

## SPEED TECHNOLOGY

# 样品承认书 Sample Approval Form

客户: 深圳无尽瓦特科技有限公司  
Customer

供应商: 惠州硕贝德汽车智联科技有限公司  
Supplier

项目名称: Ampere 弹片天线项目  
Project Name

产品名称: VISUN,LTE 弹片天线  
Part Name

产品料号: 39040004  
Part Number

产品型号: 弹片天线  
Part Model

制作日期: 2024-10-16  
Prepare Date

供应商确认			客户确认	
Supplier Approval			Customer Approval	
Prepared By 制作	Checked By 审核	Approved By 确认	Checked By 审核	Approved By 确认
赖县强	周胜中	周世扬		

# APPROVAL SHEET

**PRODUCT NAME**

Wifi 弹片天线

**CUSTOMER APPROVED BY****CUSTOMER NAME OR MODEL****APPROVED DATE**

## SPECIFICATION /规格书

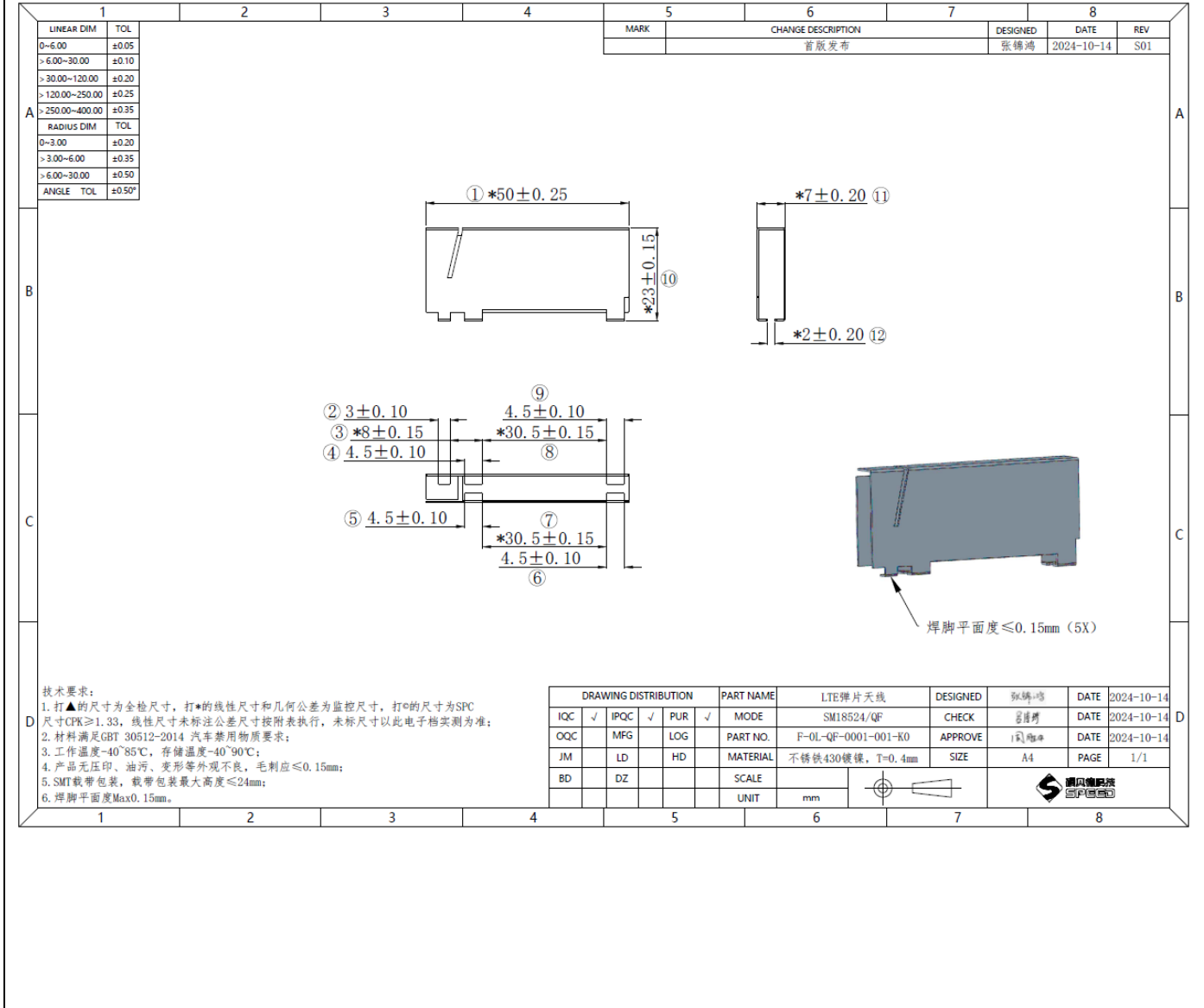
Product Name: VISUN,LTE 弹片天线Description: 贴片式弹片天线

