

Produkte
Products

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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: NJR4266F2B2

FCC Requirement

According to FCC 2.1093, 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:

Equipment Use	Frequency Range	Power Density	Average Time [min]
General Population / Uncontrolled Exposure	1.5 – 100GHz	1.0 [mW/cm ²]	30

Note: According to FCC 2.1093 (d), this evaluation was conducted at 5cm distance.

Measurement Result

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

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Measured E-Field Strength E		Meas. Distance R [m]	Calculated EIRP		EIRP as worst case		Evaluated Distance r [cm]	Calculated Power Density S [mW/cm ²]
[dBuV/m]	[V/m]		[mW]	[dBm]	[dBm]	[mW]		
103.28	0.1459	3.0	6.4	8.1	13.0	20.0	5.0	0.06366

Note:

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

$$\text{EIRP} = (E \times R)^2 / 30 = (0.1459 \times 3.0)^2 / 30 = 0.0064 \text{ [W]} = 6.4 \text{ [mW]}$$

According to the manufacturer, variations of EIRP is expected from 8 to 13dBm during mass productions. Then, maximum value of 13dBm is applied as the worst case in this evaluation.

The power density S in mW/cm² is calculated in conjunction with the next formula:

$$S = \text{EIRP} / (4 \times \pi \times r^2) = 20.0 / (4 \times \pi \times 5.0^2) = \mathbf{0.06366 \text{ [mW/cm}^2\text{]}}$$

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 50149844 001.

Conclusion

This transmitter module is classified as a portable device by the client.

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

As a result, calculated Power Density S is below FCC limit at 5cm distance.