

# **K-Band Doppler Sensor Module**

RF Frequency: 24.075 to 24.175 GHz

Model No. NJR4269F3V1/F3V2

Voltage Line-up:    V1: 5V Vcc  
                          V2: 3V/3.3V Vcc

## **Specifications Rev.01 July 8, 2015**

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New Japan Radio Co., Ltd.  
Microwave Components Division

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  - \* Equipment Used in the Deep Sea
  - \* Power Generator Control Equipment (nuclear, steam, hydraulic)
  - \* Life Maintenance Medical Equipment
  - \* Fire Alarm/Intruder Detector
  - \* Vehicle Control Equipment (automobile, airplane, railroad, ship, etc.)
  - \* Various Safety Equipment
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## 1. Electric Characteristics (Common measure condition Ta= +25 °C)

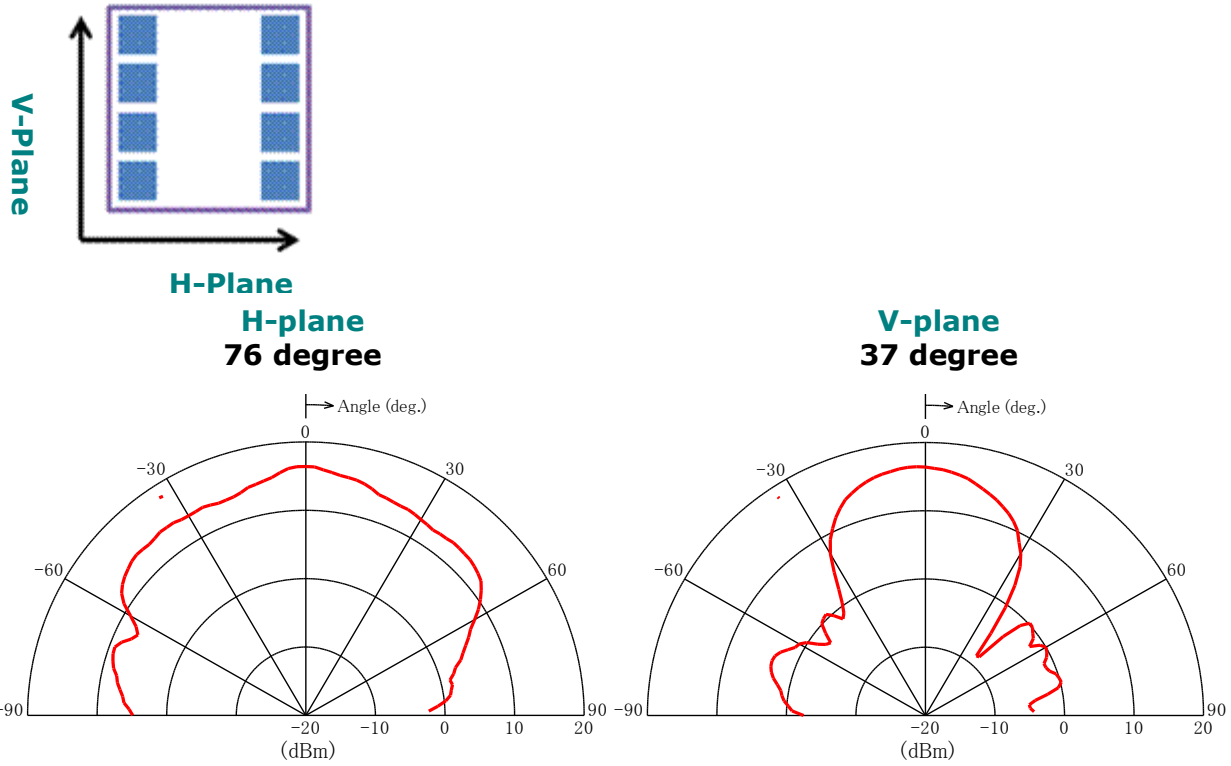
Item	Specification			Unit	Condition / Note
	Min.	Typ.	Max.		
1.1 Operation Voltage					
V1 type (Vcc = 5V)	4.75	-	5.25	V	Refer to Remarks
V2 type (Vcc = 3V/3.3V)	2.95	-	3.35	V	Refer to Remarks
1.2 Operation Current					
V1 type (Vcc = 5V)	-	30	40	mA	Vcc = 5 V
V2 type (Vcc = 3V/3.3V)	-	30	40	mA	Vcc = 3 V
	-	35	45	mA	Vcc = 3.3 V
1.3 Operation Frequency Ta= -20 to +60 °C	24.075	-	24.175	GHz	
1.4 E.I.R.P.	-	+16	-	dBm	
1.5 Frequency Stability	-	-0.4	-	MHz/°C	Ta= -20 to +60 °C
1.6 Start-up Time	-	20	-	usec	Pulse Condition: Duty 0.5% min.
1.7 2nd Harmonics (E.I.R.P.)	-	-	-30	dBm	
1.8 Radiation Pattern	-	-	-	-	
1.8.1 -3dB Beam Width (H-plane)	-	76	-	deg.	Refer to Figure 1
1.8.2 -3dB Beam Width (V-plane)	-	37	-	deg.	
1.8.3 Side-lobe Suppression (H-plane)	-	-	-	dB	No side lobe
1.8.4 Side-lobe Suppression (V-plane)	-	13	-	dB	
1.9 IF Output Offset Voltage	-300	-	+300	mV	
1.10 IF Output Signal Level	250	450	-	mVp-p	Refer to Figure 2 : Signal Test System Amp. Gain: 29 dB
1.11 IF Noise Output Voltage	-	200	-	mVp-p	Test Setup: Amp. Gain: 86 dB Amp. Band Width: 10 to 300 Hz

