

SPECIFICATION

Part No. : MA.208.A.A301111.B305111

Product Name : GPS and LTE/GSM/UMTS

(2G/3G/4G 700Mhz to 960MHz/1710MHz to 2200MHz)

Combination Antenna

Description Adhesive Mount IP67 Antenna

GPS: 3M RG-174 SMA(M) Cellular: 3M CFD-200 SMA(M)

1.8~5.5V/30dB 200.5*66.5*9mm RoHS Compliant







1.0 Introduction

The Bar MA.208 GPS/LTE Cellular antenna is a low profile, heavy-duty, fully IP67 waterproof external M2M antenna for use by RF professionals in telematics, transportation and remote monitoring applications. The Bar is unique in the market as it combines the highest possible efficiency and peak gain for GPS and all cellular bands in 2G/3G/4G in a low profile compact format for mounting via high quality first tier automotive approved 3M adhesive foam.

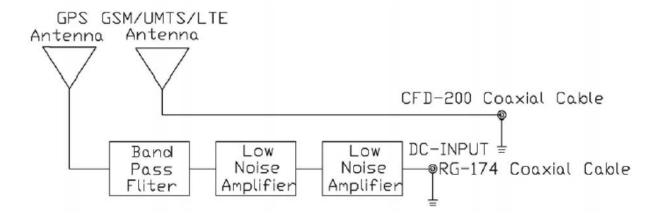
The patent pending design incorporates internally a custom Taoglas 35mm patch antenna on an extended integral ground-plane to deliver more than 3.5dBiC gain. A front-end SAW filter dramatically reduces radiated spurious emissions. The extended ground-plane used with an innovative internal cellular PIFA also enables the unique wide-band 2G/3G/4G response to deliver the highest performance possible, at 3 metres cable length. Nothing else out there comes close in terms of consistency of efficiency and peak gain at all cellular bands, with an awesome 70%+ at the LTE 700MHz band, again including 3 metres of cable loss. High antenna efficiencies are absolutely critical in today's 3G and 4G systems to achieving targeted data-speeds and coverage.

All this is done while still maintaining 20dB isolation between antennas. The Bar uses high-shielded PTFE dielectric ultra low-loss cables that maintain low attenuation at all frequency bands, and high noise rejection, with an average loss of only 0.3dB per meter (0.1dB per foot), compared to 0.7dB for RG58 and 1.2dB for RG174. Because of this, the Bar maximizes chances of passing PTCRB and network approvals first time. The Bar works best when attached to plastic or glass, but can also be used on metal if some foam spacing is added.



2.0 System Configuration

This antenna specification covers the LTE/GSM/UMTS Full band for 700MHz~960MHz 1710MHz~2170MHz and GPS (L1 Band).





