SUNNYWAY

SWB001

PN: SW19012EB56



Sunnyway Technology

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1. Electrical Specifications

Cable 1 Parameters CELLULAR / LTE Antenna

Standards	**4G/3G/2G**
Frequency range	699~960MHz 1710~2170MHz 2300~2690MHz
Peak Gain (dBi)	0~3.5dBi(699~960MHz) 0.5~3.5dBi(1710~2170MHz) 0.5~3.5dBi(2300~2690MHz)
Average Gain (dBi)	-4~-2.4dB(699~960MHz) -3.5~-1.8dB(1710~2170MHz) -3.5~-1.6dB(2300~2690MHz)
Polarization mode	Linear
VSWR	<3.0
Return Loss	<-6.0
Efficiency (%)	40~60%(699~960MHz) 44~66%(1710~2170MHz) 45~68%(2300~2690MHz)
Radiation pattern	Omni-Directional
Output impedance (Ω)	50
Max. Input Power(W)	25

Cable 2 Parameters CELLULAR / LTE Antenna

Standards	**4G/3G/2G**
Frequency range	699~960MHz 1710~2170MHz 2300~2690MHz
Peak Gain (dBi)	0.8~3.8dBi(699~960MHz) 2~5dBi(1710~2170MHz) 1.5~3dBi(2300~2690MHz)
Average Gain (dBi)	-4.3~-1.8dB(699~960MHz) -3.5~-1.4dB(1710~2170MHz) -2.5~-1.5dB(2300~2690MHz)
Polarization mode	Linear

VSWR	<3.0
Return Loss	<-6.0
Efficiency (%)	37~66%(699~960MHz) 45~73%(1710~2170MHz) 55~68%(2300~2690MHz)
Radiation pattern	Omni-Directional
Output impedance (Ω)	50
Max. Input Power(W)	25

Cable 3 Parameters

GPS/GLONASS Antenna

Standards	**GPS/GLONASS**
Frequency range	1575.42MHz 1598~1610MHz
VSWR	<2.0
Return Loss	<-15.0
Impedance	50
Polarization	RHCP
Radiation Pattern	Hemispherical
Saw Filter	Pre-Filter
Noise-Figure	1dB(+25°C±10°C)
Supply Current	15mA
Supply Voltage	1.5v-5.5v

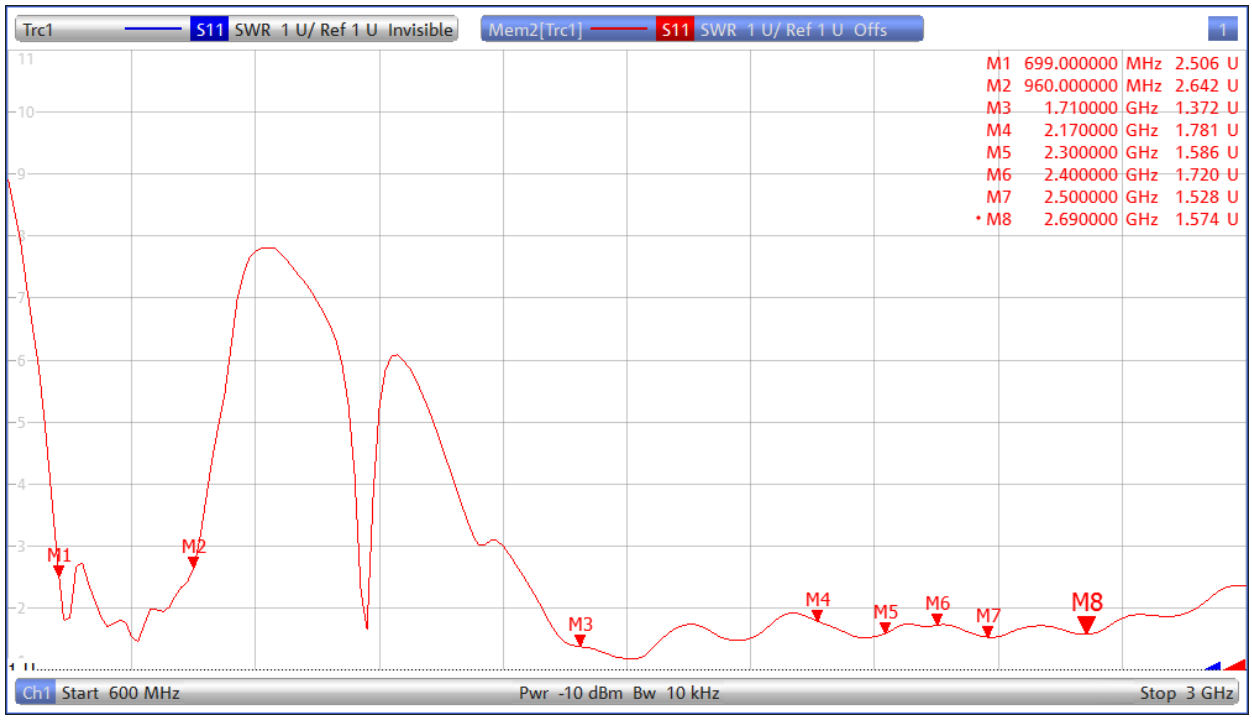
2. Mechanical and Environmental Specification

Mounting Type	Adhesive & Screw
Adhesive Type	3M &Screw
Connector Type	RG174
Antenna size(mm)	81.0 (φ) x 24.9 (H) x 3000 (Line length)
Material	External
Cable length(mm)	3000(can be customized)
Operating Temperature (˚C)	- 40 ˚C ~ + 80 ˚C
Storage Temperature(˚C)	- 40 ˚C ~ + 80 ˚C

3. Antenna parameters

Cable 1: CELLULAR/LTE Tested with 50cm cable length - RG174 with C20N

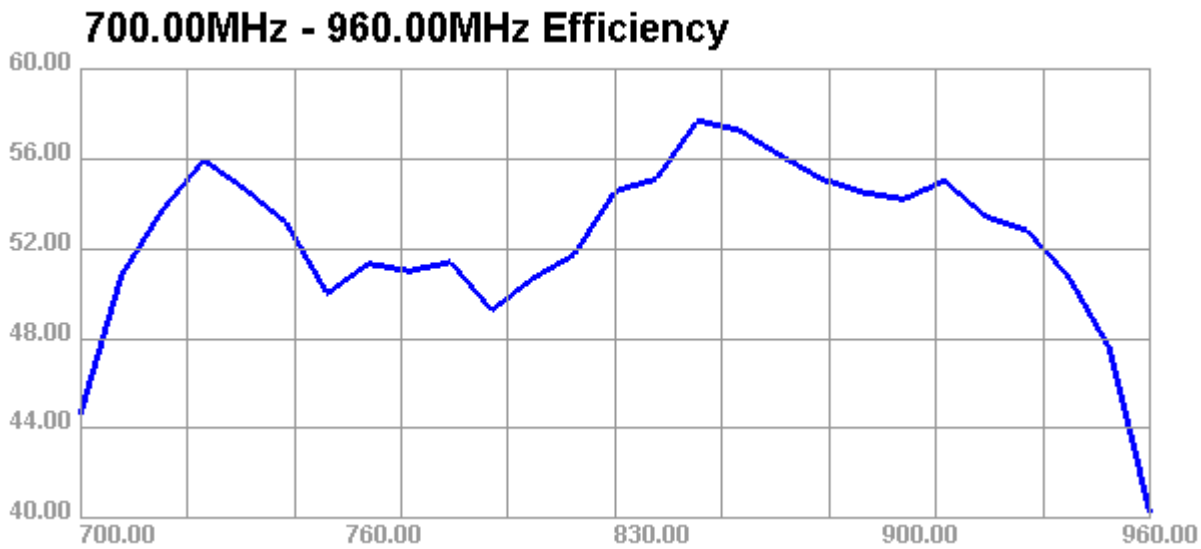
FRE（MHz）	700	960	1710	2170	2300	2400	2500	2690
VSWR	2.5	2.6	1.3	1.7	1.5	1.7	1.5	1.5
Return Loss	-7.6	-6.9	-16.0	-11.0	-12.8	-11.5	-13.6	-13.0
Eff (%)	44.6	40.2	51.0	45.6	49.3	53.6	68.4	56.3
Average Gain(dB)	-3.5	-3.9	-2.9	-3.4	-3.0	-2.7	-1.6	-2.4

