

IMI ONYX

Personal Radiation Monitor Operation Manual



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1. Introduction to ONYX

We are proud to be delivering your ONYX Personal Radiation Monitor.

ONYX is an unusual product in the radiation detection world. It is smaller and lighter than any other instrument in its class. But it is also designed to share data in ways that no previous Geiger counter has. ONYX is an accurate, high-sensitivity radiation detector that combines the aesthetic and practical benefits of a sleek, modern design, with advanced features and capabilities. As upgrades and new features are released, you may enable them via our *Mac* or *Windows*-based Firmware Loader, *OnyxLink*, to ensure that the innovation you experience does not stop. We trust you will enjoy using your own personal ONYX - an instrument we believe

will help revolutionize the way radiation data is collected, stored and shared.

Before operating your ONYX, we suggest reading the **Care & Precautions** in Chapter 7, so you may properly care for your instrument, and remain safer when you are near radiation sources.

2. About ONYX

ONYX is an accurate, functional, reliable and elegant tool for detecting and monitoring nuclear radiation, whether natural radiation from the earth and stars, or from human-created sources.

ONYX is optimized for detecting low-level radiation, but will also reliably detect, record and report radiation at moderately high levels.

ONYX detects and measures alpha, beta, gamma and X-radiation.

Please note that gamma dose rate is only accurate in situations where there is no Beta or Alpha radiation present, or if they are shielded. The detector is not energy-compensated and is calibrated to Cs137.

Radiation information can be collected and shared through applications on your iPhone or other iOS devices, Linux, Windows and applications such as *Twitter*.



New features and ONYX Applications will be added over time. You may access and install these features as they are released by visiting:


www.medcom.com/onyx-resources

3. ONYX - Quick Start Navigation Guide

ONYX is designed to always be on. If you choose to use the logging function, it will periodically record radiation data as long as the battery has a charge.

The logging interval is set under the **Settings/Geiger** Menu.

The switch on the bottom of the instrument controls whether the instrument is either actively taking and *displaying* radiation levels in *Active Mode*(Un-Lock) , or it is in *Standby Mode*(Lock) , continuously and quietly monitoring background radiation without displaying information. You may switch Modes freely at any time.

If the switch is in the DOWN position(Un-lock) , and the display does not illuminate, please charge the instrument by plugging it into a computer USB port.

The Front-Panel keypad is touch-sensitive.

Use the keypad to access the following functions:

- - **Home** *Main Menu is displayed*
- ▷ - **Select** Function (*Select a menu item, or a setting*)
- ◁ - **Back** (*return to previous menu screen*)
- △ - **Scroll Up** (*to menu items*)
- ▽ - **Scroll Down** (*to menu items*)
- - **Help** Function, (*context-sensitive information*)

To immediately begin using the instrument as a Geiger Counter, with current data displayed, select the **Home** ○ Key, **Current Readings**, then the **Select** ▷ Key.

To Lock the Keypad - Simultaneously touch and hold the left ◁ and right ▷ arrow Keys. A Lock icon will indicate Lock status in the lower right screen after approximately 3-seconds. Repeat to UnLock the keypad.

4. ONYX Features

- **Pancake Detector - 2-inch(7.1cm) diameter** for broad sensitivity to alpha, beta, gamma and X-radiation
- **32-bit ARM Processor** for rapid processing of data and power to communicate in multiple ways
- **128×128 color OLED** (Organic Light Emitting Diode) display
- **6-button capacitive-touch-array user interface (UI)**
- **Lanyard attachment** for ease of handling
- **Stealth Logging Mode** allows data logging with display off to conserve energy
- **Micro-USB Port** for charging and data upload interface, featuring an FTDI-based serial chipset capable of loading firmware directly into the microcontroller
- **3.5mm Jack** for interface to IMI's *OnyxView* Software
- **Audible Event Notification** via piezoelectric beeper
- **Real-time Clock** Time and Date in UTC Format
- **Twitter Integration** via QR Code

5. How ONYX Works

The ONYX uses a 2-inch(7.1cm) *Pancake* Geiger-Mueller tube with a low-density mica window to detect ionizing radiation. The Geiger tube generates a pulse of electrical current each time radiation passes through and causes ionization. Each pulse is electronically detected and registers as a count. ONYX displays this collected data in the mode you choose: Counts Per Minute (CPM), microSieverts per Hour ($\mu\text{Sv/hr}$) or microRoentgens per-hour ($\mu\text{R/hr}$).

