# *PROFESSOR TECHNOLOGY CO.,LTD.*

## INTRODUCTION
## MIMO 5G/4G/3G/WIFI/WiMAX/DSRC/TETRA CPR21-Full band (Twin Type)-RG58-5M-SMA/M 430~460/600~960/1710~2100/2200~2400/2500~2700/3200~3600MHz and 2.4~2.5/4.9~5.2/5.8~6.0Ghz

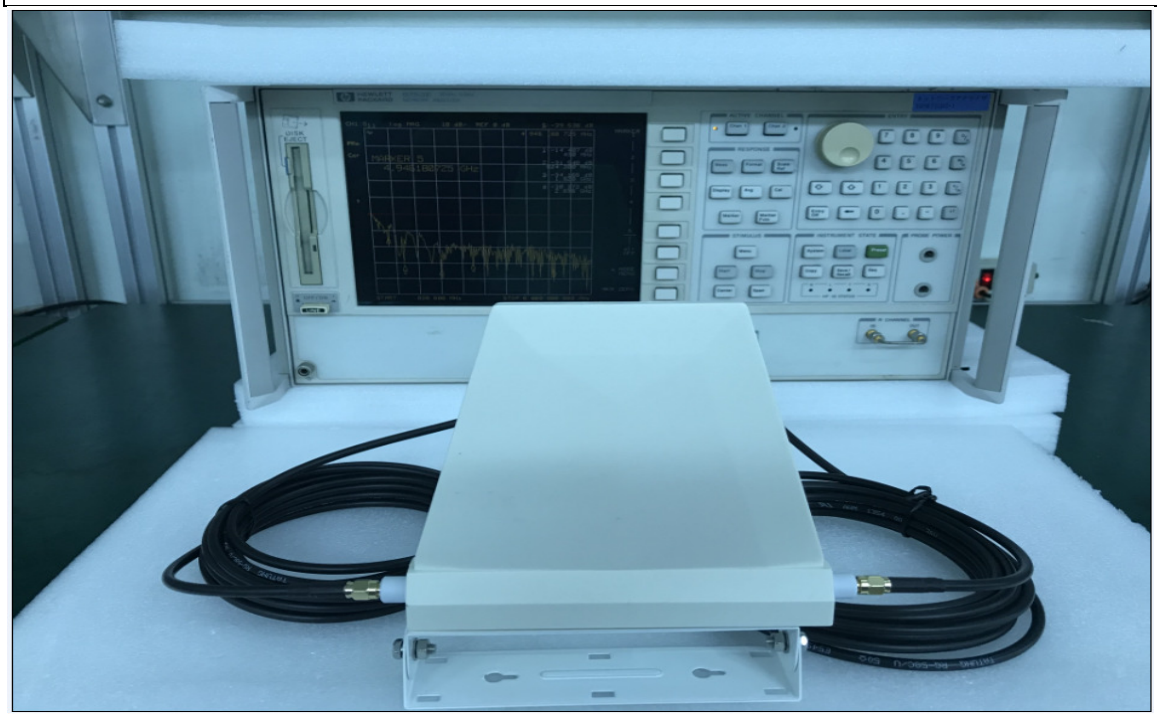
### 1. GENERAL DESCRIPTION

| Model No | Products P/N |
|---|---|
| CPR21-FULL(0.4-6GHz)-RG58-5M-SMA/M | CPR21-FULL |

**Below is a table summarizing the Full-bands YAGI Antenna (Twin Type) with RG58U 5M cable design specification.**

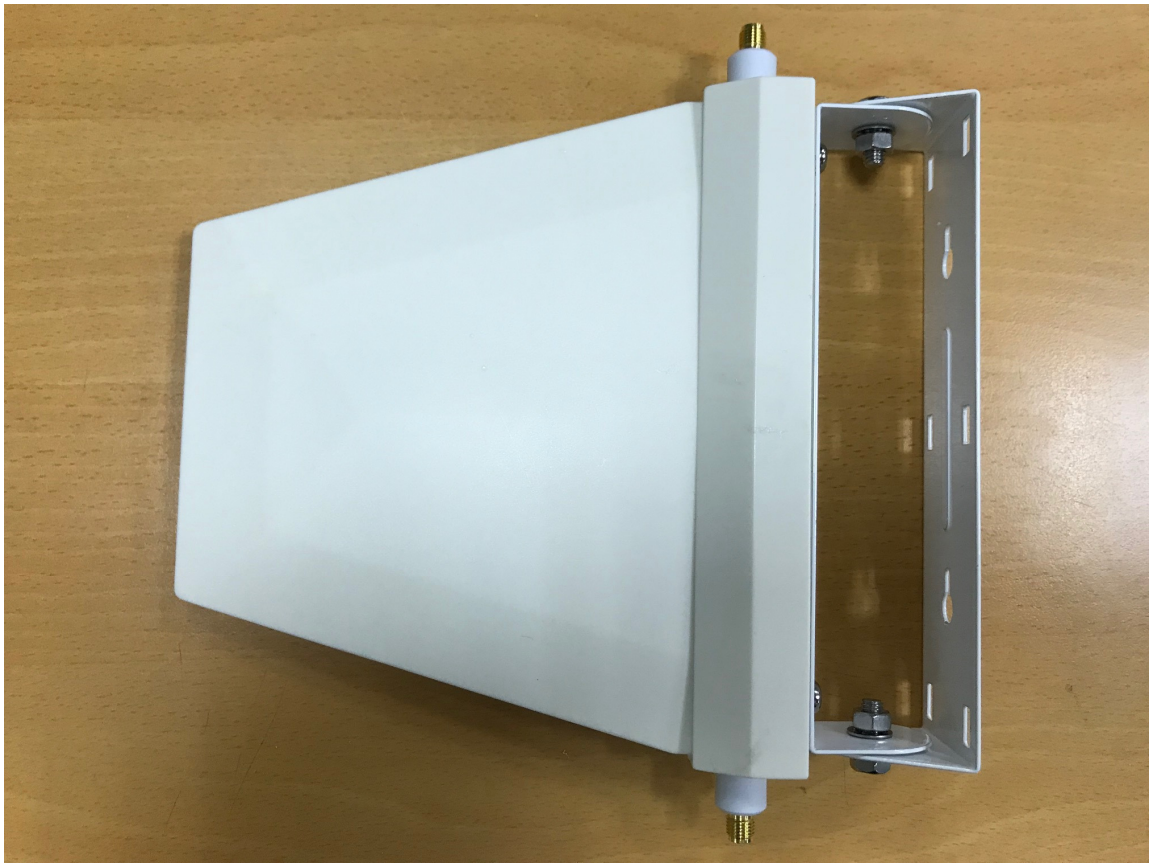
### 1.1 Electrical Properties

| Parameter | Description |
|---|---|
| Frequency Band | 430~460/600~960/1710~2170/2200~2400/2500~2700/3300~3600MHz<br>and 2.4~2.5/4.9~5.2/5.8~6.0Ghz |
| Nominal Impedance | 50 ohm |
| Polarization | Vertical |
| V.S.W.R | <2.0:1 |
| Return Loss | Please see Data-1 |
| Antenna Average Gain | 7~8 dB |
| Note: Gain includes the cable loss with the 5.0M cable test | |



### 1.2 Mechanical Properties

| Parameter | Description |
|---|---|
| Antenna Type | External Antenna |
| Antenna Material | PCB & ABS Plastic |
| Touch Type | Wall bracket |
| Connector Type | SMA/Female (Twin type) |
| Antenna Color | ABS White color |
| Test cable length | 5000mm |
| Test cable | RG58/U Low less |
| Cable connector | SMA Male |
| Operating Temperature Range | -30℃~+70℃ |
| Storage Temperature Range | -40℃~+80℃ |
| Wateproof | 100% waterproof (IP66~IP67) |



