

承

認

書

APPROVAL SHEET

CUSTOMER:訊舟科技股份有限公司

FILE NO . :

DESCRIPTION : 802.11 a+b Antenna +1.13MM CABLE

經理 Manager	品保 Q C	工程師 Engineer

ANTENNIQUES P/N : FCF-003-108-01

CUSTOMER P/N :

DATE : 中華民國 92年 12 月 30 日

Customer Approval

--	--	--



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓

TEL : 02-2668-5793

FAX : 02-2668-5795

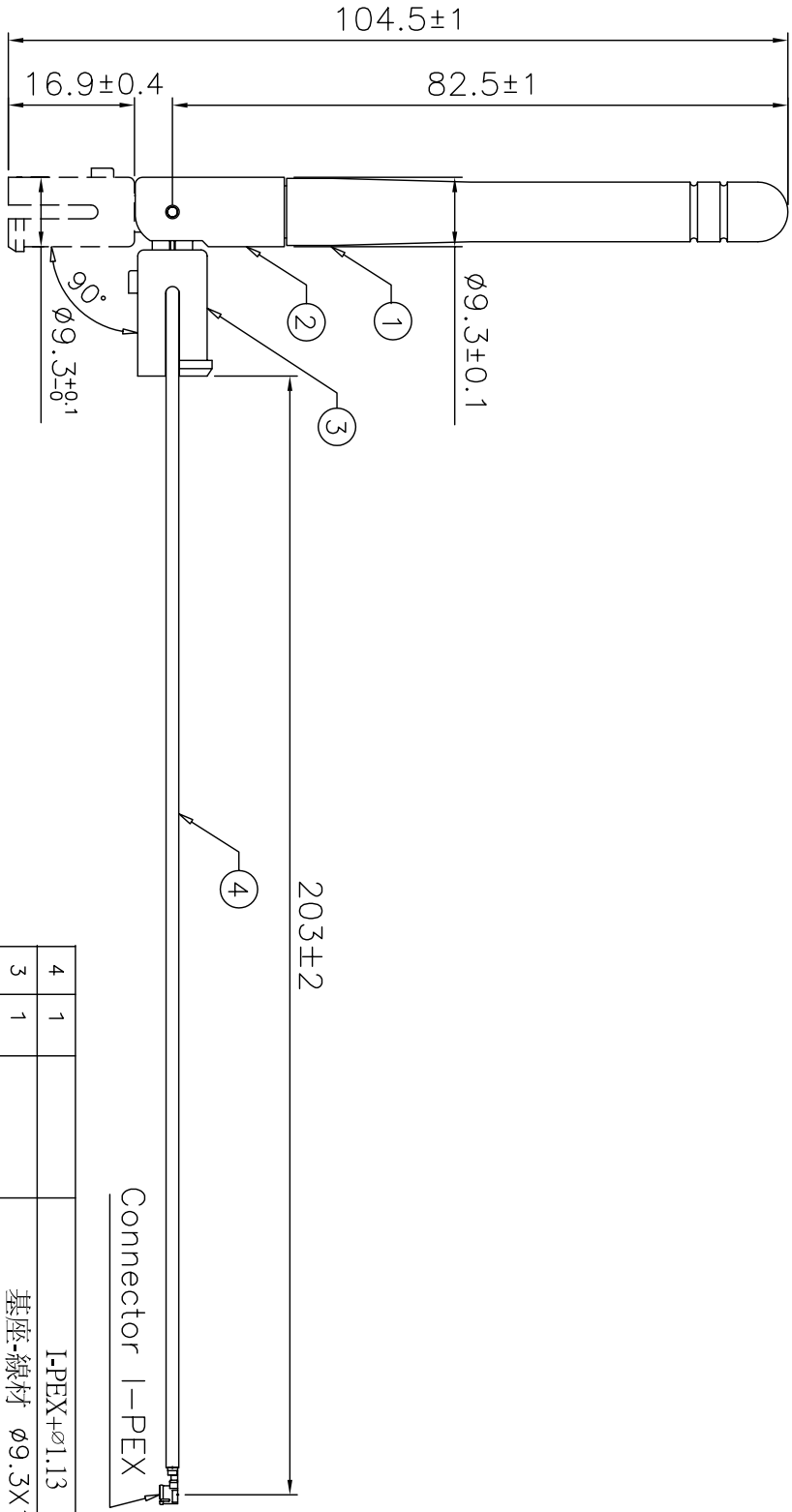
5F,No.6,Laine 122, Sec 2,Ganyun St, Shulin Chulin City,

Taipei Hsien,238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net

網 站 : www.antenniques.com.tw

REVISIONS		1
REV	BY	DATE
1		



ITEM NO.	QTY	RECD	PART NUMBER	DESCRIPTION
4	1			I-PEX ± 0.13
3	1			基座-線材 $\phi 9.3 \times 17$
2	1			轉軸 $\phi 9.3 \times 20$
1	1			外套 $\phi 8 \times 75.1 \times 9.0$

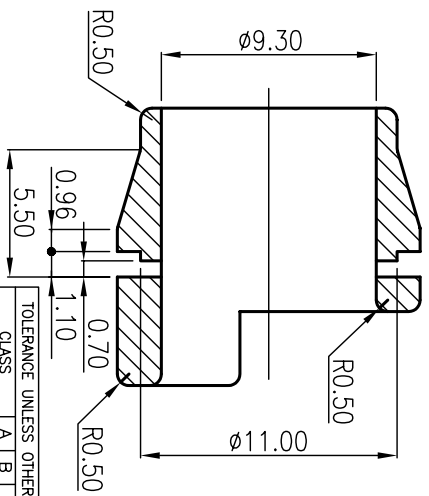
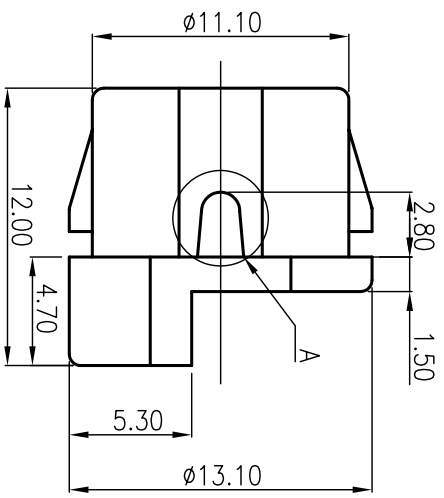
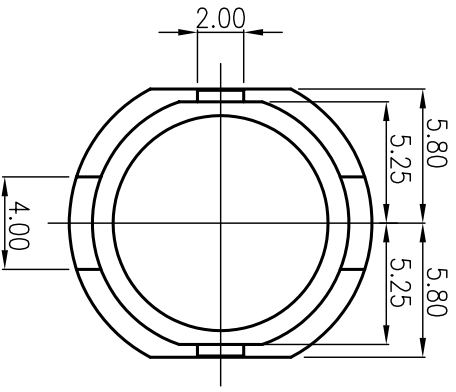
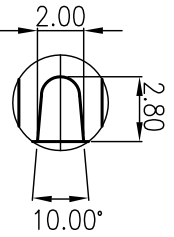
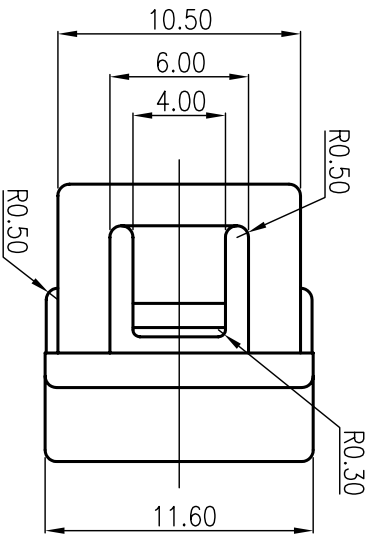
TOLERANCE UNLESS OTHERWISE SPECIFIED (+)						
CLASS	A	B	C	D	E	F
< 8mm	0.05	0.1	0.1	0.2	0.2	0.4
8 ~ 25mm	0.08	0.15	0.15	0.3	0.3	0.6
25 ~ 80mm	0.12	0.2	0.25	0.4	0.5	0.8
80 ~ 250mm	0.25	0.3	0.4	0.6	0.8	1.2
250 ~ 800mm	0.5	0.6	0.8	1.0	1.5	2.0
> 800mm	1.0	1.0	1.5	1.7	3.0	4.0
ANGLE	0.5					6.0

METRIC	DRAWN	DATE	TITLE
	CHECK	DATE	Antenniques Corp. Ltd.
	DESIGN	DATE	FCF-003
	REV A0	DATE	$\phi 1.13 + I-PEX$

THIRD ANGLE PROJECTION	FINISH	REV	SIZE	PART NO.	DRAWING NO.
		A0	A4	FCF003-108-01	WR-R-ADD0500-A1

DO NOT SCALE DRAWING	SHEET	SCALE
	1 OF 1	1 : 1

REVISIONS		1
REV	BY	DESCRIPTION
REV	BY	DATE
1		



CLASS	A	B	C	D	E	F	G
< 8mm	0.05	0.1	0.1	0.2	0.2	0.4	0.4
8 ~ 25mm	0.08	0.15	0.15	0.3	0.3	0.6	0.6
25 ~ 80mm	0.12	0.2	0.25	0.4	0.5	0.8	1.0
80 ~ 250mm	0.25	0.3	0.4	0.6	0.8	1.2	1.5
250 ~ 800mm	0.5	0.6	0.8	1.0	1.5	2.0	3.0
> 800mm	1.0	1.0	1.5	1.7	3.0	4.0	6.0

1	QTY	PART NUMBER	DRAWN	DATE	P.C.	
ITEM NO.	READ		CHECK	DATE	DESCRIPTION	
PARTS LIST						
METRIC			THIRD ANGLE PROJECTION	FINISH	TITLE	
DO NOT SCALE DRAWING			1	2	HOLDER 底座固定架	
SCALE 1 / 1			1 OF 1	PART NO. 1MPG0018011D		
92.12.02			1		DRAWING NO. PG0018	

