

# LCU

## CONNECTORS

### 承認書

#### SPECIFICATIONS FOR APPROVAL

客戶 啓碁科技股份有限公司  
CUSTOMER \_\_\_\_\_

茲送 貴公司所要求之樣品 8 個，規格書 1 份，敬請確認，惠返一份。

品名 2.4GHz SMA Swivel Antenna  
SPECIES \_\_\_\_\_

料號 F1B-004321-93  
PART NO. \_\_\_\_\_

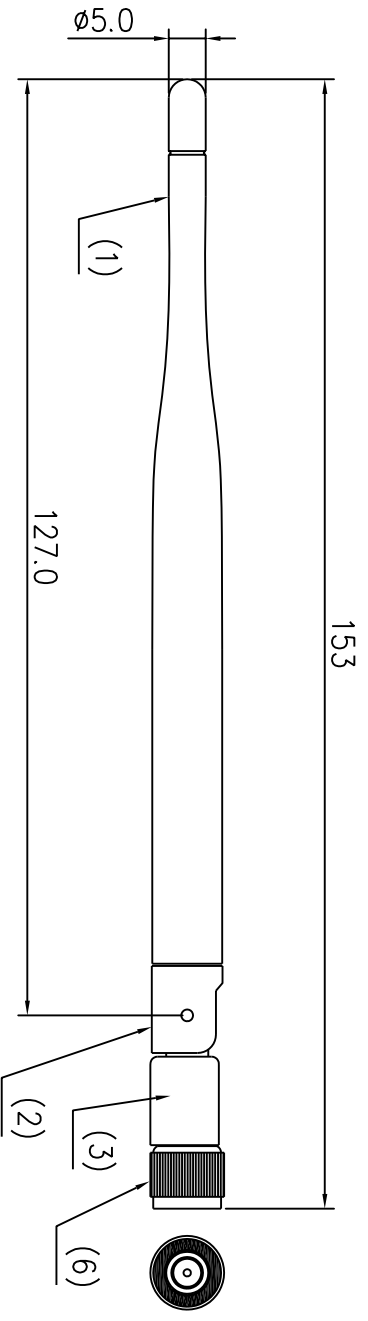
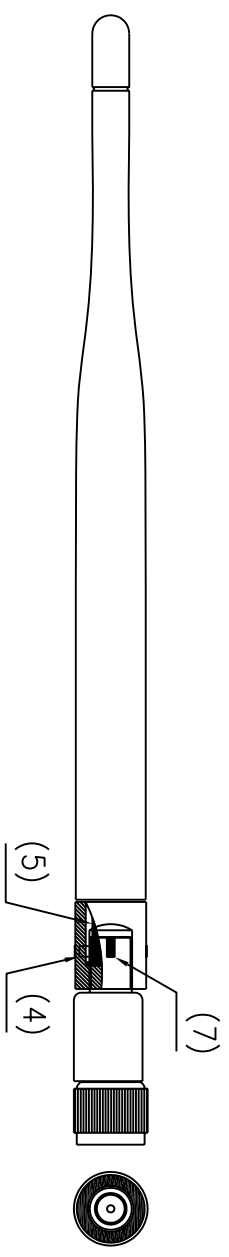
客戶料號  
CUSTOMER PART NO. \_\_\_\_\_

承認欄  
APPROVAL BY \_\_\_\_\_

龍竹企業股份有限公司  
LONG CHU ELECTRONICS CO., LTD.

台灣省新竹縣竹北市中和街 62 巷 15 弄 1 號  
NO. 1 ALLEY 15 LANE 62, CHUNG HO ST JUBEI CITY HSIN CHU HSIEN TAIWAN, R. O. C.  
TEL : (03) 5530333 (代表號) FAX : 886-3-5537016

DRAWING NUMBER



(7)	CABLE	RG-178 透明線 50 OHMS	1
(6)	CONNECTOR	SMA STRAIGHT PLUG/REVERSE	1
(5)	銅管	BRASS, NI PLATED	1
(4)	銅線釘	BRASS, 表面染黑處理	2
(3)	下固定座	ABS, BLACK	1
(2)	上固定座	ABS, BLACK	1
(1)	天線桿套	TPE, BLACK	1
NO.	NAME	DESCRIPTION	Q'TY

**Lgt** LONG CHENG ELECTRONICS CO. LTD  
 龍呈國際科技有限公司

DESCRIPTION: 2.4GHz Dipole Antenna (Black)

DIMENSION:		PART NUMBER		REV
1 PLC	±0.5	F1B-004321-93		0
2 PLC	±0.3	SCALE	SHEET	
3 PLC	±0.2	A4	1/1	1 OF 1
ANGLES	±5°			

UNIT	mm	APVD	
MATERIAL	SEE NOTE	CHK	
FINISH	SEE NOTE	DWN	
DATE	4/2/04"		
REVISION RECORD			
LTR	0	NEW RELEASE	

A B C D

A B C D

6 5 4 3 2 1

6 5 4 3 2 1

# 電氣特性規格

## Electrical Specifications

頻率範圍 (Frequency Range)	2.4~2.5GHz
增益 (Gain)	2.0dbi(typical)
VSWR	2.0 Max.
Return Loss	-10db Max.
半功率水平波束寬 (HPBW/Horizontal)	360°
半功率垂直波束寬 (HPBW/Vertical)	78°
極化 (Polarzation)	Linear, Vertical
阻抗匹配 (Impedance)	50 Ohms (typical)

# 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)

Anritsu MS4653B Vector Network Measurement System

測試資料  
(Test Result)

\*\*如下頁附圖所示

# 電氣特性測試

## Electrical Specifications Test

---

### 1. 輻射場型測試 (Radiation Pattern Test):

測試儀器 ( Test Instrument ) :

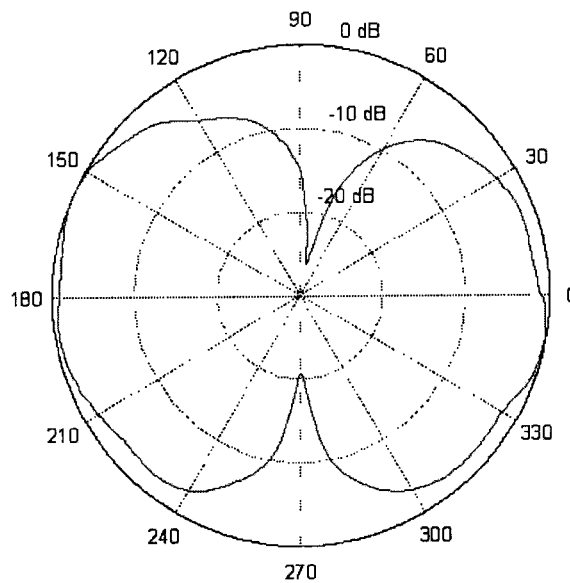
**Ancom 6 ft Near-field antenna test system**

測試資料 ( Test Result ) :

