

**MEASUREMENT REPORT**
LTE**Applicant Name:**

LG Electronics MobileComm U.S.A

1000 Sylvan Avenue

Englewood Cliffs, NJ 07632

United States

Date of Testing:

11/10 - 11/22/2017

Test Site/Location:

PCTEST Lab. Columbia, MD, USA

Test Report Serial No.:

1M1711080290-03-R1.ZNF

FCC ID:**ZNFX210APM****APPLICANT:****LG Electronics MobileComm U.S.A****Application Type:**

Certification

Model:

LM-X210APM

Additional Model(s):LMX210APM, X210APM, LM-X210CM, LM-X210CMR,
LMX210CM, LMX210CMR, X210CM, X210CMR**EUT Type:**

Portable Handset

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s):

22, 24, & 27

Test Procedure(s):

ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03

This revised Test Report (S/N: 1M1711080290-03.ZNF) supersedes and replaces the previously issued test report (S/N: 1M1711080290-03-R1.ZNF) on the same subject device for the same type of testing as indicated. Please discard or destroy the Previously issued test report(s) and dispose of it accordingly.

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: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 1 of 120

T A B L E O F C O N T E N T S

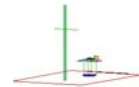
1.0	INTRODUCTION	4
1.1	Scope	4
1.2	PCTEST Test Location	4
1.3	Test Facility / Accreditations	4
2.0	PRODUCT INFORMATION	5
2.1	Equipment Description	5
2.2	Device Capabilities	5
2.3	Test Configuration	5
2.4	EMI Suppression Device(s)/Modifications	5
3.0	DESCRIPTION OF TESTS	6
3.1	Measurement Procedure	6
3.2	Block A Frequency Range	6
3.3	PCS - Base Frequency Blocks	6
3.4	PCS - Mobile Frequency Blocks	6
3.5	AWS - Base Frequency Blocks	7
3.6	AWS - Mobile Frequency Blocks	7
3.7	Radiated Power and Radiated Spurious Emissions	8
4.0	MEASUREMENT UNCERTAINTY	9
5.0	TEST EQUIPMENT CALIBRATION DATA	10
6.0	SAMPLE CALCULATIONS	11
7.0	TEST RESULTS	12
7.1	Summary	12
7.2	Occupied Bandwidth	14
7.3	Spurious and Harmonic Emissions at Antenna Terminal	35
7.4	Band Edge Emissions at Antenna Terminal	56
7.5	Peak-Average Ratio	90
7.6	Radiated Power (ERP/EIRP)	97
7.7	Radiated Spurious Emissions Measurements	103
7.8	Frequency Stability / Temperature Variation	111
8.0	CONCLUSION	120

FCC ID: ZNFX210APM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 2 of 120	



MEASUREMENT REPORT

FCC Part 22, 24, & 27



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)		
LTE Band 12	27	699.7 - 715.3	0.133	21.25	0.219	23.40	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.087	19.39	0.143	21.54	1M11W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.128	21.06	0.209	23.21	2M71G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.103	20.11	0.168	22.26	2M71W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.126	21.01	0.207	23.16	4M51G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.094	19.74	0.155	21.89	4M53W7D	16QAM
LTE Band 12	27	704 - 711	0.120	20.79	0.197	22.94	9M03G7D	QPSK
LTE Band 12	27	704 - 711	0.090	19.56	0.148	21.71	8M98W7D	16QAM
LTE Band 5	22H	824.7 - 848.3	0.159	22.01	0.261	24.16	1M10G7D	QPSK
LTE Band 5	22H	824.7 - 848.3	0.124	20.95	0.204	23.10	1M11W7D	16QAM
LTE Band 5	22H	825.5 - 847.5	0.164	22.14	0.269	24.29	2M71G7D	QPSK
LTE Band 5	22H	825.5 - 847.5	0.113	20.53	0.185	22.68	2M71W7D	16QAM
LTE Band 5	22H	826.5 - 846.5	0.170	22.31	0.279	24.46	4M52G7D	QPSK
LTE Band 5	22H	826.5 - 846.5	0.120	20.79	0.197	22.94	4M52W7D	16QAM
LTE Band 5	22H	829 - 844	0.170	22.30	0.279	24.45	9M02G7D	QPSK
LTE Band 5	22H	829 - 844	0.129	21.11	0.212	23.26	8M98W7D	16QAM
LTE Band 4	27	1710.7 - 1754.3			0.349	25.43	1M11G7D	QPSK
LTE Band 4	27	1710.7 - 1754.3			0.256	24.09	1M11W7D	16QAM
LTE Band 4	27	1711.5 - 1753.5			0.344	25.37	2M72G7D	QPSK
LTE Band 4	27	1711.5 - 1753.5			0.249	23.96	2M72W7D	16QAM
LTE Band 4	27	1712.5 - 1752.5			0.336	25.27	4M53G7D	QPSK
LTE Band 4	27	1712.5 - 1752.5			0.251	23.99	4M53W7D	16QAM
LTE Band 4	27	1715 - 1750			0.351	25.46	9M04G7D	QPSK
LTE Band 4	27	1715 - 1750			0.255	24.07	8M99W7D	16QAM
LTE Band 4	27	1717.5 - 1747.5			0.364	25.62	13M5G7D	QPSK
LTE Band 4	27	1717.5 - 1747.5			0.302	24.80	13M5W7D	16QAM
LTE Band 4	27	1720 - 1745			0.356	25.52	18M0G7D	QPSK
LTE Band 4	27	1720 - 1745			0.276	24.41	18M0W7D	16QAM
LTE Band 2	24E	1850.7 - 1909.3			0.487	26.88	1M10G7D	QPSK
LTE Band 2	24E	1850.7 - 1909.3			0.410	26.13	1M10W7D	16QAM
LTE Band 2	24E	1851.5 - 1908.5			0.474	26.76	2M71G7D	QPSK
LTE Band 2	24E	1851.5 - 1908.5			0.381	25.81	2M71W7D	16QAM
LTE Band 2	24E	1852.5 - 1907.5			0.477	26.78	4M52G7D	QPSK
LTE Band 2	24E	1852.5 - 1907.5			0.399	26.01	4M52W7D	16QAM
LTE Band 2	24E	1855 - 1905			0.480	26.82	9M01G7D	QPSK
LTE Band 2	24E	1855 - 1905			0.386	25.87	8M97W7D	16QAM
LTE Band 2	24E	1857.5 - 1902.5			0.494	26.94	13M5G7D	QPSK
LTE Band 2	24E	1857.5 - 1902.5			0.355	25.50	13M5W7D	16QAM
LTE Band 2	24E	1860 - 1900			0.531	27.25	17M9G7D	QPSK
LTE Band 2	24E	1860 - 1900			0.402	26.04	18M0W7D	16QAM

EUT Overview

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 3 of 120

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 facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. 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 ISSED Standards (RSS)."
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISSED.

FCC ID: ZNFX210APM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 4 of 120	

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFX210APM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 0707, 0749, 0632

2.2 Device Capabilities

This device contains the following capabilities:

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

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03. See Section 7.0 of this test report for a description of the radiated 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: ZNFX210APM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 5 of 120	

3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v03) were used in the measurement of the EUT.

3.2 Block A Frequency Range

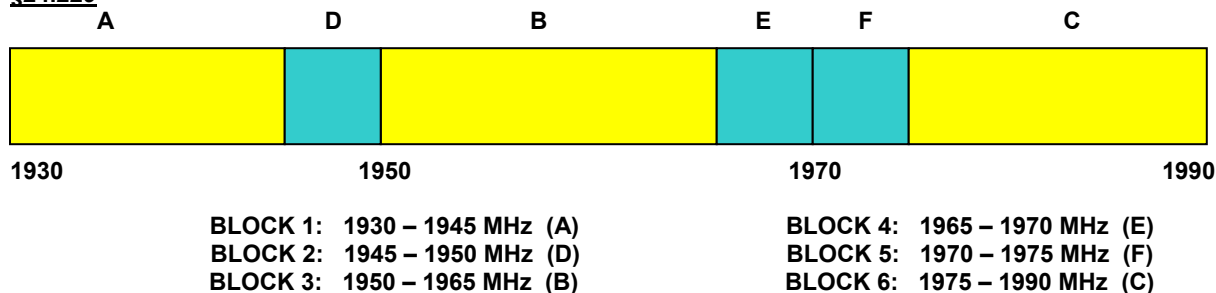
§27.5(c)

698-746 MHz band. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

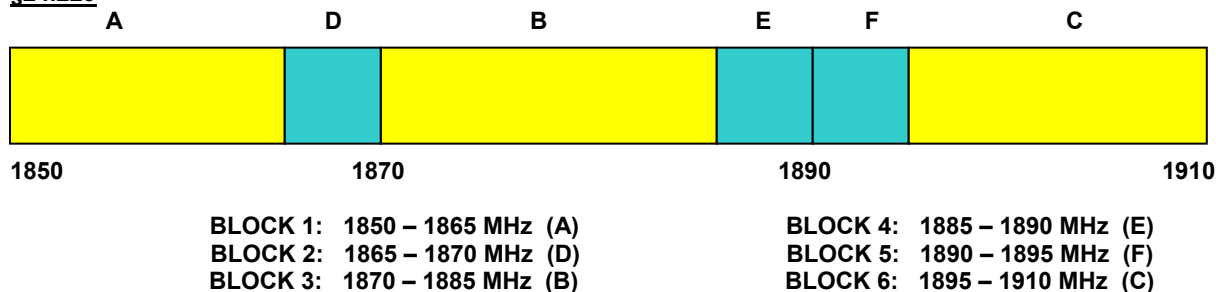
3.3 PCS - Base Frequency Blocks

§24.229



3.4 PCS - Mobile Frequency Blocks

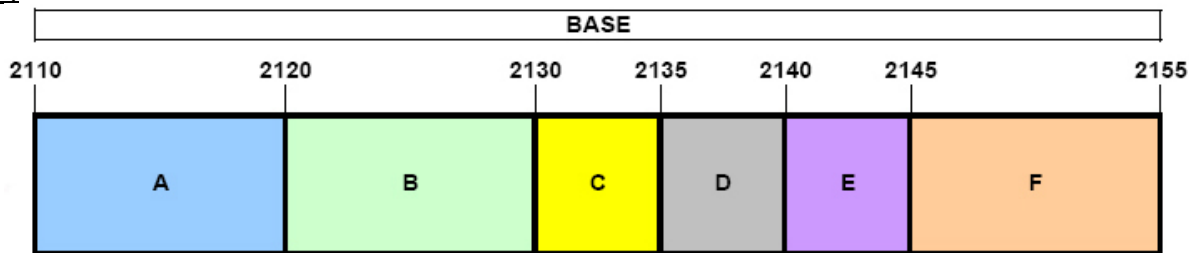
§24.229



FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 6 of 120

3.5 AWS - Base Frequency Blocks

§27.5(h)



BLOCK 1: 2110 – 2120 MHz (A)

BLOCK 2: 2120 – 2130 MHz (B)

BLOCK 3: 2130 – 2135 MHz (C)

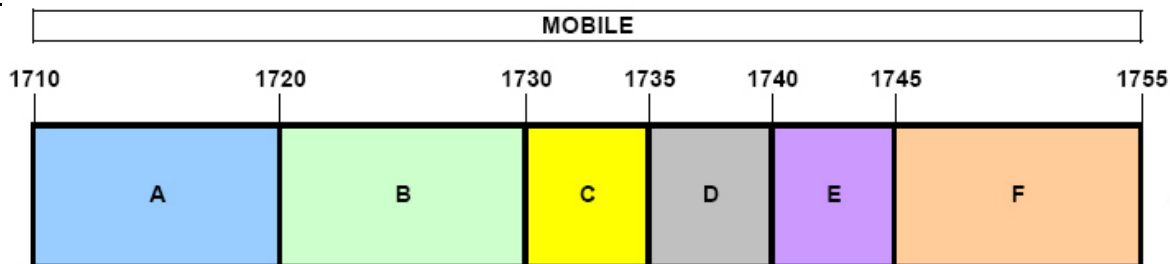
BLOCK 4: 2135 – 2140 MHz (D)

BLOCK 5: 2140 – 2145 MHz (E)

BLOCK 6: 2145 – 2155 MHz (F)

3.6 AWS - Mobile Frequency Blocks

§27.5(h)



BLOCK 1: 1710 – 1720 MHz (A)

BLOCK 2: 1720 – 1730 MHz (B)

BLOCK 3: 1730 – 1735 MHz (C)

BLOCK 4: 1735 – 1740 MHz (D)

BLOCK 5: 1740 – 1745 MHz (E)

BLOCK 6: 1745 – 1755 MHz (F)

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 7 of 120

3.7 Radiated Power and Radiated Spurious Emissions

§2.1053 §24.232(c) §24.238(a) §27.50(c)(10) §27.50(d)(4) §27.53(g) §27.53(h) RSS-130(4.4) RSS-133(6.4) RSS-133(6.5) RSS-139(6.5) RSS-139(6.6) RSS-199(4.5)

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. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168 D01 v03.

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

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

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

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10\log_{10}(\text{Power [Watts]})$. For Band 7 and 41, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of $55 + 10\log_{10}(\text{Power [Watts]})$. For Band 30, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of $70 + 10\log_{10}(\text{Power [Watts]})$.

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 8 of 120

4.0 MEASUREMENT UNCERTAINTY

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

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

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 9 of 120

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx2	Licensed Transmitter Cable Set	8/10/2017	Annual	8/10/2018	LTx2
Agilent	N9020A	MXA Signal Analyzer	12/28/2016	Annual	12/28/2017	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	3/27/2017	Annual	3/27/2018	MY52350166
COM-Power	AL-130R	Active Loop Antenna	6/5/2017	Annual	6/5/2018	121085
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/23/2016	Biennial	8/23/2018	135427
Espec	ESX-2CA	Environmental Chamber	4/11/2017	Annual	4/11/2018	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	4/26/2016	Biennial	4/26/2018	128337
Huber+Suhner	Sucoflex 102A	40GHz Radiated Cable	5/19/2017	Annual	5/19/2018	251425001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/24/2017	Annual	3/24/2018	11401010036
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	10/13/2017	Annual	10/13/2018	102060
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	4/19/2017	Annual	4/19/2018	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/31/2017	Annual	7/31/2018	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/11/2017	Annual	8/11/2018	103200
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102135
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102133
Rohde & Schwarz	TC-TA18	Cross-Pol Antenna 400MHz-18GHz	10/30/2017	Annual	10/30/2018	101058
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	5/11/2017	Annual	5/11/2018	100040
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	3/30/2016	Biennial	3/30/2018	9105-2404
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol Sciences	JB6	JB6 Antenna	9/27/2016	Biennial	9/27/2018	A082816

Table 5-1. Test Equipment

Note:

Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 10 of 120

6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The average 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 1564 MHz. So 6.1 dB is added to the signal generator reading of –30.9 dBm yielding –24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (–24.80).

FCC ID: ZNFX210APM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 11 of 120

7.0 TEST RESULTS

7.1 Summary

Company Name: LG Electronics MobileComm U.S.A
 FCC ID: ZNFX210APM
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	RSS-Gen(4.6.1) RSS-133(2.3) RSS-139(2.3)	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
2.1051 2.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Out of Band Emissions	$> 43 + 10\log_{10}(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions		PASS	Section 7.3, 7.4
24.232(d)	RSS-130(4.4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)	Peak-Average Ratio	< 13 dB		PASS	Section 7.5
2.1046	RSS-130(4.4) RSS-132(5.4) RSS-133(4.1) RSS-139(4.1)	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
2.1055 22.355 24.235 27.54	RSS-130(4.3) RSS-132(5.3) RSS-133(6.3) RSS-139(6.4)	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)		PASS	Section 7.8

Table 7-1. Summary of Conducted Test Results

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 12 of 120

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(2)	RSS-132(5.4)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5)	< 7 Watts max. ERP < 11.5 Watts max. EIRP		PASS	Section 7.6
27.50(b)(10) 27.50(c)(10)	RSS-130(4.4)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12)	< 3 Watts max. ERP < 5 Watts max. EIRP		PASS	Section 7.6
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Undesirable Emissions	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions	RADIATED	PASS	Section 7.7

Table 7-1. Summary of Radiated 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 (Sections 7.2, 7.3, 7.4, 7.5) 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 "LTE Automation," Version 4.8.

FCC ID: ZNFX210APM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 13 of 120	

7.2 Occupied Bandwidth

§2.1049 RSS-Gen (4.6.1) RSS-133(2.3) RSS-139(2.3)

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 v03 – 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 $\geq 3 \times$ 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.

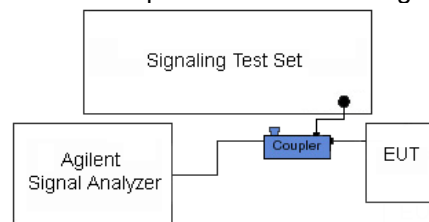


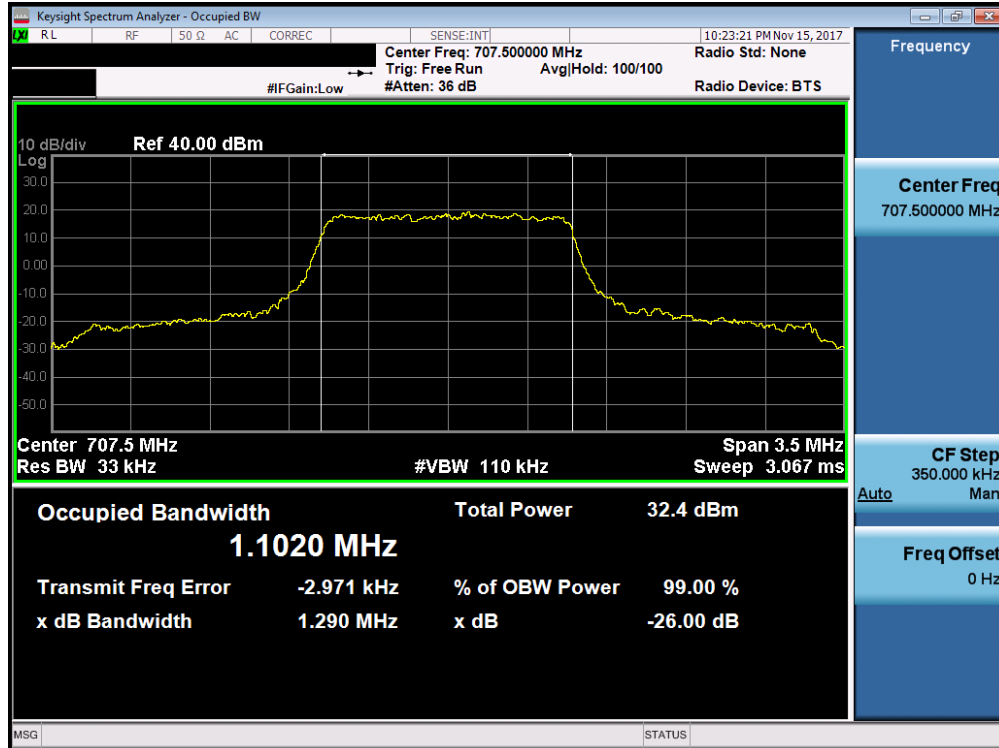
Figure 7-1. Test Instrument & Measurement Setup

Test Notes

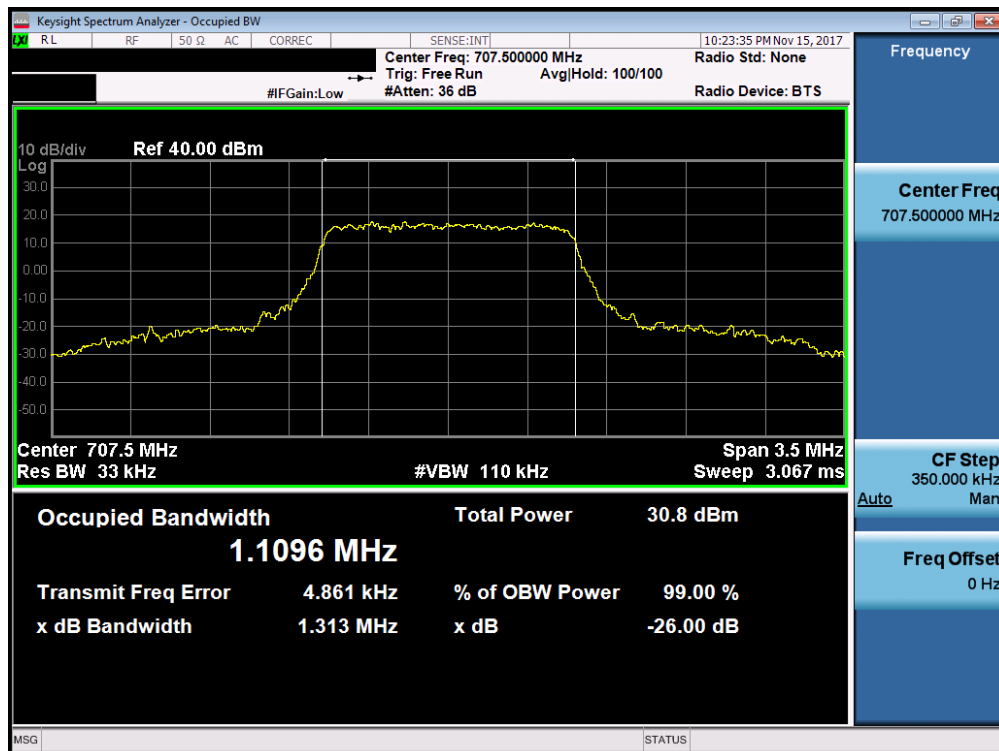
None.

