



Proven, Fast, Reliable

WirelessGRID™ Full-Duplex Backhaul Link (4.90-5.850 GHz, Up to 216 Mbps)

High-Performance Asymmetrical Full Duplex Backhaul (Point to Point) Network Links

Product Highlights

WirelessGRID Full-Duplex Point-to-Point backhaul links are based on AIRAYA's patent-pending AWBL dual-radio design for ultra-low latency asymmetric operation.

◆ **Integrated indoor/outdoor architecture** for ease of installation, configuration, and management.

Each end of the link contains two radios with dedicated transmit (Tx) and receive (Rx) paths for signaling rates up to 216 Mbps (TCP/IP data rates to 45 Mbps full-duplex)

◆ **Data rates** up to 216 Mbps per link (108 Mbps in each direction) using AIRAYA's AWBL (Asymmetrical Wireless Broadband Link) design, advanced bridging protocols, and 40, 20, 10, and 5 MHz wide channels for each Tx and Rx radio

◆ **SecureRF™** mandatory radio authentication and unique 128-bit AES data encryption for each Tx and Rx path ensures a secure backhaul connection

◆ **Compatible** with all standard 1000/100 Mbps Ethernet switches, routers, 802.11q, 802.11p VPN, Trunk and VoIP protocols. Up to 1600 byte packets supported. Integrated VLAN support and bandwidth management

◆ **Single antenna design and real-time alignment tools** simplify antenna alignment, optimizes link quality, and maximizes system throughput

◆ **Remote power** for installing WirelessGRID Outdoor Units up to 328 feet away from your network using power over Ethernet

◆ **Real-time monitoring of WirelessGRID** displays signal strength, noise floor, data rate, bridge statistics, channels...



Integrated Outdoor-Ready Architecture

Outdoor-ready WirelessGRID full-duplex links are designed to simplify installation, maximize range and capacity, and deliver ultra-low latency and outstanding performance in a dual-radio, single antenna configuration with asymmetrical dedicated transmit (TX) and receive (RX) radio paths.

Utilizing OFDM technology in the 4.90-5.85 Ghz frequency range, WirelessGRID Full Duplex links operate in Point to Point mode at ranges of up to 12 miles* and at speeds up to 108 Mbps per radio. * Distance is dependent on many factors. Please consult AIRAYA technical personnel regarding design requirements.

Simple Design, Flexible Configuration and Proven Performance

Proven in thousands of networks worldwide, WirelessGRID radios are ideally suited for low-latency bandwidth-hungry applications that require robust, reliable, and secure connectivity.

WirelessGRID full-duplex backhaul links provide optimal delivery of IP video, voice, and data services by utilizing AIRAYA's patent-pending AWBL dual radio design, asymmetrical user-selectable 5, 10, 20 and 40 MHz wide channels for each Transmit (TX) and Receive (RX) path, adjustable power settings, and more than 170 available channels. This architectural flexibility allows us to meet your capacity, speed, and scalability needs, while minimizing frequency usage and complying with local regulations.

Common WirelessGRID™ Full-Duplex Backhaul Applications

Wireless Video Surveillance and Security Systems	As a dedicated ultra low-latency pipe aggregating video streams for outdoor video camera surveillance systems, the 4958-FDD-xx provides best-in-class wireless video backhaul for homeland, military and enterprise security systems. In fact, the most important wireless video systems we know of worldwide run on AIRAYA WirelessGRID infrastructure.
Private Government Network Infrastructure	Private networks for public safety and government use allow agencies to reliably communicate and share information without risk of intrusion. AIRAYA WirelessGRID networks are proven and deployed in many private government networks today.
Service Provider Infrastructure	Rural cities and towns lack cable and telephone plant capacity. WirelessGRID systems allow for affordable and scalable high speed access in rural communities with minimal investment in new infrastructure. WirelessGRID radios are accepted by the USDA Rural Utility Services program (RUS) for government funded rural broadband use.



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Asymmetrical Full Duplex Backhaul (Point to Point) Network Links

Radio			
Each Transmit (TX) and Receive (RX) Radio Supports Multiple Frequency Bands and Channel Widths. 40, 20, 10, 5 MHz Wide Channel Selections Available Local Regulations Apply	4.940-4.990 GHz Public Safety Band (FCC Part 90, licensed Intl.) Non-overlapping Channels: 9 x 5 MHz, 5 x 10 MHz, 2 x 20 MHz, 1 x 40 MHz		
	5.25-5.35 GHz license-exempt Non-overlapping Channels: 15 x 5 MHz, 8 x 10 MHz, 4 x 20 MHz, 2 x 40 MHz		
	5.47-5.72 GHz license-exempt (ETSI, FCC, ITU) with TPC and DFS Non-overlapping Channels: 50 x 5 MHz, 25 x 10 MHz, 12 x 20 MHz, 5 x 40 MHz		
	5.725-5.850 GHz license-exempt UNII & ISM Bands Non-overlapping Channels: ISM, UNII: 22 x 5 MHz, 11 x 10 MHz, 5 x 20 MHz, 2 x 40 MHz		
Radio Type	Orthogonal Frequency Division Multiplexing (OFDM). Dual Radio Architecture for dedicated transmit (TX) and receive (RX) Paths		
Standards	802.3, 802.1Q, 802.1P, Cisco ISL, VLAN		
Total System EIRP and Radio Output Power	Radio output power: Max: 21dBm (Set to local regulatory requirements to comply with transmit, conducted and EIRP power limits)		
Radio Receiver Sensitivity	Data Rate	Sensitivity	Modulation
	2 to 216 Mbps	-73 to -91 dBm	64QAM, 16QAM, QPSK, BPSK
Antennas AI108-2-24-DP -> AI108-2-29-DP ->	24 dBi Dual Polarity Panel antenna is available 29 dBi Dual Polarity Parabolic antenna is available		