TECHNICAL DATA

Electrical Properties

Frequency Range : 2.4 2.5GHz & 5.15~5.85 GHz

Impedance : 50 Ohm nominal

VSWR : 2.0

Gain : 5.15`~~5.85 GHz GAIN 3dBi

: 2.4~~~2.5 GHZ GAIN 2dBi

Radiation : Omni

Polarization : Vertical

Electrical Wave : Dipole ARRAY

Connector : IPEX Plug

Mechanical Properties

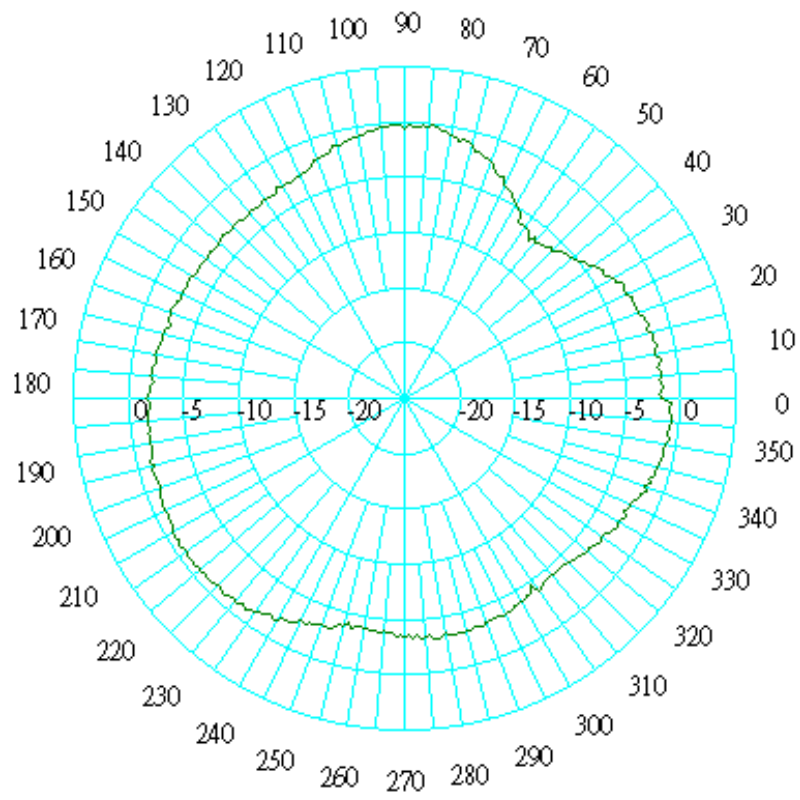
Antenna Cover : PU

Color : Black

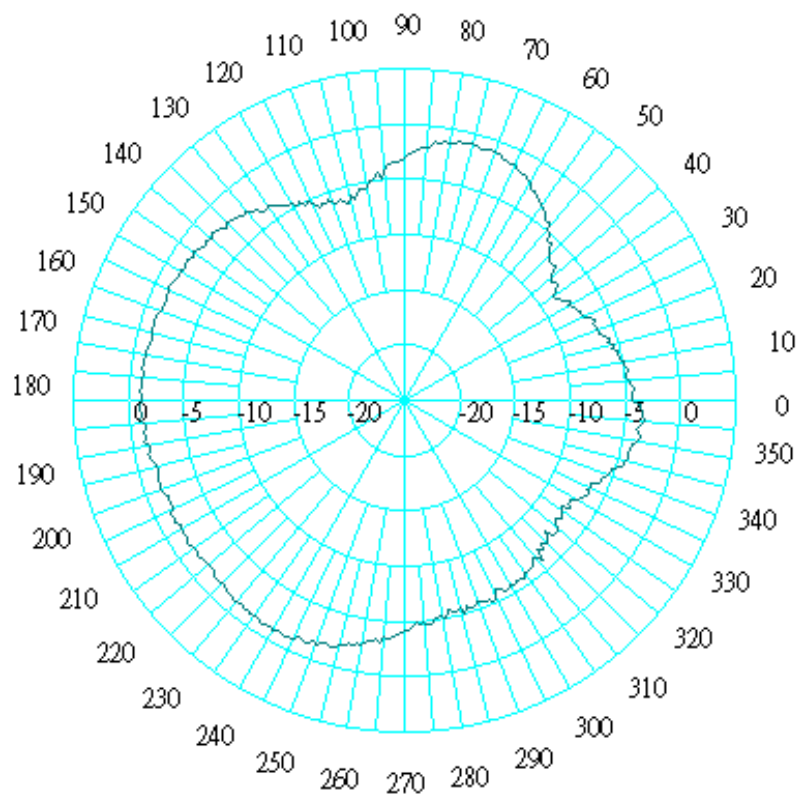
Operation Temperature : - 20 + 60

Storage Temperature : -30 + 75

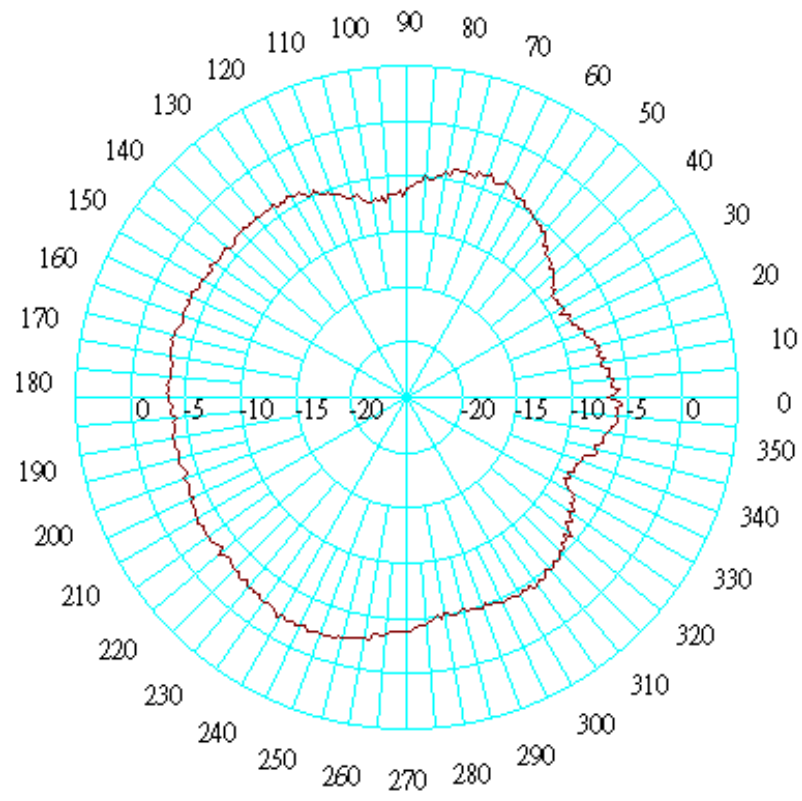
5.35G PEAK ----- -0.047 AVER ----- -2.53



