

|                                                                                        |                                                                                                |                                                                              |                     |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------|
| Alpha P/N : 506924000116                                                               |                                                                                                | 申請者：白智銘                                                                      | 主管：楊威               |
| 零組件品名：Ant 2.4G E421C SMA For D-Link                                                    |                                                                                                |                                                                              |                     |
| 原製造廠商：FRE(505620)                                                                      |                                                                                                | 原廠編號：E421C-200000R04                                                         |                     |
| 在台代理商：福登                                                                               |                                                                                                | 連絡人：吳志信                                                                      | 電話：(03)464-3715#223 |
| 應用機種：DWL-2100AP                                                                        |                                                                                                |                                                                              |                     |
| COMMENTS：                                                                              |                                                                                                |                                                                              |                     |
| 測試結果                                                                                   | FIRST SOURCE                                                                                   |                                                                              |                     |
| 檢驗重點：<br>1. 外觀<br>2. Dimension<br>3. Return Loss(For Specification 4.2): $\leq -10$ dB |                                                                                                |                                                                              |                     |
|    |                                                                                                |                                                                              |                     |
| 主 管：王椅楠                                                                                |                                                                                                | <input checked="" type="checkbox"/> 承辦者：劉炫松<br><input type="checkbox"/> 測試人： |                     |
|                                                                                        |                                                                                                | 日 期：2004/8/26                                                                |                     |
| 機構                                                                                     | R&D                                                                                            | PM                                                                           |                     |
| 生技                                                                                     | 資材                                                                                             | 品管                                                                           |                     |
| 結果                                                                                     | <input checked="" type="checkbox"/> 合格 <input type="checkbox"/> 否決 <input type="checkbox"/> 其它 | 審核                                                                           | 電子檔：王椅楠 2004/8/26   |

# FRE

## SPECIFICATION AND PERFORMANCE FOR APPROVAL

P/N: E421C-200000R04 2004/7/23 REV.0 1 of 25

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|                      |                                 |
|----------------------|---------------------------------|
| Part No.:            | E421C-200000R04                 |
| Product Description: | ANTENNA $\psi$ 9 +SMA CONNECTOR |
| Customer :           |                                 |
| Customer Part No.:   |                                 |
| Sample Qty.          |                                 |

| FRE                   |            |                             |
|-----------------------|------------|-----------------------------|
| Issued By             | Checked BY | QA Inspection               |
|                       |            | Warren Chung<br>Jul-23-2004 |
| Sales&Marketing Group | R&D Group  | QA Group                    |

| Customer                                                                                                                      |            |             |
|-------------------------------------------------------------------------------------------------------------------------------|------------|-------------|
| Customer Approval: <input type="checkbox"/> Approved <input type="checkbox"/> Concessionary <input type="checkbox"/> Rejected |            |             |
| Issued By                                                                                                                     | Checked BY | Approved By |
|                                                                                                                               |            |             |
|                                                                                                                               |            |             |
| Comments:                                                                                                                     |            |             |
|                                                                                                                               |            |             |

**SPECIFICATION AND PERFORMANCE  
FOR APPROVAL**

P/N: E421C-200000R04 2004/7/23 REV.0 2 of 25

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**CATALOGUE OF E421C-200000R04 APPROVAL SHEETS**

| ITEM/CONTENT                   | PAGE    |
|--------------------------------|---------|
| 1.Coverage                     | 1       |
| 2.Index                        | 2       |
| 3.Product Drawing              | 3       |
| 4.Specification & Performance  | 4       |
| 5.Electrical Properties        | 5 ~ 12  |
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| REVISION RECORD |     |             |      |      |
|-----------------|-----|-------------|------|------|
| REV             | ECO | DESCRIPTION | DRFT | CHKD |
|                 |     |             |      |      |
|                 |     |             |      |      |

NOTE:

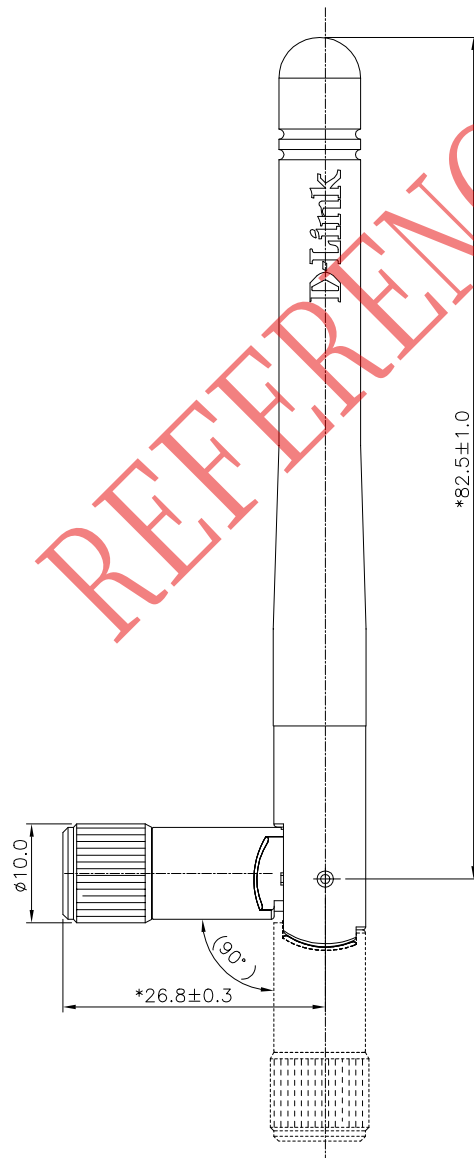
- ELECTRICAL PROPERTIES
- 1.DESCRPTION :  $1/4\lambda$  SWIVEL TYPE DIPOLE ANTENNA  
 $\phi 9 \times 82.5 \pm$  SMA
  - 2.MODEL NO. : AN-A1
  - 3.FREQUENCY : 2400~2500MHz
  - 4.IMPEDANCE : 50 Ohms nominal
  - 5.V.S.W.R. : 2.0 max. IN BAND
  - 6.GAIN : 1.14~2.14 dBi, VERTICAL DIRECTION
  - 7.ADMITTED POWER RADLATION : 1W
  - 8.TYPE OF RADLATION : TOROIDAL
  - 9.POLARIZATION : VERTICAL
  - 10.ELECTRICAL LENGTH :  $1/4\lambda$  ,DIPOLE
  - 11.RADIATION : Omni
  - 12.CONNECTOR TYPE : SMA (MALE/FEMALE OPTION)

## MECHANICAL PROPERTIES

- 1.CABLE : RG-178, 50ohm
- 2.OPERATING TEMPERATURE RANGE :  $-20^{\circ}\text{C} \sim +65^{\circ}\text{C}$
- 3.STORAGE TEMPERATURE RANGE :  $-30^{\circ}\text{C} \sim +75^{\circ}\text{C}$
- 4.ANTENNA COVER : TPEE
- 5.COLOR : GRAY (PATONE: #COOL GRAY 8C)

PART NUMBER : E421X-200000R04

CONNECTOR  
C:R-SMA (FEMALE)  
D:SMA (MALE)



| ← MM →         |                            | DFTO                 | CXQ  | DATE                            | 6/16/04" |
|----------------|----------------------------|----------------------|------|---------------------------------|----------|
| DETACHED LISTS | TOLERANCES EXCEPT AS NOTED | CHKD                 | DATE | FULL RISE ELECTRONIC CO., LTD   |          |
|                |                            | MFO                  | DATE |                                 |          |
|                |                            | APPVL                | DATE |                                 |          |
|                |                            |                      |      |                                 |          |
|                | .0 ± 0.2                   | MATERIAL :           |      | TITLE                           |          |
|                | .00 ± 0.15                 |                      |      |                                 |          |
|                | .000 ± 0.075               |                      |      |                                 |          |
|                | ANGLES ± 0.5               | QT'Y :               |      | ANTENNA $\phi 9$ +SMA CONNECTOR |          |
|                |                            | FINISH :             |      | DRAWING NO.                     | GE423P14 |
|                |                            | SCALE : 2:1          |      | /PART NO.                       | SEE NOTE |
|                |                            | DO NOT SCALE DRAWING |      | SIZE                            | A3       |
|                |                            | SHEET 1 OF 1         |      | REV                             | 0        |

7-506924000116(E8429) A

**SPECIFICATION AND PERFORMANCE  
FOR APPROVAL**

P/N: E421C-200000R04 2004/7/23 REV.0 4 of 25

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**●Electrical Properties:**

1. Frequency Range: 2.4 ~ 2.5 GHz
2. Impedance: 50 Ohms nominal
3. VSWR: 2.0 max. IN BAND
4. Gain :1.14~2.14 dBi,Vertical direction
5. Radiation: Omni
6. Polarization: Vertical
7. Electrical Wave: Dipole
- 8.Connector type: SMA CONNECTOR

**●Mechanical properties:**

1. Cable:RG-178,50ohm
- 2.Operating temperature range:-20°C~+65°C
- 3.Storage temperature range:-30°C~+75°C
- 4.Antenna cover:TPEE
- 5.Color:Gray

# SPECIFICATION AND PERFORMANCE FOR APPROVAL

P/N: E421C-200000R04

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FULL RISE ELECTRONIC CO., LTD.

