FIELDSCOUT®

FieldScout Bluetooth Device & Mobile App

PRODUCT MANUAL

Items 6453BTA, 6453BT, 6491S, 6490S

Spectrum® Technologies, Inc.

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This manual will familiarize you with the features and operation of your new Bluetooth-enabled Field Scout device and FieldScout Mobile. Please read this manual thoroughly before launching the units.

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OVERVIEW

Thank you for purchasing the **FieldScout Bluetooth Device** for TDR 300, or the **Bluetooth-enabled** TruFirm.

Bluetooth Smart technology allows FieldScout data to stream to a smartphone when paired with the free iPhone or Android **FieldScout Mobile** app (item 6453BTA). FieldScout Mobile is designed to collect, store, and analyze measurement data from FieldScout meters equipped with a Bluetooth Smart radio.

To log in as a **FieldScout Mobile—Pro** user requires a **SpecConnect FieldScout Pro** subscription (item 3035) and uses the same login credentials as the SpecConnect web portal & app (purchased separately, contact Spectrum to place an order). The FieldScout Mobile—Pro app automatically uploads measurement data to the SpecConnect web portal and launches enhanced features in the app not available in FieldScout Mobile—Basic. Enhanced features include Guided mode & Freeform mode, overlaying measurements on satellite imagery, writing notes/ comments associated with zones or sessions, and sharing information with other FieldScout Mobile—Pro users.

The FieldScout Bluetooth Device (item 6453BT) mounts to the frame of the TDR 300 and a cable plugs into the TDR's computer port. TruFirm meters (item 6490S) are available with a Bluetooth Smart radio installed internally. Bluetooth capability can be added to a TruFirm meter with the TruFirm Bluetooth radio board (item 6491S).

HOME SCREEN

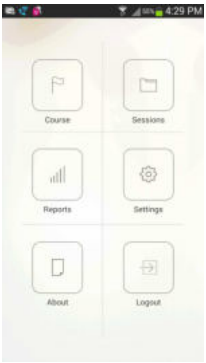


Fig. 1: Home screen

The **Home** screen (fig. 1) is displayed when the app is opened. From the **Home** screen, you can navigate immediately to a Course/Farm, an existing Session, the Settings screen, Reports, and the About Spectrum page. The Home screen is also where you download data as well. From any other screen, the **Home** screen can be accessed by tapping the icon with 3 parallel, green lines (fig. 2) and selecting "Home" from the menu.

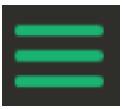


Fig 2. App menu button

GETTING STARTED

Get your Bluetooth-enabled FieldScout TDR 300 or TruFirm working with FieldScout Mobile in the following eight steps.

1 Get the app: FieldScout Mobile

Search 'FieldScout' in the Apple App Store or Android Google Play Store and download it.

2 Attach Bluetooth Device (TDR 300 only). Turn on FieldScout Meter and Bluetooth

TruFirm: Press the ON button to power-up both the meter & the Bluetooth.

TDR 300: Press the ON button on both the meter & the Bluetooth Device to power-up.

(LED will indicate the Bluetooth status, flashes red when ready to pair)

3 Open FieldScout Mobile

Select Basic login or use SpecConnect credentials for FieldScout Pro login.

4 Add New Course or Farm

Select Course or add New Course (and Farm)

Each course is a location and can be sub-divided into holes and surfaces.

5 Start New Session

A session represents a sampling date/time.

Select meter type.

Reports use sessions to organize data.

6 Identify Sampling Location

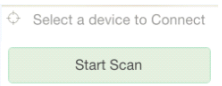
On the main screen, select the desired hole & surface.

Tap a zone to initiate pairing procedure.

7 Connect App to Bluetooth

Scan for devices and select:

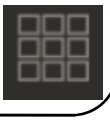
TDR 300: FieldScout Bluetooth
TruFirm: TruFirm Bluetooth



8 Take Measurements

Readings will stream to the app, Bluetooth LED will flash green

Use the grid icon to return to the main screen and go to the next zone.



TDR Bluetooth Device

The FieldScout Bluetooth Device (item 6453BT) connects to the data port of the TDR 300 meter. The TDR 300 meter must be running firmware version 6.5 or higher to be compatible with the Bluetooth Device. The FieldScout Bluetooth Device is powered by a CR2032 battery (included) and attached to the meter with Velcro.

Installing and Activating the FieldScout Bluetooth Device

1. Remove the screw from the back of the device and insert the battery (+ side up). The LED will briefly glow red after the battery is inserted. Replace the back and tighten the screw.
2. Place one piece of Velcro on the flat plate at the front of the meter and the second piece on the back of the FieldScout Bluetooth Device. Attach the device to the meter (figure 1).
3. Plug the cable into the data port on the bottom of the TDR's console (figure 2).
4. Power on the FieldScout Bluetooth Device by pressing the green On/Reset button. The LED will glow red for 2 seconds and then will start to blink red. The red blinking indicates it is ready to pair with a smart phone or tablet running FieldScout Mobile (see p. 6). If the device is not paired within 2 minutes, the LED will cease blinking and the On/Reset button must be pressed again to restart the process. After the device successfully pairs with the app, the LED will glow green for a couple seconds. A single green flash will then occur each time data is transmitted from the TDR 300 to the smart phone or tablet.

Note: When the TDR's internal data logger is full, the meter's display will not function properly. Unless you are using the internal logger as a back-up, the TDR logging function should be disabled in FieldScout software.

Fig. 1: Device attached to flat plate

Fig. 2: Cable plugged into data port

Pairing FieldScout Device with FieldScout Mobile

The Bluetooth radio must be paired with the smartphone running FieldScout Mobile. For the TDR meter, activate the Bluetooth Accessory (p. 5). For the TruFirm meter, the radio is activated when the meter is powered up.

1. Activate the Bluetooth feature on the smartphone.
2. Open the app.
3. Create or select a Course/Farm (p. 7).
4. Create or select a Session (p. 7). This will bring up the **Main** screen (Fig. 1). If you are using both TruFirm and TDR meters, confirm that the meter you are using appears at the top of the screen.
5. Tap any of the zones to bring up the **Take Reading** screen (Fig. 2).
6. Tap the **Connect FieldScout Device via Bluetooth** button. If the Bluetooth feature has not been activated, you will be prompted to do so.
7. Tap the **Start Scan** button to search for a Bluetooth device (Fig. 3). The options will be *FieldScout Bluetooth* for a TDR 300, or *TruFirm Bluetooth* for the TruFirm.

After selecting the device, the App will be ready to take readings (p. 9).

Figure 1. Main screen

Figure 2. Bluetooth Connect button

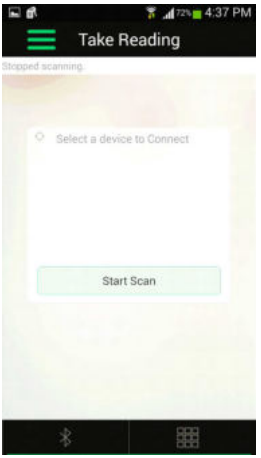


Figure 3. Scan for Devices button

Managing Courses/Farms And Sessions

Before a new data collection session can be created, the location on which that data will be taken must be selected. For the Golf setting, this will be a *Course*. For the Agriculture setting, this will be a *Farm*.

Selecting an Existing Course/Farm
From the Home screen, tap the Course/Farm button. This will bring up the **Select Course/Farm** screen (Fig 1). Select the desired Course/Farm name from the list.

Creating a New Course/Farm
From the **Select Course/Farm** screen, tap the **Add New Course/Farm** button. Enter the new name and tap the **Start** button. This will take you back to the **Select Course/Farm** screen with the new course included in the list.

Figure 1. Select Course screen

Sessions
A data session identifies the date and time when data was collected. After selecting the location, the app will take you to the **Select Sessions** screen (Fig. 2). If you are beginning a new session, tap the **Start a New Session** button. This will bring up the **Name Sessions** screen in which you name the session and identify the type of meter you are using (Fig. 3). If you would like to continue an existing session, select it from the list. After selecting a session, you will be taken to the **Main** screen (p. 8). Once in the **Main** screen, it is also possible to navigate between sessions for the same surface and hole by tapping the green arrows on either side of the session identifier window.

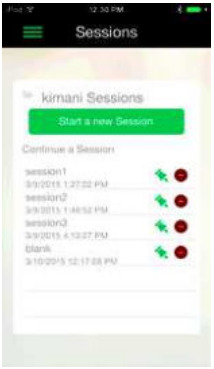


Figure 2. Select Sessions screen

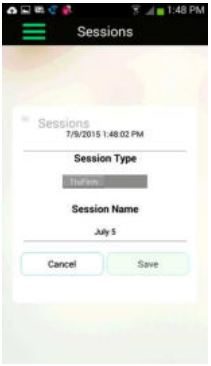


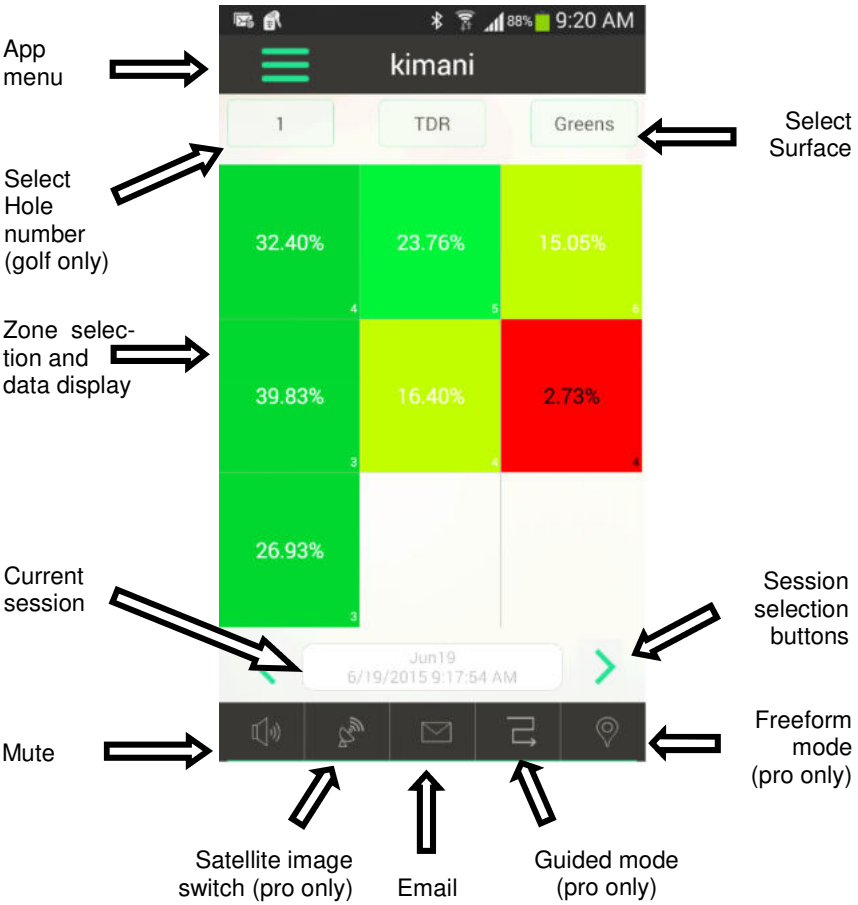
Figure 3. Name Sessions screen

MAIN SCREEN

After selecting a session (p. 7) you will be taken to the **Main** screen. Here you can review the averaged data by hole and surface or access the measurement screen.

In Golf mode, select the hole number and surface type. Tap a zone to access the **Take Readings** screen (p. 9) and begin recording data to the app from the meter. Tap and hold on a zone to begin the process of creating a user-definable configuration of zones (p. 10).

Agriculture/Other mode (see **Settings Screen**, p. 11) is similar but has no *Select Hole* option and the golf-specific surface names are removed. See pp. 12 - 13 for more detail on the Pro Only features.

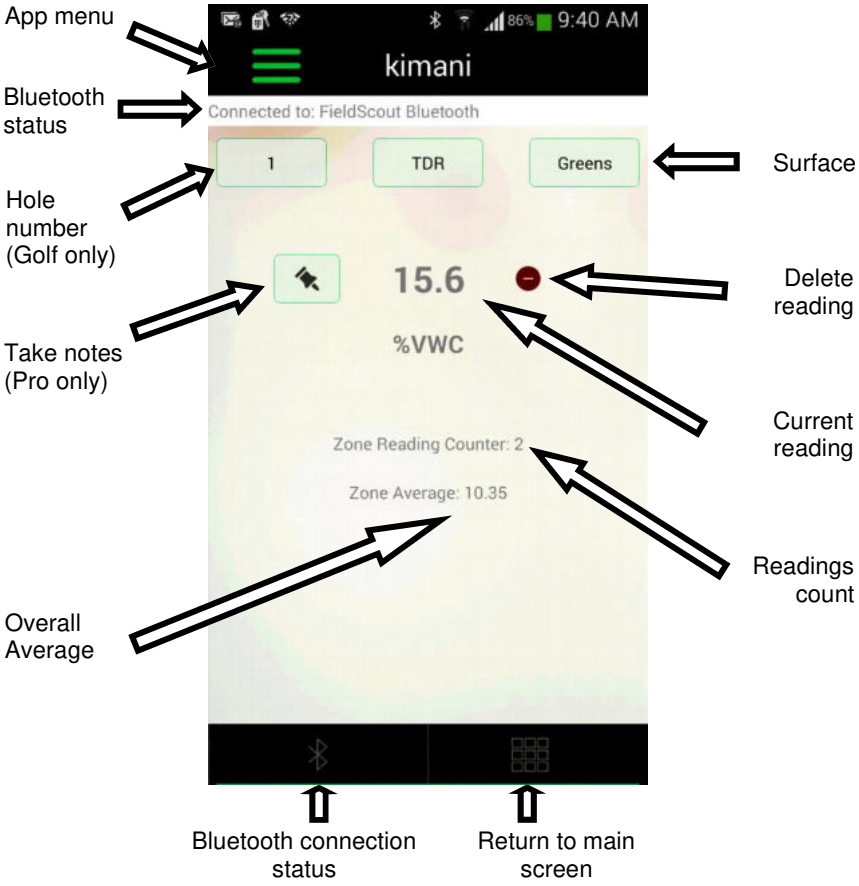


Take Reading Screen

The **Take Reading** screen is displayed while making measurements.

The value measured by the FieldScout meter will be instantly transmitted to the app and displayed in the center of the screen. Readings are automatically accepted and the zone's reading counter and average value are modified. Tap the **Delete** button to delete the most recent reading or all readings for this zone. When a reading is deleted, you are taken back to the **Main** screen (p. 8). Tapping the grid icon will also return you to the **Main** screen. Continue taking measurements by selecting another zone or moving to a different surface.

Note: The hole number, meter type, and surface cannot be modified from this screen.



Customizing the Shape of the Sampling Site

The **Zone Editing** menu (Fig. 1) is accessed by pressing an holding on any zone in the **Main** screen (p. 8). From here you can customize the configuration of zones at a given sampling location. This is useful for non-rectangular shaped sites such as a golf course green.

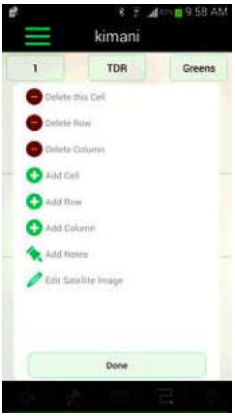


Figure 1. Zone Editing Menu

When a column is added, it is added on the far right side. When a row is added, it is added at the bottom. When a row or column is deleted, the row or column removed is the one in which that cell is located. The grid has a maximum of 5 rows and 5 columns. If the **Delete this Cell** option is selected, that individual cell will be de-activated and grayed out. The **Add Cell** option can only be used to re-activate cells that have already been removed. When a cell is added, the reading from that cell will re-appear. Figure 2 shows some examples of manipulating the default 3 x 3 grid to create a customized shape.

The **Add Notes** and **Edit Satellite Image** options are only available for the Pro version.

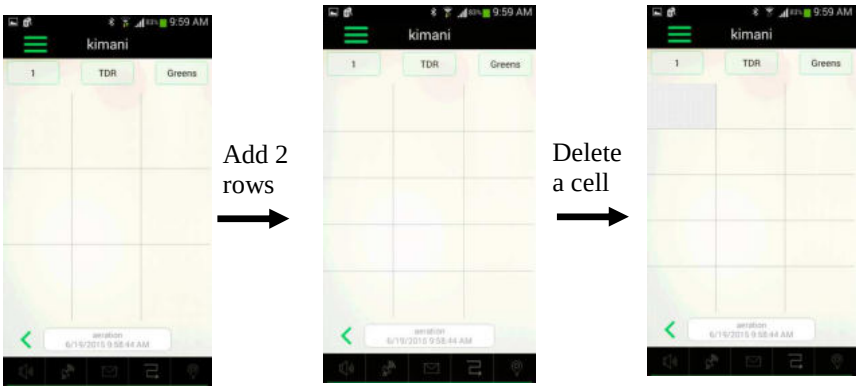


Figure 2. Modifying the zone configuration to better approximate the shape of the area being sampled.

