

MPE Calculation

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Mode)	Frequency range (MHz)			Maximum Tune-up EIRP(dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm ²)	Requirement (mW/cm ²)
60.5 GHz SRD Radar	57 000	~	64 000	14.00	25.119	0.005 0	1.000 0
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Note: Please refer to the operation description for Max tune-up power.

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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 25.119 / (4 \times 20^2 \times \pi) \\
 &= 0.0050 \text{ mW/cm}^2
 \end{aligned}$$

- 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)

Part 1.1310

▪ 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

MPE Calculation

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Mode)	Frequency range (MHz)		Max. Avg Target Power(dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm ²)	Requirement (mW/cm ²)
Bluetooth LE(1Mbps)	2 402.00	~ 2 480.00	3.40	-1.61	1.79	1.511	0.000 4	1.000 0
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Note: Please refer to the operation description for Max tune-up power.

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.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 1.511 / (4 \times 20^2 \times \pi) \\
 &= 0.0004 \text{ mW/cm}^2
 \end{aligned}$$

- Note

S= Maximum power density(mW/cm²)

EIRP= Equivalent Isotropic Radiated Power(mW)

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Part 1.1310

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RF feature(mode)	Frequency range (MHz)		Max. Avg Target Power(dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm ²)	Requirement (mW/cm ²)
LTE B12	699.00	~ 716.00	25.70	2.90	28.60	724.436	0.144 2	0.466 0
LTE B13	777.00	~ 787.00	25.70	2.90	28.60	724.436	0.144 2	0.518 0
LTE B26	814.00	~ 824.00	25.70	2.90	28.60	724.436	0.144 2	0.542 0
LTE B26(5)	824.00	~ 849.00	25.70	2.90	28.60	724.436	0.144 2	0.549 0
LTE B66(4)	1 710.00	~ 1 780.00	25.70	4.30	30.00	1000.000	0.199 0	1.000 0
LTE B25(2)	1 850.00	~ 1 915.00	25.70	4.30	30.00	1000.000	0.199 0	1.000 0
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Note: Please refer to the operation description for Max tune-up power.

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The MPE sample calculation for this exposure is shown below.

$$\begin{aligned}
 S &= \text{EIRP} / (4 R^2 \pi) \\
 &= 724.436 / (4 \times 20^2 \times \pi) \\
 &= 0.1442 \text{ mW/cm}^2
 \end{aligned}$$

- Note

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Part 1.1310

▪ 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)
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300 ~ 1,500			f / 1500	30
1,500 ~ 100,000			1.0	30

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

RF Exposure Compliance for simultaneous operations

- Worst case for simultaneous operations
- Bluetooth LE + 60.5 GHz mmW Radar

RF feature or mode	LE	Rader	-	-	-	-	-	Σ of MPE ratios
Band(Worst case)	2.4 GHz	60.5 GHz	-	-	-	-	-	
Power Density (mW/cm2)	0.000 4	0.005 0	-	-	-	-	-	
Requirement (mW/cm2)	1.000 0	1.000 0	-	-	-	-	-	
MPE ratio (Power Density/Requirement)	0.000 4	0.005 0	-	-	-	-	-	
Worst case(MPE ratio)	0.000 4	0.005 0	-	-	-	-	-	0.005 4

- Requirement = Σ of MPE ratios ≤ 1

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