May 28, 2024

FCC ID: VPYLB2FJ1

To whom it may concern,

We, UL Japan, Inc, hereby declare that Communication Module, model: 2FJ (FCC ID: VPYLB2FJ1) of Murata Manufacturing Co., Ltd. is exempt from RF exposure SAR evaluation because 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 according to the Code of Federal Regulation title 47 section 1.1307(b)(3)(i)(B). This method is used at separation distances d (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive) for single RF sources. 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

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

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

When the minimum separation distance is shorter than 0.5 cm, 0.5 cm is applied.

The SAR evaluation exemption threshold is calculated as below.

[WLAN 2.4 GHz band part]

Pth (mW)	3060
f (GHz)	2.462
$ERP_{20 \text{ cm}}$ (mW)	3060
d (cm)	20.0

Conducted Power	(dBm)	10.49
	(mW)	11.19
Antenna Gain (dBi)		1.33
EIRP (dBm)		11.82
ERP	(dBm)	9.68
	(mW)	9.29

The Maximum time-averaged power or ERP whichever greater is 11.2 mW.
(Rounded up to two decimals place)

[Bluetooth (LE) part]

Pth (mW)		3060
f (GHz)		2.48
$ERP_{20\,cm}$ (mW)		3060
d (cm)		20.0

	(dBm)	7.90
Conducted Power	(mW)	6.17
Antenna Gain (dBi)		1.33
EIRP (dBm)		9.23
ERP	(dBm)	7.09
	(mW)	5.12

The Maximum time-averaged power or ERP whichever greater is 6.2 mW.
(Rounded up to two decimals place)

[Bluetooth (BR / EDR) part]

Pth (mW)		3060
f (GHz)		2.48
$ERP_{20\,cm}$ (mW)		3060
d (cm)		20.0

	(dBm)	7.22
Conducted Power	(mW)	5.27
Antenna Gain (dBi)		1.33
EIRP (dBm)		8.55
ERP	(dBm)	6.41
	(mW)	4.38

The Maximum time-averaged power or ERP whichever greater is 5.3 mW.
(Rounded up to two decimals place)

Thank you for your attention to this matter.

T. Shimada

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Takumi Shimada
Engineer