

FCC

EMC

TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
Tablet PC

ISSUED TO
Shenzhen Jingwah Information Technology Co., Ltd.

4F, Bldg 4, Jinghua Square, No.1 Huafa North Road, Futian District,
Shenzhen



Prepared by:

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(Reporting Specialist)

Date 2014.4.14

Approved by:



Wei Yanjun
(Director)

Date 2014.4.14

Report No.: BL-SZ1430057-401

EUT Type: Tablet PC

Model Name: D70J10-2N, D70J10-2G, D70J10-2P,
D70J10-2B, D70J10-2R, D70J10-2W,
D70J10-2M

Brand Name: AOC

Test Standard: 47 CFR Part 15 Subpart B

FCC ID: RBD-D70J10

Test conclusion: PASS

Test Date: Mar 14, 2014 ~ Apr 12, 2014

Date of Issue: Apr 14, 2014

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Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Apr 10, 2014</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Apr 14, 2014</u>	<u>The Second Issue</u>

TABLE OF CONTENTS

1	GENERAL INFORMATION	4
1.1	Identification of the Testing Laboratory	4
1.2	Identification of the Responsible Testing Location	4
1.3	Test Environment Condition	4
1.4	Announce	4
2	PRODUCT INFORMATION	6
2.1	Applicant	6
2.2	Manufacturer	6
2.3	General Description for Equipment under Test (EUT)	6
2.4	Ancillary Equipment	7
3	SUMMARY OF TEST RESULTS	8
3.1	Test Standards	8
3.2	Verdict	8
3.3	Test Uncertainty	8
4	GENERAL TEST CONFIGURATIONS	9
4.1	Test Environments	9
4.2	Test Equipment List	9
4.3	Test Enclosure list	10
4.4	Test Configurations	10
4.5	Test Setups	11
4.6	Test Conditions	12
5	TEST ITEMS	13
5.1	Emission Tests	13
ANNEX A	TEST RESULTS	15
A.1	Radiated Emission	15
A.2	Conducted Emission	18

ANNEX B	TEST SETUP PHOTOS	20
B.1	Radiated Field Strength Measurement	20
B.2	Conducted Emission	21
ANNEX C	EUT PHOTOS	22
C.1	Appearance of the EUT	22
C.2	Inside of the EUT	26

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°C
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	Shenzhen Jingwah Information Technology Co., Ltd.
Address	4F, Bldg 4, Jinghua Square, No.1 Huafa North Road, Futian District, Shenzhen

2.2 Manufacturer

Manufacturer	Shenzhen Jingwah Information Technology Co., Ltd.
Address	4F, Bldg 4, Jinghua Square, No.1 Huafa North Road, Futian District, Shenzhen

2.3 General Description for Equipment under Test (EUT)

EUT Type	Tablet PC
Model under test	D70J10-2N
Series Model Name	D70J10-2N, D70J10-2G, D70J10-2P, D70J10-2B, D70J10-2R, D70J10-2W, D70J10-2M
Description of Model name differentiation	Only the difference in appearance of the color “G”—“Green”, “N”—“Neutral”, “P”—“Pink”, “B”—“Blue”, “R”—“Red” “W”—“White”, “M”—“Magenta”
Hardware Version	V1.1
Software Version	D70J10-201403
Network and Wireless connectivity	BT 3.0 WIFI 802.11b, 802.11g and 802.11n (HT20/40)
Display	7" TFT-LCD, 1024x600 pixels
About the Product	The EUT is a tablet PC, it contains Bluetooth and WIFI Module operating at 2.4GHz ISM band which supports Bluetooth 3.0 and 802.11b, 802.11g and 802.11n (HT20/40)

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	SouthRiver
	Model No	SR3067A0
	Serial No	N/A
	Capacitance	2600 mAh
	Rated Voltage	3.7V
	Extreme Voltage	Low: 3.5V / High:4.2V
Ancillary Equipment 2	Adapter	
	Brand Name	FJ
	Model No	FJ-SW0502000DU
	Serial No	(N/A. marked #1 by test site)
	Rated Input	~ 100-240V, 1350mA, 50/60Hz
	Rated Output	= 5V, 2000mA
Ancillary Equipment 3	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)	Radio Frequency Devices

3.2 Verdict

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

Note: The tests were performed according to the method of measurements prescribed in ANSI C63.4 2009.

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	2013.06.04	2014.06.03	☒
Attenuator	KMW	20dB	110617091	2013.05.14	2014.05.13	☒
Test Antenna- Loop	SCHWARZBECK	FMZB 1519	1519-037	2013.07.02	2014.07.01	☐
Test Antenna- Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2013.07.03	2014.07.02	☒
Test Antenna- Horn	SCHWARZBECK	BBHA 9120D	9120D-1148	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	2013.06.04	2014.06.03	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2013.06.04	2014.06.03	☒
AMN	SCHWARZBECK	NNBM812 4	8124-509	2013.06.29	2014.06.28	☐
AMN	SCHWARZBECK	NNBM812 4	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	SOEYI	B123	N/A	N/A	N/A	☐
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	☐

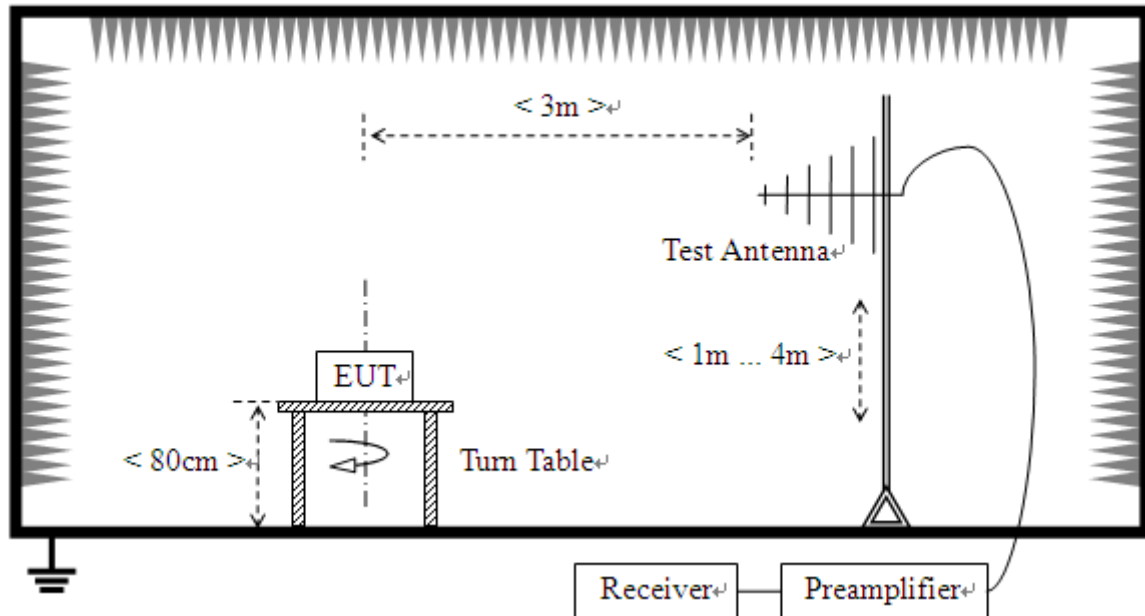
4.4 Test Configurations

Test Configurations (TC) No.	Description
TC01	<u>The USB test mode</u> The EUT configuration of the emission tests is EUT + PC + TF Card + Charger. During the measurement of working mode. the TF Card was inserted into the EUT. The PC was connected with EUT via the USB cable. And the data was transmitted between EUT and PC.
TC02	<u>The Play test mode</u> The EUT configuration of the emission tests is EUT + Charger. During the measurement of working mode. The EUT was playing a 1Khz color bar signal source let the EUT working in a worst mode.
TC03	<u>The Camera test mode</u> The EUT configuration of the emission tests is EUT + Charger. During the test, The EUT was working at the Camera mode.

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.