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 14 of 120	

Band 12



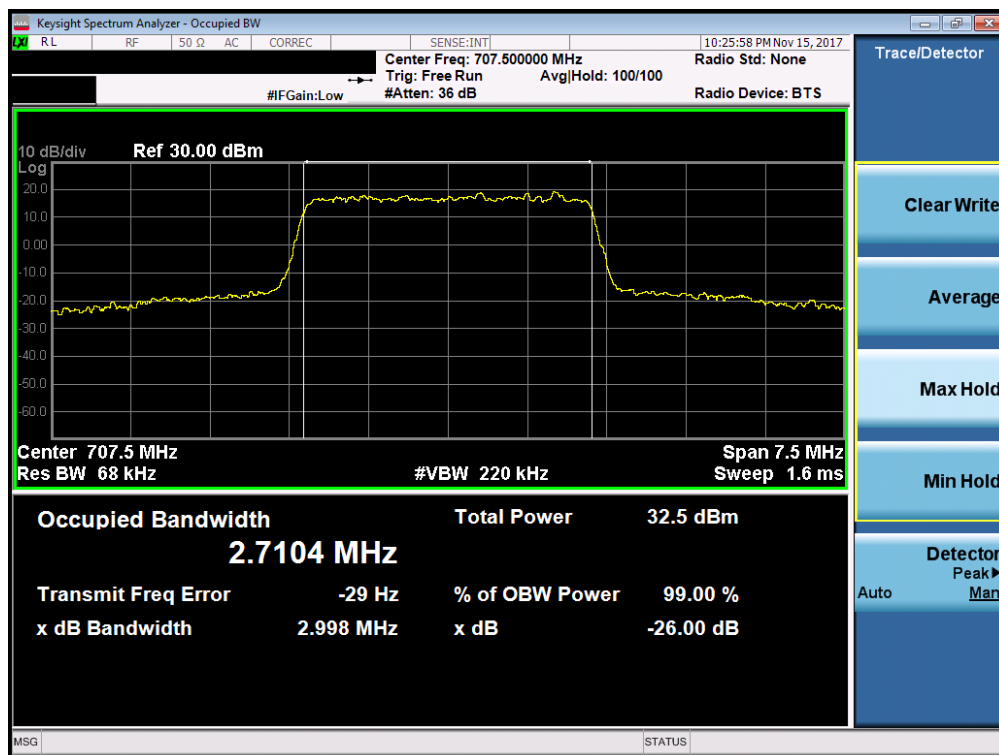
Plot 7-2. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



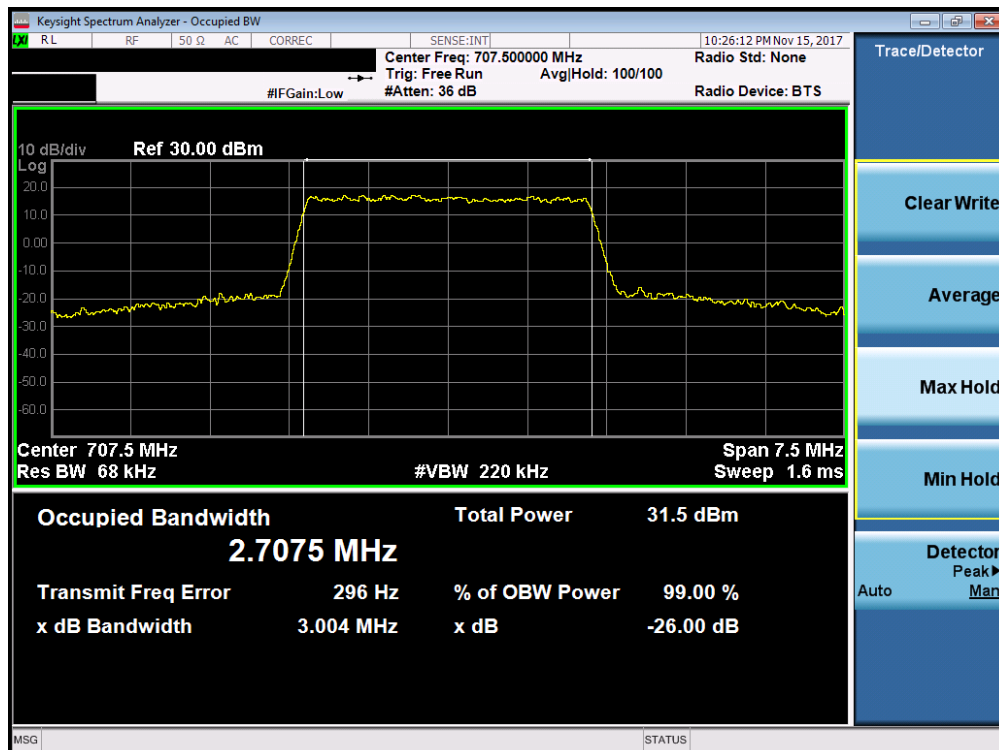
Plot 7-3. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 15 of 120	

Band 12



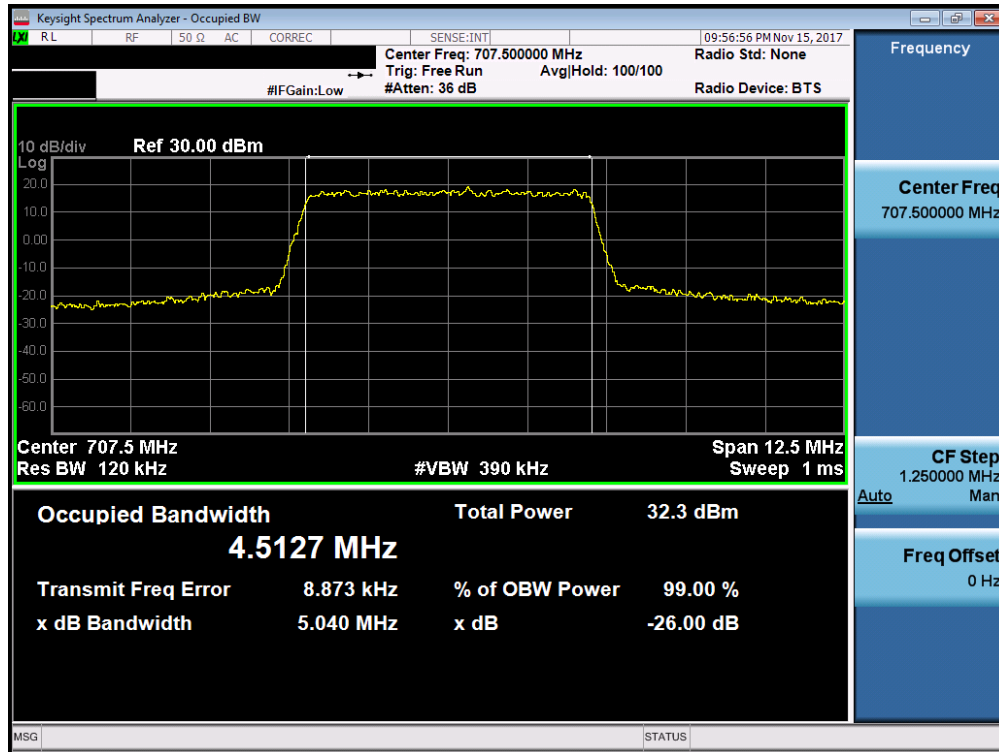
Plotcupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



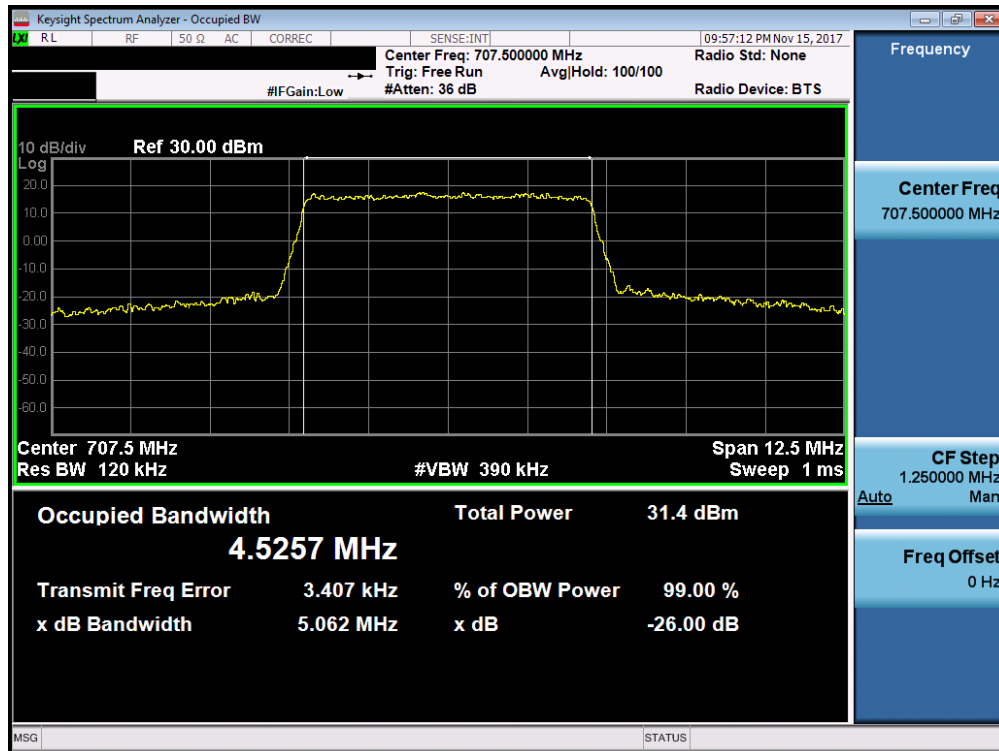
Plot 7-4. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 16 of 120

Band 12



Plot 7-5. Occupied Bandwidth Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



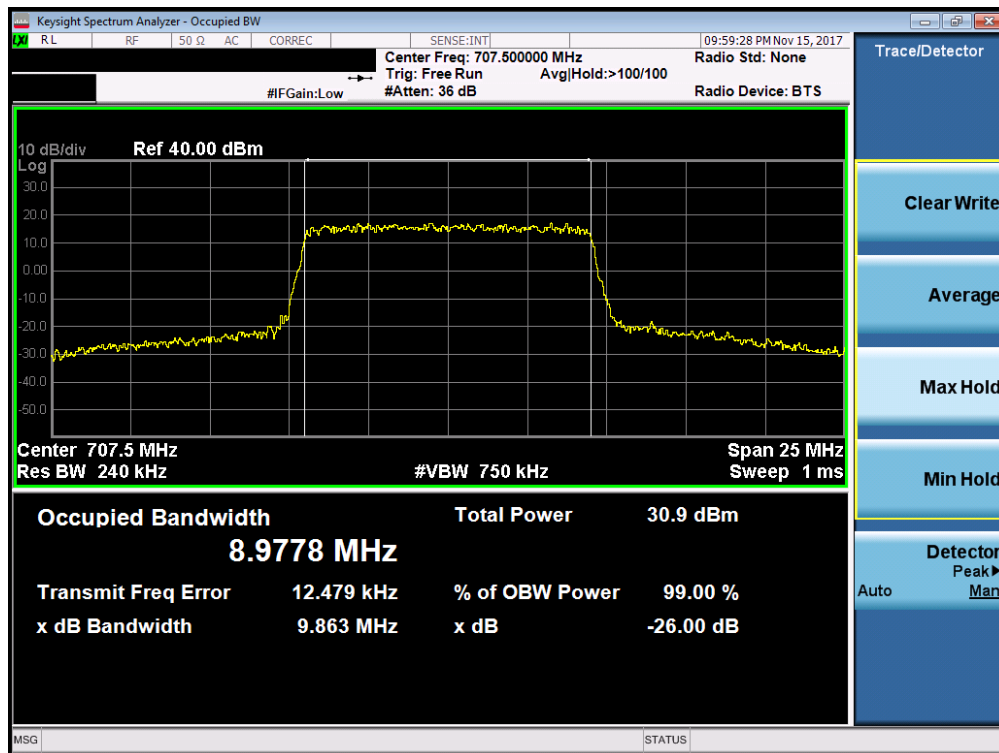
Plot 7-6. Occupied Bandwidth Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 17 of 120

Band 12



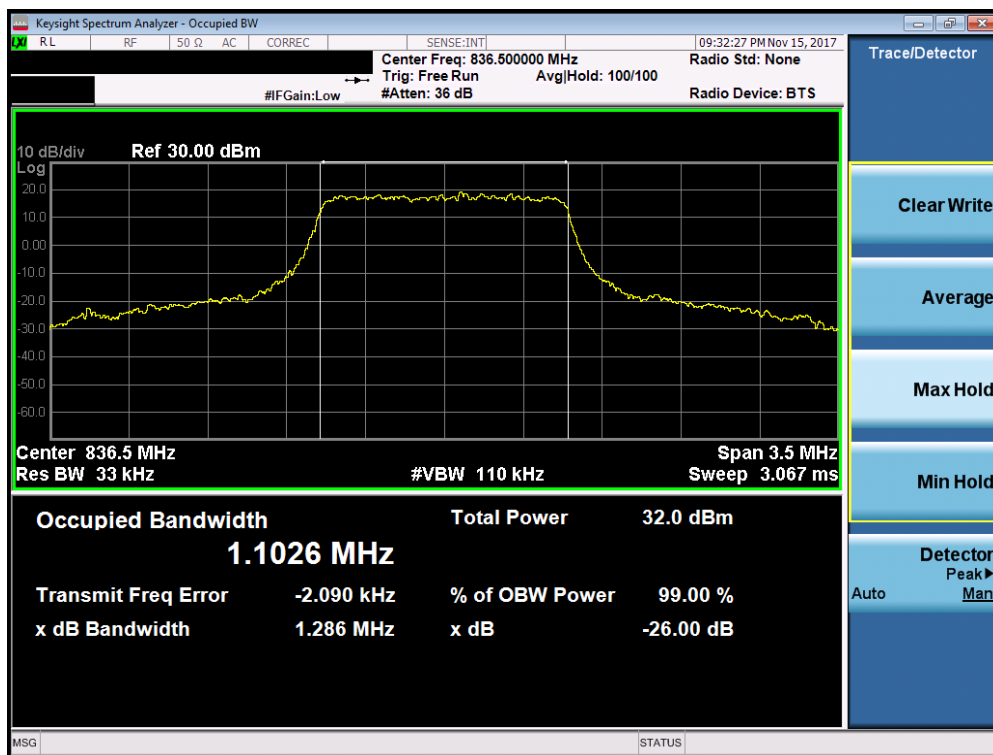
Plot 7-7. Occupied Bandwidth Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)



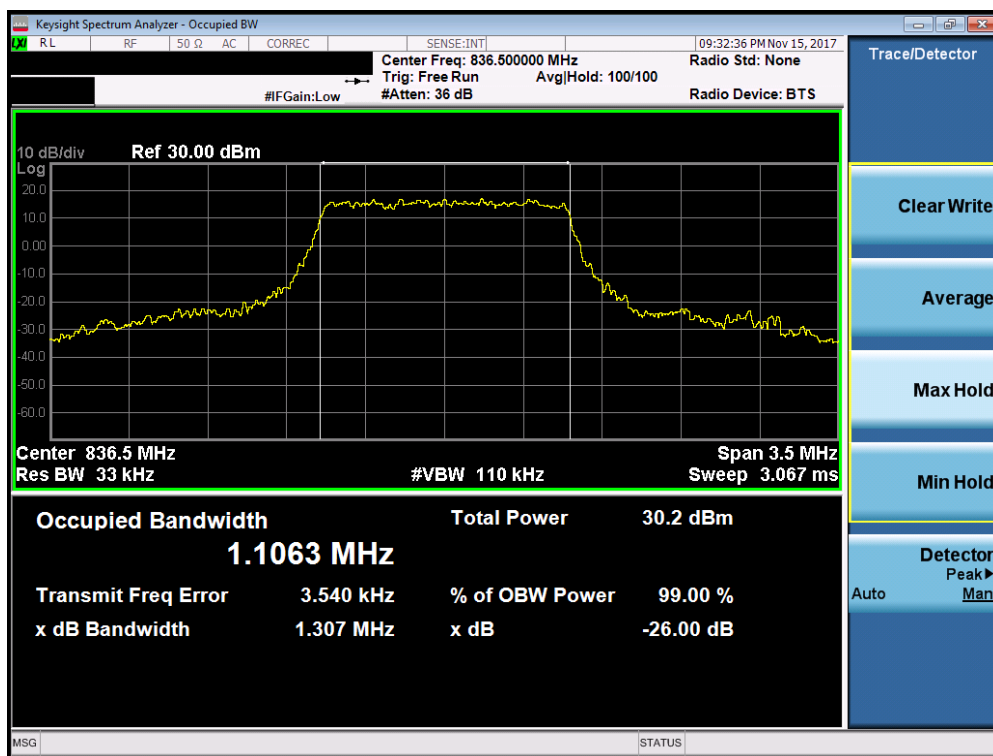
Plot 7-8. Occupied Bandwidth Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 18 of 120

Band 5



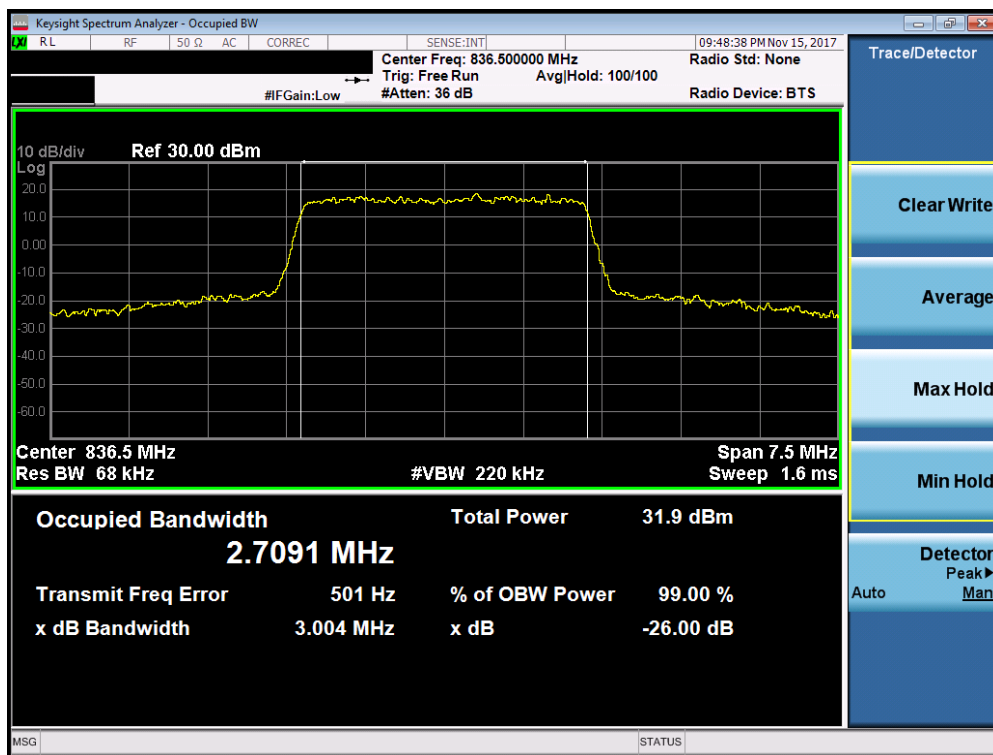
Plot 7-9. Occupied Bandwidth Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



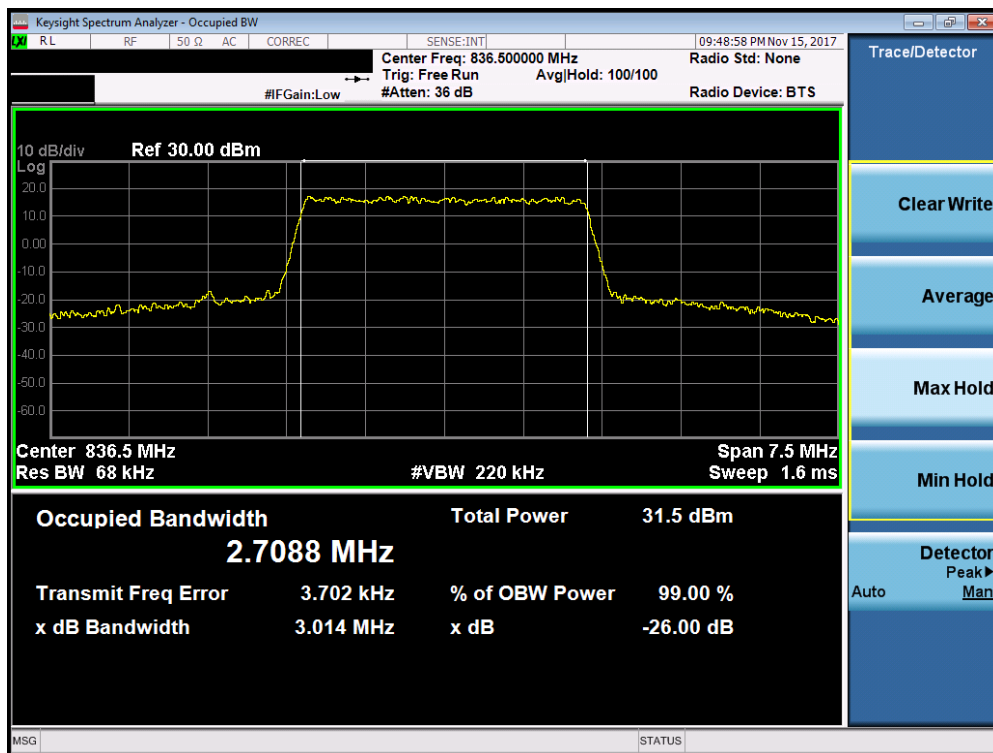
Plot 7-10. Occupied Bandwidth Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 19 of 120

Band 5



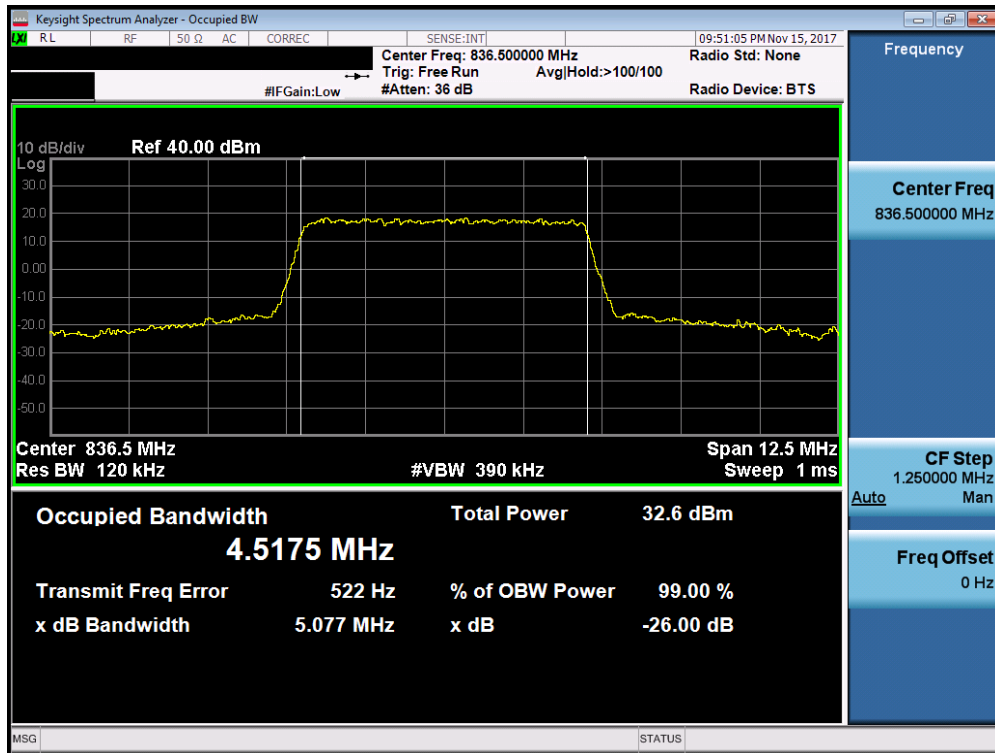
Plot 7-11. Occupied Bandwidth Plot (Band 5 – 3.0MHz QPSK - Full RB Configuration)



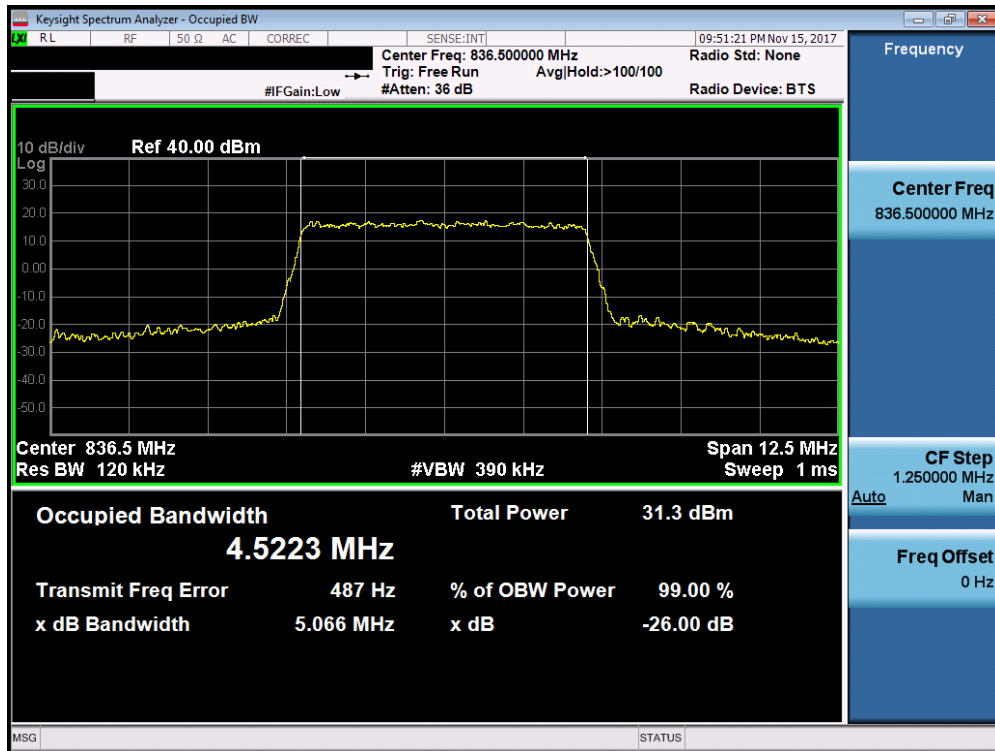
Plot 7-12. Occupied Bandwidth Plot (Band 5 – 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 20 of 120	

