

# 零件規格承認書

規格書(  1份  4份  5份  \_\_\_\_份)  
 附樣品(  1份  4份  5份  \_\_\_\_份)

料號: 27-350-720051

品名規格: WiFi主

製造商: 一佳電子

供應商: 一佳電子

供應商規格料號 YJW01.139.030.306A

製作日期: 2021.04.06  備註: \_\_\_\_\_

發行單位		會簽單位
Initiator:		<input type="checkbox"/> EMI/RF/ANT
Check:		<input type="checkbox"/> QA
Approve:		<input type="checkbox"/> ME
		<input type="checkbox"/> EE
		<input type="checkbox"/> PE
		<input type="checkbox"/> Other(keypart)
分發單位		發佈日期
<input type="checkbox"/> QC	<input type="checkbox"/> 發行單位	
<input type="checkbox"/> 廠商	<input type="checkbox"/> EE	
<input type="checkbox"/> DCC	<input type="checkbox"/> ME	
<input type="checkbox"/> Other(Keypart)	<input type="checkbox"/> EMI/RF/ANT	



# 承认书项目表

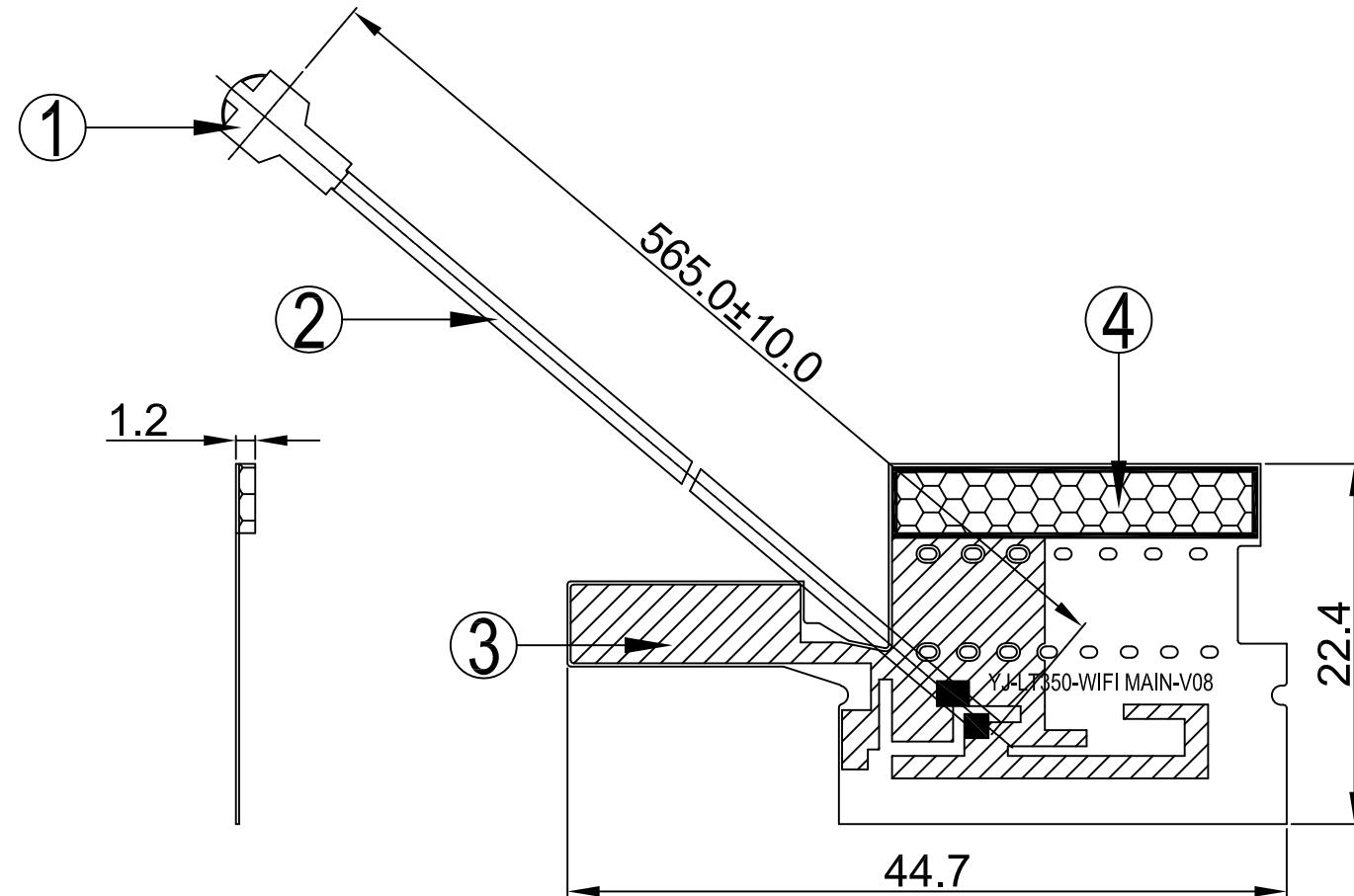
NO .	内 容 (Contents)	页 数 (Number of Page)	页 码 (Page Code)
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12	N/A	N/A	N/A
13	-	-	-

**RoHS**

Compatible

CUSTOMER	
PART NO	

REV.	DESCRIPTION	DATE
△A	首次发行	2021-01-21
△B	更改FPC	2021-03-06



东莞市一佳电子通讯科技有限公司  
Dongguan Yijia Electronics Communication Technology Co.,Ltd. Tel:0769-85535057  
Fax:0769-81664308

NO	PART NAME	DESCRIPTION	Material	Part Number	Q.TY
1	Mini Connector	Au Plated 4L	Cu	TER10001A.P01	1
2	Coaxial Cable	O.D.1.13 Black 低损耗	O.D.1.13	COA10003A.P04	1
3	FPC	44.7*22.4MM	FPC	FPC10XXXA.P01	1
4	EMI Gasket	20.0*4.0*T1.0MM	EMI Gasket	EVA10XXXA.P01	1

APPROVED BY	CHECKED BY	DESIGNED BY	Tolerance
陈国强	鲍伟	黄望春	X.X ±0.50
			X.XX±0.15
			X° ±3°
			REVISION: A



# 天线规格

## Antenna Specification

### Electrical Properties

Frequency	2.4-2.5GHz 5.15-5.85GHz
Impedance	50 Ohm Nominal
V.S.W.R	2.5 Max@2.4-2.5GHz 2.0 Max@5.15-5.85GHz
Gain	2.8dBi@2.4-2.5GHz 2.3dBi@5.15-5.85GHz
Radiation	Omni-directional
Polarization	Linear

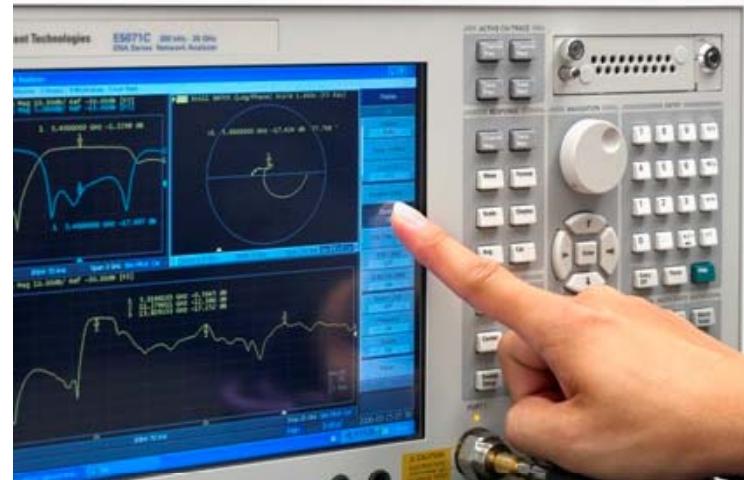
### Physical Properties

Connector	4L-IPEX
Cable Type	O.D.1.13mm低损耗
Cable Length	565mm
Cable Color	Black
Operating Temp.	-40 ~ +85 °C
Storage Temp / Humidity	25±5 °C/ <70%

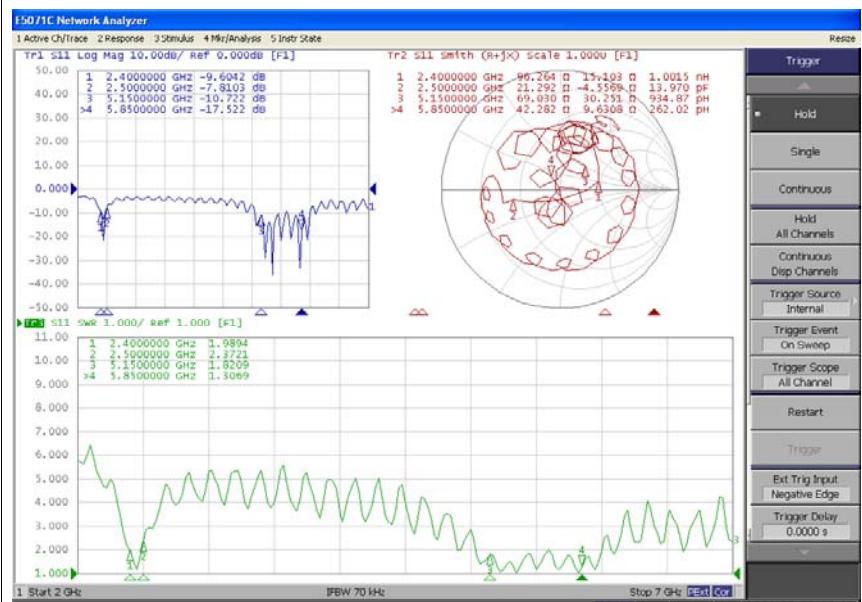


# Antenna Performance Test

*Agilent  
E5071B*



*S  
Parameter  
Test //  
WiFi main  
Antenna*





## Antenna Passive Test





### Passive Test For WiFi main Antenna(2.4G)

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	24.4	-6.1	2.0
2410	26.4	-5.8	2.2
2420	26.4	-5.8	2.1
2430	28.4	-5.5	2.0
2440	28.2	-5.5	2.4
2450	31.3	-5.0	2.6
2460	31.2	-5.1	2.4
2470	31.8	-5.0	2.8
2480	30.0	-5.2	2.5
2490	28.6	-5.4	2.1
2500	24.6	-6.1	2.0

add: 东莞市长安镇沙头社区木鱼路59号元富工业区 Tel:0769-82586086 Fax:0769-82586086



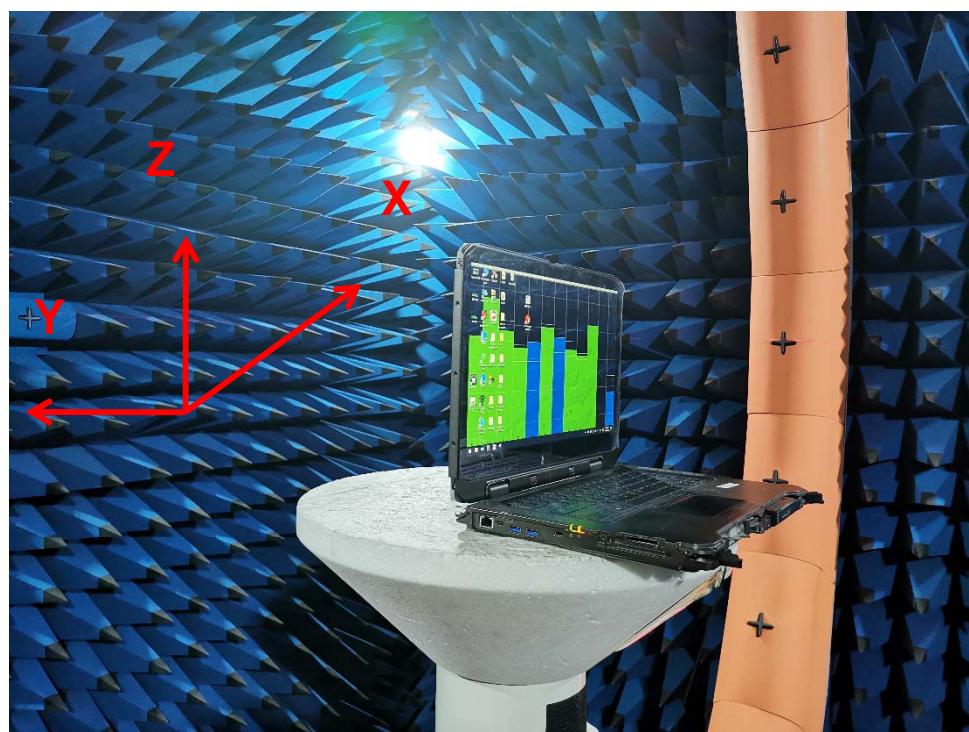
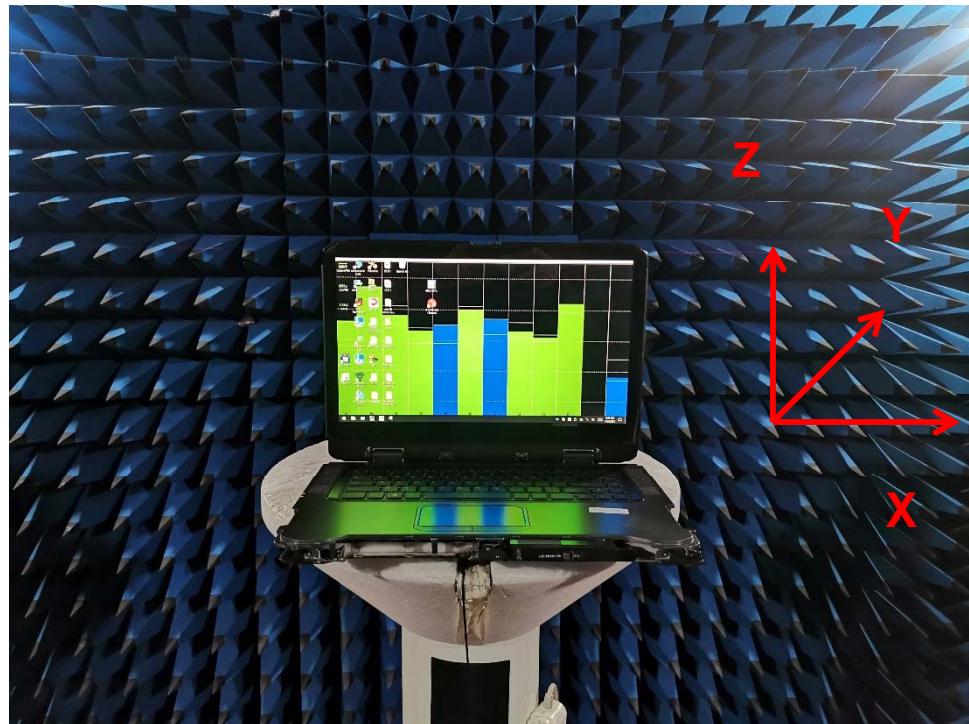
### Passive Test For WiFi main Antenna(5.8G)

