SUMMIT
DATA COMMUNICATIONS

Product Brief:

SDC-CF22AG 802.11a/g Compact Flash Card with Integrated Antenna

The SDC-CF22AG compact flash (CF) radio card from Summit Data Communications combines a high-performance 802.11a/g radio with customized software – both proven on business-critical mobile devices that operate in harsh environments – with a diversity dual-band antenna in a rugged endcap. No other Wi-Fi® radio card can match the range, robust security, seamless mobility, and easy administration of the CF22AG card.

The SDC-CF22AG radio card is designed for use in business-critical mobile devices and the challenging RF environments in which they operate.

Each CF22AG card delivers:

- Hardware: Maximized radio range, minimized power consumption, and broad operating temperature range
- Software: Enterprise-level security, fast and reliable roaming, and easy administration
- Certifications: Regulatory certifications plus Wi-Fi Alliance® and CCX V4 certifications

The CF22AG card is backed by a full set of support services including system integration support, regulatory process assistance, and technical support from product and wireless LAN (WLAN) experts.

Hardware Capabilities

The CF22AG card is designed for use in business-critical mobile devices and the challenging radio environments in which they operate. Hardware innovations enable the CF22AG card to provide far greater range than WLAN radio cards designed for office and consumer applications while minimizing power consumption and allowing for operation in extreme environments. Key hardware capabilities include:

- **802.11a and 802.11b/g:** By supporting both the IEEE 802.11a protocol and the IEEE 802.11g protocol, the CF22AG card provides for a maximum data rate of 54 megabits per second (Mbps) in both the 5 GHz and 2.4 GHz portions of the radio frequency spectrum. Because 802.11g is a superset of the popular 802.11b standard, the CF22AG card can be thought of as an 802.11a, 802.11b, and 802.11g card.

- **Integrated diversity antenna:** The CF22AG card includes four 0-dBi omnidirectional antenna elements – two for each frequency band – under a sturdy plastic cover. This antenna system supports transmit and receive diversity to maximize performance in environments with a lot of metal objects, such as factories and warehouses, that are subject to multipath propagation.
- **Range:** To maximize radio range – how far the card can be from a WLAN access point and still send data to that AP and receive data from it – the CF22AG card offers market-leading transmit power, receiver sensitivity, and delay spread. As a result, the CF22AG card delivers reliable connectivity, even in environments with few APs, many substances that absorb or reflect radio waves, and many devices that compete for the airwaves.
- **Low power consumption:** With power consumption that's up to 40% lower than other 802.11a/g radio cards, the CF22AG card maximizes device battery life to provide for full-shift operation.
- **Extended operating temperature:** To allow for device operation in extreme environments such as factories, warehouses, freezers, and the outdoors, the CF22AG card provides an extended operating temperature range of -30° to +85° C, which far exceeds the capabilities of most other radio cards.

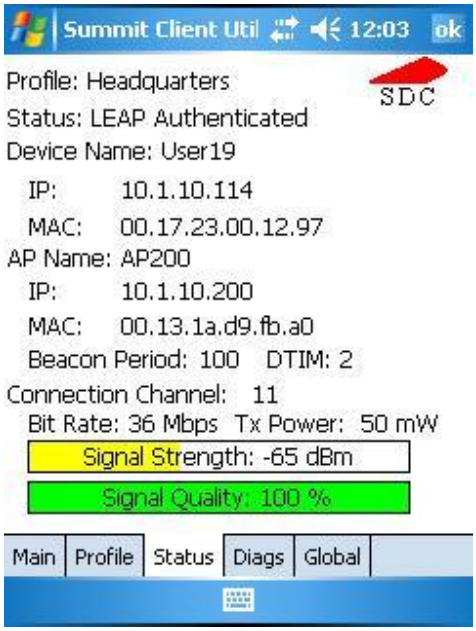
Software Capabilities

To operate effectively in a business-critical mobile device, a WLAN radio needs specialized software to deliver the security, trouble-free operations, and manageability that customers demand. Software for the CF22AG card includes a driver, an integrated security supplicant, and a full-featured management and monitoring utility called the Summit Client Utility (SCU). Key capabilities of CF22AG card software include:

- **Operating system support:** CF22AG software operates on:
  - Windows Embedded CE 5.0 and 6.0 (all versions)
  - Windows Mobile 2003, 5.0, 6.0, 6.1, and 6.5
  - Windows XP Professional and Embedded

  Security: Compliance with IEEE 802.11i, which is certified by the Wi-Fi Alliance through testing for the Enterprise version of Wi-Fi Protected Access 2® (WPA2®-Enterprise), provides for the highest level of interoperable WLAN security available. An integrated 802.1X supplicant supports authentication via pre-shared keys as well as six EAP types: EAP-TLS, PEAP-MSCHAPv2, PEAP-GTC, PEAP-TLS, EAP-TTLS, LEAP, and EAP-FAST. Data privacy is ensured via encryption and decryption using AES (WPA2), TKIP (WPA), or WEP.

