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FCC PART 15 SUBPART B TEST REPORT

FCC Part 15B

Report Reference No.....:	**CTL1306281042-WD**
Compiled by (position+printed name+signature)..:	File administrators Jacky Chen
Name of the organization performing the tests (position+printed name+signature)..:	Test Engineer Tracy Qi
Approved by (position+printed name+signature)..:	Manager Tracy Qi
Date of issue.....:	August 15, 2013
Representative Laboratory Name .:	**Shenzhen CTL Electromagnetic Technology Co., Ltd.**
Address.....:	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test Firm.....:	**Bontek Compliance Testing Laboratory Ltd**
Address.....:	1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China
Applicant's name.....:	**SHENZHEN GOLD EAST ELETRONIC CO., LTD**
Address.....:	6F, Bldg #11, Yusheng Industry Area, #467 Gushu, Xixiang, Bao'an District, Shenzhen, China 518000
Test specification:	
Standard .....:	FCC Part 15B: Unintentional Radiators
TRF Originator.....:	Shenzhen CTL Electromagnetic Technology Co., Ltd.
Master TRF.....:	Dated 2011-01

Test item description ..... :	**Tablet PC**
FCC ID……..:	**2AANTL001-30**
Trade Mark .....:	/
Model/Type reference.....:	L001-30, L002-6, L097-5, L010-13, L011-1, L001-30S, L002-6S, L002-9S, L097-5S, L010-13S, L011-1S, L013-3S, L001-40, L001-40S, L002-10, L002-10S, L097-6, L097-6S, L010-16, L010-16S, L011-2, L011-2S
I/O Type of EUT.....:	USB Port/ Earphone Port/HDMI Port/TF Card Port/SIM Card Port
I/O Q'TY.....:	1/1/1/1/1
GSM/WCDMA	

Transmit .....:	2G:GSM 850: 824~849MHz, PCS 1900: 1850~1910MHz
	3G:WCDMA Band II: 1850-1910MHz,
	WCDMA Band V: 824~849MHz
Receive .....:	2G:GSM 850: 869~894MHz, PCS 1900: 1930~1990MHz
	3G:WCDMA Band II: 1930~1990MHz,
	WCDMA Band V: 869~894MHz
Release Version .....:	2G:R99
	3G:UMTS FDD: Rel-5
Type of modulation .....:	2G: GMSK for GSM/GPRS/EDGE
	3G: QPSK
GPRS Type .....:	Class B
GPRS Class .....:	Class 12
GPS	
work frequency .....:	1575.42MHz
Type of modulation .....:	BPSK
Bluetooth	
Work frequency .....:	2402~2480MHz
Version.....:	V3.0
Type of modulation .....:	FHSS
Data Rate.....:	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps(8DPSK)
Wi-Fi	
Work frequency .....:	802.11b/g/n(20MHz): 2412~2462MHz
	802.11n(40MHz):2422~2452
Type of modulation .....:	802.11b DSSS, 802.11g/n: OFDM
Data Rate.....:	802.11b: 1/2/5.5/11 Mbps
	802.11g: 6/9/12/18/24/36/48/54 Mbps
	802.11n: up to 150 Mbps
Antenna Gain .....:	-0.5 dBi for GSM850 and WCDMA Band V
	-1.0 dBi for PCS1900 and WCDMA Band II
	-2.0 dBi for Bluetooth and Wi-Fi
Antenna type .....:	Internal
IMEI .....:	357619049208958
Result.....:	**Positive**

TEST REPORT

Test Report No. :	CTL1306281042-WD	August 15, 2013 Date of issue

Equipment under Test	:	**Tablet PC**
Model /Type	:	L001-30
Listed Models	:	L002-6, L097-5, L010-13, L011-1, L001-30S, L002-6S, L002-9S, L097-5S, L010-13S, L011-1S, L013-3S, L001-40, L001-40S, L002-10, L002-10S, L097-6, L097-6S, L010-16, L010-16S, L011-2, L011-2S
Difference Description		Only the model's name is different
Applicant	:	**SHENZHEN GOLD EAST ELETRONIC CO., LTD**
Address	:	6F, Bldg #11, Yusheng Industry Area, #467 Gushu, Xixiang，Bao'an District, Shenzhen, China 518000
Manufacturer		**SHENZHEN GOLD EAST ELETRONIC CO., LTD**
Address		6F, Bldg #11, Yusheng Industry Area, #467 Gushu, Xixiang，Bao'an District, Shenzhen, China 518000

Test Result according to the standards on page 5:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Part 15B: Unintentional Radiators

ANCI C63.4: 2003

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample : July 22, 2013

Testing commenced on : July 22, 2013

Testing concluded on : August 15, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ● 120V / 60 Hz o 115V / 60Hz
o 12 V DC o 24 V DC
● Other (specified in blank below)

DC 3.7V from battery

2.3. Short description of the Equipment under Test (EUT)

The device is a Tablet PC.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

Test Mode(TM)	Description	Remark
TM1	HDMI Playing	1KHz Audio, Connect to TV by HDMI Cable
TM2	MP3 Playing	1KHz Audio
TM3	Downloading	Connect to PC
TM4	Charging	Charged by Adapter

The field strength of radiation emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis).
The following data show only with the worst case setup.
The worst case of Y axis was reported.
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.

