FCC EMC TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

WCDMA digital mobile phone

ISSUED TO
Power Idea Technology Limited.

4th Floor, A Section , Languang Science & technology Xinxi RD, Hi-Tech Industrial Park North, Nanshan, ShenZhen, China.

Prepared by: Cao Shaodong
(Reporting Specialist)
Date 2014.5.24

Approved by: Wei Yanyuan
(Chief Engineer)
Date 2014.5.24

Report No.:	BL-SZ1440063-401
EUT Type:	WCDMA digital mobile phone
Model Name:	RG700, RG970, APEX PRO
Brand Name:	N/A
Test Standard:	47 CFR Part 15 Subpart B
FCC ID:	ZLE-RG700RG970
Test conclusion:	PASS
Test Date:	May 4, 2014 ~ May 20, 2014
Date of Issue:	May 24, 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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www.baluntek.com

Revision History

Version	Issue Date	Revisions
Rev. 01	May 24,2014	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 106kPa

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	Power Idea Technology Limited.
Address	4th Floor, A Section , Languang Science & technology Xinxi RD, Hi-Tech Industrial Park North, Nanshan, ShenZhen, China.

2.2 Manufacturer

Manufacturer	Power Idea Technology Limited.
Address	4th Floor, A Section , Languang Science & technology Xinxi RD, Hi-Tech Industrial Park North, Nanshan, ShenZhen, China.

2.3 General Description for Equipment under Test (EUT)

EUT Type	WCDMA digital mobile phone
Model Name	RG700
Series Model Name	RG700, RG970, APEX PRO
Description of Model name differentiation	The equipment model RG700, RG970 and APEX PRO are WCDMA digital mobile phone, the electrical parameters and internal structure of circuit are same, only the model is different.
Hardware Version	P2
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 Technical Information

Frequency Bands	GSM 850/1900, WCDMA 850
Modulation Type	GSM: GMSK GPRS: GMSK EGPRS: 8PSK WCDMA: QPSK

Note: The above EUT information in section 2.3 and 2.4 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	Ruide
	Model No	HD506083PL
	Serial No	(N/A. marked #1 by test site)
	Capacitance	3000mAh
	Rated Voltage	3.7V
	Extreme Voltage	Low: 3.5V / High:4.2V
Ancillary Equipment 2	AC Adapter (Charger for Battery)	
	Brand Name	Ruide
	Model No	71822258R
	Serial No	(N/A. marked #1 by test site)
	Rated Input	~ 100-240V, 200mA, 50/60Hz
	Rated Output	⎓ 5V, 1000mA
Ancillary Equipment 3	Stereo Headset	
Ancillary Equipment 4	USB Data 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)	1.12dB
Radiated emissions (30MHz-1GHz)	2.11dB
Radiated emissions (1GHz-18GHz)	3.31dB

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	2014.06.04	2015.06.03	☒
Test Antenna-Loop(9kHz-30MHz)	SCHWARZBECK	FMZB 1519	1519-037	2013.07.02	2014.07.01	☒
Test Antenna-Bi-Log(30MHz-3GHz)	SCHWARZBECK	VULB 9163	9163-624	2013.07.03	2014.07.02	☒
Test Antenna-Horn(1-18GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2013.07.02	2014.07.01	☒
Test Antenna-Horn(15-26.5GHz)	SCHWARZBECK	BBHA 9170	9170-305	2013.07.02	2014.07.01	☐
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2013.10.07	2014.10.06	☒

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2014.06.04	2015.06.03	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2014.06.04	2015.06.03	☒
AMN	SCHWARZBECK	NNBM8124	8124-509	2013.06.29	2014.06.28	☐
AMN	SCHWARZBECK	NNBM8124	8124-510	2013.06.29	2014.06.28	☐
ISN	TESEQ	ISN T800	34449	2013.06.29	2014.06.28	☐

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	☐

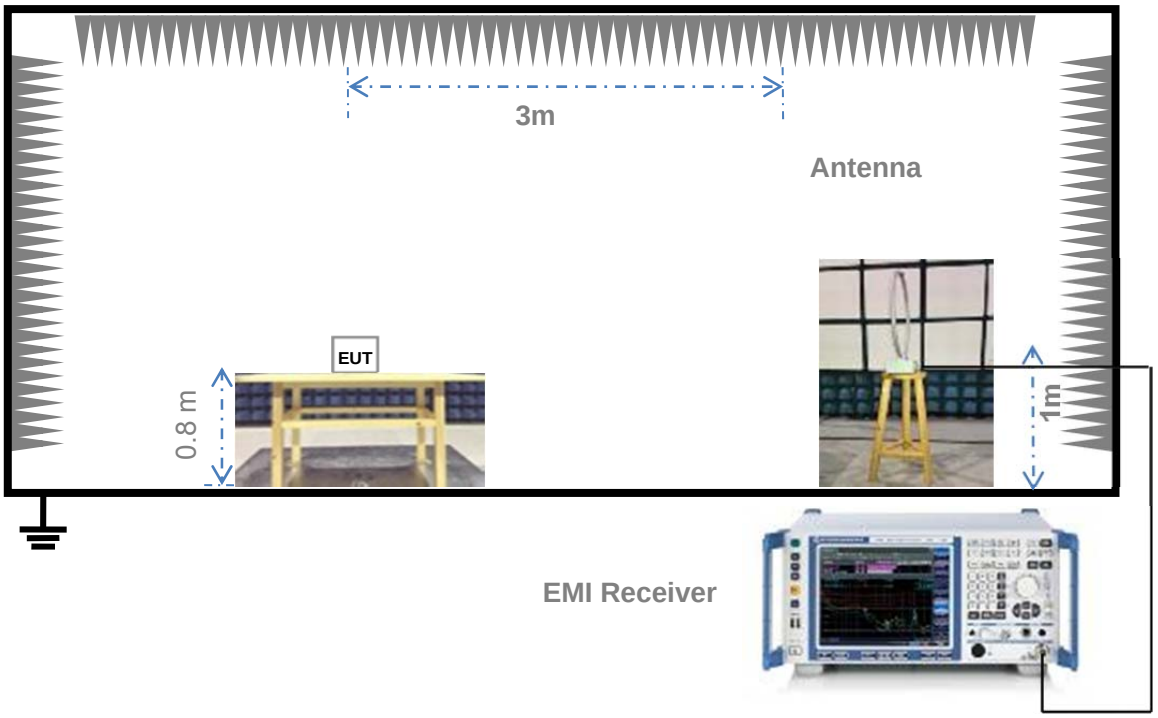
4.4 Test Configurations

Test Configurations (TC) No.	Description
TC01	The USB Test mode The EUT configuration of the emission tests is TransFlash Card + EUT + Battery + PC. In this test mode, the EUT with a TransFlash Card embedded is connected with a PC via a USB cable supplied by applicant. During the measurement, the data is transmitting between the PC and the TransFlash Card of the EUT.
TC02	The Camera test mode The EUT configuration of the emission tests is EUT + Battery + Charger. The EUT supports Camera function. During the measurement, the EUT working by way of the Camera.
TC03	The FM test mode The EUT configuration of the emission tests is EUT + Battery + Charger. During the test, the FM function was active.

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.

