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## FCC PART 15 SUBPART B TEST REPORT

### FCC Part 15B

**Report Reference No.**.....: **CTL130122127-WD**

Compiled by

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*Jacky Chen*

Name of the organization performing the tests

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*Tracy Qi*

Date of issue.....: Mar. 08, 2013

**Representative Laboratory Name.** : **Shenzhen CTL Electromagnetic Technology Co., Ltd.**

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**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 SANGFEI CONSUMER COMMUNICATIONS CO., LTD**

Address.....: 11 Science and Technology Road, Shenzhen Hi-tech Industrial Park Nanshan District. Shenzhen, PRC

#### Test specification:

Standard.....: FCC Part 15B: Unintentional Radiators

TRF Originator.....: Shenzhen CTL Electromagnetic Technology Co., Ltd.

Master TRF.....: Dated 2011-01

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**Test item description**.....: **Smartphone**

**FCC ID**.....: **VQR-W5510**

Trade Mark.....: PHILIPS

Model/Type reference.....: W5510

I/O Type of EUT.....: USB Port/ Earphone Port

I/O Q'TY.....: 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-6

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

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 65 Mbps

Antenna Gain .....: -1.5 dBi for GSM850 and WCDMA Band V  
-0.5 dBi for PCS1900 and WCDMA Band II  
-2.5 dBi for Bluetooth and Wi-Fi

Antenna type.....: Internal

IMEI.....: 911131205416242

Hardware version.....: SR701\_V2.0

Software version.....: PhilipsW5510-user 4.0.4 IMM76D eng.root.20130122.224030 test-keys

Result.....: **Positive**

**TEST REPORT**

<b>Test Report No. :</b>	<b>CTL130122127-WD</b>	Mar. 08, 2013
		Date of issue

**Equipment under Test** : Smartphone

**Model /Type** : W5510

**Listed Models** : /

**Applicant** : **SHENZHEN SANGFEI CONSUMER COMMUNICATIONS CO.,LTD**

**Address** : 11 Science and Technology Road, Shenzhen Hi-tech Industrial Park Nanshan District.Shenzhen,PRC

**Manufacturer** **SHENZHEN SANGFEI CONSUMER COMMUNICATIONS CO.,LTD**

**Address** 11 Science and Technology Road, Shenzhen Hi-tech Industrial Park Nanshan District.Shenzhen,PRC

**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.

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## **1. TEST STANDARDS**

The tests were performed according to following standards:

[FCC Part 15B: Unintentional Radiators](#)

[ANCI C63.4: 2009](#)





## 2. SUMMARY

### 2.1. General Remarks

Date of receipt of test sample : Jan. 28, 2013

Testing commenced on : Jan. 29, 2013

Testing concluded on : Feb. 28, 2013

### 2.2. Equipment Under Test

#### Power supply system utilised

Power supply voltage : ☒ 120V / 60 Hz ☐ 115V / 60Hz  
☐ 12 V DC ☐ 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 Smartphone.

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	MP3 Playing	1KHz Audio
TM2	Downloading	Connect to PC
TM3	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 is mode 1; 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

- - supplied by the manufacturer
- - supplied by the lab

- Ear-phone

Manufacturer : Philips

Model No. : KY21-05

- Notebook PC

Manufacturer : HP

Model No. : 4-1007TX

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

This submittal(s) (test report) is intended for FCC ID: **VQR-W5510** filing to comply with of the FCC Part 15B Rules.

## 2.7. Modifications

No modifications were implemented to meet testing criteria.







### 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	2012/04/14	2013/04/13
2	Radio Communication Tester	ROHDE & SCHWARZ	CMU200	2012/04/14	2013/04/13
3	Dual Directional Coupler	Agilent	778D	2012/04/14	2013/04/13
4	10dB attenuator	SCHWARZBECK	MTAIMP-136	2012/04/14	2013/04/13
5	Tunable Bandreject filter	K&L	3TNF-800	2012/04/14	2013/04/13
6	Tunable Bandreject filter	K&L	5TNF-1700	2012/04/14	2013/04/13
7	High-Pass Filter	K&L	9SH10-2700/X12750-O/O	2012/04/14	2013/04/13
8	High-Pass Filter	K&L	41H10-1375/U12750-O/O	2012/04/14	2013/04/13
9	Coaxial Cable	Huber+Suhner	AC4-RF-H	2012/04/14	2013/04/13
10	AC Power Supply	IDRC	CF-500TP	2012/04/14	2013/04/13
11	DC Power Supply	IDRC	CD-035-020PR	2012/04/14	2013/04/13
12	RF Current Probe	FCC	F-33-4	2012/04/14	2013/04/13
13	Temperature /Humidity Meter	zhicheng	ZC1-2	2012/04/14	2013/04/13
14	MICROWAVE AMPLIFIER	HP	8349B	2012/04/14	2013/04/13
15	Amplifier	HP	8447D	2012/04/14	2013/04/13
16	SIGNAL GENERATOR	HP	8647A	2012/04/14	2013/04/13
17	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2012/04/14	2013/04/13
18	Horn Antenna	Schwarzbeck	BBHA9120A	2012/04/14	2013/04/13
19	EMI Test Receiver	R&S	ESPI	2012/04/14	2013/04/13
20	Loop Antenna	ZHINAN	ZN30900A	2012/04/14	2013/04/13
21	Horn Antenna	Schwarzbeck	BBHA9120D	2012/04/14	2013/04/13
22	Horn Antenna	Schwarzbeck	BBHA9170	2012/04/14	2013/04/13

