



yGalaxLAB Antenna&RFTechnologies
KA88_Antenna Report
2024. 12. 12

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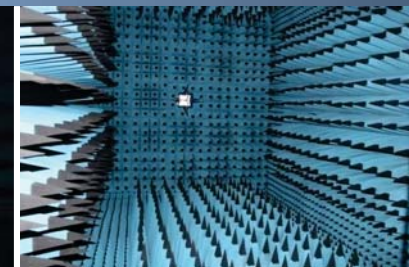
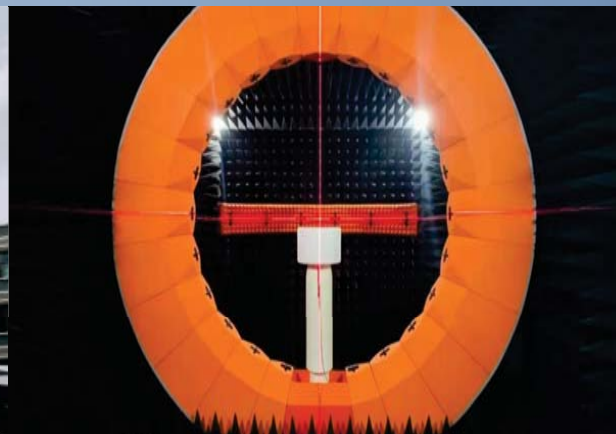
yGalax星河电波

Area F, 4/F, Building A, Junxiangda Mansion, No. 9 Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong, China

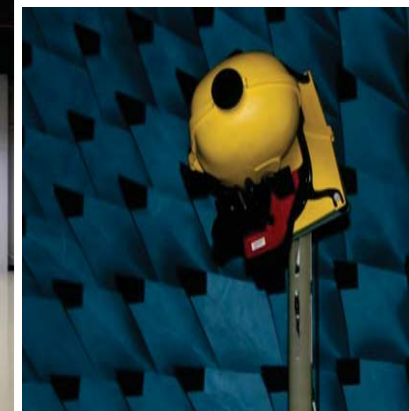
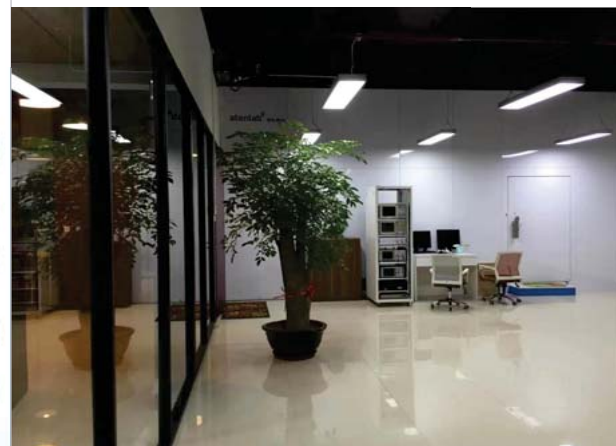
深圳星河电波科技有限公司[yGalax]-5G&AIOT天线射频一站式解决方案创新者, 研发涉及AIOT智能物联

与智能家居设备天线及相关模组、汽车天线、TWS耳机/POS机/军工/安防/医疗/智能穿戴/笔记本电脑/移动通信终端设备天线、射频识别与电子标签模组、近场通信与无线充电模组、射频前端器件等。星河电波精密制造涵盖三维表面金属化技术LDS/LCP/FPC/PCB天线、陶瓷天线、玻璃钢天线、胶棒天线、毫米波阵列天线等多种介质材料和工艺类型的微波射频器件。

星河电波在深圳市南山区设立**微波射频创新实验室yGalax LAB**, 拥有高质量的技术和服务团队, 多年深入探索各种应用场景, 可以快速响应为客户提供一站式解决方案和技术支持。实验室配置业界领先的24探头近场OTA微波暗室, 以及进口8m×4m×4m远场OTA微波暗室和天线有源/无源测试系统, 配备完善的R&S/Keysight/Anritsu等测试设备, 依据CTIA流程进行精准的OTA测试。此外, 系统配备MIMO探头矩阵进行数据吞吐率测试。yGalax LAB的研发设计与测试能力涵盖2G-5G/NB-IoT/Cat-M/LoRa/WiFi&WiFi6/NFC/RFID/Bluetooth/ZigBee/UWB/GLONASS/GPS/BDS北斗/mmWave毫米波等制式频段。



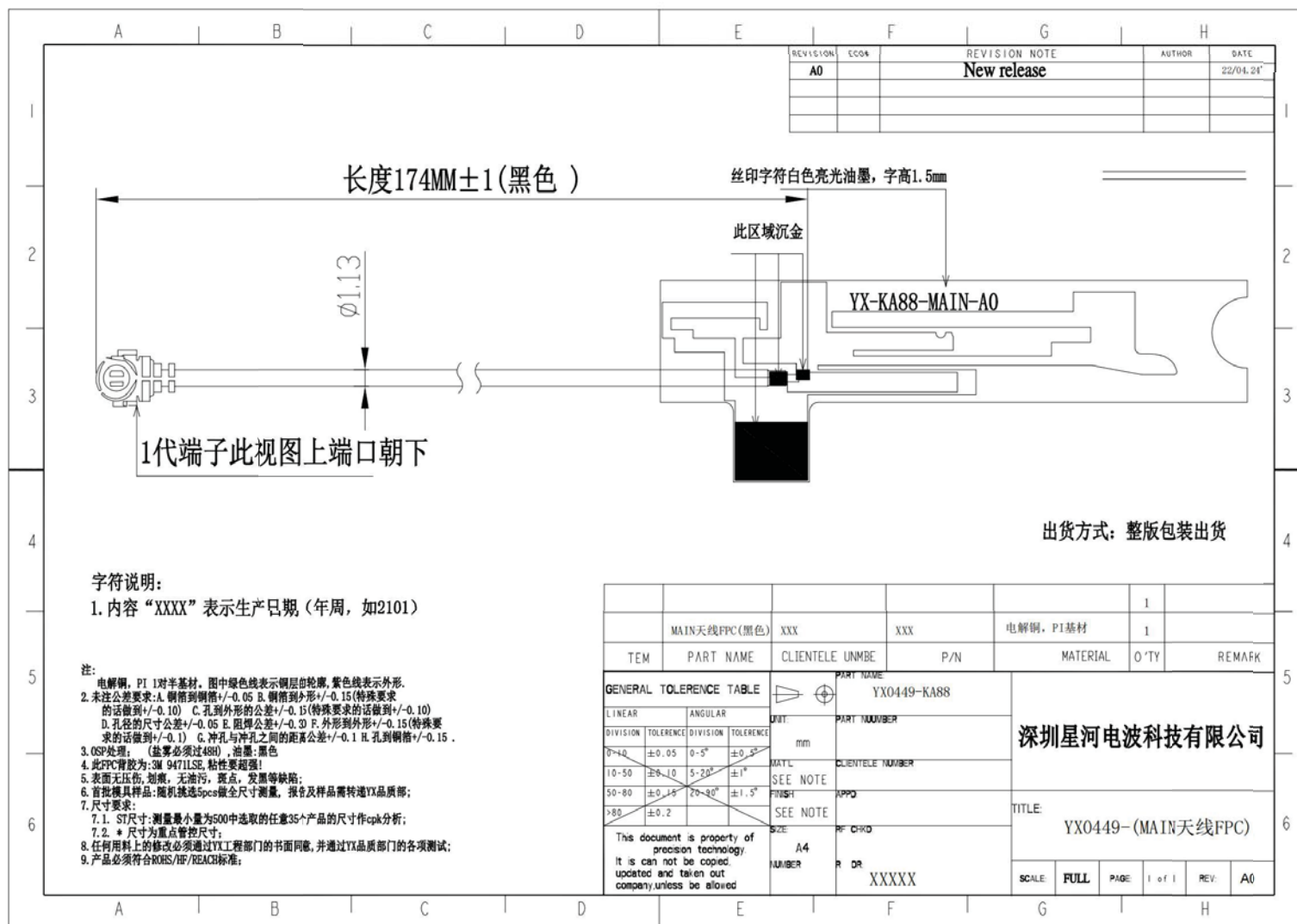
实验室配置业界领先的24探头近场OTA微波暗室, 以及进口8m×4m×4m远场OTA微波暗室和天线有源/无源测试系统, 配备完善的R&S/Keysight/Anritsu等测试设备, 依据CTIA流程进行精准的OTA测试。