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
5150	31.6	-5.0	0.6
5200	31.6	-5.0	1.6
5250	32.7	-4.9	1.8
5300	28.8	-5.4	2.1
5350	27.8	-5.6	1.9
5400	29.1	-5.4	2.3
5450	23.8	-6.2	-0.3
5500	24.9	-6.0	0.3
5550	25.8	-5.9	0.4
5600	23.7	-6.3	0.4
5650	24.6	-6.1	0.9
5700	24.3	-6.1	1.4
5750	21.9	-6.6	1.4
5800	20.6	-6.9	0.9
5850	16.5	-7.8	0.9

add: 东莞市长安镇沙头社区木鱼路59号元富工业区 Tel:0769-82586086 Fax:0769-82586086



## WiFi Antenna Active Test





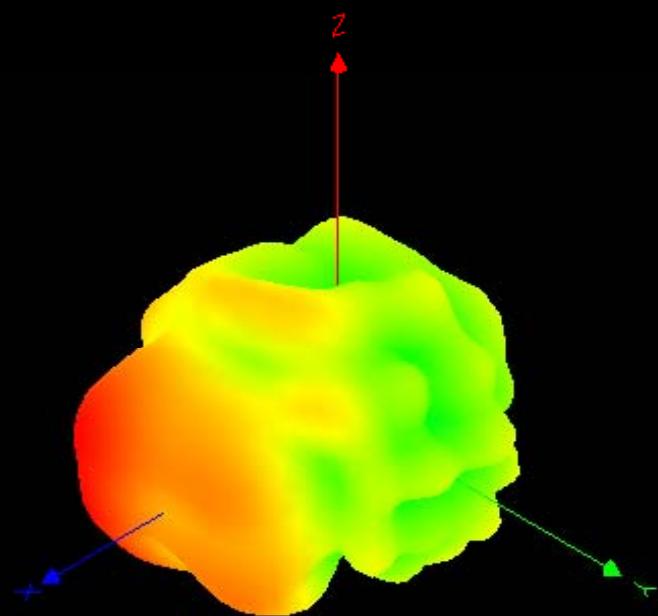
### Active Test For WIFI Antenna

Band	Channel	Data Rate	TRP	EIRP	Data Rate	TIS	EIS
WIFI 2.4G 802.11b	1	11Mbps	10.8	14.6	11Mbps	-82.2	-87.4
	6		11.0	15.0		-83.0	-87.5
	11		10.5	14.7		-82.6	-87.1
WIFI 5G 802.11a	36	6Mbps	10.4	16.2	54Mbps	-70.6	-75.4
	100		8.8	12.7		-68.5	-73.0
	165		9.0	14.9		-69.8	-74.6

add: 东莞市长安镇沙头社区木鱼路59号元富工业区 Tel:0769-82586086 Fax:0769-82586086

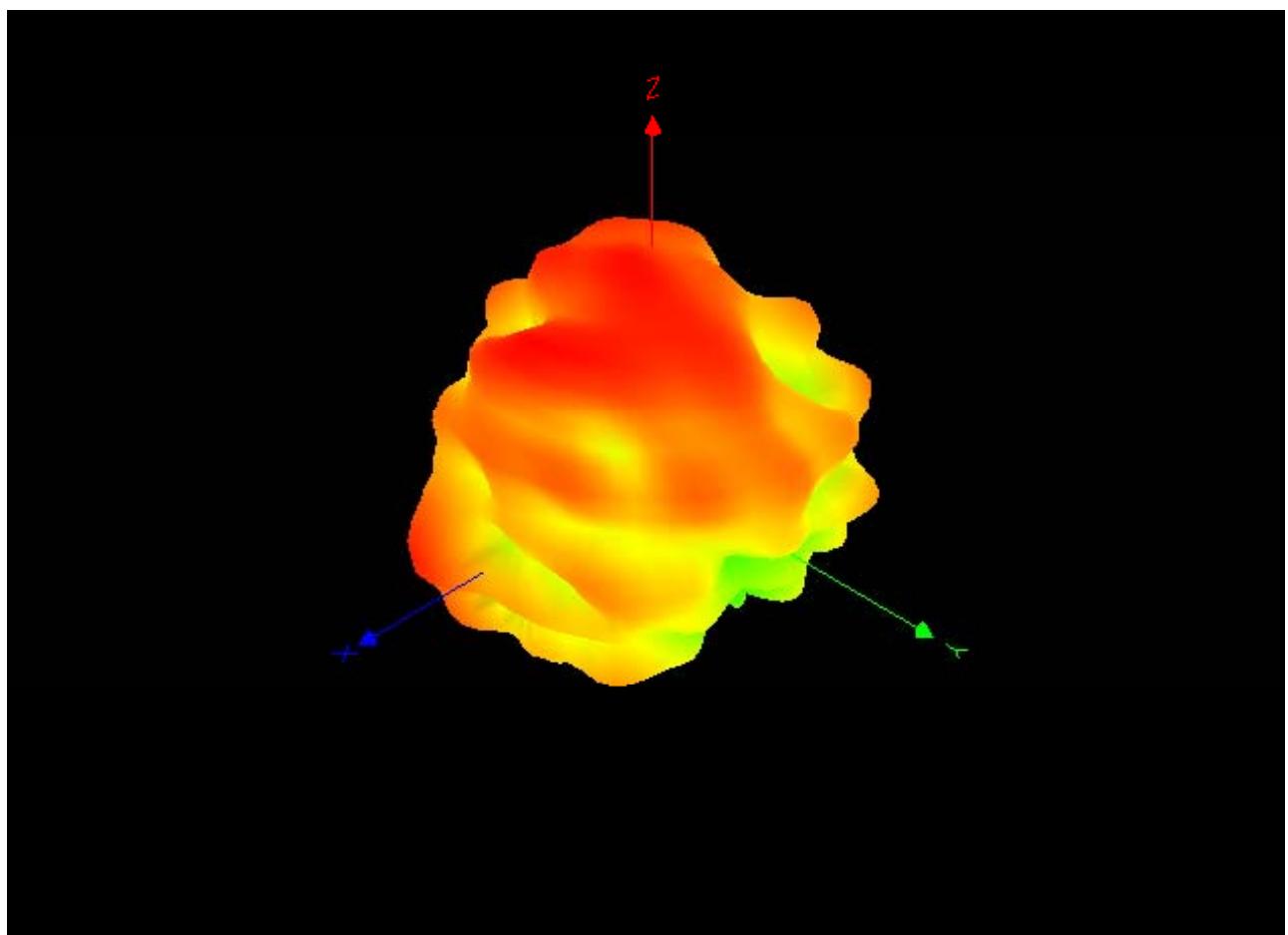


## Radiation Pattern For WiFi main Antenna(2450MHz)





## Radiation Pattern For WiFi main Antenna(5500MHz)





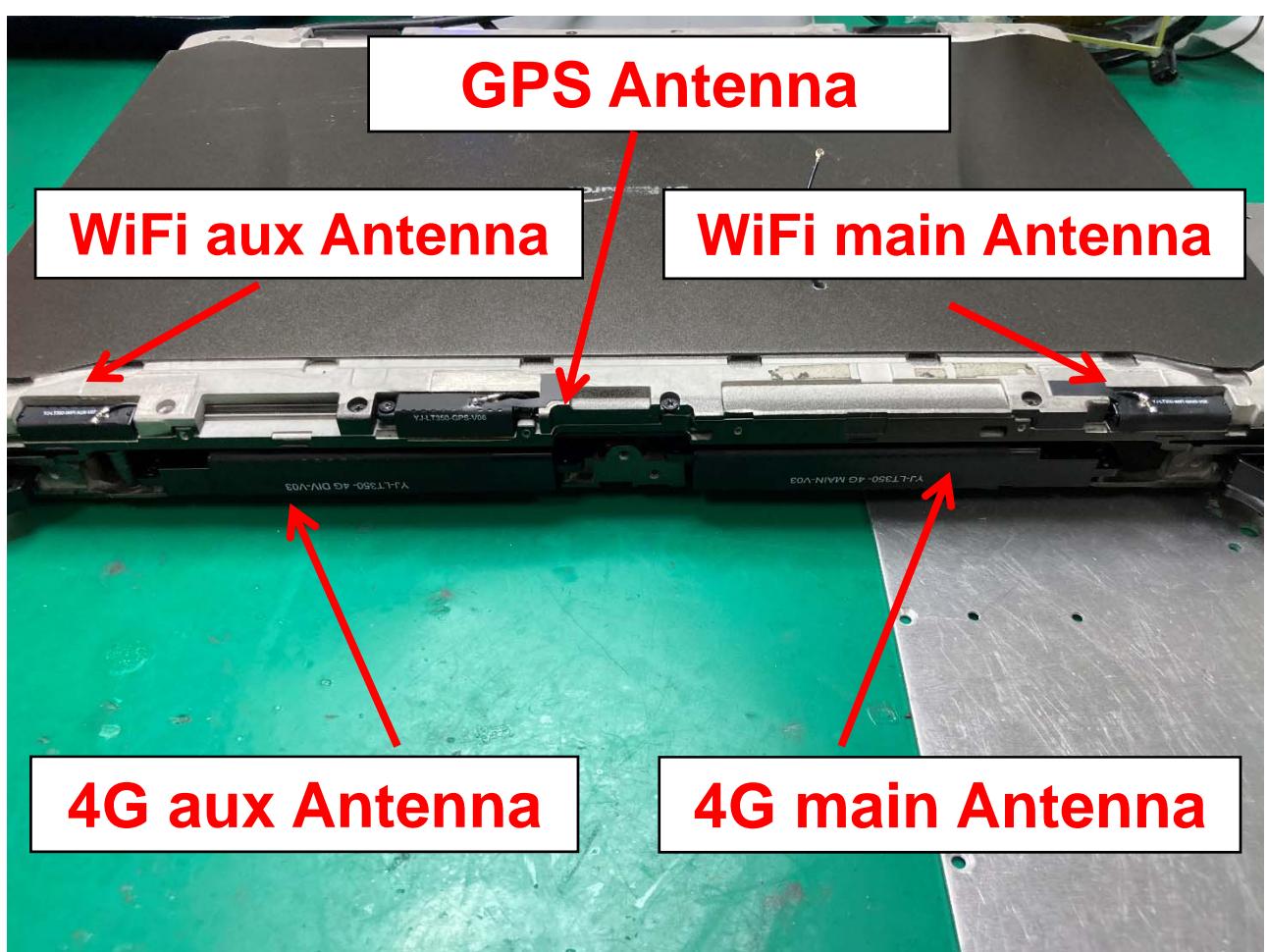
## *Device*





# *WiFi main Antenna*







**WIFI main天线测试治具**

# Material safety data sheet

## Article and manufacturer information

Item name :KTM-150F WM
Other name: NONE
Recommended use: heat hardening printing ink
Name of manufacturer or supplier: supplier - keyway Technology Co., Ltd Manufacturer - kaiyao Technology Co., Ltd
Address of manufacturer or supplier: supplier - No.18, Lane 646, Boai street, Zhubei City, Xinzhu County Factory - No.18, Lane 646, Boai street, Zhubei City, Xinzhu County
Emergency contact: (03) 555-1822 Fax: (03) 553-1338

