



Antenna Specification



Product Number: 3101504963

Product Name: Antenna

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<http://www.tp-link.com>

Product Number: 3101504963

Product Name: Antenna

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Specification For Approval

Date: _____

File No. : _____

Version: 1.0

Customer: _____ / _____

Customer P/N : _____ / _____

TP-LINK P/N: 3101504963

Description: Antenna|5.15-5.85GHz|3.0dBi|LP|Omni|2W|Weld|50mm|D1.13mm| 羽 翼
-277|TP-LINK|X2050-RW050REV1.0|黑色/ABS-HB/纹面+logo 光面|否|黑
色线/3101504181 改线长改焊线/自制件]

TP-LINK Checked By:
Customer Approved By:

TP-LINK®

TP-LINK TECHNOLOGIES CO., LTD.

South Buiding, No.5 Keyuan Road,
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[http:// www.tp-link.com](http://www.tp-link.com)

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I. Specification

Sample Photo**A. Electrical Characteristics**

Frequency	5150~5850MHz
Impedance	50 Ohm
S.W.R.	≤ 2.0
Antenna Type	Dipole
Antenna Gain	3.0dBi
Max Input Power	2 W
Polarization	Linear
Radiation pattern	Omni-Directional

B. Material & Mechanical Characteristics

Material of Radiator	Cu
Material of Plastic	Body: ABS-HB Holder: PC、ABS
Cable Type	O.D. 1.13mm (black)
Connector Type	Weld
Connector Pull Test	3Kg

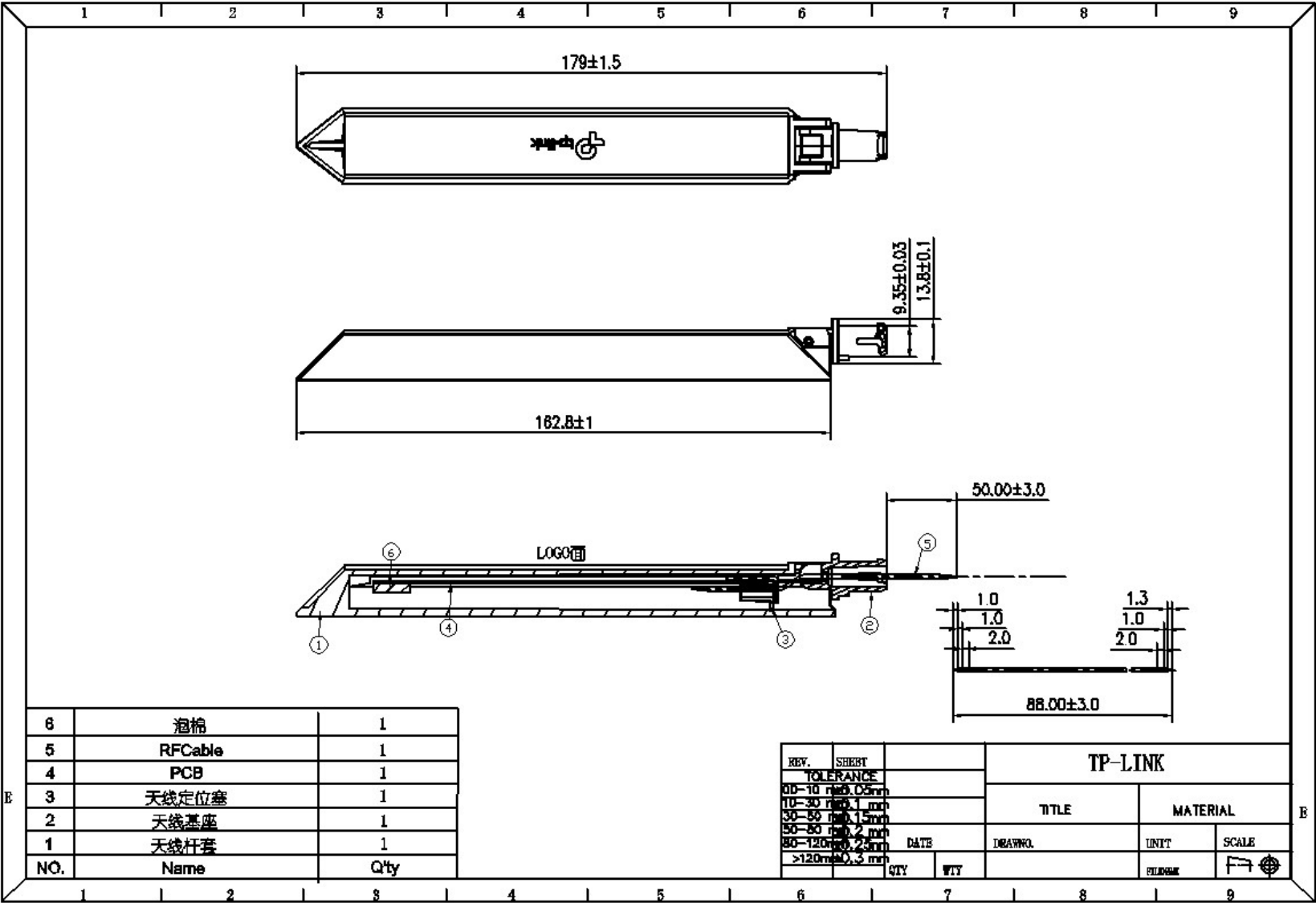
C. Environmental

Operation Temperature	- 40℃ ~ + 60℃
Storage Temperature	- 40℃ ~ + 60℃

II. Characteristics and Reliability Test

Test Items		Test Condition and Procedure	Requirements
C1	S.W.R.	Set DUT on Network Analyzer; make individual calibration to test	Directive DUT specification
C2	Antenna Gain	Set DUT on Antenna Chamber; make individual calibration to test	Directive DUT specification
M1	Vibration	MIL-STD-202G, 201 A Amplitude: 0.03 inch (0.76mm); Freq: 10 to 55 Hz 3 directions; 2 hours for each direction	1. No Visual Damage 2. Frequency Tol. ≤ 5%
M2	Random Drop	Height: 1.5 Meter; 3 directions; 1 time for each direction	1. No parts separated 2. Frequency Tol. ≤ 5%
M3	Drop Test	Combine DUT with router; Height: 0.6 Meter; 1 direction; 3 times for the direction	1. No parts separated 2. Frequency Tol. ≤ 5%
M4	Solderability	MIL-STD-202G, 210F, cond. A Solder iron: 350±10 °C; Duration: 5 seconds	1. Mounted on PCB 2. No Visual Damage
M5	Terminal- Pull Test	MIL-STD-202G, 211A, cond. A Holding with individual specification; force applied to axis of terminal	1. Directive DUT specification 2. Frequency Tol. ≤ 5%
M6	Bend Test	3 angles: 0° ,45° ,90° .100 times for each angle	1. No Visual Damage 2. No Obvious shake
M7	Dimension	Inspection of dimension, color, material, package, surface process	Directive DUT specification
E1	Salt Spray	SE-GS-90T Temp: 35°C; RH: 93%±3%; NaCl solution proportion: 1.026 ~ 1.041; Time: 12 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%
E2	Thermal Shock	1 Cycle: -40°C (30 minutes) to +70°C (30 minutes) Cycles: 24	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%
E3	Life (HighTemp.)	MIL-STD-202G, 108A, cond. A Temp: 70°C; Time: 8 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%

