

Radicom Research Inc.

RB8762 Sensor Series

(Embedded BLE5.0-Temperature sensor system)



RB8762-T PCBA



RB8762-T



RB8762-R



RoHS Compliant

Date: 09/12/2021

Doc#RRD2Z50-210912001-A01-G1b

Introduction

Radicom RB8762 Sensor System including low energy temperature and accelerator tags and an internet gateway device uses as a complete long time monitoring and recording from remote as well as can be immediately accessed from a smart phone to add state of the art noncontact short distance or long range remote monitoring application. The RB8762 Sensor tags integrate a low power ARM processor, RF, baseband, and 256KB embedded flash memory. Together with RB8762 internet gateway which is embedded a long range WiFi capability featuring a self-contained monitoring subsystem, streamlined and simple connectivity. With the smart phone APP and easy software development environment for remote monitoring, the RB8762 sensor system allows OEM integrators to incorporate wireless and sensor technology into a broad range application that previously did not feature wireless sensing capabilities. It is designed to support single or multi-sensing system. The RB8762 thermometer tag is available in a standalone or PCBA which can be integrated into other system board easily for all kinds of different application.

- Water Proof Level IP 21
- Reusable and washable
- Streamlined Slick Design
- Battery life up to 6 months of usage
- OEM/ODM Service
- Real Time Data Transferring through APP on your smart phone for Monitoring
- Alarm Setting when your kid got fever

Features

- Various sensor measurement and long term recording transmitter
- Smartphone APP configuration and receiver
- Power saving mode: up to 120 day records
- Single or multiple sensors in a device
- Ultra low power consumption with intelligent PMU
- Support OTA (Over-the-Air) programming
- Support internal 32KHz OSC or external 32KHz clock input for low power mode
- Configurable through smart phone APP
- RB8762-T size : 1.26" x 1.57" x 0.24"
 - CR2032 3V battery power input
 - Storage temperature: 25°C ± 5°C . Humidity < 70% RH
 - Operating temperature: -20°C ~ +60°C
 - Waterproof level IP 21
- RB8762-R size : 1.80" x 1.78" x 0.39"
 - Li-ion 3.7V battery power input
 - Storage temperature: -55°C ~ +125°C
 - Operating temperature: -40°C ~ +85°C
- No powerful host processor required to read from tag
- FCC/IC/CE
- RoHS 3 compliant

Support:

- WiFi, BLE and other wireless applications
- Internet capability
- Support MESH function
- Real-time counters (RTC)

Approvals

FCC Certification •
CE Certification •
IC Certification •
RoHS 3 Compliant

Electronic Characteristics

RB8762-T	Parameter	Minimum	Typical	Maximum	Unit
	Operation voltage	2.7	3	3.3	V
	Output Power			8	dBm
	Sensitivity	-100	-97	-94	dBm
	Current Consumption		80uA		mA
RB8762-R	Parameter	Minimum	Typical	Maximum	Unit
	Operation voltage	3.0	3.7	4.2	V
	Output Power			8	dBm
	Sensitivity	-100	-97	-94	dBm
	Current Consumption	12uA	12.8	29mA	mA

※The Current Consumption is code dependent. Bluetooth functions and characteristics will vary depending on the application firmware that is loaded into the RB8762 sensor series.

Physical Description

RB8762-T Size	32mm x 40 mm x 6 mm [1.26" x 1.57" x 0.24"]
Weight	8g
RB8762-R Size	45.6mm x 45.2 mm x 9.9 mm [1.80" x 1.78" x 0.39"]
Weight	12.7g

Model Naming System

Product Series: (x) represented different applications:





RB8762-(x)

T: for patch Temperature sensor application

R: for Sensor receiver application.

