



# PCTEST ENGINEERING LABORATORY, INC.

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## MEASUREMENT REPORT GSM / GPRS / EDGE / CDMA / WCDMA

**Applicant Name:**  
LG Electronics MobileComm U.S.A  
1000 Sylvan Avenue  
Englewood Cliffs, NJ 07632  
United States

**Date of Testing:**  
11/20 - 12/18/2017  
**Test Site/Location:**  
PCTEST Lab. Columbia, MD, USA  
**Test Report Serial No.:**  
1M1712050312-02-R1.ZNF


<b>FCC ID:</b>	<b>ZNFL413DL</b>
<b>APPLICANT:</b>	<b>LG Electronics MobileComm U.S.A</b>

**Application Type:** Class II Permissive Change  
**Model:** LML413DL  
**Additional Model(s):** LM-L413DL, L413DL, LM-X410ULMG, LMX410ULMG, X410ULMG  
**EUT Type:** Portable Handset  
**FCC Classification:** PCS Licensed Transmitter Held to Ear (PCE)  
**FCC Rule Part(s):** 22, 24, & 27  
**Test Procedure(s):** ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03  
**Class II Permissive Change:** Please see FCC change document

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

This test report (S/N: 1M1712050312-02-R1.ZNF) supersedes and replaces all previous versions of this test report. Please dispose of all previous versions of this test report accordingly.

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.

  
 Randy Ortanez  
 President

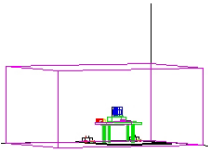


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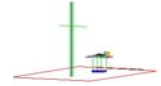
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## MEASUREMENT REPORT

### GSM / GPRS / EDGE / CDMA / WCDMA



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP	
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)
GPRS850	22H	824.2 - 848.8	1.312	31.18	2.152	33.33
EDGE850	22H	824.2 - 848.8	0.315	24.98	0.516	27.13
WCDMA850	22H	826.4 - 846.6	0.147	21.66	0.240	23.81
CDMA850	22H	824.70 - 848.31	0.161	22.07	0.264	24.22
WCDMA1700	27	1712.4 - 1752.6			0.258	24.12
GPRS1900	24E	1850.2 - 1909.8			1.403	31.47
EDGE1900	24E	1850.2 - 1909.8			0.483	26.84
WCDMA1900	24E	1852.4 - 1907.6			0.312	24.94
CDMA1900	24E	1851.25 - 1908.75			0.607	27.83

**EUT Overview**

**Note:**

Class II Permissive Change test samples were used for ERP/EIRP measurements. It has been determined that radiated powers were not changed for the ZNFL413DL. Differences in radiated powers from the original certification ERP/EIRP that are reported herein are within expected measurement tolerances.

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# 1.0 INTRODUCTION

## 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

## 1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

## 1.3 Test Facility / Accreditations

**Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.**

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISED.

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **LGE Portable Handset FCC ID: ZNFL413DL**. The test data contained in this report pertains only to the emissions due to the EUT's 2G/3G licensed transmitters.

**Test Device Serial No.:** 18320, 18387

### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA/EvDO Rev0/A (BC0, BC1), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, Bluetooth (1x, EDR, LE)

### 2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03. See Section 7.0 of this test report for a description of the radiated tests.

### 2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

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## 3.0 DESCRIPTION OF TESTS

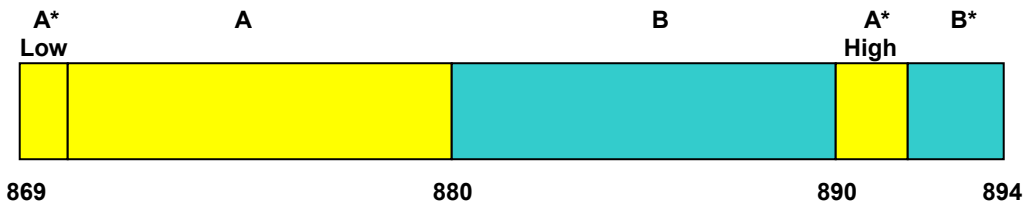
### 3.1 Evaluation Procedure

The measurement procedures described in the “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI/TIA-603-E-2016) and “Measurement Guidance for Certification of Licensed Digital Transmitters” (KDB 971168 D01 v03) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

### 3.2 Cellular - Base Frequency Blocks

§22.905



BLOCK 1: 869 – 880 MHz (A\* Low + A)

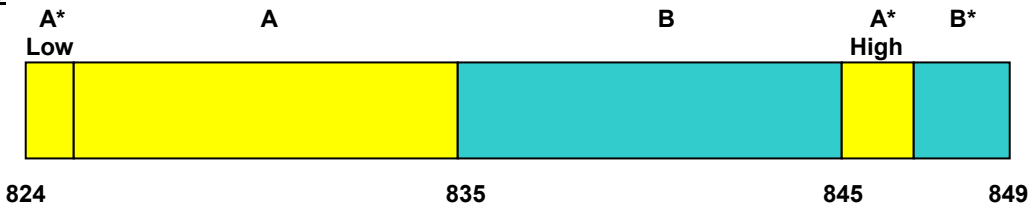
BLOCK 3: 890 – 891.5 MHz (A\* High)

