

Appendices

Where can I find more?



8.1 Aito sound research	110
8.2 Graduation Project Brief	111
8.3 Tablet speaker collage	118
8.4 Oled screens	124
8.5 Sony Surface Audio	126
8.6 Industry contact	128
8.7 Initial user test approach	129
8.8 Online survey design	130
8.9 Tablet purchase collage	174
8.10 Survey results	176
8.10.1 User test results participant 1	176
8.10.2 User test results participant 2	194
8.10.3 User test results participant 3	212
8.10.4 User test results participant 4	230
8.10.5 User test results participant 5	448
8.10.6 User test results participant 6	268
8.10.7 User test results participant 7	286
8.10.8 User test results participant 8	305
8.10.9 User test results participant 9	324
8.10.10 User test results participant 10	342
8.10.11 User test results participant 11	360
8.10.12 User test results participant 12	379
8.11 Models	398
8.12 Technical drawings	399

8.3 Tablet speaker collage

From the collage, it is concluded that the placement of the speakers varies for every brand and every model. There are some brands where there is a cut in the screen for the speaker outlet, but very few brands use this approach. The speakers are mostly placed on the sides or back of the tablet to keep the screen free from any cuts.

There is another difference in speaker design among price ranges. High-end tablets have four speakers placed in each corner where the mid and low-end have either two speakers or one speaker. The two speakers can be placed on either side, but for the iPad, the two speakers are placed on one side. These sides can also differ, sometimes the short side is used while in other cases the longer side is chosen. The different placements are likely caused by the various numbers of positions for a tablet and the fact that the speakers should fit in the intended design. With four speakers in each corner, the audio can be adjusted to the position of the tablet; this makes the design more versatile.

When focussing on the specific speaker drivers that are used in tablets, they all appear to be coil speaker drivers. This type of speaker has an outlet from where the airwaves are distributed; this means that the design of the tablet should have a hole in which this outlet can be placed. In the selection of speaker drivers, the price ranges influence the choice on which driver to select. More expensive tablets have custom speaker systems, while low-end tablets use off-the-shelf drivers. Looking at the price difference between these speakers, the speakers for the iPad Pro are 12.40 dollars for a set of four. A set of four standard off-the-shelf speaker drivers from Alibaba would cost around 1 dollar. However, these prices are based on resellers of these components. So the manufacturers of the tablet might get them for a lower price. Another effect of the price range is the allocated space for the speaker drivers. In both the iPad Pro and the Samsung Galaxy Tab S6, there is a lot of room for these speakers, and they also seem to be specially designed for these specific tablets. The breakdown by Ifixit shows foam insulated speaker chambers in the iPad Pro.

MAIN TAKEAWAYS:

- High-end tablets have up to four speakers, one in each corner. In comparison, low-end tablets have one or two speakers on only one side.
- A stereo audio output is less important in low-end tablets but is a standard in high-end tablets.
- The placement of speakers in tablets is often at the back or sides of the tablet, but companies are sometimes experimenting with other placements.
- A cut in the sides of the screen is not preferred by the industry, although some companies still chose this option.
- In low-end tablets, the speaker system is not designed for that specific tablet. For high-end tablets, more attention is given to design a custom speaker driver with a speaker chamber.
- The industry uses mainly coil speakers drivers in tablets which range from 0.25 dollars for low-end tablets up to 3.1 dollars for high-end tablets.



Connectiviteit

iPad Pro is het ultieme mobiele werkstation. Je kunt draadloos bestanden afdrucken, projecteren en versturen. De USB-C-poort is geschikt voor allerlei accessoires, zoals een camera, externe schijf of display. Wifi en LTE zijn sneller dan ooit, dus je hebt overal verbinding.⁴ En het fantastische audiosysteem met vier speakers is ideaal als je zin hebt om tv te streamen of je favoriete muziek te luisteren.



Krachtig geluid uit vier luidsprekers

Dompel jezelf onder in het diepe, bulderende geluid, dat films, series en video's laat klinken alsof je het op een thuisbioscoop afspeelt. De vier luidsprekers aan de voorzijde en ondersteuning voor Dolby Atmos[®] geven je het meeslepende gevoel van een bioscoopbezoek.



Nieuw

iPad Pro

Je volgende computer is geen computer.

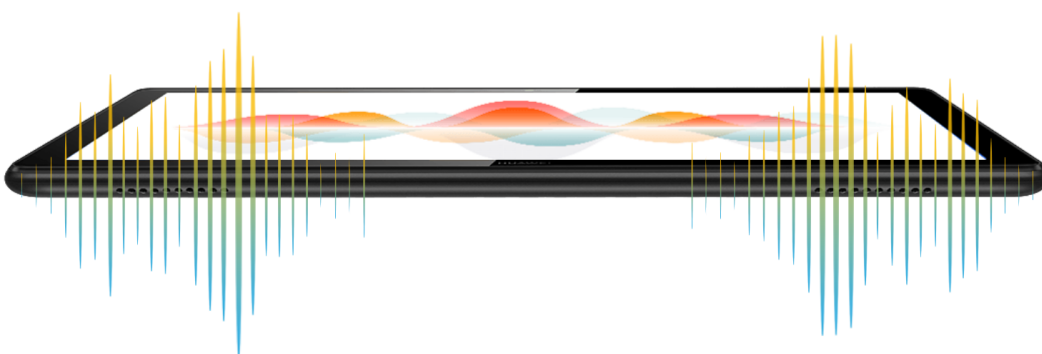
Vanaf € 899

[Koop](#)

[Meer informatie >](#)

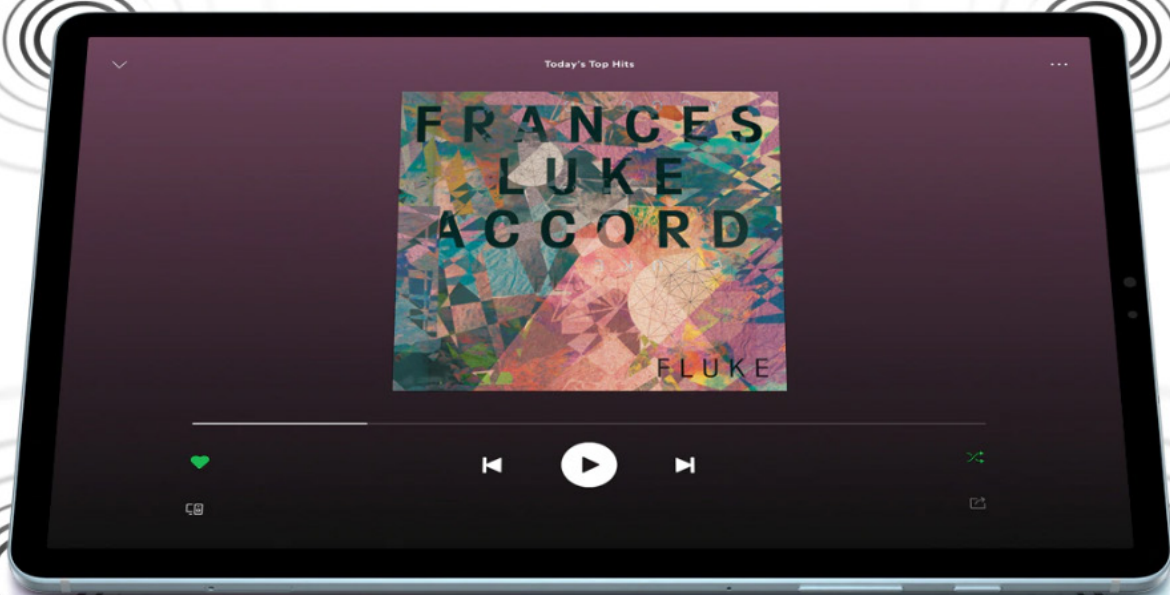
Dubbele luidsprekers, indrukwekkend geluid

De dubbele luidsprekers van de HUAWEI MediaPad T5 produceren een hoogwaardig en robuust geluid voor jouw favoriete muziek. De HUAWEI Histen audiotechnologie maakt het geluid rijker, waardoor je een indrukwekkend bioscoopgeluid krijgt.

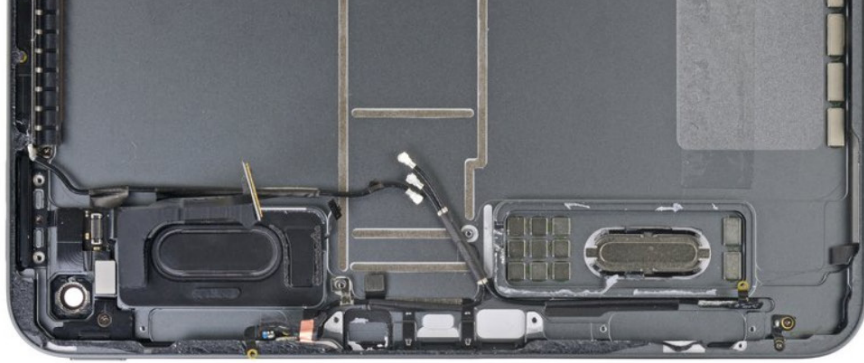


Relax met schitterend beeld en geluid

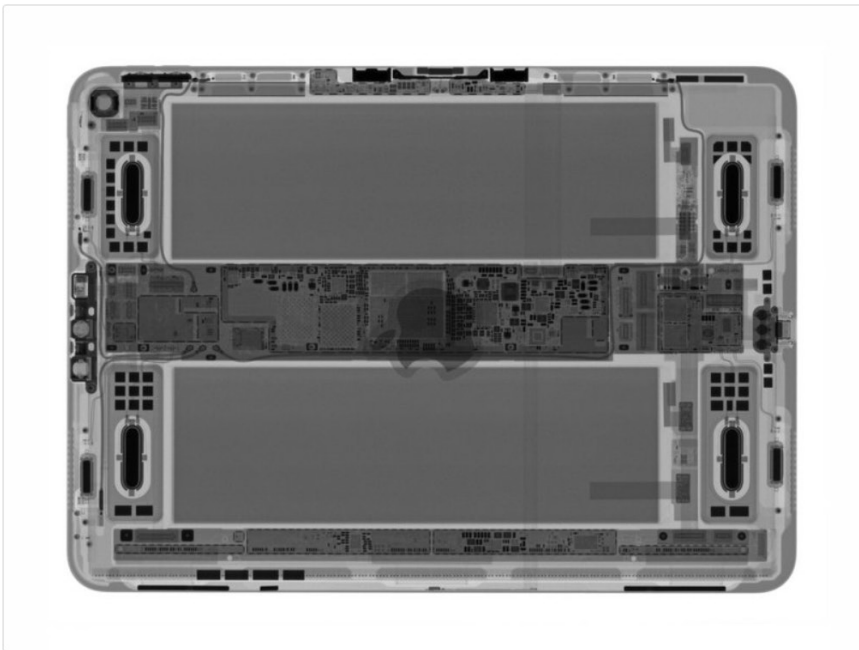
Het nagenoeg randloze sAMOLED-display heeft een 10,5" 2560x1600 WQXGA-scherm, 287 ppi en een beeldverhouding van 16:10, wat ideaal is voor urenlang kijken en lezen. Ga helemaal op in je content met vier luidsprekers die een ongekend geluid geven in zo'n dunne body.





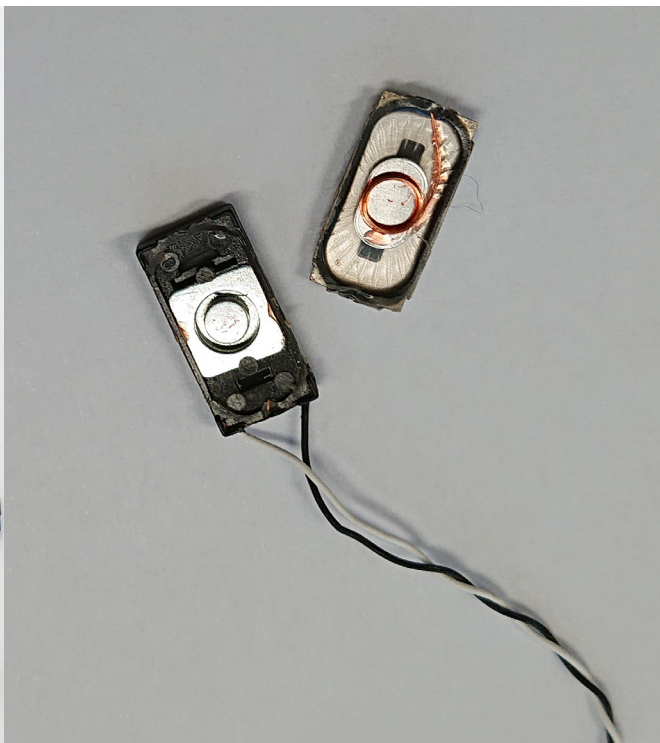
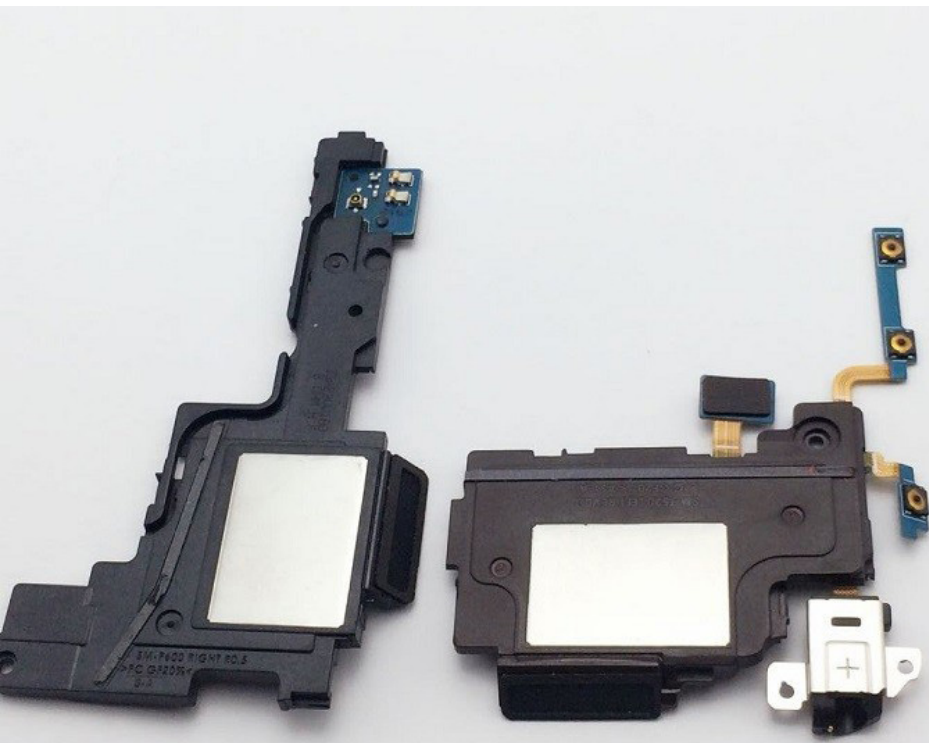


- Let's remove those speakers, shall we?
- That's easier said than tear-done. The housings are carved right into the aluminum case, and were clearly never meant to be removed. Digging them out takes a ton of heat and willpower.
- The tweeters come out without a fight but the woofer drivers are pretty much toast—hope they're made of never-fail-ium!
- Hiding within the speaker chamber; more magnets! If we had a nickel for every magnet in here, we could melt them all down and make a giant novelty nickel.



- With each passing year, Apple seemingly gets closer to realizing its dream of selling a blank slab of glass with its logo on the back.
- It's a good thing we've got X-rays on tap from [Creative Electron](#), or this would just look like a black rectangle.
- As always, the darkest areas in the X-ray image represent dense materials that absorb more X-rays—usually magnets, such as those used in speakers and for clip-on accessories.
- We're seeing *considerably* more of those than usual here.





8.4 Oled screens

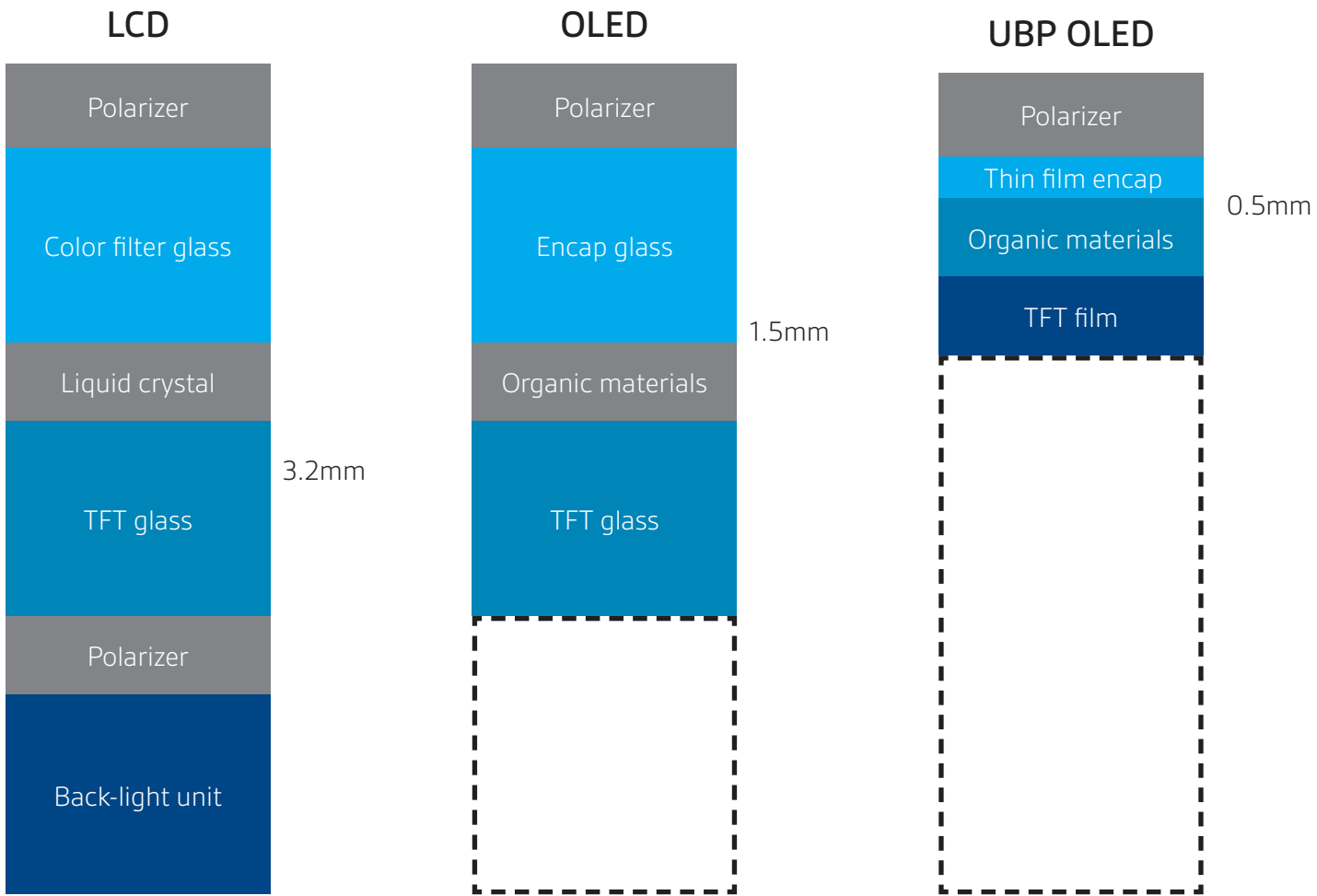
With the transition from LCD screens to Oled screens, the back-light unit in displays was eliminated. This meant a decrease in thickness, which is shown in the top image on the right. A second advantage was the lowering of energy consumption with the use of Oled screens. In an LCD screen, the colour black requires the pixels to be on. An Oled screen turns its pixels off to create the colour black, which is much more energy saving. In the current smartphones and tablets, the Oled screen is protected by a glass layer and supported with another glass layer. The protective layer prevents the screen from being scratched or dented.

A new type of Oled screen, the foldable Oled, the glass layers are removed, and mainly plastic is used. This change reduces the thickness even further and allows the screen to be bend. A downside from primarily using plastic is that now the screen is less resistant to scratches. From the available data, it is unclear how the foldable Oled displays are supported. This can either be done with the frame of the tablet itself, and the screen is glued onto this frame. Or there is another support layer added. It is quite difficult to gather this information, as this technology is quite new. Manufacturers want to prevent their competition from copying their screens, so they share no information.

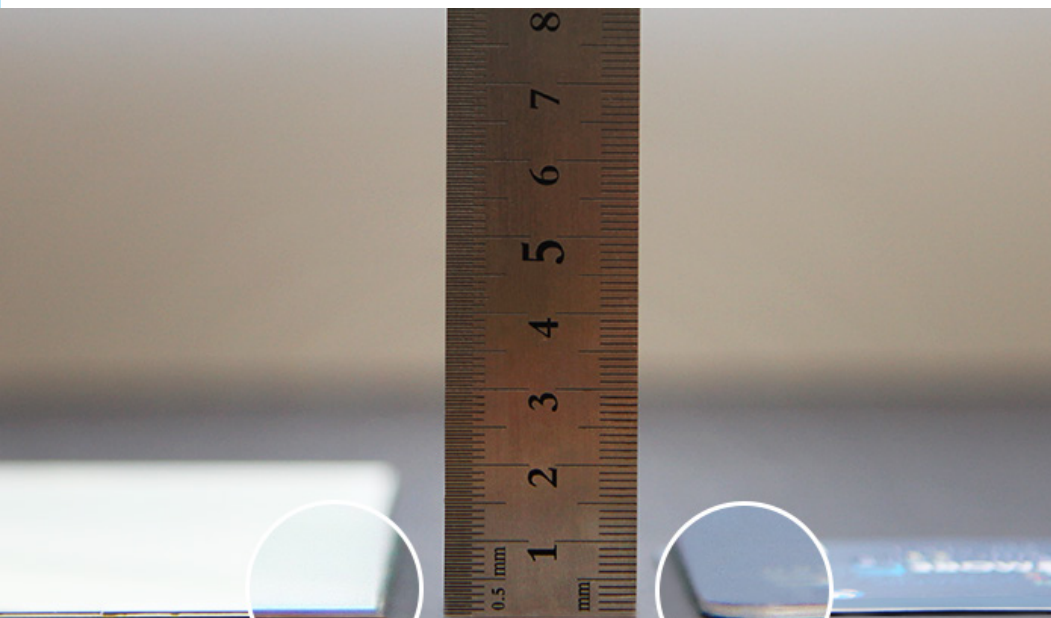
MAIN TAKEAWAYS:

- The average Oled screen is expected to be between 1mm and 0.5mm thick.
- It is unclear what the composition of the Oled screen will be, this can be glass or mainly plastic.
- For the foldable Oled screen a stiff structure underneath might be necessary to support the screen.

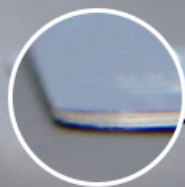




<https://gadgetstouse.com/blog/2013/04/23/samsung-galaxy-note-3-rumors/>



OLED
0.88mm

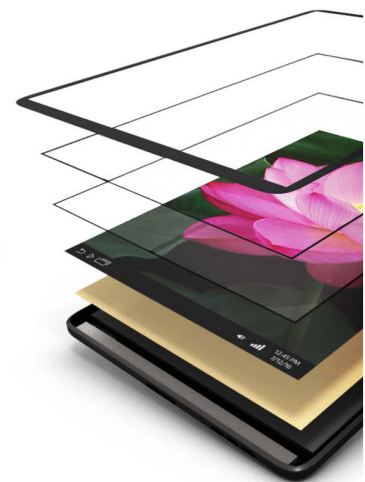


Credit Card
0.90mm

LG CHEM OLED LIGHT THICKNESS

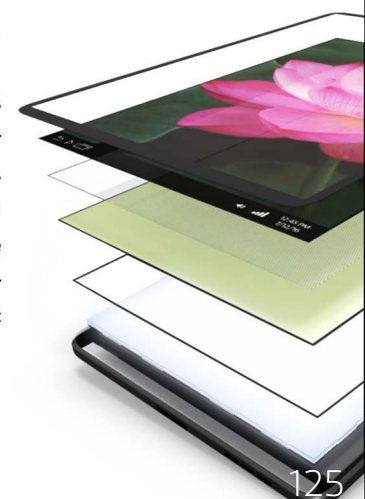
OLED

- Cover Glass
- Circular Polarizer
- Encapsulated Glass
- Glass TFT Backplane with OLED
- Heat Sink



LCD

- Cover Glass
- Linear Polarizer
- Color Filter Glass
- Liquid crystal
- Glass TFT Backplane
- Linear Polarizer
- Backlight



8.5 Sony Surface Audio

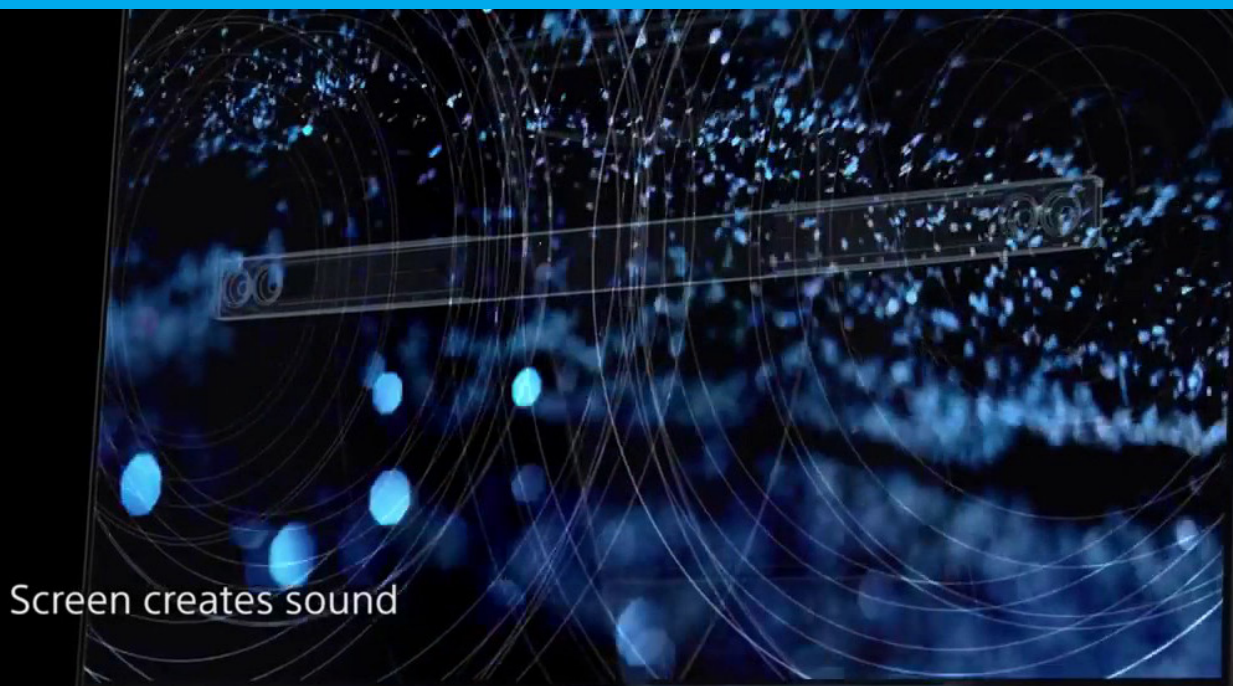
When searching for implementations of DML's in consumer products the most recent product that was found was Sony's surface audio and surface audio+. The intention for Sony with this type of sound setup is to let the sound come straight from the television instead of the bottom and keep the television as thin as possible in combination with the already thinner Oled screen. This technique is developed by LG, but none of LG's televisions have been implemented with this speaker system (yet). It is expected that somewhere in 2020 LG might put a television on the market with this technology, as they have been showcasing it at CES.

This approach to television speakers eliminates the use of sound bars and creates a front-facing audio experience. User reviews from the Sony television state that the audio seems to be moving along the screen, and that the audio comes from the object on the screen. This indicates that it is possible to have a left and a right speaker, and maybe even create more specific locations. The reviews also state that the vibrations for the audio are almost invisible. In some cases the light reflections on the screen can vibrate slightly, but when there are no reflections you cannot notice the vibrating screen.

LG's technology uses multiple coil exciters that are placed behind the screen to let it vibrate. Sony uses these exciters in two places in their older televisions, but the newer version uses three. The newer version has an exciter on either side and one in the middle. Besides the exciters the television also has a (sub)woofer installed to reach the lower frequencies. It is unclear what the design rules were for designing the television. The found 3/5 rule in literature was not followed in the placement for the exciter. The only design rule that Sony states is how the television should be mounted on the wall. The moving air cannot be obstructed by an overhanging wall or surface, and the television has to be placed a certain distance from the wall, ceiling and floor.

MAIN TAKEAWAYS:

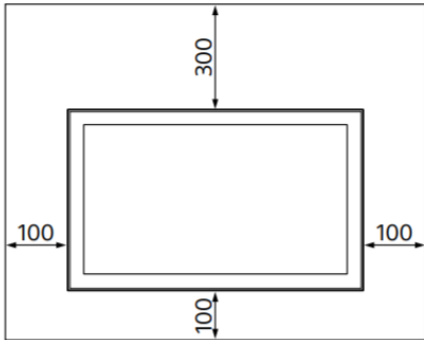
- It is possible to use exciters behind screens in a consumer product, Sony and LG show this with their televisions.
- Placement according to the 3/5 rule is not always needed, there are other possible design rules for placement.
- The screen is able to produce front-facing audio, with the help from a (sub)woofer in the stand or back of the television.
- The exciters that are used are coil-based. These exciters give stronger vibrations which creates louder audio and possibly lower frequencies.
- The moving air around the television should not be blocked as this could influence the audio.



Screen creates sound

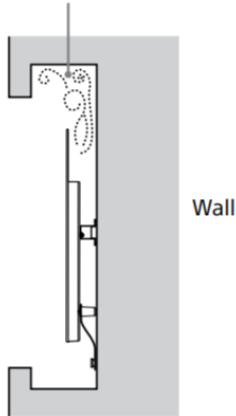
Allow for suitable clearance between the TV and the ceiling and protruding parts of the wall as shown below.

Unit: mm



- To ensure proper ventilation and prevent the collection of dirt or dust:
 - Do not lay the TV set flat, install upside down, backwards, or sideways.
 - Do not place the TV set on a shelf, rug, bed or in a closet.
 - Do not cover the TV set with a cloth, such as curtains, or items such as newspapers, etc.
 - Do not install the TV set as shown below.

Air circulation is blocked.



Acoustic Surface: The screen is the speaker

SONY



Actuators invisibly vibrate the screen to create sound waves

Sound Technology: Acoustic Surface Audio+™

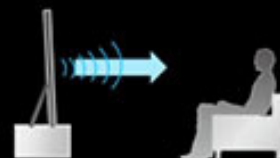
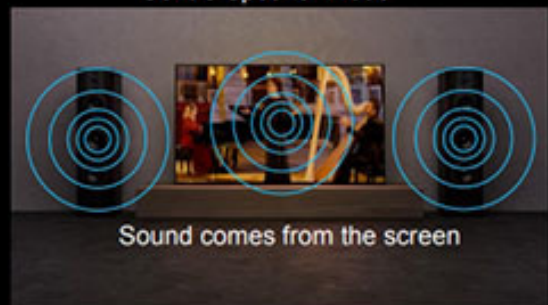
Acoustic Surface Audio+

Centre Speaker Mode

Conventional Home Theatre



Centre Speaker Mode



8.6 Industry contact

MAIN TAKEAWAYS

- The first step in creating good sound starts with the source itself, meaning that the structure of the speaker has to be perfected. The second step would be to use DSP to level the outcome to a satisfactory level; this can be done after everything has been tried with the structure of the speaker.
- Filters for DSP can be automatically generated, but you still need to do measurements after and make adjustments based on those results. This can be done in real-time with the right equipment.
- For this first exploration, the miniDSP will be sufficient enough to test the possibility of DSP for Aito's system.
- Both listening and measurements are essential in the process of creating a good speaker
- The assumption that people will adjust to certain sounds can be made and could also be used for the new setup.
- The amplifier and digital processor together would cost around 5 euro. For a piezoelectric amplifier, the cost could go up due to different voltage requirements and the fact that it probably has to be custom made.
- A different approach to switching between haptics and audio has to be found as transistors for every individual piezoelectric disc will be too expensive in an amplifier. This could be solved by creating one system for both audio and haptics; in this system, the transistors can be used for both purposes.
- Edge placement of the exciters would be an option if the back placement of the piezoelectric discs fails. However, this would require a different type of piezoelectric element.
- The lower frequency range is likely caused by the size of the panels.
- Glass seems to be a material that can be used for a panel speaker, but there is no data on what the frequency response of this material is.
- The first step in designing a speaker system for a laptop or tablet is determining what the experience should be.
- The second step is designing the speaker with the given constraints by the designer, which is often a place that is left and not particularly ideal for the audio.
- The third step is staying within budget; a "good" graded speaker system can cost around 5 dollars. This system includes the speaker drivers and the needed amplifier with DSP.
- There is a grading system that is used to identify how well speakers from various manufacturers are performing.
- A stereo setup needs a minimal distance between the speaker drivers to be perceived as stereo output.
- The standard speaker drivers require 2W from the amplifier to produce audio.
- DML's and piezoelectric speakers are explored behind closed doors throughout the industry, as this technology could give front-facing audio without cuts in the screen.
- DSP filters might not work on piezoelectric speakers as they respond differently to audio input.
- The industry seems interested in a DML system with piezoelectrics as it allows front-facing audio with a minimal thickness.

8.7 Initial user test approach

Research questions

- How do the users perceive the music and voice audio from the new piezoelectric speaker(s) compared to the existing solutions?
- How do the users perceive the audio from the new piezoelectric speaker(s) compared to each other?

Method

setup

The research should be done in a quiet room with minimal noises from outside the room. Inside the room a table will be placed with one side for the participant and the other for the researcher. On the side of the participant a laptop will be placed on which the participant can fill in the questionnaire about perceived audio of 7 different setup for personal mobile device speakers. The setups are 1 tablet, 1 smartphone, 1 laptop, and four models. This number of setups is the maximum, otherwise the test will take too long to finish. The order in which the setups are presented should be randomized to ensure the order will not have any effect on the results. The participants will all be placed the same distance from the table and the setups to keep a uniform test. During the test the same voice recording and music files will be played via the systems. The volume is set at a specific dB level and the models are connected to the same computer.

The side where the researcher will be should not be visible for the participant, as seeing the setup can alter their perception of the audio. To prevent the participant from seeing the setups a non-see-through speaker fabric is used. This fabric does not block airwaves but does obstruct the view to the other side of the table.

Participants

The ideal group of participants would be an even mix in genders and nationalities. The number of participants should be more than ten and preferably around 24 to be able to state conclusions based on a quantitative analysis. Participants will be excluded based on their hearing. Before they are invited to participate in the test, they should have performed a hearing test at home and send in these results.

Introduction

The participants will be told that they would review the speaker systems of various personal mobile devices. In this introduction they were not told that some of the speaker systems would be created by the researcher to leave them unbiased. The participants will get a cheat sheet with some audio terminology terms to help them with finding words to describe the audio. "A lexicon of audio quality" by Wilson (2015) will be the example for these words. However, due to the fact probably most participants speak Dutch, they might not understand the words correctly. Therefore, the words will be translated to give them a better understanding what these words mean. In this translation no negative or positive description should be given to these words, the translation should be neutral. They are allowed to use a cheat sheet with the translation of these words during the whole test.

Data

The data that is gathered with this test includes negative and positive descriptions of the audio and an overall audio quality rating. The rating is given on a scale from 1 to 10 and is filled in for all the setups. The descriptions have to be filled into two separate boxes, one for the positive descriptions and another for the negative wordings. The results from the grading will be turned into an average grade and the words will be visualized into word clouds.

8.8 Online survey design



Basic info

Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:

Queen - Bohemian Rhapsody (HQ)



#Stereo: Left and Right Stereo Sound Test



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> "Queen - Bohemian Rhapsody_(HQ)_"
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> "#Stereo: Left and Right Stereo Sound Test"

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

State the devices you have access to to use during this research.

Smartphone

Portable speaker

Laptop

Tablet

Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

- High-end tablet
- Mid-range tablet
- Low-end tablet

In which year did you buy your tablet?

Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

In which year did you buy your smartphone?

Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

High-end laptop

Mid-range laptop

Low-end laptop

In which year did you buy your laptop?

Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

High-end laptop

Mid-range laptop

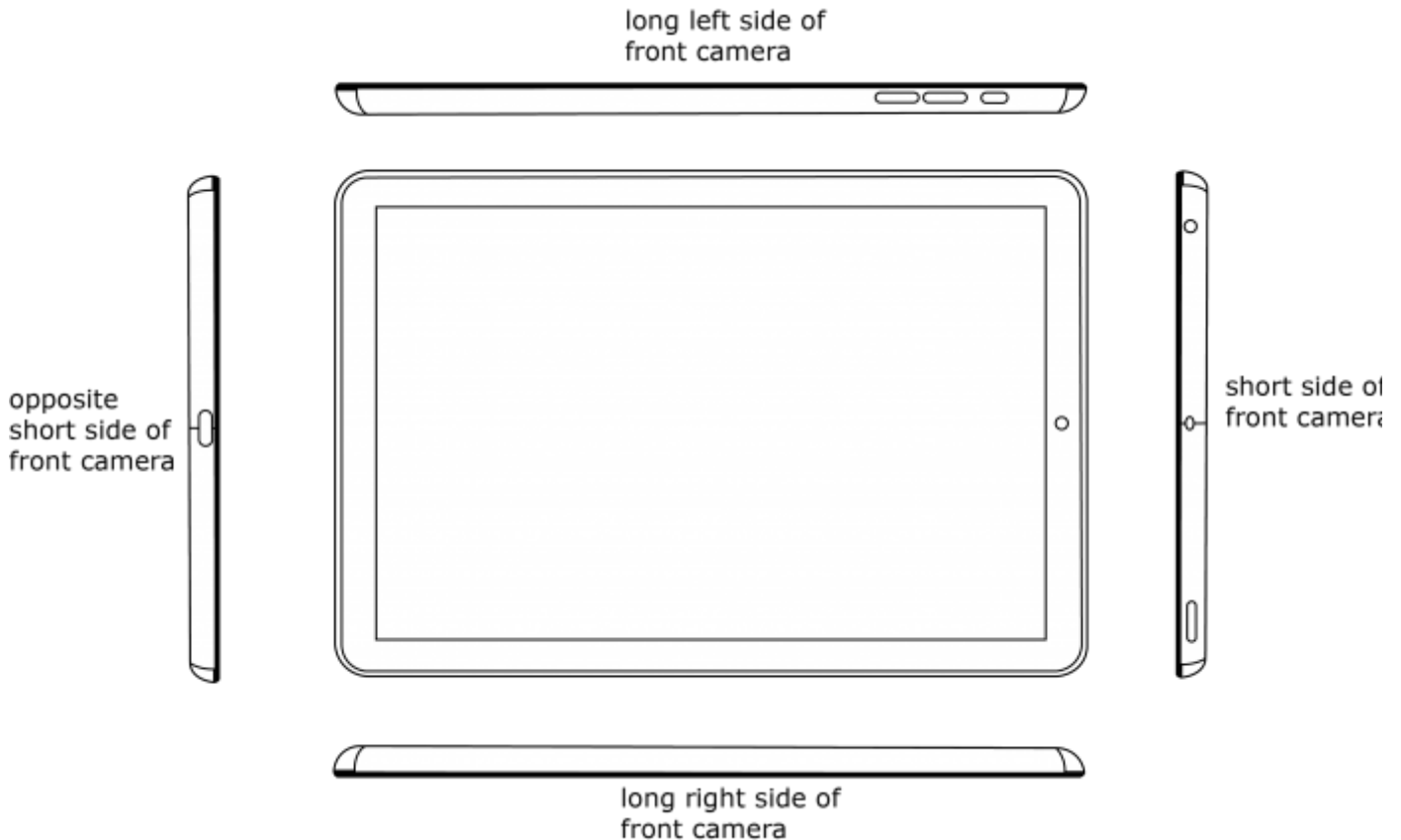
Low-end laptop

In which year did you buy your portable speaker?

Tablet questions

Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and

you can move it by pressing and holding down while moving the dot.

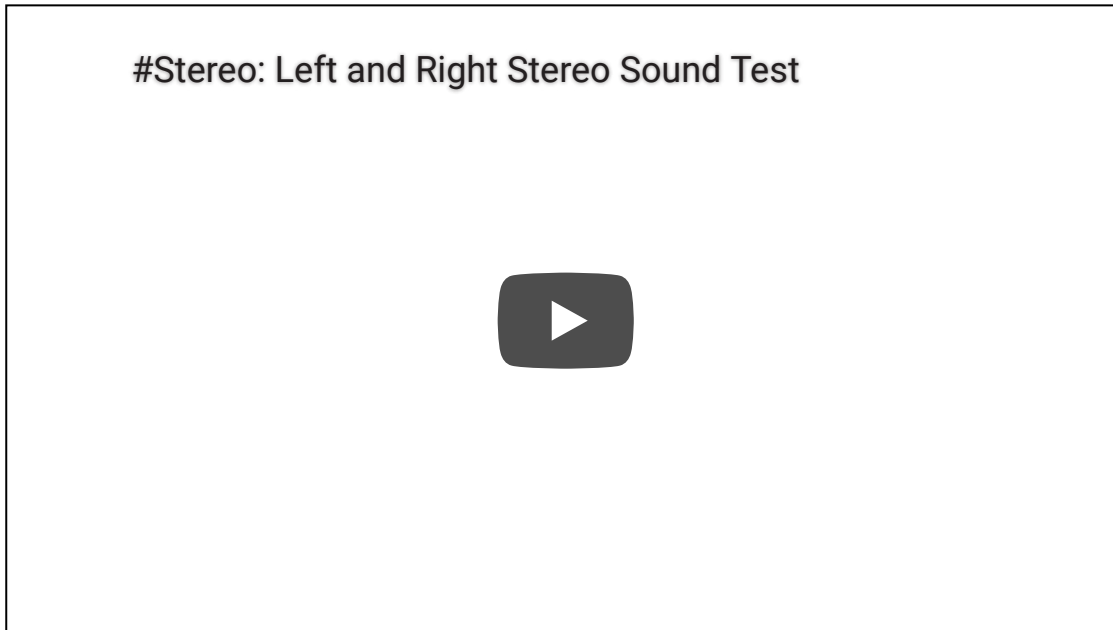


Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



Mono sound

Stereo sound

The sound changes with the orientation of the device

Did you take the speakers and sound quality into account when buying your tablet?

Yes

Maybe / I can't remember

No

Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

	I would play the audio via the speaker of my tablet	I would play the audio from headphones connected to my tablet	I would play the audio from external speakers connected to my tablet
Watching YouTube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is the reason for your choice in setup **when watching YouTube?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **browsing social media**?

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **listening to music**?

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **watching Netflix or online television?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#)).
- By scanning the QR code



- Or with by playing the video

Queen - Bohemian Rhapsody (HQ)



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

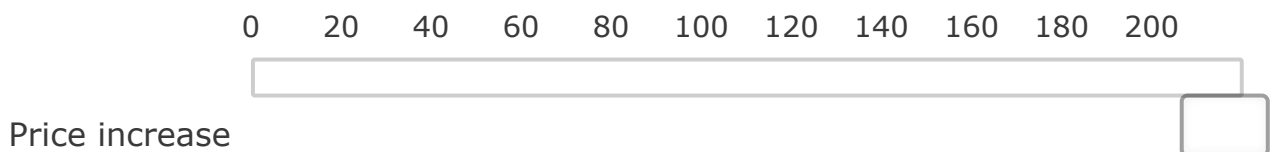
Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive,

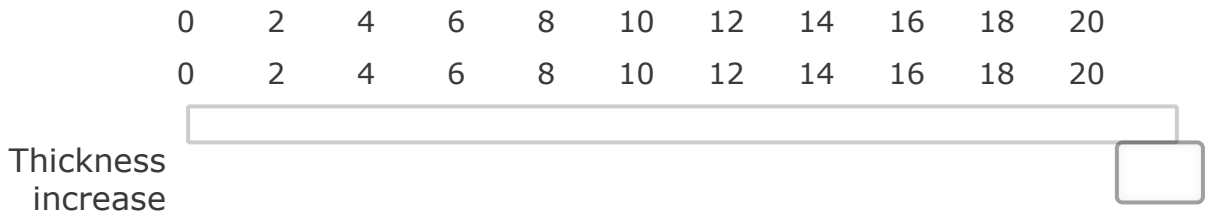
Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

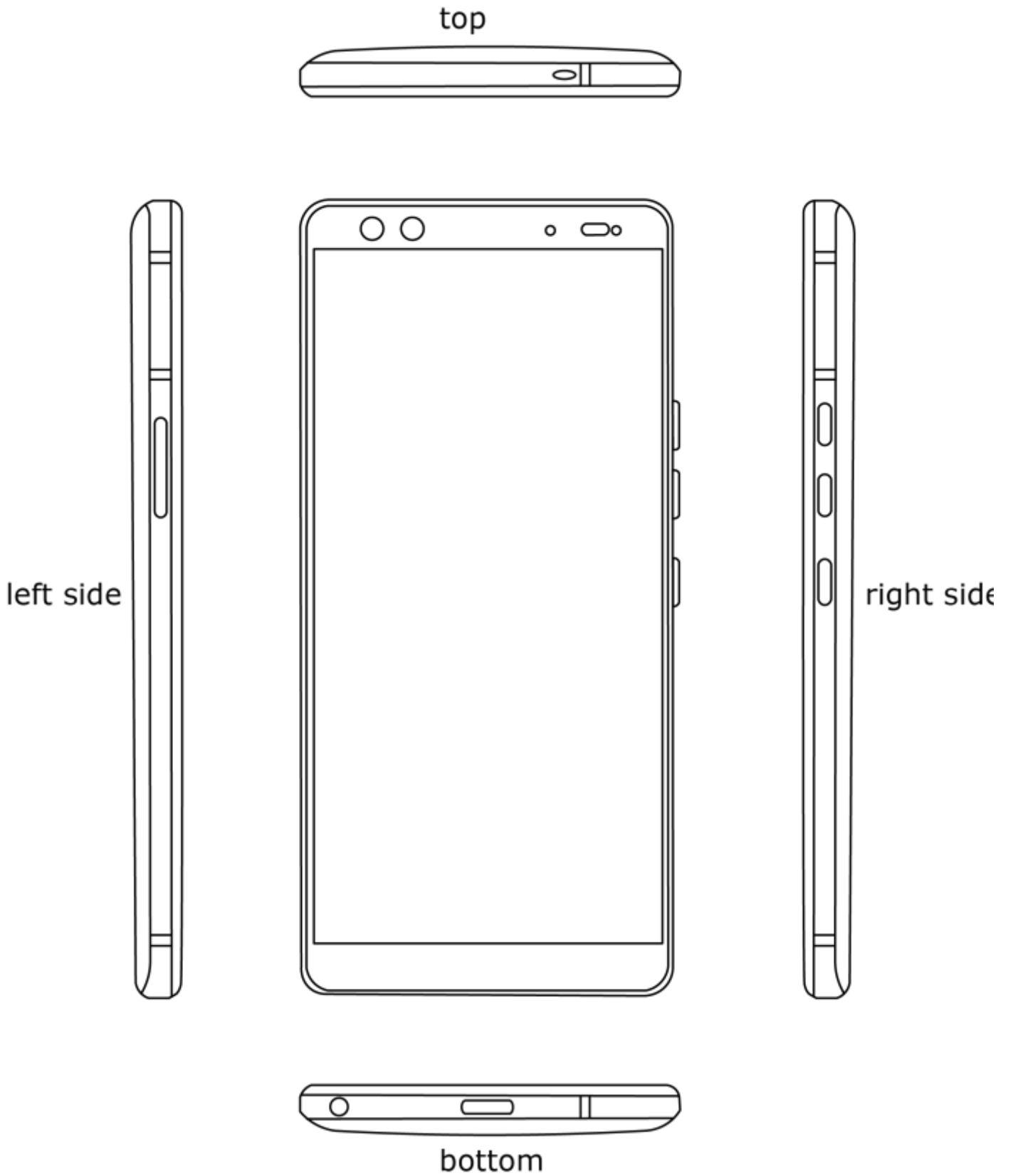


I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.