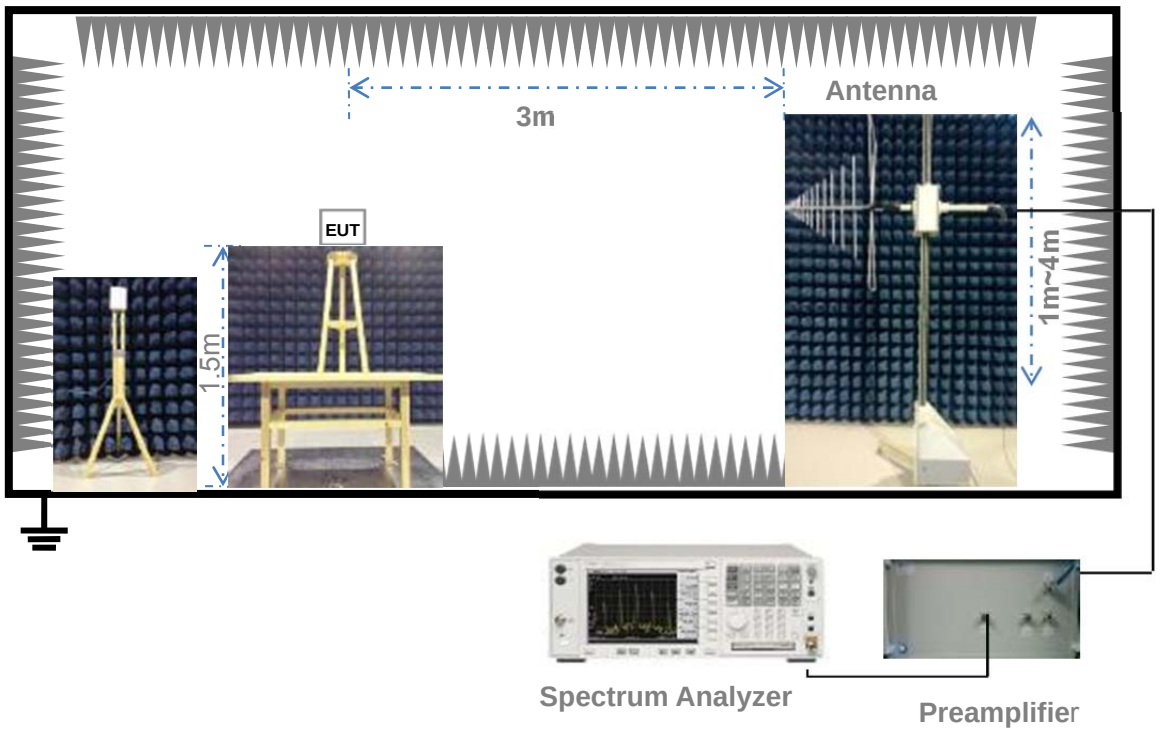
4.5 Test Setups

Test Setup 1



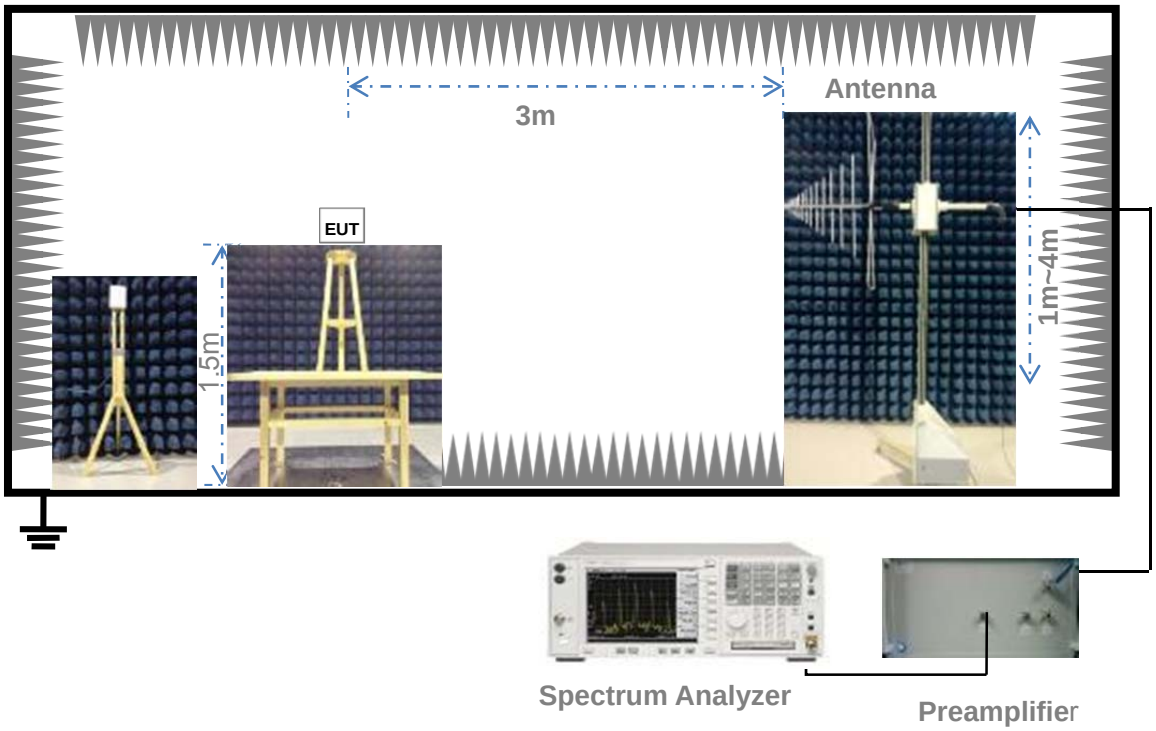
For Radiated Emission Test (Below 30MHz))

Test Setup 2



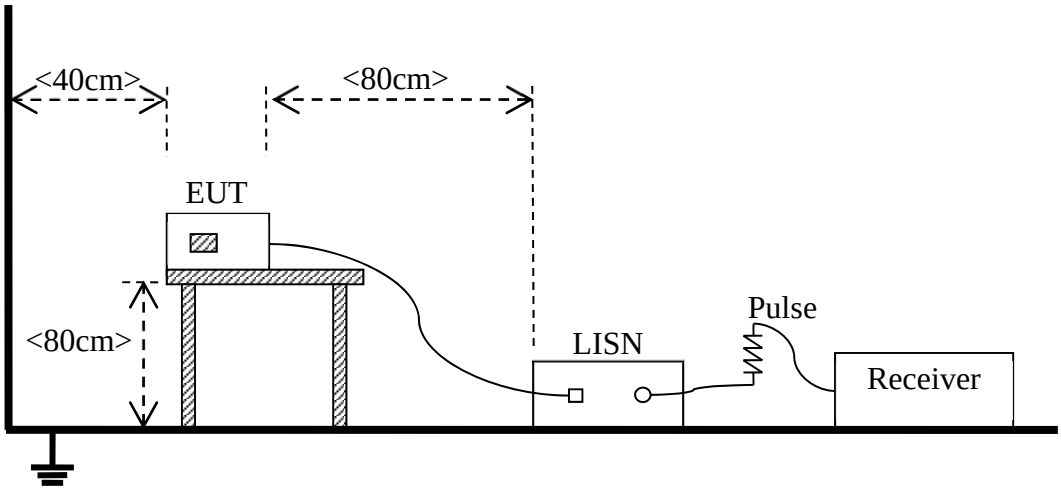
(For Radiated Emission Test (30MHz-1GHz))

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
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 4
	Test Configuration	TC01~TC03