5.725G PEAK ----- -0.856 AVER ----- -3.67

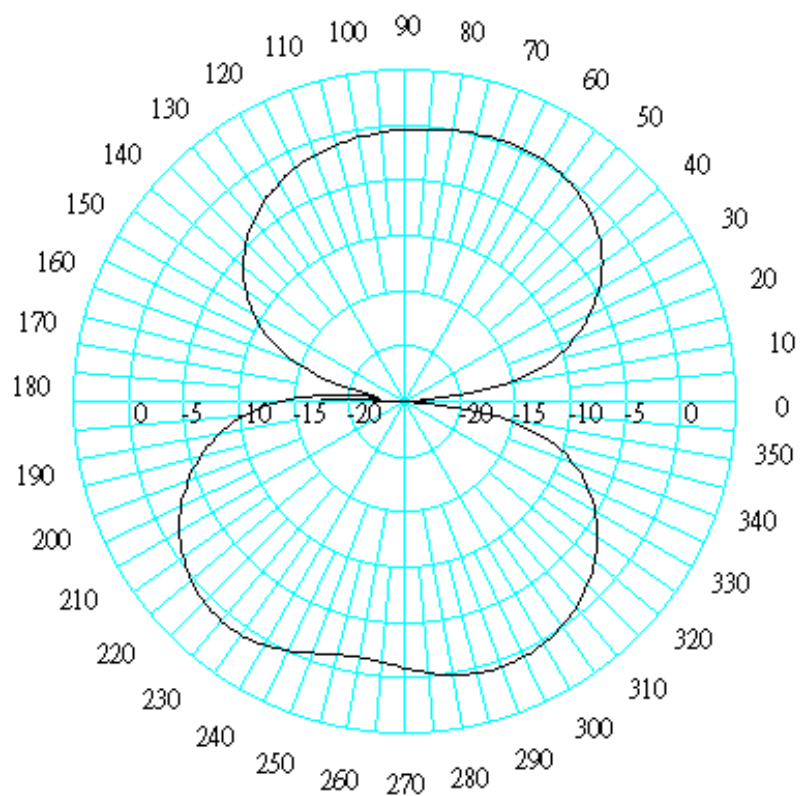


5.85G PEAK ----- -1.89 AVER ----- -4.86

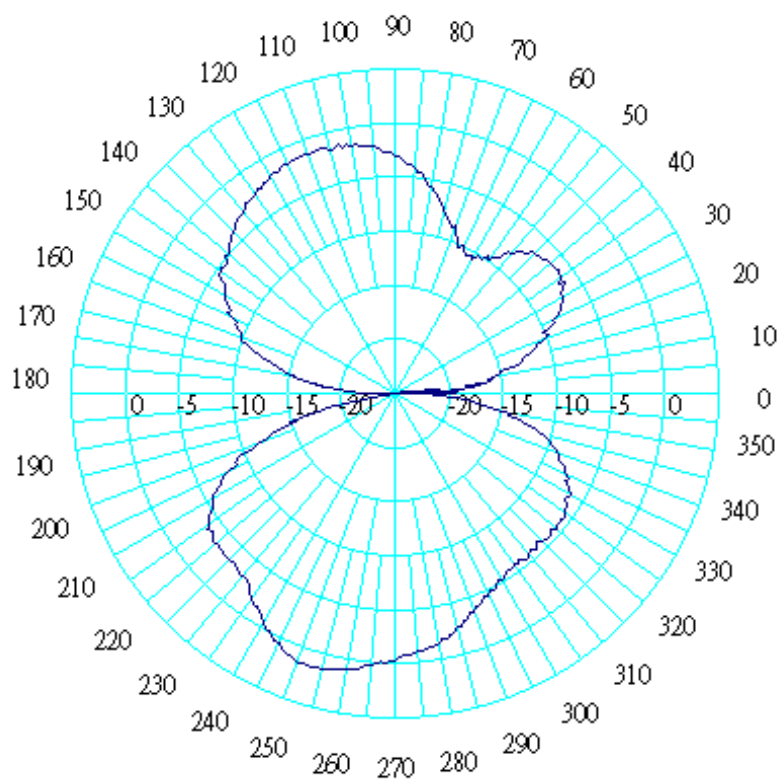


E 場

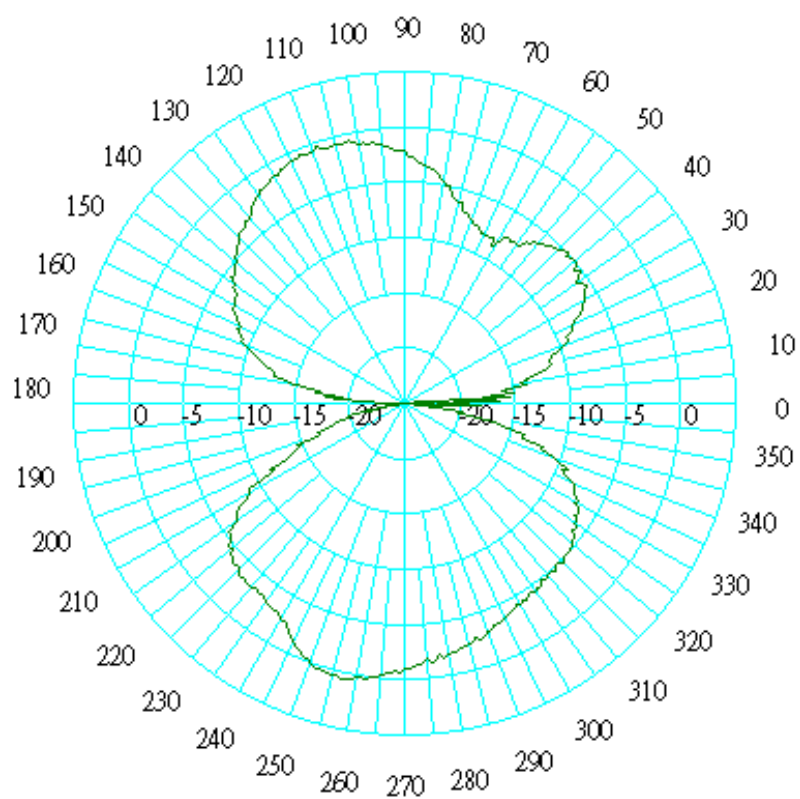
2.45G PEAK ----- 0.887 AVER ----- -4.958



