



Photograph 1: EUT Antennas.



TECHNICAL DATA SHEET

Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X



Features:

- WiFi Dual-Band
- DSRC
- Multi band 2.4-2.5/5.15-5.925GHz
- IP65
- P/N: W5029
R/A RP SMA Male, length 78mm
- P/N: W5029RPG/W5029RPGT
RP SMA Male, length 76mm
- P/N: W5029RASM
R/A SMA Male, length 76.5mm

Applications:

- Zigbee, BLE/BT, WLAN (2.4GHz, 5GHz)
- DSRC V2x communication
- Rugged Outdoor Systems
- Marine, Mining, Utility, Oil/Gas Environments
- Industrial Applications
- Metering, Security, IoT Applications
- Outdoor Networking
- Data Transmission, Access Points

Issue: 2039

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

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For more information:

Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel: 1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Co, KG
Zeppelinstrasse 15
Hertenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road/#29 Bldg.4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 P.R. China
Tel: 86 512 6807 9998




TECHNICAL DATA SHEET
Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna
Series: External Antenna
PART NUMBER: W5029X

This document covers all product variants of the following product family

Antennas	Length	Connector
W5029	78mm	Right Angle RP SMA male (Au plating)
W5029RASM	76.5mm	Right Angle SMA male (Au plating)
W5029RPG	76mm	Straight RP SMA Male (Au plating)
W5029RPGT	76mm	Straight RP SMA Male (Ni plating)

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TECHNICAL DATA SHEET

Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

ELECTRICAL SPECIFICATIONS

Frequency	2.4-2.5GHz/5.15-5.925GHz
Nominal Impedance	50Ω
Return Loss	2.4-2.5GHz <-10dB 5.15-5.85GHz <-4dB 5.55GHz <-10dB
Peak Gain	2.4-2.5GHz 2.3dBi +/-1 dB 5.15-5.85GHz 5dBi +/-1dB 5.925GHz 3dBi +/-1dB
Radiation Pattern	Omni in Horizontal plane
Polarization:	Vertical
Power withstanding	1W

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TECHNICAL DATA SHEET

Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

MECHANICAL SPECIFICATIONS

Plastic radome	TPEE
Color	Black
Weight	
W5029	11.36 g
W5029RASM	11.36 g
W5029RPG	7.82 g
W5029RPGT	7.82 g
Overall Length	
W5029	78 mm
W5029RASM	76.5mm
W5029RPG	76 mm
W5029RPGT	76 mm
IP Rate	IP65

ENVIRONMENTAL SPECIFICATIONS

Operating temperature	-35/+65° C
Storage Temperature	-30/+75° C

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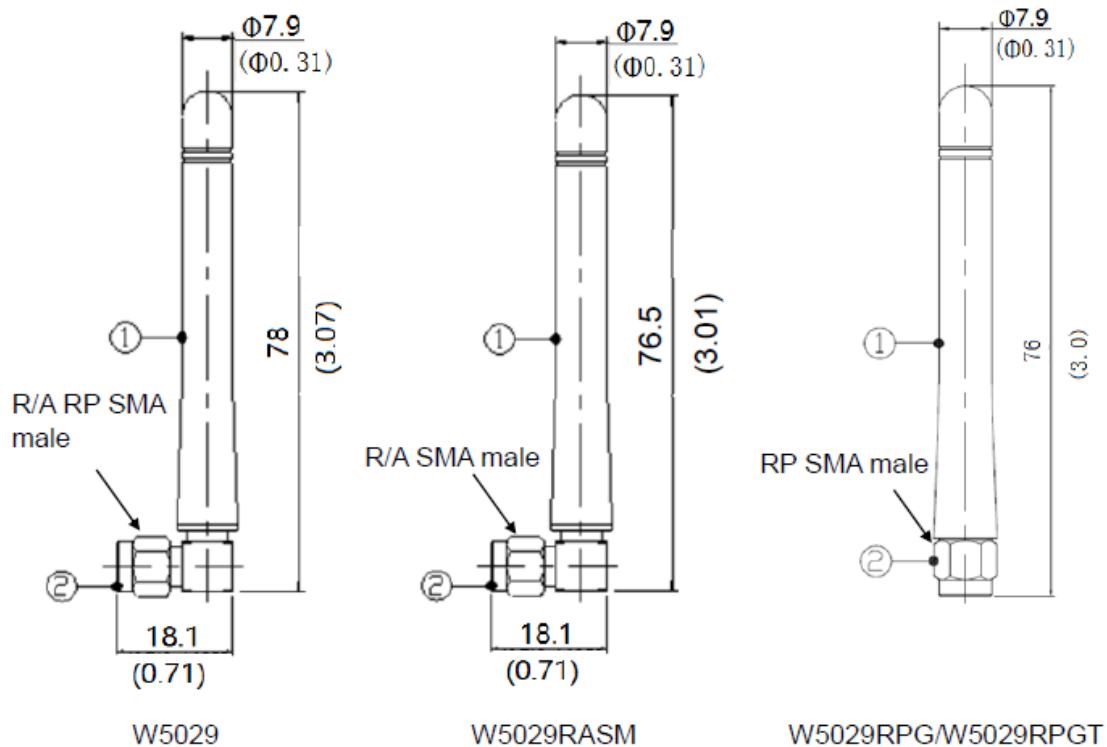
TECHNICAL DATA SHEET

Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

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MECHANICAL DRAWING



- 1, Dimension show as mm (inch)
- 2, Item 1 is tube, and item 2 is connector

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TECHNICAL DATA SHEET

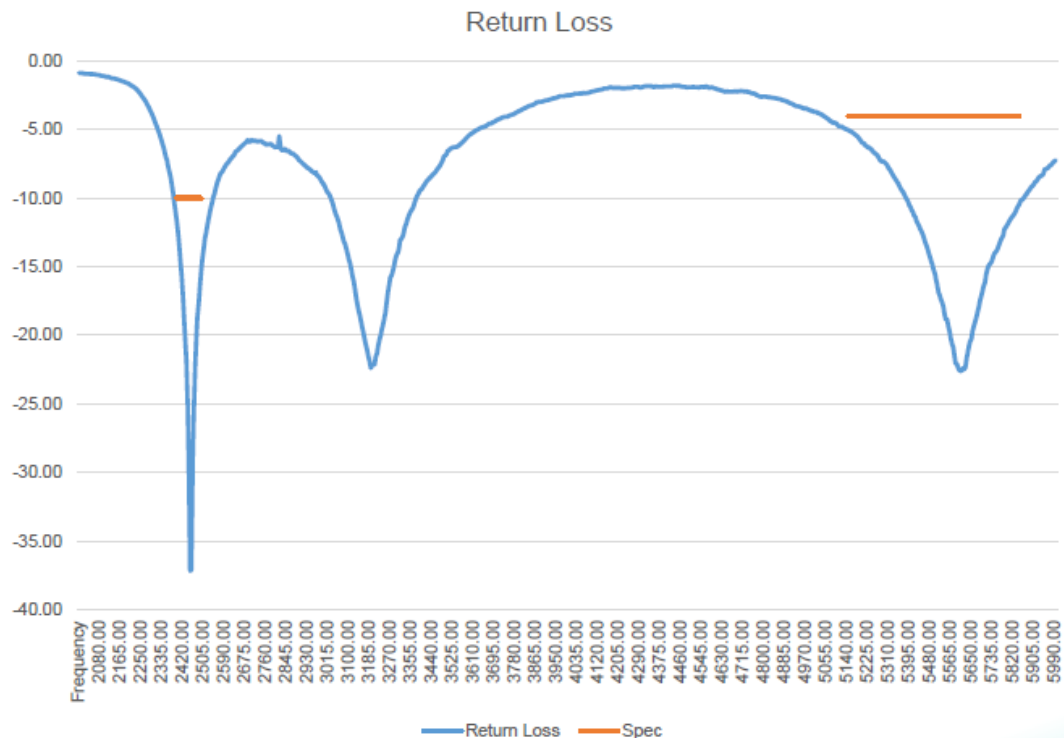
Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

