T-CZ Monopulse Secondary Surveillance Radar Antenna

OVERVIEW

The T-CZ Large Vertical Aperture antenna designed for MSSR systems is suitable for all climatic conditions without a radome. Antenna comprises 34 vertical radiating columns operating within an open reflector screen. Each column is protected with UV stabilized surface ABS radome for long term environmental durability.
The antenna provides independent Interrogate& Monopulse SUM, Side Lobe Suppression (SLS)and Monopulse Difference (DIFF) azimuth patterns, each having a broad fan beam in elevation and sharp roll-off to provide excellent system performance and to reduce ground illumination.

The Interrogate SUM and SLS patterns can be used for ISLS operation. 33 radiating columns create SUM and DIFF patterns. SLS pattern is radiated with 33 + 1 BACK column.

The SUM pattern is highly directional in azimuth with low side lobes. The SLS pattern is designed to maximise coverage of SUM pattern side lobes. The accurately defined gain relationship between the SUM and DIFF patterns at the receive frequency of 1090 MHz is used in a Monopulse system to establish the Off-Boresight Angle (OBA) measurement of received transponder replies. Transponder replies received in the SUM and SLS patterns may also be used at 1090 MHz to provide Receiver Sidelobe Suppression (RSLS).

OPTIONS

- Obstacle Light
- Surface Finish Colour Upon Customer Request

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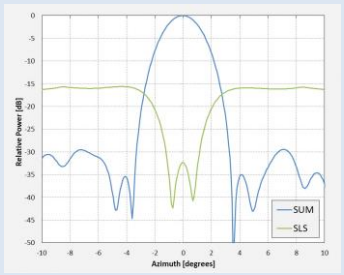
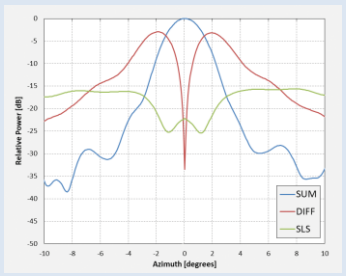
KEY TECHNICAL PARAMETERS

ELECTRICAL CHARACTERISTICS	
Transmit Frequency	1030 ± 0.2 MHz (SUM, SLS)
Receive Frequency	1090 ± 3 MHz (SUM, DIFF, SLS)
Outputs	SUM, DIFF, SLS
Output Connectors	N-female
Impedance	50 Ohm (nominal)
VSWR – SUM Channel	1.05/1.37 (1030/1090 MHz)
VSWR – DIFF Channel	1.07/1.52 (1030/1090 MHz)
VSWR – SLS Channel	1.13/1.13 (1030/1090 MHz)
Power Handling Capacity	4 kW Peak, 240 W Average
Gain (SUM Channel)	27 dBi minimum
Polarization (All Channels)	Linear vertical
AZIMUTH PATTERNS	
SUM Pattern 3 dBBeamwidth	2.4° ± 0.2°
SUM Maximum SLL	25 dB below peak
SUM/DIFF PatternCrossover Points	-3.8 dB ± 0.1 dB
DIFF Peaks Difference	0.3 dB max
DIFF Null depth	30 dB min
DIFF Null Offset withreference to SUM Maximum	0.01 dB max
SLS Coverage of SUMSidelobes	6 dB minimum
ELEVATION PATTERNS	
SUM Pattern Beam Peak	+7.1°
Vertical Roll-off	1.8 dB/° at -6 dB point
MECHANICAL	
Height	1780 mm
Width	8160 mm
Depth	688 mm
Weight	680 kg
Number of Columns	34
Operating Lifetime	at least 15 years
Elevation Tilt	
ENVIRONMENTAL	
Temperature	-40°C ÷ +70°C
Relative Humidity	To 100%, condensing
Wind – Operating	160 km/h
Wind – Survival	240 km/h
Ice Loading	To 10 mm radial thickness

Radiation Patterns
1030 MHz



Radiation Patterns
1090 MHz



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