



深圳市诚连电子有限公司
Shenzhen Chenglian Electronics co.,Ltd

承认书

SPECIFICATION FOR APPROVAL

客 户 名 称 :TOPLEO

CUSTOMER NAME:

产 品 名 称

PRODUCT NAME: PCB天线(Antenna)

客 户 料 号

CUSTOMER HY300

诚 连 料 号

Cheng Lian CL111V1 REV:A

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
CHECKED BY:	Mark	
APPROVED BY:	Andy	
DATE:	2023-9-4	



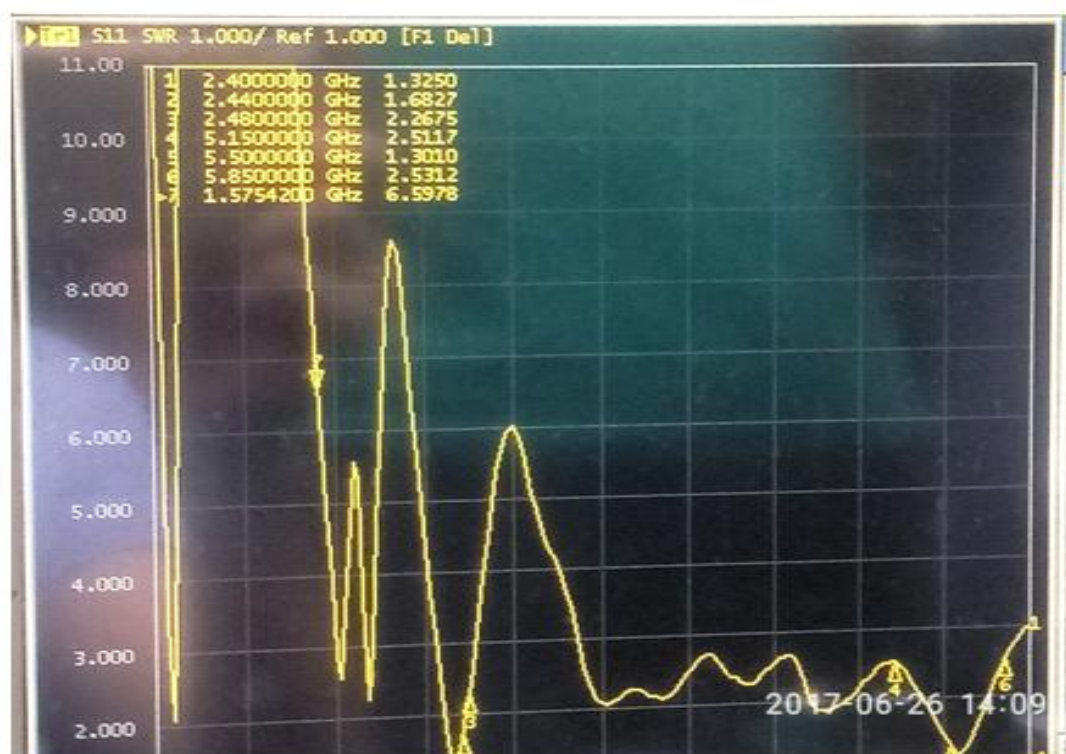
1. 规格表/ Specification table:

主要技术指标		Main technical specifications	
频率范围	2400-2500MHz 5150-5850MHz	Frequency Range	2400-2500 MHz 5150-5850 MHz
特性阻抗(Ω)	50 $\pm$ 10	Impedance(Ω)	50 $\pm$ 10
最大功率	10W	Admitted Power	10W
极化方式	垂直极化	Polarization	Linear, Vertical
方向性	全向性	Radiation	Omni-directional
连接方式	Cable	Connector Type	Cable
物理性能		Physical Properties	
天线本体材料	PCB+3M	Antenna Base	PCB+3M
天线走线材料	Copper	Antenna cover	Copper
工作温度	-20 $^{\circ}$ C $\sim$ +60 $^{\circ}$ C	Operating Temp	-20 $^{\circ}$ C $\sim$ +60 $^{\circ}$ C
保存温度	-20 $^{\circ}$ C $\sim$ +70 $^{\circ}$ C	Storage Temp	-20 $^{\circ}$ C $\sim$ +70 $^{\circ}$ C



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2. VSWR Test:





3. OTA Test:



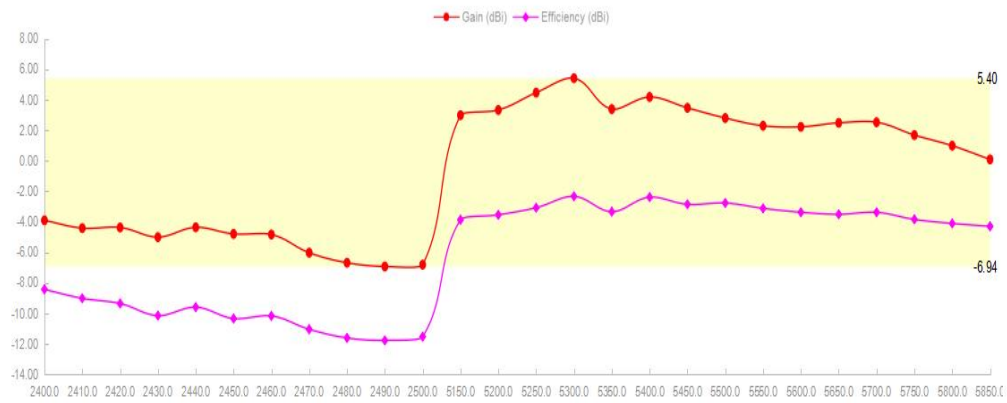
OTA: Efficiency/Gain. dBi

Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Efficiency (dBi)	-8.44	-9.02	-9.36	-10.16	-9.60	-10.35	-10.18	-11.05	-11.62	-11.78	-11.53
Gain (dBi)	-3.91	-4.42	-4.38	-5.01	-4.37	-4.80	-4.84	-6.03	-6.69	-6.94	-6.82
Efficiency (%)	14.32	12.52	11.59	9.65	10.96	9.23	9.60	7.85	6.89	6.64	7.03
Directivity (dB)	4.53	4.60	4.98	5.14	5.23	5.54	5.33	5.02	4.92	4.84	4.71
Peak Gain Position (Theta)	79.00	57.00	57.00	57.00	57.00	57.00	58.00	58.00	58.00	58.00	58.00
Peak Gain Position (Phi)	330.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00
Efficiency ThetaPol (%)	8.94	7.62	7.20	5.86	6.75	5.56	5.92	4.82	4.33	4.07	4.31
Efficiency PhiPol (%)	5.38	4.91	4.39	3.79	4.21	3.67	3.68	3.03	2.56	2.57	2.71
Upper Hem. Efficiency (%)	7.81	6.87	6.46	5.32	6.01	5.08	5.41	4.50	4.00	3.87	4.17
Lower Hem. Efficiency (%)	6.51	5.65	5.13	4.32	4.96	4.15	4.19	3.35	2.89	2.77	

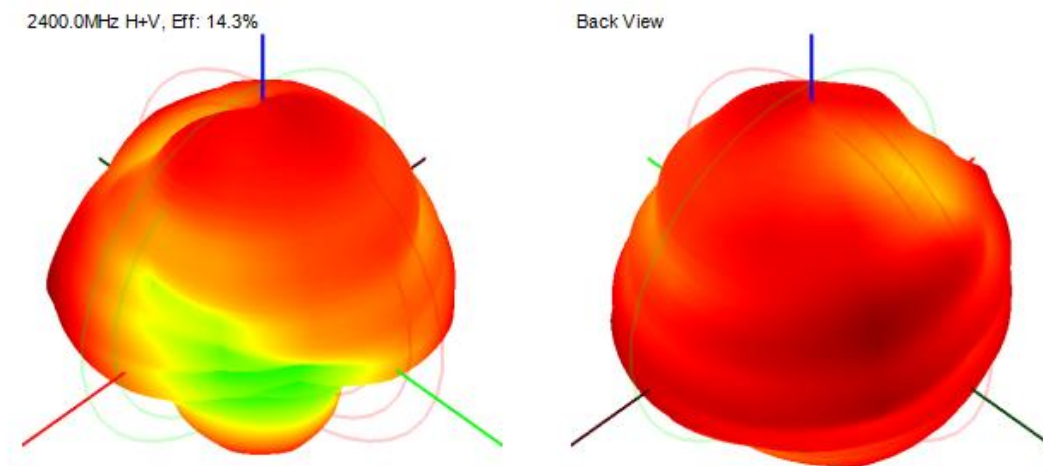
Frequency ID	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Frequency (MHz)	5150.0	5200.0	5250.0	5300.0	5350.0	5400.0	5450.0	5500.0	5550.0	5600.0	5650.0	5700.0	5750.0	5800.0	5850.0
Efficiency (dBi)	-3.88	-3.55	-3.08	-2.34	-3.35	-2.40	-2.87	-2.78	-3.13	-3.39	-3.52	-3.39	-3.85	-4.11	-4.31
Gain (dBi)	2.97	3.32	4.45	5.40	3.38	4.17	3.46	2.79	2.28	2.21	2.48	2.51	1.68	0.98	0.08
Efficiency (%)	40.96	44.14	49.15	58.33	46.25	57.60	51.70	52.75	48.67	45.86	44.50	45.84	41.18	38.77	37.10
Directivity (dB)	6.85	6.87	7.54	7.74	6.73	6.57	6.32	5.57	5.41	5.60	5.99	5.90	5.53	5.09	4.39
Peak Gain Position (Theta)	102.00	104.00	104.00	103.00	133.00	32.00	31.00	96.00	23.00	26.00	24.00	29.00	82.00	84.00	82.00
Peak Gain Position (Phi)	330.00	330.00	330.00	330.00	330.00	240.00	240.00	210.00	210.00	240.00	240.00	240.00	300.00	300.00	300.00
Efficiency ThetaPol (%)	26.61	30.17	32.89	44.38	33.03	43.79	38.38	39.83	37.51	36.05	34.36	35.12	30.53	29.54	27.07
Efficiency PhiPol (%)	14.36	13.97	16.26	13.95	13.22	13.81	13.32	12.92	11.16	9.81	10.13	10.72	10.66	9.23	10.03
Upper Hem. Efficiency (%)	21.52	23.28	26.38	31.09	25.07	30.43	27.26	27.37	25.08	24.06	23.76	25.11	22.92	21.95	21.64
Lower Hem. Efficiency (%)	19.45	20.86	22.77	27.24	21.17	27.17	24.44	25.38	23.59	21.80	20.74	20.73	18.26	16.82	15.46



