



承认书

APPROVAL SHEET

客户名称 Customer Name 石头科技

产品型号 Product Model Versa

客户料号 Customer P/N

规格描述 Specifications 4G FPC antenna IPEX1 L=270mm

南斗星料号 Southstar P/N 3. N204. 0519

制作日期 Production date 2025. 09. 17

制作版本 Revision 1. 0

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客户 (Customer)		
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深圳市南斗星科技有限公司

SHENZHEN SOUTH STAR TECHNOLOGY CO.,LTD

承认书变更履历

版本	日期	变更描述	备注
1.0	2025.09.17	初版	



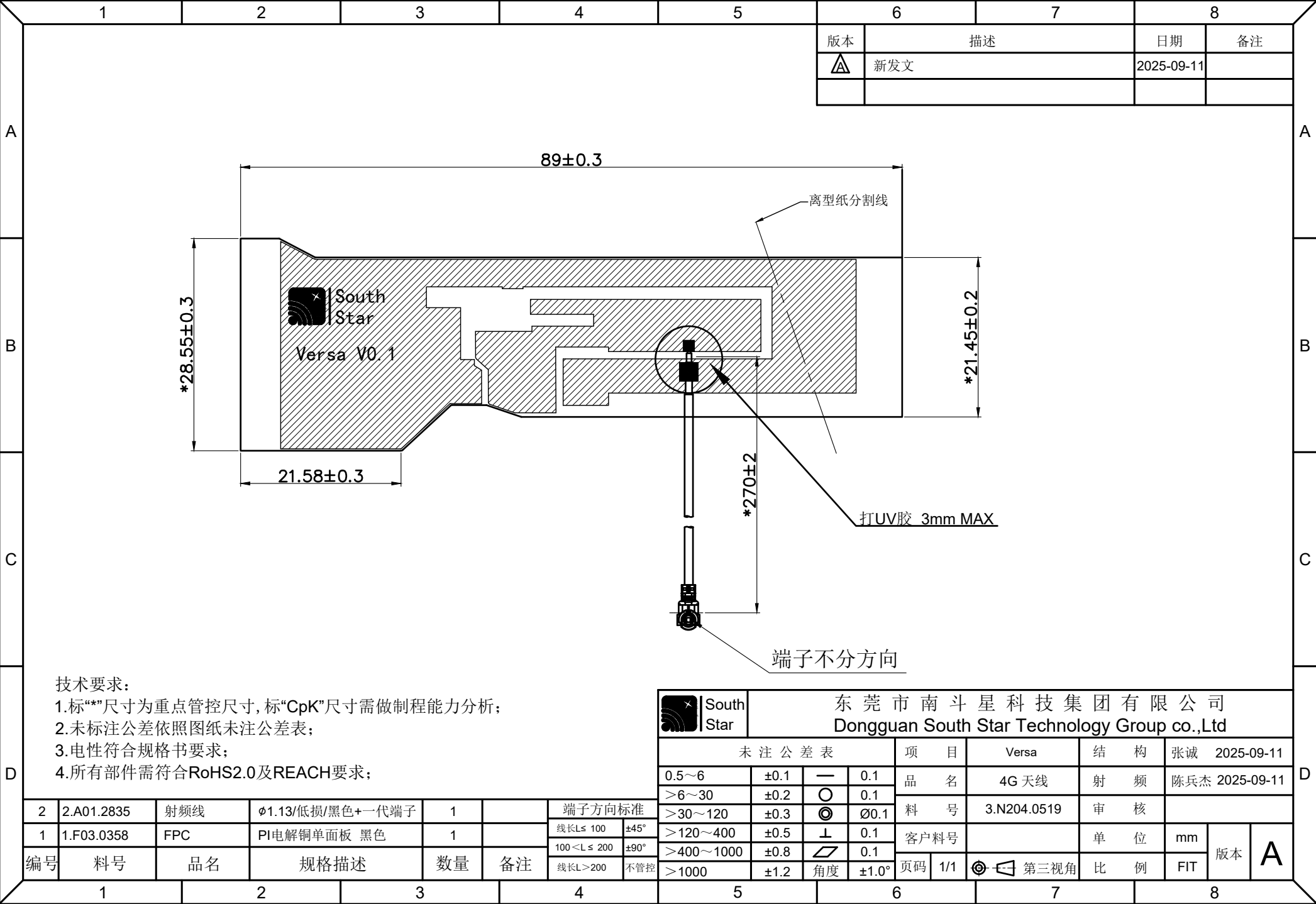
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基本参数(The basic parameters)

