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Revision: 1.4
Author: Jack Trollman
Manager: Brett Douglas

Specification for Pegasus Sector External Antenna

Part number: AIR-ANT58G10SSA-N
74-3273-01

Headline

This document outlines the technical requirements for the external sector antenna to be used with the Pegasus bridge system.

Approvals

Department	Name	Approval Date
RF Engineering		
Technical Marketing		
Marketing		
Compliance		
Program Manager		

Revision History

Rev	Date	Author	Comment
1.0	3/11/02	Jack Trollman	Initial Release
1.1	1/24/03	Jack Trollman	Include new vendor design and out-of-band gains
1.2	2/12/03	Jack Trollman	Revised to new Maxrad round design
1.3	3/5/03	Jack Trollman	Revised out of band gains, cross-pol rejection, physical size, color specifications and added radiation pattern.
1.4	3/20/03	Jack Trollman	New part numbers and radiation patterns

1. **Introduction**
   This document describes the basic specifications for the sector antenna to be used with the Pegasus system.

2. **Electrical Specifications**
   The electrical specifications for this antenna are summarized in the table below. Typical radiation pattern is shown in Figure 1.

Sector Antenna Electrical and Mechanical Specifications

Parameter	Value	Units
Frequency Range	5725 – 5825	MHz
Gain, measured at end of 1.5 Meter cable 5725-5825 MHz	9.5 ± 0.5	dBi
Maximum Out-of-band Gains: 4.50 - 5.15 GHz (Restricted Band) 5.35-5.46 GHz 7.25-7.75 GHz	 8 9 5	dBi
Impedance	50	ohms
VSWR	1.5:1 max.	
Azimuth half-power beamwidth(1)	60.0, minimum	degrees
Elevation half-power beamwidth(1)	60.0, minimum	degrees
Linear polarization options(2)	Hor/Vert	-
Cross-polarization discrimination over boresight ± 25°	18, min	dB
Sidelobe and Front-to-back ratio level from 120° to 240° (referenced to main lobe peak)	20, min	dBc
Input RMS power	4.0, max	W
Approximate Size, (L x W x D) including radome	2.5 x 2.5 x 1.75	inches
Feed cable	1.5, Times LMR-400 or equivalent	Meters
RF Connector	Type N-Male	
Mounting capability (Either Vert. or Horiz. Polarization)	Accommodates 1.5 in.to 2.5 in. pipe	
Elevation adjustment	None, main beam fixed on horizon	

Notes:
1. Beamwidth symmetrical.
2. Polarization configurable at installation. Polarization determined by orientation of radiating element. Main beam peak to remain on horizon regardless of polarization setting.

Environmental & Regulatory Requirements		
Temperature		
Operating	-30°C	Min
	+60°C	Max
Storage	-40°C	Min
	+85°C	Max
Altitude		
Operating	10000 feet	Max
Storage	16000 feet	Max
Flammability		
Antenna and Radome	UL94HB	
Radome Material	UV Resistant ABS Plastic or equivalent	
Humidity	0 - 100% RH	Condensing
Wind Speed		
Operational	100 MPH	
Survival	125 MPH	
Enclosure	NEMA 250-1997	Type 4
Lightning Protection	All metal parts grounded	DC continuity between connector center conductor and ground of 0.1 Ohm or less
Metal Parts Color	Pantone Cool Gray 2C (GE Cycolac KJB 1000)	
Plastic Radome Color	Cisco Medium Gray	Cisco Specification 95-5818-01
Cisco labeling	Sticker on rear panel	