## Hazard identification data

Hazard classification: flammable liquid, fire hazard Category 3, acute toxicity category 5.
Label content: flammable mixed solvent
Symbols: warning:
Hazard warning message: flammable substances, may be harmful if inhaled.
Hazard prevention measures: tightly cover the container; keep away from the ignition source - no smoking; place the container in a well ventilated place; take off the clothes as soon as they are polluted; wear eye mask / face shield; do not eat or drink when using, and avoid release to the environment
Other hazards:

## Component identification data

INGREDIENTS	% by Wt	CAS No.
Polyester resin (polymer)	20~25%	28064-14-4
Mixed solvent	20~25 %	106-65-0 ; 1119-40-0 ; 627-93-0
Titanium dioxide	30~35%	13463-67-7
Filler	10~15 %	14807-96-6
Hexamethylene diisocyanate refers to oligomer	5~10 %	21093-51-6
Butyl acetate	1~5 %	627-93-0

## First aid measures

First aid methods of different exposure routes:
Inhalation: 1. remove the patient to fresh air immediately. It can only cause nose irritation and may be harmful to people. Skin contact: 1. Immediately wash with water.
Eye contact: 1. Immediately open the eyelids and wash them with mild water.
Ingestion:
Most important symptoms:
Protection for first aid personnel: wear protective gloves to avoid contact with pollutants.
Tips for doctors:.

## Fire fighting measures

Suitable extinguishing agent: dry powder

Special hazards that may be encountered during fire fighting:

1. Remove the container from the fire site and put out the fire in the upwind.
2. Stop leakage without endangering personnel safety.
3. If the leakage cannot be stopped and the surrounding area is empty, the fire will burn out.

Special protective equipment for firefighters: Firefighters must wear air breathing apparatus, fire clothing and protective gloves.

## Leakage treatment method

Personal precautions: 1. Restrict personnel access until the overflow area is completely clean.

2. It is determined that the trained personnel are responsible for the cleaning work.
3. Wear appropriate personal protective equipment.

Environmental precautions:

1. Ventilate the area.
2. Extinguish or remove all sources of ignition.
3. Report to relevant units of safety, health and environmental protection of the government.

Cleaning method: 1. Do not touch the leakage. 2. Avoid discharging into sewer or other confined space. 3. Try to prevent or reduce the leakage under the condition of safety permission. 4. Use sand, soil or other absorbing substances that do not react with leakage substances to enclose the leakage. 5. In case of a small amount of leakage, absorb it with absorbent that will not react with the leakage. Contaminated absorbents and spills are equally hazardous and should be placed in properly capped and labeled containers. Flush the spill area with water. 6. In case of a large number of spills, contact the fire department, emergency treatment unit and supplier for assistance.

## Safe handling and storage methods:

Without special measures, it is not inflammable and explosive.

Storage: no corrosive container, no reactivity, low flammability, non flammable.

## Exposure precautions

Engineering control: local exhaust device or integral air exchange device.

Control parameters: eight hour daily average allowable concentration / short time

average allowable concentration / maximum allowable concentration:

Personal protective equipment: respiratory protection:

Hand protection: impervious gloves, butyl rubber recommended, Teflon, 4h, barricale, chemrel

Eye protection: 1. Goggles (minimum 8 inches). 2. splash proof safety goggles. 3. Do not wear contact lenses. Skin and body protection: chemical protective clothing.

## Physical and chemical properties

Material state: viscous paste liquid shape: paste liquid

Color: smell: Fragrance

PH value: slightly acidic boiling point / melting point range: OC /---

Decomposition temperature: flash point not measured:

Test method: open cup and close cup

Autoignition temperature: explosion limit: LEL: uel:

Vapor pressure: vapor density: > 1 (air 1)/

Specific gravity: 1.2 ~ 1.4 (25 / 25 °C) for water solubility:

Stability and reactivity

Stability: under normal conditions

Possible hazardous reactions under special conditions:

Conditions to avoid:

Substances to be avoided: acids.

Hazardous decomposition:

## Toxicity data

Exposure route: skin contact, eye contact, ingestion

Symptoms: eye damage

Acute toxicity: inhalation:

Skin: causes mild irritation. Eyes: cause mild irritation. Ingestion:

LD50 (test animal, absorption pathway) local effect:---

Sensitization:---

Chronic toxicity or long-term toxicity:

Special effect:

## Ecological data

Ecotoxicity:

Durability and degradability:

Bioaccumulation:

Mobility in soil:

Other adverse effects:

## Waste disposal method

Waste disposal method:

1. Handle according to the current laws and regulations.

Consider sanitary burying or burning in a qualified solvent burning tower.

## Delivery information

UN No:

UN transport Name:

Transportation hazard classification:

Packing category:

Marine pollutants (yes / no):

Special delivery methods and precautions:-

## Other information

References: None

Prepared by: kaiyao Technology Co., Ltd. / No.18, Lane 646, Boai street, Zhubei City, Xinzhu County/ Tel:03-5551822 / Fax:03-5531338

Prepared by: Xie Jinquan

Prepared on: August 15, 2014

Note: the above information and data are for reference only. The user shall determine the feasibility of the application according to the application requirements.

# Material safety data sheet

## 一、 Goods and manufacturer information

Item name: Halogen-free polyimide copper foil substrate(Halogen-free PI -CCL)
Item number: SHIS or SHID
Name of the manufacturer or supplier / Address / Telephone/Portraiture: Suzhou Serengeti Electronic Material Co., Ltd. /NO. 168 north Taiping road, Taicang city , Jiangsu Province, China/0512-5337 8333/0512-5337 8355
Emergency contact number/Phototelephony : 0512-5337 8333/0512-5337 8355

## 二、 Component identification data

Pure substance :

Chinese and English names: 1. Halogen-free epoxy resin adhesive 2. Polyimide film 3. Copper foil
--

Synonymous name: -
--------------------

Chemical Abstracts Agency Registration Number (CAS No.): 1. (Halogen-free epoxy resin adhesive) 24969-06-0 25% ~ 41. 2% 2. (Polyphenylene amine membrane) 25038-81-7 17. 4% ~ 39. 6% 3. (Copper foil ) 7440-50-8 28. 7% ~ 48%
--

Hazardous substance composition (percentage composition ): < 15(Halogen-free epoxy resin adhesive)
--

## 三、 Hazard identification data

Most important harm and effect	Health hazard effect: No harm to the human body.
	Environment effects: -
	Physical and chemical harm: -
	Special harm: -
Cardinal symptom:	-
Hazardous classification of articles:	-

## 四、 Emergency treatment

First aid methods for different ways of exposure: Inhalation: There is no way to inhale the film. Skin contact: No stimulation. Eye contact: No volatiles are allowed to touch. Ingestion: There is no possible way for the film.
---

Most important symptoms and harmful effects: -
--

Protection of first aid personnel: -
--------------------------------------

Tips for doctors: -
---------------------

## 五、 Fire extinguishing measures

Applicable fire-extinguishing agent: Use a fire extinguishing agent suitable for isolating the fire site.
---

Special hazards that may be encountered at the time of fire-fighting: Inhalation of high-temperature pyrolysis substances.
--

Special fire-fighting program: -
----------------------------------

Special protective equipment for firefighters: Wear air respirator and
--

protective gloves and fire-fighting clothes.

#### 六、Emergency strain of leakage

Individual considerations: Use of personal protective equipment.

Environmental consideration: -

Cleaning method: -

#### 七、Safety disposal and storage method

Handle: When operating, isolate from food and beverage.

Lay in: Store in a cool, dry and well-ventilated place.

#### 八、Exposure prevention measures

Engineering control: -

Controlling parameter:

Average allowable concentration of eight hours per day/Short time average allowable concentration/Maximum allowable concentration: -

Biological index: -

Personal protective equipment:

Respiratory protection : A dust-proof mask.

Hand protection : Gloves.

Eye protection: Safety glasses.

Skin and body protection: -.

#### 九、Physical and chemical properties

Material state:	Solid body	Form:	Membrane shape
Pigment:	Light brown ~ Dark brown(PI side)	Smell:	not have
PH value :	N/A	Boiling point/Boiling spread :	N/A
Decomposition temperature :	N/A	Flash point :	N/A test method : Open cup Closed cup
Autogenous ignition temperature :	N/A	Explosion limit :	N/A
Vapour pressure:	N/A	Vapour density :	N/A

#### 十、Stability and reactivity:

Stability:	Stable under normal condition
Possible hazardous reactions in special conditions:	-
The situation to be avoided:	-
Substance to be avoided:	-
Hazardous decomposition products:	High thermal decomposition to produce nitrogen, phosphorus oxidation gas.

#### 十一、Toxic data

Acute toxicity:	N/A
Local effect :	N/A
Sensitivity:	N/A

Chronic or long-term toxicity:	N/A
Special effects :	N/A

#### 十二、Ecological data

Possible environmental impact/Environmental flow cloth:	-
---	---

#### 十三、Disposal method

Handle according to local environmental laws and regulations.
---

#### 十四、Transport information

International shipping regulations:	Not available for IATA, ICAO. (Non-dangerous goods)
UN number :	--
Domestic transportation regulations:	--
Special delivery methods and matters needing attention:	--

#### 十五、Regulatory data

Applicable regulations:	Applicable to RoHS, GP, WEEE.
-------------------------	-------------------------------

#### 十六、Other data

Rdocument ation :	--	
Tabulatin g unit:	Name:	Suzhou Serengeti Electronic Material Co., Ltd.
	Address/Te lephone:	NO. 168 north Taiping road, Taicang city , Jiangsu Province/ 0512-5337 8333
Lister:	Professional ranks and titles : Department Manager	Name: Huang long
Tabulatio n date:	16 February, 2019	
Remarks:	<p>The symbol “-” in the above data indicates that there is no relevant information at present.</p> <p>All data and data are used for reference only. Users should judge their availability according to the application requirements.</p>	

## MATERIAL SAFETY DATA SHEET

### 产品安全资料

Section1 Preparation Identification and Company 样品标公司

Preparation Identification 标记: 防氧化原液DX-808HT

Manufacturers Name 公司名称: 深圳市东方星化工科技有限公司

Manufacturers Address 地址: 东莞市虎门镇大宁村大板地工业区

Emergency Telephone Number 联系电话: 0769-85015502

Emergency Tex Number 传真: 0769-85015500

Postal code 邮政编码: 523900

Section 2 Composition information on Ingredients

成份组成

学名 (Chemical Name)	化学文摘社登记号码 (CASNO)	浓度(%) (Concentration)
苯并咪唑 Benzimidazole	95-14-7	1%
甲酸 Formic acid	64-18-6	3%
添加剂 Additives	-----	0.05%
DI 水 DI water	7732-18-5	95.95%

Section 3 Hazards Identification

危险性概述

**Safety and Risk 安全和危险性:** DX-808HT contain formic acid which may cause severe burns. 含有甲酸可能导致灼伤

Section 4 First Aid Measures

急救措施

**Eyes 眼睛:** flush with plenty of clean, cool water for 15 minutes and get immediate medical attention 大量清水冲洗并尽快就医

**Skin 皮肤:** flush with plenty of clean, cool water for 15 minutes 大量清水冲洗15分钟

**Ingestion 食入:** get immediate medical attention 尽快就医

Section 5 Fire Fighting Measures

消防措施

不可燃

Section 6 Accidental Release Measures

泄漏应急措施

**Personal Precautions 个人防护:** wears protective clothing, chemical safety goggles, respirator, face shield and rubber gloves 穿戴耐酸保护服, 护目镜、面罩和橡胶手套

