FCC EMC TEST REPORT

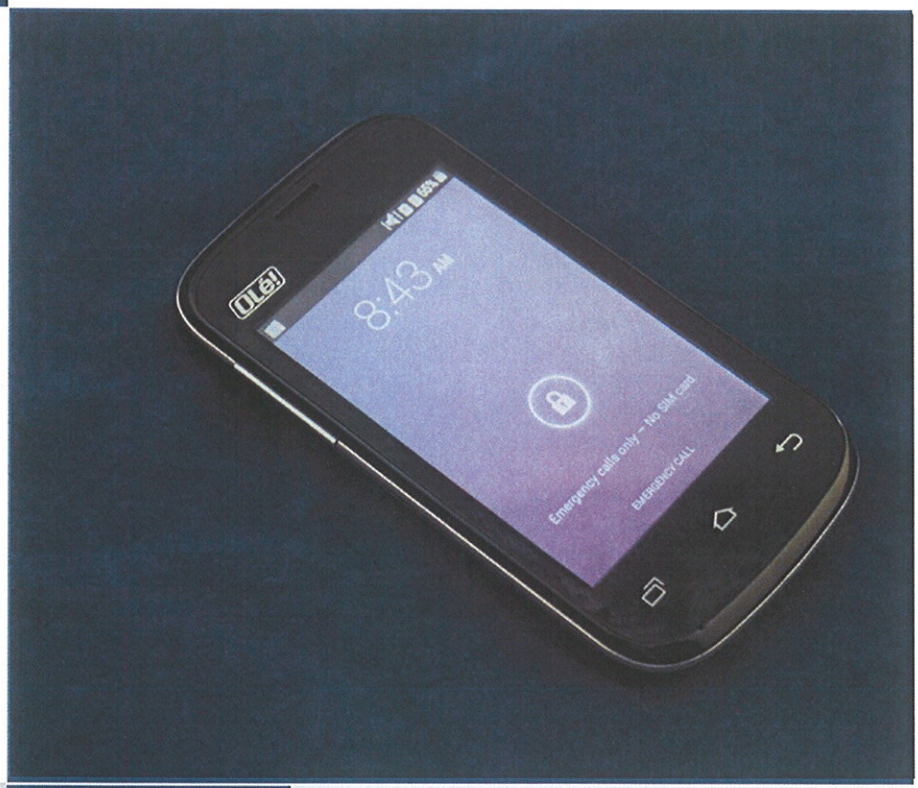
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Moblie Phone

ISSUED TO
ShenZhen Hipad Telecommunication Technology Co., LTD.

Room 502-503, Unit 3,Building C, Kexing Science Park, Keyuan Road, Hi-tech industrial Park, NanShan District, Shenzhen, GuangDong, China



Prepared by: Hongmei
Li Hongmei
(Reporting Specialist)
Date Oct. 8, 2014

Approved by:
Wei Yanquen
(Chief Engineer)
Date Oct 8, 2014

Report No.:	BL-SZ1490065-401
EUT Type:	Moblie Phone
Model Name:	MK5022, MK5022-CA, MK5022-MX
Brand Name:	N/A
Test Standard:	47 CFR Part 15 Subpart B
FCC ID:	2ABOU5022
Test conclusion:	PASS
Test Date:	Sep 4, 2014 ~ Sep 30, 2014
Date of Issue:	Oct 8, 2014

Block B, 1st FL,Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong, P. R. China 518055
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Revision History

Version	Issue Date	Revisions
Rev. 01	Oct 8, 2014	Initial Issue

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6683 3402
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), has demonstrated compliance with ISO/IEC Standard 17025:2005. The accreditation certificate number is TL-588. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Test Environment Condition

Ambient Temperature	15 to 35℃
Ambient Relative Humidity	30 to 60%
Ambient Pressure	86 to 106 kPa

1.4 Announce

(1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(2) The test report is invalid if there is any evidence and/or falsification.

(3) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(4) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	ShenZhen Hipad Telecommunication Technology Co., LTD.
Address	Room 502-503, Unit 3,Building C, Kexing Science Park, Keyuan Road, Hi-tech industrial Park, NanShan District, Shenzhen, GuangDong, China

2.2 Manufacturer

Manufacturer	ShenZhen Hipad Telecommunication Technology Co., LTD.
Address	Room 502-503, Unit 3,Building C, Kexing Science Park, Keyuan Road, Hi-tech industrial Park, NanShan District, Shenzhen, GuangDong, China

2.3 General Description for Equipment under Test (EUT)

EUT Type	Moblie Phone
The Under Test Model Name	MK5022
Series Model Name	MK5022, MK5022-CA, MK5022-MX
Description of Model name differentiation	The equipment model MK5022 and MK5022-CA, MK5022-MX are Mobile Phone, the electrical parameters and internal structure of circuit are same, only the model is different.
Hardware Version	WS4050_V1.2
Software Version	N/A
Network and Wireless connectivity	GSM, WCDMA
About the Product	The equipment is Mobile Phone, intended for used with information technology equipment.

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	KingerPower
	Model No	29.B0628000008
	Serial No	(N/A. marked #1 by test site)
	Capacitance	1100mAh
	Rated Voltage	3.7V
	Extreme Voltage	Low: 3.5V / High:4.2V
Ancillary Equipment 2	AC Adapter	
	Brand Name	AOHAI
	Model No	A75-500550-US
	Serial No	(N/A. marked #1 by test site)
	Rated Input	~ 100-240V, 150mA, 50/60Hz, 36W
	Rated Output	⎓ 5V, 550mA, 2.75W
Ancillary Equipment 3	Earphone	
Ancillary Equipment 4	USB Cable	

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-09 Edition)	Unintentional Radiators
2	ANSI C63.4-2009	American National Standard for Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

3.2 Verdict

No.	Description	FCC Rule	Test Verdict	Result
1	Radiated Emission	15.109	PASS	Annex A .1
2	Conducted Emission, AC Ports	15.107	PASS	Annex A .2

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions (9KHz-30MHz)	1.12 dB
Radiated emissions (30MHz-1GHz)	2.11 dB
Radiated emissions (1GHz-18GHz)	3.31 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

Environment Parameter	Selected Values During Tests		
	Temperature	Voltage	Relative Humidity
Normal Temperature, Normal Voltage (NTNV)	23°C~25°C	AC 110V/60Hz	50%-55%

4.2 Test Equipment List

Radiated Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2014.07.07	2015.07.06	☒
Test Antenna-Loop(9kHz-30MHz)	SCHWARZBECK	FMZB 1519	1519-037	2013.07.02	2015.07.01	☒
Test Antenna-Bi-Log(30MHz -3GHz)	SCHWARZBECK	VULB 9163	9163-624	2013.07.03	2015.07.02	☒
Test Antenna-Horn(1-18GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2013.07.02	2015.07.01	☒
Test Antenna-Horn(15-26.5GHz)	SCHWARZBECK	BBHA 9170	9170-305	2013.07.02	2015.07.01	☐
Anechoic Chamber	RAINFORD	9m*6m*6 m	N/A	2014.10.07	2015.10.06	☒

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2014.07.07	2015.07.06	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2014.07.07	2015.07.06	☒
AMN	SCHWARZBECK	NNBM8124	8124-509	2014.07.07	2015.07.06	☐
AMN	SCHWARZBECK	NNBM8124	8124-510	2014.07.07	2015.07.06	☐
ISN	TESEQ	ISN T800	34449	2014.07.07	2015.07.06	☐