### 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.

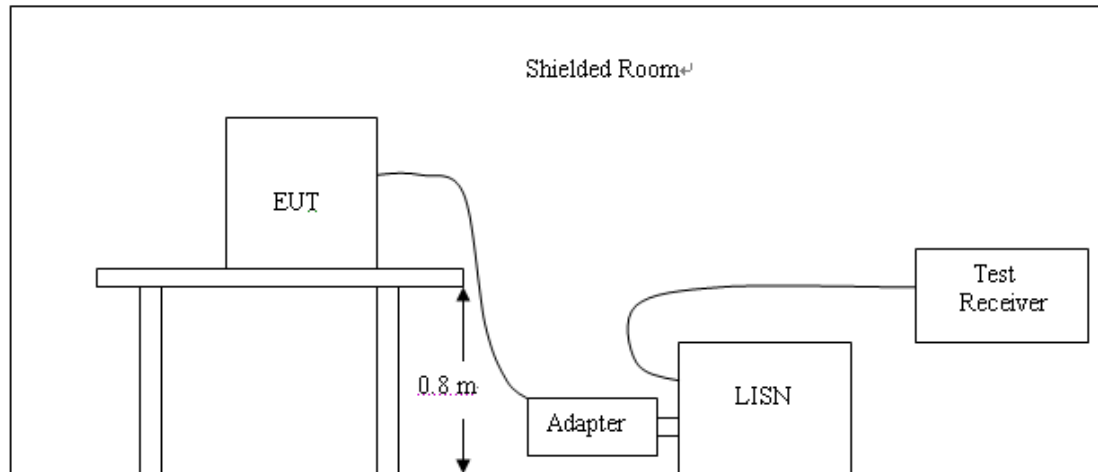
1. Execute the program, “Winthrax” , installed in PC for files transfer with EUT via USB cable.
2. Turn on camera to capture images.



## 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

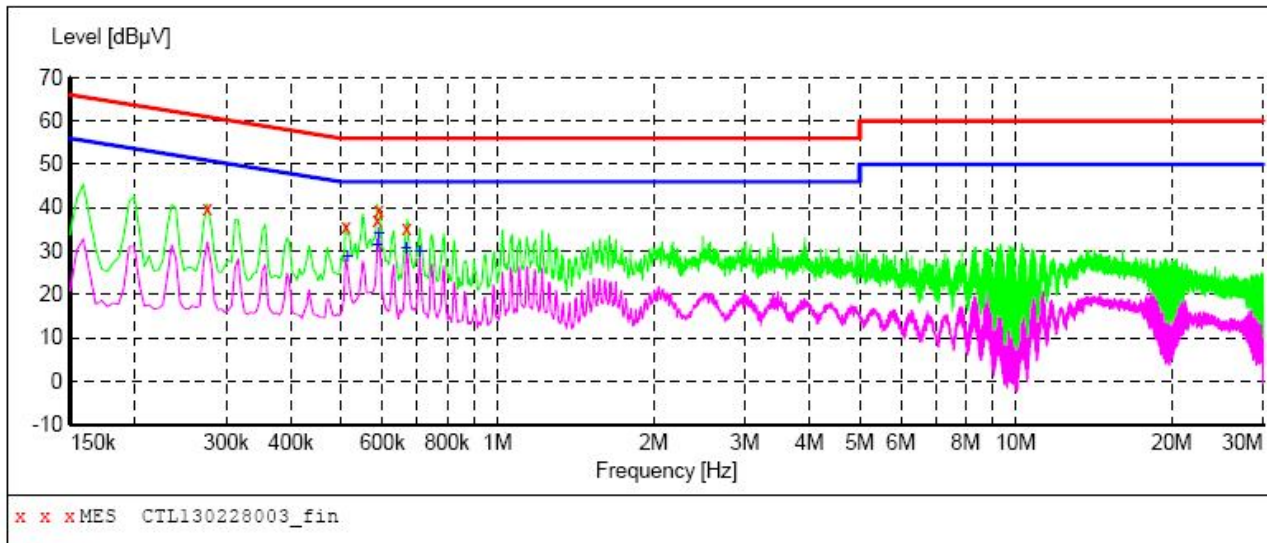
For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

