

Customer : LG

Approval No.

ISSUE

2.0

Specifications for Approval

Product Name : 17Z90Q ANTENNA , ASSY

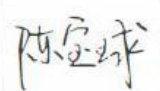
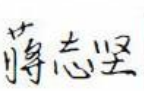
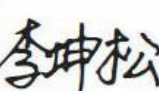
Vendor Model Name : LUXSHARE-ICT

Customer Part No. : EAA65977001

Vendor P/N : L1LRF009-CS-H

Condition : 1. _____
2. _____
3. _____
4. _____

The product above is approved.

LG MC Approval	Category	Checked	Reviewed	Agreed	Approved
	Name				
	Signature				
Vendor Approval	Category	Designed	Checked	Agreed	Approved
	Name	郭林	陈宝球	蒋志坚	李坤松
	Signature				

Vendor Name :LUXSHARE-ICT

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oyster I, Shajing Street, Baoan District, S
henzhen, China

P/N: L1LRF009-CS-H	SPECIFICATION MODEL NAME: 17Z90Q ANT ASS'Y	REV.NO:1.0
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SPECIFICATION

Test items

1) Apperance and structure check

Check item	Judgement
Visual Inspection	The shape, structure, and color should be consistent with the limit sample and related specifications
Standard	These defects should not be allowed such as damage, correosion, sink, scratches, etc.

2) Dimension Check : Measuring improtant dimensions

Dimensions should meet the requirements of the acknowledgment

3) Mate / Unmating Force : mate connector with a suitable gauge at rate of 25 ± 3 mm/min.

measure force when gauge reaches surface of connector.

mating Force	unmating Force
30N (or 3000g) Max	5 ~ 20 N (or 500g ~ 2000g) 3 ~ 20 N (or 300g ~ 2000g) Final 30 Cycles

4) Disintegration : Parts are allowed to be chiseled, not inserted, dirty etc.

soldering state of PCB like cold welding, less welding, over welding are not allowed. The length of the parts should be suitable.

and parts can not be touched each other.

5) Tape adhesion : Double Sided tape should be not sliped

should be satisfied standard specification.

6) VSWR

Test equipment : Network Analyzer equipment

Frequency(unit MHz)	MAIN	AUX
VSWR	1. 800-2. 100GHz > 5 1. 800-2. 100GHz > 5 5. 100-6. 000GHz < 6	1. 700-1. 950GHz > 5 2. 200-2. 500GHz < 5. 5 5. 000-6. 000GHz < 5. 5

P/N: L1LRF009-CS-H	SPECIFICATION MODEL NAME: 17Z90Q ANT ASS'Y	REV.NO:1.0
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SPECIFICATION

Test items

7) Gain

Test equipment : Network Analyzer equipment

Frquency(MHZ)	Efficiency(%)
2400	>30
2450	>30
2500	>30
5150	>30

8) Thermal Shock

Condition	Temperature : 85°C (30min), -40°C (30min) 10 Cycles. Being Placed 2 Hours
Judgement	Product's mechanism and VSWR should be OK.

9) High Temperature

Condition	Temperature : 80°C, 96H, Being Placed 2 Hours.
Judgement	Product's mechanism and VSWR should be OK.

10) Low Temperature

Condition	Temperature : -20°C, 96H, Being Placed 2 Hours.
Judgement	Product's mechanism and VSWR should be OK.

P/N: L1LRF009-CS-H	SPECIFICATION MODEL NAME: 17Z90Q ANT ASS'Y	REV.NO:1.0
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SPECIFICATION

Test items

12) High Temperature and humidity test

Condition	Temperature : 40°C, Humidity : 90 – 95% 96H, Being Placed 2 Hours.
Judgement	Product’s mechanism and VSWR should be OK.

13) Virbration Test

Condition	Class V3 [0.27 Grms, 10-500Hz, 50min, Per 3 axes (X,Y,Z)]
Judgement	Product’s mechanism and VSWR should be OK.

14) Drop Test

Condition	Height : 100cm to Iron Plate (Thickness : 5mm or more) one edge/Three corners/six faces are once total : 10 times
Judgement	there should be no crack and or damage parts.

