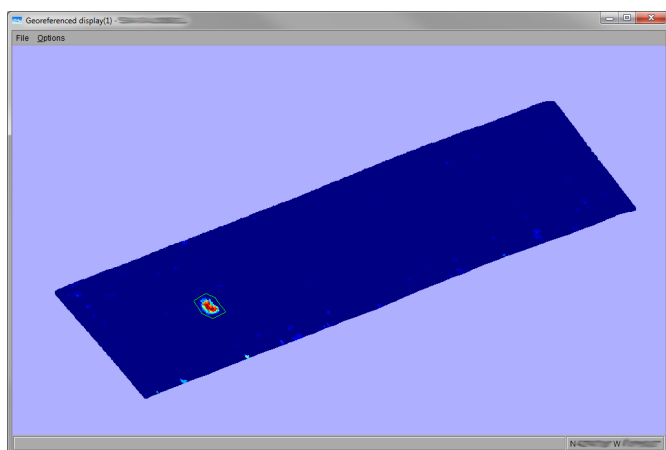


MWR-P

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

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

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

| 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*