

RF Exposure evaluation

According to 447498 D01 General RF Exposure Guidance v07:

Per §1.1307(b) (3) (i) (A), a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

$$\text{eirp} = p_t \times g_t = (E \times d)^2/30$$

where:

p_t = transmitter output power in watts,

g_t = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, --- $10^{((\text{dBuV/m})/20)}/10^6$,

d = measurement distance in meters (m)--- 3m.

$$\text{So } p_t = (E \times d)^2/(30 \times g_t)$$

Worse case is as below:

Field strength = 68.32 dBuV/m @3m

Ant gain -0.15 dBi; so Ant numeric gain= 0.97

$$\text{So } p_t = \{ [10^{(68.32/20)}/10^6 \times 3]^2 / (30 \times 0.97) \} \times 1000 \text{mW} = \underline{0.002} \text{ mW} < 1 \text{ mW}$$

Then SAR evaluation is not required.