

Wireless Communications and Remote Sensing Through Harsh Environments, Closing the Gap Faced by Conventional Wireless Technologies



For additional details, visit: www.diracsolutions.com

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Communicate, Track, Locate
in Harsh Environments

Dirac Solutions Inc. (DSI)

DSI offers the state-of-the-art products in Ultra-wideband (UWB) Communications and Battery-Free RFID solutions developed specifically for hostile RF environments.



Passive RFID Tags



Handheld RFID Reader for On-demand Remote Monitoring



Passive Tag Integrated with Sensor (strain gauge)



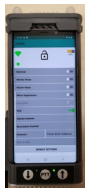
UWB Through-the-Concrete Wall Video & Sensor Data Communications



Portal RFID Reader for Continuous Remote Monitoring



Passive Seal



UWB Voice Communications Integrated with Smart Phone

Ultra-wideband Communications Capabilities for Nuclear Power Plants, SMRs, ARs, Geological Repositories, etc.

Voice, Data, Video Communications with the following features:

- Secure communications with multi-factor authentication
- Reliable communications in heavy reflective (metals), absorptive (liquids), attenuating (concrete), and electromagnetic interference (EMI) environments
- Software-defined-radio (SDR) platform for adapting the communications parameters to the operating environments
- Multiple channels of data
- Sensor and video data through five-foot-thick nuclear concrete walls
- UWB remote powering and remote switching
- Integration with smart phones for voice communications

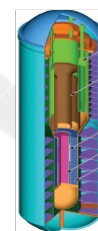
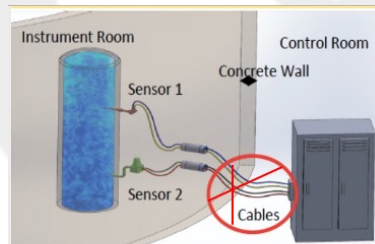


Voice Communications



Video Communications

Image Source: IAEA



Sensor Communications

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Passive (Battery-free) RFID Capabilities for Packaging and Transportation

- Battery-free tags (indefinite lifetime, maintenance-free)
- Tags can be read from inside metallic enclosures with mm size gap
- Unique ID (for 1,000s of tags)
- Read range up to 50m (can be extended to 1Km)
- Resilient to Gamma and Neutron radiation
- Integrated with sensors
- Authentication and tamper reporting (seal)
- Through-nuclear-concrete wall communications without batteries
- Tags have small form-factor and can be tailored to any curved or flat surface
- Accurate 3D localization and motion detection
- Portal standalone readers with distributed antennas, backup battery and processing platform for continuous monitoring
- (Optional) GSM Cellular Connectivity Ability to check the remotely monitored assets at all times, from anywhere
- (Optional) GPS Connectivity
- Customized handheld readers reporting to tablets and smart phones for on-demand monitoring
- Shelf readers for exact item localization on a shelf multi-layer relational database and customized application specific business logic

