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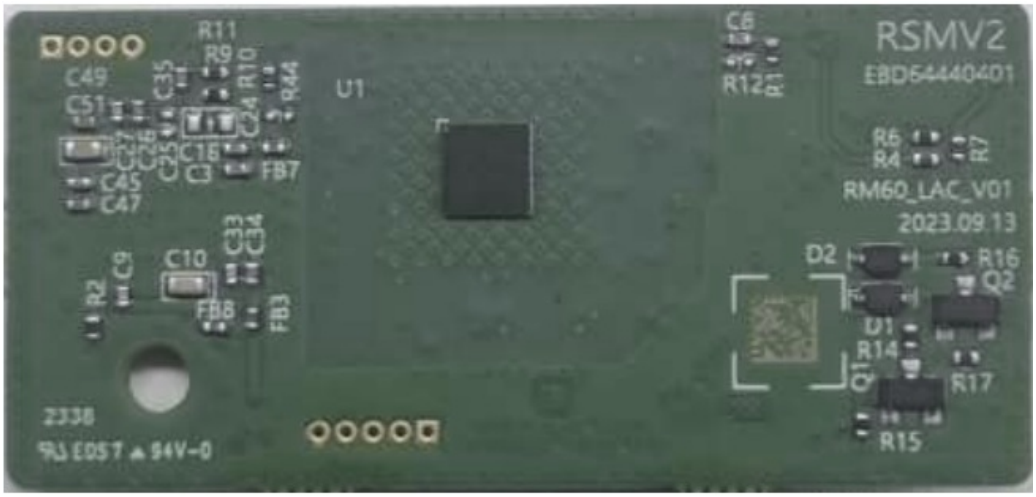
LG Electronics RSMV2 Radar Sensor Module



Specifications

Absolute Maximum Ratings

Parameters	Conditions	Spec.			Notes
		Min	Max	Unit	
Operating Temperature	Module Only	-20	+70	℃	
Storage Temperature	Module Only	-40	+100	℃	
Supply Voltage		11.4	12.6	V	

Radar Performance Specifications

(@ 25℃ unless otherwise noted)

Parameters	Spec.	Notes
Frequency	61 ~ 61.5GHz	Max. 480MHz band
Modulation Method	FMCW	Frequency Modulation Continuous Wave
Max Detection Range	≥ 5m	Adult people target
Azimuth FOV	90° (±45°)	
Number of Tx & Rx	1Tx, 1Rx	
Antenna Gain	3dBi	Typical (Max. 4dBi)
Antenna 1Tx Output Power (EIRP)	6.2dBm (±2dBm)	Max. Average EIRP

Overview

Introduction

The radar module “RSMV2” from LG Electronics is a compact millimeter wave detection

sensor optimized for detecting minute movements of objects at close area. Its main use is a presence detection sensor that checks the presence of people in various indoor and outdoor environments and has the advantage of being easy to install while minimizing sensor exposure. It also has an embedded program to enable configuration in response to various application requirements. By adopting Infineon’s radar sensor BGT60UTR11AiP, it supports an easy-to-use FMCW (Frequency Modulated Continuous Wave) radar platform. In particular, the AIP (Antenna In Package) structure, which has an antenna built into the radar chip, makes it possible to provide stable RF characteristics even if the size is small.

Features

- 61-61.5GHz radar sensor for presence detection.
- 1Tx – 1Rx Antenna
- Synthesized FMCW frequency source
- Back-channel UART through USB-to-PC for logging purposes
- Antenna in package (AIP)
- 12V power input.

Hardware Description

Product Appearance

The top and bottom views of the RSMV2 module are shown as follows.

