

## EMI CERTIFICATION REPORT

**Applicant:**

**LG Electronics MobileComm U.S.A., Inc.**  
**1000 Sylvan Avenue, Englewood Cliffs NJ 07632**

**Date of Issue: March 20, 2014**

**Test Report No.: HCT-E-1403-F023**

**Test Site: HCT CO., LTD.**  
**HCT FRN: 0005-8664-21**

**FCC ID:**

**ZNFD285G**

**Rule Part(s) / Standard(s)** : FCC PART 15 Subpart B Class B  
**Equipment Type** : Cellular/PCS CDMA Phone with BT & WLAN  
**Model Name** : LG-D285g  
**Additional Model Name** : LGD285g, D285g  
**Port / Connector(s)** : USB / Earphone Port  
**Date of Test** : February 28, 2014 – March 04, 2014

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4/2003. (See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HCT certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

**Tested By**



**Dong-Hyun Park**  
**Test Engineer**  
**EMC Team**  
**Certification Division**

**Reviewed By**



**Sang-Jun Lee**  
**Technical Manager**  
**EMC Team**  
**Certification Division**

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## DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1403-F023	March 20, 2014	Initial Release



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**ATTACHMENT: TEST SETUP PHOTOGRAPHS**



## 1. GENERAL INFORMATION

### 1.1 Product Description

Equipment Under Test is manufactured by **LG Electronics MobileComm U.S.A., Inc.**  
Its basic purpose is used for communications.

<b>Model Name</b>	LG-D285g
<b>FCC ID</b>	ZNFD285G
<b>Additional Model</b>	LGD285g, D285g
<b>EUT Type</b>	GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 b/g/n (2.4GHz_HT20), VoIP, Hotspot support
<b>TX Frequency</b>	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 826.40 MHz to 846.60 MHz (WCDMA 850)
<b>RX Frequency</b>	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 871.40 MHz to 891.60 MHz (WCDMA 850)

### 1.2 Related Submittal(s) / Grant(s)

Original submittal only.



### 1.3 Tested System Details

All

Device Type	Model Name	Manufacturer	FCC ID / DoC	Connected To
EUT	LG-D285g	LG	ZNFD285G	Notebook PC Ear-phone
USB cable	EAD62377902	Ningbo Broad	-	E.U.T Notebook PC
Ear-phone	EAB62808211	I-SOUND	-	E.U.T
Notebook PC	ProBook6560b	H.P	DoC	EUT Notebook PC adaptor
Notebook PC adaptor	PPP009D	DELTA Electronics (JIANGSU)LTD	-	Notebook PC
Gateway	MV440	Axesstel	PH7MV440	Notebook PC, Adaptor
Mouse	Serial 2 button mouse	Radio shack	FSUGMZE3	Notebook PC
Adaptor	DA-60M12	Yang Ming Industrial	-	Gateway
RJ45 cable	-	-	-	Notebook PC, Gateway
Micro SD card	8 GB	SanDisk	-	EUT



## 1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	Micro USB	Y	Y	(P,D)1.0
	Ear-phone	N/A	N	(D)1.2
Notebook PC	RJ 45	N/A	N	(D)1.5
	Serial (Mouse)	N/A	N	(D)1.8
	DC in	N	N/A	(P)1.8
Gateway	DC in	N	N/A	(P)1.8

\* The marked "(D)" means the data cable and "(P)" means the power cable.

## 1.5 Noise Suppression Parts on Cable. (I/O Cable)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
EUT	Micro USB	N	N/A	Y	Both End
	Ear-phone	N	N/A	Y	EUT End
Notebook PC	RJ 45	N	N/A	N	N/A
	Serial (Mouse)	N	N/A	Y	Notebook PC End



## 1.6 Test Methodology

Both Conducted and Radiated testing was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to EUT distance of 3 m.

## 1.7 Test Facility

Chamber used to collect the test data is located at the 74, SEOICHEON-RO, 578BEON-GIL, MAJANG-MYEON, ICHEON-SI, GYEONGGI-DO, KOREA. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4/2003.

