

PCTEST ENGINEERING LABORATORY, INC.

7185 Oakland Mills Road, Columbia, MD 21046 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctest.com



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: 04/23 - 05/16/2019 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1904220062-02.ZNF

FCC ID:

ZNFQ720QM

Certification

APPLICANT:

LG Electronics USA, Inc.

Application Type: Model: Additional Model(s):

EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): LM-Q720QM LM-Q720QM5, LM-Q720QM6, LMQ720QM, LMQ720QM5, LMQ720QM6, Q720QM, Q720QM5, Q720QM6 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.

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



FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 1 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 1 of 109
© 2010 DCTEST Engineering Labo	ratan/ Ina			V/ 0 0 02/01/2010



TABLE OF CONTENTS

1.0	INTR	ODUCTION	.4
	1.1	Scope	.4
	1.2	PCTEST Test Location	.4
	1.3	Test Facility / Accreditations	.4
2.0	PRO	DUCT INFORMATION	.5
	2.1	Equipment Description	.5
	2.2	Device Capabilities	.5
	2.3	Test Configuration	.5
	2.4	EMI Suppression Device(s)/Modifications	.5
3.0	DESC	CRIPTION OF TESTS	.6
	3.1	Evaluation Procedure	.6
	3.2	Cellular - Base Frequency Blocks	.6
	3.3	Cellular - Mobile Frequency Blocks	.6
	3.4	PCS - Base Frequency Blocks	.6
	3.5	PCS - Mobile Frequency Blocks	.7
	3.6	AWS - Base Frequency Blocks	.7
	3.7	AWS - Mobile Frequency Blocks	.7
	3.8	Radiated Measurements	. 8
4.0	MEAS	SUREMENT UNCERTAINTY	.9
5.0	TEST	EQUIPMENT CALIBRATION DATA	10
6.0	SAM	PLE CALCULATIONS	11
7.0	TEST	RESULTS	12
	7.1	Summary	12
	7.2	Occupied Bandwidth	13
	7.3	Spurious and Harmonic Emissions at Antenna Terminal	19
	7.4	Band Edge Emissions at Antenna Terminal	55
	7.5	Peak-Average Ratio	68
	7.6	Radiated Power (ERP/EIRP)	72
	7.7	Radiated Spurious Emissions Measurements	77
	7.8	Frequency Stability / Temperature Variation	94
8.0	CON	CLUSION10)9

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 2 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 2 of 109
© 2019 PCTEST Engineering Laboratory. Inc.				V 9.0 02/01/2019





MEASUREMENT REPORT GSM/GPRS/EDGE/CDMA/WCDMA



			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	0.647	28.11	1.062	30.26	246KGXW
EDGE850	22H	824.2 - 848.8	0.298	24.74	0.489	26.89	237KG7W
CDMA850	22H	824.70 - 848.31	0.041	16.10	0.067	18.25	1M28F9W
WCDMA850	22H	826.4 - 846.6	0.092	19.64	0.151	21.79	4M16F9W
WCDMA1700	27	1712.4 - 1752.6			0.149	21.73	4M16F9W
GPRS1900	24E	1850.2 - 1909.8			0.931	29.69	244KGXW
EDGE1900	24E	1850.2 - 1909.8			0.318	25.02	247KG7W
CDMA1900	24E	1851.25 - 1908.75			0.095	19.78	1M28F9W
WCDMA1900	24E	1852.4 - 1907.6			0.149	21.73	4M16F9W

EUT Overview

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 2 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 3 of 109
© 2019 PCTEST Engineering Laboratory Inc				V 9 0 02/01/2019



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.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 4 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 4 of 109
© 2010 PCTEST Engineering Labora	tony Inc			V 0 0 02/01/2010



2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFQ720QM**. 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.: 01227, 01235, 01318, 01326

2.2 Device Capabilities

This device contains the following capabilities:

800/850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1, BC10), 850/1900 GPRS/EDGE, 850/1700/1900 WCDMA, Multi-band LTE, 802.11b/g/n 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.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga E of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 5 of 109
© 2010 PCTEST Engineering Lab	poratory Inc	•		V 9 0 02/01/2019



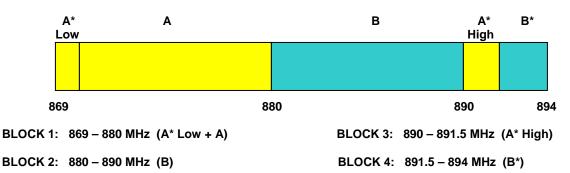
3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

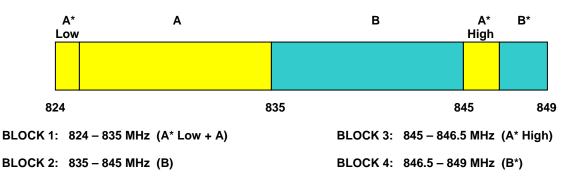
The measurement procedures described in the "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

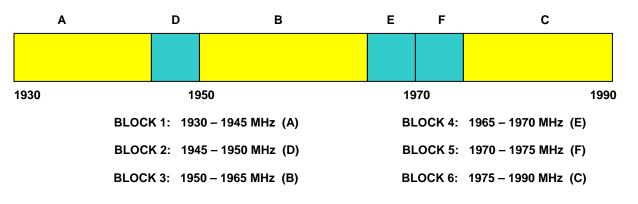
3.2 Cellular - Base Frequency Blocks



3.3 Cellular - Mobile Frequency Blocks



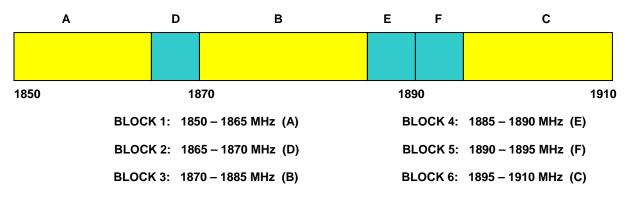
3.4 PCS - Base Frequency Blocks



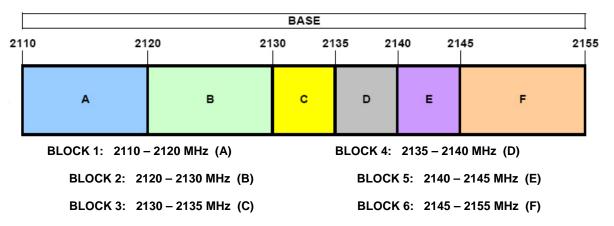
FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege C of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 6 of 109
© 2019 PCTEST Engineering Laboratory, Inc.				V 9.0 02/01/2019



3.5 PCS - Mobile Frequency Blocks



3.6 AWS - Base Frequency Blocks



3.7 AWS - Mobile Frequency Blocks

[MOBILE				
17	10	1	720 17	730 17 	'35 17 	40 17	45	1755
		A	в	с	D	E	F	
		BLOCK 1: 1	710 – 1720 MHz (A)		BLOCK	4: 1735 –	1740 MHz (D)	
		BLOCK 2: 1	720 – 1730 MHz (B)		BLOCK	5: 1740 –	1745 MHz (E)	
		BLOCK 3: 1	730 – 1735 MHz (C)		BLOCK	6: 1745 –	1755 MHz (F)	

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 7 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 7 of 109
© 2019 PCTEST Engineering Laboratory, Inc.				V 9.0 02/01/2019



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.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 9 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 8 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 0 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 9 of 109
© 2019 PCTEST Engineering Laboratory Inc.				V 9 0 02/01/2019



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.

	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9020A	MXA Signal Analyzer	3/20/2019	Annual	3/20/2020	US46470561
Agilent	N4010A	Wireless Connectivity Test Set		N/A	-	GB46170464
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	6/7/2018	Biennial	6/7/2020	9203-2178
Rohde & Schwarz	CMU200	Base Station Simulator	5/18/2018	Annual	5/18/2019	109892
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/19/2018	Biennial	3/19/2020	A051107
Rohde & Schwarz	CMW500	Radio Communication Tester	11/14/2018	Annual	11/14/2019	100976
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	9/19/2018	Annual	9/19/2019	100040
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
Seekonk	NC-100	Torque Wrench (8" lb)	3/10/2018	Biennial	3/10/2020	N/A
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11208010032
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	6/15/2018	Annual	6/15/2019	11210140001
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
-	LTx3	LIcensed Transmitter Cable Set	8/23/2018	Annual	8/23/2019	LTx3
Mini Circuits	TVA-11-422	RF Power Amp		N/A		QA1317001
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	9/17/2018	Annual	9/17/2019	441119
Schwarzbeck	UHA 9105	Dipole Antenna	3/3/2019	Biennial	3/3/2021	2696
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134

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.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 10 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 10 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



6.0 SAMPLE CALCULATIONS

GSM Emission Designator

Emission Designator = 250KGXW

GSM 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.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 11 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 11 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



7.0 TEST RESULTS

7.1 Summary

Company Name:	LG Electronics USA, Inc.
FCC ID:	ZNFQ720QM
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	Description Test Limit		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 + 10 \log_{10} (P[Watts]) at Band Edge and for all out-of- band emissions		PASS	Sections 7.3, 7.4
24.232(d) 27.50	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	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band 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 3.11.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 12 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 12 of 109
© 2019 PCTEST Engineering Laboratory. Inc.				V 9.0 02/01/2019



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.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 12 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 13 of 109
© 2019 PCTEST Engineering Labor	V 9.0 02/01/2019			





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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 14 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 14 of 109
© 2019 PCTEST Engineering Laboratory, Inc.				V 9.0 02/01/2019





Plot 7-3. Occupied Bandwidth Plot (PCS GPRS Mode)



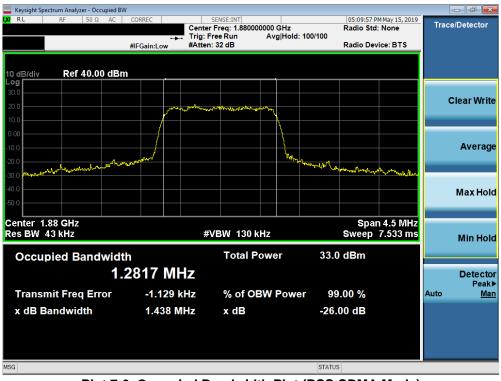
Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 15 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 15 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



www.www.www.www.www.www.www.www.www.ww	d BW			
LXI RL RF 50 Ω A(SENSE:INT Center Freq: 836.520000 MHz Trig: Free Run Avg Hold:>	05:17:48 PM May 15, 2019 Radio Std: None	Trace/Detector
	#IFGain:Low	#Atten: 34 dB	Radio Device: BTS	
10 dB/div Ref 40.00 d	Bm			
30.0				
20.0		Alla and and and and a second a secon		Clear Write
10.0	/			
0.00	/			
-10.0				Average
-20.0	man and and a second and a		water the second water the second	
-30.0			Market and	
-40.0				Max Hold
Center 836.5 MHz Res BW 43 kHz		#VBW 130 kHz	Span 4.5 MHz Sweep 7.533 ms	
		#VDVV IJUKIIZ	Sweep 7.555 ms	Min Hold
Occupied Bandwi	dth	Total Power	34.2 dBm	
·	1.2782 MH	Ζ		Detector
Transmit Freq Error	363	Iz % of OBW Power	99.00 %	Peak▶ Auto Man
· · · ·	1.440 MH			Mato <u>man</u>
x dB Bandwidth	1.440 MF	z x dB	-26.00 dB	
MSG			STATUS	

Plot 7-5. Occupied Bandwidth Plot (Cellular CDMA Mode)



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 16 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 16 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



🚾 Keysight Spectrum Analyzer - Occupied BW				
LX/RL RF 50Ω AC	CORREC	enter Freq: 836.600000 MHz	11:13:53 PM May 14, 2019 Radio Std: None	Trace/Detector
		rig: Free Run Avg Hold: 10 Atten: 28 dB	00/100 Radio Device: BTS	
10 dB/div Ref 40.00 dBm Log				
30.0				Clear Write
20.0		man and a second and a second		Clear Write
10.0				
0.00				Average
-10.0	nung		man francisco and	Average
-30.0			and the second	
-40.0				
-50.0				Max Hold
Center 836.6 MHz Res BW 150 kHz		#VBW 470 kHz	Span 15 MHz Sweep 1 ms	
Occupied Bandwidt	b	Total Power	34.2 dBm	
4.	1588 MHz			Detector Peak▶
Transmit Freq Error	6.911 kHz	% of OBW Power	99.00 %	Auto <u>Man</u>
x dB Bandwidth	4.748 MH	x dB	-26.00 dB	
MSG			STATUS	

Plot 7-7. Occupied Bandwidth Plot (Cellular WCDMA Mode)



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 17 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 17 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.			V 9.0 02/01/2019



🔤 Keysight Spectrum Analyzer - Occupie				
L <mark>X/</mark> RL RF 50Ω A		SENSE:INT nter Freg: 1.880000000 GHz	10:54:34 PM May 14, 2019 Radio Std: None	Trace/Detector
		g:FreeRun Avg Hold:10 tten:26 dB	0/100 Radio Device: BTS	
	#IFGain:Low #A	tten. 20 dB	Radio Device. B13	
10 dB/div Ref 40.00 d	Bm			
Log				
30.0				Clear Write
20.0	mont	have marker and		Clear Wille
10.0				
0.00				
-10.0				Average
-20.0	war have a start of the start o		month many and	
-30.0 months and				
-40.0				Max Hold
-50.0				
Center 1.88 GHz			Span 15 MHz	
Res BW 150 kHz		#VBW 470 kHz	Sweep 1 ms	Min Hold
Occupied Bandwi	dth	Total Power	32.5 dBm	
	4.1592 MHz			Detector Peak▶
Transmit Freq Error	-746 Hz	% of OBW Power	99.00 %	Auto <u>Man</u>
x dB Bandwidth	4.754 MHz	x dB	-26.00 dB	
MSG			STATUS	

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 40 af 400
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 18 of 109
© 2019 PCTEST Engineering Lab	poratory Inc	•		V 9 0 02/01/2019



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.