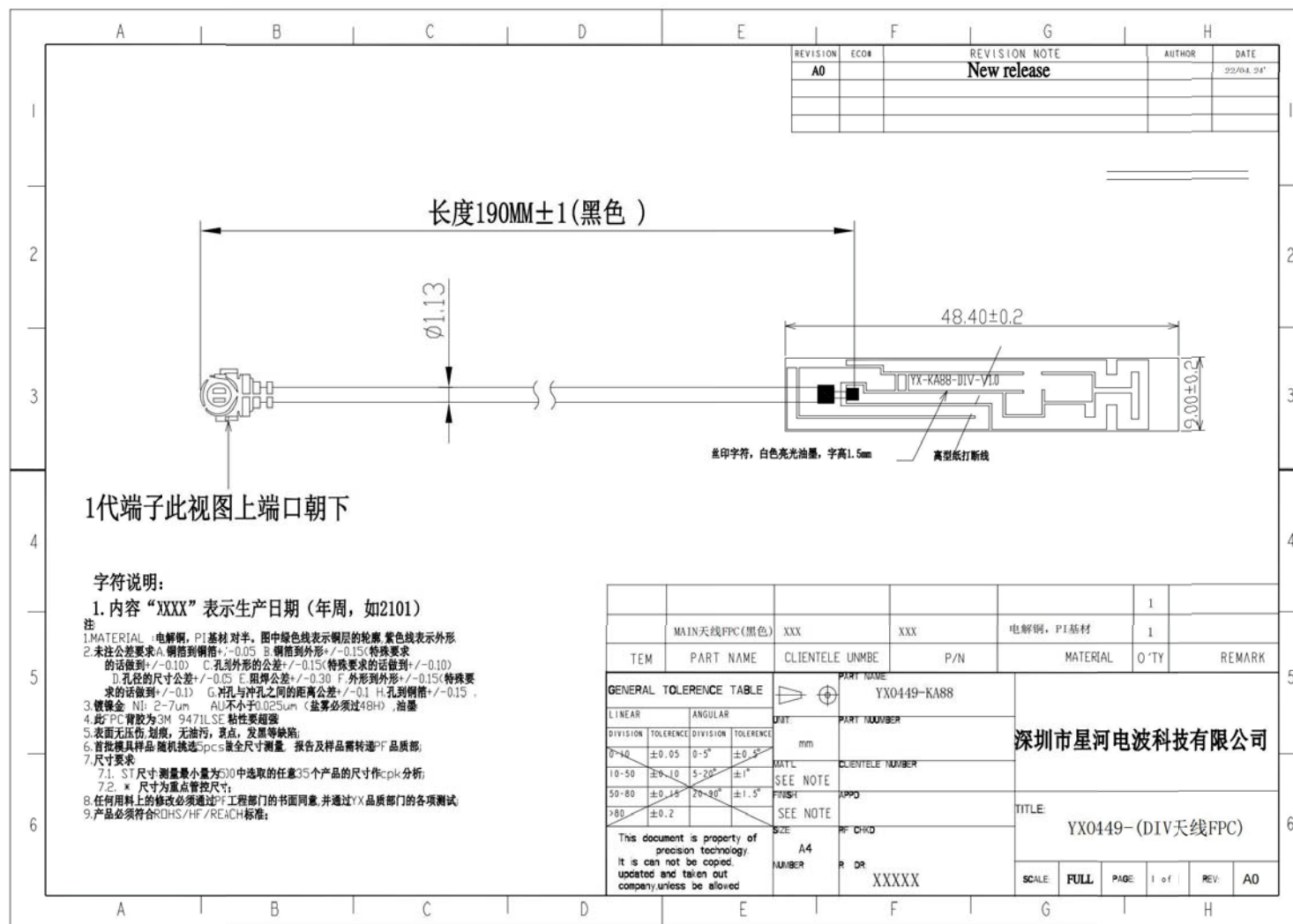


● A88-MAIN_ Antenna Information (天线信息)

Confidential

1. Type of the antenna (天线类型) : FPC+CABLE
2. The name of the antenna (天线名字) : YX- A88-MAIN-V1.0
3. Coverage (覆盖范围) : 699~ 2690MHz(LTE).

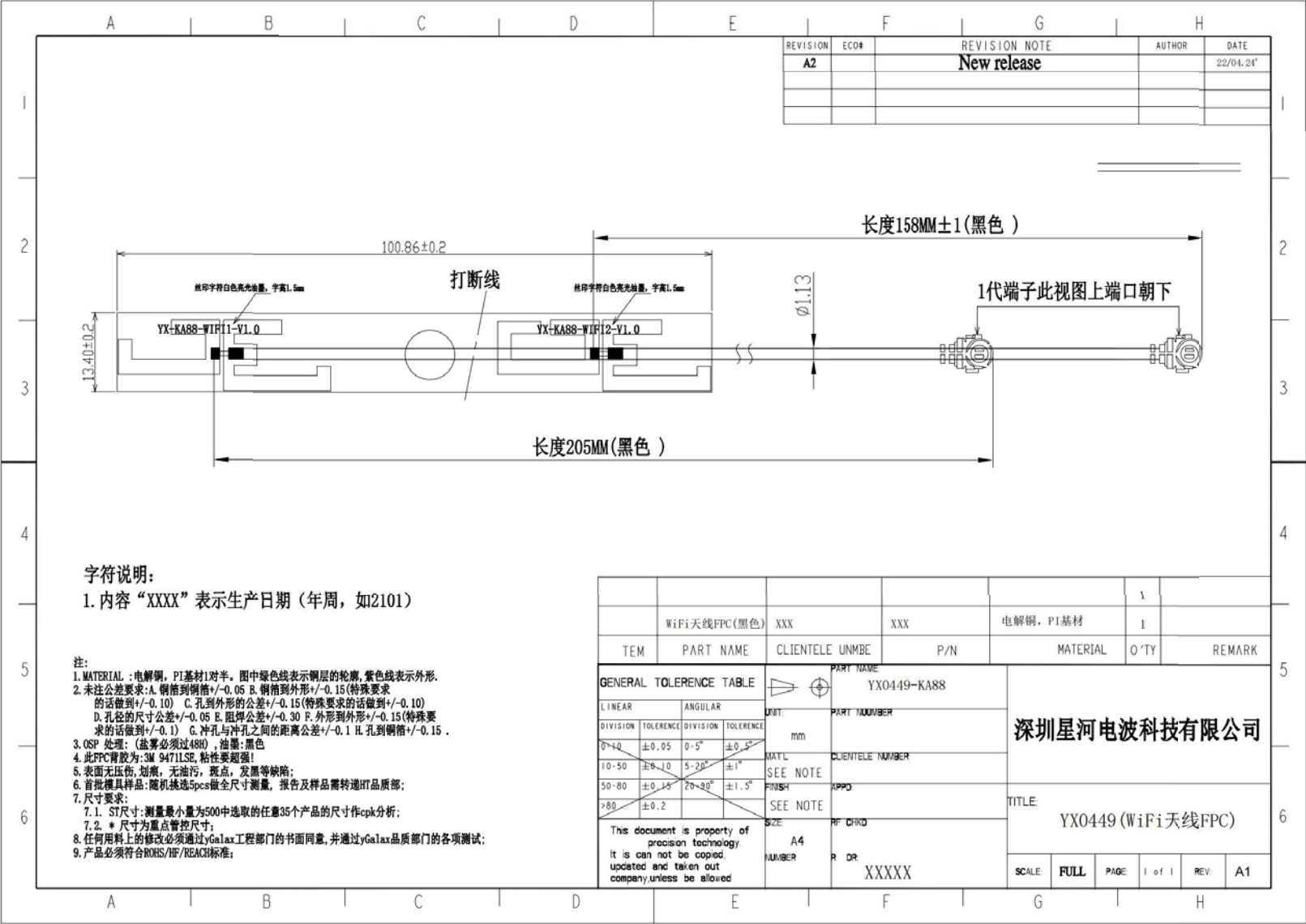




● A88-WIFI_Antenna Information (天线信息)

Confidential

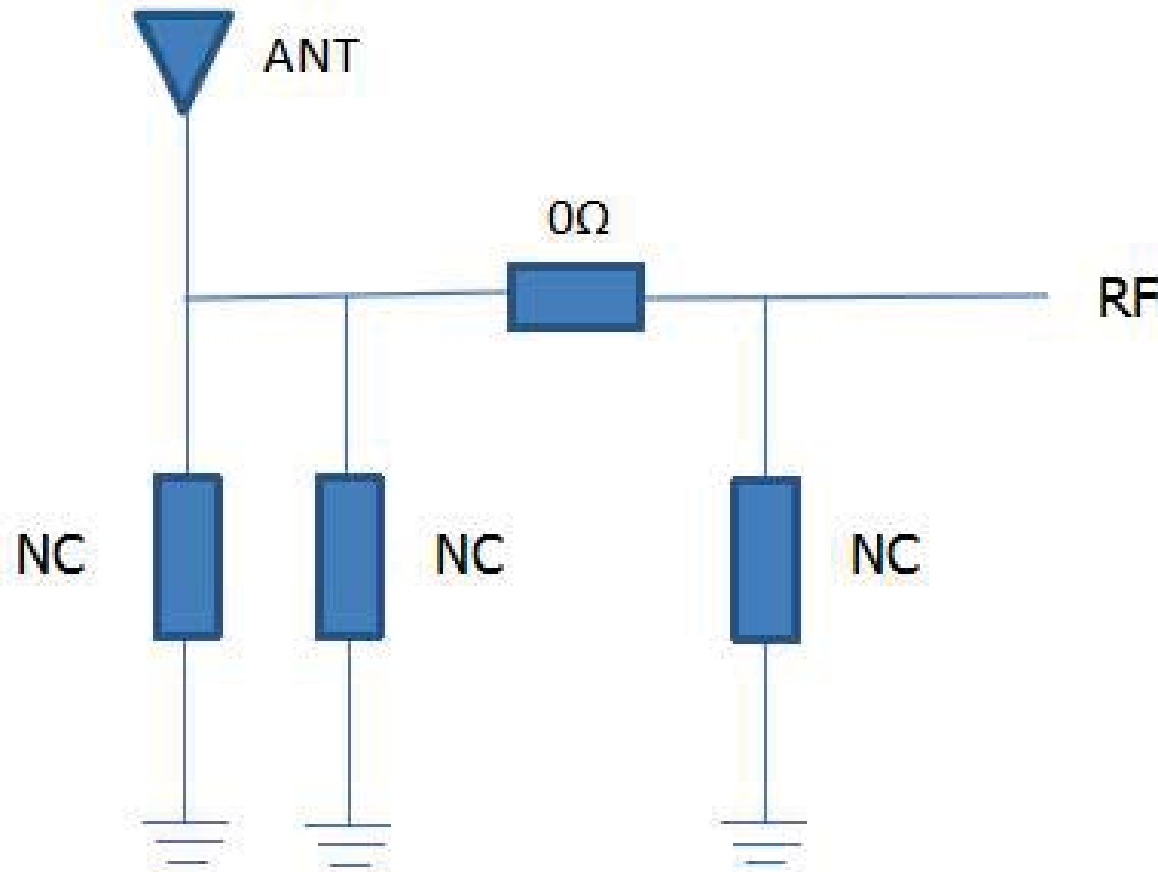
- 1. Type of the antenna (天线类型) : FPC+CABLE
- 2. The name of the antenna (天线名字) : YX- A88-WIFI-V1.0
- 3. Coverage (覆盖范围) : 2400 ~ 2500MHz(WIFI2.4G).
5150 ~ 5850MHz(WIFI5.8G)