The worst case of AC Conducted Emission isTM1; the test data of this mode was reported.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.8	Unshielded	Without Core
Earphone Cable	1.5	Unshielded	Without Core
HDMI Cable	0.8	Unshielded	Without Core

O - supplied by the manufacturer
● - supplied by the lab

● Notebook PC	Manufacturer :	lenovo
	Model No. :	E43L
● TV	Manufacturer :	SHARP
	Model No. :	LCD-26Z100A

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2AANTL001-30** filing to comply with of the FCC Part 15B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

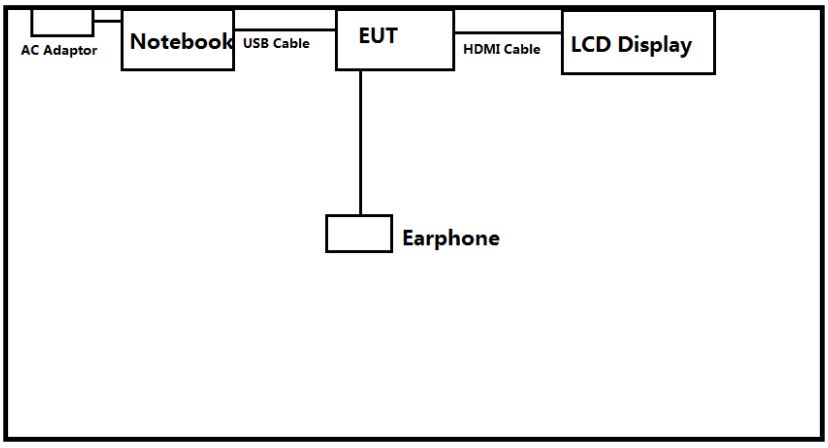
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.
Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~12.75GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Last Cal.	Due. Date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	2013/04/14	2014/04/13
2	Radio Communication Tester	ROHDE & SCHWARZ	CMU200	2013/04/14	2014/04/13
3	Dual Directional Coupler	Agilent	778D	2013/04/14	2014/04/13
4	10dB attenuator	SCHWARZBECK	MTAIMP-136	2013/04/14	2014/04/13
5	Tunable Bandreject filter	K&L	3TNF-800	2013/04/14	2014/04/13
6	Tunable Bandreject filter	K&L	5TNF-1700	2013/04/14	2014/04/13
7	High-Pass Filter	K&L	9SH10-2700/X12750-O/O	2013/04/14	2014/04/13
8	High-Pass Filter	K&L	41H10-1375/U12750-O/O	2013/04/14	2014/04/13
9	Coaxial Cable	Huber+Suhner	AC4-RF-H	2013/04/14	2014/04/13
10	AC Power Supply	IDRC	CF-500TP	2013/04/14	2014/04/13
11	DC Power Supply	IDRC	CD-035-020PR	2013/04/14	2014/04/13
12	RF Current Probe	FCC	F-33-4	2013/04/14	2014/04/13
13	Temperature /Humidity Meter	zhicheng	ZC1-2	2013/04/14	2014/04/13
14	MICROWAVE AMPLIFIER	HP	8349B	2013/04/14	2014/04/13
15	Amplifier	HP	8447D	2013/04/14	2014/04/13
16	SIGNAL GENERATOR	HP	8647A	2013/04/14	2014/04/13
17	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2013/04/14	2014/04/13
18	Horn Antenna	Schwarzbeck	BBHA9120A	2013/04/14	2014/04/13
19	EMI Test Receiver	R&S	ESPI	2013/04/14	2014/04/13
20	Loop Antenna	ZHINAN	ZN30900A	2013/04/14	2014/04/13
21	Horn Antenna	Schwarzbeck	BBHA9120D	2013/04/14	2014/04/13
22	Horn Antenna	Schwarzbeck	BBHA9170	2013/04/14	2014/04/13

3.7. Summary of Test Result

No deviations from the test standards

Test Item	Test Requirement	Standard Paragraph	Result
Radiated Emission	FCC PART 15	Section 15.109	PASS
Conducted Emission	FCC PART 15	Section 15.107	PASS

3.8. Test Software

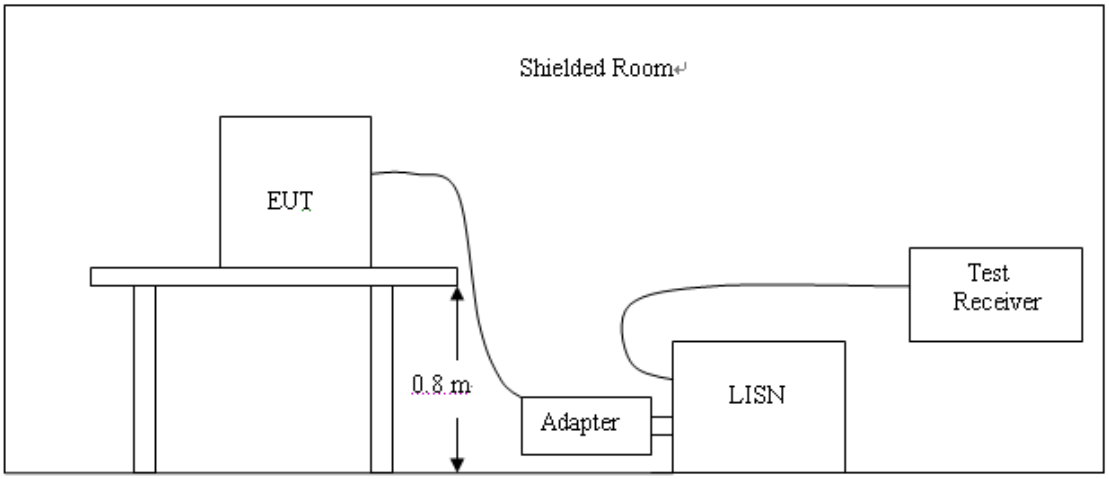
The following programs installed in the EUT were programmed during the test.