BLOCK 2: 880 – 890 MHz (B)

BLOCK 4: 891.5 – 894 MHz (B\*)

### 3.3 Cellular - Mobile Frequency Blocks

§22.905



BLOCK 1: 824 – 835 MHz (A\* Low + A)

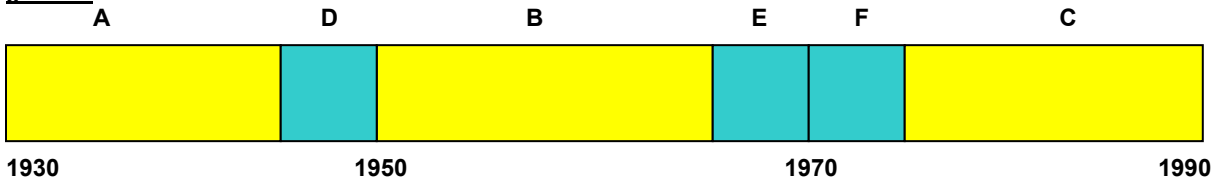
BLOCK 3: 845 – 846.5 MHz (A\* High)

BLOCK 2: 835 – 845 MHz (B)

BLOCK 4: 846.5 – 849 MHz (B\*)

### 3.4 PCS - Base Frequency Blocks

§24.229



BLOCK 1: 1930 – 1945 MHz (A)

BLOCK 4: 1965 – 1970 MHz (E)

BLOCK 2: 1945 – 1950 MHz (D)

BLOCK 5: 1970 – 1975 MHz (F)

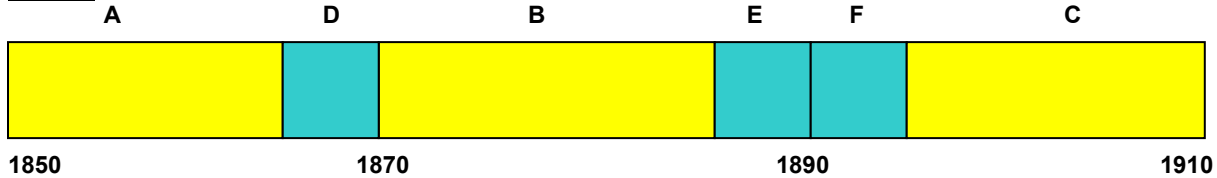
BLOCK 3: 1950 – 1965 MHz (B)

BLOCK 6: 1975 – 1990 MHz (C)

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### 3.5 PCS - Mobile Frequency Blocks

§24.229



BLOCK 1: 1850 – 1865 MHz (A)

BLOCK 4: 1885 – 1890 MHz (E)

BLOCK 2: 1865 – 1870 MHz (D)

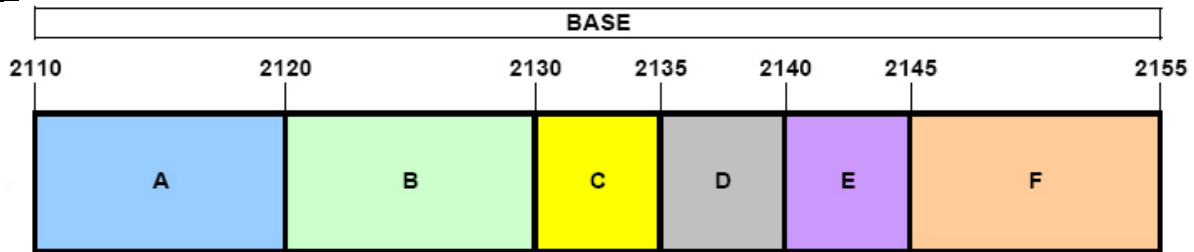
BLOCK 5: 1890 – 1895 MHz (F)

BLOCK 3: 1870 – 1885 MHz (B)

BLOCK 6: 1895 – 1910 MHz (C)

### 3.6 AWS - Base Frequency Blocks

§27.5(h)



BLOCK 1: 2110 – 2120 MHz (A)

BLOCK 4: 2135 – 2140 MHz (D)

BLOCK 2: 2120 – 2130 MHz (B)

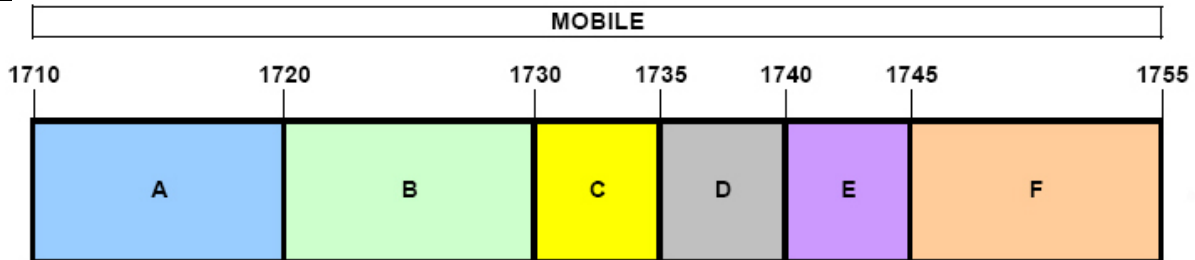
BLOCK 5: 2140 – 2145 MHz (E)

