

产品规格书

Product Specification

客户名称 Customer Name: Guangzhou Tongze Kangwei Technology Co., Ltd

项目名称 Project Name: HH40L2

规格描述 Product Spec: HH40L2-4G-SMA-J 4G Rubber rod antenna white
SMAInternal thread internal needle Customized
connector color scheme L=193MM W=16MM

版本 REV: V1.0

日期 Date: 2023.09.09

制作 drawing	审核 check	批准 approved
HUANYONGJUN	LIHUAXIONG	JIANGZHENHUAN

客户承认 Customer Approve

审核 check	批准 approved	承认 approval

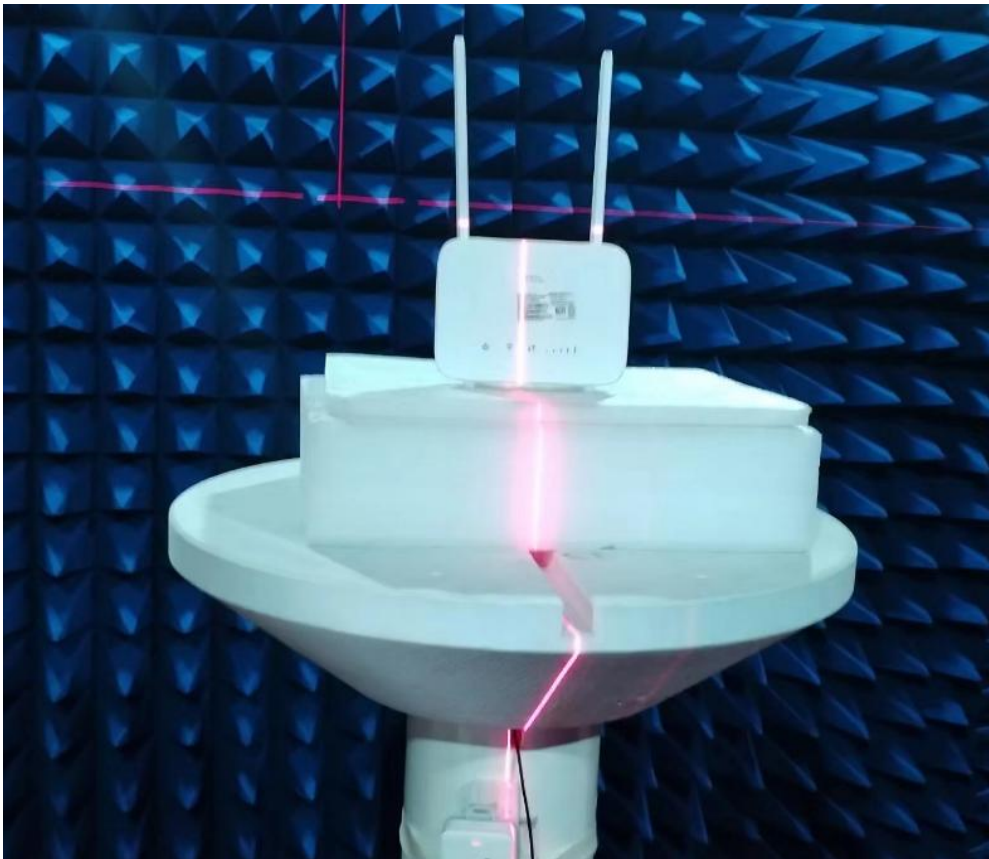
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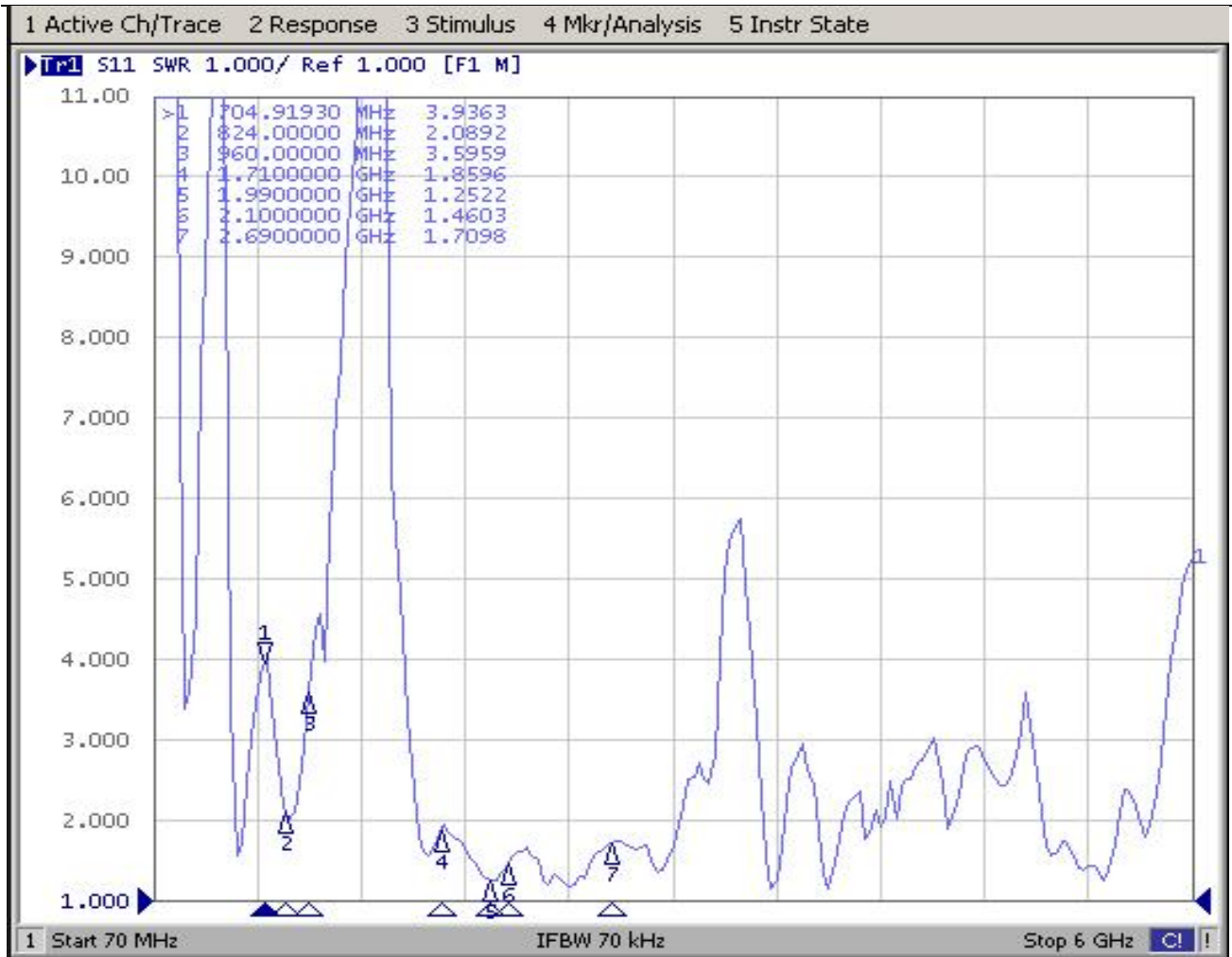
电性能指标 Electrical Performance Index