I: for Internet gate way of RB8762 system

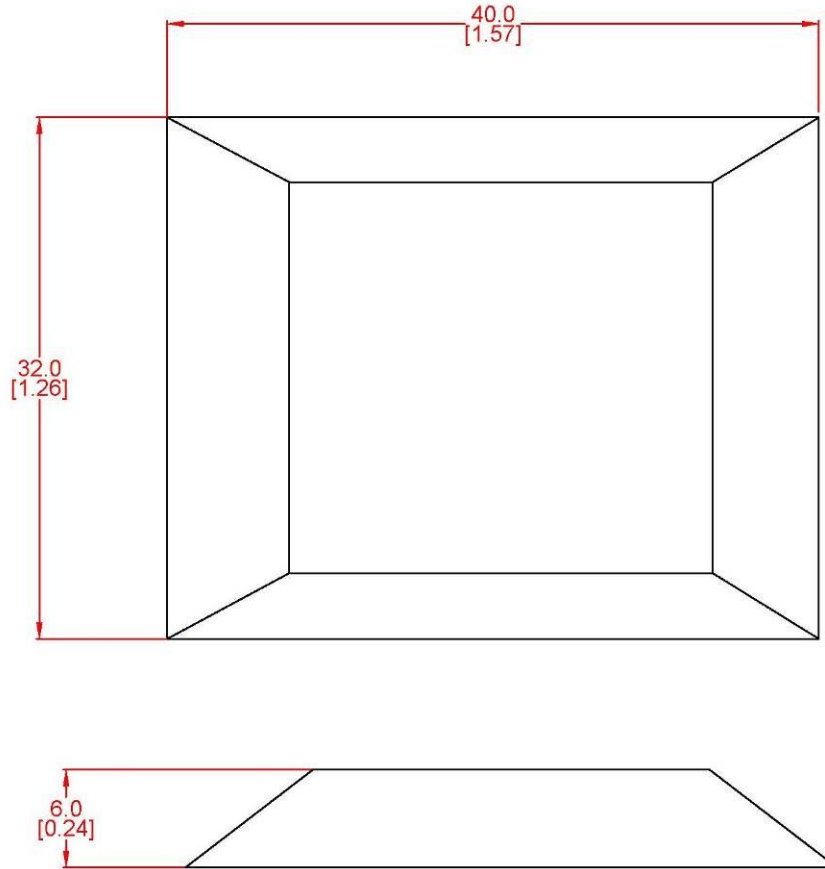
Model and Ordering Information

Model Numbers	Description
RB8762-T PCBA 	<p>The BLE 5.0 thermometer tag is available in a standalone or PCBA which can be integrated into other system board easily for all kinds of different application</p>
RB8762-T 	<p>BLE 5.0 patch temperature sensor and on-board antenna. With CR2032 battery. Power saving mode up to 120 day records Waterproof level IP 21</p>
RB8762R 	<p>BLE 5.0 wireless sensor receiver gateway Support MESH function and Real-time counters (RTC)</p>
Micro USB Cable 	<p>Accessories- USB A type to Micro USB B type cable for power supply.</p>

RB8762-T Mechanical Dimensions

Top View : 32mm x 40 mm x 6 mm [1.26" x 1.57" x 0.24"]

