Technical Publications

VeriFinder™

Operator & Maintenance Manual

symetrica

Discovery Technology ®

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Note: 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 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 technician for help.

Caution: changes or modifications not expressly approved by Symetrica could void the user's authority to operate the equipment.

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SECTION 1 GENERAL

1.1 Acronyms and Abbreviations

Acronym / Abbreviation	Definition / Description
AC	Alternating Current
APN	Access Point Name
BIT	Built in Test
CCID	Chip/Smart Card Interface Device
c/s	Counts per Second
DU	Depleted Uranium
FWHM	Full-Width Half Maximum
GLONASS	Global Navigation Satellite System
GPS	Global Positioning System
HEU	Highly Enriched Uranium
HTML	Hypertext Markup Language
ID	Identification
IP	Internet Protocol
LED	Light Emitting Diode
NORM	Naturally- Occurring Radioactive Materials. Radioactive materials (minerals and raw materials) containing radionuclides of a natural origin.
Non-NORM	Non-Naturally Occurring Radioactive Materials. Radioactive materials that have increased concentrations of radionuclides due to human intervention.

Acronym / Abbreviation	Definition / Description
n/s	Neutrons per Second.
PDF	Portable Document Format.
RDD	Radiological Dispersal Devices.
RGPu	Reactor Grade Plutonium.
RIID	Radio Isotope Identification Device.
RN	Radionuclide – (radioactive nuclide, radioisotope or radioactive isotope). An atom that has excess nuclear energy making it unstable, which often results in the emission of neutron or gamma ionizing radiation.
RNDIS	Remote Network Driver Interface Specification.
SIM	Subscriber Identity Module.
SNM	Special Nuclear Materials.
SSH	Secure Shell.
TLS	Transport Layer Security.
UI	User Interface.
USB	Universal Serial Bus.
WGPu	Weapons Grade Plutonium.
Wi-Fi	Wireless Fidelity.
WMI	Web Management Interface.

1.2 Contacting Symetrica

Contact Method	UK Office	USA Office
Telephone	+44 2380 111 580	+1 (508) 718-5610
Email / Website	info@symetrica.com / www.symetrica.com	

1.3 Warnings, Cautions and Notes

WARNING

Any operating procedure, practice, or condition which, if not strictly complied with, may result in personal injury or loss of life.

CAUTION

Any operating procedure, practice, or condition which, if not strictly complied with, may result in damage to the system or equipment.

Note:

Any operating procedure, practice, or condition that requires emphasis.

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SECTION 2 SYSTEM OVERVIEW

2.1 What is VeriFinder?

VeriFinder is a handheld Radio-isotope Identification Device, that provides accurate radiation detection and identification for cargo inspection, homeland security and emergency use.

The system can be managed as a standalone unit or can be managed from a web-based user interface (refer to document 760-0363 – VeriFinder WMI Manual).

2.2 VeriFinder Kit Contents

The VeriFinder kit comprises a Ruggedized Transit Case containing the equipment shown below. The contents will differ depending on the type of transit case supplied.

Figure 1: VeriFinder Kit Contents

Item	Description
1	VeriFinder
2	Power supply
3	Shoulder strap
4	Batteries (x2)
5	Battery charger
6	Battery charger power supply
7	Car charger
8	Quick Start Guide and battery safety information sheet

Item	Description
9	Mini-B to USB data cable, Mini-B to USB adapter and IEC cable (x2), RJ-45 Adaptor (optional)
10	AA Battery Caddy (optional)

2.3 System Overview

VeriFinder is designed to:

- Detect nuclear materials.
- Rapidly and reliably discriminate between Innocent and Threat sources such as Special Nuclear Materials (SNM) and Radiological Dispersal Devices (RDD).
- Locate and identify potentially dangerous nuclear radiological materials in unsuspected locations.

Example operational environments include:

- Emergency responders and force protection (Hazmat or Defence response teams).
- Searching for radiological and nuclear material at ports of entry and checkpoints during Custom and Border Protection operations.
- Line-up screening of specific objects identified by other means, such as: primary detectors or intelligence information.
- Screening of people, cars, trucks, containers, railcars, and other conveyances.
- Scanning wide areas such as accident scenes, special events, buildings, ships, public/open areas, container/yard checkpoint areas, piers, aircraft, and so on.

VeriFinder can store up to 500 events, which are overwritten on a first in, first out basis. ~20 GB of storage space is allocated for these events.

Note: VeriFinder functions exceptionally well in the operational environments described above. VeriFinder has not been tested in an explosive environment.

2.3.1 Main Features

VeriFinder typically operates for up to 8-10 hours on a fully charged Li-Ion battery at 25°C (ambient), and for 7 hours at -20°C (ambient).

The screen is a high-contrast, high-resolution LCD that displays color-coded backgrounds and messages, providing real time data to the operator.

Figure 2: VeriFinder Main Features

Item	Description
1	Light sensor for automatic brightness adjustment.
2	640 x 480 3.7" LCD display screen.
3	Gamma detector.
4	3-button keypad.
5	Neutron detector.
6	Power connection.
7	Headphone connection.
8	USB port (mini-B).
9	LED indicators.

Item	Description
10	Speaker for audio alerts and microphone.
11	Battery and SIM access.

2.3.2 Display Screen

The display is a high-resolution LCD display with an auto-dimming backlight. The backlight can also be adjusted manually (refer to Section 3.12.2 – Backlight Settings). The landscape display has a resolution of 640 pixels wide by 480 pixels high, which contains a User Interface (UI) that is split into seven main areas.

Figure 3: VeriFinder UI

Item	Display Area	Description
1	Battery / Power indicator	Percentage power remaining
2	Dose Rate	µSv/h or mrem/h

Item	Display Area	Description
3	Menu Bar	Menu options: Detection Mode (see Section 3.4 - Detection Modes) Information Menu (see Section 3.6 - System Status) Event Viewer (see Section 3.7 - Event Viewer) Settings (see Section 3.9 – Normal Mode Settings) The menu bar will pop up when pressing the back arrow. It will disappear once an option is selected, or the back arrow is pressed to enter the locate mode.
4	Gamma rate	c/s (counts per second)
5	Status bar	Displays the battery life of the device, a date and time stamp, and system status icons (refer to Section 2.3.3 – Status Bar icons). The bar also indicates any alarms or alerts. The color will change for detection alarms (gamma - yellow, neutron - red) and system warnings (amber, non-critical faults - grey) and remain changed until the condition is removed.
6	Neutron Rate	n/s (neutrons per second)
7	Gamma history	Provides a historical graph of the count rate to assist in locating hot spots. Note that this default display can be changed to suit the needs of the operator (refer to Section 3.4 - Detection of Radionuclide Sources The screen is also used to display alarms, warnings and information based on menu options selected.

2.3.3 Status Bar Icons

Status bar icons are summarized as follows:

Icon	Description
	Bluetooth: ▪ Black - enabled and connected. ▪ White – enabled.
	Muted / Disabled: ▪ Audio has been set to mute and / or tactile indicator has been disabled. ▪ No icon - indicates audio and tactile indicator are on.
	Cellular (3G): ▪ Black - indicates the signal strength from cellular network. ▪ White - indicates the maximum number of signal strength indicator bars.
	GPS: ▪ Black - enabled and GPS lock achieved. ▪ White - enabled and waiting for GPS lock.
	Wi-Fi Signal strength: ▪ Black - indicates the signal strength from Wi-Fi network. ▪ White - indicates the maximum number of signal strength indicator bars. ▪ No icon - indicates Wi-Fi is off or the VeriFinder is not connected to a Wi-Fi network now.
   	Symetrica Generic Push (SGP) API - Data Upload Notification: ▪ Arrow Up - Busy - indicates SGP upload is active. ▪ Tick - Idle - indicates SGP is connected but inactive. ▪ Warning – indicates there is a history of unacknowledged SGP failures. Warnings can only be cleared by an administrator using the WMI (refer to 760-0363 – VeriFinder WMI manual).

2.3.4 Menu Overview

The menu options are displayed as icons on the left side of the UI.

Figure 4: VeriFinder Menu Overview

Item	Title	Description
1	Operating mode	Operating mode selectable by the user: ▪ Locate. ▪ Spectrum. ▪ Dose.
2	System status	Used to view key device information.
3	Event viewer	Used to: ▪ View all recent events. ▪ View all archived events (that is, those that have been manually downloaded).
4	Settings	View and change device settings.
5	Exit Advanced mode	Select this to exit Advanced mode. **Note:** This icon only shows when in Advanced Mode of operation (refer to Section 4.1 – Advanced Mode Login).

2.4 Keypad Operation

Control of the VeriFinder User Interface is through the 3-button keypad.

Figure 5: VeriFinder 3-Button Keyboard

Each button has two functions:

- Primary function – Push and release.
- Secondary function – Push and hold for three seconds.

Functions are summarized as follows:

Button	Primary Function	Secondary Function
Select/Power	Press and release to: ▪ Initiate Identification from locate mode. ▪ Select highlighted menu option. ▪ Acknowledge alarms and warnings.	Press and hold to: ▪ Power On / Shutdown.

Button	Primary Function	Secondary Function
Back	Press and release to: ▪ Move focus from locate window to main (icon) menu. ▪ Scroll up through tables or menu options. ▪ When the main menu is in view, press to enter locate mode.	Press and hold to: ▪ Mute/unmute Speaker and enable/disable Tactile Indicator. **Note:** On selection, the system cycles through in a loop as follows: Speaker on, Tactile Indicator on, Speaker on, Tactile Indicator off, Speaker off, Tactile Indicator off. Advanced mode only: ▪ Speaker off, Tactile Indicator off.
Down	Press and release to: ▪ Select the next menu option. ▪ Scroll down through tables or menu options. ▪ Adjust integer value inputs or levels on applicable screens.	Press and hold to: ▪ Open Tutorial mode for basic help on the system.

2.5 Connection Points

The connection points for VeriFinder are located behind the protective cover on the rear of the unit.

Figure 6: VeriFinder Connection Points

Item	Description
1	Mini-B USB 2.0 port for communication.
2	3.5 mm headphone connection.
3	Power connection.
4	LED indicators.

2.6 Audio Indicator

The alert and alarm audio indicators, similar to a Geiger counter, are emitted from a speaker, which is located to the left of the keypad.

The audio can be switched on or off as required (refer to Section 4.3 - Adjust Alarm Thresholds).

Event	Pitch	Audio Sequence
Fault	High	1 beep per second.
Gamma detection	High	1 beep per second.
Neutron detection	High	2 beeps per second.
Personal hazard	Low/high/low	3 beeps (low, high, low pattern) per second.

2.7 Tactile Indicator

When activated, the vibrating tactile indicator automatically switches on when an alert or alarm occurs and remains on until the alarm is acknowledged. The different vibration frequency patterns for each type of alert or alarm type are shown below.

The tactile indicator can be switched on or off as required (refer to Section 4.3 - Adjust Alarm Thresholds).

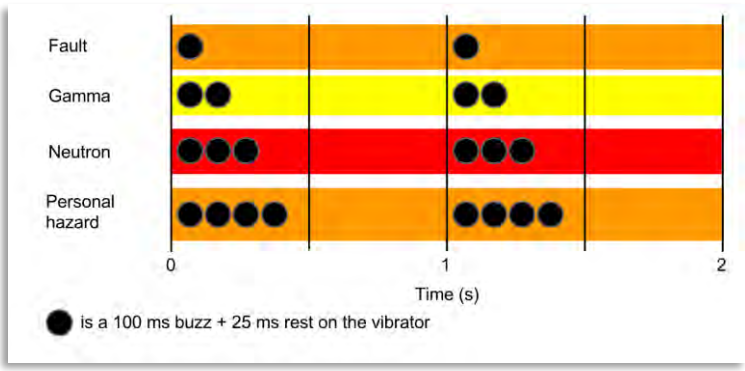


Figure 7: Tactile Indicator Vibration Frequency Patterns

2.8 Stabilization Module

The stabilization module is a tamper-proof, smart calibration device internal to the instrument, which maintains a constant calibration of the gamma detector. It uses a triple encapsulated Na-22 source with a maximum activity of 1000 Bq.

2.9 LED Indicators

Three LEDs (red, green, and amber) are used to indicate alert and alarm states. The LEDs are located on the end panel and are marked with a warning symbol for the amber LED, trefoil for red, and shield for green.

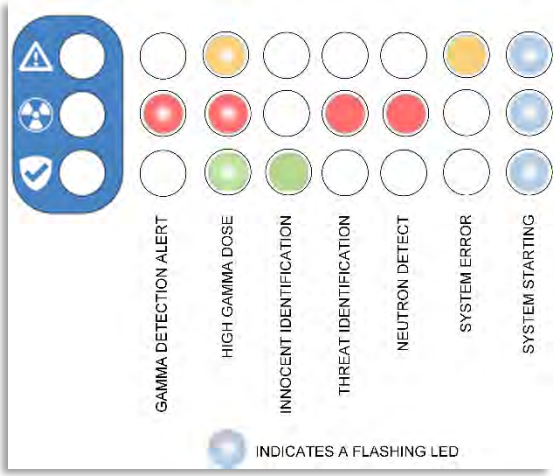


Figure 8: LED Indicator States

Alert / Alarm Condition	LED State
Gamma Detection Alert	Red on or Red Flashing.
High Gamma Dose	All Flashing.
Innocent Identification	Green On.
Threat Identification	Red On.
Neutron Detect	Red On.
System Error	Amber On.
System Starting	All Three Flashing.
System Shutdown	All Three Flashing.

2.10 Battery

The VeriFinder uses a Lithium Ion rechargeable battery with built-in protection and a typical operational capacity of up to 8 - 10 hours. The battery is easily replaced without the use of tools.

Note: - Verifinder must be used with the battery supplied by Symetrica (part number 172-0002-a) or purchased from inspired energy (part number NB2037HD34).

2.10.1 Battery Disposal

Refer to local regulations for requirements on battery disposal, as regulations vary between different countries.

2.10.2 Battery and Battery Charger Storage

The battery must be stored in an environment with low humidity, free from corrosive gas, at a recommended temperature of 21°C (70°F) and a minimum allowable storage temperature of -20°C (- 4°F) and maximum allowable storage temperature of 60°C (140°F). Extended exposure to temperatures above 45°C (113°F) will degrade battery performance and life.

The battery charger must be stored in temperatures between -20°C to +70°C (- 4°F to 158°F).

Note: When in storage, batteries can drain to a very low voltage creating a risk of permanent lockout (built-in protection). If this happens, then the battery will be rendered unusable. To prevent this from happening, it is recommended that batteries are monitored for recharging within a 6-month period.

2.10.3 Battery Charging Restriction

Battery charging is inhibited at temperatures at or above 45°C (113°F).

2.10.4 General Battery Handling Precautions

- Do not immerse in water.
- Do not disassemble or deform the battery.
- Do not dispose of the battery in or expose the battery to fire.
- Avoid excessive physical shock or vibration.
- Never use a battery that appears to have been damaged.

2.10.5 Water Ingress

The battery chamber is IP65 sealed to prevent any residual water ingress, however, if the VeriFinder is fully submerged in water, then it is possible that water ingress into the battery chamber occurs, which can cause the battery to short.

Should this happen, corrective action is to ensure the unit is fully dried out in a powered off state with the battery door open and battery removed in a well-ventilated area until dry.

Note: For safety, the battery has internal shorting protection to prevent a conductive path to the operator. If the battery has been submerged in water, it should be discarded in line with local

guidelines. Ensure the unit is fully dried out before inserting a new battery and powering the device on.

2.11 Battery Removal and Replacement

<u>CAUTION – LOSS OF DATA</u> - Turn the VeriFinder off before removing the battery. Failure to do so could result in loss of data.

2.11.1 Removing the Battery

1. Open the battery compartment by rotating the latch counter-clockwise on the underside of the unit.

Figure 9: Location of Battery Latch

2. Lift the battery cover to expose the battery.

Figure 10: Location of Battery Cover

3. Remove the battery from the battery compartment. Be careful not to let the battery drop out of the unit.

Figure 11: Removing Batteries

2.11.2 Inserting the Li-Ion Rechargeable Battery

1. Insert the battery into the battery compartment so that its connectors align with the connectors inside the battery compartment.

Figure 12: Inserting and Aligning the Li-Ion Battery

2. Close the battery cover and secure it with the latch.

Figure 13: Securing the Battery Compartment Latch

3. Turn the latch clockwise and put it against the magnetic strip so that it rests flush with the underside of the VeriFinder.

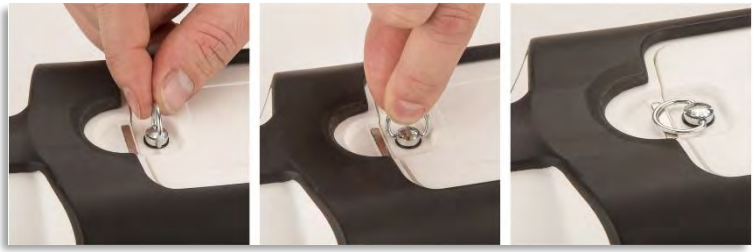


Figure 14: Positioning the Battery Compartment Latch

2.11.3 Charging the Battery in the Charger

Note: Charging applies to the Li-ion rechargeable battery only. It is not possible to charge batteries installed in the AA Battery Caddy.

The external charger requires approximately 2.5 hours to fully charge each battery when connected to the AC mains.

To charge the battery in the charger:

1. Connect the cable from the AC mains adapter into the rear of the charger.
2. Connect the other end of the cable into the AC mains supply.
3. Insert the battery into the charger ensuring contact with the connectors in the charger.

Figure 15: Inserting the Battery into the Charger

4. The battery will start charging immediately. The battery charge indicators at the top of the battery show the level of charge (each of the five indicator bars represents 20% of charge).
5. When the battery is fully charged, remove it from the charger.

2.11.4 Low Battery Warning

The System Fault Low Battery warning is generated when the battery capacity falls below the low capacity threshold (5%). The low battery warning threshold can be changed to a different value (refer to Section 4.3.6 - Low Battery Warning Threshold).

Note: A drained battery is also indicated by the 3 red LEDs on the boot of the device continually flashing. Batteries are not hot swappable.

1. Press the Select button to acknowledge the alarm.

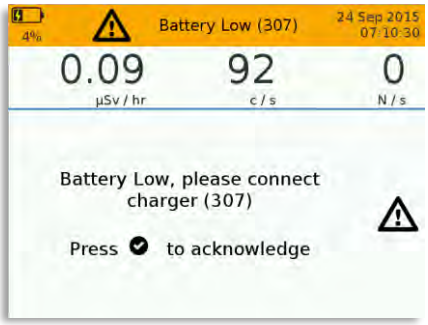


Figure 16: Battery Low Warning

2. The VeriFinder returns to the operation it was performing before the alarm.
3. Recharge the battery in the VeriFinder or replace it with a fully charged battery.

2.12 AA Battery Caddy

VeriFinder offers optional support for using AA batteries (1.5V nominal) in place of the rechargeable Lithium-Ion battery.

An AA Battery Caddy holding four AA cells, is available for use and fits into the battery compartment. The caddy replaces the normal rechargeable battery.

When AA batteries are inserted into the caddy, the red LED is illuminated to indicate battery presence.

<u>CAUTION – LOSS OF DATA</u> - Turn the VeriFinder off before removing the battery caddy. Failure to do so could result in loss of data.

Figure 17: AA Battery Caddy

2.12.1 Removing the AA Battery Caddy

1. Open the battery compartment by rotating the latch counter-clockwise on the underside of the unit.

Figure 18: Location of Battery Latch

2. Lift the battery cover to expose the battery caddy.

Figure 19: Location of Battery Cover

3. Remove the battery caddy from the battery compartment. Be careful not to let the caddy drop out of the unit.

Figure 20: Removing the Battery Caddy

4. Once done remove all AA batteries from the caddy.

Figure 21: Removing AA Batteries from the Caddy

2.12.2 Inserting the AA Battery Caddy

1. Install four new AA batteries into the Battery Caddy – make sure the polarity is correct by observing the markings in the caddy.
2. Insert the Battery Caddy into the battery compartment so that its connectors align with the connectors inside the battery compartment. Close the battery compartment.
3. Turn the latch clockwise and put it against the magnetic strip so that it rests flush with the underside of the VeriFinder.

Figure 22: Installing the AA Battery Caddy

2.12.3 AA Battery Handling Precautions

AA batteries will provide reliable and safe service when used correctly. In addition to the safety precautions detailed on Section 2.10.4 - General Battery Handling Precautions, the following precautions should also be observed:

- Always make sure you fit batteries correctly, observing the '+' and '-' signs on the battery and appliance.
- Always use Alkaline or Lithium batteries.
- Never mix with different types of batteries.
- Always remove dead batteries from equipment.
- Always replace the whole set of batteries at one time.
- Always remove batteries from VeriFinder prior to storage.
- Always follow the battery manufacturer's safety instructions.

WARNING - PRECAUTIONS FOR STORAGE AND CHARGING - ENSURE ALL THE BATTERY MANUFACTURER'S INSTRUCTIONS ARE ADHERED TO.

2.12.4 VeriFinder Performance for Different Battery Types

VeriFinder is compatible with all alkaline and primary cell lithium battery types. The following brands and models have been tested. **Note:** Results may vary if other brands are used.

Manufacturer	Chemistry	Run Time (Approx)
Duracell, MN1500	Alkaline-Manganese Dioxide	1 hour 30 minutes
Energizer, L91	Lithium / Iron Disulfide	4 hours 15 minutes
Inspired Energy, NB2037	Lithium-ion rechargeable	8 to 10 hours

When using the AA Battery caddy, the screen brightness is visibly reduced. An icon is displayed to indicate that the unit is operating on AA batteries.

Figure 23: AA Battery Icon

2.12.5 Depleted AA Batteries

If the battery power is depleting the low battery warning is shown. Switch off the unit and replace the batteries.

Figure 24: Low Battery Warning

2.13 Connecting VeriFinder to AC Power

Connecting VeriFinder to the AC power supply, recharges the battery without having to power down or remove the battery from its compartment.

