PCTEST ENGINEERING LABORATORY, INC.
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MEASUREMENT REPORT
LTE

Applicant Name:
Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
10/5-11/8/2017
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M1710050266-03.A3L

FCC ID:	**A3LSMA730F**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Certification
Model:	SM-A730F/DS
Additional Model(s):	SM-A730F
EUT Type:	Portable Handset
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	22, 24, & 27
ISED Specification:	RSS-130 Issue 1, RSS-132- Issue 3, RSS-133 Issue 6, RSS-139 Issue 3, RSS-199 Issue 3
Test Procedure(s):	ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03

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

ACCREDITED
TESTING CERT#2041.01

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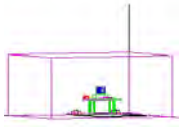
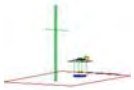


MEASUREMENT REPORT
LTE



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	0.064	18.03	0.104	20.18	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.050	16.96	0.081	19.11	1M11W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.040	16.03	0.066	18.18	1M11W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.065	18.15	0.107	20.30	2M72G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.052	17.13	0.085	19.28	2M72W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.041	16.13	0.067	18.28	2M71W7D	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.069	18.42	0.114	20.57	4M54G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.053	17.22	0.086	19.37	4M56W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.043	16.31	0.070	18.46	4M53W7D	64QAM
LTE Band 12/17	27	704 - 711	0.068	18.35	0.112	20.50	9M05G7D	QPSK
LTE Band 12/17	27	704 - 711	0.052	17.13	0.085	19.28	9M06W7D	16QAM
LTE Band 12/17	27	704 - 711	0.041	16.14	0.067	18.29	9M03W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.062	17.90	0.101	20.05	4M55G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.048	16.80	0.079	18.95	4M55W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.037	15.67	0.061	17.82	4M55W7D	64QAM
LTE Band 13	27	782	0.065	18.14	0.107	20.29	9M05G7D	QPSK
LTE Band 13	27	782	0.055	17.41	0.090	19.56	9M00W7D	16QAM
LTE Band 13	27	782	0.045	16.57	0.075	18.72	9M00W7D	64QAM
LTE Band 5/26	22H	824.7 - 848.3	0.069	18.41	0.114	20.56	1M10G7D	QPSK
LTE Band 5/26	22H	824.7 - 848.3	0.066	18.23	0.109	20.38	1M11W7D	16QAM
LTE Band 5/26	22H	824.7 - 848.3	0.053	17.26	0.087	19.41	1M10W7D	64QAM
LTE Band 5/26	22H	825.5 - 847.5	0.101	20.05	0.166	22.20	2M71G7D	QPSK
LTE Band 5/26	22H	825.5 - 847.5	0.077	18.89	0.127	21.04	2M72W7D	16QAM
LTE Band 5/26	22H	825.5 - 847.5	0.061	17.87	0.101	20.02	2M71W7D	64QAM
LTE Band 5/26	22H	826.5 - 846.5	0.098	19.93	0.161	22.08	4M54G7D	QPSK
LTE Band 5/26	22H	826.5 - 846.5	0.076	18.81	0.125	20.96	4M55W7D	16QAM
LTE Band 5/26	22H	826.5 - 846.5	0.061	17.82	0.099	19.97	4M51W7D	64QAM
LTE Band 5/26	22H	829 - 844	0.079	18.99	0.130	21.14	8M92G7D	QPSK
LTE Band 5/26	22H	829 - 844	0.060	17.76	0.098	19.91	8M93W7D	16QAM
LTE Band 5/26	22H	829 - 844	0.048	16.82	0.079	18.97	8M92W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.049	16.90	0.080	19.05	13M4G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.038	15.76	0.062	17.91	13M4W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.042	16.20	0.068	18.35	13M4W7D	64QAM

EUT Overview

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 4/66	27	1710.7 - 1779.3	0.370	25.68	1M10G7D	QPSK
LTE Band 4/66	27	1710.7 - 1779.3	0.281	24.49	1M11W7D	16QAM
LTE Band 4/66	27	1710.7 - 1779.3	0.216	23.34	1M10W7D	64QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.379	25.78	2M73G7D	QPSK
LTE Band 4/66	27	1711.5 - 1778.5	0.290	24.62	2M71W7D	16QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.223	23.49	2M72W7D	64QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.362	25.59	4M57G7D	QPSK
LTE Band 4/66	27	1712.5 - 1777.5	0.264	24.22	4M53W7D	16QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.194	22.89	4M55W7D	64QAM
LTE Band 4/66	27	1715 - 1775	0.372	25.71	9M05G7D	QPSK
LTE Band 4/66	27	1715 - 1775	0.274	24.38	9M04W7D	16QAM
LTE Band 4/66	27	1715 - 1775	0.203	23.08	9M02W7D	64QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.347	25.40	13M5G7D	QPSK
LTE Band 4/66	27	1717.5 - 1772.5	0.267	24.27	13M5W7D	16QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.207	23.17	13M5W7D	64QAM
LTE Band 4/66	27	1720 - 1770	0.347	25.40	17M8G7D	QPSK
LTE Band 4/66	27	1720 - 1770	0.278	24.43	17M7W7D	16QAM
LTE Band 4/66	27	1720 - 1770	0.224	23.49	17M7W7D	64QAM
LTE Band 2	24E	1850.7 - 1909.3	0.193	22.85	1M11G7D	QPSK
LTE Band 2	24E	1850.7 - 1909.3	0.136	21.33	1M10W7D	16QAM
LTE Band 2	24E	1850.7 - 1909.3	0.108	20.35	1M10W7D	64QAM
LTE Band 2	24E	1851.5 - 1908.5	0.268	24.29	2M72G7D	QPSK
LTE Band 2	24E	1851.5 - 1908.5	0.206	23.14	2M72W7D	16QAM
LTE Band 2	24E	1851.5 - 1908.5	0.156	21.93	2M72W7D	64QAM
LTE Band 2	24E	1852.5 - 1907.5	0.283	24.52	4M58G7D	QPSK
LTE Band 2	24E	1852.5 - 1907.5	0.217	23.37	4M54W7D	16QAM
LTE Band 2	24E	1852.5 - 1907.5	0.162	22.09	4M52W7D	64QAM
LTE Band 2	24E	1855 - 1905	0.286	24.56	9M03G7D	QPSK
LTE Band 2	24E	1855 - 1905	0.208	23.17	9M04W7D	16QAM
LTE Band 2	24E	1855 - 1905	0.178	22.50	9M05W7D	64QAM
LTE Band 2	24E	1857.5 - 1902.5	0.216	23.35	13M6G7D	QPSK
LTE Band 2	24E	1857.5 - 1902.5	0.154	21.87	13M6W7D	16QAM
LTE Band 2	24E	1857.5 - 1902.5	0.132	21.22	13M5W7D	64QAM
LTE Band 2	24E	1860 - 1900	0.194	22.88	18M0G7D	QPSK
LTE Band 2	24E	1860 - 1900	0.154	21.88	18M0W7D	16QAM
LTE Band 2	24E	1860 - 1900	0.118	20.73	17M7W7D	64QAM
LTE Band 41	27	2498.5 - 2687.5	0.143	21.54	4M56G7D	QPSK
LTE Band 41	27	2498.5 - 2687.5	0.114	20.56	4M54W7D	16QAM
LTE Band 41	27	2498.5 - 2687.5	0.091	19.61	4M53W7D	64QAM
LTE Band 41	27	2501 - 2685	0.113	20.54	8M99G7D	QPSK
LTE Band 41	27	2501 - 2685	0.091	19.59	9M02W7D	16QAM
LTE Band 41	27	2501 - 2685	0.074	18.66	8M99W7D	64QAM
LTE Band 41	27	2503.5 - 2682.5	0.125	20.95	13M5G7D	QPSK
LTE Band 41	27	2503.5 - 2682.5	0.119	20.76	13M6W7D	16QAM
LTE Band 41	27	2503.5 - 2682.5	0.086	19.33	13M5W7D	64QAM
LTE Band 41	27	2506 - 2680	0.130	21.15	17M9G7D	QPSK
LTE Band 41	27	2506 - 2680	0.121	20.82	18M0W7D	16QAM
LTE Band 41	27	2506 - 2680	0.077	18.88	18M0W7D	64QAM

EUT Overview

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 ISED Standards (RSS)."

- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISED.

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMA730F**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 29501, 21518, 29857, 29446, 21518, 24503, 29626, 24503, 29626

2.2 Device Capabilities

This device contains the following capabilities:

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

LTE Band 12 (698 - 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 - 716 MHz). Therefore, test data provided in this report covers Band 17 as well as Band 12.

LTE Band 26 (814.7 – 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 – 849 MHz). Therefore, test data provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.

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 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.

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.

3.1 Block C Frequency Range

§27.5(b)(3)

Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results do not satisfy the applicable reserve price, the spectrum in the 746-757 MHz and 776-787 MHz bands will instead be made available for assignment at a subsequent auction as follows: (i) Two paired channels of 6 megahertz each available for assignment in Block C1 in the 746-752 MHz and 776-782 MHz bands. (ii) Two paired channels of 5 megahertz each available for assignment in Block C2 in the 752-757 MHz and 782-787 MHz bands.

3.2 Block A Frequency Range

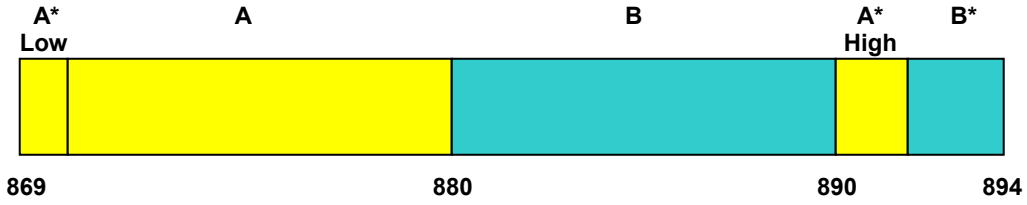
§27.5(c)

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 Cellular - Base Frequency Blocks

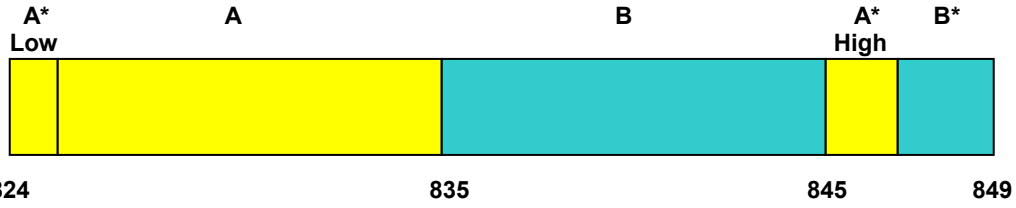
§22.905



BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.4 Cellular - Mobile Frequency Blocks

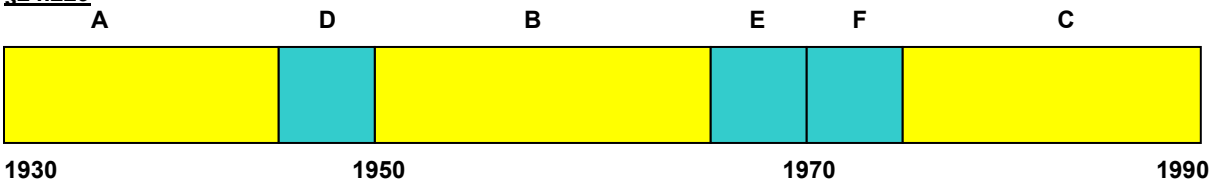
§22.905



BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.5 PCS - Base Frequency Blocks

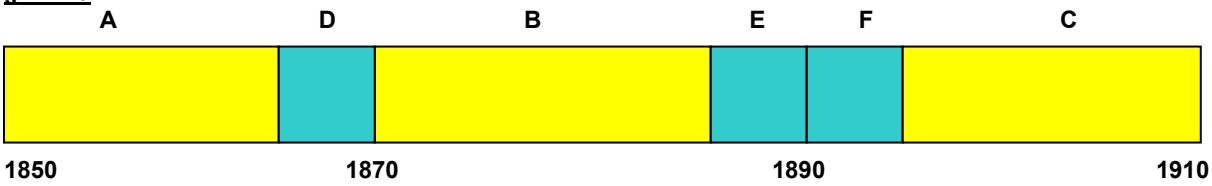
§24.229



BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.6 PCS - Mobile Frequency Blocks

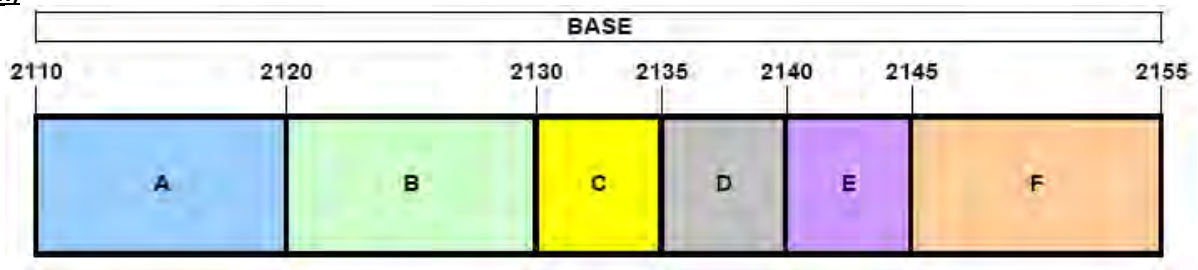
§24.229



BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

3.7 AWS - Base Frequency Blocks

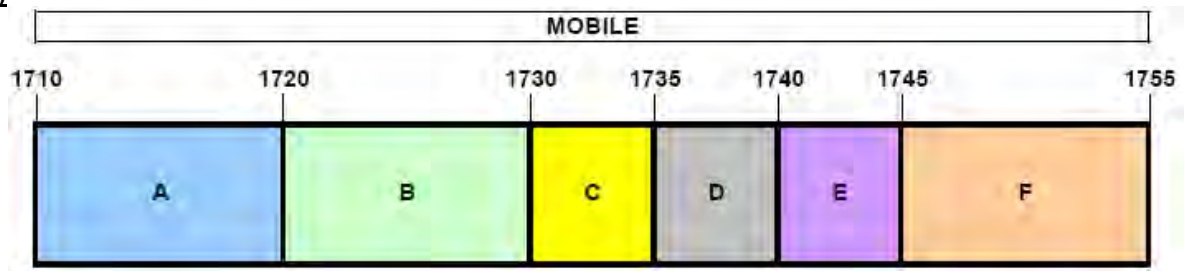
§27.5(h)



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)

3.8 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)

3.9 Radiated Power and Radiated Spurious Emissions

§2.1053 §22.913(a)(2) §22.917(a) §24.232(c) §24.238(a) §27.50(b)(10) §27.50(c)(10) §27.50(d)(4) §27.53(f) §27.53(g) §27.53(h) RSS-130(4.4) RSS-132(5.4) RSS-132(5.5) 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:

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

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 $P_{g\ [dBm]}$ – 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 + $10\log_{10}$(Power $_{[Watts]}$).

