FCC RF Test Report

APPLICANT	:	LG ELECTRONICS MOBILECOMM U.S.A., INC.
EQUIPMENT	:	GSM/WCDMA TRI-BAND PHONE WITH BT, WLAN, AND NFC
BRAND NAME	:	LG
MODEL NAME	:	LG-E960, E960, LGE960
MARKETING NAME	:	LG-E960
FCC ID	:	ZNFE960
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DSS) Spread Spectrum Transmitter

This is a variant report for FCC permissions change, and the product was received on Sep. 10, 2012 and completely tested on Sep. 14, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai

Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR291007A	Rev. 01	Please refer to FCC ID : ZNFE960 report.	Sep. 26, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
3.2	15.247(d)	A8.5	Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.35 dB at 52.950 MHz
3.3	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVENU ENGLEWOOD CLIFFS, NEW JERSEY 07632

1.2 Manufacturer

LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVENU ENGLEWOOD CLIFFS, NEW JERSEY 07632

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	GSM/WCDMA TRI-BAND PHONE WITH BT, WLAN, AND NFC
Brand Name	LG
Model Name	LG-E960, E960, LGE960
Marketing Name	LG-E960
FCC ID	ZNFE960
EUT supports Radios application	GSM/WCDMA WLAN 11abgn / Bluetooth / NFC
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Maximum Output Power to Antenna	Bluetooth (1Mbps) : 7.27 dBm (0.0053 W)
Antenna Type	FPCB Antenna type with gain -5.3 dBi
Type of Modulation	Bluetooth 3.0 EDR : GFSK, π/4-DQPSK, 8-DPSK

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978	
Test Site No.	**Sporton Site No.**	**FCC/IC Registration No.**
	03CH06-HY	722060/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC Public Notice DA 00-705
- ANSI C63.4-2003 and ANSI C63.10-2009
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
2.	AC Adapter 1	SUNLIN	MCS-01WR	N/A	N/A	N/A
3.	AC Adapter 2	TENPAO	MCS-01WT	N/A	N/A	N/A
4.	AC Adapter 3	DONG DO	MCS-01WD	N/A	N/A	N/A
5.	Battery	LG Chem	BL-T5	N/A	N/A	N/A
6.	USB Cable 1	INTERFACESAMIL	EAD62330101	N/A	N/A	Shielded, 1.1 m
7.	USB Cable 2	NINGBO	EAD62330102	N/A	N/A	Shielded, 1.1 m
8.	Wireless charging pad adapter	LG	PSTA-D0WT	N/A	N/A	Shielded, 1.5 m
9.	Wireless charging pad	LG	N/A	N/A	N/A	N/A
10.	Earphone	LG	N/A	N/A	N/A	Shielded, 1.1 m

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

Preliminary tests were performed in different data rate and recorded the RF output power in the following table:

Band	Bluetooth RF Output Power		
Channel	00	39	78
Frequency	2402	2441	2480
Avg. Power	7.27	5.96	6.53

2.2 Test Mode

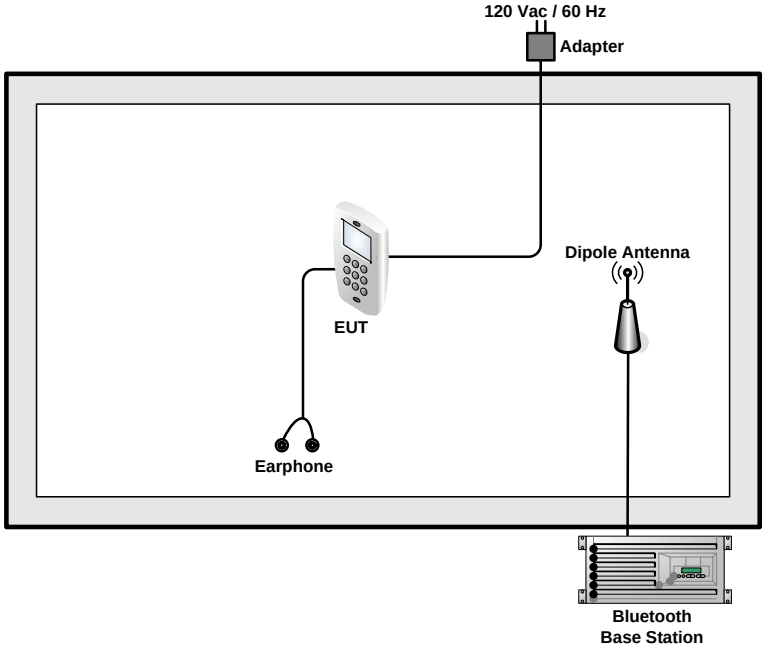
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and ANSI C63.10-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

