

## 8. MAXIMUM PERMISSIBLE EXPOSURE

<b>Name of Test:</b>	<i>Radio Frequency Exposure</i>	<b>Test Standard:</b>	<i>FCC OET Bulletin 65 &amp; RSS-GEN &amp; RSS-102</i>
<b>Tested By:</b>		<b>Test Date:</b>	

**Minimum Standard:** For FCC, per Public Exposure to Radio Frequency Energy Levels (1.1307 (b)(1)) Limits:

From §1.1310 Table 1 (B), for Public  $S = 1.0 \text{ mW/cm}^2$  ;  
 for Professional,  $S = 5.0 \text{ mW/cm}^2$ .

For IC: per RSS-102, Sec. 2.5.2, Exemption Limits for Routine Evaluation, with formula of  $1.31 \times 10^{-2} f^{0.6834} \text{ W}$ , more restricted EIRP limit value are 1.37W at 902MHz, 2.67W at 2400MHz, 4.52W at 5180MHz.

**Method of Measurement:**  $d = 0.282 * 10^{((P + G) / 20) / \sqrt{S}}$  Equation (1)  
 $S = 0.0795 * 10^{((P + G)/10) / d^2}$  Equation (2)

where

d = MPE distance in cm  
 P = Power in dBm  
 G = Antenna Gain in dBi  
 S = Power Density Limit in  $\text{mW/cm}^2$

Equation (1) and the measured peak power is used to calculate the MPE distance.

Equation (2) and the measured peak power is used to calculate the Power density.

**Test Result:**

**Complied with MPE limit**

**Calculation:**

For FCC MPE compliance:

With co-location of EUT Tx and pre-certified RF module, the following calculation shows total RF exposure is still under the MPE limit:

For EUT Tx, max. level measured at 30m distance: 55.1 dB $\mu$ V/m, i.e. P+G= -0.1dBm

Plug all three items into equation (2), yielding,

Power Density Limit (mW/cm <sup>2</sup> )	Output Power (dBm)	Antenna] Gain (dBi)	Power Density at 20cm (mW/ cm <sup>2</sup> )	Max. EIRP (W)
0.2			2.1E-4	0.001

For RF module, made by Rigado LLC, BT Module, Model # BMD-350. (FCC ID:2AA9B05, IC:12208A-05). Worst case MPE per report #CGZ3161014-01896-EFI:

Power Density Limit (mW/cm <sup>2</sup> )	Output Power (dBm)	Antenna] Gain (dBi)	Power Density at 20cm (mW/ cm <sup>2</sup> )	Max. EIRP (W)
1.0	-3.87	1.0	1.0E-4	0.0005

Thus, co-location calculations:

$$\sum MPE = 2.1E-4 \text{ mW/cm}^2 + 1.0E-4 \text{ mW/cm}^2 = 3.1E-4 \text{ mW/cm}^2 \text{ which is less than the limit } 1.0 \text{ mW/cm}^2$$

Additionally,

$$\sum SeqnSlimn = Seq1Slim1 + Seq2Slim2 \leq 1$$

$$\text{Herein } \sum SeqnSlimn = 2.1E-4/0.2 + 1.0E-4/1.0 = 2.05E-4 \leq 1$$