CHARTS

Return Loss



(*) All RF parameters measured with free space

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TECHNICAL DATA SHEET

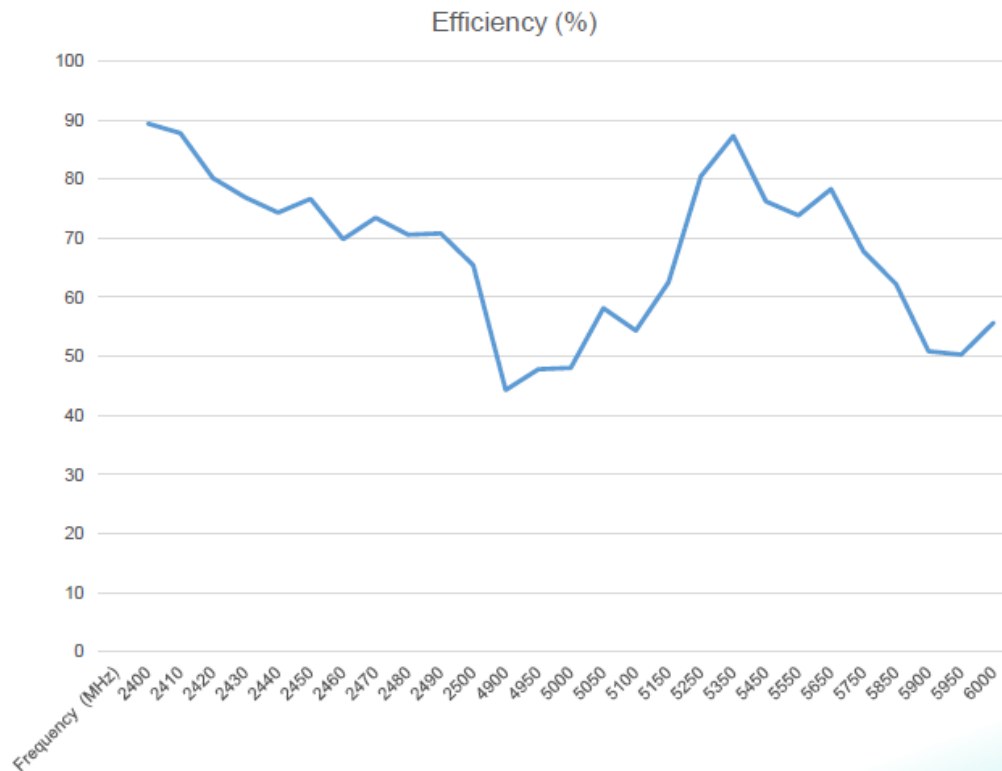
Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

CHARTS

Efficiency(%)



(*) All RF parameters measured with free space

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TECHNICAL DATA SHEET

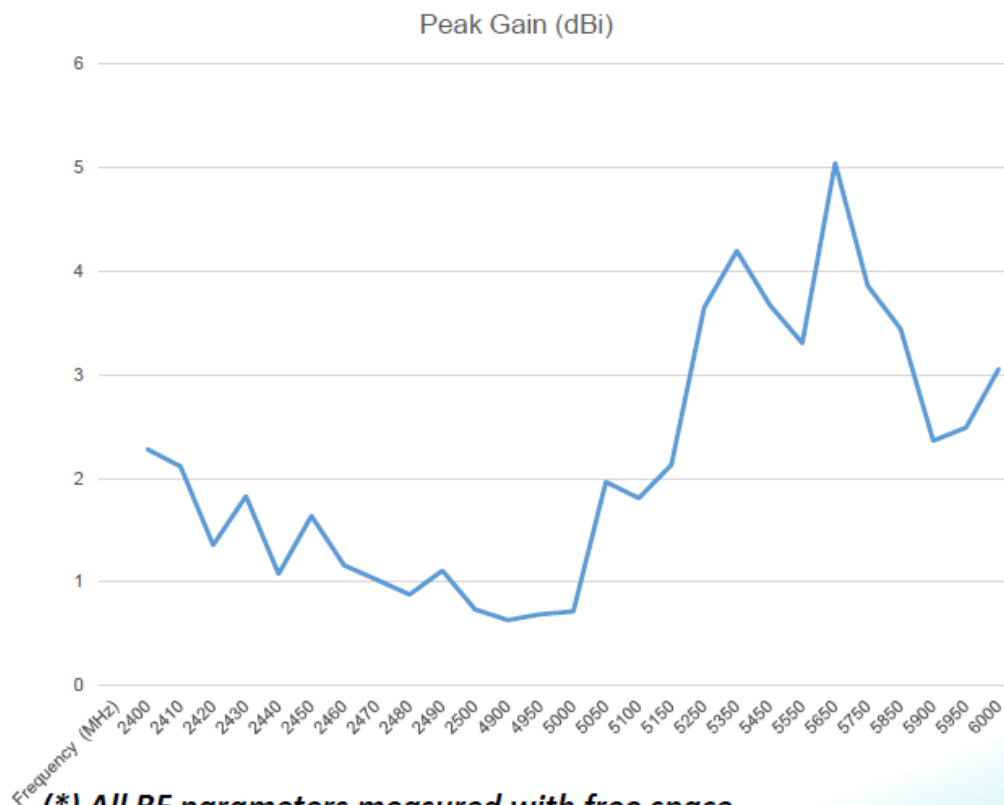
Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

CHARTS

Peak Gain (dBi)