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****Charging mode:****SCAN TABLE: "Voltage (9K-30M)FIN"**

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "CTL130228003\_fin"**

2/28/2013 3:00PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.276000	39.70	10.2	61	21.2	QP	L1	GND
0.510000	35.60	10.2	56	20.4	QP	L1	GND
0.586500	37.30	10.2	56	18.7	QP	L1	GND
0.591000	39.30	10.2	56	16.7	QP	L1	GND
0.667500	35.40	10.2	56	20.6	QP	L1	GND

**MEASUREMENT RESULT: "CTL130228003\_fin2"**

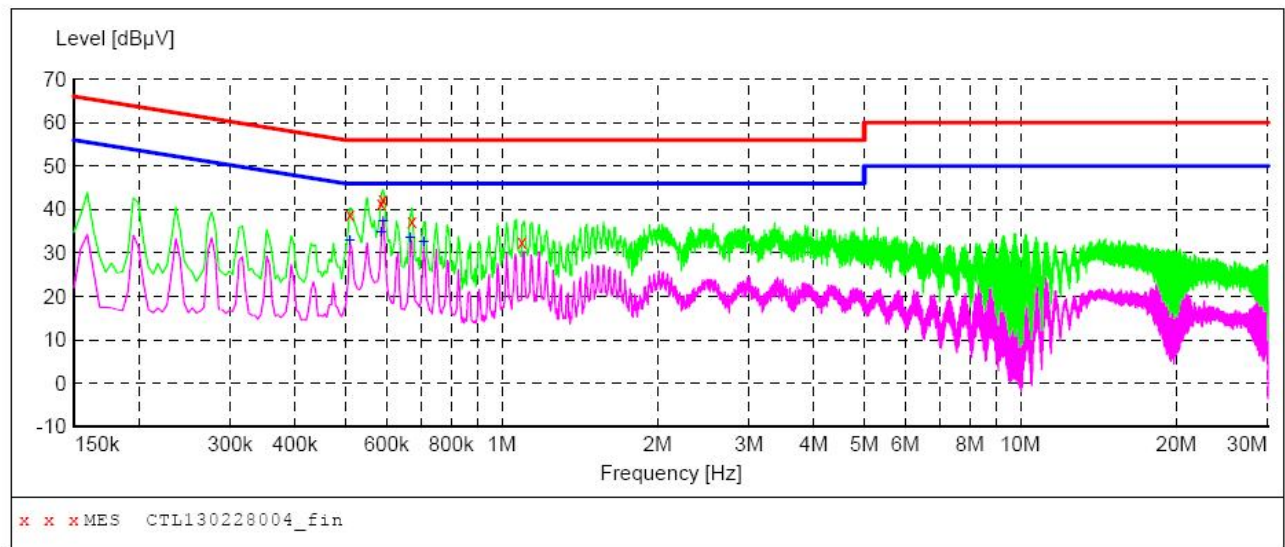
2/28/2013 3:00PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.514500	28.80	10.2	46	17.2	AV	L1	GND
0.586500	31.30	10.2	46	14.7	AV	L1	GND
0.591000	34.20	10.2	46	11.8	AV	L1	GND
0.667500	30.70	10.2	46	15.3	AV	L1	GND
0.708000	29.90	10.2	46	16.1	AV	L1	GND



**SCAN TABLE: "Voltage (9K-30M) FIN"**

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "CTL130228004\_fin"**

2/28/2013 3:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.510000	39.00	10.2	56	17.0	QP	N	GND
0.586500	41.30	10.2	56	14.7	QP	N	GND
0.591000	42.50	10.2	56	13.5	QP	N	GND
0.672000	37.30	10.2	56	18.7	QP	N	GND
1.095000	32.60	10.3	56	23.4	QP	N	GND