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

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	5/3/2017	Annual	5/3/2018	LTx2
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	6/21/2017	Annual	6/21/2018	RE1
Agilent	N9030A	PXA Signal Analyzer (44GHz)	3/27/2017	Annual	3/27/2018	MY52350166
Anritsu	MS2038C	20 GHz Network Analyzer	7/19/2017	Annual	7/19/2018	1214109
COM-Power	AL-130R	Active Loop Antenna	6/5/2017	Annual	6/5/2018	121085
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	6/21/2017	Annual	6/21/2018	441119
Com-Power	PAM-118A	Pre-Amplifier	6/21/2017	Annual	6/21/2018	551042
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
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
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	12/5/2016	Biennial	12/5/2018	128338
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	3/24/2017	Annual	3/24/2018	11210140001
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	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102133
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	102135
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/18/2015	Biennial	11/18/2017	91052523RX
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Tx	11/18/2015	Biennial	11/18/2017	91052522TX
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/14/2016	Biennial	3/14/2018	A051107

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.

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 analzyer. 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).

7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.

FCC ID: A3LSMA730F

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) 27.53(m)	RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6) RSS-199(4.5)	Out of Band Emissions	> 43 + 10log$_{10}$ (P[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) RSS-199(4.4)	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) RSS-199(4.4)	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) RSS-199(4.3)	Frequency Stability	< 2.5 ppm and fundamental emissions stay within authorized frequency block		PASS	Section 7.8

Table 7-1. Summary of Conducted Test Results

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 26/5)	< 7 Watts max. ERP < 11.5 Watts max. EIRP	RADIATED	PASS	Section 7.6
27.50(b)(10) 27.50(c)(10)	RSS-130(4.4)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12/17, 13)	< 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, 41)	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power (Band 4/66)	< 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) RSS-199(4.4)	Undesirable Emissions (Band 12/17, 2, 4/66, 5/26)	> 43 + 10log$_{10}$ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7
27.53(f)	RSS-130(4.6)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz		PASS	Section 7.7
27.53(m)	RSS-199(4.5)	Undesirable Emissions (Band 41)	> 43 + 10log$_{10}$ (P[Watts]) at channel edges > 55 + 10log$_{10}$ (P[Watts]) at 5.5MHz away and beyond channel edges		PASS	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 4.8.

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 ≥ 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.

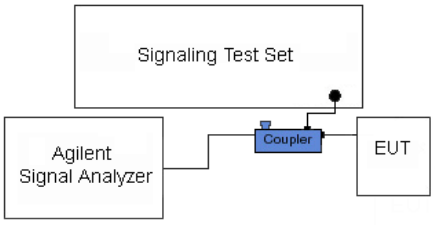
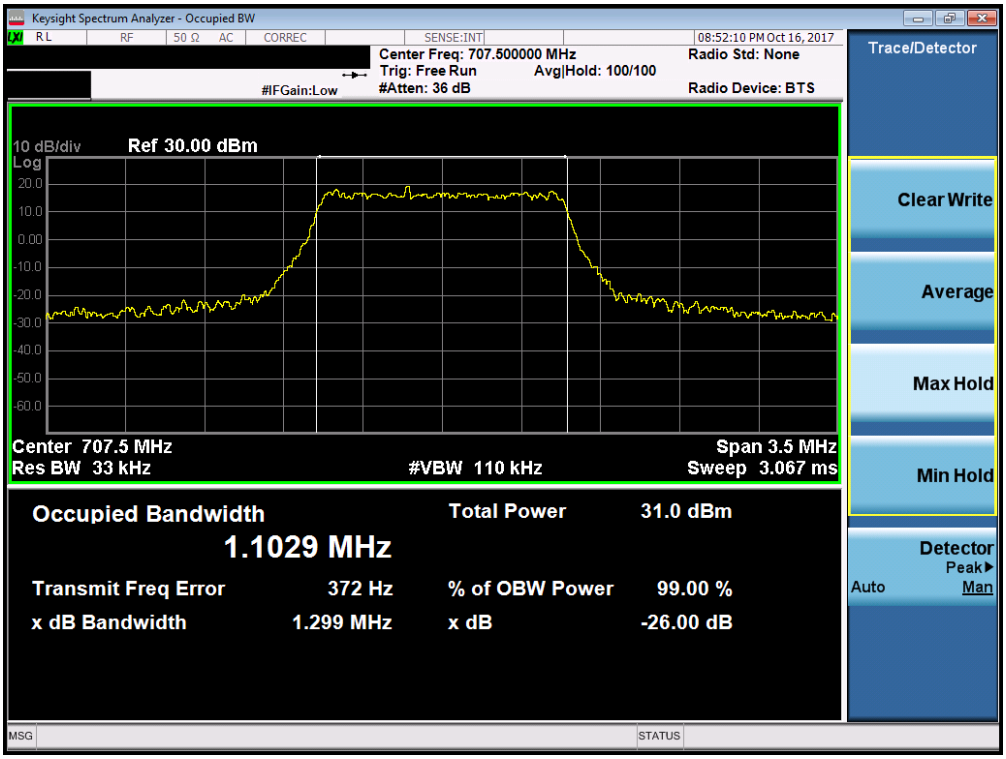


