TEST REPORT

of

FCC Part 22 Subpart H and Part 24 Subpart E
FCC ID: ZNFC195

Equipment Under Test	:	Cellular/PCS GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Model Name	:	LG-C195 (Add : C195, LGC195)
Serial No.	:	N/A
Applicant	:	LG Electronics MobileComm U.S.A., Inc.
Manufacturer	:	LG Electronics MobileComm U.S.A., Inc.
Date of Test(s)	:	2012.01.18 ~ 2012.01.26
Date of Issue	:	2012.02.08

In the configuration tested, the EUT complied with the standards specified above.

Tested By: **Date** **2012.02.08**

Duke Ko

Approved By: **Date** **2012.02.08**

Feel Jeong

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1. General information

1.1. Testing laboratory

SGS Korea Co., Ltd.(Gunpo Laboratory)
- 705, Dongchun-Dong Sooji-Gu, Yongin-Shi, Kyungki-Do, South Korea.
- Wireless Div. 2FL, 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, Korea 435-040

www.kr.sgs.com/ee

Telephone : +82 +31 428 5700
FAX : +82 +31 427 2371

1.2. Details of applicant

Applicant : LG Electronics mobileComm U.S.A.,Inc.
Address : 10101 Old Grove Road, San Diego, CA 92131
Contact Person : Cho, Yun Jin
Phone No. : +82 +2 2033 1328

1.3. Description of EUT

Kind of Product	Cellular/PCS GSM/GPRS/EDGE Phone with Bluetooth and WLAN
Model Name	LG-C195 (Add :C195, LGC195)
Serial Number	N/A
Power Supply	DC 3.7 V (Li-Ion Battery)
Rated Power	GSM850 : 33.2 dBm GSM1900 : 30.2 dBm
Frequency Range	GSM850: 824.2 ㎒ ~ 848.8 ㎒ GSM1900: 1 850.2 ㎒ ~ 1 909.8 ㎒
Class of GPRS	Class 12, Class B
Emission Designator	252KGXW (GSM850), 249KGXW (GSM1900)

1.4 Declaration by the manufacturer

- The EDGE mode has a receive function only.

1.5. Description of test mode

Band	Frequency (MHz)	Voice GSM	GPRS Data			
			GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
		(dB m)	(dB m)	(dB m)	(dB m)	(dB m)
GSM 850	824.2	**33.2**	33.1	30.6	29.1	27.6
	836.6	**33.2**	33.1	30.6	29.1	27.6
	848.8	**33.1**	33.1	30.6	29.1	27.6
GSM 1900	1 850.2	**30.0**	30.0	27.6	26.0	24.5
	1 880.0	**30.0**	30.0	27.6	26.0	24.6
	1 909.8	**30.1**	30.1	27.6	26.0	24.6

GSM (850 / 1900)
We found out the test mode with the highest power level after we analyze all the data rates. So we chose GSM850/1900 GSM Voice as a representative.

1.5. Test equipment list

Equipment	Manufacturer	Model	S/N	Cal Due.
Signal Generator	R&S	SMBV100A	255384	Jul. 20, 2012
Signal Generator	R&S	SMR40	100272	Jul. 15, 2012
PXA Spectrum Analyzer	Agilent	N9030A	US51350132	Oct. 28, 2012
Mobile Test Unit	R&S	CMU200	106190	May. 30, 2012
Directional Coupler	KRYTAR	152613	122661	May. 16, 2012
High Pass Filter	Wainwright	WHK3.0/18G-10SS	344	Jul. 07, 2012
Band Reject Filter	Wainwright	WRCG824/849-814/85960/10SS	7	Apr. 01, 2012
DC power Supply	Agilent	U8002A	MY50060028	Apr. 01, 2012
Preamplifier	H.P.	8447F	2944A03909	Jul. 04, 2012
Preamplifier	Agilent	8449B	3008A01932	Mar. 31, 2012
Preamplifier	SCHWARZBECK MESSELEKTRONIK	JS44-18004000-35-8P	1546891	Jul. 04, 2012
Test Receiver	R&S	ESU26	100109	Feb. 21, 2012
Bilog Antenna	SCHWARZBECK MESSELEKTRONIK	VULB9163	396	Apr. 27, 2013
Horn Antenna	R&S	HF 906	100326	Oct. 08, 2012
Horn Antenna	SCHWARZBECK MESSELEKTRONIK	BBHA 9170	BBHA9170431	Mar. 17, 2012
Dipole Antenna	SCHWARZBECK MESSELEKTRONIK	VHA 9103/UHA 9105	9103-2817 9105-2514	May. 14, 2013
Antenna Master	INN-CO	MM4000	N.C.R.	N.C.R.
Turn Table	INN-CO	DS 1200 S	N.C.R.	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N.C.R.	N.C.R.

