

SPEED TECHNOLOGY

SPEED Communication Technology Limited

Specification for Approval

Customer.: Point Moblie

Project: PM84

Brand Name: _____

Part No: _____

Type: BAR phone

Band: GSM850/GSM900/DCS/PCS/W1/W2/W4/W5/W8/W19
B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B19/B20/B25/B26/B28/B66/B38/B39/B40/B41

Manufacturer: SPEED

Part Name: FPC

Date.: 2023/10/26

Version: A

Editor: xw

Approval: zrl

**Customer
Approval**

Contents

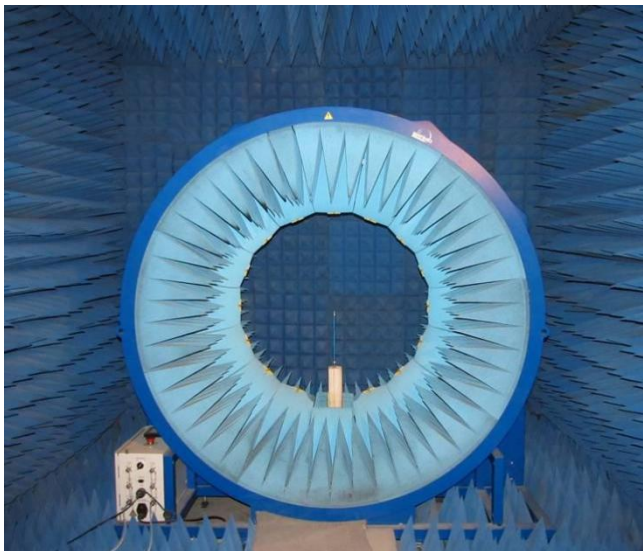
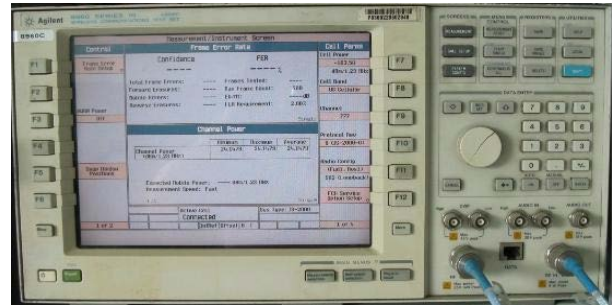
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Antenna Specification

1. Electrical Characteristics	
Frequency	700/850/900/1800/1900/2100/2500/2700MHZ
V.S.W.R.	1.5 : 1 Max
Return Loss	-10 dB Max
Polarization	Linear
Impedance	50 Ohm
2. Material & Mechanical Characteristics	
Material of antenna	FPC
3. Environmental	
Operation Temperature	- 40 °C ~ + 65 °C
Storage Temperature	- 40 °C ~ + 80 °C
Antenna Color Storage life	< 2 year

4、 Test &Item Equipment

List	Test Item	Equipment	
1.S11 Parameter	VSWR, Return Loss	Agilent VNA	
2.Active Test	TRP, TIS	Agilent 8960	Satimo Starlab
3.Passive Test	Gain, Efficiency, Pattern	Agilent VNA	



A darkroom test parameters

The test system: SATIMO-SG24

Test environment: temperature 20 °C +
2 °C, humidity of 50% plus or minus
15%

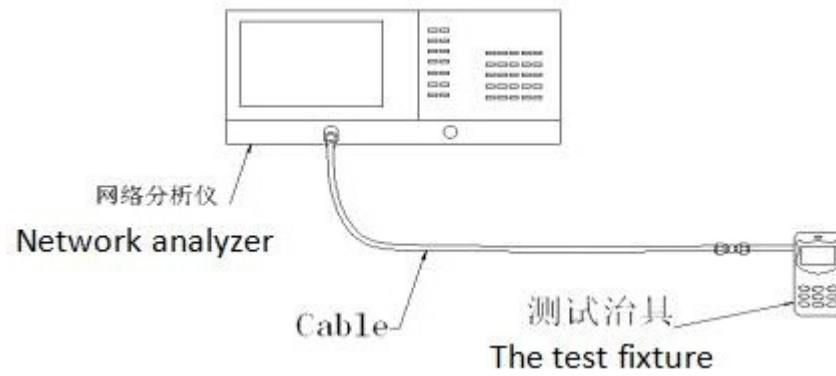
Agilent 8960 Active test equipment, test

5、 Test methods and specifications:

Testing equipment: network analyzer (HP 8753 E) Test method: with a 50 ohm CABLE CABLE from the instrument test port export, calibration using a calibration after connection

Rf fixture of the SMA connector, records related to the frequency points corresponding return loss and standing wave ratio.

