

MAXWAVE 4X4 MIMO TRAIN ANTENNA

4X4 LTE/WIFI/WIMAX MIMO ANTENNA



ELECTRICAL FEATURES

- High Efficiency
- Superior Isolation
- Patented Pattern Diversity

SYSTEM FEATURES

- 4x4 Cellular MIMO
- 4x4 WiFi/WiMAX MIMO
- GPS/GLONASS

MECHANICAL FEATURES

- Fully Certified
- Rugged Design
- Standard Train Mounting



INVENTING THE FUTURE OF WIRELESS TECHNOLOGY

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Introduction

The Maxwave 4x4 Train Antenna brings reliable high-speed wireless internet to onboard systems. Using its patented 4x4 MIMO technology, Maxwave enables high-bandwidth streaming communications.

Description

This exclusive rooftop antenna incorporates four broadband antenna elements operating simultaneously across all frequencies from 698 MHz to 6000 MHz, which includes 2G/3G/4G cellular, LTE, WiFi and WiMAX frequency bands used worldwide. By request, an active GPS/GLONASS antenna with a low noise figure, high linearity LNA, and integrated surge arrestor is available as an option.

Maxwave features a rugged design IP69K rated and has over-voltage protection compliant with EN 50124-1. Additionally, Maxwave complies with railway standard EN50155 and is fire retardant according to EN45545.

Product Benefits

- 4 antenna elements operating simultaneously from 698 MHz to 6000 MHz
- Covers all cellular, LTE, WiFi and WiMAX frequency bands
- Optional active GPS/GLONASS antenna with integrated surge arrestor
- DC grounded antenna elements for protection against lightning and high voltage power supply lines
- Versatile Design: Maintains performance when mounted on non-metallic surfaces
- Railway standard compliant to EN50155 and fire retardant according to EN 45545:2013



Applications

- High speed trains
- Trams / lightrails
- Buses / coaches
- Mass transit systems
- Heavy duty machinery
- CCTV

Ordering

- Optional GPS/GLONASS

PRODUCT NAME	PART NUMBER	PRODUCT LINE	REV - DATE	PAGE
Maxwave 4x4 MIMO Train Antenna	100-00074-01 Standard 100-00074-02 Optional GPS	LTE/MIMO	Feb. 13, 2017	2/6



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4X4 LTE/WIFI/WIMAX MIMO ANTENNA

Electrical Specifications

Parameter		Design Specifications
Frequency 4 × 698 – 6000 MHz		1575.42 MHz
Impedance		50 Ohm
VSWR Antenna Elements 1 & 4	698-960 MHz	1.6
	1710-2700 MHz	2.4
	3400-3700 MHz	1.9
	4900-5935 MHz	2.2
VSWR Antenna Elements 2 & 3	698-960 MHz	2.3
	1710-2700 MHz	2.6
	3400-3700 MHz	1.9
	4900-5935 MHz	3.0
Peak Gain Antenna Elements 1 & 4	698-960 MHz	7 dBi
	1710-2700 MHz	9 dBi
	3400-3700 MHz	9 dBi
	4900-5935 MHz	9.5 dBi
Peak Gain Antenna Elements 2 & 3	698-960 MHz	9 dBi
	1710-2700 MHz	9.5 dBi
	3400-3700 MHz	8.5 dBi
	4900-5935 MHz	11 dBi
Polarization		Linear
Pattern		Omnidirectional
Port Isolation	698-960 MHz	18 dB
	1710-2700 MHz	19 dB
	3400-3700 MHz	26 dB
	4900-5935 MHz	26 dB
Maximum Composite Input Power		20W

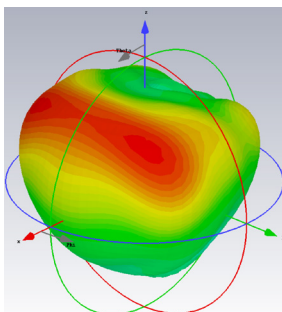
GPS/GLONAS Electrical Specifications (Optional)

Parameter	Design Specifications
Frequency	1575 MHz (GPS) 1602 MHz (GLONASS)
Polarization	RHCP
DC voltage	2.5 to 5V
DC current	11 mA (max)
Bandwidth (-1dB)	15 MHz
Total system peak gain	30 dB @ 2.5 V / 32 dB @ 5 V
Axial ratio	1 dB (min)
VSWR	1.5:1
Impedance	50 Ohm
Operating temp.	from -40°C to 85°C