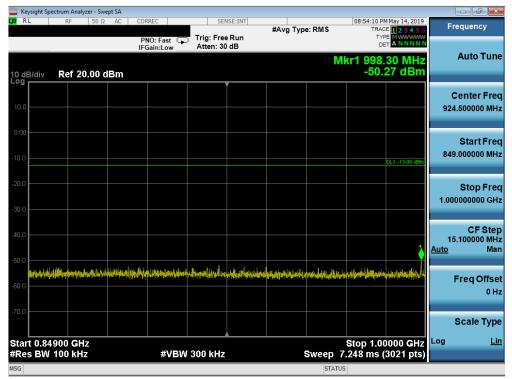
FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 10 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 19 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.			V 9.0 02/01/2019



Cellular GPRS Mode

PNO: Fast PNO: Fast IFGainLow Def Def Def Def Def Def Def Def Def Def		ectrum Analy		ot SA										
Mkr1 823.00 MHz Auto Tur 00 -43.03 dBm -43.03 dBm 00 -44.04 dBm -44.04 dBm 00 -44.04 dBm <	RL	RF	50 Ω	AC	PNO:	Fast 🗔	Trig: Fre	e Run	#Avg Typ	e: RMS	т	RACE 1 2 3 4 5 6	F	requency
Center Fr 426.50000 M Start Fr 30.00000 M Start Fr 30.00000 M Co Co Co Co Co Co Co Co Co Co Co Co Co	0 dB/div	Ref 20	0.00 di	Bm	il Gali						Mkr1 82 -4	3.00 MHz 3.03 dBm		Auto Tun
0.0 Start Fr 0.0 0.1.1.1300000 M 0.0 0.1.1.130000 M 0.0 0.1.1.130000 M 0.0 0.1.1.130000 M 0.0 0.1.1.13000 M 0.0 0.1.1.13000 M 0.0 0.1.1.13000 M 0.0 0.1.1.13000 M 0.0 0.1.1.11000 M 0.0 0.1.1.11000 M 0.0 0.1.1.11000 M 1.1.11000 M 1.1.11000 M 1.1.11000 M 1.1.1	10.0													
00.0 Image: CF Step Processing and the step Procestep Procestep Processing and the step Processing and t	10.0											DL1 -13.00 dBm	3	Start Fre
0.0 1	80.0												82	Stop Fre 3.000000 MI
A 1933 Control of the second first former and the second first former and the second												1		9.300000 M
tart 30.0 MHz Stop 823.0 MHz Log	a di anat a di	n (1993) () , Mala it di dagana	Ninter Profession	ر (در روز روز روز روز در نهی روز ور روز و	ra (rippi) (r) ugusta umaa	l <mark>efter for the second s</mark>	pp I (prov) yn Însel yn ar yn 1982 y de Fridanse oan ar de f	ini ya mana ku di fu ya si na su ku di si si su ya s	yna llefer af de persona de llefer Anter en agrandel a reconstrueren	a an	Hellow Proton Algebrach Reflection of the Algebrach	ly king in any antiset of the later algory discontration and a set		Freq Offs 0 I
	70.0) MHz									Stor	823.0 MHz	Log	Scale Typ
			z			#VBW	300 kHz		s	weep				

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

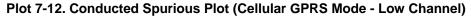


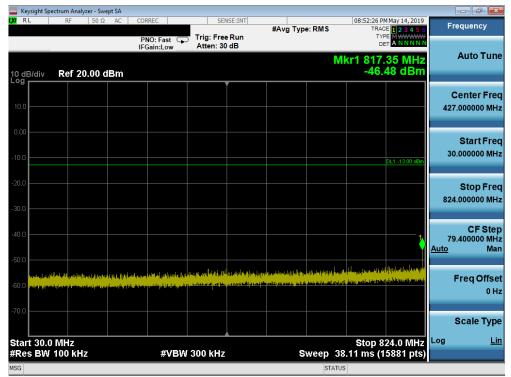
Plot 7-11. Conducted Spurious Plot (Cellular GPRS Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 20 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 20 of 109
© 2010 DOTEST Engineering Labor	aton/ Inc			V 0 0 02/01/2010



								m Analyzer - Swe		
Frequency	08:54:38 PM May 14, 2019 TRACE 1 2 3 4 5 6	vg Type: RMS	SE:INT			CORREC	AC	RF 50 Ω	. F	K/RL
				Trig: Free #Atten: 34	Fast 🖵 :Low	PNO: F IFGain:				
Auto Tune	kr1 7.640 0 GHz -31.37 dBm	M					IBm	ef 10.00 d	l/div Re	10 dB -°g r
Center Free										
5.500000000 GH										0.00
Start Fred	DL1 -13.00 dBm									-10.0
1.000000000 GH										-20.0
		▲ 1								
Stop Free 10.000000000 GH;	ing ang ang kalanang sang kapang di pang ang kanang kanang di Ang ang ang kalang mang kanang ding kanang kanang ding kanang di	a Shing Albana a ta ba ba a a a a	(hopolis)) (hopolis) Alterative (hopolis)	terre () And () And () And () And () And () And ()	an a			م القريمين والمرسول		-30.0 +
					الدرساطير والأ			ALCONTRACTOR OF	A CONTRACTOR OF THE OWNER OF THE	-40.0
CF Stej 900.000000 MH <u>Auto</u> Ma										-50.0
										-60.0
Freq Offse 0 Hi										-70.0
										-80.0
Scale Type										
Log <u>Lir</u>	0100 10.000 0112	Swoon 1		2.0 MU-	#\/D\//				1.000 G BW 1.0	
	5.60 ms (18001 pts)	Sweep 1		3.0 MHz	#VDVV			WINZ	БW 1.0	ISG





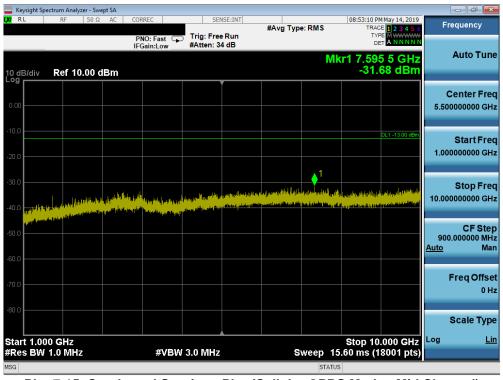
Plot 7-13. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 21 of 109
© 2019 PCTEST Engineering Lab	oratory, Inc.			V 9.0 02/01/2019



		Analyzer - Sw	rept SA										
LX/RL	R	F 50 Ω	AC	CORREC		SEN	SE:INT	#Avg Typ	e: RMS		M May 14, 2019	Free	quency
				PNO: Fast IFGain:Lov		ig: Free Atten: 32				TYI Di			uto Tune
10 dB/e Log —	div Re	ef 20.00 (dBm						N	1kr1 855. -44.	.75 MHz 59 dBm	,	uto i une
						Ĭ						Ce	enter Freq
10.0 —												924.5	00000 MHz
0.00													
													Start Freq 00000 MHz
-10.0											DL1 -13.00 dBm	043.0	00000 10112
-20.0													Stop Freq
-30.0												1.0000	00000 GHz
-30.0													
-40.0	•1-											15.1 <u>Auto</u>	CF Step 00000 MHz Man
-50.0	a stall and all the second	الاليغارية فرجيته أط		in particulation of the second se	the side of the side of the	mathe	Manufaction Bally	والأرار والالمالي المراجع	itte indian	and a second second	والمتعادية والمتعادية		
-60.0		1			alla d'unitati	18 19	and the first set.	tere e la tributera				F	eq Offset
													0 Hz
-70.0												S	cale Type
Start	0.84900	GH7								Stop 1.0	0000 GHz	Log	Lin
	BW 100			#V	'BW 300	0 kHz			Sweep	7.248 ms ((3021 pts)		
MSG									STATU	JS			

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



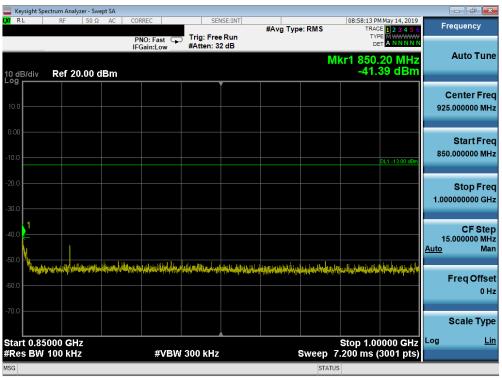
Plot 7-15. Conducted Spurious Plot (Cellular GPRS Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 22 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 22 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.			V 9.0 02/01/2019



	ectrum Analyz													
X/RL	RF	50 Ω	AC	CORREC		SEN	SE:INT	#Avg Typ	e: RMS	08:	TRACE	May 14, 2019	Fr	equency
				PNO: F IFGain:	ast 🖵 Low	Trig: Free Atten: 30		• //			TYPE	A N N N N N		
10 dB/div Log	Ref 20	.00 d	Bm							Mkr1	650. -52.0	30 MHz)5 dBm		Auto Tune
10.0														Center Freq 2.000000 MHz
-10.0												DL1 -13.00 dBm	30	Start Freq 0.000000 MHz
-20.0													824	Stop Freq
-40.0										▲1			79 <u>Auto</u>	CF Step 0.400000 MHz Man
-60.0 ****** ***	haliya (1992 a 17 fer bakiya) waalaa ka ji Mjora Antoo	lana (II) Alexand	ر المحاولة الم <mark>رام الم</mark>	pagallan lite Managana ang	ر ما البي من م	ligi of solid to be a state	patrapara (pélitar patrapara patra)	n Hijjon og standen som	COLLECTION (and the following of the second s	nt _{en t} es atart e escenative	Darpelloggel (sekera oby Accellogic (sekera		Freq Offset 0 Hz
-70.0) MHz									S	top 82	24.0 MHz	Log	Scale Type <u>Lin</u>
#Res BW					#VBW	300 kHz		s	weep	38.11	ms (1:	5881 pts)		
MSG									STA	ATUS				

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 22 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 23 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



	ctrum Analyzer - Sw										d ×
LXI RL	RF 50 Ω	AC CO	RREC	SEI	ISE:INT	#Avg Typ	e: RMS		M May 14, 2019 CE 1 2 3 4 5 6	Frequ	iency
10 dB/div	Ref 10.00	IF	NO: Fast 🕞 Gain:Low	☐ Trig: Free #Atten: 3				۳۷ D Wkr1 9.67		Au	ito Tune
0.00											iter Freq 0000 GHz
-10.0									DL1 -13.00 dBm		art Freq 0000 GHz
-20.0											top Freq
-40.0 11011		in Jeen growth papers		a Stanio y Maria Stania National Angli Stania National Angli Stania Stanio	and a second		a Tanggan Sangara A Tanggan Sangara A Tanggan Sangara	h Bendard Jacon de Dig Berlinken Analike processer Manadasa de Angeli		10.00000	0000 GHz
-50.0											CF Step 0000 MHz Man
-60.0										Fre	q Offset 0 Hz
-80.0										Sca	ale Type
Start 1.00 #Res BW			#V <u>BV</u>	/ 3.0 MHz		s	weep	Stop 10 15.60 ms (1		Log	Lin
MSG								ATUS			

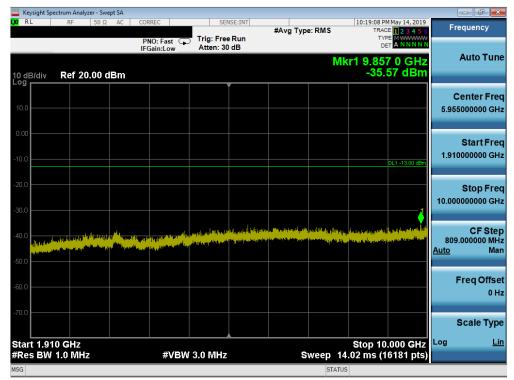
Plot 7-18. Conducted Spurious Plot (Cellular GPRS Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 24 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 24 of 109
© 2019 PCTEST Engineering Lab	oratory Inc	÷		V 9 0 02/01/2019



Keysight Spectrum Analyze						
RL RF	50 Ω AC CORF	0: Fast Trig: Fro ain:Low Atten: 3	ee Run	Гуре: RMS	10:18:56 PM May 14, 2019 TRACE 1 2 3 4 5 6 TYPE M TYPE A NNNNN	Frequency
	00 dBm			Mkr	1 1.765 0 GHz -38.38 dBm	Auto Tu
9 D.0						Center Fr 937.500000 M
.0					DL1 -13.00 dBm	Start Fr 30.000000 M
).0						Stop Fr 1.845000000 G
	hind and the second states where the	ani kananahalusin ja takatanahan	لمتخط بالمشربة والمعرفين والمتعالم والمتعالم	yallas pila midyt prilotte i t	unnun analy konderg	CF St 181.500000 M <u>Auto</u> N
.0						Freq Off 0
).0						Scale Ty
art 0.0300 GHz Res BW 1.0 MHz		#VBW 3.0 MH;	2	Sweep 2.4	Stop 1.8450 GHz 20 ms (3631 pts)	Log

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



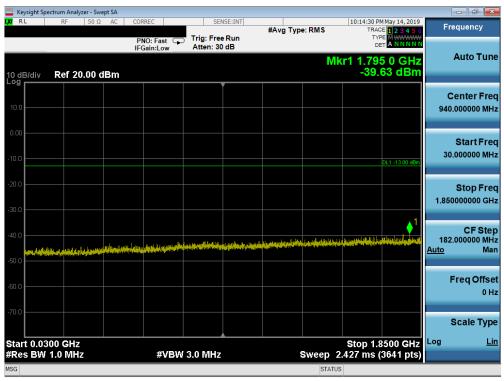
Plot 7-20. Conducted Spurious Plot (PCS GPRS Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 25 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 25 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



	ectrum Analyzer - Sv										
LX/ RL	RF 50 S	AC C	ORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	M May 14, 2019 DE 1 2 3 4 5 6	Freq	uency
10 dB/div	Ref 10.00		PNO: Fast 🕞 FGain:Low	Trig: Free Atten: 20			Μ	⊳ kr1 17.29	7 5 GHz 30 dBm	A	uto Tune
											nter Freq 00000 GHz
-10.0									DL1 -13.00 dBm		tart Freq 00000 GHz
-30.0) kashadan sedara na	and surger to the surger			t a been an a failte agus tha gas tha gas t	a bhair an suithean a		top Freq 00000 GHz
-50.0		nyak program katalan ka	den () () (i de en del) and d'i be en processe general polet (bier	والاشتقال والمراهب						1.00000 <u>Auto</u>	CF Step 00000 GHz Man
-70.0										Fre	eq Offset 0 Hz
-80.0 Start 10.0	00 GHz							Stop-20	.000 GHz	Sc Log	ale Type <u>Lin</u>
#Res BW			#VBW	/ 3.0 MHz		s	weep	25.33 ms (2	20001 pts)	-	
MSG							STA	TUS			

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



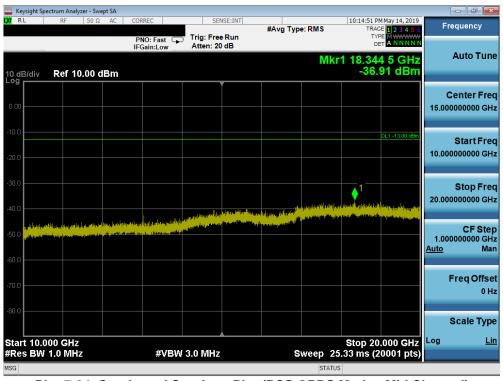
Plot 7-22. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 26 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 26 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



	pectrum Analyzer -										F X
X/ RL	RF 5	Ω AC	CORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	M May 14, 2019 DE 1 2 3 4 5 6	Frequen	су
			PNO: Fast IFGain:Low	Trig: Free Atten: 30				TYI Di	PE M WWWWW ET A N N N N N		
			II GUILLOUT				N	lkr1 9.91	2 5 GHz	Auto	Tune
10 dB/div Log	Ref 20.0	0 dBm						lkr1 9.91 -35.	81 dBm		
										Cente	r Frea
10.0										5.95500000	
0.00										Star	tFreq
-10.0									DL1 -13.00 dBm	1.9100000	00 GHz
									0E1-13.00 0Bm		
-20.0										Stop	o Freq
-30.0										10.0000000	00 GHz
-40.0	STREET, STREET	A LODING TO A LODING	and the set of the set	Hanga Helling d	rugar (Spage) (da da caster da da data	angenisten segen Alexandrik di Analas	մեստում _{եր} ինը։ Իստոնեւսությ	tergy Repliced with a laptic		CF 809.00000	Step
and the second second	and the second states of the second	elinin a second	بالأحصاص المراج							Auto	Man
-50.0											
-60.0										Freq	
											0 Hz
-70.0										Scalo	е Туре
Start 1.9	10 GHz 1.0 MHz		#\/D\	/ 3.0 MHz		6	woon		.000 GHz	Log	Lin
#Res BW	1.0 MHz		#VBV	7 3.0 MHZ		5	weep 1	14.02 ms (1	orar pis)		
150							STAT	03			

