Product Brief:
SDC-MSD10G 802.11g Miniature SDIO Module with Antenna Connectors

The SDC-MSD10G miniature SDIO radio module from Summit Data Communications combines a high-performance 802.11g radio with customized software, both proven on mobile computers and other business-critical mobile devices that operate in harsh environments. No other Wi-Fi® radio module can match the range, robust security, seamless mobility, and easy administration of the MSD10G module.

The SDC-MSD10G SDIO radio module is designed for use in business-critical mobile devices and the challenging RF environments in which they operate.

Each MSD10G module 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 MSD10G module 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 MSD10G module is designed for use in business-critical mobile devices and the challenging radio environments in which they operate. Hardware innovations enable the MSD10G module to provide far greater range than WLAN radio modules designed for office and consumer applications while minimizing power consumption and allowing for operation in extreme environments. Key hardware capabilities include:

- **802.11b/g:** By supporting the IEEE 802.11g protocol, the MSD10G module provides for a maximum data rate of 54 megabits per second (Mbps). Operating in the 2.4 GHz portion of the radio frequency spectrum, 802.11g is a superset of the popular 802.11b standard. As a result, the MSD10G module can be thought of as an 802.11b and 802.11g module.

- **Antenna connectors:** With dual Hirose U.FL antenna connectors, the MSD10G module supports antennas of varying types and gains. The dual connectors support transmit and receive diversity to maximize performance in high multipath environments.

- **Range:** To maximize radio range – how far the module can be from a WLAN access point and still send data to that AP and receive data from it – the MSD10G module offers market-leading transmit power, receiver sensitivity, and delay spread. As a result, the MSD10G module 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 802.11g radio modules, the MSD10G module 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 MSD10G module provides an extended operating temperature range of -30° to +75° C, which far exceeds the capabilities of most other radio modules.

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 MSD10G module includes a driver, an integrated supplicant, and a full-featured management and monitoring utility called the Summit Client Utility (SCU). Key capabilities of MSD10G module software include:

- **Operating system support:** MSD10G 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 Wi-Fi Protected Access™ 2 (WPA2) Enterprise, provides for the highest level of interoperable WLAN security available. An integrated 802.1X supplicant supports
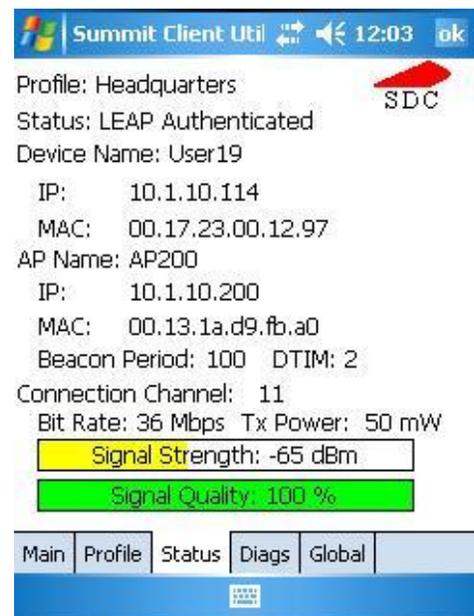
SCU is a graphical utility for configuration, troubleshooting, and management

authentication via pre-shared keys as well as a broad range of EAP types including EAP-TLS, EAP-TTLS, PEAP-MSCHAPv2, PEAP-GTC, PEAP-TLS, 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).

- **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 MSD10G module 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 MSD10G module 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 MSD10G module. 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 MSD10G module on a broad range of devices. For device vendors that offer the MSD10G module as a device component or option, Summit provides consultation and documentation to aid in hardware and software integration. When devices experience issues with the MSD10G module 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-MSD10G Specifications

System Interface	4-bit SDIO with Molex 54722-0607 60-pin connector, which mates to Molex 55560-0607 60-pin connector
Antenna interface	Two U.FL (Hirose) connectors for antenna diversity
Chipset	Broadcom BCM4318E
Input Power Requirements	3.3 VDC +/- 10%
Typical Power Consumption (at maximum transmit power setting)	Transmit: 400 mA (1320mW) Receive: 180 mA (594mW) Standby: 10 mA (33 mW)
Operating Temperature	-22° to 167°F (-30° to 75°C)
Operating Humidity	10 to 90% (non-condensing)
Length	1.26" (32 mm)
Width	0.87" (22 mm)
Thickness	0.14" (3.5 mm)
Weight	0.3 oz (9 g)
Mounting	60-pin connector
Network Standards	IEEE 802.11b, 802.11g, 802.11i
Network Architecture Types	Infrastructure and ad hoc
Frequency Band	2.4 to 2.4897 GHz
Wireless Media	Direct Sequence-Spread Spectrum (DSSS) Orthogonal Frequency Divisional Multiplexing (OFDM)
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Data Rates Supported	802.11b (DSSS): 1, 2, 5.5, 11 Mbps 802.11g (OFDM): 6, 9, 12, 18, 24, 36, 48, 54 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, Parts of Asia and Middle East) ETSI (Europe, Middle East, Africa and Parts of Asia) MIC (previously TELEC) (Japan) KCC (Korea)
Operating Channels	FCC: 11 (3 non-overlapping) ETSI: 13 (3 non-overlapping) MIC: 14 (4 non-overlapping) KCC: 13 (3 non-overlapping)
Non-overlapping Channels	Three

Transmit Power Settings *Maximum transmit power will vary according to individual country regulations. All values nominal, +/-1.5dBm*	**DSSS:** 18 dBm (63 mW) 17 dBm (50 mW) 15 dBm (30 mW) 10 dBm (10 mW) 0 dBm (1 mW)	**OFDM:** 15 dBm (30 mW) 10 dBm (10 mW) 0 dBm (1 mW)
Typical Receiver Sensitivity	1 Mbps: -96 dBm 2 Mbps: -95 dBm 5.5 Mbps: -94 dBm 6 Mbps: -94 dBm 9 Mbps: -91 dBm 11 Mbps: -90 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	
Security	**Standards** Wireless Equivalent Privacy (WEP) Wi-Fi Protected Access (WPA) IEEE 802.11i (WPA2) **Encryption** Wireless Equivalent Privacy (WEP, RC4 Algorithm) Temporal Key Integrity Protocol (TKIP, RC4 Algorithm) Advanced Encryption Standard (AES, Rijndael Algorithm) **Encryption Key Provisioning** Static (40-bit and 128-bit lengths) Pre-Shared (PSK) Dynamic **802.1X Extensible Authentication Protocol Types** EAP-FAST, EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, PEAP-TLS, LEAP	
Operating Systems Supported	Windows Mobile 6.5, 6.1, 6.0, 5.0, and (Pocket PC) 2003 Windows Embedded CE 6.0 (all versions) and 5.0 Windows XP Professional and Embedded	

Compliance	**ETSI Regulatory Domain** EN 300 328 EN 301 489 EN 60590 EN 50371 EU 2002/95/EC (RoHS) **FCC Regulatory Domain** FCC Subpart B, Class B FCC Subpart C Part 15.247, 15.207 ANSI C63.4-2003 **Industry Canada** RSS-210 **TELEC Regulatory Domain** RCR STD – 33 ARIB STD - T66 ARIB STD T71	
Certifications	**Wi-Fi Alliance** 802.11b, 802.11g WPA Enterprise WPA2 Enterprise **Cisco Compatible Extensions (CCX)** Version 4	
Warranty	**Limited Lifetime**	

Summit Data Communications, Inc. designs, manufactures, and supports WLAN radio modules 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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