

# SAR EVALUATION REPORT

**Applicant Name:**

LG Electronics MobileComm USA, Inc.  
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

**Date of Issue:** 08. 25, 2017

**Test Report No.:** HCT-A-1708-F002-1

**Test Site:** HCT CO., LTD.

**FCC ID:**

**ZNFM700N**

**Equipment Type:** GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n, NFC  
**Application Type:** Class II Permissive Change

**Model Name:** LG-M700n  
**Additional FCC Model(s):** LGM700n, M700n

**ECC Rule Part:** 47CFR §2.1093  
**Permissive change:** Changing Some target powers

**Date of Test:** 08/11/2017

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC KDB procedures and had been tested in accordance with the measurement procedures specified in FCC KDB procedures.

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.

**Tested By**



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## DOCUMENT HISTORY

Version	DATE	DESCRIPTION
HCT-A-1708-F002	08. 16, 2017	First Approval Report
HCT-A-1708-F002-1	08. 25, 2017	Sec 1.4 was revised.

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# 1. Device Under Test Description

## 1.1 DUT specification

Device Wireless specification overview		
Band & Mode	Operating Mode	Tx Frequency
GSM/GPRS/EDGE 850	Voice / Data	824.2 – 848.8 MHz
GSM/GPRS/EDGE 1900	Voice / Data	1 850.2 – 1 909.8 MHz
UMTS 850	Voice / Data	826.4 – 846.6 MHz
UMTS 1900	Voice / Data	1 852.4 – 1 907.6 MHz
LTE Band 4 (AWS)	Voice / Data	1 710.7 – 1 754.3 MHz
LTE Band 5 (Cell)	Voice / Data	824.7 – 848.3 MHz
LTE Band 12	Voice / Data	699.7 – 715.3 MHz
LTE Band 17	Voice / Data	706.5 – 713.5 MHz
2.4 GHz WLAN	Voice / Data	2 412 – 2 462 MHz
Bluetooth	Data	2 402 – 2 480 MHz
NFC	Data	13.56 MHz

Device Description		
Device Dimension	Overall (Length x Width): 69.3 mm x 142.5 mm Overall diagonal dimension: 151 mm Display diagonal dimension: 135 mm	
Back Cover:	Normal Battery cover	
Battery Options	Standard (Li-ion Polymer Battery)	
	Battery Model Name: BL-T33, Manufacturer: LishenVX	
Device Serial Numbers	Mode	Serial Number
	UMTS1900	35B7B
	LTE 4	35B2R

## 2.2 DUT Wireless mode

Wireless Modulation	Band	Operating Mode		Duty Cycle
GSM	850 1900	Voice(GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS/ EDGE Multi-Slot Class: Class 33 – 4 Up, 5 Down Mode class B	GSM Voice: 12.5% GPRS/EDGE: 1 Slot: 12.5% 2 Slots : 25% 3 Slots : 37.5% 4 Slots : 50%
WCDMA (UMTS)	Band 5 Band 2	UMTS Rel.99 (Voice / DATA) HSDPA (Rel. 5,Cat.10) HSUPA (Rel. 6 Cat.6) DC-HSDPA (Rel.8, Cat.24) HSPA+ (Rel. 7) (Uplink QPSK Only)		100 %
LTE Band	4 (AWS)	Voice / Data (QPSK, 16QAM)		100 % (FDD)
	5 (Cell)	Voice / Data (QPSK, 16QAM)		100 % (FDD)
	12	Voice / Data (QPSK, 16QAM)		100 % (FDD)
	17	Voice / Data (QPSK, 16QAM)		100 % (FDD)
2.4 GHz WLAN		Voice / Data	802.11 b, 802.11 g, 802.11 n (HT20)	99.84 %
Bluetooth		Data		76.4 % (DH5)
Bluetooth 4.2 LE		Data		N/A

### 1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

#### Maximum PCE Power

Mode / Band		3GPP WCDMA	3GPP HSDPA(dBm)				3GPP HSUPA(dBm)					DC-HSDPA(dBm)			
			Sub test1	Sub test2	Sub test3	Sub test4	Sub test1	Sub test2	Sub test3	Sub test4	Sub Test5	Sub test1	Sub test2	Sub test3	Sub test4
UMTS Band 2 (1900 MHz)	Maximum	23.2	23.2	23.2	22.7	22.7	23.2	21.2	22.2	21.2	23.2	23.2	23.2	22.7	22.7
	Nominal	22.7	22.7	22.7	22.2	22.2	22.7	20.7	21.7	20.7	22.7	22.7	22.7	22.2	22.2

