



# FCC REPORT

Report Reference No. .... : TRE1512004505 R/C.....: 93833  
FCC ID..... : 2AASJSMD-5090A  
Applicant's name..... : Daewoo International Corp.  
Address..... : 84-11, Namdaemunno 5-ga, Jung-gu, Seoul 100-753 Korea  
Manufacturer..... : SGM Co., Ltd.  
Address..... : 5F Media Tower, 108-9 Sungsan 1-dong, Mapo-gu, Seoul 121-844 Korea  
Test item description ..... : Mobile Phone  
Trade Mark ..... : DAEWOO  
Model/Type reference..... : SMD-5090A  
Listed Model(s) ..... : -  
Standard ..... : 47 CFR FCC Part 15 Subpart B - Unintentional Radiators  
ANSI C63.4: 2014  
Date of receipt of test sample..... : Dec. 06, 2015  
Date of testing..... : Dec. 07, 2015 ~ Dec. 24, 2015  
Date of issue..... : Dec. 25, 2015  
Result..... : Pass

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Testing Laboratory Name ..... : Shenzhen Huatongwei International Inspection Co., Ltd

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*The test report merely corresponds to the test sample.*

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## **1. TEST STANDARDS AND TEST DESCRIPTION**

### **1.1. Test Standards**

The tests were performed according to following standards:

[47 CFR FCC Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2014](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

## 2. SUMMARY

### 2.1. Client Information

Applicant:	Daewoo International Corp.
Address:	84-11, Namdaemunno 5-ga, Jung-gu, Seoul 100-753 Korea
Manufacturer:	SGMC Co., Ltd.
Address:	5F Media Tower, 108-9 Sungsan 1-dong, Mapo-gu, Seoul 121-844 Korea

### 2.2. Product Description

Name of EUT	Mobile Phone
Trade Mark:	DAEWOO
Model No.:	SMD-5090A
Listed Model(s):	-
IMEI1:	358228054832654
IMEI2:	358228054834789
Power supply:	DC 3.8V From internal battery
Adapter information:	Model: SMD-5090A Input: AC 100-240V 50/60Hz 0.2A Output: 5Vd.c., 1000mA

### 2.3. EUT operation mode

Test mode	Playing Video	Data Transfer	Camera	AC Adapter
1	■			■
2		■		
3			■	■

Note:

1. ■ is operation mode.

Pre-scan above all test mode, found below test mode which it was worse case mode.

Test item	Test mode (Worse case mode)
Conducted emission	Mode 2
Radiated emission	Mode 2

