

**Product Brief:**

**SDC-EC15N 802.11n ExpressCard Card with Antenna Connectors**

The SDC-EC15N ExpressCard radio card from Summit Data Communications combines a high-performance, dual-band 802.11n radio with software, both designed for business-critical mobile devices that operate in harsh environments. No other Wi-Fi® radio card can match the range, robust security, seamless mobility, and manageability of the EC15N card.



Each EC15N card delivers:

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

*The SDC-EC15N radio card is designed for use in business-critical mobile devices and the challenging RF environments in which they operate.*

The EC15N card is backed by a full set of support services from product and wireless LAN (WLAN) experts.

### **Hardware Capabilities**

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The EC15N card is designed for use in business-critical mobile devices and the challenging radio environments in which they operate. Hardware innovations enable the EC15N card to provide greater range than consumer-grade WLAN radio cards while minimizing power consumption and allowing for operation in extreme environments. Key hardware capabilities include:

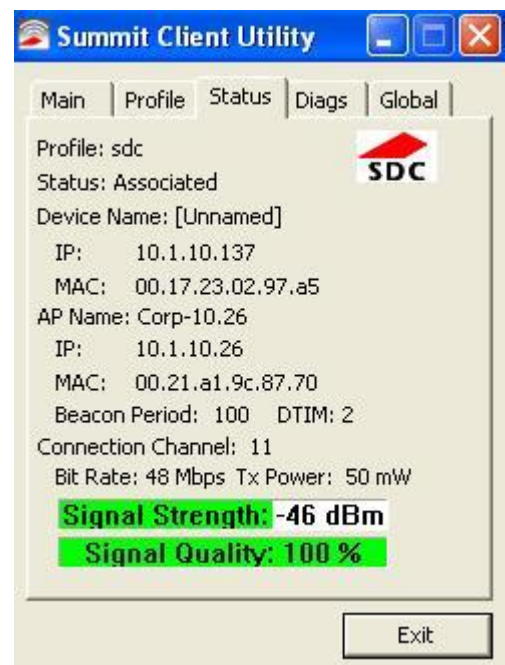
- **802.11n:** By supporting the ratified IEEE 802.11n protocol with two spatial streams, the EC15N card provides for a maximum data rate of 300 megabits per second (Mbps). Operating in both the 2.4 GHz and 5 GHz portions of the radio frequency spectrum, 802.11n is a superset of the popular 802.11b, 802.11g, and 802.11a standards, and the EC15N card can be thought of as an 802.11a, 802.11b, 802.11g, and 802.11n card.

- **Integrated dual-band antenna:** The EC15N card includes an integrated dual-band antenna system under a sturdy plastic cover. This antenna system supports 2x2 MIMO as well as transmit and receive diversity to maximize performance in environments 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 EC15N card offers enterprise-grade transmit power, receiver sensitivity, and delay spread. The 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.
- **Extended operating temperature:** To allow for device operation in extreme environments such as factories, warehouses, freezers, and the outdoors, the EC15N card provides an extended operating temperature range of -30° to +75° C, which far exceeds the capabilities of most other radio cards.
- **Power-saving options:** With configurable options for power savings, the EC15N card maximizes device battery life.

## 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 EC15N 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 EC15N card software include:

- **Operating system support:** EC15N software operates on 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 seven 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-CCMP (WPA2), TKIP (WPA), or WEP.

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

- **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).

## Certifications

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The EC15N 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 EC15N 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 EC15N card. By leveraging existing grants, test reports, and approvals, Summit customers incur minimal costs when attaining all required certifications.