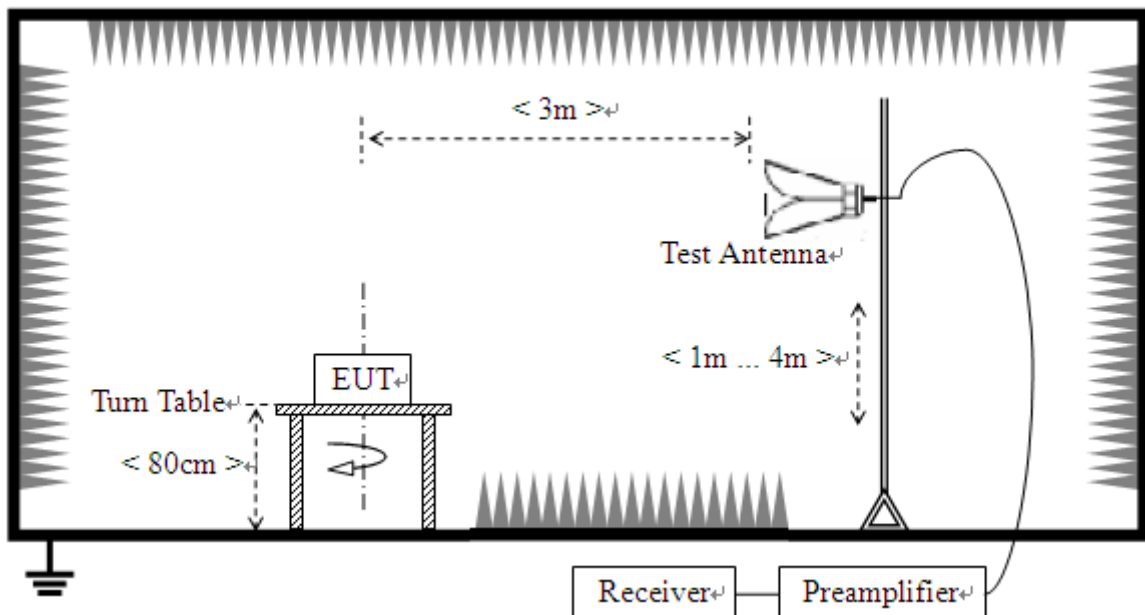
4.5 Test Setups

Test Setup 1



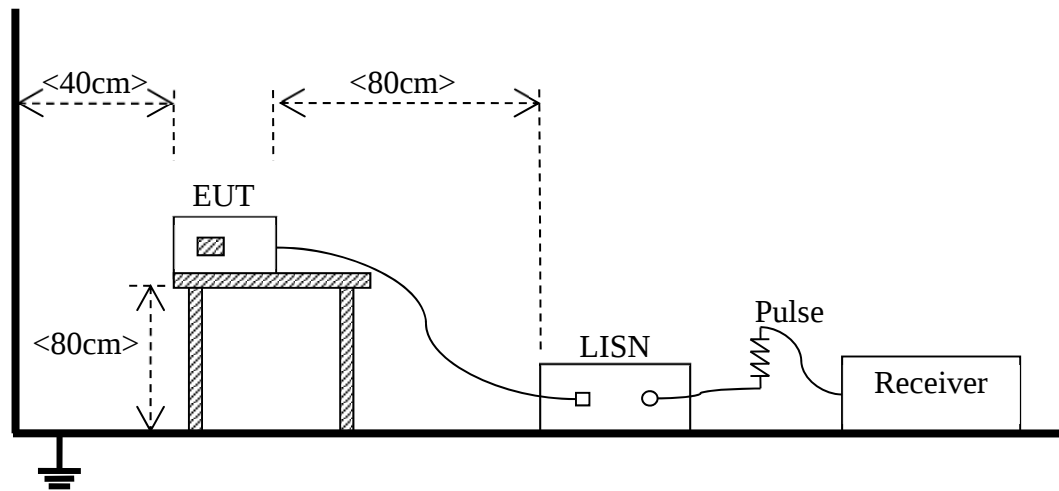
(For Radiated Emission Test (30MHz-1GHz))

Test Setup 2



(For Radiated Emission Test (above 1GHz))

Test Setup 3



(For Conducted Emission, AC Ports Test)

4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1&2
	Test Configuration	TC01~TC03
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC03

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated Emission

5.1.1.1 Limit

Frequency range (MHz)	Field Strength	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

- 1) Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.
- 2) In the emission tables above, the tighter limit applies at the band edges.

5.1.1.2 Test Procedure

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 (dB μ V)	
	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 50 Ω /50 μ H 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

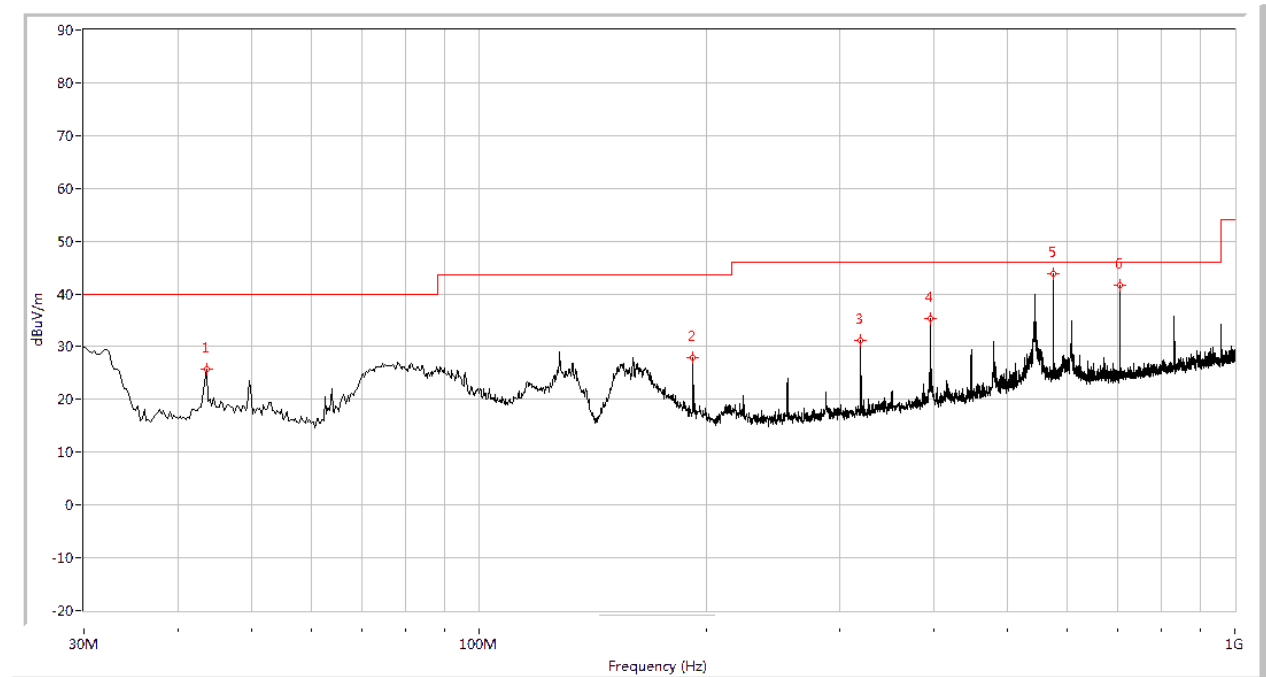
A.1 Radiated Emission

Test Data

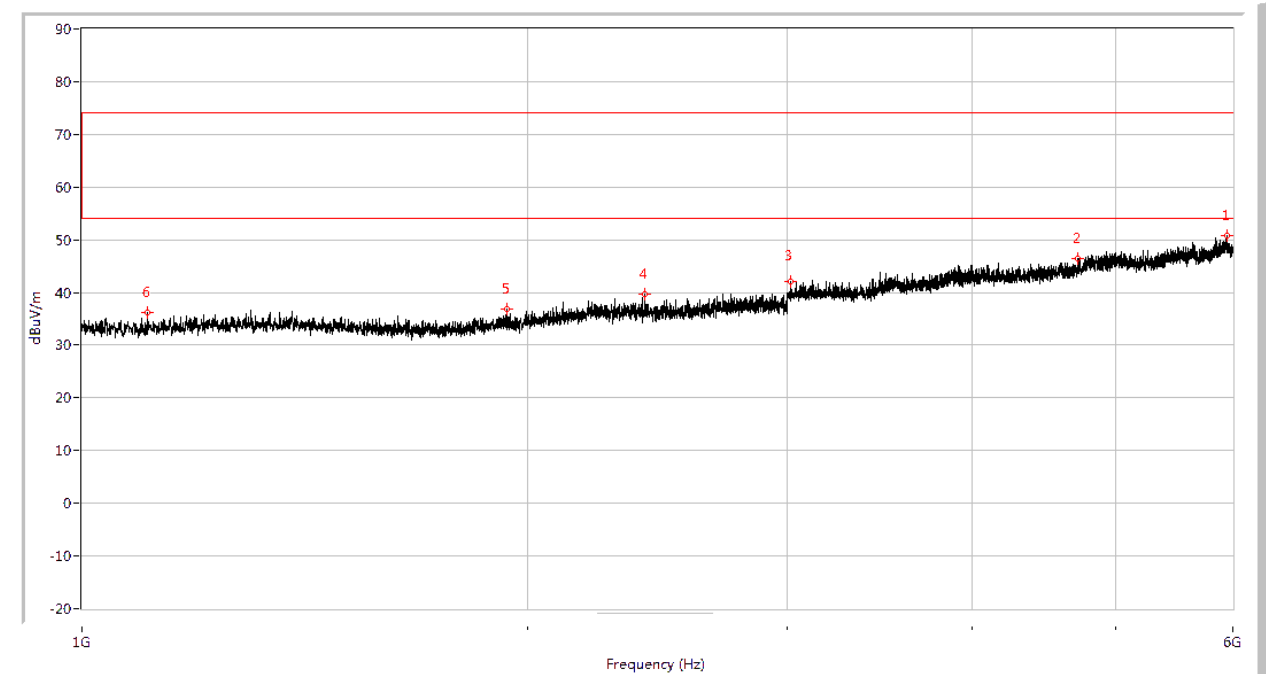
NO.	Fre. (MHz)	PK dBμV	QP dBμV	AV dBμV	Limit-PK dBμV	Limit-QP dBμV	Limit-AV dBμV	Antenna	Verdict
1	43.577	25.64	--	--	--	40.0	--	Vertical	PASS
2	191.950	27.90	--	--	--	43.5	--	Vertical	PASS
3	319.958	31.09	--	--	--	46.0	--	Vertical	PASS
4	395.841	35.24	--	--	--	46.0	--	Vertical	PASS
5	575.974	43.11	41.31	--	--	46.0	--	Vertical	PASS
6	703.982	41.67	--	--	--	46.0	--	Vertical	PASS
7	5947.513	51.36	--	--	74.0	--	54.0	Vertical	PASS
8	4716.321	48.54	--	--	74.0	--	54.0	Vertical	PASS
9	3013.497	42.05	--	--	74.0	--	54.0	Vertical	PASS
10	2401.150	39.63	--	--	74.0	--	54.0	Vertical	PASS
11	1939.265	36.87	--	--	74.0	--	54.0	Vertical	PASS
12	1107.973	36.26	--	--	74.0	--	54.0	Vertical	PASS
13	127.946	23.02	--	--	--	43.5	--	Horizontal	PASS
14	191.950	30.41	--	--	--	43.5	--	Horizontal	PASS
15	319.958	28.98	--	--	--	46.0	--	Horizontal	PASS
16	395.841	36.48	--	--	--	46.0	--	Horizontal	PASS
17	575.974	44.67	43.27	--	--	46.0	--	Horizontal	PASS
18	703.982	42.25	40.80	--	--	46.0	--	Horizontal	PASS
19	5934.016	51.34	--	--	74.0	--	54.0	Horizontal	PASS
20	4924.769	48.12	--	--	74.0	--	54.0	Horizontal	PASS
21	3249.688	42.13	--	--	74.0	--	54.0	Horizontal	PASS
22	2221.195	38.08	--	--	74.0	--	54.0	Horizontal	PASS
23	1463.384	35.39	--	--	74.0	--	54.0	Horizontal	PASS
24	1024.494	35.52	--	--	74.0	--	54.0	Horizontal	PASS

