權億科技股份有限公司
Master Wave Technology Co., Ltd.

承 認 書

APPROVAL SHEET

Customers: 茂發科技股份有限公司

Customer Model No.: EC600000000

Master Wave Model No. 98P63MIPF001

Product Description: PCB Antenna

Issue Date: 2015/10/8

REV.: 01

客戶承認用印	權億承認用印
	權億科技股份有限公司 2015.10.8 發行章 RF BU

核准 Approve	主管 Chief	承辦 Responsible
Hero	Matt	Mango

MASTER WAVE TECHNOLOGY CO., LTD.
權億科技股份有限公司
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Shengyih Electronic Plastic Co. Ltd (Shou Zhou)
聲億電子塑膠有限公司 (蘇州廠)
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Tel：+86-512-65046030 Fax：+86-512-65046033

Shengyih Electronic Plastic Manufactory (Dongguan)
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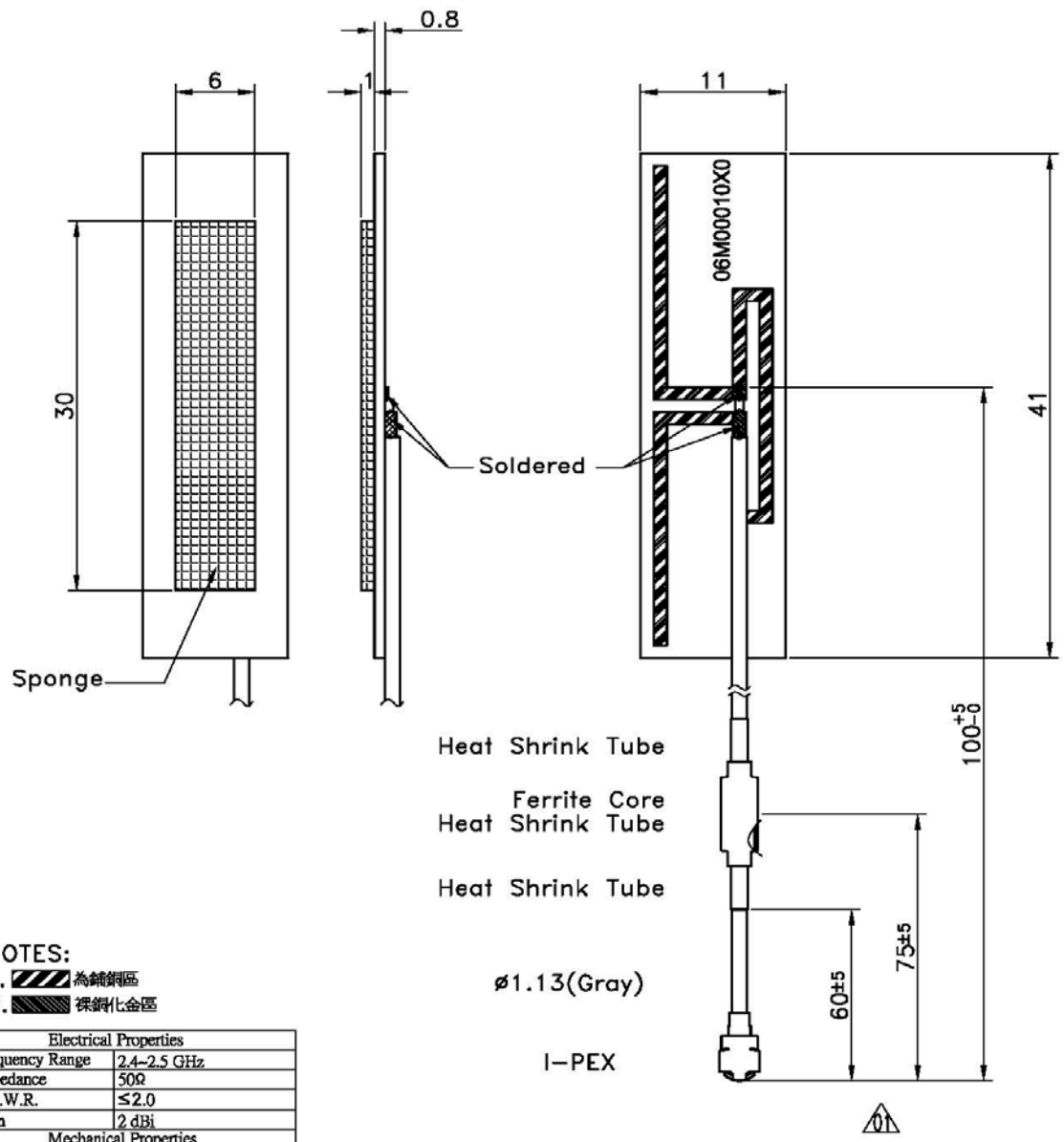
-PE Bag
-Carton

Modification History:

REV.	Date	Content
00	2015/9/22	
01	2015/10/8	增加尺寸標註

REV	ZONE	DESCRIPTION	ENG	APPROVED	DATE
01	1 B	增加尺寸標註	Mango	Jerome	2015/10/8



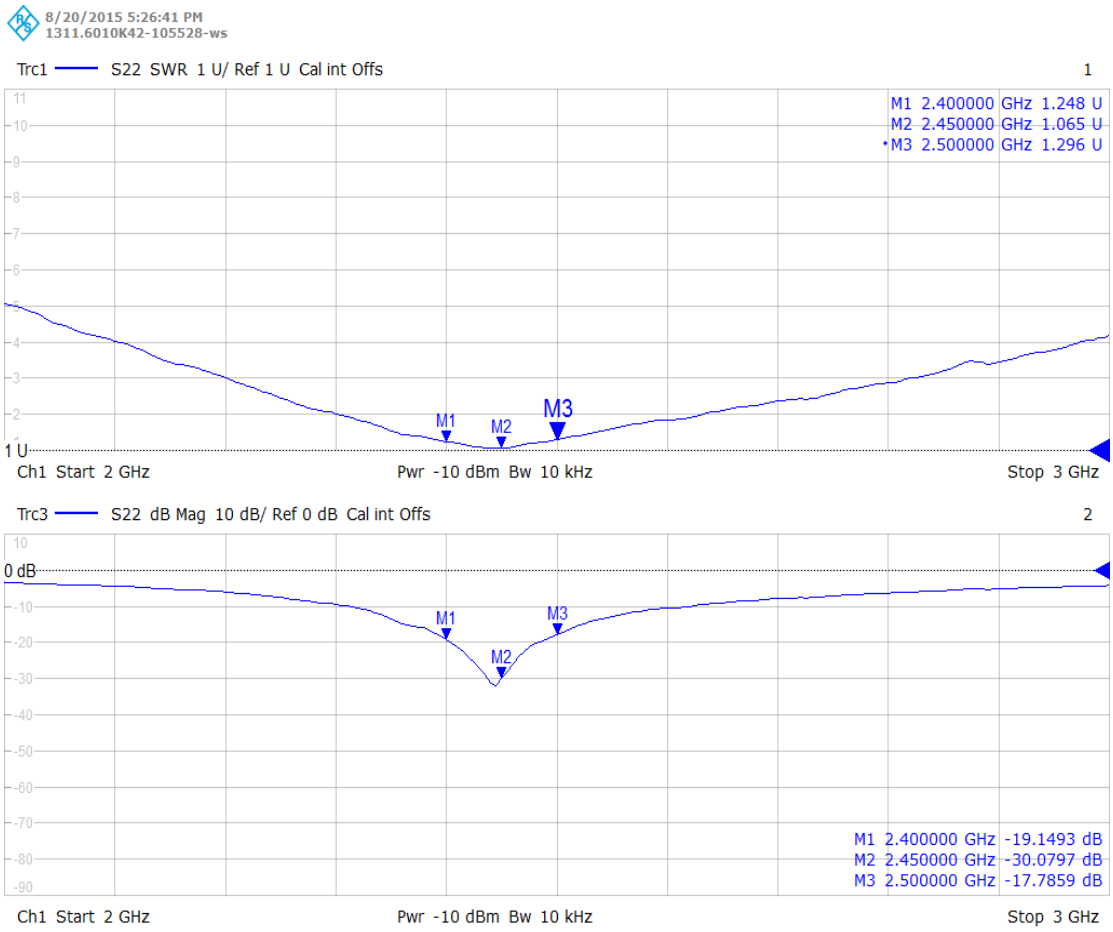
NOTES:
1. 為鋪銅區
2. 裸銅化金區

Electrical Properties	
Frequency Range	2.4~2.5 GHz
Impedance	50Ω
V.S.W.R.	≤2.0
Gain	2 dBi
Mechanical Properties	
Whip	FR4
Connector	Brass
Weight	1.3g
Operating Temp	-20°C~+70°C

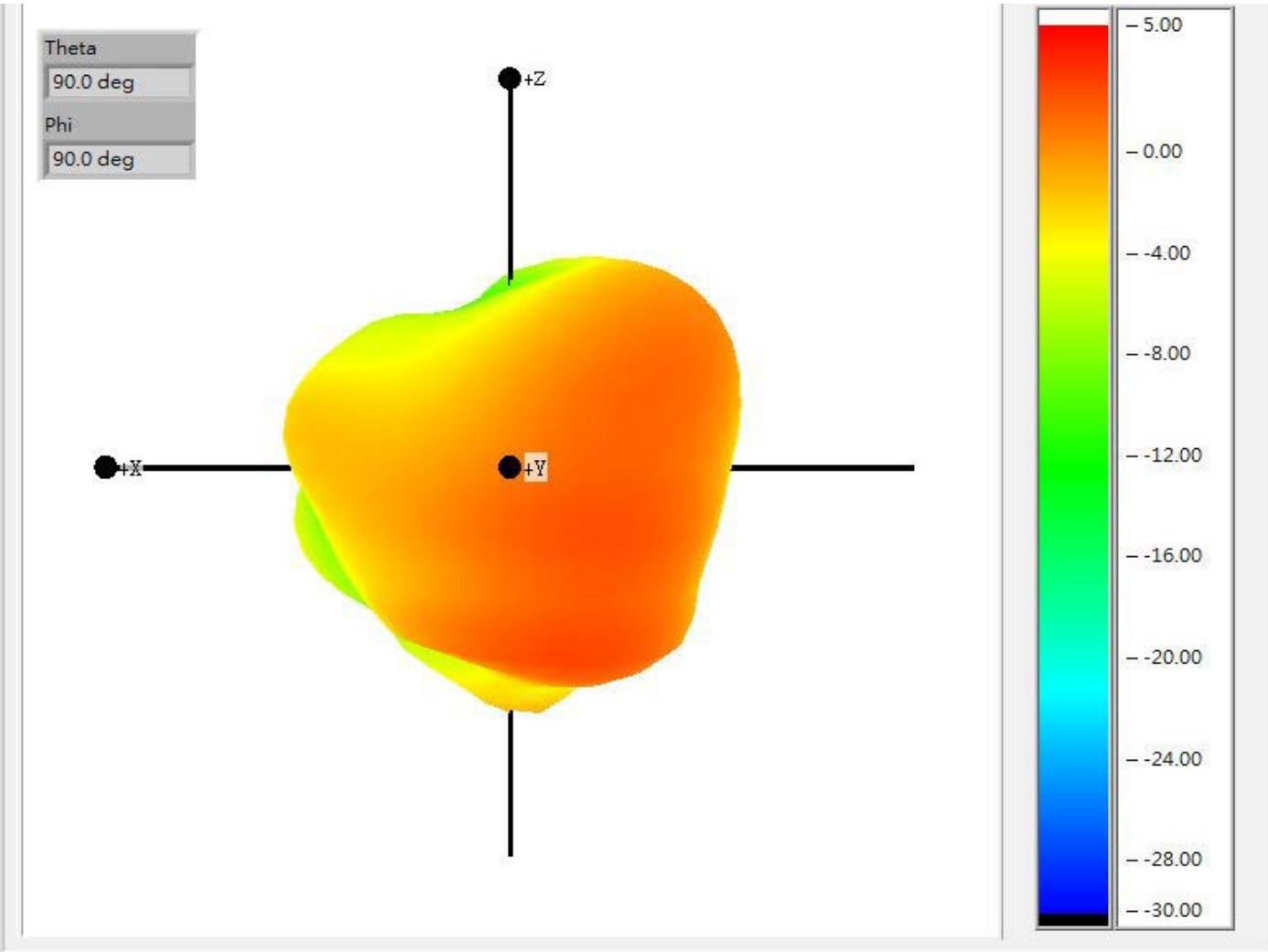
UNLESS OTHERWISE SPECFIED TOLERANCES ON: ± 0.5	DATE: 2015/9/22	MAT'L:	Master Wave Technology CO.,LTD
	UNIT: mm	FINISH:	
	THIRD ANGLE PROJECTION	SCALE: 2/1	TITLE : PCB Antenna
APPROVED BY:	CHECKED BY:	DESIGNED BY: Jerome	DRAWN BY: Mango
MODEL NO. : 98P63MIPF001			REV 01
PART NO. :			

THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MASTER WAVE AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.

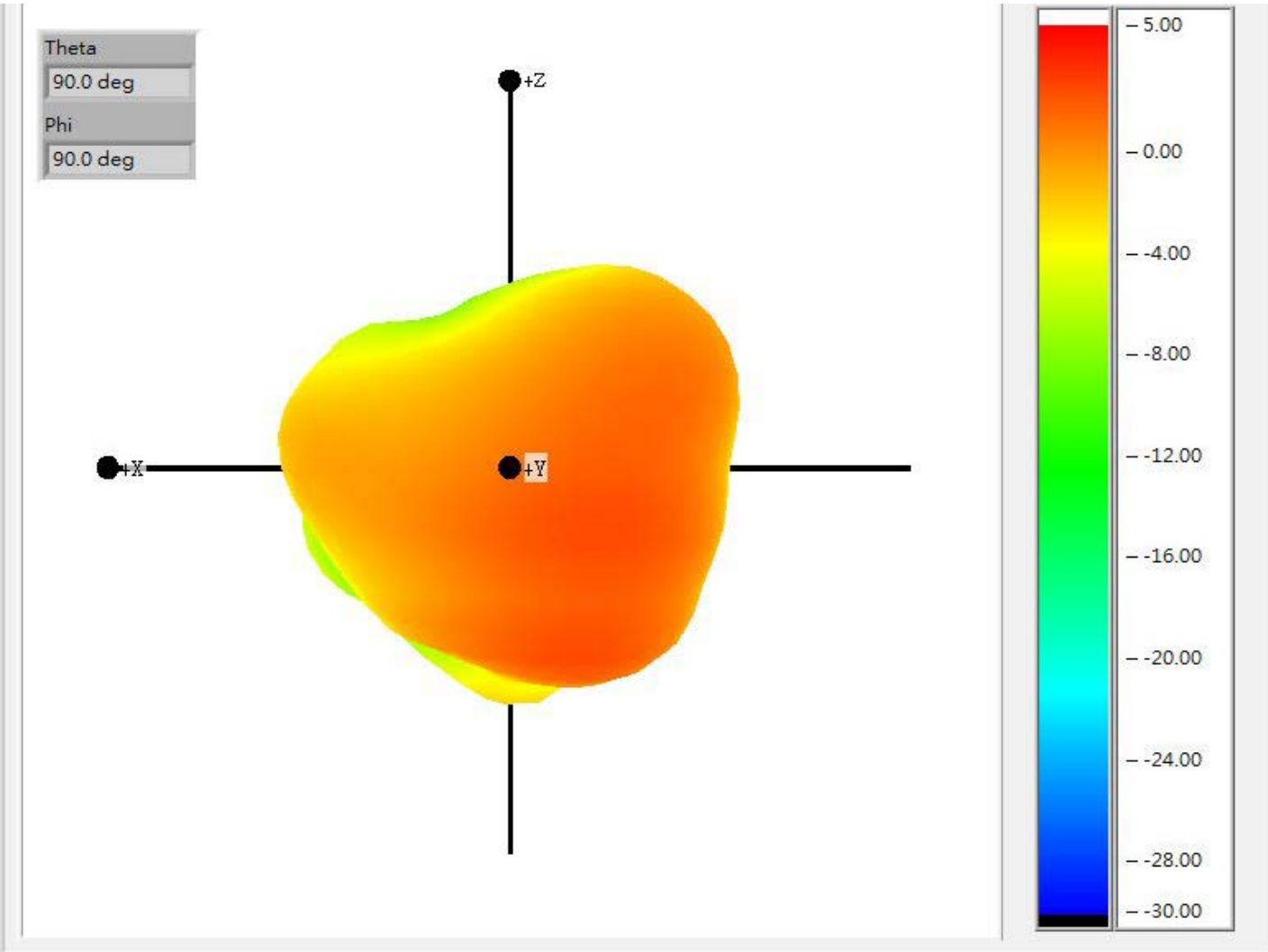
Electrical test (搭配客戶機構)



