

PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT GSM / GPRS / EDGE / CDMA / WCDMA

Applicant Name:

LG Electronics USA, Inc. 1000 Sylvan Avenue Englewood Cliffs, NJ 07632 United States Date of Testing: 12/11/2018 - 1/23/2019 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1812060222-02-R1.ZNF

FCC ID:

ZNFQ850QM

APPLICANT:

LG Electronics USA, Inc.

Application Type: Model: Additional Model(s):

EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification LM-Q850QM LMQ850QM, Q850QM, LM-Q850QM5, LMQ850QM5, Q850QM5, LMQ850QM6, LMQ850QM6, Q850QM6 Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

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 revised Test Report (S/N: 1M1812060222-02-R1.ZNF) supersedes and replaces the previously issued test report (S/N: 1M1812060222-02.ZNF) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it 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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			Ef	RP	EI	RP	
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator
GPRS850	22H	824.2 - 848.8	0.635	28.03	1.042	30.18	242KGXW
EDGE850	22H	824.2 - 848.8	0.230	23.62	0.378	25.77	244KG7W
CDMA850	22H	824.70 - 848.31	0.123	20.89	0.202	23.04	1M27F9W
WCDMA850	22H	826.4 - 846.6	0.130	21.12	0.212	23.27	4M15F9W
WCDMA1700	27	1712.4 - 1752.6			0.197	22.95	4M16F9W
GPRS1900	24E	1850.2 - 1909.8			0.416	26.19	242KGXW
EDGE1900	24E	1850.2 - 1909.8			0.101	20.04	243KG7W
CDMA1900	24E	1851.25 - 1908.75			0.217	23.36	1M28F9W
WCDMA1900	24E	1852.4 - 1907.6			0.139	21.43	4M16F9W

EUT Overview

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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 (2451B) 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 **LG Portable Handset FCC ID: ZNFQ850QM**. 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.: 00372, 00380, 00406

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA (BC0, BC1, BC10), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n/ac WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions 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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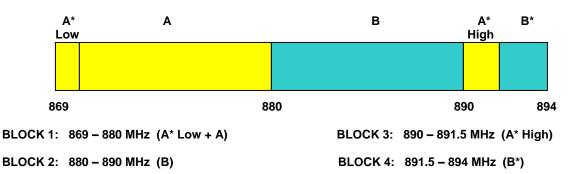
3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

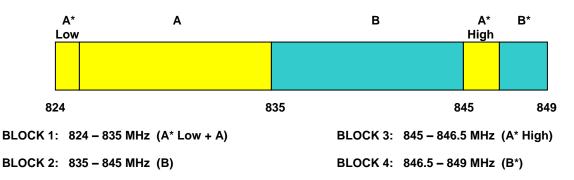
The measurement procedures described in the "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

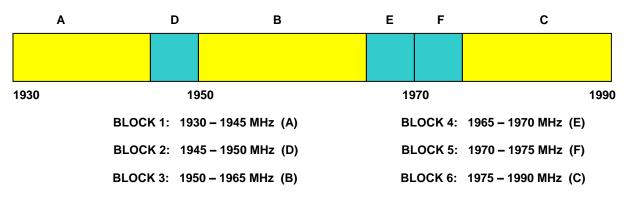
3.2 Cellular - Base Frequency Blocks



3.3 Cellular - Mobile Frequency Blocks



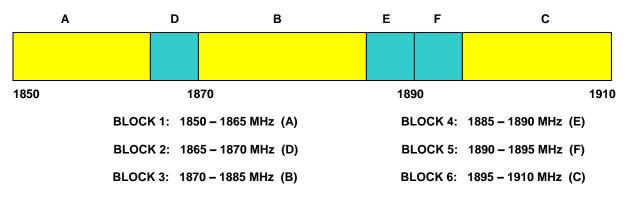
3.4 PCS - Base Frequency Blocks



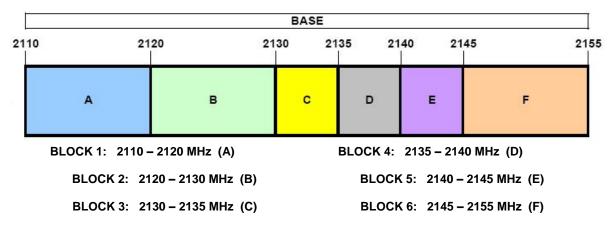
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3.5 PCS - Mobile Frequency Blocks







3.7 AWS - Mobile Frequency Blocks

			MOBILE				
710	17	20 1'	730 17 	735 17	40 17	745 	1755
	A	в	с	D	E	F	
	BLOCK 1: 1710 – 1720 MHz (A)			BLOCK	4: 1735 –	1740 MHz (D)	
	BLOCK 2: 1720 – 1730 MHz (B) BLOCK 5: 1740 – 1745 MH			1745 MHz (E)			
	BLOCK 3: 17	30 – 1735 MHz (C)		BLOCK	6: 1745 –	1755 MHz (F)	

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3.8 Radiated Measurements

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:

$$P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi]$$

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 $P_{g [dBm]}$ – cable loss [dB].

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

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 (±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
-	LTx3	LIcensed Transmitter Cable Set	8/23/2018	Annual	8/23/2019	LTx3
Agilent	N9030A	PXA Signal Analyzer (44GHz)	5/25/2018	Annual	5/25/2019	MY52350166
Anritsu	MT8820C	Radio Communication Analyzer	1/30/2018	Annual	1/30/2019	6201300731
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/9/2018	Biennial	8/9/2020	135427
Espec	ESX-2CA	Environmental Chamber	3/28/2018	Annual	3/28/2019	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
Huber + Suhner	Sucoflex 102A	40GHz Radiated Cable Set	1/23/2018	Annual	1/23/2019	251425001
Mini Circuits	TVA-11-422	RF Power Amp		N/A		QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11208010032
Rohde & Schwarz	TC-TA18	Vivaldi Antenna	8/17/2018	Biennial	8/17/2020	101072
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	1/24/2018	Annual	1/24/2019	100040
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	5/21/2018	Annual	5/21/2019	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
Rohde & Schwarz	CMW500	Radio Communication Tester	11/14/2018	Annual	11/14/2019	100976
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107

Table 5-1. Test Equipment

Notes:

- 1. 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.
- 2. 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

GPRS Emission Designator

Emission Designator = 250KGXW

GPRS BW = 250 kHz G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 250KG7W

EDGE BW = 250 kHz G = Phase Modulation 7 = Quantized/Digital Info W = Combination (Audio/Data)

CDMA Emission Designator

Emission Designator = 1M25F9W

CDMA BW = 1.25 MHz F = Frequency Modulation 9 = Composite Digital Info W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M16F9W

WCDMA BW = 4.16 MHz F = Frequency Modulation 9 = Composite Digital Info W = Combination (Audio/Data)

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 USA, Inc.
FCC ID:	ZNFQ850QM
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>GSM / GPRS / EDGE / CDMA / WCDMA</u>

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	RSS-Gen (4.6.1) RSS-133(2.3) RSS-139(2.3)	Occupied Bandwidth	N/A		PASS	Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(h)	RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Conducted Band Edge / Spurious Emissions	> 43 + log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Sections 7.3, 7.4
24.232(d)	RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.5
2.1046	RSS-132(5.4) RSS-133(4.1) RSS-139(4.1)	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report
2.1055 22.355 24.235 27.54	RSS-132(5.3) RSS-133(6.3) RSS-139(6.4)	Frequency Stability	< 2.5 ppm (Part 22) Emission must remain in band (Part 24, 27)		PASS	Section 7.8
22.913(a)(5)	RSS-132(5.4)	Effective Radiated Power	< 7 Watts max. ERP		PASS	Section 7.6
24.232(c)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power	< 1 Watts max. EIRP	RADIATED	PASS	Section 7.6
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			PASS	Section 7.7

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.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "2G/3G Automation," Version 3.9.

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7.2 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
 - 1-5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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



Figure 7-1. Test Instrument & Measurement Setup

<u>Test Note</u>s

None.

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um Analyzer - Oc	cupied BW										- 6
RF 50 Ω	DC	CORREC				0000 MHz				Trac	e/Detector
	NFE			Trig: Fre	e Run		d: 100/100		DTC		
		#IFGain:	Low	#Atten: «	54 dB			Radio Dev	ICE: BIS		
Ref 35.0	0 dBm				_		1				
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											Averag
											Max Hol
6 MHz								Snar	625 kHz		
2 kHz				#VI	3W 18 k	Hz					Min Ho
od Bond	buidt				Total F	Power	31	8.2 dBm			
eu Banu			-		Total I						
	24	+2.1	/ KF	1Z							Detect Peal
t Freq Er	ror	1	.051 k	Hz	% of O	BW Pow	er	99.00 %		Auto	M
ndwidth		3	08.4 k	Hz	x dB		-2	6.00 dB			
i a matri			oon n		A G						
							et/	ATUS			
	Ref 35.0	Ref 35.00 dBm Ref 35.00 dBm	Ref 35.00 dBm	Ref       35.00       dBm         Ref       35.00       dBm	Ref 35.00 dBm     Center F       Ref 35.00 dBm     Center F       #FGain:Low     #Atten: 3       Ref 35.00 dBm     Center F       #KHz     #VI       State     #VI       Center F     To State       Center F     To State       Center F     To State       Center F     To State	RF       50 Ω DC       CORREC       SENSE:INT         NFE       Image: Conter Freq: 838.60       Trig: Free Run         #IFGain:Low       #IFGain:Low       Trig: Free Run         Ref 35.00 dBm       Image: Conter Freq: 836.60         MFE       #IFGain:Low       #Atten: 34 dB         Ref 35.00 dBm       Image: Conter Freq: 836.60         MHZ       #WBW 18 k         MHZ       #VBW 18 k         Conter Freq: 82.17 kHz       % of O         t Freq Error       1.051 kHz       % of O	RF       50 Ω DC       CORREC       SENSE:INT         NFE       Frequencies       Center Freq: 836.600000 MHz         Trig: Freq Run       Avg Hold         #IFGein:Low       #Atten: 34 dB         Ref 35.00 dBm	RF     50 Ω     DC     CORREC     SENSE:INT       NFE     #FGain:Low     Center Freq: 836.600000 MHz     Avg Hold: 100/100       #Ref 35.00 dBm     #Gain:Low     #Atten: 34 dB     Avg Hold: 100/100       Ref 35.00 dBm     #Gain:Low     #Gain:Low     #Atten: 34 dB       Ref 35.00 dBm     #Gain:Low     #Gain:Low     #Gain:Low       #Gain:Low     #Gain:Low     #Gain:Low     #Gain:Low       #Gain:Low     #VBW 18 kHz     #Gain:Low     #Gain:Low       #Gain:Low     #VBW 18 kHz     #Gain:Low     #Gain:Low       #Gain:Low     #VBW 18 kHz     #Gain:Low     #Gain:Low       #Gain:Low     #Gain:Low     #Gain:Low     #Gain:Low       #Chi:Low	RF     50 Ω     DC     CORREC     SENSE:INT     04:54:12 P       NFE     #IFGain:Low     Center Freq: 836.600000 MHz     Radio Std: Radio Dev       Ref 35.00 dBm     #IFGain:Low     #Atten: 34 dB     Avg Hold: 100/100       6 MHz     #VBW 18 kHz     Sparse       8 kHz     #VBW 18 kHz     Sparse       9 cd Bandwidth     Total Power     38.2 dBm       242.17 kHz     % of OBW Power     99.00 %       adwidth     308.4 kHz     x dB     -26.00 dB	RF     50.0     DC     CORREC     SENSE:INT     04:54:17 PMDec 24,2018       NFE     #FGain:Low     Center Freq: 836.600000 MHz     Avg Hold: 100/100     Radio Std: None       Ref 35.00 dBm     #Gain:Low     #Atten: 34 dB     Avg Hold: 100/100     Radio Std: None       Ref 35.00 dBm	RF       50 Ω DC       CORREC       SENSE:INT       04:54:17 PMDec 24,2018       Radio Std: None         NFE       #FGain:Low       Trig: Free Run       Avg Hold: 100/100       Radio Device: BTS         Ref 35.00 dBm

Plot 7-1. Occupied Bandwidth Plot (Cellular GPRS Mode)



Plot 7-2. Occupied Bandwidth Plot (EDGE850 Mode)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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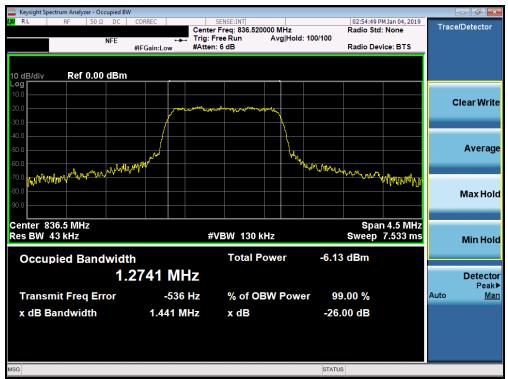
Plot 7-3. Occupied Bandwidth Plot (PCS GPRS Mode)



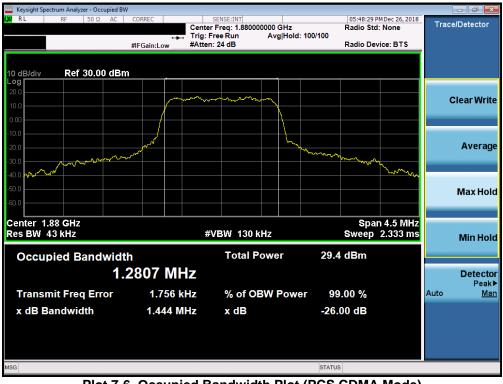
Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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Plot 7-5. Occupied Bandwidth Plot (Cellular CDMA Mode)