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



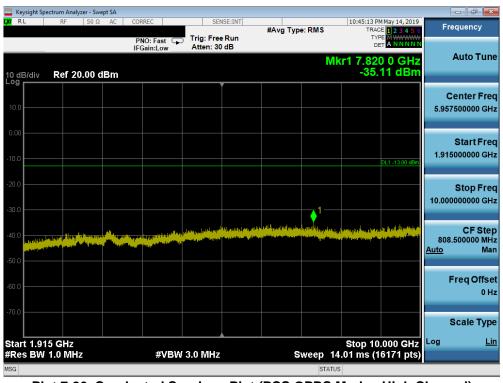
Plot 7-24. Conducted Spurious Plot (PCS GPRS Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 07 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 27 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



	ectrum Analyzer - S	Swept SA								[
LX/IRL	RF 50	Ω ΑC (CORREC	SEI	NSE:INT	#Avg Typ	e: RMS		M May 14, 2019 CE 1 2 3 4 5 6	Fre	equency
10 dB/div	Ref 20.00		PNO: Fast G	Trig: Free Atten: 30			M	□ Ikr1 1.71	7 5 GHz 68 dBm		Auto Tune
10.0											enter Freq .000000 MHz
-10.0									DL1 -13.00 dBm	30.	Start Freq .000000 MHz
-20.0										1.850	Stop Freq
-40.0	Life-ser <mark>e</mark> retetantetantetan	Anitologia de la desta de la	and the first first of						↓ 1 decandinglationspi	182. <u>Auto</u>	CF Step 000000 MHz Man
-60.0										F	Freq Offset 0 Hz
-70.0 Start 0.03								Stop 4	8500 GHz	tog	Scale Type Lin
#Res BW			#VBW	/ 3.0 MHz			Sweep	2.427 ms	8500 GHZ (3641 pts)		
MSG							STAT	US			

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 28 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



	ectrum Analyzer - Sw										
LXI RL	RF 50 S	AC CC	RREC	SEN	ISE:INT	#Avg Typ	e: RMS		M May 14, 2019 CE 1 2 3 4 5 6	Frequ	ency
		F	PNO: Fast 🕞 Gain:Low	Trig: Free Atten: 20				kr1 18.97		Au	to Tune
10 dB/div Log	Ref 10.00	dBm						-37	.11 dBm		
0.00										Cen 15.00000	ter Freq 0000 GHz
-10.0									DL1 -13.00 dBm		ort Erog
-20.0										10.00000	art Freq 0000 GHz
-30.0									1	St	op Freq
-40.0		a sa	Contraction of the second s		anan di mining ngangangang ngangang ngang ng Ngang ngang ngan		a Sigata Singar Ang Sing Singh	n _{en e} n gesternen bester telep Tressen bester ^{en e} n en det en er	Handlad a special and		CF Step
-50.0	alantha ann a le gu airgean à cainte b	., <u>.h., a.k.aisister</u> a	<u>at and part and an </u>								0000 GHz Man
-60.0											
-70.0										Fre	q Offset 0 Hz
-80.0										Sca	ale Type
Start 10.0 #Res BW			#VBW	3.0 MHz		s	weep	Stop 20 25.33 ms (2).000 GHz 20001 pts)	Log	<u>Lin</u>
MSG							STA	TUS			

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

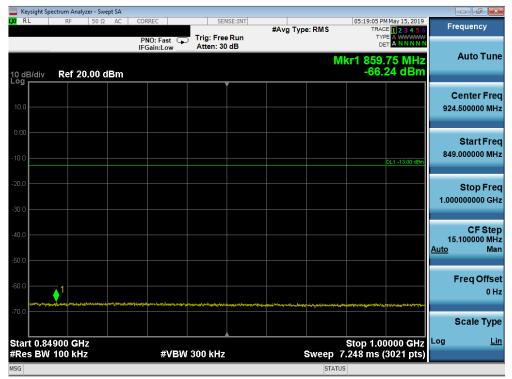
FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 20 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 29 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



Cellular CDMA Mode

	ectrum Analyzer	- Swept SA							[
<mark>(</mark> RL	RF 5	50 Ω AC	CORREC PNO: Fast		#Avg Typ	e: RMS	TRAC	1 May 15, 2019 E <mark>1 2 3 4 5 6</mark> E A WWWWW T A N N N N N	Fre	equency
I0 dB/div	Ref 20.0	0 dBm				Μ	kr1 823. -32.	00 MHz 13 dBm		Auto Tun
10.0										enter Fre 500000 MH
10.00								DL1 -13.00 dBm	30	Start Fre .000000 MH
30.0								1	823	Stop Fre .000000 МН
40.0									79 <u>Auto</u>	CF Ste 300000 M⊦ Ma
60.0	ng ti sand i Shing Menderson ay								F	Freq Offs 0 F
70.0	A	- 11 14	er, a de la la contra de la contra d							Scale Typ
Start 30.0 Res BW			#VBI	N 300 kHz	s	weep 38	8 Stop 3.06 ms (1	23.0 MHz 5861 pts)	Log	Li
SG						STATU	5			

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 30 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



	ctrum Analyzer - Sv									- F	×
L <mark>XI</mark> RL	RF 50 \$	AC C	ORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	May 15, 2019	Frequency	,
			PNO: Fast 🕞	Trig: Free #Atten: 3		•	M	TYP		Auto T	une
10 dB/div Log	Ref 10.00	dBm						-45.	66 dBm		
				``````````````````````````````````````						Center F	req
0.00										5.50000000	GHz
-10.0											
10.0									DL1 -13.00 dBm	Start F	
-20.0										1.000000000	GHz
-30.0											
-30.0										Stop F 10.000000000	
-40.0									1	10.00000000	OTTE
-50.0			<u> </u>	and the state of the state	and a second second plant.					CFS	
			ALC: NOT THE REAL PROPERTY OF							900.000000 <u>Auto</u>	MHz Man
-60.0											
-70.0										Freq Of	
											0 Hz
-80.0										Scale T	VDe
Start 1.00 #Res BW			#VBW	3.0 MHz		s	weep 1	Stop 10 5.60 ms (1	000 0112	Log	Lin
MSG							STATU				

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

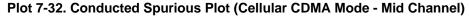


Plot 7-31. Conducted Spurious Plot (Cellular CDMA Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 21 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 31 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



	ctrum Analyz												
L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC			ISE:INT	#Avg Typ	e: RMS	TRA	M May 15, 2019 CE 1 2 3 4 5 6	Frequ	lency
				PNO: F	ast 🖵	Trig: Free Atten: 30				T			
				II Outilit						/kr1 855	.20 MHz	Αι	ito Tune
10 dB/div	Ref 20	.00 di	Bm							-62	.01 dBm		
						,						Cer	nter Freg
10.0													0000 MHz
0.00												9	tart Freg
-10.0													0000 MHz
-10.0											DL1 -13.00 dBm		
-20.0												6	top Freq
													0000 GHz
-30.0													
-40.0													CF Step
-40.0												15.10 <u>Auto</u>	0000 MHz Man
-50.0												Auto	Wall
1												Ere	eq Offset
-60.0													0 Hz
-70.0	alan and a second		****		4. Mar. 19. 100	thing in the party of the party	and regiments	****	atter frankriget of galaise	alaan ahaa ahaa ahaa ahaa ahaa ahaa ahaa	and the state of the		
-70.0												Sc	ale Type
<b>0</b> 4										04		Log	Lin
Start 0.84 #Res BW					≠vΒw	300 kHz			Sweep	5top 1.0 7.248 ms	0000 GHz (3021 pts)	209	<u></u>
MSG									STAT				



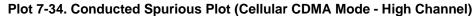


Plot 7-33. Conducted Spurious Plot (Cellular CDMA Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 32 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



	ectrum Analyz											_	
LX/RL	RF	50 Ω	AC	CORRE	C	SE	NSE:INT	#Avg Typ	e: RMS	05:21:53 P	M May 15, 2019	Fre	quency
				PNO: IFGair	Fast 🖵 n:Low	Trig: Fre Atten: 3		0 //		TYI Di	.90 MHz		Auto Tune
10 dB/div	Ref 20	.00 dl	Bm							-62.	52 dBm		
							Ĭ					С	enter Freq
10.0												427.	000000 MHz
0.00													Start Freq
-10.0											DL1 -13.00 dBm	30.	000000 MHz
-20.0													Stop Freq
-30.0													000000 MHz
-40.0													CF Step
												79. <u>Auto</u>	400000 MHz Man
-50.0													
-60.0													req Offset 0 Hz
-70.0					lana in fan de se altra de la		aniya aiy lahisar	n 10 an dir rijei we De estie					
													scale Type
Start 30.0 #Res BW					#VBW	300 kHz		s	weep 38	Stop 8 11 ms (1	24.0 MHz 5881 pts)	LOU	Lin
MSG									STATUS	1			





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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 02 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 33 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	÷		V 9.0 02/01/2019



	ctrum Analyzer - Sw									
LXI RL	RF 50 Ω	AC CO	DRREC	SEI	NSE:INT	#Avg Typ	e: RMS	TRA	M May 15, 2019 CE 1 2 3 4 5 6	Frequency
			PNO: Fast Gain:Low	Trig: Free #Atten: 3				Mkr1 9.96		Auto Tune
10 dB/div Log	Ref 10.00 d	dBm						-45	.83 dBm	
										Center Freq
0.00										5.50000000 GHz
-10.0									DL1 -13.00 dBm	Start Freq
-20.0										1.000000000 GHz
-30.0										Stop Freq 10.00000000 GHz
-40.0										10.00000000 GHZ
-50.0					and the second second second					CF Step
										900.000000 MHz <u>Auto</u> Man
-60.0										
-70.0										Freq Offset 0 Hz
-80.0										
										Scale Type
Start 1.00 #Res BW			-#\/B\A	/ 3.0 MHz				Stop 10 15.60 ms (*	0.000 GHz	Log <u>Lin</u>
#Res DW			#VBV	-5.0 WHZ		5		1 <b>3.60 MS (</b> TUS	rado r pts)	

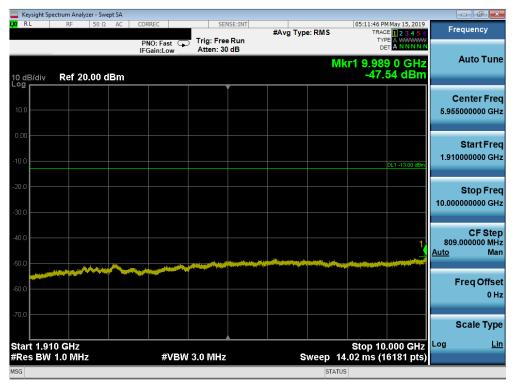
Plot 7-36. Conducted Spurious Plot (Cellular CDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 24 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 34 of 109
© 2019 PCTEST Engineering Labo	pratory. Inc.	÷		V 9.0 02/01/2019



	trum Analyzer												- 0
RL	RF	50Ω AC	F	ORREC PNO: Fa Gain:Lo	st 🖵		SENSE:INT Free Run : 30 dB	#Avg Ty	be:RMS	TRA	PM May 15, 2019 ACE 1 2 3 4 5 6 YPE A WWWWW DET A NNNNN	Fre	equency
) dB/div	Ref 20.0	0 dBm	n						Μ	kr1 1.84 -44	5 0 GHz .73 dBm		Auto Tur
													enter Fre 500000 Mi
.00 D.0											DL1 -13.00 dBm	30.	Start Fr 000000 M
).0 ).0												1.845	<b>Stop Fr</b> 000000 G
).0											1, 	181. <u>Auto</u>	CF St 500000 M M
).0					*****	n, , , age gident A	Automogelezhour transser		~3949*************************	<u></u>	gengedenten _e n optimet optimet of more t	F	req Offs 0
tart 0.030												s Log	Scale Ty
Res BW 1 G	.U WIHZ			#	ABM	3.0 M	HZ		Sweep		(3631 pts)		_

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 25 of 100	
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 35 of 109	
© 2010 PCTEST Engineering Lab		\/ 9 0 02/01/2019			



PNO: Fast PNO: Fast		ectrum Analyzer - Sv									- F	×
PN: Fast       Trig: Free Run Atten: 20 dB       Mkr1 17.702 5 GHz -49.12 dBm         10 dB/div       Ref 10.00 dBm       -49.12 dBm         000	LXI RL	RF 50 S	2 AC C	ORREC	SEI	ISE:INT	#Ava Tvp	e: RMS			Frequency	
Wiki 1 //. / 02 3 GHz         Center Freq           10 dB/div         Ref 10.00 dBm         Center Freq           100         Center Freq         15.00000000 GHz           100         Center Freq         10.00000000 GHz				PNO: Fast 🕞 IFGain:Low			"a)P		TYI Di		Auto Ti	une
000 Center Freq   10.00000000 <td< td=""><td>10 dB/div</td><td>Ref 10.00</td><td>dBm</td><td></td><td></td><td></td><td></td><td>Mk</td><td>r1 17.70 -49.</td><td>2 5 GHz 12 dBm</td><td>Autorit</td><td></td></td<>	10 dB/div	Ref 10.00	dBm					Mk	r1 17.70 -49.	2 5 GHz 12 dBm	Autorit	
10.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0	3										Center F	req
200       U1 + 300 GHz       Start Freq         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz         200       U1 + 300 GHz       U1 + 300 GHz	0.00										15.000000000	GHz
200 200 200 200 200 200 200 200	-10.0									DL1 -13.00 dBm	Start E	rog
400 400 400 400 400 400 400 400	-20.0											
40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0												
400 500 500 500 500 500 500 500	-30.0										•	
300       1.00000000 GHz         4uto       Man         4uto       Man         700       Image: Start 10.000 GHz         #Res BW 1.0 MHz       #VBW 3.0 MHz       Sweep 25.33 ms (20001 pts)	-40.0							4			20.0000000000	энz
60.0       Auto       Man         60.0       Man       Freq Offset         70.0       Man       Man         80.0       Man       Freq Offset         60.0       Man       Man         80.0       Man       State         80.0       Man       Man         80.0       Man       Man         80.0       Man       Man         State       Man       Man         State       Man       Man         State       Man       Man         Man       Man       Man         Man </td <td>-50.0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>CF St</td> <td>tep</td>	-50.0										CF St	tep
2000       2000       Freq Offset         7000       2000       2000         8000       2000       2000         8000       2000       2000         Start 10.000 GHz       #VBW 3.0 MHz       Sweep 25.33 ms (20001 pts)	and the second second											
2700 2700 2700 2700 2700 2700 2700 2700	-60.0											
Start 10.000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 25.33 ms (20001 pts)	-70.0										-	
Start 10.000 GHz         Stop 20.000 GHz           #Res BW 1.0 MHz         #VBW 3.0 MHz         Sweep 25.33 ms (20001 pts)	-80.0											
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 25.33 ms (20001 pts)											Scale Ty	уре
				#\/B\				woon J	Stop 20	.000 GHz	Log	<u>Lin</u>
ISG STATUS	#Res DW	1.0 10142		#VDV	7 3.0 MHZ		5			ooor pis)		