Band 5



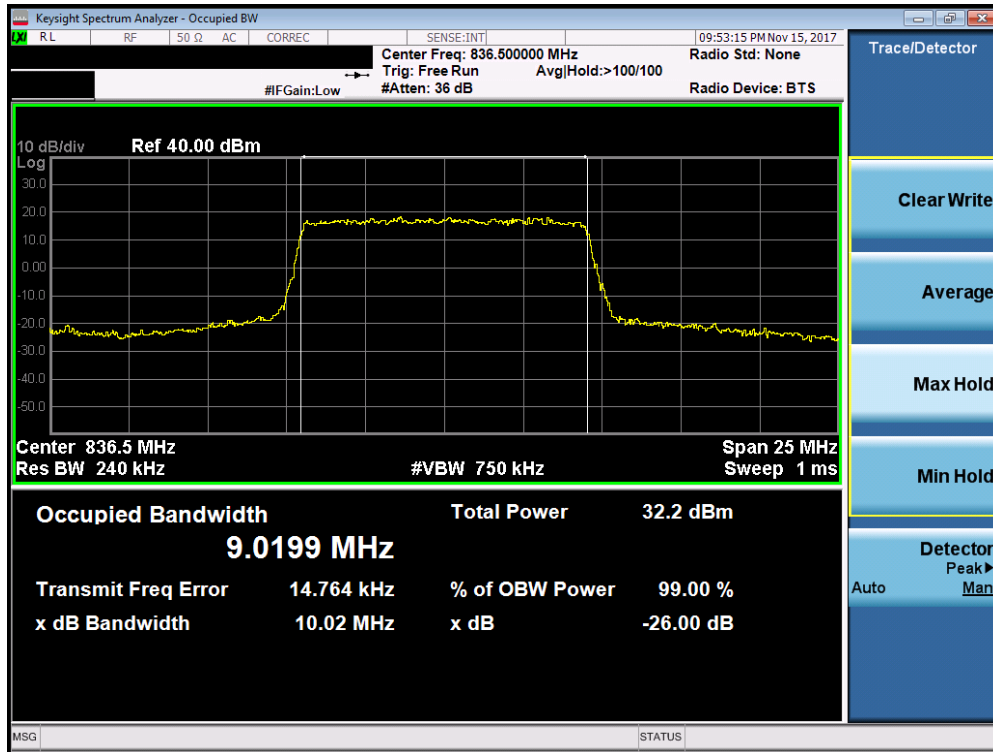
Plot 7-13. Occupied Bandwidth Plot (Band 5 – 5.0MHz QPSK - Full RB Configuration)



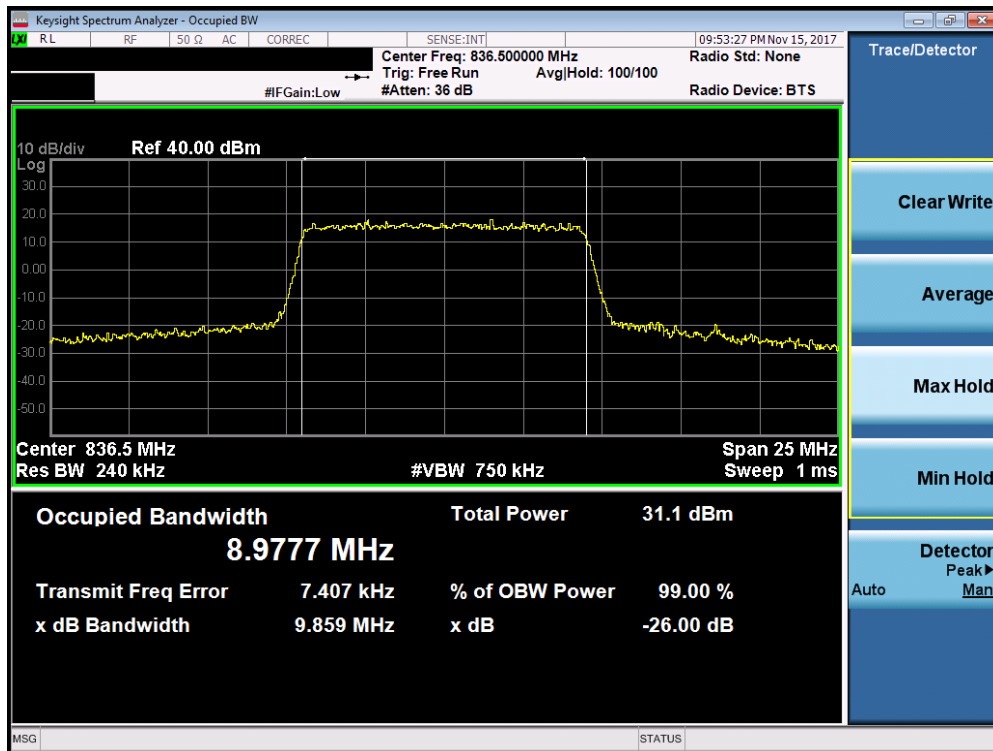
Plot 7-14. Occupied Bandwidth Plot (Band 5 – 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 21 of 120	

Band 5



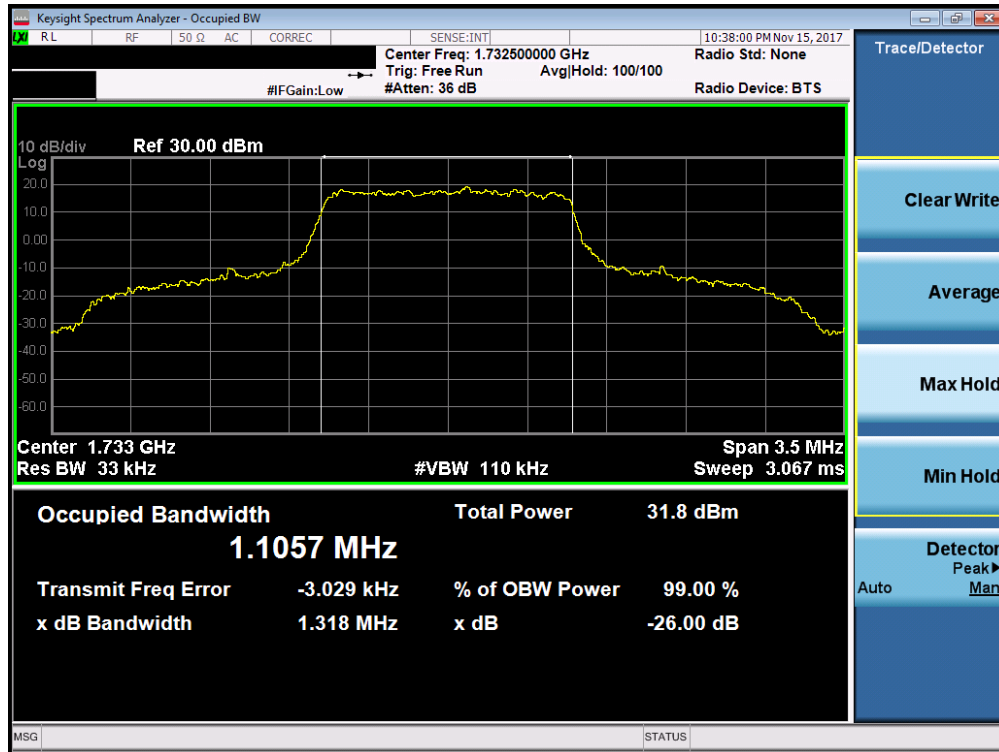
Plot 7-15. Occupied Bandwidth Plot (Band 5 – 10.0MHz QPSK - Full RB Configuration)



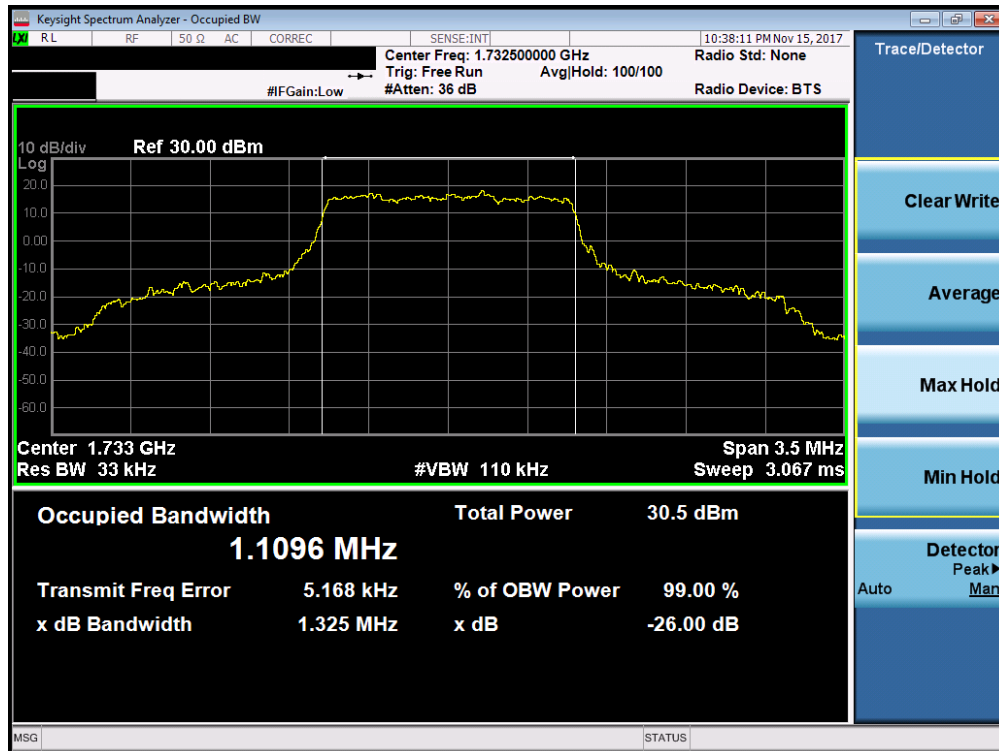
Plot 7-16. Occupied Bandwidth Plot (Band 5 – 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 22 of 120

Band 4



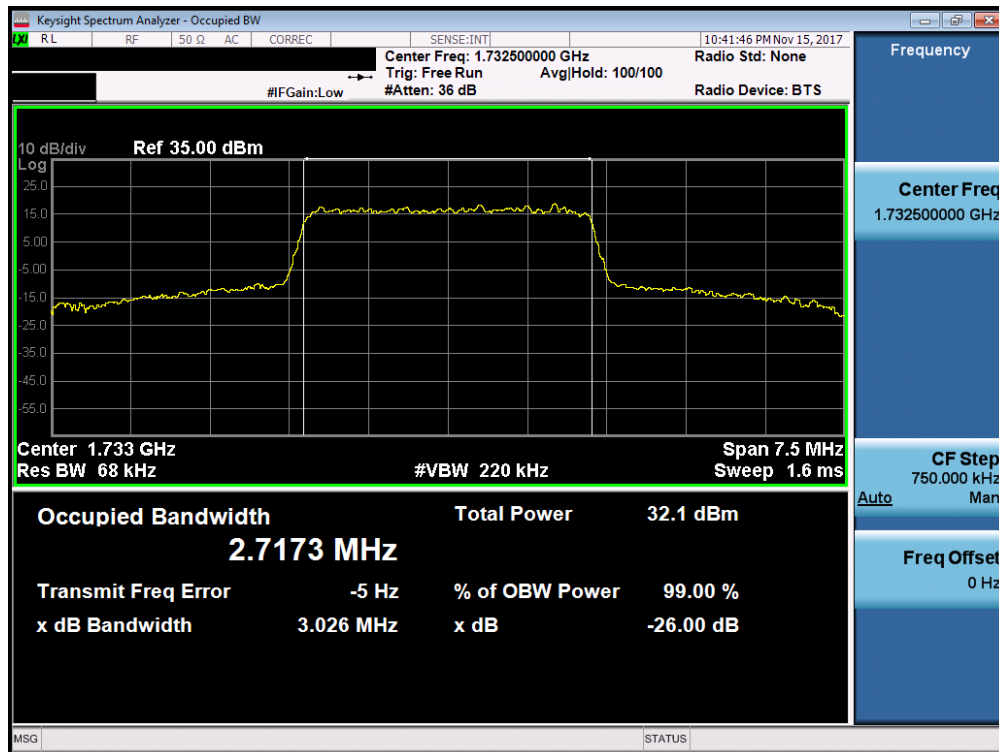
Plot 7-17. Occupied Bandwidth Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



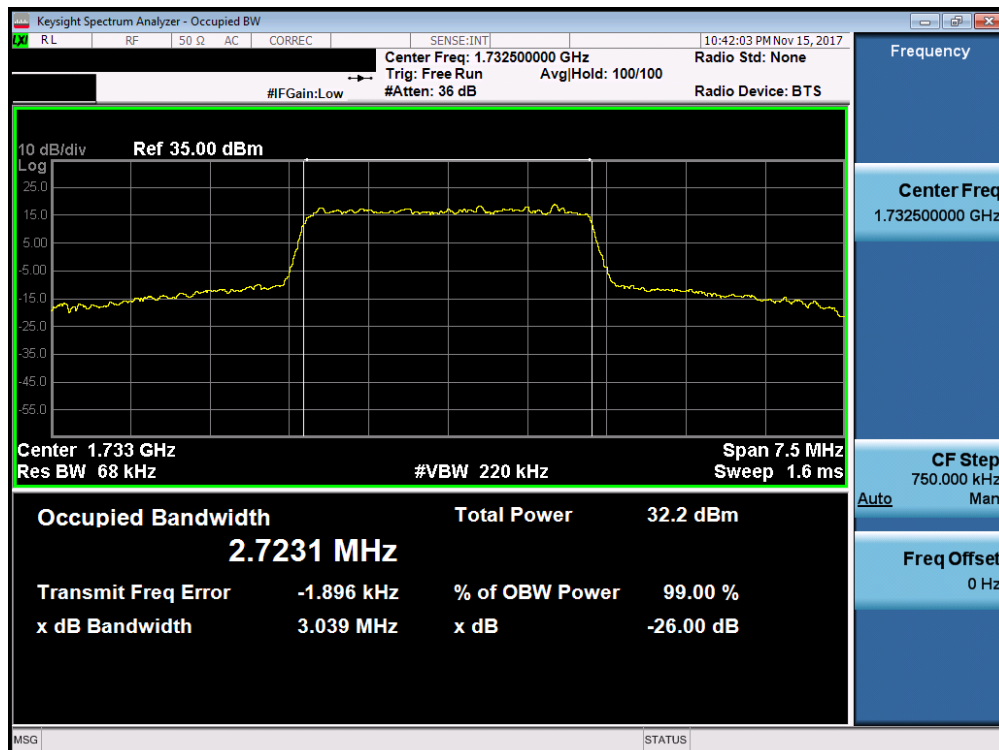
Plot 7-18. Occupied Bandwidth Plot (Band 4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 23 of 120

Band 4



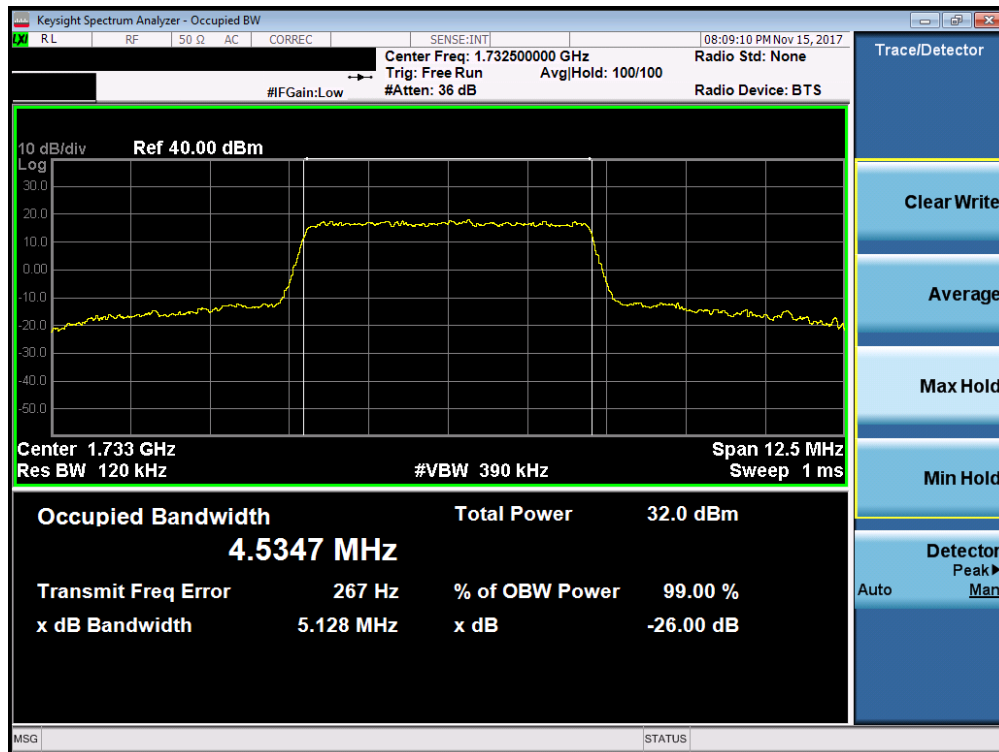
Plot 7-19. Occupied Bandwidth Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



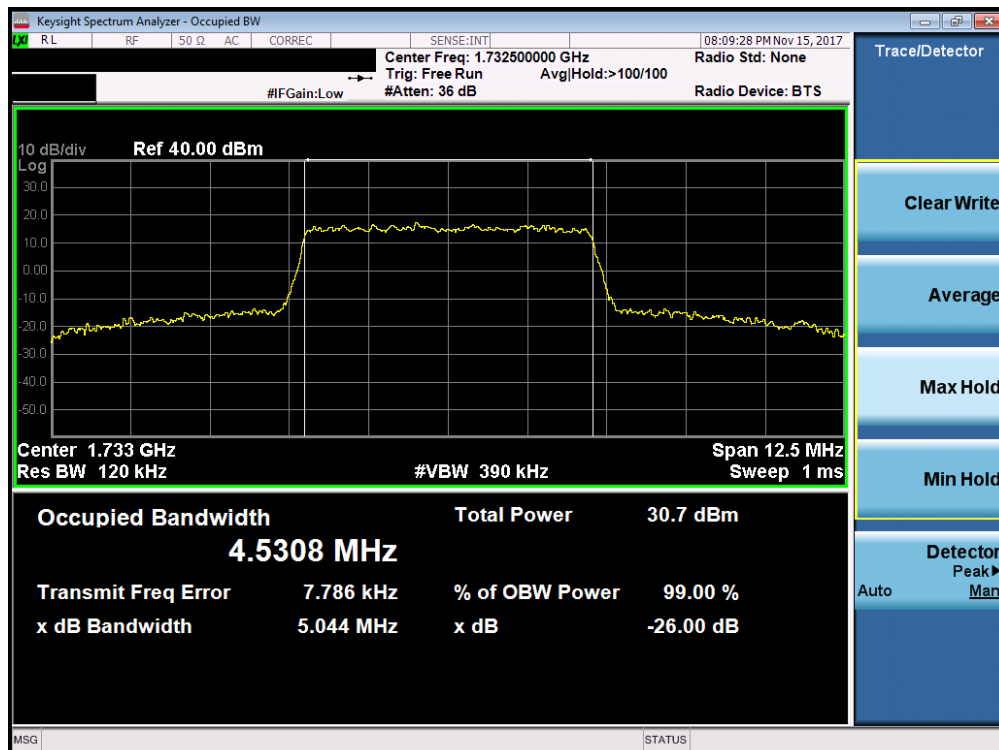
Plot 7-20. Occupied Bandwidth Plot (Band 4 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 24 of 120

Band 4



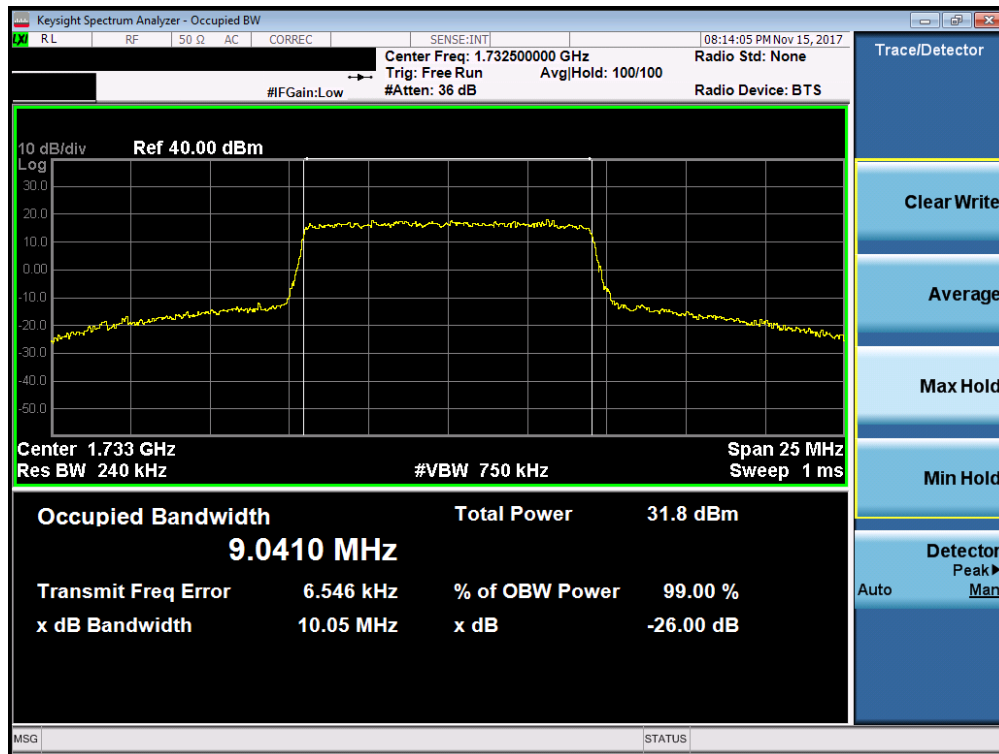
Plot 7-21. Occupied Bandwidth Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 25 of 120

Band 4



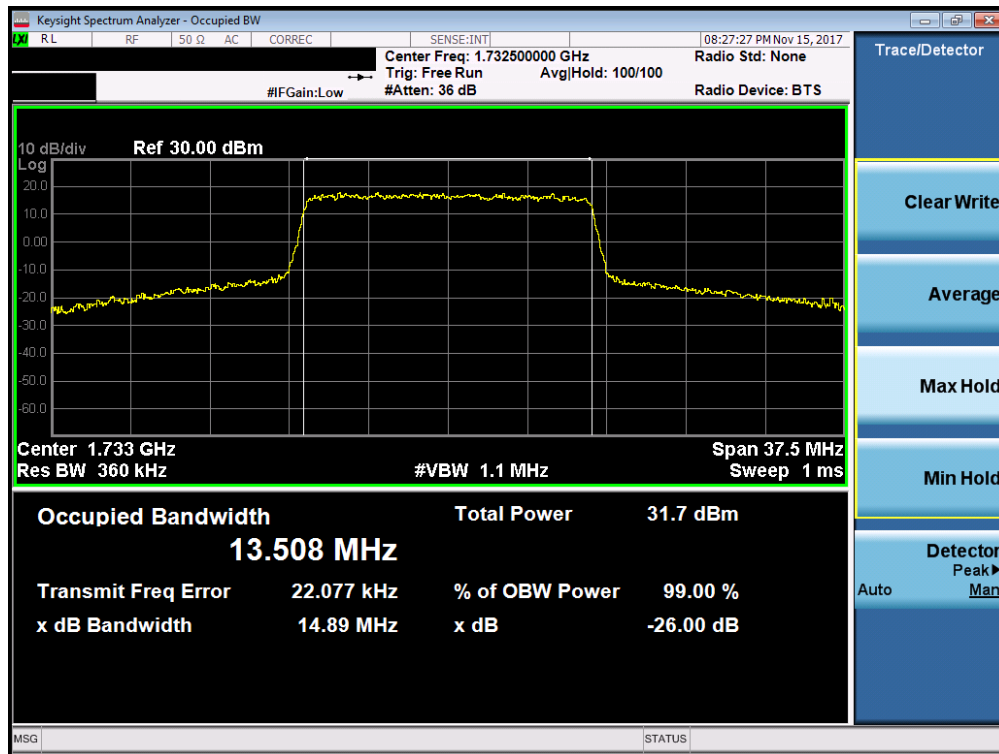
Plot 7-23. Occupied Bandwidth Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)