**MEASUREMENT RESULT: "CTL130228004\_fin2"**

2/28/2013 3:03PM

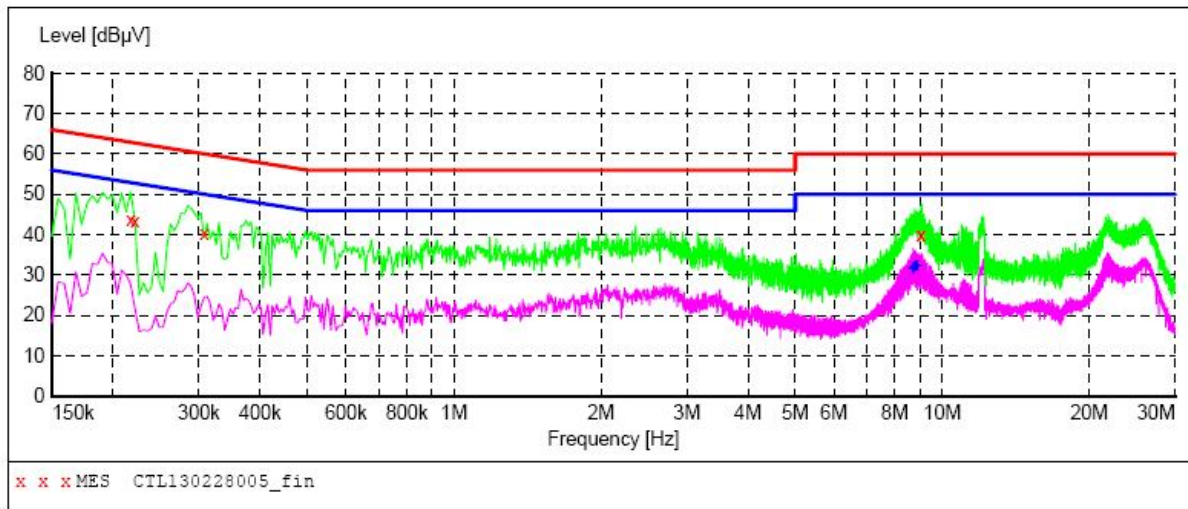
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.510000	33.00	10.2	46	13.0	AV	N	GND
0.586500	34.70	10.2	46	11.3	AV	N	GND
0.591000	37.40	10.2	46	8.6	AV	N	GND
0.667500	33.50	10.2	46	12.5	AV	N	GND
0.708000	32.40	10.2	46	13.6	AV	N	GND



## USB Copy mode:

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

Short Description: 150K-30M Voltage



## MEASUREMENT RESULT: "CTL130228005\_fin"

2/28/2013 3:09PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.217500	43.70	10.2	63	19.2	QP	N	GND
0.222000	43.40	10.2	63	19.3	QP	N	GND
0.307500	40.50	10.2	60	19.5	QP	N	GND
9.037500	40.10	10.5	60	19.9	QP	N	GND
9.046500	40.10	10.5	60	19.9	QP	N	GND

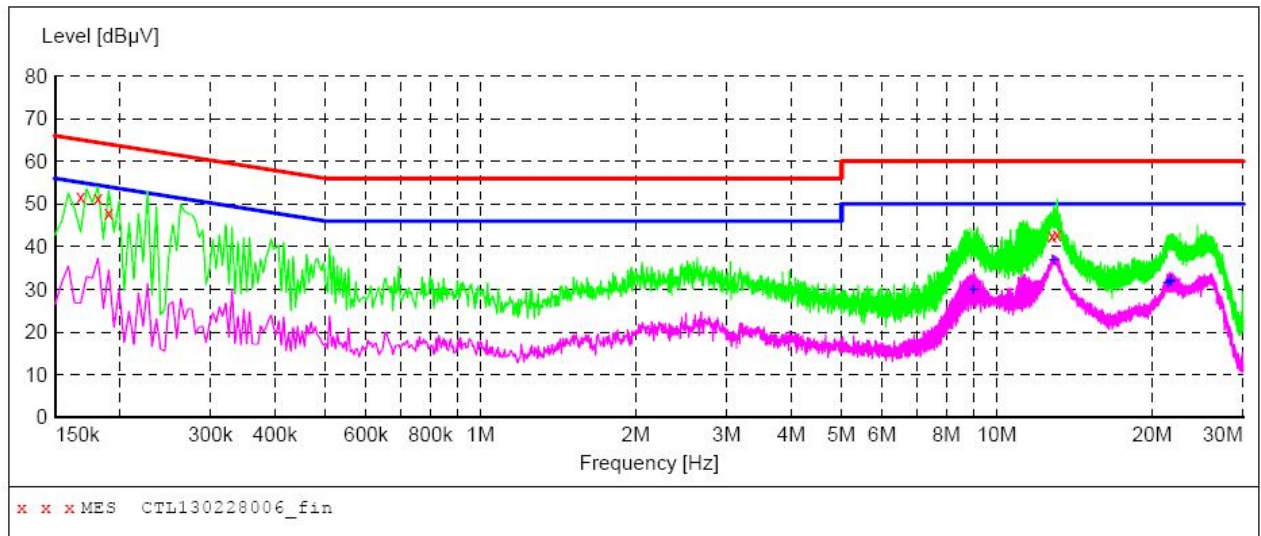
## MEASUREMENT RESULT: "CTL130228005\_fin2"