## VERSION INFORMATION

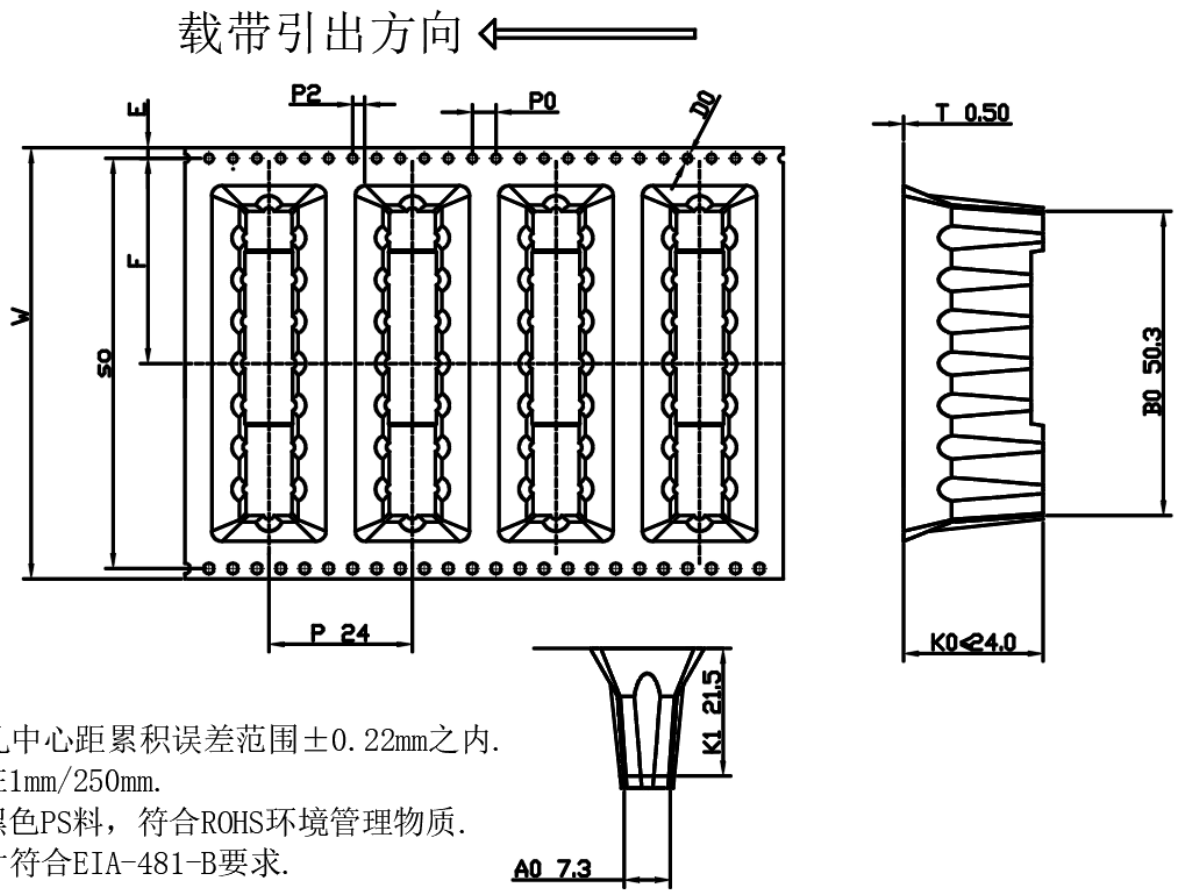
VERSION	DATE	REVISION DESCRIPTION	PREPARED	CHECKED	APPROVED
V1.0	2024-10-16	NEW ISSUED			

**PREPARED BY****CHECKED BY****APPROVED BY**

# 一、Structure 成品结构图



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LTE 弹片天线	2024-10-16	1/15
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**二、包装**


- 1: 10个链孔中心距累积误差范围±0.22mm之内.
- 2: 反弯度在1mm/250mm.
- 3: 材料: 黑色PS料, 符合ROHS环境管理物质.
- 4: 所有尺寸符合EIA-481-B要求.
- 5: 厚度: 0.50±0.05mm.
- 6: 使用 $\phi 330$ mm胶盘, 包装零件数量: 120PCS/2.88m
- 7: 保护带: 黑色PS材料.

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VISUNE/LTE 弹片天线	2024-10-16	2/15
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### 三、Electrical Characteristics 电气参数 1

#### 1.1 VISUNE/LTE 弹片天线

No	Part Name	SPEC
1	Frequency Range/频率范围	600MHz~960MHz 1710MHz~2690MHz
2	V.S.W.R/电压驻波比	600MHz~700MHz VSWR≤5.0 700MHz~960MHz VSWR≤4.0 1710MHz~2690MHz VSWR≤3.0
3	Efficiency /效率	600MHz~960MHz&25% 1710MHz~2690 MHz&40%
4	Impedence/阻抗	50 ohm
5	Polarization/极化	LP/线性极化

#### 1.2 Material/材质

No	Part Name	SPEC
1	Antenna/天线	SUS430
2	RF CaLTE/射频连接线	无
		无

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VISUN/LTE 弹片天线	2024-10-16	3/15
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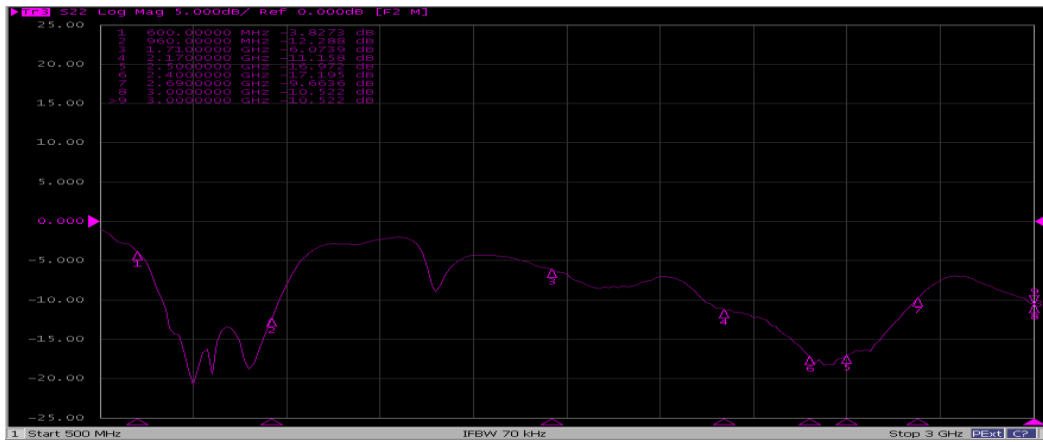
#### 四、Testing Conditions 测试条件

1	Low Temperature Operational 低温工作测试	<p>All of the specifications in Item 1 is to be satisfied after antennas exposed to <math>-40^{\circ}\text{C} \pm 2^{\circ}\text{C}</math> for 24H, and then to normal temperature 2H</p> <p>当天线暴露在温度为 <math>-40^{\circ}\text{C} \pm 2^{\circ}\text{C}</math> 24H 后，然后常温放置 2H，天线电气性能不变。</p>
2	High Temperature Operational 高温工作测试	<p>All of the specifications in Item 1 is to be satisfied after antennas exposed to <math>+85^{\circ}\text{C} \pm 2^{\circ}\text{C}</math> for 24H, and then to normal temperature 2H</p> <p>当天线暴露在温度为 <math>85^{\circ}\text{C} \pm 2^{\circ}\text{C}</math> 24H 后，然后常温放置 2H，天线电气性能不变。</p>
3	Packing Drop Test 包装跌落测试	<p>A single antenna drops with height 1.2M and marLTE platform, down ten times in accordance with the order of six-sided triangular corner</p> <p>将单个天线，跌落高度为 1.2M，大理石平台，按照一角三棱六面顺序共跌十次。</p>
4	Operating Temp 工作温度	- 40 °C ~ 85 °C
5	Storage Temp 储存温度	- 40 °C ~ 90 °C

