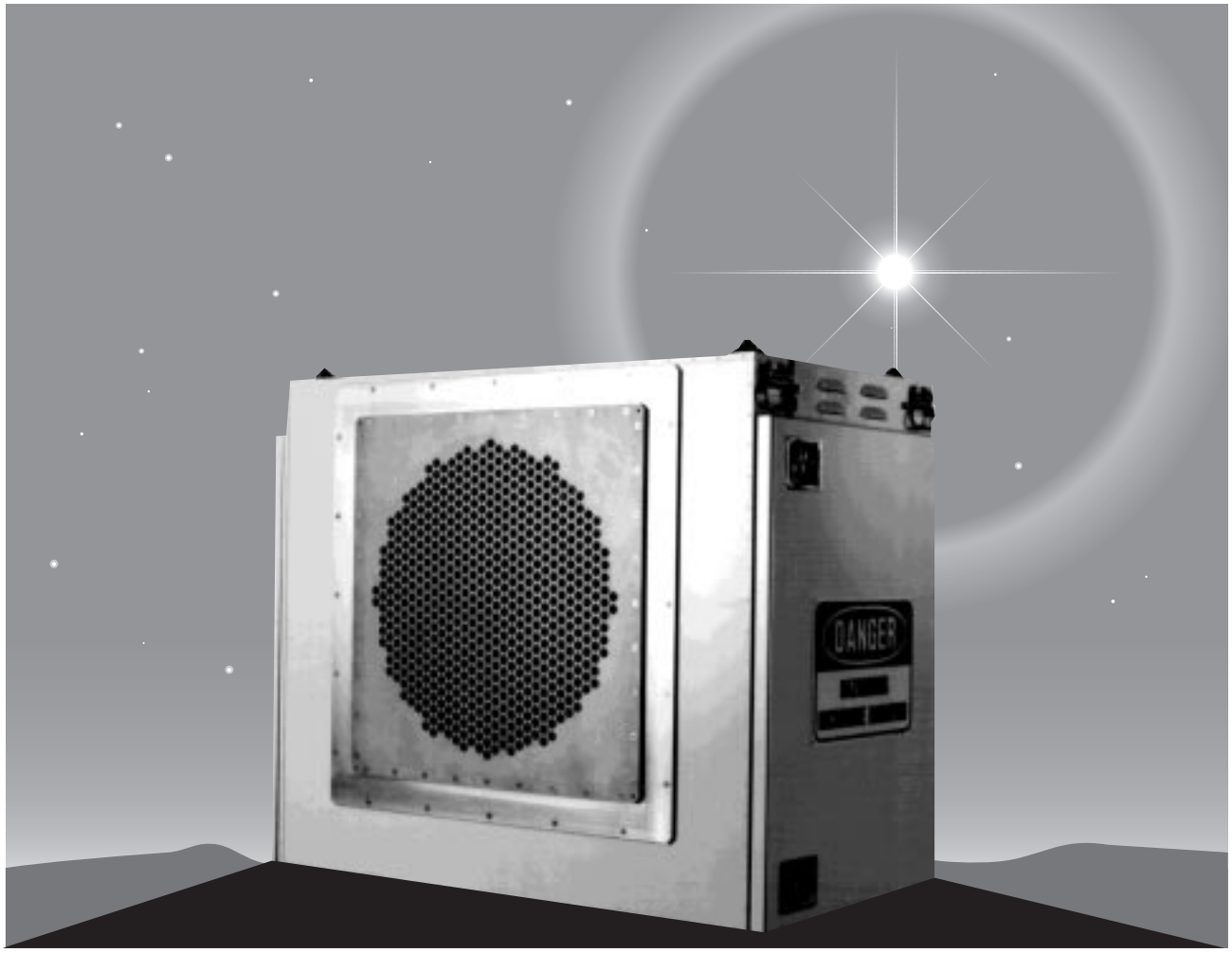
Transportable Phased Array Antenna Systems (TPAAS)
PRODUCT INFORMATION



1. Introduction

MAG Transportable Phased Array Antenna Systems (TPAAS) are a family of ruggedized, low-cost electronically scanning antennas designed for test range instrumentation applications. TPAAS antennas have been built at Ku-, X-, and C-Band frequencies, as exemplified by the X-Band unit shown above.

