



ATCR-44S **L-BAND SOLID STATE PRIMARY SURVEILLANCE RADAR**

ATCR-44S is the SELEX Sistemi Integrati solution realized to provide superior surveillance on Long Range and En-route applications, as well as to provide optimum performance at lower ranges, namely extended TMA applications. ATCR-44S is an L-Band system belonging to the SELEX Sistemi Integrati family of Primary radars.

THE SOLUTION

Designed to comply with the international standards for Primary Surveillance Radar (PSR) systems and to guarantee a high degree of maintainability, ATCR-44 also meets the requirements issued by ICAO and EUROCONTROL in terms of functional and performance characteristics. The ATCR-44S radar provides enhanced processing capabilities and extended performance monitoring in order to support 24 hours operations. Monitor and control activities can be performed from local or remote stations with user-friendly operator's interface. High operational flexibility and system availability are also guaranteed through cutting edge technological choices.

ATCR-44S employs a wide range of processing techniques, which automatically optimize the operational performance under the most severe environmental conditions. The

processing is controlled, on the cell by cell basis, by a very sophisticated geographical mapping system, managed by the extractor/controller, integrated into the equipment. An integrated weather channel is included in the ATCR-44S, providing six levels of weather contours according to the U.S. National Weather Service recommendations. The Equipment is fully solid-state using the "state of the art" technology, which ensures high reliability and availability. A comprehensive Built-In Test Equipment (BITE) is embedded in the equipment, with an ambiguity less than 2 in most cases. An easy access to all modules, PCB, assemblies, test points, terminals and wiring strongly reduces repair time. Corrective maintenance only consists of removal and replacement (plug-out, plug-in) of complete LRUs with few and simple adjustments. Full control of radar parameters is performed via Local or Remote Control Panels, allowing simple and effective on-site radar setting.

The ATCR-44S system interfaces with the L-Band Antenna Group which includes the G-14 L-Band antenna, a well proven reflector antenna system, extensively used in air traffic applications all over the world and the L-Band Antenna Base with duplicated motors and azimuth encoders. Radome is used for ensuring optimum performance under the most severe environmental conditions.



SYSTEM FEATURES

Enhanced Processing Capabilities

- Digital pulse compression with enhanced peak-to-sidelobe ratio for high radar sensitivity and improved range resolution
- Fully coherent adaptive moving target detection (A-MTD) system with four sets of Doppler filters including from 6 up to 10 for each set
- Adaptive selection among four MTD filters according to ground clutter intensity
- Extensive mapping techniques employed to adaptively maintain CFAR in presence of clutter with different temporary and spatial characteristics
- High resolution clutter maps updated separately for each MTD filter, to provide super-clutter visibility and tangential target detection.

Extended Performance Monitoring

- Designed for unattended 24 hour operation
- Built-in test equipment (BITE) for enhanced failure identification and isolation.

High Operational Flexibility

- Operation mode in fixed frequency or frequency diversity
- Emission Control function to reduce or disable RF radiation on given azimuth sectors
- Automatic antenna beam switching (between Low and High beams) for ground clutter suppression
- Linear/circular polarization, for optimum target detection in all weather conditions
- Anomalous propagation rejection
- Asynchronous Interference Blanking (AIB).

Full Redundancy of critical items

- Fully solid state and fail soft modular transmitter designed for on line replacement for improved system availability and reduced maintenance
- Redundant Receivers for target/weather
- Duplicated Signal Processor/Extractor-Controller.

ATCR-44S CONFIGURATION

- Modular Fault Tolerant solid state transmitter
- Redundant receivers for target and weather signals
- Duplicated digital A-MTD Signal Processors for target and weather signal processing
- Duplicated digital Extractor/Controller
- Monitor and Control Position.

TECHNICAL CHARACTERISTICS

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| Frequency band: | from 1250 to 1350 MHz |
| Maximum range: | up to 220 NM |
| Antenna rotation rate: | 5 up to 10 rpm |
| Transmitter architecture: | Solid State (with fail soft capability) composed of 16 over chains and radial power combiner |
| Transmitted waveforms: | Short / Long pulse (32µs / 150 µs) |
| Frequency Management: | burst to burst frequency diversity with capability of frequency selection over the L- Band. |
| Cooling: | Air cooling |
| Signal Processor: | Adaptive Moving Target Detector (A-MTD) with four sets including up to 10 FIR Filters |
| Detection Logic: | Automatic selection of fixed and adaptive thresholds based on high resolution clutter maps separate for each Doppler channel |
| Plot extraction: | Extraction logic based on Doppler filter amplitude for improved plot position determination. |
| Weather Vector Extraction: | classified in six levels, calibrated according to the U.S. National Weather service. |
| RMA | High reliability with a critical MTBF > 40.000 hours MTTR < 20 minutes Availability better than 99,999% |