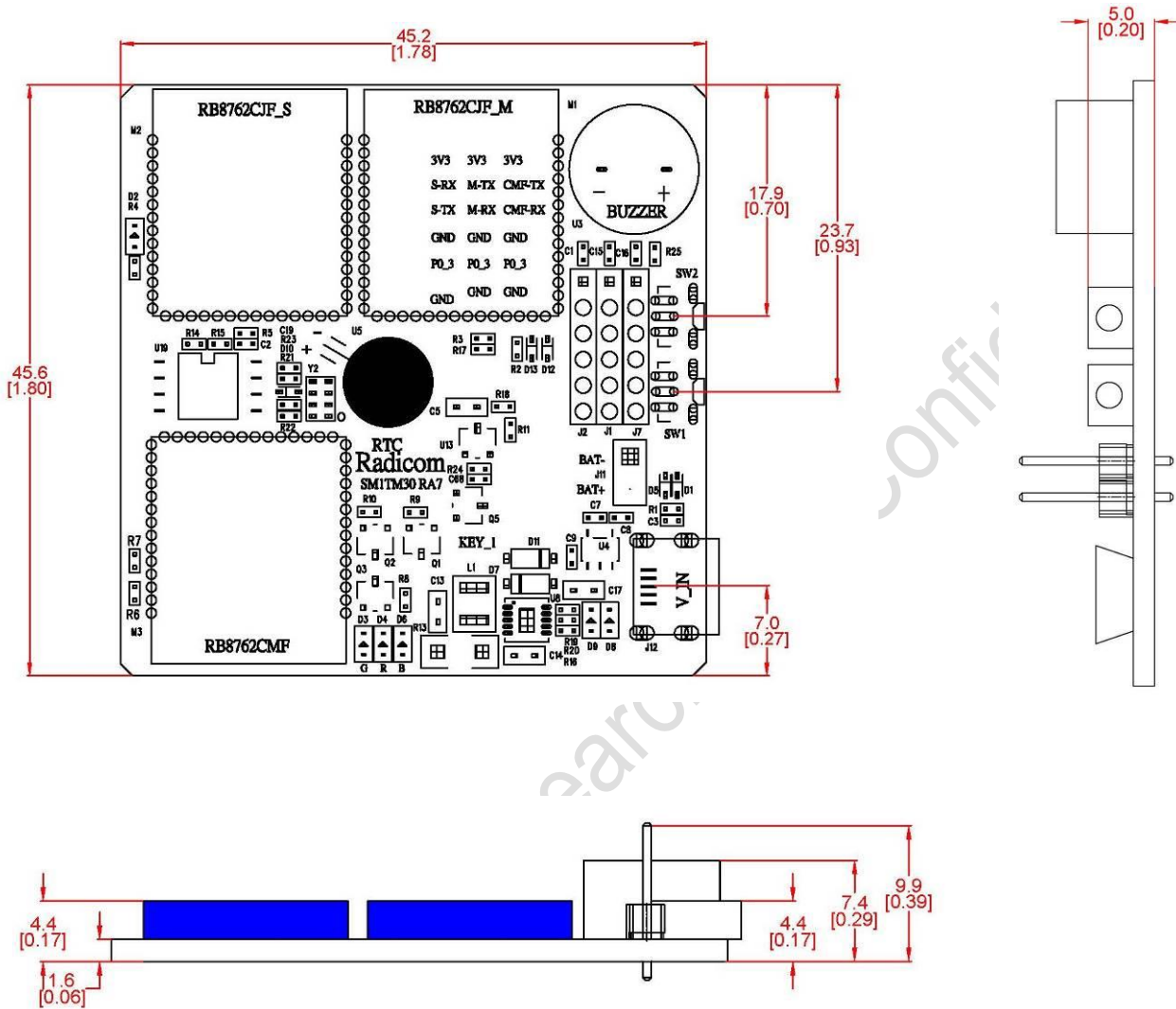
Unit: mm[inch]



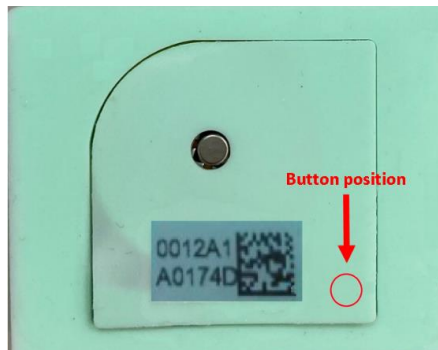
RB8762-R Mechanical Dimensions

Top View : 45.6mm x 45.2 mm x 9.9 mm [1.80" x 1.78" x 0.39"]

Unit: mm[inch]