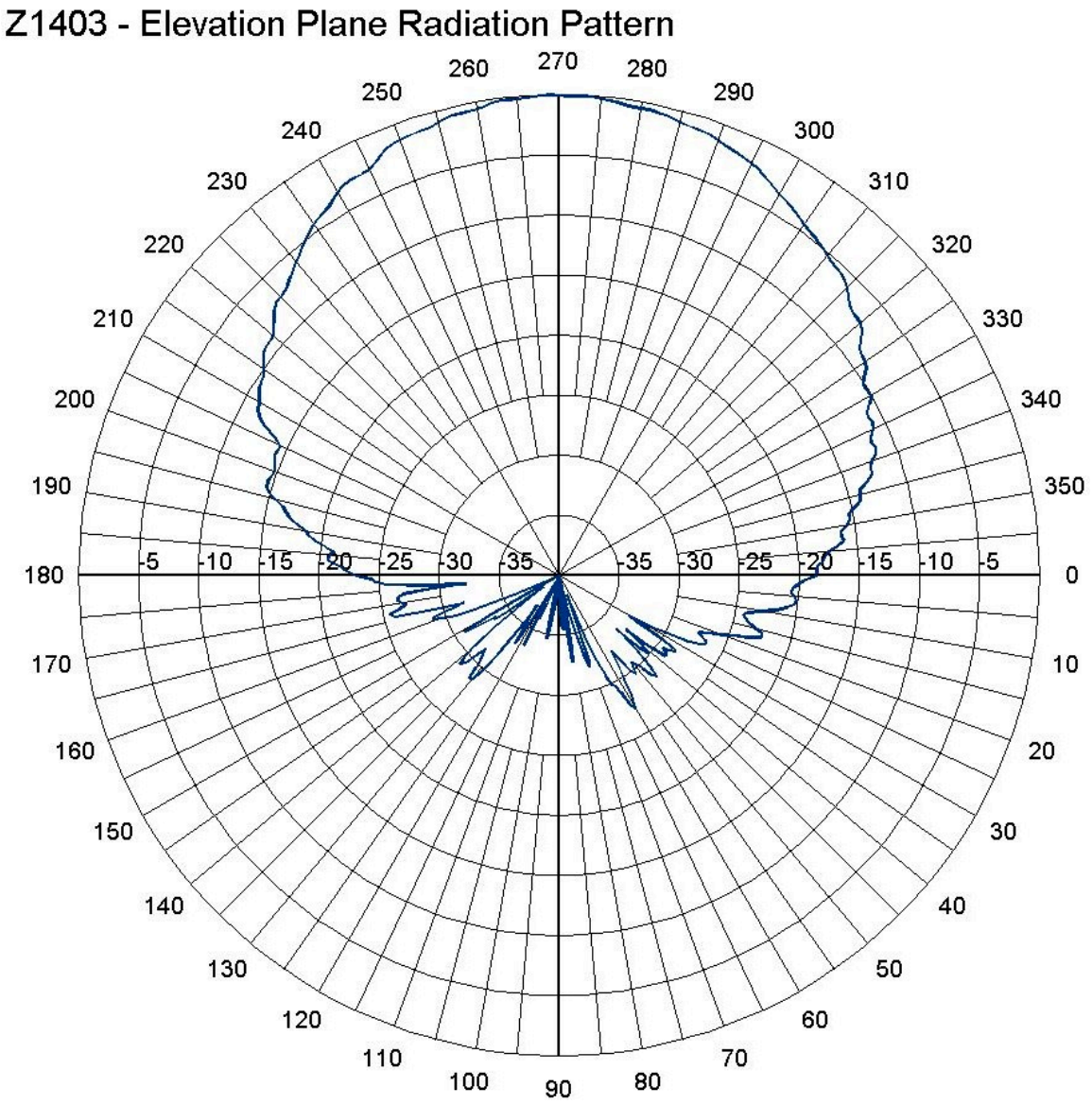

Figure 1a. Typical E-plane radiation pattern

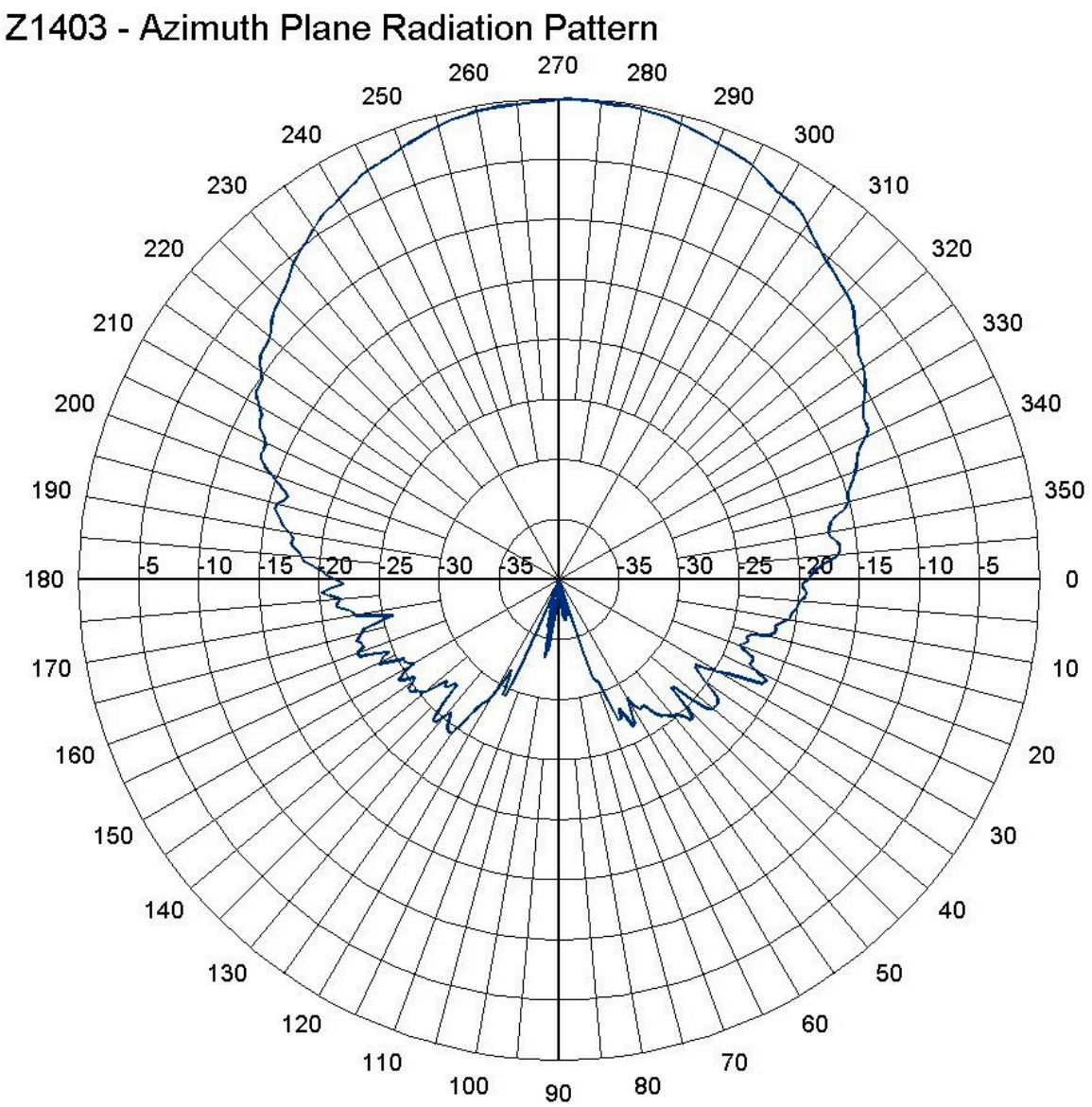

Figure 1b. Typical H-plane radiation pattern

Document Number: EDCS-256657
Revision: 1.3
Author: Jack Trollman
Manager: Brett Douglas

Specification for Pegasus Omnidirectional External Antenna

Part number: AIR-ANT58G9VOA-N
74-3272-01

Headline

This document outlines the technical requirements for the external omnidirectional antenna to be used with the Pegasus bridge system.

Approvals

Department	Name	Approval Date
RF Engineering		
Mechanical Engineering		
Marketing		
Compliance		
Program Manager		

Revision History

Rev	Date	Author	Comment
1.0	3/11/02	Jack Trollman	Initial Release
1.1	2/12/03	Jack Trollman	Incorporates new gain, cable type and color
1.2	3/5/03	Jack Trollman	Changed color spec to white, corrected Freq. range typo and included typical radiation pattern
1.3	3/20/03	Jack Trollman	New part numbers and radiation patterns

1. **Introduction**
