

客戶名稱 : **LG 16Z90Q**  
CUSTOMER

Document No.: \_\_\_\_\_

Approval Sheet Rev.: **A0**

Spec. Rev. : **A0**

**承認書**

**APPROVAL SHEET**

產品品名/Product Model  
No. :

**WA-P-LELE-04-009**

客戶料號/Customer No. :

**EAA65976701**

發行日期/ Issue Date :

**2021/08/30**

承認日期/ Approved Date :

**Approved by customer: (signing or stamping here)**



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# WA-P-LELE-04-009 Specification

## 1. Explanation of part number :

WA - P - LELE - 04 - 009  
(1) (2) (3) (4) (5)

(1) Product Type : Wireless Antenna

(2) PCB: PCB

(3) Frequency : 2400~2500MHz&5100~5800MHz&5925~7125MHz

(4) Coaxial Cable Type : With  $\phi$  0.81 Main Black / AUX Gray

(5) Suffix : 009

## 2. Storage Condition:

Temperature -40 to +70°C  
Humidity 20 to 65 %RH

## 3. Operating Condition:

Temperature -40 to +70°C  
Humidity 10 to 85 %RH

## 4. Electrical Specification :

*Those specifications were specially defined for LG 16Z90Q WIFI model, and all characteristics were measured under the model's handset testing jig .*

### 4-1. Frequency Band:

Frequency Band	MHz
WIFI BT	2400~2500 & 5100~5800 & 5925~7125

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ANGLES=± HOLEDIA=±

SCALE : UNIT : mm

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DOCUMENT NO.

PAGE REV.  
P3

## 4-2. Impedance

50 ohm nominal

## 4-3. Matching circuit

None

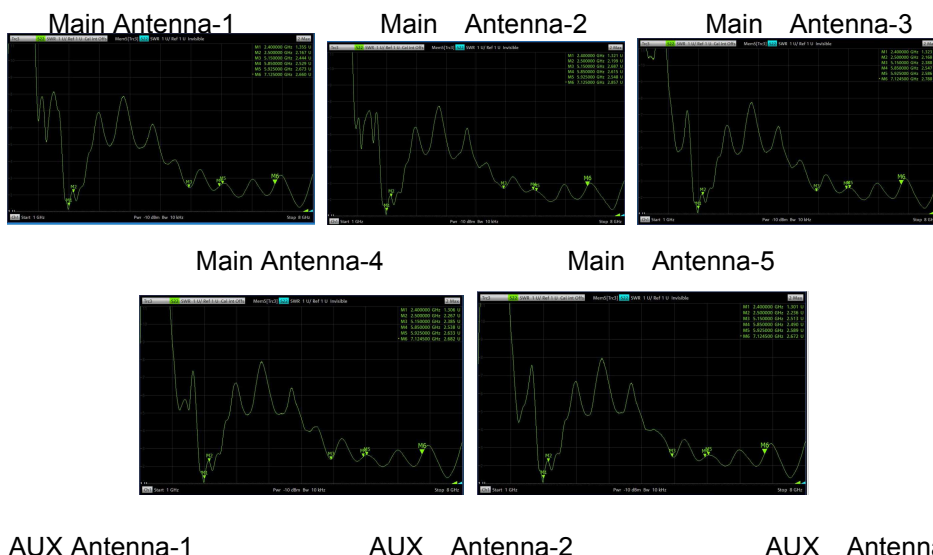
## 4-4. VSWR

### 4-4.1 Measuring Method

- 1.A 50Ω coaxial 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	2	3	4	5
Main Antenna	2400	≤3.5	1.3	1.3	1.3	1.3	1.3
	2500	≤3.5	2.1	2.1	2.1	2.2	2.2
	5150	≤4.0	2.4	2.6	2.3	2.3	2.5
	7125	≤4.0	2.6	2.8	2.7	2.6	2.6
	Judgement			ok	ok	ok	ok
Aux Antenna	2400	≤3.5	2.0	2.2	2.0	2.0	2.0
	2500	≤3.5	1.6	1.6	1.7	1.8	1.7
	5150	≤4.5	2.6	2.6	2.6	2.5	2.6
	7125	≤4.5	2.3	2.2	2.2	2.2	2.3
	Judgement			ok	ok	ok	ok



