Shenzhen PIPA antenna design Co.,LTD.

OTATESTREPORT(Passive)

Project name：UF1002
Preparedby ：XIE Mengyang
IssueDate：20241112

1. Test Laboratory

1.1 Notes of the Test report

This report shall not be reproduced in full or partial. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of applicable standards stated above.

1.2 Test facility

Satimo SG16 Chamber ： testing frequency ranges from 600MHz to6GHz.

1.3 Testing Location

Company: Shenzhen PIPA antenna design Co.,LTD.

Address: Unit F/4F, buildingA，Junxiangda，Plada，Zhongshanyuan Road，Nanshan District，Shenzhen

Contact: Xie Mengyang

Telephone: 15571213211

E-mail: PIFA555@163.com

1.4 Laboratory Environment

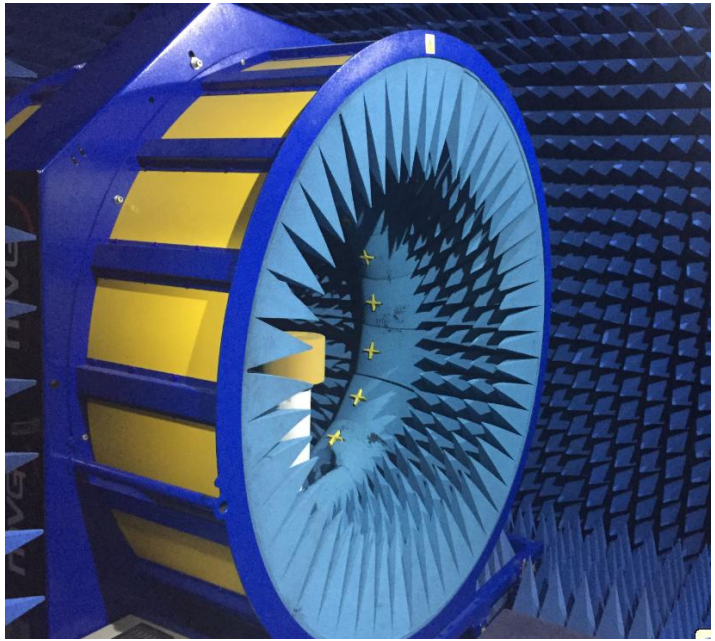
Temperature	Min.= 19℃, Max.=25℃	
Relative humidity	Min.=40%，Max.=72%	
Shield effect	0.6-7GHz	>100dB
Ground resistance	<0.5Ω	

2. General Description of Equipment under Test

2.1 General information

EUT Description	
Product Name	*Satimo SG16* Chamber
Antenna Type	FPC Antenna
Antenna Manufacturer	Shenzhen PIPA antenna design Co.,LTD.
Test Frequency	617MHz-5000MHz

3. Test Conditions



Test items	Test equipment
S11、S12 、VSWR 、LOSS	E5071B、E5062A
Efficiency、Gain 3D Radiation Pattern	Satimo SG16Chamber、GP7*4*3Chamber、 E5071B
TRP、TIS	Satimo SG16Chamber、GP7*4*3Chamber、8960 、CMW500、MT8820C、E4438C、

4. Test Results

4.1 Antenna Effi.& Max. Peak Gain

ANT0

Frequency /Mhz	Efficiency / dB	Efficiency / %	MaxGain /dBi	Frequency /Mhz	Efficiency / dB	Efficiency / %	MaxGain /dBi
600	-10.76	8.4	-9.2	1970	-3.54	44.26	1.49
620	-9.72	10.66	-8.1	1990	-3.67	42.95	1.04
640	-9.03	12.51	-6.83	2010	-3.67	42.95	0.94
660	-8.58	13.86	-4.28	2030	-3.83	41.4	0.49
680	-7.85	16.4	-3.81	2050	-3.96	40.18	0.18
700	-7.65	17.16	-2.61	2070	-4.14	38.55	0.64
720	-7.65	17.19	-3.4	2090	-4.29	37.24	1.17
740	-7.36	18.35	-2.88	2110	-4.57	34.91	1.19
760	-7.00	19.94	-1.76	2130	-4.62	34.51	1.36
780	-6.65	21.62	-1.97	2150	-4.93	32.14	1.11
800	-6.57	22.01	-3.38	2170	-5.11	30.83	1.13
820	-6.49	22.45	-3.16	2300	-5.38	28.99	1.08
840	-6.39	22.95	-3.28	2320	-5.43	28.65	1.04
860	-6.71	21.32	-4.01	2340	-5.65	27.23	0.88
880	-6.93	20.26	-4.68	2360	-5.57	27.72	1.03
900	-7.61	17.35	-5.75	2380	-5.85	26.03	0.55
920	-7.87	16.34	-5.37	2400	-5.68	27.05	0.82
940	-8.15	15.3	-4.99	2420	-5.66	27.14	0.75
960	-8.35	14.61	-5.1	2440	-5.61	27.45	0.89
1710	-6.06	24.77	-0.39	2460	-5.61	27.5	0.85
1730	-5.94	25.47	0.07	2480	-5.27	29.73	1.35
1750	-5.61	27.48	0.36	2500	-5.34	29.23	1.43
1770	-5.12	30.76	0.41	2520	-5.38	28.99	1.89
1790	-4.93	32.14	0.11	2540	-5.53	28	2.02
1810	-4.79	33.19	0.34	2560	-5.43	28.61	2.2
1830	-4.63	34.43	1	2580	-5.46	28.46	2.14
1850	-4.42	36.14	1.35	2600	-5.20	30.23	2.34
1870	-4.11	38.82	2.01	2620	-5.20	30.18	2.22
1890	-3.82	41.5	2.62	2640	-5.14	30.59	2.17
1910	-3.80	41.69	2.57	2660	-5.07	31.12	2.08
1930	-3.66	43.05	2.24	2680	-4.98	31.77	2.13
1950	-3.51	44.57	1.69	2700	-5.08	31.07	1.72

