



JOINSOON ELECTRONICS  
MFG. CO., LTD

承認書  
APPROVAL SHEET

Vendor Name	建舜電子制造股份有限公司		
承認序號(APPROVAL SHEET NO.)	APP-H170030		
Model Description	MERCURY WIFI/BT		
CUSTOMER P/N	69-910-000007R1		
JEM P/N	1510-0132-0005		
檔案號碼 (FILE NO.)	IAH160223	JEM Rev	A
Reported By	Andy	Checked By	Jane
Approved By	Jess	發行日期 (RELEASED DATE)	2017/10/19



## 編號原則：

1. 成品料號編碼結構如下：

151 X - XX XX - XXXX  
(1) (2) (3) (4) (5)

(1)成品類（固定為“151”）

(2)加工類別碼（“0”為保稅料，“A”為非保稅料）

(3)成品類別碼,共2碼(如下表原則)

(4)客戶代碼，共2碼

(5)流水碼（0001~9999）

代碼	類別識別碼
01	天線 PIFA
02	Dipole
03	RF Cable Assy
04	USB
05	Sata Cable
06	Wire Harness
07	LVDS
08	FFC

6

5

4

3

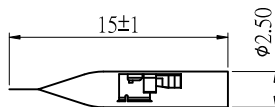
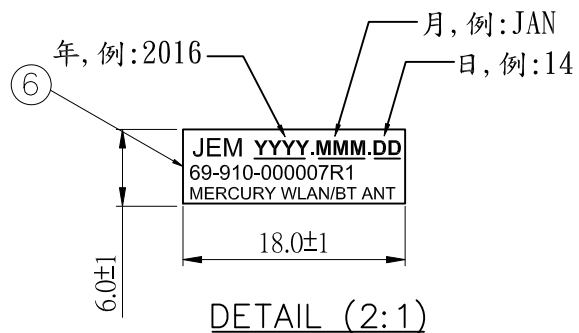
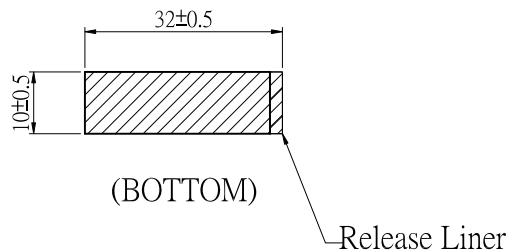
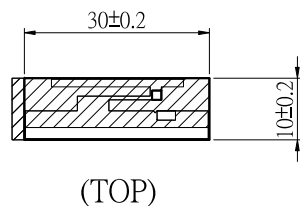
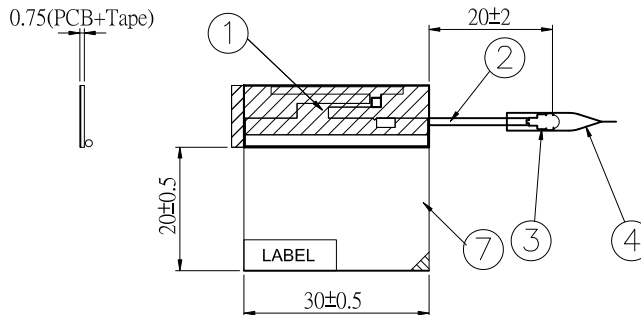
2

1

C-DWG

ELECTRICAL TEST :  
 Frequency Range : 2.4~2.5GHz,5.15~5.85GHz  
 Impedance : 50 Ohms Nominal  
 Peak Gain : ≤2dBi  
 Radiation : Linear

REV.	ECN NO.	LOCATIONS	DESCRIPTION	DATE	DESIGN
01		△	New Drawing	10/28 '16	HYH
02			Modify PCB layout	12/30 '16	HYH
03			Modify PCB layout	07/24 '17	HYH



DETAIL (2:1)  
PROTECTIVE TUBE

NO.	ITEM	SPECIFICATION	QTY.	REMARK
7	FOIL	CU FOIL SIZE : 30*20*0.08mm	1	
6	LABEL	SIZE: 18*6mm	1	
5	TAPE	G9000 32*10*0.5mm	1	
4	TUBE	PE,PENETRABILITY SIZE:D1.5*15.0mm	1	
3	CONN.	IPEX MHF FOR φ1.13	1	
2	CABLE	RF COAXIAL CABLE ,OD:1.13mm-BLACK	1	
1	ANTENNA	WLAN AUX PCB SIZE:30*10*0.6t	1	

建昇電子		DESCRIPTION:	映泰 P/N	69-910-000007R1
		MERCURY WiFi/BT ANT		

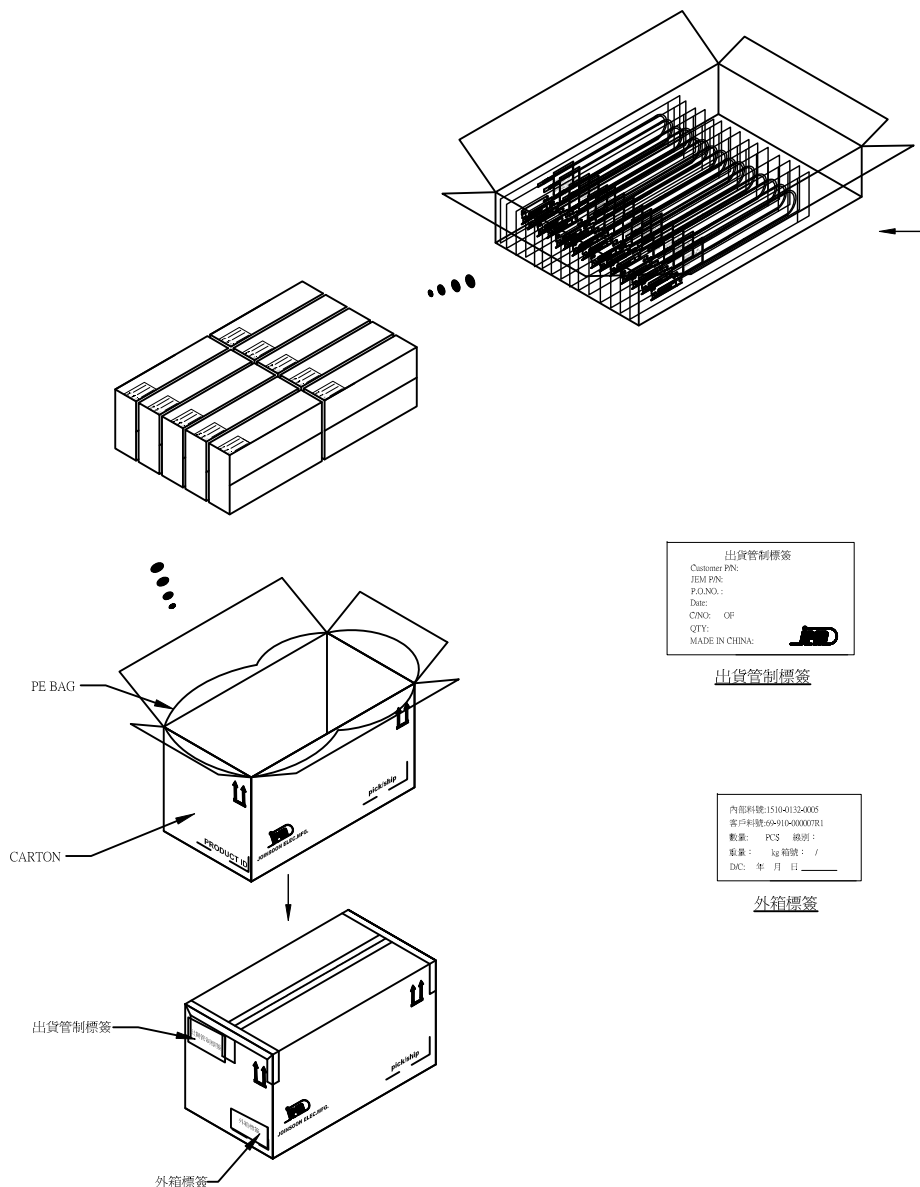
DATE	07/24 '16	PART NO	1510-0132-0005	REV	03
DWN		FILE NO	IAH160223	UNIT	MM
CHK		SCALE: NA	SHEET	1/1	
APP		TOLERANCES	0.X:±0.50 0.XX:±0.25 ∠:±1°		

The products accord with directive and edition revised of RoHS (2011/65/EU).

REV.	ECN NO.	LOCATIONS	DESCRIPTION	DATE	DESIGN
A			THE FIRST EDITION	3/29-17	胡永紅

### 客戶特殊要求:

1.外箱內部標籤注明產品淨重和毛重。

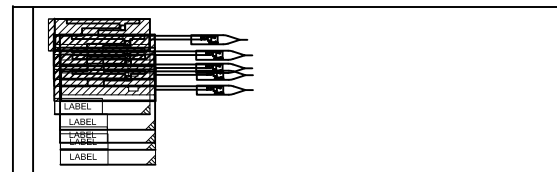


**出貨管制標籤**  
 Customer PIN:  
 JEM PIN:  
 P/ONC:  
 Date:  
 C/NO: OF  
 QTY:  
 MADE IN CHINA

出貨管制標籤

內箱料號:1510-0132-0005  
 客戶料號:69-910-000007R1  
 數量: PCS 級別:  
 重量: kg 箱號: /  
 DC: 年 月 日

外箱標籤



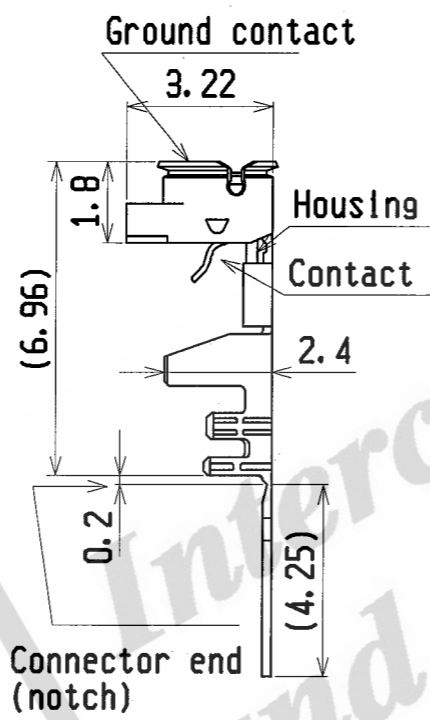
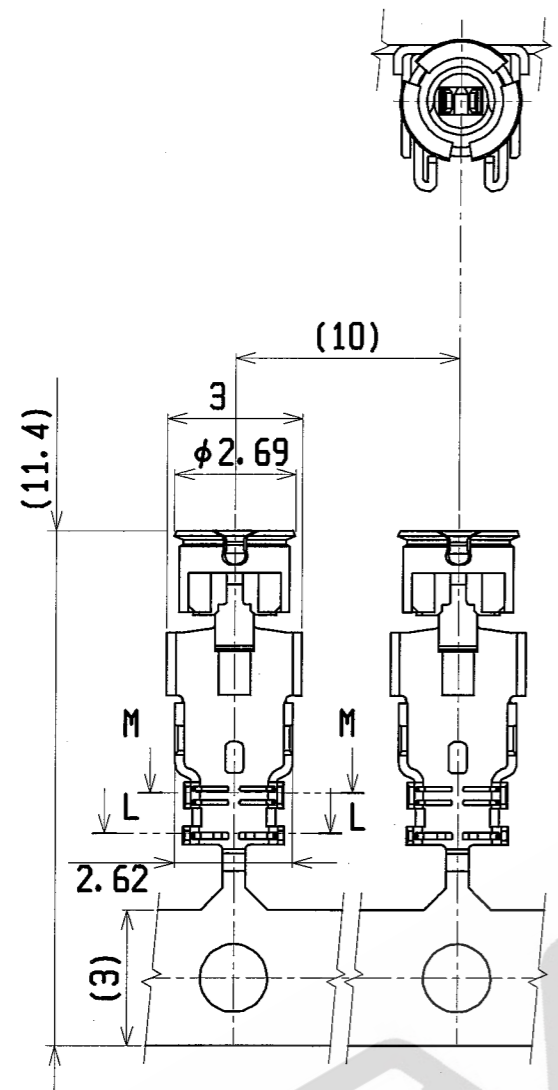
5PCS/PE BAG

#### NOTES:

- MATERIAL:
  - PE BAG:PE
  - PAPER BOX:CORRUGATED PAPER BOARD
  - SHIPPING CARTON:CORRUGATED PAPER BOARD
- QUANTITY:
  - PRIMARY PACKING: 5pcs/PE BAG
  - SECONARY PACKING: 200PCS/BOX
  - FINALLY PACKING:10BOX/CARTON 2000(200\*10)pcs
- NET WEIGHT:
  - NET WEIGHT: 2.08KG/CARTON
  - GROSS WEIGHT:3.61KG/CARTON

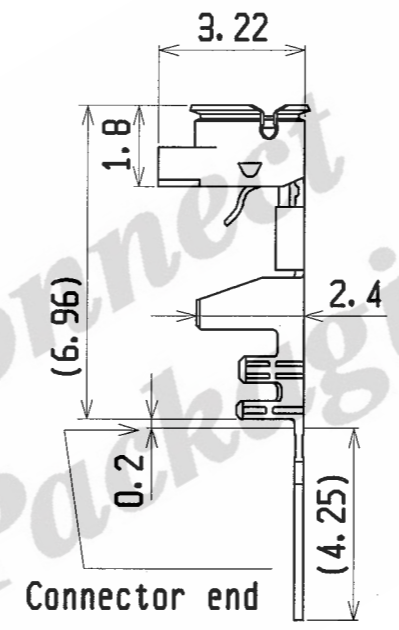
<b>JEM</b> 建昇電子		DESCRIPTION:	TPV P/N	69-910-000007R1	
		MERCURY WIFI/BT			
DATE	3/29-17'	PART NO	1510-0132-0005	REV	A
DWN		FILE NO	IAH160223	UNIT	MM
CHK			SCALE: 1/1	SHEET	1/1
APP		TOLERANCES	O.X:±0.50 O.XX±0.20	∠:±1°	

PART NO.  
20278-\*\*\*R-\*\*\*



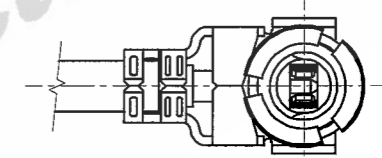
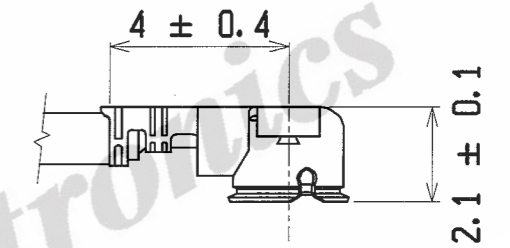
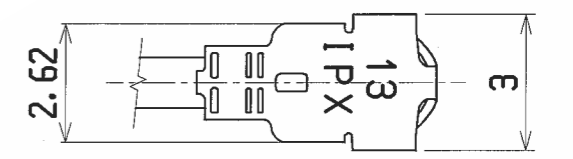
Part No. 20278-101R-08  
20278-102R-08  
20278-101R-13  
20278-102R-13  
20278-101R-32  
20278-102R-32

For hand tool  
(with notch)