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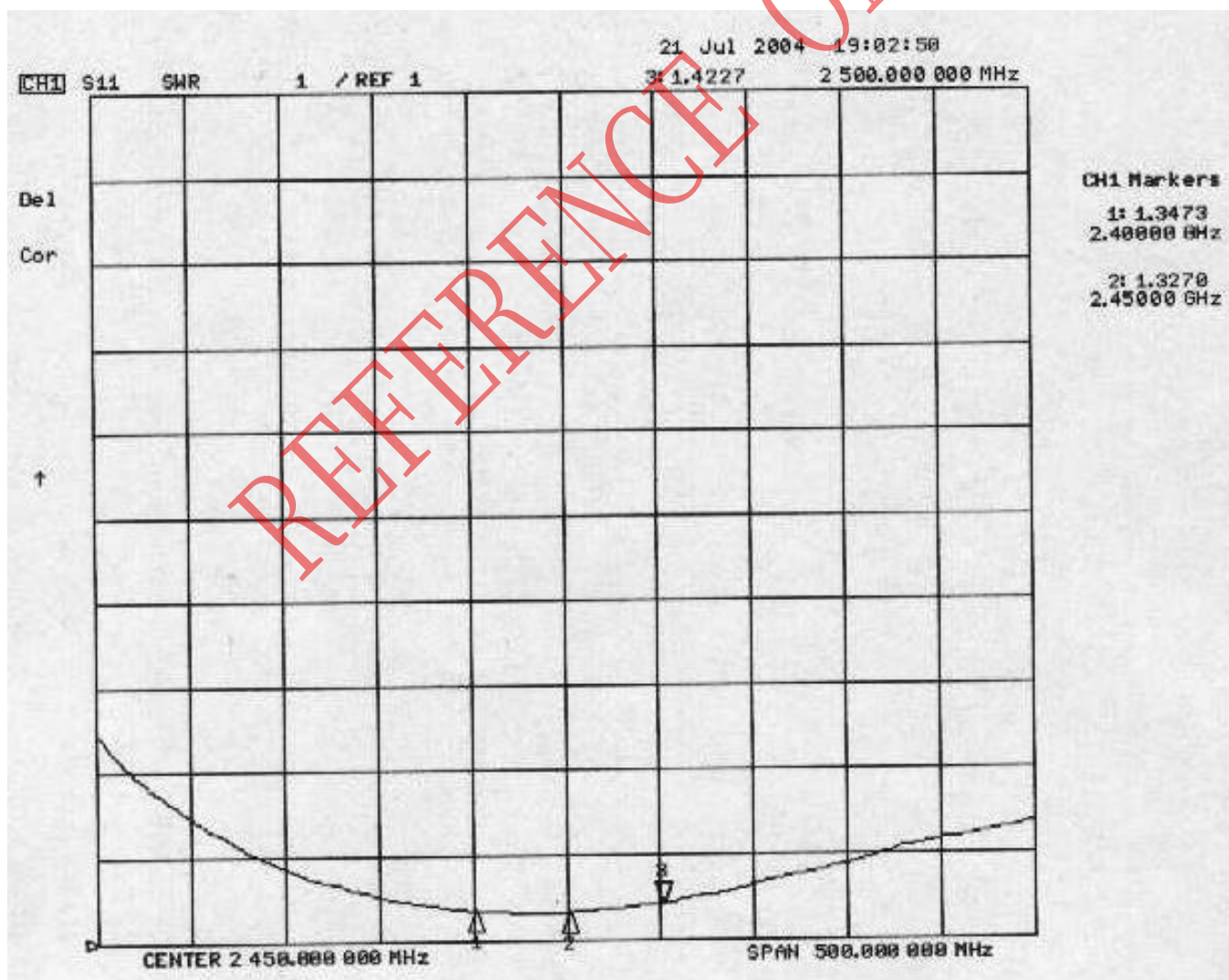
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## ●Test Result:

1.V.S.W.R(For Specification 4.1):  $\leq 2.0$ 

| Frequency | 2.4 GHz | 2.45 GHz | 2.5 GHz |
|-----------|---------|----------|---------|
| Sample 1  | 1.347   | 1.327    | 1.422   |
| Sample 2  | 1.376   | 1.325    | 1.427   |
| Sample 3  | 1.317   | 1.328    | 1.407   |
| Sample 4  | 1.387   | 1.326    | 1.428   |
| Sample 5  | 1.337   | 1.328    | 1.421   |

V.S.W.R Profiles



# SPECIFICATION AND PERFORMANCE FOR APPROVAL

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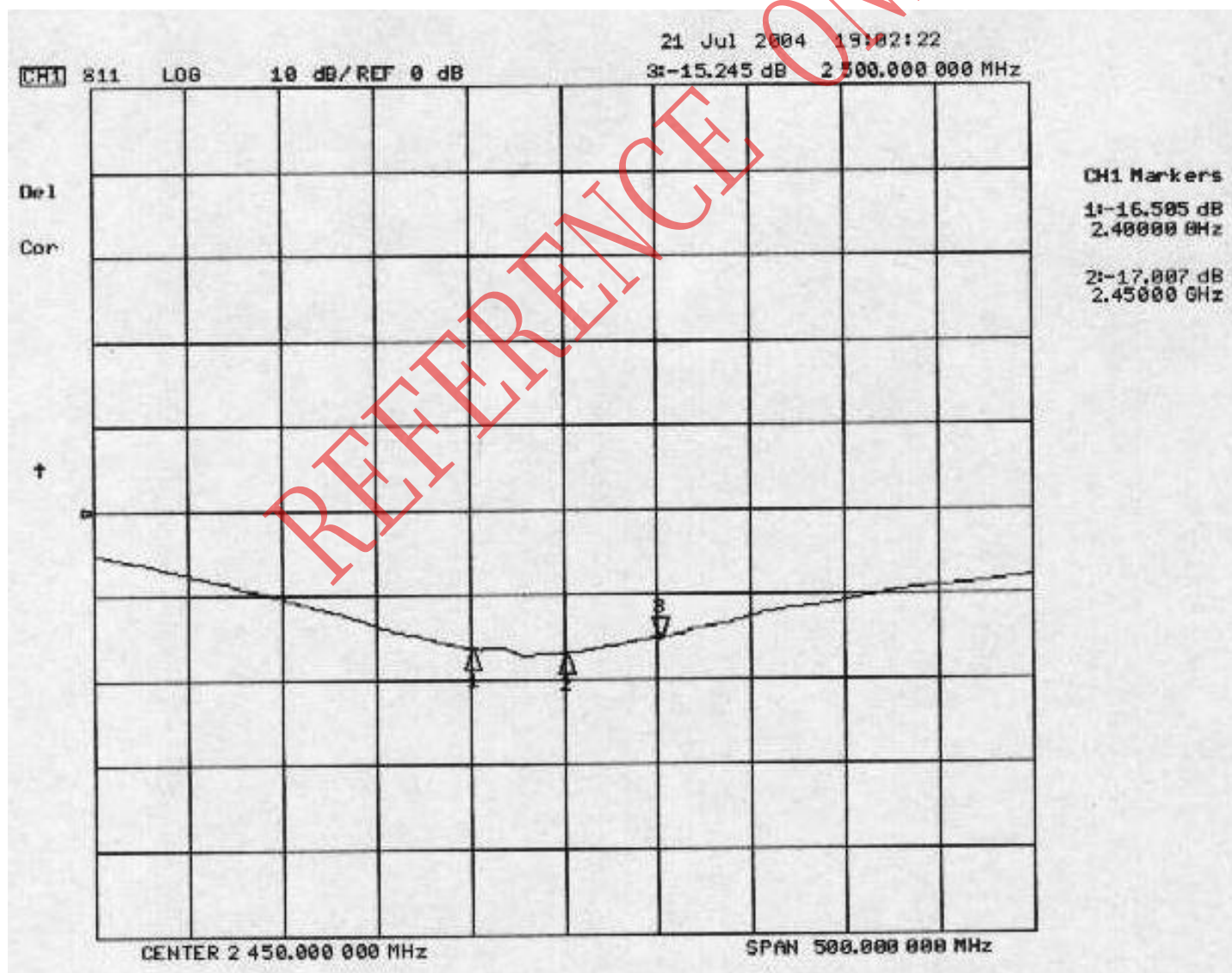
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## 2.Return Loss(For Specification 4.2): $\leq -10$ dB

| Frequency | 2.4 GHz   | 2.45 GHz  | 2.5 GHz   |
|-----------|-----------|-----------|-----------|
| Sample 1  | -16.50 dB | -17.00 dB | -15.24 dB |
| Sample 2  | -16.52 dB | -16.85 dB | -15.41 dB |
| Sample 3  | -15.51 dB | -16.57 dB | -15.23 dB |
| Sample 4  | -16.89 dB | -17.09 dB | -15.25 dB |
| Sample 5  | -16.73 dB | -17.05 dB | -15.29 dB |

