

# Specification For Approval

## 规 格 承 认 书

日期 Date : 2023/11/07

编号 File No. : XBL23110701

版次 Version : 1.0

### 客 户

Customer:  HXD

### 客 户 料 号

Customer P/N:  360500031

### 信博联料号

Sinbolin P/N: JSP-125467503-18BN

### 品 名

Description : Bluetooth antenna

信博联核对

Sinbolin Checked By:



客户核对

Customer Approved By:

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# Specification for Antenna

## 天线规格书

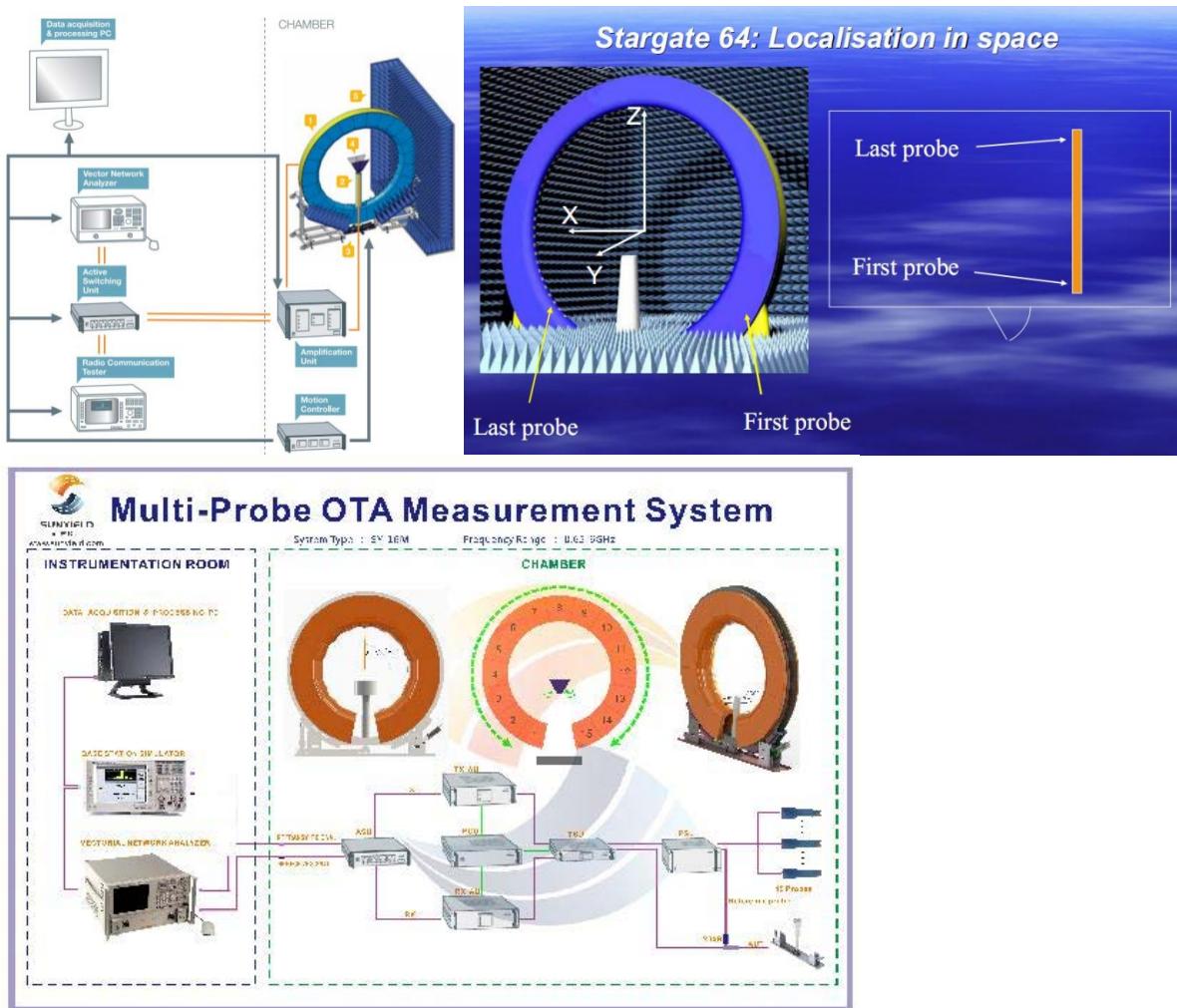
### 一、Product pictures 产品图片



### 二、Test parameters 产品测试参数

频率 (Frequency)	2400 ~ 2500 MHz
电压驻波比 (V.S.W.R)	<= 2.0 @ 2400 ~ 2500 MHz
天线增益 (Antenna Gain)	1.5 ~ 2.5dBi @ 2400 ~ 2500 MHz
辐射效率 (Radiation Efficiency)	50 ~ 60 % @ 2400 ~ 2500 MHz
阻抗 (Impedance)	50 Ohm
