

Lct

SPECIFICATION FOR APPROVAL

承認書

客 戶 承 認 印 章	龍呈國際科技有限公司		
	業 務	工 程	品 管

客 戶 智邦科技股份有限公司

CUSTOMER _____

品 名 2.4G 2Dbi WI-FI Emb. Ant 137B Ipex L160mm

SPECIES _____

料 號 FWP_16937B-I32

PART NO. _____

客 戶 料 號 120300014400E

CUSTOMER PART NO. _____

龍呈國際科技有限公司

Long Cheng Tech. Int'l Co., Ltd.

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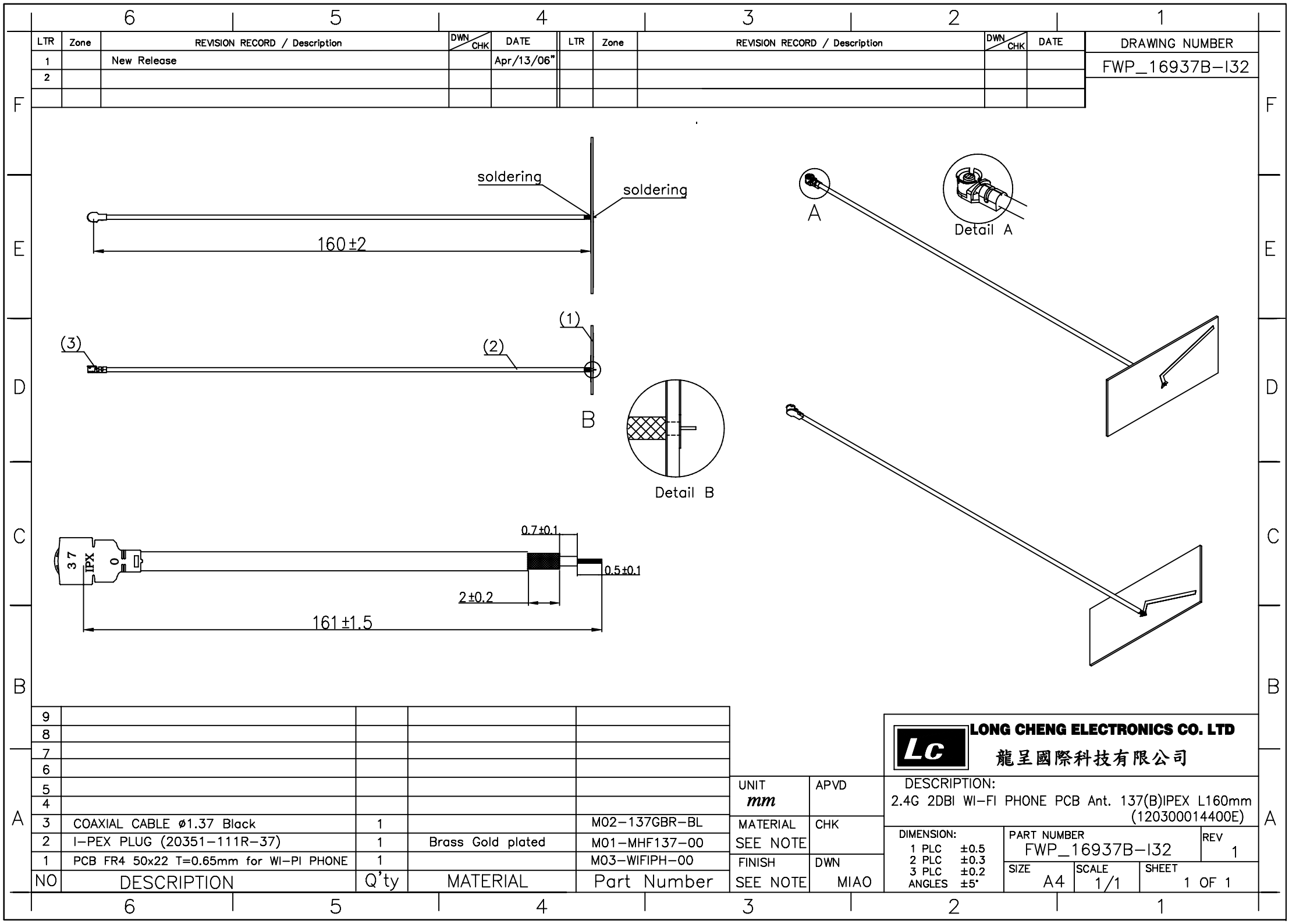
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電氣特性規格

Electrical Specifications

頻 率 範 圍 (Frequency Range)	2400MHZ - 2500MHZ
增 益 (Gain)	2Dbi(typical)
電 壓 駐 波 比 (VSWR) Return Loss Isolation Test	Return Loss $\leq$ -10 VSWR $\leq$ 2
極 化 (Polarzation)	Linear
半功率水平波束寬 (HPBW/Horizontal)	120°
半功率垂直波束寬 (HPBW/Vertical)	60°(typical)
最大功率 (Max. Power Rating)	2 W (CW)
阻抗匹配 (Impedance)	50 Ohms (typical)

機械特性規格

Mechanical Specifications

接頭種類 (Connector Type)	M.H.F(20351-111R-37)
塑膠顏色 (Plastic Color)	N/A
同軸線材 (Coaxial Cable Type)	1.37
同軸線材規格 (Coaxial Cable Spec.)	See attached file
天線罩材質 (Radom Material)	N/A
同軸線材顏色 (Coaxial Cable Color)	Black
輻射材料 (Radiator Material)	PCB
工作溫度與溼度 (Working Temperature & Humidity)	-40°C - +80°C 90% @ 25°C
儲存溫度與溼度 (Storage Temperature & Humidity)	-40°C - +85°C 95% @ 25°C
重量 (Weight)	2.5g (Max.)

電 氣 特 性 測 試

Electrical Specifications Test

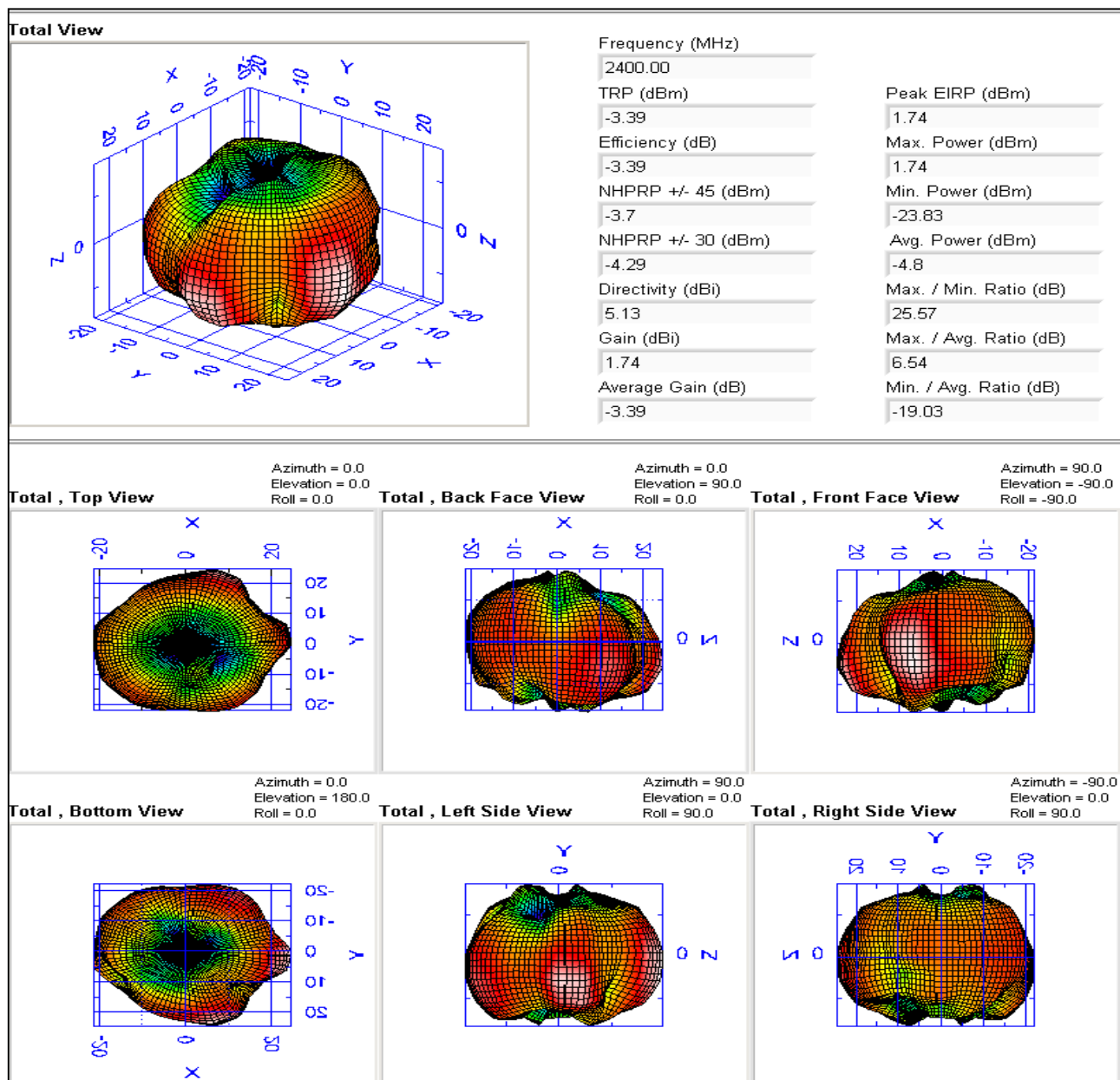
電 壓 駐 波 比 測 試 (VSWR Test)