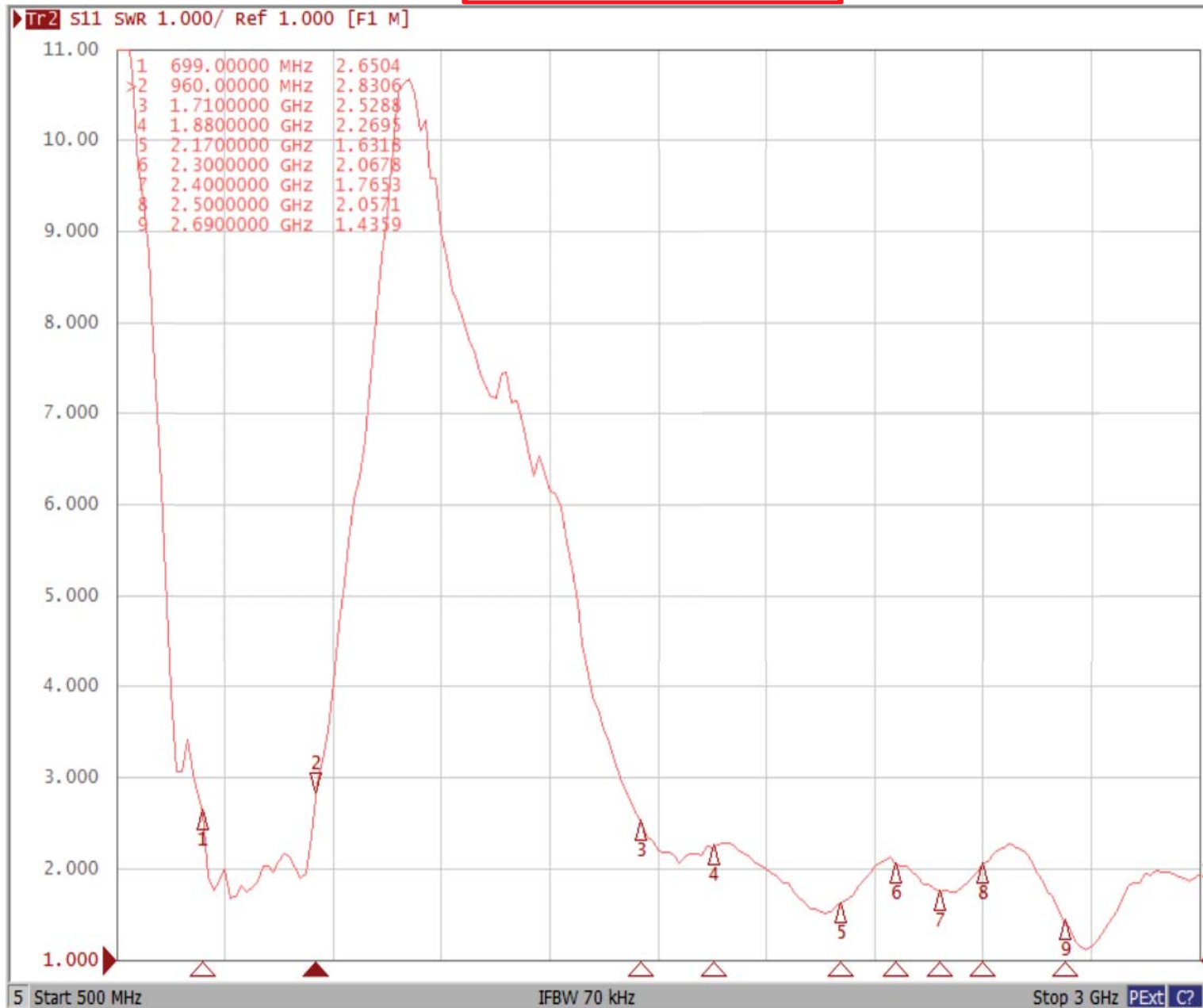
● A88_ Impedance Matching (天线阻抗匹配)

Confidential

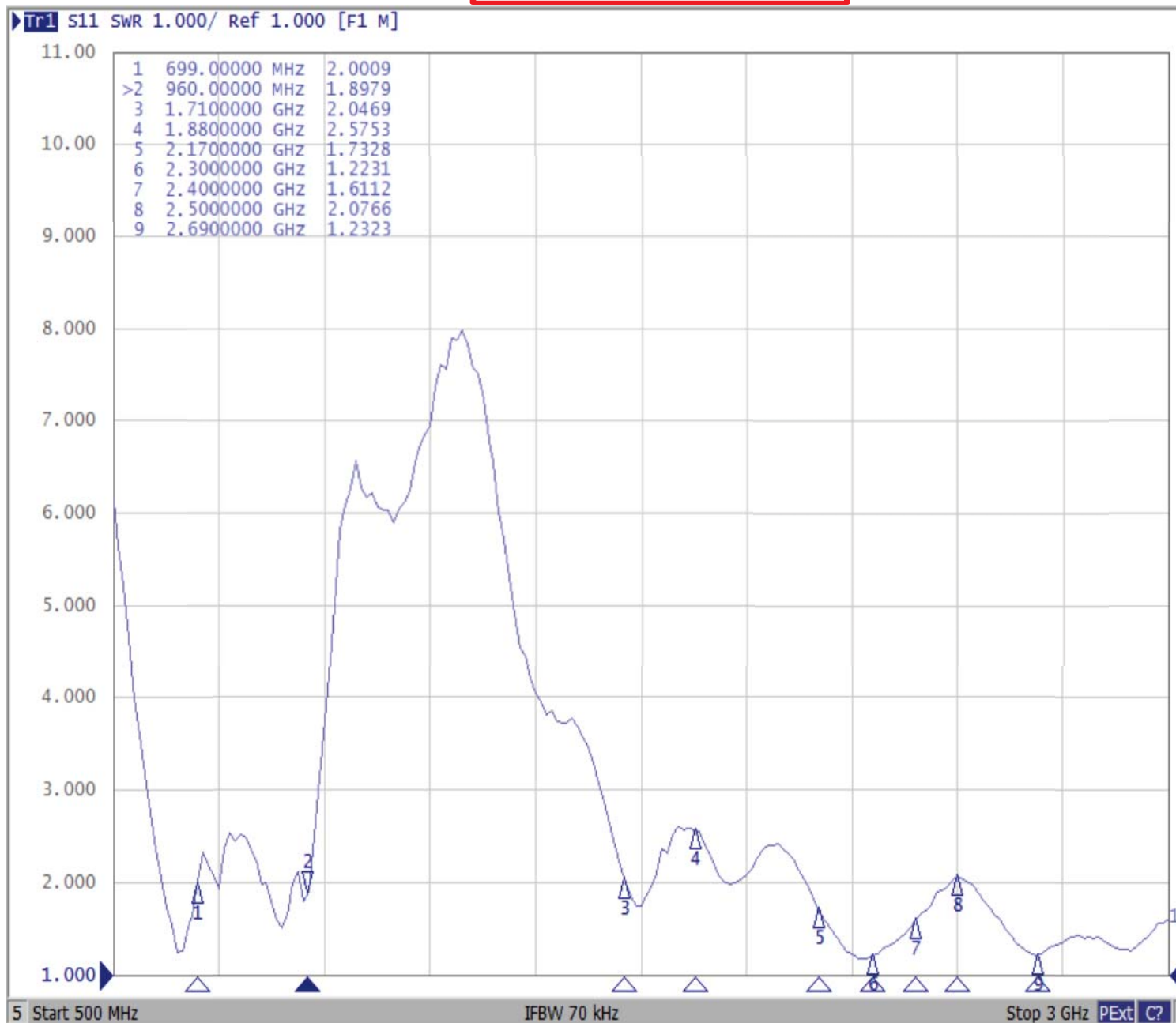
matches are unchanged



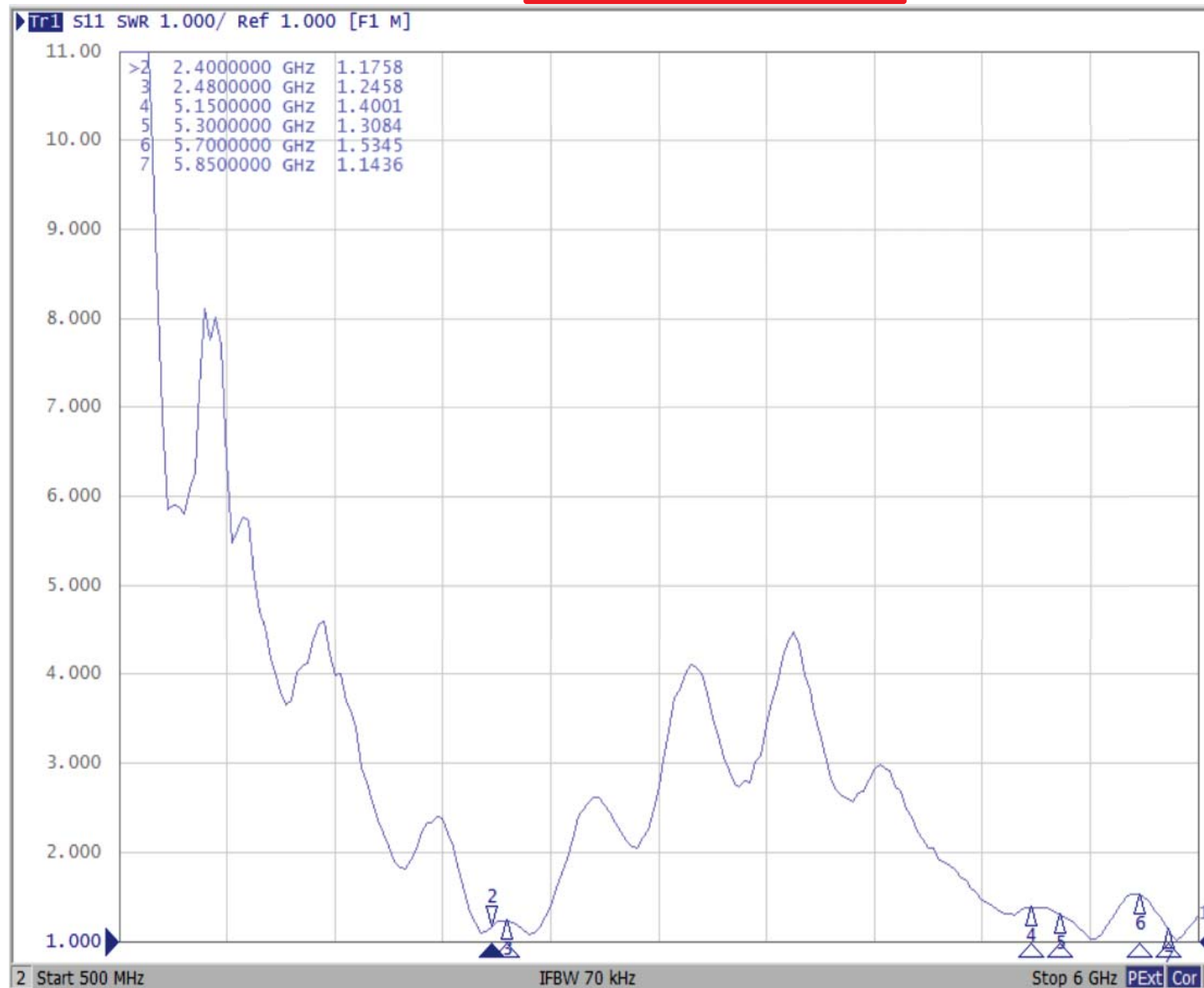
699~ 2690MHz(MAIN)