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

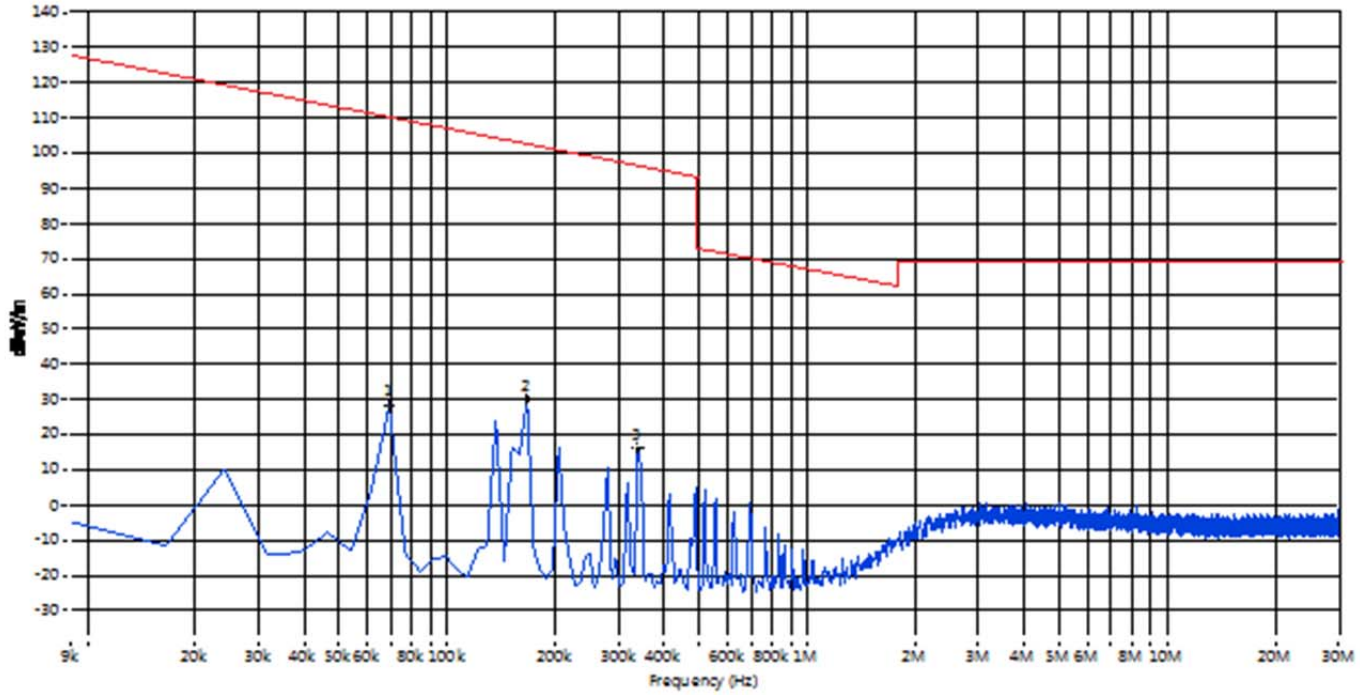
A.1 Radiated Emission

Test Data

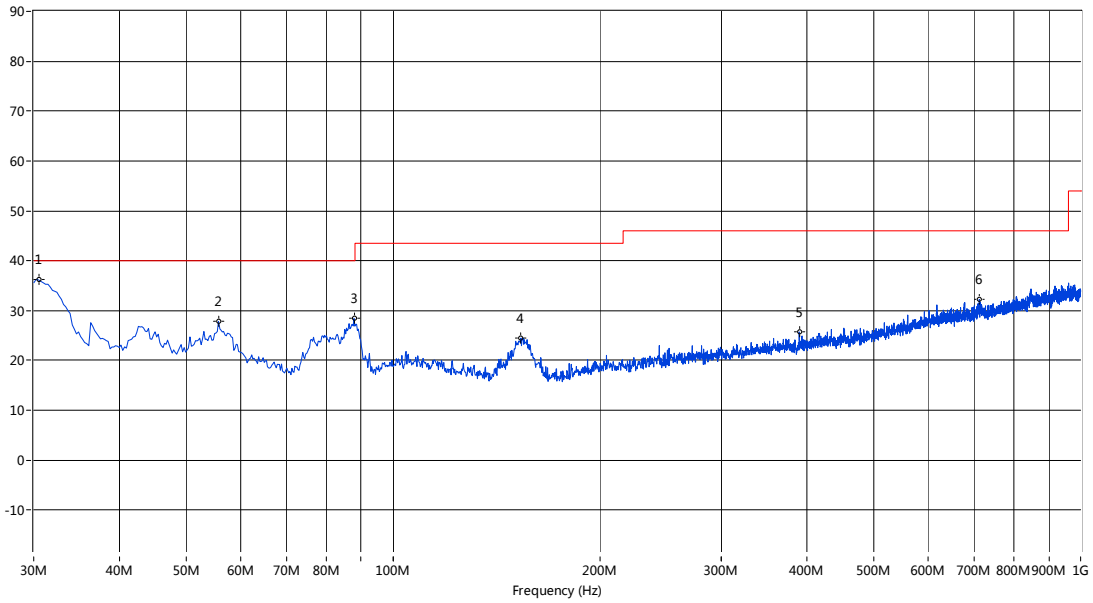
NO.	Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
1	0.069	28.18	--	--	--	110.8	--	N/A	PASS
2	0.166	29.91	--	--	--	103.2	--	N/A	PASS
3	0.339	16.03	--	--	--	97.0	--	N/A	PASS
4	30.485	36.16	--	--	--	40.0	--	Vertical	PASS
5	55.699	27.80	--	--	--	40.0	--	Vertical	PASS
6	87.701	28.40	--	--	--	40.0	--	Vertical	PASS
7	153.402	24.50	--	--	--	43.5	--	Vertical	PASS
8	389.538	25.72	--	--	--	46.0	--	Vertical	PASS
9	712.224	32.26	--	--	--	46.0	--	Vertical	PASS
10	1465.884	41.68	--	--	74.0	--	54.0	Vertical	PASS
11	1796.301	41.08	--	--	74.0	--	54.0	Vertical	PASS
12	2627.593	45.68	--	--	74.0	--	54.0	Vertical	PASS
13	3938.765	45.67	--	--	74.0	--	54.0	Vertical	PASS
14	4968.258	47.26	--	--	74.0	--	54.0	Vertical	PASS
15	5947.513	49.01	--	--	74.0	--	54.0	Vertical	PASS
16	34.849	30.95	--	--	--	40.0	--	Horizontal	PASS
17	54.244	26.39	--	--	--	40.0	--	Horizontal	PASS
18	85.761	22.16	--	--	--	40.0	--	Horizontal	PASS
19	154.371	26.95	--	--	--	43.5	--	Horizontal	PASS
20	494.999	28.41	--	--	--	46.0	--	Horizontal	PASS
21	845.081	35.23	--	--	--	46.0	--	Horizontal	PASS
22	1333.917	40.82	--	--	74.0	--	54.0	Horizontal	PASS
23	2342.164	44.04	--	--	74.0	--	54.0	Horizontal	PASS
24	2753.062	45.86	--	--	74.0	--	54.0	Horizontal	PASS
25	3984.504	45.79	--	--	74.0	--	54.0	Horizontal	PASS
26	4955.511	47.42	--	--	74.0	--	54.0	Horizontal	PASS
27	5928.018	49.28	--	--	74.0	--	54.0	Horizontal	PASS

Test Plots

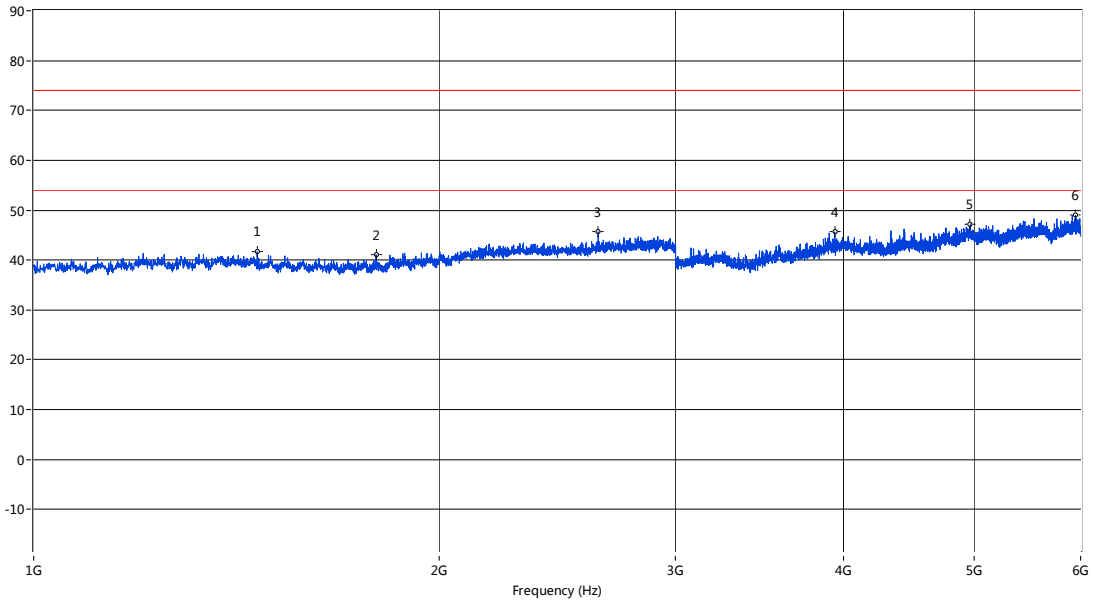
A.1.1 Below 30MHz



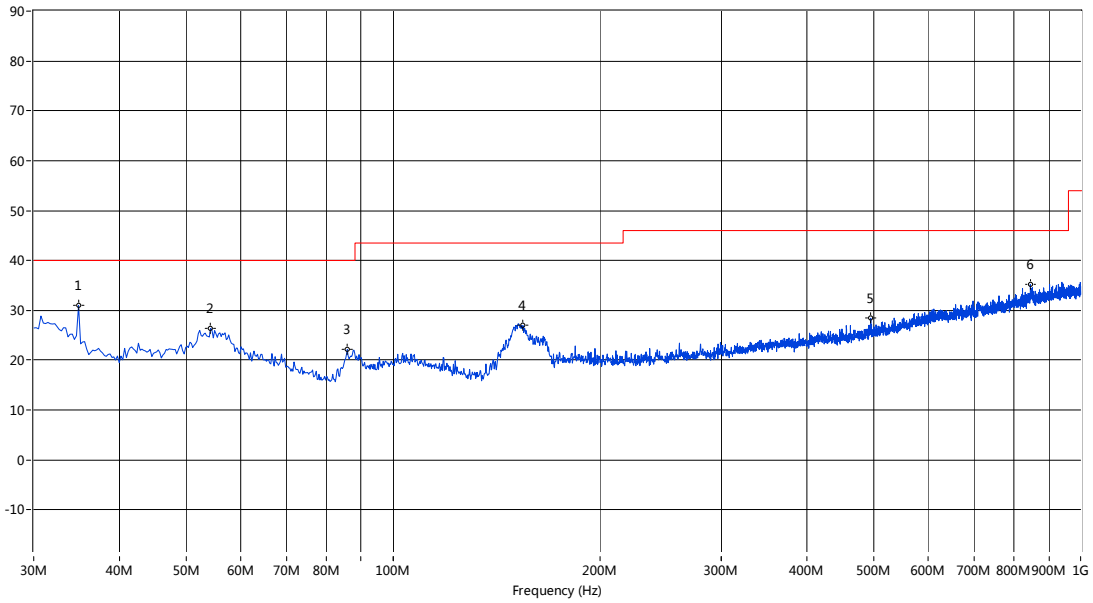
A.1.2 Test Antenna Vertical, 30MHz – 1GHz



