

A pioneer in Radio Frequency Machine Learning (RFML), Ryderoo uses RFML to enable signal detection, estimation, and classification. RFML-based systems outperform conventional signal-processing methods in signal detection and classification. Ryderoo develops innovative products using RFML such as drone detectors, mobile phone(4G,5G) detectors, and systems for RF fingerprinting & spectrum anomaly detection.

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## SecuDome Drone Detection Tablet SDDT-2458

### **SDDT-2458**

SDDT-2458 is a Wearable Drone Detector and Direction Finder using advanced Software Defined Radio architecture. SDDT-2458 offers long range drone detection using OMNI-directional antennas and enables the direction finding using a Direction Finding antenna.



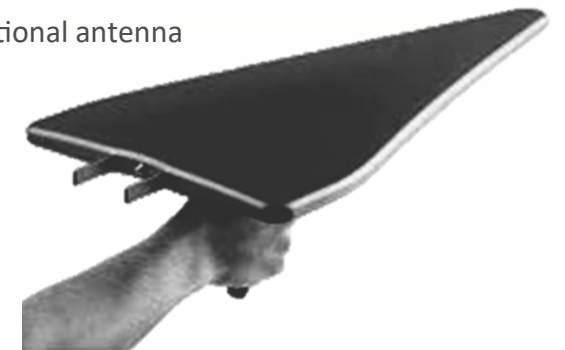


### Drone Detector Tablet

- Rugged Mil-standard Tablet with Software Radio as Attachment
- AI assisted signal processing for drone detection and warning
- Upto 1km detection range using the OMNI directional antennas
- High resolution RF spectrum display for visual conformation of drone signal

### Direction Finding Antenna

- Directional antenna is used for finding the direction of the arrival of the drone
- Antenna is rotated manually in 360° and the RF signal level is observed in the spectrum display to decide on the angle of arrival of drone
- Up to 2 km detection range using the directional antenna

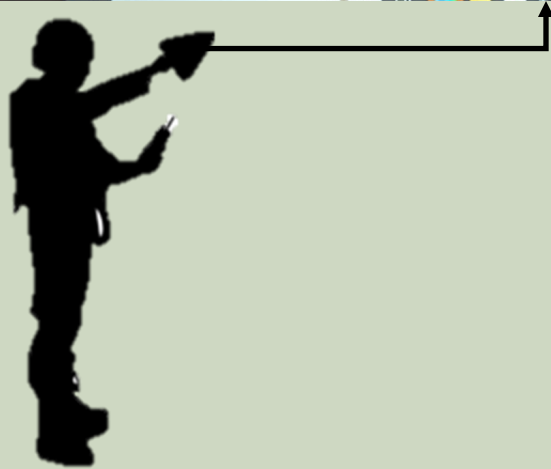
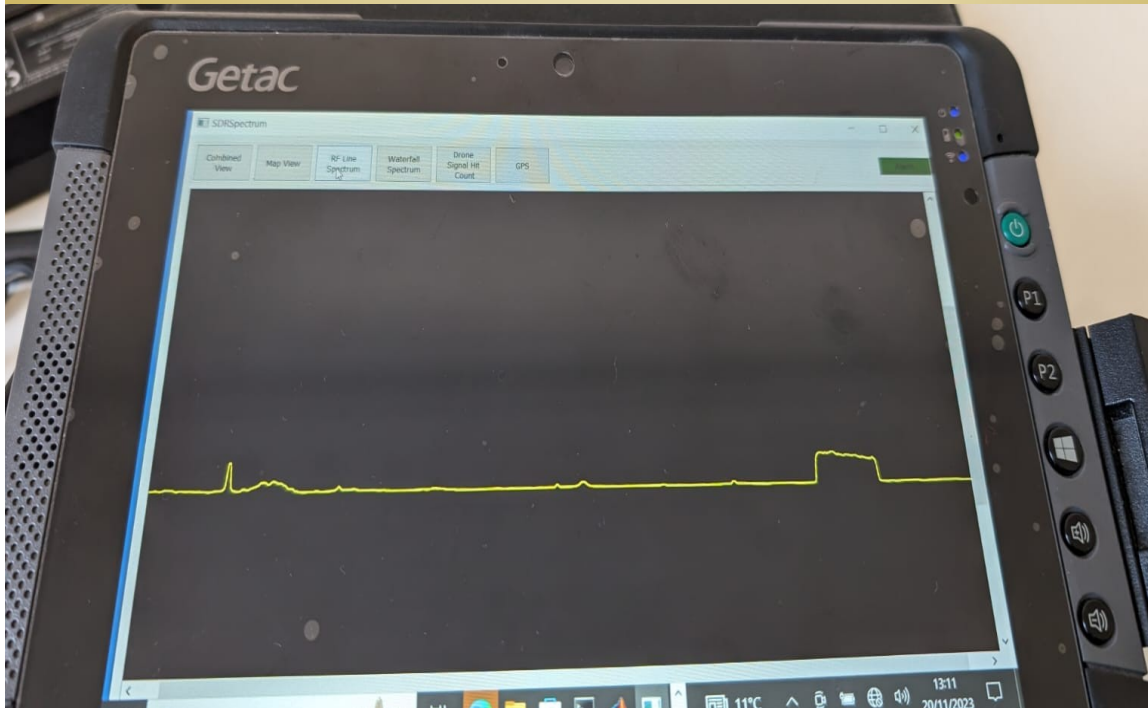