## 2. Appearance

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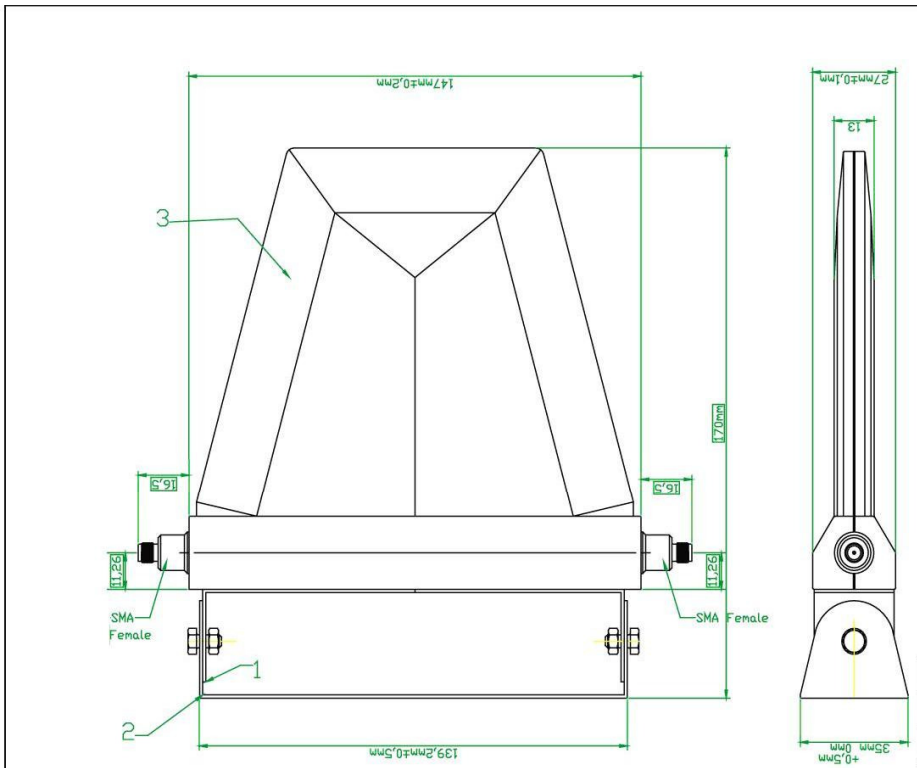
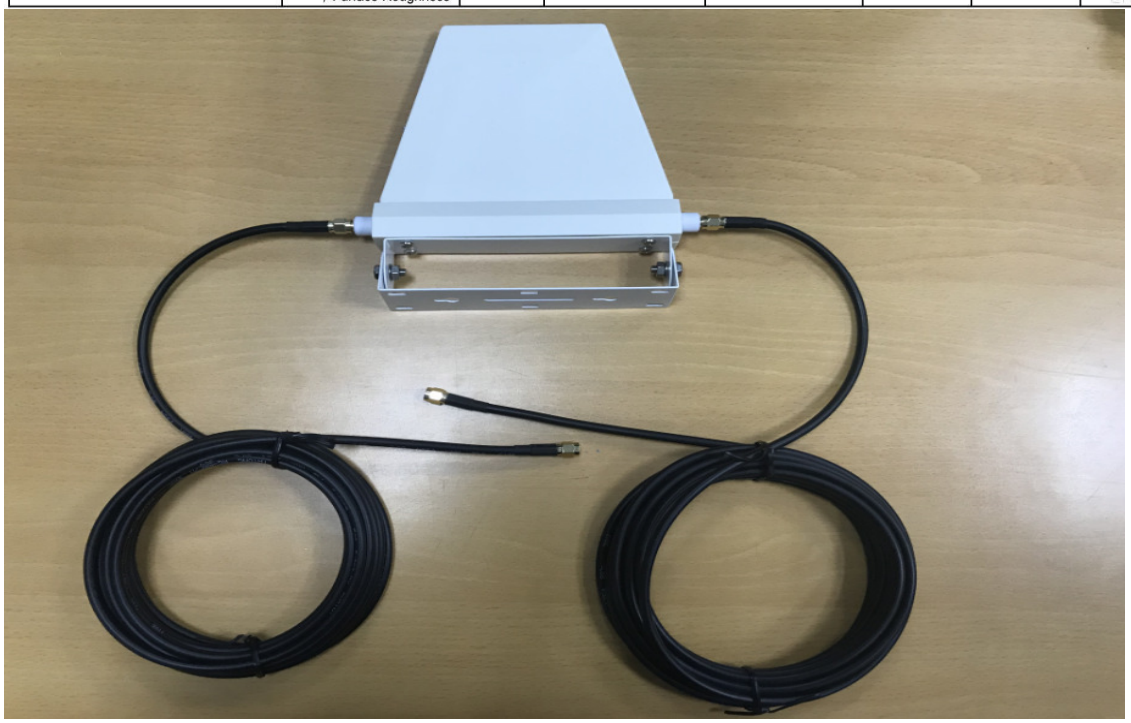



| NO. | denomination | material | QTY | |
|---|---|---|---|---|
| 3 | YAGI ANTENNA | ABS | 1 | |
| 2 | CONNECT RACK | SUS | 2 | |
| 1 | SUPPORT RACK | SUS | 1 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 第三角法 Third Angle Projection | | | | | m/m 單位 Unit | 1/1 比例 Scale | 重量 Weight | 1 版本 Version |
| | 客戶/ **CUSTOMER** | | 客戶編號 / **CUSTOMER'S** PARTS NUMBER | | | | | |
| PROFESSOR 普傑國際股份有限公司 | 公差/ Tolerance | ± 0.1mm ± 0.05" | 圖名/ NAME | 編號/ Part number | 核准 Approved | 審查 Checked | 製圖 Drawing | 設計 Designed |
| | 表面精度 / Furface Roughness | 一般 | YAGI ANTENNA | CPR21 | | | Jimmy Chan | |



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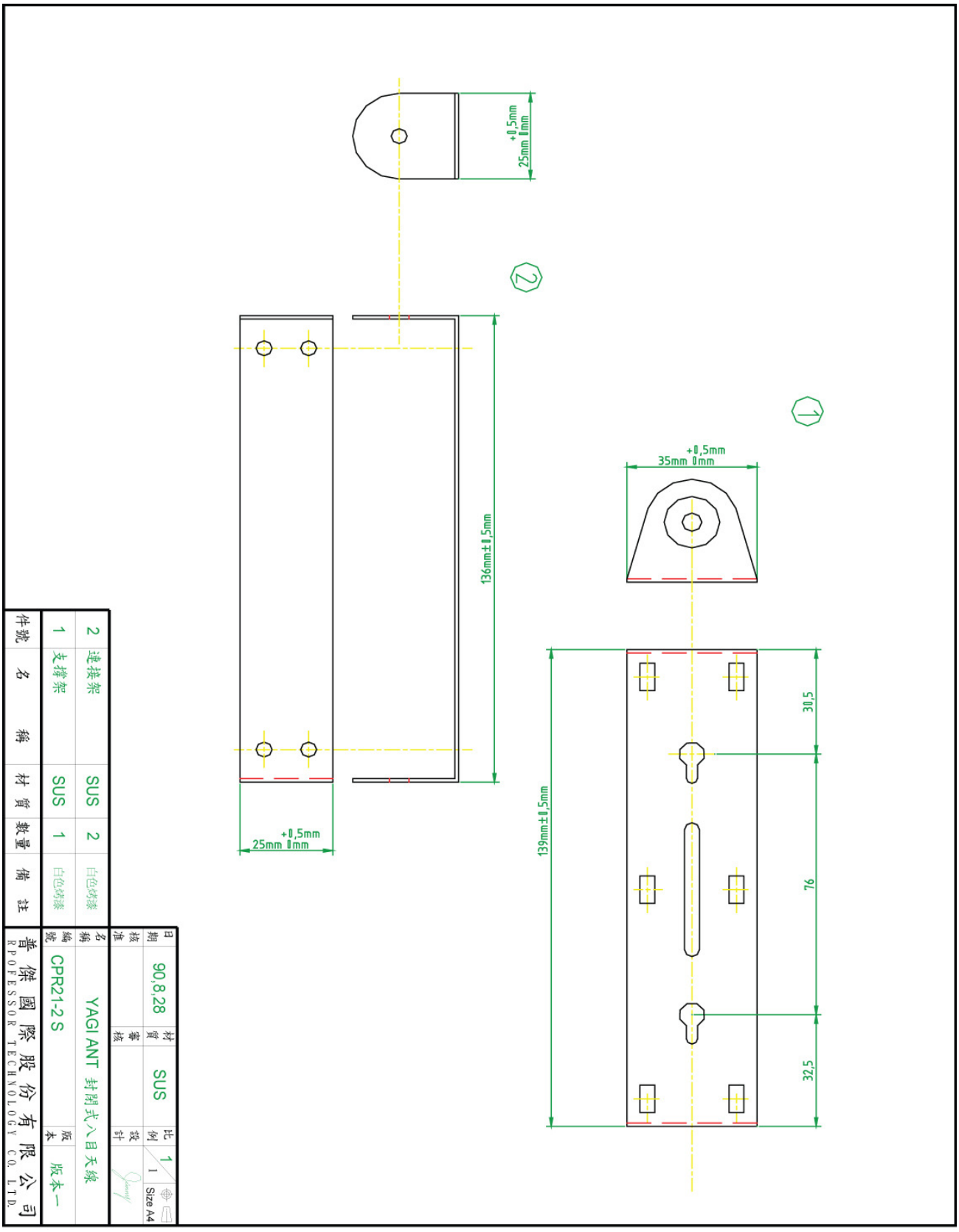

