



HCT CO., LTD.

CERTIFICATION DIVISION

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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: November 15, 2013

Test Report No.: HCTE1311FE03

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

ZNFLS995

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : Multi-Band CDMA/EVDO/GSM/EDGE/WCDMA/LTE Phone with WLAN,
Bluetooth, and RFID
Model Name : LS995
Additional Model Name : LG-LS995, LGLS995
Port / Connector(s) : USB / Earphone Port
Date of Test : November 08, 2013 - November 12, 2013

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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DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCTE1311FE03	November 15, 2013	Initial Release

TABLE OF CONTENTS

	PAGE
1. GENERAL INFORMATION	4
1.1 Product Description.....	4
1.2 Related Submittal(s) / Grant(s).....	4
1.3 Tested System Details.....	5
1.4 Cable Description	6
1.5 Noise Suppression Parts on Cable. (I/O cable)	6
1.6 Test Methodology	7
1.7 Test Facility	7
1.8 Frequency Range of Radiated Measurements	7
2. SYSTEM TEST CONFIGURATION.....	8
2.1 Configuration of Test System.....	8
3. PRELIMINARY TEST	9
3.1 Conducted Emission Test	9
3. 2 Radiated Emission Test	9
4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY	10
4.1 Conducted Emission Test	10
4.2 Radiated Emission Test	11
5. FIELD STRENGTH CALCULATION	38
6. TEST EQUIPMENT	39
7. CONCLUSION	40

ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test is **EUT type: Multi-Band CDMA/EVDO/GSM/EDGE/WCDMA/LTE Phone with WLAN, Bluetooth, and RFID, Model: LS995** manufactured by **LG Electronics MobileComm U.S.A., Inc.** Its basic purpose is used for communications.

Model Name	LS995
FCC ID	ZNFLS995
Additional Model Name	LG-LS995, LGLS995
EUT Type	Multi-Band CDMA/EVDO/GSM/EDGE/WCDMA/LTE Phone with WLAN, Bluetooth, and RFID
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) 1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900) 1 850 MHz to 1 915 MHz (LTE B25) 814 MHz to 849 MHz (LTE B26) 2 496 MHz to 2 690 MHz (LTE B41) 824.70 MHz to 848.31 MHz (CDMA BC0) 1 851.25 MHz to 1 908.75 MHz (CDMA BC1) 817.90 MHz to 823.10 MHz (CDMA BC10)
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) 1 932.4 MHz to 1 987.6 MHz (WCDMA 1 900) 1 925 MHz to 1 990 MHz (LTE B25) 859 MHz to 894 MHz (LTE B26) 2 496 MHz to 2 690 MHz (LTE B41) 869.70 MHz to 893.31 MHz (CDMA BC0) 1 931.25 MHz to 1 988.75 MHz (CDMA BC1) 862.00 MHz to 894.00 MHz (CDMA BC10)

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	Model Name	Manufacturer	FCC ID / DoC	Connected To
EUT	LS995	LG	ZNFLS995	Notebook PC Ear-phone
USB cable (USB2.0)	EAD62588801	CRESYN	-	E.U.T Notebook PC
USB cable (USB2.0)	EAD62329305	BROAD	-	E.U.T Notebook PC
USB cable (USB2.0)	EAD62329304	KSD	-	E.U.T Notebook PC
USB cable (USB3.0)	EAD62488701	BROAD	-	E.U.T Notebook PC
Ear-phone	EAB62691101	LG	-	E.U.T
Notebook PC	ProBook6570b	H.P	DoC	EUT, Notebook PC adaptor
Notebook PC adaptor	PPP012D-S	DELTA Electronics (JIANGSU)LTD	-	Notebook PC
Mouse	Serial mouse	Radio shack	FSUGMZE3	Notebook PC
Adaptor	DA-60M12	Yang Ming Industrial	-	Gateway
Gateway	MV440	Axesstel	PH7MV440	Notebook PC, Adaptor
RJ45 cable	-	-	-	Notebook PC, Gateway

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	Micro USB (USB2.0)	Y	Y	(P,D)1.2
	Micro USB (USB3.0)	Y	Y	(P,D)0.1
	Ear-phone	N/A	Y	(D)1.2
Notebook PC	RJ 45	N/A	N	(D)1.5
	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.

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

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
EUT	Micro USB (USB2.0)	N	N/A	Y	Both End
	Micro USB (USB3.0)	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.

