

RADIO FREQUENCY EXPOSURE EVALATION

Evaluation Method

KDB 447498 D04 Interim General RF Exposure Guidance v01

Applicable Standard:

FCC CFR 47 §1.1307(b)(3)(i)(B):

A single RF source is exempt if the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

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

Where

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

and

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

d = the separation distance (cm);

SAR evaluation:

Mode	Frequency	Max output power		Ant. Gain	Max E.I.R.P		P _{th}
	MHz	dBm	mW	dBi	dBm	mW	mW
BLE	2480	5.511	3.56	3.34	8.851	7.675	3060
802.11b	2437	14.59	28.77	3.34	17.93	62.087	3060
802.11g	2437	16.2	41.69	3.34	19.54	89.950	3060
802.11n20	2437	15.37	34.43	3.34	18.71	74.302	3060
802.11n40	2437	14.72	29.65	3.34	18.06	63.973	3060

Note1: For this EUT, and the separation distance is 20 cm. And the Bluetooth and WIFI can not transmit at the same time.

Note2: The Conducted output power and Maximum EIRP both no greater than the threshold P_{th}, that meets the exemption, the RF exposure evaluation is not required.

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