



# 3D Antenna Measurement Summary Report

**REPORT NO.:** ORCVKM-WTW-P25070178

**MODEL NAME:** BDN16150

**TESTED DATE:** 2025.7.15

**ISSUED DATE:** 2025.7.28

**APPLICANT :** ZMI ELECTRONICS LTD.

**ADDRESS :** 6F-1, 286-4, Shin Ya Road, Kaohsiung, Taiwan 806

**ISSUED BY:** Bureau Veritas Consumer Products Services (Hong Kong) Limited, Taoyuan Branch Mobile Communications Laboratory

**ADDRESS:** No.19, Hwa Ya 2nd Rd., Kwei shan Dist., Taoyuan City, Taiwan (R.O.C)

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## RELEASE CONTROL RECORD

| REPORT NO.           | REASON FOR CHANGE | DATE ISSUED |
|----------------------|-------------------|-------------|
| ORCVKM-WTW-P25070178 | Original release  | 2025.7.28   |
|                      |                   |             |
|                      |                   |             |

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## GENERAL INFORMATION

|                      |                        |
|----------------------|------------------------|
| APPLICANT:           | ZMI ELECTRONICS LTD.   |
| MANUFACTURER:        | ZMI ELECTRONICS LTD.   |
| BRAND (TRADE) NAME:  | Lectra Tech.           |
| MODEL NAME:          | BDN16150               |
| ANTENNA TYPE:        | PCB Antenna            |
| MEASUREMENT STANDARD | ANSI/IEEE Std 149 2021 |

TESTED BY : Leo Chen , DATE : 2025.7.28  
Leo Chen / Engineer

PREPARED BY : Johnny Liu , DATE : 2025.7.28  
Johnny Liu / Supervisor

APPROVED BY : Ken Chan , DATE : 2025.7.28  
Ken Chan / Manager

## 1. Test Methods

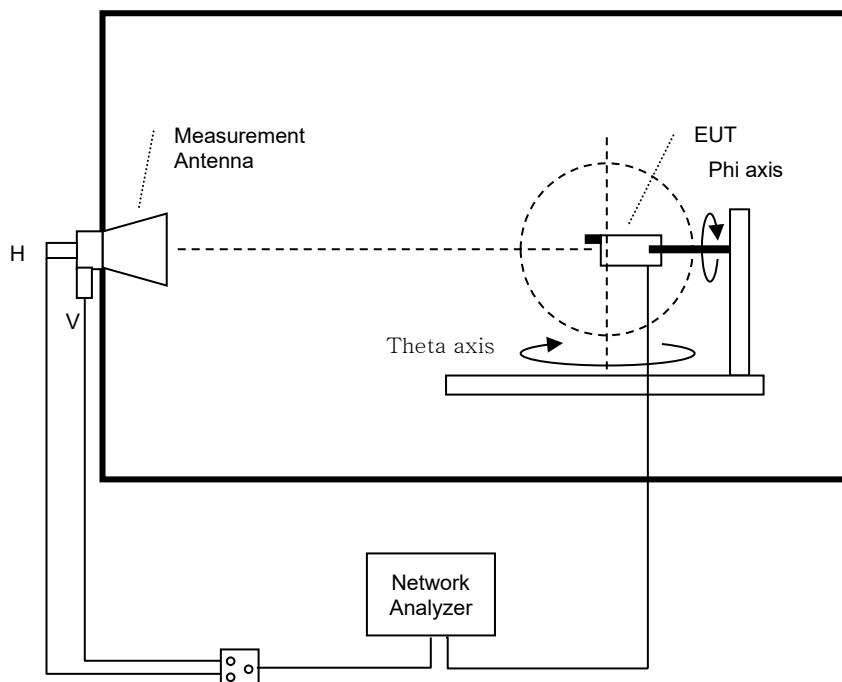
The Antenna Gain Test is performed according to The ANSI/IEEE Std 149 12.3.1 Antenna Gain (Small size (< 42cm) Linear Polarization Antennas), using a two-axis support device and one fixed measurement antenna. The EUT is positioned along the required MAPS centerline fixture holder. The EUT is then stepped between 0 and 180 degrees along the theta axis in 15-degree increments. At each theta position, the phi axis is stepped from 0-360 degrees in 15-degree increments. Data is recorded using the Network analyzer for both theta and phi polarizations at each position. Depending on the protocol, an appropriate filter is used in the EMQuest software to process the data. Upon completion of the test, test results (angular dependent EIRP) is calculated at each measurement point and the required value is automatically calculated. This test procedure is repeated for frequency and configuration as required.

