Radio Frequency Exposure

LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

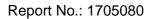|	
EUT	HEADSET
2.4GHz on the row of the Frequency band (Operating)	☐ WLAN: 2400MHz ~ 2483.5MHz ☐ WLAN: 5150MHz ~ 5250MHz ☐ WLAN: 5725MHz ~ 5850MHz ☒ Bluetooth: 2403.35MHz ~ 2477.35MHz
Device category	☒ Portable (<20cm separation) ☐ Mobile (>20cm separation)
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)

Antenna diversity	☐ Single antenna
	☒ Multiple antennas
	   ☐ Tx diversity
	   ☐ Rx diversity
	   ☒ Tx/Rx diversity

Max. output power	5.47 dBm (3.524 mW)
Antenna gain (Max)	Antenna 1: 2.55 dBi Antenna 2: 4.73 dBi
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

Remark:
1. *The maximum output power is* 5.47 dBm (3.524mW) *at* 2403.35MHz *(with* numeric 2.55 antenna gain*.)*
2. *DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.*
3. *For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm^2 even if the calculation indicates that the power density would be larger.*

*Note: Simultaneous transmission is not applicable for this EUT.

TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \dfrac{\sqrt{30 \times P \times G}}{d}$ & $S = \dfrac{E^2}{3770}$

>   Where   *E = Field strength in Volts / meter*
>   *P = Power in Watts*
>   *G = Numeric antenna gain*
>   *d = Distance in meters*
>   *S = Power density in milliwatts / square centimeter*

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

>   *P (mW) = P (W) / 1000 and*
>   *d (cm) = d(m) / 100*

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \qquad \textbf{\textit{Equation 1}}$$

>   Where   *d = Distance in cm*
>   *P = Power in mW*
>   *G = Numeric antenna gain*
>   *S = Power density in mW / cm²*

Maximum Permissible Exposure

ANT 1

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
GFSK	2403.35~ 2477.35MHz	5.47	2.55	2	0.1261	1

ANT 2

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
GFSK	2403.35~ 2477.35MHz	5.24	4.73	2	0.1976	1