

3D Antenna Measurement Summary Report

REPORT NO.: W7L-P22090013OT01

**PLATFORM
MANUFACTURER:** Synergy Consult Aps

PLATFORM NAME: 2.4GHz Multi-Protocol USB Stick

ANTENNA TYPE: Fixed Internal

TESTED DATE: 2022.08.09

ISSUED: 2022.08.09

APPLICANT: Synergy Consult Aps

ADDRESS : Rundforbivej 271A DK-2850, Naerum, DENMARK

ISSUED BY : BV 7Layers Communications Technology (Shenzhen)
Co., Ltd.

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District, Shenzhen, Guangdong, China

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RELEASE CONTROL RECORD

| REPORT NO. | REASON FOR CHANGE | DATE ISSUED |
|-------------------|-------------------|-------------|
| W7L-P22090013OT01 | Original release | 2022.08.09 |
| | | |
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GENERAL INFORMATION

| | |
|----------------------|---------------------|
| APPLICANT: | Synergy Consult Aps |
| MANUFACTURER: | Synergy Consult Aps |
| MODEL NO.: | PT24MPUSB-2 |

Test Standard: ANSI/IEEE Std. 149 1979.

PREPARED BY : Leon Guo , DATE : 2022.08.09
Leon Guo / Engineer

APPROVED BY : Luke Lu , DATE : 2022.08.09
Luke Lu / Manager

1. Test Equipment List

| TYPE OF EQUIPMENT | MODEL NUMBER | SERIAL NUMBER | CALIBRATION DUE DATE |
|---------------------|--------------|---------------|----------------------|
| Network Analyzer | E5071C | MY46214638 | 2023.05.06 |
| OTA Chamber | ETS AMS8500 | N/A | N/A |
| RF Switch | ETS EMCenter | N/A | N/A |
| Measurement Antenna | ETS 3164-06 | N/A | N/A |

2. Measurement Uncertainty

Expanded Uncertainty for Measurement (k=2 or 95% Confidence Level) at Passive antenna test over frequency range 780 – 2200MHz is +/- 1.52 dB.

3. Characteristics of antenna

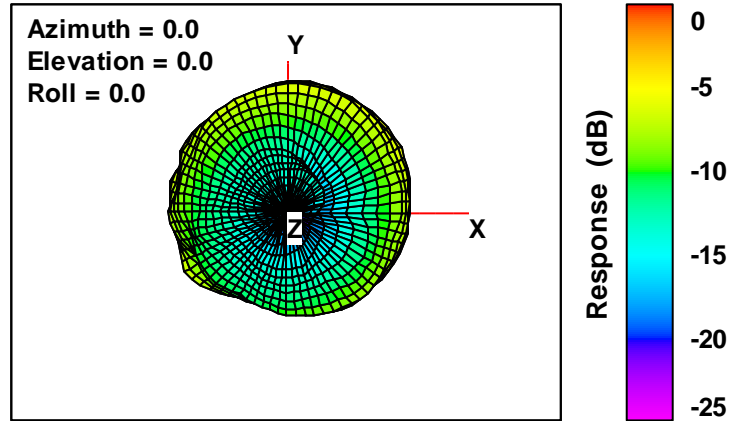
3.1. 3D Antenna Gain-Free Space

| Frequency (MHz) | Directivity (dBi) | Efficiency (dB) | Efficiency (%) | Gain (dBi) |
|-----------------|-------------------|-----------------|----------------|------------|
| 2400 | 4.77 | -8.84 | 13.07 | -4.07 |
| 2410 | 4.91 | -8.47 | 14.24 | -3.56 |
| 2420 | 4.91 | -7.91 | 16.19 | -3.00 |
| 2430 | 4.93 | -7.59 | 17.42 | -2.66 |
| 2440 | 4.93 | -7.19 | 19.08 | -2.27 |
| 2450 | 4.84 | -6.98 | 20.04 | -2.14 |
| 2460 | 4.84 | -6.61 | 21.83 | -1.77 |
| 2470 | 4.80 | -6.37 | 23.09 | -1.56 |
| 2480 | 4.86 | -6.18 | 24.12 | -1.32 |
| 2490 | 4.90 | -6.09 | 24.62 | -1.19 |
| 2500 | 4.96 | -5.86 | 25.97 | -0.90 |

