# SN509A 项目 WBG 天线承认书

# SN509A project WBG antenna acknowledgement

# 1 概述 Overview

此文档是 SN509A 项目 WBG 天线承认书;
This document is the SN509A project WBG antenna acknowledgement;
天线工作频段为 1575MHz ;2400MHz~2500MHz;5150~5850
The antenna operates in the frequency band of 1575MHz;
2400MHz~2500MHz;5150~5850

# 2 Manufacturere and its address

公司名称：禾邦电子（苏州）有限公司
Company name: INPAQ Technology (Suzhou) Co., Ltd
Address Address: Jinye First Road, Yanta District, Xi'an City, Shaanxi Province

# 3 天线的型号及天线类型

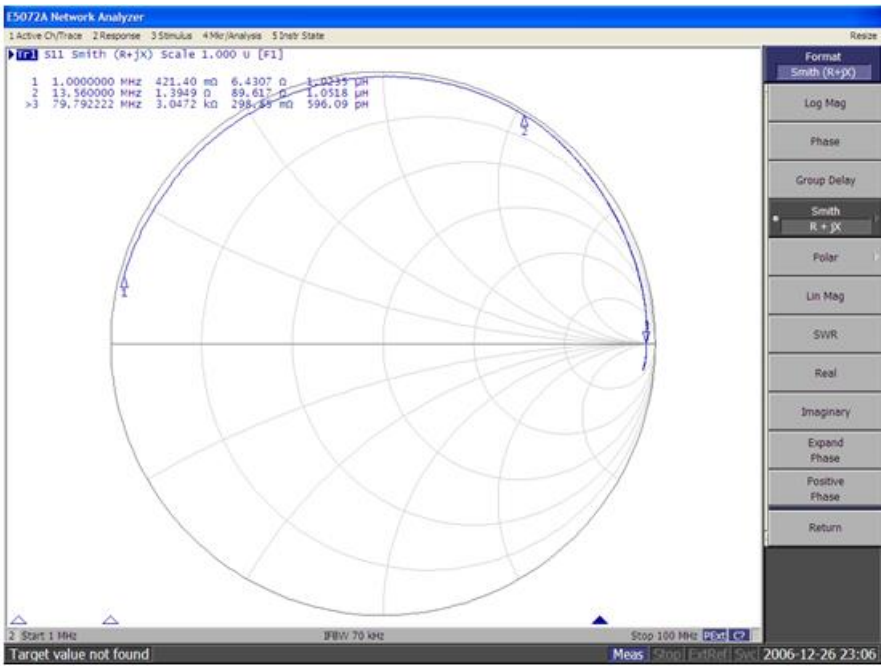
# The model and type of antenna

天线型号：SN509A-G+W(FPC)天线
Antenna model: SN509A-G+W (FPC) antenna
天线类型：IFA
Antenna type: IFA

天线型号：SN509A-NFC (FPC)天线
Antenna model: SN509A-NFC (FPC) antenna
天线类型：IFA
Antenna type: IFA

**测试数据/Test Data**

| | |
|---|---|
| Frequency range | 13.56MHz |
| Secure element interface | SWP/HCI |
| Type | Active and Passive |




# 4 天线测试环境

# 4 Antenna test environment

## 4.1 天线测试 lab，测试仪器，及校准日期

## 4.1 Antenna test lab, test instrument, and calibration date

天线输入特性测试使用 Agilent E5071C 矢量网络分析仪。

Antenna input characteristics are tested using the Agilent E5071C vector network analyzer.

天线辐射特性测试使用 GTS RayZone 2800 3D 近场微波暗室。测试坐标系如图 4.1.1 所示，

The antenna radiation characteristics test uses the GTS RayZone 2800 3D near-field anechoic chamber. The test coordinate system is shown in Figure 4.1.1.