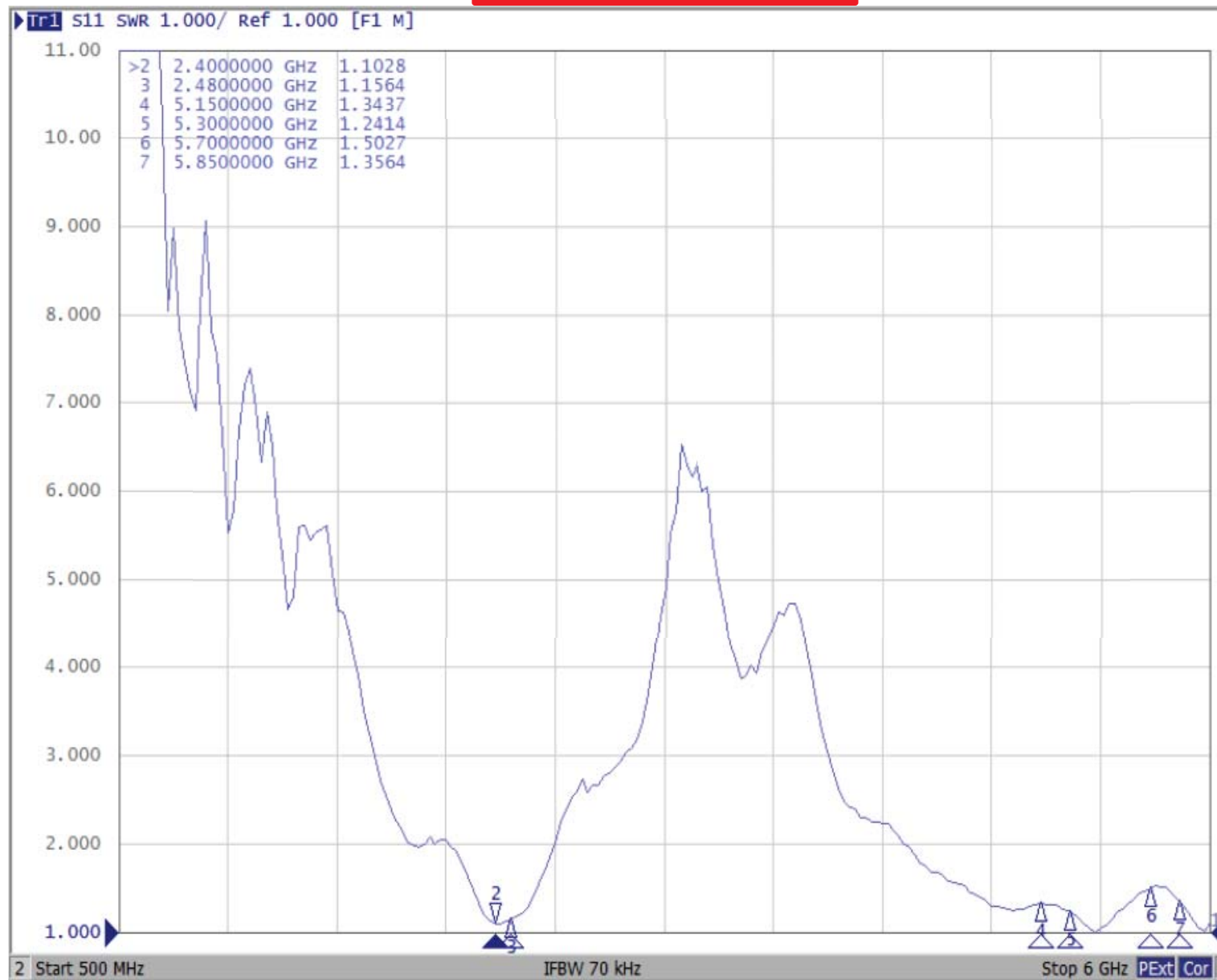
699~ 2690MHz(DIV)



2400~2500MHz
5150~5850MHz(WIFI1)



2400~2500MHz
5150~5850MHz(WIFI2)



● A88-MAIN_ Efficiency & Gain (效率和增益)

1. 无源效率: 超过50%, 天线性能基本达标。 (Passive efficiency: over 50%, antenna performance basically meets the standard)

699~ 2690MHz(MAIN)

Freq/Mhz	Effi / dB	Effi / %	Max/dBi		Freq/Mhz	Effi / dB	Effi / %	Max/dBi		Freq/Mhz	Effi / dB	Effi / %	Max/dBi
690	-2.41	57.41	2.92		1700	-3.57	43.95	3.2		2300	-3.08	49.2	1.98
710	-2.38	57.81	2.99		1720	-3.28	46.99	3.4		2320	-3.01	50	1.94
730	-2.4	57.54	3.17		1740	-3.19	47.97	3.78		2340	-2.98	50.35	1.83
750	-2.44	57.02	3.15		1760	-3.06	49.43	3.8		2360	-3.07	49.32	1.56
770	-2.63	54.58	3.08		1780	-2.82	52.24	4.22		2380	-2.86	51.76	1.84
790	-2.66	54.2	2.84		1800	-2.73	53.33	4.09		2400	-2.71	53.58	1.75
810	-2.65	54.33	2.84		1820	-2.47	56.62	4.24		2420	-2.75	53.09	1.83
830	-2.65	54.33	2.94		1840	-2.46	56.75	4.08		2440	-2.67	54.08	1.68
850	-2.93	50.93	2.88		1860	-2.37	57.94	3.83		2460	-2.61	54.83	1.68
870	-3.07	49.32	2.7		1880	-2.38	57.81	3.76		2480	-2.73	53.33	1.45
890	-2.9	51.29	2.85		1900	-2.54	55.72	3.25		2500	-2.8	52.48	1.27
910	-3.17	48.19	2.68		1920	-2.15	60.95	3.32		2520	-2.95	50.7	1.05
930	-3.09	49.09	2.32		1940	-2.48	56.49	3.11		2540	-3.06	49.43	0.86
950	-3.25	47.32	2.08		1960	-2.45	56.89	2.71		2560	-3.05	49.55	0.89
970	-3.27	47.1	1.96		1980	-2.55	55.59	2.64		2580	-3.4	45.71	0.56
					2000	-2.71	53.58	2.02		2600	-3.72	42.46	0.46
					2020	-2.82	52.24	1.61		2620	-3.99	39.9	0.3
					2040	-2.81	52.36	1.83		2640	-4	39.81	0.56
					2060	-2.92	51.05	1.84		2660	-4.31	37.07	0.24
					2080	-2.76	52.97	1.99		2680	-4.48	35.65	0.38
					2100	-3.04	49.66	1.6		2700	-4.88	32.51	0.04
					2120	-2.71	53.58	1.77					
					2140	-2.73	53.33	1.82					
					2160	-2.49	56.36	2.34					
					2180	-2.39	57.68	2.78					

● A88-DIV_ Efficiency & Gain (效率和增益)

1. 无源效率: 范围30%~ 40%, 天线性能基本达标。(Passive efficiency range30%~ 40%, antenna performance basically meets the standard)

699~ 2690MHz(DIV)

Freq/Mhz	Effi / dB	Effi / %	Max/dBi		Freq/Mhz	Effi / dB	Effi / %	Max/dBi		Freq/Mhz	Effi / dB	Effi / %	Max/dBi
690	-3.08	49.2	1.32		1700	-5.08	31.05	0.12		2300	-5.07	31.12	-1.94
710	-3.24	47.42	1.31		1720	-4.65	34.28	0.49		2320	-5.18	30.34	-2.14
730	-3.27	47.1	1.43		1740	-4.38	36.48	0.74		2340	-5.19	30.27	-1.97
750	-3.28	46.99	1.5		1760	-4.1	38.9	0.77		2360	-5.16	30.48	-1.76
770	-3.21	47.75	1.63		1780	-4.13	38.64	0.61		2380	-5.16	30.48	-1.38
790	-3.61	43.55	3.18		1800	-3.88	40.93	0.79		2400	-5.02	31.48	-1.41
810	-3.61	43.55	3.24		1820	-3.92	40.55	0.62		2420	-4.63	34.43	-0.93
830	-3.54	44.26	3.48		1840	-3.87	41.02	0.47		2440	-4.6	34.67	-0.7
850	-3.59	43.75	3.44		1860	-4.07	39.17	-0.14		2460	-4.35	36.73	-0.9
870	-3.27	47.1	3.84		1880	-4.02	39.63	-0.05		2480	-4.42	36.14	-0.96
890	-3.36	46.13	3.62		1900	-4.13	38.64	-0.32		2500	-4.21	37.93	-0.73
910	-3.07	49.32	3.83		1920	-3.97	40.09	0.03		2520	-4.1	38.9	-0.47
930	-3.13	48.64	3.7		1940	-4.21	37.93	-0.21		2540	-4.02	39.63	-0.61
950	-2.98	50.35	3.75		1960	-3.99	39.9	0.07		2560	-3.98	39.99	-0.22
970	-3.08	49.2	3.69		1980	-4.15	38.46	0.32		2580	-4.24	37.67	-0.27
					2000	-3.97	40.09	0.63		2600	-4.09	38.99	0.04
					2020	-4.16	38.37	0.72		2620	-4.44	35.97	-0.19
					2040	-3.87	41.02	1.21		2640	-4.17	38.28	0.09
					2060	-3.97	40.09	1.25		2660	-4.56	34.99	-0.17
					2080	-3.69	42.76	1.58		2680	-4.31	37.07	-0.14
					2100	-4	39.81	1.2		2700	-4.62	34.51	-0.33
					2120	-3.68	42.85	1.47					
					2140	-3.8	41.69	1.21					
					2160	-3.42	45.5	1.53					
					2180	-3.73	42.36	1.19					

● A88-WIFI1_ Efficiency & Gain （效率和增益）

1. 无源效率：范围45%~ 50%，天线性能基本达标。(Passive efficiency range45%~ 50%, antenna performance basically meets the standard)

2400~2500MHz
5150~5850MHz(WIFI1)

Freq/Mhz	Effi / dB	Effi / %	Max/dBi		Freq/Mhz	Effi / dB	Effi / %	Max/dBi
2400	-2.37	57.94	3.51		5150	-2.92	51.05	2.75
2410	-2.39	57.68	3.73		5170	-3.06	49.43	2.82
2420	-2.32	58.61	3.57		5190	-2.91	51.17	3.06
2430	-2.25	59.57	3.68		5210	-3.15	48.42	2.91
2440	-2.45	56.89	3.47		5230	-3.07	49.32	3.04
2450	-2.28	59.16	3.45		5250	-2.91	51.17	3.15
2460	-2.55	55.59	3.14		5270	-3.16	48.31	2.99
2470	-2.32	58.61	3.19		5290	-3.05	49.55	3.25
2480	-2.38	57.81	3.23		5310	-3.02	49.89	3.53
2490	-2.21	60.12	3.02		5330	-3.25	47.32	3.59
2500	-2.39	57.68	2.97		5350	-3.19	47.97	3.89
					5370	-3.36	46.13	3.84
					5390	-3.39	45.81	3.86
					5410	-3.51	44.57	3.8
					5430	-3.52	44.46	3.82
					5450	-3.9	40.74	3.54
					5470	-3.97	40.09	3.62
					5490	-3.73	42.36	3.98
					5510	-4.05	39.36	3.77
					5530	-3.98	39.99	3.88
					5550	-3.92	40.55	3.99
					5570	-4.09	38.99	3.91
					5590	-3.99	39.9	4.06
					5610	-3.72	42.46	4.37
					5630	-3.72	42.46	4.41
					5650	-3.86	41.11	4.35
					5670	-3.69	42.76	4.61
					5690	-4.06	39.26	4.28
					5710	-3.91	40.64	4.44
					5730	-3.89	40.83	4.48
					5750	-4.08	39.08	4.32
					5770	-3.83	41.4	4.74
					5790	-3.63	43.35	5.03
					5810	-3.89	40.83	4.91
					5830	-3.49	44.77	5.36
					5850	-3.6	43.65	5.37

A88-WIFI2_ Efficiency & Gain （效率和增益）

1. 无源效率：范围45%~ 50%，天线性能基本达标。(Passive efficiency range45%~ 50%, antenna performance basically meets the standard)

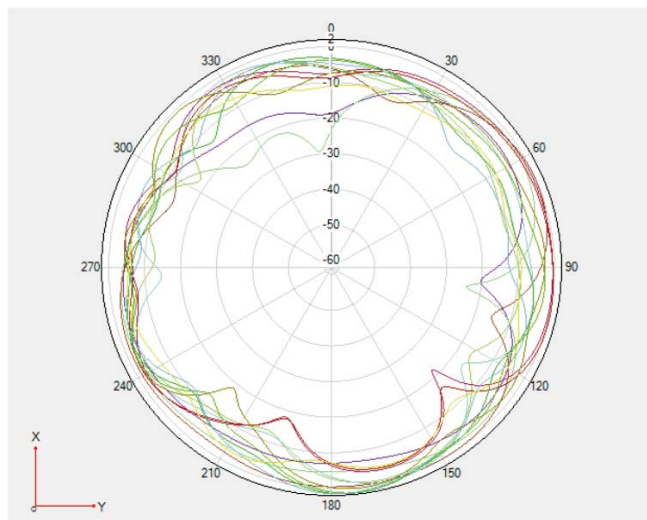
2400~2500MHz
5150~5850MHz(WIFI2)

Freq/Mhz	Effi / dB	Effi / %	Max/dBi		Freq/Mhz	Effi / dB	Effi / %	Max/dBi
2400	-2.86	51.76	2.83		5150	-2.86	51.76	2.59
2410	-3.04	49.66	2.77		5170	-2.98	50.35	2.59
2420	-2.86	51.76	2.72		5190	-2.82	52.24	2.76
2430	-2.98	50.35	2.61		5210	-3.04	49.66	2.59
2440	-2.96	50.58	2.49		5230	-2.9	51.29	2.76
2450	-3.06	49.43	2.21		5250	-2.71	53.58	2.9
2460	-3.14	48.53	2.07		5270	-2.94	50.82	2.74
2470	-3.38	45.92	1.62		5290	-2.8	52.48	2.96
2480	-3.1	48.98	2.05		5310	-2.73	53.33	3.23
2490	-3.19	47.97	1.85		5330	-2.9	51.29	3.3
2500	-3.37	46.03	1.77		5350	-2.81	52.36	3.63
					5370	-2.93	50.93	3.69
					5390	-2.93	50.93	3.79
					5410	-3.01	50	3.82
					5430	-2.96	50.58	3.89
					5450	-3.32	46.56	3.56
					5470	-3.38	45.92	3.55
					5490	-3.14	48.53	3.79
					5510	-3.48	44.87	3.44
					5530	-3.42	45.5	3.48
					5550	-3.35	46.24	3.58
					5570	-3.58	43.85	3.46
					5590	-3.49	44.77	3.66
					5610	-3.27	47.1	3.99
					5630	-3.27	47.1	4.09
					5650	-3.43	45.39	3.95
					5670	-3.29	46.88	4.13
					5690	-3.69	42.76	3.83
					5710	-3.55	44.16	4.06
					5730	-3.58	43.85	4.12
					5750	-3.79	41.78	3.96
					5770	-3.59	43.75	4.28
					5790	-3.43	45.39	4.47
					5810	-3.72	42.46	4.28
					5830	-3.33	46.45	4.65
					5850	-3.44	45.29	4.61

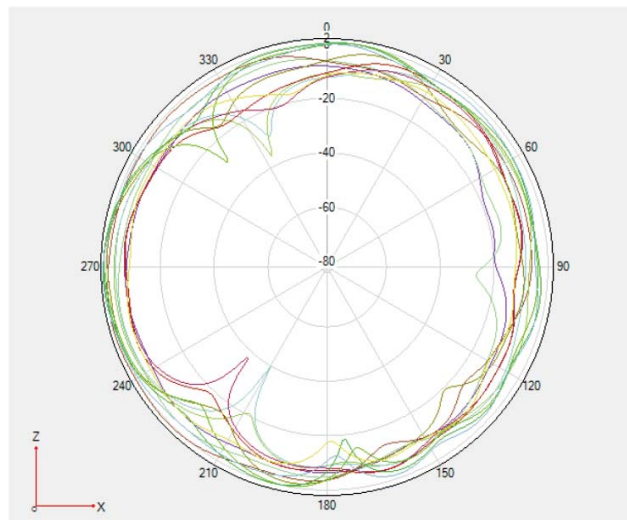
● A88-MAIN_ 2D Radiation Pattern (2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)

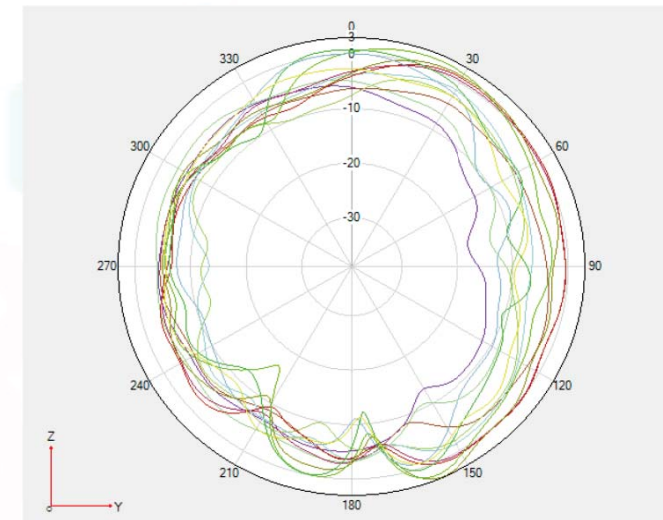
H



E1



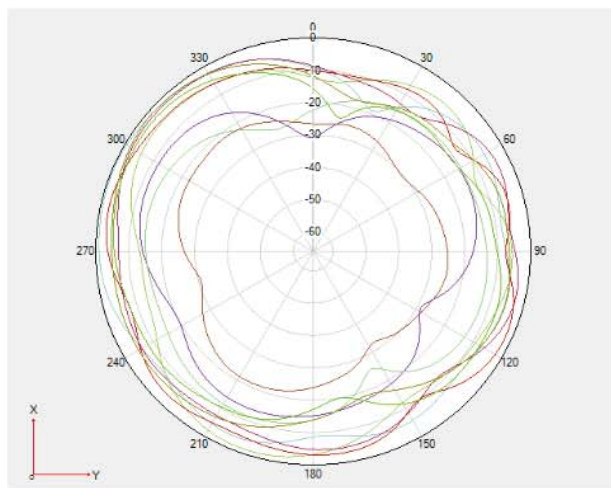
E2



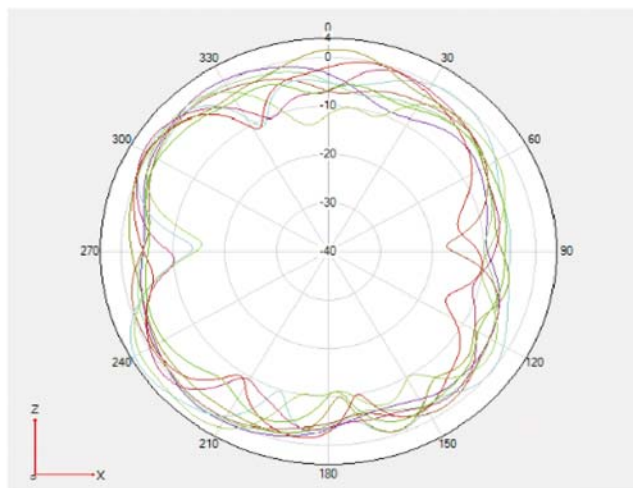
● A88-DIV_ 2D Radiation Pattern (2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)