Smartphone questions

Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

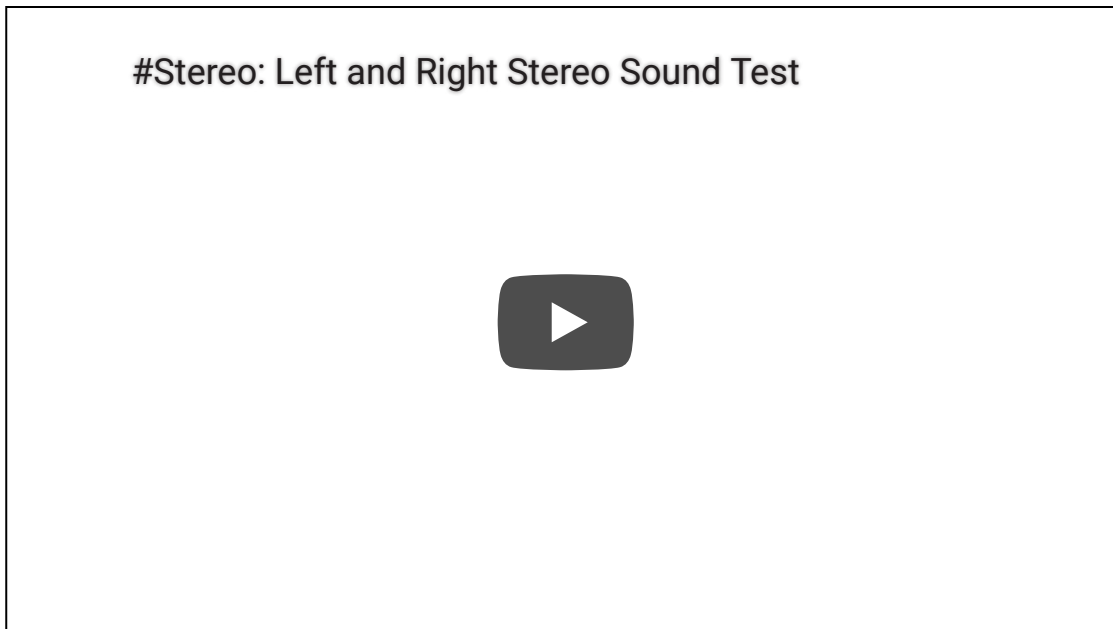


Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



Mono sound

Stereo sound

The sound changes with the orientation of the device

Did you take the speakers and sound quality into account when buying this smartphone?

No

Yes

Maybe / I can't remember

Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is the reason for your choice in setup when **watching YouTube?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **browsing social media?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **listening to music?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **watching Netflix or online television?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

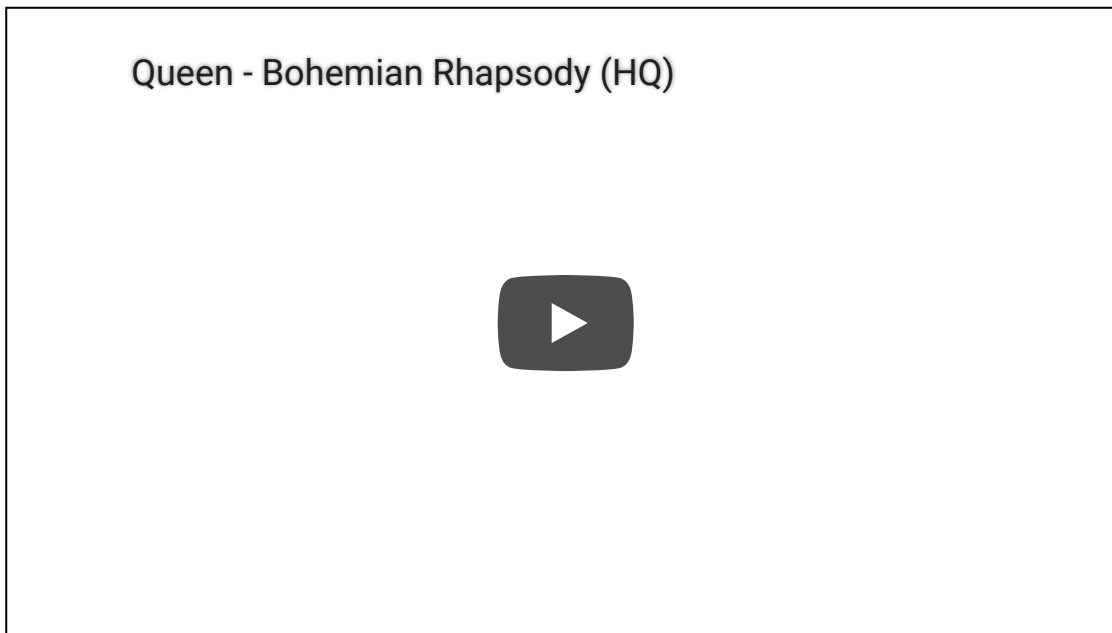
After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#)).

- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

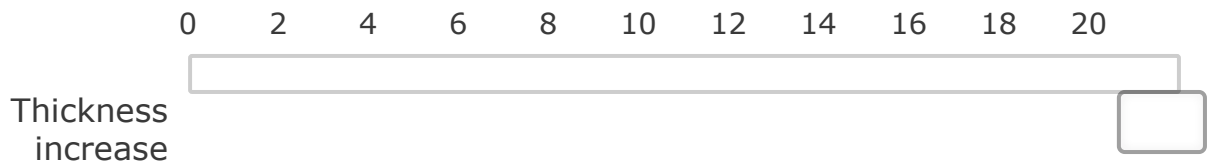
If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

0 20 40 60 80 100 120 140 160 180 200

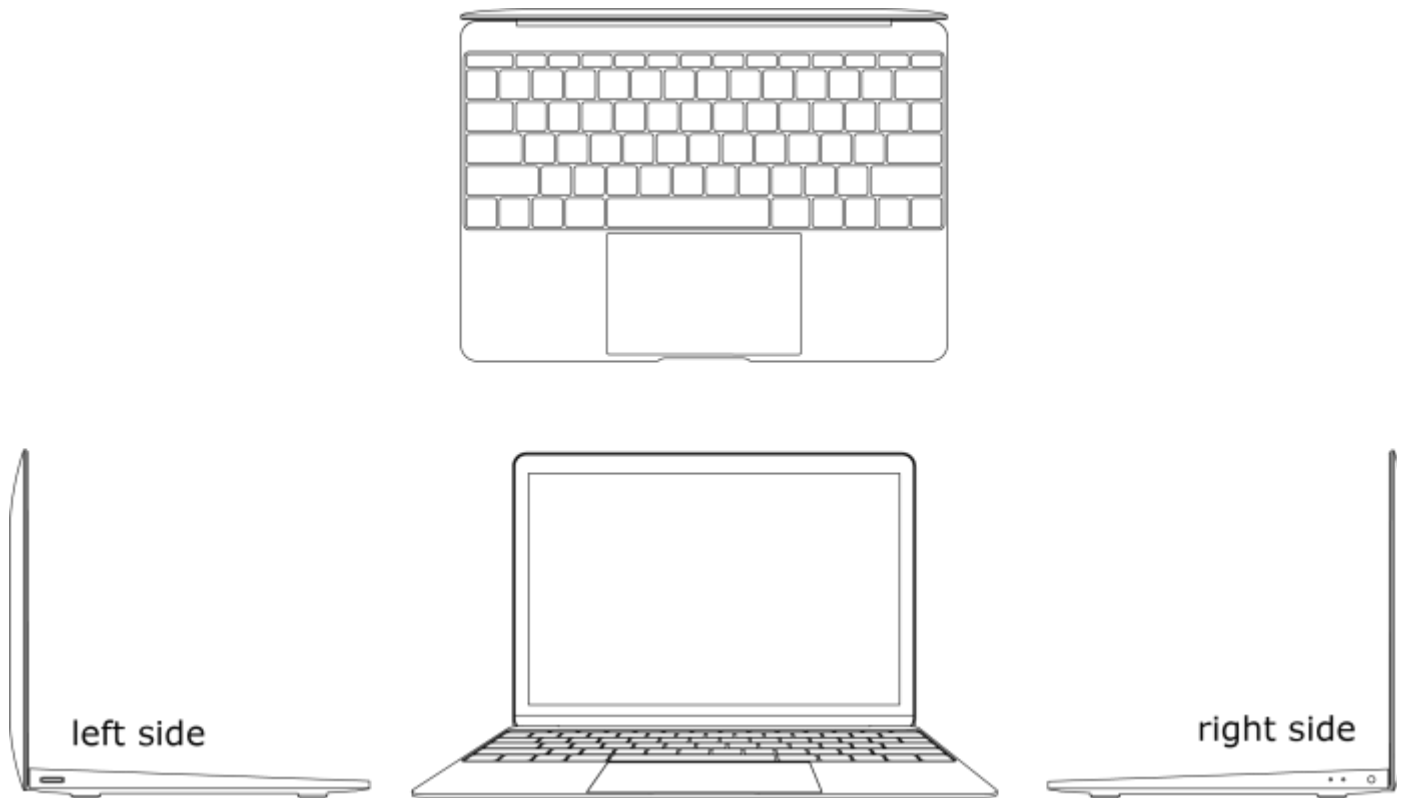
Price increase

I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.



Laptop questions

Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video

#Stereo: Left and Right Stereo Sound Test



Mono sound

Stereo sound

The sound changes with the orientation of the device

Did you take the speakers and sound quality into account when buying this laptop?

Yes

Maybe / I can't remember

No

Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is the reason for your choice in setup when **watching YouTube?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **browsing social media**?

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **listening to music**?

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other

What is the reason for your choice in setup when **watching Netflix or online television?**

I don't want to bother other people

I don't want other people to bother me

I can hear the audio better

The sound quality is better

Too much hassle to get another speaker or headphone

The sound quality is good as it is without the need for extra devices

Other


After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#)).
- By scanning the QR code



- Or with by playing the video

Queen - Bohemian Rhapsody (HQ)



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

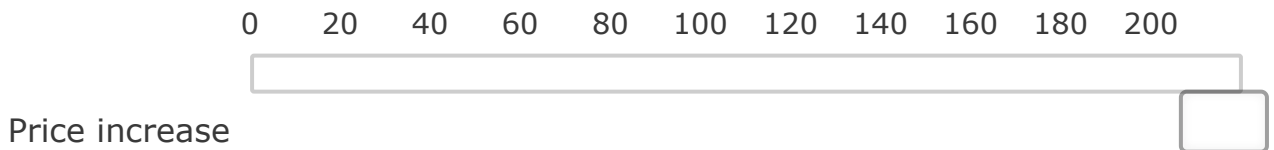
Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide,

Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Portable speaker questions

Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video

#Stereo: Left and Right Stereo Sound Test



Mono sound

Stereo sound

The sound changes with the orientation of the device

Check the boxes that apply for the purchase of your portable speaker

Sound quality

Size

Price

Design

Build in light feature

Bluetooth

Connect multiple speakers together

Charge phone with portable speaker

Other

None of the above

In which scenario's do you use your portable speaker?

Play music at a party

Play music in a park/garden

Play music in everyday use

Play audio of movie or television

Use during (video) calls

Sound during presentations or meetings

As sound improvement during laptop use

As sound improvement during tablet use

As sound improvement during smartphone use

Other

None of the above

After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#)).
- By scanning the QR code



- Or with by playing the video

Queen - Bohemian Rhapsody (HQ)



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

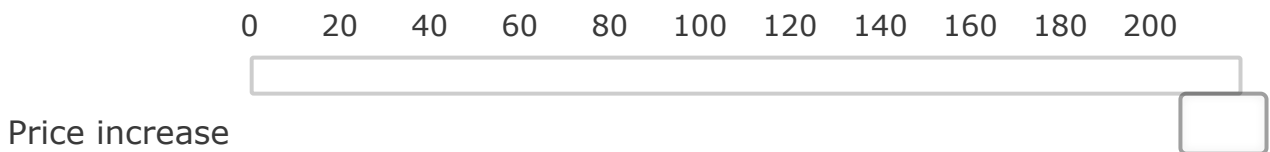
Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy,

Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

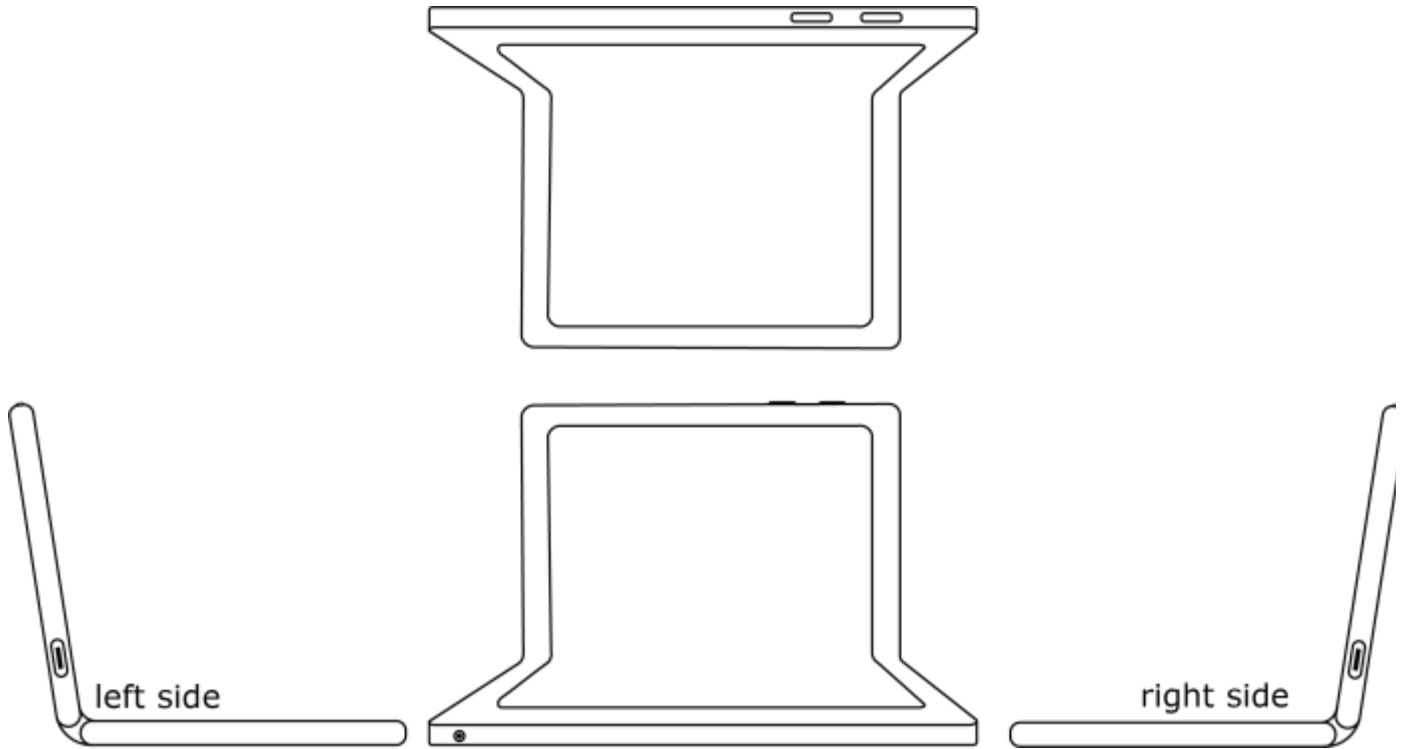


New concept (foldable laptop)

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

Would the foldable laptop have a mono or stereo speaker setup?

Mono

Stereo

Mono, but the sound changes with the orientation of the device

Stereo, but the sound changes with the orientation of the device

What would you expect the audio quality to be of a foldable laptop?

	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Foldable laptop

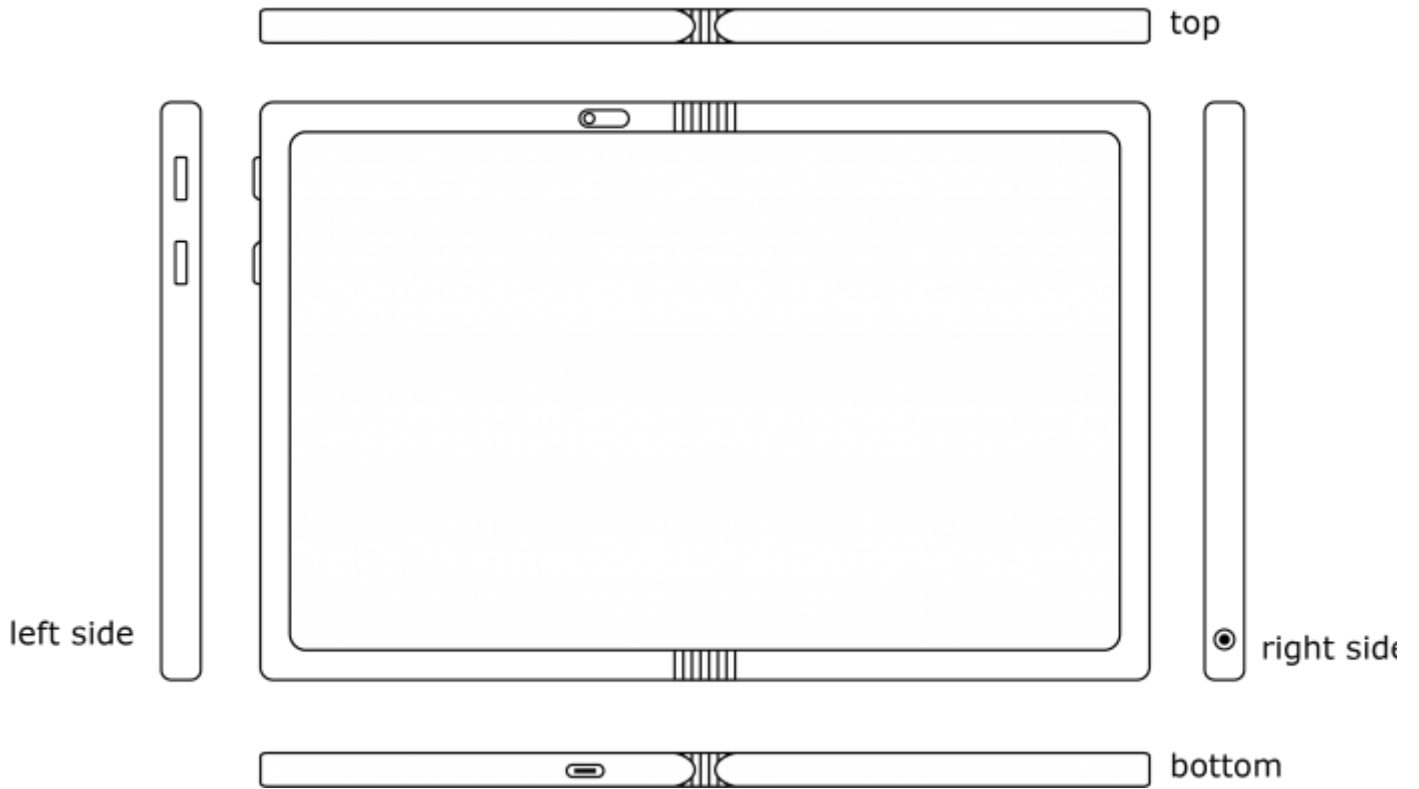
- » Tablet
- » Smartphone
- » Portable speaker
- » Laptop

New concept (foldable tablet)

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

Would the foldable tablet have a mono or stereo speaker setup?

Mono

Stereo

Mono, but the sound changes with the orientation of the device

Stereo, but the sound changes with the orientation of the device

What would you expect the audio quality to be of a foldable tablet?

	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

- »» Laptop
- »» Smartphone
- »» Tablet
- »» Portable speaker

Foldable tablet

Participant info

Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

What would you state is your gender?

Male

Female

Other

I do not want to disclose this

How old are you?

What would you state is your nationality?

How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Check the boxes that apply to you

I would consider myself up to date on technology trends

I like to buy the newest personal mobile devices when they are released

Before this survey I was already familiar with foldable tablets and laptops

End

Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

For SurveyCircle users (www.surveycircle.com): The Survey Code is: G3LH-YBVM-Y719-SWNU or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

Powered by Qualtrics

8.9 Tablet purchase collage

When looking at the filtering options there is not option to filter for audio quality on Dutch sites. For the website Tweakers, which is used to compare electronic devices, and Coolblue, a well know online electronic store; there is no filter option regarding audio. Bol.com, the Dutch variant of Amazon, does have an option to filter on type of use. For example “watching series and film”, but it is not clear if this means the filter will search for a large screen with a high resolution or also takes the sound quality into account. Best Buy, a large (online) electronic store in the United States of America, does offer a filter for “sound quality” and “speakers”. This filter is based on how other customers have rated the tablet on these aspects. When looking at the reviews regarding audio on Best Buy, only a small percentage acknowledges the audio or speakers. For the Apple iPad Pro this is 3.8% and for the Samsung Tab S6 this is 11.8%. It is uncertain how many people would actually use this filter and it is also hidden. Customers have to first scroll through the filter options and open an extra box for the section “customers rated highly for”.

There is also no specification added to the list about what type of speakers are installed or how many. This type of information has to be looked for on the website of the brand itself. And mostly the only information the brand states about the speaker system is how many speakers there are and what type of audio enhancing software is used, such as Dolby Atmos. The exception is Microsoft, they have added also the wattage of their speaker system to their specifications.

MAIN TAKEAWAYS:

- There are no clear filtering options to select devices based on audio quality when shopping online.
- The online stores do not offer clear explanations on the audio performance of the speaker system of tablets.
- Companies only acknowledge the amount of speakers and experience of these speakers in their advertisement on their own websites.
- Only a few customers acknowledge the audio quality of devices that focussed on a high quality audio experience that should compete with laptops.

The image shows three screenshots of product review pages from Best Buy, illustrating search results for 'sound audio speakers'. Each screenshot shows a search bar with the query 'sound audio speakers', a 'Sort by Best Match' dropdown, and a list of product reviews. The reviews are for various tablets, including the Cerald, Misabri, Pons, Dougins, and Dickster. Each review includes a star rating, a title, a verified purchase badge, and a short description of the product's features and performance. The reviews are sorted by 'Best Match' and show a mix of positive and negative feedback. The first screenshot shows 2 reviews, the second shows 52 reviews, and the third shows 71 reviews. The reviews are for various tablets, including the Cerald, Misabri, Pons, Dougins, and Dickster. Each review includes a star rating, a title, a verified purchase badge, and a short description of the product's features and performance. The reviews are sorted by 'Best Match' and show a mix of positive and negative feedback.

Technische specificaties

Scenario's Veelzijdige 2-in-1-laptop voor werken en spelen op jouw manier, winkelen, bankieren, schrijven op het scherm en Netflix streamen.

Afmetingen 11,5" x 7,9" x 0,33" (292 mm x 201 mm x 8,5 mm)

Beeldscherm Scherm: 12,3 inch PixelSense™-scherm
Resolutie: 2736 x 1824 (267 PPI)
Beeldverhouding: 3:2
Aanraakmodus: 10-punts multi-touch

Geheugen 4 GB, 8 GB of 16 GB LPDDR4x RAM

Processor Dual-core 10e generatie Intel® Core™ i3-1005G1-processor

Quad-core 10e generatie Intel® Core™ i5-1035G4-processor

Quad-core 10e generatie Intel® Core™ i7-1065G7-processor

Opslag³ Solid State Drive (SSD)-opties: 128GB, 256GB, 512GB of 1TB

Levensduur van de batterij¹ De batterij gaat tot wel 10,5 uur mee bij normaal gebruik van het apparaat

Grafische weergave Intel® UHD Graphics (i3)
Intel® Iris™ Plus Graphics (i5, i7)

Aansluitingen 1 x USB-C®
1 x USB-A
3,5 mm hoofdtelefoonaansluiting
1 x Surface Connect-poort
Surface Type Cover-poort⁴
MicroSDXC-kaartlezer
Compatibel met Surface Dial off-screen interaction*

Camera's, video en audio Windows Hello-gezichtsverificatiecamera (voorzijde)
Camera met 5 megapixels aan de voorkant met full HD-video-opname in 1080p
Camera aan de achterkant met 8 megapixels en autofocus met Full HD-video in 1080p
Dubbele far-field Studio Mics
1,6 W stereoluidsprekers met Dolby® Audio™

Samsung Galaxy Tab S6 Lite

+ book cover a 69.99,-



Populaire merken

Apple
Samsung
Huawei
Lenovo
Kurio
Alle tablets

Type gebruik

Dagelijks gebruik
Films & Series kijken
Ook onderweg online
Zware games spelen
Foto's bewerken
Voor kinderen

Schermgrootte

Klein (tot 8 inch)
Gemiddeld (8 tot 10 inch)
Groot (10 inch en groter)

Besturingssysteem

Android
iOS (Apple)
Windows

Ook interessant : Welke tablet kopen? Scherpgeprijsde tablets Tabletaccessoires

BEST BUY Credit Cards Top Deals Deal of the Day Gift Cards Gift Ideas For Your Business

Search Best Buy

Products Brands

Best Buy Computers & Tablets Tablets

All Tablets

Customers Rated Highly For

- Accessibility
- Android OS
- Apple pencil
- Apps
- Battery
- Battery life
- Bought as a gift
- Brightness
- Camera
- Capacity
- Charging
- Color
- Compact
- Compatibility
- Convenient
- Design
- Display
- Display quality
- Ease of use
- Easy to maneuver
- Educational
- Email
- Features
- For beginners
- For children
- For gaming
- For mom
- For toddlers
- For watching movies
- Fun
- Games
- Gaming
- Gets the job done
- Internet
- Keyboard
- Lighting
- Memory
- Notes
- Office use
- Operating system
- Parental controls
- Performance
- Photos
- Picture quality
- Portable
- Powerful
- Price
- Processor
- Product construction
- Readability
- Reliable
- Satisfied
- Screen size
- Set up
- Size
- Sketching
- Smooth
- Sound quality
- Speakers
- Speed
- Storage space
- Thin
- Update
- Useful
- Value
- Versatile
- Watching videos
- Weight
- Wi-fi
- Writing

Order Status Saved Items

Price Match Guarantee

229.99

security software \$29.99 value

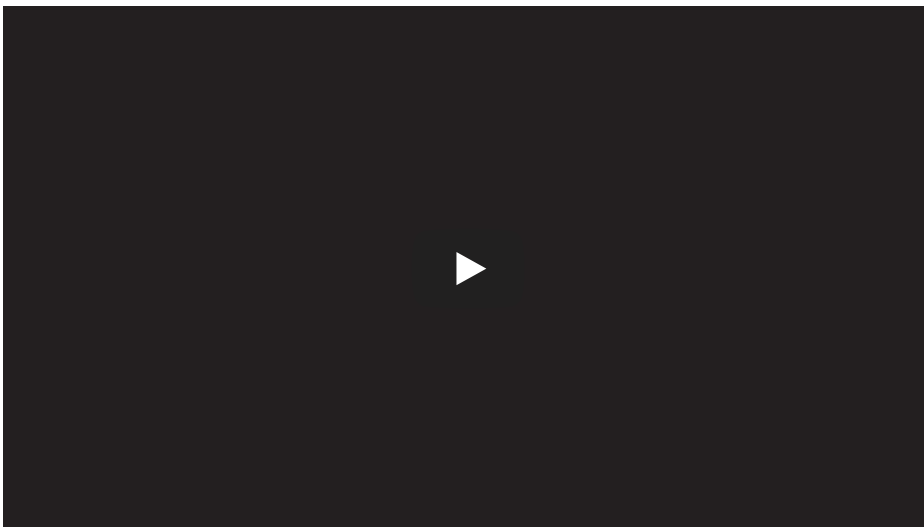
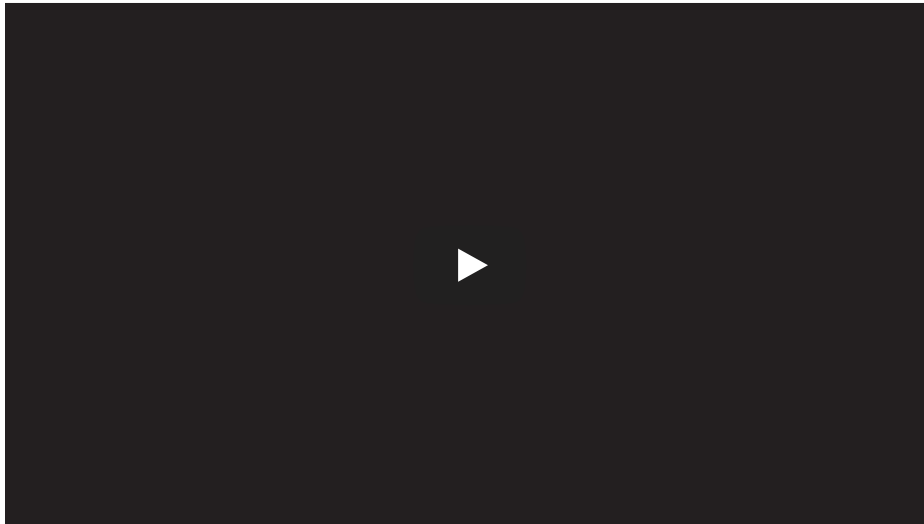
Add to Cart

Pen-Box: from \$215.99

8.10.1 User test results participant 1

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the title of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody (HQ)."
- <https://www.youtube.com/watch?v=6TWWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

Xiaomi

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2018

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

Lenovo

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2017

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

This question was not displayed to the respondent.

Q104. In which year did you buy your portable speaker?

This question was not displayed to the respondent.

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test.](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup when watching YouTube?

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when browsing social media?

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when listening to music?

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when watching Netflix or online television?

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#).)
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe positive aspects about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe negative aspects about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

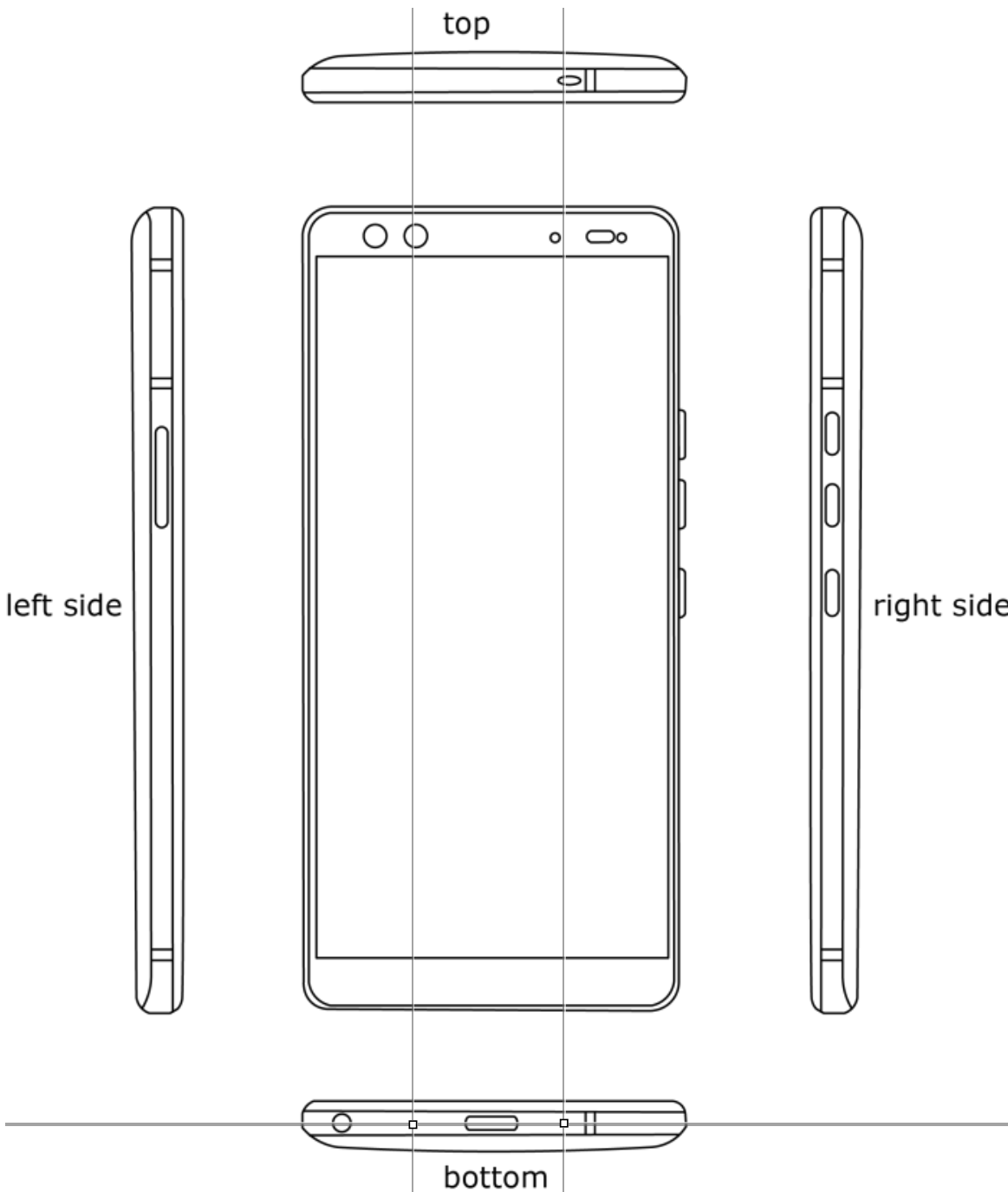
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

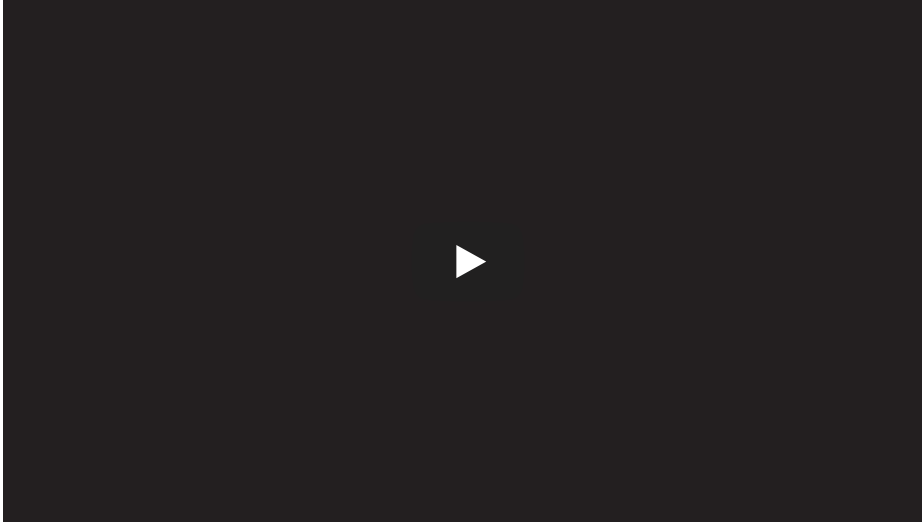


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me

- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

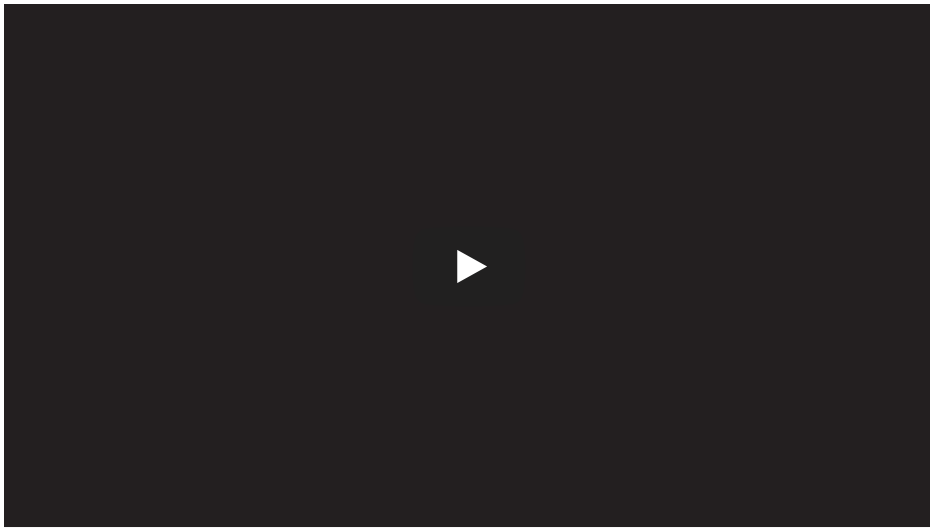
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\).](#))
- By scanning the QR code



- Or with by playing the video



Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Loud

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Harsh, Synthetic,

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

I would like to get more base into it. and beter quality in general

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



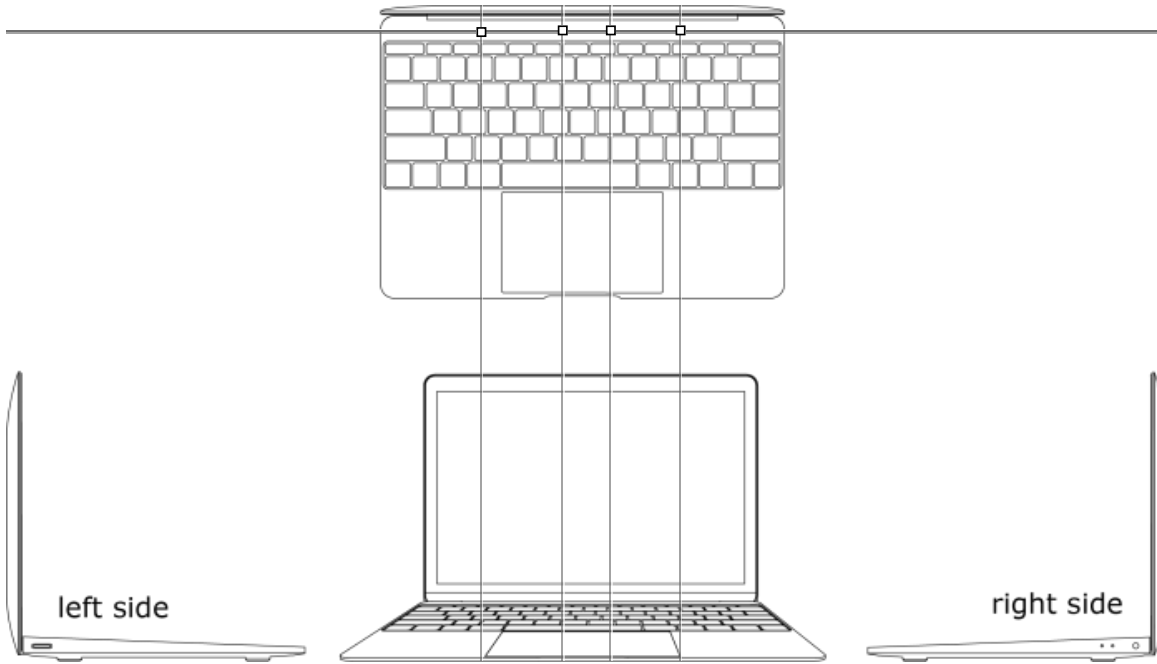
Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

Thickness increase



3

Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

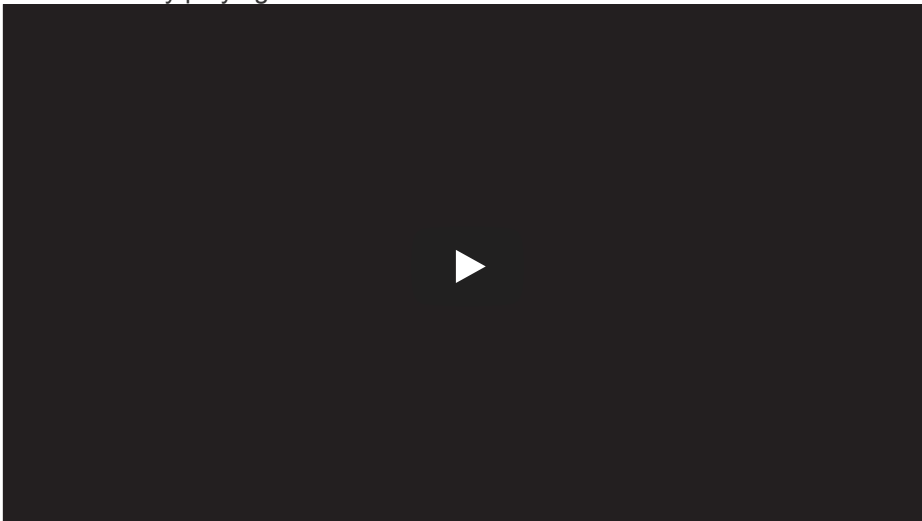


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when **watching YouTube?**

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when **browsing social media?**

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when **listening to music?**

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

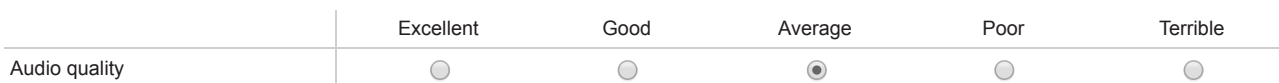
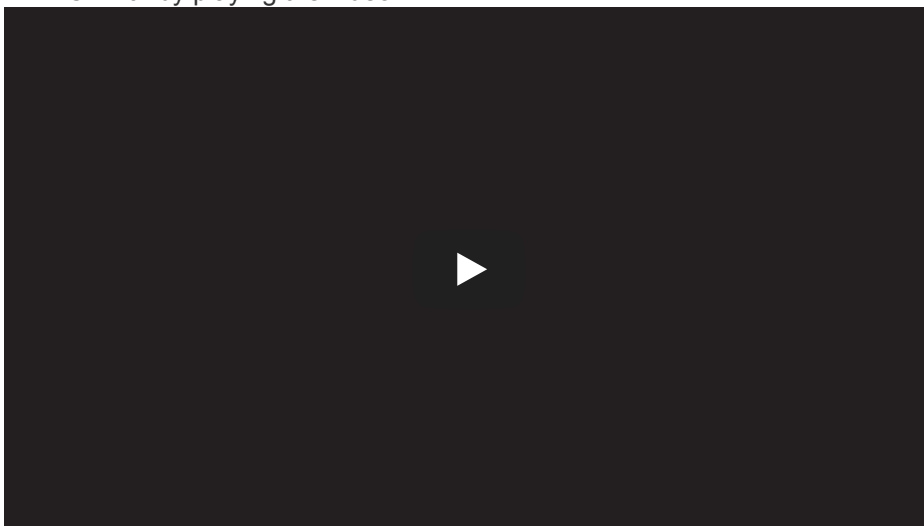
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Loud enough

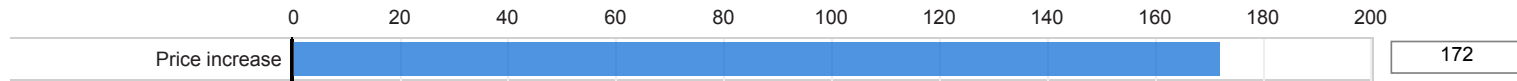
Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Synthetic,

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

bass, overall better quality

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... milimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

This question was not displayed to the respondent.

Q97. In which scenario's do you use your portable speaker?

This question was not displayed to the respondent.

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#).)
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

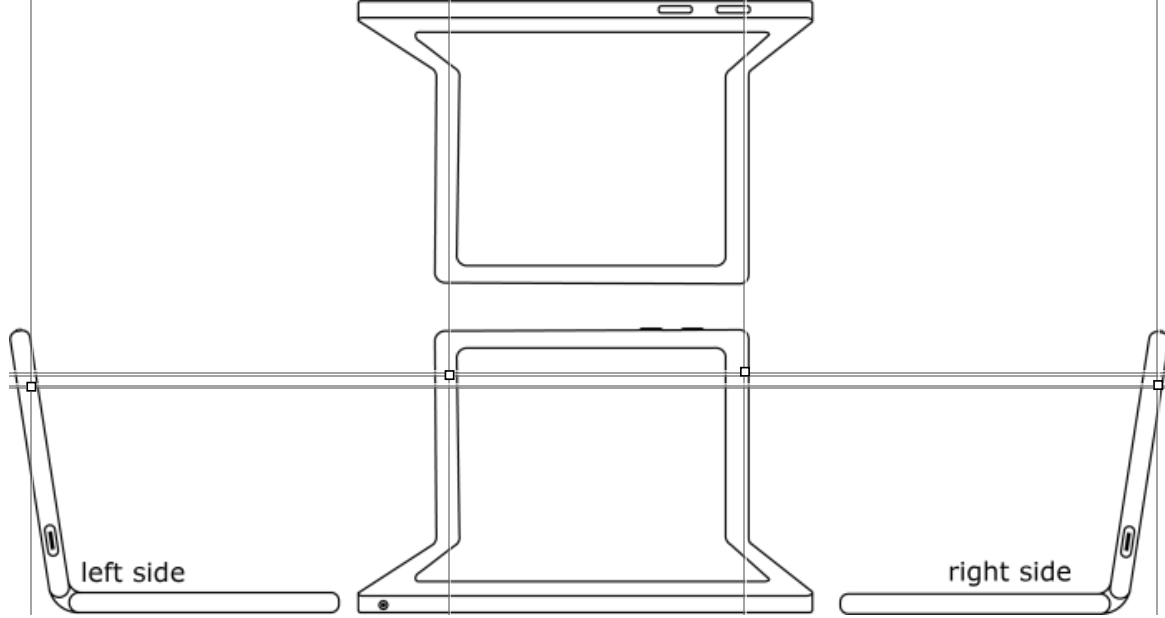
This question was not displayed to the respondent.

Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

I don't expect them to be better than a laptop... Around the same

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

I think might be lighter. and easier to watch series in bed when you want to hold it and lay on one side.. Also easier to walk with, with a laptop you have to close it because it is bad for you screen if you walk with it open. And with a foldable it could be easier. Also when cooking and you want to read recipe, you can put it easier in a holder and take up less space.

