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AWT

Defense & Aerospace

Products Guide

Radar Signal Generator

19" RACK MOUNT RADAR SIGNAL GENERATOR SYSTEMS

Ideal for creating a variety of scenarios for use in extensive training. Also ideal for receiver testing applications.

PORTABLE RADAR SIGNAL GENERATOR SYSTEMS

For use in field, maritime and other applications where portability is crucial

The transmit antenna and amplifier are integrated, which allows the simulator and the receiver being tested, to be placed in separate locations.

SCENARIOS

AOA Simulation
- DF test using Amplitude and Angle of the Antenna.
- Antenna pattern measurement
- Signal level change at scheduled time

Radar Activity
- Search Radars
- Acquisition Radars
- Tracking Radars

AWT Radar Simulators generate a variety of Radar Signals. The Simulators are ideal for radar receiver testing and in training Radar Operators on object detection and recognition in a field of Electronic Warfare (EW). The simulators offer variety of simulation capabilities; including Radar Warning Receivers (RWR), Missile Warning Receivers (MWR) and other Electronic Warfare (EW) Receivers.

AWT's Radar Simulator can generate up to 128 simultaneous CW or Pulsed signals. An intuitive graphical user interface (GUI) makes it easy to program signal parameters. Geographic Information System (GIS) tools are also available (optional). The receiving band(s) are developed to customer specifications. They are available in the range from 0.5 GHz and 40 GHz.

Simulator & Threat Software

RF Signal Parameter Management software runs on Windows operating systems. RF signals are composed of frequency, pulse and SCAN characteristics. All parameters are editable in an easy to use and clearly laid out user interface.

▲ Editor Screen
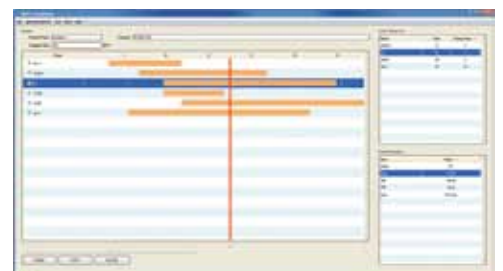
▲ Threat Sequencer Screen

- Replicates real radar signal characteristics (Frequency, Phase, Pulse, Modulation, SCAN).
- Simulation Scenarios: AOA Simulation, Radar Activity, Virtual Missions.
- Ideal for Electronic Warfare training and Radar receiver testing.
- 19" Standard Rack Mountable and Portable models are available.
- Signal data library with up to 1024 entries.

Specifications

Frequency

Range	0.5 - 40 GHz (in customer specified bands)
NATO Bands	C, D, E, F, G, H, I, J, K
IEEE Bands	UHF (upper), L, S, C, X, Ku, K, Ka
Resolution	1 MHz
Accuracy	1 kHz (higher accuracies on request) 2 MHz (VCO or DTO)
Type	Fixed, Agile (Sinusoid, Saw-Tooth, Triangular, Rectangular, Random), Hopping (up to 256 /sec)

Pulse

Type	CW, Stable, Jitter, Stagger (32 Steps), Dwell & Switch, Random
Width Range	0.05 - 225 us
Repetition Interval	1us - 1 sec (longer possible)
Density	Up to 1,000,000 pulses/sec (PPS)
FMOP	Linear, Non-Linear, (FM Bandwidth depends on PW, 40 MHz max)
PMOP Agile	Bi-Phase, Quadratic-Phase

Frequency Modulation on Pulse (FMOP)

Pattern	Linear, Non-Linear, Chirp Up/Down
Agile	Sine, Triangular
Range	5 - 50 MHz
Accuracy	1 MHz

Phase Modulation on Pulse (PMOP)

Pattern	Bi-Phase, Quadratic Phase
Change Time	< 50 ns
Accuracy	better than 20°

SCAN

Types	Electronic (Agile Beam), Conical, TWS, Steady, Sector, Lobe Switching, Circular, Helical, Raster, Bi-Directional, User define
Rate	10 ms - 10 sec
AM	0 - 40 dB

Output

|	
Number of RF Signals	**Portable** 1 CW or 1 Pulse Dropper Signal or 16 Pulse Signals
	19" Rack Mount 1 CW + 1 Pulse Doppler Signal or, 1 CW + 16 Pulse Signals, or 17 Pulse Signals
Power (signal)	> 15 dBm (other power levels on request)
Monitoring port	> 5 dBm (other power levels on request)