1. Execute the program, “Winthrax”, installed in PC for files transfer with EUT via USB cable.
2. Turn on camera to capture images.

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

Frequency (MHz)	Maximum RF Line Voltage (dBμv)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

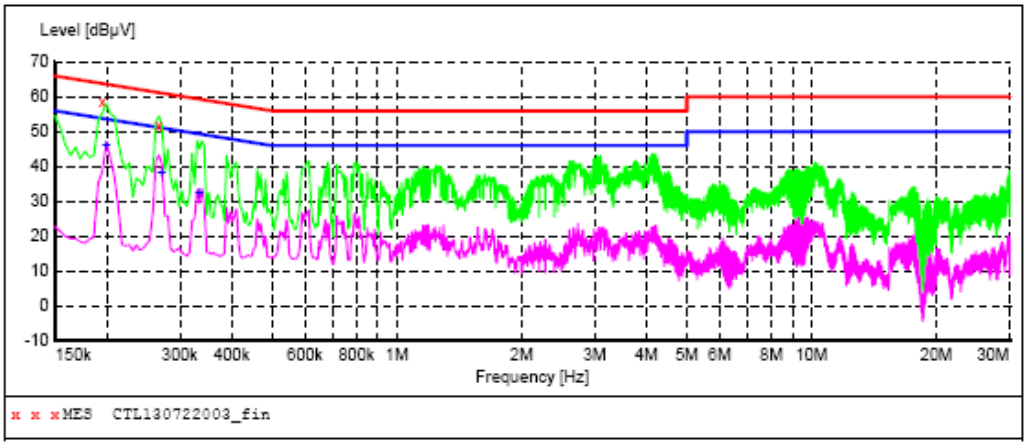
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

The RBW/VBW for 150KHz to 30MHz: 9KHz

TEST RESULTS

TM4:

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL130722003_fin"

7/22/2013 2:31PM

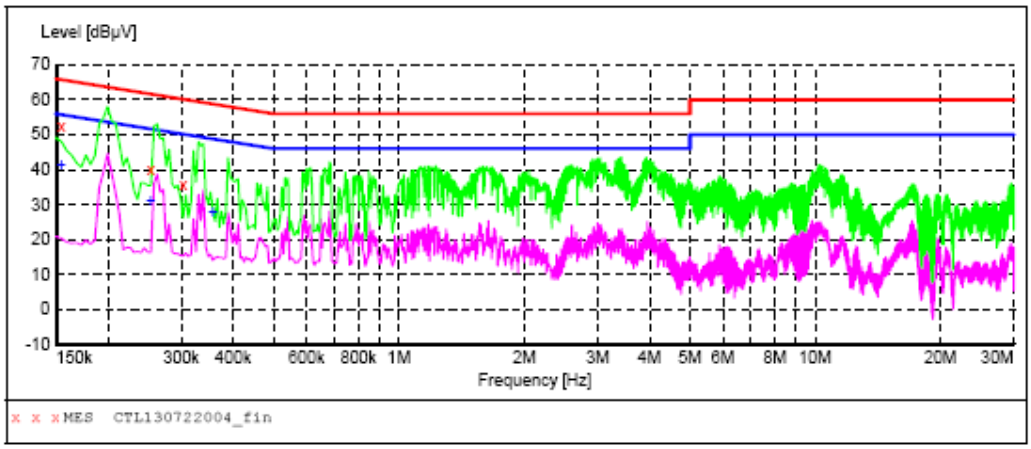
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.195000	58.40	9.8	64	5.4	QP	N	GND
0.267000	51.70	9.8	61	9.5	QP	N	GND

MEASUREMENT RESULT: "CTL130722003_fin2"

7/22/2013 2:31PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199500	46.70	9.8	54	6.9	AV	N	GND
0.271500	38.60	9.8	51	12.5	AV	N	GND
0.334500	33.00	9.8	49	16.3	AV	N	GND

SCAN TABLE: "Voltage (9K-30M) FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL130722004_fin"

7/22/2013 2:41PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154500	52.60	9.8	66	13.2	QP	L1	GND
0.253500	40.10	9.8	62	21.5	QP	L1	GND
0.303000	35.60	9.8	60	24.6	QP	L1	GND

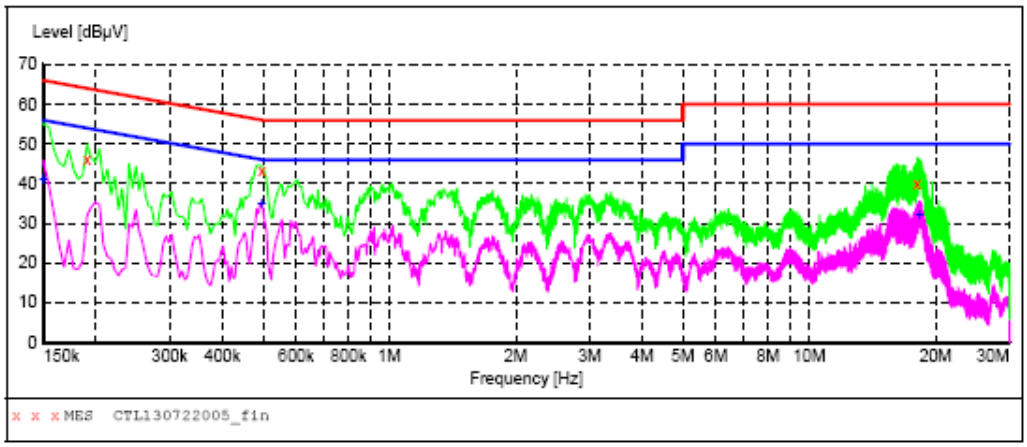
MEASUREMENT RESULT: "CTL130722004_fin2"

