SPECIFICATION FOR APPROVAL

CUSTOMER : Mototech Co.

CUSTOMER P/N :

DESCRIPTION : PCB ANTENNA + OD1.13 Cable + MHF

A-CON P/N : APP6P-700001

(Preliminary)

Customer Approval
R&D Manager

ACON Approved			
Allen 7/14/06	Allen 7/14/06	Mandy 7/19/06	Allen 7/14/06
R&D Manager / Allen.Hsiao	Engineering Manager / Akilis.Chen	Q&R Manager / Mandy.Lee	Project Engineer / Allen.Hsiao

ADVANCED-CONNECTEK INC.

B1,No. 205, Sec.3, Bei-Hsin Rd., Hsin-Tien
Taipei, Taiwan, R.O.C
TEL : 886-2-8913-1939
FAX : 886-2-8913-2538
Http : //www.acon.com

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1. Description

1.1 Component part number

Assembly : APP6P-700001

1.2 Electrical specification:

Center freq.	2.45 GHz
Bandwidth (VSWR:1.6max)	100MHz
Average gain	-2.1 dBi
Efficiency	50%
Polarization	Linear
Impedance	50 ohm
Size	45.7*19.6 mm^2

2. Electrical Performance

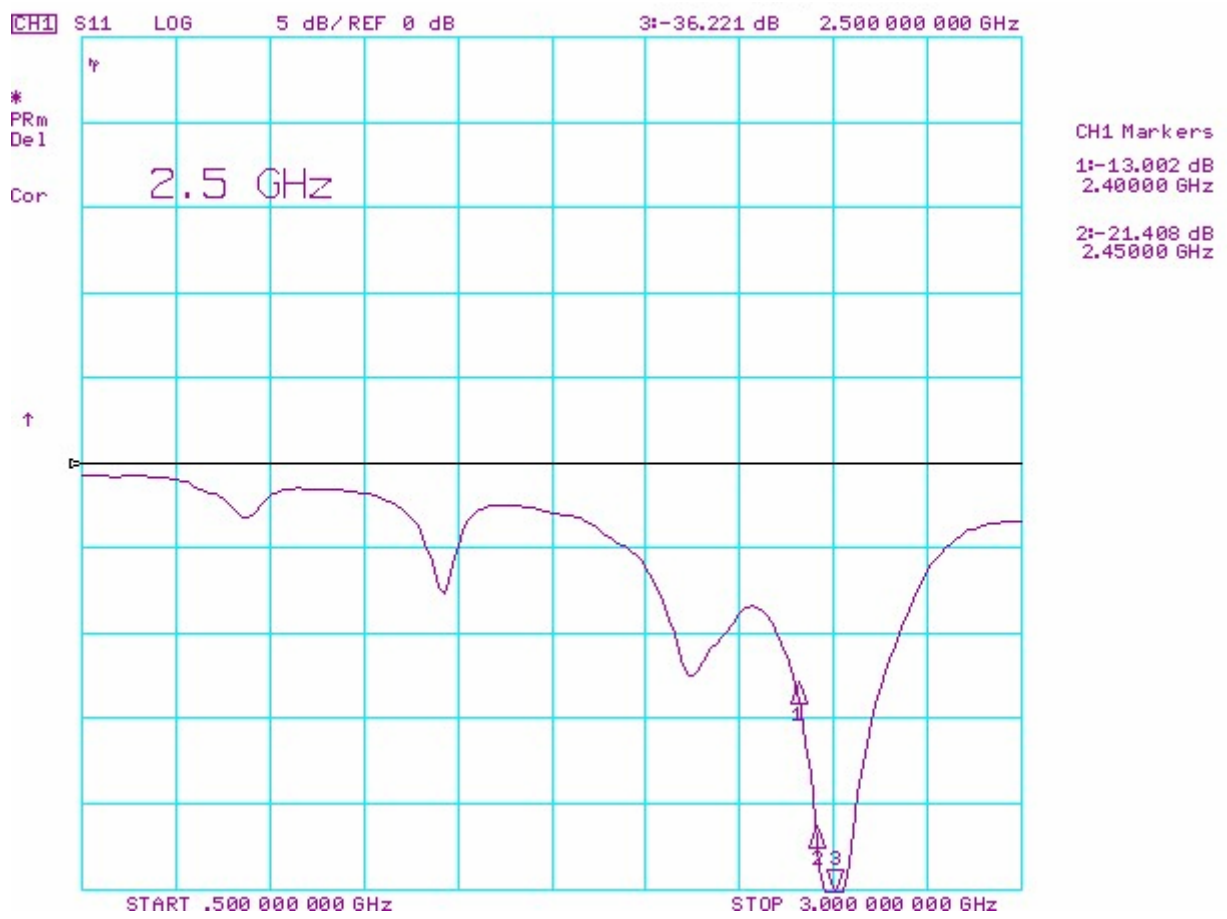
Electrical performance was tested on a typical.

