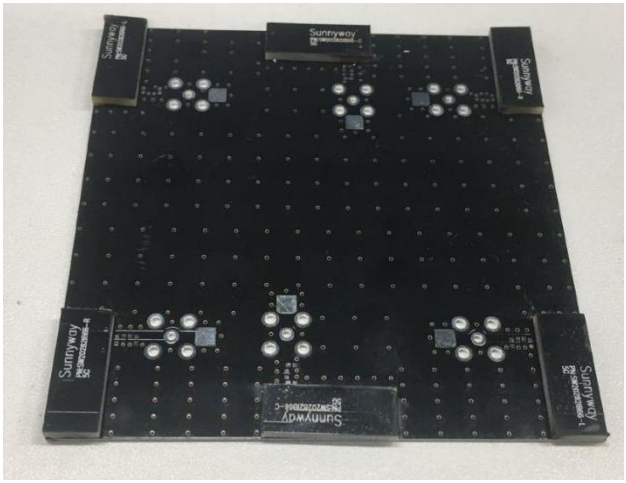
SWD017

PN: SW20282IB66-A/-B/-C



Features:

- Antenna with n×n MIMO 5G (6×6, 4×4, 2×2)
- The 5G band is n41, n77, n78, n79.
- Maintains high performance on device
- The six antennas are divided into three types: antenna A,B,C
- Impedance 50 Ohm.

Applications:

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

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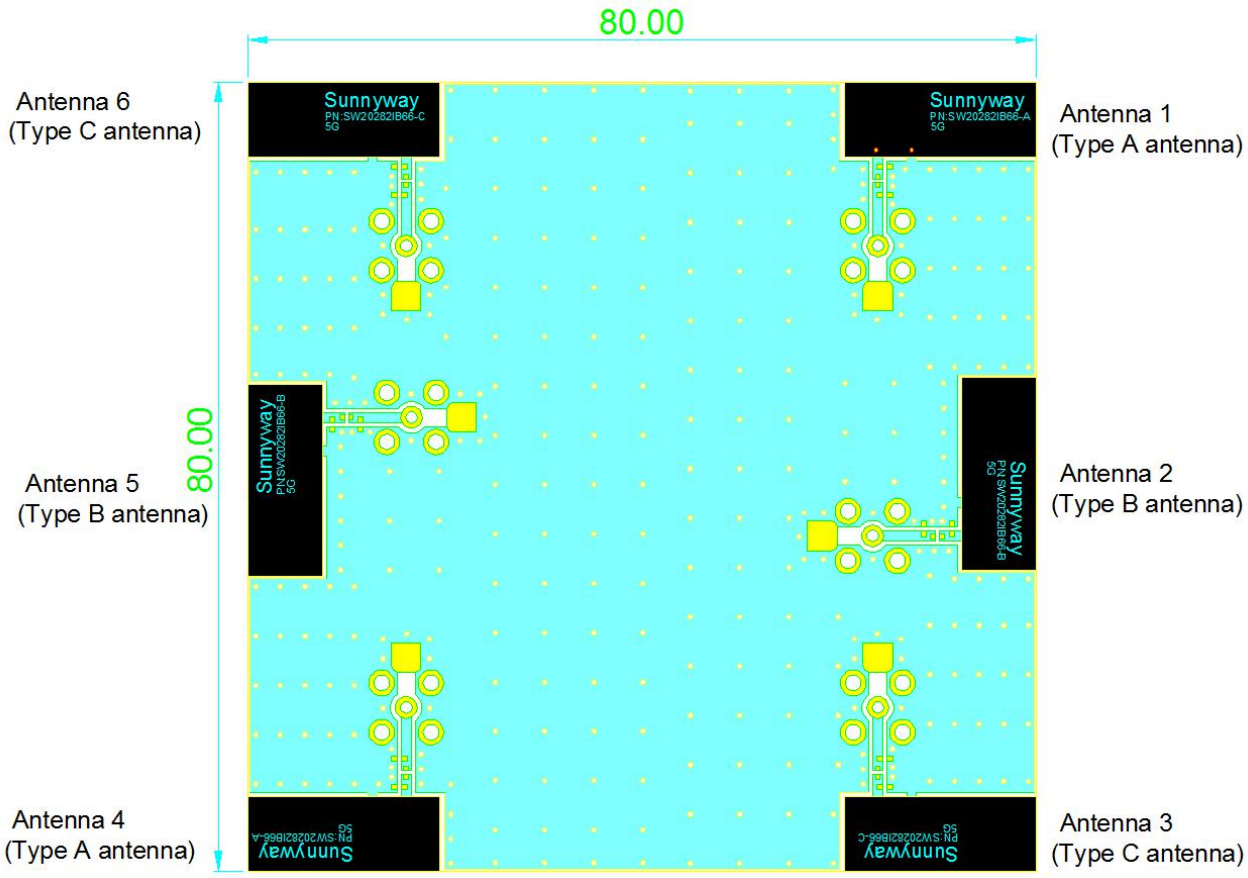
1.Antenna information



The six antennas are divided into three types: A, B and C.

Type A antenna is installed at position 1 and 4;

Type B antenna is installed at position 2 and 5;

Type C antenna is installed at position 3 and 6.

2. Electrical Specification

Type A_Antenna-1 Parameters

Standards	n41/n77/n78/n79		
Frequency range(MHz)	2490~2700	3300~4200	4400~5000
Peak Gain (dBi)	2.4~2.9	2.8~4.3	4.5~6.3
VSWR	<2.5	<2.0	<2.0
Return Loss	< -8.0	<-9.0	<-10.0
Efficiency (%)	44~46	50~66	52~63
Polarization mode	Linear	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50	50
Max. Input Power(W)	5	5	5

Type B_Antenna-2 Parameters

Standards	n41/n77/n78/n79		
Frequency range(MHz)	2490~2700	3300~4200	4400~5000
Peak Gain (dBi)	1.5~1.6	0.5~4.4	3.5~5.5
VSWR	<3.0	<2.0	<2.0
Return Loss	< -6.0	<-9.0	<-10.0
Efficiency (%)	35~39	30~52	40~56
Polarization mode	Linear	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50	50
Max. Input Power(W)	5	5	5

Type C_Antenna-3 Parameters

Standards	n41/n77/n78/n79		
Frequency range(MHz)	2490~2700	3300~4200	4400~5000
Peak Gain (dBi)	1.7~2.4	2.7~3.8	4.0~6.0
VSWR	<2.0	<2.0	<2.0
Return Loss	< -10.0	<-10.0	<-10.0
Efficiency (%)	44~48	43~62	43~67
Polarization mode	Linear	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50	50
Max. Input Power(W)	5	5	5

Type A_Antenna-4 Parameters

Standards	n41/n77/n78/n79		
Frequency range(MHz)	2490~2700	3300~4200	4400~5000
Peak Gain (dBi)	3.1~3.3	2.4~5.5	4.5~6.5
VSWR	<2.0	<2.0	<2.0
Return Loss	< -10.0	<-9.0	<-10.0
Efficiency (%)	45~47	45~60	45~65
Polarization mode	Linear	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50	50
Max. Input Power(W)	5	5	5

Type B_Antenna-5 Parameters

Standards	n41/n77/n78/n79		
Frequency range(MHz)	2490~2700	3300~4200	4400~5000
Peak Gain (dBi)	1.7~2.2	1.1~4.4	3.0~5.6
VSWR	<3.0	<2.5	<2.0
Return Loss	< -6.0	<-7.0	<-10.0
Efficiency (%)	34~37	33~61	42~57
Polarization mode	Linear	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50	50
Max. Input Power(W)	5	5	5

Type C_Antenna-6 Parameters

Standards	n41/n77/n78/n79		
Frequency range(MHz)	2490~2700	3300~4200	4400~5000
Peak Gain (dBi)	2.3~3.1	2.7~4.5	4.2~5.8
VSWR	<2.0	<2.0	<2.0
Return Loss	< -10.0	<-10.0	<-10.0
Efficiency (%)	44~48	41~62	43~68
Polarization mode	Linear	Linear	Linear
Radiation pattern	Omni-Directional	Omni-Directional	Omni-Directional
Output impedance (Ω)	50	50	50
Max. Input Power(W)	5	5	5

2. Mechanical and Environmental Specification

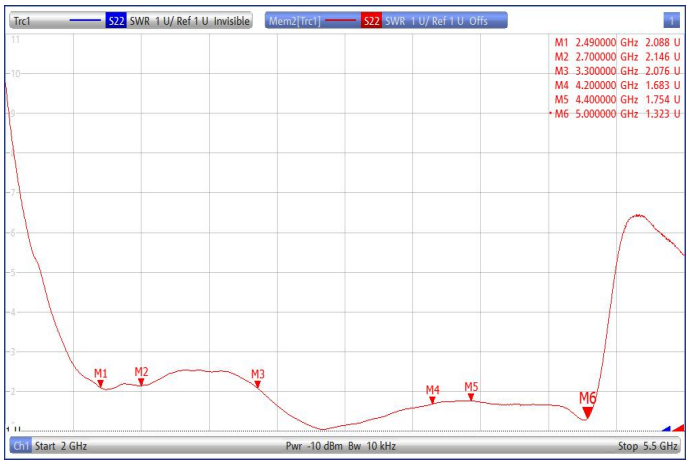
Mounting Type	SMD
Antenna size(mm)	19.5(L) x7.6 (W) x2(H)
Material	PCB
Operating Temperature (˚C)	- 40 ˚C ~ + 85 ˚C
Storage Temperature(˚C)	- 40 ˚C ~ + 85 ˚C

3. Antenna parameters

3.1 Antenna 1: n41/n77/n78/n79 General Specification

FRE (MHz)	2490	2700	3300	4200	4400	5000
VSWR	2.0	2.1	2.0	1.6	1.7	1.3
Return Loss	-9.0	-8.7	-9.1	-11.8	-11.2	-17.1
Eff (%)	43.8	45.9	54.7	58.8	62.5	52.1
Average Gain(dB)	-3.6	-3.4	-2.6	-2.3	-2.0	-2.8