The number of counts detected by ONYX varies from second to second, due to the random nature of radioactivity, but averaging protocols provide a fairly stable average of that random data.

6. Applications of ONYX

If you work around radiation sources, ONYX is a good instrument for personal health protection. In normal environments, the instrument can also provide peace of mind, by letting you know if there are any unexpected radiation sources in your environment. If you are documenting contamination or collecting data for the Safecast Global Network or other networks, you may share the data you collect.

Other Applications of ONYX

- Documenting the effectiveness of decontamination and safety programs.
- Sharing radiation measurements with a global mapping system developed by Safecast.
- Monitoring possible radiation exposure while working around radionuclides or in contaminated environments.
- Alerting the user with an audible indicator if radiation goes above a user pre-set Alert level.
- Detecting noble gases and low energy radionuclides.
- Continuous logging of radiation levels.

7. ONYX Care and Precautions

To keep the ONYX in good condition, handle it with care, and observe the following precautions:

- Avoid contamination of the ONYX by not touching it to radioactive surfaces or materials; **Instead, hold it just above the surface that is suspected of contamination to take readings.**
If contamination of your instrument is suspected, clean the surface of your instrument with mild detergent and a clean, damp cloth,

using care to keep the Geiger Tube dry.
You may call IMI for more information at +1
707.823.0336 (USA).

- Do not leave your ONYX in temperatures over 122° F (50° C) or in direct sunlight for extended periods of time.
- Do not submerge ONYX in liquid of any kind. Water can damage the circuitry and the coating of the mica surface of the Geiger tube.
- If the surface of the mica on your pancake detector becomes scratched or loses its coating, avoid making measurements with the detector window in direct sunlight; this could affect the readings.
- Do not put the ONYX in a microwave oven. It cannot measure microwaves, and you may damage it or the oven.
- Please remember to treat radiation sources with respect. Any exposure carries some risk, though it might be small. Educate and protect yourself.
- Please review the Lithium Battery Safety information in Chapter 13

8. Operation of ONYX

Units of Measurement

ONYX will display detected radiation levels in **CPM**-Counts Per Minute *and* either **μSv/hr** (microSieverts Per Hour), or **mR/hr** (milliRoentgens Per Hour).

Before Using Your ONYX


Charge your ONYX

Depending on the charger used, this will take 1 to 2 hours if the battery is fully depleted.

You may charge your ONYX from any standard computer USB port or from a wall-wart or dedicated USB Charger. When you connect a powered micro-USB connector to your ONYX, it will perform a soft reset and self-test. You will see the startup screen, showing your firmware version number, before settling-in to begin counting again.

You will also see a charge indicator on the battery icon while ONYX is being charged.

Using Your ONYX

On the back of the ONYX, slide the Mode Switch *down* to the “Un-Lock” position . Once the processor re-initializes, the OLED display will illuminate and ONYX will immediately begin to count and measure radiation while displaying the *Current Readings* on-screen. The

ONYX is now monitoring radiation in your surrounding environment and recording your measurement data to memory (if Logging is enabled in Settings).

The CPM count is at the top of the display, with the gamma dose rate below it, in $\mu\text{Sv/hr}$ or mR/hr .

When measuring surface contamination, pay attention to CPM, rather than to $\mu\text{Sv/hr}$ or mR/hr .

Please note that gamma dose rate is only accurate in situations where there is no Beta or Alpha radiation present, or if they are shielded. The detector is not energy-compensated and is calibrated to Cs137.

On the OLED display there is a colored *Status Bar* across the top. When the bar is *Amber*, the ONYX has not yet collected enough data to display statistically accurate readings. Once the *Status Bar* turns blue, it is then reading with maximum statistical relevancy.

Navigation Exercise: Setting the Time Manually

Navigation on the ONYX is intuitive. Here is a practical exercise.

If you'd like to perform a manual set-up, please follow these instructions:

Setting the Time Manually

Begin by pressing the **Home** ○ key to get to the **Home** screen.

Scroll down with the ▾ key to **Settings**, then click once on the ▷ key to select.

Scroll down with the ▾ key to **Time/Date** and click the ▷ key once to select.

Now select **Set Time (UTC)** with the ▷ key.

