DATASHEET COMBINATION ANTENNAS

Coach™ II 4G/5G FR1 GNSS Multiband Antenna

Combination Antennas - 5G Cellular, Wi-Fi and GNSS

GL9X1AX-SF, GL7X1AX-SF, GL4X4-SF-PLK, GL6X1AX-SF

Description

Multiband combination antenna offers a rugged design and is configurable up to 9x1 ports (4x4 Cellular, 4x4 Wi-Fi 7 and GNSS). The Cellular 4x4 MIMO ports cover the LTE/5G sub 6 GHz bands down to 600 MHz. The Wi-Fi 6E 4x4 MIMO port up to 7150 MHz. This antenna platform can also be equipped with a pre-filtered GNSS antenna.

The platform meets EN 50155:2007 and AAR requirements for ITS rail and roadway applications.

Technologies

- MIMO Cellular
- MIMO Wi-Fi
- LTE
- 5G
- NB-IoT
- Wi-Fi 6E, 7
- V2X
- GNSS

Features

- Compatible with the world's leading multi-carrier cellular routers
- Superior out-of-band rejection
- Easy installation and/or replacement
- Withstands severe environmental conditions
- EN 50155:2007; AAR compliant

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an **Amphenol** company

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The Coach™ II platform supports the high speed requirements of complex RF communication systems used for Intelligent Transportation Systems (ITS) and Industrial IoT applications. These low-profile, high endurance antennas feature four 5G elements compatible with the world's leading multi-carrier cellular routers that support 600 MHz to 6 GHz frequencies.

The platform meets EN 50155:2007 and AAR requirements for ITS rail and roadway applications.

Features

- Wideband coverage – 4G LTE, 5G and dual-band 802.11ac Wi-Fi coverage in a single, low-profile housing
- Superior out-of-band rejection – Proprietary filtering design allows wideband coverage for all GNSS frequencies
- Easy installation and/or replacement – Metal stud mount with slotted jam nut provides single cable exit
- Withstands severe environmental conditions – IP67 compliant design with overmolded gasket protects against water or dust ingress (when installed on sealed surface)
- Meets EN 50155:2007 and AAR certification requirements for rail applications

Certifications

RoHS COMPLIANT

SPECIFICATIONS

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Standard Configurations

Coach™ II Model Numbers	Ports			Cable Type			Connector Type			Cable Length (ft)	Mount
	LTE	Wi-Fi	GPS/ GNSS	LTE	Wi-Fi	GPS/ GNSS	LTE	Wi-Fi	GPS/ GNSS		
GL7X1AX-SF	4	2	1	RG58	RG58	RG316/ RG174	SMA-Male	RPSMA-Male	SMA-Male	17	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)
GL7X1AX-SF-1.5FT	4	2	1	RG316/ RG174	RG316/ RG174	RG316/ RG174	SMA-Male	RPSMA-Male	SMA-Male	1.5	
GL9X1AX-SF	4	4	1	RG58	RG58	RG316/ RG174	SMA-Male	RPSMA-Male	SMA-Male	17	
GL9X1AX-SF-1.5FT	4	4	1	RG316/ RG174	RG316/ RG174	RG316/ RG174	SMA-Male	RPSMA-Male	SMA-Male	1.5	
GL4X4-SF-PLK	4	0	1	RG58		RG316/ RG174	SMA-Male		SMA-Male	17	
GL4X4-SF-PLK-1.5FT	4	0	1	RG58		RG316/ RG174	SMA-Male		SMA-Male	1.5	