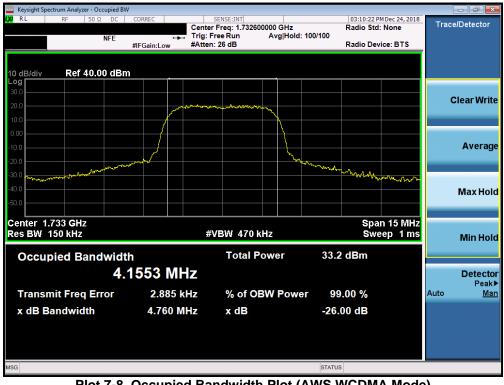
Plot 7-6. Occupied Bandwidth Plot (PCS CDMA Mode)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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Plot 7-7. Occupied Bandwidth Plot (Cellular WCDMA Mode)



Plot 7-8. Occupied Bandwidth Plot (AWS WCDMA Mode)

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Keysight Spectrum Analyzer - Occupied B				
XIRL RF 50Ω DC	CORREC	SENSE:INT nter Freq: 1.880000000 GHz	02:54:20 PM Dec 24, 2018 Radio Std: None	Trace/Detector
NFE		g: Free Run Avg Hold: 100/10 tten: 26 dB	0 Radio Device: BTS	
10 dB/div Ref 35.00 dBr	n			
25.0				
15.0		Marked James Mark Marked Ma		Clear Write
5.00				
-5.00	/			
-15.0	mm			Average
-25.0			Warman management	
-35.0			" moralinespron	
-45.0				Max Hold
-35.0				
Center 1.88 GHz Res BW 150 kHz		#VBW 470 kHz	Span 15 MHz	
			Sweep 1 ms	Min Hole
Occupied Bandwidt	th	Total Power 3	33.3 dBm	
4.	1646 MHz			Detecto
Transmit Freq Error	7.039 kHz	% of OBW Power	99.00 %	Auto Mai
x dB Bandwidth	4.774 MHz		26.00 dB	
	4.114 10112		20.00 00	
SG		sī	TATUS	

Plot 7-9. Occupied Bandwidth Plot (PCS WCDMA Mode)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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## 7.3 Spurious and Harmonic Emissions at Antenna Terminal

#### **Test Overview**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

# The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{[Watts]})$ , where P is the transmitter power in Watts.

#### **Test Procedure Used**

KDB 971168 D01 v03r01 - Section 6.0

#### Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to 10GHz for Cell, 20GHz for AWS, 20GHz for PCS (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

#### Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

#### **Test Notes**

Per 24.238(b), 27.53(h)(3), and RSS-133(6.5), RSS-139(6.5), compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1MHz, and 100 kHz or greater for Part 22 and RSS-132 measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

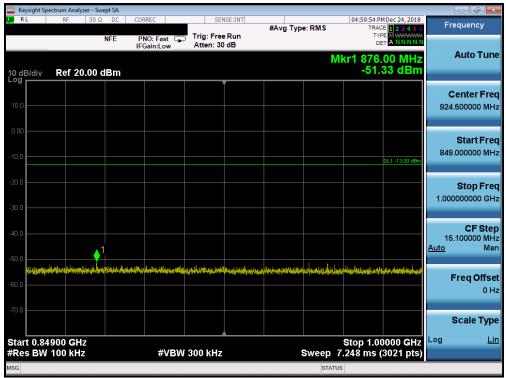
FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 10 of 104
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## Cellular GPRS Mode

🔤 Keysight Sp	ectrum Analyze	r - Swept SA									
LXI RL	RF	50 Ω DC NFE	PNO: Fast			#Avg Type	e: RMS	TRAC	MDec 24, 2018 E 1 2 3 4 5 6 E M WWWWW A N N N N N	Fre	quency
10 dB/div	Ref 20.0	00 dBm	IFGain:Low	Atten: 30	db		M	kr1 822.	90 MHz 55 dBm		Auto Tune
10.0											<b>enter Freq</b> 500000 MHz
-10.0									DL1 -13.00 dBm		Start Freq 000000 MHz
-20.0									1,		Stop Freq 000000 MHz
-40.0										79. <u>Auto</u>	CF Step 300000 MHz Mar
ويقراعو	anna an tarahan markar makanna hiji	intellinen) et l <mark>egestigenen gege</mark> sense teges en en televisierten gege	nag tip <mark>d</mark> en Ababan (basa) atau a tin katan dali a dasa	ti yili yila yila bila da kara da ya a sa kara ta ya sa kara t	A July of A July and A Start (1994) Ann an Start (1994) Ann an Start (1994)	Alay (by ) Art Free Cleptan - I yw y Starte Ry Mareth y	naterpatanda pita naterpatanta anta	land alabedaa taalaysin alabedaa	i Manghay ang Apipaté Pangana ding Apina ang	F	r <b>eq Offset</b> 0 Hz
-70.0										S	Scale Type
Start 30.0 #Res BW			#VBW	300 kHz		s	weep 38	Stop 8 .06 ms (1	23.0 MHz 5861 pts)	LUg	
MSG							STATUS				

Plot 7-10. Conducted Spurious Plot (Cellular GPRS Mode - Low Channel)

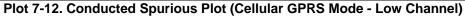


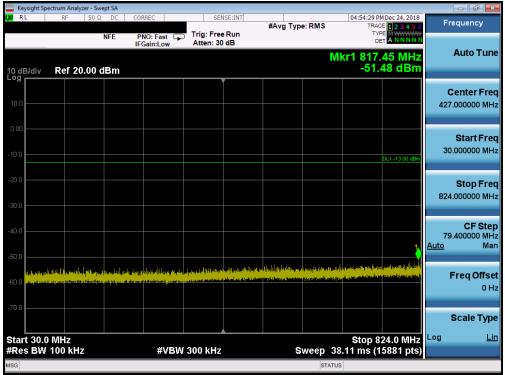
#### Plot 7-11. Conducted Spurious Plot (Cellular GPRS Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 101
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	rum Analyzer - Swej	ot SA									- 6 ×
LXVI RL	RF 50 Ω	DC COI	RREC		SE:INT	#Avg Typ	e: RMS	TRAC	M Dec 24, 2018 DE <b>1 2 3 4 5 6</b>	Free	quency
	١		NO: Fast 🖵 Gain:Low	Trig: Free #Atten: 36				TY			
10 dB/div	Ref 20.00 d	Bm					Mk	(r1 3.80 -28.	3 0 GHz 01 dBm	A	luto Tune
10.0											enter Fred 100000 GHz
-10.0									DL1 -13.00 dBm		Start Fred
-20.0			1	a a ganga tangga tangga ta	والإردارية والمرابع	a sugar and the sugar and the	a pitor e la signa da si pitor e la si	, Magazina (	्रि ^{र्ग} काद्येक्रार्थस्त्रीलंगे ^{क्रा} ाक्र्		Stop Fred
-40.0	nieps and stand of plan of an and an and a stand of the s			Confectionities, with a south	n an an an Arthur an Arthur an Arthur an Ar		, saadii ka sadii ka		a differa a teo de casa di ^{feli} tere di	900.0 <u>Auto</u>	CF Stej 00000 MH Ma
-60.0										Fi	r <b>eq Offse</b> 0 H
-70.0										S	cale Type
Start 1.000 #Res BW 1			#VBW	/ 3.0 MHz		s	weep 15	Stop 10 .60 ms (1	.000 GHz 8001 pts)	Log	Lir
MSG							STATUS				





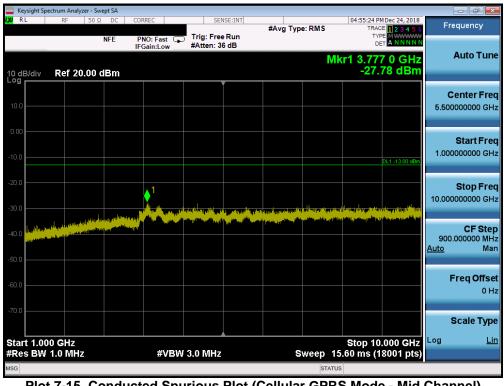
Plot 7-13. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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	oectrum Analyzer -	Swept SA								
XI RL	RF 5	0Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS		M Dec 24, 2018 DE <b>1 2 3 4 5 6</b>	Frequency
		NFE	PNO: Fast 🖵	Trig: Free Atten: 30				TYP		
			IFGain:Low	Atten: 30	ab					Auto Tun
10 dB/div	Ref 20.0	0 dBm					IV	lkr1 986. -52	10 dBm	
	Rel 20.0	o ubili		<u> </u>						
										Center Free
10.0										924.500000 MH
0.00										Start Free
-10.0										849.000000 MH
-10.0									DL1 -13.00 dBm	
-20.0										Oton Eng
										Stop Free 1.000000000 GH
-30.0										1.00000000 GH
										05.04
-40.0										CF Step 15.100000 MH
									▲1	<u>Auto</u> Mar
-50.0						والمارية والمراجعة			1 I	
-60.0	and the second second second	ha an	nig the heliophone in the		and a private state	ill Hainpin ikila		a the part of the		Freq Offse
-60.0										0 H
-70.0										
										Scale Type
										Log Lir
	4900 GHz 100 kHz		#\/B\A	/ 300 kHz			Sween	Stop 1.00 7.248 ms (	0000 GHz	Log <u>Lir</u>
ISG	TOO KI12			-500 KHZ			SWEEP		soz i pisj	
							STATU			

Plot 7-14. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)



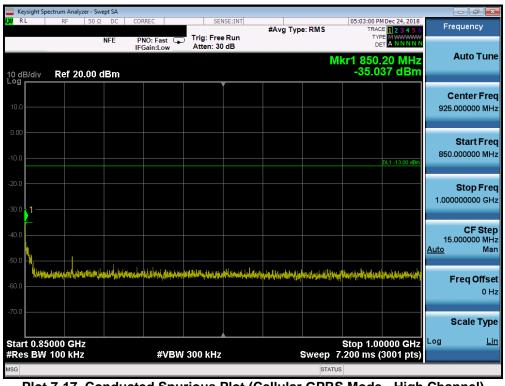
Plot 7-15. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 104	
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	pectrum Analy:										×
LXI RL	RF	50 Ω DC	CORREC	SE	NSE:INT	#Avg Typ	e RMS		M Dec 24, 2018 DE <b>1 2 3 4 5 6</b>	Frequency	
		NFE	PNO: Fast	Trig: Fre				TY			
			IFGain:Low	Atten: 30	) dB		_			Auto Tu	une
								Mkr1 704	.85 MHZ 62 dBm	Autori	anc
10 dB/div Log	Ref 20	.00 dBm						-40.	02 UBIII		
					Ĩ					Center F	rea
10.0										427.000000	
0.00											
										Start F	
-10.0									DL1 -13.00 dBm	30.000000	MHZ
-20.0										Stop F	req
										824.000000	MHz
-30.0											
-40.0										CF S	
-40.0								▲1		79.400000	
-50.0								<b>Y</b>		<u>Auto</u> I	Man
11.	in the state of the		name of the state	ling advisting and share	بلمر أتبلير لي مرتابة	والمانية والمار أورا	ki, sinashada lu	di a la la la partiti	hand and the state		
-60.0	and the state of the	a series and a series of the s	n an	and the state of the	and Linearches	d desired in the second	a participation of the local distribution of	Color and the standard sector is a sector of the sector	a pageo de la casa de l	Freq Off	
										L L	0 Hz
-70.0											
										Scale Ty	уре
Start 30.	0 MHz							Stop 9	24.0 MHz	Log	Lin
	/ 100 kHz		#VE	3W 300 kHz		S	weep	38.11 ms (1	5881 pts)		_
MSG							STAT				
											_

Plot 7-16. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)



Plot 7-17. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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	ectrum Analyze	er - Swept SA					
XI RL	RF	50 Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	05:04:00 PM Dec 24, 2018 TRACE 1 2 3 4 5 6 TYPE M WWWW DET A N N N N N	Frequency
10 dB/div	Ref 20.	.00 dBm	IFGain:Low	#Atten: 36 dB		Mkr1 3.812 0 GHz -27.24 dBm	Auto Tune
10.0							Center Free 5.500000000 GH
10.00						DL1 -13.00 dBm	<b>Start Fre</b> 1.000000000 GH
30.0				ili and and the construction of the second	and the first product of the f		Stop Fre 10.000000000 GH
40.0 <b>1900 1900</b>							CF Ste 900.000000 M⊢ <u>Auto</u> Ma
60.0							Freq Offse 0 ⊦
70.0	)0 GHz					Stop 10.000 GHz	Scale Typ
	1.0 MHz		#VBW	3.0 MHz	Sweep	15.60 ms (18001 pts)	
SG					ST/	TUS	