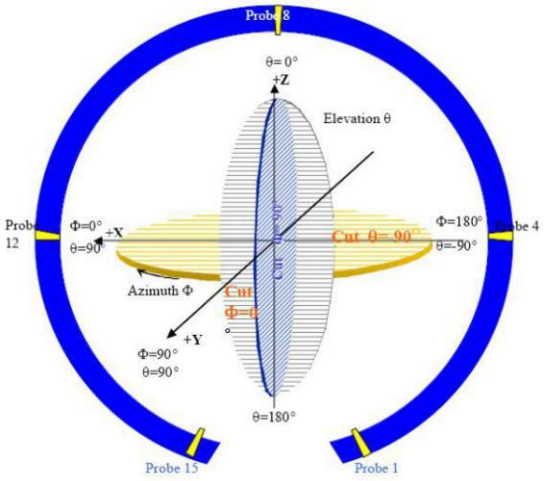



图 4.1.1 3D 微波暗室测试坐标系(back view)

Figure 4.1.1 3D anechoic chamber test coordinate system (back view)

## 4.2 天线测试 lab，测试仪器，及校准日期

4.2 Antenna test lab, test instrument, and calibration date

综测仪使用的是 Anritsu 8000A(5G)& Anritsu MT8821C (2G&3G&4G)&RS CMW500(WLAN)& Agilent E4438C(GPS)。

The tester uses the Anritsu 8000A(5G)& Anritsu MT8821C (2G&3G&4G)&RS CMW500(WLAN)& Agilent E4438C(GPS).

天线辐射特性测试使用 GTS RayZone 2800 3D 近场微波暗室。测试坐标系如图 4.2.1 所示。

The antenna radiation characteristics test uses the GTS RayZone 2800 3D near-field anechoic chamber. The test coordinate system is shown in Figure 4.2.1.

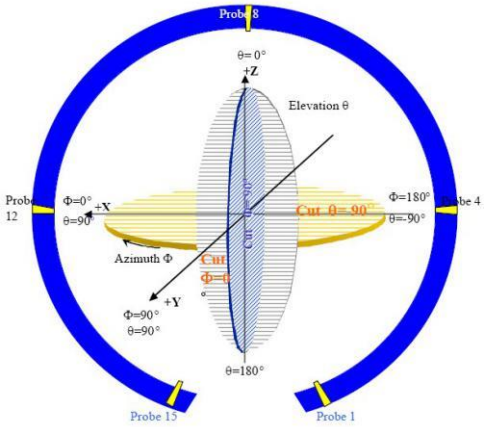



图 4.2.1 3D 微波暗室测试坐标系(back view)

Figure 4.2.1 3D anechoic chamber test coordinate system (back view)

## 4.3 天线测试 lab，测试仪器，及校准日期。

## 4.3 Antenna test lab, test instrument, and calibration date.


图 4.3.1 暗室实物图

Figure 4.3.1 Dark room physical drawing

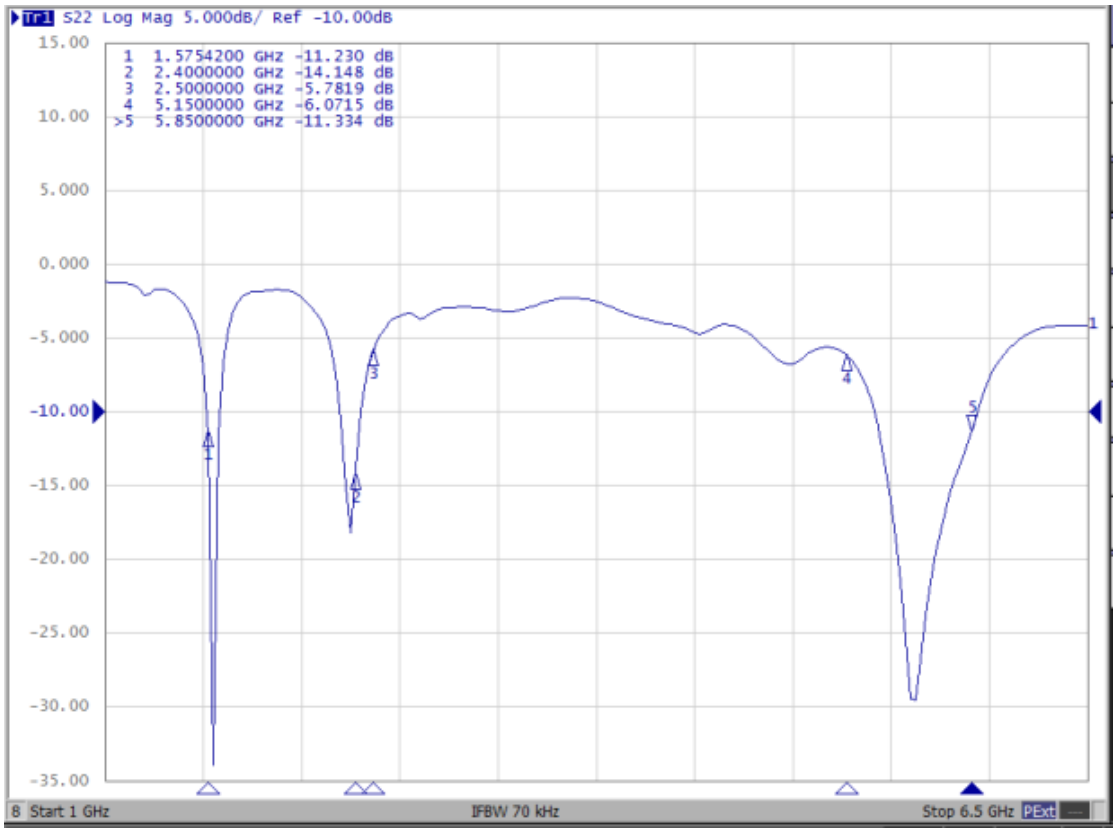
## 4.3 Anritsu 8000A& Anritsu MT8821C&RS CMW500& Agilent E4438C 校准日期

