FCC §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

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Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (Minutes)**
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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Mode	Frequency (MHz)	Antenna Gain		Tune up output power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE	2402-2480	1.1	1.29	9.0	7.94	20	0.002	1.0
LTE B2	1850-1910	1.5	1.41	24	251.19	20	0.070	1.0
LTE B4	1710-1755	1.5	1.41	24	251.19	20	0.070	1.0
LTE B5	824-849	1.0	1.26	26	398.11	20	0.100	0.549
LTE B12	699-716	0.8	1.20	25	316.23	20	0.076	0.466
LTE B13	777-787	0.8	1.20	23	199.53	20	0.048	0.518
LTE B25	1850-1915	1.5	1.41	24	251.19	20	0.070	1.0
LTE B26	814-849	1.0	1.26	25	316.23	20	0.079	0.543
LTE B41	2496-2690	1.5	1.41	24	251.19	20	0.070	1.0
LTE B66	1710-1780	1.5	1.41	24	251.19	20	0.070	1.0
NFC	13.56	/	/	/	0.295	20	0.00006	0.98

Note: 1. The device contains a certified WWAN Module, FCC ID: 2AJYU-8PYA007, the output power was refer to the module report.
2. The antenna gain was provided by applicant
3. For NFC, the maximum E-field strength is 59.93dBuV/m@3m=0.992mV/m@3m
EIRP=(E*r)^2/30=(0.975*3)^2/30=0.295mW

Simultaneously transmitting consideration:

The ratio=MPE_{BLE}/Limit+MPE_{WWAN}/Limit+MPE_{NFC}/Limit =0.002/1+0.100/0.549+0.00006/0.98=0.184<1

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance