# ANTENNA INFORMATION

| | | |
|---|---|---|
| OEM | | Lenovo |
| ODM | | Compal Electronics Inc. |
| Platform model name | | LOQ 17IRX10 |
| Intel platform (ex: Yes, No or NA) | | Yes |
| Platform type (ex: regular NB, convertible PC, AIO…etc) | | Regular NB |
| SAR minimum separation (mm) | FCC (1g) | 23.26 mm (w/bumper)<br>21.26 mm (w/o bumper) |
| | ISED (1g) | 23.26 mm (w/bumper)<br>21.26 mm (w/o bumper) |
| | ISED (10g) | |

| | | |
|---|---|---|
| Antenna manufacturer | Company name | INPAQ Technology Co. |
| | Address | No.5,Chunqiu Road, Panyang Industrial Park Huangdai Town, Xiangcheng Zone, Suzhou |
| Test location | Company name | INPAQ |
| | Address | 1F., No. 106-1, Ligong St., Beitou Dist., Taipei City 112019, Taiwan (R.O.C.) |
| Test Personnel | Name(Full name) | Levi Su |
| | E-mail | Levi.su@inpaq.com.tw |
| | Tel/Mobile | 0988-974415 |
| Testing date | | 2025/02/27 |

| | | |
|---|---|---|
| Antenna Part number | Main | DC330030E00 (WA-P-LE-02-369) |
| | Aux | DC330030E10 (WA-P-LE-03-040) |
| Antenna type (ex: PIFA, Dipole…etc) | | PIFA |

| Antenna Peak gain w/ cable loss (dBi)* | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2.4GHz** 2400-2483.5 MHz | **5.2GHz** 5150-5250MHz | **5.3GHz** 5250-5350MHz | **5.6GHz** 5470-5725MHz | **5.8GHz** 5725-5850MHz | **5.9GHz** 5850-5895MHz | **6.2GHz** 5925-6425MHz | **6.5GHz** 6425-6525MHz | **6.7GHz** 6525-6875MHz | **7.0 GHz** 6875-7125MHz |
| Main | 1.35 | 2.6 | 2.77 | 2.58 | 2.87 | 2.92 | 2.27 | 2.92 | 2.94 | 3.82 |
| Aux | 1.97 | 2.91 | 2.8 | 2.78 | 2.95 | 2.86 | 2.1 | 2.67 | 2.21 | 2.68 |

| Cable Assembly Part Number and Information | | | | | |
|---|---|---|---|---|---|
| | **Cable PN** | **Cable length**(mm) | **Cable diameter**(mm) | **Impedance**(ohm) | **Connector type** |
| Main | WIR,RF-OD1.13/50,Low Loss, Black(SY-G) | 305.5 | 1.13 | 50 | IPEX 4L |
| Aux | WIR,RF-OD1.13 / 50,LowLoss,Gray(SY-G) | 381.5 | 1.13 | 50 | IPEX 4L |

* 3D Antenna Peak Gain required being test in system basis.

| Cable loss (dBi) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2.4GHz** 2400-2483.5 MHz | **5.2GHz** 5150-5250MHz | **5.3GHz** 5250-5350MHz | **5.6GHz** 5470-5725MHz | **5.8GHz** 5725-5850MHz | **5.9GHz** 5850-5895MHz | **6.2GHz** 5925-6425MHz | **6.5GHz** 6425-6525MHz | **6.7GHz** 6525-6875MHz | **7.0 GHz** 6875-7125MHz |
| Main | 0.84 | 1.26 | 1.27 | 1.3 | 1.32 | 1.33 | 1.38 | 1.41 | 1.44 | 1.49 |
| Aux | 1.05 | 1.57 | 1.59 | 1.62 | 1.65 | 1.66 | 1.73 | 1.76 | 1.8 | 1.86 |

# Table of Contents

## 1. Intel Reference Gain and Type

| Antenna Peak gain w/ cable loss (dBi) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Band/Frequency | | **2.4GHz** 2400-2483.5 MHz | **5.2GHz** 5150-5250MHz | **5.3GHz** 5250-5350MHz | **5.6GHz** 5470-5725MHz | **5.8GHz** 5725-5850MHz | **5.9GHz** 5850-5895MHz | **6.2GHz** 5925-6425MHz | **6.5GHz** 6425-6525MHz | **6.7GHz** 6525-6875MHz | **7.0 GHz** 6875-7125MHz |
| Design | EU/UK | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| PIFA | For WiFi 6E and earlier | 3.24 | 3.64 | 3.73 | 4.77 | 4.97 | 4.72 | 4.83 | 4.30 | 5.37 | 5.59 |
| | From WiFi 7 | 2.95 | 5.11 | 4.55 | 5.15 | 5.13 | 4.45 | 5.02 | 5.02 | 4.96 | 4.96 |
| Dipole | For WiFi 6E and earlier | 2.89 | 2.92 | 3.19 | 4.41 | 4.22 | 4.22 | 4.83 | 4.30 | 4.49 | 5.34 |
| | From WiFi 7 | 2.95 | 4.03 | 4.11 | 5.15 | 5.13 | 4.45 | 5.02 | 4.71 | 4.49 | 4.96 |
| Monopole | From WiFi 7 | 2.83 | 4.57 | 4.44 | 4.95 | 4.95 | 4.43 | 4.87 | 4.91 | 4.91 | 4.79 |

**3D Peak Antenna gain should be equal or greater than -2 dBi**

If a host integrator plans to use a lower gain antenna of the same type, additional CBP(FCC)/EDT(EU) testing need to be performed while the module is installed in the host.

## 2. Document Revision History

| Revision # | Revision Details | Issued Date |
|---|---|---|
| Rev. 00 | First Issue | 2025/2/27 |

# 3. Test & System Description

## 3.1 Measurement Method and System

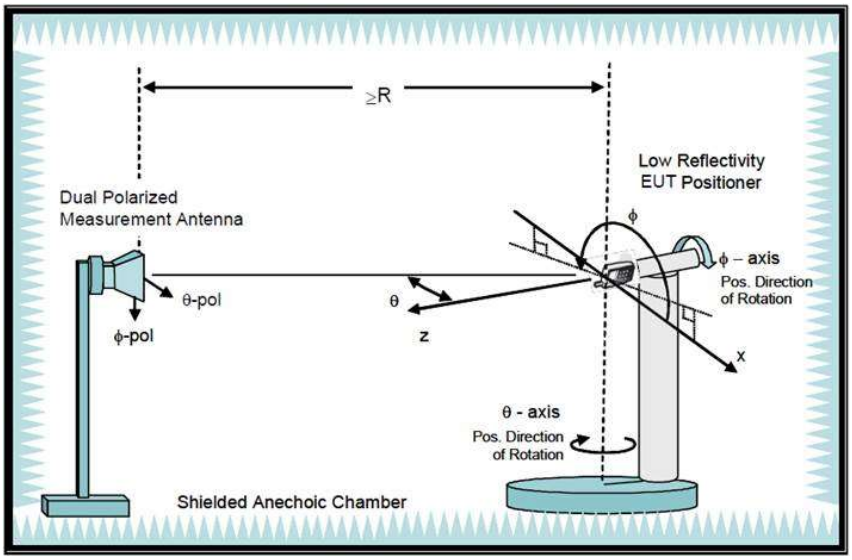
ETS-Lindgren AMS-8500 system is 3D fully anechoic chamber, it is applied to the “Conical Cut test method”, the detail description is described as below.

The Conical Cut method requires the ability of the Measurement Antenna to be physically rotated in the theta plane (overhead) of the EUT for implementations using a single Measurement Antenna, Eleven conical cuts are required to capture data at every 15 degrees from the EUT, with the top (0 degrees) and bottom (180 degrees) cuts not being measured. Typically, the EUT will remain affixed to a turntable during the entire measurement process. The Measurement Antenna will be positioned at a starting theta angle. The EUT will then be rotated around the full 360 degrees of phi rotation. The Measurement Antenna will then be positioned at the next theta angle, and the process repeated.

| | | $\theta$ -Axis | $\Phi$-Axis |
|---|---|---|---|
| Passive | Step size | 15º~165º step: 15º | 0º~345º step: 15º |
| | N / M (Points) | 12 | 24 |

## 3.2 Test setup

Typical Setup for ETS-Lindgren AMS-8500:



## 3.3 Equipment list

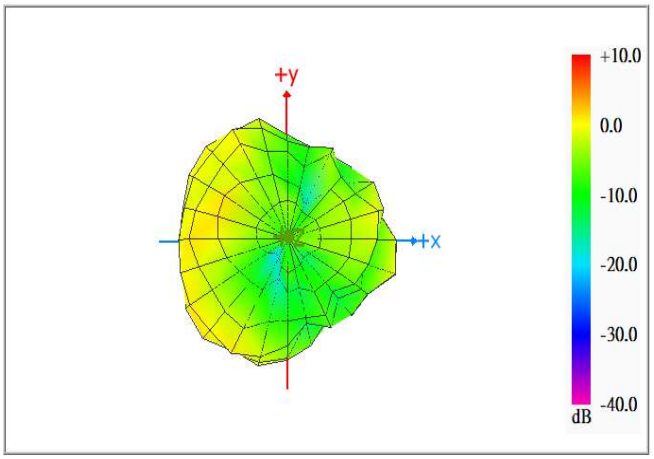
| Equipment Description | Manufacturer | Identification no. | Current calibration date | Next calibration date |
|---|---|---|---|---|
| Network analyzer | Agilent | E5071C | 2025/01/07 | 2026/01/06 |
| Measurement software | ETS-Lindgren | EMQuest | 2024/03/03 | 2025/03/03 |
| Multi axis positioning system(MAPSTM) | ETS-Lindgren | EMCO 2115 | 2024/03/03 | 2025/03/03 |
| Multi axis positioning system(MAPSTM) | ETS-Lindgren | EMCO 2110 | 2024/03/03 | 2025/03/03 |
| MAPSTM controller | ETS-Lindgren | EMCO 2090 | 2024/03/03 | 2025/03/03 |
| Horn antenna | ETS-Lindgren | 3164-10 | 2024/03/03 | 2025/03/03 |
| Cable 40cm 18 GHz | Jmtt | 201EH012010400 | 2024/04/07 | 2025/04/08 |
| Cable 6m 18 GHz | Jmtt | 201EH012016000 | 2024/04/07 | 2025/04/08 |
| Cable 6m 18 GHz | Jmtt | 201EH012016000 | 2024/04/07 | 2025/04/08 |
| Cable 3.5m 18 GHz | Jmtt | 201EH012013500 | 2024/04/07 | 2025/04/08 |
| Cable 1.5m 18 GHz | Jmtt | 201EH012011500 | 2024/04/07 | 2025/04/08 |

## 4. Radiation characteristics of antenna loaded in Host Platform

### Main Antenna

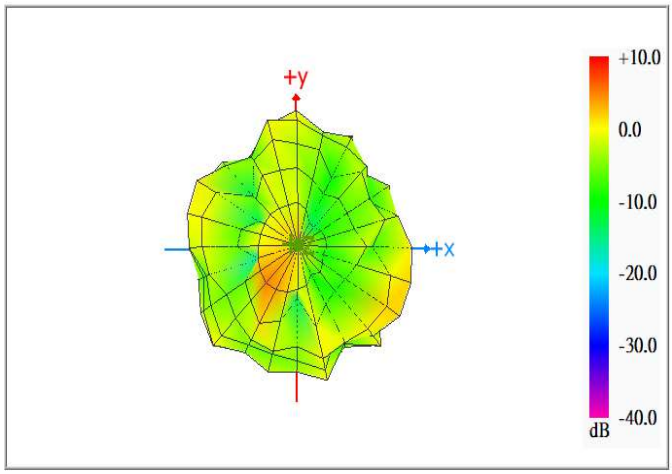
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 2400-2483.5 | 1.35 |



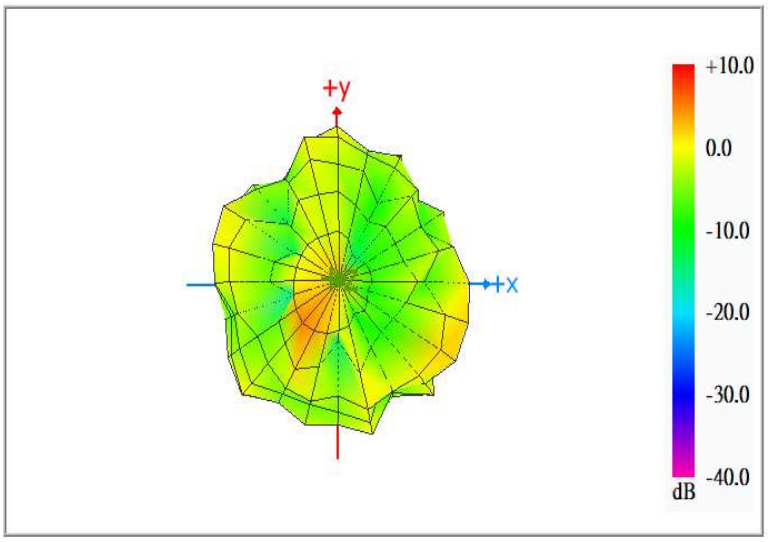

Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5150-5250 | 2.6 |



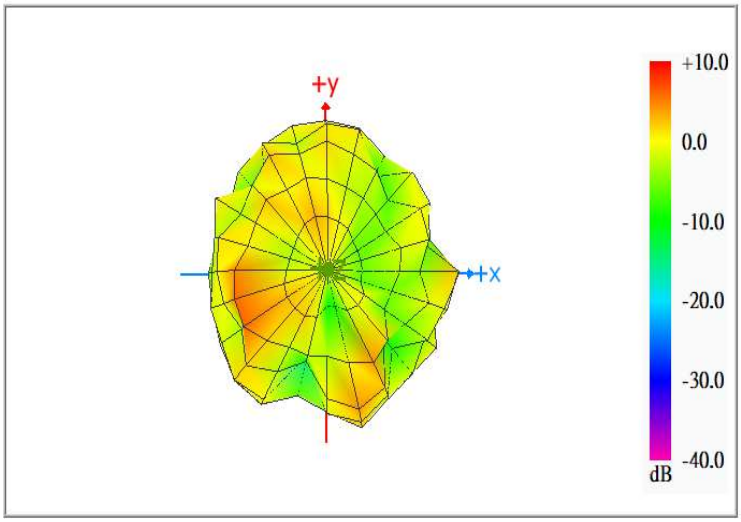
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5250-5350 | 2.77 |