2/28/2013 3:09PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
8.713500	31.60	10.5	50	18.4	AV	N	GND
8.740500	31.90	10.5	50	18.1	AV	N	GND
8.826000	32.20	10.5	50	17.8	AV	N	GND
8.839500	32.20	10.5	50	17.8	AV	N	GND
8.889000	32.30	10.5	50	17.7	AV	N	GND

**SCAN TABLE: "Voltage (9K-30M)FIN"**

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "CTL130228006\_fin"**

2/28/2013 3:12PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.168000	51.80	10.2	65	13.3	QP	L1	GND
0.181500	51.50	10.2	64	12.9	QP	L1	GND
0.190500	48.10	10.2	64	15.9	QP	L1	GND
12.781500	42.40	10.6	60	17.6	QP	L1	GND
13.074000	42.70	10.6	60	17.3	QP	L1	GND

**MEASUREMENT RESULT: "CTL130228006\_fin2"**

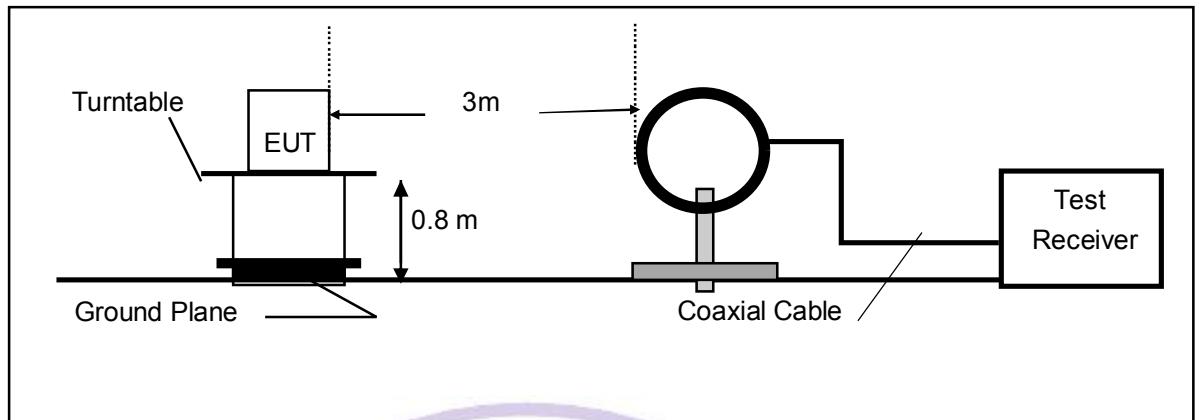
2/28/2013 3:12PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
9.015000	29.90	10.5	50	20.1	AV	L1	GND
12.907500	36.80	10.6	50	13.2	AV	L1	GND
21.430500	31.60	10.9	50	18.4	AV	L1	GND
21.727500	31.90	10.9	50	18.1	AV	L1	GND
21.732000	32.00	10.9	50	18.0	AV	L1	GND