1.6. Summary of test results

The EUT has been tested according to the following specifications:

APPLIED STANDARD : FCC Part 22, 24		
Section in FCC part	**Test Item**	**Result**
§2.1046 §22.913(a) §24.232(b)	RF Radiated Output Power	Complied
§2.1053 §22.917(a) §24.238(a)	Spurious Radiated Emission	Complied
§2.1046(a)	Conducted Output Power	Complied
§2.1049(h) (i)	Occupied Bandwidth	Complied
§2.1051 §22.917(a) §24.238(a)	Spurious Emission at Antenna Terminal	Complied
§2.1055 §22.355 §24.235	Frequency Stability	Complied
§22.917(a) §24.238(a)	Band Edge	Complied

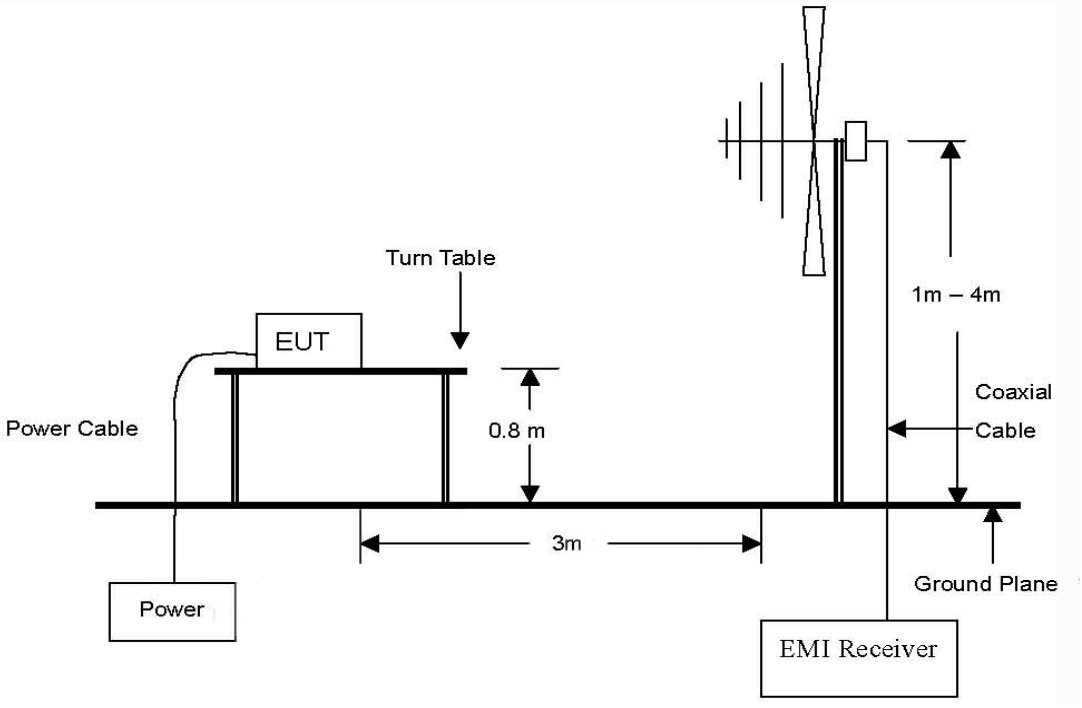
1.7. Test report revision

Revision	Report number	Description
0	F690501/RF-RTL005315	Initial

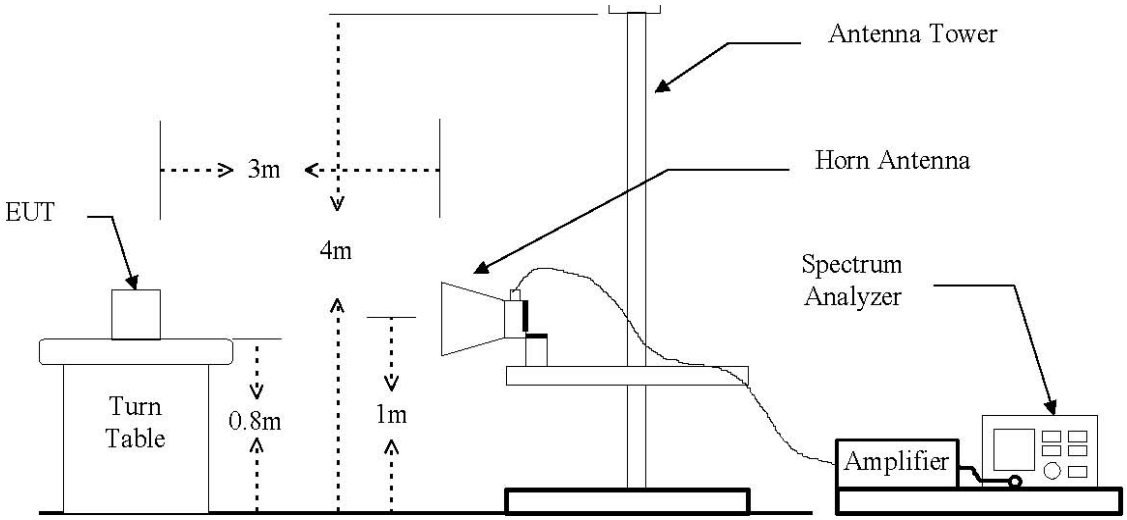
2. RF radiated output power & spurious radiated emission

2.1. Test setup

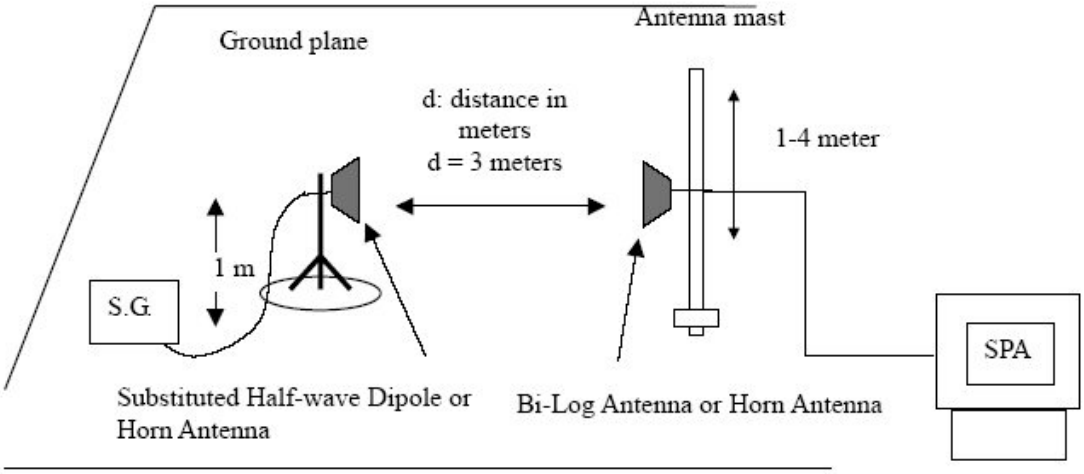
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to 20 ㎓ Emissions.



The diagram below shows the test setup for substituted method



2.2. Limit

FCC §22.913(a), the ERP of mobile transmitters must not exceed 7 watts.
FCC §24.232(b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

2.3. Test procedure : Based on ANSI/TIA 603C: 2004

1. On a test site, the EUT shall be placed at 80cm height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. During the measurement of the EUT, the resolution bandwidth was to 1 ㎒ and the average bandwidth was set to 1 ㎒.
5. The transmitter shall be switched on; the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. The EUT was replaced by half-wave dipole (824 ~ 849 ㎒) or horn antenna (1 850 ~ 1 910 ㎒) connected to a signal generator.
11. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
12. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
13. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
14. The input level to the substitution antenna shall be recorded as power level in ㏈m, corrected for any change of input attenuator setting of the measuring receiver.
15. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

2.4. Test result for RF radiated output power

Ambient temperature : (24 ± 2) ℃
Relative humidity : 47 % R.H.