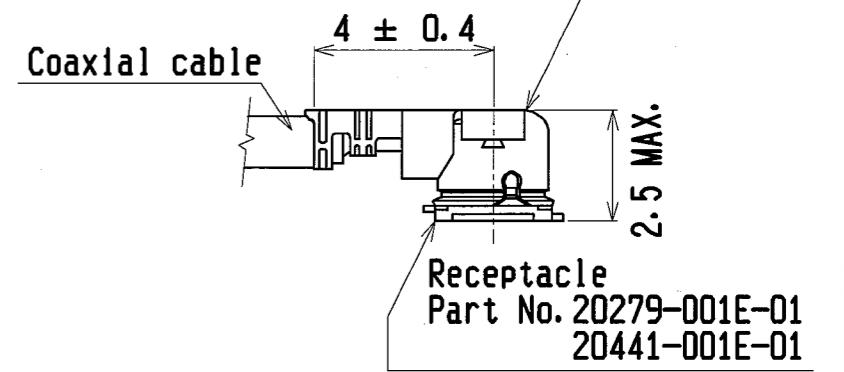
Part No. 20278-111R-08  
20278-112R-08  
20278-111R-13  
20278-112R-13  
20278-111R-32  
20278-112R-32

For semi auto  
termination machine  
(without notch)



Cable Ass'y

Plug  
P/N 20278-1\*\*R-08  
P/N 20278-1\*\*R-13  
P/N 20278-1\*\*R-32



MATING

GENERAL TOLERANCE	
6 MAX.	±0.2
6 OVER MAX. 30	±0.3
30 OVER MAX. 120	±0.5
ANGLE	±2°

19C Z08056	K.O	Feb/04/08	EK	DESIGN'D BY	DATE	<b>I-PEX</b> Interconnect and Packaging Electronics TOKYO, JAPAN	TITLE MHF series micro coaxial connector plus vertical (ground contact : gold plating)	General		
18C Z07346	K.O	Jul/10/08	E.K	K. Ohbayashi	JUN/13/01					
17C Z05233	K.O	May/18/05	T.H	CHK'D BY	DATE					
16C Z05024	K.O	Jan/20/05	T.H	APP'D BY	DATE					
15C Z04398	K.O	Nov/12/04	T.H	K. Katabuchi	JUN/13/01					
REV	ECN	BY	DATE	APP						
REV. RECORD				CUSTOMER	PROJECTION	SCALE	UNIT	DWG. No.	SHEET	REV.
SERIES No. 2814				COPY	⊙	6/1	mm	20278	1/4	19C



*JOINSOON ELECTRONICS MFG .CO,LTO*

*Mercury Antenna*

JOINSOON ELECTRONICS MFG .CO,LTO

2017/07/20



# APPROVAL SHEET

客戶名稱：映泰

承認序號 (APPROVAL SHEET NO.) :

品名規格 (DESCRIPTION) : Mercury Antenna

檔案號碼 (FILE NO.) :

版次 (REV) : A

料號 (PART NO.) :

工程師 (ENGINEER) : Jess

品保確認 (QC. CHK.) : Jane

工程確認 (ENG. CHK.) : Jess

發行日期 (RELEASED DATE) : 2017/07/20

生產廠區名稱：蘇州建合精密電子有限公司

地址：蘇州市相城區渭塘鎮通成路118號





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# [ 2. Antenna Photo ]



WiFi



# 3. Antenna Related Data

## 4.1 Frequency Range:

3G Antenna : 824~960 1710~2170 MHz

WiFi Antenna : 2.4~2.5 5.15~5.85GHz

4.2 Impedance : 50Ω

4.3 Peak Gain : ≤2

4.4 3G V.S.W.R : ≤4 @ 824~960 MHz

: ≤3 @ 1710~2170 MHz

WiFi V.S.W.R : ≤2 @ 2.4~2.5 / 5.15~5.85 GHz

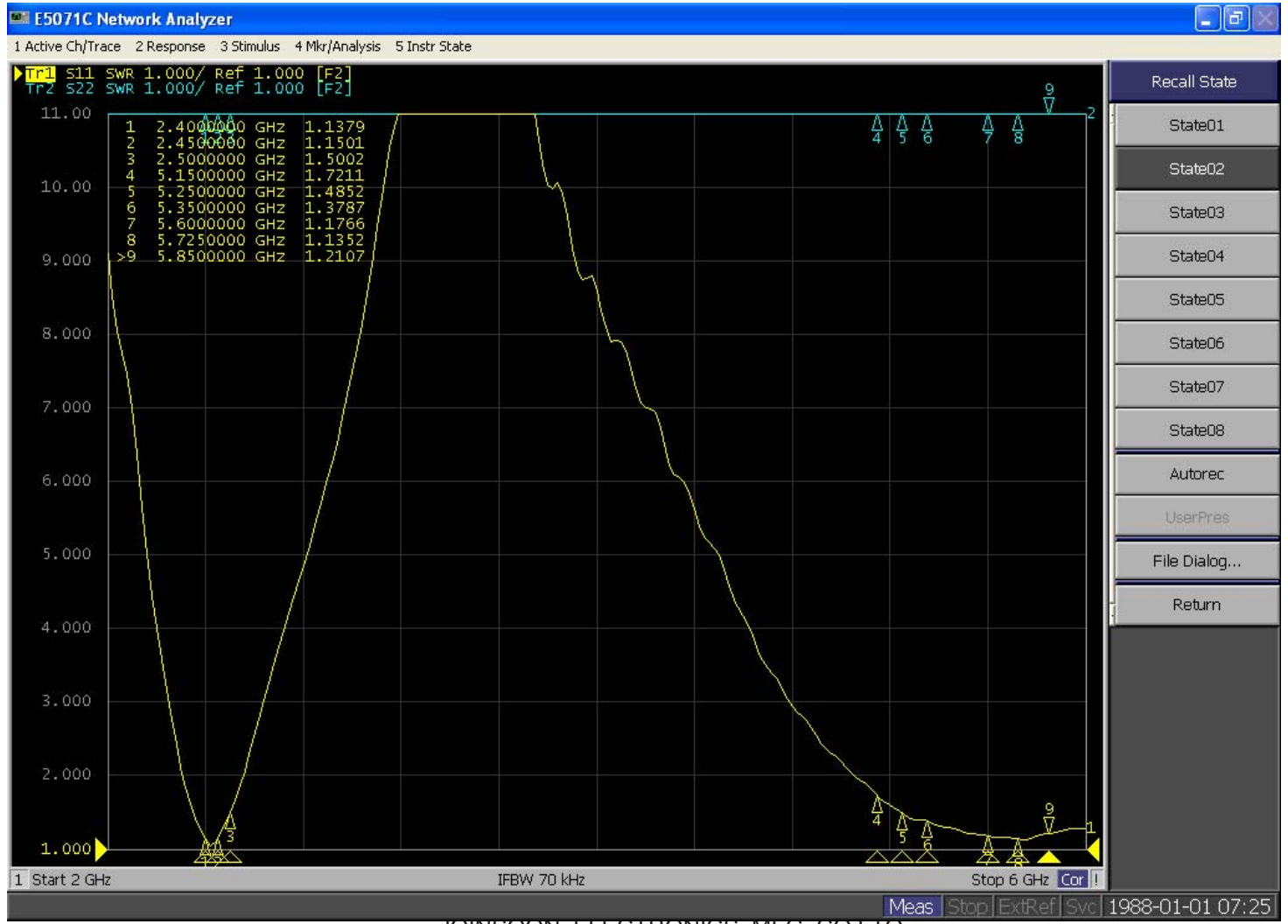
4.4 Polarization : Linear

4.5 Antenna Type : PCB Type

4.6 Cable : Φ1.13mm Black

4.7 WIFI Connector : RF Mini Plug

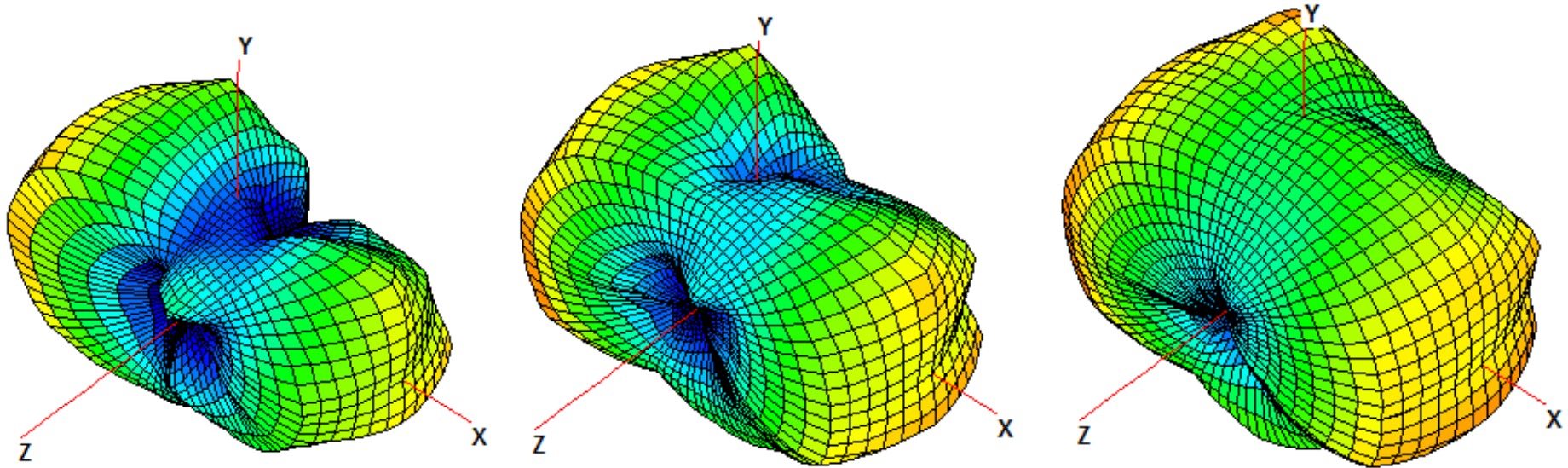
# 4.VSWR WiFi



# 5. Test Result

	WIFI										
Frequency (MHz)	2400	2450	2500	5150	5250	5350	5500	5670	5700	5785	5850
Average Gain (dB)	-2.96	-3.01	-2.67	-2.29	-1.89	-1.31	-1.90	-2.41	-2.22	-2.38	-2.37
Peak EIRP (dBm)	1.10	1.39	1.16	2.26	2.26	2.24	1.80	1.96	2.27	2.92	3.01
Efficiency (%)	50.53	50.05	54.07	59.06	64.76	74.04	64.63	57.47	60.02	57.86	58.00

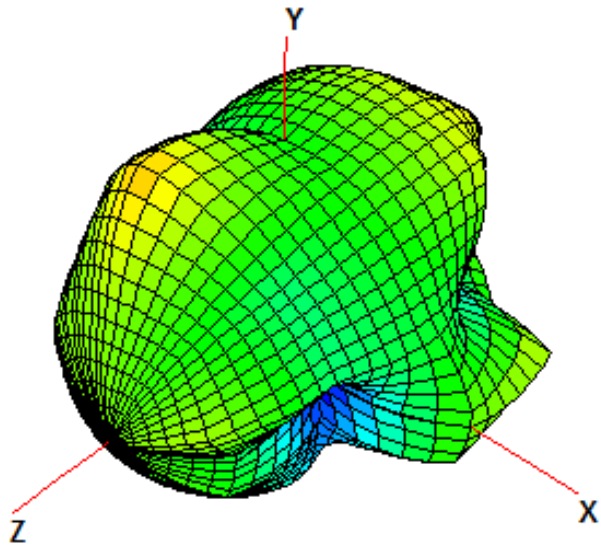
WiFi Antenna



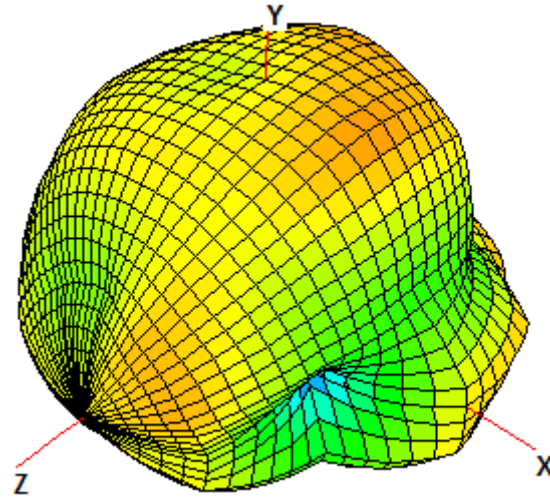
2400 MHz

2450 MHz

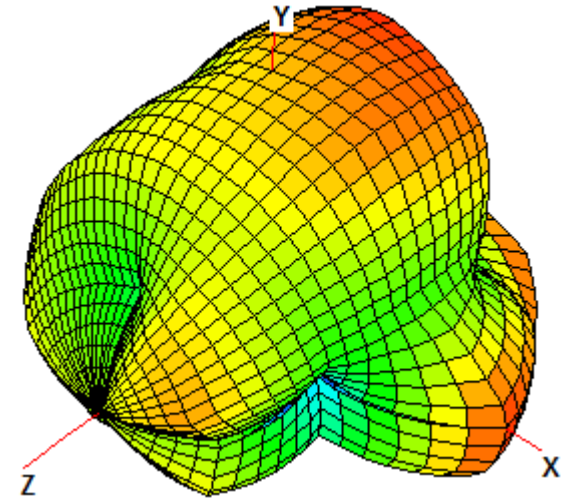
2500 MHz



5150 MHz

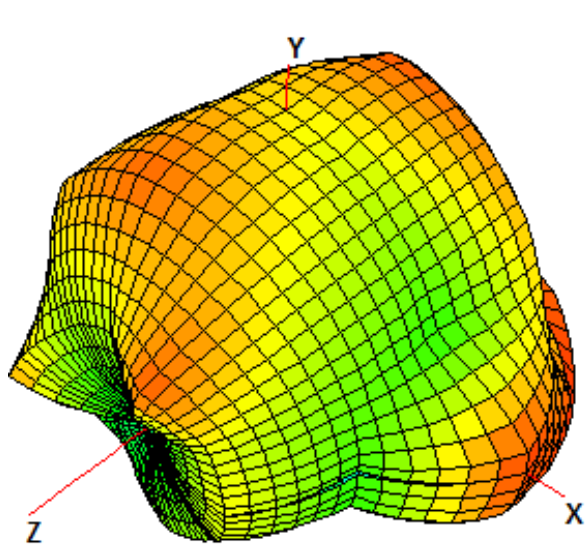


5350 MHz

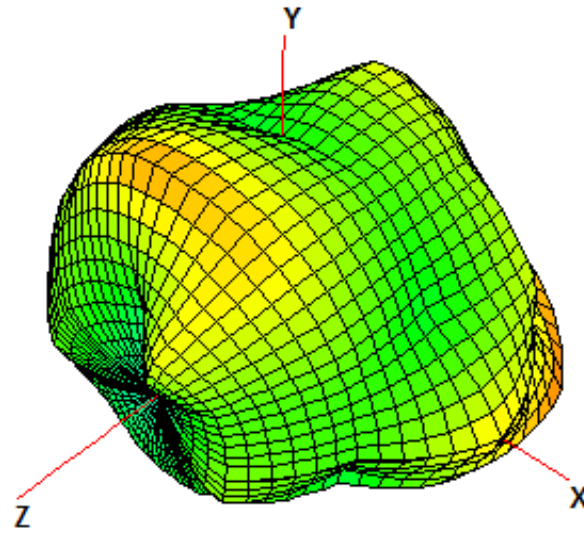


5500 MHz

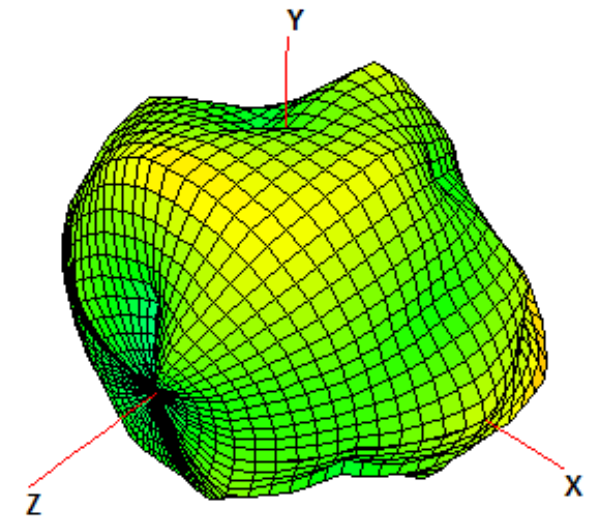




5670 MHz



5785 MHz



5850 MHz



# First Article Inspection Report

Part Number:	69-910-000007R1
Part Description:	MERCURY WIFI/BT
Part Revision:	A

Supplier :	映泰
Submission No :	
Material Spec :	