(*) All RF parameters measured with free space

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TECHNICAL DATA SHEET

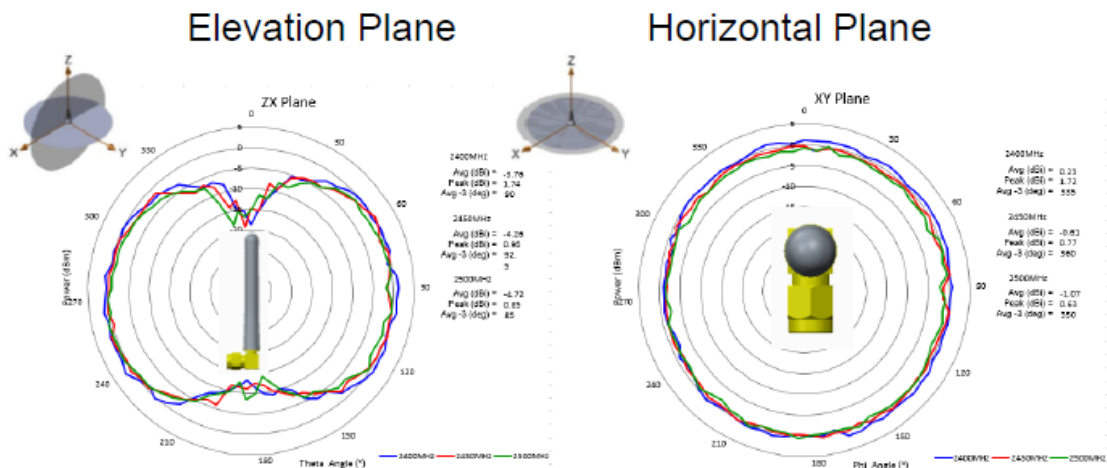
Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

CHARTS

Free Space Radiation Pattern



(*) All RF parameters measured with free space

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TECHNICAL DATA SHEET

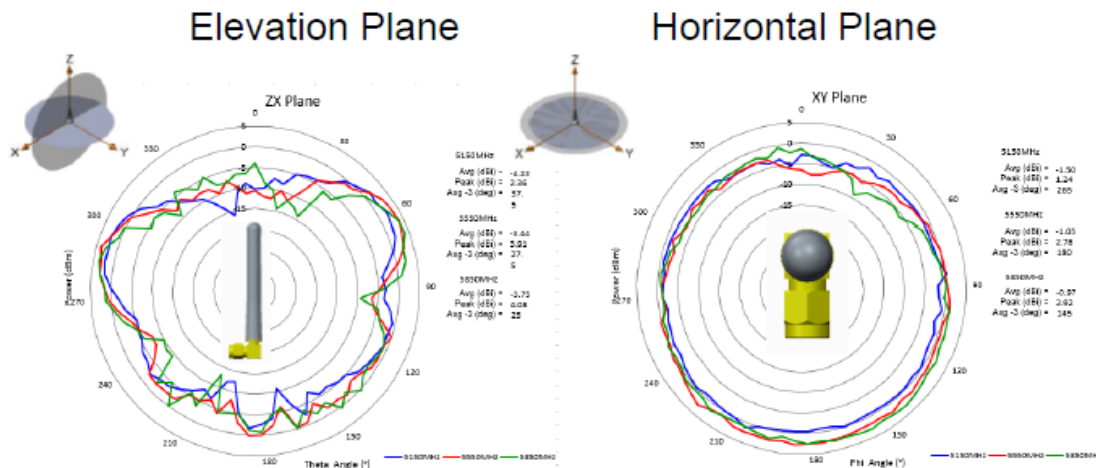
Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

CHARTS

Free Space Radiation Pattern



(*) All RF parameters measured with free space

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TECHNICAL DATA SHEET

Description: 2.4-2.5 / 5.15-5.925 GHz Stick Antenna

Series: External Antenna

PART NUMBER: W5029X

PACKAGING

20PCS/Bullet PE bag
30 Bullet PE bag/ Carton box
Total 600PCS antenna/ Carton box

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ANT-LTE-VDP-2000-SMA

Data Sheet



Product Description

The Linx VDP Series antenna is a highly versatile antenna, offering high performance in a wide range of applications as well as an industrial ruggedness at a commercial price point. These durable, low profile, IP67, UV, and extended temperature rated robust antennas mount to non-conductive surfaces with an integrated PSA adhesive patch and have a vertical cable egress. With two meters of low loss cable, the VDP Series antenna can be located remotely from the radio and positioned for optimal performance. The VDP Series offers a very rugged solution at a fraction of the cost of competitive options.