- The screen will show the following, **HH(Hours):MM(Minutes):SS(Seconds)**. The small diamonds indicate that each digit may be altered using the touch-pad arrow. The diamond color will change to maroon when that digit is selected for adjustment.
- Scroll with the △ and ▾ keys to set each digit, then use the ▷ key to move to the next digit. When complete, scroll fully right until **Save** is highlighted, then click the ▷ key one more time to **Save** your changes. The time will be displayed in the upper right corner of the *Status Bar*, next to the battery symbol.

ONYX Menu Structure

Whenever you press the **Home** ○ Key, you'll see your three Main Menu Options:

Current Readings
Advanced
Settings

Current Readings will always take you to the main data screen.

The other two Main Menu options are detailed here.

Advanced Features Menu Options

The ONYX has five **Advanced** Features Sub-Menus detailed below.

Advanced

Graphs
Accumulate/Avg
Becquerel
QR Tweet
Log Status

To select an advanced function; from the *Current Readings* screen, press the Home ○ key and scroll

down to select the **Advanced** Feature Menu, then press the ▷ key. Now choose an option from the submenu.

To view a digital graph, select the first menu item **Graphs**, by touching the ▷ key. The last 2 rolling minutes of measurement data will be displayed graphically, in CPM. For more information on the current menu selection, press the **Help** □ key. This is the ONYX context-sensitive *Help* or *Info* screen. To return to the **Graphs** screen, press the ◀ key.

- **Graphs**

The **Graphs** function displays two rolling minutes of data in CPM. The Min. and Max. counts will be shown bracketing the Graph, above and below, and apply only to the rolling 2-minute period.

The two-digit *current* count continues to appear in the upper-left corner of the display. If you switch to Lock Mode 🔒, current graph data will be lost.

- **Accumulate/Avg**

Ongoing measurement of average CPM in five-digit display. The display also shows total elapsed time for this average measurement.

- **Becquerel**

To change measurement units to **Becquerel**, use the ▷ key to enable.

A Becquerel(Bq) is a measure of activity, and one Bq is defines as 1 disintegration per-second. Units are displayed in Bq/m² (Becquerel per square Meter)

Note: A ***Bq Efficiency Value*** must be set for this to display (Set this value in the ***Settings/Geiger*** Menu).

For this to be used with accuracy, Unit efficiency needs to be known for the particular radionuclide mix on the surface being measured.

- ***QR Tweet***

Displays a QR Code representing a current radiation count, which you may then scan with a Smart Phone camera, to share that measurement with your followers at *www.Twitter.com*. You will need a QR App on your smart-phone to use this feature.

- ***Log Status***

Shows percentage usage of Flash Memory for data logging, and shows remaining data logging *time* based on the current ***Log Interval*** setting.

Also shows number of readings logged and total number of available data “slots”; for instance, **2/3772** indicates that 2 log events have been recorded to Flash Memory out of the available 3,372 data point “slots” in Flash memory, given the current ***Log Interval*** setting.

Settings Menu Options

The ONYX has four **Settings** Sub-Menus which may be used to customize your instrument further:

Settings

Interface

Geiger

Time/Date

Version

- **Interface**

Menu allows you to adjust display **Brightness**, **Geiger Beep**, Menu **Language** and set Display to **Never Dim**.

- **Geiger**

Menu to adjust how the ONYX functions and takes readings.

- **Time/ Date**

View or change the Time/Date on your ONYX

- **Version**

Displays current ONYX Firmware Version.

Settings Menu Details

Interface Sub-Menu Items

Brightness

Select the **Brightness** function to adjust the level of the OLED Display. Adjust with the Δ and ∇ keys; number 9 for brightest and 1 is dimmest. The brightness will change during adjustment.

Geiger Beep

Select the **Geiger Beep** function for the ONYX to continue beeping whenever it actively counting and has power. This function can be useful when it is not possible to view the OLED screen. It also gives an audible indication as to the fluctuation of radioactivity happening in the immediate environment.

To enable this function press the \triangleright key until you see a \checkmark to the right, confirming this option has been enabled.

If you are relying on this beeper for safety purposes, be sure it is loud enough for you to hear it in your measurement environment.

Language

Use the **Language** function to select your Menu Language. Select from English or Japanese, with more language options to come.

Never Dim

Disables the energy-saving screen dimming function. We suggest enabling this function only when ONYX is connected to a power source via USB cable.