BLOCK 3: 2130 – 2135 MHz (C)

BLOCK 6: 2145 – 2155 MHz (F)

### 3.7 AWS - Mobile Frequency Blocks

§27.5(h)



BLOCK 1: 1710 – 1720 MHz (A)

BLOCK 4: 1735 – 1740 MHz (D)

BLOCK 2: 1720 – 1730 MHz (B)

BLOCK 5: 1740 – 1745 MHz (E)

BLOCK 3: 1730 – 1735 MHz (C)

BLOCK 6: 1745 – 1755 MHz (F)

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### 3.8 Radiated Measurements

§2.1053 §22.913(a)(2) §22.917(a) §24.232(c) §24.238(a) §27.50(d)(10) §27.53(h)

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

Per the guidance of ANSI/TIA-603-E-2016, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_d \text{ [dBm]} = P_g \text{ [dBm]} - \text{cable loss [dB]} + \text{antenna gain [dBd/dBi]}$$

Where,  $P_d$  is the dipole equivalent power,  $P_g$  is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to  $P_g \text{ [dBm]} - \text{cable loss [dB]}$ .

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI/TIA-603-E-2016.

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## 4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the  $U_{CISPR}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty ( $\pm$ dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	6/21/2017	Annual	6/21/2018	RE1
Anritsu	MT8820C	Radio Communication Analyzer	5/23/2017	Annual	5/23/2018	6201240328
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	4/26/2016	Biennial	4/26/2018	128337
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/24/2017	Annual	3/24/2018	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102135
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102133
Rohde & Schwarz	TS-PR8	30 MHz-8 GHz Pre-Amplifier	12/22/2016	Annual	12/21/2017	102324
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	5/11/2017	Annual	5/11/2018	100040
Rohde & Schwarz	CMU200	Base Station Simulator	5/22/2017	Annual	5/22/2018	109892
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/31/2017	Annual	7/31/2018	100348
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	4/19/2017	Annual	4/19/2018	100342
Rohde & Schwarz	CMW500	Radio Communication Tester	5/4/2017	Annual	5/4/2018	112347
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/14/2016	Biennial	3/14/2018	A051107

**Table 5-1. Test Equipment**

**Notes:**

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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## 6.0 SAMPLE CALCULATIONS

### Spurious Radiated Emission

#### Example: Spurious emission at 3700.40 MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was  $-81.0$  dBm. The gain of the substituted antenna is  $8.1$  dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of  $-81.0$  dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is  $2.0$  dB at  $3700.40$  MHz. So  $6.1$  dB is added to the signal generator reading of  $-30.9$  dBm yielding  $-24.80$  dBm. The fundamental EIRP was  $25.50$  dBm so this harmonic was  $25.50$  dBm  $- (-24.80) = 50.3$  dBc.

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## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: LG Electronics MobileComm U.S.A  
 FCC ID: ZNFL413DL  
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)  
 Mode(s): GSM / GPRS / EDGE / CDMA / WCDMA

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(2)	RSS-132(5.4)	Effective Radiated Power	< 7 Watts max. ERP	RADIATED	PASS	Section 7.2
24.232(c)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		PASS	Section 7.2
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power	< 1 Watts max. EIRP		PASS	Section 7.2
2.1053 22.917(a) 24.238(a) 27.53(h)	RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Radiated Spurious Emissions	> 43 + log <sub>10</sub> (P[Watts]) for all out-of-band emissions		PASS	Section 7.3

**Table 7-1. Summary of Test Results**

**Notes:**

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

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## 7.2 Radiated Power (ERP/EIRP)

§22.913(a)(2) 24.232(c) 27.50(d)(4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)

### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

### Test Procedures Used

KDB 971168 D01 v03 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

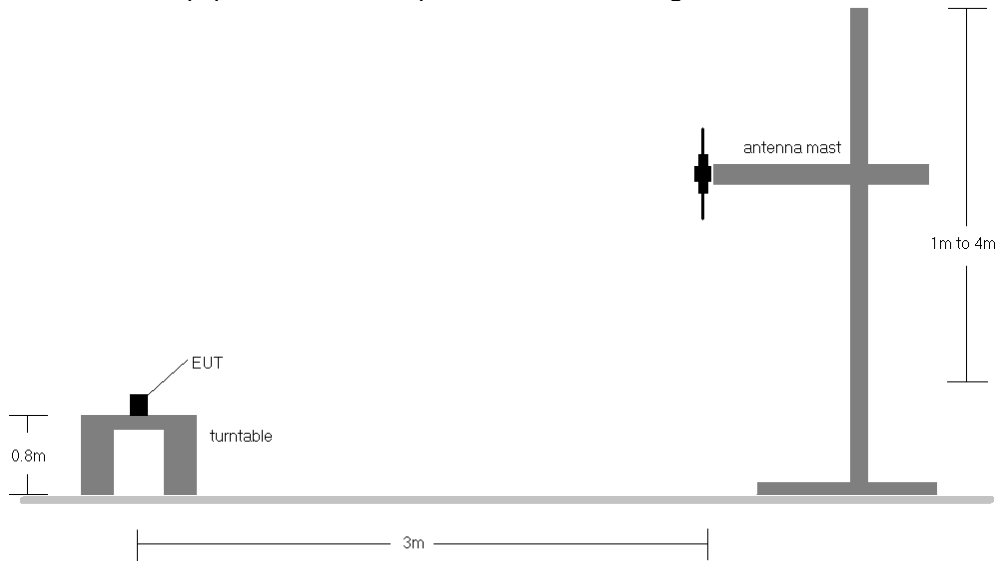
### Test Settings

1. Radiated power measurements are performed using the signal analyzer’s “channel power” measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer’s “time domain power” measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW  $\geq$  3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points  $\geq$  2 x span / RBW
6. Detector = RMS
7. Trigger is set to “free run” for signals with continuous operation with the sweep times set to “auto”. Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the “gating” function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

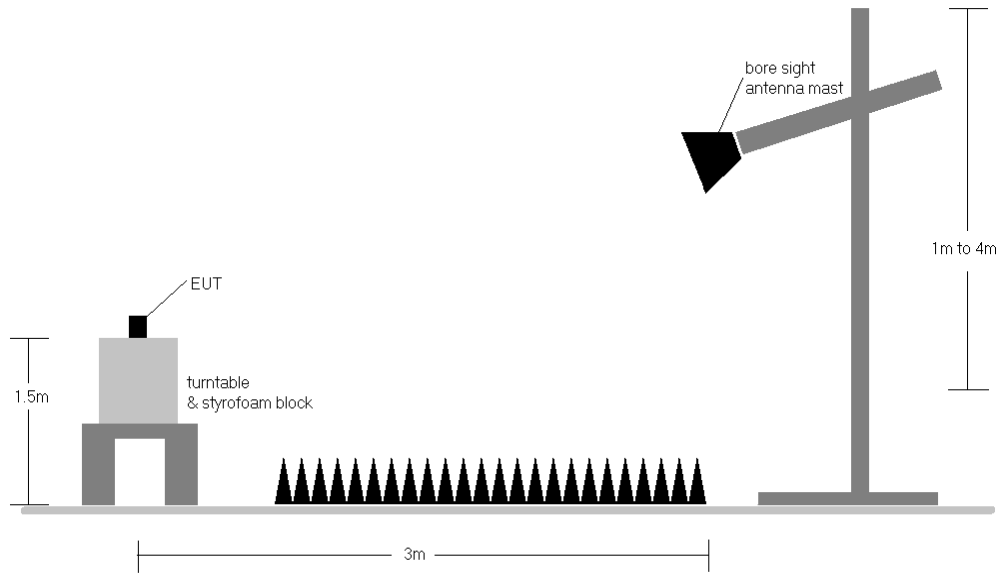
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**Test Setup**

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-1. Radiated Test Setup <1GHz**



**Figure 7-2. Radiated Test Setup >1GHz**

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### Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) This device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	V	150	3	31.83	1.50	<b>31.18</b>	<b>1.312</b>	38.45	-7.27	<b>33.33</b>	<b>2.152</b>	40.61	-7.27
836.60	GPRS850	V	150	0	31.76	1.50	31.11	1.292	38.45	-7.34	33.26	2.120	40.61	-7.34
848.80	GPRS850	V	150	3	31.76	1.50	31.11	1.291	38.45	-7.34	33.26	2.118	40.61	-7.34
824.20	GPRS850	H	150	19	30.27	1.50	29.62	0.916	38.45	-8.83	31.77	1.503	40.61	-8.83
824.20	EDGE850	V	150	3	25.63	1.50	<b>24.98</b>	<b>0.315</b>	38.45	-13.47	<b>27.13</b>	<b>0.516</b>	40.61	-13.47

**Table 7-2. ERP/EIRP (Cellular GPRS)**

FCC ID: ZNFL413DL		<b>MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)</b>			<b>Approved by:</b> Quality Manager
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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	CDMA850	V	150	357	21.77	1.50	21.12	0.129	38.45	-17.33	23.27	0.212	40.61	-17.33
836.52	CDMA850	V	150	10	22.19	1.50	21.54	0.143	38.45	-16.91	23.69	0.234	40.61	-16.91
848.31	CDMA850	V	150	355	22.72	1.50	<b>22.07</b>	<b>0.161</b>	38.45	-16.38	<b>24.22</b>	<b>0.264</b>	40.61	-16.38
848.31	CDMA850	H	150	10	22.54	1.50	21.89	0.155	38.45	-16.56	24.04	0.254	40.61	-16.56

Table 7-3. ERP/EIRP (Cellular CDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	V	150	1	20.90	1.50	20.25	0.106	38.45	-18.20	22.40	0.174	40.61	-18.20
836.60	WCDMA850	V	150	11	21.63	1.50	20.98	0.125	38.45	-17.47	23.13	0.206	40.61	-17.47
846.60	WCDMA850	V	150	8	22.31	1.50	<b>21.66</b>	<b>0.147</b>	38.45	-16.79	<b>23.81</b>	<b>0.240</b>	40.61	-16.79
846.60	WCDMA850	H	150	358	21.06	1.50	20.41	0.110	38.45	-18.04	22.56	0.180	40.61	-18.04