Settings Screen

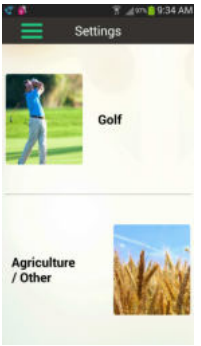


Figure 1. Settings Screen

The **Settings** screen (Fig. 1) can be accessed from the **Settings** button on the **Home** screen. This screen is used to select the **Golf** or **Agriculture/ Other** mode. Within either mode, it is possible to choose which color scheme is used in the **Main** screen (p. 8) and how that color scheme is sub-divided. After selecting the mode, the app will give you the choice of 3 color schemes (Fig. 2). Select the desired scheme and tap the **OK** button to proceed to the legend scale screen (Fig. 3). The top toggle button allows you to indicate whether the data is from a TDR or TruFirm meter. The default scale is from 0 to 1 for the TruFirm and from 0 to 25 for the TDR. To adjust these default values, enter values in the top (minimum value) field and bottom (maximum value) field. Only the high value for the lowest range and the low value for the highest range are entered in with the keypad. The rest of the legend is auto-filled. Tap the **OK** button or **App Menu** button in the upper left corner to save the changes and return to the **Home** screen. Tap the Cancel button to ignore the changes and return to **Color Scheme** screen.

Figure 2. Color scheme screen

Figure 3. Legend scale screen

GUIDED & FREEFORM MODE

The Pro version of the app (available for users with a **SpecConnect** account) offers two alternatives to how the site is sampled. These are the Guided and Freeform modes. These modes are selected from the bottom of the **Main** screen (p. 8).

Guided mode allows taking a complete set of readings at a surface (or field) uninterrupted. First, choose how many readings per zone to take (Fig. 1). This number can be modified by tapping the small pencil icon at the bottom of the zone sampling pattern screen (Fig. 2). Second, choose a horizontal or vertical path by tapping the appropriate button at the bottom of the zone sampling pattern screen. Click the first zone to start and begin taking measurements with the FieldScout meter. The app automatically progresses to the next zone after the required number of readings has been taken.

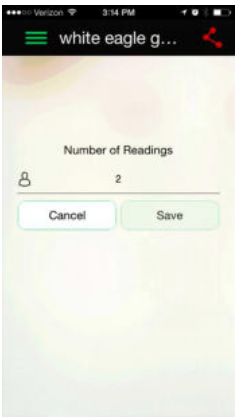


Fig. 1. Selecting number of readings

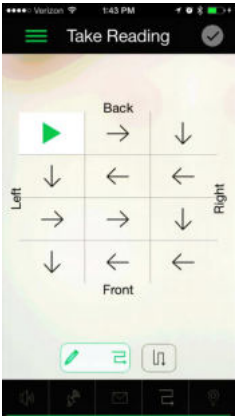


Fig. 2. Guided zone sampling pattern.

The app will track progress by highlighting the current zone and showing a readings counter in the bottom right corner of the zone.

Freeform mode allows taking measurements without the constraint of zones. Instead of averaging all measurements taken in a zone, each measurement taken in freeform mode will be shown independently as a color-coded point (Fig. 3).

Fig. 3. Freeform sampling

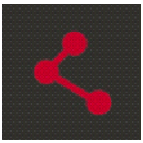
Satellite Images

FieldScout Pro users can overlay measurement data on top of a satellite image of their site. The far-right image below illustrates how the combined data screen will look. Click the satellite button at the bottom of the **Main** screen to add the map. Initially, the map will be centered at the phone location. But, the image can be re-sized, moved, and rotated by pinching and swiping with your fingers. The GPS coordinates associated with the data laid over the image are for the center of the zone location. This enhanced image can be replicated in SpecConnect if it is assigned a GPS location in the app (see p. 14).