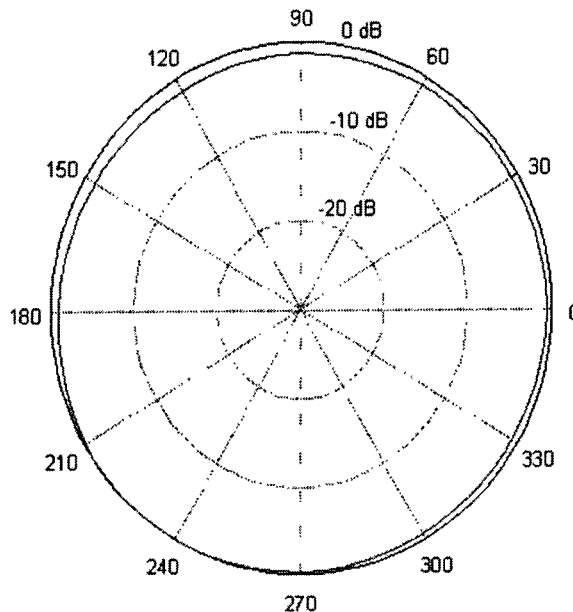
頻率 (Frequency) : **2.45GHz**

Max. gain : 1.73 dBi

Avg. gain : 1.25 dBi



**Vertical Pattern**



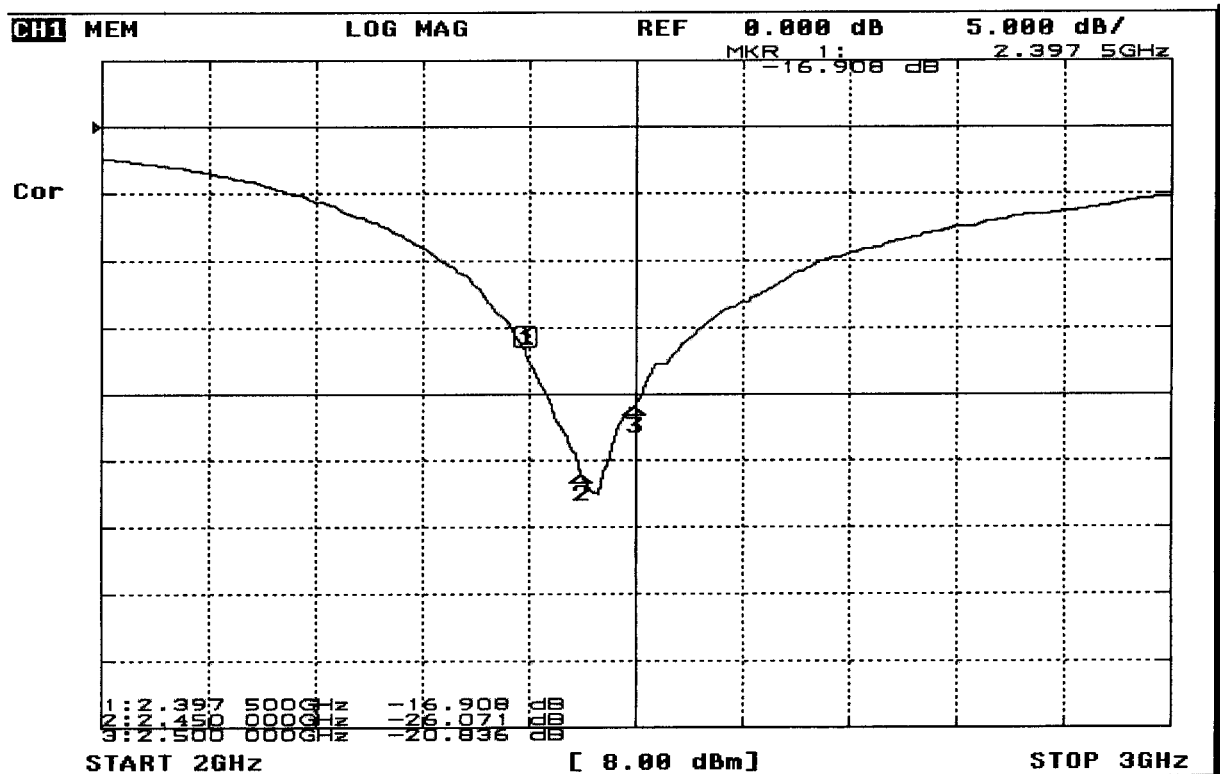
**Horizontal pattern**

## 2. Function Test :

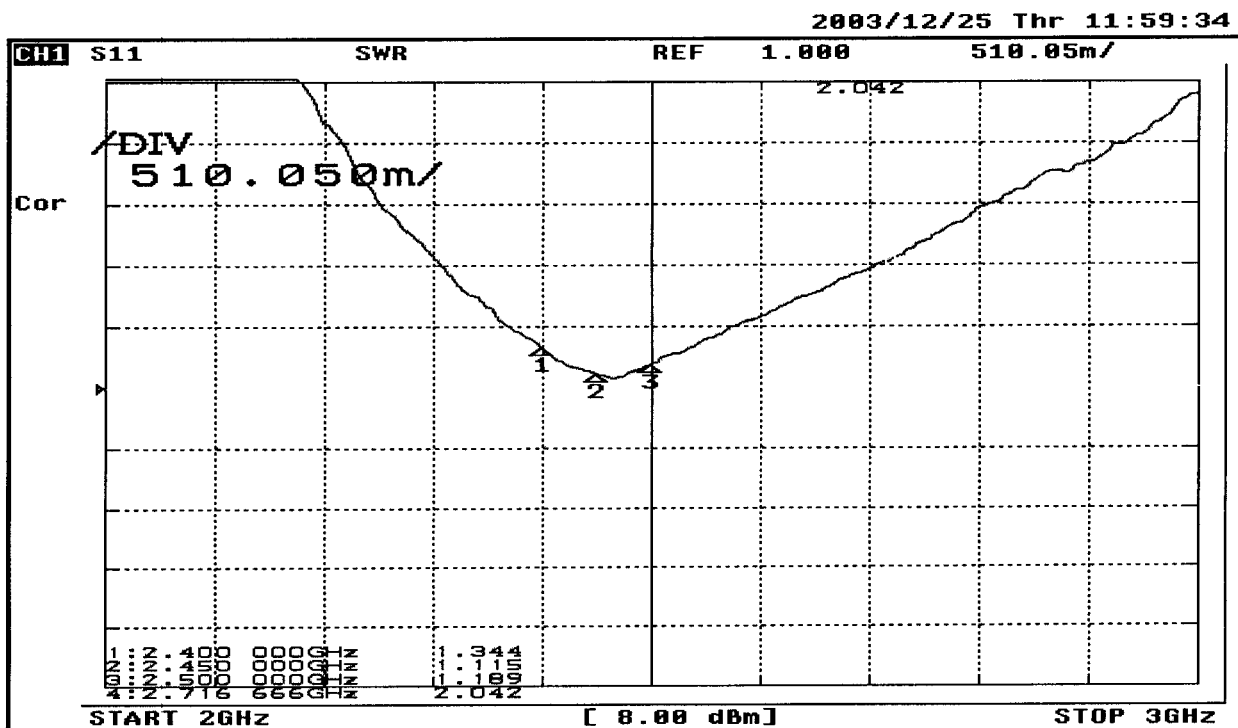
測試儀器 ( Test Instrument ):

- HP 8753E Network Analyzer 30 KHz ~ 3GHz
- Advantest R3767CG Network Analyzer 300 KHz ~ 8GHz