Test Plots

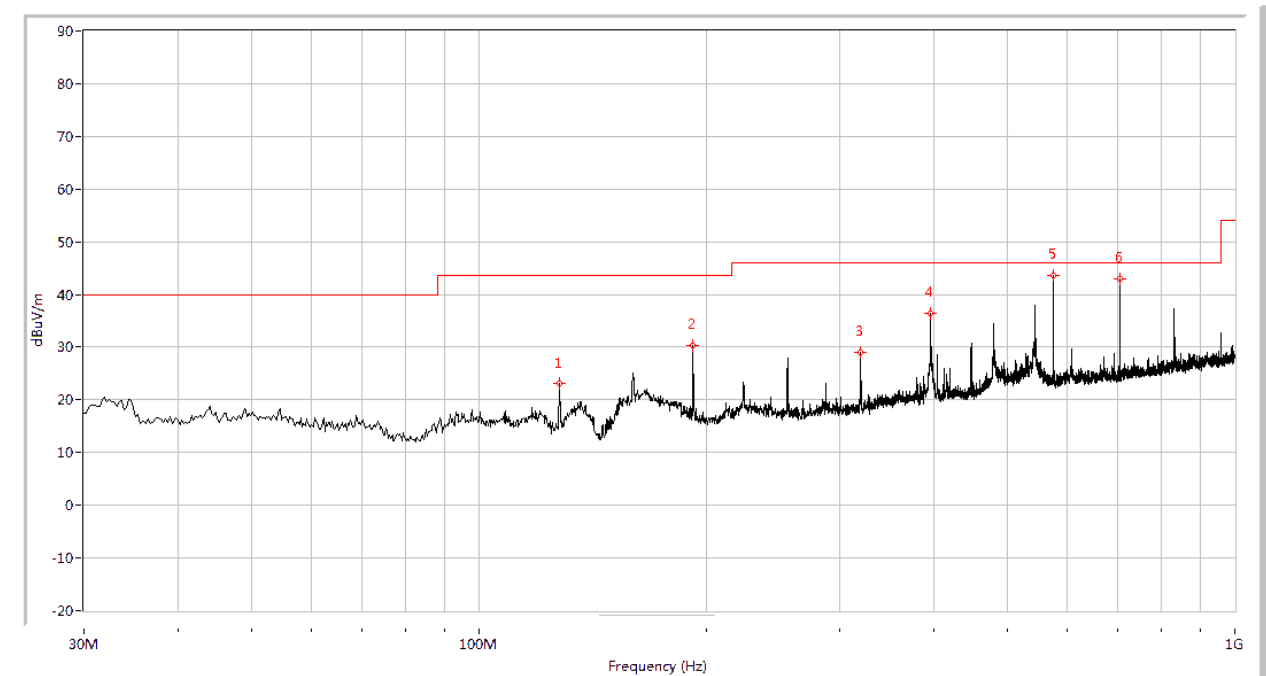
A.1.1 Test Antenna Vertical, 30MHz – 1GHz



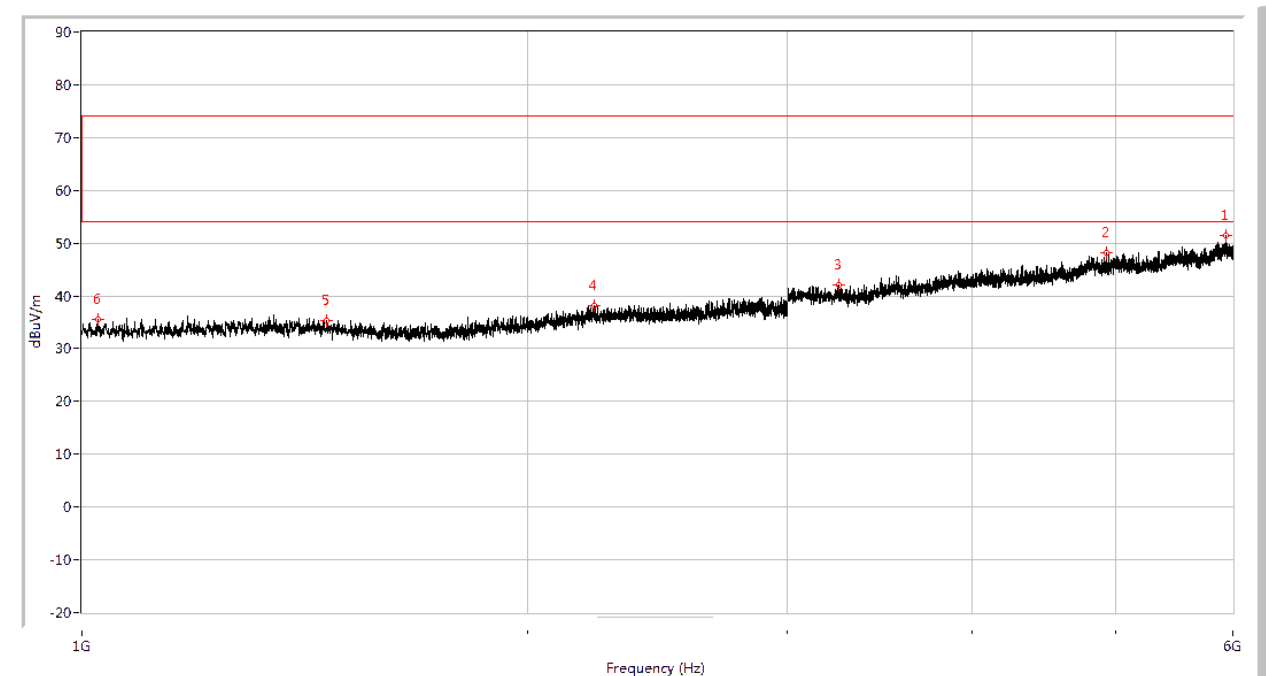
A.1.2 Test Antenna Vertical, 1GHz – 6GHz