   This document describes the basic specifications for the omnidirectional antenna to be used with the Pegasus system.

2. **Electrical Specifications**
   The electrical specifications for this antenna are summarized in the table below. Typical radiation pattern in shown in Figure 1.

Omni Antenna Electrical and Mechanical Specifications

Parameter	Value	Units
Frequency Range	5725 – 5825	MHz
Gain, measured at end of 1.5 Meter cable 5725-5825 MHz [(1)]	9.0, +1.0, -0.5	dBi
Maximum Out-of-band Gains: 4.5-5.15 GHz 5.35-5.46 GHz 7.25-7.75 GHz	 7 7 5	 dBi
Impedance	50	ohms
VSWR	1.5 maximum	
H-plane half-power beamwidth	Omnidirectional	
E-plane half-power beamwidth	6 +/- 0.5	degrees
Polarization	Vertical	-
Beam Tilt	None (on horizon)	
E-plane sidelobes below beam peak	-10.0, minimum	dB
Input RMS power	4.0, max	Watts
RF Connector	Type N-Male	
Mounting capability	Accommodates 1.5 in.to 2.5 in. pipe	

Notes:
1. H-plane shall display 360 degree omni pattern of 9.0 dBi +1.0, -0.5 dB including any incidental beam tilt inherent in the design.