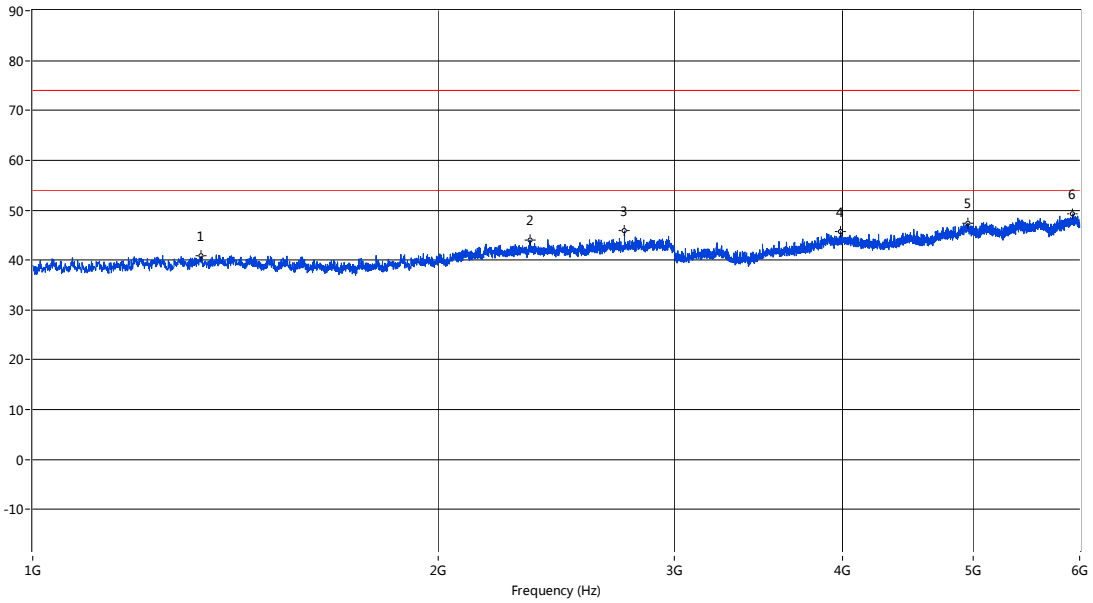
A.1.3 Test Antenna Vertical, 1GHz – 6GHz



A.1.4 Test Antenna Horizontal, 30MHz – 1GHz



A.1.5 Test Antenna Horizontal, 1GHz – 6GHz



A.2 Conducted Emission

Test Data

No.	Frequency (MHz)	Measurement Level (dBuV)	Limit (dBuV)	Margin (dB)	Phase	Detector	Result
1	0.154	45.8	65.89	-20.09	L	QP	PASS
2	0.182	48.65	65.09	-16.44	L	QP	PASS
3	0.190	34.09	54.86	-20.77	L	AV	PASS
4	0.250	29.76	53.14	-23.38	L	AV	PASS
5	2.502	27.38	46.00	-18.62	L	AV	PASS
6	4.074	42.07	56.00	-13.93	L	QP	PASS
7	4.090	26.64	46.00	-19.36	L	AV	PASS
8	4.114	41.67	56.00	-14.33	L	QP	PASS
9	13.170	25.61	50.00	-24.39	L	AV	PASS
10	15.718	37.07	60.00	-22.93	L	QP	PASS
11	15.762	25.13	50.00	-24.87	L	AV	PASS
12	15.866	37.1	60.00	-22.90	L	QP	PASS
13	0.154	45.36	65.89	-20.53	N	QP	PASS
14	0.154	29.48	55.89	-26.41	N	AV	PASS
15	0.186	47.31	64.97	-17.66	N	QP	PASS
16	0.186	34.81	54.97	-20.16	N	AV	PASS
17	4.110	42.71	56.00	-13.29	N	QP	PASS
18	4.110	26.84	46.00	-19.16	N	AV	PASS
19	4.186	42.94	56.00	-13.06	N	QP	PASS
20	4.186	26.95	46.00	-19.05	N	AV	PASS
21	12.974	39.68	60.00	-20.32	N	QP	PASS
22	13.094	39.73	60.00	-20.27	N	QP	PASS
23	13.234	27.99	50.00	-22.01	N	AV	PASS
24	15.738	26.58	50.00	-23.42	N	AV	PASS

