Operation Mode: CH High(GFSK)

Frequency [MHz]	Reading dBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4960	49.41	0.50	V	49.91	74	24.09	PK
4960	36.25	0.50	V	36.75	54	17.25	AV
7440	50.21	8.95	V	59.16	74	14.84	PK
7440	36.52	8.95	V	45.47	54	8.53	AV
4960	49.81	0.50	H	50.31	74	23.69	PK
4960	36.40	0.50	H	36.90	54	17.10	AV
7440	50.55	8.95	H	59.50	74	14.50	PK
7440	36.71	8.95	H	45.66	54	8.34	AV

Operation Mode: CH High(8DPSK)

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4960	49.69	0.50	V	50.19	74	23.81	PK
4960	36.08	0.50	V	36.58	54	17.42	AV
7440	50.27	8.95	V	59.22	74	14.78	PK
7440	36.40	8.95	V	45.35	54	8.65	AV
4960	49.27	0.50	H	49.77	74	24.23	PK
4960	36.09	0.50	H	36.59	54	17.41	AV
7440	50.15	8.95	H	59.10	74	14.90	PK
7440	36.29	8.95	H	45.24	54	8.76	AV

Operation Mode: CH High (π/4DQPSK)

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4960	49.71	0.50	V	50.21	74	23.79	PK
4960	36.15	0.50	V	36.65	54	17.35	AV
7440	50.01	8.95	V	58.96	74	15.04	PK
7440	36.40	8.95	V	45.35	54	8.65	AV
4960	49.75	0.50	H	50.25	74	23.75	PK
4960	36.19	0.50	H	36.69	54	17.31	AV
7440	50.15	8.95	H	59.10	74	14.90	PK
7440	36.60	8.95	H	45.55	54	8.45	AV

※ A.F: ANTENNA FACTOR
C.L: CABLE LOSS
AMP GAIN: AMPLIFIER GAIN

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
   a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
   b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz ≥ 1/τ Hz, where τ = pulse width in seconds.
   We performed using a reduced video BW method was done with the analyzer in linear mode.
6. We have done Normal Mode and EDR Mode test.
7. This test is performed with hopping off.
8. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

8.6.3 RADIATED RESTRICTED BAND EDGES

Test Requirements and limit, §15.247(d), §15.205, §15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c).

Operation Mode: Normal(GFSK)
Operating Frequency: 2402 MHz
Channel No: CH 0

Frequency [MHz]	Reading dBuV	※A.F+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	25.73	33.90	H	59.63	74	14.37	PK
2390.0	11.91	33.90	H	45.81	54	8.19	AV
2390.0	25.40	33.90	V	59.30	74	14.70	PK
2390.0	11.82	33.90	V	45.72	54	8.28	AV

Operation Mode: EDR(8DPSK)
Operating Frequency: 2402 MHz
Channel No: CH 0

Frequency [MHz]	Reading dBuV	※A.F+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	26.00	33.90	H	59.90	74	14.10	PK
2390.0	11.80	33.90	H	45.70	54	8.30	AV
2390.0	26.27	33.90	V	60.17	74	13.83	PK
2390.0	11.88	33.90	V	45.78	54	8.22	AV

Operation Mode	EDR(π/4DQPSK)
Operating Frequency	2402 MHz
Channel No	CH 0

Frequency [MHz]	Reading dBuV	※A.F+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	26.09	33.90	H	59.99	74	14.01	PK
2390.0	11.88	33.90	H	45.78	54	8.22	AV
2390.0	25.91	33.90	V	59.81	74	14.19	PK
2390.0	11.75	33.90	V	45.65	54	8.35	AV

※ A.F: ANTENNA FACTOR
C.L: CABLE LOSS

Notes:

1.. Frequency range of measurement = 2310 MHz ~ 2900 MHz

2. Total = Fundamental Reading Value + Antenna Factor + Cable Loss

3. Spectrum setting:

a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.

b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz ≥ 1/τ Hz, where τ = pulse width in seconds.

We performed using a reduced video BW method was done with the analyzer in linear mode.