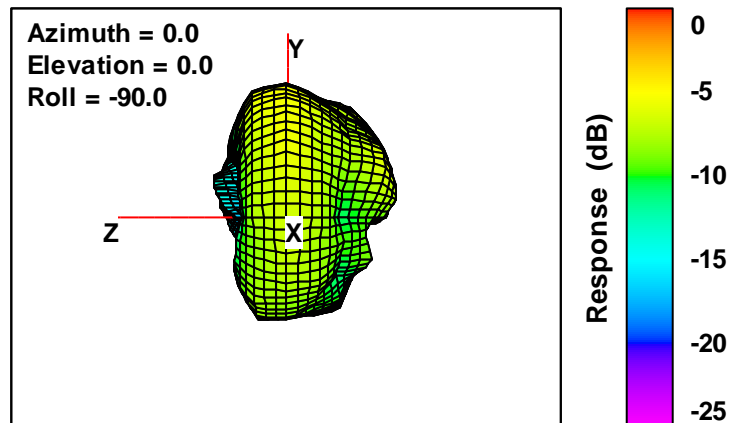
3.2. Antenna Pattern

2400MHz

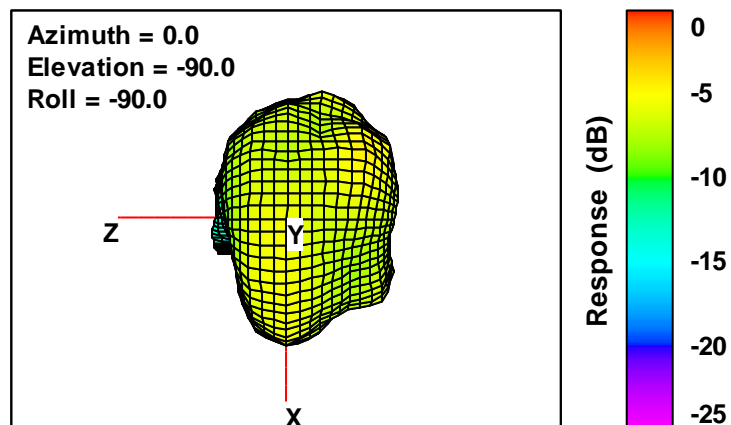
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Total

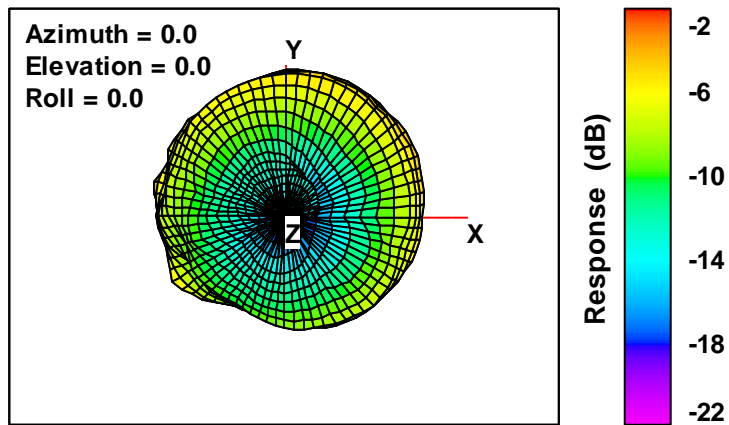


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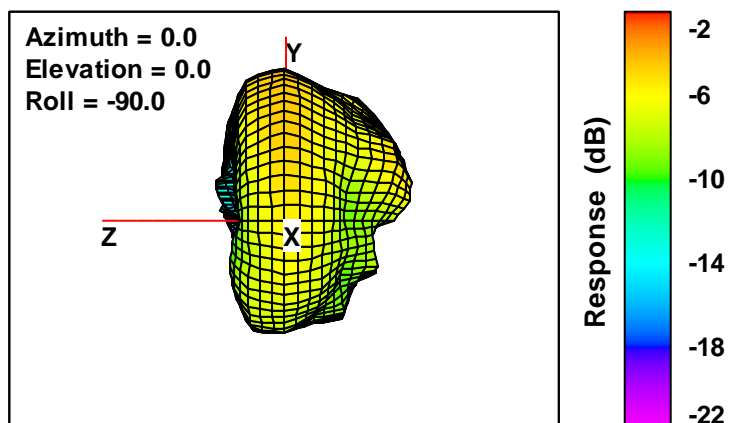


