L1/L5 GNSS CAR Antenna

MODEL: GA-38R

Small size and ruggedness, demand of vehicle locating and marine navigation GNSS antenna that will sustain harsh environment.

- High performance
- Out-band filtering & rejection
- Fully waterproof IPX8
- Voltage: 2.5 V ~5.5 V DC
- Provides excellent signal amplification
- ESD Design & TVS Design (optional)

GA-38R is the integration of a high performance GNSS patch antenna and a state-of-the-art low noise amplifier into a very low profile/ extremely compact/ fully waterproof enclosure which, when connected to a GNSS receiver with 2.5~5.5V DC antenna power, provides excellent signal amplification and out-band filtering & rejection, provide 3V or 5V input Voltage is available.

FEATURES:

- Compact Construction/ Low Profile/ Fully Waterproof
- Magnet and Screw Mount Base
- Excellent Temperature Stability
- Low Noise Figure
- High Sensitivity

APPLICATIONS:

- Automobile GNSS
- Bluetooth Receiver
- Car Tracking Navigation System
- AVL / Fleet Management Systems
- External Antenna for Handheld GNSS
- External Antenna for PDA Navigator

Specifications:

PHYSICAL CONDITION	
Constructions:	ABS PA777D Shell / AB Glue for water seal in between
Dimensions:	40.5mm (L) x 38mm (W) x 12.3mm (H)
Weight:	50 grams (excluding cable & connector)
Color:	Standard in Black,
Mounting:	Magnet mount with two magnets or 3M Double sided tape
Cable & Connector	
RF cable:	5 meter RG174/U (standard) cable, other length available
Pulling strength:	6 Kg @ 5sec. molded plastic on connector end for strain relief.

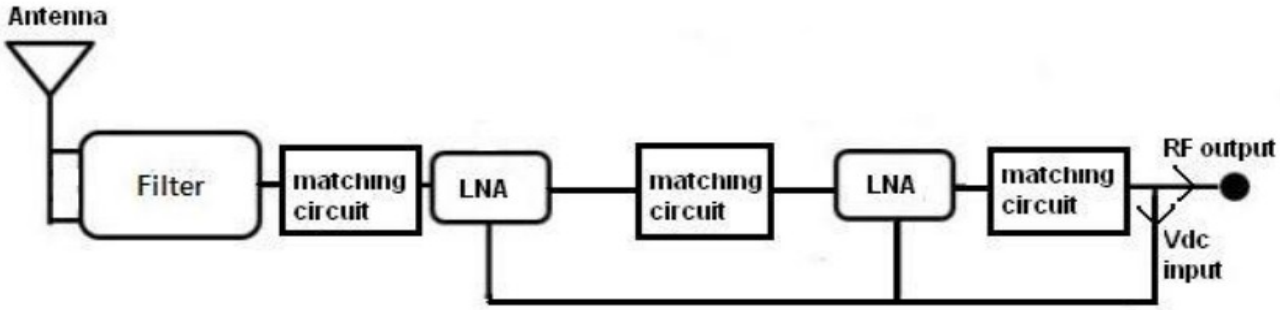
Connector	BNC,TNC,FME,GT5,GT16,GT16F,HFC, MCX,MMCX, SMA, SMB or SMC in straight or right angle
Antenna Element	
Center Frequency:	1582.5±23.5MHz(L1)and1176±12MHz(L5)
Polarization:	R.H.C.P. (Right Handed Circular Polarization).
Bandwidth	±23.5MHz(L1),±12MHz(L5)
Gain @ 10° Elevation:	-4dBic typical @ L1; -0.5dBic typical @ L5
Gain at Zenith	0 dBic typical @ L1 ; 1.5 dBic typical @ L5
Output VSWR:	2.0
Output Impedance:	50 ohm
Low Noise Amplifier	
Power Gain:	30±2 dB typical at 3V (L1and L5) 30±2 dB typical at 5V (L1and L5)
ESD (TVS)	±8kv (contact)
Noise Figure:	1.5 dB typical at 3V (L1 and L5)
Filter	Saw filter 30dB typical fo±50MHz 40dB typical fo±100MHz (fo=L1 and L5 band)
Supply Voltages:	DC = 3~5V
Current Consumption:	DC = 10±2.5mA at 3V / 27±2.5mA at 5V
Output Impedance:	50 Ω
Overall Performance: (antenna element, LNA & coax cable)	
Center Frequency:	1582.5±23.5MHz(L1),and 1176±12MHz(L5)
Gain:	30±2 dB typical at 3V (L1and L5) 30±2 dB typical at 5V (L1 and L5)
Noise Figure:	2.0 max.
Bandwidth:	±23.5MHz(L1), ±12MHz(L5)
VSWR:	2.0
Output Impedance:	50 Ω
Environmental	
Operating Temperature:	-40°C~ +85°C.
Storage Temperature:	-40°C~ +85°C.

