SUNNYWAY

SWB005

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Sunnyway Technology

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1. Electrical Specifications

Cable 1 Parameters

Tested with 20cm cable length - RG174 with C20N

Standards	4G &3G&2G	
Frequency range (MHz)	690~960MHz	1710~2690MHz
Peak Gain (dBi)	-1.3~1.6dBi	0.5~2.6dBi
Average Gain (dB)	-3.7~-2.1dB	-3.4~-2dB
VSWR	<3.7	<2.0
Return Loss	<-4.0	<-9.0
Efficiency (%)	42.8~61.2%	46.2~63.5%
Polarization mode	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50
Max. Input Power(W)	25	25

Cable 2 Parameters

Tested with 20cm cable length - RG174 with C20N

Standards	2.4G&5G WIFI	
Frequency range (MHz)	2400MHz~2500MHz	5100~5900MHz
Peak Gain (dBi)	3.1~4.4dBi	2.7~5.2dBi
Average Gain (dB)	-2.8~-2.3dB	-3.8~-1.3dB
VSWR	<2.3	<2.5

Return Loss	<-7.0	<-7.0
Efficiency (%)	52.5~58.7%	42.1~74.6%
Polarization mode	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50
Max. Input Power(W)	25	25

Cable 3 Parameters

Tested with 20cm cable length - RG174 with C20N

Standards	**GPS&GLONASS&GALILEO&BEIDOU**		
Band (MHz)	1559MHz	1575.42MHz	1602MHz
Peak Gain (dBi)	3.24dBi	1.92dBi	2.65dBi
Average Gain (dB)	-1.88dB	-2.71dB	-2.36dB
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	RHCP	RHCP
Radiation Pattern	Hemispherical	Hemispherical	Hemispherical
Saw Filter	Pre-Filter	Pre-Filter	Pre-Filter
Active Gain (dB)	28dB	28dB	28dB
Noise-Figure(dB)	1dB(+25°C±10°C)	1dB(+25°C±10°C)	1dB(+25°C±10°C)

Supply Current(mA)	15mA	15mA	15mA
Supply Voltage(V)	1.5v-5.5v	1.5v-5.5v	1.5v-5.5v

2. Mechanical and Environmental Specification

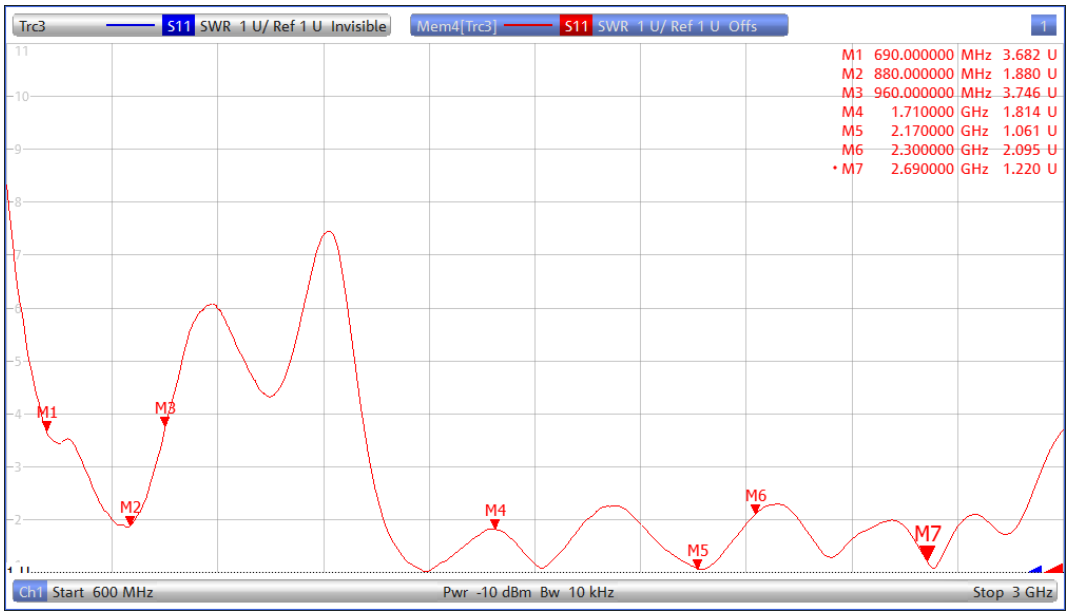
Mounting Type	**Screw lock**
Connector Type	RG174+SMA (M)
Antenna size(mm)	99.96 (φ) x 105.8 (H) x 3000 (Line length)
Material	External
Cable length(mm)	3000 (can be customized)
Operating Temperature (˚C)	- 40 ˚C ~ + 85 ˚C
Storage Temperature(˚C)	- 40 ˚C ~ + 85 ˚C

