

Shanghai Jiesheng Kang Communication Engineering Co., Ltd.

No. 358 Liuyuan Road, Baoshan Industrial Park, Shanghai

Antenna Approval Letter

2021/11/23

(1) Sample antenna description

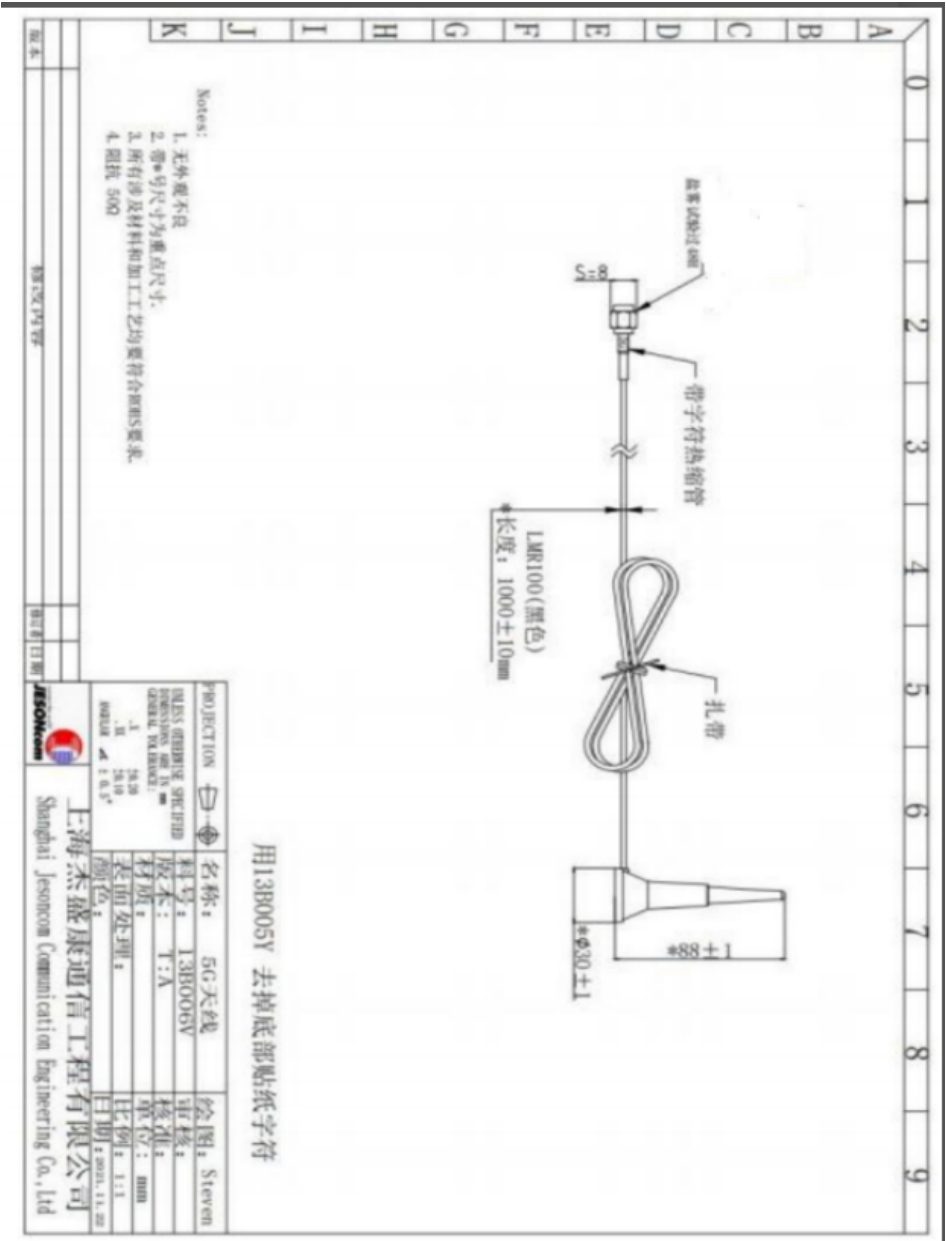
Sample antenna description	
Manufacturer's internal model	Ex:13B006V
category	EX:5G
frequency band	EX:700-2700M 3000-5850M
form	Ex:Dipole Antenna
polarization	EX:Linear polarization
standing wave	EX:1.9~3.7@700-2700M 1.1~1.5 @3000-5850M
efficiency	EX:29~55%@700-2700M 31~44%@3000-5850M
Gain	EX:0.6~4.5dbi@700-2700M 1.4~4.9dbi@3000-5850M
direction map	see Attachment
Connector type	Ex:SMA
Connector properties	Ex:SMABore
Active/passive	Ex:/
Color and material	Ex:black/ABS
Antenna size	Ex:diameter30*88(mm)
Feeder type and size	Ex:LMR100/1rice
Feeder loss	Ex:/
Operating temperature	Ex:-40~85°C
Power Capacity	Ex:/
waterproof level	Ex:/
Salt spray level	Ex:48H
Reliability performance test report	EX:see report
shock, drop	EX: /
Suction test	EX:see report
Remark	Ex:T:A