2440MHz

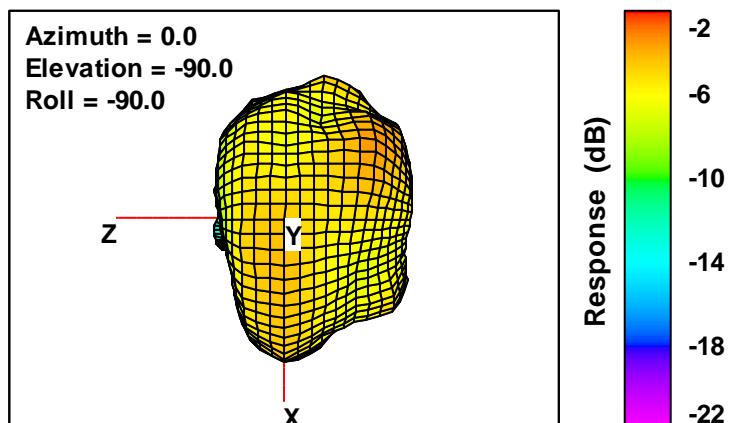
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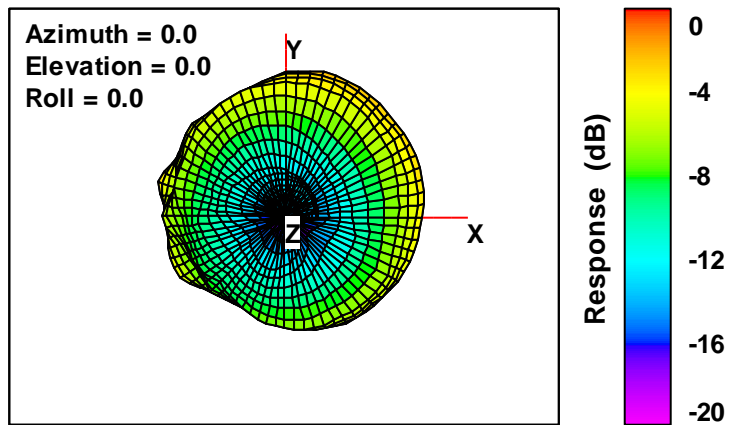


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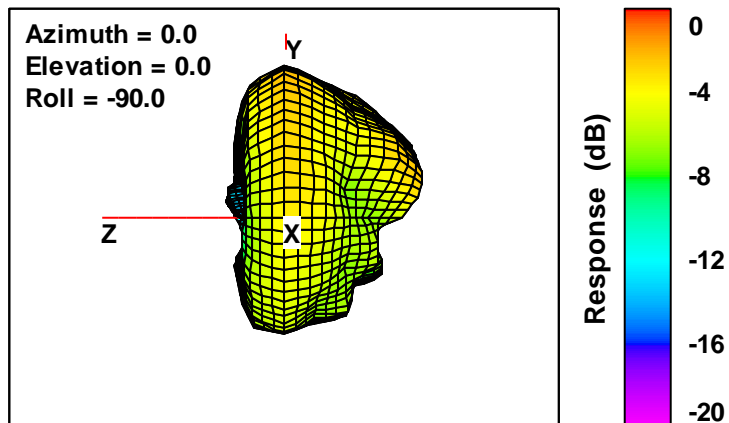