GSM850

Frequency (㎒)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P.	
					(dB m)	(㎽)
824.20	V	22.10	3.42	-2.90	15.78	37.84
824.20	H	31.36	3.42	-2.90	25.04	319.15
836.60	V	22.64	3.38	-2.97	16.29	42.56
836.60	H	31.66	3.38	-2.97	25.31	339.63
848.80	V	23.90	3.33	-3.21	17.36	54.45
848.80	H	34.30	3.33	-3.21	27.76	597.04

GSM1900

Frequency (㎒)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(㎽)
1 850.20	V	21.44	4.87	9.12	25.69	370.68
1 850.20	H	20.80	4.87	9.12	25.05	319.89
1 880.00	V	18.07	4.91	9.20	22.36	172.19
1 880.00	H	19.00	4.91	9.20	23.29	213.30
1 909.80	V	18.50	4.94	9.27	22.83	191.87
1 909.80	H	20.42	4.94	9.27	24.75	298.54

Remark:
1. E.R.P. & E.I.R.P. = [S.G level + Amp.](dBm) - Cable loss(dB) + Ant. gain (dBd/dBi)
2. The E.R.P. & E.I.R.P. was measured in three orthogonal EUT position(x-axis, y-axis and z-axis). Worst cases are x-axis for GSM850 and z-axis for GSM1900.

2.5. Spurious radiated emission

- Modulation Signal : GSM850
- Measured output Power : 27.76 ㏈m = 0.59 W
- Distance : 3 meters
- Limit : -(43 + 10log$_{10}$(W)) = -40.76 ㏈c

Frequency (㎒)	Ant. Pol. (H/V)	S.G level (㏈m)	Cable loss (㏈)	Ant. gain (㏈d)	E.R.P (㏈m)	㏈c	Margin (㏈)
Low Channel (824.2 ㎒)							
1 648.52	V	-52.97	4.54	6.44	-51.07	-78.83	38.07
1 648.52	H	-49.89	4.54	6.44	-47.99	-75.75	34.99
Middle Channel (836.6 ㎒)							
1 673.29	V	-54.33	4.58	6.50	-52.40	-80.16	39.40
1 673.29	H	-54.40	4.58	6.50	-52.47	-80.23	39.47
High Channel (848.8 ㎒)							
1 697.85	V	-52.42	4.62	6.57	-50.47	-78.23	37.47
1 697.85	H	-55.52	4.62	6.57	-53.57	-81.33	40.57

- Modulation Signal : GSM1900
- Measured output Power : 25.69 ㏈m = 0.37 W
- Distance : 3 meters
- Limit : -(43 + 10log$_{10}$(W)) = -38.69 ㏈c

Frequency (㎒)	Ant. Pol. (H/V)	S.G level (㏈m)	Cable loss (㏈)	Ant. gain (㏈i)	E.I.R.P. (㏈m)	㏈c	Margin (㏈)
Low Channel(1 850.2 ㎒)							
3 700.36	V	-50.51	7.13	11.85	-45.79	-71.48	32.79
3 700.36	H	-49.79	7.13	11.85	-45.07	-70.76	32.07
Middle Channel(1 880.0 ㎒)							
3 760.02	V	-48.99	7.23	11.85	-44.37	-70.06	31.37
3 760.02	H	-49.73	7.23	11.85	-45.11	-70.80	32.11
High Channel(1 909.8 ㎒)							
3 819.68	V	-47.40	7.33	11.84	-42.89	-68.58	29.89
3 819.68	H	-48.74	7.33	11.84	-44.23	-69.92	31.23

Remark:
1. E.R.P. & E.I.R.P. = S.G level (㏈m) - Cable loss (㏈) + Ant. gain (㏈d/㏈i)
2. No more harmonic above 3rd harmonic for all channel.

3. Conducted Output Power

3.1. Limit

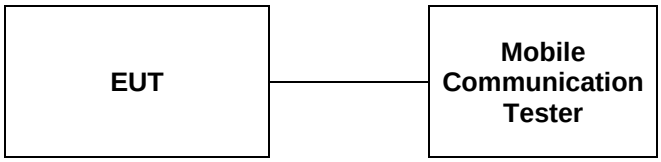
Requirements: CFR 47, Section §2.1046

3.2. Test Procedure

1. The RF output of the transmitter was connected to the input of the Mobile Communication Test Unit through sufficient attenuation.