电 器 性 能 指 标		Electrical Specifications	
频率范围		700-960/1710-2700MHZ	
电压驻波比	≤3.0	VSWR	≤3.0

辐射方式	全向	Radiation	OMNI
极化方式	线极化	Polarizatin	LINEAR
输入阻抗	50 Ω	Input Impedance	50 Ω
机械性能指标		Mechanical Specifications	
接口形式	IPEX-1	Input connector	IPEX-1
天线材质	PCB	Antenna materia	PCB
工作温度	-30℃~+80℃	Working Temperature	-30℃~+80℃
工作湿度	40~85%	Working Humidity	40~85%
实物安装 Physical installation			

测试报告 Test report

1. 天线驻波图 Antenna standing wave diagram

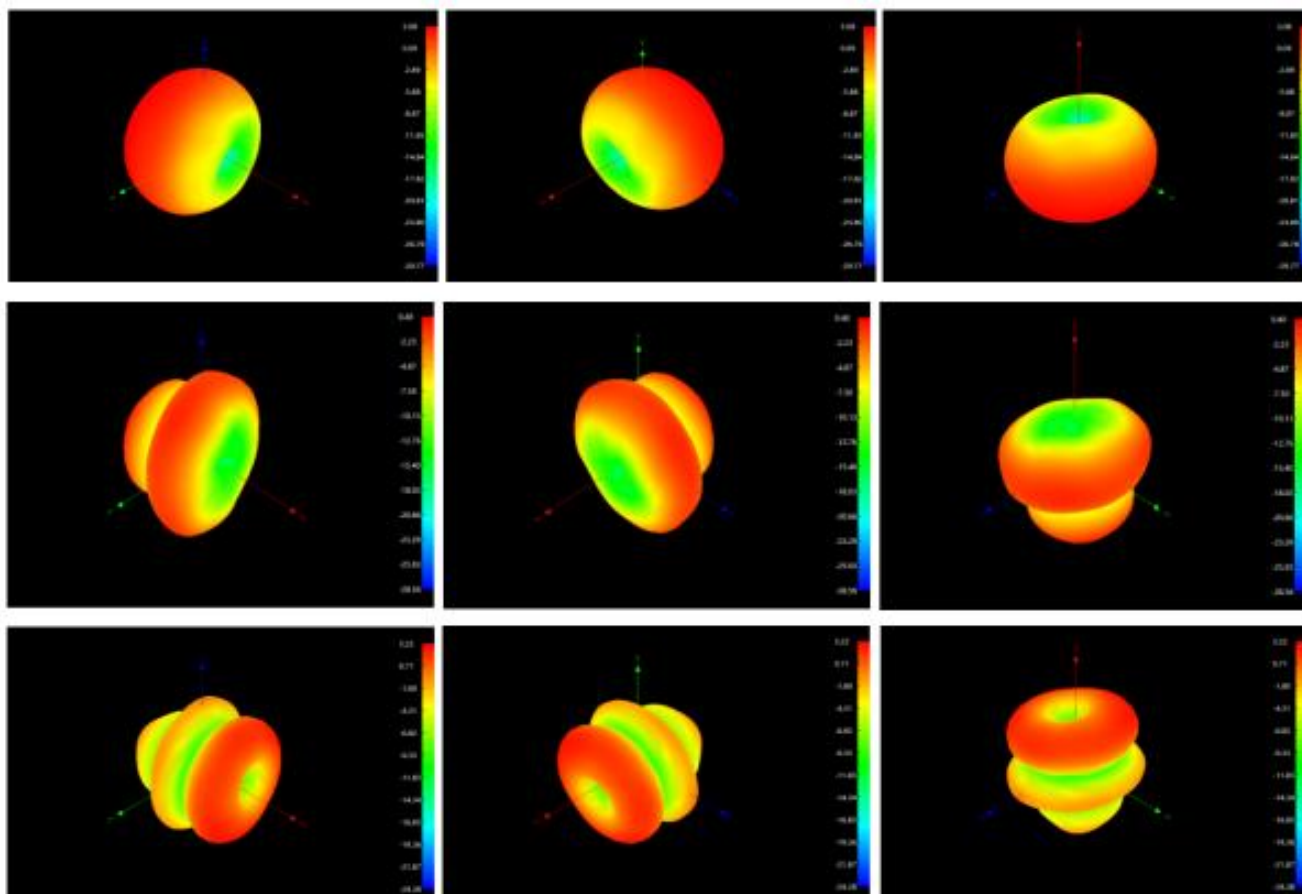


2. 天线效率 Antenna efficiency

Frequency/Mhz	Efficiency / %	MaxGain/dBi
700	49.66	3.12
710	46.24	2.37
720	43.25	1.81
730	38.55	1.03
740	36.73	1.02
750	35.97	1.08
760	35.24	0.83
770	33.81	0.66
780	34.99	0.95
790	37.5	1.5
800	36.39	0.18
810	37.5	0.95
820	37.41	0.98
830	38.46	1.05
840	40.18	1.49
850	37.84	0.84
860	35.89	0.48
870	33.34	0.02
880	31.55	-0.37
890	30.2	-0.77
900	30.76	-1.09
910	34.28	-0.64
920	36.81	-0.67
930	39.9	-0.12
940	40.55	-0.14
950	44.06	0.28
960	43.25	0.09
1710	45.08	0.97
1720	48.75	1.3
1730	46.99	0.76
1740	51.76	1.44
1750	46.77	0.72
1760	47.75	0.94
1770	51.29	1.05
1780	52	1.1
1790	52.36	0.84
1800	51.52	0.75
1810	55.34	1.35
1820	55.21	1.38
1830	55.98	1.78
1840	54.45	1.71
1850	58.34	2.31
1860	57.68	1.57
1870	55.59	1.3
1880	57.02	1.46
1890	61.38	1.84
1900	62.52	1.94
1910	63.97	1.89
1920	66.68	2.19
1930	69.5	2.27
1940	72.44	2.64
1950	68.71	2.31
1960	71.78	2.49
1970	74.64	2.59
1980	77.98	2.81
1990	72.95	2.68
2000	76.56	3.07
2010	78.34	3.17
2020	78.52	3.15
2030	74.82	2.74
2040	72.44	2.6
2050	78.7	2.9
2060	74.47	2.66