(2) Sample antenna picture

Antenna assembly diagram:

none

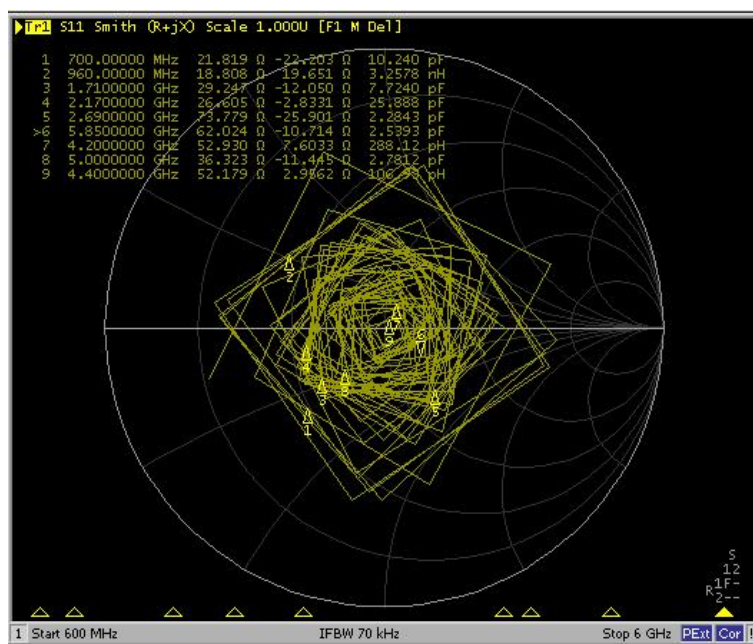
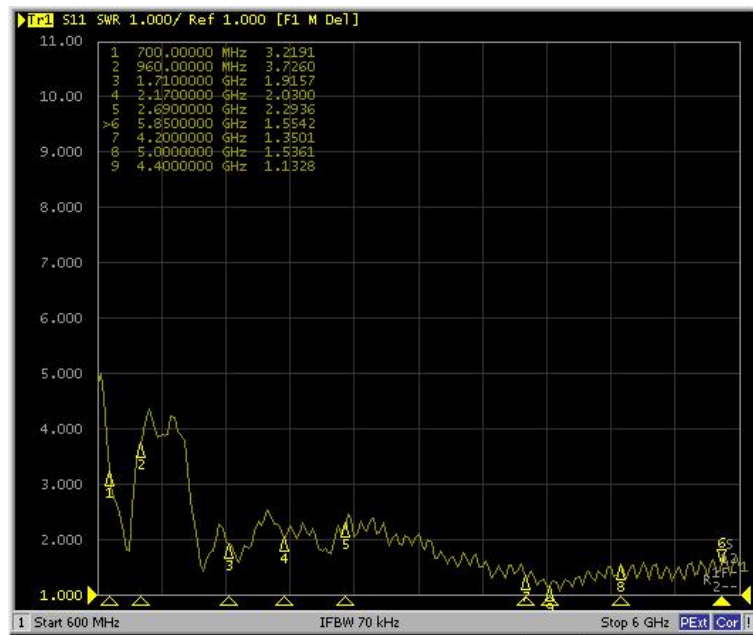
Antenna product picture:



(3)Antenna test environment diagram

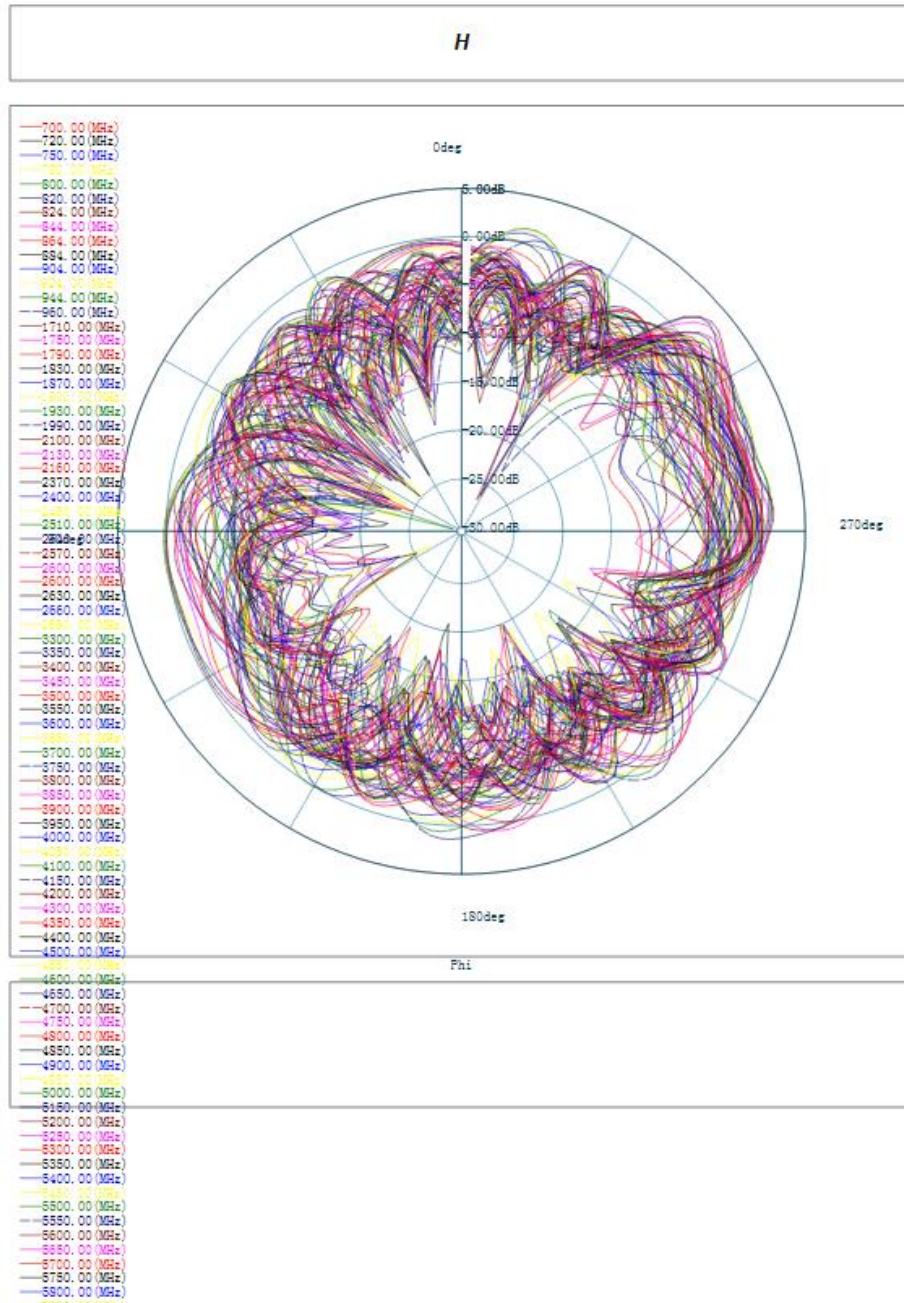
none

(4)testS11screenshot

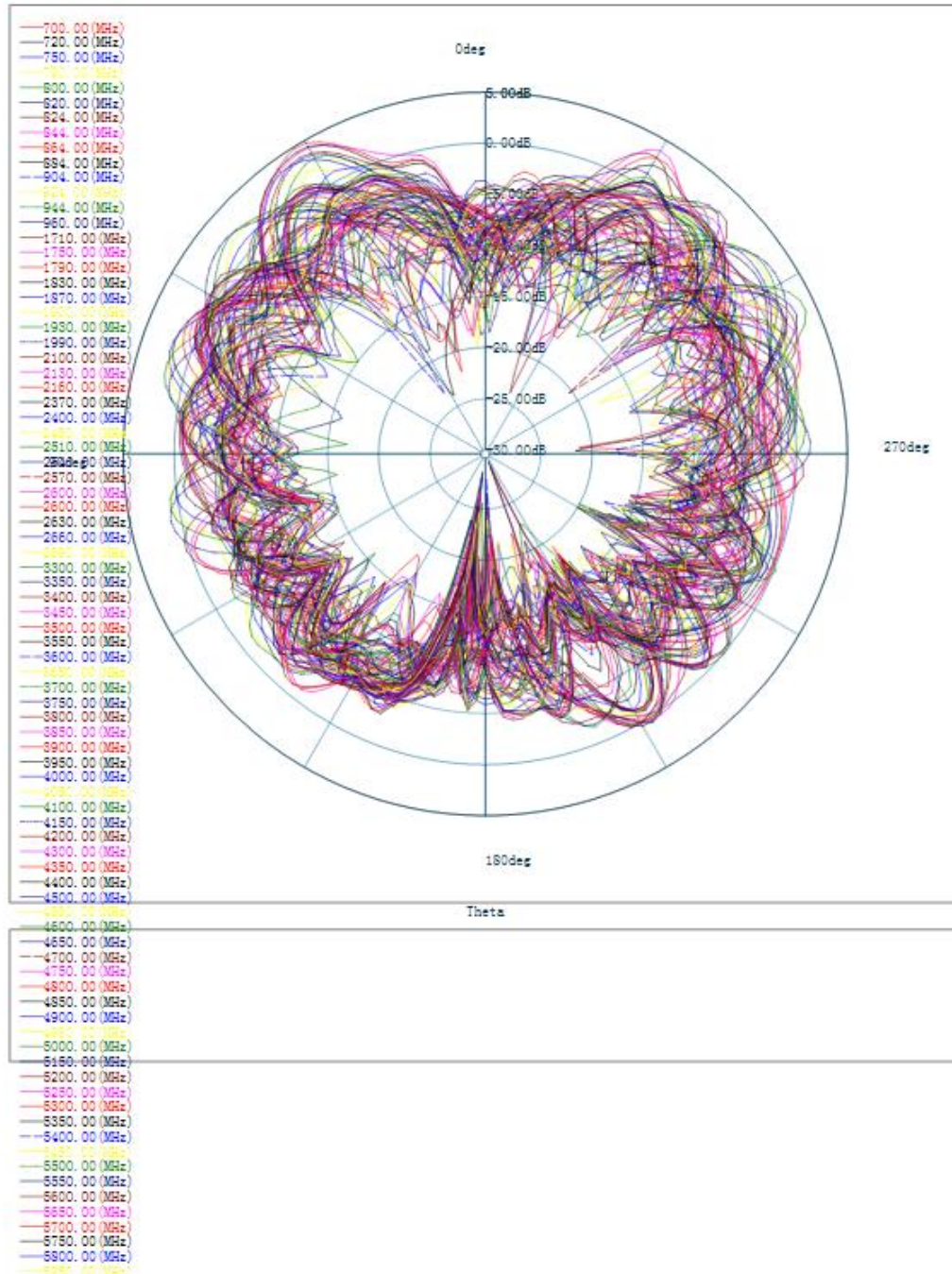


(5) Screenshot of test pattern

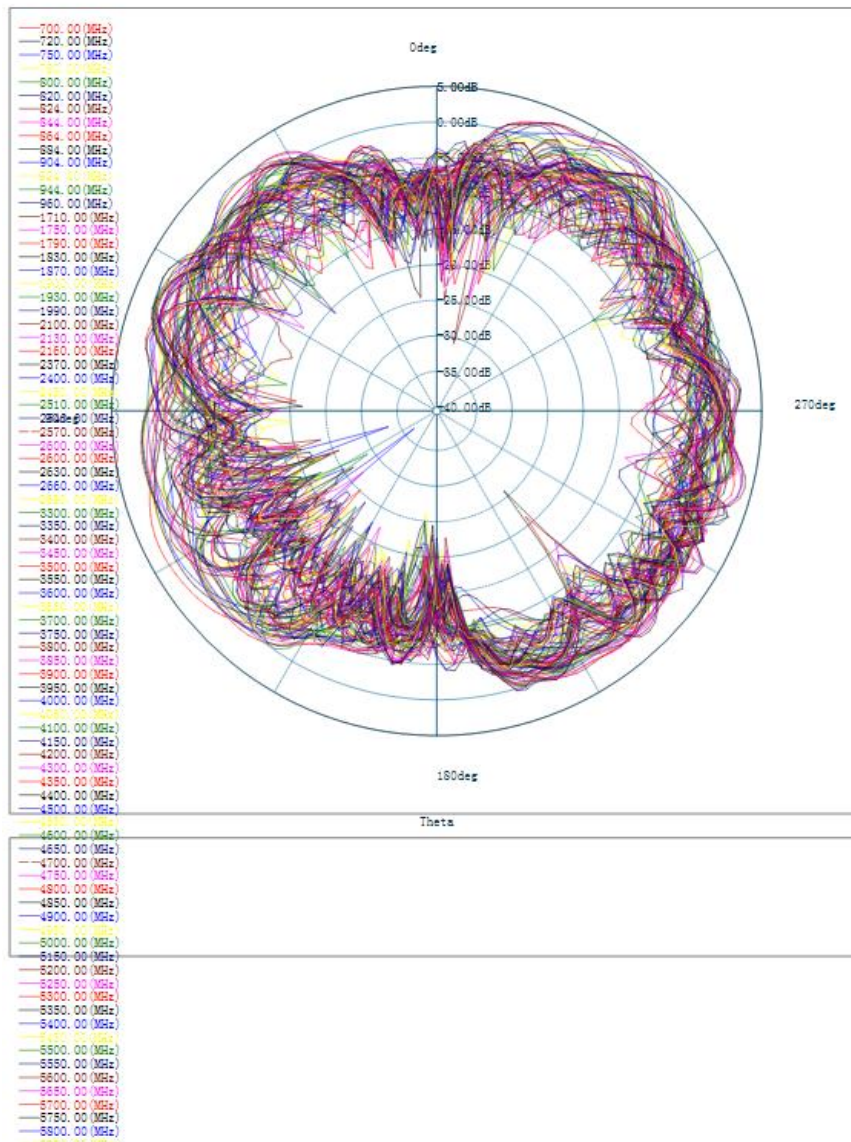
E&H Surface direction diagram:



E1



E2



3DDirectional pattern: (angle that can highlight the characteristics of the pattern)

none

(6) Screenshot of passive efficiency test data

frequency(Hz)	efficiency(%)	Gain(dBi)
700000000	34%	3.847772618
720000000	33%	3.548940299
750000000	39%	3.70709403
780000000	44%	2.621760658
800000000	46%	2.541665086
820000000	51%	2.953919555
824000000	54%	3.328745251
844000000	55%	3.710341431
864000000	56%	4.141668012
884000000	45%	3.049609266
904000000	39%	2.430999908
924000000	31%	1.504896916
944000000	29%	0.854404115
960000000	29%	0.102321395
1710000000	29%	0.671984276
1750000000	37%	1.992887547
1790000000	40%	2.954068498
1830000000	48%	3.586456717
1870000000	53%	4.220576476
1900000000	57%	4.372168304
1930000000	62%	4.67337387
1990000000	62%	4.561794803
2100000000	47%	2.705667431
2130000000	44%	2.969318376
2160000000	43%	2.960401792
2370000000	36%	2.093165932
2400000000	39%	2.399191093
2450000000	44%	2.747546698
2510000000	50%	2.959695245
2540000000	53%	3.204739721
2570000000	53%	3.469735244
2600000000	55%	4.01490564
2600000000	55%	4.073824449

