

Cisco 4G LTE 2.5 Enhanced High-Speed Wireless WAN Interface Cards for Asia, Australia, and selected Latin America Regions

The Cisco® 4G LTE 2.5 Enhanced High-Speed Wireless WAN Interface Cards (EHWICs) for Cisco ISR G2 provide the next generation of Wireless WAN primary, backhaul, or backup solutions.

Product Overview

Fourth-Generation Long-Term Evolution (4G LTE) is being used to provide both primary connectivity and network resiliency for business continuity. With greater agility and speed to deployment than wired solutions, 4G LTE reduces network cost and complexity while maintaining ROI. Practical applications of 4G LTE for distributed enterprises include parallel networks, primary connection, failover, in-vehicle, network convergence, and wireless WAN diversity. The Cisco 4G LTE EHWICs for Integrated Services Routers Generation 2 (ISR G2) are the industry leaders in bringing enterprise-grade wire-line-like functionality such as quality of service (QoS) for cellular, Multi-VRF for cellular, and unified communications solutions over LTE.

The Cisco 4G LTE EHWICs (Figure 1) are the first enterprise-class multimode 4G LTE wireless WAN (WWAN) solution. With 4G LTE, WWAN is a primary WAN link solution. Businesses can now run applications such as interactive video and telepresence on a primary 4G LTE WWAN link, which is 10 to 15 times faster and has 5 times lower latency than 3G links. These cards support the latest Third-Generation Partnership Project (3GPP) Release 8 Category 4 LTE standards. Cisco multimode 4G LTE WWAN EHWICs provide persistent, reliable LTE connectivity with fallback and transparent handoff to earlier technologies. The cards provide bandwidth to support high-definition (HD) and peer-to-peer (P2P) video calls, providing customers with an excellent mobile broadband experience. The Cisco 4G LTE WWAN EHWICs are tightly integrated with the services provided on the award-winning Cisco ISR G2 devices, which deliver secure data, voice, video, and mobility services. The EHWICs are supported on the modular Cisco 1900, 2900, and 3900 Series ISR G2 devices.

Enterprises are looking for ways to reduce deployment time, enable comprehensive media services, increase revenue, and improve business continuity. The Cisco 4G LTE WWAN EHWICs, when coupled with a service provider's wireless data plan, provide a rapidly deployable, high-bandwidth, reliable, and secure solution for branch offices and remote sites. With 4G LTE data rates, the Cisco 4G LTE WWAN EHWICs offer a primary WAN link solution capable of running comprehensive branch-office services, including voice and video services.

The Cisco 4G LTE WWAN EHWICs include the following models:

- **EHWIC-LTE-LA, EHWIC-LTE-CI, and EHWIC-LTE-JN:** Multimode LTE 2.5 for carriers that operate FDD LTE 700-MHz (band 28), 850-MHz (band 5 CLR), 850-MHz (bands 18 and 19 Low), 900-MHz (band 8), 1500-MHz (band 21), 1800-MHz (band 3), 2100-MHz (band 1), or 2600-MHz (band 7) networks; the multimode Cisco 890G Series 4G LTE 2.5 ISRs are backward-compatible with Universal Mobile Telecommunications Service (UMTS) and Dual-Carrier High-Speed Packet Access Plus (DC-HSPA+): 800

MHz (band 19 Japan), 850 MHz (band 5), 850 MHz (band 6 Japan), 900 MHz (band 8), 1800 MHz (band 9), 2100 MHz (band 1), and TD-SCDMA 39.

- Multimode LTE 2.5 for carriers that operate TDD LTE 1900 MHz (band 39), 230 MHz (band 40), 2500 MHz (band 41), or 2600 MHz (band 38).
- Multimode LTE 2.5 for carrier aggregation band combinations: 1+(8,18,19,21); 3+(5,7,19,28); 7+(5,7,28); 19+21, 38+38, 39+39, 40+40, 41+41.

Figure 1. Cisco 4G LTE 2.5 WWAN EHWIC for Cisco ISR G2



With enhanced data rates and improved latency, WWAN services are an ideal way to replace or supplement traditional wire-line services. 4G LTE WWAN data services offered today have theoretical limits of Category 4 150 Mbps on the downlink and 50 Mbps on the uplink. The actual data speed depends on the service provider's network. 4G LTE WWAN data services are an alternative in areas in which broadband services either are not available or are very expensive. Cisco is building on these performance milestones and adding support for wireless to our wide variety of WAN interface alternatives.

Main Business Benefits

Primary connectivity: The Cisco multimode 4G LTE WWAN EHWICs provide persistent, reliable LTE connectivity with fallback and transparent handoff to earlier technologies. They enable high-performance, secure, reliable, and transparent multimedia applications anywhere and anytime and allow customers to deploy and manage the same device for multiple applications, simplifying deployment and management. For businesses requiring rapid setup or temporary connectivity, 4G LTE WWAN offers the ability to deploy a new site quickly. Using the integrated services available on the Cisco ISRs, the EHWICs can provide instant and mobile communications during disasters and service outages. Figure 2 illustrates the use of 4G LTE for primary connectivity.