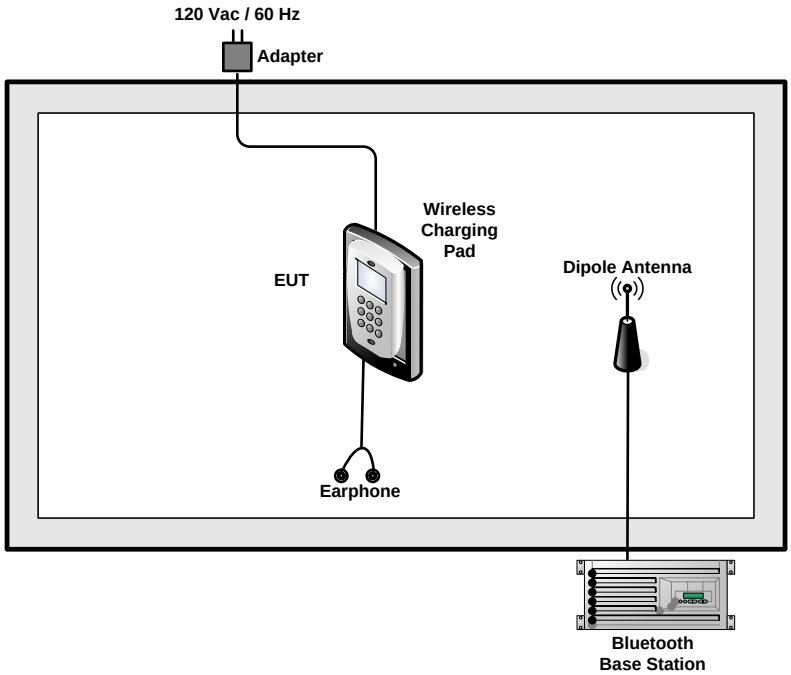
The following tables are showing the test modes as the worst cases (Mode1 ~ 3 : Y plane and Mode 4 : Z plane) and recorded in this report.

Test Cases	
Test Item	**Data Rate / Modulation**
	Bluetooth 1Mbps GFSK
Conducted TCs	Mode 1: CH00_2402 MHz + Earphone + USB Cable 1 (Charging from Adapter 2) <Fig. 1> Mode 2: CH39_2441 MHz + Earphone + USB Cable 1 (Charging from Adapter 2) <Fig. 1> Mode 3: CH78_2480 MHz + Earphone + USB Cable 1 (Charging from Adapter 2) <Fig. 1> Mode 4: CH78_2480 MHz + Wireless Charging Pad + Earphone <Fig. 2>
Remark: For radiated TCs, the data rate was set in 1Mbps due to the highest RF output power; only the data of these modes was reported.	

2.3 Connection Diagram of Test System



<Fig. 1>



<Fig. 2>

2.4 RF Utility

For Bluetooth function, key in “3845＃＊960＃” on the EUT directly. Then, the EUT will get into the engineering modes to contact with Bluetooth base station for continuous transmitting and receiving signals.