## Support Services

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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 EC15N card on a broad range of devices. For device vendors that offer the EC15N 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 EC15N 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-EC15N Specifications

<b>System Interface</b>	32-bit ExpressCard card, designed for ExpressCard slot			
<b>Antenna</b>	2 MMCX connectors for dual band diversity and 2x2 MIMO support			
<b>Chipset</b>	Broadcom BCM4322			
<b>Input Power Requirements</b>	3.3 VDC +/- 10%			
<b>Typical Power Consumption (at maximum transmit power setting)</b>	Transmit: 600 mA (1980 mW) Receive: 450 mA (1485 mW) Standby: TBD mA (TBD mW)			
<b>Operating Temperature</b>	-30° to 75°C (-22° to 167°F)			
<b>Operating Humidity</b>	10 to 90% (non-condensing)			
<b>Dimensions: L x W x H</b>	99.35 mm x 33.57 mm x 4.75 mm			
<b>Weight</b>	15 g (0.53 oz.)			
<b>Wireless Media</b>	Direct Sequence-Spread Spectrum (DSSS) Orthogonal Frequency Divisional Multiplexing (OFDM)			
<b>Media Access Protocol</b>	Carrier sense multiple access with collision avoidance (CSMA/CA)			
<b>Network Architecture Types</b>	Infrastructure and ad hoc			
<b>Network Standards</b>	IEEE 802.11a, 802.11b, 802.11d, 802.11g, 802.11h, 802.11i, 802.11n			
<b>Data Rates Supported (Mbps)</b> <i>Note: The 802.11n data rates apply to a guard interval (GI) of 400ns.</i>	802.11a (OFDM): 6, 9, 12, 18, 24, 36, 48, 54 802.11b (DSSS): 1, 2, 5.5, 11 802.11g (OFDM): 6, 9, 12, 18, 24, 36, 48, 54 802.11n (OFDM, 20-MHz channels): 14, 29, 43, 58, 87, 116, 130, 144 802.11n (OFDM 40-MHz channels): 30, 60, 90, 120, 180, 240, 270, 300			
<b>Modulation</b>	BPSK @ 1, 6, 9, 14, 30 Mbps QPSK @ 2, 12, 18, 29, 43, 60, 90 Mbps CCK @ 5.5, 11 Mbps 16-QAM @ 24, 36, 58, 87, 120, 180 Mbps 64-QAM @ 48, 54, 116, 130, 144, 240, 270, 300 Mbps			
<b>Regulatory Domain Support</b>	FCC (Americas and parts of Asia and the Middle East) ETSI (Europe, Middle East, Africa, and parts of Asia) TELECOM (Japan) KCC (Korea)			
<b>2.4 GHz Frequency Bands</b>	<b>FCC</b> 2.412-2.473 GHz	<b>ETSI and KCC</b> 2.412-2.483 GHz	<b>TELECOM</b> 2.412-2.495 GHz	
<b>2.4 GHz Operating Channels</b>	<b>FCC</b> 11 (3 non-overlapping)	<b>ETSI and KCC</b> 13 (3 non-overlapping)	<b>TELECOM</b> 14 (4 non-overlapping)	
<b>5 GHz Frequency Bands</b>	<b>FCC</b> 5.15-5.35 GHz 5.47-5.725 GHz 5.725-5.82 GHz	<b>ETSI</b> 5.15-5.35 GHz 5.47-5.725 GHz	<b>TELECOM</b> 5.15-5.35 GHz	<b>KCC</b> 5.15-5.25 GHz 5.725-5.82 GHz
<b>5 GHz Operating Channels: 20-MHz Channels</b>	<b>FCC</b> 23 non-overlapping	<b>ETSI</b> 19 non-overlapping	<b>TELECOM and KCC</b> 8 non-overlapping	