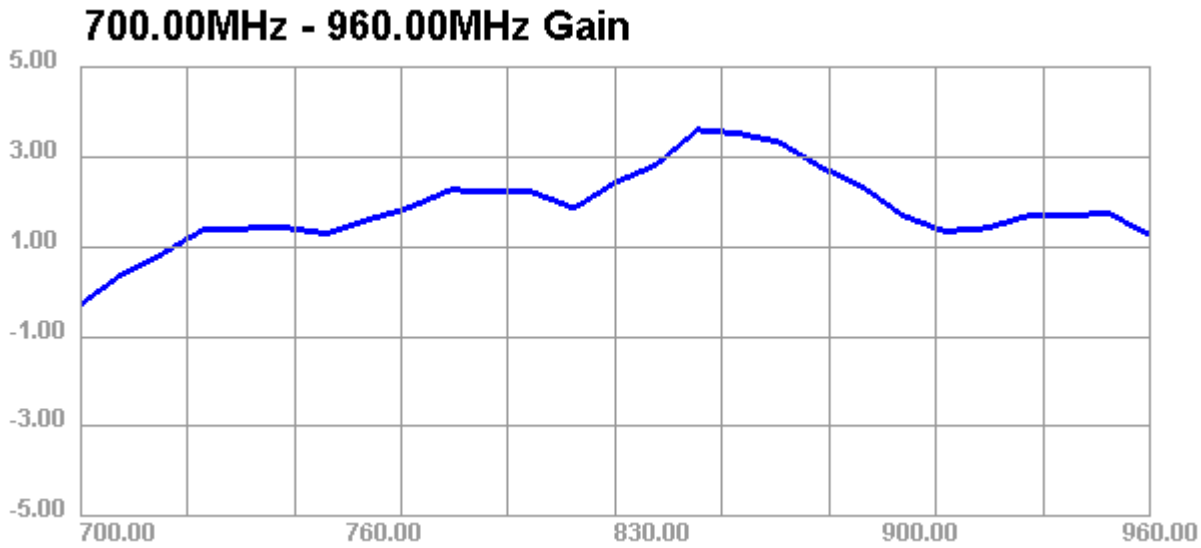


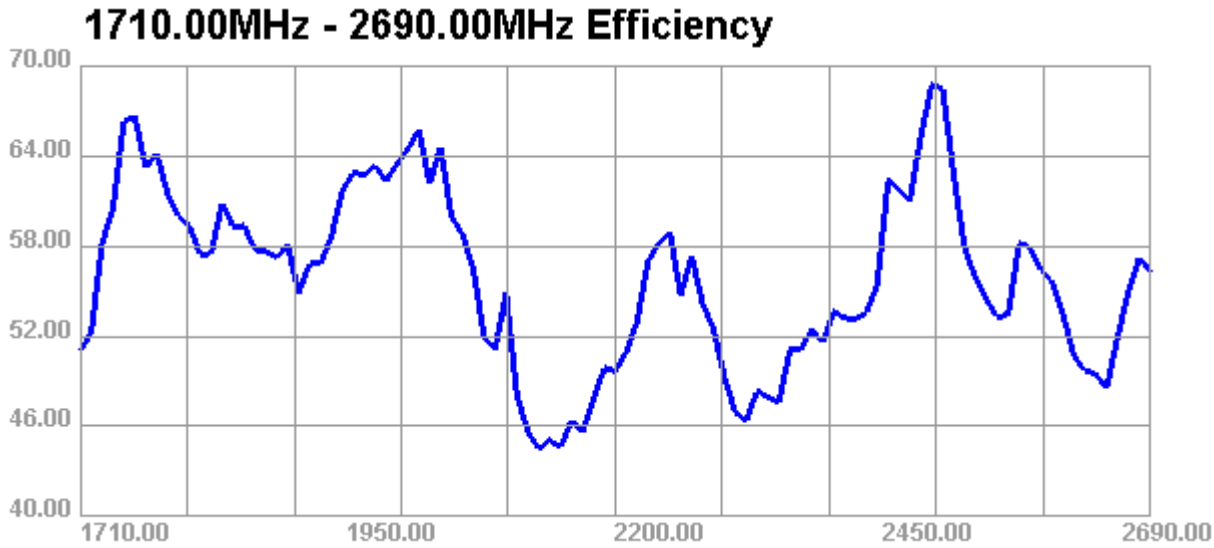
VSWR

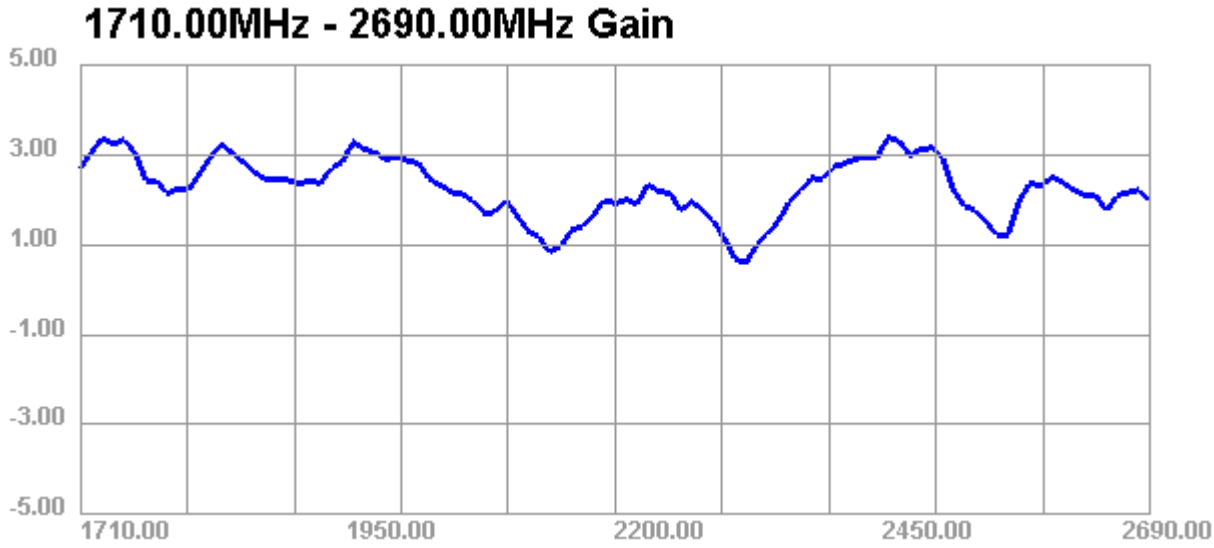

Trc1 S11 dB Mag 5 dB/ Ref 10 dB Invisible
Mem2[Trc1] S11 dB Mag 5 dB/ Ref 10 dB Offs
M1 699.000000 MHz -7.6963 dB
M2 960.000000 MHz -6.9206 dB
M3 1.710000 GHz -16.0936 dB
M4 2.170000 GHz -11.0354 dB
M5 2.300000 GHz -12.8940 dB
M6 2.400000 GHz -11.5481 dB
M7 2.500000 GHz -13.6021 dB
M8 2.690000 GHz -13.0338 dB
10 dB
Ch1 Start 600 MHz
Pwr -10 dBm Bw 10 kHz
Stop 3 GHz

