

东莞市创诚电子有限公司  
DONGGUAN SHI CHUANGCHENG DIANZI LTD.CO

承 认 书  
Specification For Approval

客户名称/CUSTOMER : 东莞保力电子有限公司

供应商料号/PROVIDER NO. : \_\_\_\_\_

客户料号/PART NO: 25720000022A1

品名/PART NAME 2.4GHz 3DBI 嵌入式天线

规格/SPEC : 3DBI 2.4-2.5GHz 嵌入式天线 L=110mm

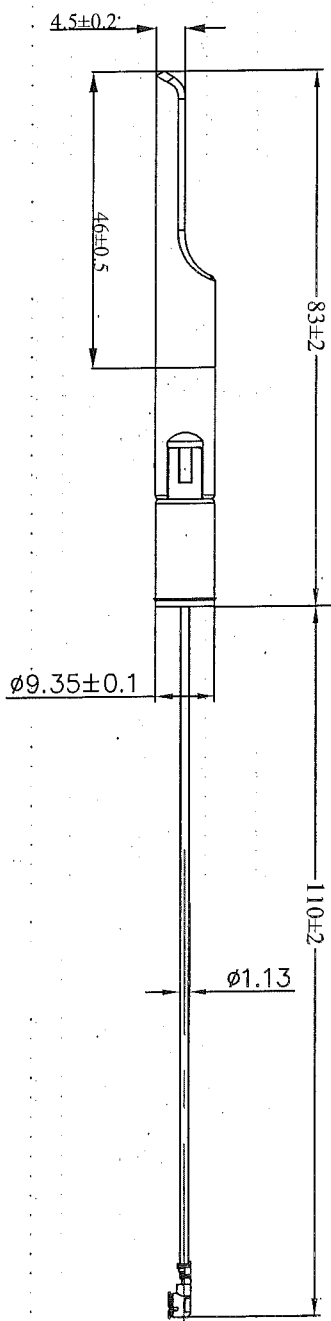
適用機種/USED FOR : \_\_\_\_\_

編號/REF.NO. : \_\_\_\_\_

承認/APPROVAL :

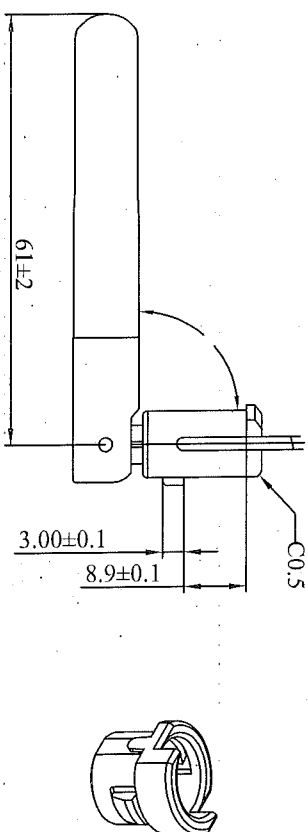
最高主管	工程主管	承認人
吴火亮	罗志明	蔡国平

APPROVE:



NOTES:

1. Electrical:
  - 1.1 Impedance: 50 OHM.
  - 1.2 FREQUENCY RANGE: 2.4~2.5GHz
  - 1.3 VSWR:  $\leq 2.0$
  - 1.4 Peak Gain: 3dBi
  - 1.5 Polarization: Vertical
  - 1.6 Radiation Patten: Omni-directional
2. Enviromental:
  - 2.1 Storage Temperature Range:  $-40$  TO  $+85^{\circ}\text{C}$
  - 2.2 Operating Temperature Range:  $-40$  TO  $+85^{\circ}\text{C}$
  3. All material must meet RoHS Request.



LENGTH	ANTENNA LENGTH $83 \pm 2$ mm			UNIT	m/m	APPROVE	CHECK	DRAWN	东莞市创诚电子有限公司 CUSTOMER 东莞市保力电子有限公司	
TITLE	2.4GHz ANTENNA WITH CABLE FOR RG113 黑色L=110mm									
ORD. NO.		MODEL NO.								
BOM NO.		SCALE	FREE	SHEET	1 OF 1	吴火亮	罗志明	吴国坚		
CUSTOMER PART NO.	2572000002A1	DWGNO.	D: \ERP\001792							

# 东莞市创诚电子有限公司

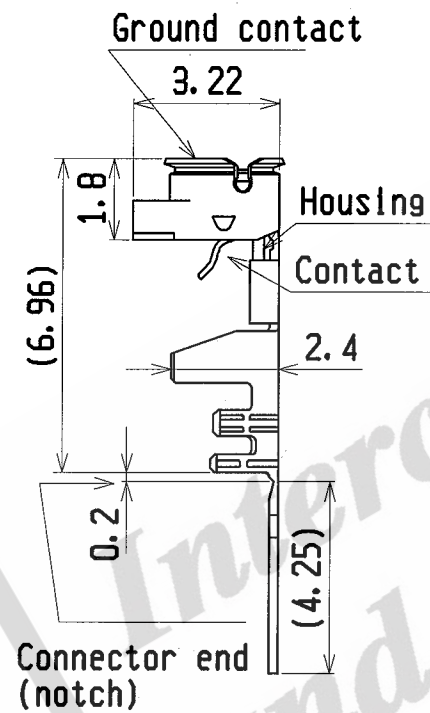
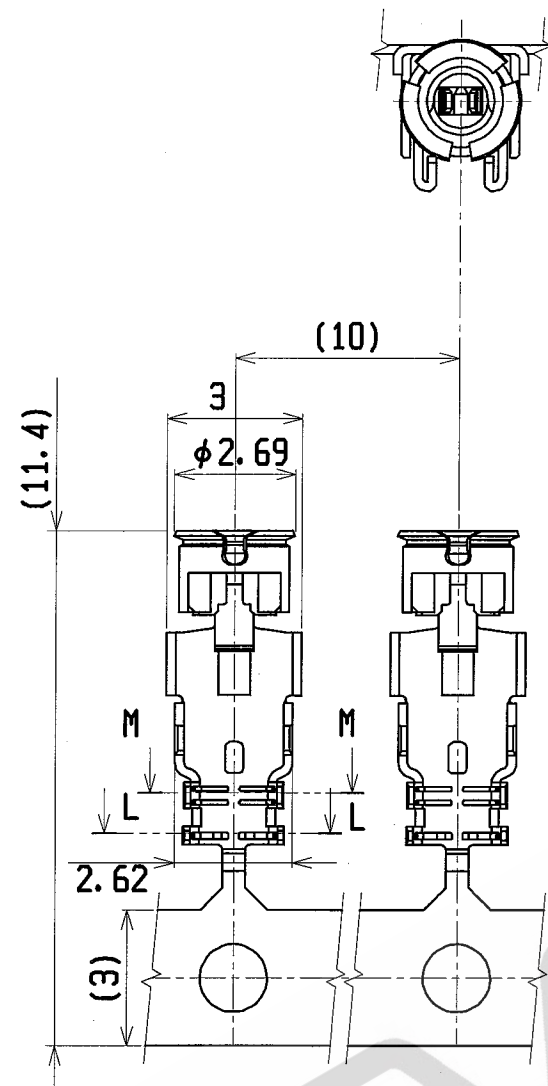
DONGGUAN SHI CHUANGCHENG DIANZI Ltd.co

## 产品主要参数

规格表

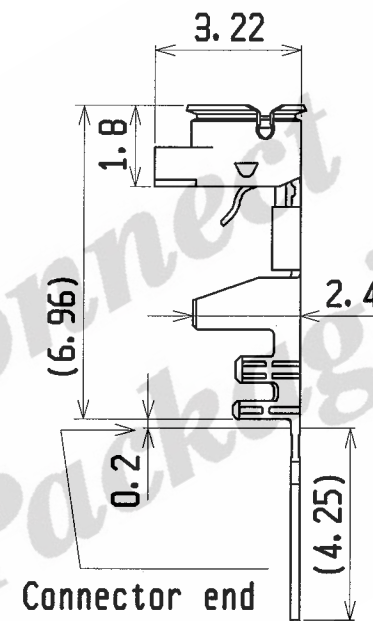
主要技术指标		Main technical specifications			
频率范围 (MHZ)	2.4GHz-2.5GHz	Frequency Range(MHZ)		2.4GHz-2.5GHz	
特性阻抗( $\Omega$ )	50	Impedance( $\Omega$ )		50	
增益(dBi)	3DBI	Peak Gain(dBi)		3DBI	
输出电压驻波比	$\leq 1.8$	VSWR		$\leq 1.8$	
最大功率	50W	Admitted Power		50W	
极化方式	垂直极化	Polarization		Linear, Vertical	
方向性	全向性	Radiation		Omni-directional	
连接方式	I-PEX	Connector Type		I-PEX	
物理性能		Physical Properties			
天线结构	Dipole	Antenna structure		Dipole	
工作温度	-40℃~+60℃	Operating Temp		-40℃~+60℃	
保存温度	-40℃~+60℃	Storage Temp		-40℃~+60℃	

PART NO.  
20278-...R-...