3 Test Result

3.1 Radiated Band Edges Measurement

3.1.1 Limit of Radiated Band Edges

In any 100 KHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.1.2 Measuring Instruments

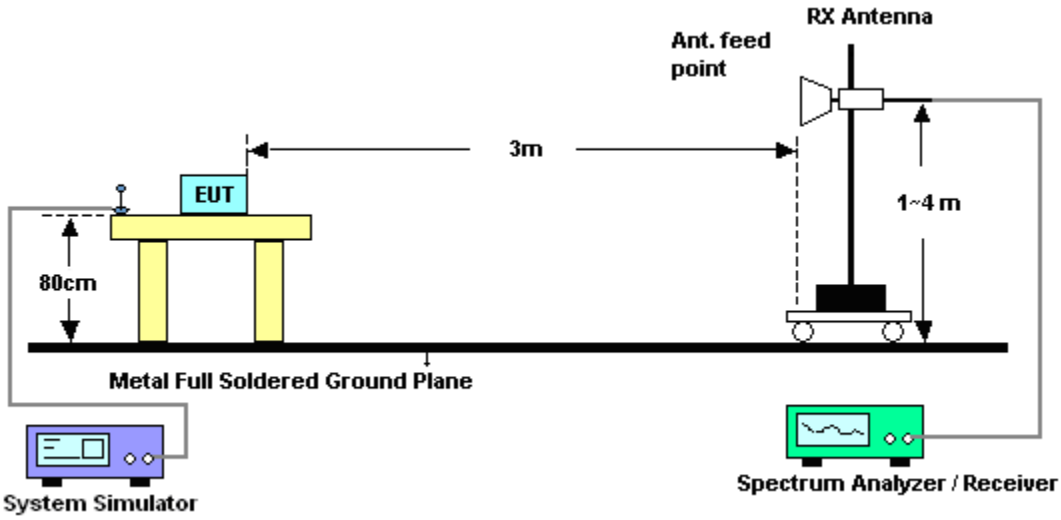
See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 KHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement: use duty cycle correction factor method.
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
   Average Level = Peak Level + 20*log(Duty cycle)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

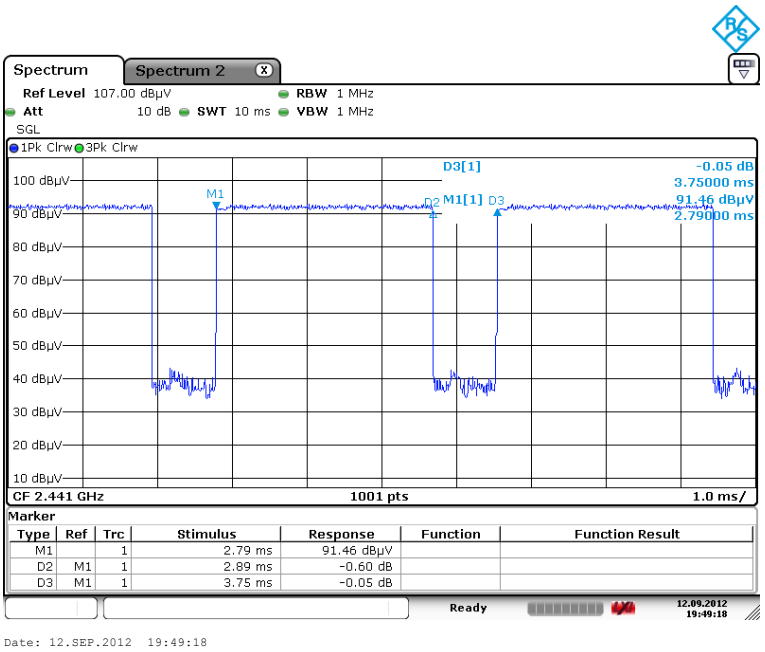
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.76dB) derived from 20log (dwell time/100ms).
For example: Average level = 46.89dBuV/m – 24.76 (dB) = 22.13dBuV/m.