<b>5 GHz Operating Channels: 40-MHz Channels</b>	<b>FCC</b> 11 non-overlapping	<b>ETSI</b> 9 non-overlapping	<b>TELEC</b> 4 non-overlapping
<b>Transmit Power Settings</b> <i>Maximum transmit power will vary according to individual country regulations. All values nominal, +/-2 dBm</i>	<b>A (802.11a)</b> 13 dBm (20 mW) 10 dBm (10 mW) 7 dBm ( 5 mW) 0 dBm ( 1 mW)	<b>B</b> 17 dBm (50 mW) 15 dBm (30 mW) 13 dBm (20 mW) 10 dBm (10 mW) 7 dBm ( 5 mW) 0 dBm ( 1 mW)	<b>G/N: 2.4 GHz, 20 MHz chs</b> 17 dBm (50 mW) 15 dBm (30 mW) 13 dBm (20 mW) 10 dBm (10 mW) 7 dBm ( 5 mW) 0 dBm ( 1 mW)
	<b>N: 2.4GHz, 40-MHz</b> 14 dBm (25 mW) 13 dBm (20 mW) 12 dBm (16 mW) 10 dBm (10 mW) 7 dBm ( 5 mW) 0 dBm ( 1 mW)	<b>N: 5 GHz, 20-MHz</b> 15 dBm (30 mW) 13 dBm (20 mW) 10 dBm (10 mW) 7 dBm ( 5 mW) 0 dBm ( 1 mW)	<b>N: 5GHz, 40-MHz</b> 14 dBm (25 mW) 13 dBm (20 mW) 10 dBm (10 mW) 7 dBm ( 5 mW) 0 dBm ( 1 mW)
<b>Typical Receiver Sensitivity (PER &lt;= 10%)</b>	<b>A (802.11a)</b> 6 Mbps: -85 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  <b>N: 20-MHz chs.</b> TBD	<b>B</b> 1 Mbps: -96 dBm 2 Mbps: -95 dBm 5.5 Mbps: -94 dBm 11 Mbps: -90 dBm  <b>N: 40-MHz chs.</b> TBD	<b>G</b> 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
<b>Delay Spread</b>	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	
<b>Operating Systems Supported</b>	Windows XP Professional and Embedded		

<b>Security</b>	<p><b>Standards</b> Wireless Equivalent Privacy (WEP) Wi-Fi Protected Access (WPA), Personal and Enterprise IEEE 802.11i, or WPA2, Personal and Enterprise</p> <p><b>802.1X Extensible Authentication Protocol (EAP) Types</b> PEAP-MSCHAPv2, PEAP-GTC, PEAP-TLS, EAP-TLS, EAP-TTLS, EAP-FAST, LEAP</p> <p><b>Encryption Protocols</b> Wireless Equivalent Privacy (WEP, RC4 Algorithm) Temporal Key Integrity Protocol (TKIP, RC4 Algorithm) Advanced Encryption Standard (AES-CCMP, Rijndael Algorithm)</p> <p><b>Encryption Key Provisioning (40-bit and 128-bit key lengths)</b> Static Pre-shared via WPA-PSK or WPA2-PSK Dynamic via EAP authentication</p>	
<b>Compliance</b>	<p><b>FCC Regulatory Domain</b> FCC Part 15.247 Subpart C FCC Part 15.407 Subpart E</p> <p><b>Industry Canada</b> RSS-210 RSS-Gen Issue 2</p> <p><b>TELEC Regulatory Domain</b> Article 2, Item 19, Category WW (2.4 GHz Channels 1-13) Article 2, Item 19-2, Category GZ (2.4 GHz Channel 14) Article 2, Item 19-3, Category XW (5150-5250 W52 and 5250-5350 W53) Article 2, Item 19-3-2, Category YW (5470-5725 W56)</p>	<p><b>ETSI Regulatory Domain</b> EN 300 328 EN 301 489-1 EN 301 489-17 EN 301 893 EN 60950-1 EU 2002/95/EC (RoHS)</p>
<b>Certifications</b>	<p><b>Wi-Fi Alliance</b> 802.11a, 802.11b, 802.11g, 802.11n WPA: Personal and Enterprise WPA2: Personal and Enterprise</p> <p><b>Cisco Compatible Extensions (CCX)</b> Version 4</p>	
<b>Warranty</b>	<u><b>Limited Lifetime</b></u>	
<i>All specifications are subject to change without notice.</i>		

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