

SWB005-1

PN: SW20031EB56-1

Features:

- Antenna for 4G&3G&2G, 2.4G&5GWiFi, GPS&GLONASS&GALILEO&BEIDOU
- Maintains high performance on device
- IP67 rated enclosure
- 3 connecting wires
- High gain
- Impedance 50 Ohm

Applications:

- Access Points
- Game Consoles
- Set-Top-Box
- Network Devices
- MIMO Systems
- Others



1. Electrical Specification	3
2. Mechanical and Environmental Specifications	5
3. Antenna Parameters	6
4. Antenna Drawing	14
Changelog	15

Sunnyway RF reserves the right to change specifications and product descriptions.

Sunnyway RF reserves all rights to this document and the information contained herein. reproduction, use or disclosure to third parties without express permission is strictly prohibited.

1. Electrical Specification

Cable 1 Parameters

Standards	4G & 3G&2G	
Frequency range (MHz)	690~960	1710~2690
Peak Gain (dBi)	-1.3~1.6	0.5~2.6
Average Gain (dB)	-3.7~-2.1	-3.4~-2.0
VSWR	<3.7	<2.0
Return Loss	<-4.0	<-9.0
Efficiency (%)	42.8~61.2%	46.2~63.5%
Polarization mode	Linear	
Radiation pattern	Omni-Directional	
Output impedance (Ω)	50	
Max. Input Power(W)	5	

Cable 2 Parameters

Standards	2.4G&5G WiFi	
Frequency range (MHz)	2400~2500	5100~5900
Peak Gain (dBi)	3.1~4.4	2.7~5.2
Average Gain (dB)	-2.8~-2.3	-3.8~-1.3
VSWR	<2.3	<2.5
Return Loss	<-7.0	<-7.0
Efficiency (%)	52.5~58.7%	42.1~74.6%

Polarization mode	Linear
Radiation pattern	Omni-Directional
Output impedance (Ω)	50
Max. Input Power(W)	5

Cable 3 Parameters

Standards	GPS&GLONASS&GALILEO&BEIDOU		
Band (MHz)	1559	1575.42	1602
Peak Gain (dBi)	3.24	1.92	2.65
Average Gain (dB)	-1.88	-2.71	-2.36
VSWR	2.40	1.77	1.34
Return Loss	-7.69	-11.08	-16.61
Efficiency (%)	64.8%	53.6%	58.1%
Impedance(Ω)	50	50	50
Polarization	RHCP		
Radiation Pattern	Hemispherical		
Saw Filter	Pre-Filter		
Active Gain (dB)	28		
Noise-Figure(dB)	1dB(+25°C±10°C)		
Supply Current(mA)	15		
Supply Voltage(V)	1.8~3.6		

2. Mechanical and Environmental Specifications

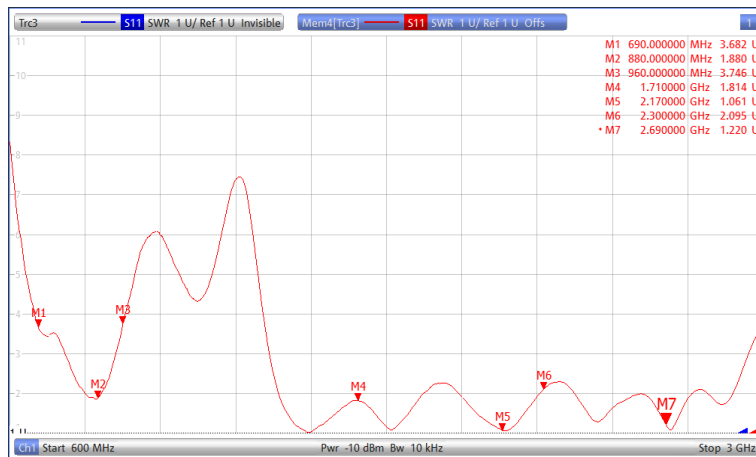
Mounting Type	Screw lock
Connector Type	SMA
IP Rate	IP67
Antenna size(mm)	Φ99.96 x 105.8 (H)
Cable length(mm)	500-RG174 (can be customized)
Operating Temperature (°C)	- 40 °C ~ + 85 °C
Storage Temperature(°C)	- 40 °C ~ + 85 °C