1. Insert the power connector into the receptacle (1).
2. Plug the electric outlet into the wall.
3. Once the battery is fully charged remove the connector and unplug from the wall.

Figure 25: Location of the Power Receptacle

2.14 Installing and Removing a SIM Card

VeriFinder has a SIM card tray located under the battery. If a SIM card is installed, VeriFinder can connect to a cellular network.

To install or remove a SIM card:

1. Make sure the VeriFinder is powered off.
2. Remove the battery (refer to Section 2.11.1 - Removing the Battery) to access the SIM card tray.
3. Remove the SIM compartment cover to see the SIM card tray. For ease, a space is provided so you can pry open the SIM compartment cover using either your fingernail or small slotted screwdriver.

Figure 26: Removing the SIM Compartment Cover

4. With your fingernail, carefully slide down and lift up the SIM card tray cover.

Figure 27: Opening the SIM Card Tray Cover

5. Remove the SIM card, or if installing a SIM card, ensure connection with the SIM card connectors.
6. Close the SIM card tray cover, slide to lock, and install the SIM compartment cover.

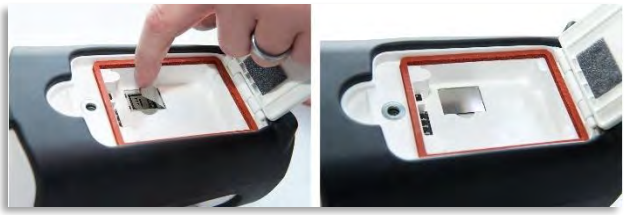


Figure 28: Installing the SIM Compartment Cover

7. Reinstall the battery. (Refer to Section 2.11.2 - Inserting the Li-Ion Rechargeable Battery).

2.15 Data Transfer

VeriFinder has several methods of connecting to a PC to transfer data, which are summarized in the following sub-sections.

2.15.1 Wired Communications

Transfers data to a PC through the provided Mini-B USB to USB cable or via the optional Mini-B USB to RJ-45 adaptor and an ethernet cable. It is also possible to transfer selected events onto a removeable media drive via the Mini-B USB to USB adaptor if required.

2.15.2 Wi-Fi Communications

Enables Wi-Fi transfer of data to a PC, using b/g/n (communication standards) Wi-Fi networks.
Note: VeriFinder will only connect to authorized networks, that is, networks with a saved security key.

2.15.3 Cellular Communications

Transfers data through a cellular network if a compatible SIM card is installed. For more information on installing a SIM card, refer to Section 2.14 - Installing and Removing a SIM Card.

2.15.4 Bluetooth Communications

Sends configured data to a recipient via Bluetooth 4.0 to a paired Android device. Also, enables connection to an Android device for access to the VeriFinder's Web Management Interface (WMI). Refer to Section 5.2 – Web Management Interface.

2.16 Transportation of the VeriFinder

Always place VeriFinder in its protective Ruggedized Transit Case whenever transporting it to a different location. The case is designed to securely hold VeriFinder and all its ancillaries (refer to Section 2.2 – VeriFinder Kit Contents).

2.17 Technical Specifications

Specification	Value
Input voltage	12 VDC
Operation time of batteries	Approximately 8 to 10 hours
Dimensions (L x H x W)	28.98 cm x 13.05 cm x 13.72 cm (11.41" x 5.15" x 5.40")
Water and dust ingress	IP65
Weight	1.99 kg (4.4 lb)
Environmental: Temperature Relative Humidity	 -20 °C (-4 °F) to 50 °C (122 °F) Up to 93% relative humidity, non-condensing at 35 °C (95 °F)
Altitude	For use below 2000 meters
Gamma detector	1.5" x 1.5" NaI or $LaBr_3$
Neutron detector	^{6}Li:ZnS (^{3}He-free)
Energy range	25 keV to 3 MeV

Specification	Value
Start-up duration including stabilization	90 seconds (for units fitted with a stabilization source that is up to 5 years old) **Note**: The unit will continue to stabilize when the stabilization source is older than 5 years, but the stabilization time will increase. For a unit with a 10-year-old stabilization source, the user should expect a stabilization time of up to ten minutes.
Calibration and stabilization	Automatic and continuous
Drop	1 meter
Communications	Mini-B USB 2.0, USB 2.0 (via adaptor), Cellular (2/3G), Bluetooth, GPS, WiFi, Ethernet (via USB, optional), removable media (via USB)

2.18 Detectable Isotopes

Appendix 1 - Isotope Library, lists the standard detectable Isotopes programmed into the VeriFinder.

Although not explicitly listed in the Isotope Library, VeriFinder provides the capability to identify isotopes associated with the following materials:

- DU – Depleted Uranium
- HEU – Highly Enriched Uranium
- WGPu – Weapons Grade Plutonium
- RGPu - Reactor Grade Plutonium

The isotopes associated with the materials are:

- DU = U-238
- HEU = U-235
- WGPu = Pu-239
- RGPu = Pu-239/Pu-241

Functionality is provided for the Advanced user to change display names of isotopes in the library to suit local needs for identifying materials (refer to document 760-0363 – VeriFinder WMI Manual. – Isotope Library).

2.19 Operational Modes

VeriFinder has two operational modes – Normal and Advanced.

Mode	Description
Normal	Basic operation functions including event viewing, reach-back, common user settings like brightness and volume, and activating / deactivating alert indicators like audio and visual feedback outside of the display. For more information regarding the procedures performed in Basic and Normal modes, refer to Section 3 - Normal Mode of Operation.
Advanced	Adds additional capabilities, including spectrum view with a manual acquisition feature, threshold adjustments, advanced settings. Advanced mode can control the parameters that can affect the result of a measurement (for example, radionuclide library, routine function control, calibration parameters, alarm thresholds). An exit icon provides a shortcut to exit the Advanced mode and return to the normal mode. For more information regarding the procedures performed in Advanced mode, refer to Section 4 - Advanced Mode of Operation.

2.20 Menu Tree

The VeriFinder UI has a navigable menu tree structure for Normal and Advanced modes.

Menu tree structures are navigated using the 3-keypad buttons as described in Section 2.4 - Keypad Operation.

Note: After 15 seconds of inactivity, operators are automatically returned to the home screen.

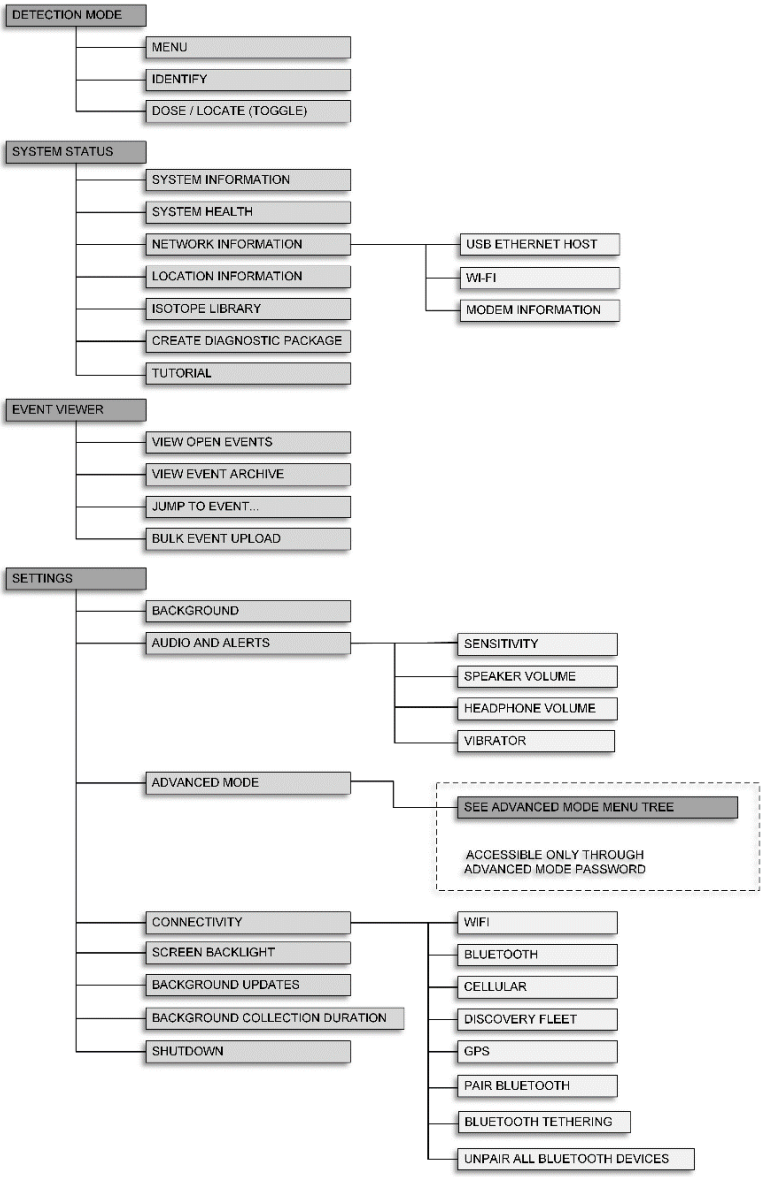


Figure 29: Normal Mode Menu Tree

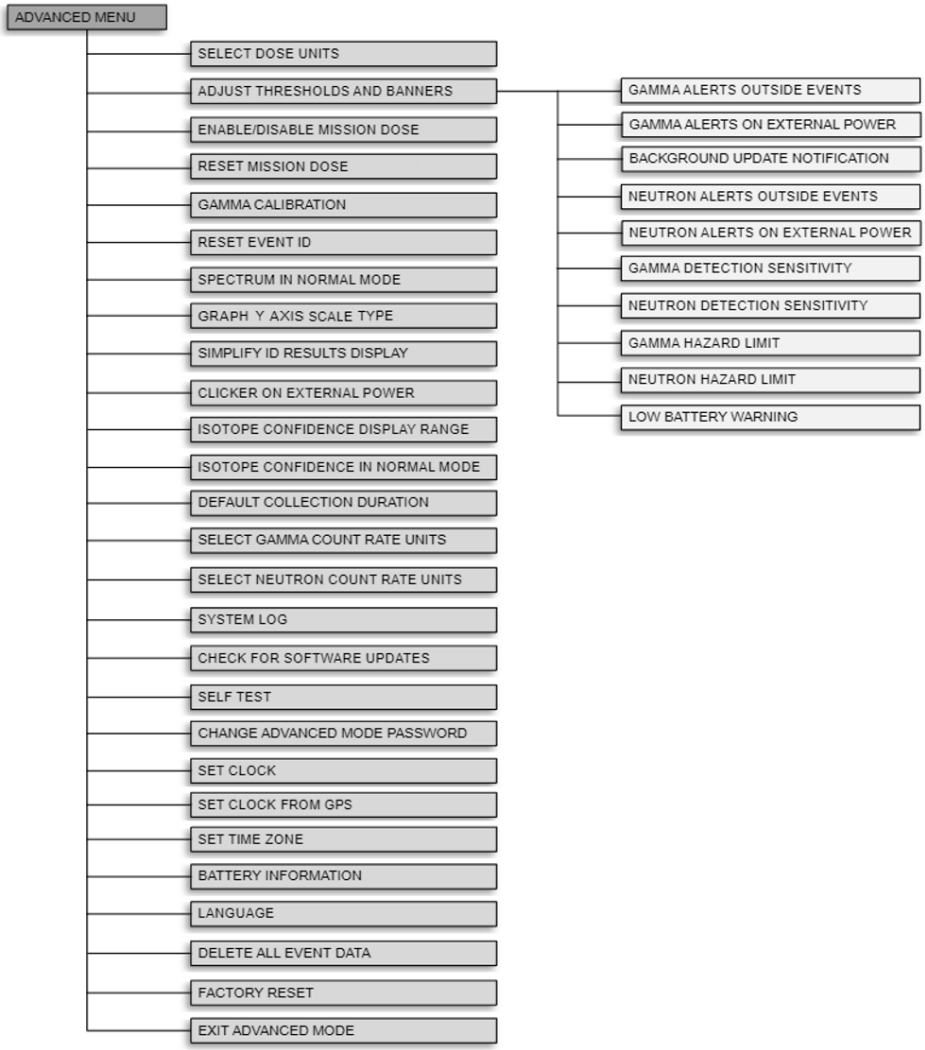


Figure 30: Advanced Mode Menu Tree

SECTION 3 NORMAL MODE OF OPERATION

3.1 Start Up

On start up the system powers in the last configuration and then boots into normal mode of operation.

To start up:

1. Push the Select button for 3 seconds. After a short while, the splash screen is displayed followed by the stabilizing screen.

Figure 31: VeriFinder Splash Screen

Figure 32: Stabilizing Screen

Note: During stabilization the system also conducts a Self Test (refer to Section 3.1.1 – VeriFinder Self Test – Alarm and Messages).

If required, you can enter **Tutorial** mode by pressing the Down button. Tutorial mode provides information on how to operate VeriFinder (refer to Section 3.6.8– Tutorial). The system will continue to stabilize whilst in this mode and will only interrupt should an alert be generated by a system error or threat alarms.

2. Once VeriFinder has completed stabilization it enters into **Locate Mode**. The system is now ready for operations (refer to Section 3.4– Detection of Radionuclide Sources).

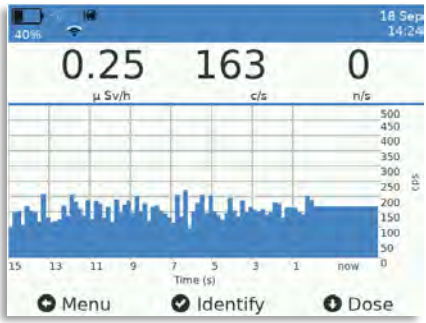


Figure 33: Locate Mode

3.1.1 VeriFinder Self Test – Alarm and Messages

If any part of the Self Test fails during stabilization, a system alarm is generated, and an applicable message is displayed:

1. Press the Select button to acknowledge the alarm. Follow any instructions provided in the error message after acknowledgment. **Note:** The results are displayed on the screen and written to the system log.

2. Failure messages are shown in rotation in the top bar, and the dose / count rate bar remains highlighted in an alert color (red, yellow, amber or grey) until the system has determined that the problem has been resolved.

Note: If VeriFinder reports a **Low Battery** error, charge the battery before operating (refer to Section 2.13 – Connecting VeriFinder to AC Power).

3.1.2 Audio Checks

Once VeriFinder has successfully booted, a constant clicking noise will indicate that audio is working correctly (assuming the **Audible Rate Indicator** has been enabled with **High** sensitivity). If this is not the case, carry out the following audio checks:

- Check that **Mute** is not enabled (look for the mute icon on the status bar).
- Check that the **Speaker Volume** is on (i.e. **≥ 10%**).
- Check that the **Sensitivity** option is set to **High**.

Refer to Section 3.11 – Audio and Alert Settings for the above audio checks.

3.2 Shutdown

1. Press and hold the Select button for five seconds.

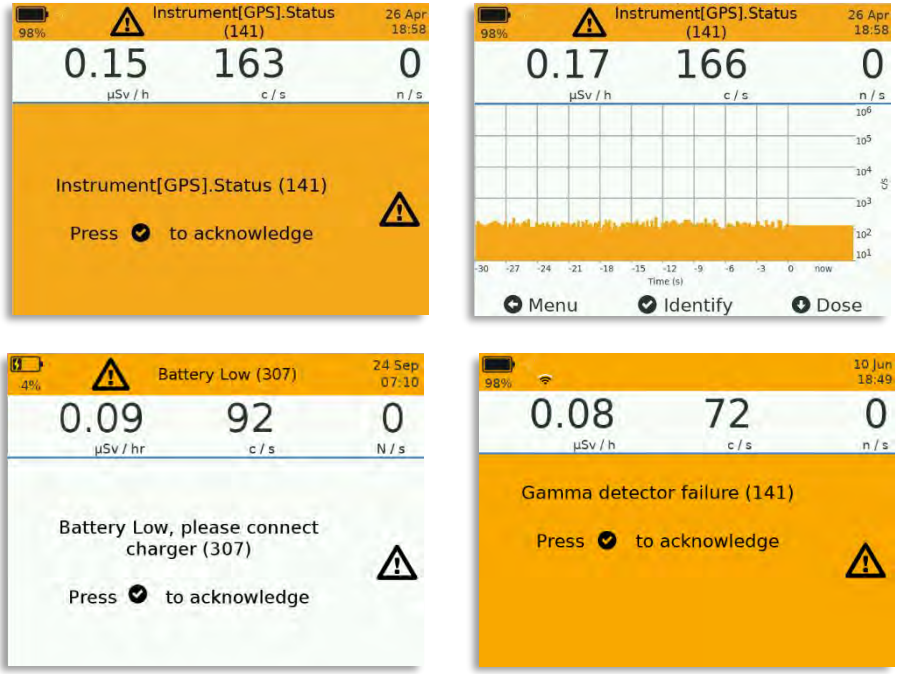
2. If a hard reboot is required, press and hold the Select button for 15 seconds.

3.3 System Alarms

System alarms are generated whenever a fault or error condition exists within VeriFinder and are indicated by the status bar and / or screen turning orange.

Possible system alarms are:

- GPS fault
- Low battery
- Detector failure



…

Figure 34: Possible System Alarms

Warnings must be acknowledged. Press the Select button to acknowledge the alarm, and then take appropriate maintenance action to resolve.

3.4 Detection of Radionuclide Sources

VeriFinder will detect a radionuclide source instantaneously and identify the type within 60 seconds, assuming a 30 second collection period. The identification process can be initiated from

either the **Locate**, **Spectrum** or **Dose** screens. **Note:** Spectrum needs to be enabled in normal mode for this screen to be visible (refer to Section 4.9 – Spectrum in Normal Mode).

Locate screen is usually the main operating screen for most users, however the screen view can be changed by pressing the Down button until the required screen is displayed.

Figure 35: (Left to Right) – Locate Screen and Spectrum Screen

Figure 36: Dose Screen

3.4.1 Detect and Identify a Source (Locate Screen View)

Note: To describe the detection and identification process of a source, the **Locate** screen option is used in the following section, although the identification process is the same for both the **Spectrum** and **Dose** screen options.

The Locate screen view is used to pinpoint a radiation source (gamma or neutron) by moving towards areas that see increased count rates. The displayed graph provides a 30 second window of historical counts, which assists with the locate capability. The graph is used to localize the radiation source(s), by determining if the source is getting closer or further away.

The measurement units displayed (Rem and Sieverts) are configurable (refer to Section 4.2 - Selecting Dose Units).

3.4.2 Gamma Detected Alert

On initial detection, VeriFinder vibrates and displays a **Gamma Detected** alert, which occurs whenever the gamma radiation exceeds the configurable threshold value and can occur at any point of operation. For more information about configuring the threshold value, refer to Section 4.3 – Adjust Alarm Thresholds and Banners.

Figure 37: Gamma Detection Alert

The alert remains displayed until it is acknowledged by pressing the Select button. On acknowledgment the view returns to the **Locate** screen.

Note: The initial alert screen is set by default but can be disabled if required (see Section 4.3.1 – Gamma and Neutron Detection Alerts). If disabled, VeriFinder will instead display the **Locate Screen** on initial detections. The alert screen can also be disabled whist VeriFinder is charging on external power (see Section 4.3.2 – Gamma and Neutron Alerts on External Power).

3.4.3 Identification of Gamma Isotopes

Note: When gamma is detected, a **Gamma Detected** banner is displayed in the status bar and remains for as long as the gamma signal continues to be above the threshold and for 30 seconds thereafter. This 30-second hysteresis value is user-adjustable and helps prevent nuisance alarms when the gross count is nearing the threshold value.

To create an event and identify the isotope:

1. From the **Locate** screen, press the Select button to initiate an identification of potential radionuclides present.

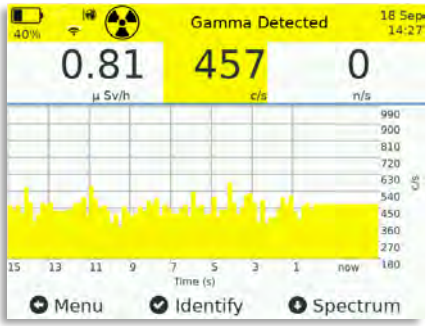


Figure 38: Locate Screen

2. The detector collects spectrum data for the user set period (default 30 seconds). The decreasing collection time is indicated by the indicator on the left side. During this time, maintain position of the VeriFinder on the hotspot.

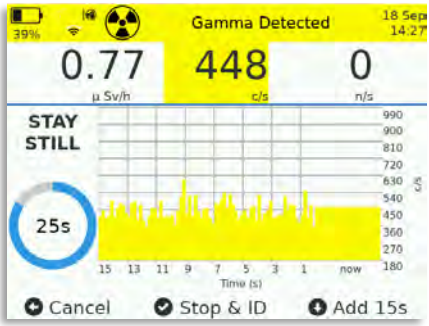


Figure 39: Default Collection Period

Notes: The collection can be manually stopped at any time by one of the following methods:

a. Press the Select button to stop and identify isotopes with data already captured.

b. Press the Back button to cancel the data collection and return to the **Locate** screen.

At any time during the collection period, more time can be added by pressing the Down button. This adds time in increasing amounts for a single event. Typically, this would be done in the following situations:

- Low signal or low certainty result.
- SNM result.
- Multiple isotopes.
- Unexpected results.

3. On completion of the data collection, the VeriFinder runs through the identification process. Once done, the device vibrates and presents a summary of the results. **Note:** If enabled, a simplified view will be displayed (refer to Section 3.4.10 – Simplified View).

