

PCTEST

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MEASUREMENT REPORT

LTE

Applicant Name:

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

Date of Testing: 3/2 - 4/1/2020 Test Site/Location: PCTEST Lab. Columbia, MD Test Report Serial No.: 1M2003020032-08-R1.ZNF

FCC ID:

ZNFK400AM

APPLICANT:

LG Electronics USA, Inc.

Application Type: Model: Additional Model(s): EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification LM-K400AKR LMK400AKR, K400AKR, LM-K400AM, LMK400AM, K400AM Portable Handset PCS Licensed Transmitter 22, 24, & 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

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

This revised test report (S/N: 1M2003020032-08-R1) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez President



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MEASUREMENT REPORT FCC Part 22, 24, & 27



			ERP E		RP			
Mode FCC Rule Part		Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 12	27	699.7 - 715.3	0.102	20.10	0.168	22.25	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.080	19.05	0.132	21.20	1M10W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.101	20.04	0.166	22.19	2M70G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.079	18.98	0.130	21.13	2M70W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.103	20.12	0.169	22.27	4M59G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.081	19.09	0.133	21.24	4M54W7D	16QAM
LTE Band 12	27	704 - 711	0.100	20.02	0.165	22.17	9M05G7D	QPSK
LTE Band 12	27	704 - 711	0.080	19.03	0.131	21.18	9M08W7D	16QAM
LTE Band 5	22H	824.7 - 848.3	0.065	18.14	0.107	20.29	1M09G7D	QPSK
LTE Band 5	22H	824.7 - 848.3	0.051	17.11	0.084	19.26	1M09W7D	16QAM
LTE Band 5	22H	825.5 - 847.5	0.065	18.10	0.106	20.25	2M70G7D	QPSK
LTE Band 5	22H	825.5 - 847.5	0.051	17.10	0.084	19.25	2M70W7D	16QAM
LTE Band 5	22H	826.5 - 846.5	0.066	18.20	0.108	20.35	4M54G7D	QPSK
LTE Band 5	22H	826.5 - 846.5	0.053	17.22	0.086	19.37	4M52W7D	16QAM
LTE Band 5	22H	829 - 844	0.066	18.19	0.108	20.34	9M04G7D	QPSK
LTE Band 5	22H	829 - 844	0.053	17.21	0.086	19.36	9M04W7D	16QAM

EUT Overview (<1 GHz)

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			EIRP			
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 66/4	27	1710.7 - 1779.3	0.210	23.21	1M10G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.166	22.19	1M11W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.213	23.27	2M70G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.163	22.11	2M70W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.218	23.37	4M55G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.172	22.36	4M54W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.204	23.09	9M03G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.162	22.10	9M05W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.219	23.40	13M6G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.170	22.30	13M6W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.207	23.15	18M1G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.162	22.10	18M1W7D	16QAM
LTE Band 2	24E	1850.7 - 1909.3	0.210	23.22	1M10G7D	QPSK
LTE Band 2	24E	1850.7 - 1909.3	0.159	22.02	1M10W7D	16QAM
LTE Band 2	24E	1851.5 - 1908.5	0.214	23.31	2M70G7D	QPSK
LTE Band 2	24E	1851.5 - 1908.5	0.169	22.28	2M70W7D	16QAM
LTE Band 2	24E	1852.5 - 1907.5	0.215	23.32	4M54G7D	QPSK
LTE Band 2	24E	1852.5 - 1907.5	0.173	22.37	4M52W7D	16QAM
LTE Band 2	24E	1855 - 1905	0.216	23.35	9M03G7D	QPSK
LTE Band 2	24E	1855 - 1905	0.173	22.37	9M02W7D	16QAM
LTE Band 2	24E	1857.5 - 1902.5	0.213	23.28	13M5G7D	QPSK
LTE Band 2	24E	1857.5 - 1902.5	0.168	22.26	13M5W7D	16QAM
LTE Band 2	24E	1860 - 1900	0.210	23.22	18M0G7D	QPSK
LTE Band 2	24E	1860 - 1900	0.160	22.03	18M0W7D	16QAM

EUT Overview (Mid Bands)

			EIRP			
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 30	27	2307.5 - 2312.5	0.108	20.34	4M53G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.086	19.37	4M52W7D	16QAM
LTE Band 30	27	2310	0.111	20.45	9M02G7D	QPSK
LTE Band 30	27	2310	0.087	19.39	9M03W7D	16QAM
		FUT Overview	(S1 GHz)			

EUT Overview (>1 GHz)

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1.0 INTRODUCTION

1.1 Scope

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

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST 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 located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

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2.0 RODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFK400AM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 10609, 10591,10583, 10633

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)

LTE Band 66 (1710 - 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

2.3 Test Configuration

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

2.4 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

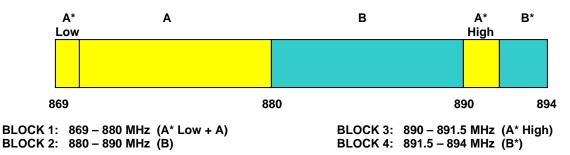
The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

3.2 Block A Frequency Range

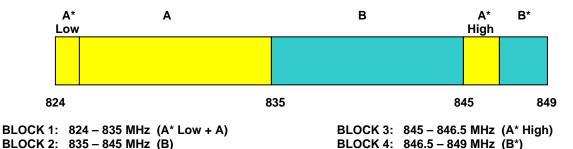
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

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 Cellular - Base Frequency Blocks



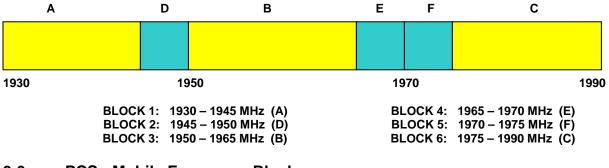
3.4 Cellular - Mobile Frequency Blocks



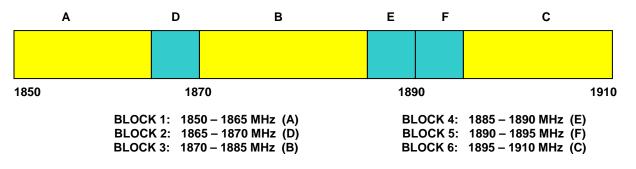
Approved by: PCTEST ſα MEASUREMENT REPORT LG FCC ID: ZNFK400AM ·L-(CERTIFICATION) Quality Manager EUT Type: Test Report S/N: Test Dates: Page 7 of 146 1M2003020032-08-R1.ZNF 3/2 - 4/1/2020 Portable Handset © 2020 PCTEST V 9.0 02/01/2019



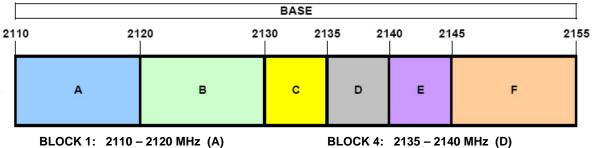
3.5 PCS - Base Frequency Blocks



3.6 PCS - Mobile Frequency Blocks

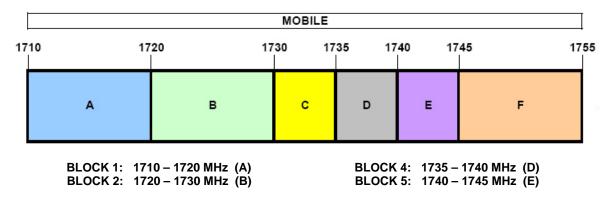


3.7 AWS - Base Frequency Blocks



BLOCK 2: 2120 – 2130 MHz (R) 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)

3.8 AWS - Mobile Frequency Blocks



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3.9 Radiated Power and Radiated Spurious Emissions

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 v03r01.