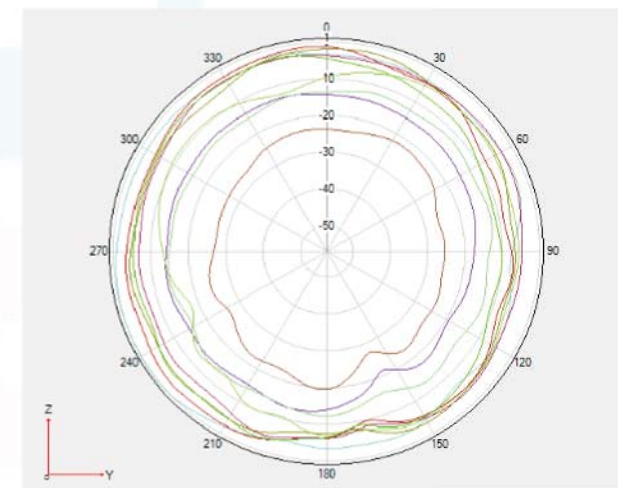
H



E1



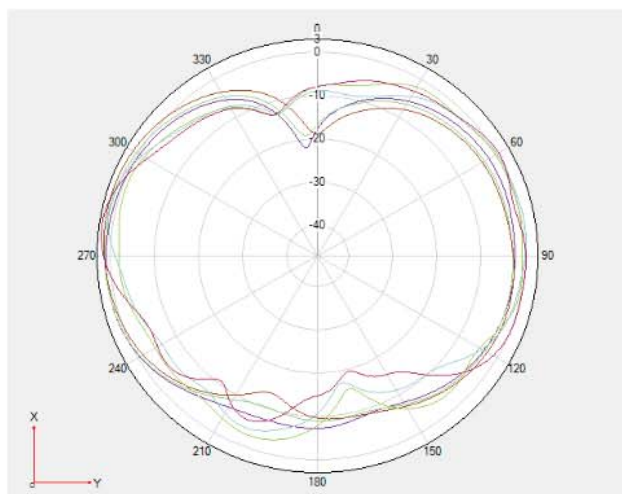
E2



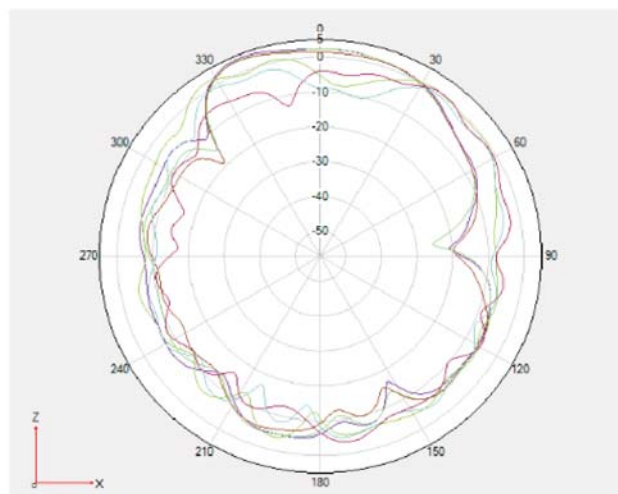
● A88-WIFI1_ 2D Radiation Pattern (2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)

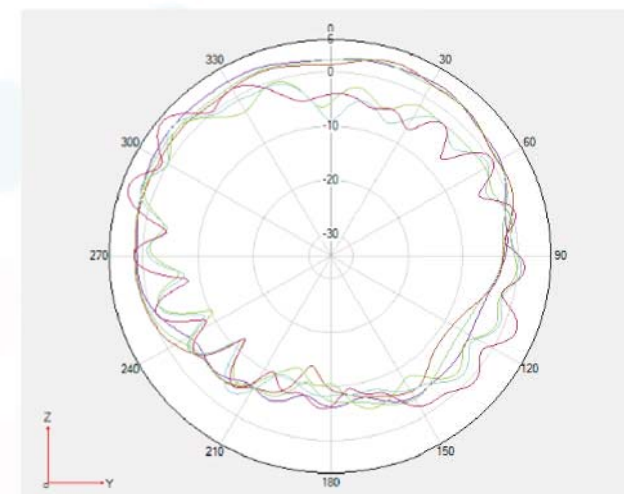
H



E1



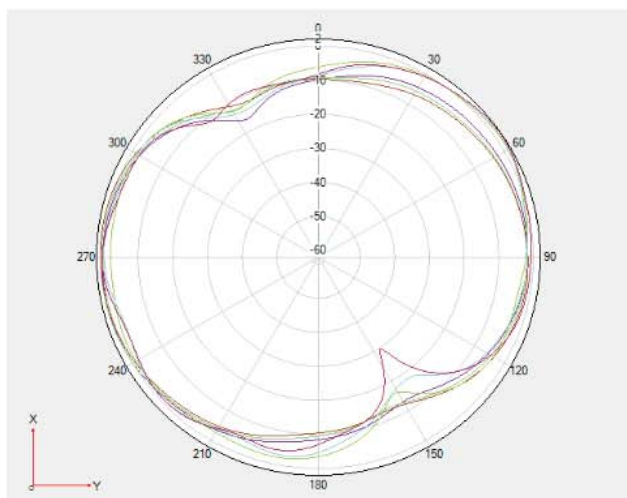
E2



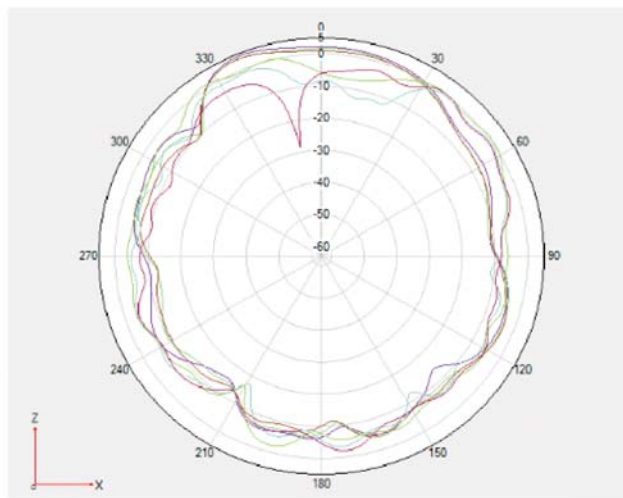
● A88-WIFI2_ 2D Radiation Pattern (2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)

