StarPlus 1120

StarPlus Radio 300 Mbps Outdoor Base Station

OVERVIEW

EION's StarPlus 1120 is a cost effective and high-performance outdoor radio ideally suited for enterprise and residential users. StarPlus 1120 uses EION's proprietary TrustLink technology, which is built on more than a decade of OFDM experience, to reduce interference and increase throughput.

By default, StarPlus 1120 is configured for use as a CPE in a point-to-multipoint application, however, with a license key, the StarPlus 1120 can be upgraded to serve as a master in a point-to-point link, or as a StarPlus base station.

With its high spectral efficiency, large capacity, user-friendly GUI and rich feature set, StarPlus is the ideal unlicensed wireless solution for rural and metropolitan broadband requirements.

TRUSTLINK ADVANTAGE

TrustLink™ technology ensures equitable distribution of traffic to all subscriber stations and uses intelligence to determine the number of polling cycles every user gets depending on the level of its activity. This way the network resources are not wasted during the polling of inactive users due to no user data transmission. TrustLink can be employed in both point-to-point and point-to-multipoint networks and dramatically reduces the effects of unwanted interference on the wireless link.

PRODUCT FEATURES

- EION TrustLink™ Technology
- 2 x 2 MIMO
- Operates in 4.9 public safety and 5.8 GHz unlicensed bands
- High spectral efficiency and robust RF network performance
- Security Management Enhancements
- Large portfolio of external panel and dish antennas or integrated 19dBi panel antenna
- Point-to-Point or Point-to-Multipoint topologies supported
- Real Time RSSI alignment indicator
- Built-in spectrum analyzer & audible antenna alignment beeper and LEDs
- Up to 300 Mbps data rate over the air, maximum Ethernet throughput is 100 Mbps
- OFDM technology provides NLOS coverage in urban environments
- User friendly web-based GUI
- SNMP v2c and enterprise MIB for advanced network management
- 40 MHz Turbo channel size
- 20 MHz Normal channel size
- 5 & 10 MHz Narrow band channel sizes

EION WIRELESS

RADIO SPECIFICATION

Topology	Point-to-Multipoint CPE or Point-to-Point Slave (Default) Point-to-Point Master (Requires upgrade key) Point-Multipoint Base Station (Requires upgrade key)
Diversity	2 × 2 MIMO (Multiple-In & Multiple-Out)
Frequency*	5.000 to 6.100 GHz (StarPlus 1120-58) 4.900 to 6.100 GHz (StarPlus 1120-49)
Channel Size*	Quarter: 5 MHz; Half: 10 MHz; Normal: 20 MHz; Turbo: 40 MHz
Channel Spacing	5 MHz × channel number for CF
Modulation	MCS 0 to 15 (6.5 to 300 Mbps); BPSK, QPSK, 16-QAM and 64-QAM, OFDM permits NLOS deployments
Antenna	2x N-type antenna connectors (default) 19 dBi dual polarized (horizontal and vertical) panel antenna (optional)
Output Power†	+29 dBm aggregate; 2 × 26 dBm per stream (configurable from 9 dBm up to license key limit in 1 dB steps), Manually programmed fixed transmit power level

Receiver Sensitivity (BER = 10^{-6}) +/- 2dB

	Modulation	5 MHz	10 MHz	20 MHz	40 MHz
MCS0/8	BPSK	-101 dBm	-98 dBm	-95 dBm	-92 dBm
MCS1/9	QPSK1/2	-99 dBm	-96 dBm	-93 dBm	-90 dBm
MCS2/10	QPSK3/4	-96 dBm	-93 dBm	-90 dBm	-87 dBm
MCS3/11	16-QAM1/2	-95 dBm	-92 dBm	-89 dBm	-84 dBm
MCS4/12	16-QAM2/3	-91 dBm	-88 dBm	-85 dBm	-81 dBm
MCS5/13	64-QAM2/3	-87 dBm	-84 dBm	-81 dBm	-77 dBm
MCS6/14	64-QAM3/4	-85 dBm	-82 dBm	-79 dBm	-76 dBm
MCS7/15	64-QAM5/6	-81 dBm	-78 dBm	-75 dBm	-74 dBm

Duplexing Format	Dynamic Time Division Duplex (TDD), Half-Duplex
Radio Feature Support	Dynamic Frequency Selection (DFS)
Spectral Efficiency	6.5 bits per Hertz

† Maximum power output is set by country specific licensing key. The operator of this product must ensure compliance when selecting external antennas with the limits specified by local regulation prior to deployment

* Frequency bands that are available to the operator are determined by country specific licensing key.