4.3 Test Enclosure list

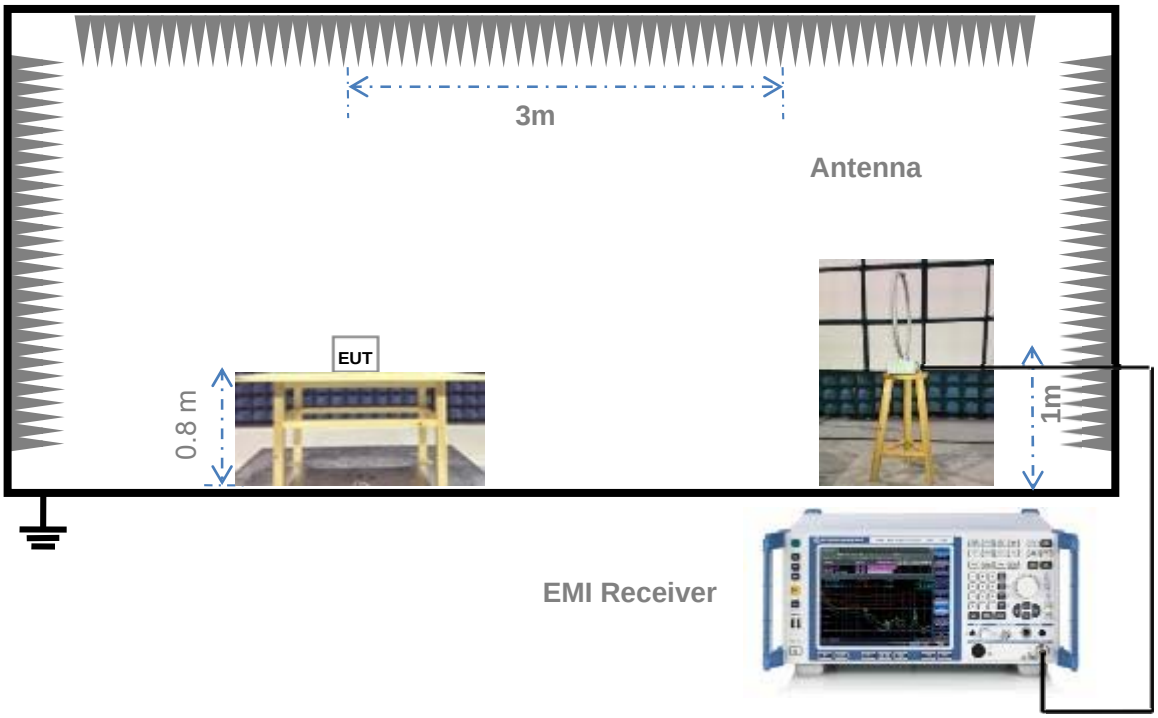
Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	N/A	N/A	N/A	N/A	Special Handled	☐
Printer	HP	DESKJET 1000	N/A	N/A	N/A	☐
Keyboard	logitech	Y-BP62a	N/A	N/A	N/A	☐
Mouse	logitech	M100	N/A	N/A	N/A	☐
USB disk	Kingston	N/A	N/A	N/A	N/A	☐
TF Card	Kingston	N/A	N/A	N/A	N/A	☐
VGA Cable	N/A	N/A	N/A	1.5m	Shielded with core	☐
HDMI Cable	N/A	N/A	N/A	1.5m	Shielded with core	☐
DVI Cable	N/A	N/A	N/A	1.5m	Shielded with core	☐
Coaxial video cable	N/A	N/A	N/A	2m	Shielded with core	☐
Phone	BBK	HCD007TSD	N/A	N/A	N/A	☐
laptop	LENOVO	K29	N/A	N/A	N/A	☒

4.4 Test Configurations

Test Configurations (TC) No.	Description
TC01	The USB Test mode The EUT configuration of the emission tests is EUT + USB cable + laptop + earphone. During the measurement, the EUT is connected with a laptop via a USB cable supplied by applicant, the data is transmitting between the PC and the EUT.
TC02	The Camera Test mode The EUT configuration of the emission tests is EUT + laptop + Charger + earphone. During the measurement, the EUT working by the way of Camera.

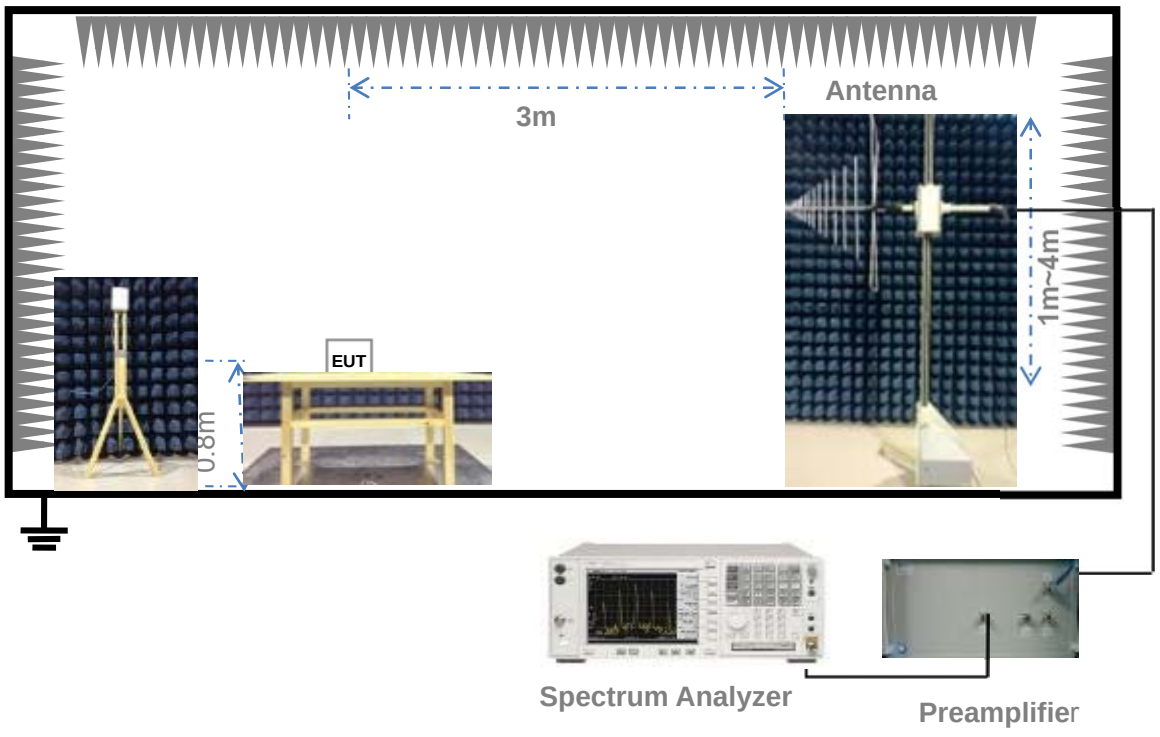
4.5 Test Setups

Test Setup 1



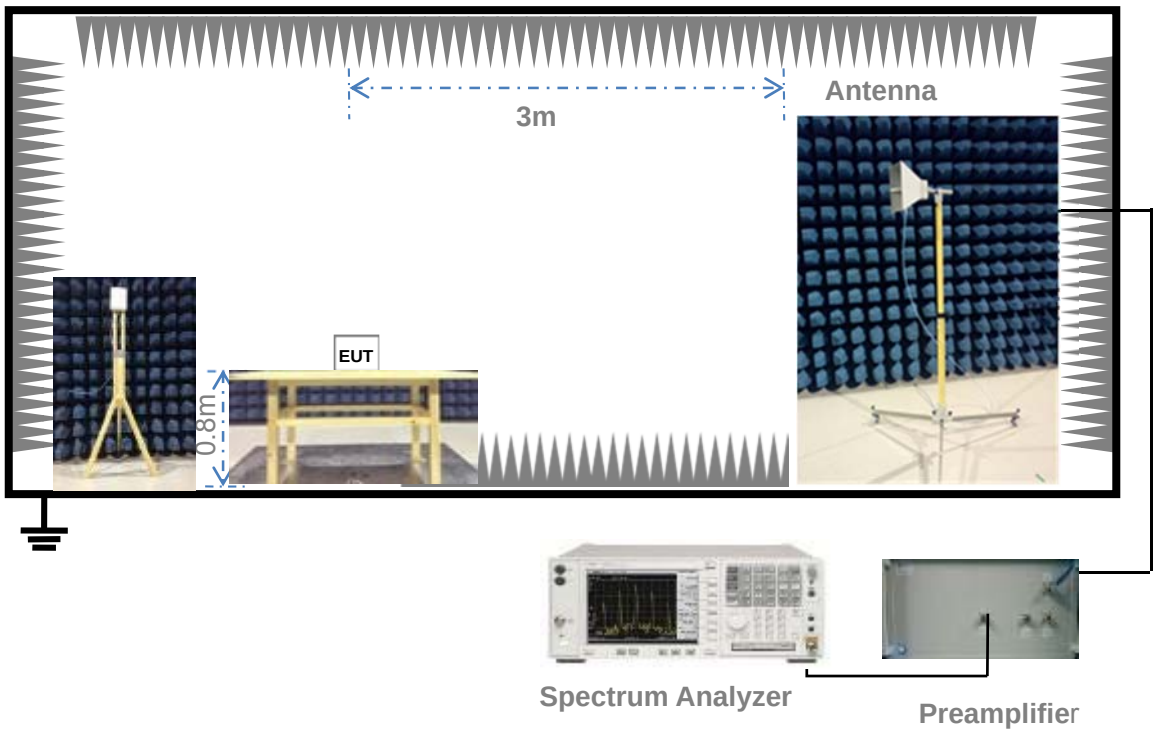
For Radiated Emission Test (Below 30MHz))

Test Setup 2



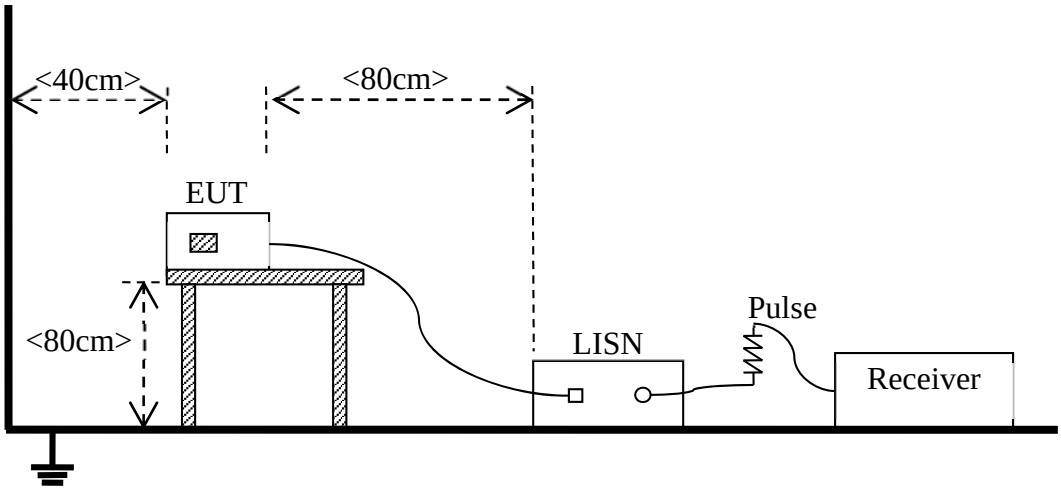
(For Radiated Emission Test (30MHz-1GHz))

Test Setup 3



(For Radiated Emission Test (above 1GHz))

Test Setup 4



(For Conducted Emission, AC Ports Test)

4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1&3
	Test Configuration	TC01~TC03 Note
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 4
	Test Configuration	TC01~TC03 Note

Note: Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report.