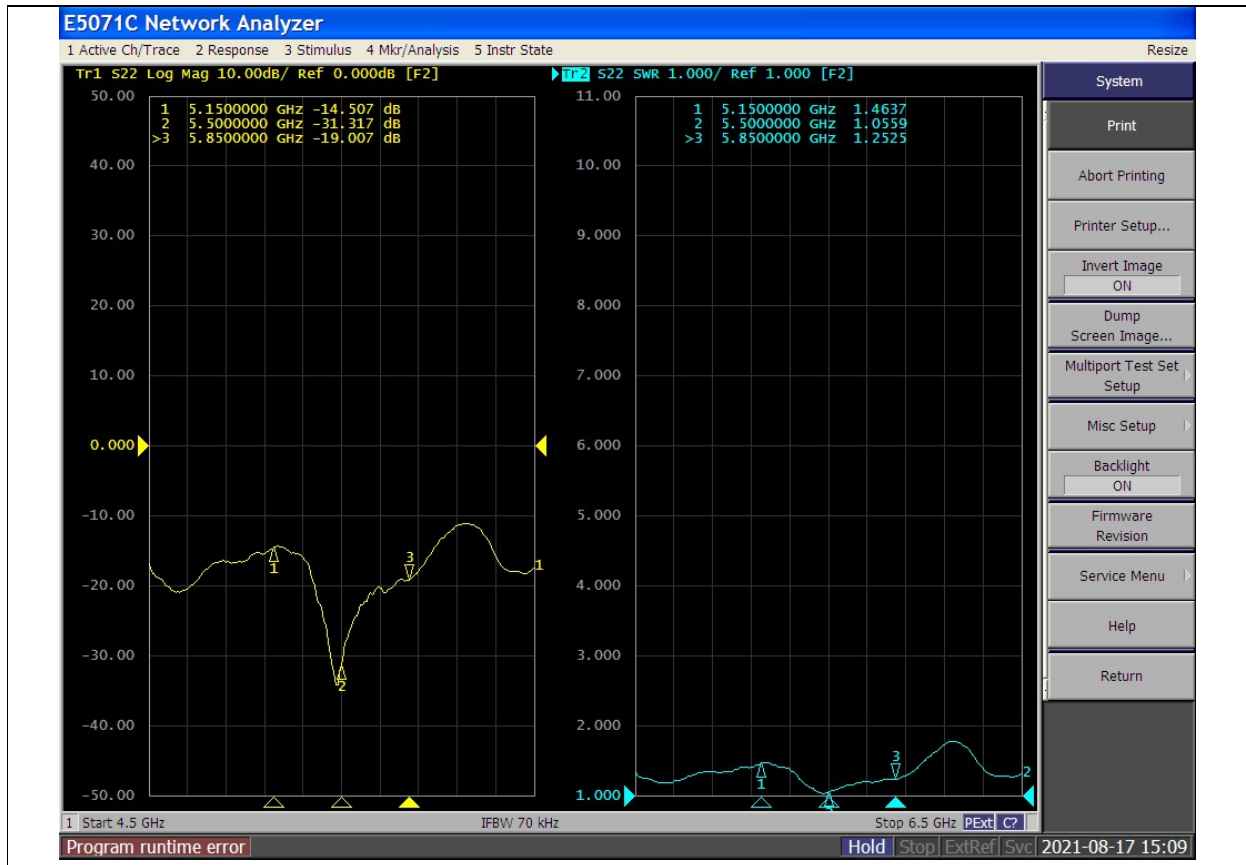
III. Mechanical Drawing and Material Description



IV. RoHS Test Report

N O .	Product Model	Constit uents	Material	Test Result for RoHS-corresponding Substance						PFOS	Halogen				Series No.	Date	Title	Test Agent						
				Cd	Pb	Hg	Cr(VI)	PBB s	PBD Es	PFOS	F	Cl	Br	I										
1	3120500035	Cable	FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		N.D	N.D	N.D	N.D	RLSHD000593720060	2011/04/25	Jacket	上海 SGS						
			FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		N.D	N.D	N.D	N.D			Insulation	上海 SGS						
			Wire-TC	N.D.	N.D.	N.D.	N.D.										Outner conductor	CTI						
			Wire-TC	N.D.	N.D.	N.D.	N.D.										Inner conductor	CTI						
2	6142504929	杆套	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							SHAEC1200148411	2012/01/09	上海 ABS	上海 SGS					
3	6142504930	基座	PC		N.D.		N.D.									N.D.	N.D.	GZ1106084755	2011/07/05	PC S-2000VR	广州 SGS			
4	6142504931	定位塞	HDPE		N.D.		N.D.									N.D.	N.D.	SHAEC1109428201	2011/06/27	HDPE	上海 SGS			
5	6410500526	Foam	EVA	N.D.	17	N.D.	N.D.	N.D.	N.D.										CANEC1103057901	2011/08/11	EVA	广州 SGS		
6	2051500808	PCB	PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							SHAEC1200879510	2014/02/12	板材	SGS				
			RS-2000 BGL	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							135	256	N.D.	N.D.	RSH03G002208001C	2014/04/24	防焊油墨	CTI
			2M-400W F	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							148	124	N.D.	N.D.	CE/2014/80454	2014/08/12	文字油墨	SGS
			OSP F-005	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.											CANEC1404310001	2014/04/08	OSP 药水	CTI	

V. Antenna – S Parameter Test Data



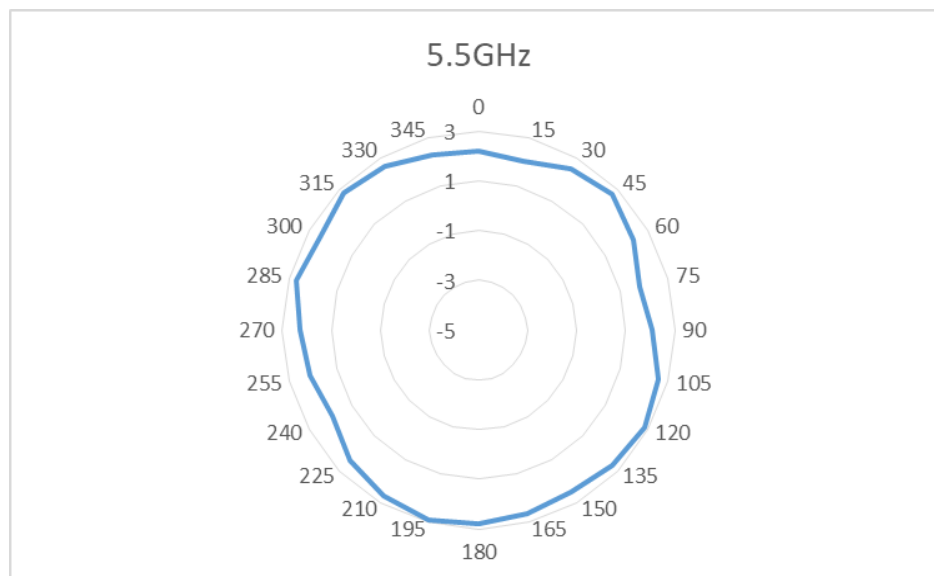
VI. Antenna – Radiation Pattern Test Data

Testing Equipment Specification	
Microwave Chamber	ETS
Testing Equipment	Agilent 5071B

PeakGain:

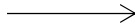
Fre(MHz)	5150	5200	5250	5300	5350	5400	5450	5500
Gain(dBi)	2.81	3.00	2.42	2.35	2.43	2.47	2.45	2.83
Fre(MHz)	5550	5600	5650	5700	5750	5800	5850	
Gain(dBi)	2.58	2.69	2.75	2.89	2.84	2.73	2.96	