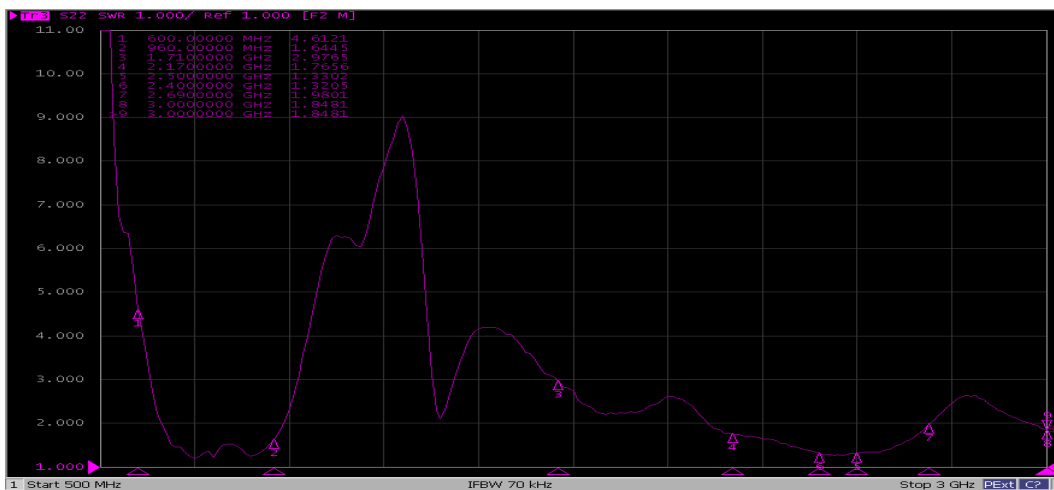
PRODUCT NAME	Prepared date	Page
VISUNE/LTE 弹片天线	2024-10-16	4/15
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## 五、Electrical Report /电气报告-----LTE 4G1 Main 天线

### S11



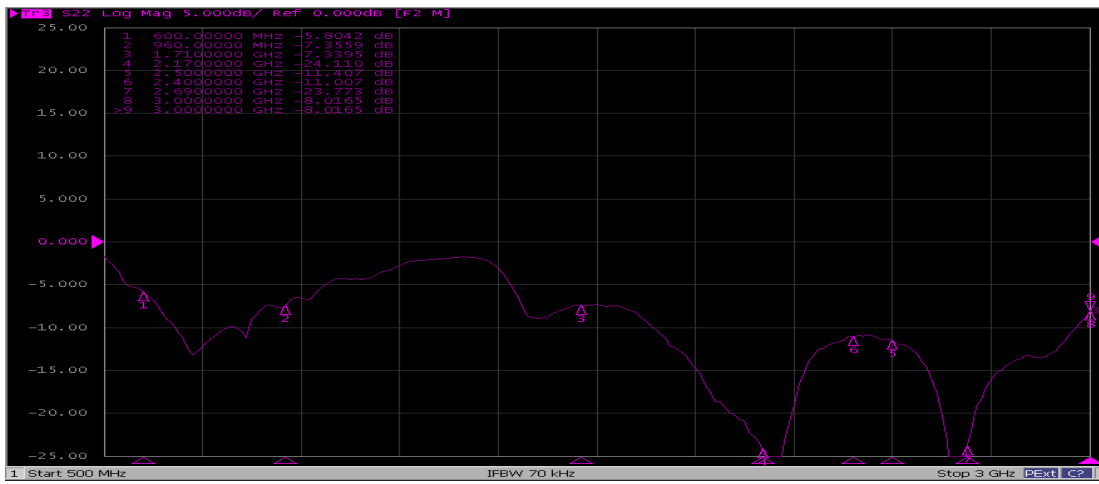
### VSWR



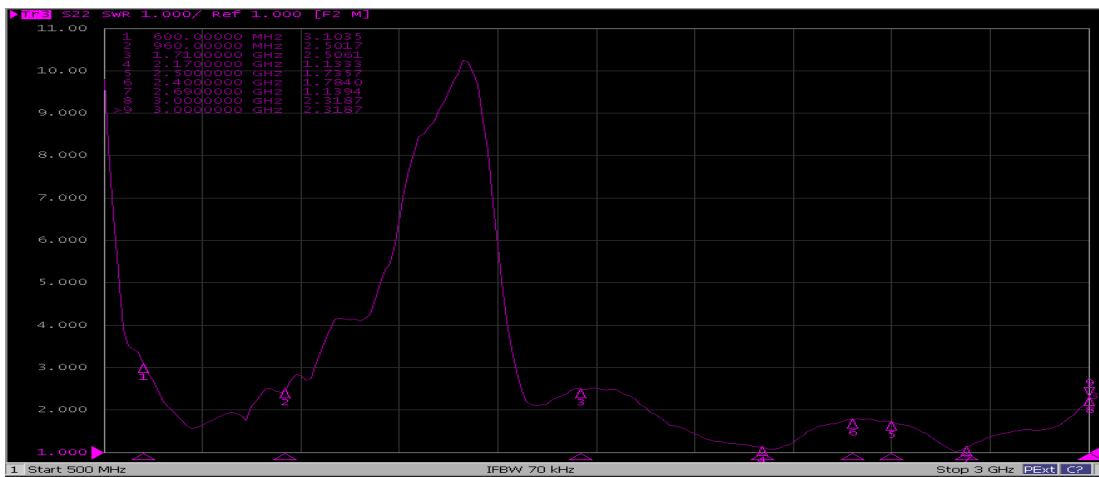
PRODUCT NAME	Prepared date	Page
VISUN/LTE 弹片天线	2024-09-06	5/15
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## 六、Electrical Report /电气报告-----LTE 4G2 Div 天线