## Return Loss Profile



# SPECIFICATION AND PERFORMANCE FOR APPROVAL

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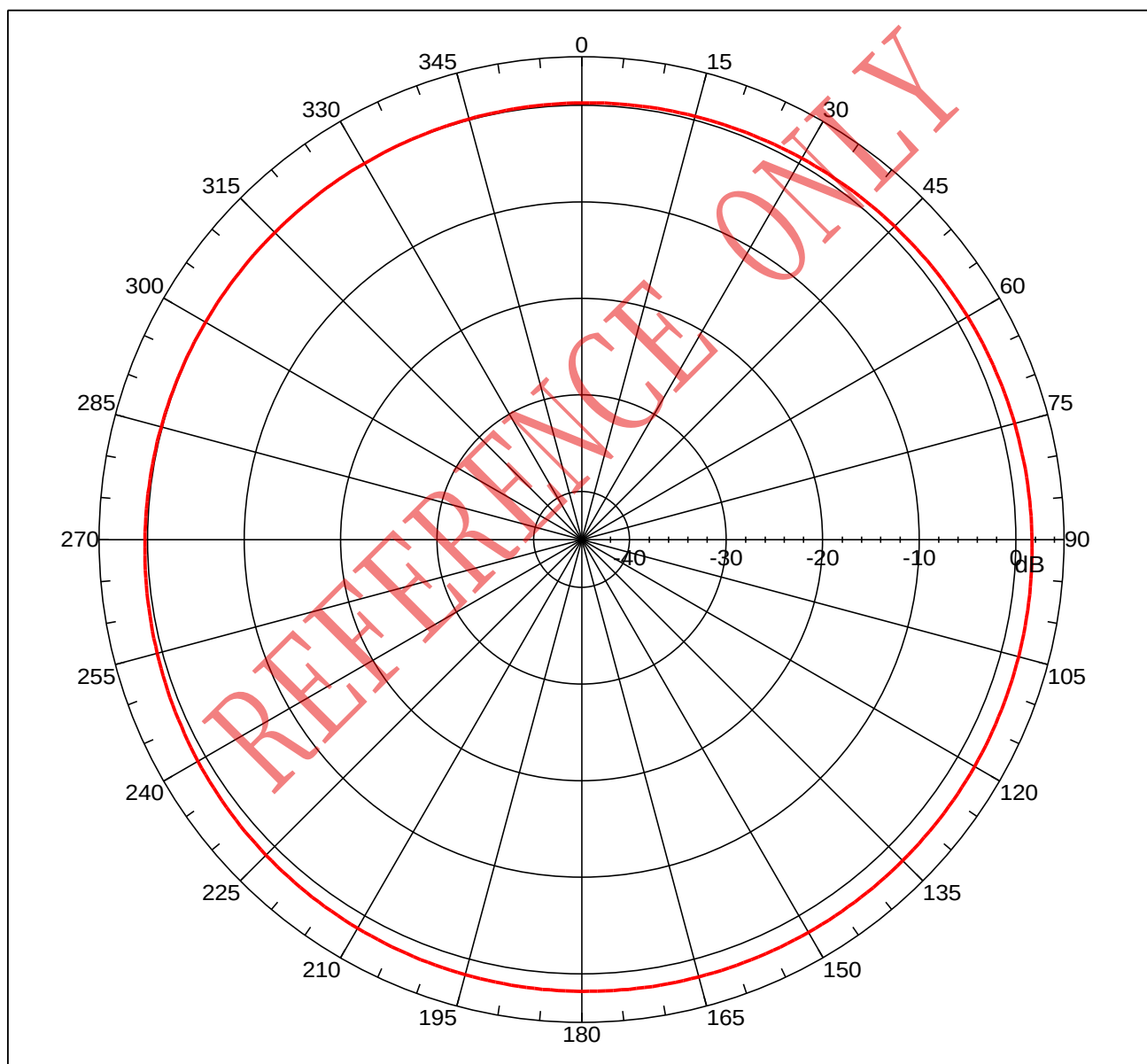
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## 3. Gain (For Specification 4.5):1.14~2.14 dBi

### 2.4 GHz H-Plain Field Pattern

E421C-200000R04 + %9 + RSMA\_Hcut.nsi

2.4 GHz 1.807 dBi



# SPECIFICATION AND PERFORMANCE FOR APPROVAL

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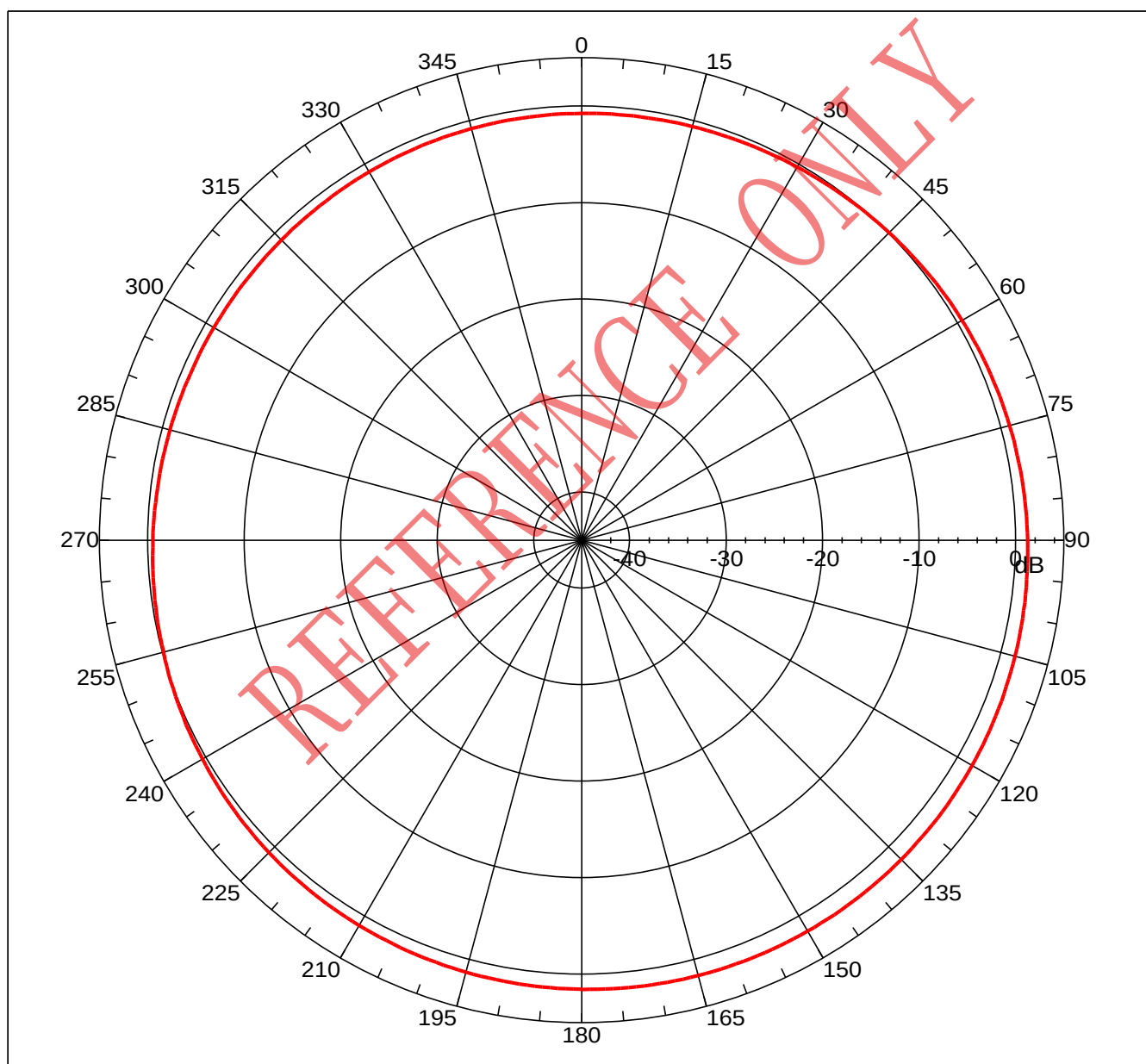
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## 2.45 GHz H-Plain Field Pattern

E421C-200000R04 + %9 + RSMA\_Hcut.nsi

2.45 GHz 1.855 dBi



# SPECIFICATION AND PERFORMANCE FOR APPROVAL

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FULL RISE ELECTRONIC CO., LTD.

