

# Passive Antenna Measurements

---

900 MHz Antenna for CAPXLV



David Chen | April 12, 2023

# Contents

1. Overview – Antenna Measurement Facilities at Jabil Taichung Lab
2. 900 MHz Antenna Test at Free Space Condition
3. Measured Return loss & VSWR and Antenna Efficiency
4. Measured 2D&3D Radiation Patterns at 900MHz
5. Summary

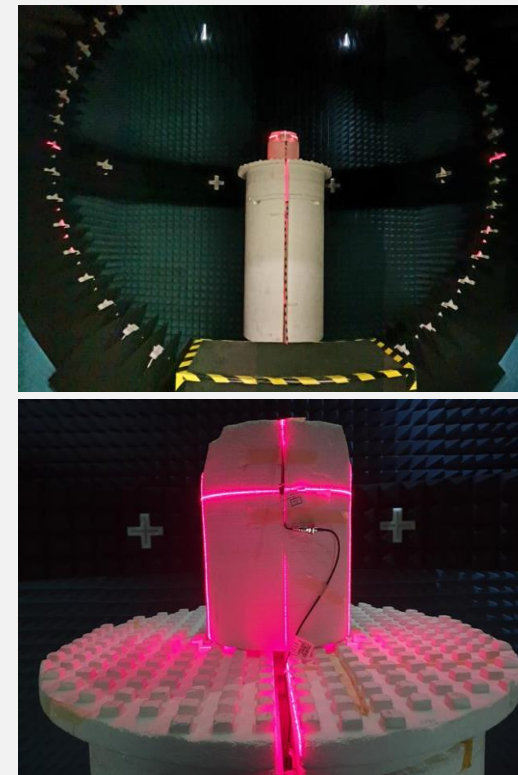
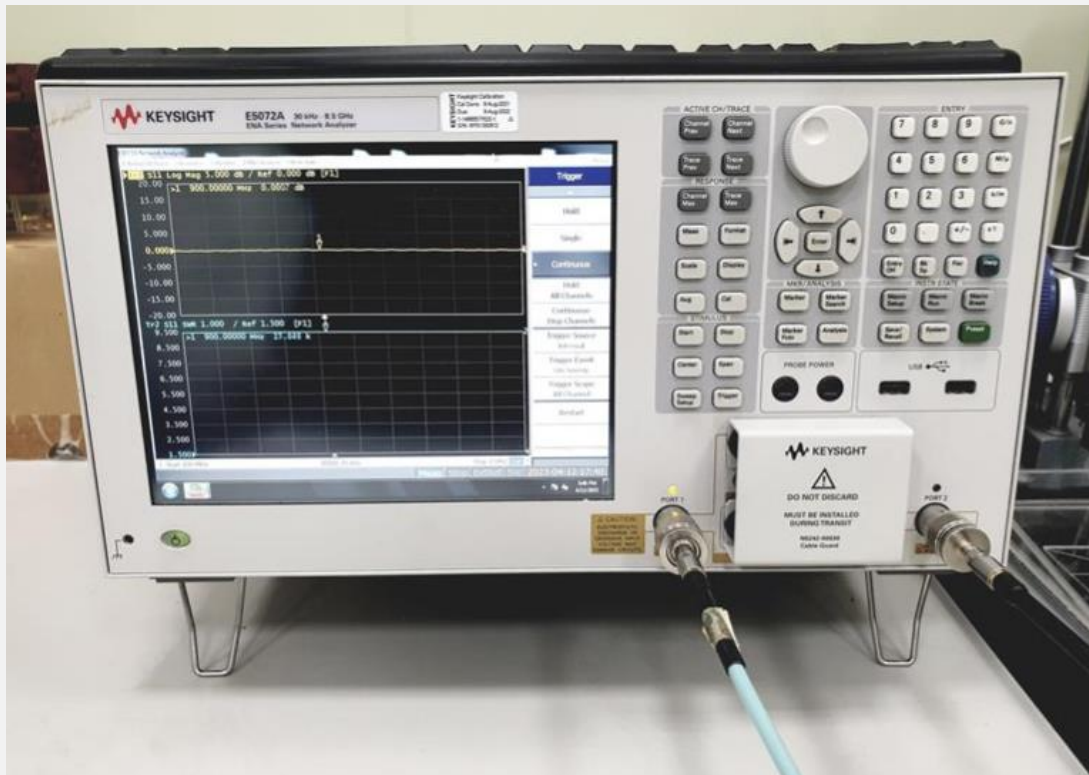
# Overview – Antenna Measurement Facilities at Jabil Taichung Lab