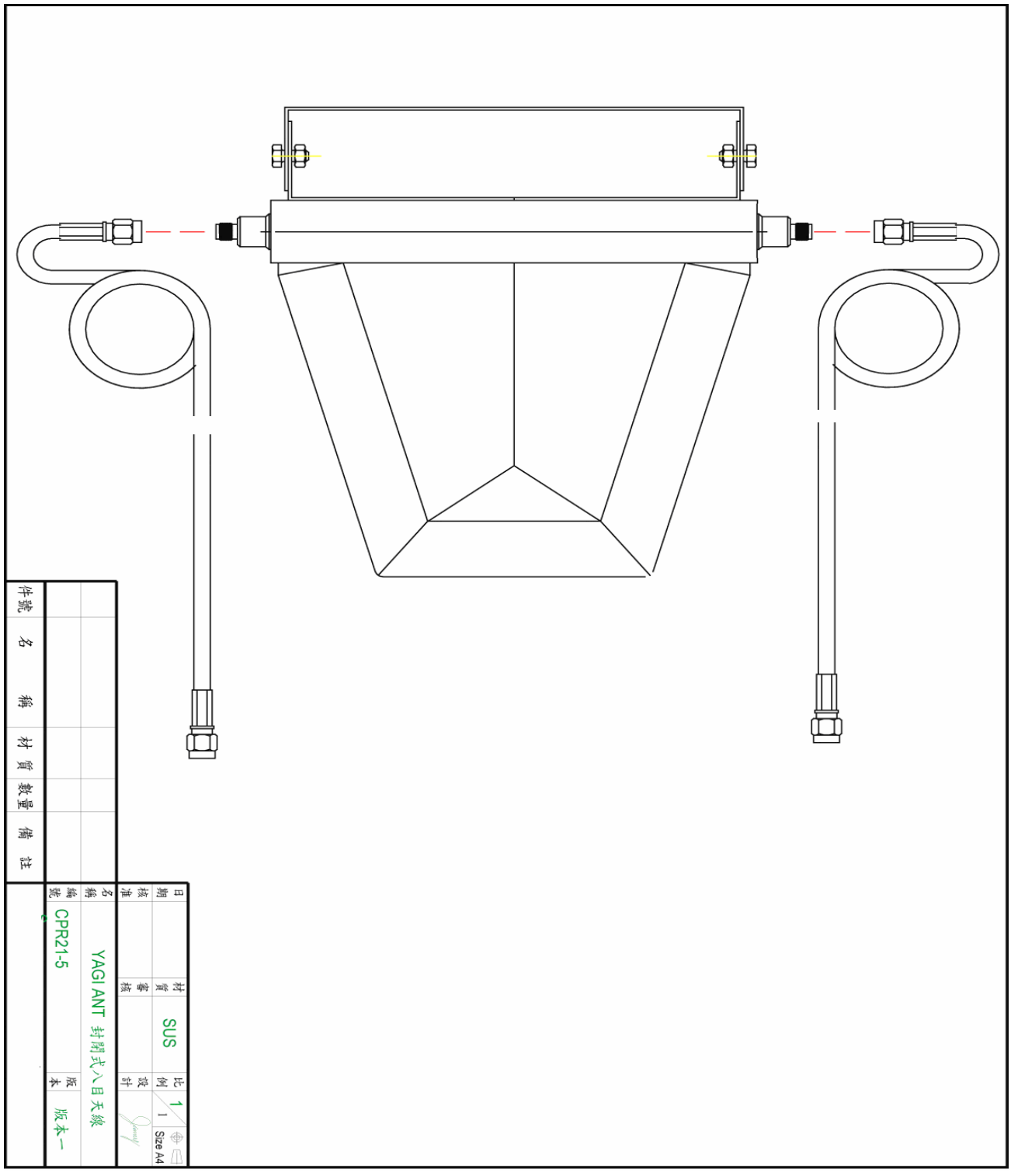


## 3. FREQUENCY

**Mini Yagi antenna CPR21 Full bands with HP 8753E30kHz-6Ghz Network analyzer test**

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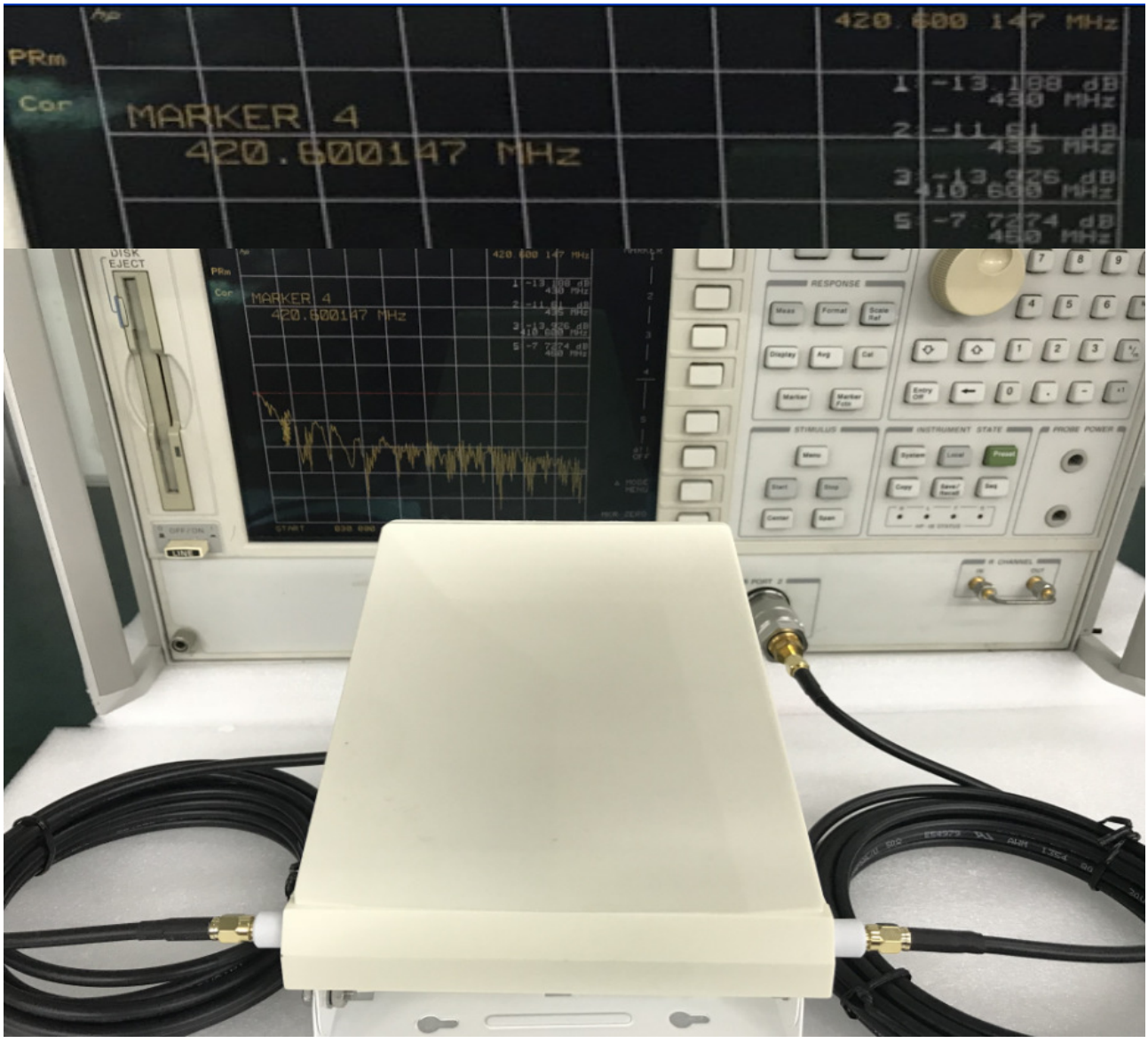
## CPR21-Full-band(Twin type) +RG58U-5M-SMA/M

**Frequency:430-460/600-960/1710-2170/2200-2400/2500-2700/3300-3600MHz and 2.4~2.5/4.9~5.2/5.8~6.0Ghz**

**3-1 Detail band test - Frequency : 430~460/MHz (TETRA)**

| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 430.000MHz | -13.188dB | 1.561:1 | 0.219 |
| 435.000MHz | -11.610dB | 1.713:1 | 0.263 |
| 440.600MHz | -13.978dB | 1.500:1 | 0.200 |
| 450.600MHz | -15.898dB | 1.382:1 | 0.160 |
| 460.000MHz | -7.7274dB | 2.394:1 | 0.411 |