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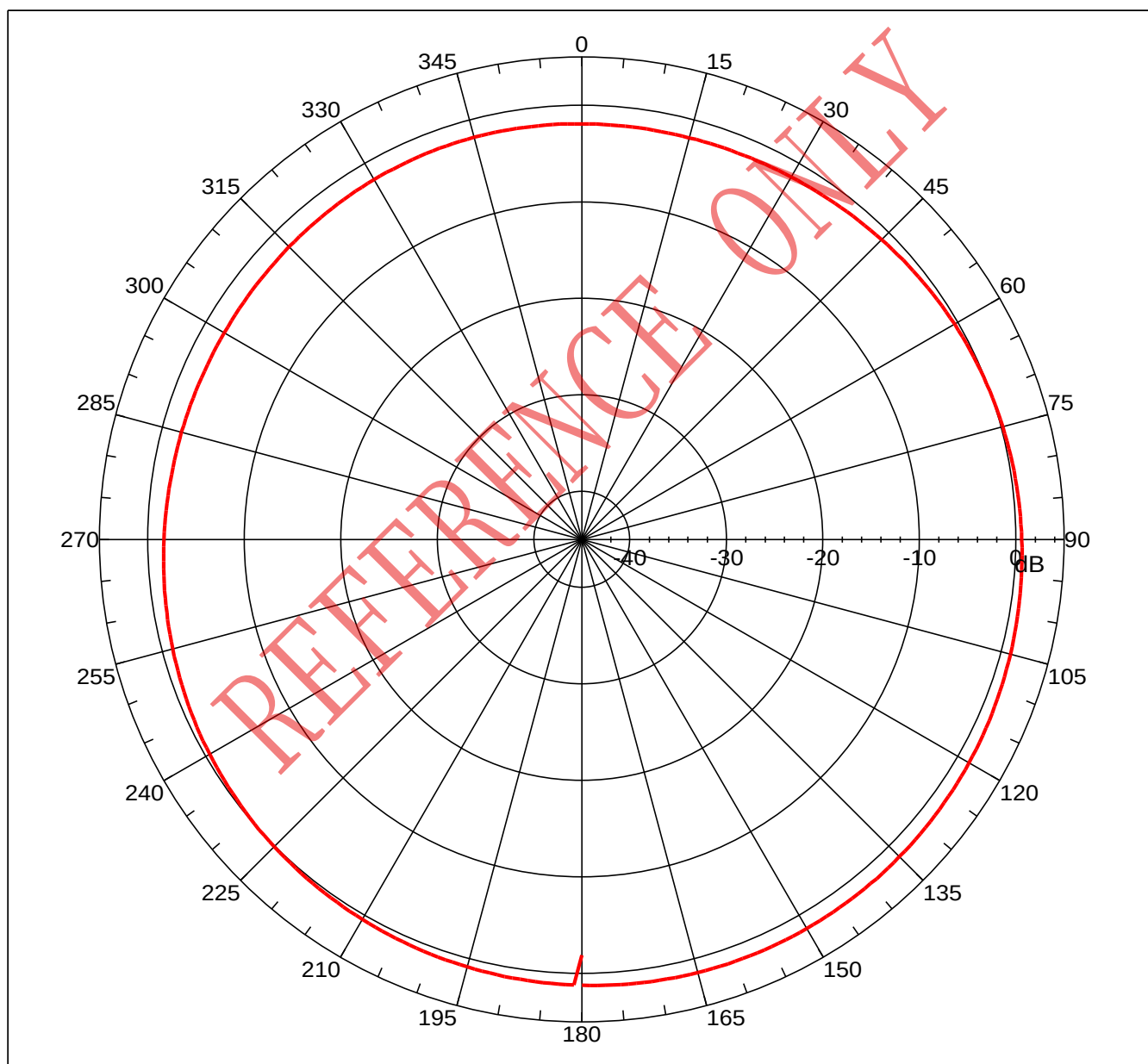
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## 2.5 GHz H-Plain Field Pattern

E421C-200000R04 + %9 + RSMA\_Hcut.nsi

2.5 GHz 1.777 dBi



# SPECIFICATION AND PERFORMANCE FOR APPROVAL

P/N: E421C-200000R04 2004/7/23 REV.0 10 of 25

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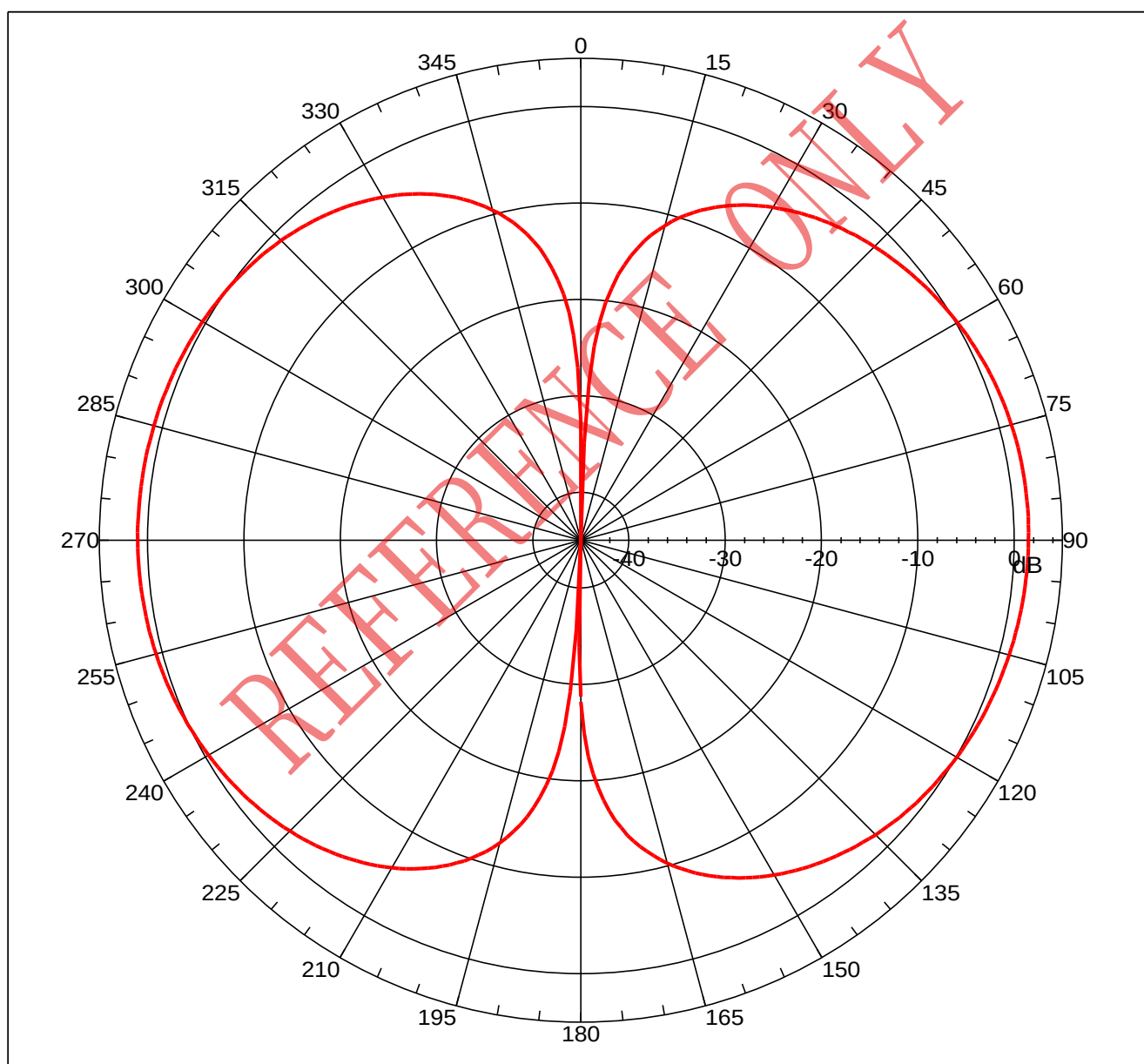
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## 2.4 GHz V-Plain Field Pattern

