



LCIE SUD EST
 Laboratoire de Moirans
 Z.I. Centr'Alp
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 38430 MOIRANS – FRANCE

FCCID: R8T-FAMAv3
RF Exposure Information

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where: S = power density
 P = power input to the 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

When all the antennas are at least 20cm away from the user's body (excluding hands and wrists during normal operation of the device), but individual antennas cannot be separated by more than 20cm from each other.

$$[Pd(1) / LPd(1)] + [Pd(2) / LPd(2)] + \dots + [Pd(n) / LPd(n)] < 1,$$

Where;
 Pd(n) = Power density of nth transmitter at 20cm
 LPd(n) = Power density limit for the nth transmitter

§ 1.1310 Radiofrequency radiation exposure limits.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) 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

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



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Calculations:

Transmitter n°1 FCC ID R17LE910NAV2

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (Lowest freq) (MHz)	Maximum conducted output power (per tune-up) (dBm)	Multi-slot Class	Maximum number of TX slots	Duty cycle (%)	Antenna gain (dBi)	Evaluation distance for compliance with MPE limits (cm)	$S = \frac{PG}{4\pi R^2}$ (mW/cm ²)
FDD 12	LTE FDD	699 - 716	699,0	24,00	N/A	N/A	100%	6,63	20	0,230
FDD 17	LTE FDD	704 - 715,9	704,0	24,00	N/A	N/A	100%	6,63	20	0,230
FDD 13	LTE FDD	777 - 787	777,0	24,00	N/A	N/A	100%	6,63	20	0,230
FDD 5	LTE FDD	824,7 - 848,3	824,7	24,00	N/A	N/A	100%	6,63	20	0,230
FDD V	WCDMAHSPA	826,4 - 846,6	826,4	24,50	N/A	N/A	100%	6,63	20	0,258
FDD 4	LTE FDD	1710,7 - 1764,3	1710,7	24,00	N/A	N/A	100%	6,00	20	0,199
FDD 2	LTE FDD	1850,7 - 1909,3	1850,7	24,00	N/A	N/A	100%	8,51	20	0,355
FDD II	WCDMAHSPA	1852,4 - 1907,6	1852,4	24,50	N/A	N/A	100%	8,51	20	0,398

Transmitter n°2 (FCC ID QQQBLE112)

Maximum peak output power at the antenna terminal: 2,55 (dBm)
 Maximum peak output power at the antenna terminal: 1,798870915 (mW)
 Antenna gain(typical): 2,3 (dBi)
 Maximum antenna gain: 1,698243652 (numeric)
 Prediction distance: 20 (cm)
 Prediction frequency: 2402 (MHz)
 MPE limit for uncontrolled exposure at prediction frequency: 1 (mW/cm²)

Power density at prediction frequency: 0,000608 (mW/cm²)

Calculation: $(Pd(2.4GHz) / LPd(2.4GHz)) + (Pd(FM) / LPd(FM)) = 0.0141 \text{ mW/cm}^2 < 1$

Colocation:	0.398608	<1
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Conclusion:

The device complies with FCC's RF radiation exposure limit for general population as a **mobile device (d>20cm)** under the collocation conditions described above.