

Surveillance Radar 942 Spider

The RSR 942 SPIDER is a vehicle mobile (1 ton truck /trailer mounted), land-based, rapid deployment, 360 Degrees continuous scanning surveillance radar (based on the RSR 940 SPIDER), which is also capable of performing high-resolution sector scanning surveillance, target recognition and identification.

It forms part of the RSR 900 StealthRad product range of Fully Coherent, Low Cost, Light-weight, Low Probability of Intercept (LPI) Frequency Modulated Continuous Wave (FMCW) radars.

The low transmitted power levels of the StealthRad family inherently increase reliability and reduce component cost, providing a cost-effective solution for short-range radars. The low LPI element makes them ideal for covert operations.

The RSR 942 SPIDER antenna, transceiver and signal processor are integrated into a single line-replaceable unit (LRU) that is mounted on a deployable frame. It can be transported on a trailer or a standard 1-ton pickup truck (double or single cab), with the antenna LRU stowed away to fit in the vehicle envelope. Deployment is quick and simple (on or off the truck) and the unit is supplied with an integrated diesel generator for ease of operation at remote sites.



TYPICAL APPLICATIONS

- **Border control operations**
- **Monitoring of private and unattended airfields**
- **Naval rapid deployment coastline control**
- **Marine management**
- **Monitoring of coastal traffic (both sea and air)**
- **Monitoring of activities on inland lakes**
- **Intruder detection**
- **Target recognition and identification**

MODE OF OPERATION

- **Continuous scanning**
- **Sector scanning providing:**
 - **High resolution surveillance (scanning)**
 - **Target recognition / identification (staring)**

SYSTEM FEATURES

- **General Features**
 - **High mobility**
 - **Rapid deployment**
 - **Local and remote (via wire or wireless network) operation**
 - **Data distribution to an area control center**
 - **Autonomous operation**
 - **Geolocation and North alignment**
 - **Detection and tracking +50°C**
- **Continuous scanning features**
 - **Detection and tracking of both air and sea > Inflatable boat (RCS = 1 m²): 15 km surface targets simultaneously**
- **Sector scanning features**
 - **High resolution capability**
 - **Doppler audio and Doppler spectrography**
 - **Doppler target signature library and the capability to store observed Doppler target signatures for post analysis**
 - **Classification of targets based on their Doppler signature**

Table 1: TECHNICAL SPECIFICATIONS

Characteristic	Description
Frequency band	I / J Band
Transmit power	20 Watt
Antenna size	3.5 m
Antenna tilt range	-10° to +10°
Source	230 VAC 50 Hz
Consumption	1.6 kW
Weight cabin	900 kg
MTBF	>1000 h
Temperature storage	-20 to +70°C
Temperature operational	-20 to +50°C

Table 2: Continuous Scanning

Characteristic	Description
Instrumented range	40 km
Scan Rate	15 RPM
Range accuracy	8m
Azimuth accuracy	1°
Detection ranges: Air targets	Light aircraft (RCS = 2 m ²): 20 km
	Private jet (RCS = 5 m ²): 30 km
	Helicopter (RCS = 10 m ²): 35 km
Detection ranges: Surface targets	Inflatable boat (RCS = 1 m ²): 15 km
	Power boat (RCS = 5 m ²): 30 km
	Fishing vessel (RCS = 100 m ²): Instrumented range

Table 3: Sector Scanning

Characteristic	Description
Instrumented range	6/10/15/25/40 km
Scan rate (adjustable)	0 - 20 °/s
Scan range (adjustable)	0 - 360°
Range accuracy (Normal resolution)	2 m (6 km range)
Range accuracy (High resolution)	0.5 m (6 km range)
Detection ranges: Land targets	Pedestrian (RCS = 1 m ²): 12 km
	Motorcycle (RCS = 1 m ²): 15 km
	Small vehicle (RCS = 5 m ²): 26 km
	Armoured vehicle (RCS = 10 m ²): 32 km
	Main battle tank (RCS = 50 m ²): 40 km

	Helicopter (hovering): 25 km (identified)
Detection ranges: Surface targets	Inflatable boat (RCS = 1m ²): 17 km
	Power boat (RCS = 5 m ²): 30 km
	Fishing vessel (RCS = 100 m ²): Instrumented range

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<http://surveillance-radars.at-communication.com/en/at/942-spider.html>