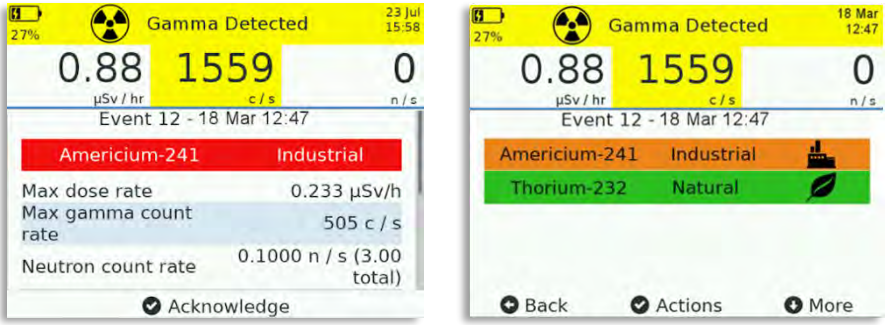


Figure 40: Summary of Results (Normal and Simplified)

4. Press the Select button to acknowledge. For each isotope identified, the following information is shown:

   - Nuclide name and Category.
   - Dose (average dose in Simplified ID Results) and count rates
   - Certainty (Advanced Mode only).

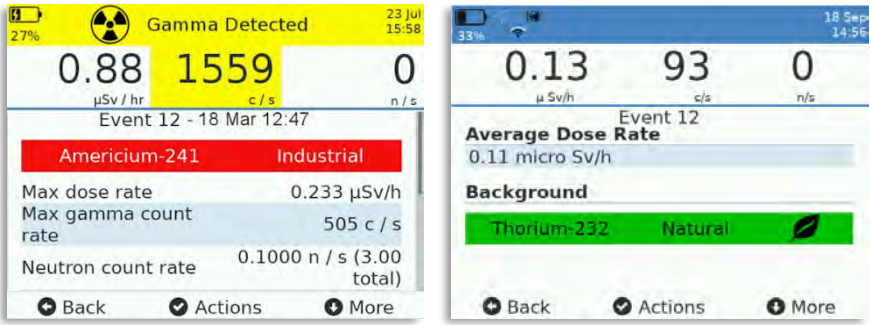


Figure 41: Event Report (Normal and Simplified)

5. To scroll through the event report, use the Down arrow button. The Back button exits back to the **Locate** screen.

6. If multiple isotopes are identified, they are listed by priority (refer to Section 3.4.8 – Simultaneous Alarms).

7. Once the event has been acknowledged, press the Select button to display a list of follow up actions (refer to Section 3.5 - Event Actions).

3.4.4 Identification of Low-Level Gamma Signals

When analyzing for identification, VeriFinder will evaluate the gamma spectrum for relative strength over the current background. If VeriFinder determines that the signal strength could be marginal for performing identification, a notification is displayed.

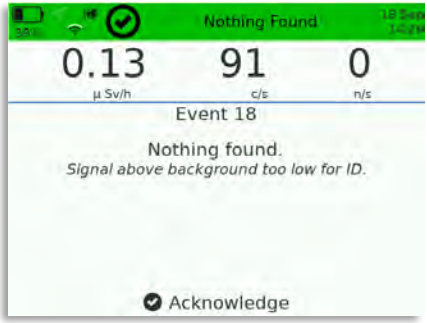


Figure 42: No Radionuclides Found

This can occur in three situations:

- No radiation is visible above background levels.
- The source is strong enough to be detected but below the limit for reliable identification.
- You have an out-of-date / invalid background.

This notification may display along with the results of one or more identified radionuclides, or with just the message '**No radionuclides found**'. In either case, you may want to get closer to the signal source to obtain a stronger spectrum for analysis.

Note: If radiation is detected whilst the event is being reviewed, the banner will change color.

3.4.5 High Gamma Dose Rate Alarm

The High Gamma Dose Rate alarm is a personal hazard alarm, which triggers when the gamma dose rate detected by VeriFinder exceeds the configurable threshold value. For more information on configuring this value, refer to Section 4.3 – Adjust Alarm Thresholds.

Features of a High Gamma Dose Rate alarm:

- The default is set to 100 µSv/h and is user settable.
- The audible alarm and tactile alert will activate.
- The banner remains whilst the dose is at a hazardous level.
- The alarm must be acknowledged.

Figure 43:High Gamma Dose Rate Alarm

When a high gamma dose rate alarm occurs, press the Select button to acknowledge the alarm and move quickly away from the area.

A **Hazardous Dose** banner is displayed in the status bar and remains for as long as the gamma gross count stays above the threshold value. Regardless of user preferred settings, the audible alarm and tactile alert will be activated.

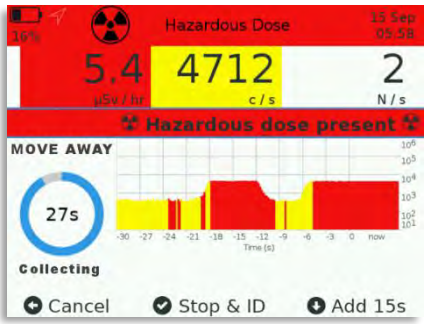


Figure 44: Search Screen – Alarm Status Message

Follow the steps for **Identification of Gamma Isotopes** in Section 3.4.3, to create an event and identify the source of the hazardous dose.

3.4.6 Neutron Detected Alert

On initial detection, VeriFinder vibrates and displays a **Neutron Detected** alert, which occurs whenever the neutron radiation exceeds the configurable threshold value and can occur at any point of operation. For more information about configuring this value, refer to Section 4.3– Adjust Alarm Thresholds.

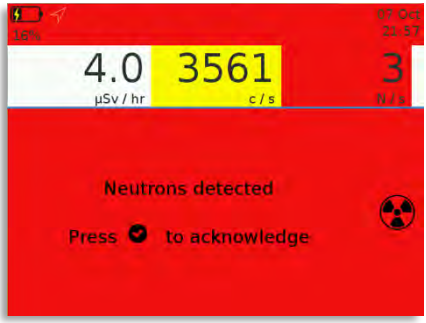


Figure 45: Neutron Detected Alert

The alert remains displayed until it is acknowledged by pressing the Select button. On acknowledgment the view returns to the **Locate** screen.

Note: The initial alert screen is set by default but can be disabled if required (see Section 4.3.1 – Gamma and Neutron Detection Alerts). If disabled, VeriFinder will instead display the **Locate Screen** on initial detections.

3.4.7 Identification of Neutron Events

Note: When neutron is detected, a **Neutrons Detected** banner is displayed in the status bar and remains for as long as the neutron signal continues to be above the threshold, and for 30 seconds thereafter.

To create an event:

1. From the **Locate** screen, press the Select button to initiate an identification.

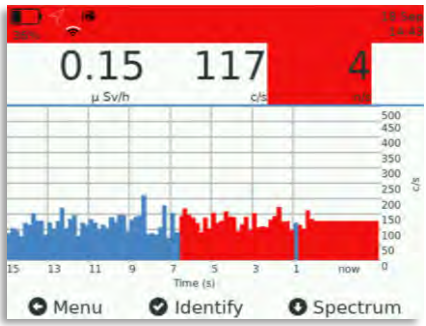


Figure 46: Locate Screen

2. The system collects data for the user set period (default 30 seconds). The decreasing collection time is indicated by the progress bar on the left side.

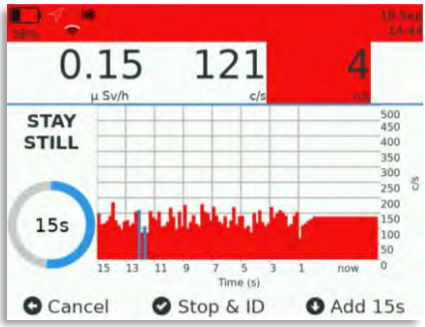


Figure 47: Default Collection Period

Notes: The collection can be manually stopped at any time by one of the following methods:

a. Press the Select button to stop and identify neutrons with data already captured.

b. Press the Back button to cancel the data collection and return to the **Locate** screen.

At any time during the collection period, more time can be added by pressing the Down button. This adds time in increasing amounts for a single event.

3. On completion of the data collection, VeriFinder runs through the identification process and presents a summary of the results.

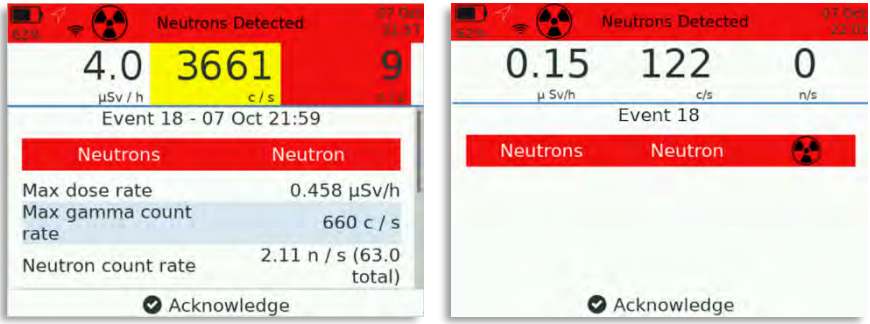


Figure 48: Summary of Results (Normal and Simplified)

4. Press the Select button to acknowledge. The event details, including spectra of any gamma radiation associated with the neutron event, are displayed in an **Event Report**.

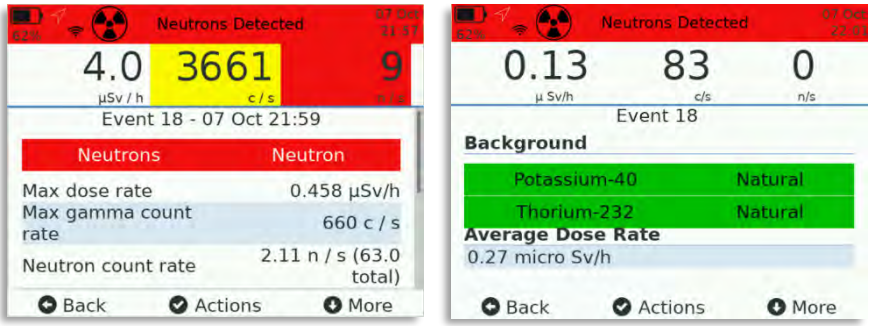


Figure 49: Event Report (Normal and Simplified)

5. To scroll through the event report, use the Down arrow button. The Back button exits back to the **Locate** screen.

6. Once the event has been acknowledged, press the Select button to display a list of follow up actions (refer to Section 3.5 - Event Actions).

3.4.8 Simultaneous Alarms

If multiple alarms occur simultaneously, each alarm must be acknowledged separately by the operator. The highest threat alarm is acknowledged first, followed by the others as follows:

Alert/Alarm Condition	Type	Priority Level
High Neutron Count (Saturation)	Alarm	1
High Gamma Dose Rate	Alarm	2
Instrument Failure	Alarm	3
System Fault	Alarm	4
Neutron Detection	Alarm	5
Gamma Detection	Alert	6
Radionuclide Identification	Alert	7
General Alert	Alert	8
Battery Low Warning	Alert	9

If multiple alarms of the same priority occur, they are acknowledged in the order in which they are detected by the system.

3.4.9 Gamma High Dose Mode and Neutron Saturation

3.4.9.1 Gamma High Dose

At a gamma dose of approximately 1 mSv/h from Cs-137, VeriFinder will enter high dose mode.

In high dose mode, the gamma detector is turned off to preserve the life of the detector and the **High Dose Mode** alarm appears. At the same time the gamma count rate reading changes to dashes (----). The dose rate is then provided by a secondary smaller detector.

High dose mode allows VeriFinder to be used in exceptionally high dose rate environments to locate large gamma sources.

VeriFinder will automatically recover when the dose returns to a normal rate, at which time it reverts to a stabilizing state to enable normal operation to continue (less than one minute).

Figure 50: High Dose Mode Alarm

If a high dose mode alarm occurs, press the Select button to acknowledge the alarm.

3.4.9.2 Neutron Saturation

Under exceptionally high gamma fluxes (2 mSv/h), VeriFinder will enter neutron saturation mode.

In neutron saturation mode, the neutron detector is turned off to preserve the life of the detector and the **Neutron Detector Saturated** alarm appears.

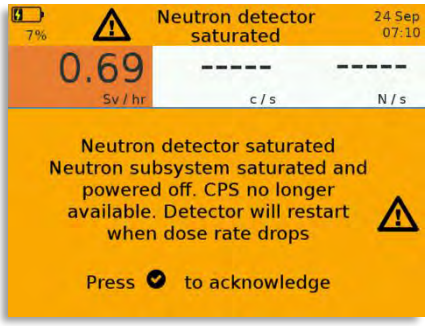


Figure 51: Neutron Detector Saturated Alarm

If a neutron saturation alarm occurs, press the Select button to acknowledge the alarm and move the VeriFinder to a lower gamma dose environment.

When the dose rate drops below the saturation threshold, the neutron detector will automatically restart and normal operation will resume.

3.4.10 Simplified Identification

Note: This new feature is applicable to software version 3.16 onwards.

If required, a simplified view of identification results can be set from the advanced settings menu (refer to Section 4.10 – Simplify ID Results Display). When in this mode of operation, the display is simplified to show just the identified isotope, category and representative icon. The simplified view is not available in Advanced Mode.

Figure 52: Simplified ID Results

Selection of the Down button displays the background isotope information, which highlights any NORM and threat nuclides included in the background.

Figure 53: Average Dose Rate and Background Isotope Information

Isotope category icons used on the simplified view are as follows:

Category	Icon
NORM	
Industrial	
Medical	
SNM	
Suspicious	
Neutron	
Unknown	
All else	

3.5 Event Actions

Once an event has been acknowledged, the following options are available from the **Actions** screen:

- Finish.
- Add Time.
- Voice Tag.
- Upload to SGP. **Note:** Can be multiple recipients listed.
- Send via Bluetooth
- Email
- Save to USB Drive.
- Choose Tag.
- View Spectrum (advanced mode only).
- View QR Code
- Archive Event.

Note: If an event action is not available for any reason, for example, it has not yet been configured or has been disabled, then it will not be shown in the list.

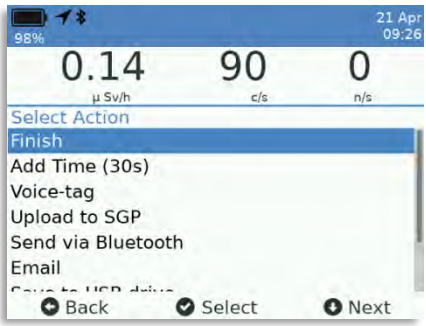


Figure 54: Event Actions

3.5.1 Event Actions – Finish

Finish - returns you back to the screen from where the identification was performed (Locate, Spectrum or Dose screen).

3.5.2 Event Actions – Add Time

To increase certainty of the isotope identification(s) you can add time after the initial collection. The default is 30 seconds and typically would be done in the following situations:

- Low signal or low certainty result.
- SNM result.
- Multiple isotopes.
- Unexpected results.

3.5.3 Event Actions – Voice-tag

A voice-tag can be added to events by speaking directly into the microphone. Please be aware that only one voice tag can be added. Any extra voice tags recorded will not be saved.

Example voice-tag: ‘Container marked XY55253, 1metre crate in far-right corner. Radiation unexpected’.

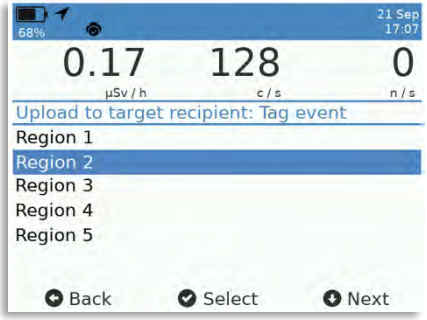
3.5.4 Event Actions - Upload to SGP

Note: Symetrica Generic Push (SGP) API can be used to automatically push data to different servers configured to receive the data. The name of the server and how information is sent can be configured from the Web Management Interface (refer to document 760-0363 – VeriFinder WMI Manual).

If SGP receivers have been configured, then selection of **Upload to SGP** enables a manual upload of tagged event data for integration into a proprietary database. **Note:** One or more receivers can be displayed depending on the **SGP Integration** configuration.

To upload event data to a receiver:

1. From within the Actions screen, press the Down button to select the Upload to SGP option, then press the Select button.
2. If tagging has been configured, a list of tags will be displayed. Press the Down button to select the required tag for upload, and then press the Select button.
   Note: If tagging has not been configured, then this screen will not be shown.
3. The event data starts the process of uploading. On completion, select **Yes** to close, or **No** to return to Upload to SGP to conduct further uploads.



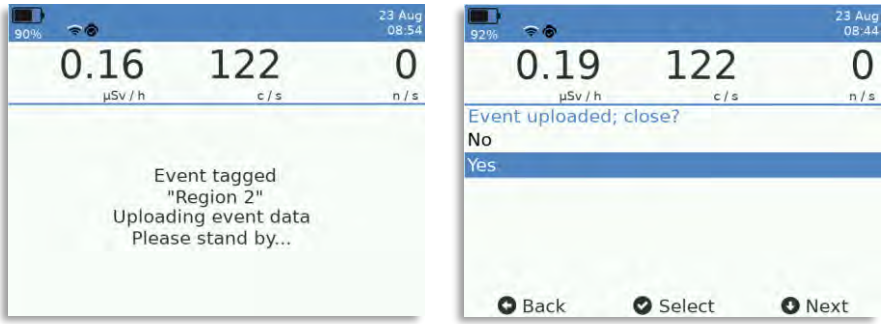


Figure 55: Upload to Target Recipient

4. If an event fails to upload, an error message is displayed with the reason why.

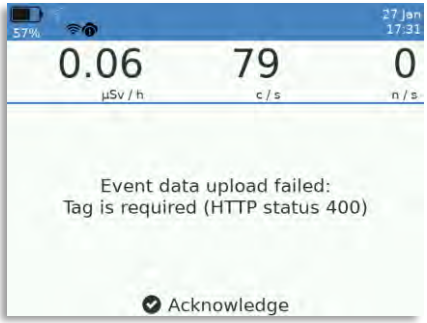


Figure 56 – Event Data Upload Failed Message

5. Press the Select button to acknowledge and inform an Administrator of the failed upload.

Note: A failed upload can happen for a number of reasons, but normally points to the SGP receiver issuing an HTTP status 400 (for example, the data stream sent by the client to the server didn't follow the rules. In the example shown in Figure 56, the SGP receiver is expecting a tag).

When an event fails to upload, details are shown in the status field on the SGP Integration screen of the Web Management Interface (WMI) as an event failure (refer to document 760-0363 – VeriFinder WMI Manual). Options are then available for the Administrator to either attempt another upload or dismiss the event from the records.

3.5.5 Event Actions – Send via Bluetooth

Sends the configured data to a recipient via Bluetooth 4.0 to a paired Android device.

1. Scroll down the menu, select ‘Send via Bluetooth’ and then select the Bluetooth device.
2. Select the required file format (N42.42, PDF, HTML or SML) and press the Select button.

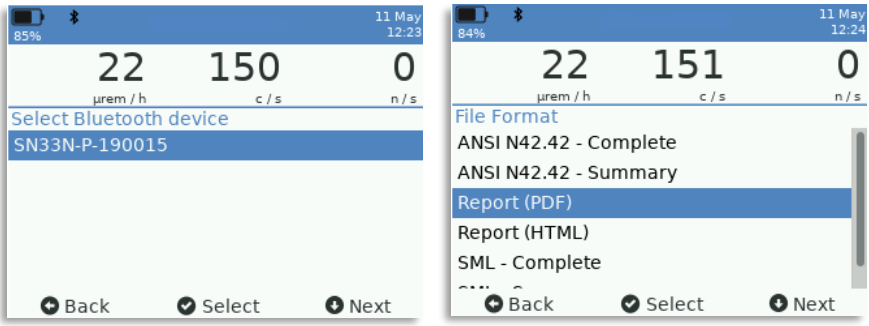


Figure 57: Event Actions – Send via Bluetooth

3. The files are sent to the Bluetooth device.

3.5.6 Event Actions – Email

Email sends the configured data to all registered email addresses. If no email addresses are configured or communications are not available, the error message UNEXPECTED_RESPONSE is displayed. **Note:** Always acknowledge the outcome of any email sent, whether this has been a successful or failed attempt.

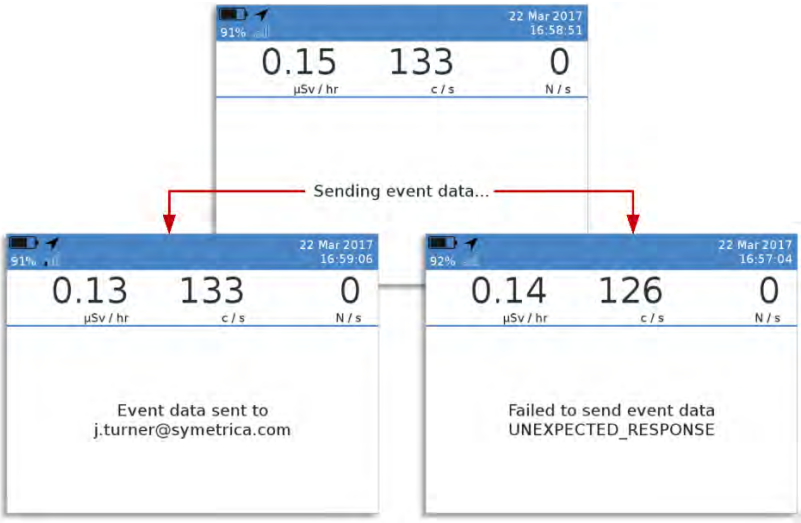


Figure 58: Event Actions – Finish and Email

3.5.7 Event Actions – Save to USB Drive

Event files can be saved to an external USB drive. **Notes:** USB drives should be formatted in FAT, VFAT, ExFAT or FAT32 format. Be aware that the USB may take a few seconds to register on the device.

1. Connect the Mini-B USB to USB converter then attach a USB drive.
2. Scroll down the menu and select 'Save to USB drive'.
3. Select the required file format (ANSI N42.42, PDF, HTML or SML) and press the Select button.

