



DATA SHEET

CISCO AIRONET 2.4 GHZ AND 5 GHZ ANTENNAS AND ACCESSORIES—COMPLETE THE WIRELESS SOLUTION

Cisco Systems® offers a complete range of antennas for access point and bridge equipment that enable a customized wireless solution for almost any installation.

CISCO AIRONET ANTENNAS AND ACCESSORIES

Every wireless LAN deployment is different. When engineering an in-building solution, varying facility sizes, construction materials, and interior divisions raise transmission and multipath considerations. When implementing a building-to-building solution, distance, physical obstructions between facilities, and number of transmission points must be taken into account.

Cisco is committed to providing the best access points, client adapters, and bridges in the industry—and is also committed to providing a complete solution for any wireless LAN deployment. Cisco has the widest range of antennas, cable, and accessories available from any wireless manufacturer.

Cisco offers a complete range of 2.4 GHz and 5 GHz antennas for access point and bridge equipment that enable a customized wireless solution for almost any installation (Figure 1).

Figure 1. Cisco 2.4-GHz Antennas and Accessories




With the Cisco FCC-approved directional and omnidirectional antennas, low-loss cable, mounting hardware, and other accessories, installers can customize a wireless solution that meets the requirements of even the most challenging applications.

ACCESS POINT ANTENNAS

Cisco Aironet 2.4-GHz access point antennas are compatible with all Cisco RP-TNC-equipped access points. The antennas are available with different gain and range capabilities, beam widths, and form factors. Coupling the appropriate antenna and access point allows for efficient coverage in any facility, as well as better reliability at higher data rates (Table 1).





Cisco Aironet 5GHz access point antennas have RP-TNC connectors and are compatible with Cisco Aironet 1200 Series and 1230AG Series access points when equipped with a RM22A radio module. Selection of the appropriate antenna should provide optimal coverage for the desired application in the 5 GHz frequency band.

Table 1. Cisco Aironet Access Point Antenna Features

				
Feature	AIR-ANT5959	AIR-ANT2012	AIR-ANT3213	AIR-ANT2410Y-R
Description	Diversity omnidirectional ceiling mount	Diversity patch wall mount	Pillar mount diversity omnidirectional	Yagi mast or wall mount
Application	Indoor unobtrusive antenna, best for ceiling mount; excellent throughput and coverage solution in high multipath cells and dense user population	Indoor/outdoor, unobtrusive midrange antenna	Indoor, unobtrusive midrange antenna	Indoor/outdoor directional antenna for use with access points or bridges
Gain	Two separate 2-dBi omnidirectional elements; minimum gain of 2.0, maximum gain of 2.35	6.5 dBi with two radiating elements	5.2 dBi with two radiating elements	10 dBi
Frequency	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz
Approximate Indoor Range at 6 Mbps*	295 ft (90 m)	418 ft (127 m)	379 ft (121 m)	548 ft (167 m)
Approximate Indoor Range at 54 Mbps*	88 ft (27 m)	126 ft (38 m)	114 ft (35 m)	165 ft (50 m)
Beam Width	360°H, 80°V	80°H, 55°V	360°H, 30°V	47°H, 55°V
Cable Length	3 ft (0.91 m)**	3 ft (0.91 m)**	3 ft (0.91 m)	3 ft (0.91 m)
Dimensions	5.3 x 2.8 x 0.9 in. (13.5 x 7.1 x 2.3 cm)	4.8 x 6.7 x 0.8 in. (12 x 17 x 2 cm)	10 x 1 in. (25.4 x 2.5 cm)	7.25 x 5 in. (18.4 x 12.7 cm)
Weight	0.3 lb (0.14 kg)	9.6 oz (272 g)	1 lb (454 g)	8 oz (227 g)

* All range estimations are based on an external antenna associating with an integrated Intel Centrino client adapter under ideal conditions. The distances referenced here are approximations and should be used for estimation purposes only.

** The cable provided on noted antennas meets UL 2043 certification for plenum rating requirements set by local fire codes and supports installation in environmental air spaces such as areas above suspended ceilings.