**Clean-up Procedure 清洗:** flush with plenty of clean, cool water 用大量清水冲洗

Section 7 Handling and Storage

操作与储存

**Ventilation 通风:** Store indoors in a cool dry area

阴凉干燥处

**Temperature 温度:** Store indoors in a cool dry area

阴凉干燥处

**Containers 容器:** Keep containers tightly closed . Loosen closure cautiously when opening. 保持容器密封, 打开时慎重

**Incompatible Materials 不相容物质:** alkalis and oxidizers 碱性和氧化物

**Pot Life 有效期:** six months 6 个月

Section8 Exposure Controls /Personal Protection 接触控制与个人保护

**Ventilation 通风:** Exhaust ventilation is recommended 推荐抽出式通风

**Respiration 呼吸:** respirator。Avoid breathing vapors or mist。防毒面具  
避免吸入蒸汽或烟雾

**Eyes and Face 眼睛和脸:** chemical safety goggles and face shield 护目镜  
和脸罩

**Hands and Skin 手和皮肤:**rubber gloves 橡胶手套

**Clothing :** protective clothing 耐酸保护服

Section 9 Physical and Chemical Properties 物理和化学特性

**Appearance 外观:** 浅蓝色液体

**Odour 气味:** 淡醋酸味

**PH:** 2.7±0.3

Section 10: Stability and Reactivity 稳定性和反应活性

**Chemical Stability 化学稳定性:** 弱的反应能力

**Incompatible Materials 不相容物质:** alkalis and oxidizers 碱性和氧化物

Section 11 Toxicological Information 毒性资料

NDA 无毒

Section 12 Disposal Consideration 废弃处理

Dispose of material in approved sites 中和后过滤排放, 过滤物交当地合法  
批准单位。

Section 13 生态资料

生态毒性: 无

生物降解性: 无

非生物降解性: 无

其它有害作用: 无

Section 14 法规信息

通用法规:

劳工安全卫生规则

特定化学物预防标准

Section 15 运送资料

国内运输规定: 依道路交通安全规则第84 条

Section 16 其他资料

制表单位: 深圳市东方星化工科技有限公司

制表地址: 东莞市虎门镇大宁村大板地工业区

制表部门: 品质部

制表日期: 2017 年 1 月

**3M™ 300LSE Adhesive Transfer Tapes: 8132LE, 8153LE, 9453FL, 9453LE, 9471FL, 9471LE, 9472FL, 9472LE, 9472LEU, 9653LE, 9671LE, 9672LE and 9698LE**



## Article Information Sheet

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**Document Group:** 07-7168-3  
**Issue Date:** 2015/05/19

**Version Number:** 1.00  
**Supercedes Date:** Initial Issue

## SECTION 1: Identification

### 1.1. Product identifier

3M™ 300LSE Adhesive Transfer Tapes: 8132LE, 8153LE, 9453FL, 9453LE, 9471FL, 9471LE, 9472FL, 9472LE, 9472LEU, 9653LE, 9671LE, 9672LE and 9698LE

### Other means of identification

### 1.2. Recommended use and restrictions on use

#### Recommended use

Bonding & Attachment, Industrial use

### 1.3. Supplier's details

**Company:** 3M Company  
**Division:** Industrial Adhesives and Tapes Division  
**ADDRESS:** 3M Center, St. Paul, MN 55144,USA  
**Phone:** 021-22105335  
**FAX:** 021-22105036  
**E Mail:** Tox.cn@mmm.com  
**Website:** www.3m.com.cn

### 1.4. Emergency telephone number

021-22105335

## SECTION 2: Hazard identification

### 2.1. Classification of the substance or mixture

This product is considered to be an article and is exempt from GHS classification.

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**Document Group:** 07-7168-3  
**Issue Date:** 2015/05/19

**3M™ 300LSE Adhesive Transfer Tapes: 8132LE, 8153LE, 9453FL, 9453LE, 9471FL, 9471LE, 9472FL, 9472LE, 9472LEU, 9653LE, 9671LE, 9672LE and 9698LE**

## **SECTION 3: Composition/information on ingredients**

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt
Paper or Film Liner	Mixture	Not Applicable
Acrylic Polymer Adhesive	Trade Secret	100

## **SECTION 4: First aid measures**

### **4.1. Description of first aid measures**

#### **Inhalation:**

No need for first aid is anticipated.

#### **Skin Contact:**

No need for first aid is anticipated.

#### **Eye Contact:**

No need for first aid is anticipated.

#### **If Swallowed:**

No need for first aid is anticipated.

## **SECTION 5: Fire-fighting measures**

In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam.

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Not applicable.

### **6.2. Environmental precautions**

Not applicable.

### **6.3. Methods and material for containment and cleaning up**

Not applicable.

## **SECTION 7: Handling and storage**

### **7.1. Precautions for safe handling**

This product is considered to be an article which does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.

### **7.2. Conditions for safe storage including any incompatibilities**

No special storage requirements.

## **SECTION 8: Exposure controls/personal protection**

This product is considered to be an article which does not release or otherwise result in exposure to a hazardous chemical

**3M™ 300LSE Adhesive Transfer Tapes: 8132LE, 8153LE, 9453FL, 9453LE, 9471FL, 9471LE, 9472FL, 9472LE, 9472LEU, 9653LE, 9671LE, 9672LE and 9698LE**

under normal use conditions. No engineering controls or personal protective equipment (PPE) are necessary.

## **SECTION 9: Physical and chemical properties**

### **9.1. Information on basic physical and chemical properties**

<b>Physical state</b>	Solid
<b>Specific Physical Form:</b>	Roll of Tape
<b>Appearance/Odor</b>	Translucent adhesive, slight acrylate odor, paper or film quick release liner
<b>Odor threshold</b>	<i>Not Applicable</i>
<b>pH</b>	<i>Not Applicable</i>
<b>Melting point/Freezing point</b>	<i>No Data Available</i>
<b>Boiling point/Initial boiling point/Boiling range</b>	<i>Not Applicable</i>
<b>Flash Point</b>	<i>Not Applicable</i>
<b>Evaporation rate</b>	<i>Not Applicable</i>
<b>Flammability (solid, gas)</b>	Not Classified
<b>Flammable Limits(LEL)</b>	<i>Not Applicable</i>
<b>Flammable Limits(UEL)</b>	<i>Not Applicable</i>
<b>Vapor Pressure</b>	<i>Not Applicable</i>
<b>Vapor Density</b>	<i>Not Applicable</i>
<b>Density</b>	<i>Not Applicable</i>
<b>Relative Density</b>	<i>Not Applicable</i>
<b>Water solubility</b>	Nil
<b>Solubility- non-water</b>	<i>Not Applicable</i>
<b>Autoignition temperature</b>	<i>Not Applicable</i>
<b>Decomposition temperature</b>	<i>Not Applicable</i>
<b>Viscosity</b>	<i>Not Applicable</i>
<b>Volatile Organic Compounds</b>	<i>Not Applicable</i>
<b>Percent volatile</b>	<i>Not Applicable</i>
<b>VOC Less H<sub>2</sub>O &amp; Exempt Solvents</b>	<i>Not Applicable</i>

## **SECTION 10: Stability and reactivity**

This material is considered to be non reactive under normal use conditions.

## **SECTION 11: Toxicological information**

### **Inhalation:**

This product may have a characteristic odor; however, no adverse health effects are anticipated.

### **Skin Contact:**

No health effects are expected

### **Eye Contact:**

No health effects are expected

### **Ingestion:**

No health effects are expected

### **Additional Information:**

This product, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for use

**3M™ 300LSE Adhesive Transfer Tapes: 8132LE, 8153LE, 9453FL, 9453LE, 9471FL, 9471LE, 9472FL, 9472LE, 9472LEU, 9653LE, 9671LE, 9672LE and 9698LE**

may affect the performance of the product and may present potential health and safety hazards.

## **SECTION 12: Ecological information**

This article is expected to present a low environmental risk either because use and disposal are unlikely to result in a significant release of components to the environment or because those components that may be released are expected to have insignificant environmental impact.

## **SECTION 13: Disposal considerations**

Dispose of contents/container in accordance with the local/regional/national/international regulations.

## **SECTION 14: Transport Information**

Not hazardous for transportation.

## **SECTION 15: Regulatory information**

### **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

This product is an article and is exempted from Measures on Environmental Management of New Chemical Substances and from IECSC inventory listing requirements.

## **SECTION 16: Other information**

### **References**

United Nations 'Recommendations on the Transport of Dangerous Goods - Model Regulations' .  
United Nations 'Globally Harmonized System of Classification and Labelling of Chemicals (GHS)'.

### **Revision information:**

Conversion to AIS.

**DISCLAIMER:** The information on this Article Information Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Information Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

**3M People's Republic of China AISs are available at [www.3m.com.cn](http://www.3m.com.cn)**

## MATERIAL SAFETY DATA SHEET

### 物质安全资料表

#### 1 、 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION 产品和公司资料

1.1 PRODUCT NAME: Polyimide reinforcement plate

产品名称: Pi 补强片

1.2 PRODUCT USE: Flexible printed circuit Boards.

用途: 用于挠性印制电路板.

1.3 Product Model 产品型号

Model:HS2025、HS3025、HS4025、HS5025、HS6025、HS7025、HS8025、HS9025、HS10025

1.4 公司名称及地址: 深圳市溢海通电子有限公司

NAME of COMPANY and ADDRESS: Shenzhen YiHaiTong Electronics Co.,ltd

广东省深圳市宝安区沙井后亭第二工业区 57 号福新大厦 B 栋 602

Building B, Fuxin Chuangke Building,  
No.57 Baoan District, Shenzhen, China

Shajing Houting Second Industrial Zone,

FOR MORE INFORMATION CALL:

IN CASE OF EMERGENCY CALL:

紧急联络电话: (Monday~Saturday,9:00am~6:00pm) (24Hours/Day, 7 Days/Week)

0755-33238080

0755-33238080

#### 2 、 COMPOSITION INFORMATION ON INGREDIENTS 组成成份资料

2.1 The main ingredient 主要成分

Ingredient name chemical abstract number weight ratio 成分名称 化学文摘号 重量比

Polyimide film 25038-81-7 30~50% 聚酰亚胺薄膜 25038-81-7 30~50%

Remove 10-25% of the release film / paper when it is used 离形膜/纸 使用时撕掉 10~25%

Acrylates 141-32-2 25~40% 丙烯酸酯 141-32-2 25~40%

Acrylic acid 79-10-7 10~20% 丙烯酸 79-10-7 10~20%

2.2 hazardous ingredients 危害物质成分

No. SGS Test Report:No.CANML1412085401, No.CANML1412085402

2.3 Molecular Structure:分子结构

3 、 HAZARDS IDENTIFICATION 危害性资料

3.1 hazard class filled by GB13690-92 " Classification of hazardous chemicals used and signs " requirement.:.

危险性类别 按 GB13690-92 《常用危险化学品的分类及标志》规定填写。

Insoluble in water, no melting point , soluble in acid, alkali .

不溶于水，无熔点，易溶于强酸、强碱。

3.2 Anonflammable sheet material, Fumes if decomposed may irritate eyes、nose and throat..

是一种难燃的片状材料。当分解时产生的气体会刺激眼睛、鼻和咽喉。

**POTENTIAL HEALTH HAZARDS:**

3.3 A brief description of the extent of environmental harm when hazards caused by certain concentrations of various chemical and biological harm .

环境危害 简要描述化学品在一定浓度时对各种生物造成的危害及其造成危害的程度。

Produces CO2 and CO decomposition.

分解时会产生 CO2 和 CO。

3.4 SKIN: Adhesive may cause moderate skin irritation.

皮肤：胶粘剂可能导致中等程度皮肤过敏。

3.5 EYES: Adhesive may cause eye moderate irritated, Fumes may irritate eyes.

眼睛：胶粘剂可能导致中等程度眼睛过敏。

3.6 INHALATION : Trace of chemical solvents may diffused to air in the processes of varnish preparation and coating production.

吸入物：在涂覆生产过程中，会有少量化学溶剂挥发出来。

3.7 INGESTION: Not determined.

摄食：没有参考值。

**4 、 FIRST AID MEASURES 首要援助措施**

SKIN: Washing the contaminated clothing in flowing water.

皮肤：脱下已污染衣服，用流动水冲洗。

EYE: Washing with flowing water for 15 minutes, consult the physician If irritation persists.

眼睛：用流动水冲洗 15 分钟，如过敏现象持续发生，请求助于医生。

INHALATION : Such as dust, smoke to much move to fresh air. If can not breathe, give mouth-to-mouth resuscitation and Call physician.

吸入：如粉末烟尘太多请转移到有新鲜空气的地方，如没有呼吸，请进行人工呼吸，并致电医生。

INGESTION: If large amounts are ingested, consult physician.

摄食：如摄入大量，请致电医生。

ADVICE TO PHYSICIAN: Treat symptomatically.