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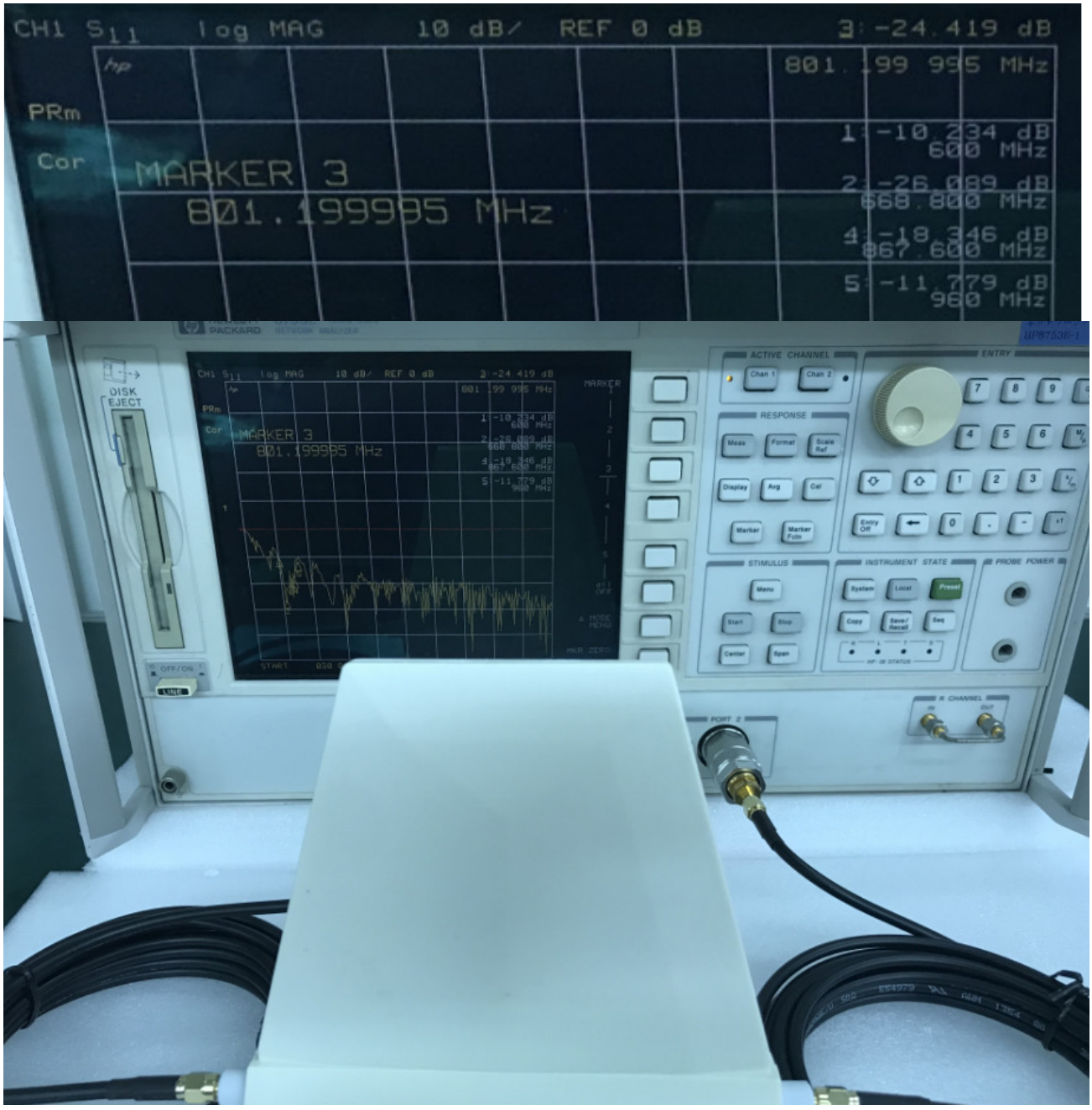
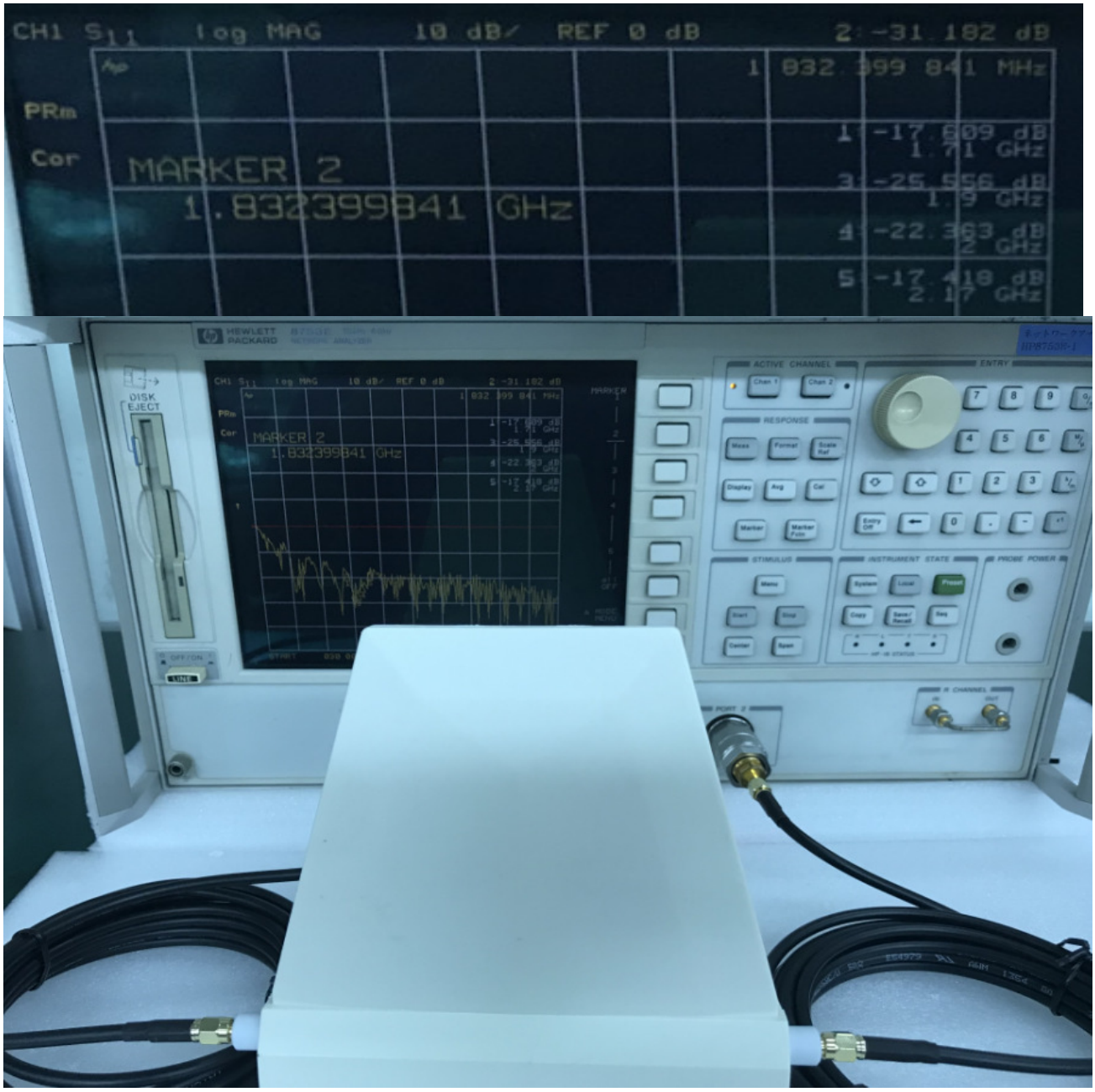
## 3-1 Detail band test - Frequency : 600~960/MHz (LTE/700)

| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 600.000MHz | -10.234dB | 1.889:1 | 0.308 |
| 668.000MHz | -26.089dB | 1.104:1 | 0.050 |
| 801.199MHz | -24.419dB | 1.128:1 | 0.060 |
| 867.600MHz | -18.346dB | 1:275:1 | 0.121 |
| 960.000MHz | -11.779dB | 1.694:1 | 0.258 |



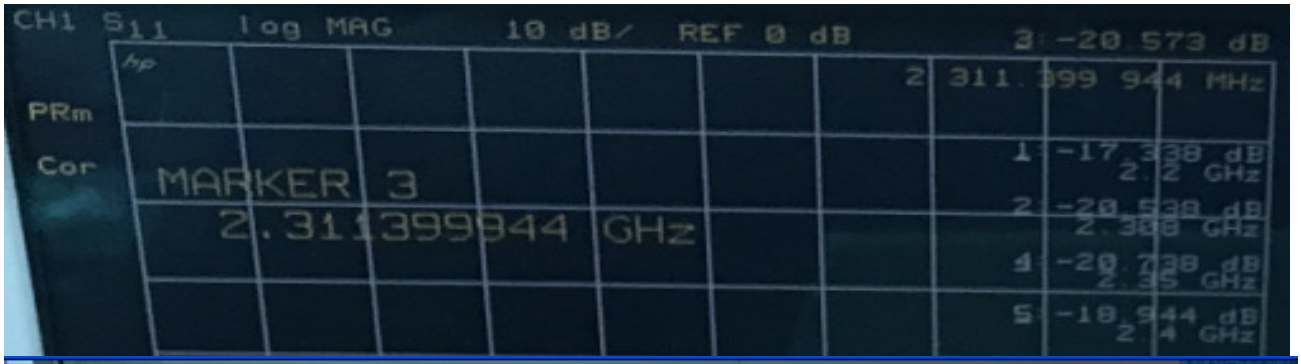
**3-2 Detail band test - Frequency : 1710-2170MHz (4G/LTE)**