7/22/2013 2:41PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154500	41.80	9.8	56	14.0	AV	L1	GND
0.253500	31.30	9.8	52	20.3	AV	L1	GND
0.357000	28.40	9.8	49	20.4	AV	L1	GND

TM1:

SCAN TABLE: "Voltage (9K-30M) FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL130722005_fin"

7/22/2013 2:44PM

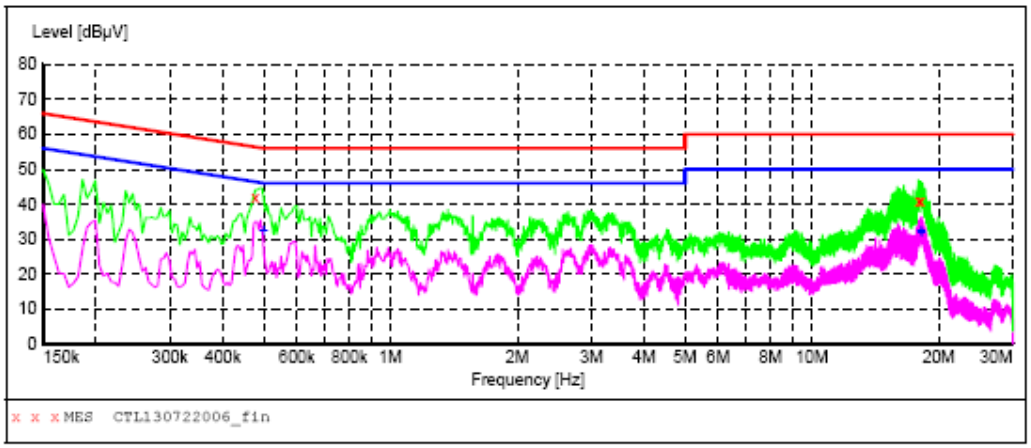
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.190500	45.90	9.8	64	18.1	QP	L1	GND
0.496500	43.40	9.8	56	12.7	QP	L1	GND
18.060000	40.10	10.4	60	19.9	QP	L1	GND

MEASUREMENT RESULT: "CTL130722005_fin2"

7/22/2013 2:44PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	41.60	9.8	56	14.4	AV	L1	GND
0.496500	35.10	9.8	46	11.0	AV	L1	GND
18.325500	32.60	10.4	50	17.4	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL130722006_fin"

7/22/2013 2:47PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.478500	41.90	9.8	56	14.5	QP	N	GND
17.943000	40.60	10.4	60	19.4	QP	N	GND
18.127500	40.80	10.4	60	19.2	QP	N	GND

MEASUREMENT RESULT: "CTL130722006_fin2"

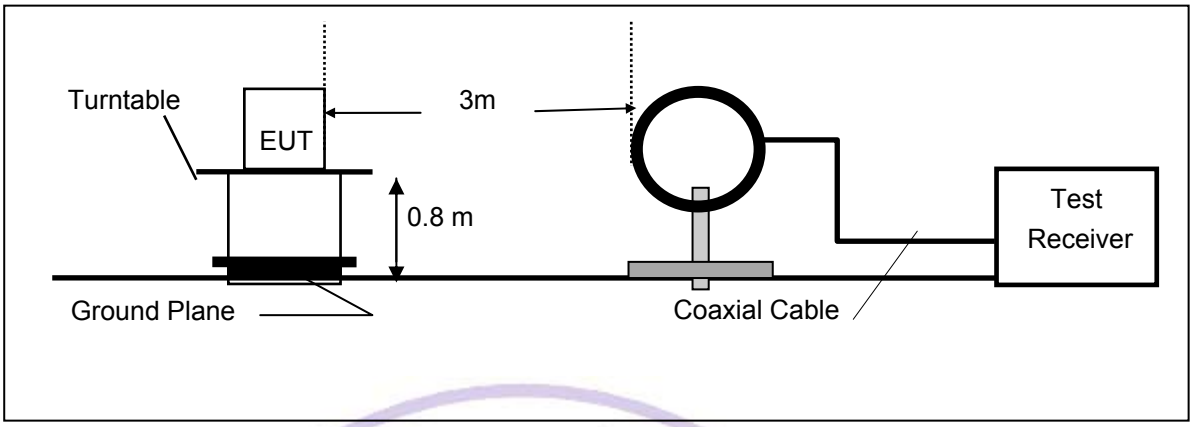
7/22/2013 2:47PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.501000	32.50	9.8	46	13.5	AV	N	GND
18.190500	32.60	10.4	50	17.4	AV	N	GND
18.240000	32.40	10.4	50	17.6	AV	N	GND