Return Loss

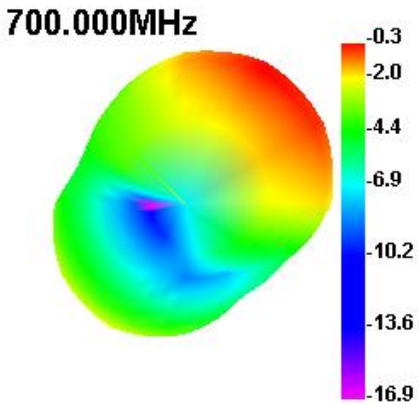

700.00MHz - 960.00MHz Efficiency
60.00
56.00
52.00
48.00
44.00
40.00
700.00
760.00
830.00
900.00
960.00

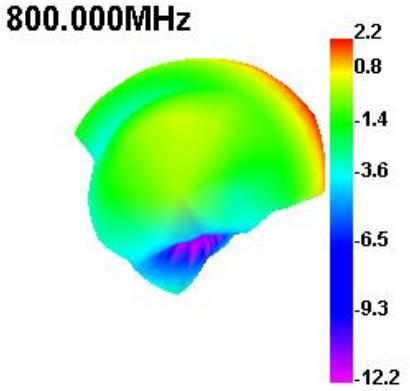

700.00MHz - 960.00MHz Gain
5.00
3.00
1.00
-1.00
-3.00
-5.00
700.00
760.00
830.00
900.00
960.00

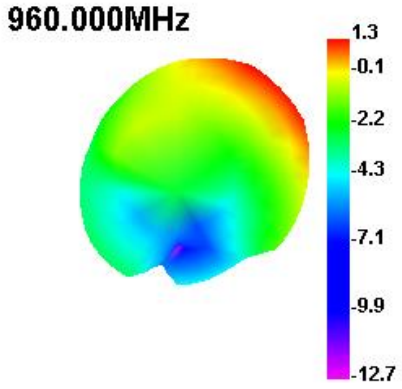

1710.00MHz - 2690.00MHz Efficiency
70.00
64.00
58.00
52.00
46.00
40.00
1710.00
1950.00
2200.00
2450.00
2690.00

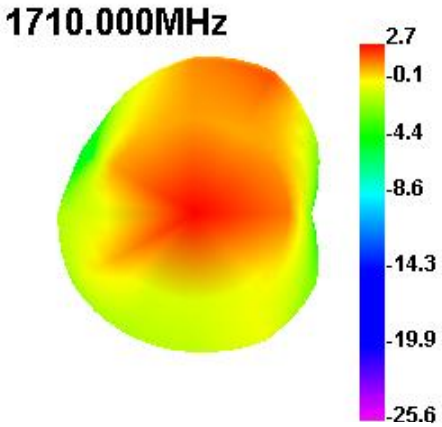

1710.00MHz - 2690.00MHz Gain
5.00
3.00
1.00
-1.00
-3.00
-5.00
1710.00
1950.00
2200.00
2450.00
2690.00