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

2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

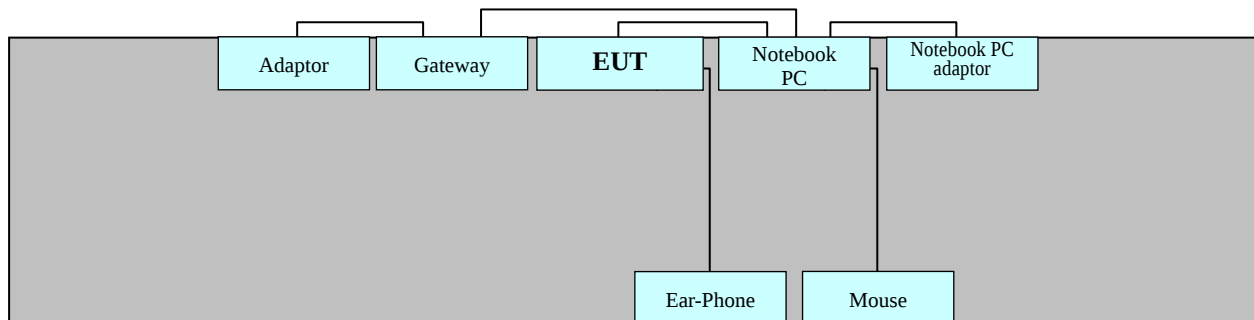
2.1.1 Conducted Emission Test

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.

2.1.2 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.

[Configuration of Tested System]



Non-Conductive Table
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 (USB2.0)
 ☒ Data Communication mode (USB3.0)

3. 2 Radiated Emission Test

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

Operation Mode: ☒ Data Communication mode (USB2.0)
 ☒ Data Communication mode (USB3.0)

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
USB Type (USB2.0)	: BROAD
Temperature	: 21.5 °C
Humidity Level	: 26.7 %
Test Date	: November 12, 2013

Frequency (MHz)	Transd (dB)	Conductor	Quasi-Peak			Average		
			Limit (dBuV)	Measurement Level (dBuV)	Result Level (dBuV)	Limit (dBuV)	Measurement Level (dBuV)	Result Level (dBuV)
0.150	9.8	H	66	42.5	52.3	56	-	-
0.150	10.0	N	66	41.8	51.8	56	-	-
0.174	9.8	H	65	34.8	44.6	55	-	-
2.292	10.2	N	56	-	-	46	14.0	24.2
2.928	10.2	N	56	-	-	46	16.7	26.9
2.980	10.0	H	56	-	-	46	16.4	26.4

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

1. Line H = Hot, Line N = Neutral
2. Transd = LISN factor + Cable Loss factor

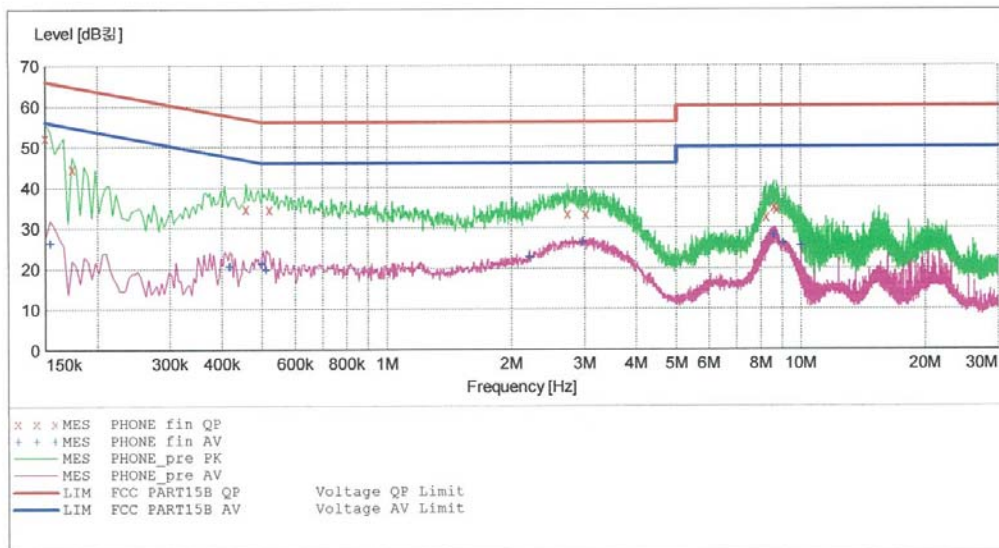
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EMC

EUT: LS995
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15B
Comment: H
Start of Test: USB 2.0 CABLE_BROAD

SCAN TABLE: "FCC CLASS B(H)"

Short Description:			FCC CLASS B(H)				Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
Frequency	Frequency	Width					
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"

2013-11-12 3:37 오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150001	52.30	9.8	66	13.7	---	---
0.174001	44.60	9.8	65	20.2	---	---
0.458001	34.80	9.8	57	21.9	---	---
0.520000	34.60	9.8	56	21.4	---	---
2.736000	33.50	10.0	56	22.5	---	---
3.028000	33.40	10.1	56	22.6	---	---
8.252000	32.80	10.4	60	27.2	---	---
8.612000	35.10	10.4	60	24.9	---	---
8.736000	34.60	10.4	60	25.4	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:37 오후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.154001	26.30	9.8	56	29.5	---	---
0.418001	20.50	9.8	48	27.0	---	---
0.500000	21.20	9.8	46	24.8	---	---
0.512000	19.70	9.8	46	26.3	---	---
2.212000	22.80	10.0	46	23.2	---	---
2.980000	26.40	10.0	46	19.6	---	---
8.612000	28.10	10.4	50	21.9	---	---
9.092000	26.10	10.4	50	23.9	---	---
10.020000	25.50	10.5	50	24.5	---	---