极化方式 (Polarization)	线性 (Linear)
天线类型 (Antenna Type)	PIFA
B. 材质及机械特性 (Material & Mechanical Characteristics)	
辐射材质 (Material of Radiator)	不锈钢(304)
C. 环境因素 (Environmental)	
工作温度 (Operation Temperature)	- 40 °C ~ + 75 °C
储存温度 (Storage Temperature)	- 40 °C ~ + 85 °C

### 三、Antenna test environment 天线测试环境



test macro 测试系统:	SY-16M Antenna measurement system 天线测量系统
testing environment 测试环境:	temperature 温度 $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , humidity 湿度 $50\% \pm 15\%$
testing equipment 测试设备:	Agilent 5071C Agilent 8960 Comprehensive measuring instrument 综测仪 Agilent CMW500 4G Comprehensive measuring instrument 综测仪

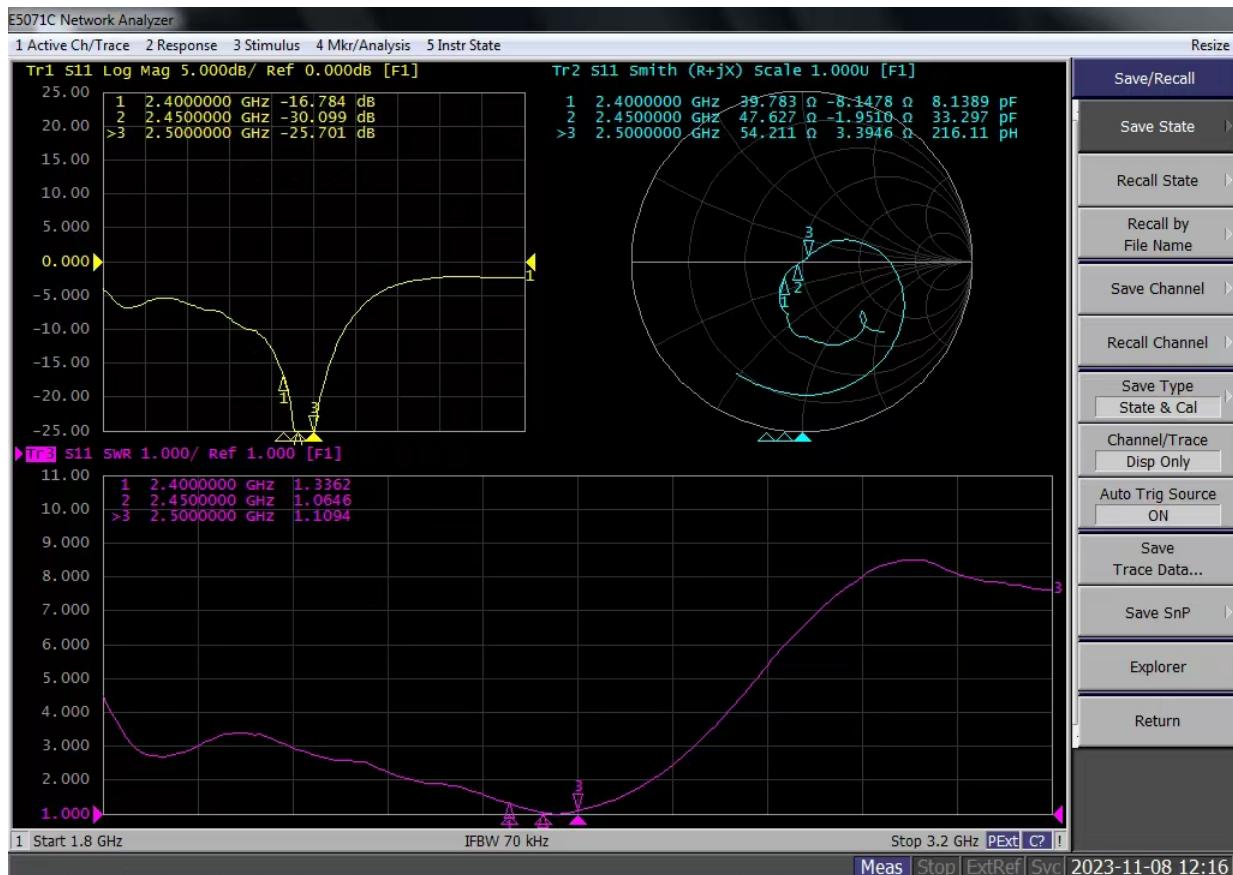
## 2. Characteristics and Reliability Test(可靠性测试)