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



A.1.4 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	0.182	50.82	65.09	-14.27	L	QP	PASS
2	0.190	33.88	54.86	-20.98	L	AV	PASS
3	0.282	26.23	52.23	-26.00	L	AV	PASS
4	0.302	43.76	61.66	-17.90	L	QP	PASS
5	0.990	31.31	56.00	-24.69	L	QP	PASS
6	1.306	33.64	56.00	-22.36	L	QP	PASS
7	2.302	17.39	46.00	-28.61	L	AV	PASS
8	4.414	16.95	46.00	-29.05	L	AV	PASS
9	7.926	31.78	60.00	-28.22	L	QP	PASS
10	7.926	19.78	50.00	-30.22	L	AV	PASS
11	8.314	31.2	60.00	-28.80	L	QP	PASS
12	29.974	17.13	50.00	-32.87	L	AV	PASS
13	0.186	29.43	54.97	-25.54	N	AV	PASS
14	0.194	47.39	64.74	-17.35	N	QP	PASS
15	0.274	42.43	62.46	-20.03	N	QP	PASS
16	0.294	23.18	51.89	-28.71	N	AV	PASS
17	0.990	30.59	56.00	-25.41	N	QP	PASS
18	1.202	32.23	56.00	-23.77	N	QP	PASS
19	1.202	18.05	46.00	-27.95	N	AV	PASS
20	3.774	16.62	46.00	-29.38	N	AV	PASS
21	7.706	27.98	60.00	-32.02	N	QP	PASS
22	8.106	29.53	60.00	-30.47	N	QP	PASS
23	8.462	18	50.00	-32.00	N	AV	PASS
24	29.778	18.84	50.00	-31.16	N	AV	PASS

Test Plots

A.2.1 L Phase



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A.2.2 N Phase



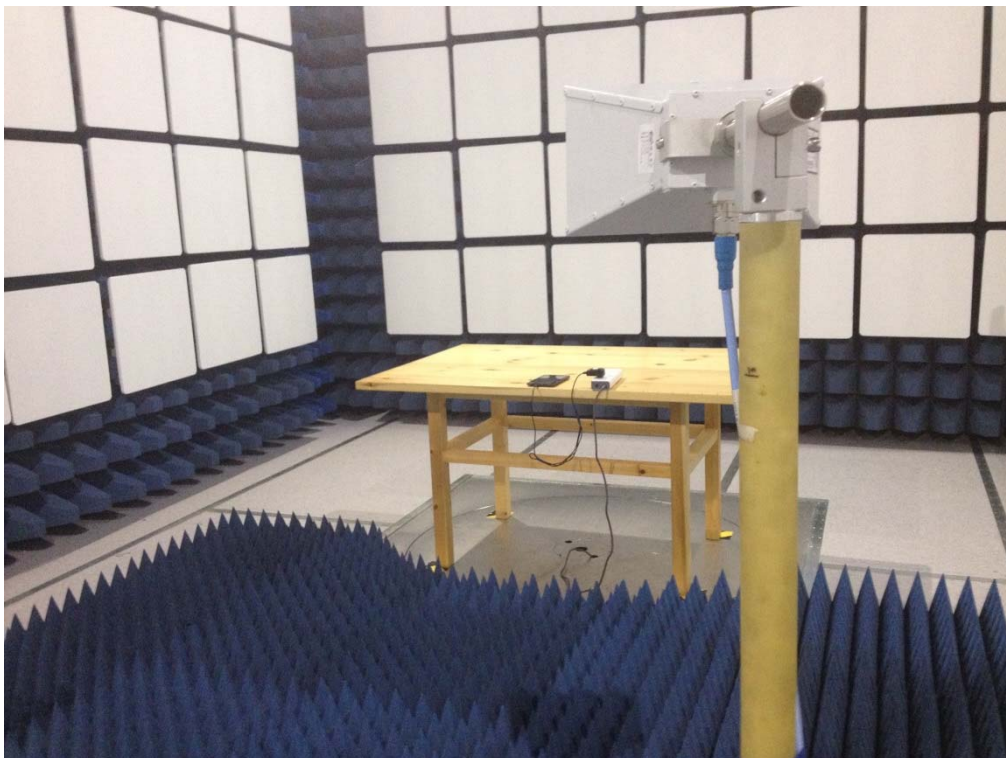
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ANNEX B TEST SETUP PHOTOS