測 試 使 用 儀 器 (Test Instrument)

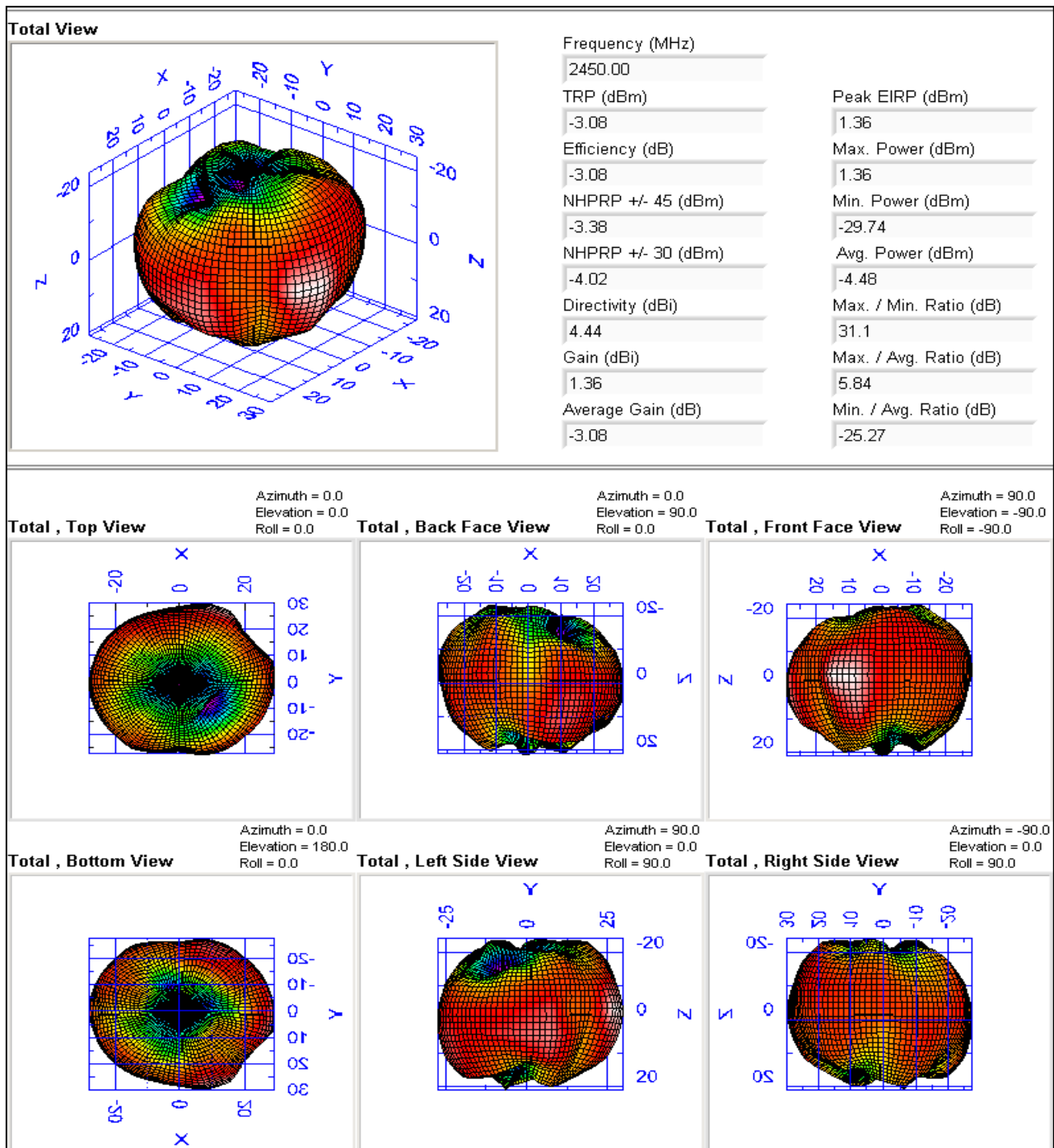
Advantest R3767CG Vector Network Measurement

測 試 資 料 (Test Result)

2.4 GHz 3D-radiation pattern

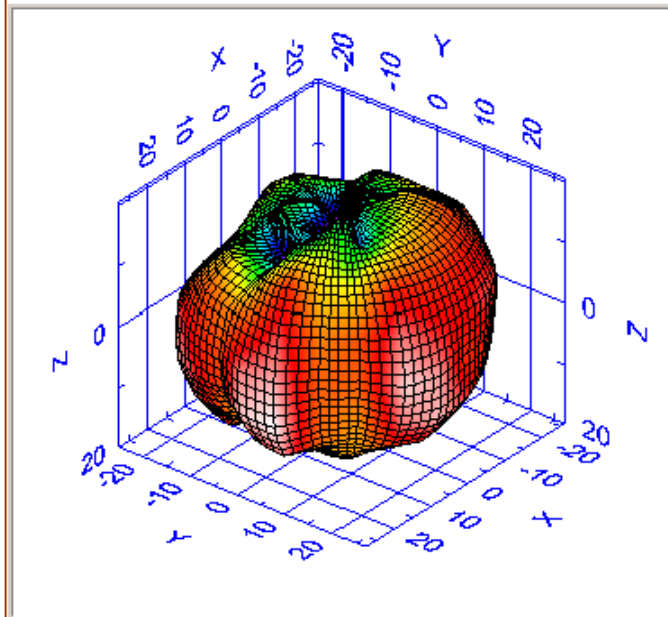


2.45 GHz 3D-radiation pattern



2.5 GHz 3D-radiation pattern

Total View



Frequency (MHz)

2500.00

TRP (dBm)

-2.92

Efficiency (dB)

-2.92

NHPRP +/- 45 (dBm)

-3.17

NHPRP +/- 30 (dBm)

-3.76

Directivity (dBi)

4.57

Gain (dBi)

1.65

Average Gain (dB)

-2.92

Peak EIRP (dBm)

1.65

Max. Power (dBm)

1.65

Min. Power (dBm)