Theta=90°

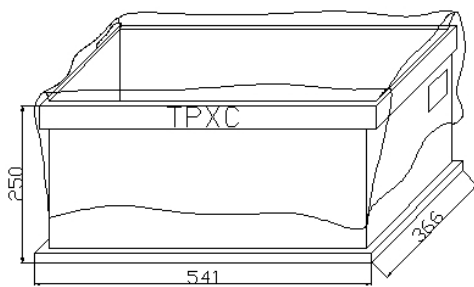


VII. Packing Drawing

i . Put ANT into Plastic Tray (400PCS/BOX) (仅作装箱说明)



ii. Packing



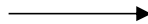
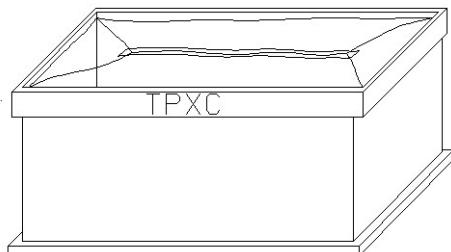
Label



MO:		P/N:		
Specification:				
Quantity:	(PCS)	G.W:	(Kg)	
Date:				
Manufacturer:	Cable manufacturing department			

4Tray, 400PCS/Box

iii.Sealing





Antenna Specification



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Product Name: Antenna

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Product Name: Antenna

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Specification For Approval

Date: _____

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Version: 1.0

Customer: _____ / _____

Customer P/N : _____ / _____

TP-LINK P/N: 3101504964

Description: Antenna|5.15-5.85GHz|3.0dBi|LP|Omni|2W|Weld|80mm|D1.37mm| 羽 翼
-277|TP-LINK|X2050-RW080REV1.0|黑色/ABS-HB/纹面+logo 光面|否|黑
色线/3101504182 改线长改焊线/自制件]

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I. Specification

Sample Photo**A. Electrical Characteristics**

Frequency	5150~5850MHz
Impedance	50 Ohm
S.W.R.	≤ 2.0
Antenna Type	Dipole
Antenna Gain	3.0dBi
Max Input Power	2 W
Polarization	Linear
Radiation pattern	Omni-Directional

B. Material & Mechanical Characteristics

Material of Radiator	Cu
Material of Plastic	Body: ABS-HB Holder: PC、ABS
Cable Type	O.D. 1.37mm (black)
Connector Type	Weld
Connector Pull Test	3Kg