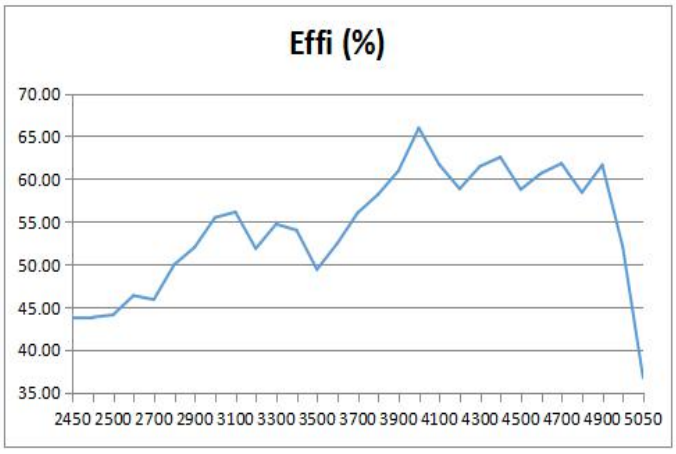
3.1.1 VSWR



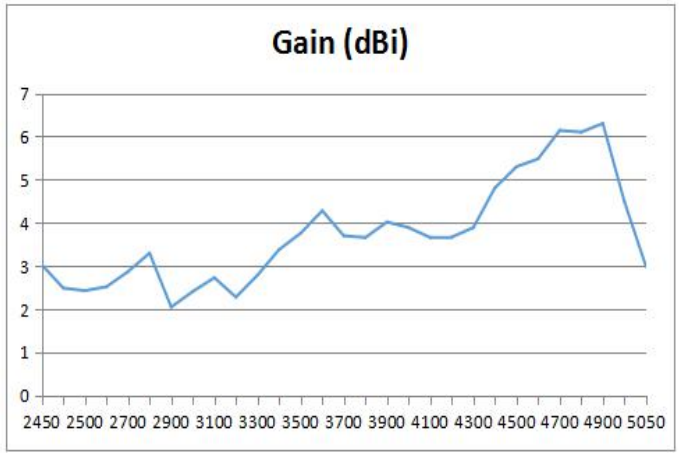
3.1.2 Return Loss



3.1.3 Efficiency

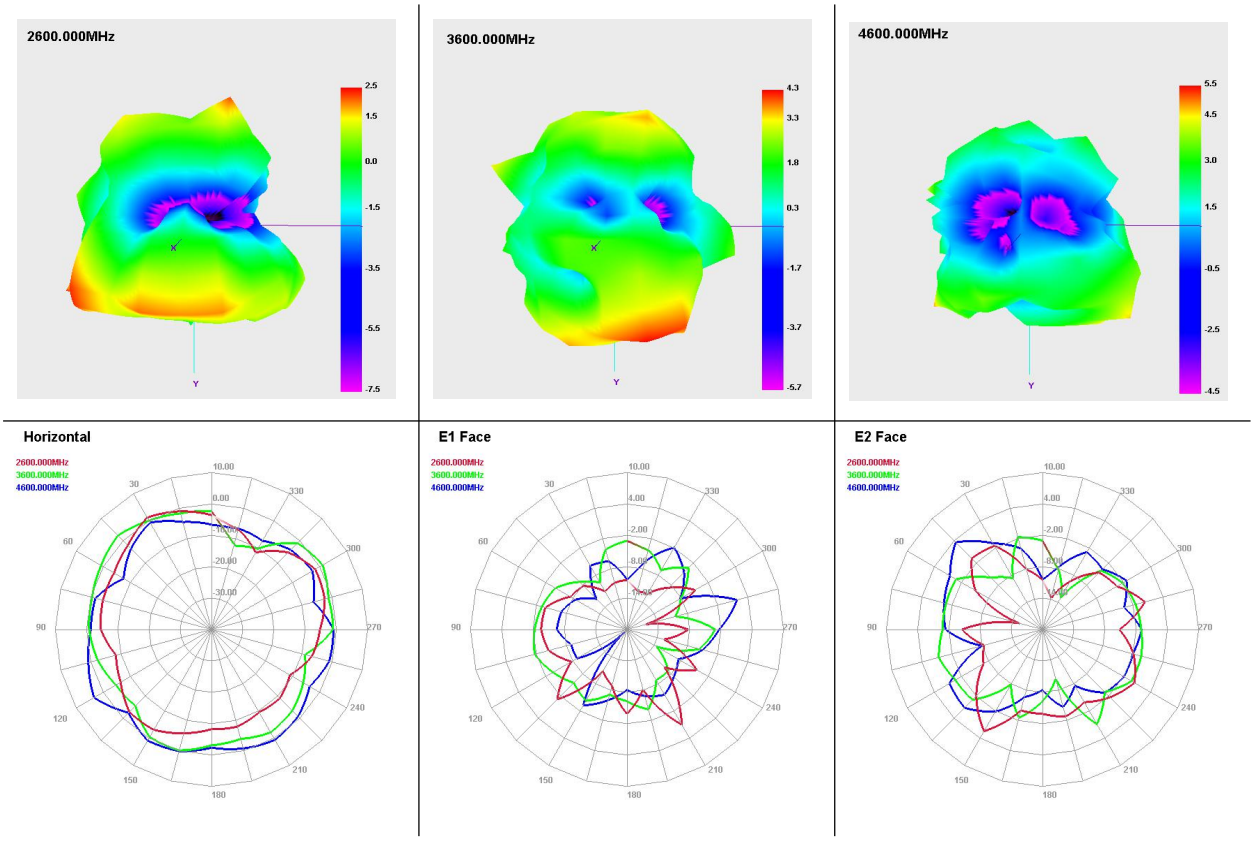


3.1.4 Gain



3.1.5 Directional pattern

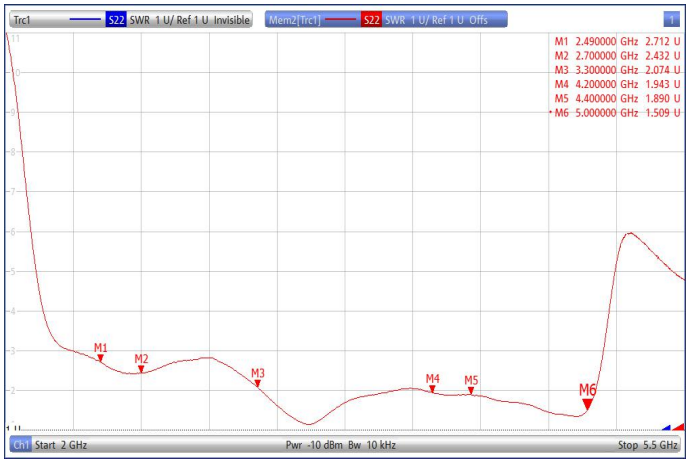




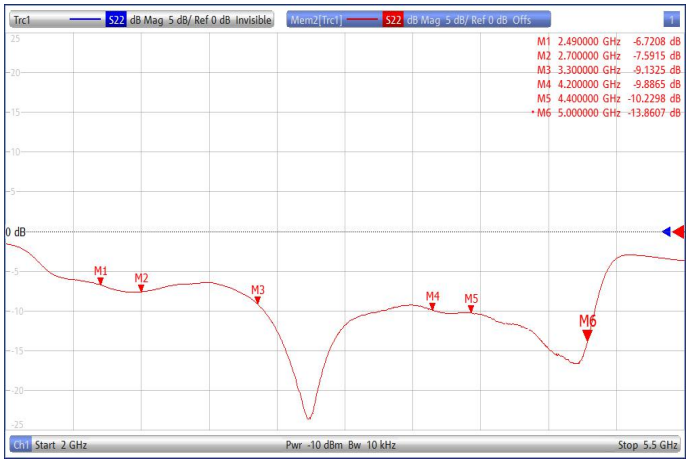
3.2 Antenna 2: n41/n77/n78/n79 General Specification

FRE (MHz)	2490	2700	3300	4200	4400	5000
VSWR	2.7	2.4	2.0	1.9	1.8	1.5
Return Loss	-6.7	-7.5	-9.1	-9.8	-10.2	-13.8
Eff (%)	35.4	37.8	38.0	52.1	56.1	40.7
Average Gain(dB)	-4.5	-4.2	-4.2	-2.8	-2.5	-3.9

