



REPORT No.: SZ23100142E10

TEST REPORT

APPLICANT : Grundig Car Radio Ltd

PRODUCT NAME : Car Audio System

MODEL NAME : GX-3900

TRADE NAME : GRUNDIG

BRAND NAME : GRUNDIG

STANDARD(S) : IEEE Std 149-2021

RECEIPT DATE : 2023-11-21

TEST DATE : 2023-11-22

ISSUE DATE : 2024-01-04



Edited by:

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MORLAB

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Change History		
Version	Date	Reason for change
1.0	2024-01-04	First edition

1. Technical Information

Note: Provide by applicant.

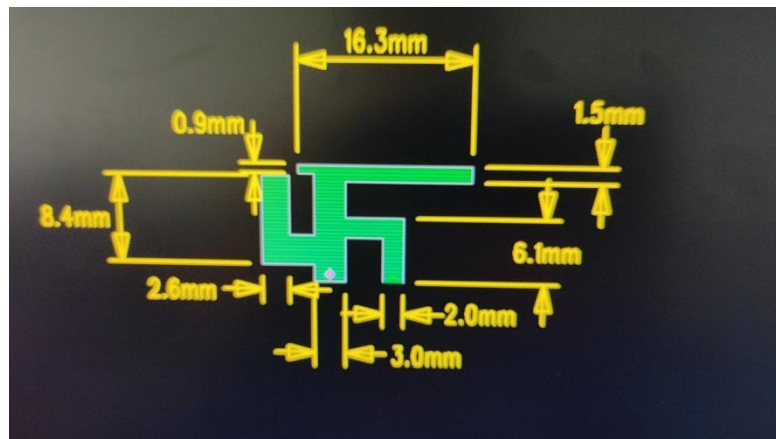
1.1. Applicant and Manufacturer Information

Applicant:	Grundig Car Radio Ltd
Applicant Address:	17/Floor, EU Yan Sang Bldg. 11-15 Chatham, Road South T. S.T, Kowloon, Hong Kong, China
Manufacturer:	Grundig Car Radio Ltd
Manufacturer Address:	17/Floor, EU Yan Sang Bldg. 11-15 Chatham, Road South T. S.T, Kowloon, Hong Kong, China
Factory:	Dongguan Team Force ELECTRONICS CO., LTD
Factory Address:	FULONG INDUSTRIAL ZONE, FULONG VILLAGE, SHIPAI TOWN, DONGGUAN, GUANGDONG PROVINCE, P.R. CHINA

1.2. Equipment Under Test (EUT) Description

Wireless Type	WiFi/Bluetooth
Frequency	2400MHz-2500MHz/5745MHz-5825MHz
Antenna Type	PCB Antenna
Hardware Version	Main Board: B37 Panel Board: B12
Software Version	V1
IMEI	N/A
Sample No.	14#

Dimension:



2. Test Results

2.1. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	IEEE Std 149-2021	IEEE Recommended Practice for Antenna Measurements

2.2. Test Conditions

Test Environment Conditions:

Relative Humidity(%):	25 - 75
Temperature(°C):	10 - 30

2.3. Measurement Uncertainty

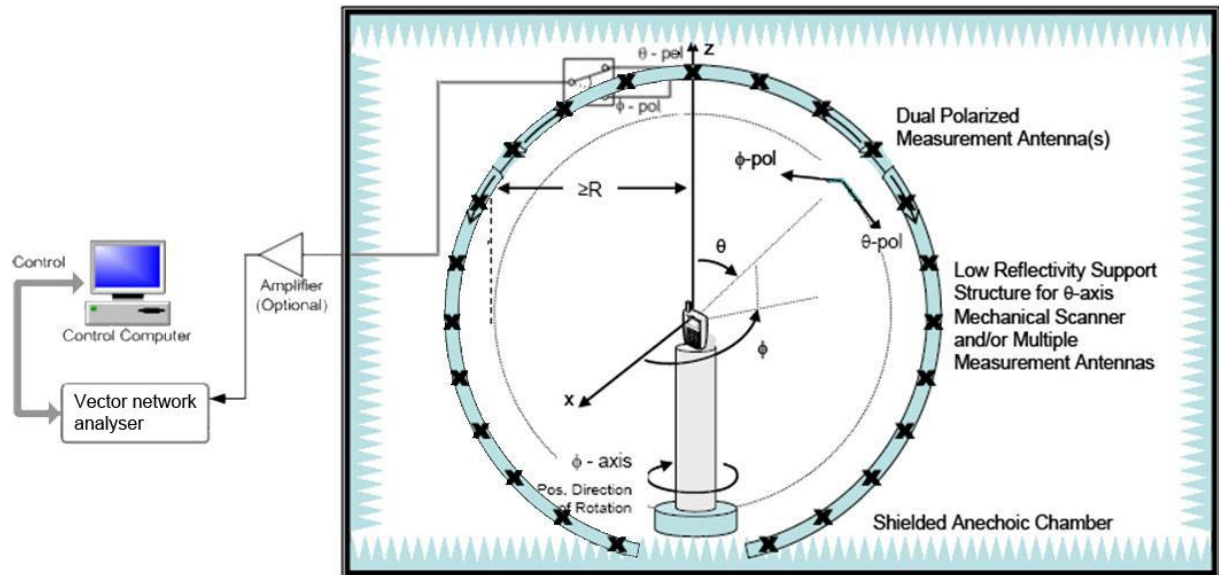
The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO. When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% Confidence intervals.

2.4. Test Results lists

2.4.1. Gain

Frequency (MHz)	Gain(dBi)
2400	-4.46
2410	-4.30
2420	-4.08
2430	-3.61
2440	-2.85
2450	-2.65
2460	-2.89
2470	-3.10
2480	-2.81
2490	-2.55
2500	-2.31
5745	-2.02
5755	-2.32
5765	-2.78
5775	-3.00
5785	-3.46
5795	-3.93
5805	-4.27
5815	-4.54
5825	-5.18