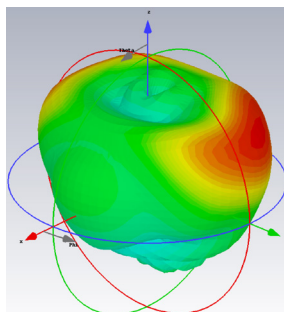
Environmental Specifications

Parameter	Design Specifications
Operating temp.	from -40°C to 85°C
Storage temp.	from -55°C to 85°C
Transport temp.	from -40°C to 85°C
IP Rating	IP69K
Wind Speed	500km/h

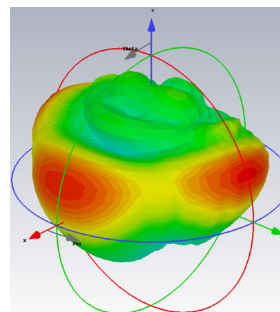
Radiation Pattern for Antenna 1
(698 MHz)



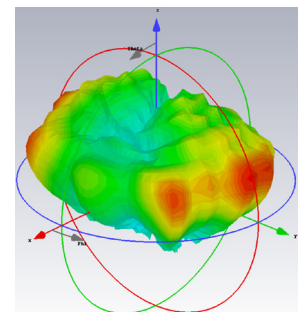
Radiation Pattern for Antenna 2
(698 MHz)



Radiation Pattern for Antenna 1
(2400 MHz)



Radiation Pattern for Antenna 2
(2400 MHz)



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100-00074-02 Optional GPS

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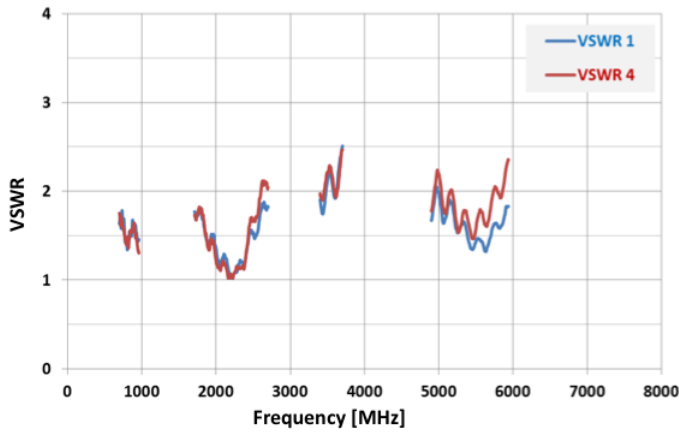
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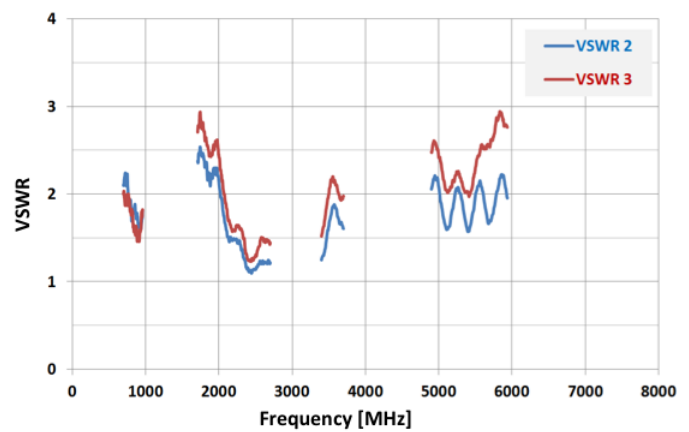
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4X4 LTE/WIFI/WIMAX MIMO ANTENNA

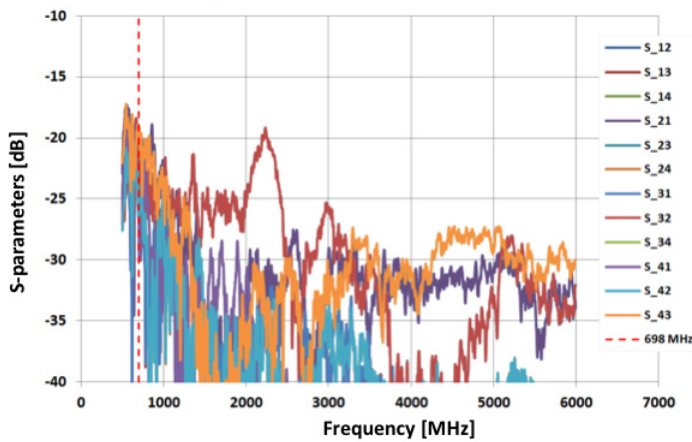
Comment: VSWR measured with 3'x4' Ground Plane