Figure 2. 4G LTE for Primary Connectivity

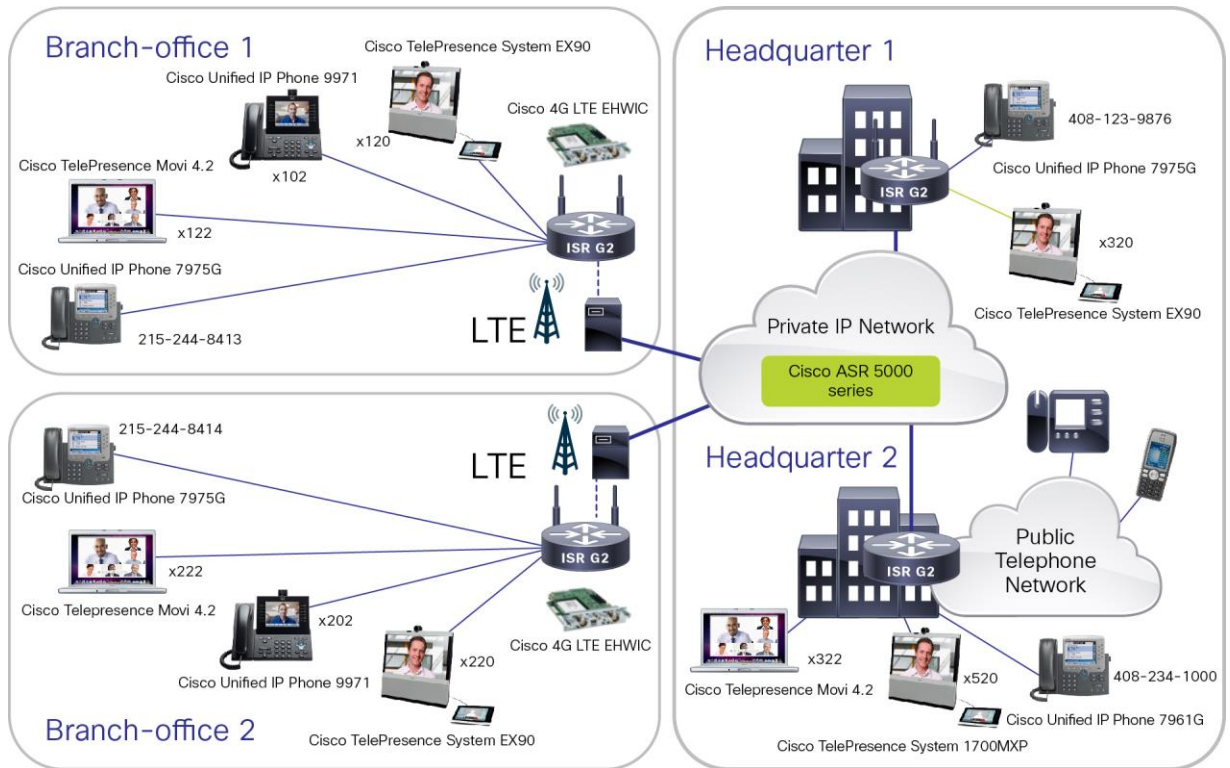
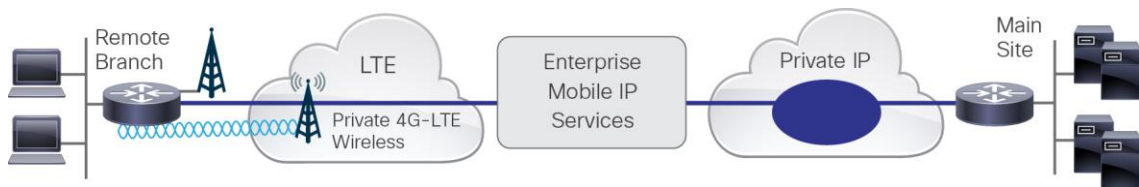
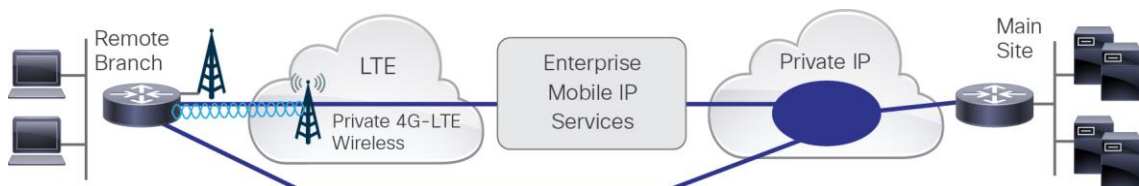


Figure 3. 4G LTE for WAN Resilience



WAN Backup: Resilient WAN access is a crucial requirement for branch offices connecting to a corporate site or the Internet. Although DSL, Frame Relay, ISDN, and dialup are common choices for backup if a primary WAN link fails, a nonterrestrial data path such as a 4G LTE WWAN provides enhanced WAN diversity (Figures 3). Cisco 4G LTE WWAN EHWICs, combined with the Cisco ISRs, offer the capability to automatically initiate connection over the 4G LTE WWAN when the primary WAN link is unavailable. In addition, you can use Cisco 4G LTE WWAN the EHWICs to provide supplemental bandwidth when the primary WAN link is overloaded (Figure 4).

