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)

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

Worse case is as below:

Mode	Frequency (MHz)	Prediction distance (cm)	RF output power		MPE (mW/cm^2)	Limit (mW/cm^2)	SAR Test Exclusion
			dBm	mW			
LTE Band 2	1850~1910	50	24.46	279.25	0.0089	1	Yes
LTE Band 4	1710~1755	50	25.41	347.54	0.0111	1	Yes
LTE Band 5	824~849	50	24.88	307.61	0.0098	0.549	Yes
LTE Band 12	699~716	50	24.49	281.19	0.0090	0.466	Yes
LTE Band 13	777~787	50	25.51	355.63	0.0113	0.518	Yes
NB-IOT Band 2	1850~1910	50	23.37	217.27	0.0069	1	Yes
NB-IOT Band 4	1710~1755	50	23.56	226.99	0.0072	1	Yes
NB-IOT Band 5	824~849	50	23.59	228.56	0.0073	0.549	Yes
NB-IOT Band 12	699~716	50	23.75	237.14	0.0076	0.466	Yes
NB-IOT Band 13	777~787	50	23.52	224.91	0.0072	0.518	Yes

Maximum Simultaneous transmission MPE Ratios for LTE+NB-IOT:

0.0113/0.518+0.0076/0.466=0.0381<1

LTE Antenna Gain: 0dBi, 1 (numeric)

Then SAR evaluation is not required.