Test Items 測試項目		Test Condition and Procedure 測試方法	Requirements 要求	Result 結果
C1	V.S.W.R. 電壓駐波比	Set DUT on Network Analyzer; make individual calibration to test 設置網路分析儀參數進行測試	Directive DUT specification 符合待測物規範	PASS
M1	Vibration 震動	GB / T2423.48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction 振幅 1.5mm; 頻率 20~80~20Hz; 3 個方向各 2H	1. No Visual Damage 2. Frequency Tol.≤5% 無明顯外觀不良; 頻率偏移≤5%	PASS
M2	Random Drop 跌落	GB / T2423.8-1995 Single: Height: 1.0 Meter; 3 directions; 1 time for each direction 單支天線, 高 1m; 3 個方向各 1 次	1. No parts separated, fracture 2. Frequency Tol.≤5% 產品無脫落、斷裂; 頻率偏移≤5%	PASS
M4	Pull Test 拉力	Holding with individual specification; force applied to axis of terminal .單獨定義產品端子拉力	1. Directive DUT specification 2. Frequency Tol.≤5% 符合待測物規範; 頻率偏移≤5%	PASS
M6	Dimension 尺寸	Inspection of dimension, color, material, package, surface process. 檢查尺寸, 颜色, 材料, 包裝, 表面處理	Directive DUT specification 符合待測物規範	PASS
E2	Salt Spray 鹽霧	GB / T 2423.17-2008 Temp: 35°C; RH: ≥ 95%; NaCl solution: ≥ 5%; Time: 24H 溫度 35°C; 濕度≥95%; 鹽水濃度≥5%; 測試 24H	1. No Visual Damage 2. Frequency Tol.≤5% 無明顯外觀不良; 頻率偏移≤5%	PASS
E3	Temperature and Humidity Chamber 恒溫恒濕	GB / T 2423.3-2006 Temp: 80°C / 12 H; -40°C / 12H RH: ≥ 90%; Time: 24H 溫度 80°C 測試 12H 轉 -40°C 測試 12H; 濕度≥ 90%; 時間 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5% 恢復 2H 后, 無明顯外觀不良; 頻率偏移≤5%	PASS
E4	Thermal Shock 冷熱衝擊	GB / T 2423.22 - 2008 - 40°C (30 minutes) to + 80°C (30 minutes); Cycles: 24 - 40°C 測試 30 分轉 80°C 測試 30 分為一個週期; 共 24 週期	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5% 恢復 2H 后, 無明顯外觀不良; 頻率偏移≤5%	PASS
E5	Aging test 老化	GB /T 2423.2 - 2008 Temp: 80°C; Time: 24 hours 溫度 80°C, 測試 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