Geiger Sub-Menu Items

$\mu\text{Sv}/\mu\text{R}$

Use the ***$\mu\text{Sv}/\mu\text{R}$*** function to select your preferred units of measurement. Japan and Europe are almost exclusively on the SI system, which is $\mu\text{Sv}/\text{hr}$. Eventually we expect that most countries will convert to the SI system, however the adaptation process can take some time.

Use the \triangle and ∇ keys to select your desired units, and then click on the \triangleright key to place a \checkmark , confirming your selection.

Calibration

This function is intended for professional use. Please contact IMI if you feel you need to calibrate your instrument.

Clear Log

Select the ***Clear Log*** function to immediately clear all readings. When finished, ONYX will display *Log Cleared, Press Any Key*. **Caution:** *Do not select unless all stored data is to be removed.*

Log Interval

Select the ***Log Interval*** function to set the desired time interval, in Minutes, between recorded data points.



The Factory Default Log Interval is – **000** – Minutes, which is the OFF state and no logging will occur.

Available interval range is 000–999 Minutes(approx. 16.5 Hours), meaning one log event will be recorded every 16.5 Hours.

Note: Very Short Log Intervals may severely impact battery state-of-charge, and will use available Flash Memory space more quickly, requiring more frequent USB Data Transfers.

If you were to log a measurement each Minute, you would be able to collect data for approximately two days. A useful way to view selection of log intervals is to consider your rate of travel; whether you are on foot, bicycle, auto or train. If you're examining an area by foot, you'll cover much less territory in the one Minute interval than if you were on the Bullet Train and, as you review your data, each logged event will represent a much smaller physical area than it would if traveling at higher speeds.

Warning Levels

Select the ***Warning Levels*** function to set the alert level for the ONYX. Once activated, the instrument will alert with an audible tone when this level is reached. To mute the tone, press any key. To reactivate the alert warning mode after muting, slide the switch to Stealth Mode(Lock) , and then back to Active Mode(Un-Lock) . To disable Alerts altogether, set the ***Warning Levels*** to – 0 – , which is the Default Value.

If you are relying on this beeper for safety purposes, be sure it is loud enough for you to hear it in your measurement environment.

Bq. Eff. Value

Select the ***Bq. Eff. Value*** (Bequerel Efficiency Value) function to pre-set counting efficiency for the ONYX, so that a reading in counts per minute may be auto-converted to Bq/cm². Unless you have a need to change this setting, and understand the ramifications, please contact IMI before making changes to this value.

For this to be used with accuracy, the becquerel efficiency needs to be known for the particular radionuclide mix on the surface being measured. The appropriate value is dependent on the radionuclide or radionuclide mix under test. The vast majority of users will find CPM to be the appropriate mode.

CPM/CPS Auto

Enable the ***CPM/CPS Auto*** function to allow the ONYX to automatically select to display radiation measurements in *Counts per Minute*, or *Counts per Second*. To enable this function click on the ▷ key until you see a ✓ to the right. To de-activate, simply click ▷ key again.

Time/Date Sub-Menu Options

Set Time (UTC)

Select the ***Time/Date*** function to manually set the Time and Date on the ONYX.

Select ***Time/Date*** and click the ▷ key once to select. Now select ***Set Time (UTC)*** with the ▷ key.

The screen will show the following,

HH(Hours):**MM**(Minutes):**SS**(Seconds). The small diamonds indicate that each digit may be altered using your touch-pad arrow. The diamond color will change to maroon when that digit is selected for adjustment.

Scroll with the △ and ▽ keys to set each digit, then use the ▷ key to move to the next digit. When complete, scroll fully right until ***Save*** is highlighted, then click the ▷ key one more time to ***Save*** your changes. The time will be displayed in the upper right corner of the *Status Bar*, next to the battery symbol.

Whether you set the time automatically, or manually, you will *still* need to adjust the *UTC Offset* for your time zone, to display the time for your part of the world. Always set the time for Universal Time (UTC) and then adjust the UTC offset for your location. This will be important if you are logging data to be displayed as part of a measurements network, so researchers can trust that your data points are valid. UTC time can be found easily with a *Web* search.

www.time.is/UTC

Here is one source of data to find the *UTC Offset* for your location:

www.en.wikipedia.org/wiki/List_of_UTC_time_offsets

Setting the time is not critical for simply using the Geiger Counter to determine the *Current Reading*, but if you want to log data with an accurate time and date-stamp, you need to perform proper set-up first.

Set Date (UTC)

Select the ***Set Date (UTC)*** menu item.