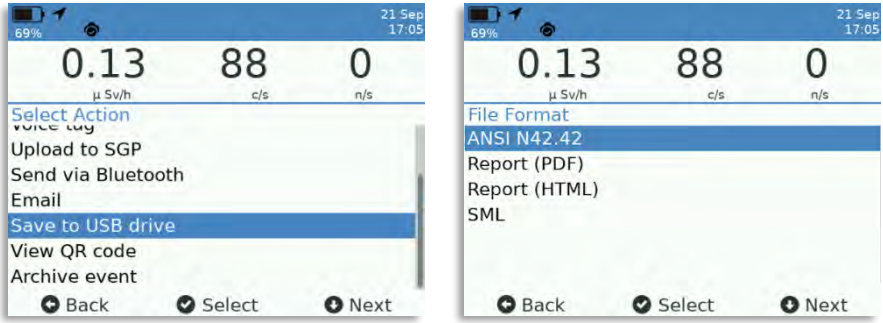


Figure 59: Event Actions – Save to USB Drive

4. The files are saved into a 'Symetrica' folder on the drive (user configurable).

3.5.8 Event Actions - Choose Tag

If tagging has been configured by an Administrator, then a list of tags is presented on selection of the **Choose tag** option. Tags are used to associate event data with an administrative system at the time of collection. The tag is then presented with the event data on review.

To choose a tag for event data:

1. From within the Actions screen, press the Down button to select the Choose tag option, then press the Select button.
2. From the list of tags that are displayed, press the Down button to select the tag that is to be associated with the event data and then press the Select button.

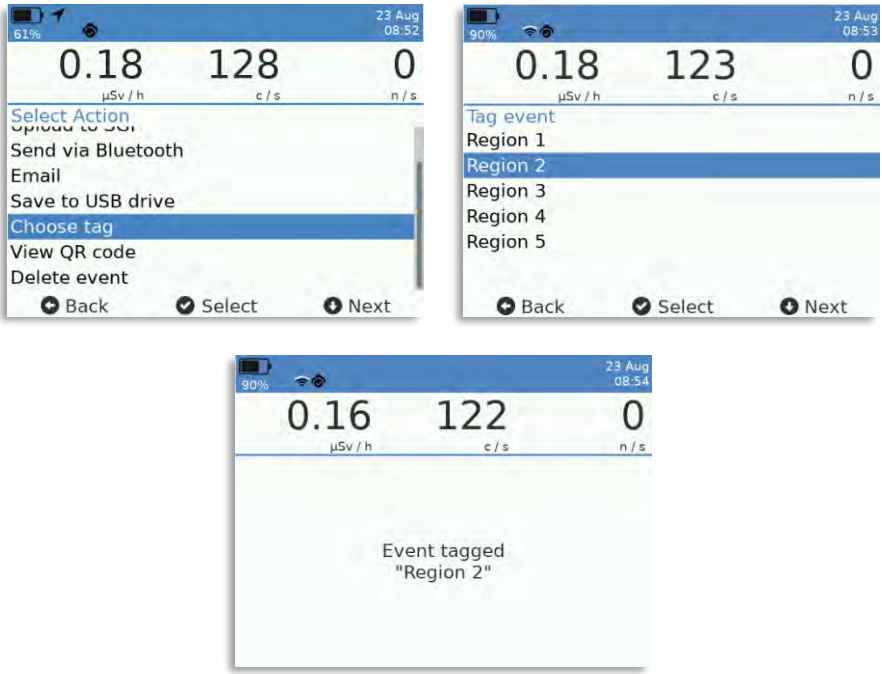


Figure 60: Choose Tag

3.5.9 Event Actions – View Spectrum (Advanced Mode)

Displays the collected spectrum of the event for technical analysis. Press the Back button to return to the Actions screen.

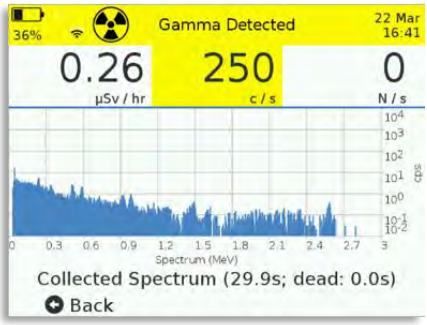
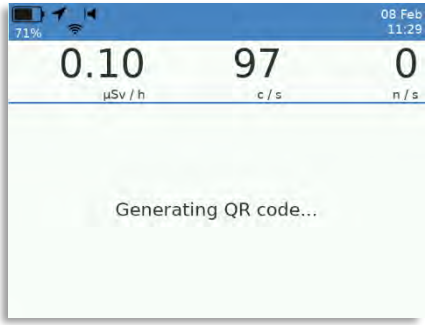


Figure 61: Event Actions – View Spectrum

3.5.10 Event Actions – View QR Code

Event data can be generated as a QR code and subsequently read by a smart device for viewing and sharing for reach-back or other analysis purposes.

1. Scroll down the menu and select 'View QR code'.
2. The device will start generating the QR code of the event.
3. On completion, the QR code is displayed for reading.



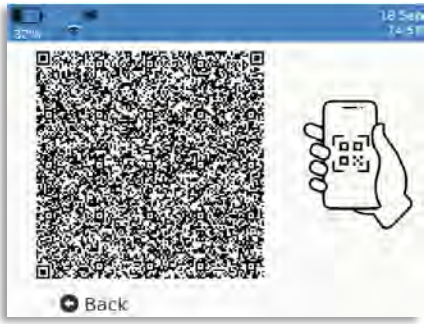


Figure 62: Event Actions – View QR Code

3.5.11 Event Actions – Archive Event

Performing this action archives the current event, preventing it from being automatically transferred during a data offload process.

Note: No confirmation is required. The event will be archived upon selecting this action. Archived events can be manually offloaded from the Event Archive.

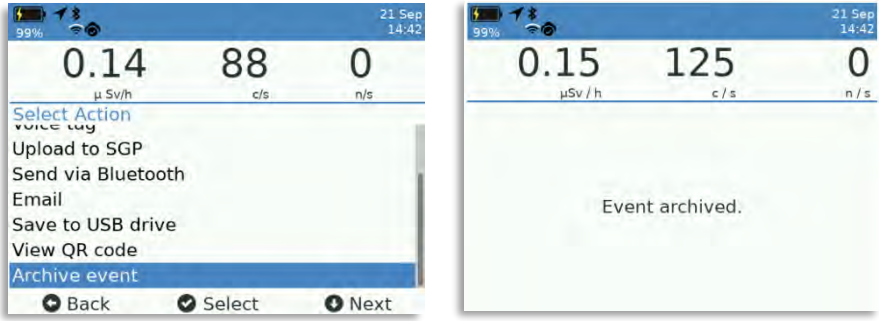


Figure 63: Event Actions – Event Discarded

Archived events can be deleted from the event archive library. Navigate to the Event Viewer followed by View event archive. Press the Select button followed by the Actions button, and then select Delete Event.

Figure 64: Event Archive Actions – Delete Event

3.6 System Status

To access the System Status from the main menu (Normal and Advanced mode), scroll to the Information icon with the Down button and press the Select button.

Figure 65: Main Menu – Information Icon

The System Status menu provides detailed information on the status / health of the system.

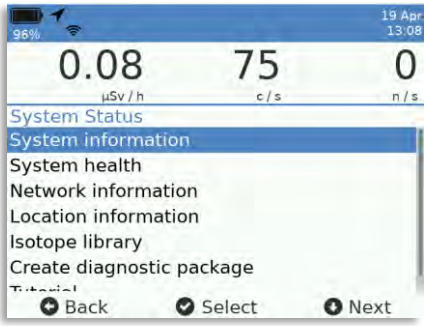


Figure 66: System Status

For more information refer to the following:

- System Information –Section 3.6.1.
- System Health –Section 3.6.2.
- Network Information –Section 3.6.3.
- Location Information –Section 3.6.4.
- Isotope Library –Section 3.6.5.
- Create Diagnostic Package –Section 3.6.7.

3.6.1 System Information

Selecting this option allows you to view the system information.

1. From the System Status screen, select System information. The System information screen is displayed.
2. Press the Back button to return to the System Status screen.

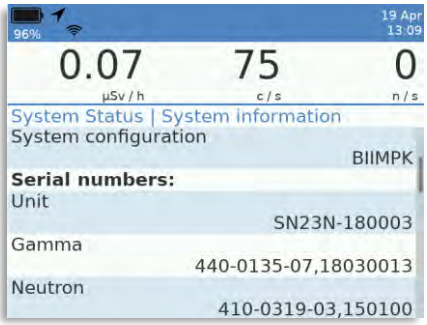


Figure 67: System Information Screen

System Information	Description
Model	VeriFinder Model name.
Gamma detector	Gamma detector type used in the VeriFinder.
Neutron detector	Neutron detector type used in the VeriFinder. **Note:** If the device does not have a neutron detector installed, this field will be annotated 'None'.
System configuration	Unique identifier for the software, firmware and operating system on the VeriFinder.
Serial number: Unit	Serial number of the VeriFinder.
Serial number: Gamma	Serial number of the gamma detector in the system.
Serial number: Neutron	Serial number of the neutron detector in the system.
Software version: Application	Application software version on the system.
Software version: Kernel	Kernel System version.

System Information	Description
Firmware version: Gamma	Firmware version of the gamma detector in the system.
Firmware version: Neutron	Firmware version of the neutron detector in the system.
Firmware version: Main board	Firmware of the main board in the system.
Calibration information: Gamma	Calibration information related to the gamma date, stabilization number of Becquerels and the born-on date.
Calibration info: Stabilization	Activity of the stabilization source at time of manufacture.
Operating Hours	Total hours of operation of System since it was last factory reset.
Storage: Free disk space	Free storage space in kilobytes.
TLS Certificate Thumbprint	TLS certificate for authenticated access to the web interface.

3.6.2 System Health

Selecting this option allows you to view the system health.

1. From the System Status screen, select System health. The System health screen is displayed.
2. Press the Back button to return to the System Status screen.

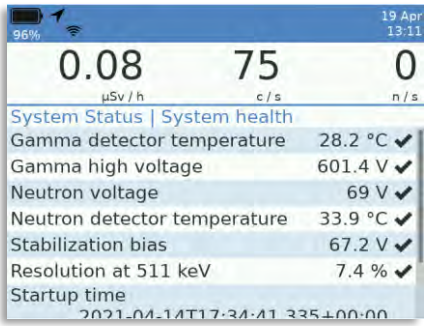


Figure 68: System Health Screen

System Information	Description
Gamma detector temperature	Normal range between -20 °C and 50 °C (-4 °F and 122 °F).
Gamma high voltage	Normal range between 500 V and 1200 V.
Neutron voltage	Normal range between 60 V and 80 V.
Neutron detector temperature	Normal range between -20 °C and 50 °C (-4 °F and 122 °F).
Stabilization bias	Normal range between 60 V and 80 V.
Resolution at 511 keV	Continuously monitors the stabilization peak FWHM. Sets off an alert if it assesses there could be an issue with the detector causing detector resolution degradation.
Startup time	Date and time the device was last switched on in the format YYY-MM-DD.
Gamma detections since boot	Count of the number of gamma detection events that have occurred since the device last booted.
Neutron detections since boot	Count of the number of neutron detection events that have occurred since the device last booted.

3.6.3 Network Information

Selecting this option allows you to view the network information.

1. From the System Status screen, select Network information.
2. Choose from the list of available connections (USB, Wi-Fi or Modem (if a SIM card is installed)).

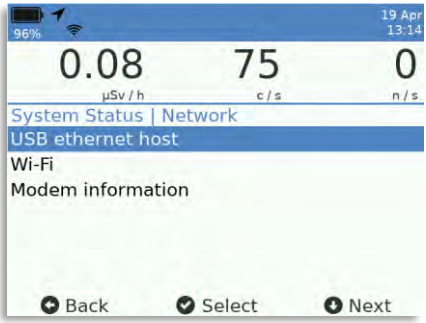


Figure 69: Network Information

3. Once you select the connection, the display indicates the following information:
   - Whether the on-board Wi-Fi interface is enabled or disabled.
   - The SSID of the Wi-Fi network to which the on-board Wi-Fi interface is connected.
   - The signal strength (in dB) detected by the on-board Wi-Fi interface.
   - The IP address of the wireless interface when connected to wireless network.
   - The media access control (MAC) address of the on-board Wi-Fi interface.
   - Whether the USB interface is connected to a PC.
   - The IP address for the USB interface when connected via a cable to a PC.

Note: If the serial interface is used the USB does not display an IP address.

If a SIM card is installed, the Modem screen displays the following information:

- The status of the cellular network.
- The readiness status of the cellular network.
- The registration status of the SIM card with the cellular network.
- The signal level of the cellular network.
- The CCID and CIMI of the installed SIM card.

4. Press the Back button to return to the System Status screen.

3.6.4 Location Information

Selecting this option allows you to view location information, which is stored in the VeriFinder data file.

1. From the System Status screen, select Location information.
2. The Location information screen appears indicating:

- Whether the Location chip is enabled or disabled.
- If a Location fix is obtained.
- The current Location longitude and latitude co-ordinates of the VeriFinder determined by the onboard location chip.

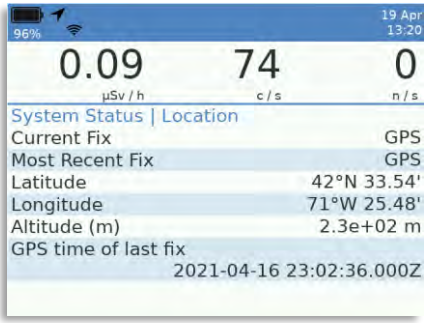


Figure 70: Location Information

3. Press the Back button to return to the System Status screen.

3.6.5 Isotope Library (Normal Mode)

Selecting this option allows you to view the Isotope Library.

1. From the System Status screen, select Isotope Library. The Isotope Library screen is displayed.
2. Press the Down button to scroll through the isotope list. Press the Back button to return to the System Status screen.

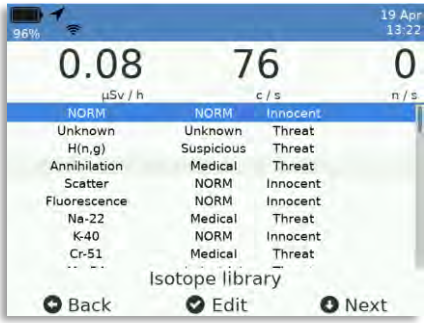


Figure 71: Isotope List

3.6.6 Isotope Library (Advanced Mode)

In Advanced mode, the isotope library can be configured allowing some isotopes to be changed from Threat to Innocent, and back. Some isotopes, such as Uranium isotopes, are always a threat and cannot be changed; this is indicated by the Locked column of the web interface isotope library management screen.

To change whether an isotope alarm category is considered innocent or threat:

1. From within the Advanced settings screen, press the Down button to select the Isotope list option, then press the Select button.
2. From the list of isotopes screen that appears, press the Down button to select the isotope whose alarm category you want to change, then press the Select button.

Figure 72: Isotope List (Advance Mode)

3. From the Threat Menu of the isotope you selected, press the Down button to select the alarm category you want to assign to that isotope (Threat, Suspicious or Innocent), then press the Select button.

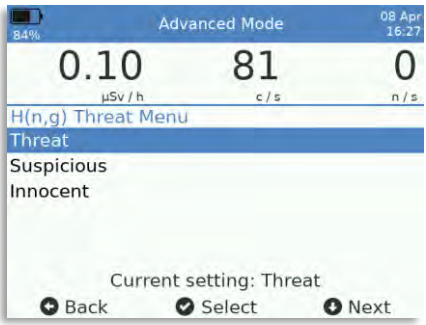


Figure 73: Alarm Category

4. To accept the new alarm category for the isotope, press the Select button.

3.6.7 Creating a Diagnostic Package

Selecting this option allows you to create a diagnostic package, which can be used for troubleshooting / support purposes. The diagnostic package is an SML file which includes:

- Last 30 seconds of recorded data.
- All health parameters.
- System log file.
- Snapshot of detector communications.

To create a diagnostic package:

1. From the System Status menu select Create Diagnostics Package.
2. Press the Select button to launch the diagnostics package building process. A screen appears showing the status of the diagnostic package building process.

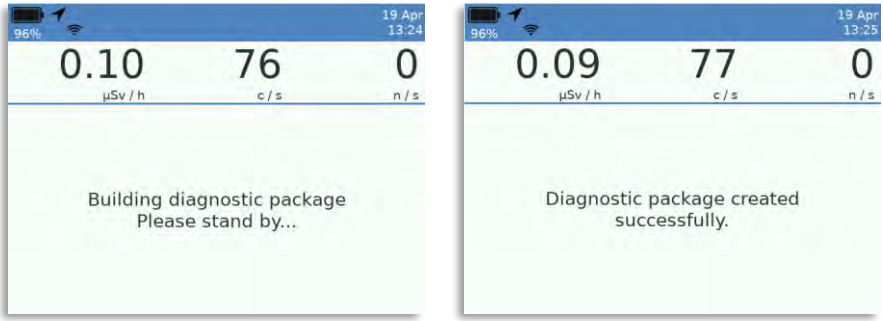


Figure 74: Creating a Diagnostic Package

3. The diagnostic package building process takes approximately five seconds to complete. Once complete, a success message appears and you are returned to the System Status menu.
4. Download using the Web Management Interface through the Advanced menu> Artifacts > Diagnostics options (refer to document 760-0363 – VeriFinder WMI Manual).

3.6.8 Tutorial

Selecting this option opens the VeriFinder tutorial, which displays basic help on the system.

Figure 75: Tutorial Screen

Use the Back ⬅ Select ✔ and Down ⬇ buttons to navigate through the help topics.

3.7 Event Viewer

There are two types of events:

- **Open Events** – Events that have not been offloaded nor archived by the user.
- **Event Archive** – Displays all events archived by the user.

Events can be:

- Viewed on screen.
- Emailed.
- Offloaded through a USB drive.
- Viewed using the Web Management Interface (refer to document 760-0363 – VeriFinder WMI Manual).

To enter the Event Viewer:

1. From the main menu, scroll to the Events icon with the Down ⬇ button and press the Select ✔ button.

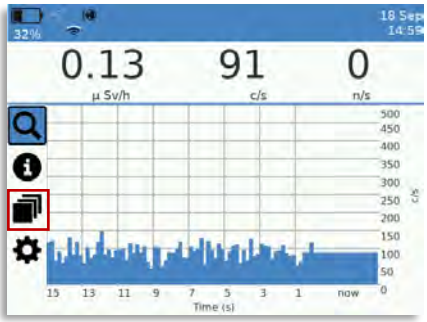
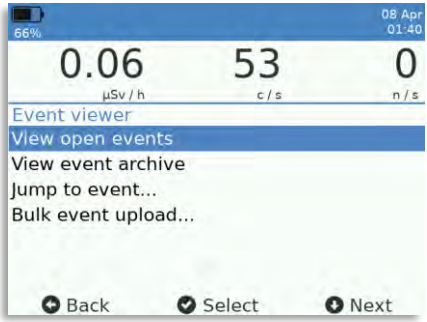


Figure 76: Main Menu

2. The Event Viewer screen is displayed.



WHITE = NO RADIATION	G = GAMMA EVENT
GREEN = NORM	N = NEUTRON EVENT
RED = THREAT	F = FAULT

Figure 77: Event Viewer

3. Once in the Event Viewer menu, you can choose to do the following:

   a. View the full list of open events (that is, events that have not yet been offloaded) starting with the most recent.

   b. View archived events (that is, everything that has ever happened since the last factory reset) starting with the most recent.

   c. Jump to a specific event to view (that is, select a specific event to go to by entering the event number).

d. Upload bulk events (that is, all, or only open events, by a set number of days (1, 7 or 30 days) or events of any age.

4. For open and archived events, a table is displayed with events listed in date time order. Scroll the list using the Down button. Press the Select button to display the event details. **Note:** On selection of an event, the color changes to a darker variant, for example a red threat event will change to dark red to indicate it is the current selection.

Figure 78: Event Viewer – Table of Recent Events

5. Event details presents the radionuclides identified and the threat category. Pressing the Down button scrolls through the event details. The Select button opens the Actions screen (see Section 3.5 – Event Actions). The Back button returns you to the events list.

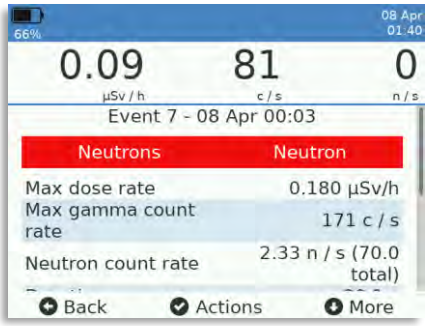


Figure 79: Event Viewer Results

3.8 Emailing Historic Events

To e-mail an historic event:

1. Navigate to the Events view and select an event.

2. Press the Select button for the action menu.

3. Select the Email option.
4. An email is sent to all recipients added for that device.

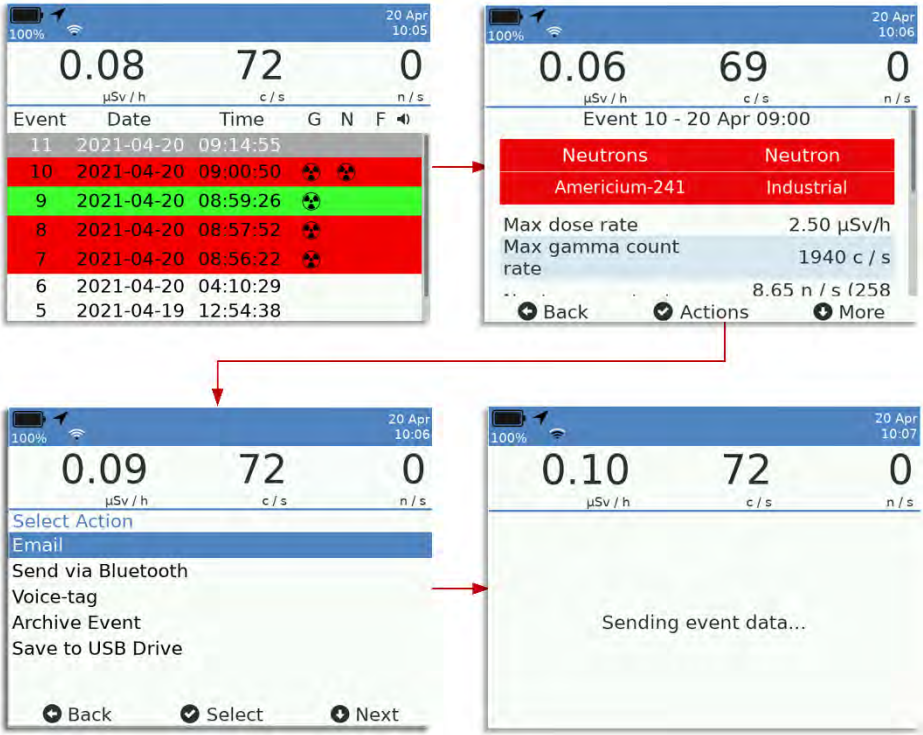


Figure 80: Emailing Historic Events

3.9 Normal Mode Settings

To access the Normal Mode settings from the main menu, scroll to the Gear icon with the Down button and press the Select button.