The VDP Series LTE antenna supports all common LTE frequency bands making it ideal for LTE, CAT-M1 and NB-IOT applications as well as 2G and 3G systems. It is easily customized with different cable lengths and connectors for volume orders. Contact Linx for details.



Features

- Covers all common 4G/3G/2G LTE bands
- Fully weatherized - UV protected, IP67, wide temperature range
- Low Loss cable for better RF performance at higher frequency bands

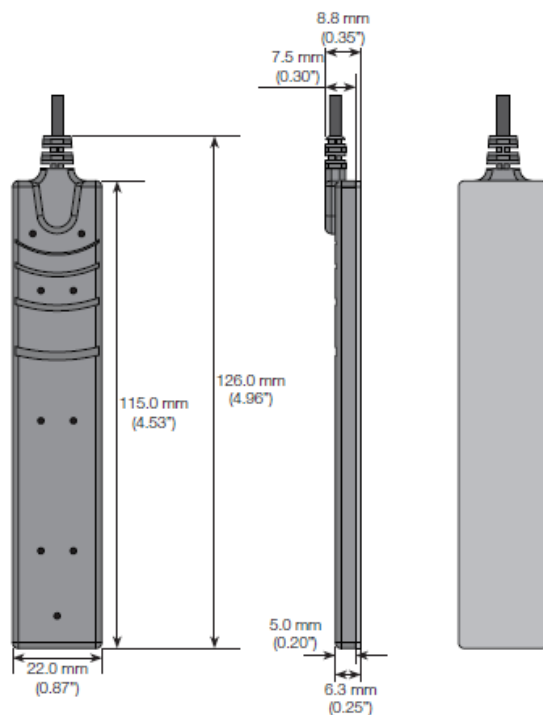
Ordering Information

ANT-LTE-VDP-2000-SMA

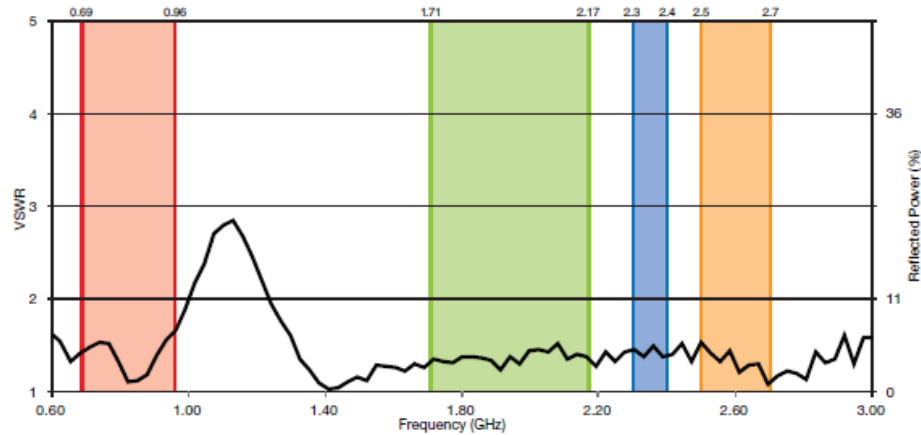
Electrical Specifications

Electrical Specifications				
Parameter	LTE/ GSM850/ GSM900	DCS/ PCS/ UMTS1	LTE 2300	LTE 2600
Recommended Frequency Range	698 – 960	1710 – 2170	2300 – 2400	2500 – 2700
VSWR	<1.7:1	<1.3:1	<1.4:1	<1.25:1
Peak Gain	4.5dBi	3.5dBi	1.5dBi	4.0dBi
Average Gain	-2.5dBi	-4.0dBi	-5.5dBi	-5.0dBi
Efficiency	55%	40%	30%	30%
Polarization	Linear			
Radiation	Omni-Directional			
Max Power	10W			
Wavelength	1/2-wave			
Impedance	50-ohms			
Cable	2m of Low Loss RG-174/U			
Connection	SMA Plug (Male)			
Mounting Type	Adhesive			
Weight	49g (1.7oz.)			
Operating Temperature Range	-40°C to +85°C			