3. Antenna parameters

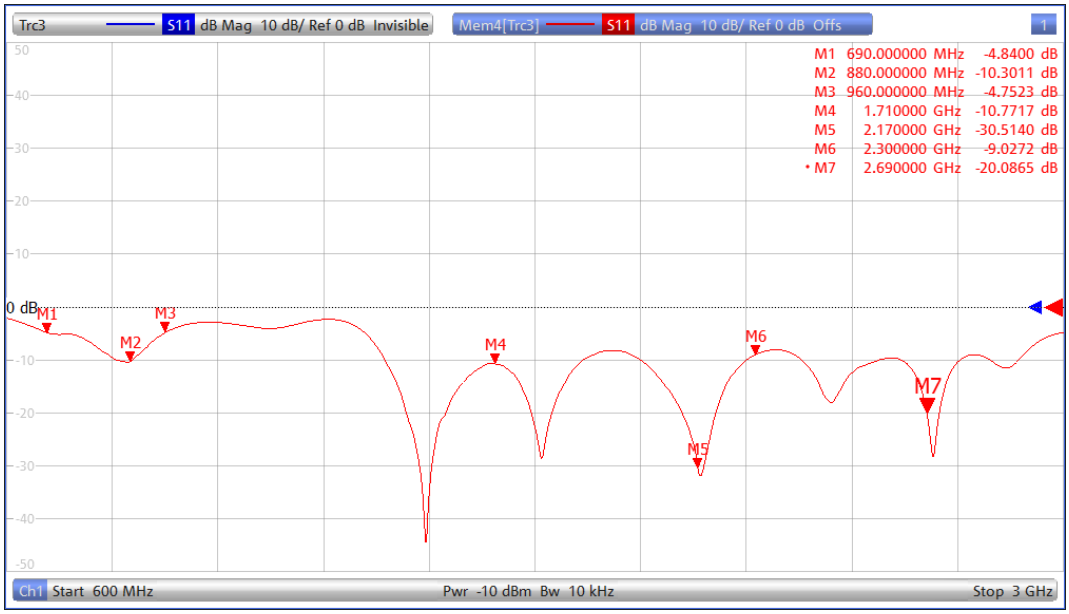
3.1 Cable 1: CELLULAR/LTE

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

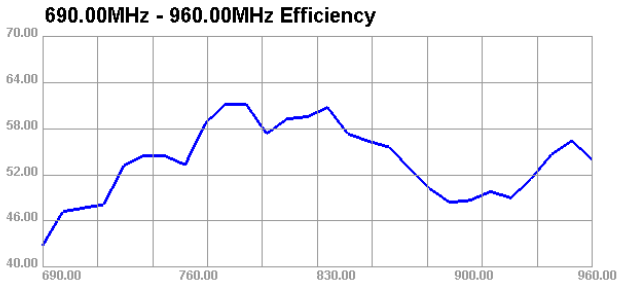
3.1.1 VSWR

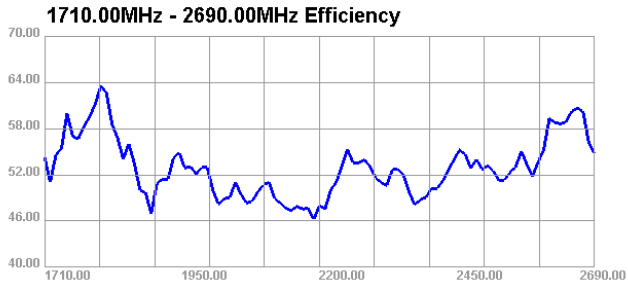


3.1.2 Return Loss

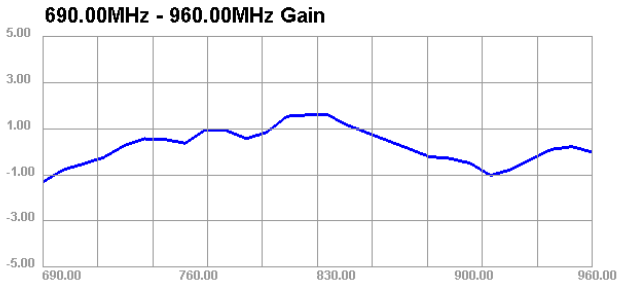