2. The mobile was set up for the max. output power with pseudo random data modulation.

3. The power was measured with



3.3. Test Result

Ambient temperature : (24 ± 2) ℃
Relative humidity : 47 % R.H.

Band	Frequency (MHz)	Voice GSM	GPRS Data			
			GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
		(dB m)	(dB m)	(dB m)	(dB m)	(dB m)
GSM 850	824.2	**33.2**	33.1	30.6	29.1	27.6
	836.6	**33.2**	33.1	30.6	29.1	27.6
	848.8	**33.1**	33.1	30.6	29.1	27.6
GSM 1900	1 850.2	**30.0**	30.0	27.6	26.0	24.5
	1 880.0	**30.0**	30.0	27.6	26.0	24.6
	1 909.8	**30.1**	30.1	27.6	26.0	24.6

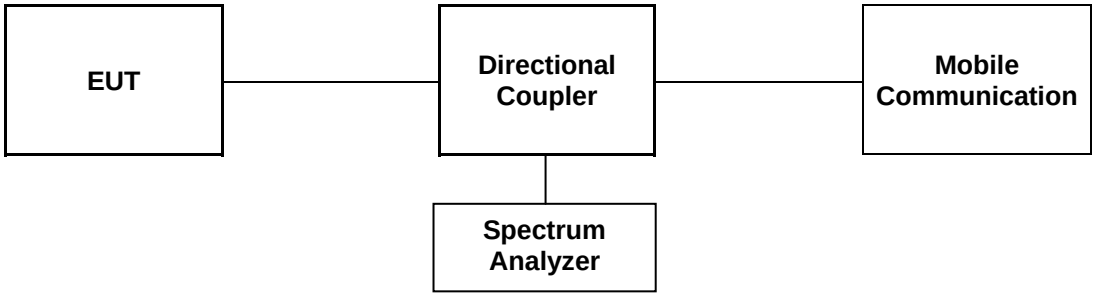
4. Occupied Bandwidth 99 %

4.1. Limit

Requirements: CFR 47, Section §2.1049.

4.2. Test Procedure

1. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
2. The resolution bandwidth of the spectrum analyzer was set.
   Occupied Bandwidth 99 % was tested under



4.3 Test Results

Ambient temperature : (24 ± 2) ℃
Relative humidity : 47 % R.H.

Band	Mode	Frequency (㎒)	Occupied Bandwidth (㎒)
GSM850	Voice GSM	824.2	0.25
		836.6	0.25
		848.8	0.25
GSM1900	Voice GSM	1 850.2	0.25
		1 880.0	0.25
		1 909.8	0.25

Please refer to the following plots.

GSM850
99 %
Low Channel

Middle Channel

High Channel

GSM1900
99 %
Low Channel

Middle Channel

High Channel

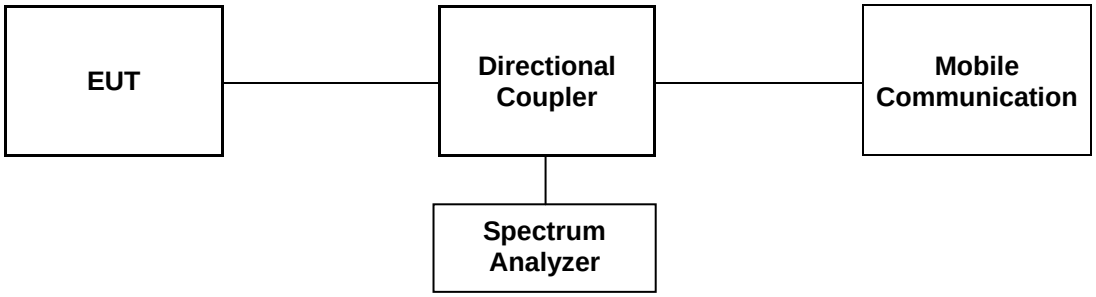
5. Spurious Emissions at Antenna Terminal

5.1. Limit

§ 22.917(a) and §24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency must be attenuated below the transmitting (P) by a factor of at least 43 + 10log(P)㏈.