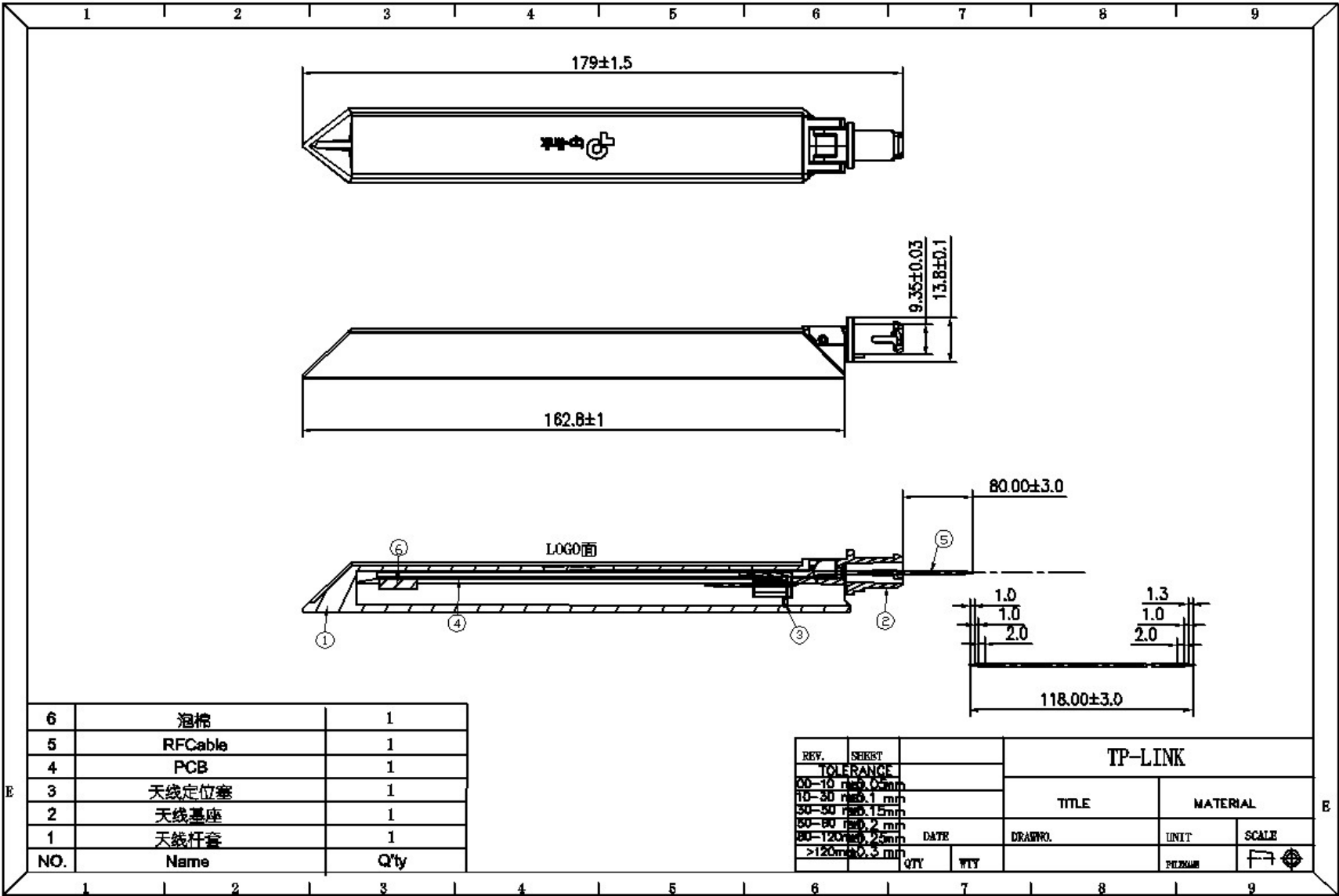
C. Environmental

Operation Temperature	- 40℃ ~ + 60℃
Storage Temperature	- 40℃ ~ + 60℃

II. Characteristics and Reliability Test

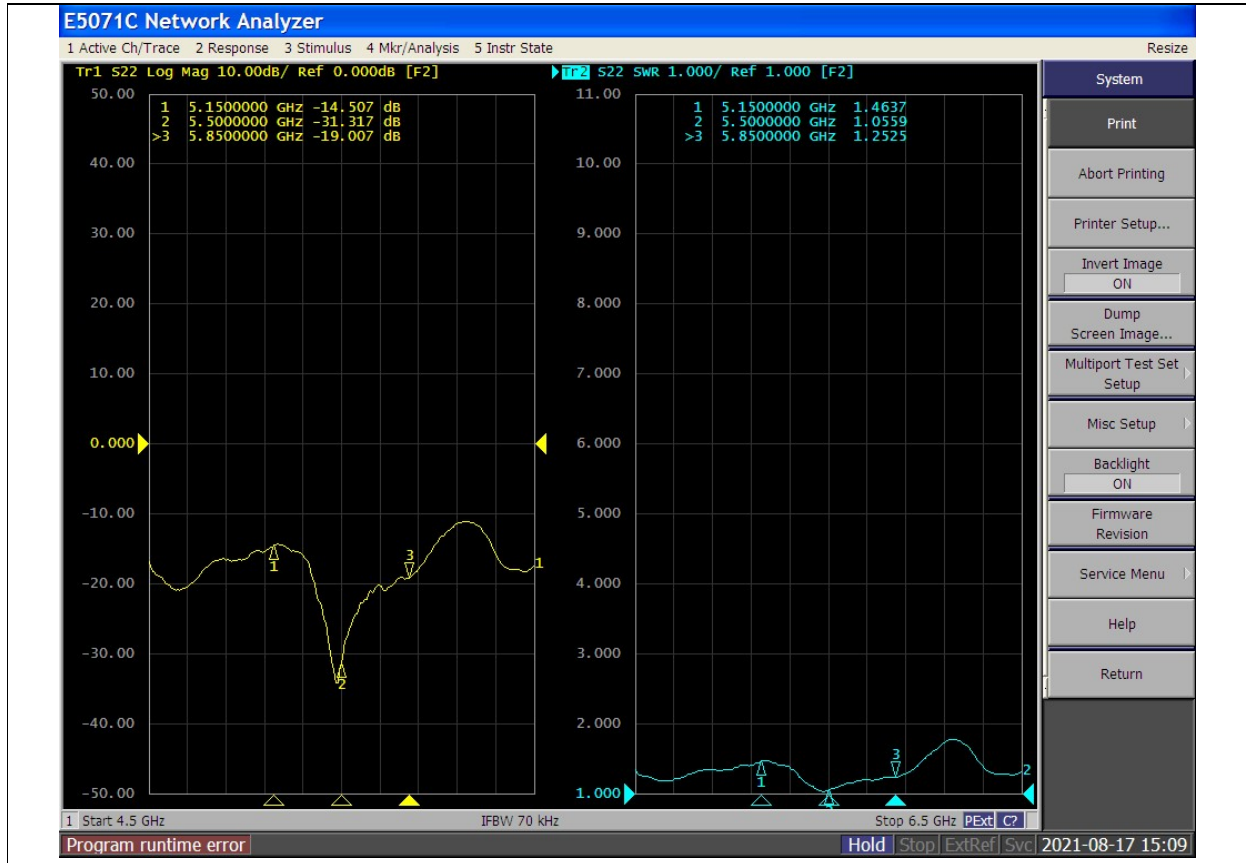
Test Items		Test Condition and Procedure	Requirements
C1	S.W.R.	Set DUT on Network Analyzer; make individual calibration to test	Directive DUT specification
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M4	Solderability	MIL-STD-202G, 210F, cond. A Solder iron: 350±10 °C; Duration: 5 seconds	1. Mounted on PCB 2. No Visual Damage
M5	Terminal- Pull Test	MIL-STD-202G, 211A, cond. A Holding with individual specification; force applied to axis of terminal	1. Directive DUT specification 2. Frequency Tol. ≤ 5%
M6	Bend Test	3 angles: 0° ,45° ,90° .100 times for each angle	1. No Visual Damage 2. No Obvious shake
M7	Dimension	Inspection of dimension, color, material, package, surface process	Directive DUT specification
E1	Salt Spray	SE-GS-90T Temp: 35°C; RH: 93%±3%; NaCl solution proportion: 1.026 ~ 1.041; Time: 12 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%
E2	Thermal Shock	1 Cycle: -40°C (30 minutes) to +70°C (30 minutes) Cycles: 24	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%
E3	Life (HighTemp.)	MIL-STD-202G, 108A, cond. A Temp: 70°C; Time: 8 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%

III. Mechanical Drawing and Material Description



IV. RoHS Test Report

N O .	Product Model	Constit uents	Material	Test Result for RoHS-corresponding Substance						PFOS	Halogen				Series No.	Date	Title	Test Agent						
				Cd	Pb	Hg	Cr(VI)	PBB s	PBD Es	PFOS	F	Cl	Br	I										
1	3120500194	Cable	FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		N.D	N.D	N.D	N.D	RLSHD000593720060	2011/04/25	Jacket	上海 SGS						
			FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D		N.D	N.D	N.D	Insulation			上海 SGS							
			Wire-TC	N.D.	N.D.	N.D.	N.D.							Outner conductor			CTI							
			Wire-TC	N.D.	N.D.	N.D.	N.D.							Inner conductor			CTI							
2	6142504929	杆套	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							SHAEC1200148411	2012/01/09	上海 ABS	上海 SGS					
3	6142504930	基座	PC		N.D.		N.D.									N.D.	N.D.	GZ1106084755	2011/07/05	PC S-2000VR	广州 SGS			
4	6142504931	定位塞	HDPE		N.D.		N.D.									N.D.	N.D.	SHAEC1109428201	2011/06/27	HDPE	上海 SGS			
5	6410500526	Foam	EVA	N.D.	17	N.D.	N.D.	N.D.	N.D.										CANEC1103057901	2011/08/11	EVA	广州 SGS		
6	2051500807	PCB	PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							SHAEC1200879510	2014/02/12	板材	SGS				
			RS-2000 BGL	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							135	256	N.D.	N.D.	RSH03G002208001C	2014/04/24	防焊油墨	CTI
			2M-400W F	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							148	124	N.D.	N.D.	CE/2014/80454	2014/08/12	文字油墨	SGS
			OSP F-005	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.											CANEC1404310001	2014/04/08	OSP 药水	CTI	

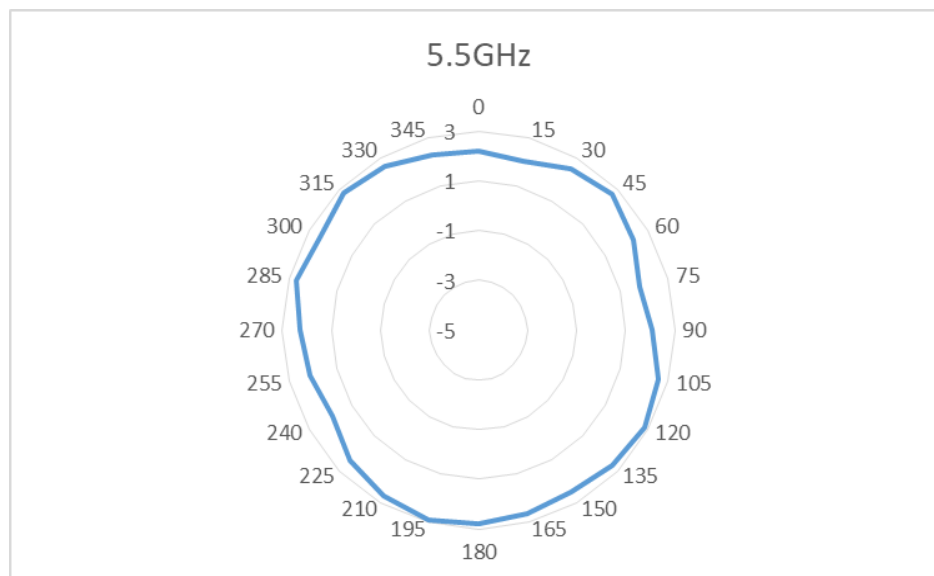
V. Antenna – S Parameter Test Data**VI. Antenna – Radiation Pattern Test Data**

Testing Equipment Specification	
Microwave Chamber	ETS
Testing Equipment	Agilent 5071B

PeakGain:

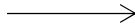
Fre(MHz)	5150	5200	5250	5300	5350	5400	5450	5500
Gain(dBi)	2.81	3.00	2.42	2.35	2.43	2.47	2.45	2.83
Fre(MHz)	5550	5600	5650	5700	5750	5800	5850	
Gain(dBi)	2.58	2.69	2.75	2.89	2.84	2.73	2.96	