ANT1

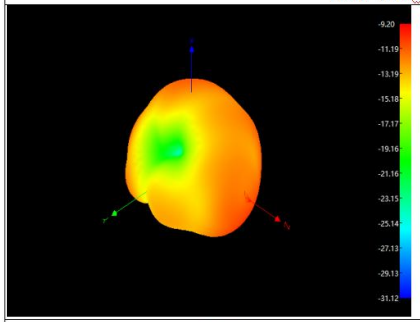
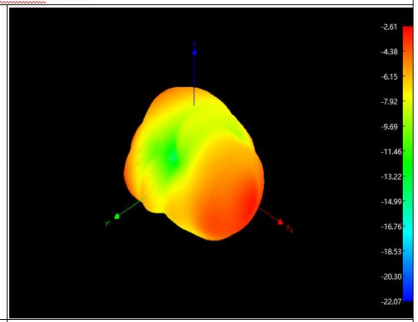
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
600	-18.30	1.48	-15.99	1970	-9.78	10.51	-5.9
620	-18.04	1.57	-16.66	1990	-9.79	10.5	-5.47
640	-17.03	1.98	-15.32	2010	-9.78	10.51	-5.12
660	-18.01	1.58	-15.9	2030	-9.78	10.52	-4.68
680	-19.43	1.14	-10.06	2050	-9.80	10.48	-4.53
700	-15.27	2.97	-9.67	2070	-9.79	10.5	-4.3
720	-15.39	2.89	-8.74	2090	-9.73	10.63	-2.88
740	-14.92	3.22	-6.63	2110	-9.74	10.61	-3.5
760	-12.17	6.07	-8.18	2130	-9.76	10.58	-4.3
780	-9.90	10.23	-6.91	2150	-9.77	10.55	-4.81
800	-9.67	10.79	-6.32	2170	-9.79	10.49	-2.08
820	-8.93	12.79	-7.19	2300	-8.65	13.65	-2.76
840	-8.36	14.59	-7.36	2320	-8.50	14.13	-2.85
860	-8.55	13.96	-7.59	2340	-8.89	12.91	-3.38
880	-9.69	10.75	-7.17	2360	-8.81	13.15	-3.41
900	-10.79	8.34	-4.49	2380	-9.12	12.25	-3.62
920	-10.93	8.08	-6.16	2400	-8.94	12.76	-3.42
940	-11.40	7.24	-5.56	2420	-9.08	12.36	-3.42
960	-12.30	5.89	-5.2	2440	-9.32	11.69	-3.39
1710	-9.18	12.08	-0.53	2460	-9.83	10.4	-3.87
1730	-9.35	11.62	-2.17	2480	-9.25	11.89	-3.29
1750	-9.45	11.35	-4.48	2500	-8.32	14.72	-2.08
1770	-9.55	11.08	-4.26	2520	-7.22	18.97	-0.56
1790	-9.62	10.91	-5.53	2540	-6.37	23.07	0.69
1810	-9.52	11.18	-3.43	2560	-5.70	26.92	1.6
1830	-9.69	10.75	-4.44	2580	-5.67	27.1	1.72
1850	-9.73	10.63	-4.6	2600	-5.85	26	1.46
1870	-9.81	10.44	-5.78	2620	-6.24	23.77	0.85
1890	-9.86	10.33	-7.16	2640	-6.86	20.61	0.19
1910	-9.88	10.28	-5.96	2660	-7.22	18.97	-0.24
1930	-9.86	10.33	-5.91	2680	-8.00	15.85	-0.99
1950	-9.80	10.47	-6.38	2700	-8.80	13.18	-1.63

ANT2

Frequency /Mhz	Efficiency / dB	Efficiency / %	MaxGain /dBi	Frequency /Mhz	Efficiency / dB	Efficiency / %	MaxGain /dBi
1505	-5.35	29.17	-0.81	5150	-5.43	28.66	-0.17
1515	-5.09	30.97	-0.16	5170	-5.33	29.29	0.21
1525	-4.76	33.41	-0.15	5190	-5.18	30.36	0.5
1535	-4.53	35.21	0.67	5210	-5.22	30.06	0.59
1545	-4.29	37.28	0.43	5230	-5.06	31.16	0.91
1555	-4.16	38.34	0.54	5250	-4.75	33.51	1.59
1565	-3.94	40.32	0.69	5270	-4.85	32.77	1.62
1575	-3.81	41.58	0.66	5290	-4.69	33.99	1.88
1585	-4.13	38.65	0.66	5310	-4.57	34.9	1.96
1595	-4.03	39.58	0.55	5330	-4.76	33.44	1.75
2400	-4.35	36.73	0.58	5350	-4.58	34.83	2.01
2410	-4.36	36.64	0.58	5370	-4.65	34.27	2.06
2420	-4.30	37.15	0.18	5390	-4.60	34.69	2.05
2430	-4.24	37.67	0.26	5410	-4.63	34.41	1.85
2440	-4.33	36.9	-0.04	5430	-4.55	35.05	1.73
2450	-4.24	37.67	-0.03	5450	-4.84	32.84	1.22
2460	-4.40	36.31	-0.21	5470	-4.75	33.51	1.14
2470	-4.32	36.98	-0.2	5490	-4.64	34.34	1.12
2480	-4.10	38.9	0.23	5510	-4.91	32.25	0.56
2490	-3.98	39.99	0.4	5530	-4.93	32.12	0.34
2500	-4.04	39.45	0.42	5550	-4.98	31.8	0.11
				5570	-5.21	30.12	-0.28
				5590	-5.21	30.12	-0.35
				5610	-5.17	30.42	-0.4
				5630	-5.30	29.53	-0.6
				5650	-5.54	27.93	-0.92
				5670	-5.51	28.1	-0.85
				5690	-5.96	25.33	-1.39
				5710	-6.01	25.04	-1.46
				5730	-6.09	24.61	-1.47
				5750	-6.37	23.05	-1.72
				5770	-6.22	23.86	-1.4
				5790	-6.12	24.42	-1.24
				5810	-6.41	22.88	-1.56
				5830	-6.15	24.28	-1.26
				5850	-6.35	23.19	-1.5

4.2 Antenna radiation pattern

ANT0

Technical Specification	
Ant0 3-D Patten Plots	
	
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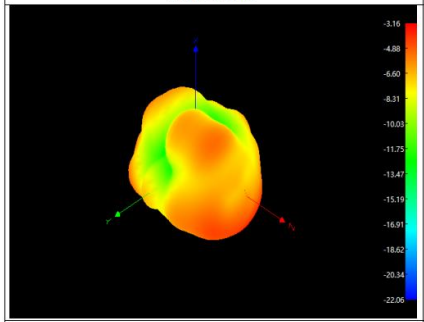	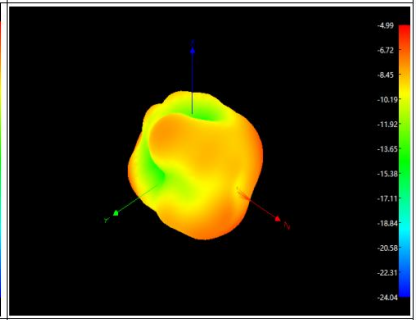
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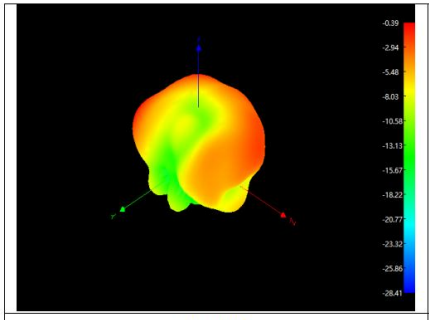
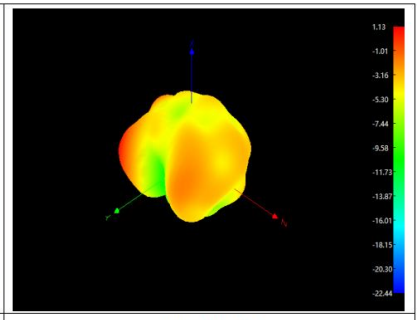
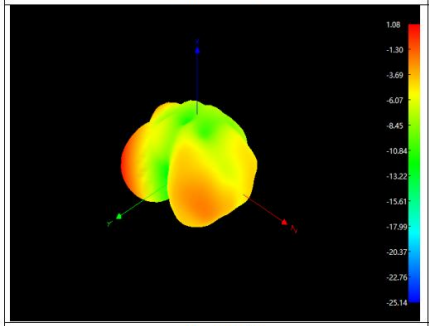
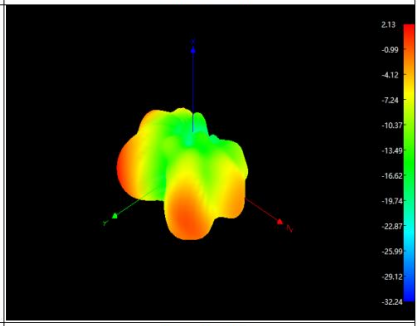
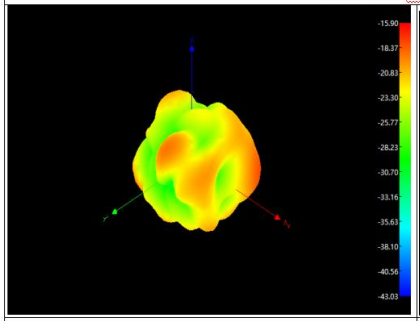
	
