USI® 環鴻科技股份有限公司
Universal Global Scientific Industrial Co., Ltd.

LoRa Tag User Manual

Product Name: LoRa Tag
Model No.: WP-SG-TAG-01

DRAFT

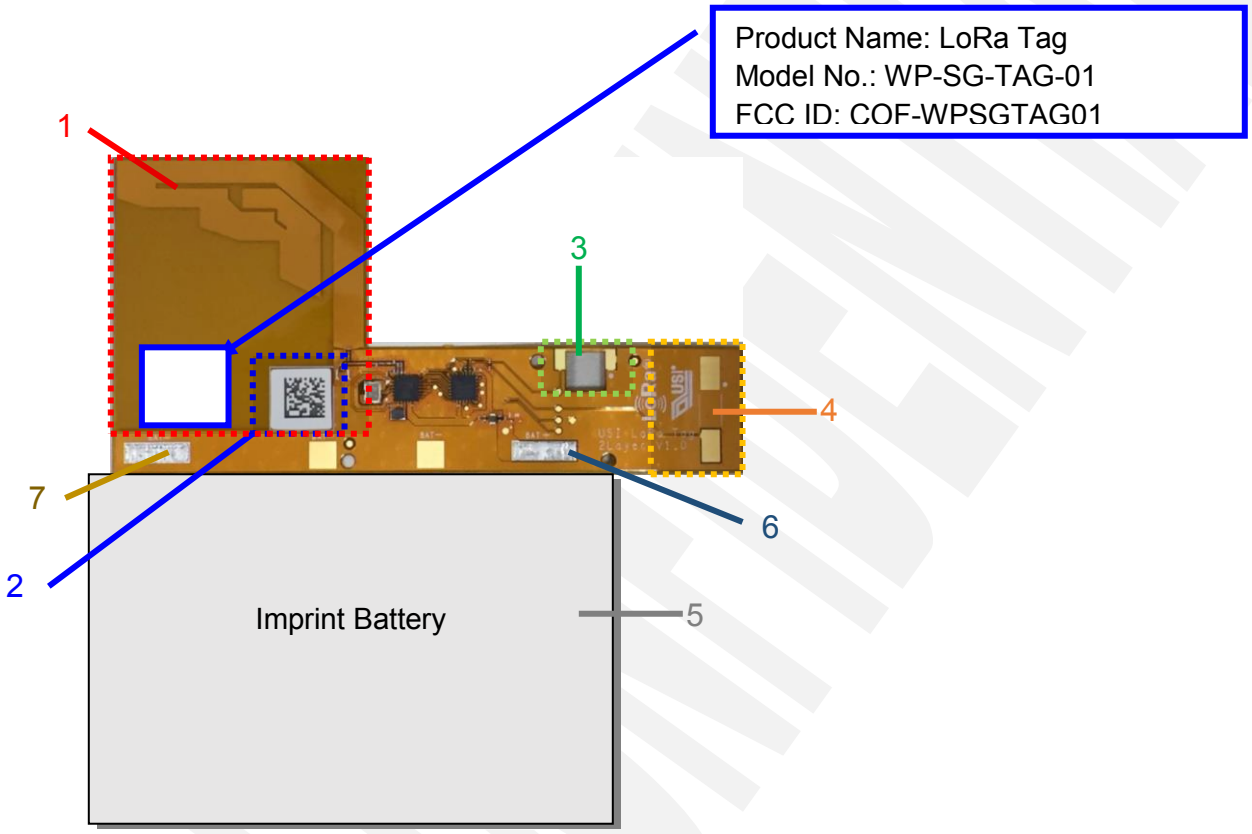
Version: 1.0

Amendment Records

Item:	Date:	Revision:	Page:	Change Description:	Changed by:
1	11/28/2018	1.0	All	Initial release	Andy

Contents

1. Tag Unit Overview



1. Antenna
2. 2D code with serial number
3. S1 Trace
4. S2 Pads
5. Imprint Battery
6. PWR+ Pad (+3.3V)
7. PWR- Pad (GND)

2. How to use the Tag

Scan the 2D barcode using mobile phone at first and a web page will pop up, then peel off the label from the poster, you may get a coupon from the web page

3. Operation Frequency

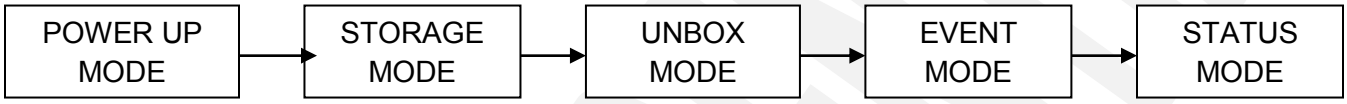
There are 64 channels for tag use, and the channel/frequency are showed as below table and the bandwidth on each frequency is 125KHz.