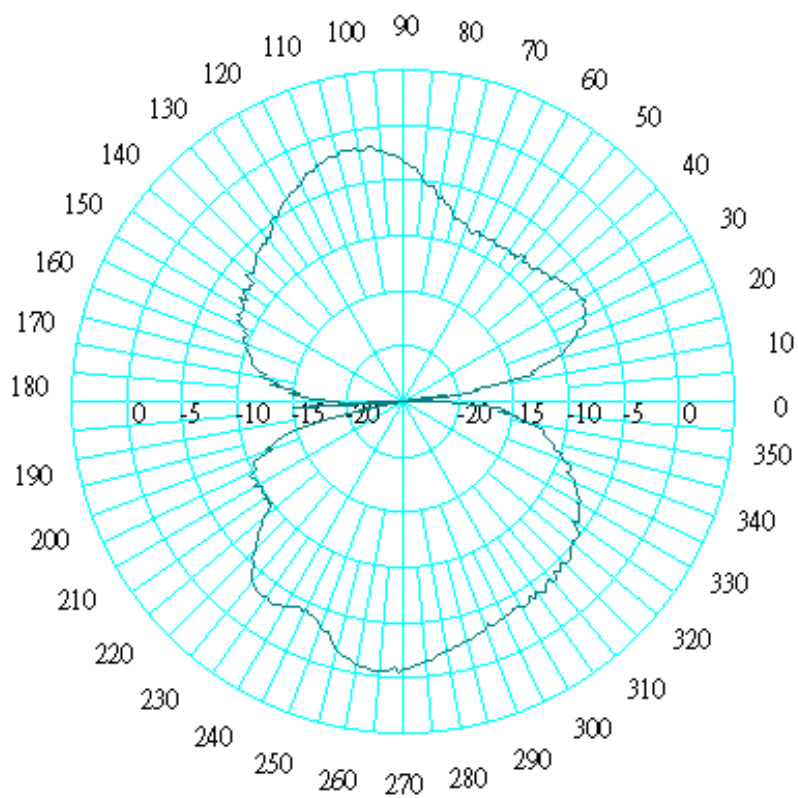
5.15G PEAK ----- 1.508 AVER ----- -7.25



5.35G PEAK ----- 0.524 AVER ----- -7.51

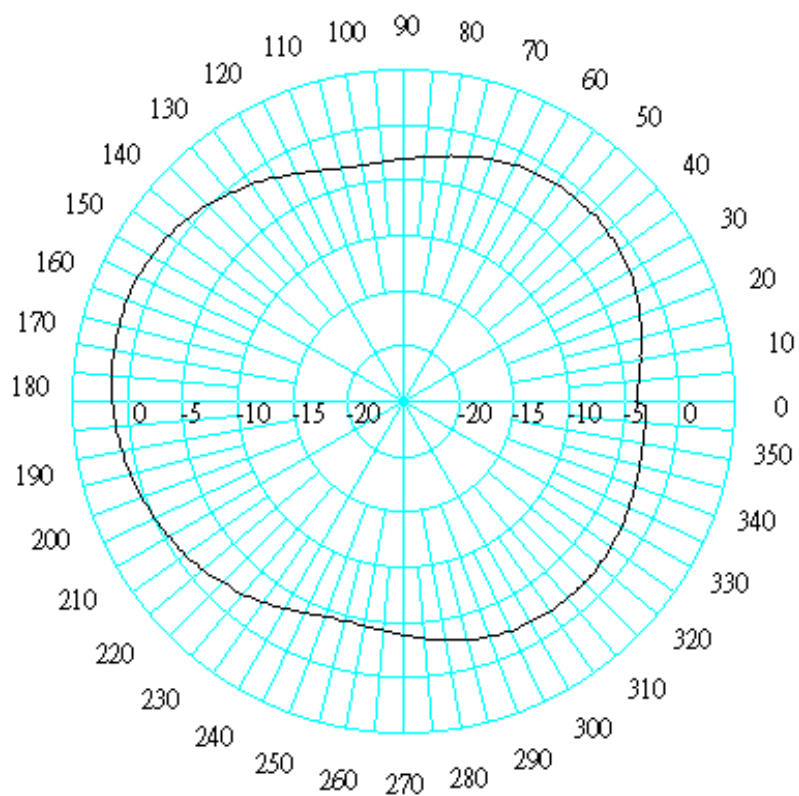


5.725G PEAK ----- -0.429 AVER ----- -7.788

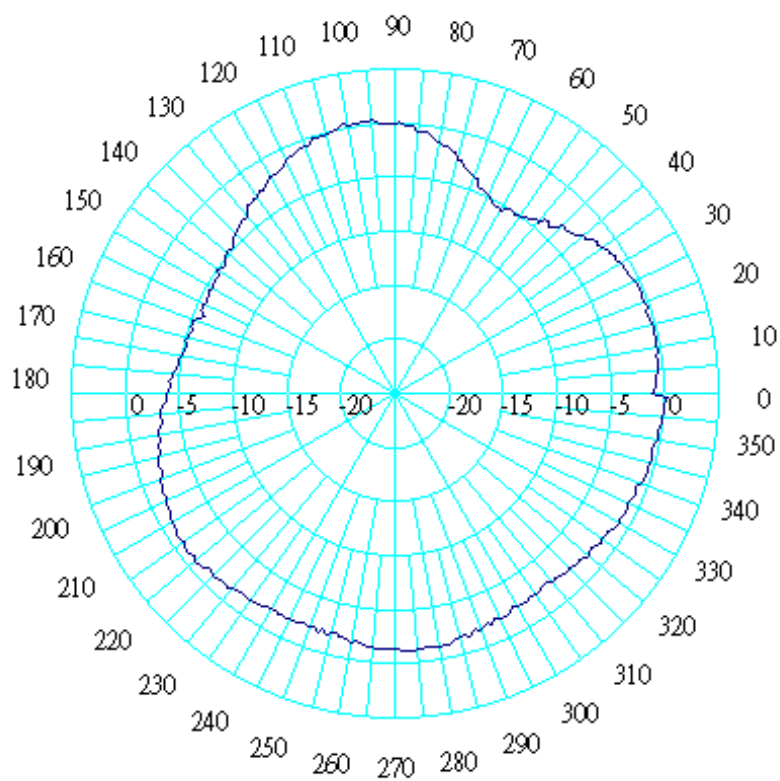


H 場

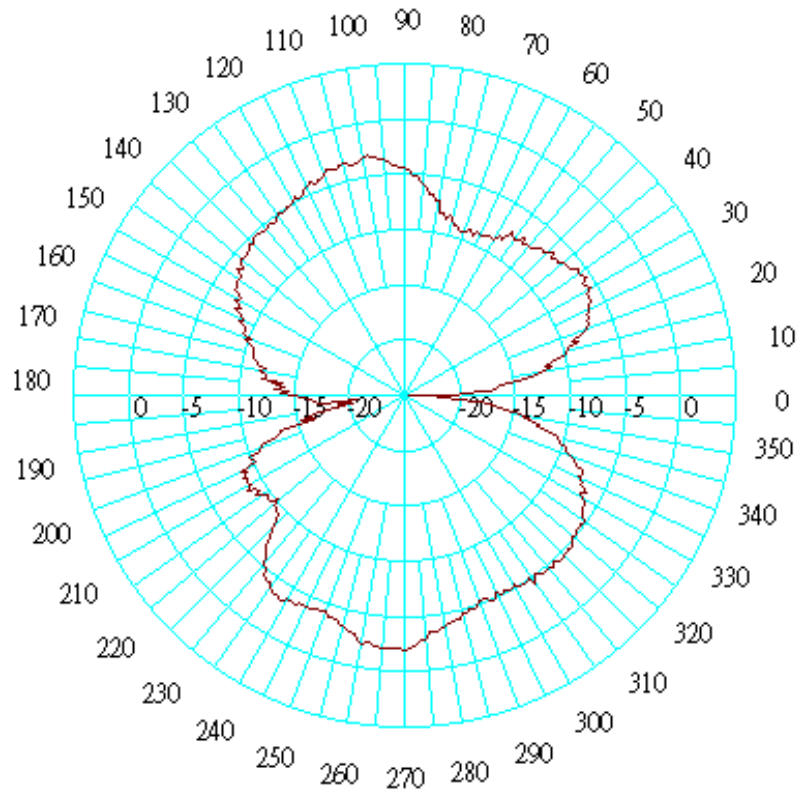
2.45G PEAK ----- 1.718 AVER ----- -1.66



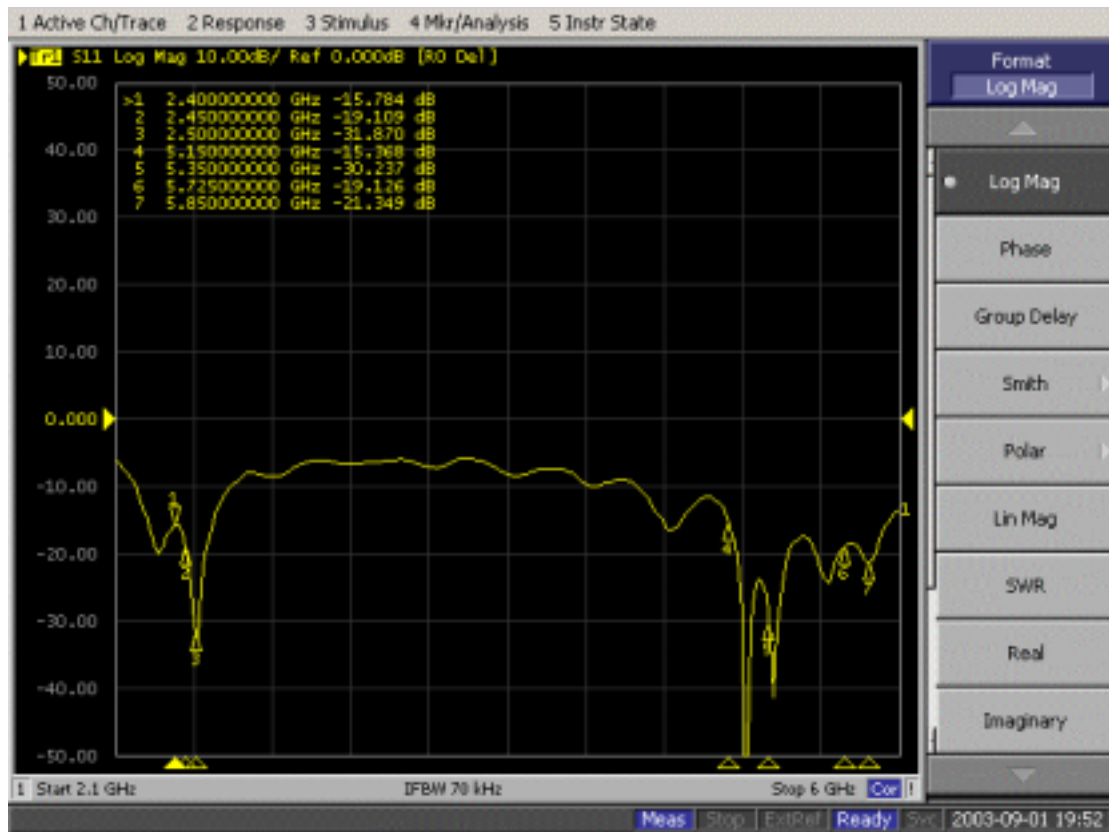
5.15G PEAK ----- 0.404 AVER ----- -2.11



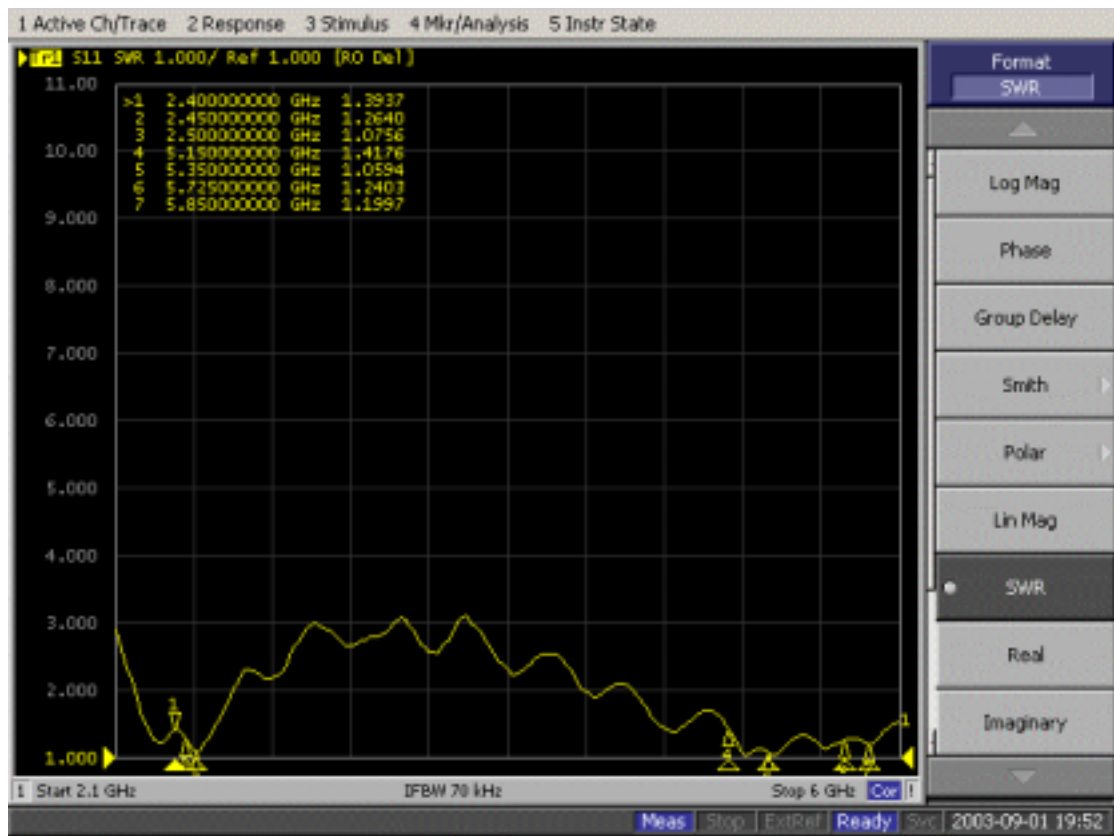
5.85G PEAK ----- -1.983 AVER ----- -7.66



return loss



V.S.W.F



Antenna Cover Polyurethane



Elastogran GmbH
Geschäftsbereich TPU-Elastomere

Elastogran GmbH · Postfach 1140 · 49440 Lemförde · Germany
WGJ COMPANY LTD.

P.O. BOX 36 - 431
RC TAOYUAN HSIEN

Date
No.

Inspection Certificate EN 10 204-3.1 B (DIN 50049)

Product : ES 95 A 50 000 S No.: 15002939
Batch : 207672
Basic-Batch 207673

Property	Test method	Unit	Value
Dichte	DIN 53479	g/cm ³	1,24
Shore-Haerte D	DIN 53505	-	50
Zugfestigkeit	DIN 53504	MPa	53
Reissdehnung	DIN 53504	%	550
Abrieb	DIN 53516	mm ³	22

Dichte = Density/Densité, Shore Härte = Shore hardness/Shore Dureté, Zugfestigkeit = Tensile strength/Resistance traction,
Reißdehnung = Elongation at break/Allongement rupture, Weiterreißwiderstand = Tear strength, Abrieb = Abrasion loss/Abrasion

The stated values are measured from a representative batch (basic-batch) of every product campaign.

Test platens are injection moulded from dry granulate with less than 0,05 % water content. Test plattens tempered 20 hrs. at 100 °C,
then cooled to 23 °C / 50 % RH before testing. Test specimen cut from test plattens.

We hereby certify, that the material described above complies with the terms of the order contract

Hübner Schoote

Works inspector

The above information is derived from our quality checks. It does not relieve the purchaser from examining the product upon delivery
and gives no assurance of suitability of the product for any particular purpose.



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Laine 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net 網 站 : www.antenniques.com.tw

Antenna Cover Polyurethane

Elastollan S規格系列

聚酯類Polyester，有良好機械特性，優異的耐磨性，高彈性，抗拉及撕裂強度用於運動鞋底、溜冰鞋及機械零件等，射出及押出成形

物 性	單位	DIN	S80A	S85A	S88A	S90A	S95A	S98A	S60D	S64D	S74D
用於射出 ▲ 押出 ■ 吹出 ●			▲ ■	▲ ■	▲	▲ ■	▲	▲	▲	▲	▲
硬度 蕭氏A Hardness	Shore A	53505	81	85	88	93	96				
硬度 蕭氏D Hardness	Shore D	53505			36	41	48	55	60	64	75
密度Density	g/cm ³	53479	1.22	1.23	1.23	1.24	1.24	1.25	1.25	1.26	1.26
抗拉強度Tensile strength *	N/mm ²	53504-S2	50	55	55	55	50	45	45	45	40
斷裂延伸率Elongation at break *	%	53504-S2	750	650	650	600	550	500	500	450	300
20% 抗拉模數 Tensile modulus *	N/mm ²	53504-S2	2	2	3	6	8	13	15	22	25
100% 抗拉模數Tensile modulus *	N/mm ²	53504-S2	4	5	6	9	11	16	18	23	30
300% 抗拉模數 Tensile modulus *	N/mm ²	53504-S2	8	8	9	13	20	23	34	38	40
彈性模數—張力測試 (測試樣品3mm) Modulus of elasticity	N/mm ²	53457-1						200	250	410	800
撕裂強度 Tear strength	N/mm	53515	60	70	75	95	120	150	170	200	240
摩擦損耗 Abrasion loss	mm ³	53516	40	35	30	30	30	25	25	25	25
室溫壓縮變形率 Compression set	%	53517	25	25	25	25	25	30	40	45	55
70°C壓縮變形率 Compression set	%	53517	35	35	35	45	45	45	50	55	60
凹口衝擊強度 +23°C	kJ/m ²	53453	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂
Notched impact strength (Charpy) -30°C			不破裂	不破裂	不破裂	不破裂	5	6	6	4	3

* S2試片在100mm/min的應變速度下測量

● 厚度2或6mm射出試片，在100°C回火20小時後測驗

● 上列測驗值僅供參考，常因客戶製品設計而變

● 換算單位：1MPa=10.2kg/cm²=145PSI=1N/mm²

1kJ/m²=1.02kg.cm/cm²

加工條件

— 射出成形溫度175~240°C

— 模溫20~70°C

— 押出成形溫度175~230°C



欣格科技股份有限公司

Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Lane 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net 網 站 : www.antenniques.com.tw

Antenna Base Polycarbonate

TEIJIN CHEMICALS LTD.