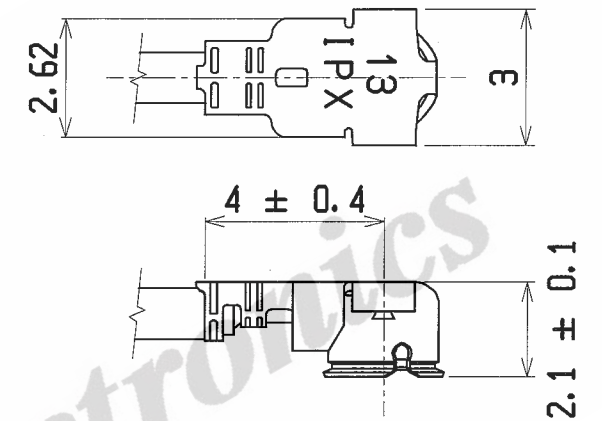
Part No. 20278-101R-08  
20278-102R-08  
20278-101R-13  
20278-102R-13  
20278-101R-32  
20278-102R-32

For hand tool  
(with notch)



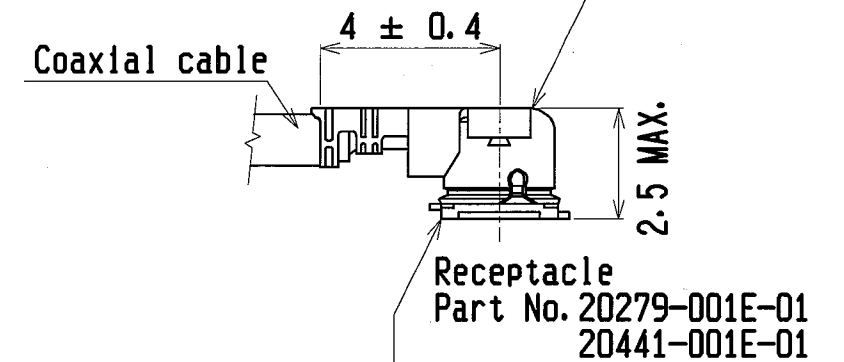
Part No. 20278-111R-08  
20278-112R-08  
20278-111R-13  
20278-112R-13  
20278-111R-32  
20278-112R-32

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

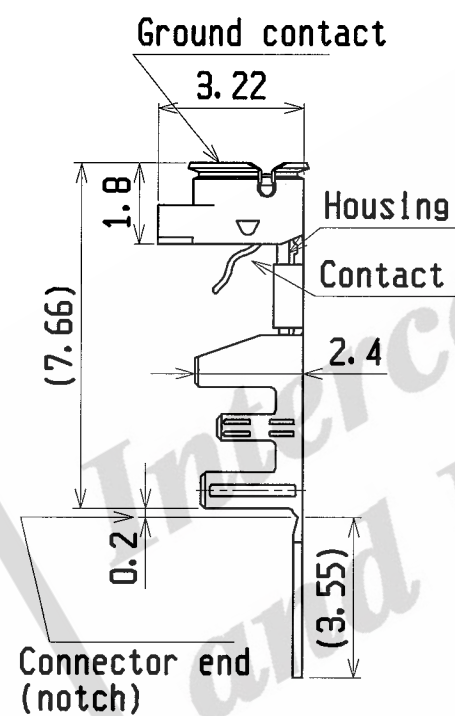
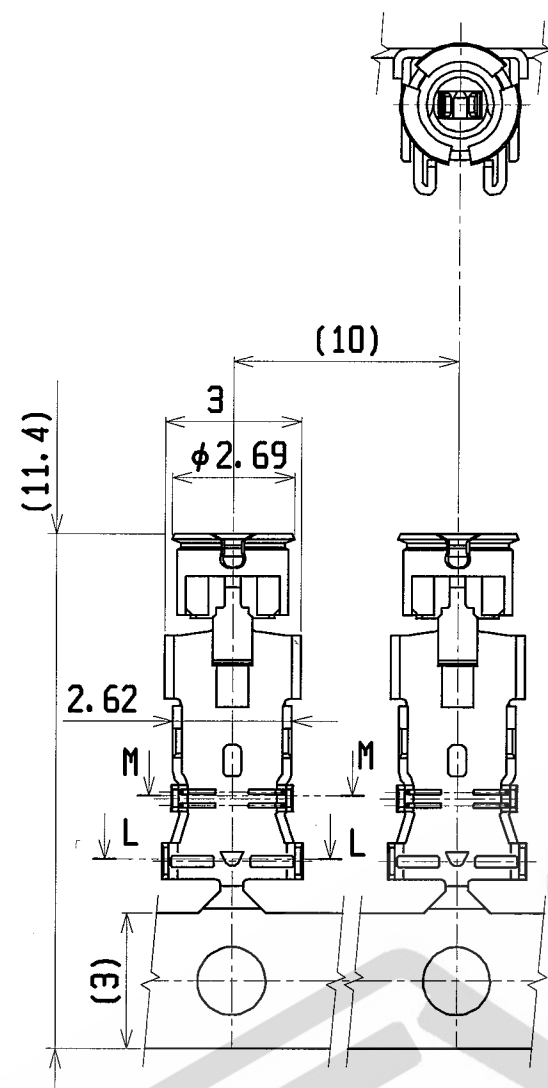
GENERAL TOLERANCE	
6 MAX.	±0.2
6 OVER MAX. 30	±0.3
30 OVER MAX. 120	±0.5
ANGLE	±2°

FORM REV. 4

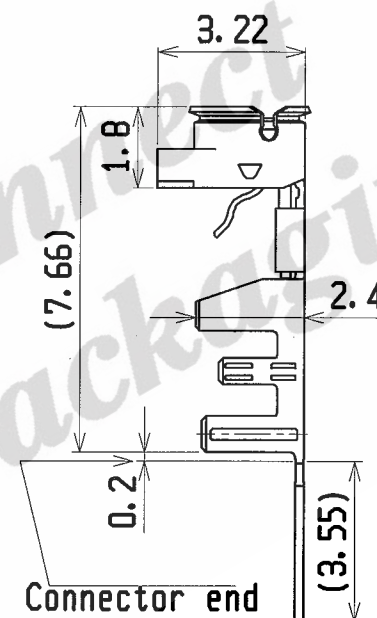
WAS T

<b>I-PEX</b>		Interconnect and Packaging Electronics TOKYO, JAPAN	
TITLE		General	
MHF series micro coaxial connector plug vertical (ground contact : gold plating)			
SCALE	UNIT	DWG. No.	SHEET REV.
6/1	mm	20278	1/4 19C

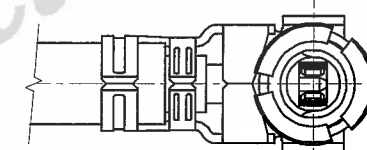
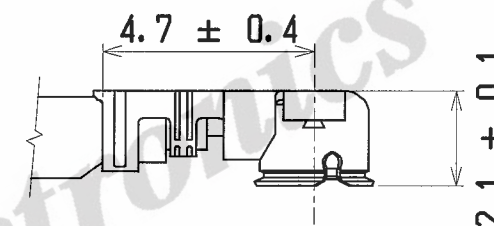
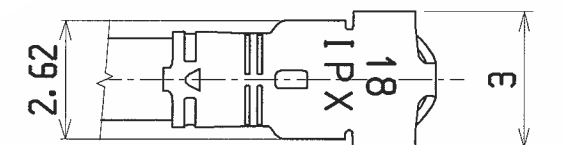
PART NO.  
20278-\*\*\*R-\*\*



Part No. 20278-101R-18  
20278-102R-18  
For hand tool  
(with notch)