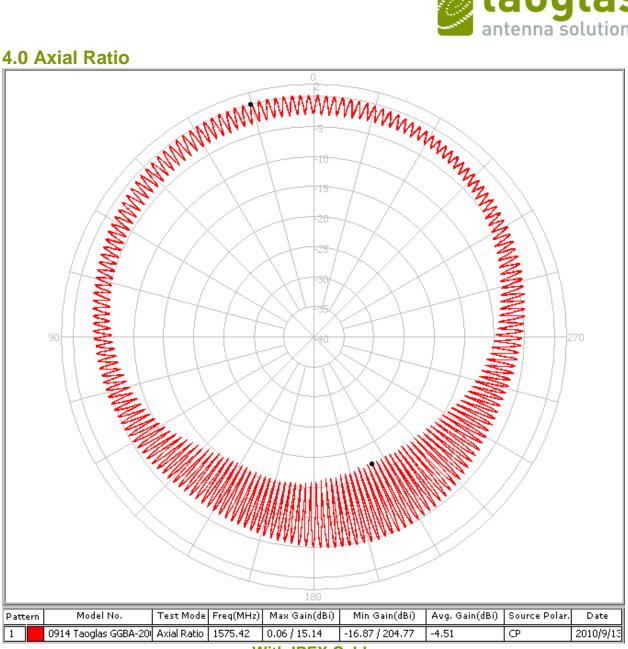
3.0 Antenna Specification

3.0 Antenna Specification Performance Specifications					
Items	GPS Antenna	Cellular Antenna			
Features	High performance GPS 35*35*4mm ceramic patch antenna with two stage high gain LNA 1575.42 +/- 1.023MHz	LTE – 700MHz CDMA: 824-896 MHz GSM: 880-960 MHz DCS: 1710-1880 MHz PCS: 1850-1990 MHz 3G: 1920-2170MHz			
Gain	3.5dBic typ @ Zenith	Average:3.03dBi at 700– 960MHz -4.34dBi at 1710 – 2170MHz Peak: 2.16dBi at 700 – 960MHz 0.42dBi at 1710 – 2170MHz			
Polarization	RHCP	Linear			
VSWR		3.3 Max. at 700- 960MHz 3.6 Max. at 1710- 1850MHz 2.2 Max. at 1880-2170MHz			
Impedance	50Ω	50Ω			
Efficiency		\$\int 88\% @ 700MHz, \$\int 2\% @ 750MHz, \$\int 66\% @ 824MHz, \$\int 6\% @ 890MHz, \$\int 1\% @ 880MHz, \$\int 3\% @ 960MHz, \$\int 7\% @ 1710MHz, \$\int 1\% @ 1880MHz, \$\int 5\% @ 1990MHz, \$\int 4\% @ 2110MHz, \$\int 4\% @ 2170MHz \$\int 5\% @ 2170MHz			
Cable / Connector	3m RG-174 Cable SMA(M) connector Fully Customisable	CFD-200 with SMA(M) Fully customisable			
Housing	UV resistant PVC				
Adhesive Mount	3M 1600TB(196.57*62.57*1.25mm)				
Protection Class	IP-67				
Operation Temperature	-40°C to +85°C				
Storage Temperature	-40°C to +85°C				
Relative Humidity	20% to 95%				
Weight per unit	0.18kg				