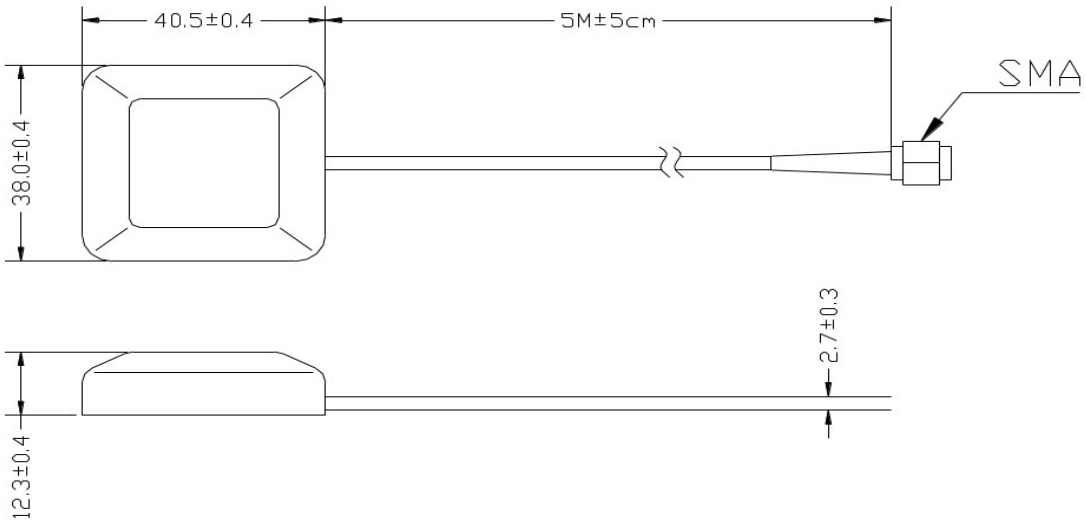
Relative Humidity:	95% non-condensing.
Water Resistance:	100% waterproof.

* This specification is subject to change without prior notice **Data Updated:** AUG.06, 2025

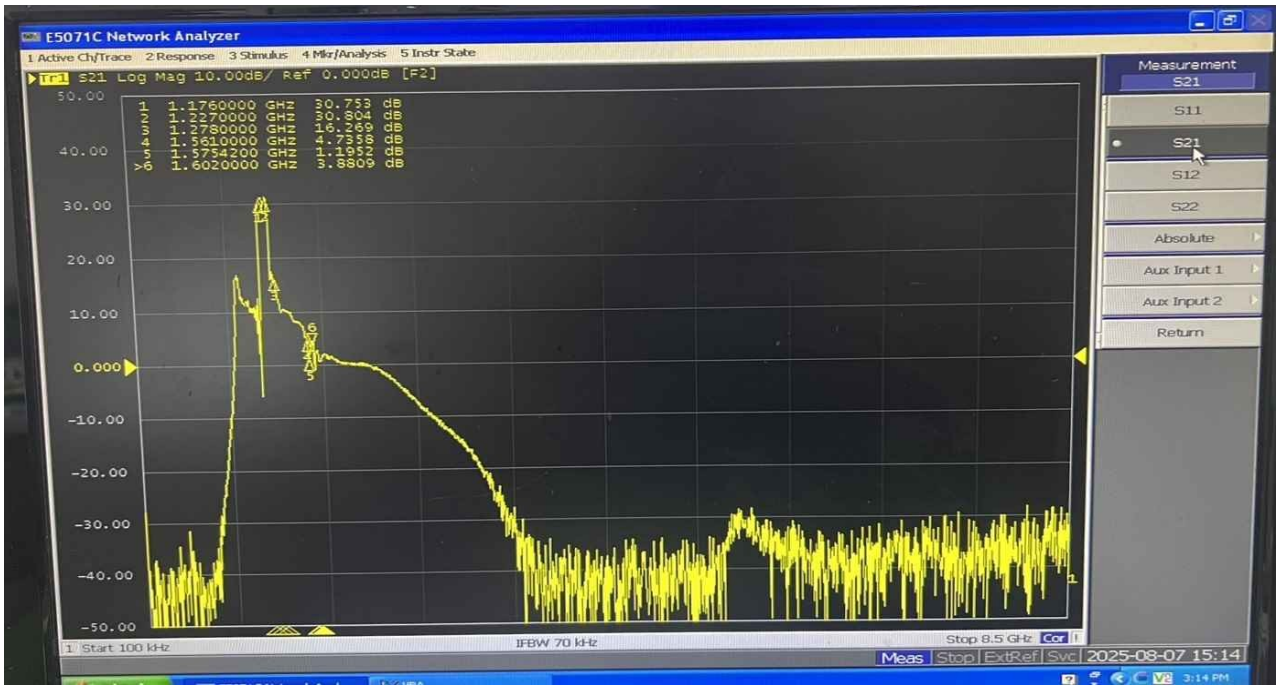
Note:1:Cable Loss=(-1.2dB/m)