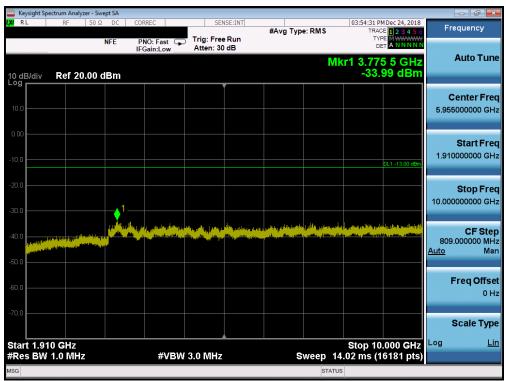
Plot 7-18. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
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G							STATUS				-
	300 GHz 1.0 MHz		#VB\	V 3.0 MHz			Sweep 2.	Stop 1.8 .420 m <u>s (</u> :			
										Log	Li
0.0										Scale	е Тур
											UF
50.0										Freq	Offs 0 H
50.0											
ومعاددته	فراد أنداجا والجاريب وساله	and the second second		وأجابة والدولية والتراجين		<u>بەردەستارى بېلىد.</u>	وأتبغان ويرابل بمليان			<u>Auto</u>	Ma
10.0									<b>↓</b> 1	CF 181,5000	= Ste
0.0											
										Stop 1.84500000	
0.0										8ter	n Er
0.0									DL1 -13.00 dBm	30.00000	JU MI
										Star	
3.00											
10.0										937.50000	00 MI
					ĺ					Cente	r Fre
0 dB/div	Ref 20.00	dBm						-40.6	00 dBm		
			FGam:Low	Atten: 00			Mk	r1 1.77	0 GHz	Auto	Tur
			PNO: Fast G	Trig: Free Atten: 30		#Avg typ	e. Rivis	TYP	E M WWWWW T A N N N N N		
	RF 50 9	DC C	ORREC	SEI	NSE:INT	#Avg Typ	o: DMS		Dec 24, 2018	Frequen	cv

Plot 7-19. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)



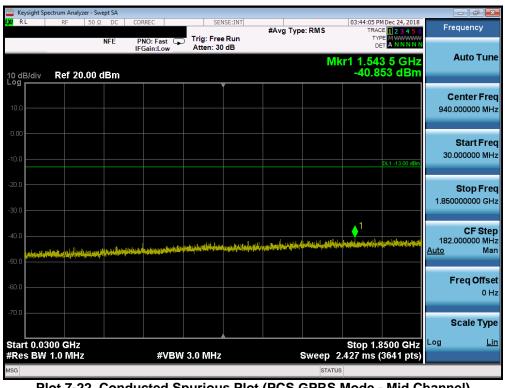
#### Plot 7-20. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 25 of 101
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	ectrum Analyzer -							
(XIRL	RF 50	Ω DC	CORREC	SENSE:	INT #Avg Ty	e: RMS	03:55:40 PM Dec 24, 2018 TRACE 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast IFGain:Low	Trig: Free Ru #Atten: 30 dl	in			
10 dB/div Log	Ref 20.00	) dBm				M	r1 19.150 5 GHz -29.68 dBm	Auto Tune
10.0								Center Freq 15.00000000 GHz
0.00								
-10.0							DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-20.0							1	<b>Stop Freq</b> 20.00000000 GHz
-30.0	Hendlich alfine kinderner	terity to one and the state	terre and a state that the state of the stat	A particular of the solution o	la fasta glata pri ta pri barratesi ja Kura para ja se fasta da partika sa ta	a an		CF Step
-40.0	iller, soller, soller, soller, sol							1.000000000 GHz <u>Auto</u> Man
-60.0								Freq Offset
-70.0								Scale Type
Start 10.0 #Res BW			#\(B\)(	3.0 MHz		woon	Stop 20.000 GHz 17.33 ms (20001 pts)	Log <u>Lin</u>
#RES DW			#VDVV	5.0 WHZ		sweep		

Plot 7-21. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)



Plot 7-22. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	t Spectrum Analyzer	- Swept SA									×
XVI RL	RF 5	50 Ω DC	PNO: Fast	Trig: Free		#Avg Type	e: RMS	TRAC	M Dec 24, 2018 DE <b>1 2 3 4 5</b> 6 PE M WWWWWW T A N N N N N	Frequency	
10 dB/div Log	v Ref 20.0	10 dBm	IFGain:Low	Atten: 30	dB		M	kr1 6.34	3 5 GHz 49 dBm	Auto Tu	JULE
10.0										Center Fr 5.955000000 G	
-10.0									DL1 -13.00 dBm	Start Fi 1.910000000 G	
-20.0					1					Stop Fi 10.000000000 G	
-40.0	and the second				Mary Constraints	and a state of the s State of the state of t			i ngga angga telahangan ngga angga telahangan ngga angga telahangan	CF St 809.000000 M Auto M	
60.0										Freq Off 0	ise ) H
-70.0										Scale Ty	ype Lir
	910 GHz W 1.0 MHz		#VBW	3.0 MHz		S	weep 14	Stop 10 1.02 ms <u>(</u> 1	.000 GHz 6181 pts)		
MSG							STATU	s			

Plot 7-23. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)



Plot 7-24. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 07 of 104
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	oectrum Analyzer -										×
L <mark>XI</mark> RL	RF 50	DΩ DC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	MDec 24, 2018	Frequency	y
		NFE	PNO: Fast IFGain:Low	Trig: Free Atten: 30				TYF			
			II Guilleon				M	kr1 1.81	8 0 GHz	Auto T	une
10 dB/div	Ref 20.00	0 dBm						-40.	68 dBm		
										Center F	Fred
10.0										940.000000	
0.00										Start F	Frea
-10.0										30.000000	
									DL1 -13.00 dBm		
-20.0										Stop F	Freq
										1.850000000	
-30.0									4		
-40.0								at the call of		CF S 182.000000	
Line and a line	and the state of the state	مولية المالية المجمعة الم	a in the second states of t		ng Lyndric Lync	all and a state of the state of					Man
-50.0		· · ·									
-60.0										Freq Of	
00.0											0 Hz
-70.0											
										Scale T	уре
Start 0.0								Stop 1.8	3500 GHz	Log	Lin
#Res BW	1.0 MHz		#VBW	3.0 MHz				2.427 ms (	3641 pts)		
MSG							STATU	S			

Plot 7-25. Conducted Spurious Plot (PCS GPRS Mode - High Channel)



Plot 7-26. Conducted Spurious Plot (PCS GPRS Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 29 of 104
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	pectrum Analyzer	- Swept SA							- 6 💌
KU RL	RF	50 Ω DC	CORREC PNO: Fast	SENS	Run	#Avg Type: RM	IS TRA	PM Dec 24, 2018 CE 1 2 3 4 5 6 PPE M WWWWW ET A N N N N N	Frequency
10 dB/div	Ref 20.0	00 dBm	IFGam:Low	#Atten: 00			Mkr1 19.88		Auto Tune
10.0									Center Fred 15.000000000 GH
.00								DL1 -13.00 dBm	<b>Start Fre</b> 10.000000000 GH
-20.0	lang s ^{ala} sun tang salarang Mang salarang salarang salarang		texture of the state of the state	a kiya sana kale ing baya kate	heaven all fragment and the	ر مالد و مالد من معالی مالد و رومالد و	eng gan baga ng kasalan dipaki pi		<b>Stop Fre</b> 20.000000000 GH
40.0									<b>CF Ste</b> 1.000000000 GH <u>Auto</u> Ma
60.0									<b>Freq Offse</b> 0 H
-70.0	000 GHz						Stop 20	).000 GHz	Scale Type
	1.0 MHz		#VBW	3.0 MHz		Swee	p 17.33 ms (2	20001 pts)	
ISG							STATUS		

Plot 7-27. Conducted Spurious Plot (PCS GPRS Mode - High Channel)

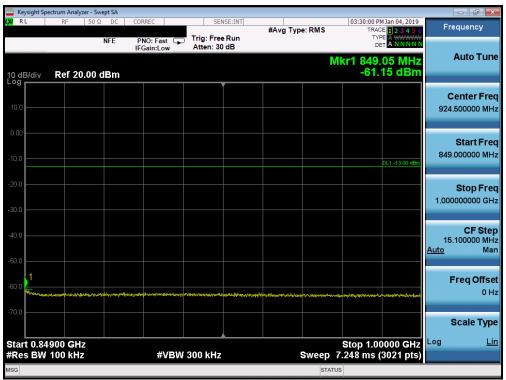
FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 104
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## Cellular CDMA Mode

	ectrum Analyzer - Swept SA					
L <mark>XI</mark> RL	RF 50 Ω DC	PNO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	03:29:47 PM Jan 04, 2019 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Frequency
10 dB/div	Ref 20.00 dBm	II Guill.LOW		Μ	kr1 822.95 MHz -33.40 dBm	Auto Tune
10.0						<b>Center Fred</b> 426.500000 MHz
-10.0					DL1 -13.00 dBm	Start Free 30.000000 MH;
-20.0					1 <u>,</u>	Stop Free 823.000000 MH
40.0						<b>CF Stej</b> 79.300000 MH <u>Auto</u> Ma
60.0	ng ginan Manini Manini a kanan		in the second second			<b>Freq Offse</b> 0 H
-70.0						Scale Type
Start 30.0 #Res BW		#VBW	300 kHz	Sweep 3	Stop 823.0 MHz 8.06 ms (15861 pts)	Log <u>Lir</u>
MSG				STATU	IS	

Plot 7-28. Conducted Spurious Plot (Cellular CDMA Mode - Low Channel)



Plot 7-29. Conducted Spurious Plot (Cellular CDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ectrum Analyz											
LXU RL	RF	50 Ω DC	CORREC		SEI	NSE:INT	#Avg Typ	e: RMS		3 PM Jan 04, 2019 RACE 1 2 3 4 5 6	Fre	equency
		NFE	PNO: IFGain	Fast 😱	Trig: Free Atten: 30							
10 dB/div Log	Ref 20	.00 dBm						Μ	lkr1 4.9 -4	50 5 GHz 2.79 dBm		Auto Tune
10.0												enter Freq 0000000 GHz
-10.0										DL1 -13.00 dBm	1.000	Start Freq 0000000 GHz
-20.0											10.000	Stop Freq
-40.0			~~	~	~~~~~	$\sim$			~~~	~~~~	900. <u>Auto</u>	CF Step 000000 MHz Man
-60.0											F	F <b>req Offset</b> 0 Hz
-70.0					,						tog	Scale Type Lin
Start 1.00 #Res BW				#VBW	3.0 MHz		s	weep 1	Stop ' 5.60 ms	10.000 GHz (18001 pts)		
MSG								STAT				

Plot 7-30. Conducted Spurious Plot (Cellular CDMA Mode - Low Channel)

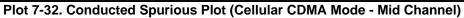


Plot 7-31. Conducted Spurious Plot (Cellular CDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 21 of 101	
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NFE         PNO: Fast IFGain:Low         Trig: Free Run Atten: 30 dB         #Avg Type: RMS         Trig: Trig: Free Run Atten: 30 dB           00         B/div         Ref 20.00 dBm         -62           00         -62         -62           00         -62         -62           00         -62         -62           00         -62         -62           00         -62         -62           00         -62         -62           00         -62         -62           00         -62         -62           00         -62         -62           00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62           -00         -62         -62		
Mkr1 899 -62 0 dB/div Ref 20.00 dBm -62 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d	PM Jan 04, 2019 ACE 1 2 3 4 5 6 YPE A WWWW DET A N N N N N	Frequency
	9.35 MHz .02 dBm	Auto Tun
		Center Fre 924.500000 MH
	DL1 -13.00 dBm	Start Fre 849.000000 MH
		<b>Stop Fre</b> 1.000000000 GH
	A	CF Ste 15.100000 Mł <u>luto</u> Mł
	The optimization of the state o	<b>Freq Offs</b> 0 F
		Scale Typ
tart 0.84900 GHz Stop 1.0 Res BW 100 kHz #VBW 300 kHz Sweep 7.248 ms	00000 GHz (3021 pts)	.og <u>L</u>





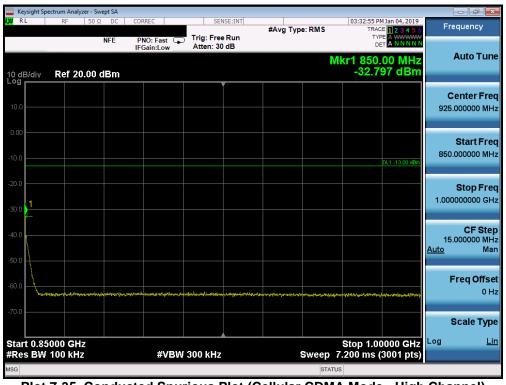
Plot 7-33. Conducted Spurious Plot (Cellular CDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 22 of 101	
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	ectrum Analy:	zer - Swept SA									_	
XI RL	RF	50 Ω DC	CORREC	ast 😱	Trig: Fre		#Avg Typ	e: RMS	TRAC	MJan 04, 2019 DE <b>1 2 3 4 5 6</b> PE A WWWWW T A N N N N N	Free	quency
			IFGain:		Atten: 30	dB		M	Di Ikr1 823.		4	Auto Tune
10 dB/div Log	Ref 20	.00 dBm							-61.2	92 dBm		
10.0												enter Freq
0.00												
-10.0										DL1 -13.00 dBm		Start Freq 000000 MHz
-20.0												Stop Freq
-30.0											024.0	CF Step
-40.0											79.4 <u>Auto</u>	000000 MHz Man
-60.0										1	Fi	req Offset
-70.0												0 Hz
												cale Type
Start 30.0 #Res BW		:		#VBW	300 kHz		s	weep 3		24.0 MHz 5881 pts)	Log	Lin
MSG								STATU	s			

Plot 7-34. Conducted Spurious Plot (Cellular CDMA Mode - High Channel)



