



RF exposure Estimation

1. Introduction

Product Description	MIPOW PLAYBULB SPHERE
Model Name	BTC100
FCC ID	SL7BTC100

2. Limit and Guidelines on Exposure to Electromagnetic Fields

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 Mobile Portable RF Exposure v05r02, no SAR required if power is lower than the flowing threshold:

At frequencies below 100 MHz, the following may be considered for SAR test exclusion, and as illustrated in Appendix C:

- a) The power threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ for test separation distances $> 50 \text{ mm}$ and $< 200 \text{ mm}$
- b) The power threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$ for test separation distances $\leq 50 \text{ mm}$
- c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable.

The test exclusions are applicable only when the minimum test separation distance is $\leq 50 \text{ mm}$ and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is $< 5 \text{ mm}$, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.



Appendix C

SAR Test Exclusion Thresholds for < 100 MHz and < 200 mm

MHz	< 50	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	237	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
50	308	617	625	634	643	651	660	669	677	686	695	703	712	721	729	738	
10	474	948	961	975	988	1001	1015	1028	1041	1055	1068	1081	1095	1108	1121	1135	
1	711	1422	1442	1462	1482	1502	1522	1542	1562	1582	1602	1622	1642	1662	1682	1702	
0.1	948	1896	1923	1949	1976	2003	2029	2056	2083	2109	2136	2163	2189	2216	2243	2269	
0.05	1019	2039	2067	2096	2125	2153	2182	2211	2239	2268	2297	2325	2354	2383	2411	2440	
0.01	1185	2370	2403	2437	2470	2503	2537	2570	2603	2637	2670	2703	2737	2770	2803	2837	

3. Calculation method

RF Transmission Frequency: 117 KHz

According to the follow transmitter output power (Pt) formula:

$$Pt = (E \times d) / (30 \times gt)$$

Pt=transmitter output power in watts

gt=numeric gain of the transmitting antenna (unitless)

E=electric field strength in V/m

d=measurement distance in meters (m)

$$E_{max}=18.93 \text{ dBuV/m} = 0.0088 \text{ V/m}, d=10 \text{ m}, gt=2$$

$$Pt = (E \times d) / (30 \times gt) = 0.0029 \text{ W} = 2.9 \text{ mW} < 948 \text{ mW}$$

Therefore, excluded from SAR testing.

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