A. 电性能Electrical Characteristics	
Frequency 频率	700MHz~960MHz, 1710MHz~ 2690MHz
VSWR 电压驻波比	<3
Avg.Efficiency 效率 700MHz~960MHz 1710MHz~ 2690MHz	>30% >43%
Impedance 阻抗	>50 Ohm
Polarization 极化	Linear
Peak Gain 增益 700MHz~960MHz 1710MHz~ 2690MHz	3.07dBi 4.93dBi
B. 材料&物理性能Material & Mechanical Characteristics	
射频材料 Material of Radiator	FPC Black
射频线类型 Cable Type	Φ 1.13mm Black
接头类型 Connector Type	一代
C. 环境 Environmental	
工作温度 Operation Temperature	- 30 °C ~ + 85°C
存放温度 Storage Temperature	- 40 °C ~ + 85°C



测试设备(Test Equipment & Conditions)

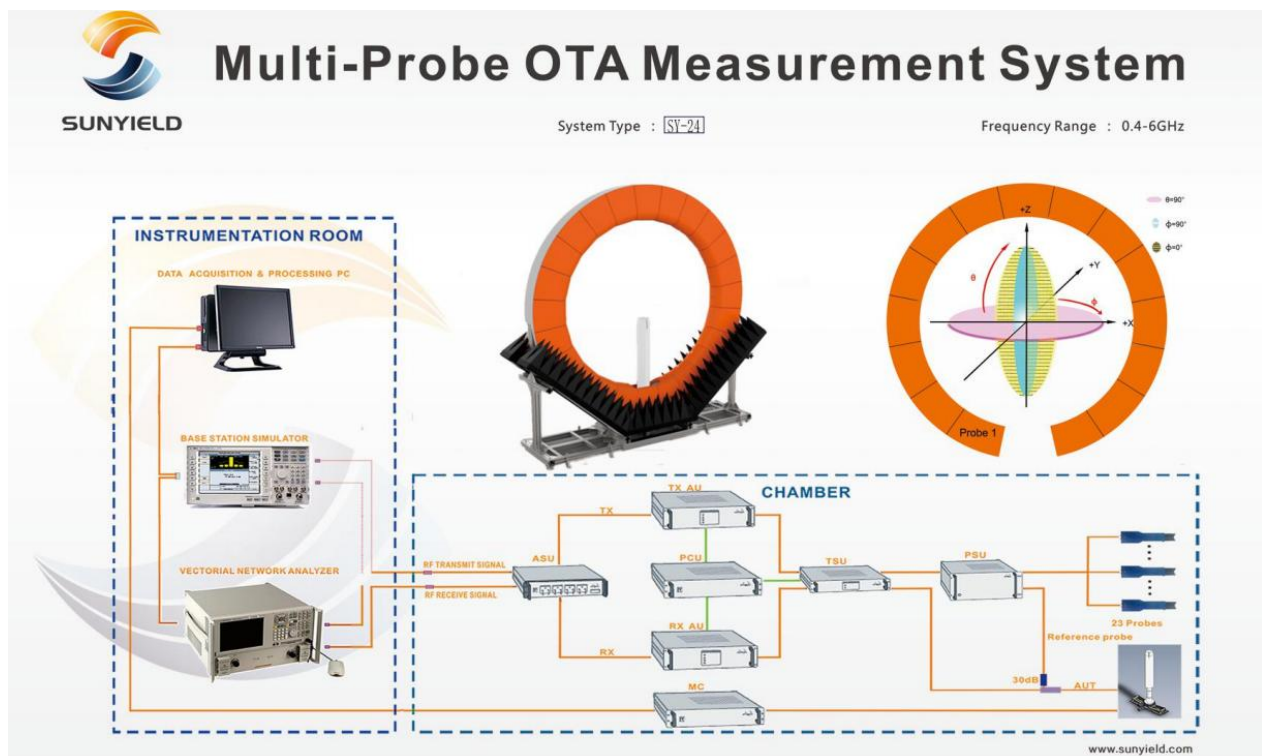
1. 网络分析仪 NetWork Analyzers:

Keysight E5071C

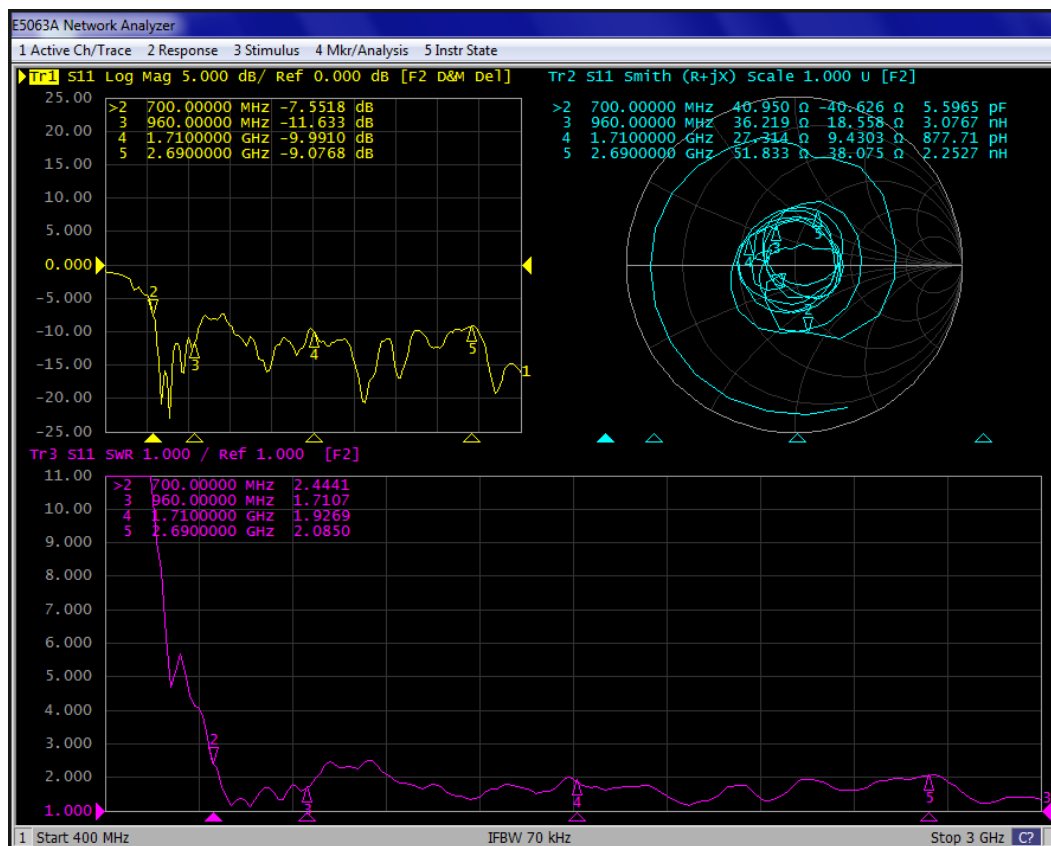
2. 综合测试仪 Comprehensive tester:

CMW500 、 MT8000A、 MT8862A

3. 3D 暗室测试系统 3D Chamber Test System:



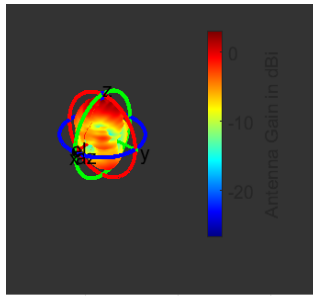
天线阻抗Antenna Impedance: S11



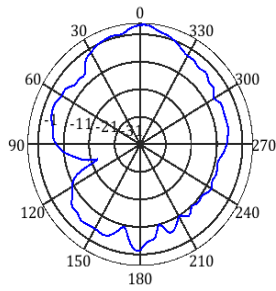
效率&增益Efficiency & Gain:

Frequency (MHz)	Gain(dBI)	Efficiency(%)	Frequency (MHz)	Gain(dBI)	Efficiency(%)	Frequency (MHz)	Gain(dBI)	Efficiency(%)
700	-1.58	30.78	1710	3.63	48.01	2300	4.35	50.12
720	-0.36	31.11	1730	3.79	45.80	2320	4.38	49.94
740	-0.81	32.77	1750	3.53	46.66	2340	4.37	49.07
760	0.17	37.25	1770	2.99	43.37	2360	4.89	48.10
780	2.79	40.49	1790	3.45	43.06	2380	4.78	47.99
800	2.68	45.71	1810	3.31	44.09	2400	4.88	47.13
820	3.07	47.05	1830	3.66	44.29	2420	4.72	46.18
840	2.76	42.49	1850	3.53	44.77	2440	4.47	45.59
860	1.84	44.31	1870	3.64	43.75	2460	3.90	44.33
880	2.18	39.56	1890	3.84	43.71	2480	3.97	44.04
900	2.25	38.85	1910	3.92	44.56	2500	4.68	45.21
920	2.59	39.79	1930	3.88	44.93	2520	4.59	43.82
940	1.79	39.17	1950	3.84	45.82	2540	4.61	44.40
960	1.76	35.51	1970	3.83	46.37	2560	4.92	44.56
			1990	4.01	46.92	2580	4.77	44.39
			2010	3.85	46.07	2600	4.93	45.51
			2030	3.80	46.12	2620	4.74	46.67
			2050	3.97	47.48	2640	4.64	46.80
			2070	3.20	50.83	2660	4.53	47.46
			2090	3.49	53.51	2680	4.18	46.77
			2110	3.62	52.42	2700	4.71	46.41
			2130	3.38	52.38			
			2150	3.13	53.26			
			2170	3.88	50.31			

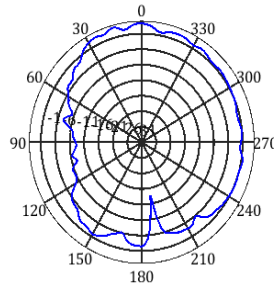
天线3D&2D方向图Antenna 3D & 2D pattern:



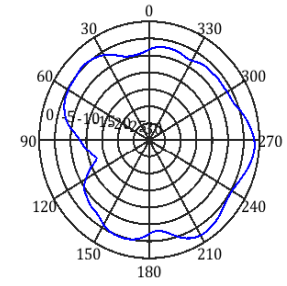
frequency=820MHz, X-Z Plane



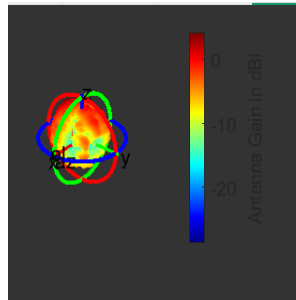
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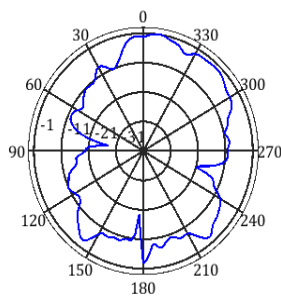
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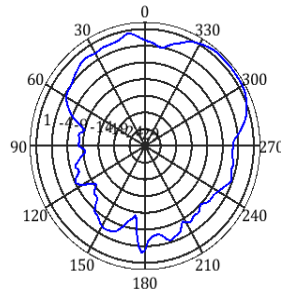
— E_{total}



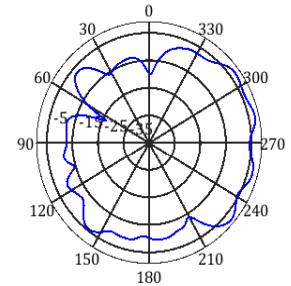
frequency=1990MHz, X-Z Plane



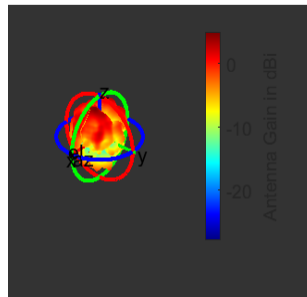
frequency=1990MHz, Y-Z Plane



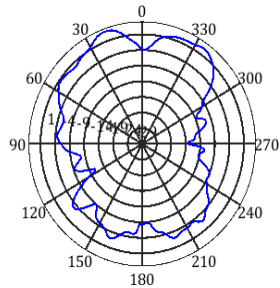
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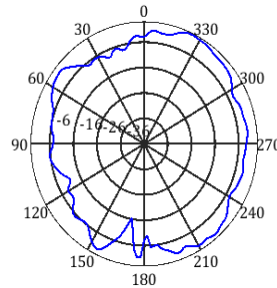
— E_{total}