Submission Date:	2017/3/29
Cavity / Tool # :	
Inspector:	PuXiangShu

Insert FAI Row

DRAWING SPECIFICATIONS					INSPECTION RESULTS										INSPECTION ANALYSIS				COMMENTS				
ITEM	DRAWING LOCATION	CTF?	NOMINAL	+TOL	-TOL	Sample Number					Deviation from Nominal					Mean	% Tolerance		Accept/Reject		Inspection Method	Supplier Remarks	Dell Engineering Disposition
						1	2	3	4	5	1	2	3	4	5		UPPER	LOWER	HIGH	LOW			
1		Yes	20.00	2	2	21	20	21	21	20	1.000	0.000	1.000	0.000	0.000	20.600	50%	0%	Accept	Accept			
2			30.00	0.5	0.5	30.06	30.11	30.02	30.08	30.06	0.060	0.110	0.020	0.110	0.060	30.066	22%	0%	Accept	Accept			
3			20.00	0.5	0.5	20.09	20.07	20.06	20.11	20.06	0.090	0.070	0.060	0.070	0.060	20.078	22%	0%	Accept	Accept			
4			30.00	0.2	0.2	30.03	30.06	30.04	30.02	30.05	0.030	0.060	0.040	0.060	0.050	30.040	30%	0%	Accept	Accept			
5			10.00	0.2	0.2	10.02	10.05	10.03	10.04	10.03	0.020	0.050	0.030	0.050	0.030	10.034	25%	0%	Accept	Accept			
6			32.00	0.5	0.5	32.06	32.08	32.06	32.05	32.08	0.060	0.080	0.060	0.080	0.080	32.066	16%	0%	Accept	Accept			
7			10.00	0.5	0.5	10.06	10.08	10.03	10.05	10.03	0.060	0.080	0.030	0.080	0.030	10.050	16%	0%	Accept	Accept			
8			18.00	1	1	18.30	18.50	18.60	18.40	18.20	0.300	0.500	0.600	0.500	0.200	18.400	60%	0%	Accept	Accept			
9			6.00	1	1	6.30	6.40	6.30	6.40	6.20	0.300	0.400	0.300	0.400	0.200	6.320	40%	0%	Accept	Accept			
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35																							

# Quality Control Flow Chart

## QC 工程圖

1 OF 3

產品系列	69-910-000007R1			日期	版本	修訂人	修訂內容	備註		
文件編號	E5-003	制定	蒲相旭	2017/3/15	A	蒲相旭	初版發行			
版本	A	審核								
發行		核準								
項次	制程名稱	管理項目	檢驗項目	檢驗方法	參考標準	抽樣計劃 檢驗頻率	負責人	檢驗工具	檢驗記錄	異常處理
1	FQC檢驗	尺寸	各尺寸	依成品圖測量要求尺寸	依成品圖	10PCS/批	FQC	卡尺 鋼尺	“尺寸檢驗記錄表”	依QPH0806《不合格品管制辦法》
		電氣性能	電測	依SOP要求，用網絡分析儀測量產品	依SOP/標準樣品	10PCS/批	FQC	網絡分析儀	“成品檢驗記錄表”	
		外觀品質	端子外觀	用放大鏡檢查端子有无变形、刮伤、压伤、深打、浅打，不可有發綠，生銹現象	依標準樣品/SOP/成品圖	MIL-STD-105E II 一次抽樣 CRI：0.01 MAJ：0.40 MIN：1.5	FQC	目視	“成品檢驗記錄表”	
			端子膠芯外觀	用放大鏡檢查膠芯有无变形、縮水、热熔、斷裂、刮傷現象						
			線材外觀	目視檢查線材外被有无破損，顏色是否樣品線一致，不可殘留錫渣、錫珠						
套管外觀	目視檢查套管外觀是否有烘破，鬆動等不良現象									
PCB板外觀	檢查有无变形、刮伤、压伤等不良現象									

# Quality Control Flow Chart

## QC 工程圖

2 OF 3

項次	制程名稱	管理項目	檢驗項目	檢驗方法	參考標準	抽樣計劃 檢驗頻率	負責人	檢驗工具	檢驗記錄	異常處理
1	FQC檢驗	外觀品質	鐵件	鐵件不可變形，缺料	依標準樣品， 成品圖	MIL-STD-105E II 一次抽樣 CRI：0.01 MAJ：0.40 MIN：1.5	FQC	目視	“成品檢驗記錄表”	依QPH0806《不合格品管制辦法》
			雙面膠外觀	1.依標準樣品檢查雙面膠，尾巴方向，位置正確 2.依標準樣品檢查雙面膠，不可超鐵件邊緣						
			標籤外觀，印字內容	1.依成品圖核對標籤印字內容，包含料號，版本等 2.依標準樣品檢查標籤外觀，位置正確						
焊接外觀	1.目視檢查焊接位置是否正確。 2.焊接點過大，冷焊，假焊，錫尖分叉，銅絲外露等不良									
包裝	1.單個小紙盒包裝數量 2.單箱包裝數量 3.外箱港口麥頭填寫狀況 4.包材種類與使用狀況 5.頭套包裝	1.目視清點單個小紙盒之裝入數量&方式與SOP要求是否相符 2.目視清點單箱包裝數量是否與SOP要求相符 3.目視檢查確認外箱港口麥頭填寫是否正確 4.目視檢查包材種類與用量是否正確 5.目視檢查頭套有無漏裝	依標準樣品， 成品圖，SOP	MIL-STD-105E II 一次抽樣 CRI：0.01 MAJ：0.40 MIN：1.5	FQC	目視 電子稱	“成品檢驗記錄表”			
								HSF確認	1.HSF物料 2.HSF制程	

# Quality Control Flow Chart

## QC 工程圖

3 OF 3

項次	制程名稱	管理項目	檢驗項目	檢驗方法	參考標準	抽樣計劃 檢驗頻率	負責人	檢驗工具	檢驗記錄	異常處理
2	OQC出貨	出貨稽核	數量核對	依出貨通知單核對出貨數量	依出貨通知單	每箱/批	OQC	目視 電子稱	“出貨稽核記錄表”	依QPH0806《不合格品管制辦法》
			出貨信息記錄	1.倉管員備好貨后，出貨人員核對並記錄出貨單號，品番，生產線別，生產日期，箱號，總箱數，客戶料號，單號，重量等。	依出貨通知單，出貨標籤					
			出貨標籤	1.依出貨SOP核對標籤規格 2.目視檢查標籤印字內容是否正確、清晰 3.依出貨SOP核對標籤貼附位置是否符合要求	依出貨SOP					



# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20140617-E466657  
**Report Reference** E466657-20140321  
**Issue Date** 2014-June-17

**Issued to:** Suzhou Kemao Electronic Material Technology Co Ltd  
No 1 Yuqian Road New District, Suzhou,  
Jiangsu 215009 CHINA.

**This is to certify that  
representative samples of**


**COMPONENT - APPLIANCE WIRING MATERIAL**  
See Addendum Page for Models/Product

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

**Standard(s) for Safety:** UL 758, Appliance Wiring Material.  
CSA C22.2 No. 210, Appliance Wiring Material Products.

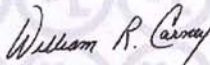
**Additional Information:** See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Recognized Component Mark for Canada should be considered as being covered by UL's Recognition and Follow-Up Service meeting the appropriate Canadian requirements.

The UL Recognized Component Mark for Canada consists of the UL Recognized Mark for Canada:  and the manufacturer's identification and catalog number, model number, or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Recognized Component Mark on the product.



William R. Carney, Director, North American Certification Programs  
UL LLC

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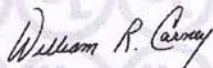


# CERTIFICATE OF COMPLIANCE

Certificate Number 20140617-E466657  
Report Reference E466657-20140321  
Issue Date 2014-June-17

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Appliance Wire, Extruded FEP Insulated Singles, Class I, Group A, B, or A/B.  
Appliance Wire, Single or Multi-conductor cable with non-extruded FEP Tape Wrap Non-integral Covering, Class I, Group A, B, or A/B.  
Appliance Wire, Single or Multiconductor cable with extruded FEP non-integral jacket, Class I, Class II, or Class I/II, Group A, B or A/B.



William R. Carney, Director, North American Certification Programs  
UL LLC

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QMFZ2 Component - Plastics

Friday, October 24, 2003

E213445

**WINTECH POLYMER LTD**

18-1 KONAN 2-CHOME MINATO-KU TOKYO 108-8280 JP

Material Designation: **3116(e)**

Product Description: Polybutylene Terephthalate (PBT), designated "Duranex" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	0.75	V-0	4	0	130	-	130	-	-
	1.5	V-0	3	0	130	120	130	-	-
NC, BK	3	5VA	2	0	130	120	130	-	-
<b>CTI: 2</b>	<b>IEC CTI (V): -</b>	<b>HVTR: 3</b>			<b>D495: 6</b>			<b>IEC Ball Pressure ( ° C): -</b>	
<b>Dielectric Strength (kV/mm): 23</b>		<b>Volume Resistivity (10<sup>9</sup>ohm-cm): 16</b>						<b>Dimensional Stability(%):0.0</b>	
<b>ISO Tensile Strength (MPa): -</b>		<b>ISO Flexural Strength (MPa): -</b>						<b>ISO Heat Deflection (C): -</b>	
<b>ISO Tensile Impact (kJ/m<sup>2</sup>): -</b>		<b>ISO Izod Impact (kJ/m<sup>2</sup>): -</b>						<b>ISO Charpy Impact(kJ/m<sup>2</sup>): -</b>	

(e) Virgin and regrind from 1 to 50 by weight incl. have the same basic material characteristics (at a minimum thickness of 0.75 mm), except for 310EP which has a lower as received Tensile Impact value from 26 to 50 percent regrind.

Report Date: 11/15/2000

Underwriters Laboratories IncR

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.



## ZPMV2.E359219 Wiring, Printed - Component

Enhanced searching capability for this category can be found in UL's iQ Family of Databases ([iq.ul.com](http://iq.ul.com)).

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### Wiring, Printed - Component

[See General Information for Wiring, Printed - Component](#)

**SUZHOU MINGLILAI ELECTRONICS CO LTD**

E359219

HUWAN INDUSTRIAL PARK

HUANGQIAO TOWN

XIANGCHENG DISTRICT

SUZHOU, JIANGSU 215132 CHINA

Type	Cond Width				Max		Max				
	Min	Edge	Cond	SS/ DSO	Area	Solder		Oper	Flame	Meets	C
	mm(in)	mm(in)	mic(mil)	DSO	mm(in)	C	sec	C	Class	UL796	T
<b>Single layer printed wiring boards, flammability only Recognition.</b>											
<b>MLL-PCB</b>	-	-	-	SS	-	300	25	-	V-0	-	-

Marking: Company name or file number and type designation. May be followed by a suffix to denote factory identification or burning test classification.

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PGGU2.MH15431

## Marking and Labeling System Materials - Component

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## Marking and Labeling System Materials - Component

[See General Information for Marking and Labeling System Materials - Component](#)

SONY CHEMICAL & INFORMATION DEVICE CORP

MH15431

KANUMA FACTORY

18 SATSUKI-CHO

KANUMA-SHI, TOCHIGI-KEN 322-8501 JAPAN

Pressure sensitive laminating adhesives:NP203, NP203W. For bonding aluminum (thickness.007 to 0.020 in), polycarbonate (thickness.019 to.079 in) and acrylic (thickness.019 to.079 in) to acrylonitrile butadiene styrene (ABS) plastic, maximum surface temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity and occasional exposure to water.

NP303, NP303W. For bonding aluminum (thickness.007 to 0.020 in), polycarbonate (thickness.019 to.079 in) and acrylic (thickness.019 to.079 in) to acrylonitrile butadiene styrene (ABS) plastic, maximum surface temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity and occasional exposure to water.

G4000, G9303S, T3500, T3500S, T3500SW, T3500W. For bonding aluminum (thickness.007 to 0.020 in), polycarbonate (thickness.019 to.079 in) and acrylic (thickness.019 to.079 in) to acrylonitrile butadiene styrene (ABS) plastic, maximum surface temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity and occasional exposure to water.

T4000, T4000W. For bonding aluminum (thickness.007 to 0.020 in), polycarbonate (thickness.019 to.079 in) and acrylic (thickness.019 to.079 in) to acrylonitrile butadiene styrene (ABS) plastic, maximum surface temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity and occasional exposure to water.

T4000B, T4000BW. For bonding aluminum (thickness.007 to 0.020 in), polycarbonate (thickness.019 to.079 in) and

acrylic (thickness.019 to.079 in) to acrylonitrile butadiene styrene (ABS) plastic, maximum surface temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity and occasional exposure to water.

T4500B, T4500BW. For bonding aluminum (thickness.007 to 0.020 in), polycarbonate (thickness.019 to.079 in) and acrylic (thickness.019 to.079 in) to acrylonitrile butadiene styrene (ABS) plastic, maximum surface temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity and occasional exposure to water.

T4700M. For bonding aluminum (thickness 0.002 to 0.032 in) to aluminum, and galvanized steel, max temperature 150 C (302 F) min temperature -40 C (-40 F); Acrylonitrile Butadiene Styrene (ABS) and Polypropylene plastics; max temperature 80 C (176 F) min temperature -40 C (-40 F); Polystyrene plastics; max temperature 60 C (140 F) min temperature -40 C (-40 F). Suitable where exposed indoors to high humidity or occasional exposure to water.

G90XX\$. For bonding aluminum (thickness.007 to 0.020 in), polycarbonate (thickness.019 to.079 in) and acrylic (thickness.019 to.079 in) to acrylonitrile butadiene styrene (ABS) plastic, maximum surface temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity and occasional exposure to water.