Ant0: 1710Mhz	Ant0: 2170Mhz
	
Ant0: 2300Mhz	Ant0: 2680Mhz

ANT1

Technical Specification

Ant1 3-D Patten Plots



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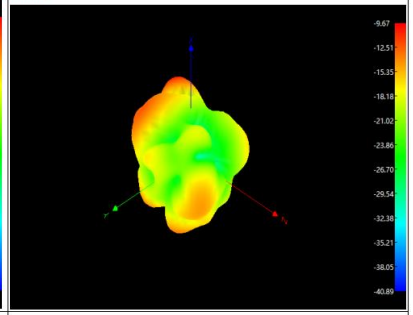
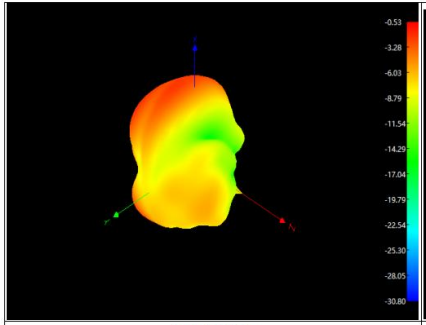


Ant1: 700Mhz



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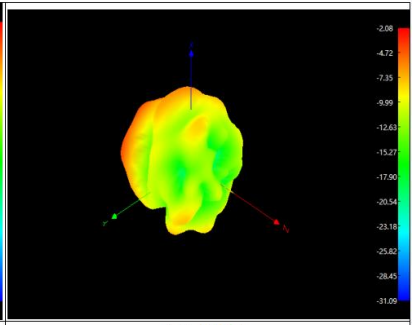

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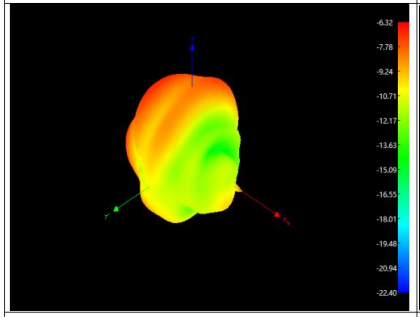

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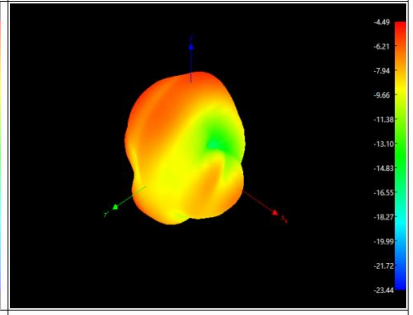
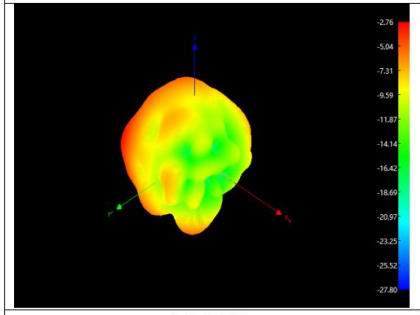
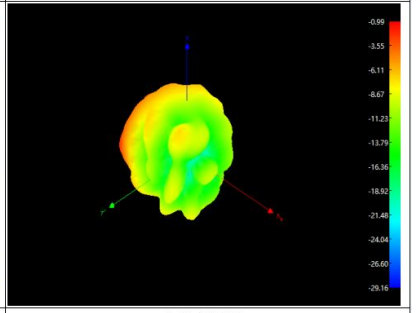