3.1.4 Test Setup



3.1.5 Duty cycle correction factor for average measurement

DH5 on time/100ms (One Pulse) Plot on Channel 39



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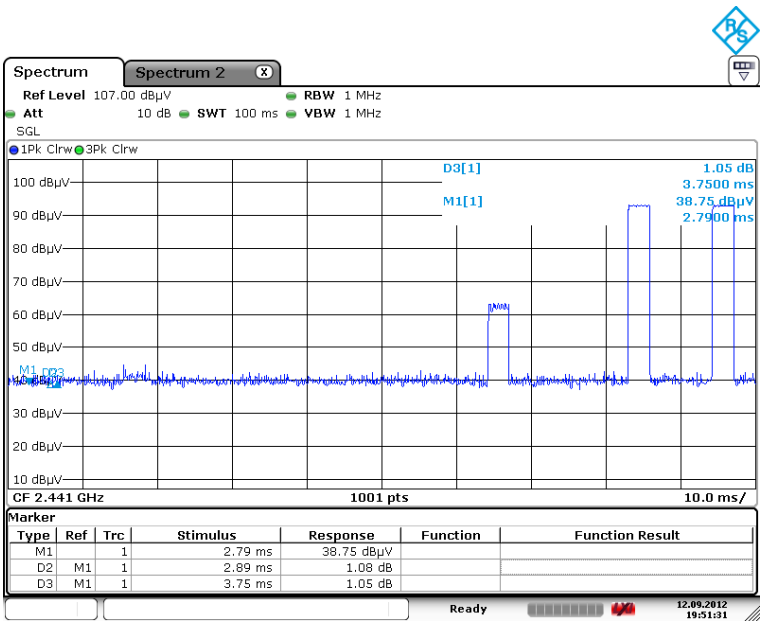
DH5 on time/100ms (Count Pulses) Plot on Channel 39



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Note:

1. Duty cycle = on time/100 milliseconds = 2 * 2.89 / 100 = 5.78 %
2. Duty cycle correction factor = 20*log(Duty cycle) = -24.76 dB
3. DH5 has the highest duty cycle and is reported.

3.1.6 Test Result of Radiated Band Edges

Test Mode :	1Mbps	**Temperature :**	30~31°C
Test Channel :	00	**Relative Humidity :**	42~43%
		Test Engineer :	Kai Wang, Timberland and Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2353.11	46.89	-27.11	74	42.76	32.31	6.38	34.56	103	309	Peak
2353.11	22.13	-31.87	54	-	-	-	-	-	-	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2362.83	46.99	-27.01	74	42.82	32.31	6.42	34.56	100	6	Peak
2362.83	22.23	-31.77	54	-	-	-	-	-	-	Average

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.76dB) derived from 20log (dwell time/100ms).

For example: Average level = 46.89dBuV/m – 24.76 (dB) = 22.13dBuV/m.

Test Mode :	1Mbps	**Temperature :**	30~31°C
Test Channel :	78	**Relative Humidity :**	42~43%
		Test Engineer :	Kai Wang, Timberland and Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2485.94	47.81	-26.19	74	43.29	32.48	6.59	34.55	100	301	Peak
2485.94	23.05	-30.95	54	-	-	-	-	-	-	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2496.92	47.34	-26.66	74	42.8	32.5	6.59	34.55	189	274	Peak
2496.92	22.58	-31.42	54	-	-	-	-	-	-	Average

Test Mode :	1Mbps	**Temperature :**	30~31°C
Test Channel :	78	**Relative Humidity :**	42~43%
		Test Engineer :	Kai Wang, Timberland and Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2499.96	47.39	-26.61	74	42.85	32.5	6.59	34.55	105	13	Peak
2499.96	22.63	-31.37	54	-	-	-	-	-	-	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.5	47.13	-26.87	74	42.61	32.48	6.59	34.55	100	360	Peak
2483.5	22.37	-31.63	54	-	-	-	-	-	-	Average