^{*}note: specifications may be subject to change

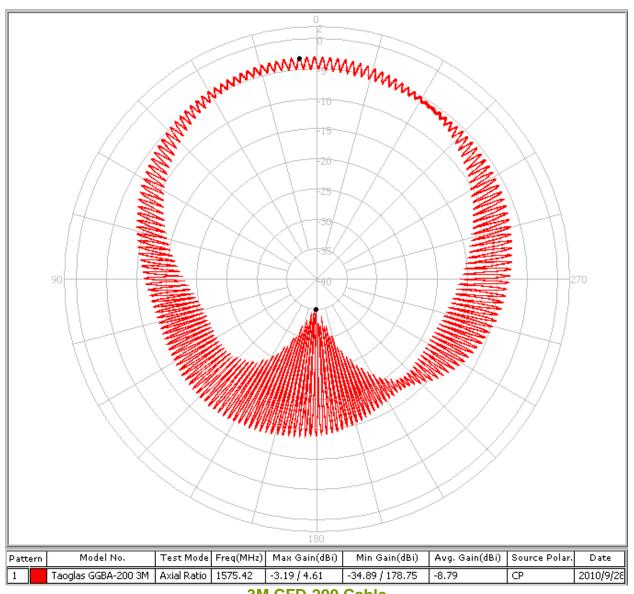


4.0 Axial Ratio



With IPEX Cable



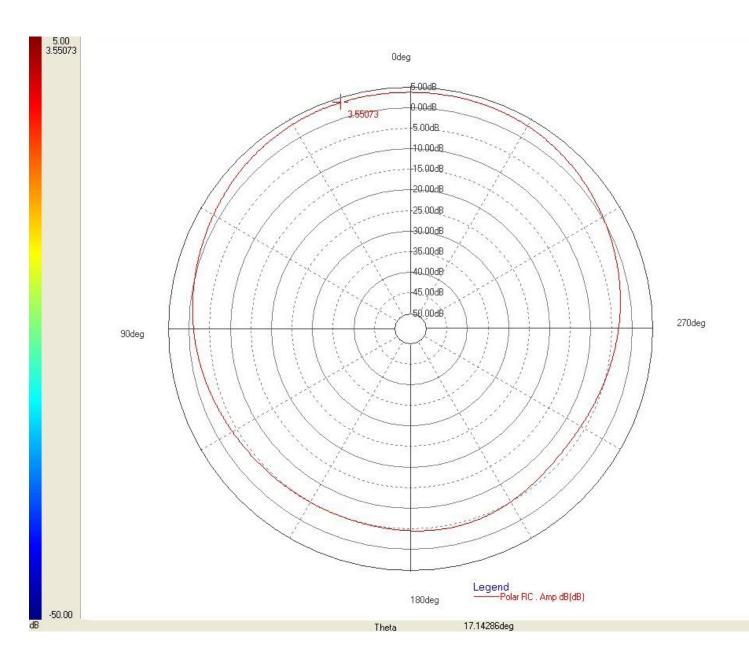


3M CFD-200 Cable



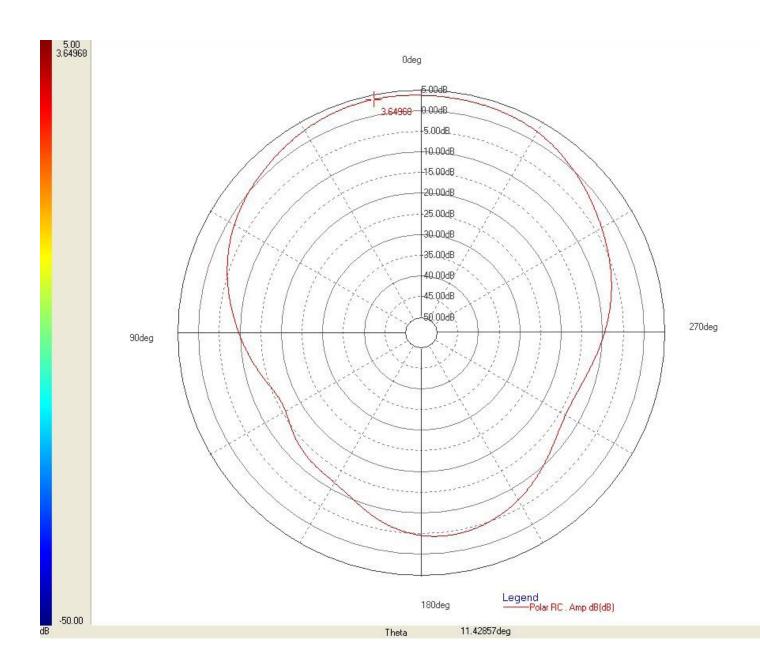
5.0 Radiation Patterns

Radiation Pattern in XZ plane



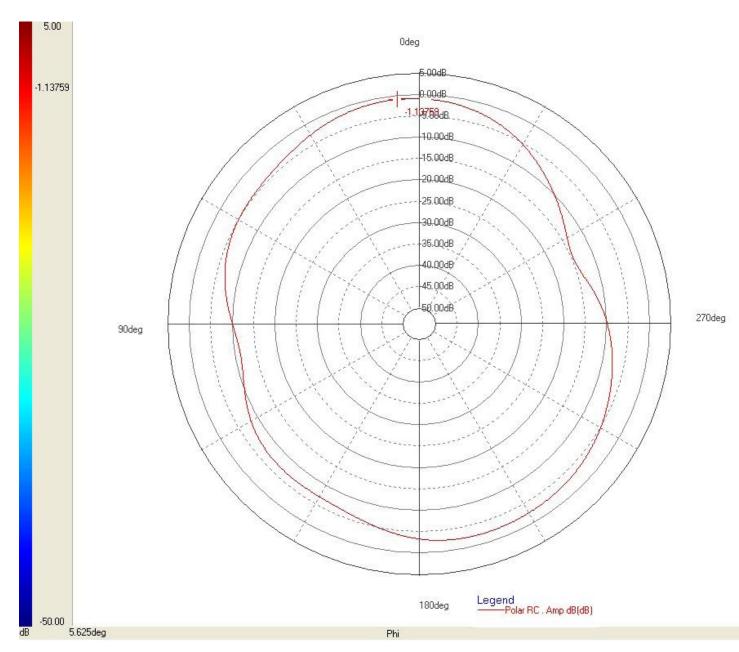


Radiation Pattern in YZ plane



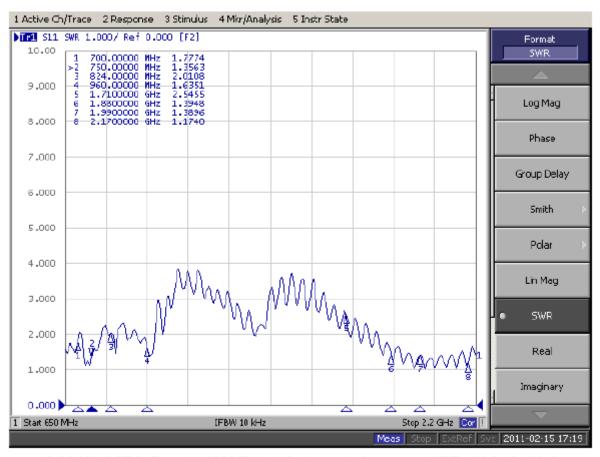


Radiation Pattern in XY plane





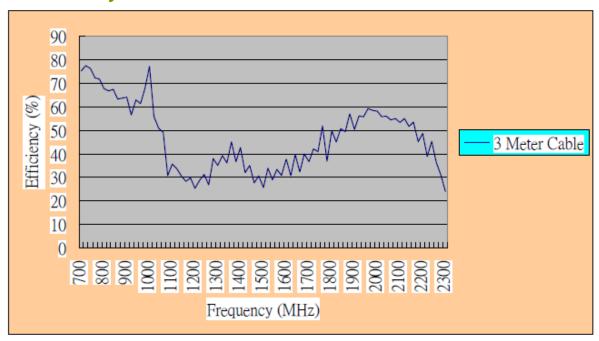
6.0 VSWR



GSM/ UMTS Band VSWR (with length 3 meter CFD-200 Cable)