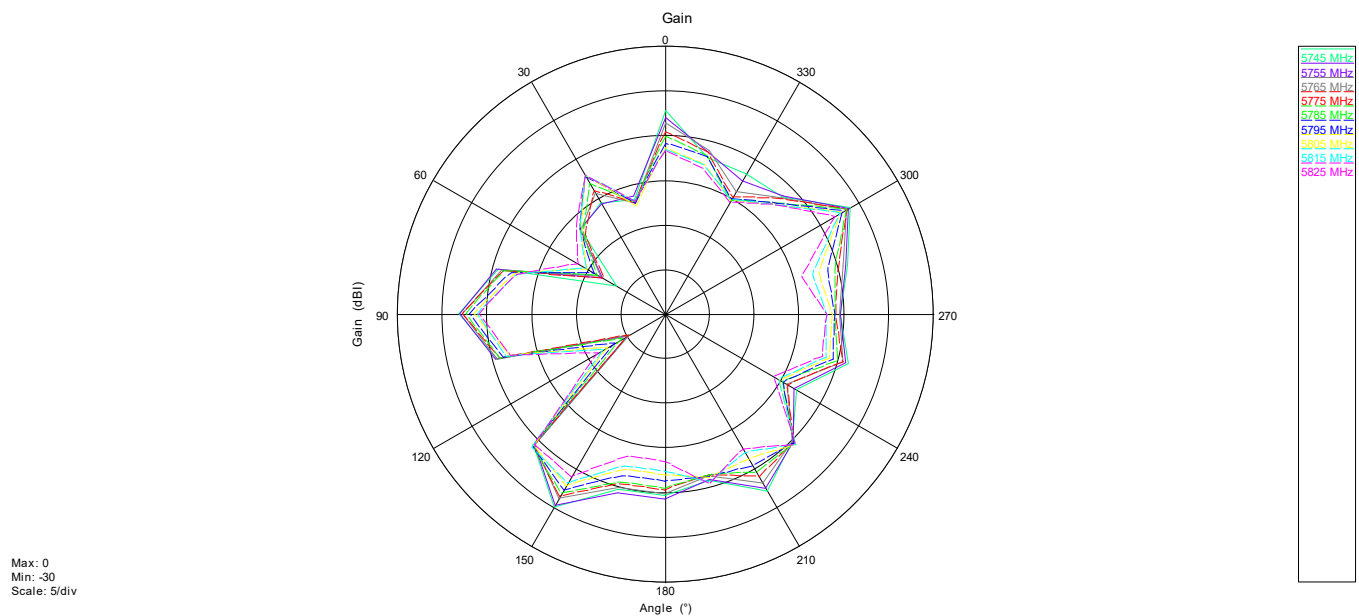
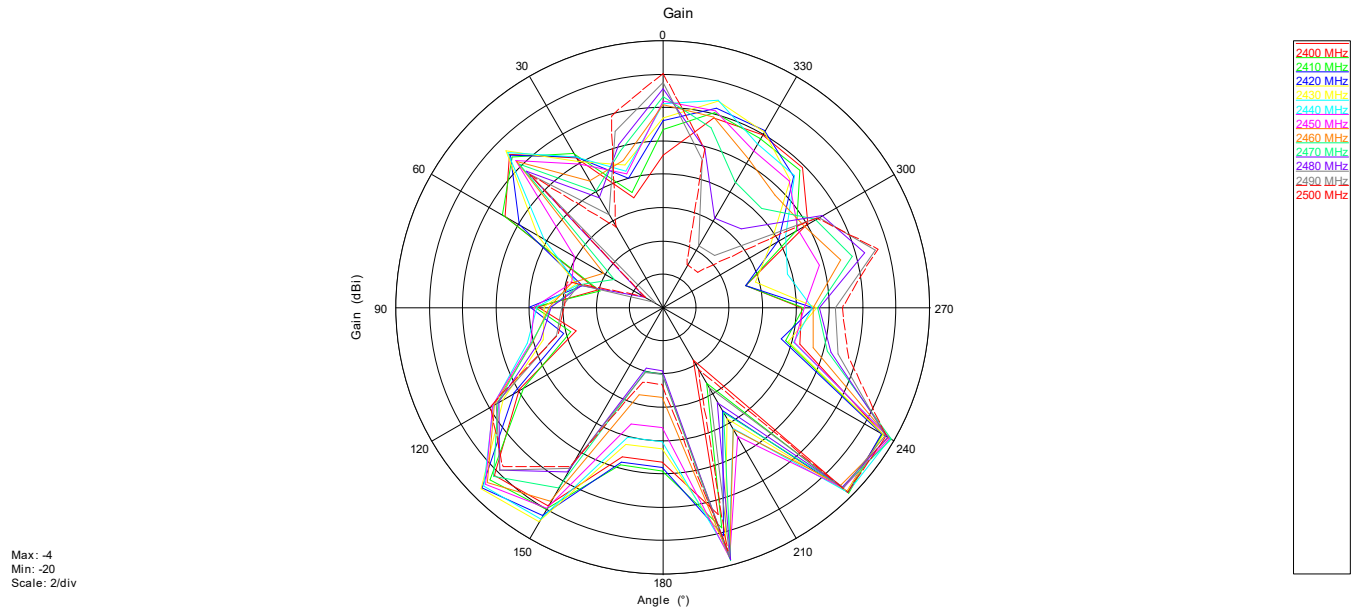
Annex A Test Setup Photos