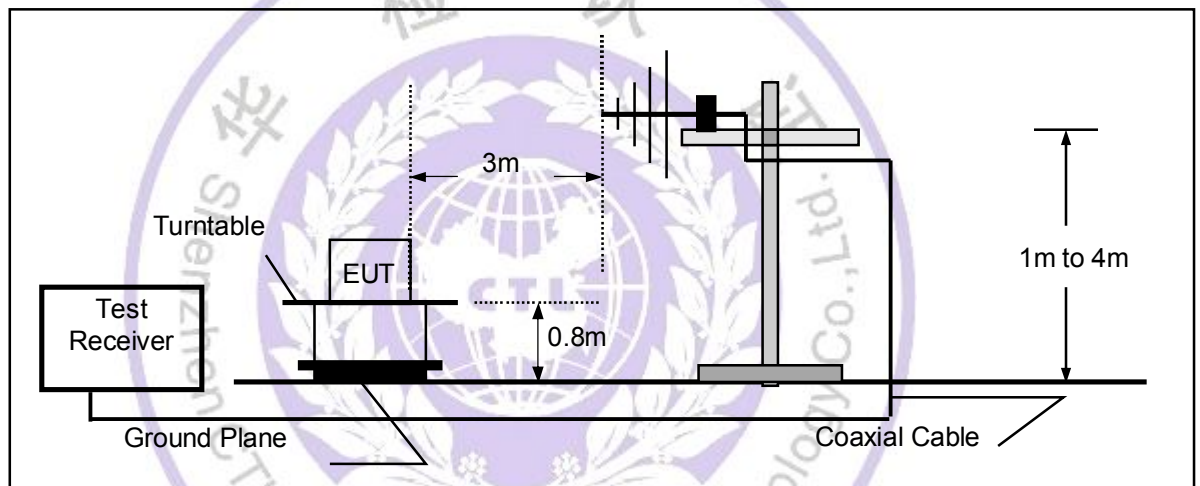
## 4.2. Radiated Emissions Test

### TEST CONFIGURATION

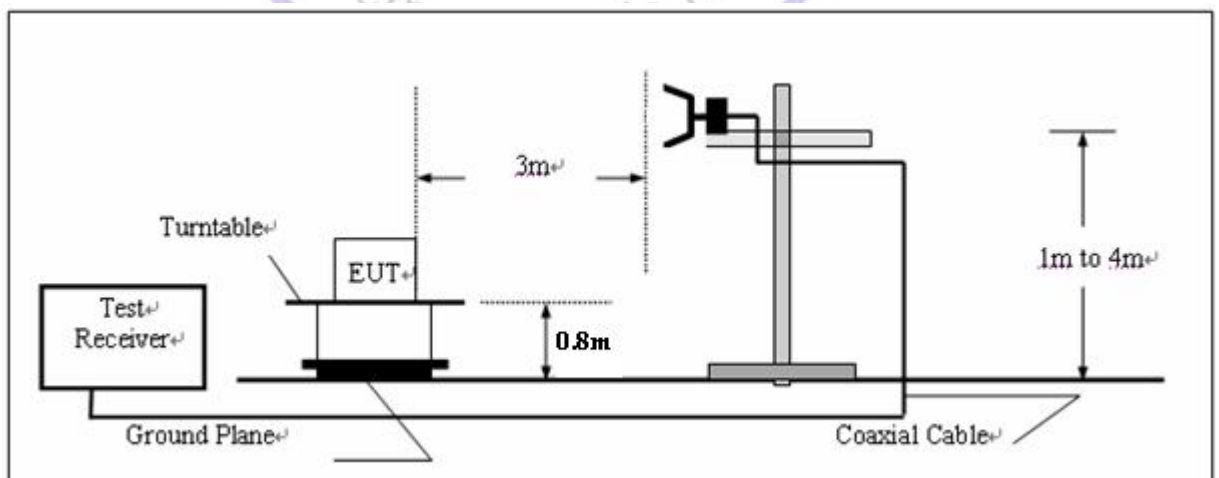
#### (A) Radiated Emission Test Set-Up, Frequency Below 30MHz



#### (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**

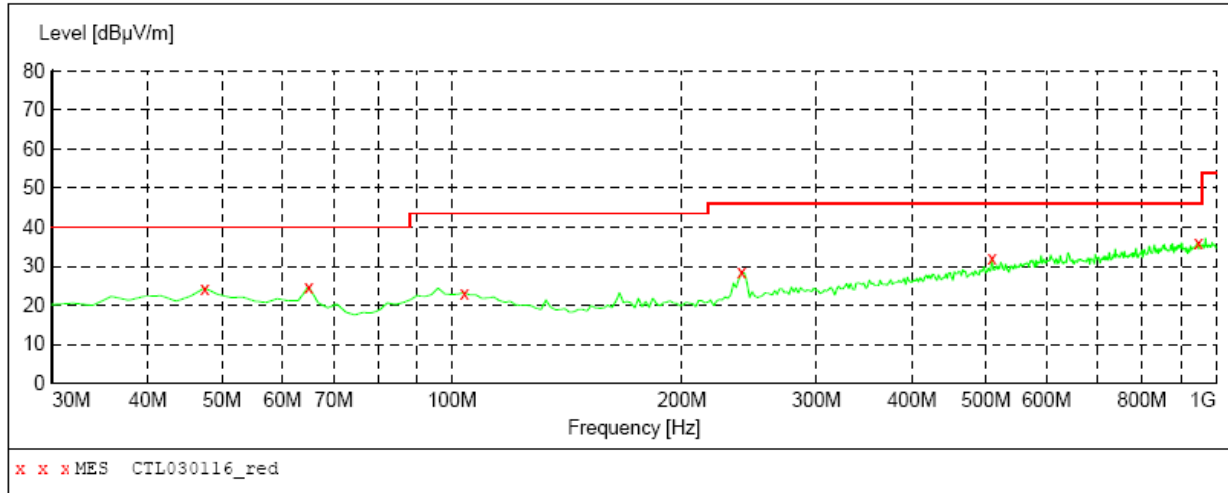
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT
4. 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 and TM3) completed for test. The worst case of Radiated Emission is mode 2; the test data of this mode was reported.