Once the ***Set Date (UTC)*** preference has been selected, the screen will show, **MM**(month) / **DD**(Day) / **YY**(Year). Scroll with the Δ and ∇ keys to set each digit, then use the \triangleright key to move to the next digit, and again *Save* the new changes with the \triangleright key.

Set UTC Offset

Select the ***Set UTC Offset*** menu item.

The screen will show the following, **HH**(Hours):**MM**(Minutes). Utilize the same navigation techniques as were used to set the Time and Date to set the ***UTC Offset***, and again ***Save*** any changes with the **▷** key.

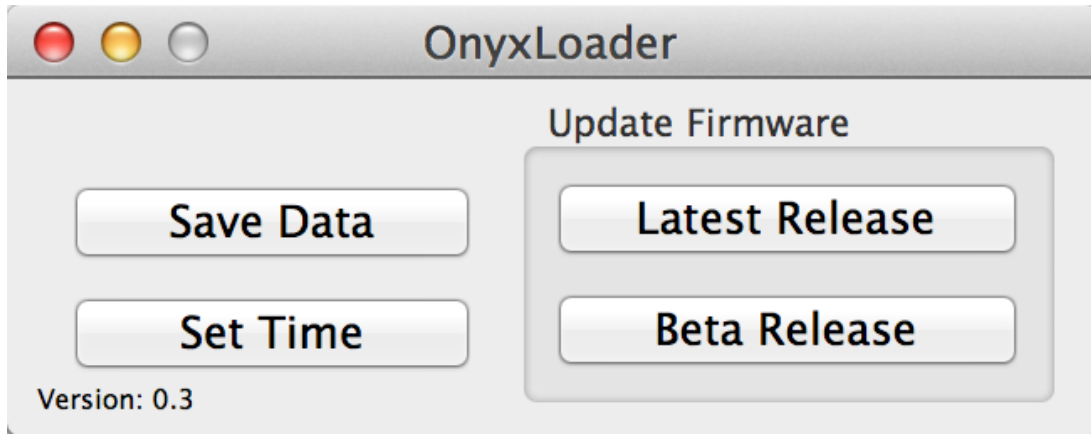
Version Sub-Menu Option

Select this to identify the Firmware Release version of your ONYX, including software load, of your device. This can be used to determine if a firmware update is available for download.

9. Using *OnyxLink* Software (formerly *OnyxLoader*)

OnyxLink Software, available for Windows and Mac OS X, allows you to *Save Data* to your computer via micro-USB cable, automatically *Set Time* to the current UTC Time, and to *Update Firmware* for your ONYX to either the *Latest Release* version, or the latest *Beta Release* version. *OnyxLink* may be found here:

www.medcom.com/onyx-resources



OnyxLink Interface Screen (Mac)

Save Data Button

The Logged Data collected by ONYX, which is stored in Flash Memory, may be saved to your computer using the *OnyxLink* software and a micro-USB cable.

Simply connect the micro-USB cable between the ONYX and your Mac or Windows computer, open the *OnyxLink* Application and click on **Save Data**. You will then be prompted to select where, on your computer, you would like the standard Spreadsheet file to be stored. You will see a progress wheel while data is flowing.

Here is an example of the data format used on the ONYX.

	A	B
1	2014-05-15T23:25:10Z	20
2	2014-05-15T23:30:11Z	26

You're looking at two data-points from May 15th, 2014, with a time interval of 5 Minutes between readings, and the two CPM readings are to the right, in column B.

Set Time Button (Sets Time *and* Date)

This button will automatically set the Time and Date on the ONYX to current UTC Time and Date.

Latest Release Button

This button will automatically update the ONYX firmware to the latest release version.

See detailed instructions in Chapter 10

Beta Release Button

This button will automatically update the ONYX firmware to the latest *Beta* release version.

Warning: Please do not use this option unless you are participating in the Beta program and agree to the Terms and Conditions, or you are a developer or wish to experiment with features that are being tested, but not yet released.

10. Updating ONYX Firmware

Occasionally IMI will release a firmware update for the ONYX. Please sign-up at our web address below to receive update notifications when an update becomes available.

