# CATALOGUE

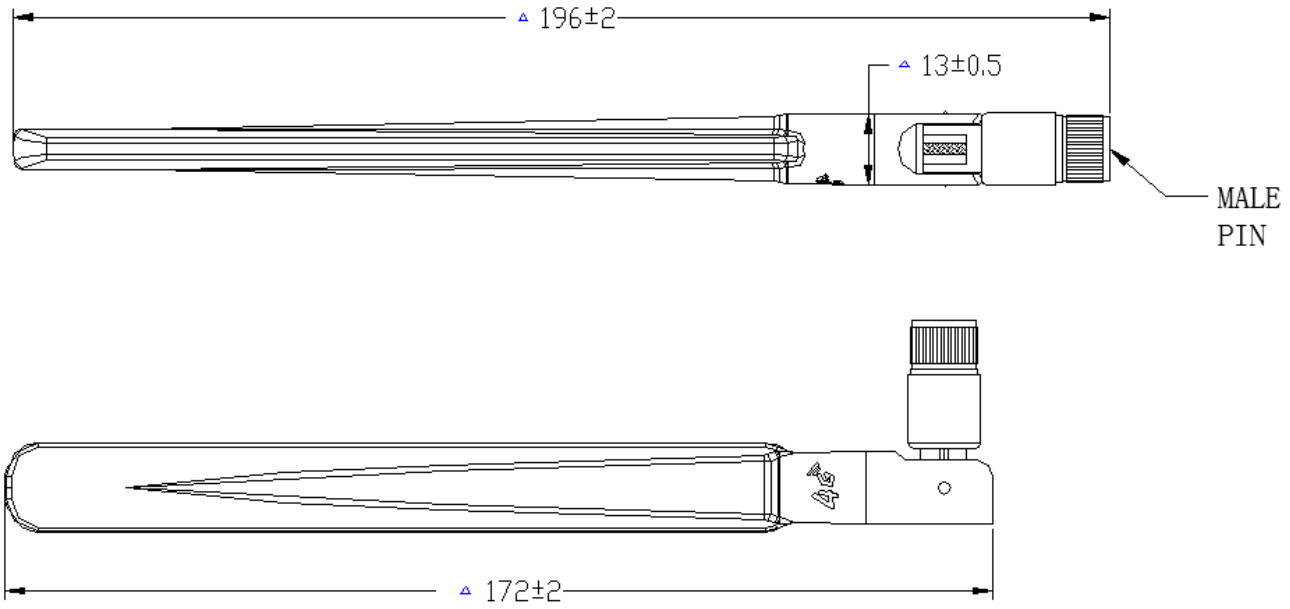
# SPECIFICATION

PRODUCT MODEL NO.： KC.DA.00110

SPECIFICATION：4G White External Antenna SMA Male Pin

PRODUCT NAME： DA.0116.L4.1EA 4G White Antenna

## 1. Physical picture

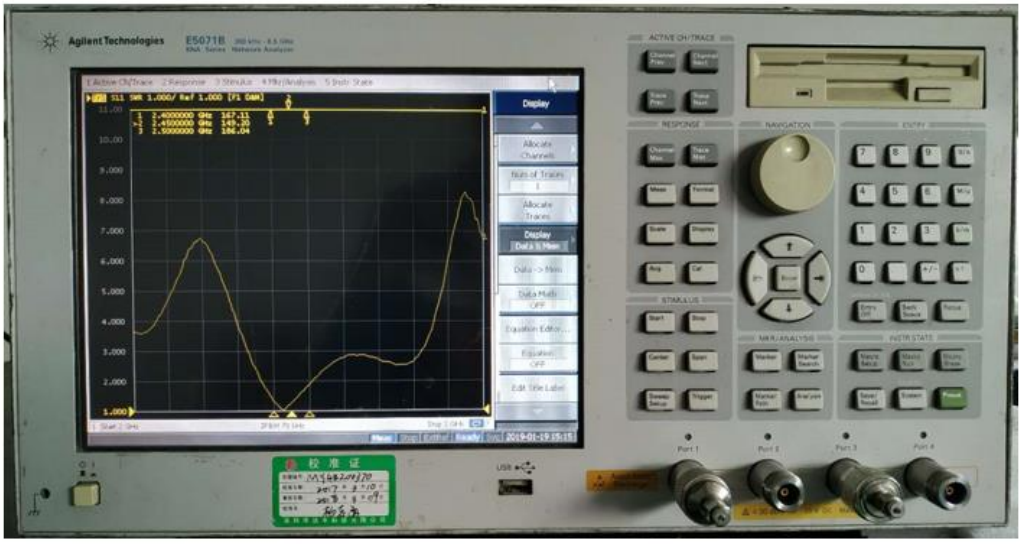


# 2. Product parameters

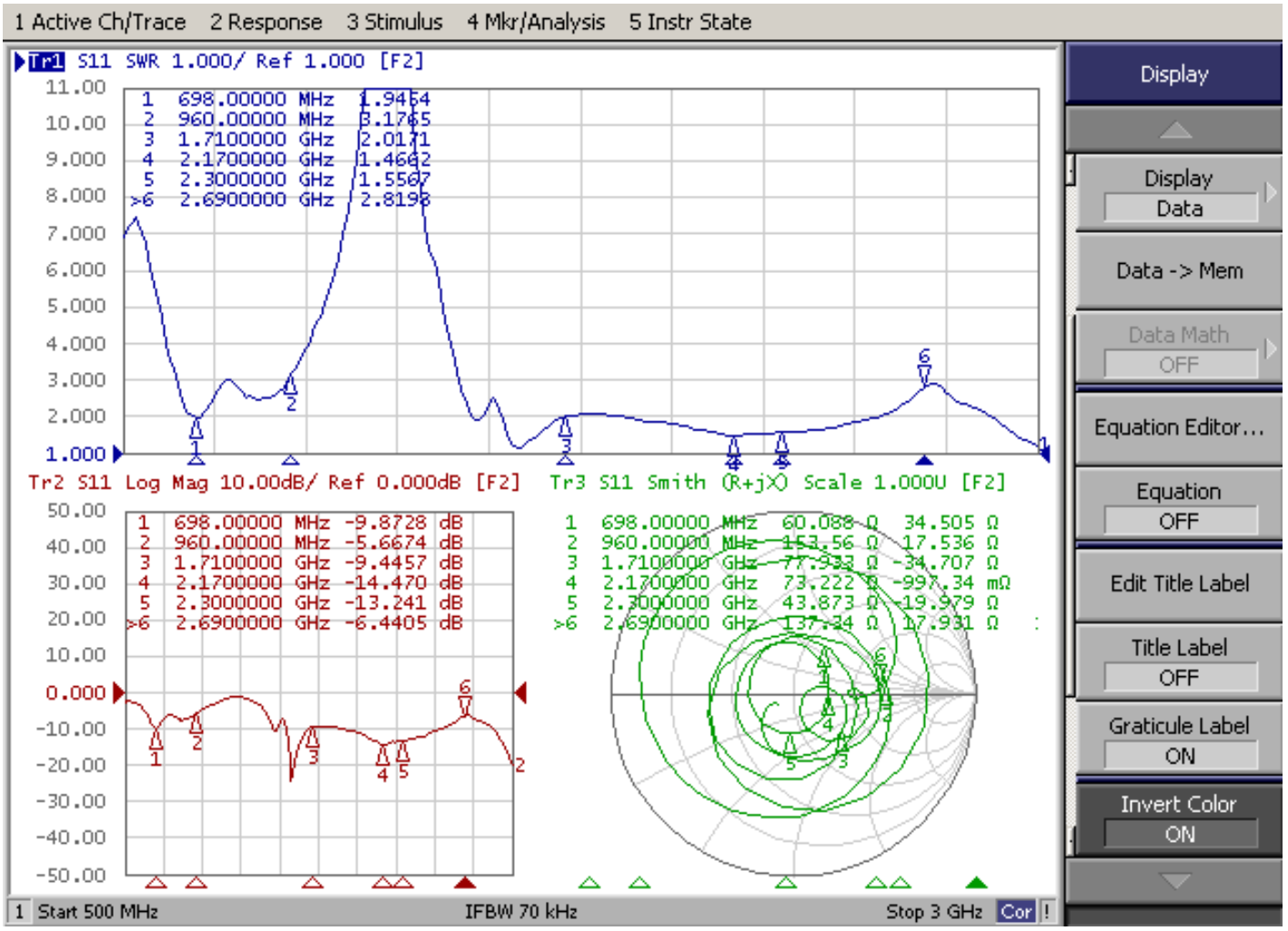
| Name / Item | DA.0116.L4.1EA | Model | DA.0116.L4.1EA |
|---|---|---|---|
| Frequency range （MHz） | 698~960<br>1710~2690 | Frequency （MHz） | 698~960<br>1710~2690 |
| 极化方式 | 线性极化 | Polarization | LP |
| 天线增益 （dBi） | 5dbi | Gain （dBi） | 5dbi |
| 电压驻波比 | 698MHz~960MHz :≤4<br>1710MHz~2690MHz: ≤3 | VSWR | 698MHz~960MHz :≤4<br>1710MHz~2690MHz: ≤3 |
| 输入阻抗 （Ω ） | 50 | Input Impedance | 50 |
| 电缆线长度 （mm） | NA | Cable length （mm） | NA |
| 天线颜色 | 白色 | Antenna Color | White |
| 接口形式 | SMA 公头公针 | Connector Type | SMA Plug Male Pin |
| 工作温度 （℃） | -40~+85 | Operation temperature（℃） | -40~+85 |
| 存储温度 （℃） | -40~+85 | Store temperature （℃） | -40~+85 |