	Main			Aux		
Frequency (MHz)	Peak gain (dBi)	Efficiency (dB)	Efficiency (%)	Peak gain (dBi)	Efficiency (dB)	Efficiency (%)
2400	-1.454	-8.1496	15.3122	2.8858	-4.5067	35.4266
2450	0.2648	-6.8193	20.8004	-0.0666	-7.8183	16.5263
2500	2.1471	-5.1853	30.302	-6.9052	-16.1423	2.4309
5150	5.2356	-4.867	32.6064	3.638	-6.4283	22.7598
5400	0.547	-8.5478	13.9706	1.1104	-7.7508	16.7848
5850	4.9603	-5.1711	30.4014	2.8823	-6.2437	23.748
5925	5.8548	-4.4653	35.7659	2.4808	-5.8828	25.8062
6525	1.193	-7.0825	19.577	1.3805	-7.2145	18.9909
7125	3.9882	-4.2065	37.9619	1.8928	-5.6131	27.4591

Regulatory WLAN Antenna Information

1.Storage Condition:

Temperature	-40 to +70℃
Humidity	20 to 65 %RH

2. Operating Condition:

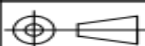
Temperature	-40 to +70℃
Humidity	10 to 85%RH

3.Electrical Specification:

Those specifications were specially defined for **LG 17Z90R** WIFI model, and all characteristics were measured under the model's handset testing jig.

3-1. Frequency Band:

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

TOLERANCE(UNLESS SPECIFIED)		CUSTOMER P/N: XXXXXXXXXXXXX	LUXSHARE-ICT				
*X	±0.5						
*X.X	±0.25	APPD:	TITLE: 17Z90R ANTENNA, ASSY				
*X.XX	±0.10						
*X.XXX	±0.05	CHKD: JACK	PART NO: L1LRF014—CS—H				
UNITS:	mm						
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				1:1	1/1	A4	X2

3-2. Impedance

50 ohm nominal

3-3. Matching circuit

None

3-4.VSWR

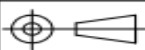
4-4.1 Measuring Method

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	Open
Main Antenna	2400	≤ 3.5	3.2
	2500	≤ 3.5	2.9
	5150	≤ 4.0	2.5
	7125	≤ 4.0	1.9
	Judgement	ok	
Aux Antenna	2400	≤ 3.5	2.4
	2500	≤ 3.5	2.8
	5150	≤ 4.5	2.2
	7125	≤ 4.5	1.6
	Judgement	ok	

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*X.XX	±0.10						
*X.XXX	±0.05						
UNITS:	mm	APPD:	TITLE: 17Z90R ANTENNA, ASSY				
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		DRAW: JACK		SCALE	SHEET	SIZE	REV
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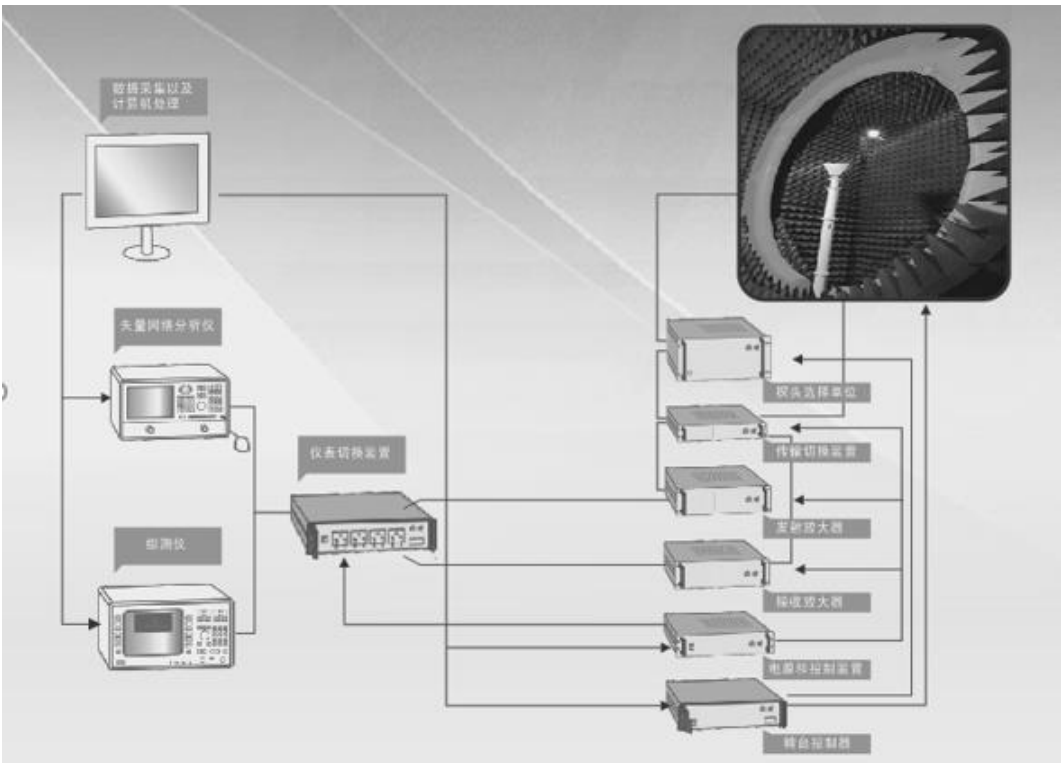
3-5. Efficiency and Gain