5.2. Test Procedure

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1 ㎒. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.
3. Spurious Emission was tested under

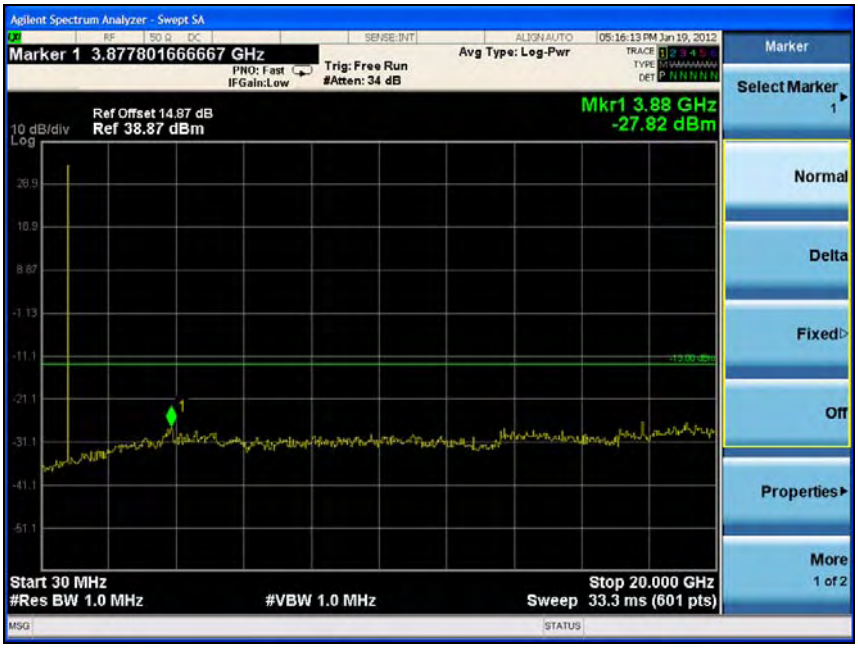


5.3. Test Results

Ambient temperature	:	(24 ± 2) ℃
Relative humidity	:	47 % R.H.

Please refer to the following plots.