E421C-200000R04 + %9 + RSMA\_Vcut.nsi

2.4 GHz 1.801 dBi



# SPECIFICATION AND PERFORMANCE FOR APPROVAL

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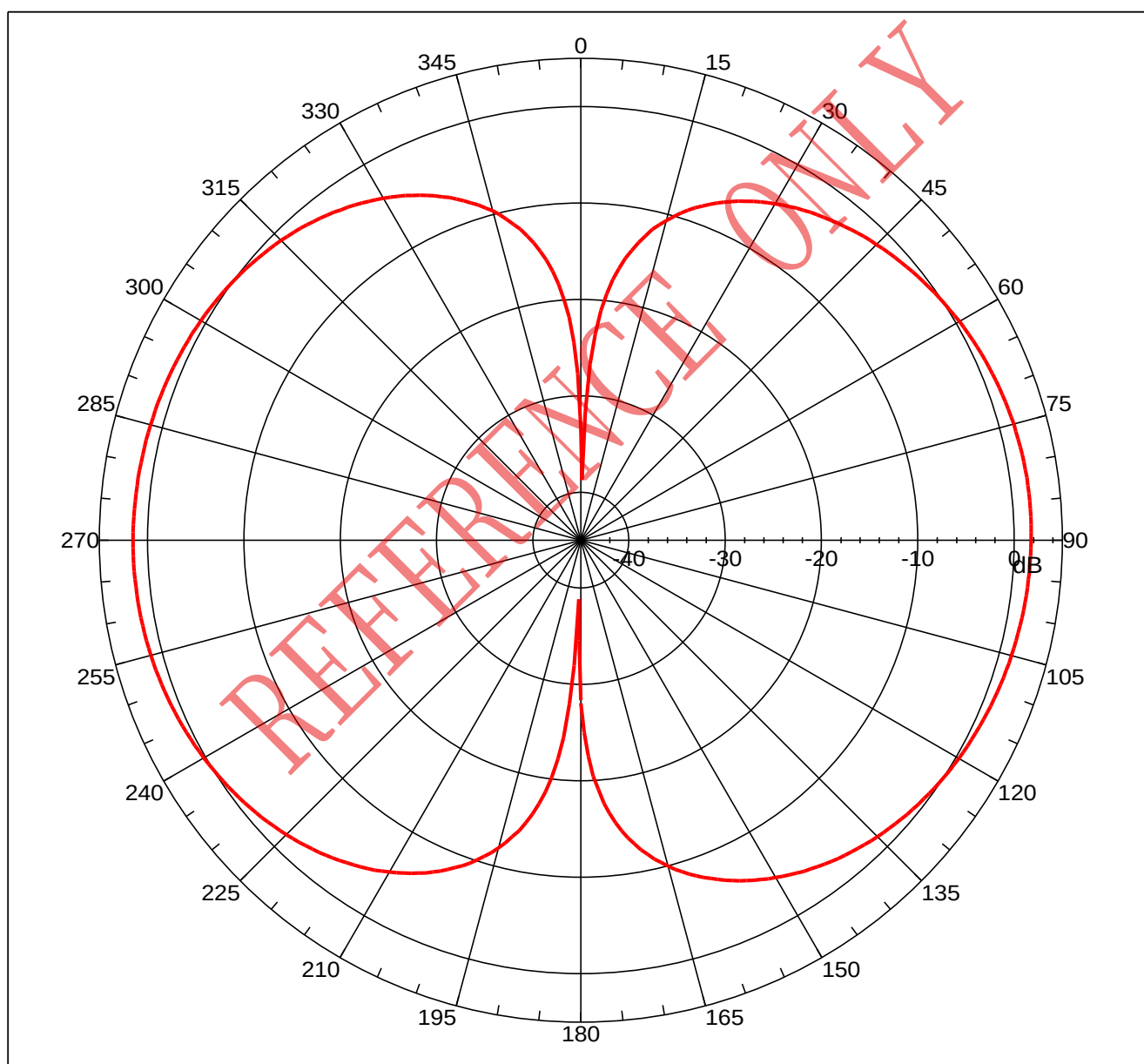
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## 2.45GHz V-Plain Field Pattern

E421C-200000R04 + %9 + RSMA\_Vcut.nsi

2.45 GHz 1.871 dBi



# SPECIFICATION AND PERFORMANCE FOR APPROVAL

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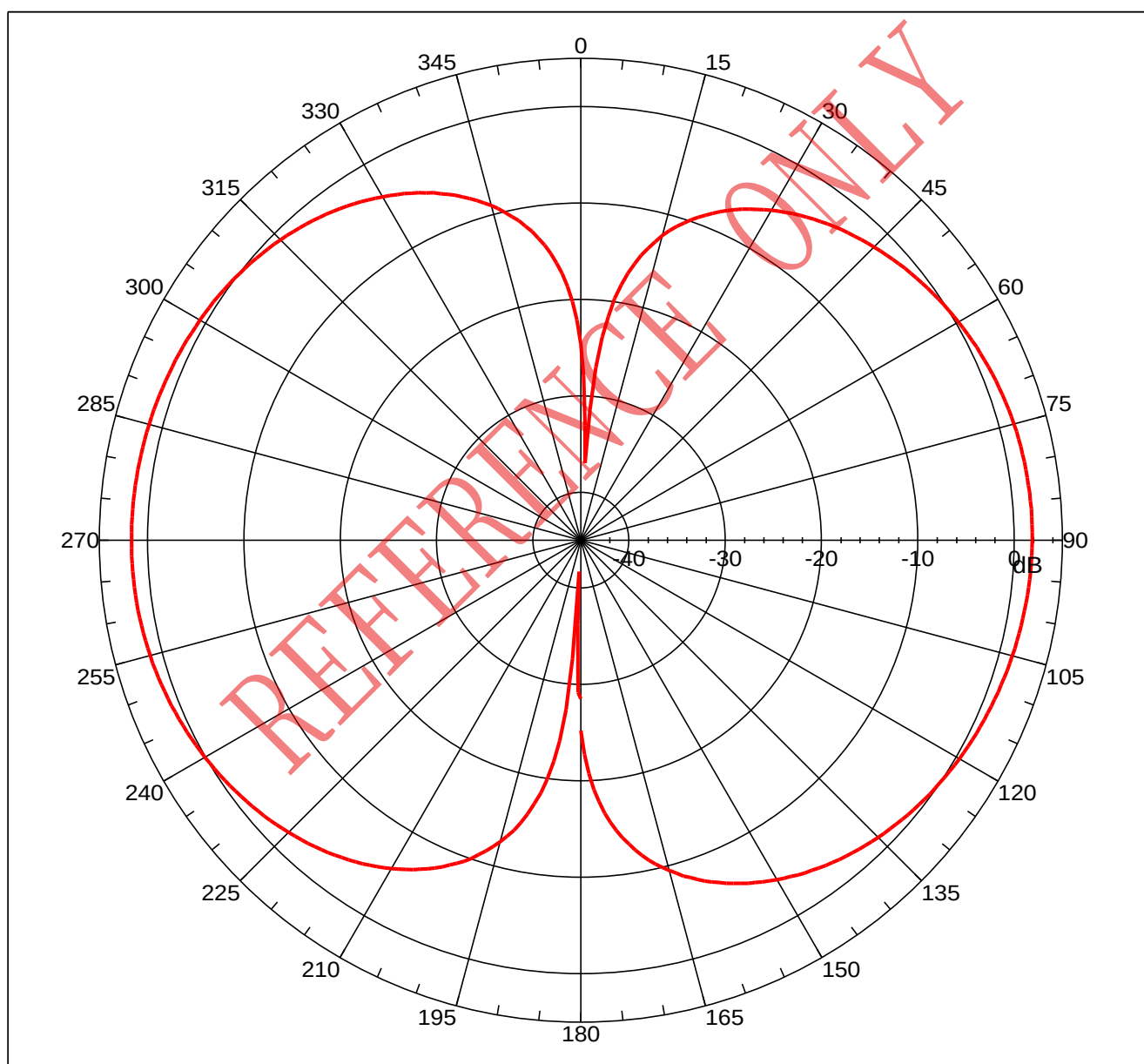
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## 2.5GHz V-Plain Field Pattern

E421C-200000R04 + %9 + RSMA\_Vcut.nsi

2.5 GHz 1.809 dBi



## T-BLEND<sup>®</sup> 9094N-DV

### Thermoplastic Elastomer Technical Document

T-BLEND<sup>®</sup>9094N-DV is a pre-formulated and palletized general-purpose thermoplastic elastomer compound based on TPV Raw material.