-27.2

Avg. Power (dBm)

-4.38

Max. / Min. Ratio (dB)

28.85

Max. / Avg. Ratio (dB)

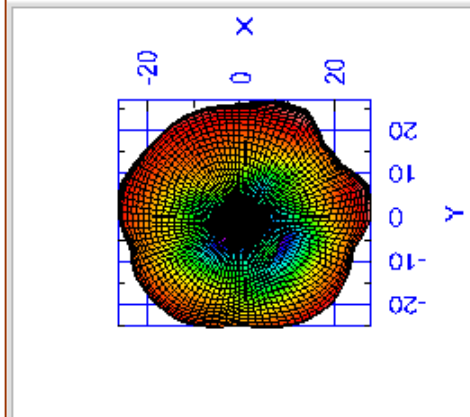
6.03

Min. / Avg. Ratio (dB)

-22.82

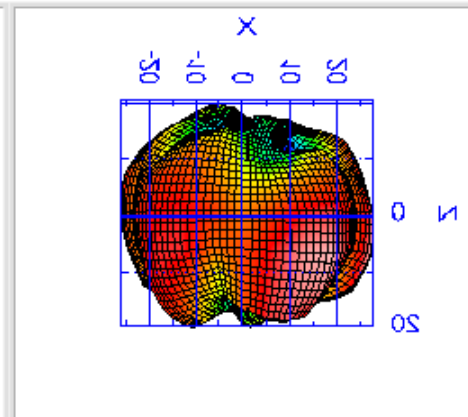
Total , Top View

Azimuth = 0.0
Elevation = 0.0
Roll = 0.0



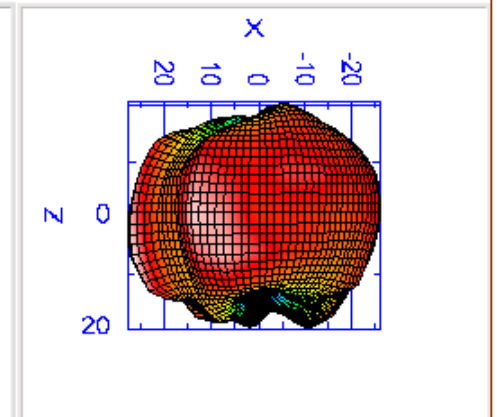
Total , Back Face View

Azimuth = 0.0
Elevation = 90.0
Roll = 0.0



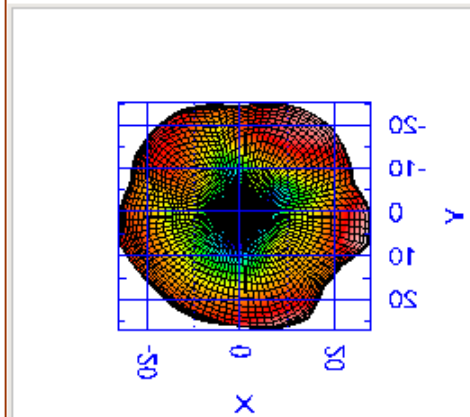
Total , Front Face View

Azimuth = 90.0
Elevation = -90.0
Roll = -90.0



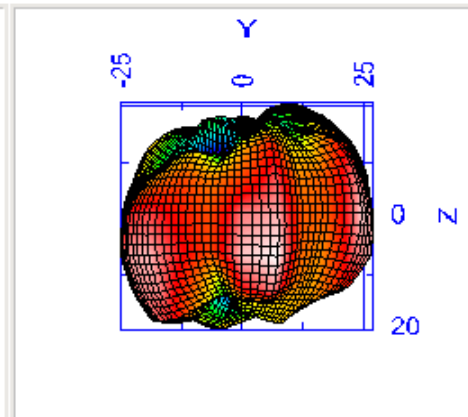
Total , Bottom View

Azimuth = 0.0
Elevation = 180.0
Roll = 0.0



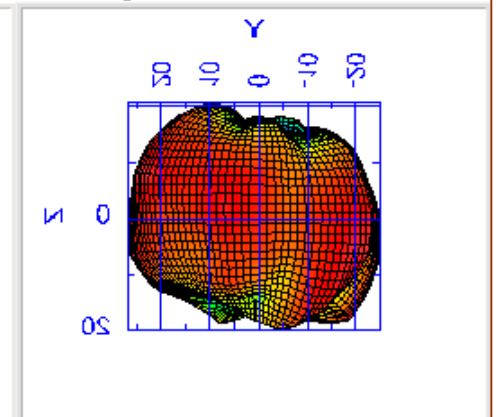
Total , Left Side View

Azimuth = 90.0
Elevation = 0.0
Roll = 90.0



Total , Right Side View

Azimuth = -90.0
Elevation = 0.0
Roll = 90.0

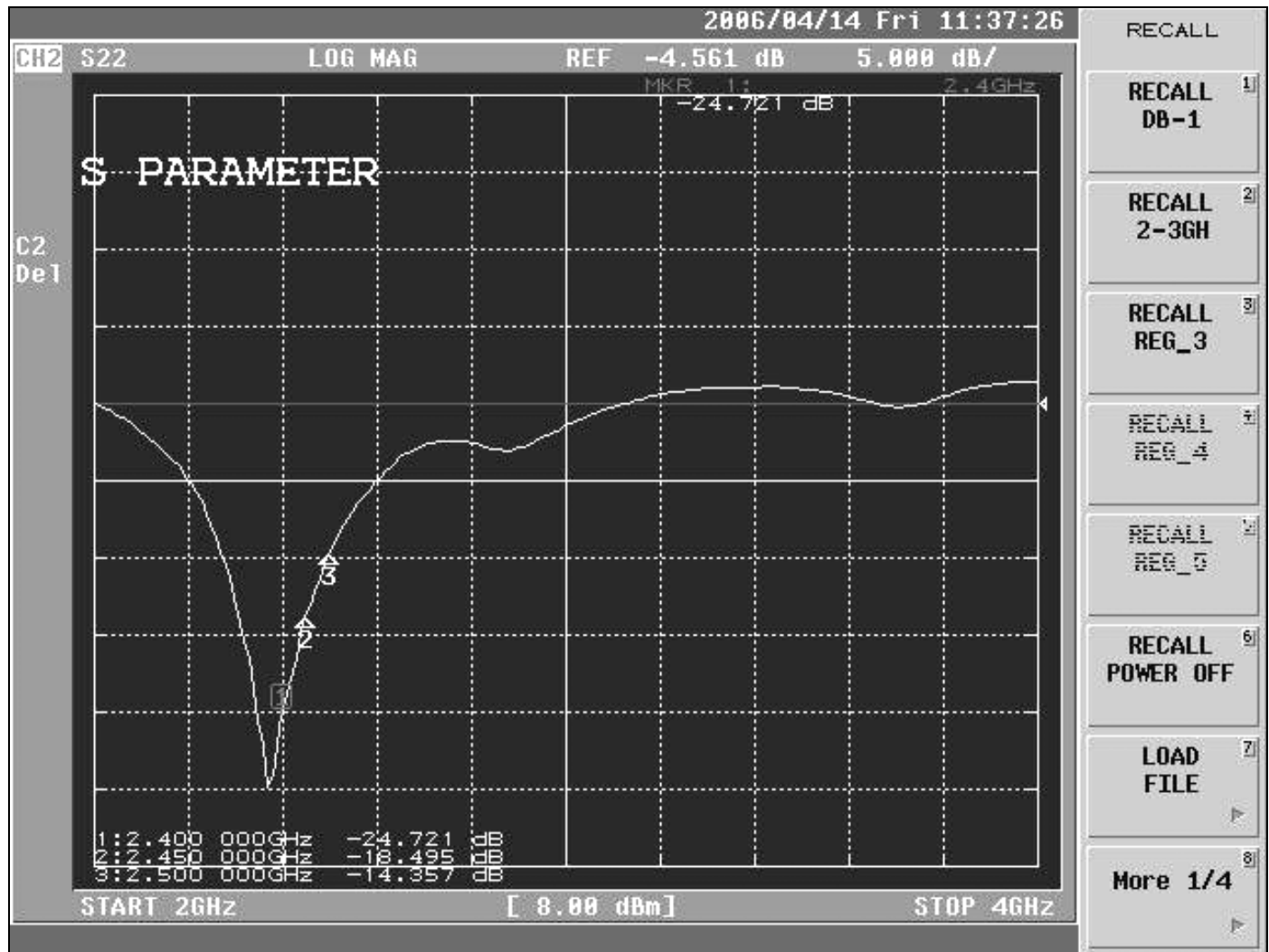


Test Report

		Date :	2006/4/14	Tester:	Miao
Model / P/N :	FWP_16937B-I32	Description	2.4G 2Dbi WI-FI Emb. Ant 137B Ipex L160mm		