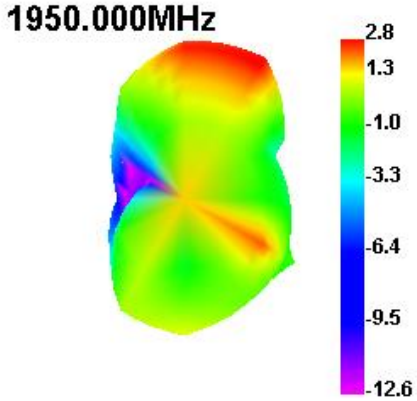
Directional pattern

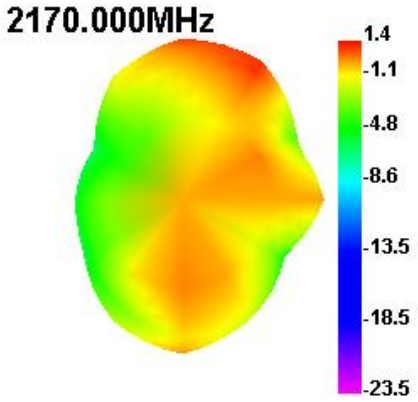


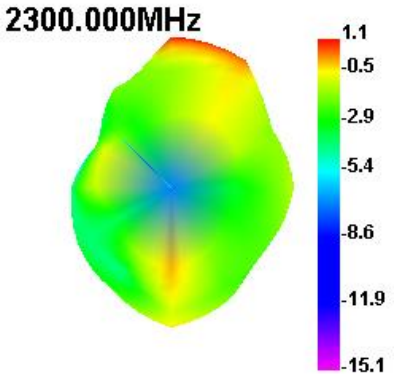


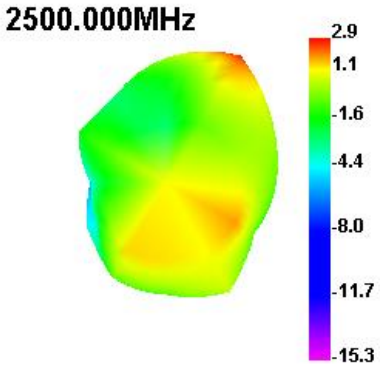


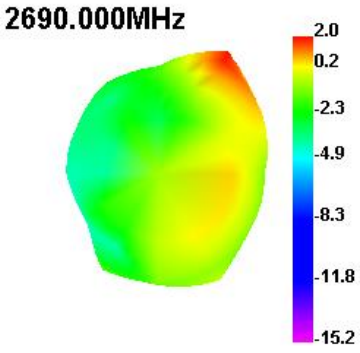






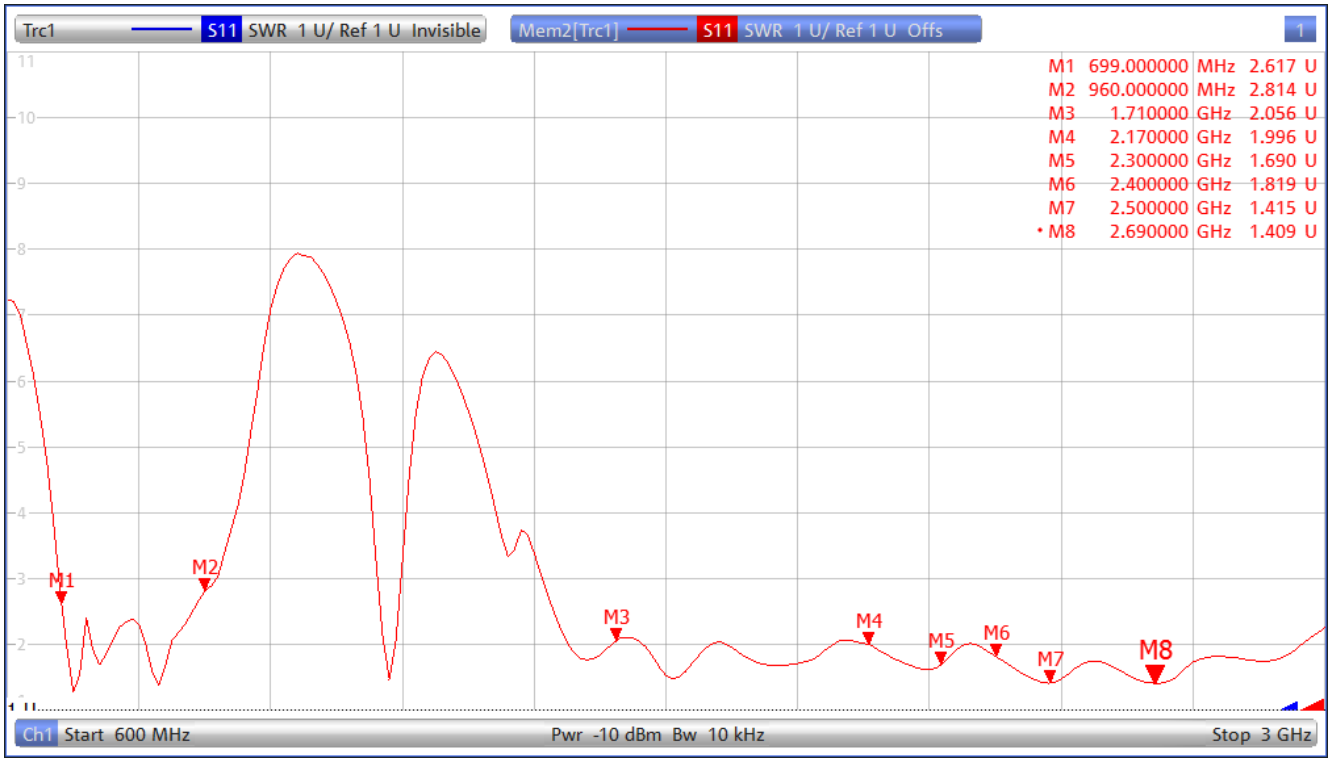




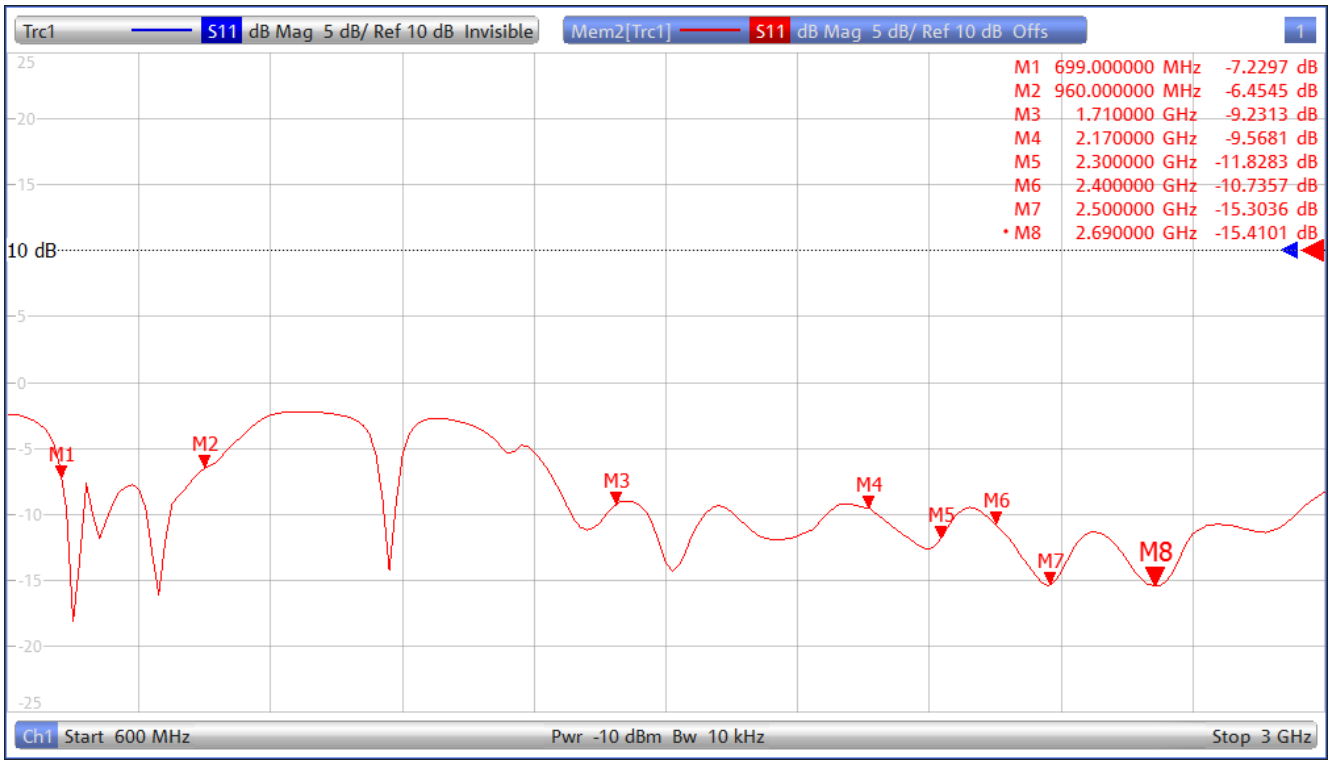


Cable 2: CELLULAR/LTE Tested with 50cm cable length - RG174 with C20N

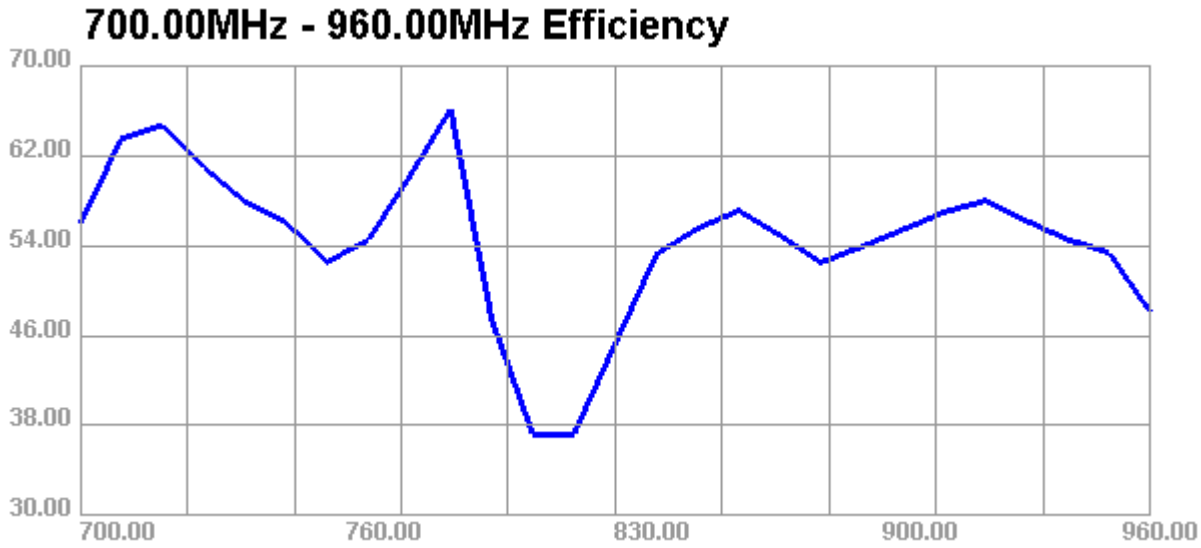
FRE（MHz）	700	960	1710	2170	2300	2400	2500	2690
VSWR	2.6	2.8	2.0	1.9	1.6	1.8	1.4	1.4
Return Loss	-7.2	-6.4	-9.2	-9.5	-11.8	-10.7	-15.3	-15.4
Eff (%)	55.9	48.1	53.6	45.4	60.5	63.3	66.2	65.2
Average Gain(dB)	-2.5	-3.1	-2.7	-3.4	-2.1	-1.9	-1.7	-1.8

