

**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

Series: RAZORBACK

PART NUMBER: RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM



RAZ62311MM (Black)



RAZ62312MM (White)

## **Features:**

- 2x LTE 644-2700MHz (MiMo)
- 0, 1x, 2x or 3x WiFi 2.4/5GHz
- DSRC
- **GNSS Active:** 
  - · Beidou, GPS, Glonass
  - RHCP polarization
  - · Amplifier Gain 30dBi
- Size: 89.2 x 195.1 x 94.7mm 3.51 x 7.68 x 3.73 in
- Power withstanding 45W
- Available Models RAZ32011MM = 3 Cable, Black RAZ32012MM = 3 Cable, White RAZ42111MM = 4 Cable, Black RAZ42112MM = 4 Cable, White RAZ52211MM = 5 Cable, Black RAZ52212MM = 5 Cable, White RAZ62311MM = 6 Cable, Black RAZ62312MM = 6 Cable, White

## **Applications:**

- Vehicular use Telematics
- · Fleet management
- Trucking
- Navigation, GIS and survey
- Public safety
- Search and Rescue
- Metering, Utility boxes

Issue: 1742

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

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden. 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

Europe Headquarters Pulse GmbH & Do, KG Zeppelinstrasse 15 Herrenberg, Germany Tel: 1-360-944-7551 Downloaded From Oneyac.com

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



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

Monopole measured on Ø1 02m (40") ground plane

67 %

57 %

45 W

**Series: RAZORBACK** 

Antenna Type

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **ELECTRICAL SPECIFICATIONS**

Antenna Type	Monopole, measured on \$1.02m (40 ) ground plane
Frequency (2x LTE)	644-960/1710-2700 MHz
Frequency (1x, 2x or 3x WiFi)	2400-2500/4900-5925 MHz
Nominal Impedance	50 Ω
VSWR	2:1
Radiation Pattern	Omni
HPBW / Vertical Plane (LTE, 644-9	60) 42°
HPBW / Vertical Plane (LTE, 1710-	2700) 31°
HPBW / Vertical Plane (WIFI, 2400	-2500) 25°
HPBW / Vertical Plane (WIFI, 4900	-5925) 20°
Polarization	Vertical
Average Peak Gain (LTE, 644-960	) (LTE, 1710-2700) 4.6/4.9 dBi
Average Peak Gain (WIFI, 2400-25	500) (WIFI, 4900-5925) 6/6.6 dBi
Isolation (LTE1 to LTE2)	<-13
Isolation (WiFi1/2, WiF2/3 & WiFi1	<-13

GNSS Beidou-GPS-Glonass

Average Efficiency (LTE)

Average Efficiency (WiFi)

Power Withstanding

Frequency 1561.098±2.046,1575.42±1.023,1602.5625±4
--

VSWR 2:1

Nominal Impedance 50  $\Omega$ 

Gain (Radiating element) 1 dBic +/- 1dB Gain (LNA gain) 30 dB +/- 2 dB

Polarization RHCP





**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **ELECTRICAL SPECIFICATIONS**

Out of Band Rejection 960MHz >65 dB, 1710MHz >60 dB,

2170MHz >65 dB, 2400MHz >65 dB Noise Figure < 2.4dB

Operating Voltage  $3.3 - 5 \text{ Vdc} \pm 0.5 \text{ V}$ 

Current Consumption < 11 mA

## **MECHANICAL SPECIFICATIONS**

Length/Height/Width 195.1mm (7.68")/94.7 (3.73")/89.2mm (3.51")

Weight 856 g (1.9 lbs)

Antenna Color / Material Black or White / PC/ABS, UV protected

Cable / Connector 2x LTE, 5.2m (17') LMR-195/SMA-Male

1x, 2x or 3x WiFi, 5.2m (17') LMR-195/RP-SMA-Male

GNSS, 5.2m (17') RG-174/SMA-Male

Mounting Configuration Magnetic Mount

## **ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature -40/+85° C

Ingress Protection IP67
RoHS Compliant Yes

## OTHER SPECIFICATIONS

Total cable assembly loss for 5.2m (17') LMR-195 @ 850MHz	2.1 dB
Total cable assembly loss for 5.2m (17') RG-174 @ 1575MHz	6.0 dB
Total cable assembly loss for 5.2m (17') LMR-195 @ 1930MHz	3.2 dB
Total cable assembly loss for 5.2m (17') LMR-195 @ 2500MHz	3.7 dB
Total cable assembly loss for 5.2m (17') LMR-195 @ 2450MHz	3.6 dB
Total cable assembly loss for 5.2m (17') LMR-195 @ 5350MHz	5.5 dB