4. We have done Normal Mode and EDR Mode.

5. This test is performed with hopping off.

6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

Operation Mode	Normal(GFSK)
Operating Frequency	2480 MHz
Channel No	CH 78

Frequency	Reading	※ A.F.+CL	Ant. Pol.	Duty Cycle Correction	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
2483.5	33.75	33.99	H	0	67.74	74	6.26	PK
2483.5	30.70	33.99	H	-24.78	39.91	54	14.09	AV
2483.5	31.27	33.99	V	0	65.26	74	8.74	PK
2483.5	27.60	33.99	V	-24.78	36.81	54	17.19	AV

Operation Mode	EDR(8DPSK)
Operating Frequency	2480 MHz
Channel No	CH 78

Frequency	Reading	※ A.F.+CL	Ant. Pol.	Duty Cycle Correction	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
2483.5	35.55	33.99	H	0	69.54	74	4.46	PK
2483.5	28.78	33.99	H	-24.76	38.01	54	15.99	AV
2483.5	32.85	33.99	V	0	66.84	74	7.16	PK
2483.5	26.16	33.99	V	-24.76	35.39	54	18.61	AV

Operation Mode	EDR(π/4DQPSK)
Operating Frequency	2480 MHz
Channel No	CH 78

Frequency	Reading	※ A.F.+CL	Ant. Pol.	Duty Cycle Correction	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
2483.5	35.66	33.99	H	0	69.65	74	4.35	PK
2483.5	29.01	33.99	H	-24.78	38.22	54	15.78	AV
2483.5	32.89	33.99	V	0	66.88	74	7.12	PK
2483.5	26.30	33.99	V	-24.78	35.51	54	18.49	AV

※ A.F: ANTENNA FACTOR
C.L: CABLE LOSS
AMP GAIN: AMPLIFIER GAIN

Notes:

1. Frequency range of measurement = 2483.5 MHz ~ 2485.5 MHz
2. Total = Fundamental Reading Value + Antenna Factor + Cable Loss – Delta Value + Duty Cycle Correction Factor
3. Spectrum setting:
   a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
   b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz ≥ 1/τ Hz, where τ = pulse width in seconds.
   We performed using a reduced video BW method was done with the analyzer in linear mode.
4. FYI : Duty Cycle Correction Factor (79 channel hopping)
   a. Time to cycle through all channels= Δ t= τ [ms] x 79 channels = 227.757 ms, where τ = pulse width
   b. 100 ms/ Δt [ms] = *H* → Round up to next highest integer, *H* ' =*1*
   c. Worst Case Dwell Time = τ [ms] x *H* ' = 2.883 ms
   d. Duty Cycle Correction = 20log (Worst Case Dwell Time/ 100ms) dB = -30.803 dB
5. Duty Cycle Correction Factor(AFH mode – minimum channel number case - 20 channels)
   a. Time to cycle through all channels= Δ t= τ [ms] x 20 channels = 57.66 ms, where τ = pulse width
   b. 100 ms/ Δt [ms] = *H* → Round up to next highest integer, *H* ' = 2
   c. Worst Case Dwell Time = τ [ms] x *H* ' = 5.766 ms
   d. Duty Cycle Correction(AFH) = 20log (Worst Case Dwell Time/ 100ms) dB = -24.7825 dB
   e. We applied DCCF in the test result which hopping channel number is 20.
6. We have done Normal Mode, EDR Mode.
7. This test is performed with hopping off.
8. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

8.7 POWERLINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. This test is performed with hopping on and and 3Mbps (3-DH5) data rate.

