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Huck Jr. 2.4 GHz, Direct Mount 5 dBi Omni-directional Antenna Specification
AIR-ANT2450V-N

Headline

This document outlines the technical requirements for a 2.4 GHz, vertical 5 dBi omni-directional antenna to be used with the Cisco Huck Jr. product and similar future products. This antenna mounts directly to the Huck Jr. platform with no cable.

Approvals

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Fred Anderson Manager, RF Engineering		
Jim Mass Manager, Mechanical Engineering		

Reviewers

Name/Title	Signature	Date
Jim Nicholson EMC Compliance Engineer		
Tom Dirrig New Product Introduction Engineer		

Revision History

Rev	Date	Author	Comment
1.0	2/27/2007	Steve Saliga	Initial Release

1. Introduction

This document describes the basic set of required specifications for an omni-directional antenna for use in the 2.4 GHz band specifically to support the Huck Jr. product. The basic features of this antenna are as follows:

- Omni-directional antenna for outdoor use
- To be direct mounted with no cable to the Huck Jr product, pointing either up or down as required
- Additionally mountable to a mast
- No more than 11 inches in length
- Antenna is terminated in an N-male connector for direct mounting
- Operates over 2400 MHz through 2500 MHz
- Peak gain is approximately 5 dBi across the 2.4 GHz band.

In general, this antenna will be housed in a white polycarbonate (or similar material) tube and have an appearance similar to Cisco's existing antenna family.

The specifications for this antenna will be presented sequentially with Electrical Specifications first, followed by Mechanical/Environmental Specifications and General Specifications.

2. Physical Appearance

The antenna should look similar to other antennas in the Cisco line. It should have a metal base suitable for mast mounting the antenna and a white/off-white "plastic" tube with an end cap. The entire antenna and enclosure should be no more than 11 inches long including the connector. Figure 2.1 shows a photograph of this antenna.

Figure 2.1
Photo of the Huck Jr. 2.4 GHz, 5 dBi Omni

3. 5 dBi Omni Specifications, AIR-ANT2450V-N

This section contains both the electrical and mechanical specs for the AIR-ANT2450V-N 2.4 GHz, 5 dBi omni-directional antenna. This antenna should be housed in a tubular radome built directly on an N-male connector. The antenna will be mounted directly to the Huck Jr. platform. Depending on how the Huck Jr. product is mounted, the antenna could be pointing up or down. In addition, provision should be made to allow this antenna to be mast mounted as well.

The antenna is designed to be used outdoors with any drainage mechanism to be built into the unit to accommodate either mounting orientation, up or down. It is highly desirable to design the proper drainage so this function does not have to be configured by the user. If this functionality cannot be designed in, a configurable drainage system will be allowable with the default drainage being that for the “upside-down” mounting method.

3.1. AIR-ANT2450V-N, Antenna Electrical Specifications

The electrical specifications for this antenna are summarized in Table 3.1.1 below. All the manufacturer's specifications should be reported in data sheet format.

	AIR-ANT2450V-N, 2.4 GHz, 5 dBi Omni-directional Antenna Electrical Specifications			
	Parameter	**Design Goal**	**Minimum**	**Maximum**
1	Antenna Type	Omni-directional (Co-linear Array)		
2	Operating Frequency Range	2400MHz – 2484 MHz		
3	Nominal Input Impedance	50 Ω		
4	1.7:1 VSWR Bandwidth	2400 MHz – 2484 MHz		
5	Gain	5 dBi		
6	Polarization	Linear, vertical		
8	E-Plane 3 dB Beamwidth	30-degrees	25-degrees	
9	H-Plane 3dB Beamwidth	Omni-directional		
10	H-Plane Ripple	1 dB		
11	1st Sidelobe Level	-10 dBc		

Table 3.1.1
AIR-ANT2450V-N 2.4 GHz, 5 dBi Omni-directional Antenna, Electrical Specifications

3.2. AIR-ANT2450V-N Antenna Mechanical and Environmental Specifications

The mechanical specifications will cover the physical appearance of the antenna as well as all mounting, cable and connectors. The mechanical and environmental specs are summarized in Table 3.2.1.

	AIR-ANT2450V-N, 2.4 GHz, 5 dBi Omni-directional Antenna Mechanical /Environmental Specifications				
	Parameter	**Design Goal**	**Minimum Acceptable**	**Max Acceptable**	**Notes**
1	Length	11 inches		11 inches	Including connector scheme
2	Diameter	1 inch			
3	Weight	6 ounces			
4	Radome Material	Polycarbonate			Or similar
5	Radome Color	White/Off-white			
6	Cable Type	None			
7	Cable Color	NA			
8	Cable Length	NA			
9	Connector Type	N-Male			
10	Mounting Options	• Direct Mount with Male-N connector • Mast Mount (hardware not included)			
11	Drainage location(s)	Default drainage scenario is pointing up. "Upside-down" mounting drainage must be provided. Preferably, drain mechanism should be "built in" and not have to be configured by the user.			
13	Environment	Outdoor			
14	Operating Temperature Range	-30 C to +70 C	-30 C to +70 C		
15	Storage Temperature	-40 C to +85 C			
16	Wind Rating/Load	125 mph operational, 165 mph gusts			
17	Water Tightness Test	IEC 60529, Code IP-54 (minor dust intrusion, withstand splashing water)			
18	Salt Mist Test	MIL-STD-810F, Method 509.4, 5% salt solution. VSWR still as specified.			
19	Vibration Test (non-operational)	Mil-STD-810F, Method 514.4, 1.12 G-rms, VSWR as specified			
20	Mechanical Shock (non-operational)	ASTM D 3332, 65 G min to 80 G max acceleration. VSWR as specified.			