建议医生：处理出现的症状。

**5 、 FIRE FIGHTING MEASURES 火灾测试**

FLAMMABLE PROPERTIES: N/A

易燃性：不适用

FLASH POINT: N/A

闪点：不适用

FLASH POINT METHOD: N/A

闪点方式：不适用

AUTOIGNITION TEMPERATURE: Not determined

自燃点温度: 无规定

UPPER FLAME LIMIT (Volume% in air) : N/A

燃烧上限: 不适用

LOWER FLAME LIMIT (Volume% in air) : N/A

燃烧下限: 不适用

FLAME PROPAGATION RATE (Solids) : UL94 V-0

燃烧等级: UL94 V-0

OSHAFLAMMABILITY CLASS: N/A

燃烧级别: 不适用

EXTINGUISHING MEDIA: Water, CO 2 and dry chemical.

灭火介质: 水、CO 2 及干化学品

SPECIAL FIREFIGHTING PRECAUTIONS/INSTRUCTIONS:

特别火灾指导:

Firemen should wear proper protective equipment and positive pressure self-contained breathing apparatus.

消防员须身穿保护装置及正压呼吸设施。

6 、ACCIDENTAL RELEASE MEASURES 意外事故的应变措施

IN CASE OF SPILL OR OTHER RELEASE : ( Always wear recommended personal protection equipment)

如有泄漏或其他释放: (通常身穿所推荐的保护设施)

Not applicable for the solid material.

不适用于固体材料。

Spills and releases may have to be reported to local authorities.

有关泄漏应报告当地政府。

7 、HANDLING AND STORAGE 仓库指南

7.1Handing Precautions refers to the process of the operation of the safety of chemicals and personal protection points to note.

操作注意事项 指对化学品操作过程中的安全注意要点和个体防护。

No.

暂无.

7.2Storage Precautions 存储注意事项

a)disposal: storage spaces non fireworks ,sit housekeeping standards to prevent dust.

处置: 存放场所严禁烟火, 做好整理、整顿以避免灰尘。

b)Storage: high stability, non-reactive under normal storage conditions.

存储: 稳定性高, 正常的存储条件下无反应。

8 、EXPOSURE CONTROLS / PERSONAL PROTECTION 泄漏控制 / 个人保护

ENGINEERING CONTROLS: Use local exhaust ventilation to control dust..

工程控制: 使用当地除尘通风设施。

PERSONAL PROTECTIVE EQUIPMENT: 个人保护措施:

SKIN PROTECTION : For brief contact to dust,no precautions other than clean bodycovering clothing should

needed.Use gloves and aprons when prolonged or frequently repeated contactoccurs.

皮肤保护：对于短暂性的接触粉尘，需要时清洗身体或衣服，无预防措施。对于长期性的接触，要配带手套和围裙。

EYE PROTECTION: Use appropriate eye protection when machining material.

眼睛保护：当加工材料时使用眼睛保护装置。

RESPIRATORY PROTECTION: When respiratory protection is required for certain operations, use a NIOSH-approved dust respirator.

呼吸保护：当进行产生大量粉尘的操作时使用规范的粉尘防毒面罩。

ADDITIONAL RECOMMENDATIONS: N/A

其它建议：不适用。

## 9 、 PHYSICAL AND CHEMICAL PROPERTIES 物理化学性能

### 9.1Appearance products 产品外观

Yellow 、 brown 、 black and so on, odorless solid flake materials

黄色，棕色和黑色等，无味固体片状材料。

### 9.2PHYSICAL STATE: Solid

物理形态：固体

### 9.3ODOR: None, unless heated

气味：无味，除非加热

### 9.4Heat of combustion

燃烧热 94-VO

### 9.5SOLUBICITY IN WATER: (Weight%) Negligible in water

水溶性：（重量%）在水中可忽略

### 9.6The main purpose 主要用途

Mainly used in packing, printing, screen printing, pad printing, nameplates, membrane switches, flexible circuits,

Insulation products, circuit boards, laser security, laminating , electronic, film sealing material, reflective materials,

Waterproof material, medicine(plaster with paper),toilet paper, adhesive, die punching processing and other

industries.

主要应用于包装、印刷、丝印、移印、铭板、薄膜开关、柔性线路、绝缘制品、线路板、激光防伪、

贴合、电子、密封材料用膜、反光材料、防水材料、医药（膏药用纸）、卫生用纸、胶粘制品、模切冲型

加工等行业领域。

## 10 、 STABILITY AND REACTIVITY 稳定性及反应性

### 10.1NORMALLY STABLE: (conditions to avoid) Stable

通常稳定：稳定

### 10.2INCOMPATIBILITIES: Not determined

不兼容性：不确定

### 10.3HAZARDOUS POLYMERIZATION? None

危险聚合物：无

### 10.4Condition to avoid 避免接触的条件

Not available: 无资料

10.5 Decomposition products 分解产物

Produces Co 2 and Co decomposition.

分解时会产生 Co 2 和 Co.

11 、 TOXICOLOGICAL INFORMATION 毒物学的资料

11.1 Acute Toxicity 急性毒性

N/A

11.2 Subacute and chronic toxicity 亚急性和慢性毒性

N/A

11.3 Irritating 刺激性

N/A

11.4 Sensitization 致敏性

N/A

11.5 Mutagenicity 致突变性

N/A

11.6 Carcinogenicity 致癌性

N/A

11.7 Other 其他

N/A

12 、 ECOLOGICAL INFORMATION 生态学资料

Not Biodegradable

非生物降解。

13 、 DISPOSAL CONSIDERATIONS 处置问题

Is the unused product a hazardous waste substances list of country hazardous waste if discarded? No.

列入国家危险废物名录的危险废物不能够再利用时是否被丢弃？ 不。

OTHER DISPOSAL CONSIDERATIONS : Dispose must be made in accordance with all applicable Local

regulations.

其它处置问题：处置必须遵循当地的法律法规。

Suggestion method after products will be discarded :

(1)、 Separate reuse method: crush products into powder, recycling as a filer.

(2)、 Incineration method : incinerate the unused products, this method may cause organic compound gas.

(3)、 Bury into deep earth.

产品报废之后有以下几种处置方法：

(1)、 分离法：将产品粉碎，可作填充料；

(2)、 焚烧法：焚烧过程中可能产生有机化合物气体；

(3)、 填埋法。

14 、 TRANSPORT INFORMATION 运输资料

For additional information on shipping regulations affecting this material, contact the information number found

on the first page.

附带资料是当运输规则影响到物料时，请和第一页所提供的联系方式联系。

15 、 REGULATORY INFORMATION 法规资料

15.1 Domestic Chemical Safety regulations 国内化学品安全管理法规  
“Material Safety Data Sheet preparation specified range” GB/T 16483-2008  
《化学品安全技术说明书编写规定范围》 GB/T 16483-2008  
“Chemical Dangerous Goods Safety Management Regulations” (February 17, 1987 the State Council issued).  
《化学危险物品安全管理条例》(1987 年 2 月 17 日国务院发布)  
“Common Hazardous Chemicals and signs” (GB13690-1992).  
《常用危险化学品的分类和标志》(GB13690-1992)  
“Air Pollutant Emission Standards” GB16297-1996  
《大气污染物综合排放标志》GB16297-1996  
“Sour gas transportation safety regulations” SY6506-2000  
《含硫气田安全输送规程》SY6506-2000  
“Chemical Dangerous Goods Safety Management Regulation implementing rules” (the Labor Fa[1992] No.677)  
《化学危险物品安全管理条例实施细则》(化劳发【1992】677 号)  
“Industrial sites safe use of chemicals” (1996 workers are No.423)  
《工业场所安全使用化学品规定》(1996 劳都发 423 号)  
“Dangerous Goods Classification and code” GB6944-1986  
《危险货物分类和品名编号》GB6944-1986  
“Transport of Dangerous Goods Package CATEGORYprinciple” GB/T15098-1994  
《危险货物运输包装类别划分原则》GB/T15098-1994  
“Transport of Dangerous Goods Management Regulations” (formerly the Ministry of Railways issued)1995  
《危险货物运输管理规则》(原铁道部颁布)1995 年  
These laws and regulations for the safe use of hazardous chemicals, production, storage, transport, handling, etc.  
are made relevant regulations.  
以上法规对化学危险品的安全使用, 生产, 存储, 运输, 装卸等方面均做了相关规定。  
附 加 法 规 资 料 :  
Shenzhen YIHAITONG Electronic Co., Ltd. does not use PBBs or PBDEs as flame retardant in the resin system of the products 深圳市溢海通电子有限公司 没有采用多溴联苯或多溴联苯醚作为阻燃剂在产品的树脂体系当中

# Material Safety Data Sheet

**ITEM : PSM-800@ /SMH-800**

Identity (Trade Name As Used On Label)

## SECTION 1

## IDENTIFICATION

Manufacturer

**UNIRES CHEMICAL INDUSTRIAL CO.,LTD.**

Address

**22CHING CHIAN 4<sup>th</sup> RD.KUANYIN INDUSTRIAL**

MSDS Number\* **20110701AAA**

**DISTRICT TAOYUAN HSIEN TAIWAN**

CAS Number\*

**07/01/2011**

Phone Number (For Information)

886-3-4836651 (fax)886-3-4837487

Emergency Phone Number

Telex \* **886-3-4836651**

Data Prepared

**HUANG CHIN HUAI**

Prepared By\*

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

## SECTION 2

## COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CAS No.	CONTENTS(%)	OSHA (PEL)	ACGIH (TLV)
Heavy aromtic naphtha(petroleum)	64742-94-5	<12%	N.D.	N.D.
Epoxy-Acrylic derivative	Trade secret	<48%	N.D.	N.D.
Barium sulfate	7727-43-7	<20%	dust 15mg/m <sup>3</sup>	10mg/m <sup>3</sup>
Silica, amorphous, fused	7631-86-9	<8%	N.D.	dustTLV10mg/m <sup>3</sup>
Dipropylene glycol methyl ether	34590-94-8	<12%	100ppm	200ppm

## SECTION 3

## HAZARDS IDENTIFICATION

INHALATION : Highly concentrated vapor irritates nose, throat ant and lungs. May cause headache and dizziness.

EYE CONTACT : Slight irritation

SKIN CONTACT : Slight irritation

INGESTION : Harmful, if swallowed.

## SECTION 4

## FIRST AID MEASURES

SKIN CONTACT : Wash with plenty of water using a soap. Do not use organic solvents.

EYE CONTACT : Rinse immediately with clean water for at least 15 minutes. If irritation persists, seek medical attention

INHALATION : Immediately carry the victim to a place where fresh air is available. If irritation persists, treat with oxygen and seek medical attention.

INGESTION :obtain medical advice immediately. It is not recommended that vomiting be induced except on medical advice

**SECTION 5****FIRE-FIGHTING MEASURES**

SUITABLE EXTINGUISHING MEDIA	: Carbon dioxide, foam, powder.
UNSUITABLE EXITINGUISHING MEDIA	: water spray and water jet.
EXPOSURE HAZARDS	: Burning may release oxides of carbon, nitrogen, sulfur and other toxic gases or vapors. Do not release chemically contaminated water into drains or surface waters, and soil according to local regulations.
PROTECTIVE EQUIPMENT	: Use full protective clothing and self-contained breathing apparatus.
FIR FIREFIGHTERS MEASURES	: promptly move transferable containers to another safety area .Check the speed of fire. Extinguish the fire with suitable extinguisher from the windward side

**SECTION 6****ACCTDENTAL RELEASE MEASURES**

PERSONAL PRECAUTION	: Avoid ignition sources. Avoid contact with skin, eyes and clothing. Avoid inhaling vapor.
ENVIRINMENTAL PRECAUTIONS	: Prevent contamination of soil, drains and surface waters
METHODS FOR CLEANING	: Scoop up or absorb into combustible material, wipe out a stain in use organic solvents. Dispose in accordance with local regulations.

**SECTION 7****HANDLING AND STORAGE**

HANDLTNG	: Handle with care. Avoid ignition sources. Ensure good ventilation and local exhaust. Do not smoke at the workplace
STORAGE	: Store in the original sealed container at less than 20°C. Avoid direct exposure to UV and sunlights.

**SECTION 8****EXPOSURE CONTROLS/PERSINAL PROTECTION**

People who know they are chemically sensitive, should avoid contact with this product.

TECHNICAL PROTECTIVE MEASURES : No special safety measures required.

EXPOSURE CONTROL LIMITS	: (see PEL and TLV values shown in shown in section 2)
RESPIRATORY PROTECTION	: Wear suitable mask to avoid inhalation of vapor.
HAND PROTECTION	: wear chemical resistant gloves.
EYE PROTECTION	: wear safety glasses.
SKIN PROTECTION	: wear suitable protective working cloths.

**SECTION 9****PHYSICAL AND CHEMICAL PROPERTIES**

BOILING	: *156°C(760mmHg)	COLOR	: <b>black</b>
FLASH	: 75.0°C	FORM	: Paste
VAPOR PRESSURE	: * 2.00mmHg(40°C)	VAPOR DENSITY	: *6.08(Air=1)
SOLUBILITY IN WATER	: *<10.7wt%	ODOR	: Mild odor
		SPECIFIC GRAVITY	: 1.18

\*Data of the organic solvents or monomers contained in this product is product is quoted.