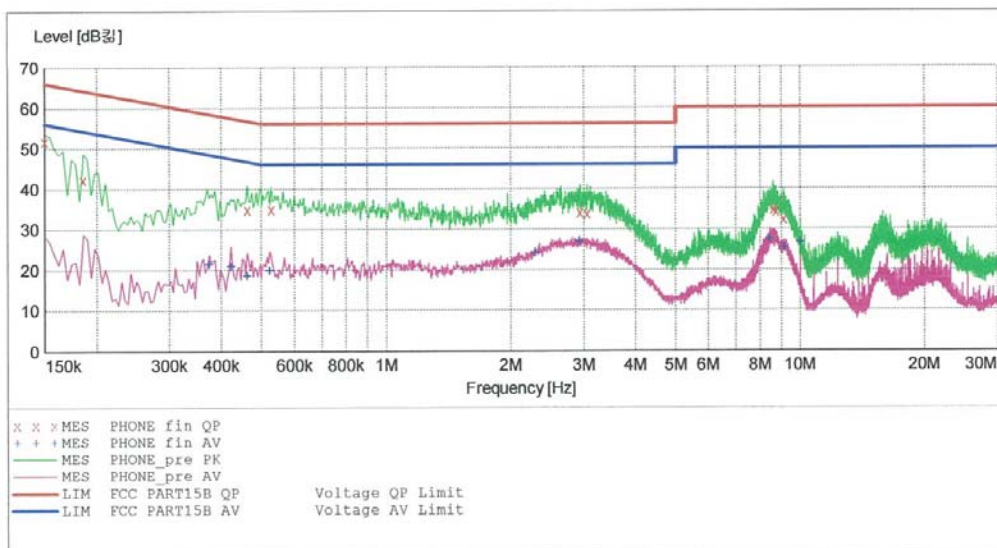
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EMC

EUT: LS995
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15B
Comment: N
Start of Test: USB 2.0 CABLE_BROAD

SCAN TABLE: "FCC CLASS B(N)"

Short Description:			FCC CLASS B(N)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
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"

2013-11-12 3:34 ㄹ

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150001	51.80	10.0	66	14.2	---	---
0.186001	42.30	10.0	64	21.9	---	---
0.462001	34.90	10.0	57	21.8	---	---
0.528000	35.00	10.0	56	21.0	---	---
2.944000	34.10	10.2	56	21.9	---	---
3.060000	33.90	10.2	56	22.1	---	---
8.612000	34.90	10.6	60	25.1	---	---
8.748000	34.40	10.6	60	25.6	---	---
9.132000	32.50	10.6	60	27.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:34 오후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.374001	21.40	10.0	48	27.0	---	---
0.422001	20.90	10.0	47	26.5	---	---
0.462001	18.60	10.0	47	28.1	---	---
0.524000	19.80	10.0	46	26.2	---	---
2.292000	24.20	10.2	46	21.8	---	---
2.928000	26.90	10.2	46	19.1	---	---
8.452000	27.50	10.6	50	22.5	---	---
9.168000	25.40	10.7	50	24.6	---	---
10.020000	26.60	10.7	50	23.4	---	---

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)

Operation Mode : Data Communication mode

USB Type (USB2.0) : KSD

Temperature : 21.5 °C

Humidity Level : 26.7 %

Test Date : November 12, 2013

Frequency	Transd	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
(MHz)	(dB)		(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV]
0.150	10.0	N	66	40.6	50.6	56	-	-
0.154	9.8	H	66	40.7	50.5	56	-	-
0.500	10.0	N	56	25.2	35.2	46	-	-
0.508	9.8	H	56	25.7	35.5	46	-	-
2.708	10.0	H	56	-	-	46	15.7	25.7
2.828	10.2	N	56	-	-	46	16.4	26.6

※ **NOTE:** Refer to page 16 to page 19 for details.

1. Line H = Hot, Line N = Neutral
2. Transd = LISN factor + Cable Loss factor

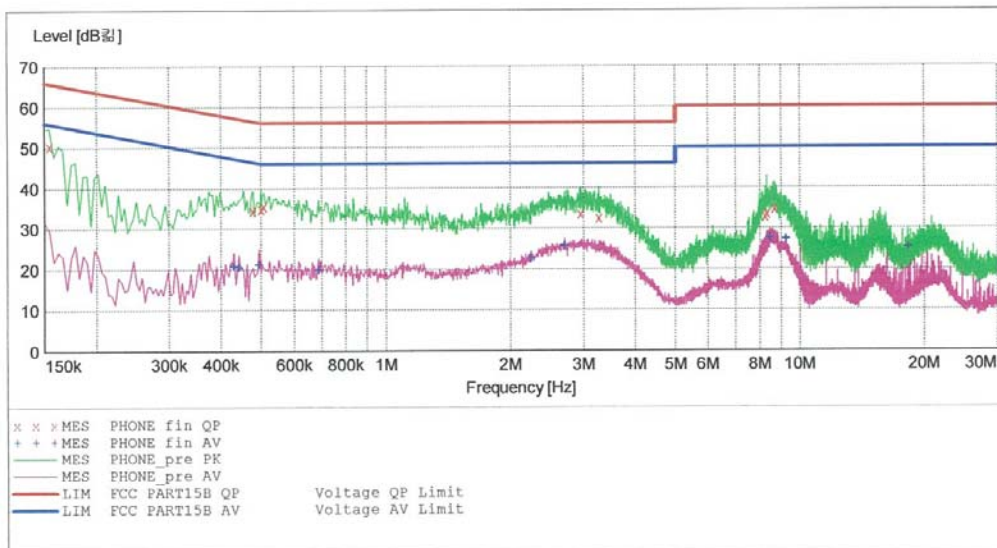
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EMC