### Remarks:

DC power supply for each module should be conformed to the electrical specifications as described in this section. **A host in which a module is integrated should provide stable DC power through suitable regulator circuit to the module.**

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**Figure 1 Typical Radiation Pattern**



**2. Mechanical characteristics**

Item	Specification
2.1 Size	25(W) x 25(D) x 6.8(H) mm Tolerance: ±0.3 mm
2.2 Weight	7 g max.
2.3 Interface / Pin assignment	Pin Size: 0.64 mm square Pin Pitch: 2.54 mm  Recommended via hole diameter: 1.2 ± 0.05 mm

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### 3. Environmental characteristics

Item	Specification
3.1 Operation Temperature	-20 to +60 °C
3.2 Storage Temperature	-40 to +80 °C
3.3 Humidity	0 to 95 % @ +30 °C
3.4 Vibration	49.03 m/s <sup>2</sup> (5 G) 30 to 50 Hz, 10 minutes, XYZ direction
3.5 Shock	196.13 m/s <sup>2</sup> (20 G) Half sine, 11 msec, XYZ direction, 3 times

### 4. Absolute Maximum Rating

Item	Specification			Unit	Condition / Note
	Min.	Typ.	Max.		
4.1 Supply voltage					
V1 type (Vcc = 5V)	0	-	5.4	V	
V2 type (Vcc = 3V/3.3V)	0	-	3.4	V	
4.2 Operation Temperature	-40	-	+85	°C	No damage
4.3 Storage Temperature	-40	-	+85	°C	

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## 5. FCC Statement

Responsible party:

New Japan Radio Co.,Ltd.  
1-1, Fukuoka 2-chome Fujimino city Saitama Japan  
Tel: +81-49-278-1271, Fax: +81-49-278-1234

This device complies with Part 15 of the FCC rules. Operation is a subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

### NOTE:

Changes or modifications to the device not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment(s).

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The equipment complies with radio frequency exposure limits set forth by the FCC for an uncontrolled environment.

The device must not be co-located or operating in conjunction with any other antenna or transmitter.

### WARNING:

The FCC regulations provide that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### Limitation for use of the modules:

When the module is installed in a host product, the module shall be connected directly to a PCB of the host product. It shall NOT be extended by any cable.

DC power supply for each module must strictly be conformed to each electrical specification as described in the section 1 of this document.