**TM 2(USB Copy):*****SWEEP TABLE: "test (30M-1G)"***

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

***MEASUREMENT RESULT: "CTL030116\_red"***

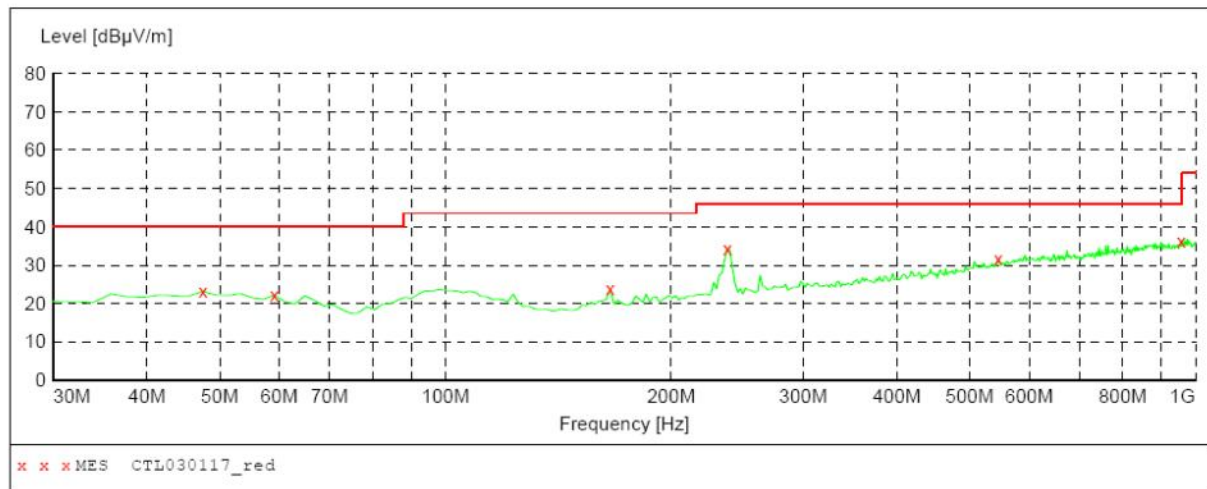
3/1/2013 10:57AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	24.40	15.8	40.0	15.6	Peak	100.0	120.0	Vertical
64.920000	24.80	13.5	40.0	15.2	Peak	100.0	66.0	Vertical
103.720000	23.20	17.1	43.5	20.3	Peak	100.0	80.0	Vertical
239.520000	28.40	16.9	46.0	17.6	Peak	100.0	333.0	Vertical
509.180000	32.20	24.1	46.0	13.8	Peak	100.0	240.0	Vertical
947.620000	36.10	29.5	46.0	9.9	Peak	100.0	110.0	Vertical