T4700M. For bonding aluminum (thickness 0.002 to 0.032 in.) to aluminum, and galvanized steel, max temperature 150 C (302 F) min temperature -40 C (-40 F); Acrylonitrile Butadiene Styrene (ABS) and Polypropylene plastics; maximum temperature 80 C (176 F), minimum temperature -40 (-40 F); polystyrene plastics, maximum temperature 60 C (140 F), minimum temperature -40 C (-40 F). Suitable where exposed indoors to high humidity or occasional exposure to water.

T4410, T4410W, T4411, T4411W, T4900, T4900W. For bonding aluminum (thickness 0.002 to 0.032 in.) to aluminum, stainless steel, galvanized steel, alkyd enamel and porcelain, maximum temperature 150 C (302 F), minimum temperature -40 C (-40 F); polycarbonate, maximum temperature 100 C (212 F), minimum temperature -40 C (-40 F); polyphenylene oxide, nylon and ABS plastic, maximum temperature 80 C (176 F), minimum temperature 40 C (-40 F). Suitable where exposed indoors to high humidity or occasional exposure to water. Also suitable where exposed outdoors, affixed to all the surfaces mentioned above except aluminum, stainless steel, polycarbonate, polyphenylene oxide and nylon.

T4720. For bonding aluminum (thickness 0.002-0.032 inch) to aluminum and galvanized steel, maximum temperature 150 C (302 F), minimum temperature -40 C (-40 F); ABS plastic, maximum temperature 80 C (176 F), minimum temperature -40 C (-40 F) and polystyrene, maximum temperature 60 C (140 F), minimum temperature -40 C (-40 F). Suitable for indoor use where exposed to high humidity or occasional exposure to water.

T4720. For bonding aluminum (thickness 0.032 inch) to polypropylene, maximum temperature 80 C (176 F). Suitable for indoor use where exposed to high humidity or occasional exposure to water.

G91XX\$, for bonding aluminum thickness 0.008 thru 0.020 in., acrylic 0.020 thru 0.079 in. and polycarbonate 0.020 thru 0.079 in. to ABS plastic, maximum temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable for indoor use where exposed to high humidity or occasional exposure to water.

"G99XX\$". For bonding aluminum face stock 0.007 inch - 0.020 inch thick, polycarbonate face stock 0.020 inch -

0.079 inch thick and acrylic face stock 0.020 inch - 0.079 inch thick to ABS plastic, maximum temperature 80 C (176 F), minimum temperature -40 C (-40 F). Suitable for indoor use where exposed to high humidity or occasional exposure to water.

Note:

\$\$- May be replaced by alpha characters denoting release liner type.

XX-Replaced by digits denoting product thickness.

Marking: Company name or trademark "SC" in a square and laminating adhesive designation on packaging, roll core or release liner.

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**PRODUCT SPECIFICATION**

製品規格

No. PRS-1176

**MHF series micro coaxial connector**

(Product No. Plug 20278, Rec. 20279)

Qualification Test Report No. TR-1021

7	S3008	K.O	Mar/24/03	<i>[Signature]</i>			
6	S2084	K.O	DEC/19/02	K.K			
5	S2082	K.O	DEC/05/02	K.K	Prepared by	Reviewed by	Approved by
4	S2076	K.O	Oct/17/02	E.K	K.Ohbayashi	E,Kawabe	K.Katabuchi
3	S2064	A.H	Sep/10/02	K.K			
REV.	ECN	BY	DATE	APP.	JUN / 25 / 01	Jun / 25 / 01	Jun / 29 / 01
REVISION RECORD							

DOCUMENT CLASSIFICATION	TITLE	No.
Product Specification 製品規格	MHF series micro coaxial connector	PRS-1176

## 1. Scope / 序言

MHF series micro coaxial connector is a wire to board connector for AWG#36,32,30 coaxial cable .  
MHF series micro coaxial connector は、AWG # 36,32,30同軸ケーブルの基板対ワイヤーコネクタである。

## 2. Objectives / 目的

This specification covers the requirements for product performance and test methods of MHF series microcoaxial connector  
本規格は、MHF series micro coaxial connector の性能と試験条件について規定する。

## 3. Part No. , construction , material and finish / 構成、材料及び仕上げ

- (1) Part No. Plug : 20278-\*\*\*R-08,-13,-32,-18 , Receptacle : 20279-001E-01  
(2) Construction, material and finish of the connector are covered as each drawings.  
構成、材料及び仕上げは、各図面に指定されている通りとする。

## 4. Applicable cable / 適合ケーブル

4-1 Part No. 20278-101R-08, 20278-111R-08

## (1) Description

Inner conductor : AWG#36(7/0.05)

Silver plating annealed copper wire or silver plating tin-copper alloy

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

Jacket : Fluoro-plastics , diameter 0.81(+0.04,-0.02)mm , nominal thickness 0.08mm

## (2) Requirements

Characteristic impedance : 50(+2,-2)ohm by TDR method

Nominal capacitance(Reference value): 96 pF/m

Conductor resistance of inner conductor at 293K (20°C)(Reference value) : 1400 ohm/km

Insulation resistance : 1000 mega-ohm.km MIN.

Dielectric withstand voltage : no breakdown at AC1000V for 1 minutes.

## (1) 構成

中心導体 : AWG # 36 (7 / 0.05), 銀メッキ軟銅線または銀メッキすず入り銅線

誘電体 : フッ素樹脂, 外径 0.4 (+0.04, -0.02), 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

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 ± 2 Ω (TDR)

標準静電容量(参考値) : 96pF/m

293K (20°C) 時の中心導体導体抵抗(参考値) : 1400 Ω / km

絶縁抵抗 : 1000MΩ · km以上

耐電圧 : AC1000V · 1分間にて絶縁破壊の無い事

4-2 Part No. 20278-101R-13, 20278-111R-13

## (1) Description

Inner conductor : AWG#32(7/0.08)

Silver plating annealed copper wire or silver plating tin-copper alloy

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

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

DOCUMENT CLASSIFICATION	TITLE	No.
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## (2) Requirements

Characteristic impedance : 50(+2,-2)ohm by TDR method  
 Nominal capacitance(Reference value): 97 pF/m  
 Conductor resistance of inner conductor at 293K (20°C)(Reference value) : 520 ohm/km  
 Insulation resistance : 1500 mega-ohm.km MIN.  
 Dielectric withstand voltage : no breakdown at AC1000V for 1 minutes.

## (1) 構成

中心導体 : AWG # 32 (7/0.08), 銀メッキ軟銅線または銀メッキすず入り銅線  
 誘電体 : フッ素樹脂, 外径0.68(+0.04,-0.02), 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  
 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±2Ω (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) : 520Ω /km  
 絶縁抵抗 : 1500MΩ・km以上  
 耐電圧 : AC1000V・1分間にて絶縁破壊の無い事

## 4-3 Part No. 20278-101R-32, 20278-111R-32

## (1) Description

Inner conductor : AWG#32(7/0.08)  
 Silver plating annealed copper wire or silver plating tin-copper alloy  
 Dielectric core : Fluoro-plastics , diameter 0.66(+0.05,-0.05)mm , nominal thickness 0.21mm  
 First outer conductor : 16/5/0.05, tin plating annealed copper wire  
 Second outer conductor : 16/6/0.05, nominal diameter 1.12mm , tin plating annealed copper wire  
 Jacket : Fluoro-plastics , diameter 1.32(+0.1,-0.1)mm , nominal thickness 0.1mm

## (2) Requirements

Characteristic impedance : 50(+2,-2)ohm by TDR method  
 Nominal capacitance(Reference value): 95 pF/m  
 Conductor resistance of inner conductor at 293K (20°C) (Reference value) : 520 ohm/km  
 Insulation resistance : 1500 mega-ohm.km MIN.  
 Dielectric withstand voltage : no breakdown at AC1000V for 1 minutes.

## (1) 構成

中心導体 : AWG # 32 (7/0.08), 銀メッキ軟銅線または銀メッキすず入り銅線  
 誘電体 : フッ素樹脂, 外径0.66(+0.05,-0.05), 標準厚さ0.21mm  
 外部導体(内側) : 16/5/0.05, すずメッキ軟銅線  
 外部導体(外側) : 16/6/0.05, 標準外径1.12mm, すずメッキ軟銅線  
 ジャケット : フッ素樹脂, 外径1.32(+0.1,-0.1)mm, 標準厚さ0.1mm

## (2) 仕様

特性インピーダンス : 50±2Ω (TDR)  
 標準静電容量(参考値) : 95pF/m  
 293K(20°C)時の中心導体導体抵抗(参考値) : 520Ω /km  
 絶縁抵抗 : 1500MΩ・km以上  
 耐電圧 : AC1000V・1分間にて絶縁破壊の無い事

DOCUMENT CLASSIFICATION	TITLE	No.
Product Specification 製品規格	MHF series micro coaxial connector	PRS-1176

4-4 Part No. 20278-101R-18, 20278-111R-18  
RG178 B/U

(1) Description

Inner conductor : AWG#30(7/0.102) , silver plating copper clad steel wire  
Dielectric core : Fluoro-plastics , diameter 0.84(+0.03,-0.03)mm , nominal thickness 0.268mm  
Outer conductor : 16/3/0.1 , nominal diameter 1.35mm , silver plating copper wire  
Jacket : Fluoro-plastics , diameter 1.8(+0.1,-0.1)mm , nominal thickness 0.23mm

(2) Requirements

Characteristic impedance : 50(+2,-2)ohm by TDR method  
Nominal capacitance(Reference value): 95 pF/m  
Conductor resistance of inner conductor at 293K (20°C) (Reference value) : 805 ohm/km  
Insulation resistance : 1500 mega-ohm.km MIN.  
Dielectric withstand voltage : no breakdown at AC2000V for 1 minutes.

(1) 構成

中心導体 : AWG # 30 (7 / 0.102) , 銀メッキ銅被鋼線  
誘電体 : フッ素樹脂, 外径 0.84 (± 0.03) , 標準厚さ 0.268mm  
外部導体 : 16 / 3 / 0.1 , 標準外径 1.35mm , 銀メッキ軟銅線  
ジャケット : フッ素樹脂, 外径 1.8 (± 0.1)mm , 標準厚さ 0.23mm

(2) 仕様

特性インピーダンス : 50 ± 2 Ω (TDR)  
標準静電容量(参考値) : 95pF / m  
293K (20°C) 時の中心導体導体抵抗(参考値) : 805 Ω / km  
絶縁抵抗 : 1500MΩ · km 以上  
耐電圧 : AC2000V · 1分間にて絶縁破壊の無い事

5. Ratings / 定格

- (1) Rated voltage / 電圧 : AC60Vrms  
(2) Nominal characteristic impedance / 公称特性インピーダンス : 50 Ω  
(3) Frequency / 周波数 : DC ~ 6GHz  
(4) VSWR : Plug 1.3 MAX at 0.1~3GHz 1.5 MAX at 3~6GHz  
Receptacle 1.3 MAX at 0.1~3GHz 1.4 MAX at 3~6GHz  
(5) Service Temperature / 使用温度範囲 : 233~363K (-40~+90°C)

6. Test methods and performance / 試験及び性能

6-1 Test condition / 試験条件

Unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202

全ての測定と試験は、MIL-STD-202 に基づき以下の条件で行う。

Temperature / 温度 : 288~308K (15~35°C)

Humidity / 湿度 : 45~75%RH



DOCUMENT CLASSIFICATION	TITLE	No.
Product Specification 製品規格	MHF series micro coaxial connector	PRS-1176

## 6-2-1 Electrical / 電氣的性能

## (1) Contact Resistance / 接触抵抗

A. Testing: 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 method.

Apply the low level condition in accordance with MIL-STD-202, Method 307.

Open circuit voltage : 20mV MAX

Circuit current : 10mA MAX. (DC or AC1kHz)

Contact resistance of inner contact : <resistance of A-E> - <resistance of B-E>

Contact resistance of ground contact : <resistance of A-D> - <resistance of B-D>

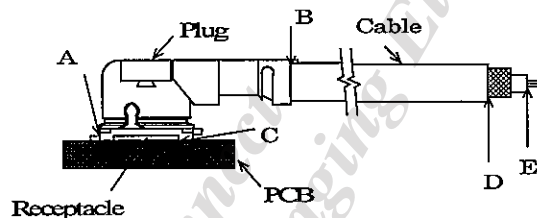


Fig.1

## B. Requirements :

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A. 試験法: 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、Fig. 1のように4端子法にて下記の条件で測定する。MIL-STD-202 試験法 307 に準拠。

開回路電圧: 20mV以下

試験電流 : 10mA (DCもしくはAC1kHz)

中心導体 : <A-E間の電気抵抗> - <B-E間の電気抵抗>

外部導体 : <A-D間の電気抵抗> - <B-D間の電気抵抗>

B. 必要条件: 中心導体 初期 20mΩ 以下, 試験後 25mΩ 以下

外部導体 初期 10mΩ 以下, 試験後 15mΩ 以下

## (2) Insulation resistance / 絶縁抵抗

A. Testing : Mate the plug and receptacle connector together, then apply DC 100 V between the inner contact and the ground contact in accordance with MIL-STD-202, Method 302.

B. Requirements : Initial 500 Mohm MIN. after testing 100 Mohm MIN.

A. 試験法: リセプタクル及びプラグコネクタを互いに嵌合させ、中心導体と外部導体の間に DC 100Vを印加し、測定する。MIL-STD-202 試験法 302 に準拠。

B. 必要条件: 初期 500MΩ 以上 試験後 100MΩ 以上

## (3) Dielectric withstanding voltage / 耐電圧

A. Testing : Mate the receptacle and plug connector together, then apply AC 200 Vrms between the inner contact and the ground contact for a minute in accordance with MIL-STD-202, Method 301.

B. Requirements : No creeping discharge, flashover, nor insulator breakdown shall occur.

A. 試験法: リセプタクル及びプラグコネクタを互いに嵌合させ、中心導体と外部導体の間にAC200V(実効値)を一分間印加する。MIL-STD-202 試験法 301 に準拠。

B. 必要条件: 沿面放電、空中放電、絶縁破壊等の異常のないこと。



DOCUMENT CLASSIFICATION	TITLE	No.
Product Specification 製品規格	MHF series micro coaxial connector	PRS-1176

## (4) VSWR

A. Testing : Measure the VSWR as shown in Fig.3 by the network analyzer.  
Frequency : 100M~6GHz

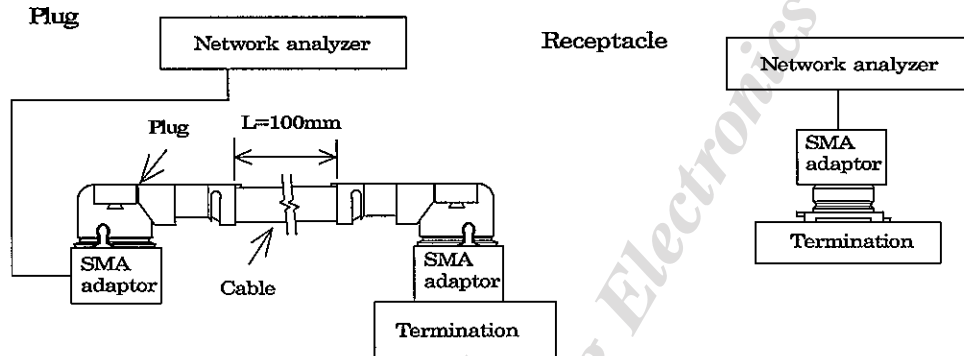


Fig.3

B.Requirements : Plug 1.3 MAX at 0.1~3GHz 1.5 MAX at 3~6GHz  
Receptacle 1.3 MAX at 0.1~3GHz. 1.4 MAX at 3~6GHz

A.試験法: ネットワークアナライザーにて Fig.3 のようにVSWRを測定する。  
周波数 : 100M~6GHz

B.必要条件: Plug 1. 3以下 0. 1~3GHz 1. 5以下 3~6GHz  
Receptacle 1. 3以下 0. 1~3GHz 1. 4以下 3~6GHz

## 6-2-2 Mechanical / 機械的性能

## (1) Unmating force / 抜去力

A. Testing : Unmate the receptacle connector ( soldered to the test board) and plug at a speed  
 $25 \pm 3$ mm/minutes along the mating by the push-on/pull-off machine .