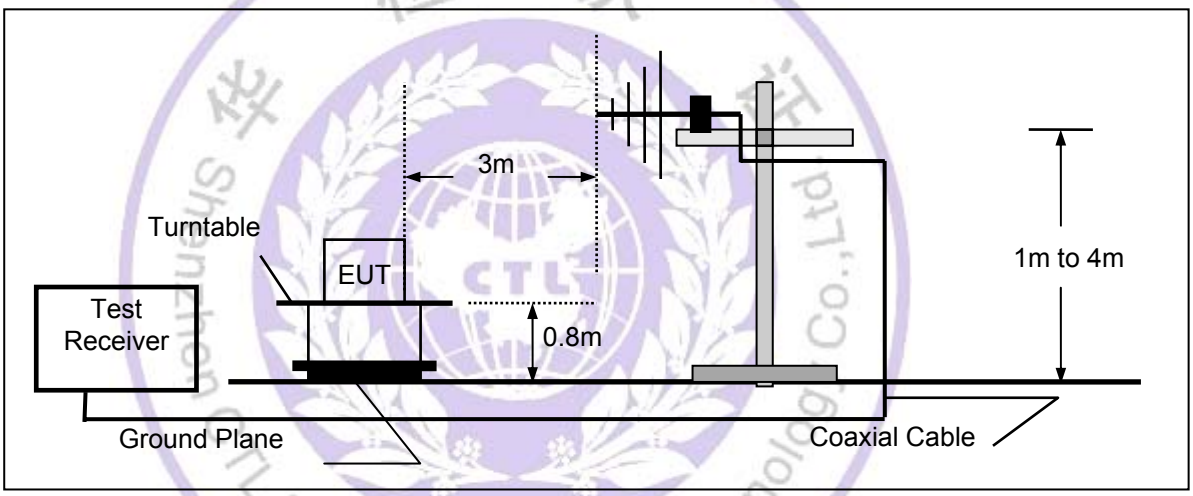
4.2. Radiated Emissions Test

TEST CONFIGURATION

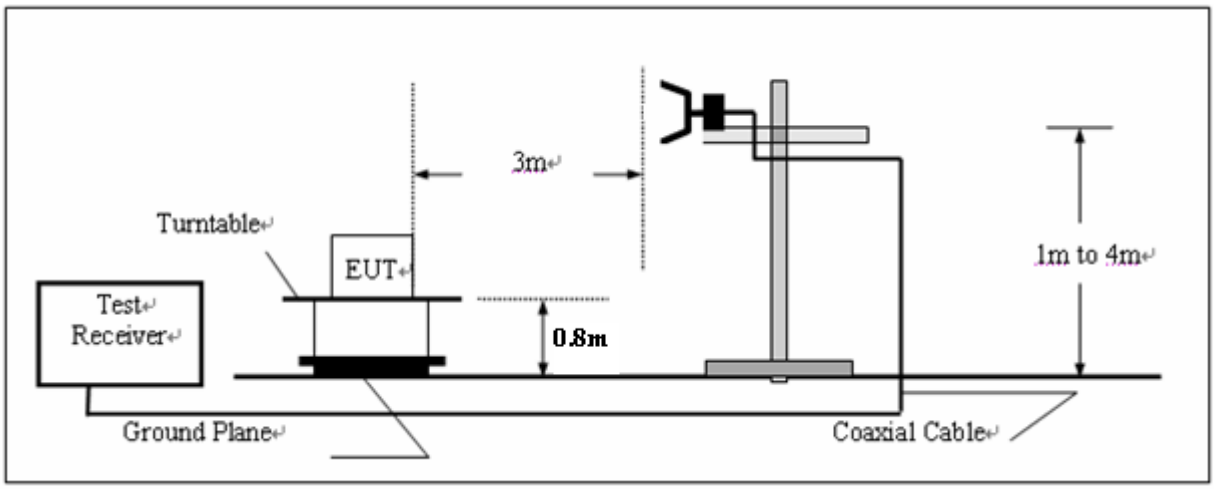
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



LIMIT

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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

FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

TEST PROCEDURE

1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measurements have been completed.
6. Based on the Frequency Generator in the device include 32KHz, 19.2MHz, and the speed of CPU is 1G, so the test frequency range from 9KHz to 2GHz per FCC PART 15.33(a) and 1.33(b)(1).

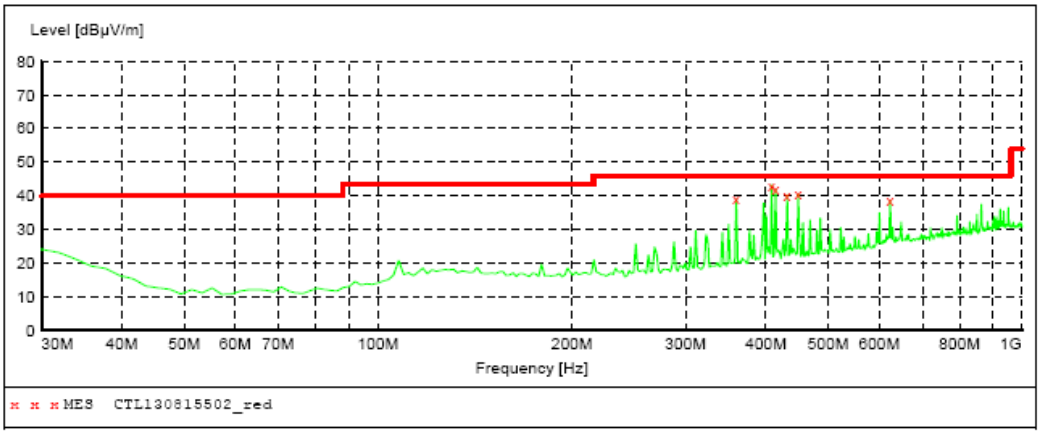
TEST RESULTS

All the test modes (TM1, TM2 , TM3 and TM4) completed for test. The worst case of Radiated Emission is TM1; the test data of this mode was reported.