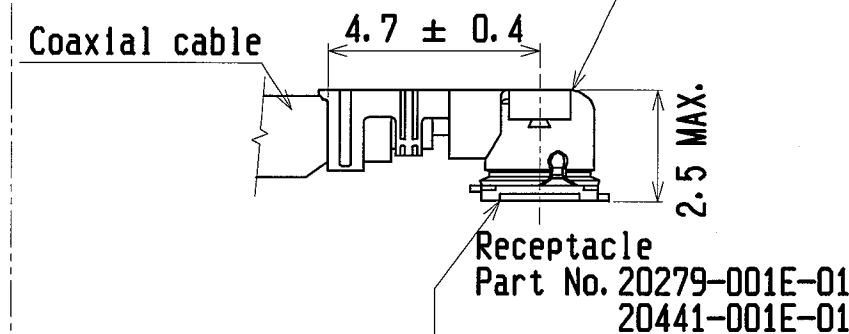


Part No. 20278-111R-18  
20278-112R-18  
For semi auto  
termination machine  
(without notch)



Cable Ass'y

Plug  
P/N 20278-1\*\*R-18



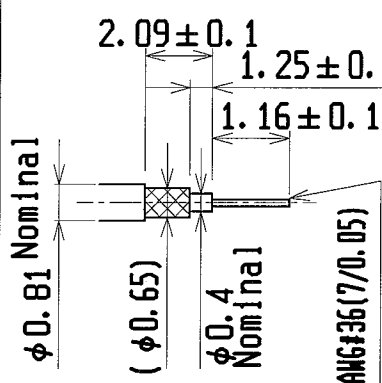
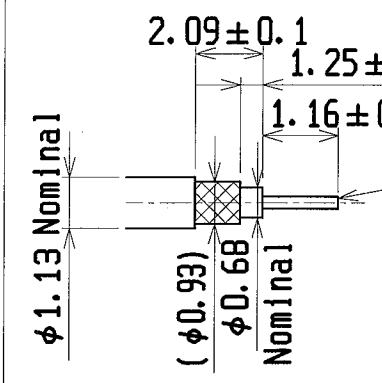
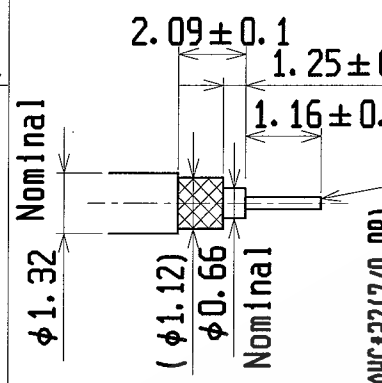
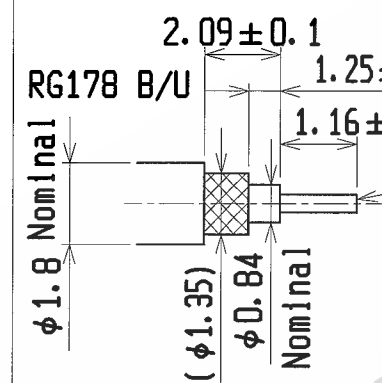
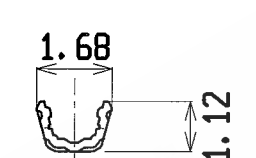
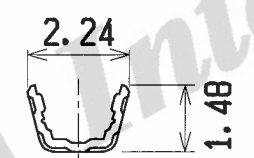
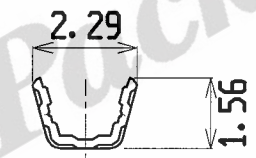
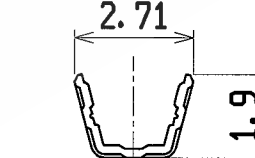
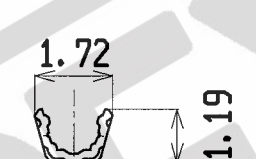
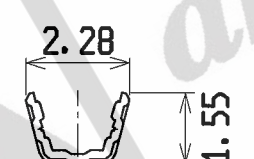
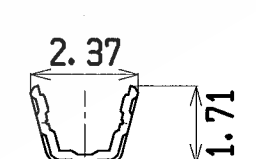
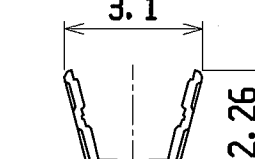
MATING

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

FORM REV. 4

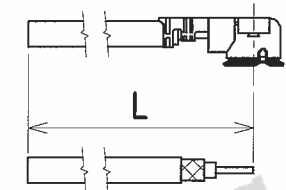
WAS T

<b>I-PEX</b>		Interconnect and Packaging Electronics TOKYO, JAPAN	
TITLE		General	
MHF series micro coaxial connector plug vertical (ground contact : gold plating)			
SCALE	UNIT	DWG. No.	SHEET REV.
6/1	mm	20278	2/4 19C

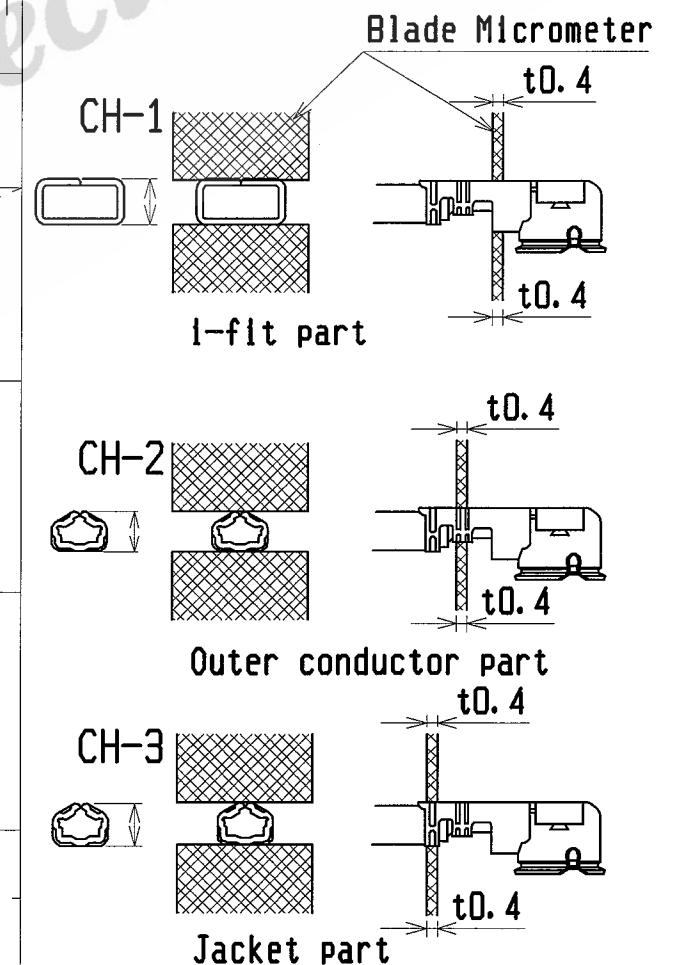
Part No. of non halogen free type	20278-101R-08 20278-111R-08	20278-101R-13 20278-111R-13	20278-101R-32 20278-111R-32	20278-101R-18 20278-111R-18
Part No. of halogen free type	20278-102R-08 20278-112R-08	20278-102R-13 20278-112R-13	20278-102R-32 20278-112R-32	20278-102R-18 20278-112R-18
Housing color	White	Black	Black	White
Applicable cable nominal dimension	 <p>※ NOTE-1</p>	 <p>※ NOTE-1</p>	 <p>※ NOTE-1</p>	 <p>※ NOTE-1</p>
Braided shield of Outer conductor 外部導体の編組	Single / 1重編組	Single / 1重編組	Double / 2重編組	Single / 1重編組
P/N of hand Tool	90187-008C	90187-013C	90187-032C	90233-018
P/N of semi auto termination machine	90213-008C	90213-013C	90213-032C	90232-018
Sect. M-M				
Sect. L-L				
Crimp Height	CH-1	1.34~1.40	1.34~1.40	1.34~1.40
	CH-2	0.76~0.84	1.06~1.14	1.41~1.49
	CH-3	0.85~0.97	1.15~1.35	1.70~1.80

NOTE-1  
中心導体, 外部導体への半田コーティングは不可  
Must not use solder coated  
Inner conductor and outer conductor.