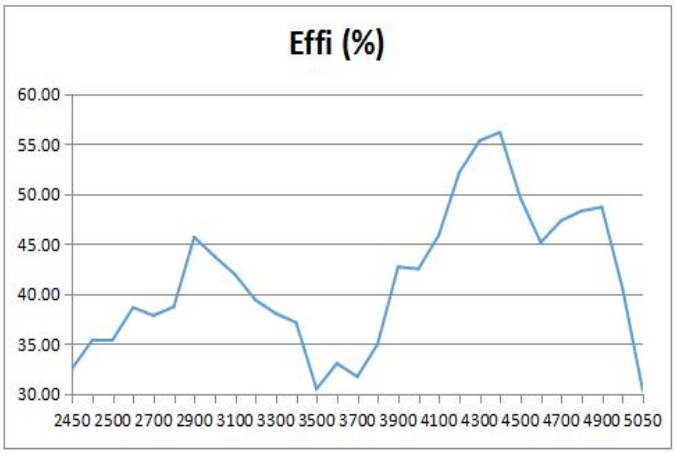
3.2.1 VSWR



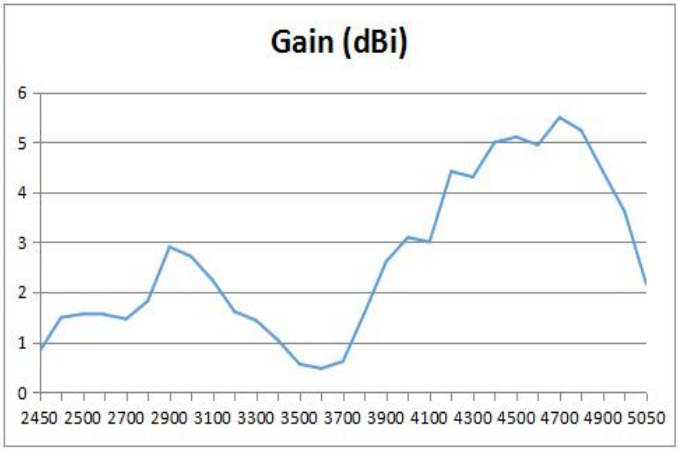
3.2.2 Return Loss



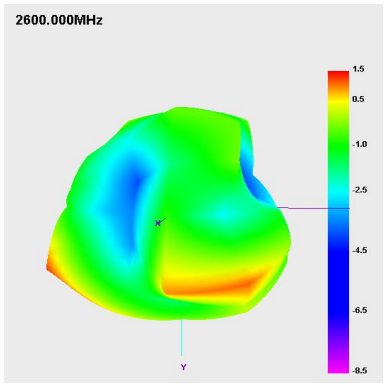
3.2.3 Efficiency

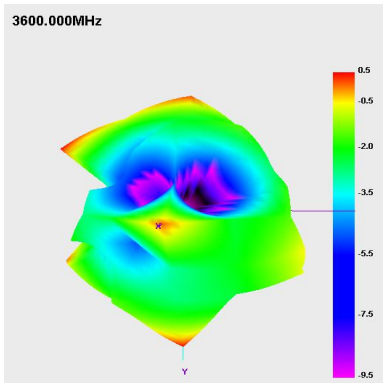


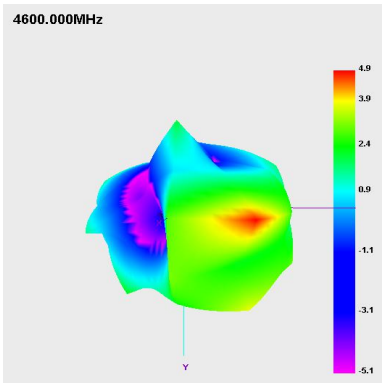
3.2.4 Gain

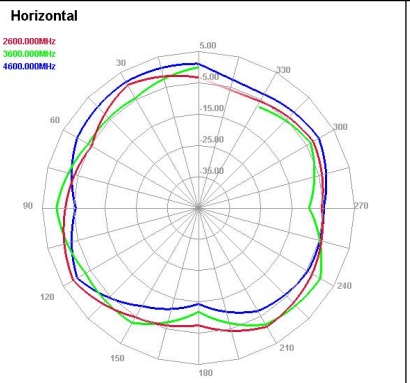


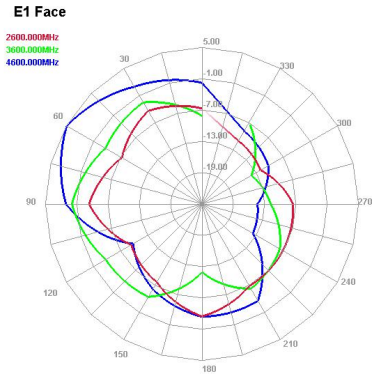
3.2.5 Directional pattern

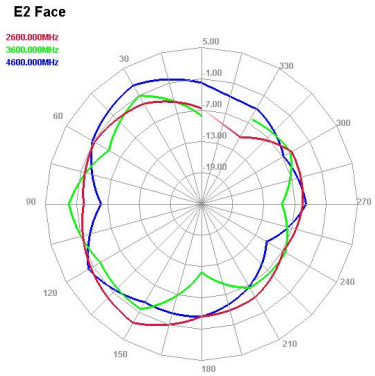








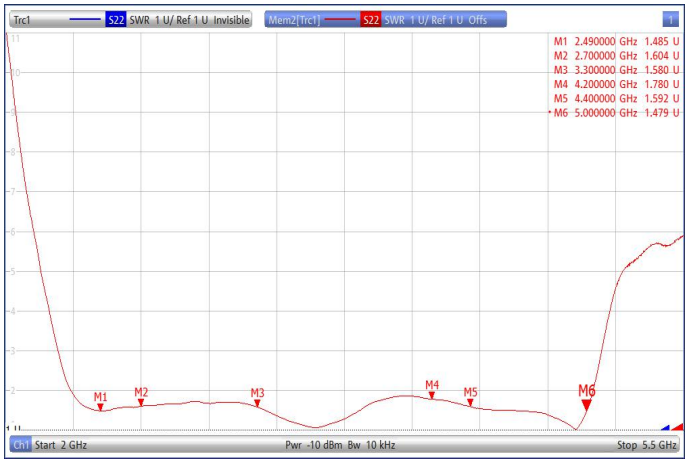




3.3 Antenna 3: n41/n77/n78/n79 General Specification

FRE (MHz)	2490	2700	3300	4200	4400	5000
VSWR	1.4	1.6	1.5	1.7	1.5	1.4
Return Loss	-14.1	-12.6	-12.9	-11.0	-12.8	-14.2
Eff (%)	40.7	42.5	52.0	59.8	66.0	43.1
Average Gain(dB)	-3.9	-3.7	-2.8	-2.2	-1.8	-3.7

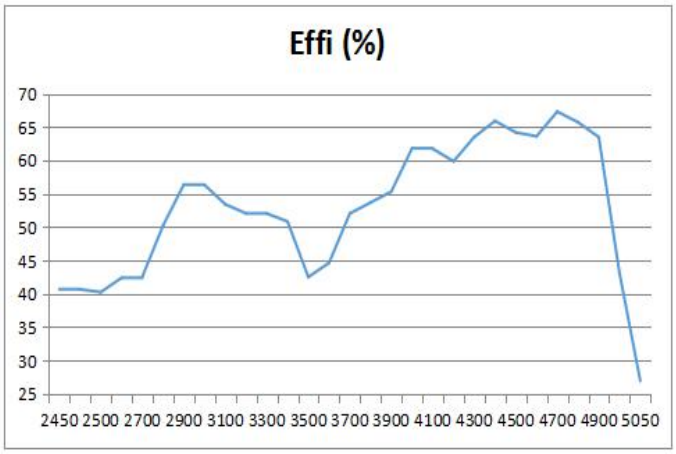
3.3.1 VSWR



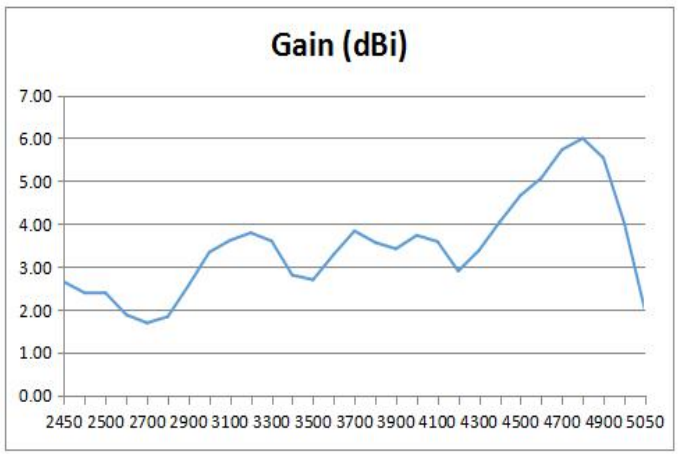
3.3.2 Return Loss



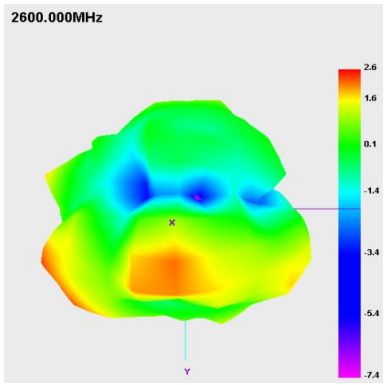
3.3.3 Efficiency

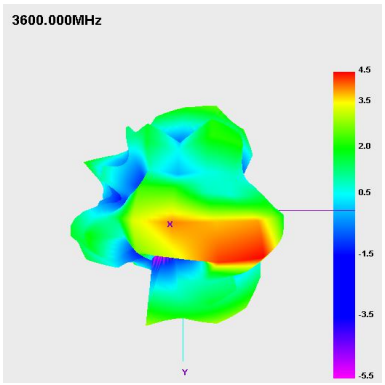


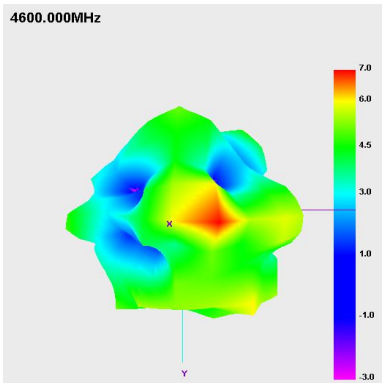
3.3.4 Gain

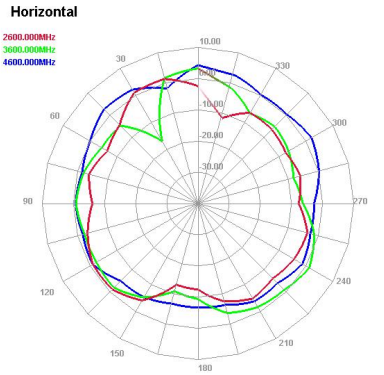


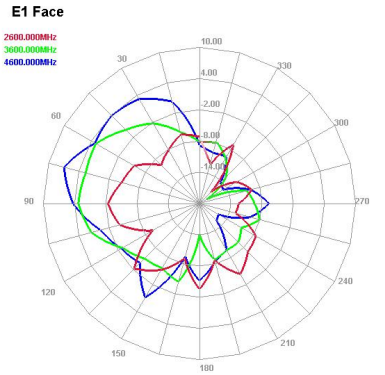
3.3.5 Directional pattern

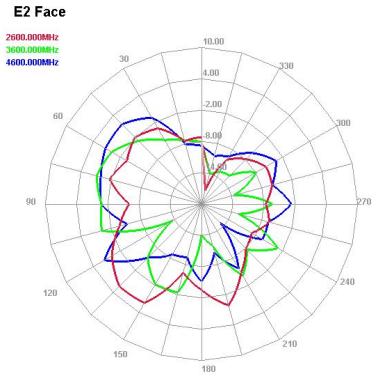








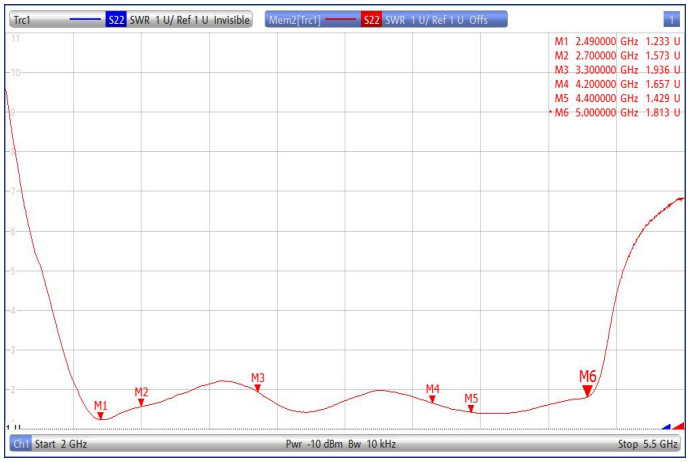




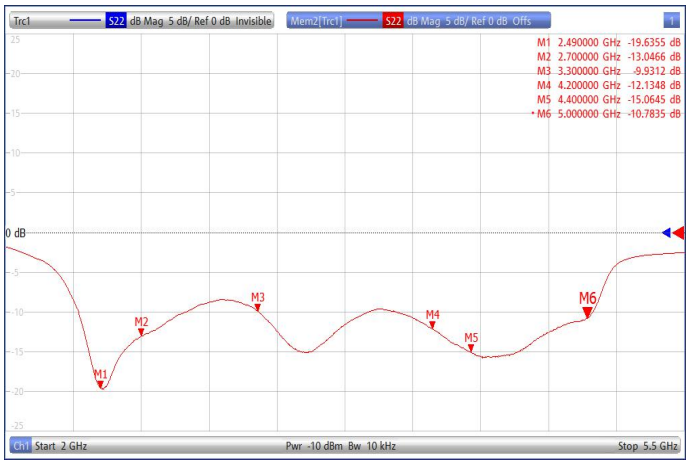
3.4 Antenna 4: n41/n77/n78/n79 General Specification