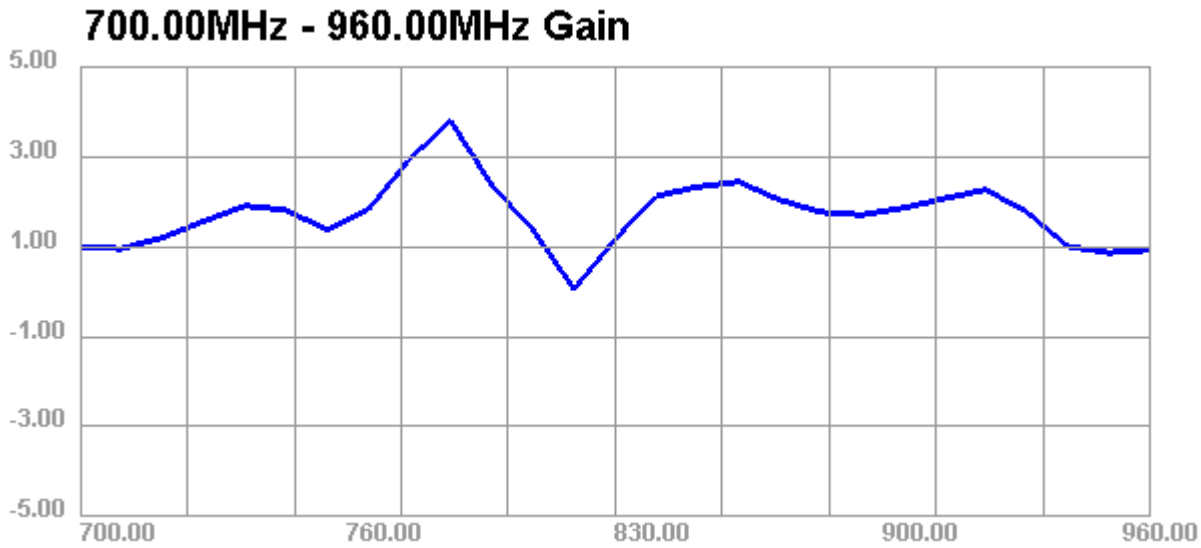


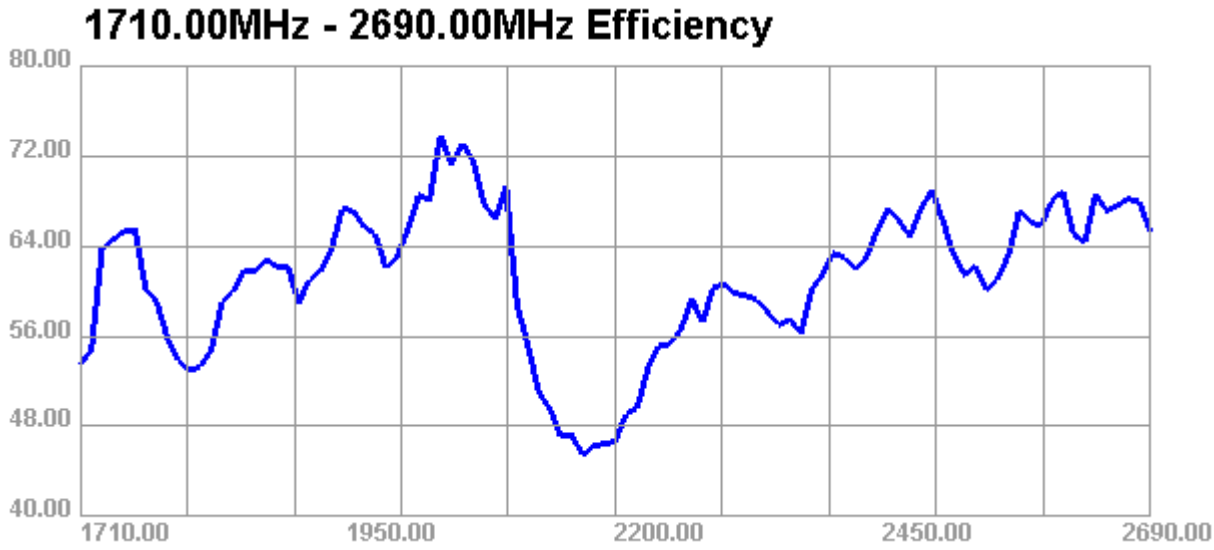
VSWR

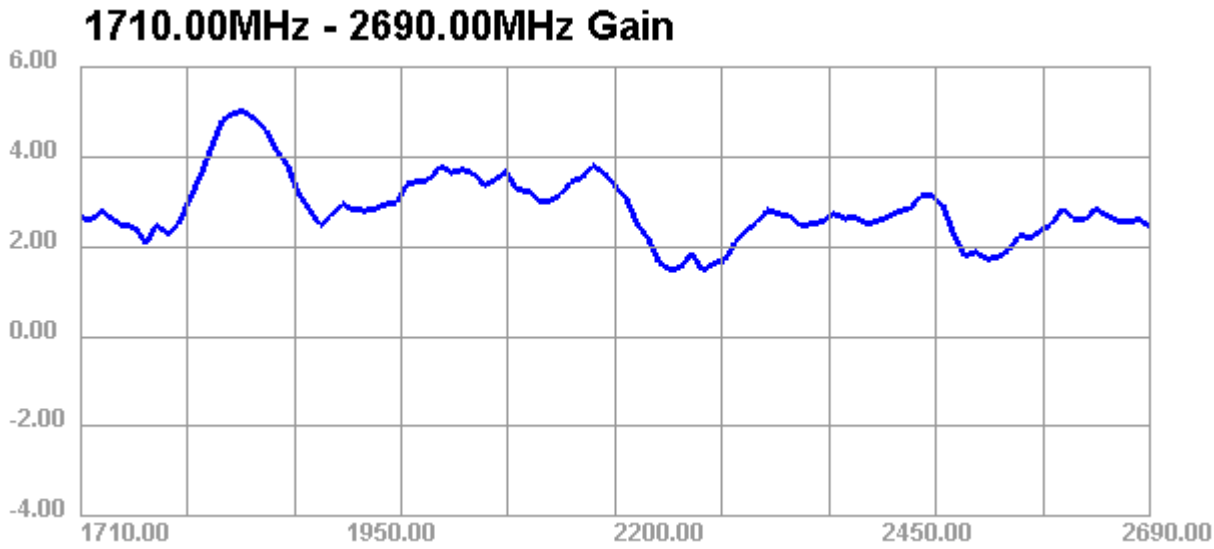

Trc1 S11 dB Mag 5 dB/ Ref 10 dB Invisible
Mem2[Trc1] S11 dB Mag 5 dB/ Ref 10 dB Offs
M1 699.000000 MHz -7.2297 dB
M2 960.000000 MHz -6.4545 dB
M3 1.710000 GHz -9.2313 dB
M4 2.170000 GHz -9.5681 dB
M5 2.300000 GHz -11.8283 dB
M6 2.400000 GHz -10.7357 dB
M7 2.500000 GHz -15.3036 dB
M8 2.690000 GHz -15.4101 dB
10 dB
Ch1 Start 600 MHz
Pwr -10 dBm Bw 10 kHz
Stop 3 GHz

Return Loss

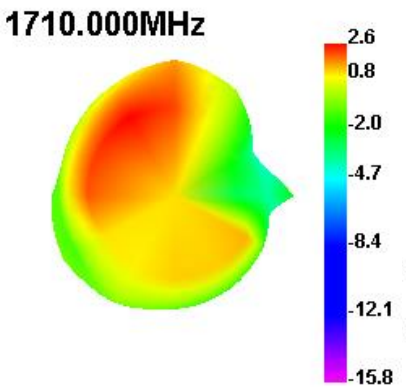

700.00MHz - 960.00MHz Efficiency
70.00
62.00
54.00
46.00
38.00
30.00
700.00
760.00
830.00
900.00
960.00