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated Emission

5.1.1.1 Limit

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

NOTE:

1) Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].
2) In the emission tables above, the tighter limit applies at the band edges.
3) For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

5.1.1.2 Test Procedure

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

An initial pre-scan was performed in the chamber using the EMI Receiver in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bi-Log antenna with 2 orthogonal polarities.

5.1.2 Conducted Emission

5.1.2.1 Test Limit

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

1) The limit is applicable to Class B ITE.
2) The lower limit shall apply at the band edges.
3) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

5.1.2.2 Test Procedure

The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The test frequency range is from 150kHz to 30MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.

ANNEX A TEST RESULTS

A.1 Radiated Emission

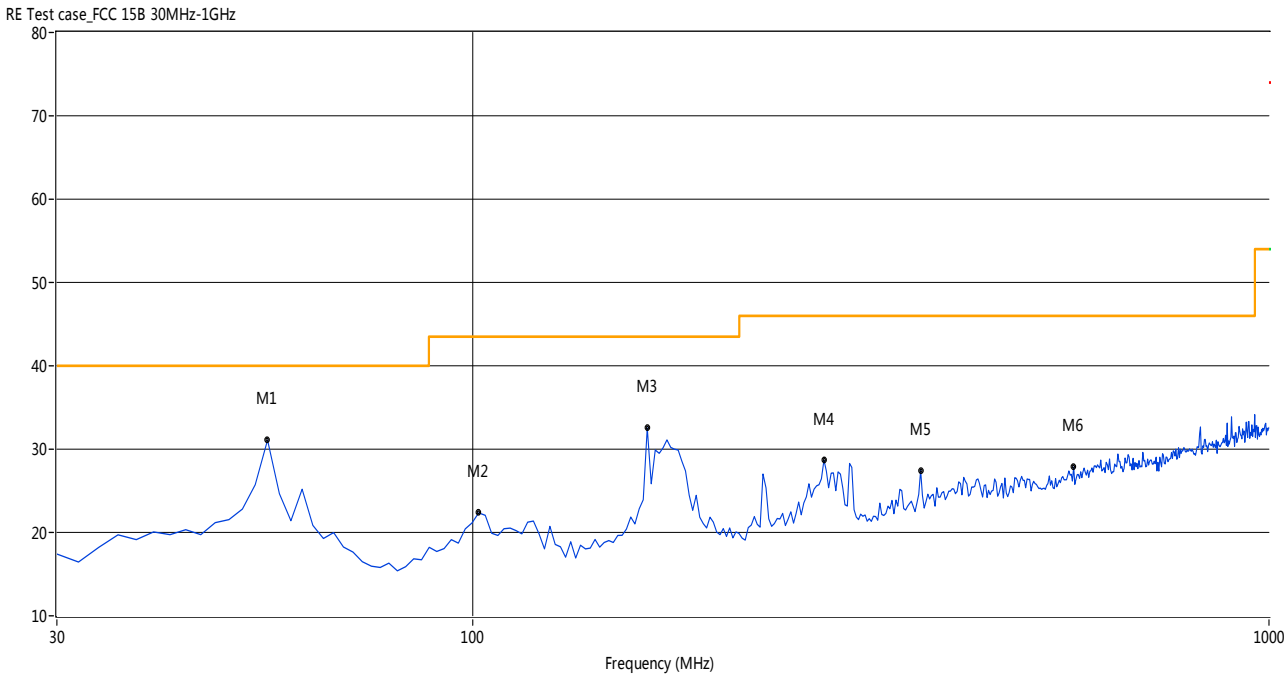
Note 1: The symbol of "--" in the table which means not application.

Note 2: For the test data above 1GHz，According the ANSI C63.4-2009, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Test Data and Plots

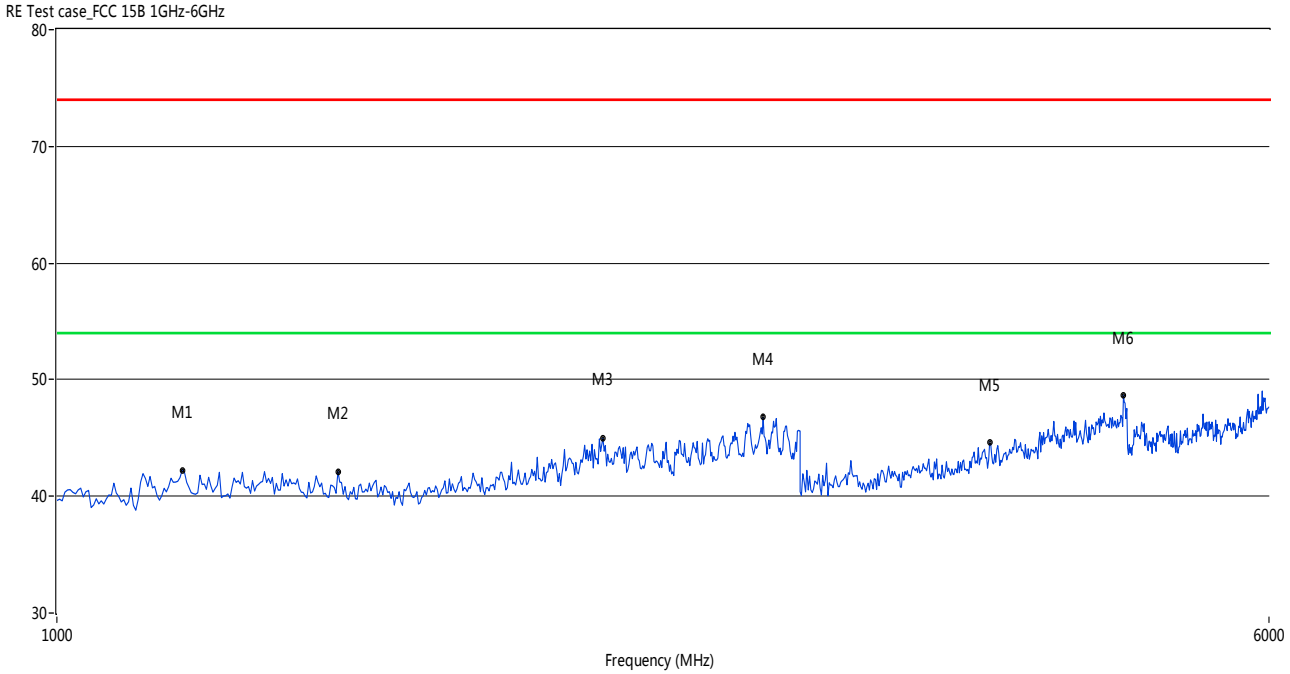
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