3-5.1 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

3-5.2 Chamber definition

1. Test setup

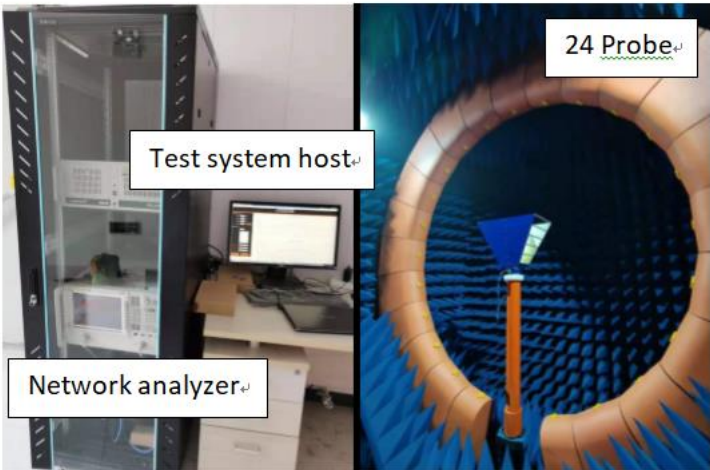
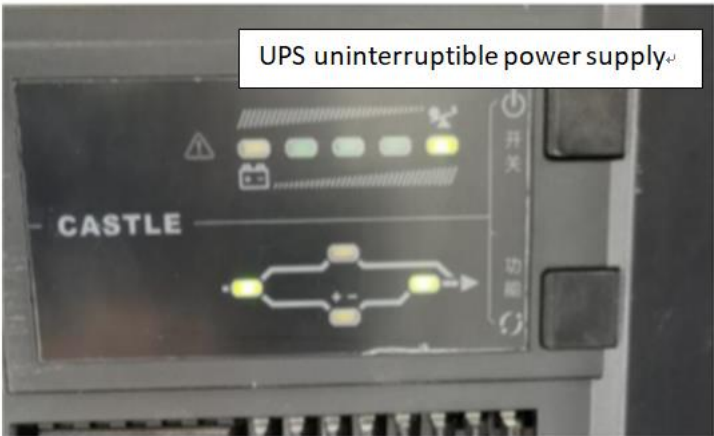
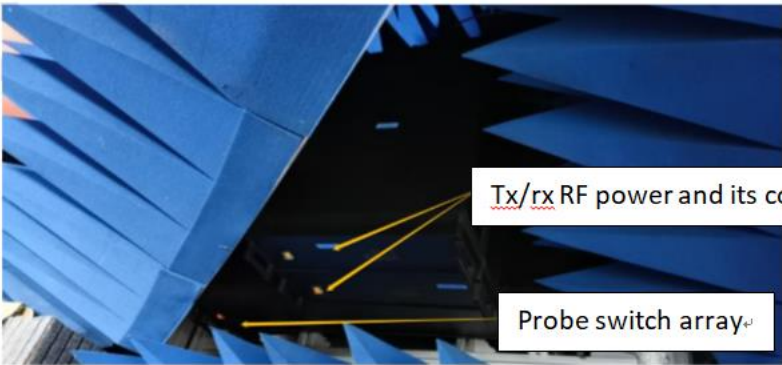
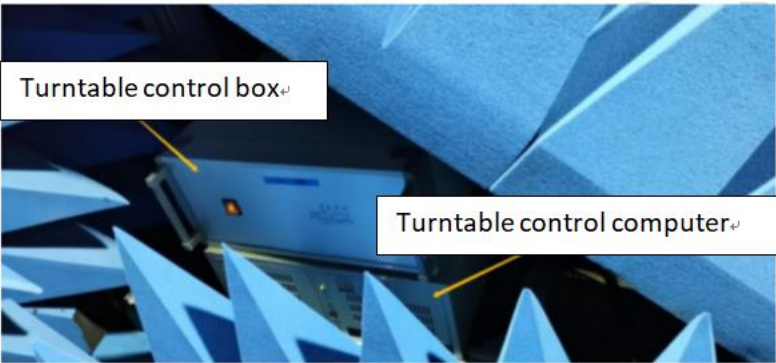