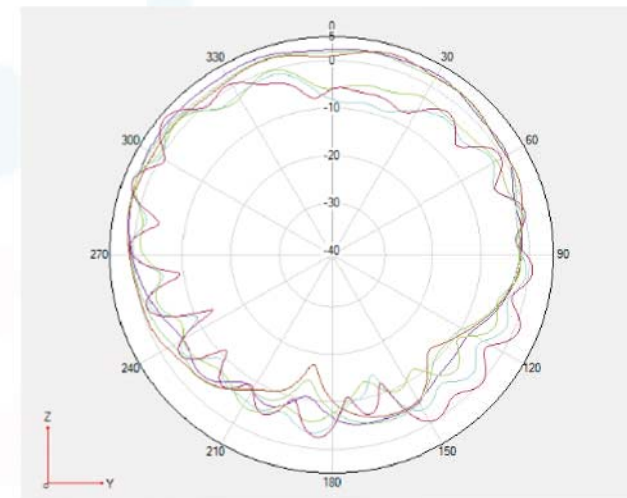
H



E1



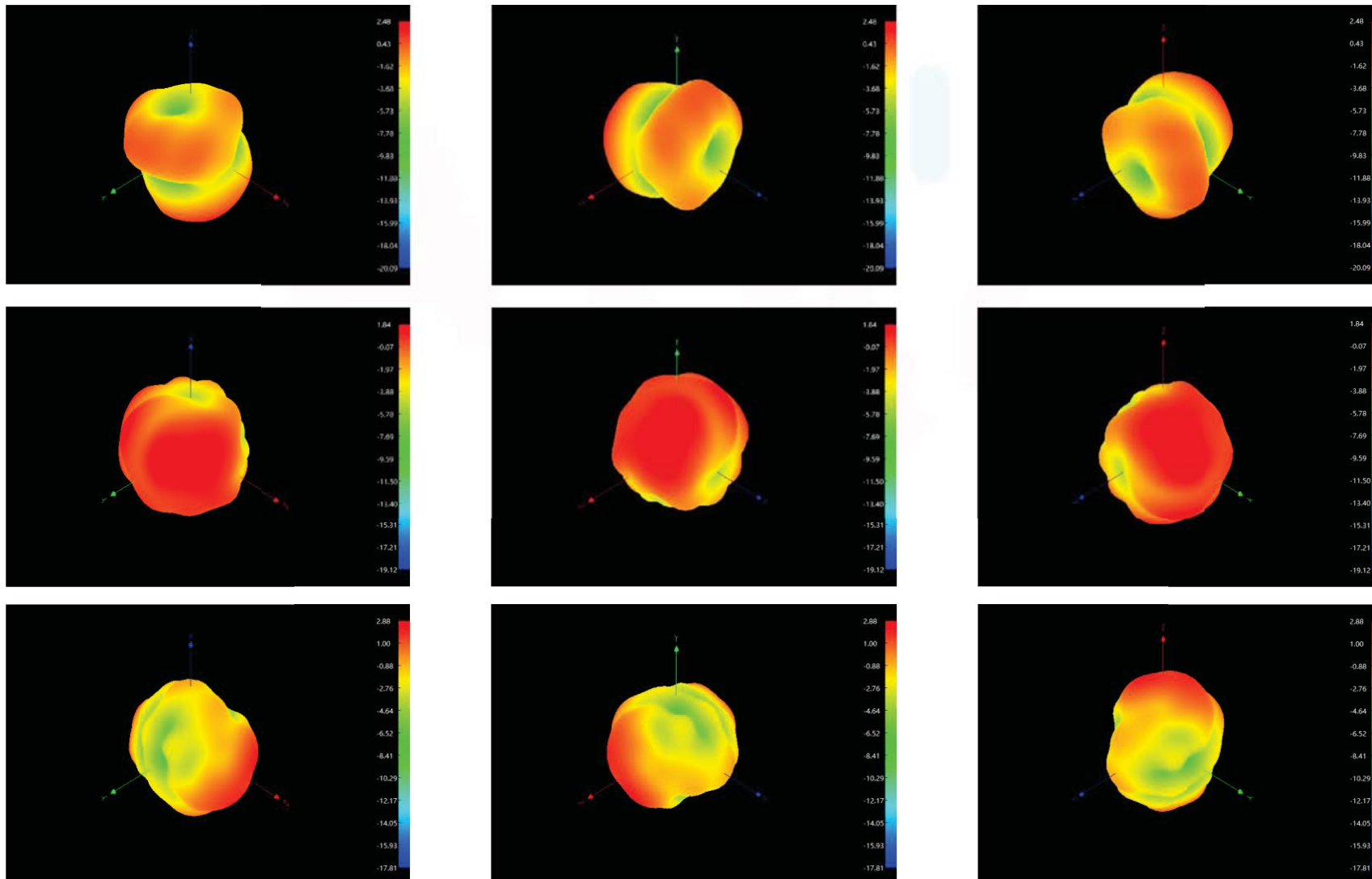
E2



● A88-MAIN_Performance : 3D Radiation Pattern (3D辐射方向图)

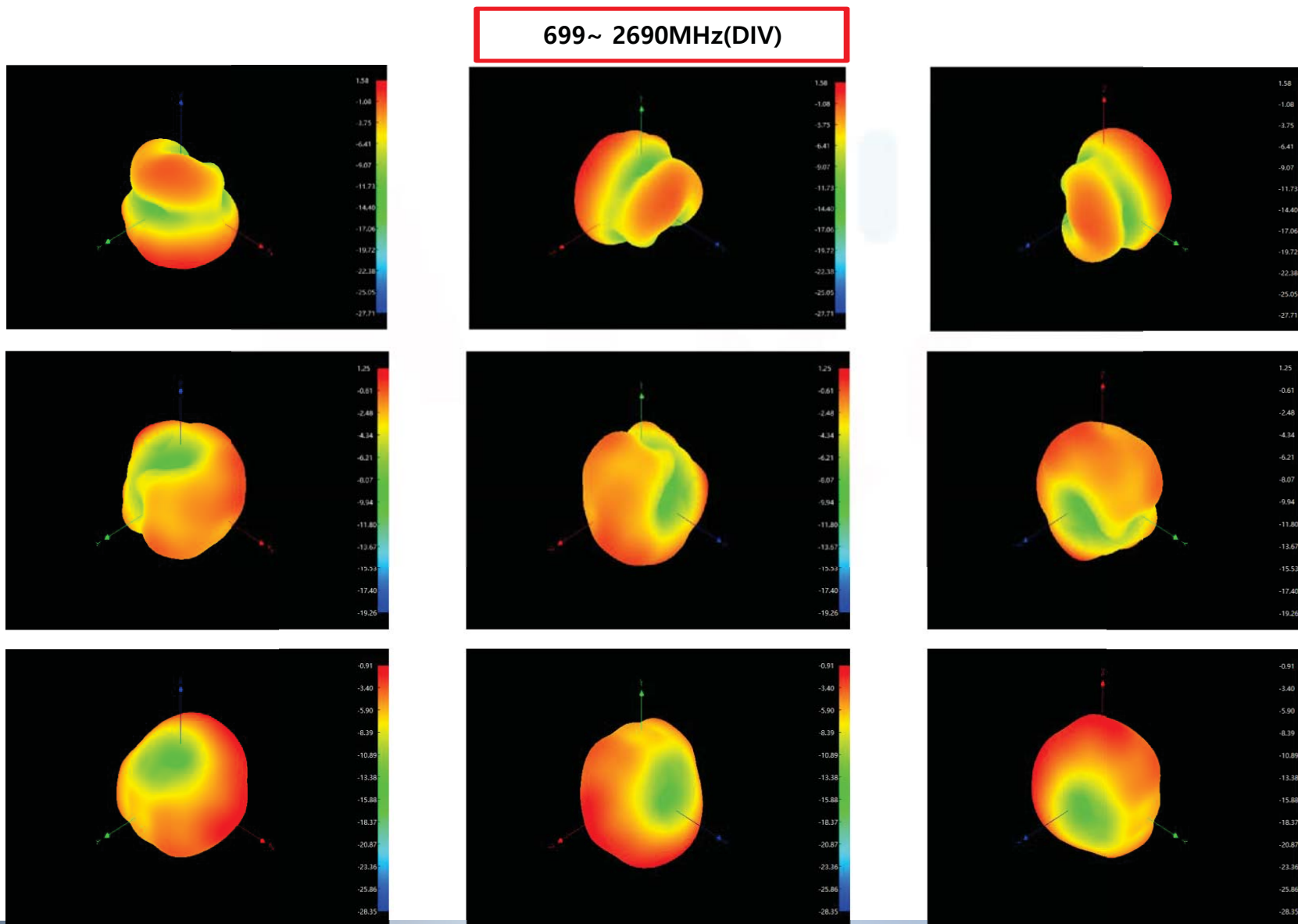
1. This 3D Radiation Pattern shows the response of each angle antenna gain on the sphere. (此3D辐射图显示了每个角度天线增益在球体上的反应)
2. The objects corresponding to the X-Y-Z axes are shown in the left picture. (与X-Y-Z轴相对应的方向如左图所示)

699~ 2690MHz(MAIN)



● A88-DIV_Performance : 3D Radiation Pattern (3D辐射方向图)

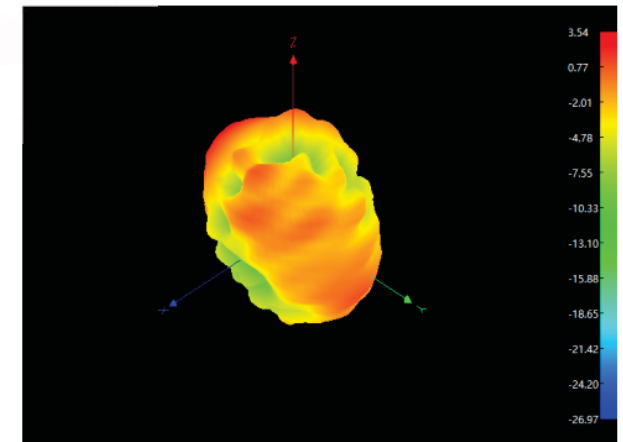
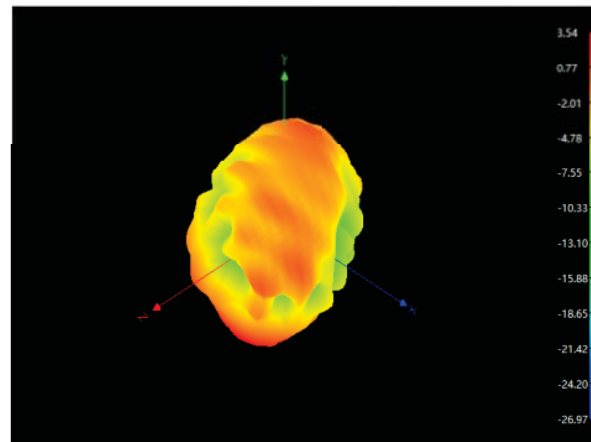
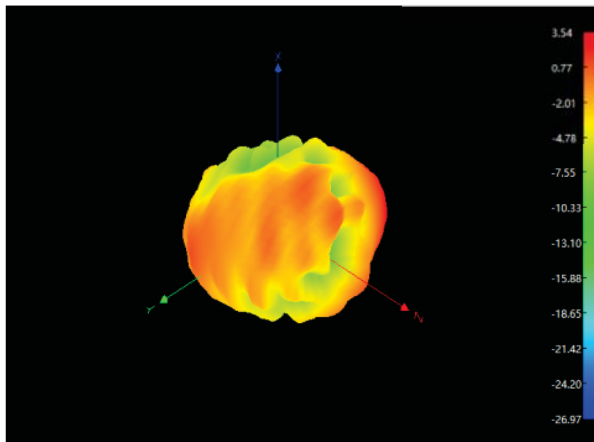
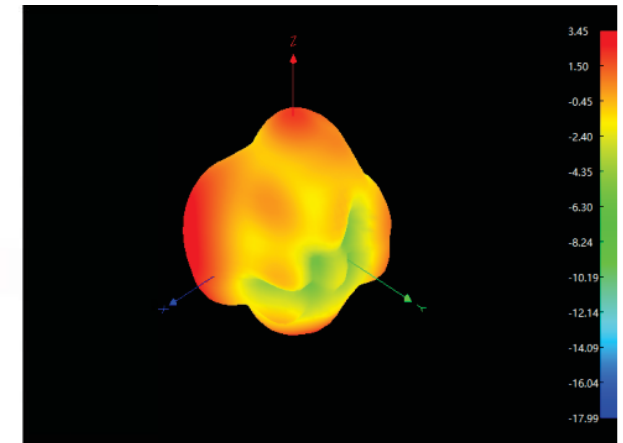
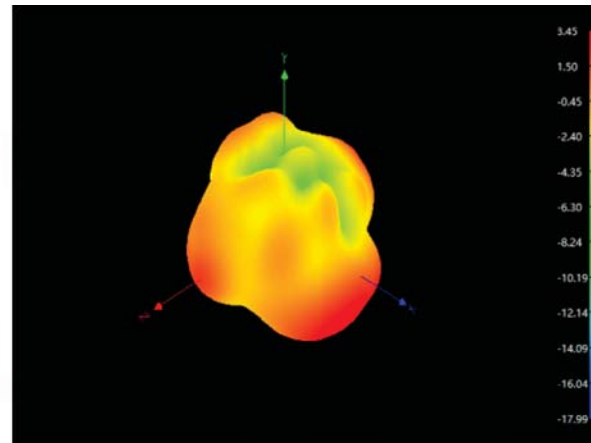
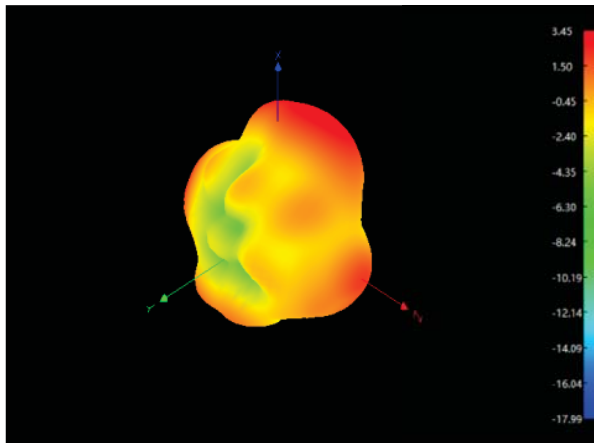
1. This 3D Radiation Pattern shows the response of each angle antenna gain on the sphere. (此3D辐射图显示了每个角度天线增益在球体上的反应)
2. The objects corresponding to the X-Y-Z axes are shown in the left picture. (与X-Y-Z轴相对应的方向如左图所示)