## 四、Antenna Passive Parameters 天线无源参数:

### 1、VSWR 驻波比图:

Antenna-BT



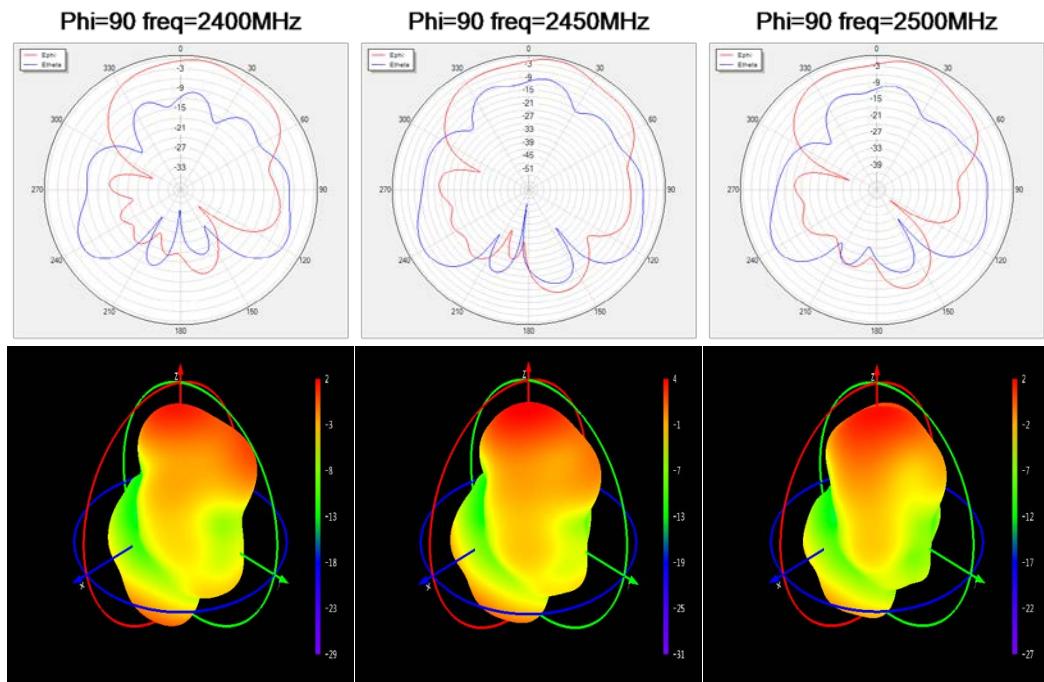
V.S.W.R

Freq/GHz	2.4	2.45	2.5
VSWR	1.3	1.0	1.1

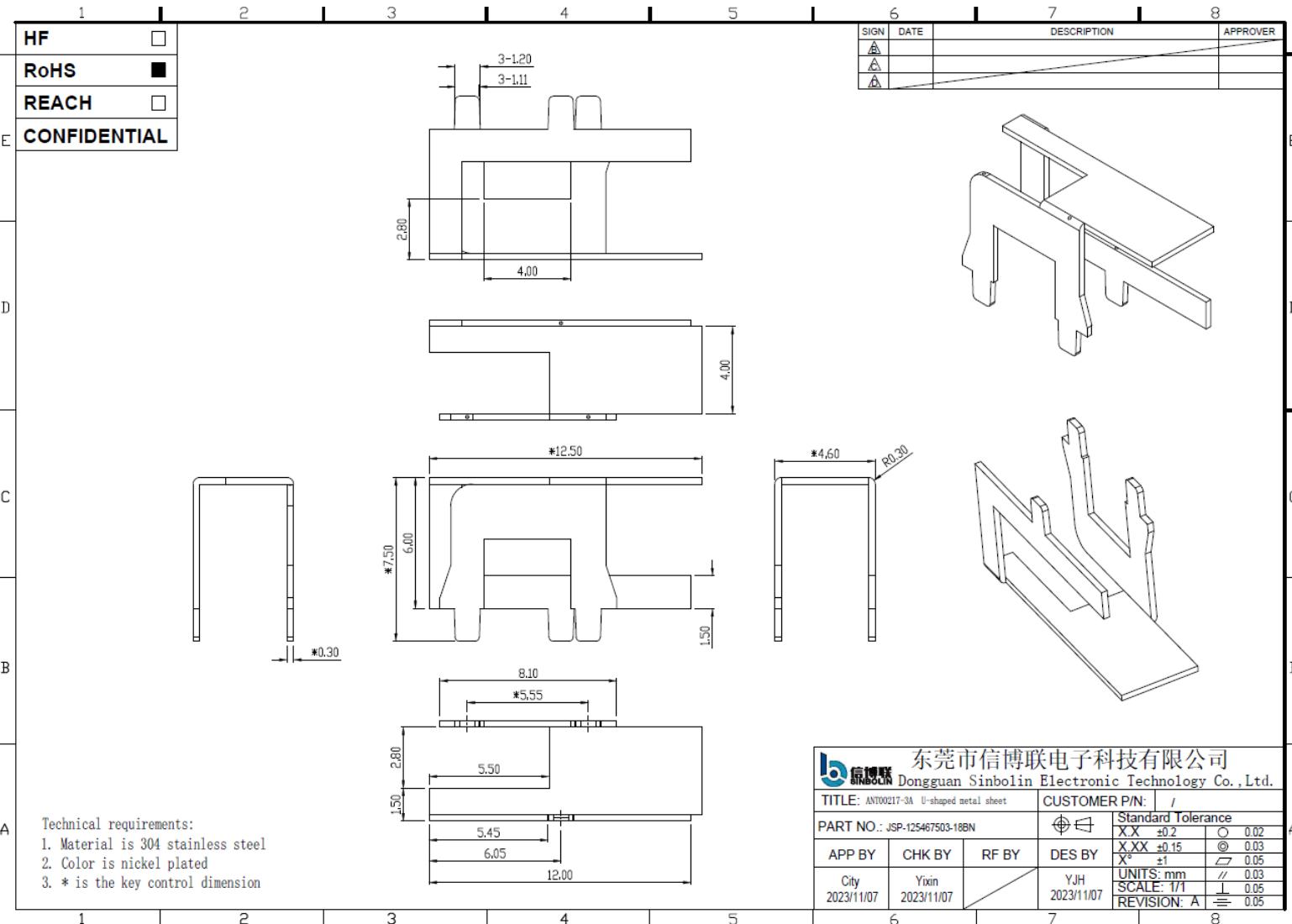
### Antenna pattern-BT

Gain&Efficiency&PhaseCenter 增益、效率和相位中心								
frequency 频率 (MHz)	gain 增 益(dBi)	efficiency 效率(%)	frequency 频率 (MHz)	gain 增益 (dBi)	efficiency 效率(%)	frequency 频率 (MHz)	gain 增益 (dBi)	efficiency 效率(%)
2400	2.68	50.25						
2410	2.46	51.65						
2420	2.27	51.86						
2430	2.27	50.47						
2440	2.18	50.52						
2450	2.15	51						
2460	2.17	52.6						
2470	2.18	54.41						
2480	2.01	55.06						
2490	1.99	56.62						
2500	1.87	56.96						

4、2D/3D directional diagram 2D/3D方向图:



## 六、Drawing产品结构图



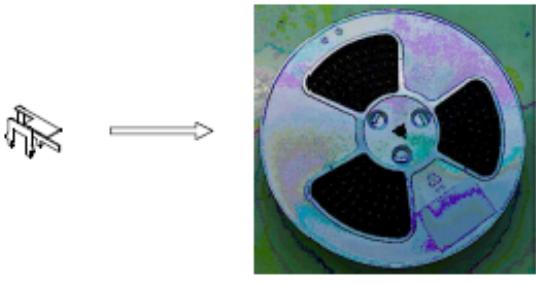
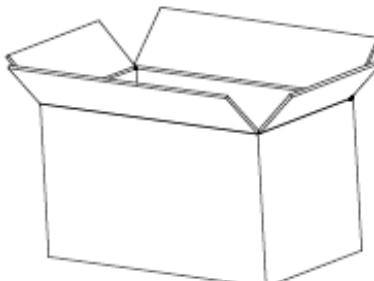
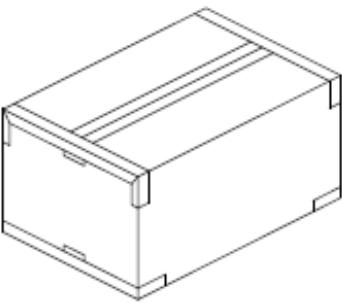
十、Packing instructions 包装说明：

## 產品包裝規範

### PACKING CRITERION

Date: 2023/11/07

Page: 1 of 1

Part Number : JSP-125467503-18BN	Revision : A
Name: ANT00217-3A U-shaped metal sheet	Customer :
<p>一. A single pack into the carrier tape reel</p>	
 <p>700PCS per tray</p>	
<p>二. PACKING</p>  <p>8400PCS/CARTON Depending on customer orders</p>	
<p>三. SEALING</p>  <p>Carton Label: SIDE FRONT Green Label</p>	

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Client Name: ZHEJIANG YONGJIN METAL TECHNOLOGY CO.,LTD

Client Address: 999 Gengtoufan, Lingdong Township, Lanxi City, Jinhua City, Zhejiang Province

Sample Name: Stainless steel cold rolled steel strip

Material and Mark: SUS304

Client Ref. Information: NJIN2304000822ML01

Main ingredients: Fe, Cr

The above sample(s) and information were provided by the client.

SGS Job No.: SUZPL2304001209

Sample Receiving Date: Apr 20, 2023

Testing Period: Apr 20, 2023 ~ May 12, 2023

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Signed for and behalf of  
SGS-CSTC Standards Technical Services (Changzhou) Co., Ltd



Joy Huan  
Approved Signatory

scan to see the report



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**Test Result(s):****Test Part Description:**

SN ID	Sample No.	SGS Sample ID	Description
SN1	001	CZX23-0006290-0001.C001	Silver metal