EUT: LS995
 Manufacturer: LG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15B
 Comment: H
 Start of Test: USB 2.0 CABLE_KSD

SCAN TABLE: "FCC CLASS B(H)"

Short Description:			FCC CLASS B(H)				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
Frequency	Frequency	Width					
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"

2013-11-12 3:23:00

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154001	50.50	9.8	66	15.3	---	---
0.478001	34.50	9.8	56	21.9	---	---
0.500000	34.90	9.8	56	21.1	---	---
0.508000	35.50	9.8	56	20.5	---	---
2.960000	33.70	10.0	56	22.3	---	---
3.272000	32.60	10.1	56	23.4	---	---
8.244000	32.90	10.4	60	27.1	---	---
8.324000	33.60	10.4	60	26.4	---	---
8.692000	34.80	10.4	60	25.2	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:23 오후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.430001	20.80	9.8	47	26.4	---	---
0.442001	20.50	9.8	47	26.5	---	---
0.494001	21.20	9.8	46	24.9	---	---
0.688000	19.80	9.8	46	26.2	---	---
2.244000	22.60	10.0	46	23.4	---	---
2.708000	25.70	10.0	46	20.3	---	---
8.484000	27.60	10.4	50	22.4	---	---
9.248000	27.20	10.4	50	22.8	---	---
18.244000	25.20	10.9	50	24.8	---	---

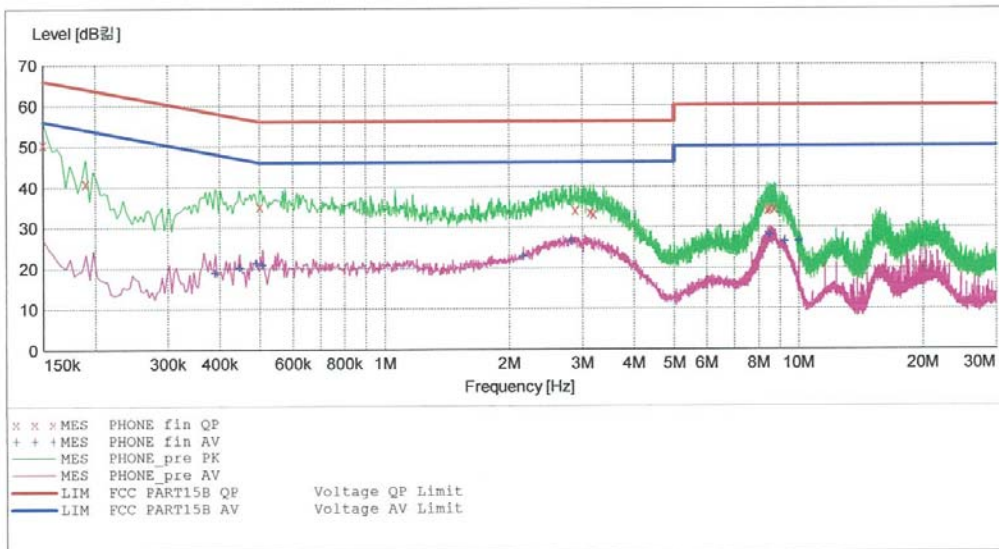
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EMC

EUT: LS995
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15B
Comment: N
Start of Test: USB 2.0 CABLE_KSD

SCAN TABLE: "FCC CLASS B(N)"

Short Description:			FCC CLASS B(N)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
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"

2013-11-12 3:29 오후

Frequency MHz	Level dB	Transd dB	Limit dB	Margin dB	Line	PE
0.150001	50.60	10.0	66	15.4	---	---
0.190001	41.00	10.0	64	23.0	---	---
0.500000	35.20	10.0	56	20.8	---	---
2.892000	34.20	10.2	56	21.8	---	---
3.144000	33.80	10.3	56	22.2	---	---
3.200000	33.30	10.3	56	22.7	---	---
8.440000	34.20	10.6	60	25.8	---	---
8.532000	34.50	10.6	60	25.5	---	---
8.732000	34.60	10.6	60	25.4	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:29 Ω-부