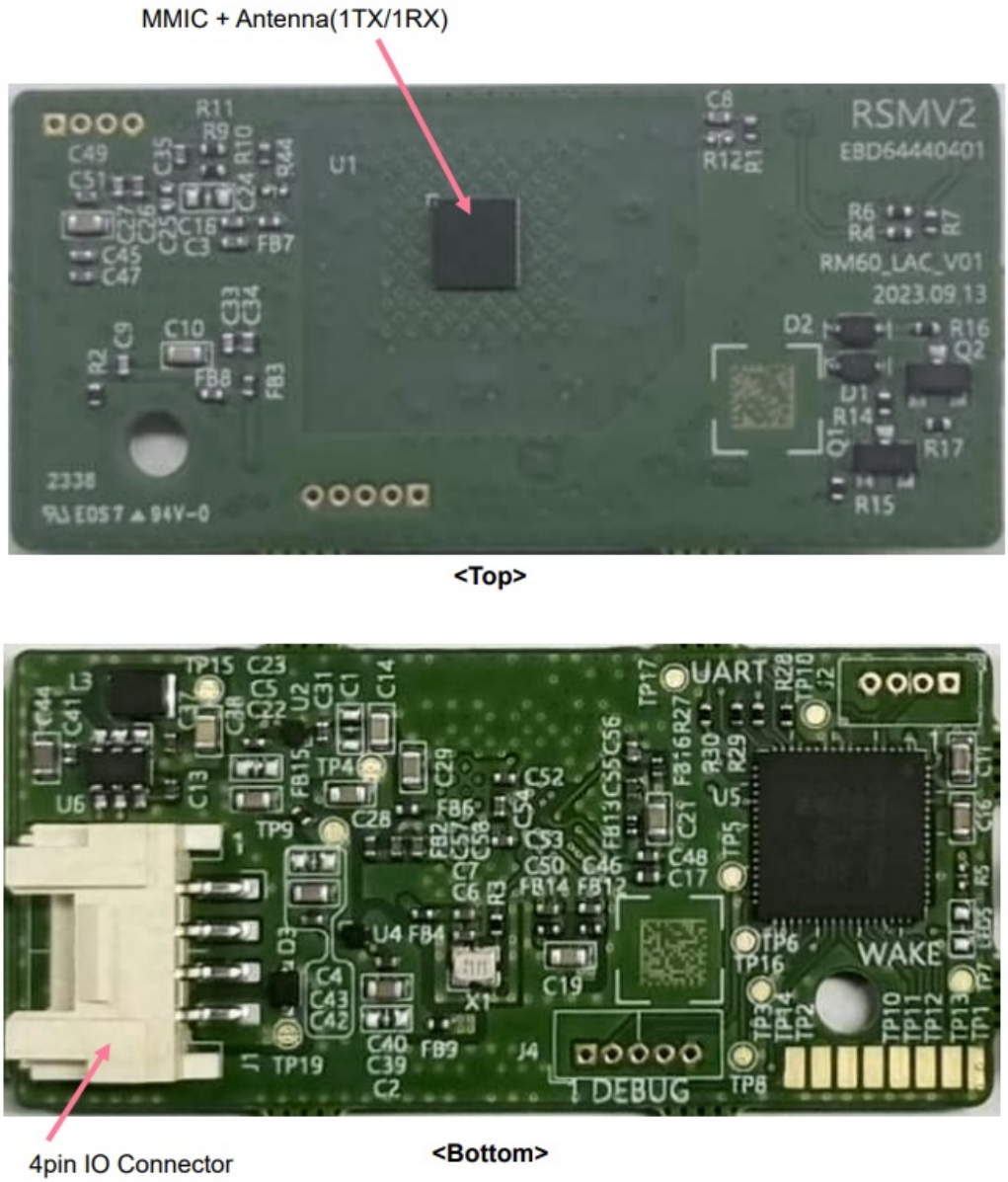
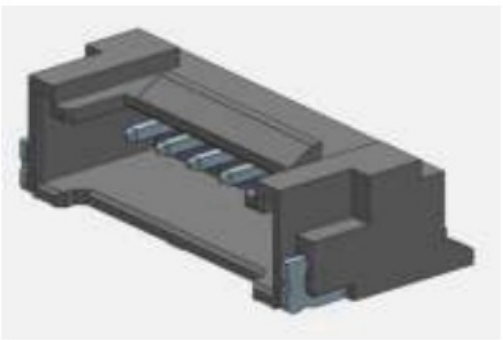