### 2.4. EUT configuration

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

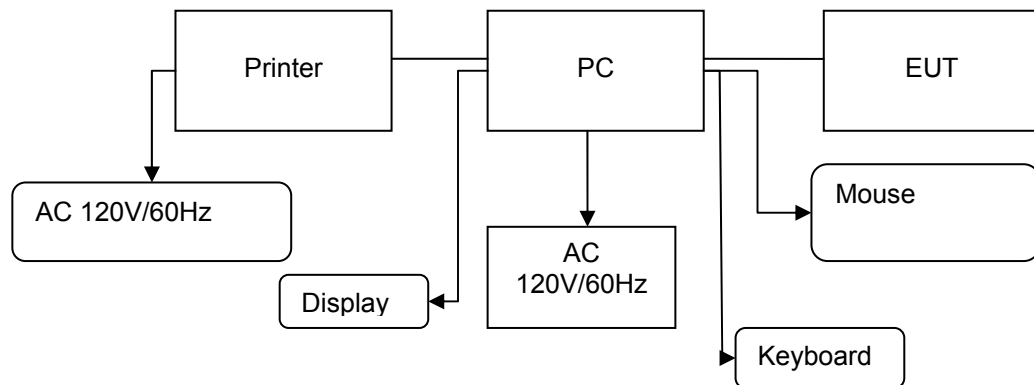
● - supplied by the manufacturer

○ - supplied by the lab

	Length (m) :	/
	Shield :	/
	Detachable :	/
	Manufacturer :	/
	Model No. :	/

## 2.5. Configuration of Tested System

**Configuration of Tested System**



**Equipment Used in Tested System**

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/unshielded	Notes
1	PC	DELL	DIMENSION E520	1RNN42X	/	/	DOC
2	Printer	ESPOn	C3990	C3990A	/	/	DOC
3	Mouse	DELL	MO56U OA	G0E02SY7	1.00m	unshielded	DOC
4	Display	DELL	1707FPt	CN-OFC237-71618-65G-AAKC	/	/	DOC
5	Keyboard	DELL	L100	CNRH65665890726009L	/	/	DOC
6	USB Cable (EUT to PC)	ITALCOM GROUP	USB 2.0	N/A	0.80m	unshielded	N/A
7	USB Cable (Printer to PC)	Genshuo	USB 2.0	N/A	1.20m	unshielded	N/A
8	Power line	/	/	N/A	1.00m	unshielded	N/A

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Phone: 86-755-26748019 Fax: 86-755-26748089

#### **3.2. Test Facility**

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

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

##### **A2LA-Lab Cert. No. 3902.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until December 31, 2016.

##### **FCC-Registration No.: 317478**

Shenzhen Huatongwei International Inspection Co., 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 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

##### **IC-Registration No.: 5377A&5377B**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **VCCI**

The 3m Semi-

anechoic chamber (12.2m×7.95m×6.7m) of Shenzhen Huatongwei International Inspection Co., Ltd.

has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 29, 2015.

Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

##### **DNV**

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

### 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. 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 Shenzhen Huatongwei International Inspection Co., 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 Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

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

### 3.5. Equipments Used during the Test

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde & Schwarz	ESCI	100106	2015/11/2
2	ARTIFICIAL MAINS	Rohde & Schwarz	ESH2-Z5	100028	2015/11/2
3	PULSE LIMITER	Rohde & Schwarz	ESHSZ2	100044	2015/11/2
4	EMI TEST SOFTWARE	Rohde & Schwarz	ES-K1	N/A	N/A

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ShwarzBeck	VULB9163	538	2015/11/2
2	EMI TEST RECEIVER	Rohde & Schwarz	ESI 26	100009	2015/11/2
3	EMI TEST Software	Audix	E3	N/A	N/A
4	TURNTABLE	MATURO	TT2.0	----	N/A
5	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
6	EMI TEST Software	Rohde & Schwarz	ESK1	N/A	N/A
7	ULTRA-BROADBAND ANTENNA	Rohde&Schwarz	HL562	100015	2015/11/2
8	Amplifier	Sonoma	310N	E009-13	2015/11/2
9	JS amplifier	Rohde & Schwarz	JS4-00101800-28-5A	F201504	2015/11/2
11	TURNTABLE	ETS	2088	2149	N/A
12	ANTENNA MAST	ETS	2075	2346	N/A
13	HORN ANTENNA	Rohde&Schwarz	HF906	100039	2015/11/2