				
Feature	AIR-ANT1728	AIR-ANT4941	AIR-ANT3549	AIR-ANT1729
Description	Omnidirectional ceiling mount	2.2-dBi dipole antenna	Patch wall mount	Patch wall mount
Application	Indoor midrange antenna, typically hung from crossbars of drop ceilings	Indoor omnidirectional coverage	Indoor, unobtrusive, long-range antenna (may also be used as a midrange bridge antenna)	Indoor/outdoor, unobtrusive, midrange antenna (may also be used as a midrange bridge antenna)
Gain	5.2 dBi	2.2 dBi	9 dBi	6 dBi
Frequency	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz
Approximate Indoor Range at 6 Mbps*	379 ft (116 m)	300 ft (91 m)	507 ft (155 m)	403 ft (123 m)
Approximate Indoor Range at 54 Mbps*	114 ft (35 m)	90 ft (27 m)	153 ft (47 m)	121 ft (37 m)
Beam Width	360°H, 38°V	360°H, 65°V	60°H, 60°V	75°H, 65°V
Cable Length	3 ft (0.91 m)	–	3 ft (0.91 m)	3 ft (0.91 m)
Dimensions	Length: 9 in. (22.9 cm) Diameter: 1 in. (2.5 cm)	5.5 in. (14 cm)	5 x 5 in. (12.7 x 12.7 cm)	4 x 5 in. (10 x 13 cm)
Weight	4.6 oz (130 g)	1.1 oz (31 g)	5.3 oz (150 g)	4.9 oz (139 g)

* All range estimations are based on an external antenna associating with an integrated Intel Centrino client adapter under ideal conditions. The distances referenced here are approximations and should be used for estimation purposes only.

Feature	AIR-ANT5135D-R	AIR-ANT5145V-R	AIR-ANT5160V-R
Description	3.5-dBi dipole antenna	4.5-dBi omnidirectional ceiling mount	6 dBi omnidirectional antenna
Application	Indoor omnidirectional coverage	Indoor midrange antenna	Indoor/outdoor midrange antenna
Gain	3.5 dBi	4.5 dBi	6 dBi
Frequency	5 GHz	5 GHz	5 GHz
Approximate Indoor Range at 6 Mbps*	675 ft (206 m)	732 ft (223 m)	822 ft (251 mm)
Approximate Indoor Range at 54 Mbps*	75 ft (21 m)	82 ft (25 m)	92 ft (28 m)
Beam Width	360°H, 40°E	360°H, 50°E	360°H, 17°E
Cable Length	–	3 ft (0.91 m)	3 ft (0.91 m)
Dimensions	5.3 x 0.6 in. (13.5 x 1.5 cm)	6.75 x 4.2 in. (17.1 x 12.7 cm)	12 in. length; 1 in. diameter (30.5 x 2.5 cm)
Weight	1 oz (28.3 g)	11.5 oz (326 g)	5.3 oz (150 g)

* All range estimations are based on an external antenna associating with an integrated Intel Centrino client adapter under ideal conditions. The distances referenced here are approximations and should be used for estimation purposes only.

** The cable provided on noted antennas meets UL 2043 certification for plenum rating requirements set by local fire codes and supports installation in environmental air spaces such as areas above suspended ceilings.

2.4 GHZ BRIDGE ANTENNAS

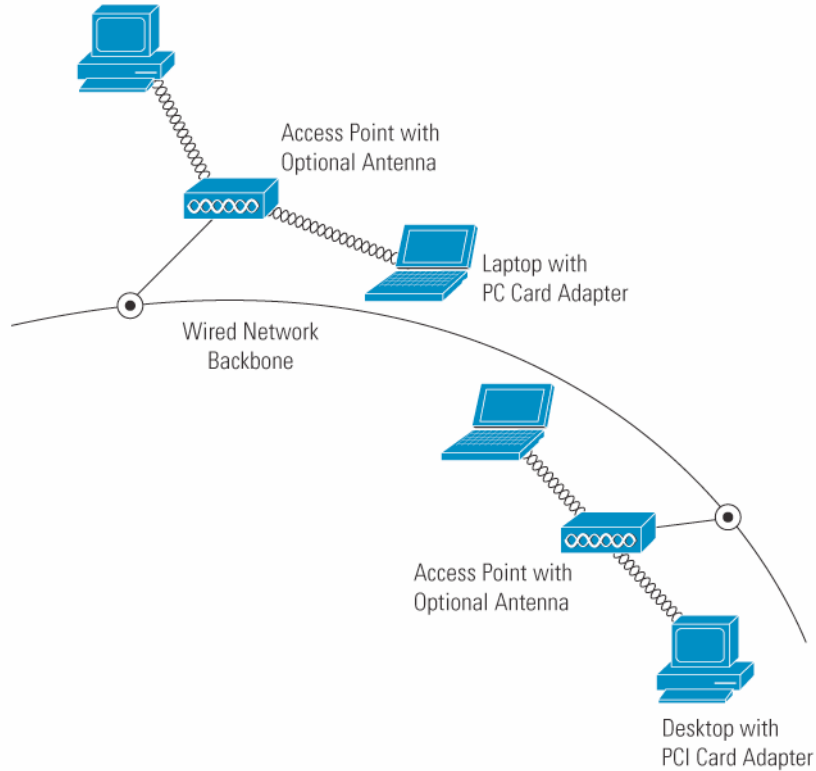
Cisco Aironet bridge antennas allow for extraordinary transmission distances between two or more buildings. Available in directional configurations for point-to-point transmission and omnidirectional configuration for point-to-multipoint implementations, Cisco has a bridge antenna for every application (Table 2).

