

SENCITY® Rail MIMO 5 Port Antenna

1399.99.0157

Description

5-Port Railway rooftop antenna for Cellular and Wi-Fi bands.
 Supports 2x2 Cellular MIMO for 3G, 4G and 5G.
 Supports 2x2 Wi-Fi MIMO in all Wi-Fi 6E bands.
 2 dedicated radiators for Cellular/Wi-Fi bands.
 2 dedicated radiators for Wi-Fi/WiMAX bands.
 Embedded GNSS antenna with integrated LNA.
 Supports GPS L1, Galileo E1, BeiDou B1 and GLONASS G1.
 Rugged design, meets EN 50155 Railway Standard.
 Fire retardant according to EN 45545-2 and NFPA-130.
 Dedicated grounding contact (optional).
 Cable conduit support (optional).



Product Configuration

Technical Data

Electrical Data

	Band 1	Band 2	Band 3	Band 4
Band Name	Cell/Wi-Fi 1	Cell/Wi-Fi 2	Cell/Wi-Fi 3	Cell/Wi-Fi 4
Frequency (MHz)	617 - 960	1350 - 2700	2700 - 3300	3300 - 4900
VSWR	1.7	1.7	1.7	1.8
Impedance (Ohm)	50	50	50	50
Gain (dBi)	5	7	5.5	5.5
Composite power max (W)	80	80	80	80
Ambient temperature (°C)	25	25	25	25
Port Isolation (dB)	15	25	45	35

	Band 5	Band 6	Band 7	Band 8
Band Name	Cell/Wi-Fi 5	Wi-Fi 1	Wi-Fi 2	GNSS
Frequency (MHz)	4900 - 7125	2400 - 2500	4900 - 7125	1559 - 1610
VSWR	1.8	1.7	2.3	1.8
Impedance (Ohm)	50	50	50	50
Gain (dBi)	7	6	6.5	
Composite power max (W)	80	80	80	
Ambient temperature (°C)	25	25	25	
Port Isolation (dB)	40	15	15	

Ports

	Port 1	Port 2	Port 3	Port 4	Port 5
Port name	Cell/Wi-Fi 1	Cell/Wi-Fi 2	Wi-Fi 1	Wi-Fi 2	GNSS
Connector	N, jack (female)	N, jack (female)	N, jack (female)	N, jack (female)	TNC, plug (male)
Cable Type	RADOX_RF_142	RADOX_RF_142	RADOX_RF_316_D	RADOX_RF_316_D	RADOX_RF_316_D
Cable Length (m)	0.24	0.12	0.36	0.3	0.17
Polarization	vertical	vertical	vertical	vertical	circular right
DC grounded	Yes	Yes	Yes	Yes	No

Connections

	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6	Band 7	Band 8
Port 1	X	X	X	X	X			
Port 2	X	X	X	X	X			
Port 3						X	X	

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Port 4	X	X	
Port 5			X

General Data

Indicated VSWR values are valid for a metallic ground plane of 0.5 x 0.5m or larger. In the 1350-7125 MHz band, Indicated VSWR values are also valid for installations on non-metallic surfaces (no specific ground plane requirements). Indicated gain values will be achieved on a metallic ground plane of 1 x 1 m or larger.

Electrical Data LNA

LNA noise figure dB	2
LNA current consumption (mA)	30
LNA is connected to	Port 5

This Antenna is compliant with the Radio Equipment Directive 2014/53/EU

EMC: EN50121-3-2 (2016)

ETSI EN 303 413 V.1.1.1 (2017-06)

ETSI EN 301 489-1 V2.2.3 (2019-03)

ETSI EN 301 489-19 V2.1.1 (2019-04)

LNA input voltage range: 3...5V

Total gain @90° elevation: 30 dBiC

Values for LNA power consumption, noise figure and gain are given for a 5V operating voltage and may differ slightly for a lower voltage.

Antennas with production date prior to 01-Oct-2020 support only GPS and GLONASS bands between 1574 - 1610 MHz.

Mechanical Data

Dimensions (mm)	81.6 x 102.5 x 352.5 (Height x Width x Depth)
Weight (kg)	2.3

High-voltage-protection: no voltage on RF port, if the catenary line touches the antenna (EN 50124-1, 3.8 kVDC, 27.5 kVAC, 1min).

High-current-protection: Designed acc. to UIC 533, DC-grounded antenna element (protection against lightning and short circuit with catenary lines(40kA/0.125s, 70kA/0.05s).

Corrosion: Low corrosion design acc. to MIL-DTL-14072(E), 96 hours Salt Spray test.

Mounting: Shall be installed in longitudinal position to the wind/driving direction.

Suitable for installation on high speed trains with a maximum speed of 500 km/hr.

4x composite sealing washers included for silicone-free sealing of the mounting screws.

Environmental Data

Environmental conditions	outdoor
Operation temperature (°C)	-55 to 85
Storage temperature (°C)	-55 to 85
Transport temperature (°C)	-55 to 85
IP rating	IP67, IP69
Flammability rating	EN 45545-2 R24 HL3
Solar radiation	UL 746C, F1
2011/65/EU (RoHS - including 2015/863 and 2017/2102)	compliant acc. Annex III
Lead-free soldered	yes
WEEE 2012/19/EU	no special marking needed
ELV 2000/53/EC	compliant
REACH 1907/2006/EC	compliant

Environmental tests: EN 50155:2018-05

Flammability rating: EN45545-2:2013 + A1:2015, NFPA-130:2017

Tested according to ISO 4589-2:2017, NFX 70-100-1:2006, ISO 5659-2:2011.

Material Data

Radome colour	RAL 7043 (dark grey)
Radome material	PC (Polycarbonate)
Back plate/base plate colour	grey
Back plate/base plate material	Aluminium
Plating	Passivated (Plating)

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Related Products

9091.99.0235 Sencity Rail Antenna grounding kit
9091.99.0236 Sencity Rail conduit Support Kit
9091.99.0256 Sencity Rail - M8 sealing washer kit
9091.99.0261 Sencity Rail antenna mounting plate

Related Documents

Mounting instruction	DOC-0000897004
Painting instruction	DOC-0000256180
Security instruction	DOC-0000278984
Outline drawing	DOU-00396864
3D-model	DOC-0000879458
CE compliancy	DOC-0000896955

Additional Information

This product meets the Deutsche Bahn specifications for rolling stock equipment. Protected by Patents: DE202015009331(U1), US10116056(B2), CN106663861B, US7327320B2, CN1765030B, AU2003218856A1, CA2521771C, SG114406, ZA200508290.

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