Plot 7-35. Conducted Spurious Plot (Cellular CDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 22 of 101	
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	ctrum Analyze										×
LX/ RL	RF	50 Ω DC	CORREC	SE	NSE:INT	#Avg Typ	e: RMS		PM Jan 04, 2019 ACE 1 2 3 4 5 6	Frequency	,
		NFE	PNO: Fast IFGain:Low	Trig: Fre #Atten: 3				1	DET A WWWWW		
10 dB/div Log	Ref 20.	00 dBm					N	lkr1 4.9 -42	53 0 GHz 2.80 dBm	Auto T	une
10.0										Center F 5.500000000	
-10.0									DL1 -13.00 dBm	Start F 1.000000000	
-20.0										Stop F 10.000000000	
-40.0					~~~					CF S 900.000000	
-60.0										Freq Of	<b>fset</b> 0 Hz
-70.0										Scale T	
Start 1.00 #Res BW	0 GHz 1.0 MHz		#V	BW 3.0 MHz		s	weep	Stop 1 15.60 ms	0.000 GHz (18001 pts)	Log	Lin
MSG							STAT				

Plot 7-36. Conducted Spurious Plot (Cellular CDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 104
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	ectrum Analyzer - Swept S					- ē 론
<mark>(</mark> RL	RF 50 Ω A	PNO: Fast 😱	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	06:06:57 PM Dec 26, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
I0 dB/div	Ref 20.00 dBr	IFGain:Low	Atten: 30 dB	M	kr1 1.845 0 GHz -42.22 dBm	Auto Tun
10.0						Center Fre 937.500000 MH
10.00					DL1 -13.00 dBm	Start Fre 30.000000 M⊦
20.0						<b>Stop Fre</b> 1.845000000 GH
40.0				ale and a second se		CF Ste 181.500000 MH <u>Auto</u> Ma
60.0						Freq Offs 0 F
70.0						Scale Typ
Start 0.03 ≉Res BW	00 GHz 1.0 MHz	#VBW	3.0 MHz	Sweep 2	Stop 1.8450 GHz 2.420 ms (3631 pts)	Log <u>L</u>
SG				STATU	s	

Plot 7-37. Conducted Spurious Plot (PCS CDMA Mode - Low Channel)



#### Plot 7-38. Conducted Spurious Plot (PCS CDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 25 of 101
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🔤 Keysight Spectrum Analyzer - Swept SA												
(XI RL	RF	50 Ω AC	CORRE	C	SEN	ISE:INT	#Avg Typ	e: RMS		PM Dec 26, 2018 CE 1 2 3 4 5 6	Frequ	iency
			PNO: IFGai	:Fast ⊊ n:Low	Trig: Free Atten: 20		• •		T			
10 dB/div Log	Ref 10.	00 dBm						Mk	r1 17.01 -47	5 5 GHz .56 dBm	AL	ito Tune
0.00												<b>iter Freq</b> 0000 GHz
-10.0										DL1 -13.00 dBm		t <b>art Freq</b> 0000 GHz
-30.0								4				t <b>op Freq</b> 0000 GHz
-50.0					-	~~~					1.00000 <u>Auto</u>	<b>CF Step</b> 0000 GHz Man
-70.0											Fre	e <b>q Offset</b> 0 Hz
-80.0											Sc: Log	ale Type
Start 10.0 #Res BW				#VBW	3.0 MHz		s	weep 2	Stop 2 5.33 ms (	0.000 GHz 20001 pts)	LUg	Lin
MSG								STAT	JS			

Plot 7-39. Conducted Spurious Plot (PCS CDMA Mode - Low Channel)