2480MHz

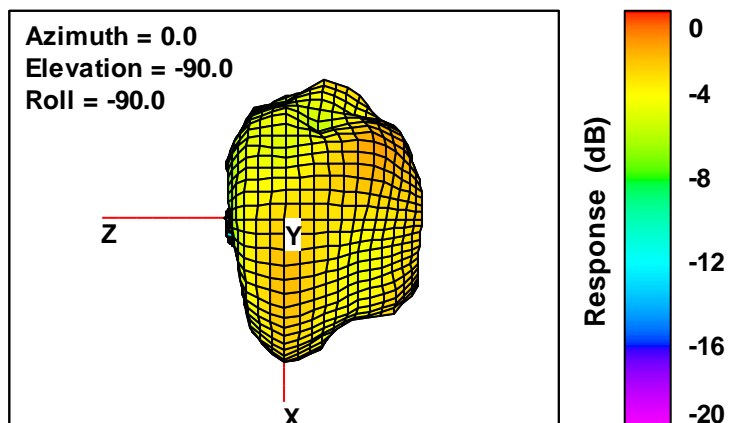
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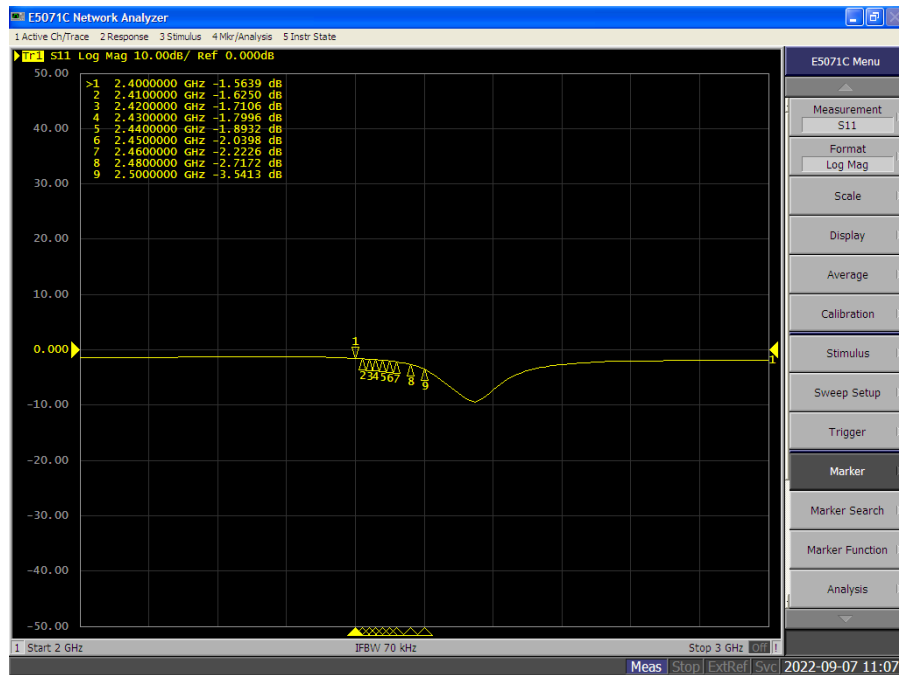
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