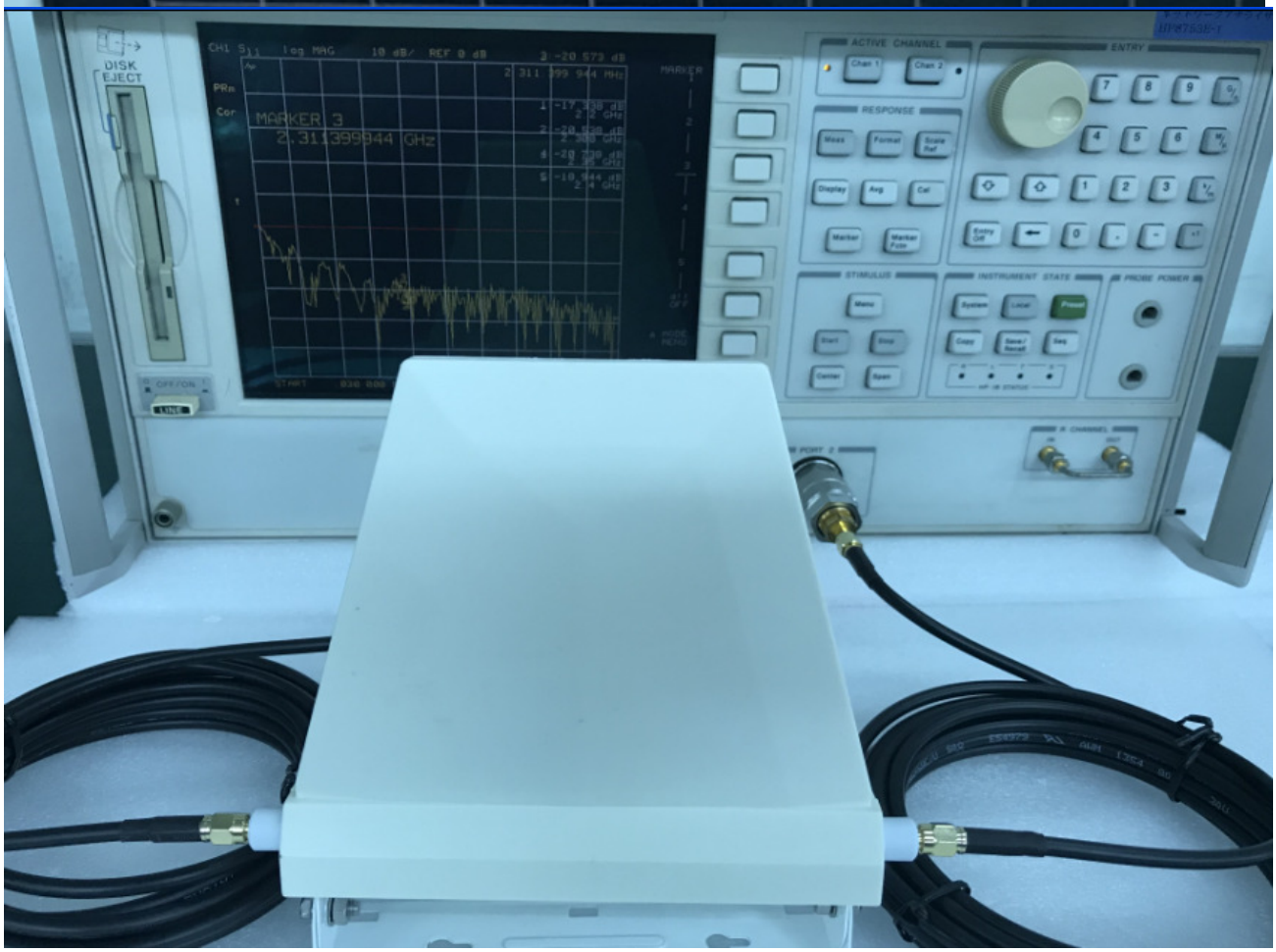
| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 1710.00MHz | -17.609dB | 1.303:1 | 0.132 |
| 1832.39MHz | -31.182dB | 1.057:1 | 0.028 |
| 1900.00MHz | -25.556dB | 1.111:1 | 0.053 |
| 2000.00MHz | -22.363dB | 1.165:1 | 0.076 |
| 2170.00MHz | -17.418dB | 1.311:1 | 0.135 |



**3-3 Detail band test- Frequency:2200-2400MHz (5G 2300)**

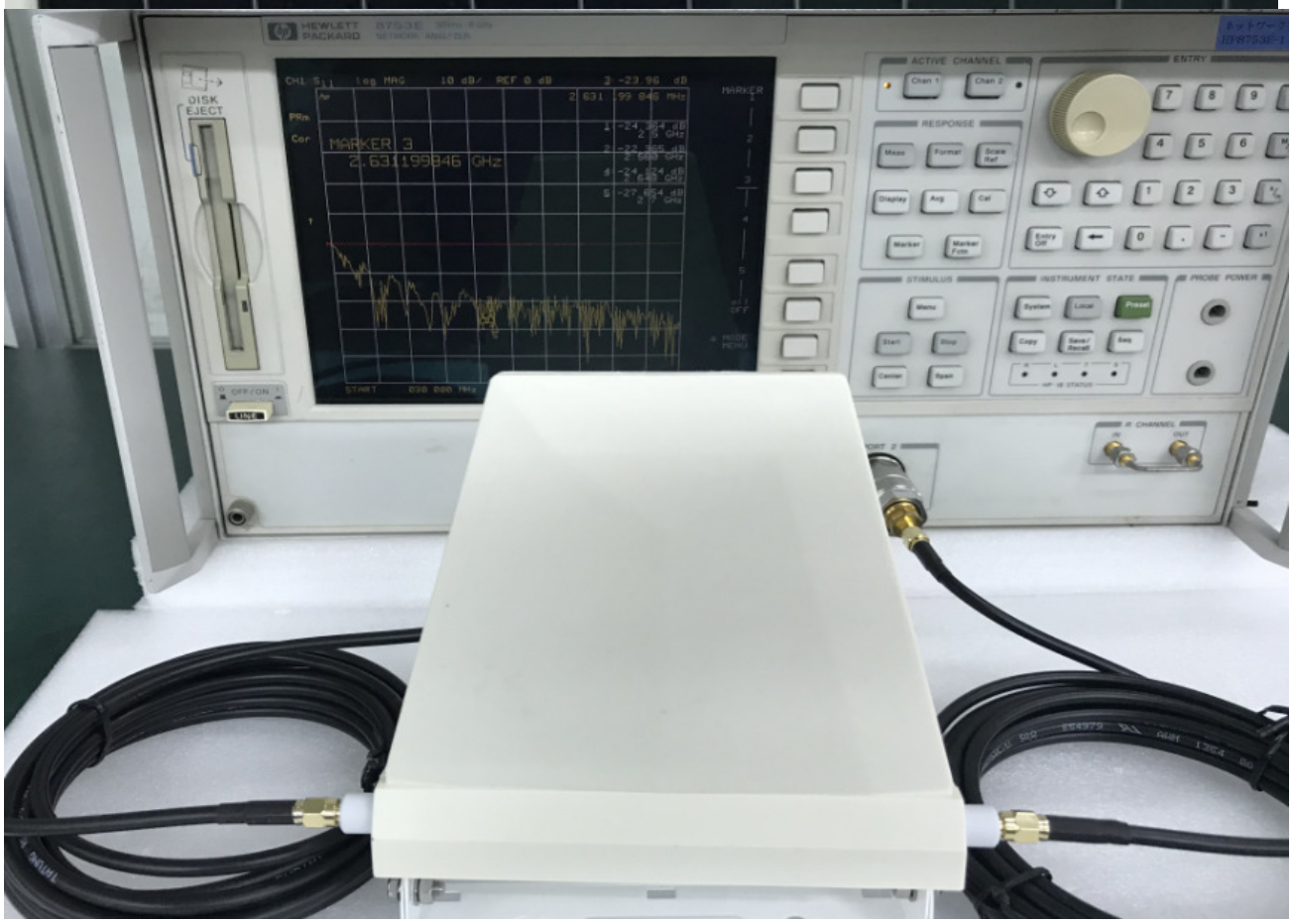
| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 2200.00MHz | -17.338dB | 1.314:1 | 0.136 |
| 2300.00MHz | -20.538dB | 1.207:1 | 0.094 |
| 2311.39MHz | -20.573dB | 1.207:1 | 0.094 |
| 2350.00MHz | -20.738dB | 1.202:1 | 0.092 |
| 2400.00MHz | -18.944dB | 1.255:1 | 0.113 |



