

# 3D Antenna Measurement Summary Report

**REPORT NO.:** ORBDKG-WTW-P22110258 R1

**MODEL NAME:** MR0105

**ANTENNA TYPE:** Monopole Antenna

**TESTED DATE:** 2022.11.21

**ISSUED:** 2022.11.28

**MANUFACTURER:** Logitech Europe S.A.

**ADDRESS :** EPFL – Quartier de l' Innovation Daniel Borel Innovation  
Center,1015 Lausanne, Switzerland.

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

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(R.O.C)

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## RELEASE CONTROL RECORD

REPORT NO.	REASON FOR CHANGE	DATE ISSUED
ORBDKG-WTW-P22110258 R1	Original release	2022.11.25
ORBDKG-WTW-P2211025	Add APENDIX report	2022.11.28

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## GENERAL INFORMATION

MANUFACTURER:	Logitech Europe S.A.
MODEL NAME:	MR0105
MEASUREMENT STANDARD	ANSI/IEEE 149 1979.

TESTED BY : Leo Chen , DATE : 2022.11.28  
Leo WN Chen / Engineer

PREPARED BY : Johnny Liu , DATE : 2022.11.28  
Johnny Liu / Supervisor

APPROVED BY : Ken Chan , DATE : 2022.11.28  
Ken Chan / Manager

## 1. Test Methods

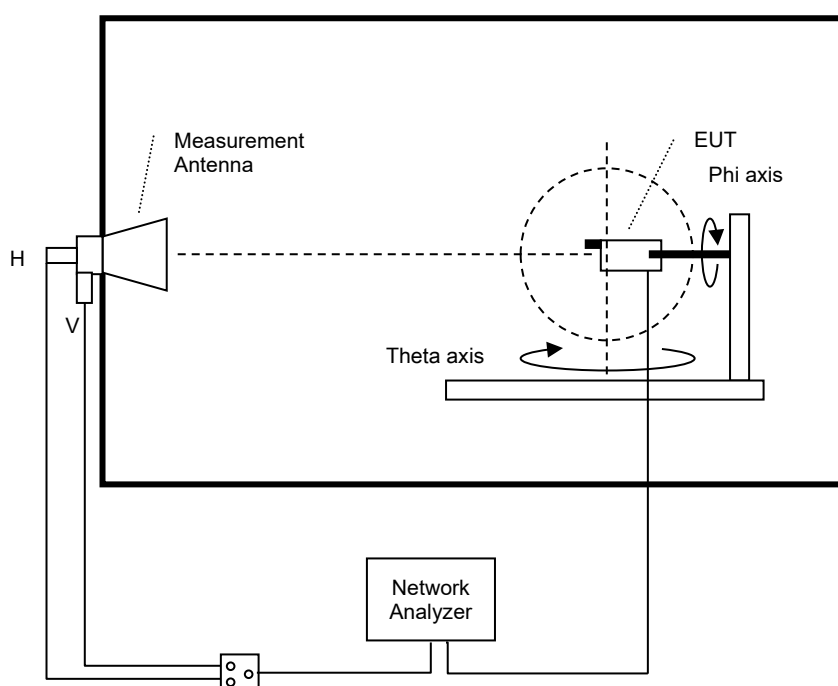
The Antenna Gain Test is performed according to The ANSI/IEEE Std 149 12.3.1 Antenna Gain (Small size (< 42cm) Linear Polarization Antennas), using a two-axis support device and one fixed measurement antenna. The EUT is positioned along the required MAPS centerline fixture holder. The EUT is then stepped 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) ETS Anechoic Chamber	ETS-Lindgren AMS-8500	CT0000411-1132	N/A
Measurement Software	ETS-Lindgren EMQuest V1.14 build 31654	1281	N/A
Multi-Axis Positioning System	ETS-Lindgren 2090-OPTI	00086248	N/A
Horn Antenna	ETS-Lindgren 3164-08	00157567	N/A
Sleeve Dipole Antenna	ETS-Lindgren, 3126-800	00201793	2023/4/22
Sleeve Dipole Antenna	ETS-Lindgren, 3126-880	00108290	2023/4/22
Sleeve Dipole Antenna	ETS-Lindgren, 3126-2500	00092560	2023/4/22
Sleeve Dipole Antenna	ETS-Lindgren, 3126-3600	00082933	2023/4/22
Sleeve Dipole Antenna	ETS-Lindgren, 3126-1845	00099429	2023/4/23
Sleeve Dipole Antenna	ETS-Lindgren, 3126-2140	00099277	2023/4/23
Sleeve Dipole Antenna	ETS-Lindgren, 3126-2450	00092170	2023/4/23
Sleeve Dipole Antenna	ETS-Lindgren, 3126-1575	00119255	2023/4/23
Sleeve Dipole Antenna	ETS-Lindgren, 3126-700	00119460	2023/4/23
Broadband Dipole Antenna Assembly	ETS-Lindgren, 3126B-04	00227410	2023/5/15
Switch Control	Agilent 3499A	MY42005285	N/A
Network Analyzer	Agilent E5071C	MY46104190	2023/5/29

