

RF Exposure evaluation

According to 447498 D04 Interim General RF Exposure Guidance v01

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B. 1})$$

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B. 2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

Frequency(MHz)	Field Strength (dBuV/m)	erp(mW)	limit (mW)	min. distance (cm)
2441.00	96.16	0.76	2.7	0.50

according to ANSI C63.10

where:

$$EIRP \text{ (dBm)} = E \text{ (dBuV/m)} - 95.2$$

$$ERP = EIRP - 2.15 \text{ dB}$$

$$E = \text{Field Strength (dBuV/m)}$$

$$\text{So } ERP = 96.16 - 95.2 - 2.15 = -1.19 \text{ dBm} \quad 10^{-0.119} = 0.76 \text{ mW} < 2.7 \text{ mW}$$

$$\text{So Output power} = 96.16 - 95.2 = 0.96 \text{ dBm} \quad 10^{0.096} = 1.25 \text{ mW} < 2.7 \text{ mW}$$

Then SAR evaluation is not required