3.2 Radiated Spurious Emission Measurement

3.2.1 Limit of Radiated Emission

In any 100 KHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

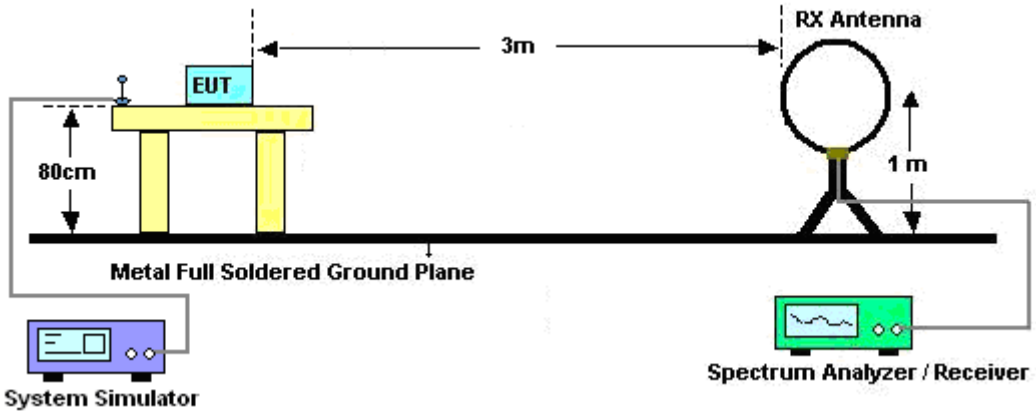
3.2.3 Test Procedures

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 KHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement: use duty cycle correction factor method.
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
   Average Level = Peak Level + 20*log(Duty cycle)
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
8. For measurement below 1GHz, if the emission level of the EUT measured by the peak detector is more than 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement by using the quasi-peak detector will be reported.

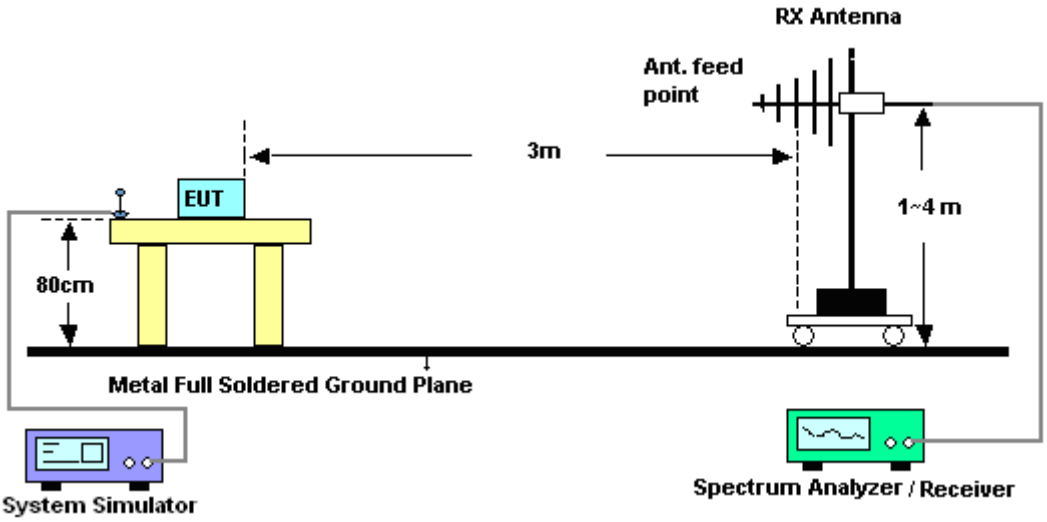
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.76dB) derived from 20log (dwell time/100ms).
For example: Average level = 103.5dBuV/m – 24.76 (dB) = 78.74dBuV/m.