Annex B Figures

1. 2D Radiation Pattern

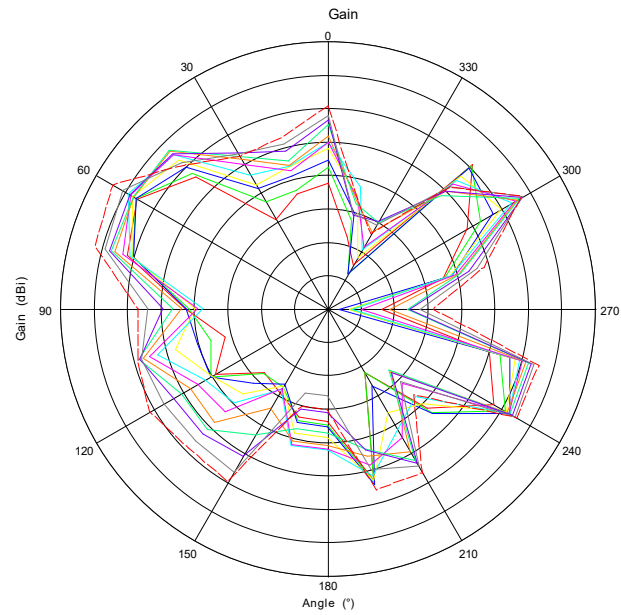


Phi=0°

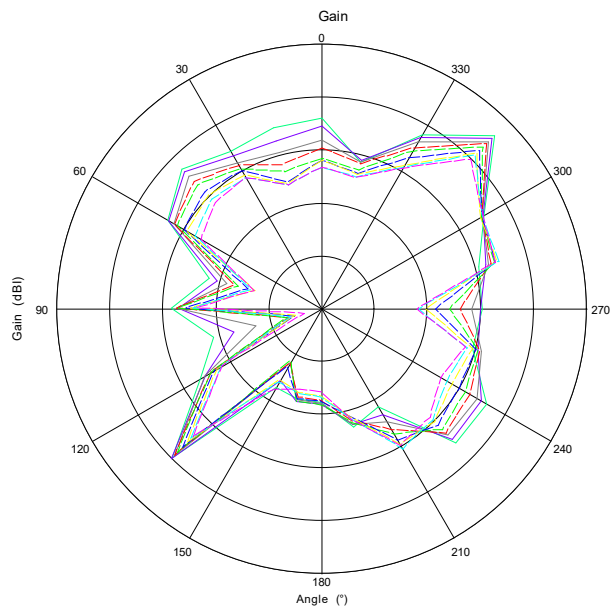


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Max: -2
Min: -18
Scale: 2/div



Max: 0
Min: -25
Scale: 5/div

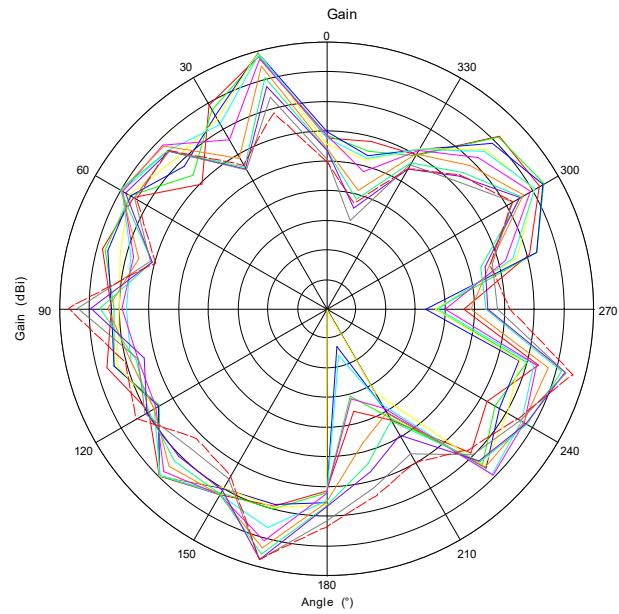


Phi=90°



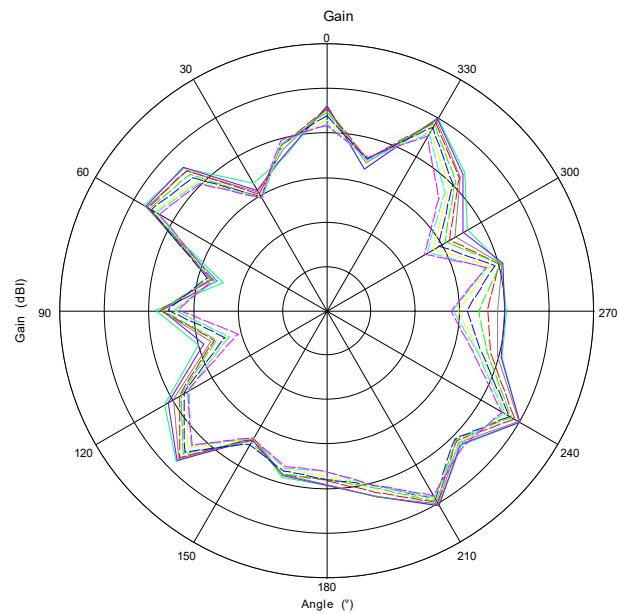
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Max: -6
Min: -24
Scale: 2/div