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].

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 log₁₀(Power [Watts]). or 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 log₁₀(Power [Watts]).

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.

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4.0 MEASUREMENT UNCERTAINTY

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

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

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5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx1	Licensed Transmitter Cable Set	6/4/2019	Annual	6/4/2020	LTx1
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
Espec	ESX-2CA	Environmental Chamber	6/13/2019	Annual	6/13/2020	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	2/22/2019	Biennial	2/22/2021	128338
Mini Circuits	TVA-11-422	RF Power Amp	N/A		QA1317001	
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/11/2019	Annual	7/11/2020	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/8/2019	Annual	7/8/2020	102133
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107

Table 5-1. Test Equipment

Notes:

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

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6.0 SAMPLE CALCULATIONS

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).

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7.0 TEST RESULTS

7.1 Summary

Company Name:	LG Electronics USA, Inc.
FCC ID:	ZNFK400AM
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>LTE</u>

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A		PASS	Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(g) 27.53(h)	Out of Band Emissions	> 43 + 10 log ₁₀ (P[Watts]) at Band Edge and for all out-of- band emissions			Section 7.3, 7.4
24.232(d) 27.53(h)	Peak-Average Ratio	< 13 dB	CONDUCTED		Section 7.5
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.8

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5)	< 7 Watts max. ERP		PASS	Section 7.6
27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12)	< 3 Watts max. ERP			Section 7.6
24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP	RADIATED		Section 7.6
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP	RADIATED		Section 7.6
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h)	Undesirable Emissions (Band 12, 5, 66/4, 2)	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions			Section 7.7
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 log ₁₀ (P[Watts])			Section 7.7

Table 7-2. 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 5.3.
- 5) For operation <1GHz, the EIRP limits in the table above are referenced to the specifications written in the relevant Radio Standards Specifications for Innovation, Science, and Economic Development Canada.

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7.2 Occupied Bandwidth

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

Test Settings

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

Test Setup

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



Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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Band 12



Plot 7-1. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-2. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

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🔤 Keysight Spectrum Analyzer - Occupi							
<mark>LX/</mark> RL RF 50 Ω [SENSE:INT enter Freq: 707.500000 MH rig: Free Run Avgl	z Hold: 100/100	12:53:33 P Radio Std	M Mar 03, 2020 : None	Trace/De	tector
		Atten: 36 dB	1010. 100/100	Radio Dev	vice: BTS		
10 dB/div Ref 40.00 d	dBm						
Log 30.0							
20.0						Clea	r Write
10.0	prover all and a	mar and a second and a second and a second a sec	~				
0.00			_\ <u>\</u>				
-10.0						A	verage
-20.0	waynam		mand	MPILIA MAN	drading and a		
-30.0					and the state of		
-40.0						Ma	ax Hold
-50.0							ix mora
Center 707.5 MHz Res BW 68 kHz		#VBW 220 kHz			n 7.5 MHz 12.53 ms		
					12100 1110	M	in Hold
Occupied Bandw	idth	Total Power	32.	2 dBm			
	2.6980 MHz					D	etector
						A	Peak▶
Transmit Freq Error				9.00 %		Auto	Man
x dB Bandwidth	2.939 MHz	x dB	-26	.00 dB			
MSG			STATU	s			

Plot 7-3. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



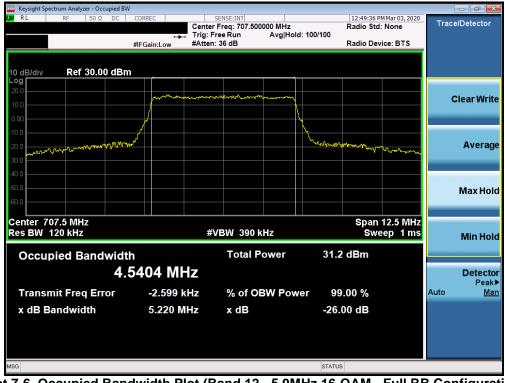
Plot 7-4. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST Proud to be part of & element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied	BW				
K RL RF 50Ω DC	Trig		Radio Std d:>100/100		Trace/Detector
	#IFGain:Low #At	tten: 36 dB	Radio Dev	vice: BTS	
10 dB/div Ref 30.00 dB	im				
Log 20.0	forman	mmmmm			Clear Write
0.00					
-20.0				and now	Average
-40.0					
-60.0					Max Hold
Center 707.5 MHz Res BW 120 kHz		#VBW 390 kHz		12.5 MHz eep 1 ms	Min Hold
Occupied Bandwid	lth	Total Power	32.3 dBm		
4	4.5914 MHz				
Transmit Freq Error	-19.324 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	5.294 MHz	x dB	-26.00 dB		
MSG			STATUS		

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: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied B	W					- ē 🔀
LXU RL RF 50Ω DC		SENSE:INT enter Freq: 707.5000 rig: Free Run	00 MHz Avg Hold: 100/100	12:40:00 PM Ma Radio Std: No		Trace/Detector
		Atten: 36 dB	.	Radio Device:	BTS	
10 dB/div Ref 30.00 dB	m					
20.0	and the second second	www.Willowarena	more			Clear Write
10.0						Clear write
0.00			\			
-10.0			with such	Whoman		
-20.0	10971:			www.shelp-angroupher	all and a second se	Average
-30.0						
-40.0						
-50.0						Max Hold
-60.0						
Center 707.5 MHz				Span 2	5 MHz	
Res BW 240 kHz		#VBW 750 kH	Iz	Sweep		Min Hold
Occupied Bandwid	th	Total Po	wer 32.	6 dBm		
	 .0479 MHz	,				Detector
3		•				Detector Peak►
Transmit Freq Error	-5.323 kHz	% of OB	W Power 99	9.00 %		Auto <u>Man</u>
x dB Bandwidth	10.25 MHz	x dB	-26	.00 dB		
MSG			STATU	IS		

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)