- **Jabil TAIWAN Design Center Lab** has a wide range of professional tools for carrying out all antenna measurements and a fully-equipped anechoic chamber with an over-the-air (OTA) measurement setup. Our antenna anechoic chamber provides a stable, non-reflective environment for antenna testing.

- **OTA measurement setup consists of this equipment:**

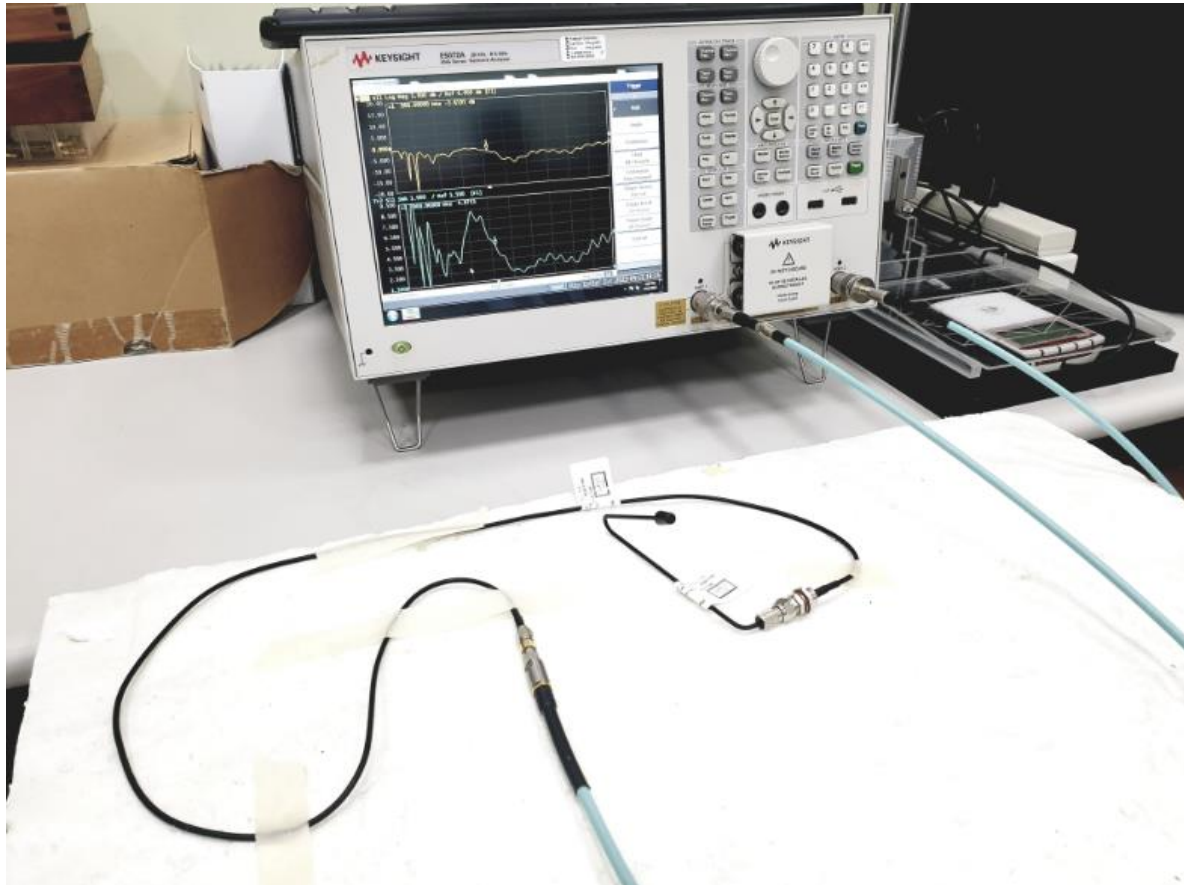
- ✓ Keysight vector network analyzer E5072A

