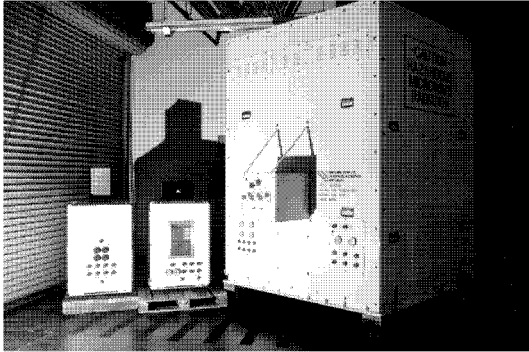




# I-30 PHASED ARRAY ANTENNA PRODUCT DATA SHEET

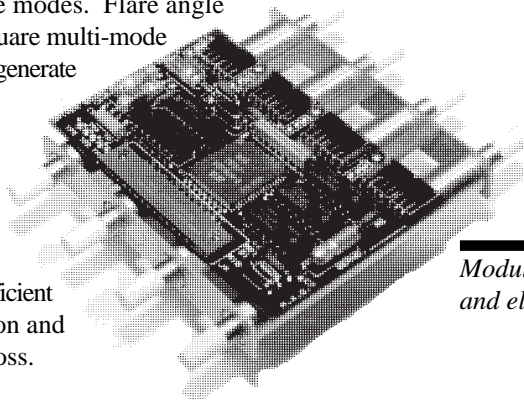


## GENERAL DESCRIPTION

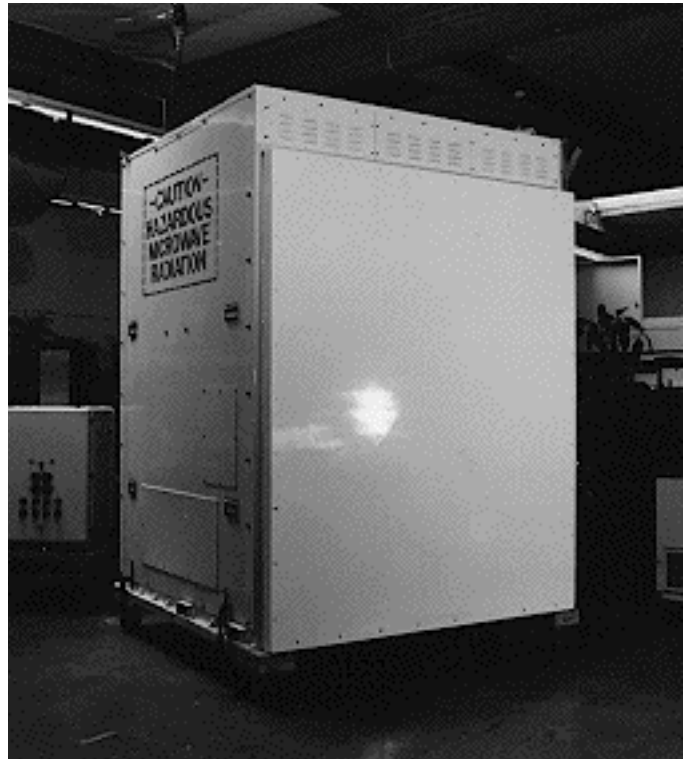
The I-30 Phased Array Antenna is an electronically steerable antenna designed for test range instrumentation applications.

The antenna consists of a phased array transmission lens (bootlace lens) with a space feed, a beam steering computer (BSC), and associated power supplies. Nonreciprocal ferrite phase shifters operating in a circularly polarized mode are contained between an aperture plate and a feed plate. Radiating elements are formed when dielectric transformers on each end of the ferrite phase shifters are inserted into circular cavities bored in the feed and aperture plates. Since the single-bounce target return is desired, the received circular polarization is opposite the transmitted circular polarization and commutation of the phase shifters is not required. Accordingly, the phase shifters are switched at the beam scan rate rather than at twice the radar pulse repetition frequency which minimizes power supply requirements.

The feed provides monopulse operation with either sense of circular polarization on receive as well as the duplexing function between the transmit and receive modes. Flare angle changes in a square multi-mode pyramidal horn generate higher order waveguide modes to obtain equal E and H plane primary patterns providing for efficient lens illumination and low spillover loss.



**AFFORDABLE**  
**RELIABLE**  
**CAPABLE**  
test range  
instrumentation  
antenna

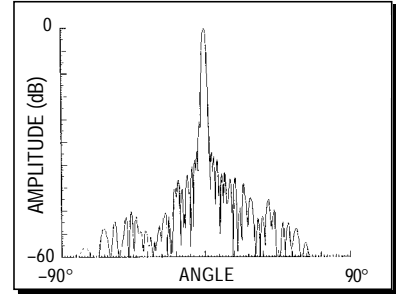


The BSC accepts signals from the system controller and points the antenna beam in a specified direction. The BSC and power supply are housed separately in rugged, compact cases. The mechanical and electrical characteristics as well as measured patterns of the I-30 Phased Array Antenna are presented on the back of this sheet.