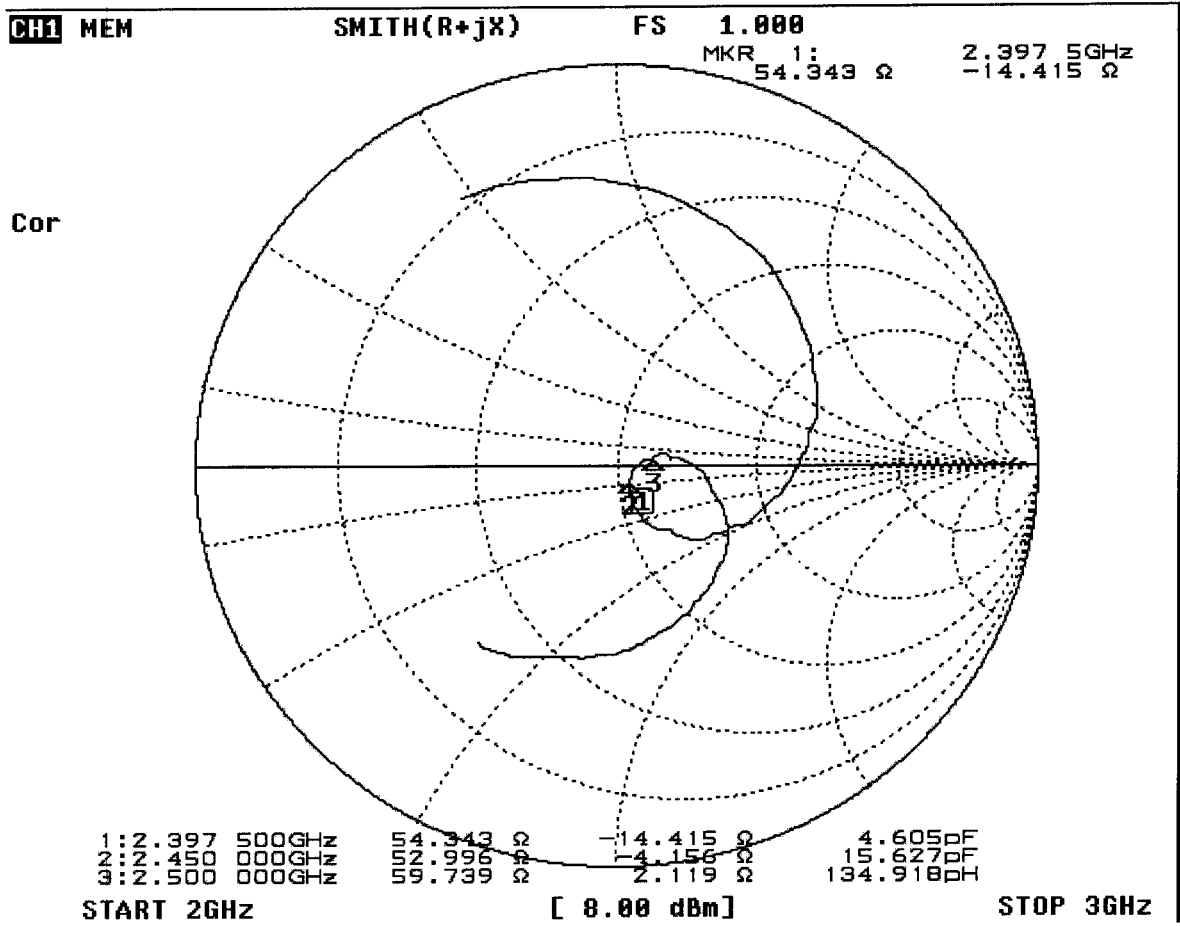
### 2.1 Return Loss



### 2.2 VSWR :



## 2.3 Smith Chart :



# 機械特性規格

## Mechanical Specifications

---

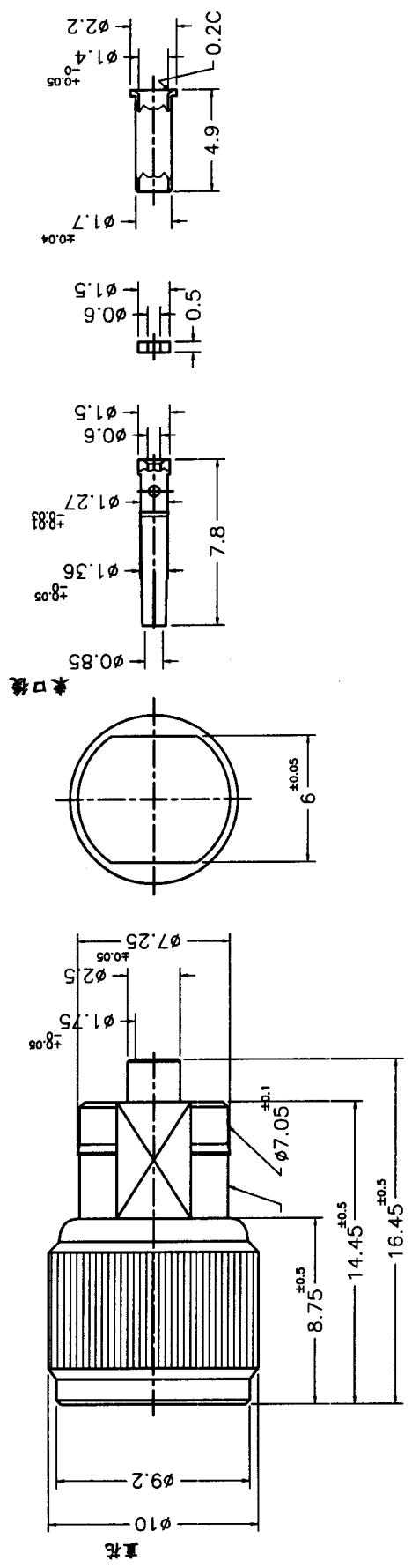
接頭種類 (Connector Type)	SMA - MALE TO FEMALE
重量 (Weight)	11 g
同軸線材 (Coaxial Cable Type)	RG - 178
同軸線材規格 (Coaxial Cable Spec.)	如附件
同軸線材顏色 (Coaxial Cable Color)	淡橘色
輻射材料 (Radiator Material)	Copper
工作溫度與溼度 (Working Temperature & Humidity)	-25 °c - +75 °c 90% @ 25 °c
天線尺寸 (Dimensions)	如附圖所示



6 5 4 3 2 1

DRAWING NUMBER

D C B A



8	FERRULE	BRASS	1	NICKEL
7	INSULATOR	TEFLON	1	
6	CENTER PIN	BRASS	1	GOLD
5	BODY	BRASS	1	GOLD
4	INSULATOR	TEFLON	1	
3	BODY	BRASS	1	BLACK CHROME
2	SPRING	SPRING STEEL	1	
1	SHELL	BRASS	1	BLACK CHROME
NO	DESCRIPTION	MATERIAL	Q'TY	FINISH

SMA Plug Reverse Straight  
For RG-178

\* 扭力 200g~400g

**Lct** LONG CHENG ELECTRONICS CO. LTD  
龍呈國際科技有限公司

DESCRIPTION:  
**CONN.SMA MALE-FEMALE RG178**

DIMENSION:  
1 PLC  $\pm 0.5$   
2 PLC  $\pm 0.3$   
3 PLC  $\pm 0.2$   
ANGLES  $\pm 5^\circ$

PART NUMBER M01-053020-00 REV 0  
SIZE SCALE SHEET  
A4 0.6/1 1 OF 1

UNIT	mm	APVD	
MATERIAL	SEE NOTE	CHK	
FINISH	SEE NOTE	DWN	09-10-2002 NINA CHEN
LTR	REVISION RECORD	DWN	CHK
	NEW RELEASE	DATE	01/15/03

6 5 4 3 2 1



**TEST REPORT**

Report No. : HCD0084/2003  
 Page : 1 of 3  
 Date : December 30, 2003

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

The following merchandise was submitted and identified by the vendor as:

**Product Description:** Swivel RF Antenna  
**Style/Item No.:** SMA Swivel Antenna (B) / No.1~No.5;  
 Diople Antenna (G) / No.1, No.2  
**Quantity:** Total 7 pieces

We have tested the submitted sample(s) as requested and the following results were obtained:

**Test Required:** (According to client's test specification, please see following sheets in detail.)  
 1. Thermal Shock test

**Test Results:** - PLEASE SEE ATTACHED SHEETS -

Signed for and on behalf of  
**SGS TAIWAN Ltd.**

Terence Hsieh  
 Asst. Supervisor

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf. Attention is drawn to the limitations of liability, indemnification, and jurisdictional issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company. 此報告係遵照本公司訂定之通則服務條款所製作發放。請注意此份報告印出後，將本公司之義務、負責、管轄權等項詳載於此。此報告結果除非另有說明僅對檢驗之樣品負責。本報告未經本公司書面許可，不得部份複製。

TW 0495855



# TEST REPORT

Report No. : HCD0084/2003

Page : 2 of 3

**1. Thermal Shock test:**

**Test Equipment:**

Name	Brand	Model	Serial No.
Thermal Shock Testing Chamber	KSON	TSK-C4H+-RAMP	2336

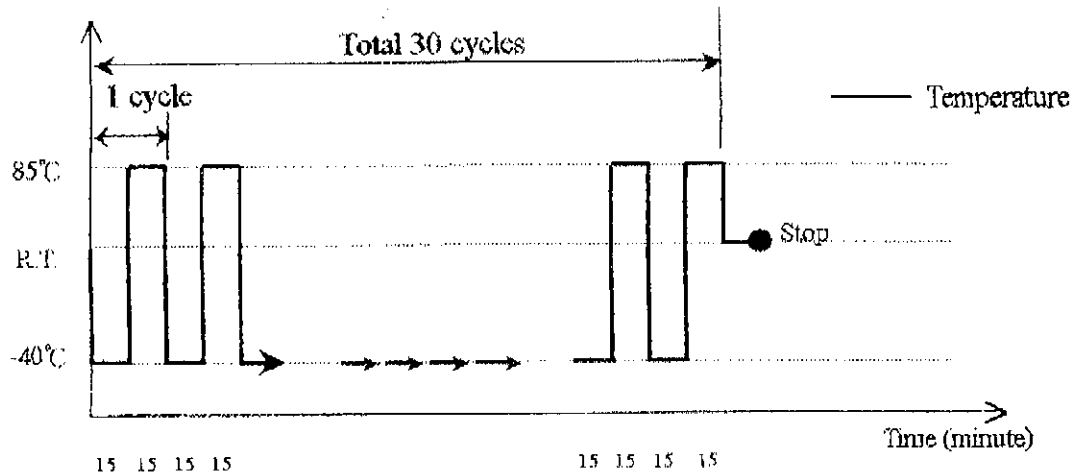
**Lab Environmental Conditions:**

Ambient temperature: 25±3°C

Relative humidity: 55±20%RH

**Test Method/ Specification:**

Temperature (°C)



- The temperature transition time shall be less than 5 minutes.
- Examine the appearance of specimen by visual check after this test.

