US Tech Test Report:	FCC Part 15 Certification/ RSS 247
FCC ID:	P2SMRXV4
IC:	4171B-MRXV4
Test Report Number:	18-0010
Issue Date:	February 2, 2018
Model:	MRX920v4

Maximum Public Exposure to RF (MPE) CFR 15.247 (i), CFR 1.1310 (e)

The maximum exposure level to the public from the RF power of the EUT shall not exceed a power density S as per the respective limits at a distance of 20 cm from the EUT.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f^2	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE for 902 MHz – 928 MHz

Limit = f / 1500 mW/cm^2 = 915/1500 = 0.61 mW/cm^2

Peak Power (dBm) = 21.71
Peak Power (watts)= 0.148
Gain of transmit Antenna (dBi) = 5.1= 3.24 (numeric)
d= Distance = 20 cm= 0.2 m

$$S = (PG/ 4\pi d^2) = EIRP/4A = 0.148(3.240)/4*\pi*0.2*0.2$$
$$=0.4795/0.5030 = 0.9533 \text{ W/m}^2$$
$$= (0.9533 \text{ W/m}^2) (1\text{m}^2/\text{W}) (0.1 \text{ mW/cm}^2)$$
$$= 0.09533 \text{ mW/cm}^2$$

which is << less than 0.6100 mW/cm^2

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MPE for 2.4 GHz Bluetooth

Limit = 1.0 mW/cm^2
Peak Power (dBm) = 8.14 (BT FCC ID: SQGBT900)
Peak Power (watts)= 0.065
Gain of transmit Antenna (dBi) = 2.0= 1.58 (numeric)
d= Distance = 20 cm= 0.2 m

$$S = (PG/ 4\pi d^2) = EIRP/4A = 0.065(1.580)/4*\pi*0.2*0.2$$
$$=0.1027/0.5030 = 0.2042 \text{ W/m}^2$$
$$= (0.2042 \text{ W/m}^2) (1\text{m}^2/\text{W}) (0.1 \text{ mW/cm}^2)$$
$$= 0.02042 \text{ mW/cm}^2$$
which is << less than 1.0 mW/cm^2

Simultaneous MPE (900 MHz band +2.4 GHz band) Calculation:

Total MPE (%) = [(900 MHz MPE result/limit (f/1500))*100] + [(2.4 GHz MPE result/limit (1.0))*100] << 100%

= [(0.0953/0.61) * 100] + [(0.0204/1.0) * 100] = 17.64% << 100%

Calculation above shows device complies with the MPE requirement at distance of 20 cm.

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RSS-102, 2.5.2 Compliance:

At or above 300 MHz and below 6 GHz and the source based time averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ in Watts (adjusted for tune-up tolerance where applicable), where f = frequency in MHz.

For 902-928MHz band

$1.31 * 10^{-2} * 915^{0.6834} = 1.39$ W

EUT max EIRP = 21.71 dBm + 2.95 dBd (5.1 dBi-2.15) = 24.66 dBm or 0.292 Watts << 1.39 Watts

For 2.4 GHz band

$1.31 * 10^{-2} * 2440^{0.6834} = 2.71$ W

EUT max EIRP = 8.14 dBm + 6.52 dBi = 14.66 dBm or 0.029 Watts << 2.71 Watts

Simultaneous Evalution percentage=
[Max EIRP (BT)/ Limit in Watts * 100] + [Max EIRP (900 MHz)/Limit in Watts * 100] <<< 100%

$[(0.029/2.71) * 100] + [(0.292/1.39) *100] = 22.1$ % << 100 %