Test Plots

A.2.1 L Phase

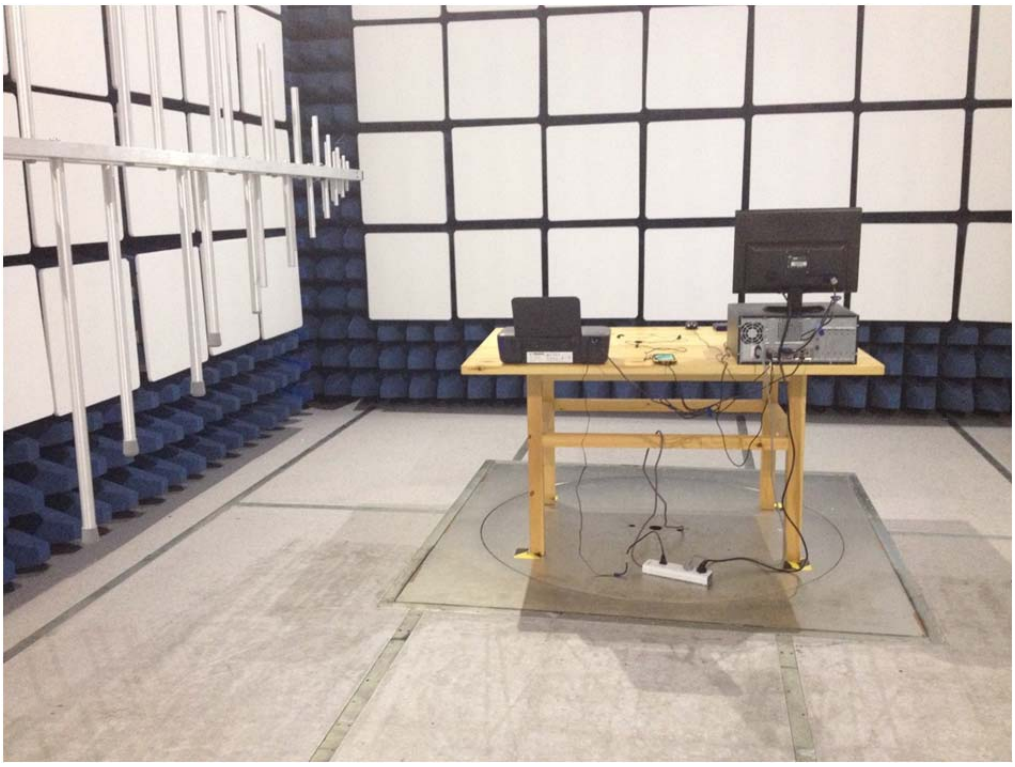
Date: 8.MAY.2014 09:46:31

A.2.2 N Phase

Date: 8.MAY.2014 09:56:19

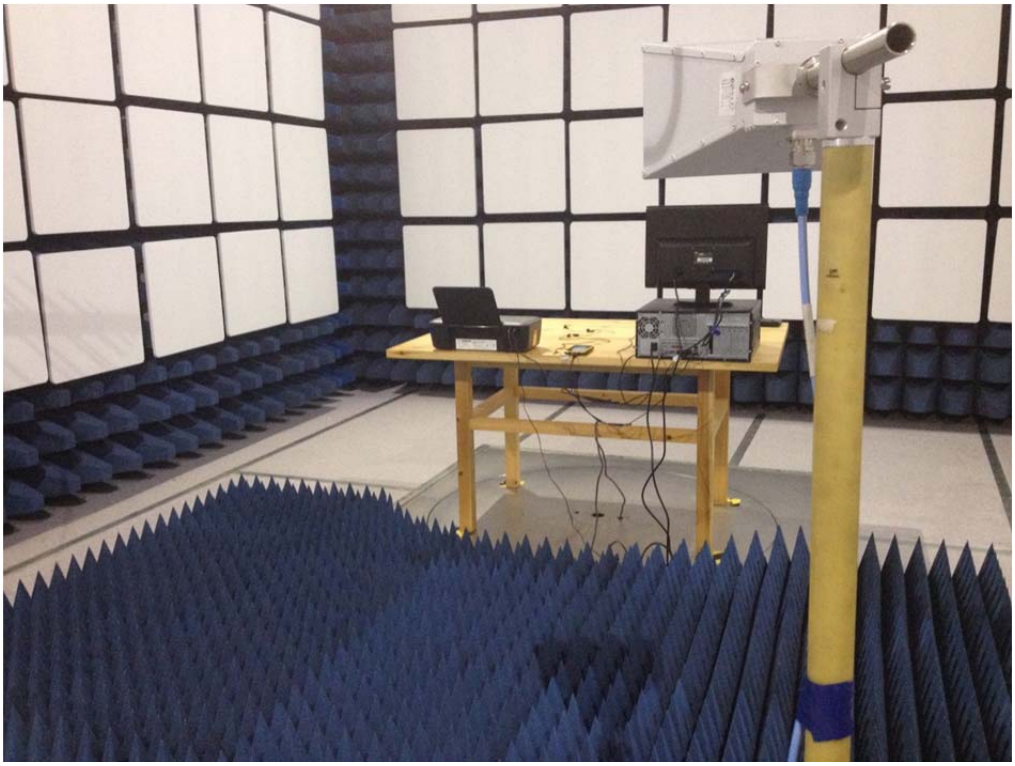
ANNEX B TEST SETUP PHOTOS

B.1 Radiated Field Strength Measurement



30MHz-1GHz (THE USB TEST MODE)

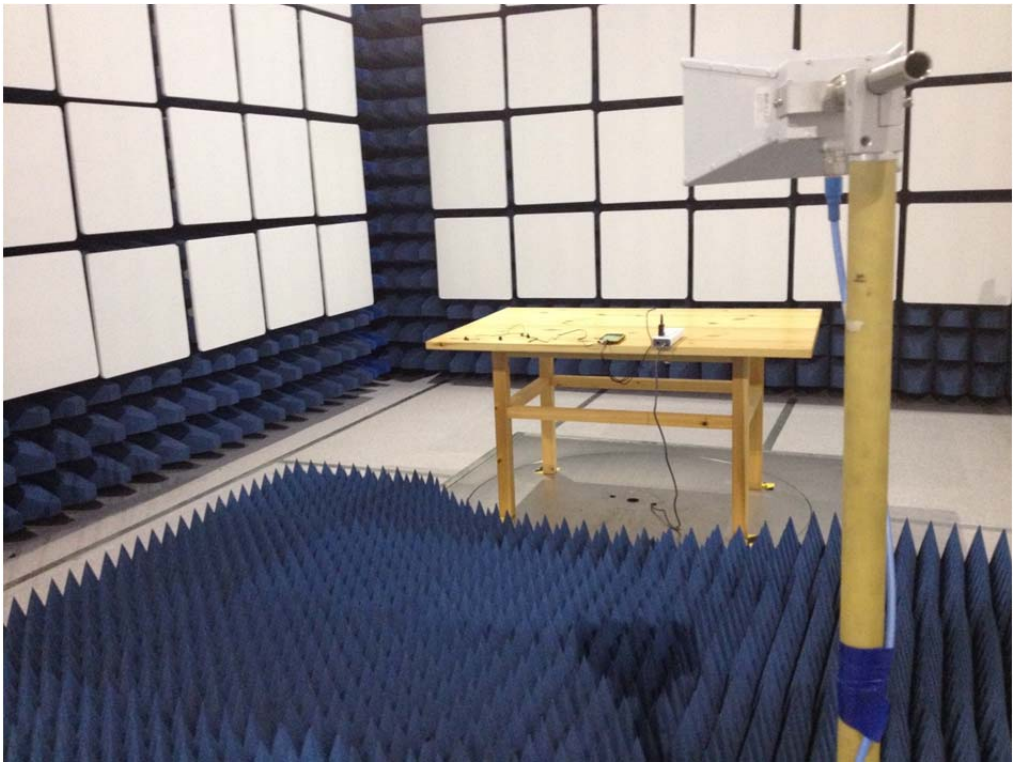
THE FRONT OF THE TEST PHOTO (THE USB TEST MODE)



Above 1GHz(THE USB TEST MODE)

THE FRONT OF TEST PHOTO (THE USB TEST MODE)

30MHz-1GHz (THE CAMERA TEST MODE)

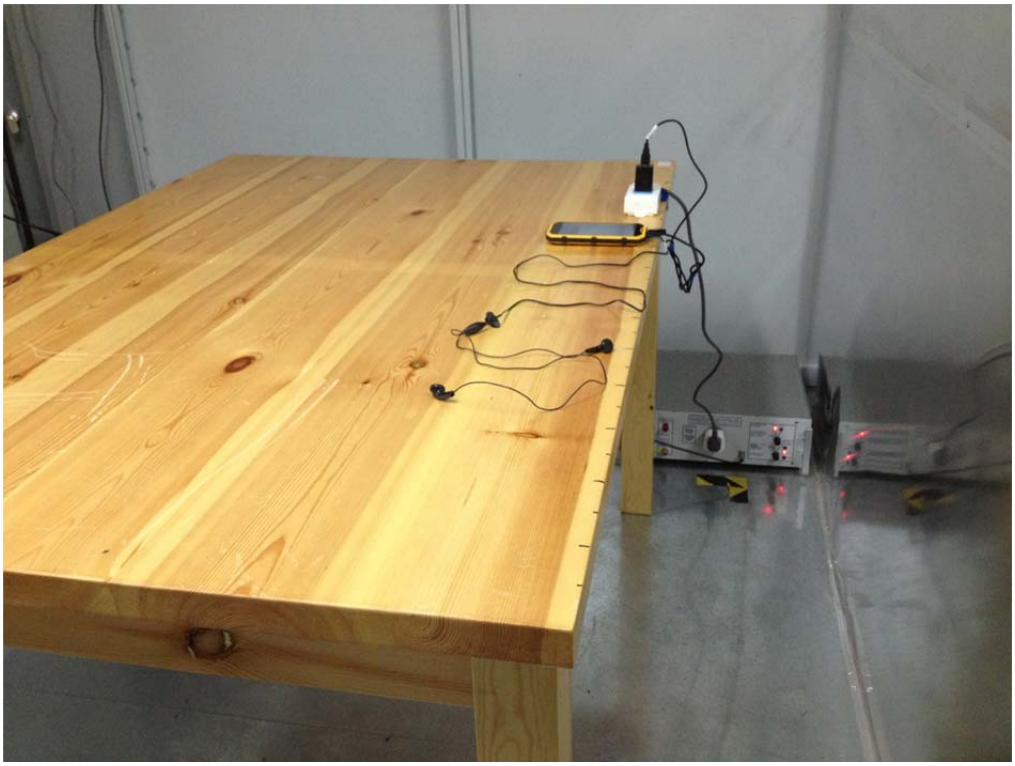


Above 1GHz(THE CAMERA TEST MODE)

B.2 Conducted Emission

THE BACK OF TEST PHOTO (THE USB TEST MODE)

THE FRONT OF TEST PHOTO (THE USB TEST MODE)