3. Antenna Parameters

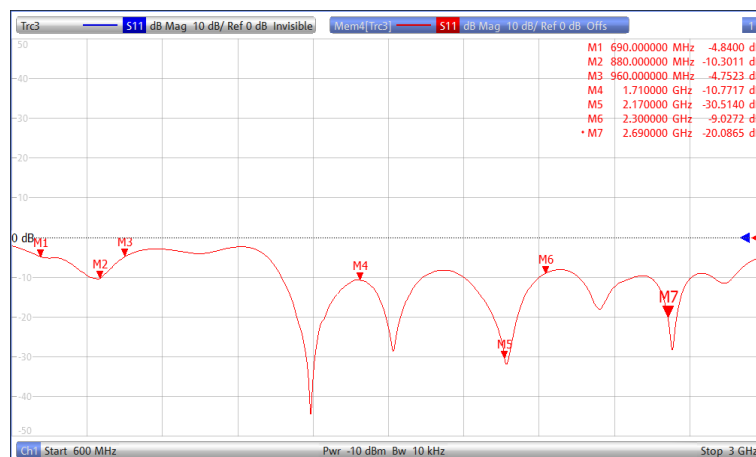
3.1 Cable 1: CELLULAR/LTE

FRE (MHz)	690	880	960	1710	2170	2300	2690
VSWR	3.68	1.88	3.74	1.81	1.06	2.09	1.22
Return Loss	-4.84	-10.30	-4.75	-10.77	-30.51	-9.02	-20.08
Eff (%)	42.84	50.21	54	54.22	47.58	51.66	54.79
Average Gain(dB)	-3.68	-2.99	-2.68	-2.66	-3.23	-2.87	-2.61