2.1 Return Loss

2.1.1 Setup

Test equipment : VSWR and return loss measurements (S11) were performed using an Agilent 8720ES S-Parameter Network Analyzer and the previously described test fixture.

2.1.2 Results



Frequency (MHz)	S11 (dB)	VSWR
2400	-13.00	1.58
2450	-21.40	1.18
2500	-36.22	1.03

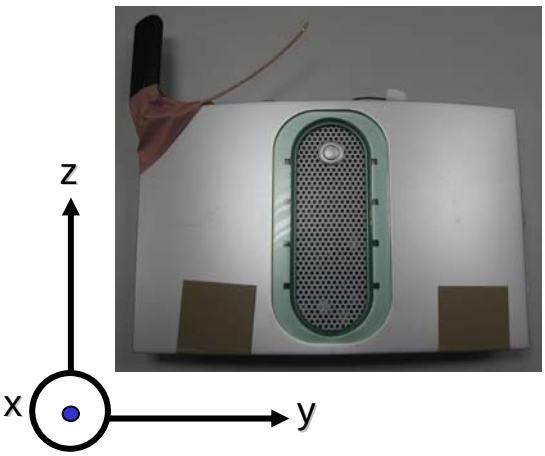
2.2 Gain

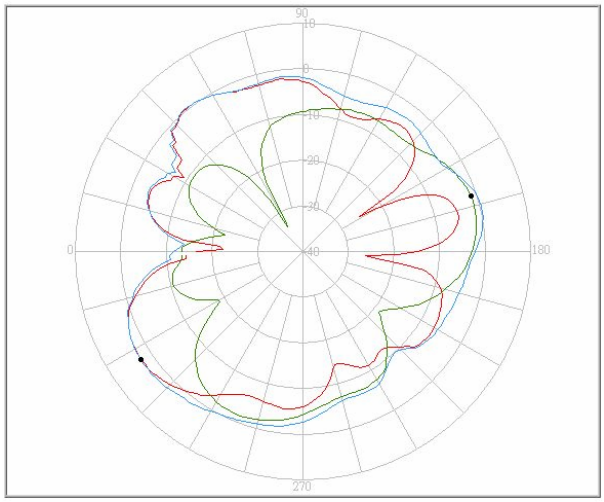
2.2.1 Setup

The gain of the antenna measured in the Anechoic Chamber in Hsin-Tien. The chamber provides less than -40dB reflectivity from 400MHz through 6GHz and an 40cm diameter spherical quite zone. The measurement results are calibrated using both dipoles and standard gain horns. A decoupling sleeve is used to reduce feed line radiation. Only free space tests were performed.

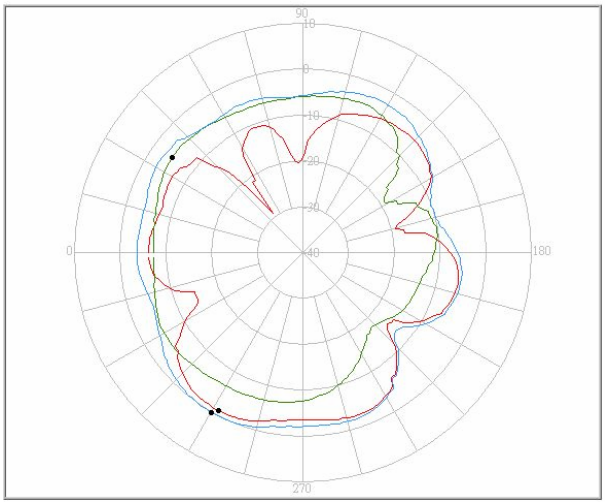
2.2.2 Results

2450MHz

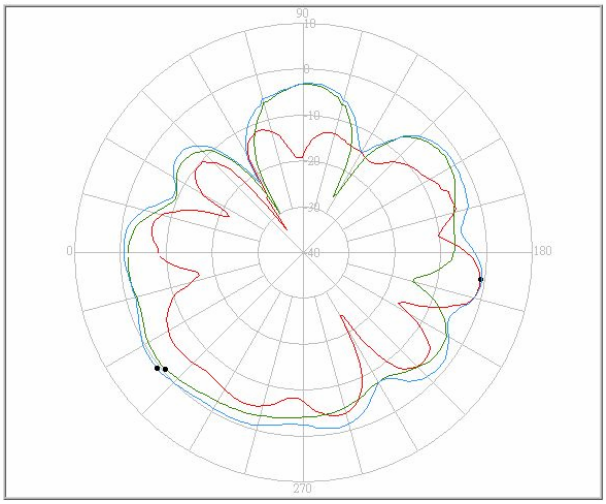




X-Y



X-Z



Y-Z

2.2.2.1 Average antenna gain

	Frequency (MHz)	V-Polarization (dBi)	H-Polarization (dBi)	V+H Polarization (dBi)
H-Plane(X-Y)	2400	-6.65	-4.00	-2.11
	2450	-6.56	-3.94	-2.08
	2500	-5.80	-3.69	-1.61

Table I: Measured the average antenna gain in H-plane including V-polarization, H-polarization and V+H polarization at center frequencies 2400, 2450 and 2500 MHz.