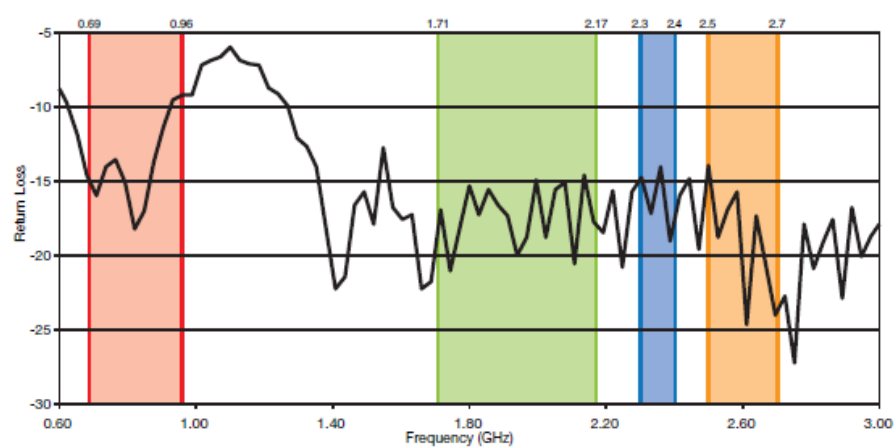
Dimensions



VSWR Graph



Return Loss



Gain Plots



XZ-Plane Gain

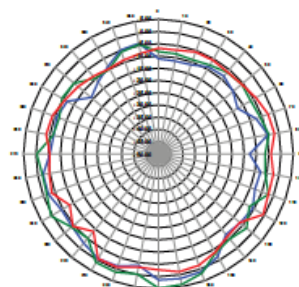


YZ-Plane Gain

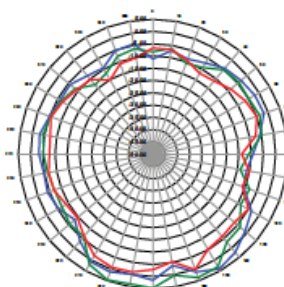


XY-Plane Gain

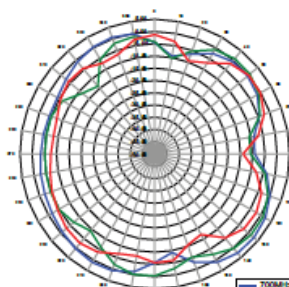
700 - 960MHz



XZ-Plane Gain



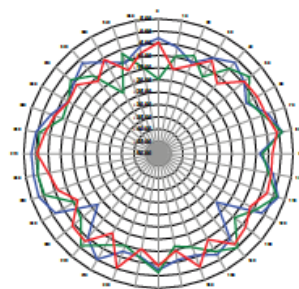
YZ-Plane Gain



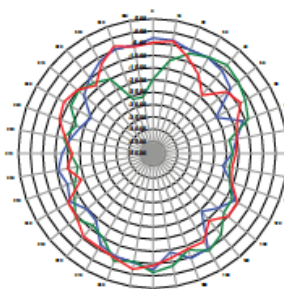
XY-Plane Gain



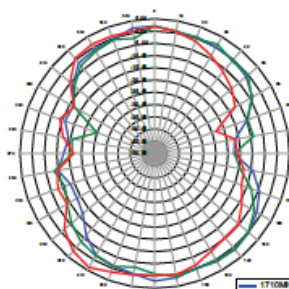
1710 - 2170MHz



XZ-Plane Gain



YZ-Plane Gain



XY-Plane Gain



Gain Plots



XZ-Plane Gain

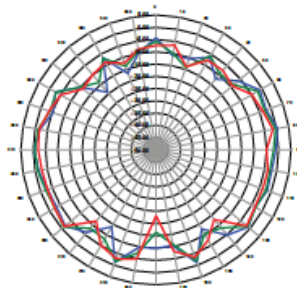


YZ-Plane Gain

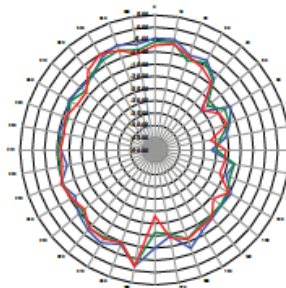


XY-Plane Gain

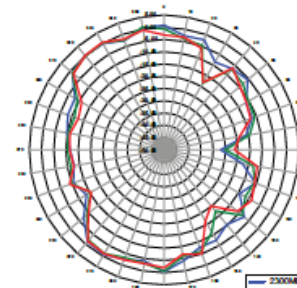
