Wideband Location System
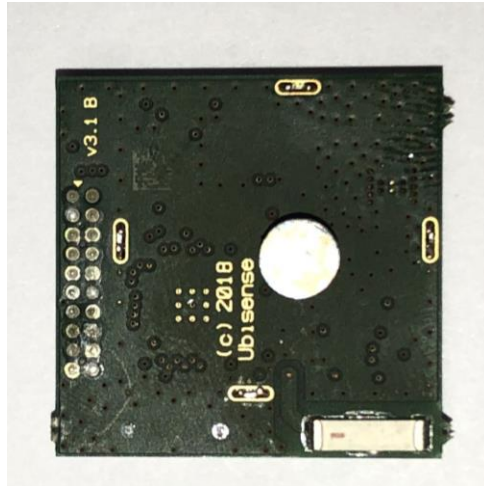

Modular Tag V3.1 (UBIMOD31)

User's Manual

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Introduction

The Modular Tag V3.1 (model number UBIMOD31) is a wireless module intended to be integrated into other devices for the real-time location of objects. It transmits wideband pulses which are picked up by a network of basestations (Ubisensors), allowing the 3D position of the tag to be found. The use of wideband technology enables greater positioning accuracy within buildings than other wireless technologies, because it is much less susceptible to multipath interference effects. Applications of the system include healthcare, workplace productivity, security, retail management and manufacturing.

This document describes the features and specifications of the Modular Tag V3.1 and important regulatory information concerning its use and integration into other devices.

Regulatory Information for the United States of America

The Modular Tag V3.1 is approved under Parts 15.249 and 15.250 of the FCC rules as a Modular Transmitter. It is the responsibility of the Host product manufacturer to ensure continued compliance of the module once integrated in to their product.

The product into which the Modular Tag V3.1 is incorporated must bear a label per the FCC requirements which shows the FCC ID assigned to the Modular Tag V3.1 as follows.

Contains FCC ID: SEAMOD31

The following information must be conveyed in the information supplied to the End User of the product into which the Modular Tag V3.1 is incorporated:

> *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.*

The user's manual or instruction manual shall caution the user that changes or modifications to the equipment not expressly approved by the party responsible for the grant of equipment authorization issued by the FCC could void the user's authority to operate the equipment under the grant of equipment authorization, for example:

> *CAUTION: Any changes or modifications made to the Modular Tag V3.1 which are not expressly approved by Ubisense Limited could void the user's authority to operate the equipment.*

IMPORTANT NOTE: FCC Radiation Exposure Statement: This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The device has been evaluated as safe to use at any separation from the person.

IMPORTANT NOTE: FCC Radiation Exposure Statement: Host configurations involving co-location of this module with other transmitters that operate simultaneously are required to be evaluated using the FCC multi-transmitter procedures.

Regulatory Information for Europe

Hereby, Ubisense Limited declares that the radio equipment type Modular Tag V3.1 (UBIMOD31) is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.ubisense.net or from:

> Ubisense
> St. Andrew's House
> St. Andrews Road
> Chesterton
> Cambridge
> CB4 1DL
> United Kingdom

This UWB transmitter must not be installed at a fixed outdoor location or used in flying models, aircraft and other forms of aviation.

The device uses the following frequency bands, at the output powers shown:

Radio interface	Lower frequency (MHz)	Upper frequency (MHz)	Output power (dBm)
2.4GHz	2401.75	2481.75	-4.9
Wideband	6201.001	7025.089	-42.3 (/MHz)

Integrators should note that when the module is integrated into other equipment the combined device must meet all essential requirements and other relevant provisions of European Directives for that combined equipment. See ETSI EG 203 367 for further details.

Regulatory Information for Canada

The Modular Tag V3.1 is approved under Industry Canada documents RSS-GEN, RSS-102, RSS-210 and RSS-220 as a Modular Transmitter.

Le Modular Tag V3.1 est certifié et approuvé conforme selon les documents de l'Industrie du Canada RSS-GEN, RSS-102, RSS-210 et RSS-220 en tant que module de transmission (Modular Transmitter)

This device complies with ISED's license-exempt RSSs. 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.

Cet appareil électronique est conforme à l'exemption de licence RSSs de l'ISED. Son utilisation est soumise aux deux conditions suivantes: (1) Cet appareil ne doit pas causer d'interférences; et (2) Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

It is the responsibility of the host product manufacturer that is installing the module in their device that the host device is correctly labelled with the following text:
Contains IC: 8673A-MOD31

and to ensure continued compliance with ISED standards and requirements once the module is installed within the host device.