### S11



### VSWR

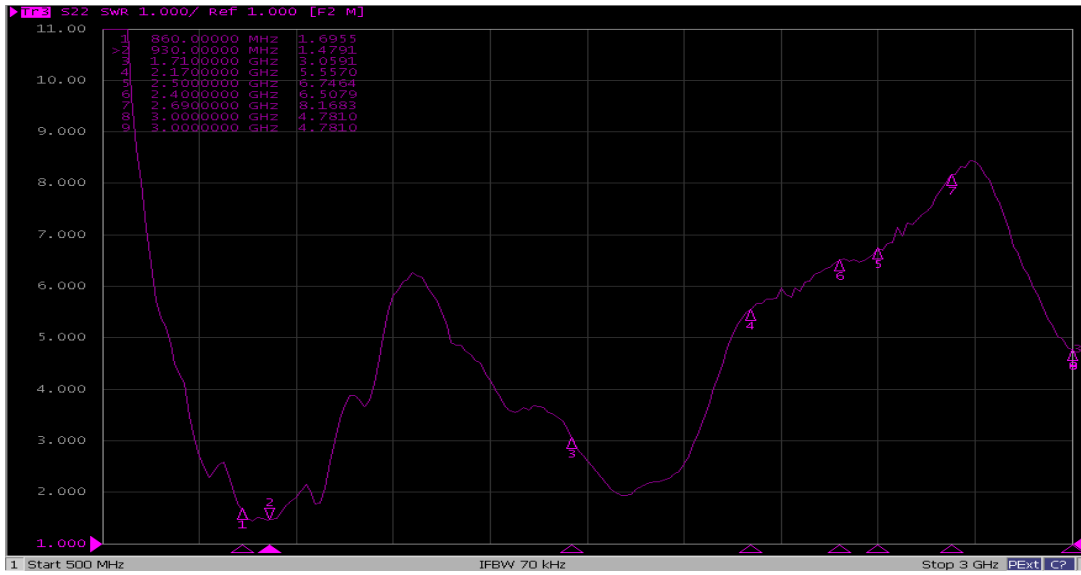


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VISUNE/LTE 弹片天线	2024-10-16	6/15
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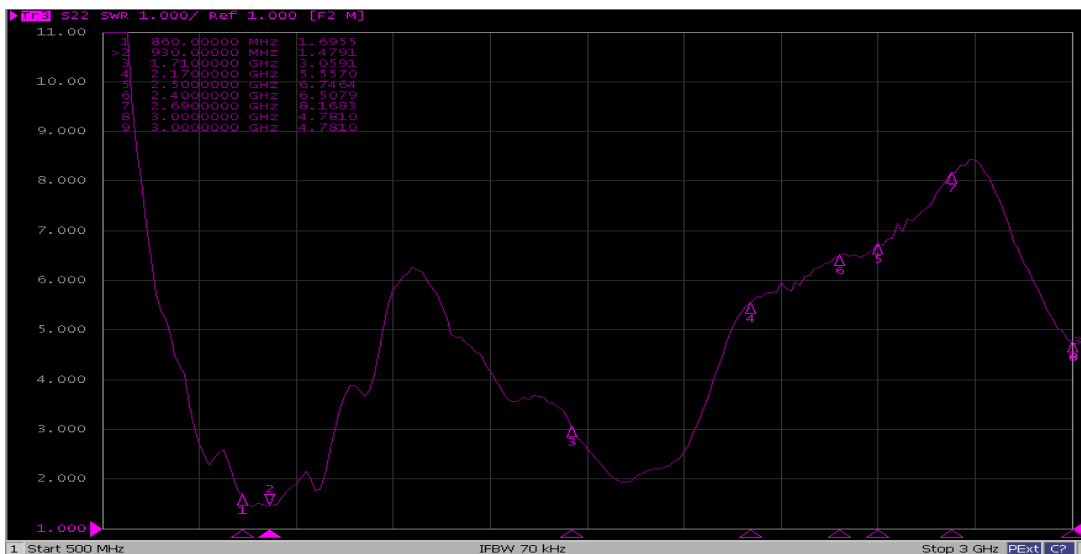


## 七、Electrical Report /电气报告-----VISUN 天线

### S11



### VSWR



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## 八、Electrical Report /电气报告-----LTE 4G1 Main 天线 Efficiency&gain

Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
600	-7.52	17.68	-4.19	900	-3.25	47.33	1.12	2300	-2.72	53.45	3.12
610	-7.18	19.16	-3.18	910	-3.50	44.70	0.44	2310	-2.83	52.09	3.18
620	-6.93	20.25	-2.70	920	-3.63	43.32	-0.21	2330	-2.96	50.57	3.25
630	-6.84	20.69	-1.37	930	-3.71	42.57	-1.07	2350	-2.90	51.33	3.13
640	-6.67	21.51	-2.98	940	-3.90	40.77	-0.59	2370	-2.85	51.90	3.14
650	-6.06	24.77	-2.47	950	-4.17	38.27	-0.04	2390	-2.72	53.42	3.19
660	-5.94	25.47	-2.51	960	-4.49	35.60	0.04	2410	-2.76	52.96	3.14
670	-5.63	27.36	-2.66	1710	-3.08	49.22	1.35	2430	-2.90	51.26	3.67
680	-5.70	26.94	-2.14	1730	-2.98	50.39	1.69	2450	-2.69	53.78	4.04
690	-5.88	25.80	-2.12	1750	-2.82	52.22	1.82	2470	-2.42	57.24	4.48
700	-6.05	24.84	-2.32	1770	-2.86	51.77	1.77	2490	-2.52	55.99	4.62
710	-6.26	23.67	-2.33	1790	-2.74	53.24	2.41	2510	-2.81	52.34	4.57
720	-6.24	23.77	-1.58	1810	-2.72	53.47	2.70	2530	-2.77	52.87	4.77
730	-6.14	24.34	-1.00	1830	-2.81	52.34	3.16	2550	-2.72	53.41	5.06
740	-6.03	24.94	-0.45	1850	-2.90	51.27	3.27	2570	-2.75	53.04	5.39
750	-5.79	26.39	-1.33	1870	-3.06	49.45	3.38	2590	-2.79	52.57	5.33
760	-5.48	28.35	-0.66	1890	-3.12	48.74	3.73	2610	-3.06	49.42	5.24
770	-5.31	29.47	-0.43	1910	-3.12	48.75	4.02	2630	-3.16	48.27	4.95
780	-5.25	29.88	-0.37	1930	-3.20	47.86	3.95	2650	-3.12	48.71	4.98
790	-5.08	31.05	-0.27	1950	-3.37	46.08	3.65	2670	-3.30	46.75	4.71
800	-5.26	29.80	-0.49	1970	-3.46	45.11	3.49	2690	-3.83	41.35	4.52
810	-5.40	28.87	-0.77	1990	-3.55	44.14	3.12				
820	-5.36	29.11	-0.81	2010	-4.37	36.60	2.27				
830	-5.19	30.30	-0.62	2030	-4.37	36.60	1.81				
840	-5.10	30.88	-0.45	2050	-4.27	37.39	1.66				
850	-5.10	30.94	-0.34	2070	-3.75	42.14	2.21				
860	-5.03	31.43	-0.72	2090	-3.49	44.77	2.41				
870	-4.60	34.64	-0.23	2110	-3.48	44.83	2.25				
880	-3.61	43.52	1.39	2130	-3.32	46.57	2.36				
890	-3.10	48.93	1.73	2150	-3.35	46.24	2.45				
				2170	-2.89	51.35	3.07				