RB8762-T Patch temperature sensor Figure and Functions

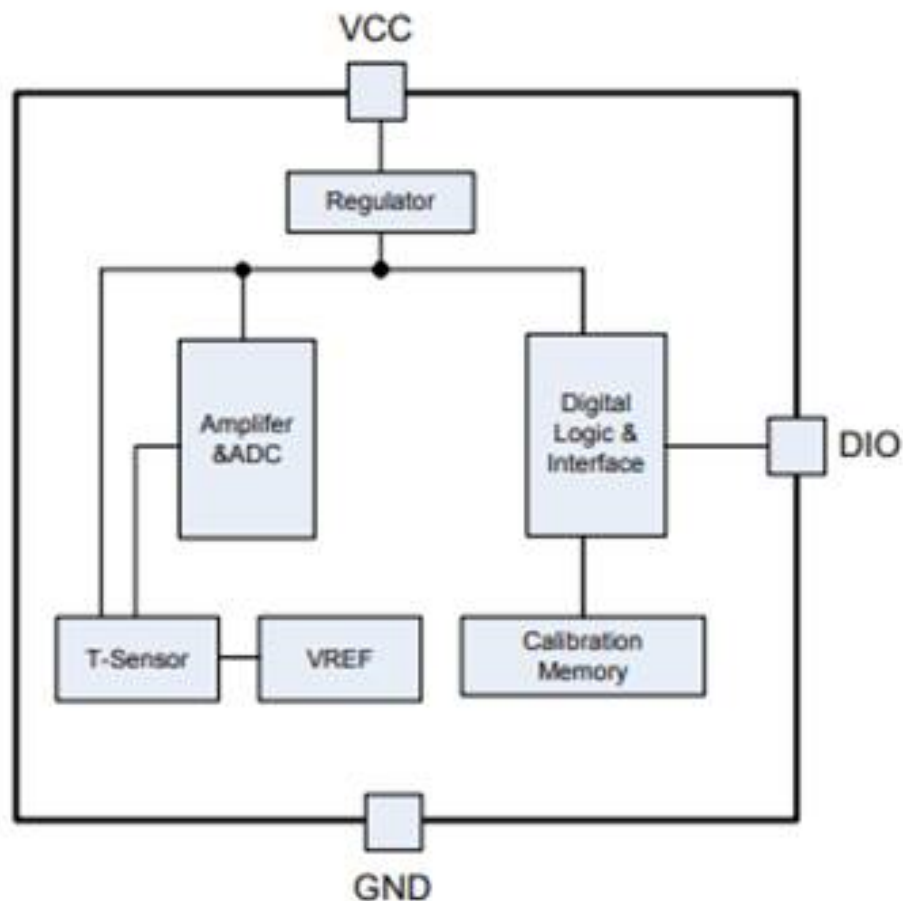


RB8762-T Patch temperature sensor

Press the power button for 1 second to turn on

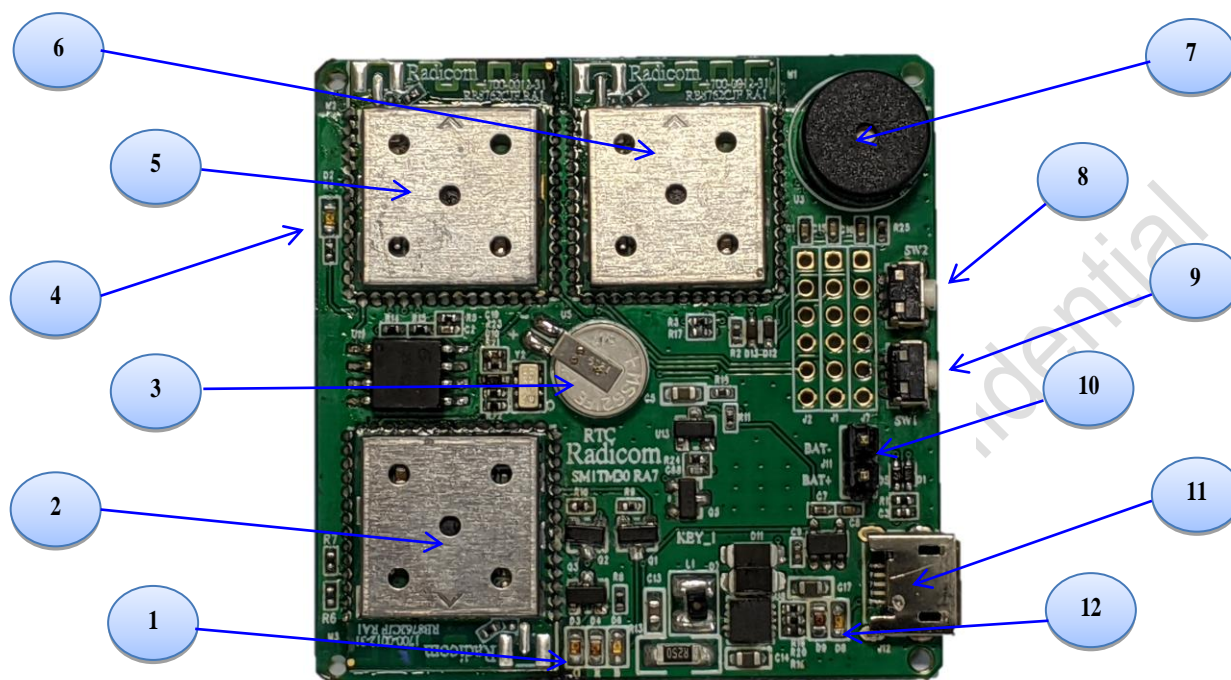
Press the power button for 4 seconds to shut down

Function Block



RB8762-R sensor receiver gateway Figure and Functions

The RB8762-R has white silkscreen legend located by the described below.