**Remarks:**

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) “-” = Not Regulated

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-6:2015 and IEC62321-8:2017, analysis was performed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	001
Cadmium(Cd)	100	mg/kg	2	ND
Lead(Pb)	1000	mg/kg	2	ND
Mercury(Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm <sup>2</sup>	0.10	ND
Polybromobiphenyl (PBBs)	1000	mg/kg	-	ND
Monobromobiphenyl (MonoBB)	-	mg/kg	5	ND
Dibromobiphenyl (DiBB)	-	mg/kg	5	ND
Tribromobiphenyl (TriBB)	-	mg/kg	5	ND
Tetrabromobiphenyl (TetraBB)	-	mg/kg	5	ND
Pentabromobiphenyl (PentaBB)	-	mg/kg	5	ND
Hexabromobiphenyl (HexaBB)	-	mg/kg	5	ND
Heptabromobiphenyl (HeptaBB)	-	mg/kg	5	ND
Octabromobiphenyl (OctaBB)	-	mg/kg	5	ND
Nonabromobiphenyl (NonaBB)	-	mg/kg	5	ND
Decabromobiphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDEs)	1000	mg/kg	-	ND
Monobromodiphenylether (MonoBDE)	-	mg/kg	5	ND
Dibromodiphenylether (DiBDE)	-	mg/kg	5	ND
Tribromodiphenylether (TriBDE)	-	mg/kg	5	ND
Tetrabromodiphenylether (TetraBDE)	-	mg/kg	5	ND
Pentabromodiphenylether (PentaBDE)	-	mg/kg	5	ND
Hexabromodiphenylether (HexaBDE)	-	mg/kg	5	ND
Heptabromodiphenylether (HeptaBDE)	-	mg/kg	5	ND
Octabromodiphenylether (OctaBDE)	-	mg/kg	5	ND
Nonabromodiphenylether (NonaBDE)	-	mg/kg	5	ND
Decabromodiphenylether (DecaBDE)	-	mg/kg	5	ND
Dibutyl Phthalate(DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate(BBP)	1000	mg/kg	50	ND
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalate(DIBP)	1000	mg/kg	50	ND

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### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) ▼ = a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm<sup>2</sup>.  
The sample coating is considered to contain Cr(VI)  
b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm<sup>2</sup>).  
The coating is considered a non-Cr(VI) based coating  
c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive -  
unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

### Element(s)

Test Method: With reference to US EPA 3050B:1996, analysis was performed by ICP-OES/AAS.

Test Item(s)	Unit(s)	MDL	001
Beryllium(Be)	mg/kg	5	ND
Antimony(Sb)	mg/kg	10	ND

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.

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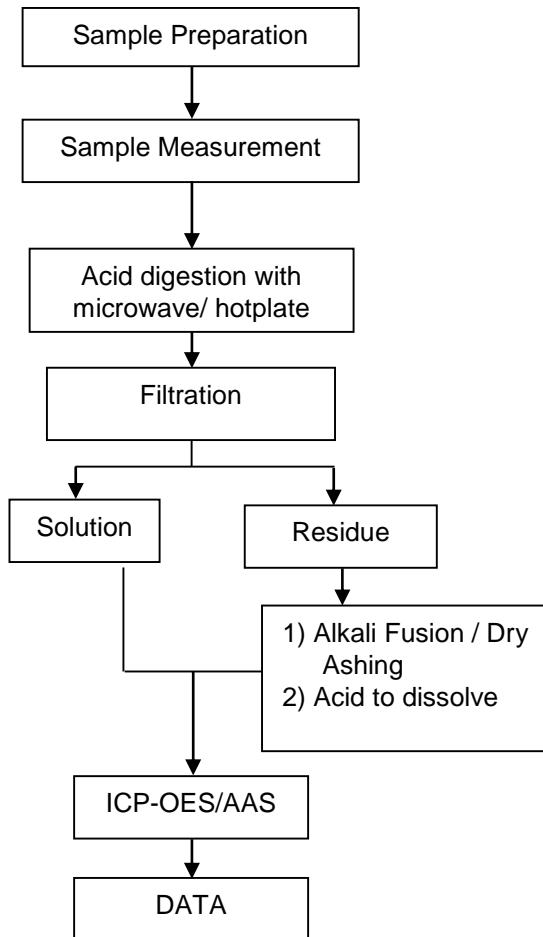
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#### Elements Testing Flow Chart

These samples were dissolved totally by pre-conditioning method according to below flow chart.



