

## RF Exposure Evaluation

### Limits

According to KDB 447498 D01 V06 and part 2.1091, Unless specifically required by the published RF exposure KDB procedures, The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

**Pd** = power density in mW/cm<sup>2</sup>, **Pout** = output power to antenna in mW;

**G** = gain of antenna in linear scale, **Pi** = 3.1416;

**R** = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

Exclusion for When all Antennas are Evaluated for MPE Only

When the Sum of the MPE Ratio for All Antennas  $\leq 1.0$

MPE Ratios are Calculated as  $[(MPE1/Limit) + (MPE2/Limit) + \dots] \leq 1.0$

### Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

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## Test Result of RF Exposure Evaluation

Mode	Field strength (dBuV/m)	EIRP power (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
BT mode	91.00	-4.16	0.383	0.0001	1.0	PASS
Simultaneous(BT mode+ WPC)				0.1	1.0	PASS

Simultaneous(BT + WPC)= 0.0001/1+0.17/1.63=0.104

Remark: antenna gain=-0.62dB

EIRP=E<sub>Meas</sub>+20log(d<sub>Meas</sub>)-104.7

EIRP is the equivalent isotropically radiated power, in dBm

E<sub>Meas</sub> is the field strength of the emission at the measurement distance, in dB  $\mu$  V/m

d<sub>Meas</sub> is the measurement distance, in m