B.1 Radiated Field Strength Measurement

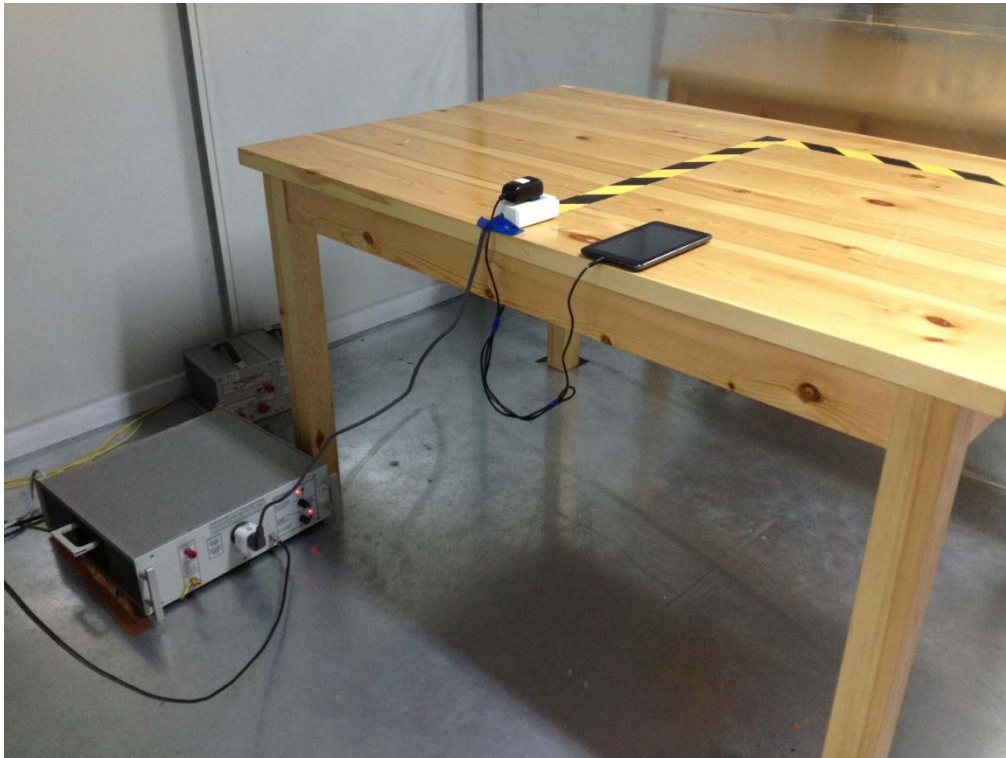


30MHz-1GHz



Above 1GHz

B.2 Conducted Emission



ANNEX C EUT PHOTOS

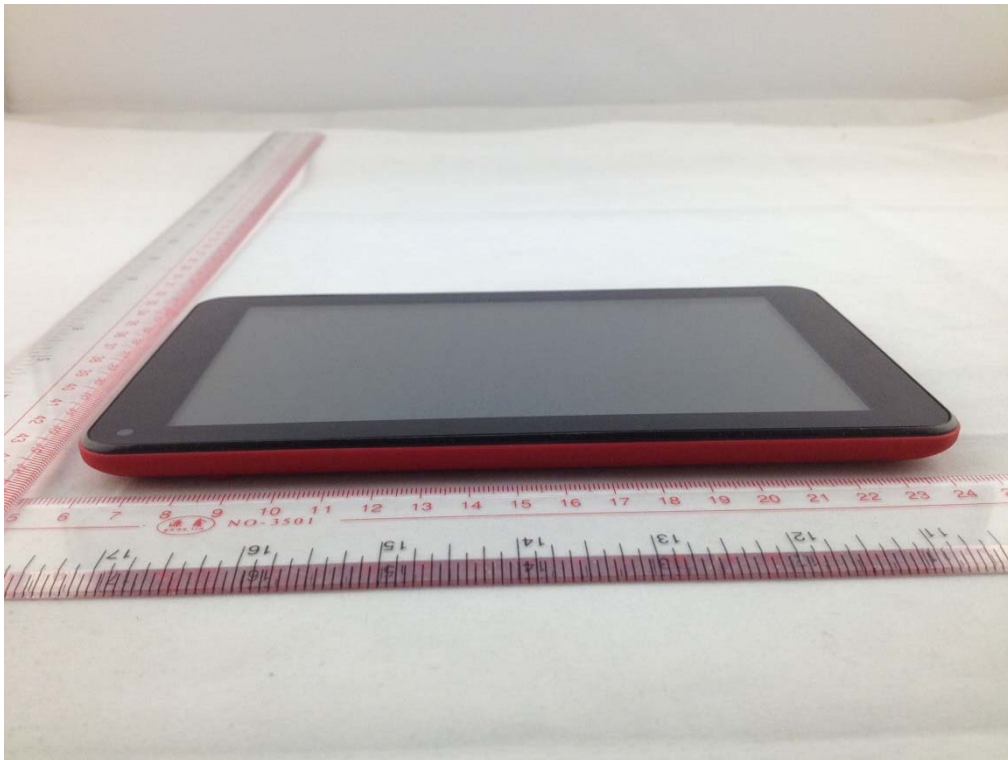
C.1 Appearance of the EUT



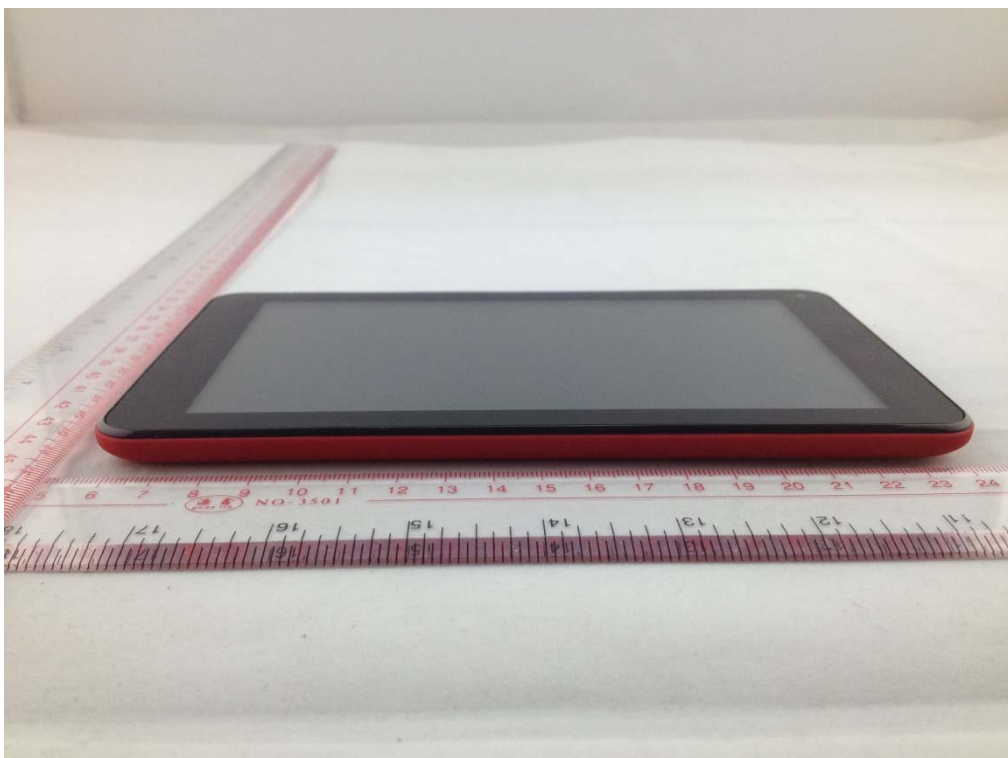
THE FRONT OF EUT



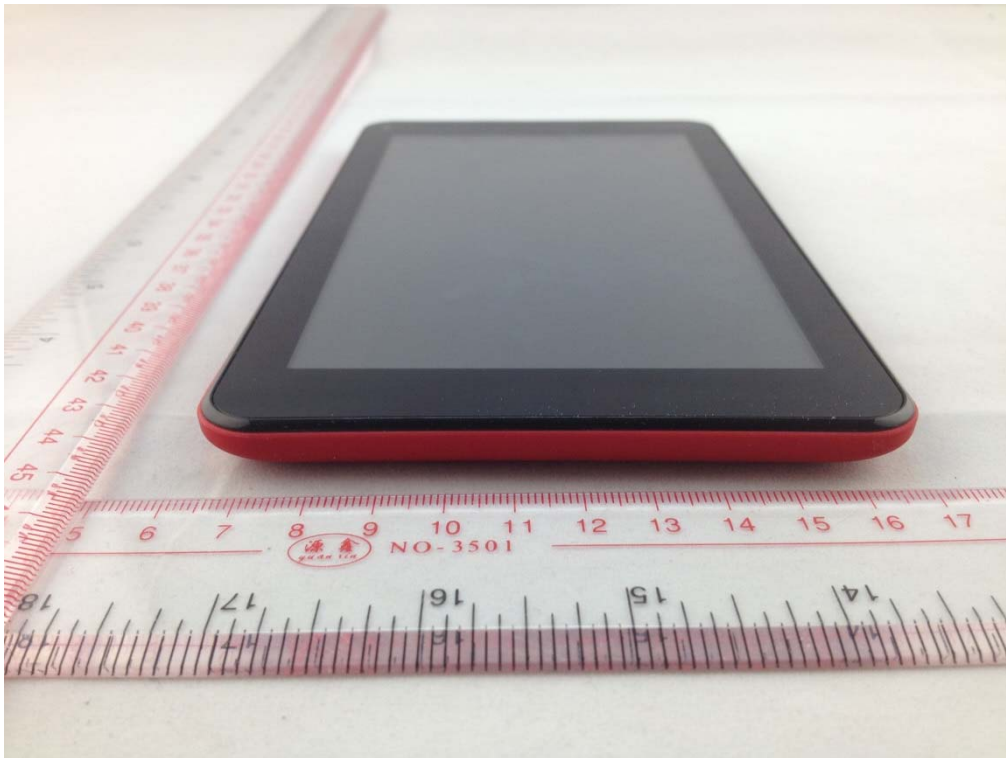