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 26 of 100	
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 36 of 109	
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019				



	ectrum Analyz													
XI RL	RF	<b>50</b> Ω	AC	CORREC		SEN	ISE:INT	#Avg Typ	e RMS	05	10:16 PM	May 15, 2019	Fr	requency
				PNO: Fa IFGain:L		Trig: Free Atten: 30		#/19 I JP			TYP			
10 dB/div Log	Ref 20	.00 d	Bm							Mkr1 9	9.967 -47.9	0 GHz 01 dBm		Auto Tune
													c	Center Freq
10.0													5.95	5000000 GHz
0.00														
-10.0													1.91	Start Freq 0000000 GHz
-10.0												DL1 -13.00 dBm		
-20.0														Stop Freq
-30.0													10.00	0000000 GHz
														CF Step
-40.0												1	809 <u>Auto</u>	0.000000 MHz. Man
-50.0	and the second	Ning				and a second second								
-60.0													I	Freq Offset
														0 Hz
-70.0														Scale Type
Start 1.91	0 GHz									St	op 1 <u>0.</u>	000 GHz	Log	<u>Lin</u>
#Res BW				#	VBW	3.0 MHz		\$	weep	14.02	<u>ms (1</u>	6181 pts)		
MSG									ST/	ATUS				

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 27 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 37 of 109
© 2019 PCTEST Engineering Lab	V 9 0 02/01/2019			



	ctrum Analyzer - Swep	ot SA								-	
LX/RL	RF 50 Ω	AC COR	REC	SEN	ISE:INT	#Avg Typ	e: RMS		M May 15, 2019 E 1 2 3 4 5 6	Frec	uency
10 dB/div	Ref 20.00 df	IFO	NO: Fast ⊆ Gain:Low	Trig: Free Atten: 30			MI	TYI Di	2 0 GHz 28 dBm	Δ	uto Tune
10.0											nter Freq 00000 MHz
-10.0									DL1 -13.00 dBm		Start Freq 00000 MHz
-20.0											Stop Freq 00000 GHz
-40.0									1	182.0 <u>Auto</u>	CF Step 00000 MHz Man
00.0	Merical galaxy might read grade and star	an a	and an	ngungana lingungi dik ^{an} darinan n	ing division of the biggs of					Fr	eq Offset 0 Hz
-70.0 Start 0.03	00 GHz							Stop 11	3500 GHz		cale Type Lin
#Res BW			#VBW	/ 3.0 MHz			Sweep 2	.427 ms (	(3641 pts)		
MSG							STATUS	5			

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 38 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



	ctrum Analyzer - Swe									
LXI RL	RF 50 Ω	AC CO	ORREC	SEI	NSE:INT	#Avg Typ	e: RMS		M May 15, 2019	Frequency
		F	PNO: Fast Gain:Low	Trig: Free Atten: 20				TYF DE kr1 18.30		Auto Tune
10 dB/div Log	Ref 10.00 d	IBm						-48.	60 dBm	
0.00										Center Freq 15.000000000 GHz
-10.0									DL1 -13.00 dBm	
-20.0										Start Freq 10.000000000 GHz
-30.0										Stop Freq 20.000000000 GHz
-40.0								<b>♦</b> ¹		CF Step
-50.0				_						1.000000000 GHz <u>Auto</u> Man
-70.0										Freq Offset 0 Hz
-80.0										Scale Type
Start 10.0 #Res BW			#VBV	/ 3.0 MHz		s	weep	Stop 20 25.33 ms (2	.000 0112	Log <u>Lin</u>
MSG							STA	TUS		

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

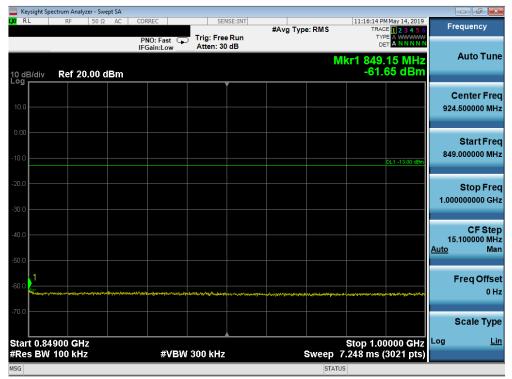
FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 20 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 39 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



# Cellular WCDMA Mode

Keysight Spe													_	- 6
RL	RF	50 Ω	AC	PNO: F	ast 🕞		SENSE Free R en: 30 d	lun	#Avg Ty	be: RMS	TRA	MMay 14, 2019 CE 1 2 3 4 5 6 PE A WWWWW ET A NNNNN	Fi	requency
) dB/div	Ref 2	0.00 d	Bm							N	lkr1 822 -27	.70 MHz .76 dBm		Auto Tun
0.0														Center Fre
).0												DL1 -13.00 dBm	3(	Start Fre
).0 ).0												1	823	Stop Fre 3.000000 MI
).0 ).0													79 <u>Auto</u>	CF Ste 9.300000 M M
).0			nigi ni silajing	****										Freq Offs 0 I
0.0 tart 30.0	MHZ										Ston	323.0 MHz		Scale Typ L
Res BW		z			#VBW	300	kHz			Sweep 3	8.06 ms ('	15861 pts)		

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 40 of 100
IM1904220062-02.ZNF 04/23 - 05/16/2019		Portable Handset	Page 40 of 109	
© 2010 PCTEST Engineering Labo	V 9 0 02/01/2019			



	ectrum Analyzer - S										
LXI RL	RF 50	Ω AC C	ORREC	SEN	SE:INT	#Avg Typ	e: RMS		M May 14, 2019 CE 1 2 3 4 5 6	Frequence	су
			PNO: Fast G	Trig: Free #Atten: 3		0 ,1		TY		Auto	Tune
10 dB/div Log	Ref 10.00	dBm						-43.	57 dBm		
				,	Í					Center	r Frea
0.00										5.50000000	
-10.0									DL1 -13.00 dBm	Start	tFreq
-20.0										1.00000000	0 GHz
-30.0										Stop	Freq
-40.0									1	10.0000000	0 GHz
-40.0					within a state on the		and the second se	and the second state of the state of the second state of the secon			
-50.0		ne man	$\gamma$							CF 900.00000	Step
and designed in										Auto	Man
-60.0											
-70.0										FreqC	
											0 Hz
-80.0										0 colta	-
										Scale	туре
Start 1.00								Stop 10	.000 0112	Log	Lin
#Res BW	1.0 MHz		#VBW	3.0 MHz		s		15.60 ms (1	18001 pts)		
MSG							STA	105			

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 41 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 41 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.			V 9.0 02/01/2019



	ctrum Analyzer - Swept SA									
LX/IRL	RF 50 Ω AC	CORREC	SEN	SE:INT	#Avg Typ	e: RMS		MMay 14, 2019	Frequer	ncy
		PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 30				TYP		Auto	Tune
10 dB/div Log	Ref 20.00 dBm						-51.	81 dBm		
									Cente	r Frea
10.0									924.5000	
0.00										
0.00										tFreq
-10.0								DL1 -13.00 dBm	849.0000	00 MHz
-20.0										
-20.0									Sto 1.0000000	p Freq
-30.0									1.0000000	00 0112
-40.0									C	= Step
-40.0									15.1000 <u>Auto</u>	00 MHz Man
-50.0										
-60.0									Freq	Offset
	ช่องการใช้รูงมีของรูปชุดภาพในสารเสียงหูสารสารไปที่จ	the manager and the state of th	م <mark>اریسرد</mark> ی میآیده هادیوارد ده	yerleyetserrentranser				asahaan yaharay		0 Hz
-70.0									- Seel	Turne
										туре
Start 0.849 #Res BW		#\/B\A	300 kHz			Sween	Stop 1.00 7.248 ms (	0000 GHz	Log	Lin
MSG		# V D V V	000 MHZ			STAT		ooz i pis)		

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



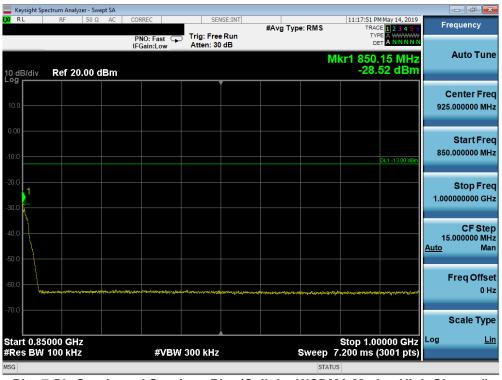
Plot 7-51. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 42 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 42 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



	ctrum Analyzer - Swe										
LX/IRL	RF 50 Ω	AC CO	DRREC		ISE:INT	#Avg Typ	e: RMS	TRAC	MMay 14, 2019	Frequ	ency
10 dB/div Log	Ref 20.00 d		PNO: Fast 🕞	Trig: Free Atten: 30			M	or 1824.	00 MHz 43 dBm	Au	to Tune
10.0											ter Freq 1000 MHz
-10.0									DL1 -13.00 dBm		art Freq 1000 MHz
-20.0											op Freq 1000 MHz
-40.0										( 79.400 <u>Auto</u>	CF Step 0000 MHz Man
-60.0									1,	Fre	q Offset 0 Hz
-70.0 Start 30.0	MHz							Stop 8	24.0 MHz		ile Type <u>Lin</u>
#Res BW			#VBW	300 kHz		S		.11 ms (1	5881 pts)		
MSG							STATUS				





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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 42 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 43 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



	ctrum Analyzer - S										
LXI RL	RF 50	Ω ΑC (	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	M May 14, 2019	Frequence	су
			PNO: Fast G	Trig: Free #Atten: 30		• //	N	DI 1kr1 9.99		Auto	Tune
10 dB/div Log	Ref 10.00	dBm					_	-43.	98 dBm		
0.00										Center 5.50000000	
-10.0									DL1 -13.00 dBm		
-20.0										Start 1.00000000	t Freq 0 GHz
-30.0										Stop 10.00000000	Freq 0 GHz
-40.0					performant of the				1. 	CF	Step
-60.0										900.00000 <u>Auto</u>	0 MHz Man
-70.0										Freq C	Offset 0 Hz
-80.0										Scale	Туре
Start 1.00 #Res BW			#VBW	/ 3.0 MHz		s	ween '	Stop 10 15.60 ms (1	.000 0112	Log	<u>Lin</u>
MSG							STAT	· ·	(101 p(3)		_

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 11 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 44 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



# AWS WCDMA Mode

	#VBVV 3.0 WIHZ	Sweep		
art 0.0300 GHz es BW 1.0 MHz	#VBW 3.0 MHz	Swoon	Stop 1.7050 GHz 2.233 ms (3351 pts)	Log <u>L</u>
.0				Scale Ty
				0
.0				Freq Offs
0.		an fan fan se ar an an an ar		
				Auto N
o				CF St 167.500000 N
			1	
0				1.705000000 G
0				Stop Fr
			DL1-13.00 dBm	
o			DL1 -13.00 dBm	30.000000 N
				Start Fr
.0				867.500000 N
g				Center Fr
dB/div Ref 20.00 dBm			-36.19 dBm	
	IFGain:Low Atten: 30 dB	M	kr1 1.705 0 GHz	Auto Tu
	PNO: Fast Trig: Free Run	#Avg Type. Rivis	TYPE A WWWWW DET A NNNNN	
RL RF 50 Ω AC	CORREC SENSE:INT	#Avg Type: RMS	11:06:28 PM May 14, 2019 TRACE 1 2 3 4 5 6	Frequency

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 45 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 45 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



	ctrum Analyzer - Swep	ot SA									7 ×
LX/RL	RF 50 Ω	AC CO	RREC	SEI	NSE:INT	#Avg Typ	e: RMS		PM May 14, 2019 ACE 1 2 3 4 5 6	Frequen	су
		P	NO: Fast Ģ Gain:Low	Trig: Free Atten: 20				T		Auto	Tune
10 dB/div Log	Ref 10.00 dl	Bm						-44	.83 dBm		
										Center	r Freq
0.00										15.0000000	00 GHz
-10.0									DL1 -13.00 dBm		
										Start 10.0000000	tFreq
-20.0										10.0000000	JU GHZ
-30.0										Stor	Freq
										20.00000000	
-40.0								<b>≬</b> 1			
-50.0						have been a set	-			CF	Step
										1.00000000 <u>Auto</u>	00 GHz Man
-60.0											
-70.0										Freq	
											0 Hz
-80.0										Scale	Turne
Start 10.00 #Res BW			#\/B\/	V 3.0 MHz			ween	Stop 2 25.33 ms (	0.000 0112	Log	Lin
MSG	NV WITH2		<i></i>	- 5.0 WITIZ				ATUS	2000 ( pis)		

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



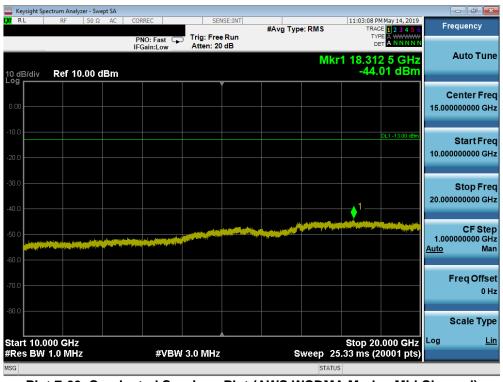
Plot 7-58. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 40 of 400
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 46 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



	ectrum Analyzer - Swe										
LX/RL	RF 50 Ω	AC COI	RREC	SEN	ISE:INT	#Avg Typ	e: RMS		M May 14, 2019 CE 1 2 3 4 5 6	Free	quency
			NO: Fast 🕞 Gain:Low	Trig: Free Atten: 30		• //		TY D			
10 dB/div Log	Ref 20.00 c	IBm					Μ	lkr1 6.89 -42	5 0 GHz 12 dBm		Auto Tune
											enter Freq
10.0										5.8775	500000 GHz
0.00										:	Start Freq
-10.0									DL1 -13.00 dBm	1.7550	00000 GHz
-20.0											Stop Freq
-30.0											000000 GHz
						<b>1</b>					CF Step
-40.0		an a	L. of the local	والمشتر والمعري	and the second strength		kone, IL _{serve} r	a., poleste bassant	and the second	824.5 <u>Auto</u>	600000 MHz Man
-50.0	and provide the second second second		in a superior such	and the second	alini dalah d	the second second second	an a	int difficultion			
-60.0										F	req Offset
-70.0											0 Hz
										S	cale Type
Start 1.75 #Res BW			#VBIA	/ 3.0 MHz			ween_1	Stop 10	).000 GHz (6491 pts)	Log	<u>Lin</u>
	ts changed; all t	races clear					STAT		erer proj		