It is designed for the over-molding of soft-touch elastomer components onto hard olefin thermoplastics such as PP resins. This material exhibits excellent flow properties and offers molded articles with fine texture, dry surface and excellent rubbery feeling. And it gets the matt surface similar to the TPV product.

Being a thermoplastic elastomer, T-BLEND<sup>®</sup>9094N-DV can be easily processed with general processing equipment and tools designed for thermoplastics and yet possess elastomeric properties at ambient temperatures.

## Properties

| Characteristics                                 | Methods     | Typical values |
|-------------------------------------------------|-------------|----------------|
| Product Form                                    | NA          | Pellets        |
| Colour                                          | NA          | Natural        |
| Specific Gravity                                | ASTM D 792  | 0.9            |
| Hardness (Injection Test Piece)                 | ASTM D 2240 | 90 ±3          |
| Tensile Strength at Break (kg/cm <sup>2</sup> ) | ASTM D 412  | 97.4           |
| Elongation at Break (%)                         | ASTM D 412  | 397            |
| 300% Modulus (kg/cm <sup>2</sup> )              | ASTM D 412  | 91.2           |
| Melt Flow Index 5 kg @ 180 °C                   | ASTM D 1238 | 52             |
| Tear strength (kg/cm)                           | ASTM D 624  | 70             |
| Rebound (%)                                     | ASTM D1054  | 40.4           |
| Akron (c.c)                                     | B.S 903     | 0.09           |
| Compression set ( %) 70°C*22hrs                 |             | 42             |

## Processing Guide

T-BLEND<sup>®</sup>9094N-DV rubber is a versatile material and can be processed by using high shear rate injection molding methods. Stability of T-BLEND<sup>®</sup>9094N-DV is excellent at normal processing temperature. However should inadvertent loss of temperature control lead to decomposition the degradation products are non-corrosive. Generally, it reacts the same as other easy molding thermoplastics, such as polystyrenes. The finished parts have sharp and well-defined details.

Typical starting conditions for a reciprocating screw injection-molding machine are listed in the accompanying chart. These values are intended only as guidelines, and the optimum conditions will vary from machine to machine.

All products purchased from or supplied by TSRC CORPORATION are subject to terms and conditions set out in the sales contract, order confirmation and/or bill of lading. TSRC CORPORATION warrants only that its product will meet those specifications designated as such herein or in other publications. All other information supplied by TSRC CORPORATION is considered accurate but is furnished upon the expressed condition that the customer shall make its own assessment to determine the application. TSRC CORPORATION makes no other warranty either expressed or implied. Including the product's suitability for a particular purpose or those regarding such other information, the data upon which the same is based, or the results to be obtained from the use thereof; that any product shall be merchantable or fit for any particular purpose; or that the use of such other information or product will not infringe any patent.

TSRC CORPORATION  
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Kaohsiung, Taiwan 815, R.O.C.  
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Fax : 886-7-352-0024  
E-mail : [darcy@tsrc.com.tw](mailto:darcy@tsrc.com.tw)

## T-BLEND<sup>®</sup> 9094N-DV

### Thermoplastic Elastomer

### Technical Document

Typical mold shrinkage for T-BLEND<sup>®</sup>9094N-DV is between 0.010-0.020 inch/inch. Short cycle time can be achieved and the scrap is 20% recyclable without loss in properties.

LDPE or EVA colour concentrates can be used to colour T-BLEND<sup>®</sup>9094N-DV.

| Suggested Processing Conditions |              |
|---------------------------------|--------------|
| Barrel temperature              |              |
| Feed                            | 80° C        |
| Rear                            | 170° C       |
| Front                           | 180° C       |
| Nozzle                          | 190° C       |
| Mold temperature                | 30 - 40° C   |
| Back pressure                   | 50 - 100 psi |
| Injection rate                  | Moderate     |
| Cycle time                      | 25 - 50 sec  |

#### Precaution in handling and storing

T-BLEND<sup>®</sup>9094N-DV rubber pellets present no unusual handling problems, thus normal procedures for handling solids that might form a dust should be followed.

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E-mail : [darcy@tsrc.com.tw](mailto:darcy@tsrc.com.tw)

From = 安泰弘

## 宮前五金股份有限公司

No. 128

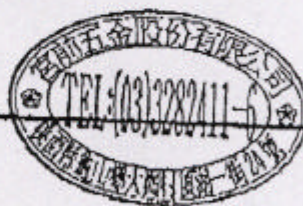
## 檢驗報告表

編號: 891207

|                       |       |                             |           |                     |
|-----------------------|-------|-----------------------------|-----------|---------------------|
| 客 戶                   |       | ELITE ELECTRONICS CO., LTD. |           |                     |
| 品 名                   |       | FREE CUTTING BRASS ROD      |           |                     |
| 規 格                   |       | JIS H3250 C3604 BD          |           |                     |
| 數 據                   |       |                             |           |                     |
| 項 目                   |       | 標 準 值                       | 實 測 值     | 備 註                 |
| 化<br>學<br>成<br>份<br>% | Cu    | 57.0 - 61.0                 | 58.98     | 六角11.0m/m 六角8.0m/m  |
|                       | Pb    | 1.8 - 3.7                   | 3.40      | 六角12.7m/m           |
|                       | Fe    | < 0.5                       | -----     | 四角11.0m/m 四角9.5m/m  |
|                       | Sn+Fe | < 1.2                       | 0.74      | 丸 21.0m/m 丸 19.0m/m |
|                       | Zn    | REMAINDER                   | REMAINDER | 丸 11.0m/m 丸 9.0m/m  |
| 其<br>它                |       |                             |           | 丸 6.35m/m           |
|                       |       |                             |           |                     |
|                       |       |                             |           |                     |



TEL: (03) 2282111-5



桃園縣龜山鄉頂湖一街 24 號 TEL: (03) 3283068-70

Tef.

APPENDIX (附录)

LEO ME PTFE Rod is manufactured with virgin PTFE powder by ram extrusion or compression molding and is conformed to meet the requirement of ASTM

TABLE 1 Detail Specification for PTFE Rod

| ITEM | PROPERTY                                                                       | ASTM TEST METHOD | VALUE                         |
|------|--------------------------------------------------------------------------------|------------------|-------------------------------|
| 1    | Specific gravity                                                               | D792             | 2.15-2.2                      |
| 2    | Tensile strength                                                               | D638             | 280-350<br>kg/cm <sup>2</sup> |
| 3    | Elongation                                                                     | D638             | 200-400%                      |
| 4    | Dielectric strength                                                            | D149             | 30KV/mm                       |
| 5    | Deformation under load. 6.9Mpa, 50C, %                                         | D621             | 3.5 - 6                       |
| 6    | Dissipation factor 1 KHz                                                       | D150             | Less than<br>.0.0005          |
| 7    | Dielectric constant 1 KHz                                                      | D150             | 2.0 - 2.1                     |
| 8    | Volume resistivity                                                             | D257             | > 10 <sup>16</sup>            |
| 9    | Surface resistivity                                                            | D257             | 10 <sup>17</sup>              |
| 10   | Flexural modulus                                                               | D790             | 430-500Mpa                    |
| 11   | Compressibility                                                                | D1147            | 16-20%                        |
| 12   | Hardness, durometer                                                            | D2240            | D53 - D60                     |
| 13   | Impact strength                                                                | D256             | 16kg-cm/cm                    |
| 14   | Coefficient of linear thermal expansion, per C. 30C to 80C, 10 <sup>-5</sup> C | D696             | 12.3<br>to<br>11.6            |

