



CUSTOMER: xiaomi

INNOWAVE P/N: RX-P98816-G&W-T09-2415-A

ANTENNA TYPE: PIFA antenna

CUSTOMER APPROVER CHECKER

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Date	Issue	Detail changes

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1. Scope

This document contains required environmental, electrical characteristic, mechanical, package and reliability test requirements.

2. Environmental Requirement

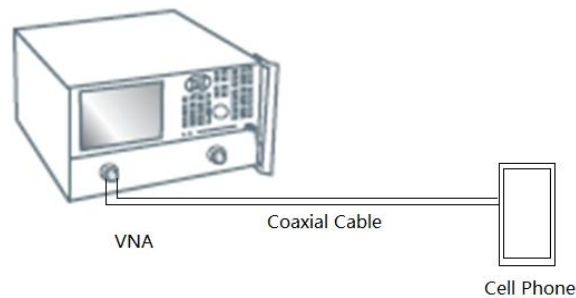
all components must be free from lead (Pb) and other banned or restricted substances according to customer's requirements.

3. Electrical Characteristic Measurement Method

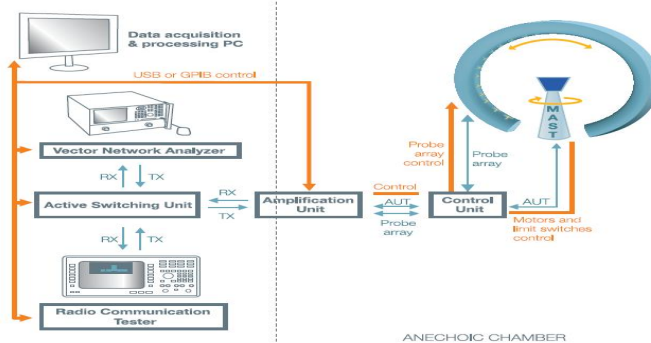
3.1 Measurement method

To measure the Return Loss and VSWR, Smith Chart, Vector Network Analyzer Agilent E5071C was used. Satimo SG24 Anechoic chamber was used to measure the Efficiency, Gain, TRP and TIS.