3.2.4 Test Setup

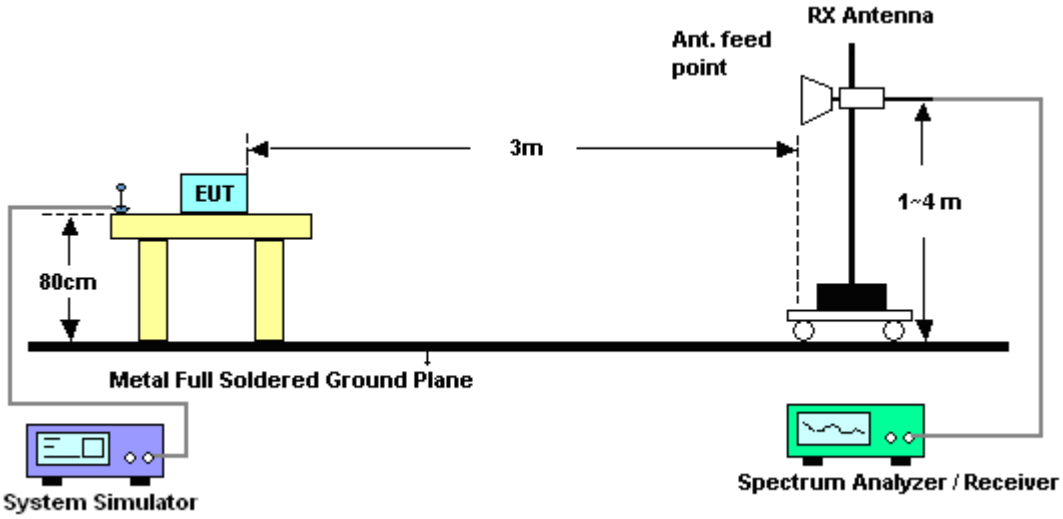
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

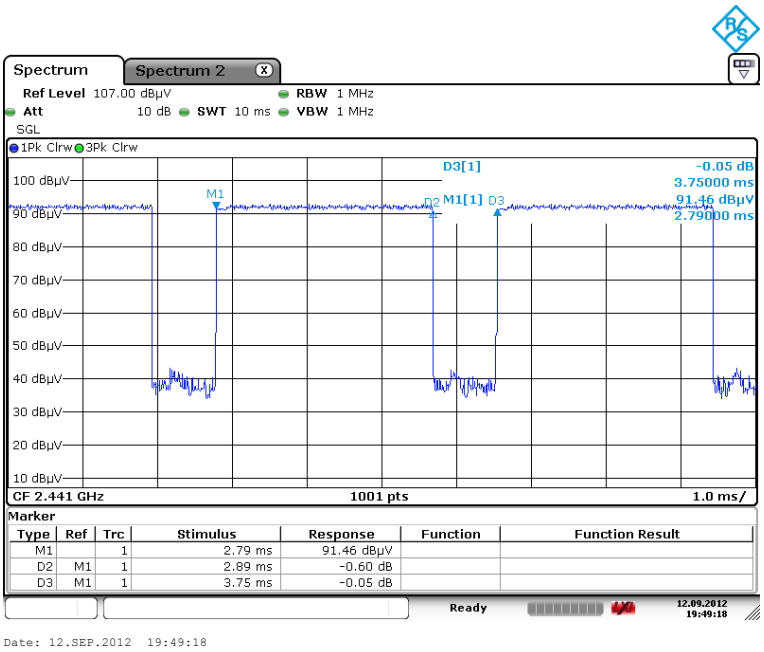


3.2.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.2.6 Duty cycle correction factor for average measurement