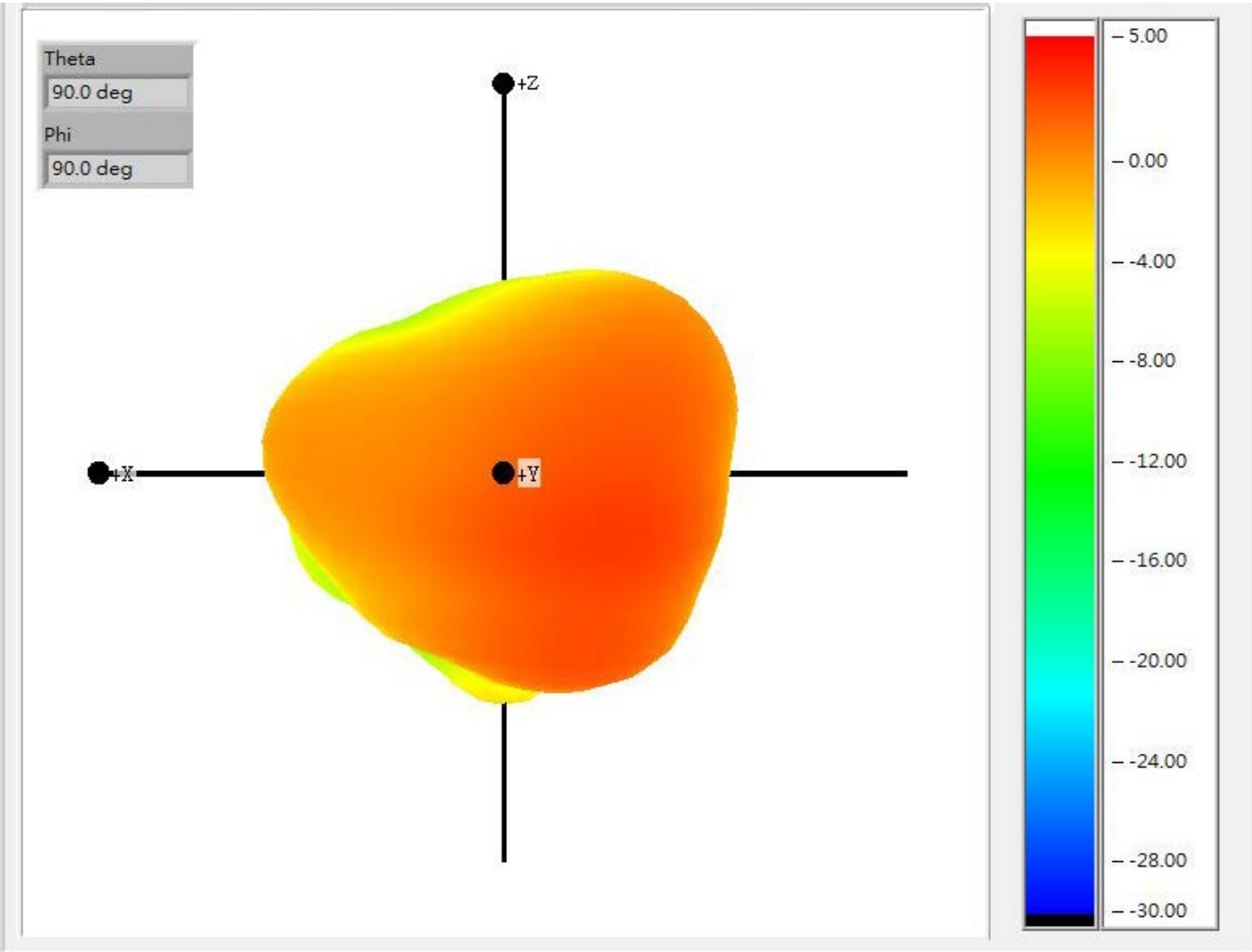
3D Radiation Pattern 2.4GHz



3D Radiation Pattern 2.45GHz



3D Radiation Pattern 2.5GHz



Antenna Efficiency

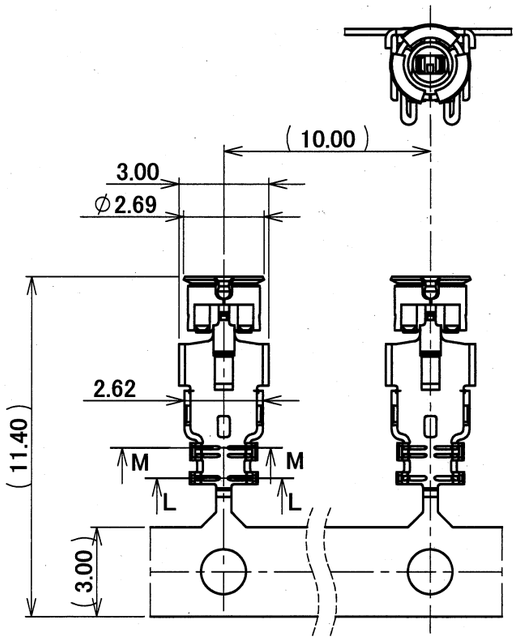
Frequency (MHz)	2400	2450	2500
Peak Gain (dBi)	2.62	2.42	2.96
Directivity (dBi)	5.38	5.32	5.4
Efficiency (dB)	-2.76	-2.9	-2.44
Efficiency (%)	52.91	51.26	57