	Frequency (MHz)	V-Polarization (dBi)	H-Polarization (dBi)	V+H Polarization (dBi)
E1-Plane(X-Z)	2400	-6.92	-7.24	-4.06
	2450	-7.45	-7.45	-3.74
	2500	-6.83	-6.83	-2.57

Table II: Measured the average antenna gain in E1-plane including V-polarization, H-polarization and V+H polarization at center frequencies 2400, 2450 and 2500 MHz.

	Frequency (MHz)	V-Polarization (dBi)	H-Polarization (dBi)	V+H Polarization (dBi)
E2-Plane(Y-Z)	2400	-4.36	-7.32	-2.58
	2450	-4.59	-7.64	-2.83
	2500	-4.40	-7.44	-2.65

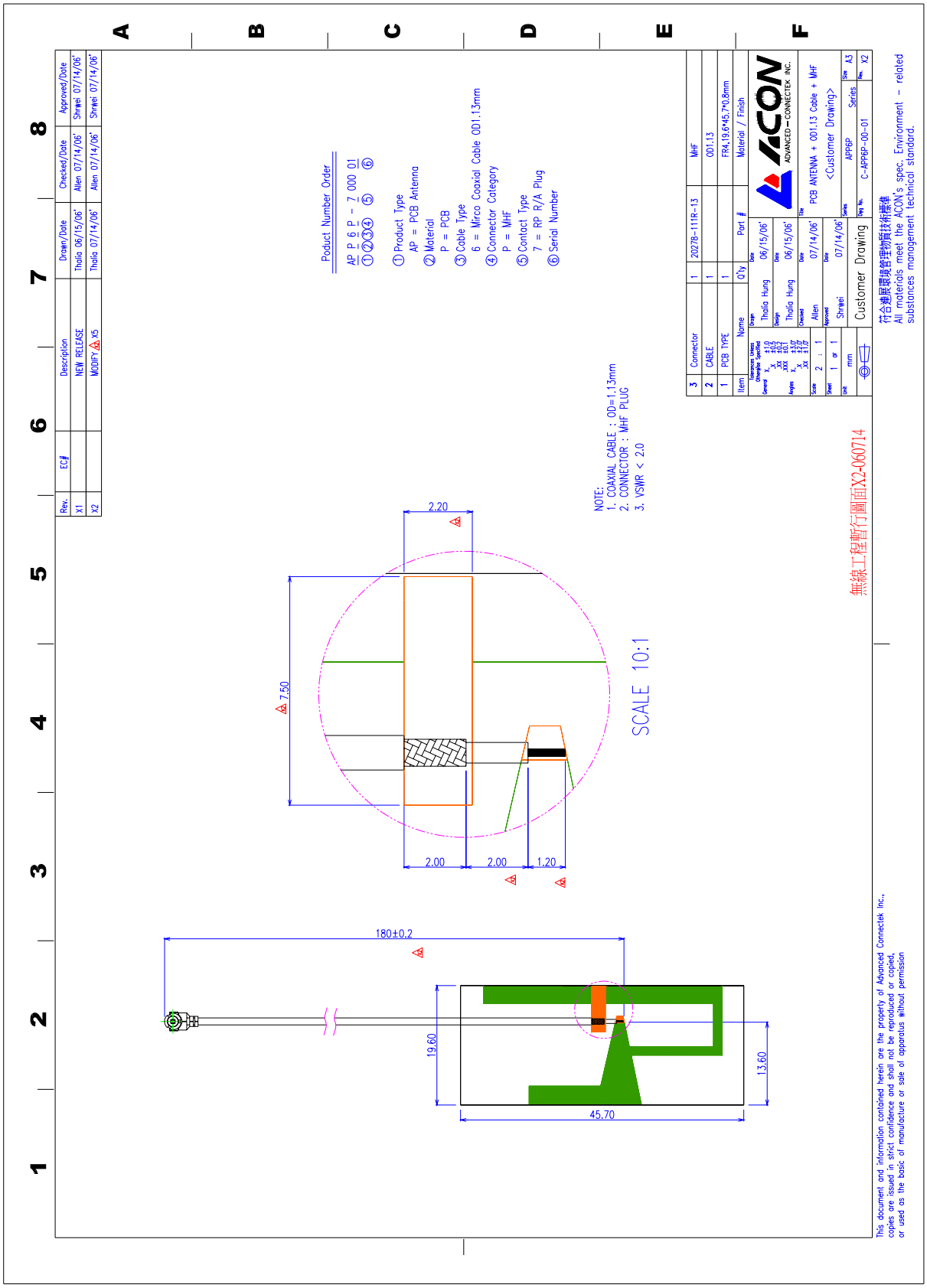
Table III: Measured the average antenna gain in E2-plane including V-polarization, H-polarization and V+H polarization at center frequencies 2400, 2450 and 2500 MHz.