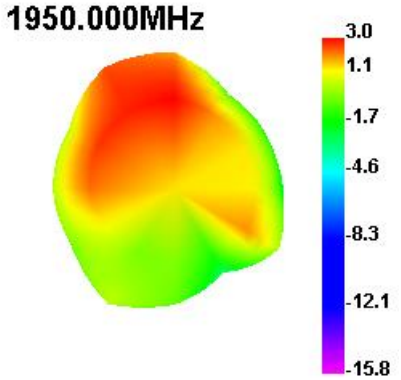

700.00MHz - 960.00MHz Gain
5.00
3.00
1.00
-1.00
-3.00
-5.00
700.00
760.00
830.00
900.00
960.00

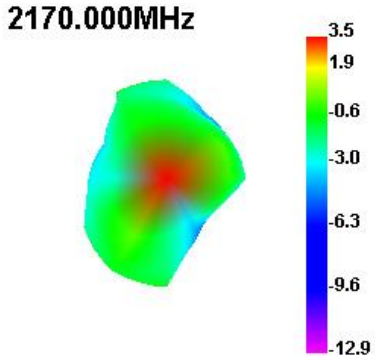

1710.00MHz - 2690.00MHz Efficiency
80.00
72.00
64.00
56.00
48.00
40.00
1710.00
1950.00
2200.00
2450.00
2690.00

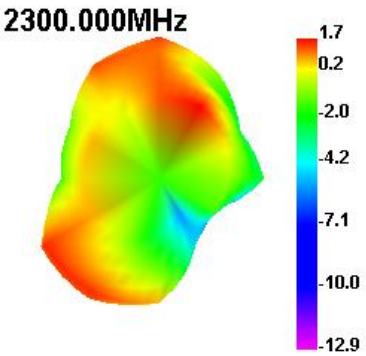

1710.00MHz - 2690.00MHz Gain
6.00
4.00
2.00
0.00
-2.00
-4.00
1710.00
1950.00
2200.00
2450.00
2690.00