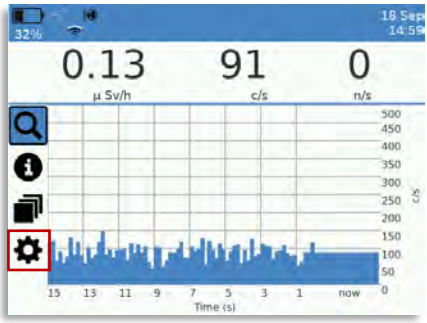


Figure 81: Main Menu – Gear Icon

The menu offers a number of setting options.

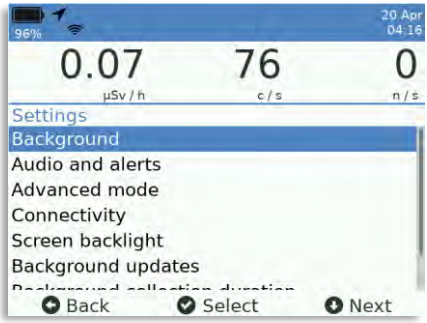


Figure 82: Normal Mode Settings Menu

Setting	Description
Background	VeriFinder updates background continuously and automatically detects when there is a change. Should you wish to capture a new background, you can do so manually using this option. For more information, see Section 3.10.1.1 – New Background Collection.

Setting	Description
Audio and Alerts	This allows audible alerts to be set to on or off and the adjustment of volume (0-100% in 10% increments). Also enables click sensitivity feedback (low / med / high) based on count rate of a source, and enablement or disablement of vibration indication. For more information, see Section 3.11 – Audio and Alert Settings.
Advanced Mode	Enters the VeriFinder in Advanced mode to provide increased access to settings and makes viewable additional information in Operating mode. **Note:** Advanced mode is password protected. For more information, see Section 4 – Advanced Mode.
Connectivity	This allows you to enable/disable the various communication methods available on this VeriFinder model. For more information, see Section 3.12.1 – Connectivity Status Settings.
Screen Backlight	This allows you to change the backlight brightness. For more information, see Section 3.12.2 – Backlight Settings.
Background Updates	By default, the VeriFinder updates the background continuously and automatically detects when there is a change. This setting allows you to change whether backgrounds are automatically updated whilst VeriFinder is being used. For more information, see Section **Error! Reference source not found.**– Background Mode Settings.
Background Collection Duration	This allows you to select the duration in seconds for the background collection. (Must be between 30 s and 999 s).
Shutdown	This provides a complete shutdown of the VeriFinder. Similar function to holding the Power / Select button for 5 seconds. For more information, see Section 3.12.4 – System Shutdown.

3.10 Background Collection

3.10.1 Manual Background Collection

It is recommended that a manual background collection is taken prior to performing each new set of identifications and / or when you move into a new area.

The recommended duration is at least 300 s in low radiation fields (1 µSv / h). In higher fields, this can be reduced linearly for example, in 10 µSv / h, 30 s is sufficient.

You will be informed if the background has changed in two stages:

- Update background (out of date alert).
- Background Invalid.

3.10.1.1 New Background Collection

Normal mode allows for the collection of a new background from the Settings menu.

To collect a new background:

1. Press the Back button to highlight the menu bar.
2. Scroll down and select the Gear (Settings) icon.
3. Select Background from the Settings screen.

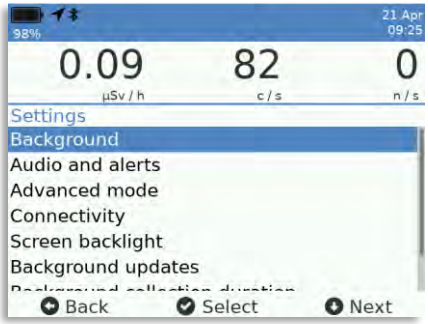


Figure 83: Settings Screen – Background Option

4. The VeriFinder displays the last background collection data.

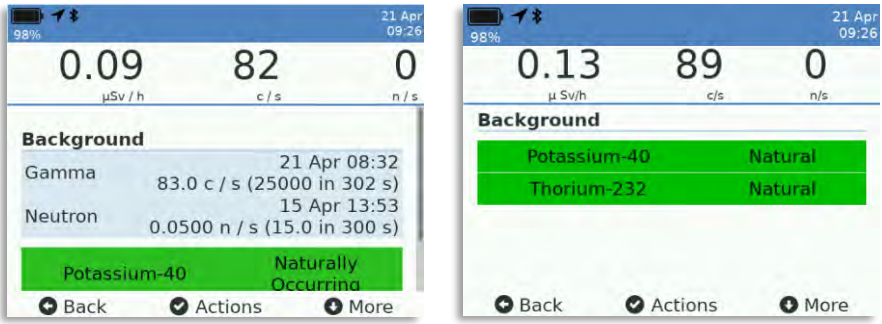


Figure 84: Last Background Collection Data (Normal and Simplified)

5. Press the Select button and from the displayed screen select the Collect option.

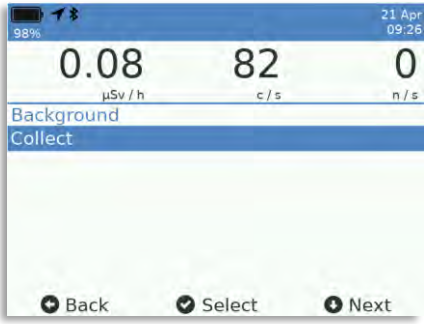


Figure 85: Collect Background Item

6. The VeriFinder starts the background collection and displays the progress.

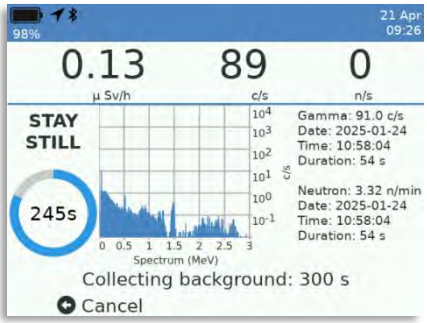


Figure 86: Background Collection Screen

7. To cancel the background collection, press the Back button. On completion of the collection, VeriFinder analyses the background for radionuclides and displays the final results.

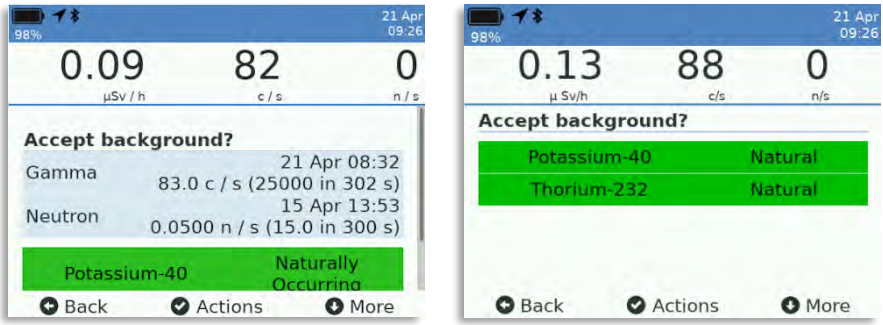


Figure 87: Background Collection Results (Normal and Simplified)

8. To reject the background and return to using the previously collected background, press the Back button.

9. To accept the new background, press the Select button. The Accept background screen is displayed with the Accept option highlighted. Press the Select button to accept the new background. Note that the new background can also be rejected from this screen.

Figure 88: Accept Background Screen

10. If the background collection period requires to be extended, press the Down button to scroll down to the Extend option and press Select. The Background duration screen is displayed.

Figure 89: Background Collection Extended Selection

11. Enter the required extended duration using the Down button to increment the values and the Select button to move to the next value box. On completion, press the Select button to initiate the extended background collection. **Note:** Extended duration is any value between the existing collection duration and 7200 seconds.

Note: If Active Background collection is enabled when a manual background collection is initiated, the Active Background is temporarily suspended during the manual collection time. Once the manual background collection is complete and you choose Accept or Reject, the Active Background mode then resumes.

3.10.1.2 New Background Needed

Note: Background notifications can be toggled to enabled or disabled to suit the needs of the operator (see Section 4.3.3 – Background Update Notification).

If a background is more than five hours old a warning is displayed. This is to ensure that operator's regularly update the background and prevents it from becoming too out of date when operating in manual background mode.

Note: A warning will remain in the status bar until a new background is taken or Automatic background is enabled.

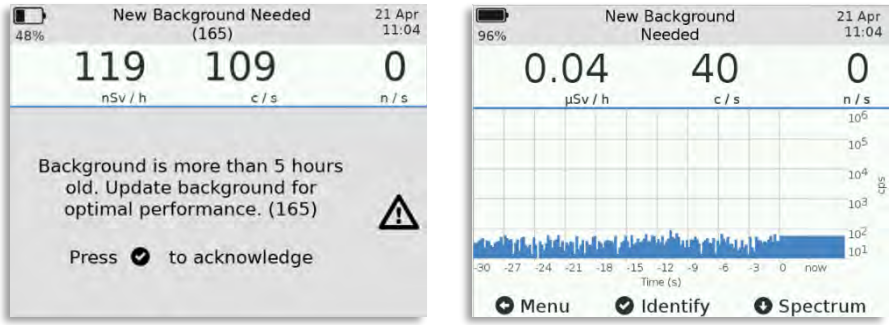


Figure 90: New Background Needed

3.10.2 Automatic Background Collection

Automatic background should only be used when searching for threat sources as NORM sources will be absorbed into the background algorithm.

Conditions for VeriFinder to automatically update its background are:

- The unit has been in an unchanging background for 5 minutes.
- Only NORM sources identified in the new background.

To enable / disable automatic background, navigate to the Settings menu and enable / disable Background Updates.

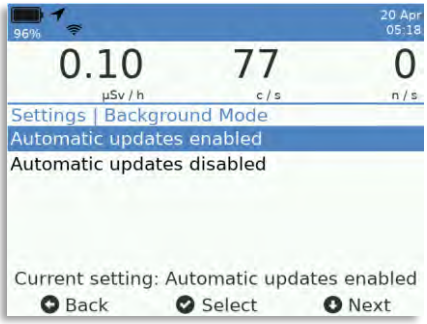


Figure 91: Enable / Disable Background Updates

When automatic updates are enabled, the system determines if a new background is needed, and the operator is notified with an acknowledge message. This situation can appear at any time, similar to an alert or alarm condition.

If the operator is in the process of conducting a data collection, the background process is temporarily halted.

Note: If the background significantly decreases from the recorded one, to prevent a negative result in the analysis, a previous background will be used.

3.10.2.1 Invalid Background

An error message is displayed when the Automatic Background determines that the background is no longer valid. This situation occurs primarily when the operator moves from a background with NORM present to a background that is clear.

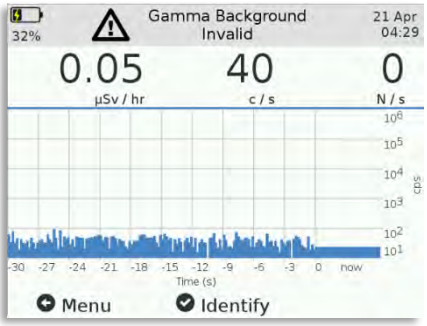


Figure 92: Invalid Background Display

Should this happen, press the Select key to acknowledge. You are advised that a new background collection is in process.

Note: It is left to operator discretion whether to perform any identifications while the background is invalid. It is still possible to perform identifications with an invalid background; however, background subtraction will not be used during analysis, since there is no valid background to use.

Subsequent displays will show a notification in the message bar that the background is presently not valid. The notification will disappear once a valid background is collected and implemented.

3.11 Audio and Alert Settings

3.11.1 Adjusting the Audible Rate Indicator

VeriFinder can provide an audible click with a rate proportional to the count rate measured, negating the need to look directly at the screen when searching for the general location of a source of interest. The default setting for the audible rate indicator is OFF.

To configure the audible rate indicated:

1. Select Audio and Alerts in the Settings menu.
2. Select the Sensitivity option.
3. Press the Down button to select your desired audible rate indicator setting (Low, Medium, High or Off), then press the Select button.
4. To accept a new audible rate indicator setting, press the Select button.

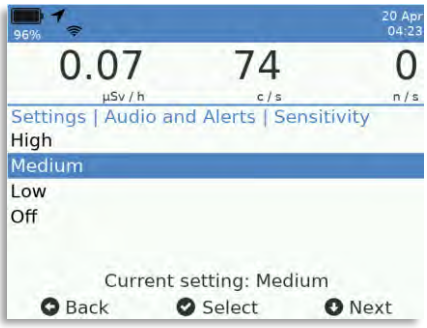


Figure 93: Settings – Audible Rate Indicator

3.11.2 Adjusting the Audible Volume

To adjust the speaker volume:

1. Select Audio and Alerts in the Settings menu.
2. Select the Speaker Volume option.
3. Press the Down button to select your desired volume setting (10% - 100%), then press the Select button.
4. To accept the new volume setting, press the Select button.

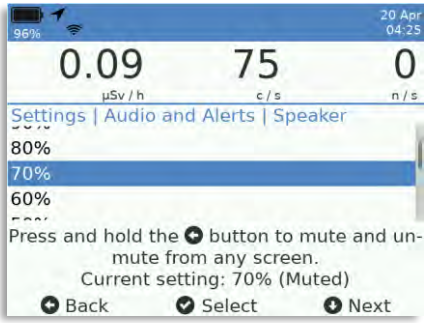


Figure 94: Settings – Audio and Alerts Speaker Volume

5. To mute the speaker volume, press the **Toggle mute** option.

To adjust the Headphone volume:

1. Select Audio and Alerts in the Settings menu.
2. Select the Headphone volume option.
3. Carry out steps 3 – 5 described in adjusting speaker volume above.

3.11.2.1 Audio Sub-System Failure

If the audio sub-system should fail for any reason, you are presented with the following screen.

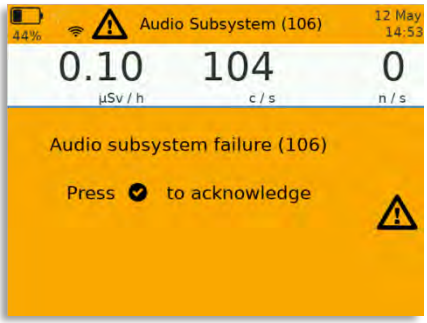


Figure 95: Audio Sub-System Failure

Press the Select button to acknowledge. Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.

3.11.3 Adjusting the Vibrator Indicator

VeriFinder can provide tactile feedback (vibration) for events via its internal vibrator. The default setting vibrator indicator is enabled.

To configure the vibrator indicator (enable or disable):

1. Select Audio and Alerts within the Settings menu.
2. Select the Vibrator option.
3. Press the Down button to select your desired (Disable or Enable) vibrator indicator setting, then press the Select button.
4. To accept a vibrator indicator setting, press the Select button.

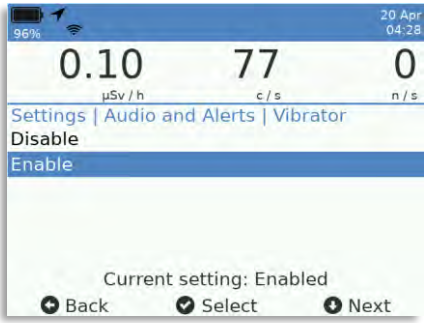


Figure 96: Settings – Vibrator Setting

3.12 Other Settings

3.12.1 Connectivity Status Settings

Note: If VeriFinder is set to operate in Alternate Mode 1 (refer to Section 4 – Advanced Mode of Operation), the Connectivity settings option can be found in the Advanced Settings menu.

You can configure which connectivity modes are enabled on VeriFinder. By default, only GPS is enabled. When a connectivity mode is enabled, its corresponding icon is visible on the status bar.

The available connectivity modes are:

- Wi-Fi – Connects to the strongest authorized Wi-Fi network.
- Bluetooth – Connects via Bluetooth 4.0 to a paired Android device.
- Cellular – 3G enabled micro SIM card required.
- GPS – Turns location information On or Off (only works in outside environment).
- Pair Bluetooth.
- Bluetooth Tethering.
- Unpair all Bluetooth Devices.

To enable/disable the available connectivity modes:

1. From the Settings menu, select Connectivity.
2. A screen appears showing the status of the connectivity modes (enabled or disabled).

Figure 97: Connectivity Status Settings

3. For each of the connectivity modes you want to change:
   a. Press the Down button to select appropriate connectivity mode.
   b. Press the Select button to toggle its status to the opposite value.
4. The screen updates with the new setting for the connectivity methods. Icons for each mode are displayed based on the enable/disable status of that mode.
5. Press the Back button to return to the Settings screen.

3.12.2 Backlight Settings

VeriFinder screen brightness can be adjusted to suit your viewing preferences by configuring the screen backlight. The default screen backlight setting is Auto.

When the backlight setting is set to Auto, the integrated luminosity meter will detect the ambient light, and automatically adjust the screen's backlight to an appropriate setting.

To configure the screen backlight:

1. From the Settings menu select Screen backlight.
2. Press the Down button to select your desired backlight setting (Auto, 100%, 75%, 50%, 25%,15%, 5%. 1%, 0%), then press the Select button.

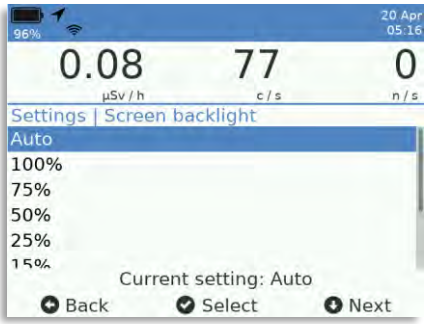


Figure 98: Settings – Screen Backlight

3.12.3 Background Collection Duration

You can set the duration for background collection between 30 and 999 seconds.

To set the background collection duration:

1. From the Settings menu select Background collections duration.
2. Change the duration by using the Down button to increment the integer value and the Select button to move to the next value box.

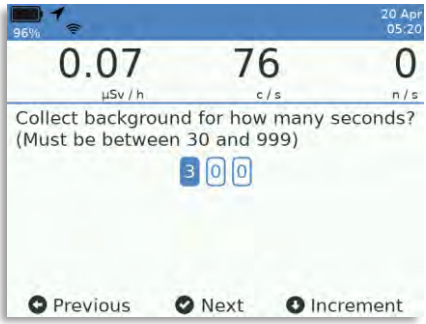


Figure 99: Background Collection Duration

3. To accept a new duration setting, press the Select button.

3.12.4 System Shutdown

To shut down VeriFinder from the Settings menu:

1. From the Settings menu select Shutdown.
2. From the screen that appears, press the Down button to select Yes, then press the Select button. After a short while VeriFinder shuts down.

Note: Pressing the Select button for 5 seconds or more will shutdown VeriFinder from any screen.

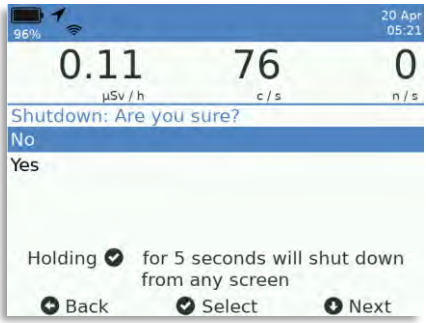


Figure 100: Settings – Shutdown

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SECTION 4 ADVANCED MODE OF OPERATION

Advanced operation of VeriFinder is available in one of two modes, **Default Mode** and **Alternate Mode 1**. Type of mode is determined from the Web Management Interface > User Interface Settings screen after logging in as Advanced user (refer to document 760-0363 – VeriFinder WMI Manual).

The main difference is that in Alternate Mode 1, there is no requirement for the user to input a password to enter advanced mode. In addition, several of the menu options are relocated, details of which are highlighted as applicable in the sections that follow.

Advanced mode enables the following processes and procedures:

- Select desired dose units for display.
- Set detection alert and alarm threshold levels.
- Set a simplified view of identification results for the normal user.
- View and reset the accumulated operating hours.
- View detector calibration data.
- Set background collection parameters (thresholds, collection time, and how the background is applied).
- Check for software updates with network connection.
- Set the advanced mode password – (Default mode of operation only).
- Set the clock and timezone.
- Look at battery information.
- Change language settings.
- Deletion of all event data collected.
- Reset to factory defaults (Default mode of operation only).

4.1 Advanced Mode Login – Default Mode Only

Access the Advanced settings menu:

1. Access the Settings menu, select the Gear icon in the menu bar.
2. From the Settings menu, select Advanced Mode.

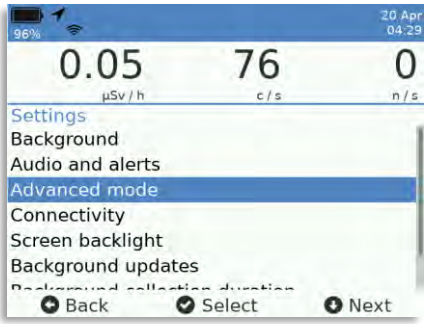


Figure 101: Advanced Mode Login

3. The Enter advanced mode password screen is displayed.

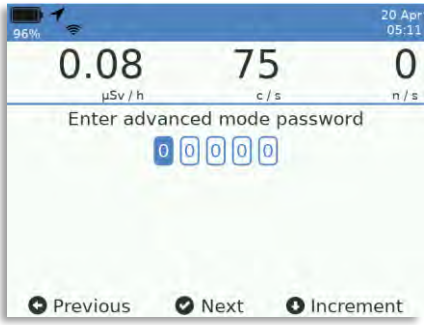


Figure 102: Advanced Mode Password

4. Enter each number of the advanced mode password by pressing the Down button to change the value, and the Select button to accept the value and move to the next box.
5. Once the advance mode password is fully specified, press the Select button to enter Advanced Mode. When in Advanced Mode you will find that:
   - You no longer need to enter a password to review and modify Advanced Mode settings.
   - Events will display the certainty of isotope identifications.