## 4.3 Anritsu 8000A& Anritsu MT8821C&RS CMW500& Agilent E4438C calibration date

| 校准日期 Calibration date |
|---|
| 2023.8.8 |

# 5 反射损耗

# 5 Reflection loss




WBG S11

## 6 天线增益及 2D or 3D Pattern 图：

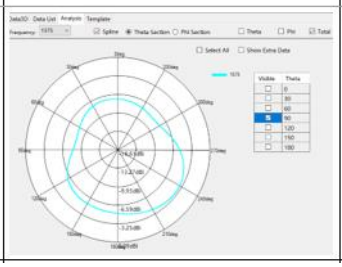
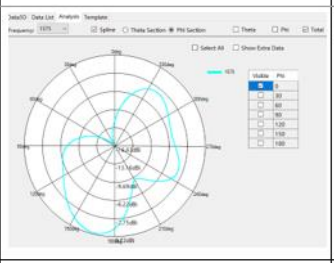
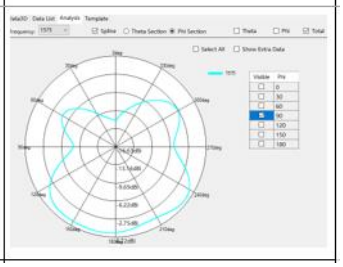
## 6 Antenna gain and 2D or 3D Pattern diagram:

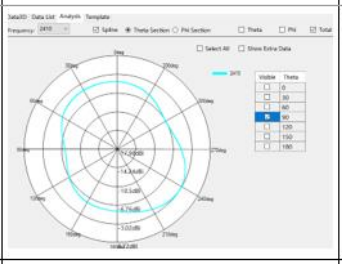
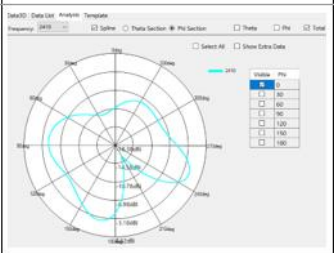
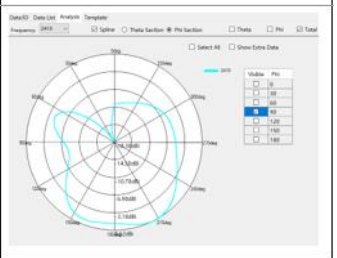
| Frequency/MHz | Efficiency/dB | Gain/dBi |
|---|---|---|
| 1575 | -3.66 | 1.4 |
| 2400 | -4.45 | -0.1 |
| 2420 | -4.78 | -0.61 |
| 2440 | -4.84 | -0.84 |
| 2460 | -4.92 | -0.98 |
| 2480 | -4.77 | -0.84 |
| 2500 | -4.94 | -1.06 |
| 5150 | -7.81 | -1.62 |
| 5200 | -6.97 | -0.55 |