DH5 on time/100ms (One Pulse) Plot on Channel 39



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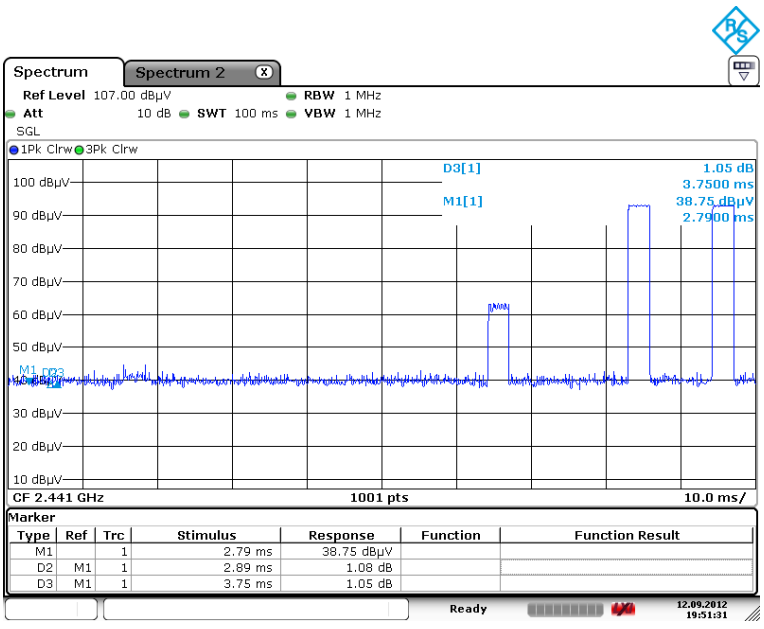
DH5 on time/100ms (Count Pulses) Plot on Channel 39



Date: 12.SEP.2012 19:51:31

Note:

1. Duty cycle = on time/100 milliseconds = 2 * 2.89 / 100 = 5.78 %
2. Duty cycle correction factor = 20*log(Duty cycle) = -24.76 dB
3. DH5 has the highest duty cycle and is reported.

3.2.7 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	1Mbps	**Temperature :**	30~31°C
Test Channel :	00	**Relative Humidity :**	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	**Polarization :**	Horizontal
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 9606 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 103.5 dBuV/m - 20dB = 83.5 dBuV/m.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	103.5	-	-	99.25	32.36	6.45	34.56	103	309	Peak
2402	78.74	-	-	-	-	-	-	-	-	Average
9606	57.06	-26.44	83.5	65.7	36.84	10.56	56.04	100	0	Peak

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.76dB) derived from 20log (dwell time/100ms).

For example: Average level = 103.5dBuV/m – 24.76 (dB) = 78.74dBuV/m.

Test Mode :	1Mbps	**Temperature :**	30~31°C
Test Channel :	00	**Relative Humidity :**	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	**Polarization :**	Vertical
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 9606 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	97.97	-	-	93.72	32.36	6.45	34.56	100	6	Peak
2402	73.21	-	-	-	-	-	-	-	-	Average
9606	52.42	-25.55	77.97	65.06	36.84	10.56	56.04	100	0	Peak

Test Mode :	1Mbps	Temperature :	30~31°C
Test Channel :	39	Relative Humidity :	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2442 MHz is fundamental signal which can be ignored. 2. 9762 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2442	102.11	-	-	97.72	32.43	6.52	34.56	100	304	Peak
2442	77.35	-	-	-	-	-	-	-	-	Average
9762	52.06	-30.05	82.11	66.37	37.06	10.57	55.94	100	360	Peak

Test Mode :	1Mbps	Temperature :	30~31°C
Test Channel :	39	Relative Humidity :	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	Polarization :	Vertical
Remark :	1. 2442 MHz is fundamental signal which can be ignored. 2. 9762 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2442	99.01	-	-	94.62	32.43	6.52	34.56	200	272	Peak
2442	74.25	-	-	-	-	-	-	-	-	Average
9762	52.51	-26.5	79.01	63.82	37.06	10.57	55.94	100	0	Peak

Test Mode :	1Mbps	Temperature :	30~31°C
Test Channel :	78	Relative Humidity :	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
144.75	26.12	-17.38	43.5	45.6	10.77	1.45	31.7	-	-	Peak
173.64	32.27	-11.23	43.5	52.58	9.46	1.91	31.68	-	-	Peak
267.06	29.67	-16.33	46	46.02	13.14	2.2	31.69	-	-	Peak
403.6	37.26	-8.74	46	50.63	16.05	2.38	31.8	100	211	Peak
630.4	31.02	-14.98	46	40.59	19.2	3.26	32.03	-	-	Peak
849.5	32.24	-13.76	46	39.84	20.4	3.91	31.91	-	-	Peak
2480	105.94	-	-	101.42	32.48	6.59	34.55	100	301	Peak
2480	81.18	-	-	-	-	-	-	-	-	Average