Ant1: 900Mhz



Ant1: 2300Mhz

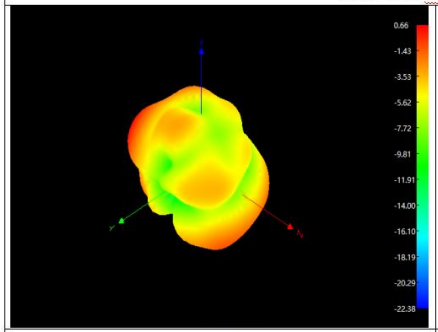


Ant1: 2680Mhz

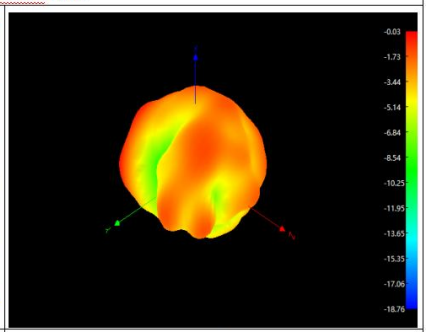
ANT2

Technical Specification

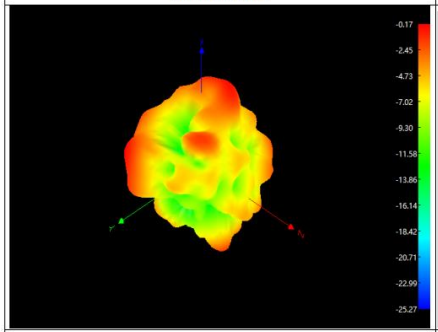
Ant2 3-D Patten Plots



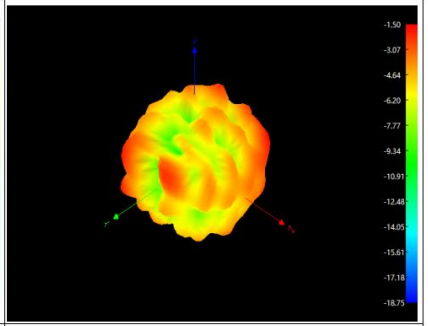
Ant3: 1575Mhz



Ant3: 2450Mhz



Ant3: 5150Mhz



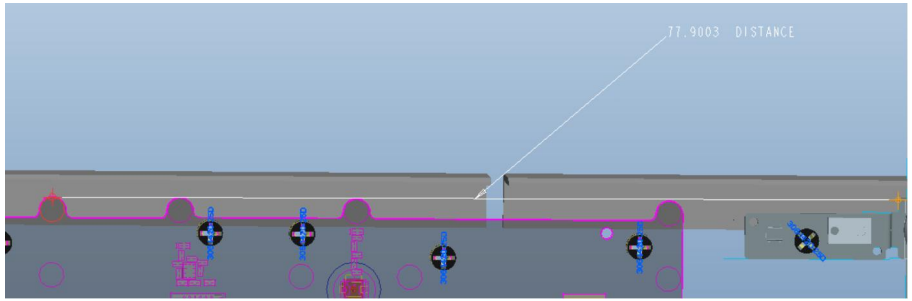
Ant3: 5850Mhz

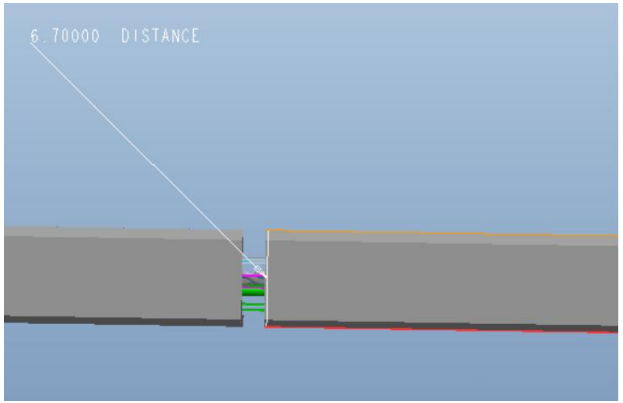
5. Equipment List

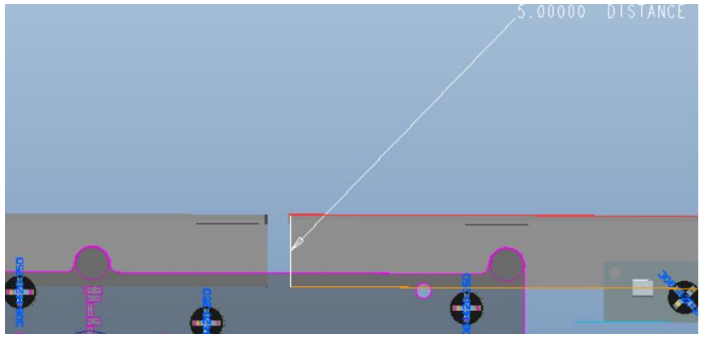
Type of Equipment	Manufacture	Model Number
Network Analyzer	Agilent Technologies	E5071B
Switch control System	GTS	RayZone1800
Software	GTS	MaxSign 100 Patten Measurement software