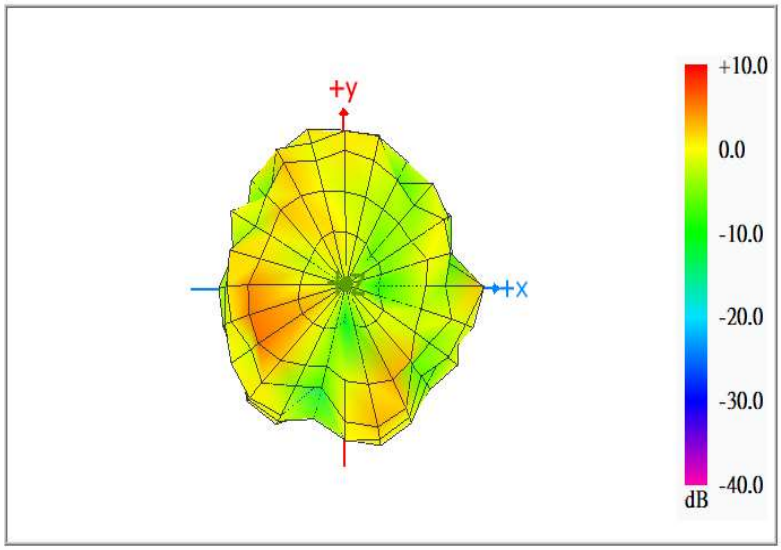

Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5470-5725 | 2.58 |



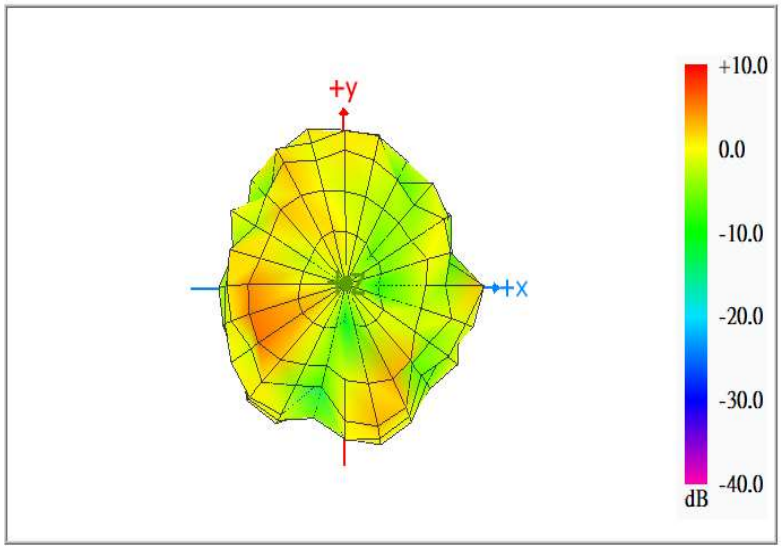
## Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5725-5850 | 2.87 |



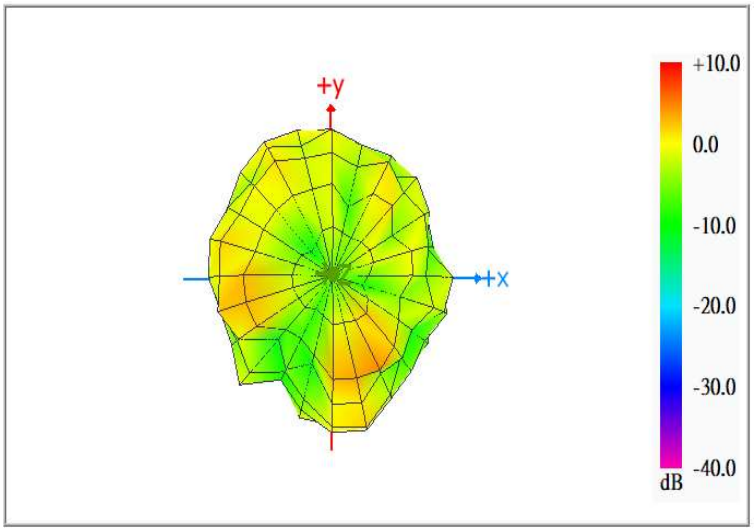

## Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5850-5895 | 2.92 |



## Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5925-6425 | 2.27 |




## Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 6425-6525 | 2.92 |