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Manual and Product Labeling information to the End User:

End user manual must include all required regulatory information and/or warning as show in this manual.

OEM Integrator must indicate "**Contain FCC ID: 2ACUJR4269** " at the outside of a host product such as label when the module is installed in the host product.

The following statement from FCC §15.19(a)(3) is required on the label of the host equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

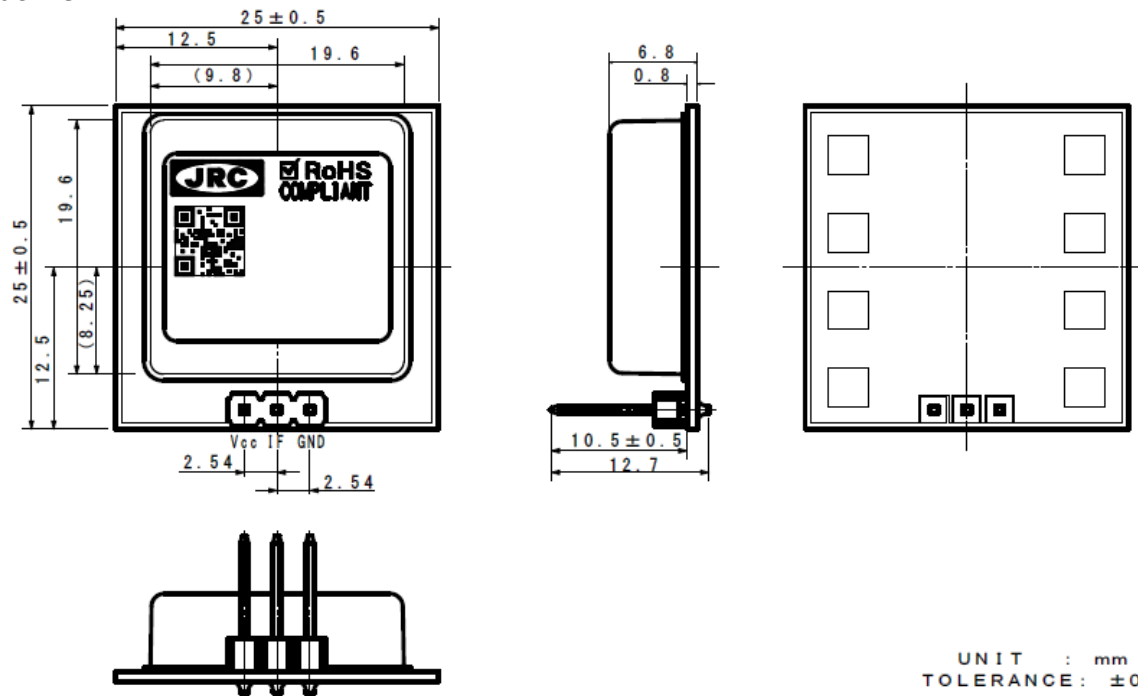
- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

OEM Integrator may be sure that the End user manual may not contain any information about the way to install or remove the modules from the host product.

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## 6. Drawing

### 6.1. Outline



Pin Assignment (view from back side [CAN package])

