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EMI CERTIFICATION REPORT

Applicant: **LG Electronics MobileComm U.S.A., Inc.** **1000 Sylvan Avenue, Englewood Cliffs NJ 07632**	**Date of Receipt: April 06, 2016** **Date of Issue: April 20, 2016** **Test Report No. HCT-E-1604-F020** **HCT FRN: 0005866421**

FCC ID : **ZNFK425**

Rule Part(s) / Standard(s):	FCC CFR 47 PART 15 Subpart B Class B
FCC Classification:	JBP (Part 15 B - Class B Computing Device Peripheral)
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.1LE, WIFI802.11b /g/n(2.4GHz_HT20), NFC, VoIP, Hotspot support
Model Name:	LG-K425
Additional Model Name(s):	LGK425, K425
Test Port:	Micro USB / Earphone Port
Date of Test:	April 15, 2016 - April 20, 2016

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 denial the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Tested By

Yoon-Hyun Park
Test Engineer
EMC Team
Certification Division

Reviewed By

Jin-Pyo Hong
Technical Manager
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Certification Division

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DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1604-F020	April 20, 2016	Initial Release

TABLE OF CONTENTS

PAGE

1. GENERAL INFORMATION 4
1.1 Description of EUT 4
1.2 Related Submittal(s) / Grant(s) 5
1.3 Test Facility 5
1.4 Tested System Details 6
1.5 Cable Description 7
1.6 Noise Suppression Parts on Cable. (I/O Cable) 7
2. DESCRIPTION OF TEST 8
3. PRELIMINARY TEST 11
3.1 Conducted Emission Test 11
3. 2 Radiated Emission Test 11
4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY 12
4.1 Conducted Emission Test 12
4.2 Radiated Emission Test 19
5. LIST OF TEST EQUIPMENT 21
6. CONCLUSION 22

ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Description of EUT

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

Model	LG-K425
FCC ID	ZNFK425
Additional Model(s)	LGK425, K425
EUT Type	GSM/WCDMA/LTE Phone with Bluetooth4.1LE, WIFI802.11 b/g/n(2.4GHz_HT20), NFC, VoIP, Hotspot support
TX Frequency	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) 1712.4 MHz to 1752.6 MHz (WCDMA 1 700) 1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900) 1 850.7 MHz to 1 909.3 MHz (LTE B2) 1 710 MHz to 1 755 MHz (LTE B4) 824 MHz to 849 MHz (LTE B5) 699 MHz to 716 MHz (LTE B12)
RX Frequency	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) 2 112.4 MHz to 2 152.6 MHz (WCDMA 1 700) 1 932.4 MHz to 1 987.6 MHz (WCDMA 1 900) 1 930.00 MHz to 1 990.00MHz (LTE B2) 2 110 MHz to 2 155 MHz (LTE B4) 869 MHz to 894 MHz (LTE B5) 729 MHz to 746 MHz (LTE B12)

1.2 Related Submittal(s) / Grant(s)

Original submittal only.

1.3 Test Facility

Test site is located at 74, SEOICHEON-RO, 578BEON-GIL, MAJANG-MYEON, ICHEON-SI, GYEONGGI-DO, SOUTH KOREA. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4-2003.

Measurement Facilities	Reg. No.
HCT FRN: 0005866421 Radiated Field strength measurement facility (3 m)	90661 (February 28, 2014)
HCT FRN: 0005866421 Radiated Field strength measurement facility (10 m)	90661 (February 28, 2014)

1.4 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Model Name	Manufacturer	FCC ID / DoC	Connected To
EUT	LG-K425	LG	ZNFK425	Notebook PC, Earphone
USB cable	EAD62786801	Ningbo Broad	-	EUT, Notebook PC
USB cable	EAD62377905	KSD	-	EUT, Notebook PC
Earphone	EAB62209304	I-SOUND	-	EUT
Notebook PC	ProBook6560b	HP	DoC	EUT, Notebook PC adaptor, RJ45 cable, Serial mouse
Notebook PC adaptor	PPP009D	DELTA Electronics (Jiangsu) LTD	-	Notebook PC
Gateway	TL-WR747N	TP-LINK	-	RJ45 cable, Gateway adaptor
Gateway adaptor	T120150-2H1	TP-LINK	-	Gateway
Serial mouse	Serial 2 button mouse	Radio shack	FSUGMZE3	Notebook PC
RJ45 cable	-	-	-	Notebook PC, Gateway
Micro SD card	16 GB	Samsung	-	EUT

1.5 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
	Earphone	N/A	Y	(D)1.1
Notebook PC	RJ 45	N/A	N	(D)2.5
	Serial (Mouse)	N/A	Y	(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.