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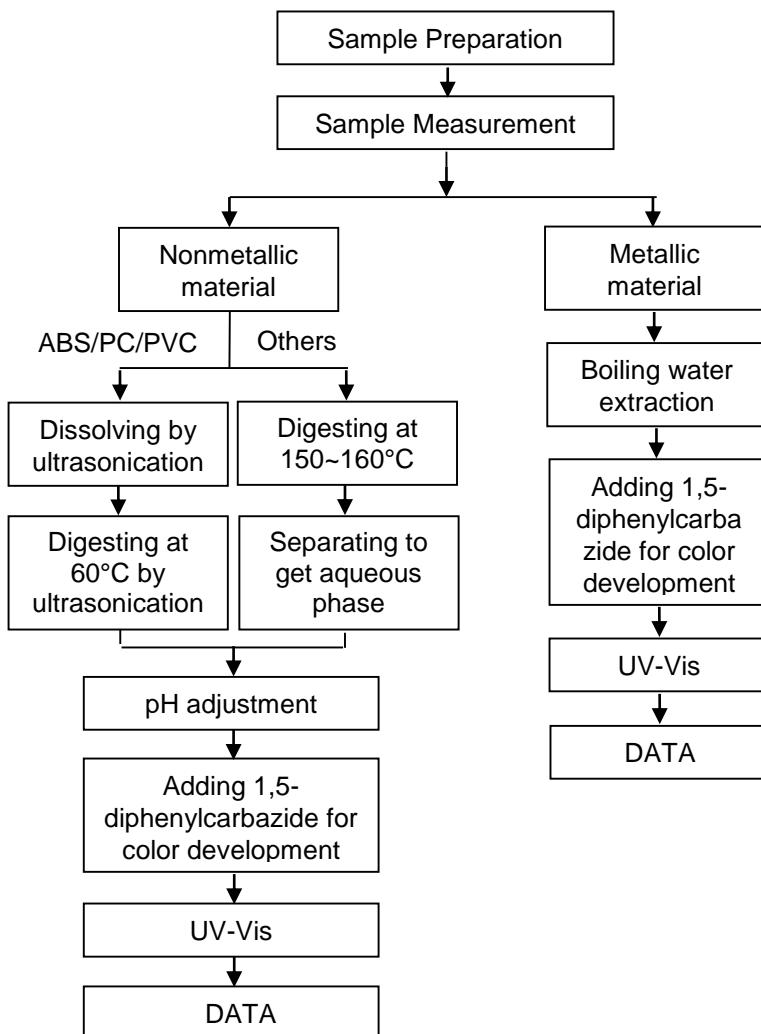
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## ATTACHMENTS

## Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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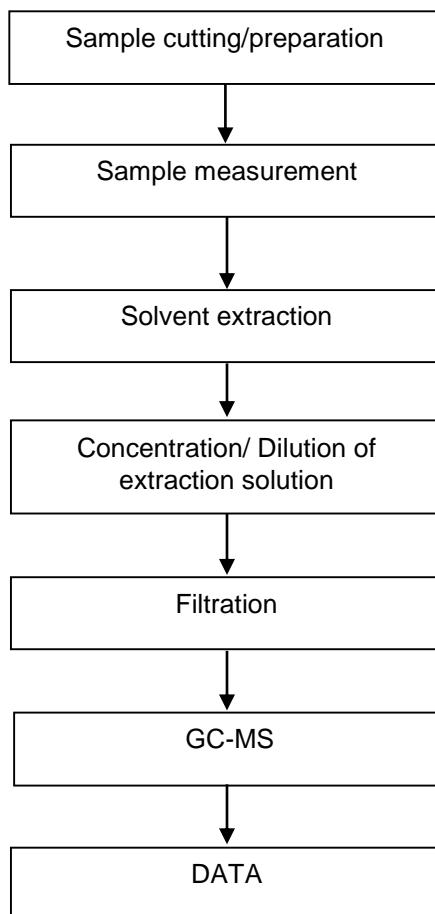
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#### PBBs/PBDEs Testing Flow Chart



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## Test Report

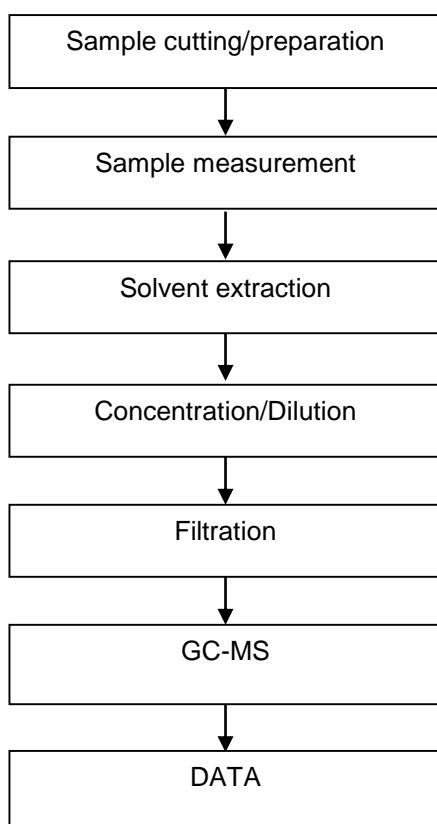
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#### Phthalates Testing Flow Chart



