Bluetooth BLE Active RFID (Sensor) Tag

or iBeacon (APPLE Trademark)

Battery	iBeacon	w G-Sensor/ w/o G-sensor	Temperature/Humidity NTC
CR-2032 x 1	BLE-T1-i	BLE-T1-G BLE-T1	BLE-T1-TH BLE-T1-NTC
CR-2032 x 2	BLE-T2-i	BLE-T2-G/ BLE-T2	N/A

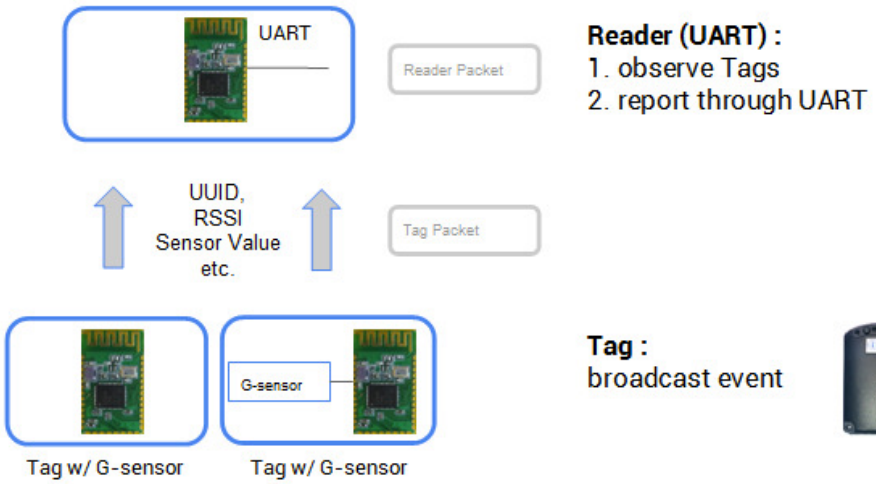
1. Application:

* Location system: Asset, Passenger, Patient, Trailer
* Access control: Garage, Enterprises, Bank, Vehicle, Factory, Hospital, Superstore,
* School, Warehouse
* Logistic management, Cargo tracking, Airport baggage management
* Local Area Real Time Location Systems (RTLS)
* Asset Management, Internet of Things (IOT) application
* Customized packet format: iBeacon (Trademark of APPLE) or proprietary

2. Specifications:

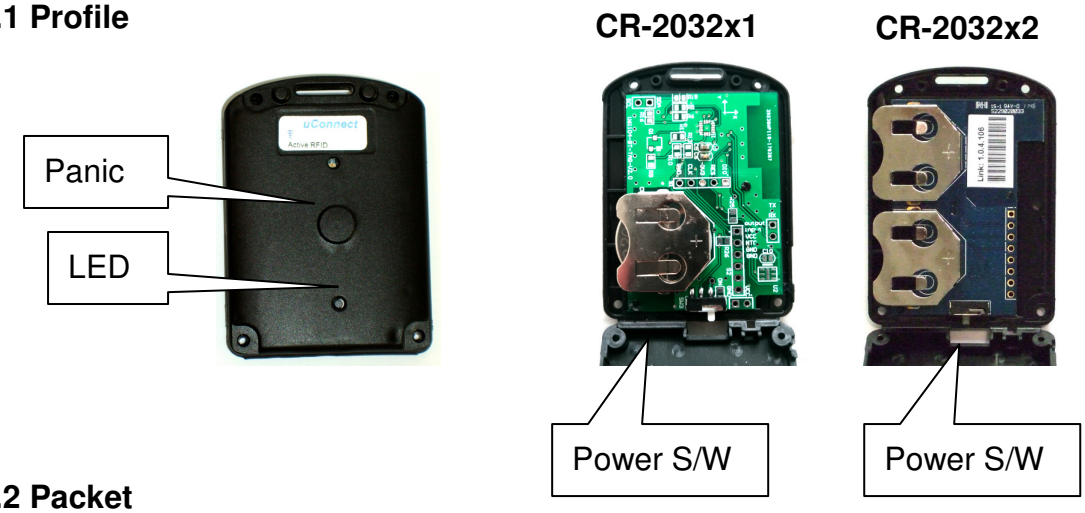
* Frequency band: 2.4GHz ISM (2.40000 – 2.4835GHz)
* Microcontroller: 32-bit ARM Cortex M0
* Range: max. 50 m in open space
* TX Power: Max. 3 dBm
* TX current consumption of 15.6 mA (radio only, 0 dbm)
* Operation Temperature: –40 ℃ to +70 ℃
* Dimensions: 5.5 × 4 × 0.8 cm
* Antenna Gain: max. 2 dB

