

FCC ID: RF41637A

To whom it may concern,

We, UL Japan, Inc, hereby declare that WLAN unit, model: WM-WL No (FCC ID: RF41637A) of KEYENCE CORPORATION 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]

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

Conducted Power	(dBm)	16.50
	(mW)	44.67
Antenna Gain	(dBi)	0.60
EIRP	(dBm)	17.10
ERP	(dBm)	14.96
	(mW)	31.33

The Maximum time-averaged power or ERP whichever greater is 44.7 mW.
(Rounded up to two decimals place)

[WLAN 5 GHz band part]

P_{th} (mW)	3060
f (GHz)	5.24
$ERP_{20\text{ cm}}$ (mW)	3060
d (cm)	20.0

Conducted Power	(dBm)	13.00
	(mW)	19.95
Antenna Gain	(dBi)	1.80
EIRP	(dBm)	14.80
ERP	(dBm)	12.66
	(mW)	18.45

The Maximum time-averaged power or ERP whichever greater is 20 mW.
(Rounded up to two decimals place)

Thank you for your attention to this matter.



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