▣ RESULT PLOTS

Conducted Emissions (Line 1)

HCT

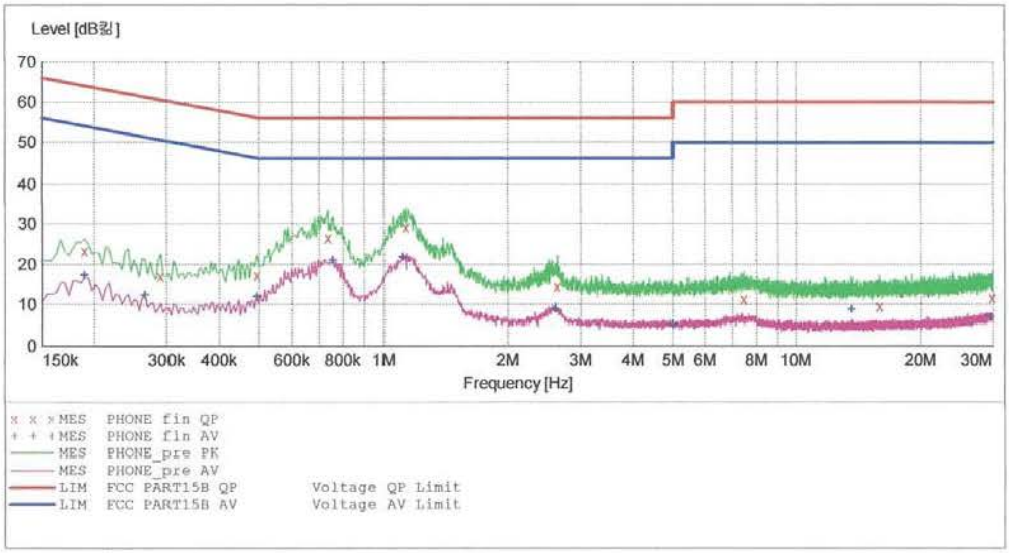
EMC

```
EUT:                    LG-E410f
Manufacturer:           LG
Operating Condition:    BT MODE
Test Site:              SHIELD ROOM
Operator:               JC SHIN
Test Specification:     FCC PART15 B
Comment:                H
```

SCAN TABLE: "FCC CLASS B(H)"

Short Description: KN22 CLASS B

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "PHONE_fin QP"

2013-06-05 1:06오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.190001	23.40	9.8	64	40.7	---	---
0.290001	17.10	9.8	61	43.4	---	---
0.494001	17.30	9.8	56	38.8	---	---
0.736000	26.60	9.8	56	29.4	---	---
1.128000	29.10	9.9	56	26.9	---	---
2.640000	14.50	10.0	56	41.5	---	---
7.448000	11.30	10.3	60	48.7	---	---
15.884000	9.60	10.8	60	50.4	---	---
29.884000	11.70	11.4	60	48.3	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

2013-06-05 1:06오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.190001	17.30	9.8	54	36.7	---	---
0.266001	12.40	9.8	51	38.8	---	---
0.494001	12.00	9.8	46	34.1	---	---
0.756000	21.00	9.8	46	25.0	---	---
1.112000	21.80	9.9	46	24.2	---	---
2.612000	8.90	10.0	46	37.1	---	---
5.000000	5.20	10.2	46	40.8	---	---
13.560000	8.80	10.7	50	41.2	---	---
29.552000	6.90	11.3	50	43.1	---	---

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Conducted Emissions (Line 2)