Il est de la responsabilité du fabricant du produit recevant le module dans son équipement, que ce dernier soit correctement étiqueté avec le texte suivant:

Contains IC: 8673A-MOD31

Afin d'assurer la continuité de conformité avec les normes et les exigences de l'ISED, une fois le module installé dans l'équipement/le produit.

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with IC multi-transmitter product procedures.

Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnement en association avec une autre antenne ou transmitteur.

This module complies with the safety requirements for RF exposure in accordance with RSS-102 Issue 5 for portable use conditions in uncontrolled environments.

Ce module est conforme aux exigences de sécurité relatives à l'exposition aux radiofréquences, conformément à la norme RSS-102, édition 5, pour systèmes portables conditions d'utilisation dans des environnements non contrôlés.

Modular Tag V3.1 Specifications

Wideband transmitter section

Operates under:	FCC Part 15.250
	Industry Canada RSS-220
	ETSI EN 302065-2

Centre frequency:	6.509GHz
-10dB bandwidth:	0.824GHz

Conventional 2.4GHz radio transceiver

Operates under:	FCC Part 15.249
	Industry Canada RSS-210
	ETSI EN 300440

Lowest channel frequency:	2401.75MHz
Highest channel frequency:	2481.75MHz

General specifications

Dimensions (WxHxD):	24.5mm x 24.5mm x 9mm
Weight:	6g
Power supply:	2.3V-5.5V DC supply
Operating temperature range:	-40ºC to +85ºC

Integration information

The dimensions of the module PCB are shown below:
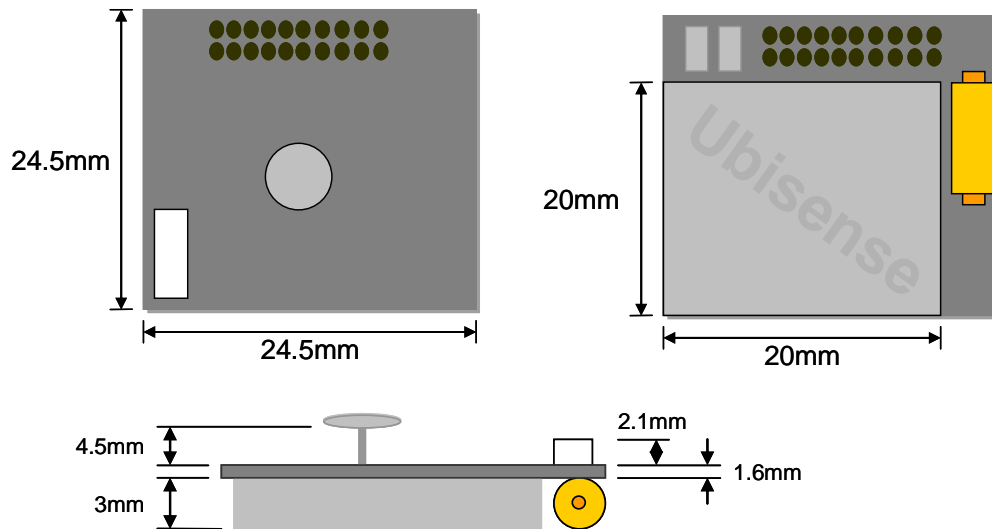
When mounting the tag on another device care must be taken to avoid occlusion of the antennas by tall components, shielding, or mounting screws. There should be an air gap of at least 1mm left around both of the antennas to avoid detuning.

While the connector provides some mechanical fixing it is not recommended that this is the only fixing point. A double-sided pad has been supplied that can be fitted to the top of the screening can to securely fix the module to a PCB.

When designing the PCB it is recommended that there is no ground plane underneath the module.

Power should be supplied on the following pins of the header:

        2.3V-5.25V DC power input: Pin 3
        Ground: Pins 5,6,9,10,14,18,19

A number of pins on the module's header may be used for digital input/output and analogue input. Note that application-specific use of these pins will require Ubisense to write modified firmware for the device, and therefore integrators wishing to make use of these features should contact Ubisense in the first instance.

The header used on the module is a **Major League TSHS-5 10-D-04-A-F-LF**, a standard 1.27mm pitch through-hole pin header. The recommended connector to use with the module is:

        Connector: Major League LSSHS-5 10-D-06-F-TB-P-LF   (SMD)

Please refer to http://www.mlelectronics.com for further information and ordering details.