**3-4 Detail band test- Frequency:2500-2700MHz (LTE 2600)**

| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 2500.00MHz | -24.364dB | 1.129:1 | 0.061 |
| 2560.00MHz | -22.365dB | 1.165:1 | 0.076 |
| 2631.19MHz | -23.960dB | 1.135:1 | 0.063 |
| 2648.00MHz | -24.124dB | 1.133:1 | 0.062 |
| 2700.00MHz | -27.654dB | 1.086:1 | 0.041 |



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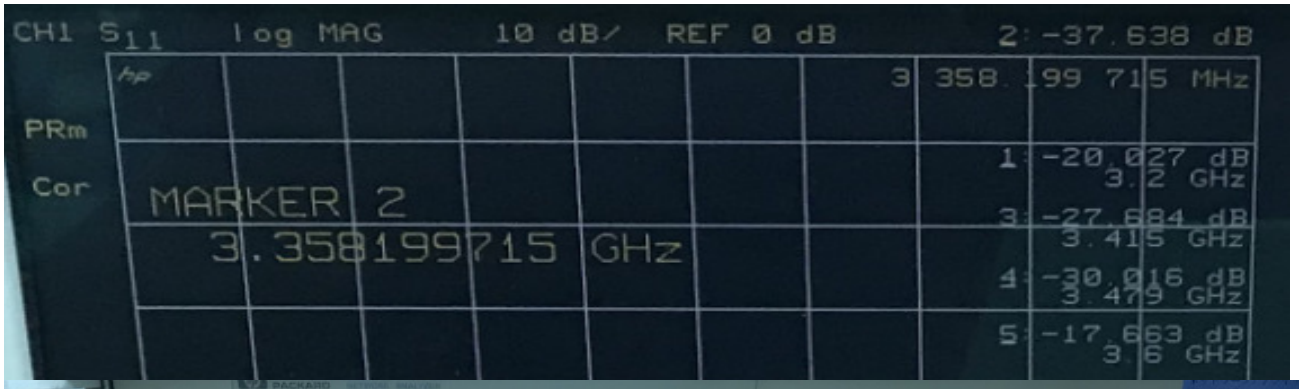
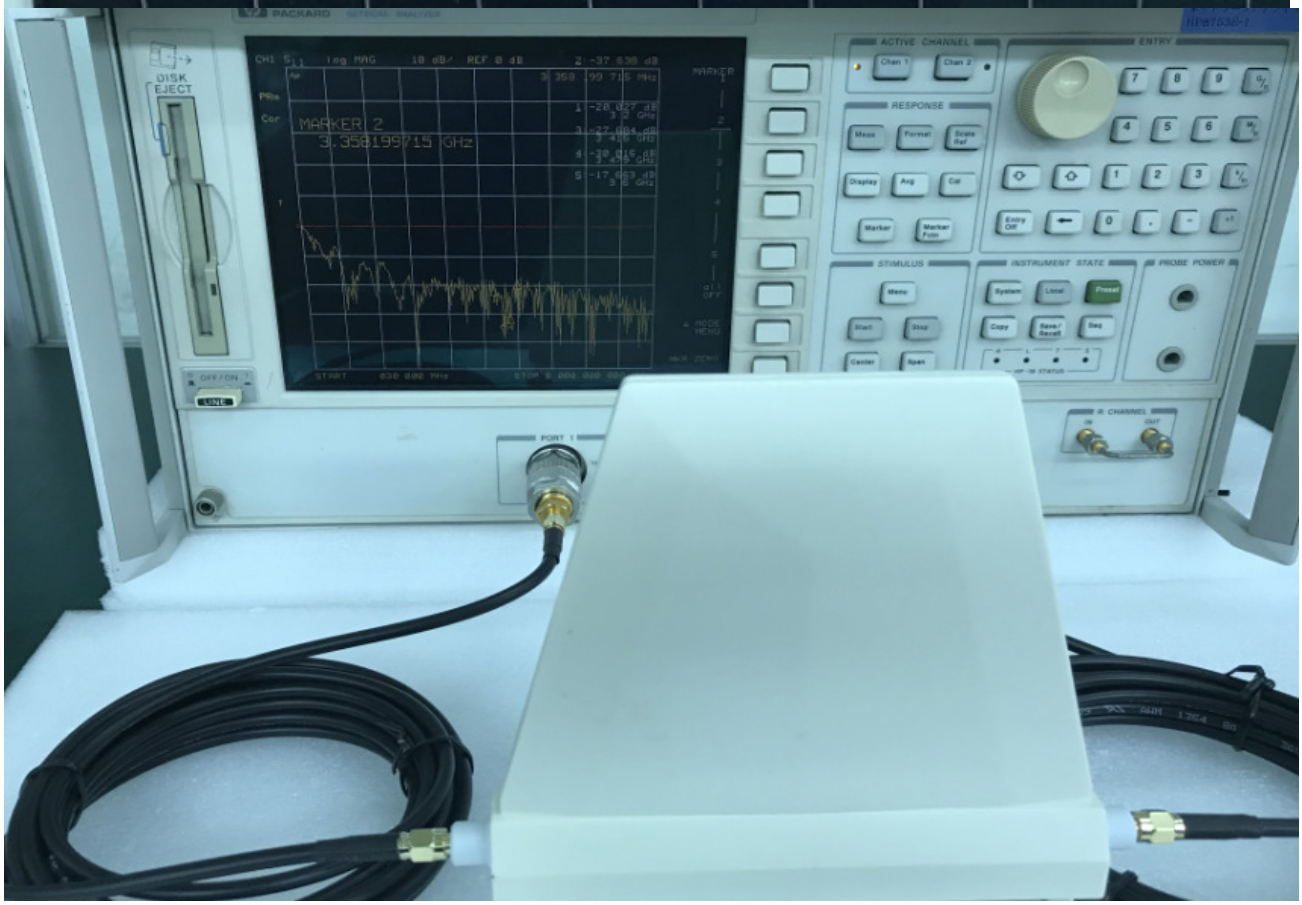
**3-5 Detail band test- Frequency:3200-3600MHz (5G 3300)**

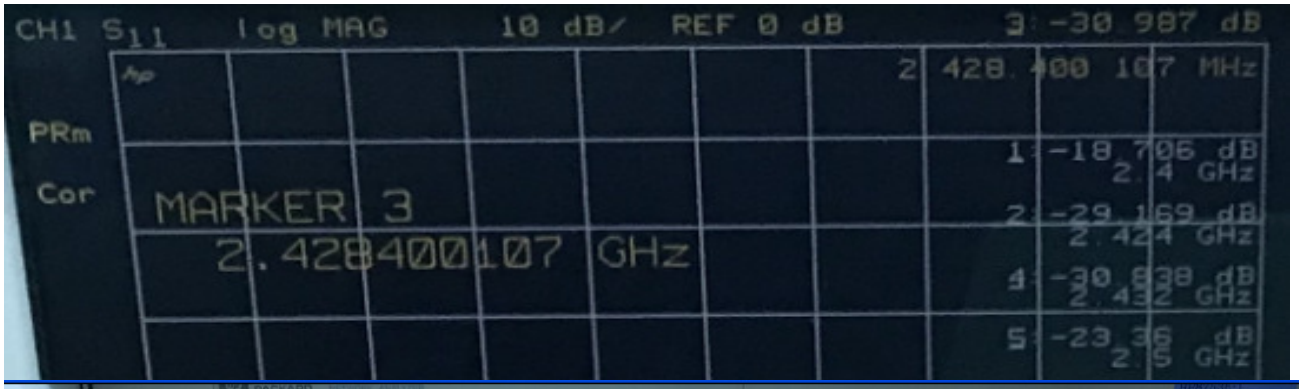
| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 3200.00MHz | -20.027dB | 1.221:1 | 0.100 |
| 3358.19MHz | -37.638dB | 1.027:1 | 0.013 |
| 3415.00MHz | -27.884dB | 1.084:1 | 0.040 |
| 3479.00MHz | -30.016dB | 1.065:1 | 0.032 |
| 3600.00MHz | -17.663dB | 1.301:1 | 0.131 |