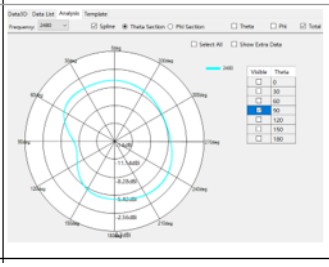
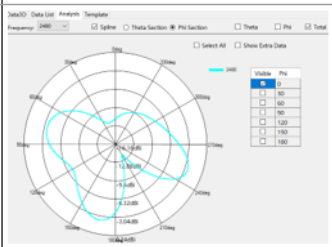
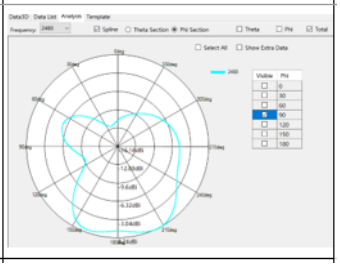
| | | |
|---|---|---|
| 5250 | -6.17 | 0.16 |
| 5300 | -5.45 | 0.86 |
| 5350 | -4.67 | 1.73 |
| 5400 | -4.66 | 1.74 |
| 5450 | -4.53 | 1.8 |
| 5500 | -4.87 | 1.33 |
| 5550 | -5.07 | 0.96 |
| 5600 | -5.13 | 0.91 |
| 5650 | -5.47 | 0.55 |
| 5700 | -5.32 | 1.01 |
| 5750 | -5.72 | 0.67 |
| 5800 | -5.76 | 0.35 |
| 5850 | -5.99 | 0.22 |

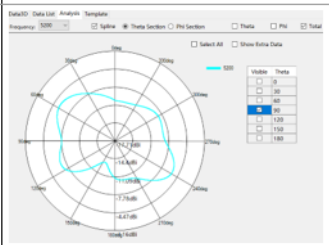
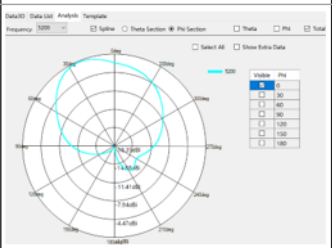
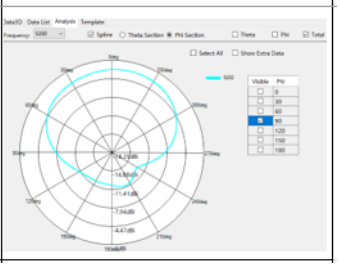
## 6.1 天线增益及 2D or 3D Pattern 图：

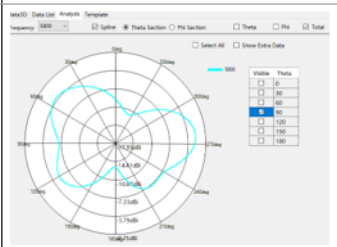
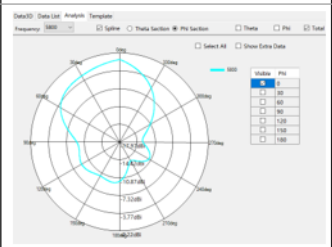
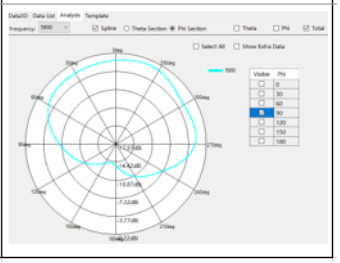
6.1 Antenna gain and 2D or 3D pattern diagram:

| Frequency /MHz | XY | XZ | YZ |
|---|---|---|---|
| 1575 |  |  |  |

| Frequency /MHz | XY | XZ | YZ |
|---|---|---|---|
| 2410 |  |  |  |

| Frequency /MHz | XY | XZ | YZ |
|---|---|---|---|
| 2480 |  |  |  |

| Frequency /MHz | XY | XZ | YZ |
|---|---|---|---|
| 5200 |  |  |  |

| Frequency /MHz | XY | XZ | YZ |
|---|---|---|---|
| 5800 |  |  |  |

**7 测试软件 GTS MaxSign-RayZone2800C_Z**

**7.Test software GTS MaxSign-RayZone2800C_Z**

**8. 签名：**

**8. Signature:** Jinhui Xue