This Test Report is issued by the Company subject to its General Conditions of Service printed over eaf. Attention is drawn to the limitations of liability, indemnification, and Jurisdiction, issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company. 此報告是遵照本公司訂定之通用服務條款所製成，請注意此報告列印之背面，將本公司之義務、免責、管轄權等項做詳盡之披露。此報告結果僅供有就測對檢驗之樣品負責，本報告未經本公司再面評定，不可部份複製。

TW 0495856



## TEST REPORT

Report No. : HCD0084/2003

Page : 3 of 3

### Specimen:

Style/ Item No.: SMA Swivel Antenna (B) / No.1~No.5;  
Diople Antenna (G) / No.1, No.2

Quantity: Total 7 pieces

### Test Result:

Check Item	Appearance Check (Visual Check)
Style/Item No.	
SMA Swivel Antenna (B) / No.1	No visible damage
SMA Swivel Antenna (B) / No.2	No visible damage
SMA Swivel Antenna (B) / No.3	No visible damage
SMA Swivel Antenna (B) / No.4	No visible damage
SMA Swivel Antenna (B) / No.5	No visible damage
Diople Antenna (G) / No.1	No visible damage
Diople Antenna (G) / No.2	No visible damage

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf. Attention is drawn to the limitations of liability, indemnification, and jurisdictional issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company. 此報告是根據本公司訂定之通用服務條款所製作發放。請注意此條款列印於背面。將本公司之業務，免費，為標明明確範圍之。此報告結果除非另有說明僅對檢驗之樣品負責。本報告未經本公司書面許可，不可部份複製。

TW 049585

### Function test after Thermal shock

Tester: James Lir Date: Jan.02,2004

Sample 1~5 SMA swivel antenna  
Sample 6~7 Fix R/A Antenna

Sample No	VSWR Test			Return Loss Test		
	2.4GHz	2.45GHz	2.5GHz	2.4GHz	2.45GHz	2.5GHz
1	1.21	1.07	1.25	-20.1	-29.50	-17.1
2	1.20	1.10	1.28	-18.4	-30.7	-17.0
3	1.30	1.10	1.15	-18.0	-33.8	-23.4
4	1.30	1.12	1.23	-18.6	-33.0	-24.2
5	1.30	1.06	1.19	-16.9	-34.2	-21.2
6	1.51	1.37	1.41	-14.2	-16.1	-15.3
7	1.45	1.36	1.42	-13.2	-15.1	-14.2

### Bending test after Thermal shock

Specifcation >20 g

Sample No	Bending force (unit:g)					
	Before 700 cycles bending			After 700 cycles bending		
	P1	P2	Result	P1	P2	Result
1	92	109	pass	47	64	pass
2	97	114	pass	35	62.7	pass
3	96	108	pass	34	59	pass
4	93	119	pass	36	64.3	pass
5	98.8	113	pass	38	65.6	pass
6	X	X	X	X	X	X
7	X	X	X	X	X	X

### Pull force test after Thermal shock

Specifcation >7kg

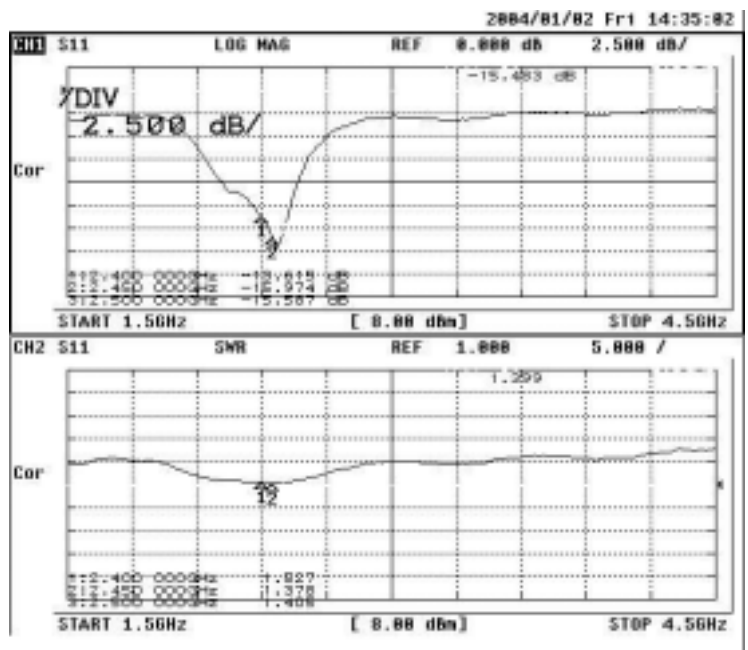
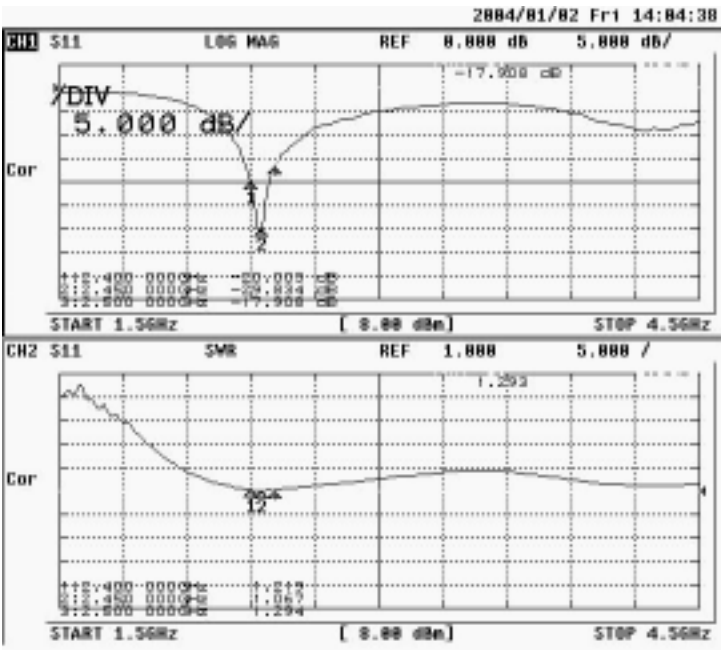
Sample No	Pull force Test	
	After thermal schock	
	Kg Max.	Result
1	11.3 kg	pass
2	10.9 kg	pass
3	12 kg	pass
4	11.2 kg	pass
5	11.9 kg	pass
6	9.9 kg	pass
7	9.8 kg	pass

### Function test after Thermal shock , bending test &

Sample No	VSWR Test			Return Loss Test		
	2.4GHz	2.45GHz	2.5GHz	2.4GHz	2.45GHz	2.5GHz
1	1.21	1.07	1.30	-20.00	-29.80	-17.90
2	1.20	1.10	1.25	-19.0	-31.0	-19.0
3	1.30	1.10	1.15	-18.0	-34.0	-23.4
4	1.30	1.12	1.23	-18.6	-33.0	-24.2
5	1.30	1.06	1.19	-17.3	-35.0	-21.0
6	1.53	1.37	1.41	-13.6	-15.9	-15.6
7	1.46	1.35	1.4	-13.1	-15.2	-14.5

### 2.4GHz SMA Swivel antenna

### 2.4GHz FIX R/A antenna



環境測試規範 Environment Test Specification	編號 No.		修訂日期 Amendment Date	
	頁次 Page	1	版本 Version	V.01
			發行日期 Release Date	