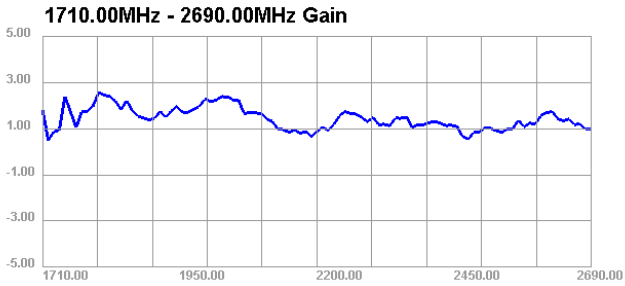
3.1.3 Efficiency



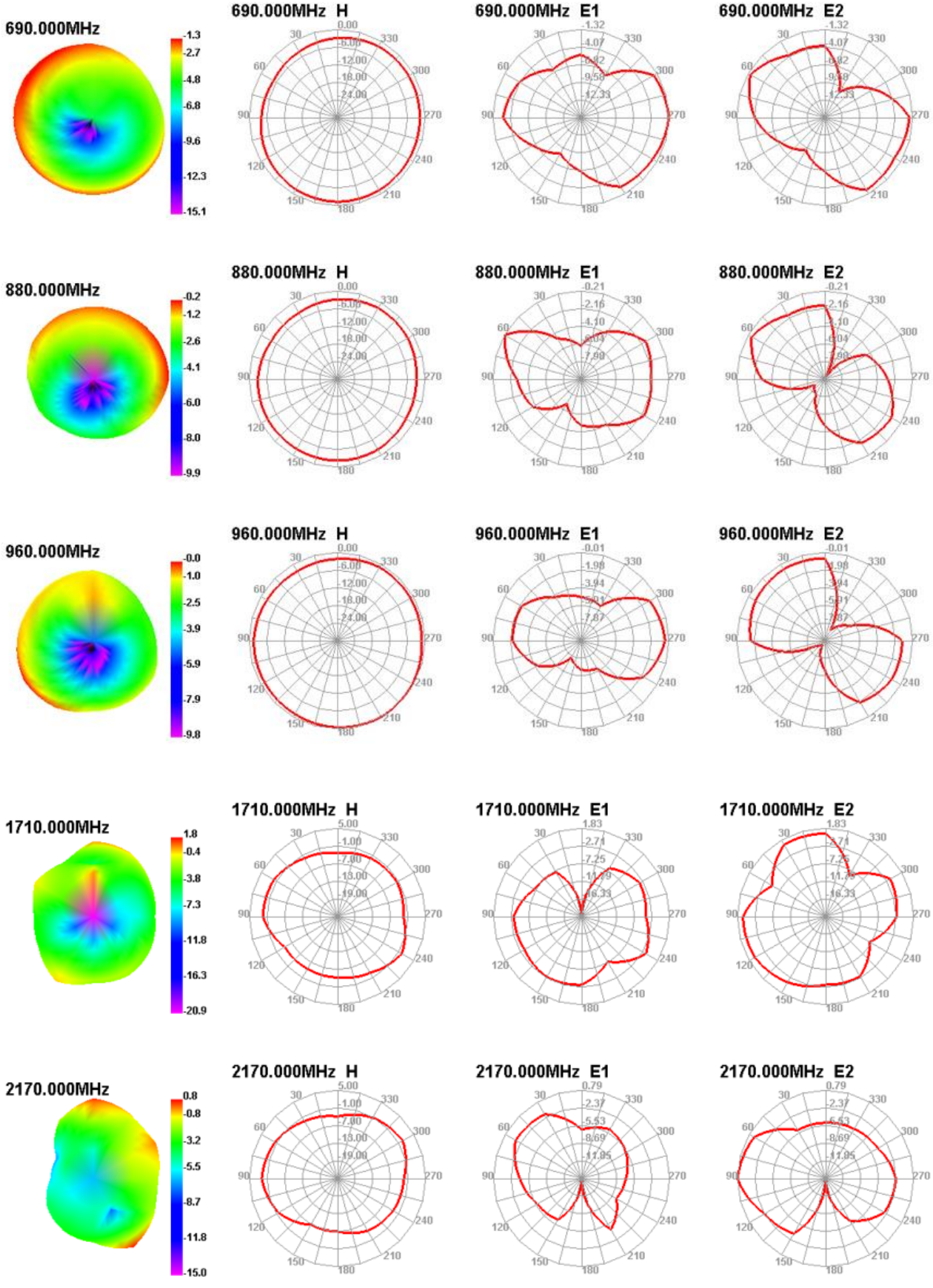


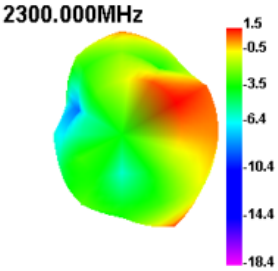
3.1.4 Gain

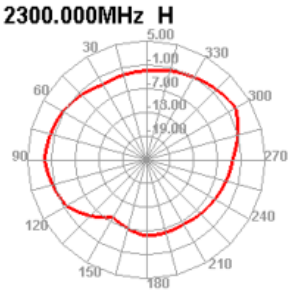


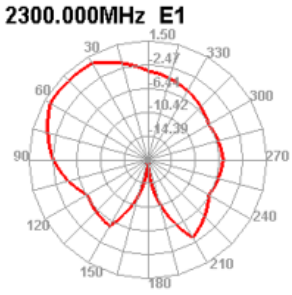


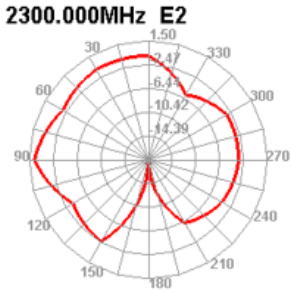
3.1.5 Directional pattern

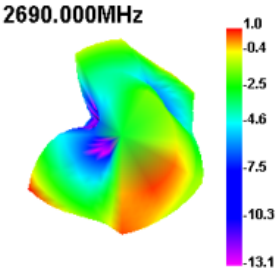