### 4. Measurement Uncertainty

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

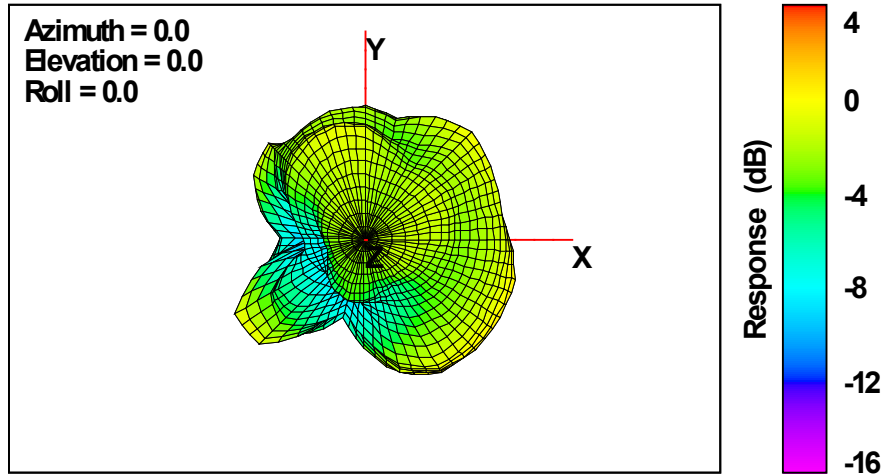
FREQUENCY RANGE	MEASUREMENT UNCERTAINTY
780~2200 MHz	1.40 dB
2200~3000 MHz	1.72 dB
3000~6000 MHz	3.86 dB

## 5. Antenna Radiation Performance

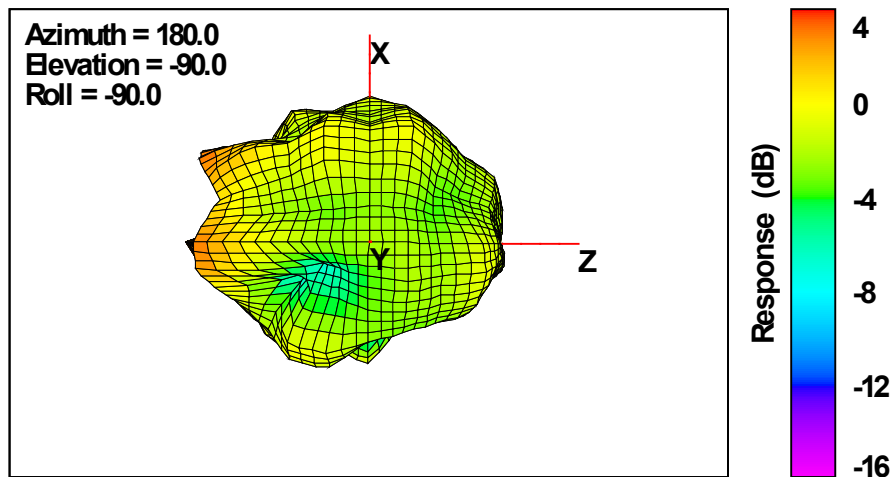
Frequency	2402	2440	2480
Average Gain (dBi)	-1.98	-2.06	-2.38
Peak Gain (dBi)	3.82	3.93	3.84
Efficiency (%)	63.41	62.17	57.84