## 1. Dry Heat Test (High Temperature Test) 高溫測試：

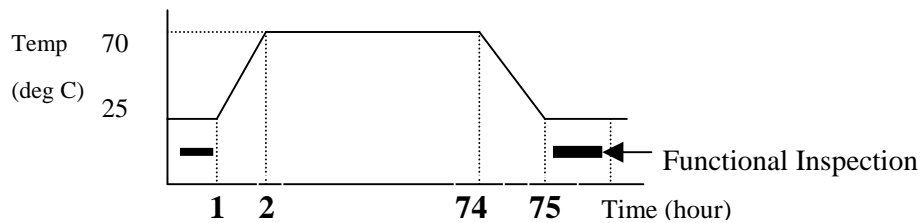
### 1.1 Test Conditions:

Temperature : 70 ±2

Humidity : Uncontrolled

Period : 72 Hours

Reference : IEC 68-2

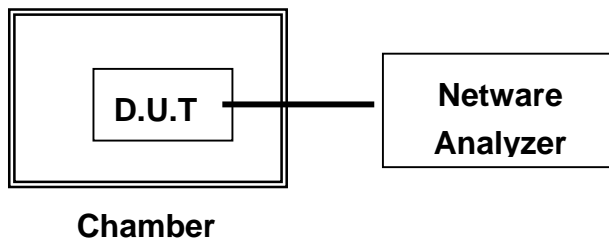


### 1.2 Test Method :

After follow No.1.1 with have testing in chamber .

The result Return Loss less than -10dbi Max .

### 1.3 Test configuration :



環境測試規範 Environment Test Specification	編號 No.		修訂日期 Amendment Date	
	頁次 Page	2	版本 Version	V.01
			發行日期 Release Date	

## 2. Cold Test (Low Temperature Test) 低溫測試：

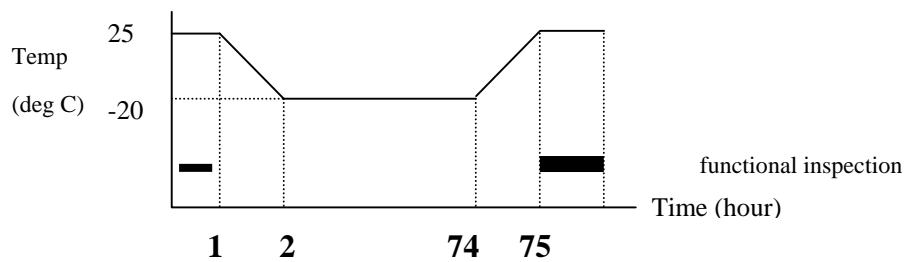
### 2.1 Test Conditions:

Temperature :  $-20 \pm 3$

Humidity : Uncontrolled

Period : 72 Hours

Reference : IEC 68-2

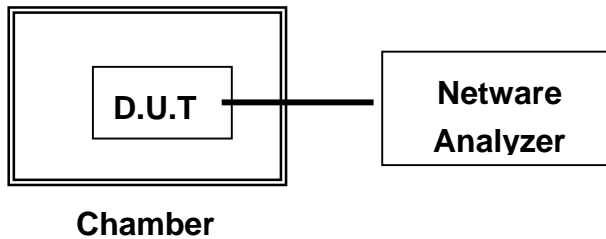


### 2.2 Test Method :

After follow No.2.1 with have testing in chamber .

The result Return Loss less than -10dbi Max. .

### 2.3 Test configuration :



環境測試規範 Environment Test Specification	編號 No.		修訂日期 Amendment Date	
	頁次 Page	3	版本 Version	V.01
			發行日期 Release Date	

### 3. Cyclic Test (Temperature Cyclic Test) 溫度循環測試：

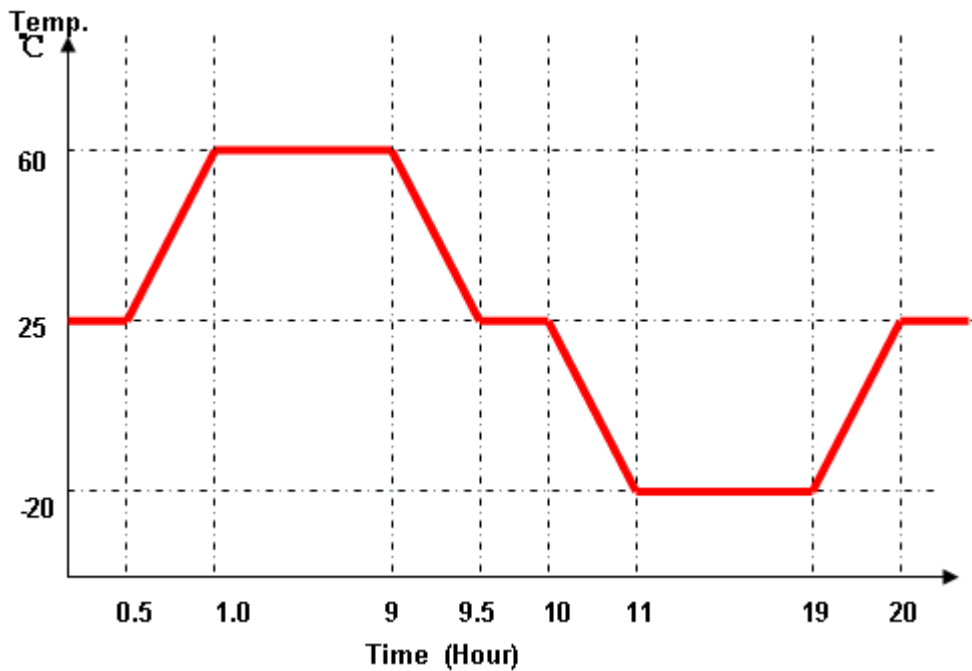
#### 3.1 Test Conditions:

Temperature : -20 ~ 60

Humidity : Uncontrolled

Period : 20 Hours

Reference : IEC 68-2

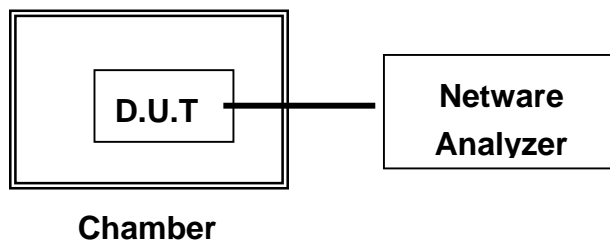


#### 3.2 Test Method :

After follow No.3.1 with have testing in chamber .

The result Return Loss less than -10dbi Max. .

#### 3.3 Test configuration :





# RF Antenna Cable Assembly

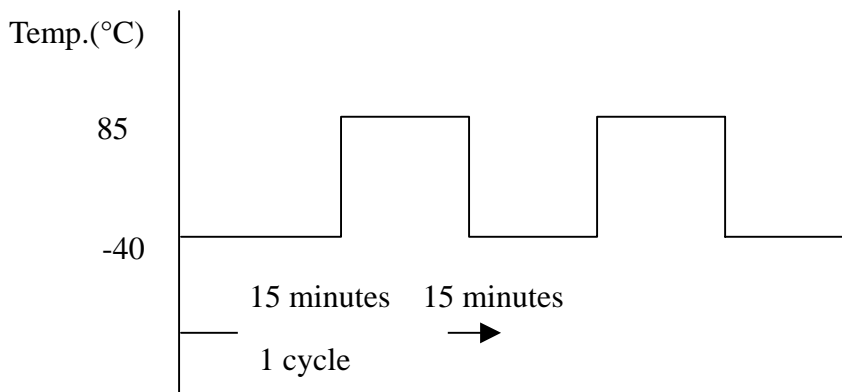
## Adhesive Force Test ( Pull force Test )

1.Equipment : Thermal-Shock machine,  
pull-force-test,machine

2.Test condition : -40°C ~ 85°C

3.Cycle : 30cycle

4.Spec : 7kg Minium



Sample	Spec	Test result
1	7Kg	>7Kg
2		>7Kg
3		>7Kg
4		>7Kg
5		>7Kg
6		>7Kg
7		>7Kg
8		>7Kg
9		>7Kg
10		>7Kg



1285 West Whittman Rd  
 Melville, NY 11747-3061  
 631-271-6200  
<http://www.ul.com/plastics>  
 Local Fax: +1 (631) 438 8048  
 App. Fax: +31 48 4780 796

Melville - March 7, 2002

AIR MAIL

DSM Engineering Plastics  
 Mr. M. C. de Vos  
 DSM Engineering Plastics  
 PO Box 604  
 6160 AP Geleen  
 The Netherlands

Our Reference: 02ME05192, E47960, QMFZ2, DCW3016P.