3.1.1 VSWR

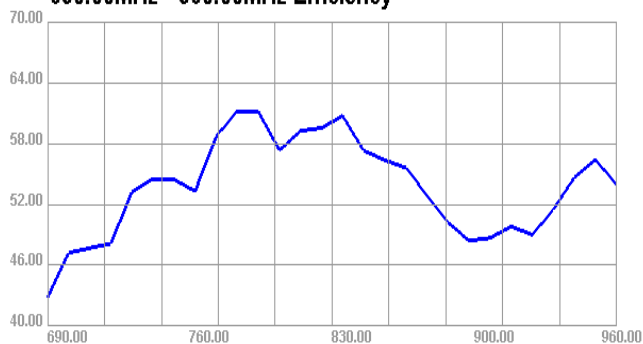


3.1.2 Return Loss

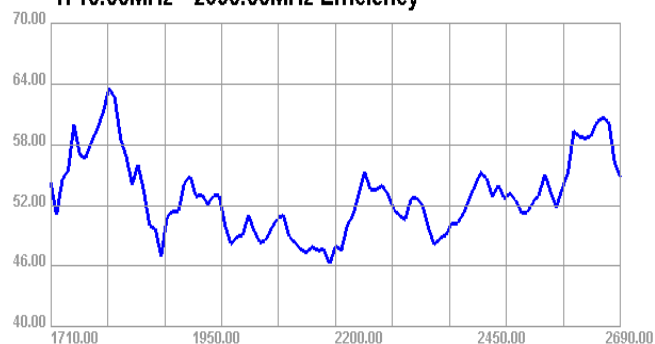


3.1.3 Efficiency

690.00MHz - 960.00MHz Efficiency

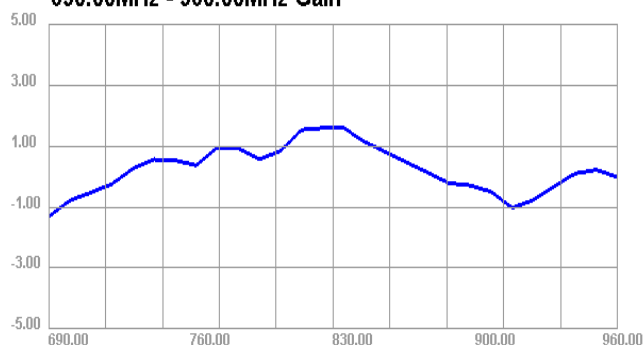


1710.00MHz - 2690.00MHz Efficiency



3.1.4 Gain

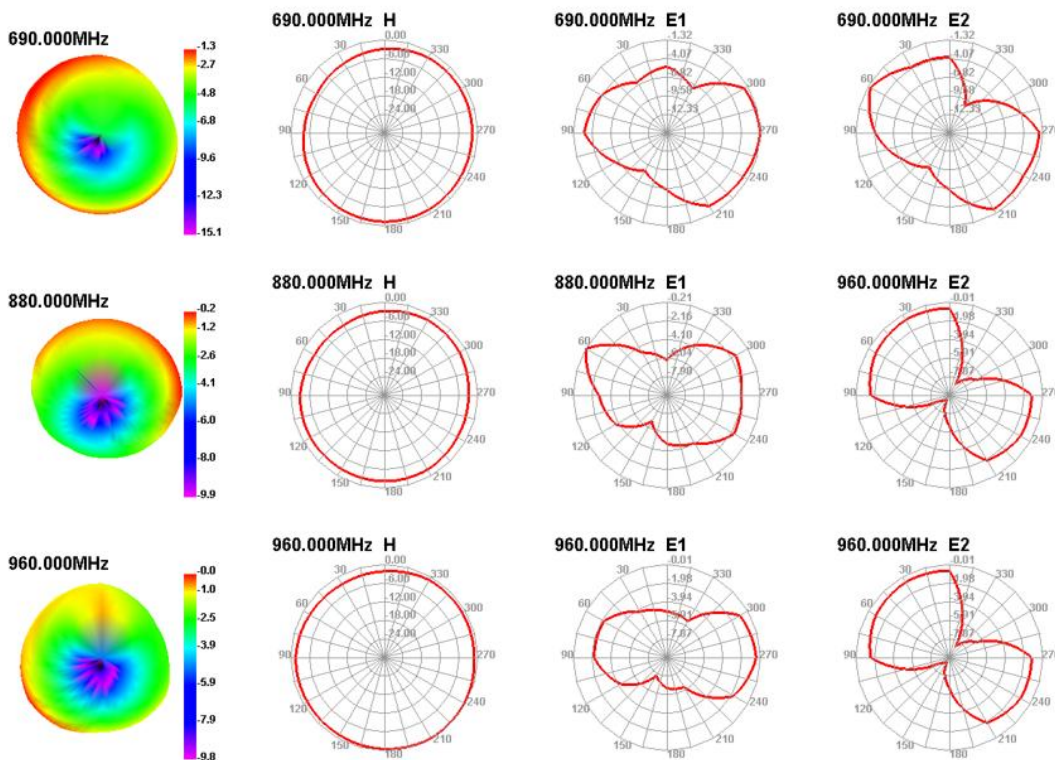
690.00MHz - 960.00MHz Gain