1.6 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
	Earphone	N	N/A	Y	Both End
Notebook PC	RJ 45	N	N/A	N	N/A
	Serial (Mouse)	N	N/A	Y	Notebook PC End

2. DESCRIPTION OF TEST

2.1 Measurement of Conducted Emission

The test procedure was in accordance with ANSI C63.4-2003

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN).
If the EUT is connected to the PC through USB, the AC power-line adapter of the PC is directly connected to a line impedance stabilization network (LISN).
Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.

c. The frequency range from 150 kHz to 30 MHz was searched.

[Conducted Emission Limits]

Frequency (MHz)	Resolution Bandwidth (kHz)	Quasi-Peak (dB(μV))	Average (dB(μV))
0.15 to 0.5	9	66 to 56*	56 to 46*
0.5 to 5	9	56	46
5 to 30	9	60	50

**Decreases with the logarithm of the frequency.*

2.2 Measurement of Radiated Emission

The test procedure was in accordance with ANSI C63.4-2003, Clause 8

a. The EUT was placed on the top of a turn table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from 1 m to 4 m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 m to 4 m and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Quasi-Peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to Peak and Average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
g. The antenna height scans apply for both horizontal and vertical polarizations, except that for vertical polarization, the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the lowest antenna element clears the site reference ground plane by at least 25 cm. (below 1 GHz)

[Radiated Emission Limits]

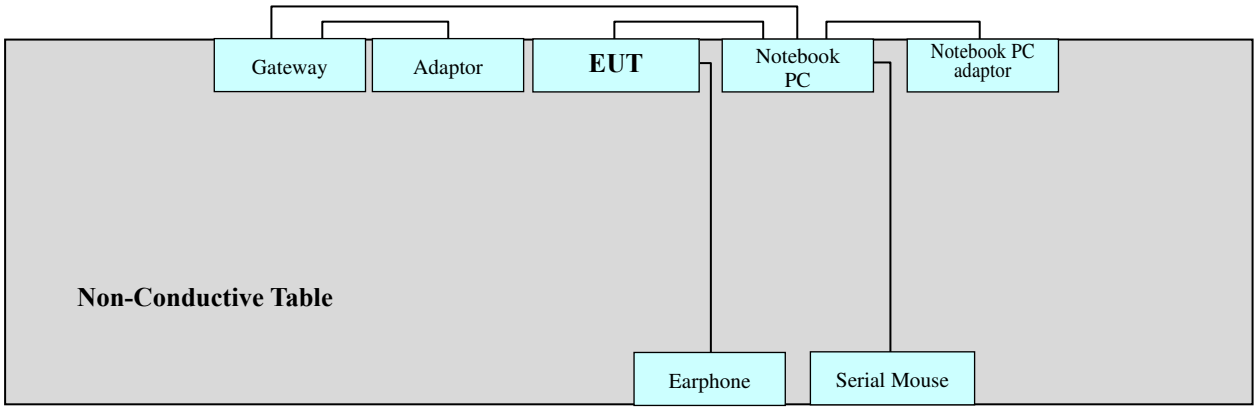
Frequency (MHz)	Antenna Distance (m)	Field Strength (μV/m)	Quasi-Peak (dB(μV)/m)
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0
Frequency (MHz)	**Antenna Distance (m)**	**Peak (dB(μV)/m)**	**Average (dB(μV)/m)**
Above 1 000	3	74	54

2.2.1 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	5th harmonic of the highest frequency or 40 ㎓, whichever is lower