- ✓ ETS AMS 8947 Antenna anechoic chamber
- ✓ R&S®CMW500 wideband radio communication tester
- ✓ Keysight N9010A EXA Signal Analyzer
- ✓ Keysight vector network analyzer E5071C



# 900 MHz Antenna Test at Free Space Condition

Keysight vector network analyzer E5072A



DUT :  
Only 900 MHz  
Antenna with Cable



# Measured Return loss & VSWR and Antenna Efficiency

Measured by E5072A Network Analyzer and ETS-LINDGREN System at Taichung (Jabil lab).

Return loss & VSWR



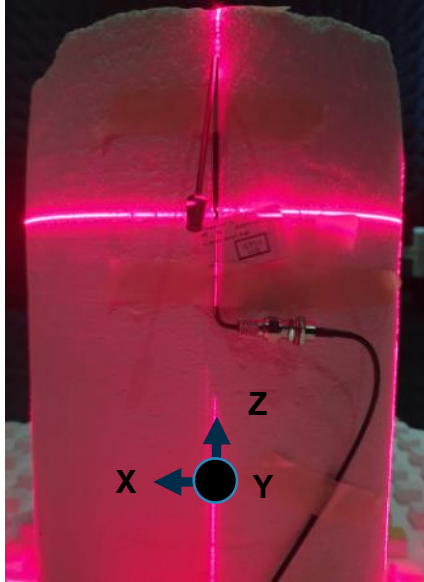
Antenna Efficiency & Peak Gain

Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)	Average Gain (dB)
850	14.84	-4.49	-8.29
860	15.97	-4.09	-7.97
870	18.36	-3.31	-7.36
880	20.62	-2.65	-6.86
890	22.81	-2.03	-6.42
900	25.30	-1.31	-5.97
910	27.78	-0.65	-5.56
920	29.48	-0.23	-5.31
930	29.30	-0.26	-5.33
940	28.70	-0.38	-5.42
950	28.61	-0.27	-5.44

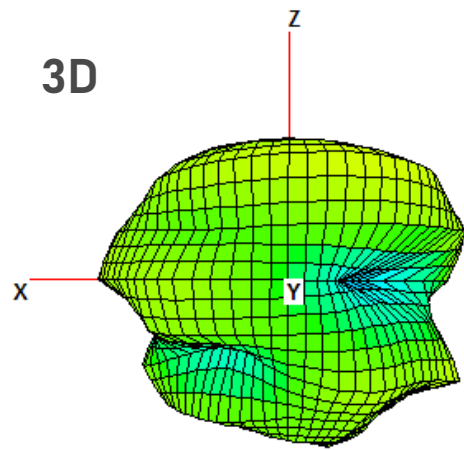
900 MHz : Efficiency: 25.30%

900 MHz : Peak Gain -1.31dBi

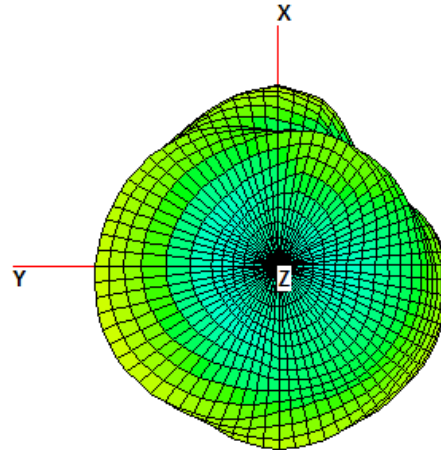
# Measured 2D&3D Radiation Patterns at 900MHz



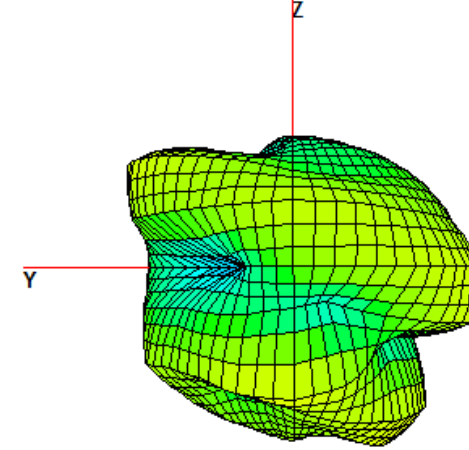
External  
Antenna  
@900MHz  
(Free space  
condition )