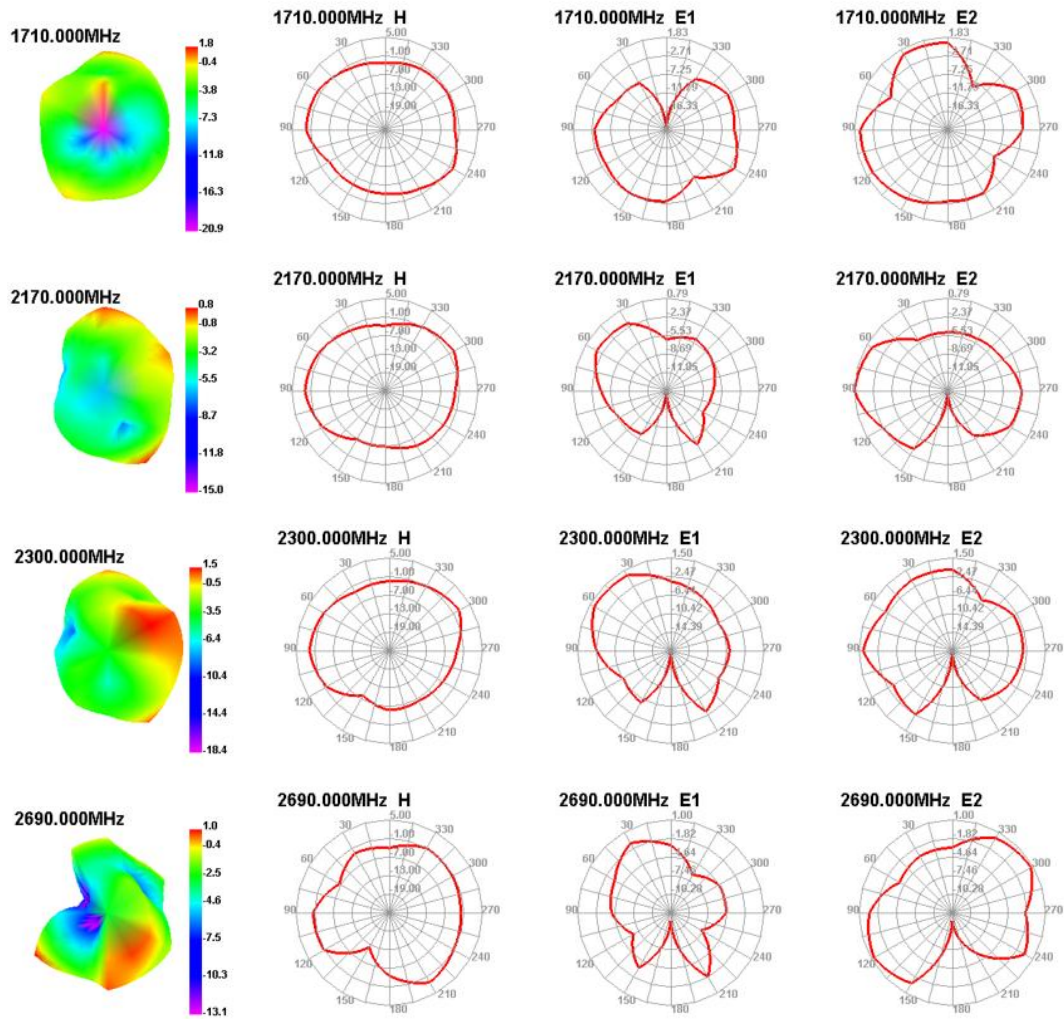


1710.00MHz - 2690.00MHz Gain



3.1.5 Directional pattern

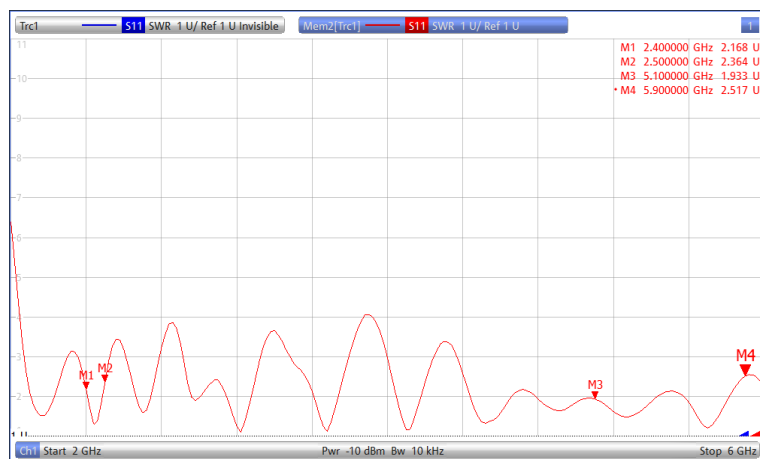




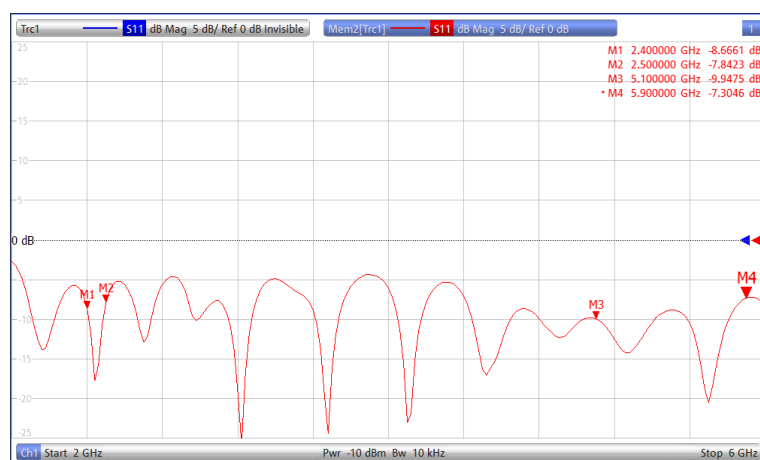
3.2 Cable 2: WiFi

FRE (MHz)	2400	2500	5100	5900
VSWR	2.16	2.36	1.93	2.51
Return Loss	-8.66	-7.84	-9.94	-7.30
Eff (%)	57.2	52.6	64.7	57.3
Average Gain(dB)	-2.43	-2.79	-1.89	-2.42