*Direction Finding Antenna*



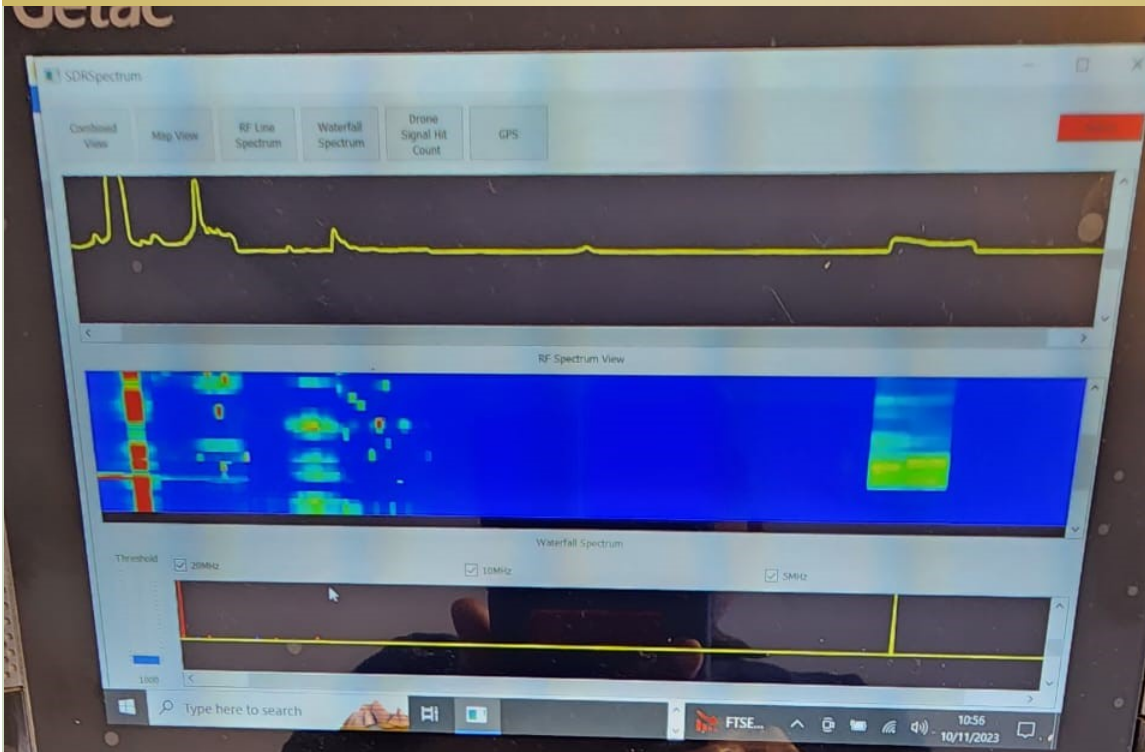
## Concept of Operation: Drone Detection

- The tablet is connected to a SDR for capturing and analyzing the drone signal
- The SDR and the tablet are placed in a wearable pouch or backpack
- The detector continuously scans the channel for drone signal and creates audio alert upon detection of drone.
- The detection can be confirmed visually by observing the RF spectrum display.
- The figure below shows the RF spectrum and the detection plot for a DJI drone
- The detector is paired with an external speaker for alerting the user regarding the presence of drone nearby
- Multiple drone detection is enabled and the alarm will sound differently if there is a higher level of threat such as a drone swarm.



## Concept of Operation: Direction Finding

- Upon initial detection, the dipole antenna is replaced by Direction Finding antenna.
- The operator then rotates the antenna in 360° in azimuth ( horizontal) direction
- The operator observes the RF spectrum view and estimates where the maximum signal level is observed.
- The direction in which maximum signal level is observed is the direction of arrival of the drone.
- The drone signal will be maximum when the antenna is pointed towards drone.
- Once azimuth (horizontal) angle is estimated, the elevation (vertical) angle can be estimated by using the same procedure
- The direction of arrival (DoA) of the drone is then used for pointing a drone gun towards the intruding drone to neutralize the threat
- SDDT-2458 has an optional add-on of a light weight drone gun ( drone jammer) to eliminate the threat.



**RF Line spectrum, Waterfall Spectrum and the Detection diagram**

## Technical Specifications

Description	Specification
Detection Range	<ul style="list-style-type: none"> <li>Up to 1Km using OMNI direction antenna</li> <li>Up to 2Km using directional LPDA Antenna</li> </ul> (If environmental RF Noise Level is high at the operational site, the detection range may be lower)
Frequency Bands	<ul style="list-style-type: none"> <li>Standard: ISM 2400 MHz and ISM 5800 MHz</li> <li>Extended: 433 MHz, 868 MHz, 915 MHz, 2400 MHz, 580 MHz</li> </ul>
Detector SDR	<ul style="list-style-type: none"> <li>RF from 70 MHz to 6000 MHz</li> <li>High performance FPGA and ARM Cortex processor</li> <li>Low noise figure, high receiver sensitivity</li> <li>Less than 10W power consumption, long battery life</li> </ul>
Detector Tablet for Display	<ul style="list-style-type: none"> <li>8.1" Wide Viewing Angle TFT LCD WXGA (1280x800)</li> <li>Touchscreen Display</li> <li>LI-on battery 4200 mAh, 880 gm weight</li> <li>Mil Std 810H, Mil Std 461G &amp; IP 65 Certified</li> </ul>
Detection GUI for Windows	<ul style="list-style-type: none"> <li>Composite Window with Detection data and RF Spectrum</li> <li>GIS enabled with track plotting app</li> <li>External Bluetooth speaker enabled</li> <li>Optional drone jammer gun as a package</li> </ul>