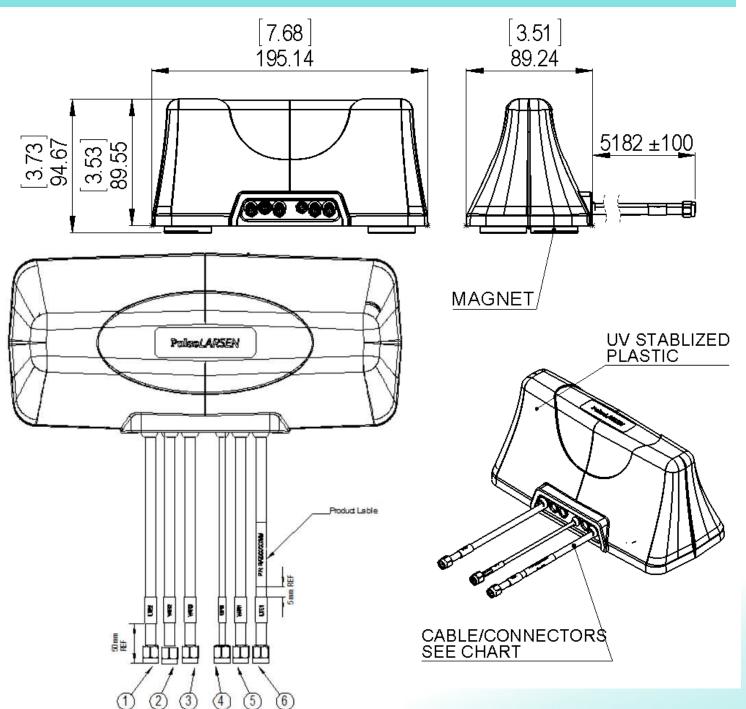
**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **MECHANICAL DRAWING**



All dimensions are in mm / inches

Issue: 1742

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





**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

# **MECHANICAL DRAWING**

# Vehicular Multiband Antenna with Magnet Mount

(Part Number)























		-
1	5	, ,
- 5	-1	1
	v.	1

1	Product ID: RAZORBACK		
2	Total Number of Cable leads		
3	Total Number of LTE Cable Leads		
4	Total Number of WiFi Cable Leads		
(5)	Total Number of GPS Cable Leads		
6	The Color of the Plastic Housing 1=Black; 2=White		
<b>(7)</b>	Mounting:Magnet Mount		

	RAZXXXXMM	CABLE	CABLE LENGTH	CONNECTOR
1	LTE-2 Cable Assy	LMR195	5181 mm / 204" /	SMA Male
2	WiFi-2 Cable Assy			DB 0144 44 1
3	WiFi-3 Cable Assy			RP-SMA Male
4	GPS Cable Assy	RG-174		SMA Male
5	WiFi-1Cable Assy	LMR195	17 FT	RP-SMA Male
6	LTE1 Cable Assy			SMA Male