Environmental & Regulatory Requirements		
Temperature		
Operating	-30°C	Min
	+60°C	Max
Storage	-40°C	Min
	+85°C	Max
Altitude		
Operating	10000 feet	Max
Storage	16000 feet	Max
Flammability		
Antenna and Radome	UL94HB	
Radome Material	UV Resistant ABS Plastic or equivalent	
Humidity	0 - 100% RH	Condensing
Wind Speed		
Operational	100 MPH	
Survival	125 MPH	
Lightning Protection	All metal parts grounded	DC continuity between connector center conductor and ground of 0.1 Ohm or less
Color	White	
Cisco labeling	Sticker on connector end	

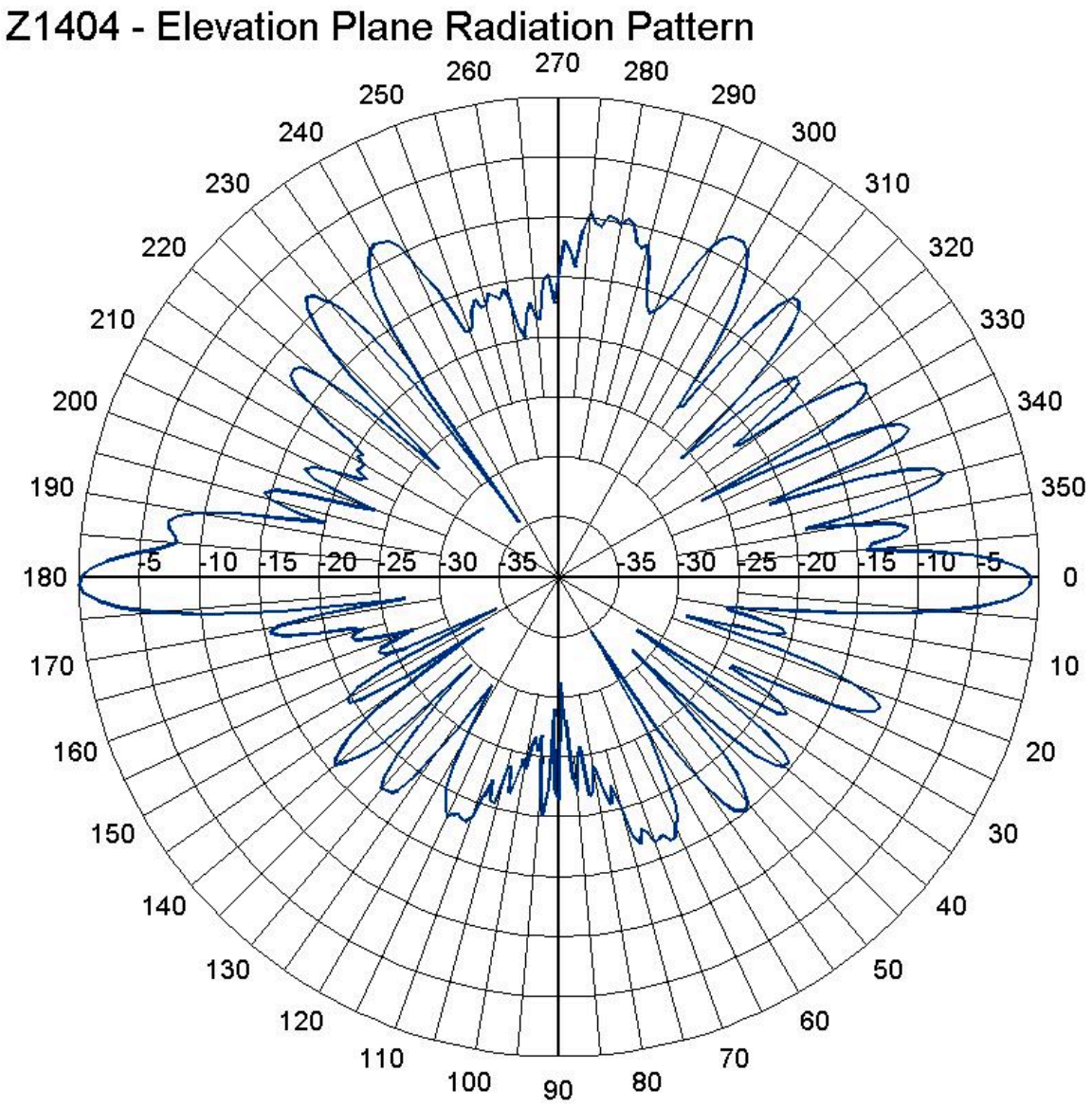

Figure 1a. Typical E-Plane (elevation) radiation pattern

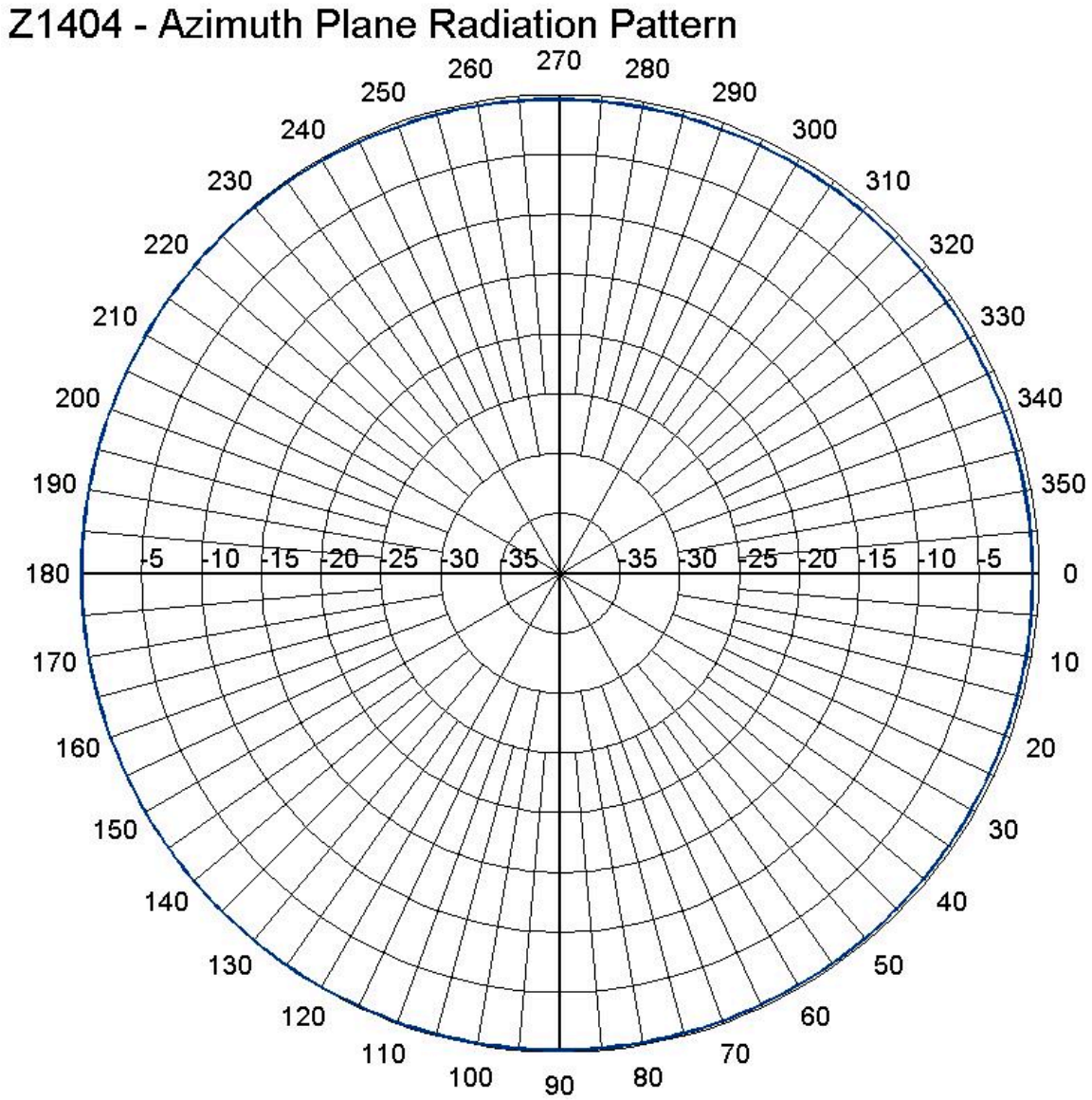

Figure 1b. Typical H-Plane (azimuth) radiation pattern

Document Number: EDCS- 256668
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Author: Jack Trollman
Manager: Brett Douglas

Specification for Pegasus External Antenna
Two-foot Dish

Part Number: AIR-ANT58G28SDA-N
74-3271-01

Headline

This document outlines the technical requirements for the external dish antenna to be used with the Pegasus bridge system.

Approvals

Department	Name	Approval Date
RF Engineering		
Mechanical Engineering		
Technical Marketing		
Marketing		
Program Manager		

Revision History

Rev	Date	Author	Comment
1.0	3/11/02	Jack Trollman	Initial Release
1.1	1/24/03	Jack Trollman	Revised out-of-band gain specifications
1.2	2/12/03	Jack Trollman	Included latest vendor changes
1.3	3/5/03	Jack Trollman	Included final diameter, color updates and radiation pattern
1.4	3/20/03	Jack Trollman	Included new part numbers and polar radiation plots

1. **Introduction**
   This document describes the basic specifications for the high-gain dish antenna to be used with the Pegasus system.

2. **Electrical Specifications**
   The electrical specifications for this antenna are summarized in Table 1 below. A typical radiation pattern is shown in Figure 1.

