12. Radio Frequency Exposure

12.1 Applicable Standards

The measurements shown in this test report were made in accordance with the procedures given in FCC Part 2 (Section 2.1091)

12.2 EUT Specification

Frequency band (Operating)	☒ WLAN: 2412MHz ~ 2462MHz ☐ WLAN: 5150MHz ~ 5250MHz ☐ WLAN: 5250MHz ~ 5350MHz ☐ WLAN: 5470MHz ~ 5725MHz ☐ WLAN: 5725MHz ~ 5850MHz ☐ BLE: 2402MHz ~ 2480MHz
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

Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A
Remark: 1. *The maximum conducted output power is <u>24.25dBm (266.073mW)</u> at <u>2437MHz</u> (with <u>2.28dBi antenna gain</u>.)* 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.*	

Cerpass Technology Corp.
T-FD-509-0 Ver 1.2

Issued date : Mar. 03, 2020
Page No.   : 65 of 67
FCC ID.   : 2AEUPBHARG061

12.3 Test Results

No non-compliance noted.

12.4 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:

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

Changing to units of mW and cm, using:

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

Yields

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

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

12.5 Maximum Permissible Exposure

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	24.25	24.25	2.28	20	0.0895	1

Maximum Permissible Exposure(Co-location)

Modulation Type	Channel Frequency (MHz)	Max. Conducted output power (dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	MPE Ratio
11g	2412-2462	24.25	24.25	2.28	20	0.0895	1.000	0.0895
GFSK	2402-2480	3.51	3.51	0.01	20	0.0004	1.000	0.0004
Co-location Total								0.0899
ΣMPE ratios Limit								1

*When ANT1 transmitter is selected for WLAN, BLE shall select ANT2 transmitter.