6. Size&Picture

ANT0

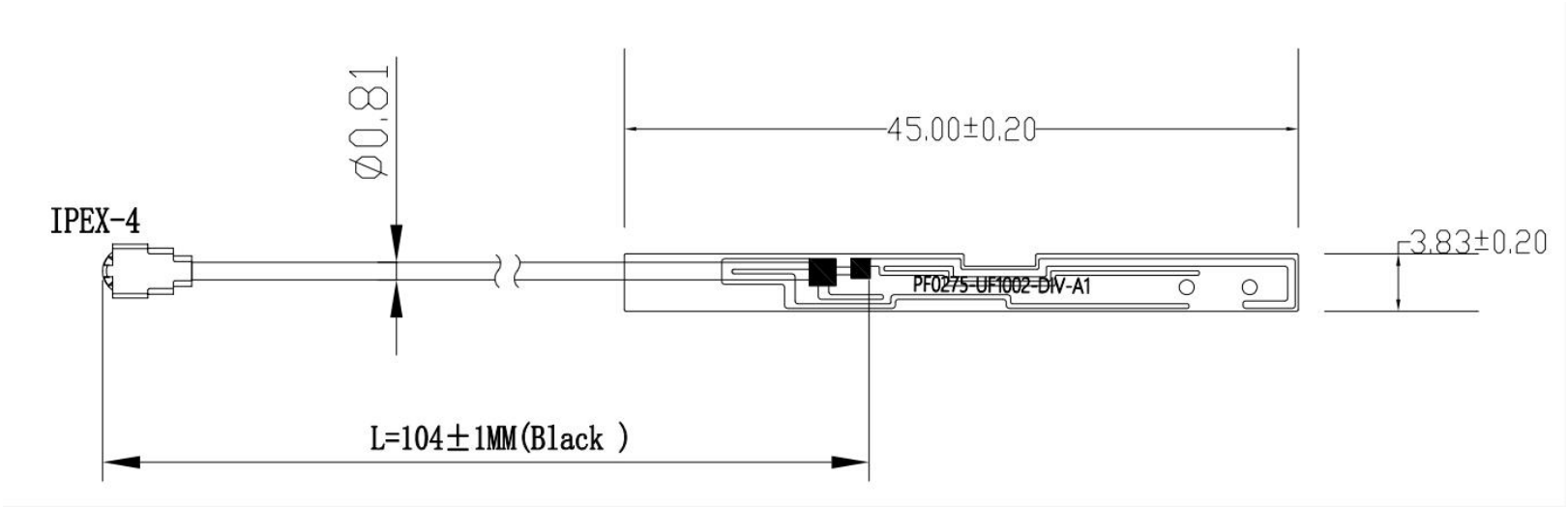






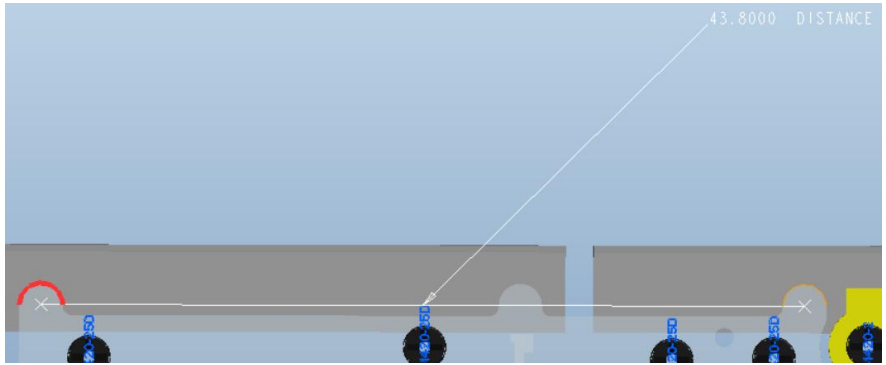
MAIN: GSM/WCDMA/LTE: 77.90*5.00*6.70mm PIFA