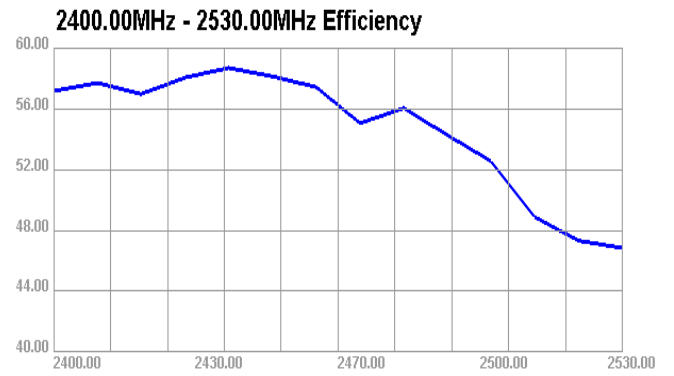
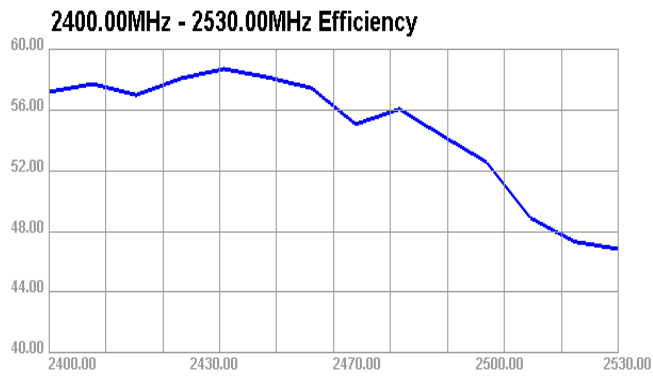
3.2.1 VSWR



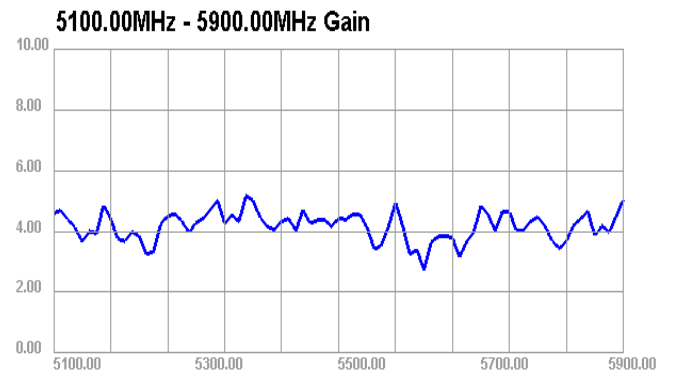
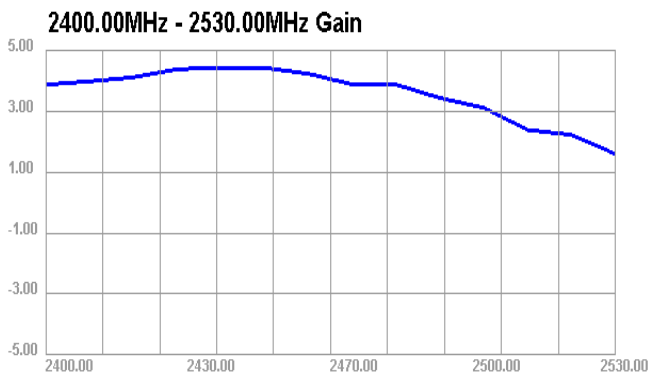
3.2.2 Return Loss