2630000000	55%	4.443890709
2660000000	53%	4.556176292
2690000000	49%	4.252854003
3300000000	44%	3.918534511
3350000000	39%	3.219165406
3400000000	38%	2.934696954
3450000000	31%	1.81085183
3500000000	30%	2.031993429
3550000000	29%	2.287723425
3600000000	32%	2.367179146
3650000000	33%	3.022749505
3700000000	34%	3.02214927
3750000000	37%	3.220362077
3800000000	38%	2.988090718
3850000000	39%	2.886098488
3900000000	37%	3.009002556
3950000000	37%	2.83774788
4000000000	35%	2.426260681
4050000000	35%	2.414133479
4100000000	35%	3.13015096
4150000000	36%	3.655301787
4200000000	38%	4.33211731
4300000000	41%	4.943806091
4350000000	39%	4.995676218
4400000000	38%	5.083489677
4500000000	36%	4.03285985
4550000000	34%	3.236665989
4600000000	33%	2.07836067
4650000000	33%	1.698707243
4700000000	34%	2.380078239
4750000000	35%	2.489511439
4800000000	35%	2.521619579
4850000000	34%	2.777312774
4900000000	34%	2.604387304
4950000000	32%	2.325876401
5000000000	29%	2.279557575
5150000000	32%	3.689792788

5200000000	35%	3.948995332
5250000000	35%	3.371122526
5300000000	36%	2.480153557
5350000000	38%	3.105515255
5400000000	37%	3.183890319
5450000000	39%	3.506760024
5500000000	37%	3.635182271
5550000000	35%	3.31983902
5600000000	35%	3.083559367
5650000000	32%	2.369172893
5700000000	32%	2.013381532
5750000000	28%	1.437935758
5800000000	32%	2.099037263
5850000000	31%	1.849691939

(7)Salt spray test report

Salt spray test report				serial number:20200730001			
product name	5G external antenna			production batch	20200604001		
Product part number	13B006V			test numbers	3PCS		
Inspection date	2020.7.30			Test date	2020.7.30		
Test items	Requirements standards	Actual value	determination	Test items	Requirements standards	Actual value	determination
Salt spray test type	NSSneutral	NSSneutral	qualified	testing time	48H	24H	qualified
brinePHvalue	6.5-7.2	7.1	qualified	Salt spray chamber temperature	35°C	35°C	qualified
Spray method	continuous spray	continuous spray	qualified	salt spray deposition	1-2ml	1.7	qualified
Salt water ingredients	5%NaCL	5%NaCL	qualified	compressed air pressure	1±0.1Kg/cm2	1.0kg/cm2	qualified
saturation temperature	47°C	47°C	qualified	Sample placement angle	90o	90o	qualified
Test observation time	Result record						
12H	No corrosion spots seen						
24H	No corrosion spots seen						
judge Certainly							
Judgment based on national standards5944-86Rating method judgment,9Level or above is qualified							
judgement result	☒ qualified ☐ Unqualified						
Measurement	trial	Finn	trial	nuclear	Sun Yueyong		
Remark: Commonly used salt spray test methods includeNSSNeutral salt spray test,AASSAcetate salt spray test,CASSCopper acetic acid accelerated test							

(8)

Reliability performance test report

Test content

Test items	Test Conditions	judgement standard	number of trials	determination
1.High temperature test	65±2placed in °C environment4h,	Place at room temperature2hAfter that, each size, Meets normal requirements and remains unchanged in appearance deformation, warping, degumming and other abnormal phenomena, Performance is normal.	5pcs	qualified
2. Low temperature test	- 40±2placed in °C environment4h,	Place at room temperature2hFinally, all dimensions meet normal requirements and the appearance is not deformed. Abnormal phenomena such as warping and degumming, etc. Can be normal.	5pcs	qualified
3. Temperature cycle test	exist65±2placed in an environment of °C set30minutes, take out at room temperature Place below5minutes; in -40± 2 placed in °C environment30minute, Take it out and place it at room temperature5point bell.	After this5After each cycle, each foot The size meets the normal requirements, and the appearance is Deformation, warping, degumming and other abnormal phenomena Like, performance is normal.	5pcs	qualified
4.Temperature and heat resistance	Meet the temperature40°C±2°C, humidity93±2%RHenvironment placementXXH;	Place at room temperature4hAfter that, each size, Meets normal requirements and remains unchanged in appearance deformation, warping, degumming and other abnormal phenomena, Performance is normal.	5pcs	qualified
final conclusion	■ Qualified □ Unqualified □			