2.Equipment list

Number	Device	Type/Model	Serial	Manufacturer	Cal. Date	Cal. Due Date
1	EMT24 Chamber	EM-testing	1603000653	EMT	2021/9/30	2023/12/31
2	Turntable control box	EM-testing	1603000653	EMT	2022/11/1	2022/12/31
3	Turntable control computer	EM-testing	1603000653	EMT	2022/11/1	2022/12/31
4	Tx/rx RF power and its control unit	EM-testing	1603000653	EMT	N/A	N/A
5	Probe switch array	EM-testing	1603000653	EMT	N/A	N/A
6	Test system host	EM-testing	1603000653	EMT	N/A	N/A
7	Network analyzer	E5071C	1603000653	EMT	2021/12/31	2022/12/31
8	RF line TX	EM-testing	1603000653	EMT	N/A	N/A
9	RF line RX	EM-testing	1603000653	EMT	N/A	N/A
10	UPS uninterruptible power supply	Castle	1603000653	EMT	N/A	N/A
11	24 Probe Antenna	EM-testing	1603000653	EMT	2022/11/1	2023/12/31
12	Cable 3m 400MHz~8.5GHz	EM-testing	1603000653	EMT	2021/9/30	2023/12/31

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*X,XX	±0.10						
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		DRAW: JACK			SCALE	SHEET	SIZE
			1:1		1/1	A4	X2

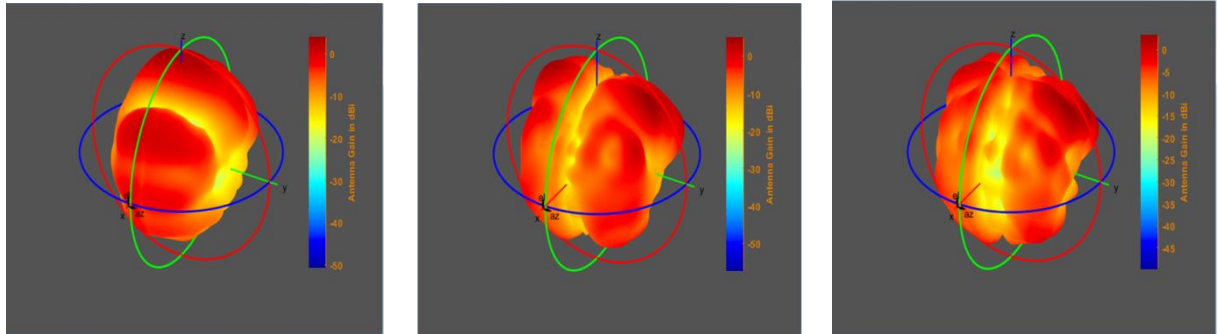
3.Setup photo



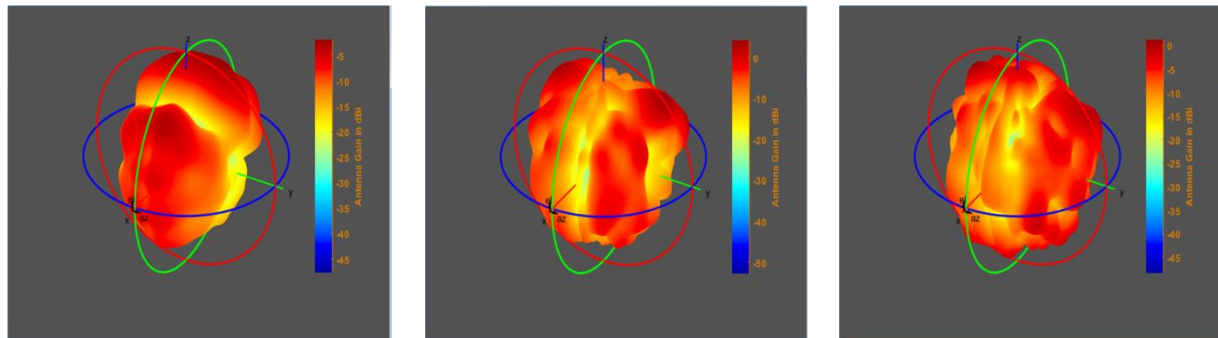
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*X	±0.5						
*X.X	±0.25						
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		DRAW: JACK		SCALE 1:1	SHEET 1/1	SIZE A4	REV X2

3-5. 3-3 Antenna 3D Radiation Pattern

Main Antenna



AUX Antenna



TOLERANCE(UNLESS SPECIFIED)		CUSTOMER P/N: XXXXXXXXXXXXX	LUXSHARE-ICT			
*X	±0.5		TITLE: 17Z90R ANTENNA, ASSY			
*X.X	±0.25					
*X.XX	±0.10					
*X.XXX	±0.05					
UNITS:	mm	APPD:				
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		DRAW: JACK		SCALE 1:1	SHEET 1/1	SIZE A4