Figure 1. Radar Module Photos

Connector Interface



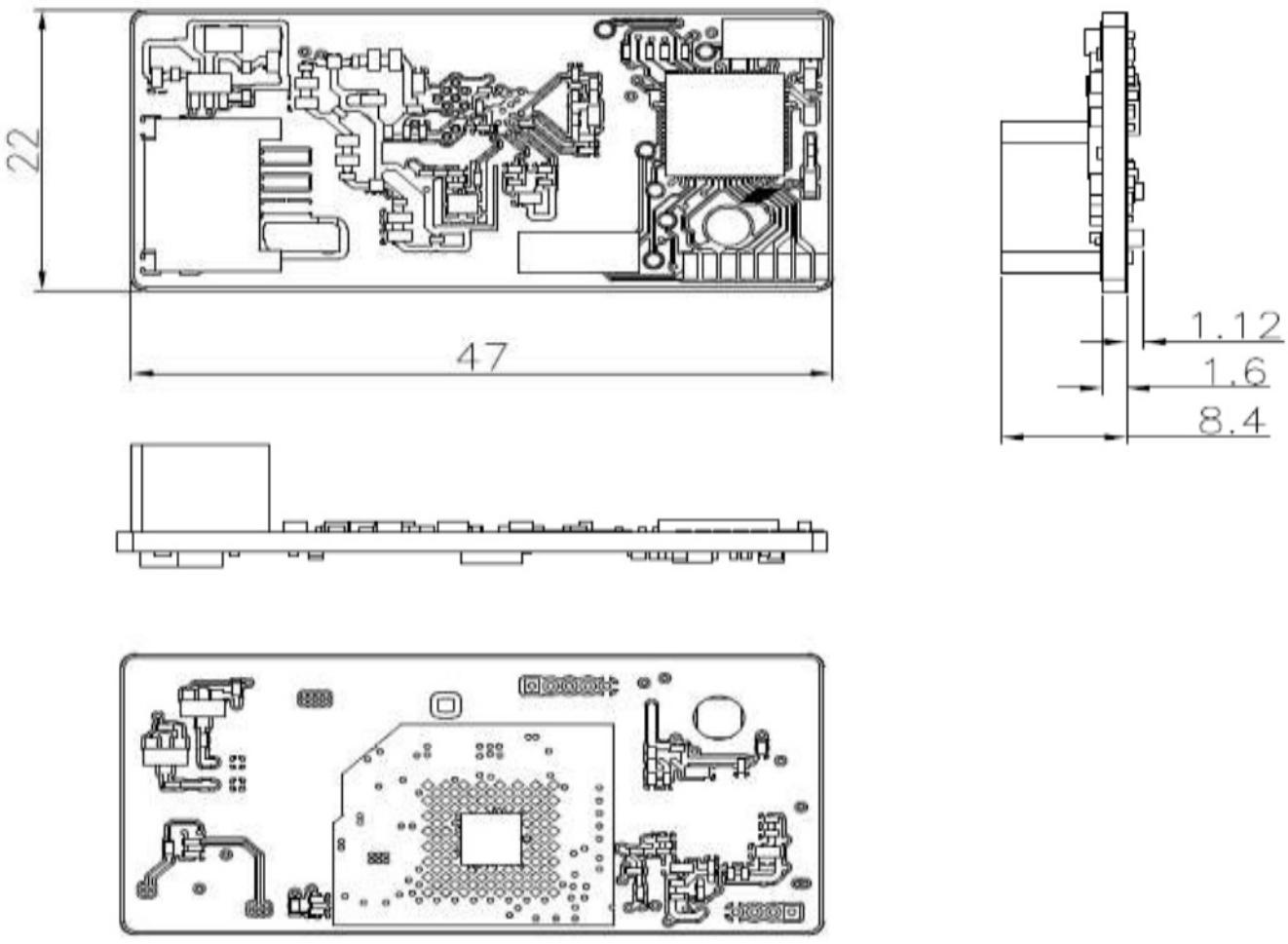
Connector Part No. : 20037WR-H04 (Maker : Yeonho Electronics)

Table 1. 4-Pin IO Connector's Pin

Pin No.	Signal Name	Function
1	HOST_UART_TX	UART TX
2	HOST_UART_RX	UART RX
3	GND	Ground
4	+VDD_12V	+12V DC Input

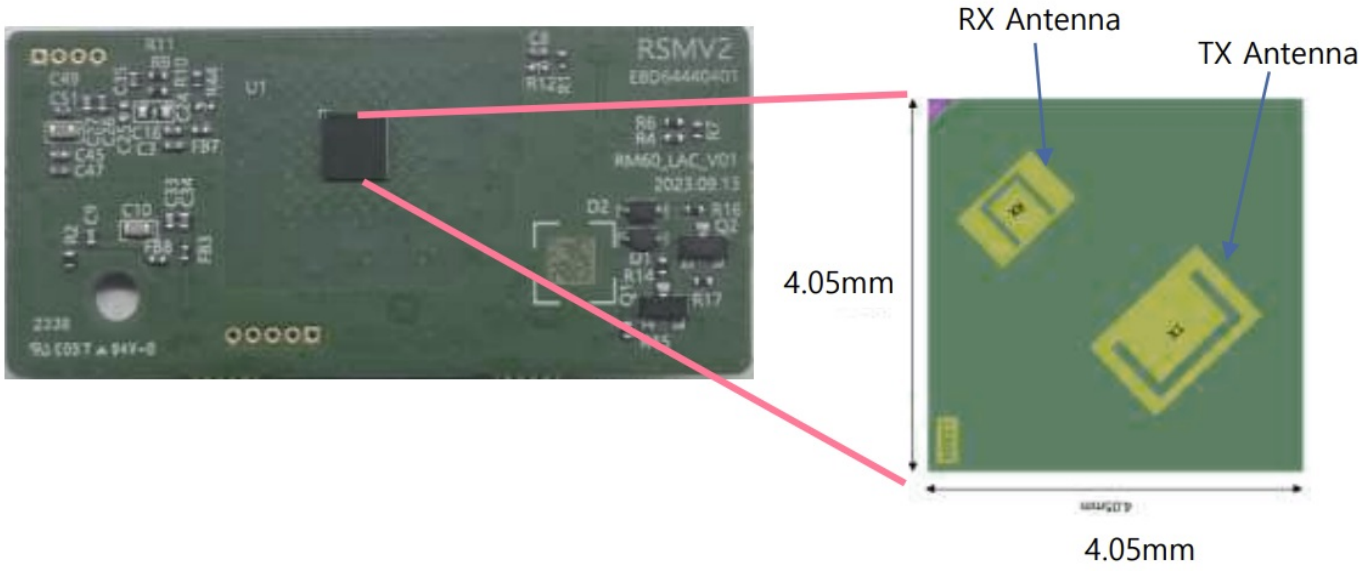
Board Dimensions

Size (W x L x H) : 22.0mm x 47.0mm x 9.52mm (±0.5mm)