Figure 4. 4G LTE as a Backup WAN Link

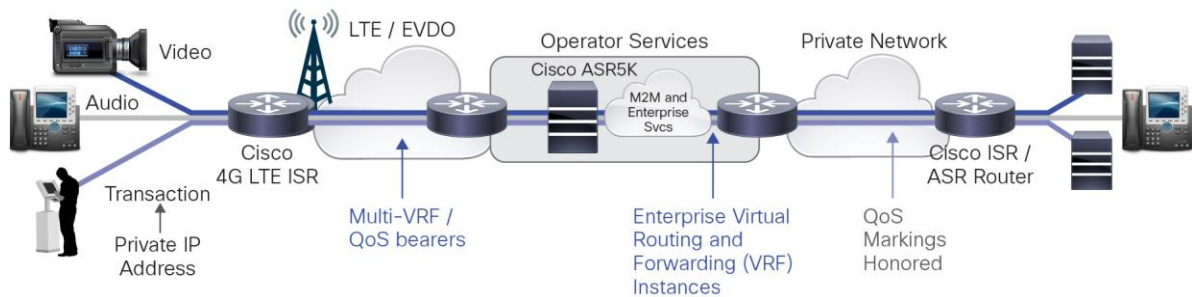


Main Features and Benefits

- **Integrated 4G LTE WWAN broadband:** With the 4G LTE WWAN modem integrated into the router, you gain the benefits of simplified installation and management. In addition, the Cisco 4G LTE WWAN EHWICs are tightly integrated with Cisco ISRs, which run the industry-leading Cisco IOS® Software, giving access to all the advanced features of Cisco IOS Software, such as QoS, intelligent network queuing, and robust security.
- **Performance:** With increasing data use and the proliferation of web-based applications at remote sites, there is an increasing need for high-speed (broadband) data connections to run mission-critical applications at these sites. 4G LTE WWAN services promise low-latency links at high speeds.
- **Short installation time:** Businesses sometimes have to wait weeks or months to get data circuits installed at new locations. For temporary or seasonal sites, wireless data services allow instant connectivity anywhere there is cellular coverage, and rapid deployment allows you to quickly set up networks with WAN connectivity.
- **Network resiliency through WAN diversity:** WAN connectivity is crucial to the functioning of your business, where any downtime means a loss of productivity and lost opportunity. Staying connected and operational during a network outage can be vital. A wireless connection for backup to a remote site provides protection against line outages and an additional level of redundancy, because the 4G LTE WWAN infrastructure is often served by separate facilities, providing redundancy for the entire local loop. With 4G LTE WWAN, Cisco Intelligent WAN (IWAN) provides transport-independent, intelligent path control, application optimization, and secure connectivity on any device, over any connection, and to any cloud.
- **Portability:** You can easily relocate wireless routers and Cisco 4G LTE WWAN EHWICs wherever coverage is available.
- **Multiple packet data networks:** You can configure multiple active access point names (APNs) so that Internet traffic can be kept separate from corporate traffic.

Enterprise-Grade WAN Features for 4G LTE

Figure 5. 4G LTE Multiple-Bearer QoS



- **4G LTE multiple-bearer QoS for cellular:** The 4G LTE EHWIC supports 4G LTE multiple-bearer QoS (Figure 5). Detailed information on the bearer is displayed by the “show” command, SNMP-MIBs, etc. The QoS feature must be launched by a service provider.
- **Multi-VRF for cellular:** 4G LTE EHWICs now support Multi-VRF for cellular networks. Multi-VRF is a Cisco proprietary implementation over and above the 3GPP specification and requires a Cisco ASR 5000 Packet Gateway (PGW) as the head end at the service provider’s network. The Multi-VRF feature is service provider dependent, and requires a service provider to launch this service.
- **Enterprise-grade unified communications solutions over LTE:** The 4G LTE EHWIC now supports voice and video and can be integrated with Cisco Unified Communications cloud or premises-based infrastructure.
- **Public Land Mobile Network (PLMN) search:** User equipment (UE) presents the end user with available PLMN search manually. UE can optimize PLMN searches using stored information such as RF carriers and cell parameters.

Product Specifications

Table 1 provides specifications for the Cisco 4G LTE 2.5 WWAN EHWICs, and Table 2 provides antenna specifications.