Frequency/Mhz	Efficiency / %	MaxGain/dBi			
2070	76.38	2.66	2360	74.13	1.51
2080	77.98	2.71	2370	76.03	1.79
2090	80.91	2.72	2380	76.74	2.17
2100	79.8	2.74	2390	71.94	2.05
2110	74.47	2.36	2400	77.62	2.62
2120	75.16	2.53	2410	78.52	2.84
2130	80.17	2.7	2420	77.27	2.84
2140	79.43	2.76	2430	75.51	2.88
2150	71.61	2.12	2440	80.35	3.09
2160	76.21	2.57	2450	80.91	3.24
2170	76.91	2.48	2460	75.68	2.5
2180	77.62	2.72	2470	74.3	2.52
2190	76.91	2.82	2480	75.51	2.4
2200	77.45	3.06	2490	79.8	3.06
2210	80.17	3.32	2500	72.44	2.63
2220	79.25	3.28	2510	72.44	2.93
2230	74.47	2.93	2520	73.79	3.31
2240	76.74	2.77	2530	73.11	4.05
2250	79.07	2.96	2540	68.39	3.81
2260	73.28	2.38	2550	67.76	3.86
2270	73.28	2.43	2560	71.78	3.83
2280	75.16	2.2	2570	73.79	3.99
2290	78.7	2.37	2580	72.78	3.82
2300	74.99	1.82	2590	70.15	3.61
2310	71.12	1.37	2600	75.68	3.8
2320	71.29	1.01	2610	74.82	3.45
2330	75.51	1.1	2620	72.61	3.23
2340	70.63	0.87	2630	71.78	2.91
2350	70.47	1.05	2640	78.34	3.27
			2650	77.62	3.38
			2660	74.3	3.23
			2670	74.13	3.33
			2680	78.52	3.6
			2690	76.38	3.65
			2700	71.29	3.4

3. 天线方向图 Antenna Pattern





4. OTA 数据/ OTA data

Measurement	Band	Channel	Total
TRP	FDD B1	18050	21.15
	FDD B1	18300	20.02
	FDD B1	18550	19.79
TIS(RSSI)	FDD B1	550	-96.69
TRP	FDD B3	19250	18.97
	FDD B3	19575	20.03
	FDD B3	19900	22.69
TIS(RSSI)	FDD B3	1900	-94.64
TRP	FDD B5	20450	19.33
	FDD B5	20525	19.11
	FDD B5	20600	20.28
TIS(RSSI)	FDD B5	2600	-94.76
TRP	FDD B8	21500	19.33
	FDD B8	21625	18.53
	FDD B8	21750	18.59
TIS(RSSI)	FDD B8	3750	-97
TRP	FDD B28	27260	16.83
	FDD B28	27435	16.72
	FDD B28	27610	17.83
TIS(RSSI)	FDD B28	9610	-92.28
TRP	TDD B41	40340	21.41
	TDD B41	40620	19.74
	TDD B41	41140	21.29
TIS(RSSI)	TDD B41	41140	-92.11

测试设备及原理 Testing Equipment and Principle

1. 测试设备 Test equipment:

网络分析仪 Network Analyzers :