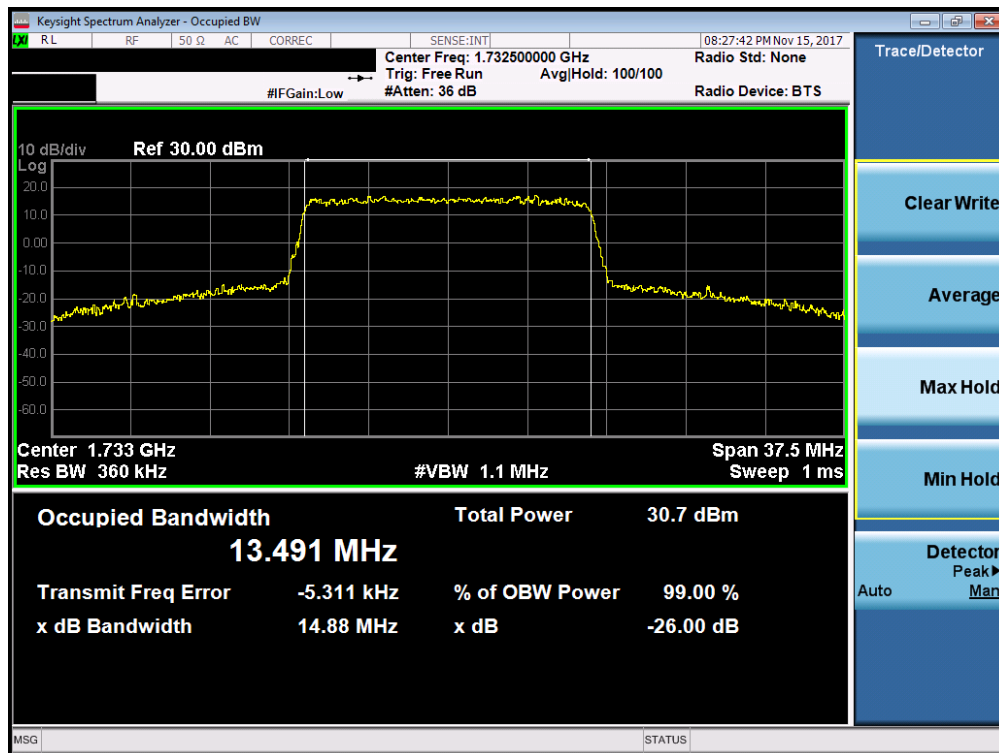
Plot 7-24. Occupied Bandwidth Plot (Band 4 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 26 of 120

Band 4



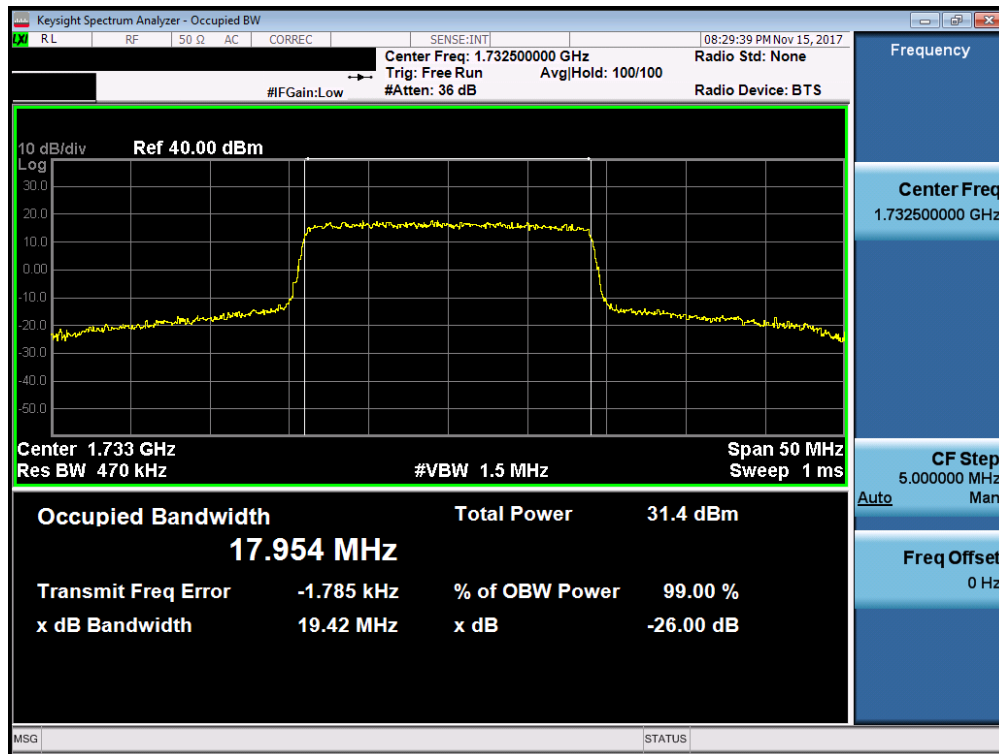
Plot 7-25. Occupied Bandwidth Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



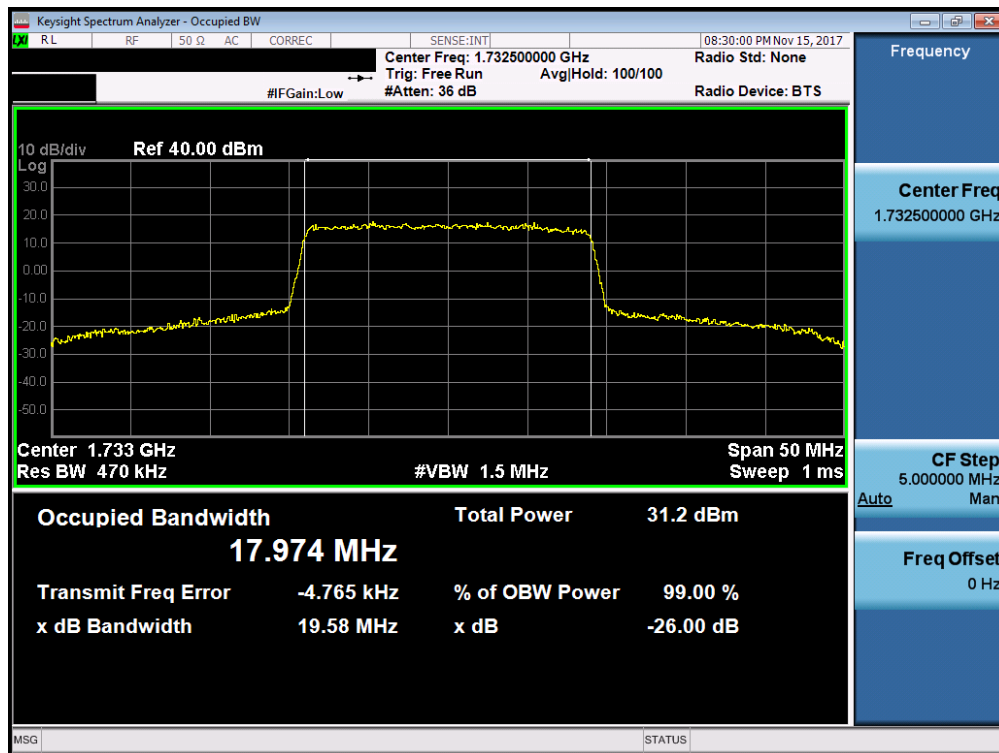
Plot 7-26. Occupied Bandwidth Plot (Band 4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 27 of 120

Band 4



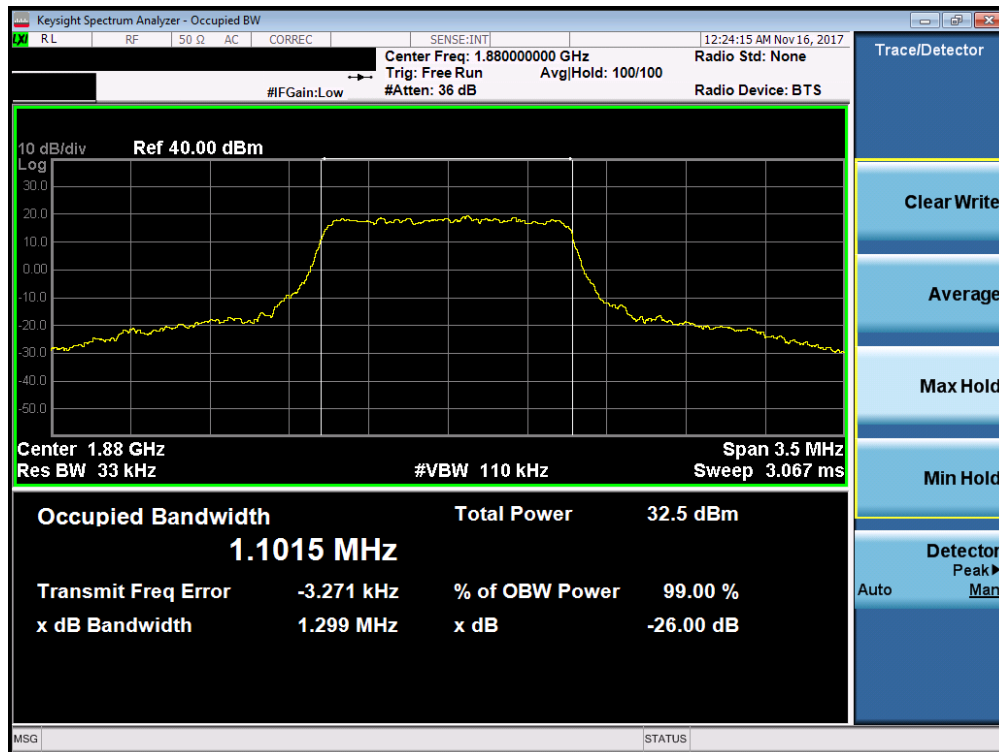
Plot 7-27. Occupied Bandwidth Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



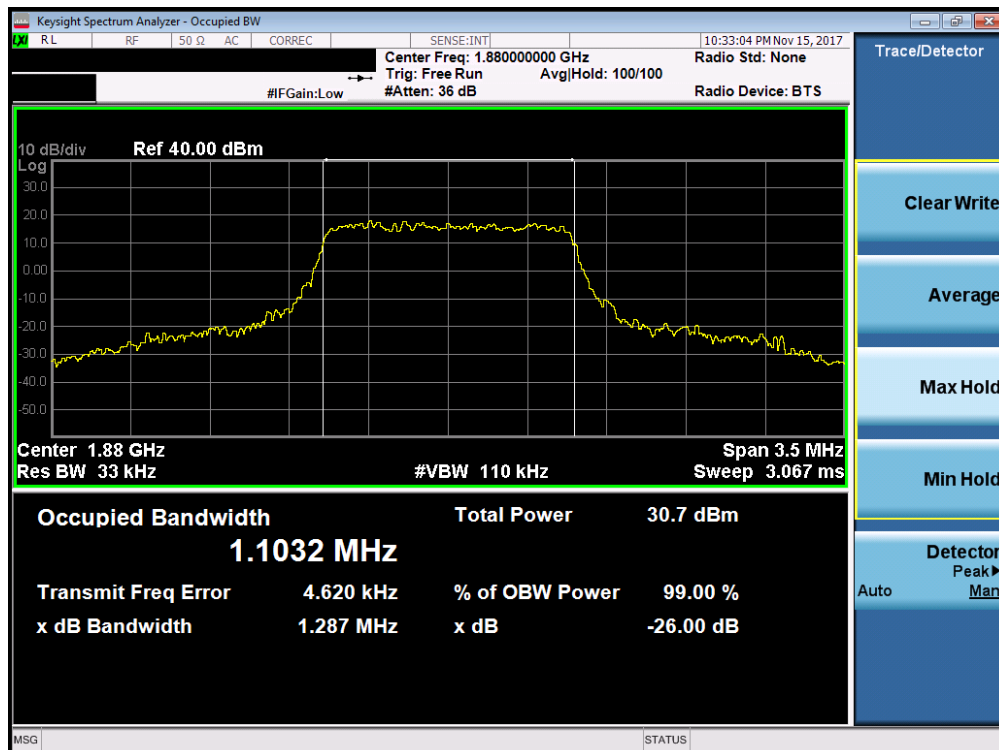
Plot 7-28. Occupied Bandwidth Plot (Band 4 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 28 of 120

Band 2



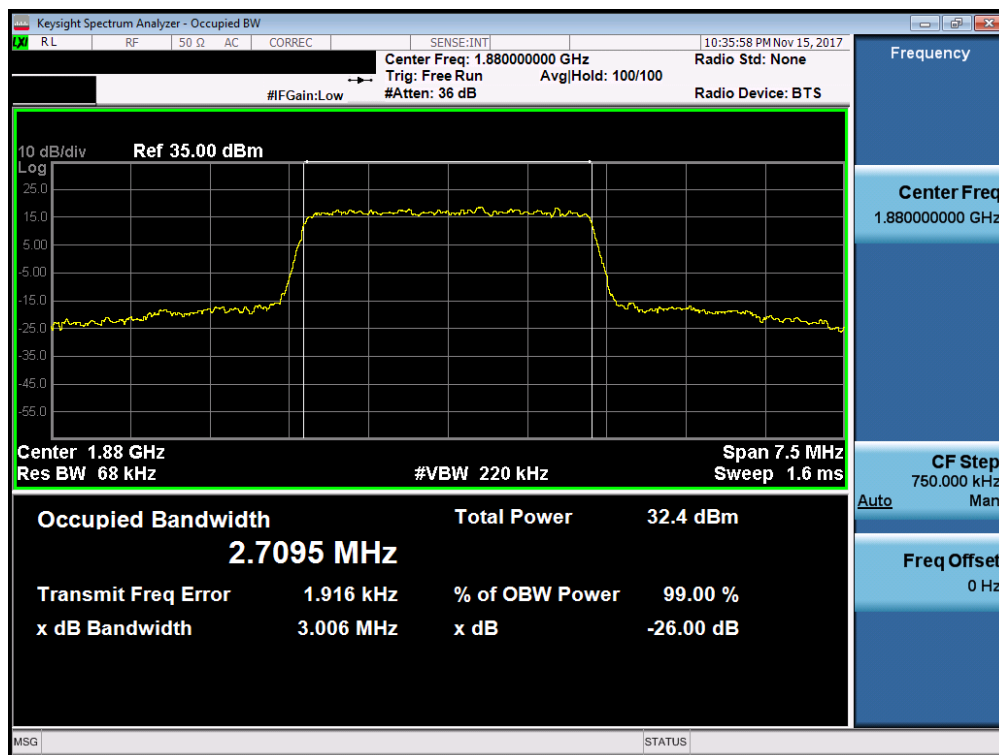
Plot 7-29. Occupied Bandwidth Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



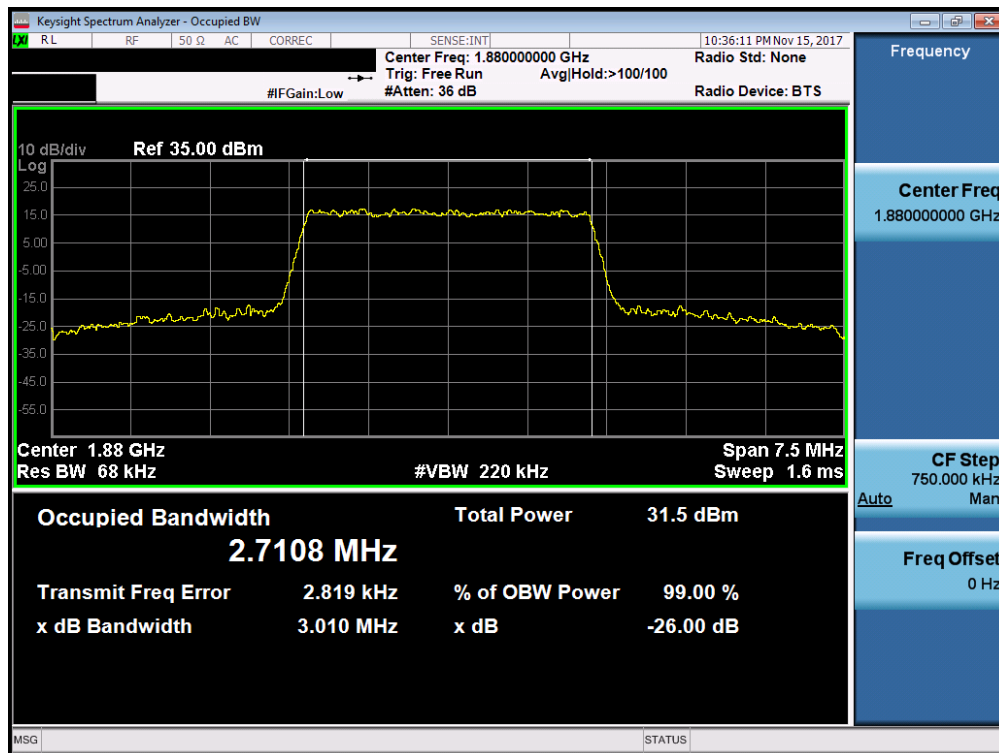
Plot 7-30. Occupied Bandwidth Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 29 of 120

Band 2



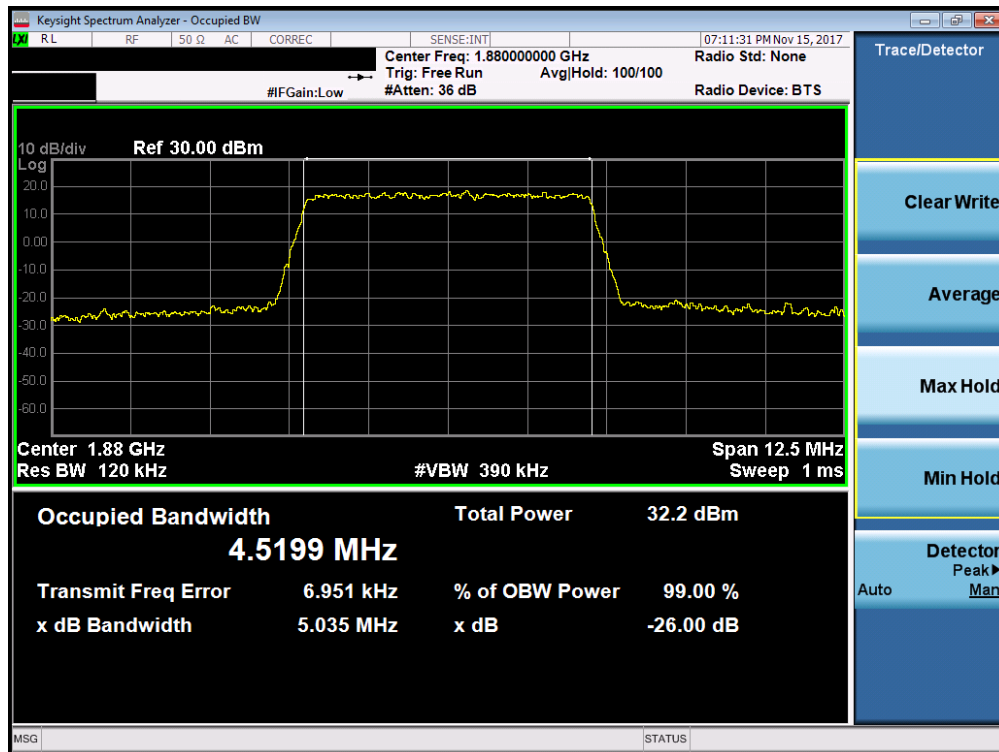
Plot 7-31. Occupied Bandwidth Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



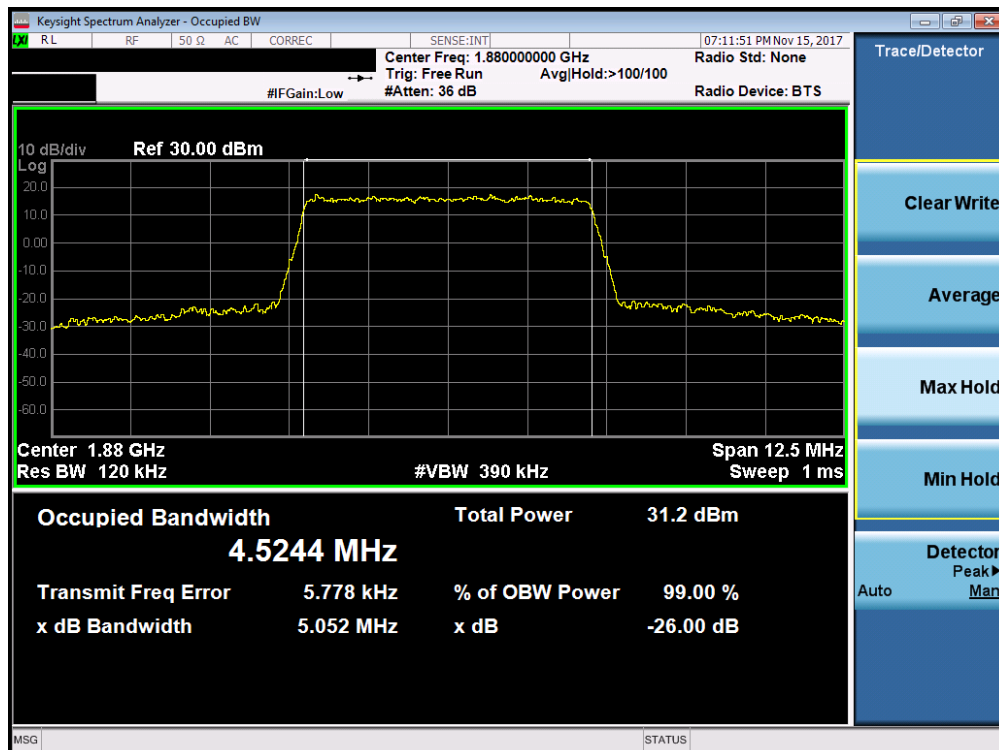
Plot 7-32. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 30 of 120	

Band 2



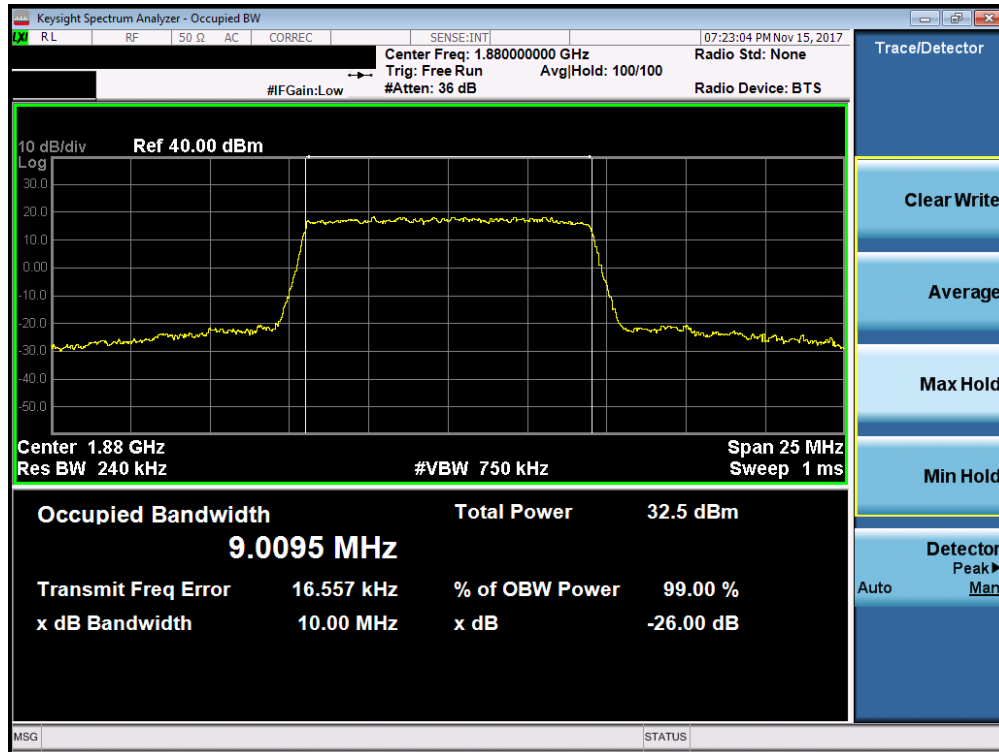
Plot 7-33. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