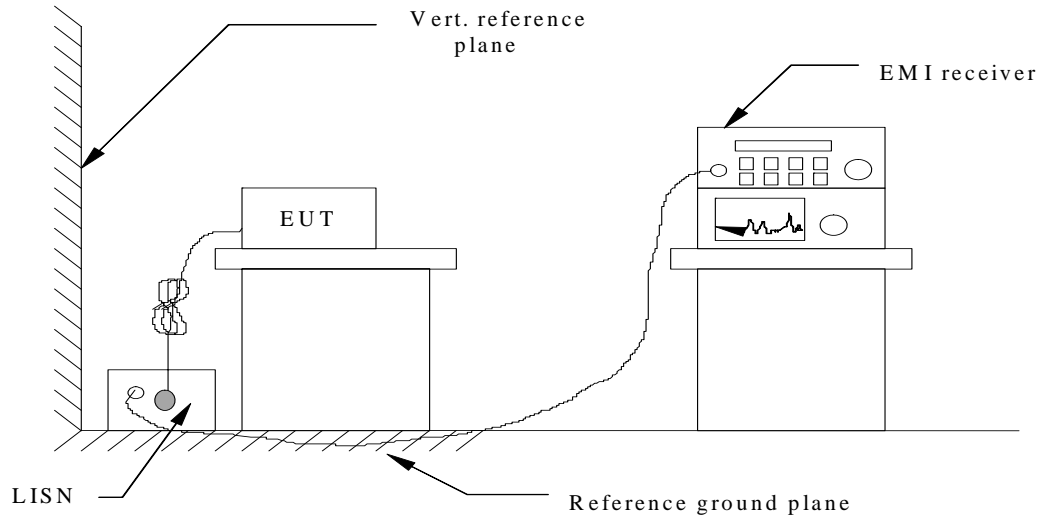
The calibration interval was one year.



## 4. TEST CONDITIONS AND RESULTS

### 4.1. Conducted Emissions Test

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2014.
2. Support equipment, if needed, was placed as per ANSI C63.4-2014
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2014.
4. The EUT received DC 5.0 from USB powered from AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

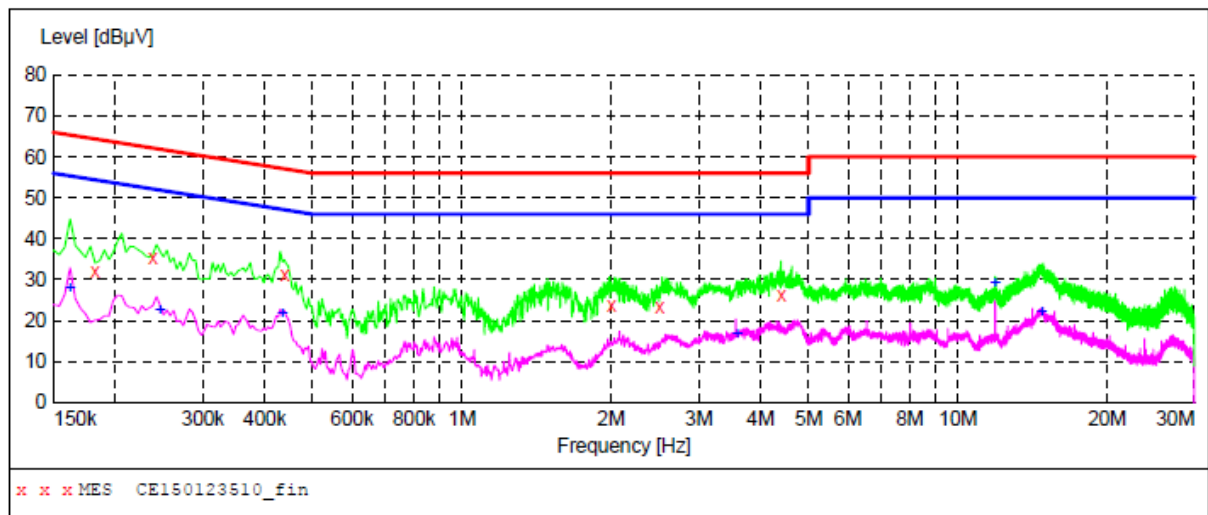
#### CONDUCTED POWER LINE EMISSION LIMIT