A.1.1 Test Antenna Vertical, 30MHz – 1GHz



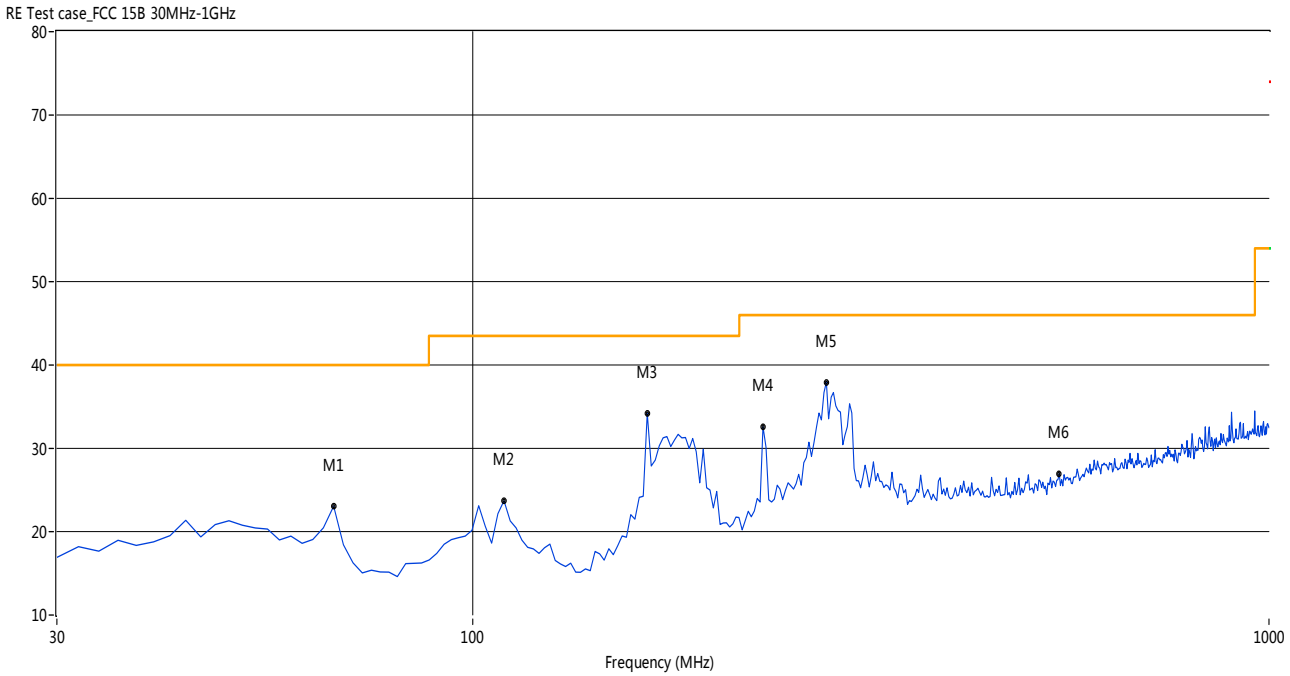
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
55.17	--	31.08	--	-18.41	--	40.0	--	8.92	287.50	100	Vertical	PASS
101.64	--	22.35	--	-19.57	--	43.5	--	21.15	273.00	100	Vertical	PASS
165.53	--	32.54	--	-22.21	--	43.5	--	10.96	306.00	100	Vertical	PASS
275.89	--	28.68	--	-17.80	--	46.0	--	17.32	62.90	100	Vertical	PASS
364.95	--	27.44	--	-15.44	--	46.0	--	18.56	3.50	100	Vertical	PASS
568.24	--	27.85	--	-10.91	--	46.0	--	18.15	0.50	100	Vertical	PASS

A.1.2 Test Antenna Vertical, 1GHz – 6GHz



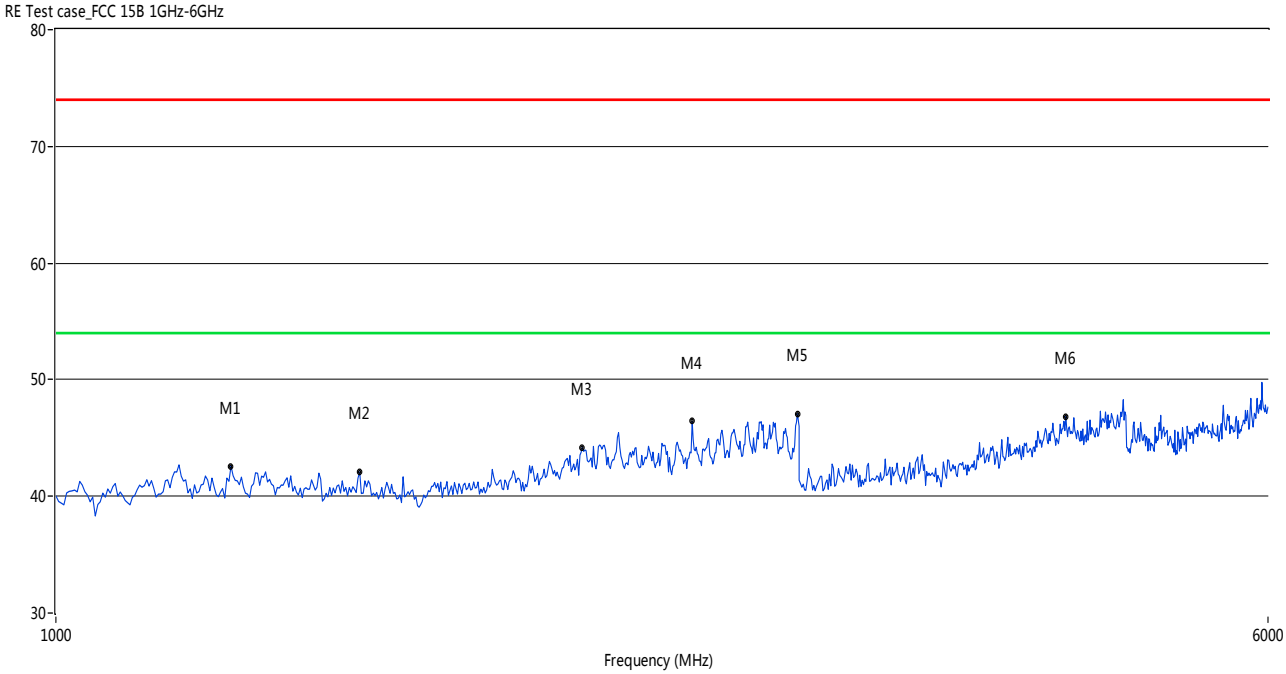
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1203.59	42.26	--	--	-4.07	74.0	--	54.0	11.74	96.10	100	Vertical	PASS
1514.97	42.13	--	--	-4.40	74.0	--	54.0	11.87	28.50	100	Vertical	PASS
2241.52	45.01	--	--	-0.56	74.0	--	54.0	8.99	146.40	100	Vertical	PASS
2840.32	46.78	--	--	2.00	74.0	--	54.0	7.22	219.10	100	Vertical	PASS
3970.06	44.59	--	--	10.01	74.0	--	54.0	9.41	169.70	100	Vertical	PASS
4838.32	48.64	--	--	13.06	74.0	--	54.0	5.36	160.80	100	Vertical	PASS

A.1.3 Test Antenna Horizontal, 30MHz – 1GHz



Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
66.79	--	23.06	--	-20.70	--	40.0	--	16.94	276.10	100	Horizontal	PASS
109.38	--	23.72	--	-19.57	--	43.5	--	19.78	215.70	100	Horizontal	PASS
165.53	--	34.23	--	-22.21	--	43.5	--	9.27	34.10	100	Horizontal	PASS
231.36	--	32.59	--	-19.02	--	46.0	--	13.41	358.90	100	Horizontal	PASS
277.82	--	37.93	--	-17.79	--	46.0	--	8.07	-0.00	100	Horizontal	PASS
545.01	--	26.96	--	-11.62	--	46.0	--	19.04	0.80	100	Horizontal	PASS

