4 FCC §15.247(f) & §2.1091 - RF Exposure

4.1 Applicable Standards

According to FCC §2.1091 (Mobile Devices) RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

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

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

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

4.3 Test Results

For transmission with 900 MHz, 2.4 GHz, and 5 GHz Radios

2.4 GHz Radio (FCC ID: P9J-642401)

Maximum peak output power at antenna input terminal (dBm):	28.27
Maximum peak output power at antenna input terminal (mW):	671.43
Prediction distance (cm):	40
Predication frequency (MHz):	2412
Maximum Antenna Gain, typical (dBi):	7.5
Maximum Antenna Gain (numeric):	5.623
Power density of prediction frequency at prediction distance (mW/cm^2):	0.1878
FCC limit (mW/cm^2):	1.00

5 GHz Radio (FCC ID: P9J-645801)

Maximum peak output power at antenna input terminal (dBm):	27.98
Maximum peak output power at antenna input terminal (mW):	628.058
Prediction distance (cm):	40
Predication frequency (MHz):	5785
Maximum Antenna Gain, typical (dBi):	8
Maximum Antenna Gain (numeric):	6.31
Power density of prediction frequency at prediction distance (mW/cm^2):	0.1971
FCC limit (mW/cm^2):	1.00

900 MHz Radio 1 (FCC ID: SK9ITR9002)

Maximum peak output power at antenna input terminal (dBm):	27.98
Maximum peak output power at antenna input terminal (mW):	628.058
Prediction distance (cm):	40
Predication frequency (MHz):	902.25
Maximum Antenna Gain, typical (dBi):	5.10
Maximum Antenna Gain (numeric):	3.236
Power density of prediction frequency at prediction distance (mW/cm^2):	0.1010
FCC limit (mW/cm^2):	0.6015

900 MHz Radio 2 (FCC ID: OWS-NIC541)

Maximum peak output power at antenna input terminal (dBm):	30.00
Maximum peak output power at antenna input terminal (mW):	1000.00
Prediction distance (cm):	40
Predication frequency (MHz):	902.3
Maximum Antenna Gain, typical (dBi):	6.00
Maximum Antenna Gain (numeric):	3.98
Power density of prediction frequency at prediction distance (mW/cm^2):	0.1979
FCC limit (mW/cm^2):	0.6015

MPE ratio sum: (0.1878/1.0) + (0.1971/1.0) + (0.101/0.6015) + (0.1979/0.6015) = 0.8818<1.0

Note: Please refer to BACL report number R1409232-247, Issue date: 2014-12-22 and EMT Report number M151008E2, Issued date: 2015-11-11. ACS Report Number: 11-0104. W06.11.C, Issue date: 2011-04-29
MicomLabs Report Number: SSNT108-U3 Rev A, Issue date: 2016-01-05.

Results

For the different combination of transmitters, a separation distance of 40 cm complies with the MPE simultaneous transmission limit of ≤ 1.0.