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EMI CERTIFICATION REPORT

Applicant:

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

Date of Issue: June 08, 2012

Test Report No.: HCTE1206FE09

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

ZNFVS930

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : Cellular/PCS CDMA/EVDO/GSM/GPRS/EDGE, PCS WCDMA/
HSPA and AWS LTE Phone with Bluetooth, WLAN and NFC
Model Name : LG-VS930
Additional Model Name : VS930, LGVS930
Port / Connector(s) : USB Port / Headset Port

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

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ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test is **Cellular/PCS CDMA/EVDO/GSM/GPRS/EDGE, PCS WCDMA/HSPA and AWS LTE Phone with Bluetooth, WLAN and NFC, Model: LG-VS930** manufactured by **LG Electronics MobileComm U.S.A., Inc.** Its basic purpose is used for communications.

Model	LG-VS930
Additional Model Name	VS930, LGVS930
FCC ID	ZNFVS930
E.U.T Type	Cellular/PCS CDMA/EVDO/GSM/GPRS/EDGE, PCS WCDMA/HSPA and AWS LTE Phone with Bluetooth, WLAN and NFC
TX Frequency	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 824.70 MHz to 848.31 MHz (CDMA 835) 1 851.25 MHz to 1 908.75 MHz (CDMA 1 900) 1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900) 777 MHz to 787 MHz (LTE B13)
RX Frequency	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 869.70 MHz to 893.31 MHz (CDMA 835) 1 931.25 MHz to 1 988.75 MHz (CDMA 1 900) 1 932.4 MHz to 1 987.6 MHz (WCDMA 1 900) 746 MHz to 756 MHz (LTE B13)

1.2 Related Submittal(s) / Grant(s)

Original submittal only.

1.3 Tested System Details

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

Device Type	Manufacturer	Model Name	FCC ID / DoC	Connected To
E.U.T	LG	LG-VS930	ZNFVS930	Notebook PC
Notebook PC	H.P	ProBook 6560b	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	CHICONY POWER TECHNOLOGY	Series PPP012H-S	-	Notebook PC
Mouse	PRIMAX ELECTRONICS	MOARUO	DoC	Notebook PC
SD Card	SanDisk	8GB	-	E.U.T
USB cable	-	-	-	E.U.T Notebook PC
Headset	-	-	-	E.U.T
Net HDD	LG	N1A1DD1	Doc	Notebook PC Net HDD adaptor
Net HDD adaptor	Yang Ming Industrial	DA-60M12	-	Net HDD
RJ45 cable	-	-	-	Net HDD Notebook PC

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
E.U.T	Micro USB	Y	Y	(P,D)1.2
	Headset jack	-	N	(D)1.1
Notebook PC	RJ 45	-	N	(D)1.5
	USB (Mouse)	-	Y	(D)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
E.U.T	Micro USB	N	N/A	Y	Both End
	Headset jack	N	N/A	Y	E.U.T End
Notebook PC	RJ 45	N	N/A	N	Both End
	USB (Mouse)	-	-	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 E.U.T distance of 3 m

1.7 Test Facility

The 3 m semi anechoic chamber used to collect the test data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, Republic of Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4.

Detailed description of test facilities was submitted to the Commission and accepted dated Mar 02, 2011 (Registration Number: 90661)

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

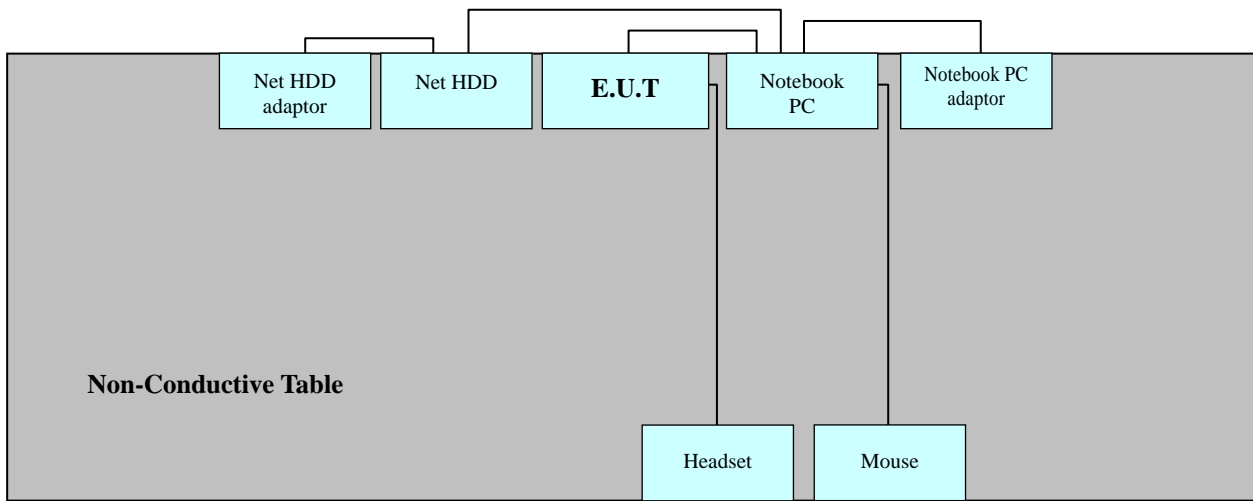
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

