

MPE Calculation

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Mode)	Frequency range (MHz)			Tune-up Max power(dBm) ^{Note1}	ANT Gain including cable(dBi) ^{Note2}	Duty Factor(dB)	Adjusted EIRP to tune-up max(dBm) ^{Note3}	Maximum power density (mW/cm ²)	Requirement (mW/cm ²)
GSM 850(1TX slot)	824.20	~	848.80	33.50	5.6	-9.03	30.07	0.202 2	0.549 0
GSM 850(4TX slot)	824.20	~	848.80	28.50	5.6	-3.01	31.09	0.255 7	0.549 0
GSM 1900(1TX slot)	1 850.20	~	1 909.80	30.50	2.5	-9.03	23.97	0.049 7	1.000 0
GSM 1900(4TX slot)	1 850.20	~	1 909.80	25.50	2.5	-3.01	24.99	0.062 8	1.000 0
WCDMA 850	826.40	~	846.60	24.00	5.6	NA	29.60	0.181 5	0.550 0
WCDMA 1700	1 712.40	~	1 752.60	23.50	6.5	NA	30.00	0.199 0	1.000 0
WCDMA 1900	1 852.40	~	1 907.60	23.50	2.5	NA	26.00	0.079 3	1.000 0
LTE Band 12(17)	699.00	~	716.00	23.00	7.6	NA	30.60	0.228 5	0.466 0
LTE Band 13	777.00	~	787.00	23.00	7.9	NA	30.90	0.244 8	0.518 0
LTE Band 5	824.00	~	849.00	23.00	5.6	NA	28.60	0.144 2	0.549 0
LTE Band 4	1 710.00	~	1 755.00	23.00	6.5	NA	29.50	0.177 4	1.000 0
LTE Band 2	1 850.00	~	1 910.00	23.00	2.5	NA	25.50	0.070 6	1.000 0
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Note1: Please refer to the tune-up procedure for tune-up max.

Note2: Assuming the worst case scenario, the antenna gain was calculated from the specification limit and Max tune-up power.

Note3: EIRP(Adjusted EIRP to Tune- up Max) = Tune-up power(dBm) + ANT Gain including cable loss(dBi) + Duty factor(dB)

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 1016.2 / (4 \times 20^2 \times \pi) \\
 &= 0.202 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm²)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenna(20cm)

▪ 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)
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 ~ 1,500			f / 1500	30
1,500 ~ 100,000			1.0	30

Conclusion : The exposure condition of this device is compliant with FCC