1. Mesh LED indicator (D3)(D4)(D6)
2. RB8762CMF-a Module (M3)
3. Real-time counters (RTC) Battery
4. Power LED indicator (D2)
5. RB8762CJF_S Module (M2) for BLE slave device
6. RB8762CJF-M Module (M1) for BLE master device
7. Buzzer (U3)
8. Power switch /reset password button (SW2)
9. Mesh pairing button (SW1)
10. Li-ion battery header (J4)
11. Micro USB connectors
12. Battery charge LED indicator (D8)(D9)

Operating RB8762-R

RB8762-R sensor receiver gateway has two applications, namely group receiving box and personal receiving box.

The group receiving box has BLE mesh network technology, which can transmit the temperature data of each Slave receiving box to the Master receiving box, which is generally used in groups.

The personal receiving box does not have BLE mesh network technology and can only be used for personal use.

Group receiving box function description:

a. Master receiving box

The Master receiving box is used to receive the temperature data of each Slave receiving box. When the received temperature data exceeds the alarm temperature, it will sound an alarm and flash a red LED light. (Refer to APP file for Set up temperature alarm steps)

The Master receiving box contains three RB8762C modules, namely BLE Master, BLE Slave, and BLE Mesh. The following is the function description of the three modules:

- i. BLE Master: reserved device
- ii. BLE Slave: APP connects to this module, you can set/read receiver box settings and get temperature patch data
- iii. BLE Mesh Master: Receive temperature data from the Slave receiving box

b. Slave receiving box

The Slave receiving box is used for the temperature patch around the scan, storing the temperature data in the flash, and sending it to the Master receiving box through the BLE mesh.

The Slave receiving box contains three RB8762C modules, namely BLE Master, BLE Slave, and BLE Mesh. The following is the function description of the three modules:

- i. BLE Master: Scan temperature patch around
- ii. BLE Slave: APP connects to this module, you can set/read receiver box settings and get temperature patch data
- iii. BLE Mesh Slave: Send temperature data to the Master receiving box

Personal receiving box function description:

The personal receiving box is used for the temperature patch around the scan, and the temperature data obtained by the scan is stored in the flash.

The Slave receiving box contains two RB8762C modules, namely BLE Master and BLE Slave. The following is the function description of the two modules:

- i. BLE Master: Scan temperature patch around
- ii. BLE Slave: APP connects to this module, you can set/read receiver box settings and get temperature patch data

Operating Description

- a. Power on: Please press the SW2 button for 1 seconds, the LED indicator will be on for 4 seconds, that is, the boot is successful
- b. Shutdown: Please press the SW2 button for 5 seconds, the LED indicator will flash once, that is, the shutdown is successful
- c. Reset: Press the SW2 button for 8 seconds LED lights for 4 seconds. receive box password will be reset

Master and Slave receiver box pairing process

Master and Slave receiver boxes must press the SW1 button at the same time for 10 seconds to enter the pairing mode. Then, after the Master receiving box scans the Slave receiving box, it will enter the pairing start mode. After the pairing is completed, the Master and Slave receiving boxes can be used.

Master and Slave receiver box are unpaired process

- a. Slave receiver box unpaired

Press the SW1 button for 10 seconds, and turn on/off the receiving box again. The receiving box will return to unpaired mode, and the blue LED will light up.

- b. Master receiver box unpaired

Press the SW1 button for 15 seconds, and turn on/off the receiving box again. The receiving box will return to unpaired mode, and all LED lights will go out



RB8762-R LED Operation

Power LED indicator (D2): when is powered on, the Blue LED on

Battery charge LED indicator: Red LED (D9) is on. The battery is charging

Blue LED (D8) on. The battery is fully charged

Mesh LED indicator (D3)(D4)(D6)

Mode	Master receiving box			Slave receiving box		
LED	R	G	B	R	G	B
Power on (unpaired)	●	●	●	●	●	○
Power on (paired)	●	●	●	●	○	●
Pairing mode	●	◎	◎	●	●	◎
Complete pairing	●	◎	●	●	○	●
Receive alarm temperature	◎	●	●			
Remark : R : Rrd LED, G : Green LED, B : Blue LED ○ Lights always on ◎Lights Flashing ● Lights off						

Operating Tag and Receiver Box

Introduction:

Radicom provides RB8762 sensor series and provide APP (Android/IOS) to operate. You can refer this document.