21	Drop Test	1 meter drop to tile, 3 drops vertically and horizontally. VSWR is still as specified. No damage to the radome that would render the product unusable.

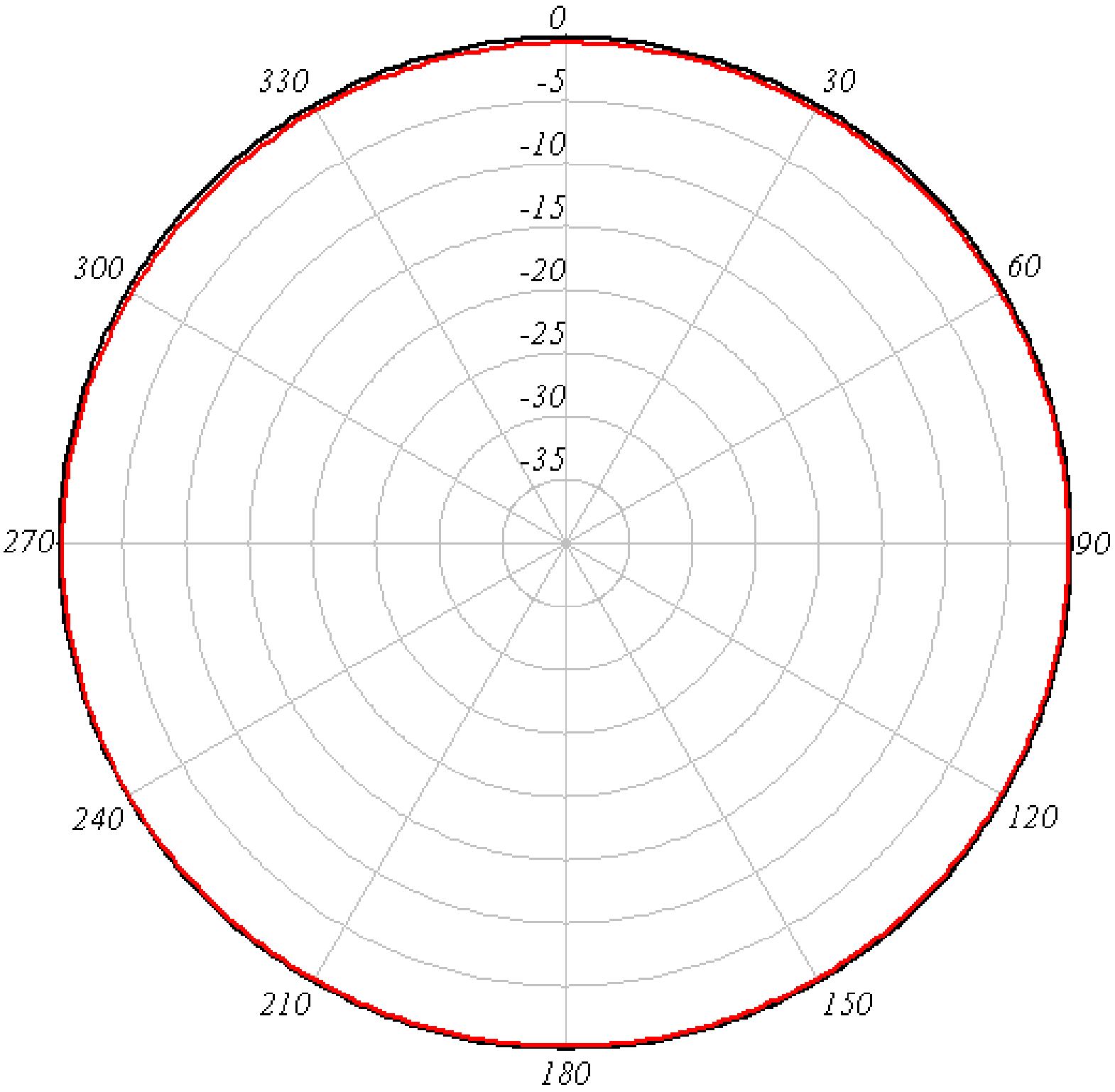
Table 3.2.1
AIR-ANT2450V-N 2.4 GHz, 5 dBi Omni-directional Antenna, Electrical Specifications

3.3. AIR-ANT2450V-N, 2.4 GHz, 5 dBi Omni-directional Antenna, General Requirements

The antenna markings and documentation requirements are outlined below in Table 3.3.1. There will be a product label to be applied to the radome of the antenna. The prototype schedule will be agreed upon by Cisco engineering and the antenna manufacturer.