Plot 7-40. Conducted Spurious Plot (PCS CDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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	ctrum Analyzer										-0	
LXI RL	RF	50Ω/		RREC		NSE:INT	#Avg Typ	e: RMS	TRA	PM Dec 26, 2018 CE 1 2 3 4 5 6 (PE A WWWW	Frequ	ency
				Gain:Low	Atten: 3			D/IL			Au	to Tune
10 dB/div Log	Ref 20.0	0 dB	m						-44	.89 dBm		
						Ĭ						ter Freq
10.0											5.955000	0000 GHz
0.00											St	art Freq
-10.0										DL1 -13.00 dBm	1.91000	0000 GHz
-20.0											St	op Freq
-30.0											10.00000	
-40.0 • 1												CF Step
		~~~									809.000 <u>Auto</u>	0000 MHz Man
-50.0												
-60.0											⊢re	q Offset 0 Hz
-70.0											0	de Tress
	A 911-								84		Log	ale Type Lin
Start 1.91 #Res BW				#VBV	V 3.0 MHz		s	weep 14	Stop 10 .02 ms (0.000 GHz 16181 pts)	209	
MSG								STATUS	6			

Plot 7-41. Conducted Spurious Plot (PCS CDMA Mode - Mid Channel)



Plot 7-42. Conducted Spurious Plot (PCS CDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 27 of 104	
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	ctrum Analyze												
LXI RL	RF	50 Ω /	AC C	ORREC			ENSE:INT	#Avg Typ	e: RMS	TRA	M Dec 26, 2018 CE 1 2 3 4 5 6	Free	quency
				PNO: Fast FGain:Lov	r v	Trig: Fre Atten: 3				T) E			
									Μ	kr1 1.78	9 0 GHz	4	Auto Tune
10 dB/div Log	Ref 20.	00 dB	m							-47	.20 dBm		
												Ce	enter Freq
10.0												940.0	00000 MHz
0.00													
0.00												;	Start Freq
-10.0											DL1 -13.00 dBm	30.0	00000 MHz
-20.0													Stop Freq
-30.0												1.8500	000000 GHz
30.0													
-40.0											1	182.0	CF Step
											,)	Auto	Man
-50.0	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.		an a				ing and a second se						
-60.0												F	req Offset
													0 Hz
-70.0													
												S	cale Type
Start 0.03											8500 GHz	Log	Lin
#Res BW	1.0 MHz			#\	/BW	3.0 MH;	2				(3641 pts)		
MSG									STATU	IS			

Plot 7-43. Conducted Spurious Plot (PCS CDMA Mode - High Channel)



Plot 7-44. Conducted Spurious Plot (PCS CDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 29 of 104
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10 dB/div Ref 1i 0.00	0.00 dBm	PNO: Fast IFGain:Low	SENSE:I	#Avg	y Type: RMS	тка т г 1 16.98	PMDec 26, 2018 VPE A 44 5 6 VPE A 45 7 VPE A 45 7 VP	Frequency Auto Tu Center Fi 15.00000000 G Start Fi 10.00000000 G
• • • • • • • • • • • • • • • • • • •	0.00 dBm	IFGain:Low	Atten: 20 dB		Mk	r1 16.98	89 0 GHz .68 dBm	Center Fr 15.00000000 G Start Fr 10.00000000 G
							DL1 -13.00 dBm	15.000000000 G Start Fr 10.000000000 G
20 0							DL1 -13.00 dBm	10.00000000 G
40.0 50.0								Stop Er
at a second s					1			20.000000000 G
								CF St 1.000000000 G <u>Auto</u> M
/0.0								Freq Off 0
80.0 Start 10.000 GHz						Stop 2	0.000 GHz	Scale Ty
Res BW 1.0 MH			3.0 MHz		Sweep 2	5.33 ms (20001 pts)	

Plot 7-45. Conducted Spurious Plot (PCS CDMA Mode - High Channel)

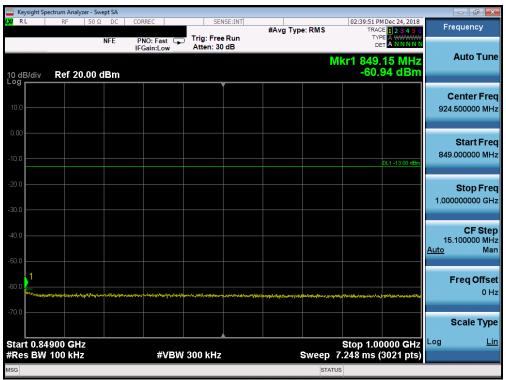
FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 104
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Cellular WCDMA Mode

	ctrum Analyzer - Swept SA					
XI RL	RF 50 Ω DC	PNO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	02:39:42 PM Dec 24, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Log	Ref 20.00 dBm		Anten oo ub	N	lkr1 822.55 MHz -31.47 dBm	Auto Tune
10.0						Center Free 426.500000 MH
-10.0					DL1 -13.00 dBm	Start Fre 30.000000 MH
-20.0					1	Stop Fre 823.000000 MH
-40.0						CF Ste 79.300000 MH <u>Auto</u> Ma
60.0		g par ben an state and the state of the best particles and the				Freq Offse 0 H
-70.0	МНа				Stop 823.0 MHz	Scale Typ
#Res BW		#VBW	300 kHz		8.06 ms (15861 pts)	
ISG				STATU	JS	

Plot 7-46. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)



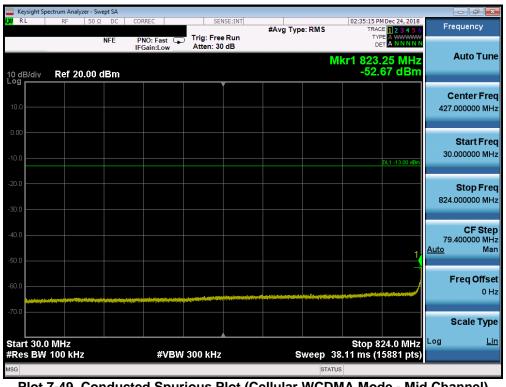
Plot 7-47. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 40 of 104
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@ 2010 DOTE OT Engineering Labore	ton loo		1/ 0.0.44/40/2040



🔤 Keysight Spectrum Analy						
LX/RL RF	50 Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	02:40:42 PM Dec 24, 2018 TRACE 1 2 3 4 5 6	Frequency
	NFE	PNO: Fast 😱 IFGain:Low	Trig: Free Run #Atten: 30 dB			
10 dB/div Ref 10	0.00 dBm			N	lkr1 3.798 5 GHz -42.81 dBm	Auto Tune
0.00						Center Freq 5.50000000 GHz
-10.0					DL1 -13.00 dBm	
-20.0						Start Freq 1.000000000 GHz
-30.0						Stop Freq
-40.0						10.00000000 GHz
-50.0 -60.0						CF Step 900.000000 MH: <u>Auto</u> Mar
70.0						Freq Offse 0 H
80.0						Scale Type
Start 1.000 GHz #Res BW 1.0 MH	z	#VBW	3.0 MHz	Sweep 7	Stop 10.000 GHz 15.60 ms (18001 pts)	Log <u>Lir</u>
MSG				STAT	US	

Plot 7-48. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)



Plot 7-49. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ctrum Analyzer -											
X/RL	RF 50	Ω DC	CORREC PNO: Fa	et 🕞 Tri	Ig: Free	SE:INT	#Avg Typ	e:RMS	TRAC	MDec 24, 2018 E 1 2 3 4 5 6 E A WWWWW A N N N N N	Frequ	uency
10 dB/div	Ref 20.00		IFGain:L	ow At	tten: 30	dB		N	lkr1 849.	,	A	uto Tune
10.0												nter Fred 0000 MH2
.10.0										DL1 -13.00 dBm		tart Fred 0000 MH:
-20.0												top Fre 10000 GH
40.0 50.0 <mark>1</mark> ——											15.10 <u>Auto</u>	CF Stej 0000 MH Ma
60.0 70.0	างการสารประการทำใจการสร้างการ	ladyter plataen meister	1141.esstatur-renau	al fair-al capture any section to be	niydrady, na yw by	مورد میکند. ایر و میکند ایر ایر میکند میکند میکند میکند.		han the state of the	togen Magdad Mastradaya	hanishikatinginanika	Fre	e q Offse 0 H
												ale Type
Start 0.84 #Res BW			#	VBW 300	0 kHz			Sweep	Stop 1.00 7.248 ms (0000 GHz 3021 pts)	Log	Lir
SG								STATU	IS			

Plot 7-50. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)



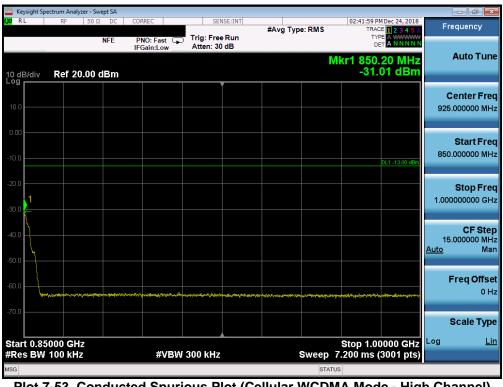
Plot 7-51. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 42 of 104
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	pectrum Analyze							- 6 -
X/RL	RF	50 Ω DC	CORREC	SENSE:II	#Avg Typ	e: RMS	02:41:51 PM Dec 24, 2018 TRACE 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast 🗔 IFGain:Low	Trig: Free Run Atten: 30 dB	n		DET A NNNNN	
						Μ	lkr1 823.15 MHz -61.22 dBm	Auto Tune
10 dB/div	Ref 20.0	00 dBm		T		1	-01.22 UBIII	
								Center Freq
10.0								427.000000 MHz
0.00								
								Start Freq
-10.0							DL1 -13.00 dBm	30.000000 MHz
-20.0								
-20.0								Stop Freq 824.000000 MHz
-30.0								824.000000 10112
								CF Step
-40.0								79.400000 MHz Auto Man
-50.0								Adto Mari
							1	Freq Offset
-60.0	والاستعادية والعراقية	indialate data in an In	an ann a' saoadh ann dan cabaan					0 Hz
-70.0	All addition of the second second	Callen Callender Hall	a (), 200, [de de Mais, 200 (and 2 d, 6 dalar	an a la se a la monte y bieller a findade la sella de la				
								Scale Type
Start 30.							Stop 824.0 MHz	Log <u>Lin</u>
#Res BW	/ 100 kHz		#VBW	/ 300 kHz	S	weep 3	8.11 ms (15881 pts)	
MSG						STATU	IS	





Plot 7-53. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Keysight Spec									
I <mark>XI</mark> RL	RF	50 Ω DC	CORREC PNO: Fast		e Run	#Avg Type: RMS	02:43:23 PM De TRACE TYPE	2 3 4 5 6	Frequency
10 dB/div Log	Ref 10.	00 dBm	IFGain:Lov	v [™] #Atten:	30 dB		Mkr1 3.796 (-42.80) GHz	Auto Tune
0.00									Center Fred 5.500000000 GH
20.0							DL1	-13.00 dBm	Start Free 1.000000000 GH
40.0			1						Stop Fre 10.000000000 GH
50.0									CF Ste 900.000000 MH <u>Auto</u> Ma
70.0									Freq Offse 0 H
Start 1.000			#\	'BW 3.0 MH;	,	Sween	Stop 10.00 15.60 ms (180		Scale Type
ISG	1.0 191112		<i>w</i> •	BW 5.0 MIL				or proj	

Plot 7-54. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 44 of 104
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AWS WCDMA Mode

	ctrum Analyzer - Swept SA					
<mark>0</mark> RL	RF 50Ω DC	PNO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	03:13:32 PM Dec 24, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Frequency
0 dB/div	Ref 20.00 dBm			MI	kr1 1.705 0 GHz -30.52 dBm	Auto Tur
10.0						Center Fre 867.500000 MH
10.0					DL1 -13.00 dBm	Start Fre 30.000000 MH
20.0					1,	Stop Fre 1.705000000 GH
0.0						CF Ste 167.500000 MI <u>Auto</u> Mi
60.0	*****	and a stand of the		<u>م من من الم الم من من الم من من الم من من</u>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Freq Offs 01
70.0	00 GHz				Stop 1.7050 GHz	Scale Typ
Res BW		#VBW	3.0 MHz	Sweep 2	Stop 1.7050 GHz 2.233 ms (3351 pts)	
SG				STATU	S	

Plot 7-55. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)



Plot 7-56. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ectrum Analyze							
X/RL	RF	50 Ω DC	CORREC	SENSE: Trig: Free Ru	#Avg	Type: RMS	03:15:44 PM Dec 24, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N	Frequency
		NFE	IFGain:Low	#Atten: 30 dl				
10 dB/div Log	Ref 10.	.00 dBm					r1 19.579 0 GHz -37.71 dBm	
				Ĭ				Center Fred
0.00								15.00000000 GHz
-10.0							DL1 -13.00 dBm	Start Fred
-20.0								10.00000000 GHz
-30.0								Stop Free
-40.0							↓	20.000000000 GHz
-40.0	~~~		**************************************			State of Sta		CF Step
-50.0								1.000000000 GH: Auto Mar
-60.0								
-70.0								Freq Offset
-80.0								
								Scale Type
Start 10.0 #Res BW			#VBW	3.0 MHz		Sweep	Stop 20.000 GHz 17.33 ms (20001 pts)	Log <u>Lir</u>
MSG						STAT		

Plot 7-57. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)



Plot 7-58. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 46 of 104	
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		zer - Swept SA										
LX/RL	RF	50 Ω DC	CORREC		SEI	NSE:INT	#Avg Typ	e: RMS		3 PM Dec 24, 2018 RACE 1 2 3 4 5 6	Frequ	ency
		NFE	PNO: F IFGain:	ast 🖵 Low	Trig: Free Atten: 30						_	
10 dB/div Log	Ref 20	.00 dBm						N	1kr1 3.7 -4	787 0 GHz 2.49 dBm	Au	to Tune