2.3 Configuration of Tested System



Power Line: 120 VAC, 60 Hz

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

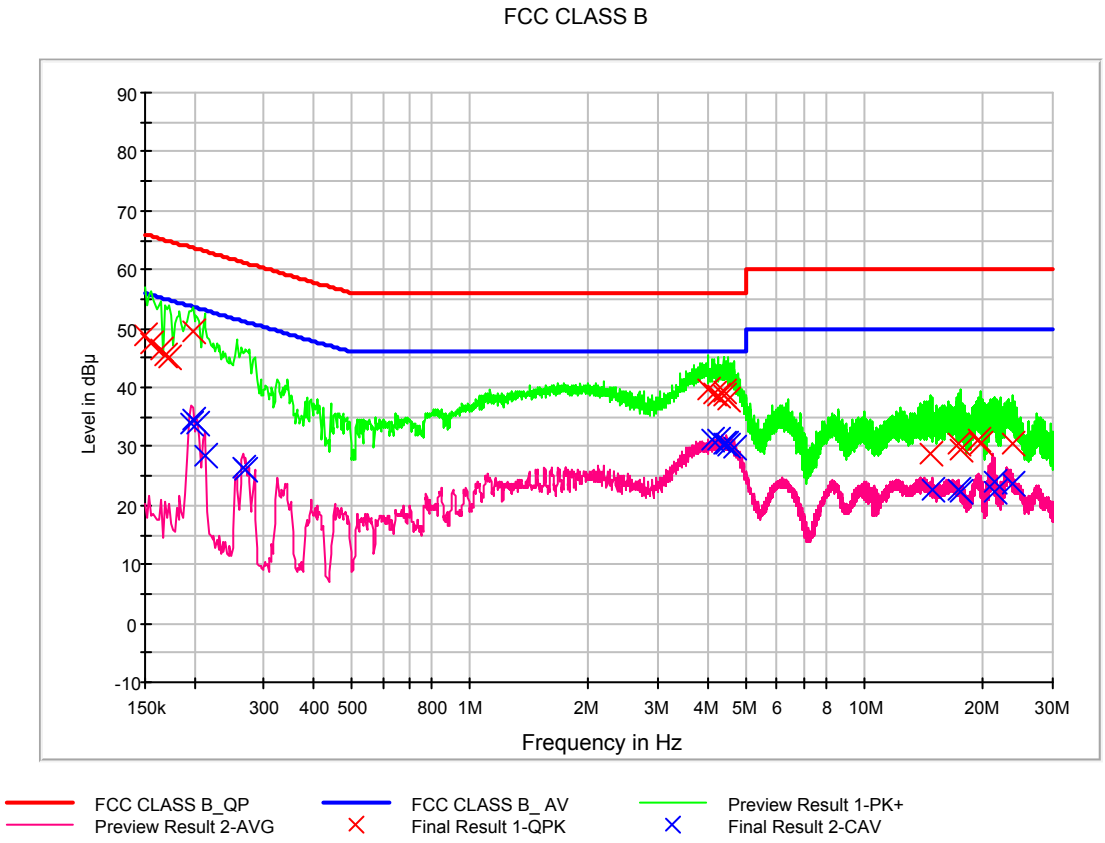
The test results of conducted emission at mains ports provide the following information:

Rule Part / Standard	FCC PART 15 Subpart B Class B
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Operation Mode	Data Communication mode
USB Cable Type	Ningbo Broad (EAD62786801) ***NOTE:** The worst-case emissions are reported.
Kind of Test Site	Shielded Room
Temperature	23.4 °C
Relative Humidity	35.1 %
Test Date	April 15, 2016

- Calculation Formula:

1. Conductor L1 = Hot, Conductor N = Neutral
2. Corr. = LISN Factor + Cable Loss
3. QuasiPeak or CAverage= Receiver Reading + Corr.
4. Margin = Limit – QuasiPeak or CAverage

Figure 1: Spectral Diagrams, Conducted Emission, AC Main Port, Line (L1)



