

SkyPilot Connector DualBand

SkyPilot Network CPE Device with Integrated Wi-Fi Access Point

The SkyPilot® Connector DualBand is a versatile CPE endpoint of the SkyPilot network, a low-latency, high-bandwidth radio system operating in the 5.0 GHz band as a self-forming, self-balancing, and self-healing wireless mesh network. The Connector DualBand integrates a high-capacity wireless 5 GHz backhaul radio supporting air data rates of up to 54 Mbps and a Wi-Fi local access 2.4 GHz radio into a single device. This combination offers two simultaneous ways to access the broadband Layer 2 Ethernet transport provided by the SkyPilot network, either through a wired Ethernet connection to the Connector DualBand or through a wireless Wi-Fi connection to the Connector DualBand.

The SkyPilot Connector DualBand is a dual radio/dual-frequency device. In the 5 GHz band, the Connector DualBand can be configured to operate in a variety of different bands for a wide range of international deployments and uses a high-gain integrated panel antenna to provide directional coverage to other SkyPilot mesh nodes; in the 2.4 GHz band, it uses an omnidirectional antenna to serve Wi-Fi clients.

The SkyPilot network's intelligent mesh technology manages traffic across the mesh network to mitigate interference and support the prioritization of voice and data for improved Quality of Service performance. Moreover, the SkyPilot network's mesh architecture improves network reliability and link integrity by creating a self-healing infrastructure using best-path, vector-based routing algorithms. Automatic link discovery and dynamic adjustment of modulation and Forward Error Correction (FEC) parameters further optimize the quality of each link. Overall, the SkyPilot network can realize throughput rates of up to 20 Mbps (UDP) and 12 Mbps (TCP) with a two-way latency of < 10 ms per hop.

The SkyPilot Connector DualBand has been designed to be quickly and simply deployed. The Connector DualBand's audible and visual cues help in aligning its integrated panel antenna toward nearby SkyPilot Extenders or Gateways. The Connector DualBand's auto-discovery and auto-provisioning features then ensure proper installation in the network and minimize both deployment and ongoing operational costs. The SkyPilot network allows bandwidth to be allocated on a per-device basis, making it possible for a SkyPilot service provider to charge for different service tiers based on varying data rates and usage, while VLANs provide application domain partitioning to further segregate user data and network access. These capabilities enable a service provider to offer a range of advanced, revenue-enhancing and transparent services to their users.



Multi-mode CPE Endpoint

- Dual-radio and dual-frequency mesh connectivity solution
 - SkyPilot mesh network communications in 5 GHz band
 - Wi-Fi wireless access point in 2.4 GHz band
- Mesh routing through SkyPilot network avoids buildings, hills, and other obstacles

Layer 2 Ethernet Transport

SkyPilot Network

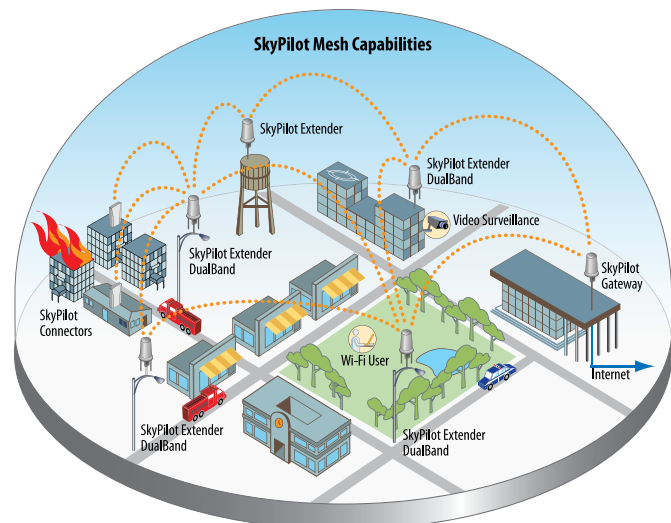
- Low latency: < 10 ms per hop (round-trip)
- High capacity: throughput of up to 20 Mbps (UDP) and 12 Mbps (TCP)
- Superior communications performance: supports end-to-end QoS on a per-application or per-client basis, allowing differentiated service offerings
- OFDM modulation improves multipath performance and allows Non-Line-of-Sight deployment
- Mesh network topology allows deployment across entire service area, supporting applications such as:
 - Fixed broadband Internet services
 - Public Wi-Fi access
 - Public safety and first responder communications
 - Other public or private communications network initiatives

Traffic Management

- VLAN support with IEEE 802.1Q
- Traffic prioritization using IEEE 802.1p, protocol type, IP Port, IP DiffServ/ToS field, and/or IP address
- Traffic filtering using protocol type, IP port and/or IP address
- Traffic shaping with upstream and downstream per-user rate control

Configuration, Management & Monitoring

- SkyPilot Element Management System (EMS) using SNMPv2c
- Dynamic or static IP addresses
- Firmware is "over-the-air" upgradeable
- Manual or automated provisioning
- Remote management via Telnet, SNMPv2c, or web interface
- Remote logging



Use of the SkyPilot Connector DualBand allows cost-effective deployment of a Wi-Fi access point with secure backhaul via the SkyPilot mesh network