Return Loss / Smith chart Test

Without Antenna (Plastics) cover (Freq. range: 2.4GHz~2.5GHz)



BILL OF MATERIAL

LEVEL	ITEM	GB P/N	SPECIFICATION	VENDER	QT'Y	MEMO
1	10	CW30039G054G	UUL 1354 80°C 30V COAXIAL CABLE 1.CONDUCTOR:30AWGx1C,SILVER PLATED COPPER WIRE. 2.INSULATION:FEP, OD=0.92±0.02mm, SELF-COLOR. 3.SHIELD:BRAID (16/5/0.05)TINNED PLATED COPPER WIRE,COVERAGE 90% MIN. 4.JACKET:FEP,OD=1.37±0.05mm,COLOR:BLACK GB COLOR:000 NO MARKING.	V-CN080	1mm	
1	20	W095095000AP	CARDBOARD.	V-CN080	0.000006pce	
1	30	Z100100100C00P	CARTON.	V-CN080	0.000001pce	

ELECTRICAL CHARACTERISTICS

ITEM	SPECIFICATION	MEMO																										
1	OPERATION TEMPERATURE:80℃																											
2	ELECTRICAL PROPERTIES: 2-1.INSULATION RESISTANCE:DC/250V 1000Mohm.m MIN.. 2-2.VOLTAGE RATING:30V. 2-3.WITHSTAND VOLTAGE:AC/500V RMS FOR ONE MINUTE. 2-4.CONDUCTOR RESISTANCE:LESS THAN 520ohm/KM(at 20℃) 2-5.CAPACITANCE:97pF/M(NOMINAL) 2-6.IMPEDANCE:50 ohm NOM @ TDR. 2-7:<table><tr><th colspan="2">NOM. ATTENUATION(dB/M)</th></tr><tr><td>0.1GHz</td><td>0.5</td></tr><tr><td>0.4GHz</td><td>1.0</td></tr><tr><td>0.8GHz</td><td>1.5</td></tr><tr><td>1.0GHz</td><td>1.6</td></tr><tr><td>1.5GHz</td><td>2.0</td></tr><tr><td>1.9GHz</td><td>2.3</td></tr><tr><td>2.4GHz</td><td>2.6</td></tr><tr><td>2.45GHz</td><td>2.7</td></tr><tr><td>3.0GHz</td><td>2.9</td></tr><tr><td>5.2GHz</td><td>4.0</td></tr><tr><td>5.8GHz</td><td>4.3</td></tr><tr><td>6.0GHz</td><td>4.3</td></tr></table>	NOM. ATTENUATION(dB/M)		0.1GHz	0.5	0.4GHz	1.0	0.8GHz	1.5	1.0GHz	1.6	1.5GHz	2.0	1.9GHz	2.3	2.4GHz	2.6	2.45GHz	2.7	3.0GHz	2.9	5.2GHz	4.0	5.8GHz	4.3	6.0GHz	4.3	
NOM. ATTENUATION(dB/M)																												
0.1GHz	0.5																											
0.4GHz	1.0																											
0.8GHz	1.5																											
1.0GHz	1.6																											
1.5GHz	2.0																											
1.9GHz	2.3																											
2.4GHz	2.6																											
2.45GHz	2.7																											
3.0GHz	2.9																											
5.2GHz	4.0																											
5.8GHz	4.3																											
6.0GHz	4.3																											

MECHANICAL CHARACTERISTICS

ITEM	SPECIFICATION	MEMO

NOTE

ITEM	SPECIFICATION	MEMO
------	---------------	------

DRAWN	DRAGON	GOLDEN BRIDGE ELECTECH INC.	DRAWING NO.	AS53-04080005-6
ENGINEER	DUNNE		REVISION	
CHECKED	WINCO		UNIT	NONE
APPROVED	JEFF		SCALE	NONE
SAMPLE NO.	AS53-04080005-6	ORG: UTE	PAGE NO.	2 OF 2
CUSTOMER: 啟碁科技		SPEC: ROUND CABLE	DATE	2004.08.16
P/N:			FILE: R:\SP\SP04\AS53-04080005-6A.DOC	



.Test Equipments

ID	Product Number	Description
1	Tek 80E04	TDR Module
2	Tek TDS8000B	TDR Mainframe
3	8753D	Network Analyzer

.Device Under Test(DUT) Information

Report Title:	11977
DUT Length:	1 Meters
Engineer:	Illumine
QTY:	6 PCS
Tested Pairs:	1 Pair
Humidity:	65%
Bundle Number:	
Temperature:	22°C

.Specification

Impedance: 50 ohm NOM

Attenuation:	0.1GHz	0.5dB
	0.4GHz	1dB
	0.8GHz	1.5dB
	1GHz	1.6dB
	1.5GHz	2dB
	1.9GHz	2.3dB
	2.4GHz	2.6dB
	2.45GHz	2.7dB
	3GHz	2.9dB
	5.2GHz	4.0dB
	5.8GHz	4.3dB
	6GHz	4.3dB



Test Report

LONG CHENG TECH. INTL. CO., LTD.
3F, NO. 3, ALLEY 15, LANE 62, CHUNG HO ST.,
JUBEI CITY, HSINCHU HSIEN, TAIWAN, R.O.C.

Report No : CE/2004/51314
Date : 2004/05/21
Page : 1 of 6

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

Type of Product : COAXIAL CABLE
Style/Item No : COAXIAL CABLE
Sample Received : 2004/05/13.
Testing Date : 2004/05/13 TO 2004/05/21

=====

Test Result : - Please see the next page -


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

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Test Report

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Test Result

PART NAME NO.1 : GRAY PLASTIC (JACKET)

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Asbestos		With reference to Health Canada, Proudct safety Bureau Reference-Manual method.						
Anthrophyllite	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	Negative				
Crocodolite	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	Negative				
Amosite	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	Negative				
Tremolite	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	Negative				
Chrysotile	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	Negative				
Actinolite	**	As per NIOSH 9000 method. Analysis was performed by XRD.	-	Negative				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
AZO		As per LMBG 8202-2						
4-AMINODIPHENYL (CAS NO.92-67-1)	ppm	Analysis was performed by GC/MS.	3	N.D.				
BENZIDINE (CAS NO.92-87-5)	ppm	Analysis was performed by GC/MS.	3	N.D.				