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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 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW						- đ	×
LX RL RF 50Ω DC (SENSE:INT ter Freq: 836.500000 MH : Free Run Avg F	z lold: 100/100	01:16:00 P Radio Std	M Mar 03, 2020 None	Trace/Detect	tor
		en: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm							
Log							
30.0						Clear W	Irite
20.0	manham	here and a second for	~				
10.0							
-10.0			Ŋ			Aver	ane
-20.0 United the stand of the stand	~~~		Marymone	5 month and		AVCI	uge
-20.0					mall way and		
-40.0							
-50.0						MaxH	loid
Center 836.5 MHz		4VPW 220 FU-			17.5 MHz		
Res BW 68 kHz		#VBW 220 kHz		sweep	12.53 ms	Min H	lold
Occupied Bandwidth		Total Power	32.	1 dBm			
2.6	967 MHz					Dete	ctor eak ▶
Transmit Freq Error	-1.496 kHz	% of OBW Po	ower 9	9.00 %			Man
x dB Bandwidth	2.929 MHz	x dB	-26	.00 dB			
MSG			STATU	IS			

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



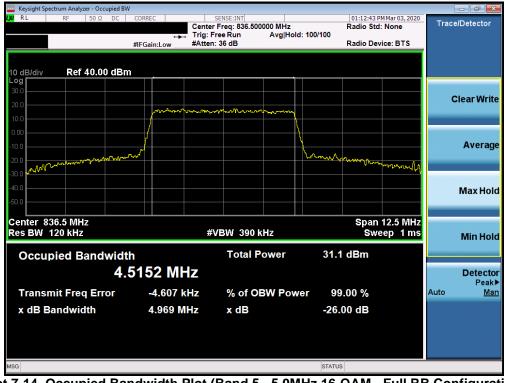
Plot 7-12. Occupied Bandwidth Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied B	w						
ΙΧ΄ RL RF 50 Ω DC		SENSE:INT er Freq: 836.500000 MHz Free Run Avg Ho	ld: 100/100	01:12:24 P	Mar 03, 2020 None	Trace	/Detector
	#IFGain:Low #Atten: 36 dB Radio Device: BTS						
10 dB/div Ref 40.00 dBm							
Log							
30.0						c	lear Write
20.0						Ŭ	
0.00			۱ <u>۱</u>				Average
-10.0			malim				Average
20.0 Manufactures				and and the state of the	Mary Marine		
-30.0							
-40.0							Max Hold
-50.0							
Center 836.5 MHz				Snan	12.5 MHz		
Res BW 120 kHz	#	≠VBW 390 kHz			ep 1 ms		Min Hold
					_		WIIITHOIG
Occupied Bandwid	th	Total Power	32.2	dBm			
4.	.5391 MHz						Detector
							Peak▶
Transmit Freq Error	-16.494 kHz	% of OBW Pov	ver 99	.00 %		Auto	Man
x dB Bandwidth	4.992 MHz	x dB	-26.	00 dB			
MSG			STATUS				

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



Plot 7-14. Occupied Bandwidth Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW	/				
LX RL RF 50 Ω DC		SENSE:INT enter Freq: 836.500000 MHz ig: Free Run Avg Hol	12:59:59 Radio Sto d: 100/100	PM Mar 03, 2020 1: None	Trace/Detector
		Atten: 36 dB	Radio De	vice: BTS	
10 dB/div Ref 40.00 dBn	n				
30.0					
20.0					Clear Write
10.0		m. marken and			
0.00	/		{		
-10.0	ъV				Average
and any and any and any any any	لأكسهم		mannam		
-20.0				- marke	
-40.0					
					Max Hold
-50.0					
Center 836.5 MHz			Spa	an 25 MHz	
Res BW 240 kHz		#VBW 750 kHz	Sw	eep 1ms	Min Hold
Occupied Bandwidt	h	Total Power	33.0 dBm		
	 0378 MHz				Detector
9.					Detector Peak►
Transmit Freq Error	-8.335 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	10.25 MHz	x dB	-26.00 dB		
MSG			STATUS		

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

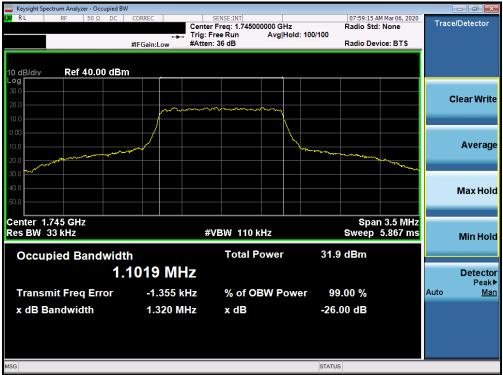


Plot 7-16. Occupied Bandwidth Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)

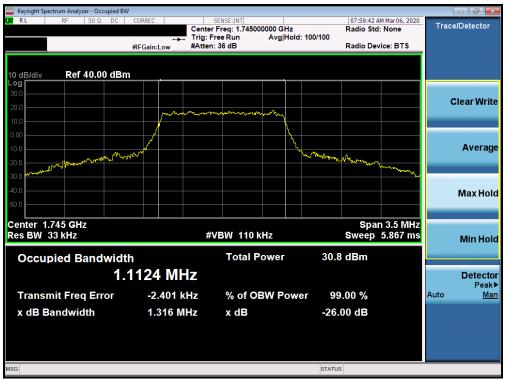
FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Band 66/4



Plot 7-17. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW								
	TI	SENSE:INT enter Freq: 1.745000 rig: Free Run Atten: 36 dB	0000 GHz Avg Hold:	100/100	07:27:44 A Radio Std		Trace	e/Detector
	#FGain:Low #/	Atten: 36 dB			Radio Dev	ICE: DIS		
10 dB/div Ref 40.00 dBm								
Log 30.0								
20.0							c	lear Write
10.0	h	man mark	m					
0.00	1		l l					
-10.0	/		1					Average
	nd l				w man	~ 10 . 10 . 1		Average
-20.0						and a fall of the state		
-30.0								
-40.0								Max Hold
-50.0								
Center 1.745 GHz		I			Spar	17.5 MHz		
Res BW 68 kHz		#VBW 220 k	Hz			12.53 ms		Min Hold
Occupied Bandwidth		Total Po	ower	32.2	dBm			
	006 MHz							Detector
								Peak►
Transmit Freq Error	2.949 kHz	% of OE	BW Powe	r 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	2.936 MHz	x dB		-26.0	00 dB			
MSG				STATUS				

