11. POWERLINE CONDUCTE 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.

Test Plots

Unterminate the Antenna

Conducted Emissions (Line 1)

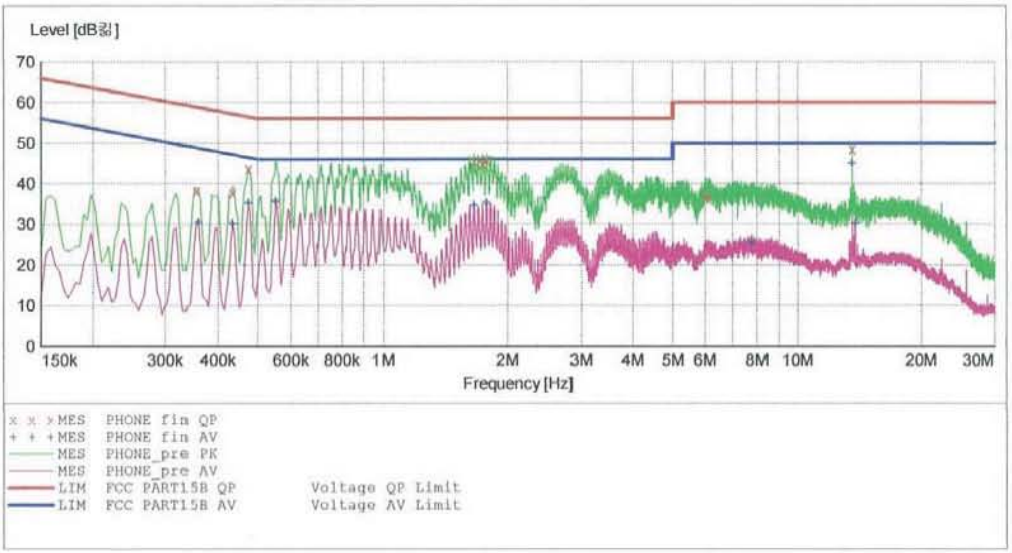
HCT

EMC

```
EUT:                    LG-E989
Manufacturer:           LG
Operating Condition:    NFC
Test Site:              SHIELD ROOM
Operator:               JS LEE
Test Specification:     FCC PART15 B
Comment:                H (Unterminated)
```

SCAN TABLE: "FCC CLASS B(H)"

```
  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"

2013-05-25 2:35오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.354001	38.30	9.8	59	20.6	---	---
0.434001	37.80	9.8	57	19.3	---	---
0.474001	43.70	9.8	56	12.7	---	---
1.660000	45.60	9.9	56	10.4	---	---
1.740000	44.90	9.9	56	11.1	---	---
1.776000	45.90	9.9	56	10.1	---	---
6.008000	36.60	10.2	60	23.4	---	---
6.124000	37.20	10.2	60	22.8	---	---
13.560000	48.50	10.7	60	11.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-05-25 2:35오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.358001	30.50	9.8	49	18.3	---	---
0.434001	30.10	9.8	47	17.0	---	---
0.474001	35.30	9.8	46	11.1	---	---
0.552000	35.70	9.8	46	10.3	---	---
1.660000	34.70	9.9	46	11.3	---	---
1.776000	35.30	9.9	46	10.7	---	---
7.784000	25.50	10.3	50	24.5	---	---
13.560000	44.90	10.7	50	5.1	---	---
13.772000	30.10	10.7	50	19.9	---	---

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Conducted Emissions (Line 2)

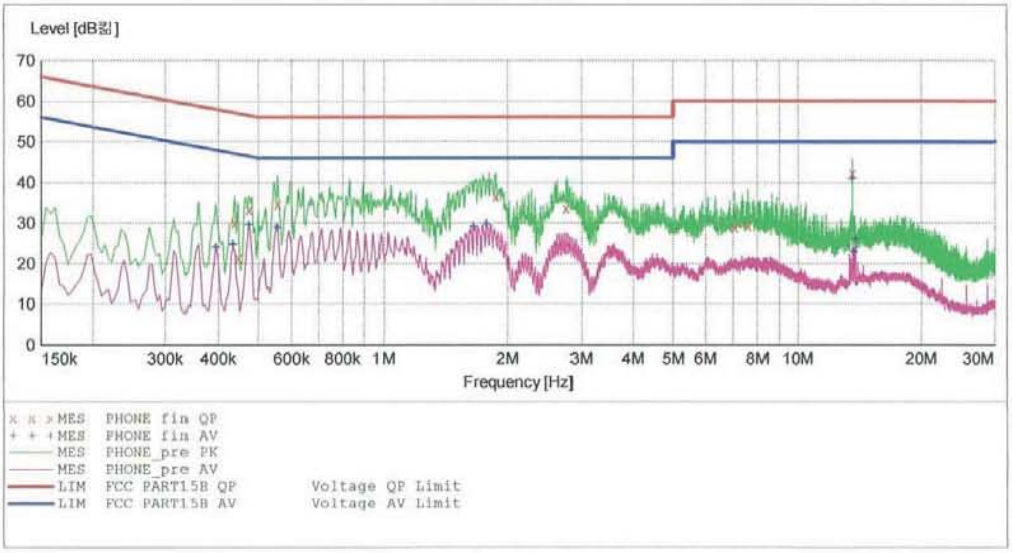
HCT

EMC

