Model RD-150
Vehicle-Mounted Radiation Detection System (VMRDS)

FEATURES:

• Gamma-ray Spectroscopy for Specific Nuclide Identification
• Solid-state Neutron Detector (optional)
• Bluetooth Communication to PAD and/or Tablet PC
• Up to 8 hour operation on a single battery charge
• Automatic System Calibration and Stabilization
• Database protocol for log files and alarm events
• Water and Shock Resistant (IP 67)
• Integrated GPS with mapping function

APPLICATIONS:

• Emergency Response
• Law Enforcement
• Homeland Security
• Undercover Surveillance
• HAZMAT
• Industrial
• Medical
• Radiation Safety
• Passenger and Freight Monitoring
• Non-proliferation Enforcement
• Health Physics
• Environmental Waste Monitoring
• Unattended/Remote Monitoring

BNC Berkeley Nucleonics
Test, Measurement and Nuclear Instrumentation since 1963

The Model RD-150 -- Vehicle-Mounted Radiation Detection System (VMRDS)

The Model RD-150 Vehicle Based Radiation Detection System offers users a quick integration of spectroscopic nuclear detection capability in existing response vehicles. Large volume, highly sensitive gamma and neutron detectors are integrated into shock-absorbent packaging for reliable mobile monitoring. The unified monitoring system is scalable with multiple detector point options in your existing vehicles. Results in simple form, backed by full spectroscopic reports and identification details, are available to the vehicle operator in real time. Detector positioning enables optimized detection geometry for pinch points, freeway passing, lot scans or other clandestine monitoring requirements. The detector modules are tied to a comprehensive user interface running locally or remotely. Scalability of systems with this size and sensitivity is a first in the mobile detection industry.

The most popular User Interface option for the Model RD-150 is PeakAbout, the Berkeley Nucleonics Smartphone Application which conveniently illustrates isotope and isotope class-specific, color coded peaks and bar graphs. The app is free and included with all shipments of Berkeley Nucleonics' Nuclear Detection and Isotope Identification products. The rich feature set in PeakAbout includes GPS Tagging, photo/video report appending, pop-up isotope help and 'Push-to-Reachback' functionality. In addition to PeakAbout, users may elect to integrate alarms or push-functions to existing communications and reporting systems.

System Hardware

At the core of the Model RD-150 is a high-performance MCA featuring DSP electronics and a high-voltage control system for optimum dynamic range. The digital processor is supplemented with an analog anode output to enhance timing functionality. The processor is a 32-Bit RISC with excellent data acquisition and processing functionality. The entire electronic module is packaged in a shock-reducing enclosure. The photomultiplier tube and NaI detector are matched prior to final hermetic seal to ensure that efficiency is optimized.

System Firmware

The data processing and management is extremely efficient and leverages several proprietary processing and post-processing techniques. A unique Wavelet Transform gives users a strong confidence level on a wide range of isotopes without being limited to a peak search in a Region of Interest (ROI). The concurrent background correction and background subtraction, two separate algorithm enhancements, give second-by-second analysis and unprecedented confidence. These enhancements are particularly useful with high-sensitivity (large volume) NaI detectors and moving applications where background shifts are common.

System Software

In addition to powerful spectroscopic data analysis and reporting, the Model RD-150 with the included PeakAbout App interface gives users features to address the larger situational needs. The full ANSI N42 report can be quickly examined, and then "Pushed" to a management team, reachback office, or series of several incident support options. Users can easily suspend the data acquisition to take pictures and videos, thereby including situational inputs in the spectroscopic report. Additional software hosted in the user application gives real time tutorials on an isotope-by-isotope basis to add credibility to the users disposition options. This focus on the larger application requirements further differentiates PeakAbout and BNC's line of Nuclear Radiation Detection instruments.

