

## Jabra Evolve2 85 claim verification

### 1. Summary

FORCE Technology has verified the measurements which contribute towards substantiating the following claim. The claim wording is created by Jabra, for their newly released headset Jabra Evolve2 85.

Product	Claim
Jabra Evolve2 85	"The best headset for concentration & collaboration"

### 2. Overview

Jabra Evolve2 85 was tested against the largest market leading manufacturers in the business, using 5 major competing products on the market.

Each product was measured on several parameters, and a weighted average score was calculated. The measurements cover a wide range of product characteristics that are relevant to wireless headset usage, user experience and performance. Specialists from FORCE Technology conducted or verified all measurements, to ensure that all products were measured correctly, in the same way and under identical conditions.

The included parameters, which are used as base for this claim are split into 4 areas:

#### 2.1 Area 1 – Concentration

- **TNC (Total noise cancellation)**
- **Music playback (consumer listening test)**
- **Busylight (yes/no)**

#### 2.2 Area 2 - Collaboration

- **Tx call-centric mean opinion score (measurement)**
  - **10% POLQA**
  - **40% G-MOS**
  - **50% Distractor MOS**
- **Rx call-centric mean opinion score (measurement)**
  - **POLQA**
- **Microsoft Teams certification**

#### 2.3 Area 3 - Flexibility

- **Battery time (Full charge)**
- **Wireless distance (spin range in communication mode)**
- **Personalization features (yes/no)**
- **Number of connectivity options**

## 2.4 Area 4 - Data

- **Exposure logging (measurement)**
- **Noise level guidance (measurement)**

A weighted average comprising each area-score is calculated, to determine the overall score.

Each area-score is calculated by a weighted average of the parameters that comprise the area. Weightings of area scores and parameters are shown in the table below:

Area	A. wgt.	Parameter	P. wgt.
Concentration	30%	Rx Call-centric: POLQA	33%
		MS teams certified	33%
		Tx Call-centric: 10% POLQA 40% G-MOS 50% Distractor MOS	33%
Collaboration	30%	TNC Perceived loudness attn.	33%
		Busylight	33%
		Subjective listening test	33%
Flexibility	30%	Battery time	25%
		Number of connections	25%
		Personalization	25%
		Wireless range	25%
Data	10%	Exposure Logging	50%
		Noise Level Guidance	50%

## 3. Method descriptions

### 3.1 TNC (Total noise cancellation):

1. The headset is placed on a head and torso simulator (Brüel & Kjær 4128C). In a diffuse field reverberation room.
2. Any ANC is turned on and set to the maximum noise attenuation.
3. 12 noise scenarios from ETSI EG 202 396-1 are played in the room, and the resulting noise at DRP (Drum Reference Point), is measured, relative to the same level without the headphones.

### 3.2 Music playback (Consumer listening study):

1. Test-participants listened to recordings of the selected products.
2. All products are recorded using a Brüel & Kjær HATS 5128. In an ITU-R BS.1116-3-compliant listening room.
  - a. All products using default settings with ANC on if available.
  - b. If wireless, connected to a Bluetooth dongle.
    - i. If a dongle was supplied with the product. This dongle was used. Otherwise a standard dongle (Asus BT400) was used.
  - c. If corded, connected to a computer USB port.

3. Products are recorded using 3 background noise scenarios from ETSI EG 202 396-1 (Office call-center, outside traffic, inside car 130km/h), and in silent background conditions.
4. Each product was tested using the same 6 music samples, with a duration of ~15seconds.
5. Product playback levels were calibrated for equal loudness.
6. Audio files were presented via Sennheiser HD650 headphones.
  - a. The influence of presentation headphone and HATS ear-canal coupler was compensated prior to the listening test.
7. Products were rated on a 1-5 scale of overall sound quality.(1 Bad, 2 Poor, 3 Fair, 4 Good, 5 Excellent)
8. 50 consumers within the “knowledge worker” category participated in the study, which was conducted using a double blind paradigm.

### **3.3 Busylight**

Check if product has busylight.

### **3.4 Tx call-centric mean opinion score:**

1. 10% POLQA.Tx TQL – average MOS based on the POLQA model.
2. 40% 3QUEST G-MOS – average MOS score with different background noise scenarios and talkers.
3. 50% Distractor MOS – average MOS score with distracting talkers at different positions relative to the headset.

### **3.5 Rx call-centric mean opinion score:**

POLQA.Rx TQL – average MOS score based on the POLQA model.

### **3.6 Microsoft Teams certification**

Check if product is certified for Microsoft Teams.

### **3.7 Battery time (Full charge)**

1. Device is charged fully.
2. Device is connected to a Bluetooth dongle, playing an audio loop, while ensuring communication mode.
3. Device playback level is adjusted using the same method for all products.
4. Device (microphone side) is exposed to ITU P.50 artificial speech.
5. Device playback time until automatic turn-off is used as final score.

### **3.8 Wireless distance (spin range in communication mode)**

1. Measurement takes place in a large open area, outdoors.
2. Headset is connected to dongle on test-pc.
3. Headset is set to communication mode, and a small loudspeaker, playing ITU-T P.50 artificial speech is mounted by the headset microphone.
4. The microphone signal is looped back, by the pc, into the headset speakers.
5. An operator wears the headset, listening to the microphone signal, while walking away from the pc.
6. At regular intervals the operator rotates 360 degrees, checking if the signal is degraded.
  - a. Once the microphone signal (which is looped back to the earphones) is degraded enough to be “Terrible – the link drops but connection can be reestablished”. The operator notes the distance.
  - b. The measurement is repeated at different angles, until the worst angle between headset and USB dongle is found (giving the shortest distance).

### **3.9 Personalization features**

Check if there is a personalizable app / software.

### **3.10 Number of connectivity options**

Note the number of connectivity options.

### **3.11 Exposure logging (measurement)**

1. The headset is placed on a head and torso simulator (Brüel & Kjær 4128C)
2. The A-weighted sound pressure level at DRP (Drum Reference Point) is measured while a speech file is played through the headset at 3 different volume settings (50%, 80%, 100%).
3. The DRP level measurement is noted 3 times, with 30 seconds between each measurement for each volume setting, and compared to the headset exposure logging output at identical times.

### **3.12 Noise level guidance (measurement)**

1. The headset is placed on a head and torso simulator (Brüel & Kjær 4128C)
2. A measurement microphone, connected to a sound level meter, is placed close to the right headset earcup.
3. The ETSI EG 202 396-1 Pub background noise scenario is played via 4 loudspeakers, at 3 different levels (averaged across the whole background noise audio file, measured using the measurement microphone, close to the earcup). 50dBA, 70dBA, 90dBA.
4. The A-weighted sound pressure level is noted 3 times, with 30 seconds between each measurement, for each of the 3 noise level settings, and compared to the headset noise level guidance output at identical times.

## **4. Document validation**

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

FORCE Technology confirms that Evolve2 85 receives the highest score amongst the tested products, substantiating the claim.

FORCE Technology confirms that on the 19<sup>th</sup> of June 2020 the claim within this document for Jabra Evolve2 85 is accurate, in terms of validity of measurements and calculations it is based upon.

**Authorized by FORCE Technology**