## 2. Description of the anechoic chamber:

**Length:** 7.32 m

**Width:** 3.66 m

**Height:** 3.51 m



### 3. Test Equipment List

| TYPE OF EQUIPMENT                 | MODEL NUMBER                              | SERIAL NUMBER  | CALIBRATION DUE DATE |
|-----------------------------------|---|----------------|----------------------|
| (OTA3-HY)<br>ETS Anechoic Chamber | ETS-Lindgren AMS-8500                     | CT0000411-1132 | N/A                  |
| Measurement Software              | ETS-Lindgren<br>EMQuest V1.14 build 31654 | 1281           | N/A                  |
| Multi-Axis Positioning System     | ETS-Lindgren 2090-OPTI                    | 00086248       | N/A                  |
| Switch Control                    | Agilent 3499A                             | MY42005285     | N/A                  |
| Network Analyzer                  | Agilent E5071C                            | MY46104190     | 2026/7/10            |

### 4. Measurement Uncertainty

Expanded Uncertainty for Measurement (k=2 or 95.45% Confidence Level) at Passive antenna test over frequency range:.

| FREQUENCY RANGE | MEASUREMENT UNCERTAINTY |
|-----------------|-------------------------|
| 780~2200 MHz    | 1.40 dB                 |
| 2200~3000 MHz   | 1.72 dB                 |
| 3000~6000 MHz   | 3.86 dB                 |

### 5. Testing Setup Photograph

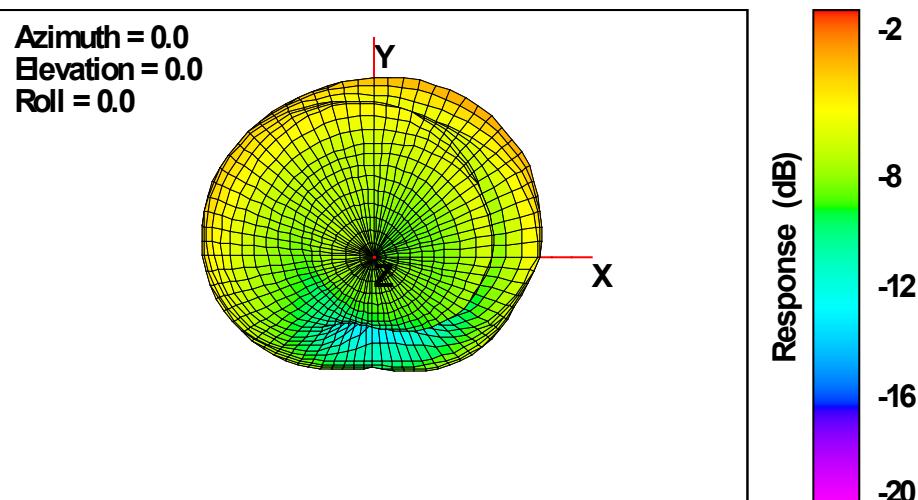
Please refer to another document - Test Setup and EUT photographs. (APPENDIX.)

### 6. Antenna Radiation Performance

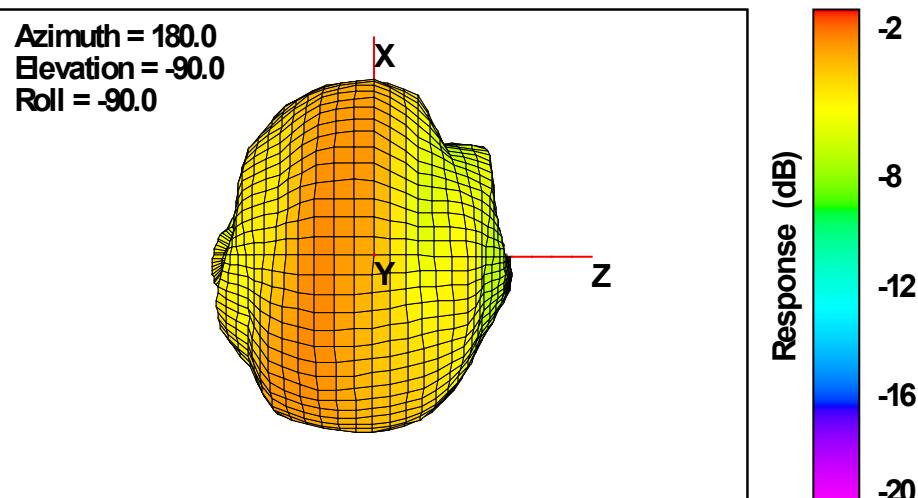
| Frequency (MHz)    | 2402  | 2440  | 2480  |
|--------------------|-------|-------|-------|
| Average Gain (dBi) | -6.10 | -6.30 | -6.59 |
| Peak Gain (dBi)    | -2.88 | -2.91 | -3.31 |
| Efficiency (%)     | 24.57 | 23.44 | 21.93 |