G. 7.11

浩裕興業有限公司

台北縣新莊市復興路三段 87 號

TEL:(02)29907903

FAX:(02)29978644

數據組編號：

1

|     |   |      |              |
|-----|---|------|--------------|
| n = | 1 | Au = | 5.47 $\mu$ " |
| n = | 2 | Au = | 6.38 $\mu$ " |
| n = | 3 | Au = | 4.56 $\mu$ " |
| n = | 4 | Au = | 4.37 $\mu$ " |
| n = | 5 | Au = | 4.12 $\mu$ " |

XRAY XDL

數據組編號： 1

產品名稱： Au

數據組結果  
(Flash 3  $\mu$ " )

校正標準片

Au

|      |    |                |
|------|----|----------------|
| 平均值  | X: | 4.982 $\mu$ "  |
| 標準差  | S: | 0.9328 $\mu$ " |
| 讀值數量 | n: | 5              |
| 最小值  |    | 4.122 $\mu$ "  |
| 最大值  |    | 6.382 $\mu$ "  |

886 2 29898188

FUN JAN CO LTD

01#04月11日 14:00:00 01/01

SHYANG RWEV. INDUSTRIAL CO. LTD. FAX NO. : 886282511746

APR. 11 2001 02:26PM P. 1

**BRUSHWELLMAN**  
ENGINEERED MATERIALSReading Plant  
Shoemakersville Road  
READING PA 19555  
USA  
Phone: (216) 486-4200  
Fax: \*Brush Wellman Singapore (S) Pte.  
Ltd.  
110 Paya Lebar Road, #02-01  
409009 SINGAPORE  
SINGAPORE

SR0057 2.5

Material Certificate

Date 07/19/2000

Purchase order item/date  
S80751 / 03/13/2000

Delivery item/date  
60095259 000010 / 07/24/2000

Order item/date  
53625 000030 / 03/14/2000

Customer nbr 11817  
Customer part nbr  
Customer spec

Rev Type Comp Class Grade

Our Material: K575850200 ROD CD M25 H 09840 X

Brush Wellman testing for chemical composition (by Optical Emission Spectrometry), is conducted at our Simora, OH Laboratory. Testing of mechanical or physical properties is conducted at Laboratories which are accredited by American Association for Laboratory Accreditation.

This material was inspected and tested for conformity as required in accordance with the noted part specification, and revision number. The quantitative test data obtained from these tests are available for review by the buyer.

Batch 0000175447 / Quantity 1,195.000 LBS

| Characteristic                | Unit | Value        | Specification Lower | Limits Upper |
|-------------------------------|------|--------------|---------------------|--------------|
| CDP (UNG) Alloy               |      | 077300       |                     |              |
| ASTM Temper                   |      | 1004         |                     |              |
| Brush Spec Nbr.               |      | BWT-RW5.00-2 |                     |              |
| <u>Dimensional Attributes</u> |      |              |                     |              |
| Diameter                      |      | 0.09840      |                     |              |
| Diameter Plus                 |      | 0.00197      |                     |              |
| Diameter Minus                |      | 0.00197      |                     |              |
| Length                        |      | 51.42525     |                     |              |
| Length Plus                   |      | 0.25000      |                     |              |
| Length Minus                  |      | 0.00000      |                     |              |

Mechanical/Physical Properties

|                |     |       |       |  |       |
|----------------|-----|-------|-------|--|-------|
| Grain Size     | mm  | 0.024 |       |  | 0.050 |
| Tensile        | kgf | 25.8  | 63.0  |  | 88.0  |
| Yield          | kgf | 61.0  | 52.0  |  | 74.0  |
| Elongation     | %   | 12.0  | 10.0  |  |       |
| Hardness Scale |     | HV    |       |  |       |
| Hardness Value |     | 254.0 | 200.0 |  | 270.0 |

The material supplied with this certification has not been heat treated. The properties were achieved in Brush Wellman's laboratory. They represent what the material would achieve using the time and temperatures

P.02 10 0286910397

08-AUG-2003 17:10 FROM

CERTIFIED TRUE COPY

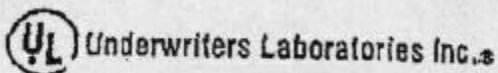


54-2X  
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鋼管 5 1/2 吋 2 吋 1 1/2 吋

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|                                                  |  |                                              |  |
|--------------------------------------------------|--|----------------------------------------------|--|
| 振吉電化股份有限公司<br>Chen Chi Electro Chemical Co., Ltd |  | Vacuum Emission Spectrometer Analysis Report |  |
| Job Description: 材料分析                            |  | Sample No: 1                                 |  |
| Date Issued: 87.7.12                             |  | Sample Received: 87.6.12                     |  |
| ANALYTIC RESULT:                                 |  | ANALYTIC RESULT:                             |  |
| AD-No: 1                                         |  | AD-No: 1                                     |  |
| Ca                                               |  | Ca                                           |  |
| N=1 08.841                                       |  | N=1 08.841                                   |  |
| N=2 86.730                                       |  | N=2 86.730                                   |  |
| AVE 86.785                                       |  | AVE 86.785                                   |  |
| Sb                                               |  | Sb                                           |  |
| N=1 00230                                        |  | N=1 00230                                    |  |
| N=2 00159                                        |  | N=2 00159                                    |  |
| AVE 00199                                        |  | AVE 00199                                    |  |
| As                                               |  | As                                           |  |
| N=1 00635                                        |  | N=1 00635                                    |  |
| N=2 00603                                        |  | N=2 00603                                    |  |
| AVE 00619                                        |  | AVE 00619                                    |  |
| Remarks: 本報告僅對送檢樣品負責。                            |  | Remarks: 本報告僅對送檢樣品負責。                        |  |
| Division Chief:                                  |  | Division Chief:                              |  |
| Inspector:                                       |  | Inspector:                                   |  |



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GREAT HOLDING INDUSTRIAL CO LTD  
MR H WANG  
516-13 CHUNG-CHENG RD  
SHIN-CHUANG  
TAIPEI HSIEN TAIWAN



Your most recent listing is shown below. Please review this information and report any inaccuracies to the UL Engineering staff member who handled your UL project.

YOPU2  
Component - Extruded Tubing, Electrical

GREAT HOLDING INDUSTRIAL CO LTD  
516-13 CHUNG-CHENG RD SHIN-CHUANG, TAIPEI HSIEN  
TAIWAN

E156256 (S)  
(A card)

| Cat. No.                        | Max<br>Voltage | Max<br>Temp, C | Col<br>Recognized | Max<br>Temp<br>Rated Oil<br>Resistance*, °C | VW-1<br>Rated # |
|---------------------------------|----------------|----------------|-------------------|---------------------------------------------|-----------------|
| Polytetrafluoroethylene (PTFE). |                |                |                   |                                             |                 |
| TFL                             | 150            | 200            | BL, NAT           | —                                           | Yes             |
| TFT                             | 300            | 200            | BL, NAT           | —                                           | Yes             |
| TFS                             | 600            | 200            | BL, NAT           | —                                           | Yes             |

\*. Tubing is considered to comply with the optional or resistance requirements only if so marked.  
#. Tubing is considered to comply with the optional VW-1 flammability requirements only if so marked.

Report: January 25, 1994.

915930001

H3088

Underwriters Laboratories Inc.®

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011/0247451  
213

For information on placing an order for UL Listing Cards in a 3 x 5 inch card format, please refer to the enclosed ordering information.

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# SPECIFICATION FOR APPROVAL

DOCUMENT: A30178B001

STYLE : 200°C 30V  
RG-178B/U

SIZE: 7/0.102 SCCS

RECOGNIZED:

WONDERFUL HI-TECH CO.,LTD

OFFICE : 72WU KONG 6TH ROAD,  
WU KU IND. DISTRICT  
TAIPEI HSIEN,TAIWAN

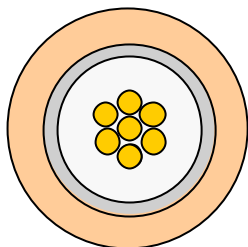
TEL : (02)22988033  
FAX : (02)22988031-2

FACTORY : 17 PEI YUAN ROAD,  
CHUNG-LI IND. PARK  
TAIWAN, R.O.C.