Cable cut length



Crimp Height



<b>I-PEX</b>		Interconnect and Packaging Electronics TOKYO, JAPAN	
TITLE		General	
MHF series micro coaxial connector plug vertical (ground contact : gold plating)			
SCALE	UNIT	DWG. No.	SHEET REV.
-/-	mm	20278	3/4 19C



## Notes

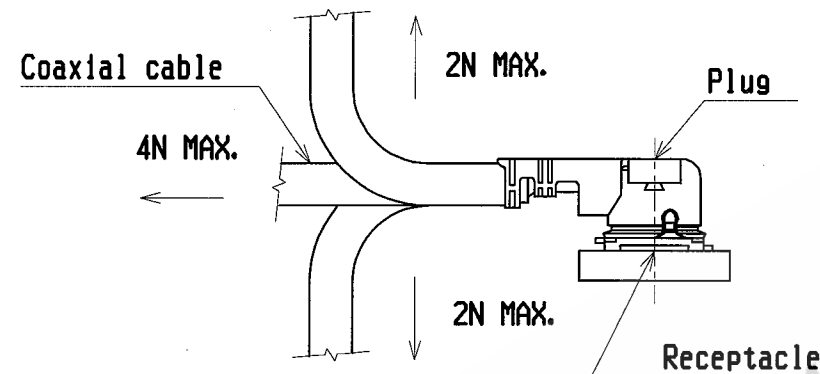
### 1. Material

- (1) Housing : PBT , UL94V-0
- (2) Contact  
phosphor bronze  
gold plating 0.1 $\mu$ m MIN.  
over nickel 1.27 $\mu$ m MIN.
- (3) Ground contact  
phosphor bronze  
gold plating 0.05 $\mu$ m MIN.  
over nickel 1.27 $\mu$ m MIN.

### 2. Packing : reel

3. Mating partner part No.  
: 20279-001E-01, 20441-001E-01

### 4. Permissible load of cable at mating



## 5. Suggestions for mating & unmating operation.

### 5-1 Mating.

Please mate the connector straightly to vertical direction as much as possible, adjusting the mating axis of plug and receptacle. As excessive slant angle mating may break the connector, please don't do it.

### 1. 材料

- (1)ハウジング: PBT, UL94V-0
- (2)コンタクト  
りん青銅  
金メッキ0.1 $\mu$ m MIN.  
下地 ニッケル1.27 $\mu$ m MIN.
- (3)グラウンドコンタクト  
りん青銅  
金メッキ0.05 $\mu$ m MIN.  
下地 ニッケル1.27 $\mu$ m MIN.

### 2. 梱包 : リール

3. かん合相手 part No.  
: 20279-001E-01, 20441-001E-01

### 4. コネクタかん合後のケーブルに対する荷重

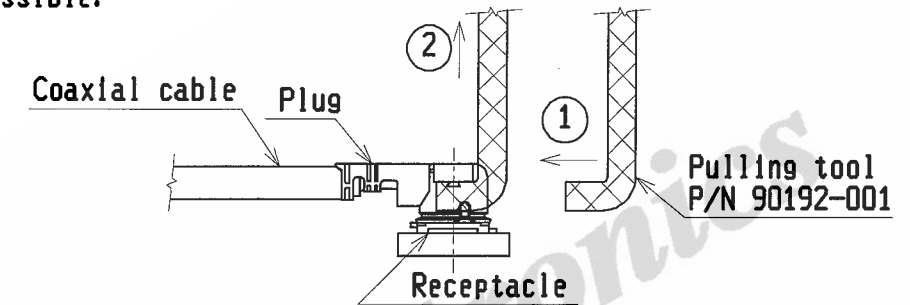
## 5. コネクタかん合時および抜去時の注意

### 5-1 コネクタ挿入時

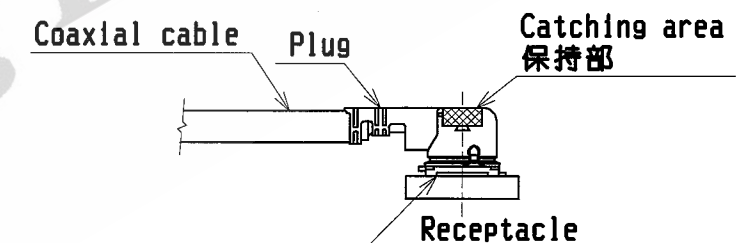
PlugとReceptacleのかん合軸を合わせ、できるだけ垂直に挿入して下さい。極端な斜め挿入は行わないで下さい。コネクタ破損の原因となりますので、過度なこじり挿入は行わないで下さい。

## 5-2 Unmating.

- (1) In case of unmating by pulling tool.  
Please use the pulling tool as the following drawing, and please pull plug to vertical direction as directly as possible.



- (2) In case of unmating directly by hand  
Please catch the catching area of plug, and please pull plug to vertical direction as directly as possible.



## 5-3 Crimp over standards of outer conductor

Standards: Less than 10% from total numbers of outer conductor  
(Numbers of outer conductor's crimp over from outer conductor's barrel)

## 5-4 Caution about Heat shrinkage tubes

Please be careful not to melt housing when using heat shrinkage tubes. It will become cause of open circuit.

## 6. This is 'Pb-free' connector.

## 5-2 コネクタ抜去時

- (1) 抜去ジグを用いる場合  
下図のようにできるだけ垂直に引き抜いて下さい。

- (2) 手で直接引き抜く場合  
下図の保持部をつかみ、できるだけ垂直に引き抜いて下さい。

## 5-3 外部導体はみ出し量

外部導体はみ出し量規定  
: 外部導体トータル本数の10%以下  
(外部導体バレルの外にはみ出し量)

## 5-4 熱収縮チューブについての注意

熱収縮チューブで外部導体を覆う場合は、導通不良の原因となりますので、熱によりハウジングを溶融させないよう注意してください。

## 6. 本コネクタは'Pb-free'である

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

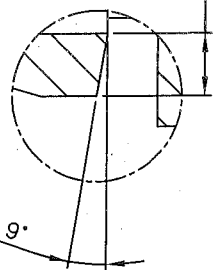
FORM REV. 4

WAS T

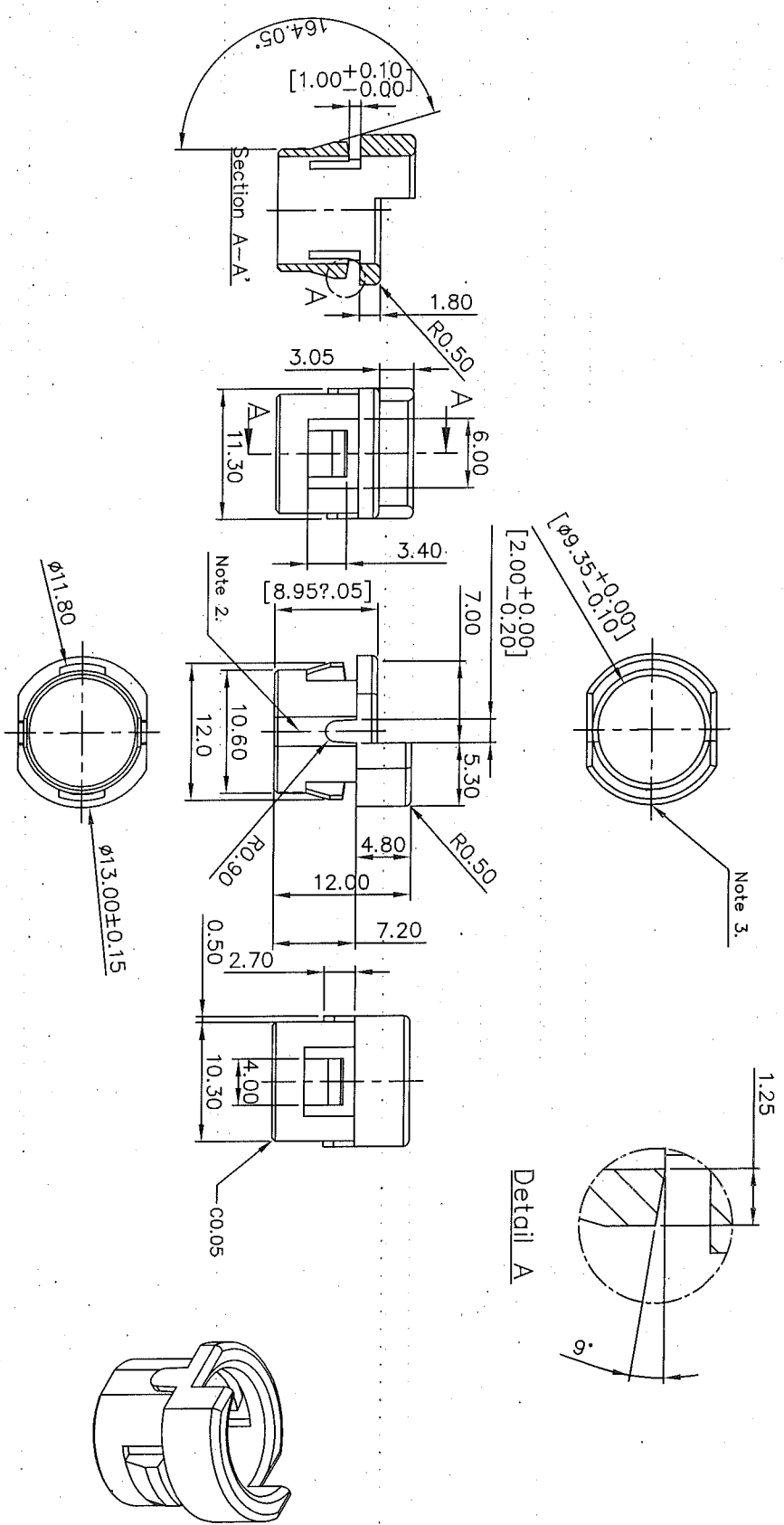
I-PEX Interconnect and Packaging Electronics TOKYO, JAPAN			
TITLE MHF series micro coaxial connector plug vertical (ground contact : gold plating)			General
SCALE -/-	UNIT mm	DWG. No. 20278	SHEET 4/4
			REV. 19C