Figure 7-1. Test Instrument & Measurement Setup

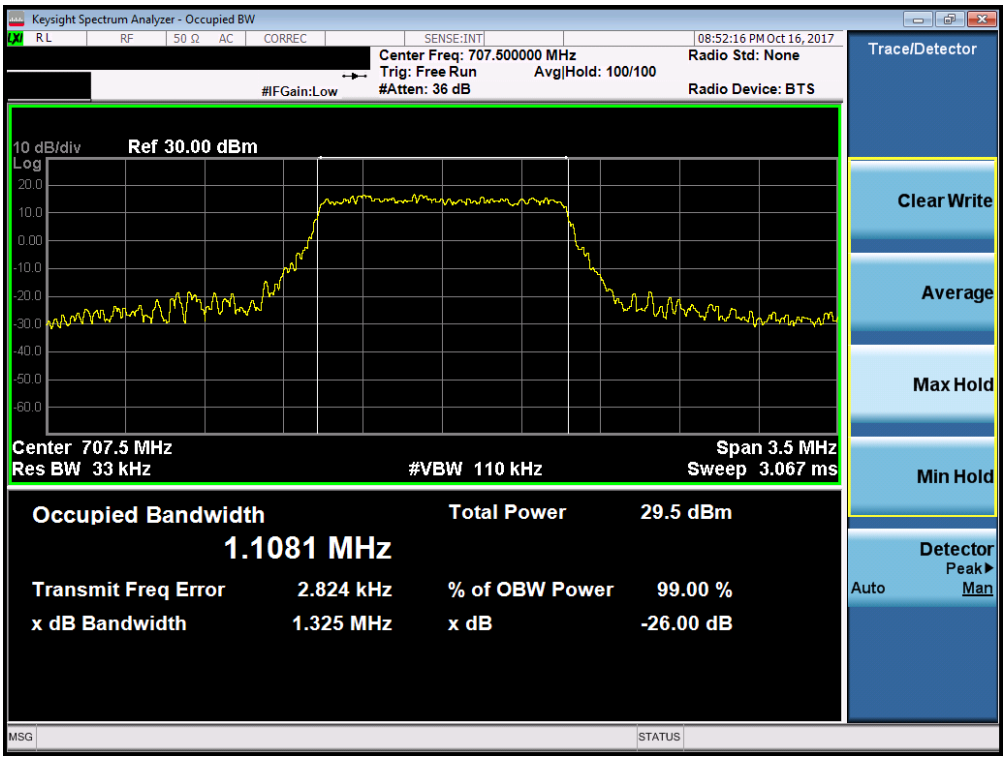
Test Notes

None.