## 7. 3D Antenna Patterns

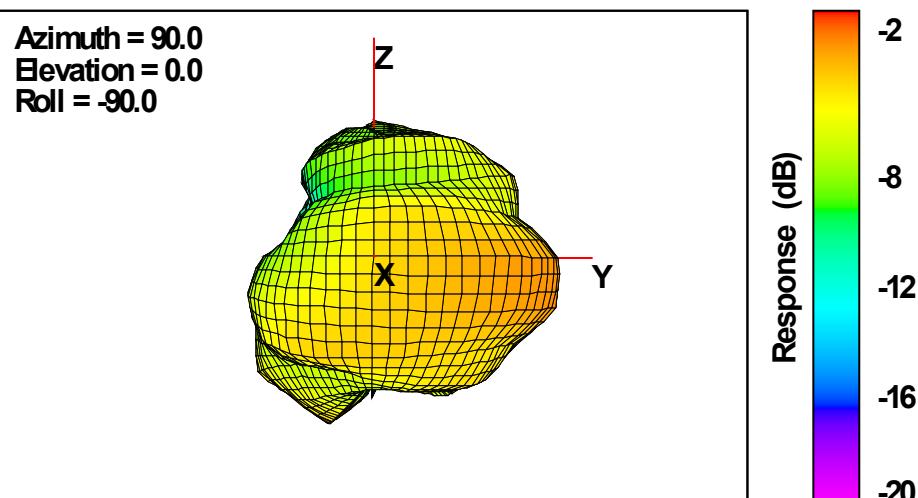
2402MHz  
Total



Total

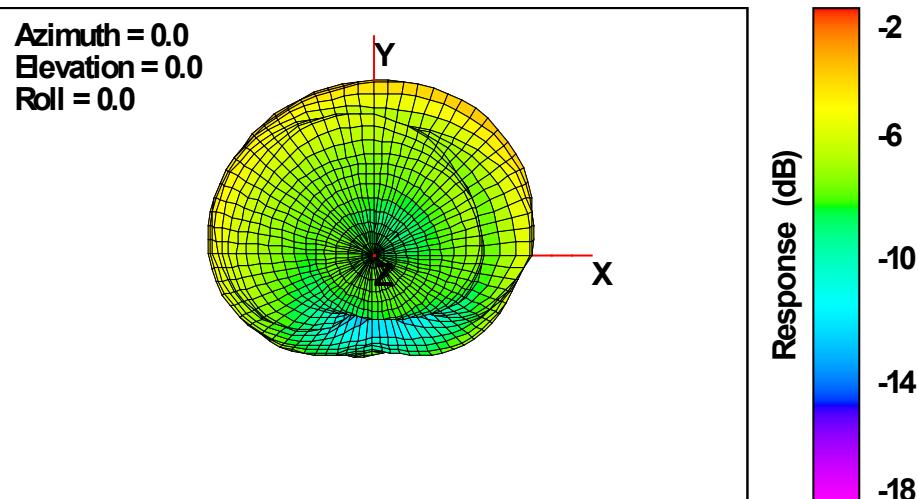


Total

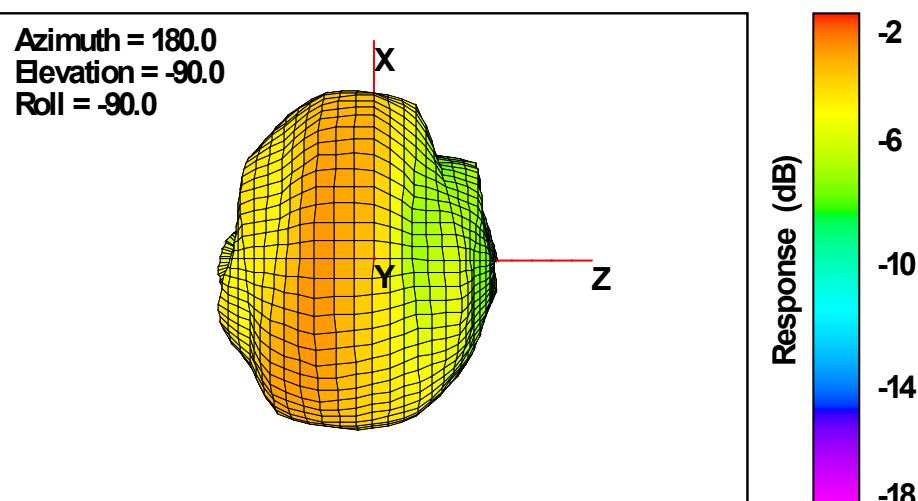


2440MHz

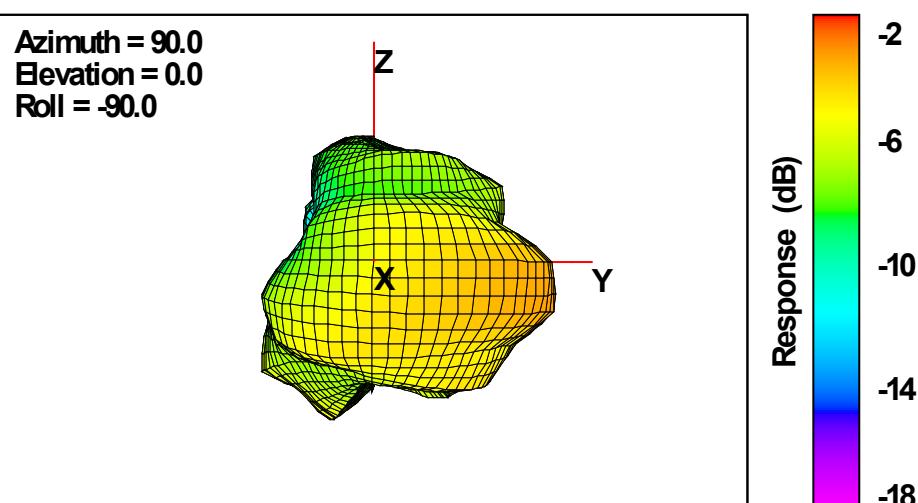
Total



Total



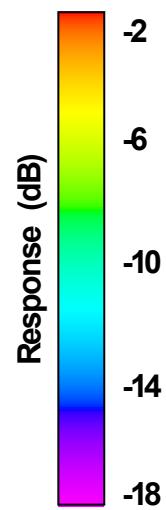
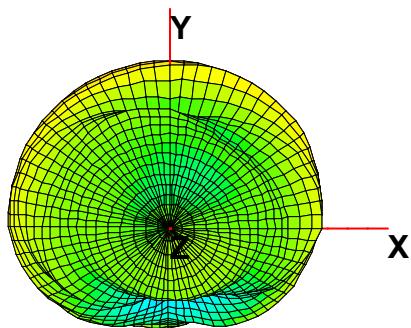
Total



2480MHz

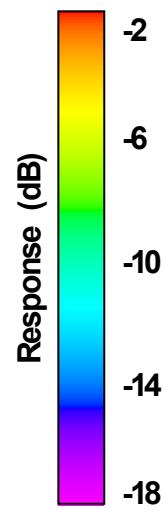