NETWORK SPECIFICATIONS

Network Connection	RJ45 10/100 BaseT IEEE802.3 complaint with data rates up to 100 Mbps Auto-negotiation or configurable for full/half duplex
Operational Mode	Transparent Bridging (per OSI Layer2), Multicast
Quality of Service	Advanced QoS with multiple service flows and classifier priorities, four separate levels supported; • VLAN ID (IEEE 802.1q) • VLAN Priority (IEEE 802.1p) • DSCP/ToS
Fast Frame Aggregation	Yes
Sector Locking/Bridging	Yes, configurable black or white Access Control Lists. Supports intra-sector bridging
VLAN	Data Tagging/Untagging, 802.1q transparency, VLAN Management, QinQ
NAT	1:N NAT configurable through CPE GUI
DHCP	DHCP server for LAN devices when in NAT mode
IPv6	IPv6 pass through enabled when CPE works in bridge mode, Tunneling in NAT mode

WIRELESS NETWORKING

Medium Access Control	Proprietary MAC, TrustLink™
Output Power Management	Yes
Data Rate Selection	Dynamic Adaptive Modulation per Link or manually programmed to fixed modulation type

SECURITY

Management Access	RADIUS, Username and Password Access is via Hypertext Transfer Protocol Secure HTTPS AES-256 (TLS 1.0+) Compatible with all modern web browsers and Windows 7 OS
Encryption	WEP (64, 128, 154), WPA1 (TKIP), WPA2 (CCMP - AES 128, CBC-MAC for headers). AES-256 Encryption on payload available via firmware upgrade key

MANAGEMENT

Remote Monitoring	HTML Web-GUI, SNMP v2c (Set, Get and Traps with proprietary MIB) MIB files are available from eionwireless.com or can be downloaded directly from the StarPlus GUI.
Management IP	DHCP client or configurable static IP
RADIUS Support	RADIUS supported for centralized admin access with fallback mode
User Management	Profiles for multiple user roles. Individual user names and passwords are supported in fallback mode
Installation Management	Wireless Link Monitor and Diagnostic Tool; • Provides noise and RSSI signal levels as well as other statistical information • Measure signal strength at each StarPlus location • Real-time view of available over the air bandwidth • Real-Time Link Quality Metrics Audible Antenna Alignment Beeper (can be switched on or off via SNMP or web GUI) Visual LED Antenna Alignment Built-in Spectrum Analyzer
Syslog	Built-in syslog, events can be viewed on the device or exported to an external syslog file for analysis
Backup Configuration	Save Radio Configuration to local PC
Software Upgrade	Over the Air or local, Web-based upgrade, Dual bank to allow rollback
Ease of Use	Single management view of all deployed products in EION Constellation centralized management system
Location Management	GPS location information can be entered and viewed in external geographical mapping tool

PHYSICAL, ELECTRICAL & ENVIRONMENTAL

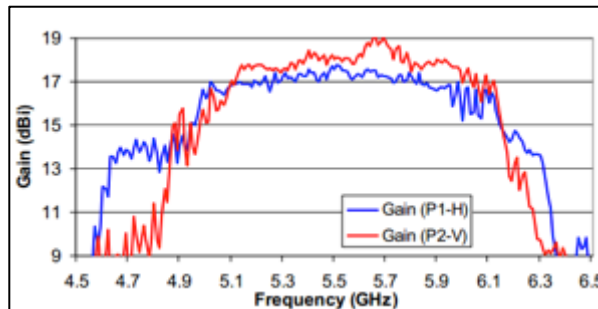|	
Power Consumption	Typ. < 6 Watts
Power Supply	100-240V, 50/60 Hz AC; UL/CSA approved 48 Volt POE system; DC power options available. The included power supply includes one standard Ethernet port for connection to LAN or local PC, and one PoE port for connection to the StarPlus equipment. Power supply is 10/100 BaseT IEEE802.3 complaint with data rates up to 100 Mbps full duplex on both ports
Temperature Range	Operating: -25º C to +70º C Storage: -40º C to +90º C
Relative Humidity	Operating: 5% to 95% (non-condensing) Storage: Max. 90% (non-condensing)
Mounting Bracket	Outdoor mounting hardware included. L-Bracket mount is suitable for pole, wall or tower configurations
Enclosure	White All-Outdoor ABS/PC, Flame Retardant, UV resistant, IP67 (inclusive of IP66)
Weight	1.2 kg
Dimensions	257 x 257 x 86mm