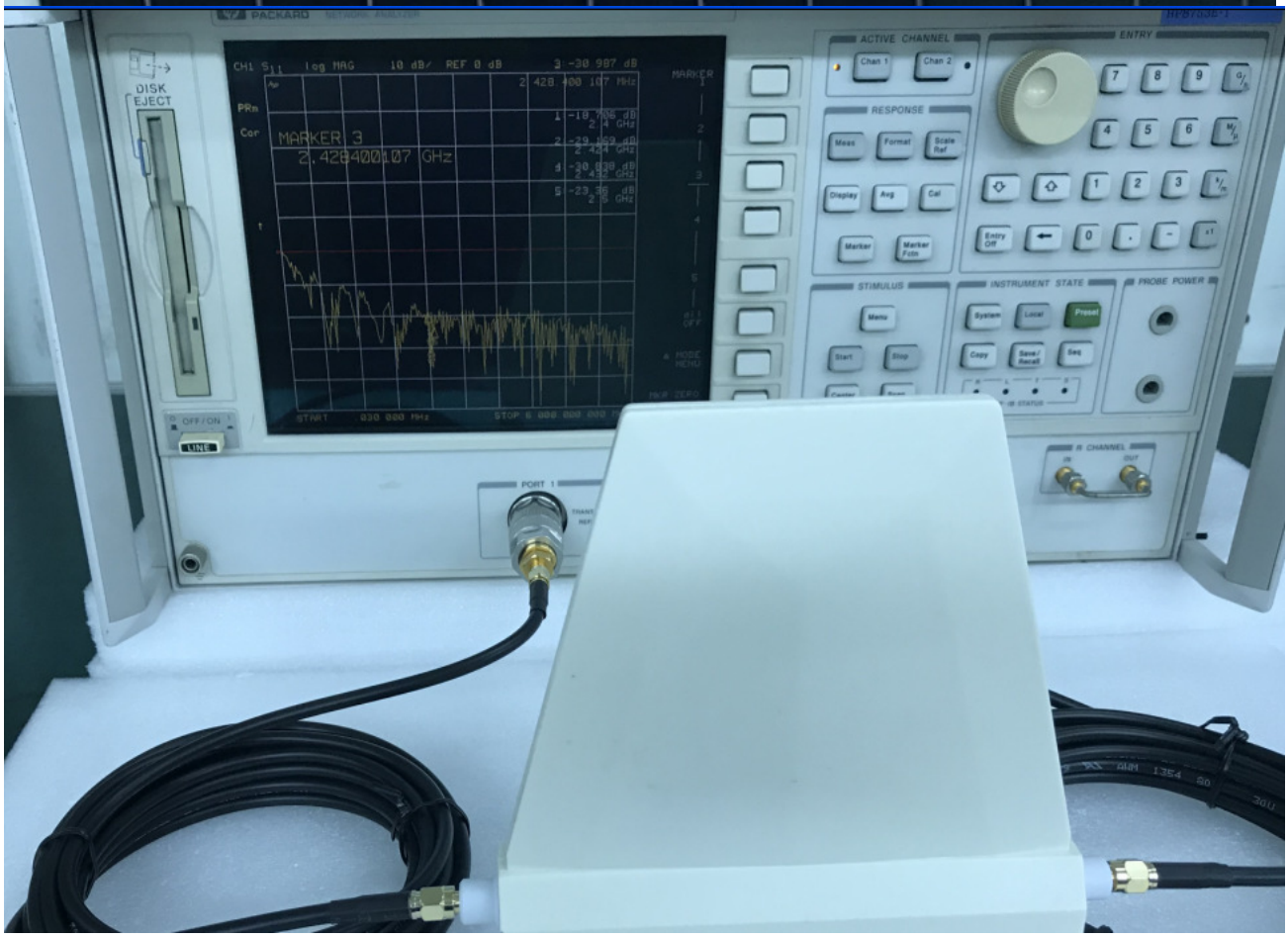


**3-6 Detail band test- Frequency:2.4-2.5GHz (2.4G WIFI)**

| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 2400.00MHz | -18.706dB | 1.263:1 | 0.116 |
| 2424.00MHz | -29.169dB | 1.072:1 | 0.035 |
| 2428.40MHz | -30.987dB | 1.058:1 | 0.028 |
| 2432.00MHz | -30.838dB | 1.059:1 | 0.029 |
| 2500.00MHz | -23.360dB | 1.146:1 | 0.068 |



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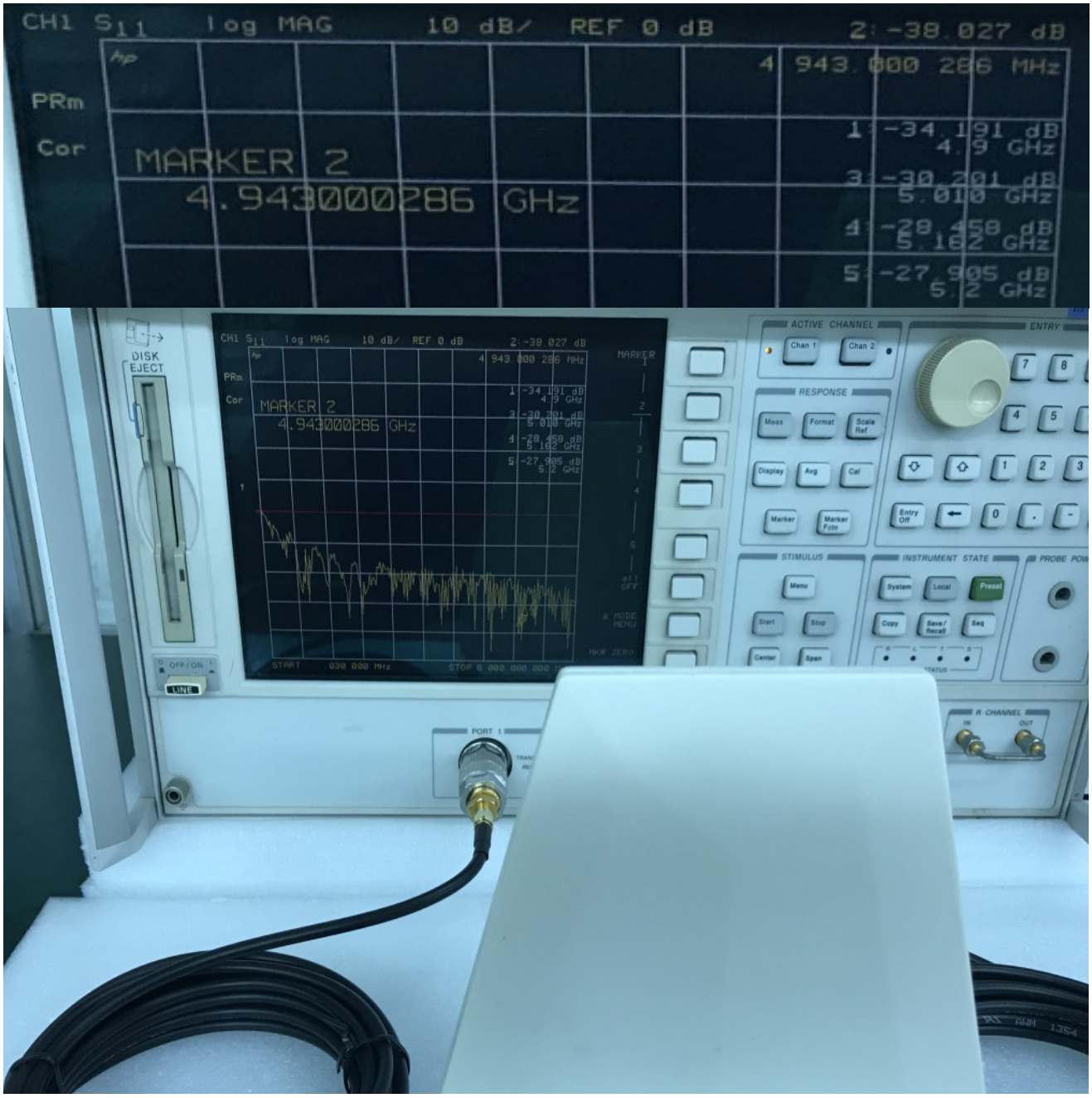
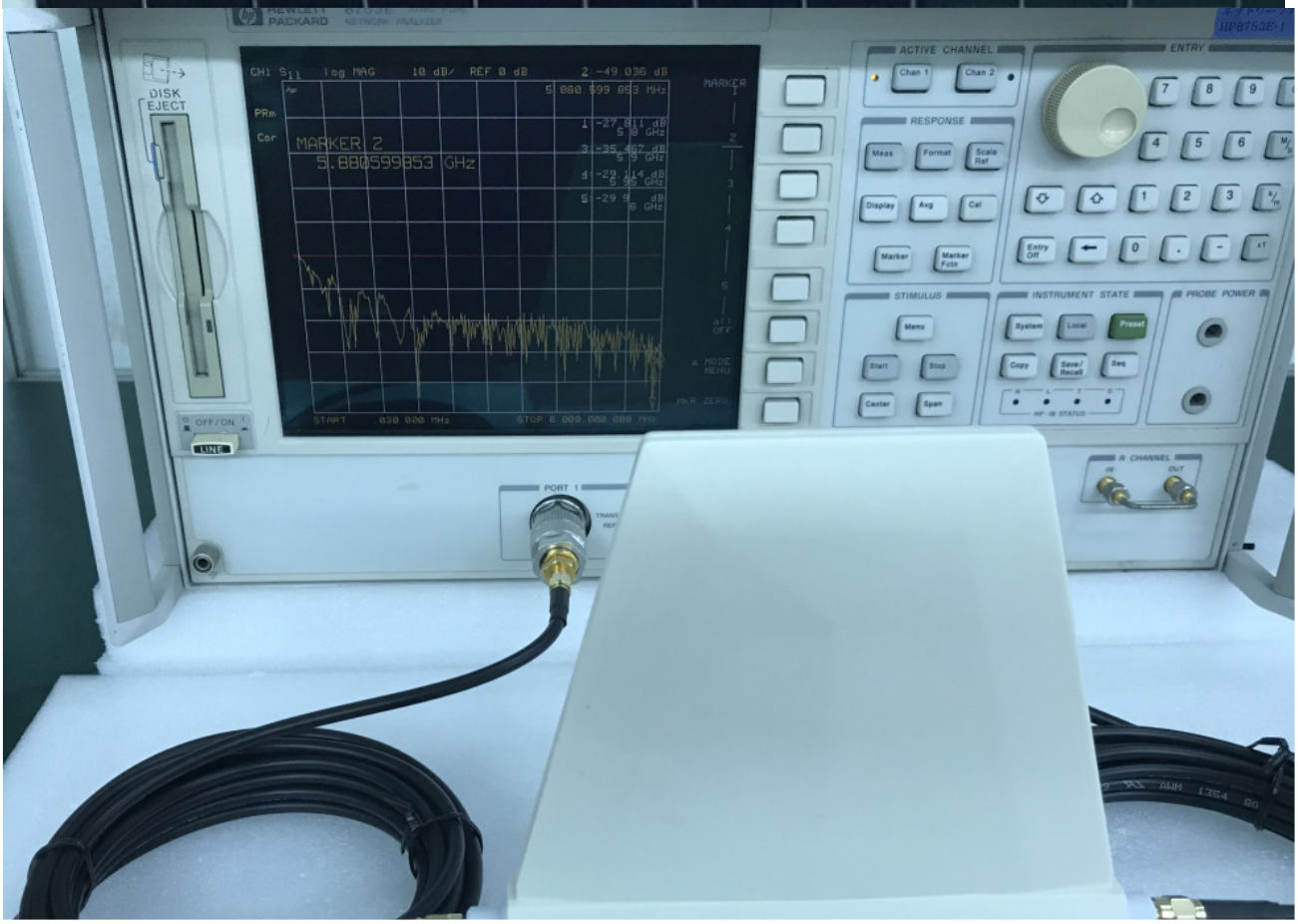
**3-7 Detail band test- Frequency:4.9-5.2GHz (5.2G WIFI)**