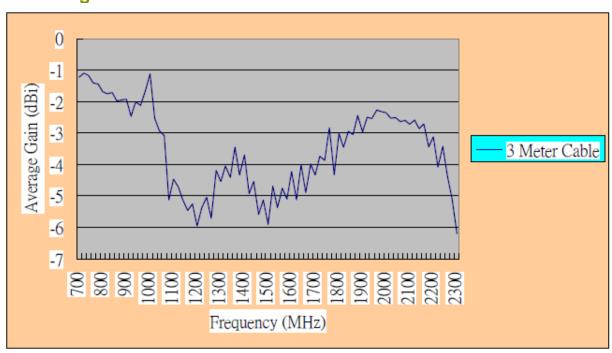


7.0 Efficiency



GSM/ UMTS Band Efficiency (with length 3 meter CFD-200 Cable)

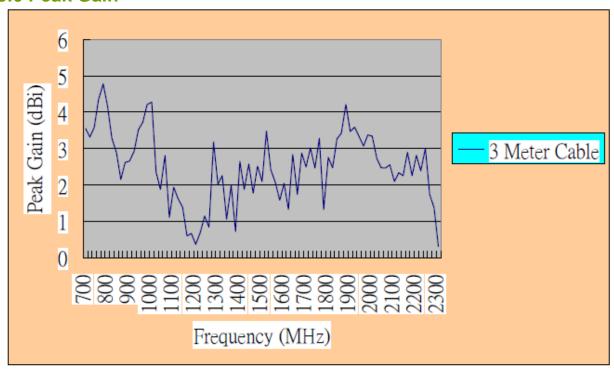
8.0 Average Gain



GSM/ UMTS Average Gain (with length 3 meter CFD-200 Cable)



9.0 Peak Gain



GSM/ UMTS Peak Gain (with length 3 meter CFD-200 Cable)

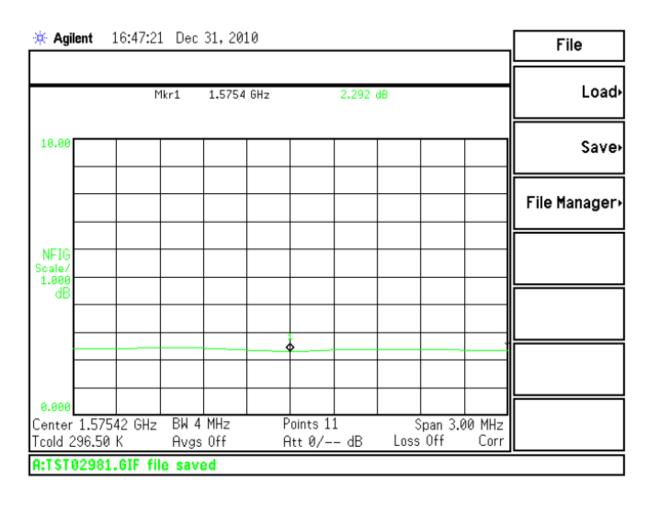
10.0 LNA

Frequency Range	1575.42+/-1.023Mhz	
Output Impedance	50 Ohm	
Output Power at 1dB Compression Point	-35dBm typ.	
Output VSWR	2.0 Max.	

