8. MAXIMUM PERMISSIBLE EXPOSURE

Name of Test:	*Radio Frequency Exposure*	Test Standard:	*FCC OET Bulletin 65 &RSS-GEN& RSS-102*
Tested By:	WEI LI	Test Date:	08/27/2019-10/01/2019

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 mW/cm^2 ;
for Professional, S = 5.0 mW/cm^2.

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

Method of Measurement:

$d = 0.282 * 10 \wedge ((P + G) / 20) / \sqrt{S}$ Equation (1)

$S = 0.0795 * 10 \wedge ((P + G)/10)/ d\wedge 2$ Equation (2)

where

d = MPE distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in 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: 55.9 dBμV/m, i.e. P+G= 0.7dBm

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

Power Density Limit (mW/cm^2)	Output Power (dBm)	Antenna] Gain (dBi)	Power Density at 20cm ($mW/cm^{2)}$)	Max. EIRP (W)
0.2			2.3E-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^2)	Output Power (dBm)	Antenna] Gain (dBi)	Power Density at 20cm ($mW/cm^{2)}$)	Max. EIRP (W)
1.0	-3.87	1.0	1.0E-4	0.0005

Thus, co-location calculations:

ΣMPE = 2.3E-4 mW/cm^2+ 1.0E-4 mW/cm^2 = 3.3E-4 mW/cm^2 which is less than the limit 1.0 mW/cm^2

Additionally,

$\sum S_{eqn}S_{limn}=S_{eq1}S_{lim1}+S_{eq2}S_{lim2}\leq 1$

Herein $\sum S_{eqn}S_{limn}=2.3E\text{-}4/0.2+1.0E\text{-}4/1.0=1.25E\text{-}3\leq 1$