1. Android app user guide
2. IOS app user guide

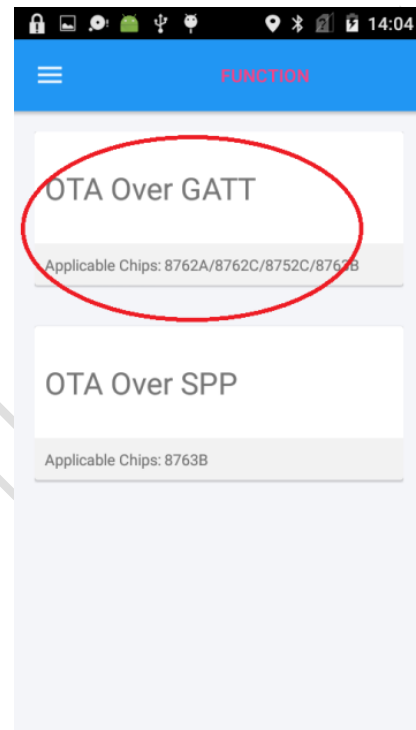
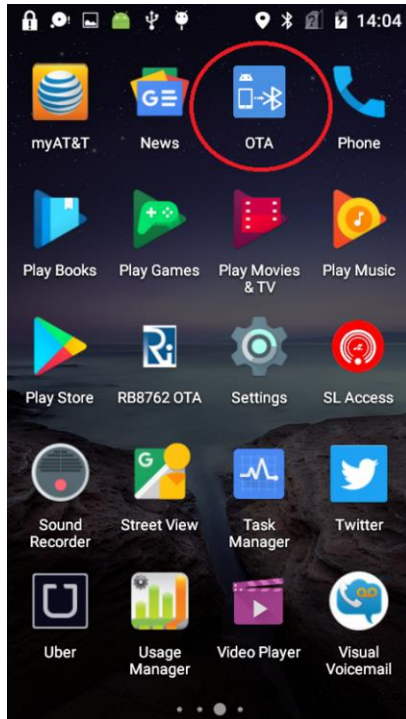
OTA Upgrade Firmware

This chapter will show you how to use OTA to upgrade firmware.

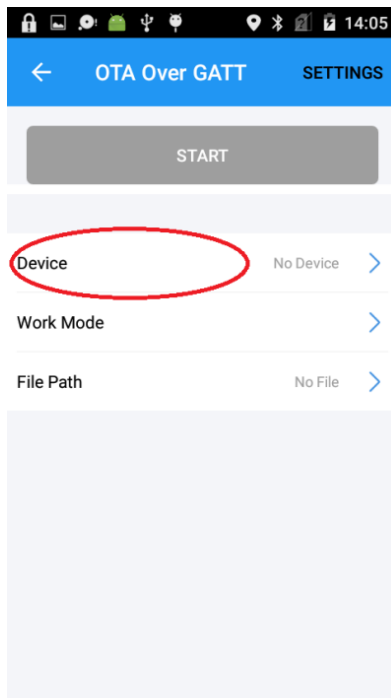
Step 1. Install OTA APP (OTA_V3.1.6.138_customerPhone.apk) under Android 9.0 or below version. [If you want to know the OTA APP, please contact Radicom.](#)

Step 2. Execute APP

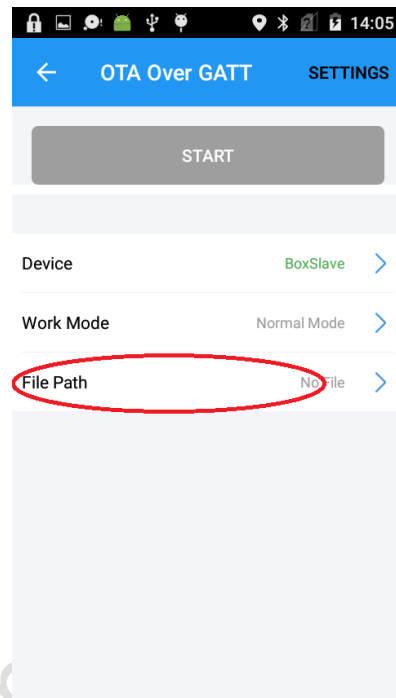
Step 3. Select “OTA Over GATT”