Table 2. Cisco Aironet 2.4 GHz Bridge Antenna Features

					
	AIR-ANT2506	AIR-ANT24120	AIR-ANT2414S-R	AIR-ANT1949	AIR-ANT3338
Description	Omnidirectional mast mount	High-gain omnidirectional mast mount	Vertically polarized sector	Yagi mast mount	Solid dish
Application	Outdoor short-range point-to-multipoint applications	Outdoor midrange point-to-multipoint applications	Outdoor long range point-to-multipoint applications	Outdoor midrange directional connections	Outdoor long-range directional connections
Gain	5.2 dBi	12 dBi	14 dBi	13.5 dBi	21 dBi
Approximate Range at 2 Mbps*	3.3 miles (5.31 km)	15.81 miles (25.43 km)	16.71 miles (26.89 km)	18.33 miles (29.49 km)	26.49 miles (42.62 km)
Approximate Range at 11 Mbps*	1.66 miles (2.66 km)	7.92 miles (12.75 km)	8.89 miles (14.30 km)	11.19 miles (18.01 km)	20.1 miles (32.33 km)
Approximate Range at 54 Mbps*	.21 miles (.34 km)	1.0 miles (1.6 km)	1.26 miles (2.02 km)	1.41 miles (2.27 km)	4.46 miles (7.17 km)
Beam Width	360°H, 38°V	360°H, 7°V	90°H, 8.5°V	30°H, 25°V	12.4°H, 12.4°V
Cable Length	3 ft (0.91 m)	1 ft (0.30 m)	5 ft (1.5m)	3 ft (0.91 m)	2 ft (0.61 m)
Dimensions	Length: 13 in. (33 cm) Diameter: 1 in. (2.5 cm)	Length: 42 in. (107 cm) Diameter: 1.5 in. (3.8 cm)	Length: 36 in. (91 cm) Width: 6 in. (15 cm)	Length: 18 in. (46 cm) Diameter: 3 in. (7.6 cm)	Diameter 24 in. (61 cm)
Weight	6 oz (170 g)	1.5 lb (0.68 kg)	6.5 lb (3 kg)	1.5 lb (0.68 kg)	11 lb (5 kg)

* All range estimations are based on use of a BR 1310 access point and the same type of antenna at each end of the connection under ideal outdoor conditions. The distances referenced here are approximations and should be used for estimation purposes only.

Figure 2. Optional, Higher-Gain Antennas Extend the Range of Access Points



LOW-LOSS/ULTRA-LOW-LOSS CABLES

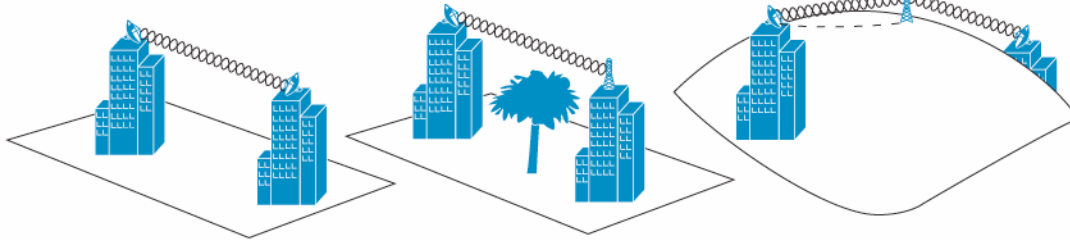
Low-loss cable extends the length between any Cisco Aironet 2.4 GHz bridge and the antenna. With a loss of 6.7 dB per 100 feet (30 m) for the low-loss cable and 4.4 dB for the ultra-low-loss cable, this provides installation flexibility without a significant sacrifice in range (Table 3).

Table 3. Cisco Aironet Low-Loss Antenna Cable Features

Feature	AIR-CAB020LL-R	AIR-CAB050LL-R	AIR-CAB100ULL-R	AIR-CAB150ULL-R
Cable Length	20 ft (6 m)	50 ft (15 m)	100 ft (30 m)	150 ft (46 m)
Transmission Loss @ 2.4 GHz	1.3 dB	3.4 dB	4.4 dB	6.6 dB

With Cisco Aironet bridge antennas, the right mounting hardware, and qualified installation, wireless links over great distances and obstacles are possible (Figure 3).

Figure 3. Crossing Great Distances with Cisco Aironet Bridge Antennas



ACCESSORIES

To complete an installation, Cisco provides accessories that offer increased capabilities, safety, and convenience (Figure 4; Table 5).