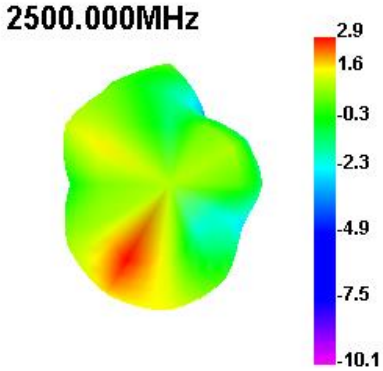
Directional pattern

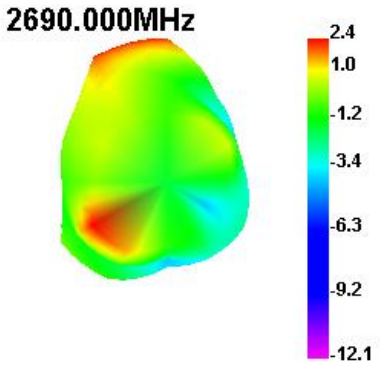




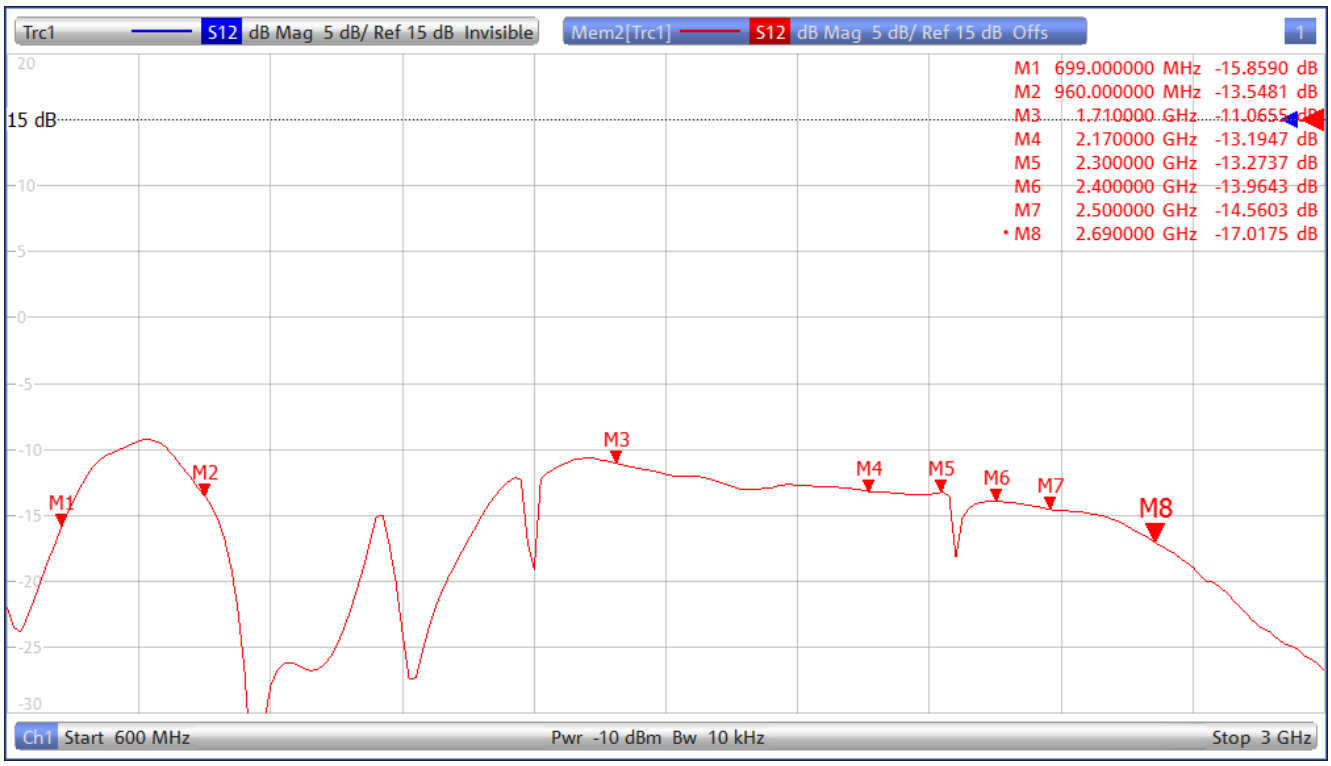






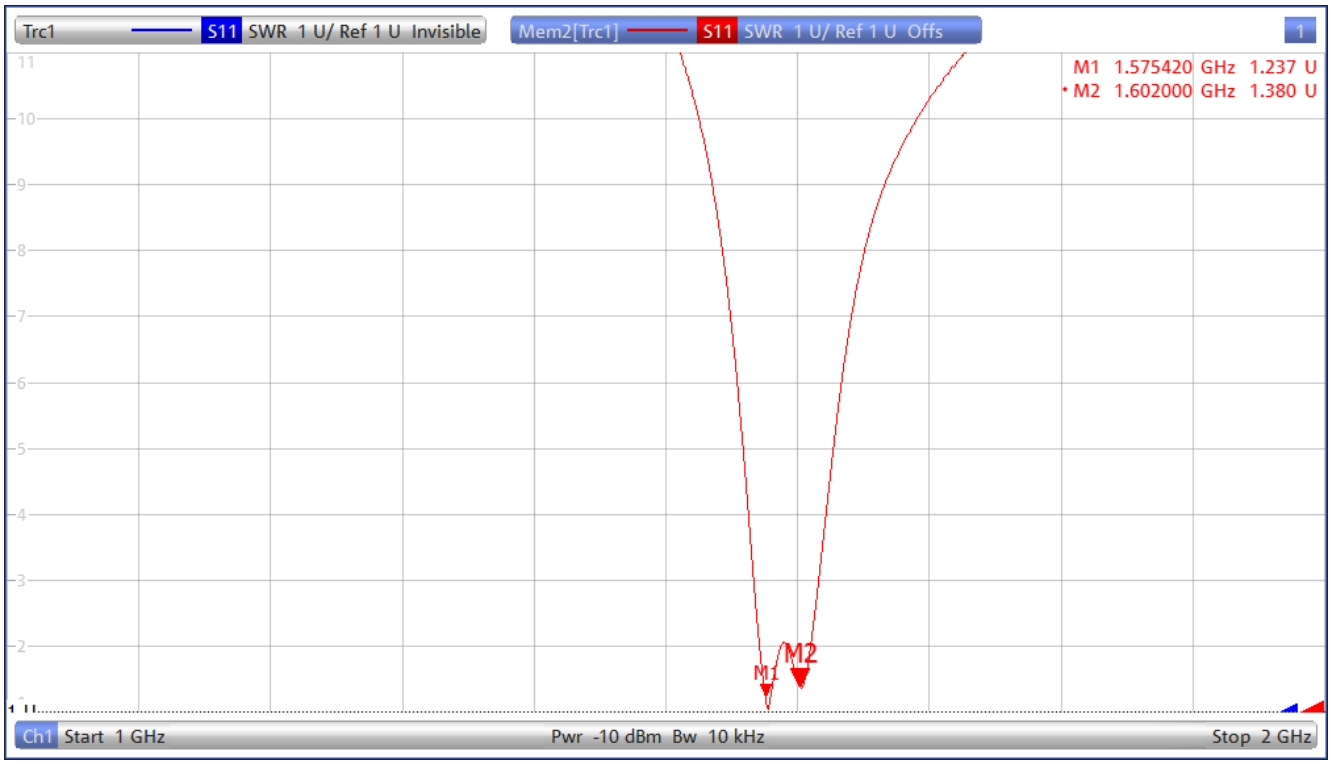


ISOLATION FOR CABLES 1 AND 2

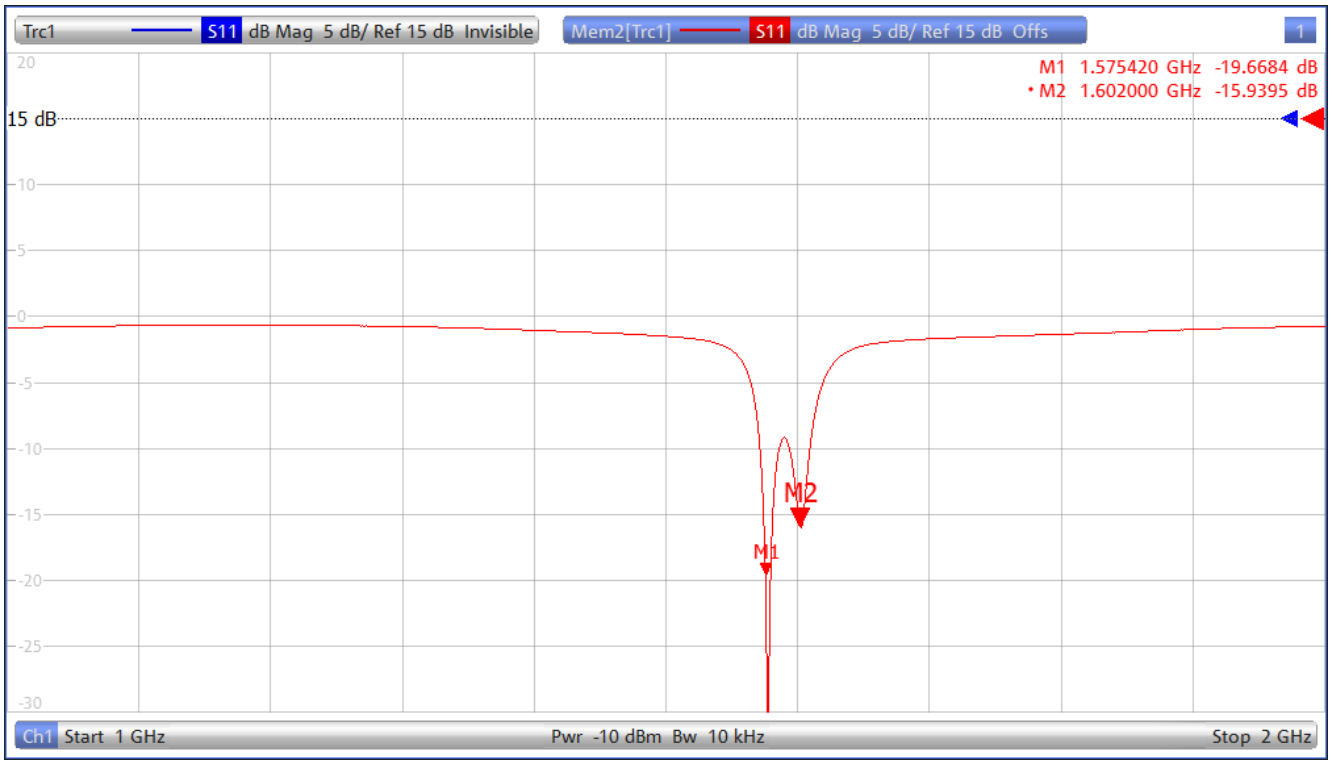


Cable 3: GNSS Tested with 50cm cable length - RG174 with C20N

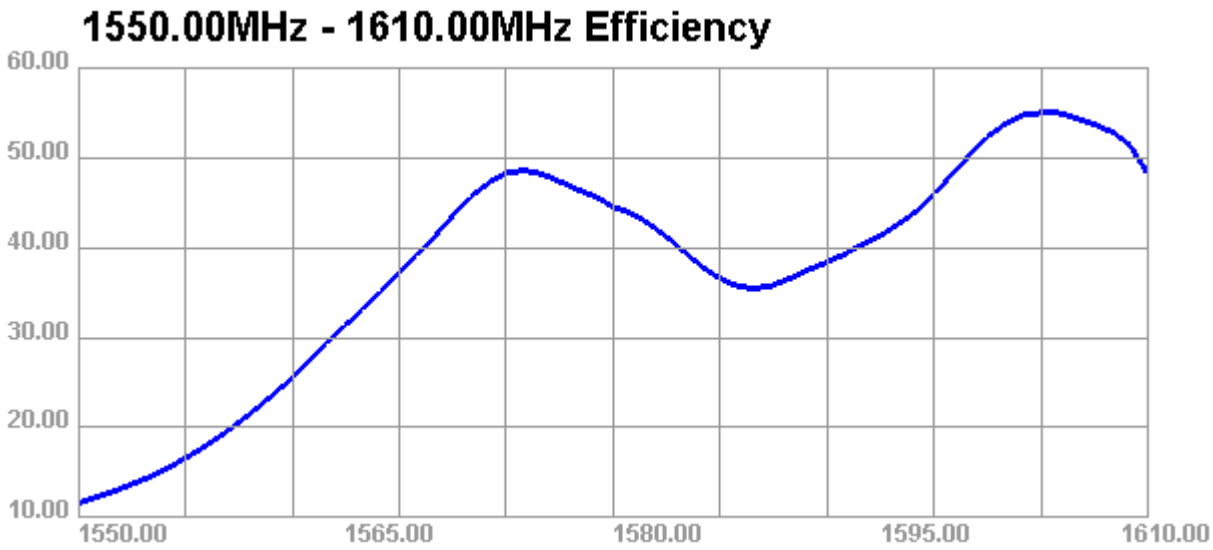
FRE（MHz）	1575.42	1602
VSWR	1.2	1.6
Return Loss	-19.6	-15.9
Eff (%)	48.5	53.7
Average Gain(dB)	-3.1	-2.7