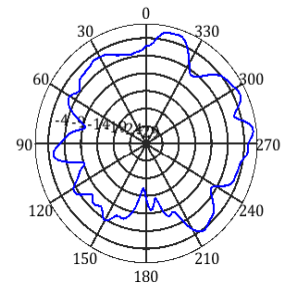
frequency=2600MHz, X-Z Plane



frequency=2600MHz, Y-Z Plane



frequency=2600MHz, X-Y Plane



— E_{total}

OTA:

FDD	信道	TRP	TIS	TX传导	RX传导
Band 1	L	19.28	-93.24	21.6	-97
	M	19.34	-93.79	22.1	-97
	H	20.04	-90.69	22.3	-97
Band 3	L	19.65	-95.83	22.3	-97
	M	19.51	-94.58	22.4	-97
	H	20.66	-95.35	22	-97
Band 7	L	21.89	-95.35	22.4	-95.5
	M	21.62	-94.13	22	-95.5
	H	21.94	-95.68	22.5	-95.5
Band 8	L	20.4	-89.87	22.8	-98
	M	18.29	-89.36	22.7	-98
	H	18.62	-91.31	22.9	-98
Band 20	L	20.42	-84.85	22.1	-97.5
	M	20.01	-87.78	22	-97
	H	20.06	-89.14	22	-95
Band 28	L	16.71	-83.43	22.7	-98
	M	18.96	-83.52	22.4	-98
	H				

天线装配图片 antenna assembly picture:



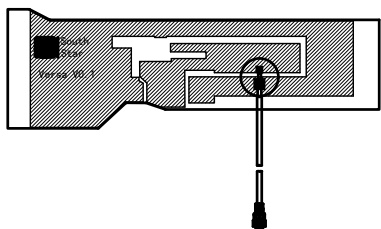


成品名称： 4G天线

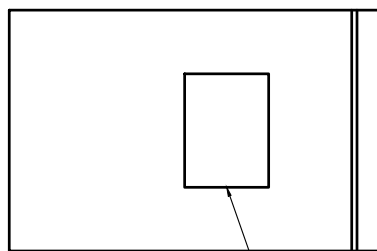
版本： A

客户： 石头科技

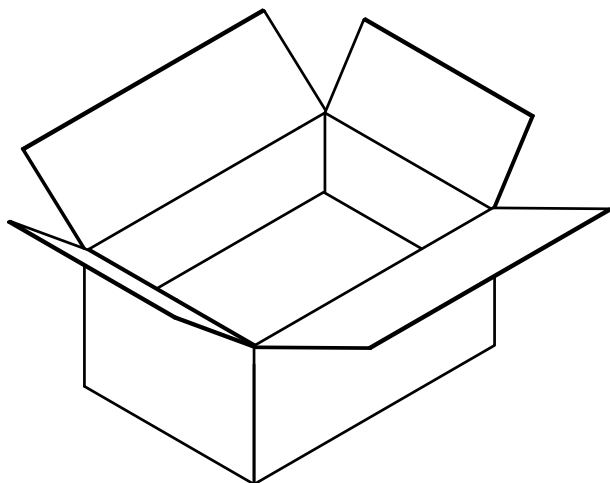
一： 成品天线



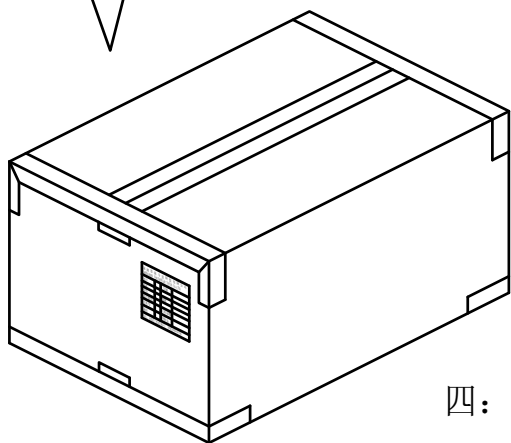
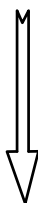
二： 装袋，每PE袋装100PCS产品.



标贴



三： 装箱 (以实际包装为准)。



四： 封箱， 外箱贴我司生产标签