DS-36

REV	DATE	DESCRIPTION
B		
C		



Detail A



单重:0.36g

NO	DESCRIPTION	MATERIAL	P/N	STANDARD COLOR	PANTONE NO.
1	Bottom Fixed Base Cover	PC-L1250Z			Pantone Process Black C

XXX	±2.0	APPROVED
XX	±1.0	CHECKED
X	±0.5	
X	±0.2	
XX	±0.1	DRAWING

VENDER :	
PART NO :	
PARTNAME :	387-HPA03T-B0
D.S PNO :	

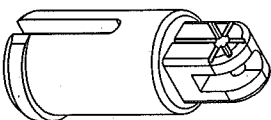
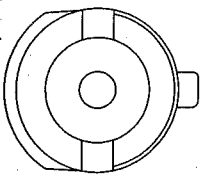
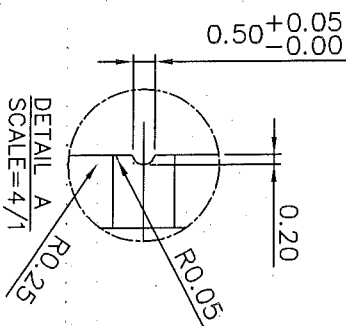
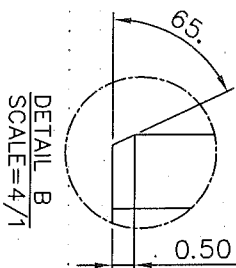
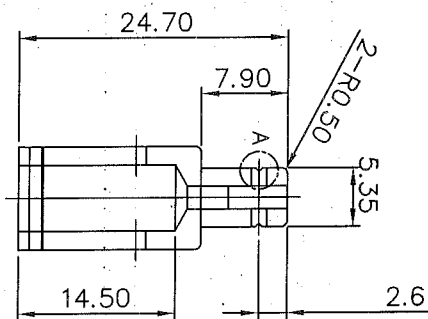
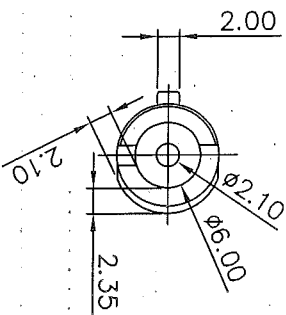
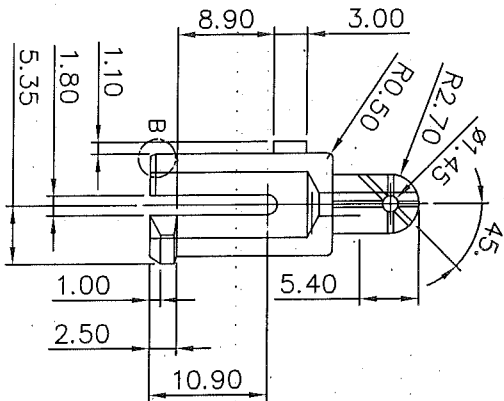
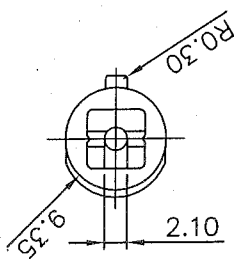
REV	UNIT	SCALE	SIZE	SHEET	FILENAME
A	m/m		A4	1 OF 1	

香港创诚国际实业有限公司



DS-105

REV	DATE	DESCRIPTION
A		New Issue



1	DS-105 Bottom Fixed Base	PBT	P/N	SPRAY PAINT COLOR	STANDARD COLOR	Pantone Process Black C
NO	DESCRIPTION	MATERIAL	P/N	SPRAY PAINT COLOR	STANDARD COLOR	PANTONE NO.

XXX ±2.0 APPROVED

XX ±1.0

X ±0.5 CHECKED

.X ±0.2

XX ±0.1 DRAWING

VENDER :	
PART NO :	
PARTNAME:	DS-105 Bottom Fixed Base



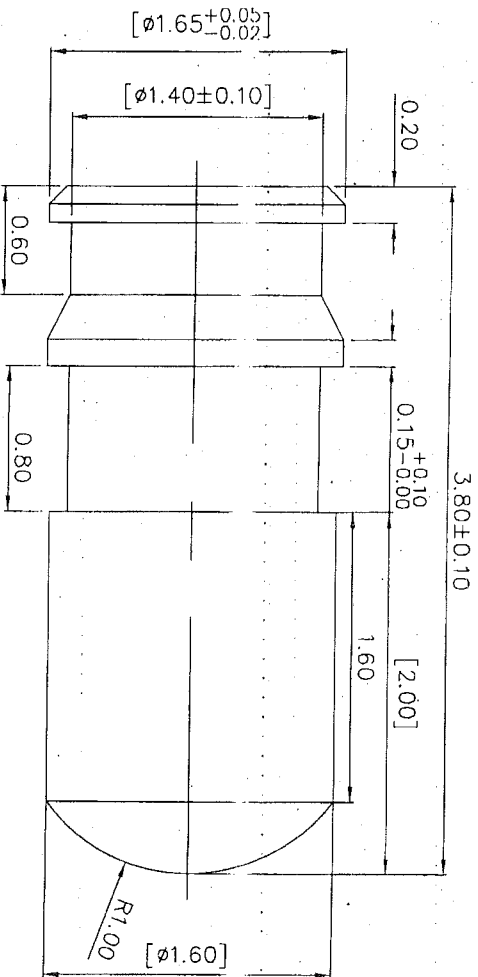
DI XIN

INDUSTRIAL CO.,LTD.

帝信 (东莞) 光电科技有限公司

DS-301

F			G
REV	DATE	DESCRIPTION	
A			



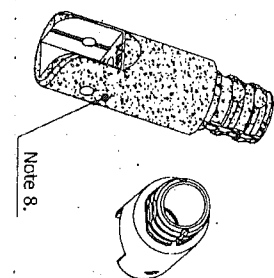
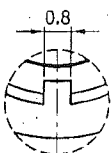
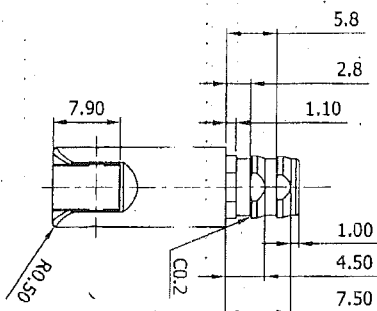
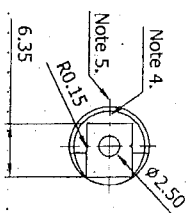
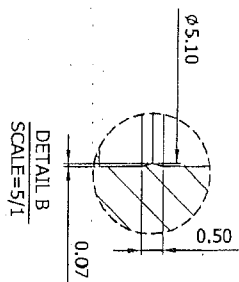
I	DS-301 SMA Rivet	POM	N/A	黑色 (002)	PANTONE NO.
NO	DESCRIPTION	MATERIAL	P/N	SPRAY PAINT COLOR	STANDARD COLOR
XXX	±2.0	APPROVED			
XX	±1.0	VENDER	PART NO		
X	±0.5	CHECKED	PARTNAME		
X	±0.2	D.S PNO		DS-301 SMA Rivet.	
XX	±0.1	DRAWING	REV	UNIT	SCALE
⊕			A	mm	25 / 1
					A 4
					1 OF 1
					FILE NAME

DI XIN

INDUSTRIAL CO.,LTD.