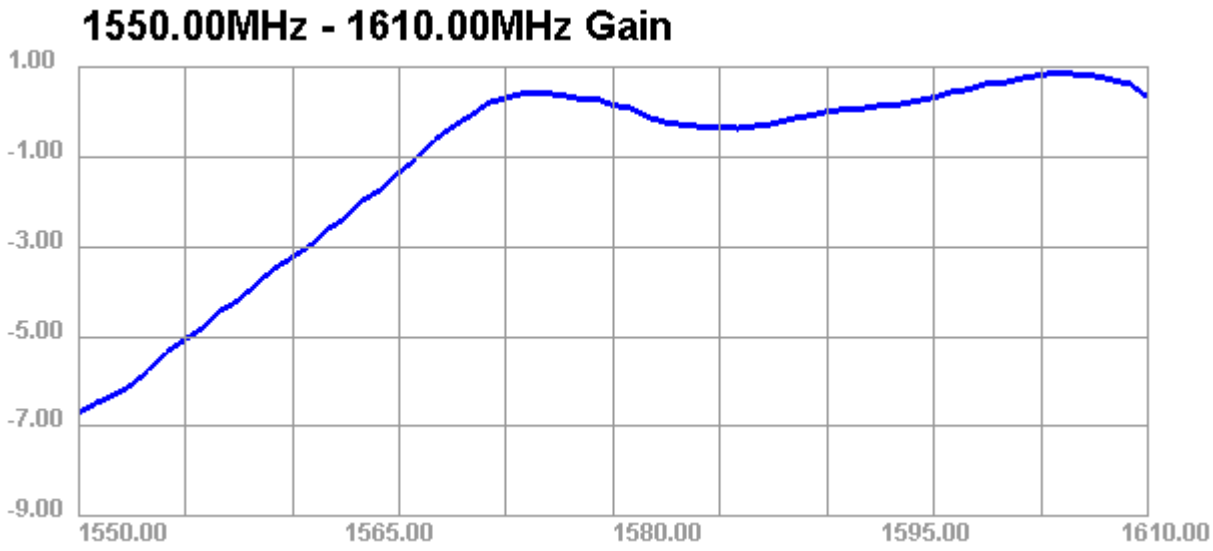


VSWR

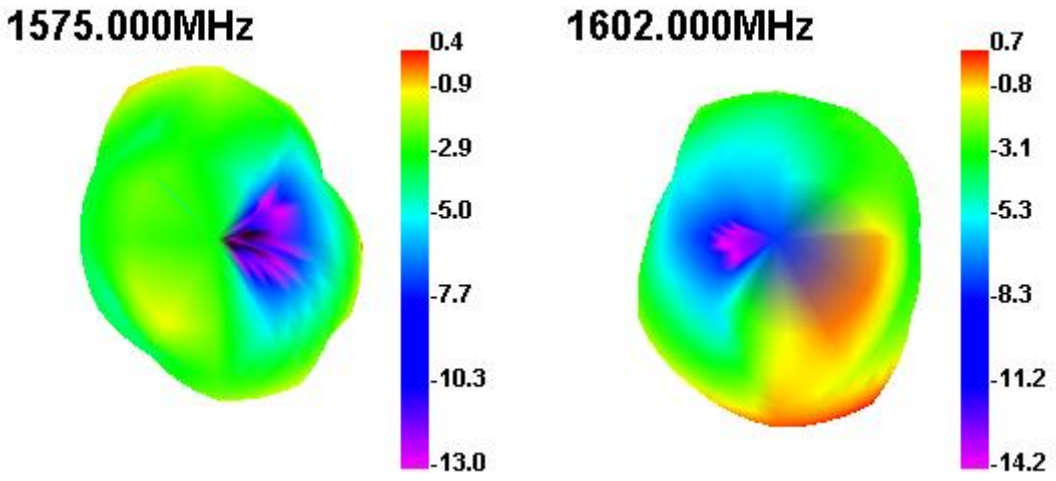

Trc1 S11 dB Mag 5 dB/ Ref 15 dB Invisible
Mem2[Trc1] S11 dB Mag 5 dB/ Ref 15 dB Offs
M1 1.575420 GHz -19.6684 dB
M2 1.602000 GHz -15.9395 dB
15 dB
M1
M2
Ch1 Start 1 GHz
Pwr -10 dBm Bw 10 kHz
Stop 2 GHz

Return Loss

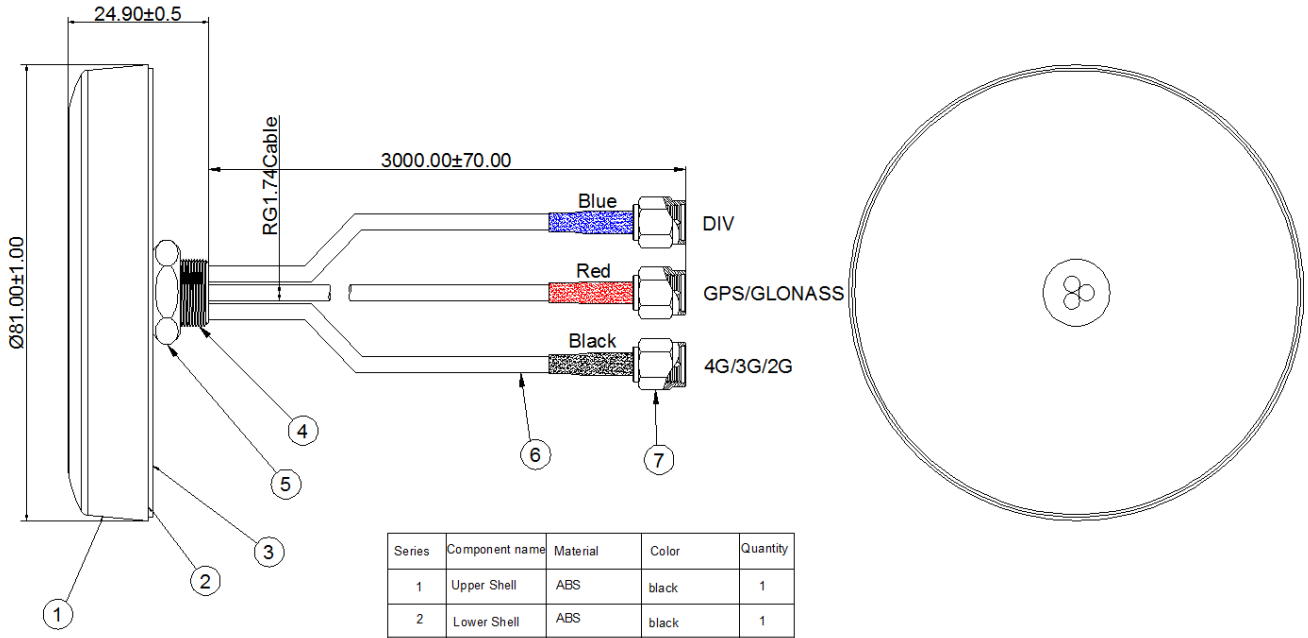

1550.00MHz - 1610.00MHz Efficiency
60.00
50.00
40.00
30.00
20.00
10.00
1550.00
1565.00
1580.00
1595.00
1610.00



Directional pattern



4. Antenna Drawing



Series	Component name	Material	Color	Quantity
1	Upper Shell	ABS	black	1
2	Lower Shell	ABS	black	1
3	Back Glue	Adhesive	natural colour	1
4	Screw	brass	Gold	1
5	Nuts	brass	Gold	1
6	Cable	RG174	black	3
7	SMA	brass	Gold	3

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