2300 - 2400MHz



XZ-Plane Gain



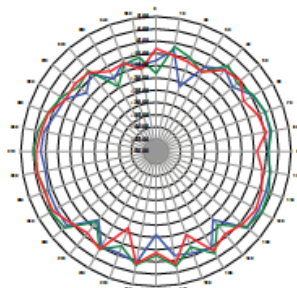
YZ-Plane Gain



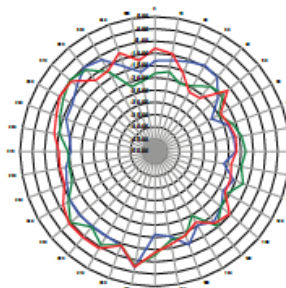
XY-Plane Gain



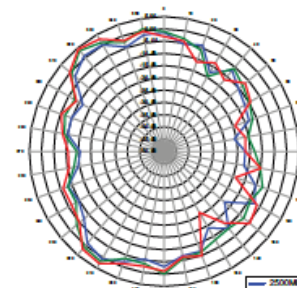
2500 - 2700MHz



XZ-Plane Gain



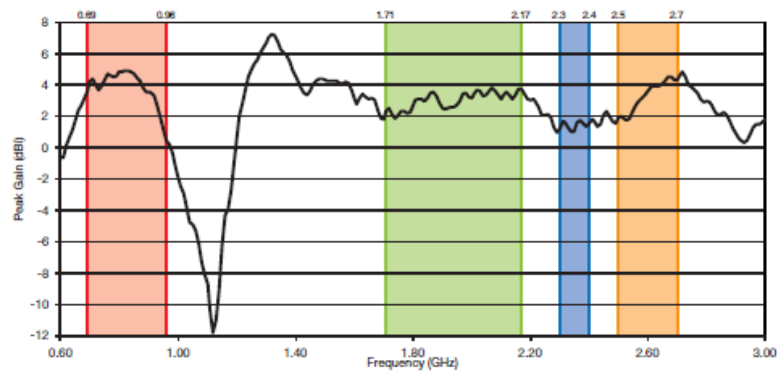
YZ-Plane Gain



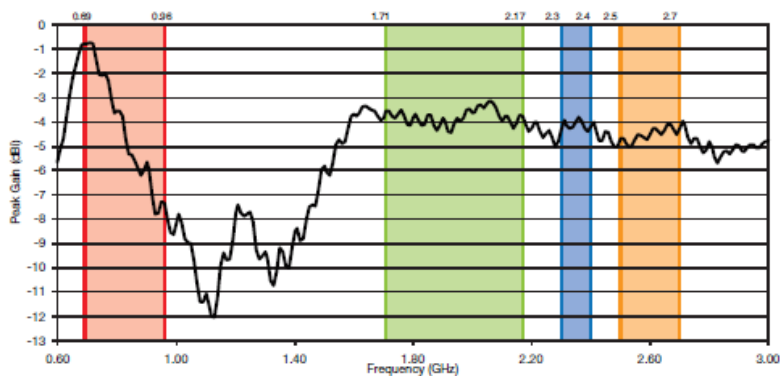
XY-Plane Gain



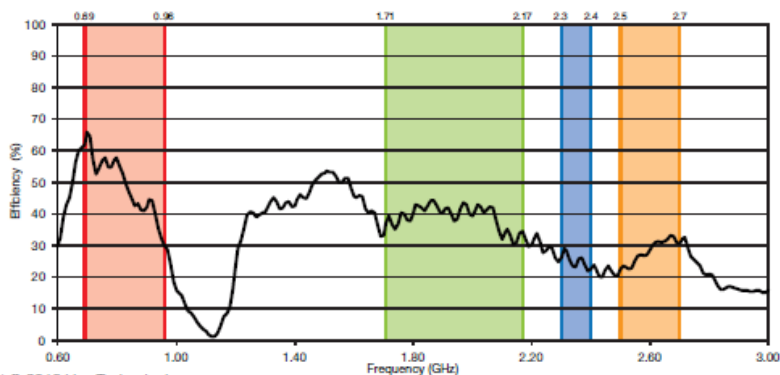
Peak Gain



Average Gain




Radiation Efficiency



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159 Ort Lane, Merlin, OR 97532
 Phone: +1 541 471 6256
 Fax: +1 541 471 6251
www.linxtechnologies.com

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ANT-LTE-VDP-2000-SMA Data Sheet 