STANDARDS COMPLIANCE

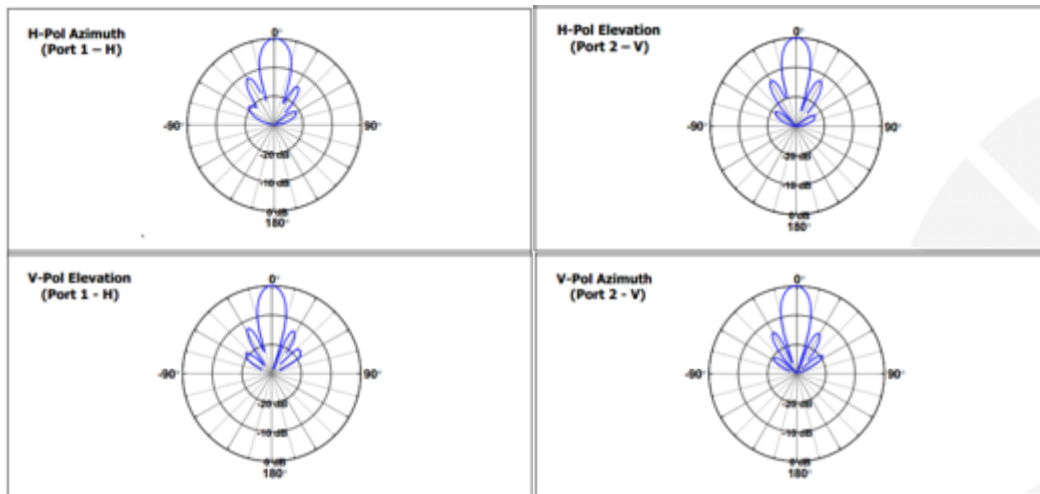|	
Radio and Spectrum Management	Adheres to Industry Canada Spectrum Management and Telecommunications Radio Standards
	Adheres to RSS-111 Issue 3 for Broadband Public Safety Equipment Operating in the band 4940-4990 MHz
	Adheres to RSS-210 Issue 8 License-exempt Radio Apparatus (all frequency bands): Category 1 Equipment
	Adheres to FCC Part 15
	Approved for WPC (India)
Weatherproofing	IP67, all models when installed to manufacturer's specification
Compliance	RoHS/WEEE
Ethernet Standards	Complaint to IEEE 802.3i-1990 for 10 BaseT
	Complaint to IEEE 802.2u-1995 for 100BaseT

INTEGRATED ANTENNA

The specifications below apply to the optional integrated antenna that is included with the StarPlus 1120. The unit can optionally be purchased with 2x N-Type antenna connectors for use with an external antenna.

Gain	19 dBi
Radiation	Directional
Frequency Range	4.9 -5.9 GHz
Polarization	Dual – Polarization
Azimuth-3dB Beamwidth	Horizontal (Port 1): 17 degrees
	Vertical (Port 2): 17 degrees
Elevation-3dB Beamwidth	Horizontal (Port 1): 17 degrees
	Vertical (Port 2): 17 degrees
Isolation	-40dB (Max)
Front-to-Back Ratio	-25dB (Max)
VSWR	Horizontal (Port 1): <1: 1.87
	Vertical (Port 2): <1: 2.00
Cross Polarization Isolation	-27dB (Max)
Side Lobe	< -12dB

INTEGRATED ANTENNA GAIN PLOT

INTEGRATED ANTENNA POLAR PLOTS

ORDERING INFORMATION

1120-58	StarPlus 1120 5.x GHz IP67 plastic enclosure, 2x Ntype
1120-49	StarPlus 1120 4.9-6.1 GHz IP67 plastic enclosure, 2x Ntype

OPTIONS

Hardware options must be specified at time of ordering with the option code listed below.

19i	Integrated 19 dBi Panel Antenna, 4.9 to 6.0 GHz. This option replaces the 2 N-Type connectors
GP	Auxiliary RJ45 Port for connection to external GPS receiver. Requires RX model upgrade on 1120. GPS Receiver purchased separately
RX	Ruggedized Enclosure. Die cast metal enclosure upgrade for 1120.

LICENSE KEYS

License keys enhance the base capability of the radio.

7900-00-00-01	P2P Master Key – Enables P2P Master Capability (enabled by default on 5300 radios)
7300-58-00-01	StarPlus Multiple Association License Key - 3 Devices
7300-58-00-02	StarPlus Multiple Association License Key - 10 Devices
7300-58-00-10	StarPlus Multiple Association License Key – Unlimited Devices
9530-00-00-10	StarPlus MIMO Upgrade Speed Key (enabled by default on 1120 and 1130 radios)
9531-00-00-10	AES-256 Encryption License Key (Require one per StarPlus radio)