Electrical Specifications – RF Antennas

F1 (MHz)	F2 (MHz)	SWR[2]	Gain (dB)[1]			Efficiency[1]		Polarization	Nominal Impedance
			Max	Typical	Range (±)	Avg	Range (±)		
LTE Primary (1&3)									
617	698	2.5	1.0	0.5	0.5	36%	3%	Linear	50 ohms
698	802	1.9	1.3	0.8	0.6	36%	4%		
824	960	2.0	1.4	1.0	1.0	40%	5%		
1710	2200	1.6	4.9	4.3	1.1	55%	5%		
2300	2690	1.4	6.0	4.7	1.5	62%	3%		
3200	4200	1.4	6.5	5.5	1.0	65%	4%		
4200	4900	1.5	6.8	5.9	1.0	65%	4%		
5150	5950	1.3	7.8	6.5	1.3	60%	9%		
LTE Secondary (2&4)									
617	698	3.4	-2.0	-4.0	2.0	16%	8%	Linear	50 ohms
698	802	2.0	0.5	-1.0	0.9	31%	4%		
824	960	2.7	1.2	0.6	0.6	28%	8%		
1710	1805	2.2	4.8	3.9	0.9	37%	3%		
1805	2200	1.6	5.0	4.0	1.0	50%	4%		
2300	2690	2.0	3.6	3.0	0.6	38%	10%		
3200	3800	1.9	7.2	5.2	2.0	48%	12%		
4200	4900	1.9	6.2	4.8	1.4	41%	6%		
5150	5950	1.4	6.2	5.6	0.6	48%	8%		
Wi-Fi									
2400	2500	1.3	6.2	5.4	0.7	62%	2%	Linear	50 ohms
4900	5900	1.5	7.7	6.7	1.1	59%	14%		

[1] Gain and efficiency measured with 1.5 ft. cables on 2 ft. diameter ground plane for a typical sample.
[2] SWR measured with 17-ft cables and no ground plane for a typical sample.

SPECIFICATIONS

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Electrical Specifications – RF Antennas (continued)

Minimum Isolation (dB)[3]

Elements	LTE Primary (1&3)		LTE Secondary (2&4)		Wi-Fi	
LTE Primary (1&3)	617-960 MHz	14.0	698-960 MHz	14.0	698-960 MHz	20.0
	1.71-2.7 GHz	25.0	1.71-2.7 GHz	25.0	1.71-2.7 GHz	17.0
	3.3-3.59 GHz	35.0	3.3-3.59 GHz	27.0	3.3-5.9 GHz	35.0
LTE Secondary (2&4)			698-960 MHz	18.0	698-960 MHz	22.0
			1.71-2.7 GHz	30.0	1.71-2.7 GHz	16.0
			3.3-3.59 GHz	32.0	4.9-5.9 GHz	32.0
Wi-Fi					2.4-2.5 GHz	25.0
					4.9-5.9 GHz	32.0

Electrical Specifications – GNSS Antenna

Specification	Measurement
Frequency Band	1565-1608 MHz
Amplifier Gain	@ 3.0 VDC: 26 dB (typical)
Output VSWR	2.0:1 (maximum)
DC Current	25 mA (typical)
DC Voltage	2.8-6.0 V (operating) ≤ 12.0 V (survivability)
Noise Figure	< 2.0 dB (typical)
Out-of-Band Rejection	f0 = 1586 MHz f0 ± 50 MHz: ≥ 60 dBc f0 ± 60 MHz: ≥ 70 dBc
Nominal Gain	3 dBic @ 90° -2 dBic @ 20°
Polarization	Right hand circular
Nominal Impedance	50 ohms

Mechanical and Environmental Specifications

All Models

Dimensions (L x W x H)	6.93 L x 6.09 W x 3.01 H in (176.0 x 154.8 x 76.5 mm)
Weight (9 ports)	4.8 lbs (2.2 kg)
Housing Material	Black or White[4], UV-Stable Rugged Thermoplastics
Temperature Range	-40°C to +85°C
Gasket Design & Construction	Contour matching, conformable, thermoplastic-elastomer gasket designed to seal between radome and baseplate. Gasket flexes and conforms to contoured surfaces. Baseplate has a 3M® VHB mounting pad for anti-rotation.

[3] Isolation measured with 17-ft cables and no ground plane.
[4] For black radome, order P/N GL9X1AX-SF; for white radome, order P/N GL9X1AX-SFW.

CONTACT US

For more information about this product contact your sales representative or visit

> pctel.com/antenna-products

Solving Complex Wireless Challenges

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