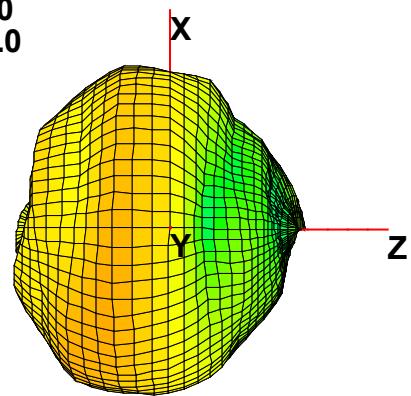
Total

Azimuth = 0.0  
Elevation = 0.0  
Roll = 0.0



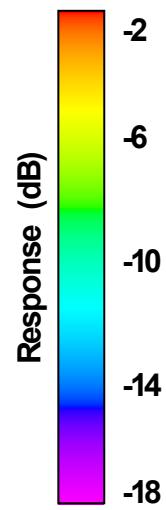
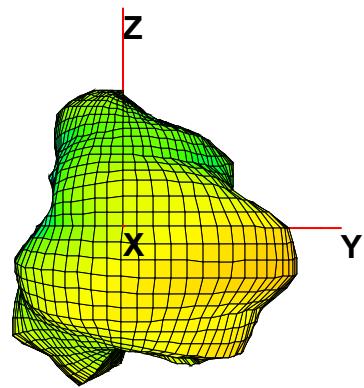
Total

Azimuth = 180.0  
Elevation = -90.0  
Roll = -90.0



Total

Azimuth = 90.0  
Elevation = 0.0  
Roll = -90.0





## APPENDIX. EUT photographs

Please refer to another document - Test Setup and EUT photographs. (APPENDIX.)