

APPLICABLE STANDARDS	
Civil	
- ICAO Doc 9871 (Ed 1 & 2)	
- ICAO Annex 10 Vol IV Ed.3 am77, Ed4 am87 and Ed5 am89-91	
- EUROCONTROL EMS3.11 and EMS4.0	
- RTCA DO-260, DO-260A, DO-260B, DO-260C / EUROCAE ED-101	
- EUROCAE ED-73 up to revision F	
Military	
- STANAG 4193 Ed3	
- DoD AIMS 03-1000 / 17-1000	

TARGET SIMULATION	
Supported MSSR/IFF Modes	- Mode 3/A, Mode C, Mode S, ADS-B, Mode 1, Mode 2 - Mode-S and ADS-B Phase Overlay - National Secure Mode (NSM) - Mode 5 Level 1*, Mode 5 Level 2*, Mode 5 Level 2B Compliant to STANAG 4193 Edition 3 using pseudo-crypto algorithms (EADS, NATO, AIMS)*
Waveform modifications (simulation of bad transponders)	Full reply modifications - RF Frequency offset: -10..+10 MHz - Pulse width offset: -200..+200 ns - Pulse rise time/fall time: 0..200 ns Individual pulse modifications (up to 4 in a single reply) - Pulse width offset: -200..+200 ns - Pulse position offset: -200..+200 ns - Pulse amplitude offset: -30..+6 dB - Pulse suppression: yes
PSR data replay	Network connection for output of PSR data in ASTERIX CAT034, CAT048
Datalink/DAP simulation	ASTERIX CAT018 and Datalink (GDLP-DLF)
Cluster simulation	ASTERIX CAT017
Scenarios Features	- 2048 independent - 4-level overlap SSR/ADS-B/FRUIT waveforms + jamming signals - Interrogator Sum Delta, Omega channels from different antenna types (classical LVA, Electronic Steering Antenna, Non-Rotation Antenna) - Supporting non-standard rotation simulation. (continuous rotation, Point and Shoot function) - Encrypted interrogations and replies using internal pseudo-crypto - Static and moving radar simulation

ANTENNA SIMULATION	
Antenna RF Connection	- 4 Channel (Sum, Delta, Omni and ADS-B) - HPD up to 360° - VPD up to 16 individual antenna patterns
Antenna Type	- Conventional LVA - Rotating Phased Array - Non-Rotating Phased Array
Moving Platform	- Simulation of mobile radars (Naval, Airborne, Ground)

* Note: Mode 5 and Military options are only available for cleared customers through custom software, hardware and firmware.

TECHNICAL SPECIFICATIONS	
Interfaces	
Control Interface(s)	2 RJ45 Ethernet Connectors
Power	IEC C14
RASS Bus	Differential multipin for linking multiple RASS® systems together
GPS Data (serial) + PPS	GPS data (NMEA-0183 format), DB9 and BNC connection
RF Outputs	4 parallel RF phase and power controllable output ports
	50 Ohm impedance
	Power: -60 .. +18 dBm
RF Inputs	4 parallel RF phase and power controllable input ports
	50 Ohm impedance
	Power: -43 .. +35 dBm
Encoder (Single ended and Differential)	Single Ended: BNC TTL Differential: DB9 RS422/RS485
Encoder and Range Trigger Outputs	2 x ACP/ARP/GPS/Trigger outputs [10...16 bit]
	2 x RASS bus connection to sync other RASS solutions
Encoder and Range Trigger Inputs	1 x ACP/ARP/GPS/Trigger input [10...16 bit]
	1 x RASS bus connection to sync other RASS solutions
3rd party system Synchronisation Interfaces	SMA 10MHz, SMA External OXCO input, SMA OXCO output
Transmitter	
Frequency range	1090MHz ± 10 MHz
Dynamic Range	-60.. +18 dBm
	-90.. -12 dBm with advised 30 dB coupler
Receiver	
Frequency range	1030MHz ± 10 kHz
Dynamic Range	-40..+35dB
Power Requirements	
Power Supply	110 to 240 VAC, 5A, 50/60 Hz

Mechanical Specifications	
Dimensions	Width: Standard 19inch (rack mountable) Height: 4U Dept:39cm
Weight device (kg)	<30 Kg
Weight incl. packaging and accessories (kg)	<40 Kg