Plot 7-19. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



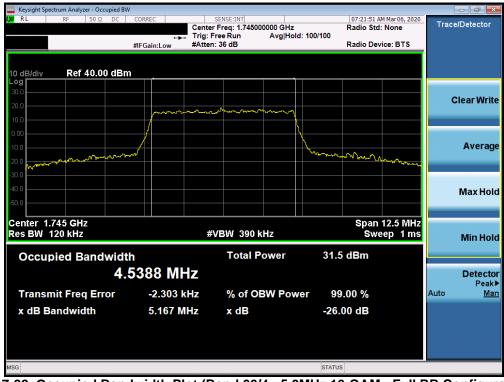
Plot 7-20. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-21. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied I	3W				
(X) RL RF 50 Ω DC	Tr		Hz R Hold: 100/100	07:17:09 AM Mar 06, 2020 adio Std: None	Trace/Detector
	#IFGain:Low #A	tten: 36 dB	R	adio Device: BTS	
10 dB/div Ref 40.00 dB	m				
Log 30.0 20.0					Clear Write
	murum	and a set of the set o	~~		
10.0					
0.00			h l		Average
-10.0 -20.0	كالعبهم		manner	al way the way of the second second second	Average
-30.0					
-40.0					Max Hold
-50.0					
Center 1.745 GHz				Span 25 MHz	
Res BW 240 kHz		#VBW 750 kHz		Sweep 1 ms	Min Hold
Occupied Rendwid	th	Total Power	r 32.4 d	Bm	
Occupied Bandwid			52.4 0	Bill	
9	.0283 MHz				Detector Peak▶
Transmit Freq Error	14.818 kHz	% of OBW P	ower 99.0	0 %	Auto <u>Man</u>
x dB Bandwidth	10.19 MHz	x dB	-26.00	dB	
MSG			STATUS		

Plot 7-23. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-24. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied B ¹	N				
ΙΧΊ R L RF 50 Ω DC		SENSE:INT er Freq: 1.745000000 GHz Free Run Avg Ho		AM Mar 06, 2020 d: None	Trace/Detector
	#IFGain:Low #Atte	en: 36 dB	Radio De	evice: BTS	
10 dB/div Ref 40.00 dBr	n				
30.0					Clear Write
20.0	for any out of	and the second second second			orear write
0.00	/		μ		A
-10.0 -20.0	Alward		The difference of the state	me hore marked	Average
-30.0					
-40.0					Max Hold
Center 1.745 GHz				1 37.5 MHz	
Res BW 360 kHz		#VBW 1.1 MHz	SW	/eep 1 ms	Min Hold
Occupied Bandwid		Total Power	32.5 dBm		
1:	3.579 MHz				Detector Peak▶
Transmit Freq Error	35.723 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	15.26 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-25. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW							
XX RL RF 50Ω DC	Trig:		lz lold: 100/100	Radio Std		Trace	/Detector
	#IFGain:Low #Atte	en: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm							
Log 30.0							
						с	lear Write
20.0	- Marman	had a second and a second and a second	7				
10.0							
0.00							
-10.0	ment in the second seco		halwand	tin all and reach	- Annow and a second		Average
-20.0							
-30.0							
-40.0							Max Hold
-50.0							
Center 1.745 GHz				Sna	n 50 MHz		
Res BW 470 kHz		#VBW 1.5 MHz			ep 1 ms		Min Hold
Occupied Bandwidt	h	Total Power	32.	7 dBm			
18	.062 MHz						Detector
							Peak▶
Transmit Freq Error	25.455 kHz	% of OBW Po	ower 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	20.04 MHz	x dB	-26	.00 dB			
MSG			STATU	IS			

Plot 7-27. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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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)

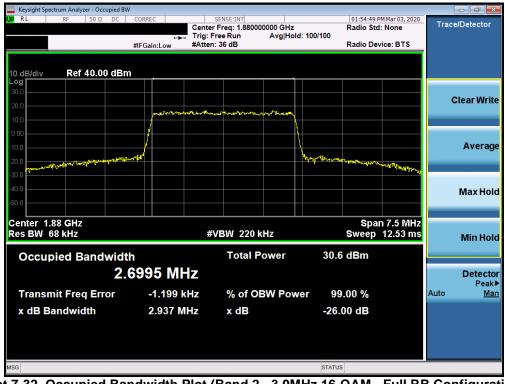
FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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🔤 Keysight Spectrum Analyzer - Occupie	ed BW				
LXI RL RF 50 Ω D	Cer	SENSE:INT nter Freq: 1.880000000 GHz g: Free Run Avg Hol	01:54:32 F Radio Sto d: 100/100	MMar 03, 2020 None:	Trace/Detector
	#IFGain:Low #At	ten: 36 dB	Radio De	vice: BTS	
10 dB/div Ref 40.00 d	IBm				
30.0					Clear Write
10.0	Lewennes	man der some commenter of			
0.00					
-10.0	-lipu-tw		Mar all and the second second	harty and	Average
-30.0					
-40.0					Max Hold
Center 1.88 GHz			C no	n 7.5 MHz	
Res BW 68 kHz		#VBW 220 kHz		12.53 ms	Min Hold
Occupied Bandwi	idth	Total Power	31.6 dBm		
	2.6973 MHz				Detector Peak▶
Transmit Freq Error	2.669 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	2.947 MHz	x dB	-26.00 dB		
MSG			STATUS		

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



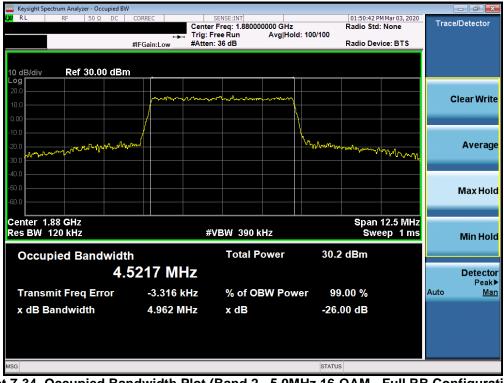
Plot 7-32. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied B\	N						
LXU RL RF 50Ω DC		SENSE:INT Iter Freq: 1.880000000 G g: Free Run Avg	iHz Hold: 100/100	01:50:28 P Radio Std	M Mar 03, 2020 : None	Trace	/Detector
		ten: 36 dB		Radio Dev	vice: BTS		
10 dB/div Ref 30.00 dBr	n			_			
20.0							
10.0			~			С	lear Write
0.00	/						
-10.0							
-20.0	~~~l		mmon	www.	a.b. 4 - 0.		Average
-30.0					and the support		_
-40.0							
-50.0							Max Hold
-60.0							Maxilolu
Center 1.88 GHz Res BW 120 kHz		#VBW 390 kHz			12.5 MHz ep 1 ms		
Res DW 120 KHZ		#VDVV 350 KHZ		300	sep mis		Min Hold
Occupied Bandwidt	th	Total Power	r 31.	6 dBm			
	5407 MHz						Detector
							Peak►
Transmit Freq Error	-13.129 kHz	% of OBW F	ower 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	4.952 MHz	x dB	-26	.00 dB			
MSG			STATU	JS			

