



APPENDIX **A**

Technical Specifications

This appendix provides technical specifications for the Cisco Aironet CB21AG and PI21AG Wireless LAN Client Adapters.

The following topics are covered in this appendix:

- Physical Specifications, [page A-2](#)
- [Radio Specifications, page A-3](#)
- Power Specifications, [page A-6](#)
- Safety and Regulatory Compliance Specifications, [page A-6](#)

Table A-1 lists the technical specifications for the Cisco Aironet CB21AG and PI21AG Wireless LAN Client Adapters.

Table A-1 Technical Specifications for CB21AG and PI21AG Client Adapters

Physical Specifications	
Size	
PC-Cardbus card	4.5 in. L x 2.1 in. W x 0.2 in. H (11.3 cm L x 5.4 cm W x 0.5 cm H)
PCI card	
Standard PCI card	4.7 in. L x 0.7 in. W x 4.8 in. H (12 cm L x 1.8 cm W x 12.1 cm H)
Low-profile PCI card	4.7 in. L x 0.7 in. W x 3.1 in. H (12 cm L x 1.8 cm W x 7.9 cm H)
Weight	
PC-Cardbus card	1.55 oz (44 g)
PCI card	
Standard PCI card with antenna	3.6 oz (103 g)
Standard PCI card without antenna	1.9 oz (55 g)
Low-profile PCI card with antenna	3.5 oz (98 g)
Low-profile PCI card without antenna	1.7 oz (49 g)
Enclosure	
PC-Cardbus card	Type II Cardbus
PCI card	Standard or low-profile Type II PCI
Connector	
PC-Cardbus card	68-pin Cardbus
PCI card	62-pin PCI
Status indicators	Green and amber LEDs; see Chapter 10
Operating temperature	32°F to 158°F (0°C to 70°C)
Storage temperature	32°F to 185°F (0°C to 85°C)
Humidity (non-operational)	90% relative humidity
ESD	15 kV (human body model)

Table A-1 Technical Specifications for CB21AG and PI21AG Client Adapters (continued)

Radio Specifications	
Type	
802.11a	Orthogonal frequency division multiplexing (OFDM)
802.11b/g	Direct-sequence spread spectrum (DSSS) and orthogonal frequency division multiplexing (OFDM)
Power output	
Note Refer to Appendix D for limitations on radiated power (EIRP) levels in the European community and other countries.	
802.11a	40 mW (16 dBm) @ 6, 9, 12, 18, 24 Mbps 25 mW (14 dBm) @ 6, 9, 12, 18, 24, 36 Mbps 20 mW (13 dBm) @ 6, 9, 12, 18, 24, 36, 48, 54 Mbps 13 mW (11 dBm) @ 6, 9, 12, 18, 24, 36, 48, 54 Mbps 10 mW (10 dBm) @ 6, 9, 12, 18, 24, 36, 48, 54 Mbps Note The maximum power setting varies according to individual country regulations.
802.11b/g	100 mW (20 dBm) @ 1, 2, 5.5, 11 Mbps 63 mW (18 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24 Mbps 50 mW (17 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36 Mbps 30 mW (15 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 Mbps 20 mW (13 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps 10 mW (10 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps Note The maximum power setting varies according to individual country regulations.
Operating frequency	
802.11a	5.15 to 5.25 GHz in the UNII 1 band* 5.25 to 5.35 GHz in the UNII 2 band* 5.470 to 5.725 GHz in the European band 5.725 to 5.825 GHz in the UNII 3 band* *Depending on the regulatory domain in which the client adapter is used
802.11b/g	2.400 to 2.497 GHz (depending on the regulatory domain in which the client adapter is used)
Usable channels	
802.11a	5170 to 5320 MHz, 5500 to 5700 MHz, and 5745 to 5805 MHz
802.11b/g	2412 to 2484 MHz in 5-MHz increments
Data rates	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
Modulation	Differential binary phase shift keying (DBPSK) - 1 Mbps Differential quaternary phase shift keying (DQPSK) - 2 Mbps Complementary code keying (CCK) - 5.5 and 11 Mbps Binary phase shift keying (BPSK) - 6 and 9 Mbps Quaternary phase shift keying (QPSK) - 12 and 18 Mbps 16-quadrature amplitude modulation (16-QAM) - 24 and 36 Mbps 64-quadrature amplitude modulation (64-QAM) - 48 and 54 Mbps

Table A-1 Technical Specifications for CB21AG and PI21AG Client Adapters (continued)

