SPEDIS-AIR

Airborne radar target simulator

The drone takes the simulator to the position and height the test needs. SPEDIS-AIR receives the radar's signal through its antennas and returns it as targets at the range and velocity the scenario sets, independent of the drone's own position and speed. The radar is tested on the range against targets it sees in open air.



Figure 1. SPEDIS-AIR: drone carrying a spherical payload with two horn antennas

Key Features

- Up to five moving targets
- Target models and Doppler
- Deceptive ECM and noise jamming
- Real flight geometry
- Path loss and field tests
- Radar signal measurement
- Built-in test and self-calibration

AT A GLANCE

FREQUENCY BAND
0.5–18 GHz

INSTANTANEOUS BANDWIDTH
1 GHz

INPUT SIGNAL LEVEL
−30 to 0 dBm; −50 to −30 dBm with the preamplifier

DYNAMIC RANGE
80 dB block (40 dB instantaneous)

NUMBER OF TARGETS
5

APPLICATIONS

- Radar development testing and verification
- Radar acceptance and qualification testing
- ECCM and anti-jamming performance evaluation
- Range testing of radars against an airborne target

Capabilities

Up to five moving targets

Each target has its own range, velocity, acceleration and attenuation profile, defined as steps with hold times. Scenarios are saved and reloaded.

Target models and Doppler

Swerling 0–IV radar cross-section fluctuation, hovering targets with their own Doppler, Doppler sweep and antenna scan simulation.

Deceptive ECM and noise jamming

RGPO and VGPO, multiple false targets, clutter and dynamic chaff test the radar's tracking under deception. A barrage or spot noise jammer with its own motion runs alongside the targets.

Real flight geometry

The simulator flies, so the radar tracks its targets along a real airborne line of sight and at different elevation angles.

Path loss and field tests

Range-dependent path loss is part of the scenario; for field tests, the distance between simulator and radar is compensated in delay and level.

Radar signal measurement

Shows the spectrum around the set centre frequency and measures the radar's frequency, amplitude, pulse width and PRI.

Built-in test and self-calibration

Checks its own hardware and calibrates internal delay automatically, with no external test equipment.

Specifications

General	
Frequency band	0.5–18 GHz
Instantaneous bandwidth	1 GHz
Input signal level	−30 to 0 dBm; −50 to −30 dBm with the preamplifier
Dynamic range	80 dB block (40 dB instantaneous)
Number of targets	5
Range simulation	300 m – 1000 km, 1 m resolution
Radial velocity simulation	Up to 30,000 m/s, 1 m/s resolution
Doppler shift	±2 MHz, 1 Hz resolution (adjustable)
Target models	Swerling 0–IV (optional)
Radar cross section	0–1000 m² in 1 m² steps
Detectable pulse width	50 ns – 1 ms
Detectable PRI	1 µs – 100 ms
Deceptive ECM	RGPO/VGPO (coordinated/uncoordinated), multiple false targets, clutter (1 km range swath), dynamic chaff
Noise jammer	1 jammer; barrage 50/100/200 MHz or spot 1/2/5/10/20 MHz
IFM	Pulsed and CW radars, with pulse detector; error < 1% (optional)
Radar measurement	1 GHz spectrum display; pulse width, PRI, frequency and amplitude (optional)
Operating mode	Radiation, through the payload's receive and transmit antennas

Warranty

All hardware and software procured from Zeta is under warranty against manufacturing or design failures for 2 years. Customer-specific warranty terms may be arranged.

Disclaimer

Due to ongoing research and development, Zeta reserves the right to change product specifications without notice.

About Zeta

Zeta Defence develops electronic intelligence (ELINT) and communication intelligence (COMINT) equipment and radar / electronic warfare simulators. Its capabilities include RF transceiver system design, digital design and large-scale software development.

Contact

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