**SECTION 10****STABILITY AND REACTIVITY**

STABILITY

: Stable

CONDITIONS TO AVOID

: Heat and sunlight.

MATERIALS TO AVOID

: Strong acids, strong bases, peroxides and strong oxidizing agents.

Hazardous decomposition products : Burning may release oxides of carbon, nitrogen, sulfur and other toxic gases or vapors.

**SECTION 11****TOXICOLOGICAL INFORMATION**

Primary route(s) of entry

 DERMAL       INHALATION       INGESTION

TOXICITY STUDIES

: Toxicity studies have not been carried out in this product. Toxicity information available for the ingredients listed in section 2 is given below.

Health Hazards

ACUTE INGESTION TOXICITY : N.E.

ACUTE SKIN IRRITATION : Slightly irritant

MUTAGENICITY : NONE

CARCINOGENICITY

 NTP       IARC       OSHA       NOT LISTED

SYMPTOMS OF OVER EXPOSURE

INHALATION : Slight irritation to respiratory tract. Highly concentrated vapor may cause headaches, and nausea.

EYES : Slight irritation

SKIN : Slight irritation

INGESTION : Expected to have a low order of toxicity.

**SECTION 12****ECOLOGICAL INFORMATION**

ACUTE FISH TOXICITY : Ecological data are not available

BIODEGRADABILITY : No data available.

**SECTION 13****DISPOSAL CONSIDERATIONS**

Incineration or landfill in accordance with local regulations.

**SECTION 14****TRANSPORT INFORMATION**

ADR

: Inflammable liquid

IMDG-CODE

: Free

IATA

: Free

US DOT

: Combustible liquid

UN : Free  
FLASH POINT : 75.0°C

## **SECTION 15 REGULATORY INFORMATION**

EEC LABELING : Harmful

RISK PHRASES : Harmful : may cause lung damage if swallowed. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SAFETY PHRASES : Avoid contact with skin.  
: Do not breathe vapor.  
: If swallowed, do not induce vomiting :seek medical advice immediately and show this container or label.  
: Avoid release to the environment. Refer to special instructions/Safety data sheets.

## **SECTION 16 OTHER INFORMATION**

This product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with any legal regulation. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.

It may not be valid for this material, if used in combination with any other materials.

深圳市达尔鑫科技有限公司  
SHENZHEN DAERXIN TECHNOLOGY CO., LTD

物质安全资料表  
Material Safety Data Sheet

共 5 页

1、物品与厂商资料 (Product and Company Identification)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害 (Specific Hazards)	N. A.

2、成分辩识资料 (Composition, Information on Ingredients)

最重要危害	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害	N. A.

3、危害辨识资料 (Hazard Identification)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害 (Specific Hazards)	N. A.
主要症状(Cardinal Symptoms)		N. A.
危害物质分类(Hazard Classification)		N. A.

## 物质安全资料表

### Material Safety Data Sheet

#### 4、急救措施(First Aid Measures)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害 (Specific Hazards)	N. A.
主要症状(Cardinal Symptoms)		N. A.
危害物质分类(Hazard Classification)		N. A.
物品中文名称 (product Name)	2.5T 铜镍全方位导电海棉	
物品型号 (product Code)	DEX-H25	
制造商名称 (Customer Name)	深圳市达尔鑫科技有限公司	

#### 5、灭火措施(Fire Fighting Measures)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害	N. A.
6、泄漏处理方法 (Accidental Release Measures)		

最重要	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.

清理方法 (Methods for Cleaning)	通常作业环境下作区别管理
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## 物质安全资料表

### Material Safety Data Sheet

#### 7、安全处置与储存方法 (Handling and Storage)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害	N. A.

#### 8、暴露预防措施 (Exposure Controls)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.

#### 9、物理及化学性质 (Physical and chemical properties)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害 (Specific Hazards)	N. A.
主要症状 (Cardinal Symptoms)		N. A.
危害物质分类 (Hazard Classification)		N. A.
物品中文名称 (product Name)	2.5T 铜镍全方位导电海棉	

自燃温度 (Self-Igniting Temperature)	N. A.
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## 物质安全资料表

### Material Safety Data Sheet

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害 (Specific Hazards)	N. A.
	主要症状(Cardinal Symptoms)	N. A.

#### 10、安全性及反应性 (Stability and Reactivity)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害 (Specific Hazards)	N. A.

#### 11、毒性资料 (Toxicological Information)

最重要危害效应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害	N. A.

特殊效应 (Special Reactions)	N. A.
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## 物质安全资料表

### Material Safety Data Sheet

#### 12、生态资料 (Ecological Information)

可能的环境影响 (Possible Environmental Impact)	N. A.
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#### 13、废弃处理方式 (Disposal Considerations)

最 重 要 危 害 效 应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.

#### 14、运送资料 (Transport Information)

最 重 要 危 害 效 应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.

#### 15、法规资料 (Regulatory information)

适用法规 (Applicable regulations)	中国劳动安全卫生法
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#### 16、其它资料 (Other information)

最 重 要 危 害 效 应	健康危害效应 (health Hazards and Reactions)	长时间接触可能会引起过敏
	环境影响 (Environmental Impact)	N. A.
	物理性及化学性危害 (Physical and Chemical Hazards)	N. A.
	特殊危害 (Specific Hazards)	N. A.

(Data Prepared)	
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产品规格 Product Type		RF113/50 低损耗电缆			
结构图 Structure Drawing					
结构特性 Structure Characteristics					
结构 Structure	项目 Item	标准值 Standard Value			
内导体 Inner Conductor	材质 Material	镀银铜线 Silverplated Copper Wire			
	结构 Construction(mm)	7/0.083			
	标称外径 Nom.Dia(mm)	0.249±0.02			
绝缘层 Insulation	材质 Material	聚全氟乙丙烯 FEP			
	标称外径 Nom.Dia(mm)	0.735±0.02			
外导体 Outer Conductor	材质 Material	铜塑箔 Cu-Plastic Composite Tape			
	标称外径 Nom.Dia(mm)	0.759±0.02			
	材质 Material	镀银铜/镀锡铜线 SC/TC Wire 16*4/0.05			
	标称外径 Nom.Dia(mm)	0.96±0.05			
护套 Jacket	编 织 覆 盖 率 Coverage Ratio(%)	90±5			
	材质 Material	聚全氟乙丙烯 FEP			
	标称外径 Nom.Dia(mm)	1.15±0.05			
电气性能 Electrical Characteristics					
项目 Item	标准值 Standard Value	项目 Item	频率 Frequency		
阻抗 Impedance (Ω)	50±2	衰减 Attenuation@20°C (dB/m)	1GHz 1.88		
电容 Capacitance(pF/m)	98		2GHz 2.55		
速率 Velocity(%)	70		3GHz 3.05		
驻波比 VSWR	≤1.30@DC-6GHz		4GHz 3.52		
最大工作电压 Max.Operating Voltage(V)	1000		5GHz 4.05		
最大工作频率 Max.Operating Frequency(GHz)	8		6GHz 4.40		
可靠性 Dependability					
最小弯曲半径(单次)Min.Bending Radius/Single	mm	5			
最小弯曲半径 ( 重复 ) Min.Bending Radius/Repeated	mm	10			
工作温度范围 Operating Temperature	°C	-55--+200			
包装 Packing					
包装方式 Packing Mode	纸盘 Papery Reel				
包装长度 The Length of Each Reel(m)	1000				
每盘段数 The Joints of Each Reel	≤5				
最小段长 Min. Segment Length(m)	≥10				
使用提示 Tips for Use					
存储环境 Storage Environment	温度：30°C以下，湿度：20-65%				
最佳保存周期 The Best Save Cycle	2 个月，2 个月以上上锡效果变差，但电性能不受影响，夏季高温高湿环境剥剥后需尽快流转				
加工温度 Processing Temperature	可短时承受 260°C的高温，300°C以上易发生分解，400°C以上发生显著的热分解				
铁氟龙收缩 Teflon Shrink	材料的固有属性，绝缘 0.2mm 以下，护套 0.3mm 以下				
护套窜动 Jacket Taaverse	加工长度 ( 护套残留长度 ) 低于 5CM 时易发生				

# PRODUCT SPECIFICATION

## 製品規格

**No. PRS-1907**

### MHF4L Connector

Plug Parts No. : 20565-001R-13, 20572-001R-08

Receptacle Parts No. : 20579-001E-01

**Qualification Test Report No. TR-14097**

					Prepared by	Reviewed by	Approved by
0	S14352	K.H	Nov./24/'14		K.Hashiba Nov./24/'14	T.Tagawa Nov./27/'14	T.Takano Nov./27/'14
REV.	ECN	BY	DATE	APP.			
REVISION RECORD							

DOCUMENT CLASSIFICATION  PRODUCT SPECIFICATION 製品規格	TITLE  MHF4L Connector Plug Parts No. : 20565-001R-13, 20572-001R-08 Receptacle Parts No. : 20579-001E-01	No.  PRS-1907
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## 1. 適応範囲／Scope

本規格は、MHF4L Connector の性能と試験条件について規定する。

試験条件は“PCI Express® M.2 Electromechanical Specification DRAFT Revision 1.0”に準ずる。

This specification covers the requirements for product performance and test methods of MHF4L Connector. Test method is complied with “PCI Express® M.2 Electromechanical Specification DRAFT Revision 1.0”.

## 2. 製品名称及び製品型番／Product Name and Parts No.

### 2.1 製品名称／Product Name

MHF4L connector

### 2.2 製品型番／Parts No.

Plug : 20565-001R-13

20572-001R-08

Receptacle : 20579-001E-01

## 3. 定格／Rating

### 3.1 適応ケーブル／Applicable cable

3.1.1 Part No. 20565-001R-13

#### (1) 構成

中心導体 : AWG#32(7/0.08), 銀メッキ軟銅線

誘電体 : フッ素樹脂, 外径 0.68(+0.04,-0.02)mm, 標準厚さ 0.22mm

外部導体 : 16/4/0.05, 標準外径 0.93mm, 銀メッキ軟銅線または錫メッキ軟銅線

ジャケット : フッ素樹脂, 外径 1.13(+0.08,-0.05)mm, 標準厚さ 0.1mm

#### (2) 仕様

特性インピーダンス :  $50 \pm 2 \Omega$  (TDR)

標準静電容量(参考値) : 97pF/m

293K(20°C)時の中心導体導体抵抗(参考値) :  $520 \Omega / \text{km}$

絶縁抵抗 :  $1,500M \Omega \cdot \text{km}$  以上

耐電圧 : AC 500V・1 分間にて絶縁破壊の無い事

#### (1) Description

Inner conductor : AWG#32(7/0.08)

Silver plating annealed copper wire

Dielectric core : Fluoro-plastics, diameter 0.68(+0.04,-0.02)mm, nominal thickness 0.22mm

Outer conductor : 16/4/0.05, nominal diameter 0.93mm, silver plating annealed copper wire or tin-copper alloy

Jacket : Fluoro-plastics, diameter 1.13(+0.08,-0.05)mm, nominal thickness 0.1mm

#### (2) Requirements

Characteristic impedance :  $50 \pm 2 \Omega$  by TDR method

Nominal capacitance(Reference value) : 97 pF/m

Conductor resistance of inner conductor at 293K (20°C)(Reference value) :  $520 \Omega / \text{km}$

Insulation resistance :  $1,500M \Omega \cdot \text{km}$  MIN.

Dielectric withstand voltage : no breakdown at AC 500V for 1 minutes.

DOCUMENT CLASSIFICATION  PRODUCT SPECIFICATION 製品規格	TITLE  MHF4L Connector Plug Parts No. : 20565-001R-13,20572-001R-08 Receptacle Parts No. : 20579-001E-01	No.  PRS-1907
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## 3.1.2 Part No. 20572-001R-08

## (1) 構成

中心導体 : AWG#36(7/0.05), 銀メッキ軟銅線  
 誘電体 : フッ素樹脂, 外径 0.4(+0.04,-0.02)mm, 標準厚さ 0.125mm  
 外部導体 : 8/5/0.05, 標準外径 0.65mm, 銀メッキ軟銅線または錫メッキ軟銅線  
 ジャケット : フッ素樹脂, 外径 0.81(+0.04,-0.02)mm, 標準厚さ 0.08mm

## (2) 仕様

特性インピーダンス :  $50 \pm 2 \Omega$  (TDR)  
 標準静電容量(参考値) : 96pF/m  
 293K(20°C)時の中心導体抵抗(参考値) : 1,400  $\Omega$ /km  
 絶縁抵抗 : 1,000M  $\Omega$  · km 以上  
 耐電圧 : AC 1,000V・1分間にて絶縁破壊の無い事

## (1) Description

Inner conductor : AWG#36(7/0.05)  
 Silver plating annealed copper wire  
 Dielectric core : Fluoro-plastics, diameter 0.4(+0.04,-0.02)mm, nominal thickness 0.125mm  
 Outer conductor : 8/5/0.05, nominal diameter 0.65mm, silver plating annealed copper wire or tin-copper alloy  
 Jacket : Fluoro-plastics, diameter 0.81(+0.04,-0.02)mm, nominal thickness 0.08mm

## (2) Requirements

Characteristic impedance :  $50 \pm 2 \Omega$  by TDR method  
 Nominal capacitance(Reference value): 96 pF/m  
 Conductor resistance of inner conductor at 293K (20°C)(Reference value) : 1,400  $\Omega$ /km  
 Insulation resistance : 1,000 M  $\Omega$  · km MIN.  
 Dielectric withstand voltage : no breakdown at AC 1,000V for 1 minutes.