Table 1. Specifications for the Cisco 4G LTE 2.5 WWAN EHWICs Among Region Theaters

Region Theaters	EHWIC-LTE-LA	EHWIC-LTE-CI	EHWIC-LTE-JP
LTE bands	LTE bands 1, 3, 5, 7, 8, 18, 19, 21, 28, 38, 39, 40, 41 FDD LTE 700 MHz (band 28), 850 MHz (band 5 CLR), 850 MHz (bands 18 and 19 Low), 900 MHz (band 8), 1500 MHz (band 21), 1800 MHz (band 3), 2100 MHz (band 1), or 2600 MHz (band 7) TDD LTE 1900 MHz (band 39), 2300 MHz (band 40), 2500 MHz (band 41), or 2600 MHz (band 38) Carrier aggregation band combinations: 1+(8,18,19,21); 3+(5,7,19,28); 7+(5,7,28); 19+21, 38+38, 39+39,40+40, 41+41	LTE bands 1, 3, 5, 7, 8, 18, 19, 21, 28, 38, 39, 40, 41 FDD LTE 700 MHz (band 28), 850 MHz (band 5 CLR), 850 MHz (bands 18 and 19 Low), 900 MHz (band 8), 1500 MHz (band 21), 1800 MHz (band 3), 2100 MHz (band 1), or 2600 MHz (band 7) TDD LTE 1900 MHz (band 39), 2300 MHz (band 40), 2500 MHz (band 41), or 2600 MHz (band 38) Carrier aggregation band combinations: 1+(8,18,19,21); 3+(5,7,19,28); 7+(5,7,28); 19+21, 38+38, 39+39,40+40, 41+41	LTE bands 1, 3, 5, 7, 8, 18, 19, 21, 28, 38, 39, 40, 41 FDD LTE 700 MHz (band 28), 850 MHz (band 5 CLR), 850 MHz (bands 18 and 19 Low), 900 MHz (band 8), 1500 MHz (band 21), 1800 MHz (band 3), 2100 MHz (band 1), or 2600 MHz (band 7) TDD LTE 1900 MHz (band 39), 2300 MHz (band 40), 2500 MHz (band 41), or 2600 MHz (band 38) Carrier aggregation band combinations: 1+(8,18,19,21); 3+(5,7,19,28); 7+(5,7,28); 19+21, 38+38, 39+39,40+40, 41+41
Theoretical Category 4 download/upload speeds	150 Mbps download and 50 Mbps upload	150 Mbps download and 50 Mbps upload	150 Mbps download and 50 Mbps upload
Australia	✓	X	X
Japan	X	X	✓
China	X	✓	X
India	X	✓	X
Southeast Asia	X	✓	X
Latin America	X	✓ (Dependent on specific operators supporting the above LTE bands)	X
South Korea	X	✓	X

Please note: LTE Category 4 download/upload speeds depend on specific carrier channel bandwidth and carrier LTE network provisioning. Cisco LTE 2.5 EHWIC performance also depends on specific ISR G2 platform scalability with services.

Item	Specification
External interfaces	<ul style="list-style-type: none"> • Cisco LTE 2.5 • Mini-USB interface for use with diagnostics and monitoring tools • Two TNC connectors with main and multiple-input/multiple-output (MIMO) RF ports for antenna connection (support for main and MIMO antenna connector) • Standalone GPS, needs line of sight (separate active GPS with SMA antenna option)
Form factor	Cisco LTE 2.5 single-wide EHWIC for Cisco ISR G2 platforms
Physical dimensions (H x W x D)	0.75 x 3.08 x 4.9 in. (1.9 x 7.8 x 12.4 cm)
Weight	5.2 oz (147 g)
Subscriber Identity Module (SIM) card	4G LTE SIM card socket (USIM or mini-SIM 2FF)
Power	10.6W peak (5.1W typical)
Supported platforms	Modular Cisco 1900, 2900, and 3900 Series ISR G2
Software compatibility	Modular Cisco 1900, 2900, and 3900 Series ISRs supported with Cisco IOS Software release: <ul style="list-style-type: none"> • Cisco IOS Software feature set: Universal Cisco IOS Software image • EHWIC-LTE-LA, EHWIC-LTE-CI: Release 15.6(2)T1 with modem firmware 2.14.3.x or later IOS