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

#### TEST RESULTS

**MEASUREMENT RESULT: "CE150123510\_fin"**

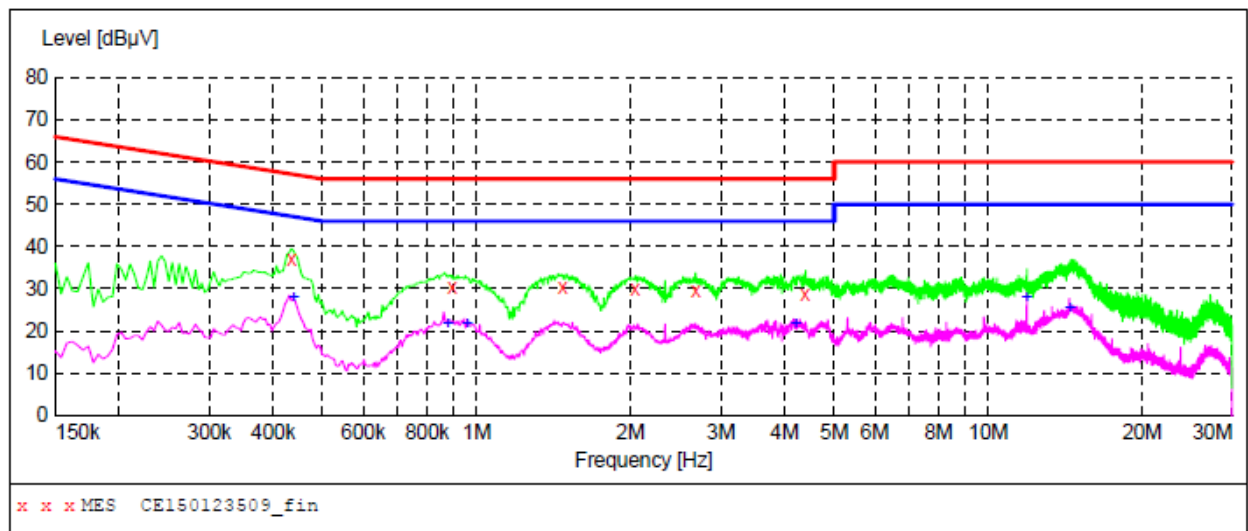
12/18/2015 2:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.182000	32.10	10.2	64	32.3	QP	L1	GND
0.238000	35.40	10.2	62	26.8	QP	L1	GND
0.438000	31.10	10.2	57	26.0	QP	L1	GND
2.002000	23.70	10.2	56	32.3	QP	L1	GND
2.502000	23.20	10.3	56	32.8	QP	L1	GND
4.402000	26.20	10.4	56	29.8	QP	L1	GND

**MEASUREMENT RESULT: "CE150123510\_fin2"**

12/18/2015 2:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.162000	28.00	10.2	55	27.4	AV	L1	GND
0.246000	22.60	10.2	52	29.3	AV	L1	GND
0.434000	21.70	10.2	47	25.5	AV	L1	GND
3.582000	16.60	10.3	46	29.4	AV	L1	GND
11.894000	29.30	10.8	50	20.7	AV	L1	GND
14.766000	21.90	10.8	50	28.1	AV	L1	GND



### MEASUREMENT RESULT: "CE150123509\_fin"

12/18/2015 2:00PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.434000	37.20	10.2	57	20.0	QP	N	GND
0.894000	30.30	10.2	56	25.7	QP	N	GND
1.470000	30.40	10.2	56	25.6	QP	N	GND
2.038000	29.80	10.2	56	26.2	QP	N	GND
2.682000	29.40	10.3	56	26.6	QP	N	GND
4.382000	28.50	10.4	56	27.5	QP	N	GND