FRE (MHz)	2490	2700	3300	4200	4400	5000
VSWR	1.2	1.5	1.9	1.6	1.4	1.8
Return Loss	-19.6	-13.0	-9.9	-12.1	-15.0	-10.7
Eff (%)	46.1	45.1	46.8	60.4	64.7	45.9
Average Gain(dB)	-3.4	-3.5	-3.3	-2.2	-1.9	-3.4

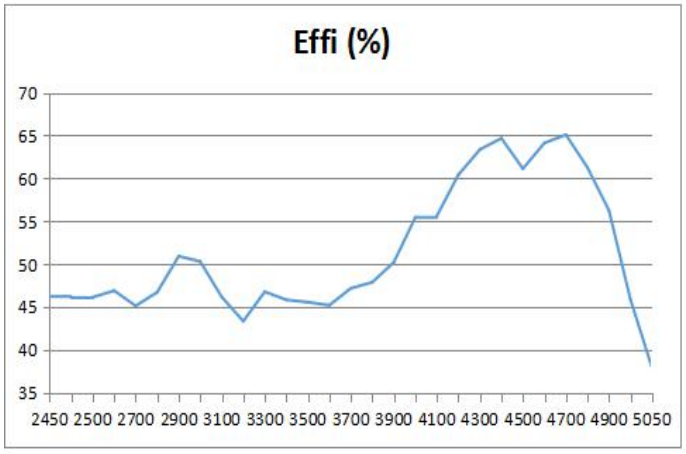
3.4.1 VSWR



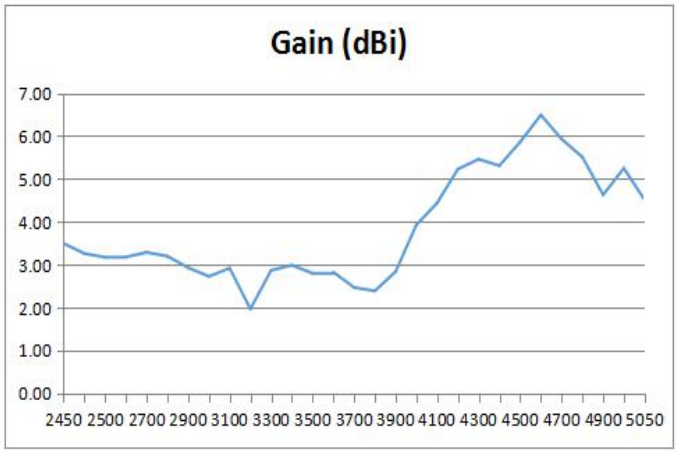
3.4.2 Return Loss



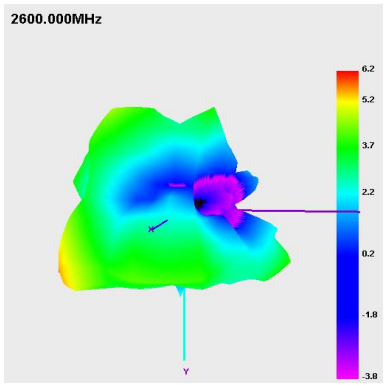
3.4.3 Efficiency

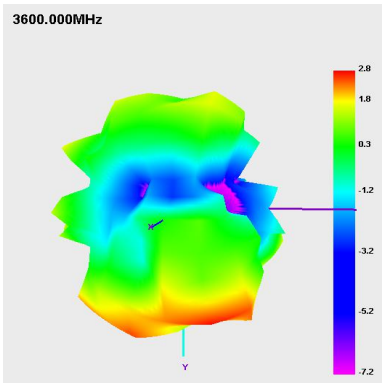


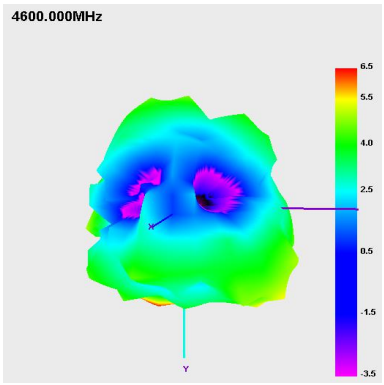
3.4.5 Gain

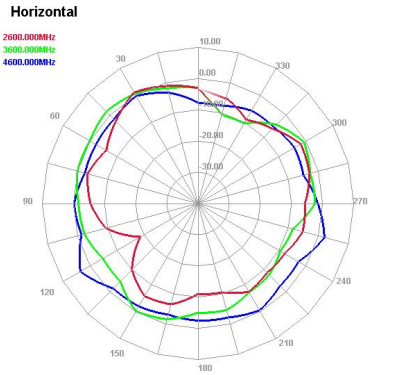


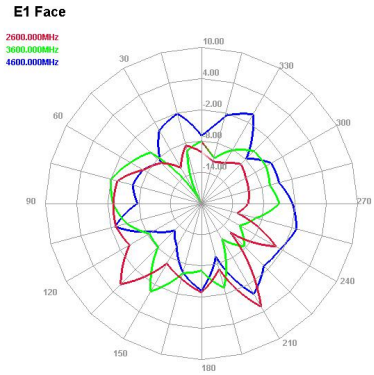
3.4.5 Directional pattern

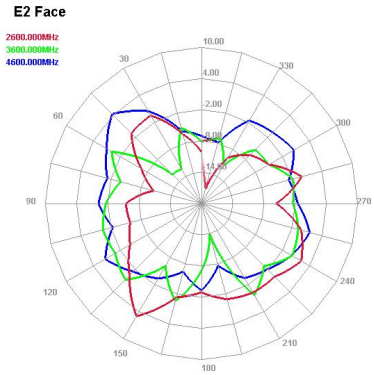








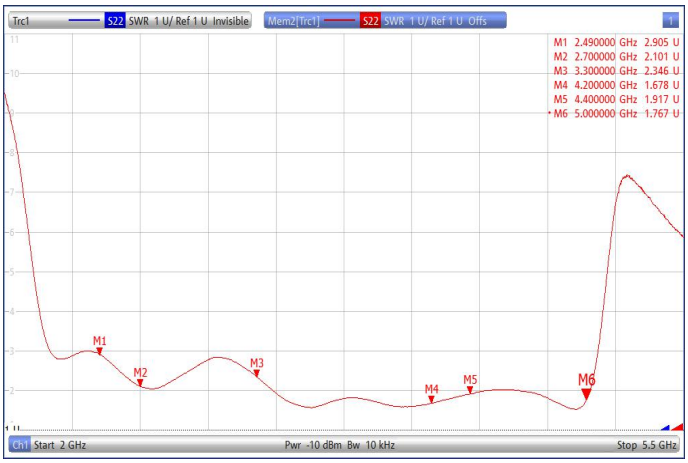




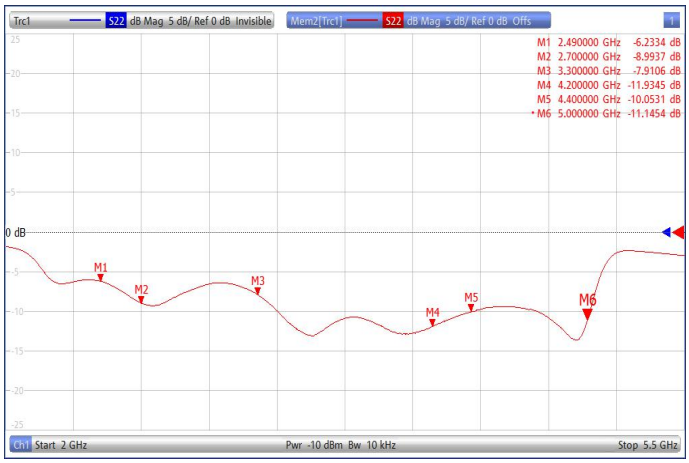
3.5 Antenna 5: n41/n77/n78/n79 General Specification

FRE (MHz)	2490	2700	3300	4200	4400	5000
VSWR	2.9	2.1	2.3	1.6	1.9	1.7
Return Loss	-6.2	-8.9	-7.9	-11.9	-10.0	-11.1
Eff (%)	37.0	33.7	38.8	55.2	57.3	42.1
Average Gain(dB)	-4.3	-4.7	-4.1	-2.6	-2.4	-3.8

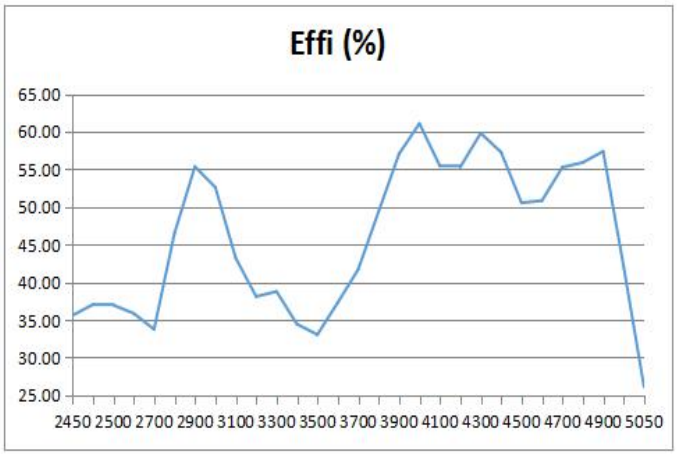
3.5.1 VSWR



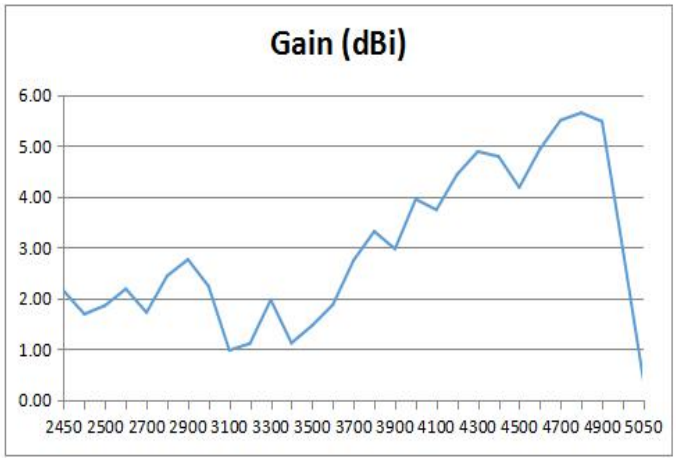
3.5.2 Return Loss



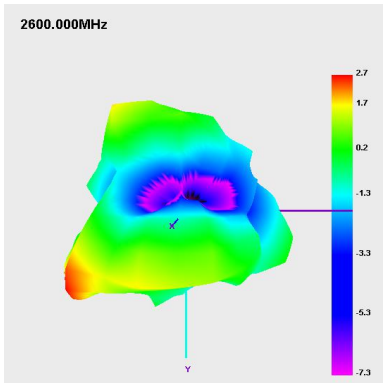
3.5.3 Efficiency

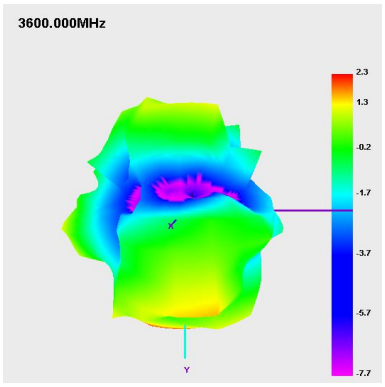


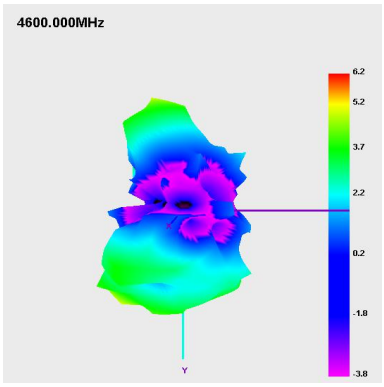
3.5.4 Gain

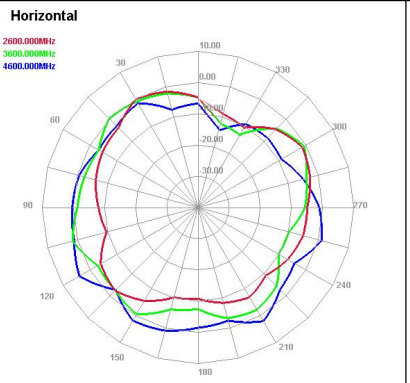


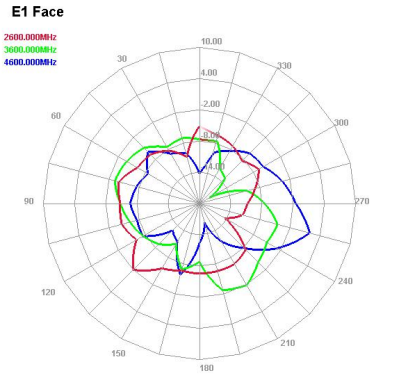
3.5.5 Directional pattern

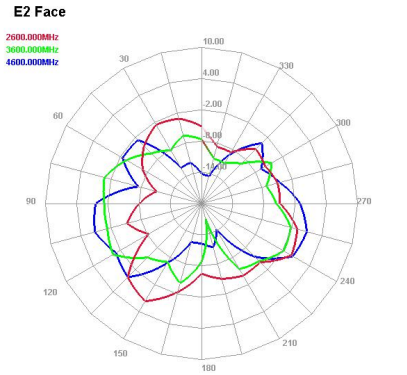








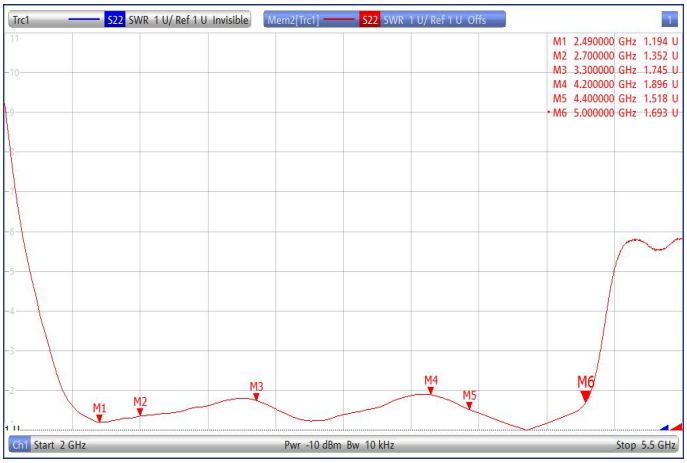




3.6 Antenna 6: n41/n77/n78/n79 General Specification

FRE (MHz)	2490	2700	3300	4200	4400	5000
VSWR	1.1	1.3	1.7	1.8	1.5	1.6
Return Loss	-21.0	-16.4	-11.3	-10.1	-13.7	-11.7
Eff (%)	45.0	46.2	50.8	51.5	63.6	43.6
Average Gain(dB)	-3.5	-3.4	-2.9	-2.9	-2.0	-3.6