- **Mobility:** A mobile device often roams from one AP to another. When scanning for a better AP or roaming to that AP, a device's radio cannot send or receive data. If roaming takes too long, a business-critical application that requires a constant connection can be disrupted. Summit radios support the fastest roaming in the industry and enable an administrator to tune roaming behavior to the needs of an application and its environment.
- **Administration:** SCU enables a user to view, and an administrator to configure, all radio operation and security settings. SCU also enables a user or administrator to view status and troubleshoot issues. All SCU functions are available to centralized management applications through the Summit software developer's kit (SDK).



SCU is a graphical utility for configuration, troubleshooting, and management

- **Integration:** Summit provides device manufacturers with the Summit Manufacturing Utility, a tool that can be used to set regulatory parameters such as channel set and maximum transmit power to provide for worldwide compliance across multiple platforms.

Certifications

The CF22AG card is certified as compliant with all applicable regulations as set forth by agencies such as ETSI, the FCC, and TELEC. Thanks to software support for all Wi-Fi requirements and key Cisco innovations, the CF22AG card is Wi-Fi CERTIFIED™ and certified for Cisco Compatible Extensions (CCX) Version 4 for application-specific devices.

Summit helps device manufacturers achieve regulatory, Wi-Fi, and CCX certifications for devices equipped with the CF22AG card. By leveraging existing grants, test reports, and approvals, Summit customers incur minimal costs when attaining all required certifications.

Support Services

A business-critical mobile device depends on its WLAN radio for communication with the business network. **Summit understands that, if the radio doesn't work, the device doesn't work. If the device doesn't work, the end user can't do his or her job.**

Summit tests the CF22AG card on a broad range of devices. For device vendors that offer the CF22AG card as a device component or option, Summit provides consultation and documentation to aid in hardware and software integration. When devices experience issues with the CF22AG card in the field, Summit's support team provides Level 2 technical support to device vendors. That team is well-versed in radio frequency characteristics, wired and wireless network architectures, and security protocols.

SDC-CF22AG Specifications

System Interface	16-bit Compact Flash Type II with 50-pin connector		
Antenna	0-dBi gain dual-band omnidirectional with diversity		
Chipset	Broadcom BCM4318E		
Input Power Requirements	3.3 VDC +/- 10%		
Typical Power Consumption (at maximum transmit power setting)	Transmit: 440 mA (1320 mW) Receive: 180 mA (594 mW) Standby: 10 mA (33 mW)		
Operating Temperature	-30° to 85°C (-22° to 185°F)		
Operating Humidity	10 to 90% (non-condensing)		
Dimensions: L x W x H	67 mm (2.64”) x 43 mm (1.69”) x 5 mm (0.2”)		
Weight	28g (1.0 oz)		
Mounting	50-pin connector and standard compact flash rails		
Wireless Media	Direct Sequence-Spread Spectrum (DSSS) Orthogonal Frequency Divisional Multiplexing (OFDM)		
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)		
Network Architecture Types	Infrastructure and ad hoc		
Network Standards	IEEE 802.11a, 802.11b, 802.11d, 802.11e, 802.11g, 802.11h, 802.11i		
Data Rates Supported	802.11a and 802.11g (OFDM): 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b (DSSS): 1, 2, 5.5, 11 Mbps		
Modulation	1, 6, 9 Mbps: BPSK 2, 12, 18 Mbps: QPSK 5.5, 11 Mbps: CCK 24, 36 Mbps: 16-QAM 48, 54 Mbps: 64-QAM		
Regulatory Domain Support	FCC (Americas and parts of Asia and the Middle East) ETSI (Europe, Middle East, Africa, and parts of Asia) TELEC (Japan) KCC (Korea)		
2.4 GHz Frequency Bands	**FCC** 2.412-2.473 GHz	**ETSI and KCC** 2.412-2.483 GHz	**TELEC** 2.412-2.495 GHz
2.4 GHz Operating Channels	**FCC** 11 (3 non-overlapping)	**ETSI and KCC** 13 (3 non-overlapping)	**TELEC** 14 (4 non-overlapping)

