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## RF Exposure Exhibit

**EUT Name:** Wireless Audio Headset

**EUT Model:** Ear Force Stealth 700X (TB300-2770-01)

**PMN:** Ear Force Stealth 700X

**HVIN:** Stealth 700X

CFR47 Part 2.1093, RSS-102 Iss. 5 March 2015

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## 1.1 Maximum Permissible Exposure

### 1.1.1 Test Methodology

In this section, we try to prove the safety of radiation harmfulness to the human body for our product. The KDB 447498 D01v06 General RF Exposure Guidance is followed. The Gain of the antenna used in this calculation is declared by the manufacturer, and the maximum average power input to the antenna is measured. Using the general SAR test exclusion guidance in Section 4.3 of KDB 447498, we show the device meeting the SAR exclusion threshold found in Appendix A of KDB 447498 D01v06 and SAR exemption limits found in Table 1 of RSS-102 Issue 5.

ISED accepts the KDB 447498 D01 Procedure.

### 1.1.2 FCC KDB 447498 D01 – General SAR Test Exclusion Guidance

The SAR exclusion threshold conditions are listed:

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$\text{Exclusion Threshold} = [P / d] * [\sqrt{f}]$$

Where

P = max power of channel (including tune-up tolerance) in mW

d = min. test separation distance in mm

f = the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

Limit:  $\leq 3.0$  of 1-g SAR       $\leq 7.5$  of 10-g extremity SAR

The test exclusions are applicable only when the minimum test separation distance is  $< 50$  mm for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR exclusion.

### 1.1.3 EUT Operating Condition

The software provided by Manufacturer enabled the EUT to transmit data at lowest, middle and highest channel individually.

### 1.1.4 Classification

The antenna of the product, under normal use condition, is 2 cm away from the body of the user; per manufacturer's declaration. This device is classified as a **Portable Device**.

### 1.1.5 Antenna Gain

Number	Antenna Type	Description	Max Gain (dBi)
Bluetooth Antenna	Integrated	Max. peak gain at 2.4 GHz	+2.8
Wi-Fi Antenna	Chip	Max. peak gain at 2.4 GHz	+1.8
		Max. peak gain at 5 GHz	+4.9

### 1.1.6 SAR Test Exclusion Threshold

#### FCC SAR Exclusion Threshold Calculation

Mode	Frequency (GHz)	Max. Power (dBm)	Max. Power (mW)	Ant. Gain (dbi)	Min. Distance (mm)	Max. EIRP (mW)	SAR Excl. Threshold (mW)	Ratio (Pwr-Limit)	Result
Bluetooth (2.4 GHz)	2.4	2.19	1.66	2.8	20	3.16	$\leq 38.0$	0.08	Exempted *
802.11b/g/n	2.4	7.94	6.22	1.8	20	9.42	$\leq 38.0$	0.25	Exempted *
802.11a/n	5	7.95	6.24	4.9	20	19.28	$\leq 25.0$	0.77	Exempted *

Note:

- Since EUT can operate at distance of 20 mm, the SAR Test Exclusion Threshold was taken from KDB 447498 D01 General RF Exposure Guidance v06 Appendix A.
- The maximum output powers were taken from Table 2 of "Turtle Beach - Ear Force Stealth 700X - FCC 15.407 Report 31763105.001", "Turtle Beach Ear Force Stealth 700X - FCC-IC 2.4GHz Report 31763010.001", and Turtle Beach - EAR FORCE Stealth 700X - BT Report 31763009.001.
- 802.11a/b/g/n uses the same chipset, and it can only transmit on one channel and in one band.
- Bluetooth and 802.11 chipset can transmit simultaneously. The sum of the ratio of any Wi-Fi and Bluetooth is always less than a factor of 1.
- (\*) The maximum eirp power is less than SAR exclusion thresholds; therefore, EUT is SAR exempted for routine evaluation.

#### RSS-102 SAR Exclusion Threshold Calculation

Mode	Frequency (GHz)	Max. Power (dBm)	Max. Power (mW)	Ant. Gain (dbi)	Min. Distance (mm)	Max. EIRP (mW)	SAR Exemption Limit (mW)	Ratio (Pwr-Limit)	Result
Bluetooth (2.4 GHz)	2.4	2.19	1.66	2.8	20	3.16	$\leq 30.0$	0.11	Exempted *
802.11b/g/n	2.4	7.94	6.22	1.8	20	9.42	$\leq 30.0$	0.31	Exempted *
802.11a/n	5	7.95	6.24	4.9	20	19.28	$\leq 27.0$	0.71	Exempted *

Note:

- The SAR Exemption Limit was taken from RSS-102 Iss. 5, Sect. 2.5.1 Table 1 for device operating at 20 mm distance.
- The maximum output powers were taken from Table 2 of "Turtle Beach - Ear Force Stealth 700X - FCC 15.407 Report 31763105.001", "Turtle Beach Ear Force Stealth 700X - FCC-IC 2.4GHz Report 31763010.001", and Turtle Beach - EAR FORCE Stealth 700X - BT Report 31763009.001
- 802.11a/b/g/n uses the same chipset, and it can only transmit on one channel and in one band.
- Bluetooth and 802.11 chipset can transmit simultaneously. The sum of the ratio of any Wi-Fi and Bluetooth is always less than a factor of 1.
- (\*) The maximum eirp power is less than SAR exemption Limit; therefore, EUT is SAR exempted for routine SAR evaluation.
- RSS-102 Nerve Stimulation Exposure does not apply since EUT operates in the 2.4 GHz and 5 GHz bands.