## 3.2 使用条件/Operating Condition

電圧/Rated voltage	AC60Vr.m.s			
公称特性インピーダンス/ Nominal characteristic impedance	50 ohm.			
周波数/Frequency	Plug : 0.1GHz～6GHz Receptacle : 0.1GHz～12GHz			
VSWR	Frequency	0.1～3GHz	3～6GHz	6～12GHz
	Plug	1.30 MAX.	1.45 MAX.	
	Receptacle	1.30 MAX.	1.40 MAX.	1.85 MAX.
使用温度範囲/ Service temperature	233K～363K (-40°C～90°C)			

DOCUMENT CLASSIFICATION  PRODUCT SPECIFICATION 製品規格	TITLE  MHF4L Connector Plug Parts No. : 20565-001R-13, 20572-001R-08 Receptacle Parts No. : 20579-001E-01	No.  PRS-1907
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#### 4. 試験及び性能 / Test and Performance

##### 試験条件 / Test Condition

本試験の初期とは、出荷時の状態のことである。

特に指定のない限り、測定と試験は、MIL-STD-202に基づき以下の条件で行う。

This initial test is equal to it's at shipping condition and unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202.

温度 / Temperature ... 288K ~ 308K (15°C ~ 35°C)

気圧 / Pressure ... 866hPa ~ 1066hPa (650mmHg ~ 800mmHg)

相対湿度 / Relative Humidity ... 45 ~ 75%R.H.

##### 4.1. 電気的性能 / Electrical Performance

No	項目 / Items	試験条件 / Test Conditions	規格 / Specifications
1.	接触抵抗  Contact Resistance	テスト基板にリセプタクルコネクタを半田付けし、プラグコネクタを嵌合させ、開回路電圧 20mV DC 以下、短絡電流 10mA DC 以下で 4 端子法に芯線及びシールド線の図 1 に示す区間の接触抵抗を測定する。 MIL-STD-202 試験法 307 に準拠。  Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in Fig.1 by the four terminal methods. Apply the low level condition of 20mV MAX. DC for the open circuit voltage and 10mA MAX. DC for the closed circuit current in accordance with MIL-STD-202, Method 307.	[中心コントクト] 初期: 20mΩ MAX. 試験後: $\triangle R$ 20mΩ MAX.  [外部コントクト] 初期: 20mΩ MAX. 試験後: $\triangle R$ 20mΩ MAX.
2.	絶縁抵抗  Insulation Resistance	リセプタクル及びプラグコネクタを嵌合させた状態で、中心導体と外部導体の間に DC100V を印加し、測定する。 MIL-STD-202 試験法 302 に準拠。  Mate the plug and receptacle connector together, and then apply DC 100 V between the inner contact and the ground contact in accordance with MIL-STD-202, Method 302.	初期 : 500 MΩ MIN. 試験後 : 100 MΩ MIN.  Initial : 500 MΩ MIN. After testing : 100 MΩ MIN.
3.	耐電圧  Dielectric Withstanding Voltage	リセプタクル及びプラグコネクタを嵌合させ、隣接する端子間に AC200V(実効値)を一分間印加する。 MIL-STD-202 試験法 301 に準拠。  Mate the receptacle and plug connector together, then apply AC 200V(rms) between the neighboring contacts for a minute in accordance with MIL-STD-202, Method 301.	沿面放電、空中放電、絶縁破壊等の異常無きこと。  No creeping discharge, flashover, no insulator breakdown shall occur.
4.	VSWR	ネットワークアナライザにて図 2 のように電圧定在波比を測定する。 周波数 : 0.1GHz ~ 12GHz  Measure the VSWR as shown in Fig.2 by the network analyzer. Frequency : 0.1GHz ~ 12GHz	[Plug] 1.30 MAX. at 0.1 ~ 3GHz 1.45 MAX. at 3 ~ 6GHz  [Receptacle] 1.30 MAX. at 0.1 ~ 3GHz 1.40 MAX. at 3 ~ 6GHz 1.85 MAX. at 6 ~ 12GHz

DOCUMENT CLASSIFICATION  PRODUCT SPECIFICATION 製品規格	TITLE  MHF4L Connector Plug Parts No. : 20565-001R-13, 20572-001R-08 Receptacle Parts No. : 20579-001E-01	No.  PRS-1907
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## 4.2. 機械的性能 / Mechanical Performance

No	項目 / Items	試験条件 / Test Conditions	規格 / Specifications
1.	挿入力 / 抜去力  Mating Force And Un-mating Force	テスト基板にリセプタクルを半田付けする。その後、試料を挿抜試験機に取り付け、嵌合軸に平行に毎分 $25 \pm 3$ mm の速度で、初期及び 30 回目の挿入抜去力を測定する。  Solder the receptacle connector to the test board, then place the board and plug on push-on/pull-off machine, measure of initial and mating/un-mating 30 cycles at a speed $25 \pm 3$ mm/min. along the mating axis.	[挿入力 / Mating] 初期/Initial : 30 N MAX. 30 回目/30cycles: 30 N MAX.  [抜去力 / Un-mating] 初期/Initial : 20 N MAX. 5 N MIN. 30 回目/30cycles: 20 N MAX. 3 N MIN.
2.	30 度引張  Cable retention force at 30 degree	プラグ及びリセプタクルコネクタを嵌合させた状態で、図.3 の様にケーブルを $30^\circ$ 傾け、10[N]の力で矢印の方向に 10 回引張る。  Mate Plug with Receptacle and tilt cable by 30 degree and pull the cable by 10N force with 10cycles toward arrowhead direction. (Fig.3)	[外観] 異常無き事。 [瞬断] 試験中、 $1 \mu s$ を超える電気的瞬断の無き事。  [Appearance] No abnormality [Electrical discontinuity] No electrical discontinuity grater than $1 \mu s$ .
3.	水平引張  Cable retention force at 0 degree	プラグ及びリセプタクルコネクタを嵌合させた状態で、図.4 の様に $\phi 1.13$ cable は水平方向 20[N]の力で引張る。 $\phi 0.81$ cable の場合は、10[N]の力で引張る。  Mate Plug with Receptacle and pull the $\phi 1.13$ cable by 20N force toward horizontal direction. (Fig.4) In case of $\phi 0.81$ cable strength should have more than 10N.	[外観] 異常無き事。 [瞬断] 試験中、 $1 \mu s$ を超える電気的瞬断の無き事。  [Appearance] No abnormality [Electrical discontinuity] No electrical discontinuity grater than $1 \mu s$ .
4.	耐久性  Durability	テスト基板にリセプタクルを半田付けする。その後、試料を挿抜試験機に取り付け、嵌合軸に平行に毎分 $25 \pm 3$ mm の速度で、30 回挿入抜去を行う。  Solder the receptacle connector to the test board, then place the board and plug on the push-on/pull-off machine, and repeat mating and un-mating 30 cycles at a speed $25 \pm 3$ mm/min. along the mating axis.	[外観] 異常無き事。 [接触抵抗] 4.1.1 を満足する事。  [Appearance] No abnormality [Contact Resistance] Shall meet 4.1.1.
5.	半田剥離強度  Receptacle shearing strength	テスト基板に半田付けされたリセプタクルコネクタを図.5 のように各方向から押す。 コネクタが破壊されるときの強度を測定する。  Solder the receptacle connector to the test board, Push the receptacle connector from each directions as Shown in Fig.5. Measure the strength when the connector is broken.	[剥離強度] 20N MIN.  [Shearing strength] 20N MIN.

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No	項目 / Items	試験条件 / Test Conditions	規格 / Specifications
6.	耐振動性	DC100mA の電流を流しながら、嵌合状態のコネクタに下記の振動を加える。 周波数: 10Hz → 100Hz → 10Hz / 約 15 分間 片振幅、加速度 : 1.5mm or 59m/s <sup>2</sup> (6G) 方向、サイクル : 3 つの互いに直角な方向について各 5 サイクル(約 75 分)実施。	[外観] 異常無き事。 [接触抵抗] 4.1.1.を満足する事。 [瞬断] 試験中、1 μ s を超える電気的瞬断の無き事。
	Vibration	Apply the following vibration to the mating connector. During the testing, run 100mA DC to check electrical discontinuity. Frequency : 10Hz → 100Hz → 10Hz / approx 15minutes. Half amplitude, Peak value of acceleration : 1.5mm or 59m/s <sup>2</sup> (6G) Directions, cycle : 3 mutually perpendicular direction, 5 cycles (approx 75minutes.) for each direction.	[Appearance] No abnormality [Contact Resistance] Shall meet 4.1.1. [Electrical discontinuity] No electrical discontinuity grater than 1 μ s.
7.	耐衝撃性	嵌合状態のコネクタを、衝撃試験機に取り付け、下記の衝撃を加える。尚、試験中に DC100mA の電流を流して電気的瞬断を確認する。 MIN-STD-202 試験法 213 試験条件 B に準拠。 最大加速度 : 735m/s <sup>2</sup> (75G) 標準持続時間 : 11m/sec 波形 : 半波正弦波 方向 : 直交する 6 方向、各 3 回	[外観] 異常無き事。 [接触抵抗] 4.1.1.を満足する事。 [瞬断] 試験中、1 μ s を超える電気的瞬断の無き事。
	Shock	Apply the following shock to the mating connector in accordance with MIL-STD-202, Method 213, Condition B. During the testing, run 100mA DC to check electrical discontinuity. Peak value of acceleration : 735m/s <sup>2</sup> (75G) Duration : 11msec Wave Form : Half sinusoidal Directions, cycle : 6 mutually perpendicular direction, 3 cycles for each direction	[Appearance] No abnormality [Contact Resistance] Shall meet 4.1.1. [Electrical discontinuity] No electrical discontinuity grater than 1 μ s.

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## 4.3.耐環境性能／Environmental Performance

No	項目 / Items	試験条件 / Test Conditions	規格 / Specifications
1.	熱衝撃  Thermal Shock	<p>テスト基板にリセプタクルコネクタを半田付けし、プラグコネクタと嵌合させ、以下の環境条件に暴露する。 MIL-STD-202 試験法 107 試験条件 A に準拠。</p> <p>温度 : 218K(-55°C):30 分 → 358K(85°C):30 分 移動時間 : 5 分以下. 回数 : 5 サイクル</p> <p>Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment in accordance with MIL-STD-202, Method 107, Condition A.</p> <p>Temperature: 218K(-55°C):30min. → 358K(85°C):30min. Transition time: 5min. MAX. No. of cycles : 5 cycles</p>	<p>[外観] 異常無き事。 [接触抵抗] 4.1.1.を満足する事。 [絶縁抵抗] 4.1.2.を満足する事。 [耐電圧] 4.1.3.を満足する事。</p> <p>[Appearance] No abnormality [Contact Resistance] Shall meet 4.1.1. [Insulation Resistance] Shall meet 4.1.2. [Dielectric Withstanding Voltage] Shall meet 4.1.3.</p>
2.	高温寿命  High Temperature Life	<p>テスト基板にリセプタクルコネクタを半田付けし、プラグコネクタと嵌合させ、以下の環境条件に暴露する。 MIL-STD-202 試験法 108 試験条件 B に準拠。</p> <p>温度: 363±2K (90±2°C) 期間: 96 時間</p> <p>Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment in accordance with MIL-STD-202, Method 108, Condition B.</p> <p>Temperature: 363±2K (90±2°C) Duration: 96 hours</p>	<p>[外観] 異常無き事。 [接触抵抗] 4.1.1.を満足する事。</p> <p>[Appearance] No abnormality [Contact Resistance] Shall meet 4.1.1.</p>
3.	湿度(定常状態)  Humidity (Steady State)	<p>テスト基板にリセプタクルコネクタを半田付けし、プラグコネクタと嵌合させ、以下の環境条件に暴露する。 MIL-STD-202 試験法 103 試験条件 A に準拠。</p> <p>温度: 313±2K (40±2°C) 湿度: 90~95%RH 期間: 96 時間</p> <p>Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment in accordance with MIL-STD-202, Method 103, Condition A.</p> <p>Temperature: 313±2K (40±2°C) Humidity : 90~95%RH Duration : 96 hours</p>	<p>[外観] 異常無き事。 [接触抵抗] 4.1.1.を満足する事。 [絶縁抵抗] 4.1.2.を満足する事。 [耐電圧] 4.1.3.を満足する事。</p> <p>[Appearance] No abnormality [Contact Resistance] Shall meet 4.1.1. [Insulation Resistance] Shall meet 4.1.2. [Dielectric Withstanding Voltage] Shall meet 4.1.3.</p>

