

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
802.11b	2412	11.94	15.63	2.7	14.64	29.11	38.6
802.11g	2437	11.66	14.66	2.7	14.36	27.29	38.4
802.11n20	2462	11.67	14.69	2.7	14.37	27.35	38.2
802.11a	5180	7.87	6.12	4.8	12.67	18.49	26.4
802.11n20	5200	7.7	5.89	4.8	12.5	17.78	26.3
802.11n40	5755	7.33	5.41	5.1	12.43	17.50	25.0

Note1: For this EUT, that is a fixed devices, and the separation distance is 2 cm. And the WIFI2.4 and WIFI5G 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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