

Product Highlights

WirelessGRID^S 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 signal rates up to 216 Mbps (TCP/IP data rates to 45 Mbps full-duplex)

◆ **Data rates** up to 216 Mbps full duplex, adaptive and fixed modulation modes operating on 40, 20, 10, or 5 MHz wide channels

◆ **SecureRF™ Architecture** provides 5 layers of security, including unique radio mask and layer-2 protocol, mutual radio authentication, 128-bit AES data encryption, and VLAN termination. Inline Ethernet encryptors can also be used as required

◆ **Compatible** with all standard 100/10 Mbps Ethernet switches, routers, 802.11q, 802.11p VPN, Trunk and VoIP protocols. Up to 1600 byte packet size supported

◆ **Real-time antenna alignment tool** simplifies antenna alignment, optimizes link quality, and maximizes system throughput

◆ **Integrated VLAN Support** for logical network segmentation

◆ **LED Diagnostics** for power, Ethernet and radio

◆ **Real-time monitoring of WirelessGRID™** displays signal strength, connected radios, and radio statistics via SNMP, CLI, and Web

◆ **Integrated network sniffer** for advanced Ethernet and Radio network diagnostics



Integrated 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 Backhaul (Point to Point) mode at ranges of up to 12 miles* and at speeds up to 216 Mbps.

* Distance is dependent on many factors. Please consult AIRAYA technical personnel regarding design requirements.

Proven Performance Simple Configuration

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.



Proven, Fast, Reliable

WirelessGRID™ Full-Duplex Backhaul Link

(4.90-5.85 GHz, Up to 216 Mbps)

Model #'s: 4958-FDD-24-050, 150, 300, 4958-FDD-29-050, 150, 300 Specifications
For High-Performance 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)		
Standards	802.3, 802.1Q, 802.1P, Cisco ISL, VLAN Termination		
Total System EIRP and Radio Output Power	Radio output power: Max: 21 dBm (Set to local regulatory requirements to comply with transmit, conducted and EIRP power limits)		
Radio Receiver Sensitivity	Data Rate	Sensitivity	Modulation
	1.5 to 216 Mbps	-69 to -91 dBm	64QAM, 16QAM, QPSK, BPSK
Antennas AI108-2-24 -> AI108-2-29 ->	24 dBi Dual Polarity Panel antenna is available 29 dBi Dual Polarity Parabolic antenna is available		
Operating Modes	Backhaul (Point-to-Point)		

Models and Ordering Information	
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™ Layered Security Design	SecureRF™ Architecture – Unique radio mask, mandatory radio authentication, 128-bit AES data encryption, VLAN termination.

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 (100 m) between network connection and outdoor unit

Configuration and Management	
Configuration Utility	Built-in Web server. Telnet/CLI. Available at all times through secure interface
Software upgrades	FTP Download
Antenna alignment	Real-time RSSI (signal strength) monitor, link optimization and throughput maximization utility, HTML
Indoor LAN Status Indicator	Remote Power Indicator
VLAN Support	Logical network setting segmentation per radio
Bandwidth Management	Maximum Information Rate(MIR) per radio
Real-time Monitoring	Secure Management Interface - Real-time signal strength, authentication data, system uptime, data rate, channel selection via HTTP, Telnet/CLI, and SNMP

Mechanical Dimensions	
Outdoor Unit (ODU)	ODU: 10 x 8 x 3 in (25.4 x 20.3 x 7.6 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: -22°F to 140°F (-30° C to 60°C)	IDU: 32°F to 122°F (0° C to 50°C)
Operating Humidity	ODU: Fully Weather Protected, NEMA 4/IP67	IDU: 5 to 95% non-condensing
Lightning Protection	ETSI CE Certified PoE and RF Protection	
Wind Survivability	130 MPH (209 km/h) Sustained	140 MPH (225 km/h) for 3 Seconds

Electrical	
Remote Power System	Input: 100-240V , 0.6A Auto-ranging (50Hz-60Hz) Output: 48V, .4A Maximum for remote powered systems (POE)

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, Hong Kong, Mexico, Singapore Part 90 Emission
Safety	UL - Canada, USA, CE Mark, RoHS, WEEE
EMC	FCC Part 15, Industry Canada RSS-210, Mexico, ETSI, EN 301 893, EN 301 489-17, EN 50385, RoHS
Emissions Designators	4.90 GHz: 5M00X1D, 10M0X1D, 15M0X1D, 20M0X1D



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Information: info@airaya.com
Support: support@airaya.com

Corporate Headquarters
18449 Technology Drive
Morgan Hill, CA 95037 USA
Toll-free: 866.224.7292
International: 408.776.2846
Email: Info@airaya.com