10.0												ter Freq 0000 GHz
-10.0										DL1 -13.00 dBm		art Freq 0000 GHz
-20.0											St 10.000000	op Freq 0000 GHz
-40.0			1		~~~	<u>^</u>						CF Step 0000 MHz Man
-60.0											Fre	q Offset 0 Hz
-70.0												ale Type
Start 1.75 #Res BW		4		#VBW	3.0 MHz		s	weep	Stop 14.29 ms	10.000 GHz (16491 pts)	Log	Lin
MSG								STAT	rus			

Plot 7-59. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)



Plot 7-60. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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G					TUS	
	300 GHz 1.0 MHz	#VI	BW 3.0 MHz	Sweep	Stop 1.8450 GHz 2.420 ms (3631 pts)	
					Oton 4 9450 Olla	Log L
						Scale Typ
0.0						
0.0						0
anal transferred	1447-14-14-14-14-14-14-14-14-14-14-14-14-14-	*****		and the second		Freq Offs
io.o						<u>Auto</u> M
0.0						181.500000 MI
						CF Ste
0.0						1.04000000 0
						Stop Fr 1.845000000 G
0.0						
0.0					DL1 -13.00 dBm	30.000000 M
						Start Fr
).00						
0.0						937.500000 M
						Center Fr
odB/div og ∎	Ref 20.00 dB	m			-38.39 dBm	
					/kr1 1.844 5 GHz	Auto Tu
	NF	E PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	1	DET A NNNN	
RL	RF 50 Ω	DC CORREC	SENSE:IN	#Avg Type: RMS	03:06:12 PM Dec 24, 2018 TRACE 1 2 3 4 5 6	Frequency
	ectrum Analyzer - Swept					

Plot 7-61. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)



Plot 7-62. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 49 of 104	
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	ectrum Analyz						
LXI RL	RF	50 Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	03:07:40 PM Dec 24, 2018 TRACE 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast 😱 IFGain:Low	Trig: Free Run #Atten: 30 dB	0 //		
10 dB/div Log	Ref 10	.00 dBm		_	М	kr1 19.564 0 GHz -38.22 dBm	Auto Tune
0.00							Center Freq 15.000000000 GHz
-10.0						DL1 -13.00 dBm	Start Freq 10.000000000 GHz
-30.0				m, ultimeter es Maltine state est attimation area and a		↓ 1	Stop Freq 20.000000000 GHz
-50.0							CF Step 1.000000000 GHz <u>Auto</u> Man
-70.0							Freq Offset 0 Hz
-80.0							Scale Type
Start 10.0 #Res BW			#VBW	3.0 MHz	Sweep	Stop 20.000 GHz 17.33 ms (20001 pts)	
MSG					STA	TUS	

Plot 7-63. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)



Plot 7-64. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ectrum Analyze										di 🗙
L <mark>XI</mark> RL	RF	50 Ω DC	CORREC		SE:INT	#Avg Typ	e: RMS	TRA	PM Dec 24, 2018 CE 1 2 3 4 5 6 (PE A WWWWW DET A NNNNN	Frequer	су
10 dB/div	Ref 20.	.00 dBm	IFGain:Low	Atten: 30			N	1kr1 3.79	1 5 GHz 59 dBm	Auto	Tune
10.0										Cente 5.9550000	
-10.0									DL1 -13.00 dBm	Star 1.9100000	t Freq 00 GHz
-20.0										Stoj 10.0000000	o Freq 00 GHz
-40.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~	<u> </u>				~~~	CI 809.0000 <u>Auto</u>	F Step 00 MHz Man
-60.0										Freq	Offset 0 Hz
Start 1.91	0 CH7							Stop 1	0.000 GHz		e Type Lin
#Res BW			#VBW	/ 3.0 MHz		S	weep	14.02 ms (16181 pts)		
MSG							STAT	rus			

Plot 7-65. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)



Plot 7-66. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ectrum Analyze								
LXI RL	RF	50 Ω DC	CORREC	SE	NSE:INT	#Avg Type: RM		32 PM Dec 24, 2018 TRACE 1 2 3 4 5 6	Frequency
		NFE	PNO: Fast IFGain:Low	Trig: Free Atten: 30					
			IFGain:Low	Atten. ot	u D		Mkr1 1 7		Auto Tune
10 dB/div	Ref 20.	00 dBm					-5	761 0 GHz i0.12 dBm	
					í l				Center Freq
10.0									940.000000 MHz
0.00									
									Start Freq 30.000000 MHz
-10.0								DL1 -13.00 dBm	30.000000 MH2
-20.0									
-20.0									Stop Freq
-30.0									1.850000000 GHz
-40.0									CF Step 182.00000 MHz
								1	<u>Auto</u> Man
-50.0					مەمبرىياد مالاردىولى م		a in an all and the state of th	uis strong and an and the	
-60.0	(1471)	Contraction of the local division of the loc							Freq Offset
-00.0									0 Hz
-70.0									
									Scale Type
Start 0.03							Stop	1.8500 GHz	Log <u>Lin</u>
#Res BW			#VE	W 3.0 MHz		Swe	ep 2.427 m	1.8500 GH2 is (3641 pts)	
MSG							STATUS		

Plot 7-67. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)



Plot 7-68. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 51 of 101	
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10 dB/div Ref 10 dB/div Ref -0 0 -10.0 -20.0 -30.0 -50.0	50 Ω DC NFE	CORREC	Trig: Free Run #Atten: 30 dB	#Avg Type: RMS	03:09:35 PM Dec 24, 20 S TRACE 12, 24 TYPE A WWW DET A NNNN Mkr1 19.550 5 GH -38.32 dB	Auto Tun Center Fre 15.00000000 GH
- 0 00 - 10 0 - 20 0 - 30 0 - 40 0	10.00 dBm				-38.32 dB	Center Fre 15.00000000 GH
- 0 00					0L1 -13.00 d	15.00000000 GH
20.0					DL1 -13.00 d	Start Fre
40.0						
50.0						Stop Fre 20.000000000 GH
60.0						CF Ste 1.00000000 GH <u>Auto</u> Ma
70.0						Freq Offs 0 H
80.0 Start 10.000 GF	Hz				Stop 20.000 GF	Scale Typ
Res BW 1.0 M	1Hz	#VBW	3.0 MHz		0 17.33 ms (20001 pt	ts)

Plot 7-69. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
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7.4 Band Edge Emissions at Antenna Terminal

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW \geq 1% of the emission bandwidth
- 4. VBW \geq 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

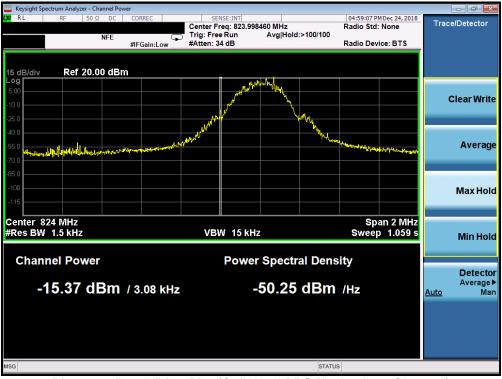
Test Notes

Per 22.917(b), 24.238(b), 27.53(h)(3), and RSS-132(5.5), RSS-133(6.5), RSS-139(6.5), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

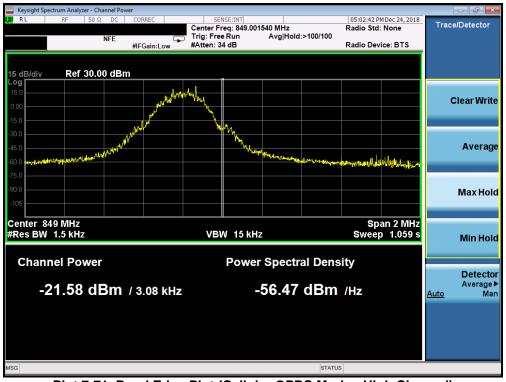
FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Cellular GPRS Mode



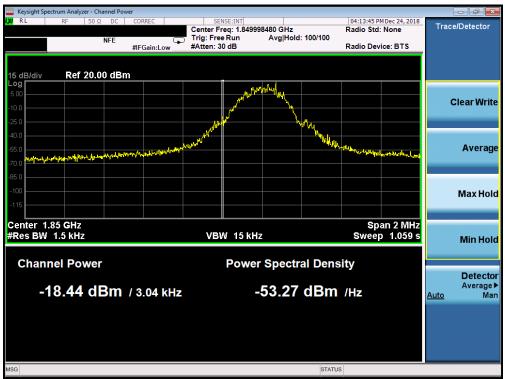
Plot 7-70. Band Edge Plot (Cellular GPRS Mode - Low Channel)



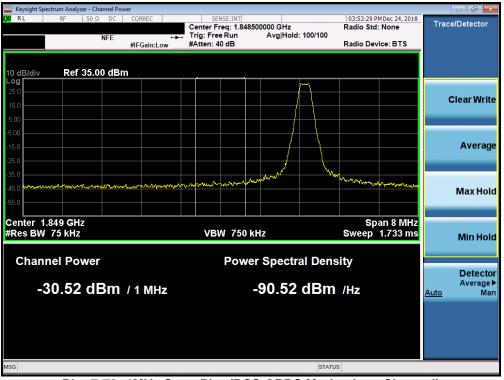
Plot 7-71. Band Edge Plot (Cellular GPRS Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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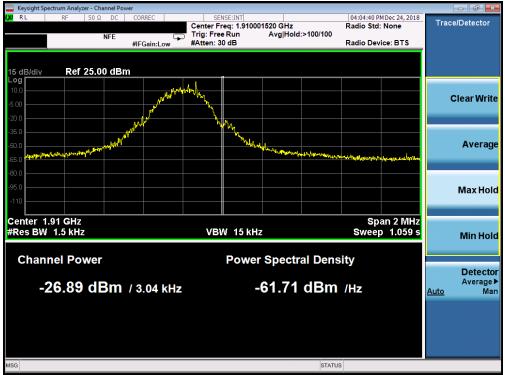




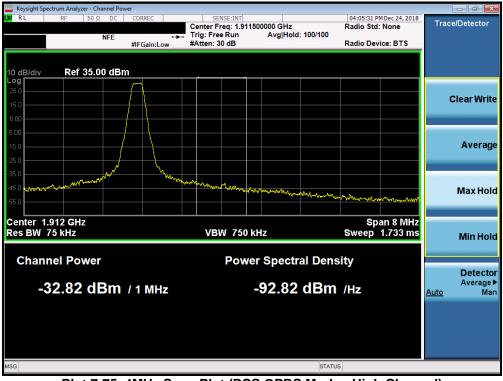
Plot 7-73. 4MHz Span Plot (PCS GPRS Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-74. Band Edge Plot (PCS GPRS Mode - High Channel)

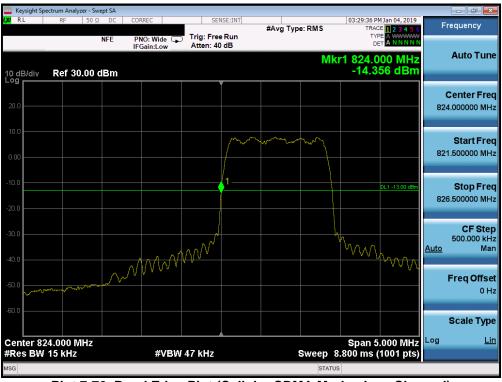


Plot 7-75. 4MHz Span Plot (PCS GPRS Mode - High Channel)

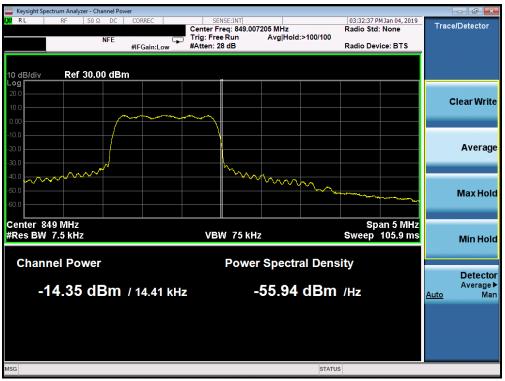
FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Daga EC of 101		
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Cellular CDMA Mode



Plot 7-76. Band Edge Plot (Cellular CDMA Mode - Low Channel)



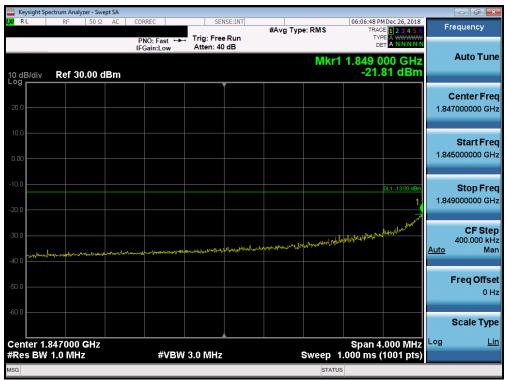
Plot 7-77. Band Edge Plot (Cellular CDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 57 of 104
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Plot 7-78. Band Edge Plot (PCS CDMA Mode - Low Channel)



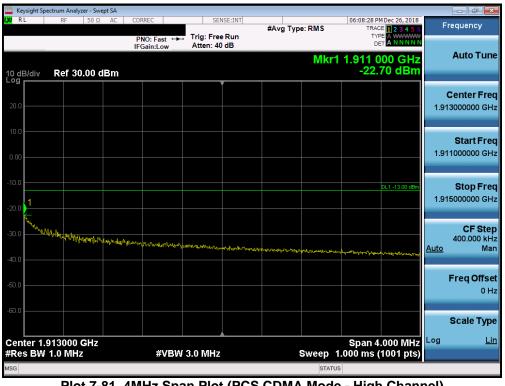
Plot 7-79. 4MHz Span Plot (PCS CDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ectrum Analyze												
RL	RF	50 Ω	AC		ide 😱	Trig: Fre		#Avg Typ	e:RMS	TRA	PM Dec 26, 2018 CE 1 2 3 4 5 6 (PE A WWWWW ET A NNNNN	F	requency
0 dB/div	Ref 30.	00 d	Bm	IFGain:I	_OW	Atten: 4) dB		Mkr	1.910	065 GHz 17 dBm		Auto Tun
20.0													Center Fre 0000000 GH
).00	\int	4. Jun 14	hand the second s	~~	γ							1.90	Start Fre 7500000 GH
20.0											DL1 -13.00 dBm	1.91	Stop Fre 2500000 GH
	~~					Mar Ar	2 ¹	1				<u>Auto</u>	CF Ste 500.000 kl M
0.0								Www.	W - Monte and	and water to the for	man and and and		Freq Offs 0 I
enter 1.	910000 C	Hz_								Span	5.000 MHz	Log	Scale Typ L
Res BW					#VBW	47 kHz			Sweep 2	27.33 ms	(1001 pts)		

Plot 7-80. Band Edge Plot (PCS CDMA Mode - High Channel)



Plot 7-81. 4MHz Span Plot (PCS CDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Cellular WCDMA Mode



Plot 7-82. Band Edge Plot (Cellular WCDMA Mode - Low Channel)



Plot 7-83. Band Edge Plot (Cellular WCDMA Mode - High Channel)

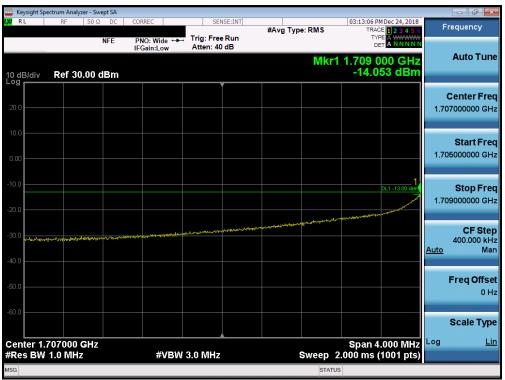
FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 60 of 101
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AWS WCDMA Mode



Plot 7-84. Band Edge Plot (AWS WCDMA Mode - Low Channel)



Plot 7-85. 4MHz Span Plot (AWS WCDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 61 of 104
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Plot 7-86. Band Edge Plot (PCS WCDMA Mode - Low Channel)



Plot 7-87. 4MHz Span Plot (PCS WCDMA Mode - Low Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 62 of 104
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	ectrum Analyze										
XI RL	RF	50 Ω DC NFE	CORREC PNO: Wide			#Avg Typ	e: RMS	TR	PM Dec 24, 2018 ACE 1 2 3 4 5 6 YPE A WWWW DET A N N N N N	Fr	equency
10 dB/div	Ref 30.0	00 dBm					Mkr	1 1.910 -18	000 GHz .80 dBm		Auto Tune
20.0											Center Free
0.00			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							1.90	Start Free 2500000 GH
-10.0					1				DL1 -13.00 dBm	1.91	Stop Fre 7500000 GH
30.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				W~					1 <u>Auto</u>	CF Ste .500000 MH Ma
50.0							~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Marshan Marshan Marshan Marshan M		Freq Offse 0 H
60.0											Scale Typ
Center 1.9 Res BW	910000 G 100 kHz	Hz	#VB	N 300 kHz			Sweep	Span 1.000 ms	15.00 MHz (1001 pts)	Log	Li
SG							STAT	US			

Plot 7-88. Band Edge Plot (PCS WCDMA Mode - High Channel)



Plot 7-89. 4MHz Span Plot (PCS WCDMA Mode - High Channel)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager		
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7.5 Peak-Average Ratio

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 5.7.1

Test Settings

- 1. The signal analyzer's CCDF measurement profile is enabled
- 2. Frequency = carrier center frequency
- 3. Measurement BW > Emission bandwidth of signal
- 4. The signal analyzer was set to collect one million samples to generate the CCDF curve