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## 九、Electrical Report /电气报告-----LTE 4G2 Div 天线 Efficiency&gain

Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
600	-7.66	17.14	-3.09	900	-6.17	24.18	-0.17	2300	-2.75	53.12	3.54
610	-7.40	18.19	-2.41	910	-6.23	23.84	-0.63	2310	-3.08	49.23	3.68
620	-7.27	18.77	-2.20	920	-6.07	24.74	-0.99	2330	-3.13	48.64	3.91
630	-6.96	20.12	-2.23	930	-5.53	28.00	-0.74	2350	-2.96	50.56	3.96
640	-6.84	20.69	-2.37	940	-4.93	32.11	0.23	2370	-2.78	52.73	3.62
650	-6.95	20.18	-2.35	950	-4.47	35.74	0.90	2390	-2.60	54.90	3.85
660	-6.72	21.27	-2.29	960	-4.14	38.56	1.28	2410	-2.64	54.39	3.64
670	-6.37	23.09	-1.86	1710	-2.56	55.45	3.12	2430	-2.69	53.77	3.90
680	-6.30	23.46	-2.33	1730	-2.51	56.11	3.01	2450	-2.60	55.01	4.14
690	-6.45	22.65	-2.56	1750	-2.40	57.54	3.00	2470	-2.17	60.72	4.84
700	-6.67	21.54	-2.05	1770	-2.53	55.81	2.62	2490	-2.29	58.99	4.85
710	-6.69	21.45	-1.35	1790	-2.34	58.33	2.77	2510	-2.45	56.85	4.24
720	-6.50	22.38	-1.09	1810	-2.27	59.35	2.82	2530	-2.43	57.20	4.11
730	-6.43	22.73	-1.08	1830	-2.23	59.84	2.93	2550	-2.43	57.13	3.79
740	-6.24	23.75	-0.95	1850	-2.19	60.37	2.96	2570	-2.33	58.44	4.07
750	-6.28	23.54	-1.00	1870	-2.21	60.13	2.93	2590	-2.28	59.19	4.13
760	-6.42	22.82	-1.33	1890	-2.15	60.99	2.80	2610	-2.34	58.30	4.35
770	-6.43	22.74	-1.36	1910	-1.99	63.20	3.11	2630	-2.34	58.33	4.42
780	-6.22	23.89	-1.15	1930	-1.89	64.77	3.45	2650	-2.04	62.52	4.67
790	-5.80	26.32	-0.75	1950	-1.87	65.09	3.52	2670	-1.88	64.83	4.80
800	-5.89	25.75	-1.51	1970	-1.65	68.36	3.66	2690	-2.04	62.51	4.40
810	-6.02	25.03	-1.79	1990	-1.36	73.09	4.12				
820	-5.69	26.96	-1.35	2010	-1.79	66.18	3.58				
830	-5.30	29.54	-0.86	2030	-1.92	64.24	3.32				
840	-5.01	31.55	-0.31	2050	-2.03	62.67	3.12				
850	-4.99	31.73	0.02	2070	-2.03	62.70	3.30				
860	-5.16	30.48	0.19	2090	-2.01	62.92	3.62				
870	-5.57	27.74	0.24	2110	-2.20	60.29	3.30				
880	-5.95	25.44	0.27	2130	-2.38	57.77	3.32				
890	-6.18	24.10	0.15	2150	-2.52	56.00	3.25				
				2170	-2.46	56.76	2.88				