A.1.4 Test Antenna Horizontal, 1GHz – 6GHz

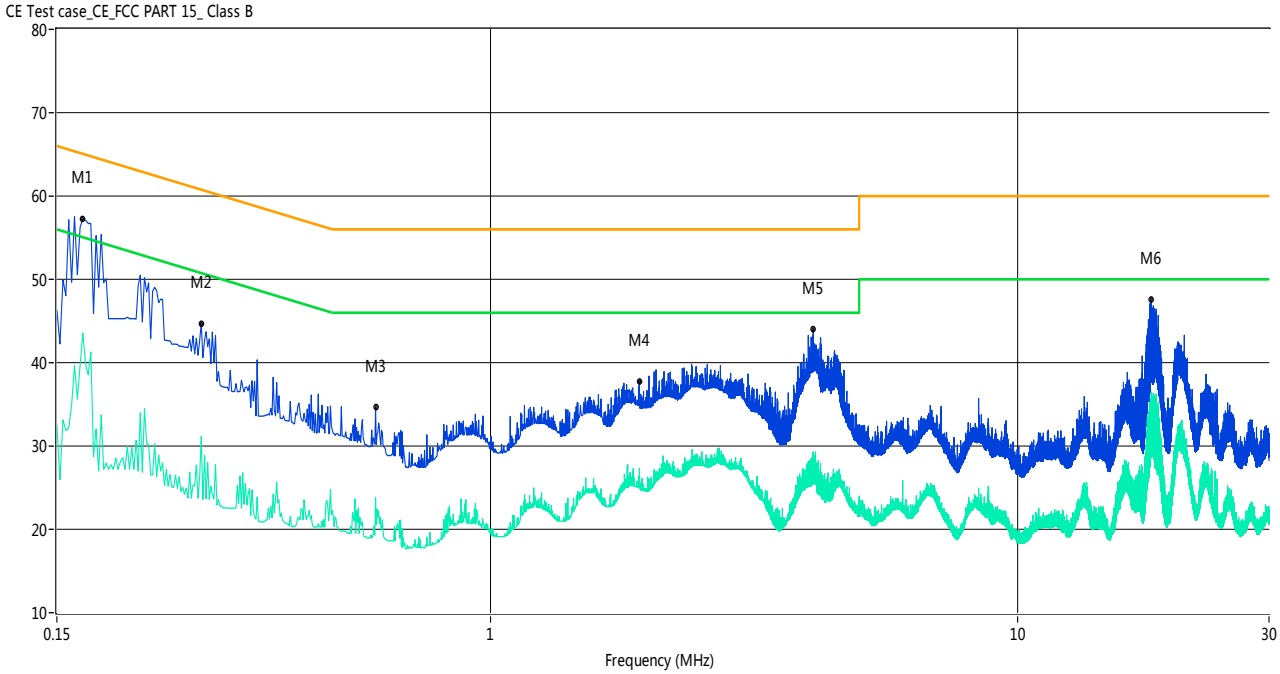


Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1295.41	42.59	--	--	-4.21	74.0	--	54.0	11.41	172.90	100	Horizontal	PASS
1566.87	42.10	--	--	-4.43	74.0	--	54.0	11.90	66.70	100	Horizontal	PASS
2177.64	44.22	--	--	-0.76	74.0	--	54.0	9.78	184.00	100	Horizontal	PASS
2560.88	46.43	--	--	-0.36	74.0	--	54.0	7.57	284.90	100	Horizontal	PASS
2992.02	47.09	--	--	2.25	74.0	--	54.0	6.91	358.40	100	Horizontal	PASS
4449.10	46.85	--	--	10.79	74.0	--	54.0	7.15	358.80	100	Horizontal	PASS

A.2 Conducted Emission

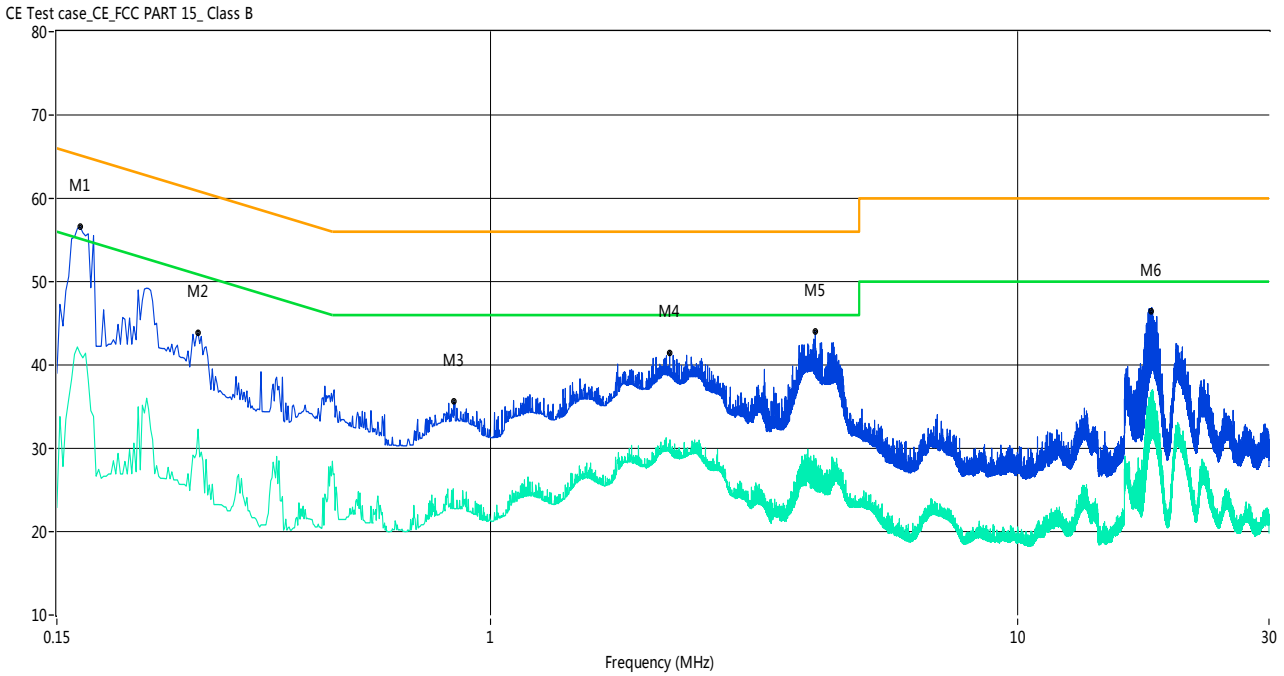
Test Data and Plots

A.2.1 L Phase



Frequency (MHz)	Peak (dBm)	Q-peak (dBuV)	Average (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.17	57.3	--	43.6	10.00	65.5	55.5	11.90	L Line	PASS
0.28	44.7	--	31.2	10.00	62.2	52.2	21.00	L Line	PASS
0.60	34.6	--	23.8	10.00	56.0	46.0	22.20	L Line	PASS
1.91	37.8	--	27.3	10.00	56.0	46.0	18.70	L Line	PASS
4.09	44.0	--	27.2	10.00	56.0	46.0	18.80	L Line	PASS
17.93	47.5	--	36.5	10.00	60.0	50.0	13.50	L Line	PASS