### MEASUREMENT RESULT: "CE150123509\_fin2"

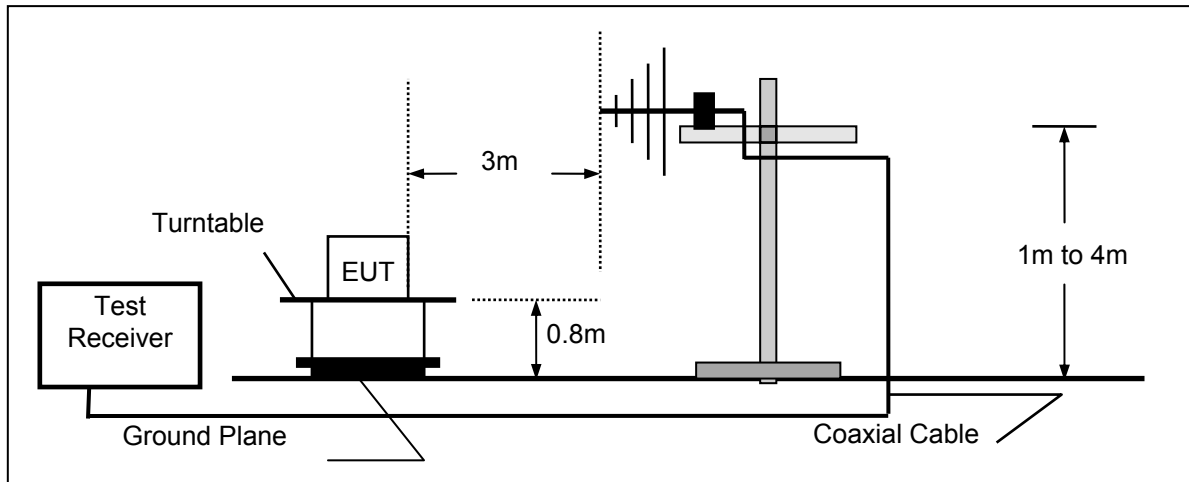
12/18/2015 2:00PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.438000	28.00	10.2	47	19.1	AV	N	GND
0.878000	21.80	10.2	46	24.2	AV	N	GND
0.958000	21.50	10.2	46	24.5	AV	N	GND
4.198000	21.70	10.3	46	24.3	AV	N	GND
11.898000	27.90	10.8	50	22.1	AV	N	GND
14.462000	25.20	10.8	50	24.8	AV	N	GND

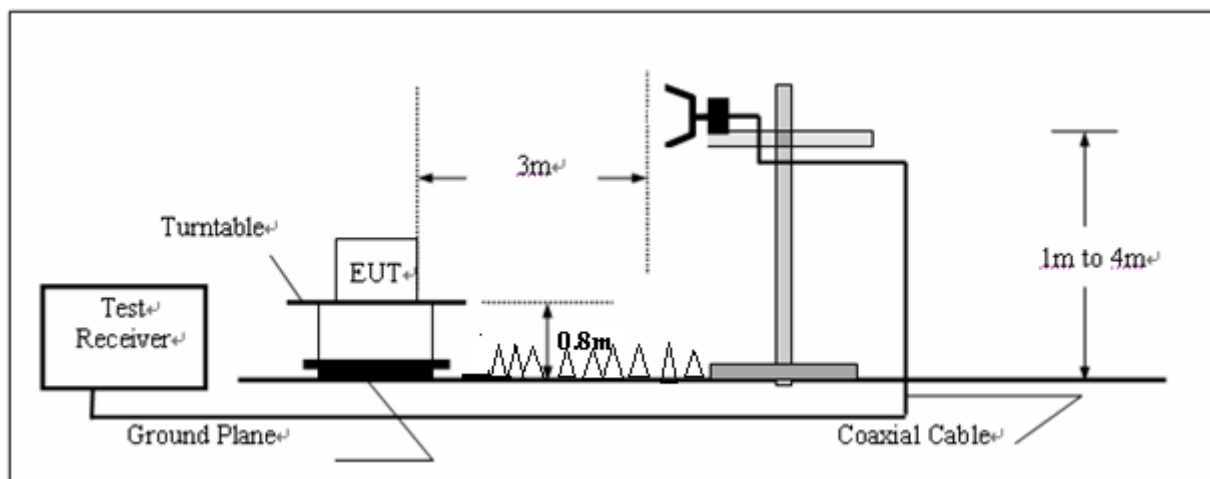
## 4.2. Radiated Emission Test

### TEST CONFIGURATION

#### a) Radiated Emission Test Set-Up, Frequency below 1000MHz



#### b) Radiated Emission Test Set-Up, Frequency above 1000MHz



### TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The EUT's frequency is 1.3GHz, and we pre-scan test all the frequency to 5th harmonic frequency, only record the worst case radiated emission test frequency from 30MHz to 7GHz.

