LEONARDO ELECTRONICS

ATCR-44S/ENH

L-band Solid State Primary Surveillance Radar

Leonardo ATCR-44S ENH is the L-Band solid-state system designed to provide superior surveillance for Long Range and En-Route applications. The sensor grants as well excellent performances at lower ranges (TMA applications). ATCR-44S/ENH can be operated for Air Traffic Surveillance in En-Route and Extended TMA, dependig on the antenna rotation rates.

ATCR-44S ENH meets ICAO and EUROCONTROL functional and performance requirements. ATCR-44S ENH provides enhanced processing capabilities granted on cell-by-cell basis by sophisticated geographical mapping. An integrated weather channel provides six levels of weather contours according to U.S. National Weather Service recommendations.

Full control of radar parameters is performed via Local or Remote Control and Monitoring Positions. The radar system interfaces with the G-14 L-Band Antenna Group which includes Antenna Base, duplicated motors, and azimuth encoders. Operation under radome is required to grant full performances under all environmental conditions.

PROCESSING FEATURES

- Detection mode in fixed frequency or frequency diversity
- On-line selection of the operative frequencies
- Emission control function to disable RF radiation on given azimuth sectors
- Antenna beam switching (Low and High beams) for ground clutter suppression
- Manual and Automatic polarization selection (Linear/Circular) for target detection in all weather conditions
- Anomalous propagation rejection
- Asynchronous Interference Detector (AID)
- Raw Video streaming on LAN
- 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 (6 to 12 filters per set)
- Adaptive selection among four MTD filters according to ground clutter
- Extensive mapping techniques to adaptively preserve Constant False Alarm Rate (CFAR) in presence of clutter with different temporary and spatial Doppler characteristics
- High resolution clutter maps, updated separately for each MTD filter, to provide super-clutter visibility and tangential target detection

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ARCHITECTURE

- Fully solid state and fail-soft modular transmitter with separate Power Supply and Driver amplifier for each Power Chain
- Redundant receiver channels
- Duplicated Radar Processor with digital A-MTD Signal Processor
- Extractor/Controller for Target and Weather detection
- Data Transmission on redundant LAN
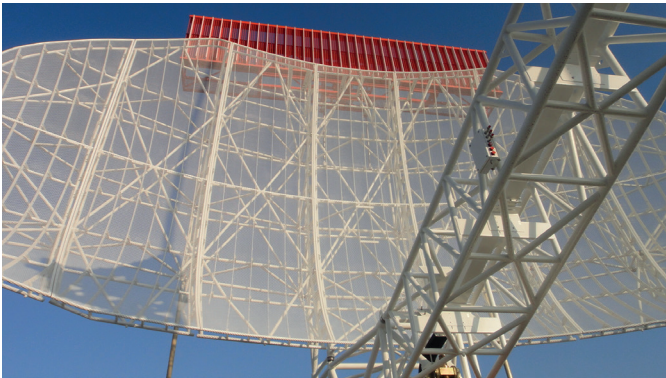
TECHNICAL FEATURES

Frequency band	From 1250 to 1350 MHz
Instrumented Range	From 100 NM up to 256 NM
Antenna rotation rate	From 5 to 7.5 RPM
Transmitter Architecture	Solid State (with fail soft capability) including 16 power chains and radial power combiner
Output Power	> 30 KW
Transmitted Waveforms	Short/Long pulses 16 μs / 150 μs for En-Route 1.2 μs / 100 μs for Extended TMA
Compressed Pulse length	1.2 μs
Frequency Management	Burst-to-burst frequency diversity with capability of on-line frequency selection
Cooling	Air cooling
Signal Processor	Adaptive Moving Target Detector (A-MTD) with 4 to 10 confugurable FIR filters, according to radar timing
Conversion Type	A/D conversion at IF (30 MHz) level
Processor Platform	COTS architecture based on DSP processors and standard interfaces C language algorithms running on LINUX OS Extended extraction processing capability (>1600 plots)
Detection Logic	Automatic selection of fixed and adaptive thresholds based on high resolution clutter maps
LAN Connections	3 (per each channel)
Weather Extraction	Classified in six levels calibrated according to U.S. National Weather service
RMA	MTBFc > 48,000 hours MTTR < 20 minutes Availability better than 99,999%

The equipment is CE and CSA certified, compliant to RED directives.

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