3.1.1 Return Loss and VSWR



3.1.2 Efficiency, Gain, OTA measurement

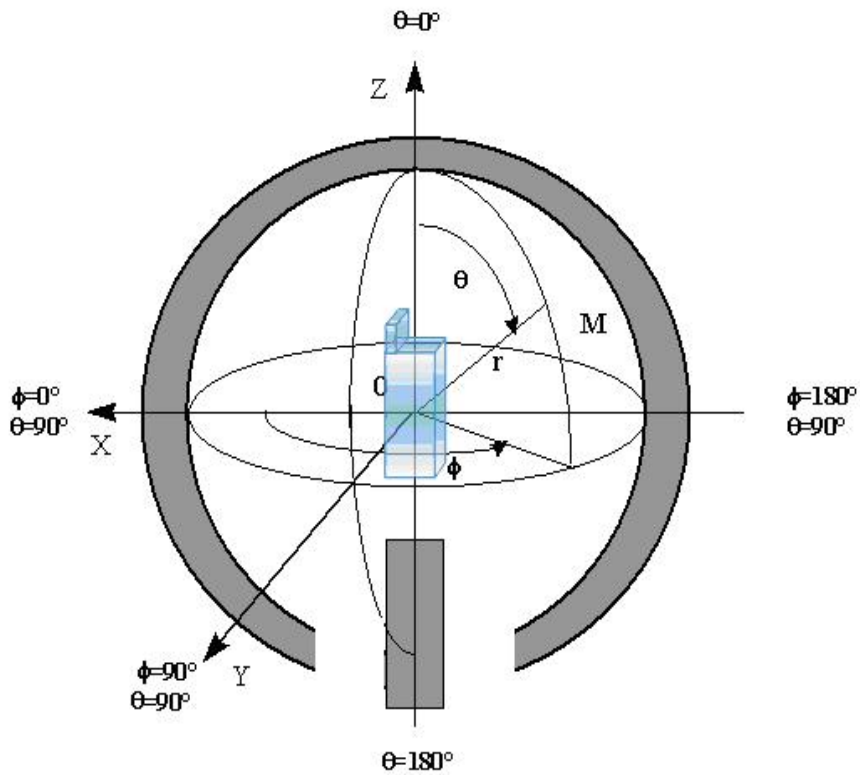


3.1.3 Cutting plane and polarization

Phi=0deg

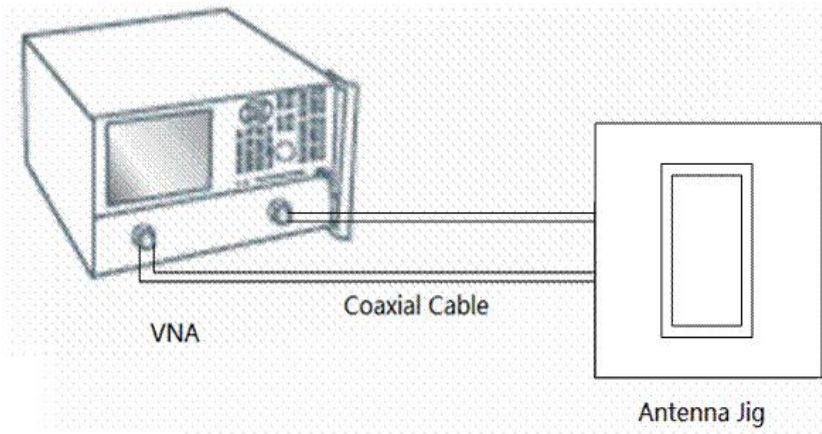
Phi=90deg

Theta=90deg



3.1.4 RF Jig

INNOWAVE designs a special S11 RF test jig for antenna test in mass production line. The antenna with average frequency in line