Communication Interfaces

Ethernet (IEEE 802.3), USB, RS-232

Dimensions / Weight / Environment / Electrical

Dimensions	Depends on model and configuration
Weight	Depends on model and configuration
Power	110-240V +/- 10% Up to 30 minutes battery operation with maximal transmit power (portable instruments only, battery is optional)
Power Consumption	Depends on model and configuration

AWT's Target Generator
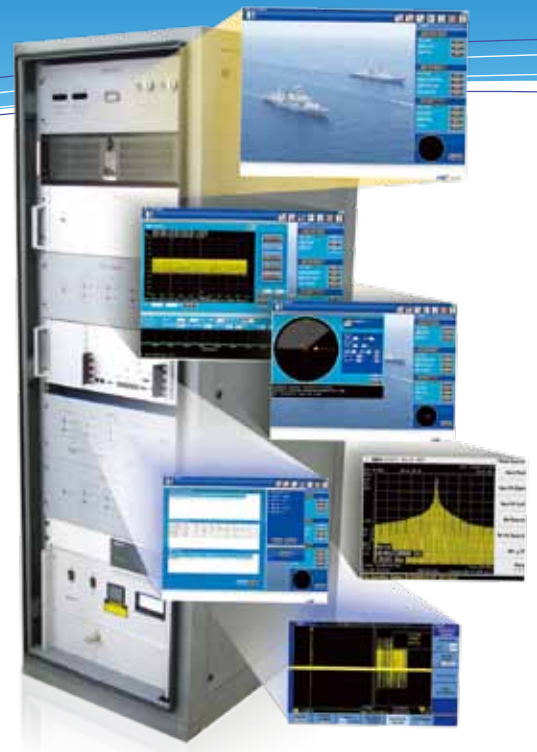
- Target Generators are very useful to generate the target echo signal(s) of radar(s) without real operation of the radar and launching Targets such as flights, battle ships…etc.

- The generators can be used for radar system T&E or radar operator training/practice. The generators are suitable for the electronic warfare (EW) officers or EW system designers to develop their skills.

- AWT's Target Generator can give the EW operators lots of flexibilities to create various coherent techniques such as range Gate Deceptions, Velocity Gate Deceptions, Multiple False Targets, and various combinations of them.

- AWT can provide the customized solutions to meet your needs.

Features

- Flexibilities to create technique : Precise adjusting the parameters using GUI software
- Wide Instantaneous Bandwidth : Up to 1GHz
- Generate the Coherent Technique on the Received Signals
- Various modulations can be programmed
- Cost-effective solution in the field of developing jamming technique, EW training, radar's ECM vulnerability test, and verification of ECCM effectiveness
- Easy to customize on the customer's requirements

Applications

- RF Signal Capture / Target Simulation
- Complex Target Simulation
- ECM Technique Development
- EW Test Range

(EW Technique Generator)

Target Generator Specifications

Parameter	Description
Frequency Coverage	Up to 18 GHz (Customization Applicable)
Instantaneous BW	Up to 1 GHz
Input Sensitivity	< -65 dBm
Range Delay	~ 3 ms (max)
Delay Resolution	>4 ns
Pulse Width	<100 ns to CW

Techniques

Range Gate Deceptions

- Linear, J-Shape, S-Shape
- Dwell / Walk / Hold time : 1 ~ 100 s
- Range Delay : ~ 3 ms (max)
- Keeper

Velocity Gate Deceptions

- Doppler Frequency Range : Up to ±300 KHz
- Synchronized with RGPO/RGPI

MFT (Multiple False Targets)