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Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
4-CHLORO-O-TOLUIDINE (CAS NO.95-69-2)	ppm	Analysis was performed by GC/MS.	3	N.D.				
2-NAPHTHYLAMINE (CAS NO.91-59-8)	ppm	Analysis was performed by GC/MS.	3	N.D.				
O-AMINOAZOTOLUENE (CAS NO.97-56-3)	ppm	Analysis was performed by GC/MS.	3	N.D.				
2-AMINO-4-NITROTOLUENE (CAS NO.99-55-8)	ppm	Analysis was performed by GC/MS.	3	N.D.				
P-CHLOROANILINE (CAS NO.106-47-8)	ppm	Analysis was performed by GC/MS.	3	N.D.				
2,4-DIAMINOANISOLE (CAS NO.615-05-4)	ppm	Analysis was performed by GC/MS.	3	N.D.				
4,4- DIAMINODIPHENYLMETHA NE (CAS NO.101-77-9)	ppm	Analysis was performed by GC/MS.	3	N.D.				
3,3-DICHLOROBENZIDINE (CAS NO.91-94-1)	ppm	Analysis was performed by GC/MS.	3	N.D.				
3,3-DIMETHOXYBENZIDINE (CAS NO.119-90-4)	ppm	Analysis was performed by GC/MS.	3	N.D.				
3,3-DIMETHYLBENZIDINE (CAS NO.119-93-7)	ppm	Analysis was performed by GC/MS.	3	N.D.				
3,3-DIMETHYL-4,4- DIAMINODIPHENYLMETHA NE (CAS NO.838-88-0)	ppm	Analysis was performed by GC/MS.	3	N.D.				
P-CRESIDINE(2-METHOXY- 5-METHYLANILINE) (CAS NO.120-71-8)	ppm	Analysis was performed by GC/MS.	3	N.D.				
4,4-METHYLENE-BIS-(2- CHLORANILINE) (CAS NO.101-14-4)	ppm	Analysis was performed by GC/MS.	3	N.D.				
4,4-OXYDIANILINE (CAS NO.101-80-4)	ppm	Analysis was performed by GC/MS.	3	N.D.				
4,4-THIODIANILINE (CAS NO.139-65-1)	ppm	Analysis was performed by GC/MS.	3	N.D.				
O-TOLUIDINE (CAS NO.95- 53-4)	ppm	Analysis was performed by GC/MS.	3	N.D.				

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Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
2,4-TOLUYLENDIAMINE (CAS NO.95-80-7)	ppm	Analysis was performed by GC/MS.	3	N.D.				
2,4,5-TRIMETHYLANILINE (CAS NO.137-17-7)	ppm	Analysis was performed by GC/MS.	3	N.D.				
O-ANISIDINE (CAS NO.90- 04-0)	ppm	Analysis was performed by GC/MS.	3	N.D.				
P-AMINOAZOBENZENE (CAS NO.60-09-3)	ppm	Analysis was performed by GC/MS.	3	N.D.				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Chlorinated Paraffin (C10~C13) (CAS NO:010871- 26-2)	%	Analysis was performed by GC/MS.	0.01	N.D.				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Mirex(CAS NO:002385-85-5)	ppm	Analysis was performed by GC/MS.	4	N.D.				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Organic-tin compounds								
Triphenyl Tin(TPT)(CAS NO:000668-34-8)	ppm	With reference to 83/677/EEC & DIN 38407. Analysis was performed by GC/FPD.	0.001	N.D.				
Tributyl Tin(TBT)	ppm	With reference to 83/677/EEC & DIN 38407. Analysis was performed by GC/FPD.	0.001	N.D.				

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Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
PCBs(Polychlorinated Biphenyls)(CAS NO:001336-36-3)	ppm	With reference to US EPA 8082,89/677/EEC. Analysis was performed by GC/ECD/MS.	0.5	N.D.				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
PBBs(Polybrominated biphenyls)(CAS NO:67774-32-7)	%	With reference to 83/264/EEC. Analysis was performed by GC/MS/ECD or HPLC/DAD/MS.	0.0005	N.D.				
PBBEs(PBDEs)(Polybrominated biphenyl ethers)	%	With reference to 83/264/EEC. Analysis was performed by GC/MS/ECD or HPLC/DAD/MS.	0.0005	N.D.				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Polychlorinated Naphthalene	ppm	Analysis was performed by GC/MS.	5	N.D.				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
PVC free(CAS No:9002-86-2)	**	Analysis was performed by FTIR/ATR AND Pyro-GC/MS.	-	Negative				

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Chromium VI (Cr+6)	ppm	As per US EPA 7196A and US EPA 3060A.	2	N.D.				

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TW 0761650

SGS Taiwan Ltd.
台灣檢驗科技股份有限公司

No. 136-1 Wu Kung Road, Wuku Industrial Zone, Taipei County, Taiwan. / 台北縣五股工業區五工路136-1號
t (886-2) 2299-3939 f (886-2) 2299-3237 www.sgs.com.tw

Member of SGS Group(Société Générale de Surveillance)



Test Report

LONG CHENG TECH. INTL. CO., LTD.
3F, NO. 3, ALLEY 15, LANE 62, CHUNG HO ST.,
JUBEI CITY, HSINCHU HSIEN, TAIWAN, R.O.C.

Report No : CE/2004/51314
Date : 2004/05/21
Page : 6 of 6

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Cadmium (Cd)	ppm	ICP-AES After As per EN 1122, Method B:2001 or other acid digestion.	2	N.D.				
Mercury (Hg)	ppm	ICP-AES After As per US EPA 3052 or other acid digestion.	2	N.D.				
Lead (Pb)	ppm	ICP-AES After As per US EPA 3050B or other acid digestion.	2	N.D.				

- NOTE: (1) N.D. = Not detected.(<MDL)
(2) ppm = mg/kg
(3) MDL= Method Detection Limit
(4) " ---" = Not Applicable
(5) " -" = Not Regulation
(6) * = Results shown are of the adjusted analytical results.
(7) **= Qualitative analysis(No Unit)
(8) Negative = Undetectable / Positive = Detectable.

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TW 0761651

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台灣檢驗科技股份有限公司

No. 136-1 Wu Kung Road, Wuku Industrial Zone, Taipei County, Taiwan.
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www.sgs.com.tw

Member of SGS Group(Société Générale de Surveillance)



Web Hong Sheng 0769-6631817

Test Report

No.: GZSC040307950/LP

Date: MAR 15, 2004

Page 1 of 1

DONGGUAN DACHEN ELECTRICAL PRODUCTS LTD
HSIN FENG LU DON, HSIN CHENG DISTRICT,
SHEK KIT TOWN, DONGGUAN CITY,
GUANGDONG, PEOPLE REPUBLIC OF CHINA

Report on the submitted sample said to be RF1.37 CONDUCTOR (镀银铜丝)

SGS Ref No. : SZ040302401EC-5.3
Manufacture / Supplier : GBE
Country of Destination : CHINA
Sample Receiving Date : MAR 14, 2004
Testing Period : MAR 15, 2004 TO MAR 15, 2004

Test Requested : As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample.

Test Method : Lead content - In-house method .
Cadmium content - In-house method ..
Mercury content - In-house method .
Hexavalent Chromium content - with reference to EPA 3060A & EPA 7196A .
Analysis was performed by Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES) / UV-VIS Spectrophotometer.

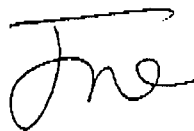
RESULTS**Silvery metal wire**

Lead content (Pb)	N.D.
Cadmium Content (Cd)	N.D.
Mercury Content (Hg)	N.D.
Hexavalent Chromium Content [Cr(VI)]	N.D.

Note : - N.D. = Not Detected (< 2 ppm)
- ppm = mg/kg

*** End of Report ***

Signed for and on behalf of
SGS-CSTC Ltd.



He Xiaoyan, Jane
Tech. Manager

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GZCM 121237

SGS**Test Report**

No.: GZSCRO40307949/LP

Date: MAR 15, 2004

Page 1 of 1

DONGGUAN DACHEN ELECTRICAL PRODUCTS LTD
HSIN FENG LU DON, HSIN CHENG DISTRICT,
SHEK KIT TOWN, DONGGUAN CITY,
GUANGDONG, PEOPLE REPUBLIC OF CHINA

Report on the submitted sample said to be RF1.13 CONDUCTOR (镀银铜丝)

SGS Ref No. : SZ040302401EC-5.2
Manufacture / Supplier : GBE
Country of Destination : CHINA
Sample Receiving Date : MAR 14, 2004
Testing Period : MAR 15, 2004 TO MAR 15, 2004

Test Requested : As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample.