```
EUT:                  LG-E989
Manufacturer:         LG
Operating Condition:  NFC
Test Site:            SHIELD ROOM
Operator:             JS LEE
Test Specification:   FCC PART15 B
Comment:              N (Unterminated)
```

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"

2013-05-25 2:16오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.438001	30.00	10.0	57	27.1	---	---
0.446001	21.50	10.0	57	35.4	---	---
0.474001	33.30	10.0	56	23.1	---	---
0.556000	34.80	10.0	56	21.2	---	---
1.872000	36.50	10.1	56	19.5	---	---
2.780000	33.60	10.2	56	22.4	---	---
7.064000	29.00	10.5	60	31.0	---	---
7.612000	29.40	10.5	60	30.6	---	---
13.560000	42.30	10.9	60	17.7	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

2013-05-25 2:16오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.394001	24.10	10.0	48	23.9	---	---
0.434001	24.80	10.0	47	22.4	---	---
0.474001	29.50	10.0	46	16.9	---	---
0.556000	28.90	10.0	46	17.1	---	---
1.656000	29.20	10.1	46	16.8	---	---
1.776000	29.80	10.1	46	16.2	---	---
13.560000	40.90	10.9	50	9.1	---	---
13.668000	22.90	11.0	50	27.1	---	---
13.772000	26.00	11.0	50	24.0	---	---

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Terminate the Antenna

Conducted Emissions (Line 1)

HCT

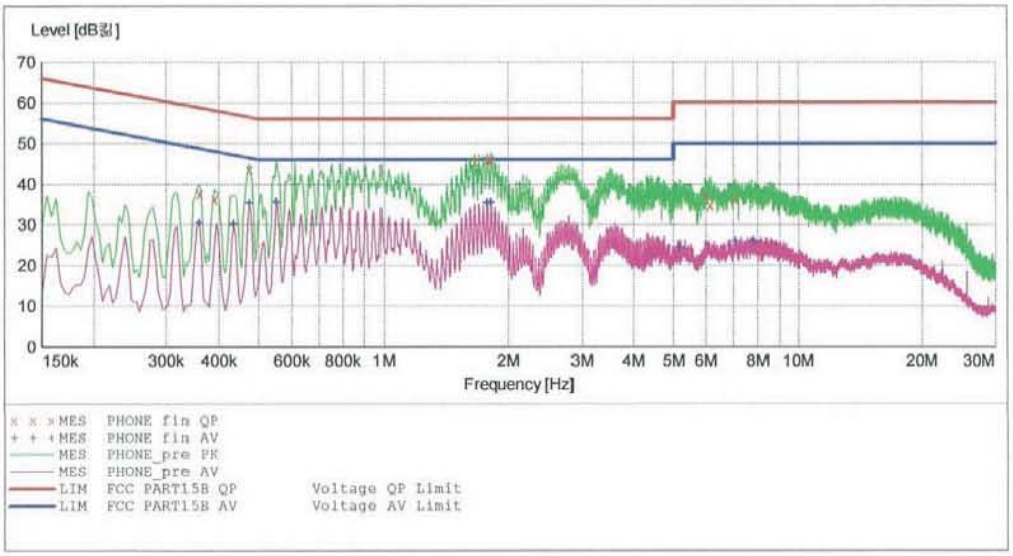
EMC