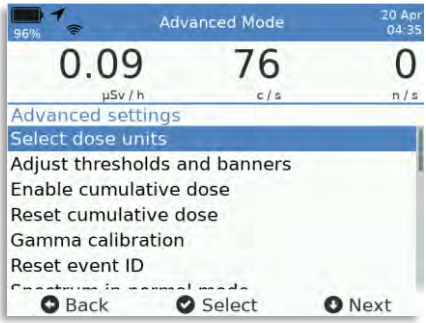


Figure 103: Advanced Settings Screen

4.2 Selecting Dose Units

VeriFinder can be configured to display either mrem/h and µSv/h dose units. The default dose unit setting is µSv/h.

To adjust which dose unit VeriFinder displays:

1. From within the Advanced settings screen, press the Down button to select the Select Dose Units option, then press the Select button.
2. From the screen that appears, press the Down button to select your desired (mrem/h or µSv/h) dose unit setting, then press the Select button.

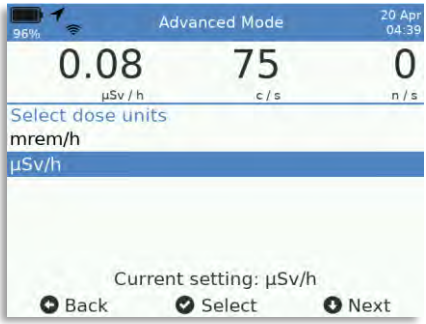


Figure 104: Selecting Dose Units

3. To accept the new dose unit setting, press the Select button.

4.3 Adjust Alarm Thresholds and Banners

Note: If VeriFinder is set to operate in Alternate Mode 1, adjustment of Alarm Thresholds and Banners can be found in the Normal Settings menu.

Adjust of alarm thresholds is from the ‘Adjust thresholds and banners’ sub-menu in the Advanced Mode menu.

4.3.1 Gamma and Neutron Detection Alerts

Alert screens can be toggled to off for when VeriFinder detects an increased gamma or neutron source, and only provide the count/dose rate outside the event collection.

To toggle gamma and neutron detection alerts:

1. From within the Advanced settings screen press the Down button to select the ‘Adjust thresholds and banners’ option, then press the Select button.
2. From the screen that appears, press the Down button to select the ‘Gamma or Neutron alerts outside events’ option, then press the Select button to toggle between Yes and No as required.

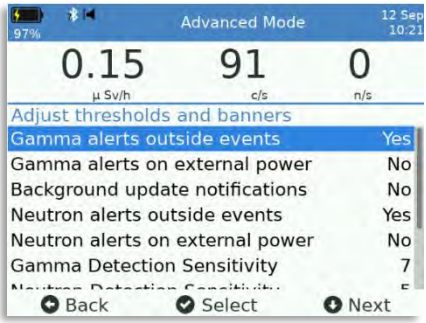


Figure 105: Gamma / Neutron Alerts Outside Events

Note: The status bar will still change color and provide detection information. Dose rate will continue to provide indications of increased radiation.

Disabling the alerts will only disable the full screen alert that requires you to acknowledge the alarm.

4.3.2 Gamma and Neutron Alerts on External Power

When the VeriFinder is connected to external power for charging, gamma and neutron alerts can be disabled to prevent the alert screen being displayed on detection of radiation (see Section 3.4.2 – Gamma Alerts).

To configure the alerts:

1. From the Advanced settings screen, press the Down button to select the Gamma / Neutron alerts on External Power option, then press the Select button.
2. From the screen that appears, press the Down button to select the desired setting (No or Yes), then press the Select button.

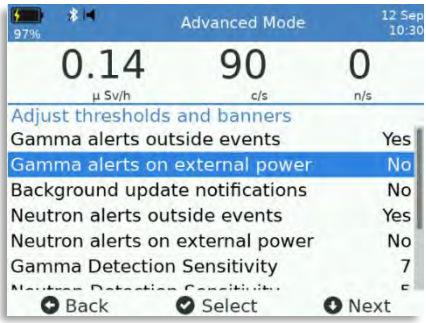


Figure 106: Gamma / Neutron Alerts on External Power

4.3.3 Background Update Notification

Background notifications can be toggled to Yes or No to suit the needs of the operator.

When set to Yes, all background notifications will be displayed in the status bar.

When set to No, only the notification ‘Update background for optimal ID’ will be shown after a 5-hour timeout. If working in Automatic mode, the status bar will turn grey for 30s whilst the background updates and will then return back to normal once the update has completed (Figure 108).

To toggle background update notifications:

1. From within the Advanced settings screen press the Down button to select the ‘Adjust thresholds and banners’ option, then press the Select button.
2. From the screen that appears, press the Down button to select the ‘Background update notifications’ option, then press the Select button to toggle between Yes and No as required.

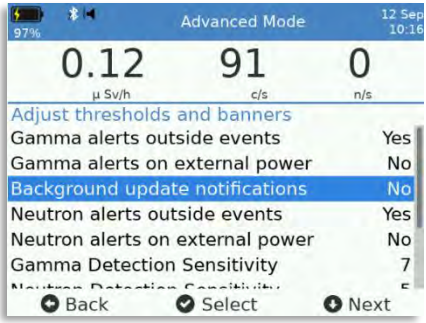


Figure 107: Background Update Notifications

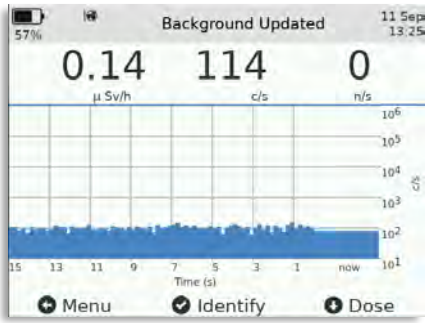


Figure 108: Background Updated Banner Displayed (with Update Notifications Set to NO)

4.3.4 Gamma and Neutron Sensitivity

Changes can be made to the detection sensitivity for both the Gamma and Neutron detectors. The default value for a neutron detector is set at 8, whereas the gamma detector is set at 9. Both however, can be modified as required from 0 (disabled) through to 9 (very high).

To change the gamma or neutron sensitivity value:

1. From within the Advanced settings screen press the Down button to select the 'Adjust thresholds and banners' option, then press the Select button.
2. From the screen that appears, press the Down button to select the Gamma or Neutron Detection Sensitivity option, then press the Select button.

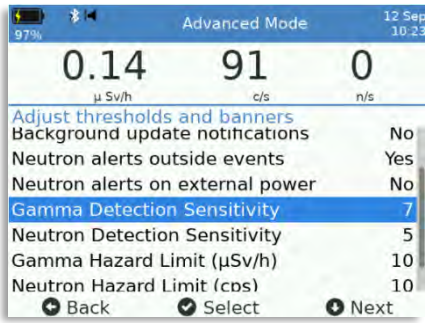


Figure 109: Gamma and Neutron Sensitivity Values

3. Change the sensitivity by using the Down button to increment the integer value to the required setting.

Figure 110: Changing the Sensitivity Value

4.3.5 Gamma and Neutron Personal Hazard Limits

Changes can be made to the count thresholds that trigger the Gamma and Neutron personal hazard alarms.

To change the neutron and/or gamma count threshold values:

1. From within the Advanced settings screen press the Down button to select the 'Adjust thresholds and banners' option, then press the Select button.
2. From the screen that appears, press the Down button to select the Gamma Hazard Limit option, then press the Select button.

Figure 111: Gamma Personal Hazard Alarm Dose Limit

3. Enter numbers by changing the highlighted box value using the Down button. Accept the value and move to the next box by pressing the Select button.
4. Once the new Gamma Detection Limit is fully specified and you are at the last box, press the Select button to store the new Gamma Detection Limit and exit back to the previous Adjust Thresholds screen.

5. Follow similar steps to adjust the neutron personal hazard limit. From the Adjust Thresholds screen that appears, change the neutron count threshold values by pressing the Down button to select the Neutron Hazard Limit option, then press the Select button.

6. Enter numbers by changing the highlighted box value using the Down button. Accept the value and move to the next box by pressing the Select button.

Figure 112: Neutron Personal Hazard Alarm Dose Limit

7. Once the new Neutron Detection Limit is fully specified and you are at the last box, press the Select button to store the new Gamma Detection Limit and exit back to the previous Adjust Thresholds screen.

4.3.6 Low Battery Warning Threshold

Note: The Low Battery Warning Threshold is set at factory and should not be changed without first consulting Symetrica support.

The percentage threshold limit that causes VeriFinder to trigger the System Fault Low Battery warning can be configured from the default percentage threshold limit of 5%, which equates to approximately a 25 minute warning under standard battery test conditions.

To change the percentage threshold limit that triggers the System Fault Low Battery warning:

1. From within the Advanced settings screen press the Down button to select the ‘Adjust thresholds and banners’ option, then press the Select button.

2. From the screen that appears, press the Down button to select the Low battery warning (percent) and then push the Select button.

3. Enter numbers by changing the highlighted box value using the Down button. Accept the value and move to the next box by pressing the Select button.

Figure 113: Low Battery Warning Threshold

4. Once the new percentage threshold limit is fully specified and you are at the last box, press the Select button to store the new percentage threshold limit and exit back to the previous Adjust Thresholds screen.

4.4 Enable / Disable Mission Dose

Mission dose displays a summary value of the dose rate that VeriFinder is exposed to over a period of time. When enabled, it is displayed on the Dose screen (if selected) for the detection of radionuclides (refer to Section 3.4 – Detection of Radionuclide Sources).

To enable / disable mission dose:

1. From within the Advanced settings screen, press the Down button to select the 'Enable mission dose' option, then press the Select button.

2. The setting changes to 'Disable mission dose'. Press the Select button to disable.

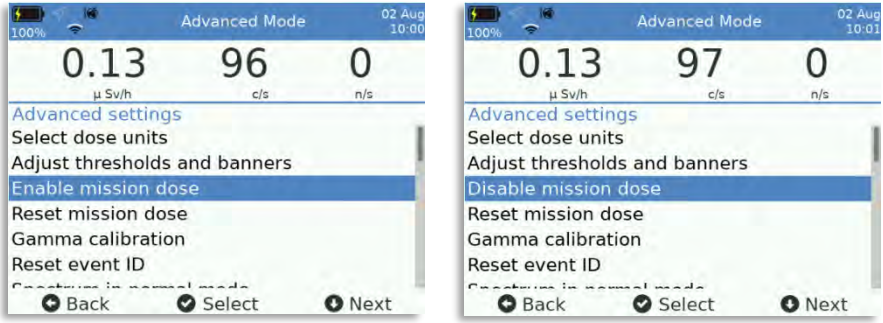


Figure 114: Enable / Disable Mission Dose

4.5 Reset Mission Dose

Reset mission dose resets the start of integer value for mission dose displayed on the Dose screen.

To reset mission dose:

1. From within the Advanced settings screen, press the Down button to select the 'Reset mission dose' option, then press the Select button.
2. Mission dose reset is displayed.

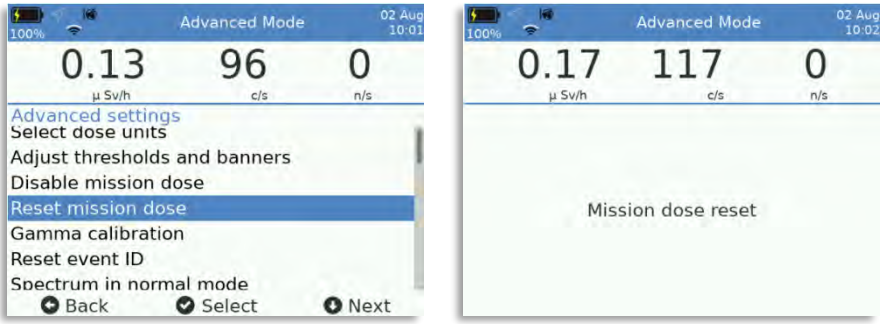


Figure 115: Reset Mission Dose

4.6 Gamma Calibration

Note: Gamma calibration of VeriFinder should only ever be performed by Symetrica personnel. Performing a gamma calibration by non-Symetrica personnel voids the warranty.

To view the existing gamma calibration on VeriFinder:

1. From the Advanced settings screen, press the Down button to select the Gamma Calibration option, then press the Select button.
2. A screen appears showing a calibration spectrum and date that the previous calibration was undertaken.

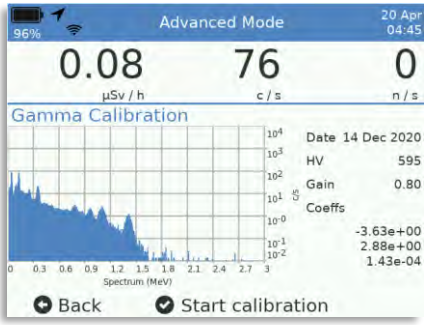


Figure 116: Gamma Calibration

3. Once you have finished reviewing the gamma calibration information, press the Back button to return to the Advanced settings screen.

4.7 Reset Event ID

This option restarts the event counter, with the next event starting at event number 1.

To reset the event ID:

1. From within the Advanced settings screen, press the Down button to select the Reset Event ID option, then press the Select button.
2. From the Reset Event ID: are you sure? Screen, select Yes and press the Select button.

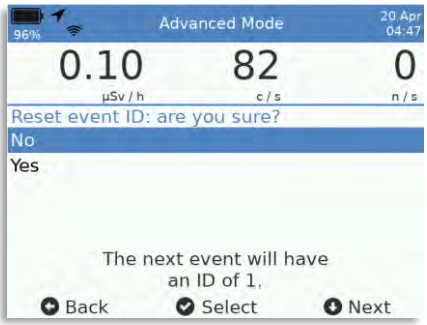


Figure 117: Reset Event ID

4.8 Graph Y-Axis Scale Type

This option determines the Y-axis value to be used for the spectrum graph, which is located on the Locate screen.

To set the y-axis value:

1. From within the Advanced settings screen, press the Down button to select the Graph Y-Axis Scale Type option, then press the Select button.

2. From the screen that appears, select the desired setting (Log10 or Linear), then press the Select button.

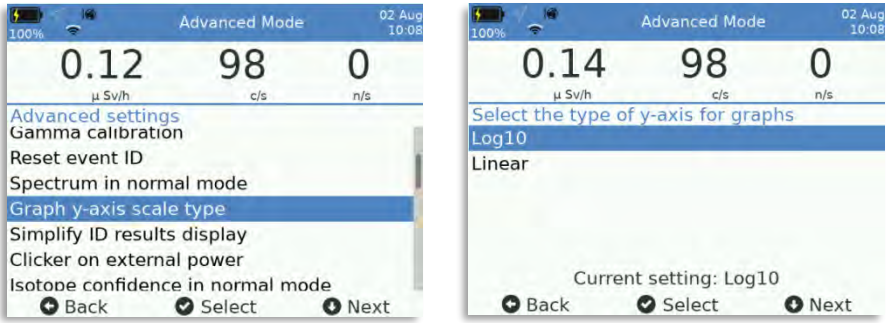


Figure 118: Graph Y-Axis Scale Type

In Log10 mode, the count rate will be displayed on a logarithmic plot in the range 10^1 to 10^6 cps.

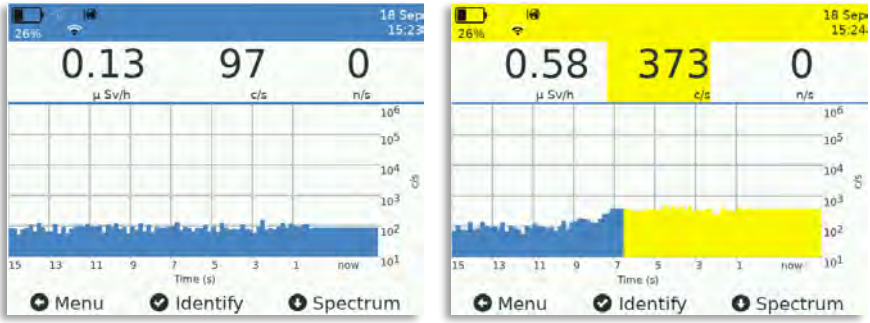


Figure 119: Logarithmic Scaling (in a low background and then a 3x signal)

In Linear mode, the count rate will be displayed on a linear plot. The axis will automatically rescale as count rates rise and fall to give the user a clear view of changes in the count rate.

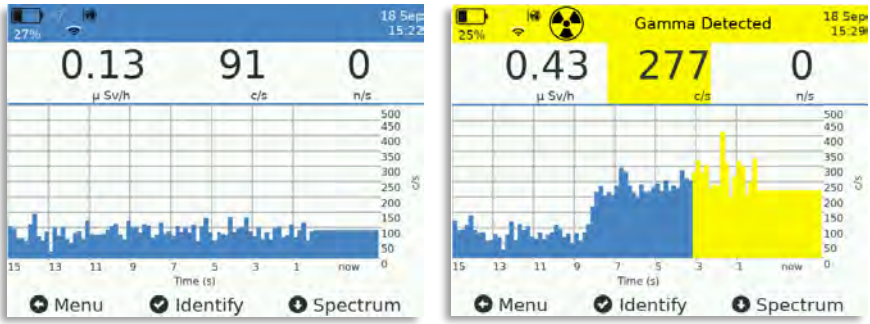


Figure 120: Linear Scaling (in a low background and then a 3x signal)

4.9 Spectrum in Normal Mode

VeriFinder can be configured to display the spectrum in normal mode when in operational use. The default setting is disabled (no spectrum in normal mode).

To configure the spectrum to display in Normal mode:

1. From the Advanced settings screen, press the Down button to select the Spectrum in Normal Mode option, then press the Select button.
2. From the screen that appears, press the Down button to select the desired setting (Disable or Enable), then press the Select button.

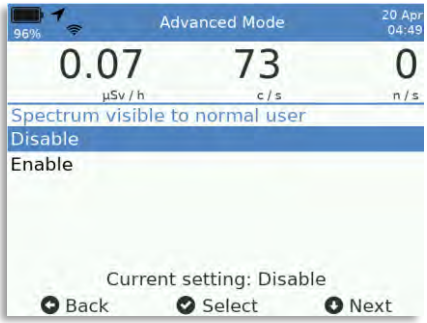


Figure 121: Spectrum Visible to Normal User

3. To accept the new setting, press the Select button.

4.10 Simplify ID Results Display

VeriFinder can be configured to simplify the details shown on the isotope identification screen, minimising event information available to the normal user.

To configure a simplified display:

1. From the Advanced settings screen, press the Down button to select the Simplify ID Results Display option, then press the Select button.
2. From the screen that appears, press the Down button to select the desired setting (Disable or Enable), then press the Select button.

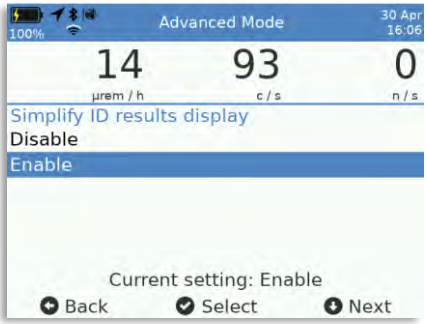


Figure 122: Simplify ID Results Display

4.11 Clicker on External Power

VeriFinder has a clicker to provide an audio indication of count rate. This function allows the user to disable it when the external power is connected.

To configure the clicker:

1. From the Advanced settings screen, press the Down button to select the Clicker on External Power option, then press the Select button.
2. From the screen that appears, press the Down button to select the desired setting (Disable or Enable), then press the Select button.

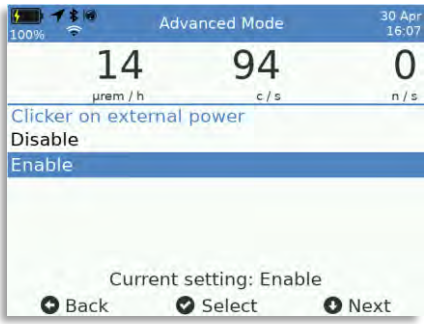


Figure 123: Clicker on External Power

4.12 Isotope Confidence in Normal Mode

VeriFinder can be configured to display an isotope confidence level when in operational use (see Section 4.13 – Isotope Confidence Display Range). When enabled, operators are presented with a level of confidence for a detected isotope, which is displayed in the identification screen after a detection has been made.

To enable isotope confidence:

1. From the Advanced settings screen, press the Down button to select the Isotope Confidence in Normal Mode option, then press the Select button.

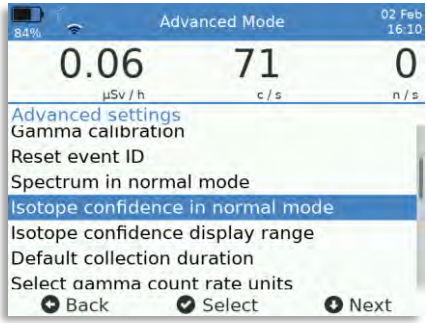


Figure 124: Isotope Confidence in Normal Mode Option

2. From the screen that appears, press the Down button to select the desired setting (Yes or No), then press the Select button.

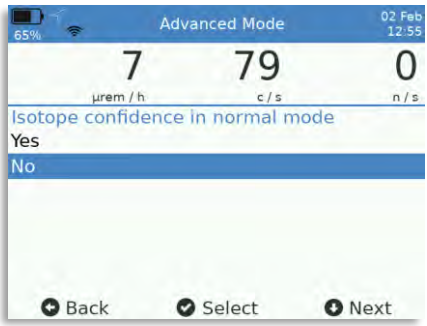


Figure 125: Options for Isotope Confidence Setting

Note: Isotope confidence is never displayed in the Simplified ID Results screen.