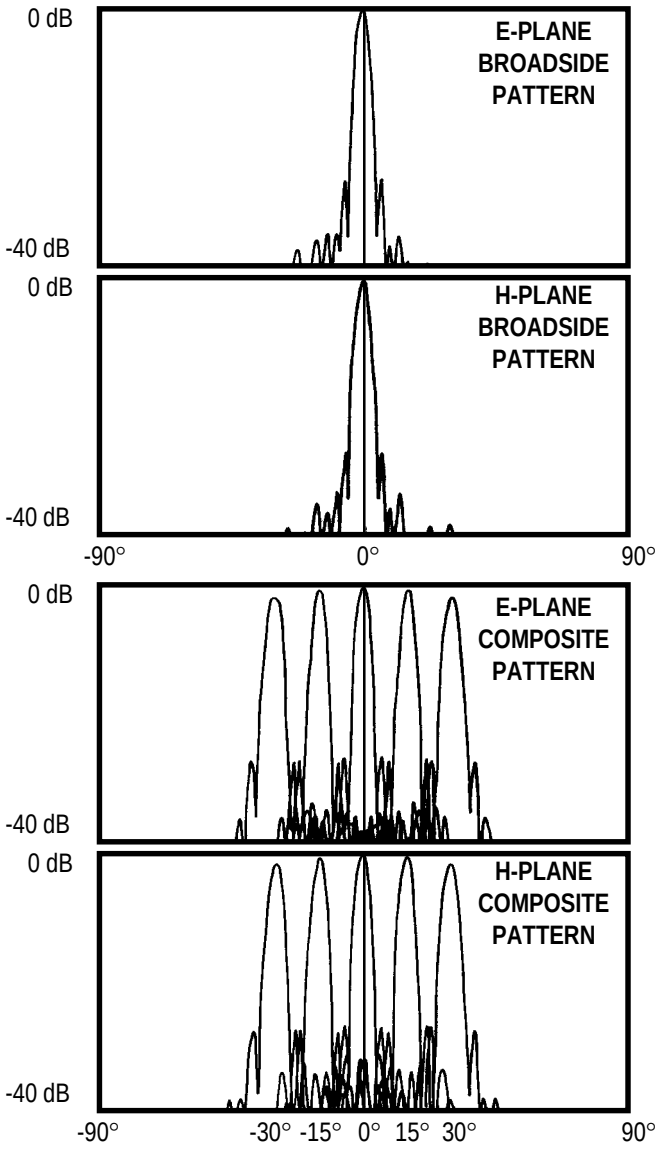
The antenna portion of the system is made up of a phased array transmission lens (bootlace lens) with a space feed. The lens consists of aperture and feed plates with ferrite phase shifters contained between the two plates. Radiating elements integrated into the aperture and feed plates are distributed on an equilateral triangular grid. The element spacing is selected to ensure that grating lobes do not occur in visible space when the beam is scanned to its limits, and the triangular grid geometry is used to minimize the number of elements.

In addition to the antenna portion, the system also consists of a beam steering controller (BSC). The BSC accepts signals from the system controller and points the antenna main beam in a specified direction within a 60 degree cone about the antenna normal. Digital communication between the BSC and the antenna is accomplished via a fiberoptic network.

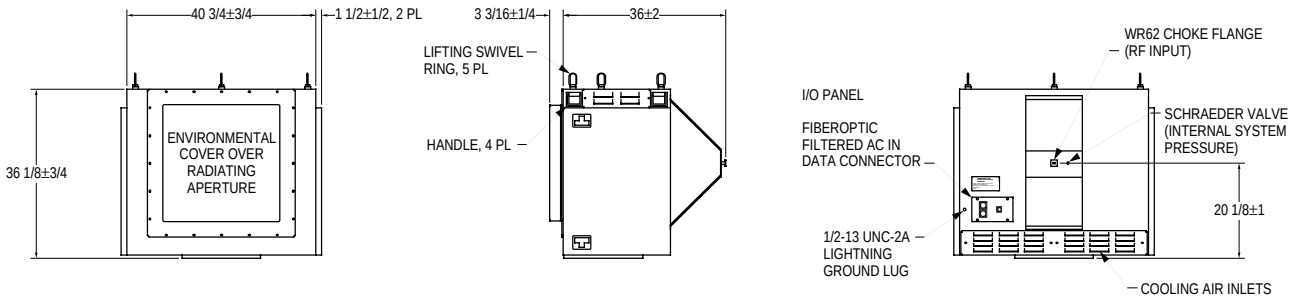
The mechanical and electrical characteristics, physical dimensions and interface data, as well as measured patterns of the Ku-, X-, and C-Band TPAAS antennas are presented on the following pages.