# 3. Antenna test

E5071B



# V.S.W.R



# Microwave anechoic chamber test

PRODUCT NAME : DA.0116.L4.1EA 4G White Antenna
Testing time : 2019-04-20
Tester :Joe

| Test Result | LTE3 TRP | | | Test Result | LTE3 TIS | |
|---|---|---|---|---|---|---|
| | 19250 | 19575 | 19900 | | 1575 | 1900 |
| Frequency (MHz) | 1715 | 1747.5 | 1780 | Frequency (MHz) | 1842.5 | 1875 |
| TRP(dBm) | 20.57 | 20.14 | 18.83 | TIS(dBm) | -96.75 | -97.65 |
| NHPRP(dBm) | 18.89 | 18.39 | 17.06 | NHPIS(dBm) | -95.07 | -96.02 |
| MAX(dBm) | 23.74 | 23.79 | 22.24 | MAX(dBm) | -101.12 | -102.21 |
| Min(dBm) | 11.34 | 11.96 | 10.67 | Min(dBm) | -90.13 | -90.97 |
| Attenuation Horizo | 39.31 | 37.4 | 37.45 | Attenuation Horizo | 40.72 | 41.78 |
| Attenuation Vertic | 39.65 | 38.33 | 37.57 | Attenuation Vertic | 39.74 | 41.35 |

| Test Result | LTE28 TRP | | | Test Result | LTE28 TIS | |
|---|---|---|---|---|---|---|
| | 27260 | 27435 | 27610 | | 9260 | 9610 |
| Frequency (MHz) | 708 | 725.5 | 743 | Frequency (MHz) | 763 | 798 |
| TRP(dBm) | 18.46 | 19.35 | 18.87 | TIS(dBm) | -92.2 | -85.96 |
| NHPRP(dBm) | 16.51 | 17.16 | 16.42 | NHPIS(dBm) | -89.85 | -83.72 |
| MAX(dBm) | 23.12 | 23.26 | 22.61 | MAX(dBm) | -95.79 | -89.45 |
| Min(dBm) | 8.15 | 7.86 | 6.52 | Min(dBm) | -79.47 | -74.49 |
| Attenuation Horizo | 35.11 | 34.4 | 33.63 | Attenuation Horizo | 33.85 | 33.49 |
| Attenuation Vertic | 35.41 | 34.74 | 33.58 | Attenuation Vertic | 33.55 | 33.26 |

| Test Result | LTE40 TRP | | | Test Result | LTE40 TIS |
|---|---|---|---|---|---|
| | 38750 | 39150 | 39550 | | 39550 |
| Frequency (MHz) | 2310 | 2350 | 2390 | Frequency (MHz) | 2390 |
| TRP(dBm) | 20.64 | 20.01 | 19.95 | TIS(dBm) | -92.56 |
| NHPRP(dBm) | 18.12 | 17.45 | 17.52 | NHPIS(dBm) | -90.31 |
| MAX(dBm) | 25.94 | 25.23 | 25.62 | MAX(dBm) | -97.16 |
| Min(dBm) | 9.19 | 5.63 | 4.12 | Min(dBm) | -80.45 |
| Attenuation Horizo | 42.79 | 43.12 | 43.5 | Attenuation Horizo | 42.41 |
| Attenuation Vertic | 42.54 | 43.53 | 44.27 | Attenuation Vertic | 43.18 |

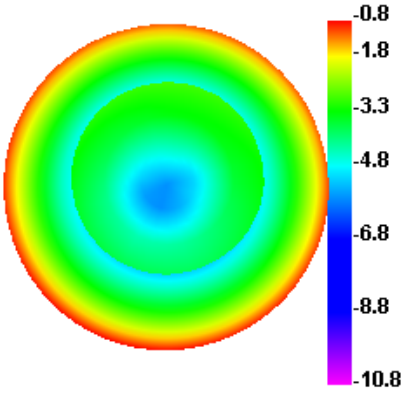
| Test Result | LTE41 TRP | | | Test Result | LTE41 TIS |
|---|---|---|---|---|---|
| | 40200 | 40620 | 41490 | | 41490 |
| Frequency (MHz) | 2551 | 2593 | 2680 | Frequency (MHz) | 2680 |
| TRP(dBm) | 20.05 | 20.14 | 18.25 | TIS(dBm) | -90.71 |
| NHPRP(dBm) | 18.31 | 18.61 | 16.94 | NHPIS(dBm) | -89.35 |
| MAX(dBm) | 25.24 | 25.46 | 21.96 | MAX(dBm) | -94.55 |
| Min(dBm) | 3.59 | 3.55 | 8.26 | Min(dBm) | -82.55 |
| Attenuation Horizo | 42.14 | 43.59 | 43.88 | Attenuation Horizo | 43.88 |
| Attenuation Vertic | 42.22 | 43.16 | 45.03 | Attenuation Vertic | 45.03 |