All dimensions are in mm / inches





**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

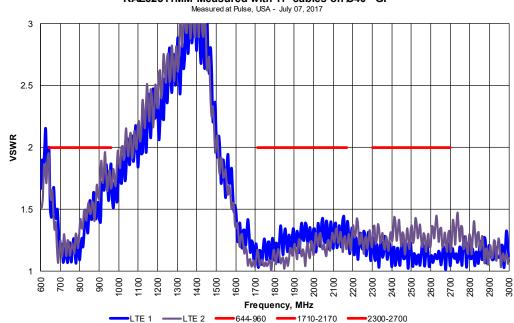
Magnetic Mount

Series: RAZORBACK

PART NUMBER: RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

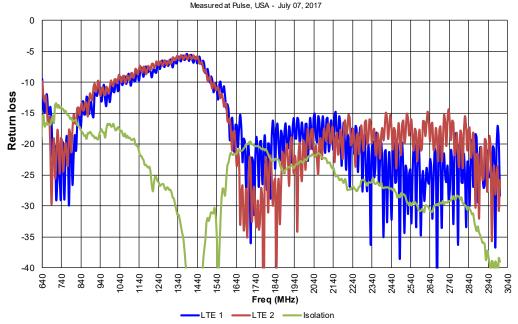
## **CHARTS**

### VSWR vs Frequency RAZ62311MM Measured with 17' cables on Ø40" GP



LTE 1 & 2 Measured with 5.2m (17') cable

### Return loss vs Frequency RAZ62311MM Measured with 17' cables on Ø40" GP



LTE 1 & 2 Measured with 5.2m (17') cable



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

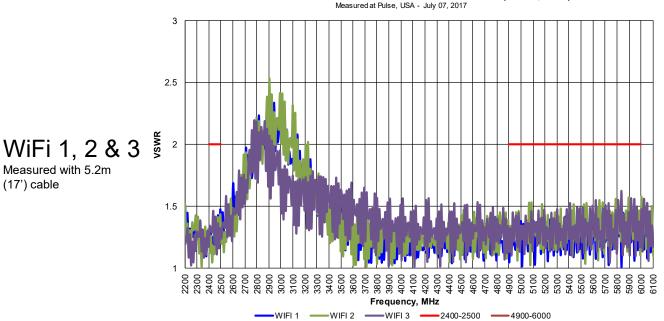
Magnetic Mount

Series: RAZORBACK

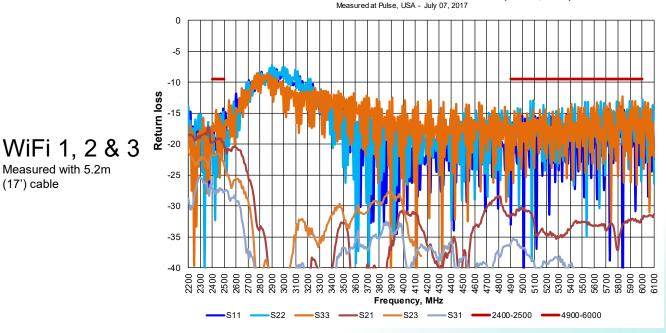
PART NUMBER: RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **CHARTS**

### **VSWR vs Frequency** RAZ62311MM Measured with 17' cables on Ø40" GP (WiFi 1, 2 &3)



### Return loss vs Frequency RAZ62311MM Measured with 17' cables on Ø40" GP (WiFi 1, 2 &3)



Measured with 5.2m (17') cable

Measured with 5.2m

(17') cable



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

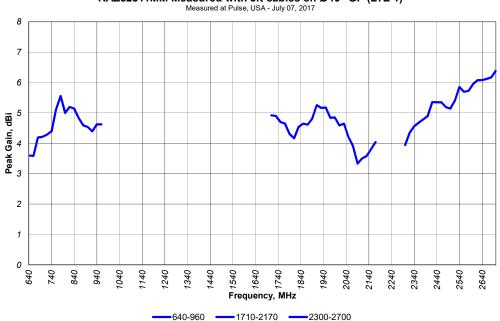
Magnetic Mount

Series: RAZORBACK

PART NUMBER: RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **CHARTS**

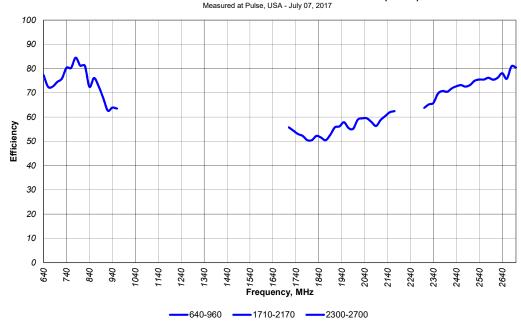
### Peak Gain vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (LTE 1)