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

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

**MEASUREMENT RESULT: "CTL030117\_red"**

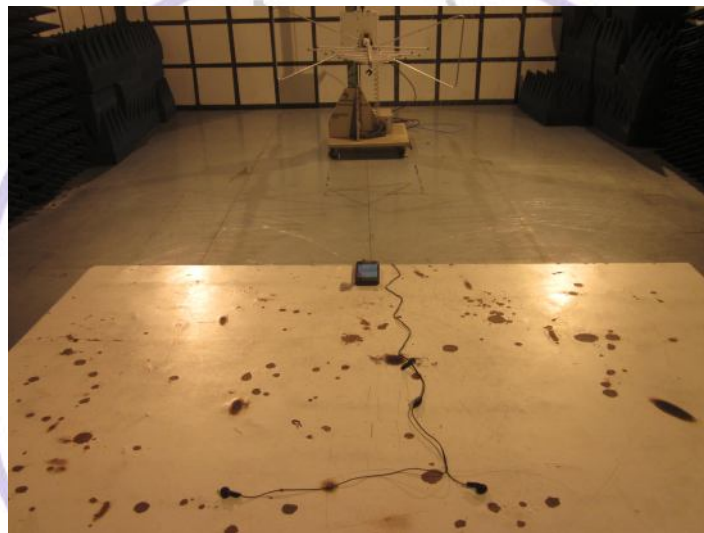
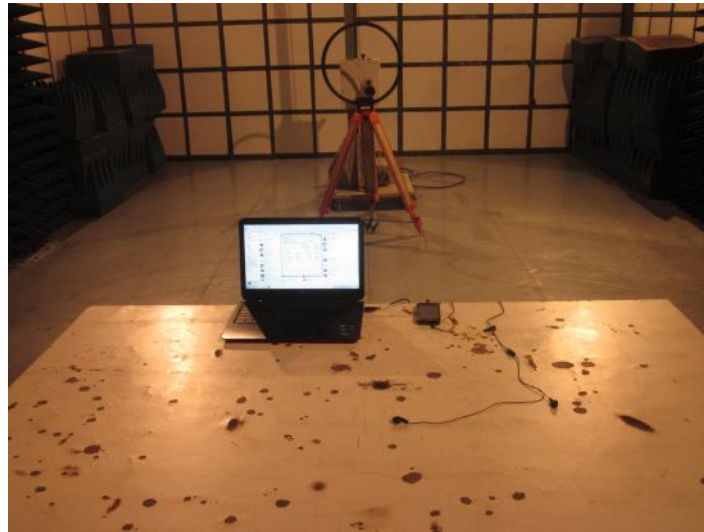
3/1/2013 11:00AM

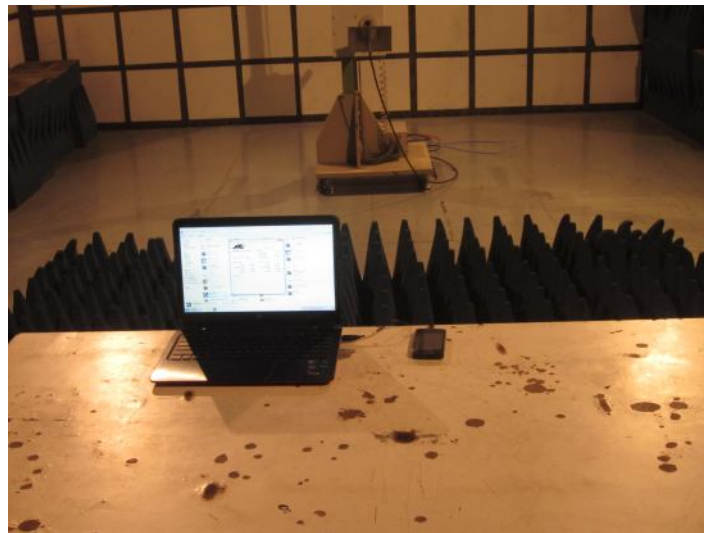
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	23.20	15.8	40.0	16.8	Peak	100.0	51.00	Horizontal
59.100000	22.20	14.6	40.0	17.8	Peak	300.0	228.00	Horizontal
165.800000	23.80	13.0	43.5	19.7	Peak	300.0	117.00	Horizontal
237.580000	34.40	16.7	46.0	11.6	Peak	100.0	78.00	Horizontal
546.040000	31.50	24.9	46.0	14.5	Peak	300.0	210.00	Horizontal
957.320000	36.20	29.6	46.0	9.8	Peak	300.0	55.00	Horizontal

**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 between 30MHz 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





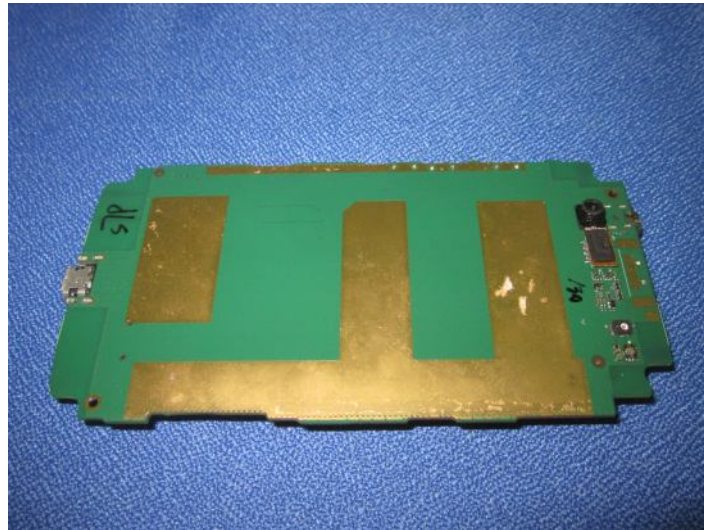




Internal Photos of EUT









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

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