Table 7-4. ERP/EIRP (Cellular WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	V	150	277	18.49	5.63	<b>24.12</b>	<b>0.258</b>	30.00	-5.88
1732.60	WCDMA1700	V	150	279	18.38	5.41	23.79	0.239	30.00	-6.21
1752.60	WCDMA1700	V	150	278	17.84	5.19	23.03	0.201	30.00	-6.97
1712.40	WCDMA1700	H	150	9	15.11	5.41	20.52	0.113	30.00	-9.48

Table 7-5. EIRP (AWS WCDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	V	150	288	26.11	4.79	30.90	1.230	33.01	-2.11
1880.00	GPRS1900	V	150	288	26.23	4.84	31.07	1.280	33.01	-1.94
1909.80	GPRS1900	V	150	238	26.61	4.86	<b>31.47</b>	<b>1.403</b>	33.01	-1.54
1909.80	GPRS1900	H	150	101	26.39	4.68	31.07	1.279	33.01	-1.94
1909.80	EDGE1900	V	150	238	21.98	4.86	<b>26.84</b>	<b>0.483</b>	33.01	-6.17

Table 7-6. EIRP (PCS GPRS)

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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1851.25	CDMA1900	H	150	7	22.62	4.82	27.44	0.55	33.01	-5.57
1880.00	CDMA1900	H	150	6	22.42	4.74	27.16	0.52	33.01	-5.85
1908.75	CDMA1900	H	150	9	23.15	4.68	<b>27.83</b>	<b>0.61</b>	33.01	-5.18
1908.75	CDMA1900	V	150	238	21.19	4.74	25.93	0.39	33.01	-7.08

Table 7-7. EIRP (PCS CDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	V	150	291	20.15	4.79	<b>24.94</b>	<b>0.312</b>	33.01	-8.07
1880.00	WCDMA1900	V	150	255	20.09	4.84	24.93	0.312	33.01	-8.08
1907.60	WCDMA1900	V	150	252	19.67	4.87	24.54	0.284	33.01	-8.47
1852.40	WCDMA1900	H	150	37	19.86	4.84	24.70	0.295	33.01	-8.31

Table 7-8. EIRP (PCS WCDMA)

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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### 7.3 Radiated Spurious Emissions Measurements

**§2.1053 §22.917(a) 24.238(a) 27.53(h) RSS-132(5.5) RSS-133(5.5) RSS-139(6.6)**

#### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### Test Procedures Used

KDB 971168 D01 v03 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

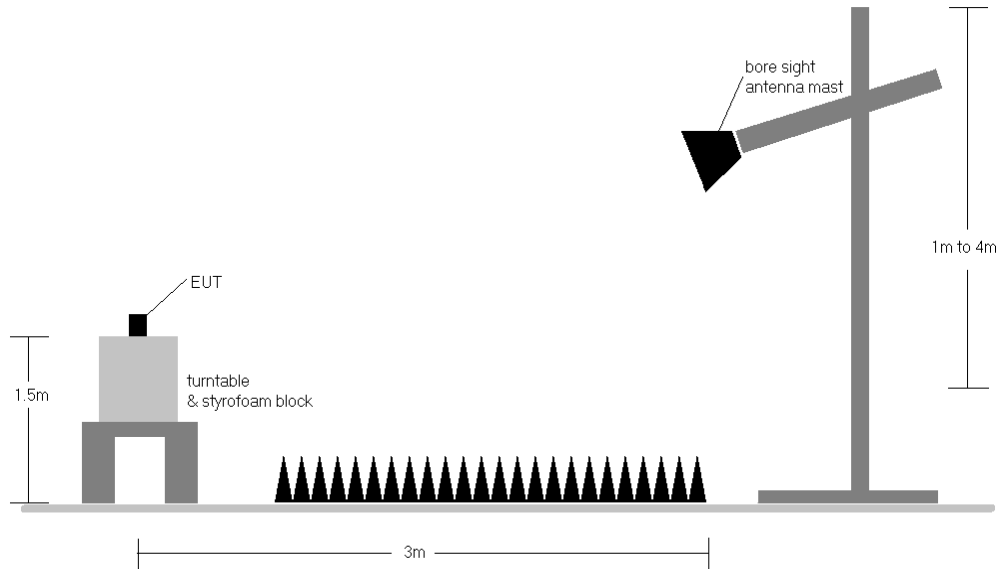
#### Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq 3 \times$  RBW
3. Span = 1.5 times the OBW
4. No. of sweep points  $\geq 2 \times$  span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

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**Test Setup**

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-3. Test Instrument & Measurement Setup**

**Test Notes**

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) For CDMA operations, this device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 8) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