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

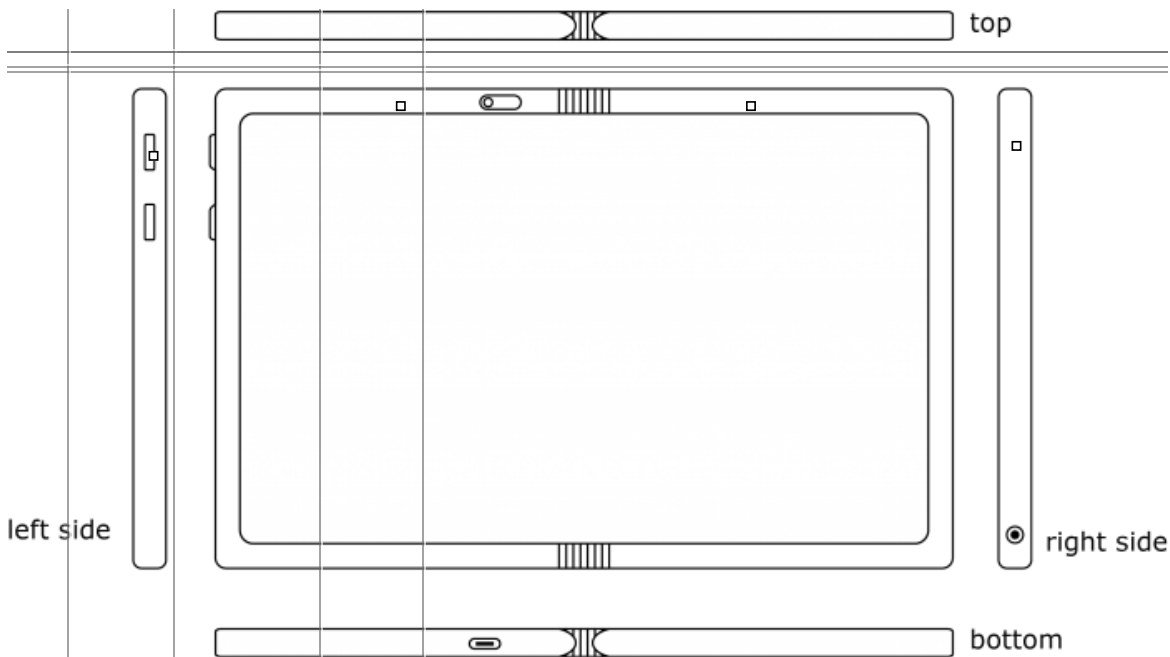
Laptop	1
Foldable laptop	2
Smartphone	3

Q45. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing

tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Same as a regular tablet

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

(it think you mean foldable tablet & Laptop) You probably dont need a standard to put it upright

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Smartphone	2
Foldable tablet	3

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

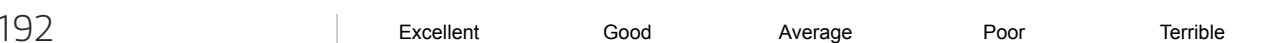
Q32. How old are you?

24

Q33. What would you state is your nationality?

Dutch

Q34. How would you rate your hearing?





Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

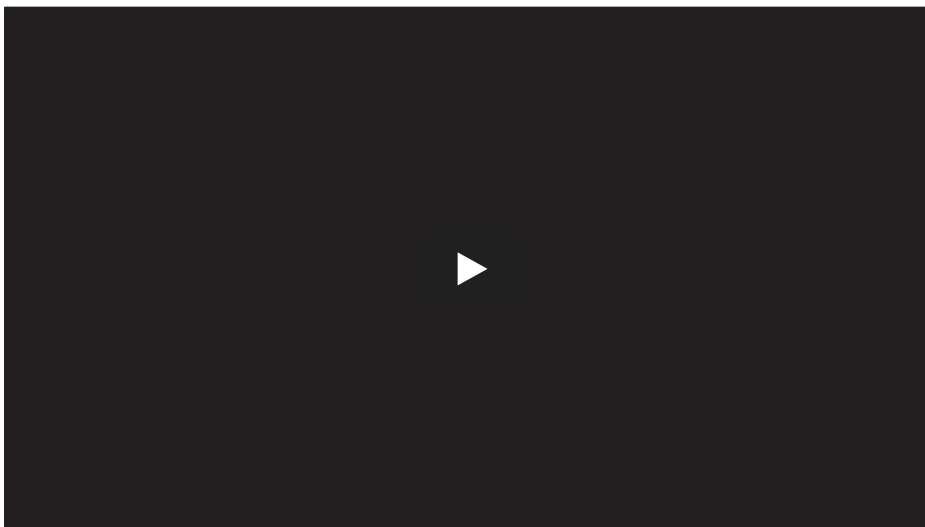
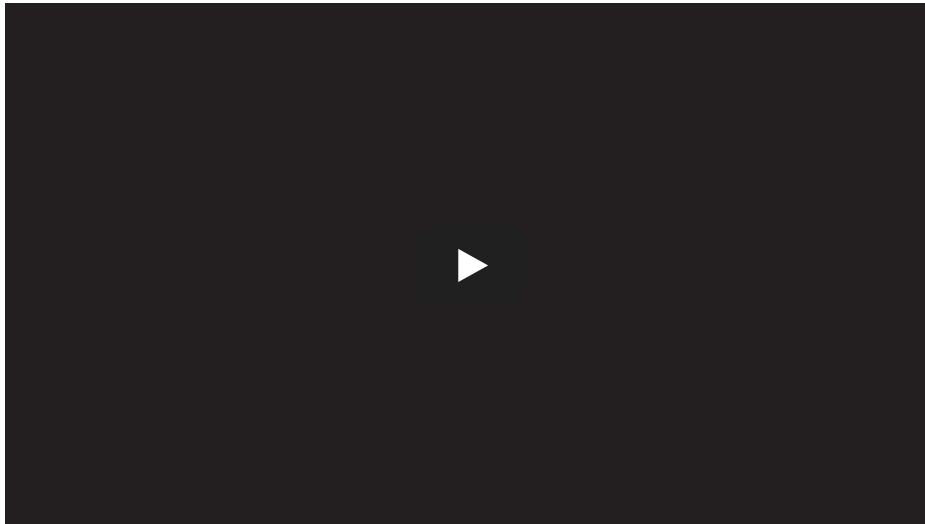
Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: G3LH-YBVM-Y719-SWNU or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.2 User test results participant 2

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

OnePlus 3

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2016

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

HP ZBook Studio G5 mobile Workstation X360

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2018

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

This question was not displayed to the respondent.

Q104. In which year did you buy your portable speaker?

This question was not displayed to the respondent.

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to choose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup **when watching YouTube?**

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media?**

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music?**

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television?**

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

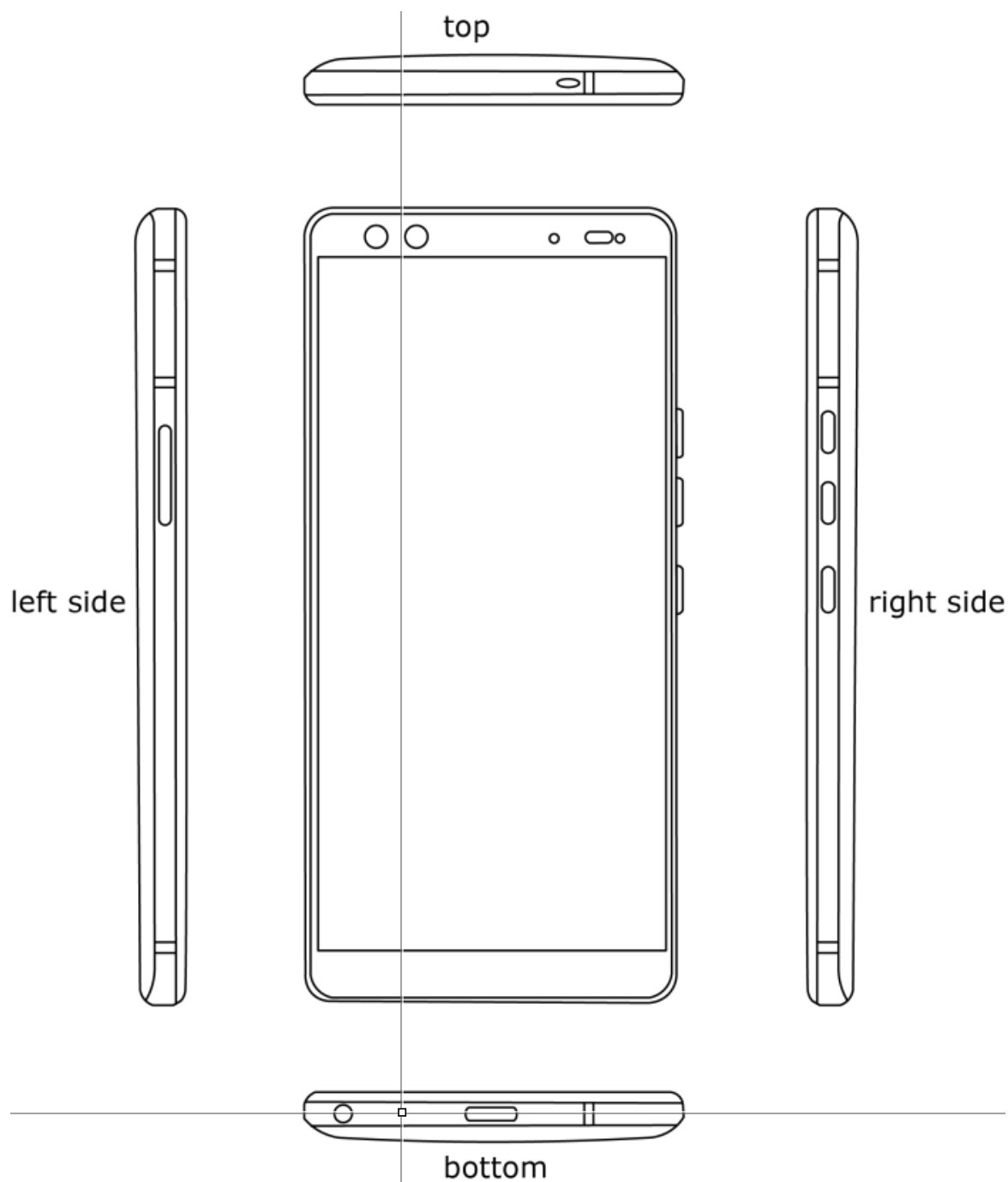
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

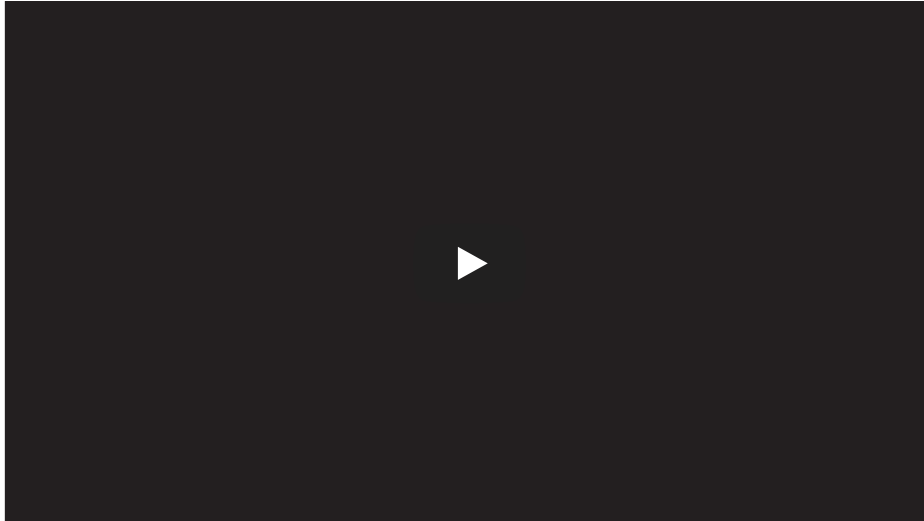


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me

- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

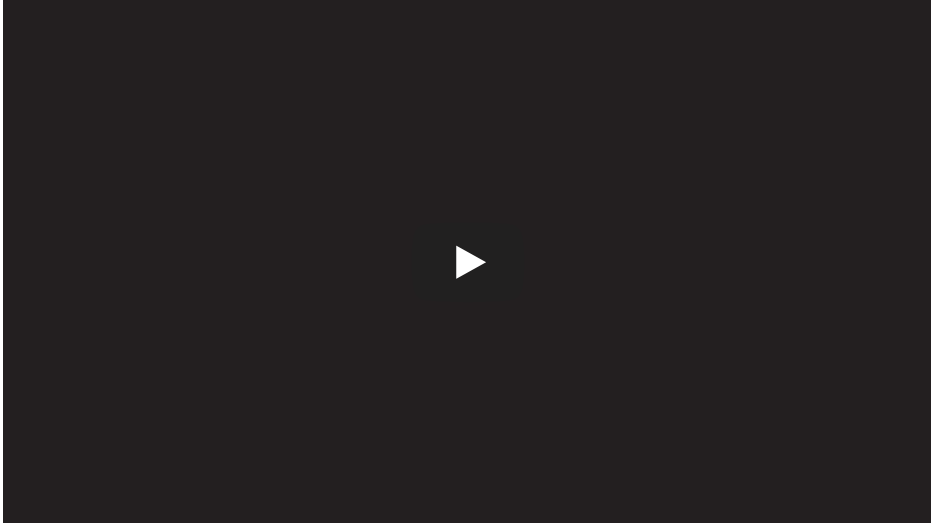
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ.\)](#))
- By scanning the QR code



Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clear

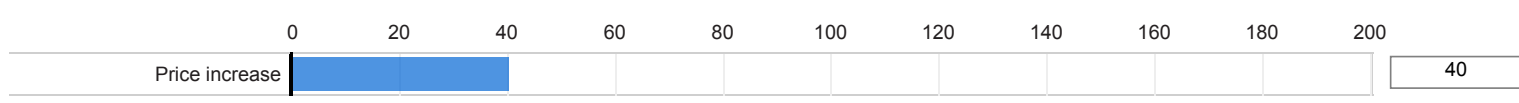
Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Synthetic and thin

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

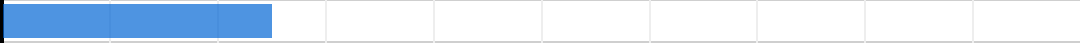
I would like to have a more full sound

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

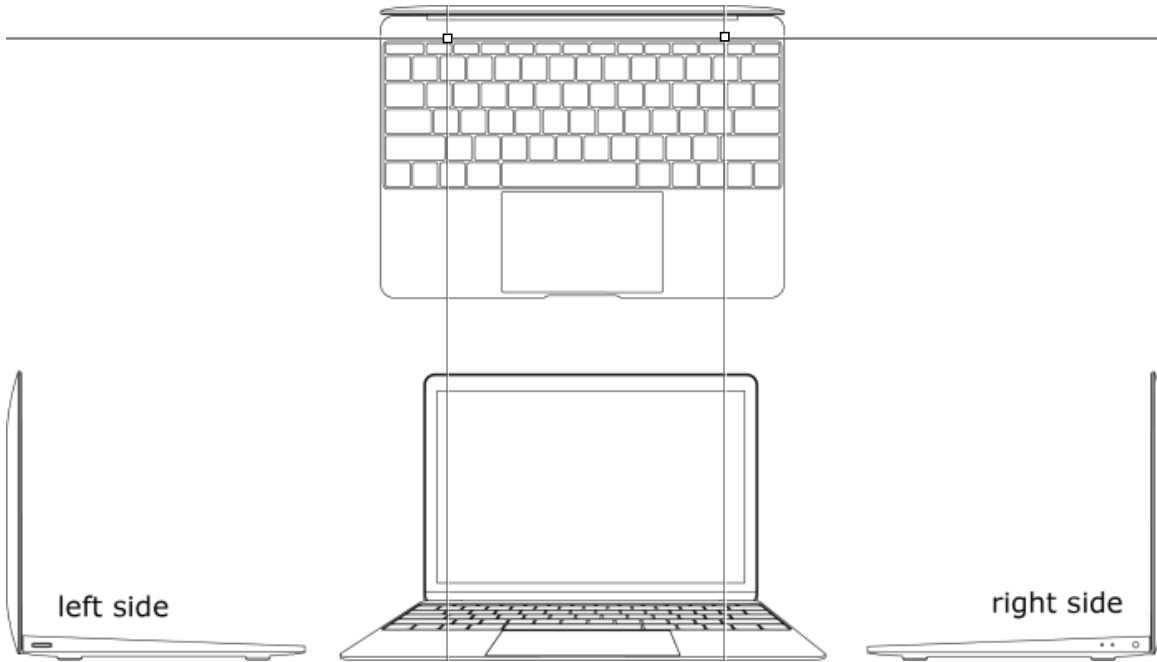


Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

Thickness increase



Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

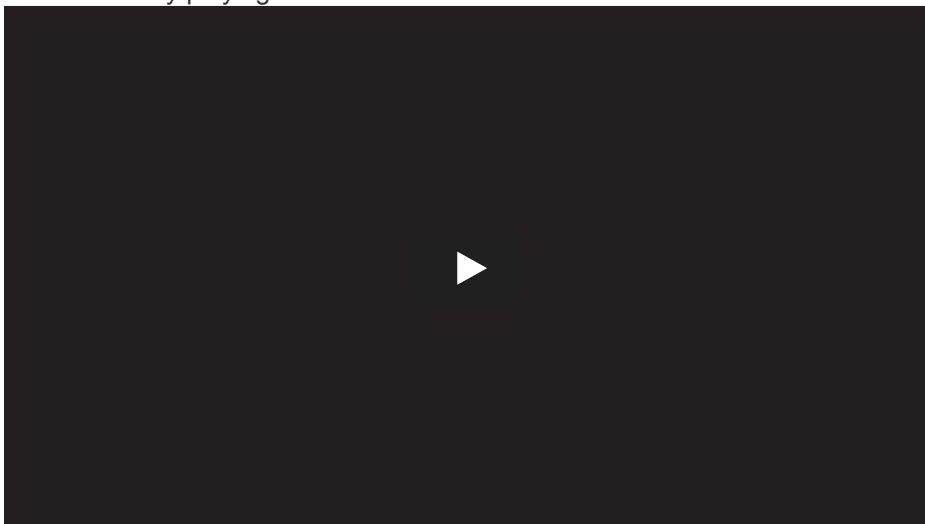


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Listening to music	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when watching Netflix or online television?

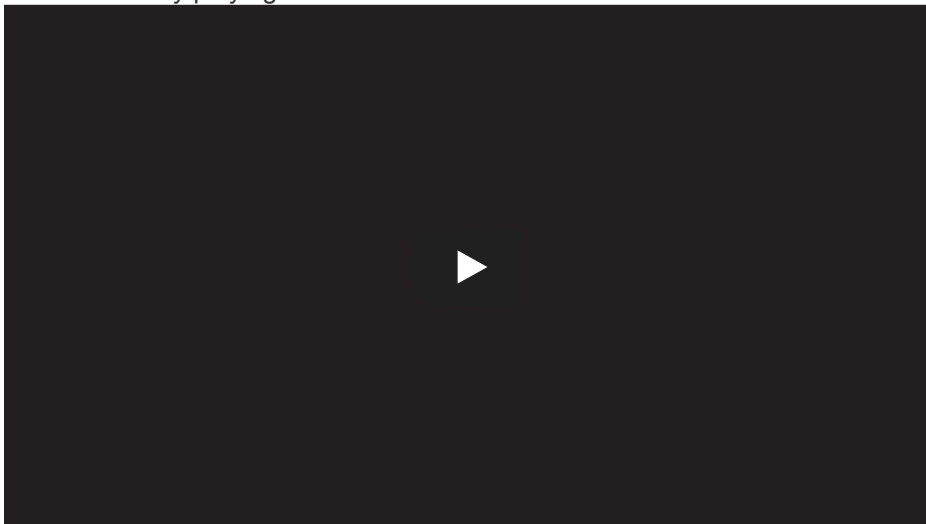
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#).)
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Deep, smooth, clear, spacious

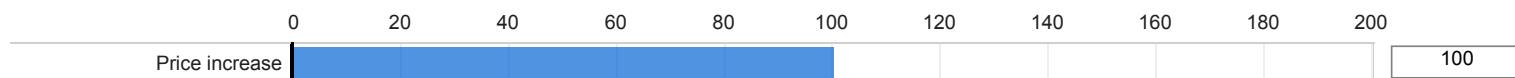
Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Crunchy for talking during video calling

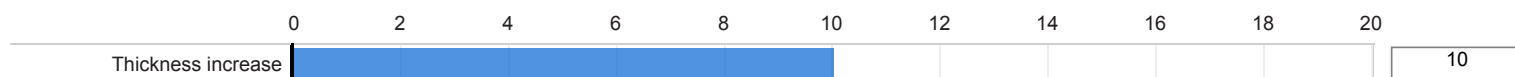
Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

better sound of speak

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

This question was not displayed to the respondent.

Q97. In which scenario's do you use your portable speaker?

This question was not displayed to the respondent.

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

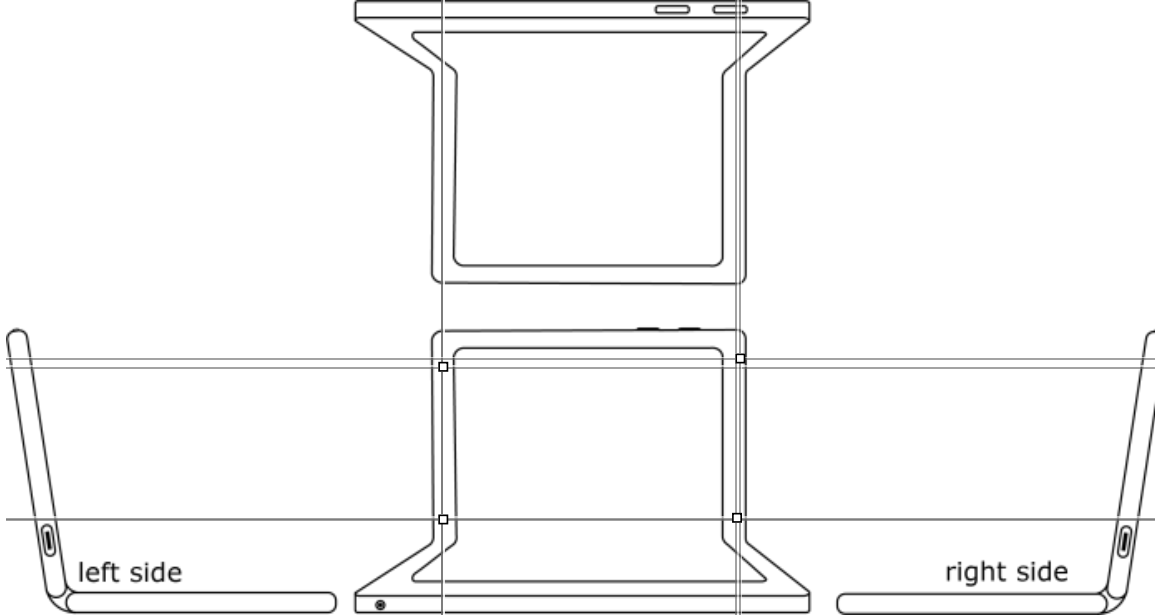
This question was not displayed to the respondent.

Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

volume and type of sound comparable to the laptop. But the location is different from my laptop, because in the foldable laptop the screen is at the location of the speakers of my normal laptop.

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

Bigger screen.

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

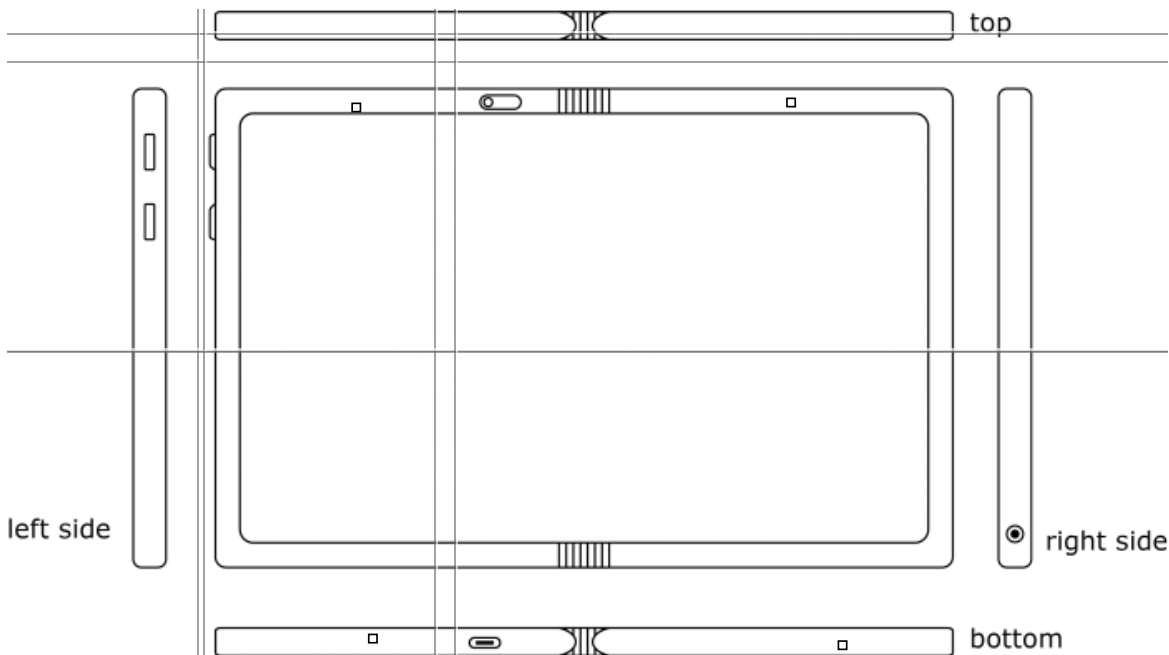
Laptop	1
Foldable laptop	2
Smartphone	3

Q45. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing

tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Good volume, but worse sound than the laptop.

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

Bigger screen and easier to carry/take with you because it is smaller when folded than an unfoldable tablet

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Foldable tablet	2
Smartphone	3

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

24

Q33. What would you state is your nationality?

Dutch

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

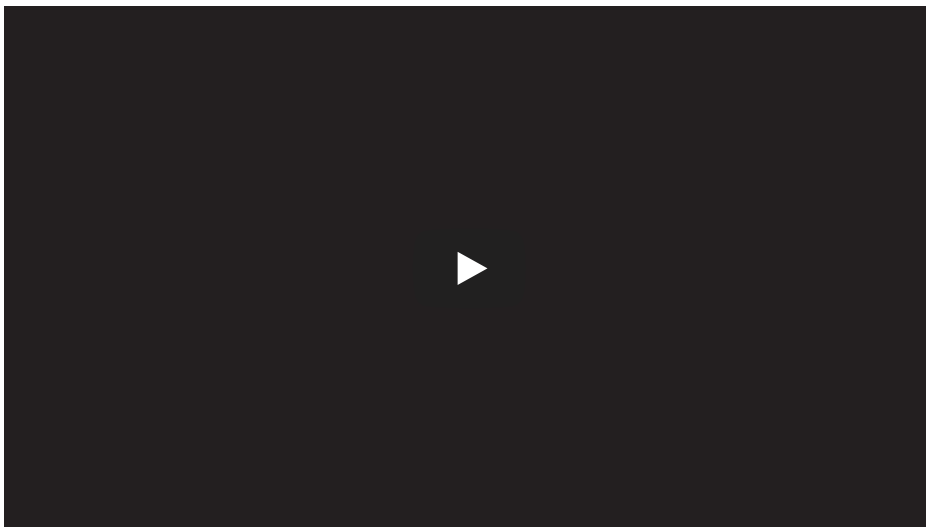
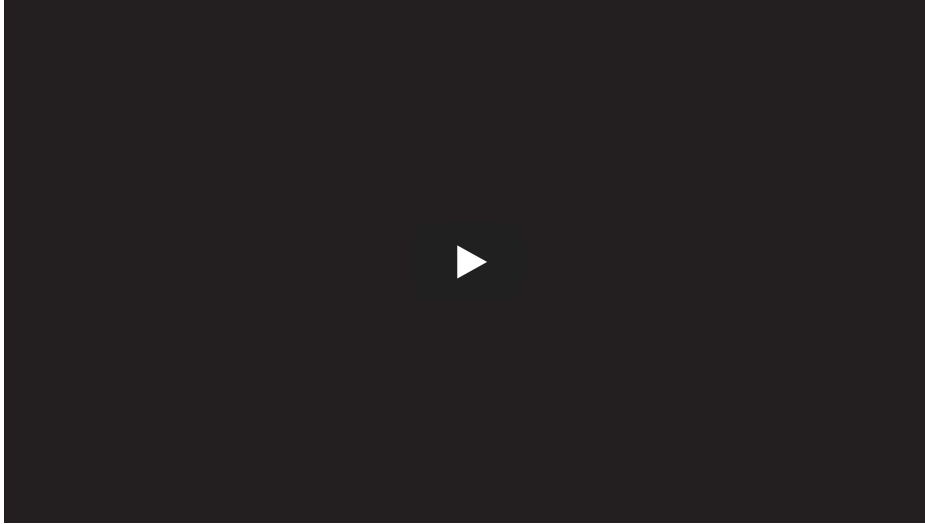
Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: **G3LH-YBVM-Y719-SWNU** or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.3 User test results participant 3

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each seperate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

Huawei P10

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2018

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

HP Z-book

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2019

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

This question was not displayed to the respondent.

Q104. In which year did you buy your portable speaker?

This question was not displayed to the respondent.

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to choose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup **when watching YouTube?**

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media?**

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music?**

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television?**

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

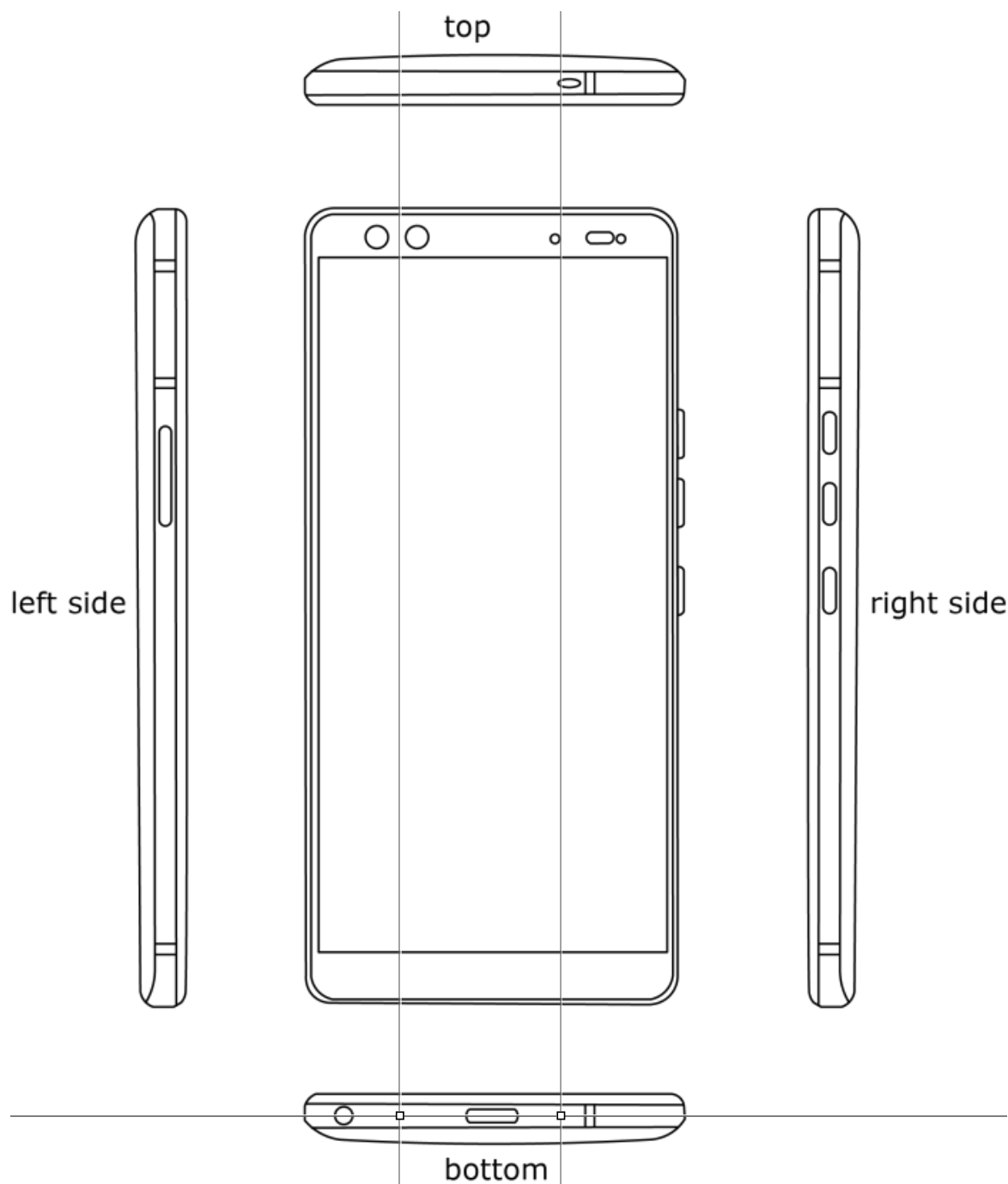
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

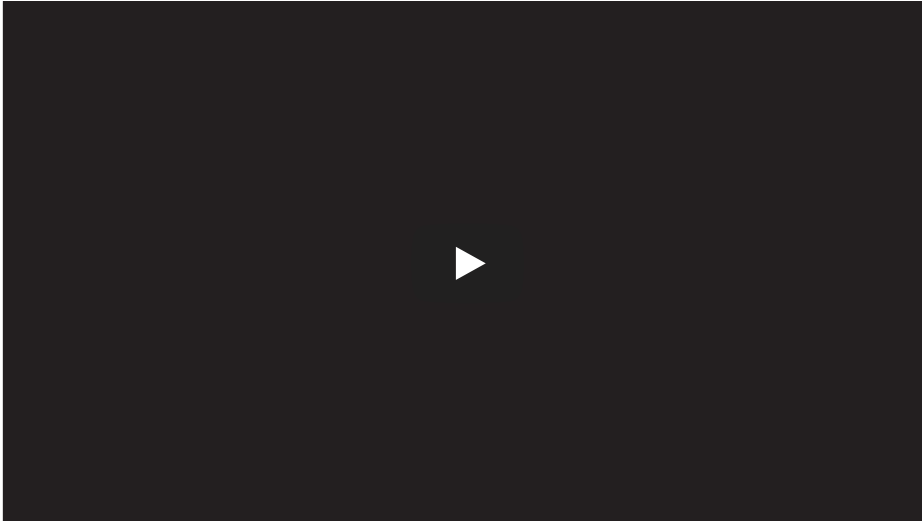


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me

- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

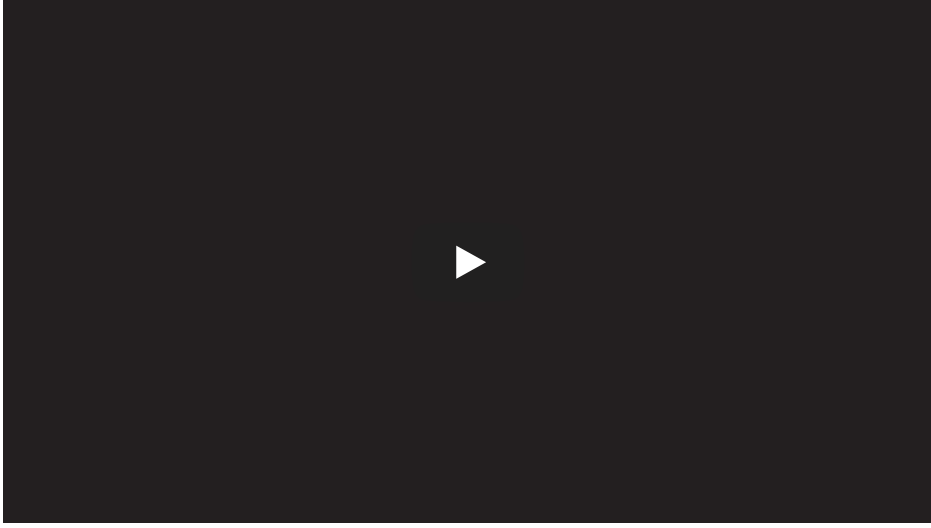
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clear

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Narrow

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

Having a left and right speaker

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

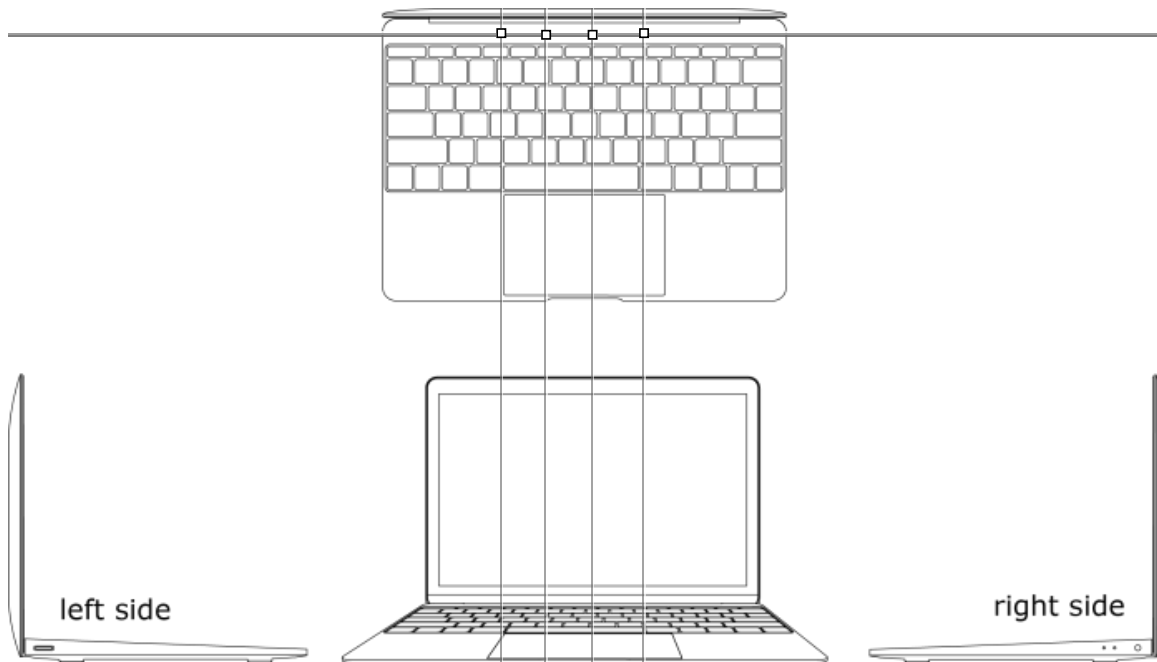
0 20 40 60 80 100 120 140 160 180 200

Price increase

15

Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

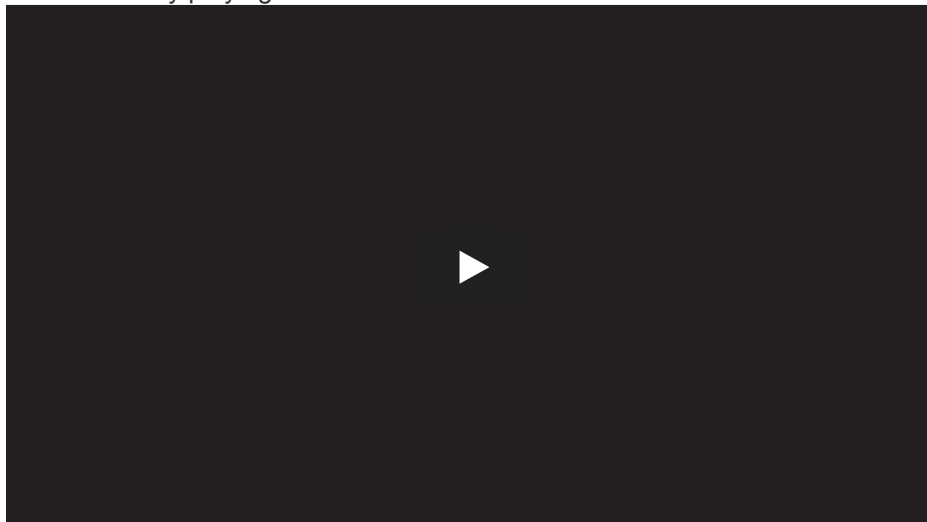


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

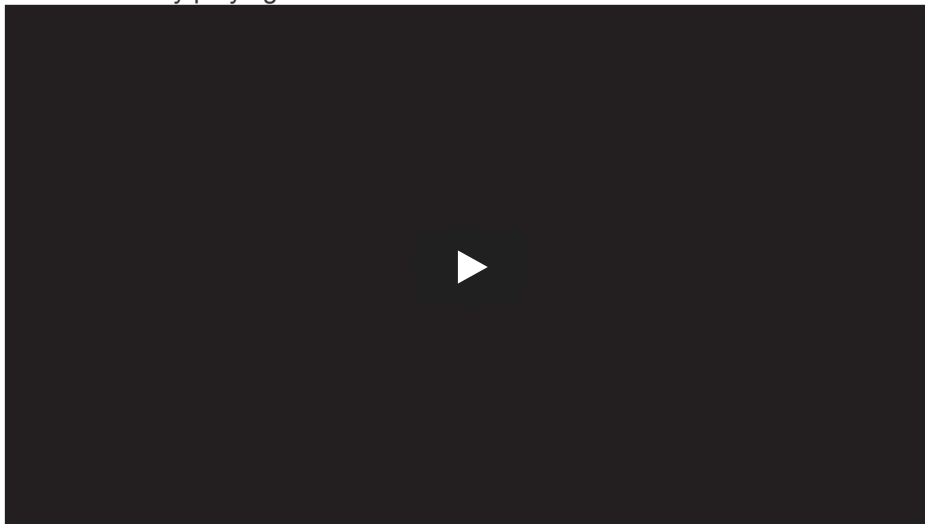
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_.](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Deep, smooth

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Wide

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

This question was not displayed to the respondent.

Q97. In which scenario's do you use your portable speaker?

This question was not displayed to the respondent.

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

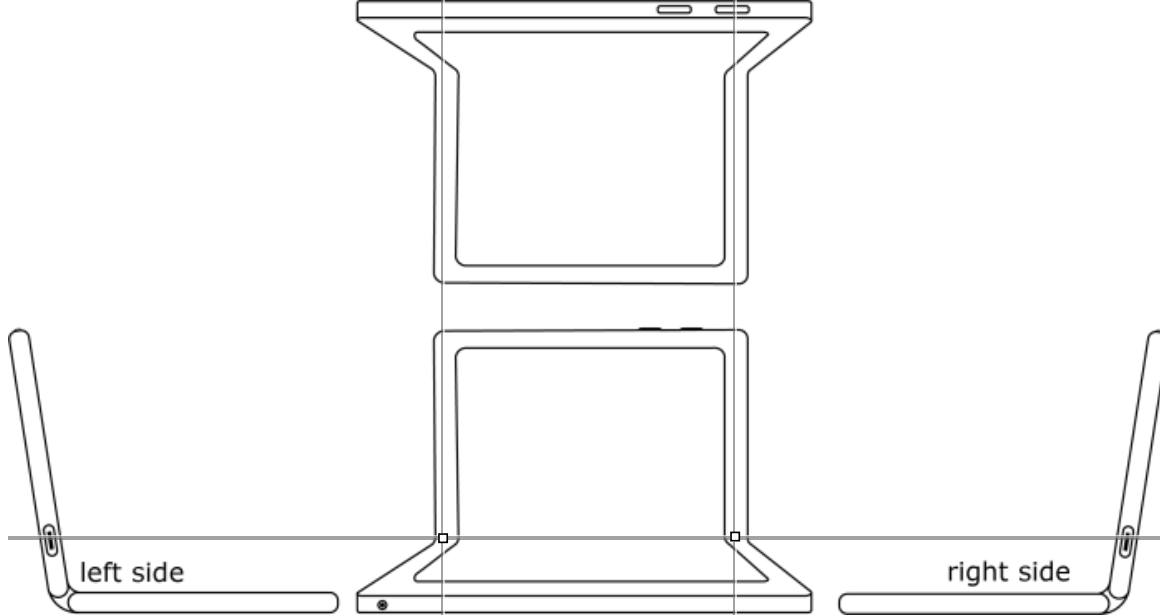
This question was not displayed to the respondent.

Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Acceptable sound quality, but can also be used with headphones for even better sound quality

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

That it's a combination with a tablet and small to carry around

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Foldable laptop

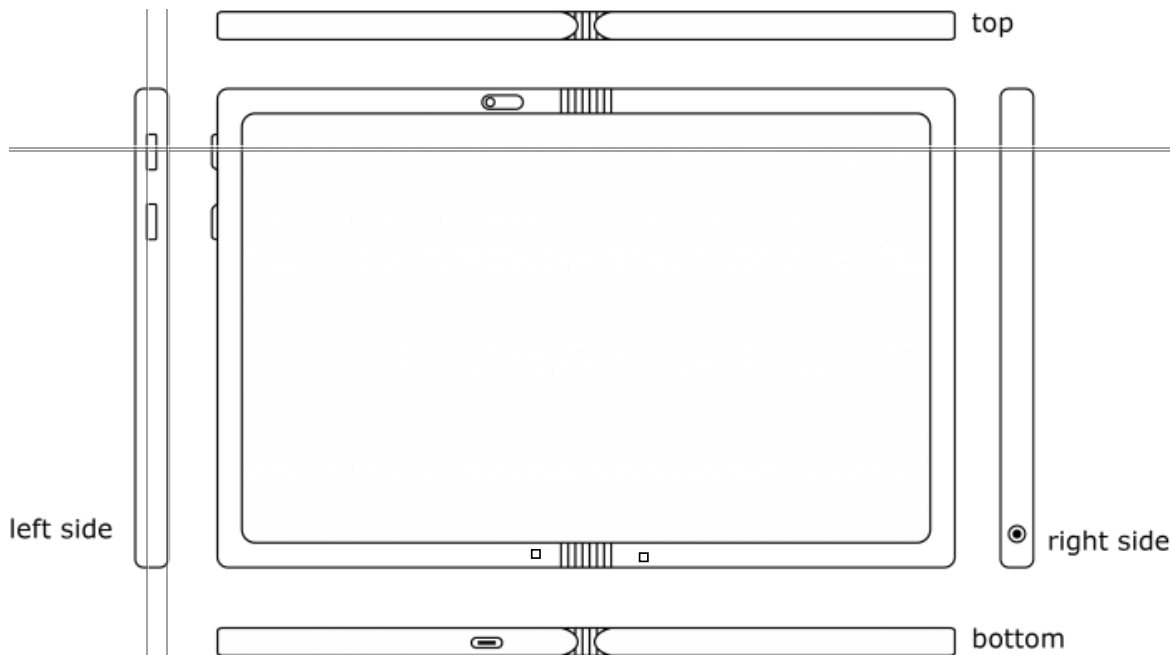
Smartphone

Laptop

tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Not high quality, not too high volume

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

Not damaging the screen

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Foldable tablet	2
Smartphone	3

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

23

Q33. What would you state is your nationality?