ANT-GPS-SH2-ccc
Data Sheet

Product Description

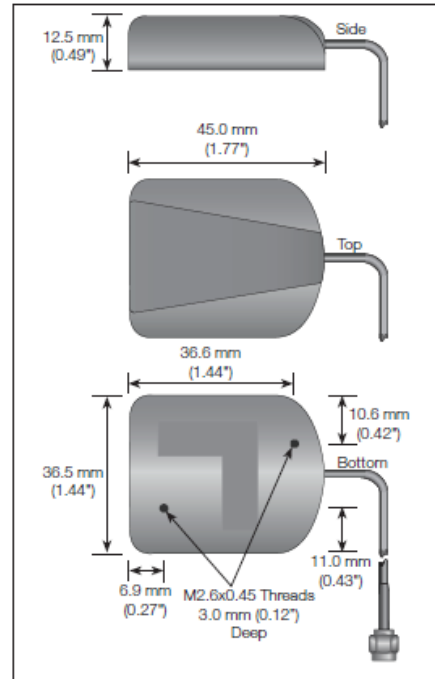
Covering both GPS and GLONASS frequencies, The high-performance SH2 Series GPS antennas combine superior performance and low power consumption. They are designed to survive the weather with an IP66 rating and UV stabilized plastic and cable. This makes them ideal for telematics, fleet management, navigation, tracking and other applications that require a compact, high-performance GPS antenna. For maximum compatibility with the host receiver, the SH2 accepts supply voltages from 2.5 to 5.5VDC and is protected against shorts, over current, or reverse polarity situations. The antennas attach via a SMA, MCX, MMCX or customer-specified connector.

Features

- Compact
- High-gain, low-noise design
- Low current consumption
- Protection circuit
- UV protection
- IP66 rating
- Rugged & damage-resistant
- Magnetic mount

Electrical Specifications

Center Frequency:	1575.42MHz, 1602MHz
Bandwidth:	10MHz @ -3dB point
VSWR:	1.5 typ.
Antenna Peak Gain:	5.0dB typ.
Impedance:	50-ohms
Axial Ratio:	1.0dB typ.
Elev. Angle Cov.:	5-90 degrees
Az. Bearing Cov.:	360 degrees
Polarization:	RHCP
System Gain:	28±1dB typ. (includes 3m cable & filter loss)
Noise Figure:	1.0dB typ.
Input Voltage:	+2.5 to +5.5VDC
Current:	5-8mA typ. @ 5V
Mounting:	Magnetic and/or screw



Cable:	117" +/-6" (3m) RG-174U (Low-loss, 0.7dB/m)
Connection:	SMA, MCX, MMCX ¹
Weight:	2.79oz (79g)
Plastic UV Resistance:	UL-746C f1
Cable UV Resistance:	UL-758
Ingress Protection:	IP66
Oper. Temp. Range:	-40°C to +85°C ²

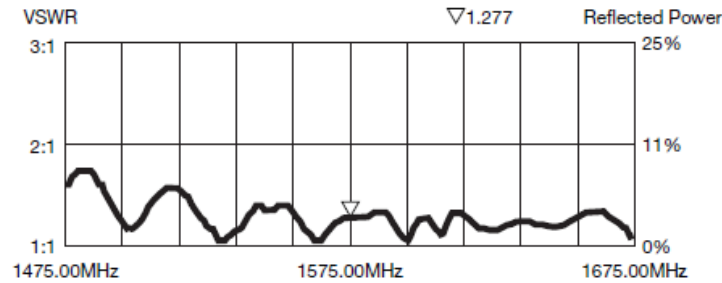
Ordering Information

ANT-GPS-SH2-SMA (with SMA connector)
ANT-GPS-SH2-MCX (with MCX connector)
ANT-GPS-SH2-MMX (with MMCX connector)

¹ Contact Linx for custom cable lengths and connectors.

² Operation below -30°C may result in a slightly longer time to first fix.

VSWR Graph



What is VSWR?

The Voltage Standing Wave Ratio (VSWR) is a measurement of how well an antenna is matched to a source impedance, typically 50-ohms. It is calculated by measuring the voltage wave that is headed toward the load versus the voltage wave that is reflected back from the load. A perfect match has a VSWR of 1:1. The higher the first number, the worse the match, and the more inefficient the system. Since a perfect match cannot ever be obtained, some benchmark for performance needs to be set. In the case of antenna VSWR, this is usually 2:1. At this point, 88.9% of the energy sent to the antenna by the transmitter is radiated into free space and 11.1% is either reflected back into the source or lost as heat on the structure of the antenna. In the other direction, 88.9% of the energy recovered by the antenna is transferred into the receiver. As a side note, since the ":1" is always implied, many data sheets will remove it and just display the first number.

How to Read a VSWR Graph

VSWR is usually displayed graphically versus frequency. The lowest point on the graph is the antenna's operational center frequency. In most cases, this is different than the designed center frequency due to fabrication tolerances. The VSWR at that point denotes how close to 50-ohms the antenna gets. Linx specifies the recommended bandwidth as the range where the typical antenna VSWR is less than 2:1.