5 GHz Frequency Bands	**FCC and KCC** 5.15-5.35 GHz 5.47-5.725 GHz 5.725-5.82 GHz	**ETSI** 5.15-5.35 GHz 5.47-5.725 GHz	**TELEC** 5.15-5.25 GHz
5 GHz Operating Channels	**FCC and KCC** 23 non-overlapping	**ETSI** 19 non-overlapping	**TELEC** 4 non-overlapping
Transmit Power Settings ***Maximum transmit power will vary according to individual country regulations. All values nominal, +/-2 dBm***	**802.11a** 15 dBm (30 mW) 10 dBm (10 mW) 0 dBm (1 mW)	**802.11b** 18 dBm (63 mW) 17 dBm (50 mW) 15 dBm (30 mW) 10 dBm (10 mW) 0 dBm (1 mW)	**802.11g** 15 dBm (30 mW) 10 dBm (10 mW) 0 dBm (1 mW)
Typical Receiver Sensitivity **(PER <= 10%)**	**802.11a** 6 Mbps: -85 dBm 9 Mbps: -84 dBm 12 Mbps: -83 dBm 18 Mbps: -80 dBm 24 Mbps: -76 dBm 36 Mbps: -73 dBm 48 Mbps: -70 dBm 54 Mbps: -65 dBm	**802.11b** 1 Mbps: -96 dBm 2 Mbps: -95 dBm 5.5 Mbps: -94 dBm 11 Mbps: -90 dBm	**802.11g** 6 Mbps: -94 dBm 9 Mbps: -91 dBm 12 Mbps: -88 dBm 18 Mbps: -86 dBm 24 Mbps: -83 dBm 36 Mbps: -78 dBm 48 Mbps: -76 dBm 54 Mbps: -75 dBm
Delay Spread	1 Mbps: 600 ns 2 Mbps: 500 ns 5.5 Mbps: 400 ns 6 Mbps: 400 ns 9 Mbps: 400 ns 11 Mbps: 200 ns 12 Mbps: 350 ns 18 Mbps: 350 ns 24 Mbps: 250 ns 36 Mbps: 250 ns 48 Mbps: 150 ns 54 Mbps: 150 ns		
Operating Systems Supported	Windows Mobile 6.5, 6.1, 6.0, 5.0, and (Pocket PC) 2003 Windows Embedded CE 6.0 and 5.0 Windows XP Professional and Embedded		
Security	**Standards** Wireless Equivalent Privacy (WEP) Wi-Fi Protected Access (WPA), Personal and Enterprise IEEE 802.11i, or WPA2, Personal and Enterprise **802.1X Extensible Authentication Protocol (EAP) Types** PEAP-MSCHAPv2, PEAP-GTC, PEAP-TLS, EAP-TLS, EAP-TTLS, EAP-FAST, LEAP **Encryption Protocols** Wireless Equivalent Privacy (WEP, RC4 Algorithm) Temporal Key Integrity Protocol (TKIP, RC4 Algorithm) Advanced Encryption Standard (AES, Rijndael Algorithm) **Encryption Key Provisioning (40-bit and 128-bit key lengths)** Static Pre-shared via WPA-PSK or WPA2-PSK Dynamic via EAP authentication		

Compliance	**FCC Regulatory Domain** FCC Part 15.247 Subpart C FCC Part 15.407 Subpart E **Industry Canada** RSS-210 RSS-Gen Issue 2 **TELEC Regulatory Domain** Article 2 Item 19, Category WW (2.4GHz Channels 1-13) Article 2 Item 19-2, Category GZ (2.4GHz Channel 14) Article 2 Item 19-3 Category XW (5150-5250 W52 & 5250-5350 W53)	**ETSI Regulatory Domain** EN 300 328 EN 301 489-1, EN 301 489-17 EN 301 893 EN 60950-1 EN 50371 EU 2002/95/EC (RoHS)
Certifications	**Wi-Fi Alliance** 802.11a, 802.11b, 802.11g WPA: Personal and Enterprise WPA2: Personal and Enterprise **Cisco Compatible Extensions (CCX)** Version 4	
Warranty	Limited Lifetime	
All specifications are subject to change without notice.		

Summit Data Communications, Inc. designs, manufactures, and supports WLAN radio modules and cards for business-critical mobile devices such as mobile computers and medical devices. Summit delivers comprehensive solutions of hardware, software, certifications, and support services that ensure trouble-free integration and operation.

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