Item	Specification
	<p>Release with respective modem firmware</p> <ul style="list-style-type: none"> • EHWIC-LTE-JN: Release 15.6(2)T1 with modem firmware 2.20.3.x or later IOS Release with respective modem firmware • –LA FW is specific for Telstra, –JN is specific for NTT DoCoMo, and –CI Generic FW for all other APAC/LATAM countries <p>Main Features Include</p> <ul style="list-style-type: none"> • Automatic switch failover between primary and backup links • Multichannel-interface-processor (MIP) profile configuration • 3G Simple Network Management Protocol Version 2 (SNMPv2) MIBs and traps • Remotely initiated data callback using voice • Remotely initiated data callback using SMS • Remote firmware upgrade over 4G LTE • Virtual diagnostic monitoring • SIM lock and unlock capability • Receive diversity: For all supported bands (MIMO on LTE) • Density: Maximum EHWIC slots (scalability depends on specific ISR G2 series)
SMS/GPS/multiple profile	<ul style="list-style-type: none"> • GPS antenna: SMA connector (separate standalone active GPS with SMA option) • Send and receive SMS (maximum 160 characters) • Configure multiple profile
MIBs	<ul style="list-style-type: none"> • 3G MIB • Entity MIB • IF MIB • 3G WWAN MIB persistence • Enhanced 3G MIB for 4G MIB extension
Network management and diagnostics	<ul style="list-style-type: none"> • In-band and out-of-band management using Telnet (Cisco IOS Software command-line interface [CLI]) and SNMP, including MIB II and other extensions • Industry-standard 4G LTE diagnostics and monitoring tools (QUALCOMM CDMA Air Interface Tester [CAIT] and Spirent Universal Diagnostic Monitor [UDM])
Modem information	<ul style="list-style-type: none"> • Modem form factor: Embedded Peripheral Component Interconnect (PCI) minicard • EHWIC-LTE-LA, EHWIC-LTE-CI and EHWIC-LTE-JN: Sierra Wireless MC7430 with Qualcomm MDM9230
Carrier support	<p>For an updated list of carriers that offer services with Cisco 4G LTE WWAN EHWIC, please visit http://www.cisco.com/go/4g</p>
Diagnostic	RSVD mini-USB port
Programming interfaces	Cisco IOS Software CLI
Wireless technologies supported	<p>EHWIC-LTE-LA, EHWIC-LTE-CI, and EHWIC-LTE-JN</p> <ul style="list-style-type: none"> • FDD LTE 700 MHz (band 28), 850 MHz (band 5 CLR), 850 MHz (bands 18 and 19 Low), 900 MHz (band 8), 1500 MHz (band 21), 1800 MHz (band 3), 2100 MHz (band 1), or 2600 MHz (band 7) • TDD LTE 1900 MHz (band 39), 2300 MHz (band 40), 2500 MHz (band 41), or 2600 MHz (band 38) <p>Backward compatibility:</p> <ul style="list-style-type: none"> • UMTS and HSPA+: 800 MHz (band 19), 850 MHz (band 5), 850 MHz (band 6), 900 MHz (band 8), 1800 MHz (band 9), and 2100 MHz (band 1) • HSPA+ speed DL up to Category 20 (42.2 Mbps) and UL up to Category 6 (5.76 Mbps) • DC-HSPA+ speed DL with Category 26 (62 Mbps) and UL up to Category 8 (11.5 Mbps) • TD-SCDMA 39 (China Mobile support)
LED indicators	<p>EHWIC-LTE-LA, EHWIC-LTE-CI, and EHWIC-LTE-JN</p> <p>WWAN LED (connection status indication)</p> <ul style="list-style-type: none"> • RSSI • HSPA+ • GPS • LTE
Approvals and compliance	<p>Safety</p> <ul style="list-style-type: none"> • UL 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1, IEC 60950-1, AS/NZS 60950.1, FCC Part 2.1093, RSS-102, and EN 50385 <p>EMC</p> <ul style="list-style-type: none"> • FCC Part 15, Industry Canada ICES-003, EN 301 489-01, EN 301 489-07, EN 301 489-24, EN55022

Item	Specification
	(CISPR22), EN55024 (CISPR24), EN300-386, EN 61000-3-2, EN 61000-3-3, AS/NZS CISPR 22, CNS13438, and VCCI V-3 Radio <ul style="list-style-type: none"> FCC Part 2, FCC Part 22, FCC Part 24, RSS 129 and RSS 133, RSS 132 and RSS 133, EN 301 908-1, and EN 301 908-2

Table 2. Antenna Specifications

Item	Specification
Diversity (dual antenna) MIMO	<ul style="list-style-type: none"> EHWIC-LTE-LA, EHWIC-LTE-CI, EHWIC-LTE-JN
Antenna 4G- ANTM-OM-CM	Description <ul style="list-style-type: none"> Multiband indoor omnidirectional antenna Ceiling mount Electrical Specifications <ul style="list-style-type: none"> Frequency range: 698 to 960 MHz, and 1710 to 2690 MHz Gain: 1 and 1.5 decibels relative to isotropic (dBi) (700 to 960 MHz), 1.7 and 3.2 dBi (1700 to 2200 MHz), 3 and 4 dBi (2500 to 2700 MHz) Maximum power: 50W Connector: TNC male Voltage standing wave ratio (VSWR): 2.0:1 and 3.01:1 or less for GPS Nominal impedance: 50 ohms Polarization: Linear vertical Mechanical Specifications <ul style="list-style-type: none"> Radome material: White ABS Dimensions (outside dimensions [OD] x height [H]): 5.64 OD in. x 2.0 H in. (143.3 x 50.8 mm) Weight: 6.0 oz (170.1 g) Temperature rating: -40° to 85°C (-40° to 185° F) Can be used with the following cable extensions: 3G-CAB-ULL-20 and 3G-CAB-ULL-50
Antenna 4G- LTE-ANTM-D	Description <ul style="list-style-type: none"> Cisco 3G and 4G omnidirectional dipole antenna Articulating joint; can be rotated 360 degrees and is capable of maneuvering into three stop positions: 0 degrees, 45 degrees, and 90 degrees Plug-threaded TNC connector: Directly mount the antenna on any Cisco 4G or 3G wireless ISR EHWIC with a TNC connector; the threads on the connector must comply with the ANSI 7/16-28 UNEF 2B thread specification Multiband swivel-mount dipole antenna Faceplate mount (dual units included with all Cisco 4G WWAN EHWICs) Electrical Specifications <ul style="list-style-type: none"> Operating frequency ranges: 698 to 806 MHz, 824 to 894 MHz, 925 to 960 MHz, 1710 to 1885 MHz, 1920 to 1980 MHz, 2110 to 2170 MHz, and 2500 to 2690 MHz Maximum peak gain: 2 dBi Maximum input power: 3W Connector: TNC plug VSWR: < 2.5:1 or less Characteristic impedance: 50 ohms Mechanical Specifications <ul style="list-style-type: none"> Antenna dimensions (L x W x D): 9 x 1.2 x 7/16 in. (229 x 30.5 x 11 mm) Temperature rating: -22° to 158°F (-30° to 70°C) Antenna base and random color: Cisco Raven Black
Antenna extension 4G-AE015-R	Description <ul style="list-style-type: none"> Single-unit antenna extension base (15 ft (457.2 cm)) Electrical Specifications <ul style="list-style-type: none"> Frequency range: 6 GHz Attenuation: Less than 3 dB at or below 2.5 GHz Base connector: TNC socket Pigtail connector: TNC plug

