V6 Badge Tag

User Manual for V6 Badge Tag

Revision History

revision	date	notes
1.0	Sep. 2018	Initial release

User Manual

1. Overview

Designed to operate within Redpoint's RTLS system, the wearable V6 badge tag can track and alert workforce anywhere on your site. Accurate to within 20cm, the ultra-wideband device is capable of detecting the wearer's precise location and generating personal and site-wide alerts for location-based hazards, man-down, and mustering events.

When integrated with Redpoint's SiteWise cloud-based dashboard and analytics platform, the badge enables total visibility across the job site and provides critical safety and efficiency metrics.

The badge's firmware can be fully configured or upgraded remotely over-the-air anywhere within the UWB mesh-network coverage area.

2. Specification

Maximum Rating

The tag should be stored indoors with relative humidity no greater than 80%, and temperature between 0 °C and 70 °C. Exposure to high heat is prohibited. Direct sunlight should also be avoided.

Parameter	Maximum Rating
Temperature (°C)	0 ~ 70
Humidity (%)	< 90
Supply Voltage (V)	5V

Recommended Operating Conditions

Parameter	Min	Max
Temperature (°C)	0	40
Humidity (%)	N/A	<80

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Power Supply and Battery

The badge can be powered by an external DC power supply via the Pogo connector. The power supply should be clean with current rating of 500mA or higher. The node can also be powered by a built-in battery.

Power supply

Parameter	Condition	Min	Typ	Max	Unit
voltage		4.8	5.0	5.2	V
current	battery charging		250	500	mA
	not charging, mobile node	<0.1		120	mA
	not charging, navigation node	<0.1		150	mA

Internal Battery

Parameter	Rating
Type	Lithium-Ion, single cell, rechargeable
nominal voltage	3.6V - 4.2V
minimum capacity	500 mAh

RF Transceiver

The tag operates in the unlicensed UWB frequency. The transmitted signal bandwidth is 500 MHz or greater. The units are calibrated such that the maximum radiated spectrum density is no more than -41 dBm/MHz and is fully compliant to the spectrum mask defined in FCC part 15. It is also compliant with the similar spectrum regulation for regions and countries including US, Canada and EU.

Parameter	Min	Max
Frequency Range (MHz)	3244	6999
10dB Bandwidth (MHz)	500	
Center Frequency* (MHz)	3494.4	6489.6
Spectrum Density (dBm/MHz)	N/A	-41

**The center frequency is software configurable. See table below for details.*

The tag is software configurable to operate on 4 UWB channels. The specification of each channel is given as below.

Channel Number	F_c (MHz)	F_{min} (MHz)	F_{max} (MHz)
1	3494.4	3244.8	3744
2	3993.6	3774	4243.2
3	4492.8	4243.2	4742.4
5	6489.6	6240	6739.2

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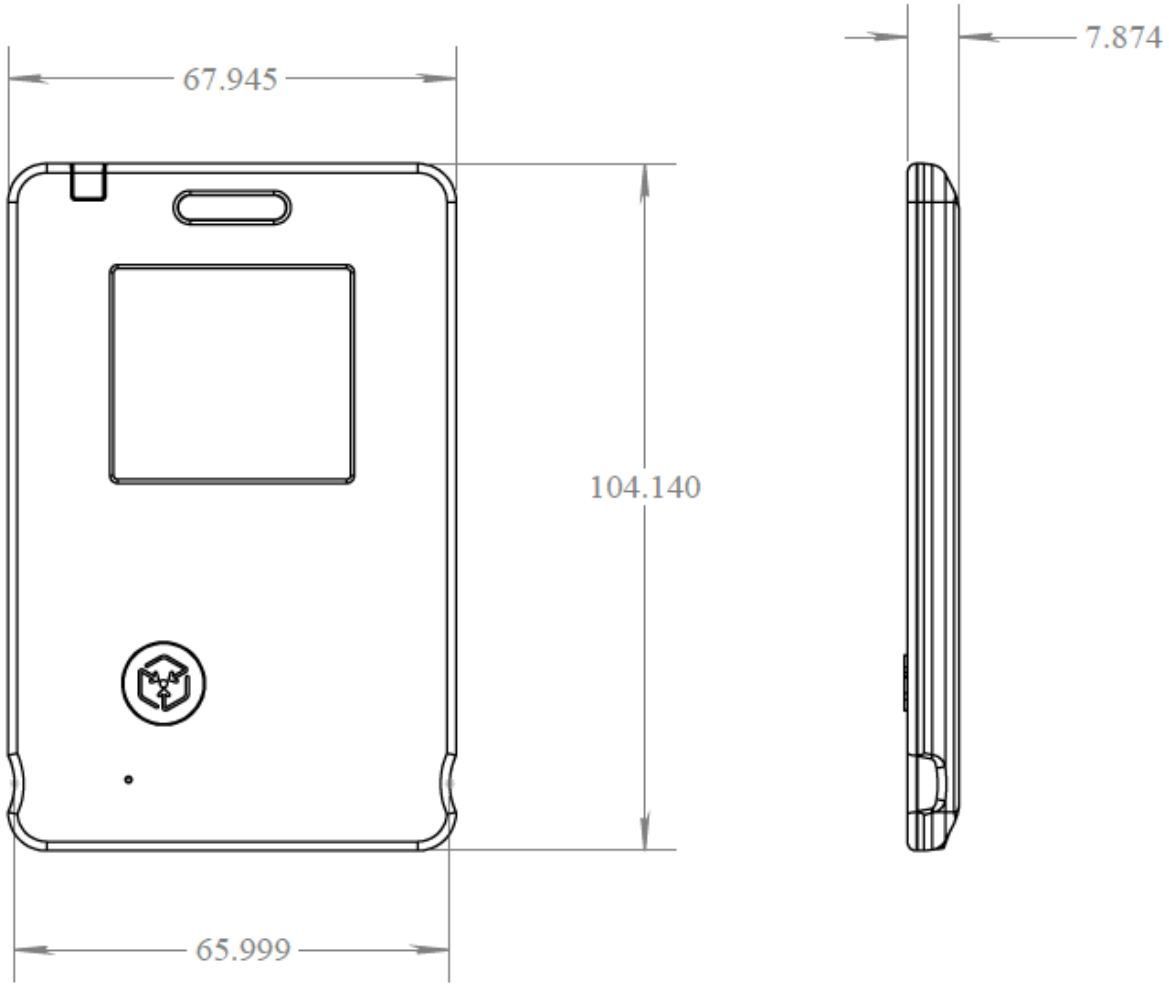
Mechanical and Packaging

The dimensions of the badge are 68 x 104 x 7.9 (mm). The following diagram shows the outline of the badge.



Important Regulatory Information

FCC Notice (for U.S. Customers):
This device complies with Part 15 of the FCC Rules:

Operation is subject to the following conditions:

1. This device many not cause harmful interference, and

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

*Changes and Modifications not expressly approved by **RED POINT POSITIONING** can void your authority to operate this equipment under Federal Communications Commission's rules.*

ISED Canada Compliance Statements

***This device complies with ISED Canada licence-exempt RSS standard(s).** Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.*

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RADIO AND TELEVISION INTERFERENCE

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 or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the 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.

You may also find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402.

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