



# APPENDIX **B**

## Technical Specifications

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

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

**Table B-1** Technical Specifications for CB21AG and PI21AG Client Adapters

| <b>Physical Specifications</b>       |  |
|--------------------------------------|--|
| <b>Size</b>                          |  |
| PC-Cardbus card                      | 4.5 in. L x 2.1 in. W x 0.2 in. H<br>(11.3 cm L x 5.4 cm W x 0.5 cm H) |
| <b>PCI card</b>                      |  |
| Standard PCI card                    | 4.7 in. L x 0.7 in. W x 4.8 in. H<br>(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<br>(12 cm L x 1.8 cm W x 7.9 cm H)   |
| <b>Weight</b>                        |  |
| PC-Cardbus card                      | 1.55 oz (44 g)   |
| <b>PCI card</b>                      |  |
| 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)  |
| <b>Enclosure</b>                     |  |
| PC-Cardbus card                      | Type II Cardbus  |
| PCI card                             | Standard or low-profile Type II PCI                                    |
| <b>Connector</b>                     |  |
| PC-Cardbus card                      | 68-pin Cardbus   |
| PCI card                             | 62-pin PCI   |
| Status indicators                    | Green and amber LEDs; see <a href="#">Chapter 1</a>                    |
| 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 B-1** Technical Specifications for CB21AG and PI21AG Client Adapters (continued)

| <b>Radio Specifications</b>  |  |
|--|--|
| Type   |  |
| 802.11a  | Orthogonal frequency division multiplexing (OFDM)  |
| 802.11b/g  | Direct-sequence spread spectrum (DSSS) and orthogonal frequency division multiplexing (OFDM)   |
| Power output   |  |
| <b>Note</b> Refer to <a href="#">Appendix E</a> 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<br>25 mW (14 dBm) @ 6, 9, 12, 18, 24, 36 Mbps<br>20 mW (13 dBm) @ 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>13 mW (11 dBm) @ 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>10 mW (10 dBm) @ 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br><b>Note</b> The maximum power setting varies according to individual country regulations.  |
| 802.11b/g  | 100 mW (20 dBm) @ 1, 2, 5.5, 11 Mbps<br>63 mW (18 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24 Mbps<br>50 mW (17 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36 Mbps<br>30 mW (15 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 Mbps<br>20 mW (13 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps<br>10 mW (10 dBm) @ 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps<br><b>Note</b> 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*<br>5.25 to 5.35 GHz in the UNII 2 band*<br>5.470 to 5.725 GHz in the European band<br>5.725 to 5.825 GHz in the UNII 3 band*<br>*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<br>Differential quaternary phase shift keying (DQPSK) - 2 Mbps<br>Complementary code keying (CCK) - 5.5 and 11 Mbps<br>Binary phase shift keying (BPSK) - 6 and 9 Mbps<br>Quaternary phase shift keying (QPSK) - 12 and 18 Mbps<br>16-quadrature amplitude modulation (16-QAM) - 24 and 36 Mbps<br>64-quadrature amplitude modulation (64-QAM) - 48 and 54 Mbps  |

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

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

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

| Receiver delay spread (multipath) |   |   |
|-----------------------------------|---|---|
| 802.11a/g                         | 400 ns @ 6 Mbps<br>250 ns @ 9 and 12 Mbps<br>220 ns @ 18 Mbps<br>160 ns @ 24 Mbps<br>100 ns @ 36 Mbps<br>90 ns @ 48 Mbps<br>70 ns @ 54 Mbps   |   |
| 802.11b                           | 350 ns @ 1 Mbps<br>300 ns @ 2 Mbps<br>200 ns @ 5.5 Mbps<br>130 ns @ 11 Mbps   |   |
| Range                             |   |   |
| 802.11a                           | <b>Indoor (typical)</b><br>500 ft (152 m) @ 6 Mbps<br>400 ft (122 m) @ 18 Mbps<br>90 ft (27 m) @ 54 Mbps  | <b>Outdoor (typical)</b><br>950 ft (290 m) @ 6 Mbps<br>800 ft (244 m) @ 18 Mbps<br>170 ft (52 m) @ 54 Mbps  |
|                                   | <b>Note</b> 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. |   |
| 802.11b/g                         | <b>Indoor (typical)</b><br>410 ft (125 m) @ 1 Mbps<br>300 ft (91 m) @ 6 Mbps<br>220 ft (67 m) @ 11 Mbps<br>180 ft (55 m) @ 18 Mbps<br>90 ft (27 m) @ 54 Mbps  | <b>Outdoor (typical)</b><br>700 ft (213 m) @ 1 Mbps<br>650 ft (198 m) @ 6 Mbps<br>490 ft (149 m) @ 11 Mbps<br>400 ft (122 m) @ 18 Mbps<br>110 ft (34 m) @ 54 Mbps |
|                                   | <b>Note</b> 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. |   |
| 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 B-1 Technical Specifications for CB21AG and PI21AG Client Adapters (continued)**

| <b>Power Specifications</b>                            |  |
|--|--|
| 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   |
| <b>Safety and Regulatory Compliance Specifications</b> |  |
| Safety   | Designed to meet: <ul style="list-style-type: none"> <li>• UL 60950</li> <li>• CSA 22.2 No. 60950</li> <li>• IEC 60950 Second Ed., including Amendments 1-4 with all national deviations</li> <li>• EN 60950 Second Ed., including Amendments 1-4</li> </ul> |
| EMI and susceptibility                                 | FCC Part 15.107 & 15.109 Class B<br>ICES-003 Class B (Canada)<br>VCCI (Japan)<br>EN 301.489-1 and EN-301.489-17 (Europe)   |
| Radio approvals  | FCC Part 15.247<br>FCC Part 15.401-15.407<br>Canada RSS-210<br>Europe EN-300.328, EN-301.893<br>ARIB STD-33, ARIB STD-66, ARIB STD-T71 (Japan)<br>AS 4268.2 (Australia)<br>AS/NZS 3548 (Australia and New Zealand)   |
| RF exposure  | FCC Bulletin OET-65C<br>Industry Canada RSS-102  |