Subject: Component - Plastics; Grades EL550, EM550, EL630 and EM630 designated "Aritel".

**NOTICE OF AUTHORIZATION TO APPLY THE UL MARK**

We have completed our Engineering Investigation under the above file number and find the products comply with the applicable requirements.

This letter temporarily supplements the UL Follow-Up Services Inspection Procedure and your Component Recognition Listing Information Page. The ratings indicated on the table below are being assigned to the products.

Material Designation	Color	Min. thk mm	UL94 Flame Class	R.T.I. °C		
				Elec	Mech with Imp	Mech w/o Imp
<i>Thermoplastic Elastomer (TPE), Polyester, designated "Aritel", furnished in the form of pellets</i>						
EL550, EM550	NC, BK	1.5	HB	50	50	50
EL630, EM630	NC, BK	1.5	HB	50	50	50

The material designations shown above will be used in the report and Recognition Card. If these are not accurate, please notify us of the correct material designations as soon as possible so that these documents will reflect the proper nomenclature.

This letter serves as authorization to apply the UL Recognized Marking and/or Recognized Component Mark to the above products which are constructed identically to grades EL550, EM550, EL630 and EM630, which were submitted to UL for this investigation. The UL records covering the materials will be in the Follow-Up Services Inspection Procedure, File E47960, Volume 1.

To provide the manufacturer with the intended authorization to use the UL Mark you, the Applicant, must send a copy of this Notice and all attached material to each manufacturing location covered by a UL Follow-Up Service Procedure.

A not-for-profit organization  
 dedicated to public safety and  
 committed to quality service

Base ABS

QMFZ2

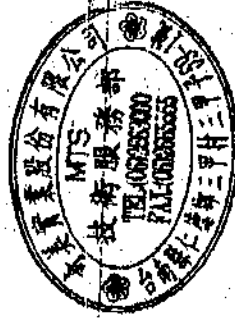
Component - Plastics

May 8, 1996

CHI MEI CORPORATION

PA-765A	AI	1.57	94V-1	85	80	85	(A1B2 - cont. from A1B1 card)	E56070 (S)
		2.12	94V-0	85	80	85	- 0	7 1
		2.54	94-5VA	85	80	85	3 0	2 7 0
		3.17	94V-0	85	80	85	- 0	2 7 1
							0 0	0 7 1

Report: June 23, 1983.



Replaces E56070A1B2 dated April 12, 1996.

267295002

N7047

Underwriters Laboratories Inc.™

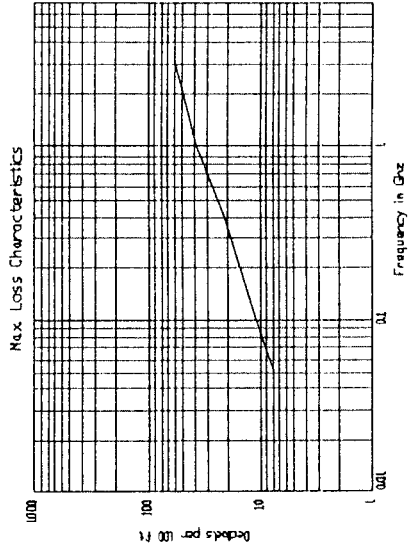
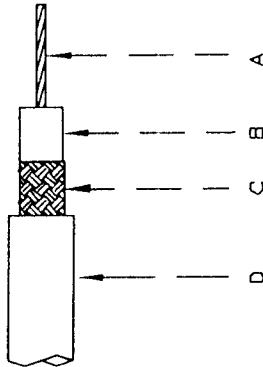
(Cont. on A1C card)

011/0294897

**Base ABS**

Flame Retardant						High Heat		
PA-769	PA-766	PA-765	PA-765A	PA-765B	PA-764	PA-777B	PA-777D	PA-777E
390 (5530)	370 (5250)	390 (5530)	400 (5670)	400 (5670)	370 (5250)	430 (6100)	440 (6240)	440 (6240)
25	30	15	15	25	15	15	15	10
2.1 (3.0)	2.0 (2.8)	2.1 (3.0)	2.3 (3.2)	2.4 (3.4)	2.0 (2.8)	2.4 (3.4)	2.5 (3.5)	2.5 (3.5)
620 (8800)	590 (8360)	620 (8800)	640 (9070)	650 (9200)	590 (8360)	700 (9920)	750 (10630)	750 (10630)
R-98	R-95	R-100	R-100	R-102	R-96	R-112	R-115	R-115
21 (3.8)	23 (4.3)	20 (3.7)	21 (3.8)	24 (4.4)	14 (2.6)	23 (4.3)	17 (3.2)	12 (2.2)
16 (2.9)	21 (3.9)	16 (2.9)	17 (3.1)	20 (3.7)	12 (2.2)	20 (3.7)	14 (2.6)	11 (2.0)
96 (208)	98 (214)	90 (194)	92 (197)	95 (203)	97 (208)	115 (239)	125 (257)	129 (264)
88(190) 78(172)	89(192) 81(178)	83(181) 73(165)	85(185) 76(169)	86(187) 79(174)	92(198) 79(174)	107(225) 97(206)	115(239) 105(221)	120(248) 109(228)
1.19	1.20	1.20	1.17	1.16	1.19	1.03	1.06	1.07
3.2	2.3	5.2	4.8	2.6	3.2	--	--	--
35	25	60	55	28	35	6.7	6.0	5.0
1/8" V-O	1/16" V-O	1/16" V-O 1/10" 5VA	1/12" V-O 1/10" 5VA	1/16" V-2 1/10" V-O 1/8" 5VA	1/16" V-O 1/10" 5VA	1/16" HB	1/16" HB	1/16" HB
F. R. Medium Impact	F. R. Medium Impact	F. R. High Flow	F. R. High Flow	F. R. Medium Impact	F. R. Weather Resistance	High Heat High Impact	Super High Heat	Super High Heat

Rev	Change	Date
A	Corrected Cut-off Freq.	11/13/01



Construction:

- A) Center Conductor:  
26 7/.0067 SPCW  
OD .020" ± .001"
- B) Dielectric:  
Extruded PTFE  
OD .060" ± .003"
- C) Shield:  
J8 AWG SPC  
OD .081" Max.
- D) Jacket:  
FEP - Brown Tint  
OD .098" ± .005"

Electricals:

- Impedance: 50 ± 2 Ohms
- Capacitance: 32 pF/ft Max.
- Velocity of Prop.: 69.5% Nom.
- Time Delay: 1.50 ns Max.
- Cut off Frequency: 65 GHz

Physical Properties:

- Weight per 1000 ft: 12.2 lbs max
- Minimum Bend Radius: .5"
- Operating Temperature Range: -55° C to +200° C

Surface Printed: "M17/113-RC316 MIL-C-17 27478 HARBOUR INDUSTRIES"

<b>Harbour Industries</b>	
Date: 10/26/89	Scale: None
Drawn By: Joann McVeigh	
Approved By:	
Drawing Name: M17/113-RC316	Rev: A
Sheet 1 of 1	
Part Number: J1108	Drawing Number: 032096_2



