INTERSOFT ELECTRONICS



SkyRF® Generator

Complex Scenario Generation for IFF and PSR

SkyRF

The SkyRF® Generator offers advanced capabilities for complex scenario generation in both **IFF** and **Primary Surveillance Radar (PSR)** domains. It is a specialized configuration of SkyRF®, the widely adopted RPAS-based solution for **CNS (Communication, Navigation, and Surveillance)** measurements. By enabling target generation and scenario simulation at altitude, ***The SkyRF® Generator*** introduces more efficient and flexible methods for **IFF system certification, sensor alignment**, and **Combat Management System testing** — reducing the need for costly and logistically demanding ground-based setups.

IFF NATO / AIMS Certification

The SkyRF® Generator can simulate radar targets for secondary surveillance radar (SSR) in Modes 1, 2, 3/A, and C, supporting both transponder and interrogator functions. Additionally, a transponder module can be mounted to enable simulation of advanced modes such as Mode S and Mode 5. The Mode 5 simulation capability is designed to support **IFF system certification in accordance with NATO/AIMS standards**, making The SkyRF® Generator a valuable tool for testing and validating compliant systems.

PSR Sensor Alignment



Many airfields equipped with Primary Surveillance Radar (PSR) systems use **active reflectors** to verify the geographical alignment of radar video with key reference points such as touchdown zones and runway intersections. These active reflectors, also referred to as **stationary targets**, must generate a Doppler shift to avoid being suppressed as clutter by the radar's Moving Target Indication (MTI) or Moving Target Detection (MTD) processors. This ensures the target is displayed on the Air Traffic Controller's radar screen. The SkyRF® Generator provides a dynamic 360° target with configurable parameters for **Doppler shift, radar cross section (RCS), and distance**, making it an ideal tool for precise PSR alignment and system validation.



How it works

Mode S/5 Flight Certification

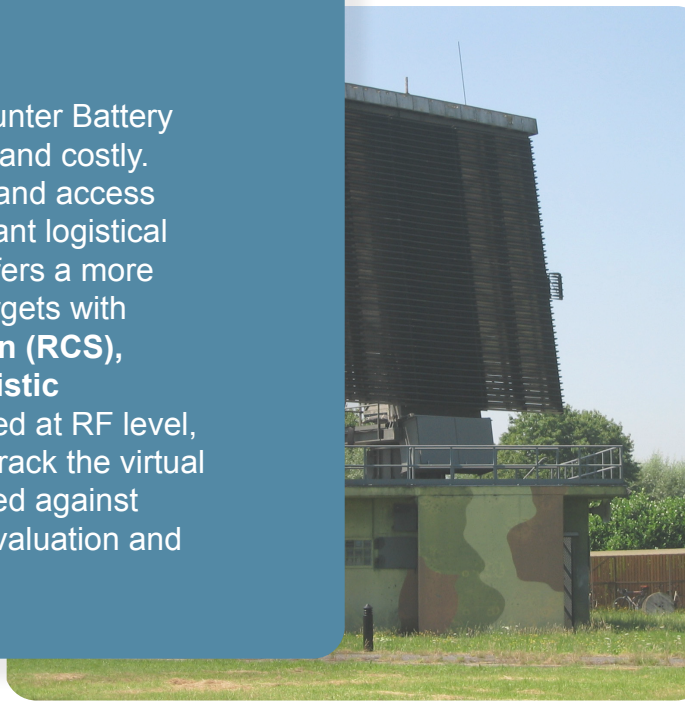
The SkyRF® Module receives the Mode S/5 pulse and buffers it in its FPGA. The interrogation is delayed in time (i.e. range) and sent to the co-mounted transponder, which replies to the interrogator.





Missile Generation –
Testing of Combat Management Systems

Testing Combat Management Systems such as Counter Battery and Missile Defense radars is traditionally complex and costly. Conventional field testing requires live ammunition and access to secure test ranges, both of which involve significant logistical and financial challenges. The SkyRF® Generator offers a more accessible and efficient alternative by simulating targets with predefined parameters such as **radar cross section (RCS), Doppler shift, and velocity**, following realistic **ballistic trajectories**. These simulated signals are transmitted at RF level, allowing the radar system under test to detect and track the virtual target. The system's response can then be compared against the generated scenario for accurate performance evaluation and validation.



Features and Specifications

Radial Target (Heli, Fighter, Missile, …): multiple targets (#20) at different speeds, different Doppler, different RCS, different acceleration
Mode 1/2/3/A/C/S/5L1/5L2, OEM independent
ADS-B, Mode 5 E Squitter (GNSS NMEA/ARINC input)
Certified Transponder: Ping 20SI for civil and RT-2087 for military applications
Transponder C2 integration (changing codes)
PSR + SSR: one Scenario Generation Interface for combined targets
40MHz instantaneous bandwidth
Target Range Resolution: 3.75m
Simultaneous targets: - Short Range (<30km): 4 - Long Range (around the world): 16
0dBsm RCS performance depending on radar frequency and power. E.g. - L-band 100kW 0dBsm: 4 - 500+ km - S-band 20kW 0dbsm: 2.5 - 500+ km

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