- 5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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



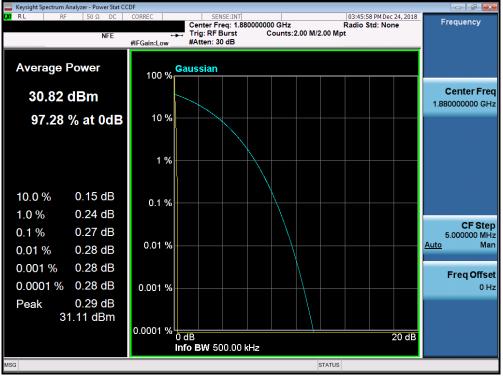
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

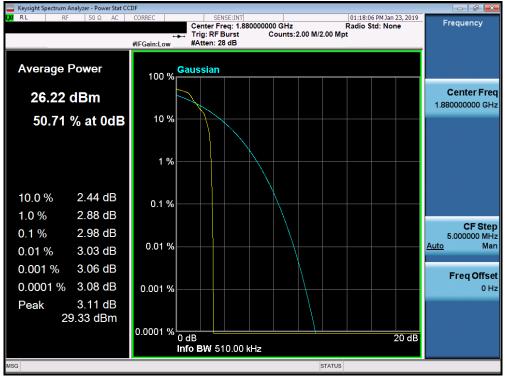
None

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		
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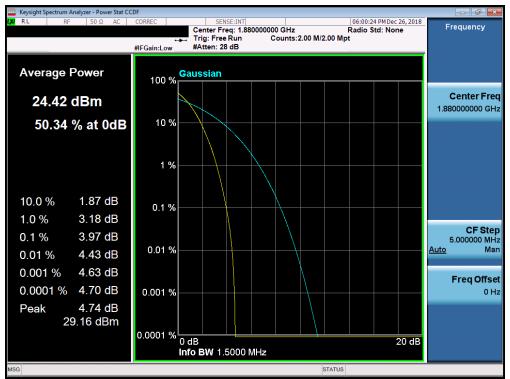




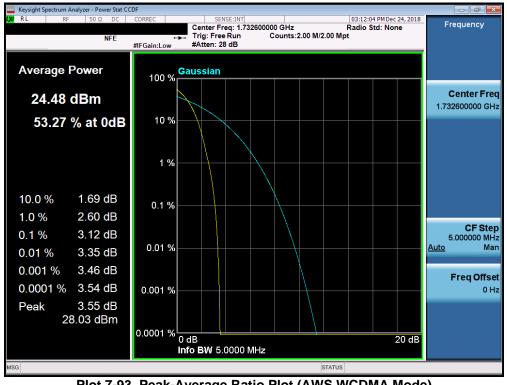
Plot 7-91. Peak-Average Ratio Plot (PCS EDGE Mode)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 65 of 104
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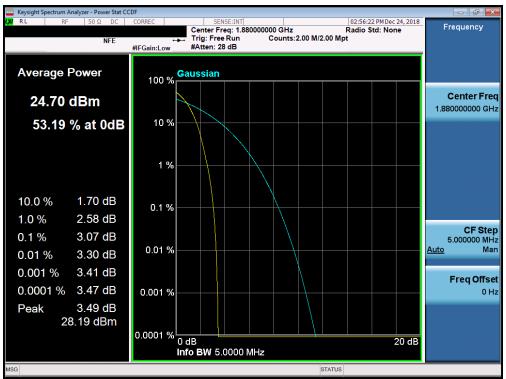


Plot 7-93. Peak-Average Ratio Plot (AWS WCDMA Mode)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 66 of 104		
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Plot 7-94. Peak-Average Ratio Plot (PCS WCDMA Mode)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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7.6 Radiated Power (ERP/EIRP)

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 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 v03r01 - 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.

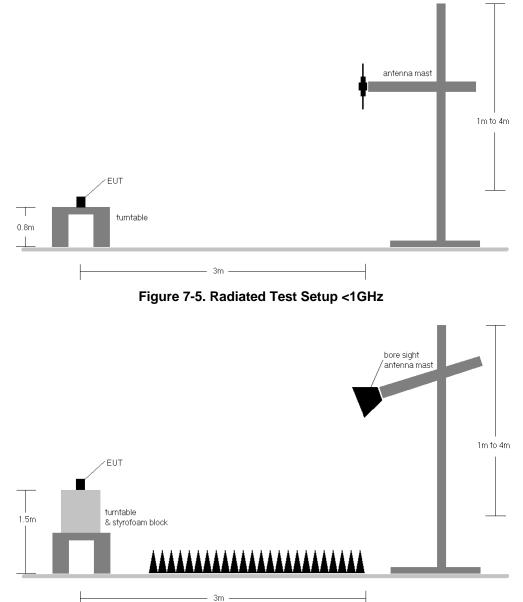


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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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 Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	н	180	221	28.53	1.65	28.03	38.45	-10.42	30.18	40.61	-10.43
836.60	GPRS850	н	190	210	28.42	1.57	27.84	38.45	-10.61	29.99	40.61	-10.61
848.80	GPRS850	н	103	213	28.67	1.50	28.02	38.45	-10.43	30.17	40.61	-10.44
824.20	GPRS850	V	182	345	25.03	1.65	24.53	38.45	-13.92	26.68	40.61	-13.93
824.20	EDGE850	н	180	221	24.12	1.65	23.62	38.45	-14.83	25.77	40.61	-14.84

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

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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 Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
824.70	CDMA850	Н	188	29	21.05	1.65	20.55	38.45	-17.90	22.70	40.61	-17.91
836.52	CDMA850	н	107	39	21.47	1.57	20.89	38.45	-17.56	23.04	40.61	-17.56
848.31	CDMA850	н	112	30	20.91	1.50	20.26	38.45	-18.19	22.41	40.61	-18.19
836.52	CDMA850	V	119	172	15.78	1.57	15.20	38.45	-23.25	17.35	40.61	-23.25

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

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level	Ant. Gain [dBi]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	Н	173	210	21.24	1.63	20.73	38.45	-17.73	22.88	40.61	-17.73
836.60	WCDMA850	Н	106	211	21.70	1.57	21.12	38.45	-17.33	23.27	40.61	-17.33
846.60	WCDMA850	Н	100	220	21.53	1.51	20.89	38.45	-17.56	23.04	40.61	-17.56
836.60	WCDMA850	V	131	18	19.10	1.57	18.52	38.45	-19.93	20.67	40.61	-19.93

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 Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	V	133	342	13.08	8.21	21.29	30.00	-8.71
1732.60	WCDMA1700	V	129	118	14.89	8.06	22.95	30.00	-7.05
1752.60	WCDMA1700	V	130	100	13.02	7.91	20.93	30.00	-9.07
1732.60	WCDMA1700	Н	112	283	12.76	8.06	20.82	30.00	-9.18

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 Limit [dBm]	Margin [dB]
1850.20	GPRS1900	Н	114	268	14.40	8.37	22.77	33.01	-10.24
1880.00	GPRS1900	Н	109	88	17.78	8.41	26.19	33.01	-6.82
1909.80	GPRS1900	Н	108	289	15.73	8.46	24.19	33.01	-8.82
1880.00	GPRS1900	V	159	66	14.33	8.41	22.74	33.01	-10.27
1880.00	EDGE1900	Н	109	88	11.63	8.41	20.04	33.01	-12.97

Table 7-6. EIRP (PCS GPRS)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: 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]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1851.25	CDMA1900	н	142	278	13.04	7.72	20.75	33.01	-12.26
1880.00	CDMA1900	н	142	288	14.64	7.80	22.44	33.01	-10.57
1908.75	CDMA1900	н	146	117	15.48	7.88	23.36	33.01	-9.65
1908.75	CDMA1900	V	194	160	10.79	7.88	18.67	33.01	-14.34

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 Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	Н	140	327	13.10	7.72	20.81	33.01	-12.20
1880.00	WCDMA1900	Н	134	284	13.63	7.80	21.43	33.01	-11.58
1907.60	WCDMA1900	н	138	255	12.28	7.88	20.15	33.01	-12.86
1880.00	WCDMA1900	V	168	22	11.00	7.80	18.80	33.01	-14.21

Table 7-8. EIRP (PCS WCDMA)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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7.7 Radiated Spurious Emissions Measurements

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 v03r01 - 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 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x 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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EUT turntable 8. styrofoam block.

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

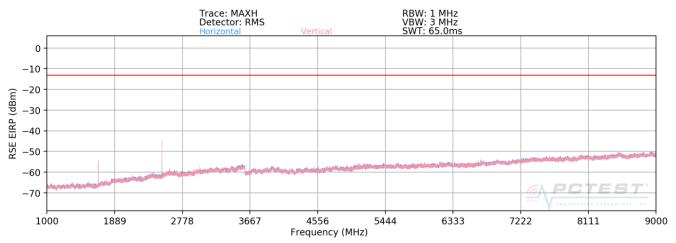
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

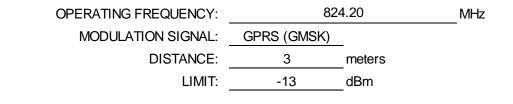
- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA 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) 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.

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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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	Н	191	337	-60.81	8.61	-52.20	-39.2
2472.60	Н	156	81	-54.35	8.78	-45.57	-32.6
3296.80	Н	-	-	-57.78	8.52	-49.27	-36.3
4121.00	Н	-	-	-54.48	9.40	-45.08	-32.1

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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OPERATING FREQUENCY:	83	6.60	MHz
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	H	159	36	-61.52	8.46	-53.05	-40.1
2509.80	H	180	277	-57.34	8.81	-48.54	-35.5
3346.40	Н	-	-	-56.28	8.65	-47.63	-34.6
4183.00	Н	-	-	-55.40	9.77	-45.63	-32.6

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

OPERATING FREQUENCY:

MODULATION SIGNAL:

REQUENCY:848.80ON SIGNAL:GPRS (GMSK)DISTANCE:3LIMIT:-13dBm

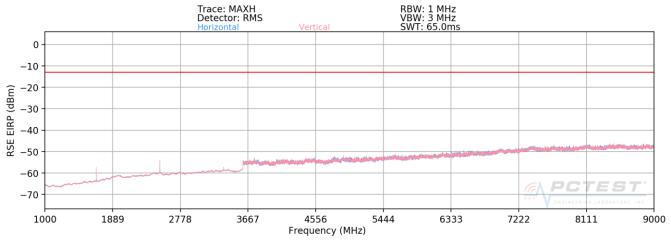
MHz

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	H	101	232	-50.09	8.32	-41.77	-28.8
2546.40	H	105	96	-53.71	8.81	-44.90	-31.9
3395.20	Н	-	-	-56.44	8.79	-47.65	-34.7
4244.00	Н	-	-	-55.71	9.99	-45.72	-32.7

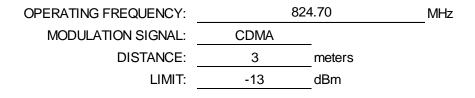
Table 7-11. Radiated Spurious Data (Cellular GPRS Mode – Ch. 251)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Plot 7-96. Radiated Spurious Emission Plot >1GHz (Cellular CDMA Mode)

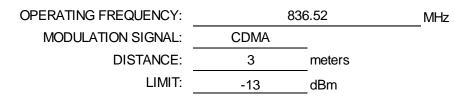


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	Н	144	114	-61.13	8.60	-52.53	-39.5
2474.10	Н	192	109	-56.08	8.78	-47.30	-34.3
3298.80	Н	145	289	-55.01	8.51	-46.50	-33.5
4123.50	Н	-	-	-54.23	9.42	-44.81	-31.8
4948.20	Н	-	-	-52.00	10.50	-41.51	-28.5

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 77 of 104	
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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	Н	114	220	-59.10	8.46	-50.63	-37.6
2509.56	Н	174	104	-54.13	8.81	-45.33	-32.3
3346.08	Н	-	-	-56.24	8.65	-47.59	-34.6
4182.60	Н	-	-	-55.12	9.77	-45.35	-32.3

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

MHz

OPERATING FREQUENCY:

MODULATION

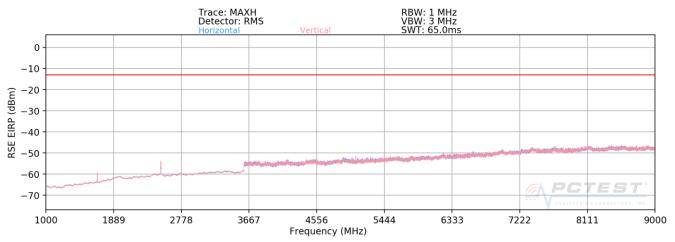
REQUENCY:	84	8.31
ON SIGNAL:	CDMA	
DISTANCE:	3	meters
LIMIT:	-13	dBm

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	Н	162	220	-56.57	8.33	-48.24	-35.2
2544.93	Н	149	242	-55.39	8.81	-46.58	-33.6
3393.24	Н	148	50	-55.37	8.78	-46.59	-33.6
4241.55	Н	-	-	-55.55	9.98	-45.57	-32.6
5089.86	Н	-	-	-52.68	10.78	-41.90	-28.9

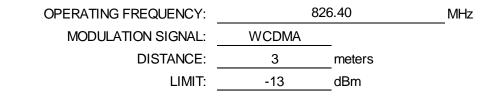
Table 7-14. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 79 of 104	
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Plot 7-97. Radiated Spurious Emission Plot >1GHz (Cellular WCDMA Mode)



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	Н	161	275	-62.47	8.58	-53.88	-40.9
2479.20	Н	130	235	-57.36	8.79	-48.57	-35.6
3305.60	Н	-	-	-56.30	8.53	-47.77	-34.8
4132.00	Н	-	-	-54.24	9.47	-44.77	-31.8

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 70 of 104
1M1812060222-02-R1.ZNF	12/11/2018 - 1/23/2019	- 1/23/2019 Portable Handset		Page 79 of 104
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OPERATING FREQUENCY:	83	6.60	MHz
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	Н	157	233	-61.62	8.46	-53.15	-40.2
2509.80	Н	157	285	-55.60	8.81	-46.80	-33.8
3346.40	Н	-	-	-57.05	8.65	-48.40	-35.4
4183.00	Н	-	-	-54.41	9.77	-44.64	-31.6

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

OPERATING FREQUENCY:

MODULATION SIGNA

REQUENCY:	846	6.60
ON SIGNAL:	WCDMA	_
DISTANCE:	3	meters
LIMIT:	-13	dBm

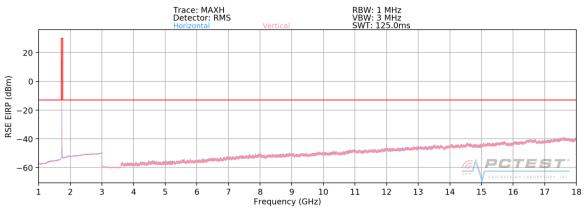
MHz

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	Н	154	221	-58.64	8.35	-50.29	-37.3
2539.80	H	106	237	-55.53	8.81	-46.72	-33.7
3386.40	Н	-	-	-56.23	8.76	-47.47	-34.5
4233.00	Н	-	-	-54.66	9.96	-44.70	-31.7

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 80 of 104	
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OPERATING FREQUENCY:	17 <i>1</i>	MHz	
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	V	-	-	-56.23	8.83	-47.40	-34.4
5137.20	V	-	-	-53.21	10.63	-42.58	-29.6

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

OPERATING FREQUENCY:1732.60MHzMODULATION SIGNAL:WCDMADISTANCE:3metersLIMIT:-13dBm

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	V	-	-	-55.93	8.88	-47.05	-34.0
5197.80	V	-	-	-53.08	10.33	-42.75	-29.7

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dege 91 of 104			
1M1812060222-02-R1.ZNF	12/11/2018 - 1/23/2019	Portable Handset		Page 81 of 104			
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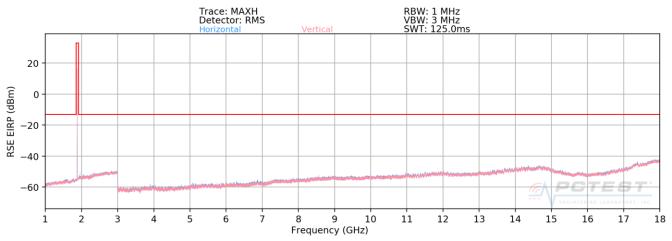
OPERATING FREQUENCY:	175	2.60	MHz
MODULATION SIGNAL:	WCDMA		_
DISTANCE:	3	meters	
LIMIT:	-13	_dBm	

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	V	-	-	-56.35	8.92	-47.43	-34.4