Test Method : Lead content - In-house method .
Cadmium content - In-house method ..
Mercury content - In-house method .
Hexavalent Chromium content - with reference to EPA 3060A & EPA 7196A .
Analysis was performed by Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES) / UV-VIS Spectrophotometer.

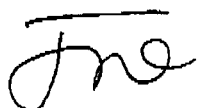
RESULTSSilvery metal wire

Lead content (Pb)	N.D.
Cadmium Content (Cd)	N.D.
Mercury Content (Hg)	N.D.
Hexavalent Chromium Content [Cr(VI)]	N.D.

Note : - N.D. = Not Detected (< 2 ppm)
- ppm = mg/kg

*** End of Report ***

Signed for and on behalf of
SGS-CSTC Ltd.


He Xiaoyan, Jane
Tech. Manager

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GZCM 121236

SGS

Test Report

No.: GZSCR040307948/LP

Date: MAR 15, 2004 Page 1 of 1

DONGGUAN DACHEN ELECTRICAL PRODUCTS LTD
HSIN FENG LU DON, HSIN CHENG DISTRICT,
SHEK KIT TOWN, DONGGUAN CITY,
GUANGDONG, PEOPLE REPUBLIC OF CHINA

Report on the submitted sample said to be RF1.13 & 1.37 BRAID (镀银铜丝)

SGS Ref No. : SZ040302401EC-5.1
Manufacture / Supplier : GBE
Country of Destination : CHINA
Sample Receiving Date : MAR 14, 2004
Testing Period : MAR 15, 2004 TO MAR 15, 2004

Test Requested : As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample.

Test Method : Lead content - In-house method .
Cadmium content - In-house method ..
Mercury content - In-house method .
Hexavalent Chromium content - with reference to EPA 3060A & EPA 7196A .
Analysis was performed by Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES) / UV-VIS Spectrophotometer.

RESULTS

Silvery metal wire

Lead content (Pb)	N.D.
Cadmium Content (Cd)	N.D.
Mercury Content (Hg)	N.D.
Hexavalent Chromium Content [Cr(VI)]	N.D.

Note : - N.D. = Not Detected (< 2 ppm)
- ppm = mg/kg

*** End of Report ***

Signed for and on behalf of
SGS-CSTC Ltd.



He Xiaoyan, Jane
Tech. Manager

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GZCM 121235



Test Report

GOLDEN BRIDGE ELECTECH INC.
3F., NO.6, LANE 270, SEC.3, PEI SHEN RD., SHEN
KENG, TAIPEI, TAIWAN, R.O.C.

Report No : CE/2004/31925
Date : 2004/03/24
Page : 1 of 1

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

Type of Product : MINI RF CABLE
Style/Item No : COAXIAL CABLE
Sample Received : 2004/03/17.
Testing Date : 2004/03/17 TO 2004/03/24

Test Result

PART NAME NO.1 : BLACK PLASTIC JACKET
PART NAME NO.2 : GRAY PLASTIC JACKET
PART NAME NO.3 : WHITE PLASTIC JACKET
PART NAME NO.4 : TRANSPARENT PLASTIC INSULATION

Test Item(s):	Unit	Method	MDL	Result			
				NO.1	NO.2	NO.3	NO.4
PBBs(Polybrominated biphenyls)(CAS NO:67774-32-7)	%	With reference to 83/264/EEC. Analysis was performed by GC/MS.	0.0005	N.D.	N.D.	N.D.	N.D.
PBBEs(PBDEs)(Polybrominated biphenyl ethers)	%	With reference to 83/264/EEC. Analysis was performed by GC/MS.	0.0005	N.D.	N.D.	N.D.	N.D.

NOTE: (1) N.D. = Not detected.(<MDL)
(2) ppm = mg/kg
(3) MDL= Method Detection Limit
(4) " ---" = Not Applicable
(5) " -" = Not Regulation
(6) * = Results shown are of the adjusted analytical results.
(7) **= Qualitative analysis(No Unit)
(8) Negative = Undetectable / Positive = Detectable.

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

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TW 0680577

SGS Taiwan Ltd. No. 138-1 Wu Kung Road, Wuku Industrial Zone, Taipei County, Taiwan. / 台北縣五股工業區五工路138-1號
台灣檢驗科技股份有限公司 t (886-2) 2299-3939 f (886-2) 2299-3237 www.sgs.com.tw

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TOTAL P.01



Test Report

No.: GZSCR040931790/LP

Date: SEP 09, 2004

Page 1 of 1

DONGGUAN DACHEN ELECTRICAL PRODUCTS LTD.
HSIN FENG LU DON, HSIN CHENG DISTRICT,
SHEK KIT TOWN, DONG GUAN CITY, GUANG DONG

Report on the submitted sample said to be RF CABLE 镀锡编织铜丝 (镀锡铜)

SGS Ref No. : SZ040910232EC
Country of Origin : CHINA
Sample Receiving Date : SEP 03, 2004
Testing Period : SEP 03, 2004 TO SEP 08, 2004

Test Requested : As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample.

Test Method : Lead content – In-house method, with reference to EPA method 3050B: 1996 .
Cadmium content – In-house method, with reference to BS EN1122: 2001 method B .
Mercury content – In-house method, with reference to EPA 3052: 1996.
Hexavalent Chromium content – with reference to EPA 3060A: 1996 & EPA 7196A: 1992 .
Analysis was performed by Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES) / UV-VIS Spectrophotometer.

RESULTS

Lead Content (Pb)(ppm)	7
Cadmium Content (Cd)	N.D.
Mercury Content (Hg)	N.D.
Hexavalent Chromium Content [Cr(VI)]	N.D.

Note : - N.D. = Not Detected (< 2 ppm)
- ppm = mg/kg

*** End of Report ***

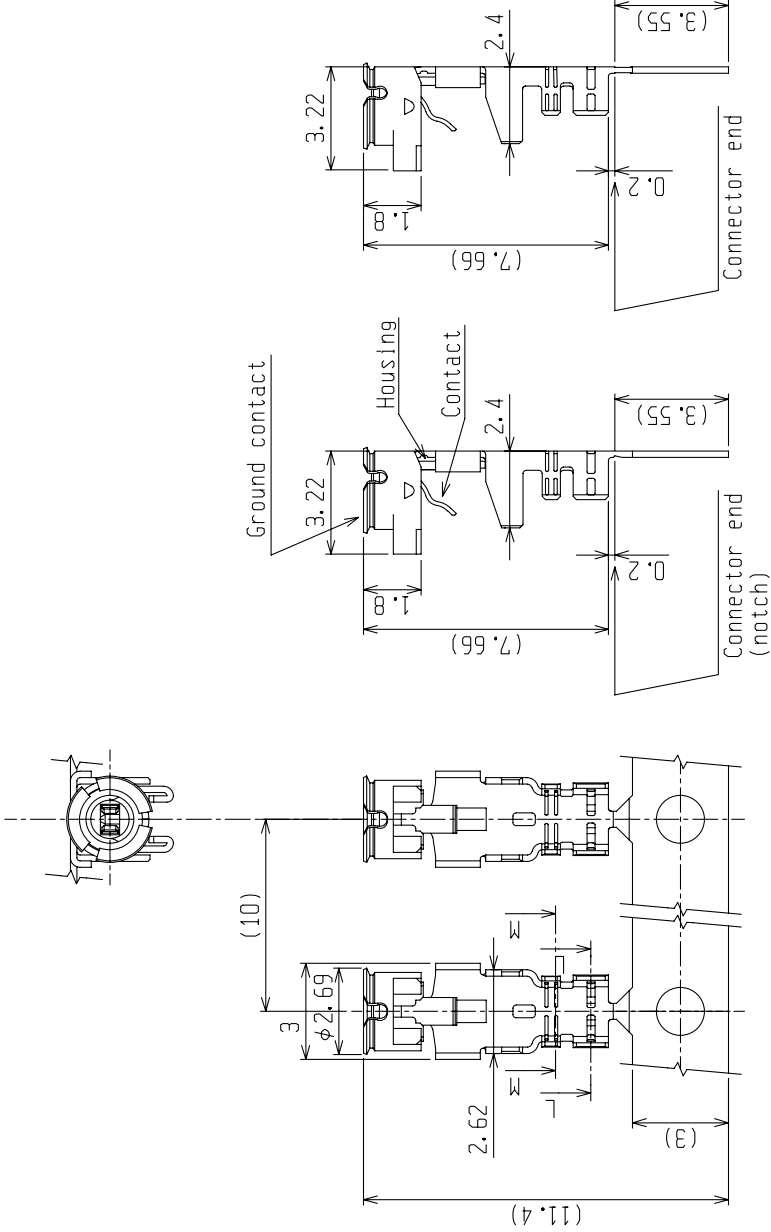
Signed for and on behalf of
SGS-CSTC Ltd.