2.2.2.2 Efficiency

Frequency (MHz)	Efficiency (%)
2400	58.61
2450	67.0
2500	56.5

3. Mechanical Specification

3.1 Customer Drawing



Revision History

Revision	Date	Change Notification	Description
Rev.X1	2006/06/22	-	WSFA-06042
Rev.X2	2006/07/14	Revised Drawing	-

Intertek Labtest

Appendix A -- PCB SGS Report

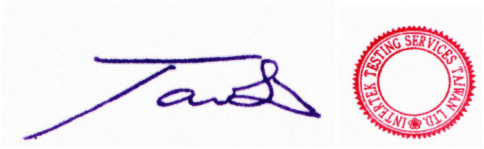
TEST REPORT NUMBER : THJ0019553

APPLICANT: ADVANCED-CONNECTEK INC. DATE : APR 20, 2006
1F NO 2 ALLEY 9 LANE 45 PAO-HSIN ROAD
HSIN-TIEN TAIPEI TAIWAN ROC

SAMPLE DESCRIPTION:
ONE (1) GROUP OF SUBMITTED SAMPLES SAID TO BE :
SAMPLE DESCRIPTION : PRINTED CIRCUIT BOARD
STYLE / ITEM NO. : COATING TIN
DATE SAMPLE RECEIVED : APR 18, 2006
DATE TEST STARTED : APR 18, 2006
****

TEST CONDUCTED:
AS REQUESTED BY THE APPLICANT, FOR DETAILS PLEASE REFER TO ATTACHED PAGES.
****

AUTHORIZED BY:
ON BEHALF OF INTERTEK TESTING SERVICES
TAIWAN LIMITED



JACOB LIN
GENERAL MANAGER

Intertek Testing Services Taiwan Ltd.
8/F., No. 423, Ruiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
全國公證檢驗股份有限公司
114 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 2797-8885 Fax: (+886-2) 6602-2410

NUMBER : THJ0019553

TEST CONDUCTED

(A) TEST RESULT SUMMARY :

TESTING ITEM	RESULT (ppm)
	PCBA
CADMIUM (Cd) CONTENT	ND
LEAD (Pb) CONTENT	33
MERCURY (Hg) CONTENT	ND
CHROMIUM VI (Cr^{6+}) CONTENT	ND
PBBs/PBDEs	ND

REMARKS : ppm = PARTS PER MILLION
ND = NOT DETECTED
SAMPLES WERE GROUND AND RANDOMLY SELECTED FOR TEST

(B) TEST METHOD :

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO USEPA 3052, BY MICROWAVE DIGESTION AND DETERMINED BY ICP-OES	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO USEPA 3052, BY MICROWAVE DIGESTION AND DETERMINED BY ICP-OES	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO USEPA 3052, BY MICROWAVE DIGESTION AND DETERMINED BY ICP-OES	2 ppm
CHROMIUM VI (Cr^{6+}) CONTENT	WITH REFERENCE TO USEPA 3060A & 7196A, BY ALKALINE DIGESTION AND DETERMINED BY UV-VIS	1 ppm
PBBs/PBDEs	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY HPLC-DAD OR GC-MSD	5 ppm

REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE

****

END OF REPORT

Intertek Testing Services Taiwan Ltd.
8/F., No. 423, Ruiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
全國公證檢驗股份有限公司
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Tel: (+886-2) 6602-2888 2797-8885 Fax: (+886-2) 6602-2410

TEST CONDUCTED

PHOTO

Intertek Testing Services Taiwan Ltd.
8/F., No. 423, Ruiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
全國公證檢驗股份有限公司
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Tel: (+886-2) 6602-2888 2797-8885 Fax: (+886-2) 6602-2410

Appendix B -- Connector MSDS and SGS

No.2006-1
Sep/30 /'02

材料証明書
MATERIAL CERTIFICATE

当社製品には下記の材料が使われている事を証明致します。
WE HEREBY CERTIFY THAT THE FOLLOWING MATERIALS ARE USED IN OUR PRODUCT.