B.Requirements :

Total unmating force : Initial 5N MIN. after 30 cycles 3N MIN.

Unmating force of inner contact : Initial 0.15N MIN. after 30 cycles 0.1N MIN

A.試験法: 挿抜試験機を用いて、基板に半田付けしたリセプタクルとプラグを嵌合軸と平行に毎分 $25 \pm 3$ mm  
の速度で挿抜する。

B.必要条件:

総合抜去力: 初回抜去力 5N以上 ,30回後抜去力 3N以上

中心導体 : 初回抜去力 0. 15N以上 ,30回後抜去力 0. 1N以上

## (2) Crimp strength / 引張強度

A. Testing : Pull the cable as shown in Fig.5 at a speed  $25 \pm 3$ mm/minutes by tensile strength machine.

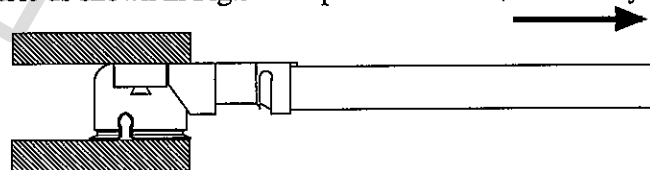


Fig.5

B.Requirements : 20278-1\*1R-08,13,32 : 10N MIN, 20278-1\*1R-18 : 15N MIN,

A.試験法: 引張試験機を用いて、毎分 $25 \pm 3$ mmの速度でケーブルを引張り、強度を測定する。

B.必要条件: 20278-1\*1R-08,13,32 : 10N以上, 20278-1\*1R-18 : 15N以上

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Product Specification 製品規格	MHF series micro coaxial connector	PRS-1176

## (3) Durability / 耐久性

A. Testing : Mate and umate the receptacle connector ( soldered to the test board) and plug 30 cycles at a speed  $25 \pm 3$ mm/minutes along the mating by the push-on/pull-off machine .

## B.Requirements :

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A.試験法:挿抜試験機を用いて、基板に半田付けしたリセプタクルとプラグを嵌合軸と平行に毎分 $25 \pm 3$ mmの速度で30回挿抜する。

B.必要条件 中心導体接触抵抗 : 初期  $20\text{m}\Omega$  以下, 試験後  $25\text{m}\Omega$  以下  
外部導体接触抵抗 : 初期  $10\text{m}\Omega$  以下, 試験後  $15\text{m}\Omega$  以下

## (4) Cable retention force / ケーブル保持力

A. Testing : Apply force on the cable as shown in Fig.2.

During the testing, run 100mA DC to check electrical discontinuity.

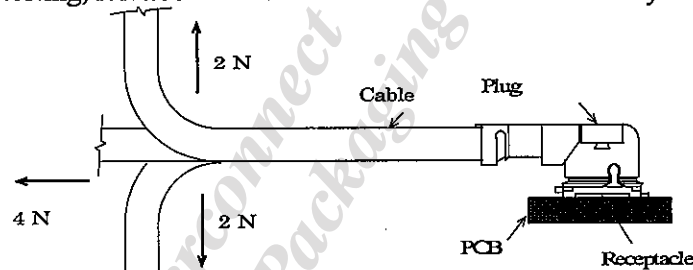


Fig.2

## B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Electrical discontinuity : No electrical discontinuity grater than 1 micro-sec. shall occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A.試験法:Fig. 2のようにケーブルに力を加える。尚、試験中にDC100mAの電流を流して電氣的瞬断を確認する。

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。  
電流瞬断 : 試験中、1 マイクロ秒を超える電氣的瞬断の無いこと。  
中心導体接触抵抗 : 初期  $20\text{m}\Omega$  以下, 試験後  $25\text{m}\Omega$  以下  
外部導体接触抵抗 : 初期  $10\text{m}\Omega$  以下, 試験後  $15\text{m}\Omega$  以下

## (5) Vibration / 振動

A. Testing : Apply the following vibration to the mating connector .

During the testing, run 100mA DC to check electrical discontinuity.

Frequency : 10Hz  $\rightarrow$  100Hz  $\rightarrow$  10Hz / approx 15 minutes.

Half amplitude ,Peak value of acceleration:  $1.5\text{mm}$  or  $59\text{m/s}^2$  (6G)

Directions , cycle : 3 mutually perpendicular direction ,  
5 cycles(approx 75min )about each direction

## B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Electrical discontinuity : No electrical discontinuity grater than 1micro-sec. shall occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

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A.試験法:嵌合状態のコネクタを、下記の振動を加える。尚、試験中にDC100mAの電流を流して電氣的瞬断を確認する。

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

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。

電流瞬断 : 試験中、1マイクロ秒を超える電氣的瞬断の無いこと。

中心導体接触抵抗 : 初期 20mΩ 以下, 試験後 25mΩ 以下

外部導体接触抵抗 : 初期 10mΩ 以下, 試験後 15mΩ 以下

#### (6) Shock / 衝撃

A. Testing : Apply the following vibration 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 about each direction

#### B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Electrical discontinuity : No electrical discontinuity grater than 1 micro-sec. shall occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A.試験法: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の電流を流して電氣的瞬断を確認する。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: 11msec.

波形: 半波正弦波

方向: 直交する6方向、各3回

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。

電流瞬断 : 試験中、1マイクロ秒を超える電氣的瞬断の無いこと。

中心導体接触抵抗 : 初期 20mΩ 以下, 試験後 25mΩ 以下

外部導体接触抵抗 : 初期 10mΩ 以下, 試験後 15mΩ 以下

#### 6-2-3 Environmental / 耐環境性

##### (1) Thermal shock/ 温度サイクル

A. Testing : Apply the following environment to the mating connector .

Temperature ,duration

:233K/30minutes→278~308K/5minutes MAX.→363K/30minutes→278~308K/5minutes MAX.

(-40°C)

(5~35°C)

(90°C)

(5~35°C)

No. of cycles : 5 cycles

#### B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

Insulation resistance : initial 500 mega-ohm MIN. after testing 100 mega-ohm MIN.

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A.試験法: 嵌合状態のコネクタを、下記の雰囲気気中に放置する。

1サイクルの条件

: 233K / 30分 → 278 ~ 308K / 5分以下 → 363K / 30分 → 278 ~ 308K / 5分以下  
(-40°C) (5 ~ 35°C) (90°C) (5 ~ 35°C)

実施サイクル : 5サイクル

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。  
中心導体接触抵抗 : 初期 20mΩ 以下, 試験後 25mΩ 以下  
外部導体接触抵抗 : 初期 10mΩ 以下, 試験後 15mΩ 以下  
絶縁抵抗 : 初期 500MΩ 以上 試験後 100MΩ 以上

## (2) Humidity / 湿度

A. Testing : Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 103, Condition B.

Temperature : 313 ± 2 K (40 ± 2°C)

Humidity : 90 ~ 95% RH

Duration : 96 hours

### B. Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25 milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15 milli-ohm MAX.

Insulation resistance : initial 500 mega-ohm MIN. after testing 100 mega-ohm MIN.

A.試験法: 嵌合状態のコネクタを、下記の雰囲気気中に放置する。MIL-STD-202 試験法 103 条件 B に準拠。

温度: 313 ± 2K (40 ± 2°C)

湿度: 90 ~ 95% RH

時間: 96時間

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。  
中心導体接触抵抗 : 初期 20mΩ 以下, 試験後 25mΩ 以下  
外部導体接触抵抗 : 初期 10mΩ 以下, 試験後 15mΩ 以下  
絶縁抵抗 : 初期 500MΩ 以上 試験後 100MΩ 以上

## (3) Salt water spray / 塩水噴霧

A. Testing : Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 101, Condition B.

Temperature : 308 ± 2 K (35 ± 2°C)

Salt water density by weight : 5 ± 1%

Duration : 48 hours

B. Requirements : Appearance no abnormality adversely affecting the performance shall occur.

A.試験法: 嵌合状態のコネクタを、下記の雰囲気気中に放置する。

温度 : 308 ± 2K (35 ± 2°C)

塩水濃度: 5 ± 1% (重量比)

時間 : 48時間

B.必要条件 : 外観 著しい腐食の無い事。

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## (4) High temperature life / 高温

A. Testing : Apply the following environment to the mating connector.

Temperature :  $363 \pm 2$  K ( $90 \pm 2^\circ\text{C}$ ) Duration : 96 hours

## B. Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A.試験法: 嵌合状態のコネクタを、下記の雰囲気中に放置する。

温度:  $363 \pm 2$ K ( $90 \pm 2^\circ\text{C}$ ) 時間: 96時間

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。

中心導体接触抵抗 : 初期 20mΩ 以下, 試験後 25mΩ 以下

外部導体接触抵抗 : 初期 10mΩ 以下, 試験後 15mΩ 以下

## 6-2-4 Solder / 半田付け関連

## (1) Solderability / 半田付け性

A. Testing : Dip the solder tine of the contact in the solder bath at  $518 \pm 5$  ( $245 \pm 5^\circ\text{C}$ ) for  $5 \pm 0.5$  sec.

After immersing the tine in the flux of RMA or R type for 5 to 10 seconds in accordance with MIL-STD-202, Method 208.

B. Requirements : More than 95% of the dipped surface shall be evenly wet.

A.試験法: コネクタの半田付け部を  $518 \pm 5$ K ( $245 \pm 5^\circ\text{C}$ ) の半田槽内に  $5 \pm 0.5$  秒浸す。フラックスは、RMA 又は R 型を使用し 5~10 秒間浸すものとする。MIL-STD-202, 試験法 208 に準拠。

B.必要条件: 浸した面積の 95% 以上に半田がむらなく付着すること。

## (2) Reflow soldering heat resistance / 半田耐熱性

A. Testing : Put on the receptacle connector to PCB, apply the heat 2 cycles as shown in Fig. 4

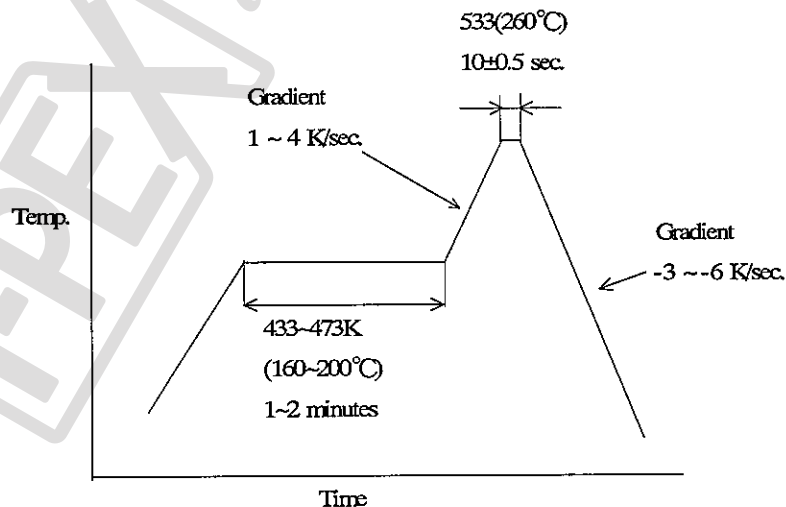


Fig4

B. Requirements : Appearance no abnormality adversely affecting the performance shall occur.

A.試験法: 基板にリセプタクルコネクタを置き、Fig. 4の条件で2回リフローを行う。

B.必要条件: 機能を損なう変形及び欠陥の無い事。

DOCUMENT CLASSIFICATION Product Specification 製品規格	TITLE MHF series micro coaxial connector	No. PRS-1176
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## 6-2-5 試験順序と試料数 / Test Sequence and Sample Quantity

Test Item 試験項目	Group / グループ														
	A	B	C	D	E	F	G	H	I	L	M	N	O	P	
(1) Contact Resistance 接触抵抗					1 3	1 3	1 3	1 3	1 4	1 4		1 3			
(2) Insulation resistance 絶縁抵抗									2 5	2 5					
(3) Dielectric withstanding voltage 耐電圧	1														
(4) VSWR		1													
(5) Crimp strength 引張強度			1												
(6) Unmating force 抜去力				1											
(7) Durability 耐久性					2										
(8) Cable retention force ケーブル保持力						2									
(9) Vibration 振動							2								
(10) Shock 衝撃								2							
(11) Thermal shock 温度サイクル									3						
(12) Humidity 湿度										3					
(13) Salt water spray 塩水噴霧											1				
(14) High temperature life 高温												2			
(15) Solderability 半田付け性													1		
(16) Reflow soldering heat resistance 半田耐熱性														1	
Sample QTY pcs. 試料数	Plug プラグ	10	5	10	10	10	10	10	10	10	10	10	10	----	----
	Receptacle リセプタクル	10	5	----	10	10	10	10	10	10	10	10	10	10	10
Test Board 基板数	pcs.	10	5	----	10	10	10	10	10	10	10	10	10	----	10



SHANGHAI NANYA COPPER CLAD LAMINATE CO., LTD.

# 上海南亞覆銅箔板有限公司

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若要更多的信息，欢迎您登陆我们的网址：

For more information, welcome to INTERNET HTTP:

[http: www.ccl-china.com](http://www.ccl-china.com)

## 2、产品的组成 COMPOSITION OF THE PRODUCT

原材料名称 Raw Material	含量% contend	美国化学文摘服务社登记号
玻璃纤维布 Fibre Glass Cloth	30~40	65997-17-3
铜箔 Copper Foil	15~25	7440-50-8
环氧树脂 Epoxy Resin	40~70	28064-14-4

## 3、物化性能 PHYSICAL AND CHEMICAL PROPERTIES

外观： Appearance:	板材颜色为黄色 Yellow in normal
气味： Odor:	常态下为无味固体 solid state, none
比重： Density:	(水=1.0) 1.7±0.25 (Water =1.0) 1.7±0.25
水溶性： Solubility:	不溶固体 Negligible in water

## 4、防火测试 FIRE PROOFING TEST

易燃性： Flammable Properties:	不适应 N/A
燃烧等级：	UL 94-V0





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物质安全资料手册

MATERIAL SAFETY DATA MANUAL

1、产品及公司名称、地址 PRODUCT AND COMPANY IDENTIFICATION

产品名称: 无卤覆铜箔层压板(黄料)、半固化片

Product Name: HALOGEM-FREE Copper clad laminate (Yellow)、 prepreg

产品用途: 用于印制线路板、制作多层板

Using of the Product: Making for Printed Circuit Board and Mality-lay Board

公司名称及地址: 上海南亞覆銅箔板有限公司

上海南翔昌翔路158号

Company Name and Address: Shanghai Nanya Copper Clad Laminate CO., LTD.  
NO.158, Changxiang Road, Nanxiang, Shanghai,  
P. R. CHINA

如果您有任何问题或建议的话, 请按如下方式联系我们:

电话: 0086-21-5917-5555

传真: 0086-21-6917-8833

E-MAIL: [sales@ccl-china.com](mailto:sales@ccl-china.com)

If you have any questions and suggestions, please feel free to contact us and no hesitation

TEL: 0086-21-5917-5555

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Flame rate:	UL 94-V0
灭火介质:	水、CO <sub>2</sub> 、干粉灭火器及细砂
Extinguishing Medium:	Water、CO <sub>2</sub> 、Dry chemical or sand
不正常火灾:	当发生热温度时，可能会释放出NO化合物
Fire in Especial:	Making decompose, releasing the NO Compound
灭火人身安全:	消防员必须穿戴专业的保护装置和正压呼吸系统
Personal Protection:	Firemen should wear proper equipment and posit a pressure self-contained breathing apparatus

#### 5、防静电 ANTI-STATIC

产生环境:	非常干燥、空气完全不流通
Environment:	Exceeding dry and the air no current completely
产生原因:	从堆叠的板料中拿起或放入瞬时
The Reason:	Removing or depositing in a stack of material, causing spark
防护措施:	拿起或放入时，戴上手套
Protective Measure:	Removing or depositing, wearing mittens.