is selected as reference antenna, and the results of the test jig is going to correlated to the performance in the real phone.



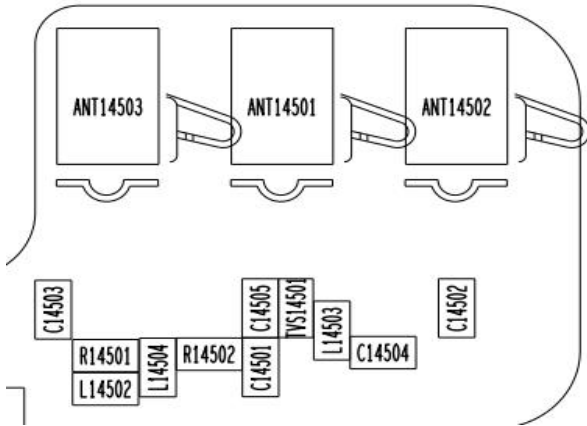
4. Pictures of antenna and antenna type



WCN ant

ANT	Type	Material Quality
WCN	Internal	FPC

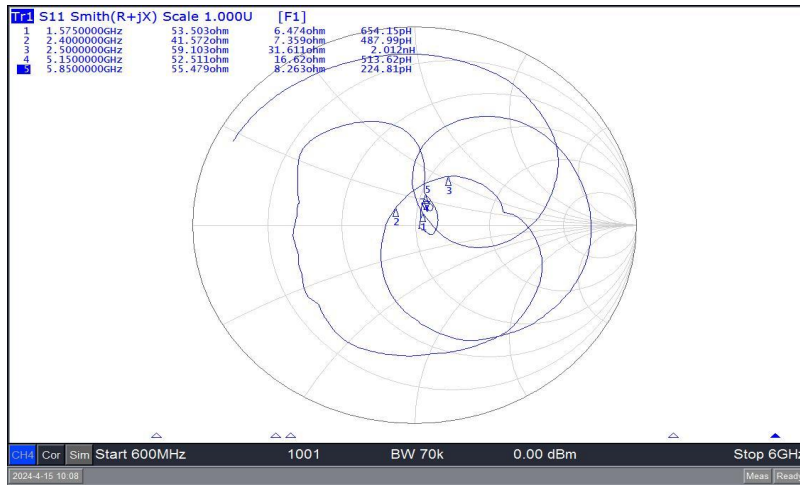
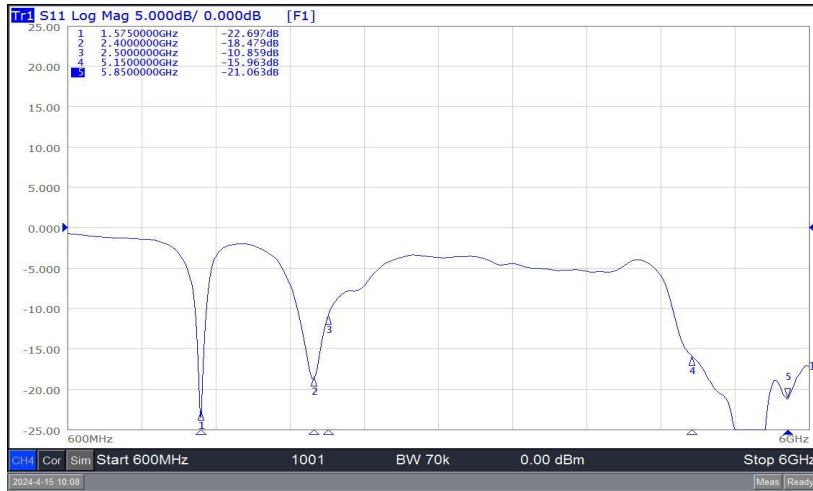
5. Matching Circuit