● A88-WIFI1_Performance : 3D Radiation Pattern (3D辐射方向图)

1. This 3D Radiation Pattern shows the response of each angle antenna gain on the sphere. (此3D辐射图显示了每个角度天线增益在球体上的反应)
2. The objects corresponding to the X-Y-Z axes are shown in the left picture. (与X-Y-Z轴相对应的方向如左图所示)

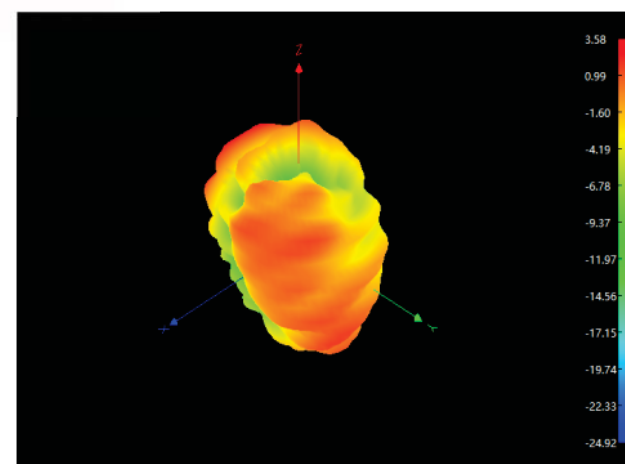
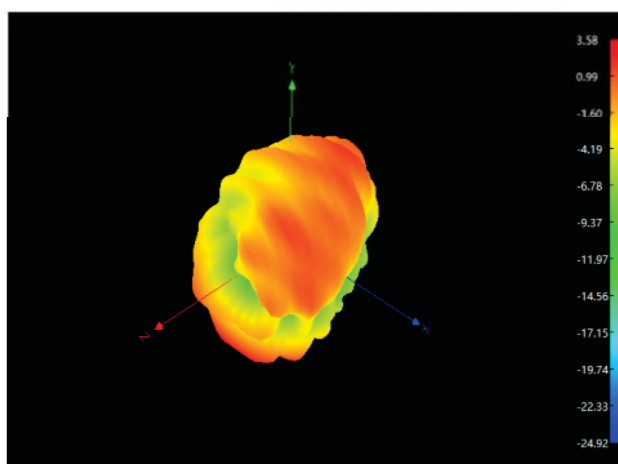
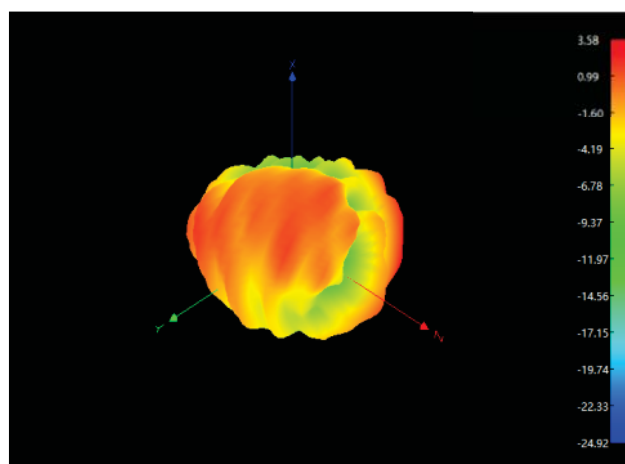
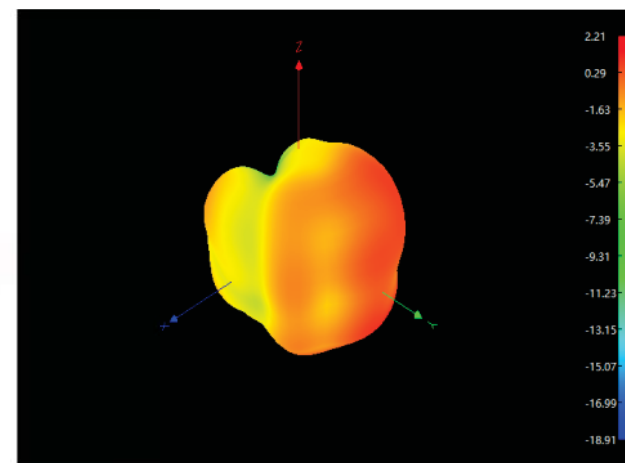
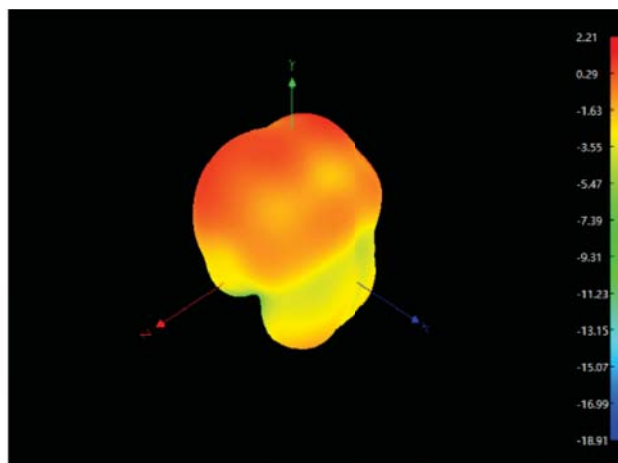
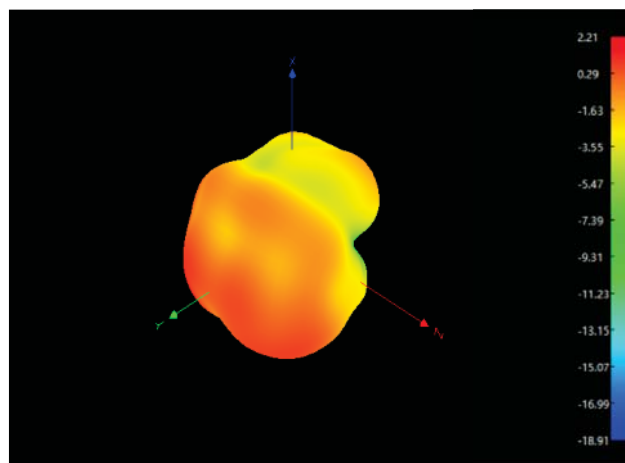
2400~2500MHz
5150~5850MHz(WIFI1)



● A88-WIFI2_ Performance : 3D Radiation Pattern (3D辐射方向图)

1. This 3D Radiation Pattern shows the response of each angle antenna gain on the sphere. (此3D辐射图显示了每个角度天线增益在球体上的反应)
2. The objects corresponding to the X-Y-Z axes are shown in the left picture. (与X-Y-Z轴相对应的方向如左图所示)

2400~2500MHz
5150~5850MHz(WIFI2)



FS主集有源测试数据							
FS	Channel	TX (dBm)	RX (dBm)	FS	Channel	TX (dBm)	RX (dBm)
LTE-1	L	19.09		LTE-12	L	17.1	
	M	19.64			M	18.65	
	H	19.98	-92.38		H	18.29	-79.81
LTE-2	L	19.74		LTE-13	L	19.68	
	M	19.58			M	20.17	
	H	19.39	-92.28		H	19.77	-80.09
LTE-3	L	19.12		LTE-18	L	18.59	
	M	19.28			M	19.27	
	H	19.37	-90.52		H	18.98	-82.12
LTE-4	L	19.06		LTE-19	L	19.18	
	M	19.48			M	18.62	
	H	19.56	-92.41		H	18.38	-80.59
LTE-5	L	18.77		LTE-20	L	18.54	
	M	18.87			M	18.2	
	H	18.33	-80.81		H	18.01	-80.3
LTE-7	L	20.02		LTE-25	L	19.72	
	M	20.43			M	19.44	
	H	19.94	-91.39		H	18.84	-90.3
LTE-8	L	18.63		LTE-26	L	18.54	
	M	18.99			M	18.89	
	H	17.84	-80.97		H	18.34	-81.52
LTE-28	L	17.53		LTE-38	L	20.05	
	M	18.3			M	20.36	
	H	19.34	-81.95		H	19.64	-91.31
LTE-39	L	20.05		LTE-40	L	19.89	
	M	19.71			M	19.51	
	H	19.71	-90.25		H	18.76	-91.17
LTE-41	L	20.03					
	M	20.02					
	H	19.81	-90.08				

FS	Channel	TX (dBm)	RX (dBm)
2.4G WiFi- 11B(11M)	1	16.01	
	6	16.07	
	11	15.76	-82.76
5.8G WiFi- 11A(54M)	36	15.24	
	149	14.48	
	165	15.87	-71.55

● A88_ Antenna Summary (天线总结)

1. The antenna meets the basic performance requirements. (天线满足基本的性能要求)

*** Please let me know if there is a change in the device. And if have any questions, please communicate promptly***

*** (如果机器有变化, 请通知我司; 如果有任何问题, 请及时沟通) ***

Thank You!!