64 Channels are provided for Hopping Mode (125kHz Bandwidth):

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.3	16	905.5	32	908.7	48	911.9
1	902.5	17	905.7	33	908.9	49	912.1
2	902.7	18	905.9	34	909.1	50	912.3
3	902.9	19	906.1	35	909.3	51	912.5
4	903.1	20	906.3	36	909.5	52	912.7
5	903.3	21	906.5	37	909.7	53	912.9
6	903.5	22	906.7	38	909.9	54	913.1
7	903.7	23	906.9	39	910.1	55	913.3
8	903.9	24	907.1	40	910.3	56	913.5
9	904.1	25	907.3	41	910.5	57	913.7
10	904.3	26	907.5	42	910.7	58	913.9
11	904.5	27	907.7	43	910.9	59	914.1
12	904.7	28	907.9	44	911.1	60	914.3
13	904.9	29	908.1	45	911.3	61	914.5
14	905.1	30	908.3	46	911.5	62	914.7
15	905.3	31	908.5	47	911.7	63	914.9

4. Operation Mode

There are 5 operation modes below in the tag life cycle.



4.1 POWER UP Mode

Started when power on, and will stopped after 5 ALIVE packets sent.

Packet Duty Cycle:
1 packet per 5 seconds

Packet Example:
`"datr":"SF7BW125","addr":44012345, "port":59,"data":02000001B318`

Payload Format:
Port: ***59***
BYTE 1 (bit7:0): Major Version
BYTE 2 (bit7:0): Minor Version
BYTE 3 (bit7:0): Patch Version
BYTE 4 (bit7:4): S2 State, 0: Low Level, 1: High Level (Triggered)
BYTE 4 (bit3:0): S1 State, 0: Low Level, 1: High Level (Triggered)
BYTE 5 (bit7:0): VCC voltage (+150 = Real VCC Voltage)
BYTE 6 (bit7:0): Temperature

4.2 STORAGE Mode

Started after 5 ALIVE packets sent in power up mode, and will stop when S1 or S2 be triggered. No any TX & RX in the storage mode.

4.3 UNBOX Mode

Started when S1 be triggered and will move to EVENT mode after 1 hour.

Packet Duty Cycle:
1 packet per 20 seconds in the initial hour

Packet Example:
"datr":"SF7BW125",addr":44012345, "port":**60**,"data":**B318**

Payload format:
Port: **60**
BYTE 1 (bit7:0): VCC voltage (+150 = Real VCC Voltage)
BYTE 2 (bit7:0): Temperature

4.4 EVENT Mode

Started at the end of UNBOX mode until S2 be triggered.

Packet Duty Cycle:
1 packet per hour

Packet Example:
"datr":"SF7BW125",addr":44012345, "port":**60**,"data":**B318**

Payload format:
Port: **60**
BYTE 1 (bit7:0): VCC voltage (+150 = Real VCC Voltage)
BYTE 2 (bit7:0): Temperature

4.5 STATUS Mode

Started when S2 be triggered until no battery.

Packet Duty Cycle:
1 packet per 1 minute

Packet Example:
"datr":"SF7BW125",addr":44012345, "port": **61**,"data": **00000000B318**

Payload format:
Port: **61**
BYTE 1 (bit7:0): bit 31:24 of Frame Count
BYTE 2 (bit7:0): bit 23:24 of Frame Count
BYTE 3 (bit7:0): bit 15:8 of Frame Count
BYTE 4 (bit7:0): bit 7:0 of Frame Count
BYTE 5 (bit7:0):VCC voltage (+150 = Real VCC Voltage)
BYTE 6 (bit7:0): Temperature

Universal Global Scientific Industrial Co., Ltd.
No. 141, Lane 351, Taiping Road, Sec. 1, Tsaotuen,
Nantou County 54261, Taiwan
TEL +886-49-221-2700
FAX +886-49-232-9561

Federal Communication Commission Interference Statement

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.

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 5mm between the radiator & your body.