4.13 Isotope Confidence Display Range

The isotope confidence range is selected from the Advanced settings and provides the operator with a visual level of confidence for a detected radionuclide isotope, by either a percentage or integer range.

To select the isotope confidence display range:

1. From the Advanced settings screen press the Down button to select the Isotope confidence display range option, then press the Select button.
2. From the screen that appears, press the Down button to select the desired display range (1 – 100 (%) or 1 – 10), then press the Select button.

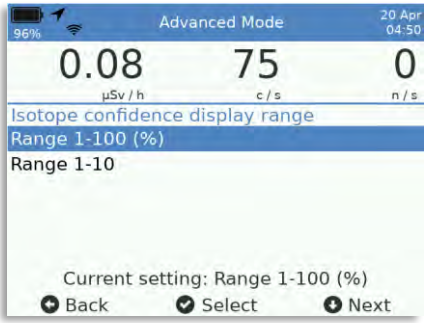


Figure 126: Isotope Confidence Display Range

4.14 Default Collection Duration

Note: If VeriFinder is set to operate in Alternate Mode 1, the Default Collection Duration option can be found in the Normal Settings menu.

Default Collection Duration determines the extent of data collection when the operator selects the identify function to detect and identify radionuclide sources.

VeriFinder can be configured to a collection duration of 30 seconds, 60 seconds, 2 minutes, 5 minutes, 10 minutes, or 15 minutes. The default collection duration is 30 seconds.

To adjust the default collection duration:

1. From the Advanced settings screen, press the Down button to select the Default Collection Duration option, then press the Select button.
2. From the screen that appears, press the Down button to select the desired default collection duration then press the Select button.

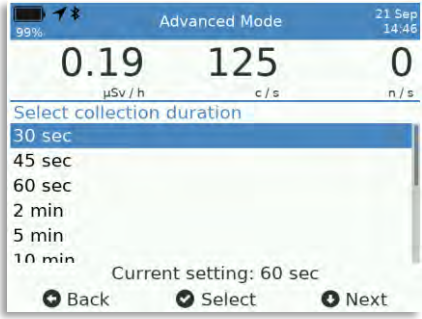


Figure 127: Start Collection Duration

4.15 Gamma / Neutron Count Rate Units

The rate unit used to display gamma count rates can be configured as either:

- Counts per second (c/s).
- Counts per minute (c/min).

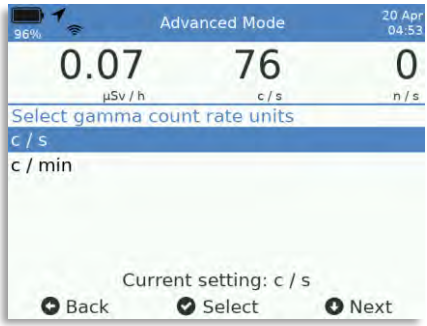
Similarly, the neutron count rate can be configured as either:

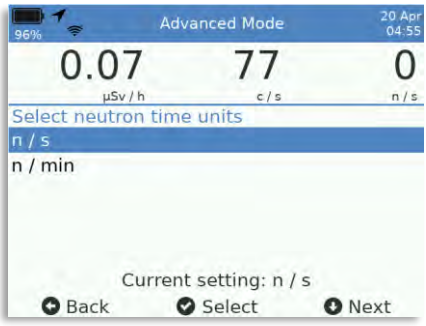
- Neutrons per second (n/s).
- Neutrons per minute (n/min).

Note: The units will auto scale as the count rate increases.

To change the Gamma or Neutron Count Rate units:

1. Navigate to Advanced Settings.
2. Press the Down button and select either the gamma or neutron count rate units as required.
3. The relevant select count rate units screen is displayed.
4. Choose either c/s or c/min (gamma) or n/s or n/min (neutron) and press the Select button.
5. The new count rate setting is applied.





…

Figure 128: Count Rate Settings

4.16 System Log

The system log is written by the system at start-up. It contains a record of the current software running on VeriFinder along with all system messages, any alerts or alarms and configuration changes.

To view the system log:

1. From the Advanced Settings screen, select System log.
2. The System log screen appears.

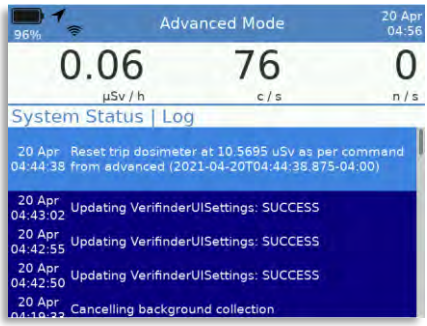


Figure 129: System Log

3. If necessary, scroll through the logs by pressing the Down button and Select button.
4. Press the Back button to return to the Advanced Settings screen.

4.17 Check for Software Updates

Note: Prior to updating software, ensure the system is reliably connected to the network. If possible, connect the power cord to a mains power supply.

Software releases are created to add new functionality or features, improve performance / stability or correct any issues discovered.

To check for Software Updates:

1. From within the Advanced Settings press the Down button to select the Check for Software Updates option, then press the Select button.
2. From the 'Settings | Software update' screen that is displayed, press the Select button to initiate a check.

Figure 130: Settings / Software Update Screen

3. The System commences a check for any software updates. If new updates are available, 'Software updates are ready to be installed' is displayed. Press the Select button to acknowledge.

Figure 131: Acknowledge Software Updates Available

4. When the Update status changes to ‘Updates ready’ press the Down button to install.

Figure 132: Updates Ready to be Installed

5. The system updates with the latest software. On completion, the status changes to ‘Up-to-date’.

4.18 Self Test

Self test facilitates a series of tests that are run on the VeriFinder to confirm its functional status. After a test is completed, the operator confirms the results by selecting either Pass or Fail before proceeding to the next test. Results of all tests are recorded in the Log file (Log.xml), which can be viewed from the Artifacts screen on the Web Management Interface (refer to document 760-0363 – VeriFinder WMI Manual - Artifacts).

A self test can be stopped at any time by selecting the Cancel button.

To conduct a self test:

1. From the Advanced Settings press the Down button to select the ‘Self test’ option, then press the Select button.
2. The ‘Self test of device’ screen is displayed with ‘Start self test’ highlighted. Press the Select button to continue.

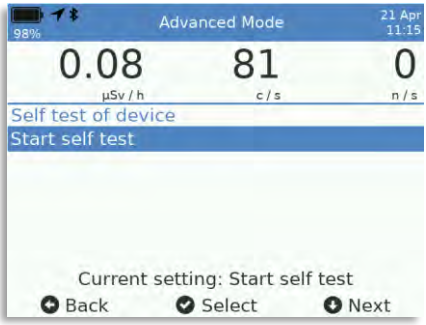


Figure 133: Self Test of Device Screen

3. From the ‘Self test: Are you sure?’ screen, press the Down button to select ‘Yes’ then press the Select button to continue.

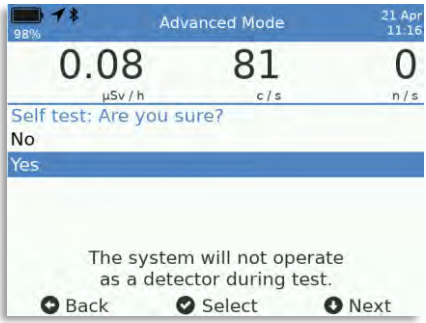


Figure 134: Confirm Start Self Test Screen

4. The self test sequence will start with a check on functionality of the VeriFinder buttons (Left, Middle and Right). Press each button when requested.

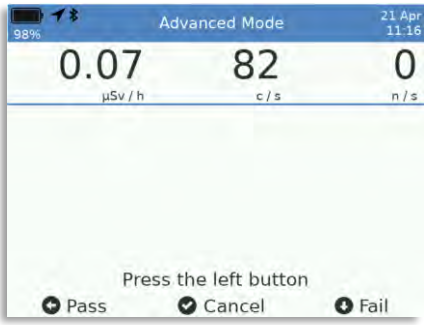


Figure 135: VeriFinder Buttons Test (Example)

5. For each test displayed thereafter, select either Pass or Fail as appropriate. Test results will be recorded in the Log file.

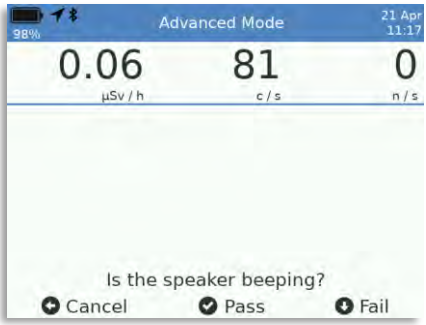


Figure 136: Example Test Screen

Self tests conducted are as follows:

- VeriFinder buttons (Left, Middle, Right).
- Is the speaker beeping?
- Is the buzzer buzzing?
- Are the lights flashing red?
- Are the lights flashing green?
- Are the lights flashing blue?
- Testing system display (a series of screen color tests are conducted).

On completion, select the Back arrow to return to the self test screen.

4.19 Change Advanced Mode Password – Default Mode Only

The Advance Mode Password is required to access the Advanced settings menu.

To change the Advance Mode Password:

1. From the Advanced settings menu, select Change Advanced Mode Password.

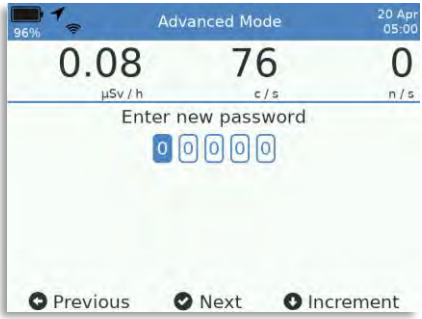


Figure 137: Enter New Password

2. From the Enter advanced mode password screen that appears, change the Advanced Mode Password, as follows:

   a. Enter numbers by changing the highlighted box value using the Down button. Accept the value and move to the next box by pressing the Select button.

   b. Once the new Advanced Mode Password is fully specified and you are at the last box, press the Select button to store the new Advanced Mode Password and return to the previous menu.

4.20 Configuring the Clock Settings

The VeriFinder internal clock can be configured as required. To configure the internal clock:

1. From within the Advanced settings press the Down arrow button to select the Set clock option, then press the Select button.

2. From the 'Select clock value to change' screen that is displayed, press the Down arrow button to select the clock setting you want to change (Year, Month, Day of month, Hour, Minute or Second), then press the Select button.

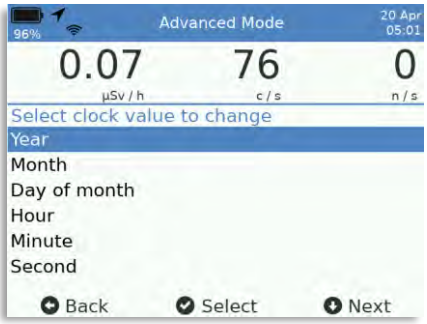


Figure 138: Select Clock Value to Change

3. From the numerical value screen that is displayed, change the highlighted box value using the Down arrow button, accept the value and move to the next box by pressing the Select button.
4. Once the new value is fully specified and you are at the last box, press the Select button to store the new value and exit back to the previous page.
5. Repeat steps 2 and 3 for each clock value that you want to change.
6. Once you are happy with the updated clock values, press the Select button.

4.21 Configuring the Time Zone

The time zone used by the VeriFinder internal clock can be configured as required. Each time zone accounts for daylight savings differently, so it is important to set the time zone correctly in order for the internal clock to match that of local time.

To configure the time zone:

1. From the Settings menu select Set time zone.
2. From the screen that appears, press the Down button to select the required area, and then press the Select button.
3. Next, select the required time zone and then press the Select button.

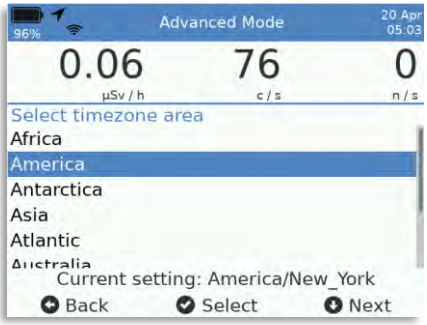


Figure 139: Select Time Zone

4.22 Battery Information

It is important for both operators and maintenance personnel to monitor the life of the batteries. The battery health screen provides this information.

1. From the Advanced Settings screen, select Battery information.
2. The Battery Information screen appears displaying the battery information.
3. Use the Down arrow button to scroll through the battery information.
4. Press the Back arrow button to return to the Advanced Settings screen.

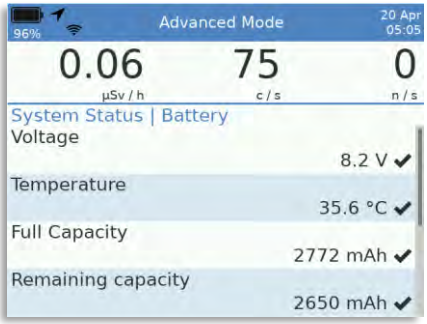


Figure 140: Battery Information

Battery Information:

Displayed Data	Description
Voltage	Actual battery voltage.
Temperature	Temperature of battery in degrees Celsius.
Full Capacity	Total battery capacity in mAh.
Remaining Capacity	Remaining battery capacity in mAh.
Time to empty	Remaining time before the battery is empty in minutes.
Percent Charge	Percent remaining on the charge.

4.23 Language Settings

The VeriFinder user interface supports various languages. The default language setting is English.

To configure the user interface language:

1. From the Advanced Settings menu select Language.
2. Press the Down button to select your desired language, then press the Select button.

Figure 141: Advanced Settings – Language

4.24 Delete All Event Data

This option permanently removes all events from the device.

To delete all event data:

1. From within the Advanced settings screen, press the Down button to select the Delete all event data option, then press the Select button.
2. From the Delete all events: Are you sure? Screen, select Yes and press the Select button.

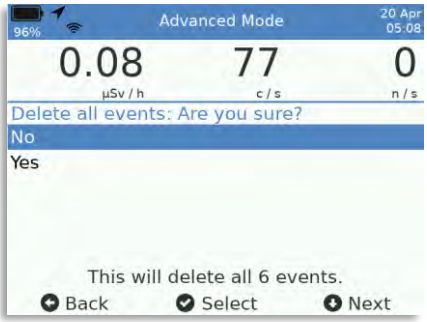


Figure 142: Delete All Event Data

4.25 Factory Reset – Default Mode Only

Performing a factory reset will reset all parameters of VeriFinder back to their factory settings, including the advance mode password and clears all events (refer to Section 8.2 - Default Settings).

To perform a factory reset:

1. From the Advanced settings screen, press the Down button to select the Factory reset option, then press the Select button.
2. From the Factory Reset: Are you sure? Screen that appears, press the Down button to select Yes, then press the Select button. VeriFinder takes approximately 30 seconds to reboot.

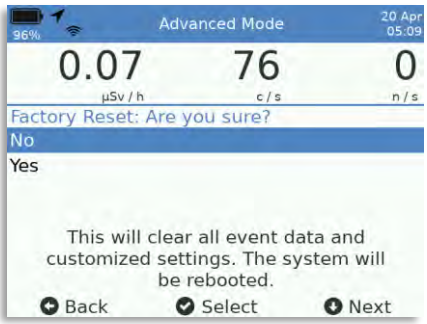


Figure 143: Factory Reset

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SECTION 5 OFF-LOADING EVENTS AND THE WMI

Before you can off-load events to a PC, the Symetrica Deep Discovery software needs to be installed (refer to Section 9.1 – Installing Deep Discovery Software).

5.1 Offloading Events to a PC

To offload events from VeriFinder to a PC:

1. Ensure that either the external power is connected to VeriFinder or that the battery is not fully depleted.
2. Open the protective boot cover on the rear of VeriFinder and use the supplied USB cable to connect to a USB port on the PC.
3. Click the Start menu and run Deep Discovery or double-click the Deep Discovery tray icon.
4. In the Symetrica Application Discovery window, select the detected VeriFinder unit and click the Connect button.

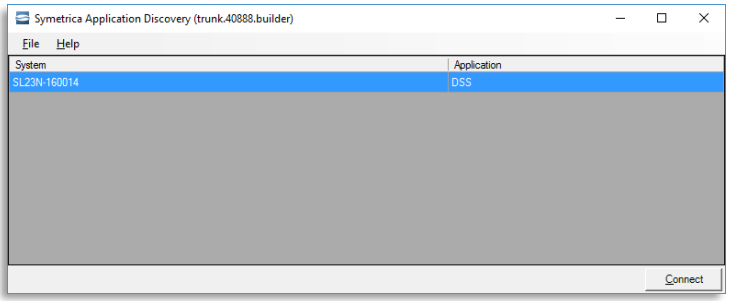

Figure 144: Symetrica Application Discovery

5. If this is the first connection, a Confirm Remote Identify dialog may appear. Click Accept to accept the certificate. **Note:** If the required VeriFinder is not on the list, navigate to the File menu and click the Connect option. From the Connect dialog, enter the IP address of the VeriFinder and click OK.

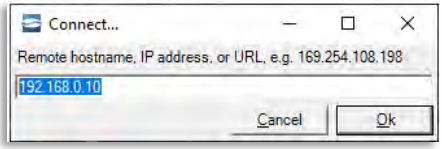

Figure 145: VeriFinder Connect Dialog

6. When asked to Log in, enter ‘operator’ in the Username field. In the Password field, enter the current password; the default is ‘symetrica’.

7. On successful connection the ‘Offload data…’ dialog appears with options to export only new events or export all events.

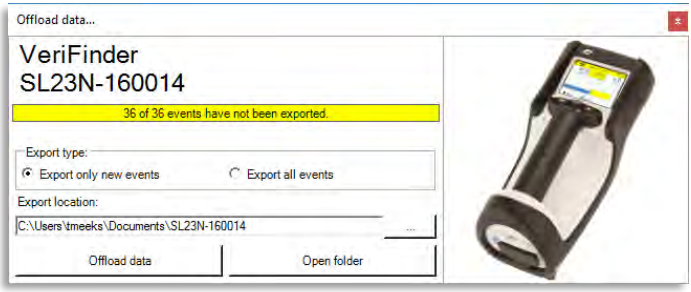

Figure 146: Offload Data Dialog

8. Enter an export location and click the ‘Offload data’ button. The progress bar populates with the offload status indicating number of event files offloaded.

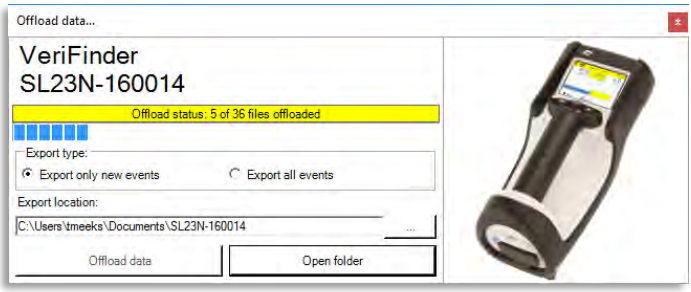

Figure 147: Progress Bar – Events Files Offloaded

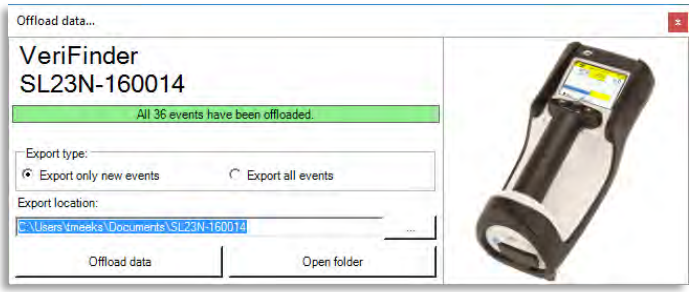

Figure 148: Progress Bar – All Events Offloaded

9. Click the Open folder button to view the offloaded files.

5.2 Web Management Interface (WMI)

VeriFinder contains a built-in web server, which hosts a set of **Web Management Interface** (WMI) screens that can be accessed using a PC Web Browser and / or Android device. The WMI enables remote operational control, for example, deployment into high radiation fields via a drone or mobile robot carrier. It also enables remote management of the VeriFinder as an alternative to using the advanced features on the device itself.

For further details, refer to document 760-0363 – VeriFinder WMI Manual.

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SECTION 6 TROUBLESHOOTING

6.1 Troubleshooting Guide

Issue	Action
The VeriFinder device will not power on.	Check that the battery has been correctly loaded / situated in the battery compartment. Connect to the AC mains supply and check for power (power icon on status bar). If necessary, remove the battery and recharge for 2.5 hours. If immediate use is required, remove the battery, and insert a new battery or an AA battery caddy (4 x AA battery cells). If the problem persists, contact Symetrica support.
No Audio output on the device.	Check that the mute/disabled icon is not displayed in the status bar. If necessary, enable Speaker from the Audio and Alerts /Settings menu. If the problem persists, contact Symetrica support.
No Audible click on the device.	By default, the audible rate indicator is set to Off. If necessary, enable Sensitivity from the Audio and Alerts / Settings menu. If the problem persists, contact Symetrica support.
No Vibration on the device.	Check that the mute/disabled icon is not displayed in the status bar. If necessary, enable Vibrator from the Audio and Alerts / Settings menu. If the problem persists, contact Symetrica support.
Audio Subsystem Failure is displayed.	Acknowledge the status. Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.

Issue	Action
Cannot connect to Wi-Fi.	Check that Wi-Fi is not set to Disabled. If necessary, enable Wi-Fi from the Settings / Connectivity menu. If the problem persists, contact Symetrica support.
Cannot connect Bluetooth to a paired device.	Check that Bluetooth is not set to Disabled. If necessary, enable Bluetooth from the Settings / Connectivity menu. If the problem persists, contact Symetrica support.
Cannot connect to a cellular device.	Check that a micro SIM card is installed on the device. Check that Cellular is not set to Disabled. If necessary, enable Cellular from the Settings / Connectivity menu. If the problem persists, contact Symetrica support.
Cannot connect to GPS.	Check that GPS is not set to Disabled. If necessary, enable GPS from the Settings / Connectivity menu. If the problem persists, contact Symetrica support.
There is no Alert Screen displayed on detection of a Gamma / Neutron source.	Check that ‘Gamma / Neutron Alerts outside events’ option is not set to ‘No’. If necessary, set to ‘Yes’ from Advanced Mode / Adjust Thresholds and Banners menu. If the problem persists, contact Symetrica support.
Cumulative Dose is not displayed on the Dose screen.	Check that Cumulative Dose is not set to ‘Disable’. If necessary, set to ‘Enable’ from the Advanced Settings menu. If the problem persists, contact Symetrica support.