Theta=90°

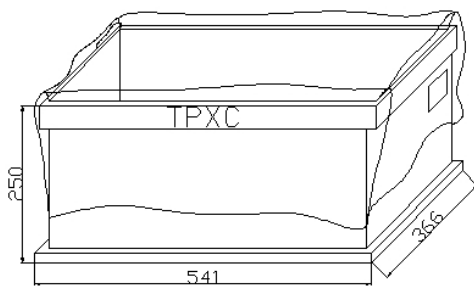


VII. Packing Drawing

i . Put ANT into Plastic Tray (400PCS/BOX) (仅作装箱说明)



ii. Packing



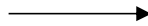
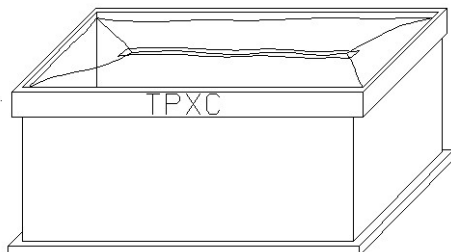
Label



MO:		P/N:		ROHS
Specification:				
Quantity:	(PCS)	G.W:	(Kg)	
Date:				
Manufacturer:	Cable manufacturing department			

4Tray, 400PCS/Box

iii.Sealing





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Version: 1.0

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TP-LINK P/N: 3101504965

Description: Antenna|5.15-5.85GHz|3.0dBi|LP|Omni|2W|Weld|200mm|D1.37mm| 羽 翼
-277|TP-LINK|X2050-RW200REV1.0|黑色/ABS-HB/纹面+logo 光面|否|黑
色线/3101504182 改线长改焊线/自制件]

TP-LINK Checked By:
Customer Approved By:

TP-LINK®

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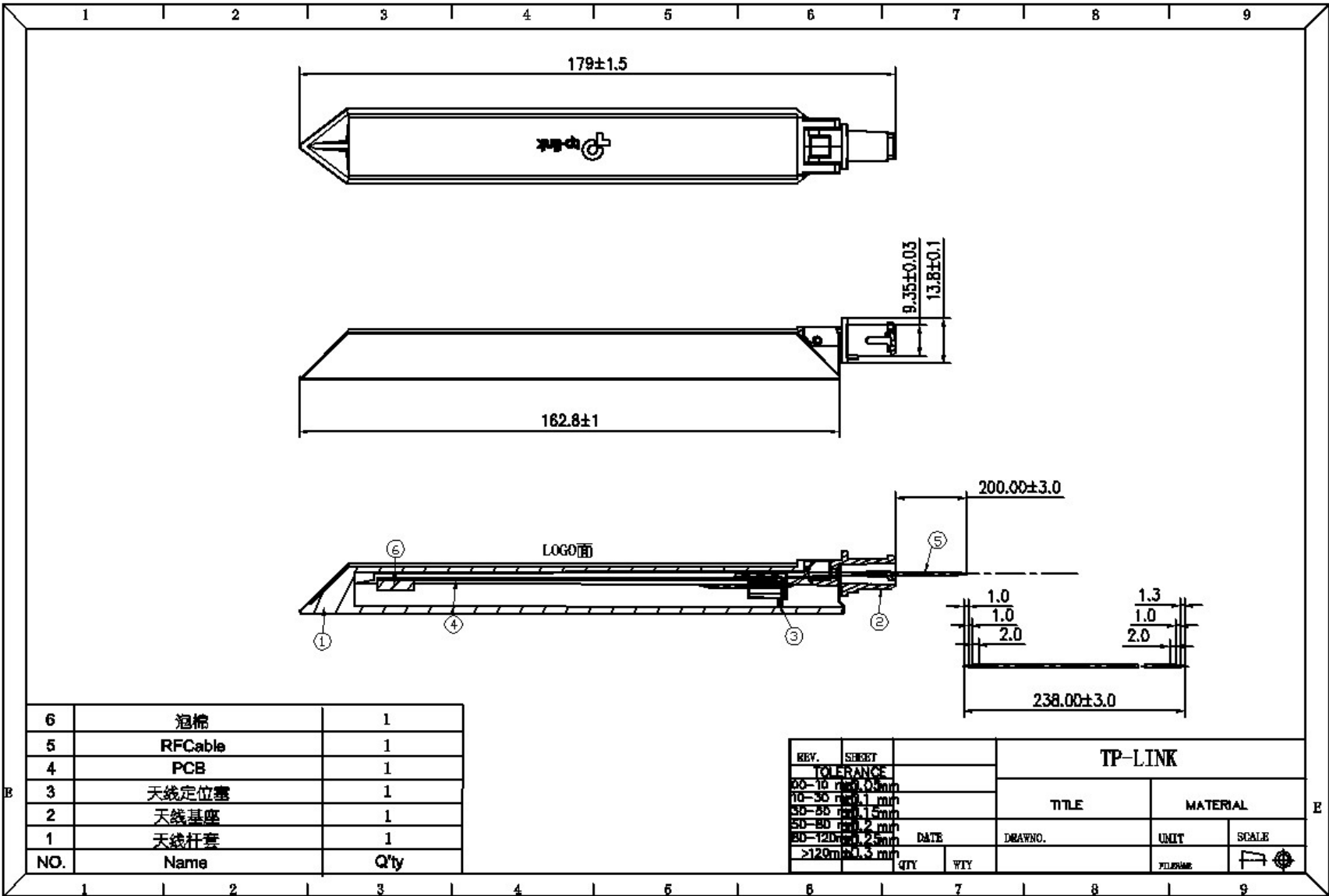
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III. Mechanical Drawing and Material Description