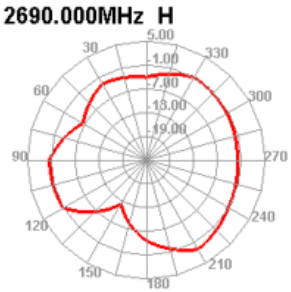

2300.000MHz
1.5
-0.5
-3.5
-6.4
-10.4
-14.4
-18.4

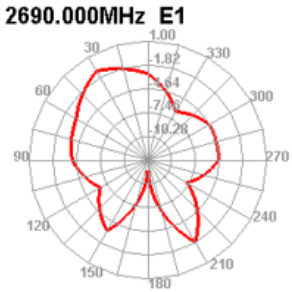

2300.000MHz H
5.00
1.00
-7.00
-13.00
-19.00

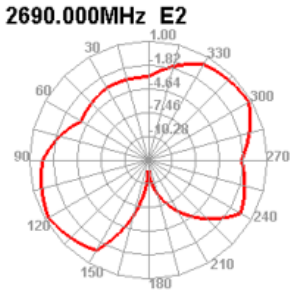

2300.000MHz E1
1.50
-2.47
-6.42
-10.42
-14.39


2300.000MHz E2
1.50
-2.47
-6.42
-10.42
-14.39


2690.000MHz
1.0
-0.4
-2.5
-4.6
-7.5
-10.3
-13.1


2690.000MHz H
5.00
1.00
-7.00
-13.00
-19.00

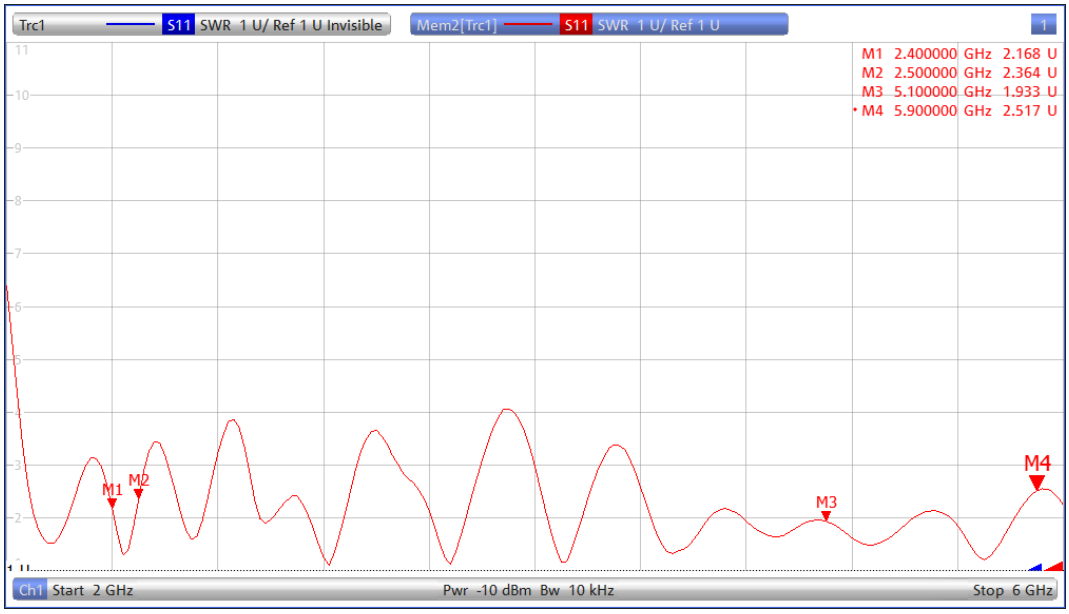

2690.000MHz E1
1.00
-1.82
-4.64
-7.46
-10.28


2690.000MHz E2
1.00
-1.82
-4.64
-7.46
-10.28

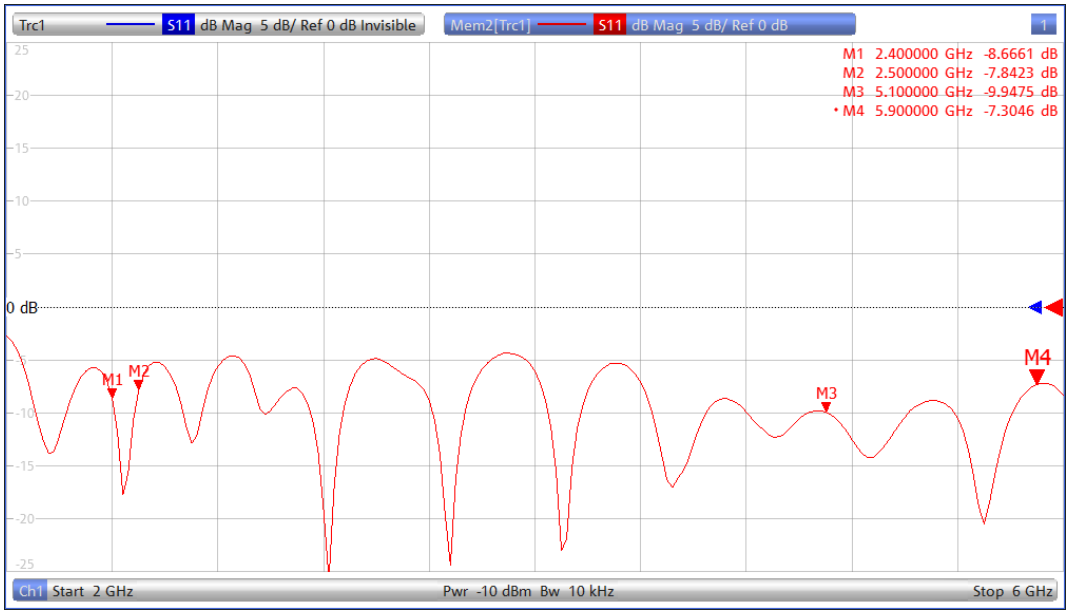
3.2 Cable 2: WiFi

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

