

客戶名稱 : **LG 16Z90SP**
CUSTOMER

Document No.: _____
Approval Sheet Rev.: P0
Spec. Rev. : P0

承認書

APPROVAL SHEET

產品品名/Product Model No. : **WA-P-LBLB-04-111**

客戶料號/Customer No. : **EAA65985601**

專案名稱/Project Name: **16Z90SP**

發行日期/ Issue Date : **2023/08/15**

承認日期/ Approved Date : _____

Approved by customer: (signing or stamping here)



履历表

History List

[illegible]

4-2. Impedance

50 ohm nominal

4-3. Matching circuit

None

4-4. VSWR

4-4.1 Measuring Method

1.A 50Ωcoaxial cable is connected to the antenna. Then this cable is connected

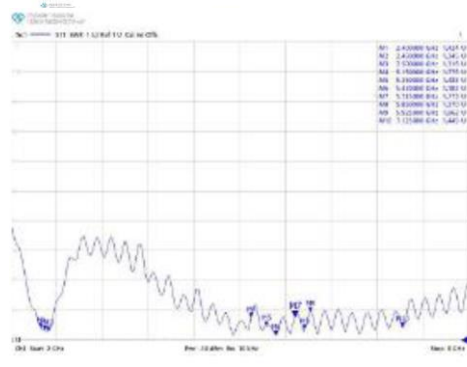
to a network analyzer to measure the VSWR

2.Keeping this jig away from metal at least 20cm

4-4.2 Measurement frequency points and VSWR value

VSWR	Frequency (Unit MHz)	Spec	1
Main Antenna	2400	≤ 3.0	1.4
	2500	≤ 3.0	1.3
	5150	≤ 3.0	1.7
	7125	≤ 3.0	1.4
	Judgement		ok
Aux Antenna	2400	≤ 3.0	1.8
	2500	≤ 3.0	1.5
	5150	≤ 3.0	1.5
	7125	≤ 3.0	2.1
	Judgement		ok

Main Antenna-1



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X = ±

X.X = ±

X.XX = ±

ANGLES = ±

HOLEDIA = ±

SCALE :

UNIT : mm

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CHECKED BY: 张涛

DESIGNED BY: 张翔

APPROVED BY: 徐克文

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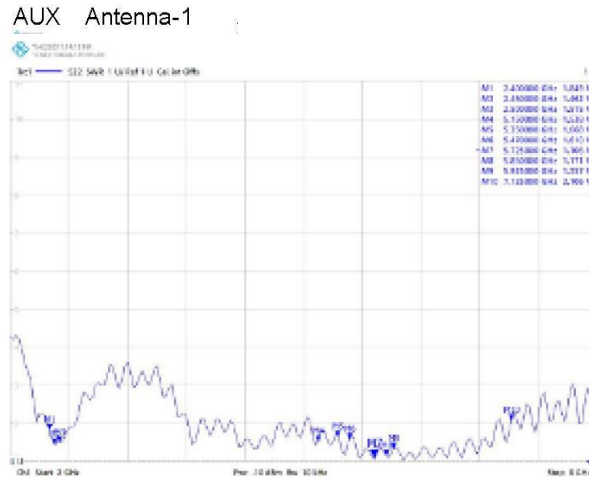
AUX Antenna-3

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NO.

PAGE REV.
P0



4-5. Efficiency and Gain

4-5.1 Measuring equipment

Measuring instrument:

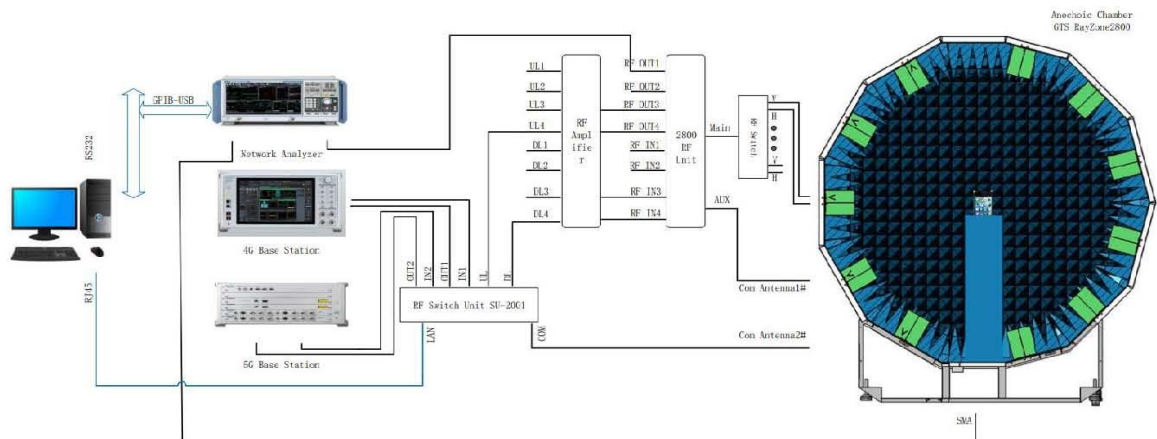
Microwave chamber, Network analyzer, and standard antenna.