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) | Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|---|---|---|---|---|---|---|---|
| 670 | 36.19 | -4.41 | -0.53 | 1700 | 55.3 | -2.57 | 1.49 |
| 680 | 41.28 | -3.84 | 0.39 | 1710 | 79.34 | -1.01 | 3.03 |
| 690 | 37.63 | -4.24 | 0.54 | 1720 | 63.11 | -2 | 2.12 |
| 700 | 44.13 | -3.55 | 1.07 | 1730 | 68.64 | -1.63 | 2.56 |
| 710 | 44.11 | -3.55 | 0.56 | 1740 | 45.7 | -3.4 | 0.88 |
| 720 | 54.07 | -2.67 | 0.98 | 1750 | 65.34 | -1.85 | 2.33 |
| 730 | 49.93 | -3.02 | 0.5 | 1760 | 44.56 | -3.51 | 0.75 |
| 740 | 56.21 | -2.5 | 1.06 | 1770 | 71.87 | -1.43 | 2.51 |
| 750 | 51.72 | -2.86 | 0.87 | 1780 | 47.7 | -3.22 | 0.71 |
| 760 | 61.71 | -2.1 | 1.55 | 1790 | 55.74 | -2.54 | 1.55 |
| 770 | 47.81 | -3.2 | 0.36 | 1800 | 42.78 | -3.69 | 0.45 |
| 780 | 54.49 | -2.64 | 1.03 | 1810 | 51.58 | -2.87 | 1.33 |
| 790 | 55.18 | -2.58 | 1.02 | 1820 | 38.36 | -4.16 | 0.19 |
| 800 | 64.05 | -1.93 | 1.63 | 1830 | 52.24 | -2.82 | 1.77 |
| 810 | 57.85 | -2.38 | 1.25 | 1840 | 40.34 | -3.94 | 0.7 |
| 820 | 59.5 | -2.25 | 1.47 | 1850 | 53.2 | -2.74 | 2.08 |
| 830 | 61.23 | -2.13 | 1.71 | 1860 | 52.91 | -2.76 | 2.39 |
| 840 | 61.49 | -2.11 | 1.88 | 1870 | 52.81 | -2.77 | 2.53 |
| 850 | 57.32 | -2.42 | 1.53 | 1880 | 56.88 | -2.45 | 3.23 |
| 860 | 60.87 | -2.16 | 1.82 | 1890 | 57.4 | -2.41 | 3.29 |
| 870 | 60.93 | -2.15 | 1.95 | 1900 | 51.21 | -2.91 | 2.38 |
| 880 | 59.57 | -2.25 | 1.87 | 1910 | 58.22 | -2.35 | 2.85 |
| 890 | 63.86 | -1.95 | 2.25 | 1920 | 56.72 | -2.46 | 2.26 |
| 900 | 66.74 | -1.76 | 2.4 | 1930 | 52.99 | -2.76 | 1.97 |
| 910 | 62.34 | -2.05 | 1.92 | 1940 | 58.14 | -2.36 | 2.55 |
| 920 | 63.47 | -1.97 | 2.28 | 1950 | 54.47 | -2.64 | 2.45 |
| 930 | 57.11 | -2.43 | 2.1 | 1960 | 56.03 | -2.52 | 2.47 |
| 940 | 56.81 | -2.46 | 2.23 | 1970 | 44.72 | -3.5 | 1.52 |
| 950 | 51.32 | -2.9 | 1.78 | 1980 | 58.91 | -2.3 | 2.95 |
| 960 | 54.94 | -2.6 | 1.96 | 1990 | 46.28 | -3.35 | 2.06 |
| 970 | 50.8 | -2.94 | 1.72 | 2000 | 49.04 | -3.09 | 2.48 |
| 980 | 49.19 | -3.08 | 1.88 | 2010 | 41.89 | -3.78 | 1.86 |
| 990 | 35.7 | -4.47 | 0.74 | 2020 | 58.4 | -2.34 | 3.36 |
| 1000 | 43.15 | -3.65 | 1.66 | 2030 | 49.66 | -3.04 | 2.54 |