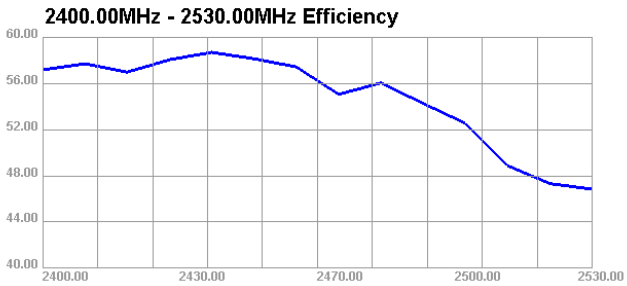
3.2.1 VSWR

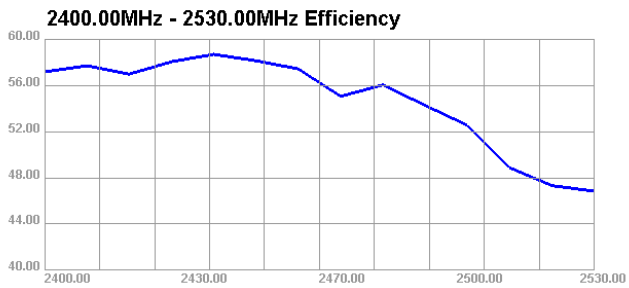


3.2.2 Return Loss

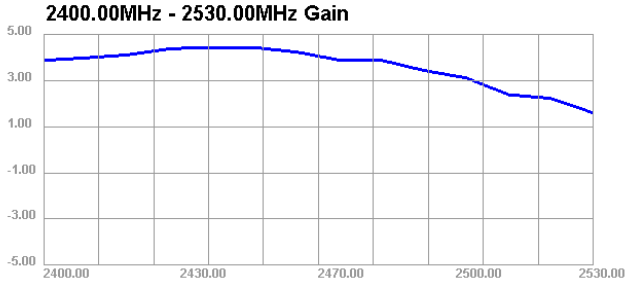


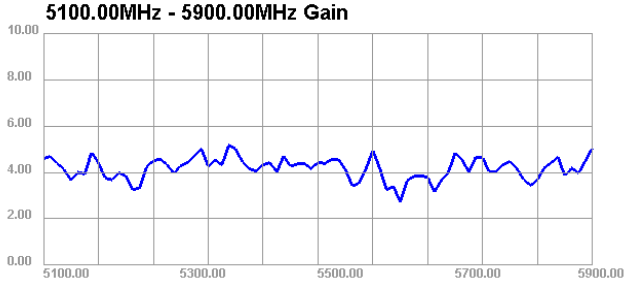
3.2.3 Efficiency



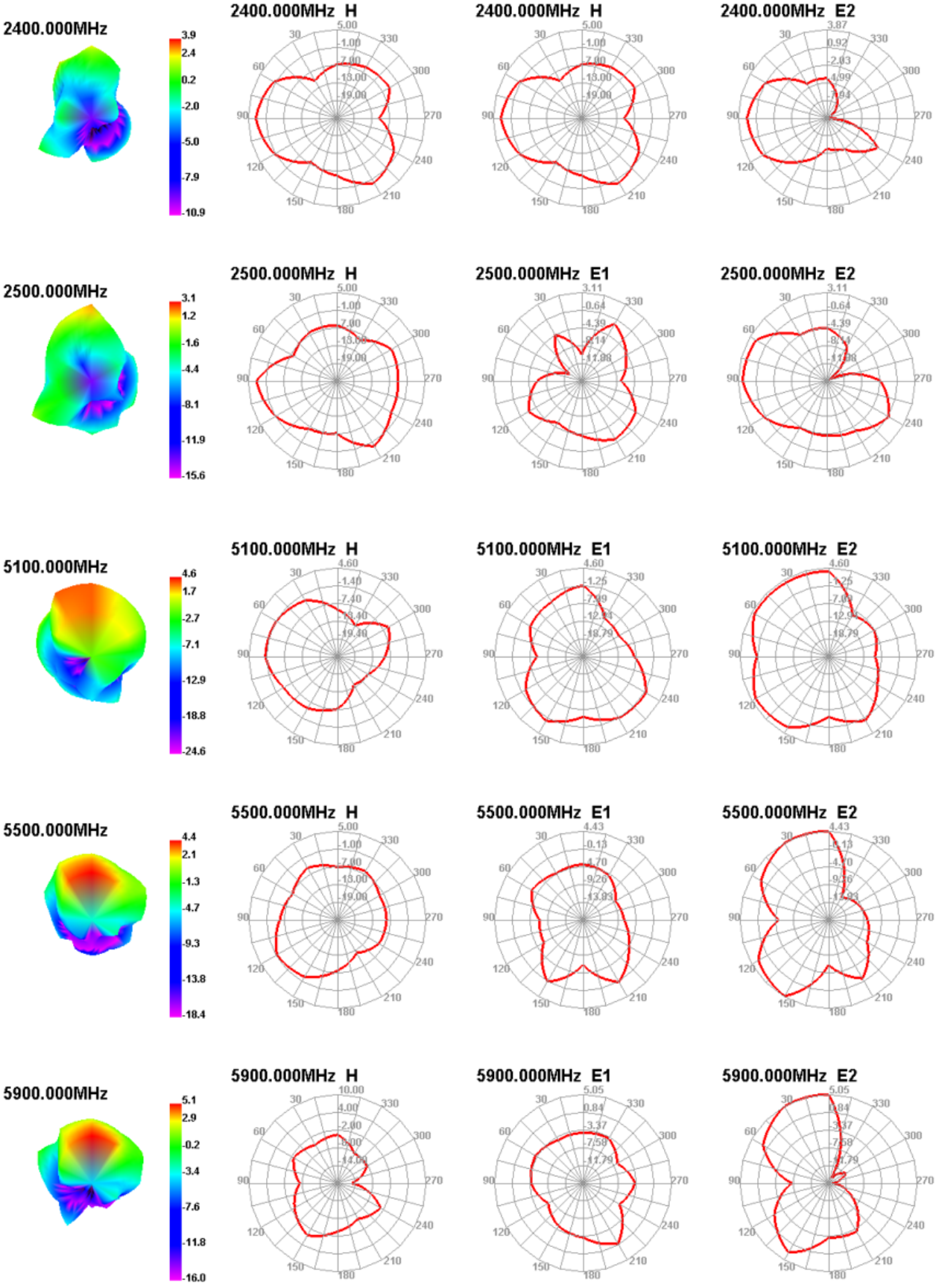


3.2.4 Gain

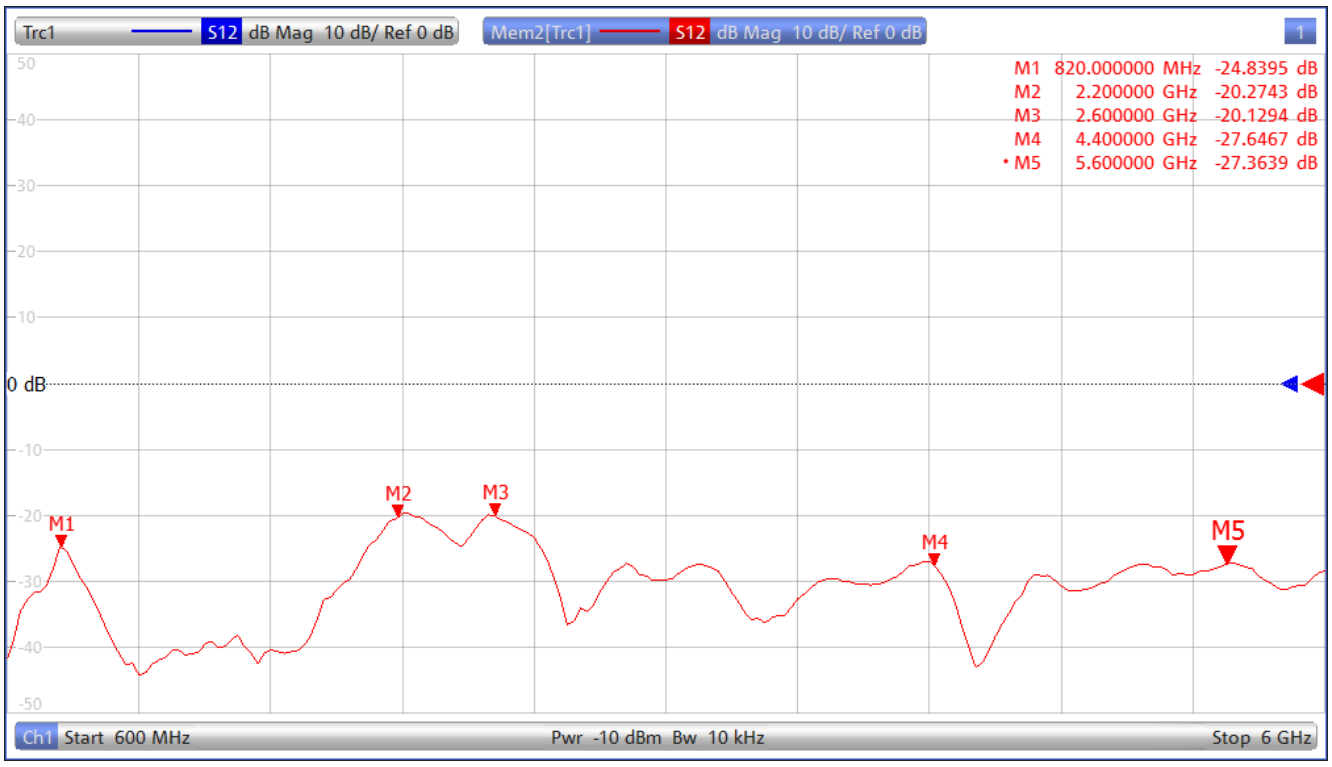