Measurement Facilities	Reg. No.
Radiated Field strength measurement facility (3m)	90661 (June 21, 2011)
Radiated Field strength measurement facility (10m)	90661 (June 21, 2011)

## 1.8 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower



## 2. DESCRIPTION OF TEST

### 2.1 Conducted Emission Test

EUT was connected to LISN via Notebook PC adaptor and Base Station. Preliminary Power Line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worst operating conditions.

#### [ Conducted Emission Limits ]

Frequency (MHz)	Quasi-Peak(dB $\mu$ V)	Average(dB $\mu$ V)
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

\*Decreases with the logarithm of the frequency.

### 2.2 Radiated Emission Test

Preliminary Radiated Emission tests were performed by using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worst operating condition. Final Radiated Emission tests were performed at 3 m semi-anechoic chamber.

#### [ Radiated Emission Limits ]

Frequency (MHz)	Field Strength( $\mu$ V/m)	Quasi-Peak (dB $\mu$ V/m)
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

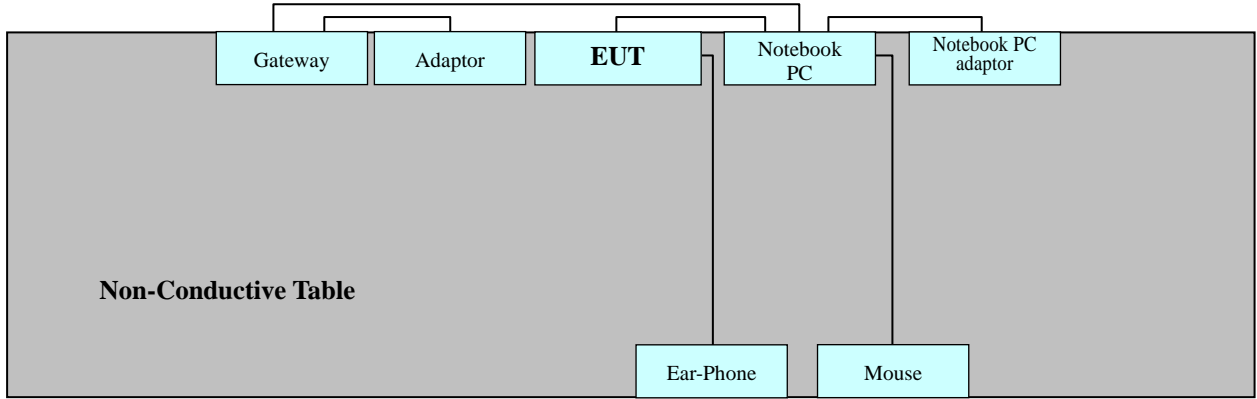
Frequency (MHz)	Peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)
1 000 to 12 000*	74	54

\* 5<sup>th</sup> harmonic of highest fundamental frequency or 40 GHz, whichever is lower.





## 2.3 Configuration of Tested System



Power Line: 120 VAC



### 3. PRELIMINARY TEST

#### 3.1 Conducted Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

**Operation Mode:**       Data Communication mode

#### 3.2 Radiated Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

**Operation Mode:**       Data Communication mode



## 4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

### 4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Limit Apply to	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Operation Mode	: Data Communication mode
Temperature	: 21.7°C
Humidity Level	: 29.4 %
Test Date	: March 04, 2014

Frequency (MHz)	Transd (dB)	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
			(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)
0.1500	9.7	L1	66.0	43.5	53.2	56.0	23.0	32.7
0.1590	9.7	N	65.5	42.2	51.9	55.5	24.8	34.5
0.1770	9.7	N	64.6	38.2	47.9	54.6	20.2	29.9
0.1725	9.7	L1	64.8	39.9	49.6	54.8	19.9	29.6

※ **NOTE:** Refer to page 11 to page 14 for details.