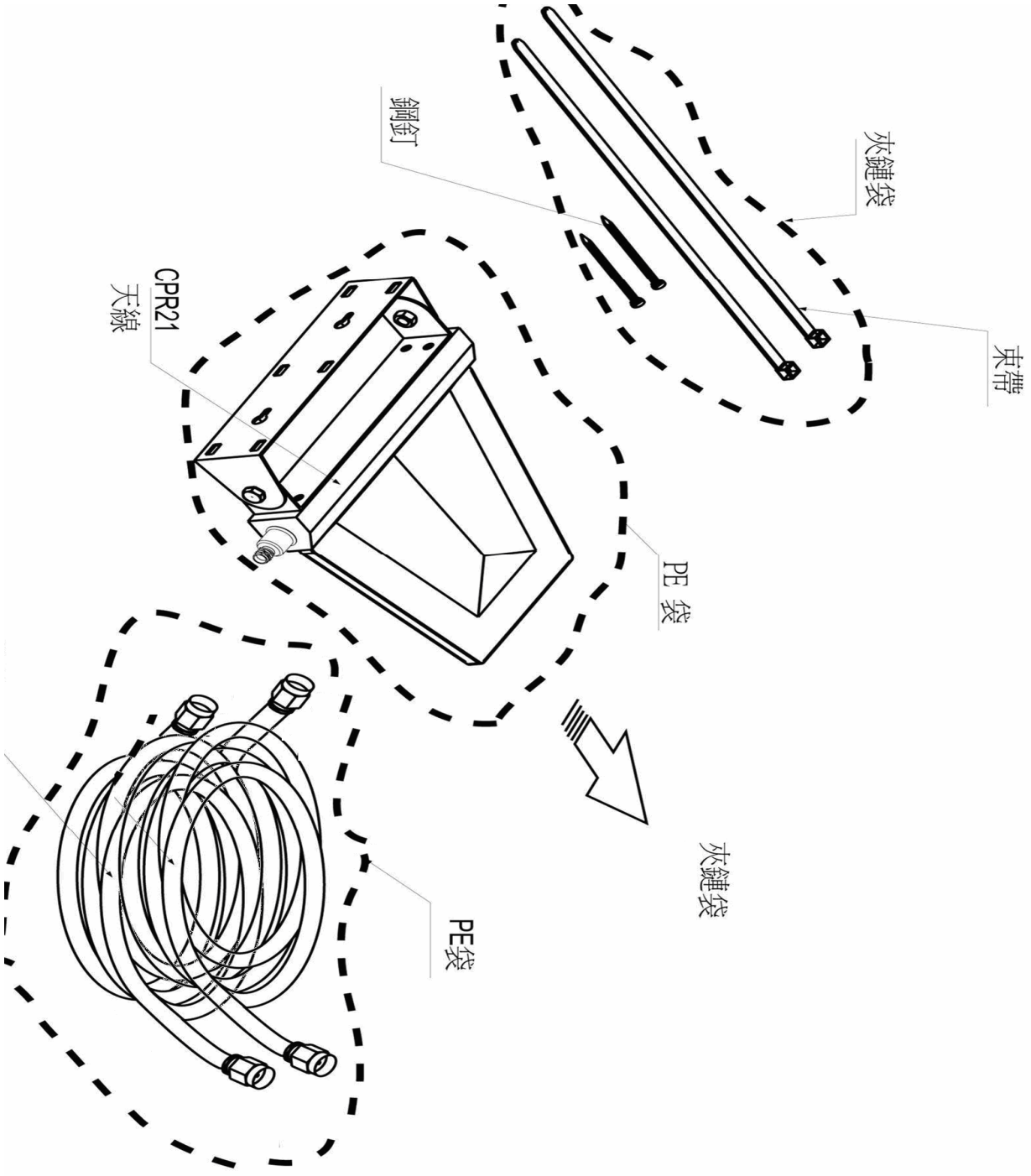
| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 4900.00MHz | -34.191dB | 1.040:1 | 0.020 |
| 4943.00MHz | -38.027dB | 1.025:1 | 0.013 |
| 5010.00MHz | -30.201dB | 1.064:1 | 0.031 |
| 5162.00MHz | -28.458dB | 1.078:1 | 0.038 |
| 5200.00MHz | -27.905dB | 1.084:1 | 0.040 |



**3-8 Detail band test- Frequency:5.8~6.0GHz (DSRC)**

| Frequency | Return loss | V.S.W.R | Reflection coefficient |
|---|---|---|---|
| 5800.00MHz | -27.811dB | 1.085:1 | 0.041 |
| 5880.59MHz | -49.036dB | 1.007:1 | 0.004 |
| 5900.00MHz | -35.467dB | 1.021:1 | 0.011 |
| 5950.00MHz | -29.114dB | 1.073:1 | 0.035 |
| 6000.00MHz | -29.900dB | 1.066:1 | 0.032 |




夾鏈袋
鋼釘
束帶
CPR21
天線
PE 袋
夾鏈袋
PE袋

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**Material List**

| 編號 | 品名 | 數量 | 規格/材質 | 備註 |
|---|---|---|---|---|
| 1 | 天線<br>YAGI Antenna PCB | 1 | 0.4~6.0GHz | |
| 2 | 連接線<br>Connect Cable | 1 | RG316 | For antenna inside. |
| 3 | 接頭<br>Connector | 1 | SMA Female | |
| 4 | 左蓋<br>L Cover | 1 | ABS | |
| 5 | 右蓋<br>R Cover | 1 | ABS | |
| 6 | 封蓋<br>Cap | 1 | ABS | |
| 7 | 連接架<br>SUS Rack | 1 | SUS316 | 白色噴漆 |
| 8 | 支撐架<br>SUS Rack | 1 | SUS316 | 白色噴漆 |
| 9 | 六角螺絲<br>HEX SCREW | 2 | M5x8 | |
| 10 | 六角螺帽<br>HEX NUTS | 2 | M5 | |
| 11 | 華司<br>Washer | 2 | M5 | |
| 12 | 圓頭螺釘<br>Screw | 4 | M4x5 | |
| 13 | 鋼釘<br>Steel Nail | 2 | 2 in (51.5mm) | |
| 14 | 束帶<br>Cable Tie | 2 | 7 1/2 in (190mm)<br>W= 4.8mm | |
| 15 | 外連接線<br>Extension Cable | 1 | RG58/U Low less<br>L:500CM x 2 pcs | PVC 包覆黑色 60P |