5. RF EXPOSURE EVALUATION

5.1 Applicable Standard

FCC §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.

5.2 Procedure

According to §1.1307(b)(3)(ii)(B)

Simultaneous Transmission with both SAR-based and MPE-Based Test Exemptions

This case is described in detail in § 1.1307(b)(3)(ii)(B) and covers the situations where both SAR-based and MPE-based exemption may be considered for test exemption in fixed, mobile, or portable device exposure conditions. For these cases, a device with multiple RF sources transmitting simultaneously will be considered an RF exempt device if the condition of Formula (1) is satisfied.

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1 \qquad (1)$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th}, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERP_j = the ERP of fixed, mobile, or portable RF source j.

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least $\lambda/2\pi$ according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure\ Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from § 1.1310 of this chapter.

5.3 EUT Information▲:

Operation Modes	Operation Frequency (MHz)	Conducted output power including Tune-up Tolerance (dBm)	Maximum Antenna Gain (dBi)	
			Antenna 0	Antenna 1
WLAN	2412-2462	26	2.5	/
BLE	2402-2480	7	2.5	/
BDR/EDR	2402-2480	10	2.5	/
WCDMA B2	1850-1910	25	2.15	3.36
WCDMA B4	1710-1755	25	2.63	2.46
WCDMA B5	824-849	25	2.08	-1.19
LTE B2	1850-1910	25	2.15	3.36
LTE B4	1710-1755	25	2.63	2.46
LTE B5	824-849	25	2.08	-1.19
LTE B12	699-716	25	1.70	-2.17
LTE B13	777-787	25	1.92	-2.41
LTE B14	788-798	25	1.89	-2.41
LTE B66	1710-1780	25	2.65	2.82
LTE B71	663-698	25	1.91	-1.65

Note:
The devices may contain certified WWAN Module, FCC ID: XMR202008EC25AFXD
The WWAN and Bluetooth or WLAN can transmit simultaneously.

5.4 Measurement Result

Radio	Frequency (MHz)	Distance (mm)	P_{th} (mW)	Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	Conducted Power or ERP	
						dBm	mW
WLAN	2412-2462	200	3060	26	2.50	26.35	431.52
BLE	2402-2480	200	3060	7	2.50	7.35	5.43
BDR/EDR	2402-2480	200	3060	10	2.50	10.35	10.84
WCDMA B2	1850-1910	200	3060	25	3.36	26.21	417.83
WCDMA B4	1710-1755	200	3060	25	2.63	25.48	353.18
WCDMA B5	824-849	200	1681	25	2.08	25	316.23
LTE B2	1850-1910	200	3060	25	3.36	26.21	417.83
LTE B4	1710-1755	200	3060	25	2.63	25.48	353.18
LTE B5	824-849	200	1681	25	2.08	25	316.23
LTE B12	699-716	200	1426	25	1.70	25	316.23
LTE B13	777-787	200	1585	25	1.92	25	316.23
LTE B14	788-798	200	1608	25	1.89	25	316.23
LTE B66	1710-1780	200	3060	25	2.82	25.67	368.98
LTE B71	663-698	200	1353	25	1.91	25	316.23

$$\sum_{i=1}^{a} \frac{P_i}{P_{\text{th},i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{\text{th},j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k}$$

$=P_{\text{WLAN}} / P_{\text{th}} + P_{\text{WAAN}} / P_{\text{th}}$

$=431.52/3060 + 316.23/1353$

$=0.375$

< 1.0

Result: The device meet FCC MPE at 20 cm distance.

<center>===== **END OF REPORT** =====</center>