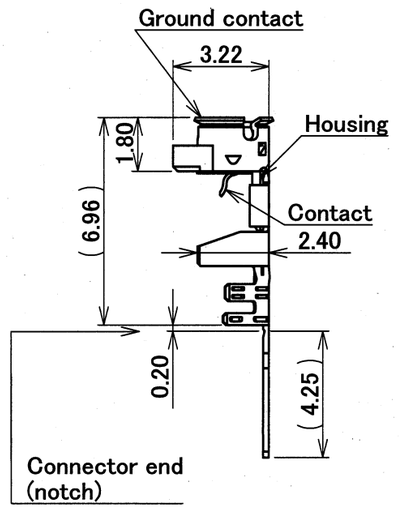
Recommended P/N	20278-112R-**

PART No.
20278-***R-**

20278-***R-**

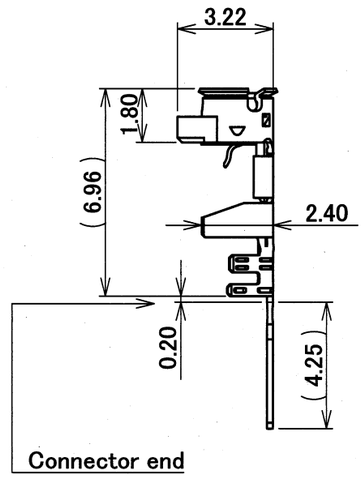
- Cable type
- 1 Non halogen free type
  2 Halogen free type
- 0 With notch
  1 Without notch
- 1 Au Plating





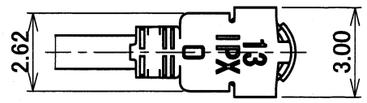
Part No. 20278-101R-08
20278-102R-08
20278-101R-13
20278-102R-13
20278-101R-32
20278-102R-32

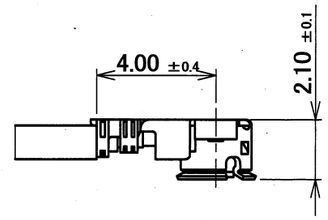
For hand tool
(with notch)

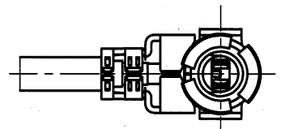


Part No. 20278-111R-08
20278-112R-08
20278-111R-13
20278-112R-13
20278-111R-32
20278-112R-32

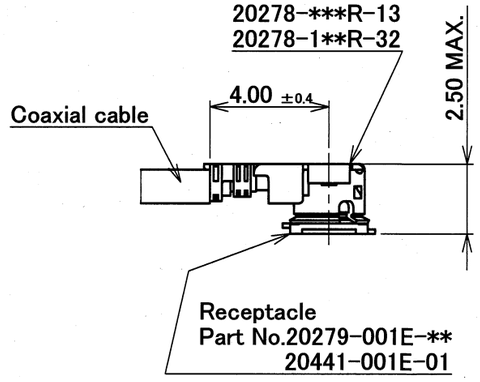
For semi auto
termination machine
(without notch)







Cable Ass'y



MATING

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

REV	ECN	BY	DATE	APP
23	Z150949	K.T	Aug./31/'15	Tom
22	Z150615	Tad	Jun./04/'15	Tom
21	Z131052	T.S	Nov./15/'13	Tom
20	Z12832	H.M	Sep./27/'12	Tom
19	Z08056	K.O	Feb./04/'08	E.K

REV.RECORD

SERIES No. R14

DESIGN'D BY K.Oobayashi DATE Jul./13/'01

CHK'D BY DATE

APP'D BY K.Katabuchi DATE Jul./13/'01

CUSTOMER COPY

PROJECTION

DAI-ICHI SEIKO CO.,LTD.
I-PEX Business Company

TITLE MHF PLUG ASS'Y (Au TYPE)

SCALE	UNIT	DWG. No.	SHEET	REV.
5:1	mm	20278	1/4	23

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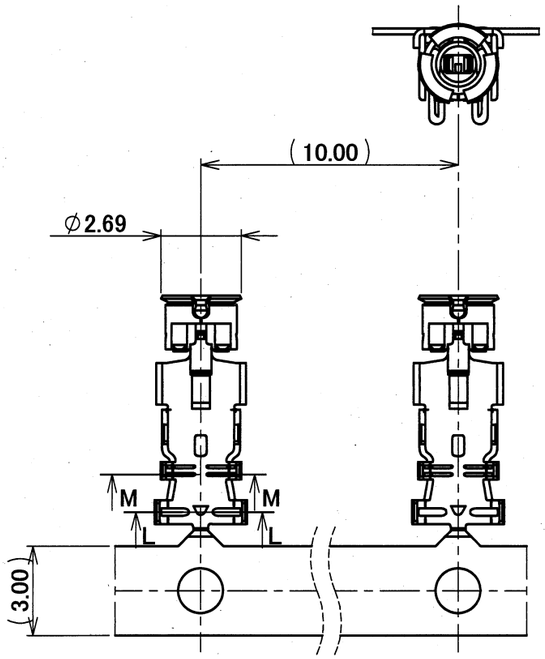
QKE-DFFDE06-02 REV.7