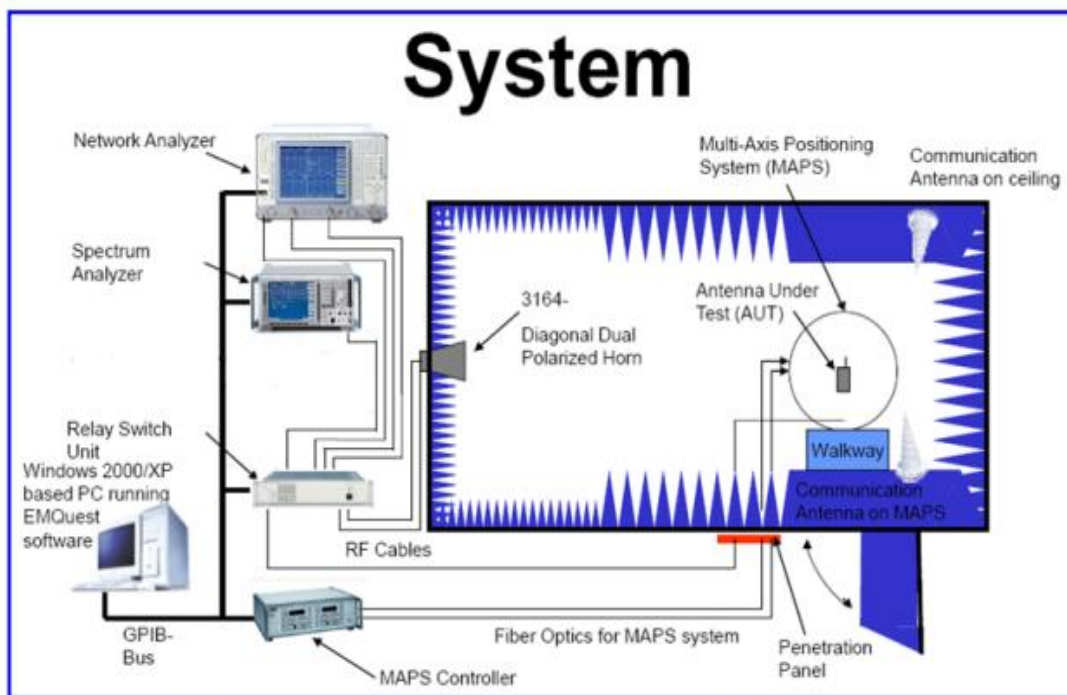
Agilent 8753D 5071B

综合测试仪 Communications Test Set:

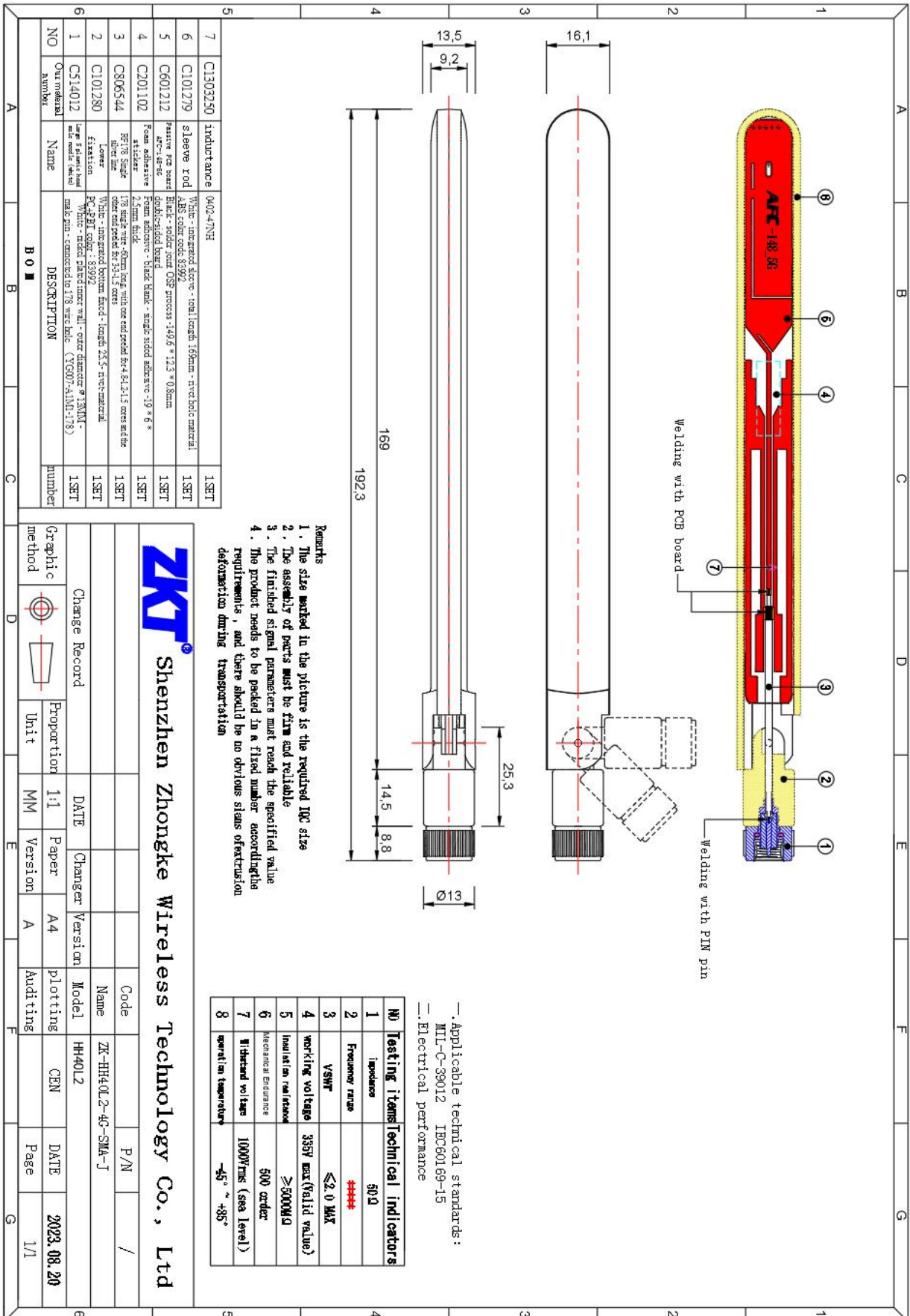
Agilent E5515C CMW500 8820C

3D 暗室测试系统 3D Chamber Test System:

2. 测试原理 Testing Principles:



工程图纸 Product Drawing





可靠性测试报告 Reliability test report

测试项目 Test items		测试方法 test method	要求 Requirements	结果 result
C1	V. S. W. R. 电性驻波比	设计网路分析仪参数进行测试 Design network analyzer parameters for testing	符合待测物规范 Comply with the specifications of the object to be tested	pass
M1	天线增益 Antenna gain	设计天线暗室参数进行测试 Design antenna darkroom parameters for testing	符合待测物规范 Comply with the specifications of the object to be tested	pass
M2	Vibration 震动	GB / T2423. 48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80to 20 Hz3 directions; 2 hours for each direction 振幅 1.5mm; 频率 20~80~20Hz; 3 个方向各 2H	1. No Visual Damage 2. Frequency Tol. ≤5% 无明显外观不良; 频率偏移 ≤5%	pass
M6	Random Drop 跌落	GB / T2423. 8-1995 Single: Height: 1.0 Meter; 3 directions; 1 time for each direction 单支天线, 高 1m; 3 个方向各 1 次	1. No parts separated、fracture 2. Frequency Tol. ≤5% 产品无脱落、断裂; 频率偏移 ≤5%	pass
E3	Dimension 尺寸	Inspection of dimension, color, material, package, surface process. 检查尺寸, 颜色, 材料, 包装, 表面处理	Directive DUT specification 符合待测物规范	pass