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## Cellular GPRS Mode

OPERATING FREQUENCY: 824.20 MHz  
 CHANNEL: 128  
 MODULATION SIGNAL: GPRS (GMSK)  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1648.40	V	385	182	-65.82	8.86	-56.96	-44.0
2472.60	V	153	298	-62.25	9.17	-53.07	-40.1
3296.80	V	-	-	-68.72	9.43	-59.29	-46.3
4121.00	V	-	-	-69.57	9.83	-59.74	-46.7
4945.20	V	-	-	-70.44	11.18	-59.26	-46.3
5769.40	V	-	-	-69.46	11.33	-58.13	-45.1
6593.60	V	-	-	-66.12	11.18	-54.94	-41.9
7417.80	V	-	-	-63.11	10.76	-52.35	-39.3
8242.00	V	-	-	-64.96	11.71	-53.25	-40.2

**Table 7-9. Radiated Spurious Data (Cellular GPRS Mode – Ch. 128)**

OPERATING FREQUENCY: 836.60 MHz  
 CHANNEL: 190  
 MODULATION SIGNAL: GPRS (GMSK)  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	V	387	124	-67.35	8.70	-58.65	-45.6
2509.80	V	209	295	-61.40	9.24	-52.17	-39.2
3346.40	V	-	-	-68.56	9.34	-59.22	-46.2
4183.00	V	-	-	-69.16	10.25	-58.92	-45.9
5019.60	V	-	-	-70.17	11.09	-59.08	-46.1
5856.20	V	-	-	-69.34	11.29	-58.05	-45.1
6692.80	V	-	-	-65.60	10.95	-54.65	-41.6
7529.40	V	-	-	-64.54	11.01	-53.53	-40.5
8366.00	V	-	-	-65.03	11.76	-53.27	-40.3

**Table 7-10. Radiated Spurious Data (Cellular GPRS Mode – Ch. 190)**

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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OPERATING FREQUENCY: 848.80 MHz  
 CHANNEL: 251  
 MODULATION SIGNAL: GPRS (GMSK)  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1697.60	V	101	229	-68.60	8.55	-60.05	-47.1
2546.40	V	101	70	-62.22	9.20	-53.02	-40.0
3395.20	V	-	-	-66.80	9.45	-57.35	-44.4
4244.00	V	-	-	-69.87	10.49	-59.38	-46.4
5092.80	V	-	-	-69.49	10.89	-58.60	-45.6
5941.60	V	-	-	-68.36	11.21	-57.15	-44.2
6790.40	V	-	-	-64.86	10.79	-54.07	-41.1
7639.20	V	-	-	-65.18	11.29	-53.89	-40.9
8488.00	V	-	-	-64.59	11.68	-52.91	-39.9

Table 7-11. Radiated Spurious Data (Cellular GPRS Mode – Ch. 251)

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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## Cellular CDMA Mode

OPERATING FREQUENCY: 824.70 MHz  
 CHANNEL: 1013  
 MODULATION SIGNAL: CDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	H	115	368	-74.90	8.85	-66.05	-53.1
2474.10	H	111	303	-64.62	9.67	-54.95	-42.0
3298.80	H	-	-	-73.68	9.51	-64.17	-51.2
4123.50	H	-	-	-72.45	10.23	-62.23	-49.2
4948.20	H	-	-	-72.37	10.89	-61.48	-48.5
5772.90	H	-	-	-72.30	11.49	-60.82	-47.8
6597.60	H	-	-	-71.57	12.08	-59.49	-46.5
7422.30	H	-	-	-68.48	10.97	-57.51	-44.5
8247.00	H	-	-	-66.70	11.24	-55.46	-42.5

**Table 7-12. Radiated Spurious Data (Cellular CDMA Mode – Ch. 1013)**

OPERATING FREQUENCY: 836.52 MHz  
 CHANNEL: 384  
 MODULATION SIGNAL: CDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.04	H	217	317	-73.81	8.85	-64.96	-52.0
2509.56	H	389	308	-65.97	9.78	-56.20	-43.2
3346.08	H	-	-	-73.47	9.66	-63.80	-50.8
4182.60	H	-	-	-73.71	10.38	-63.34	-50.3
5019.12	H	-	-	-72.01	10.90	-61.11	-48.1
5855.64	H	-	-	-71.13	11.56	-59.57	-46.6
6692.16	H	-	-	-70.96	11.72	-59.24	-46.2
7528.68	H	-	-	-67.87	11.12	-56.74	-43.7
8365.20	H	-	-	-65.80	11.15	-54.65	-41.6



**Table 7-13. Radiated Spurious Data (Cellular CDMA Mode – Ch. 384)**

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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OPERATING FREQUENCY: 848.31 MHz  
 CHANNEL: 777  
 MODULATION SIGNAL: CDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1696.62	H	143	72	-76.51	8.85	-67.66	-54.7
2544.93	H	112	305	-66.06	9.75	-56.31	-43.3
3393.24	H	-	-	-73.98	9.82	-64.16	-51.2
4241.55	H	-	-	-73.52	10.55	-62.97	-50.0
5089.86	H	-	-	-71.27	10.78	-60.49	-47.5
5938.17	H	-	-	-71.71	11.48	-60.23	-47.2
6786.48	H	-	-	-70.41	11.62	-58.79	-45.8
7634.79	H	-	-	-66.92	11.33	-55.59	-42.6
8483.10	H	-	-	-66.04	11.06	-54.97	-42.0