Dutch

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

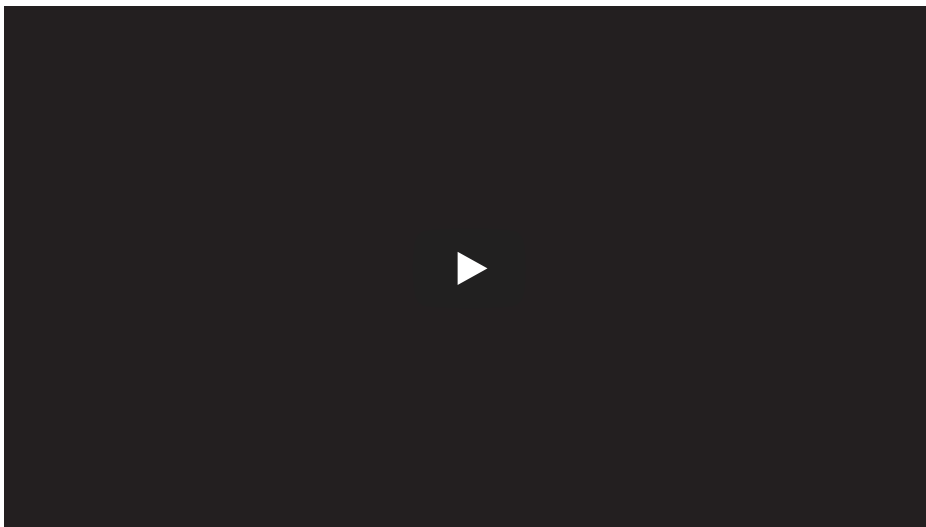
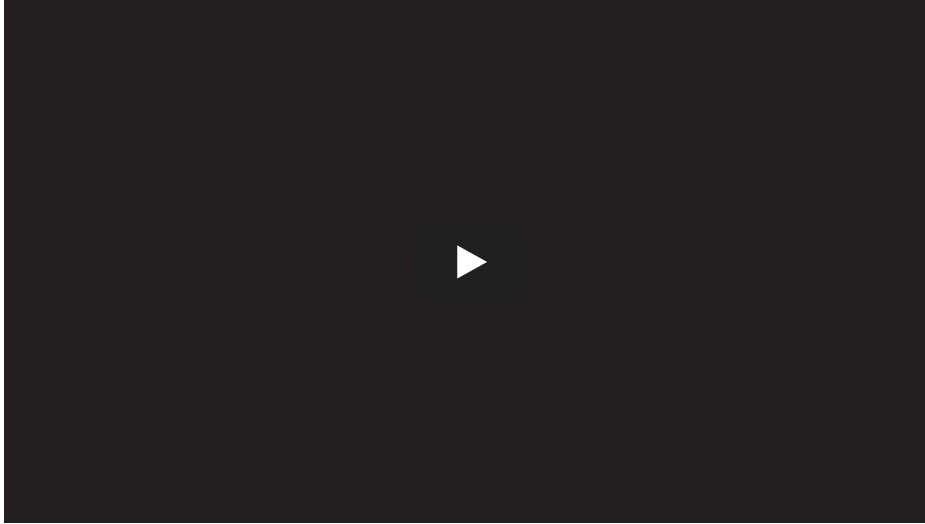
Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: **G3LH-YBVM-Y719-SWNU** or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.4 User test results participant 4

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each seperate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)_"
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

Samsung S9

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2019

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

Macbook Pro

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2018

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

This question was not displayed to the respondent.

Q104. In which year did you buy your portable speaker?

This question was not displayed to the respondent.

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup when watching YouTube?

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when browsing social media?

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when listening to music?

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when watching Netflix or online television?

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe positive aspects about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe negative aspects about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

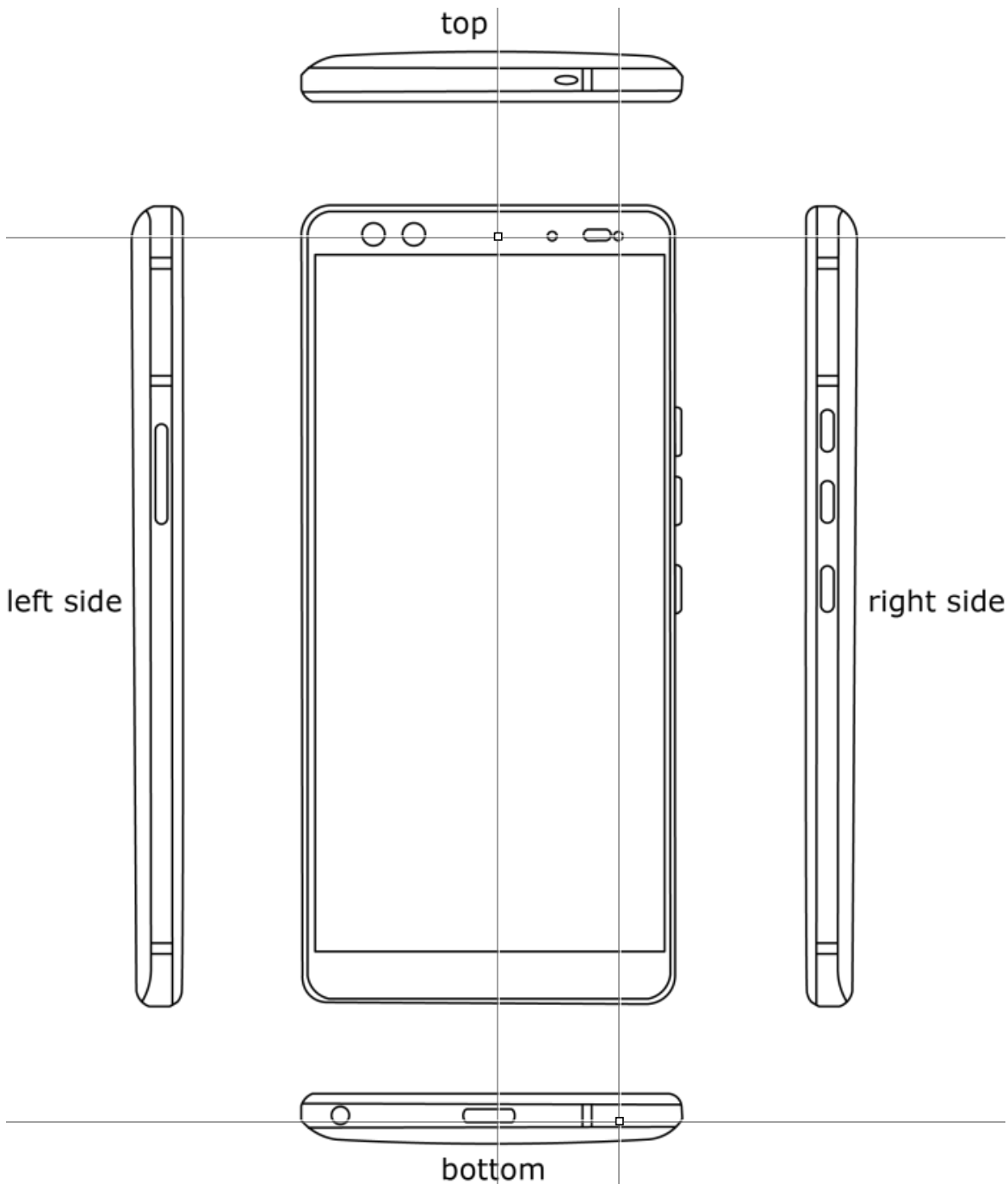
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

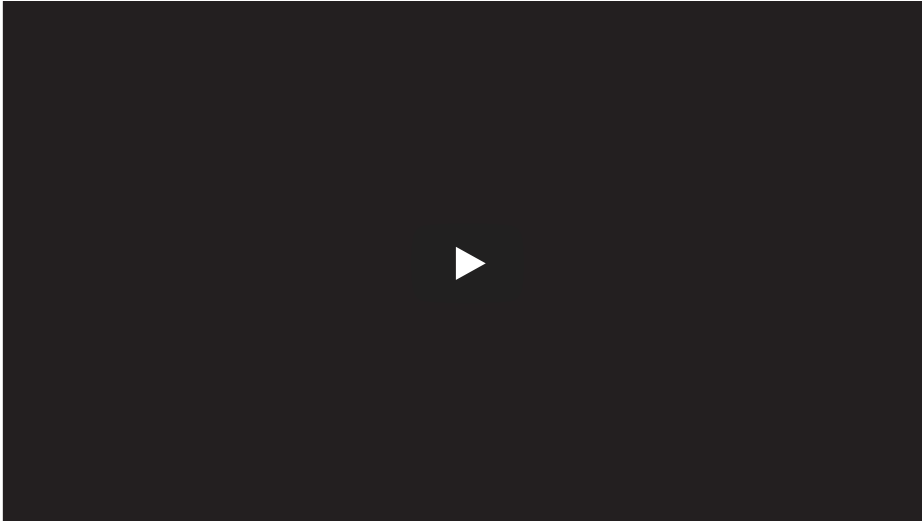


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me

- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

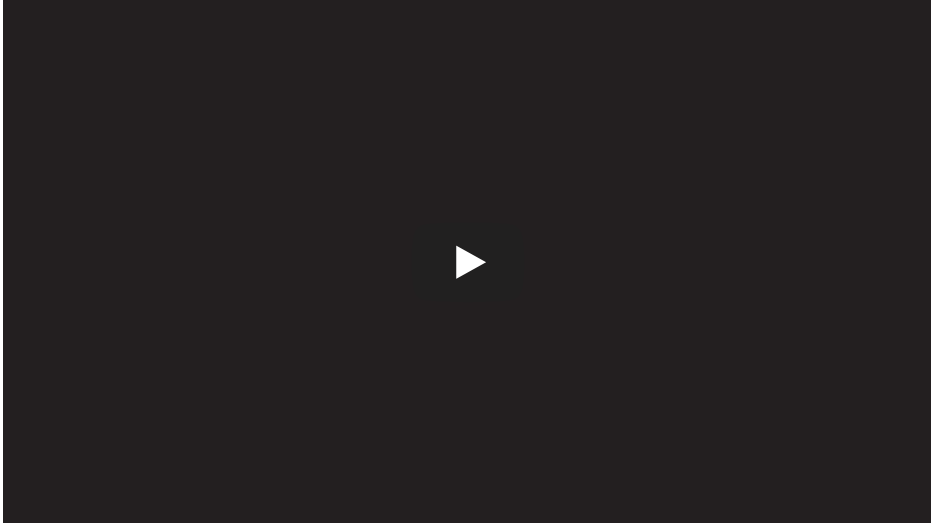
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clear, Loud, Full, Bright, Smooth

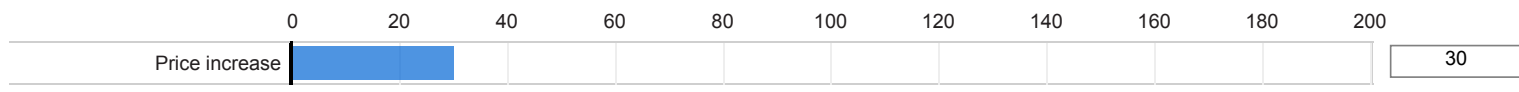
Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Narrow

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

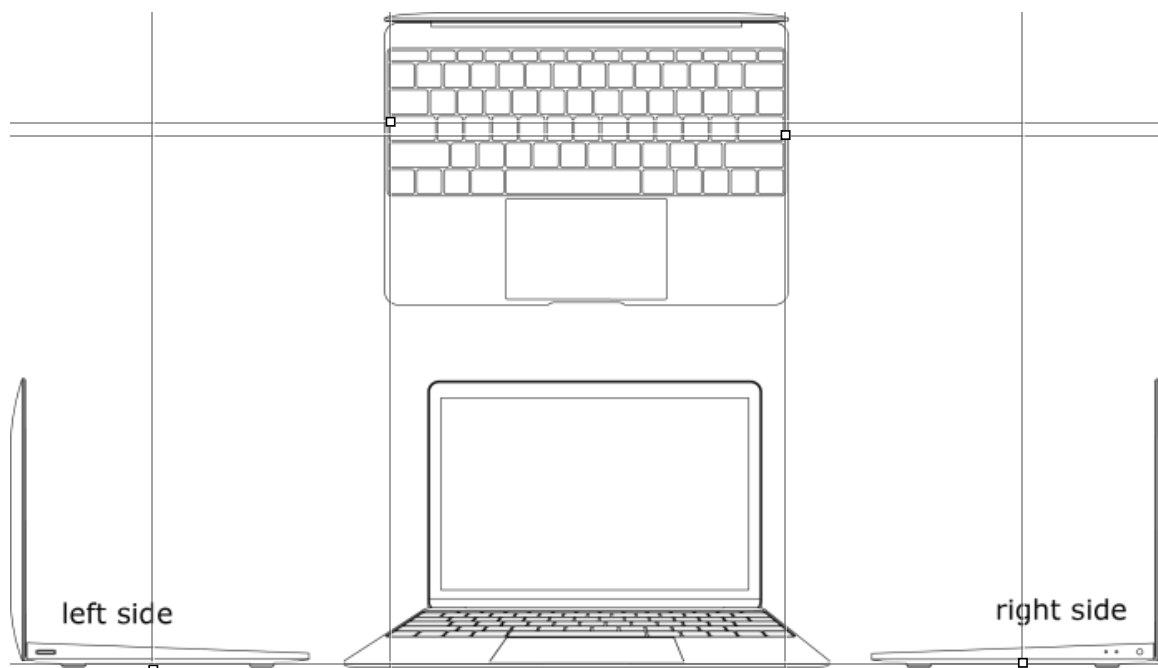
I would add more bass.

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

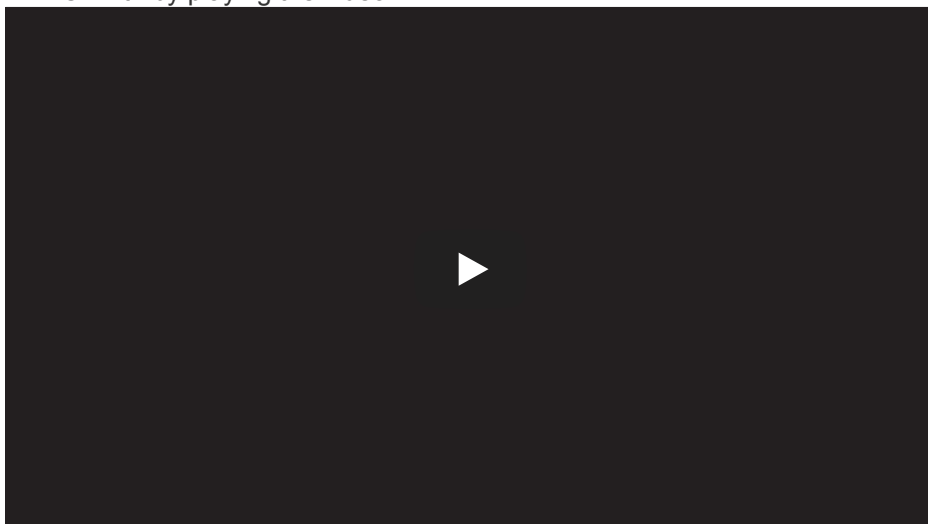


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

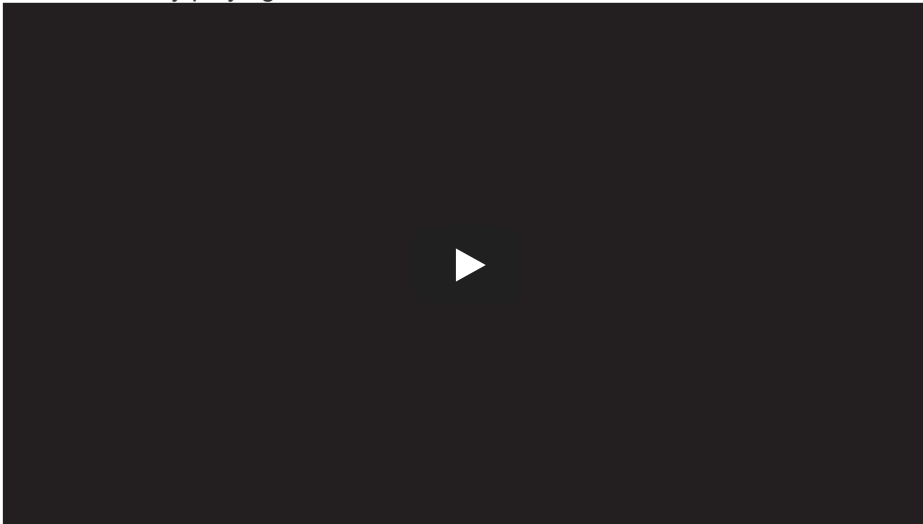
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_.](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clean, Full, Strong, Clear, Deep, Bright, Loud, Smooth

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

This question was not displayed to the respondent.

Q97. In which scenario's do you use your portable speaker?

This question was not displayed to the respondent.

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

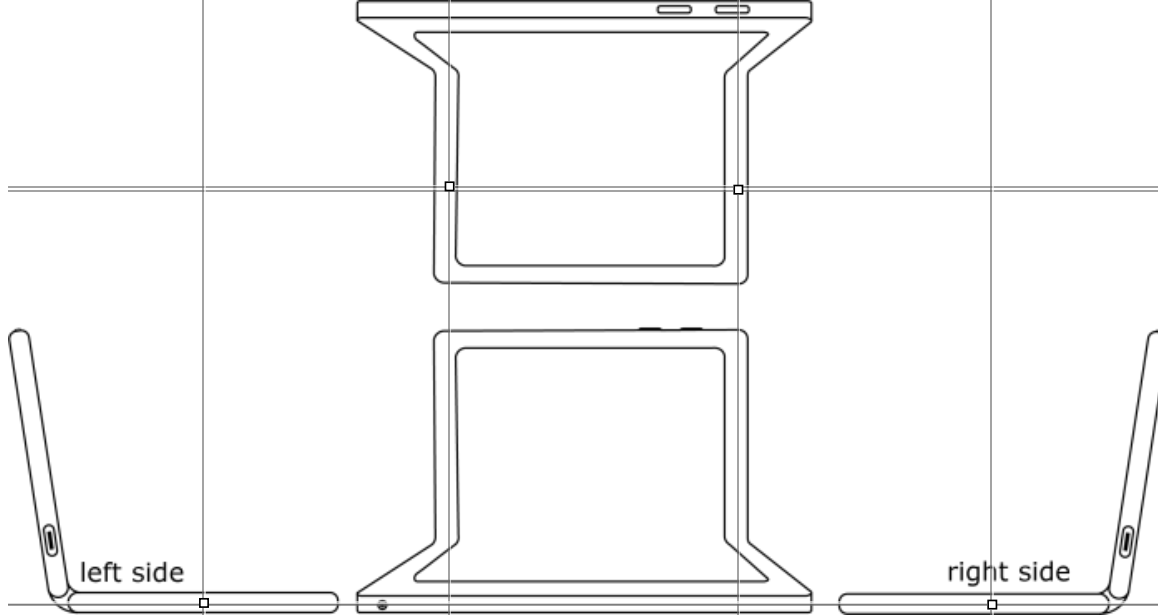
This question was not displayed to the respondent.

Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Nice bass, proper volume and clear stereo sound.

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

The tablet functionality.

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



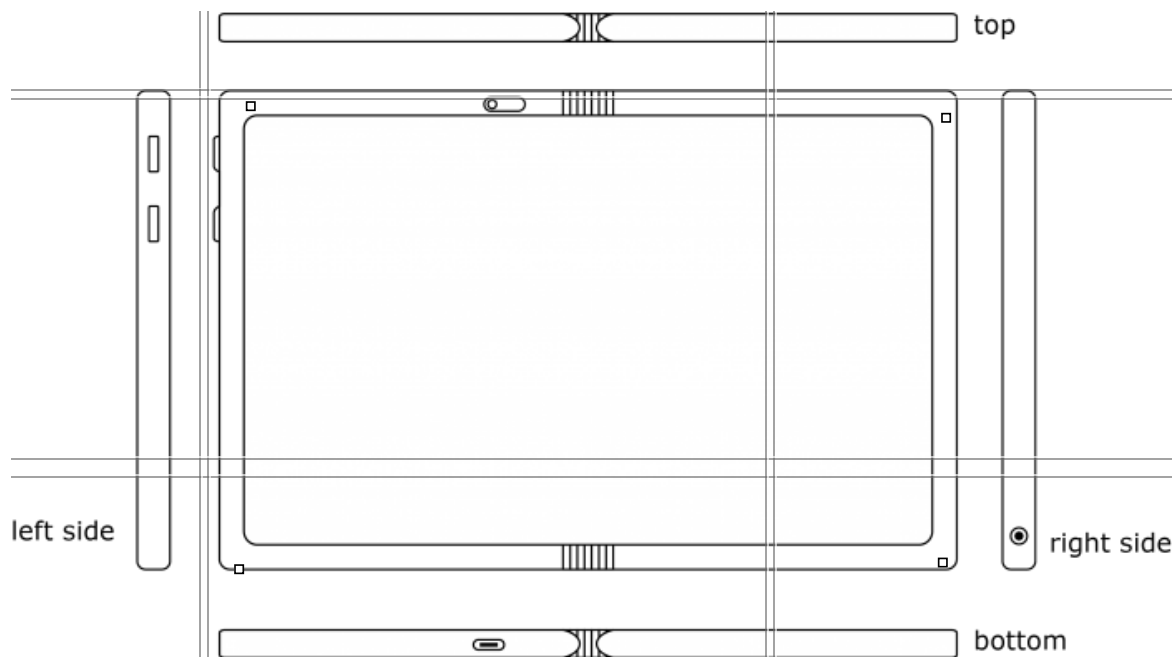
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Foldable laptop	2
Smartphone	3

tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Proper volume and bass, clear multi-stereo sound

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

The tablet functionality

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Foldable tablet	2
Smartphone	3

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

23

Q33. What would you state is your nationality?

Dutch

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

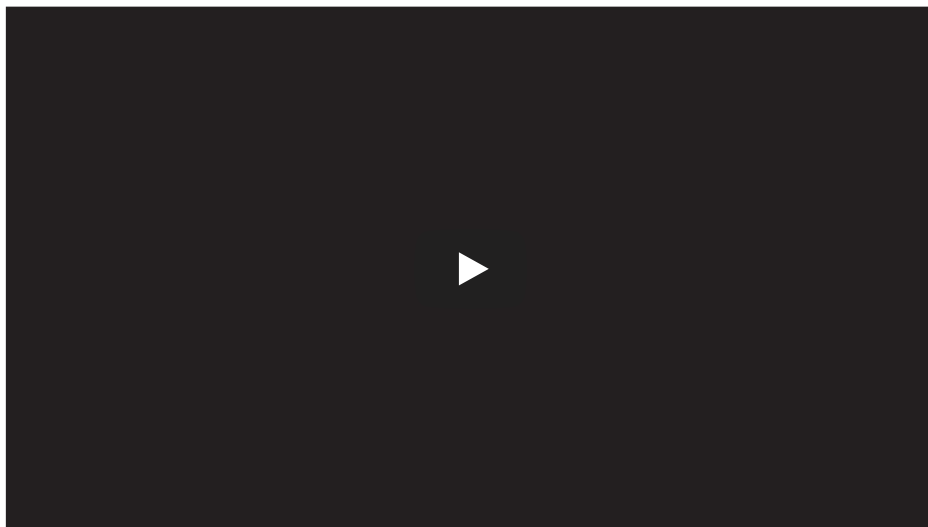
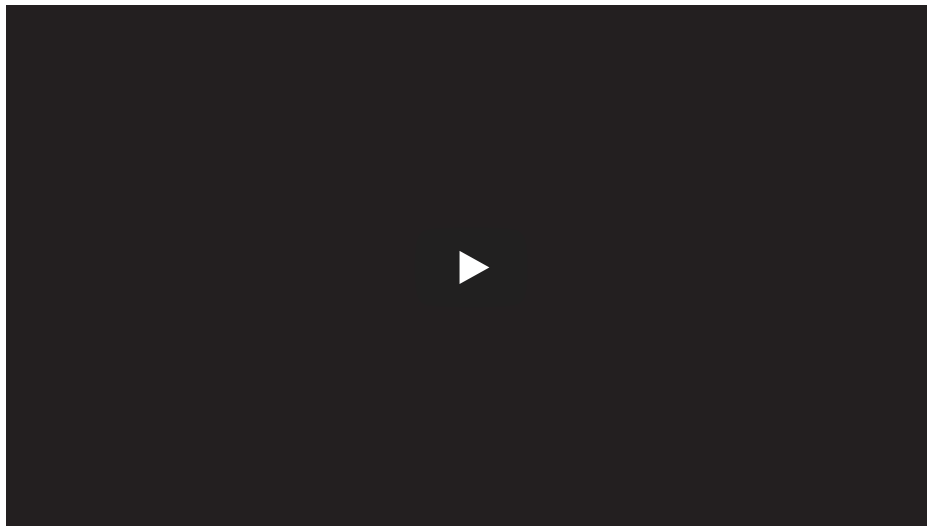
Good luck with the rest of the research!

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: G3LH-YBVM-Y719-SWNU or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.5 User test results participant 5

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)_"
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

ASUS ZenPad

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

- High-end tablet
- Mid-range tablet
- Low-end tablet

Q74. In which year did you buy your tablet?

2018

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

Samsung Galaxy S7

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2016

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

Lenovo Thinkpad

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2019

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

SONY SRS-X55

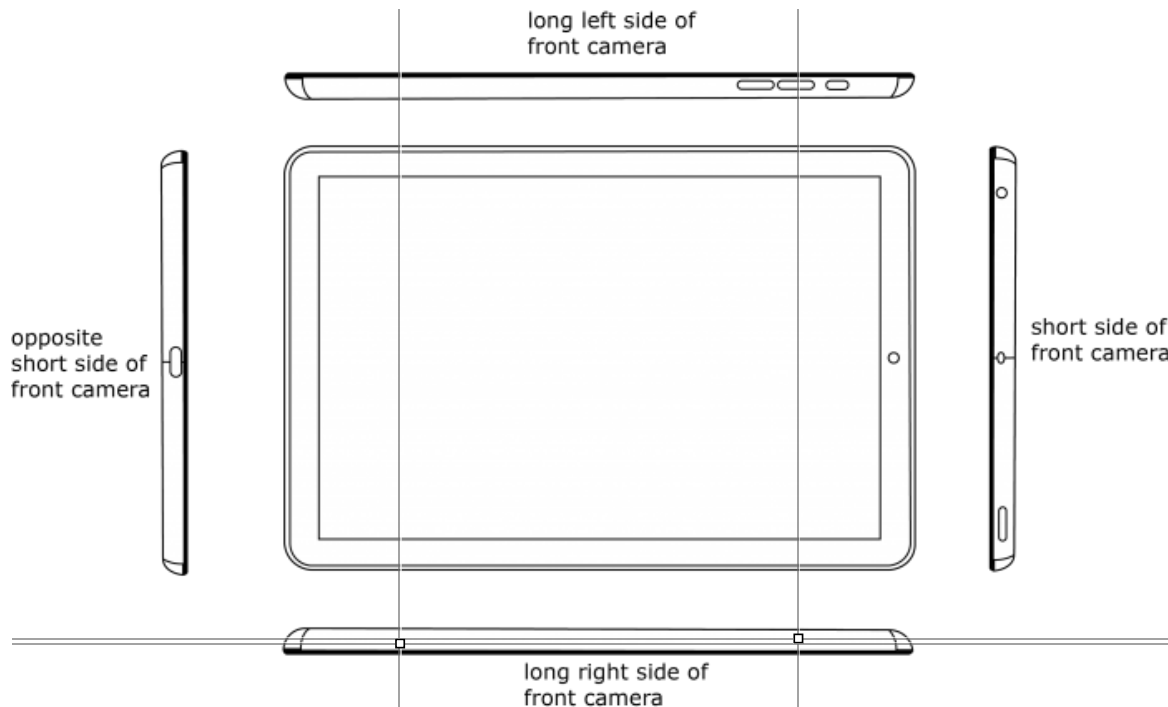
Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

- High-end portable speaker
- Mid-range portable speaker
- Low-end portable speaker

Q104. In which year did you buy your portable speaker?

2017

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

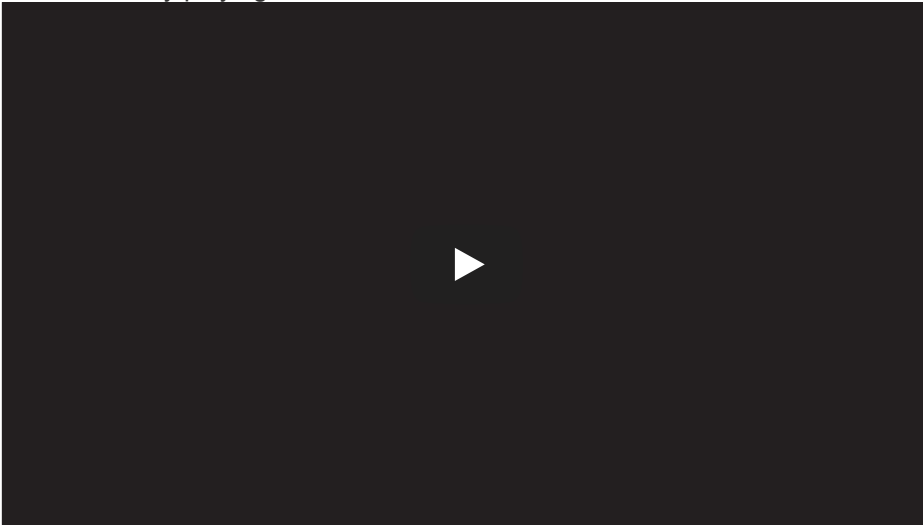


Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q13. Did you take the speakers and sound quality into account when buying your tablet?

- Yes
- Maybe / I can't remember
- No

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

	I would play the audio via the speaker of my tablet	I would play the audio from headphones connected to my tablet	I would play the audio from external speakers connected to my tablet
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q61. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices

Other

Q58. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q59. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q60. What is the reason for your choice in setup when **watching Netflix or online television**?

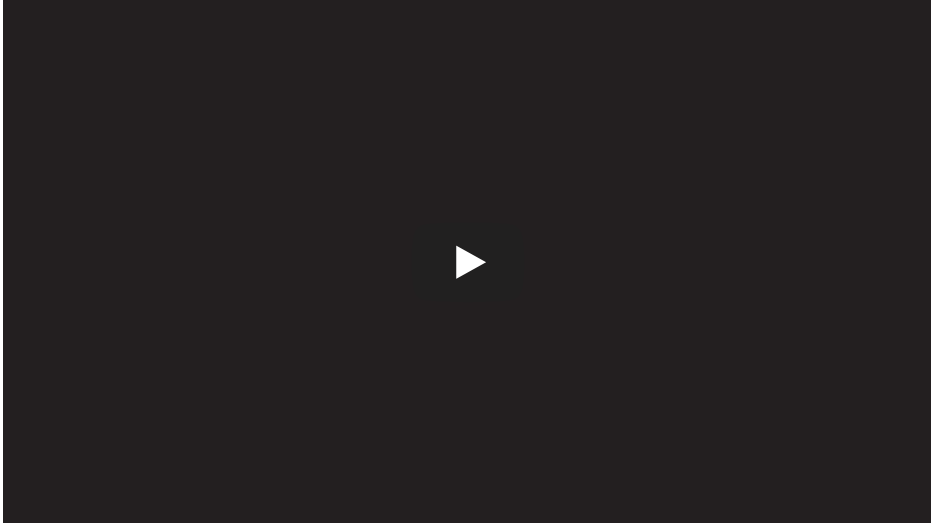
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

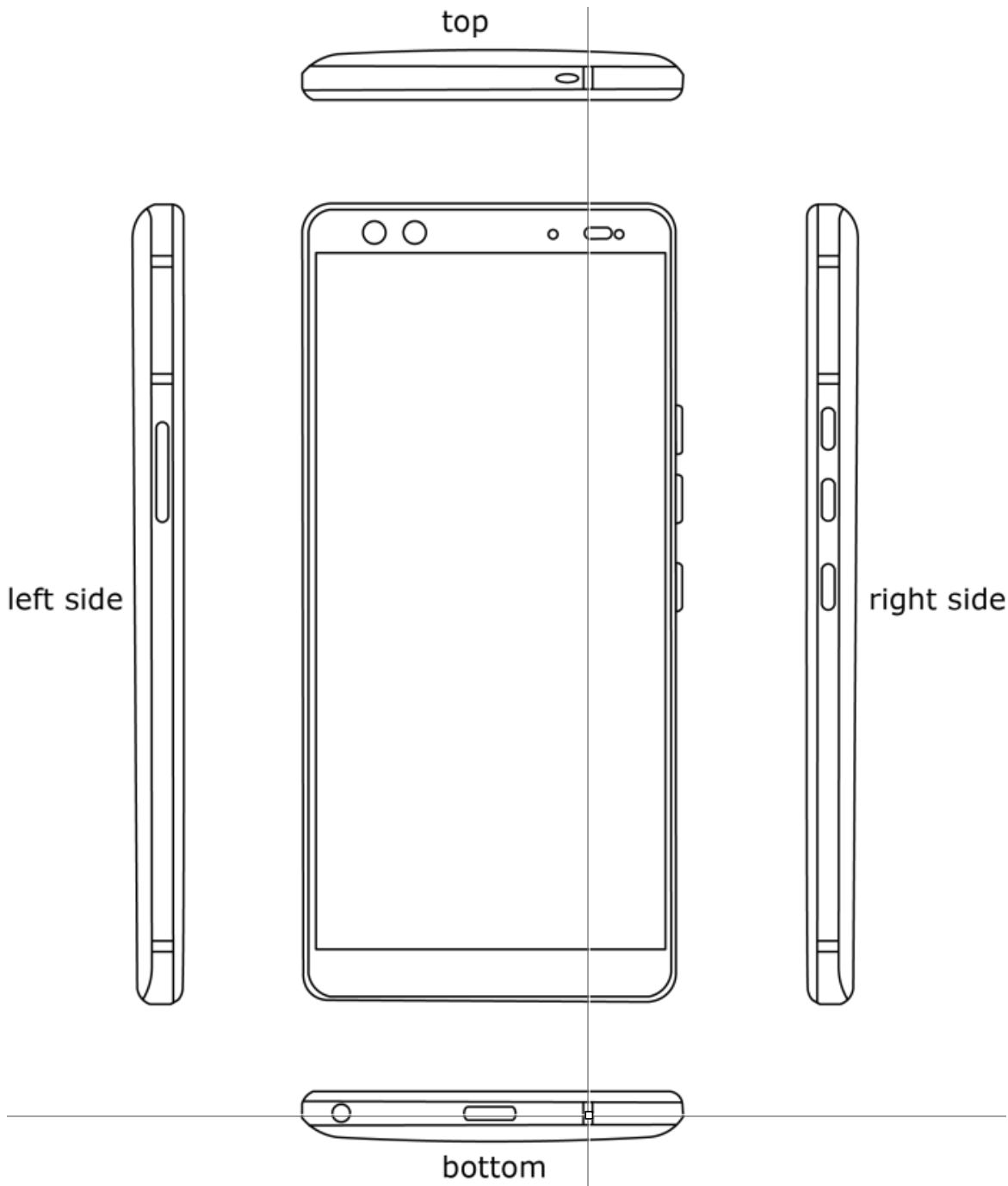
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

0 20 40 60 80 100 120 140 160 180 200

Price increase

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

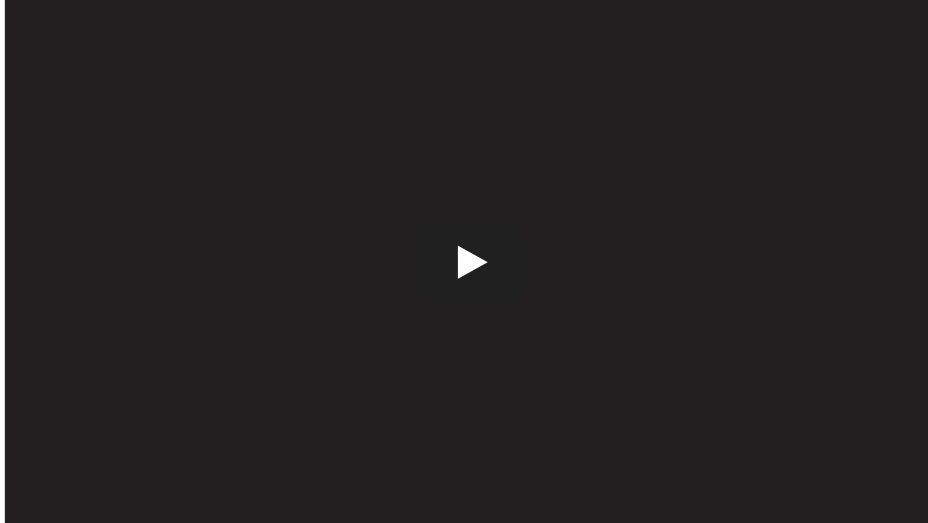
Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code





- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people

- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when watching Netflix or online television?

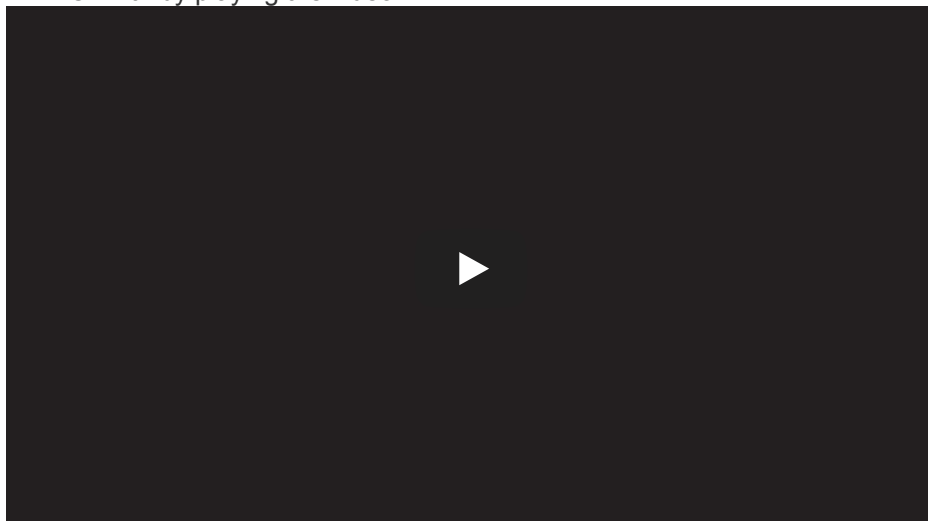
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar (Queen - Bohemian Rhapsody (HQ))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

clear

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

synthetic

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

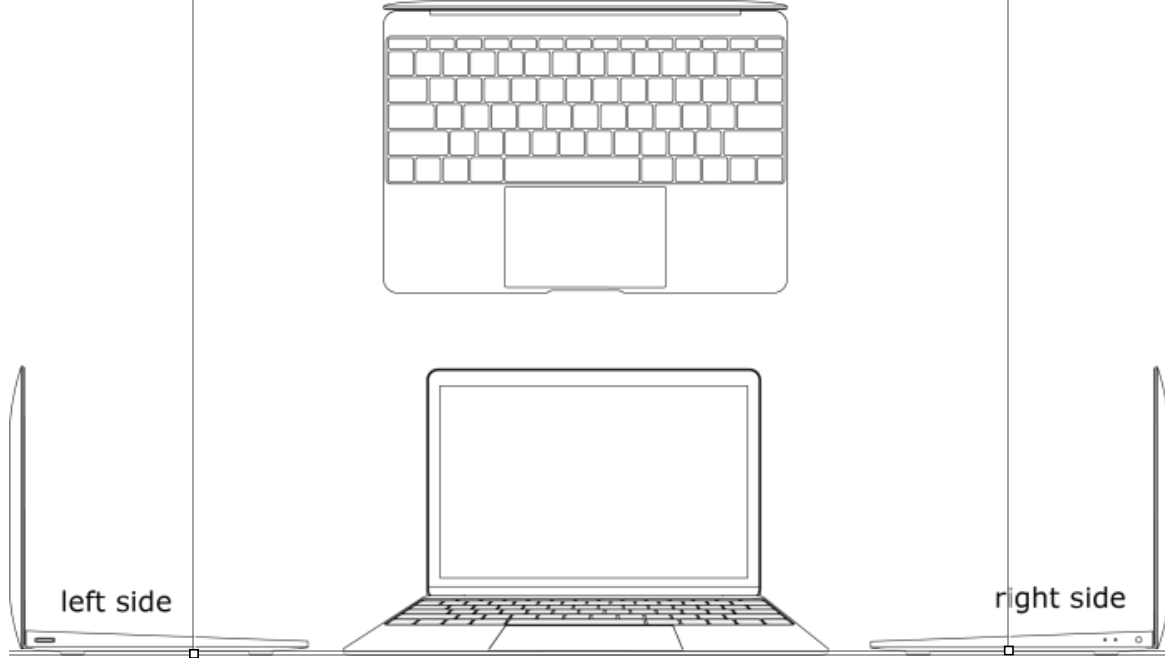
Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.



Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

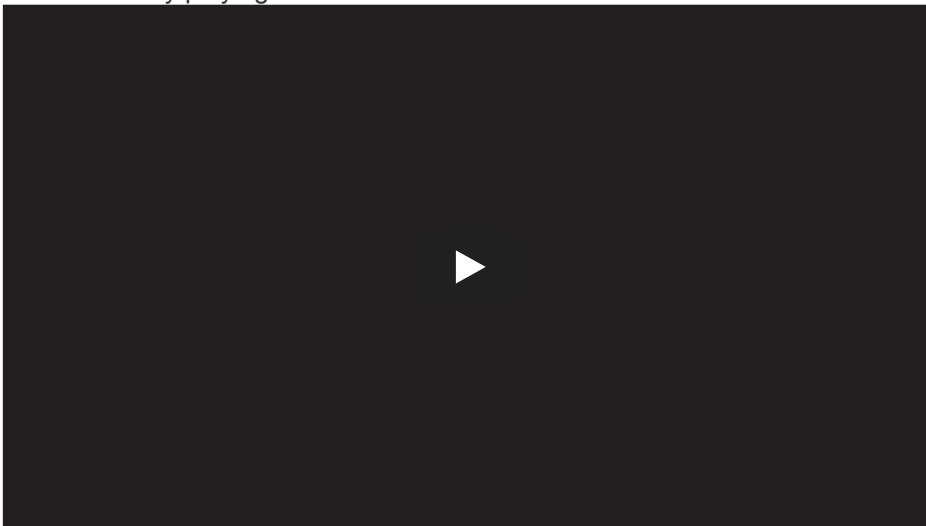


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Q68. What is the reason for your choice in setup when **watching YouTube**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better

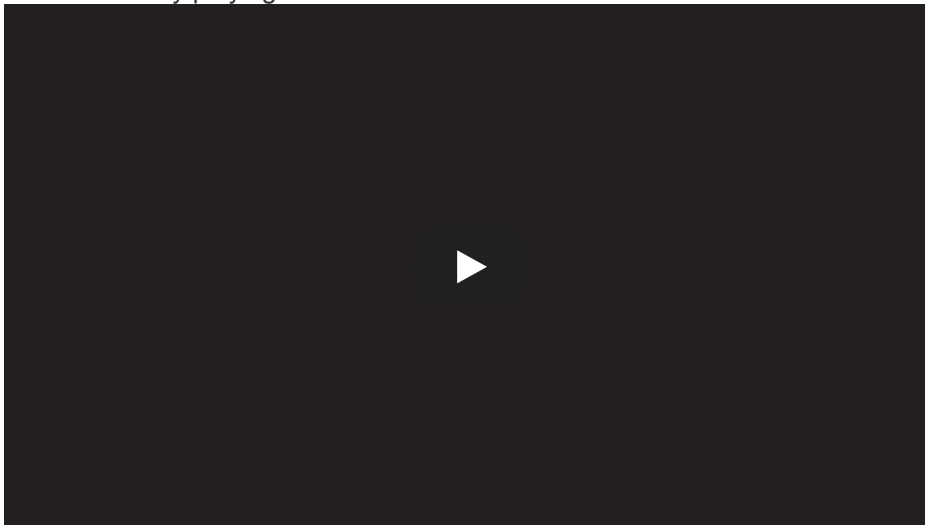
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#).)
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

clean

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

narrow

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

0 20 40 60 80 100 120 140 160 180 200

Price increase |

Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.

0 2 4 6 8 10 12 14 16 18 20

Thickness increase |

Q92. Check the boxes that apply for the purchase of your portable speaker

- Sound quality
- Size
- Price
- Design
- Build in light feature
- Bluetooth
- Connect multiple speakers together
- Charge phone with portable speaker
- Other
- None of the above

Q97. In which scenario's do you use your portable speaker?

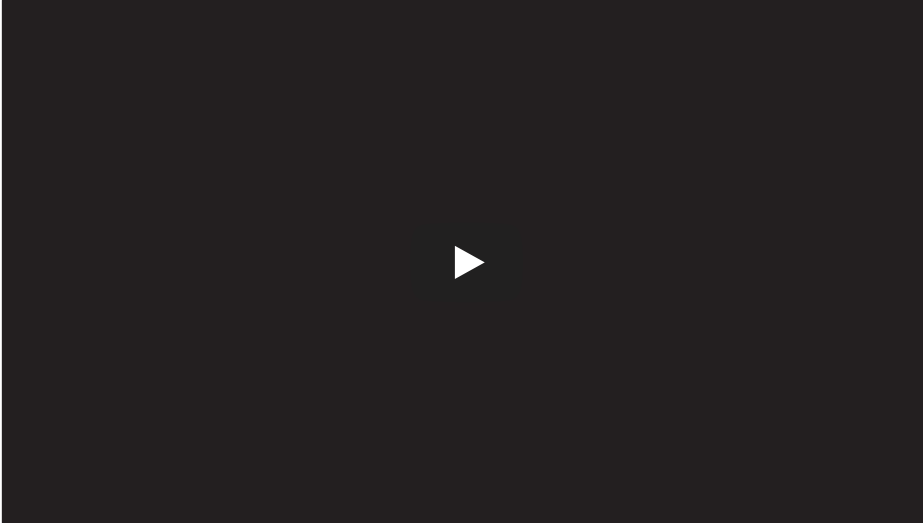
- Play music at a party
- Play music in a park/garden
- Play music in everyday use
- Play audio of movie or television
- Use during (video) calls
- Sound during presentations or meetings
- As sound improvement during laptop use
- As sound improvement during tablet use
- As sound improvement during smartphone use
- Other
- None of the above

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



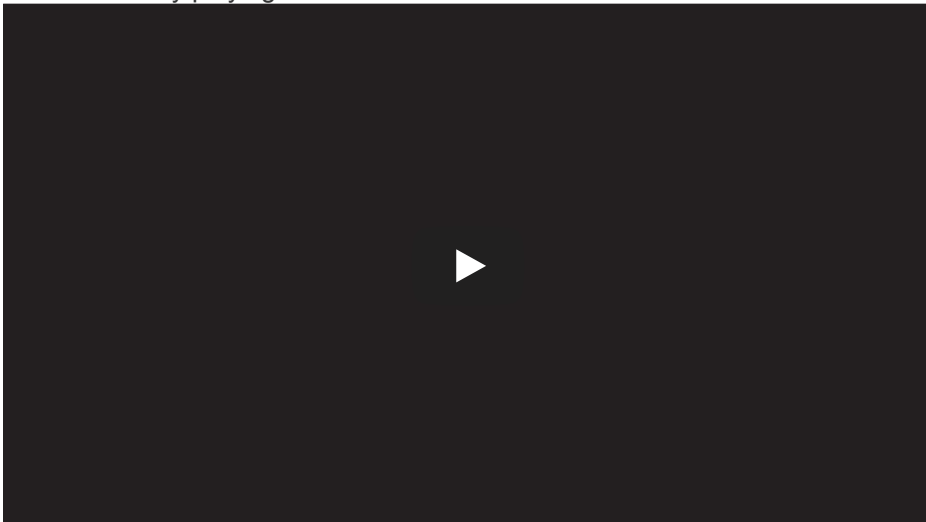
- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar (Queen - Bohemian Rhapsody (HQ.))
- By scanning the QR code



- Or with by playing the video



Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

deep

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

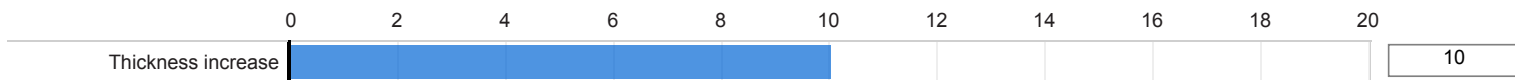
dullish not distinct

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



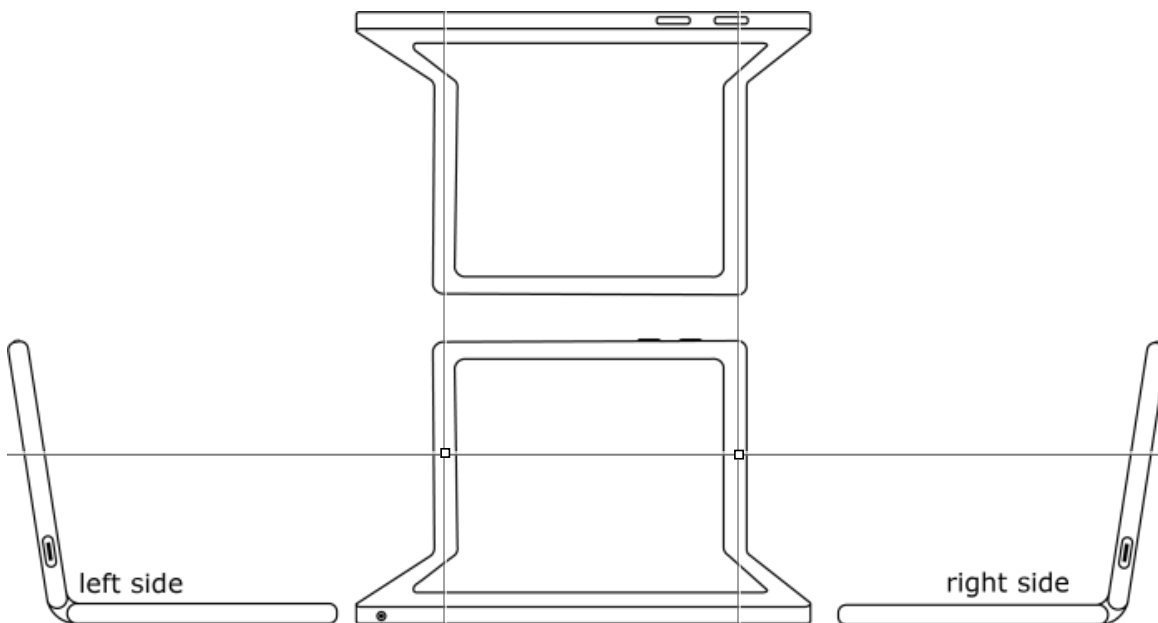
Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.