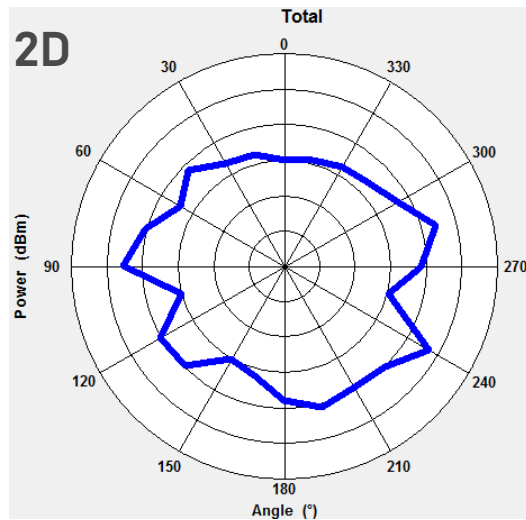
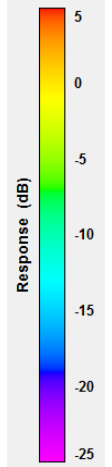
Z-X Plane



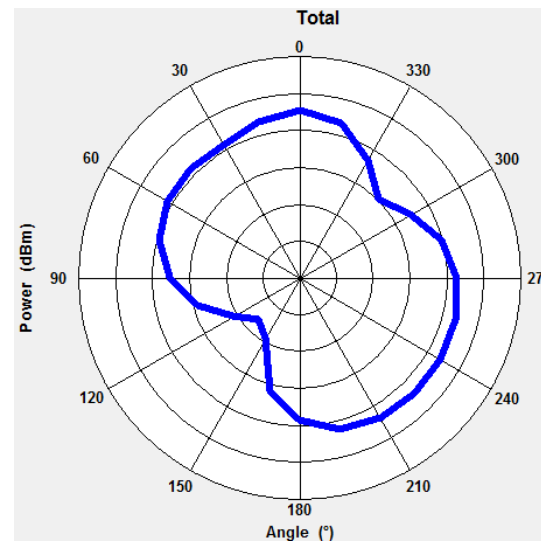
X-Y Plane



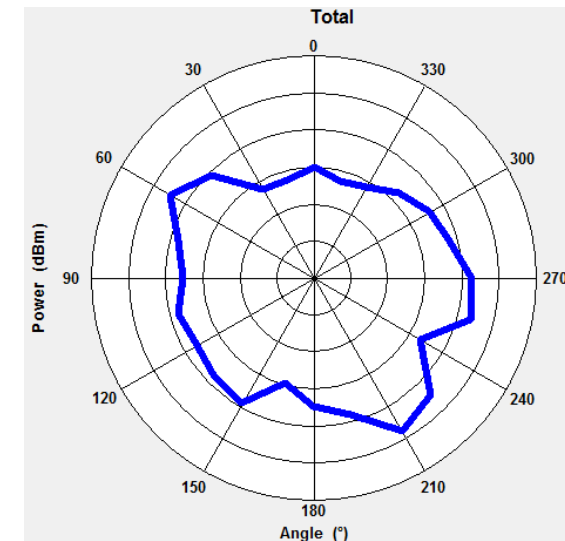
Z-Y Plane



Phi 0deg



Theta 90deg



Phi 90deg

Max: 5  
Min: -25  
Scale: 5/div



# Summary

## Overview of Antenna Measurements for 900M Antenna Performance

Electrical	
Frequency	900 MHz
Impedance	50 $\Omega$
VSWR Max.	4.87
Gain (dBi) Max.	-1.31 dBi
Efficiency	25.30% (-5.97dB)
Polarization	Linear
Radiation Pattern	Omni-directional

# Thank You

---

**JABIL**