PRODUCT NAME： MHF series micro coaxial connector PLUG P/N 20278-**1R-**
20308-**1R-**

	部品 COMPONENT	材料／MATERIAL			UL94難燃性 UL94 FLAME CLASS	ULﾌｧｲﾙNo. UL FILE No.
		材質名 MATERIAL	型名 CAT No.	材料メーカ MANUFACTURER		
1	HOUSING	PBT	3116	WINTECH POLYMER LTD.	V－0	E 213445

PRODUCT NAME： MHF series micro coaxial connector RECEP. P/N 20279-001E-01

	部品 COMPONENT	材料／MATERIAL			UL94難燃性 UL94 FLAME CLASS	ULﾌｧｲﾙNo. UL FILE No.
		材質名 MATERIAL	型名 CAT No.	材料メーカ MANUFACTURER		
1	HOUSING	LCP	E130i	POLYPLASTICS CO.,LTD.	V－0	E 106764

PRODUCT NAME： MHFⅡ connector P/N 20311-**1R-08

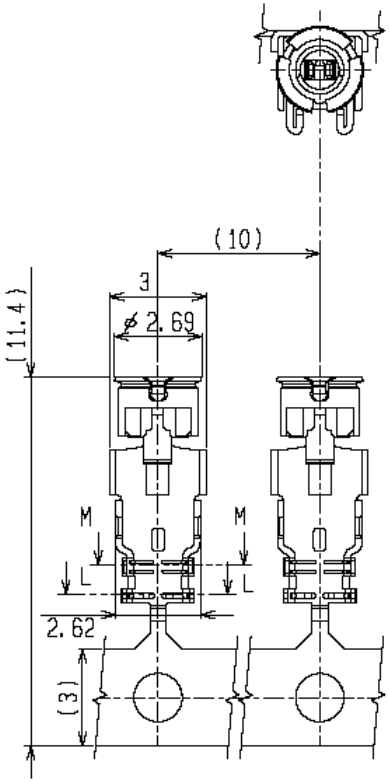
	部品 COMPONENT	材料／MATERIAL			UL94難燃性 UL94 FLAME CLASS	ULﾌｧｲﾙNo. UL FILE No.
		材質名 MATERIAL	型名 CAT No.	材料メーカ MANUFACTURER		
1	HOUSING	LCP	A430	POLYPLASTICS CO.,LTD.	V－0	E 106764

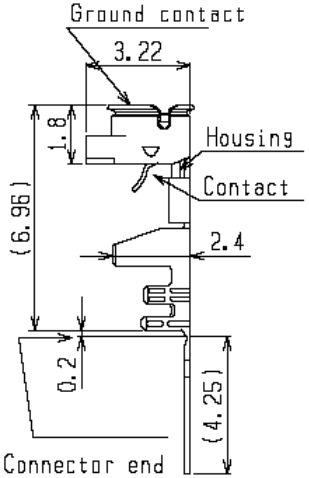
株式会社アイペックス
I-PEX Co.,Ltd.

APPROVAL	CHECK	ORIGINATOR
K.Katabuchi Oct/02/'02	E.Kawabe Oct/02/'02	A.Hino Oct/02/'02

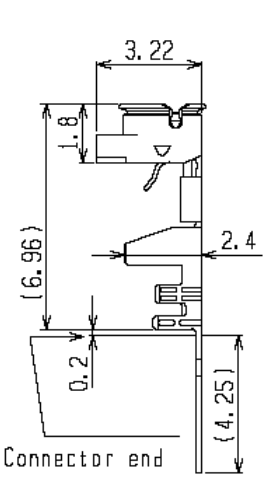
FORM REV.0

PART NO.
20278-**1R-**

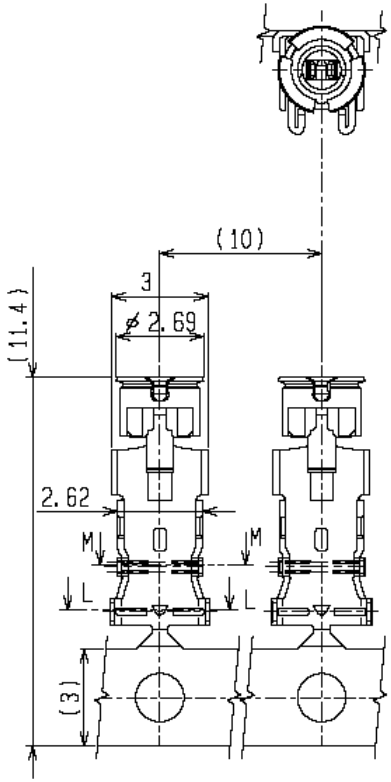


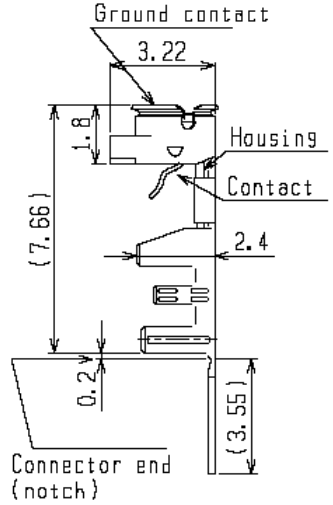


Part No. 20278-101R-08
20278-101R-13
20278-101R-32
For hand tool
(with notch)