Q28. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

direct and controlled from the device itself without reflections from i.e. table

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

possibility for multiply open views...

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?

	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

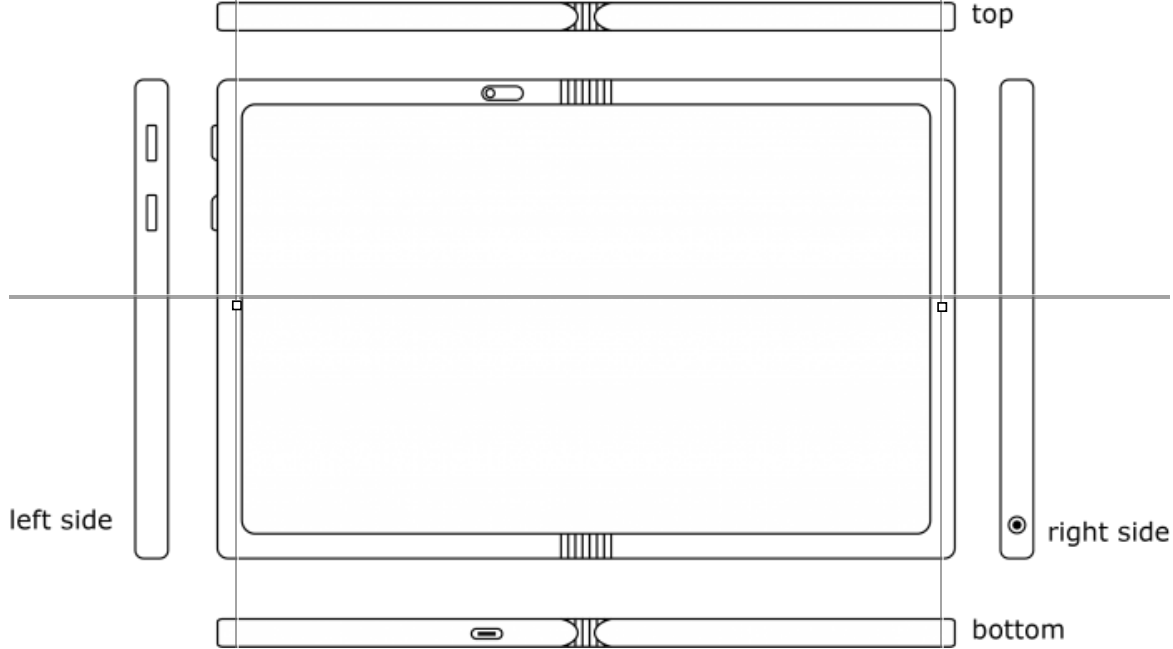
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Foldable laptop	2
Laptop	3
Tablet	4
Smartphone	5

Q45. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

stereo clear sound

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

larger display in same package

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Laptop	2
Foldable tablet	3
Tablet	4
Smartphone	5

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

65

Q33. What would you state is your nationality?

Finnish

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

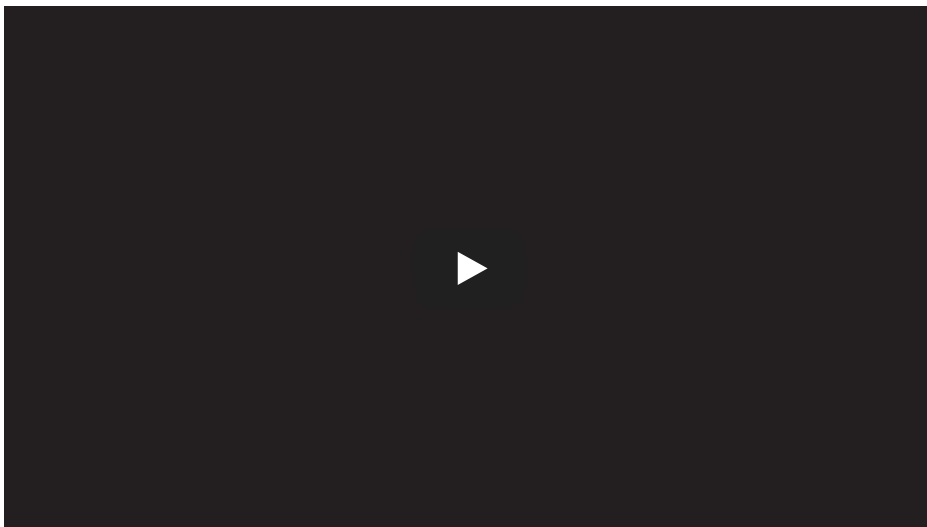
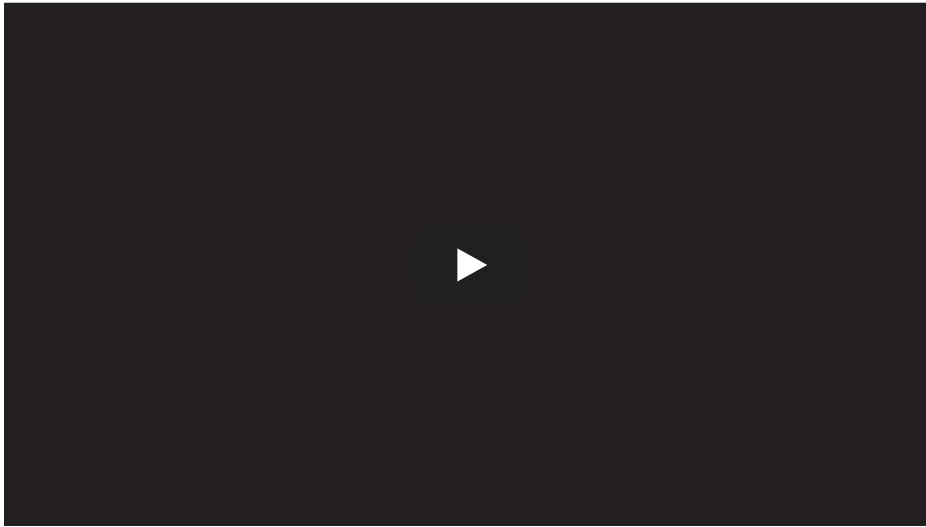
Good luck with your Thesis!!

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: **G3LH-YBVM-Y719-SWNU** or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.6 User test results participant 6

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)_"
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

iPhone 6s

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2015

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

MacBook Pro 2013

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2013

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

This question was not displayed to the respondent.

Q104. In which year did you buy your portable speaker?

This question was not displayed to the respondent.

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to choose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

Q61. What is the reason for your choice in setup **when watching YouTube?**

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media?**

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music?**

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television?**

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

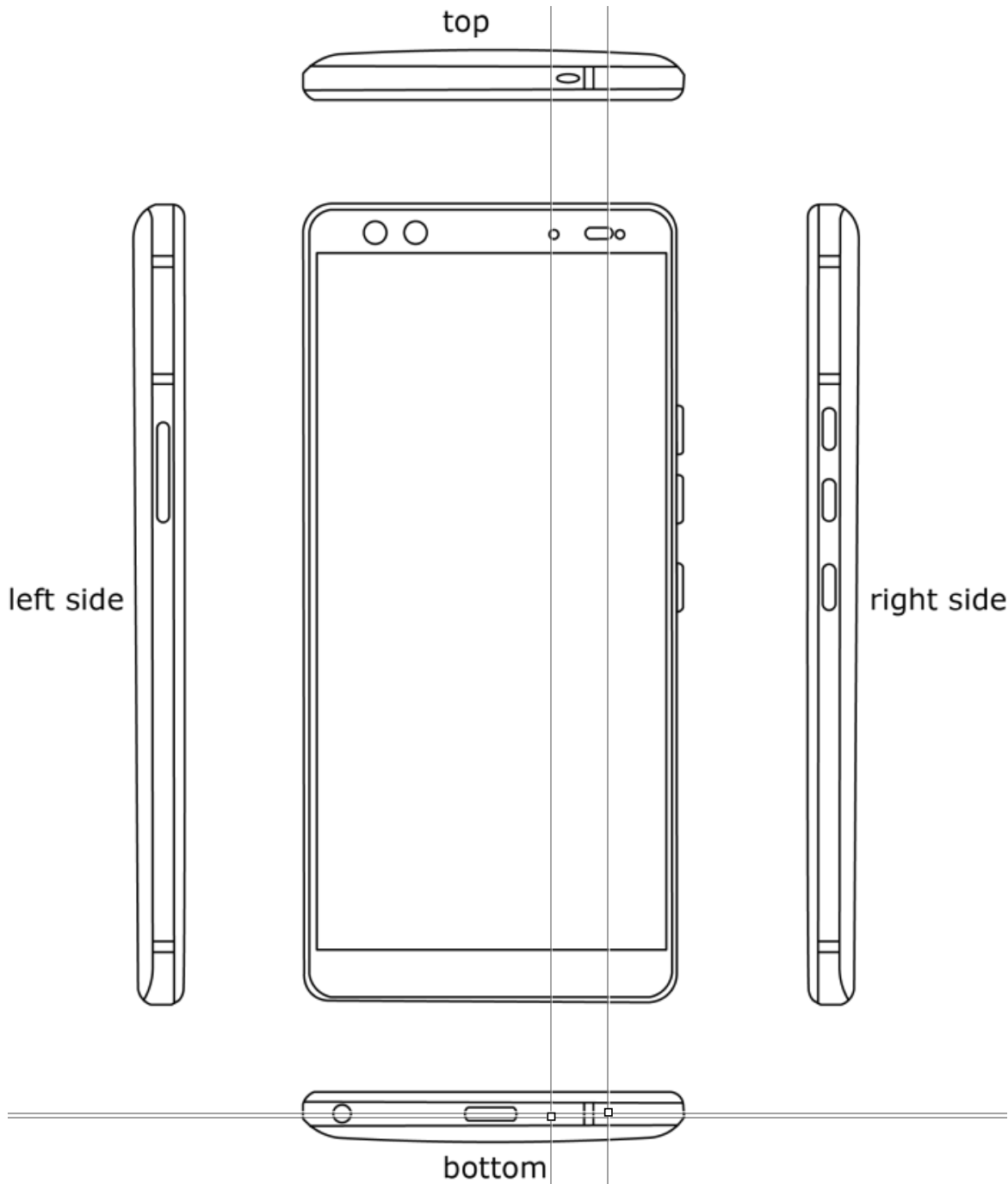
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

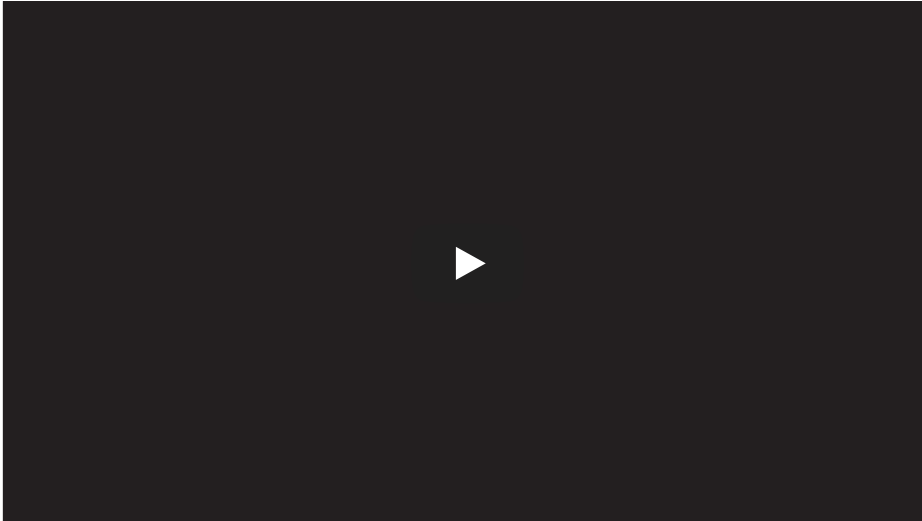


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me

- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

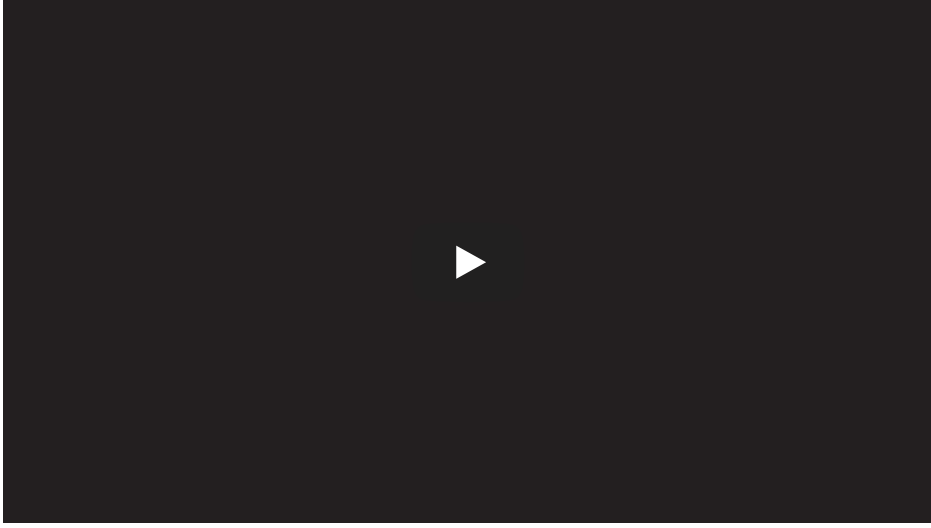
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

clear (but better than expected in this very quiet surrounding)

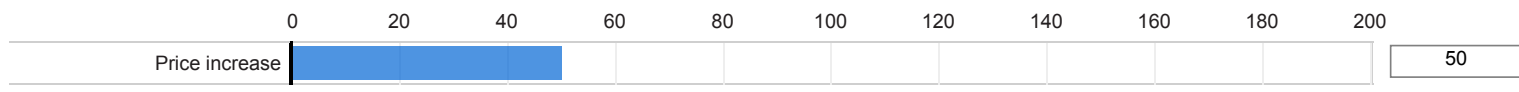
Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

narrow, no base

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

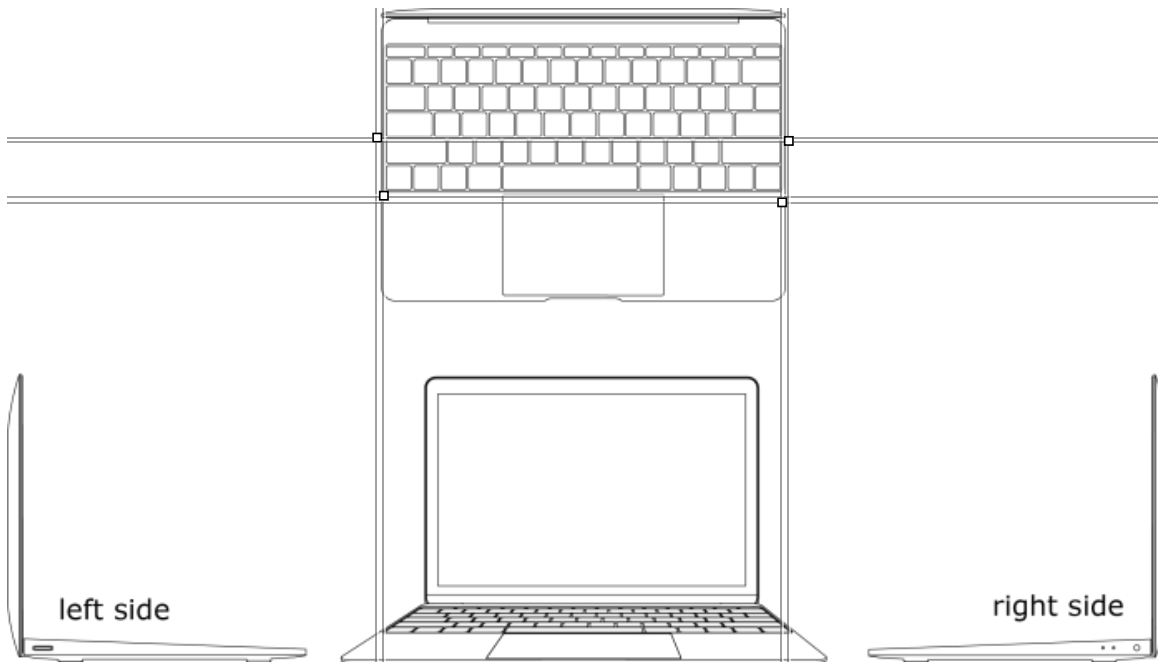
deeper, stronger, more base...possibility to make louder...really make it as good as a 50€ bluetooth speaker

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

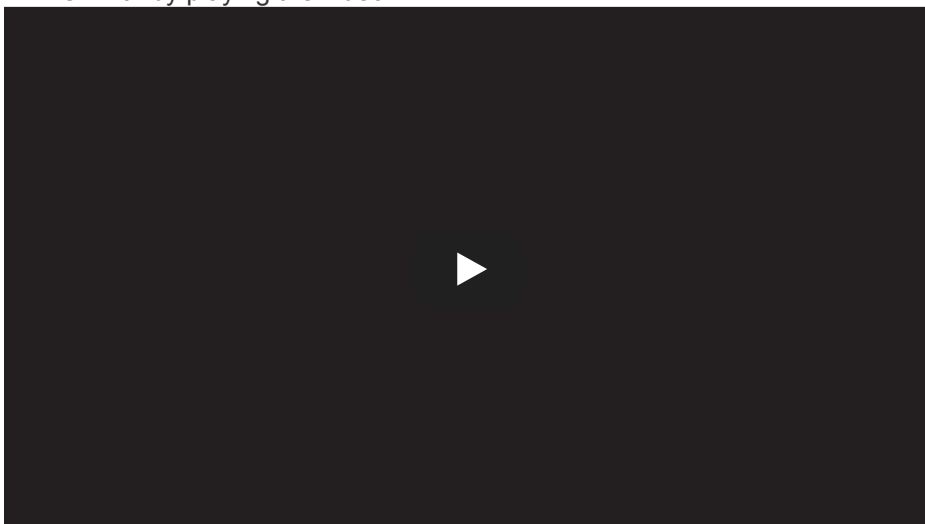


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

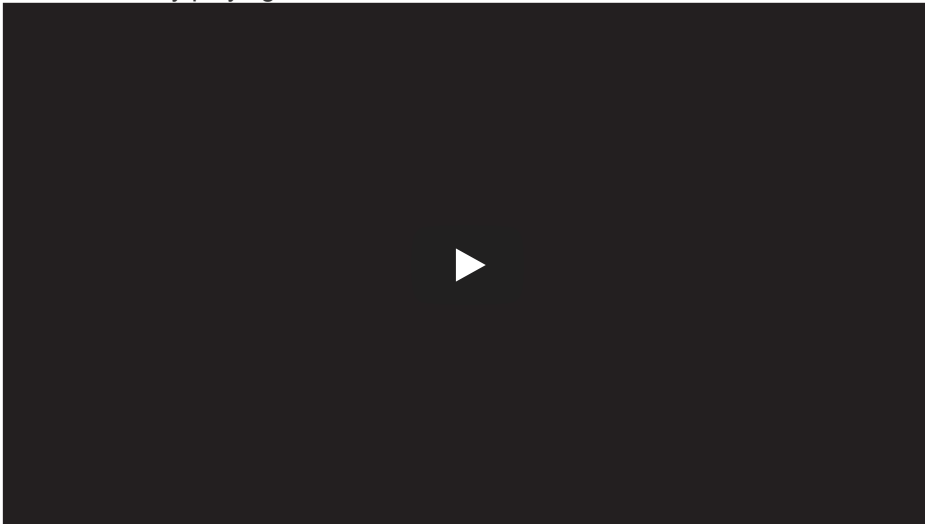
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_.](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

clear, strong, bright

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

narrow

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

more full, more base, deeper

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

This question was not displayed to the respondent.

Q97. In which scenario's do you use your portable speaker?

This question was not displayed to the respondent.

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

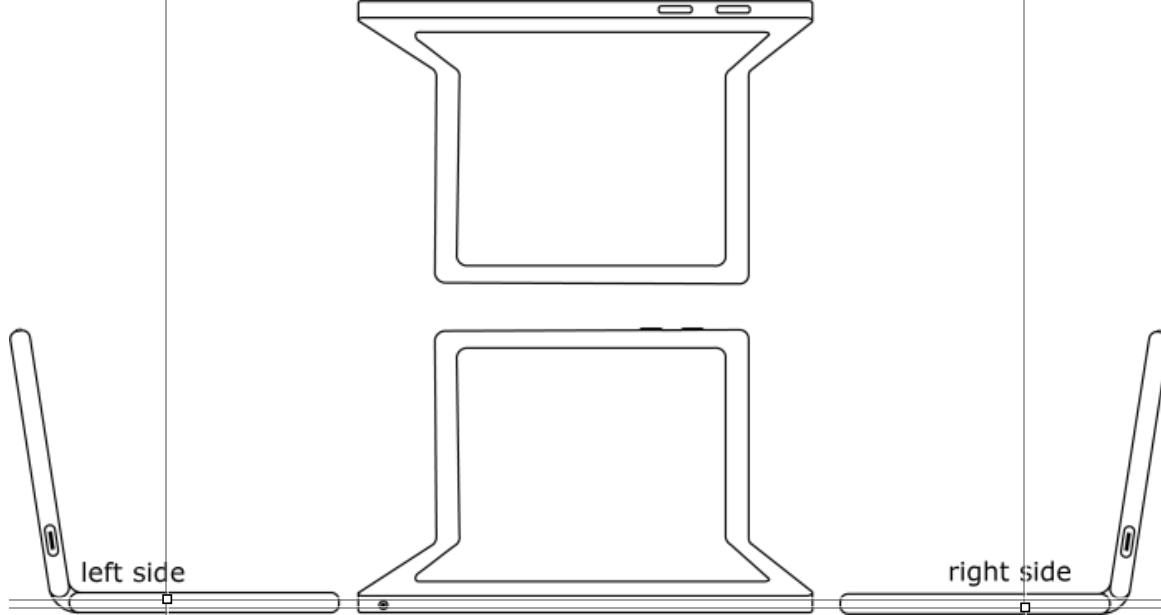
This question was not displayed to the respondent.

Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Same as laptop, or even a bit less

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

bigger screen, better presentation possibilities to people around you

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



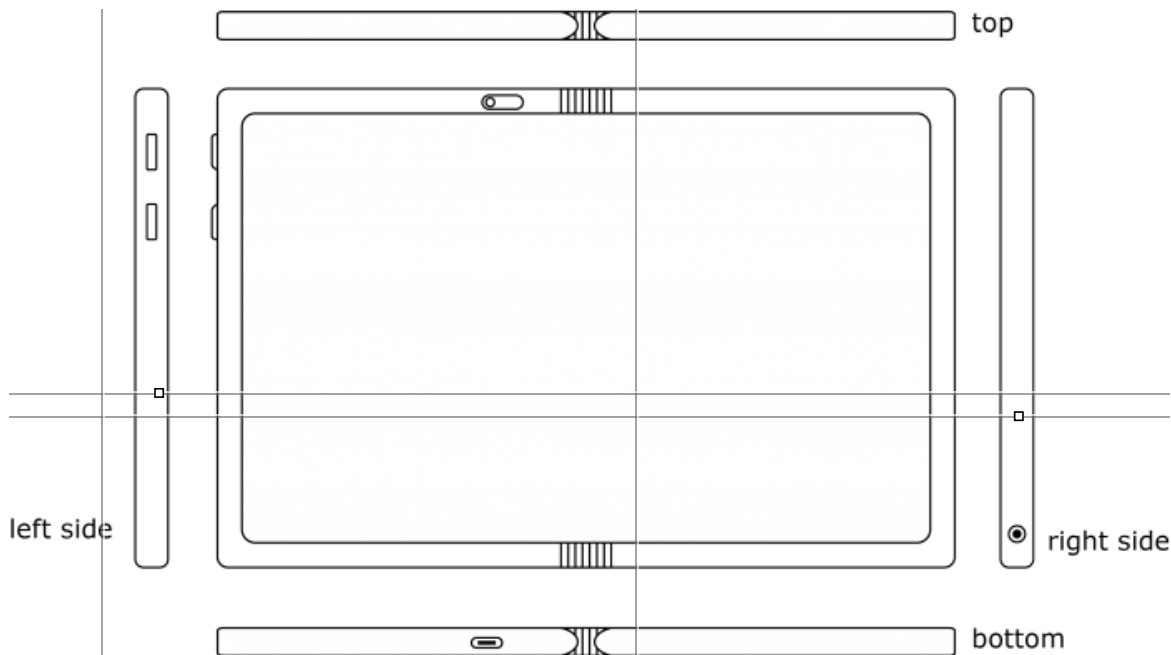
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Foldable laptop	2
Smartphone	3

tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Difficult to categorise foldable laptop different from foldable tablet, so similar to laptop, maybe a bit less

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

presentation possibilities to people around you. Big screen for reading.

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Foldable tablet	2
Smartphone	3

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

39

Q33. What would you state is your nationality?

EU citizen

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

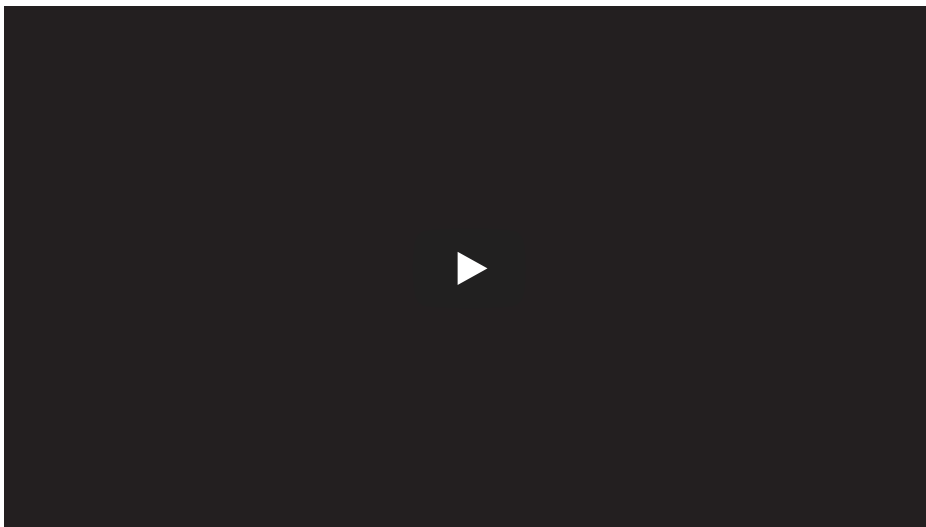
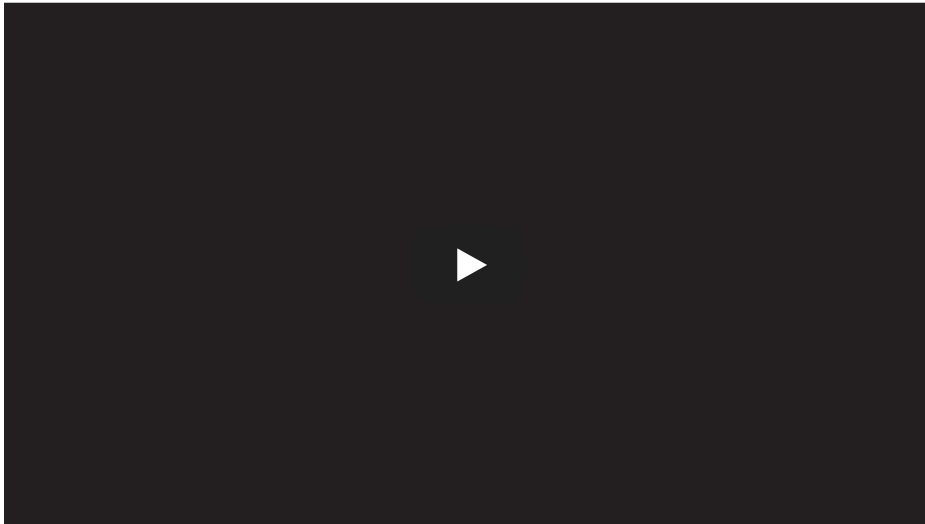
nice survey!

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: **G3LH-YBVM-Y719-SWNU** or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.7 User test results participant 7

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each seperate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

iPhone 7

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2020

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

MacBook Air

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2017

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

Gecko BS050

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

- High-end portable speaker
- Mid-range portable speaker
- Low-end portable speaker

Q104. In which year did you buy your portable speaker?

2017

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

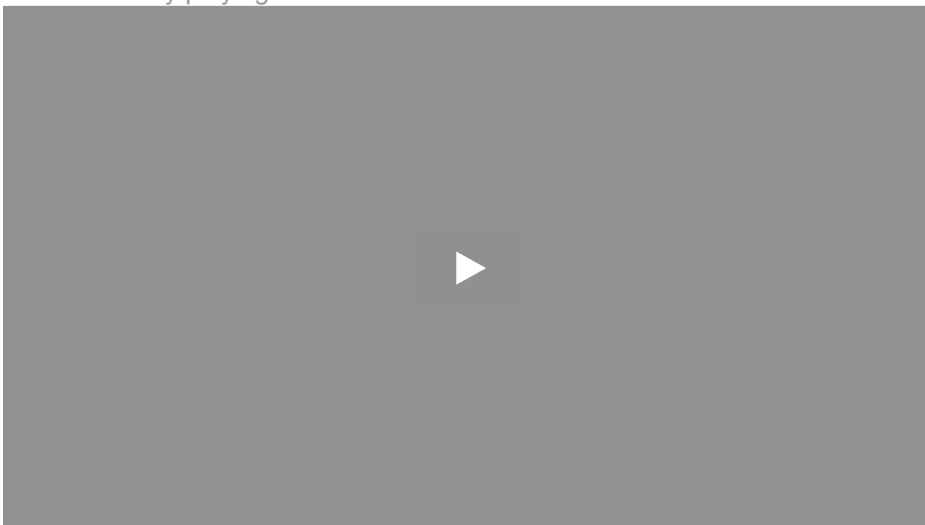
This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup **when watching YouTube**?

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media**?

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music**?

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television**?

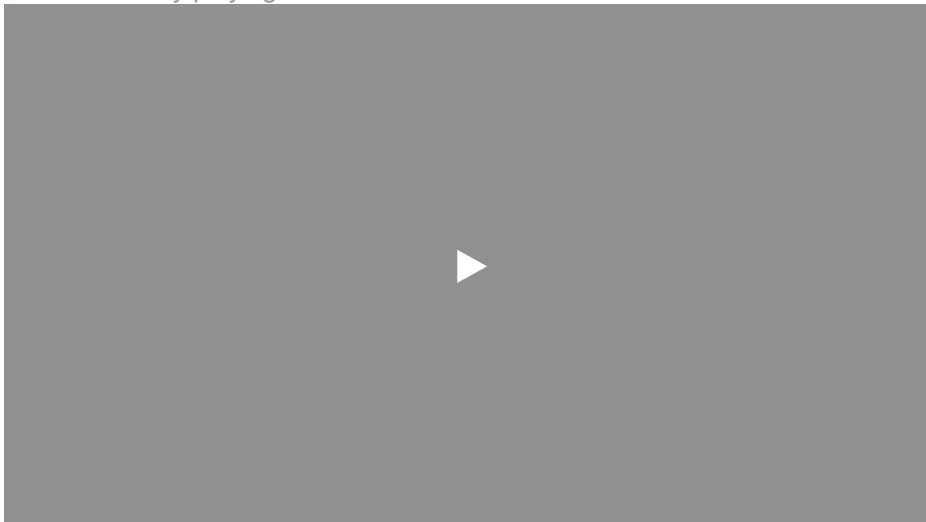
This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

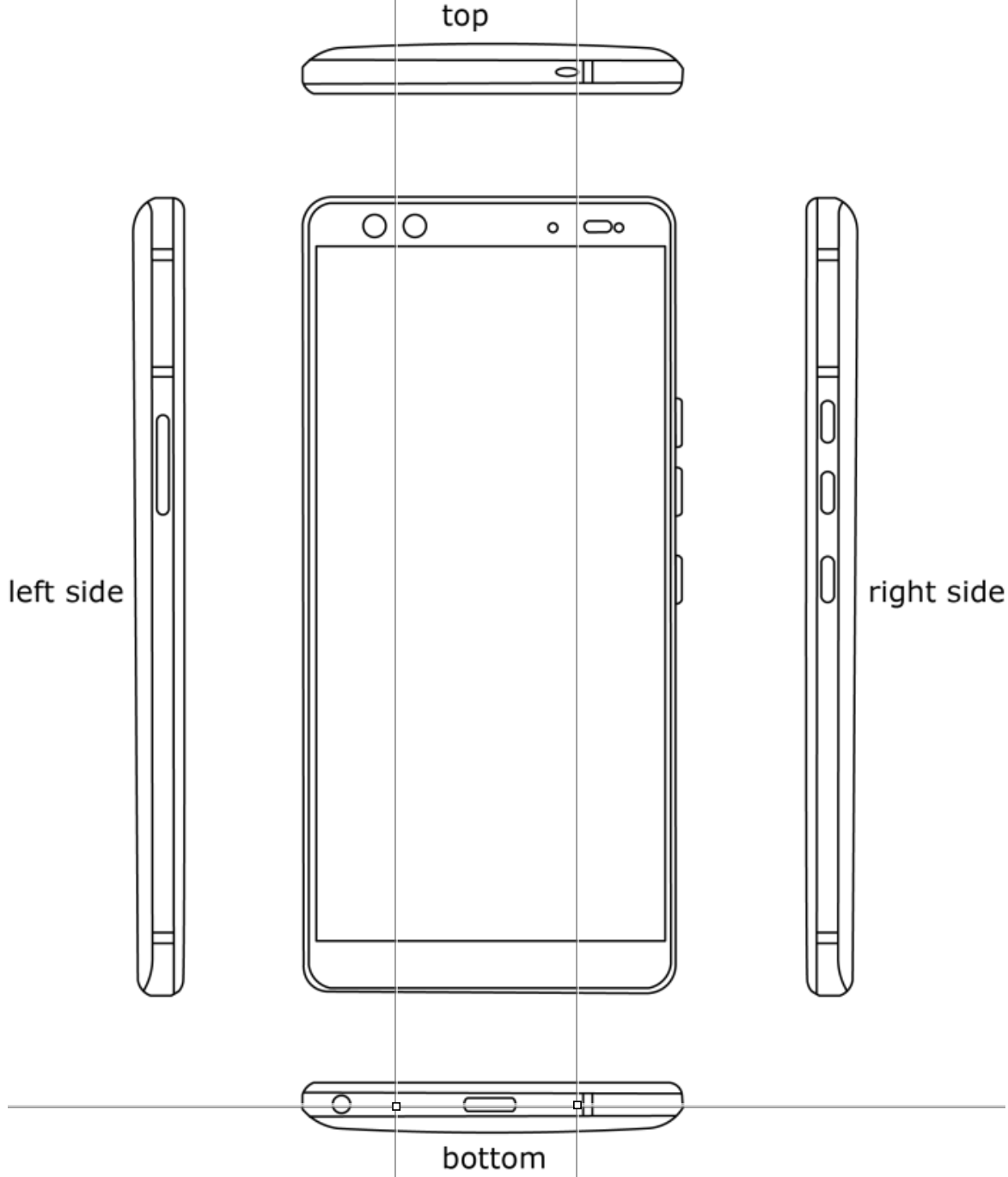
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

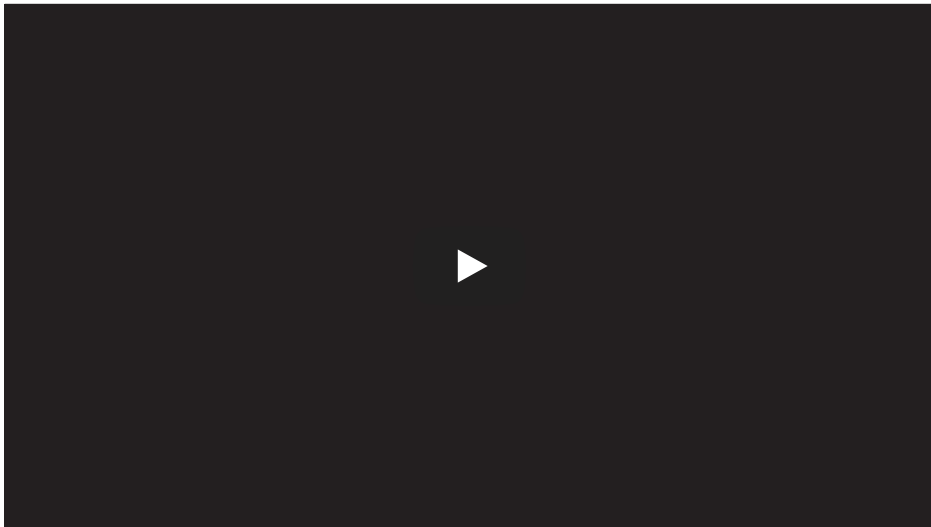


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when you want to listen to audio. You have the options to choose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people

- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

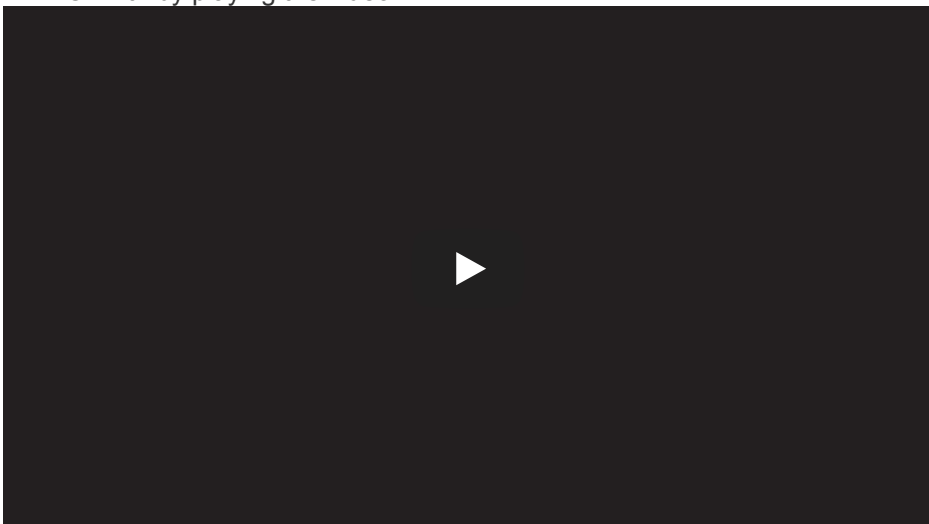
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clean, Smooth

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Dull, Spacious, Soft

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

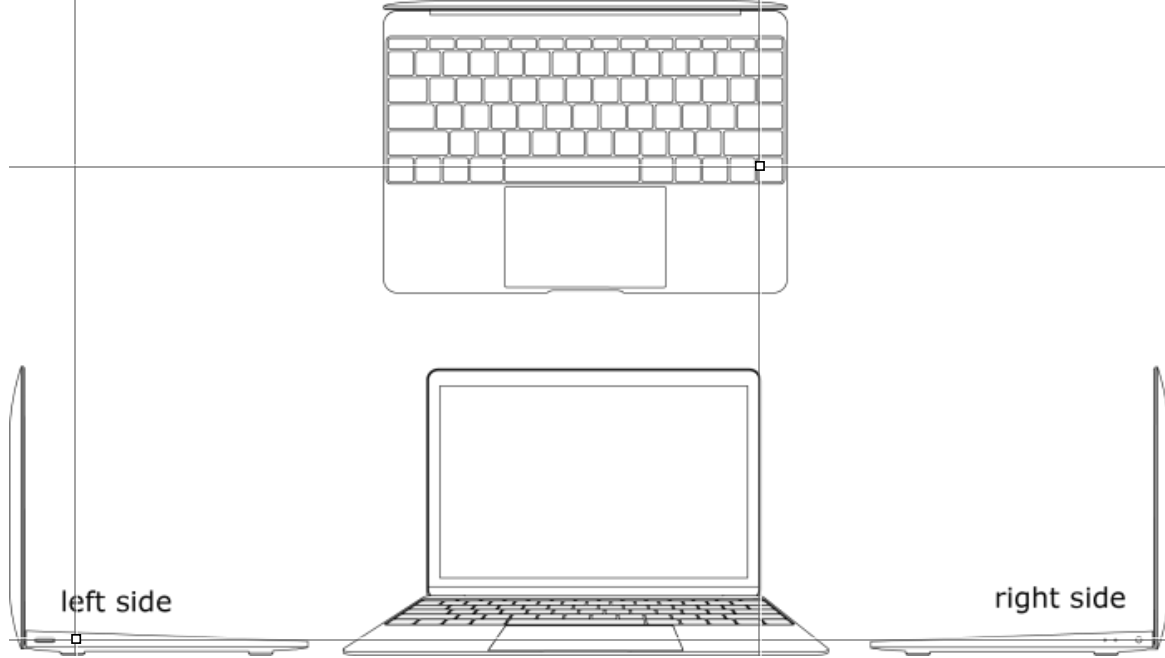
Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

0	20	40	60	80	100	120	140	160	180	200	
Price increase											0

Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

0	2	4	6	8	10	12	14	16	18	20	
Thickness increase											0

Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

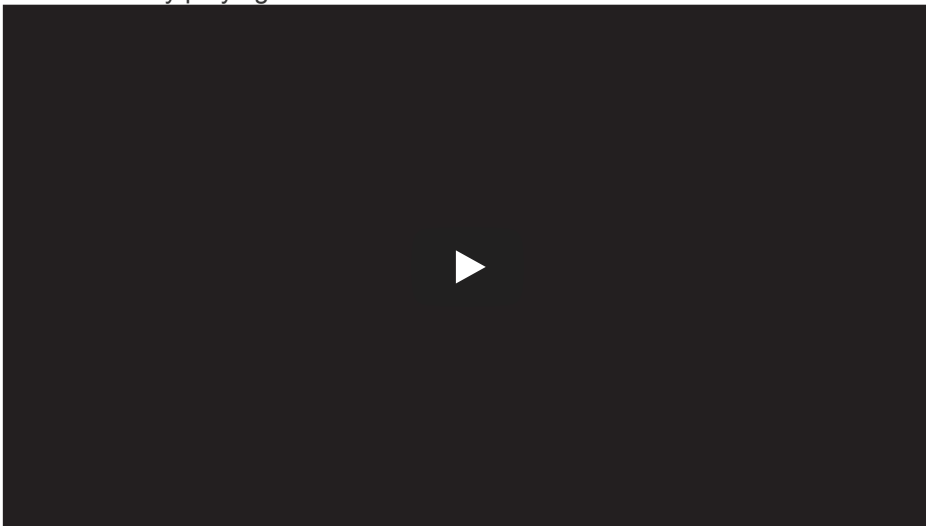


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetthooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when watching Netflix or online television?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better

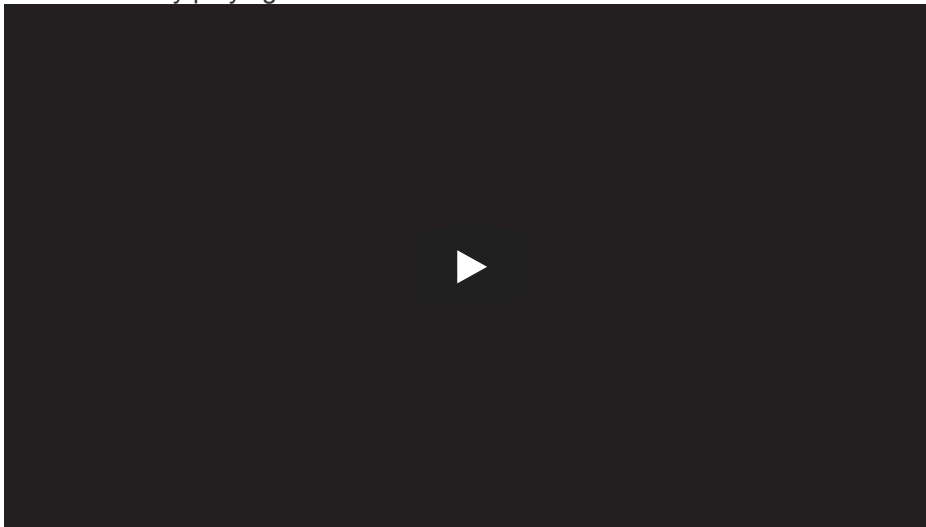
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ.\)](#))
- By scanning the QR code



- Or with by playing the video



Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Okay, Clean, Smooth

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Soft, Thin, Dull

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

0 20 40 60 80 100 120 140 160 180 200

Price increase |

Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.

0 2 4 6 8 10 12 14 16 18 20

Thickness increase |

Q92. Check the boxes that apply for the purchase of your portable speaker

- Sound quality
- Size
- Price
- Design
- Build in light feature
- Bluetooth
- Connect multiple speakers together
- Charge phone with portable speaker
- Other
- None of the above

Q97. In which scenario's do you use your portable speaker?