Test schematic diagram is as follows:



6.1、Machine Status

6.2、 Overview

GSM850/GSM900/DCS/PCS/W1/W2/W4/W5/W6/W8/W19

LTE B1/2/3/4/5/7/8/12/13/17/19/20/25/26/28/38/39/40/41/66

7、 Antenna Test Results

7.1、 Main antenna status

7.1.1 Main refection loss 1 (Switch RF1 parallel 0ohm 0ohm)

Frequency(MHz)	S11(dB)
880	-8.5
960	-3.1
1710	-11.9
2690	-16.9

7.1.2、Main passive efficiency 1

Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)
880	-4.19	1890	-2.55	2300	-2.34
890	-3.68	1900	-2.58	2310	-2.20
900	-3.56	1910	-2.68	2320	-2.27
910	-3.41	1920	-2.74	2330	-2.24
920	-3.71	1930	-2.63	2340	-2.25
930	-4.11	1940	-2.84	2350	-2.38
940	-4.28	1950	-2.93	2360	-2.44
950	-4.61	1960	-3.02	2370	-2.41
960	-5.93	1970	-2.96	2380	-2.33
		1980	-2.78	2390	-2.12
1710	-2.01	1990	-2.85	2400	-2.02
1720	-1.91	2000	-2.94	2410	-2.08
1730	-1.83	2010	-3.08	2420	-2.04
1740	-1.92	2020	-3.15	2430	-2.17
1750	-2.21	2030	-3.33	2440	-2.40
1760	-2.37	2040	-3.42	2450	-2.32
1770	-2.52	2050	-3.46	2460	-2.20
1780	-2.59	2060	-3.53	2470	-2.19
1790	-2.61	2070	-3.37	2480	-2.05
1800	-2.56	2080	-3.08	2490	-1.88
1810	-2.56	2090	-3	2500	-1.78
1820	-2.76	2100	-3.02	2510	-1.61
1830	-2.71	2110	-3.13	2520	-1.65
1840	-2.48	2120	-3.25	2530	-1.65
1850	-2.69	2130	-3.32	2540	-1.73
1860	-2.85	2140	-3.38	2550	-1.86
1870	-2.86	2150	-3.32	2560	-2.06
1880	-2.76	2160	-3.2	2570	-2.05
		2170	-3.08	2580	-1.94
		2180	-2.98	2590	-1.88
		2190	-2.79	2600	-1.8
		2200	-2.71	2610	-1.68
				2620	-1.59
				2630	-1.72
				2640	-1.86
				2650	-2.04
				2660	-2.21
				2670	-2.29
				2680	-2.37
				2690	-2.51
				2700	-2.51

7.1.3、Main antenna status 2 (Switch RF2 parallel 4.3nh)