1. Conductor L1 = Hot, Conductor N = Neutral
  2. Transducer = LISN Factor + Cable Loss Factor
  3. Result Level = Measurement Level + Transducer Factor
- \* 'Result Level' in above table is same as the 'Quasi-Peak' and 'CAverage' of the test data



EMI Auto Test(1)

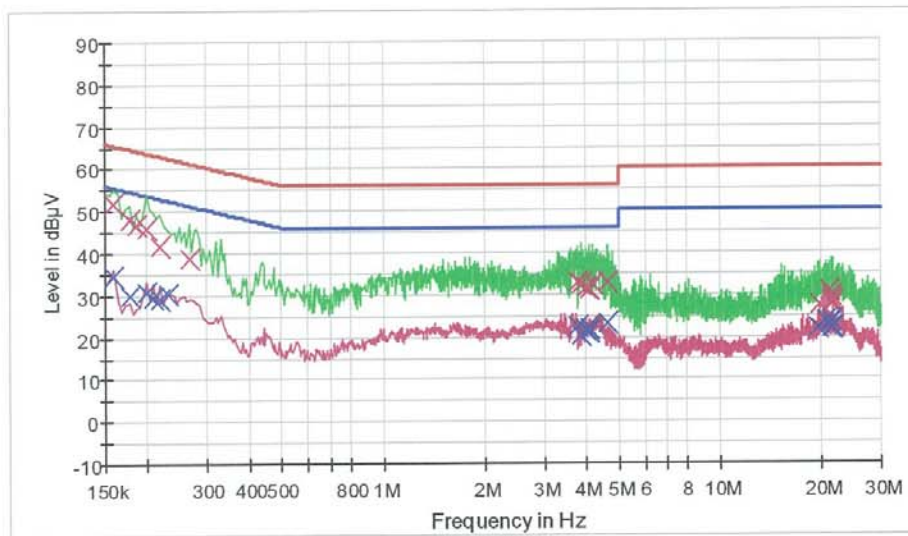
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# HCT TEST Report

## Common Information

EUT: LG-D285g  
 Manufacturer: LG  
 Test Site: SHIELD ROOM  
 Operating Conditions: DATA MODE  
 Operator Name:

FCC CLASS B



— FCCCLASS B\_OP      — FCCCLASS B\_AV      — Preview Result 1-PK+  
 — Preview Result 2-AVG      X Final Result 1-CPK      X Final Result 2-CAV

## Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	51.9	9.000	Off	N	9.7	13.6	65.5
0.177000	47.9	9.000	Off	N	9.7	16.7	64.6
0.186000	46.8	9.000	Off	N	9.7	17.4	64.2
0.199500	45.9	9.000	Off	N	9.7	17.7	63.6
0.217500	41.8	9.000	Off	N	9.7	21.1	62.9
0.267000	38.6	9.000	Off	N	9.7	22.6	61.2
3.776000	32.8	9.000	Off	N	10.0	23.2	56.0
3.884000	32.3	9.000	Off	N	10.1	23.7	56.0
4.010000	31.5	9.000	Off	N	10.1	24.5	56.0
4.077500	31.3	9.000	Off	N	10.1	24.7	56.0
4.185500	32.5	9.000	Off	N	10.1	23.5	56.0
4.608500	32.8	9.000	Off	N	10.1	23.2	56.0
19.827500	27.4	9.000	Off	N	10.8	32.6	60.0
21.056000	30.7	9.000	Off	N	10.8	29.3	60.0
21.249500	28.5	9.000	Off	N	10.8	31.5	60.0
21.263000	28.0	9.000	Off	N	10.8	32.0	60.0

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## EMI Auto Test(1)

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Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
21.474500	29.4	9.000	Off	N	10.9	30.6	60.0
21.515000	27.7	9.000	Off	N	10.9	32.3	60.0

## Final Result 2

Frequency (MHz)	CAverage (dB $\mu$ V)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.159000	34.5	9.000	Off	N	9.7	21.0	55.5
0.177000	29.9	9.000	Off	N	9.7	24.7	54.6
0.199500	30.6	9.000	Off	N	9.7	23.0	53.6
0.208500	29.5	9.000	Off	N	9.7	23.8	53.3
0.217500	28.9	9.000	Off	N	9.7	24.0	52.9
0.231000	30.2	9.000	Off	N	9.7	22.2	52.4
3.776000	22.3	9.000	Off	N	10.0	23.7	46.0
3.884000	20.4	9.000	Off	N	10.1	25.6	46.0
4.010000	21.6	9.000	Off	N	10.1	24.4	46.0
4.068500	21.1	9.000	Off	N	10.1	24.9	46.0
4.077500	21.8	9.000	Off	N	10.1	24.2	46.0
4.608500	23.4	9.000	Off	N	10.1	22.6	46.0
19.566500	21.9	9.000	Off	N	10.8	28.1	50.0
20.687000	23.5	9.000	Off	N	10.8	26.5	50.0
21.056000	22.9	9.000	Off	N	10.8	27.1	50.0
21.249500	22.1	9.000	Off	N	10.8	27.9	50.0
21.263000	23.6	9.000	Off	N	10.8	26.4	50.0
21.515000	21.9	9.000	Off	N	10.9	28.1	50.0