GSM850
Low Channel

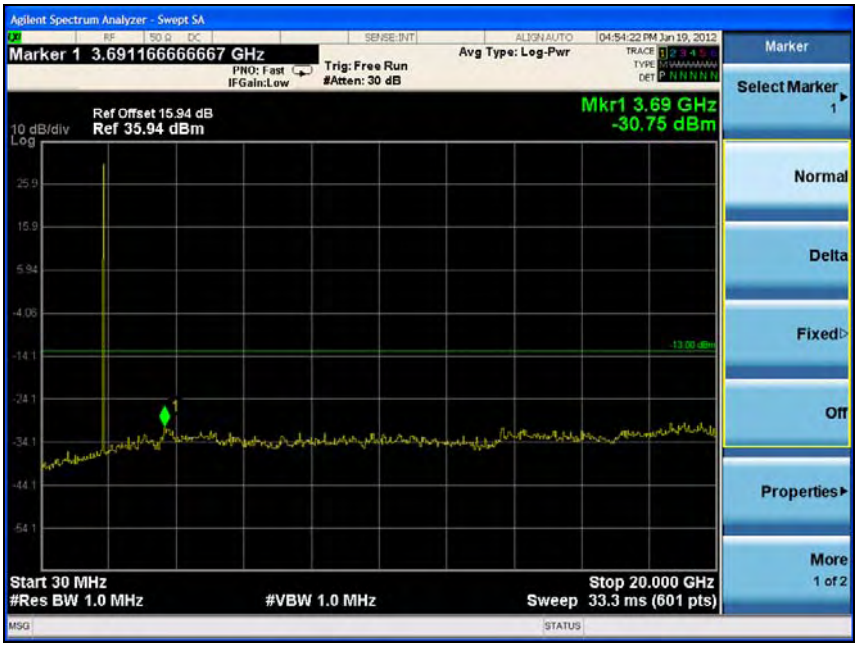


Middle Channel

High Channel

GSM1900
Low Channel

Middle Channel



High Channel

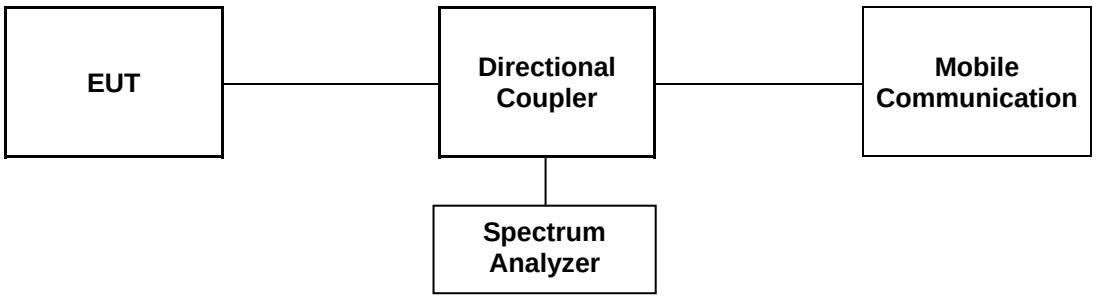
6. Band Edge

6.1. Limit

§ 22.917(a) and §24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency must be attenuated below the transmitting (P) by a factor of at least 43+10log(P)dB.

6.2. Test Procedure

1. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
2. The center of the spectrum analyzer was set to block edge frequency.



6.3. Test Results

Ambient temperature	:	(24 ± 2) ℃
Relative humidity	:	47 % R.H.

Please refer to the following plots.

GSM850
Low Channel

High Channel

GSM1900
Low Channel

High Channel

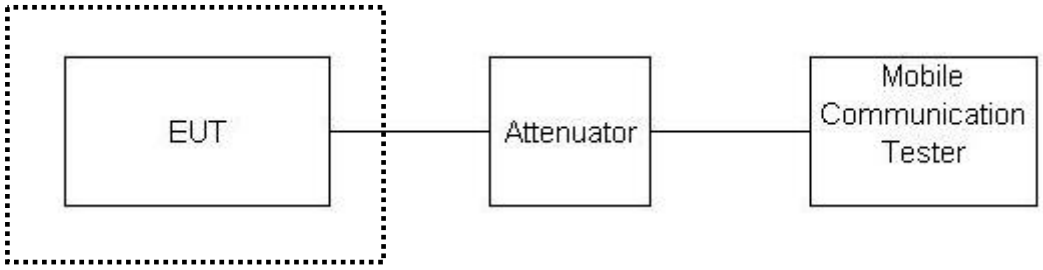
7. Frequency Stability

7.1. Limit

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:
According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.
For Mobile devices operating in the 824 to 849 ㎒ band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.
§24.235 The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

7.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.



Temperature Chamber

7.3. Test Results

Ambient temperature : (24 ± 2) ℃
Relative humidity : 47 % R.H.

GSM850 mode at middle channel

Reference Frequency: 836.6 ㎒, Limit: 2.5 ppm			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (Vdc)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	3.7	-30	-0.035 9
40		-25	-0.029 9
30		-18	-0.021 5
24		-22	-0.026 3
10		-15	-0.017 9
0		10	0.012 0
-10		-16	-0.019 1
-20		-15	-0.017 9
-30		-14	-0.016 7
Frequency Stability versus power Supply			
Environment Temperature (℃)	**Power Supplied (Vdc)**	**Frequency Measure with Time Elapse**	
		Frequency Error (Hz)	**ppm**
24	4.255	-25	-0.029 9
	3.4 (batt. End point)	-23	-0.027 5

GSM1900 mode at middle channel

Reference Frequency: 1 880.0 ㎒, Limit: 2.5 ppm			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (Vdc)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	3.7	-41	-0.021 8
40		-38	-0.020 2
30		-39	-0.020 7
24		-42	-0.022 3
10		-25	-0.013 3
0		-30	-0.016 0
-10		-26	-0.013 8
-20		-19	-0.010 1
-30		-23	-0.012 2
Frequency Stability versus power Supply			
Environment Temperature (℃)	**Power Supplied (Vdc)**	**Frequency Measure with Time Elapse**	
		Frequency Error (Hz)	**ppm**
24	4.255	-41	-0.021 8
	3.4 (batt. End point)	-45	-0.023 9