7.1.4、Main reflection loss 2

Frequency(MHz)	S11(dB)
824	-7.4
894	-5.2



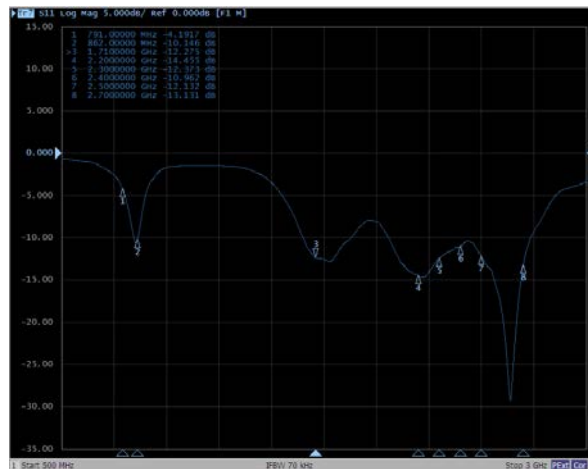
7.1.5 、 Main passive efficiency 2

Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)
820	-3.5	1890	-2.34	2300	-2.23
830	-3.83	1900	-2.33	2310	-2.17
840	-3.32	1910	-2.38	2320	-2.26
850	-2.77	1920	-2.43	2330	-2.29
860	-3.39	1930	-2.35	2340	-2.36
870	-4.15	1940	-2.52	2350	-2.53
880	-4.87	1950	-2.62	2360	-2.59
890	-4.49	1960	-2.65	2370	-2.55
		1970	-2.52	2380	-2.48
1710	-2.14	1980	-2.32	2390	-2.28
1720	-1.97	1990	-2.35	2400	-2.2
1730	-1.91	2000	-2.41	2410	-2.25
1740	-1.93	2010	-2.57	2420	-2.26
1750	-2.22	2020	-2.63	2430	-2.35
1760	-2.36	2030	-2.85	2440	-2.57
1770	-2.54	2040	-2.9	2450	-2.45
1780	-2.58	2050	-2.94	2460	-2.32
1790	-2.74	2060	-3.02	2470	-2.25
1800	-2.63	2070	-2.88	2480	-2.13
1810	-2.66	2080	-2.63	2490	-1.94
1820	-2.82	2090	-2.58	2500	-1.88
1830	-2.76	2100	-2.62	2510	-1.74
1840	-2.54	2110	-2.72	2520	-1.76
1850	-2.73	2120	-2.86	2530	-1.75
1860	-2.86	2130	-2.95	2540	-1.85
1870	-2.79	2140	-3.02	2550	-1.96
1880	-2.64	2150	-2.98	2560	-2.08
		2160	-2.9	2570	-2.12
		2170	-2.78	2580	-2.07
		2180	-2.64	2590	-2.01
		2190	-2.52	2600	-1.99
		2200	-2.45	2610	-1.93
				2620	-1.88
				2630	-2.01
				2640	-2.2
				2650	-2.41
				2660	-2.68
				2670	-2.88
				2680	-3.05
				2690	-3.34
				2700	-3.42

7.1.7 、 Main circuit match 3 (Switch RF3 parallel 4.7nh)

7.1.8 、 Main reflection loss 3

Frequency(MHz)	S11(dB)
791	-4.1
862	-10.1



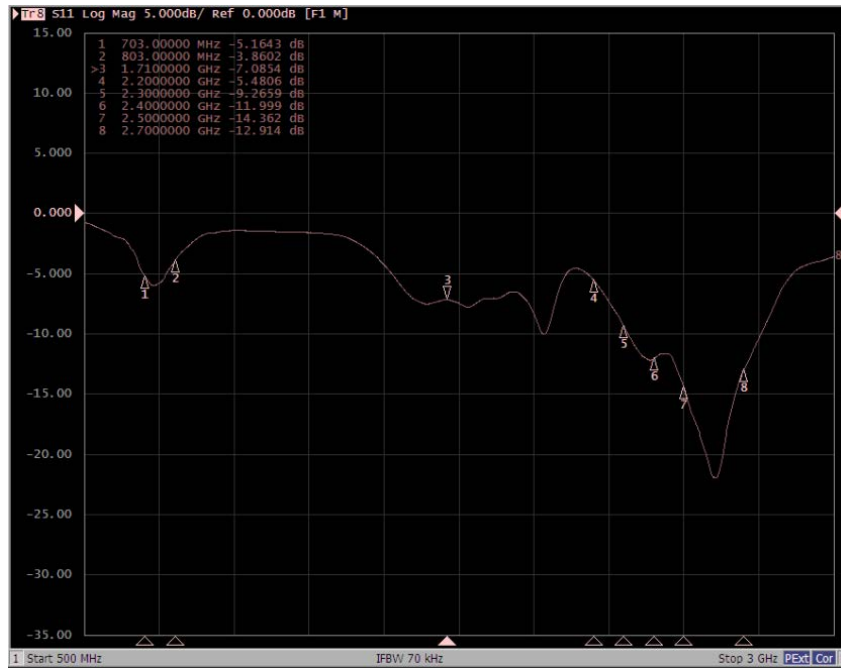
7.1.9、 Main passive efficiency 3

Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)
790	-5.96	1890	-2.79	2300	-3.8
800	-5.41	1900	-2.71	2310	-3.55
810	-4.75	1910	-2.82	2320	-3.49
820	-5.21	1920	-2.81	2330	-3.26
830	-5.47	1930	-2.81	2340	-3.08
840	-5.16	1940	-2.99	2350	-3.16
850	-5.42	1950	-3.12	2360	-3.13
860	-6.77	1960	-3.13	2370	-3
		1970	-2.96	2380	-2.88
1710	-3.88	1980	-2.72	2390	-2.66
1720	-3.66	1990	-2.73	2400	-2.55
1730	-3.55	2000	-2.86	2410	-2.52
1740	-3.43	2010	-3.08	2420	-2.48
1750	-3.68	2020	-3.33	2430	-2.48
1760	-3.69	2030	-3.75	2440	-2.59
1770	-3.76	2040	-4.04	2450	-2.44
1780	-3.68	2050	-4.41	2460	-2.3
1790	-3.77	2060	-5.08	2470	-2.26
1800	-3.61	2070	-5.56	2480	-2.14
1810	-3.68	2080	-5.96	2490	-1.94
1820	-3.74	2090	-6.81	2500	-1.84
1830	-3.65	2100	-7.81	2510	-1.74
1840	-3.35	2110	-8.77	2520	-1.73
1850	-3.43	2120	-9.67	2530	-1.73
1860	-3.44	2130	-10.45	2540	-1.82
1870	-3.3	2140	-10.73	2550	-1.95
1880	-3.06	2150	-10.54	2560	-2.08
		2160	-9.99	2570	-2.12
		2170	-9.17	2580	-2.03
		2180	-8.36	2590	-1.98
		2190	-7.47	2600	-1.87
		2200	-6.85	2610	-1.79
				2620	-1.69
				2630	-1.82
				2640	-1.98
				2650	-2.23
				2660	-2.4
				2670	-2.49
				2680	-2.56
				2690	-2.73
				2700	-2.68