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 47 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 47 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



	ectrum Analyzer - Swe										
LX/RL	RF 50 Ω	AC CC	RREC	SEN	ISE:INT	#Avg Type	E: RMS		May 14, 2019	Fre	equency
10 dB/div	Ref 20.00 c	IF	PNO: Fast 🕞 Gain:Low	Trig: Free Atten: 30		0 /		TYF DE ( <b>r1 1.68</b> 1			Auto Tune
10.0											enter Freq .000000 MHz
-10.0									DL1 -13.00 dBm	30.	Start Freq .000000 MHz
-20.0										1.710	Stop Freq 0000000 GHz
-40.0							alling Bable ( some a	d a secondaria de competition	\$	168. <u>Auto</u>	CF Step 000000 MHz Man
-60.0	in the second	مول مناجبة مع يورو و يرين مع	**************************************							F	Freq Offset 0 Hz
-70.0 Start 0.03								Stop 1.7	100 0112	ې Log	Scale Type <u>Lin</u>
#Res BW	1.0 MHz		#VBN	/ 3.0 MHz				2.240 ms (	3361 pts)		
MSG							STATU	5			

Plot 7-61. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)



Plot 7-62. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 40 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 48 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



	ctrum Analyzer - Swe										
LXI RL	RF 50 Ω	AC (	CORREC		VSE:INT	#Avg Typ	e:RMS	TRA	M May 14, 2019 CE <b>1 2 3 4 5</b> 6	Fre	quency
10 dB/div Log	Ref 10.00 c		PNO: Fast ⊂ IFGain:Low	Trig: Free Atten: 20			M	₀ kr1 18.29	4 0 GHz 79 dBm	,	Auto Tune
0.00											enter Freq 000000 GHz
-10.0									DL1 -13.00 dBm		Start Freq 000000 GHz
-30.0								1			Stop Freq 000000 GHz
-50.0										1.000 <u>Auto</u>	CF Step 000000 GHz Man
-70.0										F	req Offset 0 Hz
-80.0 Start 10.00 #Res BW			#VB	W 3.0 MHz			weep	Stop 20 25.33 ms (2	.000 0112	S Log	cale Type <u>Lin</u>
MSG							STA				

Plot 7-63. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 40 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 49 of 109
© 2019 PCTEST Engineering Lab	oratory Inc	÷		V 9 0 02/01/2019



RL RF	lyzer - Swept SA 50 Ω AC	CORREC	SENSE:INT		10:56:09 PM May 14, 2019	
True IN	20.37 40	PNO: Fast	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Frequency
) dB/div Ref 2	20.00 dBm	IFGain:Low	Atten: 30 dB	N	lkr1 1.845 0 GHz -34.32 dBm	Auto Tur
0.0						Center Fre 937.500000 Mi
0.0					DL1 -13.00 dBm	Start Fr 30.000000 M
0.0					1	Stop Fr 1.845000000 G
0.0					and the state of the	CF St 181.500000 M <u>Auto</u> N
0.0		nadi na kata na				Freq Offs 0
0.0						Scale Ty
tart 0.0300 GH Res BW 1.0 MI		#VBW	3.0 MHz	Sweep	Stop 1.8450 GHz 2.420 ms (3631 pts)	Log <u>I</u>

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



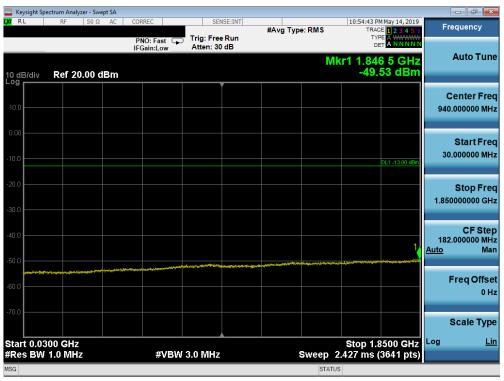
#### Plot 7-65. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 50 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 50 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



	ctrum Analyzer - Swep									
L <mark>XI</mark> RL	RF 50 Ω				#Avg Typ	e: RMS	TRAC	M May 14, 2019 CE 1 2 3 4 5 6 PE A WWWWW	Frequ	uency
10 dB/div Log	Ref 10.00 df	IFG	IO: Fast     ⊊ Sain:Low	Atten: 20		Mk	r1 18.29 -44.		A	uto Tune
0.00										nter Freq 10000 GHz
-10.0								DL1 -13.00 dBm		tart Freq 10000 GHz
-30.0							<b>1</b>			top Freq 00000 GHz
-50.0										CF Step 00000 GHz Man
-70.0									Fre	eq Offset 0 Hz
Start 10.0 #Res BW			#VBM	/ 3.0 MHz	s	weep 2	Stop 20 25.33 ms (2	.000 0112	Sc Log	ale Type <u>Lin</u>
MSG						STAT				

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo E1 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 51 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	÷		V 9.0 02/01/2019



	ectrum Analyzer - Sw										
L <mark>XI</mark> RL	RF 50 Ω	2 AC C	ORREC	SEI	ISE:INT	#Avg Typ	e: RMS		M May 14, 2019	Frequ	ency
10 dB/div	Ref 20.00		PNO: Fast	Trig: Free Atten: 30		0 ,1		rvi Di k <b>r1 9.98</b>	2 0 GHz 58 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		<u></u>					ang dia dia kaominina dia kaominina manjara dia kaominina dia k		1	809.000 <u>Auto</u>	CF Step 0000 MHz Man
-60.0										Fre	q Offset 0 Hz
-70.0 Start 1.91								Stop <u>10</u>	.000 0112	Sca Log	ile Type <u>Lin</u>
#Res BW	1.0 MHz		#VBV	V 3.0 MHz		S	weep 14	1.02 ms (1	6181 pts)		
MSG							STATU	s			

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



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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage E2 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 52 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	÷		V 9.0 02/01/2019



	ectrum Analyzei												d X
X/RL	RF	50 Ω .	AC	CORREC			ENSE:INT	#Avg Ty	/pe: RMS	TR	PM May 14, 2019 ACE 1 2 3 4 5 6	Frequ	ency
10 dB/div	Ref 20.0	00 dB		PNO: Fa IFGain:L	ow	Trig: Fr Atten:			Μ	kr1 1.83	32 0 GHz .47 dBm	Au	to Tune
10.0													ter Freq 0000 MHz
-10.0											DL1 -13.00 dBm		art Freq 0000 MHz
-20.0													op Frec 0000 GH2
-40.0								a de stanset wet i de	a day ang		1		CFStep 0000 MH2 Mar
60.0 <b></b>	**************************************			******								Fre	q Offse 0 Ha
-70.0 Start 0.03										Stop 1	0000 0112	Sca Log	ale Type <u>Lir</u>
#Res BW	1.0 MHz			#	VBW	3.0 MH	Z		Sweep		(3641 pts)		

Plot 7-70. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)



Plot 7-71. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 52 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 53 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	÷		V 9.0 02/01/2019



	ectrum Analyzer - Swe										d X
L <mark>XI</mark> RL	RF 50 Ω	AC CO	RREC	SEI	ISE:INT	#Avg Typ	e: RMS		M May 14, 2019	Freque	ncy
		P IF	NO: Fast 🕞 Gain:Low	Trig: Free Atten: 20				דיז ס <b>kr1 18.30</b>		Auto	Tune
10 dB/div Log	Ref 10.00 d	Bm						-44.	46 dBm		
0.00										Cente 15.0000000	er Freq 00 GHz
-10.0									DL1 -13.00 dBm	Sto	rt Erog
-20.0										10.0000000	rt Freq 00 GHz
-30.0										Sto 20.0000000	p Freq
-40.0											F Step
-50.0					· · · · · · · · · · · · · · · · · · ·					1.0000000 <u>Auto</u>	
-60.0										_	
-70.0										Freq	Offset 0 Hz
-80.0										Scal	е Туре
Start 10.0 #Res BW			#VBW	/ 3.0 MHz		s	weep	Stop 20 25.33 ms (2	.000 0112	Log	<u>Lin</u>
MSG							STA	TUS			

Plot 7-72. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga E4 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 54 of 109
© 2019 PCTEST Engineering Lab	oratory Inc	÷		V 9 0 02/01/2019



# 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 $43 + 10 \log_{10}(P_{[Watts]})$ , 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

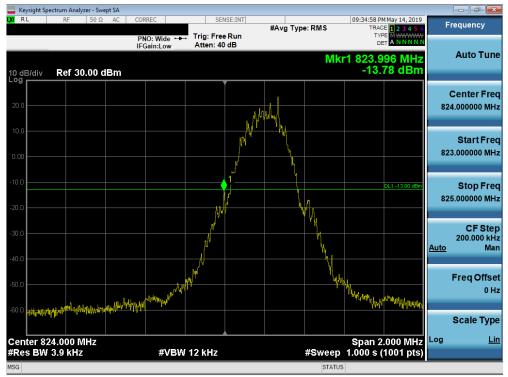
## Test Notes

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.

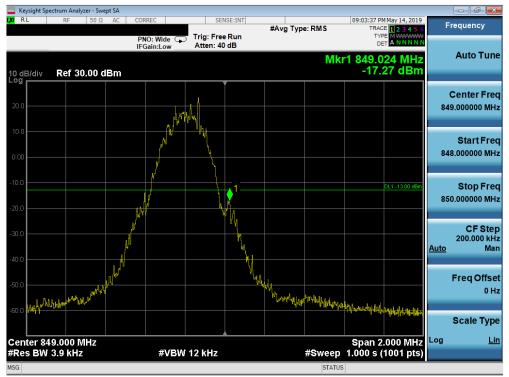
FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega EE of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 55 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	*		V 9.0 02/01/2019



## Cellular GSM/GPRS Mode



Plot 7-73. Band Edge Plot (Cellular GSM Mode - Low Channel)

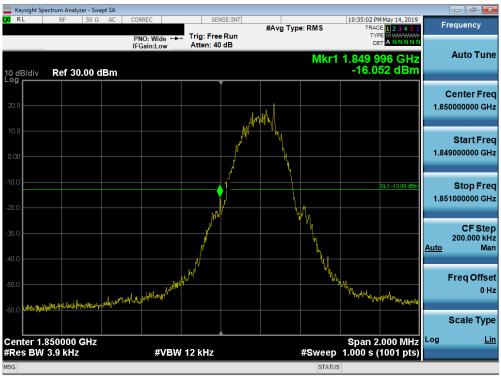


## Plot 7-74. Band Edge Plot (Cellular GSM Mode - High Channel)

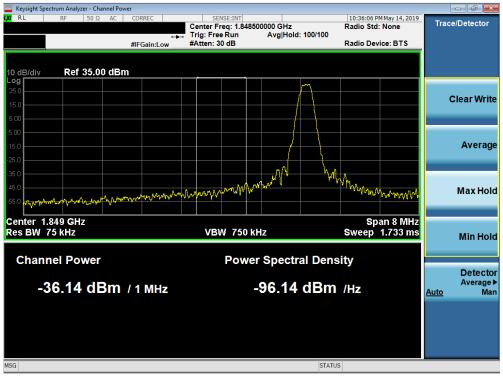
FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage EC of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 56 of 109
© 2010 PCTEST Engineering Lab	oratory Inc			\/ 9 0 02/01/2019



# PCS GSM/GPRS Mode



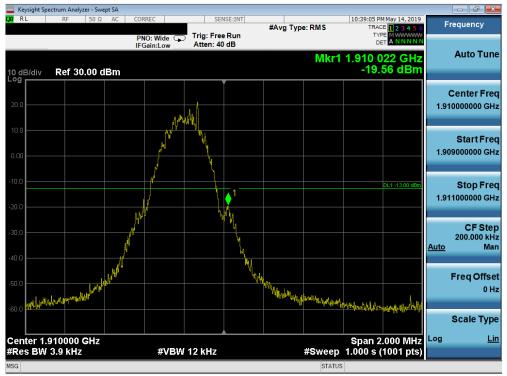
Plot 7-75. Band Edge Plot (PCS GSM Mode - Low Channel)



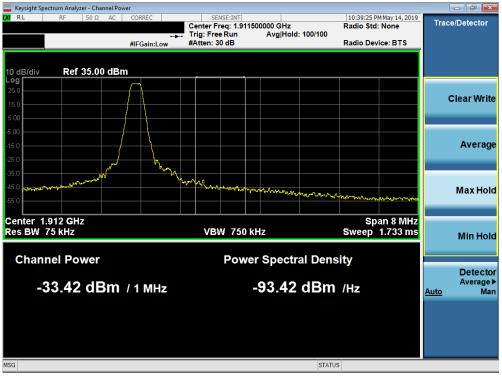
## Plot 7-76. 4MHz Span Plot (PCS GSM Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 57 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 57 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019





Plot 7-77. Band Edge Plot (PCS GSM Mode - High Channel)

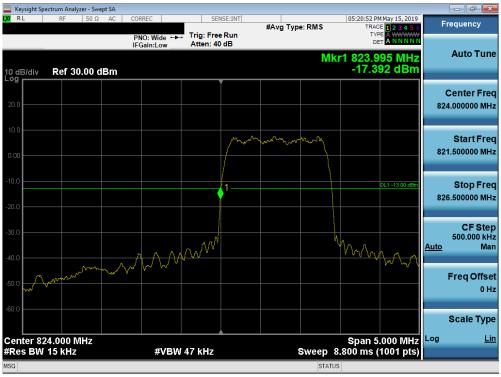


Plot 7-78. 4MHz Span Plot (PCS GSM Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege EQ of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 58 of 109
© 2019 PCTEST Engineering Lab	oratory, Inc.	•		V 9.0 02/01/2019



# Cellular CDMA Mode



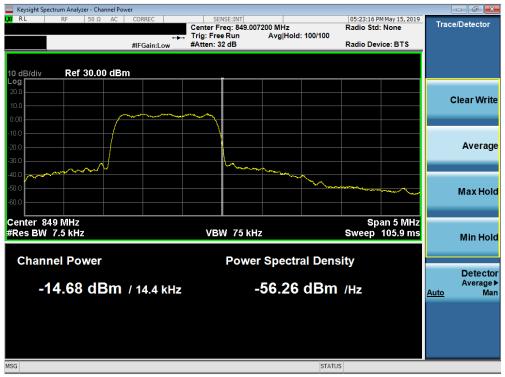
Plot 7-79. Band Edge Plot (Cellular CDMA Mode - Low Channel)



## Plot 7-80. 4MHz Span Plot (Cellular CDMA Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo E0 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 59 of 109
© 2010 PCTEST Engineering Lab	oratory Inc			\/ 9 0 02/01/2019





Plot 7-81. Band Edge Plot (Cellular CDMA Mode - High Channel)



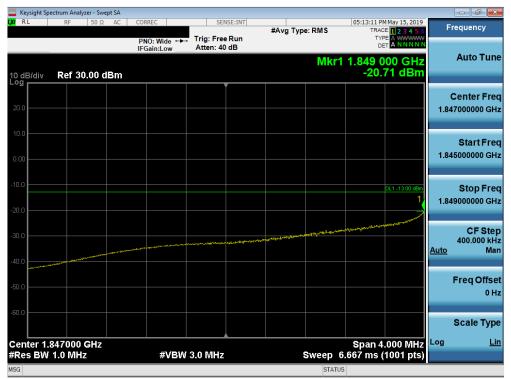
Plot 7-82. 4MHz Span Plot (Cellular CDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 60 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 60 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019