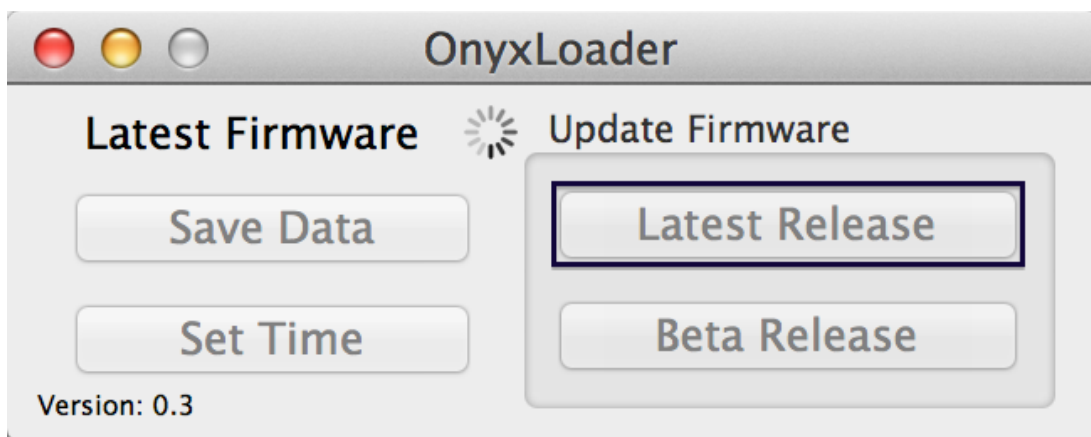
Updates will be accessed using IMI's *OnyxLink* software, found via this link.

www.medcom.com/onyx-resources

Alternately, you may perform a *Latest Release* update occasionally; no changes will be made to your instrument unless a new release is available.

Connect the ONYX to your computer with a micro-USB charge cable. Open the *OnyxLink* Application for *Mac* or *PC* and click on the ***Latest Release*** button.

You will see a progress wheel during the update process.



Do not disconnect your instrument until you see this or a similar notification.



11. Uploading your Data to *SafeCast*

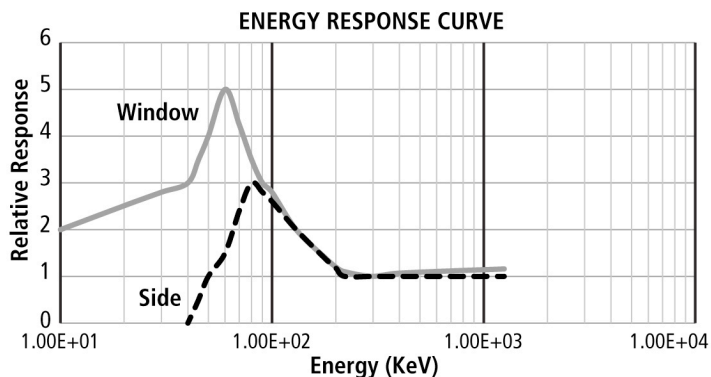
You can learn more about submitting reports using Safecast's web-based data submission site at:

www.api.safecast.org

Please check with the Safecast team before sending data to the Safecast network.

12. Specifications:

Detector	LND 7317 "Pancake" Halogen-Quenched Geiger-Mueller tube; Effective diameter 1.75" (45 mm); Mica window density 1.5-2.0 mg/cm ² ; Detects Alpha, Beta, Gamma and X-radiation		
Display	128x128 color OLED (Organic Light Emitting Diode)		
Operating Range	μSv/hr: .000 to 1,000 mR/hr: .000 to 100 CPM: 0 to 350,000		
Calibration	Cesium-137 (gamma from daughter metastable Barium)		
Gamma Sensitivity	334 CPM per μSv/hr (3340 CPM per mR/hr) referenced to Cs-137		
Efficiencies	For 2 pi Geometry (typical Efficiencies, primary emissions noted)		
	Isotopes	Energy	Efficiency
	Pu - 239	5.245 MeV (alpha primarily)	20 to 36%
	Th - 230	4.621 MeV (alpha)	16 to 36%
	SrY-90	546 keV avg, 2.3 MeV max (beta)	48%
	Cs - 137	Betas (-) 5.6 % - 1,176 keV max (416.3 keV average) 94.4% - 514 keV max (174 keV average) Gamma 661 keV (released by Ba-137m)	48%
	Tc - 99	294 keV beta	48 to 56%
Accuracy	+/- 10% typical, +/- 15% maximum		
Alert Range	0 to 99,999 CPM; Beeper sounds alert when warning level feature is activated		
Average	Accumulate/Average feature builds average over time when activated		
Count Light	Red LED flashes with each count		
Audio	Beeper chirps for each count when Geiger Beep function is activated		
Ports	Output: 3.5 mm jack sends pulses to Safecast iPhone application		
Anti-Saturation	Readout holds at full scale in fields up to 100 times the maximum reading		
Temperature Range	-20 to +50 C, -4 to +122 F		
Power	One 3.7 V Lithium Ion battery		
Size	130 X 660 X 230 mm (5.1 X 2.6 X 0.9 inches)		
Weight	200 grams (7 oz) including battery		
Options	USB cable, charger and carrying case available		
Certifications	CE Certified: Emissions: EN 55011:2009 +A1:2010 (Class B emissions limits); EN: 61000-4-2:1995 (ESD); EN 61000-4-3:1997. RoHs Compliant; Meets WEEE Standards		