Bit number	Value
C14504	33pF
TVS14501	
L14503	68nH
C14505	33pf
C14501	100nH
R14502	1nH
L14504	NF
R14501	0ohm
L14502	NF
J14501	NF
ANT14503	NC

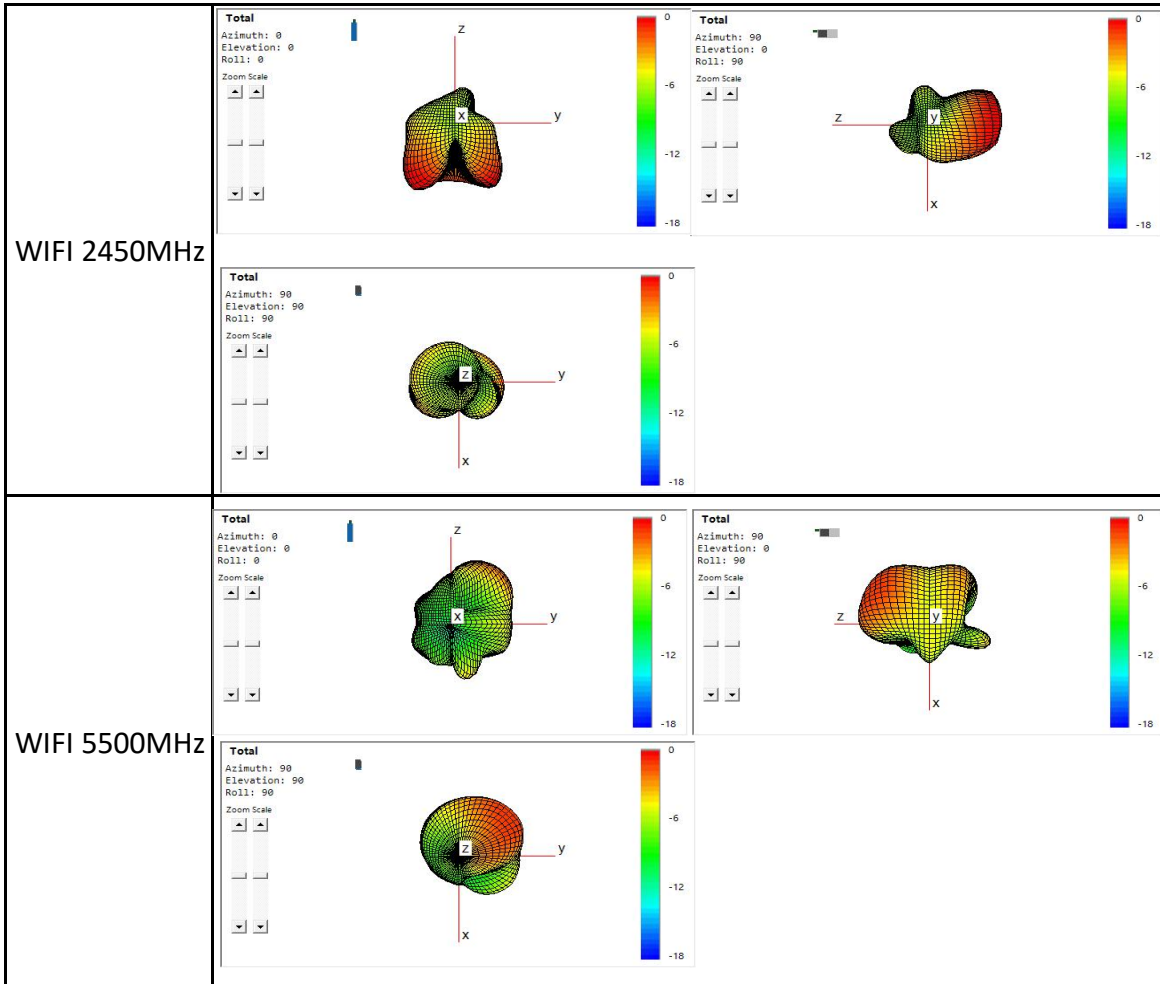
WCN ant

6.1 WCN Ant



6.2 Radiation Pattern

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6.3 Efficiency

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Frequency/MHZ	Eff(dB)	Eff(%)	Gain (dBi)	Upper Hem.Total Radiated Pwr (dBm)
2400	-3.7	42.4	1.5	-9.1
2410	-3.6	43.3	1.5	-8.9
2420	-3.8	41.3	1.4	-9.1
2430	-4.1	38.8	1.1	-9.2
2440	-4.1	39.1	1.1	-9.0
2450	-4.2	37.9	1.1	-9.1
2460	-4.3	37.2	1.3	-9.2
2470	-4.4	36.6	1.3	-9.2
2480	-4.6	34.8	1.1	-9.5
2490	-4.6	34.6	1.1	-9.4
2500	-4.6	35.0	1.0	-9.4

5150	-7.2	19.0	-2.8	-9.7
5250	-6.9	20.2	-1.2	-8.8
5350	-6.0	25.2	-0.3	-8.6
5450	-5.7	27.0	0.2	-8.1
5550	-5.0	31.8	0.4	-7.4
5650	-5.2	30.0	-0.1	-7.9
5750	-5.3	29.4	-1.0	-7.9
5850	-5.6	27.7	-1.1	-8.3

7.Active Measurement Data

7.1 WCN ant

2.4G WiFi&5G WiFi			
BAND	CH	TRP	TIS
		6M	54M
A	44	12.1	-69.2
	60	12.5	-70.5
	157	12.4	-70.8
		6M	54M
G	1	16.0	-71.9
	7	16.2	-72.3
	13	16.3	-71.5

BT		
CH	TRP	TIS
0	7.5	-86.5
39	7.4	-85.2
78	7.4	-85.3

8. Antenna measurement spec on RF test jig

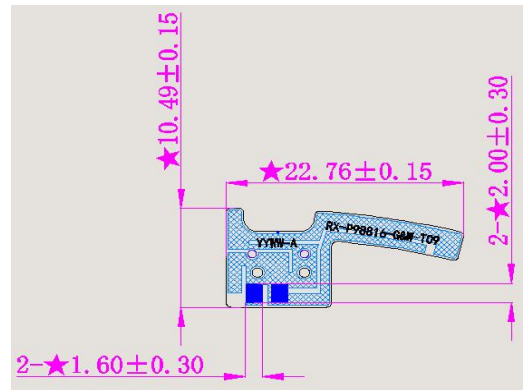
Test band	Reference frequency(MHz)	Spec(MHz)
WCN	2930 / 3101	±25
	5000 / 6000	±35

9. Mechanical Layout and Dimensions

9.1 Antenna holder mechanical layout and dimensions



WCN



** RL spec presented in the table is only valid in INNOWAVE measurement condition. The measurement result can be different according to measurement conditions such as place, cable, tester and network analyzer etc. If the measurement condition is changed, make sure that reference frequency should be adjusted again by the provided reference antenna.