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.390001	18.80	10.0	48	29.3	---	---
0.446001	20.20	10.0	47	26.8	---	---
0.490001	21.30	10.0	46	24.9	---	---
0.508000	20.80	10.0	46	25.2	---	---
2.164000	22.80	10.2	46	23.2	---	---
2.828000	26.60	10.2	46	19.4	---	---
8.536000	28.00	10.6	50	22.0	---	---
9.248000	26.40	10.7	50	23.6	---	---
10.016000	26.50	10.7	50	23.5	---	---

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)

Operation Mode : Data Communication mode

USB Type (USB2.0) : CRESYN

Temperature : 21.5 °C

Humidity Level : 26.7 %

Test Date : November 12, 2013

Frequency	Transd	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
(MHz)	(dB)		(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV]
0.150	9.8	H	66	42.1	51.9	56	18.6	28.4
0.150	10.0	N	66	40.9	50.9	56	-	-
0.170	9.8	H	65	35.3	45.1	55	-	-
0.498	10.0	N	56	25.9	35.9	46	-	-
2.800	10.0	H	56	-	-	46	16.0	26.0
3.004	10.2	N	56	-	-	46	15.8	26.0

※ **NOTE:** Refer to page 21 to page 24 for details.

1. Line H = Hot, Line N = Neutral
2. Transd = LISN factor + Cable Loss factor

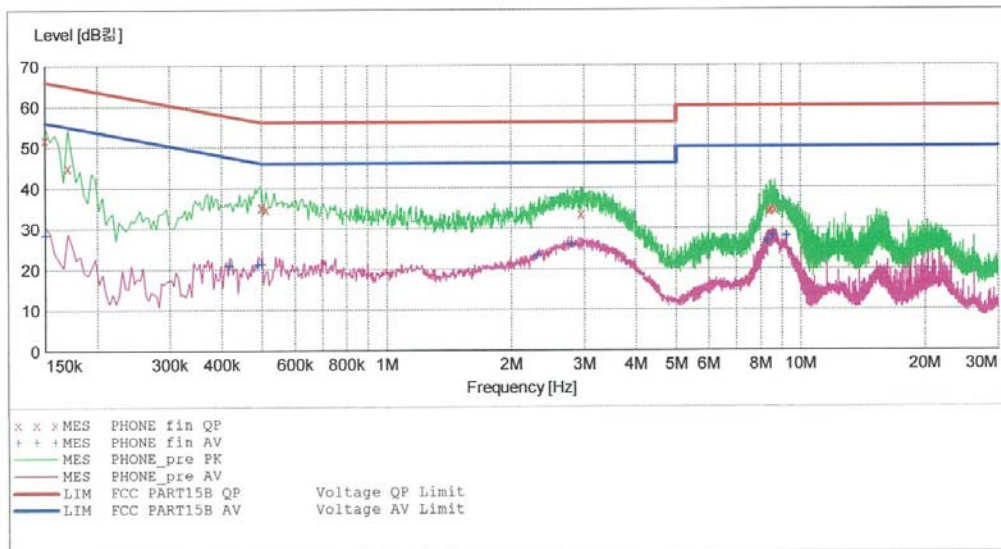
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EMC

EUT: LS995
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15B
Comment: H
Start of Test: USB 2.0 CABLE_CRESYN

SCAN TABLE: "FCC CLASS B(H)"

Short Description:			FCC CLASS B(H)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
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"

2013-11-12 3:18 오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150001	51.90	9.8	66	14.1	---	---
0.170001	45.10	9.8	65	19.9	---	---
0.498001	35.30	9.8	56	20.8	---	---
0.500000	35.20	9.8	56	20.8	---	---
0.512000	34.80	9.8	56	21.2	---	---
2.956000	33.50	10.0	56	22.5	---	---
8.412000	34.30	10.4	60	25.7	---	---
8.512000	34.70	10.4	60	25.3	---	---
8.676000	34.60	10.4	60	25.4	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:18 오후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.150001	28.40	9.8	56	27.6	---	---
0.418001	20.90	9.8	48	26.6	---	---
0.490001	21.20	9.8	46	24.9	---	---
0.500000	21.30	9.8	46	24.7	---	---
2.312000	23.20	10.0	46	22.8	---	---
2.800000	26.00	10.0	46	20.0	---	---
8.308000	26.60	10.4	50	23.4	---	---
8.572000	28.10	10.4	50	21.9	---	---
9.248000	28.00	10.4	50	22.0	---	---