He Xiaoyan, Jane
Tech Manager

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GZCM 150809

PART NO.
20351-111R-37



Part No. 20351-101R-37
For hand tool
(with notch)

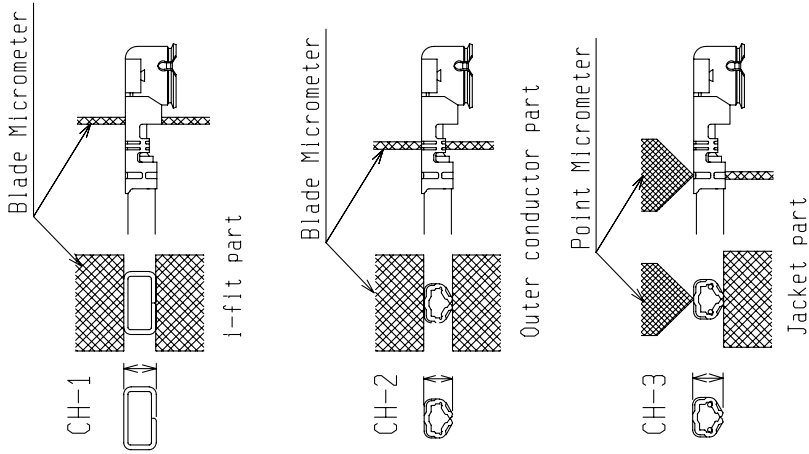
Part No. 20351-111R-37
For semi auto
termination machine
(without notch)

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

FORM REV. 4

										I-PEX Interconnect and Packaging Electronics TOKYO, JAPAN TITLE MHF series micro coaxial connector plug vertical (ground contact : gold plating)		
3	204046	K.O	Feb/12/'04	K.K	T. Hirakawa	DESIGN'D BY	SEP/11/'03	DATE				
2	23156	A.H	OCT/28/'03	K.K	CHK'D BY		SEP/11/'03	DATE				
1	23124	K.O	SEP/16/'03	K.K	T. Harada		SEP/11/'03	DATE				
0	23122	T.H	SEP/11/'03		APP'D BY		SEP/11/'03	DATE				
REV	ECN	BY	DATE	APP	K. Katabuchi		SEP/11/'03	DATE				
		REV. RECORD		CUSTOMER		COPY		PROJECTION				
		SERIES No.		2814								
												
								SCALE		UNIT	DWG. No.	
								6/1		mm	20351	
								SHEET		REV.		
								1/3		3		

Part No.	20351-101R-37 ----- 20351-111R-37
Applicable cable nominal dimension	
Jacket	Outer conductor plating silver or tin
Dielectric core	
Inner conductor	silver plating
Applicable cable nominal dimension	Center conductor half-coating is not possible, outer conductor half-coating must be implemented. Must not use solder coated inner conductor. Must use solder coated outer conductor.
Braided shield of Outer conductor 外部導体の編組	Single / 1重編組
P/N of hand Tool	90233-037
P/N of semi auto termination machine	90232-037
Sect. M-M	
Sect. L-L	
Crimp Height	CH-1 1.34~1.40 CH-2 1.33~1.38 CH-3 1.31~1.36



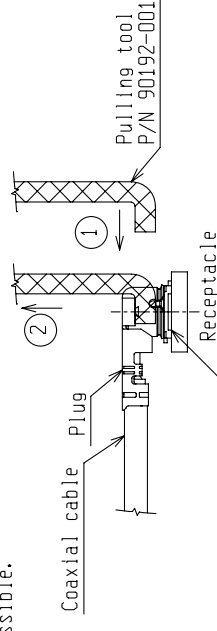
Crimp Height

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

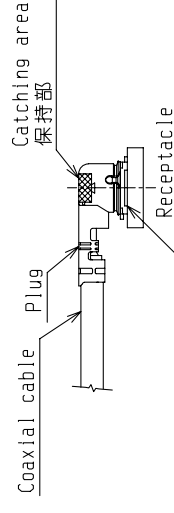
DESIGN D BY	DATE	Interconnect and Packaging Electronics TOKYO, JAPAN
CHK' D BY	DATE	
APP' D BY	DATE	
REV ECN	BY	DATE
REV. RECORD	APP	
SERIES No.	2814	
CUSTOMER COPY	PROJECTION	TITLE
		MFH series micro coaxial connector plug vertical (ground contact : gold plating)
	SCALE	UNIT
	—/—	mm
	DWG. No.	20351
	SHEET	2/3
	REV.	3

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)

外部導体はみ出し量規定
：外部導体トータル本数の
の10%以下
(外部導体パレルの外に
はみ出した量)

5-4 Caution about Heat shrinkage tubes

-4 Caution about Heat shrinkage. 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

6. Tip of contact should be recessed of housing after crimped about mating area.

6. 圧着後、コネクタかん合部に
おいて、コネクタ先端が
ハウジングより飛び出さない事。

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

2.5 mm

RECEPTACLE

P/N 20279-001E-01

MATING

Interconnect
and Packaging Electronics
TOKYO, JAPAN

I-PEX

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

UNIT mm
SCALE --/--
DWG. No. 20351
SHEET 3/3 REV. 3

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

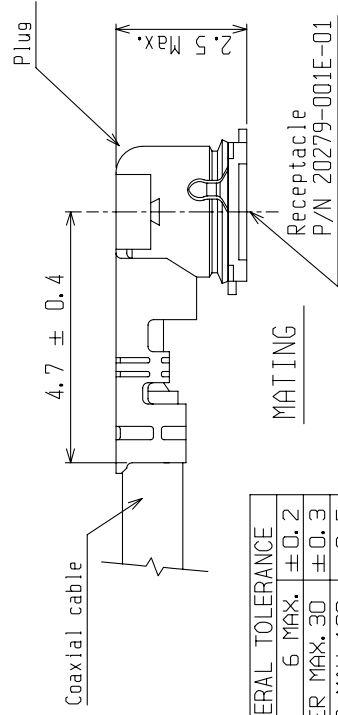
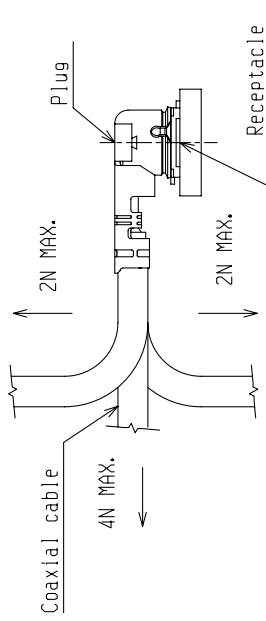
REV ECN	BY	DATE	APP
REV. RECORD			
SERIES No.	2814		

CUSTOMER COPY	PROJECTION
---------------	------------

5. 「ネクタサ」合時および抜去時の注意

5-1 コネクタ挿入時

「Push and Reception」のカーン合軸を合わせ、
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下さい。
挿入クランプ破損の原因となりますので、過度なこじり
挿入は行わない下さい。



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

No.2006-3
Feb/13 /'04

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-**, P/N 20351-**1R-37

	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 RECEPTOR
P/N 20279-001E-01, P/N20314-001E-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 : MHF II connector P/N 20311-**1R-**, P/N 20312-**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	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
T.Harada Feb/13/'04		K.Ohbayashi Feb/13/'04

FORM REV.0



Test Report

I-PEX JP CO., LTD. TAIWAN BRANCH (JAPAN)
4F-4, NO.2, JIAN BA ROAD, CHUNG HO CITY,
TAIPEI 235, TAIWAN, R.O.C.