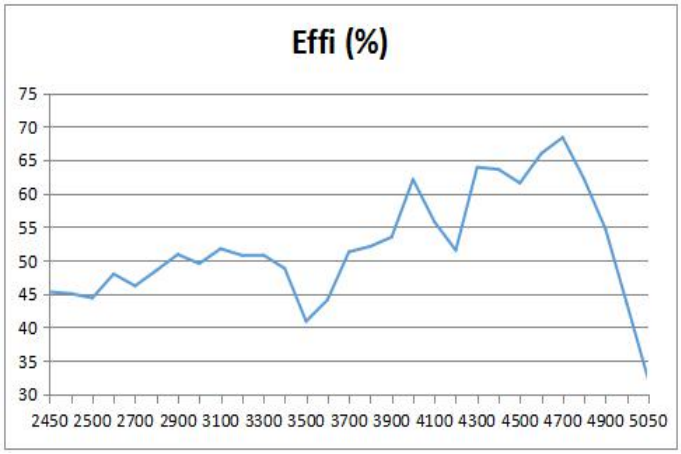
3.6.1 VSWR



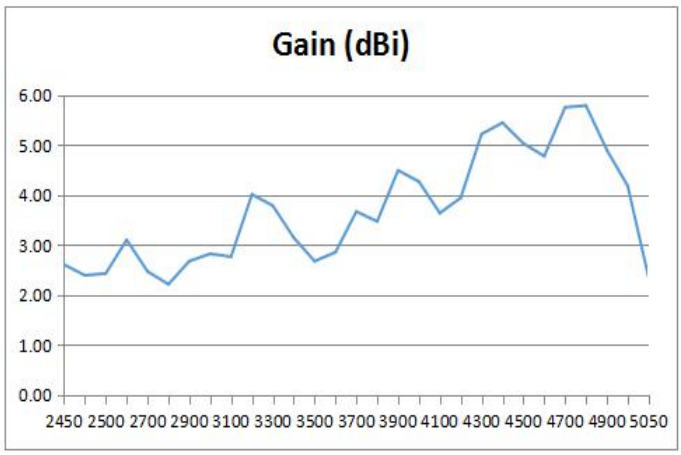
3.6.2 Return Loss



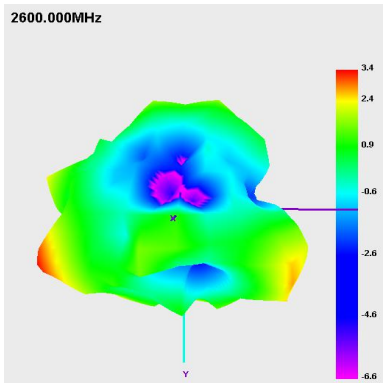
3.6.3 Efficiency

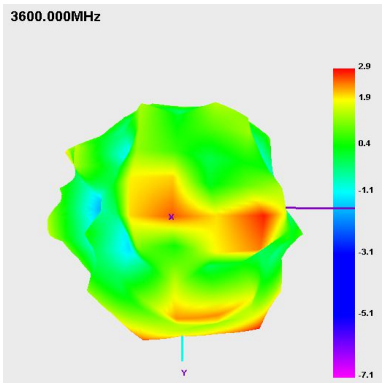


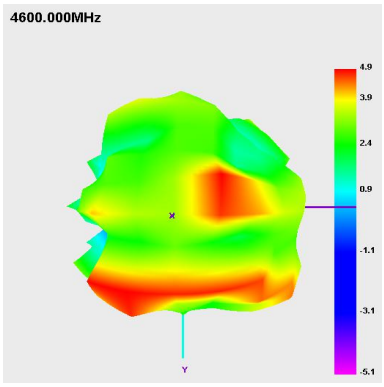
3.6.4 Gain



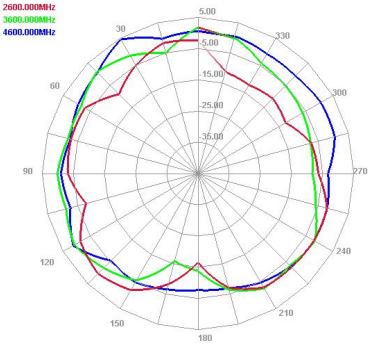
3.6.5 Directional pattern



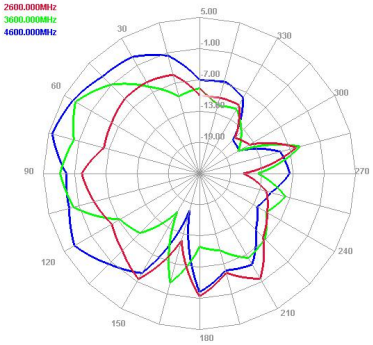




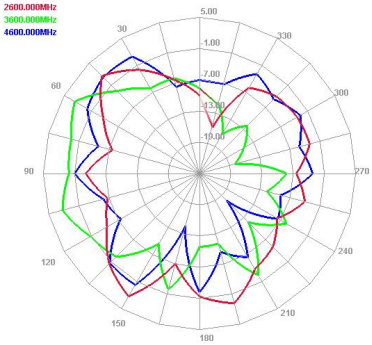
Horizontal



E1 Face



E2 Face



4. Isolation

4.1 Isolation of antenna 1 and 2



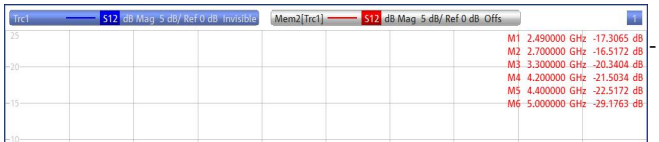
4.2 Isolation of antenna 1 and 3



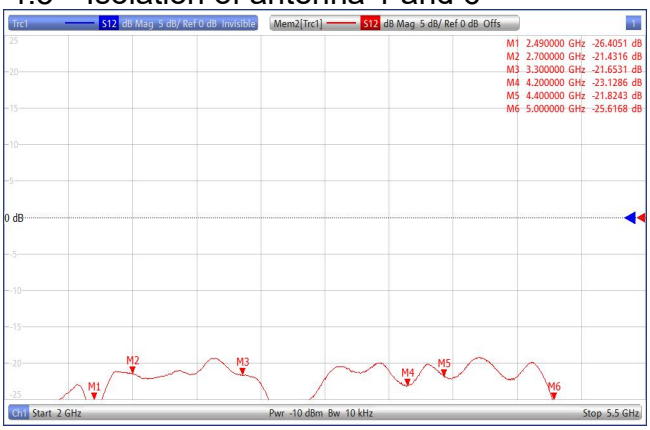
4.3 Isolation of antenna 1 and 4



4.4 Isolation of antenna 1 and 5



4.5 Isolation of antenna 1 and 6



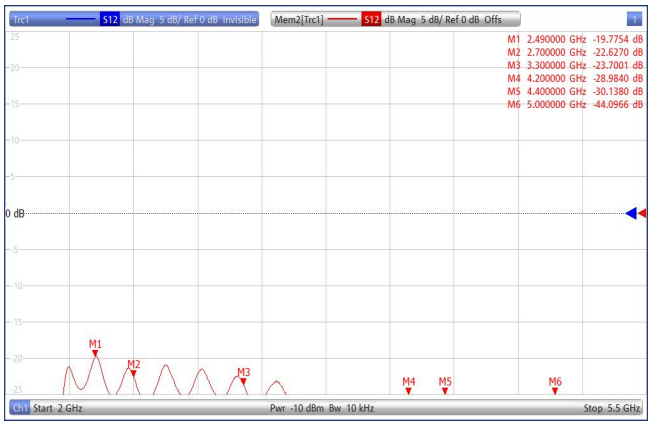
4.6 Isolation of cables 2 and 3



4.7 Isolation of antenna 2 and 4



4.8 Isolation of antenna 2 and 5



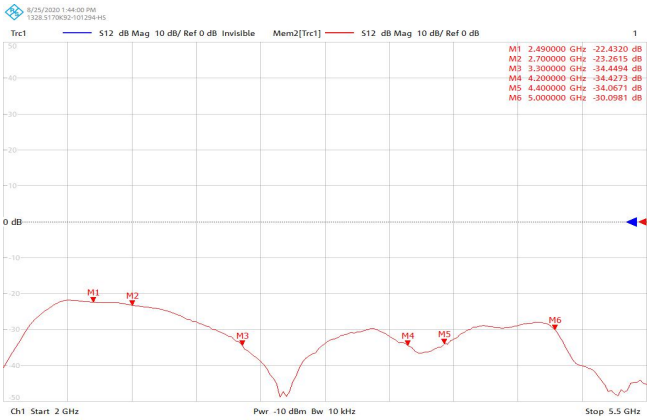
4.9 Isolation of antenna 2 and 6



4.10 Isolation of antenna 3 and 4



4.11 Isolation of antenna 3 and 5



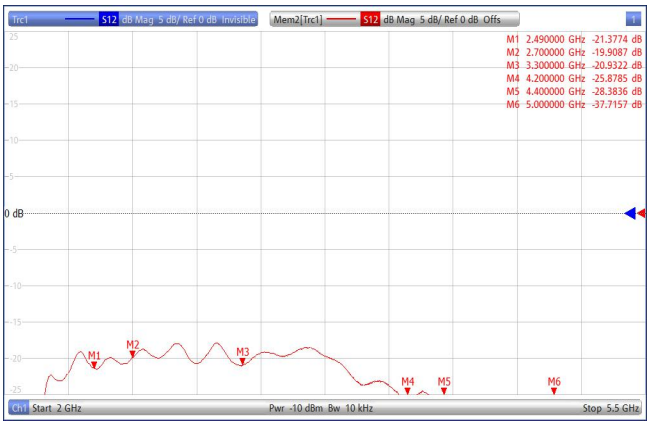
4.12 Isolation of antenna 3 and 6



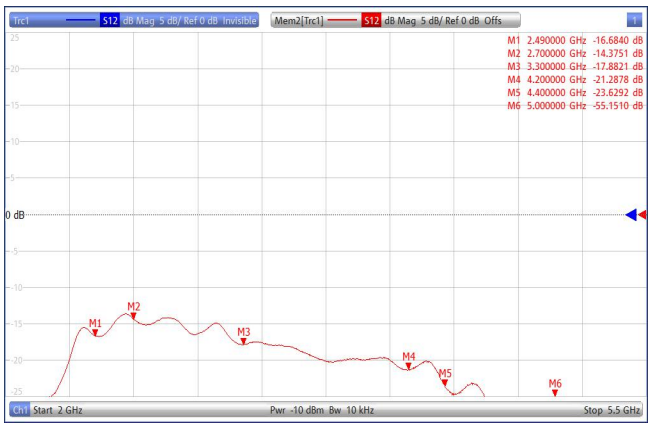
4.13 Isolation of antenna 4 and 5



4.14 Isolation of antenna 4 and 6

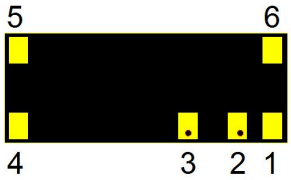


4.15 Isolation of antenna 5 and 6

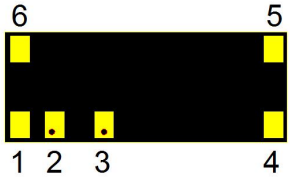


5. Schematic symbol and Pin definition

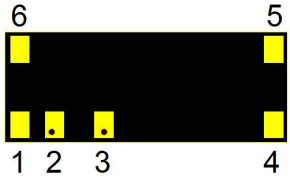
The pin assignment for the SWD017 antenna are as follows. The antenna has 6 pins and only two work. All other pins are designed for mechanical strength.



Antenna 1 4
(Type A antenna)



Antenna 2 5
(Type B antenna)

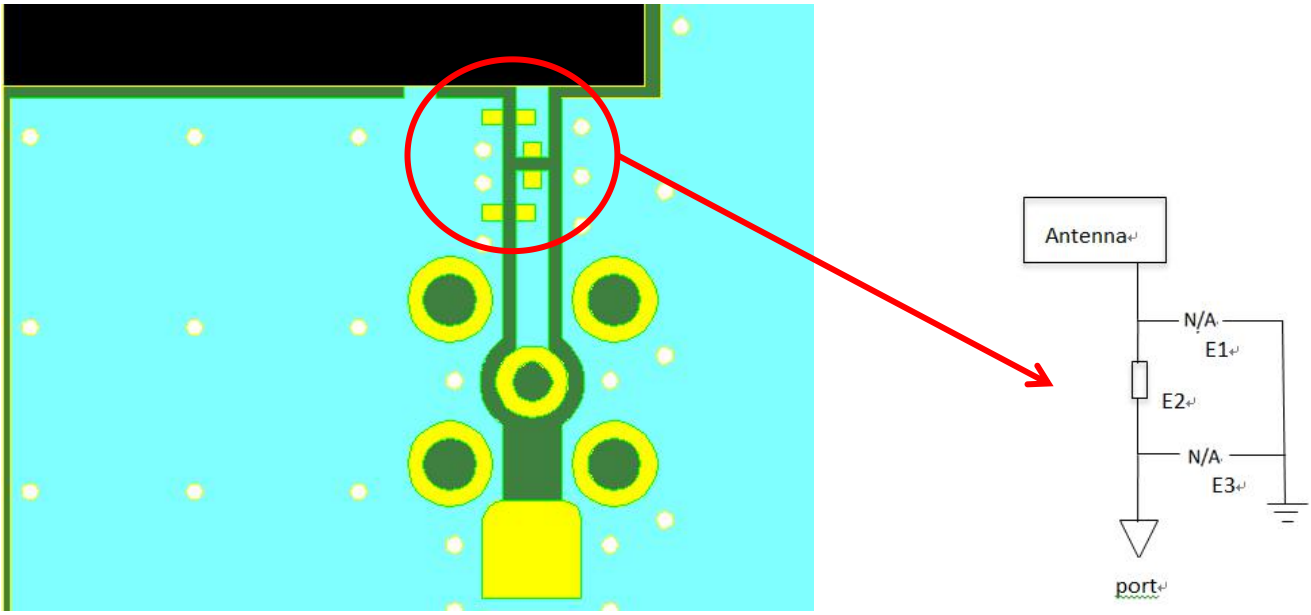


Antenna 3 6
(Type C antenna)

Pin No.	Description
2	Feed
3	Return/GND
1,4,5,6	Not used (Mechanical only)

6. Matching circuit

The A.,B and C antenna requires a matching circuit that must be optimized for each product. The matching circuit will require up to three components and the following circuit should be designed into the host PCB. Not all components may be required but should be included as a precaution. The matching network must be placed close to the antenna feed to ensure it is more effective in tuning the antenna.

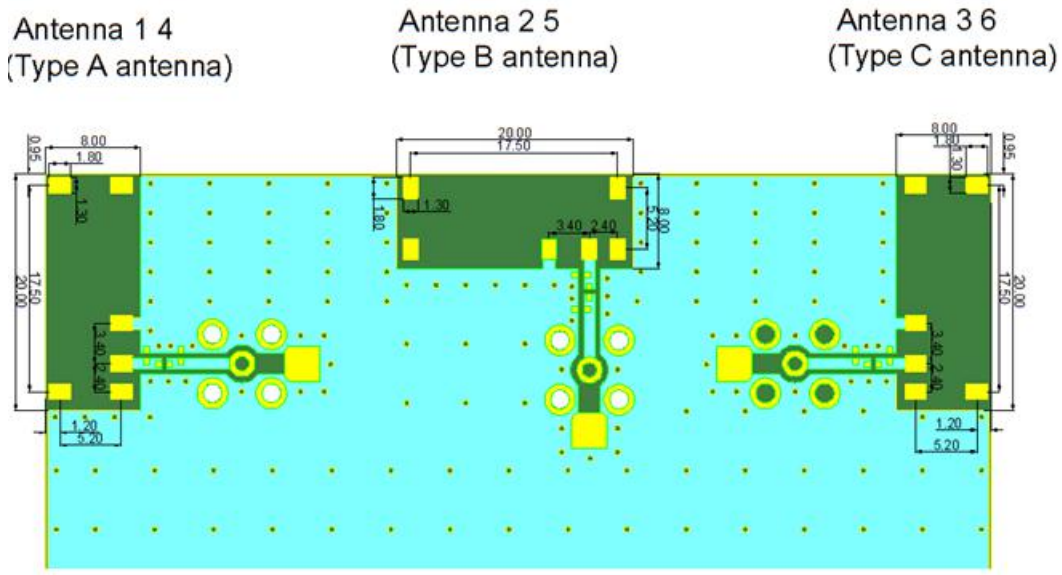


A, B and C antenna	Type	Value
E1	N/A	N/A
E2	Resistance	0Ω
E3	N/A	N/A

7. Host PCB Requirement

The printed circuit board of the host must ensure that the antenna clearance area meets the antenna specifications.

