Rm.1311 Digitalempire Bldg., 1130 Beoman-ro, Geumcheon-gu,
Seoul 08595, Korea

§1.1307 and §2.1093-RF EXPOSURE EVULATION

1.1 Limit

§ 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Average Time (minutes)
(A) Limits for Occupational/Control Exposures				
30 - 300	**61.4**	**0.163**	**1.0**	**6**
300 - 1500	--	--	f/300	6
(B) Limits for General Population/Uncontrolled Exposure				
30 - 300	27.5	0.073	0.2	30
300 - 1500	--	--	f/1500	30

Note: f is frequency in MHz

1.2 Method of Measurements

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi \cdot r^2} = \frac{EIRP}{4\pi \cdot r^2}$$

Where, P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power.
S: power density mW/cm2
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

$$r = \sqrt{\frac{PG}{4\pi \cdot S}} = \sqrt{\frac{EIRP}{4\pi \cdot S}}$$

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device.

1.3 Evaluation of RF Exposure Compliance Requirements

Maximum RF Power conducted, P [dBm] = 10.06
Maximum Antenna Gain, G[dBi] = -2.69
Maximum EIRP, P [dBm] = 7.37
Peak EIRP = 10.06 dBm + -2.69 dBi = 7.37 dBm = 5.46 mWatts (worst case)
Average EIRP = 50% * EIRP = 2.73 mWatts

MPE Limit for Occupational/Controlled Exposure, S [mW/cm2] = 0.1
MPE Limit for General Population/Uncontrolled Exposure, S [mW/cm2] = 0.04

Calculation of Minimum RF Safety Distance Limits:
Calculated RF Safety Distance for Occupational/Controlled Exposure,
r [cm] = 2.42
Calculated RF Safety Distance for General Population/Uncontrolled Exposure,
r[cm] = 2.70

Results: Manufacturer declares RF Safety Distance of 2.42 cm for Occupational/Controlled Exposure and 2.70 cm for General Population/Uncontrolled Exposure which met the FCC Limits. Please refer to Users Manual for details of RF Exposure Information.

SAR evaluation

Step 1)
SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance ≤ 50 mm
= Used
[(max.power of channel, including tune-up torelance, mW)/(min. test separation distance, mm)] * [√f(GHz)]
= [20 / 24.2] * [√ 0.2165] = 0.3845 ≤ 3, for 1g SAR
Thus, SAR for this device is not required.