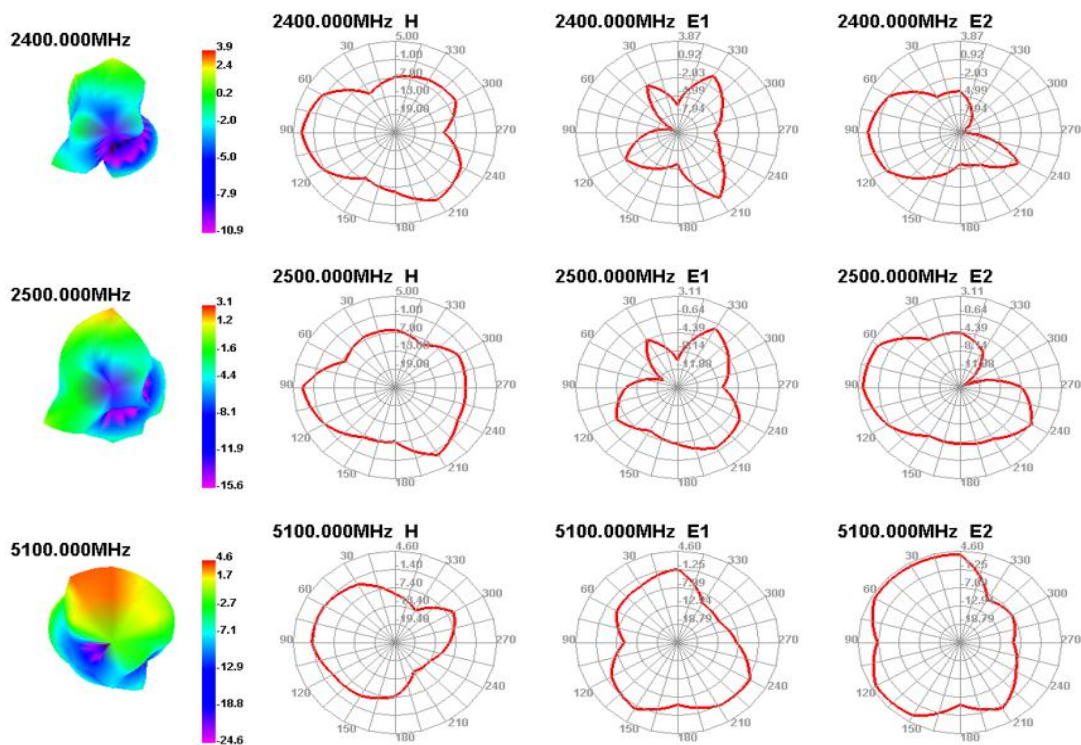
3.2.3 Efficiency

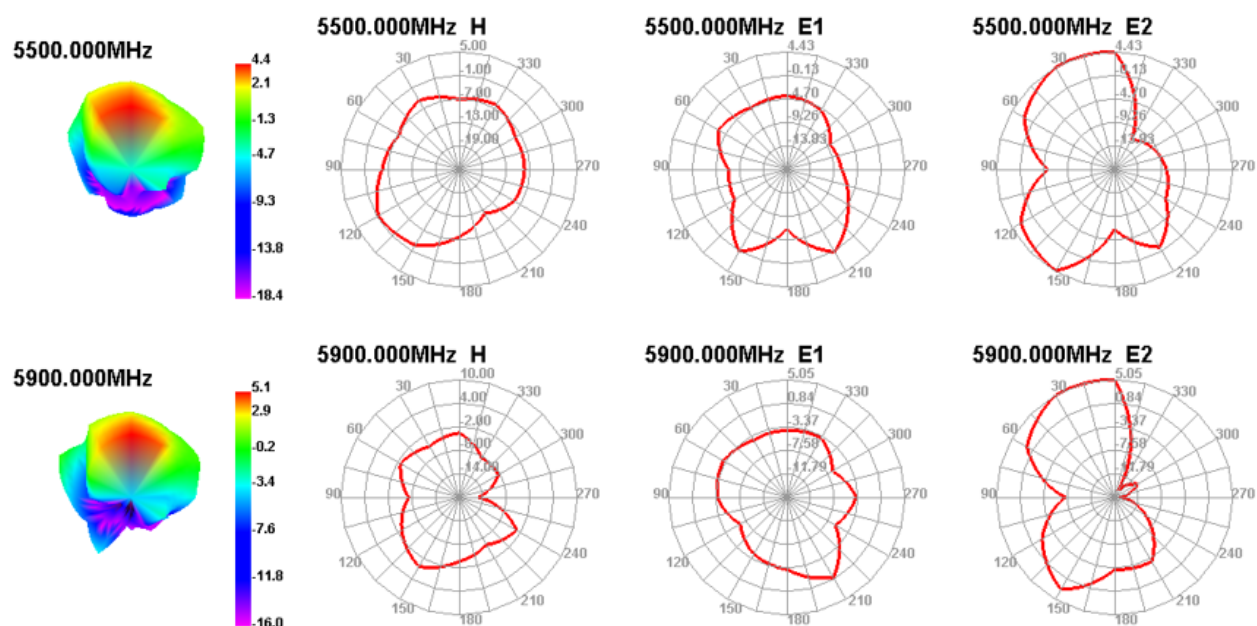


3.2.4 Gain



3.2.5 Directional pattern





3.2.6 ISOLATION FOR CABLES 1 AND 2



3.3 Cable 3: GNSS

FRE (MHz)	1559	1575.42	1602
VSWR	2.40	1.77	1.34
Return Loss	-7.69	-11.08	-16.61
Eff (%)	64.8	53.6	58.1
Average Gain(dB)	-1.88	-2.71	-2.36