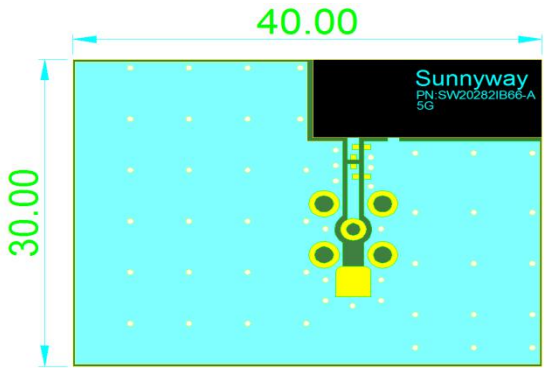
An example of a PCB layout shown as below:



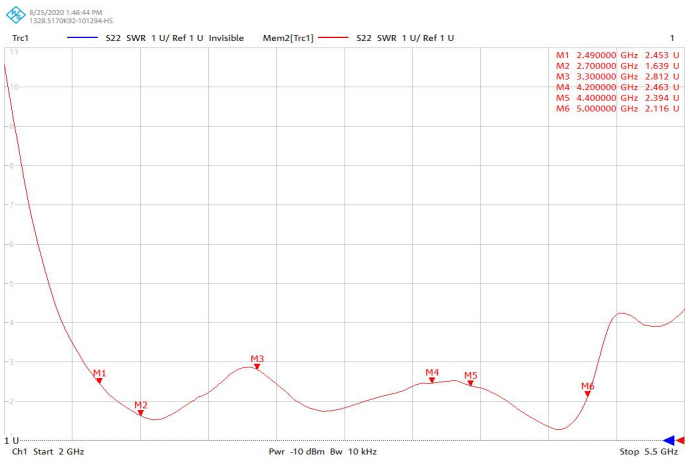
8. Single antenna system

This type of antenna is suitable for miniaturized products, a single 5G antenna test performance are shown as below!

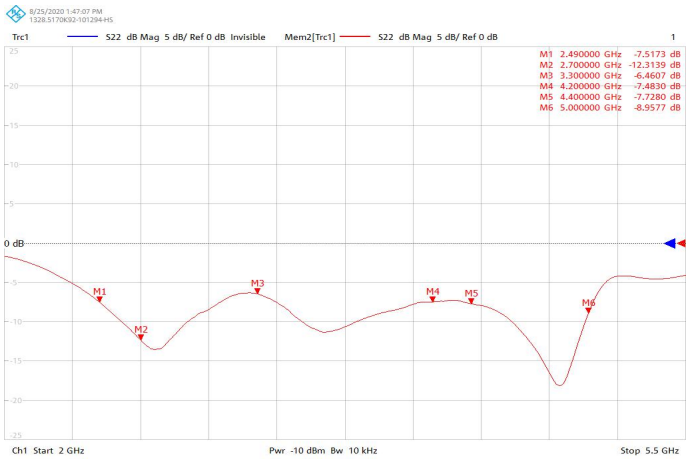
8.1 Antenna A tested with minimum board size 30 x 40mm:



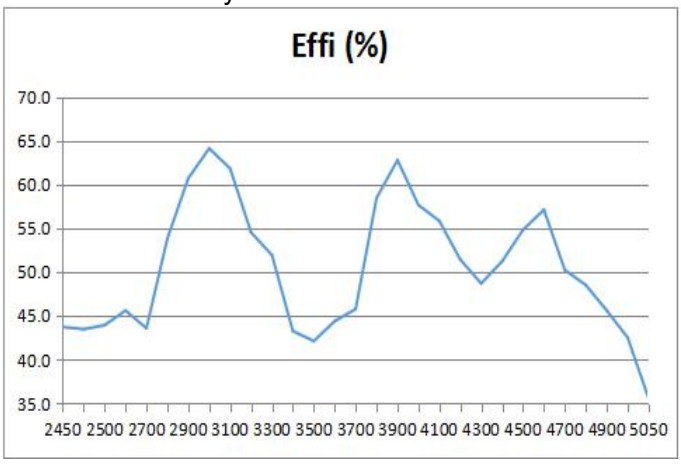
8.1.1 VSWR



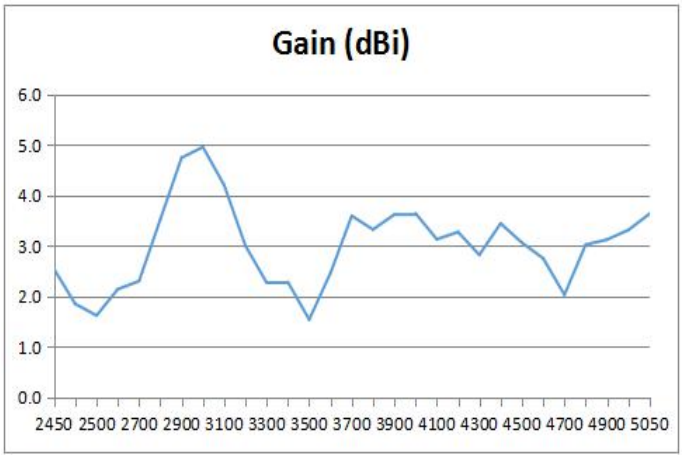
8.1.2 Return Loss



8.1.3 Efficiency



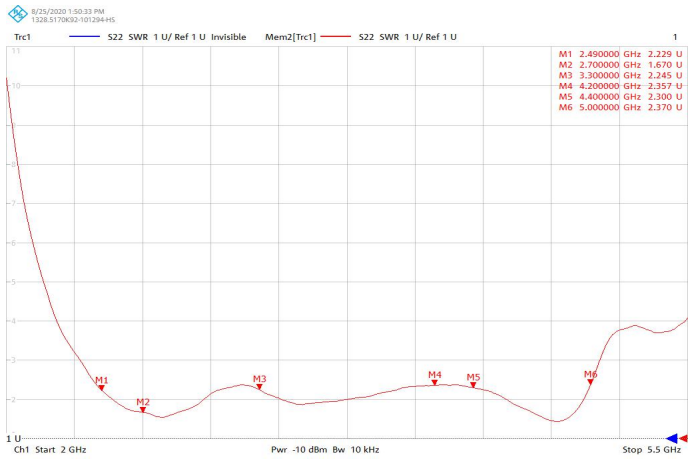
8.1.4 Gain



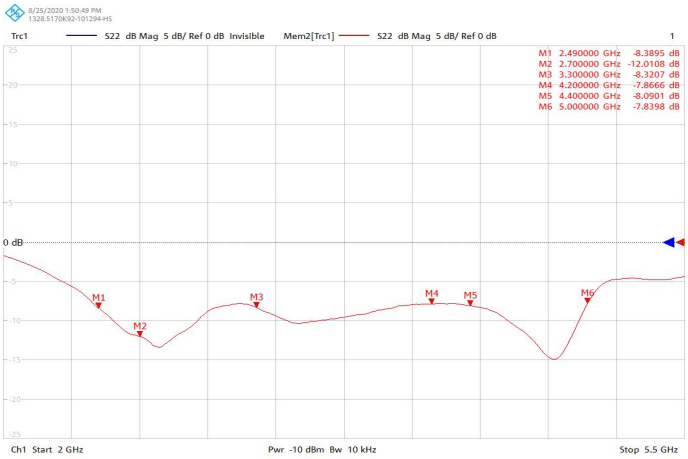
8.2 Antenna C tested with minimum board size 30 x 40mm:



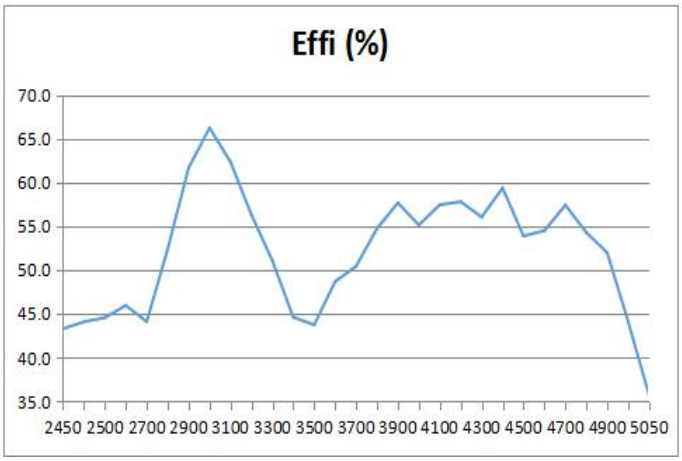
8.2.1 VSWR



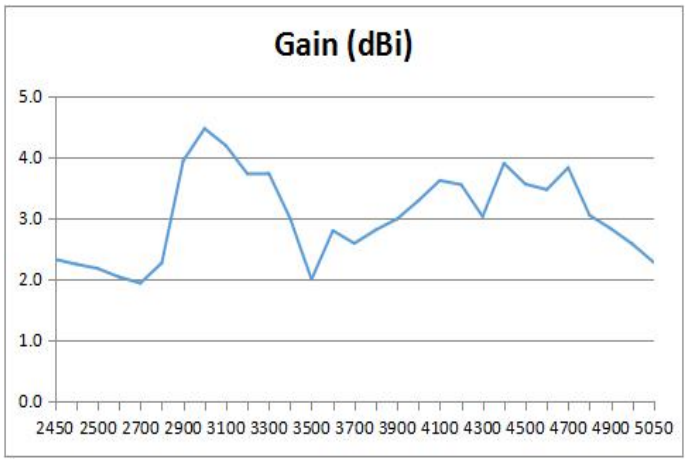
8.2.2 Return Loss



8.2.3 Efficiency



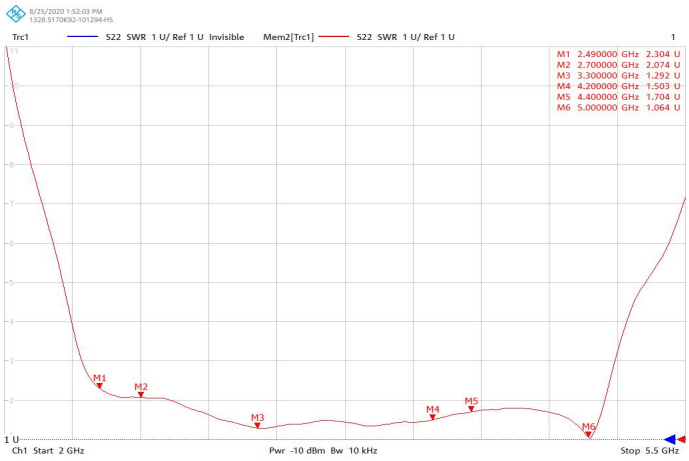
8.2.4 Gain



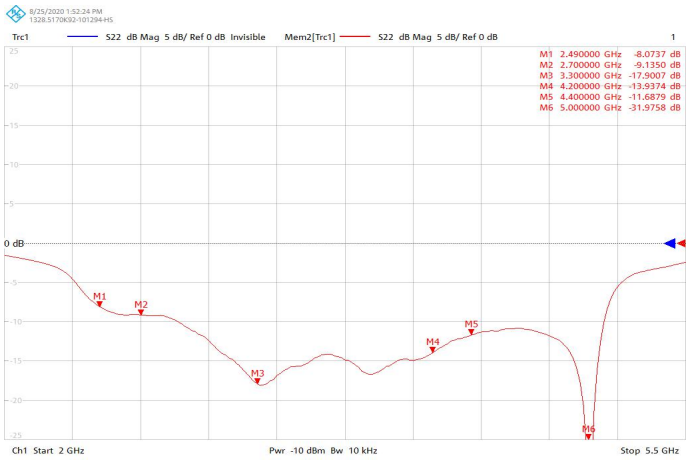
8.3 Antenna B tested with minimum board size 30 x 40mm:



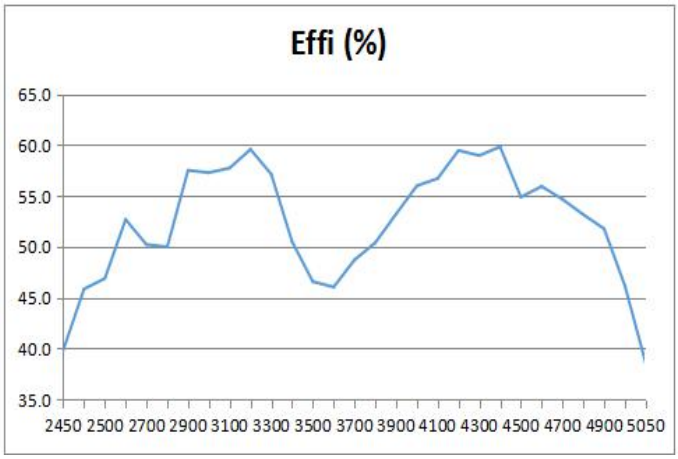
8.3.1 VSWR



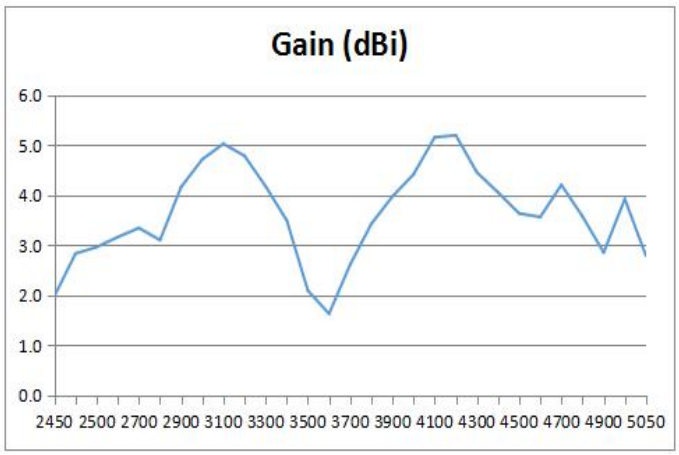
8.3.2 Return Loss



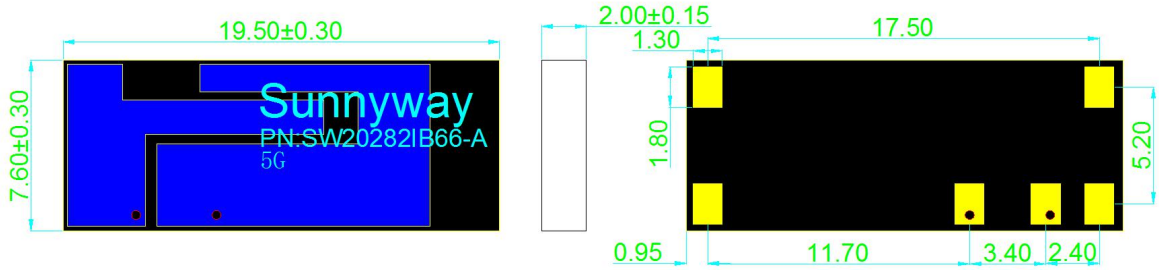
8.3.3 Efficiency

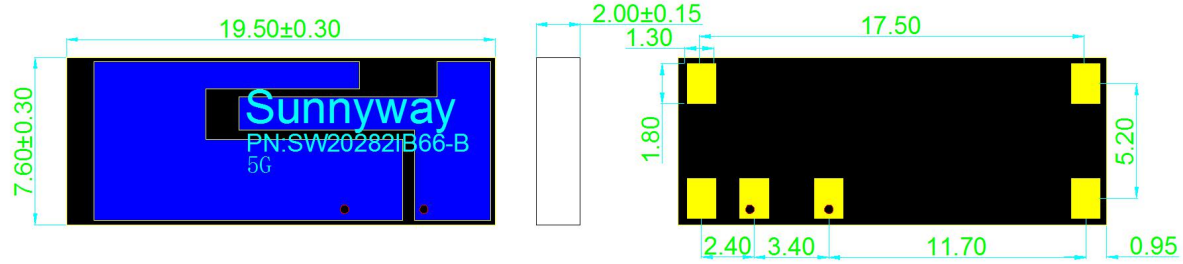


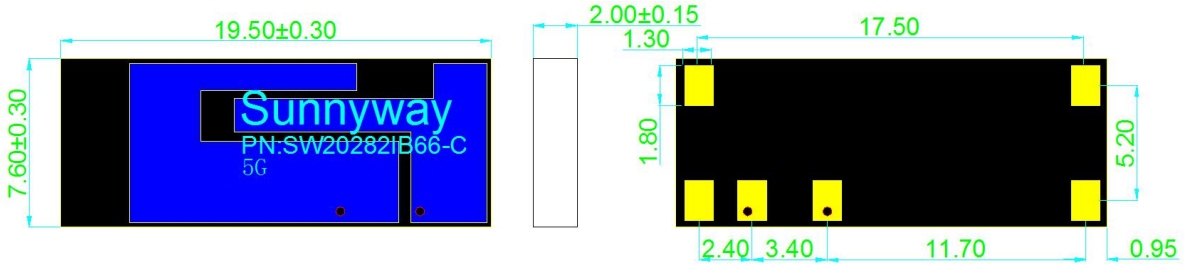
8.3.4 Gain

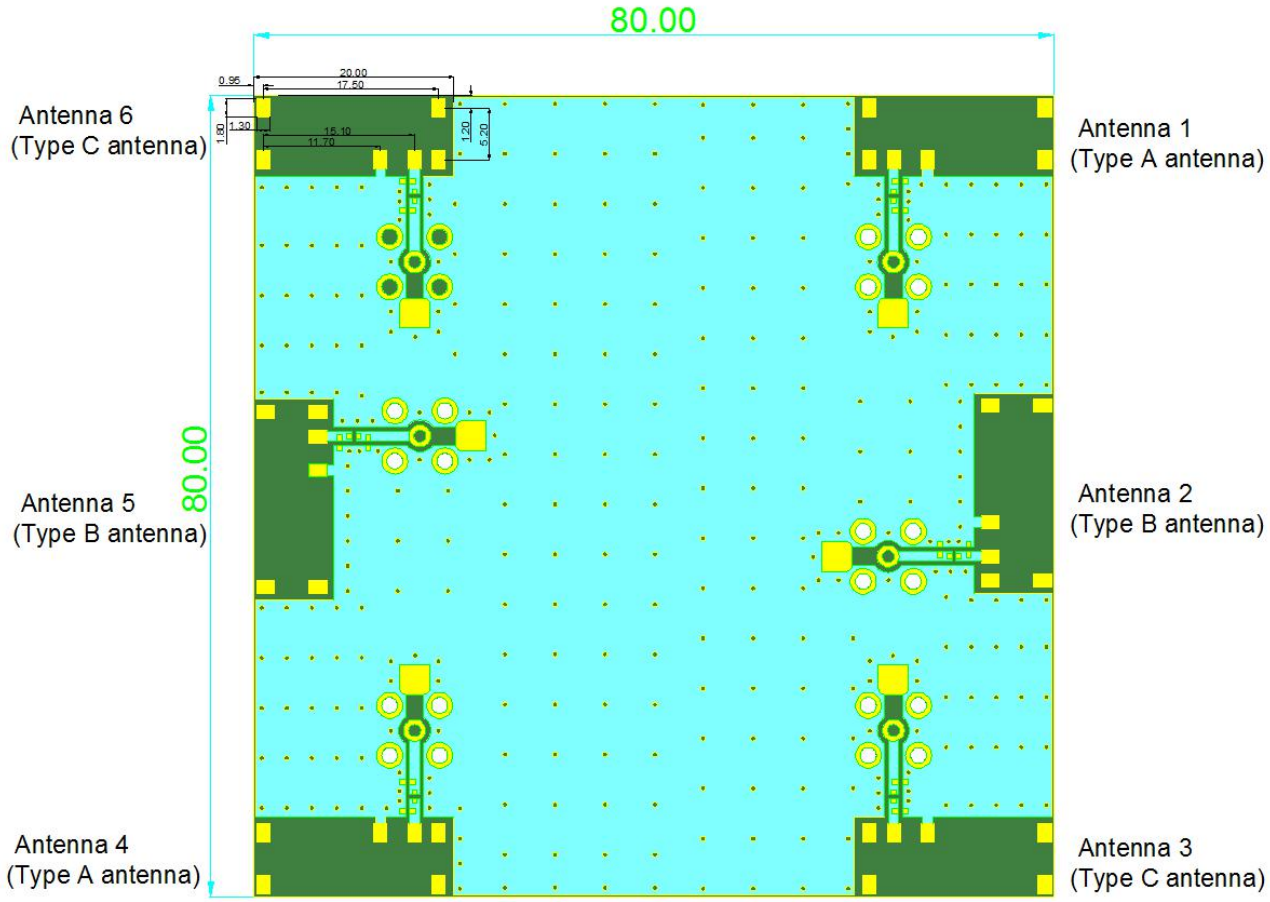


9.Antenna Drawing


19.50±0.30
7.60±0.30
Sunnyway
PN:SW20282IB66-A
5G
2.00±0.15
1.30
17.50
1.80
5.20
0.95
11.70
3.40
2.40


19.50±0.30
7.60±0.30
Sunnyway
PN:SW20282IB66-B
5G
2.00±0.15
1.30
17.50
1.80
5.20
2.40
3.40
11.70
0.95


19.50±0.30
7.60±0.30
Sunnyway
PN:SW20282IB66-C
5G
2.00±0.15
1.30
17.50
1.80
5.20
2.40
3.40
11.70
0.95


80.00
80.00
0.95
20.00
17.50
1.90
1.30
15.10
11.70
1.20
5.20
Antenna 6
(Type C antenna)
Antenna 1
(Type A antenna)
Antenna 5
(Type B antenna)
Antenna 2
(Type B antenna)
Antenna 4
(Type A antenna)
Antenna 3
(Type C antenna)

10. Soldering Temperature

PHASE	PROFILE FEATURES	PB-Free Assembly(max.)
RAMP-UP	Avg.Ramp-up Rate(Tsmax to Tp)	3℃/second(max.)
PREHEAT	Temperature Min(Tsmin) Temperature Max(Tsmax) Time(tsmin to tsmax)	150℃ 180℃ 120seconds max
REFLOW	Temperature(TL) Total Time above TL(tl)	210℃ 50seconnds max
PEAK	Temperature(Tp) Time(tp)	260℃ 10seconnds max
RAMP-DOWN	Rate	5℃/second max

11. Reflow Profile