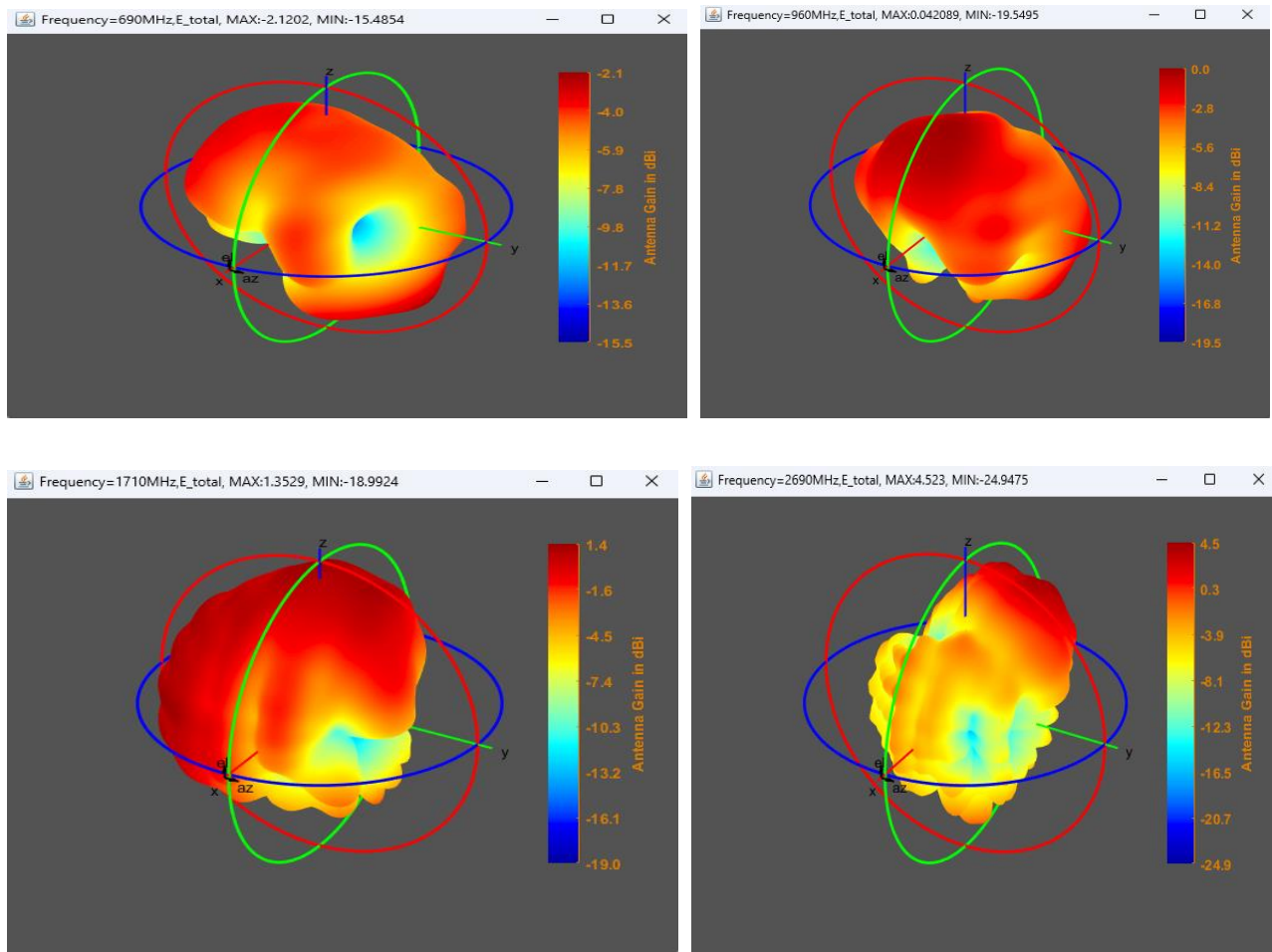
<b>PRODUCT NAME</b>	<b>Prepared date</b>	<b>Page</b>
VISUNE/LTE 弹片天线	2024-10-16	9/15
<b>Prepared by</b>	<b>Checked by</b>	<b>Approved by</b>

**十、Electrical Report /电气报告-----VISUN 天线 Efficiency&gain**

Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
860	-3.60	43.62	-0.24
870	-3.79	41.76	-0.64
880	-4.01	39.75	-0.76
890	-3.75	42.15	0.44
900	-3.53	44.39	0.54
910	-3.94	40.35	-0.11
920	-3.71	42.59	0.00
930	-4.07	39.15	0.26

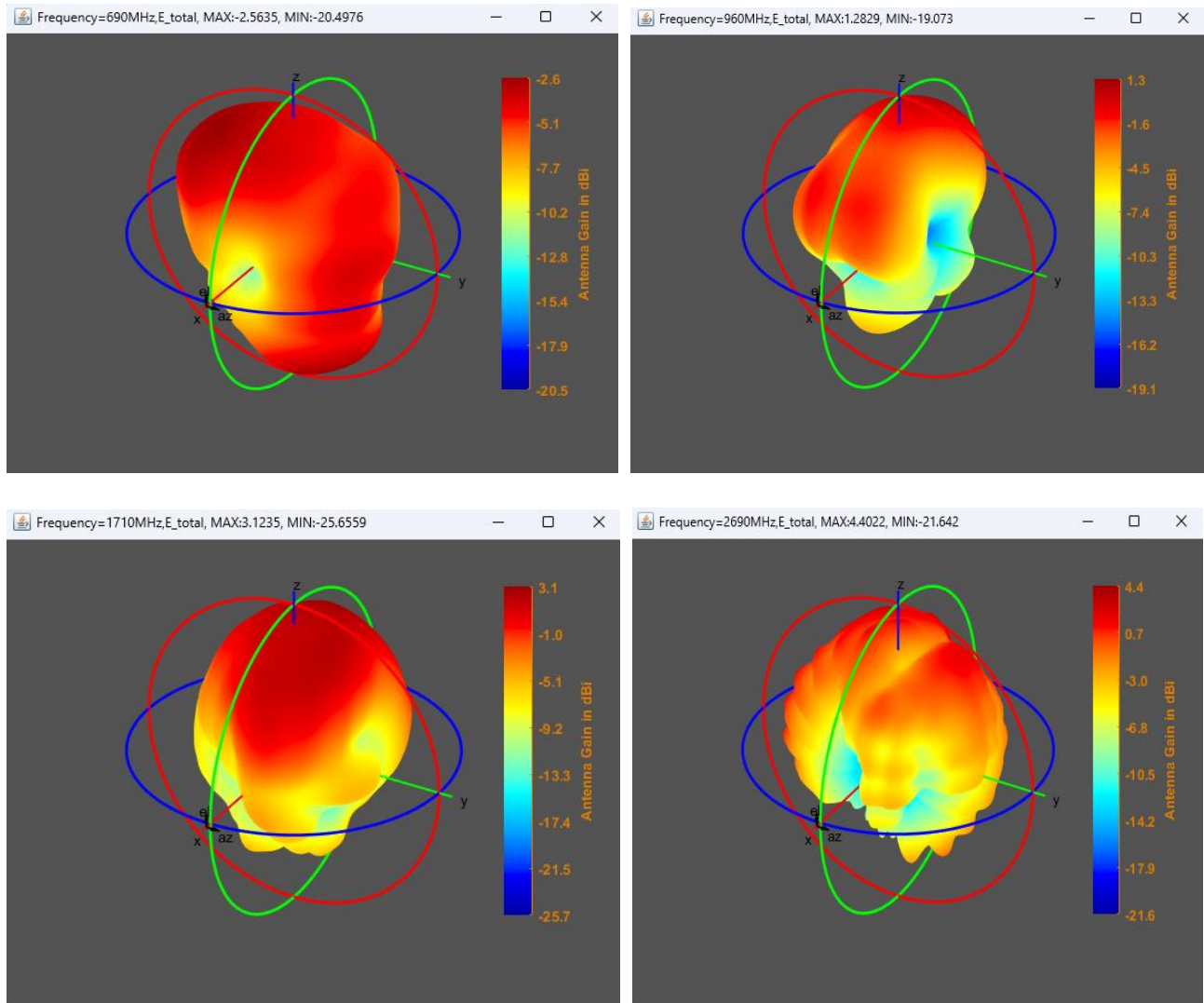
PRODUCT NAME	Prepared date	Page
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### 十一、Electrical Report /电气报告-----LTE 4G1 Main 天线 3D Plot