TM 1:

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



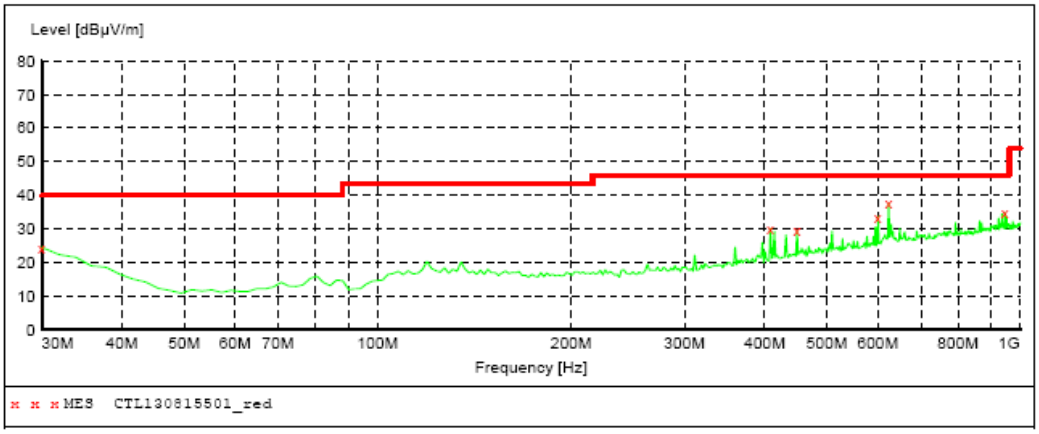
MEASUREMENT RESULT: "CTL130815502_red"

8/15/2013 9:40AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
359.800000	39.10	17.3	46.0	6.9	---	0.0	0.00	HORIZONTAL
408.300000	43.20	18.4	46.0	2.8	---	0.0	0.00	HORIZONTAL
414.120000	42.10	18.6	46.0	3.9	---	0.0	0.00	HORIZONTAL
431.580000	40.20	18.9	46.0	5.8	---	0.0	0.00	HORIZONTAL
449.040000	40.60	19.2	46.0	5.4	---	0.0	0.00	HORIZONTAL
623.640000	38.70	22.3	46.0	7.3	---	0.0	0.00	HORIZONTAL

SWEEP TABLE: "test (30M-1G)"

Short Description: Start Frequency	Stop Frequency	Detector	Field Strength Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL130815501_red"

8/15/2013 9:37AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.50	21.1	40.0	15.5	---	0.0	0.00	VERTICAL
408.300000	30.10	18.4	46.0	15.9	---	0.0	0.00	VERTICAL
449.040000	29.40	19.2	46.0	16.6	---	0.0	0.00	VERTICAL
600.360000	33.60	21.8	46.0	12.4	---	0.0	0.00	VERTICAL
623.640000	37.70	22.3	46.0	8.3	---	0.0	0.00	VERTICAL
945.680000	34.80	26.6	46.0	11.2	---	0.0	0.00	VERTICAL

Remark：

(1) Measuring frequencies from 9 KHz to the 2GHz, Loop Antenna used below 30MHz. See Section 3.6 table item 20. Radiated emission test from 9KHz to 30MHz, above 1GHz were verified, and no any emission was found except system noise floor.

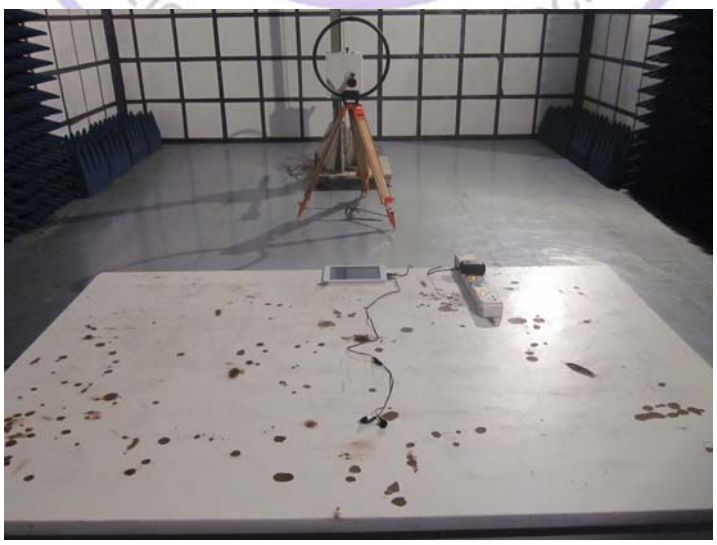
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

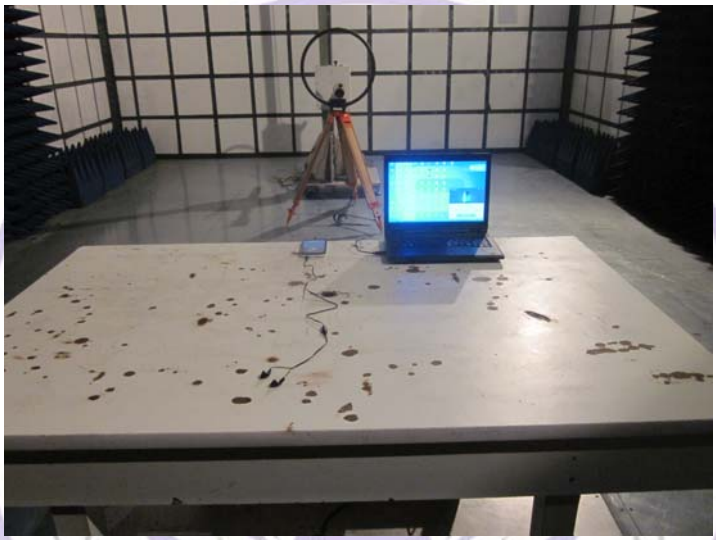
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. The test results from 9KHz to 30MHz, above 1GHz are not reported because the emissions levels that are 20dB below the official limit.