2400 MHz
2410 MHz
2420 MHz
2430 MHz
2440 MHz
2450 MHz
2460 MHz
2470 MHz
2480 MHz
2490 MHz
2500 MHz

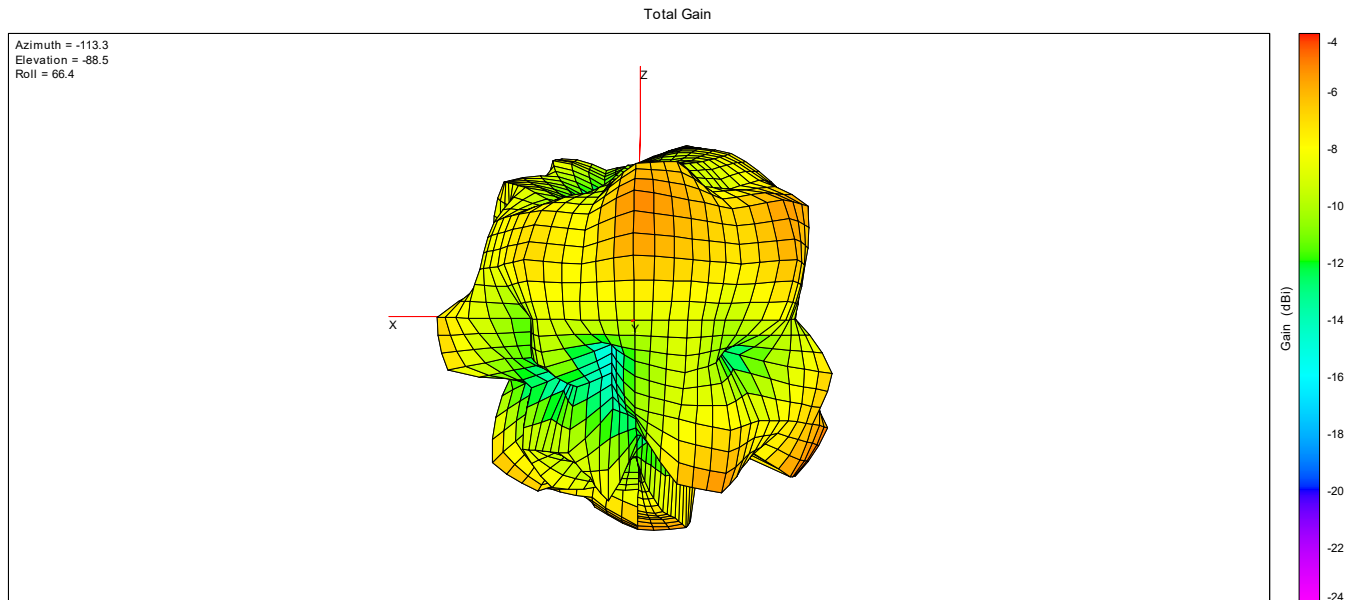
Max: 0
Min: -30
Scale: 5/div



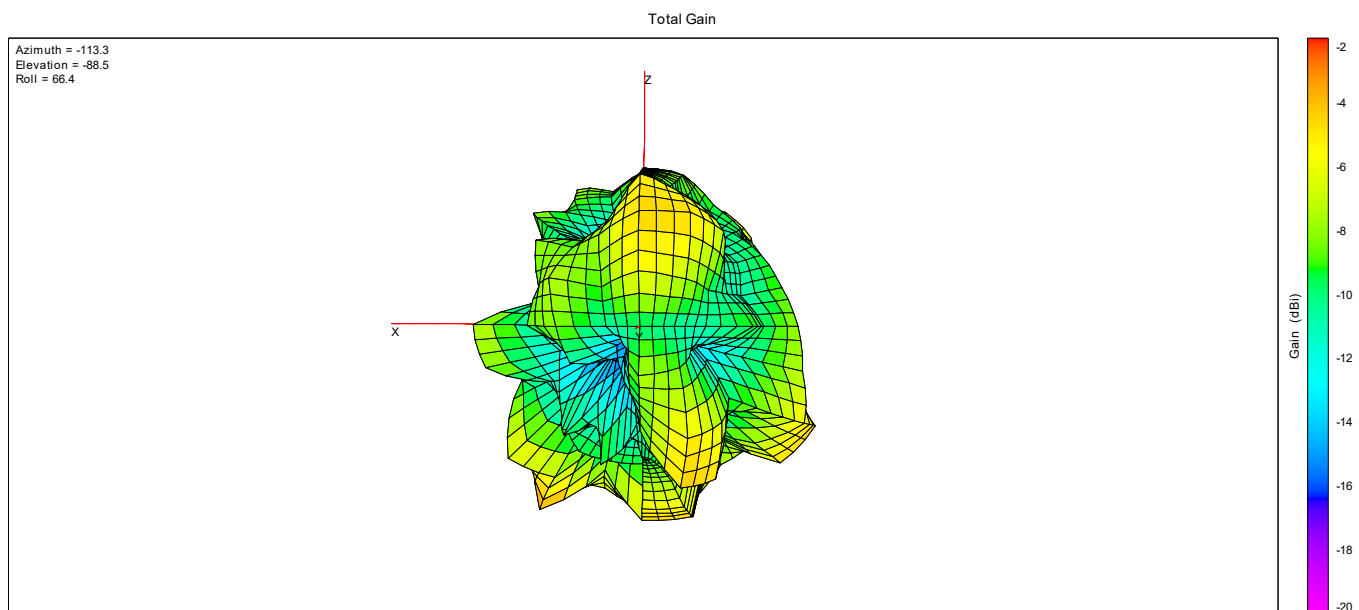
5745 MHz
5755 MHz
5765 MHz
5775 MHz
5785 MHz
5795 MHz
5805 MHz
5815 MHz
5825 MHz