Power Line Conducted test : E.U.T 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.

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.

[Configuration of Tested System]



Power Line: 110 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

Test Configuration Normal cover
 Wireless cover

3. 2 Radiated Emission Test

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

Operation Mode: Data communication mode

Test Configuration Normal cover
 Wireless cover

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 : 26.3 °C

Humidity Level : 46.0 %

Test Date : June 06, 2012

[Wireless Cover]

Frequency (MHz)	Transd (dB)	Conductor (H/N)	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
			(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)
0.158	10.00	N	66	39.0	49.0	56	-	-
19.352	11.40	N	60	32.6	44.0	50	-	-
20.868	11.50	N	60	33.9	45.4	50	-	-
20.768	11.60	H	60	33.3	44.9	50	26.70	38.30
20.876	11.60	H	60	33.2	44.8	50	-	-
21.000	11.60	H	60	33.1	44.7	50	-	-

[Standard Cover]

Frequency (MHz)	Transd (dB)	Conductor (H/N)	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
			(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)
0.162	10.00	N	65	38.5	48.5	55	19.00	29.00
20.776	11.50	N	60	34.1	45.6	50	-	-
20.728	11.60	H	60	33.2	44.8	50	-	-
20.864	11.60	H	60	33.4	45.0	50	-	-
20.952	11.60	H	60	33.3	44.9	50	-	-
21.316	11.50	N	60	31.9	43.4	50	-	-

※ **NOTE:** Refer to page 11 to page 18 for details.

1. The worst-case emissions are reported.
2. Line H = Hot, Line N = Neutral

[Wireless Cover]

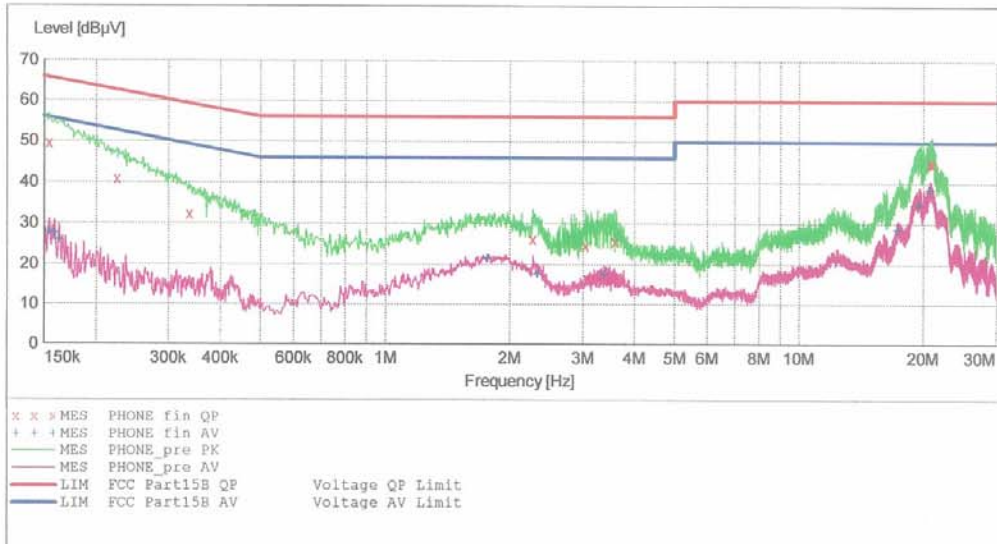
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EUT: VS930
 Manufacturer: LG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 Comment: H(WIRELESS COVER)