Comment: VSWR measured with 3'x4' Ground Plane

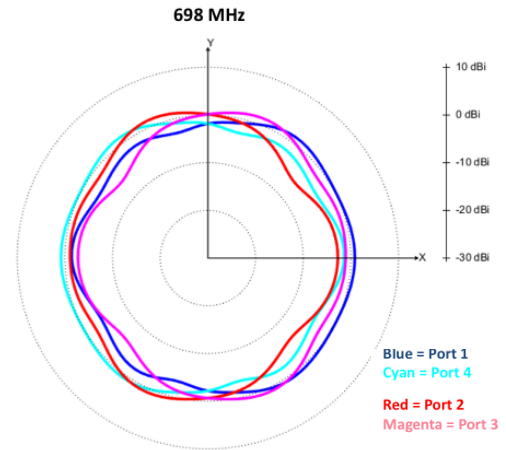


Comment: S-parameters measured with 3'x4' Ground Plane

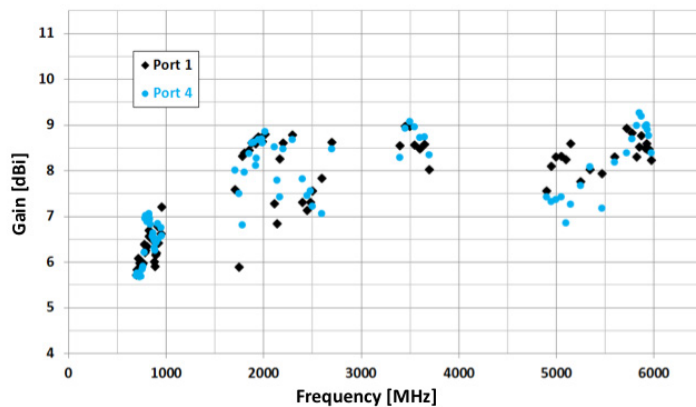


Radiatio Patterns in x-y plane ($\Theta = 90^\circ$)*

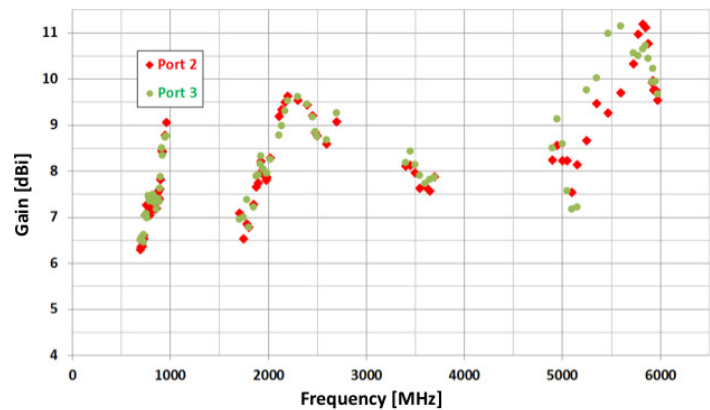
*measured with ground plane diameter 4' 4"



Peak Gain data measured with groundplane \varnothing 4' 4"



Peak Gain data measured with groundplane \varnothing 4' 4"



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4X4 LTE/WIFI/WIMAX MIMO ANTENNA

Mechanical Specifications

Parameter	Design Specifications
Height	81.6mm (3.2")
Width	102.5mm (4")
Length	870mm (34.25")
Weight	5.329 kg (11 lbs 12 oz)

Material Specifications

Parameter	Design Specifications
Radome color	Dark Grey
Radome material	Acrylic-styrene-acrylonitrile (ASA)
Base plate material	Aluminum
Corrosion	MIL-F-14072 (E)

Connector Specifications

Parameter	Design Specifications
Port 1, 2, 3 and 4	N (female)
GPS Port	TNC (male)
Cable Type	RG142
GPS Cable	RG316
Cable Length	0.25m

Mounting Specifications

Parameter	Design Specifications
Mounting Holes Diameter	11mm
Seal	Rubber Gasket Seal
Mounting	Longitudinal position
Ground Plane	Ground Plane Independent

Ordering Specifications

For ease of ordering, we provide the Maxwave 4x4 MIMO Train Antenna with an optional GPS/GLONASS element. If you should need a sample, large quantities, or have any other questions about ordering this product, please contact us directly with your project scope and timeline.