Dish Antenna Electrical and Mechanical Specifications

Parameter	Value	Units
Frequency Range	5725 – 5825	MHz
Gain, measured at end of 1.5 Meter cable: 5725 to 5825 MHz	28.0, +/- 0.5	dBi
Maximum Out-of-band Gains: 4.50 - 5.15 GHz (Restricted Band) 5.35-5.46 GHz 7.25-7.75 GHz	 19 22 29	dBi
Impedance	50	ohms
VSWR	1.5:1 maximum	
E and H-plane half-power beamwidths	4.75 minimum	degrees
Polarization options (linear)(1)	Hor or Vert	-
Cross-polarization discrimination over boresight ± 2°	20, min	dB
Sidelobe and Front-to-back ratio level from 10° to 350° (referenced to main lobe peak)	20, min	dB
Maximum Input RMS power	4.0	W
Diameter	29.0 maximum	inches
RF cable (Can include segment of smaller dia. cable)	Times LMR-400 or equiv.	
RF Connector on end of 1.5 M cable	N-Male	
Mounting capability (Either Vert. or Horiz. Polarization)	Accommodates 1.5 in.to 2.5 in. pipe	
Elevation adjustment range	± 12.5 from horiz.	degrees

Notes:
1. Polarization determined by orientation of antenna, i.e. physically rotate antenna 90° to obtain either horizontal or vertical polarization. Must be configurable during installation. Mounting bracket to accommodate either polarization without special hardware.

Environmental & Regulatory Requirements		
Temperature		
Operating	-30°C	Min
	+60°C	Max
Storage	-40°C	Min
	+85°C	Max
Altitude		
Operating	10000 feet	Max
Storage	16000 feet	Max
Flammability		
Antenna (aluminum)	N/A	
Feed/radome	UL94HB	
Feed/radome Material	UV Resistant ABS Plastic or equivalent	
Out-of-band gain reduction filter	Self-contained within feed	Loss included in gain calculation
Humidity	0 - 100% RH	Condensing
Wind Speed		
Operational	100 MPH	
Survival	125 MPH	
Enclosure	NEMA 250-1997	Type 4
Lightning Protection	All metal parts grounded	DC continuity between connector center conductor and ground of 0.1 Ohm or less
Color	Pantone Cool Gray #2C (GE Cycolac KJB 1000)	
Cisco labeling	Same position as on 24 inch 2.4 GHz dish	

