

FCC SAR Exclusion Report

Report No. : SFCFQC-WTW-P22040277

Applicant : Sonova Consumer Hearing GmbH

Address : Am Labor 1, 30900 Wedemark, Germany

Product Name : Bluetooth USB Adapter (BTD 600)

Brand Name : SENNHEISER

FCC ID : 2A3ULBTD600

Model No. : BTD 600

FCC Rule Part : CFR §2.1093

Standards : IEEE Std 1528:2013, KDB 865664 D01 v01r04, KDB 865664 D02 v01r02, KDB 447498 D01 v06

Sample Received Date : Apr. 14, 2022

Date of Evaluation : Jun. 11, 2022

Lab Address : No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan


Test Location : No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City, Taiwan

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch – Lin Kou Laboratories**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

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Annex A. Maximum Target Conducted Power

Annex B. Considerations Related to Bluetooth for Setup and Testing

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1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest Reported SAR _{1g} (W/kg)
DSS & DTS	Bluetooth	Not Required

Note:

1. The SAR limit (**Head & Body: SAR_{1g} 1.6 W/kg**) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.

References Guidance :

1. IEEE C95.1:1992, FCC-19-126

2. Description of Equipment Under Test

Test Item Description	Bluetooth USB Adapter
Product Name	Bluetooth USB Adapter (BTD 600)
FCC ID	2A3ULBTD600
Brand Name	SENNHEISER
Model No.	BTD 600
Status of EUT	Engineering Sample
Power Ratings	5Vdc, 100mA
Power Supply (Nominal & Testing)	5Vdc, 100mA
Operating Temperature range	0°C ~ 40°C
Modulation Type	BDR & EDR: GFSK, $\pi/4$ DQPSK, 8DPSK BLE: GFSK
Transmission Technology	BDR & EDR: FHSS BLE: DSSS
Technology	Bluetooth
Operating Frequency	2402 - 2480MHz (for Frequency Band: 2400-2483.5MHz)
No. of channels	BDR & EDR: 79 BLE: 40
Channel Spacing	BDR & EDR: 1MHz BLE: 2MHz
Channel Bandwidth	BDR & EDR: 79MHz BLE: 80MHz
Data Transfer Rate	BDR: 1Mbps and EDR: 2Mbps/3Mbps LE 4.0: 1Mbps and LE 5.2: 2Mbps
Maximum Tune-up Conducted Power (Unit: dBm)	Please refer to Annex A
Antenna Type	Monopole PCB antenna
Antenna Gain	-3.83 dBi
HW Version	R1
SW Version	1.6.0
Cable supplied	NA

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

3. SAR Measurement Evaluation

3.1 Maximum Output Power

3.1.1 Maximum Target Conducted Power

Refer to Annex A.

3.1.2 Considerations Related to Bluetooth for Setup and Testing

Refer to Annex B.

3.1.3 Time-Avg. Power Calculation

The calculation of time-avg. power (Unit : dBm) including duty cycle.

<The calculation average power with duty cycle>

Mode	Max Tune-up Power (Not include Duty Cycle)	Duty Cycle (%)	Calculated Time-Avg. Power (Include Duty Cycle)
BR/EDR	12.5	14.87	4.22
LE	7.5	20.64	0.65

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3.2 SAR Testing Exclusions

According to FCC-19-126, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

1. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequency from 0.3 GHz to 6 GHz (inclusive).

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

Where

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

and

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

d = the separation distance (cm);

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Rear Face		
			Ant. to Surface (mm)	Calculated Result (dBm)	Require SAR Testing?
Bluetooth	4.22	2.64	5	4.34	No

Note:

1. When the device output power is less than the power threshold shown in above table, the SAR testing exclusion is applied.
2. Units for d are cm and units for f are GHz.
3. The Calculated Result is scaling x2.5 for head exclusion threshold.

Summary:

Since the SAR testing for all device orientations apply SAR test exclusion per FCC-19-126, SAR testing for this device is not required.

4. Construction Photos of EUT

Please refer to the attached file (CFQC-WTW-P22040277 (EUT photo)).

5. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The road map of all our labs can be found in our web site also.

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