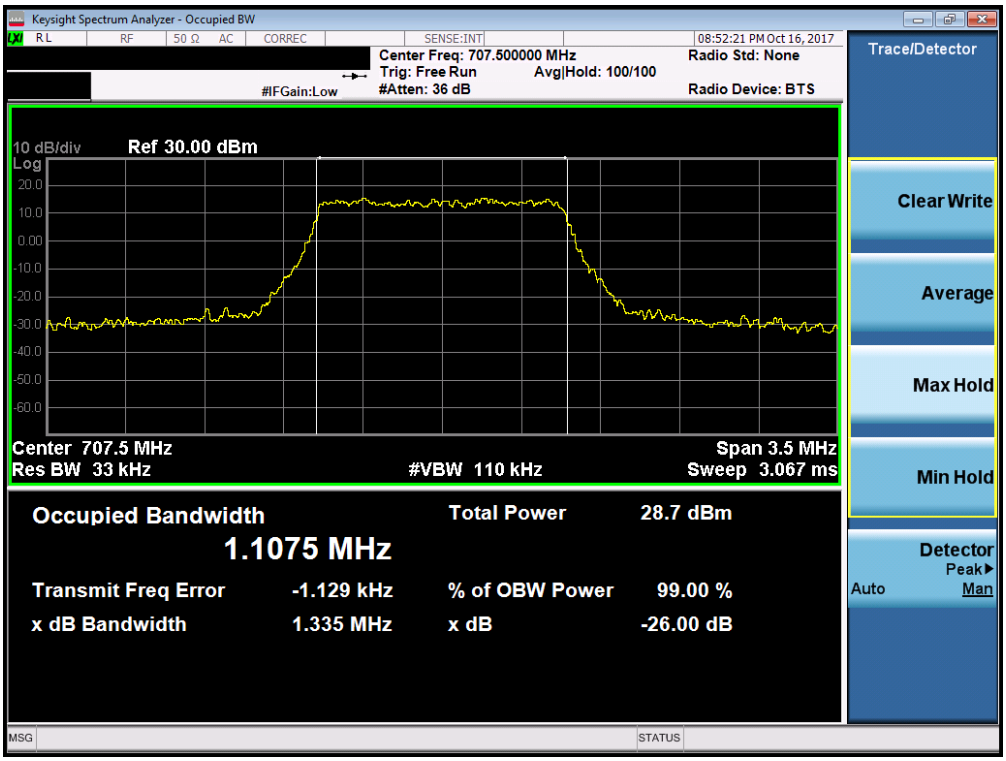
Band 12



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

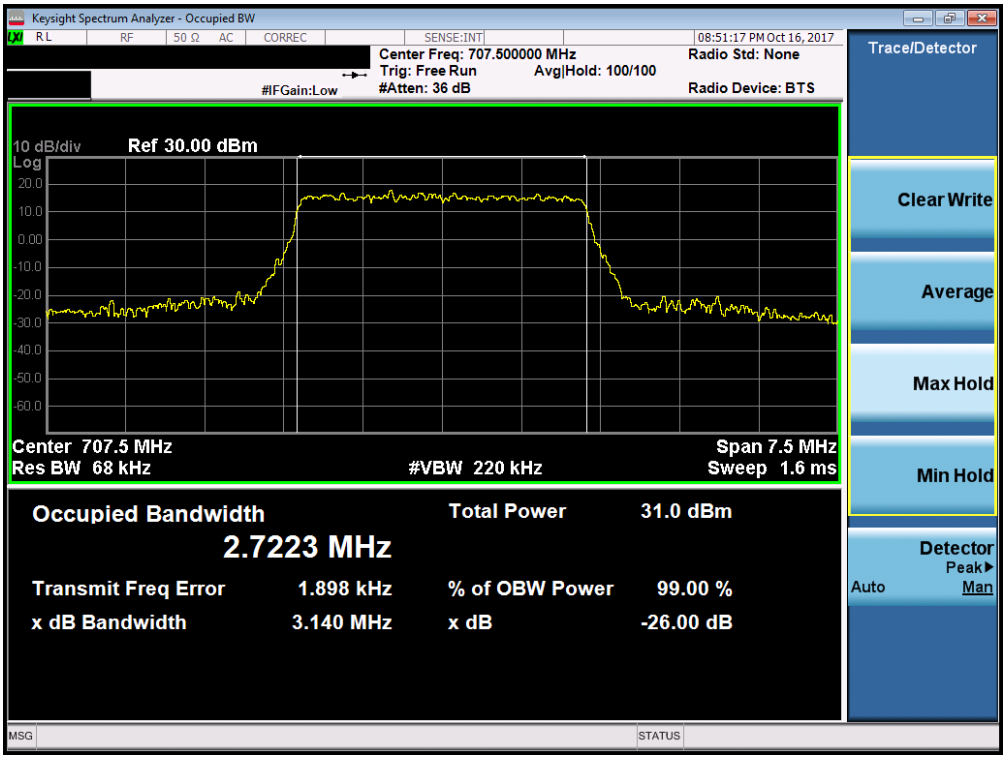


Plot 7-4. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

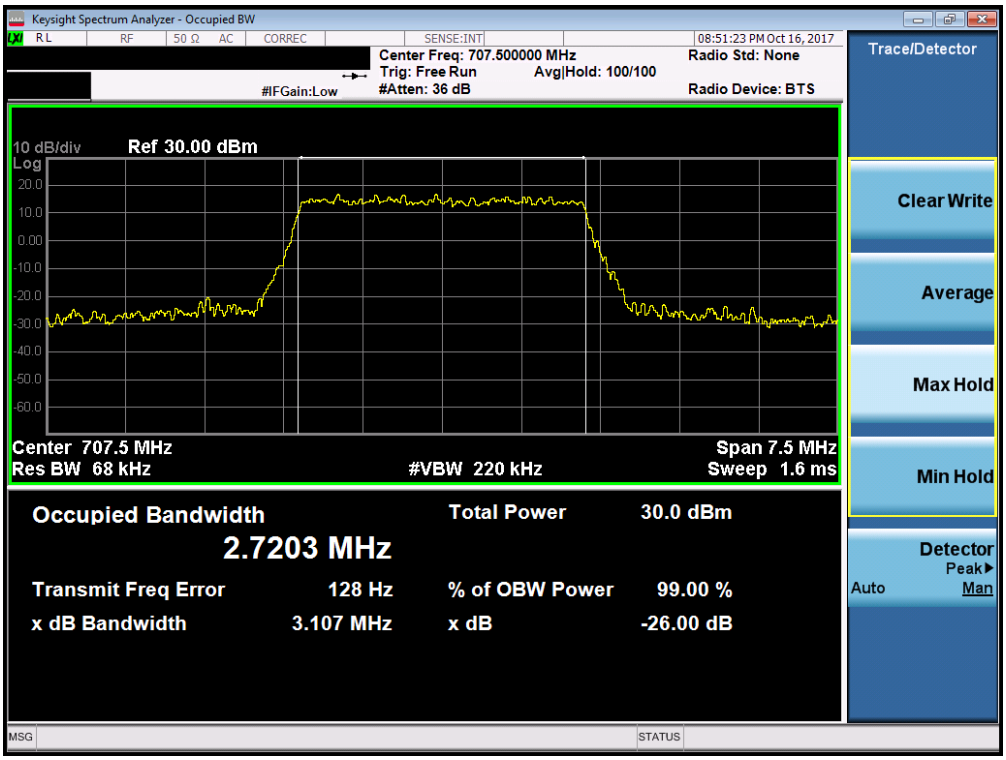


Plot 7-5. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

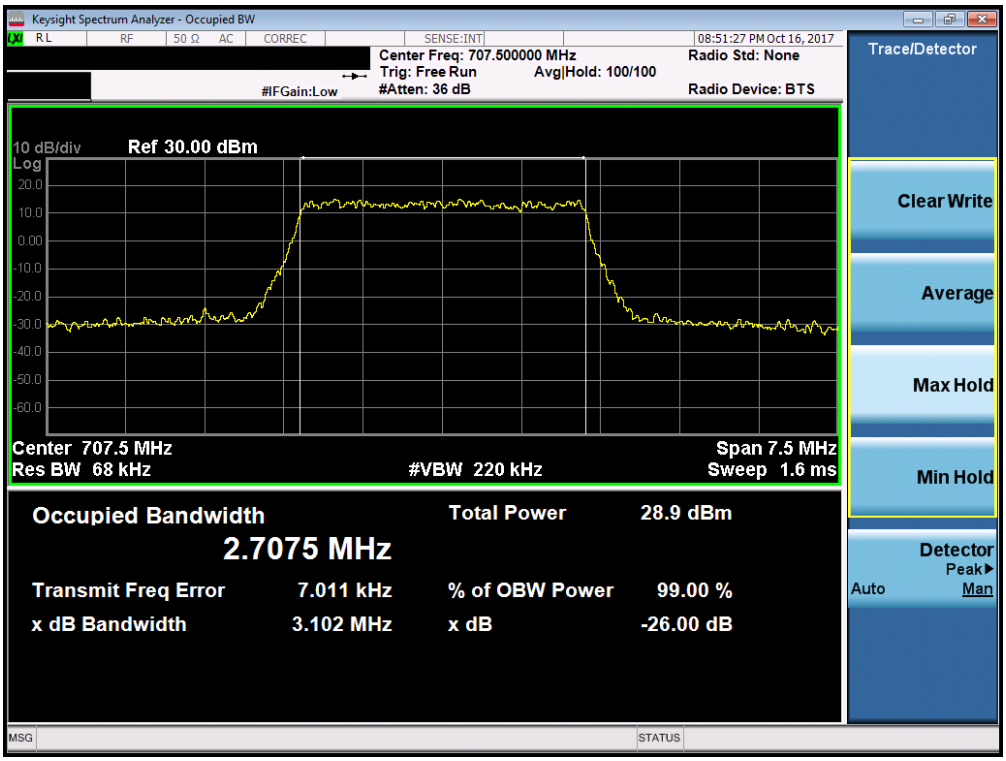
Band 12



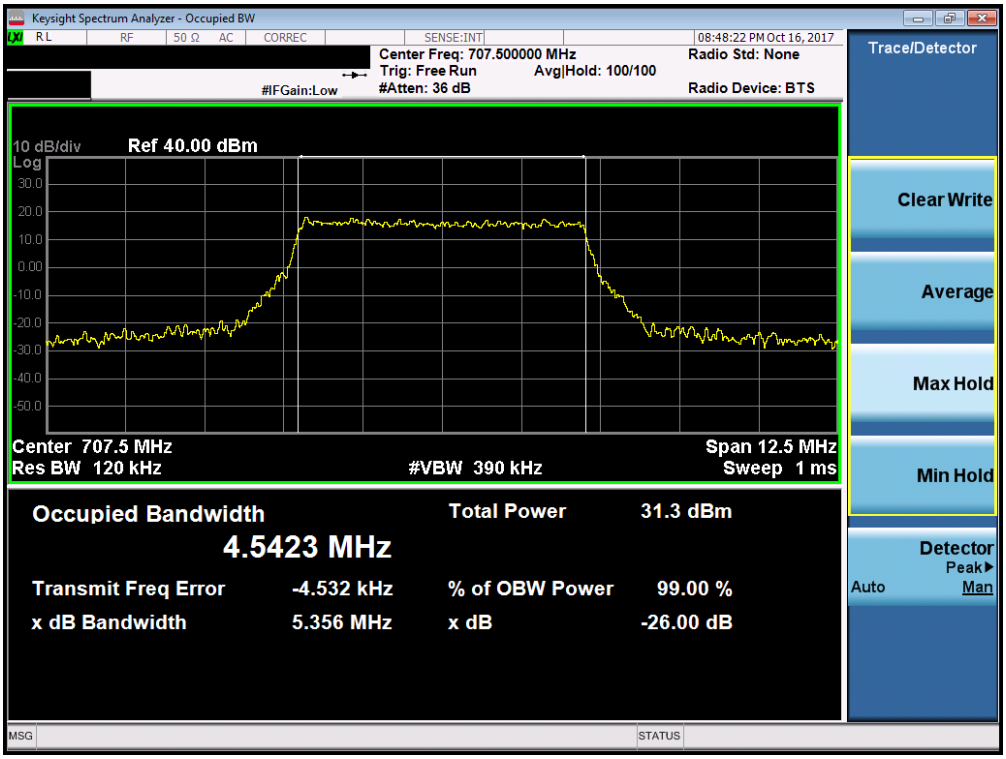
Plot 7-6. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