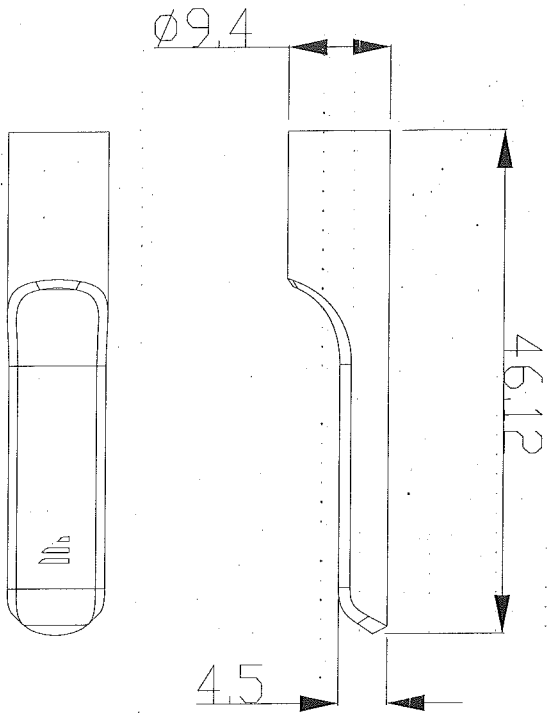
帝信 (东莞) 光电科技有限公司

F		G	
REV	DATE	DESCRIPTION	
A		New Issue	

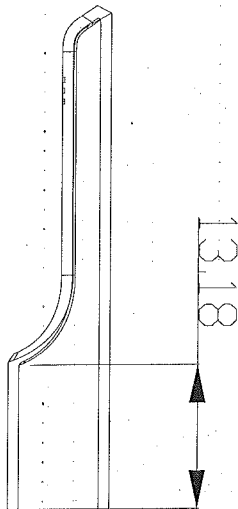
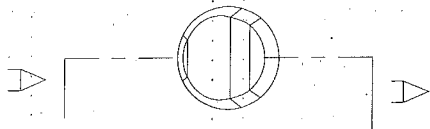


DI XIN  
INDUSTRIAL CO.,LTD.  
帝信 (东莞) 光电科技有限公司

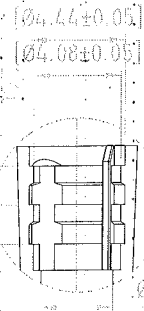
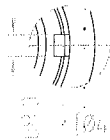
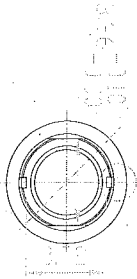
序号	标题	更改内容	更改人/日期
1			



材料: TPPE 65D

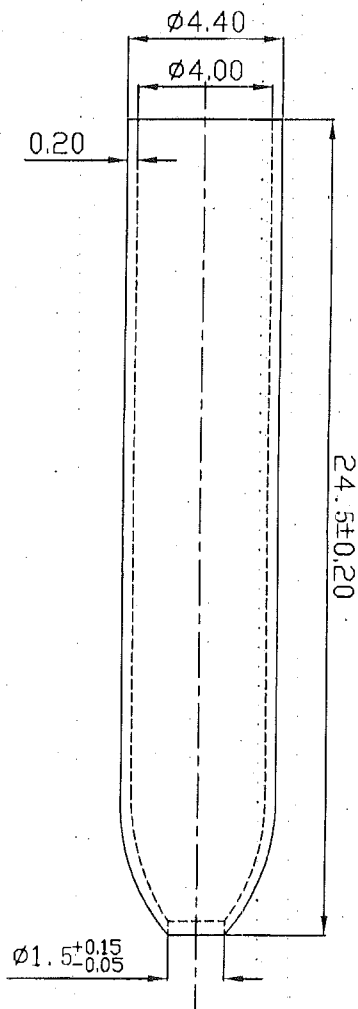
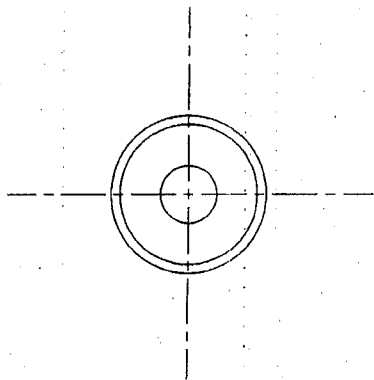


SECTION A-A



卡位结构与小S杆套一样。

公差						东莞创诚电子有限公司			
400~1000	20~400	50~120	10~30	<10		名称: 卡位杆	材料: TPPE	比例: 1:1	单位: mm
±0.4	±0.3	±0.2	±0.15	±0.1		绘制/日期	审核/日期	页次: 1/1	图框: A4



NOTES:

1. MATERIAL: BRASS
2. FINISH: TIN



繪制 DRAWN BY	張雪松	品名 ITEM	Ø4.4*Ø4.0*24.5L 銅管	角法 ANGLE PROJECTION	單位 UNIT	MM	版本 REVISION	修改記錄 DESCRIPTION	修改日期 DATE
審核 CHECKED BY		料號 PART NO.	C04441007	公差 TOLERANCE	比例 SCALE	日期 DATE	1	新訂圖面	
批准 APPROVED BY				XX±0.10		2009/12/24			





**HL 海联集团 HILUM TECHNOLOGIES GROUP**深圳市海联通科技有限公司 深圳市海联长信科技有限公司  
Hileton Technology Co., Ltd. Hilum Technology Co., Ltd.

地址: 深圳市光明新区公明街道将石社区石围大田洋工业区G区H栋

Tel: 0755-36697911

Fax: 0755-36697928

ADD: H Building, C District, Da Tian Yang Industrial Zone, Jiang Shi Wei, Gong Ming Street, Guang Ming New District, Shenzhen

\*\*\*\*\*

# 产 品 规 格 书

## Product specification

物料编码: \_\_\_\_\_

Material code:

产品名称: 同轴线缆Product name: coaxial cable产品型号: RF1.13/P-TCproduct model: RF1.13/P-TC规 格: 7/0.08SCSpecifications: 7/0.08SC

版本号 version number	修订日期 Revision date	修订内容 revised contents	修订人 Revised	发行日期 date of issue
A	2009. 10. 06	新 增 new increase	向明松	2009. 10. 10
B	2015. 03. 19	修订规格书格式 revised Specification Format	杨道东	2015. 03. 20
C				
D				
E				
F				
制 作 Preparation		审 核 auditor	批 准 approver	
杨道东		秦荣新	张立澎	

1. 产品描述

product description

1.1 本产品是 Teflon 绝缘系列柔软同轴电缆线, 适用于微波设备、无线通信设备系统和设备。

This product is soft Teflon insulation series coaxial cable. Is suitable for the microwave equipment, wireless communication systems and equipment.

1.2 产品特点: 极好的柔软性, 低驻波比, 良好的屏蔽性能, 精确的相位匹配。

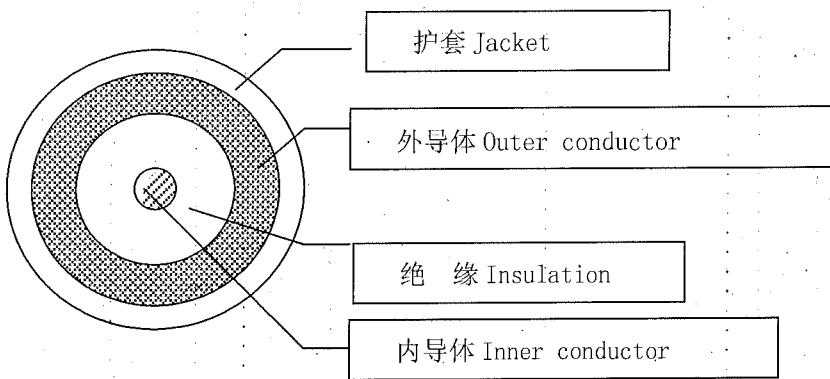
Product features: Excellent flexibility, good V.S.W.R, good shielding performance.