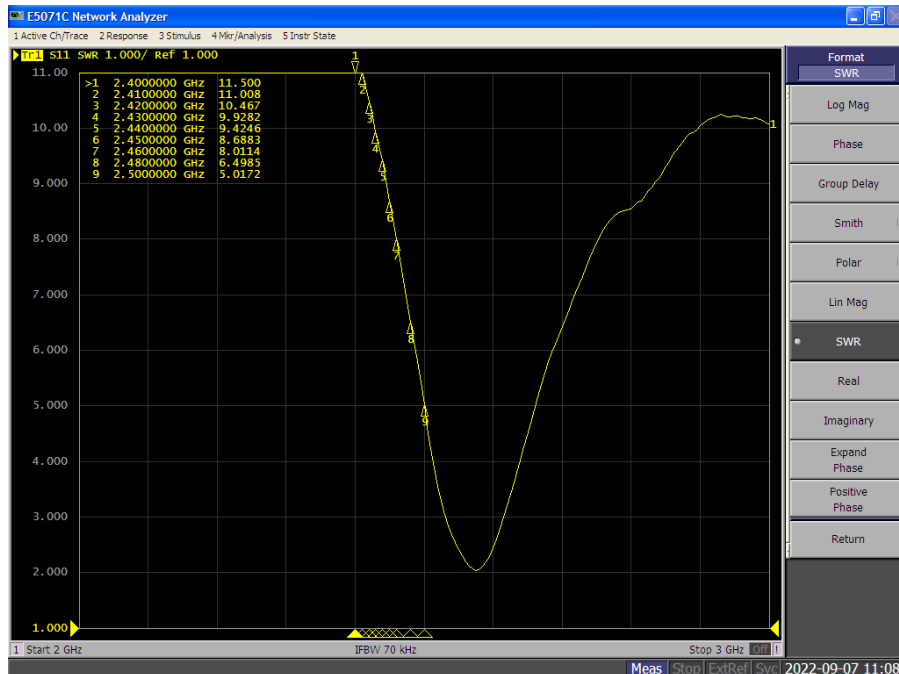
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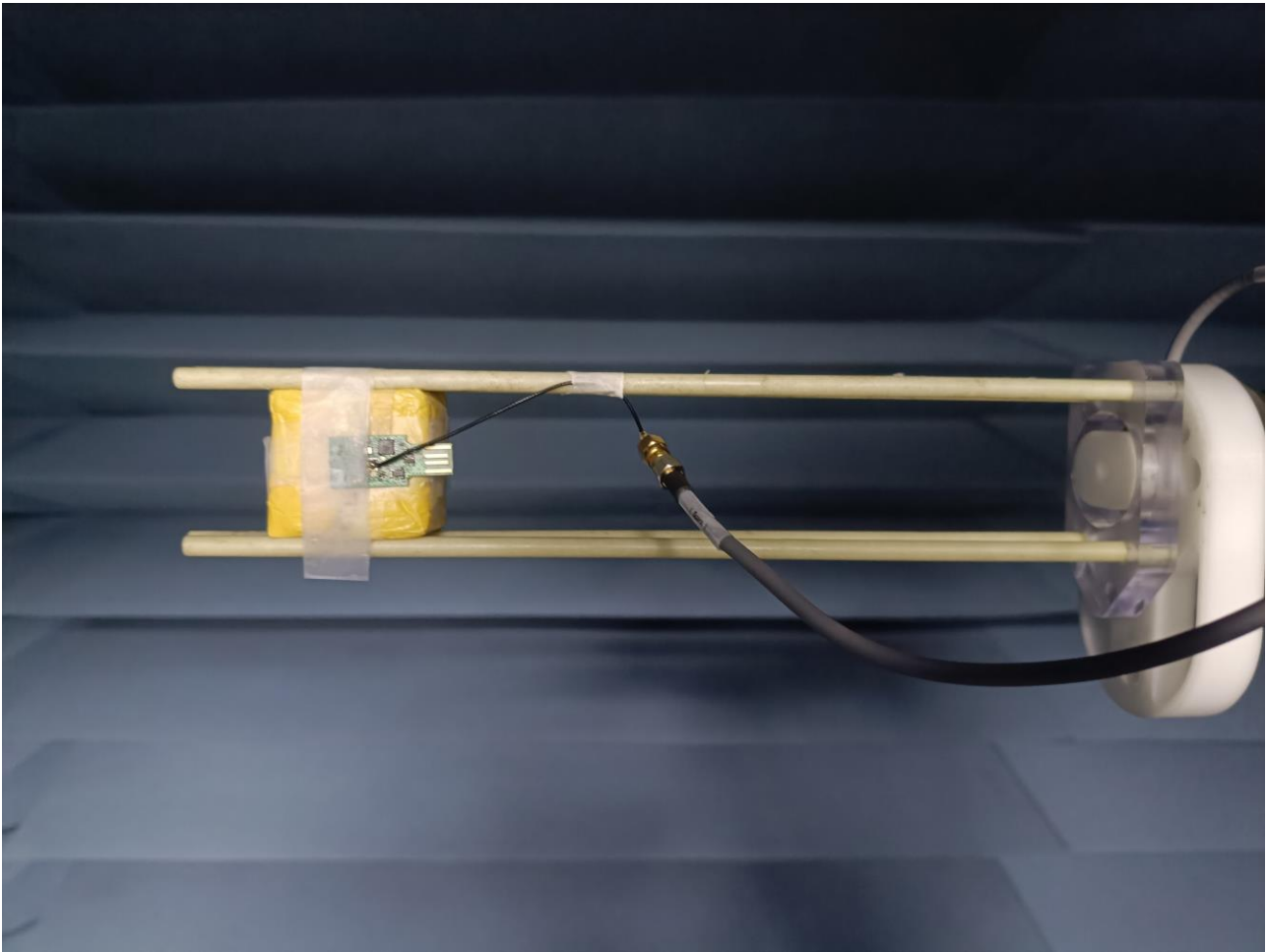
3.3. LOG MAG



3.4. SWR



Appendix A. Testing Setup Photo



Free Space