ITF 1 Measured with 914mm (36") cable

### Efficiency vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (LTE 1)

640-960 -



LTE 1 Measured with 914mm (36") cable



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

#### **CHARTS** XY plane @ Lower Band 800 330 $A \vee g (dBi) = -1.71$ Peak (dBi) = 0.15 $A \vee g - 3 (deg) = 340$ 1930 300 -15 Avg(dBi) = -0.51Peak (dBi) = 1.17 -20 Avg - 3 (deg) = 2382500 Avg (dBi) = -2.63 Peak (dBi) = -0.43 LTE 1 -30 270 Avg - 3 (deg) = 360Measured with 914mm (36") cable 240 210 150 2500 800 -1930 Phi Angle (°) 180 ZX plane @ Lower Band 330 800 30 Avg (dBi) = -1.80Peak (dBi) = 3.03 Avg - 3 (deg) = 47300 Avg (dBi) = -3.62Peak (dBi) = 3.52 -20 Avg - 3 (deg) = 302500 -30 LTE 1 Avg (dBi) = -3.07Peak (dBi) = 4.41 270 Avg - 3 (deg) = 32Measured with 914mm (36") cable 240 120 210 150 800 -1930 2500 180 Theta Angle (°)

Issue: 1742

ROHS



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **CHARTS**

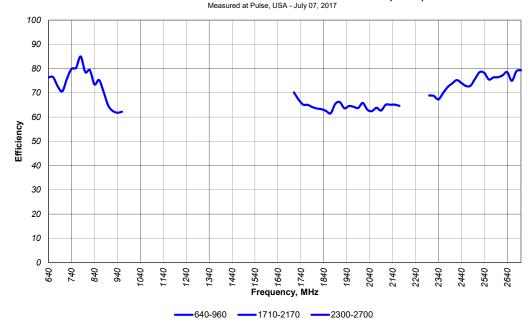
### Peak Gain vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (LTE 2)

LTE 2
Measured with
914mm (36") cable

# Efficiency vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (LTE 2)

640-960 -

**-**1710-2170 **--**2300-2700



LTE 2 Measured with 914mm (36") cable

Issue: 1742

OMPLIANT

10



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

### **CHARTS** XY plane @ Lower Band 800 330 $A \vee g (dBi) = -1.78$ Peak (dBi) = 0.24 $A \lor g - 3 (deg) = 346$ 1930 300 Avg(dBi) = -0.29Peak (dBi) = 1.14 -20 Avg - 3 (deg) = 3602500 -30 Avg (dBi) = -1.52 Peak (dBi) = 0.93 LTE 2 270 Avg - 3 (deg) = 282Measured with 914mm (36") cable 240 210 150 2500 800 -1930 Phi Angle (°) 180 ZX plane @ Lower Band 0 330 800 30 Avg(dBi) = -1.66Peak (dBi) = 3.02 Avg - 3 (deg) = 50300 Avg (dBi) = -4.03Peak (dBi) = 3.03 -20 Avg - 3 (deg) = 28Sain (dBi) 2500 -30 LTE 2 Avg (dBi) = -3.66Peak (dBi) = 2.86 270 Avg - 3 (deg) = 43Measured with 914mm (36") cable 240 210 150 800 -1930 2500

Issue: 1742



11

180



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

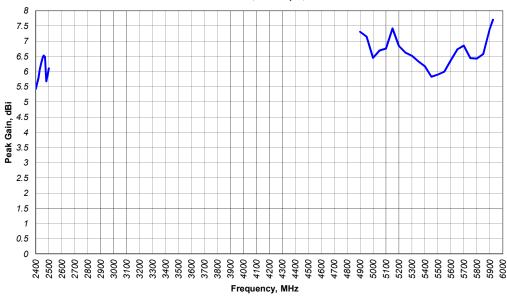
Magnetic Mount

Series: RAZORBACK

PART NUMBER: RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **CHARTS**

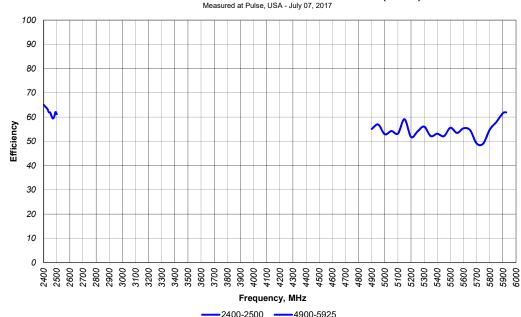
### **Peak Gain vs Frequency** RAZ62311MM Measured with 3ft cables on Ø40" GP (WiFi 1)