Item	Specification
	<p>Mechanical Specifications</p> <ul style="list-style-type: none"> • Base material: Cisco gray UL94 V0 PC/ABS plastic • Dimensions: 2.8 x 2.4 x 1.8 in. (7.1 x 6.1 x 4.6 cm) • Weight: 6 oz (0.17 kg) • Cable: 15 ft (457.2 cm) nonplenum rated Pro-Flex Plus 195
<p>Antenna extension 4G-AE010-R</p>	<p>Description</p> <ul style="list-style-type: none"> • Single-unit antenna extension base (10 ft [304.8 cm] cable included) <p>Electrical Specifications</p> <ul style="list-style-type: none"> • Frequency range: 6 GHz • Attenuation: Less than 3 dB at or below 2.5 GHz • Base connector: TNC socket • Pigtail connector: TNC plug <p>Mechanical Specifications</p> <ul style="list-style-type: none"> • Base material: UL 94 V0PC and ABS plastic • Dimensions: 2.8 x 2.4 x 1.8 in. (7.1 x 6.1 x 4.6 cm) • Weight: 6 oz (0.17 kg) • Cable: 10 ft (304.8 cm) nonplenum rated Pro-Flex Plus 195
<p>ANT-4G-OMNI-OUT-N*</p>	<p>Description: Cisco outdoor omnidirectional antenna for 2G, 3G, and 4G cellular</p> <ul style="list-style-type: none"> • UV-stable radome • Mast-mounting bracket • Applicable for both 3G and 4G solutions • Domestic LTE 700 band and global LTE 2600 band • Domestic cellular and global GSM • WiMAX 2300 and 2500 <p>Electrical Specifications</p> <ul style="list-style-type: none"> • Frequency ranges: 698 to 960 MHz, 1710 to 2170 MHz, and 2300 to 2700 MHz • Nominal gain (dBi): 698 to 960 MHz = 1.5 dBi, and 1710 to 2700 MHz = 3.5 dBi • 3 dB beam width (E plane): 698 to 960 MHz = 81 degrees, 1710 to 2170 MHz = 75 degrees, and 2300 to 2700 MHz = 100 degrees • 3 dB beam width (H plane): 360 degrees, omnidirectional • Polarization: Vertical and linear • Normal impedance: 50 ohms • VSWR: < 2.5:1 (698 to 960 MHz) and < 2.0:1 (1710 to 2690 MHz) • Radiation pattern: Omnidirectional <p>Mechanical Specifications</p> <ul style="list-style-type: none"> • Mount style: Mast mount, upright position only • Environment: Outdoor • Connector: N-type socket • Antenna length (height): 9.8 x 1 in. (24.9 x 2.45 cm) • Weight: 1.5 lb (0.68 kg) • Dimensions (H x Outside dimensions): 9.8 x 1 in. (248 x 24.5 mm) • Operating temperature range: -22° to 158°F (-30° to 70°C) • Storage temperature: -40° to 185°F (-40° to 85°C) • Maximum power: 20W • Radome: Polycarbonate, UV, white • Material substance compliance: ROHS compliant

