DATASHEET COMBINATION ANTENNAS

Coach™ II FAKRA Permanent Mount

Combination Antennas - 5G Cellular, Wi-Fi 6E, and GNSS

Description

Multiband combination antenna, fitted with FAKRA connectors. It offers a rugged design configurable up to 9x1 ports (4x4 Cellular, 4x4 Wi-Fi 7 and GNSS).

This low-profile, high endurance antenna platform features four 5G elements compatible with the world's leading multi-carrier cellular routers that support 600 MHz to 6 GHz frequencies and 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 including Sierra XR90 and XR80 5G Radios
- Superior out-of-band rejection
- Easy installation and/or replacement
- Withstands severe environmental conditions
- EN 50155:2007; AAR compliant

PCTEL

Coach™ II FAKRA Permanent Mount

Combination Antennas - 5G Cellular, Wi-Fi 6E, and GNSS

The Coach™ II multiband combination antenna, fitted with FAKRA connectors offers a rugged design configurable up to 9x1 ports (4x4 Cellular, 4x4 Wi-Fi 7 and GNSS). The Cellular 4x4 MIMO port covers the LTE/5G sub 6 GHz bands down to 600 MHz. The Wi-Fi 6E 4x4 MIMO port covers up to 7150 MHz. It can also be equipped with a pre-filtered GNSS antenna.

FAKRA connectors enable fast "Poka-Yoke" installation on routers/gateways equipped with FAKRA and 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 also incorporates 802.11ax Wi-Fi MIMO connectivity, with four dual band 2.4/5 GHz Wi-Fi elements supporting DSRC 5.99 GHz applications. In addition, PCTEL's proprietary high-rejection multi-GNSS technology is included for high precision tracking and asset management. 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 6E 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

Compatibility

Routers	Models
Sierra Wireless	XR90 XR80

Certifications

RoHS COMPLIANT

SPECIFICATIONS

Coach™ II FAKRA Permanent Mount

Combination Antennas - 5G Cellular, Wi-Fi 6E, and GNSS

Standard Configurations

Model	Elements	Cable	Code	Connector	Mount
COACH2-5X1-17FT-FAKRA	Cellular (LTE/5G)	Two-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195)	Code D	FAKRA-Female	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)
	Wi-Fi	Two-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195)	Code I	FAKRA-Female	
	GNSS	One-17 feet RG-316	Code C	FAKRA-Female	
COACH2-5X1-1.5FT-FAKRAM	Cellular (LTE/5G)	Two-1.5 feet	Code D	FAKRA-Male	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)
	Wi-Fi	Two-1.5 feet	Code I	FAKRA-Male	
	GNSS	One-1.5 feet RG-316	Code C	FAKRA-Male	
COACH2-7X1-17FT-FAKRA	Cellular (LTE/5G)	Four-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195)	Code D	FAKRA-Female	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)
	Wi-Fi	Two-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195)	Code I	FAKRA-Female	
	GNSS	One-17 feet RG-316	Code C	FAKRA-Female	
COACH2-7X1-1.5FT-FAKRAM	Cellular (LTE/5G)	Four-1.5 feet	Code D	FAKRA-Male	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)
	Wi-Fi	Two-1.5 feet	Code I	FAKRA-Male	
	GNSS	One-1.5 feet RG-316	Code C	FAKRA-Male	
COACH2-9X1-17FT-FAKRA	Cellular (LTE/5G)	Four-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195)	Code D	FAKRA-Female	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)
	Wi-Fi	Four-17 feet (2-ft RG-316/15-ft Pro-Flex™ Plus 195)	Code I	FAKRA-Female	
	GNSS	One-17 feet RG-316	Code C	FAKRA-Female	
COACH2-9X1-1.5FT-FAKRAM	Cellular (LTE/5G)	Four-1.5 feet	Code D	FAKRA-Male	1-inch OD, 3/4-inch long (.75") zinc stud mount with jam nut (all models)
	Wi-Fi	Four-1.5 feet	Code I	FAKRA-Male	
	GNSS	One-1.5 feet RG-316	Code C	FAKRA-Male	

SPECIFICATIONS

Coach™ II FAKRA Permanent Mount

Combination Antennas - 5G Cellular, Wi-Fi 6E, and GNSS

Electrical Specifications – RF Antennas

F1 (MHz)	F2 (MHz)	SWR[1]	Gain (dB)[2] Max	Gain (dB)[2] Typical	Gain (dB)[2] Range (±)	Efficiency[2] Avg	Efficiency[2] Range (±)	Polarization	Nominal Impedance	Maximum Power
LTE Primary (1&3)										
617	698	2.5	-0.2	-0.9	0.7	33%	3%	Linear	50 ohms	50 watts
698	802	1.9	1.1	-0.3	1.4	34%	6%			
824	960	2.0	2.1	0.6	1.6	36%	4%			
1710	2200	1.6	4.4	2.6	1.9	31%	3%			
2300	2690	1.4	4.8	2.7	2.1	29%	2%			
3400	3800	1.4	4.7	2.5	2.2	26%	1%			
5150	5950	1.3	5.8	1.9	3.9	16%	3%			
LTE Secondary (2&4)										
617	698	3.4	-1.4	-3.0	1.6	16%	8%	Linear	50 ohms	50 watts
733	802	2.0	0.0	-1.0	0.9	31%	4%			
824	960	2.7	0.0	-1.6	1.5	28%	8%			
1805	2200	1.6	1.7	0.9	0.8	29%	4%			
2300	2690	2.0	1.5	-0.5	2.0	20%	6%			
3400	3800	1.9	2.2	0.4	1.8	20%	3%			
5150	5950	1.4	2.6	1.3	1.4	16%	1%			
Wi-Fi										
2400	2500	1.3	9.1	7.2	1.9	74%	4%	Linear	50 ohms	50 watts
4900	5900	1.5	11.4	9.1	2.3	59%	14%			

Minimum Isolation (dB)[3]

Elements	LTE Primary (1&2)		LTE Primary (1&2)		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

[1] Gain and efficiency measured with no cable and no ground plane.
[2] SWR measured with 17-ft cables and no ground plane.
[3] Isolation measured with 17-ft cables and no ground plane.

SPECIFICATIONS

Coach™ II FAKRA Permanent Mount

Combination Antennas - 5G Cellular, Wi-Fi 6E, and GNSS

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

Specification	
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, 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.

CONTACT US

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

> pctel.com/antenna-products

Solving Complex Wireless Challenges

PCTEL is a leading global provider of wireless technology solutions, including purpose-built Industrial IoT devices, antenna systems, and test and measurement products. Trusted by our customers for over 28 years, we solve complex wireless challenges to help organizations stay connected, transform, and grow.

PCTEL, Inc.

T: +1 630 372 6800 | pctel.com