THE BACK OF EUT



THE LEFT OF EUT



THE RIGHT OF EUT



THE UP OF EUT

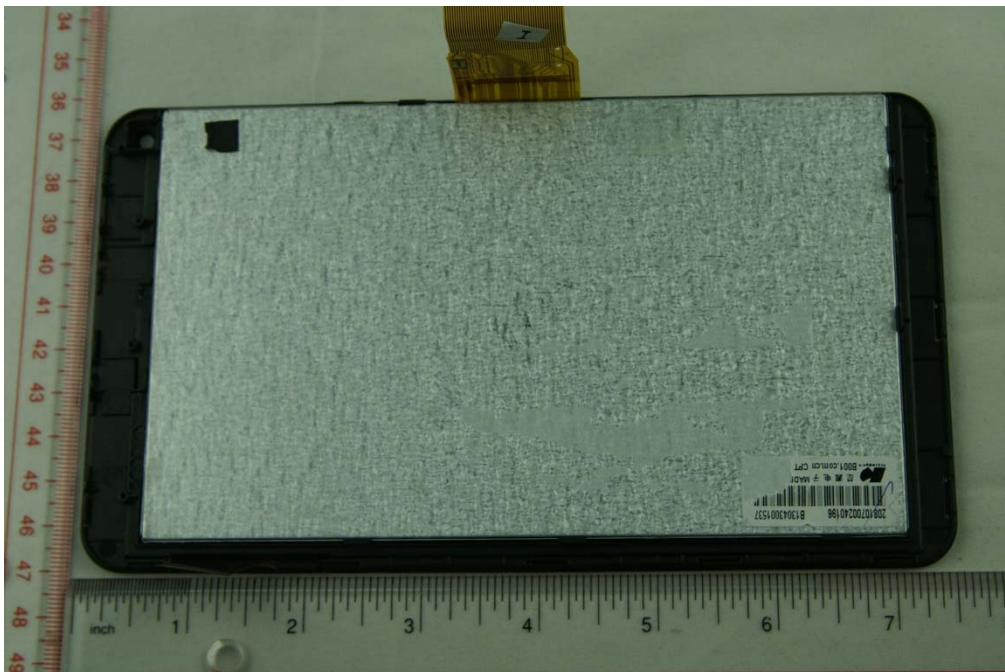


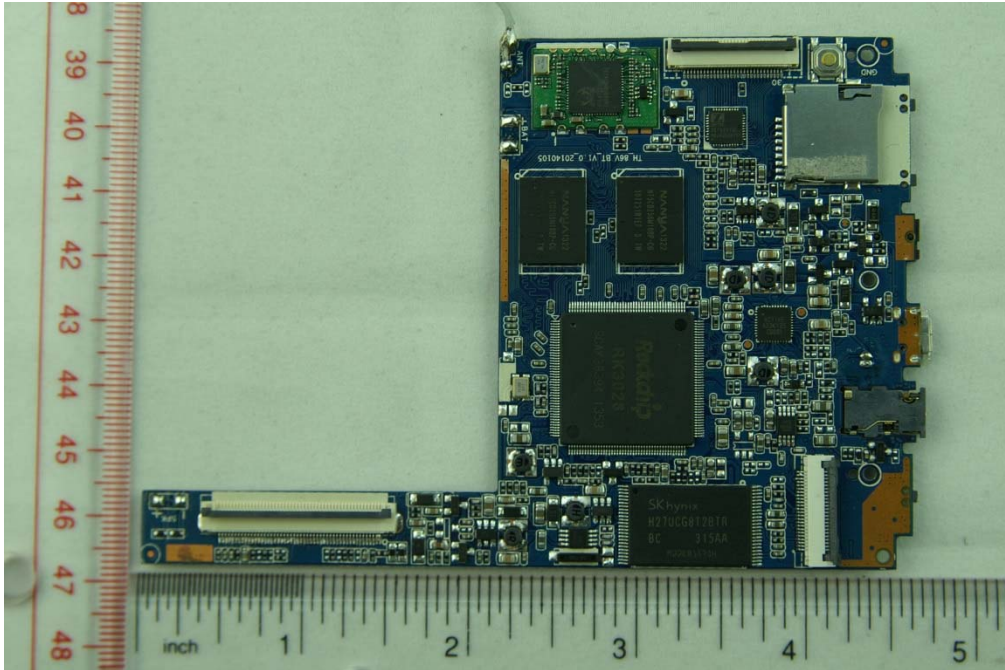
THE DOWN OF EUT



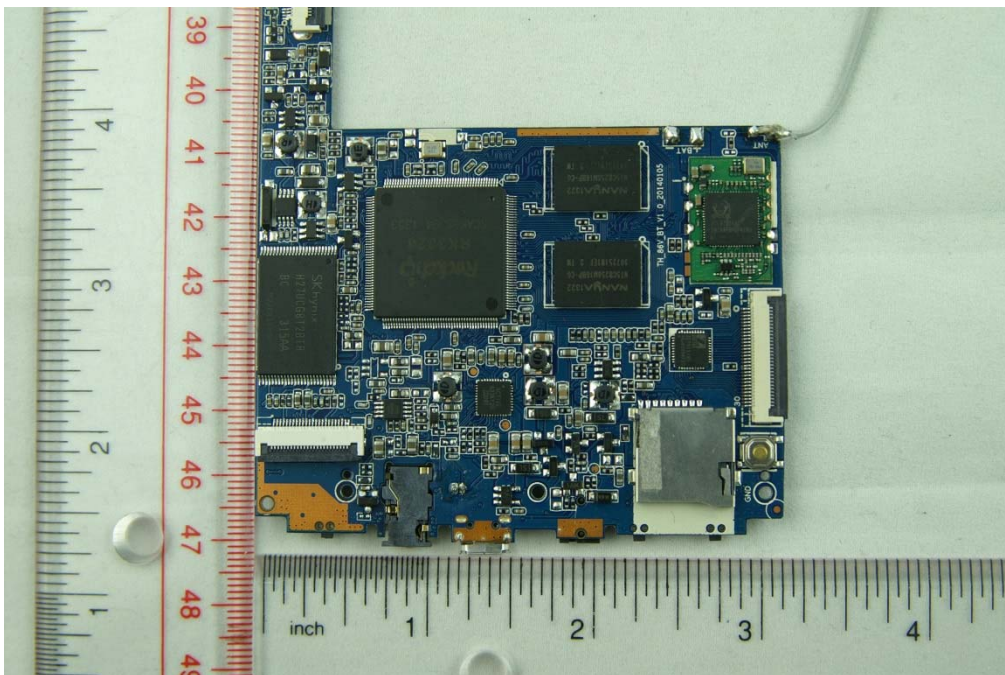
THE PHOTO OF CHARGER

C.2 Inside of the EUT

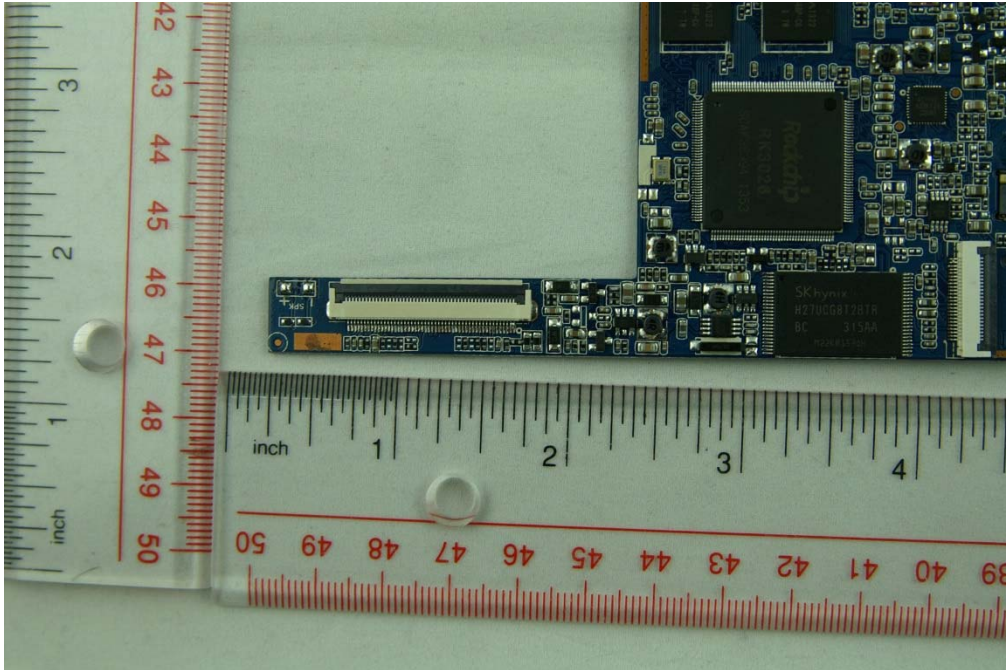