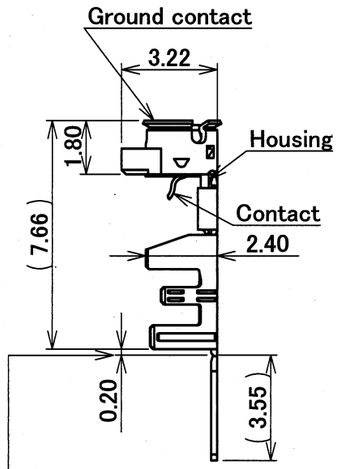
Recommended P/N	20278-112R-**

PART No.
20278-***R-**

20278-***R-**

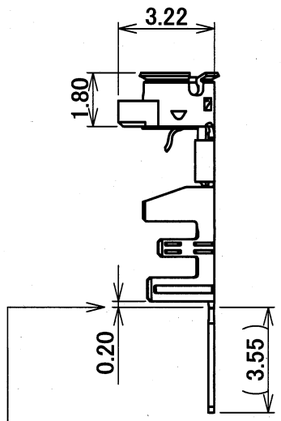
- Cable type
  - 1 Non halogen free type
  - 2 Halogen free type
- 0 With notch
  - 1 Without notch
- 1 Au Plating





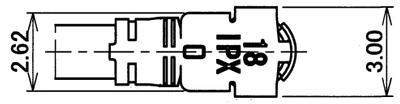
Part No. 20278-101R-18
20278-102R-18

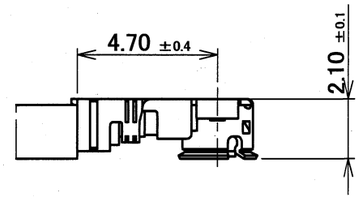
For hand tool
(with notch)

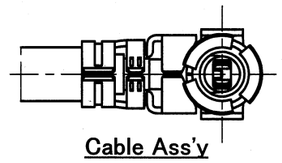


Part No. 20278-111R-18
20278-112R-18

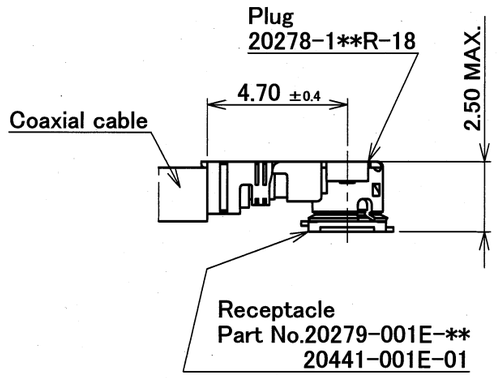
For semi auto
termination machine
(without notch)







Cable Ass'y



MATING

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

DESIGN'D BY	DATE	DAI-ICHI SEIKO CO.,LTD. I-PEX Business Company				
CHK'D BY	DATE	TITLE MHF PLUG ASS'Y (Au TYPE)				
APP'D BY	DATE					
CUSTOMER COPY	PROJECTION	SCALE 5:1	UNIT mm	DWG. No. 20278	SHEET 2/4	REV. 23

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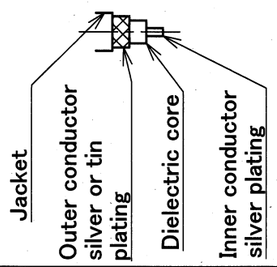
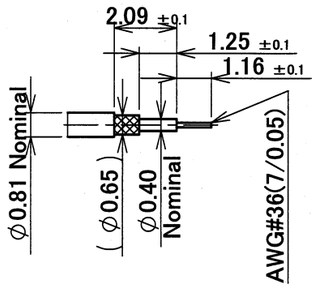
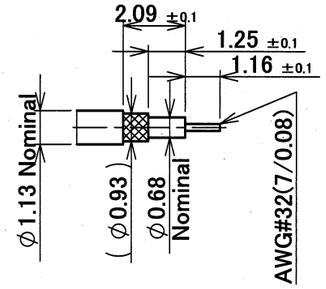
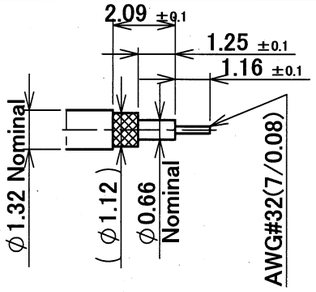
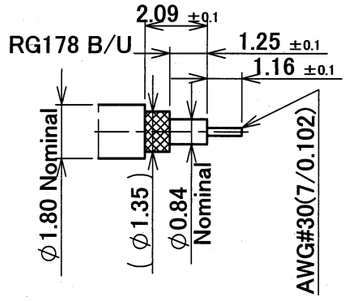
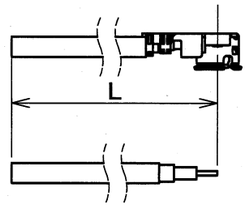
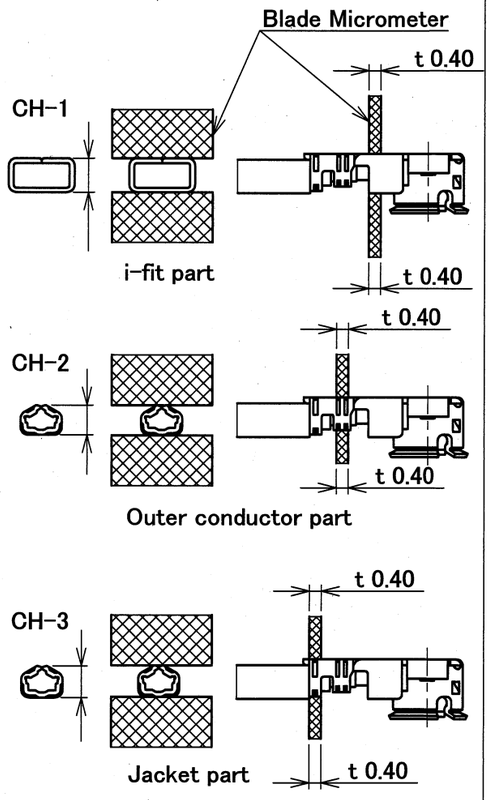
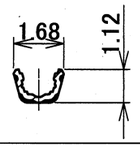
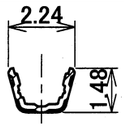
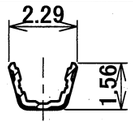
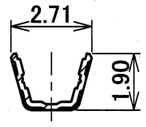
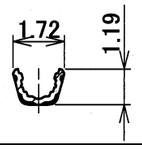
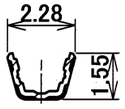
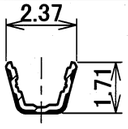
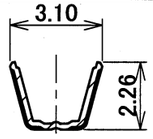
QKE-DFFDE06-02 REV.7

