

# 2AR06 INV-CC1312R1 User's Manual and OEM/Integrators Installation Manual

## 1. Overview

The Innovive Sub-GHz module is used mainly as transport for the alert system covering Innovive products. It leverages IEEE 802.15.4.g and proprietary messaging to deliver reliable communications, long range possibilities, and low power consumption. The module uses a Texas Instruments CC1312R1 chipset and has several additional features and peripheral capabilities.

## 2. Features

- CC1312R1 SoC
- Microcontroller
  - Arm® Cortex®-M4F Processor
  - 352KB of In-System Programmable Flash
  - 256KB of ROM for Protocols and Firmware
  - 80KB of Ultra-Low Leakage SRAM
- Low Power
  - Active-Mode RX: 5.7 mA
  - Active-Mode TX at +10 dBm: 14 mA (868 MHz)
  - Active-Mode MCU 48 MHz (CoreMark): 2.82 mA (59 µA/MHz)
  - Standby: 0.8 µA (RTC on, 80KB RAM and CPU Retention)
  - Shutdown: 105 nA (Wakeup on External Events)
- Radio Section
  - Flexible High-Performance Sub-1 GHz RF Transceiver
  - Excellent Receiver Sensitivity: -125 dBm for SimpleLink Long Range, -109 dBm at 50 kbps
  - Excellent Selectivity: 52 dB at 50 kbps
- 8Mbit external flash
  - Programmable flash intended to provide more flexible memory availability

## 3. Description

The Innovive Sub-GHz module provides a micro USB interface to the RF subsystem. The module uses the 902.4-927.8MHz Sub-GHz spectrum to



provide a link layer for the Innovive products. The standard USB interface is used to provide 5V and the same interface is leveraged to send proprietary commands used to interface with the SoC, RF subsystem and the peripherals. The Innovive Sub-GHz module has two antenna options,

- 1) On-board PCB trace antenna
- 2) External dipole antenna

For on-board antenna version, the C36 is populated to choose right RF path; while for off-board antenna version, the C31 is populated to choose another RF path. No other change on the hardware. The antenna circuit changes between these two options will only be made by Innovive to ensure the correct installation. For the external antenna version, the RP-SMA connector must be used with the external dipole antenna. The external dipole antenna also comes with unique RP-SMA connector.

## 4. RF Exposure Requirements / Antenna Installation

All antennas must be installed and kept a minimum distance of 20 cm to the human body. The antenna must not be co-located or operating in conjunction with any other antenna or transmitter than the ones stated in this document.

Only the certified antennas can be used with this module.

Innovive will provide guidance and help OEM integrator with the antenna installation into their host to ensure it's done properly.

## 5. FCC Statements

### FCC STATEMENT

1. 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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. NOTE: 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.



The module is limited to OEM installation ONLY. OEM integrators are responsible for ensuring that the end-user has no manual instructions to remove or install the module.

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.

#### FCC Radiation Exposure Statement

The module is limited to installation in mobile or fixed applications, according to Part 2.1091(b). This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This radio module must not installed to co-locate and operating simultaneously with other radios in host system , additional testing and equipment authorization may be required to operating simultaneously with other radio. Separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

## 6. FCC Labelling requirement

The **2ARO6INV-CC1312R1** module is designed to comply with the FCC statement. FCC ID is **2ARO6INV-CC1312R1**. If the FCC identification number 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 this case, the host system using **2ARO6INV-CC1312R1**, must have label indicated it contain module's FCC ID, as the following:

**“Contains FCC ID: 2ARO6INV-CC1312R1”**. Guidance with be provided to the host manufacturer for compliance with the FCC labelling requirement.

The OEM/Integrator must include the following statements in the host's user manual:



“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.

Guidance will be provided to the host manufacturer for compliance with the Part 15B requirements.