IV. RoHS Test Report

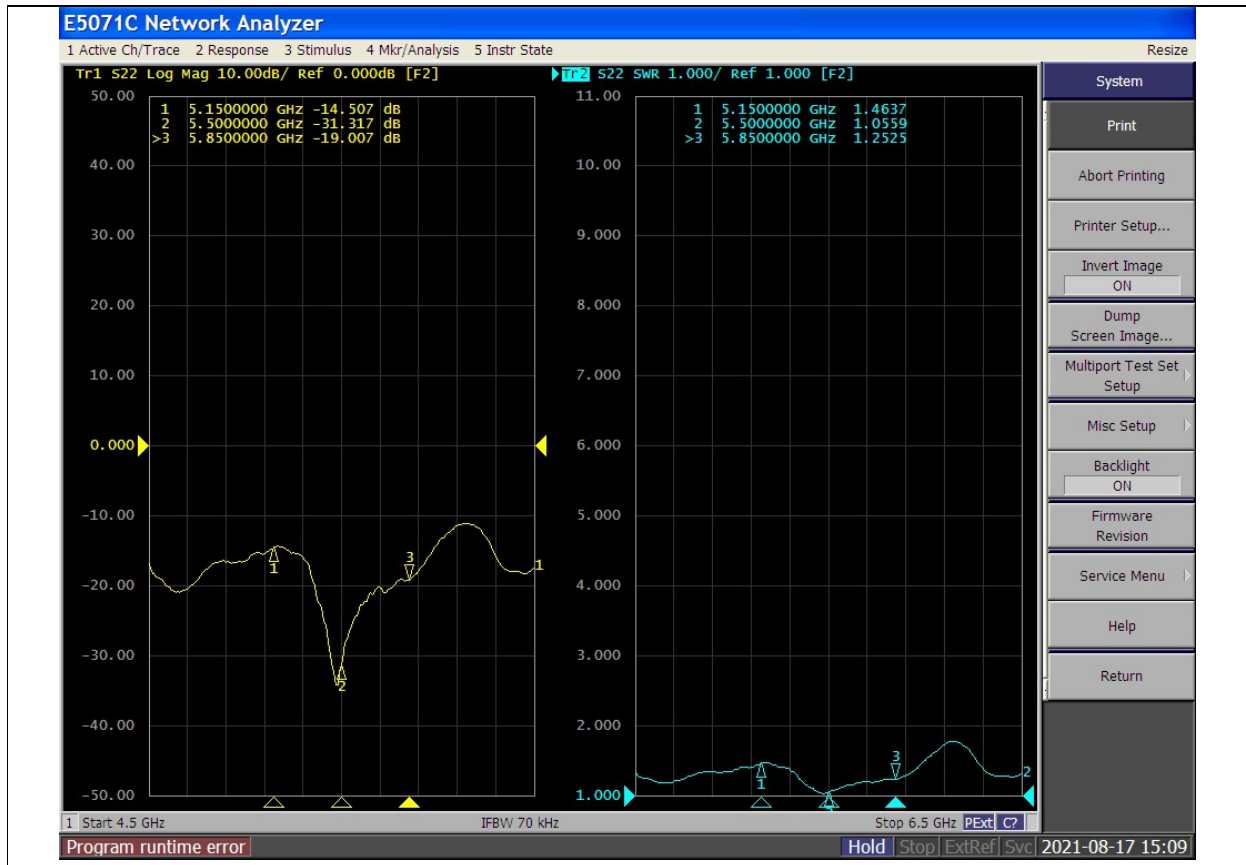
N O .	Product Model	Constit uents	Material	Test Result for RoHS-corresponding Substance						PFOS	Halogen				Series No.	Date	Title	Test Agent				
				Cd	Pb	Hg	Cr(VI)	PBB s	PBD Es	PFOS	F	Cl	Br	I								
1	3120500194	Cable	FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		N.D	N.D	N.D	N.D	RLSHD000593720060	2011/04/25	Jacket	上海 SGS				
			FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D		N.D	N.D	N.D	Insulation			上海 SGS					
			Wire-TC	N.D.	N.D.	N.D.	N.D.							Outner conductor			CTI					
			Wire-TC	N.D.	N.D.	N.D.	N.D.							Inner conductor			CTI					
2	6142504929	杆套	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.						SHAEC1200148411	2012/01/09	上海 ABS	上海 SGS				
3	6142504930	基座	PC		N.D.		N.D.								N.D.	N.D.	GZ1106084755	2011/07/05	PC S-2000VR	广州 SGS		
4	6142504931	定位塞	HDPE		N.D.		N.D.								N.D.	N.D.	SHAEC1109428201	2011/06/27	HDPE	上海 SGS		
5	6410500526	Foam	EVA	N.D.	17	N.D.	N.D.	N.D.	N.D.									CANEC1103057901	2011/08/11	EVA	广州 SGS	
6	2051500807	PCB	PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.					SHAEC1200879510	2014/02/12	板材	SGS				
			RS-2000 BGL	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.					135	256	N.D.	N.D.	RSH03G002208001C	2014/04/24	防焊油墨	CTI
			2M-400W F	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.					148	124	N.D.	N.D.	CE/2014/80454	2014/08/12	文字油墨	SGS
			OSP F-005	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.									CANEC1404310001	2014/04/08	OSP 药水	CTI	

Product Number: 3101504965

Product Name: Antenna

TP-LINK®

V. Antenna – S Parameter Test Data



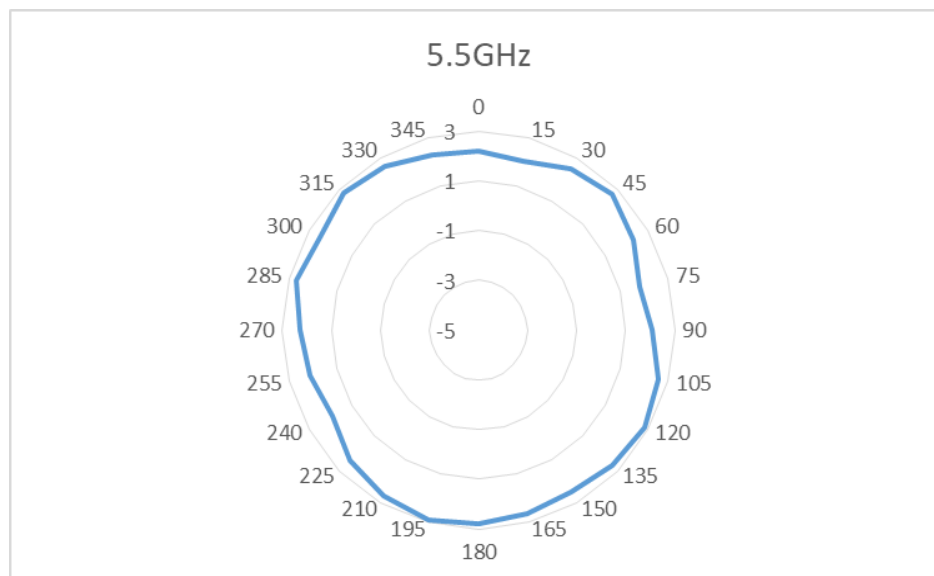
VI. Antenna – Radiation Pattern Test Data

Testing Equipment Specification	
Microwave Chamber	ETS
Testing Equipment	Agilent 5071B

PeakGain:

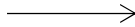
Fre(MHz)	5150	5200	5250	5300	5350	5400	5450	5500
Gain(dBi)	2.81	3.00	2.42	2.35	2.43	2.47	2.45	2.83
Fre(MHz)	5550	5600	5650	5700	5750	5800	5850	
Gain(dBi)	2.58	2.69	2.75	2.89	2.84	2.73	2.96	

Theta=90°

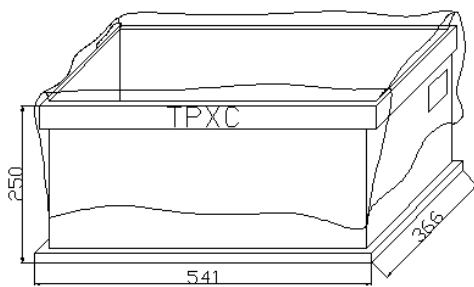


VII. Packing Drawing

i . Put ANT into Plastic Tray (400PCS/BOX) (仅作装箱说明)



ii. Packing



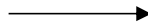
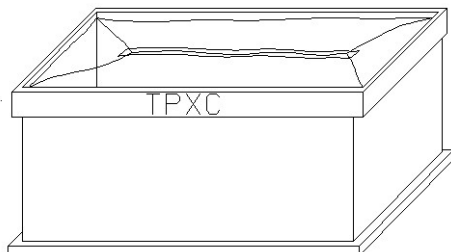
Label



MO:		P/N:		
Specification:				
Quantity:	(PCS)	G.W:	(Kg)	
Date:				
Manufacturer:	Cable manufacturing department			

4Tray, 400PCS/Box

iii.Sealing





Antenna Specification



Product Number: 3101504966

Product Name: Antenna

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<http://www.tp-link.com>

Product Number: 3101504966

Product Name: Antenna

TP-LINK®

Specification For Approval

Date: _____

File No. : _____

Version: 1.0

Customer: _____ / _____

Customer P/N : _____ / _____

TP-LINK P/N: 3101504966

Description: Antenna|5.15-5.85GHz|3.0dBi|LP|Omni|2W|Weld|270mm|D1.37mm| 羽 翼
-277|TP-LINK|X2050-RW270REV1.0|黑色/ABS-HB/纹面+logo 光面|否|黑
色线/3101504182 改线长改焊线/自制件]

TP-LINK Checked By:
Customer Approved By:

TP-LINK®

TP-LINK TECHNOLOGIES CO., LTD.