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EMI Auto Test(1)

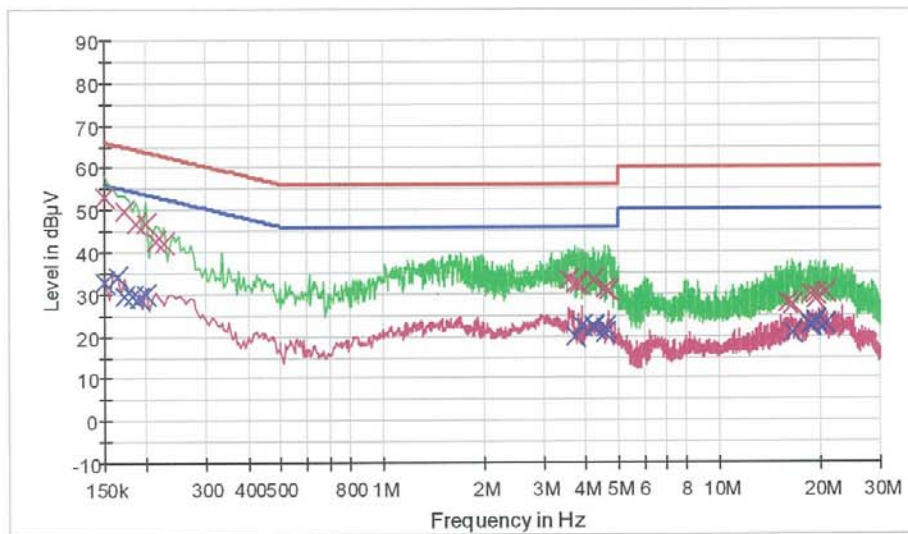
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# HCT TEST Report

## Common Information

EUT: LG-D285g  
 Manufacturer: LG  
 Test Site: SHIELD ROOM  
 Operating Conditions: DATA MODE  
 Operator Name:

FCC CLASS B



— FCCCLASS B\_QP      — FCCCLASS B\_AV      — Preview Result 1-PK+  
 — Preview Result 2-AVG      X Final Result 1-CFK      X Final Result 2-CAV

## Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	53.2	9.000	Off	L1	9.7	12.8	66.0
0.172500	49.6	9.000	Off	L1	9.7	15.2	64.8
0.186000	46.8	9.000	Off	L1	9.7	17.4	64.2
0.199500	46.6	9.000	Off	L1	9.7	17.0	63.6
0.213000	42.5	9.000	Off	L1	9.7	20.6	63.1
0.226500	42.3	9.000	Off	L1	9.7	20.3	62.6
3.587000	33.2	9.000	Off	L1	10.0	22.8	56.0
3.753500	32.6	9.000	Off	L1	10.0	23.4	56.0
3.812000	32.6	9.000	Off	L1	10.0	23.4	56.0
4.217000	33.4	9.000	Off	L1	10.1	22.6	56.0
4.581500	31.3	9.000	Off	L1	10.1	24.7	56.0
4.712000	30.6	9.000	Off	L1	10.1	25.4	56.0
15.939500	27.6	9.000	Off	L1	10.7	32.4	60.0
16.430000	27.4	9.000	Off	L1	10.8	32.6	60.0
18.549500	29.8	9.000	Off	L1	10.8	30.2	60.0
19.197500	29.8	9.000	Off	L1	10.9	30.2	60.0

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EMI Auto Test(1)

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Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
19.310000	28.7	9.000	Off	L1	10.9	31.3	60.0
20.615000	30.4	9.000	Off	L1	10.9	29.6	60.0