Recommended P/N	20278-112R-**

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	Natural	Black	Black	Natural	
Applicable cable nominal dimension	  ※ Note-1	 ※ Note-1	 ※ Note-1	 ※ Note-1	Cable cut length 
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	Crimp Height 
P/N of hand Tool / P/N of semi auto termination machine	90187-008C / 90213-008C	90187-013C / 90213-013C	90187-032C / 90213-032C	90233-018 / 90232-018	
Sect. M-M					
Sect. L-L					
Crimp Height CH-1	1.34～1.40	1.34～1.40	1.34～1.40	1.34～1.40	
Crimp Height CH-2	0.76～0.84	1.06～1.14	1.20～1.30	1.41～1.49	
Crimp Height CH-3	0.85～0.97	1.15～1.35	1.26～1.46	1.70～1.80	

Note-1
中心導体、外部導体への半田ｺｰﾃｨﾝｸﾞは不可
Must not use solder coated
inner conductor and outer conductor.

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

DESIGN'D BY	DATE	DAI-ICHI SEIKO CO.,LTD. I-PEX Business Company					
CHK'D BY	DATE						
APP'D BY	DATE	TITLE MHF PLUG ASS'Y (Au TYPE)					
CUSTOMER COPY	PROJECTION	SCALE -:-	UNIT mm	DWG. No. 20278		SHEET 3/4	REV. 23

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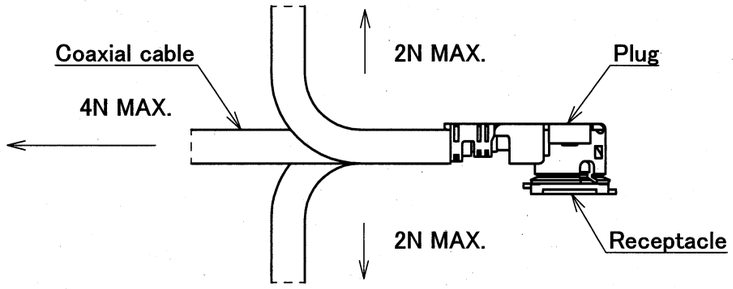
QKE-DFFDE06-02 REV.7

Recommended P/N	20278-112R-**

Notes

1.Material
(1) Housing : PBT , UL94V-0
(2) Contact
phosphor bronze : Au over Ni
(3) Ground contact
・20278-1**R-**
phosphor bronze : Au over Ni
2.Packing : reel
3.Mating partner part No.
: 20279-001E-**, 20441-001E-01
4. Permissible load of cable at mating

1. コネクタの材料
(1) ハウジング:PBT, UL94V-0
(2) コンタクト
りん青銅 : 金ﾒｯｷ、下地 ﾆｯｹﾙﾒｯｷ
(3) グランドコンタクト
・20278-1**R-**
りん青銅 : 金ﾒｯｷ、下地 ﾆｯｹﾙﾒｯｷ
2. 梱包 : リール
3. かん合相手 Part No.
:20279-001E-**,20441-001E-01
4. コネクタかん合後のケーブルに対する荷重



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.

5. コネクタかん合時および抜去時の注意

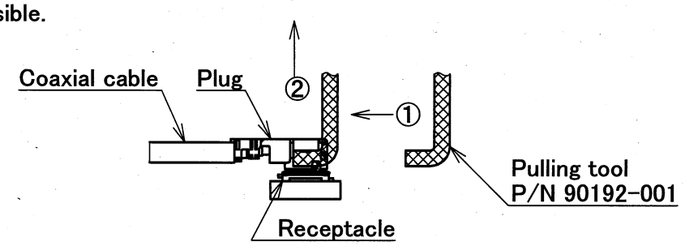
5-1 コネクタ挿入時
PlugとReceptacleのかん合軸を合わせ、できるだけ垂直に挿入して下さい。
極端な斜め挿入は行わないで下さい。
コネクタ破損の原因となりますので、過度なこじり挿抜は行わないで下さい。

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.