5257.80	V	-	-	-53.57	10.38	-43.20	-30.2

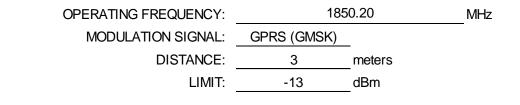
Table 7-20. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1513)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 82 of 104
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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	Н	119	270	-53.49	8.83	-44.66	-31.7
5550.60	Н	-	-	-51.97	10.44	-41.53	-28.5
7400.80	Н	-	-	-48.06	10.34	-37.72	-24.7

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dege 82 of 104			
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OPERATING FREQUENCY:	188	80.00	MHz
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	Н	117	306	-52.37	8.44	-43.93	-30.9
5640.00	Н	-	-	-52.03	10.64	-41.39	-28.4
7520.00	Н	-	-	-48.23	11.10	-37.13	-24.1

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

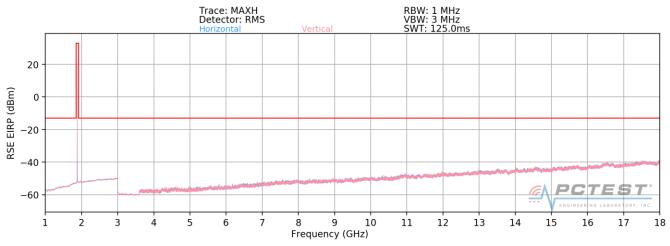
OPERATING FREQUENCY:	190	9.80	MHz
MODULATION SIGNAL:	GPRS (GMSK)		
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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	Н	114	313	-52.50	8.22	-44.29	-31.3
5729.40	Н	-	-	-52.54	10.40	-42.14	-29.1
7639.20	Н	-	-	-49.48	11.23	-38.26	-25.3

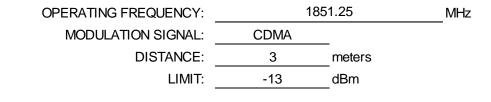
Table 7-23. Radiated Spurious Data (PCS GPRS Mode – Ch. 810)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 94 of 104
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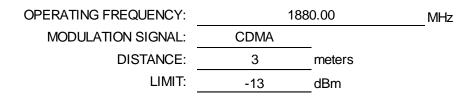


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3702.50	Н	103	129	-53.25	8.81	-44.44	-31.4
5553.75	Н	-	-	-52.56	10.46	-42.10	-29.1
7405.00	Н	10	176	-46.90	10.37	-36.52	-23.5
9256.25	Н	-	-	-49.30	11.90	-37.41	-24.4
11107.50	Н	-	-	-46.83	12.99	-33.84	-20.8

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

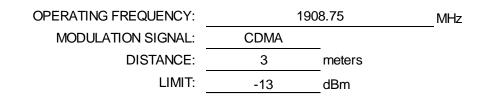
FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 85 of 104
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	154	74	-51.72	8.44	-43.28	-30.3
5640.00	Н	-	-	-53.22	10.64	-42.58	-29.6
7520.00	Н	106	165	-47.79	11.10	-36.69	-23.7
9400.00	Н	-	-	-49.15	12.77	-36.38	-23.4
11280.00	Н	-	-	-46.84	12.95	-33.89	-20.9

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

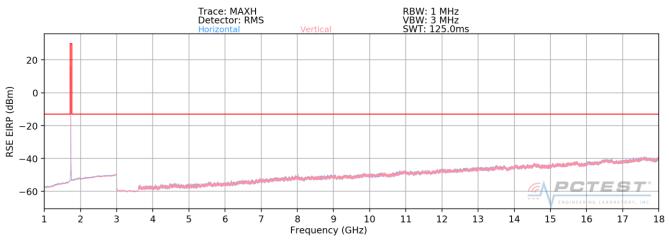


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3817.50	Н	161	327	-51.70	8.21	-43.49	-30.5
5726.25	Н	-	-	-52.20	10.40	-41.80	-28.8
7635.00	Н	157	5	-47.05	11.22	-35.83	-22.8
9543.75	Н	-	-	-48.97	12.34	-36.64	-23.6
11452.50	Н	-	-	-45.97	13.00	-32.97	-20.0

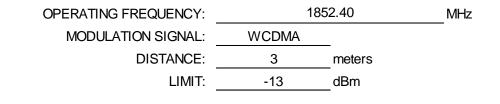
Table 7-26. Radiated Spurious Data (PCS CDMA Mode – Ch. 1175)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 96 of 104
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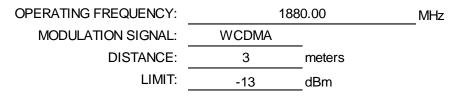






Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3704.80	Н	-	-	-55.11	8.80	-46.31	-33.3

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



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	Н	-	-	-54.12	8.44	-45.68	-32.7
5640.00	Н	-	-	-52.81	10.64	-42.17	-29.2

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 97 of 104
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OPERATING FREQUENCY:	190	07.60	MHz
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	Н	-	-	-53.01	8.21	-44.81	-31.8
5722.80	Н	-	-	-52.87	10.40	-42.47	-29.5

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

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 89 of 104
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Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, RSS-132, and RSS-133, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24, Part 27, and RSS-139, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 00 of 104
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OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	190	
REFERENCE VOLTAGE:	4.30	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	836,600,104	104	0.0000124
100 %		- 20	836,600,243	243	0.0000290
100 %		- 10	836,599,861	-139	-0.0000166
100 %		0	836,600,025	25	0.0000030
100 %		+ 10	836,600,311	311	0.0000372
100 %		+ 20	836,599,930	-70	-0.000084
100 %		+ 30	836,600,027	27	0.0000032
100 %		+ 40	836,600,266	266	0.0000318
100 %		+ 50	836,599,845	-155	-0.0000185
85 %		+ 20	836,599,951	-49	-0.0000059
BATT. ENDPOINT	3.40	+ 20	836,600,021	21	0.0000025

Table 7-30. Frequency Stability Data (Cellular GPRS Mode – Ch. 190)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 00 of 104
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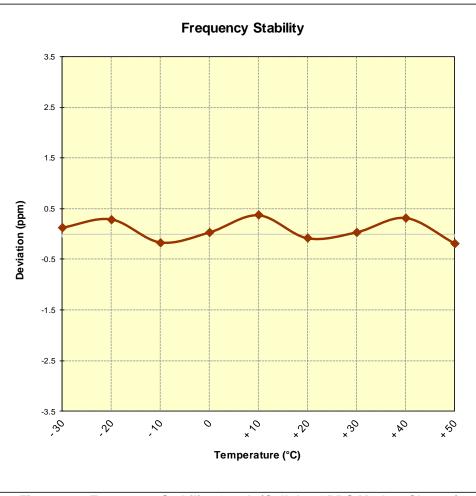


Figure 7-8. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 01 of 104
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OPERATING FREQUENCY:	836,520,000	Hz
CHANNEL:	384	_
REFERENCE VOLTAGE:	4.30	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	836,519,855	-145	-0.0000173
100 %		- 20	836,520,060	60	0.0000072
100 %		- 10	836,519,940	-60	-0.0000072
100 %		0	836,520,002	2	0.0000002
100 %		+ 10	836,520,379	379	0.0000453
100 %		+ 20	836,520,249	249	0.0000298
100 %		+ 30	836,519,699	-301	-0.0000360
100 %		+ 40	836,520,066	66	0.0000079
100 %		+ 50	836,519,861	-139	-0.0000166
85 %		+ 20	836,520,115	115	0.0000137
BATT. ENDPOINT	3.40	+ 20	836,520,128	128	0.0000153

Table 7-31. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 02 of 104
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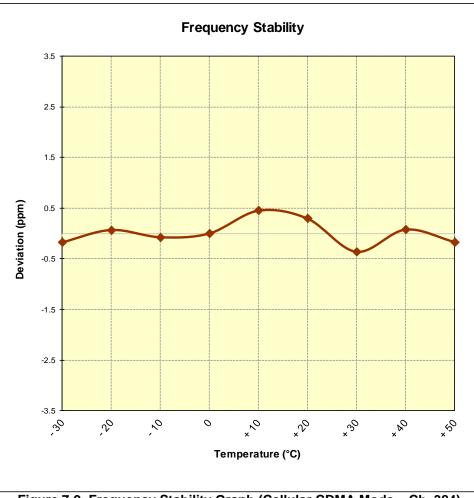


Figure 7-9. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

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OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	4183	
REFERENCE VOLTAGE:	4.30	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	836,600,258	258	0.0000308
100 %		- 20	836,600,331	331	0.0000396
100 %		- 10	836,600,046	46	0.0000055
100 %		0	836,599,769	-231	-0.0000276
100 %		+ 10	836,599,787	-213	-0.0000255
100 %		+ 20	836,599,585	-415	-0.0000496
100 %		+ 30	836,599,944	-56	-0.0000067
100 %		+ 40	836,599,761	-239	-0.0000286
100 %		+ 50	836,600,342	342	0.0000409
85 %		+ 20	836,600,029	29	0.0000035
BATT. ENDPOINT	3.40	+ 20	836,600,159	159	0.0000190

Table 7-32. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

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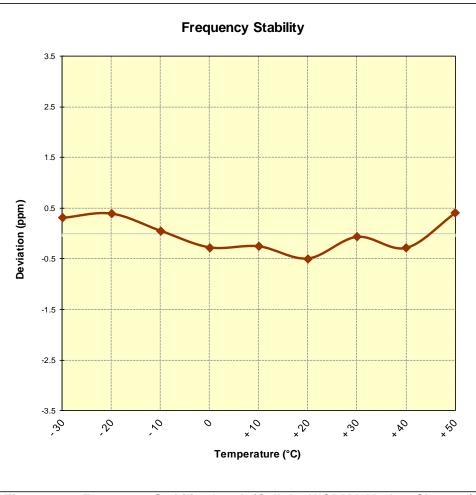


Figure 7-10. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFQ850QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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OPERATING FREQUENCY:	1,732,600,000	Hz
CHANNEL:	1413	_
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	1,732,599,959	-41	-0.0000024
100 %		- 20	1,732,600,163	163	0.0000094
100 %		- 10	1,732,599,919	-81	-0.0000047
100 %		0	1,732,599,979	-21	-0.0000012
100 %		+ 10	1,732,600,105	105	0.0000061
100 %		+ 20	1,732,599,980	-20	-0.0000012
100 %		+ 30	1,732,599,898	-102	-0.0000059
100 %		+ 40	1,732,599,904	-96	-0.0000055
100 %		+ 50	1,732,599,916	-84	-0.0000048
85 %		+ 20	1,732,600,000	0	0.0000000
BATT. ENDPOINT	3.40	+ 20	1,732,599,682	-318	-0.0000184

Table 7-33. Frequency Stability Data (AWS WCDMA Mode – Ch. 1413)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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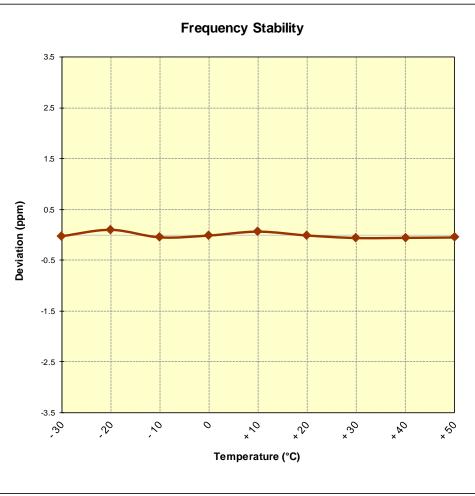


Figure 7-11. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	661	
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	1,880,000,065	65	0.0000035
100 %		- 20	1,879,999,739	-261	-0.0000139
100 %		- 10	1,880,000,363	363	0.0000193
100 %		0	1,879,999,816	-184	-0.0000098
100 %		+ 10	1,880,000,214	214	0.0000114
100 %		+ 20	1,880,000,007	7	0.0000004
100 %		+ 30	1,880,000,009	9	0.0000005
100 %		+ 40	1,879,999,962	-38	-0.0000020
100 %		+ 50	1,880,000,309	309	0.0000164
85 %		+ 20	1,879,999,978	-22	-0.0000012
BATT. ENDPOINT	3.40	+ 20	1,879,999,859	-141	-0.0000075

Table 7-34. Frequency Stability Data (PCS GPRS Mode – Ch. 661)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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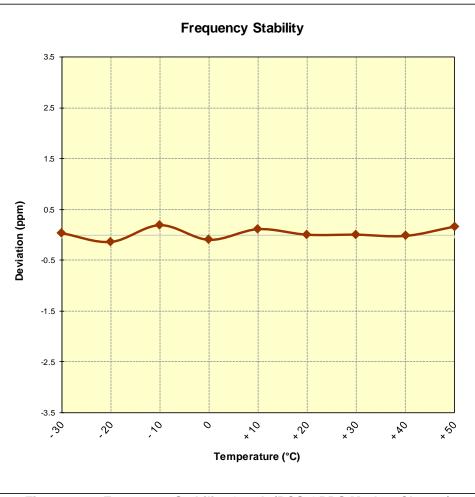


Figure 7-12. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	600	
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	1,879,999,691	-309	-0.0000164
100 %		- 20	1,880,000,236	236	0.0000126
100 %		- 10	1,880,000,023	23	0.0000012
100 %		0	1,879,999,939	-61	-0.0000032
100 %		+ 10	1,879,999,867	-133	-0.0000071
100 %		+ 20	1,880,000,045	45	0.0000024
100 %		+ 30	1,879,999,738	-262	-0.0000139
100 %		+ 40	1,880,000,105	105	0.0000056
100 %		+ 50	1,880,000,011	11	0.0000006
85 %		+ 20	1,879,999,860	-140	-0.0000074
BATT. ENDPOINT	3.40	+ 20	1,880,000,028	28	0.0000015

Table 7-35. Frequency Stability Data (PCS CDMA Mode – Ch. 600)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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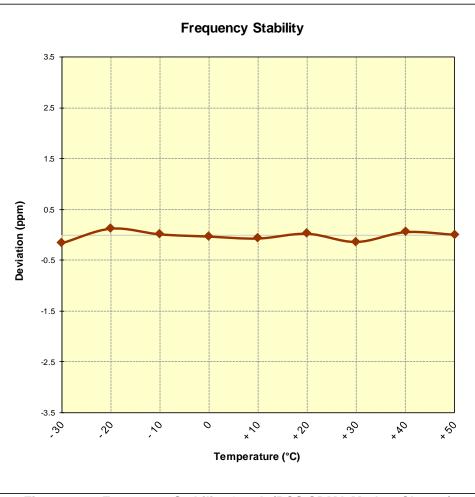


Figure 7-13. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

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OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	1,880,000,041	41	0.0000022
100 %		- 20	1,880,000,171	171	0.0000091
100 %		- 10	1,879,999,939	-61	-0.0000032
100 %		0	1,879,999,704	-296	-0.0000157
100 %		+ 10	1,880,000,309	309	0.0000164
100 %		+ 20	1,880,000,104	104	0.0000055
100 %		+ 30	1,879,999,855	-145	-0.0000077
100 %		+ 40	1,880,000,035	35	0.0000019
100 %		+ 50	1,880,000,040	40	0.0000021
85 %		+ 20	1,880,000,255	255	0.0000136
BATT. ENDPOINT	3.40	+ 20	1,880,000,002	2	0.0000001

Table 7-36. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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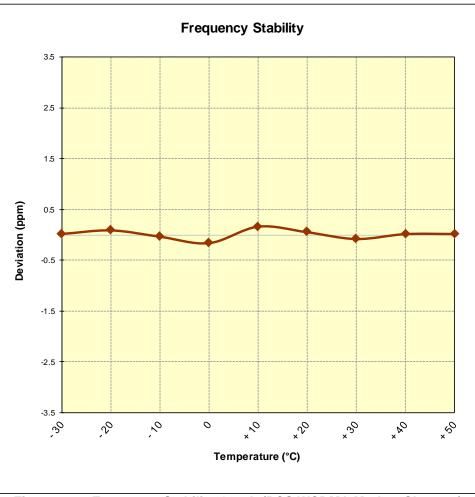


Figure 7-14. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFQ850QM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules.

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