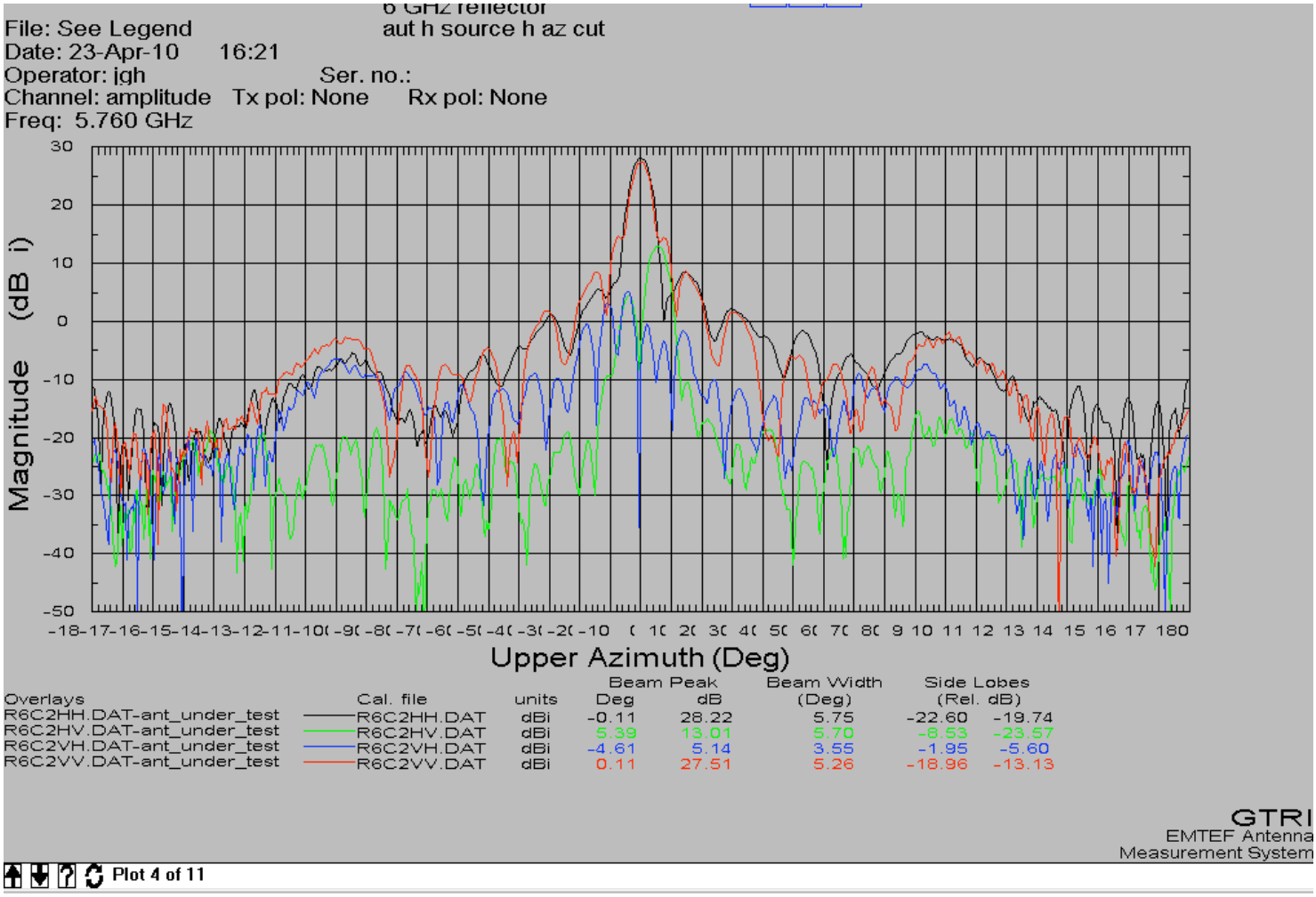

Figure 1a. Typical radiation pattern - rectangular plot

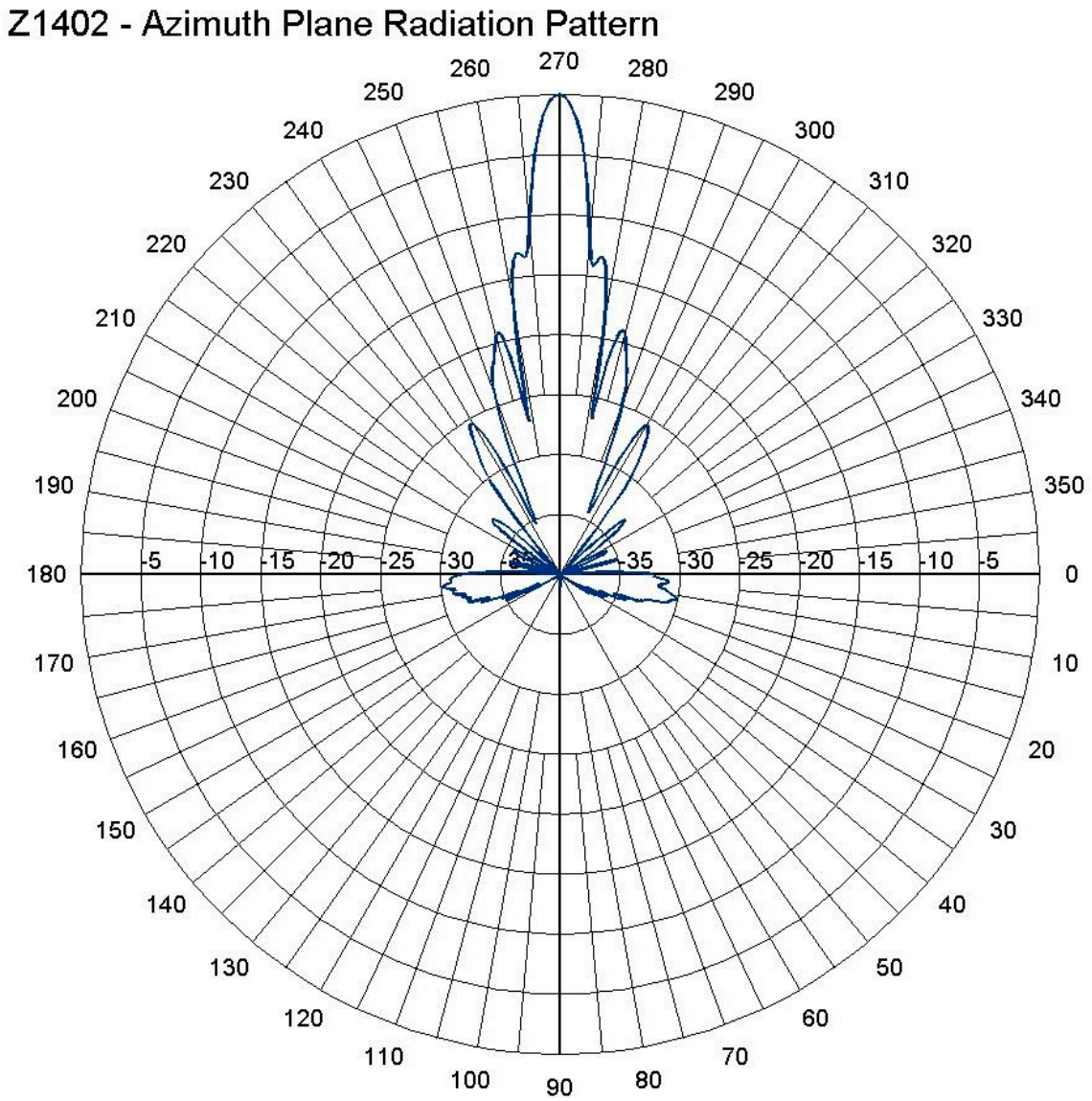