SCAN TABLE: "FCC PART 15 B(H)"

Short Description:			FCC PART 15 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	1.0 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"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154010	49.60	10.0	66	16.2	---	---
0.225010	40.90	10.1	63	21.8	---	---
0.336010	32.40	10.1	59	26.9	---	---
2.276000	26.20	10.2	56	29.8	---	---
3.048000	24.60	10.3	56	31.4	---	---
3.592000	25.70	10.3	56	30.3	---	---
20.768000	44.90	11.6	60	15.1	---	---
20.876000	44.80	11.6	60	15.2	---	---
21.000000	44.70	11.6	60	15.3	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154010	27.90	10.0	56	27.9	----	----
0.159010	27.60	10.0	56	28.0	----	----
0.163010	25.90	10.1	55	29.4	----	----
1.768000	21.50	10.2	46	24.5	----	----
2.332000	17.60	10.2	46	28.4	----	----
3.376000	17.60	10.3	46	28.4	----	----
17.368000	28.70	11.3	50	21.3	----	----
19.520000	34.70	11.5	50	15.3	----	----
20.768000	38.30	11.6	50	11.7	----	----

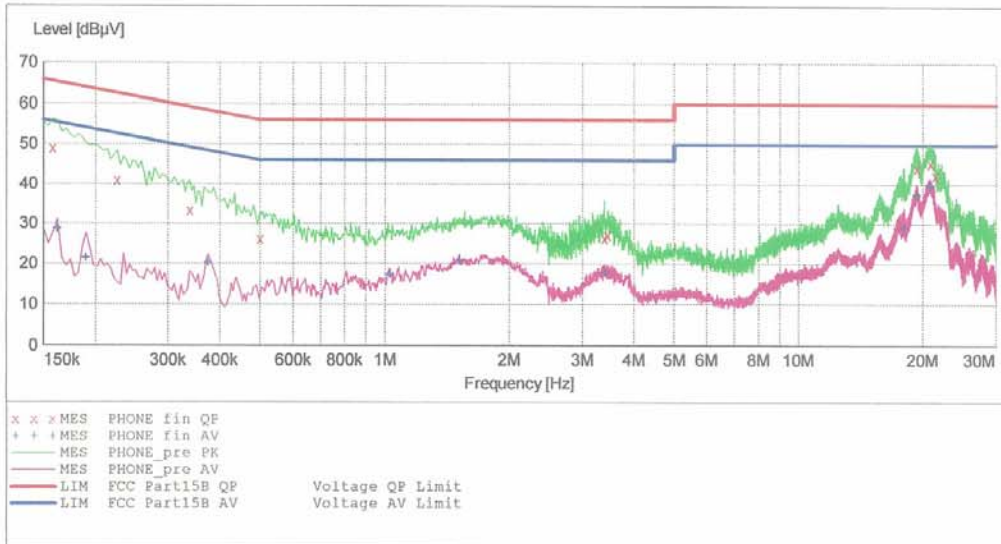
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EMC

EUT: VS930
 Manufacturer: LG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 Comment: N(WIRELESS COVER)

SCAN TABLE: "FCC PART 15 B(N)"

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



MEASUREMENT RESULT: "PHONE_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.158010	49.00	10.0	66	16.6	---	---
0.226010	41.00	10.1	63	21.5	---	---
0.338010	33.30	10.1	59	25.9	---	---
0.500000	26.20	10.0	56	29.8	---	---
3.396000	26.40	10.3	56	29.6	---	---
3.460000	27.10	10.3	56	28.9	---	---
19.352000	44.00	11.4	60	16.0	---	---
20.868000	45.40	11.5	60	14.6	---	---
21.400000	42.30	11.5	60	17.7	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.162010	28.70	10.0	55	26.6	---	---
0.190010	21.40	10.1	54	32.6	---	---
0.374010	20.30	10.1	48	28.1	---	---
1.028000	17.30	10.1	46	28.7	---	---
1.516000	20.80	10.2	46	25.2	---	---
3.408000	17.90	10.3	46	28.1	---	---
18.020000	28.90	11.3	50	21.1	---	---
19.256000	37.30	11.4	50	12.7	---	---
20.820000	39.50	11.5	50	10.5	---	---

[Standard Cover]