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: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 22 of 146	
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Keysight Spectrum Analyzer - Occupied BV					
ιχα RL RF 50 Ω DC		SENSE:INT er Freq: 1.880000000 GH Free Run Avg H		4 PM Mar 03, 2020 itd: None	Trace/Detector
		en: 36 dB		evice: BTS	
10 dB/div Ref 30.00 dBn	n į				
Log 20.0 10.0			η		Clear Write
-10.0					
-20.0	un na la companya da company		when the the	- Malling Const	Average
-40.0					
-60.0					Max Hold
Center 1.88 GHz Res BW 240 kHz	ŧ	#VBW 750 kHz		oan 25 MHz weep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	32.0 dBm		
9.	0266 MHz				Detector Peak▶
Transmit Freq Error	1.343 kHz	% of OBW Po	ower 99.00 %		Auto <u>Man</u>
x dB Bandwidth	9.901 MHz	x dB	-26.00 dB		
MSG			STATUS		

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



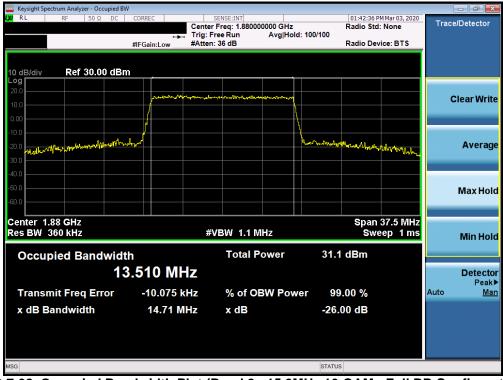
Plot 7-36. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST Proud to be part of & element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 22 of 146	
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🔤 Keysight Spectrum Analyzer - Occup	ied BW					
LXI RL RF 50 Ω	DC CORREC	Center Freq: 1.8800	000000 GHz Avg Hold: 100/100	01:42:21 PMM Radio Std: N	lone	Trace/Detector
	#IFGain:Low	#Atten: 36 dB		Radio Device	e: BTS	
10 dB/div Ref 30.00	dBm					
20.0	man		man			Clear Write
0.00						
-20.0 10000000000000000000000000000000000	1,44-11111		*ากไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรการไปไรก	ul manana and	ware	Average
-40.0						Max Hold
-60.0						Max Hold
Center 1.88 GHz Res BW 360 kHz		#VBW 1.1	MHz	Span 37 Swee	7.5 MHz p 1 ms	Min Hold
Occupied Bandw	vidth	Total	Power 32.	.1 dBm		
	13.526 M	Hz				Detector Peak▶
Transmit Freq Erro	r 76	9 Hz % of C	BW Power 9	9.00 %	A	Auto <u>Man</u>
x dB Bandwidth	14.86	MHz xdB	-26	5.00 dB		
MSG			STAT	US		

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: ZNFK400AM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW							[
		SENSE:INT Center Freq: 1.88000 Trig: Free Run	0000 GHz Avg Hold:	: 100/100	Radio Std		Trace	e/Detector
#IF	Gain:Low	#Atten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm	_							
Log 30.0								
20.0							c	lear Write
10.0	monum	many and the property of	monore					
0.00								
-10.0	/		\ 					Average
				mound	~ ^ֈ ՟՟՟՟ֈՠֈֈֈֈֈֈֈֈֈ			Average
-20.0						Al Warterway		
-40.0								Max Hold
-50.0							_	
Center 1.88 GHz				1	Spa	n 50 MHz		
Res BW 470 kHz		#VBW 1.5 M	Hz		Swe	ep 1ms		Min Hold
Occupied Bandwidth		Total P	ower	31.8	dBm			
	78 MHz	7						Detector
								Peak▶
Transmit Freq Error	-5.910 kH	z % of OE	SW Powe	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	19.36 MH	z xdB		-26.	00 dB			
MSG				STATUS				

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)

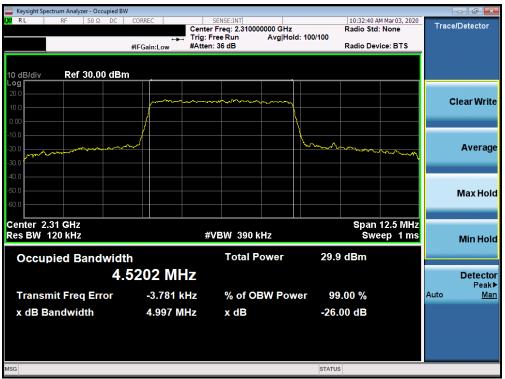
FCC ID: ZNFK400AM	PCTEST Proud to be part of & element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 25 of 146	
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Band 30



Plot 7-41. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-42. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 26 of 146
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Plot 7-43. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-44. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 27 of 146	
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7.3 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at 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 $43 + 10 \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

For Band 30, the minimum permissible attenuation level of any spurious emission <2288MHz and >2365MHz is 70 + 10 log10(P[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 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.

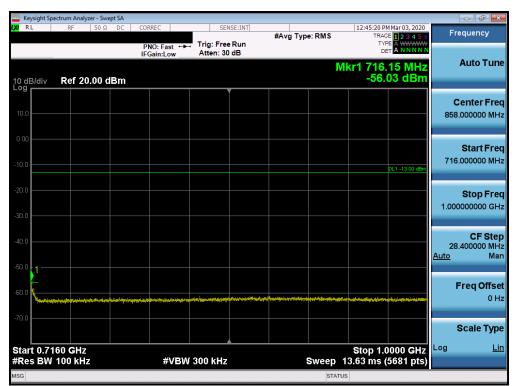
FCC ID: ZNFK400AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 20 of 146
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Band 12



Plot 7-45. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-46. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

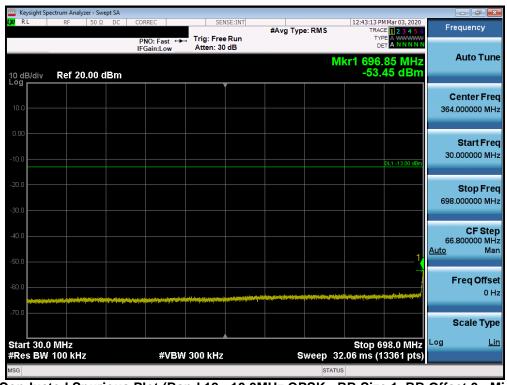
FCC ID: ZNFK400AM	Pcut to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dago 20 of 146
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Plot 7-47. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