Instructions for microwave chamber:

This is a microwave chamber set up by our company in Suzhou. This microwave chamber belongs to a set of near-field measurement system. The size of the chamber is 2.95M * 3M * 3M.



RayZone2800 Test Setup



The microwave chamber, shown above, using a unique multi-probe technique,
The aim is to reduce the measurement time of the whole measurement system. The

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			P0

measuring system use multi-probe array instead of single probe to scan the measured surface of the antenna under test, a single probe has the capability of measuring orthogonal polarization amplitude and phase, it also has a wide frequency range, the corresponding multi-probe array is switched quickly by electronic switch, greatly improved the measurement efficiency.

The probe model: MA186960A(400MHz~7.5GHz) . Because of its capability of broadband frequency and the orthogonal polarization function, the number of probes needed to be equipped with the system is reduced; The small size of the probe reduces the coupling between the probes, make it is possible to insert probes of other frequency bands between probes, then a single system can support a wider frequency range

4-5.2 Efficiency and Gain

Antenna gain is marked (dBi) and is based on STANDARD HORN antenna. The data shows Peak Gain and Average Gain.

4-5-2-1 Electrical specification

Frequency (MHz)	Average Efficiency (%)
2400~2500	>30
5100~5825	>30
5925~7125	>30

4-5.2-2 Efficiency and Gain Test Data

Frequency (MHz)	Main Antenna-1		
	Efficiency (%)	Gain w/ cable loss (dBi)	Peak Gain w/ cable loss (dBi)
2.4GHz (2400~2500MHz)	-2.8	52.1	2.2
5.2&5.3GHz (5150~5350MHz)	-5.0	31.4	1.8
5.5GHz (5470~5725MHz)	-4.0	39.9	2.9
5.8GHz (5725~5850MHz)	-4.2	38.0	2.3
6.2GHz (5925~6425MHz)	-2.9	51.0	3.3

Frequency (MHz)	Main Antenna-1		
	Efficiency (%)	Gain w/ cable loss (dBi)	Peak Gain w/ cable loss (dBi)
6.5GHz (6425~6525MHz)	-3.5	45.1	2.7
6.7GHz (6525~6875MHz)	-4.7	33.8	1.3
6.9GHz (6875~7125MHz)	-4.1	39.2	1.4

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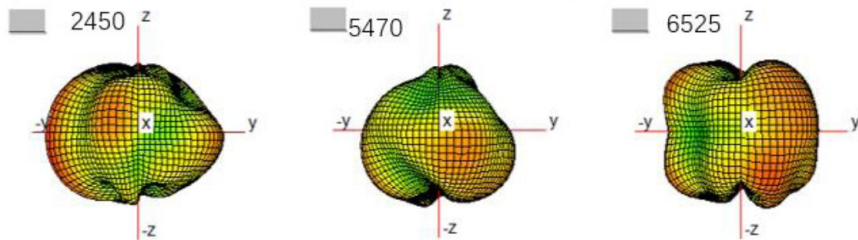
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PAGE REV.
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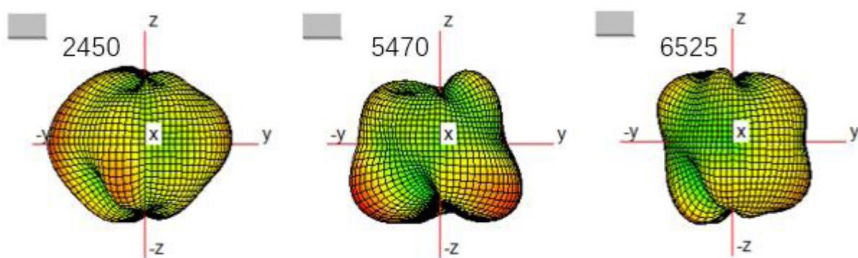
Frequency (MHz)	Aux Antenna-1		
	Efficiency (%)	Gain w/ cable loss (dBi)	Peak Gain w/ cable loss (dBi)
2.4GHz (2400~2500MHz)	-2.5	55.7	2.1
5.2&5.3GHz (5150~5350MHz)	-4.4	36.6	1.8
5.5GHz (5470~5725MHz)	-4.9	32.5	2.8
5.8GHz (5725~5850MHz)	-3.9	40.9	3.0
6.2GHz (5925~6425MHz)	-3.6	43.9	1.8
6.5GHz (6425~6525MHz)	-4.1	38.9	2.5
6.7GHz (6525~6875MHz)	-4.3	37.1	3.3
6.9GHz (6875~7125MHz)	-3.6	43.8	2.9