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

常态是否稳定:	稳定
Normally Stable:	Stable
不兼容性:	不确定
Incompatibilities:	Not determine
是否存在危险聚合物:	无
Hazardous Polymerization:	None



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## 7、危险性 HAZARDS IDENTIFICATION

潜在的危险品

Potential Health Hazards

粉末:

当生产、成品切削时, 粉末会飞散出

Powder:

Fibrous dust may be released from the fiber-glass cloth substrate when machined

皮肤:

粉末会导致中等程度的皮肤过敏

Skin:

Dust may cause moderate skin irritation

眼睛:

粉末会导致中等程度的眼睛过敏

Eyes:

Dust may cause moderate eyes irritation

## 8、加热时的危害 HAZARDS WHEN HEATED

现象:

会产生难闻的气味, 常时间闻此气味严重者, 会出现头痛、头晕

Appearance:

Making afflictive gas when heated. For brief contact to dust, no precarious other than headachy and giddy

措施:

设置排气装置, 不断更换新鲜空气

Protection:

Putting up exhaust. Changing fresh air constantly

## 9、首要防护措施 FIRST AID MEASURES

皮肤:

除去已污染的衣物, 用流动水冲洗不小于10分钟; 如有持续过敏现象, 求助医生

Skin:

Wash in flowing water on less 15 minutes; if irrigation persists consult a physician

眼睛:

马上用流动水冲洗15分钟以上, 并不时眨眼睛, 切勿揉搓, 如有持续过敏现象, 求助医生



SHANGHAI NANYA COPPER CLAD LAMINATE CO., LTD.

上海南亞覆銅箔板有限公司

NO. 158 CHANGXIANG ROAD NANXIANG SHANGHAI P. R. CHINA

中國上海南翔昌翔路 158 號

TEL: 0086-21-59175555 FAX: 0086-21-69178833

INTERNET HTTP: www.ccl-china.com

E-MAIL: sales@ccl-china.com

Eye: Irrigate with flowing water for 15 minutes immediately, blinking continually, forbidding kneading; if irrigation persists consult a physician

吸入: 如粉尘烟气太重, 及时转移到空气新鲜的地方, 危急情况, 进行人工呼吸, 并求助医生诊断

Inhalation: if overcome by dust or smoke, moving to fresh air, no breathing, giving mouth-to-mouth resuscitation, and calling physician

#### 10、工程控制 ENGINEERING CONTROLS

安装、使用除尘通风设备

Setting and using exhaust ventilation to control dust

#### 11、个人防护措施 PERSONAL PROTECTION

皮肤保护: 短暂接触粉尘, 需要时清洗身体或衣服

常接触或常时间接触粉尘, 穿戴防护装置

Skin Protection: For brief contact to dust, no precarious other than clean body covering clothing should be needed

眼睛保护: 使用有关材料操作时, 佩带眼睛保护装置

Eye Protection: Using appropriate eye protection when machining material

呼吸保护: 大气中的玻璃纤维粉尘颗粒不宜大于 $10\text{mg}/\text{m}^3$ , 铜屑粉尘颗粒必须小于 $1\text{mg}/\text{m}^3$

Respiratory Protection: The fiberglass in atmospheric should be maintained no more than  $10\text{mg}/\text{m}^3$  and copper dust must be under  $1\text{mg}/\text{m}^3$

#### 12、毒物学资料 TOXICOLOGICAL INFORMATION



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INTERNET HTTP: [www.ccl-china.com](http://www.ccl-china.com)

E-MAIL: [sales@ccl-china.com](mailto:sales@ccl-china.com)

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敏感反应:	粉尘将导致眼、皮肤中毒过敏
Immediate (Acute) Effects:	Dust may cause moderate eyes, skin, and respiratory irritation
慢性反应:	未知
Delayed (Subchronic & chronic) Effects:	None known

### 13、生态学资料 ECOLOGICAL INFORMATION

非生物降解

Not biodegradable

### 14、排放程序及废物处置 SPILL PROCEDURES WASTE DISPOSAL

排放程序:	如材料不被污染, 将其存入洁净的容器中再使用; 如被污染, 将其存入指定容器中待处理
Spill Procedures:	If material is not contaminated, scoop into clean containers for reuse. Else, scoop it into containers or disposal
废物处置:	对加工处理出来的废物统一放置, 由认定的清运商进行相关的处理
Waste Disposal:	Land filling of cured material in a admmissive facility in accordance with local regulations in acceptable disposal method

**SAFETY DATA SHEET**

Date Revised (4): 11/08/2012

Date Prepared : 4/24/2001

**SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product name : G9000-SY (Pressure sensitive double sided tape)  
 Manufacturer : Dexerials Corporation  
 Address : 12-3 Satsuki-cho, Kanuma-city, Tochigi-Pref. 322-8502 Japan  
 Phone +81-289-76-0225 Fax +81-289-76-0299  
 Emergency phone +81-289-76-0918

**SECTION 2. COMPOSITION / INFORMATION ON INGREDIENTS**Structure(Thickness and wt.% of each structure)

1. Adhesive	150 $\mu$ m	(44 %)
2. Base material	※1	( 6 %)
3. Release liner	150 $\mu$ m	(50 %)

(※1:be included in adhesive layer)

Components(% Chemical component by WT.)

1. Adhesive		
<u>Hazardous composition</u>	<u>CAS#</u>	<u>Contents</u>
Tackifier	Trade Secret	< 10%
Acrylic monomer (As residual monomer)	Trade Secret	< 1.5 %
<u>Non-hazardous composition</u>	<u>CAS #</u>	<u>Contents</u>
Acrylic resin	Trade Secret	> 90 %
2. Base material		
<u>Non-hazardous composition</u>	<u>CAS #</u>	<u>Contents</u>
Tissue Paper	N/A	100 %
3. Release liner		
<u>Non-hazardous composition</u>	<u>CAS #</u>	<u>Contents</u>
Polyethylene laminated paper coated with silicone release agent	N/A	100 %

(Refer to section 8)

**SECTION 3. HAZARDS IDENTIFICATION**Emergency overview

There is no special hazard in the normal use of this product.

Contact with adhesive face may cause irritation.

It is recommended to wear suitable protective gloves.

Ventilate if smells at working area.

Potential health effects

## Skin/Eyes contact

Direct contact may cause irritation or sensitization.

## Ingestion/Inhalation

Breathe in smell of product may cause headache, nausea and irritation to respiratory system.

#### **SECTION 4. FIRST AID MEASURES**

##### Inhalation

Remove to fresh air if feel ill by smell of product.

If the condition of a disease continues or getting worse, seek medical attention.

##### Eye contact

Rinse immediately with plenty of water.

If irritation persists, seek medical attention.

##### Skin contact

Remove it gently then rinse with water.

If irritation persists, seek medical attention.

##### Ingestion

As supplied, product is a solid material and would not in practice, be ingested.

#### **SECTION 5. FIRE-FIGHTING MEASURES**

##### Flash point and autoignition temperature

Flash point : No data.

Autoignition temperature : No data.

##### Extinguish media

Water spray, carbon dioxide, dry chemical powder or foam

##### Fire fighting instruction

Wear positive pressure, self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Evacuate area and fight fire from a safe distance.

#### **SECTION 6. ACCIDENTAL RELEASE MEASURES**

As supplied, product is a solid material and would not in practice, be released.

#### **SECTION 7. HANDLING AND STORAGE**

##### Handling

Protection gear may not be required in particular in the normal use of this product.

It is recommended to wear suitable protective gloves in the case of direct contact with the adhesive face.

Handle at well-ventilated place so as not to be inhaled the smell of product.

It is recommended to install the appropriate equipment of ventilation when the smell of product is spread at working area.

##### Storage

Store in a cool place.

#### **SECTION 8. EXPOSURE CONTROLS, PERSONAL PROTECTION**

##### Engineering controls

Suitable ventilating equipment should be installed at working area if smells hardly.

##### Personal protection

Protective gloves: Wear impervious gloves (polyethylene, nitrile rubber) when contact with the adhesive face.

Protective glasses: Not required in particular.

Protective clothes: Not required in particular.

##### Exposure guideline

No data as product.

As tackifier : Not established by OSHA and ACGIH.

As acrylic monomer : Not established by OSHA and ACGIH as main component.  
ACGIH TLV-TWA 2 ppm(skin) as sub component.



**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	:	Adhesive tape
Odor	:	Acrylic odor
Boiling point	:	Not applicable
Vapor pressure	:	Not applicable
Melting point	:	Not applicable
Solubility in water	:	Insoluble in water
Specific gravity	:	Approx. 1.0

**SECTION 10. STABILITY AND REACTIVITY**

Stability

Stable under normal handling conditions.

Incompatibility

Strong acids and strong oxidizing agents.

Hazardous decomposition products

Carbon monoxide, Carbon dioxide

Hazardous polymerization

It will not occur.

**SECTION 11. TOXICOLOGICAL INFORMATION**

No information and data as product

As tackifier

Toxicity data

ORL-RAT LD<sub>50</sub>: > 20,000 mg/kg

As acrylic monomer(main component)

Toxicity data

ORL-RAT LD<sub>50</sub>: 5,660 mg/kg

**SECTION 12. ECOLOGICAL INFORMATION**

Ecotoxicological information

Unknown

Chemical fate information

Unknown

**SECTION 13. DISPOSAL CONSIDERATIONS**

Disposal should be made in accordance with federal, state and local regulations.

**SECTION 14. TRANSPORT INFORMATION**

UN NO.	:	Not listed
International classification	:	Not relevant

**SECTION 15. REGULATORY INFORMATION**

Export control law in Japan: Not applicable both List and Catch-all regulations.

Other regulatory information

We are not able to check up the regulatory information in regard to the substances in your country or region, therefore, we request this matter would be filled by your responsibility.

***SECTION 16.* OTHER INFORMATION**

Reference

SDS of each component issued by material makers

The information herein is the best of our knowledge and is only related to this specific product. No warranty, either expressed or implied, is made with respect to such information. The recommended handling procedures are believed to be generally applicable. However, it is user's responsibility to review these recommendations in the specific content of the intended use. We reserve the right to revise this SDS as new information become available. It is recommended to ask for the latest version to our Sales & Marketing division.

End of SDS

# 钰承电子绝缘制品（昆山）有限公司

## 物質安全資料表(MSDS)

### 一、物品與廠商資料

物品名稱:銅箔
物品編號:暫無
製造商或供供應商名稱、位址及電話：昆山市玉山镇模具区成功路 199 号 钰承电子绝缘制品（昆山）有限公司
緊急聯絡電話/傳真電話 0512-57786166 FAX：0512-57786603

### 二、成分辯認資料

純物質：
中英文名稱：銅箔（CU）
同義名稱：压延铜
化學文摘社登記號編（CAS NO）銅箔（7440-50-8）
危害物質成分（成分百分比）：見測驗報告
混合物：
化學物質：無
危害物質成分之中方名稱：無 濃度或濃度範圍（成分百分比）：暫無 危害物質分類圖式：無

### 三、危害辯識資料

最 重 要 危 害	健康危害效應：
	無環境影響：無
	物理性及化學性危害：常態下物理及化學性質穩定
	特殊危害：無
主要症狀：無	
物品危害分類：無	

### 四、急救措施

不同暴露途徑之急救方法： ●吸入：吸入情況不可能發生 ●皮膚接觸：無明顯反應 ●眼睛接觸：無明顯反應 ●食入：此產品不能食入
最重要症狀及危害效應：無
對急救人員之防護：無特殊要求
對醫師之提示：使用後清水洗手即可

### 五、滅火措施

適用滅火劑：水 泡沫 乾粉 CO2
滅火時可能遇到之特殊危害：無特殊危害
特殊滅火程式：用水 泡沫 乾粉 CO2 噴灑

### 六、洩漏處理方法

個人應注意事項：盡可能用手套以防被刮傷皮膚
環境注意事項：對環境無污染
清理方法：掃起置於容器之內

### 七、安全處置與儲存方法

處置：最適宜的溫度為室內溫狀態下。PH 值為中性
儲存：堆放時不宜過高以免跌落損傷人或物，避免陽光直射

## 八、暴露預防措施

工程控制：通風設備 A 局部通風設備 B 整體換氣裝置	
控制參數：	
● 八小時日量平均容許濃度/短時間量平均容許濃度/最高容許濃度	
● 生物指標：無	
個人防護設備	
● 呼吸防護：無特殊要求	
● 手部防護：手套	
● 眼睛防護：無特殊要求	
● 皮膚及身體防護：無特殊要求	
衛生措施：作業完成後洗手，保持作業環境乾淨整潔	

## 九、物理及化學性質

物質狀態：固體	形狀：卷材
顏色：銅色	氣味：無味
PH 值：中性	閃火點：
自燃溫度：無	爆炸界限：無
蒸氣壓：無	蒸氣密度：無
密茺：大於 1	溶解度：常態下不溶于水

## 十、安定性及反應性

安定性：穩定
特殊狀況下可之危害反應
應避免之狀況：無特殊狀況
應避免之物質：無特殊要求
危害分解物：無

## 十一、毒性資料

急毒性：無
局部效應：無
致敏效應：無
慢毒性或長期毒性：無
特殊效應：無

## 十二、生態資料

可能之環境影響/環境流布：對環境不會造成污染
------------------------

## 十三、廢棄處置方法

廢棄處置方法：回體回收或依當地法規處理
---------------------

## 十四、運送資料

國際運送規定：無
聯合國編號：無
國內運送規定：無
特殊運送方法及注意事項：防曬 防損

## 十五、法規資料

適用法規：安全生產法 固體廢物污染防治學或依當地法規
----------------------------

## 十六、其他資料

參考文獻：無		
製表單位	名稱：钰承电子绝缘制品（昆山）有限公司	
	位址/電話：昆山市玉山镇模具区成功路 199 号 TEL: 0512-57786166	
製錶人	職稱：品管	姓名（簽章）袁锦绣