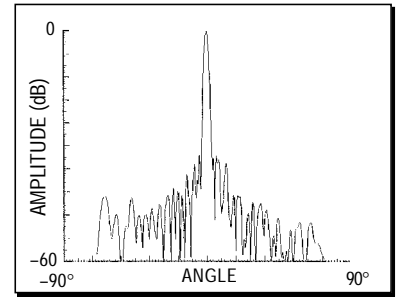
*Module containing four phase shifters and electronic drivers.*

# I-30 PHASED ARRAY ANTENNA

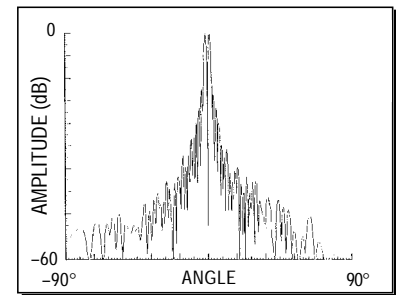
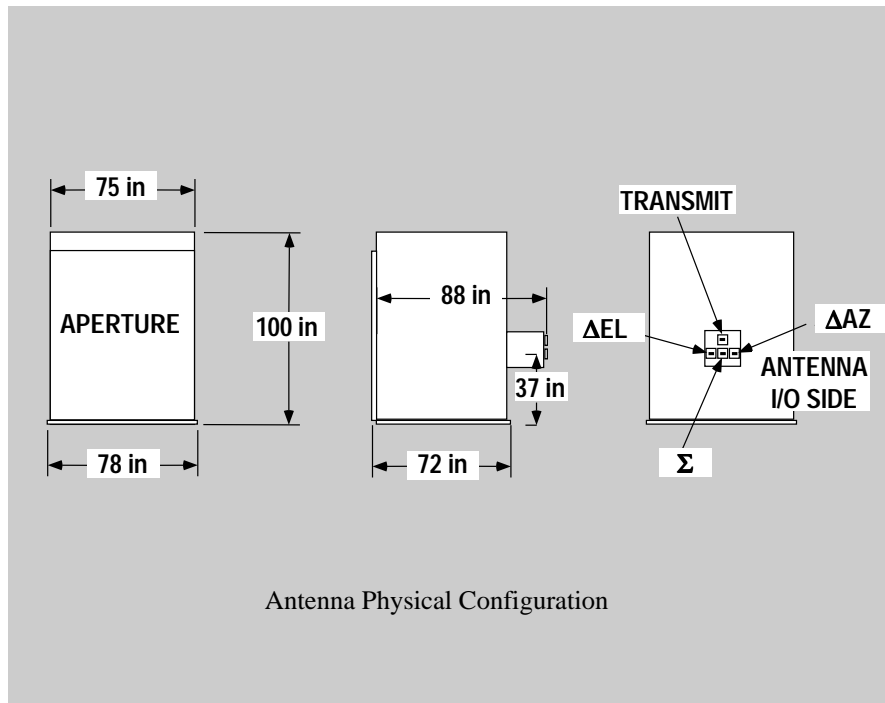
CHARACTERISTIC	DESCRIPTION
Frequency	X-Band, 7%
Instantaneous Bandwidth	50MHz
Polarization	Circular
VSWR	1.50 : 1 max
Gain (Broadside)	36dB min
Peak Power	100KW
Average Power	8KW
Beamwidth	Pencil Beam, 1.9 Degrees Nominal
Beam Pointing Accuracy	0.25 Milliradians
Beam Resolution	0.25 Milliradians
Beam Broadening	0.3 Degrees max
Peak Sidelobe Level	-25dB max
Beam Switching Time	100 Microseconds
Load Time	500 Microseconds max
Operating Temperature	-15 to +46 Degrees C



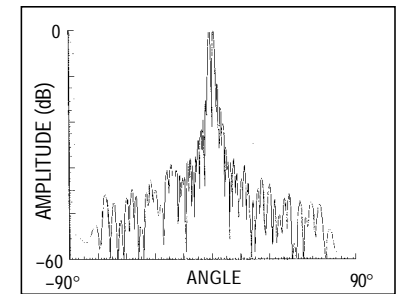
E-Plane Boresight Pattern



H-Plane Boresight Pattern



E-Plane Difference Pattern



H-Plane Difference Pattern