**Physical Characteristics**

**MIL-C17Type Coaxial Cable, QPL approved**

M17 Number	Center Conductor	Dielectric	Dielectric O.D.	Shield	Jacket	Overall O.D.	Operating Temp°C	Weight (lbs. /MFT)	Comments
M17/60-RG142	.037" SCCS	PTFE	.116"	SPC (2)	FEP	.195"	-55+200	43.0	
M17/93-RG178	.0120" (7/.004")SCCS	PTFE	.033"	SPC	FEP	.071"	-55+200	6.3	
M17/94-RG179	.0120" (7/.004")SCCS	PTFE	.063"	SPC	FEP	.100"	-55+200	10.8	
M17/110-RG302	.0253" SCCS	PTFE	.14"	SPC	FEP	.202"	-55+200	40.0	
M17/111-RG303	.037" SCCS	PTFE	.116"	SPC	FEP	.170"	-55+200	31.0	
M17/112-RG304	.059" SCCS	PTFE	.185"	SPC (2)	FEP	.280"	-55+200	94.0	QPL Approval Pending
M17/113-RG316	.0201" (7/.0067") SCCS	PTFE	.060"	SPC	FEP	.098"	-55+200	12.2	
M17/127-RG393	.094 (7/.0312")SPC	PTFE	.285"	SPC (2)	FEP	.390"	-55+200	165.0	
M17/128-RG400	.0384"(19/.008")SPC	PTFE	.116"	SPC (2)	FEP	.195"	-55+200	50.0	
M17/131-RG403	.012"(7/.004")SCCS	PTFE	.033"	SPC (2)	FEP (2)	.116"	-55+200	15.0	Triaxial M17/93-RG178
M17/152-0001	.0201"(7/.0067")SCCS	PTFE	.060"	SPC (2)	FEP	.114"	-55+200	18.5	Double Shielded RG316

**RG Type Coaxial Cable, Non-QPL**

RG174 /U	.0120" (7/.0067")TPC	PE	.060"	TPC	PVC	.110"	-40+85	9.0	
RG213 /U	.089"(7/.0296")BC	PE	.285"	BC	PVC	.405"	-40+85	111.0	
RG214 /U	.089"(7/.0296")SPC	PE	.285"	SPC (2)	PVC	.425"	-40+85	136.4	
RG223 /U	.034" SPC	PE	.117"	SPC (2)	PVC	.212"	-40+85	36.7	
RG178 /U-SF	.0120"(7/.004")TPC	PE irradi.	.033"	TPC	PVC	.017"	-40+85	5.8	
RG178 /U	.0120"(7/.004")SPC	FEP	.033"	SPC	FEP	.071"	-55+200	6.3	
RG179 B/U	.0120"(7/.004")SPC	FEP	.063"	SPC	FEP	.100"	-55+200	10.8	
RG316 /U	.0201"(7/.0067")SPC	FEP	.060"	SPC	FEP	.098"	-55+200	12.2	
RG142 B/U	.037" SPC	FEP	.116"	SPC (2)	FEP	.195"	-55+200	43.0	
RG400 /U	.0384"(19/.008")SPC	FEP	.116"	SPC (2)	FEP	.195"	-55+200	50.0	

**Other type RG cables are available upon requested**

**PTFE Tape Wrap Jacketed RG Cables :**

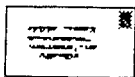
RG187 A/U	.0120"(7/.004")SCCS	PTFE	.063"	SPC	PTFE	.100"	-55+250	9.0	250°C rated
RG18 A/U	.0201"(7/.0067")SCCS	PTFE	.060"	SPC	PTFE	.100"	-55+250	12.0	250°C rated
RG196 A/U	.0120"(7/.004")SCCS	PTFE	.034"	SPC	PTFE	.080"	-55+250	8.0	250°C rated

## Electrical Characteristics

Type No.	Impedance (ohms)	Capaci. (pf/ft)	Working Voltage (Vols RMS)	Macimum Attenuation (db/100ft)@						Max Frequency (Ghz)
				100Mhz	400MHz	1Ghz	3Ghz	5Ghz	10Hgz	
M17/60-RG142	50+/- 2	29.4	1900	5.5	11.7	19.0	35.0	48.0	-	12.4
M17/93-RG178	50+/- 2	29.4	1000	16.0	33.0	52.0	4.0	-	-	3.0
M17/94-RG179	75+/- 3	19.4	1000	-	21.0	-	-	-	-	-
M17/110- RG302	75+/- 3	19.4	2300	-	8.0	-	26.0	-	-	-
M17/111- RG303	50+/- 2	29.4	1900	3.9	8.6	15.0	28.0	-	-	-
M17/112- RG304	50+/- 2	29.4	3000	2.7	6.4	11.1	22.0	30.0	37.0	8.0
M17/113- RG316	50+/- 2	29.4	1200	11.0	21.0	38.0	58.0	-	-	3.0
M17/127- RG393	50+/- 2	29.4	2500	2.4	5.0	8.8	18.0	24.6	37.0	11.0
M17/128- RG400	50+/- 2	29.4	1900	4.5	10.5	17.0	38.0	50.0	78.0	12.0
M17/131- RG403	50+/- 2	29.4	1000	-	37.0	-	-	-	-	10.0
M17/152-00001	50+/- 2	29.4	1200	11.5	24.0	40.0	75.0	110.0	170.0	12.0
RG174 /U	50+/- 2	30.8	1200	11.0	21.0	38.0	58.0	-	-	3.0
RG213 /U	50+/- 2	30.8	2500	2.1	5.0	8.8	18.0	-	-	-
RG214 /U	50+/- 2	30.8	2500	2.1	5.0	8.8	16.0	-	-	-
RG223 /U	50+/- 2	30.8	1900	4.9	11.0	18.0	39.5	-	-	-
RG178 / U-SF	50+/- 2	30.8	1000	16.0	33.0	52.0	94.0	-	-	3.0
RG178/U	50+/- 2	29.4	1000	16.0	33.0	52.0	94.0	-	-	3.0
RG179 B/U	75+/- 2	19.4	1000	-	21.0	-	-	-	-	-
RG316 /U	50+/- 2	29.4	1200	11.0	21.0	38.0	58.0	-	-	3.0
RG142 B/U	50+/- 2	29.4	1900	5.5	11.7	19.0	35.0	-	-	-
RG400/U	50+/- 2	29.4	1900	4.5	10.5	17.0	38.0	-	-	-
<b>PTFE Tape Wrap Jacketed RG Cables :</b>										
RG187 A/U	75+/- 3	19.4	1200	-	21.0	-	-	-	-	3.0
RG188 A/U	50+/- 2	29.4	1200	11.0	21.0	38.0	58.0	-	-	3.0
RG196 A/U	50+/- 2	29.4	1000	-	21.0	-	-	-	-	-

**< PDF >**

Next Page



**Buyers Inquiry**

**Raison Enterprise Co., Ltd.**

1F, No. 2-2 Alley 3, Lane 387, Nei-Hou Rd., Sec. 1, Taipei, Taiwan, R.O.C.

TEL: 886-2-26590060 FAX: 886-2-27973715

(SALES OFFIC& MANUFACTURING FACILITY)

**Commate International Co.(Canada)**

49 Thatcher's Millway Markham , Ontario ,L3P 3T2 FaX : (905) 472-2487

仕 様 書

# SPECIFICATION

***TakiTek***



Messr. Borntek Corp.

Date of Establishment: Jan. 29. 2003

Date of Issue: **03.2.-3**

SPECIFICATION

for

HIFLON

FEP INSULATED-FEP JACKETED COAXIAL CABLE

Type : RG-178-TA

(This cable is the specification change article of RG178.)

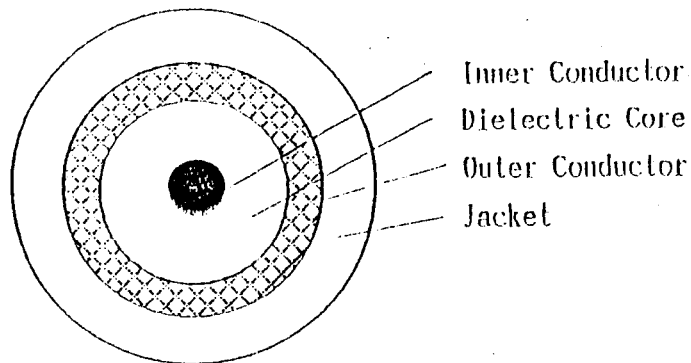
## 1. SCOPE

This specification applies to HIFLON FEP INSULATED COAXIAL CABLE

UL File No.	: E56198
Applicable Specification	: UL 758, UL 62
Temp. Rating	: 90°C
Voltage Rating	: AC 30V

## 2. CONSTRUCTION, MATERIALS AND DIMENSIONS

### 2.1 Construction



### 2.2 Materials and dimensions

Materials and dimensions of this cable is shown as Table-1.

## 3. PERFORMANCE OF THE CABLE

### 3.1 Testing of cable

Performance of the cable is examined and tested in accordance with the test method as listed in Table-2.