# 物质安全技术说明书 (MSDS)

## 第一部分：化学品及企业标识

化学品中文名称：不干胶标签材料

同义名：压敏胶

化学品英文名称：Pressure Sensitive Adhesive Materials

产品代号：A1HG3

企业名称：广东冠豪高新技术股份有限公司

地址：广东省湛江市经济技术开发区乐怡路6号

邮编：524022

传真号码：+86-759-3382109

公司紧急联络电话：+86-759-3399898

国家应急联络电话：+86-532-3889090（中国石化青岛安全工程研究院）

消防应急联络电话：119

## 第二部分：成分/组成信息

纯物质       混合物

有害物质：无

组分	材料名称	含量	物质名称	CAS NO.
面材	铜版纸	<2%	水分	7732-18-5
		<31%	纤维	65996-61-4
		<17%	碳酸钙	471-34-1
胶水	高粘永久胶	<5%	聚合物	9003-55-8
		<2%	碳酸钙	471-34-1
		<5%	石油树脂	69430-35-9
底纸	格拉辛底纸	<37%	木浆纤维	65996-61-4
		<1%	硅油	68083-19-2

## 第三部分：危险性概述

危险性类别：无化学危害分类

侵入途径：误食或眼睛接触

健康危害：误食可能导致胃功能紊乱，眼睛接触可能导致过敏/刺激

环境危害：无，此材料在自然环境中可降解

燃爆危险：可燃，无爆炸危险

## 第四部分：急救措施

皮肤接触：无资料

眼睛接触：如感刺激或不适，应立即用大量清水冲洗至少15分钟，情况严重者送医处理

吸入：无资料

食入：如感不适，应立即就医

## 第五部分：消防措施

危险特性：在有氧气的情况下，遇明火或高温可燃

有害燃烧产物：在空气中燃烧可能产生有害物质，如一氧化碳和烟尘

灭火方法及灭火剂：干粉，二氧化碳，泡沫和水系灭火剂

特殊灭火程序/防护：如遇浓烟产生或氧气不足，需使用自给式呼吸面具以防窒息

#### **第六部分： 泄漏应急处理**

应急处理：无资料，本材料为固态

#### **第七部分： 操作处置与储存**

操作处置注意事项：无资料

储存注意事项：防水，防高温，避免日光直射，在T：23+/-2℃，H：45%~55%环境下保存

#### **第八部分： 接触控制/个体防护**

最高容许浓度：无意义

监测方法：无意义

工程控制：无意义

呼吸系统防护：无意义

眼睛防护：加工本材料时使用防护眼镜

身体防护：无资料

手部防护：无资料

其他防护/卫生措施：禁止在工作现场饮食

#### **第九部分： 理化特性**

外观与性状：固态卷状，展开时为片材，略有气味

熔点（℃）：无意义

沸点（℃）：无意义

饱和蒸气压（kPa）：无意义

临界温度：无意义

辛醇/水分配系数的对数值：无意义

闪点（℃）：无意义

燃点（℃）：约130℃

溶解性：无意义

主要用途：标签印刷

PH 值：中性

相对密度（水=1）：<1

相对蒸气密度（空气=1）：无意义

燃烧热（kJ/mol）：无资料

临界压力（MPa）：无意义

爆炸上限%（V/V）：无意义

爆炸下限%（V/V）：无意义

#### **第十部分： 稳定性和反应性**

稳定性：稳定

禁配物：无资料

避免接触的条件：高温、日照、潮湿

聚合危害：不能发生

分解产物：无资料

#### **第十一部分： 毒理学资料**

急性毒性（半数致死剂量LD50）：无

急性毒性（半数致死浓度LC50）：无

亚急性和慢性毒性：无

刺激性：无



致敏性：无  
致癌性：无  
其他：无

#### **第十二部分：生态学资料**

生态毒性：无资料  
生物降解性：无资料  
非生物降解性：可光解、水解  
生物富集或生物积累性：无  
其他：无

#### **第十三部分：废弃处置**

废弃物性质：未列入《国家危险废物名录2008》  
废弃处置方法：无资料  
废弃注意事项：无资料

#### **第十四部分：运输信息**

危险货物编号：未列入《GB6944-2005 危险货物分类和品名编号》  
联合国编号：无  
包装标志：无  
包装类别：未列入《GB/T15098-2008 危险货物运输包装类别划分方法》  
包装方法：无  
运输注意事项：未列入危险货物，请遵守本国/当地法规

#### **第十五部分：法规信息**

国内法规：请遵守《危险化学品安全管理条例》及相关化学品使用管理规定  
国际法规：请遵守本国/当地法规

#### **第十六部分：其他信息**

参考文献：《GB16483-2000 化学品安全技术说明书编写规定》  
技术说明书编码：AD-MSDS-CN-019  
生效日期：2011-01-07  
编制部门：广东冠豪高新技术股份有限公司技术部  
审核单位：广东冠豪高新技术股份有限公司  
修改说明：2011年第2次修改  
其他信息：无

本技术说明书，仅为参考用途，其所包含的信息基于尽力准确的数据。但冠豪高新对信息、数据的准确性和完整性并不作任何担保，无论是明示或暗指的。本技术说明书并不构成冠豪高新对于本说明书涉及物质的质量保证或者承诺。冠豪高新或其任何关联企业不对因使用本说明书所涉及的物质而导致的任何人身伤害或财产损失负责，包括买方、使用者或第三方。买方或使用者在使用本物质时，应考虑到所有相关的风险，并依据相关法律法规安全使用本物质。

# 浙江新东方油墨集团有限公司

## 物质资料安全表

### 一、物品与厂商资料

化学品中文名称	液态感光阻焊油墨（主剂）
化学品俗名或商品名	NSR-9000M（1系列）/G5
化学品英文名称	Liquid Photoimageable Solder Mask (Main agent)
企业（制造商）名称	浙江新东方油墨集团有限公司
地 址	浙江省台州市黄岩区黄椒路 101 号
邮 编	318020
电子邮件地址	<a href="mailto:newkorea@mail.tzptt.zj.cn">newkorea@mail.tzptt.zj.cn</a>
传 真 号 码	0576-84275906
紧急联系电话	0576-84275747
生 效 日 期	2010 年 6 月 26 日

### 二、成分辨识资料

物质组成	CAS No.	%
石脑油	64742-94-5	3
二乙二醇乙醚醋酸酯	112-15-2	18
环氧丙烯酸树脂	商业机密	43
硫酸钡	7727-43-7	30
光引发剂 907	71868-10-5	4
颜料	商业机密	2
总和		100

### 三、危害辨识资料

危险性类别：无
进入人体途径：吸入、食入、皮肤接触、眼睛接触
健康危害：吸入过量会引起眩晕、对皮肤、眼睛有发生红肿等过敏现象
环境危害：有机溶剂挥发会造成空气污染
燃暴危险：遇高热、明火及强氧化剂易引起燃烧

### 四、急救措施

1、吸入蒸气后,须立即将患者移至新鲜空气处.
------------------------

2、呼吸停止,应立即由受过训的人施以人工呼吸.
3、眼睛接触时,立即撑开眼皮,以大量水冲洗.
4、皮肤接触时,以肥皂和水冲洗患部.
5、如患者即将丧失意志或失去意志或痉挛,勿经口喂食任何东西,切勿催食,给予患者喝 300 毫升的水以稀释胃中之物,若患者自然呕吐,让患者身体向前,以避免吸入呕吐物.
6、经过处理,立即就医.

## 五、灭火措施

火	灭火材料: 二氧化碳化学干粉泡沫
灾	特殊灭火程序: 无

## 六、泄露处理方法

泄漏紧急应变	<ul style="list-style-type: none"> <li>a) 提供适当防护设备及通风设备.</li> <li>b) 移开热源,火源.</li> <li>c) 用沙,泥土或其它惰性物质来围堵泄漏物.</li> <li>d) 避免流入下水道或其它密闭空间.</li> <li>e) 用最便利及安全的方法收集泄漏物.</li> </ul>
废弃处理方法	焚化安全卫生掩埋,依现行法规处理.

## 七、安全处置及储存方法

安全处置与储存	<ul style="list-style-type: none"> <li>1. 容器保持密闭.</li> <li>2. 储存于阴凉处,远离热源,火源.</li> <li>3. 储存及使用区为禁烟区.</li> </ul>
注意事项	

## 八、暴露预防措施

个人防护设备	眼睛: 化学安全防护目镜,洗眼设备. 呼吸: 有机蒸气滤罐或滤毒罐呼吸防护器. 手套: 一般橡胶手套. 其它: 上述橡胶材质工作鞋
通风设备	一般通风
个人卫生	<ul style="list-style-type: none"> <li>1. 工作时须戴防护目镜,手套,防护衣服及安全鞋等.</li> <li>2. 工作后尽快脱掉受污染衣物,洗干净再穿或丢弃.</li> <li>3. 工作场所严禁吸烟或饮食.</li> <li>4. 处理后应立即洗手.</li> <li>5. 维持良好之物管.</li> </ul>

## 九、物质及理化性质

物质状况: <input checked="" type="checkbox"/> 糊状物 <input type="checkbox"/> 粉末 <input type="checkbox"/> 固体 <input checked="" type="checkbox"/> 液体 <input type="checkbox"/> 气体	PH 值: -
	外观: 粘稠状液体
	气味: -
沸点: 190-220℃                      熔点: -	蒸气压力: 0.4mmHg
蒸气密度: (空气=1) >5	比重(水=1): 1.3±0.2
挥发速度: (乙酸丁酯=1) <1	水中溶解性: 微溶

## 十、安定性与反应性

安定性	安定	√	应避免之状况:避免储存于高温场所或阳光及紫外光照射所 危害分解物: 无
	不安定		
危害之聚合	可能发生		应避免之状况:避免储存于高温场所或阳光及紫外光照射所 危害分解物: 无
	不会发生	√	
不兼容性	应避免之物质: 氧化剂		

## 十一、毒性资料

进入人体之途径: <input checked="" type="checkbox"/> 吸入 <input checked="" type="checkbox"/> 皮肤接触 <input checked="" type="checkbox"/> 吞食
健康危害效应: 急性: 吸入: 蒸气会刺激呼吸道,会造成呕吐,食欲不振. 接触: 造成轻微的刺激. 眼睛: 造成轻微的刺激. 慢性: 长期处于高浓度环境将有害身体健康

## 十二、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

## 十三、废弃处置方法

泄漏紧急应变	<ol style="list-style-type: none"> <li>1) 提供适当防护设备及通风设备.</li> <li>2) 移开热源,火源.</li> <li>3) 用沙,泥土或其它惰性物质来围堵泄漏物.</li> <li>4) 避免流入下水道或其它密闭空间.</li> <li>5) 用最便利及安全的方法收集泄漏物.</li> </ol>
废弃处理方法	焚化安全卫生掩埋,依现行法规处理.

## 十四、运送资料

联合国编号 (UN NO)	-	危害性 分类	NA	所须图标种类 (Hazard labels)	NA
包装类别	无	包装方式	塑料桶	运输注意事项	防止日光 暴晒

## 十五、法规资料

法规资料	化学品安全技术说明书 GB16483-2000
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## 十六、其它资料

制表单位	名称: 浙江新东方油墨股份有限公司
	地址: 中国浙江省台州市黄岩区黄椒路 101 号
	电话: 0576-84275712          传真:0576-84275906
制表人	林华君
制表日期	2008 年 1 月 10 日
修订日期	2010 年 6 月 26 日

TO: 建合

提出资料编号	<b>RF 1.13 TX-TX 同轴电线材质证明</b>	制定部门
201010002		电子线生产部 技术科

首先，祝愿贵公司事业兴旺发达，蒸蒸日上！  
感谢贵公司对弊公司的关照和支持！

1. 对象制品

RF coaxial cable 1.13TX-TX (FEP)

2. SPEC NO.

KM-SP-002

3. 成分构成

产品总重: 3.025kg/km

主要成分:	材质	所占比例 (%)
导体:	镀锡软铜线	10.28%
绝缘:	FEP	23.11%
编织:	镀锡铜线	37.69%
护套:	FEP	28.92%

以上

作成者	审核者	承认者
Leo	Leo	Eric

## 屏蔽电磁波干扰金属胶带产品

## EMI Shielding Metal Tape Products

### 双导铜箔资料

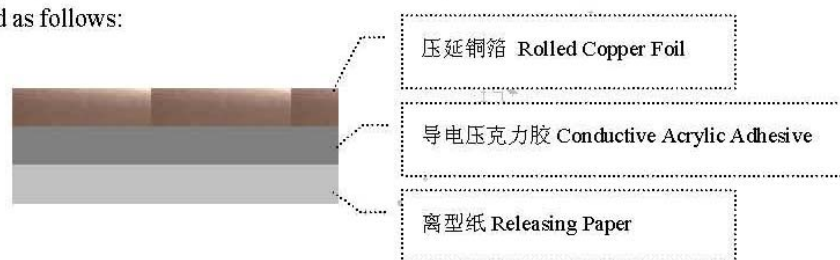
### Copper Foil with Conductive Adhesive Data Sheet

**XPH00183** **XPH00253** **XPH00353** **XPH00503** **XPH01003**

## 1 产品说明 Product description

1.1 此类产品结构是以软态压延铜箔为基材, 导电压克力胶为胶粘剂, 加离型纸为底纸。The product structure is based on soft-state rolled copper foil as the substrate, conductive acrylic adhesive as the adhesive, plus release paper.

1.2 结构如下: Structured as follows:



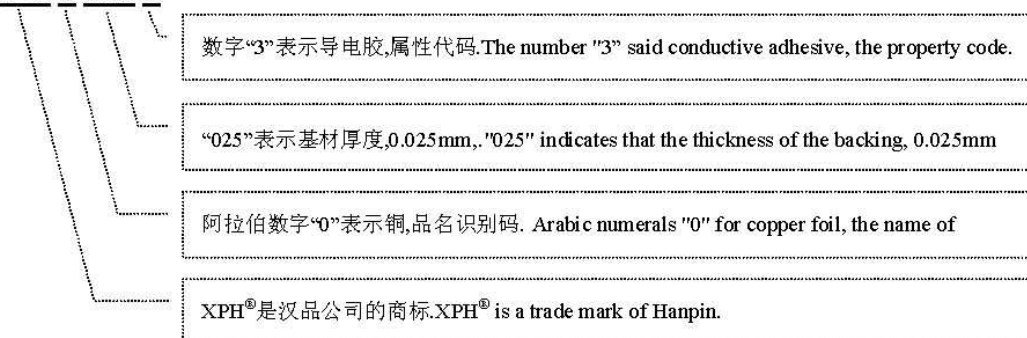
1.3 三层结构的卷料非常适合刀模或五金模模切,可在平刀机器及圆刀机器上模切。Three-tier architecture is very suitable for cutter mold or the metal mold die-cutting, Can be flat cutter or round cutter to die-cutting.

1.4 材料的宽度可从 3mm~380mm,标准长度为 50m.也可做 100m,150m 或更长,为客户省去频繁换料的麻烦。

The width of the product available from 3mm ~ 380mm. Standard length is 50m., also do 100m, 150m or longer, save customers the trouble of frequently reloading.