Mode / Band		Modulated Average (dBm)
LTE Band 4 (AWS)	Maximum	23.2
	Nominal	22.7

## 1.4 SAR Test Exclusion

The power of the bands ( WCDMA Band 2 / LTE Band 4 )in the original model has been changed as shown in the table below

Conducted Output powers of C2PC Model were measured and verified for the WCDMA Band 2 and LTE Band 4 in Sec.2

Target Powers for the original model (WCDMA2 / LTE4 ) are higher than C2PC model. Therefore, additional SAR testing of the C2PC model are not required.

Detailed description of the change are include in LG Class II Change Description Document

See Original Report No: HCT-A-1706-F005-1 for SAR compliance evaluation

Item	Band	Description	
		Original Model	Permissive Changed model
Main RF Tune up power	WCDMA Band 2	23.2 dBm	22.7 dBm
	LTE Band 4	24.2 dBm	22.7 dBm

## 1.5 Guidance Applied

- IEEE1528-2013
- FCC KDB Publication 941225 D01 3G SAR Procedures v03r01
- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05
- FCC KDB Publication 447498 D01 General SAR Guidance v06
- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04

## 2. Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

### 2.1 UMTS

#### WCDMA Band 2

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 2 [dBm]		
		Subtest	UL 9262 DL 9662	UL 9400 DL 9800	UL 9538 DL 9938
99	WCDMA	12.2 kbps RMC	23.14	23.08	23.15
99	WCDMA	12.2 kbps AMR	23.03	23.02	23.00
5	HSDPA	Subtest 1	22.97	23.01	23.03
5		Subtest 2	22.94	23.06	23.04
5		Subtest 3	22.50	22.51	22.45
5		Subtest 4	22.46	22.50	22.41
6	HSUPA	Subtest 1	22.75	22.67	22.50
6		Subtest 2	20.99	21.11	21.05
6		Subtest 3	21.99	22.15	22.10
6		Subtest 4	21.04	21.07	21.17
6		Subtest 5	22.74	22.71	22.48
8	DC-HSDPA	Subtest 1	22.98	22.76	22.86
8		Subtest 2	22.89	22.73	22.75
8		Subtest 3	22.53	22.30	22.39
8		Subtest 4	22.53	22.30	22.38