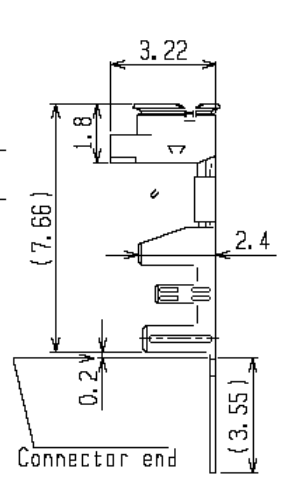


Part No. 20278-111R-08
20278-111R-13
20278-111R-32
For semi auto
termination machine
(without notch)





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



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

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
13C	Z3074	A.H	May/22/'03	K.K
12C	Z3052	K.O	Apr/16/'03	K.K

REV	ECN	BY	DATE	APP
11C	Z3041	K.O	Mar/24/03	K.K
10C	Z3014	K.O	JAN/31/03	K.K
9C	Z2239	K.O	NOV/15/02	E.K
8C	Z2224	K.O	OCT/17/02	E.K
7B	Z2180	K.O	JUL/29/02	E.K
6B	Z2146	K.O	JUN/24/02	K.K
5B	Z2117	A.H	MAY/17/02	K.K

REV	ECN	BY	DATE	APP
4	Z2023	K.O	JAN/30/02	E.K
3	Z1256	K.O	NOV/14/01	K.K
2	Z1197	K.O	AUG/27/01	K.K
1	Z1118	K.O	JUN/26/01	K.K
0	Z1109	K.O	JUN/13/01	
REV	ECN	BY	DATE	APP

REV. RECORD
SERIES No. 2814

		DATE
DESIGN'D BY	K. Ohbayashi	JUN/13/01
CHK'D BY		DATE
APP'D BY	K. Katabuchi	JUN/13/01

CUSTOMER COPY

PROJECTION

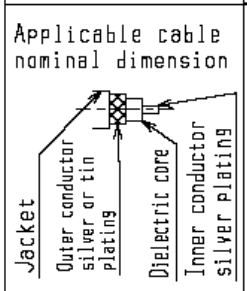
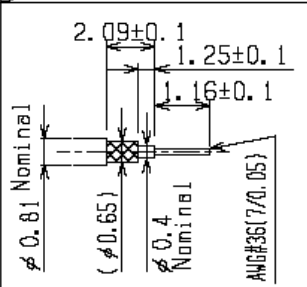
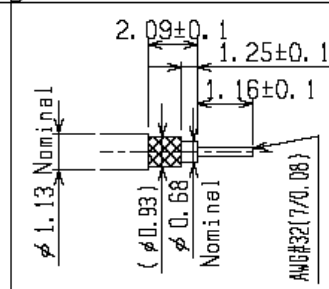
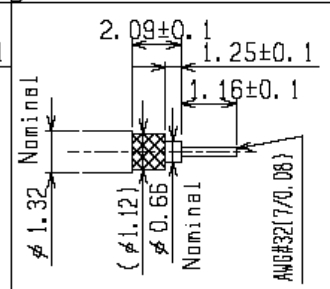
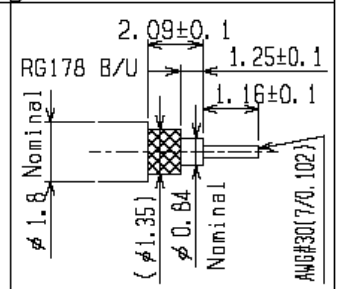
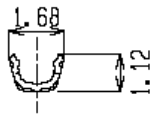
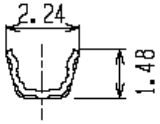
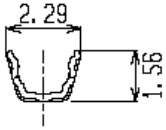
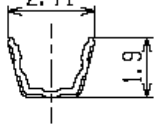
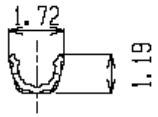
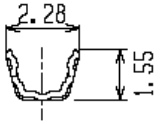
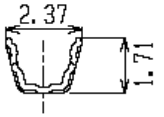
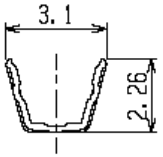
I-PEX Interconnect and Packaging Electronics TOKYO, JAPAN

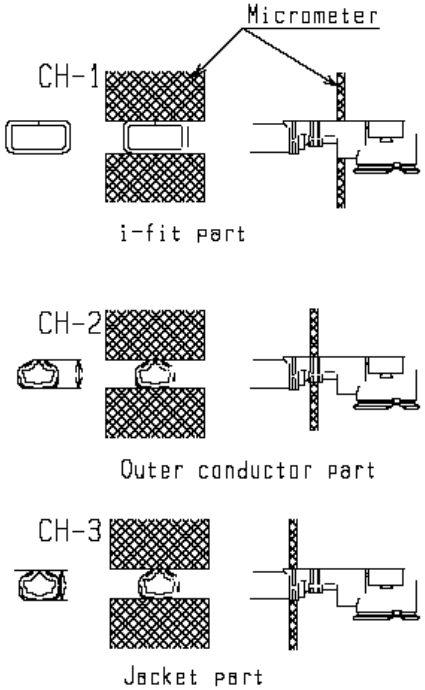
TITLE
MHF series micro coaxial connector plug
vertical (ground contact : gold plating)