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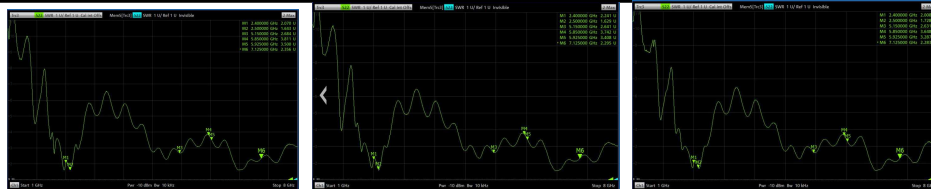
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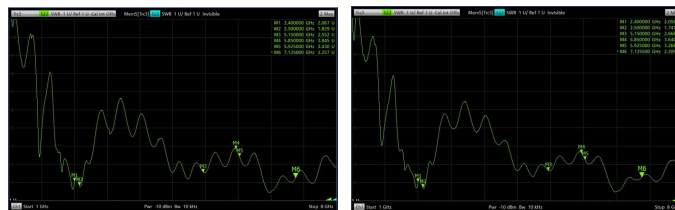
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PAGE REV.  
 P3



AUX Antenna-4

AUX Antenna-5

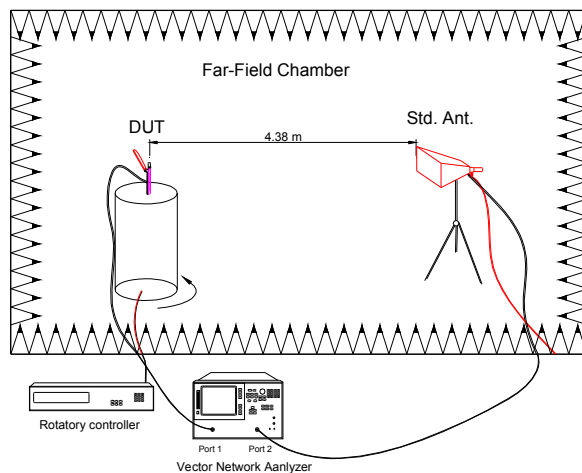


## 4-5. Efficiency and Gain

### 4-5.1 Measure method

1. Using a low loss coaxial cable to link a standard handset jig
2. Fixed this handset jig on chamber's rotator plane
3. Linking jig into network analyzer port and using a probing horn antenna to collect data.
4. Using another standard gain horn antenna to calibrated those data

### 4-5.2 Chamber definition



1. An anechoic chamber (8mx4mx3.5m) which satisfied far-field condition was applied to avoid multi-path effect
2. The quiet room region is 40cmx40cmx40cm at the center of rotator
3. The distance between DUT and standard antenna is 4.38 m
4. Probing antenna (9120D horn antenna) and standard gain horn antenna (BBHA9120 LPF 700MHz ~6GHz)