Item	Specification
ANT-4G-SR-OUT-TNC	<p>Description: Cisco integrated 4G low-profile outdoor saucer antenna</p> <ul style="list-style-type: none"> • Applicable for both 3G and 4G solutions • Domestic LTE 700 band and global LTE 2600 band • Domestic cellular and global GSM • Weatherproof UV stable radome • Performance optimized • Excellent flame rating <p>Electrical Specifications</p> <ul style="list-style-type: none"> • Frequency ranges: 698 to 960 MHz and 1710 to 2700 MHz • Peak gain with 1-ft cable: 1.5 dBi (698 to 960 MHz) and 3.7 dBi (1710 to 2700 MHz) • Peak gain with 15-ft cable: 0.8 dBi (698 to 960 MHz) and 0.2 dBi (1710 to 2700 MHz) • Average efficiency with 1-ft cable: 90% (698 to 960 MHz) and 82% (1710 to 2700 MHz) • Average efficiency with 15-ft cable: 60% (698 to 960 MHz) and 40% (1710 to 2700 MHz) • Polarization: Linear and vertical • Nominal impedance: 50 ohms • VSWR (maximum): 2.0:1 (698 to 960 MHz) and 2.0:1 (1710 to 2700 MHz) • H-plane (3-dB beam width): Omnidirectional <p>Mechanical Specifications</p> <ul style="list-style-type: none"> • Power: 3W • Cable: 15-ft LMR 195 • RF connector: Type N (f); TNC (plug) available • Mount style: Ceiling mount • Radome: PC/ABS, UV stable, black • Material substance compliance: RoHS compliant • Operational temperature: -22° to 158°F (-30° to 70°C) • Storage temperature: -40° to 185°F (-40° to 85°C) • Environment: Indoor • Dimensions (H x OD): 3.4 x 7.9 in. (87 x 200 mm)
ANT-4G-PNL-OUT-N*	<p>Description: Cisco multiband panel outdoor 4G antenna</p> <ul style="list-style-type: none"> • Supports 3G and 4G solutions • Supports bands • Wall mount and mast mount • Indoor and outdoor • Dual type-N socket connector <p>Electrical Specifications</p> <ul style="list-style-type: none"> • Frequency ranges: 698 to 960 MHz and 1710 to 2700 MHz • VSWR: 2.0:1 maximum • Gain: 5.5 to 10.5 dBi (698 to 960 MHz) and 6.5 to 9.0 dBi (1710 to 2700 MHz) • 3 dB beam width (vertical plane): 55 to 70 degrees = 698 to 960 MHz, 53 to 98 degrees = 1710 to 2200 MHz, 60 to 70 degrees = 2200 to 2500 MHz, and 55 to 70 degrees = 2500 to 2700 MHz • 3 dB beam width (horizontal plane): 55 to 70 degrees = 698 to 960 MHz and 50 to 90 degrees = 1710 to 2200 MHz • F/B ratio: > 15 dB, typical 20 dB = 698 to 960 MHz, and > 17 dB, typical 23 dB = 1700 to 2700 MHz • Isolation: > 30 dB • Polarization: Slant +/- 45 degrees • Nominal impedance: 50 ohms • Radiation pattern: Directional

Item	Specification
	<p>Mechanical Specifications</p> <ul style="list-style-type: none"> • Mount style: Wall or mast mount • Environment: Outdoor • Connector: Dual type-N socket (direct connect or dual 12 in. (30 cm)) • Antenna length (height): 11.6 in. (2.95 cm) • Temperature range (operating): –22° to 158°F (–30° to 70°C) • Storage temperature: –40° to 185°F (–40° to 85°C) • Wind rating: 160 km per hr • IP rating: IP 54 • Radome: Polycarbonate, UV resistant, white • Material substance compliance: ROHS compliant
<p>CGR-LA-NM-NF* CGR-LA-NF-NF*</p>	<p>Description: Cisco Lightning Arrestor</p> <ul style="list-style-type: none"> • Broadband operation • DC continuity for outdoor powering • Reversed installation • Permanently installed gas capsule • CGR-LA-NM-NF: male-to-female connector • CGR-LA-NF-NF: female-to-female connector <p>Feature Description</p> <ul style="list-style-type: none"> • Arrestor Type: Gas discharge tube • Main path connectors: Port 1: protected, N plug (male), Port 2: unprotected, N jack (female, bulkhead side) • Impedance: 50 ohms • Frequency range: 0 MHz to 5800 MHz • Return loss: Greater than or equal to 20 dB • Insertion loss: Less than or equal to 0.2 dB • RF CW power: Less than or equal to 60W • Surge current handling capability: 10 single, multiple kA (test pulse 8/20 ms) • Residual pulse energy: 250 microsecond typically (test pulse 4 kV 1.2/50 microsecond; 2kA 8/20 microsecond), main path (protected side) • Operating temperature range: -40°F to 185°F (-40°C to 85°C) • Waterproof rating: IP 67 (according to IEC 60529, data refer to the coupled state) • Mounting and grounding: MH24 (bulkhead) • Material <ul style="list-style-type: none"> ◦ Housing: brass ◦ Port 1 center contact: gold-plated brass ◦ Port 2 center contract: copper beryllium alloy

* –N antenna works with –N cables and –N lightning arrestor

Ordering Information

To place an order, refer to Tables 3 through 5 and visit the [Cisco Ordering home](#) page.