1.5 常规型号 General Part Number : **XPH00183** **XPH00253** **XPH00353** **XPH00503** **XPH01003**

说明 Illustrate **XPH 0 025 3**





## 2 产品属性 Product Properties

料号 Part Number	基材 Backing Material	基材厚度 Thickness of Backing (mm)	含胶厚度 Total Thickness (mm)	保持力 (Holding Power) <sup>1</sup> Min/inch	剥离力 Adhesion Strength <sup>2</sup>	胶粘剂 Adhesive Component	屏蔽效能 Shield Efficacy 10MHz~1GHz(dB)	Z-向电阻 Conductivity z-(ohms) <sup>3</sup>
XPH00183	Copper Foil	0.018	0.050±0.005	≥1440	>0.8kg/25mm	Conductive Acrylic	≥60	<0.05
XPH00253	Copper Foil	0.025	0.06±0.005	≥1440	>0.8kg/25mm	Conductive Acrylic	≥60	<0.05
XPH00353	Copper Foil	0.035	0.070±0.005	≥1440	>0.8kg/25mm	Conductive Acrylic	≥60	<0.05
XPH00503	Copper Foil	0.050	0.085±0.005	≥1440	>0.8kg/25mm	Conductive Acrylic	≥60	<0.05
XPH01003	Copper Foil	0.100	0.135±0.01	≥1440	>0.8kg/25mm	Conductive Acrylic	≥60	<0.05

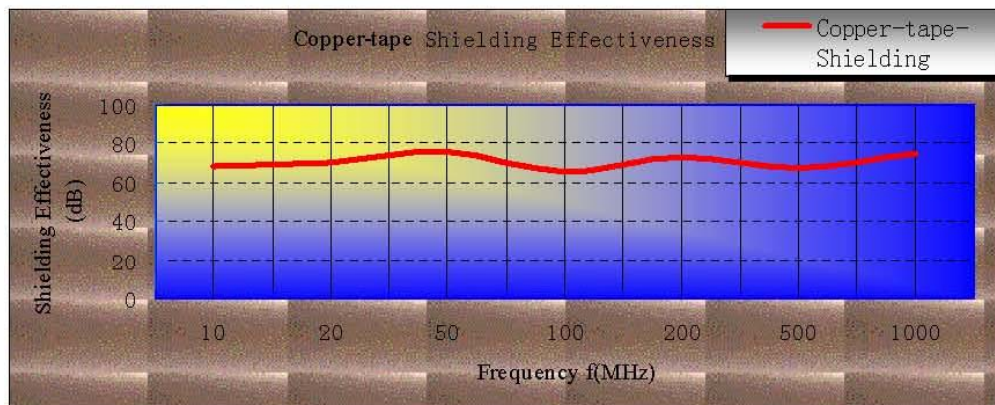
## 3 应用 Application

我们的 EMI 屏蔽金属胶带产品有非常低的阻抗, 良好的屏蔽效能, 并能按客户要求提供特殊尺寸和规格; 适用于 FCC 及 CE 等认证标准的显示器, 台式电脑, 笔记本电脑, 手机, 电缆组件和通讯通信设备。 Our EMI Shielding Metal Tape Products with a very low resistance, good shielding effectiveness, to provide special size and specifications of the customer; can apply to the FCC, CE certification standard monitor, desktop computers, notebook computers, mobile phones, cable assemblies and communication devices.

## 4 屏蔽效能 Shielding effectiveness

本测试条件为常温 20°C, 相对湿度 65% 底下采用美国 ASTM-D1000 所得之结果。

Testing conditions for the temperature of 20 ° C and relative humidity under 65 ° C.



## 5 备注 Remarks

5.1 此资料只作为导电屏蔽材料参数, 但不代表适用于所有场合, 须以客户测试并确定其适用性. This document is only as shielding conductive material parameters. But does not mean that applies to all occasions, Customer shall test and determine its applicability.

5.2 测试方式与数值依 ASTM D1000 得出。

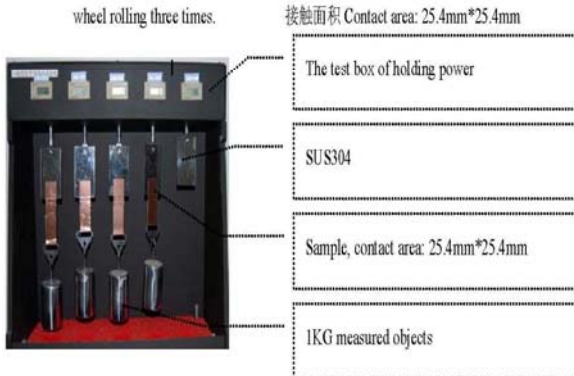
Test method and numerical according to customer requirements from the ASTM D1000.

5.3 上述数据变更, 恕不另行通知. The data is subject to change without notice.

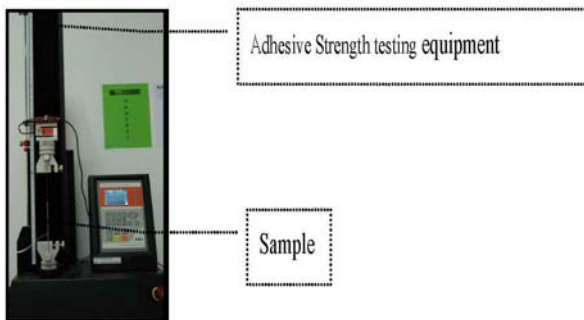
5.4 Z 向电阻单指导电胶的部分, 而非整个产品, 该数值会因铜, 铝或其它基材不同有所改变. Z-Resistance is only conductive adhesive tape data, instead of the entire product, the numerical result of copper, aluminum or various other changes in the substrate.

保持力测试(Holding Power)<sup>1</sup> 分钟/英寸, 用 1KG 的法码挂 25.4\*80mm 大小样品,样品粘在不锈钢板上, 用 2KG 滚轮碾三次.Min/inch:

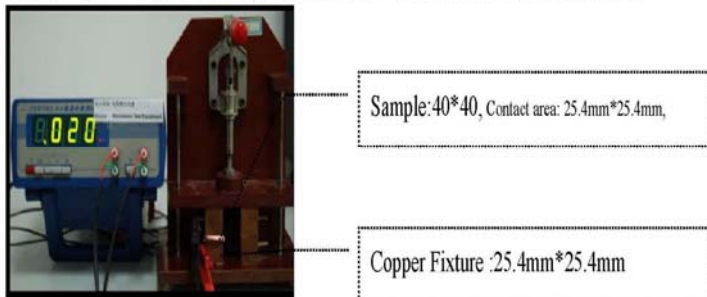
The weight hangs with 1KG measured objects, 25.4\*80mm size sample, Sample glued on stainless steel, 2KG wheel rolling three times. 接触面积 Contact area: 25.4mm\*25.4mm



剥离力测试(Adhesion Strength)<sup>2</sup>: 取一 25.4\*200mm 尺寸样品,样品粘在不锈钢板上, 用 2KG 滚轮碾三次,30 分钟后以 180° C 角度 305mm/分钟的速度直拉, 25.4\*200mm size sample, Sample glued on stainless steel, 2KG wheel rolling three times, 180°,Cross-head speed-305mm/min,test after 30min. 接触面积>Contact area- 25.4mm\*100mm



纵向电阻测试(Conductivity z-(ohms))<sup>3</sup>: 微电阻测试仪的两个夹头夹住两个铜块的引针,至少保持一分钟. Micro-Resistance Tester 2 chuck clamping two pieces of copper needles cited, Dwell least one time. 接触面积 Contact area: 25.4mm\*25.4mm,



## 6. Contact

# SONY

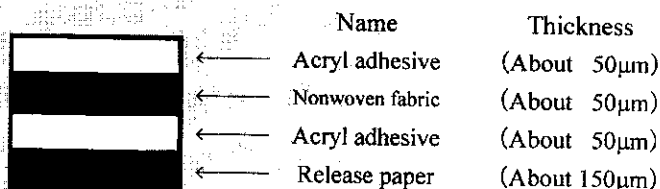
## High-strength high-performance both-sided adhesive tape

# G9000

### Advantages

- ❑ On the acrylic double-sided adhesion tape containing nonwoven fabric base material,
- ❑ The balance of the adhesion characteristic is good and excellent in especially heat resistance.
- ❑ This is the next generation of adhesive tape, whose impact on the global environment is low, because the organic solvents used in conventional tape are not used at coating.

### Basic structure



### Specifications

Main component of the adhesive	Acrylic resin	Adhesive thickness (including base material)	0.15mm
Color	Transparent colorless	Shape	Stamped products
Base material	Nonwoven fabric		Rolled products

G9000

Sony Chemicals Corporation

# SONY

## Characteristics

### 1. Bond strength (180° -degree peeling)

- Tape width: 20 mm
- Bonding condition: One stroke with 2 kg roller
- Leave the specimen for one hour at RT before the test.
- Atmosphere for measurement: RT ( $23 \pm 5^\circ\text{C}$ ,  $65 \pm 10\%$ )
- Peeling speed: 300 mm/min.
- Backing material: 25  $\mu\text{m}$  PET

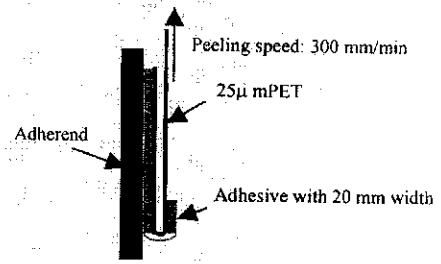


Fig. 1 Measurement method of 180° peeling

	(N/2cm)						
Adherend	SUS	AL	ABS	Acryl	PS	PP	PC
Bond strength	13.7	8.8	11.6	12.4	11.5	5.1	11.9
Adherend	Hard-PVC	Soft-PVC	Grass	CR	NR		
Bond strength	12.6	13.2	12.9	3.4	4.0		

Jerky

### 2. Holding power

- The area of tape attached: 25 × 25 mm
- Adherend: SUS304
- Bonding condition: One stroke with 2 kg roller
- Load: 1 kg
- Measure the creep (mm) after one hour.

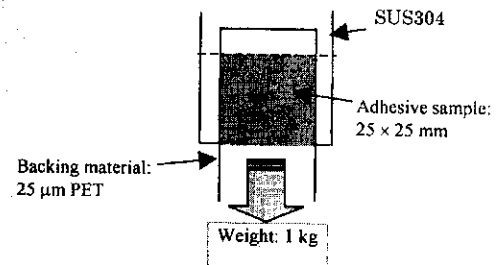


Fig. 2 Measurement method of holding power

Measurement temperature	40°C	60°C	80°C	100°C
Creep (mm)	0.2	0.3	0.3	0.6

### 3. Ball Tack (J. Dow method)

Ball Tack (Ball No.)	2 ~ ×
----------------------	-------

× : Less than one

# SONY

#### 4. Temperature characteristic Bond strength (180° -degree peeling)

- Tape width: 20 mm
- Bonding condition: One stroke with 2 kg roller
- Leave the specimen for one day at RT before the test.
- Atmosphere for measurement: Each temperature
- Peeling speed: 300 mm/min.
- Backing material: 100  $\mu$  m AL Foil(-20~5°C), 25  $\mu$  m PET (10~100°C)

(N/2cm)

Measurement temperature	-20°C	0°C	5°C	10°C	23°C	40°C	60°C	80°C	100°C
Bond Strength	AL	94.2	91.0	25.5	17.4	14.4	11.9	10.8	9.3

AL : AF from backing material

Both side AF

#### 5. A constant load exfoliation examination

- Tape width: 20 mm
- Bonding condition: One stroke with 2 kg roller
- Leave the specimen for one hour at RT before the test.
- Atmosphere for measurement: RT (23  $\pm$  5°C, 65  $\pm$  10%)
- Backing material: 25  $\mu$  m PET
- Load : 100g
- Exfoliation distance is measured.

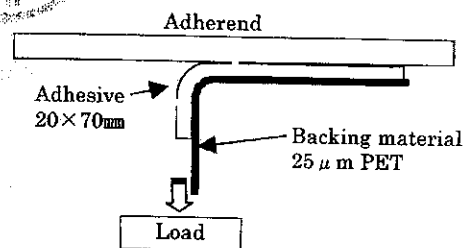


Fig 3. Measurement method of  
A constant load exfoliation examination

		SUS	AL	ABS	PS	PMMA	PP
Exfoliation distance(mm)	1h after	1.0	2.0	2.0	2.5	2.0	3.5
	3h after	1.3	3.0	3.5	5.0	3.3	7.8
	5h after	1.3	2.8	4.5	7.5	4.5	11.0
	24h after	1.5	9.5	18.5	34.0	16.0	59.0

Note This report is based on our reliable experiments. However, it does not mean that the performance described in this report is guaranteed.  
Use the products under your responsibility after sufficiently studying the intended use and service condition of the products.

**Sony Chemicals Corp.**  
<http://www.scej.co.jp/>

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Osaki, Shinagawa-ku, Tokyo, 141-0032

Tel.+81-3-5435-3946

Kanuma Plant: 12-3, Satsuki-cho, Kanuma-shi, Tochigi, 322-8502

Tel. +81-289-76-0211

Creation April, 2004

**Sony Chemicals Corporation**



## 技术参数

产品编号: MZ0051 (无背印)  
修订日期: 12/2007

Fasson® 25 micron Chrome PET NTC/S333/BG50#WH

法森牌 25 微米亚银聚酯薄膜 NTC/S333/80 克白格拉辛底纸

### 表面基材:

表面经适印处理的亚银聚酯薄膜。

基本克重: 34 g/m<sup>2</sup> ± 10% ISO536

厚度: 0.025 mm ± 10% ISO534

### 粘胶剂:

永久性丙烯酸乳胶。

### 底纸:

超级研光的白色格拉辛底纸。

基本克重: 80 g/m<sup>2</sup> ± 10% ISO536

厚度: 0.070 mm ± 10% ISO534

### 典型粘性值: (N/25mm)

初始粘性(st, st) - FTM 9: 8.0

20 分钟 90°剥离粘性(st, st) - FTM 2: 5.0

24 小时 90°剥离粘性(st, st) - FTM 2: 7.5

最低贴标温度: -4°C

使用温度范围: -40°C ~ +149°C

### 粘胶剂表现性能:

这是一种用途广泛、具有优异表现性能的工业级永久性透明粘胶剂。粘胶剂具有很高的初始粘度和最终粘性，渗胶率极低。

此粘胶剂符合 FDA 第 175.105 项，可用于食品、药品及化妆品等产品的非直接接触贴标用途。

### 应用:

此产品具有优异的抗撕裂、耐高温、尺寸稳定及耐化学腐蚀性能，适合制成各种耐久性标签。此产品获得 UL 认证，认证编号: MH20557。

以上的建议应用说明不作为艾利·丹尼森的一种担保。所有艾利·丹尼森公司的产品的售出均应由客户在最终使用环境下进行测试，以确认是否符合该使用环境的要求。

### 印刷及加工:

经过电晕处理过的表面可用于多种印刷方式。PET 专用溶剂性油墨及 UV 油墨适用。印刷前的油墨测试是必要的。加工及存储过程中应避免面材受到摩擦、环境温湿度急剧变化等因素对表面能的影响。可在标准轮转印刷机上做高速模切和排废。推荐使用高硬度的锐利模切刀具，尤其是在平压平的模切方式中。应避免复卷张力过大，导致标签溢胶。可用于自动贴标。不推荐用于传统丝网烘箱干燥方式。

### 储存期:

在温度 23±2°C、相对湿度 50±5% 的情况下，可储存一年。



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