3.2.5 Directional pattern



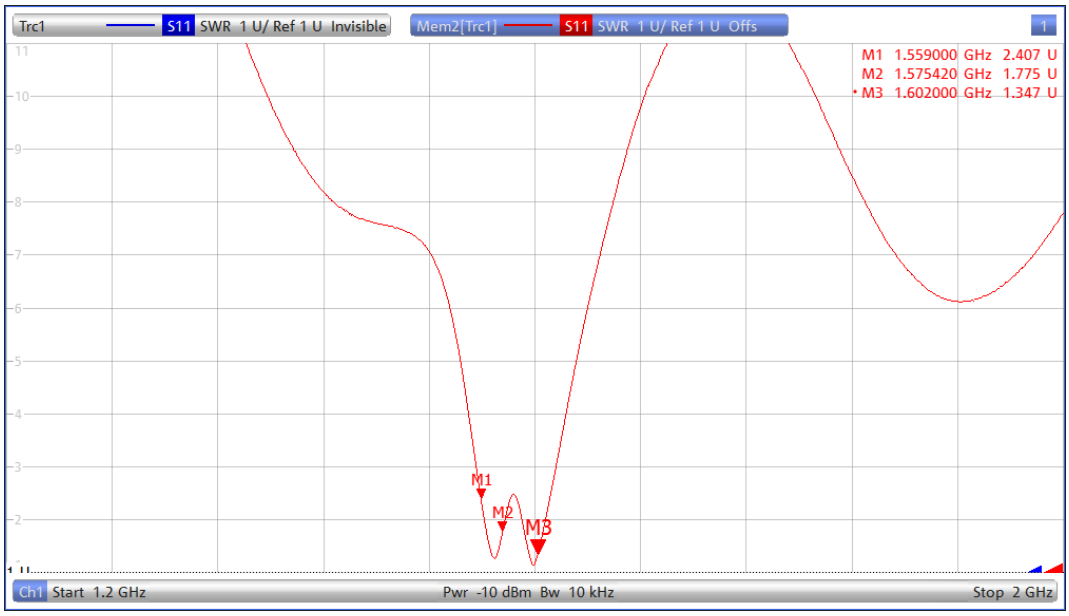
3.2.6 ISOLATION FOR CABLES 1 AND 2



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

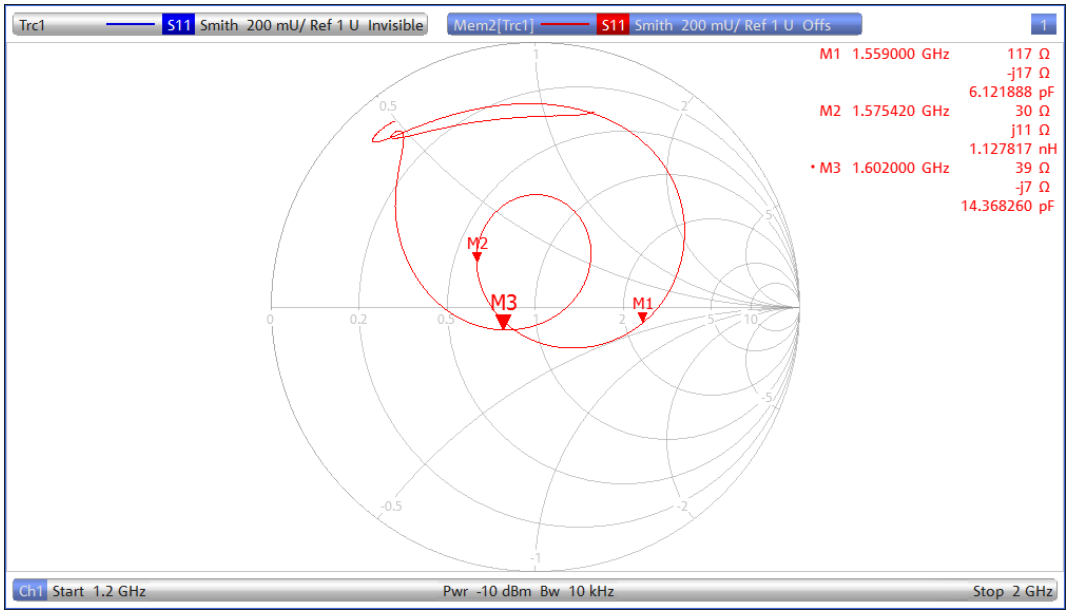
3.3.1 VSWR



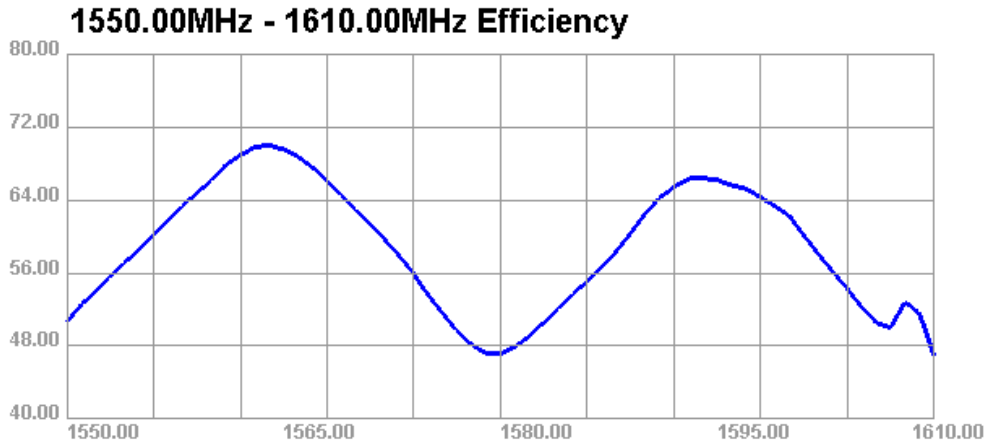
3.3.2 Return Loss



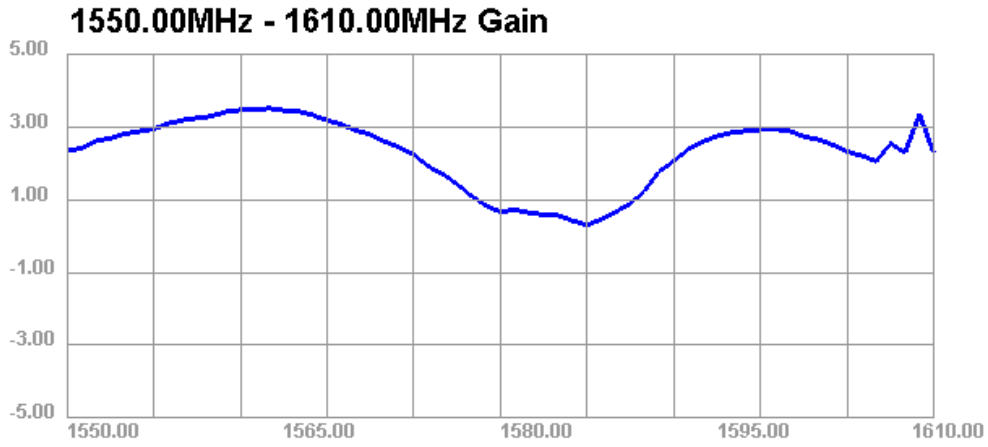