SCALE	UNIT	DWG. No.	SHEET	REV.
6/1	mm	20278	1/3	13C

FORM REV. 4

WAS T

Part No.		20278-101R-08 / 20278-111R-08	20278-101R-13 / 20278-111R-13	20278-101R-32 / 20278-111R-32	20278-101R-18 / 20278-111R-18
Applicable cable nominal dimension		  ※ NOTE-1	 ※ NOTE-1	 ※ NOTE-1	 ※ NOTE-1
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 / 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
	CH-2	0.76~0.84	1.06~1.14	1.20~1.30	1.41~1.49
	CH-3	0.85~0.97	1.15~1.35	1.26~1.46	1.70~1.80



Crimp Height

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.

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

REV. RECORD
SERIES No. 2814

DESIGN'D BY DATE
CHK'D BY DATE
APP'D BY DATE
CUSTOMER COPY
PROJECTION

I-PEX Interconnect and Packaging Electronics TOKYO, JAPAN

TITLE
MHF series micro coaxial connector plug vertical (ground contact : gold plating)

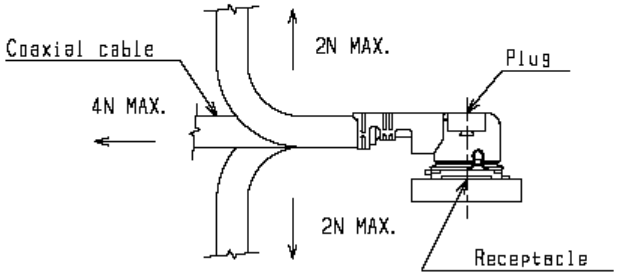
SCALE	UNIT	DWG. No.	SHEET	REV.
-/-	mm	20278	2/3	13C

FORM REV. 4

WAS T

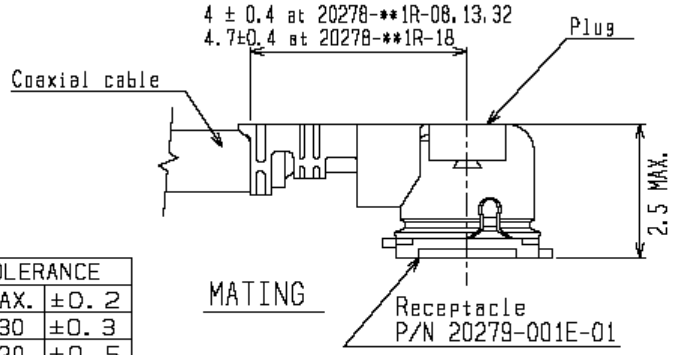
Notes

1. Material
 (1) Housing : PBT , UL94V-0 , black
 (2) Contact
  phosphor bronze
  gold plating 0.1μm MIN.
  over nickel 1.27μm MIN.
 (3) Ground contact
  phosphor bronze
  gold plating 0.05μm MIN.
  over nickel 1.27μm MIN.
2. Packing : reel
3. Mating partner part No.
 : 20279-001E-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, 黒色
 (2) コンタクト
  りん銅
  金メッキ0.1μm MIN.
  下地 ニッケル1.27μm MIN.
 (3) グランドコンタクト
  りん青銅
  金メッキ0.05μm MIN.
  下地 ニッケル1.27μm MIN.
2. 梱包 : リール
3. かん合相手 part No.
 :20279-001E-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

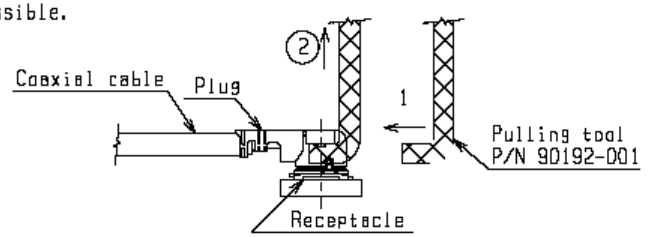
5-1 コネクタ挿入時
PlugとReceptacleのかん合軸を合わせ、できるだけ垂直に挿入して下さい。
極端な斜め挿入は行わないで下さい。
コネクタ破損の原因となりますので、過度なこじり挿抜は行わないで下さい。

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.