Report No : CE/2004/42496
Date : 2004/04/27
Page : 1 of 1

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

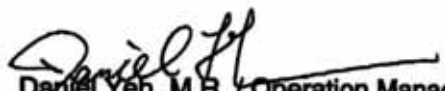
Type of Product : MHF CONNECTOR
Style/Item No : 20278-111R-XX
Sample Received : 2004/04/22.
Testing Date : 2004/04/22 TO 2004/04/27

Test Result

PART NAME NO.1 : MIX GOLDEN COLORED METAL & BLACK PLASTIC

Test Item(s):	Unit	Method	MDL	Result				
				NO.1				
Chromium VI (Cr+6)	ppm	As per US EPA 7196A and US EPA 3060A.	2	N.D.				
Cadmium (Cd)	ppm	ICP-AES After As per EN 1122, Method B:2001 or other acid digestion.	2	N.D.				
Mercury (Hg)	ppm	ICP-AES After As per US EPA 3052 or other acid digestion.	2	N.D.				
Lead (Pb)	ppm	ICP-AES After As per US EPA 3050B or other acid digestion.	2	N.D.				

NOTE: (1) N.D. = Not detected.(<MDL)
(2) ppm = mg/kg
(3) MDL= Method Detection Limit
(4) " ---" = Not Applicable


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



Test Report No. JP/2004/120691 Date: January 25, 2005 Page 1 of 2

NIHON SUPERIOR, LTD.
NS BLDG 1-16-15, ESAKA-CHO, SUITA-CITY,
OSAKA 564-0063 JAPAN

Report on the submitted samples said to be "SN100CL".

Client Ref. No.

Sample Receiving Date : 2004/12/17

Testing Period : 2004/12/22 TO 2005/1/24

Color, Appearance etc. of the sample : Solder Bar

Test Result

Test Item	Unit	Result	Method	Instrument	Detection Limit
Cd	ppm	N.D.	EN 1122B	ICP-AES	2
Hg	ppm	N.D.	EPA 3052	ICP-AES	2
Cr(VI)	ppm	N.D.	EPA 3060A	UV-VIS	2
Pb	ppm	286	EPA 3050B	ICP-AES	2
PBBs					
Bromobiphenyl	ppm	N.D.	—	GC/MS	5
Dibromobiphenyl	ppm	N.D.	—	GC/MS	5
Tri bromobiphenyl	ppm	N.D.	—	GC/MS	5
Tetrabromobiphenyl	ppm	N.D.	—	GC/MS	5
Pentabromobiphenyl	ppm	N.D.	—	GC/MS	5
Hexabromobiphenyl	ppm	N.D.	—	GC/MS	5
Heptabromobiphenyl	ppm	N.D.	—	GC/MS	5
Octabromobiphenyl	ppm	N.D.	—	GC/MS	5
Nonabromobiphenyl	ppm	N.D.	—	GC/MS	5
Decabromobiphenyl	ppm	N.D.	—	GC/MS	5

JP 507429

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Member of the SGS Group (Incorporated in Switzerland)



Test Report No.JP/2004/120692 Date: January 25, 2005 Page 1 of 2

NIHON SUPERIOR, LTD.
NS BLDG 1-16-15, ESAKA CHO, SUITA-CITY,
OSAKA 564-0063 JAPAN

Report on the submitted samples said to be "SN100CLe".

Client Ref. No. :

Sample Receiving Date :2004/12/17

Testing Period :2004/12/22 TO 2005/1/24

Color, Appearance etc. of the sample :Solder Bar

Test Result

Test Item	Unit	Result	Method	Instrument	Detection Limit
Cd	ppm	N.D.	EN 1122B	ICP-AES	2
Hg	ppm	N.D.	EPA 3052	ICP-AES	2
Cr(VI)	ppm	N.D.	EPA 3060A	UV-VIS	2
Pb	ppm	340	EPA 3050B	ICP-AES	2
PBBs					
Bromobiphenyl	ppm	N.D.	—	GC/MS	5
Dibromobiphenyl	ppm	N.D.	—	GC/MS	5
Tribromobiphenyl	ppm	N.D.	—	GC/MS	5
Tetrabromobiphenyl	ppm	N.D.	—	GC/MS	5
Pentabromobiphenyl	ppm	N.D.	—	GC/MS	5
Hexabromobiphenyl	ppm	N.D.	—	GC/MS	5
Heptabromobiphenyl	ppm	N.D.	—	GC/MS	5
Octabromobiphenyl	ppm	N.D.	—	GC/MS	5
Monobromobiphenyl	ppm	N.D.	—	GC/MS	5
Decabromobiphenyl	ppm	N.D.	—	GC/MS	5

JP 501431

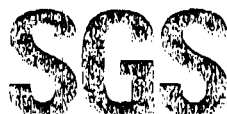
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Member of the SGS Group (Entité membre du Groupe SGS)



Test Report

SOLNET METAL INDUSTRY CO., LTD.
9, LANE 83, HWA CHENG RD., HSIN CHUANG, TAIPEI
HSIEN, TAIWAN.

Report No. : CE/2005/53041
Date : 2005/05/24
Page : 1 of 4

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

Type of Product : LEAD-FREE SOLDER
Style/Item No : M705 (Sn 96.5-3Ag-0.5Cu)
Sample Received : 2005/05/17
Testing Date : 2005/05/17 TO 2005/05/24

=====

Test Result : - Please see the next page -


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

★ Sample to be returned as requested ★

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之規格、允收、檢驗標準與結果。此報告結果並非自認對顧客保證之品質。本公司未對本公司之品質、不可部份複製。

1907704



Test Report

SOLNET METAL INDUSTRY CO., LTD.

9, LANE 83, HWA CHENG RD., HSIN CHUANG, TAIPEI
HSIEN, TAIWAN.

Report No. : CE/2005/53041

Date : 2005/05/24

Page : 2 of 4

Test Result

PART NAME NO.1 : SILVER COLORED METAL WIRE (PLEASE REFER
TO THE PHOTO ATTACHED)

Test Item (s):	Unit	Method	MDL	Result No.1
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)(Polybromin ated biphenyl ethers)/Sum of above	%		-	N.D.

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1908197



Test Report

SOLNET METAL INDUSTRY CO., LTD.

9, LANE 83, HWA CHENG RD., HSIN CHUANG, TAIPEI
HSIEN, TAIWAN.

Report No. : CE/2005/53041

Date : 2005/05/24

Page : 3 of 4

Test Item (s):	Unit	Method	MDL	Result
				No.1
Chromium VI (Cr+6)	ppm	UV-VIS after reference to US EPA 3060A.	2	N.D.
Cadmium (Cd)	ppm	ICP-AES after reference to EN 1122, method B:2001 or other acid digestion.	2	N.D.
Mercury (Hg)	ppm	ICP-AES after reference to US EPA 3052 or other acid digestion.	2	N.D.
Lead (Pb)	ppm	ICP-AES after reference to US EPA 3050B or other acid digestion.	2	299.5

NOTE: (1) N.D. = Not detected (<MDL)
(2) ppm = mg/kg
(3) MDL = Method Detection Limit
(4) " - " = No Regulation

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