COMSAT RSI
Technical Products

SMALL APERTURE SECONDARY SURVEILLANCE RADAR (SSR) ANTENNAS

Lightweight, Rugged, Easily Transportable

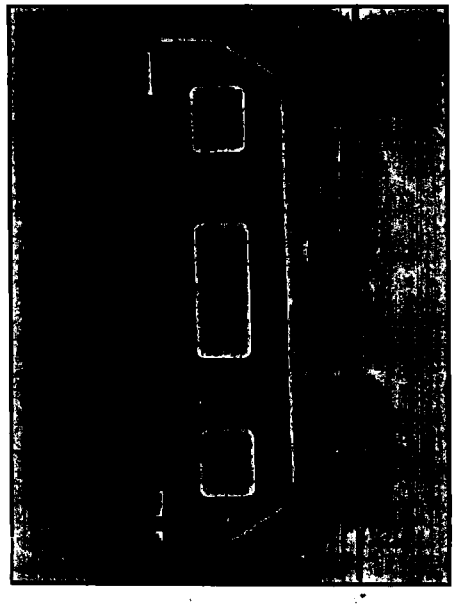
COMSAT RSI's Small Aperture SSR antennas are lightweight, rugged, and suitable for various radar applications including tactical, mobile, shipboard and fixed sites. The open array antennas present a lower wind profile and provide improved RF performance than their predecessor, the hogtrough antennas. The design approach is based on the proven technology used in our Large Vertical Aperture (LVA) antennas and features COMSAT RSI's patented encapsulated dipole column. With an injection molded shell, these columns are suitable for environmental conditions experienced worldwide. COMSAT RSI's Small Aperture SSR arrays are the antenna solution for the next generation of Secondary Surveillance Radar.

Description

COMSAT RSI offers two standard sizes of the small aperture SSR antennas, Model 114-S/M and Model 214-S/M. The S Model is a conventional sum and difference SSR antenna while the M Model is a monopulse sum, difference and SLS antenna for the MSSR application. The antenna can be co-mounted on either a primary radar antenna or used in a standalone configuration.

Features

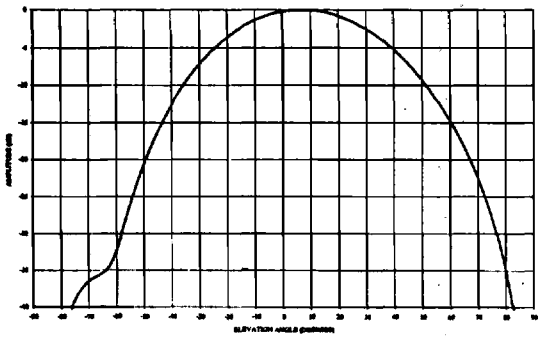
- Open structure for low wind load
- Standard and monopulse models available
- Encapsulated weatherproof dipole columns
- Superior RF performance
- Shaped elevation patterns (Model 214)



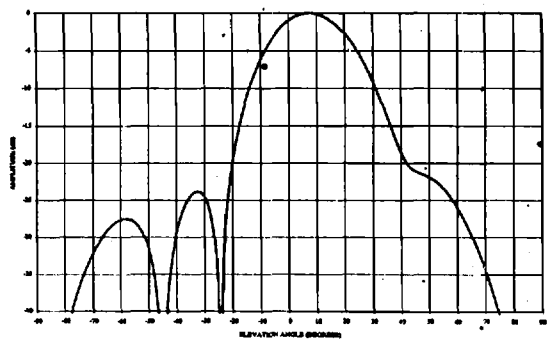
Encapsulated Dipole Column

Functional Characteristics

ELECTRICAL		
Frequency Range:		
• Transmit	1030 ± 5 Mhz	
• Receive	1090 ± 10 Mhz	
VSWR	1.5:1 max.	
Impedance	50 ohms	
Power Handling Capacity	10 KW peak, 100 W average	
Polarization	Vertical	
Cross Polarization	30 dB below peak	
Gain:		
• Model 114	19 dBi min.	
• Model 214	21 dBi min.	
AZIMUTH PATTERNS		
Sum Pattern 3-dB Beamwidth	4.2° nominal	
Sum Pattern Sidelobe Level	25 dB below peak	
Standard (Sum and Difference) Antennas:		
• Effective 9 dB Beamwidth	3° nominal	
Monopulse (Sum, Difference and SLS) Antennas:		
• Difference Pattern Sidelobe Level	24 dB below peak	
• Sum/Difference Crossover Points	-3 dB ± 0.5 dB	
• SLS Coverage of Sum Pattern Sidelobes	4 dB min.	
ELEVATION PATTERNS	See patterns below.	
MECHANICAL	Model 114	Model 214
Height	16 inches	31 inches
Width	167 inches	167 inches
Depth	15 inches	20 inches
Weight	90 lbs.	140 lbs.
ENVIRONMENTAL		
Elevation	0 to 12,000 feet above sea level	
Temperature	-50°C to +70°C	
Humidity	5 to 100 percent	
Precipitation:		
• Rain	to 60 millimeter/hour	
• Hail	to 1/2-inch diameter hailstones at 60 FPS	
• Ice Loading	to 1/2-inch radial thickness	
Wind:		
• Operating	86.8 knots maximum with 1/2-inch radial ice	
• Non-Operating	125 knots maximum	
Barometric Pressure	Up to 30.5 inches of mercury	
Operating Lifetime	20 years	



Elevation Pattern —Model 114



Elevation Pattern —Model 214

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