## 4. QUALITY ASSURERANCE

4.1 **TakiTek** Electric Company fully guarantees the quality of this cable.

Every lot produced are processed and inspected with best available technical skill.

#### 4.2 Quality conformance inspection

Every lot produced shall be examined and tested for items 1 thru 14 of Table-2.

#### 5. PACKAGING AND MARKING

##### 5.1 Packaging

Unless otherwise indicated in the contract, packaging shall be made per good commercial practices.

##### 5.2 Marking

Each coil shall be marked with the following information.

- |                   |                         |
|-------------------|-------------------------|
| 1. File No.       | 6. Length               |
| 2. Style No.      | 7. Name of Manufacturer |
| 3. Voltage Rating | 8. Date of Manufacture  |
| 4. Temp. Rating   | 9. Lot Number           |
| 5. Conductor Size | 10. UL Label            |

Table-1. Description

No.	Components	Material	Construction	Diameter
1	Inner Conductor	Silver-Coated Annealed Copper Wire	7/0.102	0.305mm(nominal)
2	Dielectric Core	FEP Color:Natural	Thickness 0.27mm(nominal)	0.84mm(nominal)
3	Outer Conductor	Tinned Annealed Copper Wire	16/3/0.1	1.35mm(nominal)
4	Jacket	FEP Color:Brown	Thickness 0.23mm(nominal)	1.80±0.10mm

Table-2. Requirements

PART	No.	TEST ITEM	PERFORMANCE	TEST CONDITIONING
Inner Conductor	1	Stranding	See Table-1.	Visual
	2	Material	See Table-1.	Visual
	3	Diameter of Wire	See Table-1.	
	4	Conductor Resistance (at 20°C)	Less than 320Ω/km	Double Bridge
Dielectric Core	5	Diameter of Core	See Table-1.	
	6	Spark Test	No breakdown at AC 4000V for 0.15sec.	Spark Tester
Outer Conductor	7	Material of Strands	See Table-1.	Visual
	8	Construction	See Table-1.	Visual
Finished cable	9	Overall Diameter	See Table-1.	
	10	Dielectric Withstand Voltage	No breakdown at AC 2000V for 1min.	Outer Conductor to Inner Conductor
	11	Insulation Resistance (at 20°C)	More than 1500MΩ·km	High Insulation Resistance Meters
	12	Characteristic Impedance	50±2 ohms	TDR Method
	13	Capacitance	95pF/m (nominal)	Capacitance Meter
	14	Attenuation	at 100 MHz nominal 0.53dB/km at 1500 MHz nominal 2.13dB/km at 1900 MHz nominal 2.42dB/km at 2300 MHz nominal 2.69dB/km at 5000 MHz nominal 4.11dB/km	Network Analyzer

# RG Series Cable / RG-178-TA Coaxial Cable for WLAN Application

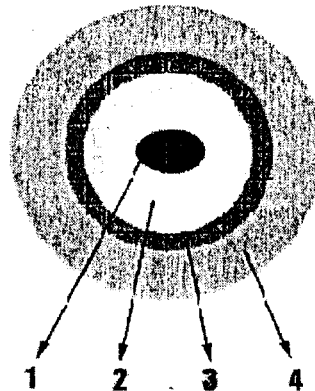
version 1.1

## RG series cable :

The RG series coaxial cable are easy to strip, flexible alternative to standard MIL-spec. Our RG coaxial cable provides the best combination of handling and loss characteristics available in the market today.

With RG, we can approach the electrical performance of MIL-spec with a flex life somewhat closer to standard flexible constructions.

A good selection of standard interface connectors (crimp or clamp style) are available, RG cables can be purchased in bulk reels or predominated and tested cable assemblies.



1. Center conductor: Silver coated copper wire
2. Dielectric: FEP
3. Shield : Tin coated copper wire
4. Jacket : FEP

## Mechanical Characteristics:

Specification Data		
Inner Conductor	Const.	7/0.102
	Material	SA
	Diameter (mm)	0.305
Dielectric Core	Material	FEP
	Diameter (mm)	0.84
Outer Conductor	Const.	16/3/0.1
	Structure	TA
	Diameter (mm)	1.35
Jacket	Material	FEP
	Thickness (mm)	0.23
Outside Diameter (mm)		1.80 +/- 0.10
Impedance ( $\Omega$ )		50 +/- 2
Nominal Attenuation (dB / m)	100 MHz	0.53
	1.5 GHz	2.13
	1.9 GHz	2.42
	2.3 GHz	2.69
	3.0 GHz	3.00
	5 GHz	4.11

SA: Silver-Coated Annealed Copper Wire

TA: Tin-Coated Annealed Copper Wire

**TakiTek**

Tel: +813 5825 2960 / Fax: +813 5825 2961 / website: <http://www.takitek.co.jp>

Add: 1-3-10,ROKUHARA BUILD 3F, HIGASHI NIHONBASHI, CHUOU-KU, TOKYO 103-0004, JAPAN

Above specification change without notice

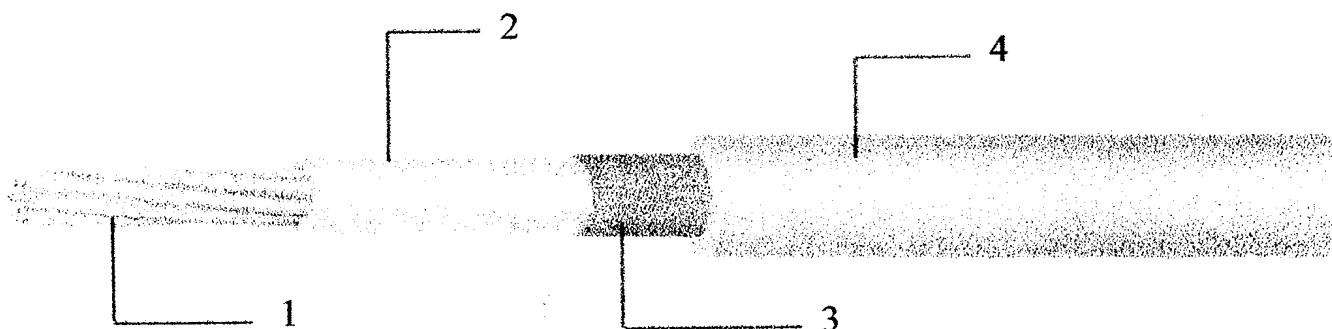
# Nizing Electric Co., Ltd.

RG 178 B/U	FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE	PAGE	1 / 2
PRODUCT STANDARD		ISSUED	21. Oct. 2003
		REVISED	

## I - Scope

This specification presents a FEP insulated high-frequency coaxial cable AWG 30, 1.8 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	—	CP-AG
	Composition	No./mm	AWG 30 or 7 × 0.1
	Dia. (approx.)	mm	0.305
2. Dielectric	Material	—	Extruded FEP
	Nom. O.D.	mm	0.84 ± 0.05
	Color	—	Natural
3. Outer Conductor	Material	—	Silver coated copper
	Composition	—	Braided (16 / 3 / 0.1)
	Dia. (approx)	mm	1.29 ± 0.07
4. Jacket	Material	—	Extruded FEP
	Dia.	mm	1.80 ± 0.08
	Color	—	Standard color is Light Orange

Note :

MADE BY

APPROVALS

# Nizing Electric Co., Ltd.

RG 178 B/U	FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE	PAGE	2 / 2
PRODUCT STANDARD		ISSUED	21. Oct. 2003
		REVISED	

## III – Characteristics

Item	Unit	Specified Value	Note
Temperature Rating	°C	-55 ~ +200	
Voltage Lasting	V	1000	
Dielectric strength	—	Dielectric core: No breakdown at AC 3 kv for 0.2 sec.	Spark test
		Jacket: No breakdown at AC 3 kv for 0.2 sec.	Spark test
Characteristic Impedance	Ω	50 ± 2	TDR method
Capacitance	pF / ft	29.4	
Attenuation. (Max.)	dB/100ft	16.0	100.0 MHz
		33.0	400.0 MHz
		52.0	1.0 GHz
		94.0	3.0 GHz
Approx. Weight	g / m	7.68	

Note :

MADE BY

APPROVALS