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 P3

### 4-5.3 Efficiency and Gain

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

#### 4-5-3-1 Electrical specification

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

#### 4-5.3-2 Efficiency and Gain Test Data

Frequency(MHz)	Main Antenna-1			Main Antenna-2			Main Antenna-3		
	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)
2400	2.3	-5.0	31.7	2.2	-4.9	32.6	2.1	-4.9	32.6
2450	2.4	-4.7	33.8	2.3	-4.7	33.9	2.4	-4.8	33.4
2500	3.2	-4.4	36.6	3.1	-4.7	34.1	3.3	-4.6	34.5
5150	4.2	-3.9	40.3	4.2	-4.0	39.8	4.2	-4.0	39.8
5400	4.2	-3.9	41.2	4.2	-3.1	48.8	4.3	-3.9	40.6
5850	4.4	-3.7	42.5	4.0	-2.8	52.0	4.8	-3.8	41.8
5925	4.1	-4.0	39.7	4.3	-3.1	49.5	4.1	-4.2	38.5
6525	4.1	-4.3	37.0	4.2	-2.9	51.3	3.9	-4.2	37.8
7125	4.2	-4.5	35.6	4.1	-3.4	45.3	3.6	-4.3	37.3
Frequency(MHz)	Main Antenna-4			Main Antenna-5					
	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)			
2400	2.1	-4.9	32.3	2.3	-4.7	33.5			
2450	2.3	-4.6	34.8	2.2	-4.5	35.2			
2500	3.3	-4.6	34.9	3.1	-4.7	34.2			
5150	4.1	-3.9	40.5	4	-3.9	40.5			
5400	4.2	-3.8	41.5	3.9	-3.9	41.2			
5850	4.3	-4.0	39.8	4.1	-4.0	39.6			
5925	3.8	-3.9	40.5	3.8	-4.2	37.8			
6525	3.7	-4.1	38.5	3.7	-4.3	36.9			
7125	3.6	-4.4	36.2	3.7	-4.4	36.2			

Frequency(MHz)	AUX Antenna-1			AUX Antenna-2			AUX Antenna-3		
	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)
2400	2.0	-4.8	33.2	1.9	-4.8	32.8	2.2	-5.0	31.7
2450	2.6	-4.6	34.7	2.4	-4.7	33.7	2.6	-4.9	32.6
2500	2.4	-4.9	32.7	2.3	-5.0	31.5	2.3	-4.7	33.8
5150	3.5	-4.5	35.3	3.6	-4.6	35.1	3.6	-4.3	37.3
5400	3.6	-4.5	35.4	3.7	-4.3	37.4	3.8	-4.2	38.0
5850	3.5	-4.4	36.3	3.5	-4.5	35.8	3.8	-4.7	34.0
5925	3.4	-4.6	34.6	3.5	-4.6	34.5	3.1	-4.8	33.5
6525	3.2	-4.8	33.1	3.5	-4.9	32.1	3.1	-4.9	32.6
7125	2.3	-4.8	32.8	2.3	-4.5	35.7	2.5	-5.1	30.8
Frequency(MHz)	AUX Antenna-4			AUX Antenna-5					
	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)	Peak Gain (dBi)	Efficiency (dBi)	Efficiency(%)			
2400	2.1	-5.1	30.9	2.2	-5.0	31.8			
2450	2.4	-4.9	32.4	2.5	-4.7	33.5			
2500	2.3	-5.0	31.5	2.3	-4.9	32.4			
5150	3.6	-4.5	35.8	3.6	-4.2	38.4			
5400	3.7	-4.6	34.6	3.8	-4.3	37.4			
5850	3.4	-4.5	35.6	3.5	-4.4	36.5			
5925	3.3	-4.8	33.1	3.4	-4.6	34.5			
6525	3.1	-4.9	32.2	3.2	-4.8	33.1			
7125	2.3	-5.2	30.4	2.2	-5.1	31.0			

