Maximum permissible exposure (MPE) measurement according to FCC CFR 47part 2, §2.1091

EUT with external antenna

General

This test was performed to determine the minimum safe distance between the transmitter antenna and human to avoid public exposure in excess of limits for general population (uncontrolled exposure). Specification test limits are given in Table 1 below.

Table 1 RF exposure limits

Frequency range, MHz	Power density		Electric field strength*, V/m
	mW/cm^2	W/m^2	
2400.0 – 10000.0	1.00	10.0	61.4

* - Electric field strength limit was calculated from power density as follows: E = sqrt (S×120×π), where E is electric field strength in V/m and S is power density in W/m^2

Test procedure for E-field strength measurements

1. The EUT, connected to the antenna providing the maximum directional gain, was set up as shown in Figure 1 below.
2. The E-field probe was pointed to the EUT antenna zero azimuth at a 3 m distance, the maximum field strength reading was recorded in Table 2.
3. The E-field probe was slowly moved toward the EUT until E-field equivalent to the maximum permitted power density was measured.
4. The probe was investigated over a cross-section area equivalent to the antenna size at various test distances to detect the maximum radial from the antenna.
5. The obtained antenna to probe distance was recorded in Table 2 as a minimum separation distance.
6. The test was repeated at the rest of test distances according to Table 2.

Figure 1 Maximum permissible exposure (MPE) measurement set up

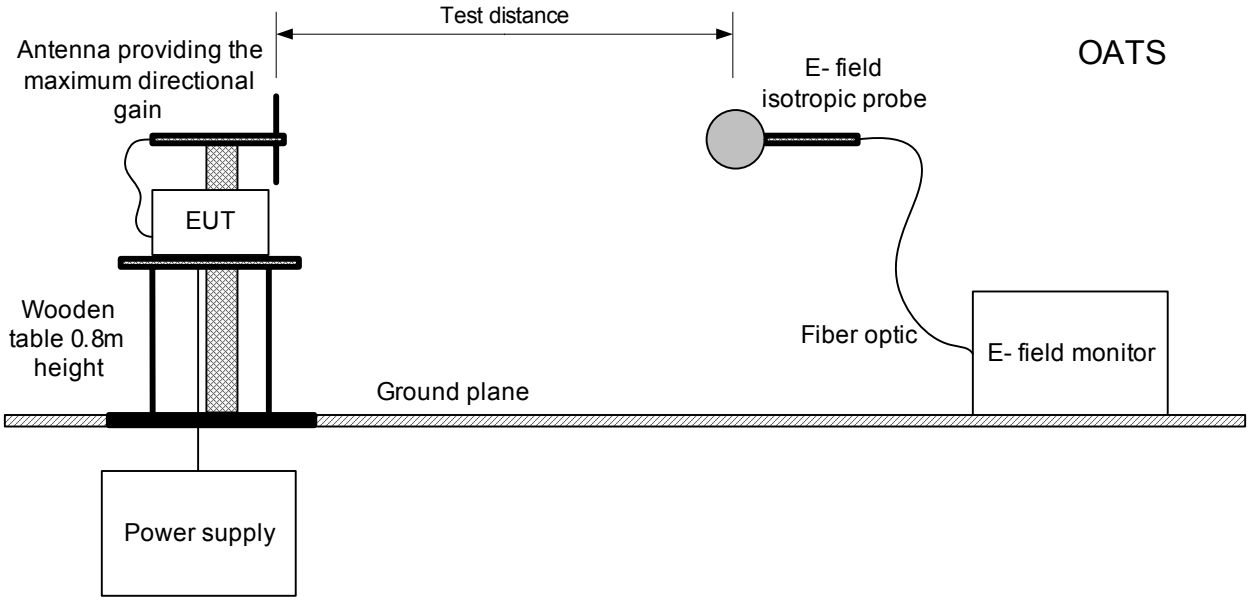

Table 2 Maximum permissible exposure (MPE) measurement with external antenna

Test distance, m	Power density, mW/cm^2	Limit, mW/cm^2	Margin, mW/cm^2	Verdict
Low carrier frequency				
3.0	0.0348	1.00	-0.9652	Pass
2.5	0.0515	1.00	-0.9485	Pass
2.0	0.0631	1.00	-0.9369	Pass
1.5	0.0838	1.00	-0.9162	Pass
1.0	0.0921	1.00	-0.9079	Pass
0.5	0.0844	1.00	-0.9156	Pass
0.3	0.1569	1.00	-0.8431	Pass
0.2	0.1769	1.00	-0.8231	Pass
0.1	0.1118	1.00	-0.8882	Pass
0.05	0.1815	1.00	-0.8185	Pass
Mid carrier frequency				
3.0	0.0356	1.00	-0.9644	Pass
2.5	0.0525	1.00	-0.9475	Pass
2.0	0.0768	1.00	-0.9232	Pass
1.5	0.0871	1.00	-0.9129	Pass
1.0	0.0882	1.00	-0.9118	Pass
0.5	0.0614	1.00	-0.9386	Pass
0.3	0.1354	1.00	-0.8646	Pass
0.2	0.1812	1.00	-0.8188	Pass
0.1	0.1731	1.00	-0.8269	Pass
0.05	0.1510	1.00	-0.8490	Pass
High carrier frequency				
3.0	0.0341	1.00	-0.9659	Pass
2.5	0.0563	1.00	-0.9437	Pass
2.0	0.0835	1.00	-0.9165	Pass
1.5	0.1723	1.00	-0.8277	Pass
1.0	0.1453	1.00	-0.8547	Pass
0.5	0.0642	1.00	-0.9358	Pass
0.3	0.1935	1.00	-0.8065	Pass
0.2	0.3560	1.00	-0.6440	Pass
0.1	0.2280	1.00	-0.7720	Pass
0.05	0.3330	1.00	-0.6670	Pass