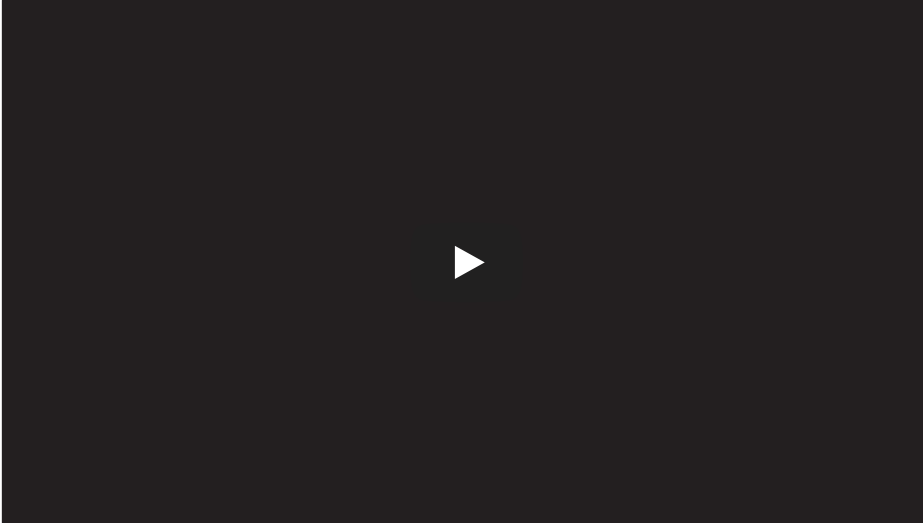
- Play music at a party
- Play music in a park/garden
- Play music in everyday use
- Play audio of movie or television
- Use during (video) calls
- Sound during presentations or meetings
- As sound improvement during laptop use
- As sound improvement during tablet use
- As sound improvement during smartphone use
- Other
- None of the above

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



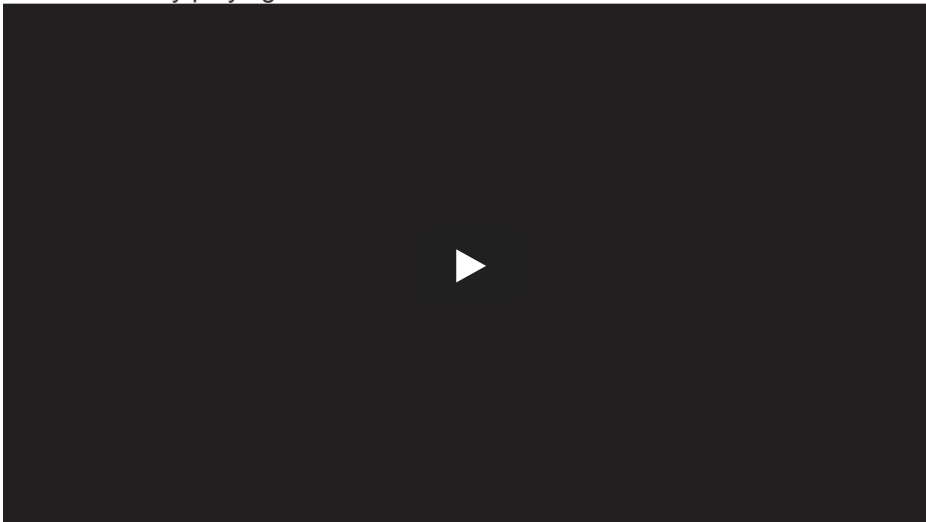
- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar (Queen - Bohemian Rhapsody (HQ.))
- By scanning the QR code



- Or with by playing the video



Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Loud, Clean, Full, Strong

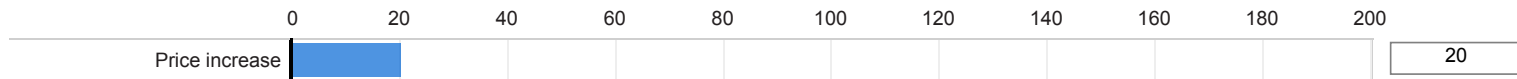
Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Crunchy when too load, not enough bass.

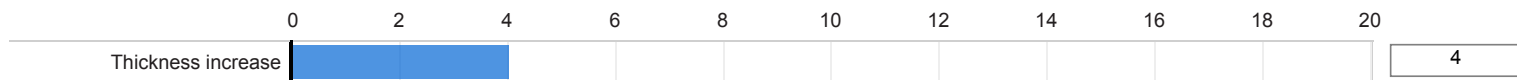
Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

A better bass.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

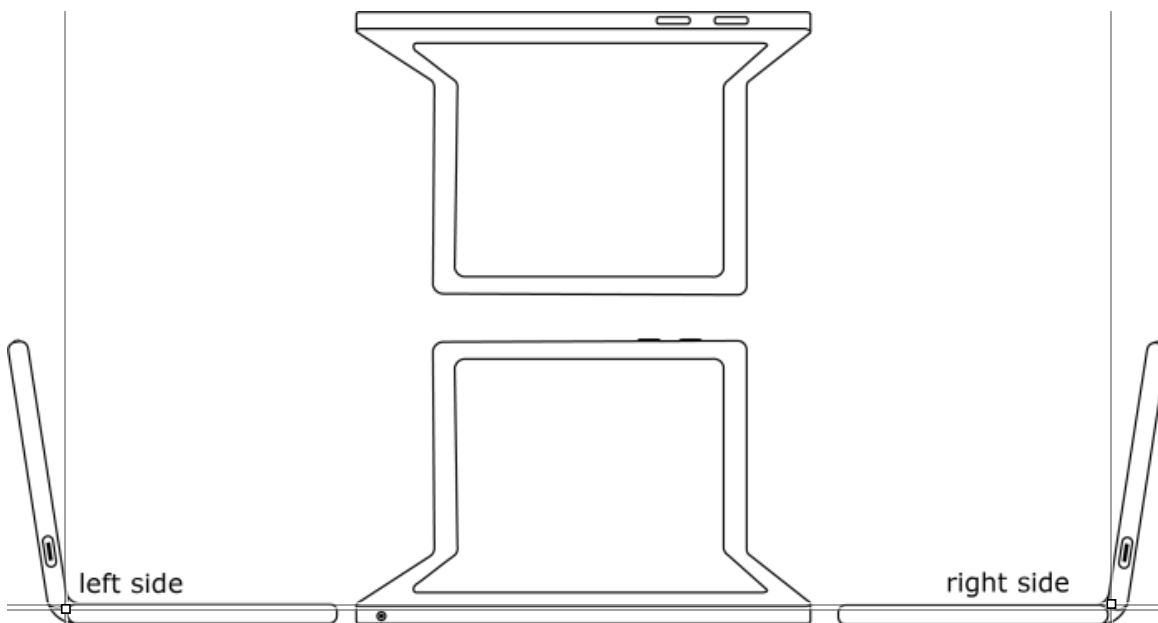


Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Surround sound

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

You can take it anywhere.

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



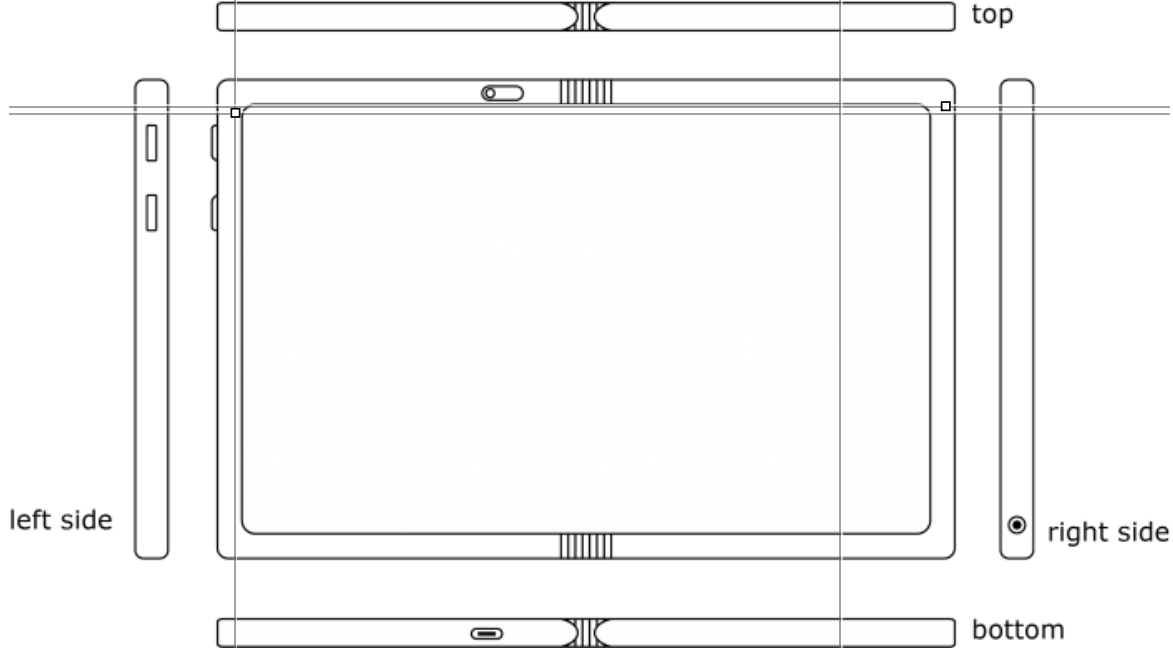
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Smartphone	2
Foldable laptop	3
Laptop	4

Q45. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Not as loud as the other ones.

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

It gets smaller?

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Smartphone	2
Laptop	3
Foldable tablet	4

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

22

Q33. What would you state is your nationality?

Dutch

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

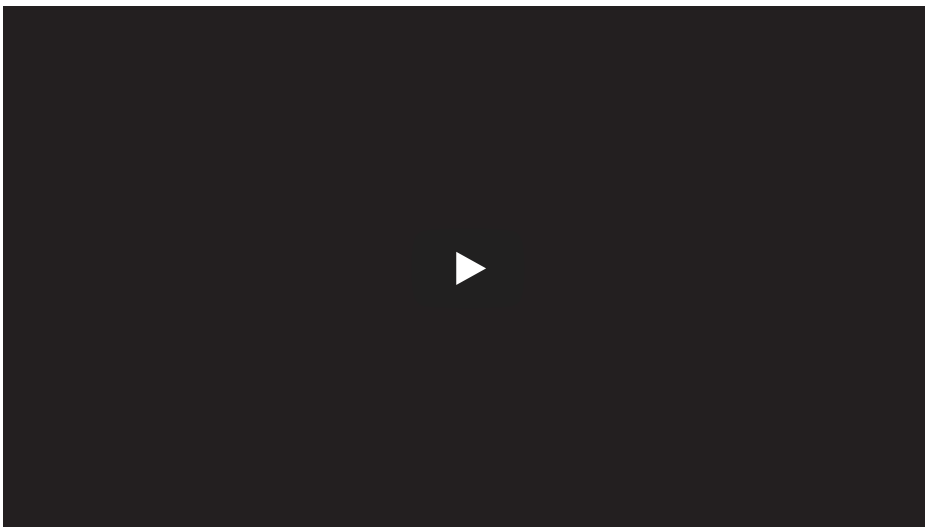
Some questions were not correct, for example during the "foldable tablet" questions, a question about the foldable laptop popped up.

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: **G3LH-YBVM-Y719-SWNU** or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.8 User test results participant 8

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

Xiaomi Mi 9 SE

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2020

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

Apple Macbook Pro 15 inch

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2013

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

JBL Flip 4

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

- High-end portable speaker
- Mid-range portable speaker
- Low-end portable speaker

Q104. In which year did you buy your portable speaker?

2017

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup **when watching YouTube**?

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media**?

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music**?

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television**?

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

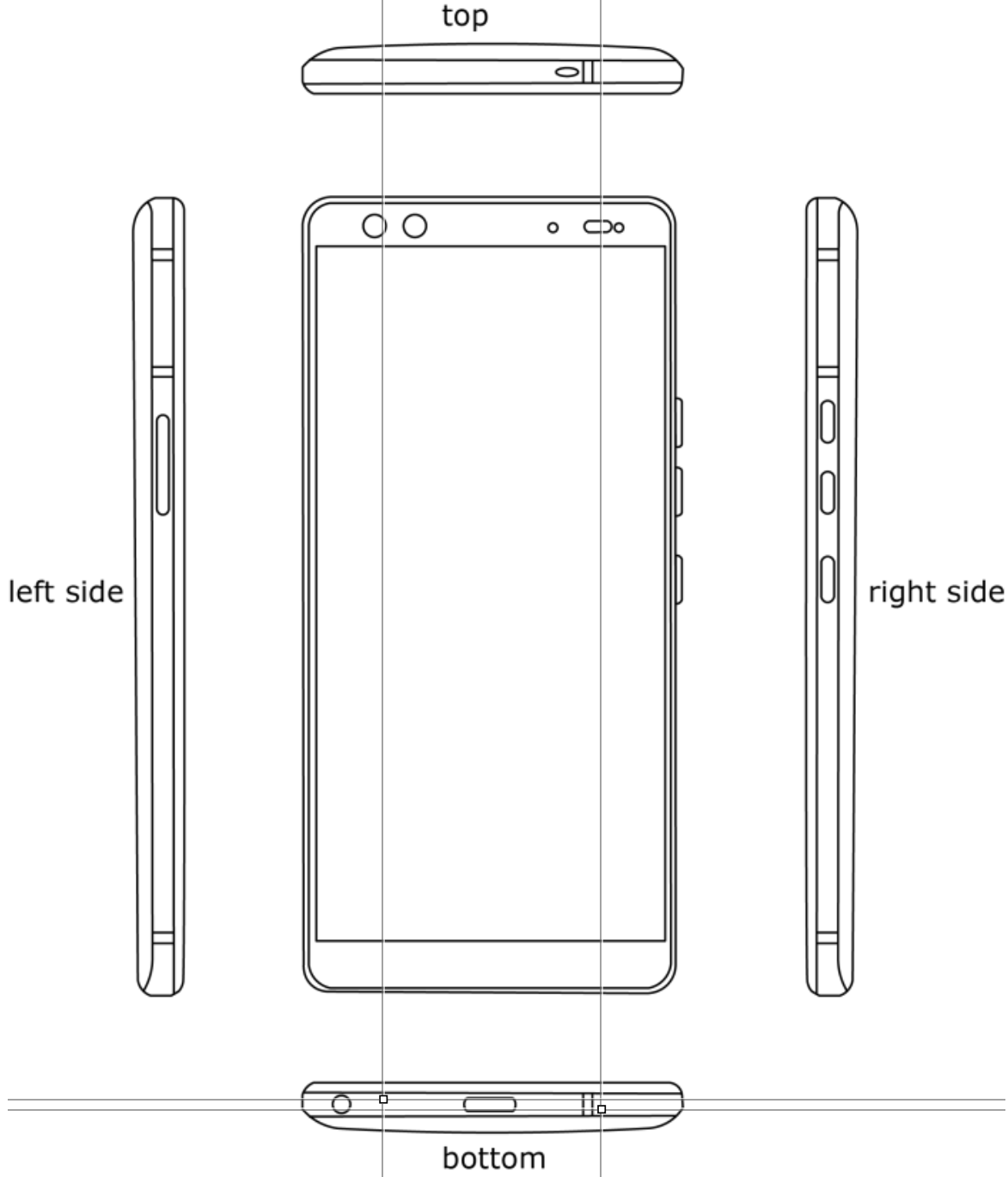
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

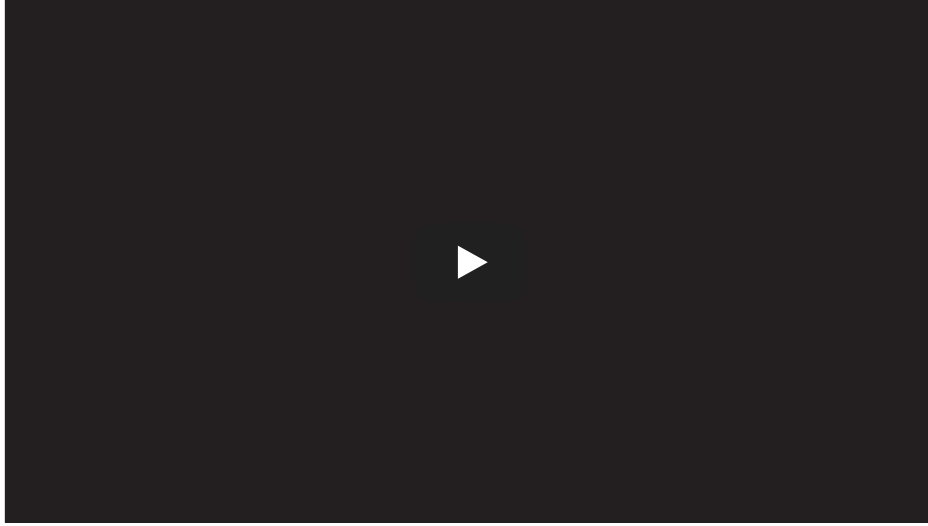


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people

- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

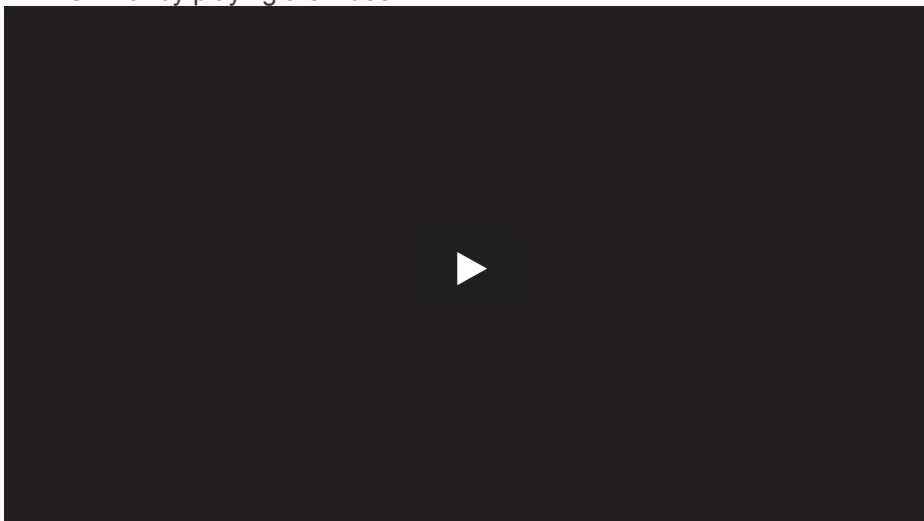
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clear

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Empty, Thin

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

More "warm" sounds. Lower frequencies

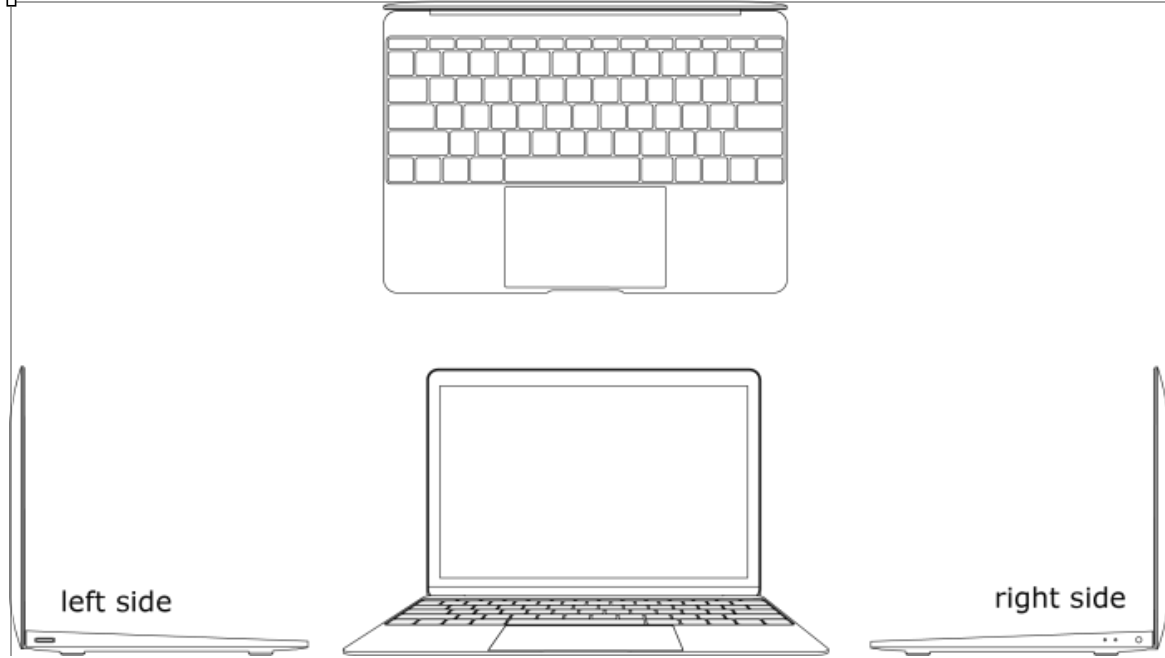
Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.



Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

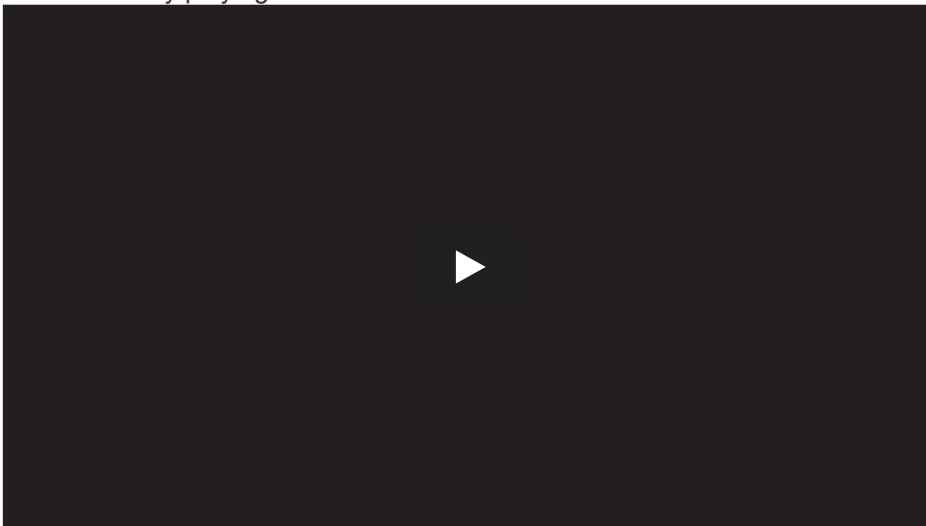


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when **watching YouTube**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better

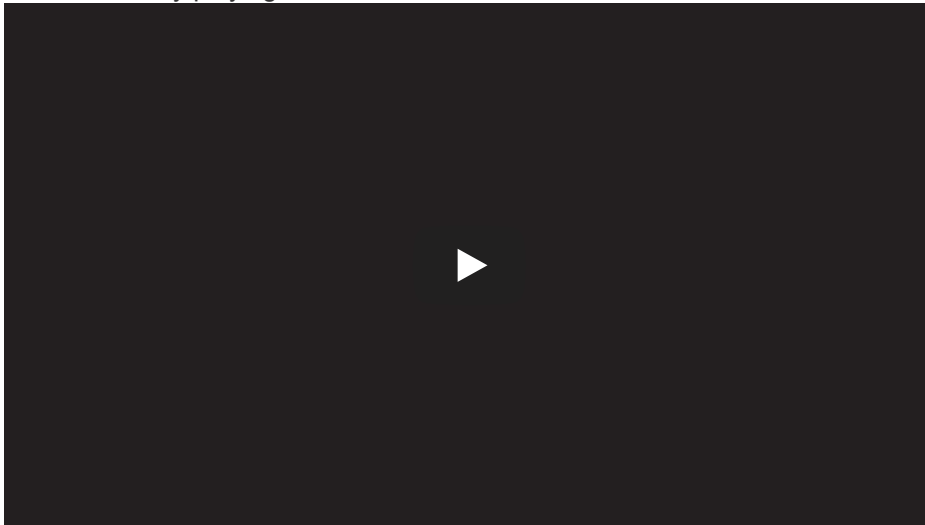
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#).)
- By scanning the QR code



- Or with by playing the video



Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clear, Detailed, warmer than smartphone

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

not immersive, stereo doesn't work very well, not hearing everything but raising volume will not make it better.

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

Better surround-ish sound. More warm sounds

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

- Sound quality
- Size
- Price
- Design
- Build in light feature
- Bluetooth
- Connect multiple speakers together
- Charge phone with portable speaker
- Other
- None of the above

Q97. In which scenario's do you use your portable speaker?

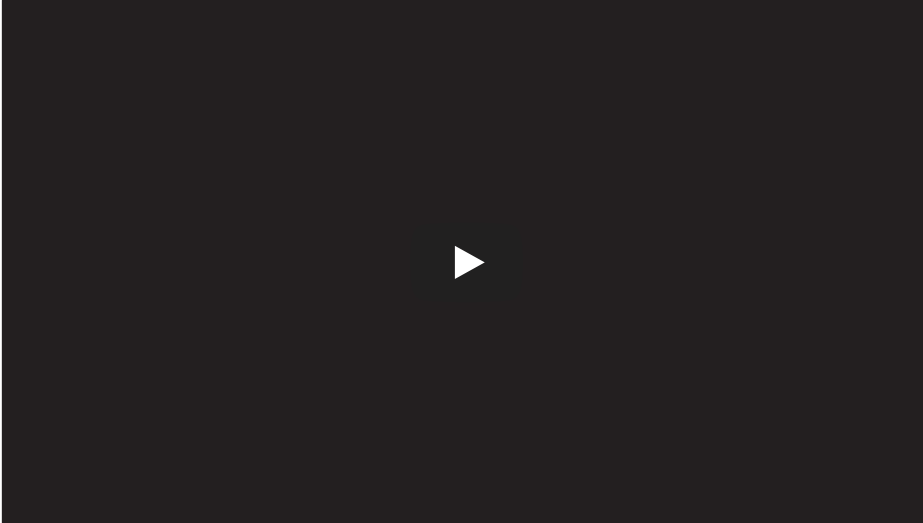
- Play music at a party
- Play music in a park/garden
- Play music in everyday use
- Play audio of movie or television
- Use during (video) calls
- Sound during presentations or meetings
- As sound improvement during laptop use
- As sound improvement during tablet use
- As sound improvement during smartphone use
- Other
- None of the above

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



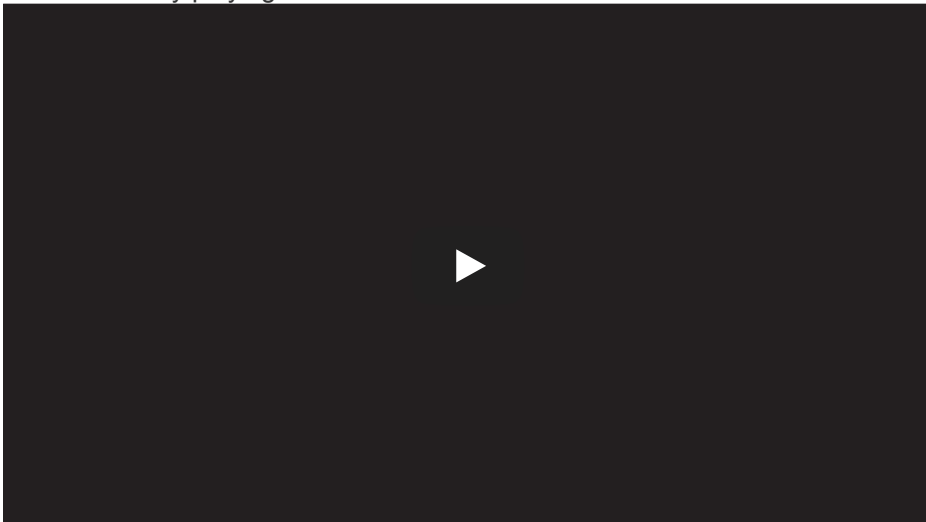
- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar (Queen - Bohemian Rhapsody (HQ.))
- By scanning the QR code



- Or with by playing the video



Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Strong, Spacious, reaches all frequencies, clear, warm. Turning it horizontal widens the sounds. Vertical orientation focusses the sound.

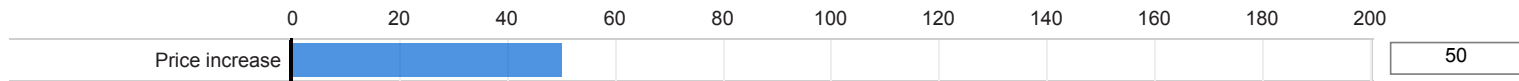
Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Lack of vibrating bass.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

Add a subwoofer

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



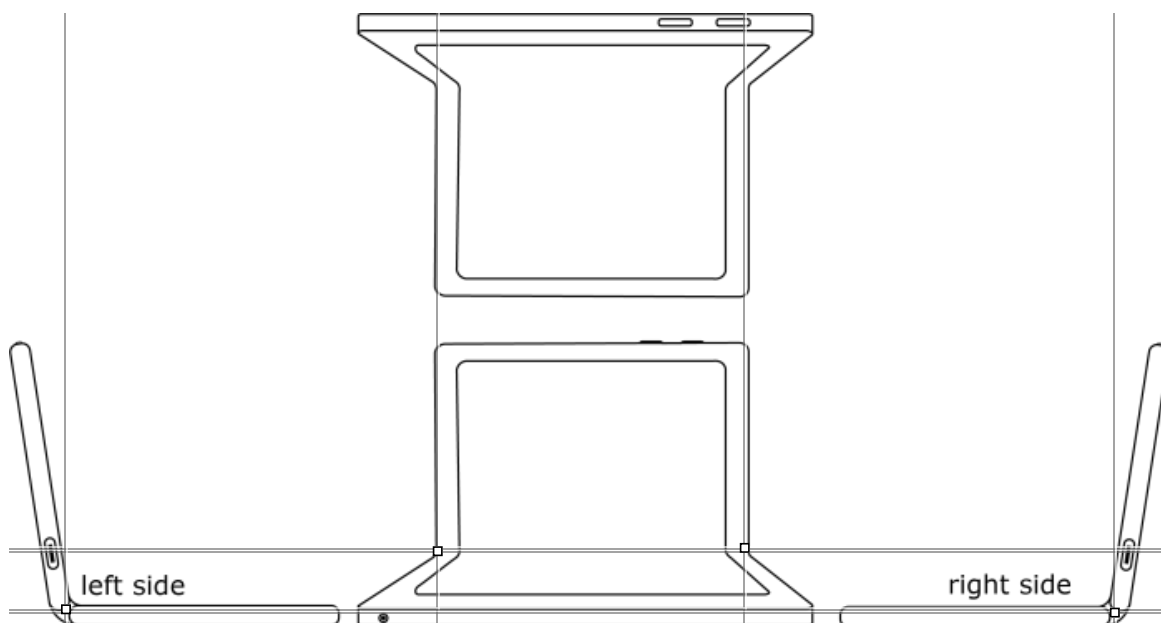
Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.



Q28. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Close to that of a laptop, probably a bit more bass as I guess the device is a bit thicker compared to most other laptops

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

You can impress others with a cool new gadget.

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



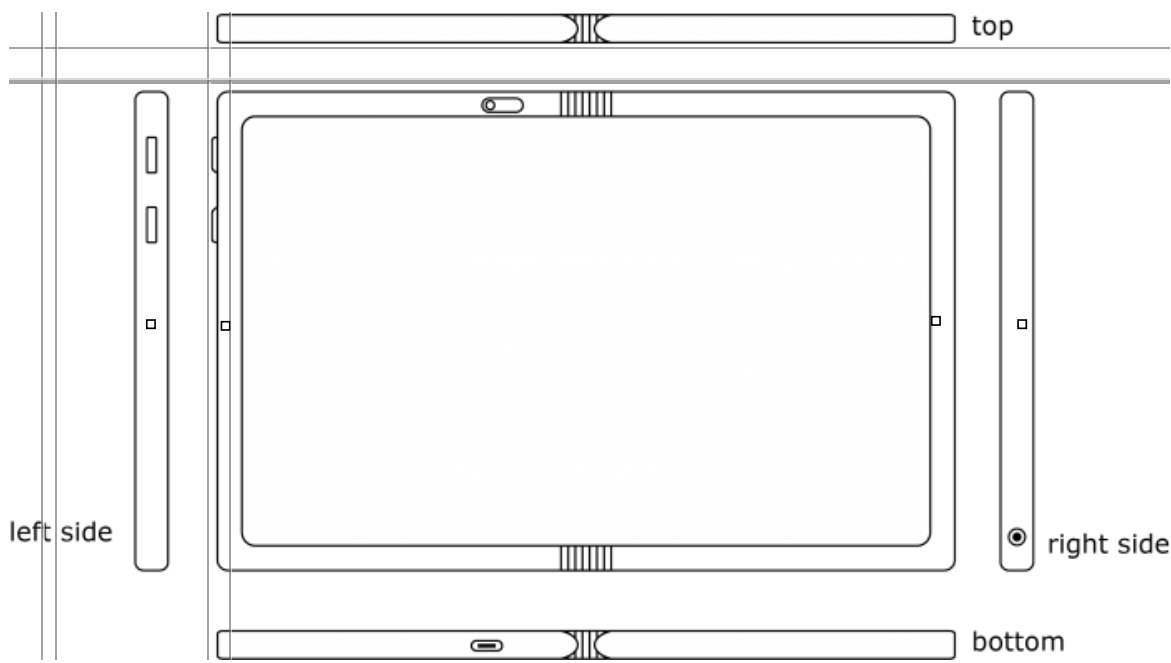
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Foldable laptop	2
Laptop	3
Smartphone	4

Q45. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Comparable to a smartphone, but since the tablet is rather big. It can make sense to put them in stereo position.

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

Portability, Looks cool

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Laptop	2
Foldable tablet	3
Smartphone	4

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

25

Q33. What would you state is your nationality?

Dutch

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

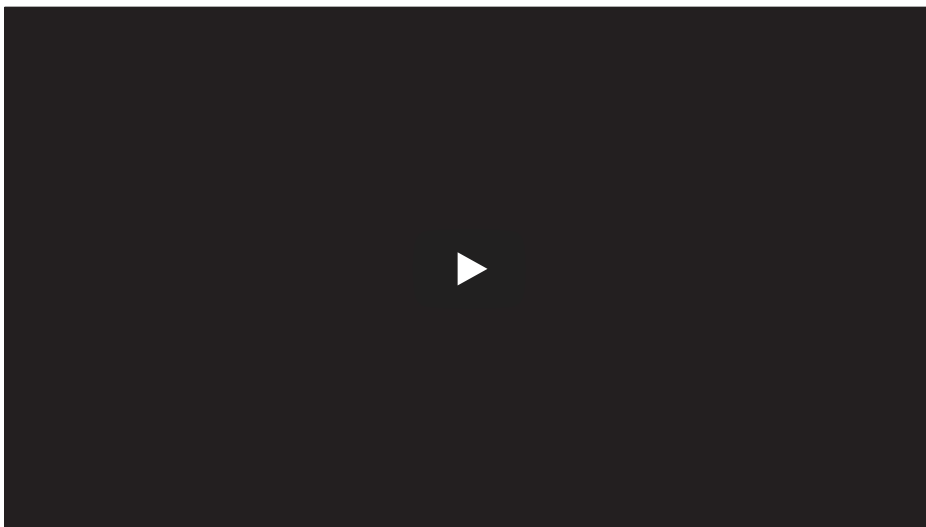
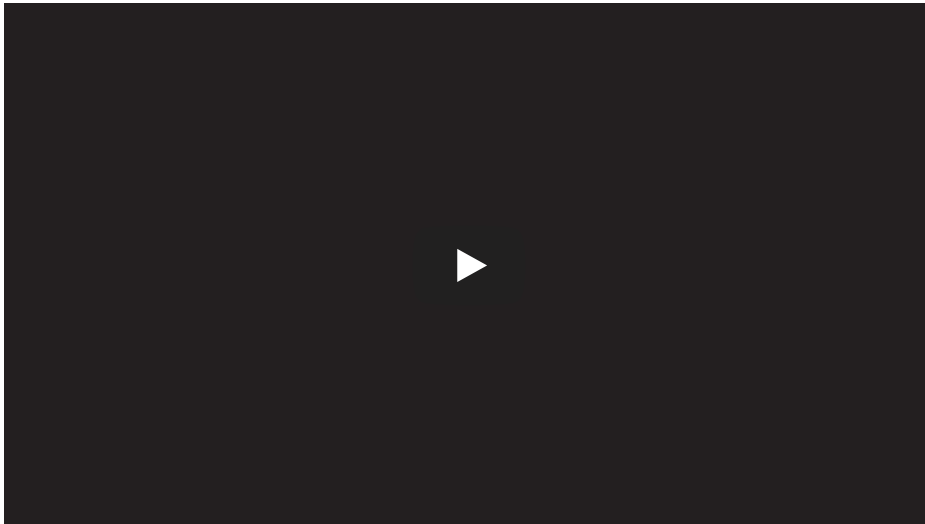
Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: G3LH-YBVM-Y719-SWNU or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.9 User test results participant 9

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each seperate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

iPad Pro

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

- High-end tablet
- Mid-range tablet
- Low-end tablet

Q74. In which year did you buy your tablet?

2019

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

iPhone Xr

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2020

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

This question was not displayed to the respondent.

Q76. In which year did you buy your laptop?

This question was not displayed to the respondent.

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

This question was not displayed to the respondent.

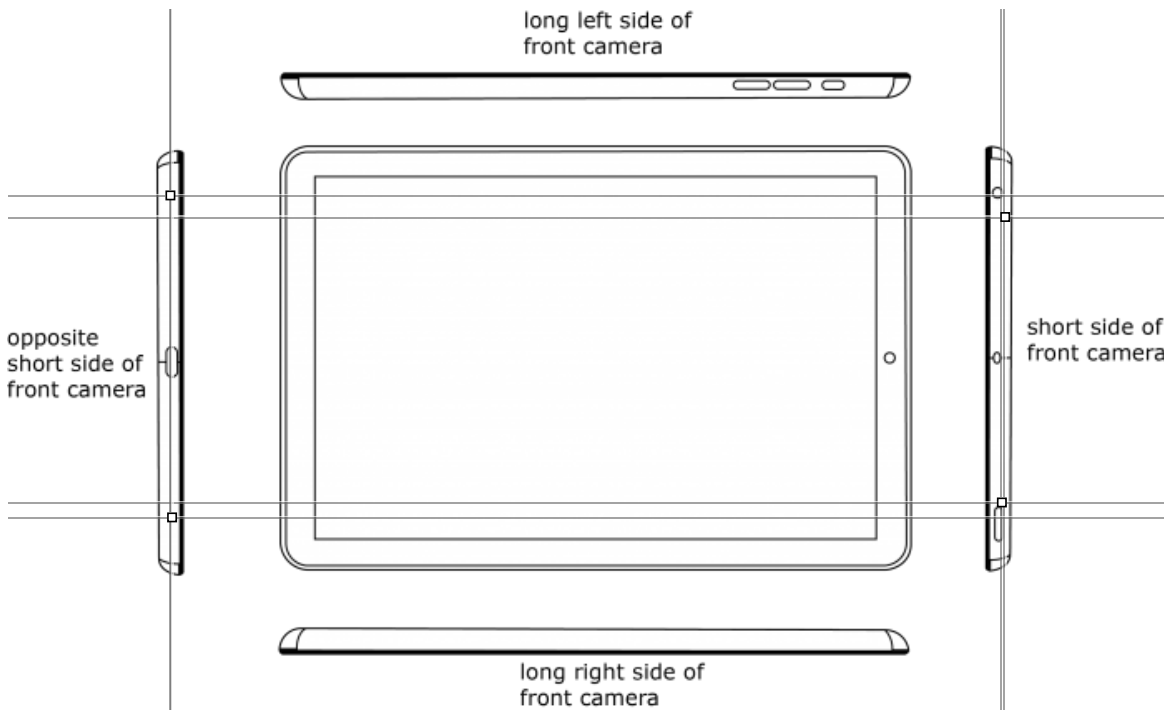
Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

This question was not displayed to the respondent.

Q104. In which year did you buy your portable speaker?

This question was not displayed to the respondent.

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

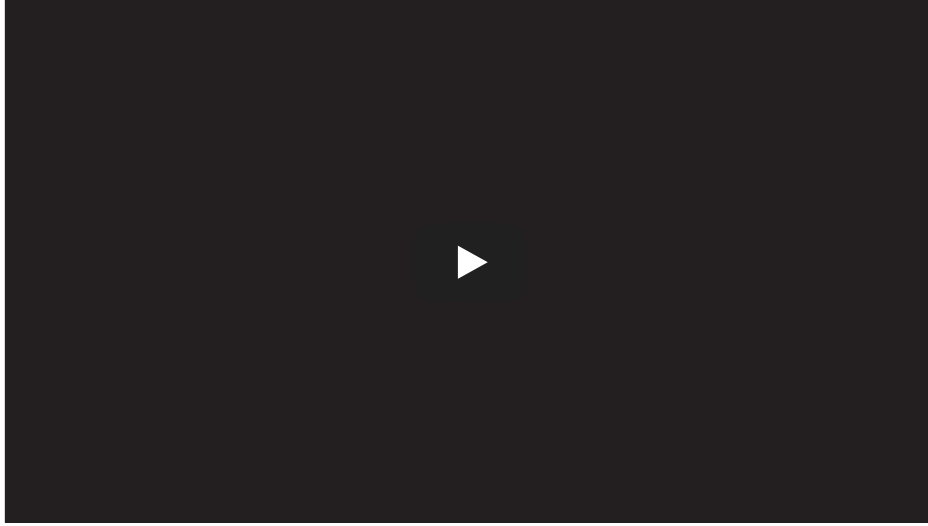


Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q13. Did you take the speakers and sound quality into account when buying your tablet?

- Yes
- Maybe / I can't remember
- No

Q38. Select for each scenario which case is most common when you want to listen to audio. You have the options to choose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

	I would play the audio via the speaker of my tablet	I would play the audio from headphones connected to my tablet	I would play the audio from external speakers connected to my tablet
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q61. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q58. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people

- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q59. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q60. What is the reason for your choice in setup when watching Netflix or online television?

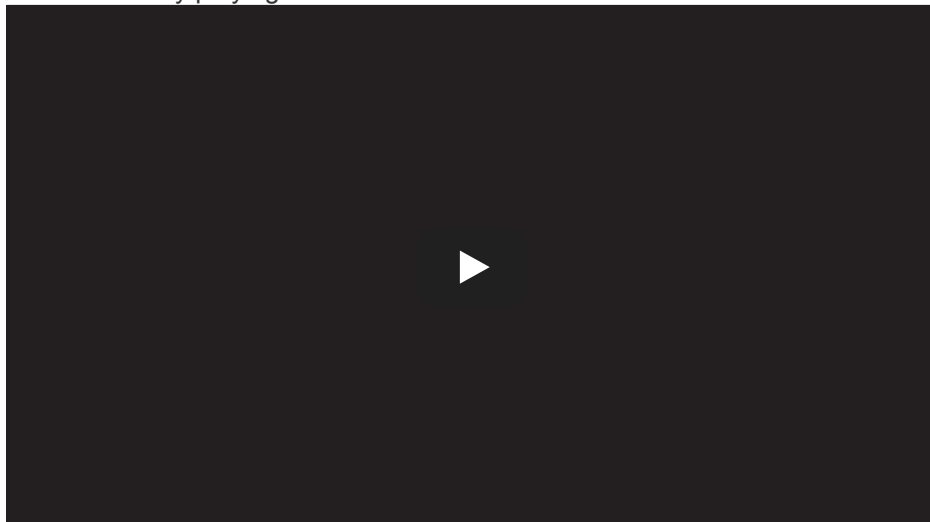
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Strong, Deep, smooth

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

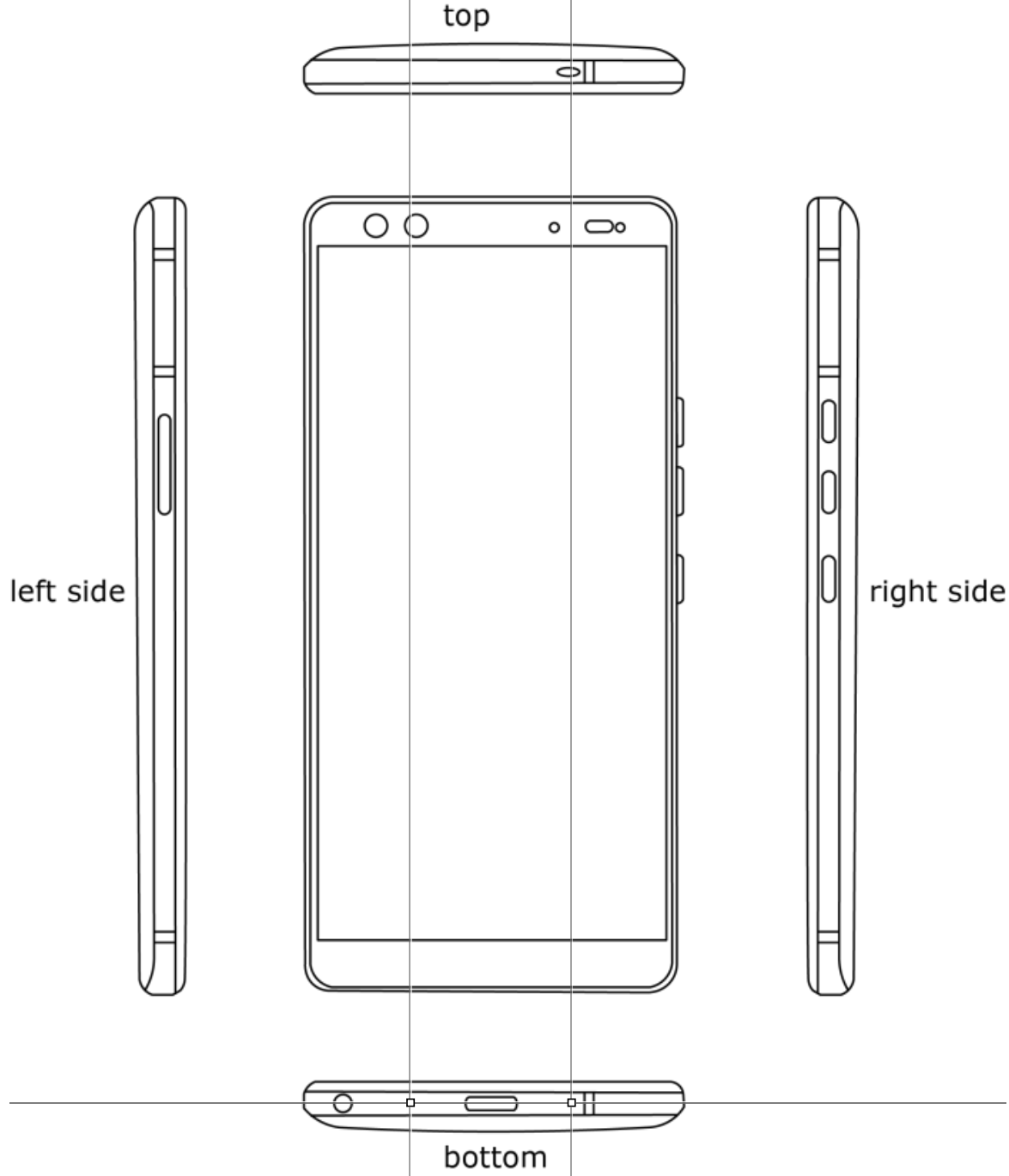
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.



Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

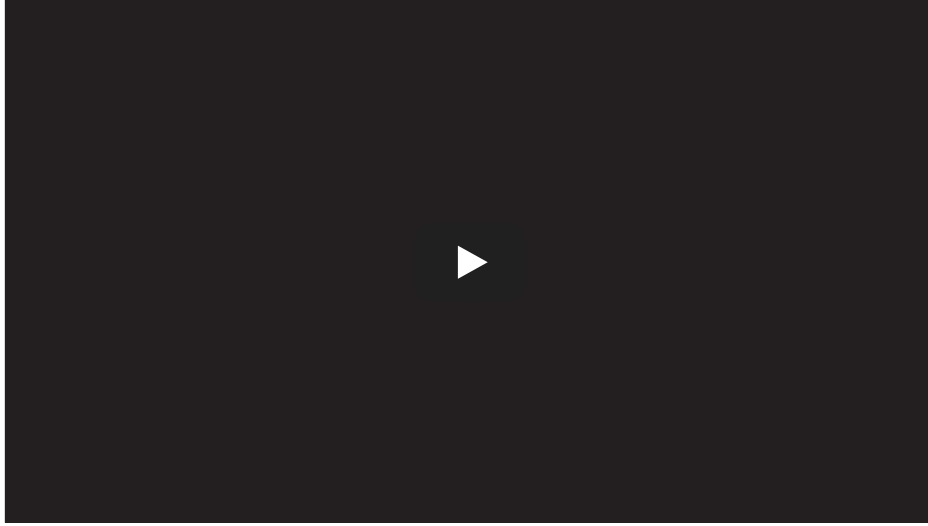


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people

- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

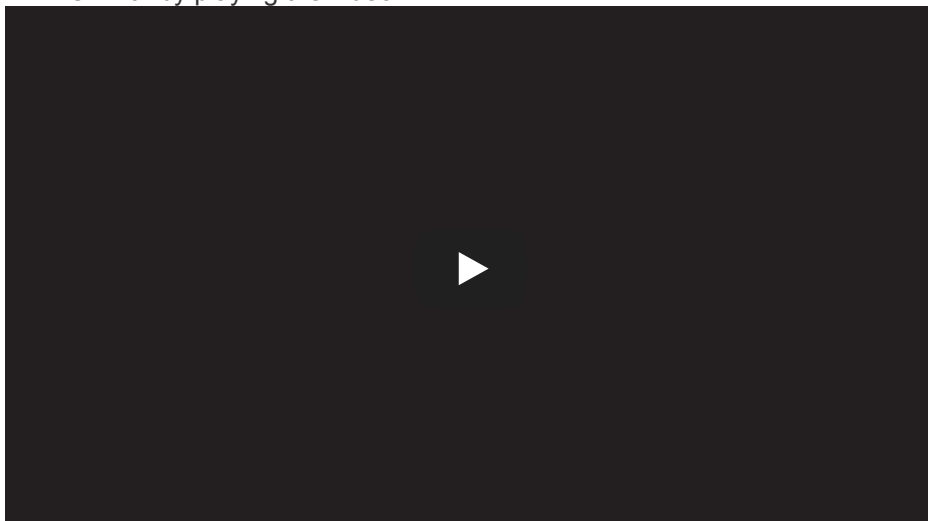
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#).)
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clean, Synthetic

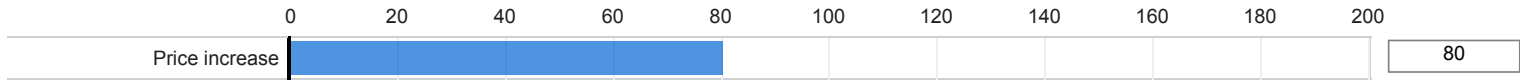
Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Thin

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

More bass, more depth

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.



Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q20. Did you take the speakers and sound quality into account when buying this laptop?

This question was not displayed to the respondent.

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to choose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

This question was not displayed to the respondent.

Q68. What is the reason for your choice in setup when **watching YouTube**?

This question was not displayed to the respondent.

Q69. What is the reason for your choice in setup when **browsing social media**?

This question was not displayed to the respondent.

Q70. What is the reason for your choice in setup when **listening to music**?

This question was not displayed to the respondent.

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

This question was not displayed to the respondent.

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q92. Check the boxes that apply for the purchase of your portable speaker

This question was not displayed to the respondent.

Q97. In which scenario's do you use your portable speaker?

This question was not displayed to the respondent.

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

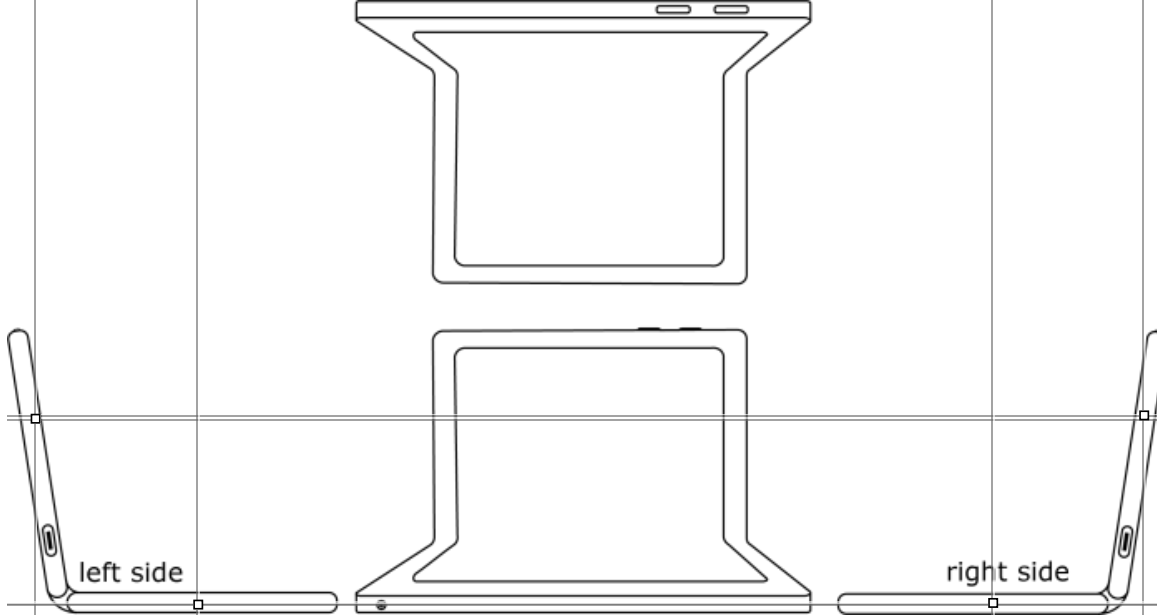
Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q28.
In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

At least the Same Quality as the speakers on my Tablet

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

No idea.... maybe more compact...less weight?

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



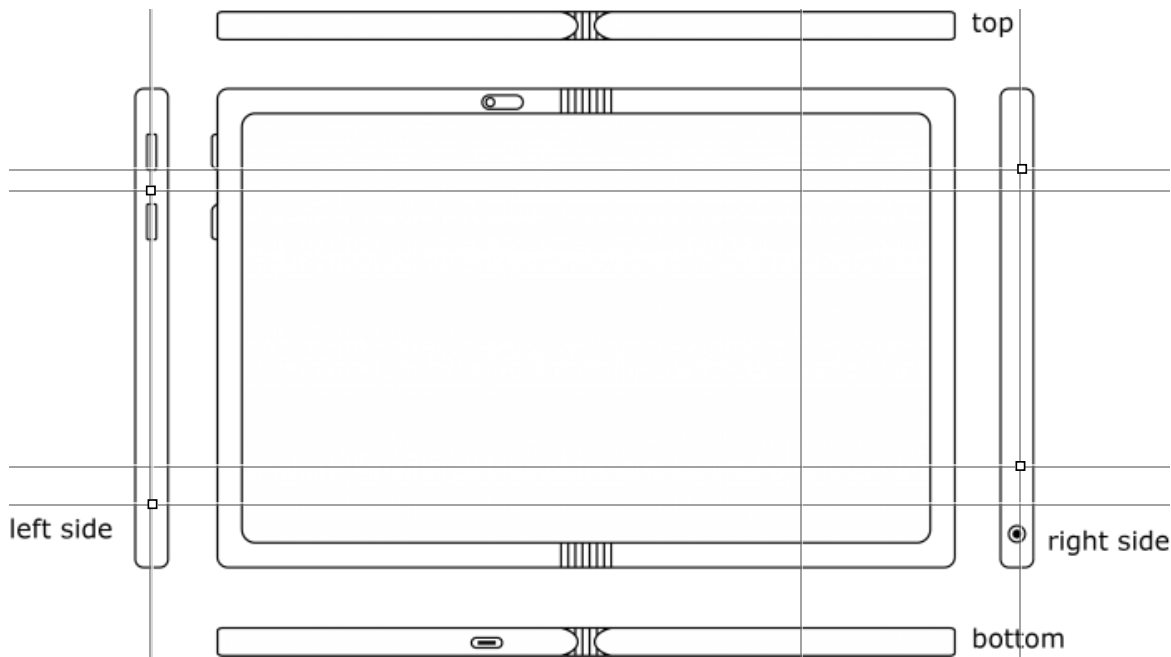
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Tablet	1
Foldable laptop	2
Smartphone	3

tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Same quality as my iPad Pro

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

The ability of changing the size of it when needed to

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Foldable tablet	1
Tablet	2
Smartphone	3

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

49

Q33. What would you state is your nationality?

Dutch

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

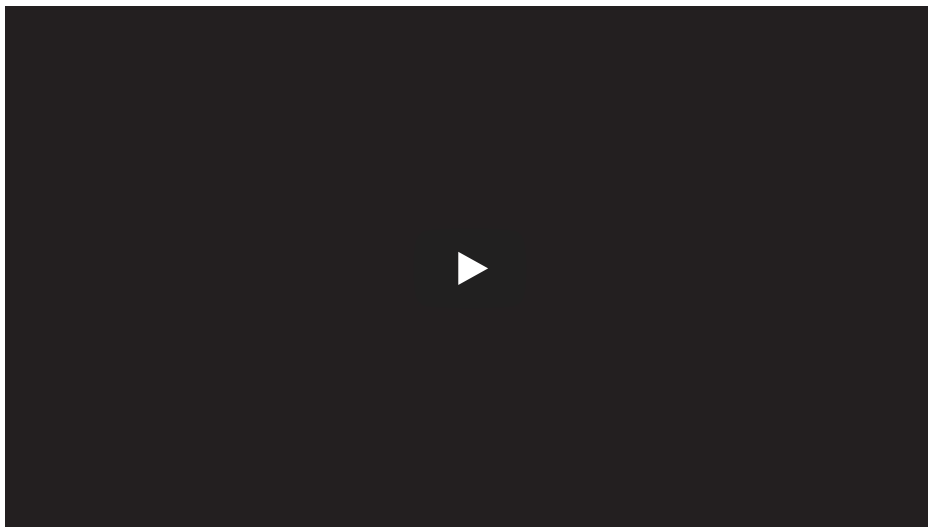
Good Survey! I was a Little Bit confused about the following: In the beginning of the Survey I was asked to State which devices I was using during the Survey. I mentioned that I was using my Tablet and smarthphone. Later on I had to answer questions about the Sound on my portable speaker which I didn't use during the Survey... maybe I did something wrong or misunderstood the question?

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: G3LH-YBVM-Y719-SWNU or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.10 User test results participant 10

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each seperate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody (HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

iPhone SE

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2017

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

HP Elitebook 8570w

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2012

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

This question was not displayed to the respondent.

Q104. In which year did you buy your portable speaker?

This question was not displayed to the respondent.

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

Q61. What is the reason for your choice in setup **when watching YouTube?**

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media?**

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music?**

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television?**

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

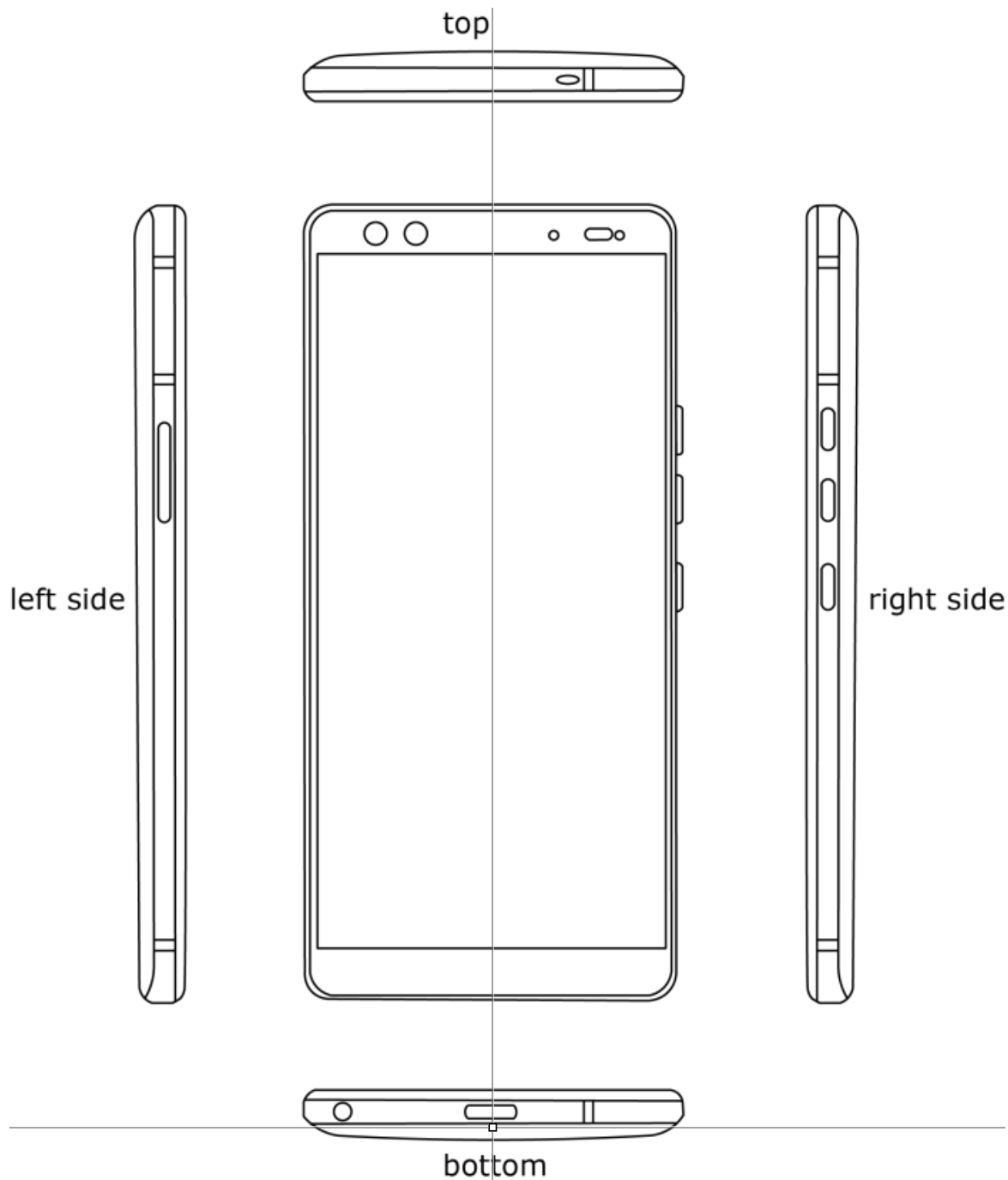
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

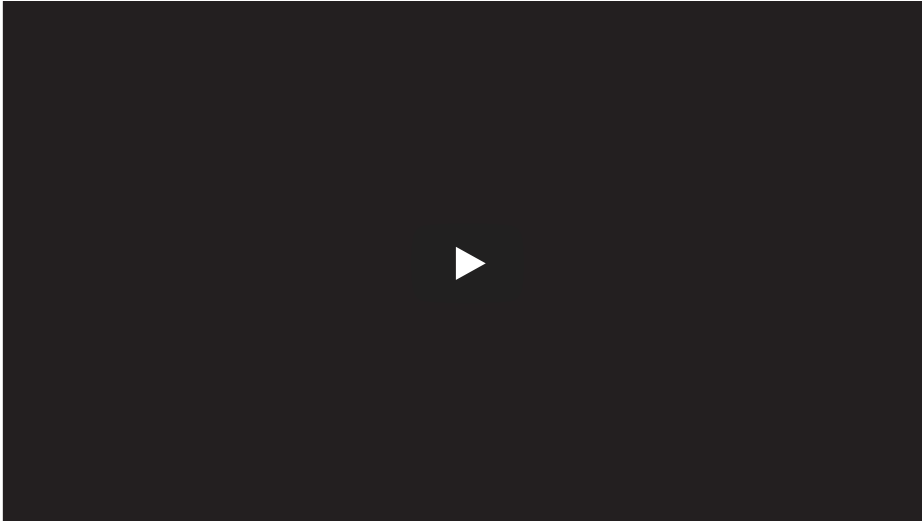


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me

- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

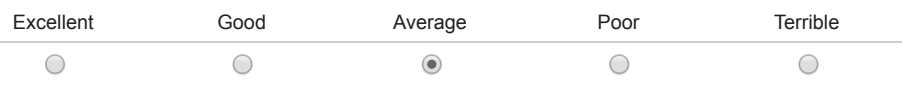
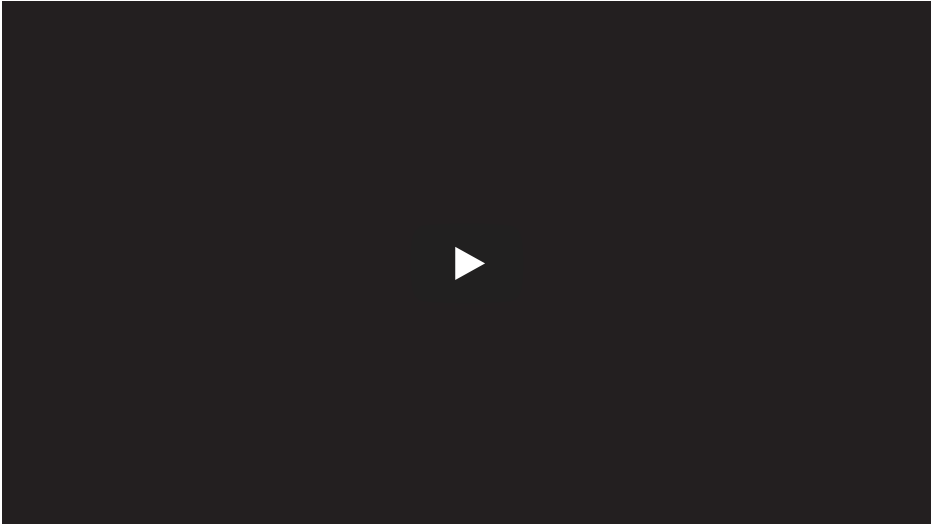
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

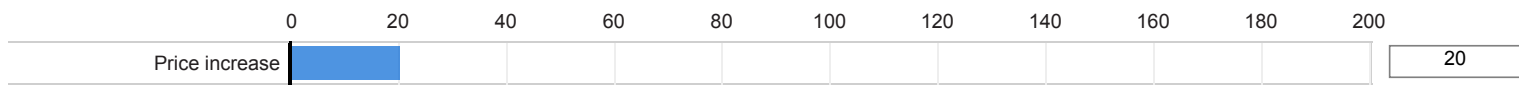
clear

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

thin dull distorted harsh

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

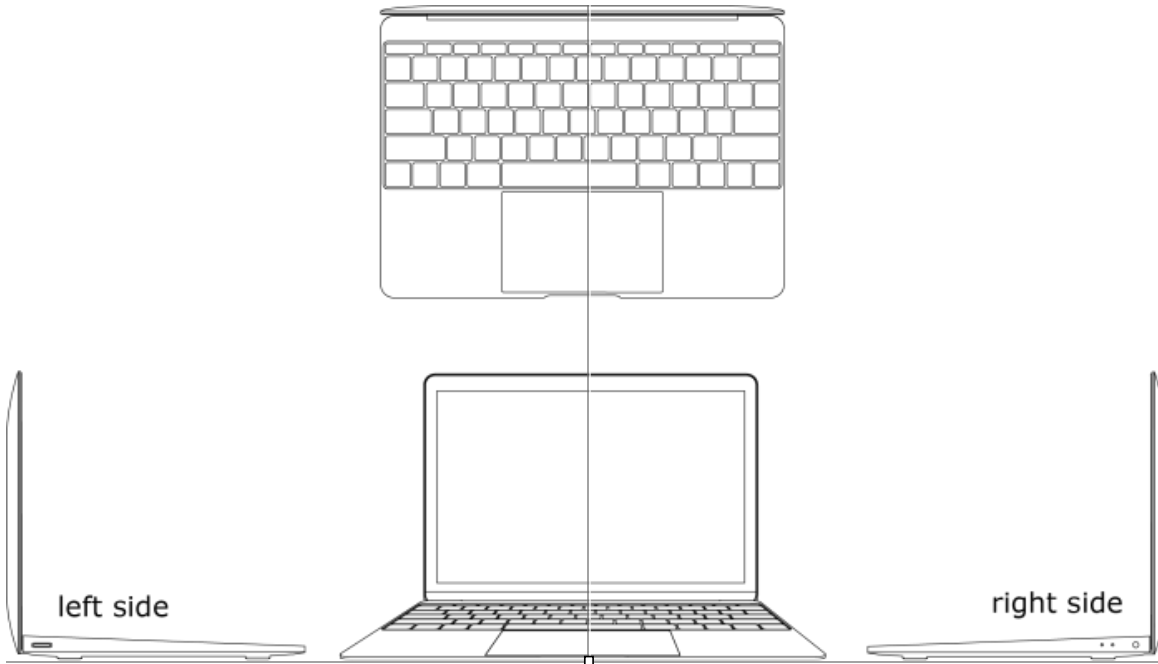


Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

Thickness increase



Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

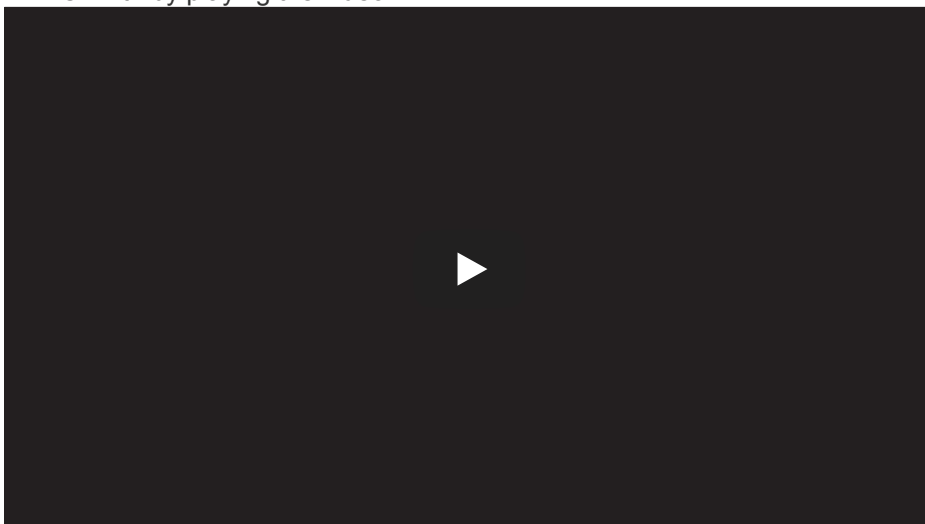


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

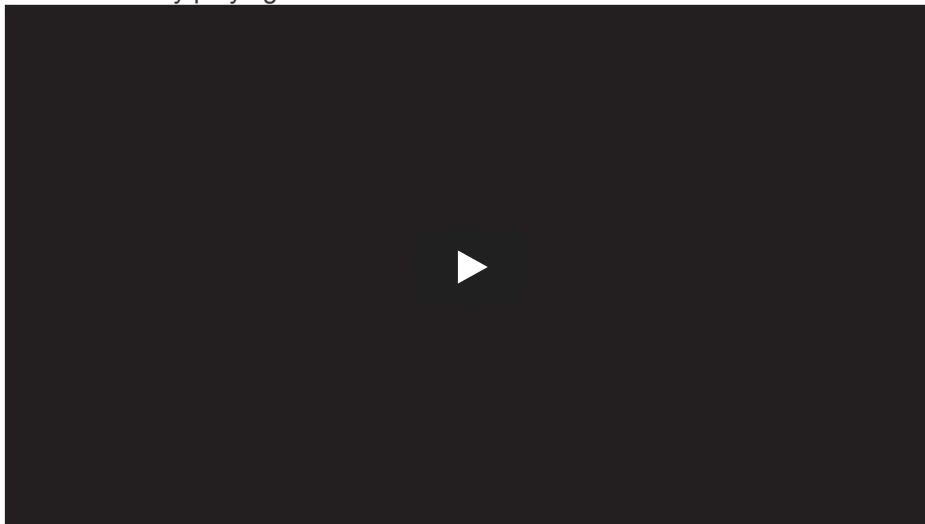
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_.](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Strong ,spacious, smooth wide synthetic

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

fuzzy, distorted dull

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

More brightness

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

This question was not displayed to the respondent.

Q97. In which scenario's do you use your portable speaker?

This question was not displayed to the respondent.

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#)).
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody_\(HQ\)_](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

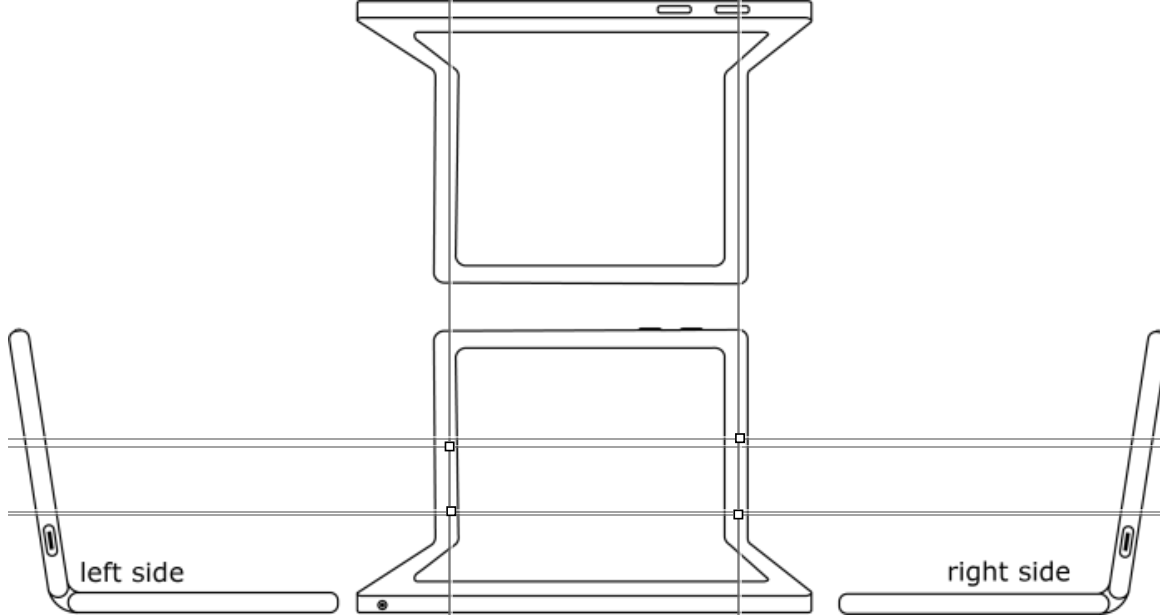
This question was not displayed to the respondent.

Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

4 side speakers in front with a separate bass (at base)

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

larger screen possible

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?



Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Foldable laptop

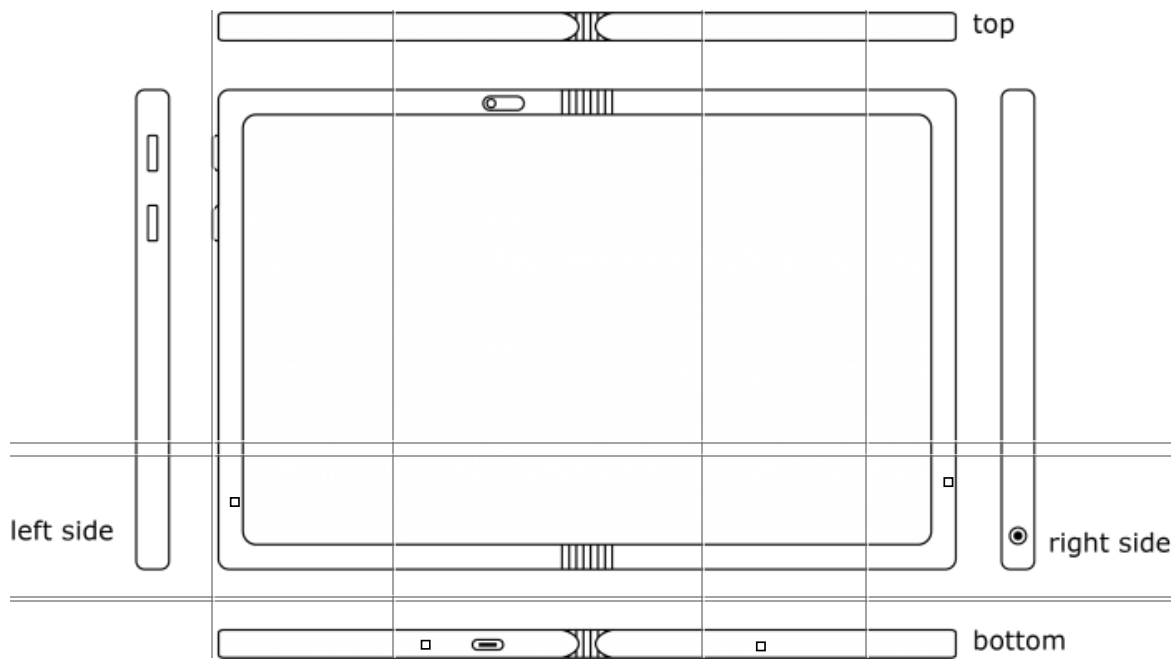
Smartphone

Laptop

tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

sufficient bass to keep the balance

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

smaller if folded while having a larger scree

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Laptop	1
Foldable tablet	2
Smartphone	3

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

26

Q33. What would you state is your nationality?

Netherlands

Q34. How would you rate your hearing?

Excellent

Good

Average

Poor

Terrible



Click to write Statement 1

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

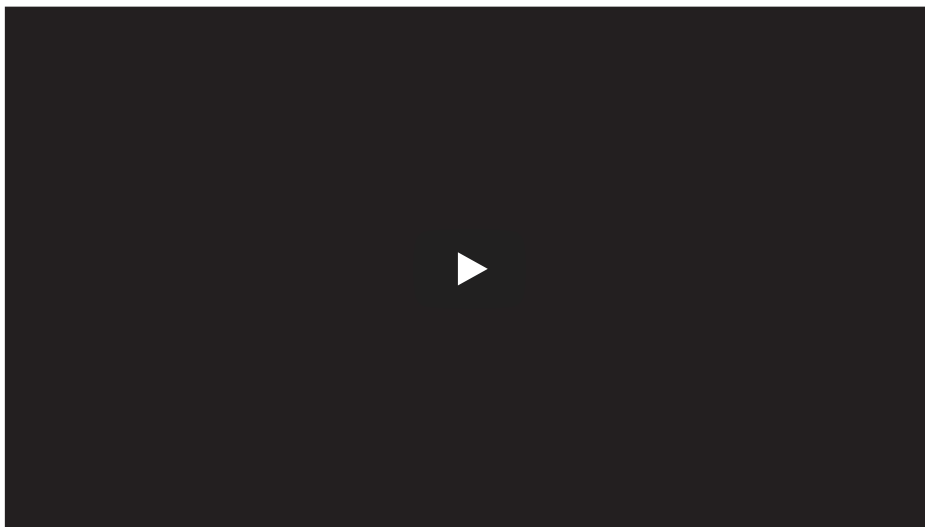
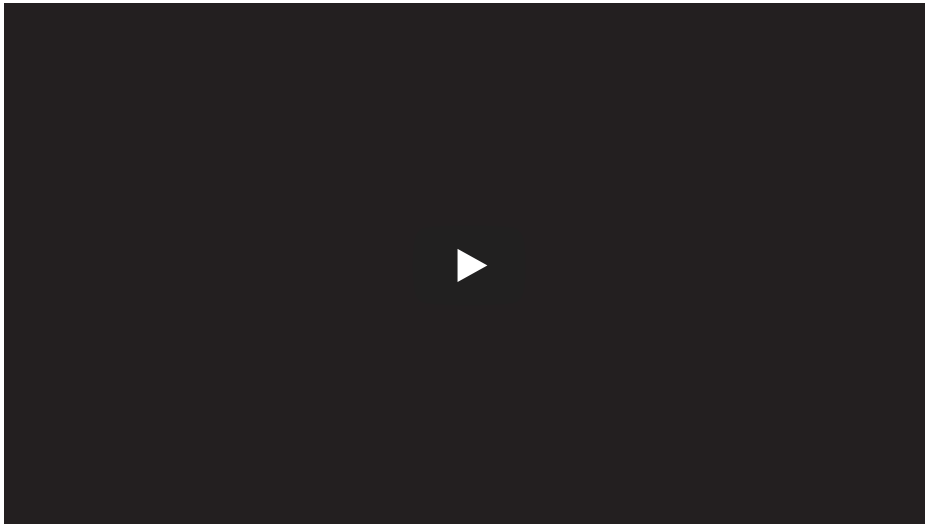
Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: G3LH-YBVM-Y719-SWNU or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.11 User test results participant 11

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

iPhone 6S

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2014

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

MacBook Pro 15" (end of 2019 model)

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2019

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

HifiBerry Amp+ on top of a Raspberry Pi 3 with 2 big speakers (sorry not very portable, not sure if you can use these results).

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

- High-end portable speaker
- Mid-range portable speaker
- Low-end portable speaker

Q104. In which year did you buy your portable speaker?

2016

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup **when watching YouTube?**

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media?**

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music?**

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television?**

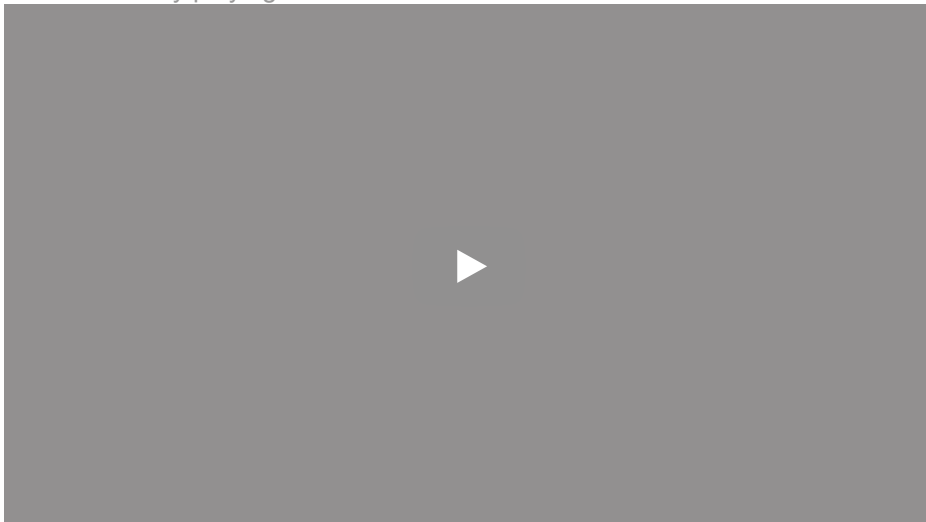
This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

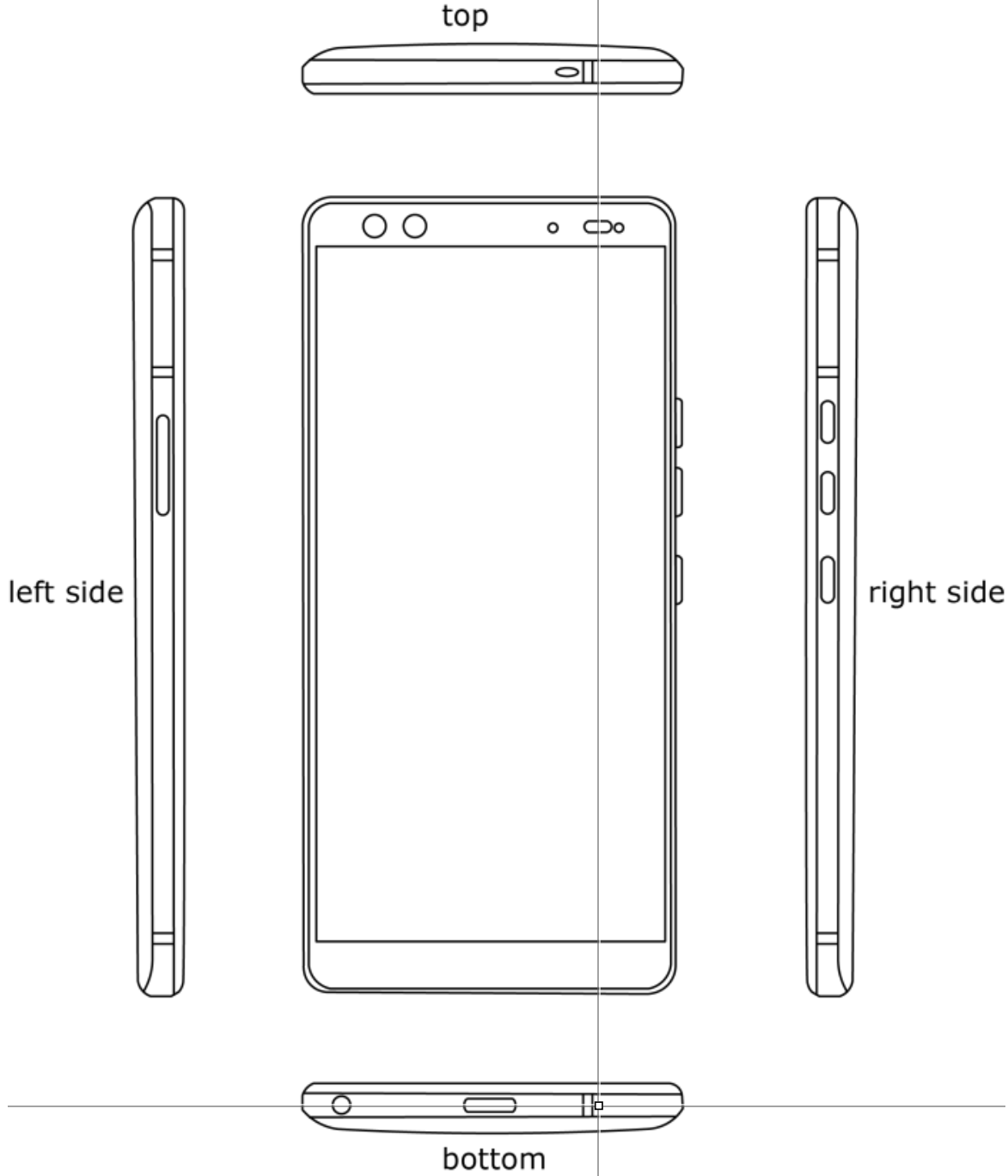
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

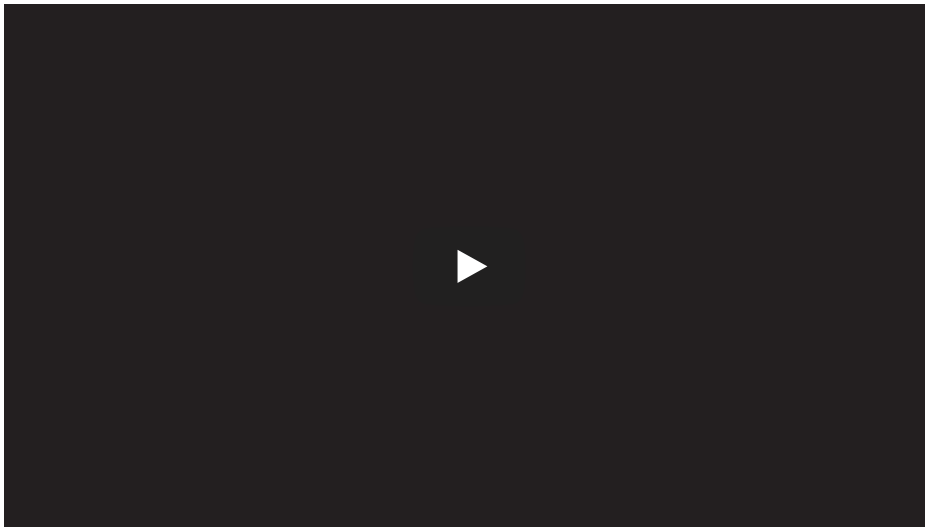


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when you want to listen to audio. You have the options to choose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people

- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

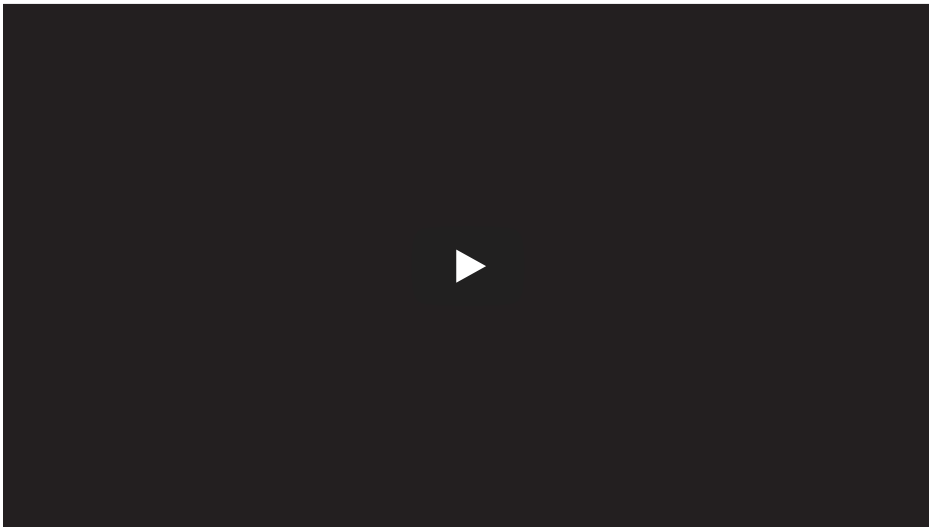
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Complete, Clean

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Thin

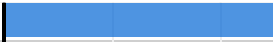
Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



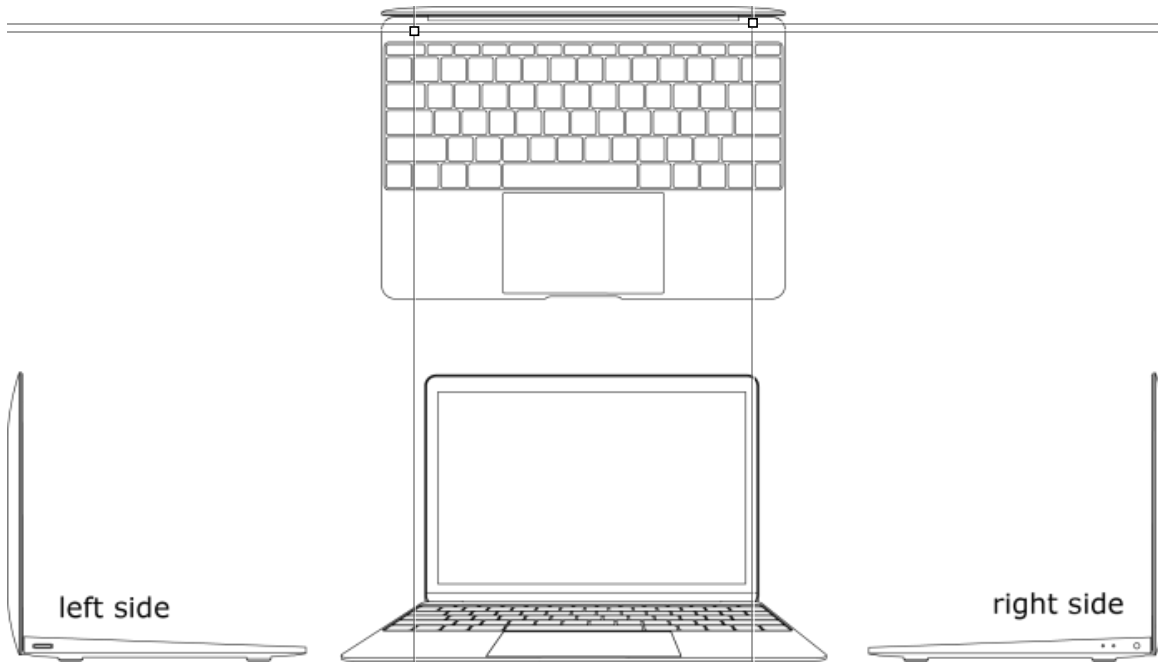
Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.

Thickness increase



5

Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

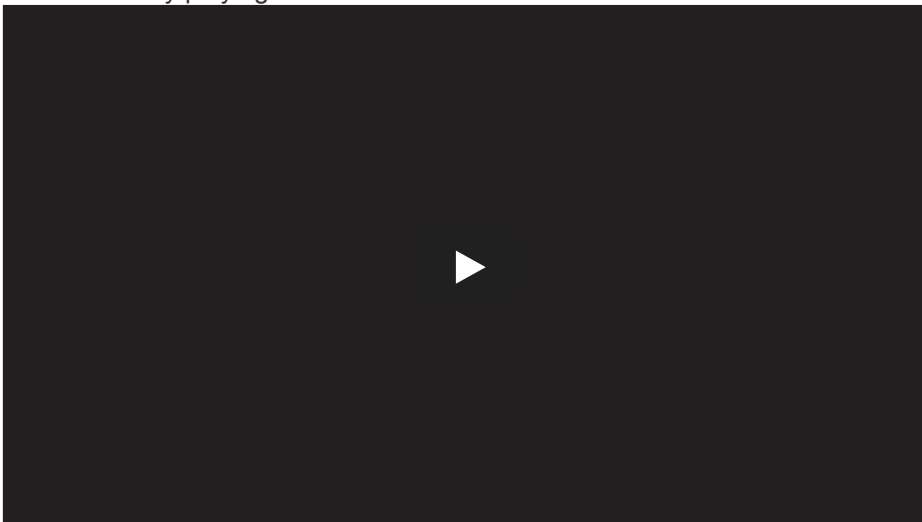


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when listening to music?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

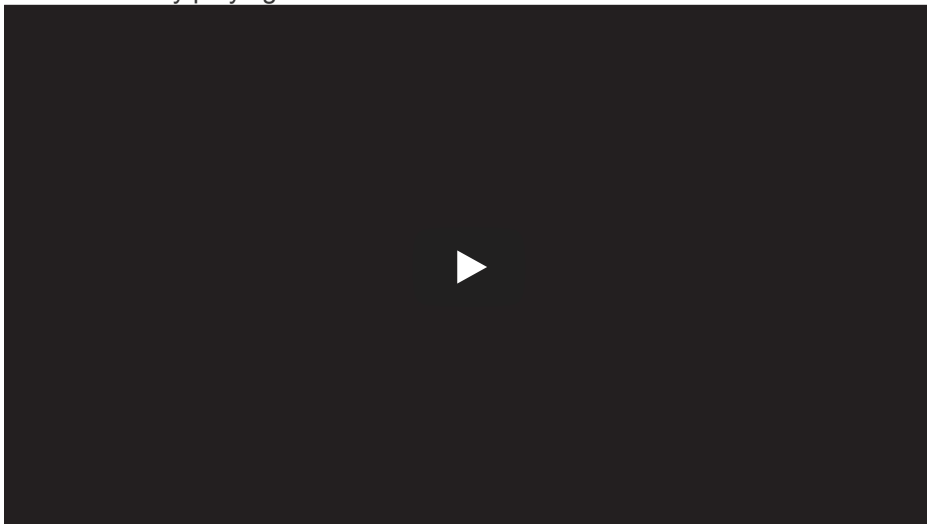
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Full, Deep, Bright

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Thin

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.