Table 7-14. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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## Cellular WCDMA Mode

OPERATING FREQUENCY: 826.40 MHz  
 CHANNEL: 4132  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1652.80	H	352	368	-77.04	8.99	-68.05	-55.0
2479.20	H	144	48	-64.01	9.12	-54.89	-41.9
3305.60	H	-	-	-73.62	9.37	-64.25	-51.3
4132.00	H	-	-	-71.59	9.89	-61.71	-48.7
4958.40	H	-	-	-73.07	11.24	-61.83	-48.8

**Table 7-15. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4132)**

OPERATING FREQUENCY: 836.60 MHz  
 CHANNEL: 4183  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	H	260	174	-77.00	8.85	-68.15	-55.2
2509.80	H	130	40	-65.69	9.17	-56.53	-43.5
3346.40	H	-	-	-74.36	9.36	-65.00	-52.0
4183.00	H	-	-	-72.09	10.19	-61.90	-48.9
5019.60	H	-	-	-72.76	11.09	-61.67	-48.7

**Table 7-16. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4183)**



FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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OPERATING FREQUENCY: 846.60 MHz  
 CHANNEL: 4233  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.20	H	255	196	-71.50	8.70	-62.80	-49.8
2539.80	H	135	43	-59.80	9.26	-50.54	-37.5
3386.40	H	-	-	-72.81	9.44	-63.37	-50.4
4233.00	H	-	-	-72.61	10.43	-62.17	-49.2
5079.60	H	-	-	-72.31	10.90	-61.41	-48.4

**Table 7-17. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4233)**

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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## AWS WCDMA Mode

OPERATING FREQUENCY: 1712.40 MHz  
 CHANNEL: 1312  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3424.80	H	116	131	-59.83	9.52	-50.31	-37.3
5137.20	H	-	-	-68.42	10.81	-57.61	-44.6
6849.60	H	-	-	-63.51	10.84	-52.67	-39.7
8562.00	H	-	-	-63.68	11.66	-52.02	-39.0

**Table 7-18. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1312)**

OPERATING FREQUENCY: 1732.60 MHz  
 CHANNEL: 1413  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3465.20	H	104	135	-53.81	9.59	-44.22	-31.2
5197.80	H	-	-	-68.63	10.83	-57.79	-44.8
6930.40	H	-	-	-63.72	10.90	-52.82	-39.8
8663.00	H	-	-	-63.72	11.76	-51.96	-39.0



**Table 7-19. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1413)**

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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OPERATING FREQUENCY: 1752.60 MHz  
 CHANNEL: 1513  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3505.20	H	104	129	-61.94	9.67	-52.27	-39.3
5257.80	H	-	-	-68.74	10.97	-57.78	-44.8
7010.40	H	-	-	-64.34	11.00	-53.34	-40.3
8763.00	H	-	-	-63.63	11.89	-51.74	-38.7

Table 7-20. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1513)

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
Test Report S/N: 1M1712050312-02-R1.ZNF	Test Dates: 11/20 - 12/18/2017	EUT Type: Portable Handset			Page 27 of 34

## PCS GPRS Mode

OPERATING FREQUENCY: 1850.20 MHz  
 CHANNEL: 512  
 MODULATION SIGNAL: GPRS (GMSK)  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3700.40	H	117	9	-63.71	9.74	-53.97	-41.0
5550.60	H	178	346	-66.69	10.97	-55.71	-42.7
7400.80	H	146	303	-63.31	10.77	-52.54	-39.5
9251.00	H	149	166	-63.10	12.28	-50.82	-37.8
11101.20	H	121	356	-61.48	12.94	-48.54	-35.5
12951.40	H	-	-	-62.14	12.69	-49.45	-36.5
14801.60	H	201	359	-53.97	10.38	-43.59	-30.6
16651.80	H	103	225	-63.58	16.12	-47.46	-34.5

**Table 7-21. Radiated Spurious Data (PCS GPRS Mode – Ch. 512)**

OPERATING FREQUENCY: 1880.00 MHz  
 CHANNEL: 661  
 MODULATION SIGNAL: GPRS (GMSK)  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	H	115	30	-63.97	9.50	-54.47	-41.5
5640.00	H	383	152	-67.02	11.16	-55.86	-42.9
7520.00	H	146	11	-63.71	11.03	-52.68	-39.7
9400.00	H	135	2	-64.18	12.19	-51.99	-39.0
11280.00	H	137	210	-63.88	13.15	-50.73	-37.7
13160.00	H	188	335	-62.06	12.88	-49.18	-36.2
15040.00	H	175	70	-55.23	11.73	-43.50	-30.5
16920.00	H	114	263	-63.19	15.35	-47.84	-34.8



**Table 7-22. Radiated Spurious Data (PCS GPRS Mode – Ch. 661)**

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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OPERATING FREQUENCY: 1909.80 MHz  
 CHANNEL: 810  
 MODULATION SIGNAL: GPRS (GMSK)  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3819.60	H	188	25	-64.03	9.29	-54.73	-41.7
5729.40	H	137	200	-62.80	11.34	-51.46	-38.5
7639.20	H	128	172	-60.53	11.28	-49.25	-36.2
9549.00	H	114	239	-62.94	12.24	-50.71	-37.7
11458.80	H	-	-	-64.58	13.26	-51.32	-38.3
13368.60	H	-	-	-61.92	12.80	-49.12	-36.1
15278.40	H	160	360	-58.80	13.12	-45.69	-32.7
17188.20	H	195	85	-59.70	13.54	-46.16	-33.2