	AIR-ANT2450V-N, 2.4 GHz, 5 dBi Omni-directional Antenna General Requirements	
1	Antenna Marking	Cisco antenna label. Artwork to follow at a later date.
2	Electrical Data	All VSWR and pattern data will be created by the manufacturer and presented to Cisco engineering on the manufacturer's letterhead and via "text" or "Excel" files.
3	Mechanical/ Environmental Documentation	A full set of mechanical drawings and all environmental test data will be created by the manufacturer and will be presented to Cisco engineering.
4	Samples	Samples will be created and submitted according to a mutually agreed upon plan between the manufacturer and Cisco engineering.

Table 3.3.1
AIR-ANT2450V-N 5 dBi Omni-directional Antenna, General Requirements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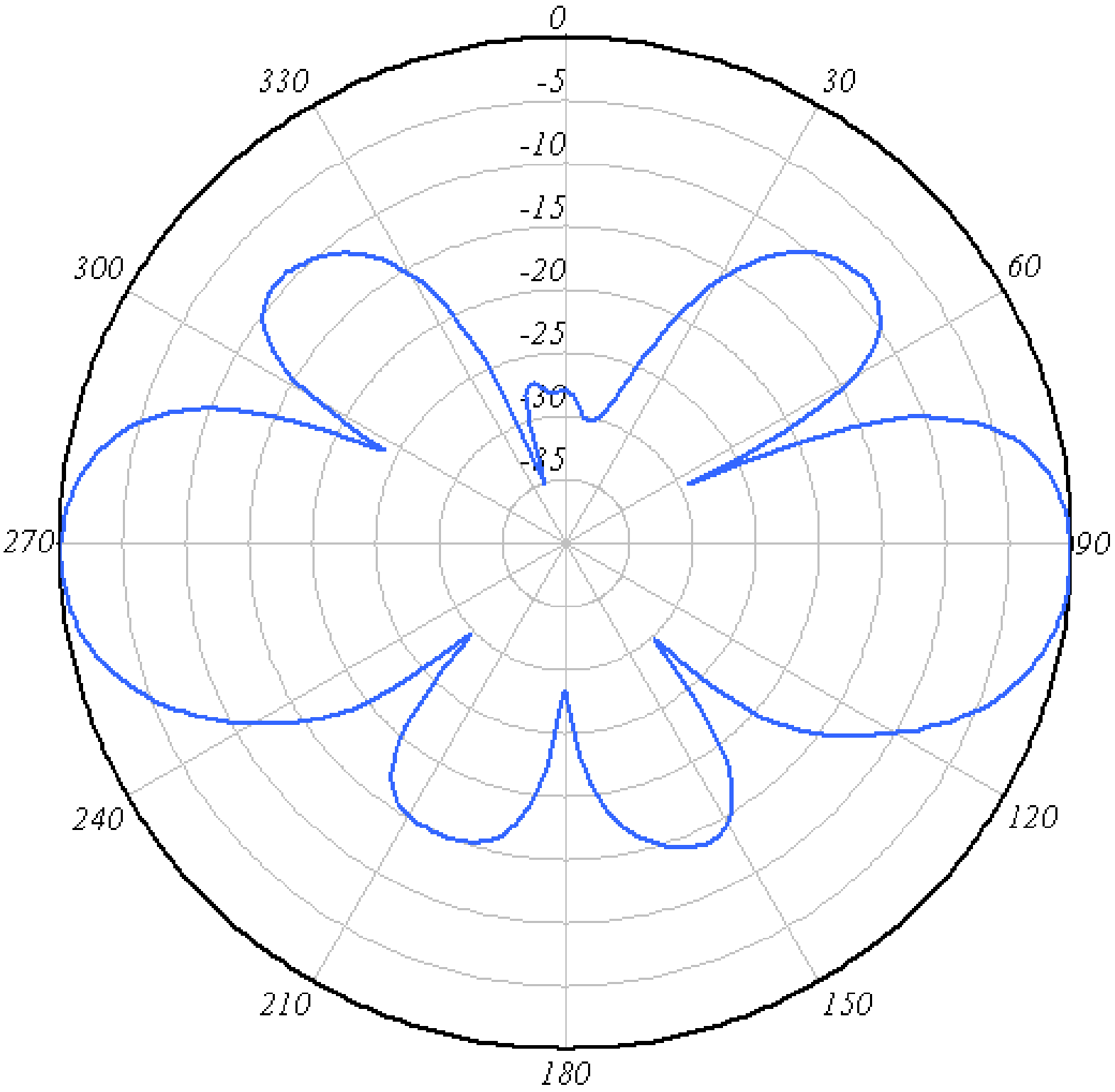
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