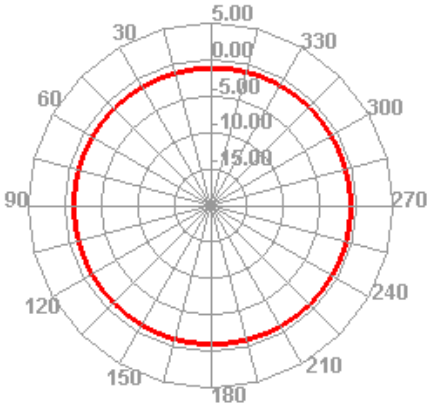
| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|---|---|---|---|
| 2040 | 50.86 | -2.94 | 2.54 |
| 2050 | 50.78 | -2.94 | 2.62 |
| 2060 | 55.71 | -2.54 | 2.94 |
| 2070 | 57.08 | -2.44 | 3.15 |
| 2080 | 67.7 | -1.69 | 4.04 |
| 2090 | 60.95 | -2.15 | 3.58 |
| 2100 | 56.58 | -2.47 | 3.18 |
| 2110 | 71.37 | -1.46 | 3.95 |
| 2120 | 50.76 | -2.94 | 2.34 |
| 2130 | 59.99 | -2.22 | 3.22 |
| 2140 | 49.46 | -3.06 | 2.44 |
| 2150 | 48.86 | -3.11 | 3.09 |
| 2160 | 45.18 | -3.45 | 2.48 |
| 2170 | 57.05 | -2.44 | 3.34 |
| 2180 | 54.91 | -2.6 | 2.66 |
| 2190 | 54.47 | -2.64 | 2.7 |
| 2200 | 49.43 | -3.06 | 2.28 |
| 2210 | 60.75 | -2.16 | 3.3 |
| 2220 | 58.67 | -2.32 | 3.37 |
| 2230 | 70.94 | -1.49 | 4.14 |
| 2240 | 61.03 | -2.14 | 3.89 |
| 2250 | 64.37 | -1.91 | 4.06 |
| 2260 | 64.61 | -1.9 | 4.14 |
| 2270 | 63.79 | -1.95 | 4.27 |
| 2280 | 64.57 | -1.9 | 4.3 |
| 2290 | 54.22 | -2.66 | 3.64 |
| 2300 | 53.46 | -2.72 | 3.77 |
| 2310 | 49.73 | -3.03 | 3.43 |
| 2320 | 58.53 | -2.33 | 4.39 |
| 2330 | 57.21 | -2.43 | 4.28 |
| 2340 | 65.32 | -1.85 | 4.85 |
| 2350 | 49.88 | -3.02 | 3.5 |
| 2360 | 61.76 | -2.09 | 4.5 |
| 2370 | 52.72 | -2.78 | 3.56 |

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|---|---|---|---|
| 2380 | 63.19 | -1.99 | 4.58 |
| 2390 | 49.86 | -3.02 | 3.82 |
| 2400 | 53.21 | -2.74 | 4.38 |
| 2410 | 47.03 | -3.28 | 3.41 |
| 2420 | 56.22 | -2.5 | 4.45 |
| 2430 | 57.4 | -2.41 | 4.22 |
| 2440 | 59.33 | -2.27 | 4.6 |
| 2450 | 46.12 | -3.36 | 3.32 |
| 2460 | 57.58 | -2.4 | 4.06 |
| 2470 | 53.36 | -2.73 | 3.77 |
| 2480 | 61.37 | -2.12 | 4.4 |
| 2490 | 61.71 | -2.1 | 4.47 |
| 2500 | 53.17 | -2.74 | 3.9 |
| 2510 | 56.62 | -2.47 | 3.93 |
| 2520 | 50.25 | -2.99 | 3.38 |
| 2530 | 53.54 | -2.71 | 3.79 |
| 2540 | 55.59 | -2.55 | 3.66 |
| 2550 | 49.79 | -3.03 | 3.64 |
| 2560 | 44.24 | -3.54 | 3.02 |
| 2570 | 59.01 | -2.29 | 4.16 |
| 2580 | 48.42 | -3.15 | 3.45 |
| 2590 | 49.41 | -3.06 | 3.66 |
| 2600 | 48.19 | -3.17 | 3.12 |
| 2610 | 50.67 | -2.95 | 3.28 |
| 2620 | 50.1 | -3 | 2.89 |
| 2630 | 52.73 | -2.78 | 3.11 |
| 2640 | 46.31 | -3.34 | 2.61 |
| 2650 | 50.97 | -2.93 | 2.8 |