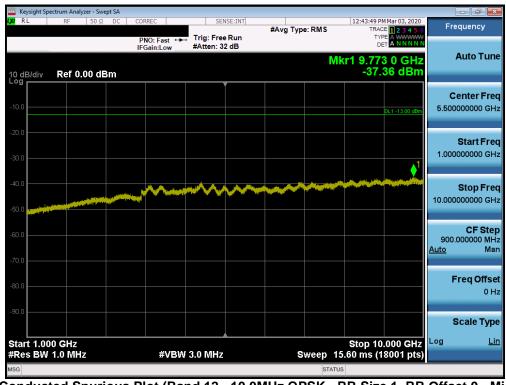
Plot 7-48. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyzer - Swept SA								
LX/RL	RF 50 Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	M Mar 03, 2020	Frequency
		PNO: Fast ++- IFGain:Low	Trig: Free Atten: 30				TYF DE		A.4. 7
10 dB/div Log	Ref 20.00 dBm					M	kr1 718. -53.	15 MHz 46 dBm	Auto Tune
									Center Freq
10.0									858.000000 MHz
0.00									Start Freq
-10.0								DL1 -13.00 dBm	716.000000 MHz
-20.0									Stop Freq
-30.0									1.000000000 GHz
-30,01									CF Step
-40.0									28.400000 MHz Auto Man
-50.0 1									
-60.0	and some dark states. The state states in the			مر میں این میں اور میں	and the second	all with the second second	allering the strength of the	Australia and the standards	Freq Offset 0 Hz
-70.0									
									Scale Type
Start 0.71 #Res BW		#\/B\/	300 kHz			Sween 1	Stop 1.0	0000 GHz 5681 pts)	Log <u>Lin</u>
MSG		<i></i>	-500 KHZ			STATUS		soor prs)	

Plot 7-49. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



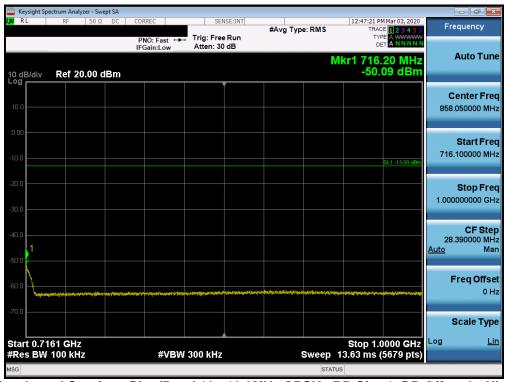
Plot 7-50. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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			Analyzer -													
l <mark>,XI</mark> R	L	RF	50	Ω DC	CORR	EC		SEN	SE:INT	#Avg T	ype: RMS		TR/	PM Mar 03, 2020	Fr	equency
						D: Fast ain:Low		ig: Free tten: 30					r1 697	.95 MHz		Auto Tune
10 dE Log	B/div	Ref	20.00) dBm									-57	.58 dBm		
10.0																Center Freq .000000 MHz
0.00 -10.0														DL1 -13.00 dBm	30	Start Freq 0.000000 MHz
-20.0 -30.0															698	Stop Freq 0000000 MHz
-40.0 -50.0															66 <u>Auto</u>	CF Step 5.800000 MHz Man
-60.0														1		F req Offset 0 Hz
-70.0																Scale Type
	t 30.0 s BW					#VE	3W 30	0 kHz			Sweep	32.0	Stop 06 ms (698.0 MHz 13361 pts)	Log	<u>Lin</u>
MSG											ST	TATUS				

Plot 7-51. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-52. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Plot 7-53. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

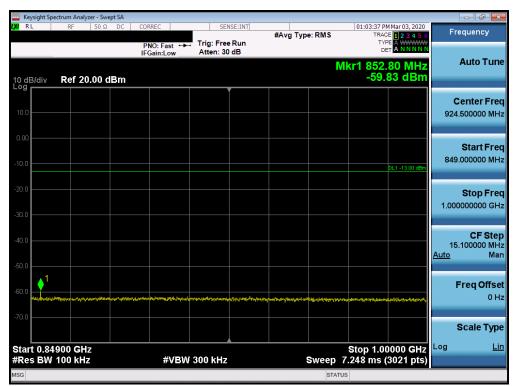
FCC ID: ZNFK400AM	Pecud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 43 of 146
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Band 5



Plot 7-54. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

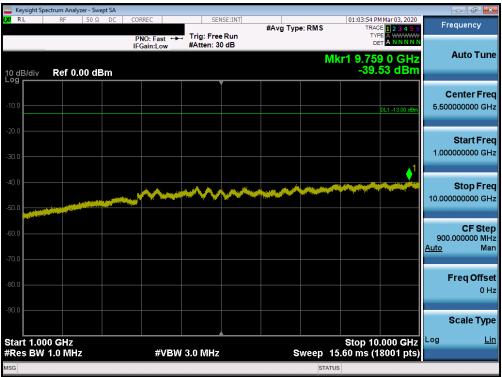


Plot 7-55. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFK400AM	Pcctest Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 44 of 146
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Plot 7-56. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-57. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 45 of 140
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Keysight Spectrum										
L <mark>XI</mark> RL R	F 50 Ω	DC CORR	EC	SEN	ISE:INT	#Avg Typ	e: RMS		4 Mar 03, 2020 E 1 2 3 4 5 6	Frequency
			0:Fast ↔ ain:Low	Trig: Free Atten: 30				TYF DE		
		10					M	kr1 849.	25 MHz	Auto Tune
10 dB/div Re	f 20.00 dB	m						-57.	71 dBm	
Log										Center Freq
10.0										924.500000 MHz
0.00										Start Freq
40.0										849.000000 MHz
-10.0									DL1 -13.00 dBm	
-20.0										Stop Freq
										1.000000000 GHz
-30.0										
(0.0										CF Step
-40.0										15.100000 MHz <u>Auto</u> Man
-50.0										<u>Auto</u> Man
										Freq Offset
-60.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		ميا ويساوات الحالي وروات	*****	ورجارها والقرور فالمحاصر	all and the state of the	-	n an	har har man that has not	0 Hz
70.0										
-70.0										Scale Type
										Log <u>Lin</u>
Start 0.84900 #Res BW 100			#VBW	300 kHz			Sweep 7	Stop 1.00 7.248 ms ()000 GHz 3021 pts)	
MSG							STATU			

Plot 7-58. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



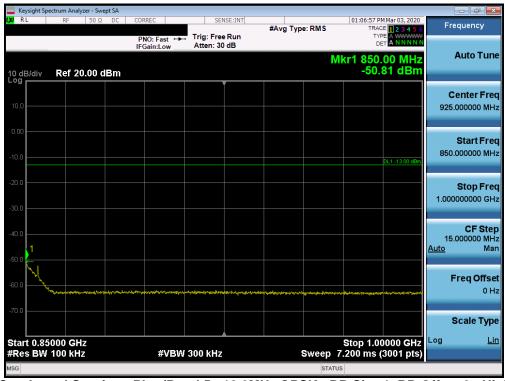
Plot 7-59. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 46 of 146
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	/sight Spe															
LX/I RI		RF	5	50Ω I	DC	CORREC			SENSE:INT	#/	Avg Typ	e: RMS		L PM Mar 03, 2020 RACE 1 2 3 4 5 6	Fr	equency
						PNO: F IFGain:	ast ↔ Low		Free Run n: 30 dB		• 7	М	kr1 82	2.65 MHz		Auto Tune
10 dE Log	3/div	Ref	20.0	0 dB	m								-6	1.12 dBm		
10.0																Center Freq .000000 MHz
0.00 -10.0														DL1 -13.00 dBm	30	Start Freq .000000 MHz
-20.0 -30.0															824	Stop Freq .000000 MHz
-40.0 -50.0															79 <u>Auto</u>	CF Step .400000 MHz Man
-60.0		ad gailed													· ·	F req Offset 0 Hz
-70.0																Scale Type
	t 30.0 s BW						#VBN	/ 300 k	Hz		s	weep 38	Stop 3.11 ms	824.0 MHz (15881 pts)	Log	Lin
MSG												STATU	s			

