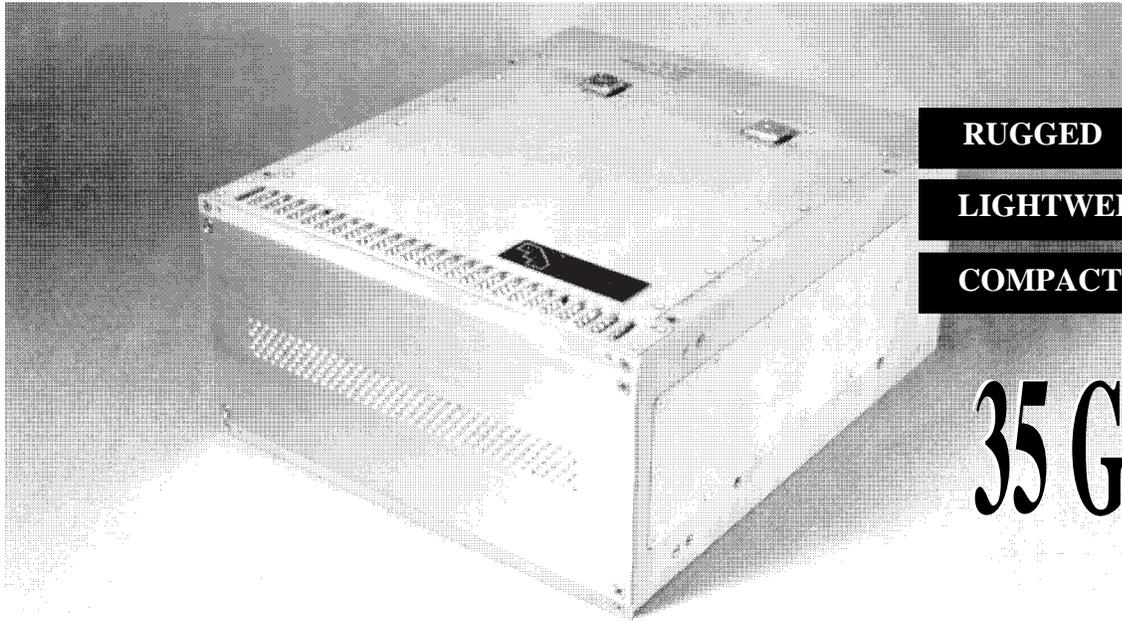




## MILLIMETER-WAVE ANTENNA PRODUCT DATA SHEET



**RUGGED**

**LIGHTWEIGHT**

**COMPACT**

**35 GHz**

### GENERAL DESCRIPTION

The MAG Millimeter-Wave Antenna Subsystem is phase scanned in both azimuth and elevation planes with a beamwidth of 18.5 degrees in elevation by 2.0 degrees in azimuth, and a scan volume of  $\pm 35$  degrees in elevation and  $\pm 45$  degrees in azimuth. Monopulse capability is provided in the elevation plane, and the antenna is capable of switching from one beam position to any other within 30 microseconds. Instantaneous system bandwidth is 500 MHz.

The antenna design consists of 216 MAG reciprocal ferrite phase shifters arranged on an isosceles triangular grid. The center-to-center element spacing is .258 inches within each row of 36 phase shifter elements, and the phase shifter elements are arranged into six rows. The spacing between each of the rows is .180 inches.

The radiating aperture is made up of circular dielectric-loaded waveguides in a metal ground plane. This type of element has broad patterns in both elevation and azimuth planes.

Electronic drivers use the MAG logic chip, and have built-in-test capability. Easy driver board replacement is made possible through access panels in the unit.

The array package is a self-contained, environmentally controlled unit. Blowers within the unit ensure a phase shifter temperature rise of less than 10 degrees C over ambient, alleviating the need for differential temperature compensation of phase shifter insertion phase.

Mechanical and electrical characteristics, as well as measured patterns, are presented on the back of this sheet.

# MILLIMETER-WAVE ANTENNA

CHARACTERISTIC	DESCRIPTION
Operating Frequency	Ka-BAND
Instantaneous Bandwidth	500MHz
Polarization	Vertical
Azimuth Scan Coverage	$\pm 45$ Degrees
Elevation Scan Coverage	$\pm 35$ Degrees
Azimuth Boresight Beamwidth	$2\pm 2$ Degrees
Elevation Boresight Beamwidth	$18.5\pm 1.0$
Antenna Boresight Gain	25.0 dBi
Elevation Monopulse Null Depth	-30 dB
Elevation Monopulse Null Position Accuracy	1.0 Degree
Beam Steering Quantization Azimuth	.03 Degrees
Beam Steering Quantization Elevation	.5 Degrees
Beam Pointing Accuracy Azimuth	$\pm 1$ Degrees
Beam Pointing Accuracy Elevation	$\pm 1.2$ Degrees
Beam Switching Time	30 Microseconds
Operating Temperature	-32 to 71 Degrees C
Nonoperating Temperature	-54 to 71 Degrees C
Operating Altitude	0 to 15,000 Feet
Nonoperating Altitude	0 to 40,000 Feet
Average RF Power	100 Watts
Weight	35 lbs.
Size	5-3/4"h x 11-1/4"w x 13-1/8"d