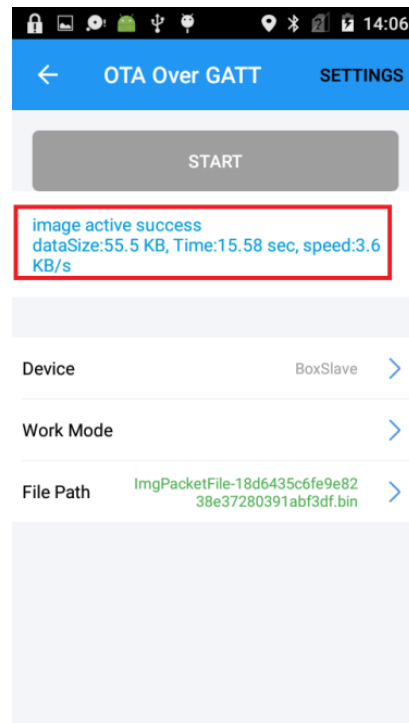
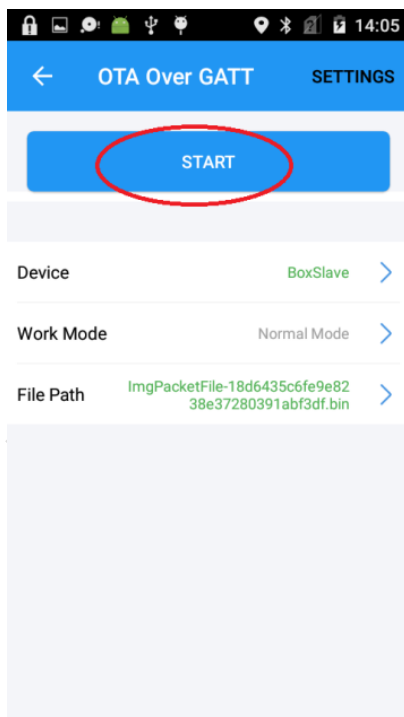
Step 4. Select “Device”



Step 5. Select “File Path” (Image for OTA)



