

Product

MWR-P

Ultra-compact imaging airborne microwave radiometer for day & night oil spill analysis



OPTIMARE INDIA

APPLICATION

- Day & night airborne detection and mapping of hot spots of oil spills
- Airborne measurement of oil spill thickness in the range from 0.05 to 3 millimeters
- Quantification of oil volume
- Cloud penetrating capability
- Support of oil spill response actions

Product Evolution

The ultra-compact MWR-P is OPTIMARE's third generation microwave radiometer for day & night airborne analysis of oil spills in terms of thickness distribution and volume. Two decades of experience in microwave radiometry enabled OPTIMARE to develop a microwave radiometer with roughly one-half in volume and weight compared to its predecessor. The new MWR-P makes airborne pollution analysis possible from a huge variety of airborne platforms. The MWR-P has a built-in interface to OPTIMARE's airborne maritime surveillance system MEDUSA.

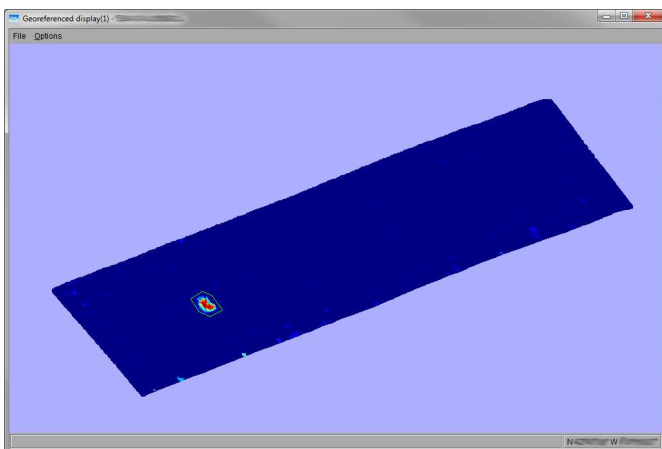


Application

Imaging multi-frequency microwave radiometers such as the MWR-P are the only remote sensors for day & night measurement of oil spill thickness and volume. Like its predecessor the MWR-P is specifically designed to support emergency response actions. The sensor is invaluable in terms of oil spill response as the most critical areas of an oil spill are mapped, localized and quantified.

Technique

The MWR-P is a three-frequency imaging airborne microwave radiometer which is capable of detecting and mapping oil layers exceeding a thickness of 0.05 millimeters. Furthermore, this system is capable of measuring and mapping oil layer thickness in the range from 0.05 to 3 millimeters. The MWR-P can be operated during day & night and above clouds.



MWR-P

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SPECIFICATION	
Mechanical properties	
Dimensions	Scan Head: 500 mm (Ø) x 642 mm x 527 mm (overall) Zenith Radiometer: 170 mm x 227 mm x 264 mm (overall) Control Unit: 210 mm x 350 mm x 400 mm
Mass	Scan Head: 22.5 kg Zenith Radiometer: 8.0 kg Control Unit: 14.5 kg
Stand-alone/Module	The MWR-P is connected to a mission computer
Detectors	
Number of channels	Scan Head: 3 (covering 3 frequencies) Zenith Radiometer: 1
Spectral sensitivity	Scan Head: 18.7 GHz, 36.5 GHz, 89.0 GHz Zenith Radiometer: 89.0 GHz
Measurement range	Oil spill detection: >0.05 mm; oil layer thickness: 0.05 mm ° 3 mm
Scanning Systems	
Scanning method	Across-track scanning
Scan rate	10 Hz
Line rate	10 Hz
Field of View (FOV)	88 deg
Instantaneous Field of View (IFOV)	4 deg (18.7 GHz), 2 deg (36.5 GHz), 0.8 deg (89.0 GHz)
Altitude of operation	Typically 1,000 ft (higher altitude operation possible)
Power/Fuel supply	
Current	10 A @ 28 VDC
Voltage	28 VDC (nominal), 20 VDC - 32 VDC
Communication/Interface	
Network connection	Copper or fiber-optic ethernet
Operating/Storage conditions	
Ground survival temperature	-55 °C ... +60 °C
Operating temperature	-40 °C ° +55 °C
Altitude/Pressure	41,000 ft (storage); 15,000 ft (operating)
Vibration	RTCA/DO-160G Section 8, Category S, Curve L (random)
Humidity	RTCA/DO-160G Section 6, Category B
Standards	
Environmental qualification	In accordance with RTCA/DO-160G
Electromagnetic compatibility	In accordance with RTCA/DO-160G

*Subject to technical changes and misprints
January, 2017*