Plot 7-60. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-61. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-62. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFK400AM	Pcud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 49 of 146
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Band 66/4

Keysight Spectrum Analyzer - Swept SA				
RL RF 50Ω DC	CORREC SEN PNO: Fast ↔ Trig: Free IFGain:Low Atten: 30		07:09:07 AM Mar 06, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
0 dB/div Ref 20.00 dBm	IPGalli.Low Mach. oo		Mkr1 1.708 5 GHz -44.56 dBm	Auto Tune
10.0				Center Free 869.500000 MH
10.0			DL1 -13.00 dBm	Start Fre 30.000000 MH
30.0				Stop Fre 1.709000000 GH
40.0			1	CF Ste 167.900000 MH <u>Auto</u> Ma
00.0		1999 (1999), Angeler (1997), Angeler (1997), Angeler (1997), Angeler (1997), Angeler (1997), Angeler (1997), An		Freq Offs 0 H
70.0				Scale Typ
Res BW 1.0 MHz	#VBW 3.0 MHz		p 2.239 ms (3359 pts)	

Plot 7-63. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-64. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFK400AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	
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	ectrum Analyzer - Swept SA					
LX/IRL	RF 50 Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	07:09:35 AM Mar 06, 2020 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast ↔ IFGain:Low	Trig: Free Run Atten: 10 dB	• //		Auto Tune
10 dB/div Log	Ref 0.00 dBm			MIKI	1 19.591 0 GHz -56.52 dBm	
-10.0			Ĭ			Center Freq
-10.0					DL1 -13.00 dBm	15.000000000 GHz
-20.0						Start Freq
-30.0						10.00000000 GHz
-40.0						Stop Freq
-50.0					1	20.00000000 GHz
-60.0			ter allows Bl. and state	a la la de la de la dela		CF Step
			ellessifie and space contrages beyond			1.000000000 GHz <u>Auto</u> Man
-70.0						Freq Offset
-80.0						0 Hz
-90.0						Scale Type
Start 10.0	100 GHz				Stop 20.000 GHz	
#Res BW		#VBW	3.0 MHz	Sweep 17	7.33 ms (20001 pts)	
MSG				STATU	S	

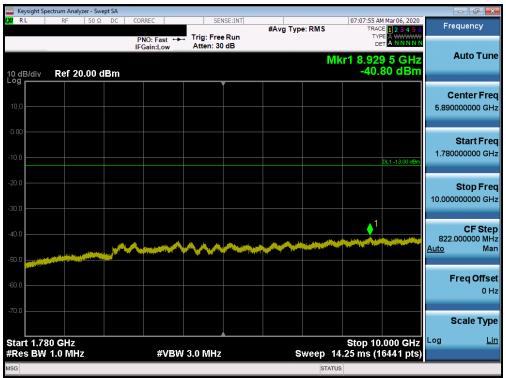
Plot 7-65. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-66. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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Plot 7-67. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-68. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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Keysight Spectrum Analyzer - Sv					
ιχ/ RL RF 50 Ω	2 DC CORREC	SENSE:INT	#Avg Type: RMS	07:10:54 AM Mar 06, 2020 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast 🔸	Trig: Free Run Atten: 30 dB	• //	TYPE A WWWW DET A NNNNN	Auto Tune
10 dB/div Ref 20.00	dBm			-50.33 dBm	
10.0					Center Freq 870.000000 MHz
-10.0				DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0					Stop Freq 1.710000000 GHz
-40.0				\	CF Step 168.00000 MHz <u>Auto</u> Man
-60.0		alan ayadar iyo ta'na iyo ta'n			Freq Offset 0 Hz
-70.0					Scale Type
Start 0.0300 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 2	Stop 1.7100 GHz 2.240 ms (3361 pts)	Log <u>Lin</u>
MSG			STATU		

Plot 7-69. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-70. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of & element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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			alyzer - Swe										- ē -
l XI R	L	RF	50 Ω	DC	CORRE	C	SEI	SE:INT	#Avg Typ	e: RMS	TR	AM Mar 06, 2020	Frequency
					PNO: IFGair	Fast ↔ •:Low	Trig: Free Atten: 10		•		1		
					il dui					М	kr1 19.5	19 5 GHz	Auto Tun
10 dE Log	3/div	Ref	0.00 dE	3m							-56	6.14 dBm	
LUG													Center Fre
-10.0												DL1 -13.00 dBm	15.00000000 GH
-20.0													Start Fre
-30.0													10.000000000 GH
-30.0													
-40.0													Stop Fre
													20.000000000 GH
-50.0												1	
-60.0							(international and a partic	a station. Loss state		الم المرب الحق		an ann an thairtean	CF Ste
00.0	in the second			and a second			and defining a feature shall	a distante the state	a dapat angle at	and building of	And the second second second	T	1.000000000 GH Auto Ma
-70.0													
													Freq Offse
-80.0													0 H
-90.0													
													Scale Typ
Star	t 10.0		7								Stop 2	20.000 GHz	Log <u>Li</u>
	s BW					#VBW	3.0 MHz		s	weep	17.33 ms	(20001 pts)	
MSG										STA	ATUS		

Plot 7-71. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Band 2



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



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

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	sight Spec	trum Analy	zer - Swej	pt SA									
L <mark>XI</mark> RL		RF	50 Ω	DC	CORREC PNO: Fa	ast ↔	SE Trig: Fre Atten: 1	#Avg Type	RMS	TRA TY	MMar 03, 2020 CE 1 2 3 4 5 6 PE A WWWWW ET A NNNN	Fred	quency
10 dB Log r	/div	Ref 0.	00 dB	m	I Guille				Mk	ar1 19.51 -52	2 0 GHz 90 dBm	A	luto Tune
-10.0 -											DL1 -13.00 dBm		e nter Freq 100000 GHz
-20.0 -30.0													Start Freq 000000 GHz
-40.0 -											1		Stop Freq 100000 GHz
-60.0			ana papa	i ang si ing s			er ber stand i de se en de se se en se Antes de se sinn primer par par par par	han die fan die Staat die staa Staat die staat die st				1.0000 <u>Auto</u>	CF Step 000000 GHz Man
-70.0 -												Fi	r eq Offset 0 Hz
-90.0													cale Type
		0 GHz 1.0 MH			#	VBW	3.0 MHz	S	weep 1	Stop 20 7.33 ms (2).000 GHz 20001 pts)	Log	Lin
MSG									STATI	US			