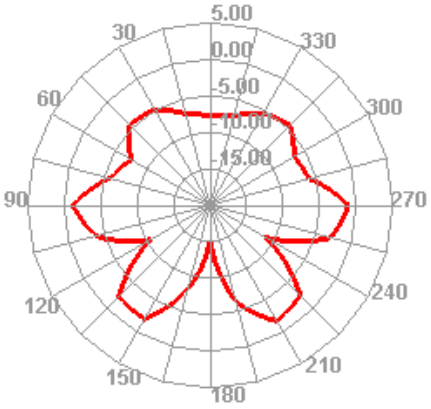
700.000MHz



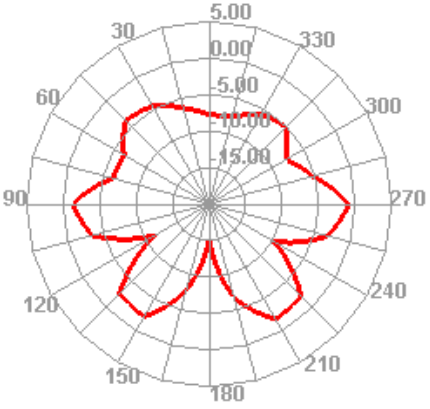

700.000MHz H



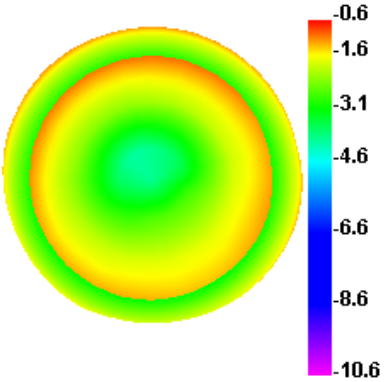

700.000MHz E1



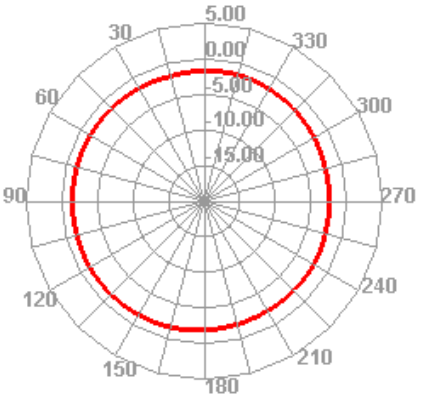

700.000MHz E2



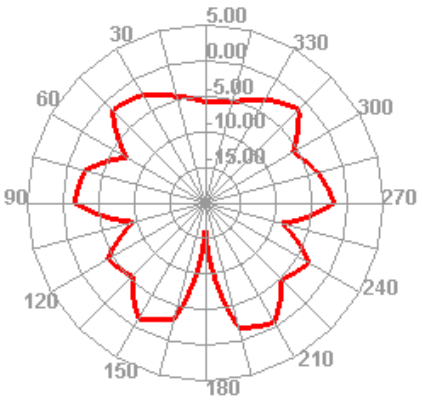

960.000MHz



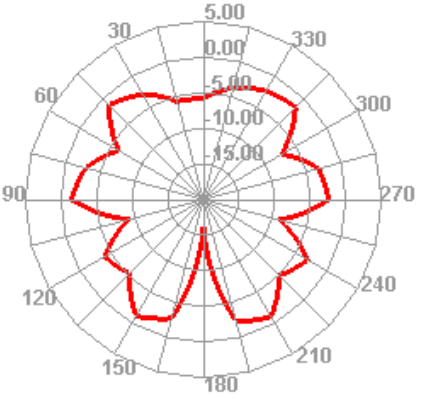

960.000MHz H



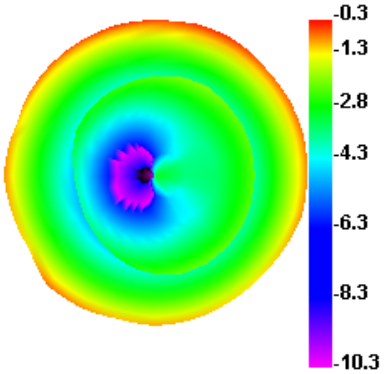

960.000MHz E1



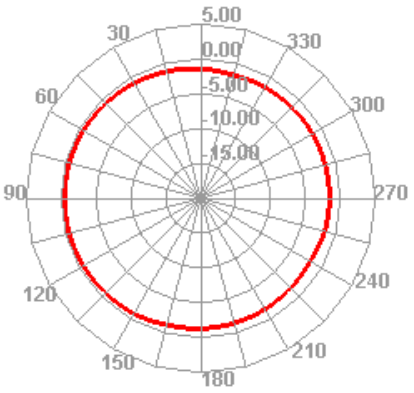

960.000MHz E2



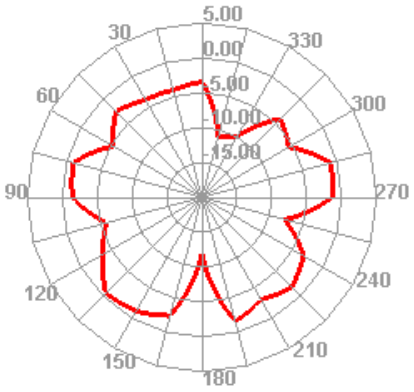
1700.000MHz



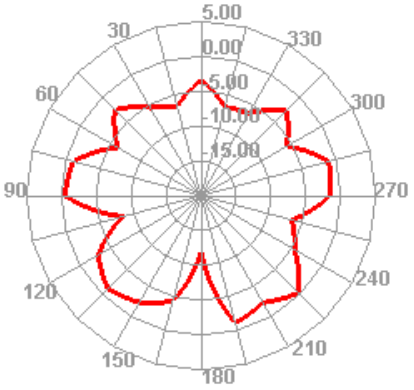

1700.000MHz H



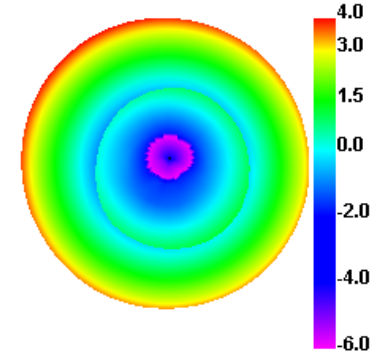

1700.000MHz E1



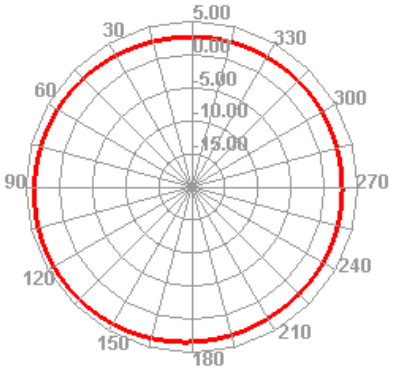

1700.000MHz E2



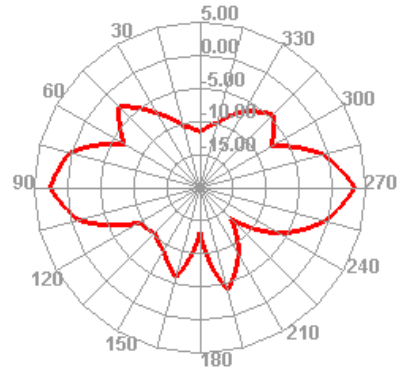

2650.000MHz



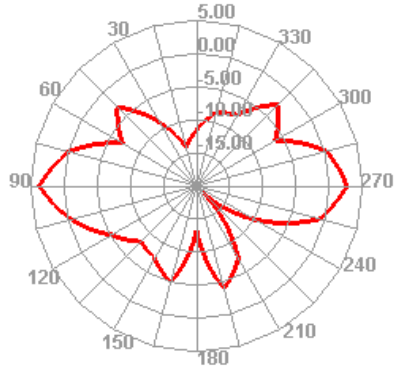

2650.000MHz H




2650.000MHz E1




2650.000MHz E2



# ENVIRONMENT AND RELIABILITY TEST

| Item | Reference standard, experimental conditions | Judgments based | Number of samples / bad quantity( PCS) | Test/device |
|---|---|---|---|---|
| Collision | GB/T 2423.6-1995<br>Acceleration: 200m / s2<br>Collision pulse duration: 6ms<br>Number of collisions per minute: 40~80 times<br>Total number of collisions: 400 times in the vertical direction, before and after,<br>300 times in the horizontal direction, 1000 times in total. | The electrical characteristics should be met, and the mechanical properties are normal, but the appearance of scratches, whitening and bending are within the allowable range. | 5/0 | Collision experiment machine |
| vibration | GB/T 2423.10-1995 Test FC<br>Frequency: 10~30; 30~50Hz;<br>Resonance point amplitude: 0.35mm<br>Amplitude: 0.75mm<br>Duration: X, Y & Z 0.5 hours in each direction.<br>Period: 1min;<br>Tested after 1 hour of experimentation. | And the firmware is not loose, the parts are not broken or fatigued;<br>No original parts fall off, no solder joint breaks;<br>Electrical performance indicators meet technical specifications; | 5/0 | Vibration tester |