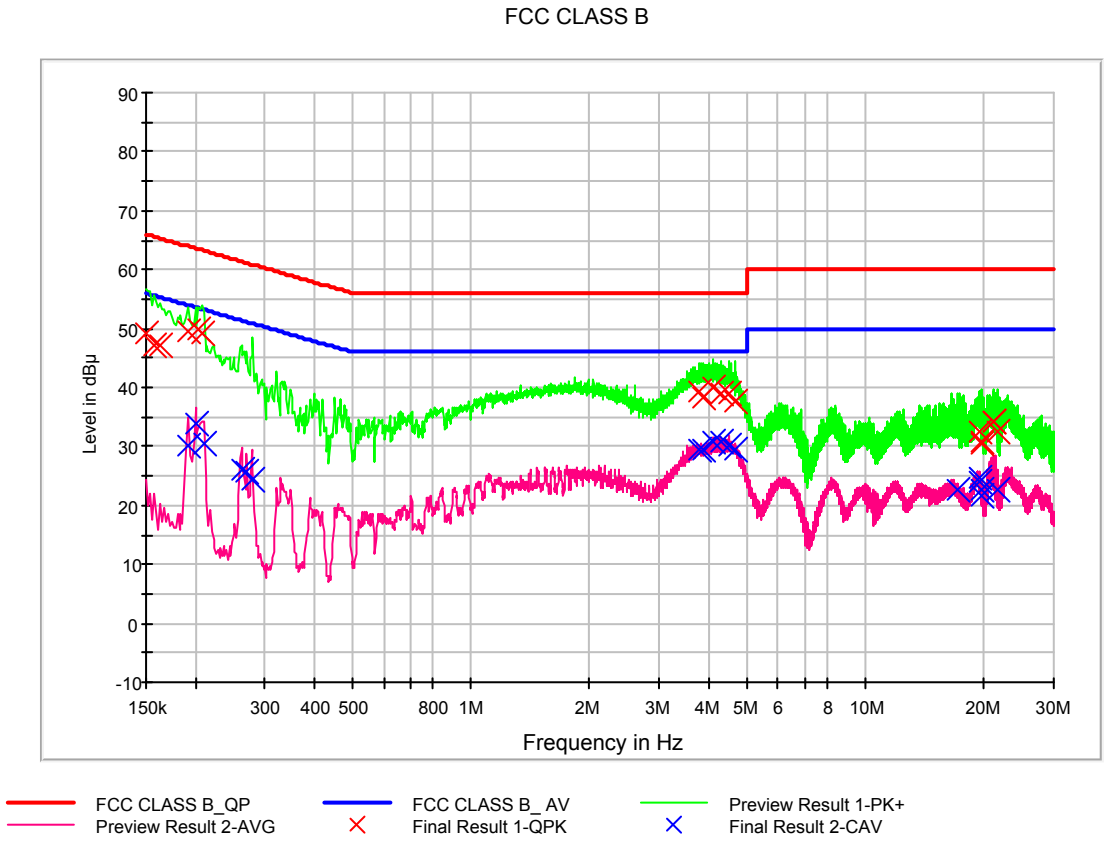
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	48.8	9.000	L1	9.7	17.2	66.0
0.156000	47.5	9.000	L1	9.6	18.2	65.7
0.164000	46.3	9.000	L1	9.6	19.0	65.3
0.168000	45.5	9.000	L1	9.6	19.6	65.1
0.172000	45.2	9.000	L1	9.6	19.7	64.9
0.198000	49.4	9.000	L1	9.6	14.3	63.7
4.030000	39.8	9.000	L1	9.8	16.2	56.0
4.172000	39.1	9.000	L1	9.8	16.9	56.0
4.244000	38.8	9.000	L1	9.8	17.2	56.0
4.382000	39.3	9.000	L1	9.8	16.7	56.0
4.386000	38.6	9.000	L1	9.8	17.4	56.0
4.528000	37.9	9.000	L1	9.9	18.1	56.0
14.772000	28.7	9.000	L1	10.1	31.3	60.0
17.312000	30.5	9.000	L1	10.2	29.5	60.0
17.456000	29.6	9.000	L1	10.2	30.4	60.0
19.506000	31.2	9.000	L1	10.2	28.8	60.0
19.718000	30.5	9.000	L1	10.2	29.5	60.0
23.744000	30.5	9.000	L1	10.3	29.5	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.196000	33.8	9.000	L1	9.6	20.0	53.8
0.198000	34.4	9.000	L1	9.6	19.3	53.7
0.204000	33.9	9.000	L1	9.6	19.5	53.4
0.212000	28.5	9.000	L1	9.6	24.6	53.1
0.266000	26.5	9.000	L1	9.6	24.7	51.2
0.270000	26.2	9.000	L1	9.6	25.0	51.1
4.102000	31.0	9.000	L1	9.8	15.0	46.0
4.244000	31.1	9.000	L1	9.8	14.9	46.0
4.386000	30.4	9.000	L1	9.8	15.6	46.0
4.456000	30.3	9.000	L1	9.8	15.7	46.0
4.528000	30.2	9.000	L1	9.9	15.8	46.0
4.664000	29.7	9.000	L1	9.9	16.3	46.0
14.910000	22.6	9.000	L1	10.1	27.4	50.0
17.312000	22.5	9.000	L1	10.2	27.5	50.0
17.456000	22.3	9.000	L1	10.2	27.7	50.0
21.344000	23.9	9.000	L1	10.3	26.1	50.0
21.416000	22.4	9.000	L1	10.3	27.6	50.0
23.744000	23.7	9.000	L1	10.3	26.3	50.0