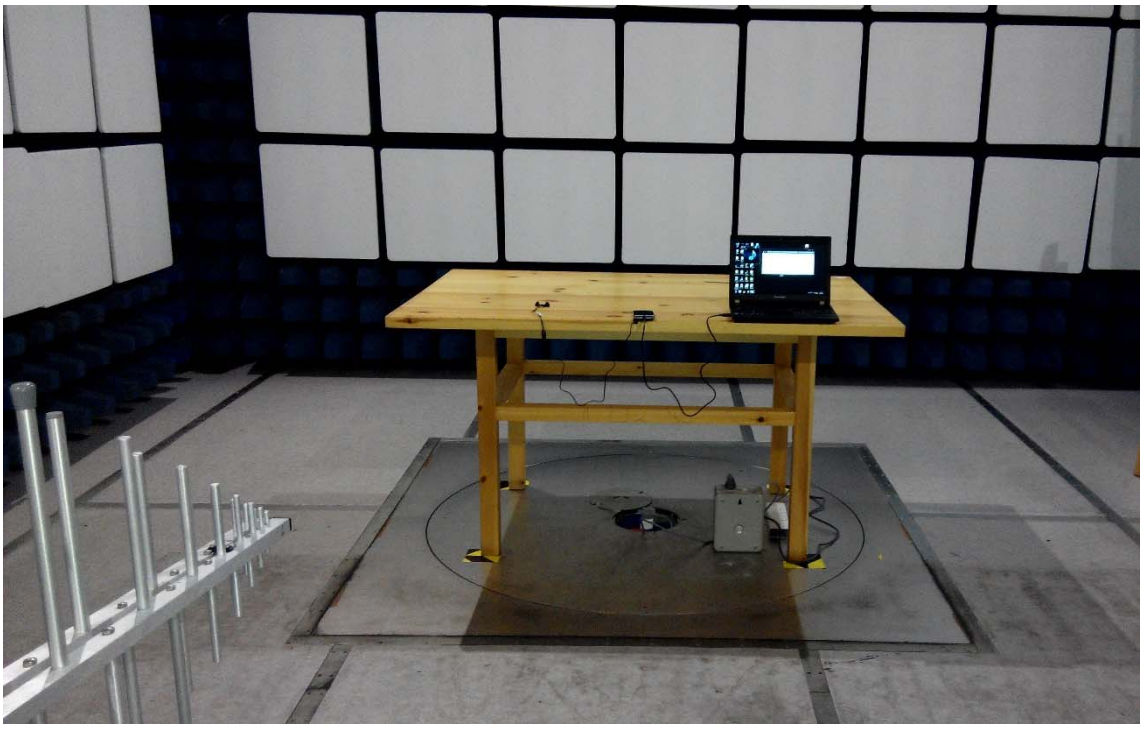
A.2.2 N Phase



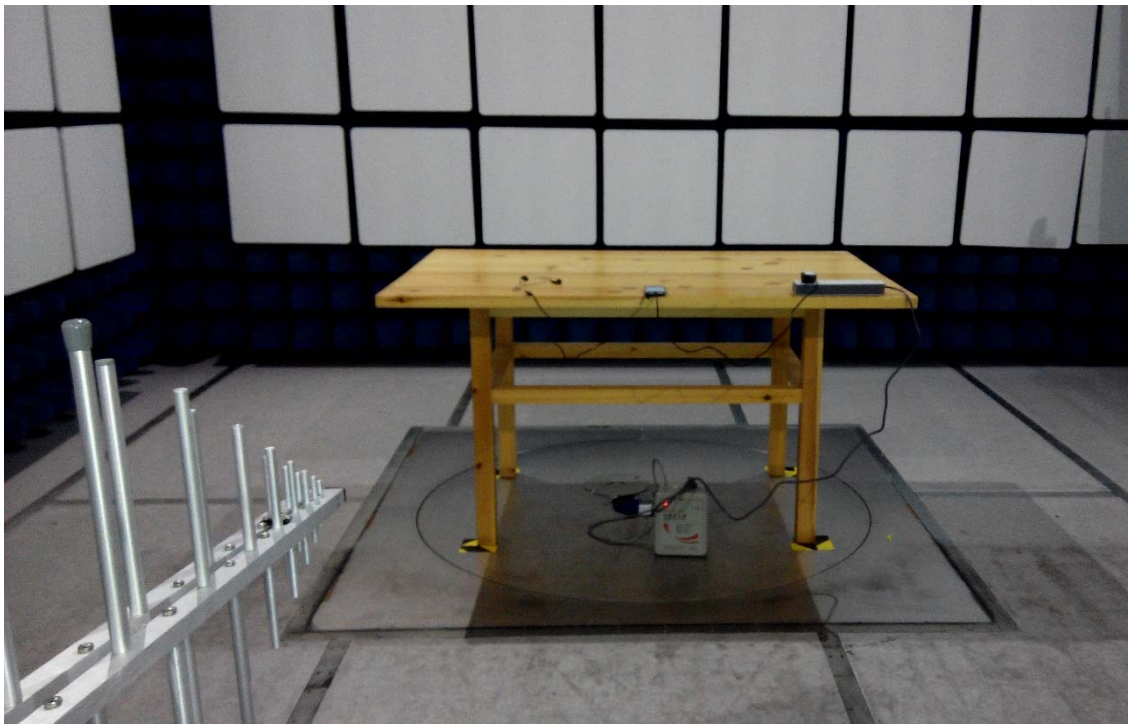
Frequency (MHz)	Peak (dBm)	Q-peak (dBuV)	Average (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.17	56.6	--	41.4	10.00	65.5	55.5	14.10	N Line	PASS
0.28	43.8	--	32.3	10.00	62.3	52.3	20.00	N Line	PASS
0.85	35.6	--	22.9	10.00	56.0	46.0	23.10	N Line	PASS
2.18	41.5	--	31.0	10.00	56.0	46.0	15.00	N Line	PASS
4.13	44.1	--	28.5	10.00	56.0	46.0	17.50	N Line	PASS
17.89	46.4	--	35.4	10.00	60.0	50.0	14.60	N Line	PASS

ANNEX B TEST SETUP PHOTOS

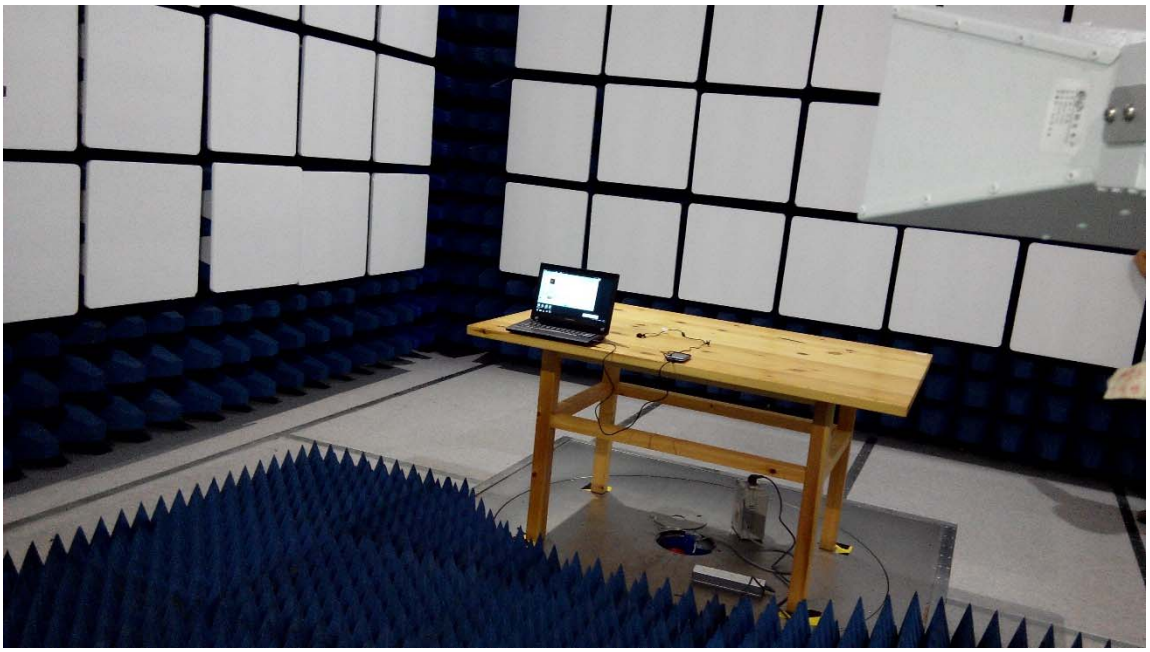
B.1 Radiated Field Strength Measurement



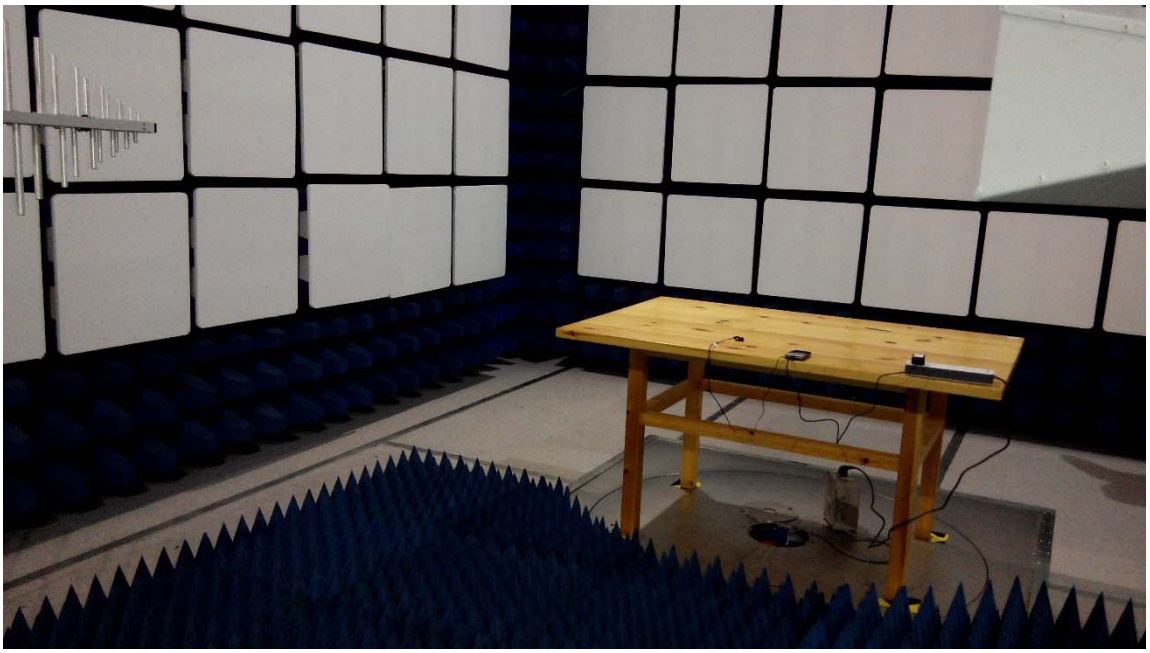
30MHz-1GHz (USB MODE)



30MHz-1GHz (CAMERA MODE)

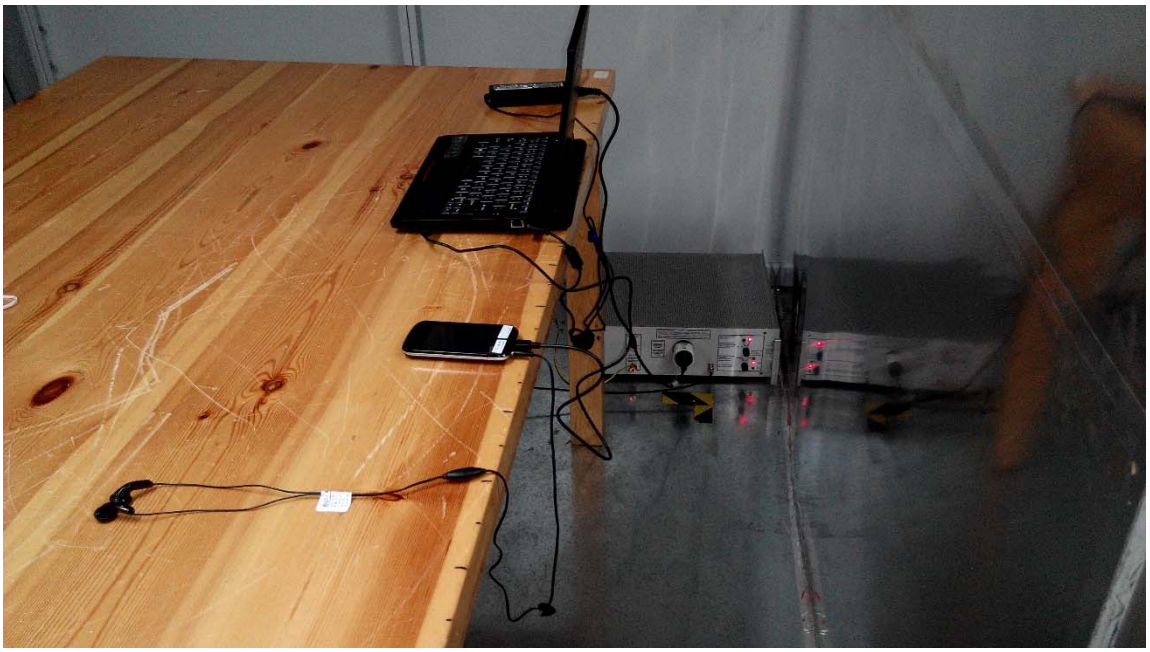


1GHz-6GHz (USB MODE)