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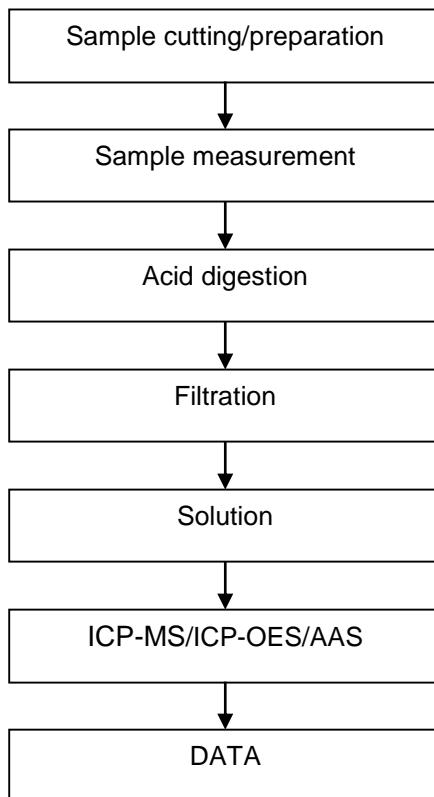
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### Elements Testing Flow Chart



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# 東莞市信博聯電子科技有限公司

Dongguan Xinbolian Electronic Technology Co., Ltd

鹽霧試驗報告(Salt spray test report)

試驗日期(Test date): 2024.02.21	試驗編號(Test number): 202402Y040		
產品名稱: 金屬片 (Product name: metal sheet) 物料編號 (Material number): JSP-125467503-18BN /360500031	供應商(supplier): / 數量(quantity): 5PCS		
試驗日期: 02月21日08時至02月22日08時 共計24小時 噴霧時間: 實驗若有中斷,其原因為: 無中斷 (Test date: 08:00 on February 21st to 08:00 on February 22nd. Total spraying time of 24 hours: If the experiment is interrupted, the reason is: No interruption)			
1. NaCl 品質 (Quality)	NACL 含量: 99.5%		
2. 蒸餾水品質 (Distilled water quality)	蒸餾水 (distilled water)		
3. 噴霧採取器 (spray collector)	1.0-2.0ml/80cm <sup>2</sup> /h		
3.1 噴霧量 (Spray volume)			
3.2 收集溶液在室溫的比重或濃度. Collect the specific gravity or concentration of a solution at room temperature.	NaCl 5.0% (現配) (Ready made)		
3.3 PH	6.9		
4. 試樣 (sample)			
4.1 種類 (type)	表面區域 (surface area)		
4.2 形狀 (shape)			
4.3 尺度 (scale)			
4.4 數量 (quantity)	5PCS		
5. 壓縮空氣壓力 (compressed air pressure).	1kgf/cm <sup>2</sup>	8. 壓力桶溫度. (Pressure barrel temperature.)	47±1°C
6. 實驗室相對濕度 Laboratory relative humidity	>85%	9. 鹽水桶溫度. (Salt water tank temperature.)	35±1°C
7. 實驗室溫度 (laboratory temperature)	35±1°C	10. 噴霧收集量. (Spray collection volume)	42ml
11. 實驗說明: 取5PCS產品作鹽霧試驗.			
12. 實驗後現象(Post-experimental phenomena): 試驗結果在光學顯微鏡下觀察之結果. (The test results are observed under an optical microscope.)			
<p>1. 經鹽霧試驗之表面區域外觀未有明顯生銹, 發綠, 氧化等現象. (After the salt spray test, the surface area showed no obvious signs of rust, greenish oxidation, etc.)</p> <p>2. 取樣之產品經鹽霧實驗後未有見明顯差異.(附相關樣品). There was no obvious difference in the sampled products after the salt spray test. (Relevant samples are attached).</p>			
			
判定: 1. 依標準圖判定: 2. 依其它方法判定:取樣之產品鍍層鹽霧試驗24H後,產品表面區域OK.			
Judgment: 1. Judgment based on the standard drawing: 2. Judgment based on other methods: After 24 hours of salt spray test on the sampled product coating, the surface area of the product is OK.			
審核 (Review): 程明聯 (Cheng Minglian) 確認 (Confirm): 黃建华 (Huang Jianhua) 試驗員 (tester): 黃建华 (Huang Jianhua)			