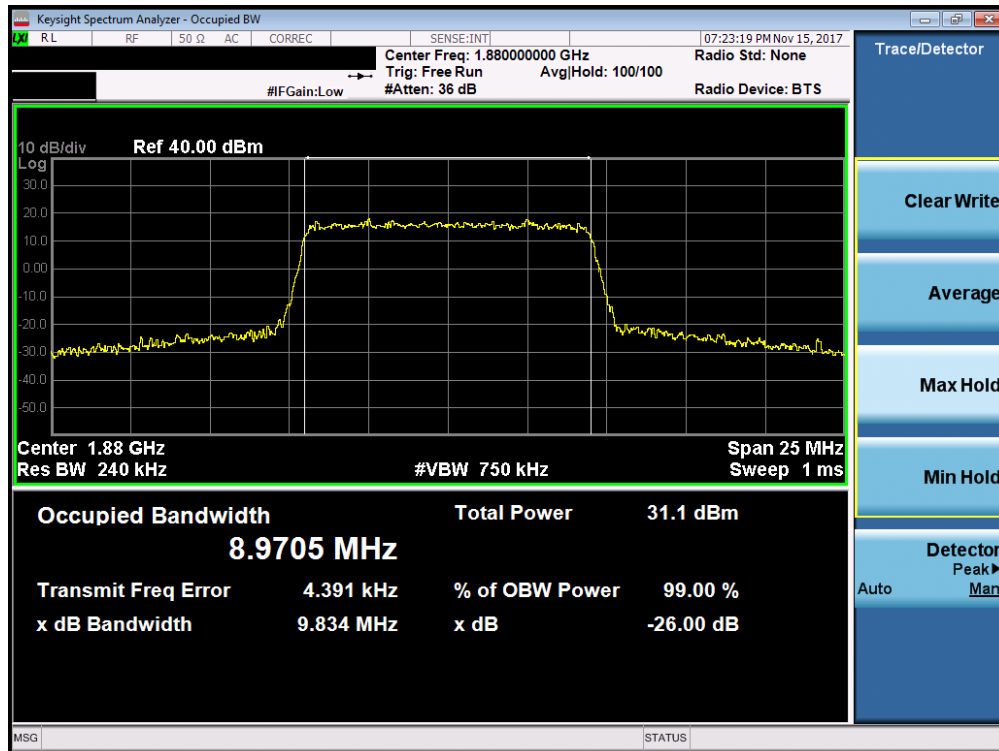
Plot 7-34. Occupied Bandwidth Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 31 of 120	

Band 2



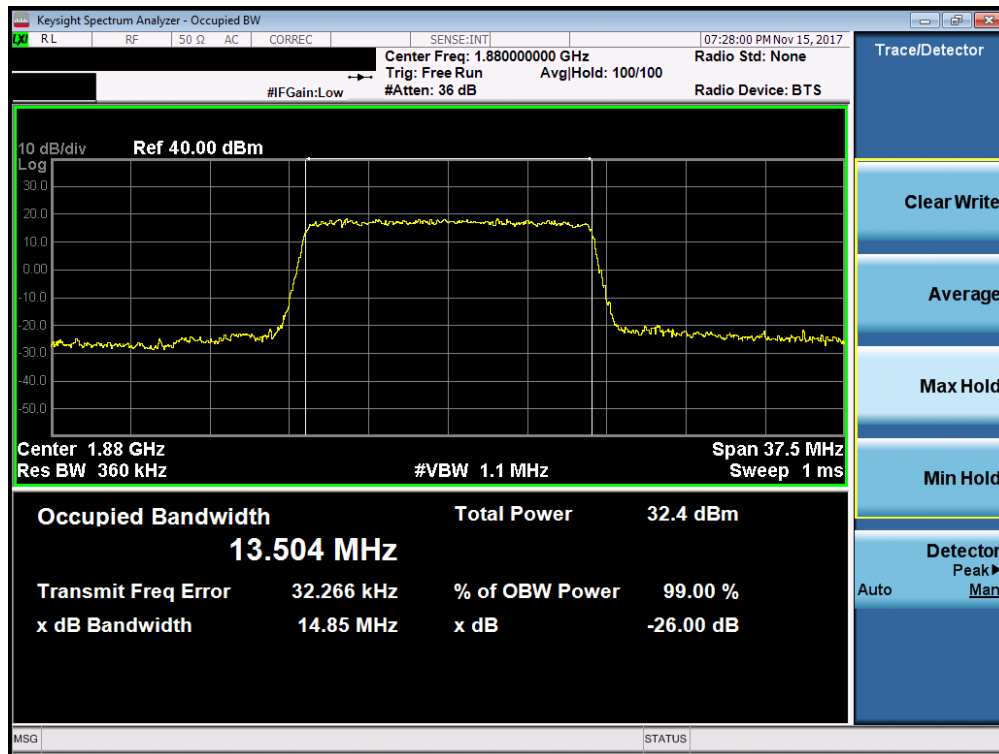
Plot 7-35. Occupied Bandwidth Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



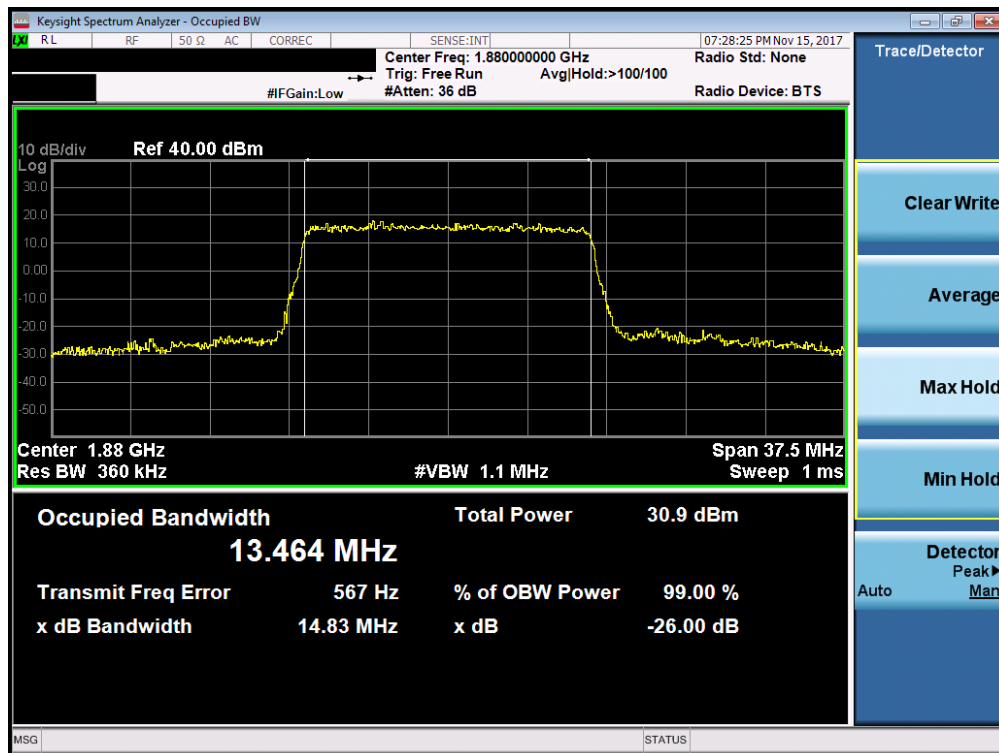
Plot 7-36. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 32 of 120	

Band 2



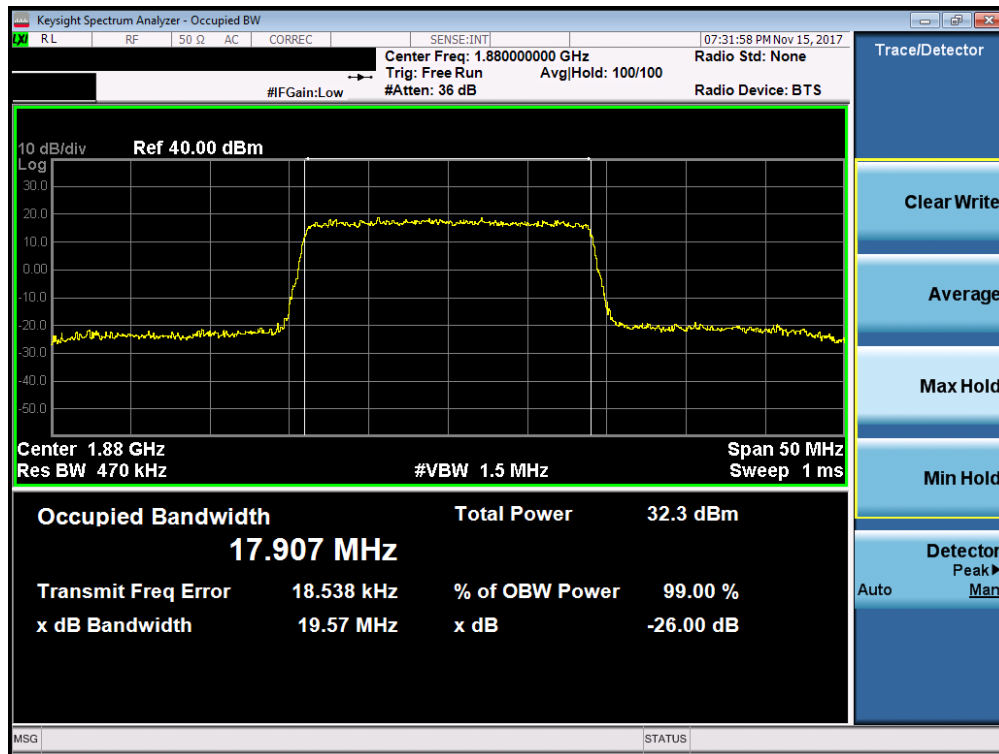
Plot 7-37. Occupied Bandwidth Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



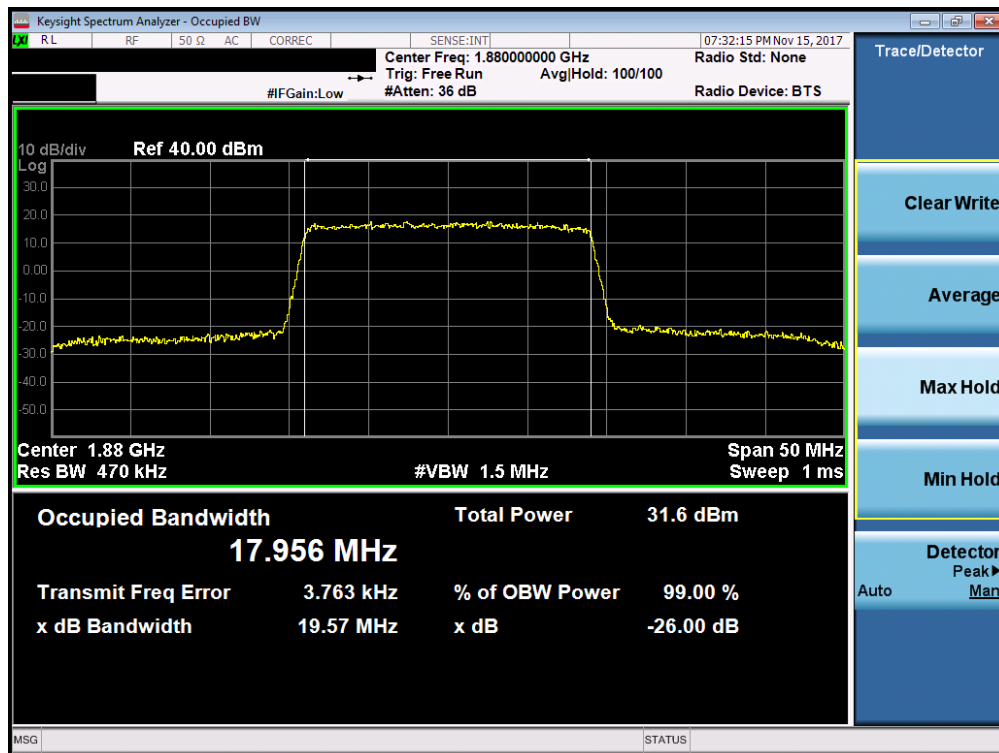
Plot 7-38. Occupied Bandwidth Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 33 of 120

Band 2



Plot 7-39. Occupied Bandwidth Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 34 of 120

7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §24.238(a) §27.53(g) §27.53(h) RSS-130(4.6) RSS-133(6.5) RSS-139(6.6)

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 its maximum duty cycle, 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 $43 + \log_{10}(P_{\text{Watts}})$, where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v03 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average
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.

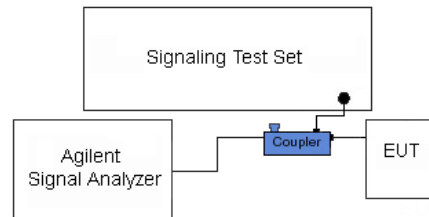


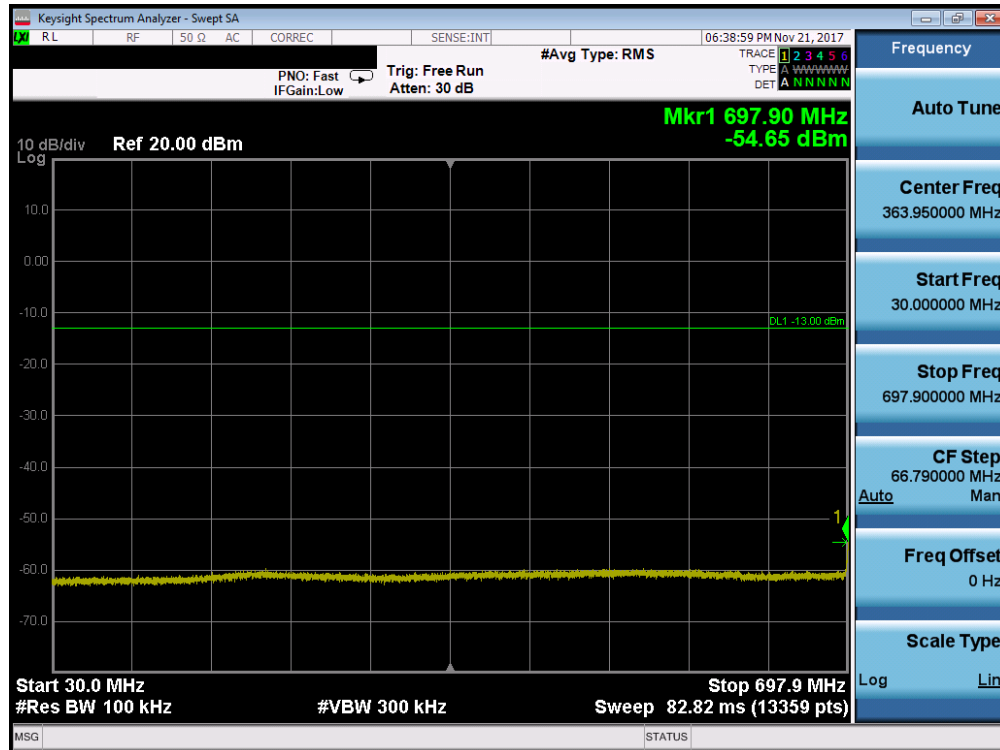
Figure 7-2. Test Instrument & Measurement Setup

Test Notes

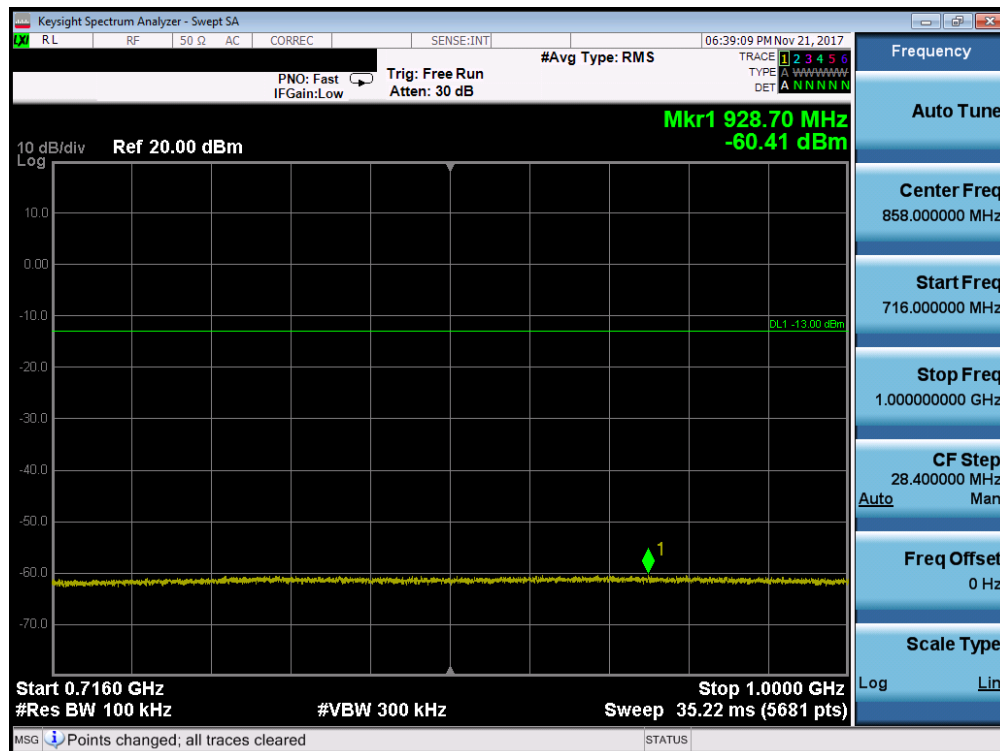
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the 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: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 35 of 120