Q92. Check the boxes that apply for the purchase of your portable speaker

- Sound quality
- Size
- Price
- Design
- Build in light feature
- Bluetooth
- Connect multiple speakers together
- Charge phone with portable speaker
- Other
- None of the above

Q97. In which scenario's do you use your portable speaker?

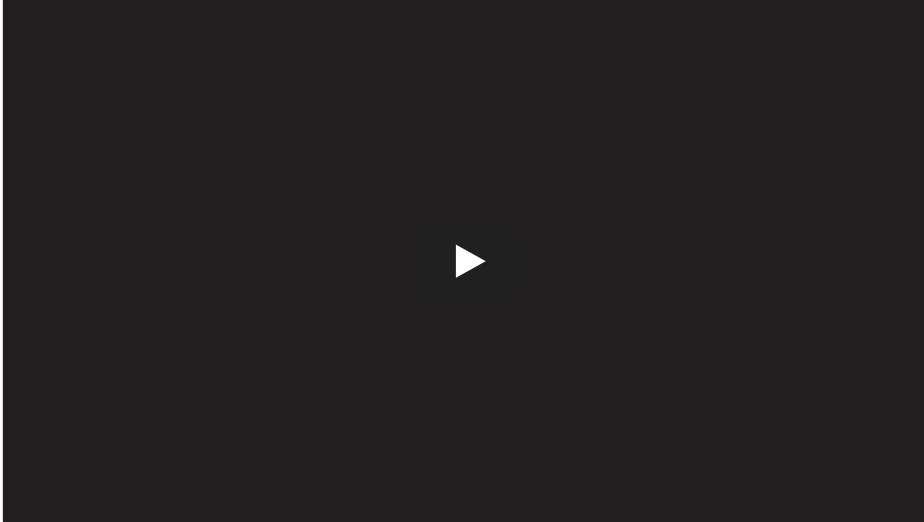
- Play music at a party
- Play music in a park/garden
- Play music in everyday use
- Play audio of movie or television
- Use during (video) calls
- Sound during presentations or meetings
- As sound improvement during laptop use
- As sound improvement during tablet use
- As sound improvement during smartphone use
- Other
- None of the above

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



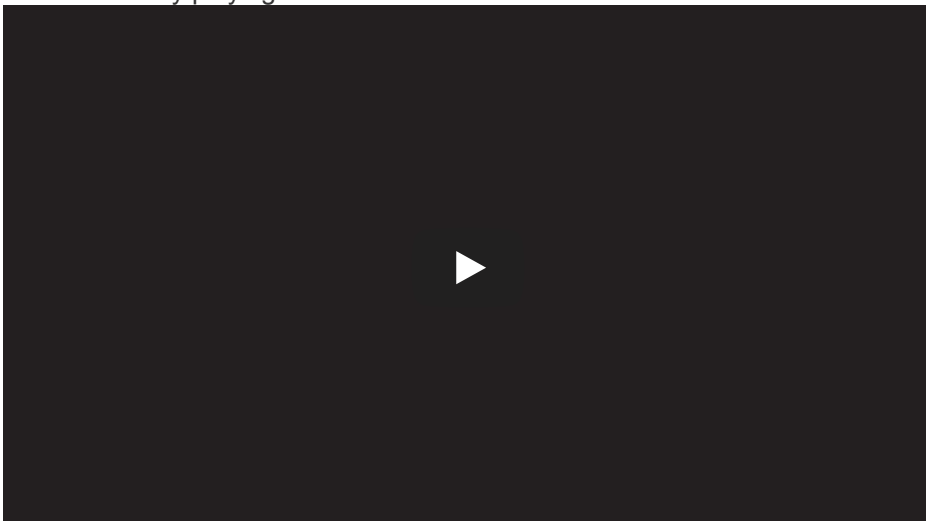
- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ.\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Full, Strong, Deep

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Fuzzy

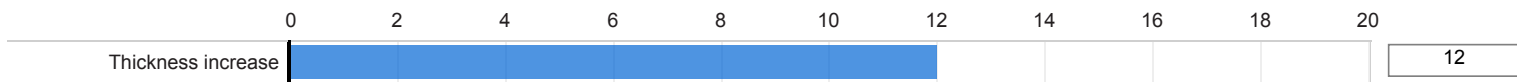
Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

I would say I have to change my room - I play them in a very small room 3x2 m, which is too small to achieve really good audio quality.

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



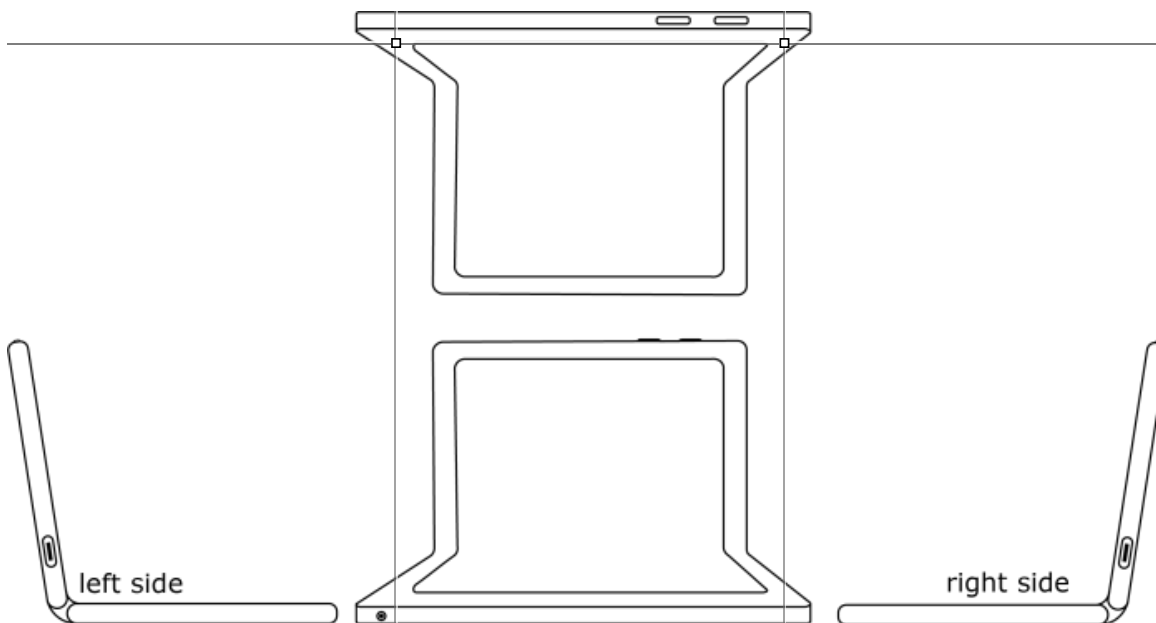
Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.



Q28. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

I would say they will be similar to my phone or maybe even laptop

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

More screen

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?

	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

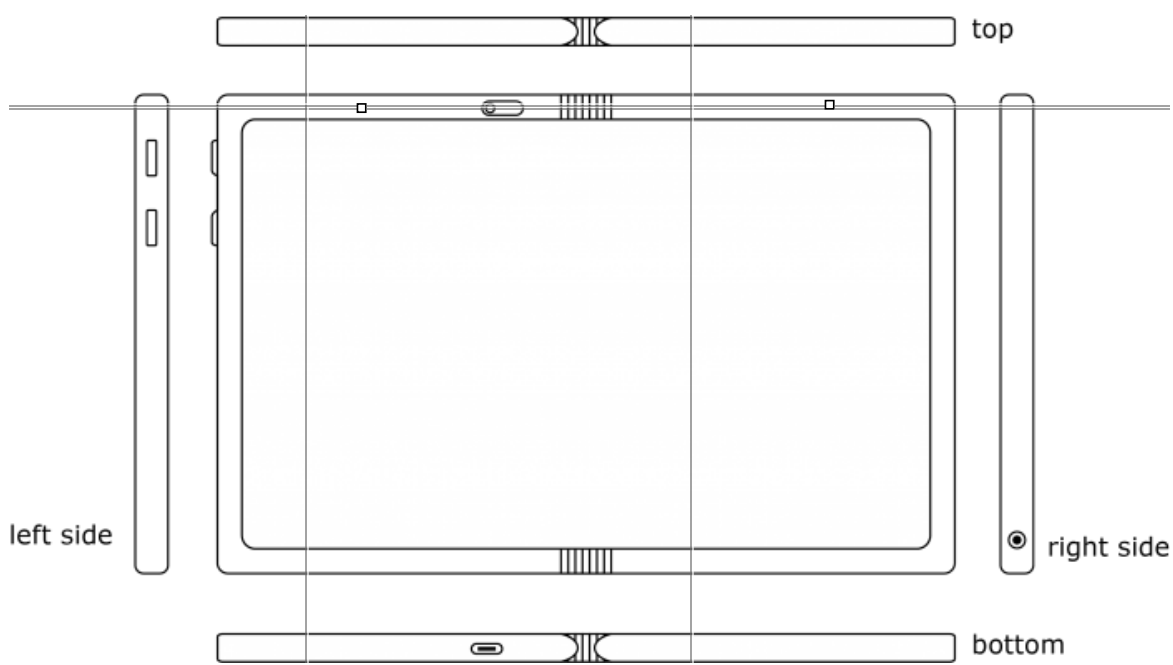
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Laptop	2
Foldable laptop	3
Smartphone	4

Q45. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Similar to phone (or maybe even laptop?)

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

More screen

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Portable speaker	1
Laptop	2
Foldable tablet	3
Smartphone	4

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

56

Q33. What would you state is your nationality?

Netherlands

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

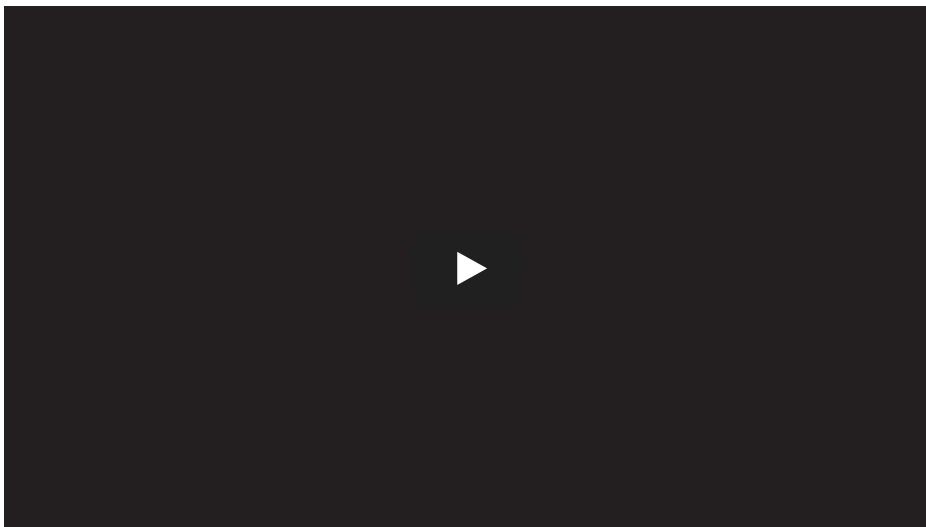
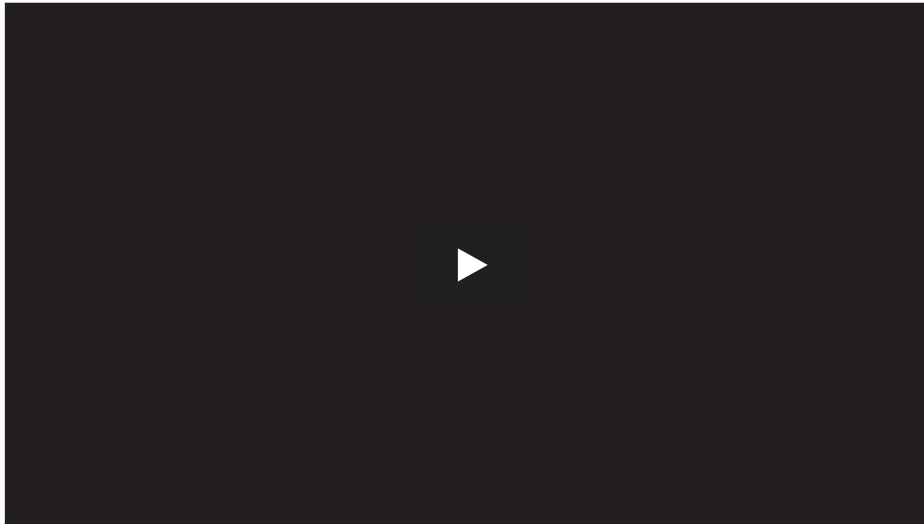
Good luck with your study! I missed a clear starting question on the page with the portable speaker questions. Hope my filling out helps even though my speaker is not portable...

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: **G3LH-YBVM-Y719-SWNU** or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.10.12 User test results participant 12

Introduction. Thank you for participating in this research about expectations for speakers in personal mobile devices. With personal mobile devices we mean either laptops, smartphones or tablets. This research will take approximately **15 to 30 minutes**, based on the amount of devices you participate with.

To participate in this survey we want you to have **access to at least two** (but preferably all) of the following mobile devices: a **tablet, laptop, portable speaker and/or smartphone**. These devices are needed to watch video's on YouTube on to rate the audio quality of each separate device. The video's you will use during this survey are the following:



These video's will also be available for the related questions, but only for the device you take the survey on. For your other devices we recommend you to **use the titel of the video to find it on YouTube, scan the QR code or type the following links in your browser:**

- <https://www.youtube.com/watch?v=Vt4CEfMTLJc> " Queen - Bohemian Rhapsody_(HQ)."
- <https://www.youtube.com/watch?v=6TWJaFD6R2s> " #Stereo: Left and Right Stereo Sound Test "

It is advised to test the video's on all devices before you continue with the survey and to make sure you are in an area in which you can play the audio at a audible level. The audio should be played through the speakers of the device itself, so not trough headphones or external speakers that are connected to the device.

All the information that is gathered in this survey will be kept confidential and your results are anonymous, non of these results can be linked back to you.

Devices used. State the devices you have access to to use during this research.

- Smartphone
- Laptop
- Portable speaker

Tablet brand. Which **brand** and **type** of tablet do you own? (if you have multiple tablets only **state the one you will be using** during this research)

This question was not displayed to the respondent.

Q55. How would you rank your tablet compared to other tablets **on the market when you bought the tablet?**

This question was not displayed to the respondent.

Q74. In which year did you buy your tablet?

This question was not displayed to the respondent.

Smartphone brand. Which **brand** and **type** of smartphone do you own? (if you have multiple smartphones only **state the one you will be using** during this research)

Samsung S9

Q56. How would you rank your smartphone compared to other smartphones **on the market when you bought the smartphone?**

- High-end smartphone
- Mid-range smartphone
- Low-end smartphone

Q75. In which year did you buy your smartphone?

2019

Laptop brand. Which **brand** and **type** of laptop do you own? (if you have multiple laptops only **state the one you will be using** during this research)

HP Zbook

Q57. How would you rank your laptop compared to other laptops **on the market when you bought the laptop?**

- High-end laptop
- Mid-range laptop
- Low-end laptop

Q76. In which year did you buy your laptop?

2018

Q102. Which **brand** and **type** of portable speaker do you own? (if you have portable speakers only **state the one you will be using** during this research)

JBL go

Q103. How would you rank your portable speaker compared to other portable speakers **on the market when you bought the portable speaker?**

- High-end portable speaker
- Mid-range portable speaker
- Low-end portable speaker

Q104. In which year did you buy your portable speaker?

2019

Speaker position. Indicate in which area the speakers of your tablet are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

This question was not displayed to the respondent.

Q9. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q13. Did you take the speakers and sound quality into account when buying your tablet?

This question was not displayed to the respondent.

Q38. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the tablet, external speakers connected to the tablet or headphones that are connected to the tablet via either bluetooth or cable.

This question was not displayed to the respondent.

Q61. What is the reason for your choice in setup **when watching YouTube**?

This question was not displayed to the respondent.

Q58. What is the reason for your choice in setup when **browsing social media**?

This question was not displayed to the respondent.

Q59. What is the reason for your choice in setup when **listening to music**?

This question was not displayed to the respondent.

Q60. What is the reason for your choice in setup when **watching Netflix or online television**?

This question was not displayed to the respondent.

Q14. After listening to the song on your tablet, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



This question was not displayed to the respondent.

Q15. Describe **positive aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q16. Describe **negative aspects** about the audio quality of your tablet. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

This question was not displayed to the respondent.

Q17. If you could change anything about the sound performance of your tablet what would it be? If you would not change anything you can leave this field blank.

This question was not displayed to the respondent.

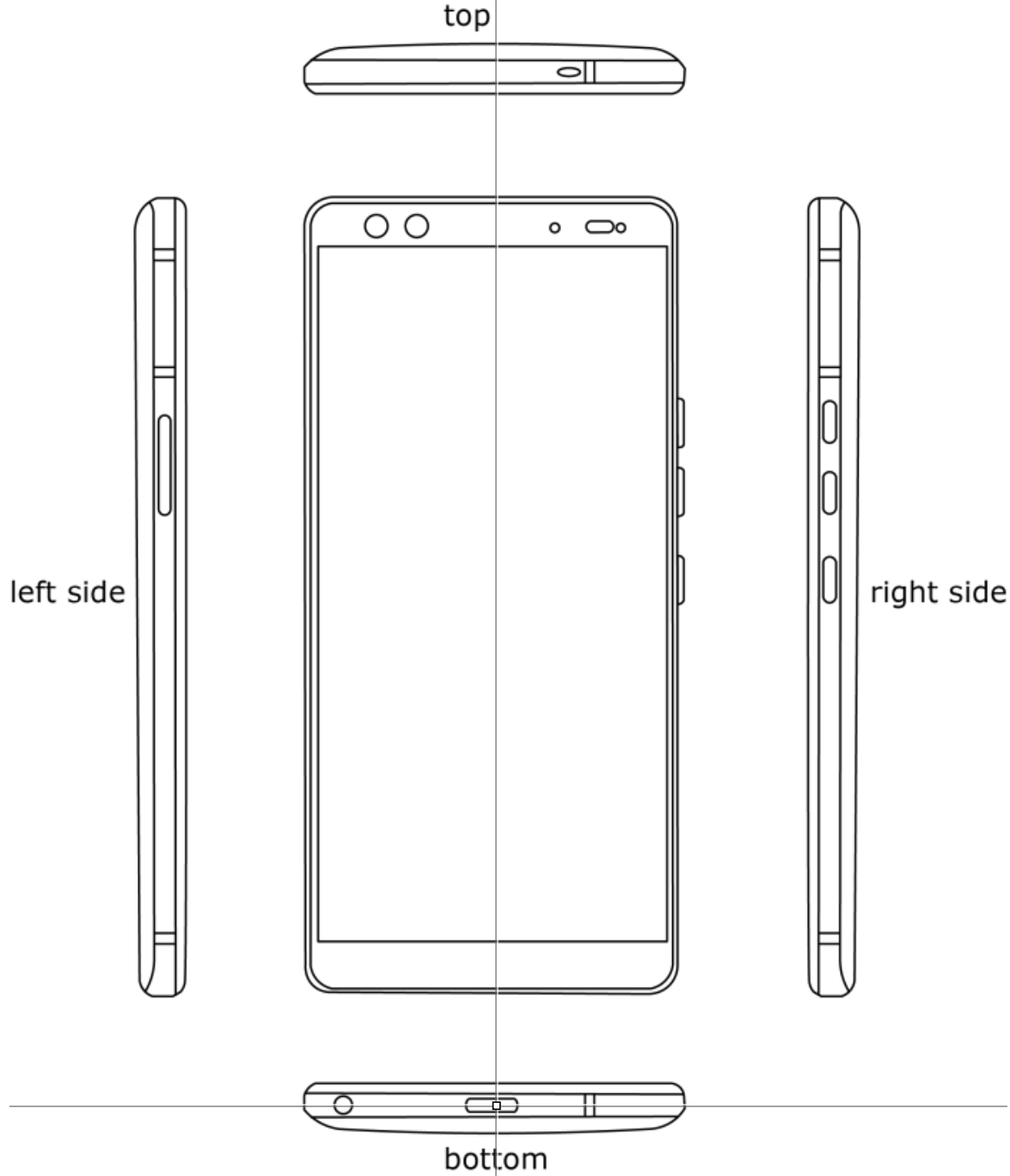
Q79. I would pay ... dollar/euro more for a tablet to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q80. I would be willing to choose a tablet that is ... millimeter (1 mm is 0.04 inch) thicker than my current tablet to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker tablet for a better sound performance set the slider to 0.

This question was not displayed to the respondent.

Q25. Indicate in which area the speakers of your smartphone are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 2 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

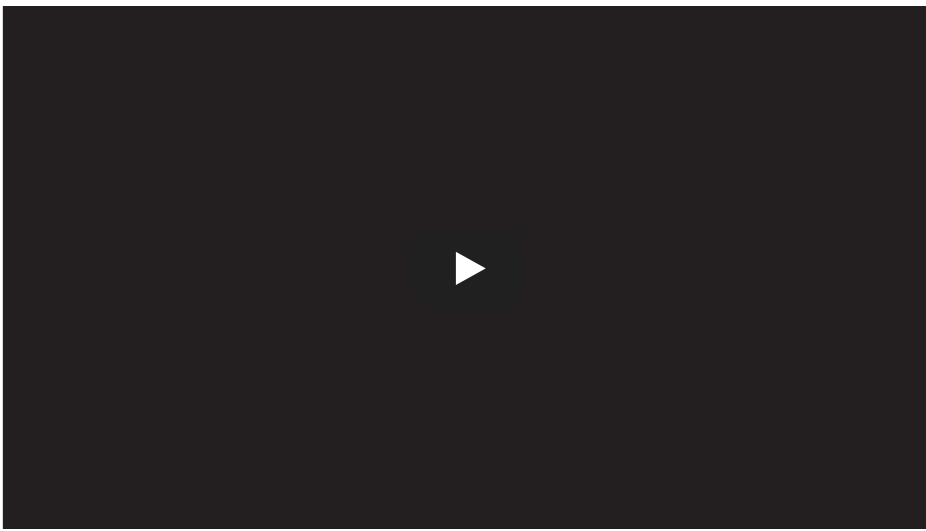


Q26. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar ([#Stereo: Left and Right Stereo Sound Test](#))
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q27. Did you take the speakers and sound quality into account when buying this smartphone?

- Yes
- Maybe / I can't remember
- No

Q62. Select for each scenario which case is most common when you want to listen to audio. You have the options to choose between internal speakers of the smartphone, external speakers connected to the smartphone or headphones that are connected to the smartphone via either bluetooth or cable.

	I would play the audio via the speaker of my smartphone	I would play the audio from headphones connected to my smartphone	I would play the audio from external speakers connected to my smartphone
Watching YouTube	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instagram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(Video) calling	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Q63. What is the reason for your choice in setup when watching YouTube?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q64. What is the reason for your choice in setup when browsing social media?

- I don't want to bother other people

- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q65. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q66. What is the reason for your choice in setup when **watching Netflix or online television**?

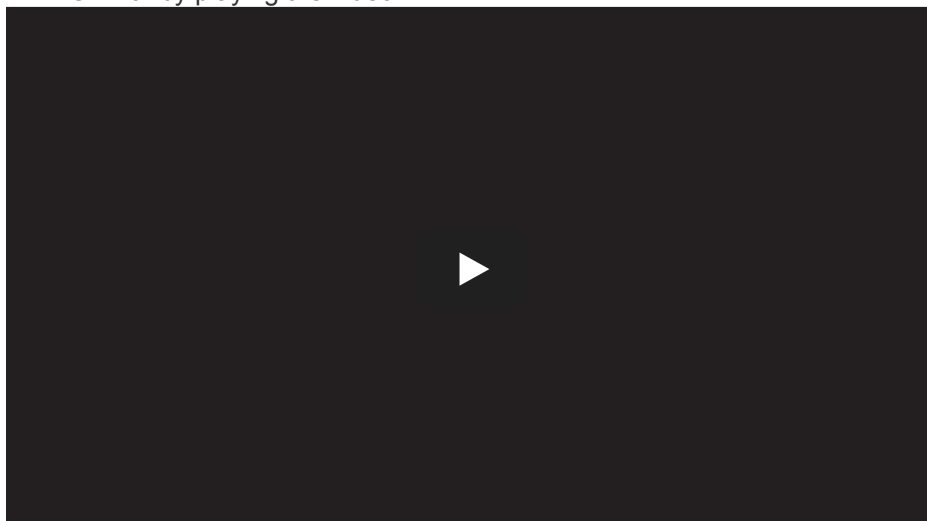
- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q28. After listening to the song on your smartphone, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29. Describe **positive** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clear, Strong, Loud

Q30. Describe **negative** aspects about the audio quality of your smartphone. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Synthetic, thin

Q31. If you could change anything about the sound performance of your smartphone what would it be? If you would not change anything you can leave this field blank.

Deeper sound, less synthetic, more bass

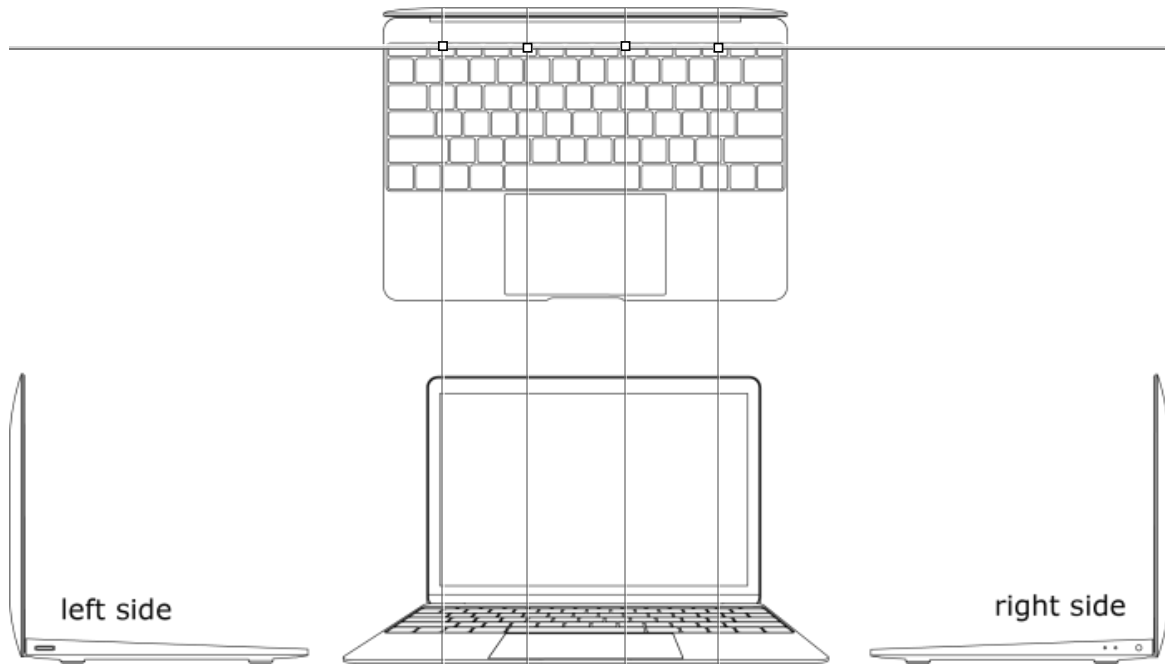
Q84. I would pay ... dollar/euro more for a smartphone to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q85. I would be willing to choose a smartphone that is ... millimeter (1 mm is 0.04 inch) thicker than my current smartphone to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker smartphone for a better sound performance set the slider to 0.



Q18. Indicate in which area the speakers of your laptop are located on the example image. You can indicate where the speaker is placed by clicking on that area. You can place a total of 4 speaker locations, each dot counts as one speaker in that location. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.

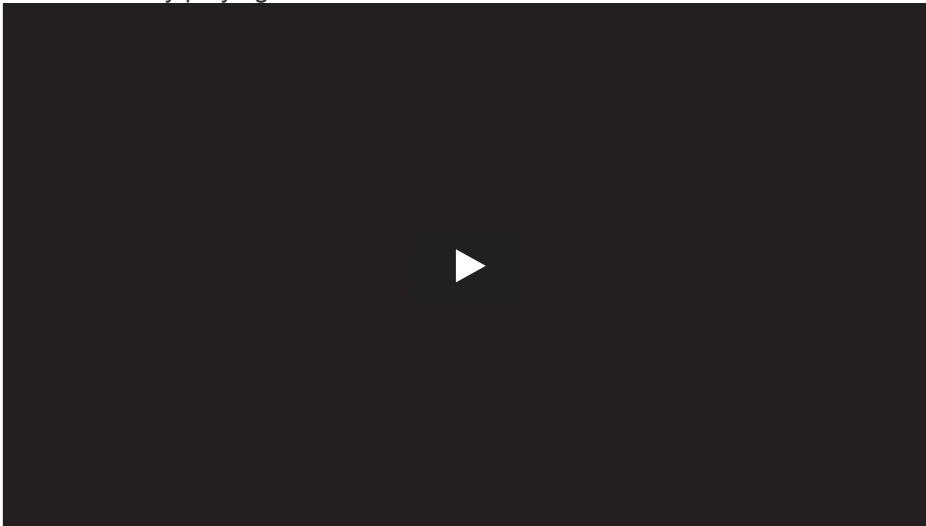


Q19. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q20. Did you take the speakers and sound quality into account when buying this laptop?

- Yes
- Maybe / I can't remember
- No

Q67. Select for each scenario which case is most common when to you want to listen to audio. You have the options to chose between internal speakers of the laptop, external speakers connected to the laptop or headphones that are connected to the laptop via either bluetooth or cable.

	I would play the audio via the speaker of my laptop	I would play the audio from headphones connected to my laptop	I would play the audio from external speakers connected to my laptop
Watching YouTube	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browsing social media (Facebook, Instragram, etc..)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to music	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching Netflix or online television	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Video) calling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q68. What is the reason for your choice in setup when **watching YouTube**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q69. What is the reason for your choice in setup when **browsing social media**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q70. What is the reason for your choice in setup when **listening to music**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q71. What is the reason for your choice in setup when **watching Netflix or online television**?

- I don't want to bother other people
- I don't want other people to bother me
- I can hear the audio better
- The sound quality is better

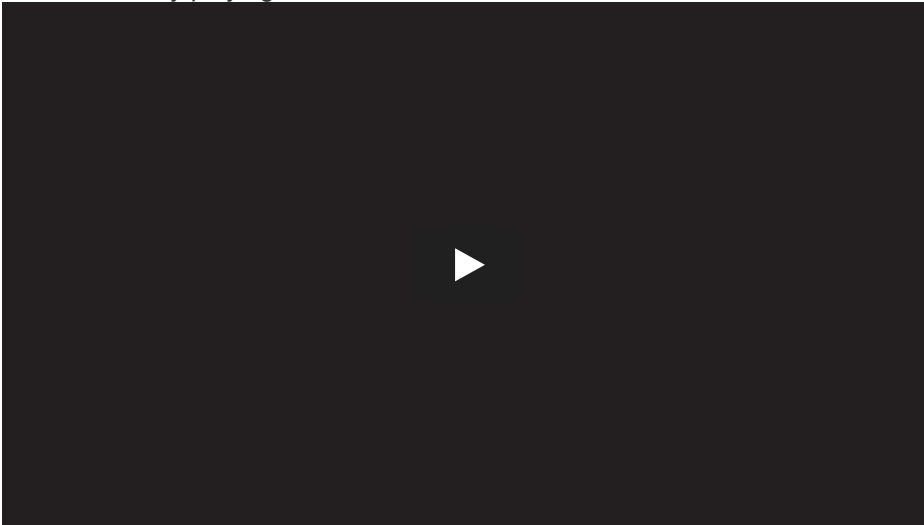
- Too much hassle to get another speaker or headphone
- The sound quality is good as it is without the need for extra devices
- Other

Q21. After listening to the song on your laptop, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar ([Queen - Bohemian Rhapsody \(HQ\)](#).)
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Describe **positive** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Wide, Full, Bright, Clean

Q23. Describe **negative** aspects about the audio quality of your laptop. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Flat

Q24. If you could change anything about the sound performance of your laptop what would it be? If you would not change anything you can leave this field blank.

Deeper sound

Q82. I would pay ... dollar/euro more for a laptop to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.

0 20 40 60 80 100 120 140 160 180 200

Price increase |

Q83. I would be willing to choose a laptop that is ... millimeter (1 mm is 0.04 inch) thicker than my current laptop to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker laptop for a better sound performance set the slider to 0.

0 2 4 6 8 10 12 14 16 18 20

Thickness increase |

Q92. Check the boxes that apply for the purchase of your portable speaker

- Sound quality
- Size
- Price
- Design
- Build in light feature
- Bluetooth
- Connect multiple speakers together
- Charge phone with portable speaker
- Other
- None of the above

Q97. In which scenario's do you use your portable speaker?

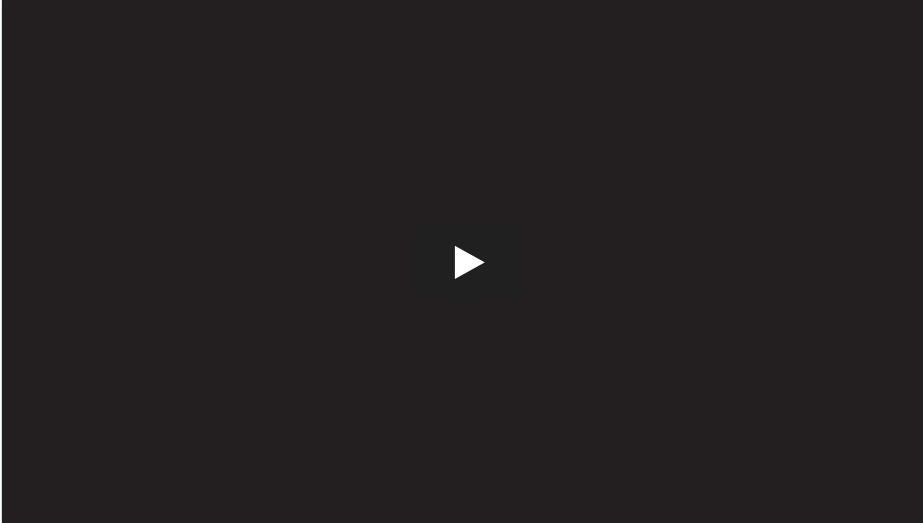
- Play music at a party
- Play music in a park/garden
- Play music in everyday use
- Play audio of movie or television
- Use during (video) calls
- Sound during presentations or meetings
- As sound improvement during laptop use
- As sound improvement during tablet use
- As sound improvement during smartphone use
- Other
- None of the above

Q91. Is the sound mono or stereo sound? Mono meaning that the sound does not "move" from one speaker to another, which is the case for stereo. You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=6TWJaFD6R2s>)
- By typing the title in the search bar (#Stereo: Left and Right Stereo Sound Test)
- By scanning the QR code



- Or with by playing the video



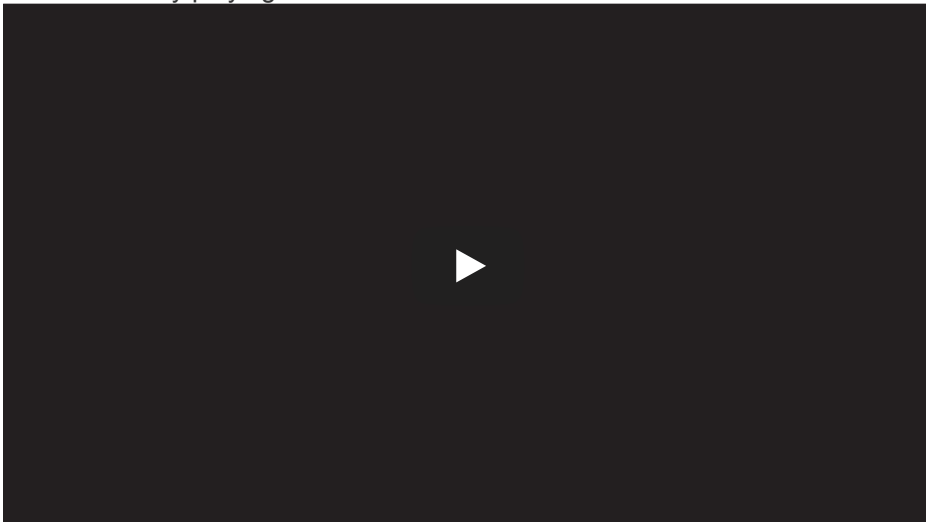
- Mono sound
- Stereo sound
- The sound changes with the orientation of the device

Q98. After listening to the song on your portable speaker, how do you rate the audio quality on a scale from one to five? You can test this with:

- The stereo test link (<https://www.youtube.com/watch?v=Vt4CEfMTLJc>)
- By typing the title in the search bar (Queen - Bohemian Rhapsody (HQ.))
- By scanning the QR code



- Or with by playing the video



	Excellent	Good	Average	Poor	Terrible
Audio quality	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q99. Describe **positive** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Clean, Full, Strong, Clear, Bright

Q100. Describe **negative** aspects about the audio quality of your portable speaker. If there are not any you can leave this field blank. As an example you can use words such as: Clean, Full, Strong, Clear, Spacious, Deep, Smooth, Punchy, Wide, Aggressive, Bright, Synthetic, Crunchy, Loud, Narrow, Thin, Dull, Fuzzy, Harsh, Distorted.

Thin, no bass

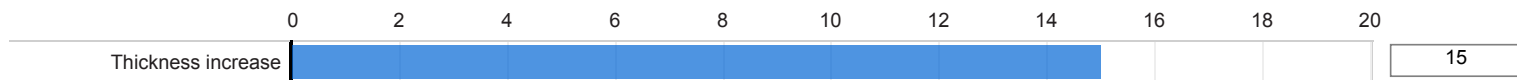
Q101. If you could change anything about the sound performance of your portable speaker what would it be? If you would not change anything you can leave this field blank.

Deeper sound, bass

Q102. I would pay ... dollar/euro more for a portable speaker to make the previously stated changes possible. Adjust the slider to the right amount. If you would not want to pay more for a better sound performance set the slider to 0.



Q103. I would be willing to choose a portable speaker that is ... centimeter (1 cm is 0.4 inch) thicker than my current portable speaker to make the previously stated changes possible. Adjust the slider to the right increase in thickness. If you would not want a thicker portable speaker for a better sound performance set the slider to 0.

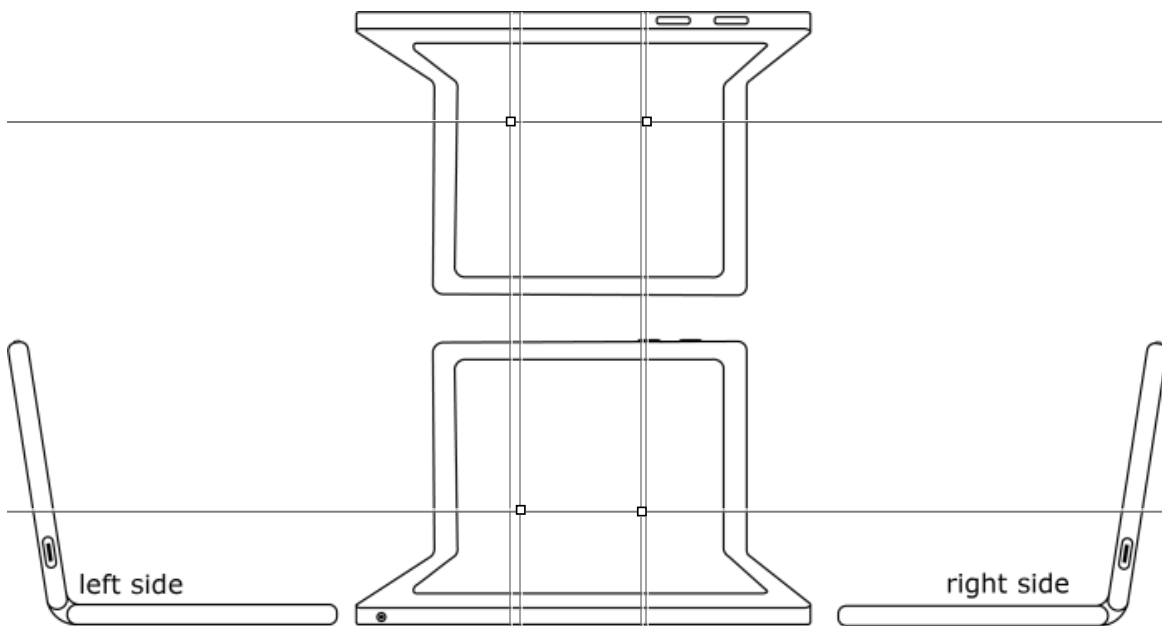


Q28.

In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable laptop. This device has the same specifications as a well performing laptop but the screen covers the whole area of the laptop where the keyboard used to be. When the laptop is folded open in the laptop position the top of the screen can be compared to a regular tablet screen with another tablet screen as a keyboard. If the laptop is fully folded open it transforms in a 17 inch screen.



Q10. Where do you expect the speakers are placed in a foldable laptop? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q35. What would you expect from the speakers of the foldable laptop compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

Sound coming from different locations, so the orientation of the laptop makes no difference. Type of sound is the same as a normal high end laptop.

Q77. What is the main advantage of a foldable laptop compared to a normal laptop in your eyes?

Nice to watch movies, as you can use the full screen. Disadvantage would be that the experience of the buttons disappears.

Q36. Would the foldable laptop have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q73. What would you expect the audio quality to be of a foldable laptop?

	Excellent	Good	Average	Poor	Terrible
Audio quality	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

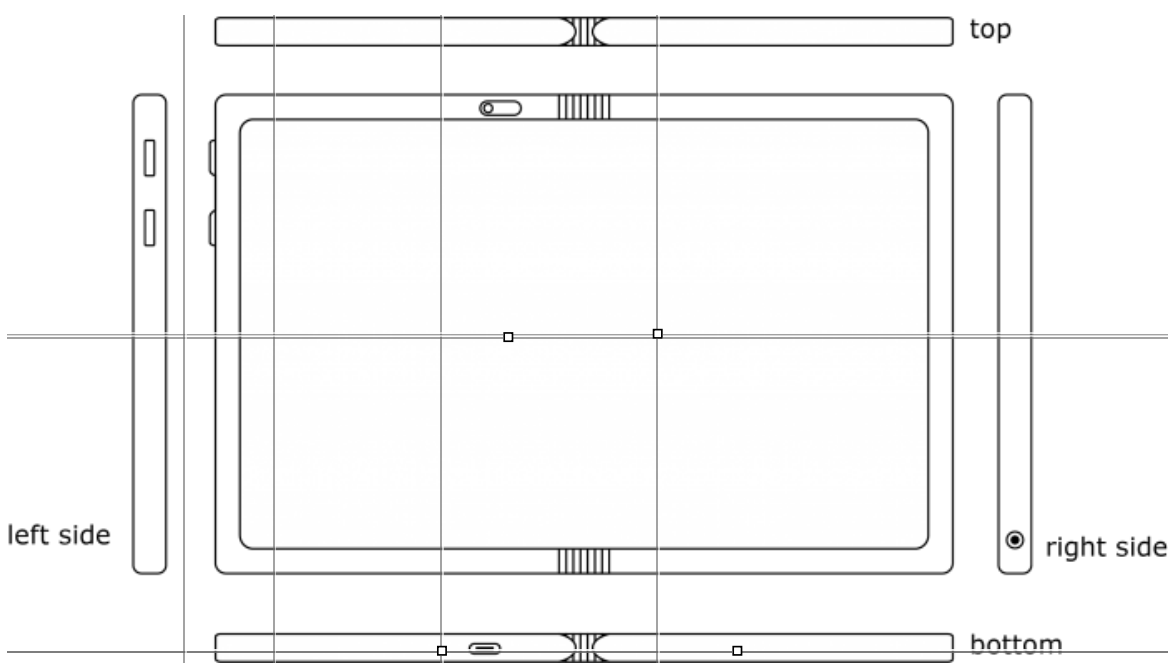
Q37. How would you rank the foldable laptop compared to your devices, based on your expectations about the foldable laptop? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Foldable laptop	1
Laptop	2
Portable speaker	3
Smartphone	4

Q45. In this section of the survey you are asked to state your expectations and assumptions about a new personal mobile device, the foldable tablet. This device has the same specifications as a well performing tablet but the screen can be folded in half to reduce the size. When the tablet is fully folded open the screen is 13 inches, but the tablet can also be used in a small laptop position. Each half is turned into a 9 inch screen, which can be compared to a small tablet.



Q46. Where do you expect the speakers are placed in a foldable tablet? You can select up to 4 speaker locations, each dot counts as one speaker in that location. In this case you don't have to use all 4 speaker options if you feel like this device will likely have less speakers. You can remove a dot by clicking on it and you can move it by pressing and holding down while moving the dot.



Q47. What would you expect from the speakers of the foldable tablet compared to your other devices? Think about amount of speakers, bass, volume, type of sound, location it is coming from etc...

No bass as this would make the tablet too thick to fold, more speakers to provide a good experience in every position, The speakers at multiple positions.

Q78. What is the main advantage of a foldable tablet compared to a normal tablet in your eyes?

Space efficient. Screen is protected when folded. Half of the screen can be used as keyboard.

Q48. Would the foldable tablet have a mono or stereo speaker setup?

- Mono
- Stereo
- Mono, but the sound changes with the orientation of the device
- Stereo, but the sound changes with the orientation of the device

Q72. What would you expect the audio quality to be of a foldable tablet?



Q108. How would you rank the foldable tablet compared to your devices, based on your expectations about the foldable tablet? 1 being the best in terms of speakers and ascending to the device with the worst speakers.

Foldable tablet	1
Laptop	2
Portable speaker	3
Smartphone	4

Q51. Lastly we would like to get some background information about who you are. We will keep this information anonymous so it cannot be linked to you as stated in the introduction.

Q31. What would you state is your gender?

- Male
- Female
- Other
- I do not want to disclose this

Q32. How old are you?

23

Q33. What would you state is your nationality?

Netherlands

Q34. How would you rate your hearing?

	Excellent	Good	Average	Poor	Terrible
Click to write Statement 1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52. Check the boxes that apply to you

- Before this survey I was already familiar with foldable tablets and laptops
- I would consider myself up to date on technology trends
- I like to buy the newest personal mobile devices when they are released

Q100. Is there anything you would like to let us know either about the topic of the survey or the survey itself? If not you can submit the survey by clicking on next button.

Q109. For SurveyCircle users (www.surveycircle.com): The Survey Code is: **G3LH-YBVM-Y719-SWNU** or click the following link: <https://www.surveycircle.com/G3LH-YBVM-Y719-SWNU>

8.11 Models

This part is removed due to confidentiality issues

8.12 Technical drawings

This part is removed due to confidentiality issues

Wow!
You read my whole report.
I hope you enjoyed it and
learned a thing or two.