Issue	Action
GPS Fault is displayed.	Acknowledge the status. Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.
Modem Fault is displayed.	Acknowledge the status. Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.
Gamma / Neutron Detector Failure is displayed.	Acknowledge the status. Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.
The display is not functioning.	Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.
The navigation buttons are not functioning.	Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.
SGP upload fails.	Check connection to enabled network. If the problem persists, contact Symetrica support.
The system will not power on.	Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.

Issue	Action
The system will not bootup.	Power off of the VeriFinder, leave for 10mins and power back on again. If the problem persists, contact Symetrica support.
The system will not stabilize.	Power off of the VeriFinder, leave for 10mins and power back on again. Wait at least 10mins for stabilization to complete. If the problem persists, contact Symetrica support.
The case is cracked.	Contact Symetrica support and arrange return of the unit.

SECTION 7 MAINTENANCE

7.1 Preventive Maintenance

Preventive maintenance includes all scheduled maintenance actions required to keep the VeriFinder in good operational condition. Preventive maintenance actions include:

- Periodic inspections.
- Condition monitoring.
- Servicing (for example, cleaning).

7.1.1 Scheduled Maintenance Tasks

Recommended Schedule	Task
Monthly Actions.	▪ Inspect the unit for damage and functionality (see **Note:** below). ▪ Clean the unit monthly or as necessary, for example if the system has been used in harsh or contaminated environments. ▪ Clean the battery charger monthly or as necessary.
Seven Year Actions.	▪ Replace the real time clock battery. **Note:** Arrange return of the unit to Symetrica support for this task. ▪ Replace the Stabilization source. The system is labeled with the source installation/ initiation date. This date is also accessible through the user interface on the device **Note:** Arrange return of the unit to Symetrica support for this task. **Note**: The unit will continue to stabilize when the stabilization source is older than seven years but stabilization time on start-up might take longer than five minutes

Recommended Schedule	Task
Ten-year Actions	▪ Replace the Stabilization source. The system is labeled with the source installation/ initiation date. This date is also accessible through the user interface on the device **Note:** Arrange return of the unit to Symetrica support for this task. **Note**: The unit will continue to stabilize when the stabilization source is older than ten years but stabilization time on start-up might take longer than ten minutes.

7.1.2 Cleaning Materials

Recommended cleaning materials for the VeriFinder:

- Alcohol Wipes (or equivalent).
- Mild Detergent (or equivalent).
- Kim Wipes (or equivalent).

7.1.3 Cleaning VeriFinder

Clean the unit whenever possible or necessary, especially if it has been used in harsh or contaminated environments.

To clean VeriFinder:

1. Remove the boot (refer to Section 7.2.2 – Remove and Replace the VeriFinder Boot) and wipe down the VeriFinder with mild soap solution applied to a soft cloth on the case and handle.
2. Clean the LED display with an alcohol wipe.
3. Ensure that no dirt remains in any recessed areas such as the microphone, connector panel and screws.
4. Wipe down or hose the boot depending on the level of contamination.
5. Leave the detector and boot to air dry.
6. If the detector or boot is placed in the case the lid should be left open while drying.
7. When completely dry, re-attach the boot to the VeriFinder (refer to Section 7.2.2 – Remove and Replace the VeriFinder Boot).

7.2 Corrective Maintenance

Corrective maintenance includes the remove and replace actions required as a result of damage / wear and tear of the VeriFinder external components.

7.2.1 Remove and Replace the VeriFinder Strap

Refer to Figure 149 during this procedure.

To remove the strap:

1. Unclip the strap from the strap clip (1).
2. Push the strap clip through the strap loop (2) and remove it from the retaining bar (3).

To replace the Strap:

1. Insert the strap clip loop behind the retaining bar (3) and pull the strap clip through the strap clip loop to secure it (2).
2. Clip the strap to the strap clip (1). Adjust the strap for fit when worn.

Figure 149: Remove and Replace the VeriFinder Strap

7.2.2 Remove and Replace the VeriFinder Boot

Refer to Figure 150 during this procedure.

To remove the boot:

1. Hold the VeriFinder firmly by the handle, and with your other hand prise and pull the back of the boot from the back of the unit (1).

2. Once released, pull the VeriFinder away and out of the boot (2).

To replace the boot:

1. Insert the VeriFinder into the front of the boot (2).
2. Hold the VeriFinder firmly by the handle, and with your other hand pull the back of the boot up and over the back of the unit (1).
3. Adjust the fit so that the boot fits tight to the Verifinder and the electrical connector cover is able to seal around the electrical connectors.

Figure 150: Remove and Replace the VeriFinder Boot

SECTION 8 ADDITIONAL INFORMATION

8.1 Full Isotope Library

The following table details radiological/nuclear material categories and their attributes.

Some isotopes are always a threat and cannot be changed. This is indicated by the **Lock** icon.

ANSI Name	Display Name	Threat	Category	Locked
NORM	NORM	Innocent	NORM	
Unknown	UNKNOWN	Threat	Unknown	
H(n,g)	Neutron Capture	Threat	Suspicious	
Annihilation	Fluorine-18	Threat	Medical	
Scatter	X-Ray Scatter	Innocent	NORM	
Fluorescence	Fluorescence	Innocent	NORM	
Na-22	Sodium-22	Threat	Medical	
K-40	Potassium-40	Innocent	NORM	
Cr-51	Chromium-51	Threat	Medical	
Mn-54	Manganese-54	Threat	Industrial	
Co-57	Cobalt-57	Threat	Industrial	
Co-60	Cobalt-60	Threat	Industrial	
Ga-67	Gallium-67	Threat	Medical	
Se-75	Selenium-75	Threat	Medical	
Rb-81	Rubidium-81	Threat	Medical	
Sr-82	Strontium-82	Threat	Medical	

ANSI Name	Display Name	Threat	Category	Locked
Y-88	Yttrium-88	Threat	Industrial	
Sr-89	Strontium-89	Threat	Medical	
Sr-90	Bremsstrahlung	Threat	Industrial	
Mo-99	Molybdenum-99	Threat	Medical	
Tc-99m	Technetium-99m	Threat	Medical	
Pd-103	Palladium-103	Threat	Medical	
Cd-109	Cadmium-109	Threat	Industrial	
In-111	Indium-111	Threat	Medical	
I-123	Iodine-123	Threat	Medical	
I-125	Iodine-125	Threat	Medical	
I-131	Iodine-131	Threat	Medical	
Cs-131	Cesium-131	Threat	Medical	
Xe-133	Xenon-133	Threat	Medical	
Ba-133	Barium-133	Threat	Industrial	
Cs-134	Cesium-134	Threat	Industrial	
Cs-137	Cesium-137	Threat	Industrial	
La-138	Lanthanum-138	Innocent	NORM	
Eu-152	Europium-152	Threat	Industrial	
Sm-153	Samarium-153	Threat	Medical	

ANSI Name	Display Name	Threat	Category	Locked
Ho-166m	Holmium-166	Threat	Medical	
Lu-177	Lutetium-177	Threat	Medical	
Ir-192	Iridium-192	Threat	Industrial	
Tl-201	Thallium-201	Threat	Medical	
Tl-204	Thallium-204	Threat	Industrial	
Bi-207	Bismuth-207	Threat	Industrial	
Ra-223	Radium-223	Threat	Medical	
Ra-226	Radium-226	Innocent	NORM	
Th-228	Thorium-228	Innocent	NORM	
Th-232	Thorium-232	Innocent	NORM	🔒
U-232	Uranium-232	Threat	SNM	
U-233	Uranium-233	Threat	SNM	🔒
U-235	Uranium-235	Threat	SNM	🔒
Np-237	Neptunium-237	Threat	SNM	🔒
U-238	Uranium-238	Threat	Suspicious	
Pu-238	Plutonium-238	Threat	Suspicious	🔒
Pu-239	Plutonium-239	Threat	SNM	🔒
Am-241	Americium-241	Threat	Industrial	
Pu-241	Plutonium-241	Threat	SNM	🔒

8.2 Default Settings

The following details the default settings when VeriFinder is delivered from factory.

Settings Menu:

Setting	Value
Sensitivity Volume	Medium
Volume (Alarms and Alert)	70%
Volume (Headphones)	30%
Vibrator (tactile alert)	Enabled
Background Updates (Automatic)	Disabled
Screen Backlight (Brightness)	Auto
Background Collection Duration	300 s

Connectivity in Settings Menu:

Setting	Value
Wi-Fi	Disabled
Bluetooth*	Disabled
Cellular (3G)	Disabled
Reachback*	Disabled
GPS	Enabled

* Optional

Advanced Mode Menu:

Setting	Value
Advanced Mode Password	00000

Setting	Value
Dose Units	µSv/h
Spectrum in Normal Mode	Disabled
Default ID Collection Duration	30s

Adjust Thresholds and Banners in Advanced Mode Menu:

Setting	Value
Gamma Alerts Outside Events (Banner)	Yes
Neutron Alerts Outside Events (Banner)	Ye
Gamma Sensitivity	9
Neutron Sensitivity	8
Gamma Hazard Limit *	100 µSv/h
Neutron Hazard Limit	93 cps
Low Battery Warning **	5%

* IAEA Protected Radiation Zone Threshold

** It is recommended that this setting is not changed.

8.3 Detector Location Points

Refer to Figure 151 for the location of the Gamma and Neutron detector reference points.

Figure 151: Gamma and Neutron Detector Location Points

SECTION 9 DEEP DISCOVERY SOFTWARE

Deep Discovery is companion software, which provides management, analysis and configuration capabilities. If this software has been purchased, install following the procedures below.

For purchasing of Deep Discovery, contact Symetrica support for details.

9.1 Installing the Deep Discovery Software

To install the Deep Discovery software:

1. Open the protective boot cover on the rear of VeriFinder and use the supplied USB cable to connect to a USB port on the PC.

Figure 152: Connecting VeriFinder to a USB Port on the PC

2. VeriFinder is recognized as a mass storage device and is displayed with a new drive letter.

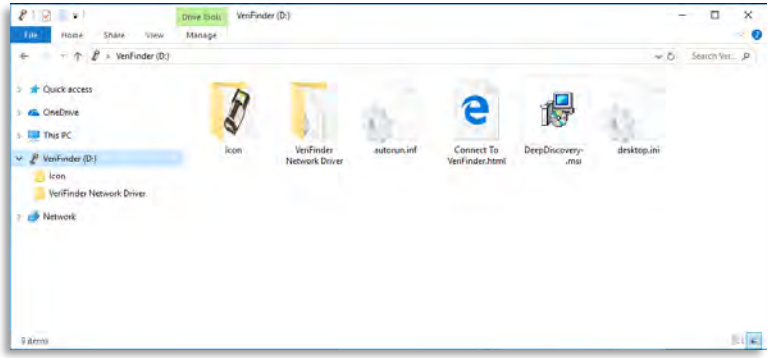

Figure 153: Windows Explorer

3. Double click on the Deep Discovery.msi file and follow the installer instructions that appear to install the Deep Discovery software on the PC.

9.1.1 Using Deep Discovery

Deep Discovery is launched from the Offload Tool > Open Folder button.

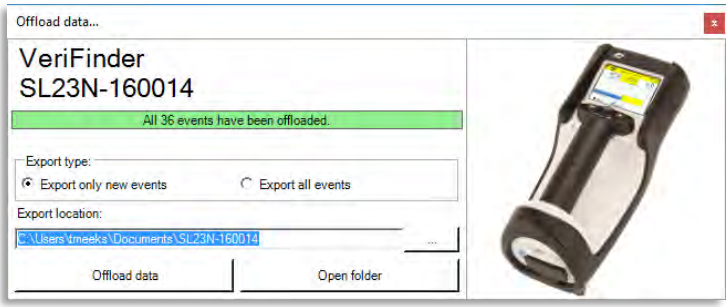

Figure 154: Offload Tool – Open Folder for Deep Discovery

1. Click the 'Open Folder' button. Deep Discovery loads all the SMLGZ files in the folder and presents them in the Occupancy Tab.

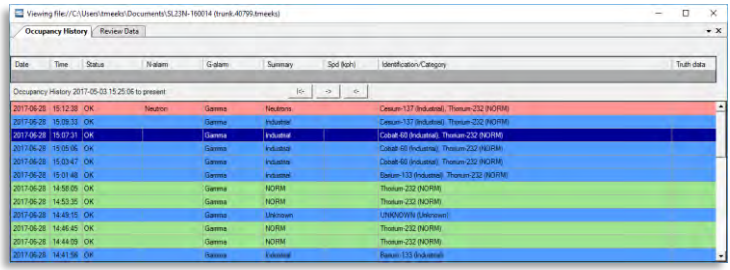

Figure 155: Deep Discovery – Occupancy History

2. Right-click an event to display the context menu and export options available.

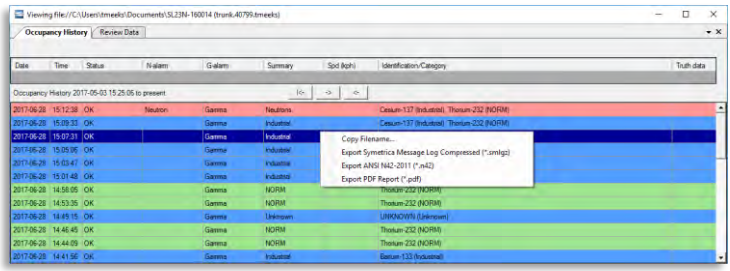

Figure 156: Deep Discovery Export Options

or…

3. Double-click the event to display the Review Data tab.

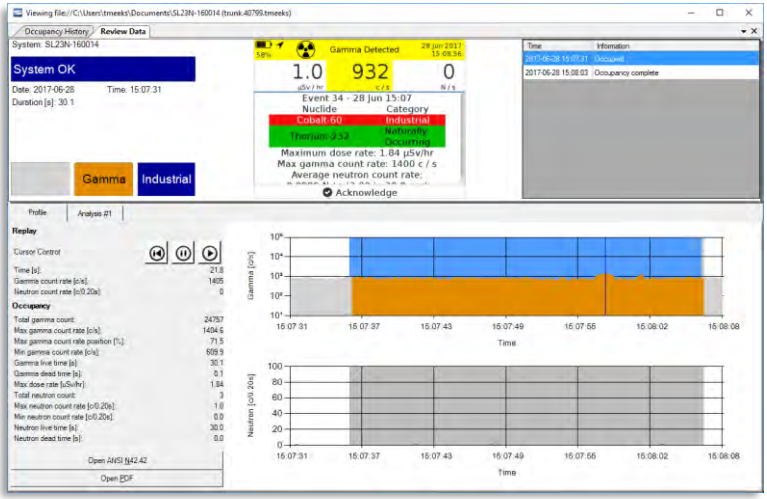

Figure 157: Deep Discovery Review Data

Note: You can export files using the Open ANSI N42.42 and Open PDF buttons on the bottom left of this screen.

4. Click the Analysis #1 tab to review analysis data.

Figure 158: Deep Discovery Analysis Data

Note the following:

- Observe the percentage in the Certainty column.
- If multiple analyses / or no analyses were performed, there will be more or less Analysis tabs.
- If you click on a line, it will display it on the graph above.
- The graph can be zoomed and put into log mode using the mouse and the right-click menu.

5. Click Open PDF to display the PDF report.

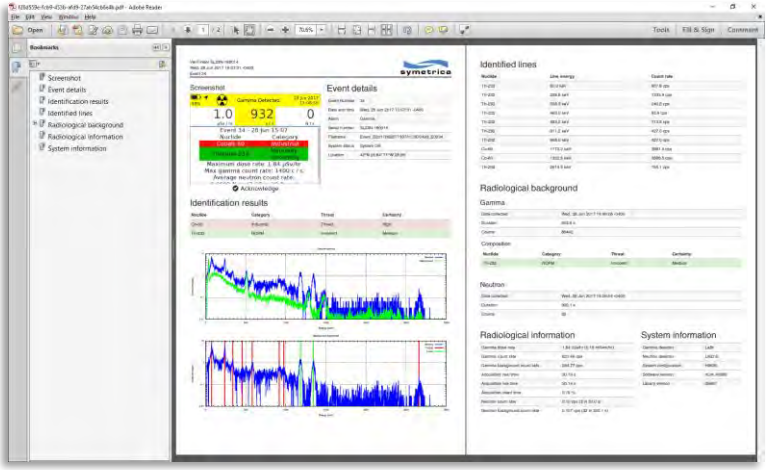

Figure 159: Open PDF (Example File)

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SECTION 10 SPARE PARTS LIST

Part Number	Part Nomenclature
172-0002	BAT, NB2037 SMART LI-ION
390-0003	VERIFINDER CARRY STRAP
410-0363	ASSY, VERIFINDER PACKING CASE
410-0364	ASSY, VERIFINDER AA CADDY
410-0365	ASSY, VERIFINDER CAR CHARGER
410-0381	ASSY, VERIFINDER AC CHARGER
410-1193	ASSY, VERIFINDER HANDHELD
420-0157	CABLE, USB OTG MINI USB TO USB A SOCKET
420-0158	CABLE, AC LINE CORD 3 CONDUCTOR USA
420-0161	CABLE, USB A TO MINI-B 5-PIN CABLE 3 FOOT
430-0085	Li-ION BATTERY CHARGER
430-0086	Li-ION BATTERY CHARGER POWER SUPPLY
430-0421	USB 2.0 TO ETHERNET ADAPTOR
360-0023	VERIFINDER BOOT

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REVISION HISTORY

Revision	Reason for Revision	Date Revised
Rev 01	Initial release version	2015-10-01
Rev 02	Minor updates	2016-01-01
Rev 03	Regulatory information for NRC submission	2016-10-01
Rev 04	Transfer to new template, major updates	2017-06-23
Rev 05	Release after T Meeks review	2017-06-29
Rev 06	Updates for 2.25 software	2017-08-30
Rev 07	Release after T Meeks review	2017-09-04
Rev 08	Added wording on battery protection and part numbers	2017-09-13
Rev 09	Changed wording of battery compatibility.	2017-09-18
Rev 10	Photographs updated for hard-tooled version	2017-10-24
Rev 11	Updated model numbers to remove hyphens.	2017-10-24
Rev 12	Re-instated hyphens.	2017-11-07
Rev 13	Small graphic and procedure change section 6 RNDIS drivers	2018-05-02
Rev 14	Integrated supplement 1	2018-07-23
Rev 15	Addition of NORM radionuclides added to Table26 (SN Series)	2019-06-18
Rev 16 /17	Updated to new Symetrica template. Additions / changes added as a result of internal intensive review. Addition of Section 8 – Using the Web Management Interface.	2020-04-27
Rev 18	Updated to version 3.4.5 software	2021-04-19

Revision	Reason for Revision	Date Revised
Rev 19	Updates to manual including: Section 3 – Event Actions – Send via Bluetooth (images added) Addition of Section 9 – Troubleshooting Addition of TM validation review comments.	2021-06-11
Rev 20	Update to Section 6.2 – Offloading Events to the PC, to include step for manual entry of an IP address. Addition of Section 8.11.7.6 - ANSI N42.42 Settings.	2022-01-06
Rev 21	Update to Section 8.11.11 – Update Software, to include bullet and caveat for the configuration of the software repository.	2022-07-07
Rev 22	Update to Section 2.2.3 – Status Bar Icons, to include new Data Upload notification icons. Updates to Section 3.4 - Event Actions, to include new SGP options; Choose Tag and Upload to Receiver. Updates to Section 8.5.5 - Connectivity, to include the new SGP Integration feature for uploading event data. Updates to Section 3.6 – Event Viewer, to include the uploading of bulk events.	2022-08-17
Rev 23	Updates to Section 2.2.3 – Status Bar icons, to include new SGP Warning notification icon. Updates to Section 8.5.5.7 – SGP Integration > SGP Status field, to include addition of actions to be taken in the case of event upload failures. Updates to Section 3.4.5 – Event Actions > Upload to target Recipient, to include addition of details in the case of an event upload failure. Updated Figure 39 – Choose Tag. Removal of the ‘Do not tag’ option. Updated Figure 40 – Upload to target Recipient. Removal of the ‘Do not tag’ option.	2023-01-27

Revision	Reason for Revision	Date Revised
	Addition of Section 4.8 – Isotope Confidence in Normal Mode. Update to Section 8.11.1 – Device User Interface Settings to include additional option for Isotope Confidence Visible to Normal User. Addition of Section 11.3 – Detector Location Points.	
Rev 24	Changes to Section 3.4.5 - Event Actions - Upload to Target Recipient, to replace the third image 'Event Tagged' Region 2, Uploading event data, please stand by…' Updates to Section 4.3.3 – Changed title to Gamma and Neutron Personal Hazard limits. Previous version (23) alluded to more than the hazard limits.	2023-03-17
Rev 25	Update to preliminary pages to include the addition of regulatory compliance directives. Overhaul and re-structure of the user manual, including removal of repeat content and section replacement / renumbering. Removal of Section 7 – Web Management Interface (WMI) to a new independent user manual (760-0363 – VeriFinder WMI Manual). Updates to include software upgrade changes: Section 3.4.10 – Simplified Identification. Section 3.5.10 – Event Actions – View QR Code. Section 4.3.2 – Gamma and Neutron Alerts on External Power. Section 4.3.3 – Background Update Notification. Section 4.8 – Graph Y-Axis Scale Type. Section 4.9 – Simplify ID Results Display. Section 4.10 – Clicker on External Power.	2024-09-13
Rev 26	Addition of new statements for Regulatory Compliances	2025-05-01

Notes

Notes

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