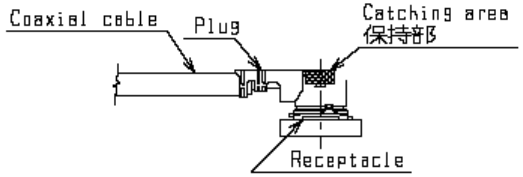
5-2 コネクタ抜去時

(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、熱によりハウジングを溶融させないよう注意してください。

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

REV. RECORD
SERIES No. 2014

DESIGN'D BY DATE
CHK'D BY DATE
APP'D BY DATE

CUSTOMER COPY

PROJECTION

I-PEX Interconnect and Packaging Electronics TOKYO, JAPAN

TITLE
MHF series micro coaxial connector plug vertical (ground contact : gold plating)

SCALE	UNIT	DWG. No.	SHEET	REV.
-/-	mm	20278	3/3	13C

FORM REV. 4

WAS T

Test Report

ADVANCED-CONNECTEK INC.
NO. 2, ALLEY 9, LANE 45, PAO-HSIN RD., HSIN-TIEN,
TAIPEI, TAIWAN, R. O. C.

Report No. : CE/2005/C2056
Date : 2005/12/15

The following merchandise was (were) submitted and identified by the client as :

Type of Product	:	MHF SERIES CONNECTORS
Style/Item No	:	20278-XXXR-XX / 20311-XXXR-XX / 20351-XXXR-XX / 20367-XXXR / 20279-001E-01 / 20369-001E
Sample Received	:	2005/12/08
Testing Date	:	2005/12/08 TO 2005/12/15

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Test Result : - Please see the next page -

Daniel Yeh, M.R. / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

Test Report

ADVANCED-CONNECTEK INC.
NO. 2, ALLEY 9, LANE 45, PAO-HSIN RD., HSIN-TIEN,
TAIPEI, TAIWAN, R. O. C.

Report No. : CE/2005/C2056
Date : 2005/12/15

Test Result

PART NAME NO.1 : GOLDEN COLORED METAL (SHELL)
PART NAME NO.2 : BLACK PLASTIC (HOUSING)

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Monobromobiphenyl	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	---	N.D.
Dibromobiphenyl	%		0.0005	---	N.D.
Tribromobiphenyl	%		0.0005	---	N.D.
Tetrabromobiphenyl	%		0.0005	---	N.D.
Pentabromobiphenyl	%		0.0005	---	N.D.
Hexabromobiphenyl	%		0.0005	---	N.D.
Heptabromobiphenyl	%		0.0005	---	N.D.
Octabromobiphenyl	%		0.0005	---	N.D.
Nonabromobiphenyl	%		0.0005	---	N.D.
Decabromobiphenyl	%		0.0005	---	N.D.
Total PBBs (Polybrominated biphenyls)/Sum of above	%		-	---	N.D.
Monobromobiphenyl ether	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	---	N.D.
Dibromobiphenyl ether	%		0.0005	---	N.D.
Tribromobiphenyl ether	%		0.0005	---	N.D.
Tetrabromobiphenyl ether	%		0.0005	---	N.D.
Pentabromobiphenyl ether	%		0.0005	---	N.D.
Hexabromobiphenyl ether	%		0.0005	---	N.D.
Heptabromobiphenyl ether	%		0.0005	---	N.D.
Octabromobiphenyl ether	%		0.0005	---	N.D.
Nonabromobiphenyl ether	%		0.0005	---	N.D.
Decabromobiphenyl ether	%		0.0005	---	N.D.
Total PBBEs(PBDEs) (Polybrominated biphenyl ethers)/Sum of above	%		-	---	N.D.
Total of Mono to Nona-brominated biphenyl ether. (Note 4)	%		-	---	N.D.

Test Report

ADVANCED-CONNECTEK INC.
NO. 2, ALLEY 9, LANE 45, PAO-HSIN RD., HSIN-TIEN,
TAIPEI, TAIWAN, R. O. C.

Report No. : CE/2005/C2056
Date : 2005/12/15

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Chromium VI (Cr+6)	ppm	UV-VIS after reference to US EPA 3060A.	2	N.D.	N.D.
Cadmium (Cd)	ppm	ICP-AES after reference to EN 1122, method B:2001 or other acid digestion.	2	N.D.	N.D.
Mercury (Hg)	ppm	ICP-AES after reference to US EPA 3052 or other acid digestion.	2	N.D.	N.D.
Lead (Pb)	ppm	ICP-AES after reference to US EPA 3050B or other acid digestion.	2	22.0	49.5

NOTE: (1) N.D. = Not detected (<MDL)
(2) ppm = mg/kg
(3) MDL = Method Detection Limit
(4) Decabromodiphenyl ether (DecaBDE) in polymeric applications is exempted by Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified under document 2005/717/EC.
(5) PBBEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.
(6) " - " = Not Regulation
(7) " --- " = Not Applicable

Test Report

ADVANCED-CONNECTEK INC.
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Report No. : CE/2005/C2056
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