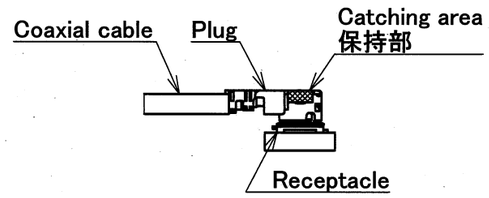
5-2 コネクタ抜去時

(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) 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.

(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 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)

5-3 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た量)

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.

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、導通不良の原因になりますので、熱によりハウジグを溶融させないよう注意してください。

6. This is "Pb-free" connector.

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°

DESIGN'D BY	DATE	DAI-ICHI SEIKO CO.,LTD. I-PEX Business Company
CHK'D BY	DATE	TITLE MHF PLUG ASS'Y (Au TYPE)
APP'D BY	DATE	

CUSTOMER COPY	PROJECTION	SCALE	UNIT	DWG. No.	SHEET	REV.
		-:-	mm	20278	4/4	23

Confidential III C

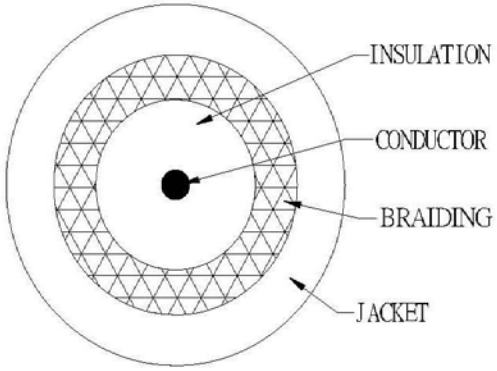
QKE-DFFDE06-02 REV.7

線材規格

CABLE SPECIFICATION

SPECIFICATION:	1.13mm CABLE	
ITEM		SPECIFICATION
CONDUCTOR	MATERIAL	Silver-coated Copper Wire
	Composition(No./mm)	7/0.080
	NOM.O.D	0.24±0.03
INSULATION	Material	FEP(Natural)
	Nom.Thick.(mm)	0.23
	NOM.O.D	0.70±0.03
BRAIDING	MATERIAL	Tinned annealed copper wire
	Composition	Single Braid of 0.05
JACKET	MATERIAL	FEP(*color)
	Nom.Thick(mm)	0.1
	Nom.O.D(mm)	1.13±0.08
	Color	White、Black、Brown、Gray、Blue

CONSRUCTION D.W.G



Electrical Properties(at 20℃)

Item	Unit	Details
Conductor Resistance	Ω/km	Max.581
Insulation Resistance	MΩ.km	Min.200
Dielectric Strength	V(AC)/min	1000
Capacitance	pF/m	105

REMARK

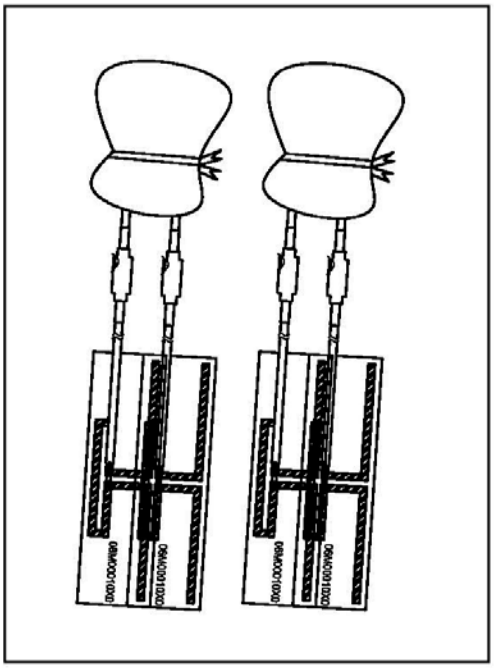
Characteristic Impedance	Ω	50±2.0	
Attenuation	dB/m	1GHz	2.20
		2GHz	3.10
		3GHz	3.90
		4GHz	4.50
		5GHz	5.00
		6GHz	5.50
Temperature range	℃	-55~150	
Standing wave(0-6GHz)	/	≦1.35	

MASTER WAVE TECHNOLOGY CO., LTD.

CHECKED		**DATE**	2012/11/29
DRAWING	Charlene	**REV**	00

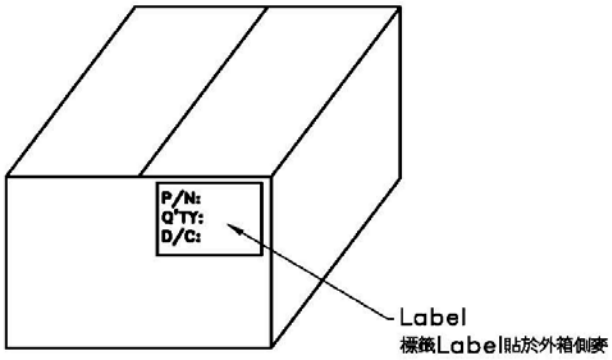
權億科技股份有限公司
Master Wave Technology Co., Ltd.

REV	ZONE	DESCRIPTION	ENG	APPROVED	DATE



25PCS ANTENNA綁一束

50PCS ANTENNA 1PE BAG



	DATE:	MAT'L:	Master Wave Technology CO.,LTD
	UNIT: mm	FINISH:	
	THIRD ANGLE PROJECTION	SCALE: –	TITLE : PCB Antenna Packing

APPROVED BY:	CHECKED BY:	DESIGNED BY:	DRAWN BY: Mango	MODEL NO. :	REV
				PART NO. :	00

THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MASTER WAVE AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.