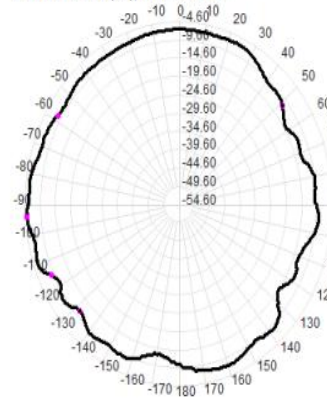
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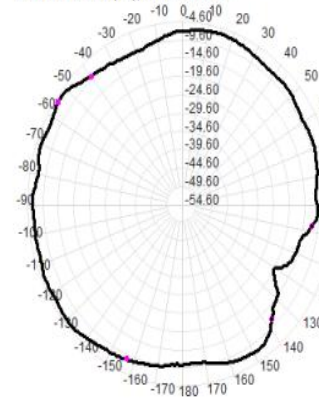
OTA: Antenna pattern



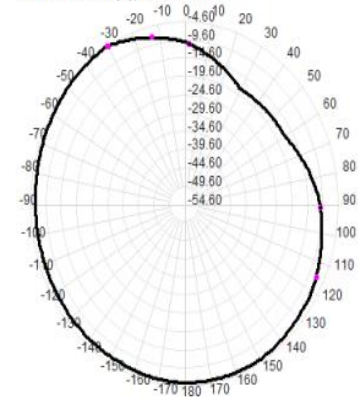
2400.0MHz Total(E1), Max=-5.33dBi



2400.0MHz Total(E2), Max=-5.74dBi



2400.0MHz Total(H), Max=-4.60dBi



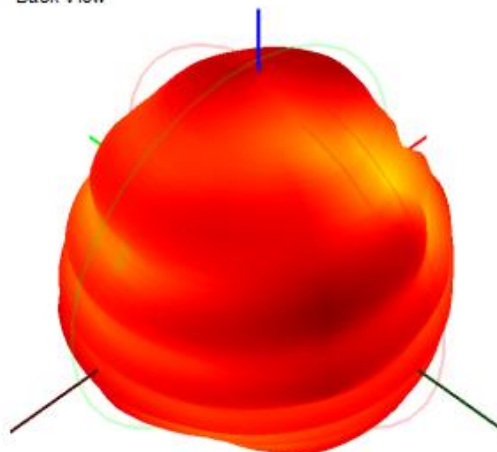
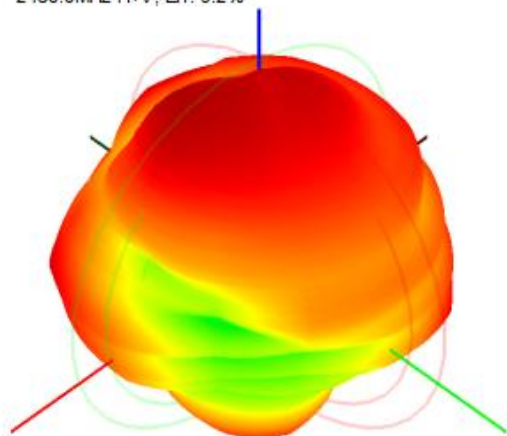