7.1.10 Main circuit match 4 (Switch RF4 parallel 18nh)

7.1.11 Main reflection loss 4

Frequency(MHz)	S11(dB)
703	-5.1
803	-3.8



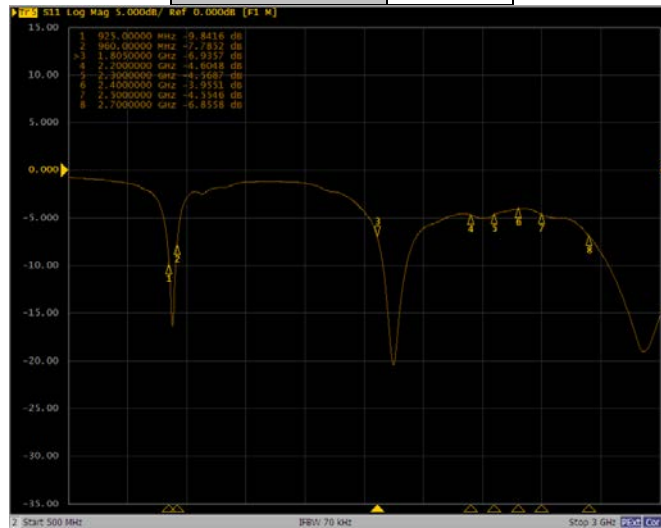
7.1.12 Main passive efficiency 4

Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)
700	-5.08	1890	-2.8	2300	-3.8
710	-4.44	1900	-2.71	2310	-3.53
720	-4.55	1910	-2.78	2320	-3.48
730	-4.24	1920	-2.77	2330	-3.25
740	-4.41	1930	-2.77	2340	-3.1
750	-4.43	1940	-2.96	2350	-3.17
760	-4.87	1950	-3.11	2360	-3.15
770	-4.61	1960	-3.11	2370	-3.05
780	-5.42	1970	-2.93	2380	-2.94
790	-5.79	1980	-2.68	2390	-2.68
800	-5.26	1990	-2.7	2400	-2.58
		2000	-2.83	2410	-2.58
1710	-3.8	2010	-3.07	2420	-2.51
1720	-3.6	2020	-3.35	2430	-2.52
1730	-3.48	2030	-3.76	2440	-2.66
1740	-3.38	2040	-4.05	2450	-2.52
1750	-3.61	2050	-4.42	2460	-2.38
1760	-3.62	2060	-5.08	2470	-2.35
1770	-3.69	2070	-5.51	2480	-2.23
1780	-3.63	2080	-5.91	2490	-2.02
1790	-3.7	2090	-6.76	2500	-1.93
1800	-3.56	2100	-7.78	2510	-1.79
1810	-3.59	2110	-8.73	2520	-1.8
1820	-3.71	2120	-9.65	2530	-1.8
1830	-3.61	2130	-10.44	2540	-1.89
1840	-3.34	2140	-10.76	2550	-2
1850	-3.43	2150	-10.61	2560	-2.13
1860	-3.48	2160	-10.1	2570	-2.15
1870	-3.32	2170	-9.29	2580	-2.03
1880	-3.09	2180	-8.52	2590	-1.95
		2190	-7.58	2600	-1.87
		2200	-6.92	2610	-1.78
				2620	-1.69
				2630	-1.83
				2640	-1.99
				2650	-2.19
				2660	-2.36
				2670	-2.41
				2680	-2.47
				2690	-2.6
				2700	-2.58