Test Mode :	1Mbps	**Temperature :**	30~31°C
Test Channel :	78	**Relative Humidity :**	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	**Polarization :**	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.95	34.65	-5.35	40	58.18	7.5	0.66	31.69	100	288	Peak
189.3	24.56	-18.94	43.5	45.41	8.9	1.91	31.66	-	-	Peak
267.06	27.75	-18.25	46	44.1	13.14	2.2	31.69	-	-	Peak
403.6	35.86	-10.14	46	49.23	16.05	2.38	31.8	-	-	Peak
650	32.92	-13.08	46	42.28	19.2	3.41	31.97	-	-	Peak
849.5	28.31	-17.69	46	35.91	20.4	3.91	31.91	-	-	Peak
2480	99.71	-	-	95.19	32.48	6.59	34.55	189	274	Peak
2480	74.95	-	-	-	-	-	-	-	-	Average

Test Mode :	1Mbps	Temperature :	30~31°C
Test Channel :	78	Relative Humidity :	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	Polarization :	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2480	104.26	-	-	99.74	32.48	6.59	34.55	105	13	Peak
2480	79.5	-	-	-	-	-	-	-	-	Average

Test Mode :	1Mbps	Temperature :	30~31°C
Test Channel :	78	Relative Humidity :	42~43%
Test Engineer :	Kai Wang, Timberland and Ivan Chiang	Polarization :	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2480	100.91	-	-	96.39	32.48	6.59	34.55	100	360	Peak
2480	76.15	-	-	-	-	-	-	-	-	Average

3.3 Antenna Requirements

3.3.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.3.2 Antenna Connected Construction

Non-standard connector used.

3.3.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz ~ 26.5GHz	Nov. 23, 2011	Sep. 12, 2012~ Sep. 14, 2012	Nov. 22, 2012	Radiation (03CH06-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-30GHz	Nov. 03, 2011	Sep. 12, 2012~ Sep. 14, 2012	Nov. 02, 2012	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz ~ 1000MHz	May 04, 2012	Sep. 12, 2012~ Sep. 14, 2012	May. 03, 2013	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz ~ 2GHz	Oct. 22, 2011	Sep. 12, 2012~ Sep. 14, 2012	Oct. 21, 2012	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 01, 2012	Sep. 12, 2012~ Sep. 14, 2012	Jul. 31, 2013	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 20, 2011	Sep. 12, 2012~ Sep. 14, 2012	Oct. 19, 2012	Radiation (03CH06-HY)
Preamplifier	Agilent	8449B	3008A01917	1GHz ~ 26.5GHz	Apr. 13, 2012	Sep. 12, 2012~ Sep. 14, 2012	Apr. 12, 2013	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz ~ 1GHz	Apr. 11, 2012	Sep. 12, 2012~ Sep. 14, 2012	Apr. 10, 2013	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 21, 2012	Sep. 12, 2012~ Sep. 14, 2012	Jul. 20, 2013	Radiation (03CH06-HY)
Pre Amplifier	MITEQ	AMF-7D-00101800-30-10P	159087	1GHz~18GHz	Feb. 27, 2012	Sep. 12, 2012~ Sep. 14, 2012	Feb. 26, 2013	Radiation (03CH06-HY)
Bluetooth Base Station	R&S	CBT32	100522	N/A	Feb. 09, 2012	Sep. 12, 2012~ Sep. 14, 2012	Feb. 08, 2014	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	100315	9KHz ~ 30MHz	May 14, 2012	Sep. 12, 2012~ Sep. 14, 2012	May 13, 2013	Radiation (03CH06-HY)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**