

# Testing Report

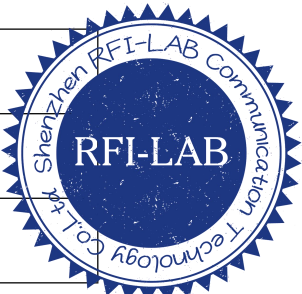
Customer Name: Audio Link Co.,Ltd.

Product Name: Vehicle Audio System

Sample Model: MA132、MA122

Reference Standard: *GB/T 9410-2008; ANSI/IEEE Std 149-1979*

Issue Date: 2022.11.29

Engineer: Jackson	Date: 2022.11.28	
Auditor: Eason	Date: 2022.11.29	
Approver: Janson	Date: 2022.11.29	

### Version

Version No.	Date	Description	Formulate	Approval
A0	2022.11.29	For the first time, formulate	Jackson	Eason

### Contents

- 1.General Information ..... 3
  - 1.1 General information of testing institutions ..... 3
  - 1.2 Testing principle ..... 3
  - 1.3 Test equipment ..... 4
  - 1.4 Test environment ..... 4
  - 1.5 Statement ..... 4
- 2.Sample Information ..... 5
  - 2.1 Client information ..... 5
  - 2.2 Description of EUT(S) ..... 5
  - 2.3 EUT appearance ..... 6
  - 2.4 EUT setup photo of free space OTA testing ..... 6
- 3.Test Results ..... 7
  - 3.1 Test standard ..... 7
  - 3.2 Test uncertainty ..... 7
  - 3.3 Test data ..... 8
    - 3.3.1 Typical free space efficiency and gain ..... 8
    - 3.3.2 Typical free space radiation pattern ..... 8
  - (The following is blank) ..... 9

# 1.General Information

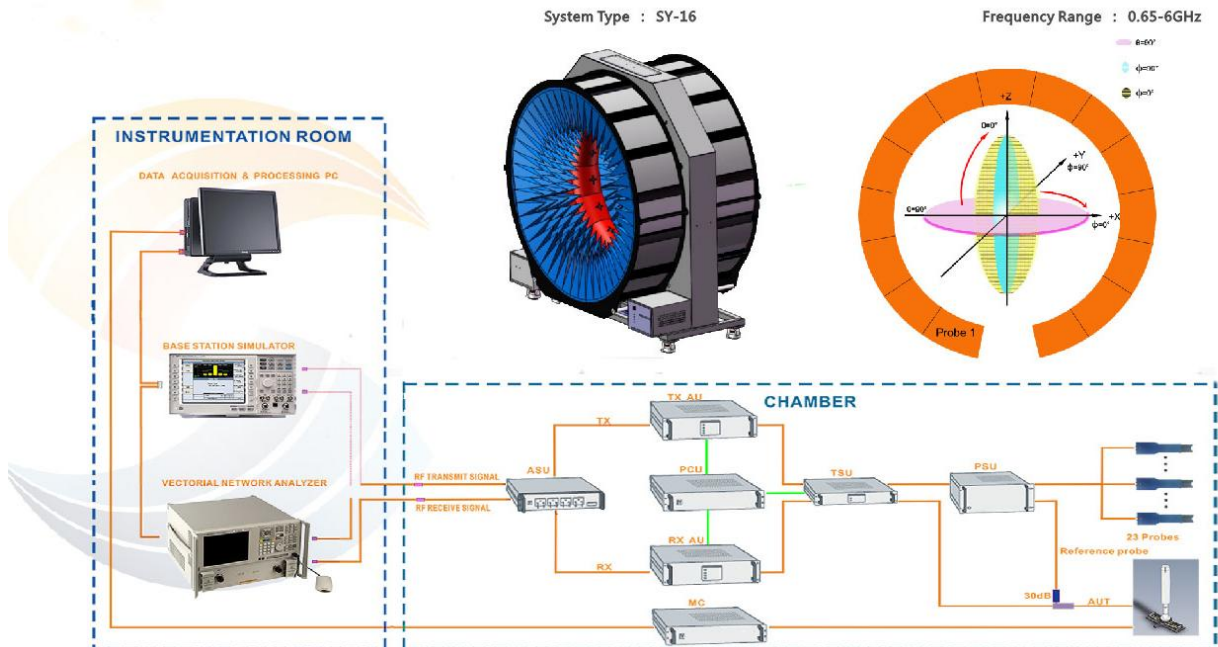
## 1.1 General information of testing institutions

<b>Name</b>	Shenzhen RFI-LAB Communication Technology Co., Ltd.
<b>Address</b>	10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ
<b>Tel</b>	13682621346
<b>E-mail</b>	rfi-lab@tech-now.com
<b>Equipment</b>	All the equipment used in the report is fixed in 10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ

## 1.2 Testing principle



# Multi-Probe OTA Measurement System



### 1.3 Test equipment

Equipment	Model No.	Serial No.	Manufacturer	Calibration date	Next calibration date
16 probe microwave chamber	3*3*2.5	RFI-LAB-RF-A00	SUNYIELD	2021.3.15	2023.3.14
Network Analyzer	E5071C	RFI-LAB-RF-A02	Agilent	2022.5.13	2023.5.12

### 1.4 Test environment

Temperature	24.4°C
Humidity	58%RH
Pressure	100.14kPa

### 1.5 Statement

- (1) The test results in the report are only applicable to the tested samples and the tested samples work under the environment described in the report.
- (2) Only Shenzhen RFI-LAB Communication Technology Co., Ltd. have the right to modify the report, and the modification information shall be annotated in the revision form.
- (3) Any objection to this report shall be raised within 30 days after formal confirmation of the report.
- (4) This report is invalid if there is any evidence that the sample information provided is falsified.
- (5) The report is invalid without the signature of the auditor and approver.

## 2. Sample Information

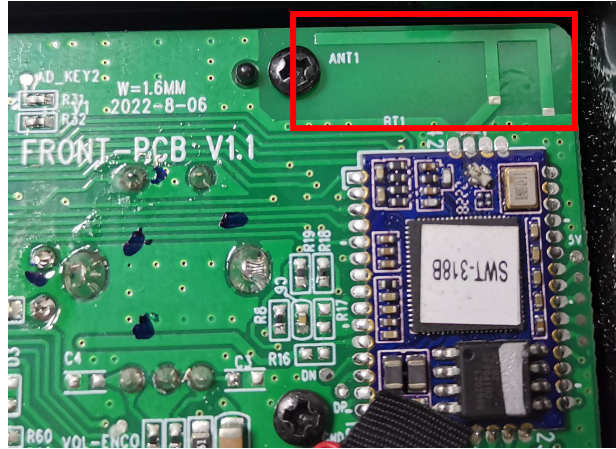
### 2.1 Client information

<b>Name</b>	Audio Link Co.,Ltd.
<b>Address</b>	Left Side of Floor 4, Building B, No.2, Lilian Road, Lianhu Community, Tangxia Town, Dongguan City, Guangdong Province, 523719, China.
<b>Contacts</b>	/
<b>Tel</b>	/
<b>E-mail</b>	/
<b>Manufacturer</b>	Audio Link Co.,Ltd.

### 2.2 Description of EUT(S)

<b>Product Name</b>	Vehicle Audio System
<b>Sample Model</b>	MA132、 MA122
<b>Size</b>	/
<b>Serial No.</b>	/
<b>Test Item</b>	Antenna gain; Radiation pattern and efficiency
<b>Frequency Range</b>	2400MHz-2500MHz
<b>Received Date</b>	2022.11.28
<b>Test Date</b>	2022.11.28
<b>Remark</b>	The length of the RF cable is 40mm

### 2.3 EUT appearance

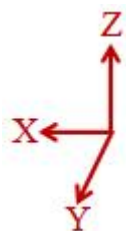
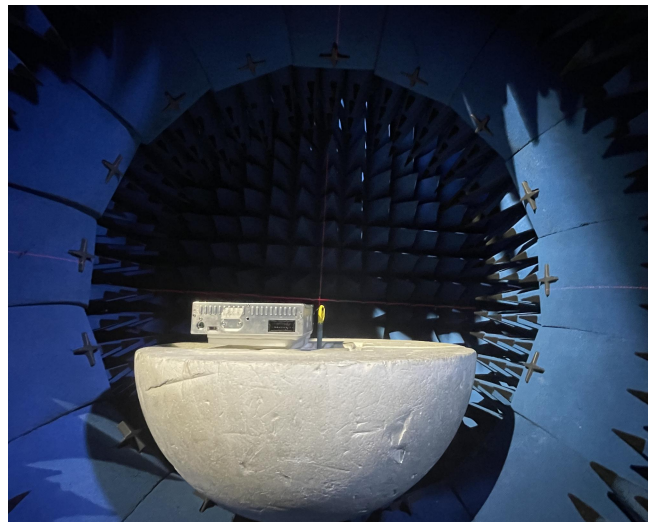


### 2.4 EUT setup photo of free space OTA testing

Planform



Front view



## 3. Test Results

### 3.1 Test standard

Name	Parameter	Method	Standard no.
Mobile communication antenna	Antenna gain	Generic specification for antennas used in the mobile communications	GB/T 9410-2008
	Radiation pattern		
Antenna	Radiation efficiency	IEEE Standard Test Procedures for Antennas	ANSI/IEEE Std 149-1979
	Gain and directivity		

### 3.2 Test uncertainty

The uncertainty was calculated on the basis of the GUM published by ISO, using the inclusion factor of  $K=2$  and the 95% confidence level to express the extended uncertainty.