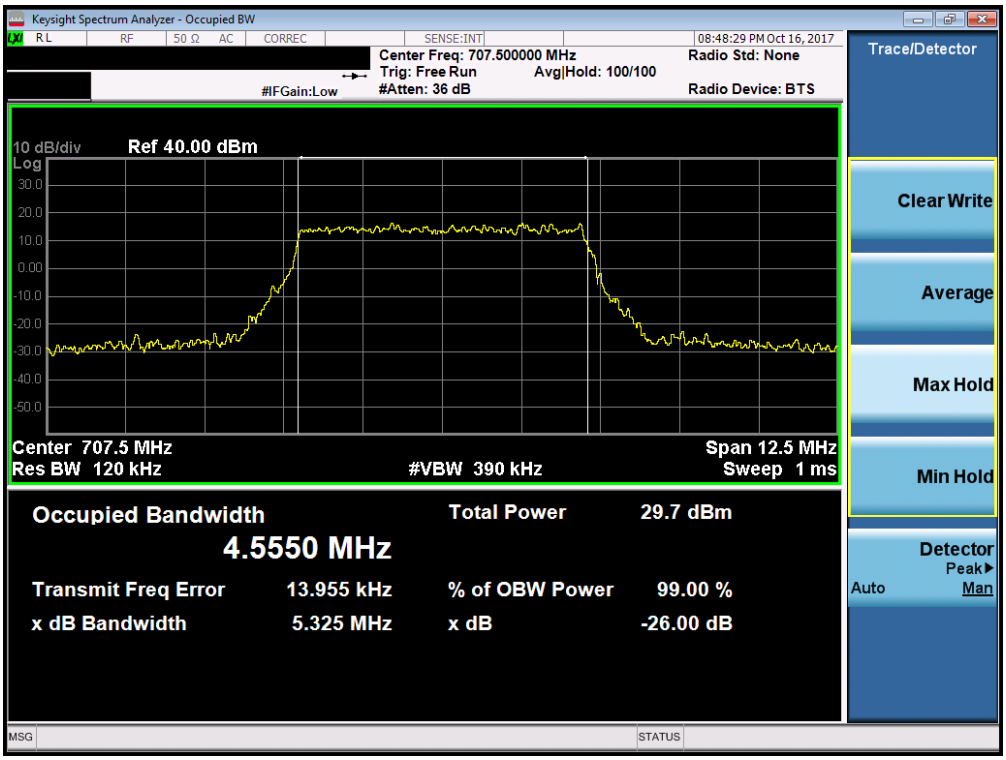
Plot 7-7. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)



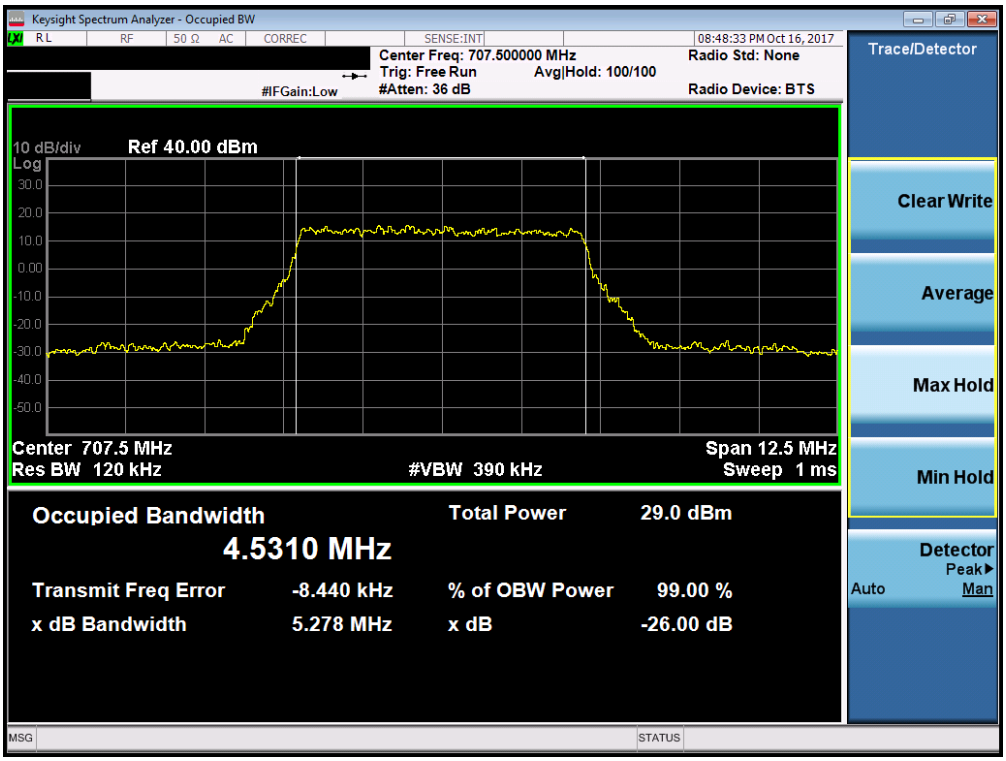
Plot 7-8. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)



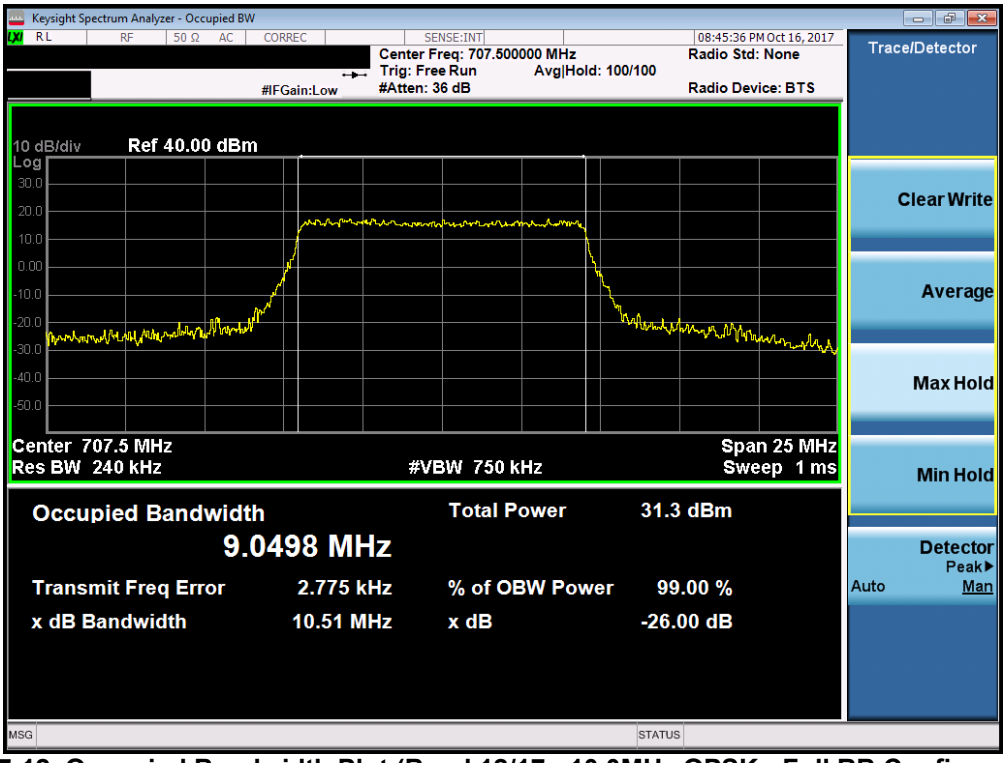
Plot 7-9. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