THE CAMERA TEST MODE

ANNEX C EUT PHOTOS

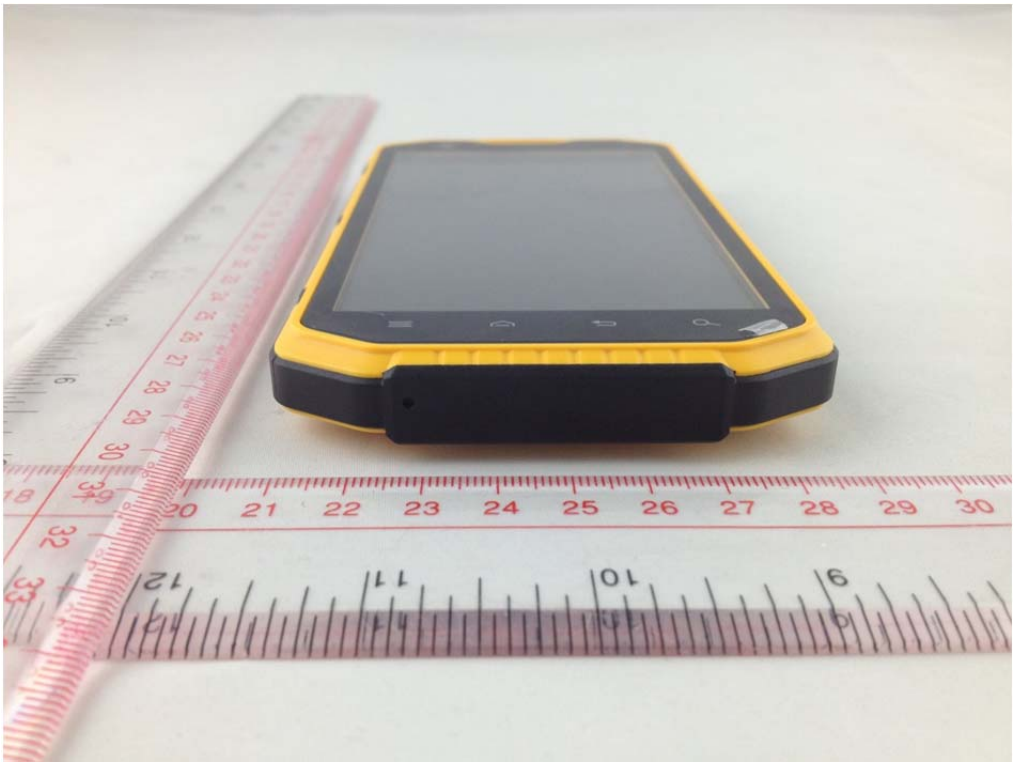
C.1 Appearance of the EUT

THE FRONT OF EUT

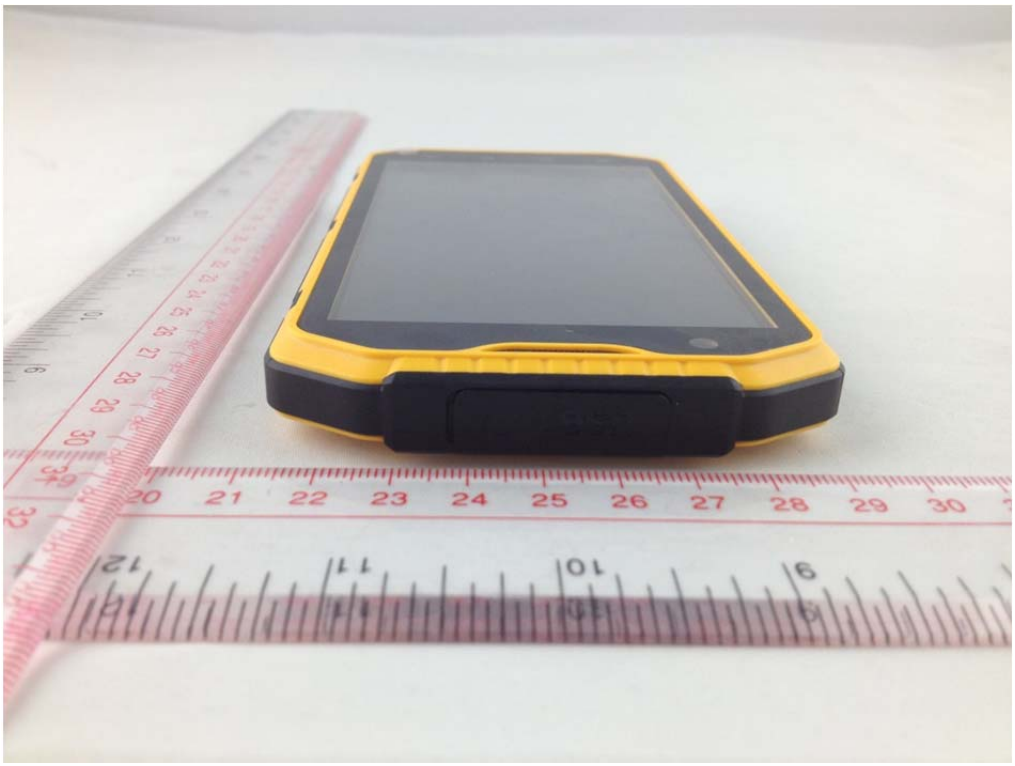
THE BACK OF EUT

THE LEFT OF EUT

THE RIGHT OF EUT



THE UP OF EUT



THE DOWN OF EUT

CHARGER

DATA CABLE

HEADPHONE CABLE