7.2.1、 Div antenna status

7.2.2 、 Div refection loss 1

Frequency(MHz)	S11(dB)
925	-9.8
960	-7.7
1805	-6.9
2690	-6.8

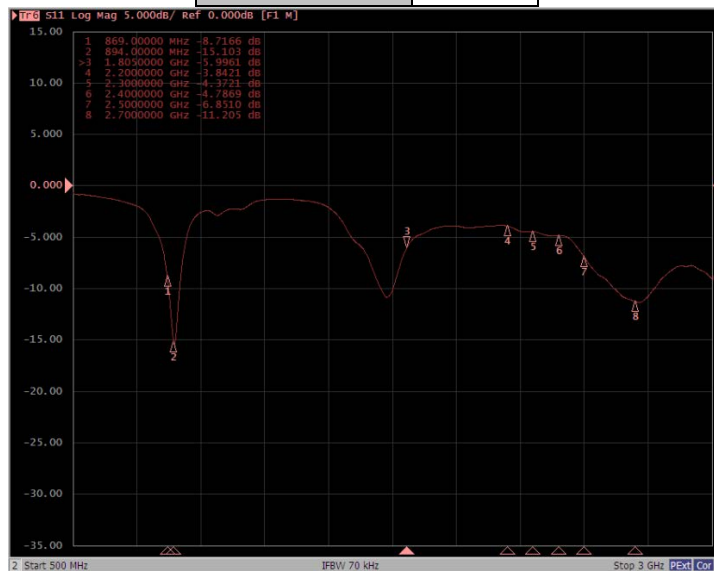


7.2.3、 Div passive efficiency 1

Frequenc y (MHz)	Efficiency (dB)	Frequenc y (MHz)	Efficiency (dB)	Frequenc y (MHz)	Efficiency (dB)
920	-4.28	1990	-2.89	2300	-4.37
930	-3.92	2000	-3	2310	-4.49
940	-3.31	2010	-3.12	2320	-4.64
950	-3.03	2020	-3.16	2330	-4.8
960	-3.66	2030	-3.25	2340	-4.96
		2040	-3.43	2350	-5.3
1800	-4.74	2050	-3.59	2360	-5.29
1810	-4.44	2060	-3.66	2370	-5.25
1820	-4.02	2070	-3.56	2380	-5.09
1830	-3.4	2080	-3.42	2390	-4.81
1840	-2.98	2090	-3.44	2400	-4.73
1850	-2.74	2100	-3.61	2510	-3.83
1860	-2.65	2110	-3.73	2520	-3.75
1870	-2.55	2120	-3.78	2530	-3.75
1880	-2.42	2130	-3.74	2540	-3.84
1890	-2.2	2140	-3.84	2550	-3.84
1900	-2.27	2150	-3.79	2560	-3.85
1910	-2.47	2160	-3.76	2570	-3.81
1920	-2.66	2170	-3.83	2580	-3.7
1930	-2.7	2180	-3.72	2590	-3.75
1940	-2.87	2190	-3.5	2600	-3.68
1950	-3.03	2200	-3.33	2610	-3.59
1960	-3			2620	-3.51
1970	-3.01			2630	-3.51
1980	-2.95			2640	-3.62
				2650	-3.67
				2660	-3.9
				2670	-4.05
				2680	-4.15
				2690	-4.05
				2700	-3.93

7.2.4 、Div refection loss 2

Frequency(MHz)	S11(dB)
869	-8.7
894	-15.1

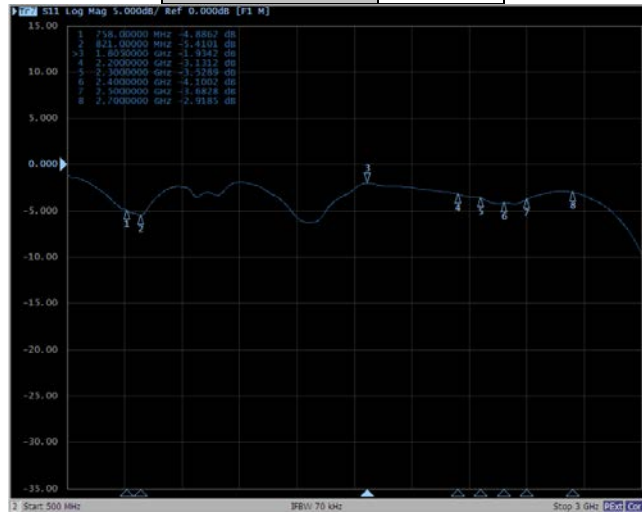


7.2.5 、 Div passive efficiency 2

Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)
870	-3.72	1990	-4.46	2300	-4.67
880	-3.31	2000	-4.46	2310	-4.66
890	-2.84	2010	-4.48	2320	-4.75
900	-2.64	2020	-4.53	2330	-4.79
		2030	-4.59	2340	-4.86
1800	-5.31	2040	-4.75	2350	-5.12
1810	-5.39	2050	-4.96	2360	-5.07
1820	-5.41	2060	-5.02	2370	-5.08
1830	-5.21	2070	-4.9	2380	-4.99
1840	-5	2080	-4.72	2390	-4.74
1850	-5.03	2090	-4.69	2400	-4.63
1860	-5.21	2100	-4.78	2500	-3.22
1870	-5.14	2110	-4.88	2510	-3.15
1880	-5.01	2120	-4.91	2520	-3.1
1890	-4.74	2130	-4.83	2530	-3.1
1900	-4.77	2140	-4.92	2540	-3.18
1910	-4.88	2150	-4.77	2550	-3.2
1920	-4.99	2160	-4.72	2560	-3.23
1930	-4.91	2170	-4.72	2570	-3.21
1940	-4.94	2180	-4.56	2580	-3.11
1950	-4.95	2190	-4.33	2590	-3.12
1960	-4.79	2200	-4.15	2600	-3.07
1970	-4.78			2610	-3.02
1980	-4.6			2620	-2.9
				2630	-2.95
				2640	-3.06
				2650	-3.16
				2660	-3.31
				2670	-3.47
				2680	-3.59
				2690	-3.59
				2700	-3.51