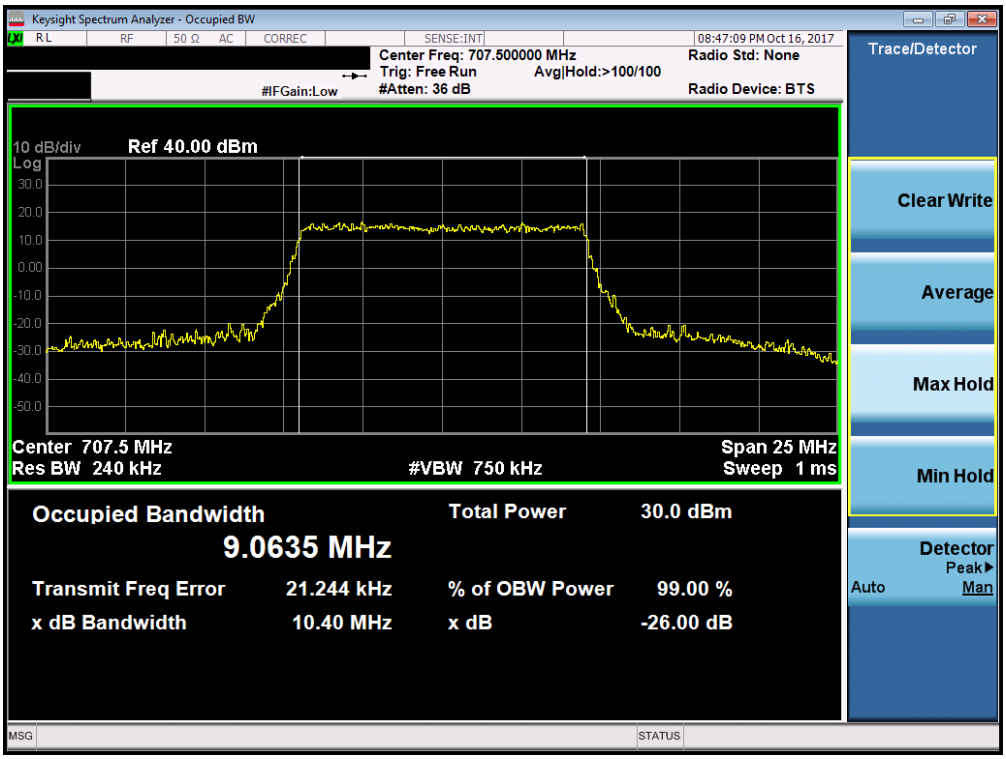
Plot 7-10. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)



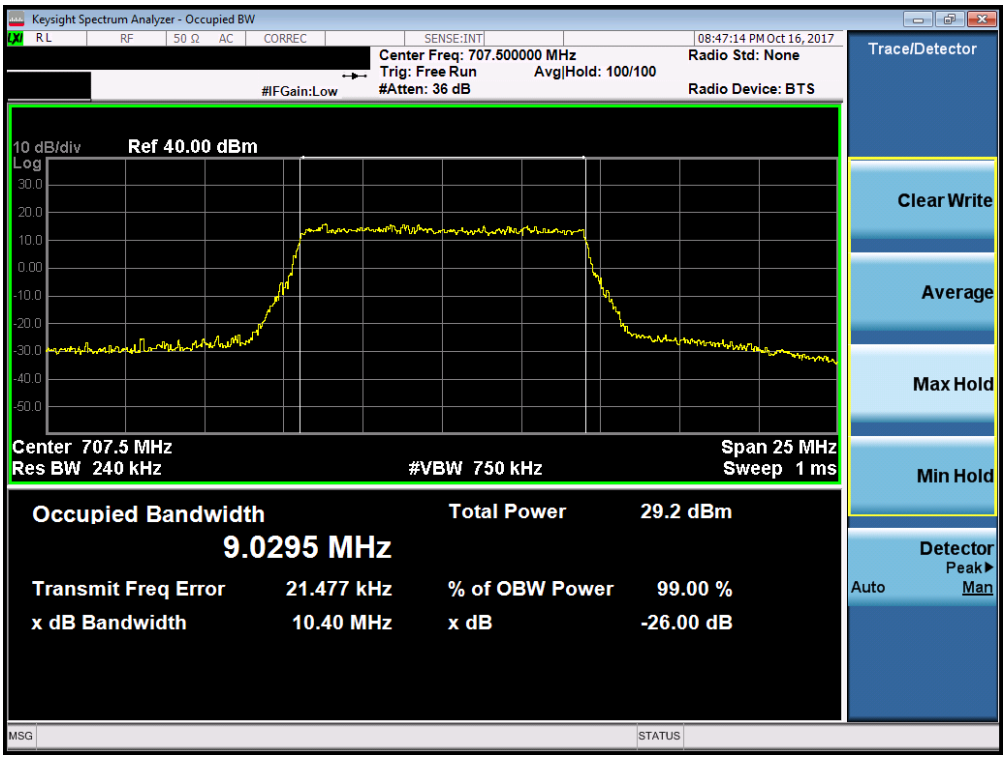
Plot 7-11. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

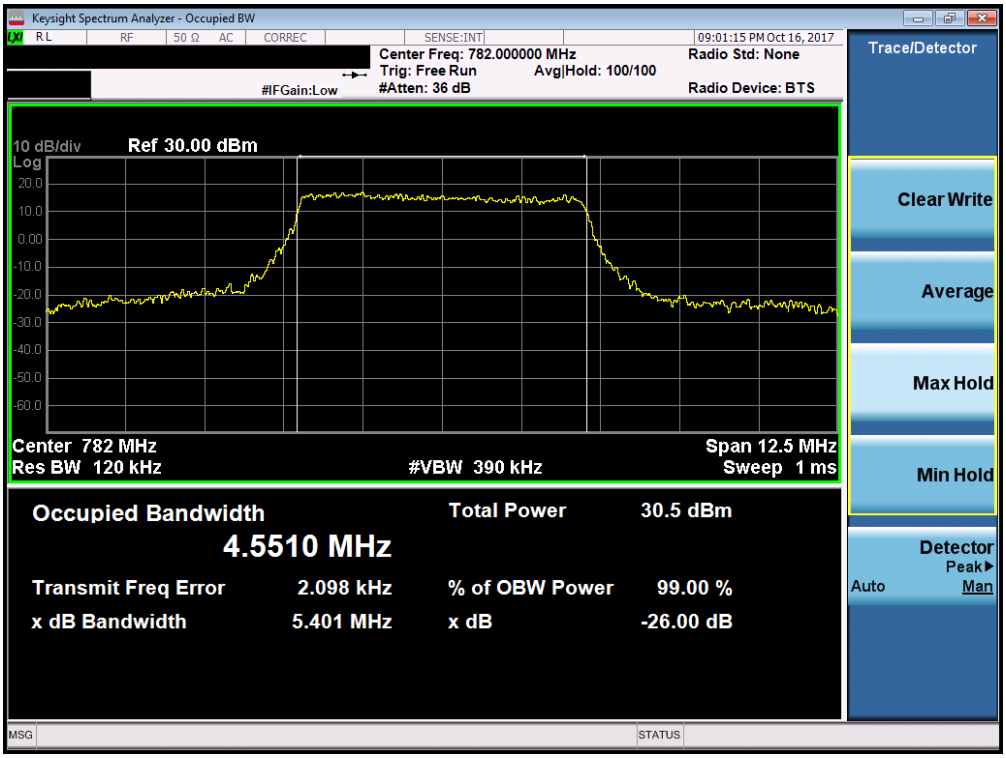


Plot 7-13. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)