Table 3. Cisco 4G LTE WWAN EHWICs Ordering Information

Description	Part Number
Cisco LTE 2.5 4G EHWIC for Australia with Sierra Wireless MC7430/Qualcomm MDM9230, FDD LTE bands 1, 3, 5, 7, 8, 18, 19, 21, 28, and TDD LTE 38, 39, 40, 41 bands with carrier aggregations, UMTS/HSPA+ bands and TD-SCDMA 39s	EHWIC-LTE-LA EHWIC-LTE-LA= (Spare)
Cisco LTE 2.5 4G EHWIC for China, Southeast Asia, LATAM, South Korea and India with Sierra Wireless MC7430/Qualcomm MDM9230, FDD LTE bands 1, 3, 5, 7, 8, 18, 19, 21, 28, and TDD LTE 38, 39, 40, 41 bands with carrier aggregations, UMTS/HSPA+ bands and TD-SCDMA 39	EHWIC-LTE-CI EHWIC-LTE-CI= (Spare)
Cisco LTE 2.5 4G EHWIC for Japan with Sierra Wireless MC7430/Qualcomm MDM9230, FDD LTE bands 1, 3, 5, 7, 8, 18, 19, 21, 28, and TDD LTE 38, 39, 40, 41 bands with carrier aggregations, UMTS/HSPA+ bands and TD-SCDMA 39	EHWIC-LTE-JN EHWIC-LTE-JN= (Spare)

Table 4. Antenna Ordering Information

Description	Part Number
Multi-Band Integrated 3-in-1 Indoor/Outdoor IP67 Antenna with GPS	4G-LTE-ANTM-O-3-X 4G-LTE-ANTM-O-3-X= (Spare) X = R (Red); X = B (Black); X = W (White); X = C (Blue);
Multi-Band Swivel Mount Dipole Antenna-Faceplate Mount	4G-LTE-ANTM-D 4G-LTE-ANTM-D= (Spare)
Multi-Band Omnidirectional Antenna-Ceiling Mount	4G-ANTM-OM-CM 4G-ANTM-OM-CM= (Spare)
Single Unit Antenna Extension Base (10-ft cable included)	4G-AE010-R 4G-AE010-R= (Spare)
Single Unit Antenna Extension Base (15-ft cable)	4G-AE015-R 4G-AE015-R= (Spare)
50-ft (15 m) Ultra-Low-Loss LMR 400 Cable with TNC Connector	4G-CAB-ULL-50 4G-CAB-ULL-50= (Spare)
20-ft (6 m) Ultra-Low-Loss LMR 400 Cable with TNC Connector	4G-CAB-ULL-20 4G-CAB-ULL-20= (Spare)
25-ft (7.5 m) Low-Loss LMR 240 Cable with TNC Connector	4G-CAB-LMR240-25 4G-CAB-LMR240-25= (Spare)
50-ft (15 m) Low-Loss LMR 240 Cable with TNC Connector	4G-CAB-LMR240-50 4G-CAB-LMR240-50= (Spare)
75-ft (23 m) Low-Loss LMR 240 Cable with TNC Connector	4G-CAB-LMR240-75 4G-CAB-LMR240-75= (Spare)
Standalone active SMA GPS antenna with 17-ft extender	GPS-ACT-ANTM-SMA GPS-ACT-ANTM-SMA= (Spare)
Multiband Low-Profile Saucer Outdoor 4G Antenna	ANT-4G-OMNI-OUT-N
Multiband Panel Outdoor 4G Antenna	ANT-4G-SR-OUT-TNC
50-ft (15 m) Ultra-Low-Loss LMR 400 Cable TNC-N Connector	ANT-4G-PNL-OUT-N
20-ft (6 m) Ultra-Low-Loss LMR 400 Cable with TNC-N Connector	CAB-L400-50-TNC-N
20-ft (6 m) Ultra-Low-Loss LMR 400 Cable with N Connectors	CAB-L400-20-TNC-N
Lightning Arrestor Kit: female to female	CAB-L400-20-N-N
Lightning Arrestor Kit: male to female	CGR-LA-NF-NF
4G LTE Lightning Arrestor	4G-ACC-OUT-LA 4G-ACC-OUT-LA= (Spare)

Note: All 4G LTE EHWICs (including spares) ship with dual 4G-LTE-ANTM-D and dual extender 4G-AE010-R.

Mobile IP requires a separate APP or AX license.

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco Services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, refer to [Cisco Technical Support Services](#) and [Cisco Advanced Services](#).

Warranty Information

The Cisco 4G LTE EHWICs have a 90-day limited liability warranty.

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For More Information

For more information about the Cisco 4G LTE WWAN EHWICs, visit <http://www.cisco.com/go/4g> or contact your local Cisco account representative.

For configuration guidance, see

<http://www.cisco.com/en/US/docs/routers/access/interfaces/software/feature/guide/EHWIC-4G-LTESW.html>.

For installation guidance (-N antenna and cable), see

http://www.cisco.com/en/US/prod/collateral/modules/ps5949/ps11540/ehwic_4g_ltehw.pdf

<http://www.cisco.com/en/US/docs/routers/connectedgrid/antennas/installing/Overview.html>



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