

Maximum Permissible Exposure (MPE)

Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

RSS 102 issue 5.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

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
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

FCC: 2.4GHz mode: PIFA Antenna

Maximum Permissible Exposure (MPE) Evaluation

The worst case of average power: refer to FCC P15C test report for detail measurement date.

Power measurement:

Channel		Output Chain (dBm)		Combine Output Power (dBm)	Limit (dBm)	Result
		Chain A	chain B			
AN HT20	CH 1	9	9	12.01	30	Pass
	CH 6	12.29	12.54	15.43	30	Pass
	CH 11	12.33	12.29	15.32	30	Pass
	CH 12	-20.17	-22.26	-18.08	30	Pass
	CH 13	-20.22	-22.16	-18.07	30	Pass

Prediction of MPE limit at a given distance

Equation from page 18 of 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

Maximum output power at antenna input terminal:	15.43	(dBm)
Maximum output power at antenna input terminal:	34.91403155	(mW)
Tune-Up power Tolerance:	2	dB
Duty cycle:	100	(%)
Maximum Pav :	55.33501092	(mW)
Antenna gain (typical):	4.46	(dBi)
Maximum antenna gain:	2.792543841	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0307575	(mW/cm^2)

FCC: 2.4GHz mode: PCB Antenna

Maximum Permissible Exposure (MPE) Evaluation

The worst case of average power: refer to FCC P15C test report for detail measurement date.

Power measurement:

Channel		Output Chain (dBm)		Combine Output Power (dBm)	Limit (dBm)	Result
		Chain A	chain B			
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Maximum output power at antenna input terminal:	15.43	(dBm)
Maximum output power at antenna input terminal:	34.91403155	(mW)
Tune-Up power Tolerance:	2	dB
Duty cycle:	100	(%)
Maximum Pav :	55.33501092	(mW)
Antenna gain (typical):	3.3	(dBi)
Maximum antenna gain:	2.13796209	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0235478	(mW/cm^2)