E4	Temperature and Humidity Chamber 恒温恒湿	GB / T 2423. 3-2006 Temp: 80° C / 12 H; -40° C / 12H RH: ≥ 90%; Time: 24H 温度 80° C 测试 12H 转 -40° C 测试 12H; 湿度 ≥ 90%; 时间 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 恢复 2H 后, 无明显外观不良; 频率偏移 ≤5%	pass
E5	Thermal Shock 冷热冲击	GB / T 2423. 22 - 2008 - 40° C (30 minutes) to + 80° C (30 minutes); Cycles: 24 - 40° C 测试 30 分 转 80° C 测试 30 分为一个周期; 共 24 周期	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 恢复 2H 后, 无明显外观不良; 频率偏移 ≤5%	pass
R1	Aging test 老化	GB / T 2423. 2 - 2008 Temp: 80° C; Time: 24 hours 温度 80° C, 测试 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 無明顯外觀不良; 頻率偏移 ≤5%	pass
M1	RoHS	With Reference to IEC 62321:2008 with flow chart 参考 IEC 62321 测试流程	Directive RoHS 2015/863/EU 符合 RoHS 2015/863/EU 标准	pass

包装要求 Packaging requirements

一、标签要求 labeling requirement

采购单号 Purchase Order Number	*****
物料编码 material code	*****
品名规格 Product name and specifications	*****
数量/单位 Quantity/Unit	*****
备注 notes	*****

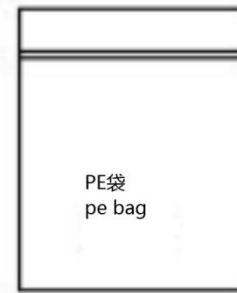
二、装箱要求 Encasement requirements

作业说明 job description:

1. 内包装 inner packing:

产品 100 PCS 一小袋

Product 100 PCS per small bag



2. 外包装 external packing:

根据实际数量定数量/箱

Determine quantity/box based on actual quantity



纸箱carton

注意事项 note:

1. 是否要增设隔板、珍珠棉;

Is it necessary to add partitions and pearl cotton;

2. 标签的贴附, 如 ROHS 等;

Labeling, such as ROHS;