TEIJIN CHEMICALS LTD.
2-2, UCHISAIWAICHO 1-CHOME,
CHIYODA-KU, TOKYO, JAPAN

TELEPHONE: TOKYO (3508) 4780
FACSIMILE: TOKYO (3508) 4780

TO WHOM IT MAY CONCERN

CERTIFICATE OF QUALITY

COMMODITY : TEIJIN PANLITE (Polycarbonate Resin)

GRADE NO. : L-1250Z100
COL. NO. : NATURAL

ITEM	UNIT	TEST METHOD	TEIJIN CHEMICALS QUALITY STANDARD	TEST RESULT
IMPACT STRENGTH (IZOD NOTCHED 3.2mm thick)	kgfcm/cm	ASTM D256	≥ 80	PASS
FLEXURAL MODULUS	kgf/cm ²	ASTM D790	23,600 ± 1,500	PASS
TENSILE STRENGTH (AT BREAK)	kgf/cm ²	ASTM D638	820 ± 140	PASS

NOTE : ALL FIGURES ENTERED IN THIS TABLE ARE FOR THIS SPECIFIC LOT AND, THEREFORE,
NO GUARANTEE.

TEIJIN CHEMICALS LTD.

M. Kikuchi
for Y. KIKUCHI
MANAGER
SALES ADMINISTRATION DEPT.



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Lane 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net 網站 : www.antenniques.com.tw

Antenna Base Polycarbonate

QMFZ2

Component - Plastics

TEIJIN CHEMICALS LTD

						E5C075 (M)					
						(C - cont. from li010 card)					
L-1225LM(d),	All	0.40	94V-2	80	80	80	4	3	2	—	—
L-1225ZL(d)		0.75	94V-2	80	80	80	3	1	2	—	—
		1.5	94V-2	125	115	125	3	1	3	—	—
		2.1	94HB	125	115	125	3	1	3	—	—
		3.0	94HB	125	115	125	2	1	3	5	2
		6.0	94HB	125	115	125	1	1	4	—	—
L-1225LL(d)	All	0.4	94V-2	80	80	80	4	3	2	—	—
		0.75	94V-2	80	80	80	3	1	2	—	—
		1.5	94V-2	125	115	125	3	1	3	—	—
		3.0	94V-2	125	115	125	3	1	3	5	2
		3.3	94HB	125	115	125	2	1	3	—	—
		6.0	94HB	125	115	125	1	1	4	—	—
L-1250#(f2)(d),	All	0.40	94V-2	80	80	80	4	3	2	—	—
L-1250U#(d),		0.84	94V-2	80	80	80	4	—	4	—	—
L-1250V#(d),		1.5	94HB	125	115	125	4	0	3	—	—
L-1250Z#(d)		3.0	94HB	125	115	125	2	0	3	5	2
		6.0	94HB	125	115	125	1	0	4	—	—

Reports: February 10, 1989; February 10, 1989; September 24, 1990.

Replaces E50075C dated November 1, 1994.

699748006

N7047

Underwriters Laboratories Inc.®

(Cont. on C005 card)

011/0032918

QMFZ8

Component - Plastics Certified for Canada

TEIJIN CHEMICALS LTD

								E50075 (M)	
								(C - cont. from B card)	
(cc) 10 thru 30 incl.									
(i) A two digit number (10-15) denoting carbon filler content.									
(j) A two digit number (10-40) denoting the total content of carbon fiber and glass fiber.									
ww = A two digit number 10 thru 20 denoting content of carbon filler.									
# Any one or two letters may be suffixed to the grade.									

Marking: Company name and material designation, generic polymer identification, color number where appropriate, and batch or lot number or date of manufacture on container, wrapper or molded on finished part.

See General Information Preceding These Recognitions.

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



欣格科技股份有限公司

Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F,No.6,Laine 122, Sec 2,Ganyun St, Shulin Chulin City,Taipei Hsien,238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net 網 站 : www.antenniques.com.tw

Antenna Base Polycarbonate

Items	Unit	Test Method	Condition	Weather Resistant Grade (SAE approved)		
				L-1225ZL	L-1225Z	L-1250Z
Specific gravity	—	ASTM D792	—	1.20	1.20	1.20
Water absorption	%	ASTM D570	24 hr in 23°C water	0.20	0.20	0.20
Light transmission	%	ASTM D1003	3mm thick	88	88	88
Refractive Index	—	ASTM D542	—	1.585	1.585	1.585
Tensile strength	Yield	MPa (kgf/cm ²)	ASTM D638	65 (660)	63 (640)	62 (630)
	Break	MPa (kgf/cm ²)	ASTM D638	64 (655)	77 (790)	80 (820)
Tensile modulus	MPa (kgf/cm ²)	ASTM D638	—	2,190 (22,300)	2,130 (21,700)	2,120 (21,600)
Tensile elongation	Yield	%	ASTM D638	6	6	6
	Break	%	ASTM D638	130	140	140
Flexural strength	MPa (kgf/cm ²)	ASTM D790	—	96 (980)	93 (950)	92 (940)
Flexural modulus	MPa (kgf/cm ²)	ASTM D790	—	2,330 (23,800)	2,260 (23,000)	2,230 (22,700)
Compressive strength	MPa (kgf/cm ²)	ASTM D695	—	77 (790)	76 (780)	76 (770)
Impact strength	J/m (kgf·cm/cm)	ASTM D256	Izod notched 3.2mm thick	100 (10)	830 (85)	880 (90)
	J/m (kgf·cm/cm)	ASTM D256	Izod notched 6.4mm thick	50 (5)	130 (13)	140 (14)
Rockwell hardness	—	ASTM D785	M scale	77	77	77
Mold shrinkage	%	ASTM D955	Flow direction	0.5~0.7	0.5~0.7	0.5~0.7
			Traverse direction	0.5~0.7	0.5~0.7	0.5~0.7
Heat distortion temperature	°C	ASTM D648	Load 0.451 MPa (4.6 kgf/cm ²)	138	141	142
			Load 1.813 MPa (18.6 kgf/cm ²)	128	131	132
Coefficient of linear expansion	× 10 ⁻⁵ cm/cm/°C	ASTM D696	Flow direction	7	7	7
			Traverse direction	7	7	7
Dielectric breakdown strength	kV/mm	ASTM D149	Quick voltage rise method 1.6mm thick	30	30	30
Volume resistivity	× 10 ¹⁶ Ω·cm	ASTM D257	—	3	3	3
Dielectric constant	—	ASTM D150	60 Hz	2.95	2.95	2.95
			10 ⁶ Hz	2.9	2.9	2.9
Dielectric loss tangent	—	ASTM D150	60 Hz	0.0004	0.0004	0.0004
			10 ⁶ Hz	0.009	0.009	0.009
Arc resistance	sec	ASTM D495	—	100	100	100
Anti-tracking (CTI)	V	IEC 112	—	300	300	300
Flame resistance	—	UL 94	1.47mm thick	94V-2	94V-2	94V-2
			3.05mm thick	94V-2	94V-2	94V-2
Temperature Index	°C	UL 746B	Electric 1.47mm thick	125	125	125
			Impact 1.47mm thick	115	115	115
			Non-Impact 1.47mm thick	125	125	125

All figures entered in this table are the typical figures and, therefore, no guarantee is made.



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Lane 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.

E-mail : antenniques@msa.hinet.net 網站 : www.antenniques.com.tw

Antenna Base

Grades of **Panlite**

Grades	Viscosity	Characteristics	Main molding methods	Principal applications
K-1300	High	Standard	Extruding/blow molding/ injection molding	<ul style="list-style-type: none"> • Sheet, film, pipe and other extruded products. • Bottles and other direct blow molded products. • Large tanks and other rotational molded products.
K-1300Y	"	Mold release/ice color	Extruding/blow molding/ injection molding	
K-1300Z	"	Weather resistance/ ice color	Extruding/blow molding/ injection molding	
K-1300W	"	Powder	Extruding/rotational molding	
K-1285	"	Standard	Extruding/blow molding/ injection molding	
L-1250	Medium	Standard	Injection molding	<ul style="list-style-type: none"> • Machine parts, electric and electronics appliance parts, medical apparatuses, protective equipment parts, industrial parts in general. • Lighting fixture parts requiring transparency and heat resistance. • Table wares and mechanical parts requiring cold and heat resistance. • Large tanks and other rotational molded products. • Thin-wall products requiring high flowability, electric & electronics appliance parts, machine parts, protective equipment parts, medical apparatuses, lighting fixtures, lamp shade, table wares and containers. • Suitable for injection blow molding uses.
L-1250R	"	Mold release	Injection molding	
L-1250Y	"	Mold release/ice color	Injection molding	
L-1250Z	"	Weather resistance/ ice color	Injection molding	
L-1250J	"	Boiling water resistance	Injection molding	
L-1250T	"	Boiling water resistance/mold release/ice color	Injection molding	
L-1250W	"	Powder	Injection molding/ rotational molding	
L-1225	Low	Standard	Injection molding	
L-1225R	"	Mold release	Injection molding/ injection blow molding	
L-1225Y	"	Mold release/ice color	Injection molding/ injection blow molding	
L-1225Z	"	Weather resistance/ ice color	Injection molding	
L-1225J	"	Boiling water resistance	Injection molding	
L-1225T	"	Boiling water resistance/mold release/ice color	Injection molding/injection blow molding	
L-1225W	"	Powder	Injection molding/ rotational molding	
L-1225L	Ultra low	Mold release/ice color	Injection molding	• Ultra-thin wall parts of electric & electronics appliances.
L-1225ZL 100	"	Mold release/ weather resistance/ ice color	Injection molding	• Ultra-thin lamp lenses.
AD-5503	"	Optical properties/ low contamination	Injection molding	• Compact disks, CD-ROM, optical lenses.



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Lane 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.