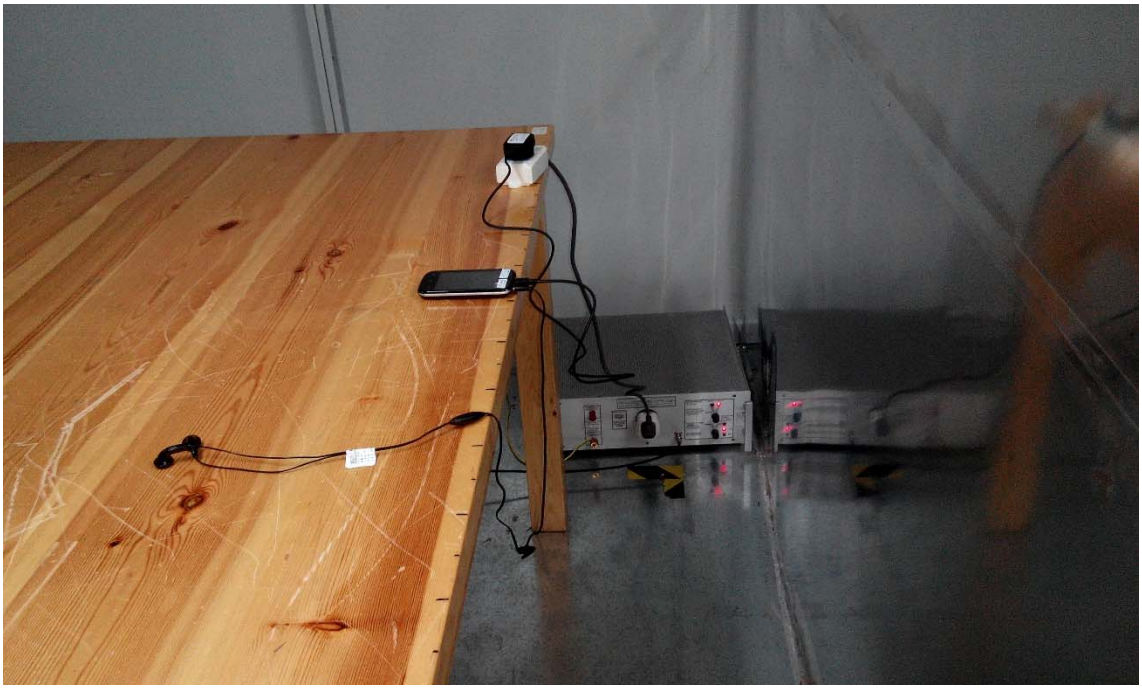


1GHz-6GHz (CAMERA MODE)