3.3.3 Smith



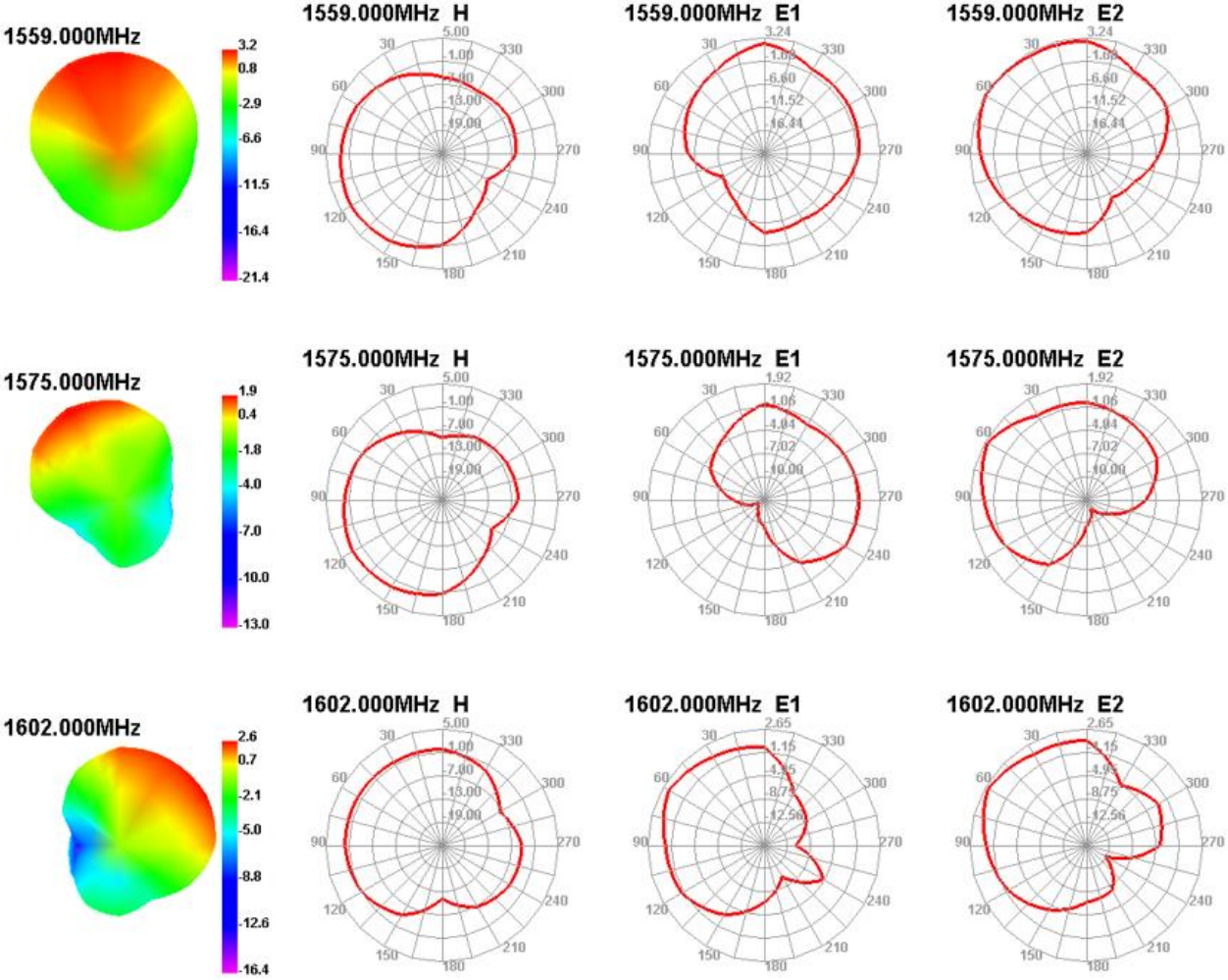
3.3.4 Efficiency



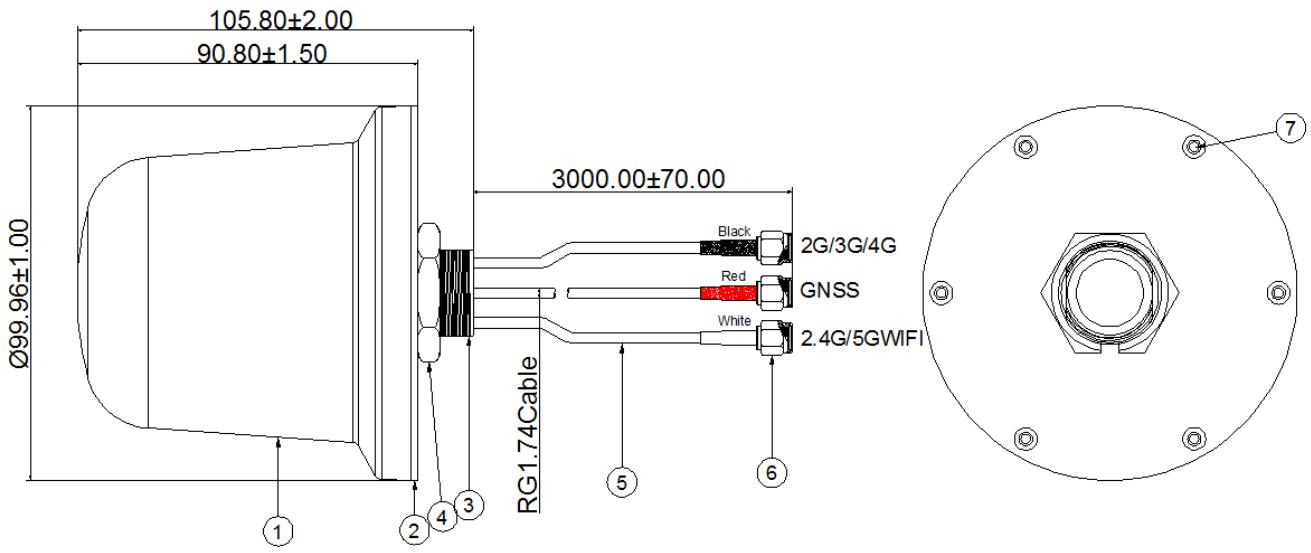
3.3.5 Gain



3.3.6 Directional pattern



4. Antenna Drawing



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	brass	Gold	3
7	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