

Jabra Enhance Plus claim verification

1. Summary

FORCE Technology has performed the measurements which contribute towards substantiating parts of the following claim. The claim wording is created by Jabra, for their newly released earbuds, Jabra Enhance Plus.

Product	Claim
Jabra Enhance Plus	"Smallest and lightest earbud"

2. Method

Jabra Enhance Plus was tested against the primary market leading manufacturers in the product segment, using 32 major competing products on the market.

Each product was measured repeatedly on several parameters, and an average score was calculated and converted into a ranking of the products. The ranking was adjusted for measurement uncertainties by including calculations of the standard deviations from the repeated measures (i.e. two products could have the same rank if they were not significantly different). A weighted average score was then calculated based on the ranking and weights seen in the table below.

The measurements were done for weight and size of the earbuds. Specialists from FORCE Technology conducted all measurements, and all products were measured consistently in the same way and under identical conditions.

The included measures, which are used as base for this claim are:

- **Weight**
- **Size:**
 - **Depth**
 - **Area**
 - **Volume**

Table 1 below shows the overall weighting of each parameter. Weightings are mutually agreed by Jabra and FORCE Technology.

Measure of Weight	Weighting
Weight	100%
Measure of Size	Weighting
Depth	25%
Area	25%
Volume	50%

Jabra Enhance scored lowest, meaning it had lowest Weight and smallest Size across the 33 measured products.

3. Methods

Only the Right side of each device-pair was measured, as product symmetry could be assumed.

All products that had adjustable sizes of tips and sleeves were mounted with Medium, which was also default configuration when opened in the sealed product cases.

All measurements were done in a temperature and humidity-controlled laboratory at 20.0 degrees Celsius, 26% rel. humidity.

Weight

The weight used in the calibration lab at FORCE Technology was a Mettler Toledo model PR503.

Resolution: 1mg

1. All products were measured 3 times (product 1 throughout to 33 were measured and then repeated two more times).
2. Reference weights of 5g and 20g were used to validate weight accuracy between each round.

Size – Depth

Measuring equipment: STACO Electronic Digital Caliper Item no. 33120

1. The measurements were performed with digital calipers that was calibrated before use via the reset button
2. Earbud opening towards the ear canal (speaker output) is placed 'face-to-face' on one jaw of the caliper while the other jaw is gently closed around the housing of the earbud. It is avoided that the silicone plug is deformed when closing the slider.
3. All products were measured 3 times (product 1 throughout to 33 were measured and then repeated two more times).

Size – Area

Measuring equipment: Brüel & Kjær HATS type 5128, Nikon D5000 SLR, diffuse LED light panels, ruler.

The camera lens was adjusted to align with the ear canal entrance on the HATS 5128 at 90 cm distance.

1. All products were inserted in the right side ear of the Head and Torso simulator (HATS) and photographed. This was done twice (from product 1-33 and then again 1-33). The photos were used for measuring the visible area of the earbud using high precision polygon meshes.
2. All photos were analysed (product 1 throughout to 33 and then repeated for next batch of photos).

Size – Volume

Measuring equipment: Measuring cylinder 250 ml (glass), Mettler Toledo model PR503 weight

Water temperature: 20,0°C, Barometric pressure: ~1020hPa

1. A measuring cylinder was placed at an angle of appr. 45 degrees and mounted with a thin drip string of plastic-coated metal (length appr. 3mm)

2. The measuring cylinder was filled with Demineralized water that had added dishwashing soap to it, to reduce surface tension
3. The product (earbud) was carefully put into the water (sliding down inside the glass) using a tweezer
4. An empty/dry cup collected the water spilling out of the measuring cylinder
5. The cup + water was measured on the weight with 1mg resolution
6. The weight of the (dry) cup was subtracted from the measure.

The products with silicone plugs had them turned inside out to avoid air captured while inserted to the water.

4. Document validation

FORCE Technology confirms the correct performance of measurements and calculations stated in this document.

FORCE Technology confirms that on the 15th of March 2022 the claim within this document for the Jabra Enhance Plus is accurate, in terms of validity of measurements and calculations it is based upon.

Authorized by FORCE Technology