**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	

For example

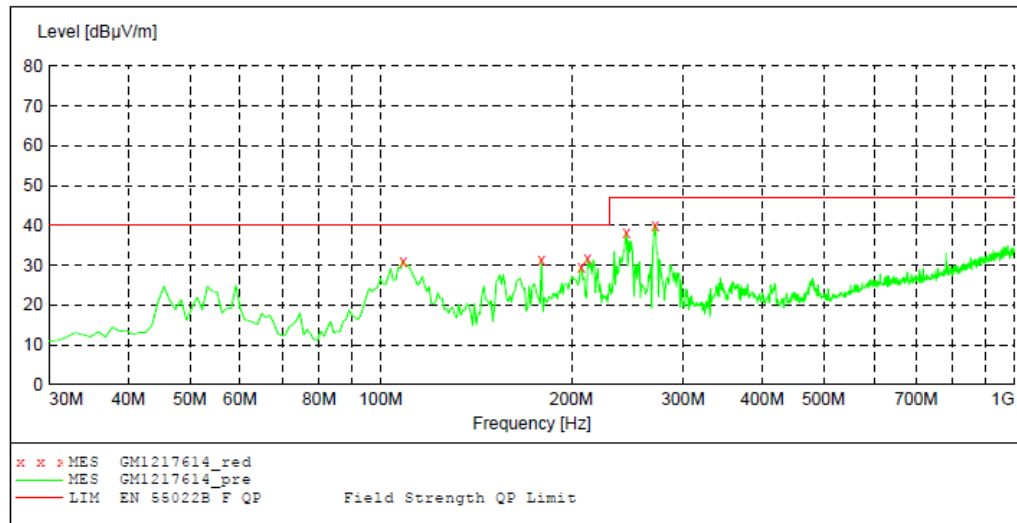
Frequency (MHz)	FS (dB $\mu$ V/m)	RA (dB $\mu$ V/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = \text{AF} + \text{CL} - \text{AG}$$

**RADIATION LIMIT**

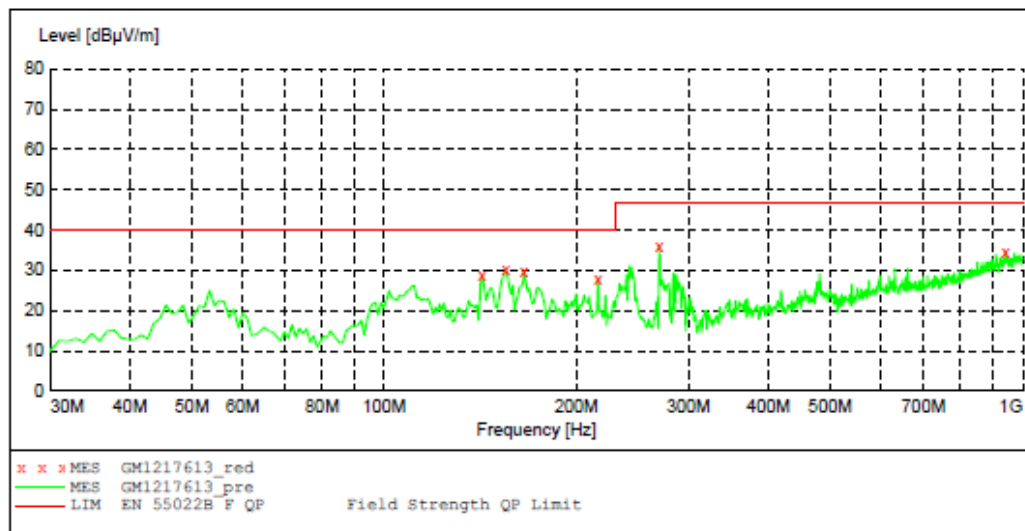
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dB $\mu$ V/m)	Radiated ( $\mu$ V/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