Supply Voltage	Gain(Typ)	Noise Figure(Typ)	Power Consumption (Typ.)
1.8V	27.0dB	2.2dB	5.5mA
3.0V	32.9dB	2.3dB	12.5mA
5.5V	33.8dB	2.5dB	15.0mA

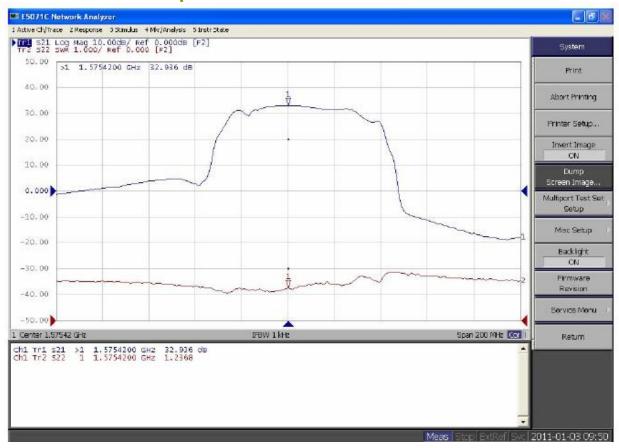


11.1 LNA Noise Figure at 3.0V





11.2 LNA Gain and Output of VSWR at 3.0V

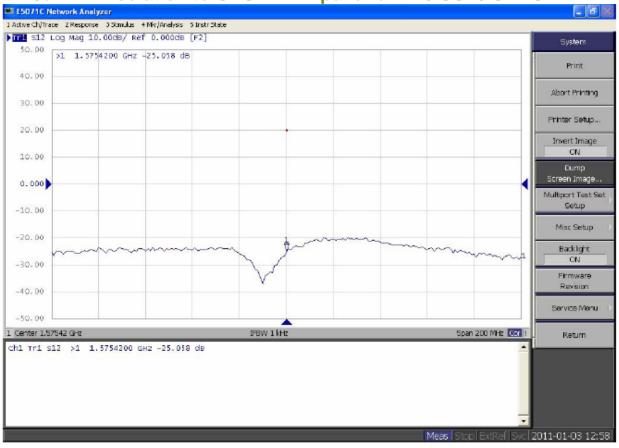


12.0 GPS Antenna Specifications (Through Antenna, LNA and Cable Assembly)

Frequency Range	1575.42+/-1.023Mhz	
Gain at 3.0V	32.5dBic @ Zenith	
Output Impedance	50 Ohm	
Output VSWR	2.0 Max.	

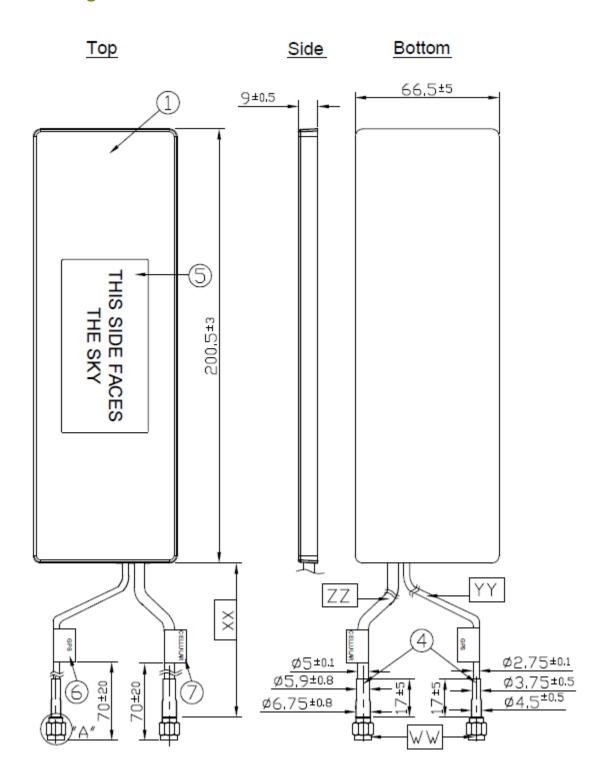


12.1 20dB min isolation to GPS LNA input and LTE/ GSM/ UMTS ANTENNA

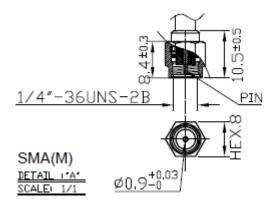




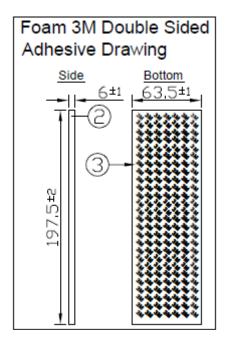
13.0 Drawing







Separate Adhesive Pad





14.0 Packing

