



Prediction of MPE at a given distance

1. Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

KDB Test Methodology: KDB 447498 D01 v06.

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 Exposure				
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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

2. Test Procedure

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

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna



3. Result

Mode	Frequency (MHz)	Prediction distance (cm)	RF output power(Max) (dBm)	Tune-up power (Max)		MPE (mW/cm ²)	Limit (mW/cm ²)	SAR Test Exclusion
				dBm	mW			
BLE	2402~2480	20	2.38	3.00	2.00	0.0006	1.000	Yes
LTE B2	1850~1910	20	25.44	26.00	349.95	0.1418	1.000	Yes
LTE B4	1710~1755	20	23.26	24.00	211.84	0.0841	1.000	Yes
LTE B5	824~849	20	22.09	23.00	161.81	0.0493	0.550	Yes
LTE B7	2500~2570	20	25.75	26.00	375.84	0.1701	1.000	Yes
LTE B12	699~716	20	22.14	23.00	163.68	0.0418	0.466	Yes
LTE B13	777~787	20	22.40	23.00	173.78	0.0500	0.520	Yes
LTE B25	1850~1915	20	28.08	29.00	642.69	0.2830	1.000	Yes
LTE B26 for Part 22	824~849	20	23.94	24.00	247.74	0.0629	0.550	Yes
LTE B26 for Part 90	814~824	20	20.86	21.00	121.90	0.0315	0.543	Yes
LTE B38	2570~2620	20	20.35	21.00	108.39	0.0467	1.000	Yes
LTE B41	2496~2690	20	24.35	25.00	272.27	0.1562	1.000	Yes
LTE B66	1710~1780	20	23.57	24.00	227.51	0.0841	1.000	Yes

The device could support transmission with BLE and LTE simultaneously.

BLE and LTE: $0.0006/1 + 0.2830/1 = 0.2836 \leq 1.0$, No RF Exposure Evaluation/SAR test is required.

Maximum Gain is 1.78dBi for BLE

Maximum Gain is 2.53dBi for LTE Band 2

Maximum Gain is 2.26dBi for LTE Band 4

Maximum Gain is 0.94dBi for LTE Band 5

Maximum Gain is 3.32dBi for LTE Band 7

Maximum Gain is 0.22dBi for LTE Band 12

Maximum Gain is 1.00dBi for LTE Band 13

Maximum Gain is 2.53dBi for LTE Band 25

Maximum Gain is 1.00dBi for LTE Band 26

Maximum Gain is 2.71dBi for LTE Band 38

Maximum Gain is 3.95dBi for LTE Band 41

Maximum Gain is 2.26dBi for LTE Band 66

Conclusion: Then SAR evaluation is not required.