7.2.6 、 Div reflection loss 3

Frequency(MHz)	S11(dB)
703	-4.8
803	-5.4



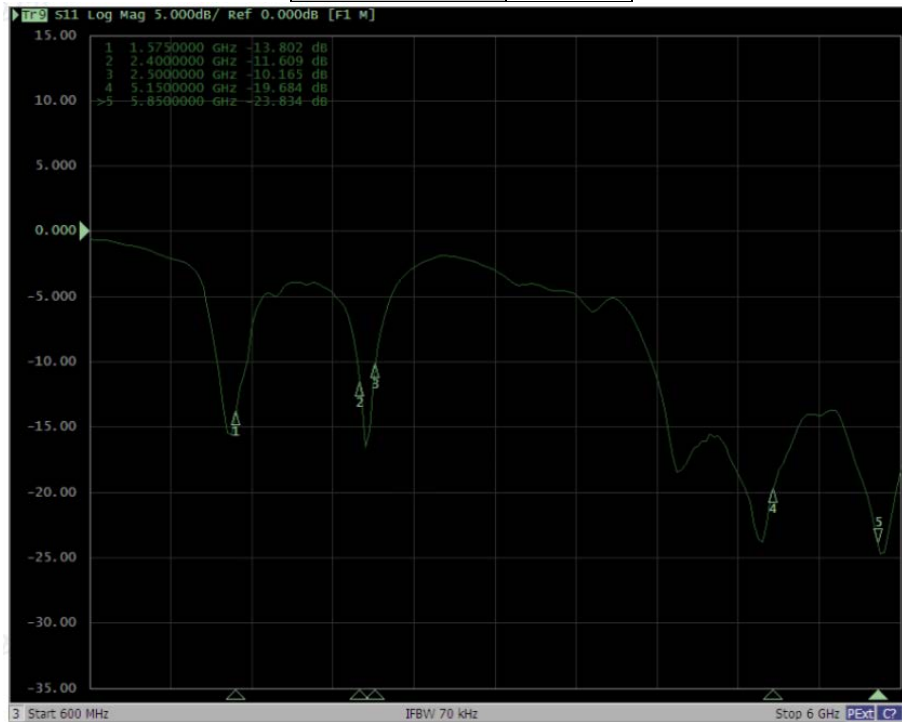
7.2.7 、 Div passive efficiency 3

Frequenc y (MHz)	Efficiency (dB)	Frequenc y (MHz)	Efficiency (dB)	Frequenc y (MHz)	Efficiency (dB)
750	-5.29	1990	-7.08	2300	-6.09
760	-5.14	2000	-7.07	2310	-5.95
770	-5	2010	-6.98	2320	-5.92
780	-5.42	2020	-7.04	2330	-5.84
790	-5.63	2030	-7.06	2340	-5.82
800	-4.68	2040	-7.22	2350	-6.13
		2050	-7.39	2360	-6.3
1800	-11.1	2060	-7.4	2370	-6.48
1810	-10.99	2070	-7.23	2380	-6.62
1820	-10.59	2080	-6.9	2390	-6.5
1830	-10.13	2090	-6.82	2400	-6.54
1840	-9.82	2100	-6.91	2500	-6.9
1850	-9.9	2110	-7.03	2510	-7.04
1860	-9.9	2120	-7.09	2520	-7.21
1870	-9.48	2130	-6.96	2530	-7.27
1880	-9.14	2140	-7.07	2540	-7.52
1890	-8.58	2150	-6.87	2550	-7.58
1900	-8.44	2160	-6.82	2560	-7.92
1910	-8.36	2170	-6.78	2570	-8.03
1920	-8.28	2180	-6.64	2580	-7.98
1930	-8.08	2190	-6.36	2590	-8.11
1940	-7.91	2200	-6.09	2600	-8.2
1950	-7.75			2610	-8.3
1960	-7.49			2620	-8.21
1970	-7.48			2630	-8.25
1980	-7.31			2640	-8.28
				2650	-8.17
				2660	-8.28
				2670	-8.25
				2680	-8.33
				2690	-8.28
				2700	-7.96