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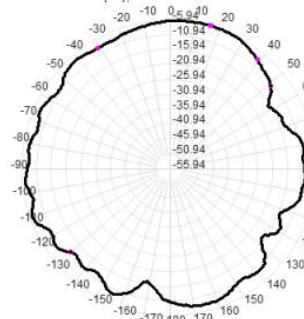
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2450.0MHz H+V, Eff: 9.2%

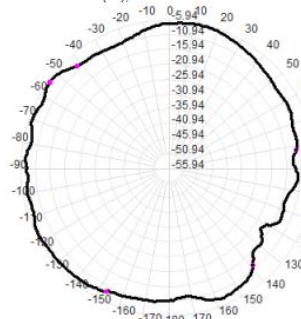
Back View



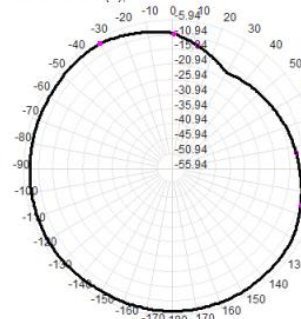
2450.0MHz Total(E1), Max=-5.94dBi



2450.0MHz Total(E2), Max=-6.45dBi

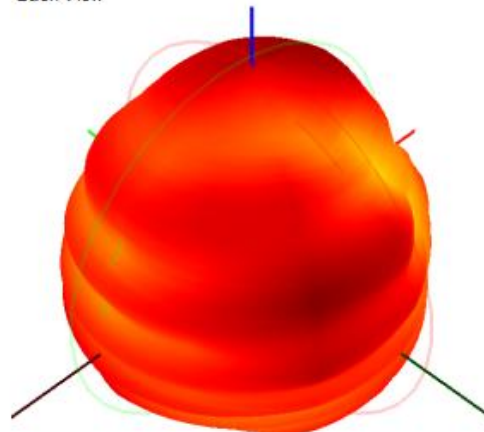
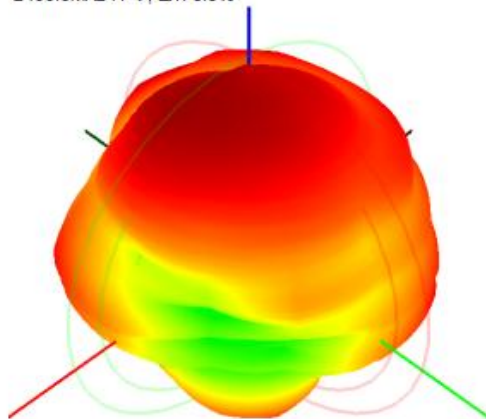