TEL : (03)4527777  
FAX : (03)4517214

# WONDERFUL HI-TECH CO., LTD

## SPECIFICATION

|                     |                                                                                     |                                             |
|---------------------|-------------------------------------------------------------------------------------|---------------------------------------------|
| STYLE               | 200°C 30V<br>COAXIAL                                                                | DOCUMENT NO :<br>A30178B001                 |
| SIZE                | RG-178B/U                                                                           | ESTABLISHED DATE:<br>2003/02/13             |
| STANDARD : MIL-C-17 |                                                                                     |                                             |
| Conductor           | Size                                                                                | AWG 30                                      |
|                     | Material                                                                            | -----<br>Silver-Coated Copper<br>Clad Steel |
|                     | Conductors No.                                                                      | -----<br>7                                  |
|                     | Conductors Size                                                                     | mm 0.102                                    |
|                     | O.D.                                                                                | mm 0.30                                     |
| Insulation          | Average Thickness                                                                   | mm 0.28                                     |
|                     | Diameter                                                                            | mm 0.86                                     |
|                     | Material                                                                            | -----<br>FEP                                |
|                     | Color                                                                               | -----<br>Clear                              |
| Braid               | Material                                                                            | -----<br>Silver-Coated Copper               |
|                     | Construction                                                                        | mm 16 / 3 / 0.10                            |
|                     | Coverage                                                                            | % 95                                        |
| Jacket              | Average Thickness                                                                   | mm 0.25                                     |
|                     | Diameter                                                                            | mm 1.80 ±0.05                               |
|                     | Material                                                                            | -----<br>FEP                                |
|                     | Color                                                                               | -----<br>Brown                              |
| Marking             |                                                                                     |                                             |
| Drawing             |  |                                             |

AK001/210X297/1.0

PAGE : 1

EDITION : 1.1

REVISED DATE :

MAKER : C.Y.CHEN

CONFIRM : S.N.WONG

APPROVAL : W.J.WANG

# WONDERFUL HI-TECH CO., LTD

## SPECIFICATION

| Electrical & Physical Properties |        |                  |        |                                            |        |      |  |
|----------------------------------|--------|------------------|--------|--------------------------------------------|--------|------|--|
| Item                             |        |                  |        | RG-178B/U                                  |        |      |  |
| Rating Temp Voltage              |        |                  |        | 200°C 30V                                  |        |      |  |
| Conductor Resistance             |        |                  |        | 838 OHM/KM/20°C MAX.                       |        |      |  |
| Insulation Resistance            |        |                  |        | 3000 MEGA OHM/KM MIN.                      |        |      |  |
| Dielectric Strength              |        |                  |        | AC 1.0 KV/Minute                           |        |      |  |
| Spark Test                       |        |                  |        | 2.0 KV                                     |        |      |  |
| Insulation                       | Unaged | Tensile Strength |        | 2500 PSI MIN.( 1.76 Kg / mm <sup>2</sup> ) |        |      |  |
|                                  |        | Elongation       |        | 200% MIN.                                  |        |      |  |
|                                  | Aged   | Tensile Strength |        | UNAGED MIN 75%(168HRS×232°C)               |        |      |  |
|                                  |        | Elongation       |        | UNAGED MIN 75%(168HRS×232°C)               |        |      |  |
| Jacket                           | Unaged | Tensile Strength |        | 2500 PSI MIN.( 1.76 Kg / mm <sup>2</sup> ) |        |      |  |
|                                  |        | Elongation       |        | 200% MIN.                                  |        |      |  |
|                                  | Aged   | Tensile Strength |        | UNAGED MIN.75%(168HRS×232°C)               |        |      |  |
|                                  |        | Elongation       |        | UNAGED MIN.75%(168HRS×232°C)               |        |      |  |
| Nom. Impedance                   |        |                  |        | 50 Ohms                                    |        |      |  |
| Nom. Capacitance                 |        |                  |        | 95.8 pF/m                                  |        |      |  |
| Nom. Vel. of Prop.               |        |                  |        | 69.5%                                      |        |      |  |
| VSWR (0 – 6 GHZ)                 |        |                  |        | UNDER 1.3                                  |        |      |  |
| Attenuation (dB/100m)            | 100MHz | 1GHz             | 1.8GHz | 2.4GHz                                     | 5.2GHz | 6GHz |  |
|                                  | 46     | 155              | 295    | 340                                        | 505    | 550  |  |

AK001/210X297/1.0

PAGE : 2

EDITION : 1.1

REVISED DATE :

MAKER : C.Y.CHEN

CONFIRM : S.N.WONG

APPROVAL : W.J.WANG



SGS Taiwan Ltd.

208, Chung Hwa 2nd Road, San  
Min District Kaohsiung, Taiwan.  
Tel : (07) 3230920  
Fax: (07) 3157484

REPORT NO . KE/2003/20813  
PAGE NO . 1 OF 2  
DATE . 2003/02/27

## Test Report

THE FOLLOWING MERCHANDISE WAS (WERE) SUBMITTED AND IDENTIFIED BY THE CLIENT AS :

**CLIENT** TSRC CORPORATION.  
**CARGO** TPR-9094N(B)-DV. (AS ATTACHED SAMPLE CARD).  
**COLOR** WHITE.  
**STYLE/ITEM NO.** TPR-9094N(B)-DV.  
**MATERIAL COMPONENT** TPR.  
**TESTING DATE** 2003/02/20~2003/02/26.  
**SAMPLE RECEIVED** 2003/02/20.  
**SAMPLE SUBMITTED BY** TSRC CORPORATION.

WE HAVE TESTED THE SAMPLE(S) SUBMITTED AS REQUESTED AND THE FOLLOWING RESULTS WERE OBTAINED.

### TEST RESULT:

| TEST ITEM(S) | UNIT | METHOD    | DETECT. LIMIT | SPEC. | RESULT | CONCLUSION |
|--------------|------|-----------|---------------|-------|--------|------------|
| CADMIUM      | ppm  | ASTM F963 | 0.015         | <75.0 | n.d.   | PASS       |
| LEAD         | ppm  | ASTM F963 | 0.020         | <90.0 | n.d.   | PASS       |
| MERCURY      | ppm  | ASTM F963 | 0.020         | <60.0 | n.d.   | PASS       |
| ARSENIC      | ppm  | ASTM F963 | 0.050         | <25.0 | n.d.   | PASS       |
| CHROMIUM     | ppm  | ASTM F963 | 0.025         | <60.0 | n.d.   | PASS       |
| BARIUM       | ppm  | ASTM F963 | 0.020         | <1000 | n.d.   | PASS       |
| ANTIMONY     | ppm  | ASTM F963 | 0.015         | <60.0 | n.d.   | PASS       |
| SELENIUM     | ppm  | ASTM F963 | 0.020         | <500  | n.d.   | PASS       |
| TOTAL LEAD   | ppm  | ASTM F963 | 0.020         | <600  | n.d.   | PASS       |

NOTE: n.d. = not detected.

--- 1 ---

  
George Huang/Supervisor  
Sign for and on behalf of  
SGS Taiwan Ltd.

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**1. NO. 19-4, KAO SHAN, KAO SHUANG VILLAGE, PING CHEN CITY, TAOYUAN,**

**2. NO. 26, KAO CHING ROAD, KAO SHAN LI, YANG MEI, TAOYUAN,**

**TAIWAN, R.O.C.**

*Bureau Veritas Quality International certify that the  
Quality Management System of the above supplier  
has been assessed and found to be in accordance  
with the requirements of the quality  
standards detailed below*

QUALITY STANDARDS

**BS EN ISO 9001:2000**

SCOPE OF SUPPLY

**DESIGN, MANUFACTURE AND SUPPLY THE FOLLOWING:**

- 1. PCB MODULAR JACK AND PLUGS 2. TELECOM ACCESSORIES C3, C4,  
C5, C5E, C6 3. PC CONNECTORS, IEEE 1394, USB 4. SMART CARD  
CONNECTORS 5. Mobile phone connectors**

*Original approval date:*

**03 March, 1998**

*Subject to the continued satisfactory operation of the supplier's  
Quality Management System, this Certificate is valid for a period of three years from:*

**26 July, 2001**

**Date: 01 August, 2001**

Managing Office:  
Bureau Veritas Quality International  
Taiwan District  
6<sup>th</sup> Fl., No. 3, Tun Hua S. Rd., Sec. 1  
Taipei 105, Taiwan, R.O.C.



008

*[Signature]*  
For Bureau Veritas Quality  
International (Holding) S.A.,  
2<sup>nd</sup> Floor, Tower Bridge Court  
224-226 Tower Bridge Road  
London SE1 2TX

**Certificate No: 86005**

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