E-mail : antenniques@msa.hinet.net 網站 : www.antenniques.com.tw

Heat Shrink Tube Sumitube F32

1. SCOPE

THIS SPECIFICATION COVERS NEW SUMITUBE F32 .

2. FEATURE

NEW SUMITUBE F32 IS AN IRRADIATED CROSSLINKED , THERMALLY-STABILIZED , FLAME-RETARDANT FLEXIBLE POLYOLEFIN HEAT SHRINKABLE TUBING .
UNLIKE OTHER TYPICAL FLAME-RETARDANT TUBING , NEW SUMITUBE F32 IS FREE OF POLYBROMINATED BIPHENYL OXIDES (PBBOs) , POLYBROMINATED BIPHENYL ETHERS (PBBEs) , POLYBROMINATED BIPHENYLS (PBBs) AS FLAME-RETARDED CHEMICALS .

3. RECOGNITION

NEW SUMITUBE F32 IS UL-RECOGNIZED AND CSA-CERTIFIED AT 125 DEG. C , 600 V WITH UL VW-1 AND CSA OPT FLAME-RETARDANCY RATING .

	UL 224	CSA
VOLTAGE RATING	600V	600V
TEMPERATURE RATING	125 DEG. C	125 DEG. C
CATALO NO.	SUMITUBE F32	SUMITUBE F32
FILE NO.	E-48762	LR84766

4. COLOR

STANDARDS COLORS ; BLACK , WHITE , BROWN , RED , ORANGE , BLUE , GREEN , YELLOW , VIOLET , GRAY .

5. MARKING

FOLLOWING LETTERS SHOULD BE PRINTED ON THE SURFACE OF THE PRODUCTS
.RU VW-1 SUMI-PAC CSA HS X PO TUBING SUMITUBE F32 125 C OPT -F- (Size) 82

6. STANDARD SIZES

STANDARD SIZES SHALL BE SPECIFIED IN TABLE

7. PROPERTIES.

PROPERTIES SHALL BE AS SPECIFIED WITH TABLE

8. METOD OF MEASURING SIZES AND TESTING PROPERTIES

1.) INSIDE DIAMETER

INSIDE DIAMETER SHALL BE MEASURED BY A METAL GAGE ROD OR A METAL TAPE GAGE WHICH HAS INTERVAL OR GRADUATION .



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F,No.6,Laine 122, Sec 2,Ganyun St, Shulin Chulin City,Taipei Hsien,238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net 網 站 : www.antenniques.com.tw

Heat Shrink Tube Sumitube F32

IN CASE OF USING A GAGE ROD : READ THE VALUE OF THE MAXIMUM GAGE ROD WHICH SHALL PASS FREELY INTO THE TUBING WITHOUT EXPANDING THE TUBING .

IN CASE OF USING A TAPER GAGE : READ THE VALUE ON THE GAGE WHEN THE TUBING ISN'T EXPANDED BY INSERTION AND THERE IS NO VISIBLE SPACE BETWEEN THE TUBING AND THE TAPER GAGE .

2.) WALL THICKNESS

WALL THICKNESS SHALL BE MEASURED BY A PIN-DIAL GAGE OR A MICROMETER AT SEVERAL POINTS .

3.) SHRINKABLE CONDITION AND LONGITUDINAL CHANGE

SHRINKABLE CONDITION : UNRESTRICTED SHRINKAGE SHALL BE PLACED AT 150 DEG. C IN A CIRCULATING AIR OVEN FOR 5 MINUTES .

LONGITUDINAL SHRINKAGE : THE TUBING SHALL BE CUT IN ABOUT 100 MM AND MEASURED THE LENGTH . AFTER UNRESTRICTED SHRINKAGE (AFTER RECOVERED) , THE LENGTH IS TO BE RE-MEASURED AND THE LONGITUDINAL SHRINKAGE SHALL BE CALCULATED FROM THE FOLLOWING FORMULA .

$$\text{LONGITUDINAL CHANGE} = \frac{\text{LENGTH AS SUPPLIED} - \text{LENGTH AFTER RECOVERED}}{\text{LENGTH AS SUPPLIED}} * 100 \%$$

4.) PROPERTIES SHALL BE TESTED IN ACCORDANCE WITH UL224 & CSA 22.2 NO. 198 TEST METHOD



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Lane 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.


E-mail : antenniques@msa.hinet.net 網站 : www.antenniques.com.tw

Heat Shrink Tube Sumitube F32



Canadian Standards Association
Association canadienne de normalisation

CERTIFICATION RECORD

The company named below has been authorized by Canadian Standards Association to represent the products listed in this record as "CSA Certified" and to affix the CSA Mark  to these products according to the terms and conditions of the CSA Service Agreement.

NUMBER 084766X0000 March 28, 1994 (Replaces: July 10, 1990)

CLASS 9032 01 (Re-examination Service)

SUMI-PAC ELECTRO-CHEMICAL CORP.
4th Fl., Pacific Commercial Bldg.
265, Chung Hsiao E. Rd., Sec 4
Taipei, Taiwan

FACTORY
No. 15, Industrial 5th Rd.
Hsin-Chu, Enlarged Industrial Park
6th Lin, Feng-Shan Chun
Hukao Hsiang, Hsin-Chu Hsin
Taiwan

INSULATING DEVICES AND MATERIALS - Insulating Tubing and Sleeving

- Max temperature rating: 125C
 - Max voltage rating: 600V
 - "SUMITUBE F2" and "SUMITUBE F32", flexible heat-shrinkable irradiated cross-linked polyolefin tubing (Class I), in trade sizes 3/64 in to 1 in and 1.0mm to 26mm, OFT.
 - Max temperature rating: 125C.
 - Max voltage rating: 150V.
 - "SUMITUBE F4", flexible heat-shrinkable irradiated cross-linked polyolefin tubing (Class I), in trade sizes 3/64 in to 1 in and 1.0mm to 26mm, OFT.
- Note: Above tubing approved in all colours except clear and transparent.

* * * * *



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Lane 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.

E-mail : antenniques@msa.hinet.net 網站 : www.antenniques.com.tw

Heat Shrink Tube Sumitube F32

ABS Characteristics

POLYLAC[®]

特 性 試 驗 法 單 位 Typical Properties ASTM Test Units			一般級 (General Purpose)					
			PA-707	PA-757	PA-717C	PA-727	PA-747	PA-709
引張強度 Tensile Strength	D-638	kg/cm ² (lb/in ²)	500 (7,090)	480 (6,800)	450 (6,380)	485 (6,870)	385 (5,470)	400 (5,670)
延伸率 Tensile Elongation	D-638	%	15	20	25	20	30	40
彎曲彈性率 Flexural Modulus	D-790	10 ⁴ kg/cm ² (10 ⁴ lb/in ²)	2.9 (4.1)	2.7 (3.8)	2.5 (3.5)	2.7 (3.8)	2.2 (3.1)	2.3 (3.2)
彎曲強度 Flexural Strength	D-790	kg/cm ² (lb/in ²)	860 (12,200)	790 (11,200)	720 (10,200)	780 (11,000)	620 (8,800)	640 (9,070)
洛氏硬度 Rockwell-Hardness	D-785		R-116	R-116	R-115	R-110	R-108	R-102
IZOD 衝擊強度 IZOD Impact Strength (Notched)	D-256	1/8" kg-cm/cm (ft-lb/in)	14 (2.6)	20 (3.7)	28 (5.2)	26 (4.8)	41 (7.5)	45 (8.4)
		1/4" kg-cm/cm (ft-lb/in)	14 (2.6)	18 (3.3)	25 (4.6)	23 (4.2)	36 (6.6)	40 (7.4)
軟化點 Vicat Softening Temp.	D-1525	°C (°F)	105 (221)	105 (221)	104 (219)	105 (221)	103 (217)	105 (221)
熱變形溫度 Heat Distortion Temp.	D-648 (annealed) (unannealed)	°C (°F)	99(210) 88(190)	99(210) 88(190)	98(208) 87(189)	99(210) 87(190)	99(207) 86(187)	99(208) 88(190)
比重 Specific Gravity	D-792	23/23 °C	1.06	1.05	1.04	1.04	1.03	1.03
流動係數 Melt Flow Index	D-1238	200 °C × 5kg g/10min(Cond.G)	1.9	1.8	1.4	1.8	1.2	0.5
	ISO-1133*	220 °C × 10kg g/10min	20	22	14	19	13	5
燃點標準 Flammability	File No. E56070 UL & C-UL		1/16"HB	1/16"HB	1/16"HB	1/16"HB	1/16"HB	1/16"HB
產品特性			高光澤性 高剛性	高剛性 高光澤性	一般射出 成型用	電鍍級	超高強度 射出成型用	超高衝擊強度 押管用
Product Description			High Gloss High Rigid	High Gloss Medium Impact	Medium Impact	Electro- Plating	High Impact	Super Impact

以上數據係依照 ASTM 標準方法於正常實驗室所測得，僅供參考用。*ISO 試驗方法



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F, No. 6, Lane 122, Sec 2, Ganyun St, Shulin Chulin City, Taipei Hsien, 238 Taiwan R.O.C.