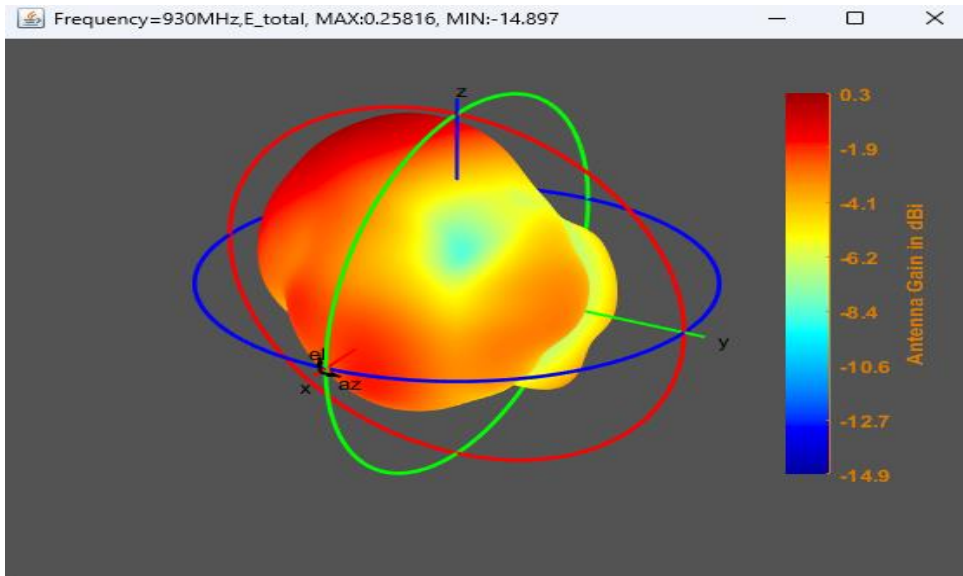
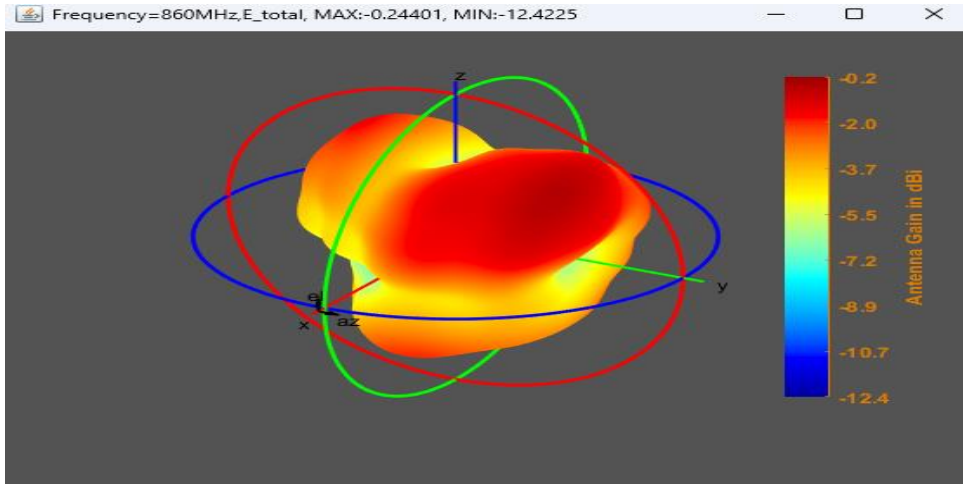
PRODUCT NAME	Prepared date	Page
VISUNE/LTE 弹片天线	2024-10-16	11/15
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## 十二、Electrical Report /电气报告-----LTE 4G2 Div 天线 3D Plot