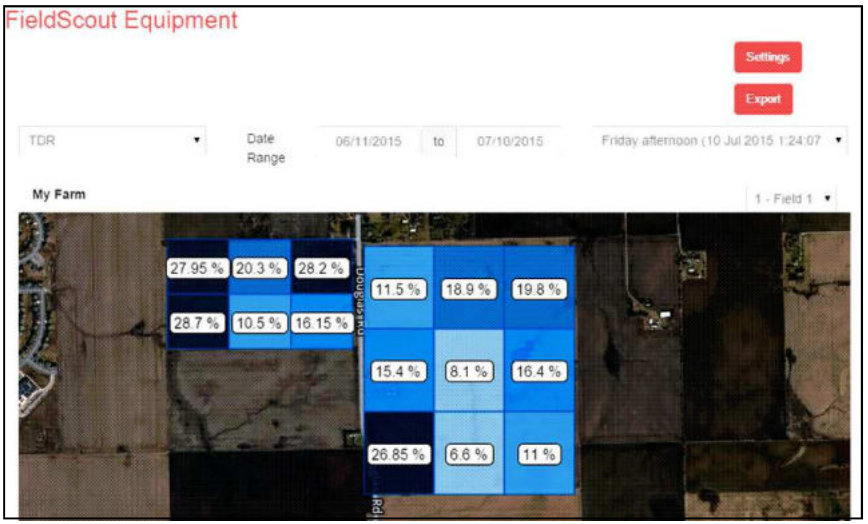
Emailing Images

Both FieldScout Basic and Pro users can email images of their measurement grids. Click the email button at the bottom of the **Main** screen. Tap “Select Session” and select the session of interest from the list. Only sessions for the current Course/Farm will be listed. Tap the “Send Email” button to open the email app on your phone. Type in the destination of the email. The default email Subject is the date and time of the sampling session. This can be modified to something more descriptive. Text can also be entered into the body of the email. Images of all active grids for that session will be sent as attached files.

Sending Data to SpecConnect



FieldScout Pro users will automatically transmit their measurement data from the app to their SpecConnect web portal account when their phone is connected to a WiFi network or allows the use of cellular data. The SpecConnect icon in the top right indicates if the data is synced (red) or not (gray). In SpecConnect, select the device from the Equipment page. View grid and freeform mode data for a selected meter type (TDR or TruFirm). All sessions for a selected date range will appear in the drop down menu on the right. For data taken in Golf mode, use the surface dropdown list to scan to the selected hole and surface. Use the Settings menu to select a color scheme and adjust the range scale in the same way as it is done in the app (p. 11). Use the Export button to download a comma delimited (.csv format) file of the selected session to your computer. Only the average data for a grid zone will be transferred to the exported data file.



SPECIFICATIONS

Compatibility

- Apple Bluetooth Smart devices
  - ⇒ iPhone (6 Plus, 6, 5S, 5C, 5, 4S)
  - ⇒ iPad (Air, Mini, 3rd & 4th gen)
  - ⇒ iPod Touch (5th and 6th gen)
- Android Bluetooth Smart devices (v4.3 or later)
  - ⇒ Samsung Galaxy series
  - ⇒ HTC One, One Max
  - ⇒ Motorola Droid RAZR, Maxx, Mini, Moto G, X
  - ⇒ Nexus 4, 5, 7, 10
- TDR 300 (firmware version 6.5 or later)
- TruFirm with Bluetooth Smart radio

Physical Properties

- Cable: 9” length with 3.5mm stereo plug and sealing grommet for FieldScout communications port
- Dimensions: 2.25 x 1.5 x 0.75 in (5.7 x 4.1 x 1.9 cm)
- Weight: < 2.5 oz (70 g)
- Operating Temperature: -40 °F to 185 °F (-40 °C to 85 °C)
- Battery: 2032 Lithium coin cell
  - ⇒ 6 months expected life
- IP40 enclosure
- Materials: enclosure—ABS plastic; cable—PVC45P

Radio Specifications

- Bluetooth 4.0 (Bluetooth Smart): QDID—B021015
- Frequency: 2.402 GHz to 2.480 GHz
- Modulations: GFSK
- Range: 50 ft (15 m)

Regulatory Information

- USA: FCC ID – QOQBLE113
- Canada: IC – 5123A-BGTBLE113
- CE approval: EN300328, EN301489

WARRANTY

This product is warranted to be free from defects in material or workmanship for one year from the date of purchase. During the warranty period Spectrum will, at its option, either repair or replace products that prove to be defective. This warranty does not cover damage due to improper installation or use, lightning, negligence, accident, or unauthorized modifications, or to incidental or consequential damages beyond the Spectrum product. Before returning a failed unit, you must obtain a Returned Materials Authorization (RMA) from Spectrum. Spectrum is not responsible for any package that is returned without a valid RMA number or for the loss of the package by any shipping company.

DECLARATION OF CONFORMITY

Spectrum Technologies, Inc.
3600 Thayer Court
Aurora, IL 60504 USA

Model Numbers:	6453BT, 6491S, 6490S
Description:	Field Scout Bluetooth Device
Type:	Electrical equipment for measurement, control, and laboratory use
Directive:	2014/30/EU
Standards:	EN 61000-6-1:2007 EN 61000-6-3: 2007 IEC 61000-4-2:2008 IEC61000-4-3:2006, including A1:2007 and A2:2010 EN 55022: 2010 FCC Part 15 CFR Title 47: 2014 ICES-003: 2012 Digital Apparatus (Industry Canada)

David Anderson—VP Product Development August 21, 2015

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