Band 12

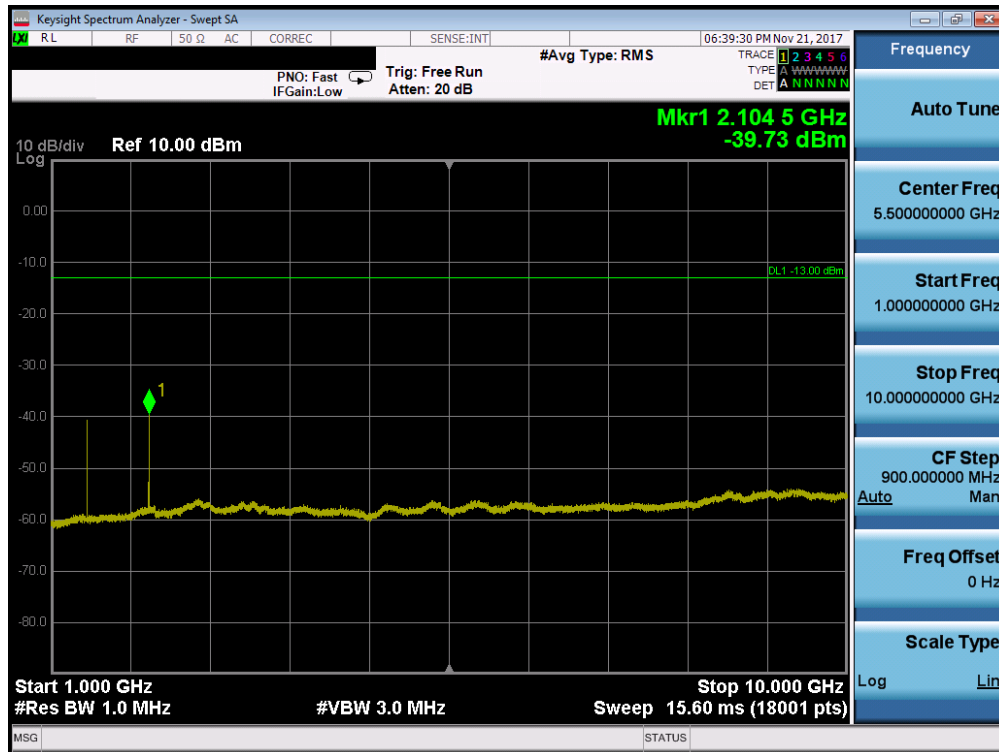


Plot 7-41. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

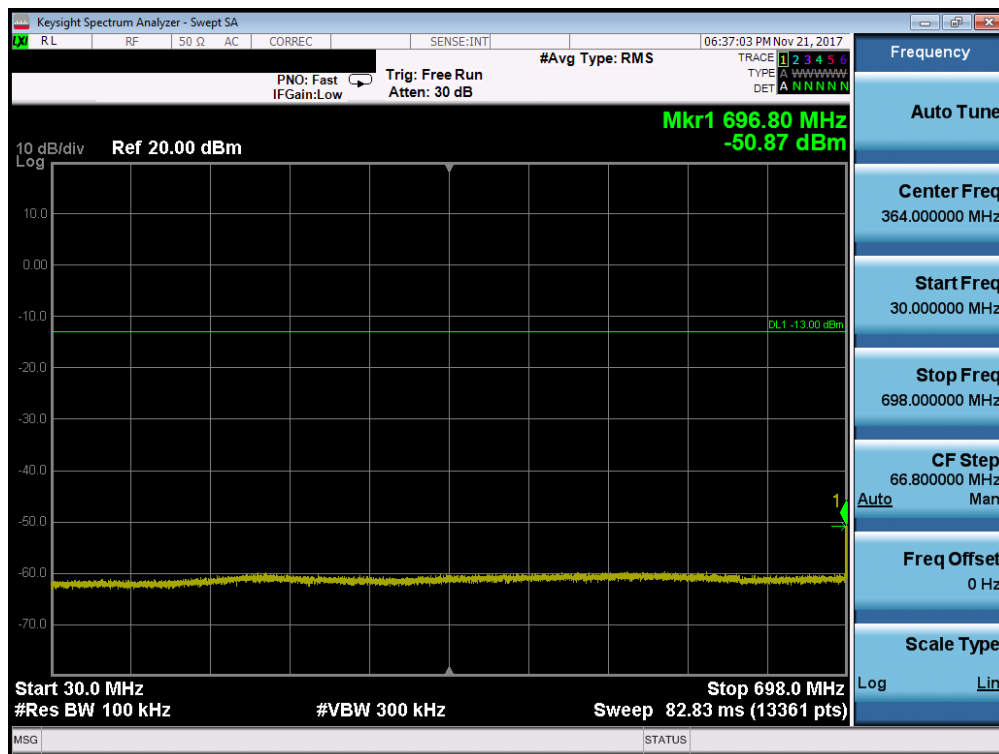


Plot 7-42. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 36 of 120

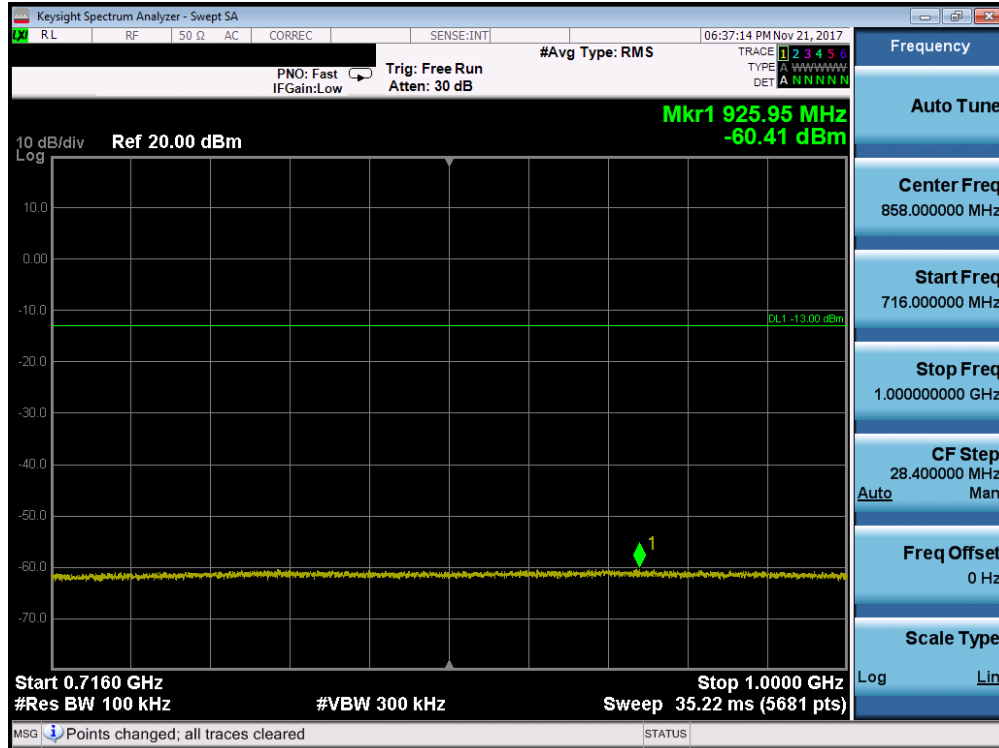


Plot 7-43. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

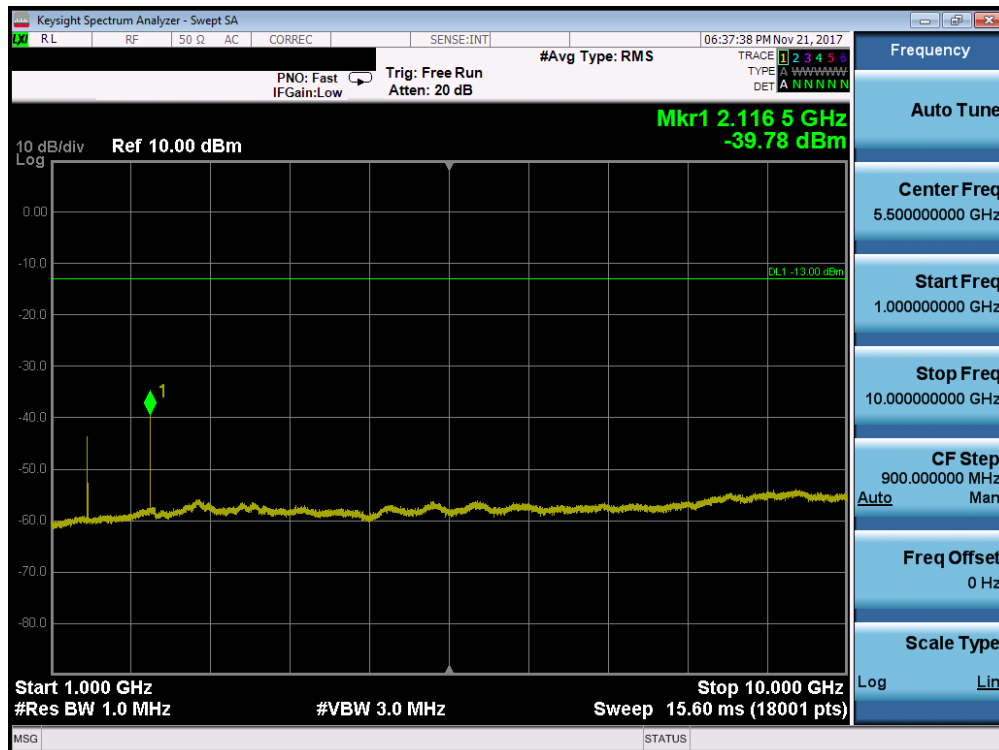


Plot 7-44. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 37 of 120

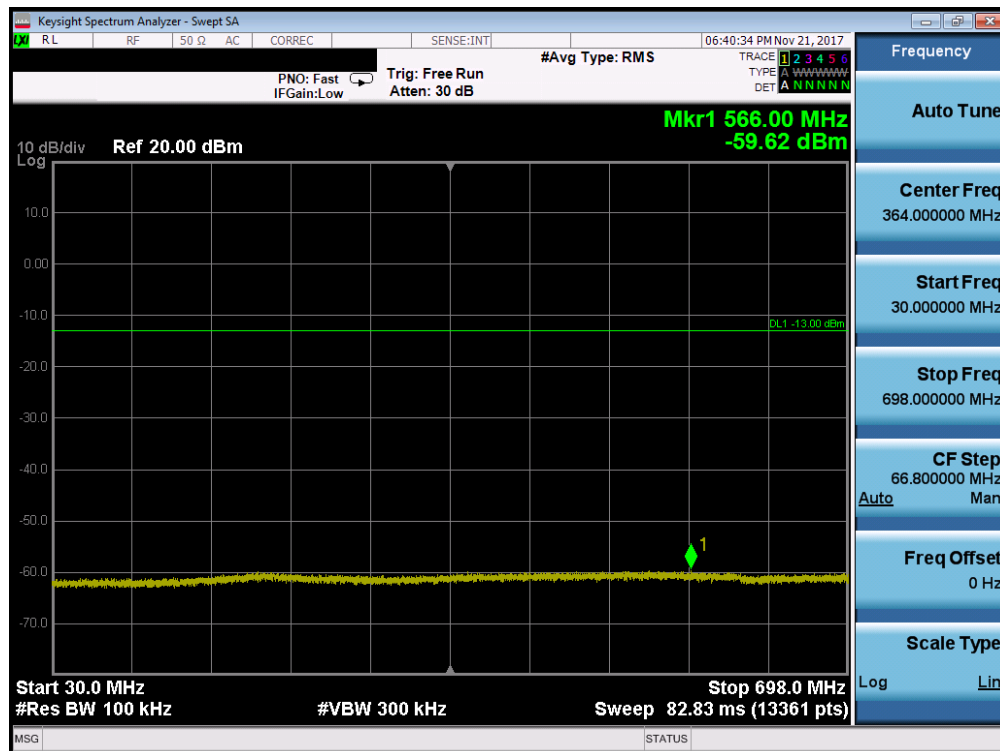


Plot 7-45. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

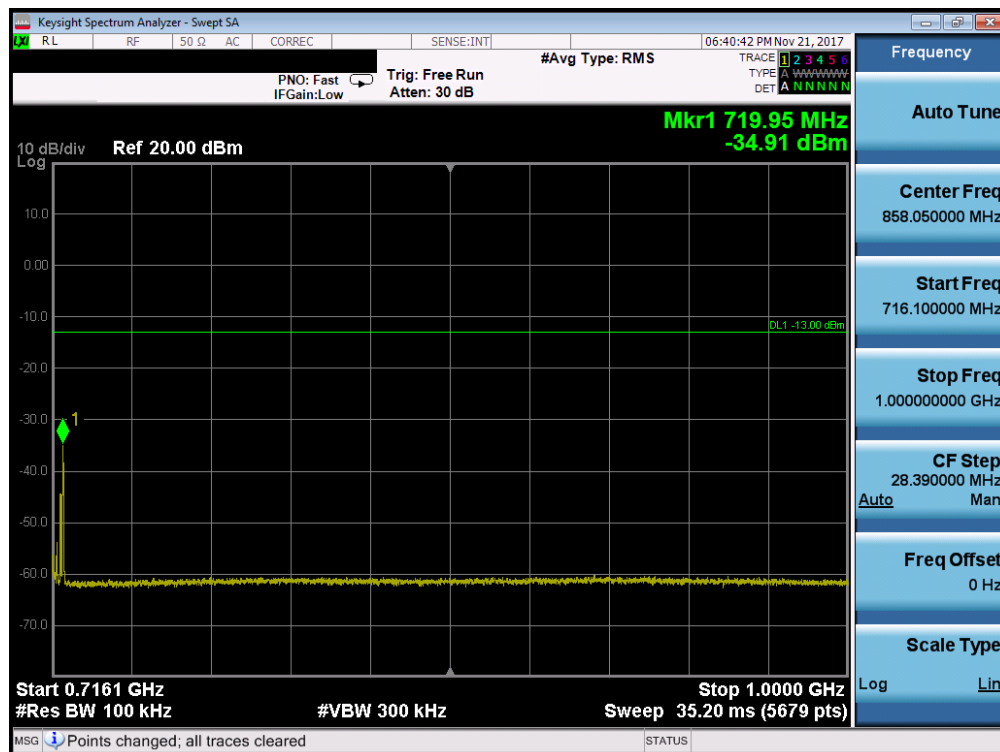


Plot 7-46. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 38 of 120

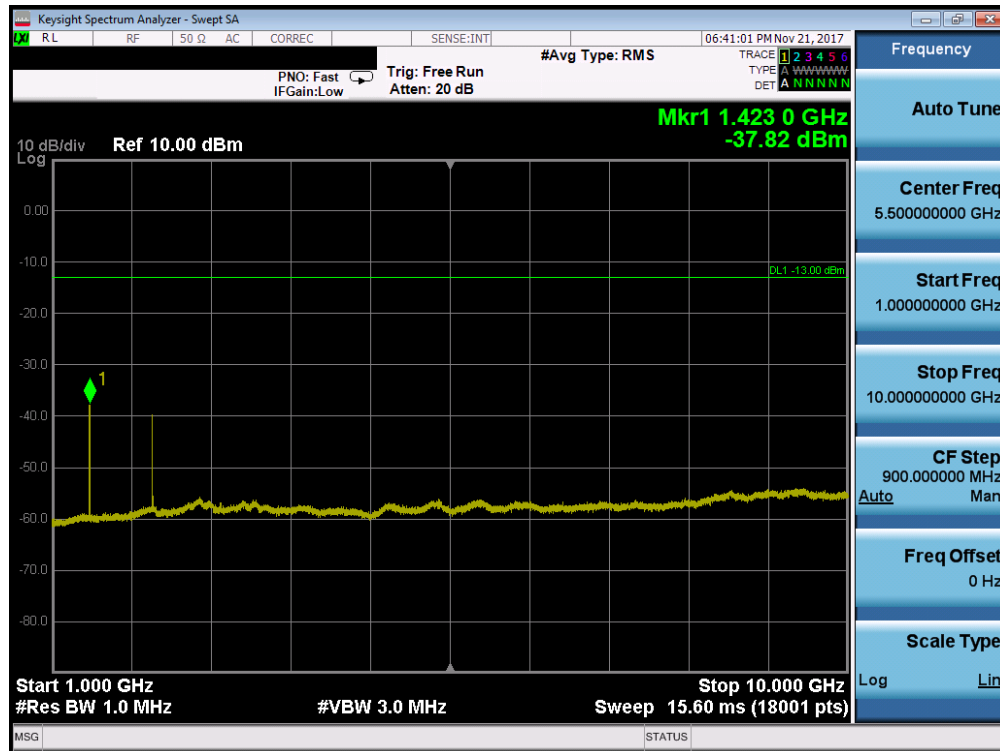


Plot 7-47. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-48. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

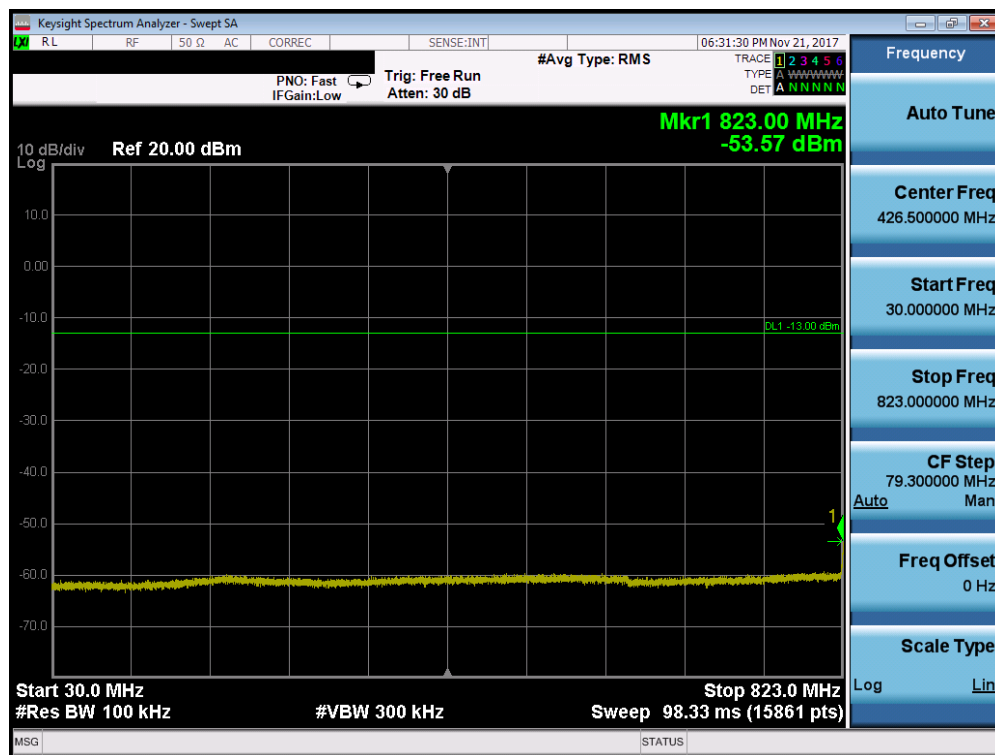
FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 39 of 120



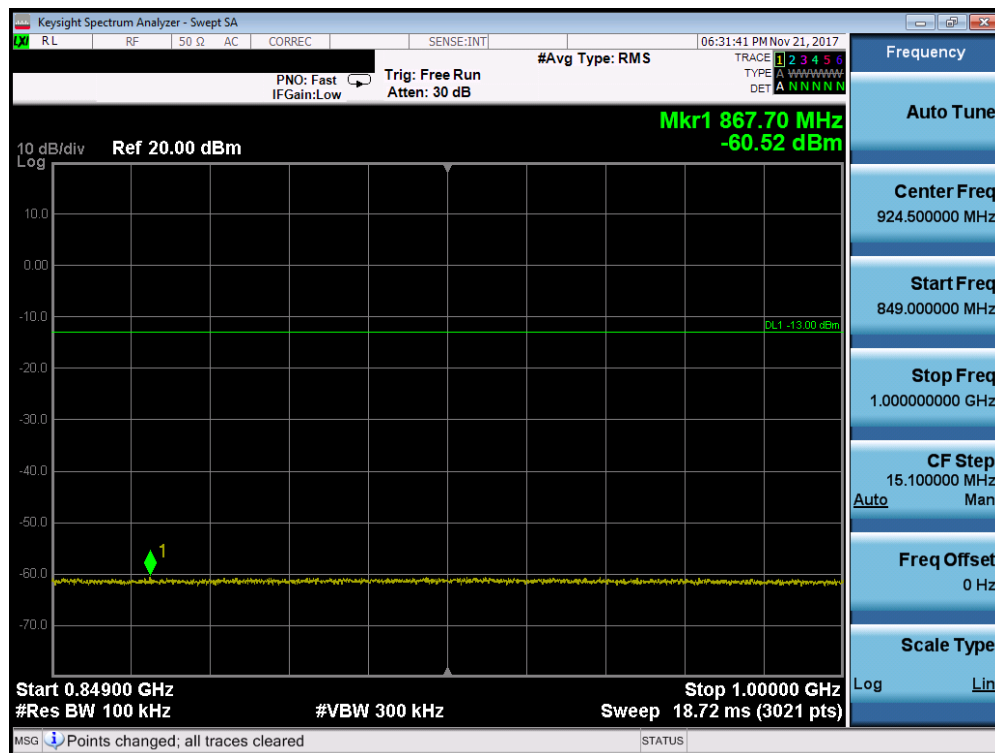
Plot 7-49. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 40 of 120	

