

GNSS Marine Small GNSS Antenna

L1 / L5 Antenna

MODEL: MA-650R

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



- Low noise figure
- Fully weather proof.
- Ultra-high Sensitivity
- Compact construction
- Excellent temperature stability

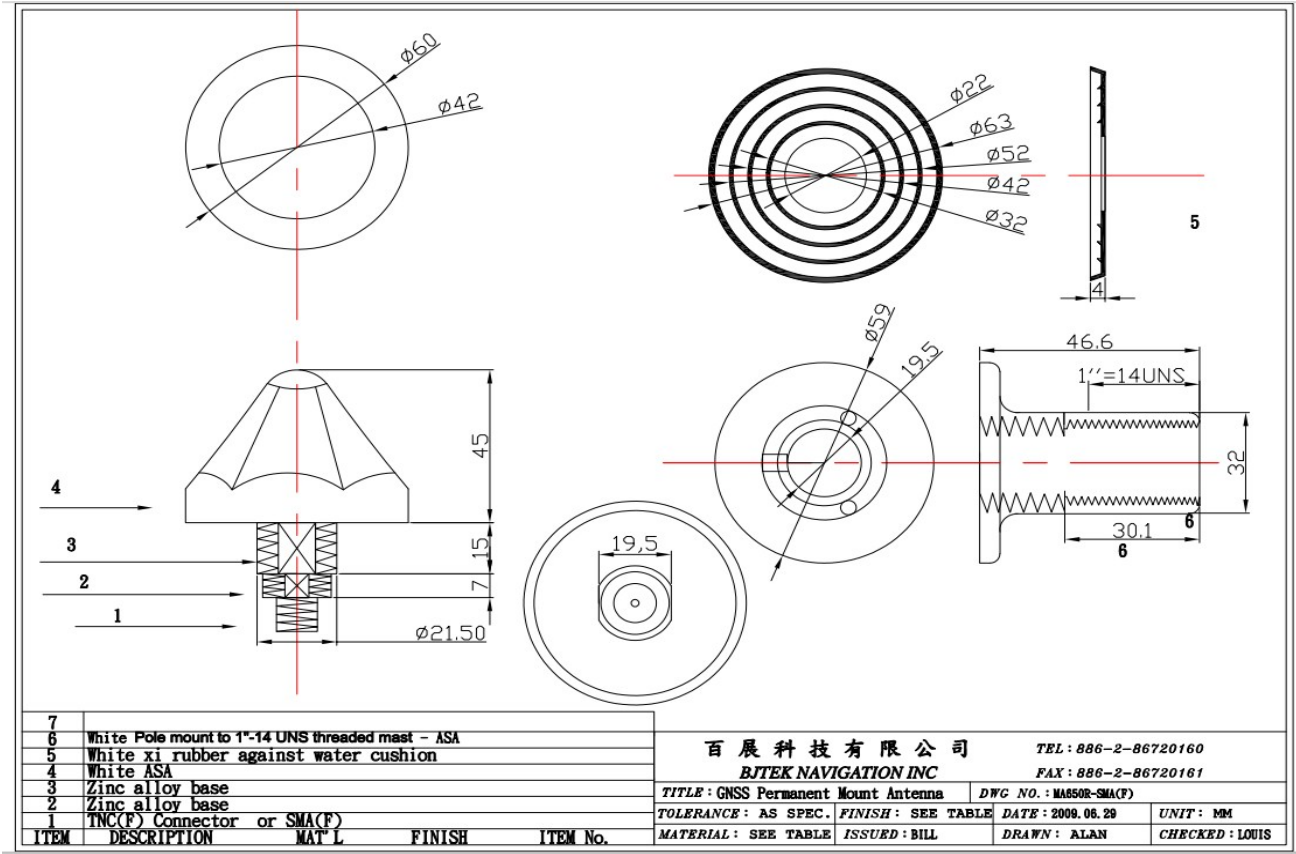
Specifications:

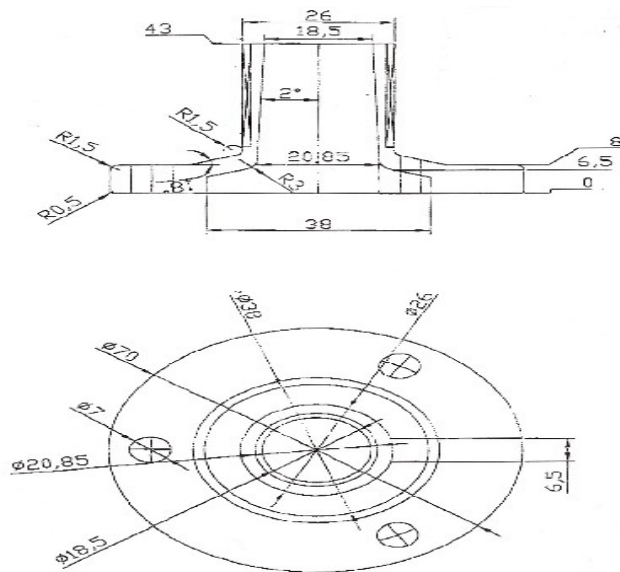
PHYSICAL CONDITION	
Constructions:	ASA + Zinc Alloy
Dimensions:	60mm(Dia.) x 95mm(H)
Weight:	175grams (w/o cable & connector).
Color:	white
Mounting:	Bulkhead mount with 0.8 inch threaded wing nut (standard accessory).
Mounting Adapters	Pole mount to 1"-14 UNS threaded mast
Base mounting	FB1 1"-14 UNS
Cable & Connector	
RF cable:	SMA(M) +10 meter RG58 +TNC(M) (standard) other length (optional)
Pulling strength:	6 Kg @ 5sec. molded plastic on connector end for strain relief.
Connector	SMA(F) or TNC(F)
Antenna Element	
Center Frequency:	1582.5±23.5MHz(L1),and1176±12MHz(L5)

Polarization:	R.H.C.P. (Right Handed Circular Polarization).
Bandwidth	$\pm 23.5\text{MHz(L1)}$, $\pm 12\text{MHz(L5)}$
Gain @ 10° Elevation:	-4dBic typical @ L1; -0.5dBic typical @ L5
Gain at Zenith	0 dBic typical @ L1; 1.5 dBic typical @ L5
Output VSWR:	1.5 max
Output Impedance:	50 Ω
Low Noise Amplifier	
Power Gain:	30 \pm 2 dB typical at 3V (L1and L5) 30 \pm 2 dB typical at 5V (L1and L5)
ESD (TVS)	$\pm 8\text{kv}$ (contact)
Noise Figure:	1.5 dB typical at 3V (L1 and L5)
Filter	Saw filter 30dB typical fo \pm 50MHz 40dB typical fo \pm 100MHz (fo=L1,L2 and L5 band)
Supply Voltages:	DC = 3~5V
Current Consumption:	DC = 10 \pm 2.5mA at 3V / 27 \pm 2.5mA at 5V
Output Impedance:	50 Ω
Overall Performance: (antenna element, LNA & coax cable)	
Center Frequency:	1582.5 \pm 23.5MHz(L1), and 1176 \pm 12MHz(L5)
Gain:	30 \pm 2 dB typical at 3V (L1and L5) 30 \pm 2 dB typical at 5V (L1and L5)
Noise Figure:	2.0 max.
Bandwidth:	$\pm 23.5\text{MHz(L1)}$, $\pm 12\text{MHz(L5)}$
VSWR:	2.0 max.
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.

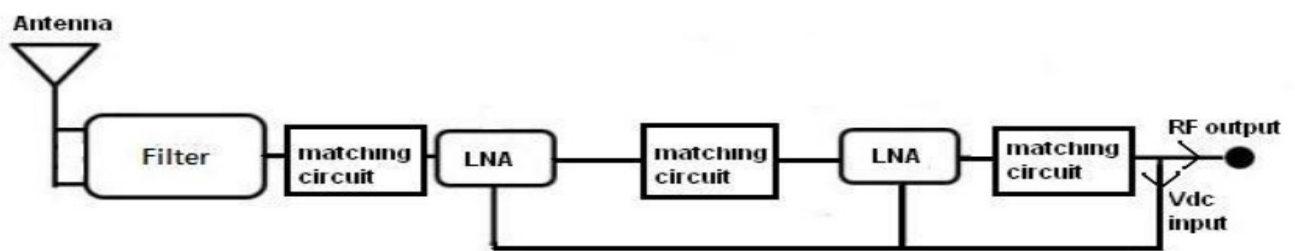
* This specification is subject to change without prior notice