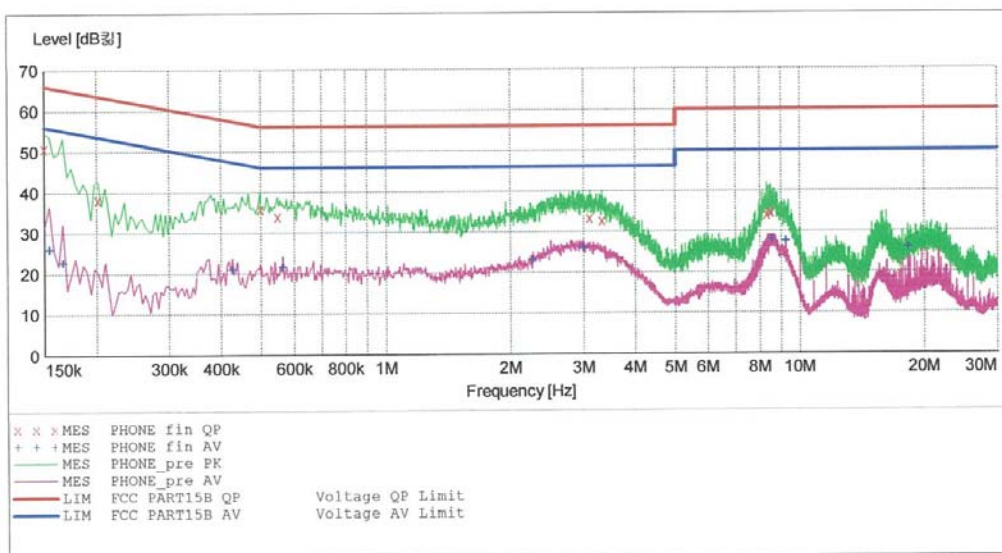
HCT

EMC

EUT: LS995
 Manufacturer: LG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15B
 Comment: N
 Start of Test: USB 2.0 CABLE_CRESYN

SCAN TABLE: "FCC CLASS B(N)"

Short Description:			FCC CLASS B(N)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
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"

2013-11-12 3:14 오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150001	50.90	10.0	66	15.1	---	---
0.202001	38.20	10.0	64	25.3	---	---
0.498001	35.90	10.0	56	20.1	---	---
0.548000	34.00	10.0	56	22.0	---	---
3.116000	33.40	10.2	56	22.6	---	---
3.332000	32.70	10.3	56	23.3	---	---
8.312000	34.10	10.6	60	25.9	---	---
8.508000	34.70	10.6	60	25.3	---	---
8.532000	34.60	10.6	60	25.4	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:14 오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154001	25.90	10.0	56	29.9	---	---
0.166001	22.70	10.0	55	32.4	---	---
0.426001	20.90	10.0	47	26.4	---	---
0.564000	21.50	10.0	46	24.5	---	---
2.272000	23.00	10.2	46	23.0	---	---
3.004000	26.00	10.2	46	20.0	---	---
8.576000	27.90	10.6	50	22.1	---	---
9.252000	27.60	10.7	50	22.4	---	---
18.244000	25.80	11.2	50	24.2	---	---

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)

Operation Mode : Data Communication mode

USB Type (USB 3.0) : BROAD

Temperature : 21.5 °C

Humidity Level : 26.7 %

Test Date : November 12, 2013

Frequency	Transd	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
(MHz)	(dB)		(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV]
0.154	10.0	H	66	40.1	50.1	56	-	-
0.154	9.8	N	66	41.0	50.8	56	20.0	29.8
0.434	9.8	N	57	27.1	36.9	47	-	-
0.482	10.0	H	56	27.0	37.0	46	-	-
0.516	9.8	N	56	26.6	36.4	46	-	-
2.800	10.2	H	56	-	-	46	15.7	25.9

※ **NOTE:** Refer to page 26 to page 29 for details.

1. Line H = Hot, Line N = Neutral
2. Transd = LISN factor + Cable Loss factor

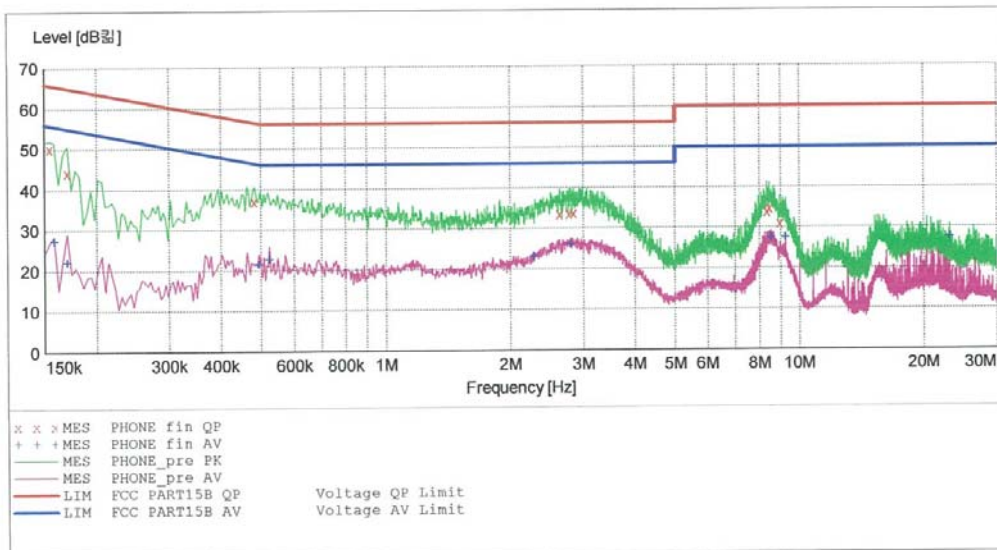
HCT

EMC

EUT: LS995
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15B
Comment: N
Start of Test: USB 3.0 CABLE