Models and Ordering Information – Base Stations and Subscriber Units	
4958-FDD-24-050	Outdoor Full-Duplex Backhaul Link with 50ft. PoE cables, 2 x 108 Mbps radios with dedicated asymmetrical transmit and receive paths, 2 x 24 dBi panel antennas, 4 x 6ft LMR-400 cables, PoE surge protection
4958-FDD-24-150	Outdoor Full-Duplex Backhaul Link with 150ft. PoE cables, 2 x 108 Mbps radios with dedicated asymmetrical transmit and receive paths, 2 x 24 dBi panel antennas, 4 x 6ft LMR-400 cables, PoE surge protection
4958-FDD-24-300	Outdoor Full-Duplex Backhaul Link with 300ft. PoE cables, 2 x 108 Mbps radios with dedicated asymmetrical transmit and receive paths, 2 x 24 dBi panel antennas, 4 x 6ft LMR-400 cables, PoE surge protection
4958-FDD-29-050	Outdoor Full-Duplex Backhaul Link with 50ft. PoE cables, 2 x 108 Mbps radios with dedicated asymmetrical transmit and receive paths, 2 x 29 dBi parabolic antennas, 4 x 6ft LMR-400 cables, PoE surge protection
4958-FDD-29-150	Outdoor Full-Duplex Backhaul Link with 150ft. PoE cables, 2 x 108 Mbps radios with dedicated asymmetrical transmit and receive paths, 2 x 29 dBi parabolic antennas, 4 x 6ft LMR-400 cables, PoE surge protection
4958-FDD-29-300	Outdoor Full-Duplex Backhaul Link with 300ft. PoE cables, 2 x 108 Mbps radios with dedicated asymmetrical transmit and receive paths, 2 x 29 dBi parabolic antennas, 4 x 6ft LMR-400 cables, PoE surge protection

SecureRF Radio Security	
SecureRF™ Bridge Authentication and Data Encryption	SecureRF Architecture – Mandatory bridge authentication. 128-bit AES data encryption. Proprietary radio mask

Configuration and Management	
Configuration Utility	Built-in Web server. Telnet. Available at all times through secure interface for both TX and RX radios
Software upgrades	FTP Download
Antenna alignment	Real-time RSSI (signal strength) monitor, link optimization and throughput maximization utility, HTML
Indoor Status Indicator	Remote Power Indicator
Real-time Monitoring	Secure Management Interface - Real-time signal strength, authentication data, system information, data rate, channel selection via HTTP, Telnet, and SNMP

Indoor Unit (IDU) to Outdoor Unit (ODU) Communication	
Cable Type	CAT 5e 4 x 2 x 24AWG gel-filled (UV protected, weatherized)
Maximum Distance	328 ft (100m) between network connection and outdoor unit

Mechanical	
Outdoor Unit (ODU)	ODU: 10 x 8 x 3 in (25.4 x 20.3 x 7 cm)
Indoor Unit (IDU)	6 x 3 x 1 in (15.2 x 7.6 x 2.5 cm)
Outdoor Unit Mounting	Includes mast mount and clamp kit for 1" (26mm) diameter thru 4.5" (115mm) diameter masts. Also wall mountable

Environmental		
Operating Temperature	ODU: -30 to 60°C	IDU: 0 to 50°C
Operating Humidity	ODU: Fully weather protected	IDU: 5 to 95% non-condensing
Lightning Protection	ETSI CE Certified PoE and RF Protection Options Available	
Wind Survivability	130 MPH Sustained	140 MPH for 3 Seconds

Electrical	
All Models	Input: 100-240V, 0.5A Auto-ranging (50Hz-60Hz) Output: 48V, 0.4A Max for remote ODU power

Compliance and Certification	
Radio	Public Safety (Part 90), FCC 15.407 (UNII, ISM), Industry Canada RSS-210, ETSI CE Mark (w/TPC and DFS), Anatel
Safety	UL - Canada, USA, CE Mark, RoHS, WEEE
EMC	FCC Part 15, Industry Canada RSS-210, Mexico, ETSI
Emissions Designators	4.9 GHz: 5M00X1D, 10M0X1D, 15M0X1D, 20M0X1D



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