Plot 7-83. Band Edge Plot (PCS CDMA Mode - Low Channel)



## Plot 7-84. 4MHz Span Plot (PCS CDMA Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 61 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 61 of 109
© 2010 PCTEST Engineering Lab	oratory Inc			\/ 9 0 02/01/2019



	ectrum Analyze											[	- 0 ×
XIRL	RF	50 Ω	AC	CORREC		SEI	SE:INT	#Avg Ty	pe: RMS		M May 15, 2019 CE 1 2 3 4 5 6	Fre	equency
					/ide ↔→	Trig: Free		#/( <b>1</b> g / <b>)</b>	pe. runo	TΥ			
				IFGain:	Low	Atten: 40	dB			-			Auto Tune
									MK	r1 1.910 ( -31.6	JU5 GHZ		nuto nuno
10 dB/div Log	Ref 30.	00 d	Bm						_	-51.0	49 UBIII		
												с	enter Freg
20.0													000000 GHz
10.0													
		~~~	$\sim \sim \sim$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$\sim$								Start Freq
0.00					$\rightarrow$							1.907	500000 GHz
					<pre>\</pre>								
-10.0											DL1 -13.00 dBm		Stop Freq
												1.912	500000 GHz
-20.0													
	N				k		1						CF Step
-30.0	Aug -					mar and a start of the start of	han	~					500.000 kHz
-40.0							- Jorg	$\sqrt{\Lambda}$				<u>Auto</u>	Man
-40.0								- 44-4	m	man .			
-50.0											and the second	F	req Offset
													0 Hz
-60.0													
												5	Scale Type
Conton 4	010000-0	NU-7								Snor	000 MH-	Log	Lin
#Res BW	910000 G 15 kHz	ΠZ			#VBW	47 kHz			Sween	span : 8.800 ms	5.000 MHz (1001 pts)	209	<u></u>
MSG									STA		(1001 pt3)		
									514				

Plot 7-85. Band Edge Plot (PCS CDMA Mode - High Channel)



Plot 7-86. 4MHz Span Plot (PCS CDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 62 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 62 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019



## Cellular WCDMA Mode



Plot 7-87. Band Edge Plot (Cellular WCDMA Mode - Low Channel)



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

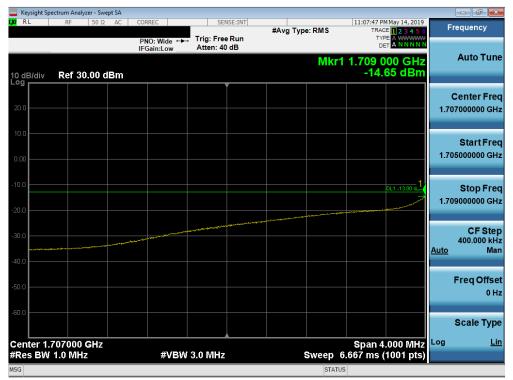
FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 62 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 63 of 109
© 2010 PCTEST Engineering Lab	oratory Inc			\/ 9 0 02/01/2019



# AWS WCDMA Mode



Plot 7-89. Band Edge Plot (AWS WCDMA Mode - Low Channel)



## Plot 7-90. 4MHz Span Plot (AWS WCDMA Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 64 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 64 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



	ectrum Analyzer - S										7 X
LXVI RL	RF 50	Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	MMay 14, 2019	Frequen	су
			PNO: Wide ↔ IFGain:Low	Trig: Free Atten: 40		• •		TYP			
			II Galli.Low				Mkr1	1.755 0	15 GHz	Auto	Tune
10 dB/div	Ref 30.00	dBm						-20.9	15 GHz 61 dBm		
										Center	r Erog
20.0										1.75500000	
										1.70000000	
10.0		~~~~	mmm	0.4							
		السمر		Le v						Star1 1.74750000	tFreq
0.00										1.74750000	JU GHZ
40.0		1									
-10.0									DL1 -13.00 dBm		Freq
-20.0					<u></u>					1.76250000	00 GHz
-30.0					5					CF 1.50000	Step
					V M	m				Auto	Man
-40.0							the second secon				
-50.0							- mar	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	FreqC	Offset
-30.0											0 Hz
-60.0											
										Scale	Туре
Center 1	755000 GH	7						Span 1	5.00 MHz	Log	Lin
#Res BW			#VBW	300 kHz			Sweep ~	1.000 ms (	1001 pts)		
MSG							STATU	s			

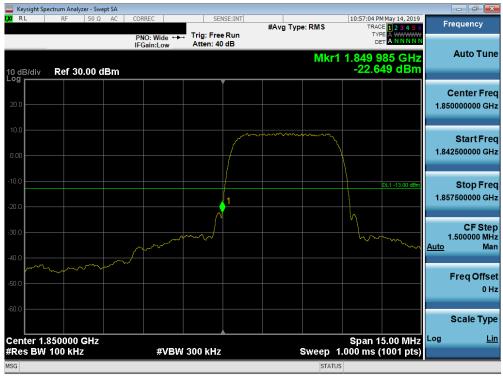
Plot 7-91. Band Edge Plot (AWS WCDMA Mode - High Channel)



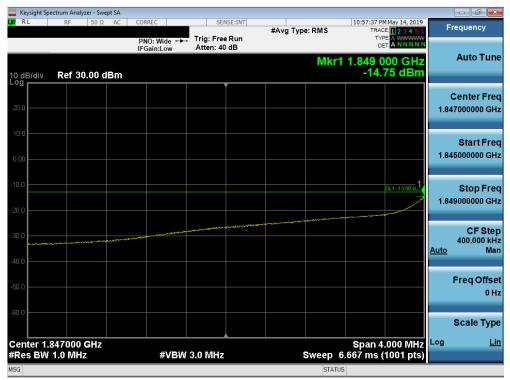
Plot 7-92. 4MHz Span Plot (AWS WCDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo CE of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset	Page 65 of 109	
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			





Plot 7-93. Band Edge Plot (PCS WCDMA Mode - Low Channel)



## Plot 7-94. 4MHz Span Plot (PCS WCDMA Mode - Low Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 66 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 66 of 109
© 2019 PCTEST Engineering Laboratory Inc				V 9 0 02/01/2019



						trum Analyzer - Swept	
Frequency	10:58:50 PM May 14, 2019 TRACE 1 2 3 4 5 6	#Avg Type: RMS	SENSE:INT	EC	AC COR	RF 50 Ω	KI RL
Auto Tune		• //	: Free Run en: 40 dB				
Auto Tulle	1.910 015 GHz -22.383 dBm	Mkr			Bm	Ref 30.00 dB	I0 dB/div
Center Fred			Ĭ				
1.91000000 GHz							20.0
Otort Eroc					Jun		10.0
Start Fred 1.902500000 GHz			<u>}</u>		<i>(</i>		0.00
Stop Fred	DL1 -13.00 dBm						10.0
1.917500000 GHz			1				20.0
CF Step		~	Im			my /	30.0
1.500000 MHz <u>Auto</u> Man		and					www
							-40.0
Freq Offset 0 Hz							-50.0
							.60.0
Scale Type							
Log <u>Lir</u>	Span 15.00 MHz	<b>.</b>				10000 GHz	
	.000 ms (1001 pts)	Sweep	KHZ	#VBW 300 ki		IUU KHZ	#Res BW

Plot 7-95. Band Edge Plot (PCS WCDMA Mode - High Channel)



Plot 7-96. 4MHz Span Plot (PCS WCDMA Mode - High Channel)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 67 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset	Page 67 of 109	
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



# 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.



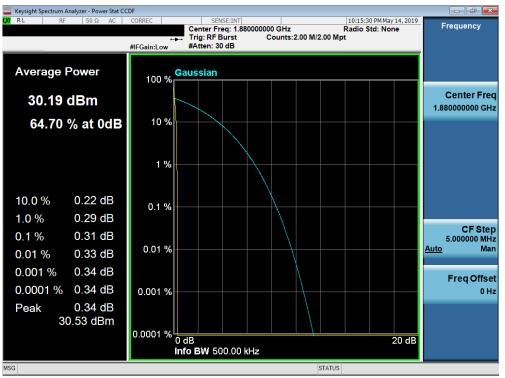
Figure 7-4. Test Instrument & Measurement Setup

## Test Notes

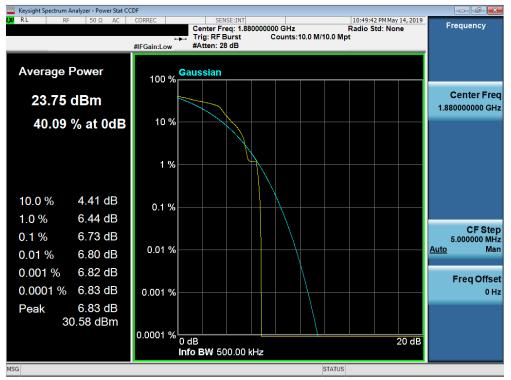
None

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 69 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 68 of 109
© 2019 PCTEST Engineering Lab	V 9 0 02/01/2019			





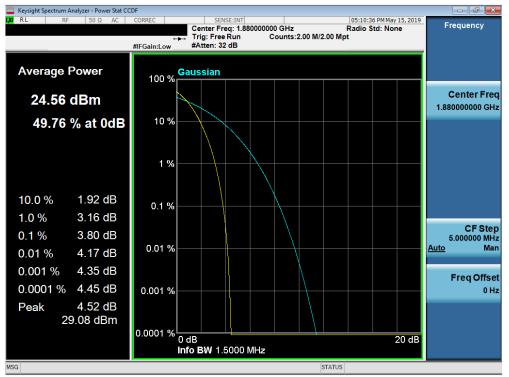




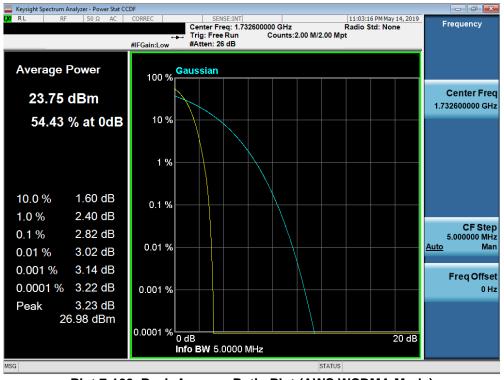
#### Plot 7-98. Peak-Average Ratio Plot (PCS EDGE Mode)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 60 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 69 of 109
© 2019 PCTEST Engineering Laboratory Inc.				V 9 0 02/01/2019





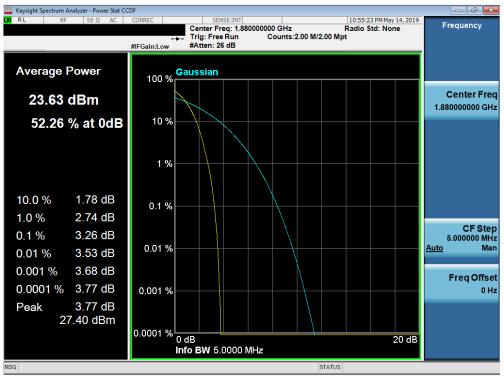




Plot 7-100. Peak-Average Ratio Plot (AWS WCDMA Mode)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset	Page 70 of 109	
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			





Plot 7-101. Peak-Average Ratio Plot (PCS WCDMA Mode)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 71 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 71 of 109
© 2019 PCTEST Engineering Lab	V 9 0 02/01/2019			



# 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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 70 of 400
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 72 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



#### Test Setup

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

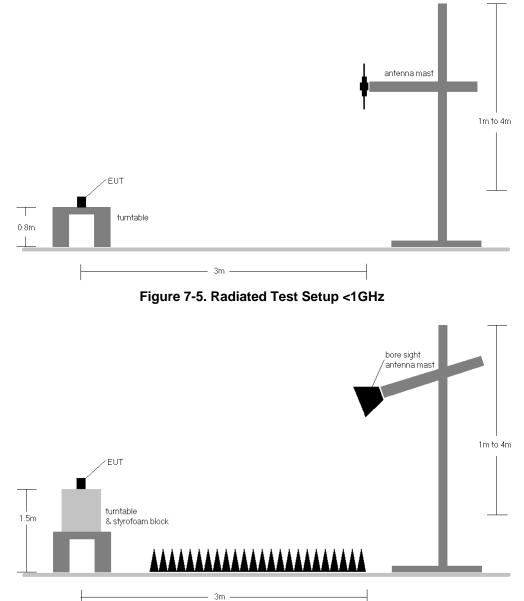


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 72 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 73 of 109
© 2019 PCTEST Engineering Lab	V 9 0 02/01/2019			



#### Test Notes

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

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	V	138	250	23.56	6.70	28.11	0.647	38.45	-10.34	30.26	1.062	40.61	-10.35
836.60	GPRS850	V	143	285	23.13	6.70	27.68	0.586	38.45	-10.77	29.83	0.962	40.61	-10.78
848.80	GPRS850	V	134	281	22.36	6.70	26.91	0.491	38.45	-11.54	29.06	0.805	40.61	-11.55
824.20	GPRS850	н	216	273	21.94	6.70	26.49	0.446	38.45	-11.96	28.64	0.731	40.61	-11.97
824.20	EDGE850	V	149	244	20.19	6.70	24.74	0.298	38.45	-13.71	26.89	0.489	40.61	-13.72

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 74 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 74 of 109
© 2010 PCTEST Engineering Labora	atory Inc			V 9 0 02/01/2019



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	V	149	120	10.66	6.70	15.21	38.45	-23.24	17.36	40.61	-23.25
836.52	CDMA850	V	132	123	11.55	6.70	16.10	38.45	-22.35	18.25	40.61	-22.36
848.31	CDMA850	V	111	118	10.86	6.70	15.41	38.45	-23.04	17.56	40.61	-23.05
836.52	CDMA850	Н	313	163	7.26	6.70	11.81	38.45	-26.64	13.96	40.61	-26.65

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

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	V	136	260	14.94	6.70	19.49	38.45	-18.96	21.64	40.61	-18.97
836.60	WCDMA850	V	142	246	15.09	6.70	19.64	38.45	-18.81	21.79	40.61	-18.82
846.60	WCDMA850	V	136	255	14.12	6.60	18.57	38.45	-19.88	20.72	40.61	-19.89
836.60	WCDMA850	н	205	279	13.48	6.70	18.03	38.45	-20.42	20.18	40.61	-20.43

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	136	351	12.17	9.43	21.60	30.00	-8.40
1732.60	WCDMA1700	V	142	136	12.42	9.31	21.73	30.00	-8.27
1752.60	WCDMA1700	V	148	53	10.96	9.21	20.17	30.00	-9.83
1732.60	WCDMA1700	Н	205	243	10.25	9.31	19.56	30.00	-10.44

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	V	326	87	17.27	9.48	26.75	33.01	-6.26
1880.00	GPRS1900	V	149	357	19.79	9.90	29.69	33.01	-3.32
1909.80	GPRS1900	V	260	68	15.65	10.26	25.91	33.01	-7.10
1880.00	GPRS1900	н	149	357	19.35	9.90	29.25	33.01	-3.76
1880.00	EDGE1900	V	317	96	15.12	9.90	25.02	33.01	-7.99

#### Table 7-6. EIRP (PCS GPRS)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 75 of 109
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 75 01 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



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	V	108	255	9.82	9.49	19.31	33.01	-13.70
1880.00	CDMA1900	V	100	55	9.88	9.90	19.78	33.01	-13.23
1908.75	CDMA1900	V	133	64	8.41	10.25	18.66	33.01	-14.35
1880.00	CDMA1900	Н	212	355	9.38	9.90	19.28	33.01	-13.73

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	104	179	10.86	9.51	20.37	33.01	-12.64
1880.00	WCDMA1900	н	148	356	11.83	9.90	21.73	33.01	-11.28
1907.60	WCDMA1900	н	104	359	10.77	10.24	21.01	33.01	-12.00