South Buiding, No.5 Keyuan Road,
Central Zone, Science&Technology Park,
Nanshan, Shenzhen, P.R.China

TEL: + 86 755 26612350

+ 86 755 26504400

[http:// www.tp-link.com](http://www.tp-link.com)

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I. Specification

Sample Photo**A. Electrical Characteristics**

Frequency	5150~5850MHz
Impedance	50 Ohm
S.W.R.	≤ 2.0
Antenna Type	Dipole
Antenna Gain	3.0dBi
Max Input Power	2 W
Polarization	Linear
Radiation pattern	Omni-Directional

B. Material & Mechanical Characteristics

Material of Radiator	Cu
Material of Plastic	Body: ABS-HB Holder: PC、ABS
Cable Type	O.D. 1.37mm (black)
Connector Type	Weld
Connector Pull Test	3Kg

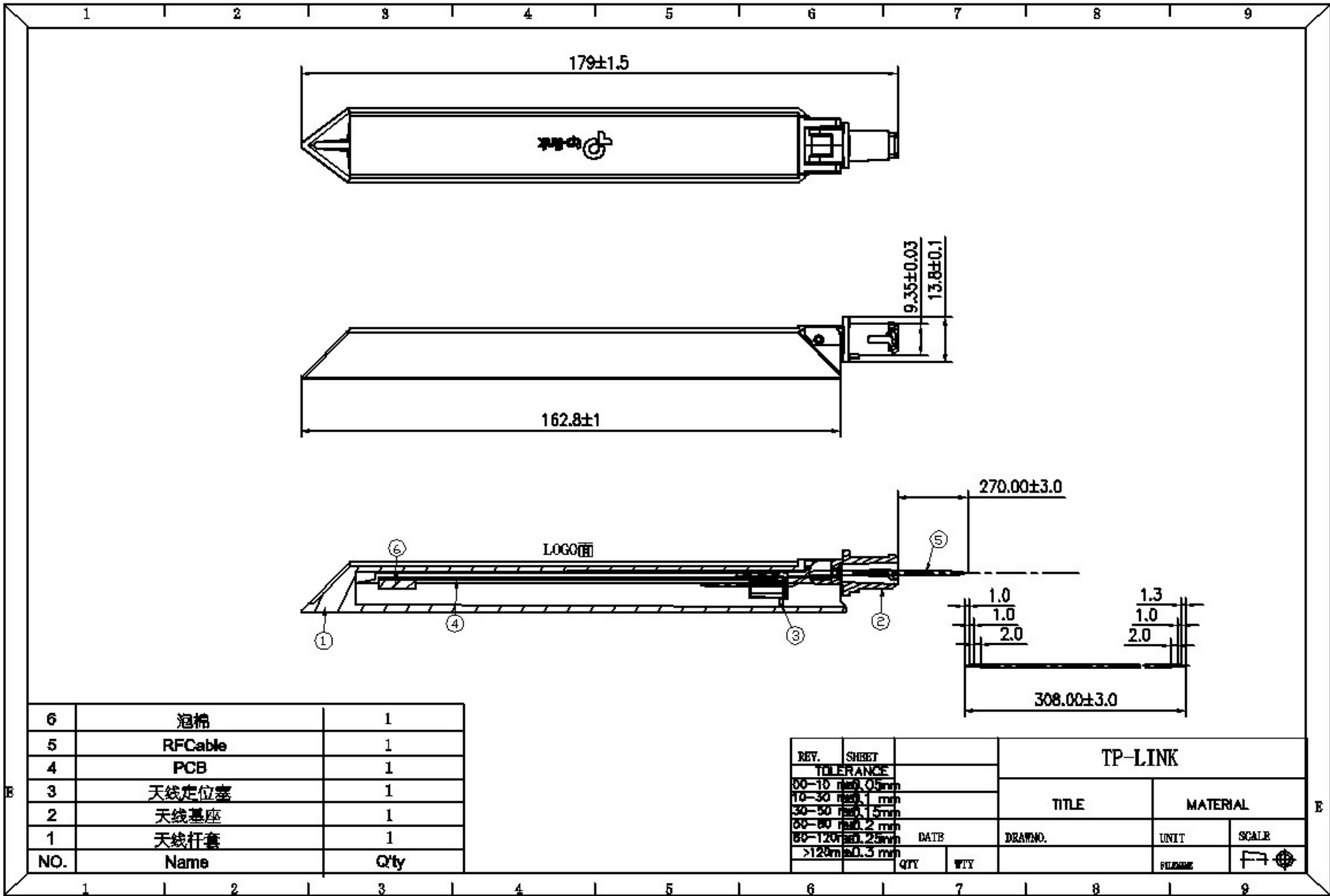
C. Environmental

Operation Temperature	- 40℃ ~ + 60℃
Storage Temperature	- 40℃ ~ + 60℃

II. Characteristics and Reliability Test

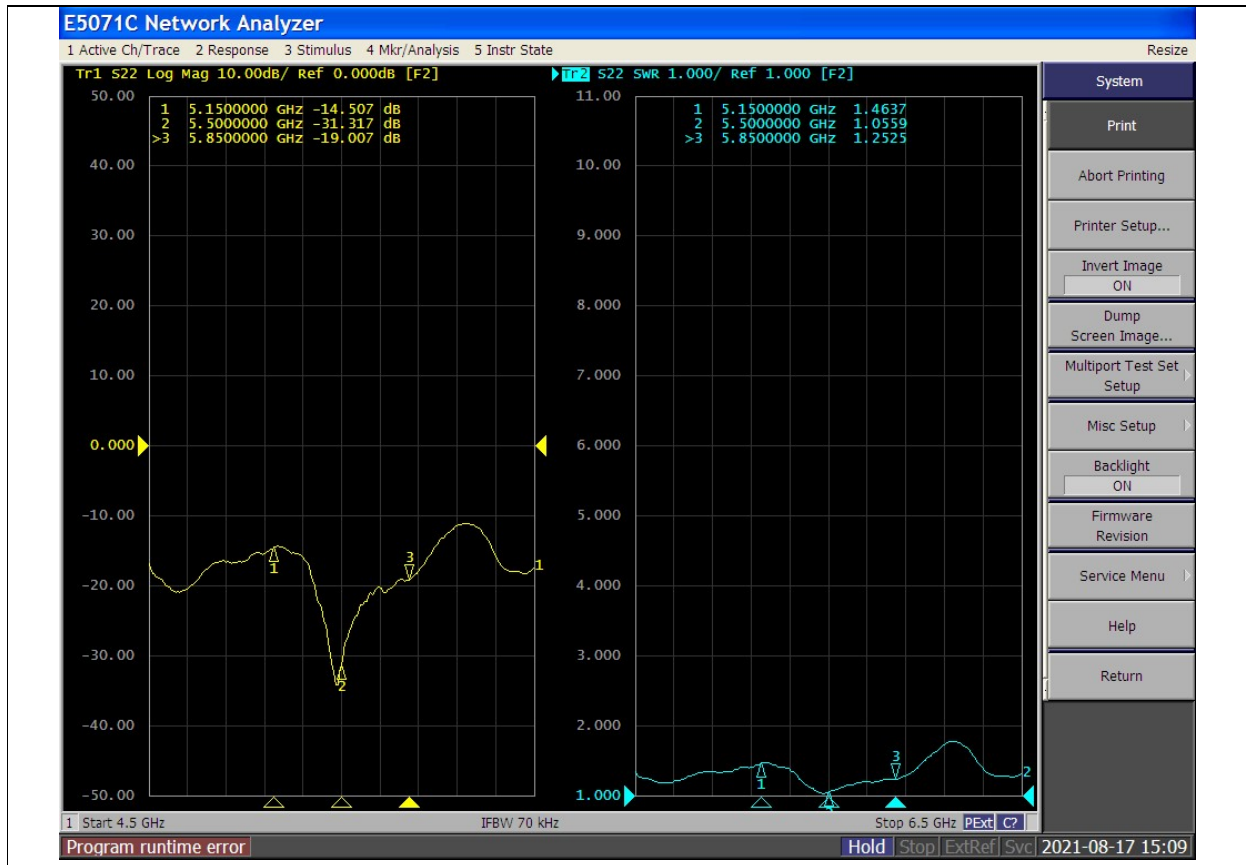
Test Items		Test Condition and Procedure	Requirements
C1	S.W.R.	Set DUT on Network Analyzer; make individual calibration to test	Directive DUT specification
C2	Antenna Gain	Set DUT on Antenna Chamber; make individual calibration to test	Directive DUT specification
M1	Vibration	MIL-STD-202G, 201 A Amplitude: 0.03 inch (0.76mm); Freq: 10 to 55 Hz 3 directions; 2 hours for each direction	1. No Visual Damage 2. Frequency Tol. ≤ 5%
M2	Random Drop	Height: 1.5 Meter; 3 directions; 1 time for each direction	1. No parts separated 2. Frequency Tol. ≤ 5%
M3	Drop Test	Combine DUT with router; Height: 0.6 Meter; 1 direction; 3 times for the direction	1. No parts separated 2. Frequency Tol. ≤ 5%
M4	Solderability	MIL-STD-202G, 210F, cond. A Solder iron: 350±10 °C; Duration: 5 seconds	1. Mounted on PCB 2. No Visual Damage
M5	Terminal- Pull Test	MIL-STD-202G, 211A, cond. A Holding with individual specification; force applied to axis of terminal	1. Directive DUT specification 2. Frequency Tol. ≤ 5%
M6	Bend Test	3 angles: 0° ,45° ,90° .100 times for each angle	1. No Visual Damage 2. No Obvious shake
M7	Dimension	Inspection of dimension, color, material, package, surface process	Directive DUT specification
E1	Salt Spray	SE-GS-90T Temp: 35°C; RH: 93%±3%; NaCl solution proportion: 1.026 ~ 1.041; Time: 12 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%
E2	Thermal Shock	1 Cycle: -40°C (30 minutes) to +70°C (30 minutes) Cycles: 24	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%
E3	Life (HighTemp.)	MIL-STD-202G, 108A, cond. A Temp: 70°C; Time: 8 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5%