13. Lithium Battery Safety & Disposal Information

ONYX uses a Lithium-Ion Secondary Battery. Lithium-Ion batteries can be hazardous if mishandled. The user accepts liability for the use of a Lithium-Ion Battery. As the manufacturer and distributor cannot ensure the battery is used correctly (charging, discharging, storage). They cannot be held liable for damages caused to persons or property.

Take care to prevent puncture of the Lithium-Ion Cell. In the event of battery leakage, avoid any liquid coming into contact with the skin and eyes. In case of contact with skin, wash with copious amounts of cold water and consult a doctor immediately. If you notice a suspicious smell or noise, or observe smoke around the charger or instrument, disconnect immediately.

Charging should only be done with a certified USB power source, approved by the appropriate agency for the country of use.

Tips for Prolonged ONYX Battery Life

The ONYX implements aggressive energy-saving techniques.

Always make sure your ONYX has the latest firmware.

www.medcom.com/onyx-resources

Your choice of settings can have a tremendous effect on your ONYX battery life; you can assure maximum active-use time by following these simple tips:

- minimize time in Un-Lock mode ■ (active display)
- disable the ***Never Dim*** feature
- use a longer ***Log Interval*** setting, or disable logging

(Logging is disabled by default when you receive your ONYX.)

If your Lithium-Ion Battery ever needs replacement, please contact IMI to arrange for replacement service. The battery is not a user-serviceable component and users should not attempt battery replacement.

We recycle Lithium-Ion batteries via *Call2Recycle*, a free web-based service, with their drop-off site locator on the Web at:

www.call2recycle.org

Appendix

www.safecast.org

Maintenance and Warranty:

Warranty & Warranty Service

We offer the following **two-year limited warranty** on all of our handheld radiation detection instruments and on our Hawk Radius Radiation Monitor systems:

Warranty

This product is warranted to the original owner to be free from defects in materials and workmanship for two years from the date of purchase with the exception of the Geiger-Mueller tube, which is warranted for one year. IMI-International Medcom, Inc. will, at its own discretion, repair or replace this instrument if it fails to operate properly within this warranty period unless the warranty has been voided by any of the following circumstances: misuse, abuse, or neglect of this instrument voids this warranty; modification or repair of this instrument by anyone other than IMI or their approved repair facility voids this warranty; contamination of this instrument with radioactive materials voids this warranty. Contaminated instruments will not be accepted for servicing at our repair facility.

This warranty applies solely to the original owner and is valid only on instruments sold by IMI and its authorized representatives.

The user is responsible for determining the suitability of this product for his or her intended application. The user assumes all risk and liability connected with such use.

IMI is not responsible for incidental or consequential damages arising from the use of this instrument.

Should the battery ever need replacing, it should be done only by IMI or an authorized agent of IMI.

How to Request Warranty Service

If your instrument fails to operate properly within the warranty period, contact IMI to receive a return authorization number (RMA).

PLEASE DO NOT SEND WITHOUT AN RMA NUMBER ON THE PACKAGE!

Also, please do not send an instrument which you suspect has been contaminated. Call IMI first so we may assist you; we may ask you to send your instrument.

Please contact us for the required *Service Request Form* or, refer to the IMI website at:

www.medcom.com

*For warranty services, the customer is responsible for the cost of shipping the instrument.

The terms of warranty and specifications are subject to change without notice.

The contents of this Manual and instrument specifications are subject to change without notice.

Please stay in touch with IMI at the following link for the latest ONYX information.

www.medcom.com/onyx-resources

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