1880.00	WCDMA1900	V	148	65	9.15	9.90	19.05	33.01	-13.96

Table 7-8. EIRP (PCS WCDMA)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 70 of 400
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 76 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019



### 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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 77 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 77 of 109
© 2019 PCTEST Engineering Labo	V 9.0 02/01/2019			



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

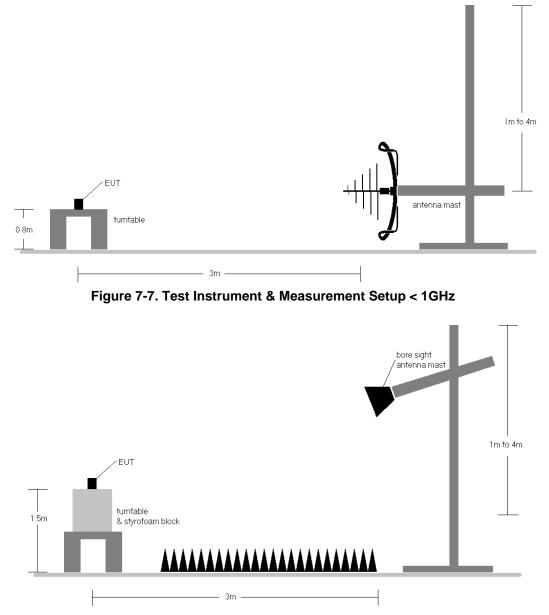


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 78 of 109
© 2019 PCTEST Engineering Lab	oratory, Inc.	•		V 9.0 02/01/2019

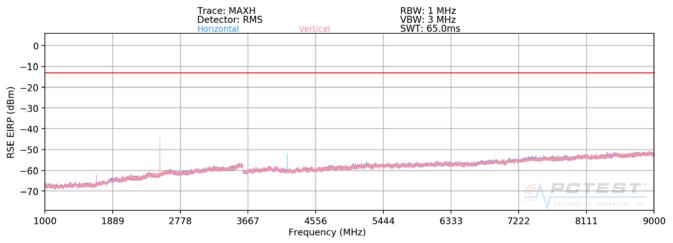


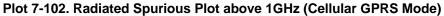
#### Test Notes

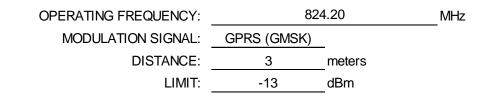
- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) For CDMA, 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: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 70 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 79 of 109
© 2019 PCTEST Engineering Lab	oratory Inc	÷		V 9 0 02/01/2019







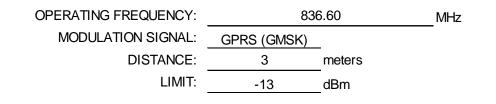


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1648.40	Н	122	232	-61.01	9.57	-51.45	-38.4
2472.60	Н	185	225	-46.11	9.47	-36.64	-23.6
3296.80	Н	400	114	-60.81	7.54	-53.28	-40.3
4121.00	Н	154	148	-59.58	7.97	-51.61	-38.6
4945.20	Н	-	-	-61.65	10.59	-51.06	-38.1
5769.40	Н	-	-	-62.00	12.44	-49.56	-36.6

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 90 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 80 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.	•		V 9.0 02/01/2019





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	188	230	-60.55	9.54	-51.01	-38.0
2509.80	Н	331	0	-47.28	9.42	-37.86	-24.9
3346.40	H	307	121	-60.44	7.31	-53.12	-40.1
4183.00	H	266	327	-57.59	8.16	-49.43	-36.4
5019.60	Н	-	-	-61.54	10.80	-50.74	-37.7
5856.20	H	-	-	-62.79	12.39	-50.40	-37.4

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

GPRS (GMSK)

3

848.80

meters

dBm

MHz

OPERATING FREQUENCY:

MODULATION SIGNAL:

DISTANCE:

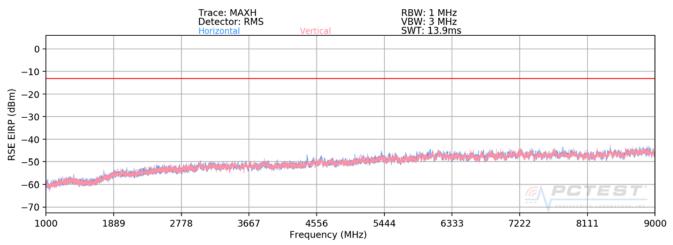
LIMIT: -13

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	Н	132	246	-61.11	9.51	-51.60	-38.6
2546.40	Н	169	230	-47.30	9.38	-37.92	-24.9
3395.20	H	135	54	-61.22	7.32	-53.91	-40.9
4244.00	Н	120	145	-59.00	8.49	-50.51	-37.5
5092.80	Н	-	-	-62.27	10.93	-51.34	-38.3
5941.60	Н	-	-	-61.53	12.39	-49.14	-36.1

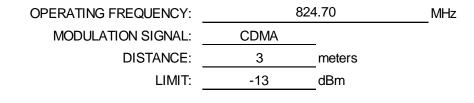
Table 7-11. Radiated Spurious Data (Cellular GPRS Mode – Ch. 251)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 81 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 81 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019





Plot 7-103. Radiated Spurious Plot above 1GHz (Cellular CDMA Mode)

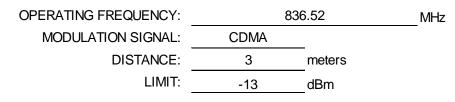


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	Н	212	242	-74.37	9.56	-64.80	-51.8
2474.10	Н	190	229	-71.50	9.47	-62.03	-49.0
3298.80	Н	-	-	-70.63	7.52	-63.11	-50.1
4123.50	Н	-	-	-70.58	7.98	-62.59	-49.6

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 82 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 82 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9.0.02/01/2019





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	144	232	-74.06	9.54	-64.52	-51.5
2509.56	Н	211	233	-71.14	9.42	-61.72	-48.7
3346.08	Н	-	-	-69.56	7.32	-62.25	-49.2
4182.60	Н	-	-	-70.53	8.16	-62.37	-49.4

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

OPERATING FREQUENCY:

MODULATION SIGNAL

REQUENCY:	84	48.31
ON SIGNAL:	CDMA	
DISTANCE:	3	meters
LIMIT:	-13	dBm

MHz

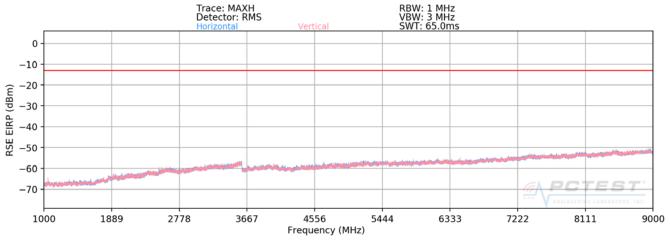
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1696.62	Н	113	244	-75.04	9.51	-65.52	-52.5
2544.93	Н	105	233	-71.29	9.38	-61.91	-48.9
3393.24	Н	-	-	-70.25	7.32	-62.94	-49.9
4241.55	Н	-	-	-71.65	8.47	-63.17	-50.2

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 82 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019 Portable Handset			Page 83 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.			V 9.0 02/01/2019



### Cellular WCDMA Mode



Plot 7-104. Radiated Spurious Plot above 1GHz (Cellular WCDMA Mode)

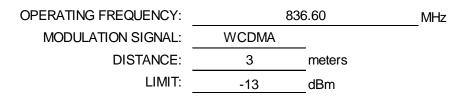
82	6.40	MHz
WCDMA	_	
3	meters	
-13	dBm	
	WCDMA 3	<u> </u>

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	-	-	-75.64	9.56	-66.08	-53.1
2479.20	Н	228	341	-70.82	9.46	-61.36	-48.4
3305.60	Н	-	-	-69.82	7.49	-62.33	-49.3
4132.00	Н	-	-	-69.70	8.01	-61.69	-48.7

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 84 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019 Portable Handset			Page 84 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.			V 9.0 02/01/2019





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	264	136	-74.19	9.54	-64.65	-51.7
2509.80	Н	312	335	-70.95	9.42	-61.53	-48.5
3346.40	Н	-	-	-69.48	7.31	-62.16	-49.2
4183.00	Н	-	-	-69.62	8.16	-61.46	-48.5

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

MHz

OPERATING FREQUENCY:

MODULATION SIGNA

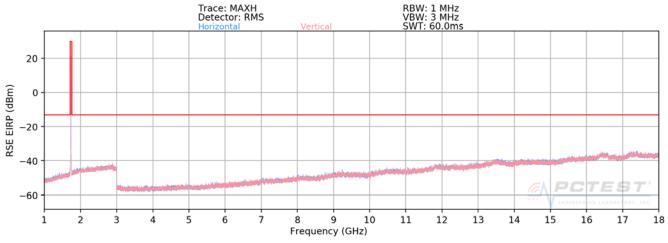
REQUENCY:	84	6.60
ON SIGNAL:	WCDMA	
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.20	Н	-	-	-75.42	9.52	-65.90	-52.9
2539.80	H	142	117	-72.67	9.39	-63.28	-50.3
3386.40	Н	-	-	-69.14	7.31	-61.83	-48.8
4233.00	H	-	-	-69.57	8.42	-61.15	-48.2

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 95 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019 Portable Handset			Page 85 of 109
© 2019 PCTEST Engineering Lab	oratory. Inc.			V 9.0 02/01/2019





#### Plot 7-105. Radiated Spurious Plot above 1GHz (AWS WCDMA Mode)

OPERATING FREQUENCY:	171	2.40	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	-	-	-68.91	7.44	-61.47	-48.5
5137.20	V	-	-	-71.82	11.05	-60.77	-47.8

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

OPERATING FREQUENCY:	173	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]
3465.20	V	-	-	-69.22	7.53	-61.69	-48.7
5197.80	V	-	-	-71.38	11.15	-60.22	-47.2

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 96 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 86 of 109
© 2010 DOTE OT Engineering Labo	roton: las			V 0 0 00/01/2010



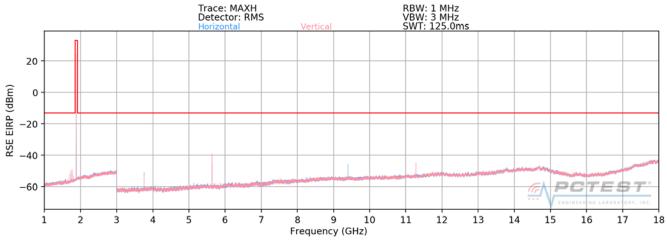
OPERATING FREQUENCY:	175	52.60	MHz
MODULATION SIGNAL:	WCDMA		
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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	-	-	-69.01	7.46	-61.55	-48.6
5257.80	V	-	-	-71.88	11.33	-60.55	-47.5

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 97 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 87 of 109
© 2019 PCTEST Engineering Lab	poratory Inc	÷		V 9 0 02/01/2019





Plot 7-106. Radiated Spurious Plot above 1GHz (PCS GPRS Mode)

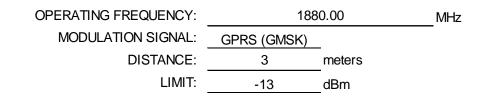
185	50.20	MHz
GPRS (GMSK)	_	
3	meters	
-13	dBm	
	GPRS (GMSK) 3	<u> </u>

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	332	294	-50.78	6.14	-44.64	-31.6
5550.60	Н	220	15	-44.34	12.00	-32.33	-19.3
7400.80	Н	179	33	-60.79	12.44	-48.35	-35.4
9251.00	Н	179	303	-46.28	8.73	-37.55	-24.5
11101.20	Н	108	338	-50.43	10.56	-39.87	-26.9
12951.40	Н	-	-	-59.99	11.45	-48.54	-35.5
14801.60	Н	-	-	-59.23	12.02	-47.21	-34.2

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 80 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 88 of 109
© 2019 PCTEST Engineering Lab	oratory Inc			V 9 0 02/01/2019





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	313	305	-51.32	5.90	-45.42	-32.4
5640.00	Н	255	8	-46.42	12.27	-34.15	-21.1
7520.00	Н	160	22	-61.37	12.56	-48.81	-35.8
9400.00	Н	299	59	-46.86	9.05	-37.81	-24.8
11280.00	Н	162	90	-50.75	10.42	-40.33	-27.3
13160.00	Н	-	-	-58.93	11.34	-47.59	-34.6
15040.00	Н	-	-	-58.77	12.04	-46.73	-33.7

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

OPERATING FREQUENCY: MODULATION SIGNAL:

DISTANCE:

LIMIT:

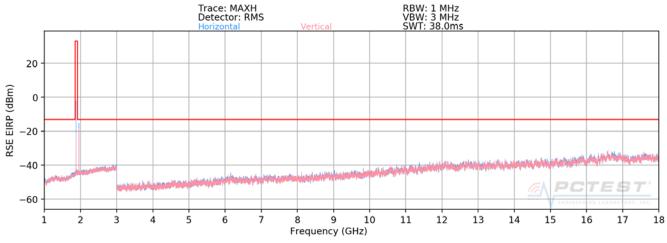
1909.80 <u>GPRS (GMSK)</u> <u>3</u> meters <u>-13</u> dBm MHz

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]
3819.60	H	343	326	-53.16	5.82	-47.34	-34.3
5729.40	H	223	35	-46.91	12.45	-34.47	-21.5
7639.20	H	155	346	-61.61	12.38	-49.23	-36.2
9549.00	H	258	15	-48.23	9.35	-38.89	-25.9
11458.80	H	160	79	-51.67	10.14	-41.53	-28.5
13368.60	H	-	-	-60.12	11.63	-48.49	-35.5
15278.40	Н	-	-	-58.41	13.56	-44.85	-31.8

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 90 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 89 of 109
© 2010 PCTEST Engineering Lab	aratony Inc			V 0 0 02/01/2010





Plot 7-107. Radiated Spurious Plot above 1GHz (PCS CDMA Mode)

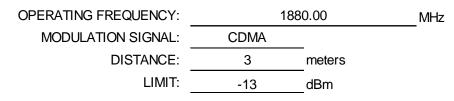
18	51.25	MHz
CDMA	_	
3	meters	
-13	dBm	
	CDMA 3	<u> </u>

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	313	56	-66.62	6.13	-60.50	-47.5
5553.75	Н	115	304	-70.53	12.01	-58.51	-45.5
7405.00	Н	233	31	-66.87	12.44	-54.43	-41.4
9256.25	Н	-	-	-63.43	8.76	-54.67	-41.7
11107.50	Н	193	19	-61.56	10.55	-51.01	-38.0
12958.75	Н	-	-	-61.41	11.43	-49.98	-37.0
14810.00	Н	-	-	-60.59	12.03	-48.56	-35.6

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 00 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 90 of 109
© 2019 PCTEST Engineering Lab	V 9 0 02/01/2019			





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	155	326	-64.92	5.90	-59.02	-46.0
5640.00	Н	266	20	-71.23	12.27	-58.96	-46.0
7520.00	Н	272	314	-67.93	12.56	-55.37	-42.4
9400.00	Н	-	-	-63.23	9.05	-54.18	-41.2