Item	Uncertainty
Antenna gain	$\pm 1\text{dB}$
Radiation efficiency	$\pm 10\%$

### 3.3 Test data

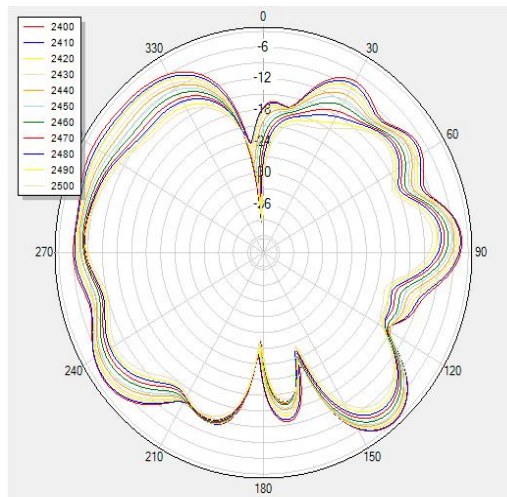
#### 3.3.1 Typical free space efficiency and gain

Frequency/MHz	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Peak Gain/dBi	0.69	0.21	-0.23	-0.94	-1.49	-2.12	-3.00	-3.73	-4.44	-5.31	-6.11
Efficiency/%	18.96	17.34	15.48	13.71	12.01	10.66	8.95	7.58	6.59	5.68	4.77

#### 3.3.2 Typical free space radiation pattern

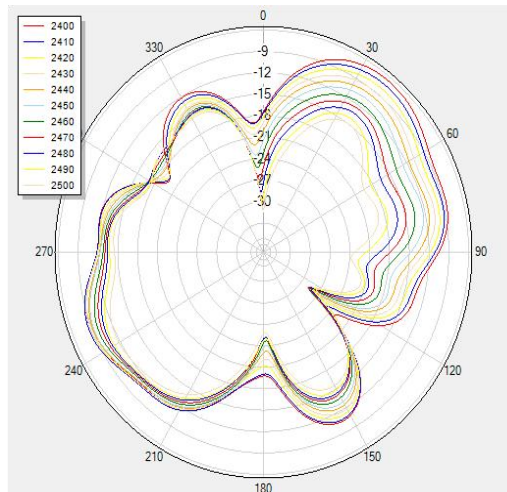
(1) X-Z Plane:

$V \text{ Phi}=0$



(2) Y-Z Plane:

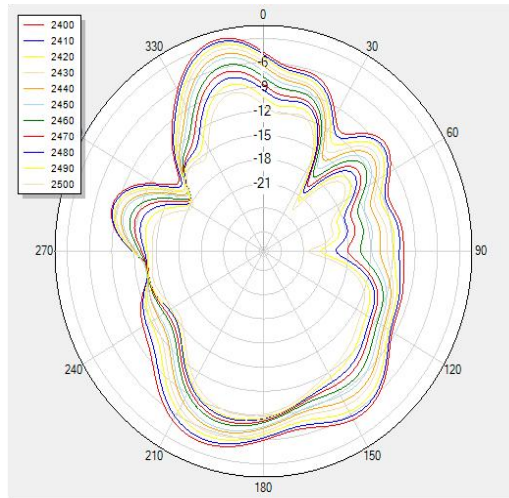
$V \text{ Phi}=90$



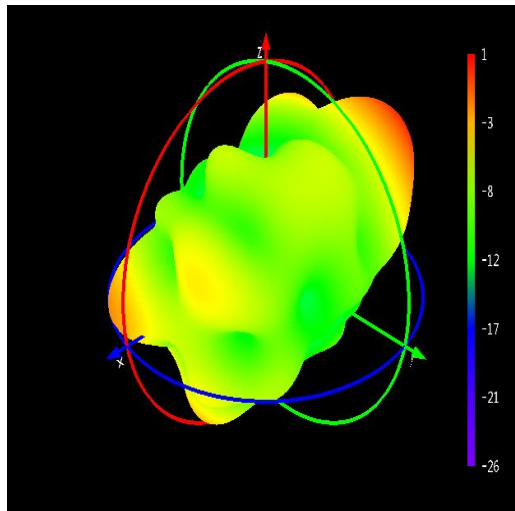


(3) X-Y Plane:

**H Theta=90**



(4) Typical Free Space 3D Radiation Pattern at 2400MHz:



**End**

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