

# RADIO FREQUENCY EXPOSURE EVALUATION

## 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);

FCC CFR 47 §1.1307(b)(3)(ii)(B):

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

**SAR evaluation:**

Separated check:

Module	Mode	Max output power		Ant. Gain	Max E.I.R.P		P <sub>th</sub>
		dBm	mW	dBi	dBm	mW	mW
WLT5283M	BLE	-7.439	0.18	3	-4.439	0.360	3060
ICT-M	BLE	10	10.00	3.26	13.26	21.184	3060
	WIFI2.4G	20.5	112.20	3.26	23.76	237.684	3060

Sum limit check:

Module	WLT5283M	ICT-M	
Technology	BLE	BLE	WIFI2.4G
Result	0.36	21.184	237.684
Limit	3060	3060	3060
Ratio (Result/Limit)	0.0001	0.0069	0.0777
Sum	0.0847		

Note1: For this EUT, and the separation distance is 20 cm.

Note2: The Sum = 0.0847 &lt; 1, that meets the exemption of multiple transmit, the RF exposure evaluation is not required.

Note3: The "ICT-M" was one single modular which FCC ID is "2AC7Z-ESPS3WROOM1".

**-END-**