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User Guide

SmartView Indoor Location

Going further in critical communications

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# Contents

1.0 About this Guide

This user guide describes the Indoor location functions within the radio and how they are operated by the user.

2.0 Overview

Indoor Location improves worker safety by enabling the location status of personnel, working in a predefined operational area, to be monitored remotely (by a supervisor in a control room for example). In the event of an incident or accident, a faster and more successful response can be co-ordinated if the specific location of personnel in danger (and members of the response team) are known.

Within buildings and enclosed spaces, the reliability of using GNSS alone to locate personnel is either seriously impaired or completely non-functioning. The indoor location system uses beacons installed within the buildings to overcome these issues.

The System operates as follows:
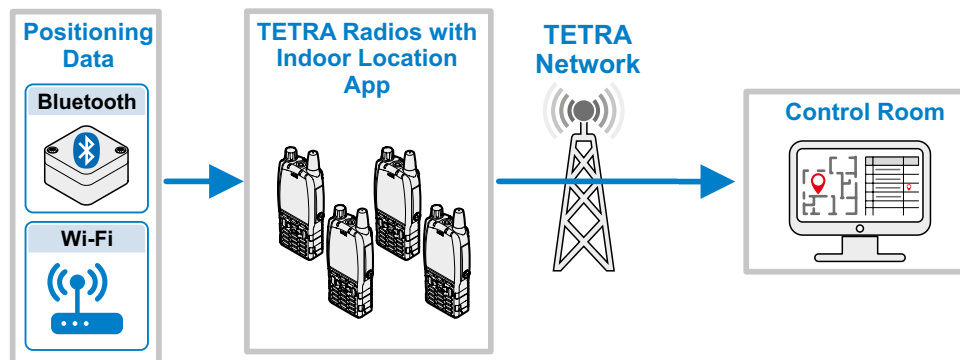
- The system uses a number of low energy Bluetooth iBeacons* or Wi-Fi Access Points (AP), strategically placed in defined locations within the operational area. Each iBeacon / AP constantly emits a signal which includes its own unique identity number. A combination of both iBeacons and Access Points can be used in one system installation.

- The Smart View Indoor Location app on the radio scans for and identifies the best signal and sends a report message, including both the iBeacon / AP and radio identification information via the TETRA Radio Network.

- In the control room, the data message is received by an app and can be plotted on a map.

- If the radio user moves location towards another iBeacon / AP, the app detects the closer iBeacon / AP and sends updated information.

- Notifications such as status display and/or an audible tone can also be enabled in the app to notify the user that an SDS is sent for location update.

*iBeacons are a wireless technology using Bluetooth to provide location-based information, developed by Apple Inc.

3.0 Checking Status

You can check if the Indoor Location app is operating normally by manually opening the background app status view, as follows:

1. On the radio, choose **Menu**,
2. Select the app's icon
3. Select the **Indoor Location** app.

The status screen will indicate:

- Bluetooth status (on or off)
- The last beacon identified
- Other data which may help troubleshoot any issues

4.0 Installation

Before use, all radios used with the Indoor Location app must be programmed with the appropriate settings, apps and licenses. This is done using Radio Manager.

Indoor Location requires and utilises the SC Series radios Bluetooth and Wi-Fi capability. This guide assumes that the Bluetooth / Wi-Fi function and licenses are already installed on each radio.

4.1 Beacons/Access Points Supported

Any Bluetooth beacon using the iBeacon protocol is supported. The following parameters should be configurable to tune with the application:

- UUID
- Minor value
- Major value
- Transmission power

Any standard 2.4 GHz Wi-Fi Access Point for Wi-Fi reports.

5.0 Configuration

Parameters are available to customise and tune the Indoor Location app, to fulfil the requirements of the installation.

Parameters are customised in the the AppSPACE Configuration Editor. Refer to the **Help** tab for more information about each configurable parameter.

5.1 Message

Indoor Location runs autonomously on the radio and scans for Bluetooth and/or Wi-Fi beacons. The scanning results are sent as SDS messages using ISO/IEC 8859-1 Latin 1 (8bit) alphabet coding scheme via the TETRA network to the backend application. Messages work in the same way as TETRA LIP location messages. SDS received or consumed acknowledgement is not used, and location report message retransmissions is not supported.

5.2 Bluetooth Report

The Bluetooth beacon scan results are packaged into SDS using the following format:

- Header: IL0, where the "0" is the revision of the protocol
- BBMNR: Beacon Minor Value
- BBMJR: Beacon Major Value
- Beacon ID: UUID
- Signal value: RSSI

Space is used as a delimiter.

Example Message String:

IL0 6 12345 acfd065e-c3c0-11e3-9bbe-1a514932ac01 -46

5.3 Wi-Fi Report

The Wi-Fi Access Point scan results are packaged into SDS using the following format:

- Header: IL0, where the "0" is the revision of the protocol
- Reserved for future use: 0
- Reserved for future use: 0
- Beacon ID: BSSID
- Signal value: RSSI

Space is used as a delimiter.

The Wi-Fi beacon BSSID is the same as the MAC address. The typical format of the MAC address is xx:xx:xx:xx:xx:xx. However, the app removes the colons to save space in the SDS message.

Example Message String:

IL0 0 0 24a07475f966 -51

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MOD-22-2576 Issue 2

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