Band 5

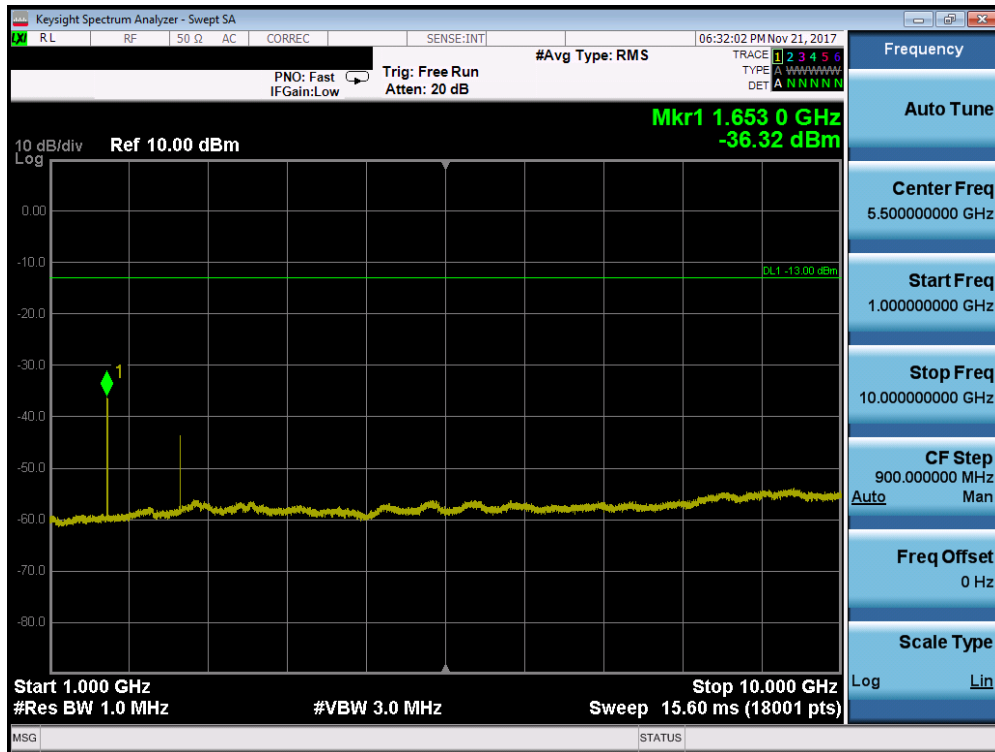


Plot 7-50. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

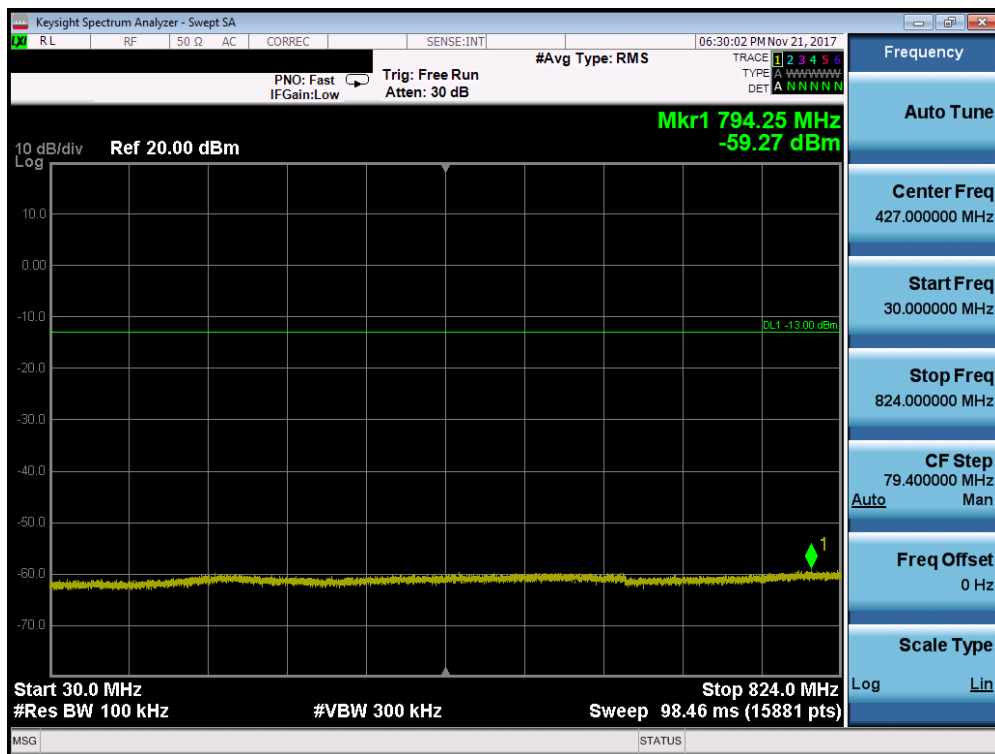


Plot 7-51. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 41 of 120

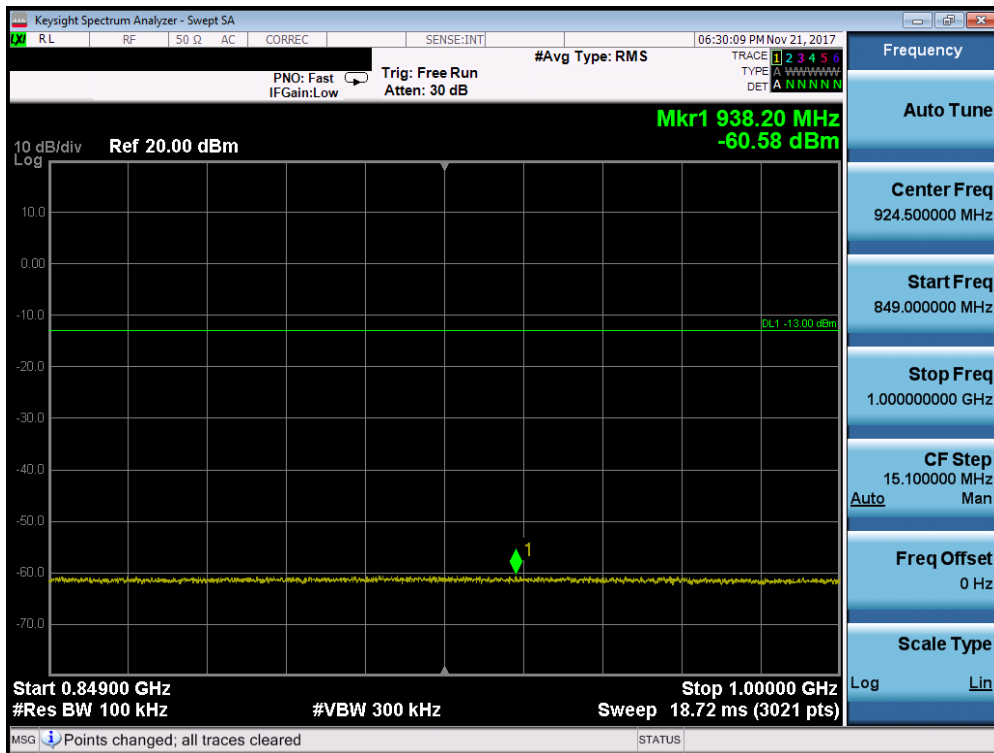


Plot 7-52. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

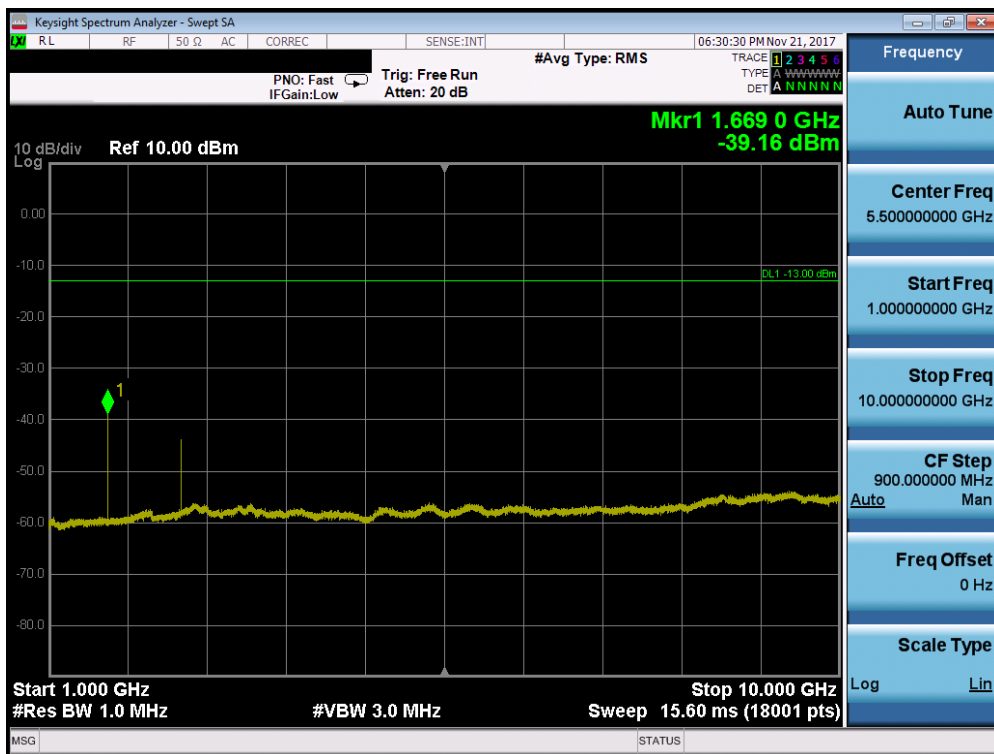


Plot 7-53. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 42 of 120

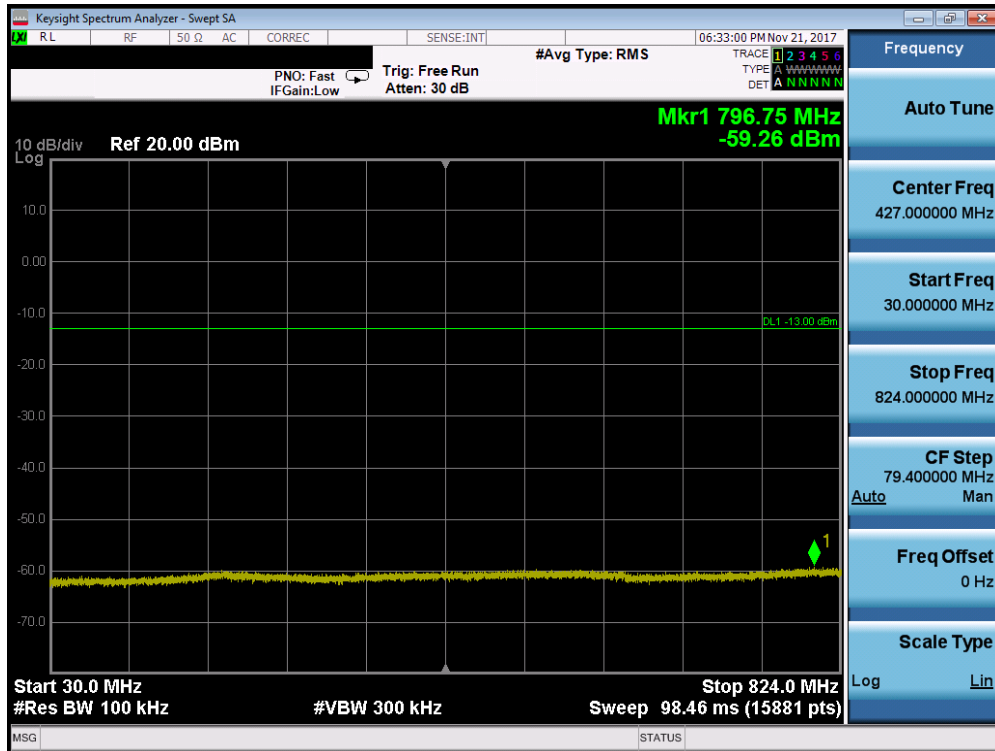


Plot 7-54. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

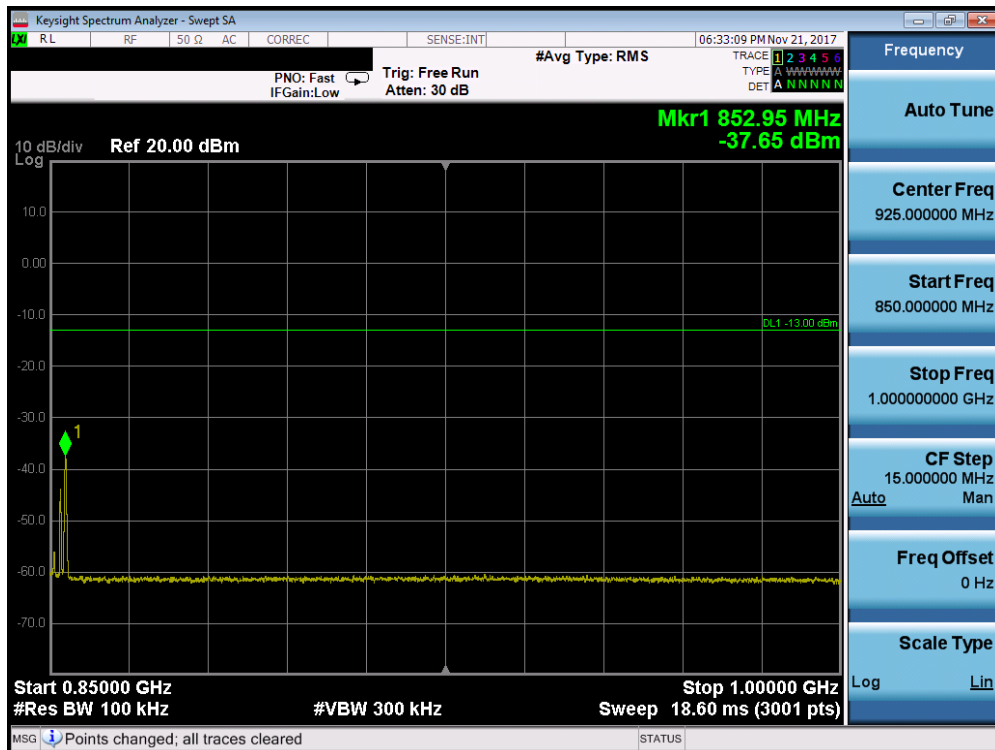


Plot 7-55. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 43 of 120

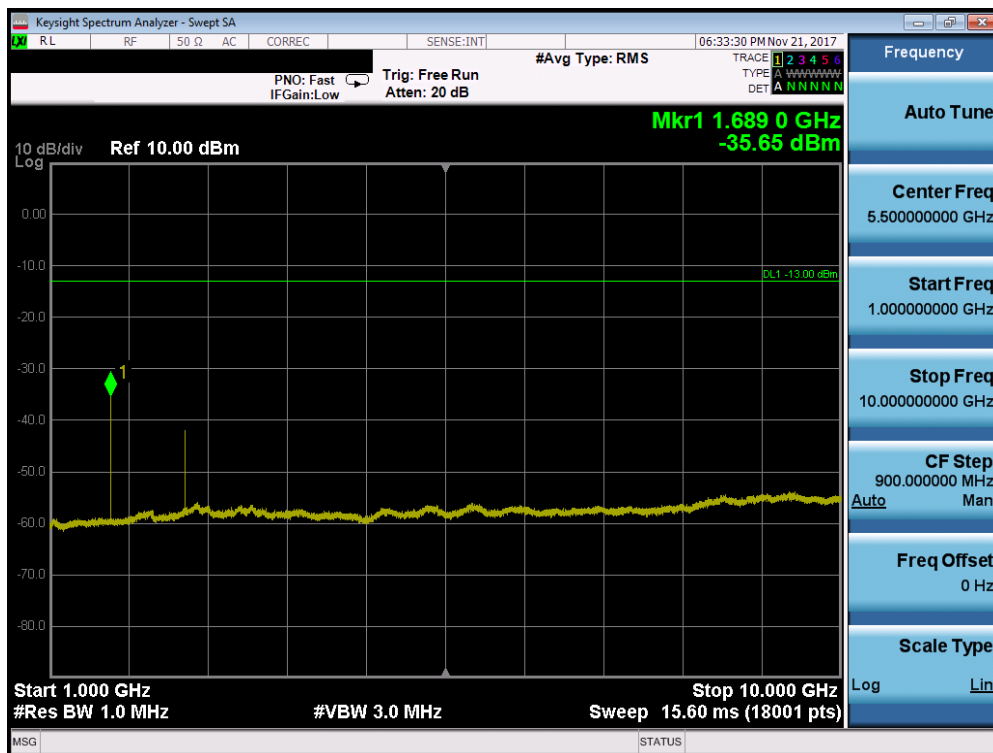


Plot 7-56. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-57. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

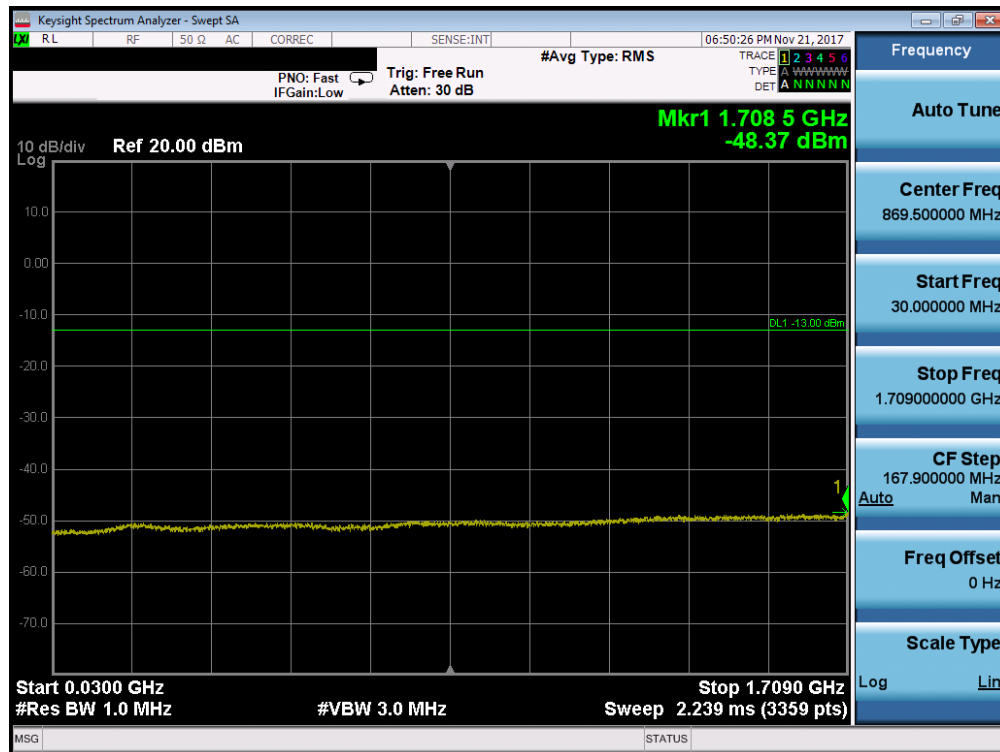
FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 44 of 120



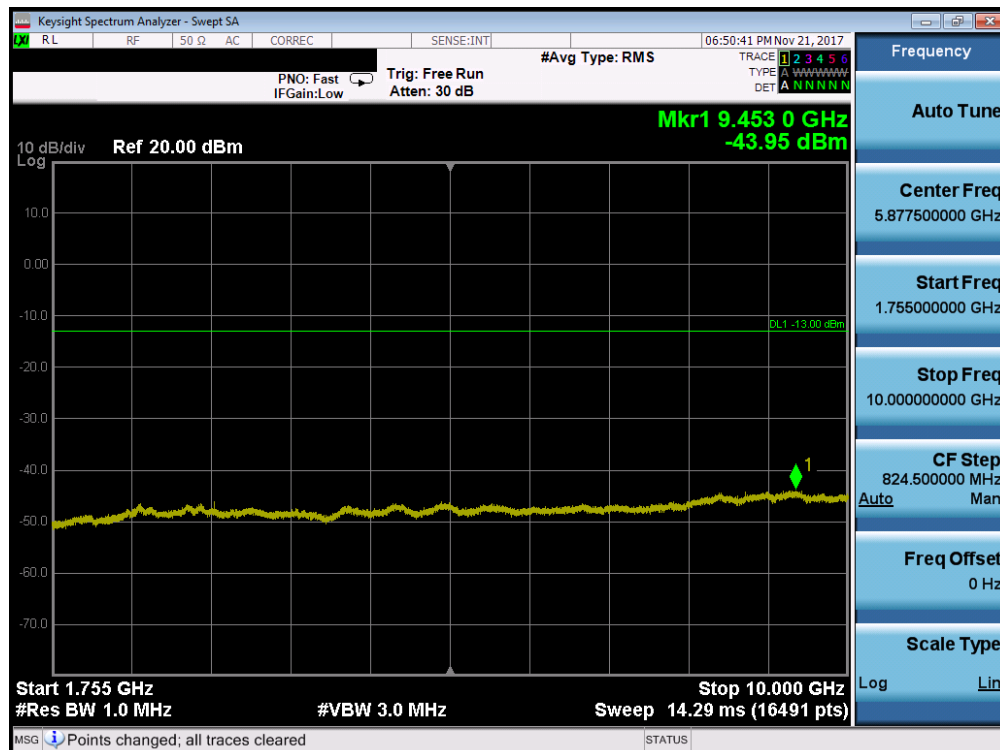
Plot 7-58. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 45 of 120

Band 4

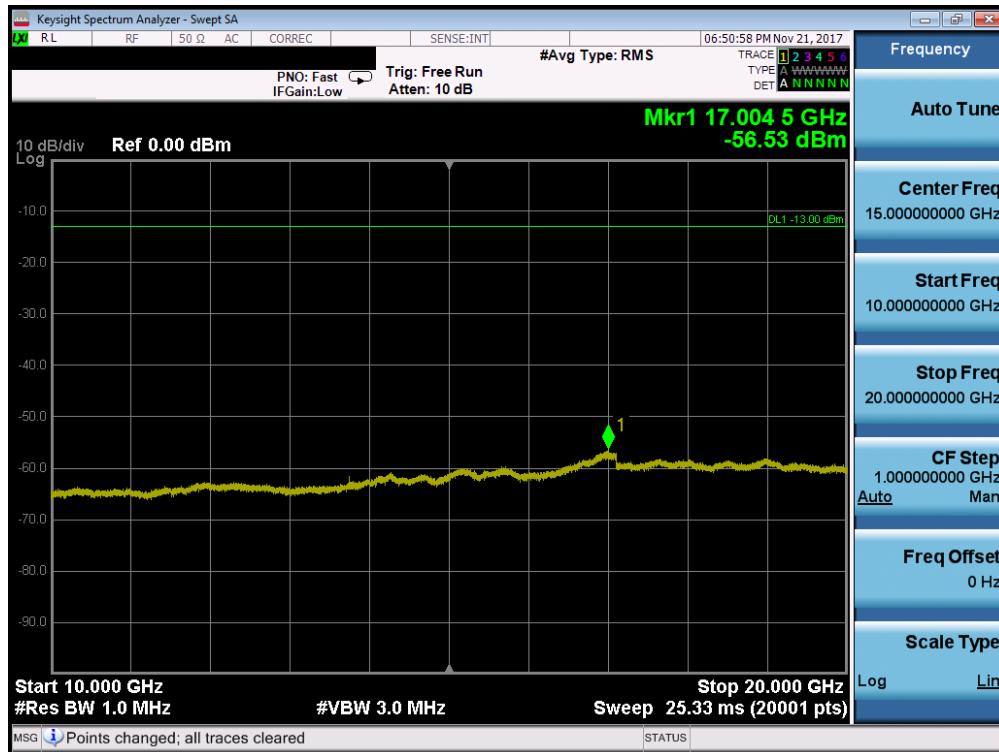


Plot 7-59. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-60. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 46 of 120

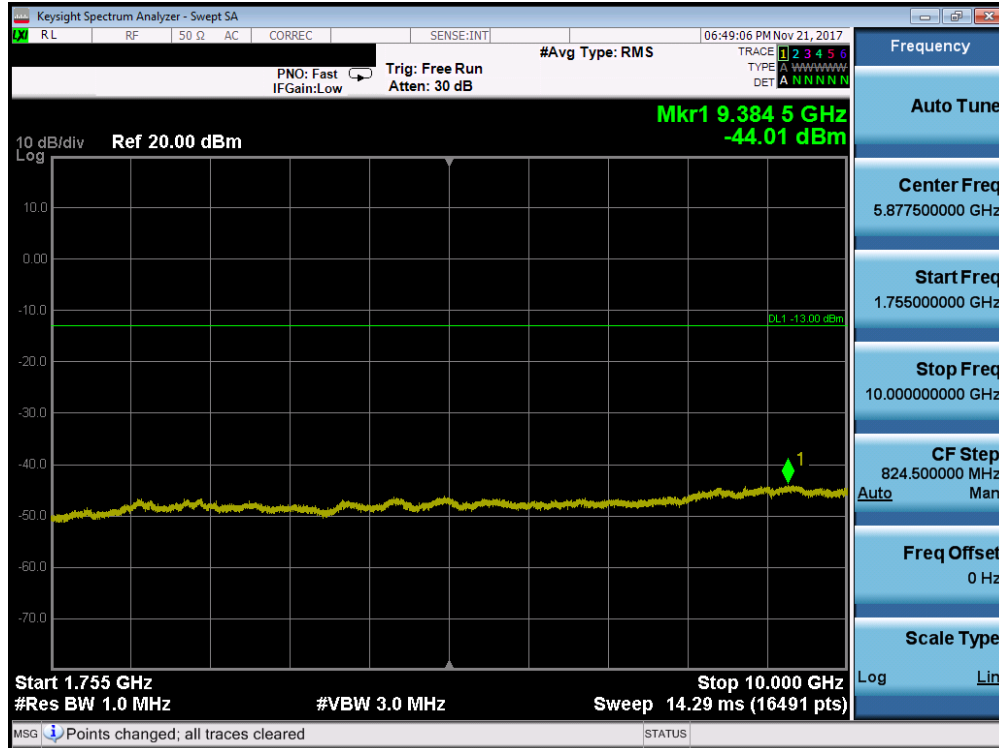


Plot 7-61. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

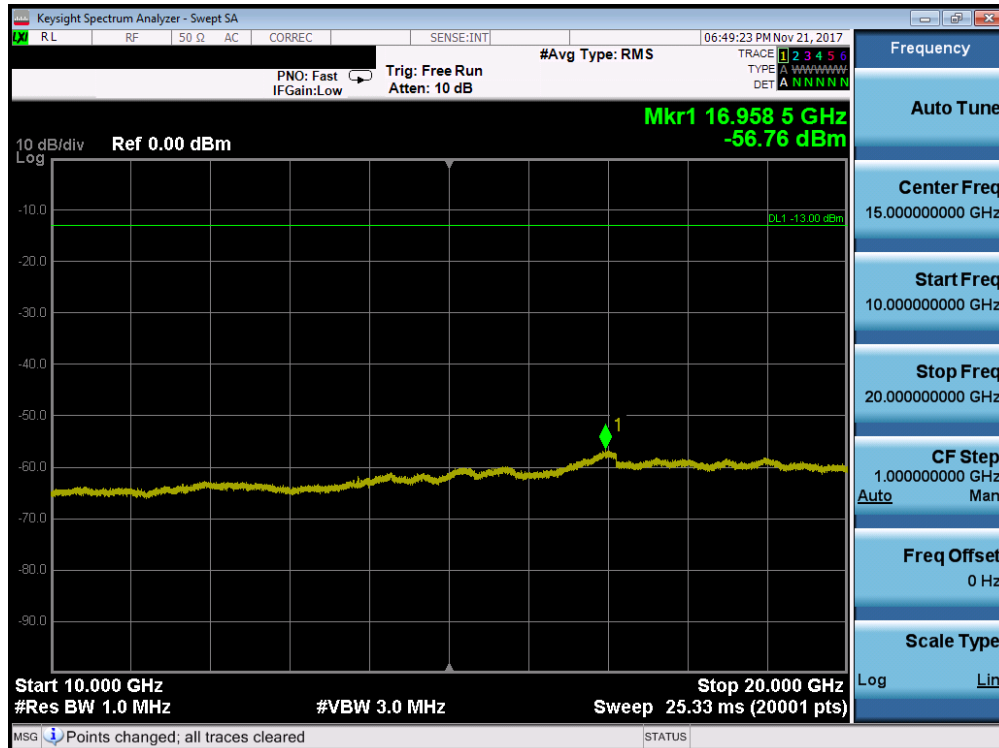


Plot 7-62. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 47 of 120	

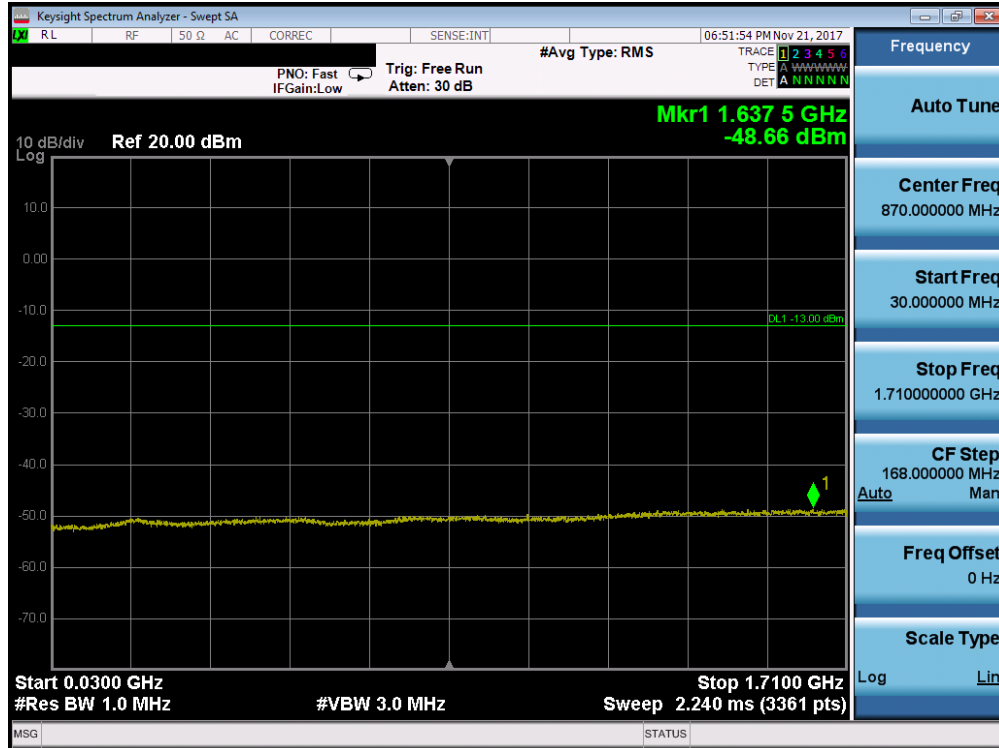


Plot 7-63. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

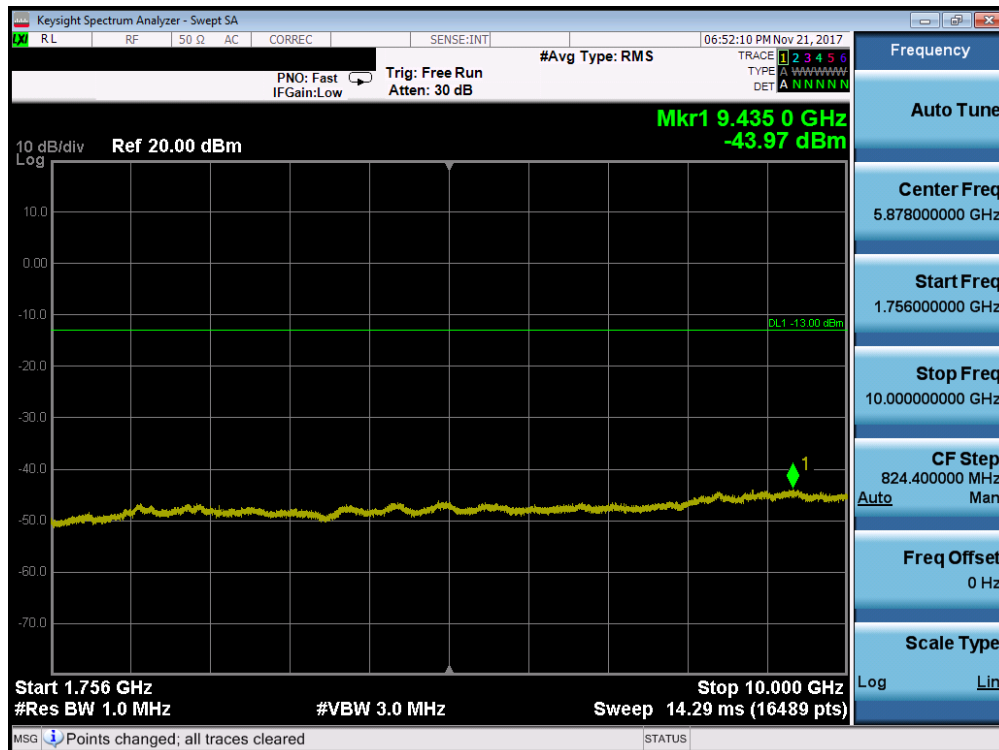


Plot 7-64. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 48 of 120

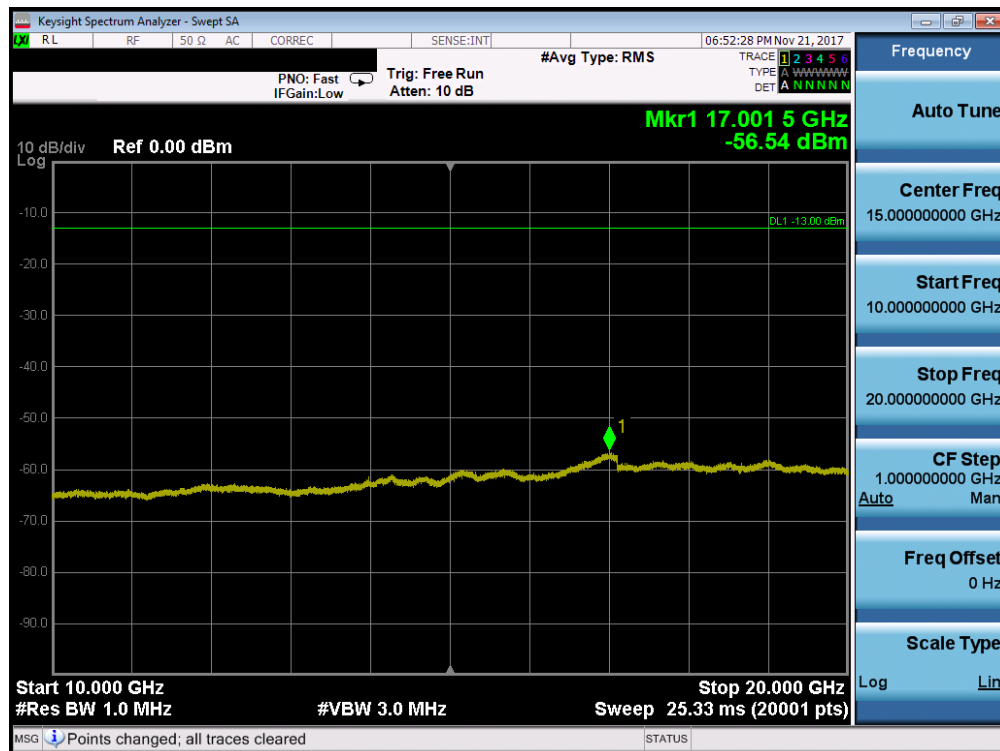


Plot 7-65. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-66. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