## 6. 3D Antenna Patterns

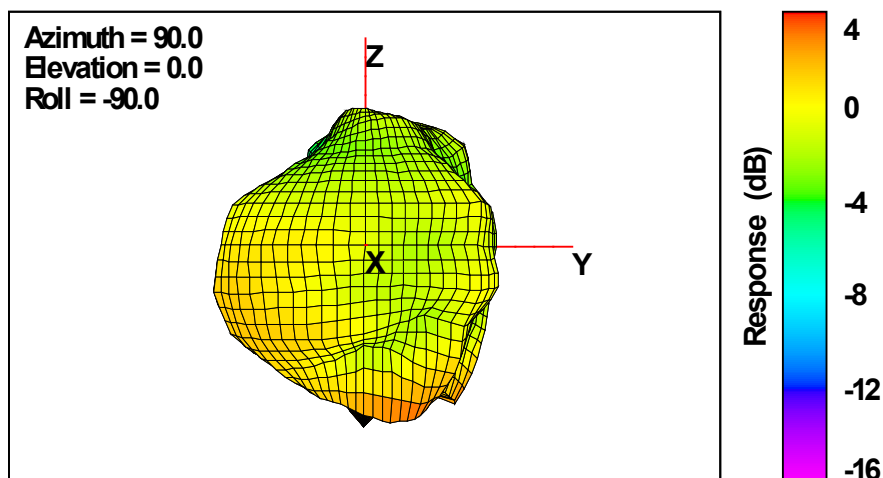
2402MHz  
Total



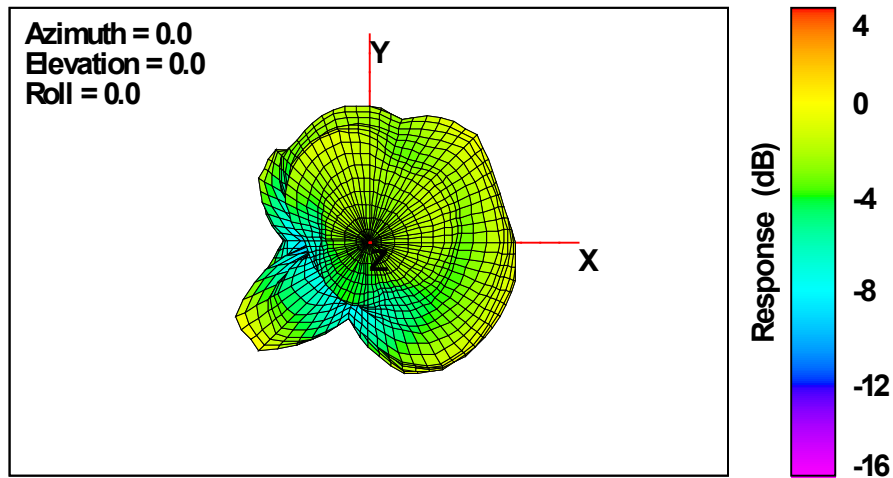
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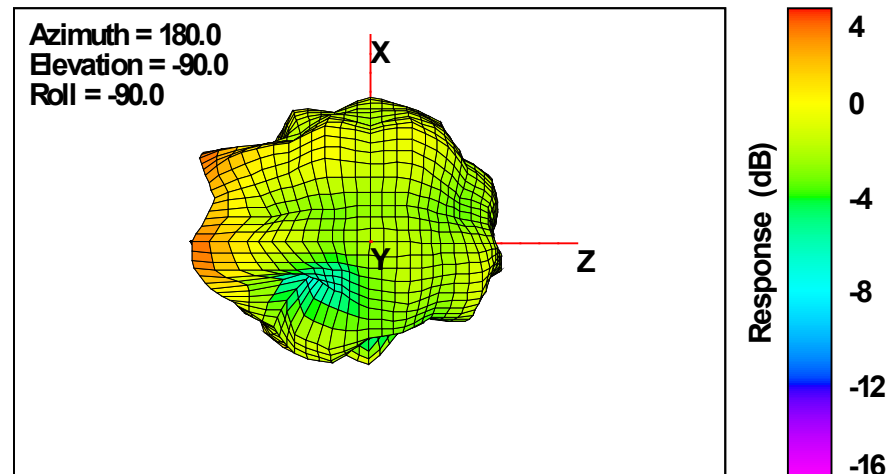
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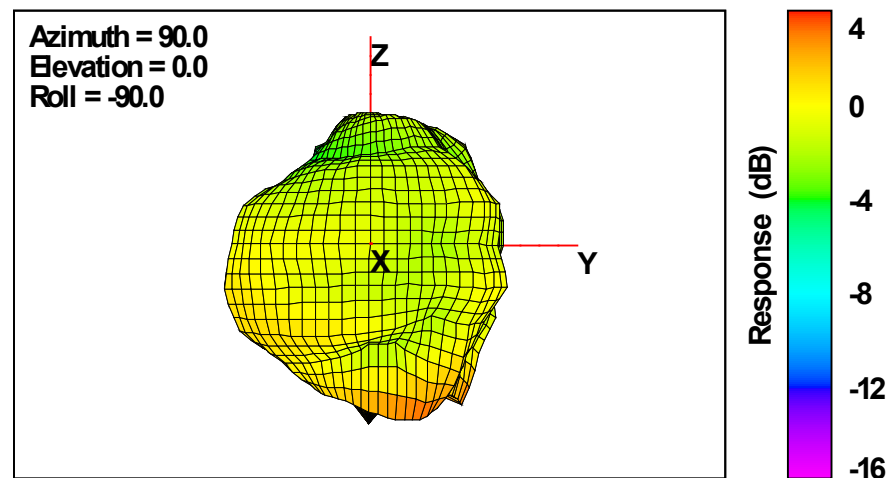
**2440MHz  
Total**