Berkeley Nucleonics Coporation - 2955 Kerner Blvd - San Rafael CA 94901
800-234-7858 or LiveChat @ www.berkeleynucleonics.com
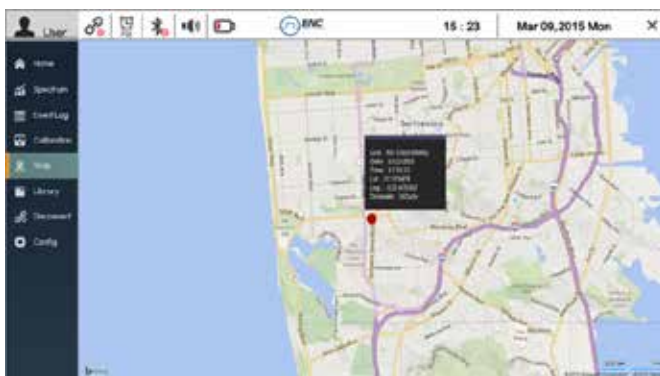
2

Application Software - PeakGO

The PeakGO application software is compatible with any Windows platform. It graphically displays details about identified isotopes and a map derived from GPS data. Alternatively, an Android-based application software can be used for smartphone.

Main Screen

Event Log screen

Map Screen

Spectrum Analysis/ID screen

Detectable Isotopes

NORM	K^{40}, Ra^{226} and daughters, Th^{232} and daughters
Medical	F^{18}, Cr^{51}, Ga^{67}, Mo^{99}, Tc^{99m}, Pd^{103}, In^{111}, I^{123}, I^{125}, I^{131}, Xe^{133}, Sm^{153}, Tl^{201}
Industrial	Na^{22}, Co^{57}, Co^{60}, Se^{75}, Rh^{106}, I^{132}, I^{133}, Ba^{133}, Cs^{134}, Cs^{137}, Eu^{152}, Ir^{192}, Am^{241}
SNM	U^{233}, U^{235}, U^{238}, Pu^{239}, Pu^{241}, Np^{237}

Berkeley Nucleonics Coporation - 2955 Kerner Blvd - San Rafael CA 94901
800-234-7858 or LiveChat @ www.berkeleynucleonics.com

3

Vehicle-Mounted Radiation Detection System (VMRDS)

Specifications:

INPUT/OUTPUT	
USB	Micro USB 2.0
Bluetooth	Class 2.0, max 100m range (class2)
GPS	Built-in GPS in a Tablet PC or Smartphone
PHYSICAL	
Dimensions (W x D x H)	74 x 52 x 30 (cm)
Weight	20 kg (44 lb) VMRDS-2G1 model
ENVIRONMENTAL	
Operating Temperature	5 to 122 F (-15 to 50 C)
Relative Humidity	10 to 80%, non condensing
Protection Rating	IP 65 (according to IEC 60529)
PERFORMANCE	
Energy Resolution (Gamma)	NaI(Tl) 2x4x16 inch: > 8% @ 662 keV
Energy Range (Gamma)	20 keV – 3 MeV
Throughput	> 150 kcps
MCA channel	10bit 1024 channel
Dose rate range (NaI)	0 – 10 mR/h
Dose rate range (GM)	10 mR/h – 10 R/h
Stabilization	Automatic real-time stabilization using K-40
Nuclide Identification	According to ANSI N42.34, isotope/category/confidence report
Battery	> 8 hours, Lithium Ion
DETECTORS	
Gamma NaI(Tl)	2x4x16 inch – Standard, 4x4x16 inch – optional, up to 2 detectors/unit
Gamma (High Dose Rate)	Geiger-Muller detector (Standard)
Neutron (optional)	Solid-state Neutron detector: 4 cm^2 active area, 20% thermal neutron eff. Gamma rejection: 1: 10^7, Tileable up to 20 detectors.
DISPLAY	
Smartphone	Samsung Galaxy Player or equivalent
Tablet PC	Any Windows compatible tablet PC
SOFTWARE	
Application SW	Android based application SW for Smartphone Windows based application SW for Tablet PC
Reach-back Feature	ANSI N42.42 event data via a Tablet PC or Smartphone

Ref:3.18.15