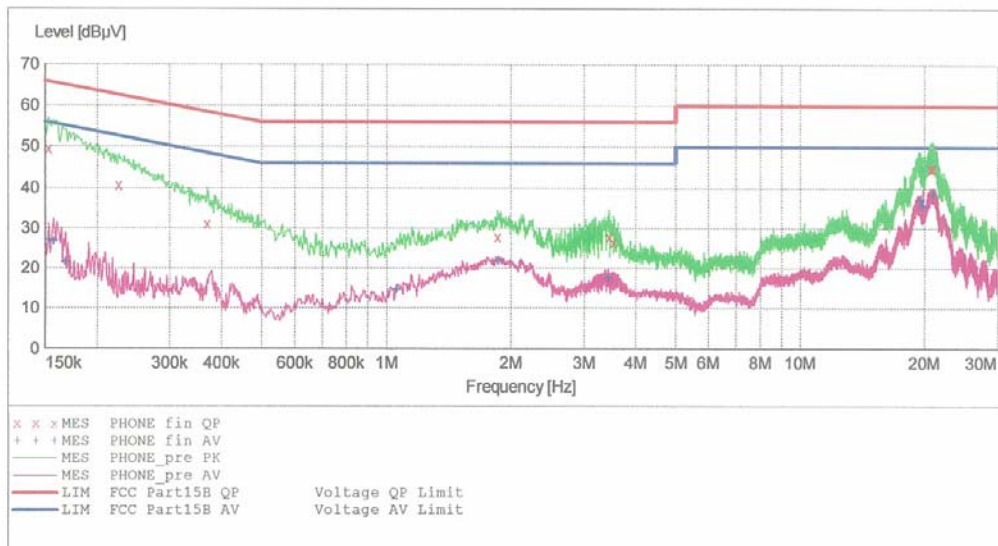
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EMC

EUT: VS930
 Manufacturer: LG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 Comment: H(STANDARD COVER)

SCAN TABLE: "FCC PART 15 B(H)"

Short Description:			FCC PART 15 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	500.0 kHz	1.0 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"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.153010	49.60	10.0	66	16.2	---	---
0.226010	40.70	10.1	63	21.9	---	---
0.369010	31.20	10.1	59	27.3	---	---
1.856000	27.90	10.2	56	28.1	---	---
3.456000	27.90	10.3	56	28.1	---	---
3.536000	26.50	10.3	56	29.5	---	---
20.728000	44.80	11.6	60	15.2	---	---
20.864000	45.00	11.6	60	15.0	---	---
20.952000	44.90	11.6	60	15.1	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.153010	27.10	10.0	56	28.8	---	---
0.157010	26.70	10.0	56	28.9	---	---
0.168010	21.50	10.1	55	33.6	---	---
1.060000	14.70	10.1	46	31.3	---	---
1.860000	21.70	10.2	46	24.3	---	---
3.436000	17.40	10.3	46	28.6	---	---
19.620000	36.90	11.5	50	13.1	---	---
19.804000	35.50	11.5	50	14.5	---	---
20.968000	38.40	11.6	50	11.6	---	---

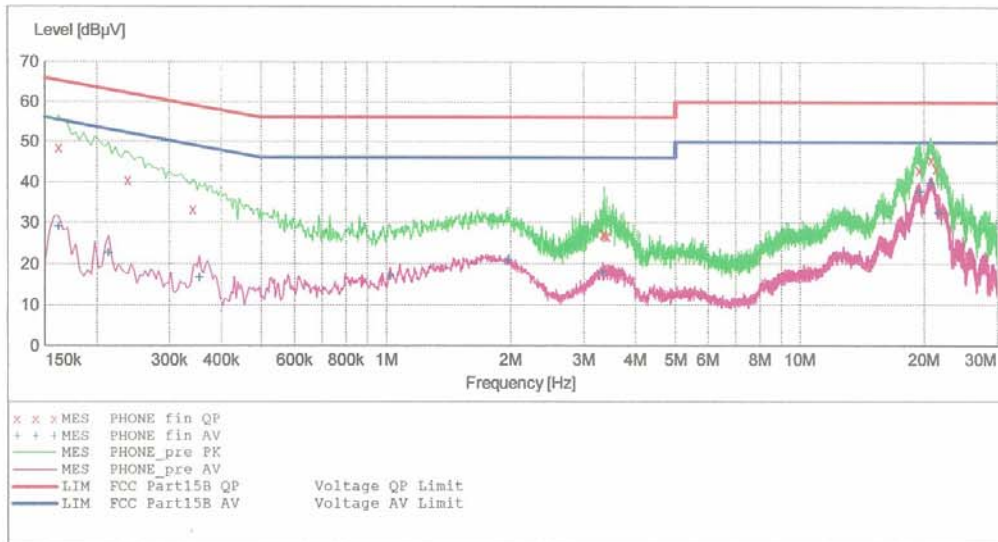
HCT

EMC

EUT: VS930
 Manufacturer: LG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 Comment: N(STANDARD COVER)

