FCC RF EXPOSURE REPORT

EUT	WIFI module
Frequency band (Operating)	☒ WLAN: 2.412GHz ~ 2.462GHz ☒ WLAN: 2.422GHz ~ 2.452GHz ☒ WLAN: 5.180GHz ~ 5.240GHz ☐ WLAN: 5.260GHz ~ 5.320GHz ☒ WLAN: 5.500GHz ~ 5.700GHz ☒ BLE: 2.402GHz ~ 2.480GHz ☒ Bluetooth: 2.402GHz ~ 2.480GHz
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	25.64dBm (366.438mW)
Antenna gain (Max)	Chain 1: 3.21dBi for 2400~2500MHz band, 3.41dBi for 5150~5850MHz band. Chain 2: 2.52dBi for 2400~2500MHz band, 3.28dBi for 5150~5850MHz band.
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

TEST RESULTS

No non-compliance noted.

Calculation

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

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

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

Where *d = Distance in cm*
P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm^2

Maximum Permissible Exposure

WIFI

Modulation Mode	Frequency band (MHz)	Peak output power(dBm)	Peak output power(mW)	Antenna Gain (dBi)	Antenna gain (*Numeric*)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
802.11b	2412-2462	**19.41**	**87.29713684**	**3.21**	**2.09**	**20**	**0.03637919**	**1**
802.11g	2412-2462	**22.74**	**187.9316817**	**3.21**	**2.09**	**20**	**0.07831647**	**1**
802.11n HT20	2412-2462	**21.74**	**149.279441**	**3.21**	**2.09**	**20**	**0.06220898**	**1**
802.11n HT40	2422-2452	**21.43**	**138.9952631**	**3.21**	**2.09**	**20**	**0.05792327**	**1**
802.11a	5180-5240	12.87	19.36421964	3.41	2.1928049	**20**	0.00844993	**1**
802.11an HT20	5180-5240	12.72	18.7068214	3.41	2.1928049	**20**	0.00816306	**1**
802.11an HT40	5180-5240	12.42	17.45822153	3.41	2.1928049	**20**	0.00761821	**1**
802.11ac VHT20	5180-5240	12.77	18.92343619	3.41	2.1928049	**20**	0.00825759	**1**
802.11ac VHT40	5180-5240	12.45	17.57923614	3.41	2.1928049	**20**	0.00767102	**1**
802.11ac VHT80	5180-5240	11.99	15.81248039	3.41	2.1928049	**20**	0.00690006	**1**
802.11a	5260-5320	12.36	17.21868575	3.28	2.128139	**20**	0.00729211	**1**
802.11an HT20	5260-5320	11.56	14.32187899	3.41	2.1928049	**20**	0.00624961	**1**
802.11an HT40	5260-5320	11.55	14.28893959	3.41	2.1928049	**20**	0.00623524	**1**
802.11ac VHT20	5260-5320	11.63	14.55459081	3.41	2.1928049	**20**	0.00635116	**1**
802.11ac VHT40	5260-5320	11.53	14.22328787	3.41	2.1928049	**20**	0.00620659	**1**
802.11ac VHT80	5260-5320	11.59	14.42115352	3.41	2.1928049	**20**	0.00629293	**1**
802.11a	5500-5700	12.73	18.74994508	3.28	2.128139	**20**	0.0079406	**1**
802.11an HT20	5500-5700	12.48	17.70108958	3.41	2.1928049	**20**	0.00772419	**1**
802.11an HT40	5500-5700	11.44	13.93156803	3.41	2.1928049	**20**	0.00607929	**1**
802.11ac VHT20	5500-5700	12.55	17.98870915	3.41	2.1928049	**20**	0.0078497	**1**
802.11ac VHT40	5500-5700	11.72	14.85935642	3.28	2.128139	**20**	0.00629293	**1**
802.11ac VHT80	5500-5700	11.91	15.5238701	3.28	2.128139	**20**	0.00657435	**1**

Bluetooth 3.0

Modulation Mode	Frequency band (MHz)	Peak output power(dBm)	Peak output power(mW)	Antenna Gain (dBi)	Antenna gain (*Numeric*)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
GFSK	2402-2480	**5.01**	**3.169567463**	**3.21**	**2.09**	**20**	**0.00132085**	**1**
π/4 DQPSK	2402-2480	**6.63**	**4.602565736**	**3.21**	**2.09**	**20**	**0.00191802**	**1**
8DPSK	2402-2480	**6.73**	**4.709773264**	**3.21**	**2.09**	**20**	**0.0019627**	**1**

Bluetooth LE

Modulation Mode	Frequency band (MHz)	Peak output power(dBm)	Peak output power(mW)	Antenna Gain (dBi)	Antenna gain (*Numeric*)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
GFSK	2402-2480	**7.84**	**6.081350013**	**3.21**	**2.09**	**20**	**0.00253427**	**1**