WiFi 1 Measured with 914mm (36") cable

> Efficiency vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (WiFi 1)

**-**2400-2500 **---**4900-5925



WiFi 1 Measured with 914mm (36") cable

Issue: 1742

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





**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

### **CHARTS** XY plane @ Lower Band 2450 330 30 Avg (dBi) = -1.87 Peak (dBi) = 0.61 $A \vee g - 3 (deg) = 62$ 5350 300 $A \lor g (dBi) = -1.68$ Peak (dBi) = 3.94 -20 Avg - 3 (deg) = 86Power (dBm) WiFi 1 -30 270 90 Measured with 914mm (36") cable 240 120 210 150 2450 -5350 Phi Angle (°) 180 ZX plane @ Lower Band 330 2450 30 Avg (dBi) = Peak (dBi) = Avg - 3 (deg) = 265350 300 Avg (dBi) = -0.65Peak (dBi) = 5.70 -20 $A \lor g - 3 (deg) = 17$ Power (dBm) -30 WiFi 1 270 Measured with 914mm (36") cable 240 210 150

Issue: 1742

ROHS

-5350

2450

180



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

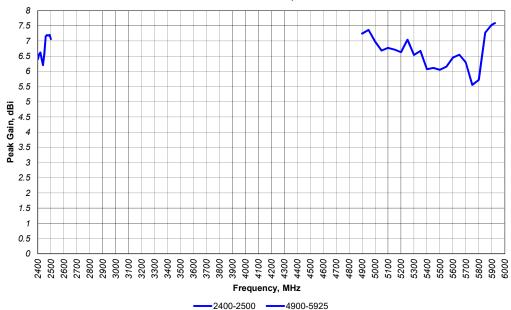
Series: RAZORBACK

PART NUMBER: RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **CHARTS**

### Peak Gain vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (WiFi 2)

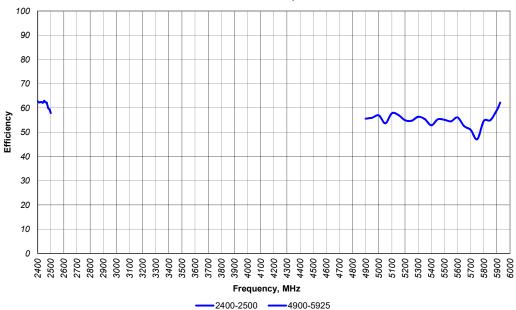
Measured at Pulse, USA - July 07, 2017



WiFi 2 Measured with 914mm (36") cable

### Efficiency vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (WiFi 2)

Measured at Pulse, USA - July 07, 2017



WiFi 2 Measured with 914mm (36") cable

Issue: 1742

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





Description: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

### **CHARTS** XY plane @ Lower Band 2450 330 30 Avg (dBi) = Peak (dBi) = 2.27 $A \vee g - 3 (deg) = 49$ 5350 300 -15 $A \lor g (dBi) = -2.83$ Peak (dBi) = 0.65 -20 Avg - 3 (deg) = 63Power (dBm) -30 WiFi 2 270 90 Measured with 914mm (36") cable 240 210 150 -5350 2450 Phi Angle (°) 180 ZX plane @ Lower Band 330 2450 30 A∨g (dBi) = Peak (dBi) = 5.38 $A \vee g - 3 (deg) = 21$ 5350 300 $A \lor g (dBi) = -2.53$ Peak (dBi) = 5.59-20 $A \vee g - 3 (deg) = 15$ Power (dBm) -30 WiFi 2 270 90 Measured with 914mm (36") cable 240 210 150