Receiver sensitivity	
802.11a	<p><u>5150 to 5250 MHz</u> –87 dBm @ 6, 9, 12, and 18 Mbps –82 dBm @ 24 Mbps –79 dBm @ 36 Mbps –74 dBm @ 48 Mbps –72 dBm @ 54 Mbps</p> <p><u>5250 to 5350 MHz</u> –89 dBm @ 6, 9, and 12 Mbps –85 dBm @ 18 Mbps –82 dBm @ 24 Mbps –79 dBm @ 36 Mbps –74 dBm @ 48 Mbps –72 dBm @ 54 Mbps</p> <p><u>5470 to 5725 MHz</u> –87 dBm @ 6, 9, 12, and 18 Mbps –82 dBm @ 24 Mbps –79 dBm @ 36 Mbps –74 dBm @ 48 Mbps –72 dBm @ 54 Mbps</p> <p><u>5725 to 5805 MHz</u> –84 dBm @ 6, 9, and 12 Mbps –83 dBm @ 18 Mbps –82 dBm @ 24 Mbps –79 dBm @ 36 Mbps –72 dBm @ 48 Mbps –65 dBm @ 54 Mbps</p>
802.11b/g	–94 dBm @ 1 Mbps –93 dBm @ 2 Mbps –92 dBm @ 5.5 Mbps –90 dBm @ 11 Mbps –86 dBm @ 6, 9, 12, and 18 Mbps –84 dBm @ 24 Mbps –80 dBm @ 36 Mbps –75 dBm @ 48 Mbps –71 dBm @ 54 Mbps

Table A-1 Technical Specifications for CB21AG and PI21AG Client Adapters (continued)

Receiver delay spread (multipath)		
802.11a/g	400 ns @ 6 Mbps 250 ns @ 9 and 12 Mbps 220 ns @ 18 Mbps 160 ns @ 24 Mbps 100 ns @ 36 Mbps 90 ns @ 48 Mbps 70 ns @ 54 Mbps	
802.11b	350 ns @ 1 Mbps 300 ns @ 2 Mbps 200 ns @ 5.5 Mbps 130 ns @ 11 Mbps	
Range		
802.11a	Indoor (typical) 500 ft (152 m) @ 6 Mbps 400 ft (122 m) @ 18 Mbps 90 ft (27 m) @ 54 Mbps Note The above range numbers assume that the client adapter is being used at maximum transmit power with a Cisco Aironet 1232AG Access Point with a 3.5-dBi dipole antenna. Different range characteristics are likely when using the client adapter with a different access point or a Cisco Aironet 1200 Series Access Point with a different antenna.	Outdoor (typical) 950 ft (290 m) @ 6 Mbps 800 ft (244 m) @ 18 Mbps 170 ft (52 m) @ 54 Mbps
802.11b/g	Indoor (typical) 410 ft (125 m) @ 1 Mbps 300 ft (91 m) @ 6 Mbps 220 ft (67 m) @ 11 Mbps 180 ft (55 m) @ 18 Mbps 90 ft (27 m) @ 54 Mbps Note The above range numbers assume that the client adapter is being used at maximum transmit power with a Cisco Aironet 1232AG Access Point with a 2.2-dBi dipole antenna. Different range characteristics are likely when using the client adapter with a different access point or a Cisco Aironet 1200 Series Access Point with a different antenna.	Outdoor (typical) 700 ft (213 m) @ 1 Mbps 650 ft (198 m) @ 6 Mbps 490 ft (149 m) @ 11 Mbps 400 ft (122 m) @ 18 Mbps 110 ft (34 m) @ 54 Mbps
Antennas		
PC-Cardbus card	Integrated 0-dBi dual-band 2.4/5-GHz diversity antenna	
PCI card	1-dBi dual-band 2.4/5-GHz antenna, permanently attached by 6.6-ft (2-m) cable	

Table A-1 Technical Specifications for CB21AG and PI21AG Client Adapters (continued)

Power Specifications	
Operational voltage	3.3 V (\pm 0.3 V)
Receive current steady state	
802.11a	318 mA maximum
802.11b	327 mA maximum
802.11g	282 mA maximum
Transmit current steady state	
802.11a	554 mA maximum
802.11b	539 mA maximum
802.11g	530 mA maximum
Sleep mode steady state	203 mA average
Safety and Regulatory Compliance Specifications	
Safety	Designed to meet: <ul style="list-style-type: none"> • UL 60950 • CSA 22.2 No. 60950 • IEC 60950 Second Ed., including Amendments 1-4 with all national deviations • EN 60950 Second Ed., including Amendments 1-4
EMI and susceptibility	FCC Part 15.107 & 15.109 Class B ICES-003 Class B (Canada) VCCI (Japan) EN 301.489-1 and EN-301.489-17 (Europe)
Radio approvals	FCC Part 15.247 FCC Part 15.401-15.407 Canada RSS-210 Europe EN-300.328, EN-301.893 ARIB STD-33, ARIB STD-66, ARIB STD-T71 (Japan) AS 4268.2 (Australia) AS/NZS 3548 (Australia and New Zealand)
RF exposure	FCC Bulletin OET-65C Industry Canada RSS-102