2. Ku-Band TPAAS

CHARACTERISTIC	DESCRIPTION
Frequency	Ku-Band, 7%
Instantaneous Bandwidth	100 MHz
Polarization	Circular
VSWR	1.40 : 1 max
Gain (Broadside)	30 dB min
Peak Power	30 kW
Average Power	1500 W
Beamwidth (Nominal)	Pencil Beam, 3.7 Degrees
Beam Pointing Accuracy	±0.3 Degrees max
Beam Resolution	0.6 Degrees max
Beam Broadening	0.9 Degrees max
Peak Sidelobe Level	-25 dB max
Beam Switching Time	120 Microseconds
Load Time	3.24 Milliseconds max
Operating Temperature	-20 to +50 Degrees C

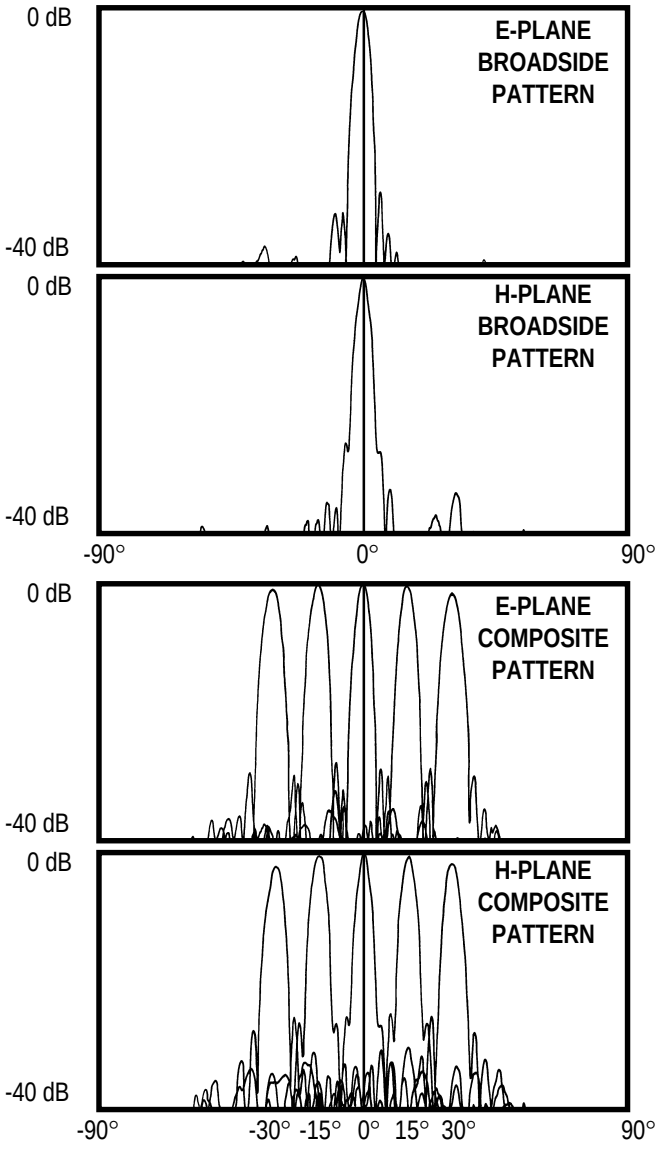


OUTLINE DRAWING
Dimensions in Inches

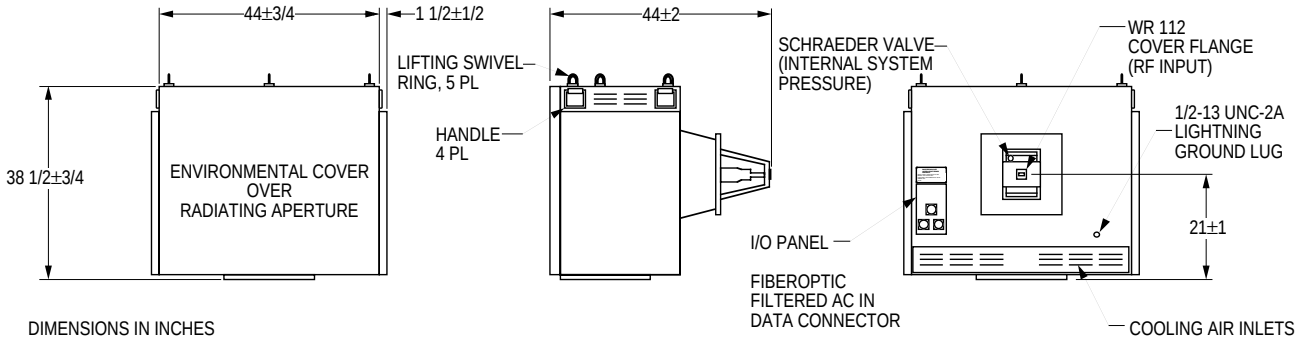


3. X-Band TPAAS

CHARACTERISTIC	DESCRIPTION
Frequency	X-Band, 7%
Instantaneous Bandwidth	50 MHz
Polarization	Circular
VSWR	1.50 : 1 max
Gain (Broadside)	30 dB min
Peak Power	50 kW
Average Power	3 kW
Beamwidth (Nominal)	Pencil Beam, 1.9 Degrees