2450.0MHz Total(H), Max=-7.54dBi

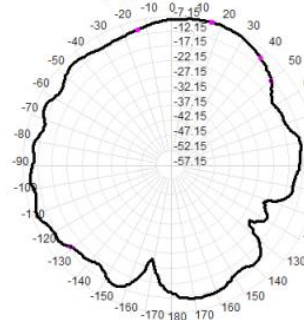


2480.0MHz H+V, Eff: 6.9%

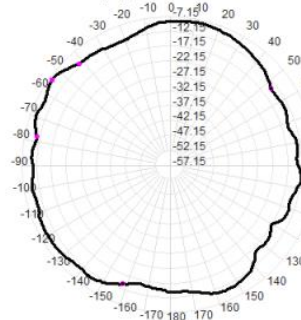
Back View



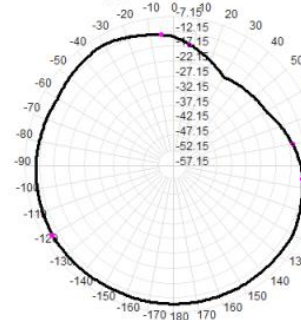
2480.0MHz Total(E1), Max=-7.15dBi



2480.0MHz Total(E2), Max=-8.16dBi



2480.0MHz Total(H), Max=-10.20dBi



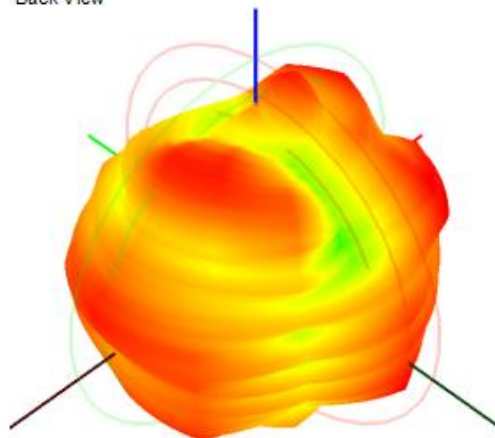
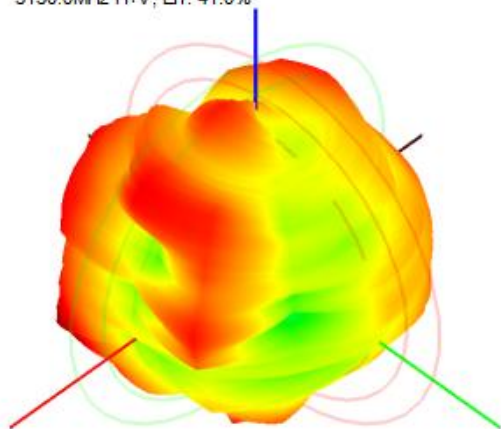


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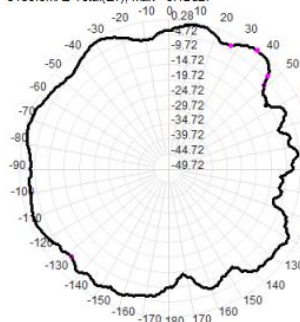
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5150.0MHz H+V, Eff: 41.0%

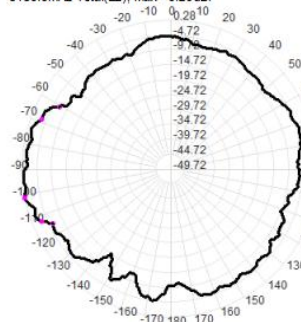
Back View



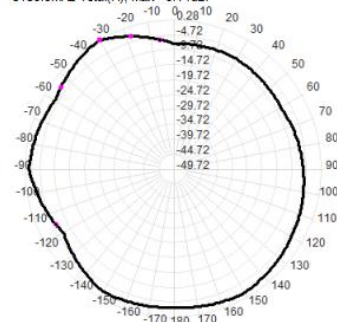
5150.0MHz Total(E1), Max= 0.12dBi



5150.0MHz Total(E2), Max= 0.28dBi

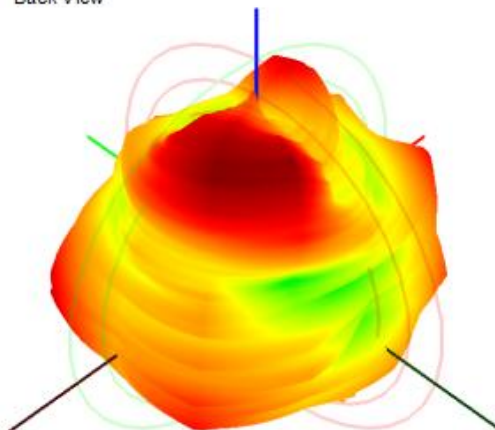
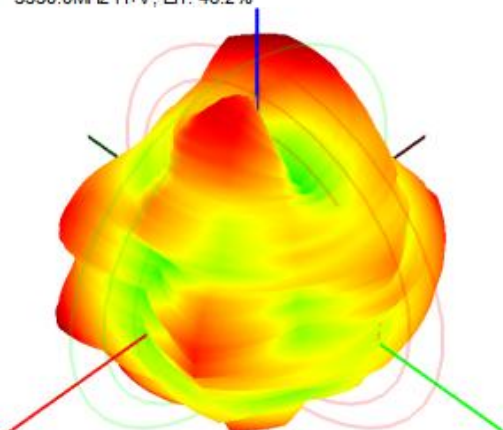