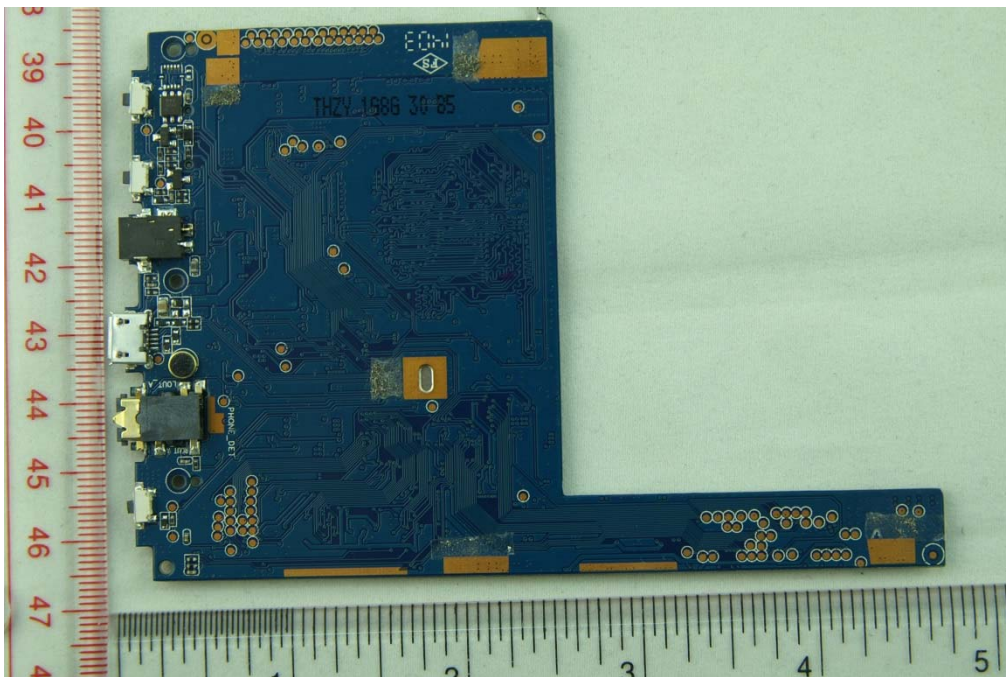
Main Board



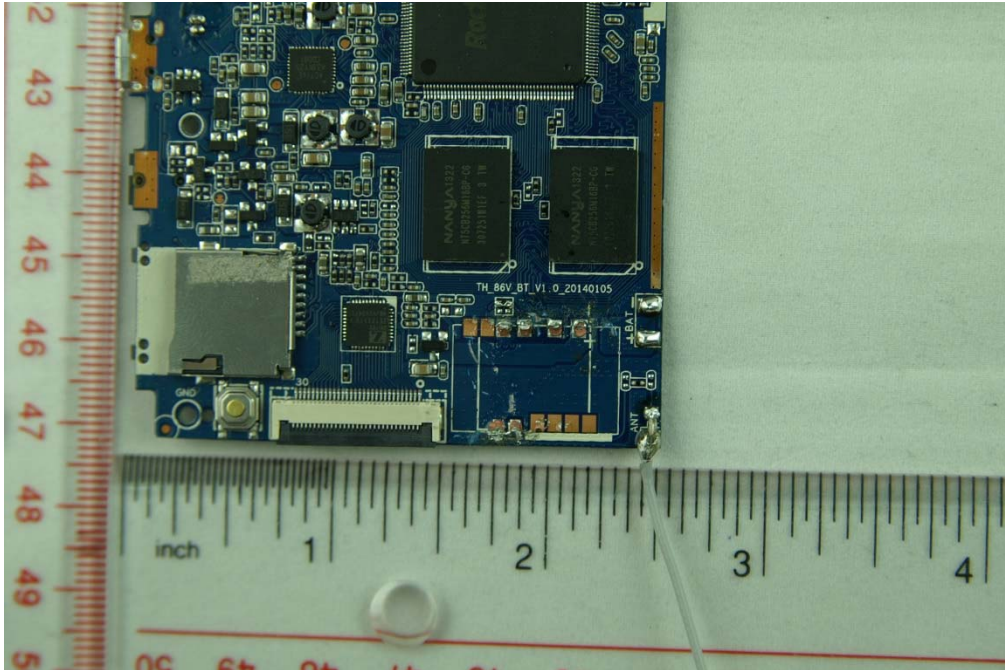
Main Board



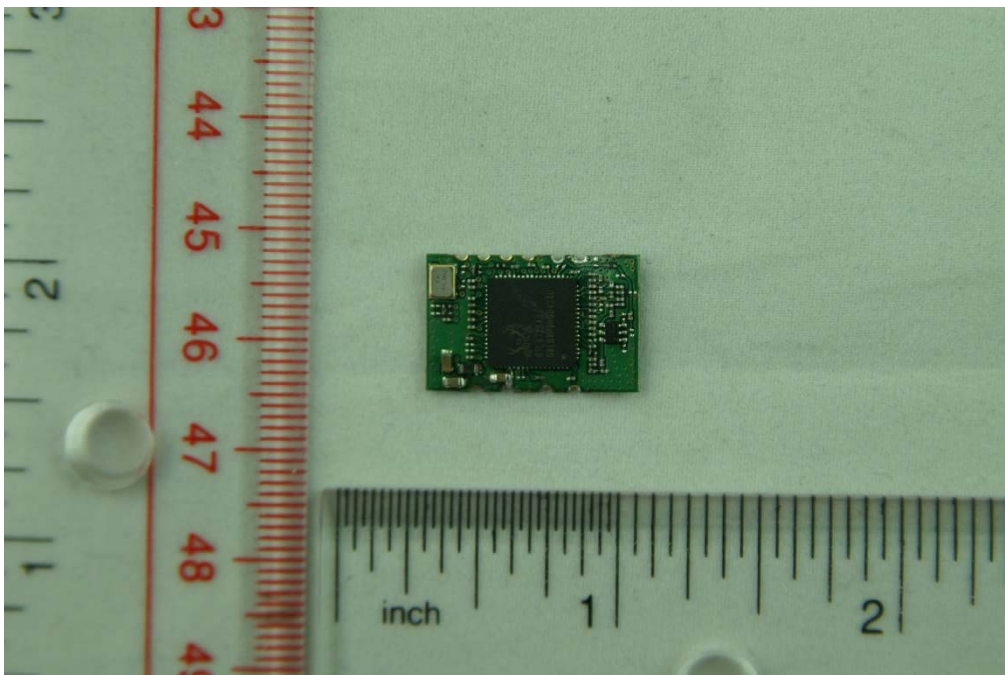
Main Board



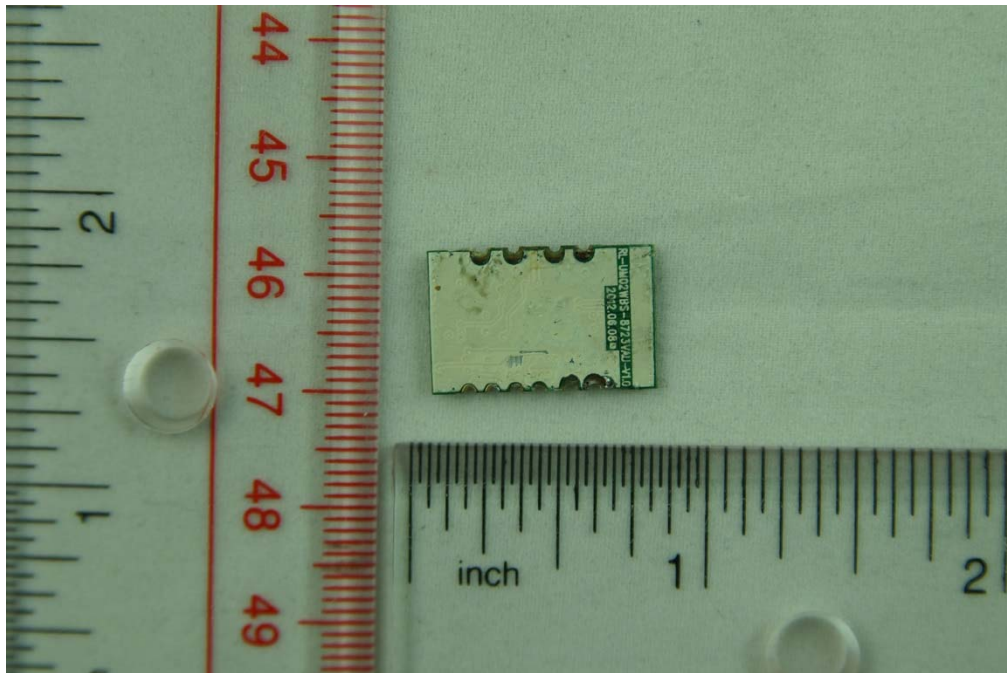
Main Board



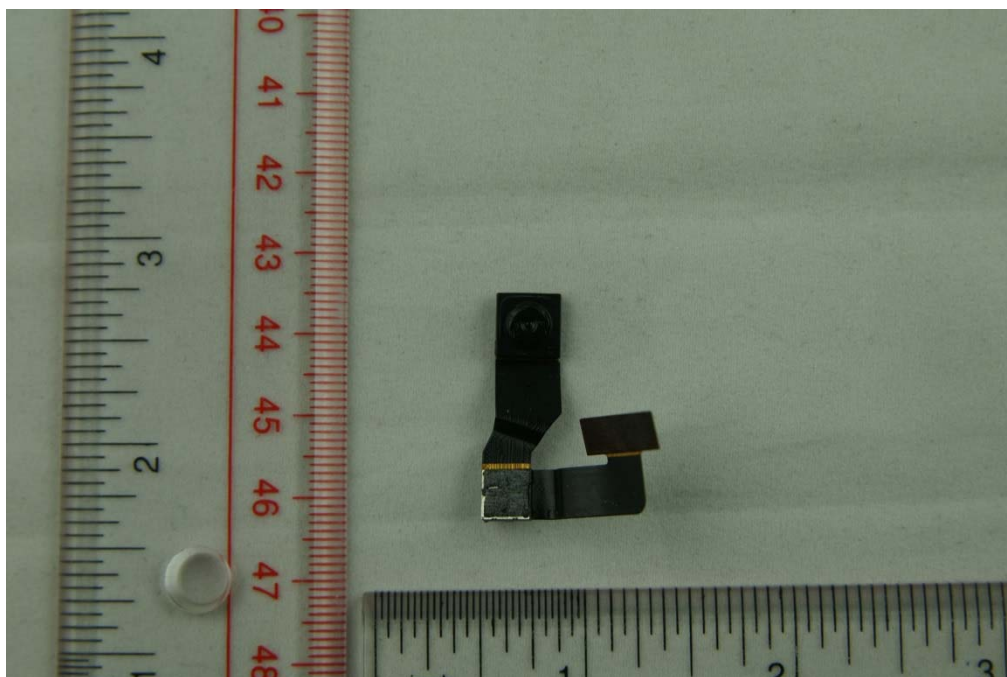
Main Board



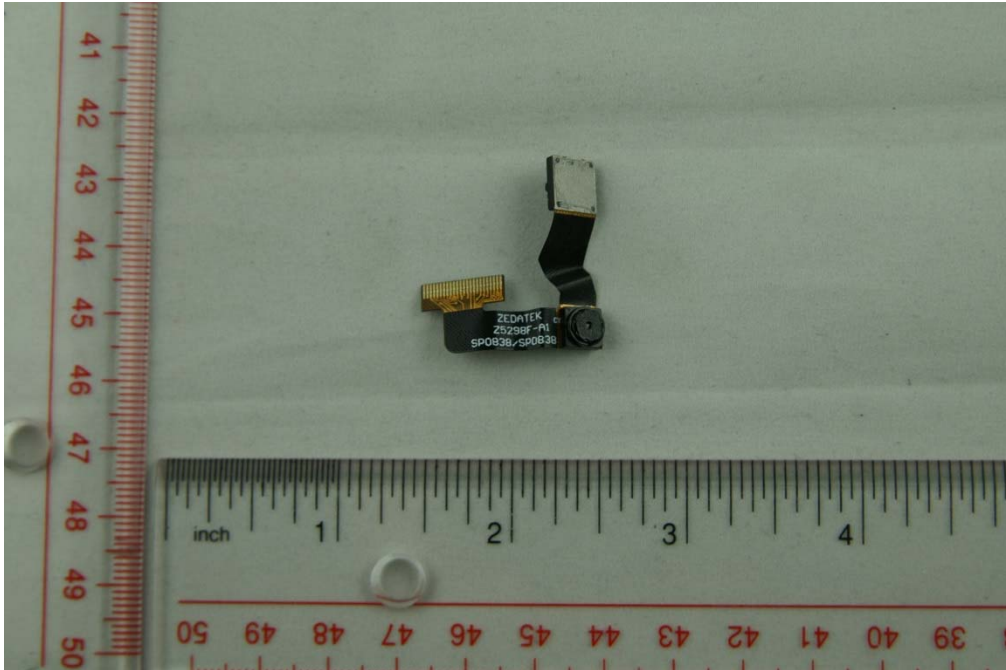
RF Board