- False Target Numbers : 255 (max)
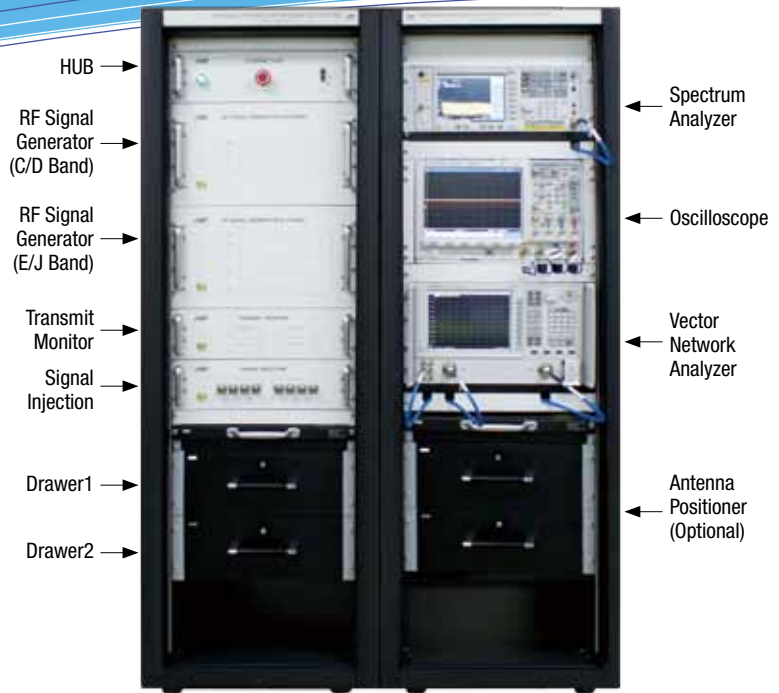- Interval Range Between Targets : 4 ns ~ 3 ms

Noise Jamming

- SSR, LFN
- Sinusoidal, Triangle, Sawtooth pattern
- Sweep Rate : 0.125 ~ 500 Hz
- Duty Cycle : 1 ~ 90%

* Please contact us if you need more details
* The other band models are available on requests

ANTENNA/RADOME & EW

- HUB
- RF Signal Generator (C/D Band)
- RF Signal Generator (E/J Band)
- Transmit Monitor
- Signal Injection
- Drawer1
- Drawer2
- Spectrum Analyzer
- Oscilloscope
- Vector Network Analyzer
- Antenna Positioner (Optional)

System Introduction

Antenna/Radome Measurements

- Main Lobe Beam Width, Radiation Patterns, and Gain for Antenna with or without Radome.

EW Receiver Test

- The performance of EW Receiver itself can be tested by signal injection method as well as the free space characteristics for those EW Receivers including their antennas which are connected RF Cables.

Specifications

Frequency Characteristics

0.5GHz to 18GHz coverage (Resolution 1MHz)

Accuracy	±1.5 ppm (with Synthesizer) ±2 MHz (with DTO)
Agile Pattern	Sine, Triangle, Rectangle, Saw
Hopping Frequency Number	16

Pulse Characteristics

Pulse Range	1~1,000,000 us
PW Range	0.1~225 us
Stagger/ Dwell & Switch	up to 32 steps
Jitter Pattern	Sine, Triangle, Rectangle, Saw

Intra-pulse Modulation	
FMOP	Linear, Non Linear
(FM BW is dependent on PW, 40 MHz Max.)	
PMOP	Bi-Phase, Quadratic-Phase

Scan Characteristics

Scan type	Electronic(Agile Beam), Conical, TWS, Steady, Sector, Lobe Switching, Circular, Helical, Spiral, Raster, Bi-Directional, User define

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SCENARIOS

AOA Simulation

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RWR

(Radar Warning Receiver)

RWR includes 4 antenna located at the sing tips with each providing up to 90° conical coverage.

Experience

AWT has 30 years experienced of electronic warfare technology

RECEIVER TEST SYSTEM (Model AWT-ARRTS-167)

Number of RF Signals

0.5 GHz ~ 2 GHz

- 1 CW Signal + 1 Pulse Doppler or 1 CW Signal + 16 Pulse Signals or 17 Pulse Signals
- Output Ports : AOA1 (45°), AOA2 (90°), AOA3 (180°), AOA4 (270°)

2 GHz ~ 18 GHz

- 2 CW Signals + 2 Pulse Doppler or 2 CW Signals + 1 Pulse Doppler + 16 Pulse Signals or 2 CW Signals + 32 Pulse Signals or 34 Pulse Signals
- Output Ports : AOA1 (45°), AOA2 (90°), AOA3 (180°), AOA4 (270°)

Measuring Instruments

- Spectrum Analyzer
- Oscilloscope
- Vector Network Analyzer

Antenna Fixtures (Optional)

- The mounting brackets and fixture to place the EW Receiver Antenna or Antenna/Radome under Test.

Software Description

Machine Control

- Control the RF Signal Generators
- Control the Positioner
- Built in Test
- Calibration

Antenna/Radome Measurement

- Test Data Management
- Remote control the Vector Network Analyzer
- Collect the test result data

EW Receiver Test

- RF Signal Generator control according to the scenario
- Manage the threat Library
- Remote control the Spectrum Analyzer