E-mail : antenniques@msa.hinet.net 網 站 : www.antenniques.com.tw

Heat Shrink Tube Sumitube F32

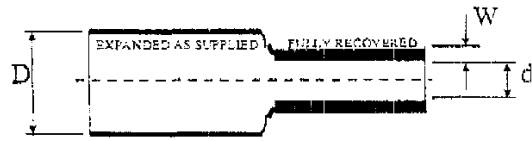


TABLE 1. STANDARD SIZE

TRADE SIZE (METRIC)	AS SUPPLIED (MM)		AFTER RECOVERED (MM)		STANDARDS LENGTH	
	INSIDE DIAMETER D	NOM. WALL THICKNESS	INSIDE DIAMETER d (MAX)	WALL THICKNESS W (MIN)	CUT(M)	SPOOL(M)
1*0.2	1.30±0.30	0.2	0.50	0.33	1	200
1.5*0.2	2.00±0.30	0.2	0.75	0.36	1	200
2*0.2	2.50±0.30	0.2	1.00	0.44	1	200
2.5*0.25	3.00±0.30	0.25	1.25	0.44	1	200
3*0.25	3.50±0.30	0.25	1.50	0.44	1	200
3.5*0.25	4.00±0.30	0.25	1.75	0.44	1	200
4*0.25	4.50±0.30	0.25	2.00	0.44	1	200
5*0.25	5.40±0.30	0.25	2.50	0.56	1	100
6*0.25	6.40±0.40	0.25	3.00	0.56	1	100
7*0.25	7.40±0.40	0.25	3.50	0.56	1	50
8*0.25	8.40±0.40	0.25	4.00	0.56	1	50
9*0.25	9.40±0.40	0.25	4.50	0.56	1	50
10*0.25	10.4±0.40	0.25	5.00	0.56	1	50
11*0.25	11.4±0.40	0.25	5.50	0.56	1	50
12*0.25	12.4±0.40	0.25	6.00	0.56	1	50
13*0.30	13.4±0.40	0.30	6.50	0.69	1	50
14*0.30	14.5±0.40	0.30	7.00	0.69	1	50
15*0.30	15.5±0.40	0.30	7.50	0.69	1	50
16*0.30	16.8±0.50	0.30	8.00	0.69	1	50
18*0.35	18.7±0.50	0.35	9.00	0.77	1	50
20*0.35	21.2±0.60	0.35	10.00	0.77	1	50
22*0.40	23.2±0.60	0.40	11.00	0.77	1	50
25*0.40	26.1±0.80	0.40	12.50	0.87	1	50
28*0.50	29.0±1.00	0.50	14.00	0.87	1	50
30*0.50	32.0±1.00	0.50	15.00	0.87	1	50

*LONGITUDINAL CHANGE : (5±5)%



欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓 TEL : 02-2668-5793 FAX : 02-2668-5795

5F,No.6,Laine 122, Sec 2,Ganyun St, Shulin Chulin City,Taipei Hsien,238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net 網站 : www.antenniques.com.tw

QUALIFICATION TEST REPORT**Document No. TR-1037****MHF series micro coaxial connector****Product Specification No. PRS-1180**

					Prepared by	Reviewed by	Approved by
2	T2020	K.O	MAY/17/02	K.K	K.Ohbayashi Nov/16/01	E.Kawabe Nov/20/01	K.Katabuchi Nov/21/01
1	T1040	K.O	Dec/25/01	K.K			
0	T1036	K.O	Nov/16/01				
REV.	ECN	BY	DATE	APP.			
REVISION RECORD							

DOCUMENT CLASSIFICATION	TITLE	DOCUMENT No.
Qualification Test Report	MHF series micro coaxial connector	TR-1037

1.Purpose

Testing was performed on the MHF series micro coaxial connector to determine meets the requirement of I-PEX specification,PRS-1180

2.Conclusion

All the specimen met the requirements of PRS-1180.

3.Sample

- (1) Connector Plug : part No.20278-111R-13
Receptacle : part No.20279-001E-01
- (2) Cable AWG#32 coaxial cable (jacket diameter 1.13mm)

3.Method

Refer to product specification,PRS-1180

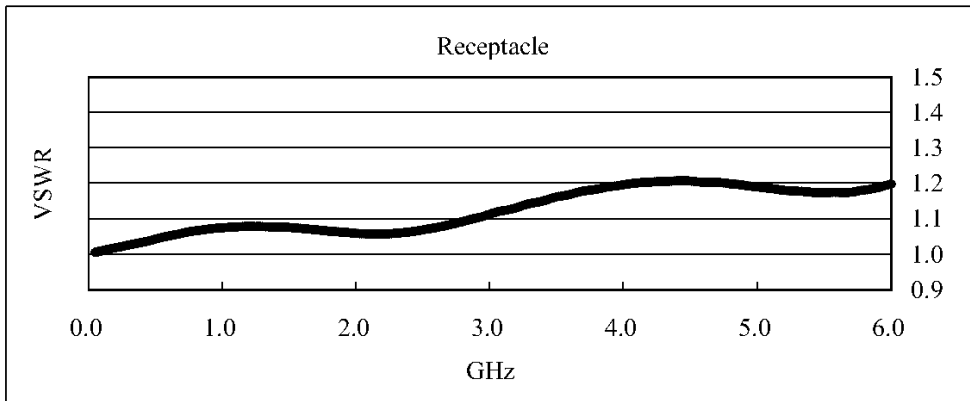
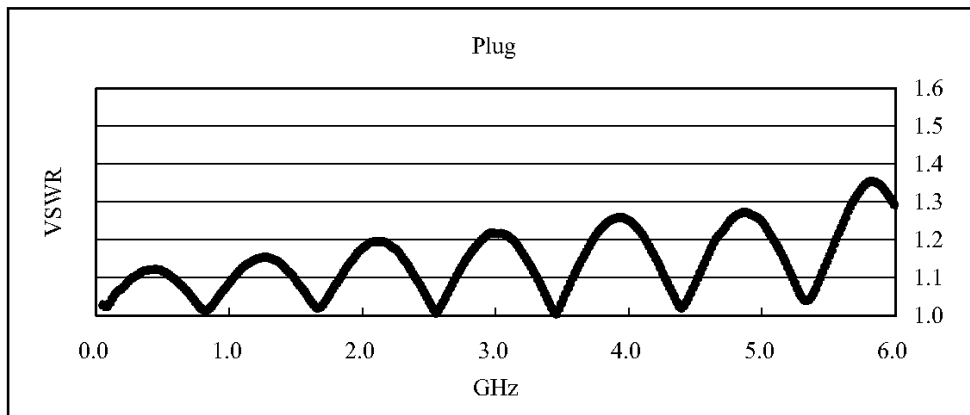
4. Results

(1) Dielectric withstanding voltage

Results	No abnormality
Sample quantity	10pcs.
Judge	OK

(2) VSWR

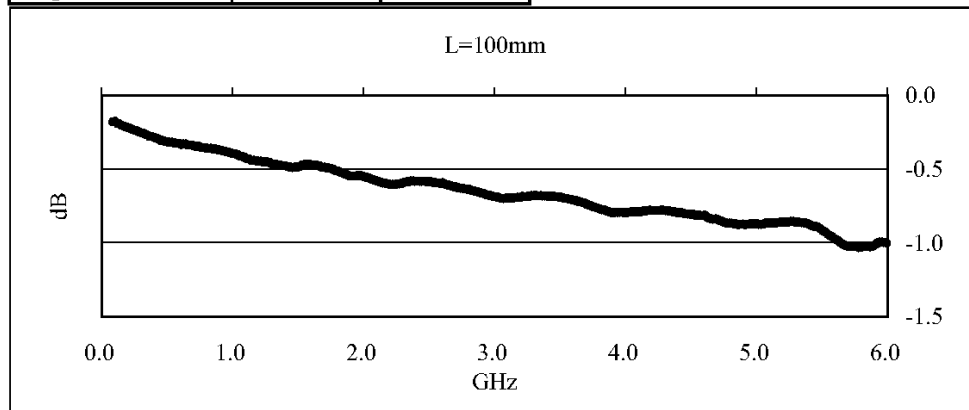
	Plug		Receptacle	
	0.1~3GHz	3~6GHz	0.1~3GHz	3~6GHz
AVE.	1.240	1.370	1.120	1.216
MAX.	1.25	1.39	1.13	1.24
MIN.	1.23	1.35	1.11	1.20
Specification	1.3 MAX.	1.5 MAX.	1.3 MAX.	1.4 MAX.
Sample quantity	5pcs.	5pcs.	5pcs.	5pcs.
Judge	OK	OK	OK	OK



DOCUMENT CLASSIFICATION Qualification Test Report	TITLE MHF series micro coaxial connector	DOCUMENT No. TR-1037
--	---	-------------------------

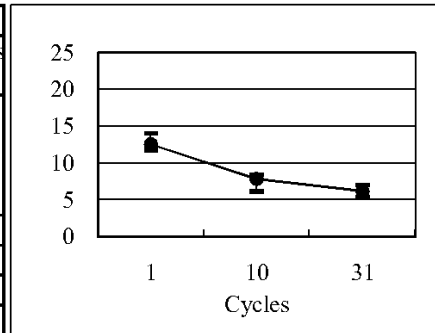
(3) Insertion loss

	Plug cable length 100mm	
	0.1~3GHz	3~6GHz
AVE.	-0.682	-0.990
MAX.	-0.66	-0.96
MIN.	-0.71	-1.02
Specification	-1.0 MIN.	-1.6 MIN.
Sample quantity	5pcs.	5pcs.
Judge	OK	OK

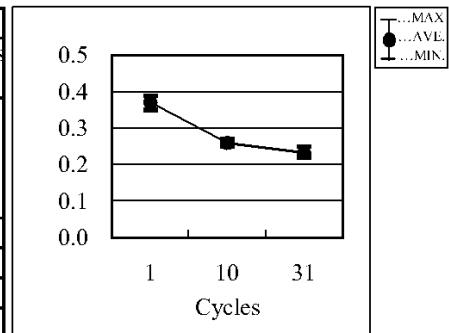


(3) Unmating force(抜去力)

Total unmating force (総合抜去力)	Initial (初期)	After 30cycles (30回後)
AVE.	12.6	6.2
MAX.	14	7
MIN.	12	5
S	0.8	0.6
Specification(規格)	5 MIN.	3 MIN.
Units(単位)	N	N
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



Unmating force of inner contact (中心導体抜去力)	Initial (初期)	After 30cycles (30回後)
AVE.	0.372	0.233
MAX.	0.39	0.25
MIN.	0.35	0.22
S	0.015	0.012
Specification(規格)	0.15 MIN.	0.1 MIN.
Units(単位)	N	N
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



DOCUMENT CLASSIFICATION	TITLE	No.
Qualification Test Report テストレポート	MHF series micro coaxial connector	TR-1037

(4) Durability(耐久性)

Appearance(外観) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)			20 15 10 5 0	Initial	After	
	Initial (初期)	After testing (試験後)				
AVE.	1.41	1.70		Initial	After	
MAX.	2.1	3.1				
MIN.	1.0	1.1				
S	0.37	0.58				
Specification(規格)	20 MAX.	25 MAX.				
Units(単位)	mille-ohm	mille-ohm				
Sample quantity(試料数)	10pcs.	10pcs.				
Judge(判定)	OK	OK				
Contact resistance of ground contact (外部導体接触抵抗)			20 15 10 5 0	Initial	After	
	Initial (初期)	After testing (試験後)				
AVE.	1.49	2.51		Initial	After	
MAX.	1.8	3.0				
MIN.	0.9	1.3				
S	0.30	0.59				
Specification(規格)	10 MAX.	15 MAX.				
Units(単位)	mille-ohm	mille-ohm				
Sample quantity(試料数)	10pcs.	10pcs.				
Judge(判定)	OK	OK				

