

RF Exposure Statement: JP21NCFI 001
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Client: New Japan Radio Co.,Ltd.
 1-1, Fukuoka 2-Chome, Fujimino-City, Saitama, 356-8510 Japan

Test item: K-Band Doppler Sensor Module (Movement Sensor)

Identification: NJR4266F3C2

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	Average Time [min]
General Population / Uncontrolled Exposure	1,500 – 100,000	1.0 [mW/cm ²]	<30

Note: This evaluation was conducted at 5cm test separation distance (variable r in the statement). It was specified by the customer.

Measurement Result

The maximum measured E-field strength and corresponded estimated EIRP from the transmitter are given in the following table:

Measured E-Field Strength E		Meas. Distance R [m]	Calculated EIRP		EIRP as the worst case		Evaluated Distance r [cm]	Calculated Power Density S [mW/cm ²]
[dBuV/m]	[V/m]		[mW]	[dBm]	[dBm]	[mW]		
104.23	0.1627	3.0	7.941	9.0	16.0	39.8	5.0	0.126687

Note:

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

$$\text{EIRP} = (E \times R)^2 / 30 = (0.1627 \times 3.0)^2 / 30 = 0.007941387 \text{ [W]} = 7.941 \text{ [mW]}$$

According to the manufacturer specifications, variations of EIRP is expected up to 16.0dBm for mass production units. Hence, 16.0dBm is applied as worst case in this evaluation.

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

$$S = \text{EIRP} / (4 \times \pi \times r^2) = 39.8 / (4 \times \pi \times 5.0^2) = \mathbf{0.126687 \text{ [mW/cm}^2\text{]}}$$

Since one wave length λ of the transmitter is 1.25cm, above mentioned calculations are considered in far field condition.

CW operation (100% duty cycle) is the worst case configuration of this transmitter. Therefore, above mentioned condition is considered as the most severe estimation. For details, refer to the submitted test report JP21FRBC 001.

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, calculated Power Density S is below FCC limit at the separation distance of 5cm.