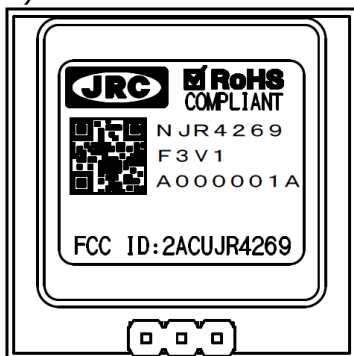
Left side : VCC

Center : IF

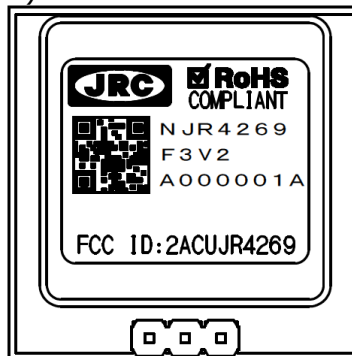
Right side : GND

### 6.2. Label

1) NJR4269F3V1



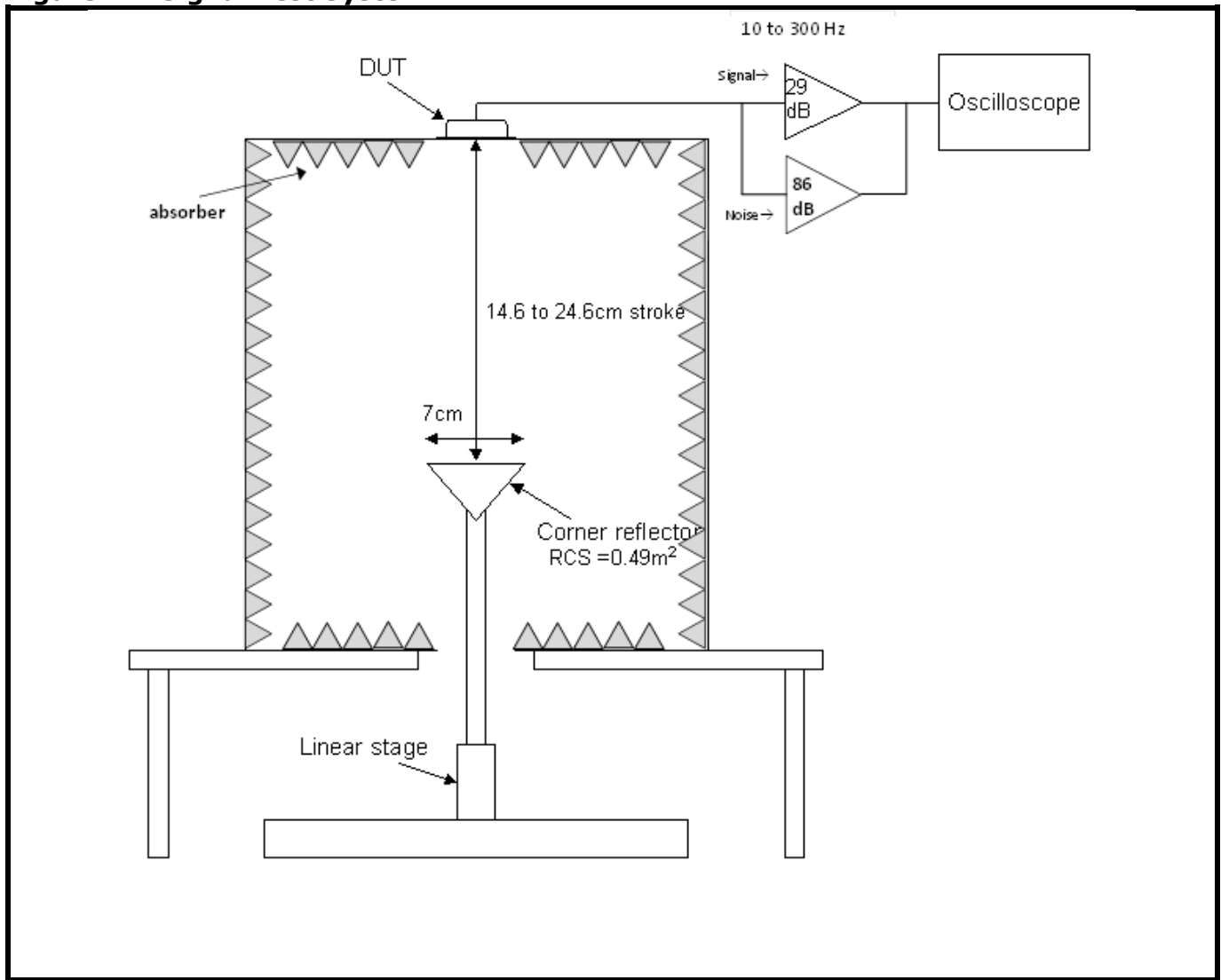
2) NJR4269F3V2



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**Figure 2 Signal Test System**



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