III. Mechanical Drawing and Material Description



IV. RoHS Test Report

N O .	Product Model	Constit uents	Material	Test Result for RoHS-corresponding Substance						PFOS	Halogen				Series No.	Date	Title	Test Agent						
				Cd	Pb	Hg	Cr(VI)	PBB s	PBD Es	PFOS	F	Cl	Br	I										
1	3120500194	Cable	FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		N.D	N.D	N.D	N.D	RLSHD000593720060	2011/04/25	Jacket	上海 SGS						
			FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D		N.D	N.D	N.D	Insulation			上海 SGS							
			Wire-TC	N.D.	N.D.	N.D.	N.D.							Outner conductor			CTI							
			Wire-TC	N.D.	N.D.	N.D.	N.D.							Inner conductor			CTI							
2	6142504929	杆套	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.							SHAEC1200148411	2012/01/09	上海 ABS	上海 SGS					
3	6142504930	基座	PC		N.D.		N.D.									N.D.	N.D.	GZ1106084755	2011/07/05	PC S-2000VR	广州 SGS			
4	6142504931	定位塞	HDPE		N.D.		N.D.									N.D.	N.D.	SHAEC1109428201	2011/06/27	HDPE	上海 SGS			
5	6410500526	Foam	EVA	N.D.	17	N.D.	N.D.	N.D.	N.D.													CANEC1103057901	2011/08/11	EVA
6	2051500807	PCB	PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	SHAEC1200879510	2014/02/12	板材	SGS											
			RS-2000 BGL	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		135	256	N.D.	N.D.	RSH03G002208001C							2014/04/24	防焊油墨	CTI
			2M-400W F	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		148	124	N.D.	N.D.	CE/2014/80454							2014/08/12	文字油墨	SGS
				OSP F-005	N.D.	N.D.	N.D.	N.D.	N.D.		N.D.					CANEC1404310001	2014/04/08	OSP 药水	CTI					

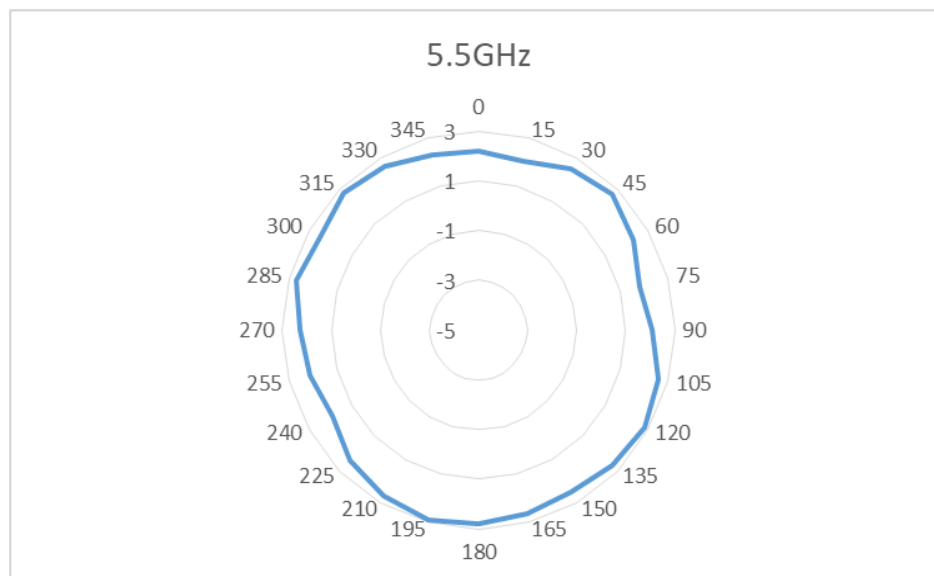
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Testing Equipment	Agilent 5071B

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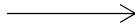
Fre(MHz)	5150	5200	5250	5300	5350	5400	5450	5500
Gain(dBi)	2.81	3.00	2.42	2.35	2.43	2.47	2.45	2.83
Fre(MHz)	5550	5600	5650	5700	5750	5800	5850	
Gain(dBi)	2.58	2.69	2.75	2.89	2.84	2.73	2.96	

Theta=90°

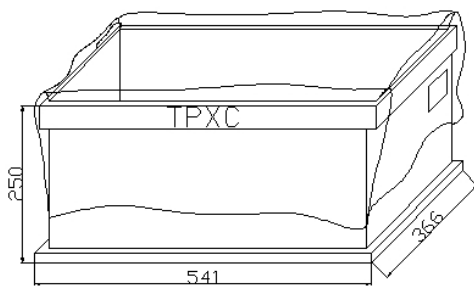


VII. Packing Drawing

i . Put ANT into Plastic Tray (400PCS/BOX) (仅作装箱说明)



ii. Packing



Label



MO:		P/N:		
Specification:				
Quantity:	(PCS)	G.W:	(Kg)	
Date:				
Manufacturer:	Cable manufacturing department			

4Tray, 400PCS/Box

iii.Sealing