| | | | | |
|---|---|---|---|---|
| Shock | Acceleration: 300m / s2<br>Shock pulse duration: 18ms<br>Number of impacts: 18 times<br>GB/T 2423.5-1995 | The electrical characteristics should be met, and the mechanical properties are normal, but the appearance of scratches, whitening and bending are allowed. | 5/0 | Crushing machine |
| fall | GB/T2423.8-95<br>Dropped from the height of 100cm to the floor 10 times. GB/T2423.8-95 | 1. No obvious abnormal appearance<br>2. After the test, the electrical performance meets the specification requirements, and the electrical characteristics should be met, and the mechanical properties are normal, but the appearance of the bumps, whitening and bending are within the allowable range. | 5/0 | Drop test machine |
| High temperature re storage | GB/T 2423.2-2001<br>Test B<br>Environmental conditions: +85 ± 3℃ for 96H<br>The test was completed after standing at room temperature for 24 hours. | The surface coating shall be free from flaking, cracking, separation, etc.;<br>Non-metallic structural parts have not undergone permanent deformation, cracking, degumming, etc.;<br>Mobile components are not stuck or disconnected;<br>Electrical performance indicators meet | 10/0 | Temperature and humidity cycle test box |

| | | | | |
|---|---|---|---|---|
| | | technical specifications | | |
| Low temperature storage | GB/T 2423.1-2001 Test A Environmental conditions: -40 ± 3℃ for 96H The test was completed after standing at room temperature for 24 hours. | The surface coating shall be free from flaking, cracking, separation, etc.; Non-metallic structural parts have not undergone permanent deformation, cracking, degumming, Mobile components are not stuck or disconnected; Electrical performance indicators meet technical specifications | 10/0 | Temperature and humidity cycle test box |
| High and low temperature cycle | GB/T2423.22-2002 Test N: The antenna was placed in a T1 = -40 ℃ incubator for 30 minutes, then the temperature was increased to T2 = 80℃ for 60 minutes, then the temperature was maintained for 30 minutes, and the relative humidity was 50% RH, and the cycle was repeated 20 times. | The surface coating shall be free from flaking, cracking, separation, etc.; Non-metallic structural parts have not undergone permanent deformation, cracking, degumming, etc.; Mobile components are not stuck or disconnected; Electrical performance indicators meet technical specifications | 10/0 | Temperature and humidity cycle test box |

| | | | | |
|---|---|---|---|---|
| Damp heat test | GB/T 2423.3-1993 test Ca: Environmental conditions: 40 ± 2 ℃, relative humidity 80 ~ 90%, placed for 96 hours. The test was completed after standing at room temperature for 24 hours. | 1. No obvious abnormality in appearance 2. Various electrical properties after test Meet the specifications, mechanical performance, electrical performance to meet the specifications. | 10/0 | Temperature and humidity cycle test box |
| Salt spray test | GB/T 2423.18-2000 Test Kb<br><br>The test article was placed in a salt spray test chamber, and the test specimen was sprayed with salt at a concentration of (5 ± 1)%, a temperature of 35℃± 1℃, and a sedimentation rate of (1-2) ml / 50 mm 2 * h, 48 hours. After that, check the appearance. | No rust, mechanical properties and electrical properties meet the specifications. | 5/0 | Salt spray test machine |

# PACKING INSTRUCTION

PRODUCT MODEL No.： KC.DA.00110

PRODUCT NAME：DA.0116.L4.1EA 4G White Antenna

一、labeling requirement：

| | | | |
|---|---|---|---|
| Buyer | Xx | | |
| Supplier | DONGGUAN KINGRF ELECTRONICS TECHNOLOGY CO.,LTD | | |
| Purchase No. | Xx | | |
| Material Code | Xx | | |
| Product No. | | | |
| Quantity/PCS | XXX PCS | Date of production | XXXX/XX/XX |
| Remark | | | |

二、Packing requirement：

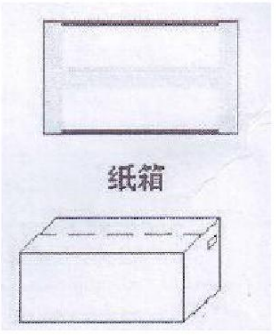

1. inner packing：

Product XX PCS Put in a PE bag；

2. external packing：

Xx PCS Put in a carton；

3. matters need attention：



| NAME: DA.0116.L4.1EA 4G White Antenna | | | CUSTOMER Part No.: | | REV: X0 | Quantity: 5 PCS | Date: 2019.04.23 | | Annotation |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Sample / Standard | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Decide | Measuring tool | |
| 1 | 196±2 | 196 | 196 | 196 | 196 | 196 | OK | Ruler | |
| 2 | 172±2 | 172 | 172 | 172 | 172 | 172 | OK | Ruler | |
| 3 | 13±0.5 | 13.22 | 13.21 | 13.32 | 13.44 | 13.37 | OK | Slide Gauge | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| | | | | | | | | | |
| APPROVED BY | Wave | | CHECKED BY: | | / | DESIGNER: | Wan rou | | |