SCAN TABLE: "FCC PART 15 B(N)"

Short Description:			FCC PART 15 CLASS B			
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
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"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.162010	48.50	10.0	65	16.8	---	---
0.238010	40.50	10.1	62	21.7	---	---
0.342010	33.30	10.1	59	25.9	---	---
3.348000	27.30	10.3	56	28.7	---	---
3.368000	26.80	10.3	56	29.2	---	---
3.420000	26.70	10.3	56	29.3	---	---
19.456000	43.00	11.4	60	17.0	---	---
20.776000	45.60	11.5	60	14.4	---	---
21.316000	43.40	11.5	60	16.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.162010	29.00	10.0	55	26.3	---	---
0.214010	22.70	10.1	53	30.4	---	---
0.354010	16.70	10.1	49	32.2	---	---
1.024000	17.00	10.1	46	29.0	---	---
1.976000	20.90	10.2	46	25.1	---	---
3.340000	17.80	10.3	46	28.2	---	---
19.468000	37.50	11.4	50	12.5	---	---
20.740000	39.70	11.5	50	10.3	---	---
21.684000	32.50	11.5	50	17.5	---	---

4.2 Radiated Emission Test

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

Limit Apply to : FCC PART 15 Subpart B Class B

-For measurement below 1 GHz

Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)

Operation Mode : Data communication mode

-For measurement above 1 GHz

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 : 23.5 °C

Humidity Level : 46.8 %

Test Date : June 06, 2012

[Wireless Cover]

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)			
30.100	10.36	V	1.0	11.44	3.40	40.0	25.2	14.8
53.600	15.18	V	1.0	12.22	3.60	40.0	31.0	9.0
77.100	17.75	H	2.7	8.68	3.77	40.0	30.2	9.8
119.400	15.02	H	1.2	11.78	3.99	43.5	30.8	12.7
146.600	13.08	V	1.5	12.96	4.07	43.5	30.1	13.4
220.500	18.95	V	1.0	10.67	4.38	46.0	34.0	12.0

[Standard Cover]

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)			
30.100	9.16	V	1.0	11.44	3.40	40.0	24.0	16.0
45.500	14.73	V	1.0	12.36	3.51	40.0	30.6	9.4
55.100	14.75	V	1.2	12.15	3.60	40.0	30.5	9.5
125.200	14.40	H	1.0	12.10	4.00	43.5	30.5	13.0
249.600	15.75	V	1.5	11.76	4.50	46.0	32.0	14.0
753.100	8.94	H	1.0	21.76	5.70	46.0	36.4	9.6

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5th harmonic of highest fundamental frequency.
2. For measurement above 1 GHz, Emission noise was not founded over the ambient noise.

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 μ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB μ V/m value is mathematically converted to its corresponding level in μ V/m.

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

[Radiated Emission Limits]

Frequency of Emission (MHz)	Field Strength	
	μ V/m	dB μ 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

6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Next CAL Date</u>
<u>Conducted Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2013.05.02
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2013.02.03
<input checked="" type="checkbox"/> LISN	EMCO	3816/2SH	9706-1070	2013.05.02
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2012.08.01
<u>Radiated Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2013.05.03
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2012.08.02
<input type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	-
<input type="checkbox"/> Antenna master controller	HD GmbH	HD100	100/637BJ:00	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	-
<input checked="" type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	2012.09.19
<input type="checkbox"/> Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	937	2013.10.17

7. CONCLUSION

The data collected shows that the **Cellular/PCS CDMA/EVDO/GSM/GPRS/EDGE, PCS WCDMA/HSPA and AWS LTE Phone with Bluetooth, WLAN and NFC, Model: LG-VS930, FCC ID: ZNFVS930** complies with §15.107 and §15.109 of the FCC rules.