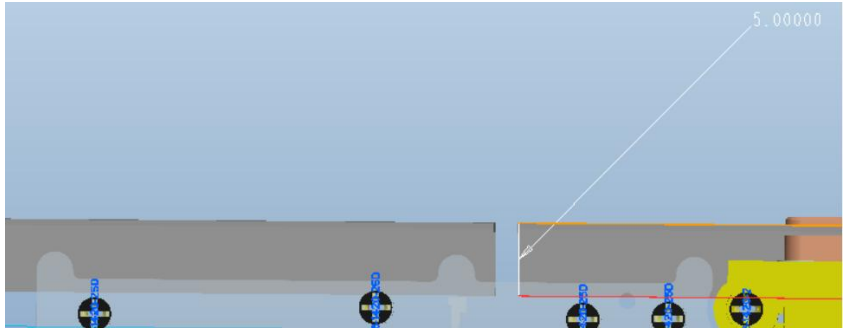
ANT1



DIV: GSM/WCDMA/LTE: 45.00*3.83*0.12mm PIFA

ANT2

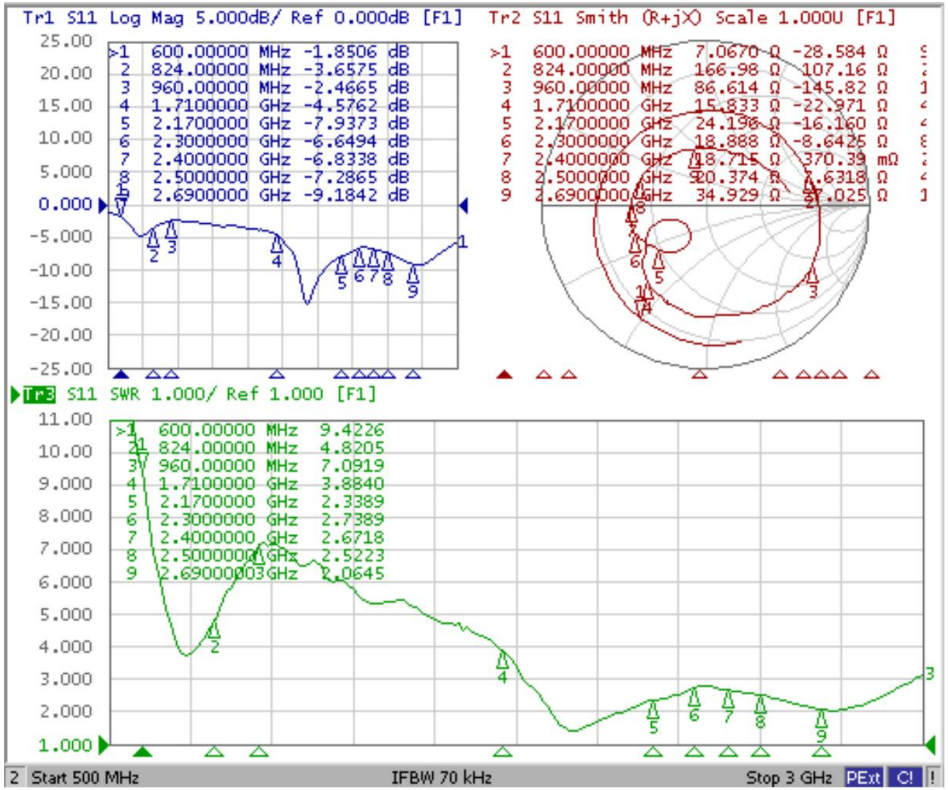




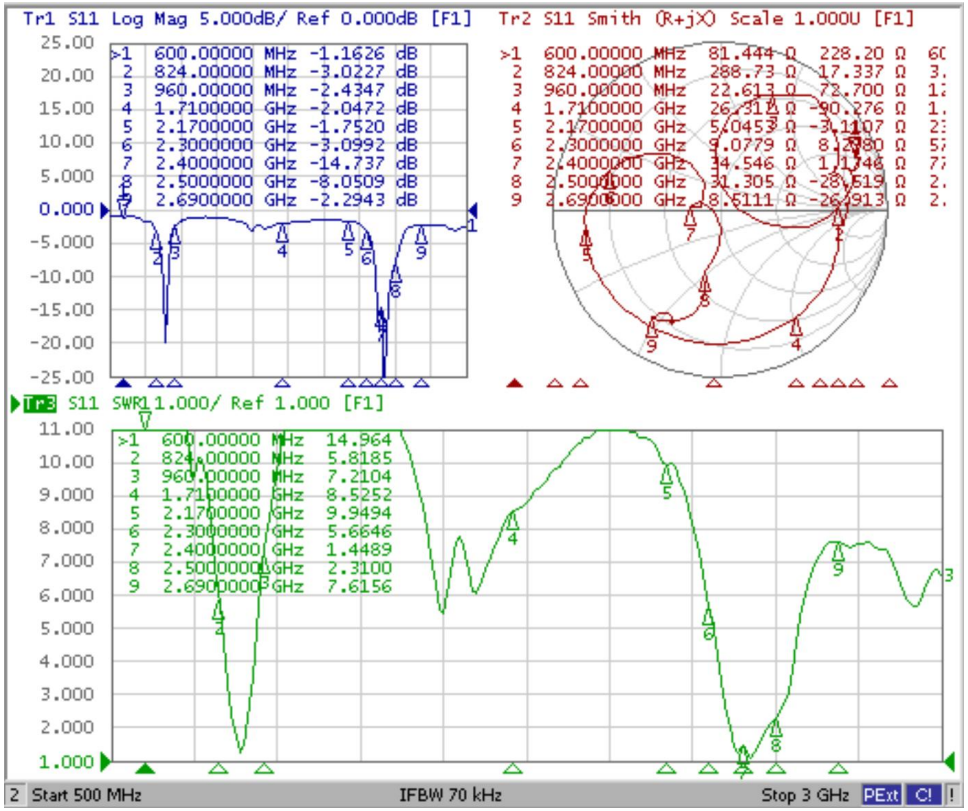
WGB: 43.80*5.00*6.70mm PIFA

7. S11

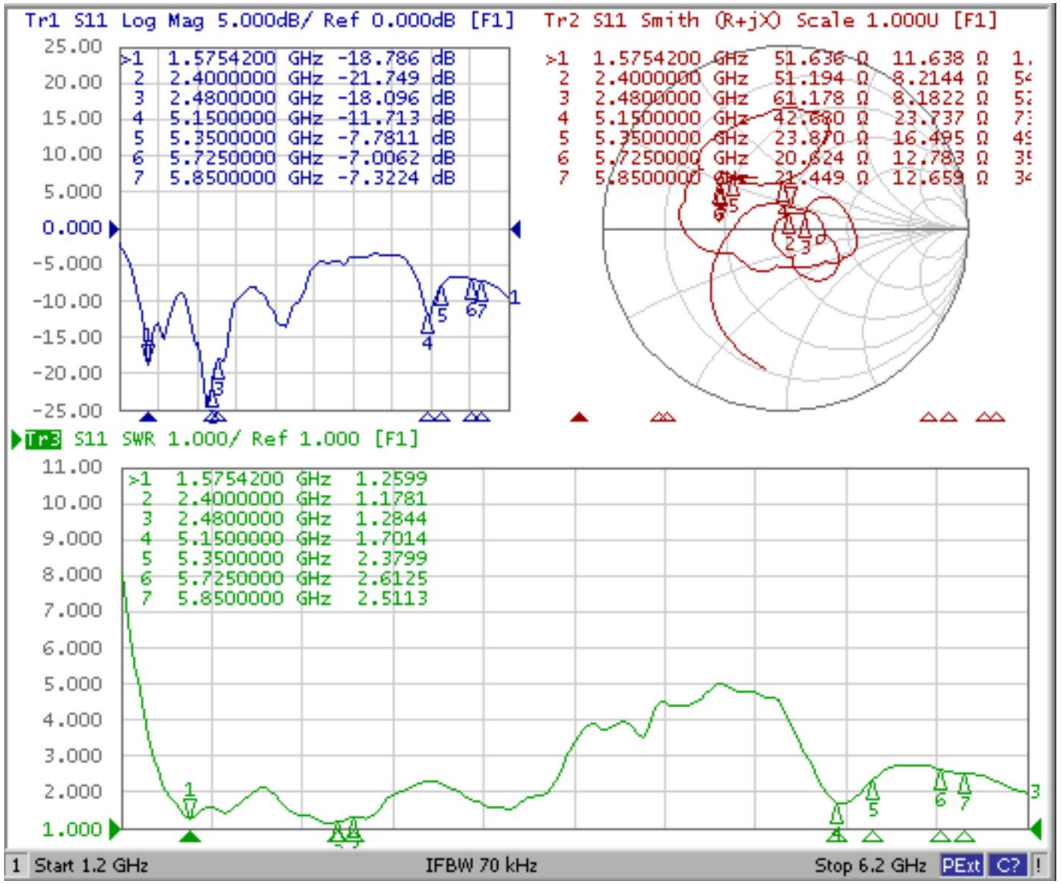
ANT0


Tr1 S11 Log Mag 5.000dB/ Ref 0.000dB [F1]
>1 600.00000 MHz -1.8506 dB
2 824.00000 MHz -3.6575 dB
3 960.00000 MHz -2.4665 dB
4 1.7100000 GHz -4.5762 dB
5 2.1700000 GHz -7.9373 dB
6 2.3000000 GHz -6.6494 dB
7 2.4000000 GHz -6.8338 dB
8 2.5000000 GHz -7.2865 dB
9 2.6900000 GHz -9.1842 dB
Tr2 S11 Smith (R+jX) Scale 1.000U [F1]
>1 600.00000 MHz 7.0670 Ω -28.584 Ω
2 824.00000 MHz 166.98 Ω 107.16 Ω
3 960.00000 MHz 86.614 Ω -145.82 Ω
4 1.7100000 GHz 15.833 Ω -22.971 Ω
5 2.1700000 GHz 24.196 Ω -16.160 Ω
6 2.3000000 GHz 18.888 Ω -8.6425 Ω
7 2.4000000 GHz 18.715 Ω 370.39 mΩ
8 2.5000000 GHz 20.374 Ω 7.6318 Ω
9 2.6900000 GHz 34.929 Ω 37.025 Ω
Tr3 S11 SWR 1.000/ Ref 1.000 [F1]
>1 600.00000 MHz 9.4226
2 824.00000 MHz 4.8205
3 960.00000 MHz 7.0919
4 1.7100000 GHz 3.8840
5 2.1700000 GHz 2.3389
6 2.3000000 GHz 2.7389
7 2.4000000 GHz 2.6718
8 2.5000000 GHz 2.5223
9 2.6900000 GHz 2.0645
2 Start 500 MHz
IFBW 70 kHz
Stop 3 GHz
PExt
C!

ANT1


Tr1 S11 Log Mag 5.000dB/ Ref 0.000dB [F1]
>1 600.00000 MHz -1.1626 dB
2 824.00000 MHz -3.0227 dB
3 960.00000 MHz -2.4347 dB
4 1.7100000 GHz -2.0472 dB
5 2.1700000 GHz -1.7520 dB
6 2.3000000 GHz -3.0992 dB
7 2.4000000 GHz -14.737 dB
8 2.5000000 GHz -8.0509 dB