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No	項目 / Items	試験条件 / Test Conditions	規格 / Specifications
4.	塩水噴霧  Salt Water Spray	テスト基板にリセプタクルコネクタを半田付けし、プラグコネクタと嵌合させ、以下の環境条件に暴露する。 MIL-STD-202 試験法 101 試験条件 B に準拠。 温度 : $308 \pm 2K$ ( $35 \pm 2^{\circ}C$ ) 塩水濃度 : $5 \pm 1\%$ [重量比] 期間 : 48 時間  Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment in accordance with MIL-STD-202, Method 101, Condition B. Temperature : $308 \pm 2K$ ( $35 \pm 2^{\circ}C$ ) Salt water density: $5 \pm 1\%$ [by weight] Duration : 48 hours	[外観] 異常無き事。 [接触抵抗] 4.1.1.を満足する事。  [Appearance] No abnormality [Contact Resistance] Shall meet 4.1.1.
5.	硫化水素ガス  H <sub>2</sub> S Gas	テスト基板にリセプタクルコネクタを半田付けし、プラグコネクタと嵌合させ、以下の環境条件に暴露する。 温度 : $313 \pm 2K$ ( $40 \pm 2^{\circ}C$ ) 相対湿度: $80 \pm 5\%$ RH ガス : H <sub>2</sub> S $3 \pm 1$ ppm 期間 : 48 時間  Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment Temperature : $313 \pm 2K$ ( $40 \pm 2^{\circ}C$ ) Relative Humidity: $80 \pm 5\%$ RH Gas : H <sub>2</sub> S $3 \pm 1$ ppm Duration : 48 hours	[外観] 性能上有害な異常無き事。 [接触抵抗] 4.1.1.を満足する事。  [Appearance] No abnormality adversely affecting the performance shall occur. [Contact Resistance] Shall meet 4.1.1.

## 4.4.その他 (Others)

No	項目 / Items	試験条件 / Test Conditions	規格 / Specifications
1.	半田付け性  Solder ability	端子の半田付け部を $518 \pm 5K$ ( $245 \pm 5^{\circ}C$ ) の半田槽内に $5 \pm 0.5$ 秒間浸す。フラックスは、RMA 型を使用し、5~10 秒間浸漬するものとする。 MIL-STD-202F 試験法 208E に準拠。  Dip the soldering point of the contacts in the solder bath at $518 \pm 5K$ ( $245 \pm 5^{\circ}C$ ) for $5 \pm 0.5$ seconds after immersing the tine in the flux of RMA type for 5 to 10 seconds in accordance with MIL-STD-202F, Method 208E.	浸した面積の 95%以上に半田が付着し、かつピンホール空隙が1箇所に集中せず、5%以下である事。  The surface of the dipped contact must become 95% wet and the non-wetted pinholes must not accumulate in one area but be distributed and must be less than 5% of the contact area to be soldered.
2.	半田耐熱性  Soldering Heat Resistance	リフロー温度プロファイルは図 6 を参照。 リフロー回数は 2 回以内。 メタルマスクサイズは図 7 を参照。  Reflow temperature profile as shown in Fig.6. The number of times of Reflow is within 2. Metal mask size Fig.7	機能を損なう変形及び欠陥の無き事。  No abnormality adversely affecting the performance shall not occur.

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#### 4.5 試験順序と試料数／Test Sequence and Sample Quantity

表(Table)1 試験順序と試料数／Test Sequence and Sample Quantity

※グループ表中の番号は、試験順序を示す。

The number of group is test sequence.

試験項目／Test Item	Group															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
(1) 接触抵抗 Contact Resistance						1,3		1,3	1,3	1,5	1,3	1,5	1,3	1,3		
(2) 絶縁抵抗 Insulation resistance										2,6		2,6				
(3) 耐電圧 Dielectric withstanding voltage	1									3,7		3,7				
(4) VSWR		1														
(5) 挿抜力/抜去力 mating force/Unmating force			1													
(6) 30度引張 Cable retention force at 30 degree				1												
(7) 水平引張 Cabel retention force at 0 degree					1											
(8) 耐久性 Durability						2										
(9) 半田剥離強度 Shearing strength							1									
(10) 耐振動性 Vibration								2								
(11) 耐衝撃性 Shock									2							
(12) 热衝撃 Thermal shock										4						
(13) 高温寿命 High temperature life											2					
(14) 湿度(定常状態) Humidity(steady state)												4				
(15) 塩水噴霧 Salt Water Spray													2			
(16) 硫化水素ガス H <sub>2</sub> S Gas														2		
(17) 半田付け性 Solder ability															1	
(18) 半田耐熱性 Soldering Heat Resistance																1
Sample QTY pcs.	Plug	10	10	10	10	10	10	----	10	10	10	10	10	10	10	----
	Receptacle	10	10	10	10	10	10	12	10	10	10	10	10	10	10	10
Test Board pcs.		10	10	10	10	10	10	12	10	10	10	10	10	10	10	10

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## 5. 測定方法／Measuring method

### 5.1 接触抵抗測定方法／Measuring method of Contact Resistance

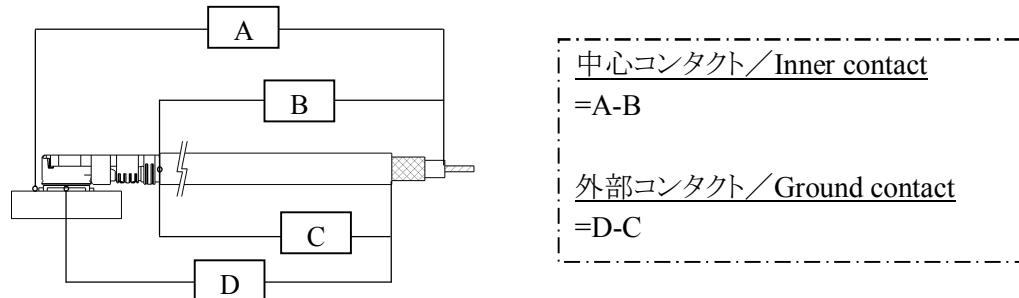


図 1. 接触抵抗

(Fig.1 Contact Resistance)

### 5.2 VSWR 測定方法／Measuring method of VSWR

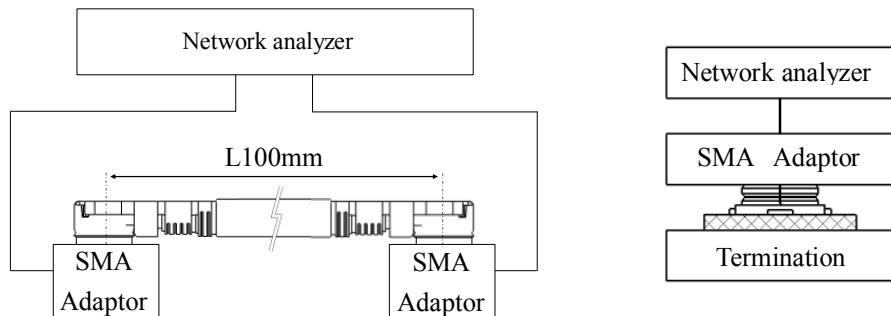


図 2. VSWR

(Fig.2 VSWR)

### 5.3 30 度引張測定方法／Measuring method of Cable retention force at 30 degree

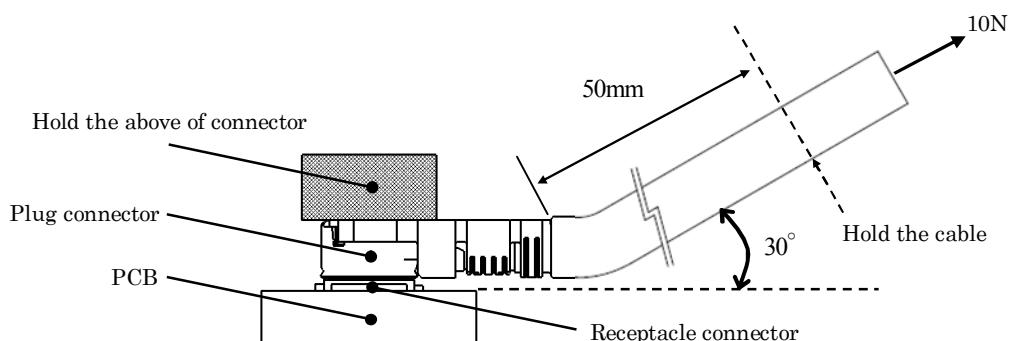


図 3. 30 度引張

(Fig.3 Cable retention force at 30 degree)

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#### 5.4 水平引張測定方法／Measuring method of cable retention force at 0 degree

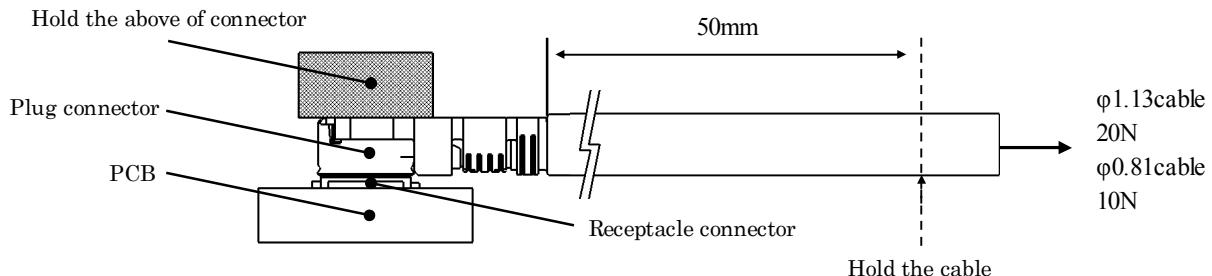


図4. 水平引張

(Fig.4 Cable retention force at 0 degree)

#### 5.5 半田剥離強度測定方法／Measuring method of receptacle shearing strength

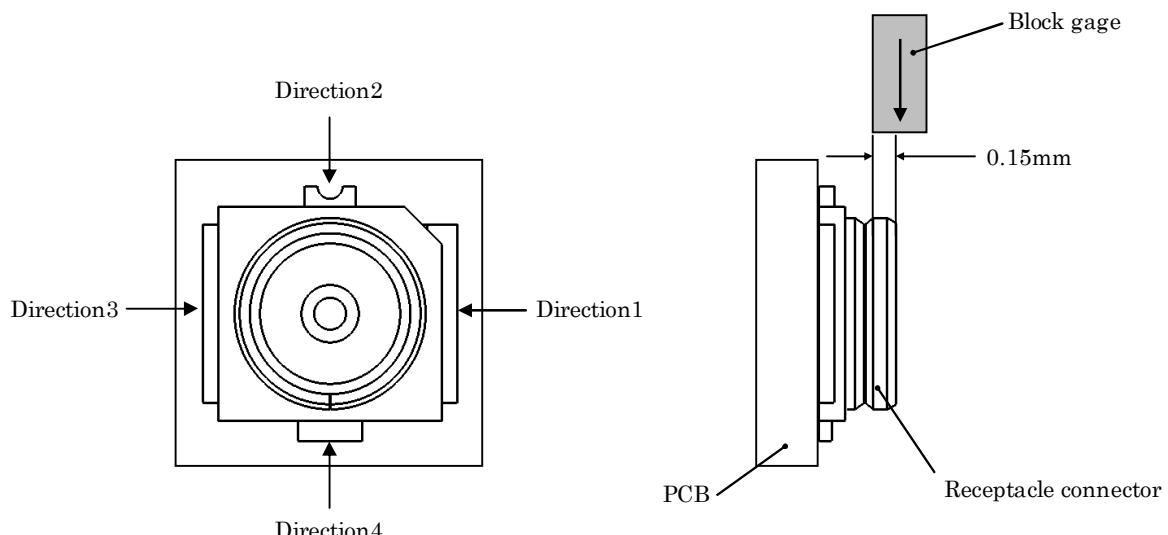


図5. 半田剥離強度

(Fig.5 Receptacle shearing strength)