(5) The IF bandwidth of EMI Test Receiver between30MHz to 1GHz was 100KHz. Below 30MHz was 10KHz. Above 1GHz was 1MHz.

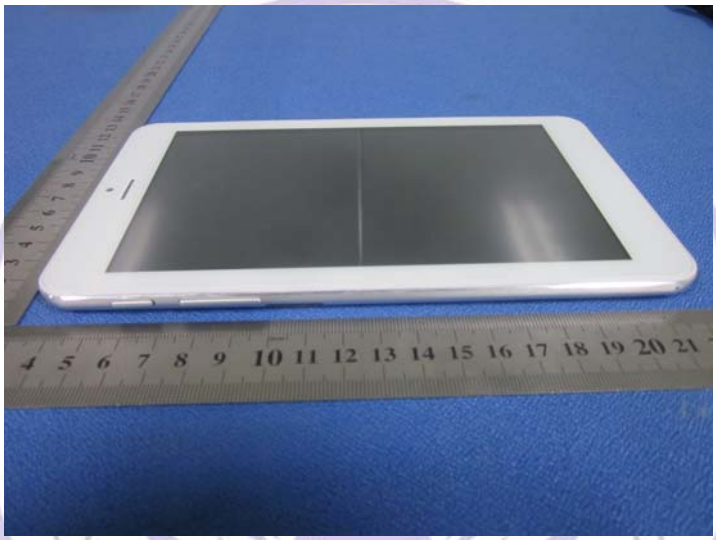
5. Test Setup Photos of the EUT





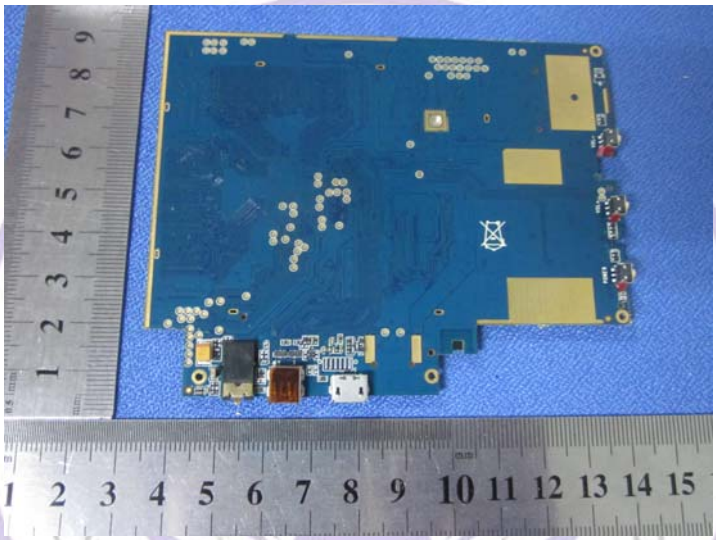
6. External and Internal Photos of the EUT