**Total**

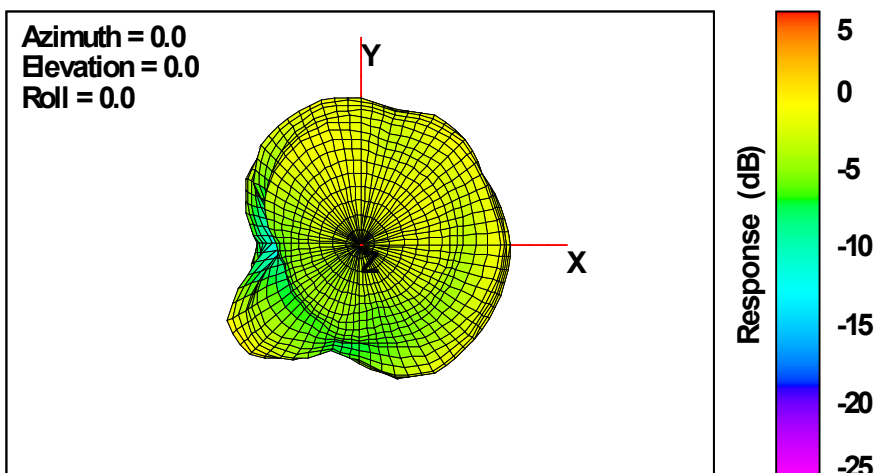


**Total**

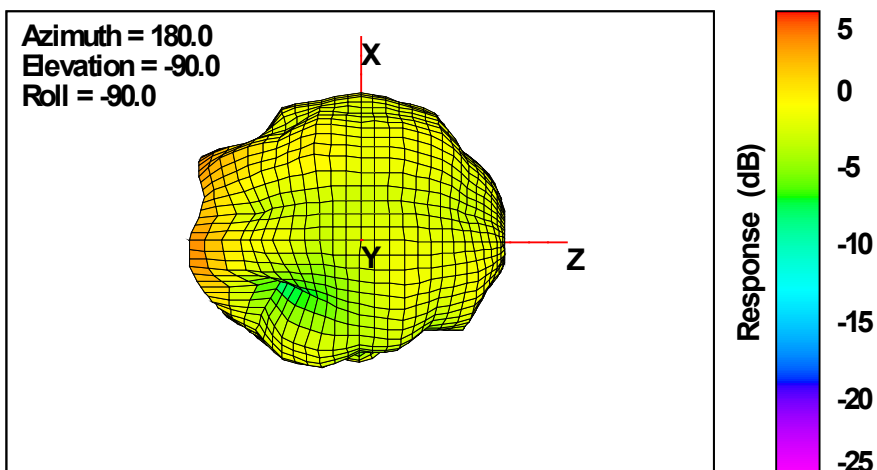




**2480MHz  
Total**



**Total**



**Total**