Beam Pointing Accuracy	±0.3 Degrees max
Beam Resolution	0.6 Degrees max
Beam Broadening	0.9 Degrees max
Peak Sidelobe Level	-25 dB max
Beam Switching Time	120 Microseconds
Load Time	3.24 Milliseconds max
Operating Temperature	-20 to +50 Degrees C

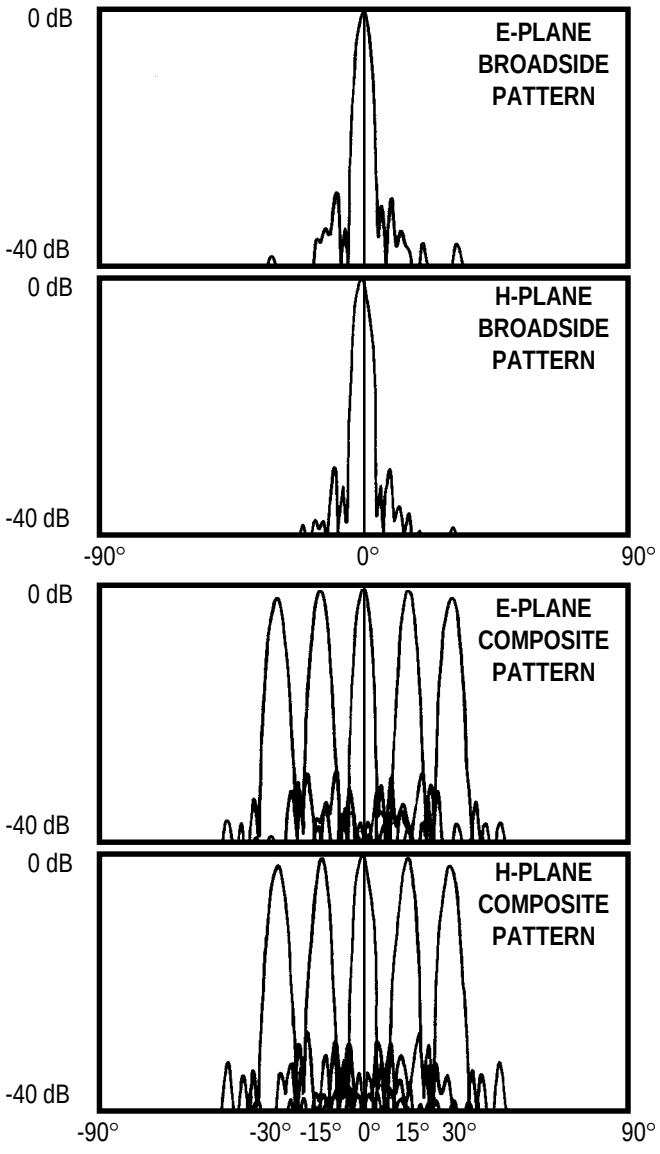


OUTLINE DRAWING
Dimensions in Inches



4. C-Band TPAAS

CHARACTERISTIC	DESCRIPTION
Frequency	C-Band, 17%
Instantaneous Bandwidth	100 MHz
Polarization	Circular
VSWR	1.40 : 1 max
Gain (Broadside)	30 dB min
Peak Power	25 kW
Average Power	10 kW
Beamwidth (Nominal)	Pencil Beam, 3.7 Degrees
Beam Pointing Accuracy	±0.3 Degrees max
Beam Resolution	0.6 Degrees max
Beam Broadening	0.9 Degrees max
Peak Sidelobe Level	-25 dB max
Beam Switching Time	200 Microseconds
Load Time	3.24 Milliseconds max
Operating Temperature	-20 to +50 Degrees C



OUTLINE DRAWING
Dimensions in Inches