We make the sky safer



INDUSTRY STANDARD SSR | IFF TARGET
and ENVIRONMENT SIMULATOR
for ANSPs, Manufacturers and DoDs

RES® | Radar Environment Simulator



Join our live
RES® webinar

AIR TRAFFIC TECHNOLOGY

5 JUNE

2:00 - 3:00 PM
LONDON TIME



The RES® simulates up to 2048 independent SSR or Mode S targets, ADS-B, FRUIT, reflectors and antenna behavior on RF level. All the signals that would occur in real life situations are injected into the radar, hereby replying correctly to the radar's interrogations as real transponders would do. A known reference scenario is presented to the radar and compared to the radar output testing the full data link capabilities and system performance limits.

CAPABILITIES

- Simulation up to 2048 targets in Mode S, Mode 1, 2, 3/A, C, NSM, Mode 5, Mode 5 Level 2 and 2B, ADS-B and TIS-B.
- Quickly create complex scenarios and injection of predefined scenarios
- Test a radar's most challenging performance specifications: load capacity, sensitivity, Mode S performance, Mode 1 and 2 performance, resolution behavior, accuracy, probability of reply, performance when using low PRF, high rotation speed, jammer frequencies, etc
- PSR with RTG/SSR/ADS-B full system evaluation
- Scalable and customisable static and moving platform with motion compensation, standard antenna systems, EASA antenna systems remote control and standalone maintenance

BENEFITS

- EUROCONTROL EMS compliant STANAG and AIMS Mode 5 capabilities
- RES® speeds up factory acceptance testing through generating simulated scenarios which are impossible to achieve with common signal generators. Repeatability of tests is a valuable time- and cost-saving advantage of RES®.
- RES® avoids dependency of opportunity traffic and test flights, as such increasing reliability and reducing cost and environmental impact.
- RES® has an intuitive user interface but has many expert features. Therefore, it comes with profound user training, documentation and, obviously, with maintenance and calibration services.

USE CASES

System developers

Full test capabilities for the industry requirements for Secondary Surveillance Radar.

System acceptance engineers

RES® provides the ultimate test instrument to perform factory acceptance of SSR or Mode S radars. The RES® software enables the user to create scenarios very quickly by using implemented models allowing to test a radar's most challenging performance specifications. RES® allows BOX-level testing and performance evaluations.

Maintenance engineers

Secondary radars are incredibly complex, requiring a vast number of parameters to be tested. When radar settings or environment are modified, or if a radar's firmware is upgraded by the manufacturer, maintenance personnel require a method to determine the new performance of the radar and compare it to the "previous" condition. The RES® is perfectly suited for this type of regression testing. Several predefined scenarios can be injected in the radar before and after modifications, allowing performance to be compared. The same principle can be used to compare radar channels for similar behavior and parameter settings.

FEATURES

Compared to the previous flagship the RES® has enclosed the following updates and improvements

- Real-Time Target Movement Interpretation**
Enables live processing for dynamic and precise tracking capabilities.
- Seamless Backward Compatibility**
Ensures integration with existing legacy systems without additional modifications.
- Unified Graphical User Interface (GUI)**
Combines functionality into a single, comprehensive interface.
- Support for Point-and-Shoot Antennas**
Optimized for intuitive operation and enhanced targeting precision.
- 360° Channel Coverage with ADS-B Integration**
Delivers comprehensive situational awareness across all channels.
- Enhanced Built-In Test Equipment (BITE) and Diagnostics**
Reduces troubleshooting time with advanced fault-detection tools.
- Device Synchronization**
Fully compatible with other Intersoft Electronics equipment.
- Support for Absolute Azimuth Encoders**
Provides superior precision for azimuth data handling.
- Optimized Radar OBA Tuning**
Simplifies Sum - Difference adjustments through intuitive IQ phase shifting.
- Expanded Receiver Capabilities**
Includes calibration features for Interrogator receivers.
- Standardized Remote Control Protocols**
Incorporates official RPC techniques for streamlined remote operations.
- Omni-Channel Generation**
Ensures robust performance across diverse operational scenarios.
- Full integrated FRUIT generation**
IN and OUT-beam FRUIT in the same box.
- Remote operation**
RES Calibration Kit Available with remote calibration capabilities
Remote Software Update Capability

Designed to perform reliably 24/7 under demanding conditions