B.2 Conducted Emission



USB MODE



CAMERA MODE

ANNEX C EUT PHOTOS

C.1 Appearance of the EUT

THE FRONT OF EUT

THE BACK OF EUT

THE LEFT OF EUT

THE RIGHT OF EUT

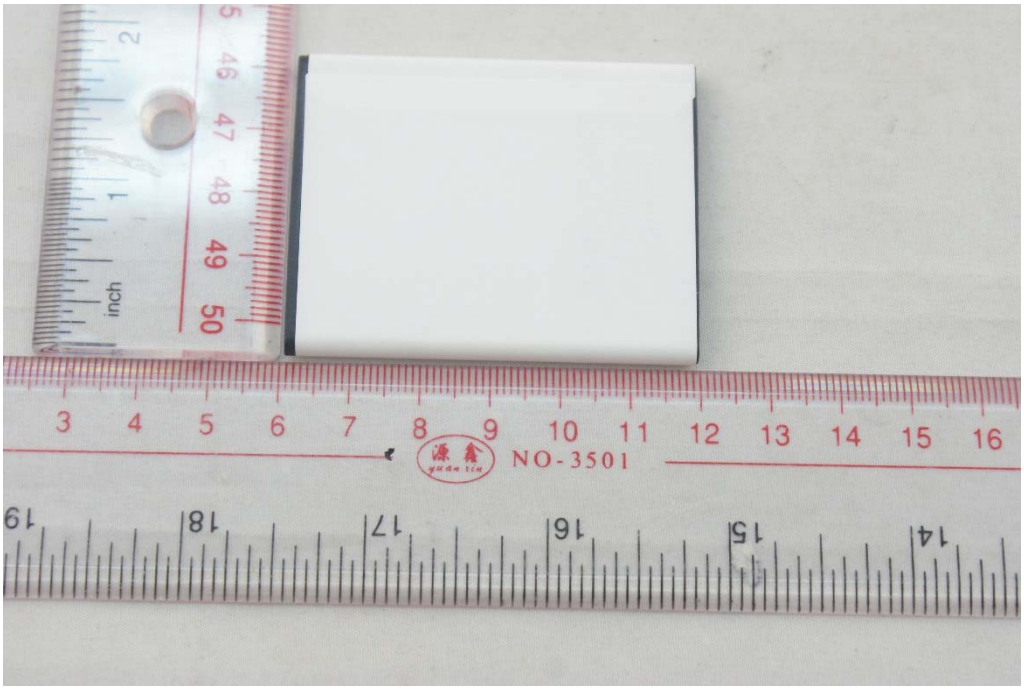
THE UP OF EUT

THE DOWN OF EUT

CHARGER

DATA CABLE

HEADPHONE CABLE

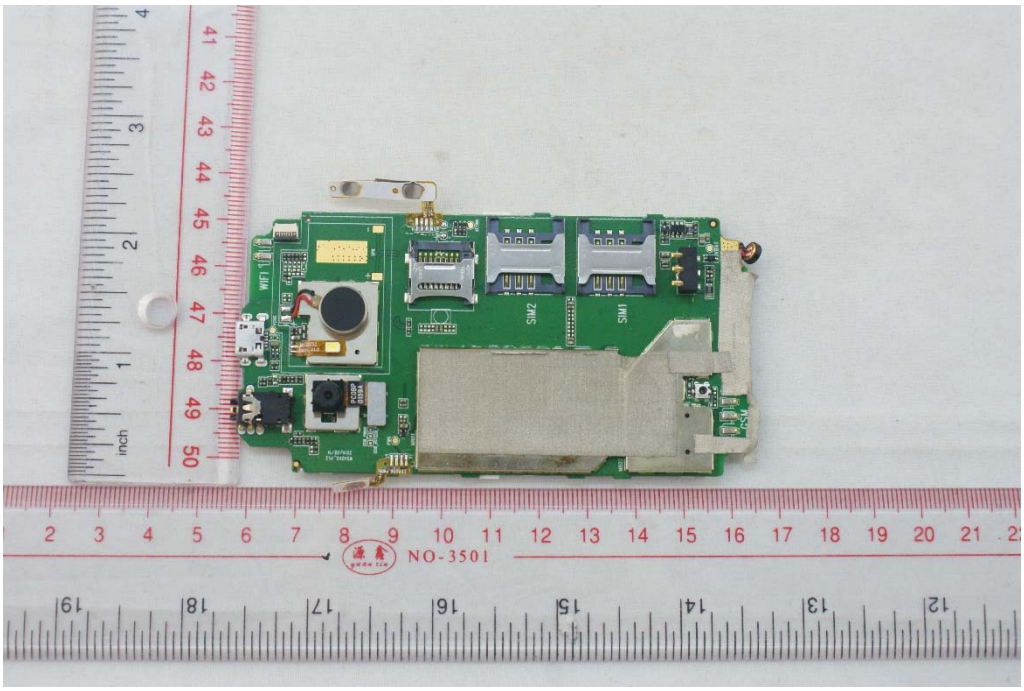


CHARGER

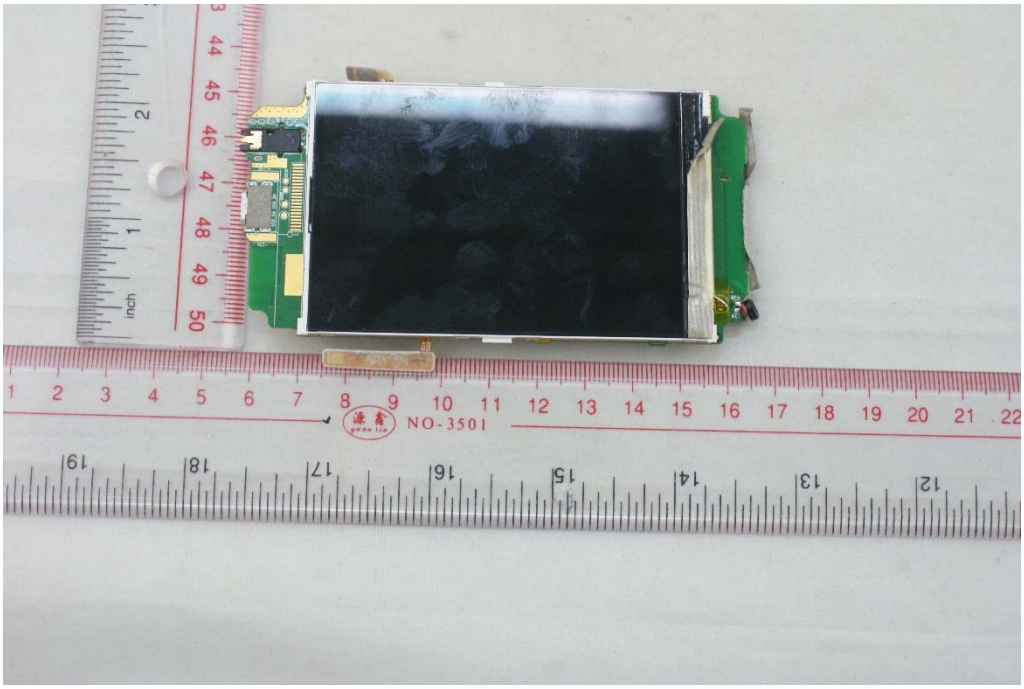
C.2 Inside of the EUT

EUT UNCOVER VIEW 1

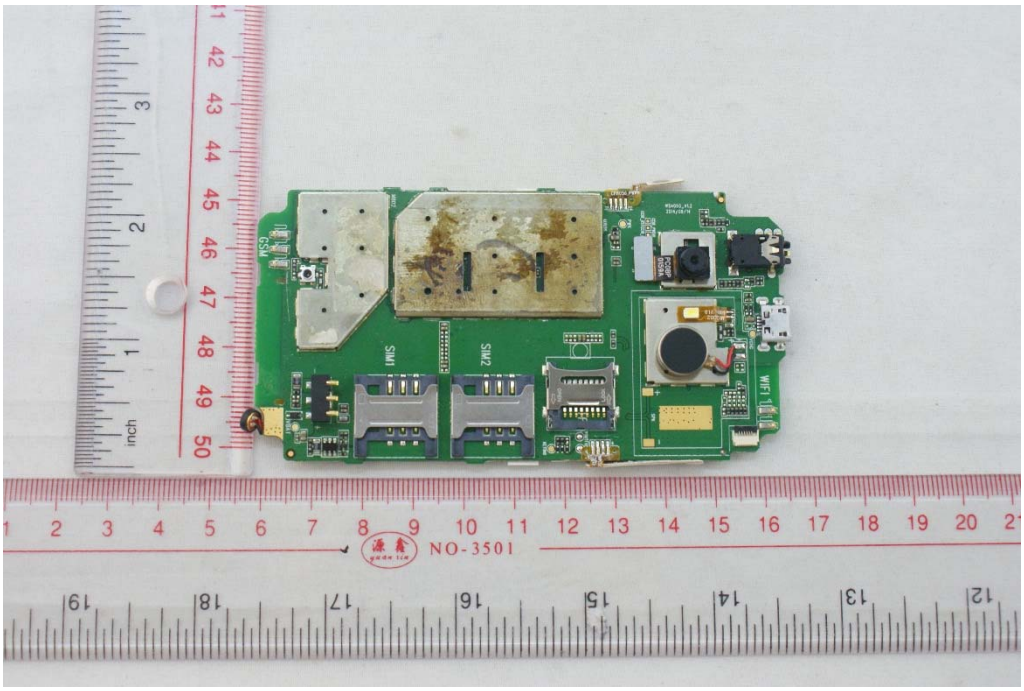
EUT UNCOVER VIEW 2



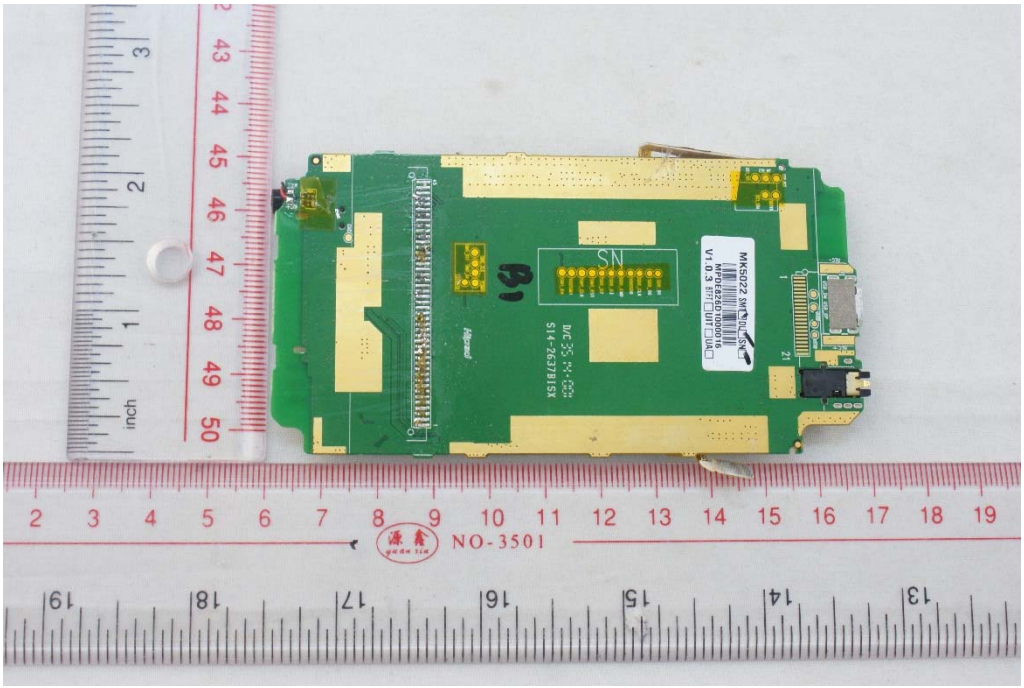
MAIN BOARD TOP VIEW 1



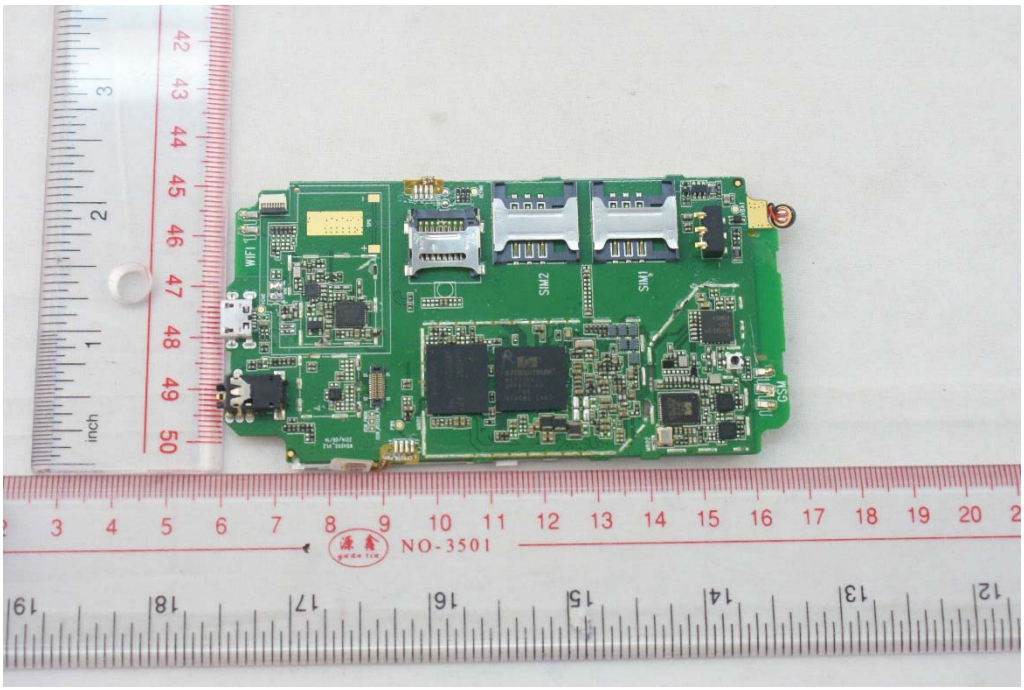
MAIN BOARD BACK VIEW 1



MAIN BOARD TOP VIEW 2



MAIN BOARD BACK VIEW 2



MAIN BOARD TOP VIEW 3

--END OF REPORT--