Table 7-23. Radiated Spurious Data (PCS GPRS Mode – Ch. 810)

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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### PCS CDMA Mode

OPERATING FREQUENCY: 1851.25 MHz  
 CHANNEL: 25  
 MODULATION SIGNAL: CDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3702.50	H	369	55	-64.58	9.52	-55.06	-42.1
5553.75	H	315	304	-68.52	11.02	-57.50	-44.5
7405.00	H	-	-	-68.48	10.95	-57.53	-44.5
9256.25	H	-	-	-67.05	11.52	-55.53	-42.5
11107.50	H	-	-	-67.64	12.81	-54.83	-41.8
12958.75	H	-	-	-65.04	13.37	-51.67	-38.7
14810.00	H	-	-	-60.97	12.36	-48.61	-35.6
16661.25	H	-	-	-65.64	15.27	-50.37	-37.4

**Table 7-24. Radiated Spurious Data (PCS CDMA Mode – Ch. 25)**

OPERATING FREQUENCY: 1880.00 MHz  
 CHANNEL: 600  
 MODULATION SIGNAL: CDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	H	123	130	-58.72	9.39	-49.33	-36.3
5640.00	H	339	122	-67.05	11.22	-55.83	-42.8
7520.00	H	-	-	-67.70	11.10	-56.60	-43.6
9400.00	H	-	-	-66.48	11.54	-54.94	-41.9
11280.00	H	-	-	-65.75	12.76	-52.98	-40.0
13160.00	H	-	-	-66.47	13.05	-53.41	-40.4
15040.00	H	-	-	-64.52	13.61	-50.91	-37.9
16920.00	H	-	-	-64.03	14.24	-49.79	-36.8



**Table 7-25. Radiated Spurious Data (PCS CDMA Mode – Ch. 600)**

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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OPERATING FREQUENCY: 1908.75 MHz  
 CHANNEL: 1175  
 MODULATION SIGNAL: CDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3817.50	H	132	133	-64.26	9.32	-54.94	-41.9
5726.25	H	344	107	-69.56	11.36	-58.20	-45.2
7635.00	H	-	-	-67.00	11.33	-55.67	-42.7
9543.75	H	-	-	-66.62	11.76	-54.86	-41.9
11452.50	H	-	-	-64.55	12.69	-51.86	-38.9
13361.25	H	-	-	-63.95	12.65	-51.30	-38.3
15270.00	H	-	-	-66.62	14.84	-51.78	-38.8
17178.75	H	-	-	-61.30	13.15	-48.15	-35.1

Table 7-26. Radiated Spurious Data (PCS CDMA Mode – Ch. 1175)

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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### PCS WCDMA Mode

OPERATING FREQUENCY: 1852.40 MHz  
 CHANNEL: 9262  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3704.80	H	109	35	-65.51	9.52	-55.99	-43.0
5557.20	H	-	-	-70.97	11.03	-59.94	-46.9
7409.60	H	-	-	-68.50	10.95	-57.54	-44.5
9262.00	H	-	-	-67.28	11.53	-55.75	-42.8
11114.40	H	-	-	-66.66	12.80	-53.86	-40.9
12966.80	H	-	-	-65.30	13.36	-51.94	-38.9
14819.20	H	-	-	-60.62	12.41	-48.22	-35.2
16671.60	H	-	-	-65.72	15.23	-50.49	-37.5

**Table 7-27. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9262)**

OPERATING FREQUENCY: 1880.00 MHz  
 CHANNEL: 9400  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	H	111	38	-61.19	9.39	-51.80	-38.8
5640.00	H	-	-	-72.31	11.22	-61.09	-48.1
7520.00	H	-	-	-67.80	11.10	-56.70	-43.7
9400.00	H	-	-	-66.56	11.54	-55.02	-42.0
11280.00	H	-	-	-65.55	12.76	-52.78	-39.8

**Table 7-28. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9400)**

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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OPERATING FREQUENCY: 1907.60 MHz  
 CHANNEL: 9538  
 MODULATION SIGNAL: WCDMA  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.20	H	109	41	-63.20	9.32	-53.88	-40.9
5722.80	H	-	-	-71.49	11.35	-60.14	-47.1
7630.40	H	-	-	-67.24	11.32	-55.92	-42.9
9538.00	H	-	-	-66.62	11.75	-54.87	-41.9

Table 7-29. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9538)

FCC ID: ZNFL413DL		MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Approved by: Quality Manager
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## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LGE Portable Handset FCC ID: ZNFL413DL** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules.

<b>FCC ID:</b> ZNFL413DL		<b>MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1712050312-02-R1.ZNF	<b>Test Dates:</b> 11/20 - 12/18/2017	<b>EUT Type:</b> Portable Handset	Page 34 of 34	