

RF Exposure evaluation

According to 447498 D04 Interim General RF Exposure Guidance v01

1-mW Test Exemption

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.

1-mW Test Exemption for Multiple Sources

The 1-mW exemption intended for single transmitters may be also applied to simultaneous transmission conditions, within the same host device, according one of the following criteria:

a) When maximum available power each individual transmitting antenna within the same time averaging period is ≤ 1 mW, and the nearest parts of the antenna structures of the simultaneously operating transmitters are separated by at least 2 cm.

b) When the aggregate maximum available power of all transmitting antennas is ≤ 1 mW in the same time-averaging period.

This exemption may not be combined with any other exemption.

(1-mW Test Exemption)

As this equipment:

$$EIRP = P_t * G_t = (E*d)^2/30$$

$$\text{So } P_t = (E*d)^2/(30*G_t)$$

where:

P_t = transmitter output power in watts,

G_t = numeric gain of the transmitting antenna (unit-less),

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

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

Field strength: $E=51.37$ dBuV/m @3m

Ant gain 0 dBi; so Ant numeric gain $G_t=1$

$$\text{So } P_t = \{ [10^{(51.37/20)/10^6} \times 3]^2 / (30*1) \} \times 1000 \text{ mW} = 0.000041 \text{ mW} < 1 \text{ mW}$$

Then the SAR test is exempted.