(5) Cable retention force(ケーブル保持力)

Appearance(外観) : No abnormality(異常無し)

Electrical discontinuity(電気瞬断) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)			20 15 10 5 0	Initial	After	
	Initial (初期)	After testing (試験後)				
AVE.	1.23	1.35		Initial	After	
MAX.	1.8	2.0				
MIN.	0.9	1.0				
S	0.35	0.37				
Specification(規格)	20 MAX.	25 MAX.				
Units(単位)	mille-ohm	mille-ohm				
Sample quantity(試料数)	10pcs.	10pcs.				
Judge(判定)	OK	OK				
Contact resistance of ground contact (外部導体接触抵抗)			20 15 10 5 0	Initial	After	
	Initial (初期)	After testing (試験後)				
AVE.	1.41	1.69		Initial	After	
MAX.	1.8	2.5				
MIN.	0.8	0.9				
S	0.35	0.46				
Specification(規格)	10 MAX.	15 MAX.				
Units(単位)	mille-ohm	mille-ohm				
Sample quantity(試料数)	10pcs.	10pcs.				
Judge(判定)	OK	OK				

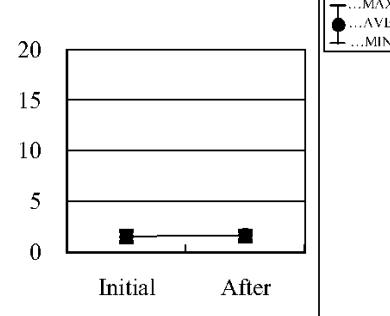
DOCUMENT CLASSIFICATION Qualification Test Report テストレポート	TITLE MHF series micro coaxial connector	No. TR-1037
---	---	----------------

(6) Vibration(振動)

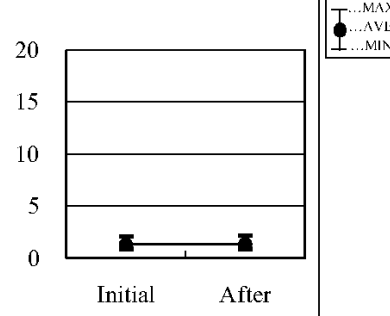
Appearance(外観) : No abnormality(異常無し)

Electrical discontinuity(電気瞬断) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.55	1.72
MAX.	2.1	2.1
MIN.	1.0	1.1
S	0.44	0.46
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



Contact resistance of ground contact (外部導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.35	1.39
MAX.	2.1	2.2
MIN.	0.9	0.9
S	0.41	0.46
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

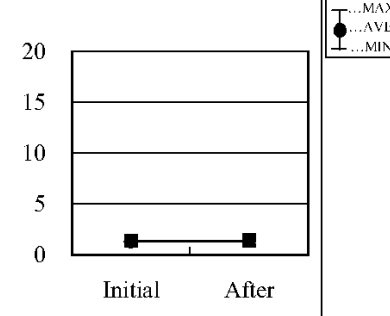


(7) Shock(衝撃)

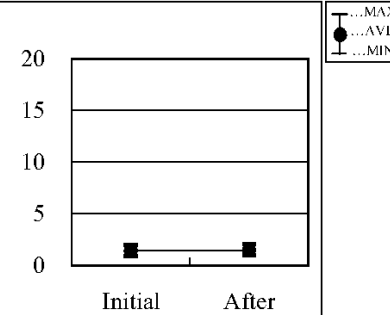
Appearance(外観) : No abnormality(異常無し)

Electrical discontinuity(電気瞬断) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.32	1.45
MAX.	1.8	1.9
MIN.	0.9	0.9
S	0.30	0.35
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



Contact resistance of ground contact (外部導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.45	1.53
MAX.	2.0	2.1
MIN.	0.9	1.0
S	0.34	0.37
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

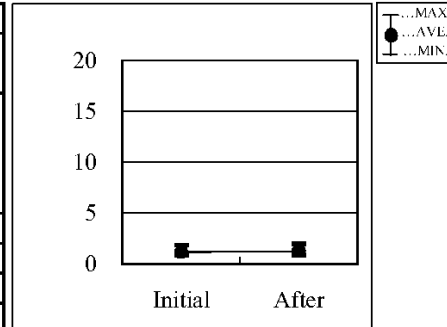


DOCUMENT CLASSIFICATION Qualification Test Report テストレポート	TITLE MHF series micro coaxial connector	No. TR-1037
---	---	----------------

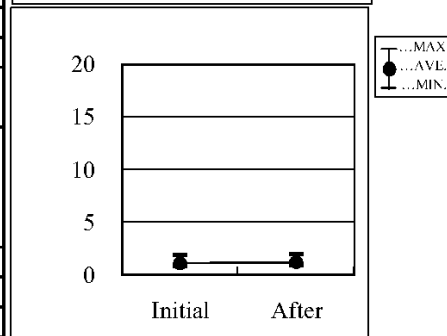
(8) Thermal shock(熱衝撃)

Appearance(外観) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.23	1.34
MAX.	1.9	2.0
MIN.	0.9	0.9
S	0.25	0.32
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



Contact resistance of ground contact (外部導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.13	1.24
MAX.	1.9	2.0
MIN.	0.9	0.9
S	0.37	0.38
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



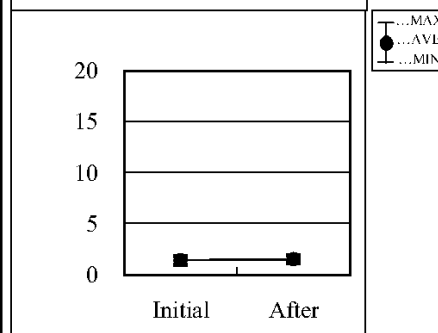
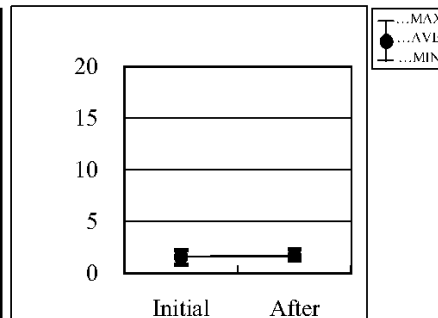
Insulation resistance (絶縁抵抗)		
	Initial (初期)	After testing (試験後)
Results(結果) MIN. value	10,000	10,000
Specification(規格)	500 MIN.	100 MIN.
Units(単位)	mega-ohm	mega-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

DOCUMENT CLASSIFICATION Qualification Test Report テストレポート	TITLE MHF series micro coaxial connector	No. TR-1037
---	---	----------------

(9) Humidity(湿度)

Appearance(外観) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.58	1.72
MAX.	2.2	2.3
MIN.	0.8	1.2
S	0.45	0.51
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK
Contact resistance of ground contact (外部導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.44	1.55
MAX.	1.8	1.9
MIN.	1.0	1.2
S	0.25	0.25
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



Insulation resistance (絶縁抵抗)		
	Initial (初期)	After testing (試験後)
Results(結果) MIN. value	10,000	10,000
Specification(規格)	500 MIN.	100 MIN.
Units(単位)	mega-ohm	mega-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

(10) Salt water spray
(塩水噴霧)

	Initial(初期)	After testing(試験後)
Results(結果)	No abnormality(異常無し)	No abnormality(異常無し)
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

(11) Solderability , reflow soldering resistance(半田付け性, 半田耐熱性)

	Solderability(半田付け性)	Reflow soldering resistance(半田耐熱性)
Results(結果)	No abnormality(異常無し)	No abnormality(異常無し)
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

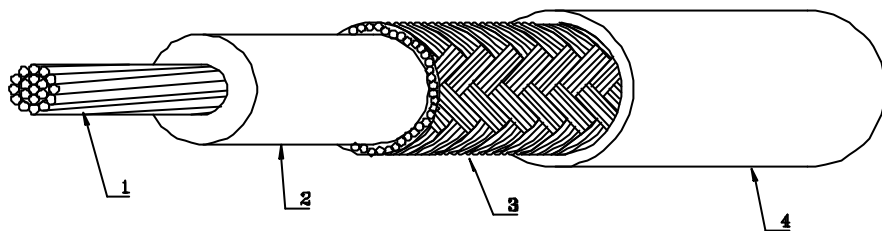
SPECIFICATION OF COAX 50 Ohms AWG32 CORE PTFE D=1.13 mm	AXON' CABLE S.A.S. <i>CABLE & INTERCONNECT</i> ROUTE DE CHALONS-SUR-MARNE 51210 MONTMIRAIL-FRANCE Tel : (33) 03 26 81 70 00 Fax : (33) 03 26 81 28 83 e-mail : sales@axon-cable.fr	N° P530738A Page 1/1
--	---	------------------------------------

Index	Date	Designed by	Approval	Description of the Modifications
A	02/04/02	PV	SW	CREATION

I – Scope

This specification presents a PTFE jacketed COAXIAL cable AWG32, 1.13 mm O.D. for internal wiring of electronic equipment, such as Computer / Notebook with wireless communication systems.

II – Construction



Item	Unit	Details
1-Inner Conductor	Material	- Silver Plated Copper
	Composition	No./mm AWG32 or 7 x 0.079
	Nom. O.D.	mm 0.237
2-Dielectric	Material	- Extruded PTFE
	Nom. O.D.	mm 0.68
	Color	- Natural
3-Outer Conductor	Material	- Tin Plated Copper
	Composition	- Braided Shield AWG44
	Approx. O.D.	mm 0.90
5-Outer Jacket	Material	- Extruded FEP
	O.D. (mm)	mm 1.13±0.05
	Color	- P530738A^ : Light Grey P530738A^V1 : Black P530738A^V2 : Dark Grey

III – Characteristics

Item	Unit	Nom. Value
Inner Conductor resistance @20°C	Ω/km	525 max.
Characteristic Impedance	Ω	50 ± 2
Capacitance	PF/m	98
Nom. Attenuation (dB/m)	@ 1.0 GHz	1.8
	@ 1.5 GHz	2.3
	@ 2.0 GHz	2.6
	@ 2.45 GHz	3.0
	@ 5.2 GHz	4.6
	@ 5.8 GHz	5.0
Temperature Rating	°C	150
Approx. Weight	g/m	3.5