Prediction of MPE at a given distance

According to 447498 D04 Interim General RF Exposure Guidance v01

The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form as below. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in §1.1310(e)(1).

$$P_{th} \ (mW) = ERP_{20 \ cm} \ (mW) = \begin{cases} 2040f & 0.3 \ \text{GHz} \leq f < 1.5 \ \text{GHz} \\ 3060 & 1.5 \ \text{GHz} \leq f \leq 6 \ \text{GHz} \end{cases}$$

"f" is in GHz

Simultaneous Transmission with MPE-based Exemptions

For these cases, a device with multiple RF sources transmitting simultaneously will be considered an RF exempt device if the condition of following Formula is satisfied.

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure \ Limit_k} \leq 1$$

As this equipment:

Distance=20cm

f = 0.2472

So P_{th}=3060mW

Where:

EIRP = Pm + Gi

Pt=10$^{(EIRP/10)}$

Pm = measured transmitter output power in dBm,

Pt = transmitter output power in milliwatts,

Gi = numeric gain of the transmitting antenna (unit-dBi)

Ant gain Gi=1.56 dBi

Pm=16.335 dBm

So Pt=10$^{(16.335/10)}$ mW =43.003 mW<3060mW

Then the SAR test is exempted.