SkyPilot Connector DualBand Specifications

	5 GHz Mesh Specifications	Wi-Fi Access Point Specifications
Frequency Band	4.940 to 6.075 GHz, including: <ul style="list-style-type: none"> US: 4.940 - 4.990 GHz public safety US: 5.250 - 5.350 GHz U-NII mid US: 5.470 - 5.725 GHz U-NII worldwide US: 5.725 - 5.850 GHz U-NII upper World: 5.850 - 6.075 GHz extended range 	2.400-2.483 GHz
Transmit Power	<ul style="list-style-type: none"> 30 dBm (maximum at radio antenna port) Reduced as needed for regulatory compliance 	<ul style="list-style-type: none"> 27 dBm (maximum at radio antenna port) Reduced as needed for regulatory compliance
Antenna	<ul style="list-style-type: none"> Directional panel Isotropic gain <ul style="list-style-type: none"> 15.1 dBi @ 4.900 GHz 16.0 dBi @ 5.350 GHz 16.3 dBi @ 5.725 GHz Beamwidth: ~24° azimuth, ~16° elevation 	7.4 dBi omni
Media Access	Time Division Duplex (TDD)	IEEE 802.11b/g
Modulation	OFDM with adaptive modulation	<ul style="list-style-type: none"> 802.11b: DSSS 802.11g: OFDM
Data Rates	6 / 9 / 12 / 15 / 18 / 24 / 36 / 48 / 54 Mbps	<ul style="list-style-type: none"> 802.11b: 1 / 2 / 5.5 / 11 Mbps 802.11g: 6 / 9 / 12 / 15 / 18 / 24 / 36 / 48 / 54 Mbps
Receive Sensitivity (3% FER @ antenna port)	<ul style="list-style-type: none"> -92.0 dBm @ 6 Mbps -92.0 dBm @ 9 Mbps -90.0 dBm @ 12 Mbps -89.0 dBm @ 18 Mbps -85.0 dBm @ 24 Mbps -82.0 dBm @ 36 Mbps -76.0 dBm @ 48 Mbps -73.0 dBm @ 54 Mbps 	<ul style="list-style-type: none"> 802.11b: -97 dBm @ 1 Mbps; -92 dBm @ 11 Mbps 802.11g: -94 dBm @ 6 Mbps; -74 dBm @ 54 Mbps
Channel Width	20 MHz	20 MHz
Channel Resolution	5 MHz frequency control	5 MHz frequency control
Range	Up to 7.5 miles / 12 kilometers	Variable
Network Security	<ul style="list-style-type: none"> AES-128 encryption Certificate-based authentication 	WPA, WPA2, multiple SSIDs, MAC address Access Control List, MAC address filter, 802.1x EAP-TLS, EAP-TTLS, RADIUS support

Physical Specifications

Connectivity	<ul style="list-style-type: none"> 10/100BaseT port to/from client device(s) and as Power-over-Ethernet (PoE) power input To/from SkyPilot Gateways and/or Extenders as an endpoint node of the SkyPilot 5 GHz mesh network 2.4 GHz 802.11b/g access point to/from wireless client devices
Input Voltage	<ul style="list-style-type: none"> 48 VDC PoE 8P8C connector AC/DC adapter and PoE injector: 100~240 VAC / 47~63 Hz
Power	20 Watts (maximum)
Surge Protection	<ul style="list-style-type: none"> Requires Trilliant part 620-00705-01 or equivalent Weatherproof PoE-compatible 10/100Base-T CAT5 lightning protector (8P8C or unterminated)
Dimensions	H x W x D <ul style="list-style-type: none"> 11.0 x 6.5 x 4.5 (inches) 28.0 x 16.5 x 11.4 (centimeters) Wi-Fi antenna adds 17.5" / 44.5 cm
Weight	3.0 lbs / 1.4 kg
Operating Temperature	-40 to +158 °F / -40 to +70 °C
Humidity	5 to 95% non-condensing
Wind Loading	120 mph / 193 km/h
Installation	Pole- or panel-mounted (eave, rooftop, chimney, etc.)
Enclosure	<ul style="list-style-type: none"> Outdoor UV-stabilized plastic IP65 Tamper proof seal/locking mechanism

Compliance Specifications

Unlicensed Radio Operation	<ul style="list-style-type: none"> FCC Part 15 Subpart C & E Industry Canada RSS-210 Other regulatory domains
Device IDs	WAN: 5.250-5.350 GHz; 5.470-5.850 GHz <ul style="list-style-type: none"> FCC: RV7-SC6000 IC: 5550A-SC6000 WAN: 4.940-4.990 GHz <ul style="list-style-type: none"> FCC: RV7-SD1087 IC: na Wi-Fi Access Point: 2.400-2.4835 GHz <ul style="list-style-type: none"> FCC: RV7-SC6010 IC: 5550A SC6010
EMI/EMC	<ul style="list-style-type: none"> FCC Part 15 Subpart B (Class B) Industry Canada ICES-003 (Class B) EN 301-489
Safety	<ul style="list-style-type: none"> UL 60950-1 CSA C22.2 No. 60950-1 EN 60950-1
Environmental	RoHS



1100 Island Drive
 Redwood City, CA 94065 USA
 +1.650.204.5050
 SkyPilotSales@TrilliantInc.com
 www.trilliantinc.com

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