7.3、GPS/WIFI 2.4G+5.8G antenna

7.3.1、GPS/WIFI 2.4G+5.8G reflection loss

Frequency(MHz)	S11(dB)
1575	-13.8
2400	-11.6
2500	-10.1
5150	-19.6
5850	-23.8



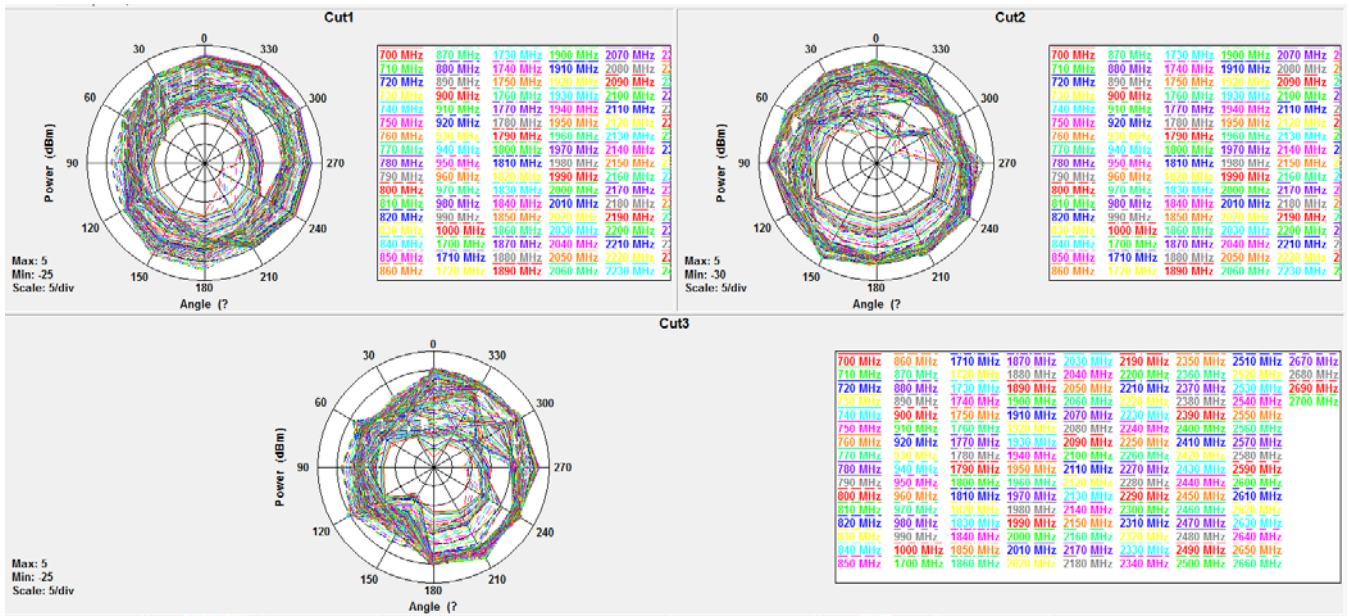
Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)	Frequency (MHz)	Efficiency (dB)
1520	-2.77	2400	-4.20	5150	-2.42
1530	-2.75	2410	-4.09	5200	-2.60
1540	-2.88	2420	-4.03	5250	-2.42
1550	-2.90	2430	-4.03	5300	-2.68
1560	-3.00	2440	-4.02	5350	-2.67
1570	-3.17	2450	-4.07	5400	-2.60
1580	-3.21	2460	-4.09	5450	-2.86
1590	-3.26	2470	-4.15	5500	-2.86
1600	-3.08	2480	-4.31	5550	-2.93
1610	-3.28	2490	-4.48	5600	-2.78
1620	-3.28	2500	-4.68	5650	-2.85
				5700	-2.89
				5750	-2.76
				5800	-3.29
				5850	-3.48