Issue: 1742

ROHS

-5350

2450

180



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

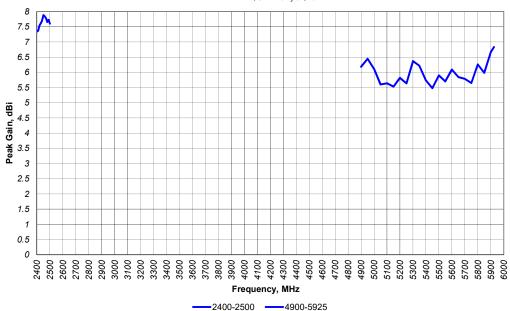
Series: RAZORBACK

PART NUMBER: RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **CHARTS**

### Peak Gain vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (WiFi 3)

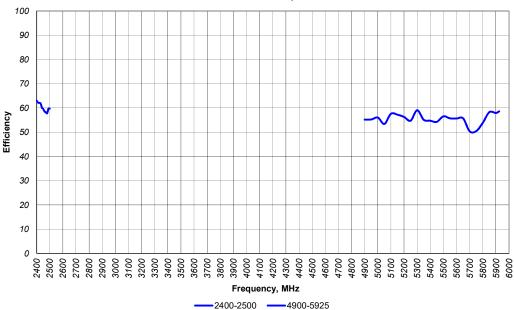
Measured at Pulse, USA - July 07, 2017



WiFi 3 Measured with 914mm (36") cable

### Efficiency vs Frequency RAZ62311MM Measured with 3ft cables on Ø40" GP (WiFi 3)

Measured at Pulse, USA - July 07, 2017



WiFi 3 Measured with 914mm (36") cable

Issue: 1742

16



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

### **CHARTS** XY plane @ Lower Band 0 2450 330 30 A∨g (dBi) = -2.03 Peak (dBi) = 2.04 Avg - 3 (deg) = 1705350 300 $A \lor g (dBi) = -3.17$ Peak (dBi) = 0.55 -20 Avg - 3 (deg) = 184Power (dBm) WiFi 3 -30 270 Measured with 914mm (36") cable 240 210 150 -5350 2450 Phi Angle (°) 180 ZX plane @ Lower Band 330 2450 30 Avg (dBi) = Peak (dBi) = 7.63 $A \vee g - 3 (deg) = 23$ 5350 300 Avg (dBi) = -3.30Peak (dBi) = 4.49 -20 Avg - 3 (deg) = 23Power (dBm) -30 WiFi 3 270 90 Measured with 914mm (36") cable 240 210 150

Issue: 1742

ROHS

-5350

2450

180



**Description**: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

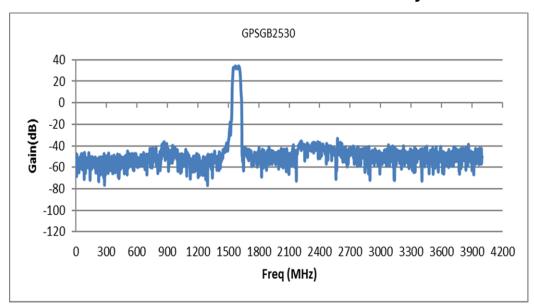
Magnetic Mount

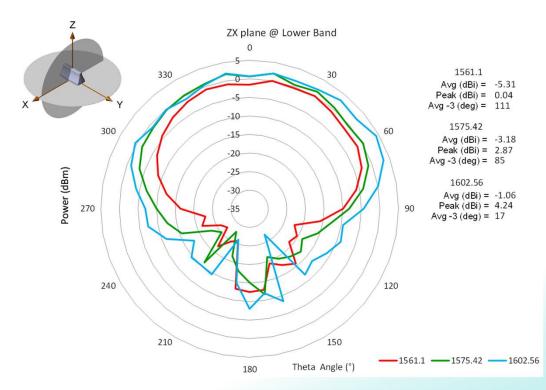
**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **CHARTS**

# GNSS LNA Gain and out-of-band rejection





**GNSS** 

Passive Measurement Measured with 152mm (6") cable

Issue: 1742

ROHS

18



Description: GNSS / 2x LTE / 0, 1x, 2x or 3x WiFi

Magnetic Mount

**Series: RAZORBACK** 

**PART NUMBER:** RAZ32011MM, RAZ32012MM, RAZ42111MM, RAZ42112MM, RAZ52211MM, RAZ52212MM, RAZ62311MM, RAZ62312MM

## **PACKAGING**

1pcs antennas per foam bag

6pcs antennas per package box

Total 6pcs antenna per package box

Package box: 558mm\*386mm\*210mm

# 单击下面可查看定价,库存,交付和生命周期等信息

# >>Pulse(普思)