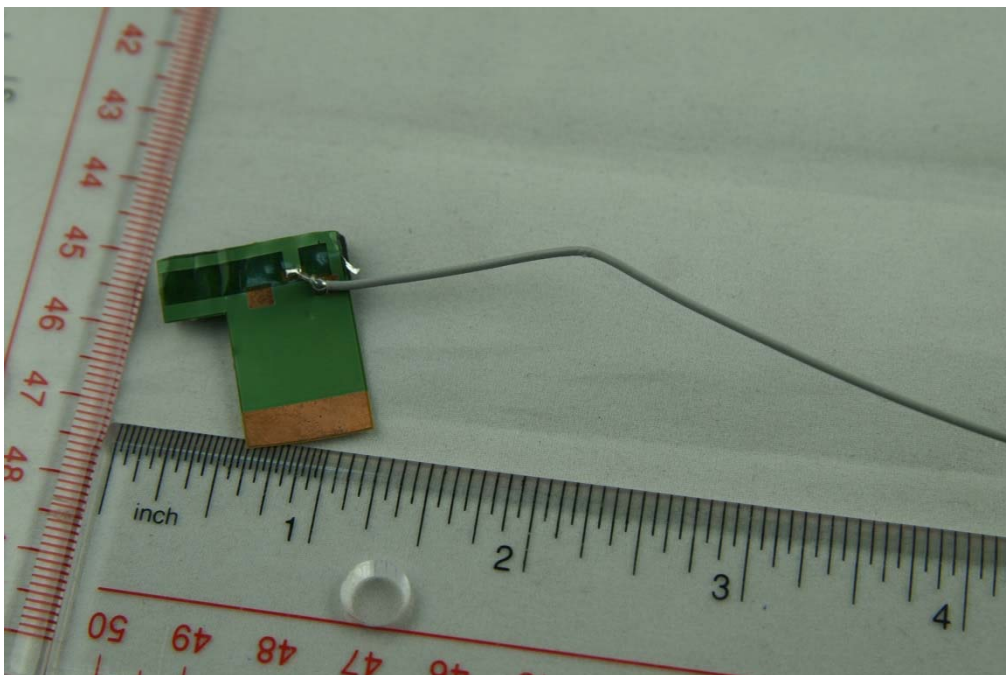
RF Board



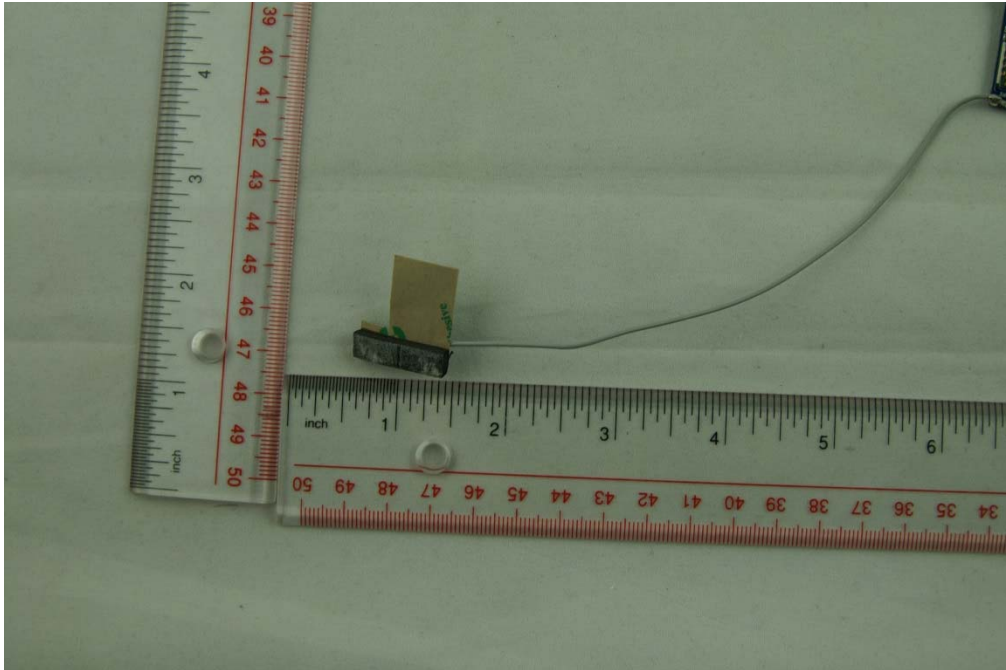
Camera



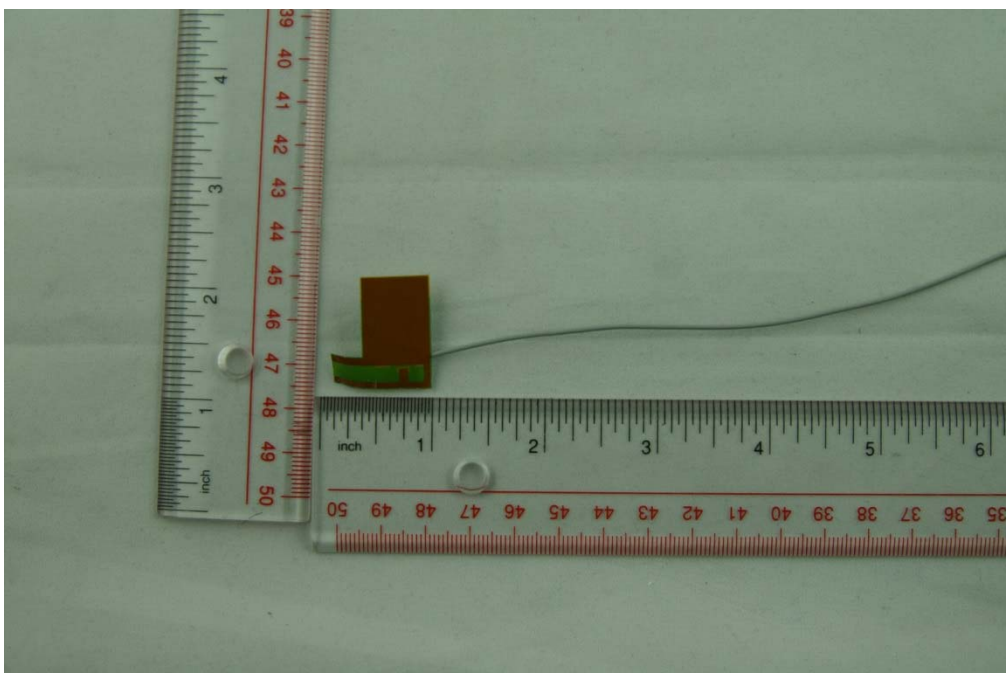
Camera



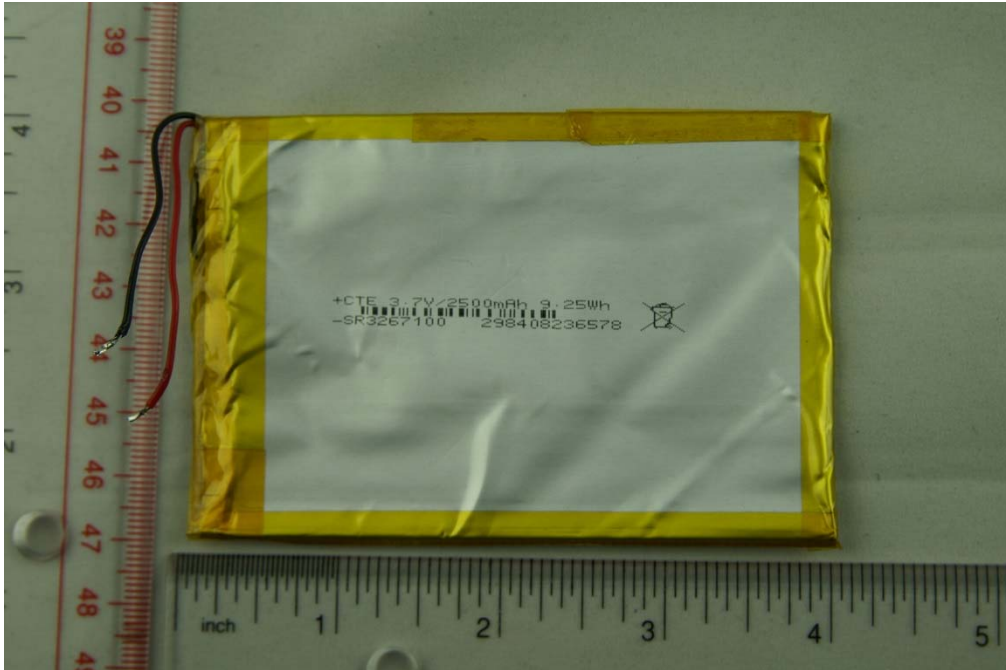
Radio Transmitter Antenna



Radio Transmitter Antenna



Radio Transmitter Antenna



Battery



Battery

--END OF REPORT--