3. System Architecture:



4. Tag

4.1 Profile



4.2 Packet

AD1 Length (1 Byte)	AD1 Type (1 Byte)	AD1 Flags (1 Byte)	AD2 Length (1 Byte)	AD2 Type (Manufacturer Spec) (1 Byte)	Manufacturer Spec Data (26 Bytes)

MFG Code (2 Bytes)	Beacon Code (2 Bytes)	Tag Type (1 Byte)	Tag ID (6 Bytes)	Tag Batt (1 Byte)	Button Status (1 Byte)	Motion Status (1 Byte)	Reserved (11 Bytes)	Ref RSSI (1 Bytes)

BLE ADV:

AD1 (Length, Type, Flags)	BLE Advertising Flags
AD2 Length	fixed to 27 (type + manufacturer spec data)
AD2 Type	fixed to 0xFF (for manufacturer)
Manufacturer Spec Data	manufacturer defined payload

Manufacturer Spec Data:

Field	Description	Field Offset
MFG Code	Manufacturer vendor code, fixed	0
Beacon Code	Magic Code to identify packet format, fixed to 0xBCAA	2
Tag Type	type of tag ex. 1: tag w/o g-sensor, 2: tag w/ g-sensor ..	4
Tag ID	6 bytes ID of tag	5
Tag Batt	batt voltage of tag in 1/10 volt unit	11
Tag Button Status	button status ex. 0: released, 1: pushed	12
Tag Motion Status	motion status ex. 0: non-moving, 1: moving	13
Reserved	reserved for sensor data (11 bytes)	14
Ref RSSI	calibrated rssi at 1 M for approaching usage	25

5. Sensors: (Option)

5.1 Temperature/Humidity:

5.2 NTC

5.3 G-sensor

5.4 DIO

5. Reader:

5.1 Output Format:

$<msg type>,<reader id>,<tag type>,<tag id>,<tag batt>,<button status>,<motion status>,<reserved>,<tag rssi>#

Field	Description
$	start of report
msg type	Type of message ex. 0: general scanner, 1: tag scanner
reader id	6 bytes ID of reader in hex => 12 chars
tag type	type of tag ex. 1: tag w/o g-sensor, 2: tag w/ g-sensor ..
tag id	6 bytes ID of tag in hex => 12 chars
tag batt	batt voltage of tag in 1/10 volt unit
tag button status	button status ex. 0: released, 1: pushed
tag motion status	motion status ex. 0: non-moving, 1: moving
reserved	Reserved for external sensor data (11 bytes)
tag rssi	tag read rssi
#	end of report

example:

$1,E2C69918FD94,1,FFC98B7FC1A9,32,0,0,,-55#

$1,E2C69918FD94,1,FFC98B7FC1A9,32,1,1,,-55#
$1,E2C69918FD94,1,FFC98B7FC1A9,32,1,1,,-54#
$1,E2C69918FD94,1,FFC98B7FC1A9,32,1,1,,-63#
$1,E2C69918FD94,1,FFC98B7FC1A9,32,0,0,,-56#

Default Tag Adv Period: 1000 ms
Panic Mode Tag Adv Period: 300 ms

Sensor Value:

ASCII Value	Byte 19	Byte 20	Byte 21	Byte 22	Byte 23	Byte 24	Byte 25	Byte 26	
Sesnor Name	D0	D1	D2(+/-)	D3	D4	D5	D6	D7	D8~D10
Temperature(NTC)	0x30	0x42(B)	+:0x2b,-0x2d	0~F	0~F	.0x2e	0~F	0~F	
Temperature(SHT-20)	0x30	0x31	+:0x2b,-0x2d	0~F	0~F	.0x2e	0~F	0~F	
Humidity(SHT-20)	0x30	0x32	+	0~F	0~F				

5.2 RS-232 Reader

* DB9 Male
* Power input: 5~27VDC, Mini USB, Pin9 of DB9 or Terminal block
* Slide switch (Rear side): DCE/DTE
* DIP switch: RSSI filtering setting

5.3 Reader Gateway:

* Support Wifi, Ethernet or RS-585
* Power input: 5~27VDC
* Support sensor: Temperature, Humidity, PM2.5, CO, CO2, CH2O, VOC, PIR, DIO,…

Remark: All contents are subject to change without notice.

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