Data Updated: AUG.06, 2025

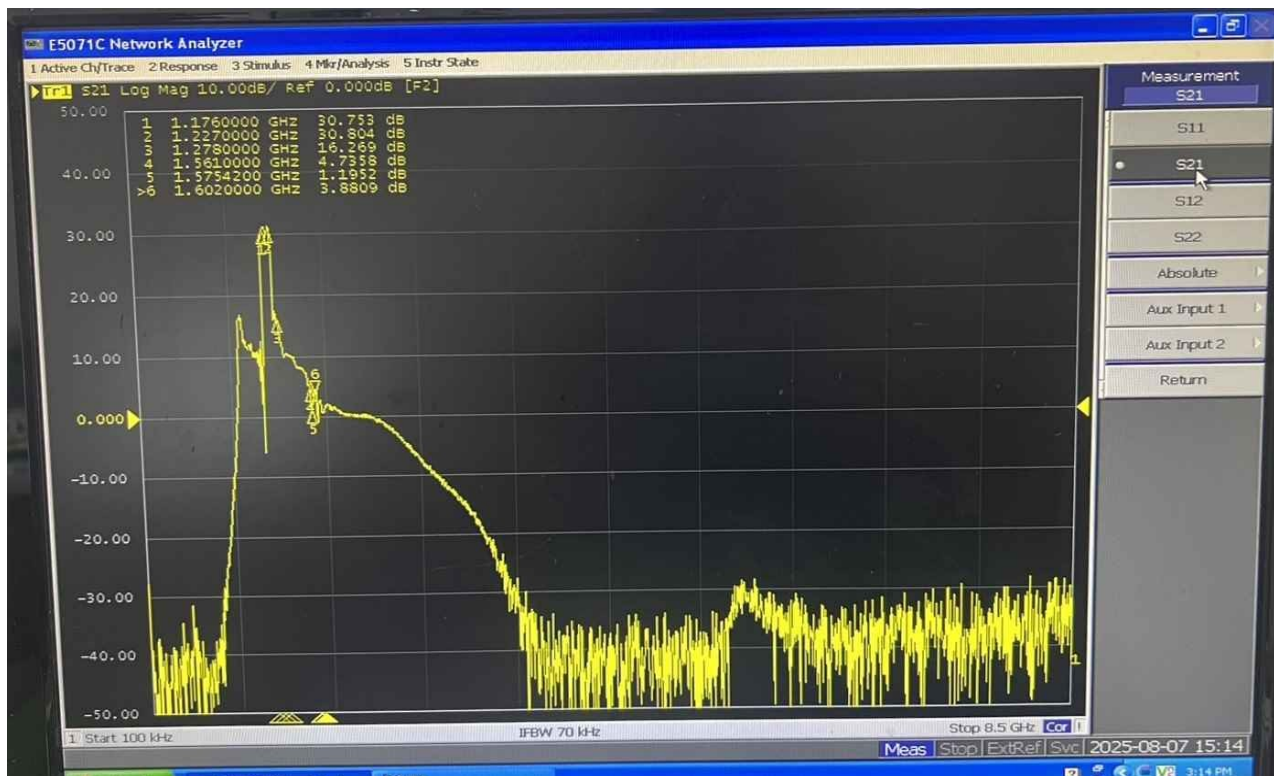




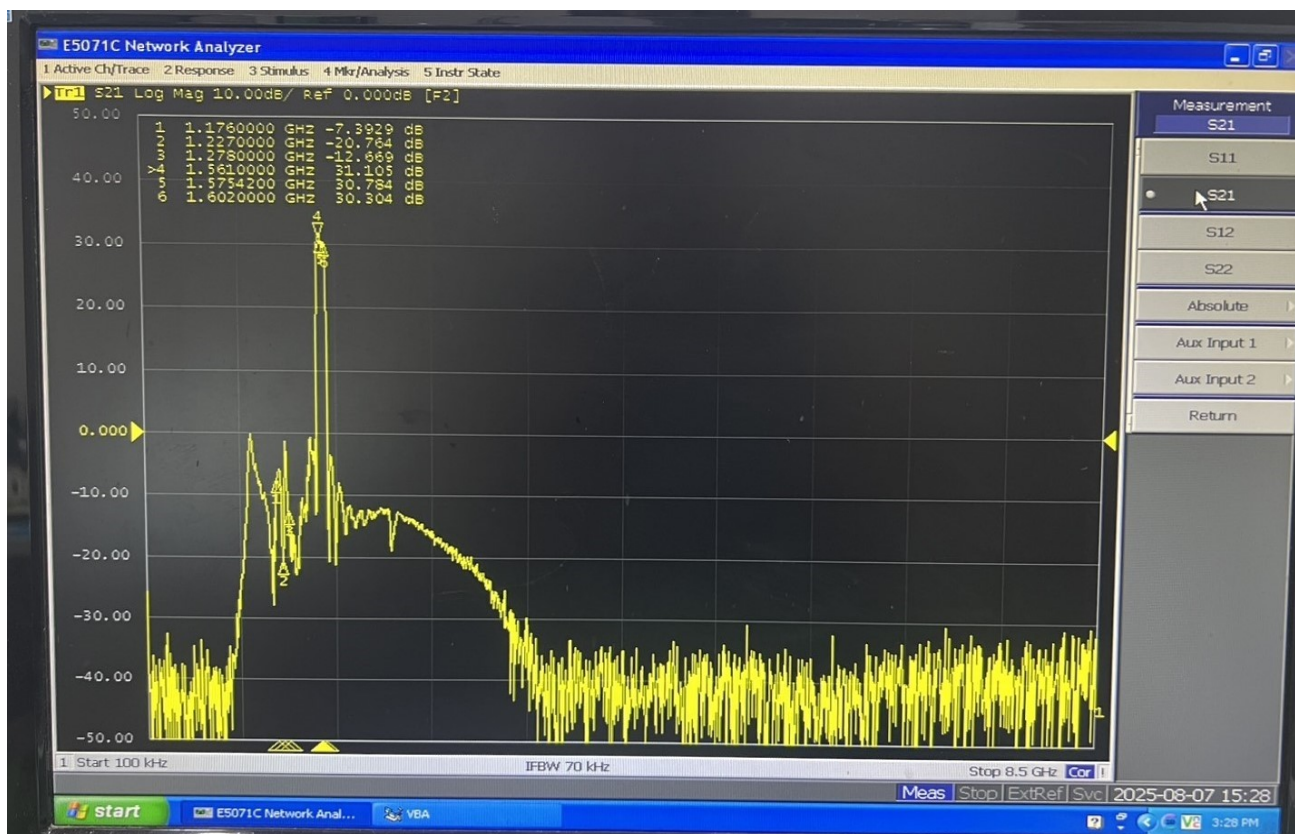
Block diagram:



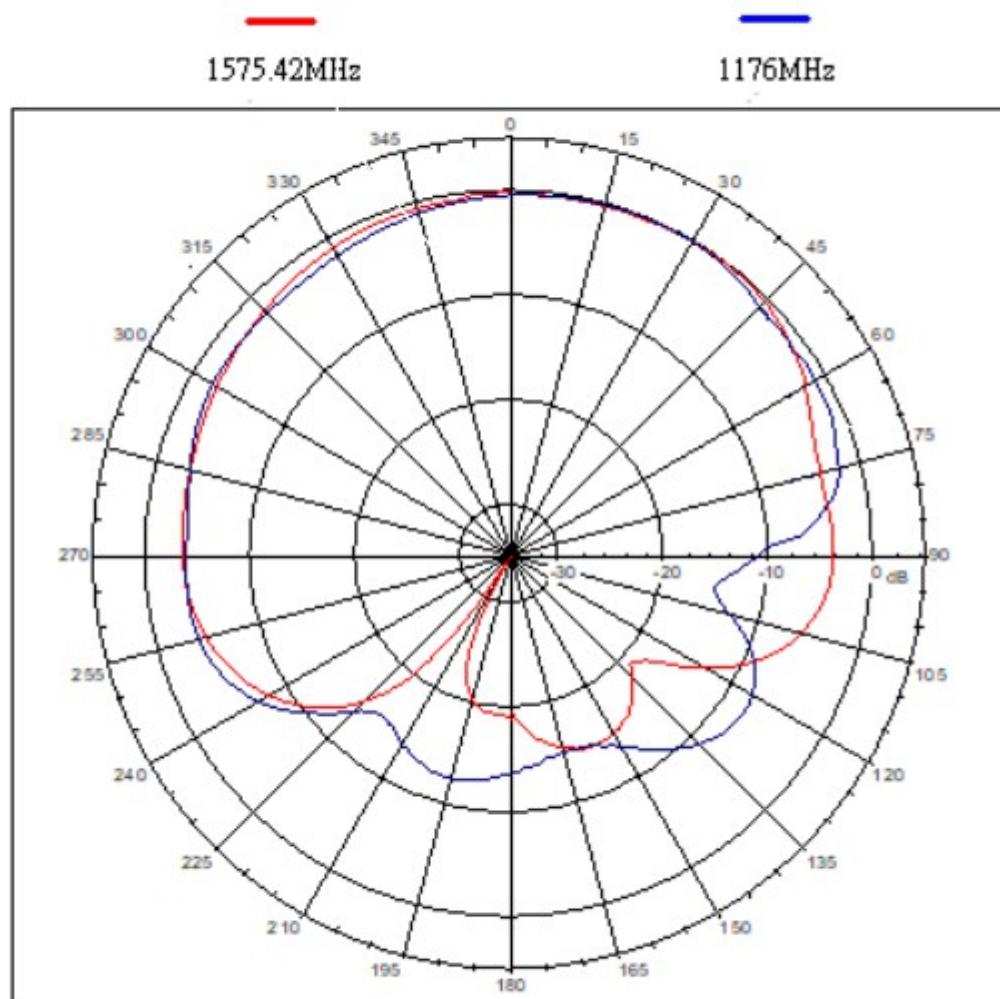
L5 S21:



L1 S21:



Far-field amplitude of IA002.nsi



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