**TEST RESULTS****MEASUREMENT RESULT: "GM1217614\_red"**

12/17/2015 10:01AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
108.570000	31.00	-15.0	40.0	9.0	QP	300.0	81.00	HORIZONTAL
179.380000	31.40	-15.9	40.0	8.6	QP	300.0	360.00	HORIZONTAL
207.510000	29.60	-13.9	40.0	10.4	QP	100.0	315.00	HORIZONTAL
212.360000	31.60	-14.1	40.0	8.4	QP	100.0	59.00	HORIZONTAL
244.370000	38.20	-15.3	47.0	8.8	QP	100.0	59.00	HORIZONTAL
271.530000	40.00	-14.7	47.0	7.0	QP	100.0	59.00	HORIZONTAL

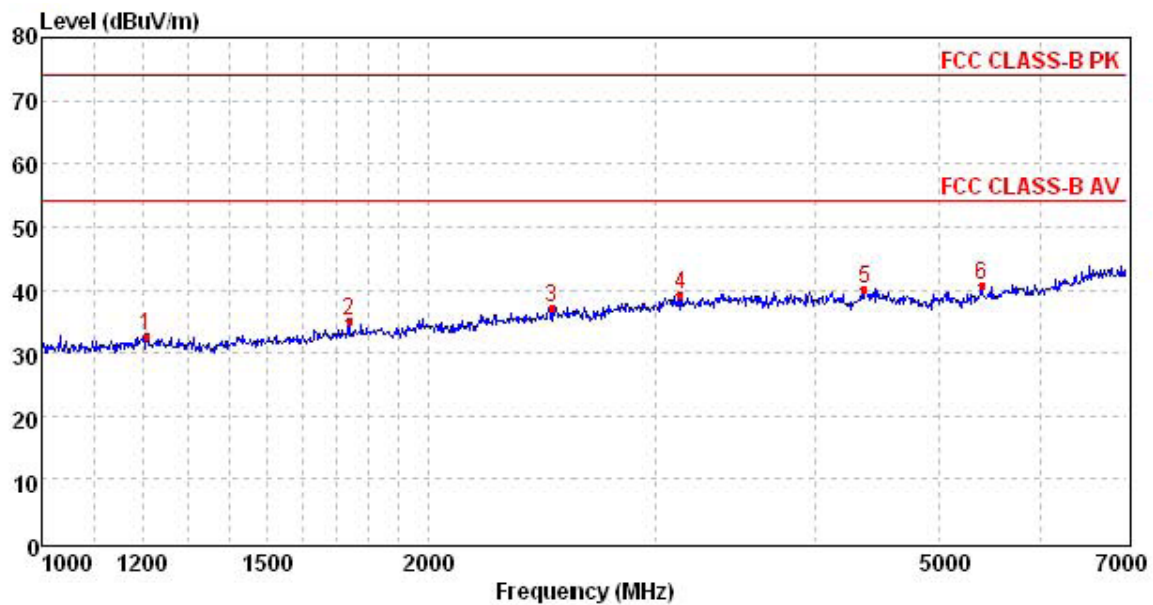
**MEASUREMENT RESULT: "GM1217613\_red"**

12/17/2015 9:58AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
142.520000	28.60	-18.2	40.0	11.4	QP	100.0	263.00	VERTICAL
155.130000	30.10	-17.5	40.0	9.9	QP	100.0	335.00	VERTICAL
165.800000	29.60	-16.8	40.0	10.4	QP	100.0	281.00	VERTICAL
216.240000	27.80	-14.3	40.0	12.2	QP	100.0	229.00	VERTICAL
269.590000	36.10	-14.8	47.0	10.9	QP	100.0	155.00	VERTICAL
941.800000	34.50	3.5	47.0	12.5	QP	100.0	247.00	VERTICAL