Figure 4. Cisco Aironet Antenna Accessories



Table 4. Cisco Aironet Accessory Features

Feature	AIR-ACC2537-060	AIR-ACC3354	AIR-ACC245LA-R	AIR-ACC2662
Description	60 in. (152 cm) bulkhead extender	2.4 GHz lightning arrester	2.4 GHz and 5 GHz lightning arrester	Yagi articulating mount
Application	Flexible antenna cable that extends access point cabling, typically within an enclosure	Helps prevent damage due to lightning-induced surges or static electricity; flexible antenna cable that extends access point cabling, typically within an enclosure	Supports both 2.4 GHz and 5 GHz applications; Helps prevent damage due to lightning-induced surges or static electricity; helps prevent damage due to lightning-induced surges or static electricity	Adds swiveling capability to mast-mounted Yagi antennas

MOUNTING HARDWARE AND ANTENNAS

In addition to the antennas available from Cisco, the Cisco 1300 Series has different mounting options (Figure 5). These optional mounting kits are available for mounting to a roof, wall, or pole. The quick-hang mounting bracket allows a simple one-person installation.

Figure 5. Cisco Aironet 1300 Series Mounting Hardware



MOUNTING KITS FOR CISCO AIRONET 1300 SERIES OUTDOOR ACCESS POINT/BRIDGES

A roof-mount kit is available for use with Cisco Aironet 1300 Series outdoor access points/bridges (integrated antenna and connectorized versions). A wall-mount kit is available for use with Cisco Aironet 1300 Series outdoor access points/bridges with RP-TNC type connectors. The wall-mount kit is for indoor use only. These kits must be ordered separately (Table 5).

Table 5. Mounting Kits for Cisco Aironet 1300 Series Outdoor Access Points/Bridges

Product Number	Product Description
AIR-ACCWAMK1300=	<p>Cisco Aironet 1300 Series Wall-Mount Kit for use with AIR-BR1310G-x-K9-R</p> <p>Kit includes:</p> <ul style="list-style-type: none">• Two 1-ft RG-59 power injector cables• Wall-mount bracket• Mounting hardware
AIR-ACCRMK1300=	<p>Cisco Aironet 1300 Series Roof-Mount Kit for use with AIR-BR1310G-x-K9</p> <p>Kit includes:</p> <ul style="list-style-type: none">• Roof-mount mast (pole and mounting base)• Multifunction mount (allows mounting to roof-mount mast, or directly to a wall)• Mounting hardware• 20-ft dual RG-6 cable assembly with F-Type connectors• 50-ft dual RG-6 cable assembly with F-Type connectors• Coaxial sealant• One Cisco Aironet grounding block• Grounding lug• Anticorrosion gel• U-bolts• Coaxial sealant• Optional 100-ft dual RG-6 cable available separately

- * An antenna that concentrates transmission power into a direction that increases coverage distance at the expense of coverage angle. Directional antenna types include Yagi, patch, and parabolic dish antennas. A Yagi is a type of cylindrical directional antenna. A patch antenna is a type of flat antenna designed for flush wall mounting that radiates a hemispherical coverage area. A parabolic dish antenna is a concave or dish-shaped object, often referring to dish antennas. Parabolic dish antennas tend to provide the greatest gain and the narrowest beam width, making them ideal for point-to-point transmission over the longest distances.
- ** An antenna that provides a 360-degree transmission pattern. These types of antennas are used when coverage in all directions is required.
- *** A linear measure of the distance that a transmitter can send a signal.
- **** A method of increasing the transmission distance of a radio by the concentration of its signal in a single direction, typically through the use of a directional antenna. Gain does not increase the signal strength of a radio, but simply redirects it. Therefore, as gain increases, the decrease in angle of coverage is inversely proportional.
- ***** The angle of signal coverage provided by an antenna. This angle may be decreased by a directional antenna as gain increases.



Corporate Headquarters

Cisco Systems, Inc.
 170 West Tasman Drive
 San Jose, CA 95134-1706
 USA
 www.cisco.com
 Tel: 408 526-4000
 800 553-NETS (6387)
 Fax: 408 526-4100

European Headquarters

Cisco Systems International
 BV
 Haarlerbergpark
 Haarlerbergweg 13-19
 1101 CH Amsterdam
 The Netherlands
 www-europe.cisco.com
 Tel: 31 0 20 357 1000
 Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
 170 West Tasman Drive
 San Jose, CA 95134-1706
 USA
 www.cisco.com
 Tel: 408 526-7660
 Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
 168 Robinson Road
 #28-01 Capital Tower
 Singapore 068912
 www.cisco.com
 Tel: +65 6317 7777
 Fax: +65 6317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on **the Cisco Web site at www.cisco.com/go/offices.**

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Cyprus
 Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland
 Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland
 Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden
 Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Copyright © 2004 Cisco Systems, Inc. All rights reserved. Cisco, Cisco Systems, the Cisco Systems logo, and Aironet are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0402R) 204113_ETMG_SD_11.04