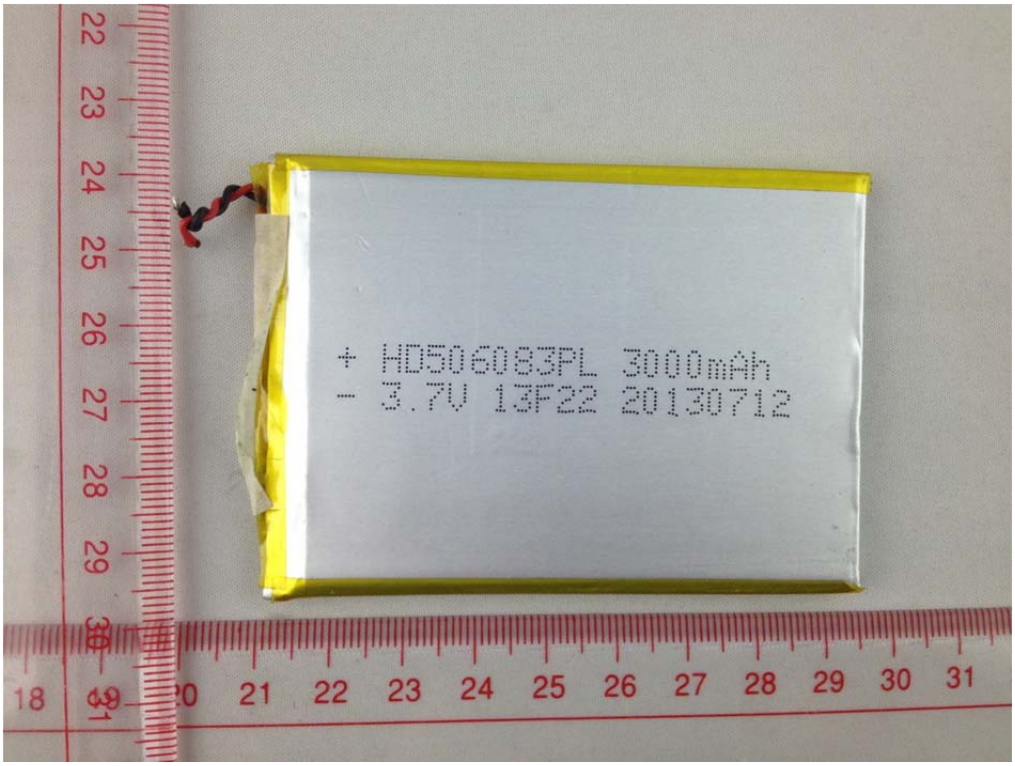
C.2 Inside of the EUT

EUT UNCOVER VIEW 1

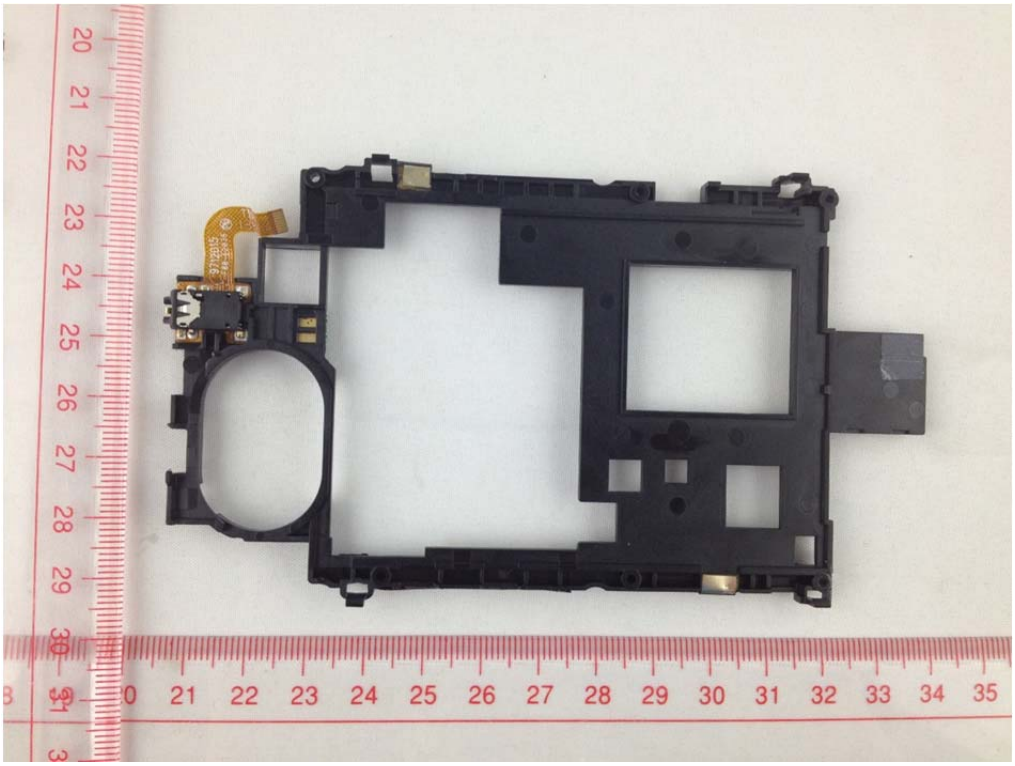
EUT UNCOVER VIEW 2

EUT UNCOVER VIEW 3

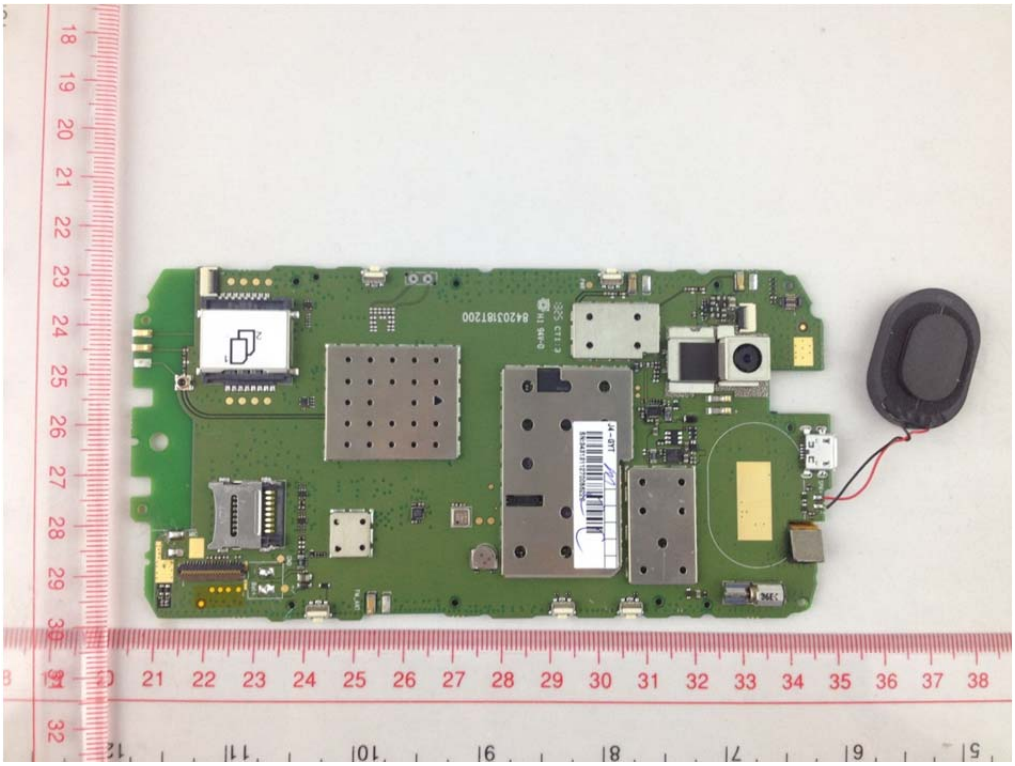
EUT UNCOVER VIEW 3



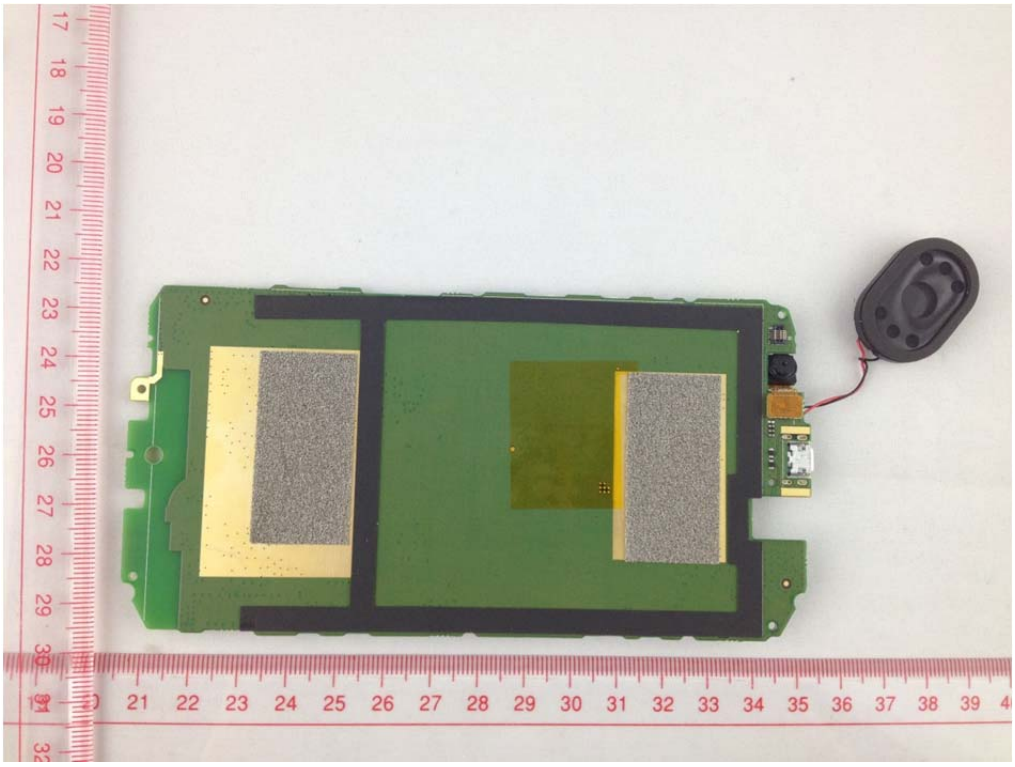
BATTERY



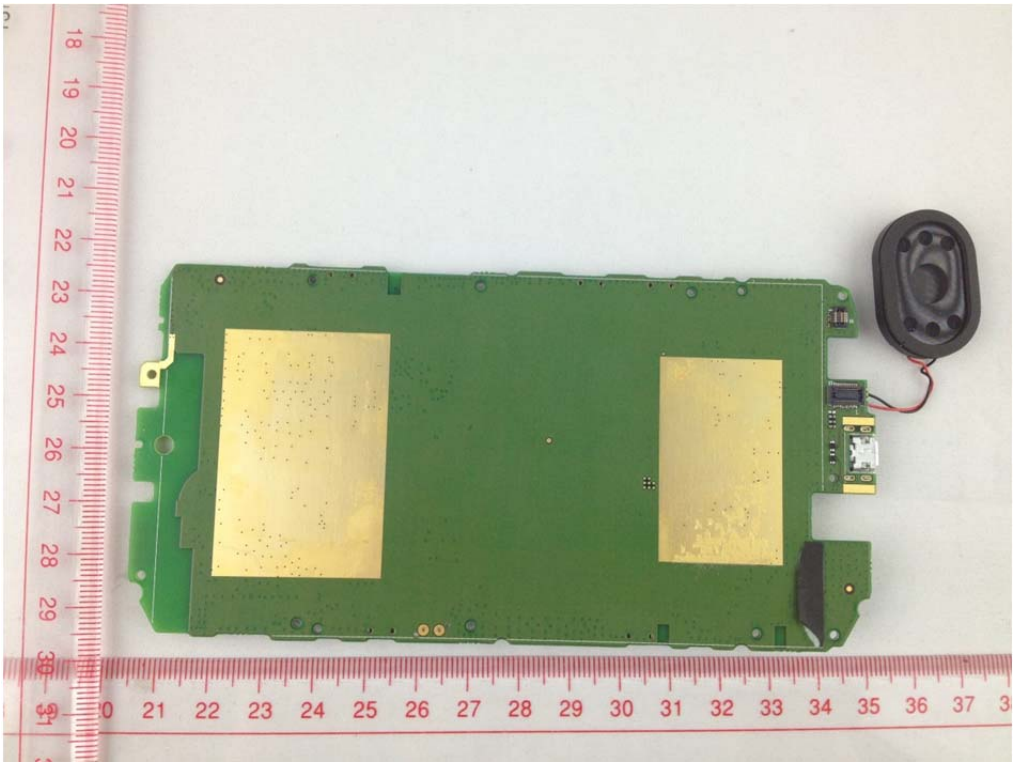
