

US Tech Test Report:
 FCC ID:
 IC:
 Test Report Number:
 Issue Date:
 Customer:
 Model:

FCC Part 15/IC RSS Certification
 2ARTD-HMG1
 24568-HMG1
 18-0419
 January 23, 2019
 Wren Associates, LTD.
 HMG1

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 in Table 1 below, at a distance, d, of 20 cm (Mobile condition) 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)
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

Therefore, for:

MPE for 902 MHz – 928 MHz:

Limit: 0.61 mW/cm²

Peak Power (dBm) = 12.24 dBm (Max Output power level)

Peak Power (Watts) = 0.017 W

Gain of Transmit Antenna = +8 dBi = 6.31, numeric (Highest Gain Antenna)

d = Distance = 20 cm = 0.2 m

$$\begin{aligned}
 S &= (PG/4\pi d^2) = \text{EIRP}/4A = 0.017 (6.31)/4*\pi*0.2*0.2 \\
 &= 0.1073/0.5030 = 0.2133 \text{ W/m}^2 \\
 &= (0.2133 \text{ W/m}^2) (1\text{m}^2/\text{W}) (0.1 \text{ mW/cm}^2) \\
 &= 0.02133 \text{ mW/cm}^2
 \end{aligned}$$

which is << less than S = 0.61 mW/cm²

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RF Exposure Evaluation – IC

According to RSS-102, 2.5.2 Exemption Limits for Routine Evaluation

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

For 2.4 GHz Band:

$$\text{Limit} = 1.31 \times 10^{-2} \times 915^{0.6834} = 1.38 \text{ Watts}$$

$$\text{Max EIRP for WiFi} = 12.24 \text{ dBm} + 8 \text{ dB} = 20.24 \text{ dBm} = 105.7 \text{ mW} \ll 1380 \text{ mW}$$