5150.0MHz Total(H), Max= 0.14dBi

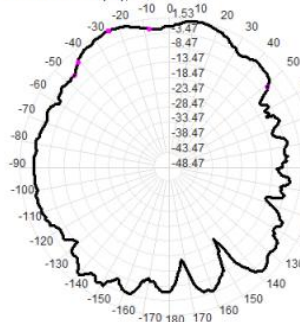


5350.0MHz H+V, Eff: 46.2%

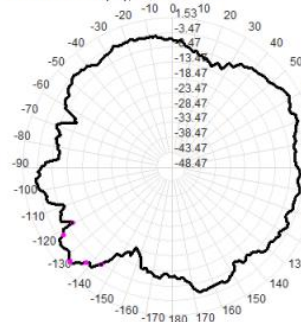
Back View



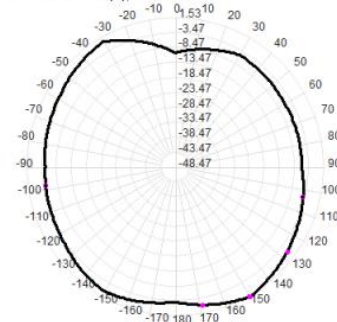
5350.0MHz Total(E1), Max= 1.39dBi



5350.0MHz Total(E2), Max= -2.09dBi



5350.0MHz Total(H), Max= 1.53dBi



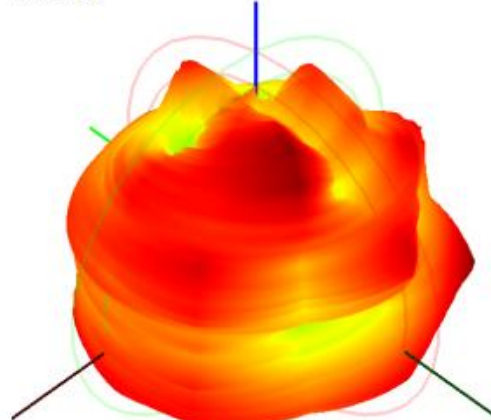
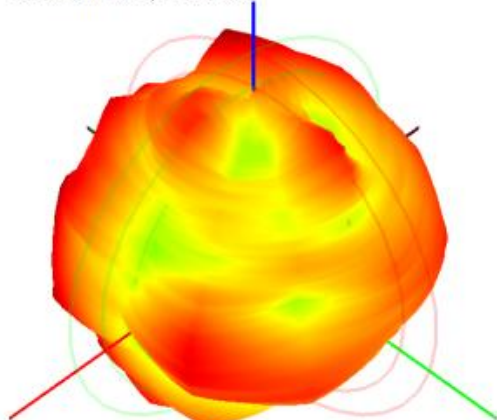


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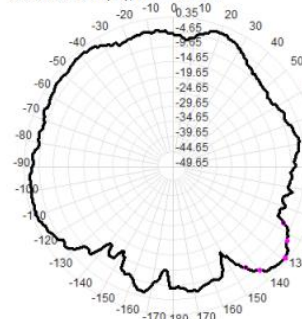
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5750.0MHz H+V, Eff: 41.2%

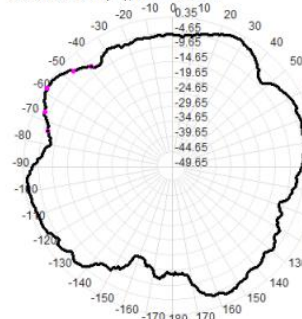
Back View



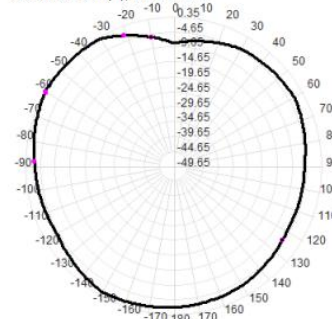
5750.0MHz Total(E1), Max=-0.83dBi



5750.0MHz Total(E2), Max=-0.23dBi

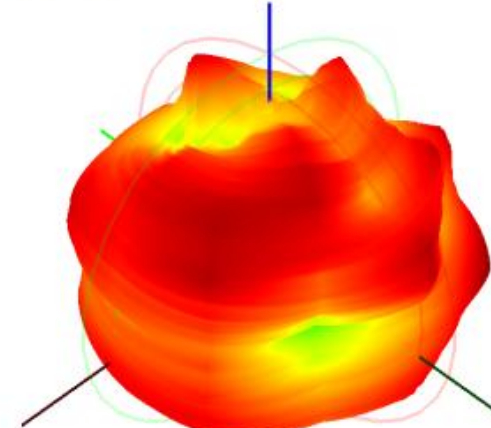
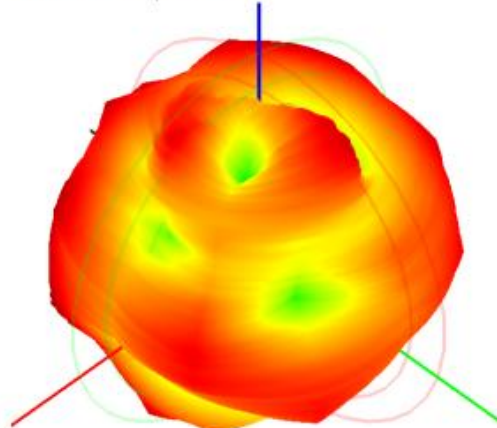