ANTENNA



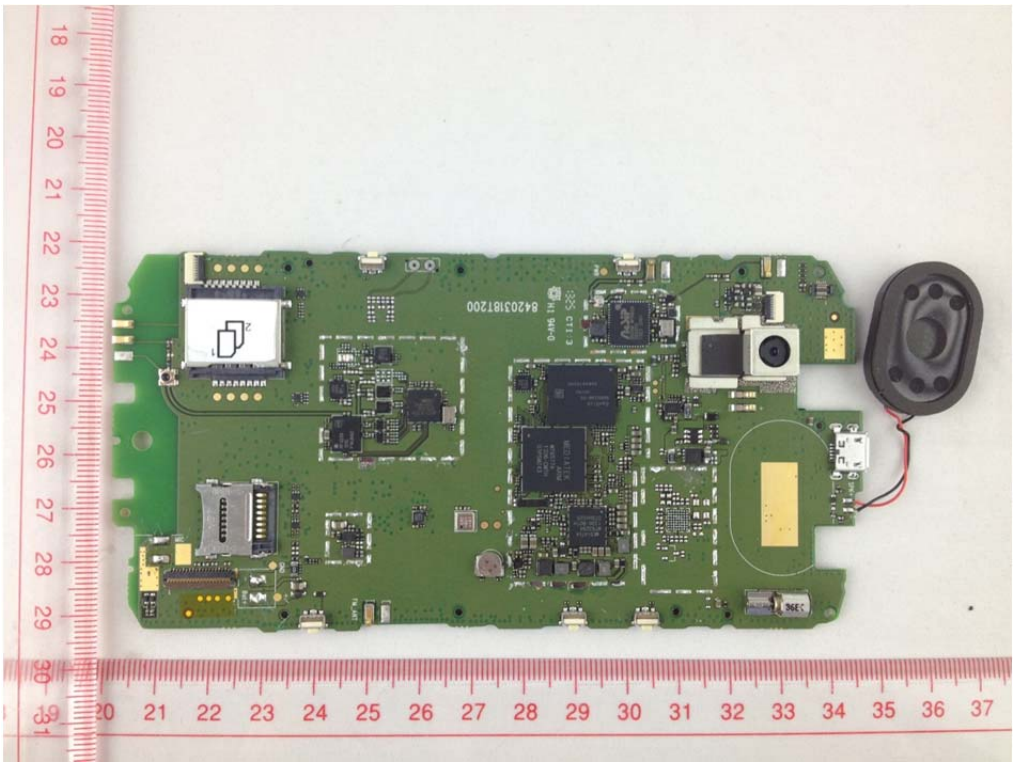
MAIN BOARD TOP VIEW 1



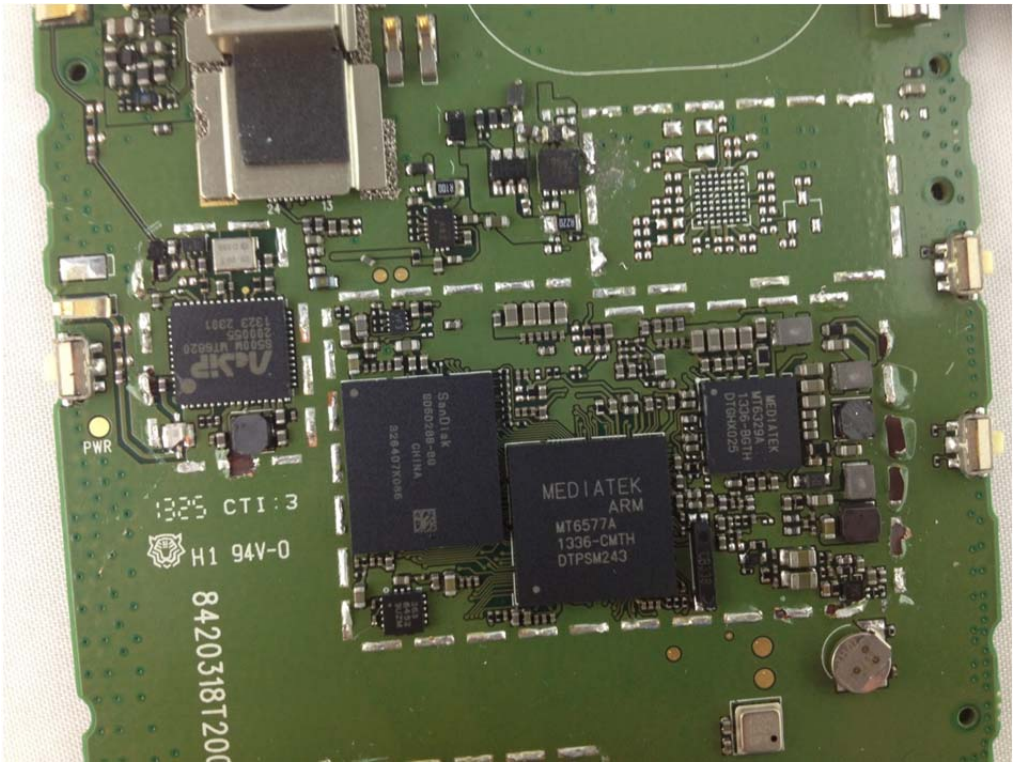
MAIN BOARD BACK VIEW 1



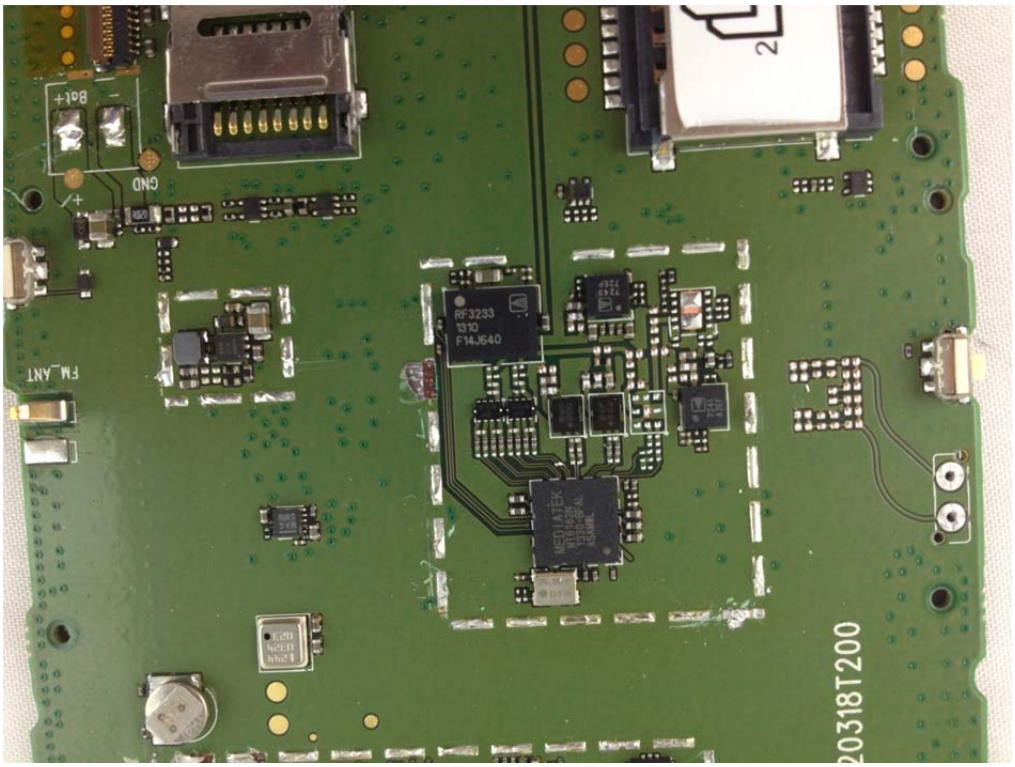
MAIN BOARD TOP VIEW 2



MAIN BOARD TOP VIEW 3



MAIN BOARD TOP VIEW 4



MAIN BOARD TOP VIEW 5

--END OF REPORT--