Figure 1b. Typical azimuth radiation pattern - polar plot

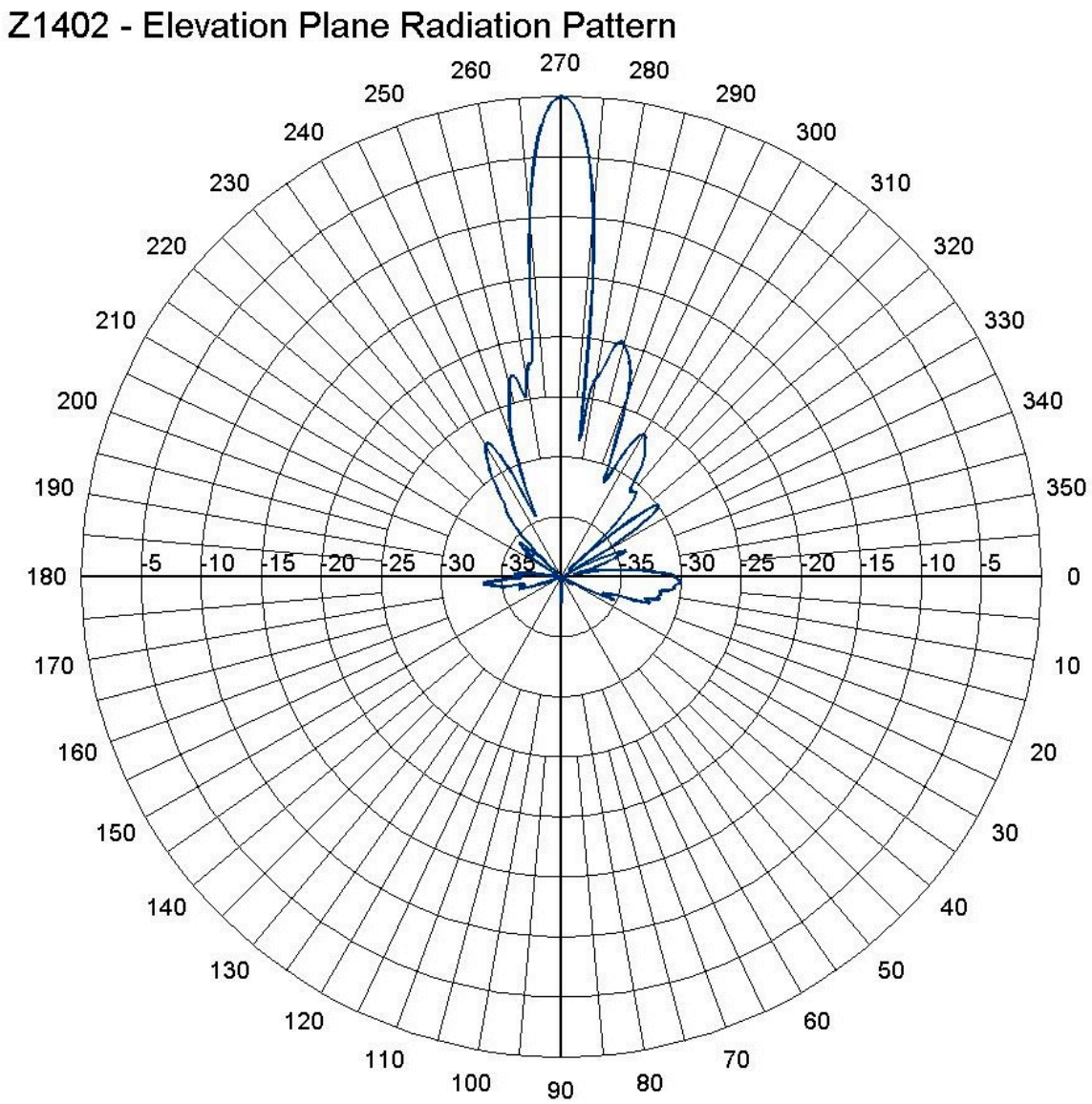

Figure 1c. Typical elevation radiation pattern - polar plot