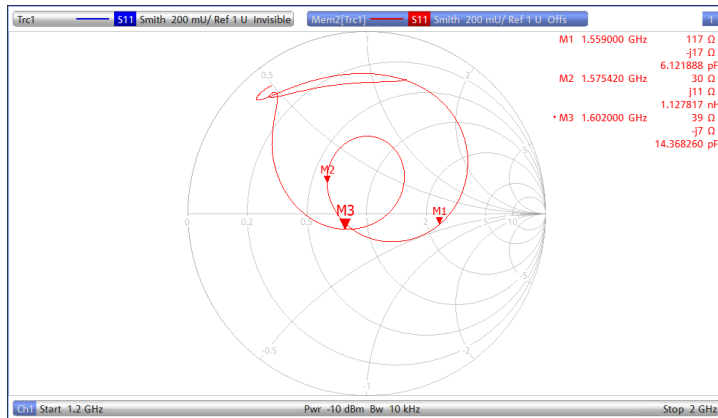
3.3.1 VSWR



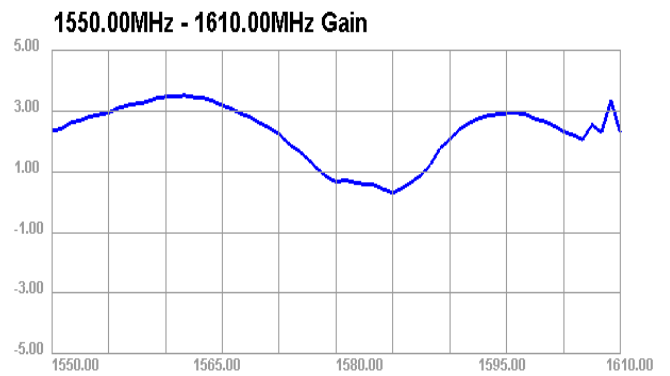
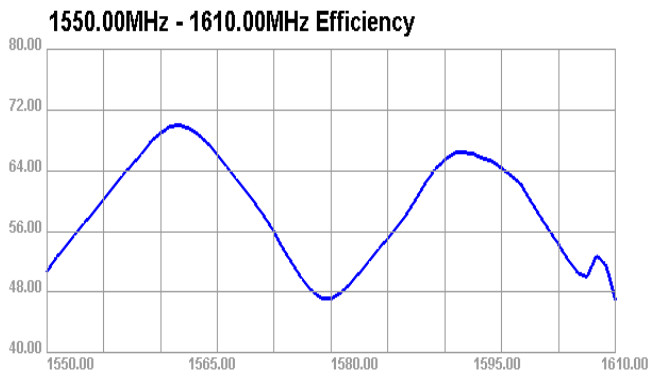
3.3.2 Return Loss