Step 6. Click “START” to start OTA and wait for success

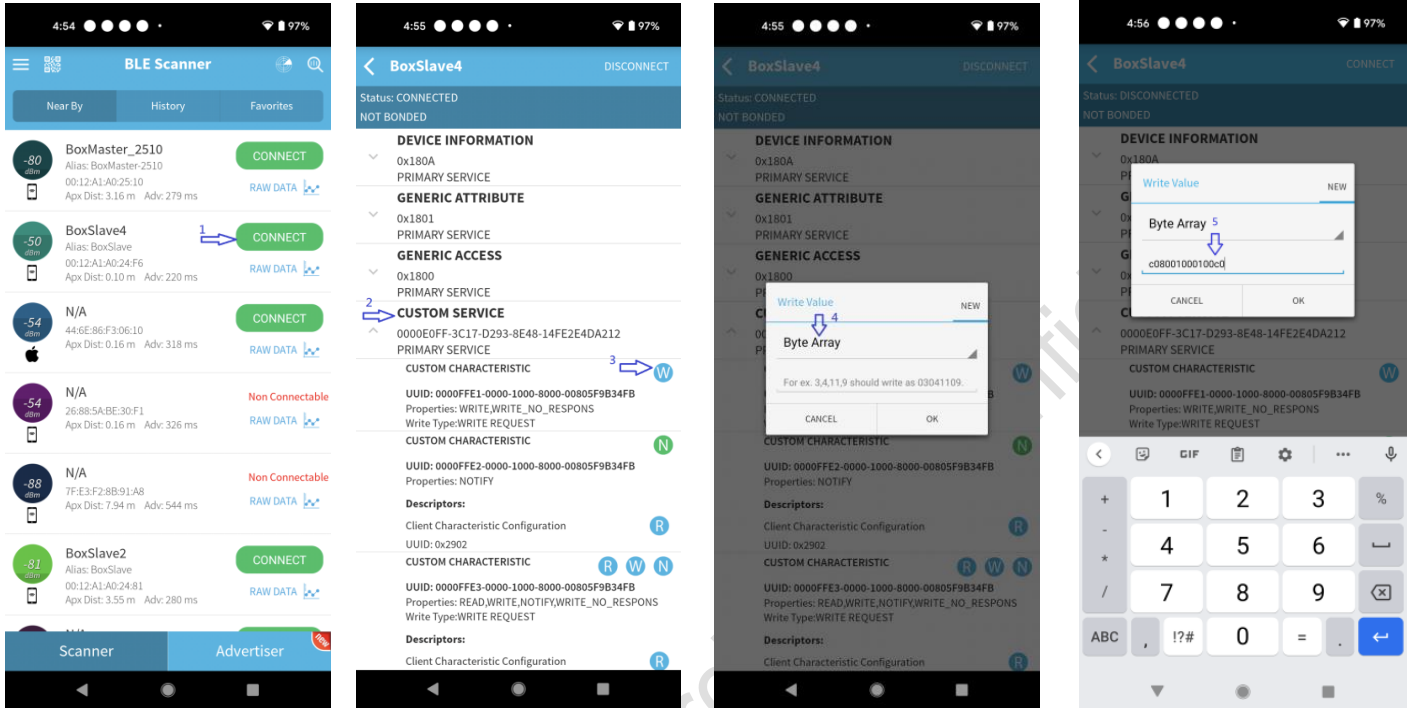


OTA update BLE master image

1. Change BLE maser role into slave mode

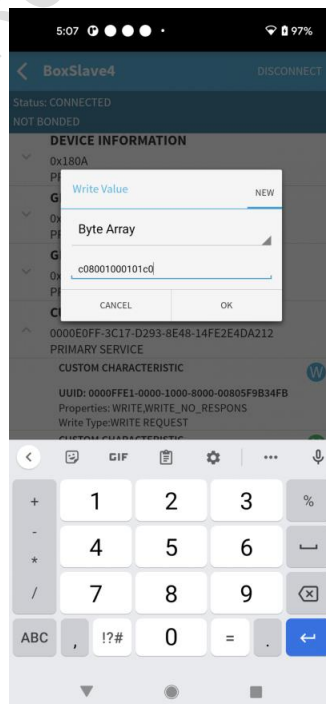
1.1 Use an APP (BLE Scanner/nRF Connect/...) to scan and connect receiver box.

After connection, send command to let BLE master to be slave role.



1.2 Use OTA APP to select “BoxMaster” to update firmware

1.3 Send command to change role back to BLE master role.



Limited Warranty

Warranty Coverage and Duration

Radicom Research, Inc. (“RRI”) warrants to the original purchaser its RRI-manufactured products (“Product”) against defects in material and workmanship under normal use and service for a period of one year from the date of delivery. During the applicable warranty period, at no charge, RRI will, at its option, either repair, replace or refund the purchase price of this Product, provided it is returned in accordance with the terms of this warranty to RRI. Repair, at the option of RRI, may include the replacement of parts, boards or other components with functionally equivalent reconditioned or new parts, boards or other components. Replaced parts, boards or other components are warranted for the balance of the original applicable warranty period. All replaced items shall become the property of RRI.

RRI MAKES NO GUARANTEE OR WARRANTY THAT THE PRODUCT WILL PREVENT OCCURRENCES, OR THE CONSEQUENCES THEREOF, WHICH THE PRODUCT IS DESIGNED TO DEFECT.

This expressed limited warranty is extended by RRI to the original end-user purchaser only, and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by RRI, and RRI assumes no obligation or liability for additions or modifications to this warranty. In no case does RRI warrant the installation, maintenance or service of the Product. RRI is not responsible in any way for any ancillary equipment not furnished by RRI that is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment and all such equipment is expressly excluded from this warranty. Because of wide variations in topographical and atmospheric conditions, which may require availability of repeater stations or of particular radio frequencies, RRI assumes no liability for range, coverage or suitability of the Product for any particular application. Buyer acknowledges that RRI does not know a particular purpose for which buyer wants the Product, and that buyer is not relying on RRI’s skill and judgment to select or furnish suitable goods.

What this Warranty does NOT Cover:

1. Defects or damage resulting from use of the Product in other than its normal and customary manner.
2. Defects or damage from misuse, accident or neglect.
3. Defects of damage from improper testing, operation, maintenance, installation, alteration, modification or adjustment.
4. Disassembly or repair of the Product in such a manner as to adversely affect performance or prevent adequate inspection and testing to verify any warranty claim.
5. Any Product that has had its serial number or date code removed or made illegible.

How to Receive Warranty Service:

To obtain warranty service, contact RRI by phone (408) 383 9006 for RMA Department and RMA (Return Merchandise Authorization) number. Deliver or send the Product, transportation and insurance prepaid to RRI, with the RMA number clearly marked on the outside of the package.

General Provision

This warranty sets forth the full extent of RRI's responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at RRI's option, is the exclusive remedy. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESSED WARRANTIES. ANY APPLICABLE IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. TO THE FULLEST EXTENT PERMITTED BY LAW, RRI DISCLAIMS ANY LIABILITY FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVING OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE OR FAILURE OF SUCH PRODUCT.

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