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2.4 GHz, Direct Mount 8 dBi, Omnidirectional Antenna Specification AIR-ANT2480V-N



Headline

This document outlines the technical requirements for a 2.4 GHz, vertical 8 dBi omnidirectional antenna to be used with the Cisco outdoor bridges and access points.

Approvals

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Reviewers

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Revision History

Rev	Date	Author	Comment
1.0	1/29/2007	Steve Saliga	Initial Release

1. Introduction

This document describes the basic set of required specifications for an omnidirectional antenna for use in the 2.4 GHz band specifically to support the Sky Captain and Huck Jr. products. The basic features of this antenna are as follows:

- Omnidirectional antenna for outdoor use
- Direct mounted with no cable to the Sky Captain and Huck Jr. products, pointing either up or down as required
- Additionally mountable to a mast
- Approximately 20 inches in length
- Antenna is terminated in an N-male connector for direct mounting
- Operates over 2400 MHz through 2500 MHz
- Peak gain is 8 dBi across the 2.4 GHz band.

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 will have a metal base suitable for mast mounting the antenna and a white/off-white fiberglass tube with an end cap. The entire antenna and enclosure will be approximately 20 inches long including the connector. A photo of the antenna appears in Figure 2.1 below.

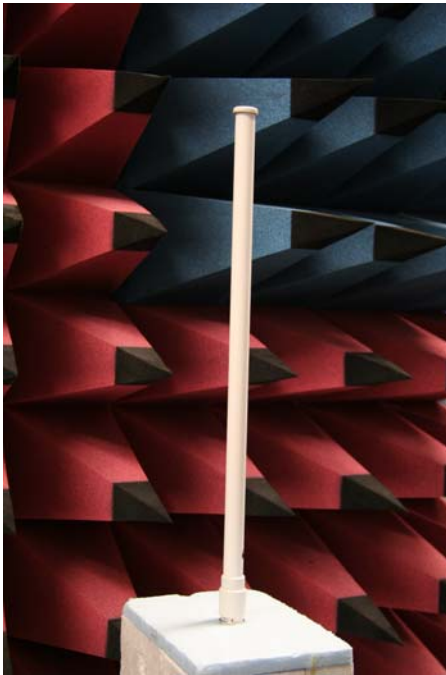


Figure 2.1
8 dBi Omnidirectional Antenna for 2.4 GHz

3. **8 dBi Omni Specifications, AIR-ANT2480V-N**

This section contains both the electrical and mechanical specs for the AIR-ANT2480V-N 2.4 GHz, 8 dBi omnidirectional 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 Sky Captain and Huck Jr. platforms. Depending on how these products are 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-ANT2480V-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-ANT2480V-N, 2.4 GHz, 8 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	8 dBi		
6	Polarization	Linear, vertical		
8	E-Plane 3 dB Beamwidth	10-degrees		
9	H-Plane 3dB Beamwidth	Omni-directional		
10	H-Plane Ripple	1 dB		1.5 dB
11	1 st Sidelobe Level	-8 dBc		

Table 3.1.1
AIR-ANT2480V-N 2.4 GHz, 8 dBi Omnidirectional Antenna, Electrical Specifications

3.2. AIR-ANT2480V-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-ANT2480V-N, 2.4 GHz, 8 dBi Omnidirectional Antenna Mechanical /Environmental Specifications					
	Parameter	Design Goal	Minimum Acceptable	Max Acceptable	Notes
1	Length	19-1/2" inches			Including connector scheme
2	Diameter	0.75 inch			
3	Weight	< 0.5 lb			Without mast mounting hardware
4	Radome Material	Fiberglass			
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	<ul style="list-style-type: none"> Direct Mount with Male-N connector Mast Mount (hardware included), 1" to 2-1/8" diameter mast 			
11	Drainage location(s)	Default drainage scenario is pointing up. "Upside-down" mounting drainage must also be provided. 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	100 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 514.5c-1, 30 minutes per axis, VSWR as specified			
20	Mechanical Shock (non-operational)	ASTM D 3332, Trapezoidal Wave, 3 impacts per axis, 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.
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Table 3.2.1

AIR-ANT2480V-N 2.4 GHz, 8 dBi Omnidirectional Antenna, Mechanical Specifications

3.3. AIR-ANT2480V-N, 2.4 GHz, 8 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-ANT2480V-N, 2.4 GHz, 8 dBi Omnidirectional 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-ANT2480V-N 8 dBi Omnidirectional Antenna, General Requirements

