Data Sheet

SENCITY® Rail ACTIVE Rooftop Antenna LTE
1499.00.0001

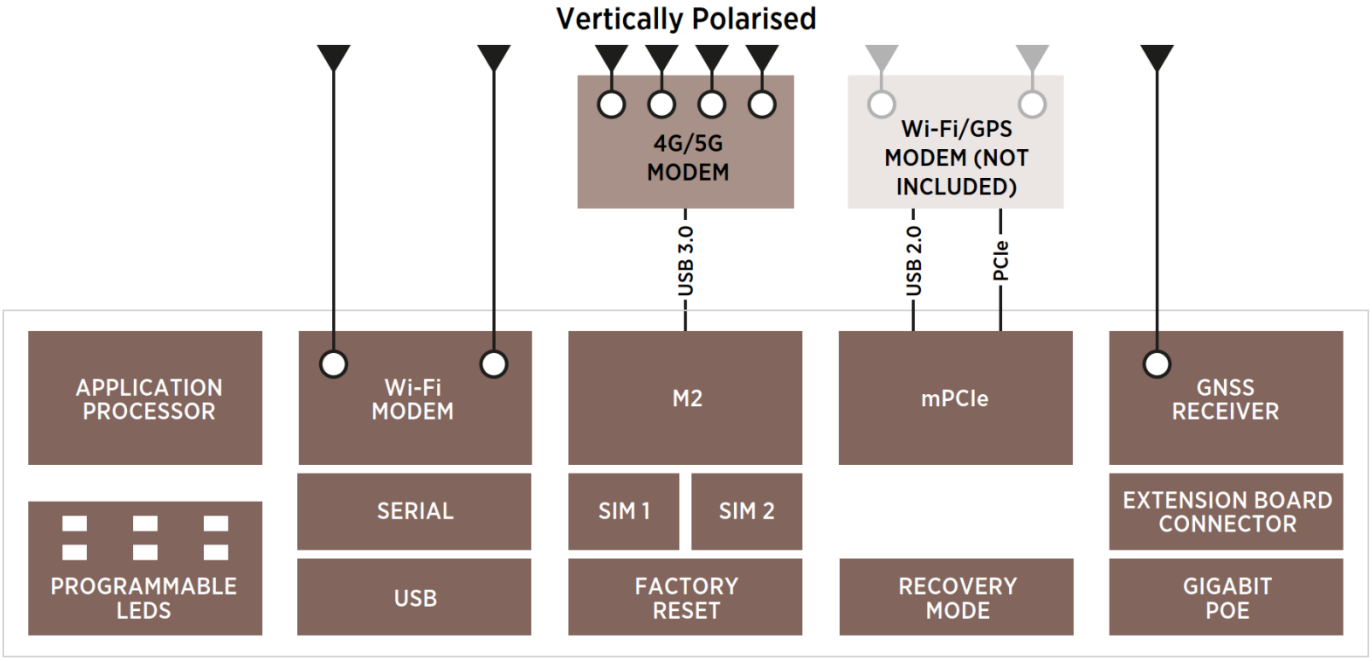
Description

Railway omni-directional rooftop antenna for Cellular 4G, Wi-Fi 5 and GNSS train-to-ground services.
Includes integrated connected compute board, Cellular and Wi-Fi radio modules.
Connection provided via a single PoE input LAN M12 X-code female 300mm pigtail.
Supports 4x4 MIMO Cellular LTE with 3G fallback.
Supports 2x2 MU-MIMO Wi-Fi 5 Dual-band 2.4 / 5 GHz.
GNSS receiver supports GPS L1, Galileo E1, BeiDou B1, GLONASS G1 constellations.
Rugged design meeting the EN 50155 Railway Standard.
Fire retardant according to EN 45545-2/NFPA-130.
Compliant to high-voltage and high-current standards for use under catenary lines.

NOTE: No application software included

Product Configuration

Block Diagram



Communication Services

Radio Module: TELIT© LTE LM960A18		
Supported Bands	LTE FDD	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29 (DL Only), B30, B32, B66, B71* *(617-2360 MHz)*
	LTE TDD	B38, B39, B40, B41, B42, B43, B46 (DL Only), B48. *(1880-5925 MHz)*
	WCDMA	FDD B1, FDD B2, FDD B4, FDD B5, FDD B8, FDD B9, FDD B19
	Wi-Fi	802.11ac Wave 2, 2x2 MU-MIMO *(5150-5850 MHz)* 802.11n Wave 1 *(2400-2500 MHz)*
	GNSS	GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1I, Galileo E1B/C *(1559 – 1610 MHz)*
Note	Supported bands also valid for installations on non-metallic surfaces (no specific ground plane requirements). For band 71 an additional ground plane of at least 500x500mm is recommended.	

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Mechanical Data

Dimensions (mm)	84 x 368 x 425 (Height x Width x Depth)
Weight (kg)	7.5 (without packaging)

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).
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.

Electrical Data

Processor	2x ARM Cortex-A72 1.6GHz, 4x ARM Cortex-A53 1.26GHz, 2x ARM Cortex-M4F 266MHz
Memory	4GB RAM
Storage	16GB eMMc
Operating System	Embedded Linux Debian 10, Linux 5.4 kernel operating system
Ethernet	1x LAN M12 X-code female 300mm pigtail
Power input	PoE+ Class 4 (802.3at)
Interfaces	1x M.2 key B, USB 3.0, 2x SIM slots (2FF) 1x mPCIe , USB 2.0, PCIe

6x LED status indicators

2x integrated SIM slots (2FF form factor), remote SIM module connection possible.
Preinstalled firmware Debian 10, Linux 5.4 kernel operating system, preconfigured for basic connectivity.

This Product is compliant with the Radio Equipment Directive 2014/53/EU
EMC: EN50121-3-2 (2016), EN55032 (2015+A11:2020) - CISPR 32
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)

Environmental Data

Environmental conditions	outdoor
Operation temperature (°C)	-40 to 85
Storage temperature (°C)	-40 to 85
Transport temperature (°C)	-40 to 85
IP rating	IP69
Flammability rating	EN 45545-2 R24 HL3
Solar radiation	UL 746C, F1
2011/65/EU (RoHS - including 2015/863)	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

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.

Environmental tests: EN 50155:2018-05
§13.4.6 EN 60068-2-1:2008-01 Cold temperature test Ab, -40°C, 16h
§13.4.5 EN 60068-2-2:2008-01 Dry heat test Be +85°C, 16h
§13.4.7 EN 60068-2-30:2006-06 Damp heat cyclic test Db, +25/55°C, 2 cycles
§13.4.10 EN 60068-2-11:2000-02 Salt mist test, 96h
§13.4.11 EN 61373:2011-04 § 8, Cat. 1B Broadband Random Vibration
§13.4.11 EN 61373:2011-04 § 9, Cat. 1B Increased Random Vibration
§13.4.11 EN 61373:2011-04 § 10, Cat. 1B Mechanical shock
§13.4.12 Ingress Protection EN 60529:2014-09 IP6X, IPX7, IPX9

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Material Data

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

Related Documents

Mounting instruction	DOC-0001117651
Outline Drawing	DOU-01102906

Additional Information

The antenna needs a customer specific bracket when mounted on a curved roof (not part of the delivery content of the antenna). A standard bracket is available for the antenna mounting above an existing cable breakthrough on a flat roof (Article Numbers 9091.99.0269, 9091.99.0270).

Protected by Patents: DE202015009331(U1), US10116056(B2), CN106663861B, US7327320B2, CN1765030B, AU2003218856A1, CA2521771C, SG114406, ZA200508290.