**Final Result 2**

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	32.7	9.000	Off	L1	9.7	23.3	56.0
0.163500	33.9	9.000	Off	L1	9.7	21.4	55.3
0.172500	29.6	9.000	Off	L1	9.7	25.2	54.8
0.181500	29.6	9.000	Off	L1	9.7	24.8	54.4
0.190500	29.1	9.000	Off	L1	9.7	24.9	54.0
0.199500	29.7	9.000	Off	L1	9.7	23.9	53.6
3.753500	20.0	9.000	Off	L1	10.0	26.0	46.0
3.902000	22.4	9.000	Off	L1	10.1	23.6	46.0
4.217000	21.7	9.000	Off	L1	10.1	24.3	46.0
4.226000	22.3	9.000	Off	L1	10.1	23.7	46.0
4.581500	21.8	9.000	Off	L1	10.1	24.2	46.0
4.599500	20.6	9.000	Off	L1	10.1	25.4	46.0
16.430000	20.8	9.000	Off	L1	10.8	29.2	50.0
18.549500	22.6	9.000	Off	L1	10.8	27.4	50.0
18.693500	22.2	9.000	Off	L1	10.8	27.8	50.0
19.197500	23.5	9.000	Off	L1	10.9	26.5	50.0
19.310000	23.1	9.000	Off	L1	10.9	26.9	50.0
20.615000	22.7	9.000	Off	L1	10.9	27.3	50.0



## 4.2 Radiated Emission Test

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

### -For measurement below 1 GHz

Limit Apply to	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Operation Mode	: Data Communication mode
Temperature	: 20.3°C
Humidity Level	: 27.7 %
Test Date	: March 03, 2014

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
265.60	17.61	H	1.0	12.28	4.41	46.0	34.3	11.7
375.00	16.64	H	1.0	15.08	4.79	46.0	36.5	9.5
625.00	12.04	V	1.0	19.97	5.39	46.0	37.4	8.6





### -For measurement above 1 GHz

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Peak mode: Peak (RBW: 1 MHz, VBW: 1 MHz)  
: Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)

Operation Mode : Data Communication mode

Temperature : 20.2°C

Humidity Level : 25.2 %

Test Date : February 28, 2014

Frequency (GHz)	Polarity (H/V)	Antenna Height (m)	Peak			Average		
			Total (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Total (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1.3274	V	1.0	51.1	74	22.9	32.1	54	21.9
1.9944	V	1.0	56.9	74	17.1	39.2	54	14.8
2.6555	V	1.0	51.9	74	22.1	33.6	54	20.4

※ **NOTE:**

1. Measurement above 1 GHz was performed from 1 GHz to the 5<sup>th</sup> harmonic of highest fundamental frequency. Test was measured by 12 GHz.



## 5. FIELD STRENGTH CALCULATION

The field strength is calculated by adding the antenna factor and cable factor.  
The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dB $\mu$ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB $\mu$ V/m value is mathematically converted to its corresponding level in  $\mu$ V/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dB}\mu\text{V/m}$$



## 6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>Next CAL Date</u>
<b><u>Conducted Emission</u></b>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	2015.01.24
<input checked="" type="checkbox"/> LISN	EMCO	3816/2SH	9706-1070	1 year	2014.04.26
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	1 year	2015.01.29
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	2014.06.23
<input type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	2014.07.03
<input type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	2014.07.03
<b><u>Radiated Emission</u></b>					
<b>-For measurement below 1 GHz</b>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2014.04.16
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	2014.12.17
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	N/A	-
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
<input type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9168	185	2 year	2015.04.16
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
<b>-For measurement above 1 GHz</b>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2014.04.16
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	N/A	-
<input checked="" type="checkbox"/> Power Amplifier	CERNEX	CBLU1183540	21690	1 year	2014.07.12
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	2014.12.13
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-



## 7. CONCLUSION

The data collected shows that the **EUT type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 b/g/n(2.4GHz\_HT20), VoIP, Hotspot support, FCC ID: ZNFD285G, Model: LG-D285g** complies with §15.107 and §15.109 of the FCC rules.