Block diagram:

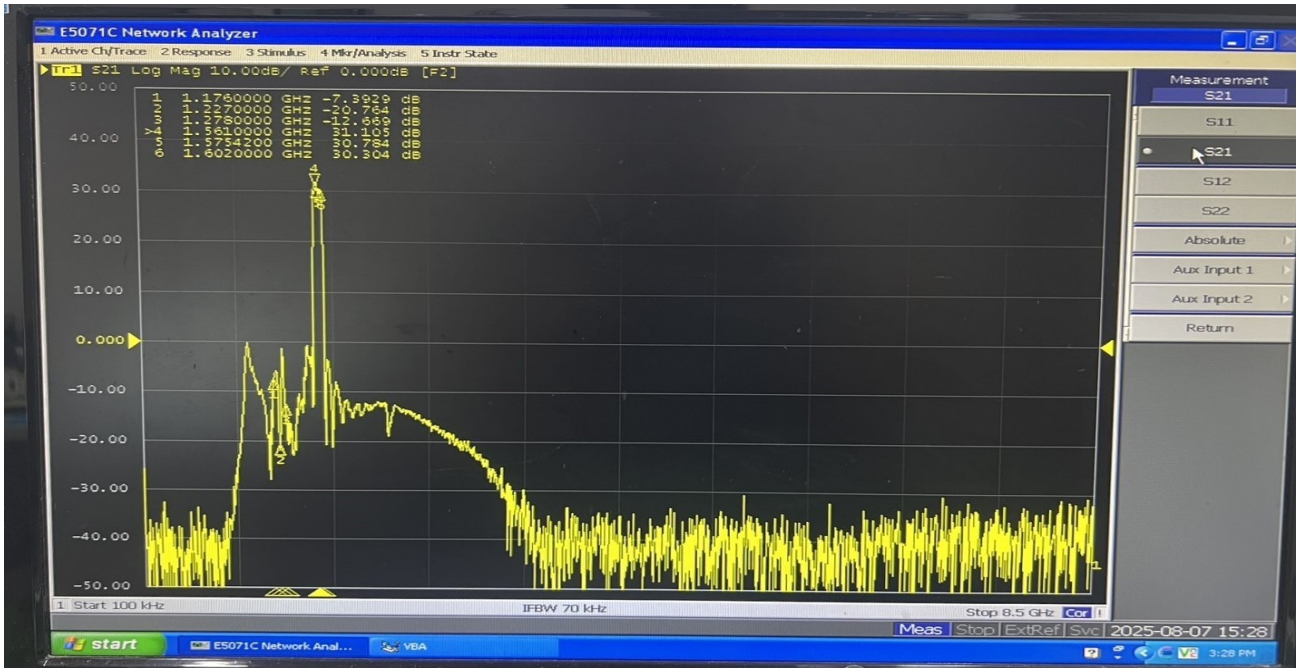




L5 S21:

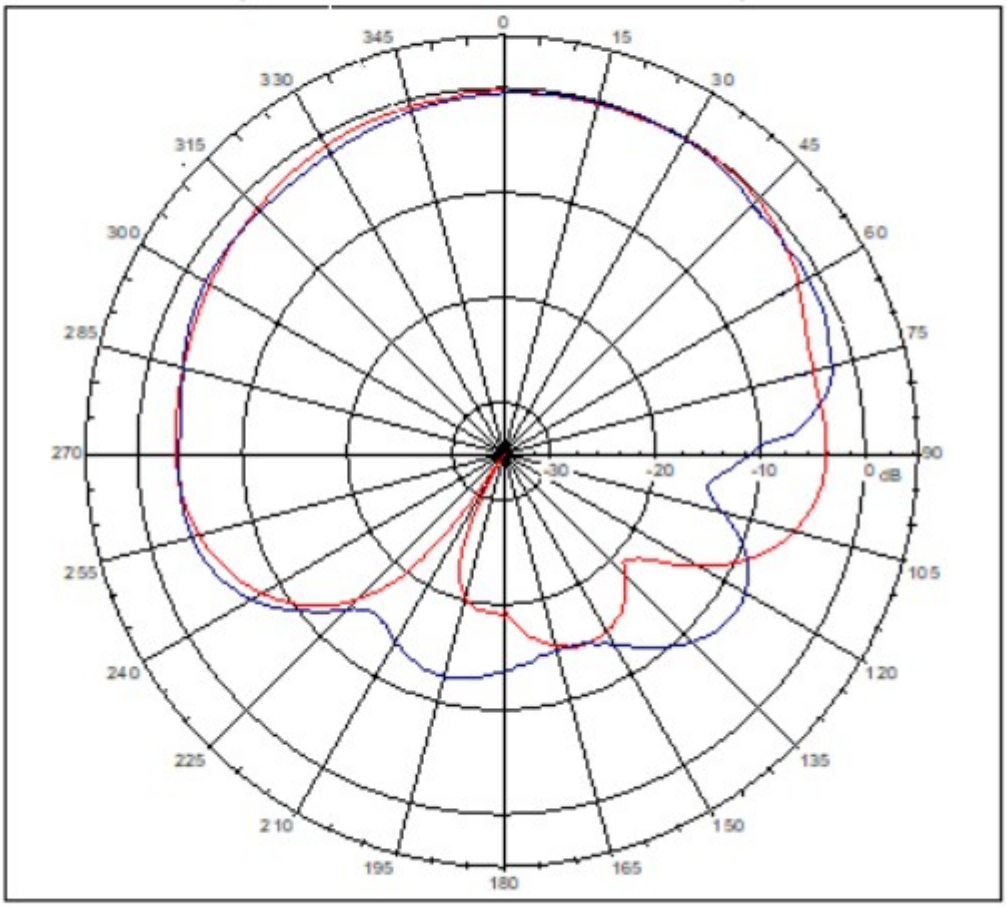

E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S21 Log Mag 10.00dB/ Ref 0.000dB [F2]
1 1.1760000 GHz 30.753 dB
2 1.3270000 GHz 30.804 dB
3 1.2780000 GHz 16.269 dB
4 1.5610000 GHz 4.7338 dB
5 1.5754200 GHz 1.1952 dB
>6 1.6020000 GHz 3.8809 dB
50.00
40.00
30.00
20.00
10.00
0.000
-10.00
-20.00
-30.00
-40.00
-50.00
1 Start 100 kHz
IFBW 70 kHz
Stop 8.5 GHz
Cor
Measurement
S21
S11
S21
S12
S22
Absolute
Aux Input 1
Aux Input 2
Return
Meas Stop ExtRef Svc 2025-08-07 15:14
3:14 PM

L1 S21:


E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S21 Log Mag 10.00dB/ Ref 0.000dB [F2]
1 1.1760000 GHz -7.3929 dB
2 1.3270000 GHz -20.764 dB
3 1.2780000 GHz -12.669 dB
>4 1.5610000 GHz 31.105 dB
5 1.5754200 GHz 30.784 dB
6 1.6020000 GHz 30.304 dB
50.00
40.00
30.00
20.00
10.00
0.000
-10.00
-20.00
-30.00
-40.00
-50.00
1 Start 100 kHz
IFBW 70 kHz
Stop 8.5 GHz
Cor
Measurement
S21
S11
S21
S12
S22
Absolute
Aux Input 1
Aux Input 2
Return
Meas Stop ExtRef Svc 2025-08-07 15:28
start
E5071C Network Anal...
VBA
3:28 PM

Far-field amplitude of IA002.nsi

1575.42MHz 1176MHz



PS: Total Gain = Passive Pattern Gain + LNA Gain - cable loss (1.1dB/m)