WCDMA Average Conducted output powers



## 2.2 LTE

### LTE Band 4 Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				19957	20175	20393		
				1710.7 MHz	1732.5 MHz	1754.3 MHz	[dB]	[dB]
1.4 MHz	QPSK	1	0	22.35	22.60	22.38	0	0
		1	3	22.46	22.66	22.44	0	0
		1	5	22.34	22.54	22.40	0	0
		3	0	22.41	22.47	22.29	0	0
		3	1	22.39	22.51	22.39	0	0
		3	3	22.37	22.44	22.47	0	0
	16QAM	6	0	21.27	21.51	21.33	0-1	1
		1	0	21.63	21.70	21.16	0-1	1
		1	3	21.49	21.48	21.31	0-1	1
		1	5	21.24	21.38	21.14	0-1	1
		3	0	21.28	21.76	21.27	0-1	1
		3	1	21.26	21.61	21.29	0-1	1
		3	3	21.25	21.84	21.20	0-1	1
		6	0	20.38	20.44	20.46	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				19965	20175	20385		
				1711.5 MHz	1732.5 MHz	1753.5 MHz	[dB]	[dB]
3 MHz	QPSK	1	0	22.44	22.63	22.37	0	0
		1	7	22.54	22.91	22.44	0	0
		1	14	22.43	22.66	22.38	0	0
		8	0	21.42	21.60	21.33	0-1	1
		8	3	21.54	21.59	21.35	0-1	1
		8	7	21.39	21.58	21.40	0-1	1
		15	0	21.38	21.60	21.26	0-1	1
	16QAM	1	0	21.26	21.36	21.07	0-1	1
		1	7	21.16	21.06	21.09	0-1	1
		1	14	21.32	21.40	21.19	0-1	1
		8	0	20.50	20.42	20.30	0-2	2
		8	3	20.50	20.62	20.49	0-2	2
		8	7	20.71	20.85	20.43	0-2	2
		15	0	20.57	20.68	20.37	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				19975	20175	20375		
				1712.5 MHz	1732.5 MHz	1752.5 MHz	[dB]	[dB]
5 MHz	QPSK	1	0	22.48	22.52	22.54	0	0
		1	12	22.97	22.86	22.78	0	0
		1	24	22.50	22.48	22.53	0	0
		12	0	21.42	21.55	21.37	0-1	1
		12	6	21.40	21.62	21.46	0-1	1
		12	11	21.41	21.52	21.47	0-1	1
	16QAM	25	0	21.42	21.58	21.42	0-1	1
		1	0	21.07	21.32	21.29	0-1	1
		1	12	21.37	21.32	21.18	0-1	1
		1	24	21.12	21.27	21.22	0-1	1
		12	0	20.49	20.51	20.55	0-2	2
		12	6	20.58	20.52	20.54	0-2	2
		12	11	20.49	20.50	20.47	0-2	2
		25	0	20.40	20.52	20.51	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20000	20175	20350		
				1715 MHz	1732.5 MHz	1750 MHz	[dB]	[dB]
10 MHz	QPSK	1	0	22.58	22.60	22.76	0	0
		1	24	22.96	23.00	22.78	0	0
		1	49	22.60	22.67	22.66	0	0
		25	0	21.48	21.63	21.53	0-1	1
		25	12	21.53	21.55	21.50	0-1	1
		25	24	21.49	21.58	21.39	0-1	1
		50	0	21.47	21.60	21.52	0-1	1
	16QAM	1	0	21.28	21.34	21.40	0-1	1
		1	24	21.25	21.29	21.29	0-1	1
		1	49	21.18	21.26	21.26	0-1	1
		25	0	20.67	20.68	20.56	0-2	2
		25	12	20.59	20.62	20.55	0-2	2
		25	24	20.56	20.62	20.47	0-2	2
		50	0	20.55	20.56	20.61	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20025	20175	20325		
				1717.5 MHz	1732.5 MHz	1747.5 MHz	[dB]	[dB]
15 MHz	QPSK	1	0	22.68	22.73	22.89	0	0
		1	36	22.61	23.09	23.07	0	0
		1	74	22.70	22.75	22.69	0	0
		36	0	21.59	21.60	21.56	0-1	1
		36	18	21.55	21.61	21.60	0-1	1
		36	38	21.53	21.62	21.41	0-1	1
		75	0	21.50	21.60	21.50	0-1	1
	16QAM	1	0	21.42	21.35	21.39	0-1	1
		1	36	21.54	21.25	21.24	0-1	1
		1	74	21.42	21.44	21.24	0-1	1
		36	0	20.54	20.66	20.73	0-2	2
		36	18	20.61	20.55	20.68	0-2	2
		36	38	20.48	20.60	20.44	0-2	2
		75	0	20.66	20.77	20.58	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)		MPR Allowed Per 3GPP	MPR
				20175			
				1732.5 MHz		[dB]	[dB]
20 MHz	QPSK	1	0	22.85		0	0
		1	49	23.02		0	0
		1	99	22.52		0	0
		50	0	21.62		0-1	1
		50	25	21.59		0-1	1
		50	49	21.55		0-1	1
		100	0	21.63		0-1	1
	16QAM	1	0	21.41		0-1	1
		1	49	21.34		0-1	1
		1	99	21.25		0-1	1
		50	0	20.70		0-2	2
		50	25	20.74		0-2	2
		50	49	20.72		0-2	2
		100	0	20.61		0-2	2

**Note:** LTE Band 4 (AWS) at 20 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

### 3. TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
Agilent	Base Station E5515C	GB444400269	02/02/2017	Annual	02/08/2018
R&S	Wideband Radio Communication Tester CMW500	101519	04/27/2017	Annual	04/27/2018
Anritsu	Radio Communication Analyzer/ MT8820C	6200628628	07/04/2017	Annual	07/04/2018
Anritsu	Radio Communication Analyzer/ MT8820C	6200576565	07/04/2017	Annual	07/04/2018

## 4. CONCLUSION

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/IEEE C95.1 1992.

These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests.

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

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