RF EXPOSURE REPORT

Applicant:	Sonova Consumer Hearing GmbH Am Labor 1, 30900 Wedemark, Germany
Manufacturer:	Sonova Consumer Hearing GmbH Am Labor 1, 30900 Wedemark, Germany
Product Name:	ACCENTUM Open (OTW1)
Brand Name:	SENNHEISER
Model No.:	OTW1(Refer to page 2 for more details)
FCC ID	2A3ULOTW1
Date of EUT Received:	Sep. 23, 2024
Issue Date:	Jan. 08, 2025

Approved By John Yeh

John Yeh

We hereby certify that:

The above equipment was evaluated by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §1.1307 & KDB 447498 D04 v01 "& interim V01 8/29/2023.

The results of this report relate to the specific sample identified in this report.

Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2409000617ES	00	Original	Jan. 08, 2025	Kimmy Chiou	

Note:

1、The remark "*" indicates modification of the report upon requests from certification body.

2、The EUT system ACCENTUM Open (OTW1) contain the following devices:

Item	Brand Name	Device Model No.
Right Earbud	SENNHEISER	OTW1 R
Left Earbud	SENNHEISER	OTW1 L
Charging Case	SENNHEISER	OTW1 C

* OTW1 R and OTW1 L with BT TX/RX function

* Charging case is solely used for charging OTW1 R and OTW1 L only.

Contents

1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Test Item Description	True Wireless Earphones
Product Name	ACCENTUM Open (OTW1)
Brand Name	SENNHEISER
Serial Number / Status of EUT	Engineering sample
Model No.	OTW1 (Refer to page 2 for more details)
Hardware Version	V03
Firmware Version	Earbuds: V1.0.24 Charging case: V1.0.4
Power Ratings	Earbuds: 3.85Vdc, 35-36 mAh (from battery) Charging case: 5Vdc, 500 mA (from Type-C USB interface) 3.7Vdc, 380-400 mAh (from battery)
Power Supply (Nominal & Testing)	5Vdc, 500 mA (from Type-C USB interface) 3.85Vdc, 380-400 mAh (from battery)
Cable supplied / Device ports	0.4m shielded USB cable without core
Test Software (Name/Version)	WQ TWS RF TOOL

1.2 RF Specification

Technology	Bluetooth
Operating Frequency	2402 - 2480MHz (for Frequency Band: 2400-2483.5MHz)
Channel number	79 channels
Channel Spacing	1MHz
Channel Bandwidth	79MHz
Data Transfer Rate	BDR: 1Mbps, EDR: 2Mbps/3Mbps
Modulation type	GFSK, π/4DQPSK, 8DPSK
Transmission Technology	FHSS
Maximum Transmit Power	7.49 dBm
Dwell Time	≦ 0.4s
Operating Temperature range	0°C - +40°C

1.3 Evaluation site

Laboratory		Site Address	FCC Designation number	ISED Company Number	CAB Identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	☒	No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan.	TW0027	4620A	TW3702
	☐	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.	TW0028	4620E	
	☐	1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Neihu District, Taipei City, 222 Taiwan.	TW0029	23862	

1.4 Antenna Information:

Antenna Type	Freq. (GHz)	Peak Antenna Gain (dBi)
Monopole	2.4GHz	-5.60
		-4.60

Note: Antenna information is provided by the applicant.

2 DETEMINATION OF MPE EXEMPTION

2.1 FCC

2.1.1 Single RF Source

As per §1.1307(b)(3)(i),

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

Note: *when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.*

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) –
Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)			Minimum Distance			Threshold ERP (W)
fL		fH	λL / 2π		λH / 2π	
0.3	-	1.34	159m	-	35.6m	1920 R^2
1.34	-	30	35.6m	-	1.6m	3450 R^2/f^2
30	-	300	1.6m	-	159mm	3.83 R^2
300	-	1500	159mm	-	31.8mm	0.0128 R^2f
1500	-	100000	31.8mm	-	0.5mm	19.2R^2

R= minimum separation distance in meter

f = frequency in MHz

2.1.2 Multiple RF Sources

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1$$

2.1.3 Single RF Source Evaluation Results

ANT	Frequency (MHz)	Distance (cm)	Max. tune-up power without duty cycle (dBm)	Duty cycle (%)	Max. tune-up power with duty cycle (mW)	Peak gain (dBi)	ERP (dBm)	ERP (mW)	x	ERP_{20cm} (mW)	P_{th} (mW)	P or ERP /P_{th}
BDR	2480	0.5	8.5	29.60	2.096	-4.6	-4.157	0.384	1.905	3060.00	2.72	0.771
EDR	2480	0.5	8.5	29.60	2.096	-4.6	-4.180	0.382	1.905	3060.00	2.72	0.771

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the minimum separation distance of that band. All the single RF source results (P or ERP) are less than their corresponding threshold (P_{th} or ERP_{th}), so they are exempt from RF exposure testing.

~ End of Report ~