Figure 2: Spectral Diagrams, Conducted Emission, AC Main Port, Line (N)



QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	49.1	9.000	N	9.6	16.9	66.0
0.158000	47.3	9.000	N	9.6	18.3	65.6
0.162000	47.2	9.000	N	9.6	18.2	65.4
0.192000	49.7	9.000	N	9.6	14.3	63.9
0.204000	49.8	9.000	N	9.6	13.6	63.4
0.208000	49.3	9.000	N	9.6	14.0	63.3
3.778000	39.2	9.000	N	9.8	16.8	56.0
3.858000	38.4	9.000	N	9.8	17.6	56.0
4.098000	40.1	9.000	N	9.8	15.9	56.0
4.310000	39.0	9.000	N	9.8	17.0	56.0
4.522000	38.9	9.000	N	9.8	17.1	56.0
4.662000	37.7	9.000	N	9.8	18.3	56.0
19.354000	32.4	9.000	N	10.3	27.6	60.0
19.708000	30.8	9.000	N	10.3	29.2	60.0
19.780000	30.4	9.000	N	10.3	29.6	60.0
21.120000	34.3	9.000	N	10.3	25.7	60.0
21.192000	34.3	9.000	N	10.3	25.7	60.0
21.544000	32.4	9.000	N	10.3	27.6	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.192000	30.1	9.000	N	9.6	23.8	53.9
0.200000	34.0	9.000	N	9.6	19.6	53.6
0.210000	30.6	9.000	N	9.6	22.6	53.2
0.262000	26.2	9.000	N	9.6	25.2	51.4
0.270000	25.7	9.000	N	9.6	25.4	51.1
0.278000	24.3	9.000	N	9.6	26.6	50.9
3.778000	29.6	9.000	N	9.8	16.4	46.0
3.858000	29.5	9.000	N	9.8	16.5	46.0
4.098000	30.7	9.000	N	9.8	15.3	46.0
4.310000	30.8	9.000	N	9.8	15.2	46.0
4.522000	30.0	9.000	N	9.8	16.0	46.0
4.662000	29.4	9.000	N	9.8	16.6	46.0
17.022000	22.6	9.000	N	10.2	27.4	50.0
19.354000	24.7	9.000	N	10.3	25.3	50.0
19.496000	24.1	9.000	N	10.3	25.9	50.0
19.708000	22.7	9.000	N	10.3	27.4	50.0
19.780000	21.5	9.000	N	10.3	28.5	50.0
21.544000	22.7	9.000	N	10.3	27.3	50.0