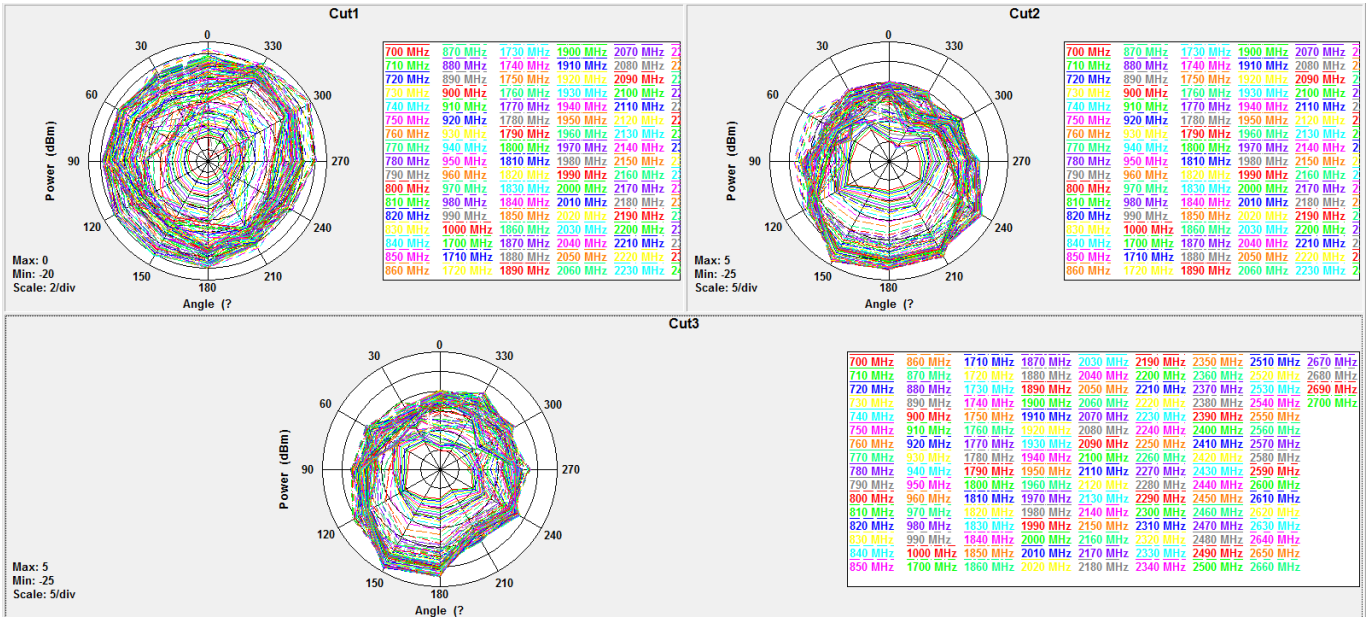
7.4.1、Peak gain value

Main		Div		GPS/2.4G WIFI		5G WIFI	
Band	Peak	Band	Peak	Pre (Mhz)	Peak	Pre (Mhz)	Peak
	Gain. dBi		Gain. dBi		Gain. dBi		Gain. dBi
GSM850	-1.1		GSM850	0.5	1500.000000	1.52	5150.000000
GSM900	0.3	GSM900	1.4	1510.000000	1.5	5200.000000	2.32
DCS	3.6	DCS	0.7	1520.000000	1.46	5250.000000	1.88
PCS	2.6	PCS	1.9	1530.000000	1.48	5300.000000	1.92
WCDMA 1	1.3	WCDMA 1	4.3	1540.000000	1.31	5350.000000	2.16
WCDMA 2	2.6	WCDMA 2	2.9	1550.000000	1.22	5400.000000	1.86
WCDMA 4	2.3	WCDMA 4	4.3	1560.000000	1	5450.000000	1.48
WCDMA 5	-1.1	WCDMA 5	0.5	1570.000000	0.8	5500.000000	1.67
WCDMA 8	0.3	WCDMA 8	1.4	1580.000000	0.66	5550.000000	2.06
WCDMA 19	-1.1	WCDMA 19	0.5	1590.000000	0.53	5600.000000	1.59
LTE-B1	1.3	LTE-B1	4.3	1600.000000	0.39	5650.000000	1.65
LTE-B2	2.6	LTE-B2	1.9	2400.000000	0.17	5700.000000	2.51
LTE-B3	3.6	LTE-B3	0.7	2410.000000	0.19	5750.000000	2.4
LTE-B4	2.3	LTE-B4	4.3	2420.000000	0.23	5800.000000	1.52
LTE-B5	-1.1	LTE-B5	0.5	2430.000000	0.24	5850.000000	1.35
LTE-B7	2.5	LTE-B7	2.9	2440.000000	0.3		
LTE-B8	0.3	LTE-B8	1.4	2450.000000	0.3		
LTE-B12	-0.4	LTE-B12	-0.4	2460.000000	0.29		
LTE-B13	-0.4	LTE-B13	-0.4	2470.000000	0.09		
LTE-B17	-0.4	LTE-B17	-0.4	2480.000000	-0.18		
LTE-B20	-1.8	LTE-B20	-2.2	2490.000000	-0.55		
LTE-B25	2.5	LTE-B25	-2.9	2500.000000	-1.09		
LTE-B26	-1.1	LTE-B26	0.5				
LTE-B28	-0.5	LTE-B28	-0.4				
LTE-B66	1.3	LTE-B66	4.3				
LTE-B38	2.5	LTE-B38	2.9				
LTE-B40	1.1	LTE-B40	5.4				
LTE-B41	2.5	LTE-B41	2.9				

7.4.2、Radiation chart (XY/XZ/YZ)

Main





GPS/WIFI2. 4G+5. 8G