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Maxwave 4x4 MIMO Train Antenna	4x4 LTE/WIF/WIMAX MIMO Train Antenna with GPS/GLONASS	100-00074-02

Compliance and Certifications

Standard	Certification (Designed for)
Solar Radiation Standard DIN 757220	Compliant
RoHS 2011/65/EC Standard	Compliant
TEACH 2006/1907/EC Standard	Compliant
EN 50155:2007 Environmental Tests	Compliant
EN45545-2 Flammability Standard	Compliant
DIN 5510-2	Compliant
BS 6853	Compliant
NF F16-101/102	Compliant
EN 50121	Compliant
UIC 533	Compliant
MIL-F-14072(E)	Compliant
DIN 75220	Compliant
RoHS 2011/65/EC	Compliant
RoHS 2002/95/EC	Compliant
REACH 2006/1907/EC	Compliant
ISO 9001	Compliant
ISO 14001	Compliant
ISO/TS 16949	Compliant
IRIS	Compliant

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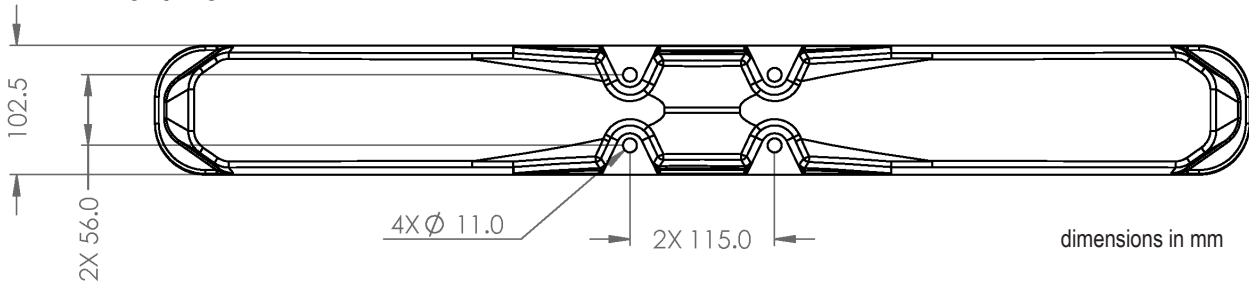
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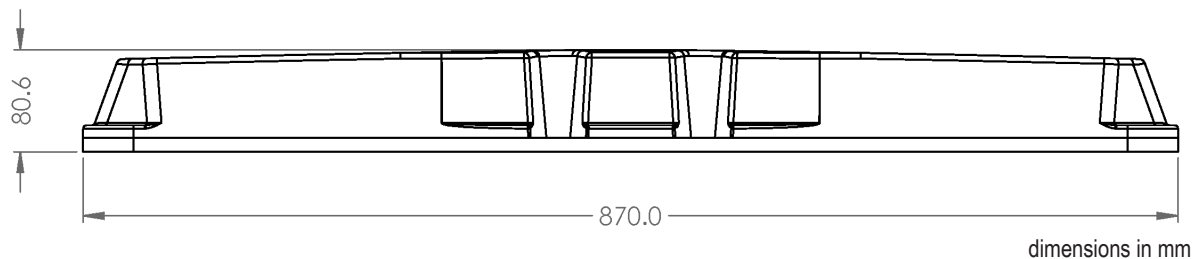
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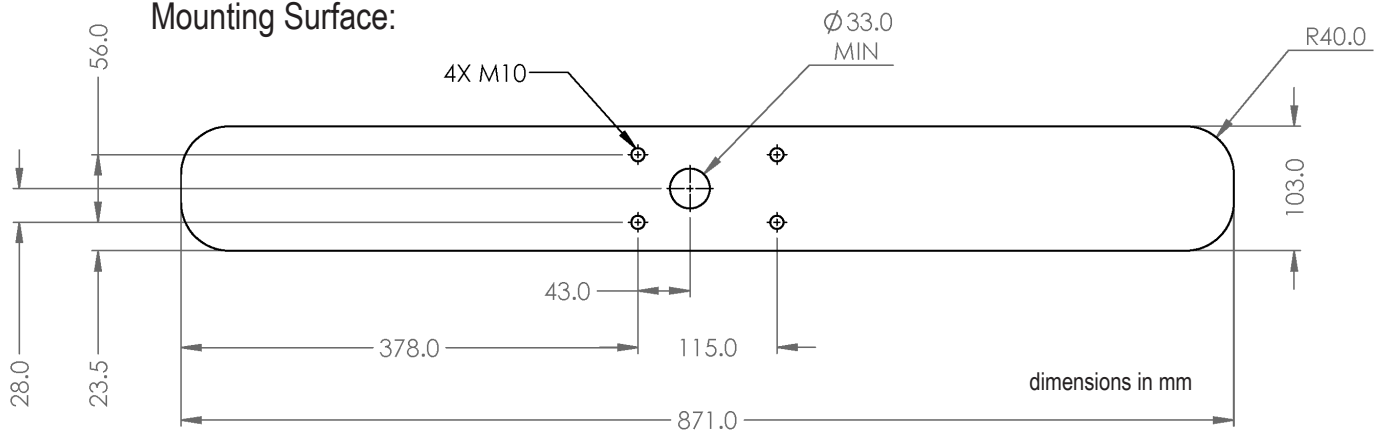
Front View:



Side View:



Mounting Surface:



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