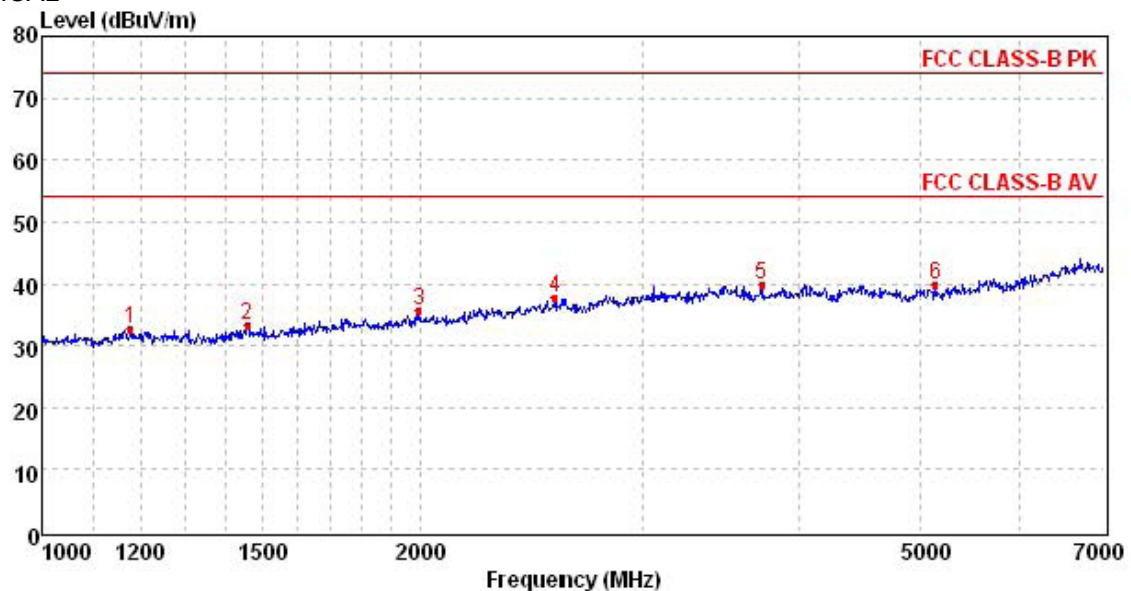
Above 1GHz

## HORIZONTAL



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1207.74	40.11	24.43	4.55	36.52	32.57	74.00	-41.43	Peak
2	1737.83	40.93	25.41	5.68	37.05	34.97	74.00	-39.03	Peak
3	2500.58	40.08	27.90	6.98	37.66	37.30	74.00	-36.70	Peak
4	3139.91	40.34	28.56	8.35	37.99	39.26	74.00	-34.74	Peak
5	4371.04	38.81	30.55	8.89	38.25	40.00	74.00	-34.00	Peak
6	5393.30	37.26	32.15	9.57	38.34	40.64	74.00	-33.36	Peak

## VERTICAL



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1177.57	40.36	24.40	4.48	36.49	32.75	74.00	-41.25	Peak
2	1458.64	40.41	24.67	5.10	36.80	33.38	74.00	-40.62	Peak
3	1999.19	40.64	26.10	6.15	37.25	35.64	74.00	-38.36	Peak
4	2564.65	40.20	27.99	7.15	37.70	37.64	74.00	-36.36	Peak
5	3733.63	40.04	29.09	8.71	37.99	39.85	74.00	-34.15	Peak
6	5137.21	37.46	31.53	9.42	38.54	39.87	74.00	-34.13	Peak



## 5. Test Setup Photos of the EUT

Conducted Emission (AC Mains)



Radiated Emission (30MHz-1GHz)



Radiated Emission (above 1GHz)







## **6. External and Internal Photos of the EUT**

Reference to the test report No. TRE1512004501

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