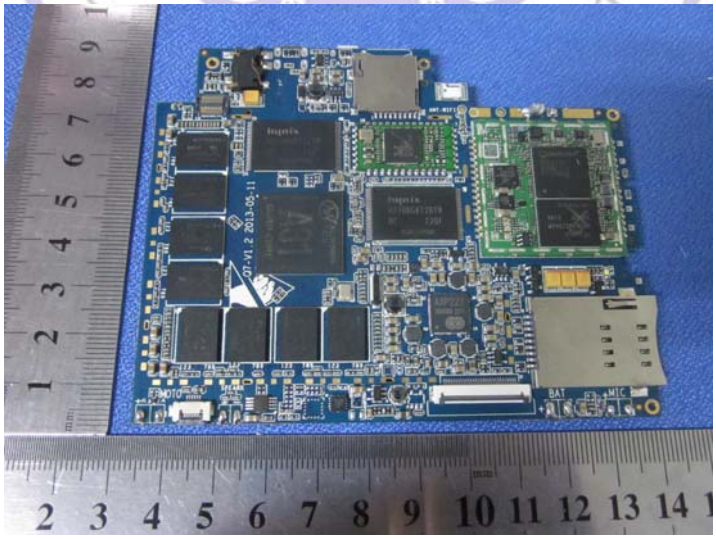
External Photos of EUT

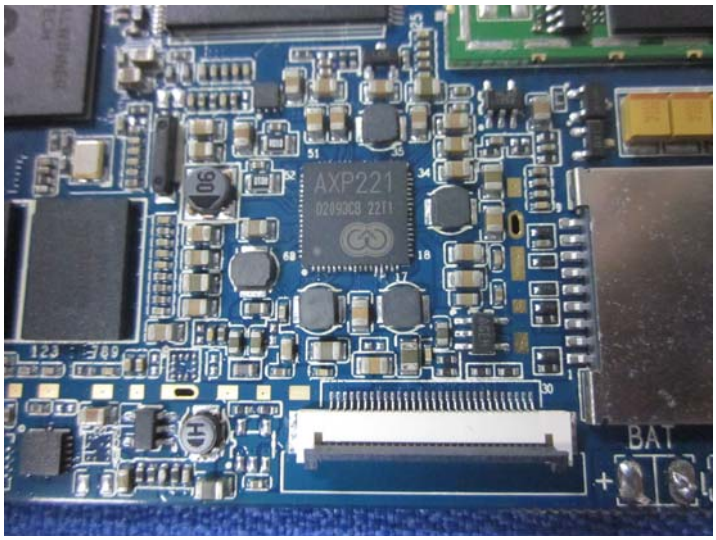


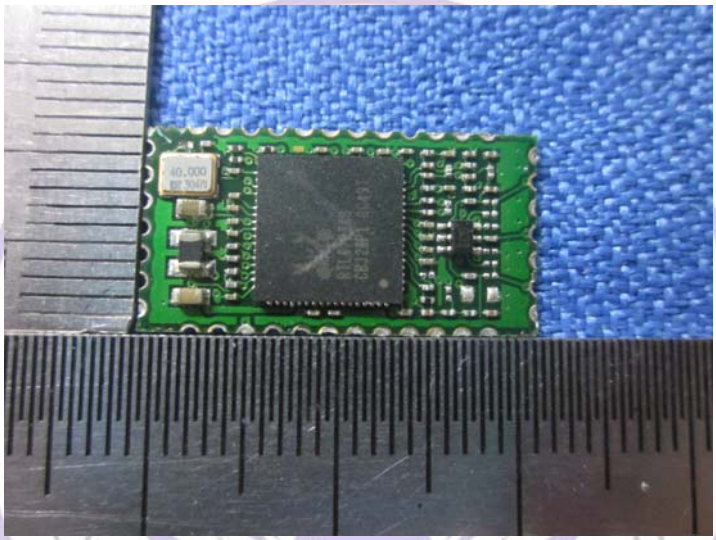
Internal Photos of EUT

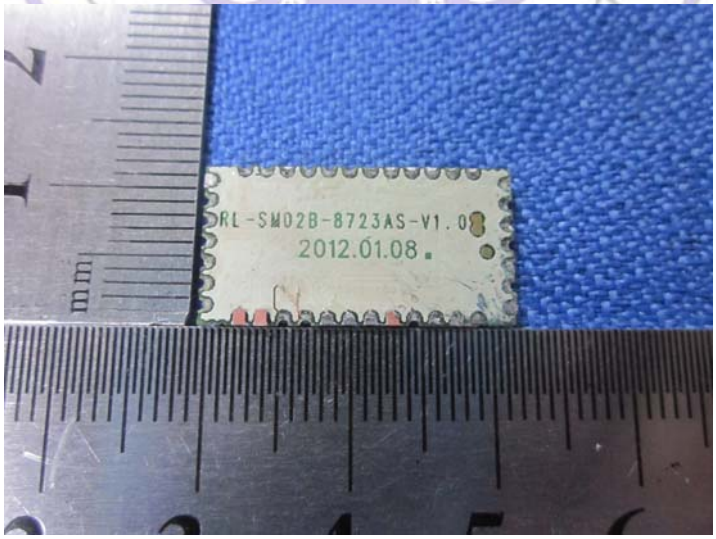

HWM620
SW VER:C1B2106






AXP221
BAT

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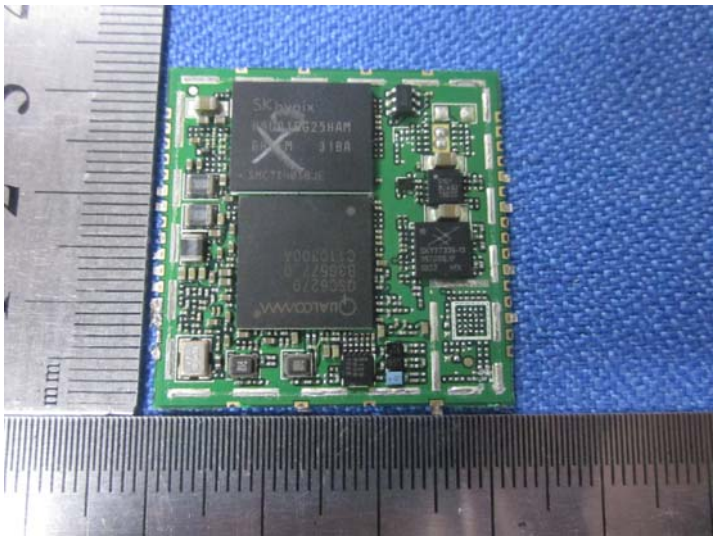
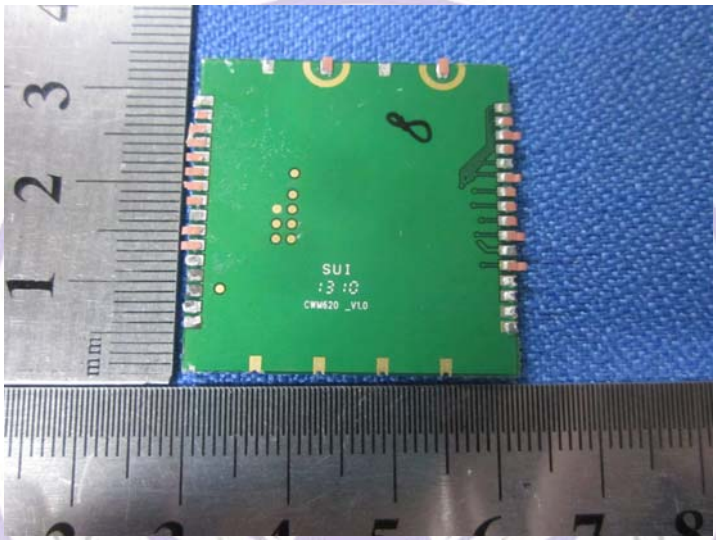
2012.01.08.





.....End of Report.....