SCAN TABLE: "FCC CLASS B(N)"

Short Description:			FCC CLASS B(N)				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
Frequency	Frequency	Width					
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"

2013-11-12 3:09오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154001	50.10	10.0	66	15.7	---	---
0.170001	44.20	10.0	65	20.7	---	---
0.482001	37.00	10.0	56	19.3	---	---
2.636000	33.50	10.2	56	22.5	---	---
2.784000	33.60	10.2	56	22.4	---	---
2.848000	33.80	10.2	56	22.2	---	---
8.336000	33.90	10.6	60	26.1	---	---
8.472000	34.70	10.6	60	25.3	---	---
8.996000	30.90	10.6	60	29.1	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:09 오후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.158001	27.20	10.0	56	28.4	---	---
0.170001	22.00	10.0	55	32.9	---	---
0.494001	21.40	10.0	46	24.7	---	---
0.524000	22.60	10.0	46	23.4	---	---
2.284000	23.00	10.2	46	23.0	---	---
2.800000	25.90	10.2	46	20.1	---	---
8.544000	27.50	10.6	50	22.5	---	---
9.252000	27.60	10.7	50	22.4	---	---
23.128000	27.50	11.4	50	22.5	---	---

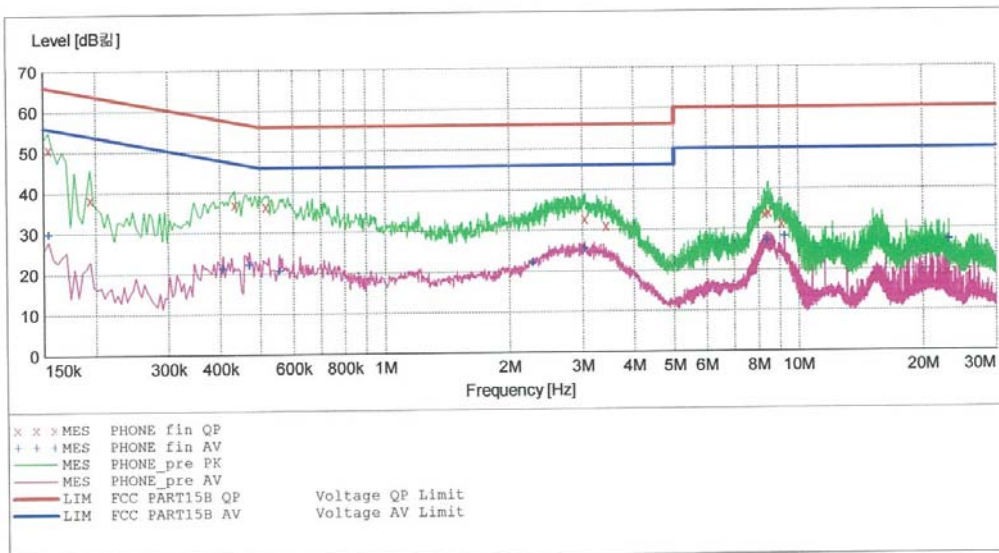
HCT

EMC

EUT: LS995
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15B
Comment: H
Start of Test: USB 3.0 CABLE

SCAN TABLE: "FCC CLASS B(H)"

Short Description:			FCC CLASS B(H)				Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
Frequency	Frequency	Width					
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"

2013-11-12 3:02오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154001	50.80	9.8	66	15.0	---	---
0.194001	38.30	9.8	64	25.6	---	---
0.434001	36.90	9.8	57	20.3	---	---
0.516000	36.40	9.8	56	19.6	---	---
3.044000	32.70	10.1	56	23.3	---	---
3.428000	31.10	10.1	56	24.9	---	---
8.300000	33.60	10.4	60	26.4	---	---
8.476000	34.00	10.4	60	26.0	---	---
9.100000	31.30	10.4	60	28.7	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-11-12 3:02 오후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.154001	29.80	9.8	56	26.0	---	---
0.406001	21.10	9.8	48	26.6	---	---
0.470001	22.00	9.8	47	24.5	---	---
0.556000	20.50	9.8	46	25.5	---	---
2.284000	22.00	10.0	46	24.0	---	---
3.040000	25.50	10.1	46	20.5	---	---
8.396000	27.10	10.4	50	22.9	---	---
9.248000	28.10	10.4	50	21.9	---	---
23.128000	27.10	11.1	50	22.9	---	---

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
USB Type (USB 2.0)	: CRESYN
Temperature	: 23.0 °C
Humidity Level	: 36.6 %
Test Date	: November 08, 2013