2. 电缆详细资料及结构图:

Cable with data and structure diagram:

2.1 结构图:

structure diagram



2.2 电缆规格:

Specification of cable:

项 目 Item		单位 NO	材质及尺寸 Materials and size
内导体 Inner conductor	材 质 Material	/	镀银铜线 Silver plated copper wire
	构 成 Composition	mm	7/0.08±0.02
	外 径 OD	mm	Φ 0.24
绝 缘 Insulation	材 质 Material	/	Teflon FEP (200 度 聚全氟乙烯-丙烯 树脂) Teflon FEP (200 degrees of fluorinated ethylene propylene resin)
	厚 度 Thickness	mm	0.21
	外 径 OD	mm	Φ 0.68±0.03
	颜 色 Color	/	透明色 transparent color
外导体 Outer conductor	材 质 Material	/	镀锡铜线 Tinned copper wire
	形 式 Form	/	编 织 Weave
	密 度 Density	%	93%(26 目 (Mesh); 80 编 (Coding 4*16/0.05mm))
	外 径 OD	mm	Φ 0.88±0.05
护 套 Jacket	材 质 Material	/	Teflon FEP (200 度聚全氟乙烯-丙烯 树脂)

			Teflon FEP (200 degrees of fluorinated ethylene propylene resin)
厚度 Thickness	mm	0.125	
外径 OD	mm	$\Phi 1.13 \pm 0.05$	
护套颜色 color of sheath	/	灰色或黑色 (也可按客户要求加工) Gray or black (Can also be processed according to customer requirements)	

## 3. 电缆特性

The cable properties

## 3.1 电气性能

Electrical properties

测试项目 test project	标准要求 Standard value		备注 Note
额定温度/电压 Rated temperature / voltage	$-55^{\circ}\text{C} \sim +200^{\circ}\text{C} / 30\text{V}$		/
绝缘电阻 Insulation resistance	$3000\text{M}\Omega \cdot \text{Km}$		电阻测试仪 Resistance tester
导体电阻 Conductor resistance	$482\Omega / \text{Km } 20^{\circ}\text{C}$		/
耐压 Pressure	2KV		耐压测试仪 Withstand voltage tester
绝 缘 Insulation	未老化前 Unaged	抗拉强度 Tensile Strength	2500 PSI MIN. ( $1.76\text{Kg}/\text{mm}^2$ )
		延伸率 Elongation	200% MIN
	老化后 Aged	抗拉强度 Tensile Strength	2500 PSI*75% (168HRS*232 $^{\circ}\text{C}$ )
		延伸率 Elongation	200% MIN*75% (168HRS*232 $^{\circ}\text{C}$ )
护 套 Jacket	未老化前 Unaged	抗拉强度 Tensile Strength	2500 PSI MIN. ( $1.76\text{Kg}/\text{mm}^2$ )
		延伸率 Elongation	200% MIN
	老化后 Aged	抗拉强度 Tensile Strength	2500 PSI*75% (168HRS*232 $^{\circ}\text{C}$ )
		延伸率 Elongation	200% MIN*75% (168HRS*232 $^{\circ}\text{C}$ )
特性阻抗 characteristic impedance	$50 \pm 2\Omega$		网析分析仪、TRK 测试仪 Analysis of network analyzer The TRK tester
电容 Capacitance	$96 \pm 3 \text{ PF/M}$		数字电容仪 Digital capacitance meter
传输速率 Velocity	69%		网析分析仪 Analysis of network analyzer
传输延迟 Propagation Delay	4.8ns/m		/

屏蔽率减 Shielding attenuation	100dB		/
弯曲半径 Bending radius	<7mm		/
阻燃性 (UL) Flame retardant	passed		VW-1 提供材料报告 VW-1 provides material report
屏蔽衰减 (dB/m) Attenuation (dB/m)	测试频率 test frequency	衰减 Attenuation	海平面 20°C 测试 Sea level to 20 DEG C test
	0.1GHz	0.42	
	0.4GHz	0.58	
	1GHz	2.20	
	2GHz	3.40	
	3GHz	4.20	
	4GHz	4.50	
	5GHz	5.20	
	6GHz	5.60	
驻波比 VSWR	0.3—3GHz	≤1.30	
	3—6GHz	≤1.35	

## 4. 包装要求

## Packaging requirements

## 4.1 包装长度: 1000 米

Package length: 1000 meters

包装方式: 轴,

The way of packing: Volume

最短线长度:  $\geq 30$  米

The stub length: 30 meters

最短线比例: 15%

The proportion of short-term: 15%

## 4.2 包装标识: 标准或按客户要求.

Packaging and labeling: standard or according to customer requirements.

## 5. 材料成份:

Material composition:

## 5.1: 品名及规格: 同轴线 RG1.13/P-TC

Name of commodity and specifications : Coaxial cable RG1.13/P-TC

## 5.2: 材料重量: 3240(mg/m)

The weight of material: 3240(mg/m)

部位 Position	部位质量(mg) Site quality	材料名称 Material name	材料物质构成 Material composition	CAS NO	含有量(mg) The amount of (mg)	含有率(%) Containing rate	备注 Note
导体 conductor	350	镀银铜线 Silver plated copper wire	Cu	7740-50-8	344.75	10.64	
			Ag	7740-22-4	5.25	0.162	
绝缘 Insulation	742	Teflon FEP	FEP	26655-00-5	742	22.901	
屏蔽 Shield	1322	镀锡铜线 Tinned copper wire	Cu	7740-50-8	1282.34	39.578	
			Sn	7740-31-5	39.66	1.224	
护套 Jacket	826	Teflon FEP	FEP	26655-00-5	770	23.765	
			色母 Color Masterbatch	/	56	1.728	

我司产品执行 UL-1979 标准, 暂不提供 UL 标准认证号, 可提供 SGS、MSDM 报告。

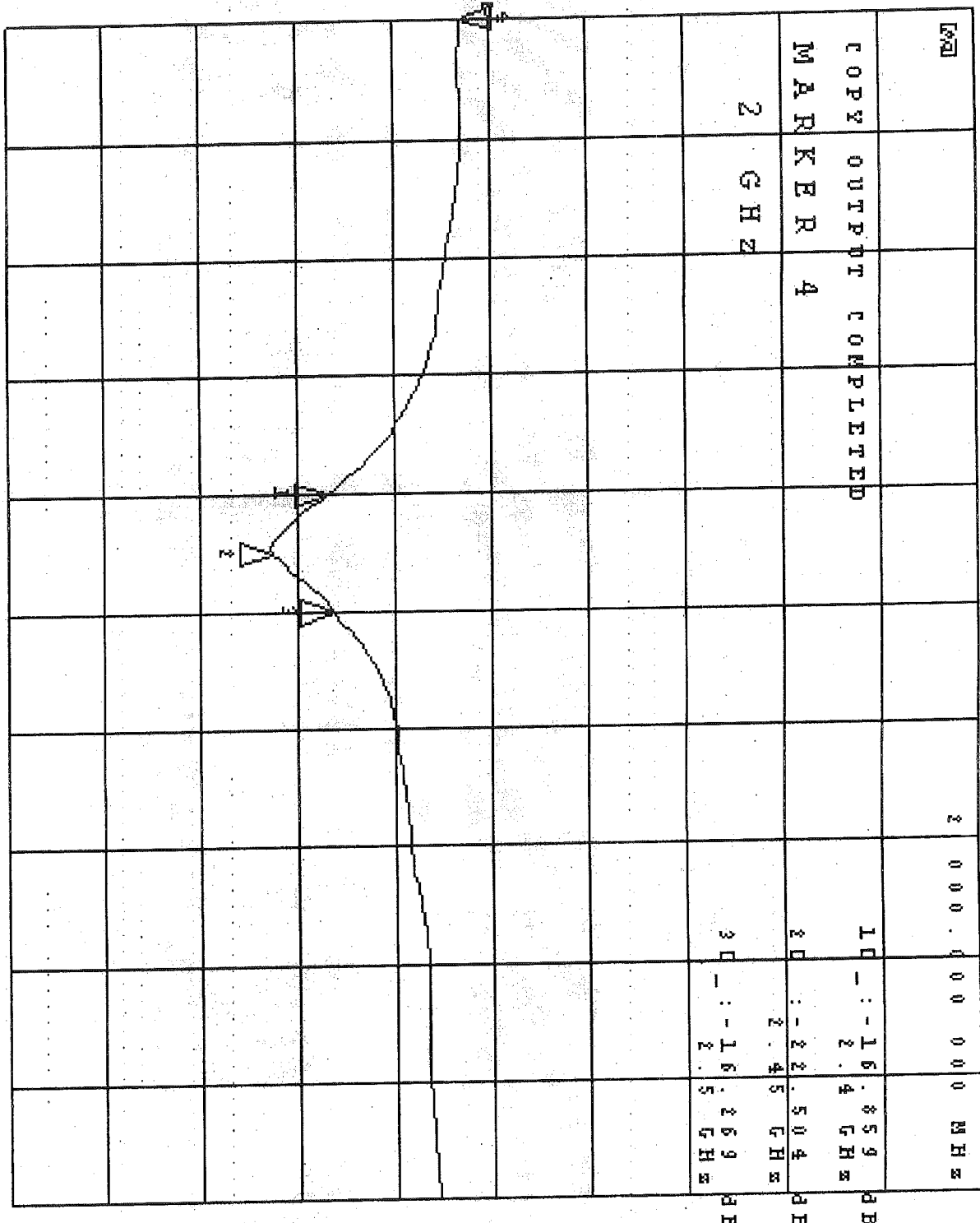
Our products are the implementation of UL-1979 standard, does not provide UL certification standards, can provide SGS, MSDM report.