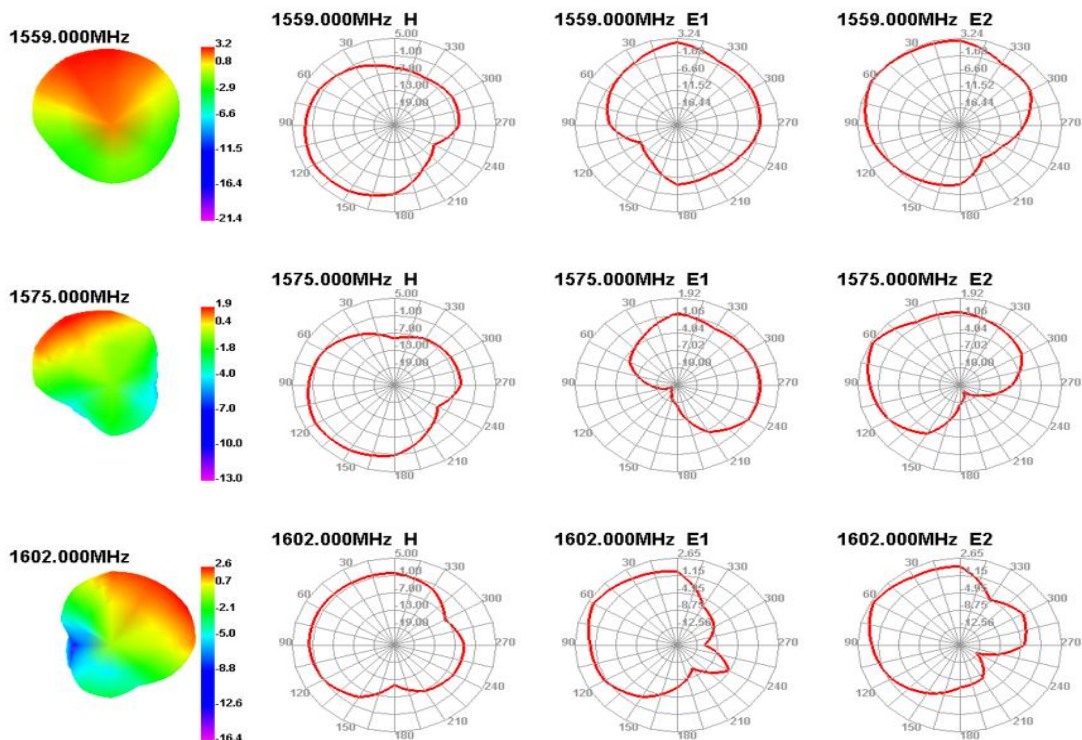
3.3.3 Smith



3.3.4 Efficiency and Gain

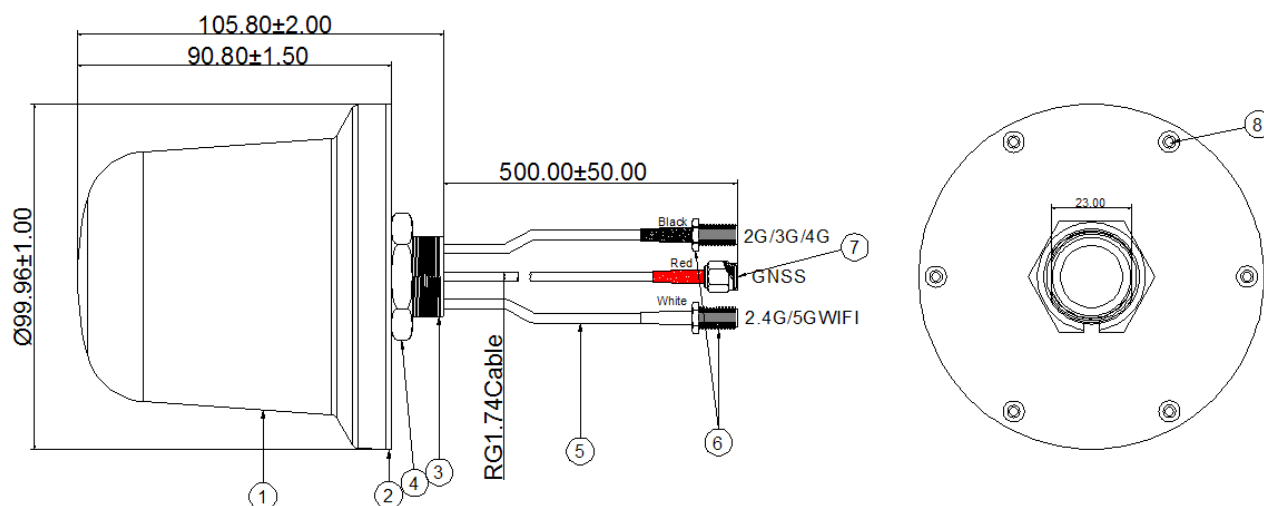


3.3.5 Directional pattern



4. Antenna Drawing

Unit: mm



Series	Component name	Material	Color	Quantity
1	Upper Shell	SABIC PC 1414	black	1
2	Lower Shell	SABIC PC 1414	black	1
3	Screw	brass	Gold	1
4	Nuts	brass	Gold	1
5	Cable	RG174	black	3
6	SMA Female	brass	Gold	2
7	SMA Male	brass	Gold	1
8	Screw	M3x5	black	6

Note: Cable Loss

20℃时衰减（允许误差15%） Attenuation constant at 20℃（Permissible error 15%）	200MHz	dB/100m	39
	400MHz	dB/100m	58
	900MHz	dB/100m	90
	1500MHz	dB/100m	117
	1800MHz	dB/100m	128
	2000MHz	dB/100m	139
	2500MHz	dB/100m	156

Changelog for the datasheet			
Revision	Date	Author:	Notes:
-	2020-02-13	Kevin LV	Initial Datasheet Release
V0	2025-06-16	Kevin LV	Update text formatting, titles, fonts, etc