

## 16 RF Exposure

### KDB 447498 MPE Calculation

#### Prediction of MPE limit at a given distance

Equation from IEEE C95.1

$$S = \frac{EIRP}{4 \pi R^2} \text{ re-arranged} \quad R = \sqrt{\frac{EIRP}{S 4 \pi}}$$

where:

S = power density

R = distance to the centre of radiation of the antenna

EIRP = EUT Maximum power

Note:

The EIRP was calculated by addition of the maximum conducted carrier power plus the antenna gain.

OR

The following formula may be used to convert field strength (FS) in volts/metre to transmitter output power (TP) in watts:

$$TP = (FS \times D)^2 / (30 \times G)$$

where D is the distance in metres between the two antennas and G is the antenna numerical gain referenced to isotropic gain.

Result

| Prediction Frequency (MHz) | Field Strength (dBuV/m) | Maximum EIRP (mW) | Minimum Distance (cm) | Power density at distance (mW/cm <sup>2</sup> ) | Power density limit (S) (mW/cm <sup>2</sup> ) |
|----------------------------|-------------------------|-------------------|-----------------------|-------------------------------------------------|-----------------------------------------------|
| 24125                      | 113.36                  | 65.0              | 2.5                   | 0.83                                            | 1                                             |