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



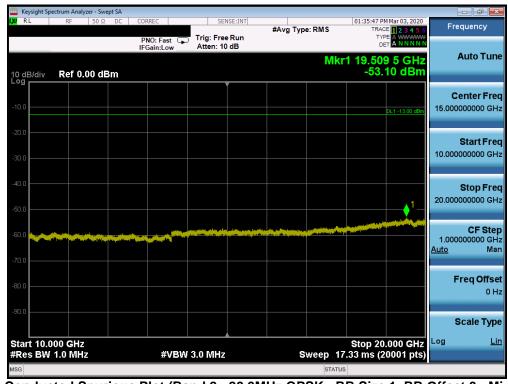
Plot 7-75. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-76. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-77. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFK400AM	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyzer - Swept SA					
LXIRL	RF 50 Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	01:39:41 PM Mar 03, 2020 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref 20.00 dBm	PNO: Fast ++ IFGain:Low	Trig: Free Run Atten: 30 dB	• //	kr1 1.763 5 GHz -49.50 dBm	Auto Tune
10.0						Center Freq 940.000000 MHz
-10.0					DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0						Stop Freq 1.850000000 GHz
-40.0		and stranger and an and an and an and an and	ay cargo you the institute you and you have	an a gard - Andrew Server a gard ber a familie of more and an and	1 	CF Step 182.00000 MHz <u>Auto</u> Man
-60.0						Freq Offset 0 Hz
Start 0.03					Stop 1.8500 GHz	Scale Type Log <u>Lin</u>
#Res BW	1.0 MHz	#VBW	3.0 MHz	-	2.427 ms (3641 pts)	
MSG				STATU	S	

Plot 7-78. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-79. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFK400AM	Pcctest Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	pectrum Analyze									
LXU RL	RF	50 Ω DC	CORREC	SE	NSE:INT	#Avg Typ	e: RMS	TRAC	Mar 03, 2020	Frequency
			PNO: Fast	Atten: 10				TYF		
	-		IFGain:Low	Atten: 10	0 a B		Mik			Auto Tune
	Def 0.0	0 dDm					IVIK	r1 19.49	2 5 GHZ 79 dBm	
10 dB/div	Ref 0.0	и авти			•					
										Center Freq
-10.0									DL1 -13.00 dBm	15.00000000 GHz
-20.0										Start Freq
										10.000000000 GHz
-30.0										10.000000000 GHz
-40.0										Stop Freq
-50.0									▲1	20.00000000 GHz
-30.0									and a star of the second	
-60.0	والمراجع والمحار والمحاد	يريقون مالارور	الأولغم ورزام المرز بقطع			and only president of the second states	and the second difference of the second		A DESCRIPTION OF THE OWNER OF THE	CF Step
the star	a different south and the	and a state of the	and the second se		and shall say the	and the state				1.00000000 GHz <u>Auto</u> Man
-70.0										Auto Mari
-80.0										Freq Offset
										0 Hz
-90.0										
										Scale Type
Start 10.	000 GHz							Ston 20	.000 GHz	Log <u>Lin</u>
	1.0 MHz		#VE	3W 3.0 MHz		s	weep 1	7.33 ms (2	000 0112	
MSG							STATU			

Plot 7-80. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFK400AM	Pcud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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7.4 Band Edge Emissions at Antenna Terminal

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at 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 $43 + 10 \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 30 is > 43 + 10 log10 (P[Watts] at 2300-2305MHz & 2345-2360MHz, > 55 + 10 log10 (P[Watts]) at 2320-2324MHz & 2341-2345MHz, > 61 + 10 log10 (P[Watts]) at 2324-2328MHz & 2337-2341MHz, > 67 + 10 log10 (P[Watts]) at 2288-2292MHz & 2328-2337MHz, and > 70 + 10 log10 (P[Watts]) at frequencies < 2288MHz & >2365MHz.

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 > 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
- 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

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Test Notes

Per 22.917(b), 24.238(a), 27.53(h) 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.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(a)(5) in the 1 MHz bands immediately outside and adjacent to the channel blocks at 2305, 2310, 2315, 2320, 2345, 2350, 2355, and 2360 MHz, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 MHz). 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 emissions are attenuated at least 26 dB below the transmitter power.

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Band 12



Plot 7-81. Lower Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-82. Upper Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

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	ectrum Analy												
X/RL	RF	50 Ω	DC	CORREC		SEN	ISE:INT	#Avg Typ	e: RMS		M Mar 03, 2020	F	requency
				PNO: W IFGain:	/ide ↔ Low_	Trig: Free Atten: 36		• //		۲۷۱ ام kr1 697.8			Auto Tune
10 dB/div Log 15.0	Ref 25	00 dl	Bm				7			-29.			Center Freq 8.000000 MHz
-5.00												69	Start Freq 6.000000 MHz
-15.0						1-					DL1 -13.00 dBm	70	Stop Freq 0.000000 MHz
-35.0	and the second	hare for the second	ulan wayanı	needer op on the second	and and a second se	Aperton al Ser Destantion of	ᡧᢩᢂᠰᡗ᠆ᡯ᠇ᢛᡳᡘᢇᡟᡟ	Myndplandor Ynddi	Holpow ^{II.}			<u>Auto</u>	CF Step 400.000 kHz Man
-55.0													Freq Offset 0 Hz
-65.0		14.7								Snop-4	000 MH-	Log	Scale Type
#Res BW					#VBW	300 kHz			-	6.667 ms (.000 MHz (1001 pts)	9	
MSG									STAT	US			

Plot 7-83. Lower Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-84. Upper Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

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	ectrum Analyz												
LXV RL	RF	50 Ω	DC	CORREC			ENSE:INT	#Avg Typ	e: RMS	TRAC	M Mar 03, 2020	F	requency
				PNO: IFGair	Wide ↔ ∺Low	Trig: Fr Atten:							Auto Tune
10 dB/div Log	Ref 25	.00 dl	3m						IVI	-29.	86 dBm		
													Center Fred
15.0												69	3.000000 MH:
5.00										month	An Araba and An Andrew Star		Start Free
-5.00												69	5.000000 MH
0.00										1	DL1 -13.00 dBm		
-15.0									wh			70	Stop Fred
-25.0	nu nap	rhinn har	ddwrand /	wn _{bull} t	wntratary.	amparation	ghalang manager and h	hermonia	white a				CF Ste
45.0												<u>Auto</u>	400.000 kH Ma
10.0													Freq Offse
-55.0													0 H
-65.0													
													Scale Type
Center 698.000 MHz Span 4.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 6.667 ms (1001 pts)								Log	Lir				
	TUU KHZ				#VBW	7 300 KH	Z		Sweep		Tour pts)		

Plot 7-85. Lower Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-86. Upper Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

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