Theta=90°

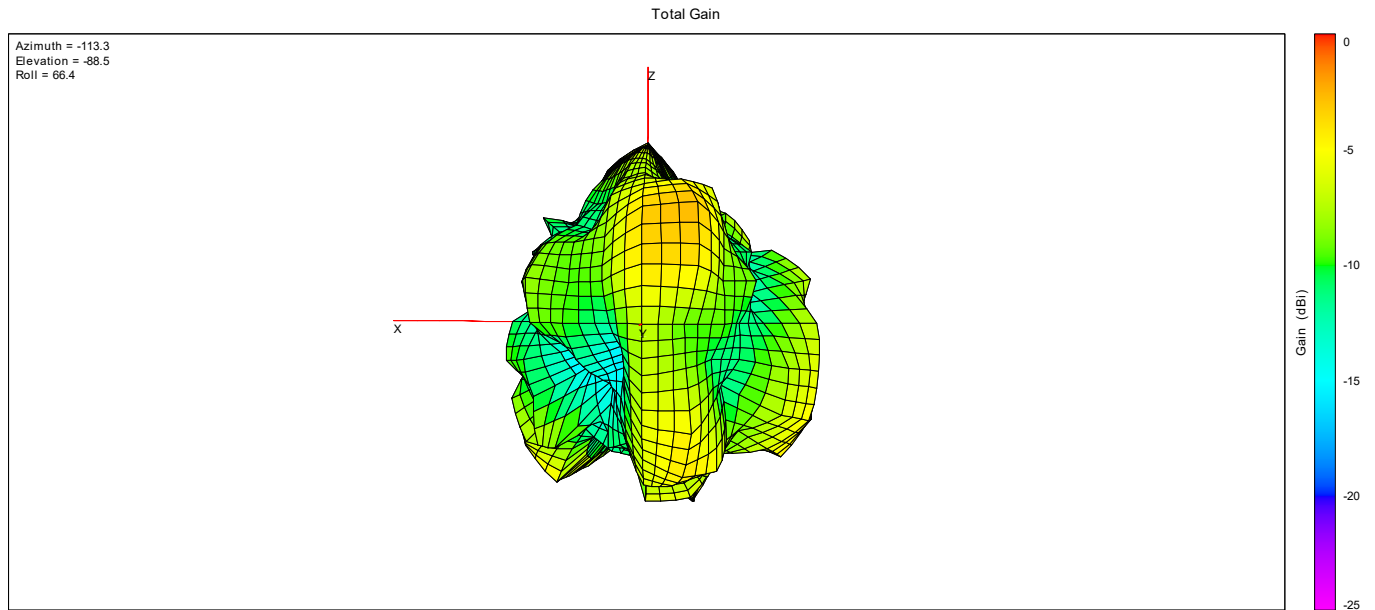
2. 3D Radiation Pattern



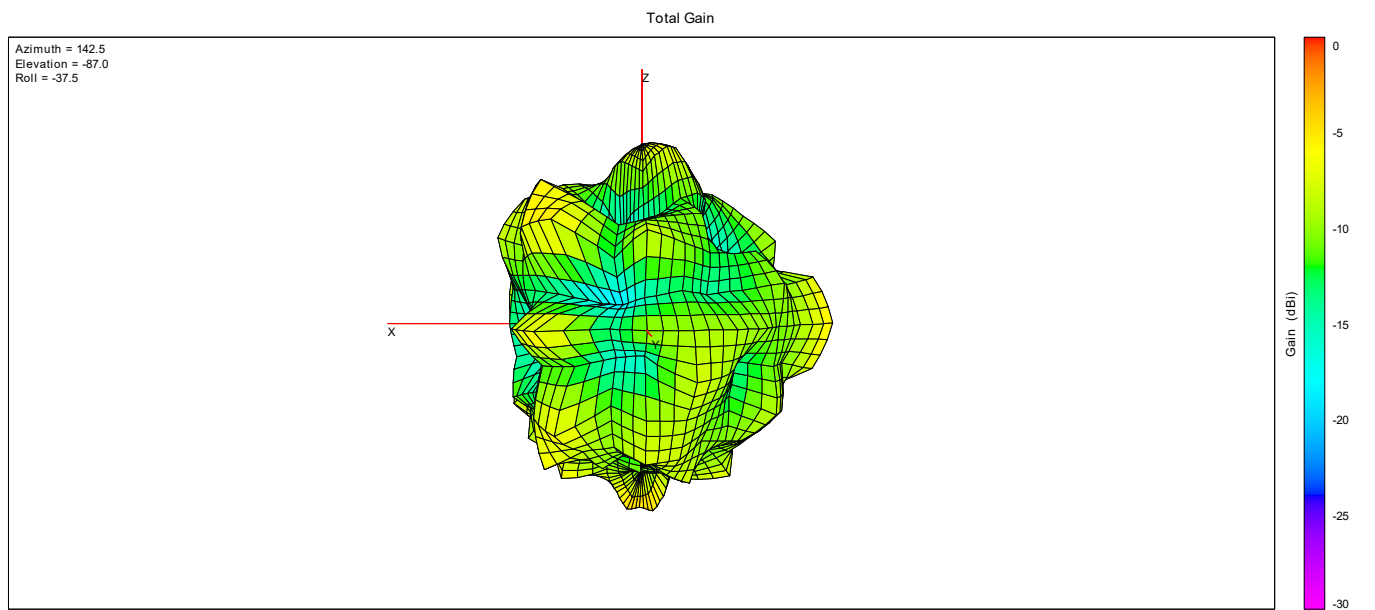
2400MHz



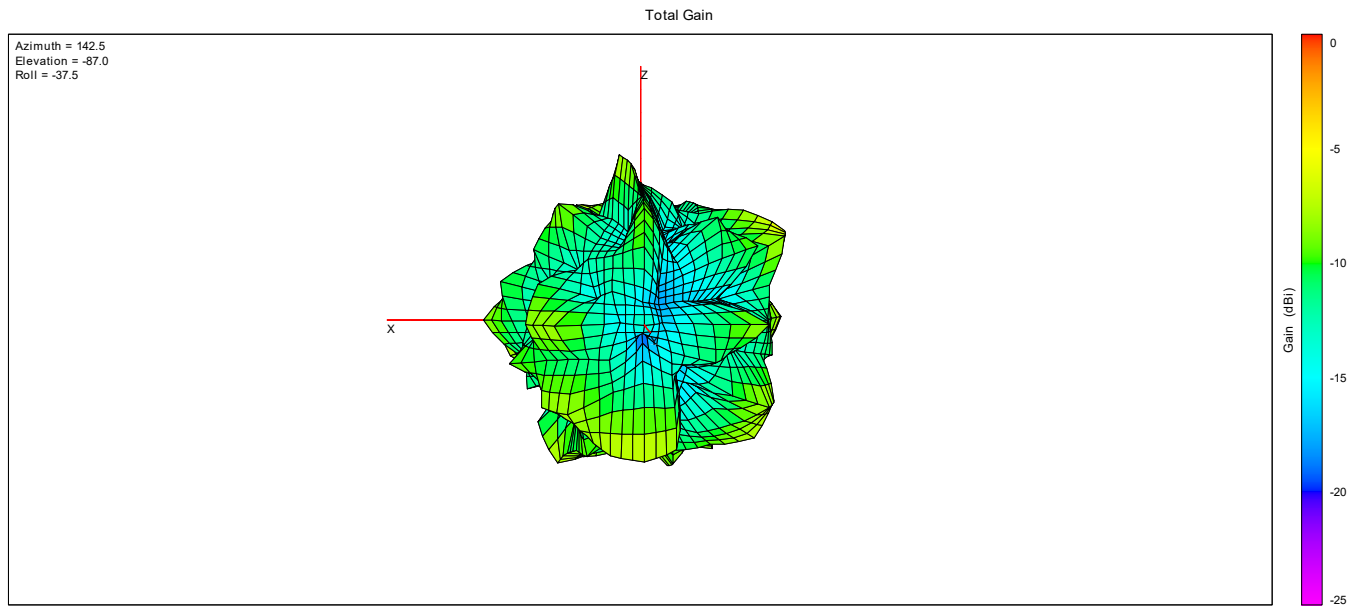
2450MHz



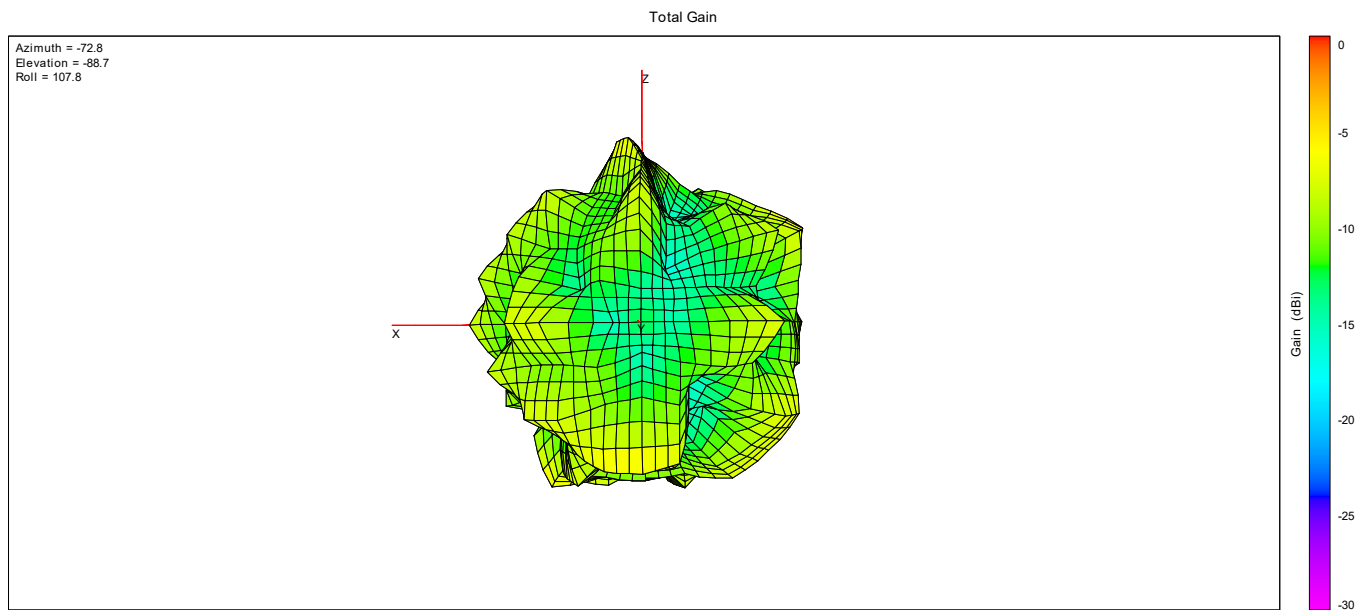
2500MHz



5745MHz



5755MHz



5825MHz



Annex C General Information

1.1 Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , Guangdong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

1.2 Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , Guangdong Province, P. R. China

1.3 Test Equipments Utilized

No.	Equipement Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Network Analyzer	MY46110140	E5071C	Agilent	2023.06.21	2024.06.20
2	OTA Chamber	TJ2235-Q1793	AMS-8923 -150	ETS	2022.11.30	2025.11.29

1.4 Test Software Utilized

No.	Software Name	Serial No.	Type	Manufacturer
1	Antenna Measurement System	1685	EMQuest EMQ-100 V 1.13 Build 21267	ETS

Note:The Main report is end here and the other Annex D will be submitted separately.

————— END OF REPORT —————