此规格书只适用于常规线材, 若客户所需线材为特殊规格的, 请以线材承认书为准。

This specification is only for conventional wire, if the customer needed to wire for special specification, please refer to our wire admitted that book.

CH1 511 109 MHz 10 dB/ REF 0 dB 25 Nov 2013 10:51:43 40 -:-2.9799 dB

PRM  
COR



START 0.000.000 MHz

STOP 3.000.000 MHz



CH1 31.1

30R

1

/

REF 1

25 Nov 2013 10:52:14

40 - : 5.8665

P R m

C o r

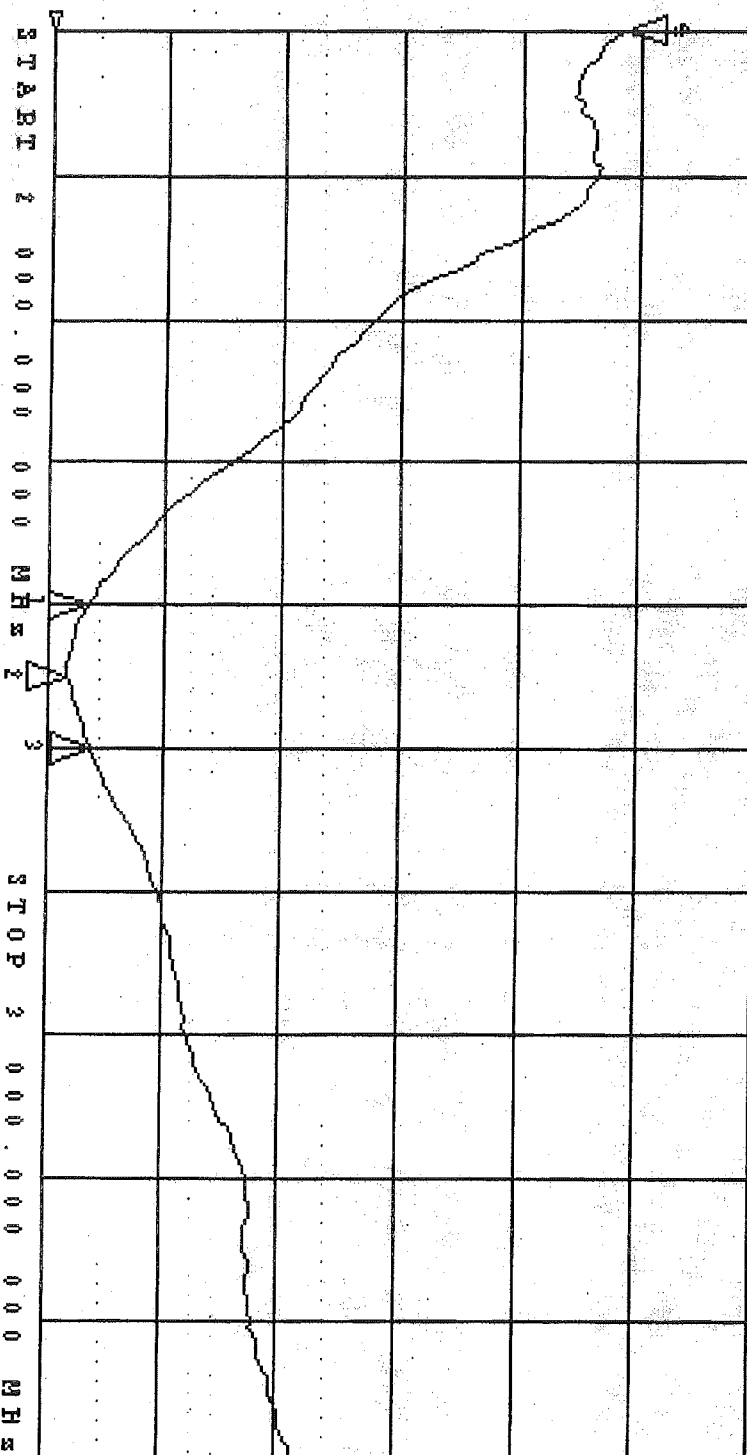
2 000.000 000 MHz

10 - : 1.342  
2.4 GHz

MARKER 4  
30 : 1.1595  
2.45 GHz

40 - : 1.3532  
2.5 GHz

1



# RF Antenna Assembly

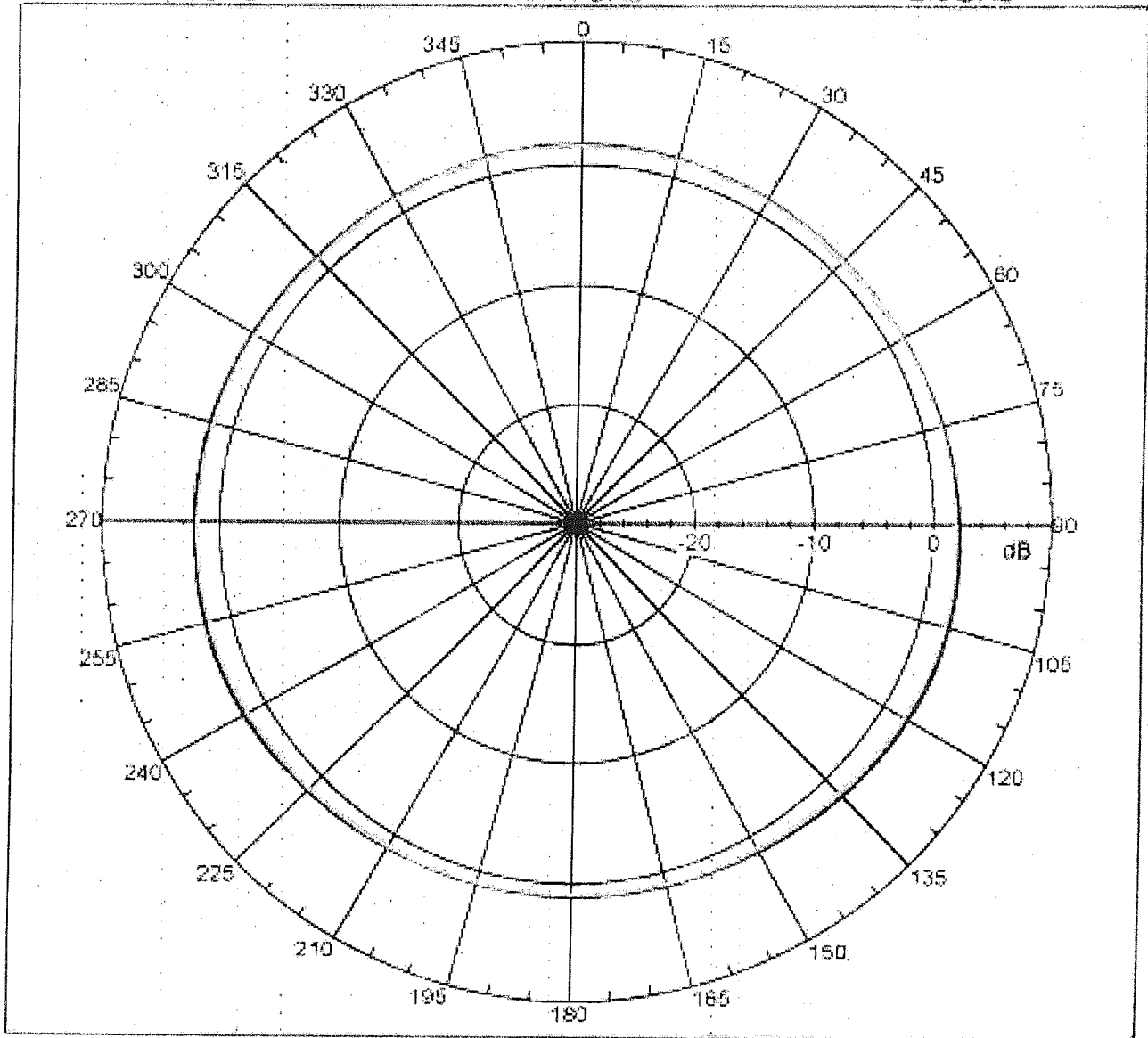
SPEC:2.4~2.5GHz

H Plane

2.4GHz

2.45GHz

2.5GHz



RF Antenna Assembly  
SPEC:2.4~2.5GHz

E Plane

2.4GHz

2.45GHz

2.5GHz