9 2.6900000 GHz -2.2943 dB
Tr2 S11 Smith (R+jX) Scale 1.000U [F1]
>1 600.00000 MHz 81.444 Ω 228.20 Ω
2 824.00000 MHz 288.73 Ω -17.337 Ω
3 960.00000 MHz 22.613 Ω 72.700 Ω
4 1.7100000 GHz 26.317 Ω -90.276 Ω
5 2.1700000 GHz 5.0453 Ω -3.1107 Ω
6 2.3000000 GHz 9.0779 Ω 8.2480 Ω
7 2.4000000 GHz 34.546 Ω 1.1746 Ω
8 2.5000000 GHz 31.305 Ω -28.619 Ω
9 2.6900000 GHz 8.5111 Ω -26.913 Ω
Tr3 S11 SWR 1.000/ Ref 1.000 [F1]
>1 600.00000 MHz 14.964
2 824.00000 MHz 5.8185
3 960.00000 MHz 7.2104
4 1.7100000 GHz 8.5252
5 2.1700000 GHz 9.9494
6 2.3000000 GHz 5.6646
7 2.4000000 GHz 1.4489
8 2.5000000 GHz 2.3100
9 2.6900000 GHz 7.6156
2 Start 500 MHz
IFBW 70 kHz
Stop 3 GHz
PExt
C!

ANT2


Tr1 S11 Log Mag 5.000dB/ Ref 0.000dB [F1]
>1 1.5754200 GHz -18.786 dB
2 2.4000000 GHz -21.749 dB
3 2.4800000 GHz -18.096 dB
4 5.1500000 GHz -11.713 dB
5 5.3500000 GHz -7.7811 dB
6 5.7250000 GHz -7.0062 dB
7 5.8500000 GHz -7.3224 dB
Tr2 S11 Smith (R+jX) Scale 1.000U [F1]
>1 1.5754200 GHz 51.636 Ω 11.638 Ω
2 2.4000000 GHz 51.194 Ω 8.2144 Ω
3 2.4800000 GHz 61.178 Ω 8.1822 Ω
4 5.1500000 GHz 42.660 Ω 23.737 Ω
5 5.3500000 GHz 23.870 Ω 16.495 Ω
6 5.7250000 GHz 20.624 Ω 12.783 Ω
7 5.8500000 GHz 21.449 Ω 12.659 Ω
Tr3 S11 SWR 1.000/ Ref 1.000 [F1]
>1 1.5754200 GHz 1.2599
2 2.4000000 GHz 1.1781
3 2.4800000 GHz 1.2844
4 5.1500000 GHz 1.7014
5 5.3500000 GHz 2.3799
6 5.7250000 GHz 2.6125
7 5.8500000 GHz 2.5113
1 Start 1.2 GHz
IFBW 70 kHz
Stop 6.2 GHz
PExt
C?

THE END