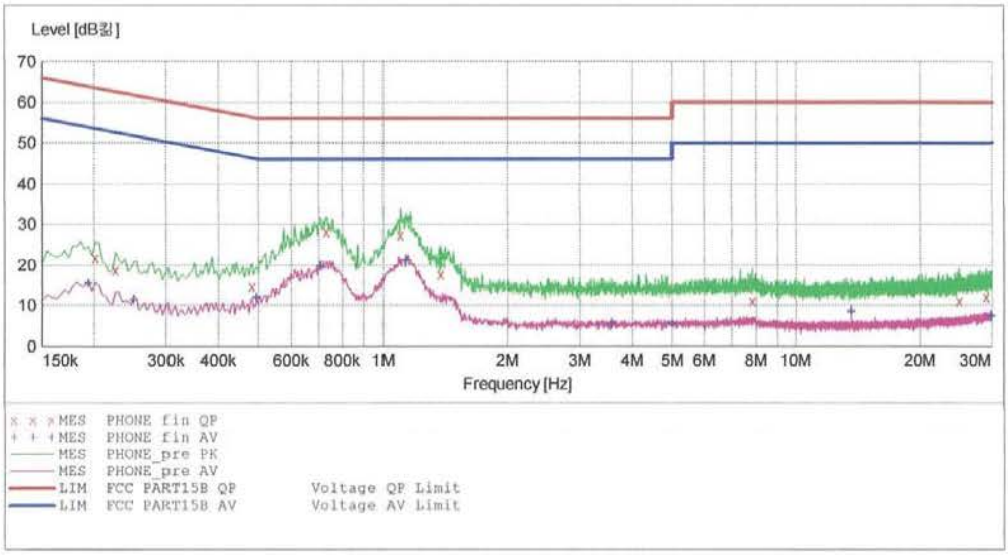
HCT

EMC

```
EUT:                    LG-E410f
Manufacturer:           LG
Operating Condition:    BT MODE
Test Site:              SHIELD ROOM
Operator:               JC SHIN
Test Specification:     FCC PART15 B
Comment:                N
```

SCAN TABLE: "FCC CLASS B(N)"

```
  Short Description:                KN22 CLASS B
  Start       Stop        Step      Detector   Meas.     IF       Transducer
  Frequency   Frequency   Width                Time      Bandw.
  150.0 kHz   500.0 kHz   4.0 kHz   MaxPeak    10.0 ms   9 kHz    None
                                    Average
  500.0 kHz   5.0 MHz     4.0 kHz   MaxPeak    10.0 ms   9 kHz    None
                                    Average
  5.0 MHz     30.0 MHz    4.0 kHz   MaxPeak    10.0 ms   9 kHz    None
                                    Average
```



MEASUREMENT RESULT: "PHONE_fin QP"

2013-06-05 11:46오전

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.202001	21.70	10.0	64	41.8	---	---
0.226001	18.90	10.0	63	43.7	---	---
0.482001	14.80	10.0	56	41.5	---	---
0.732000	28.30	10.0	56	27.7	---	---
1.100000	27.40	10.1	56	28.6	---	---
1.376000	17.90	10.1	56	38.1	---	---
7.836000	11.00	10.6	60	49.0	---	---
24.976000	11.00	11.5	60	49.0	---	---
29.024000	12.10	11.8	60	47.9	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-06-05 11:46오전

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.194001	15.50	10.0	54	38.3	---	---
0.250001	11.30	10.0	52	40.4	---	---
0.494001	12.00	10.0	46	34.1	---	---
0.708000	19.70	10.0	46	26.3	---	---
1.132000	21.30	10.1	46	24.7	---	---
3.556000	5.40	10.3	46	40.6	---	---
5.000000	5.50	10.4	46	40.5	---	---
13.560000	8.60	10.9	50	41.4	---	---
29.828000	7.40	11.8	50	42.6	---	---

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9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	02/06/2014	100073
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	12/17/2014	3150
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	04/16/2014	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	04/25/2014	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	05/14/2014	MY51110063
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/11/2013	10094
MITEQ	AMF-6B-180265-35-10P / POWER AMP	Annual	04/16/2014	667624
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2014	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/08/2014	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2013	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	04/16/2014	MY4442009
Wainwright Instrument	WHF3.0/18G-10EF / High Pass Filter	Annual	02/08/2014	F6
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	04/16/2014	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	Annual	04/16/2014	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	03/19/2014	1
Hewlett Packard	11636B/Power Divider	Annual	11/07/2013	11377
Agilent	87300B/Directional Coupler	Annual	12/24/2013	3116A03621
Hewlett Packard	11667B / Power Splitter	Annual	05/29/2014	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2013	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2013	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/24/2014	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	04/25/2014	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
CERNEX	CBLU1183540 / POWER AMP	Annual	07/27/2013	21691
Agilent	8493C / Attenuator(10 dB)	Annual	07/30/2013	76649
WEINSCHEL	2-3 / Attenuator(3 dB)	Annual	11/07/2013	BR0617