11280.00	Н	133	295	-62.72	10.97	-51.75	-38.7
13160.00	Н	-	-	-61.41	12.03	-49.38	-36.4
15040.00	Н	-	-	-61.83	13.40	-48.43	-35.4

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

OPERATING FREQUENCY: MODULATION SIGNAL:

DISTANCE:

GNAL: CDMA ANCE: 3 meters LIMIT: -13 dBm

1908.75

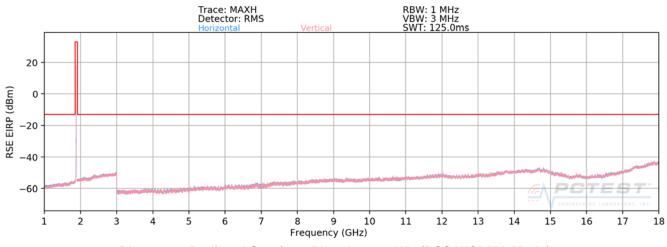
MHz

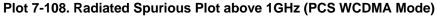
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3817.50	Н	136	325	-63.71	5.82	-57.89	-44.9
5726.25	Н	239	4	-70.71	12.44	-58.27	-45.3
7635.00	Н	269	312	-67.53	12.38	-55.14	-42.1
9543.75	Н	-	-	-63.72	9.32	-54.39	-41.4
11452.50	Н	100	29	-62.98	11.24	-51.74	-38.7
13361.25	Н	-	-	-62.90	13.45	-49.45	-36.4
15270.00	Н	-	-	-59.92	12.66	-47.26	-34.3

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 01 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset	Page 91 o	
© 2010 PCTEST Engineering Lab	oratory Inc	•		V 0 0 02/01/2010







OPERATING FREQUENCY:	18	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]
3704.80	Н	-	-	-67.87	6.12	-61.75	-48.7
5557.20	Н	-	-	-71.83	12.02	-59.80	-46.8

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

188	80.00	MHz
WCDMA	_	
3	meters	
-13	_dBm	
	WCDMA 3	3 meters

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	134	45	-66.10	5.90	-60.20	-47.2
5640.00	Н	-	-	-72.14	12.27	-59.87	-46.9
7520.00	Н	-	-	-69.60	12.56	-57.05	-44.0

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 02 of 100	
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 92 of 109	
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019				



OPERATING FREQUENCY:	190	7.60	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	-	-	-67.27	5.82	-61.45	-48.4
5722.80	Н	-	-	-72.19	12.44	-59.76	-46.8

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 02 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 93 of 109
© 2019 PCTEST Engineering Lab	poratory. Inc.	÷		V 9.0 02/01/2019



#### **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  $\pm 0.00025\%$  ( $\pm 2.5$  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: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	N: Test Dates: EUT Type:			Dogo 04 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 94 of 109
© 2019 PCTEST Engineering Lab	V 9.0.02/01/2019			



OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	190	
REFERENCE VOLTAGE:	4.33	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	836,600,022	22	0.0000026
100 %		- 20	836,600,131	131	0.0000157
100 %		- 10	836,599,946	-54	-0.0000065
100 %		0	836,600,072	72	0.000086
100 %		+ 10	836,599,633	-367	-0.0000439
100 %		+ 20	836,599,933	-67	-0.0000080
100 %		+ 30	836,600,060	60	0.0000072
100 %		+ 40	836,600,258	258	0.0000308
100 %		+ 50	836,600,311	311	0.0000372
BATT. ENDPOINT	3.50	+ 20	836,600,012	12	0.0000014

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 05 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 95 of 109
© 2019 PCTEST Engineering Labo	V 9.0 02/01/2019			



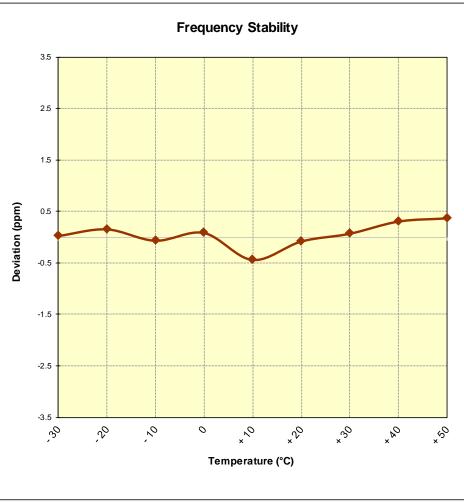


Figure 7-9. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N: Test Dates: EUT Type:			Dage 06 of 100	
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 96 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



OPERATING FREQUENCY:	836,520,000	Hz
CHANNEL:	384	
REFERENCE VOLTAGE:	4.33	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	836,519,816	-184	-0.0000220
100 %		- 20	836,519,987	-13	-0.0000016
100 %		- 10	836,519,581	-419	-0.0000501
100 %		0	836,520,142	142	0.0000170
100 %		+ 10	836,519,982	-18	-0.0000022
100 %		+ 20	836,520,031	31	0.0000037
100 %		+ 30	836,520,245	245	0.0000293
100 %		+ 40	836,519,874	-126	-0.0000151
100 %		+ 50	836,519,864	-136	-0.0000163
BATT. ENDPOINT	3.50	+ 20	836,519,970	-30	-0.0000036

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 07 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 97 of 109
© 2019 PCTEST Engineering Labo	V 9.0 02/01/2019			



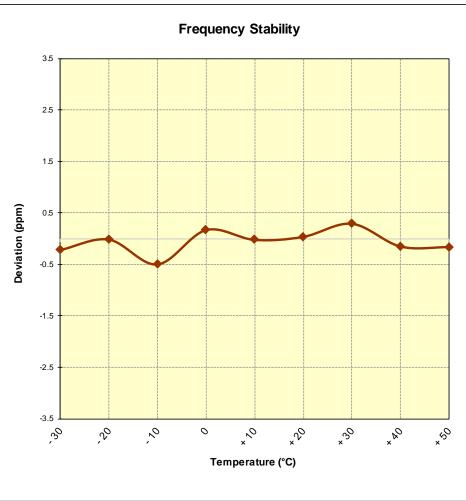


Figure 7-10. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:		Dage 09 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 98 of 109
© 2019 PCTEST Engineering Labo	V 9.0 02/01/2019			



OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	4183	
REFERENCE VOLTAGE:	4.33	VDC
<b>DEVIATION LIMIT:</b>	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	836,600,173	173	0.0000207
100 %		- 20	836,599,684	-316	-0.0000378
100 %		- 10	836,599,978	-22	-0.0000026
100 %		0	836,599,882	-118	-0.0000141
100 %		+ 10	836,600,041	41	0.0000049
100 %		+ 20	836,599,959	-41	-0.0000049
100 %		+ 30	836,600,163	163	0.0000195
100 %		+ 40	836,600,045	45	0.0000054
100 %		+ 50	836,600,331	331	0.0000396
BATT. ENDPOINT	3.50	+ 20	836,599,895	-105	-0.0000126

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 00 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset	Page 99 of 109
© 2019 PCTEST Engineering Labora	V 9.0 02/01/2019		



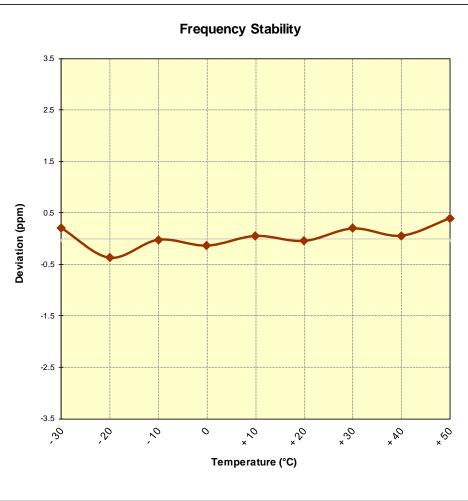


Figure 7-11. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 100 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 100 of 109
© 2019 PCTEST Engineering Labor	V 9.0 02/01/2019			



OPERATING FREQUENCY:	1,732,600,000	Hz
CHANNEL:	1413	_
REFERENCE VOLTAGE:	4.33	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	1,732,599,916	-84	-0.0000048
100 %		- 20	1,732,600,261	261	0.0000151
100 %		- 10	1,732,600,080	80	0.0000046
100 %		0	1,732,599,966	-34	-0.0000020
100 %		+ 10	1,732,600,184	184	0.0000106
100 %		+ 20	1,732,600,406	406	0.0000234
100 %		+ 30	1,732,599,900	-100	-0.0000058
100 %		+ 40	1,732,599,777	-223	-0.0000129
100 %		+ 50	1,732,600,343	343	0.0000198
BATT. ENDPOINT	3.50	+ 20	1,732,600,025	25	0.0000014

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.

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 101 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 101 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



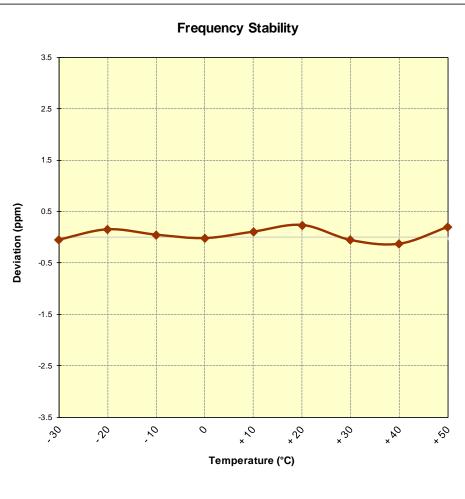


Figure 7-12. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 102 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 102 of 109
© 2019 PCTEST Engineering Labor	V 9.0 02/01/2019			



OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	661	_
REFERENCE VOLTAGE:	4.33	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	1,879,999,904	-96	-0.0000051
100 %		- 20	1,879,999,958	-42	-0.0000022
100 %		- 10	1,879,999,722	-278	-0.0000148
100 %		0	1,879,999,667	-333	-0.0000177
100 %		+ 10	1,880,000,146	146	0.0000078
100 %		+ 20	1,879,999,703	-297	-0.0000158
100 %		+ 30	1,880,000,372	372	0.0000198
100 %		+ 40	1,880,000,453	453	0.0000241
100 %		+ 50	1,880,000,138	138	0.0000073
BATT. ENDPOINT	3.50	+ 20	1,880,000,006	6	0.000003

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 103 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



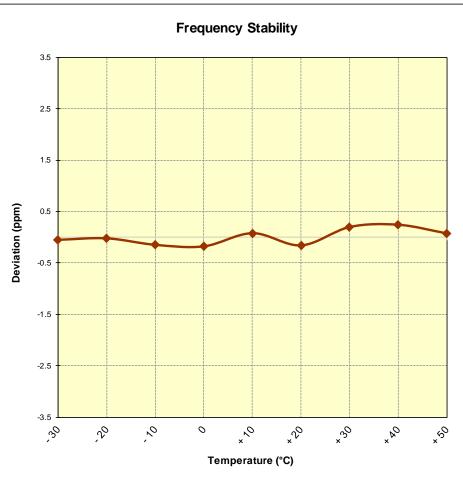


Figure 7-13. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 104 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 104 of 109
© 2019 PCTEST Engineering Lab	V 9.0 02/01/2019			



OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	600	_
REFERENCE VOLTAGE:	4.33	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	1,879,999,970	-30	-0.0000016
100 %		- 20	1,879,999,717	-283	-0.0000151
100 %		- 10	1,880,000,119	119	0.0000063
100 %		0	1,879,999,719	-281	-0.0000149
100 %		+ 10	1,880,000,066	66	0.0000035
100 %		+ 20	1,880,000,246	246	0.0000131
100 %		+ 30	1,880,000,080	80	0.0000043
100 %		+ 40	1,880,000,192	192	0.0000102
100 %		+ 50	1,879,999,928	-72	-0.000038
BATT. ENDPOINT	3.50	+ 20	1,879,999,739	-261	-0.0000139

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 105 of 109
© 2019 PCTEST Engineering Laboratory. Inc.				V 9.0 02/01/2019



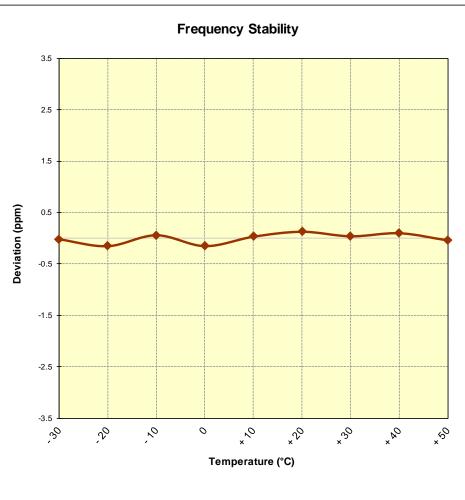


Figure 7-14. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 106 of 100	
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 106 of 109	
© 2019 PCTEST Engineering Laboratory, Inc.				V 9.0 02/01/2019	



OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	_
REFERENCE VOLTAGE:	4.33	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	1,879,999,966	-34	-0.0000018
100 %		- 20	1,879,999,837	-163	-0.0000087
100 %		- 10	1,880,000,019	19	0.0000010
100 %		0	1,880,000,170	170	0.0000090
100 %		+ 10	1,880,000,190	190	0.0000101
100 %		+ 20	1,880,000,060	60	0.0000032
100 %		+ 30	1,880,000,245	245	0.0000130
100 %		+ 40	1,879,999,933	-67	-0.0000036
100 %		+ 50	1,879,999,940	-60	-0.0000032
BATT. ENDPOINT	3.50	+ 20	1,880,000,218	218	0.0000116

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

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 107 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 107 of 109
© 2019 PCTEST Engineering Laboratory. Inc.				V 9.0 02/01/2019



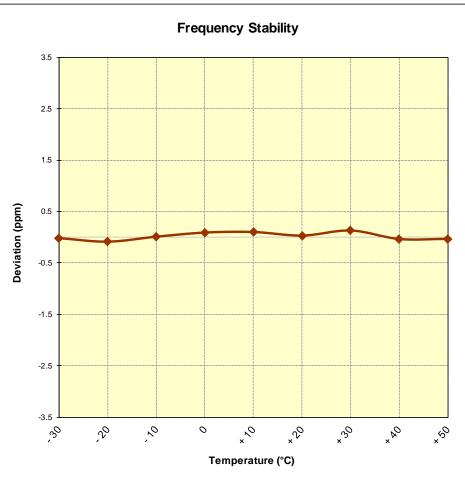


Figure 7-15. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: ZNFQ720QM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 108 of 100	
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 108 of 109	
© 2019 PCTEST Engineering Laboratory, Inc.				V 9.0 02/01/2019	



### 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFQ720QM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules.

FCC ID: ZNFQ720QM	INGINEERINE LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 100
1M1904220062-02.ZNF	04/23 - 05/16/2019	Portable Handset		Page 109 of 109
© 2019 PCTEST Engineering Laboratory, Inc.				V 9.0 02/01/2019