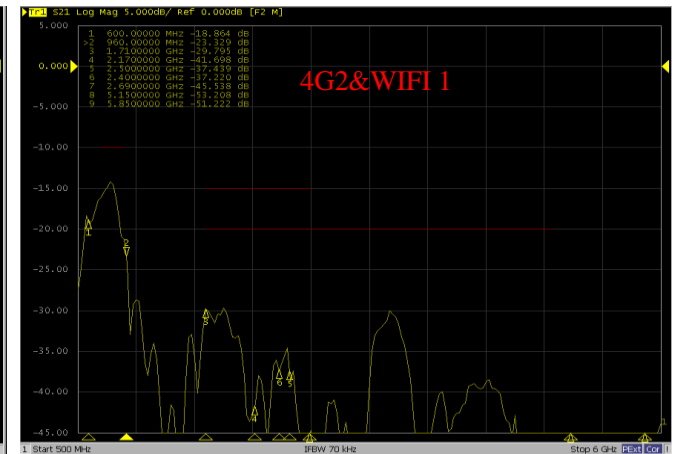
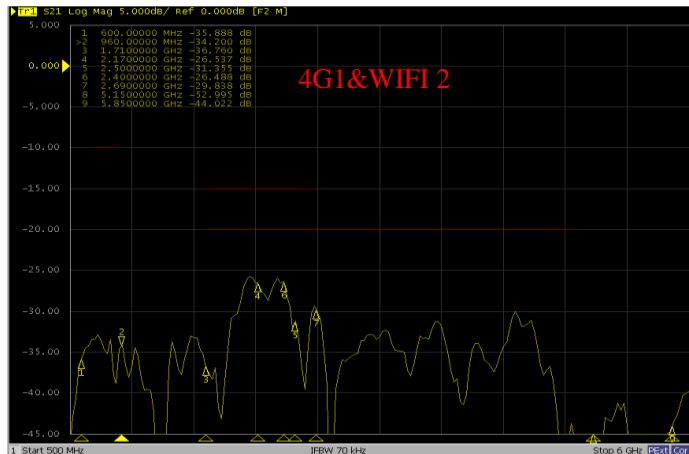
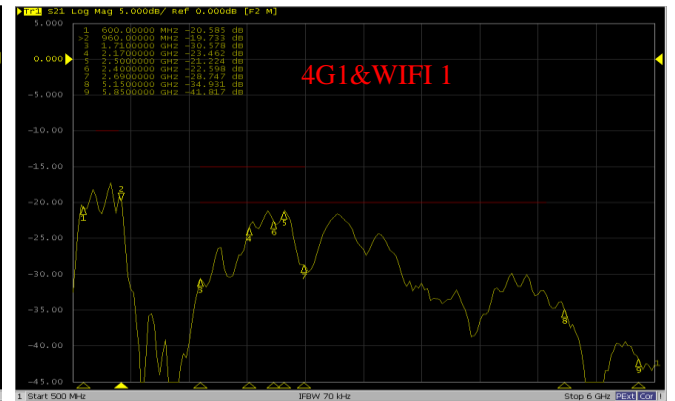
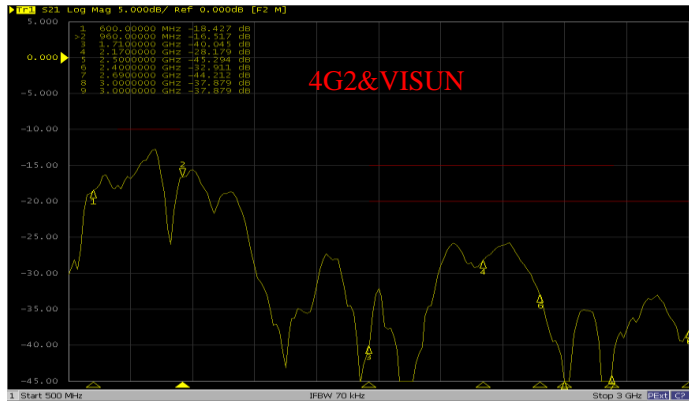
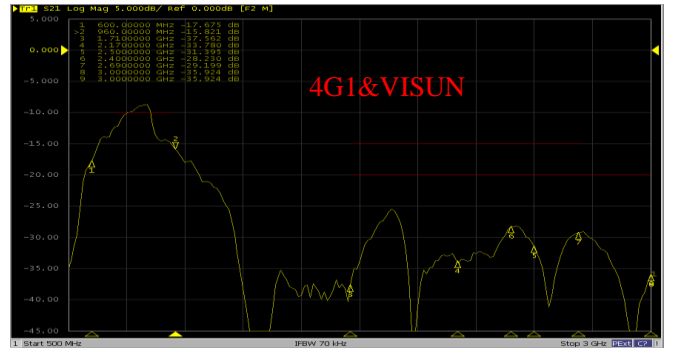
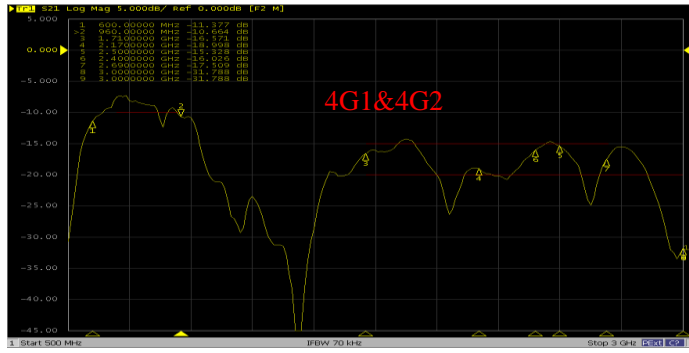
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VISUNE/LTE 弹片天线	2024-10-16	12/15
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### 十三、Electrical Report /电气报告-----VISUN 天线 3D Plot



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VISUNE/LTE 弹片天线	2024-10-16	13/15
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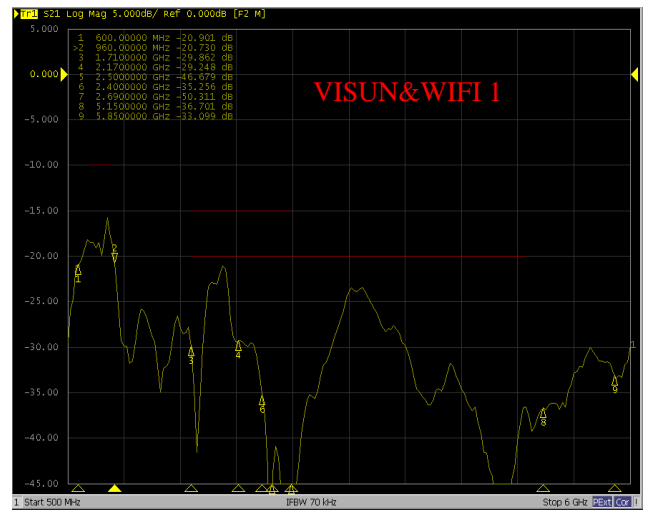
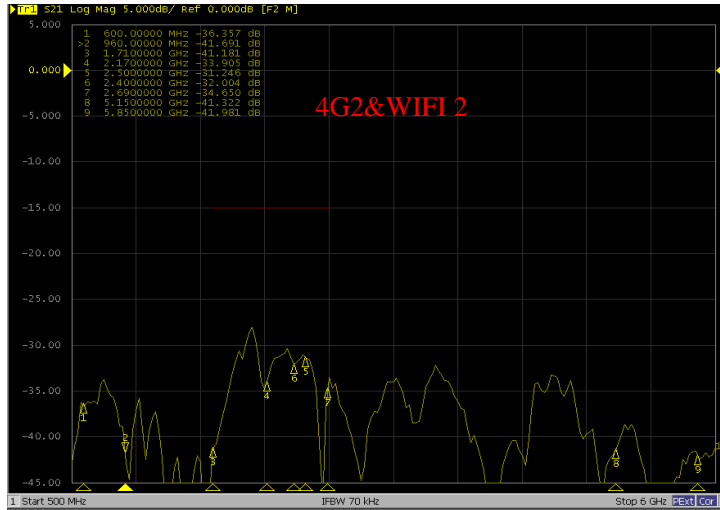
## 十四、Electrical Report /电气报告----S15 Isolation



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VISUNE/LTE 弹片天线	2024-10-16	14/15
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## 十五、Electrical Report /电气报告----S15 Isolation



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VISUNE/LTE 弹片天线	2024-10-16	15/15
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