4-5.2-3 Antenna 3D Radiation Pattern

Main Antenna-1



AUX Antenna-1



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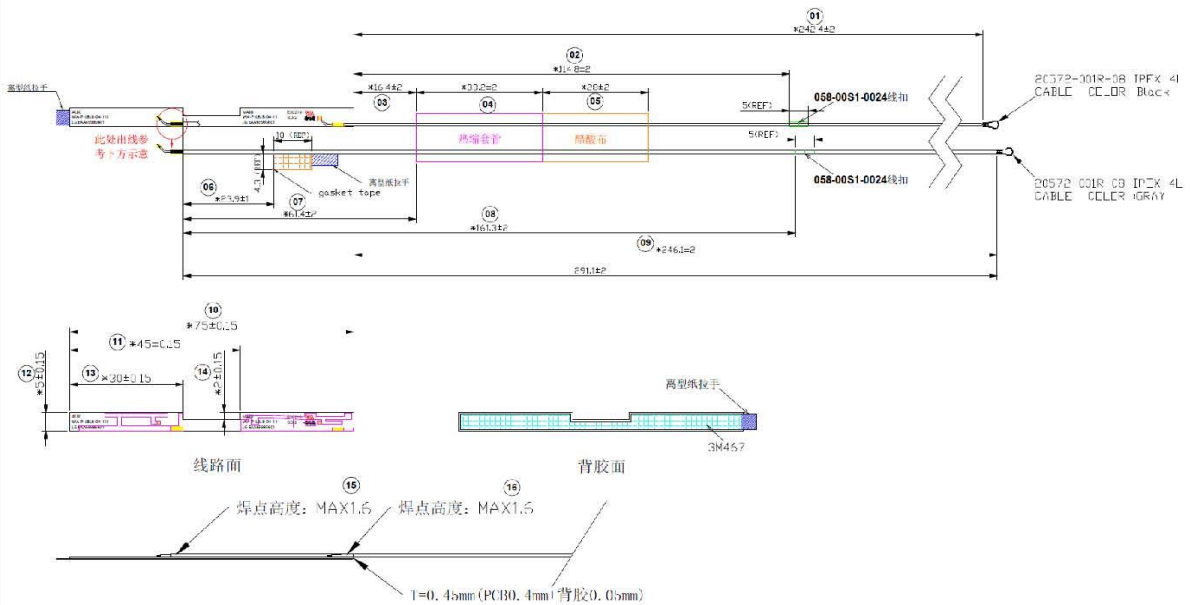
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DOCUMENT
NO.

PAGE REV.
P0



Material list :

Item	Description	Material	Quantity
1	PCB	PCB T0.4 WA-P-LBLB-04-111	1
2	Acetate tape	Acetate tape 18x10mm, T0.12mm	1
3	Shrink Tube	Shrink Tube black, ϕ 1.5 x33.2mm	1
4	Cable black	Cable 0.81 black	1
5	Cable gray	Cable 0.81 gray	1
6	Connector	I-PEX MHF 4L for 0.81, 20572	2
7	TAP	TAP 3M467 74x4mm	1
8	Clamp	Clamp 0.81 5mm	2
9	Acetate tape	醋酸布 28x10x0.08	1

6. UL File No:

ITEM	DESCRIPTION	SUPPLIER	UL File No
1	PCB	HA0129	E202191
2	CABLE	HA0008	E318898
		HA0053	E464731

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