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)			
125.3	12.78	V	1.0	12.03	3.90	43.5	28.7	14.80
133.0	17.66	V	1.0	12.40	3.94	43.5	34.0	9.50
213.2	21.96	H	1.3	10.31	4.22	43.5	36.5	7.00
263.9	21.07	H	1.2	12.23	4.41	46.0	37.7	8.30
334.3	17.87	H	1.0	14.17	4.66	46.0	36.7	9.30
360.0	17.32	H	1.0	14.74	4.74	46.0	36.8	9.20

-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

USB Type (USB 2.0) : KSD

Temperature : 23.0 °C

Humidity Level : 36.6 %

Test Date : November 08, 2013

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)			
133.4	20.24	V	1.0	12.42	3.94	43.5	36.6	6.90
214.9	22.39	H	1.5	10.38	4.23	43.5	37.0	6.50
263.6	20.58	H	1.3	12.22	4.40	46.0	37.2	8.80
345.9	21.07	V	1.5	14.43	4.70	46.0	40.2	5.80
480.9	12.57	V	1.0	17.25	5.08	46.0	34.9	11.10
625.0	12.24	V	1.0	19.97	5.39	46.0	37.6	8.40

-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

USB Type (USB 2.0) : BROAD

Temperature : 23.0 °C

Humidity Level : 36.6 %

Test Date : November 08, 2013

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)			
133.00	16.86	V	1.0	12.40	3.94	43.5	33.20	10.30
214.50	22.31	H	1.0	10.36	4.23	43.5	36.90	6.60
266.70	21.77	V	1.0	12.32	4.42	46.0	38.50	7.50
356.50	19.60	H	1.0	14.66	4.73	46.0	39.00	7.00
480.90	12.77	V	1.0	17.25	5.08	46.0	35.10	10.90
625.00	10.94	V	1.0	19.97	5.39	46.0	36.30	9.70

-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
 USB Type (USB 3.0) : BROAD
 Temperature : 23.0 °C
 Humidity Level : 36.6 %
 Test Date : November 08, 2013

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)			
35.80	11.90	V	1.0	11.55	3.35	40.0	26.80	13.20
63.10	12.21	H	1.0	11.43	3.56	40.0	27.20	12.80
133.40	18.34	V	1.1	12.42	3.94	43.5	34.70	8.80
214.70	18.80	V	1.0	10.37	4.23	43.5	33.40	10.10
268.70	22.99	H	1.2	12.38	4.42	46.0	39.80	6.20
360.00	18.12	V	1.4	14.74	4.74	46.0	37.60	8.40

-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

USB Type (USB 2.0) : CRESYN

Temperature : 23.0 °C

Humidity Level : 30.1 %

Test Date : November 12, 2013

Frequency (GHz)	Peak			POL	Average		
	Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)		Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1.2700	46.2	74	27.8	V	28.0	54	26.0
2.6000	53.5	74	20.5	V	32.1	54	21.9

※ NOTE:

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

-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

USB Type (USB 2.0) : KSD

Temperature : 23.0 °C

Humidity Level : 30.1 %

Test Date : November 12, 2013

Frequency (GHz)	Peak			POL	Average		
	Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)		Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2.3900	50.1	74	23.9	V	31.7	54	22.3
3.1900	51.1	74	22.9	V	32.2	54	21.8

※ NOTE:

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

-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

USB Type (USB 2.0) : BROAD

Temperature : 23.0 °C

Humidity Level : 30.1 %

Test Date : November 12, 2013

Frequency (GHz)	Peak			POL	Average		
	Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)		Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1.1800	47.0	74	27.0	V	26.6	54	27.4
2.6000	53.4	74	20.6	V	30.3	54	23.7

※ NOTE:

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

-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

USB Type (USB 3.0) : BROAD

Temperature : 23.0 °C

Humidity Level : 30.1 %

Test Date : November 12, 2013

Frequency (GHz)	Peak			POL	Average		
	Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)		Total (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1.1900	51.1	74	22.9	V	27.3	54	26.7
2.1600	53.9	74	20.1	V	29.5	54	24.5

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5th 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 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 Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>Next CAL Date</u>
<u>Conducted Emission</u>					
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	2014.04.25
☐ EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	2014.06.23
☐ LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	2014.07.03
☒ LISN	EMCO	3816/2SH	9706-1070	1 year	2014.04.26
☒ LISN	Rohde & Schwarz	ENV216	100073	1 year	2014.02.06
☐ Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	2014.07.03
<u>Radiated Emission</u>					
-For measurement below 1 GHz					
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2014.04.16
☒ Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	2014.12.17
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Turn Table	HD GmbH	2090	9702/1224	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
☐ Trilog Antenna	Schwarzbeck	VULB9168	185	2 year	2015.04.16
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
-For measurement above 1 GHz					
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2014.04.16
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Turn Table	HD GmbH	2090	9702/1224	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ Power Amplifier	CERNEX	CBLU1183540	21690	1 year	2014.07.12
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	2014.12.13

7. CONCLUSION

The data collected shows that the **EUT type: Multi-Band CDMA/EVDO/GSM/EDGE/WCDMA/LTE Phone with WLAN, Bluetooth, and RFID, FCC ID: ZNFLS995, Model: LS995** complies with §15.107 and §15.109 of the FCC rules.