5750.0MHz Total(H), Max=0.35dBi

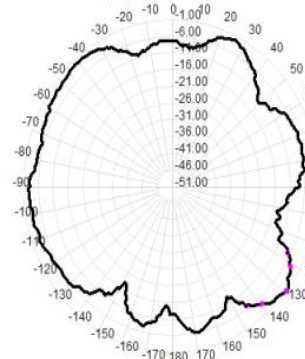


5850.0MHz H+V, Eff: 37.1%

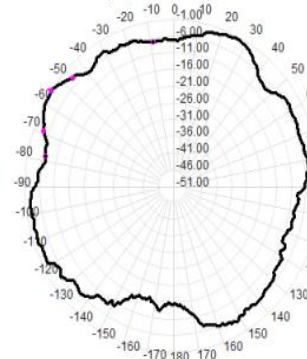
Back View



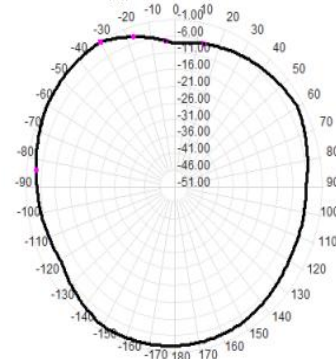
5850.0MHz Total(E1), Max=-1.37dBi



5850.0MHz Total(E2), Max=-1.00dBi



5850.0MHz Total(H), Max=-1.10dBi



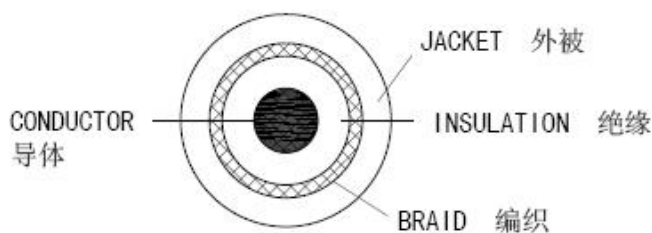


3. Cable specification parameter:

结构/Construction:

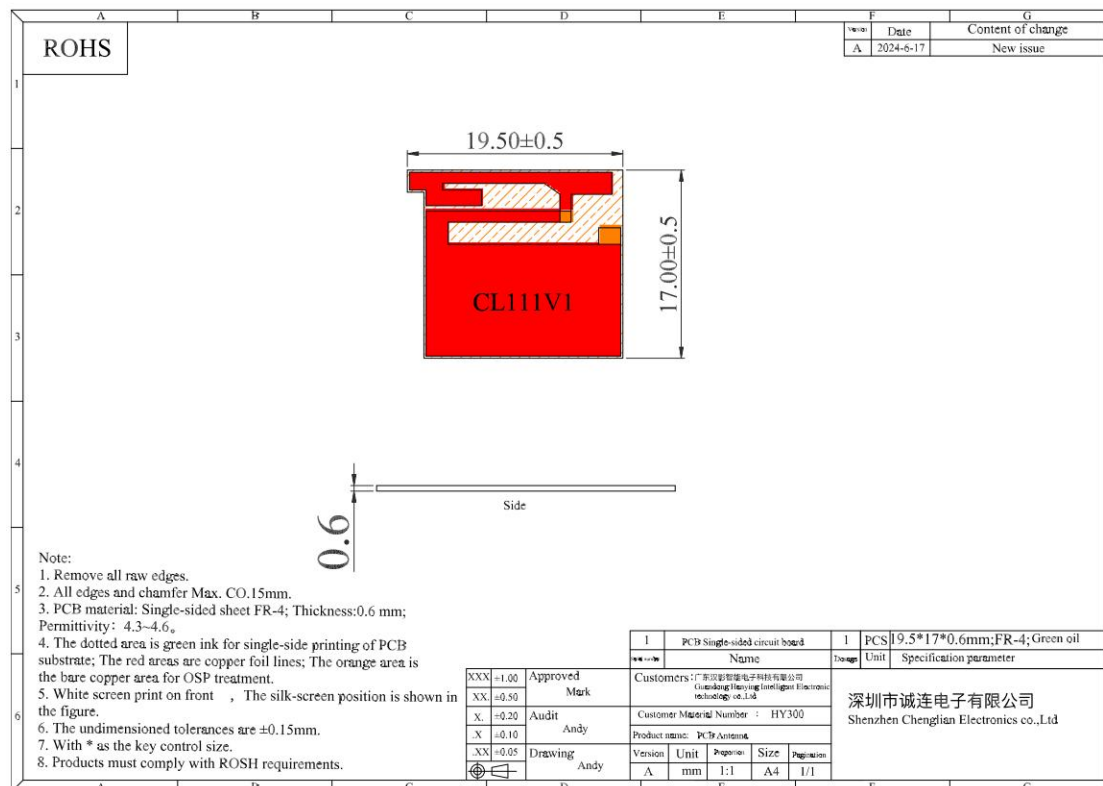
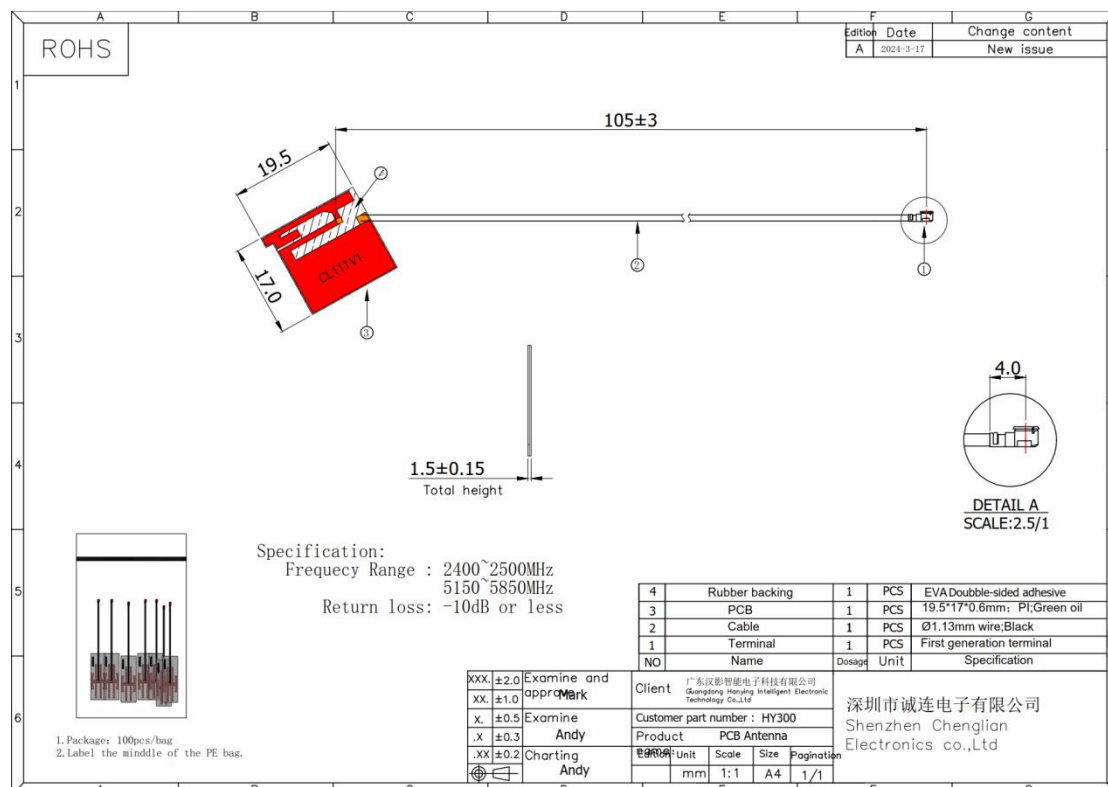
单位/Unit:mm

项目/Item		详细资料/Details
导体/Conductor	材料/Material	镀银铜线 /Silver-coated Copper Wire
	构成(根/mm) Composition(No. /mm)	7/0.080
	标称直径/NOM. O. D	0.24±0.03
绝缘层 /Insulation	材料/Material	聚全氟乙丙烯 (自然色) /FEP(Natural)
	标称绝缘厚度 /Nom. Thick. (mm)	0.23
	标称外径/NOM. O. D	0.70±0.03
屏蔽层/Shield	材料/Material	镀锡铜线/Tinned annealed copper wire
	构成/Composition	16*4/0.05
	编织密度/Coverage (%)	90±5
护套/Jacket	材料/Material	聚全氟乙丙烯/FEP
	标称护套厚度 / Nom. Thick (mm)	0.10
	标称外径/Nom. O. D (mm)	1.13±0.05
	颜色/Color	按与客户确认的颜色/According to corresponding have approved by the suppliers and customers





4. 天线/Antenna:





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