

Bluetooth V4.1 Low Energy Active RFID Tag

Model: BLE-T(G) (G: G-Sensor)



Option: 3D G-Sensor

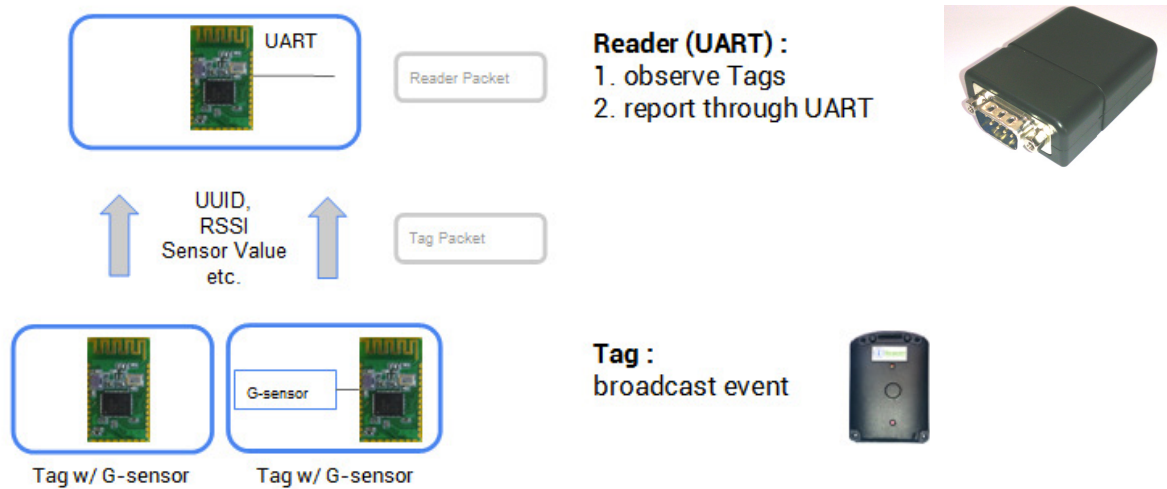
Application:

- 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

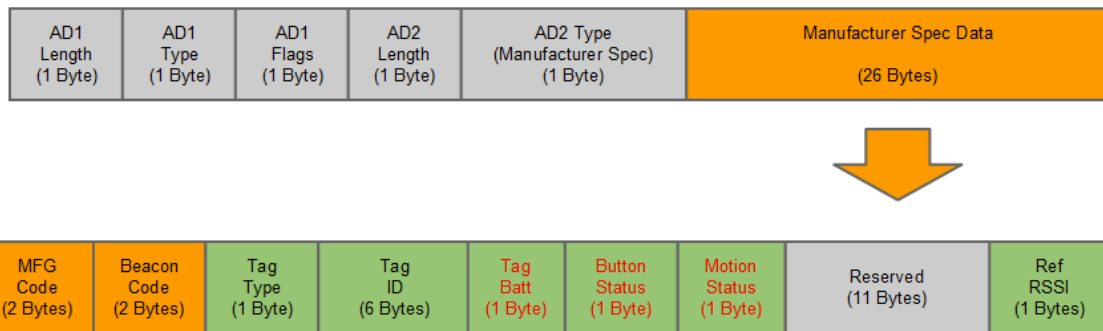
Specifications:

Frequency band	2.4GHz ISM (2.40000 – 2.4835GHz)
Microcontroller	32-bit ARM Cortex M0
On-air data rate	250 kbps, 1 Mbps or 2 Mbps
Modulation	GFSK
Output power	Programmable: +4 to -20dBm in 4dB steps
Sensitivity	-93dBm <i>Bluetooth</i> low energy -96dBm at 250kb -90dBm at 1Mbs -85dBm at 2Mbs
Radio current consumption LDO at 1.8V	16mA – TX at +4dBm output power 10.5mA – TX at 0dBm output power 13mA – RX at 1Mbs
Radio current consumption DC-DC at 3V	10.5mA – TX at +4dBm output power 8.1mA – TX at 0dBm output power 9.5mA – RX at 1Mbs
System current consumption	420nA – No RAM retention 530nA - 8k RAM retention 2µA – All peripherals in IDLE mode
Hardware Security	128-bit AES ECB/CCM/AAR co-processor

System Architecture:



Tag Packet:



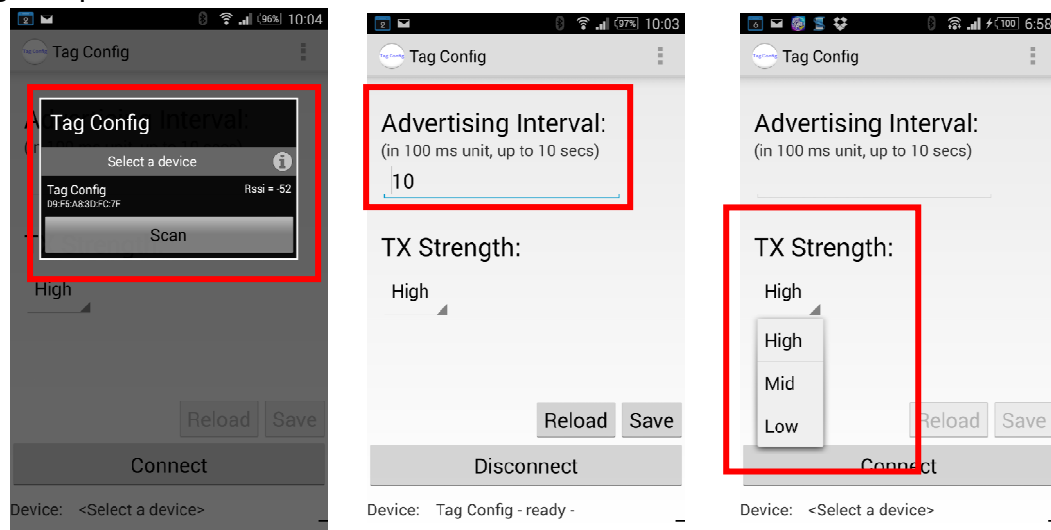
BLE ADV:

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

Tag setup APP:



Reader 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

Reader UART is fixed at 115200,8,N,1

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#
```

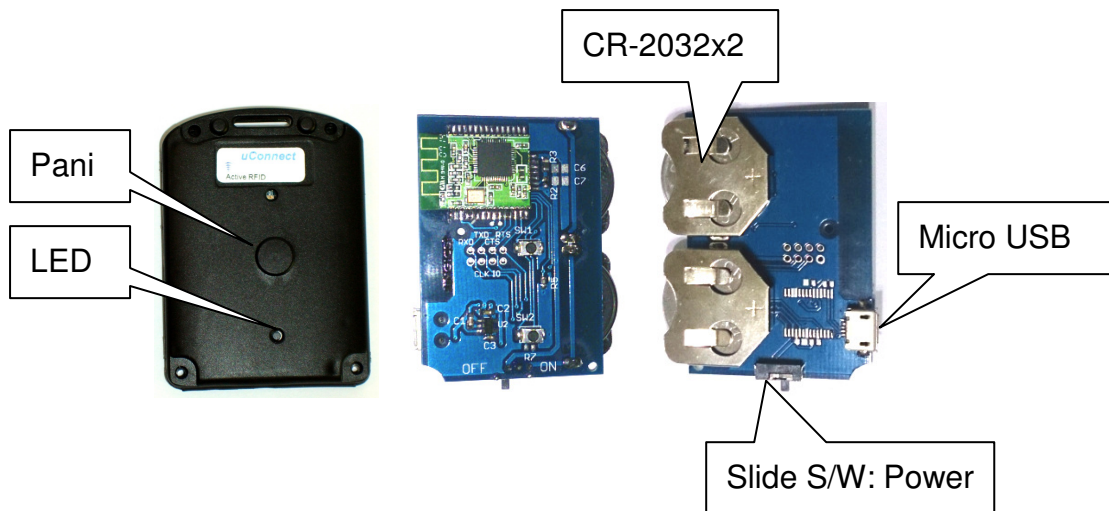
Default Tag Adv Period: 1000 ms

Panic Mode Tag Adv Period: 300 ms

Test Video:

http://youtu.be/Vs_hOSBHfns

Tag:



Reader:



User Interfaces:

1. DB9 Male
2. Micro USB (side): Power input
3. Slide switch (Rear side): DCE/DTE
4. Tact switch (Rear side): Reset to default setting

Remark: All contents are subject to change without notice.



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