Antenna Shape

Single patch Antenna in Package



FCC Statement

FCC Part 15.19 Statements:

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.

FCC Part 15.21 statement

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual v01>

List of applicable FCC rules

This module has been granted modular approval as listed below, FCC rule parts.

FCC Rule parts 15.255

- **Summarize the specific operational use conditions**

  -The OEM integrator should use equivalent antennas which is the same type and equal or less gain then an antenna listed below in this instruction manual.

- Limited module procedures (Only limited modular approval) N/A
- **Trace antenna designs (Only trace antenna module) N/A**
  This device is not using trace antenna.

RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following conditions:

- The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.
- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.
  - **Mobile use**
    As long as the three conditions above are met, further transmitter testing will not be required. OEM integrators should provide the minimum separation distance to end users in their end-product manuals.
- **Antennas**
  - This module is certified with the following integrated antenna.
- **Type:** Single patch Antenna in Package / Peak Gain: 3 dBi

Any new antenna type, higher gain than listed antennas, should be met the requirements of FCC rule 15.203 and 2.1043 as permissive change procedure.

Label and compliance information

- **End Product Labeling (FCC)**
  The module is labeled with its own FCC ID. If the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:
- **“Contains FCC ID: BEJ-RSMV2**
  Information on test modes and additional testing requirements
- **OEM integrator is still responsible for testing their end-product for any additional compliance**

requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, additional transmitter in the host, etc.).

- **Additional testing, Part 15 Subpart B disclaimer**
  The final host product also requires Part 15 subpart B compliance testing with the modular transmitter installed to be properly authorized for operation as a Part 15 digital device.

Note EMI Considerations

- Note that a host manufacturer is recommended to use D04 Module Integration Guide, recommending as “best practice” RF design engineering testing, and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties
- For standalone mode, reference the guidance in D04 Module Integration Guide, and for simultaneous mode, see D02 Module Q&A Question 12, which permits the host manufacturer to confirm compliance.

How to make changes

Since only Grantees are permitted to make permissive changes, when the module will be used differently than granted, please contact the module manufacture on below contact information.

Contact information:

- jaecheol.song@lge.com
- **Tel**: 82-10-2485-3739

<ISED Statement>

RSS-GEN, Sec. 7.1.3–(licence-exempt radio apparatus) This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause

undesired operation of the device.

RF Exposure

The antenna (or antennas) must be installed so as to maintain at all times a distance minimum of at least 20 cm between the radiation source (antenna) and any individual. This device may not be installed or used in conjunction with any other antenna or transmitter.

End Product Labeling (ISED)

The module is labeled with its own IC Certification Number. If the IC Certification Number are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following: “Contains IC: 2703N-RSMV2

Revision Sheet (history)

Release No.	**Date**	**Revision Description**
Rev. 0.1	09/30/2023	Initial draft
Rev. 1.0	07/04/2024	A few minor changes

Status: Initial	Date: July 4th, 2024	Author:
Version: 1.0	Document number:	Filename: RSMV2 Radar Sensor Specification (User's Manual)

FAQs

Q: How do I install the RSMV2 Radar Sensor?

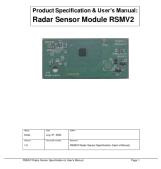
A: To install the RSMV2 Radar Sensor, follow these steps:

1. Locate a suitable mounting location with a clear line of sight.
2. Connect the 4-pin IO connector to the appropriate interface.
3. Power up the sensor and configure it according to your application needs.
4. Test the sensor by moving objects within its detection range to ensure proper functionality.

Q: What is the detection range of the RSMV2 Radar Sensor?

A: The RSMV2 Radar Sensor has a maximum detection range of 5 meters.

Documents / Resources

	LG Electronics RSMV2 Radar Sensor Module [pdf] User Manual RSMV2, BEJ-RSMV2, BEJRSMV2, RSMV2 Radar Sensor Module, RSM V2, Radar Sensor Module, Sensor Module

References

- User Manual

LG Electronics

BEJ-RSMV2, BEJRSMV2, LG Electronics, Radar Sensor Module, RSMV2, RSMV2 Radar Sensor Module, Sensor Module

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