RF Exposure Statement: JP24VXOW 001

Client:	Nisshinbo Micro Devices Inc. 1-1, Fukuoka 2-Chome, Fujimino-City, Saitama, 356-8510 Japan
Test item:	K-Band Doppler Sensor Module (Movement Sensor)
Identification:	NJR4267F3C1

FCC Requirement

According to FCC §2.1093 (d)(1), Portable Devices that transmit at frequencies above 6 GHz must comply with the following applicable limit for Maximum Permissible Exposure (MPE) specified in FCC §1.1310 (e)(1), Table 1:

Equipment Use	Frequency Range [MHz]	Power Density Limit [mW/cm^2]	Average Time [min]
General Population / Uncontrolled Exposure	1,500 – 100,000	1.0	<30

Note:

This evaluation was conducted at 5.0cm test separation distance (variable r in the statement). It was specified by the customer.

Evaluation Result

The maximum measured E-field strength and estimated EIRP from the transmitter taking the specification range of EIRP stated by the manufacture into consideration as the worst case, are given in the following table:

Freq. [GHz]	Wave Length [cm]	Measured E-Field Strength E		Meas. Distance R [m]	Specification Range of EIRP by Manufacture [dB]	Calculated E-Field Strength E	
		[dBuV/m]	[V/m]			[dBuV/m]	[V/m]
24.129522	1.243290	108.22	0.258	3.0	4.77	112.99	0.446

Calculated EIRP		Test Distance r [cm]	Calculated Power Density S [mW/cm^2]
[mW]	[dBm]		
59.675	17.76	**5.0**	**0.189951**

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Note:

The EIRP in mW is calculated in conjunction with the following formula:

$EIRP = (E \times R)^2/30 = (0.446 \times 3.0)^2 / 30 = 0.059675$ [W] = 59.675 [mW]

The power density S in mW/cm^2 is calculated in conjunction with the next formula:

$S = EIRP / (4 \times \pi \times r^2) = 59.675 / (4 \times \pi \times 5.0^2) =$ **0.189951 [mW/cm^2]**

Since the shortest wave length λ of transmitter is 1.243cm, above mentioned calculations are considered in far field condition.

Normal mode (i.e. 100% duty cycle operation) is the worst case configuration of this transmitter, therefore above mentioned condition is considered as the most severe estimation.

Conclusion

This transmitter module is classified as Portable Devices by the client.

SAR evaluation is not required since nominal frequency of the transmitter is higher than 6GHz, therefore, RF exposure evaluation (MPE) was conducted by the above-mentioned calculated method.

As a result, the calculated Power Density S is below FCC limit at the separation distance of 5.0cm.