```
EUT:                    LG-E989
Manufacturer:           LG
Operating Condition:    NFC
Test Site:              SHIELD ROOM
Operator:               JS LEE
Test Specification:     FCC PART15 B
Comment:                H (Terminated)
```

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"

2013-05-25 2:31오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.358001	37.70	9.8	59	21.0	---	---
0.390001	36.20	9.8	58	21.9	---	---
0.474001	43.70	9.8	56	12.7	---	---
1.660000	45.50	9.9	56	10.5	---	---
1.776000	45.90	9.9	56	10.1	---	---
1.816000	46.10	9.9	56	9.9	---	---
5.964000	37.30	10.2	60	22.7	---	---
6.152000	34.90	10.2	60	25.1	---	---
7.064000	36.20	10.3	60	23.8	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-05-25 2:31오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.358001	30.40	9.8	49	18.3	---	---
0.434001	30.10	9.8	47	17.1	---	---
0.474001	35.30	9.8	46	11.2	---	---
0.552000	35.70	9.8	46	10.3	---	---
1.776000	35.40	9.9	46	10.6	---	---
1.816000	35.50	9.9	46	10.5	---	---
5.180000	24.30	10.2	50	25.7	---	---
7.072000	25.90	10.3	50	24.1	---	---
7.824000	25.90	10.3	50	24.1	---	---

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Conducted Emissions (Line 2)

HCT

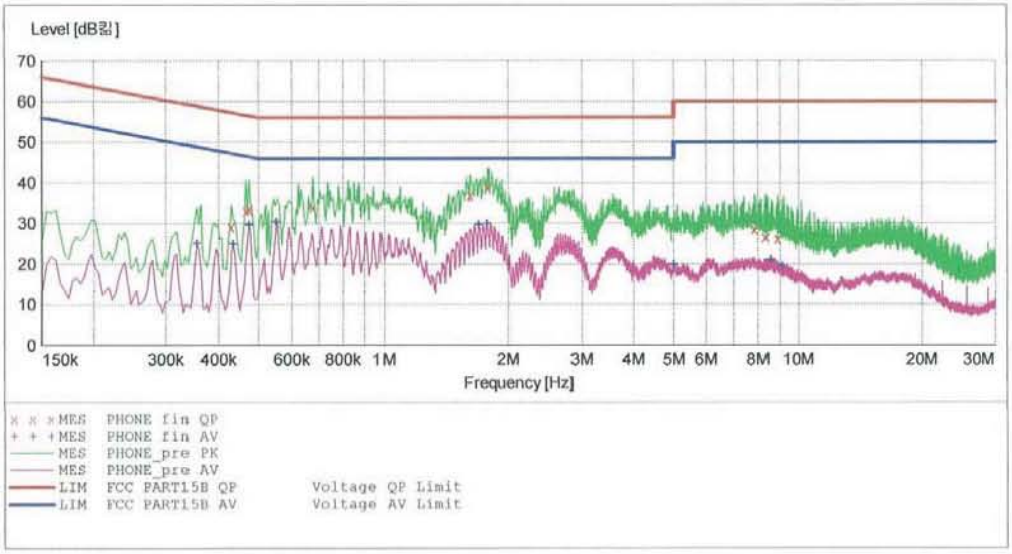
EMC

```
EUT:                  LG-E989
Manufacturer:         LG
Operating Condition:  NFC
Test Site:            SHIELD ROOM
Operator:             JS LEE
Test Specification:   FCC PART15 B
Comment:              N (Terminated)
```

SCAN TABLE: "FCC CLASS B(N)"

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"

2013-05-25 2:20오후

Frequency MHz	Level dBµ	Transd dB	Limit dBµ	Margin dB	Line	PE
0.430001	29.20	10.0	57	28.0	---	---
0.466001	33.20	10.0	57	23.4	---	---
0.474001	33.50	10.0	56	22.9	---	---
0.676000	34.00	10.0	56	22.0	---	---
1.620000	36.90	10.1	56	19.1	---	---
1.788000	39.00	10.1	56	17.0	---	---
7.844000	28.70	10.6	60	31.3	---	---
8.352000	26.60	10.6	60	33.4	---	---
8.904000	26.30	10.6	60	33.7	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

2013-05-25 2:20오후

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.354001	25.10	10.0	49	23.7	---	---
0.434001	24.90	10.0	47	22.2	---	---
0.474001	29.70	10.0	46	16.7	---	---
0.552000	30.50	10.0	46	15.5	---	---
1.696000	29.70	10.1	46	16.3	---	---
1.776000	29.90	10.1	46	16.1	---	---
5.000000	19.80	10.4	46	26.2	---	---
8.580000	21.00	10.6	50	29.0	---	---
9.132000	19.50	10.6	50	30.5	---	---

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12. 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