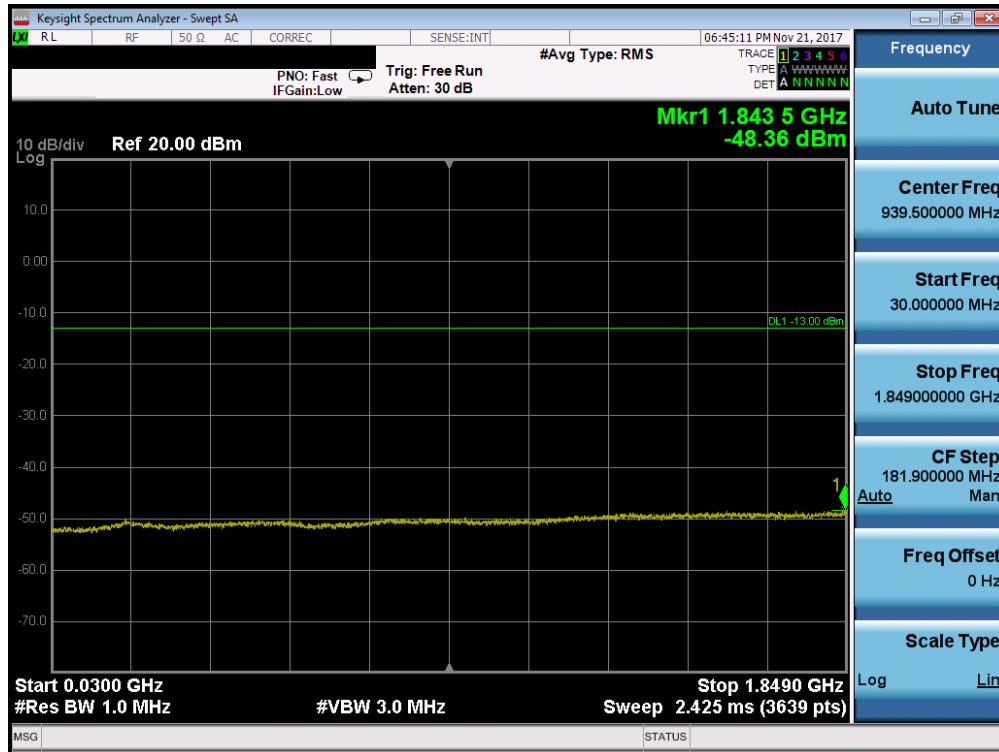
FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 49 of 120	



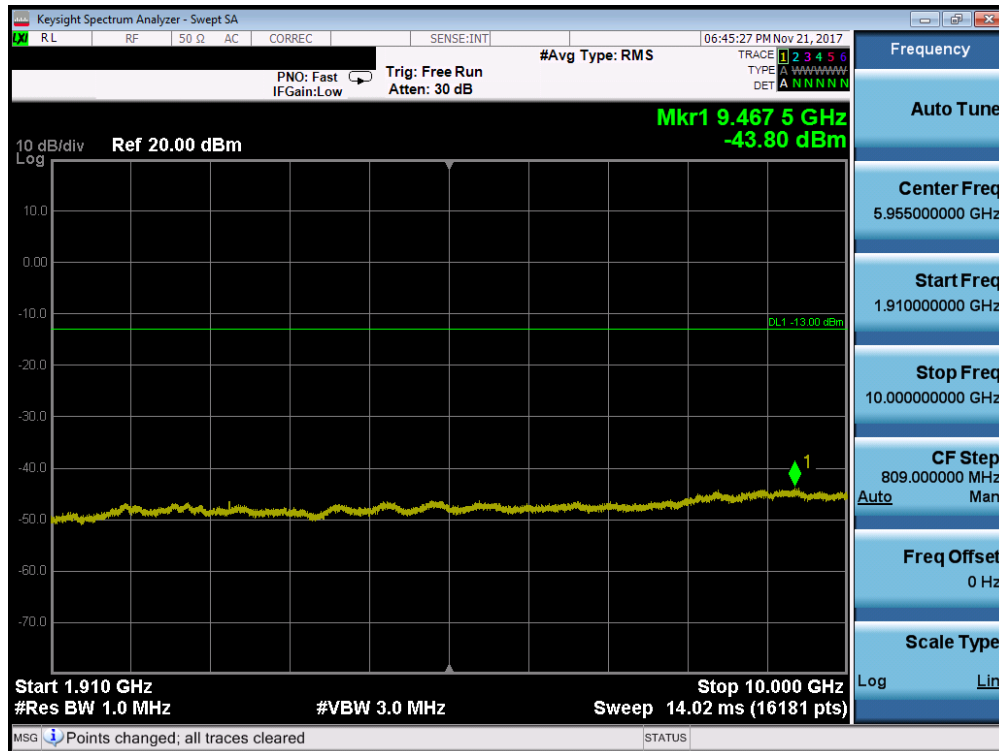
Plot 7-67. Conducted Spurious Plot (Band 4 - 15.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 50 of 120

Band 2

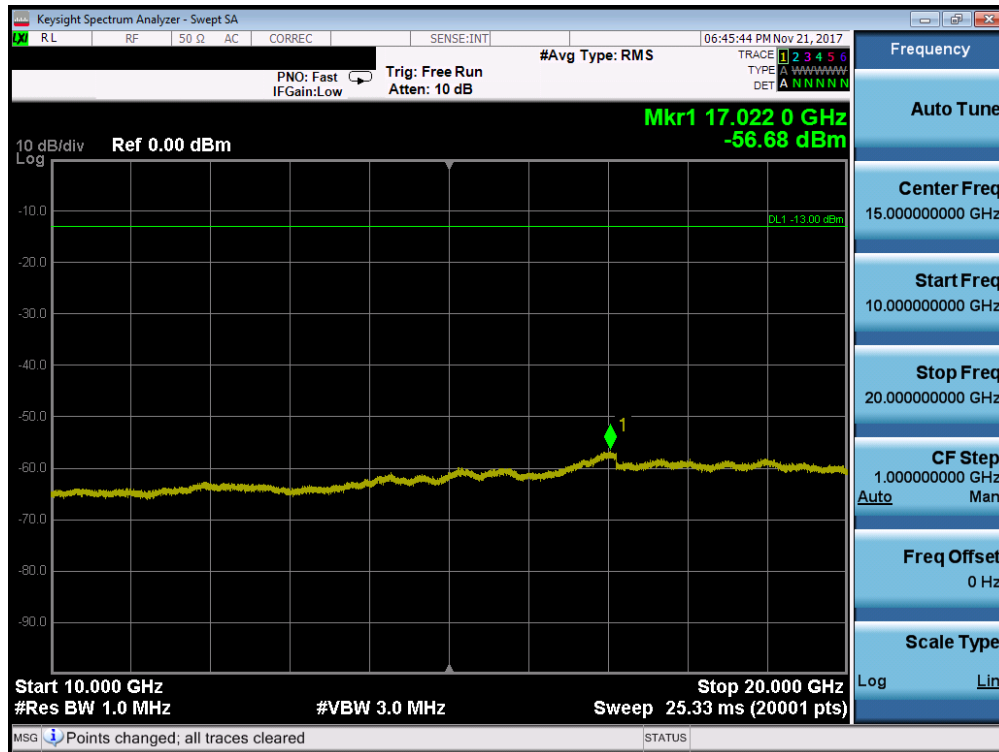


Plot 7-68. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

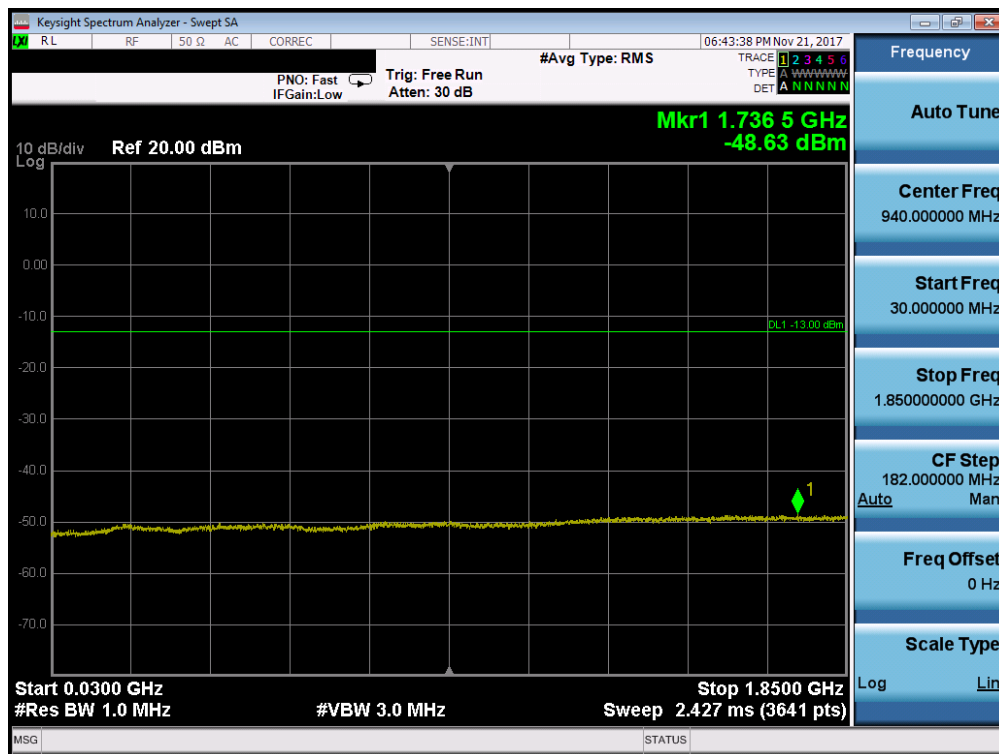


Plot 7-69. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 51 of 120

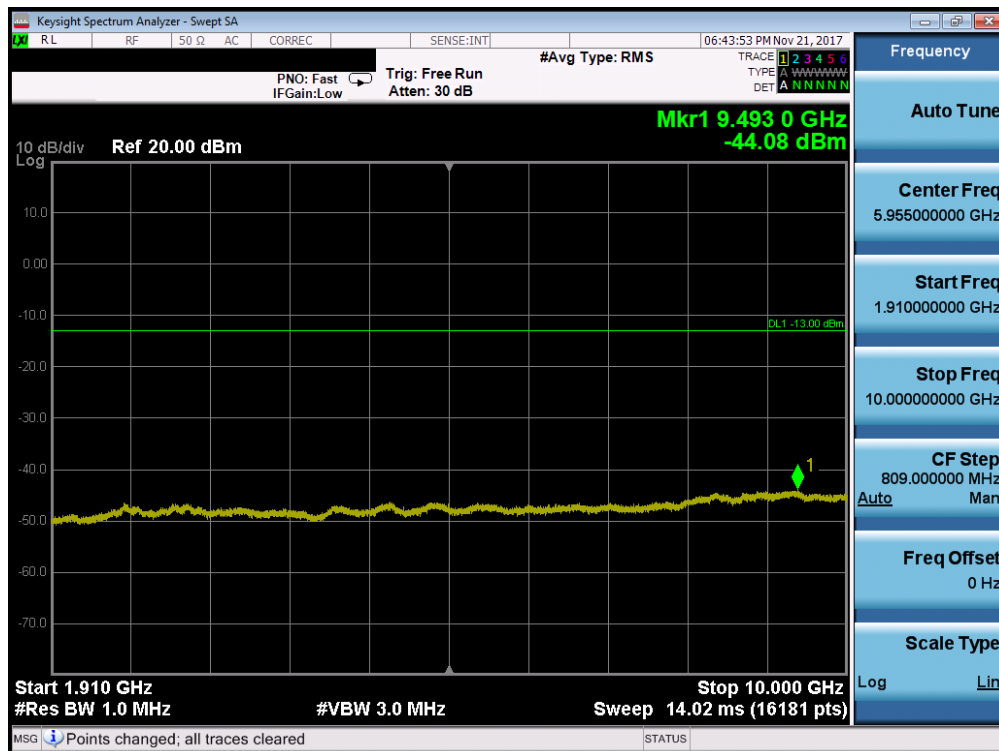


Plot 7-70. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

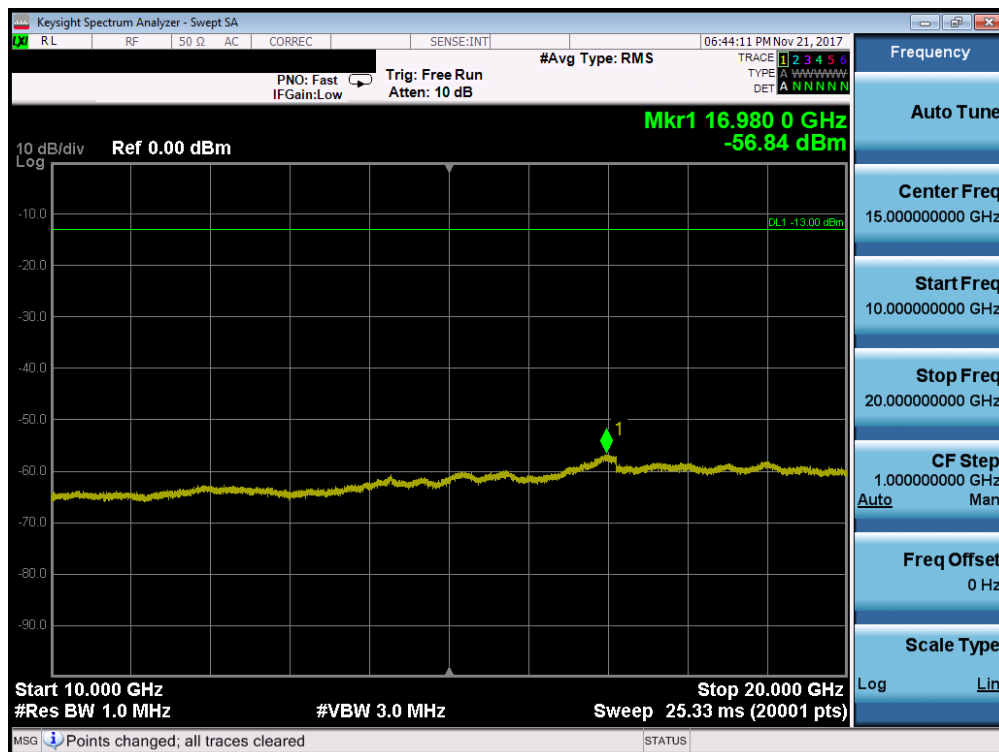


Plot 7-71. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 52 of 120

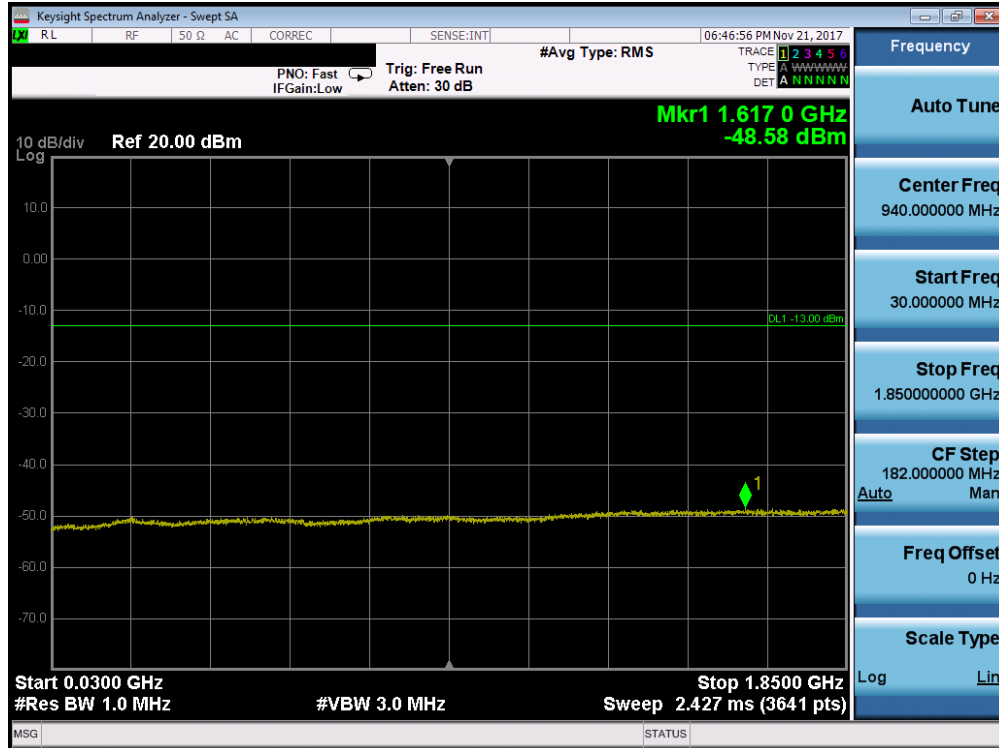


Plot 7-72. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

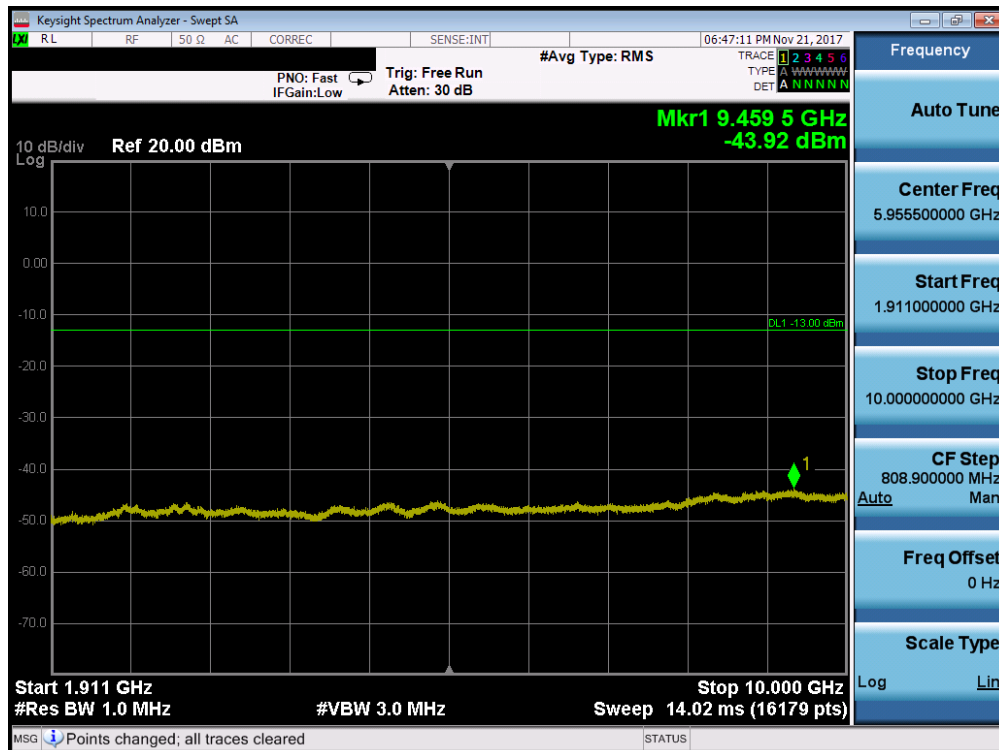


Plot 7-73. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX210APM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset		Page 53 of 120

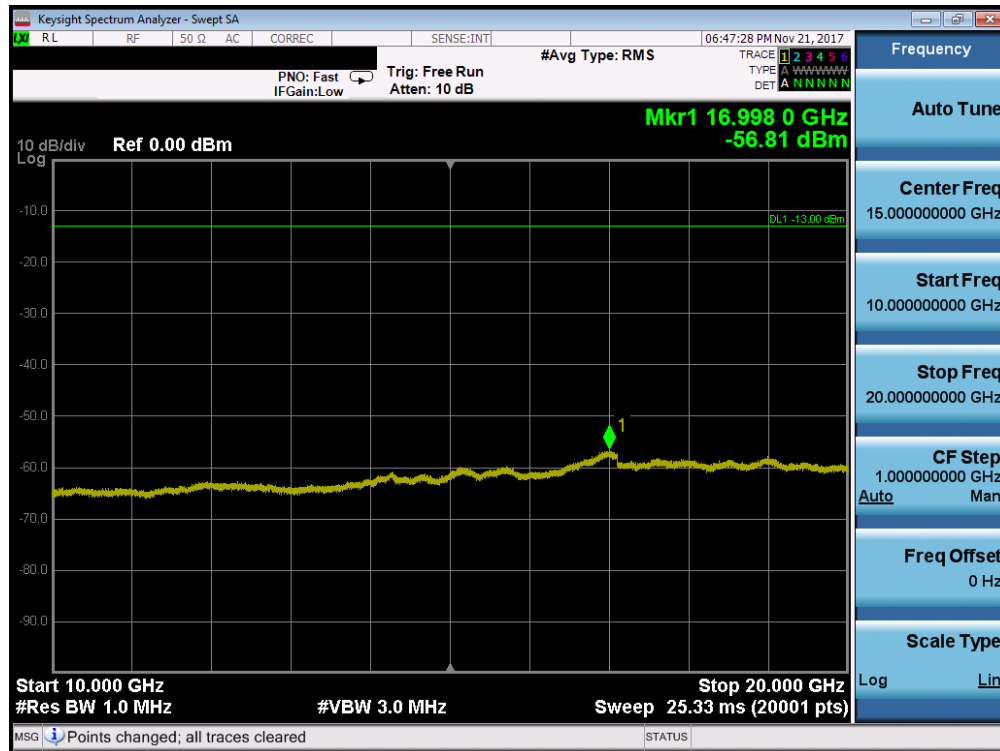


Plot 7-74. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-75. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX210APM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1-ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 54 of 120



Plot 7-76. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX210APM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080290-03-R1.ZNF	Test Dates: 11/10 - 11/22/2017	EUT Type: Portable Handset	Page 55 of 120