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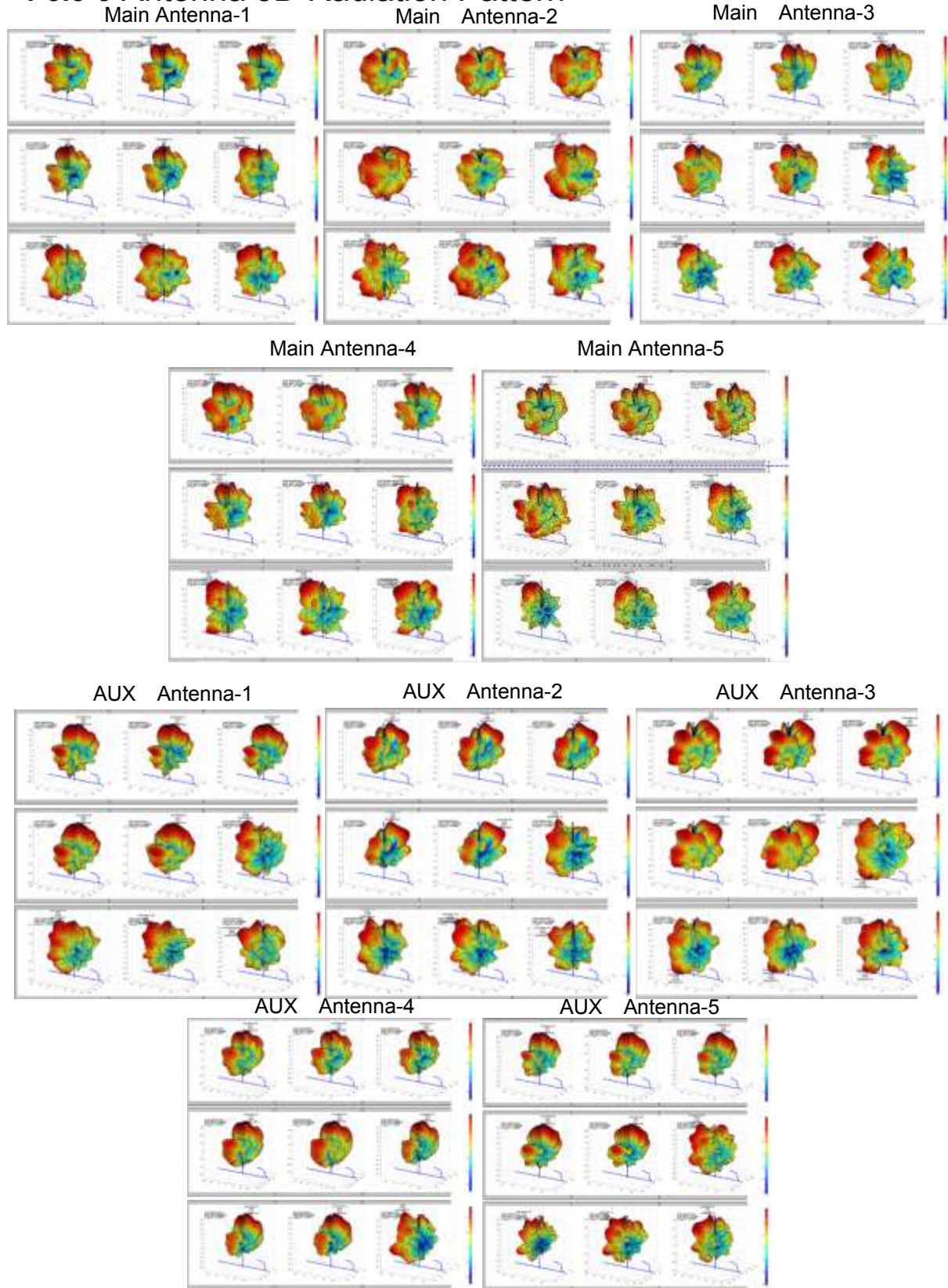
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 P3

### 4-5.3-3 Antenna 3D Radiation Pattern



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Material list :

Item	Description	Material	Quantity
1	PCB AUX	FR4 40x6mm,T0.4mm	1
2	PCB MAIN	FR4 40x6mm,T0.4mm	1
3	Acetate Tape	Acetate Tape 21x7mm, T0.12mm	2
4	Shrink Tube	Shrink Tube black, $\phi$ 1.5 x10mm	1
5	Cable black	Cable 0.81 black	1
6	Cable gray	Cable 0.81 gray	1
7	Connector	I-PEX MHF 4L for 0.81, 20572	2
8	TAP	3M467 39*5mm	2
9	Clamp	Clamp 0.81 5mm	2

## 6. UL File No:

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

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PAGE REV.  
P3