4.2 Radiated Emission Test

The test results of radiated emission provide the following information:

-For Measurement Below 1 GHz

Rule Part / Standard	FCC PART 15 Subpart B Class B
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Operation Mode	Data Communication mode
USB Cable Type	Ningbo Broad (EAD62786801) ***NOTE:** The worst-case emissions are reported.
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.6 °C
Relative Humidity	34.7 %
Test Date	April 20, 2016

Frequency (MHz)	Quasi Peak (dBuV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
54.086653	33.7	100.0	V	69.0	15.8	6.3	40.0
63.486092	33.3	400.0	H	336.0	15.0	6.7	40.0
85.428858	31.6	350.0	H	138.0	11.6	8.4	40.0
249.979319	38.5	135.0	H	-1.0	16.3	7.5	46.0
375.012024	35.1	100.0	H	54.0	20.1	10.9	46.0
874.991182	39.6	100.0	H	45.0	29.4	6.4	46.0

- Calculation Formula:

1. POL. H = Horizontal, POL. V = Vertical
2. QuasiPeak = Reading (Receiver Reading) + Corr.
3. Corr. (Correction Factor) = Antenna Factor + Cable Loss
4. Margin = Limit - QuasiPeak

-For Measurement Above 1 GHz

Rule Part / Standard	FCC PART 15 Subpart B Class B
Detector	Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz) CISPR-Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)
Highest Operating Frequency	1.267 GHz
Testing Frequency Range	1 GHz to 6.335 GHz
Operation Mode	Data Communication mode
USB Cable Type	Ningbo Broad (EAD62786801) ***NOTE:** The worst-case emissions are reported.
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.6 °C
Relative Humidity	34.7 %
Test Date	April 20, 2016

Frequency (MHz)	Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1331.012024	49.3	143.0	V	130.0	-9.8	24.7	74.0
1400.050100	49.5	185.0	V	27.0	-9.6	24.5	74.0
1991.733467	56.6	100.0	V	223.0	-8.4	17.4	74.0

Frequency (MHz)	CAverage (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1331.012024	30.8	143.0	V	130.0	-9.8	23.2	54.0
1400.050100	47.2	185.0	V	27.0	-9.6	6.8	54.0
1991.733467	37.5	100.0	V	223.0	-8.4	16.5	54.0

- Calculation Formula:

1. POL. H = Horizontal, POL. V = Vertical
2. Peak or CAverage = Reading (Receiver Reading) + Corr.
3. Corr. (Correction Factor) = Antenna Factor+ Cable Loss –Amplifier Gain
4. Margin = Limit - Peak or CAverage

5. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model Name	Serial Number	Calibration Cycle	CAL Date
Conducted Emission					
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	12.28.2015
☒ LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	06.11.2015
☒ LISN	Rohde & Schwarz	ENV216	100073	1 year	12.28.2015
☒ Software	Rohde & Schwarz	EMC32	-	-	-
Radiated Emission					
-For measurement below 1 GHz					
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	03.30.2016
☒ Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	11.17.2014
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
☒ Turn Table	EMCO	1060-2M	-	N/A	-
☒ Turn Table controller	EMCO	2090	9702-1224	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	06.05.2015
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ Software	Rohde & Schwarz	EMC32	-	-	-
-For measurement above 1 GHz					
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	03.30.2016
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
☒ Turn Table	EMCO	1060-2M	-	N/A	-
☒ Turn Table controller	EMCO	2090	9702-1224	N/A	-
☐ Power Amplifier	CERNEX	CBLU1183540	21691	1 year	07.06.2015
☒ Power Amplifier	CERNEX	CBLU5183530	24348	1 year	06.15.2015
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	10.07.2014
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	06.05.2015
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ Software	Rohde & Schwarz	EMC32	-	-	-

6. CONCLUSION

The data collected shows that the **EUT Type: GSM/WCDMA/LTE Phone with Bluetooth4.1LE, WIFI802.11b/g/n(2.4GHz_HT20), NFC, VoIP, Hotspot support, Model: LG-K425, FCC ID: ZNFK425** complies with §15.107 and §15.109 of the FCC rules.