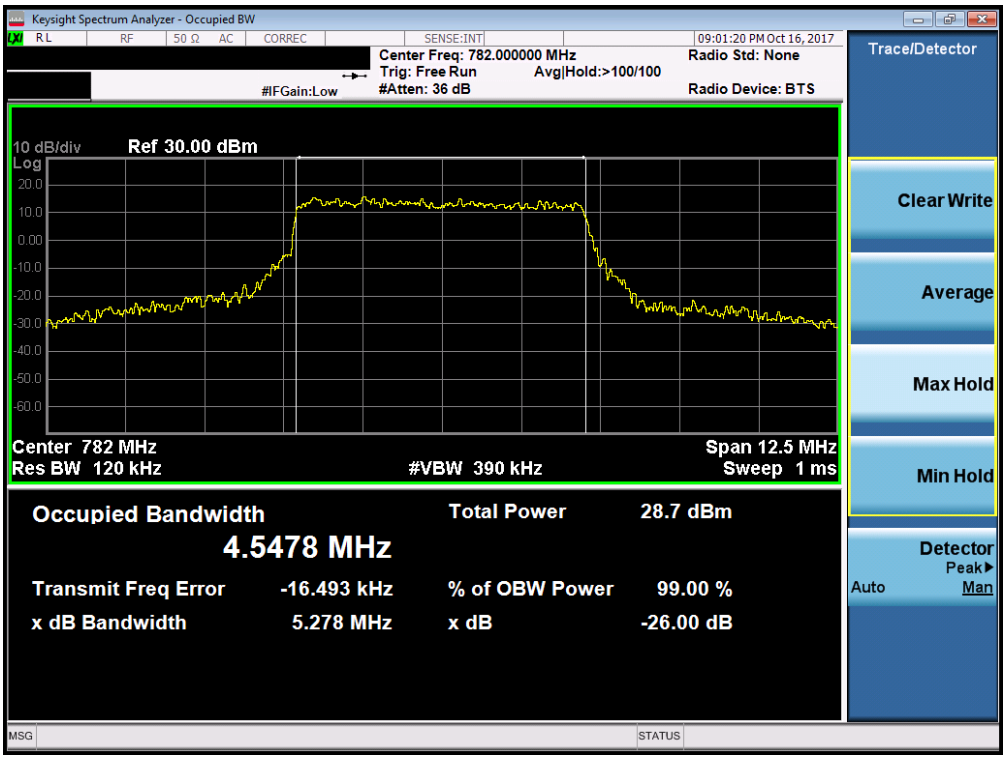


Plot 7-14. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

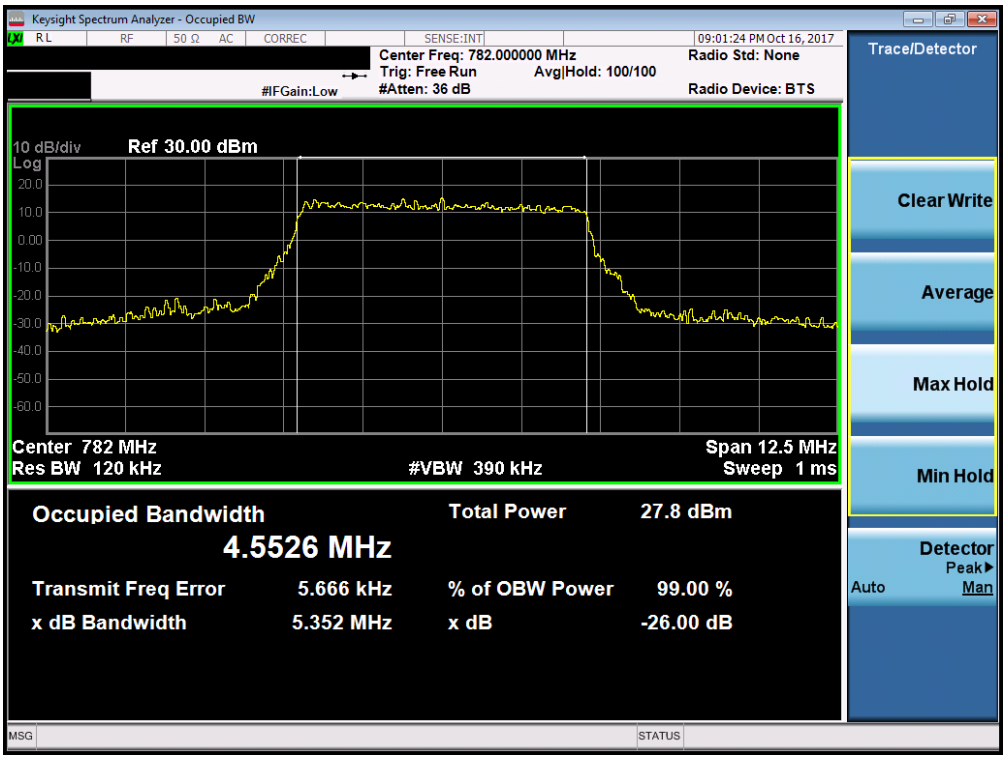
Band 13



Plot 7-15. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



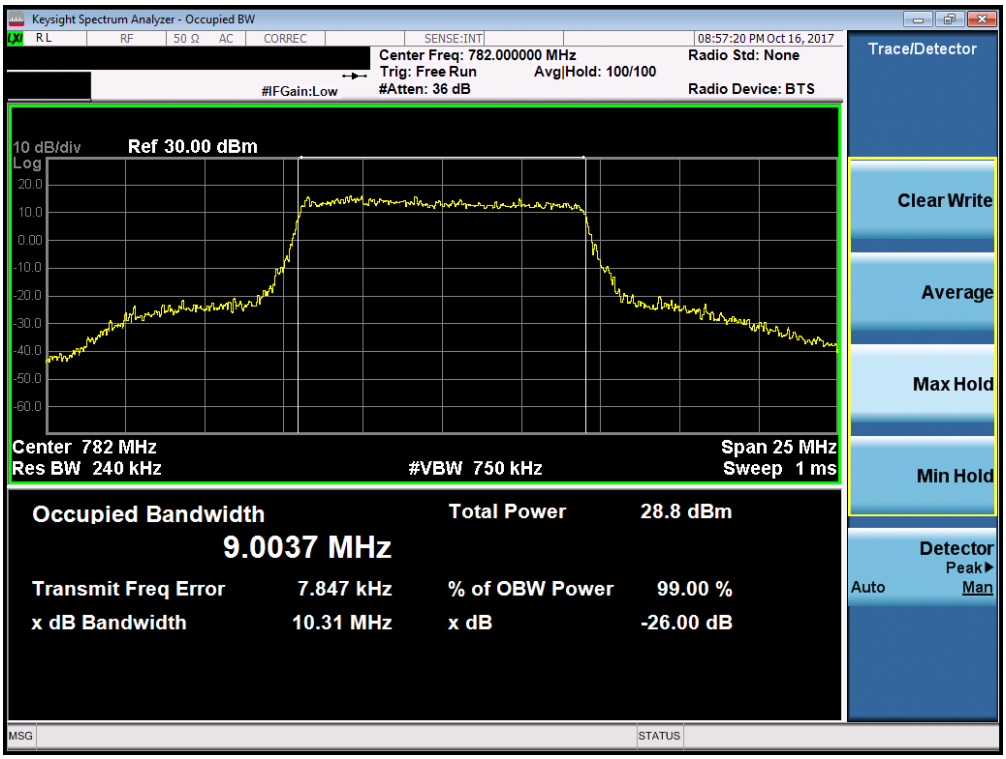
Plot 7-16. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)



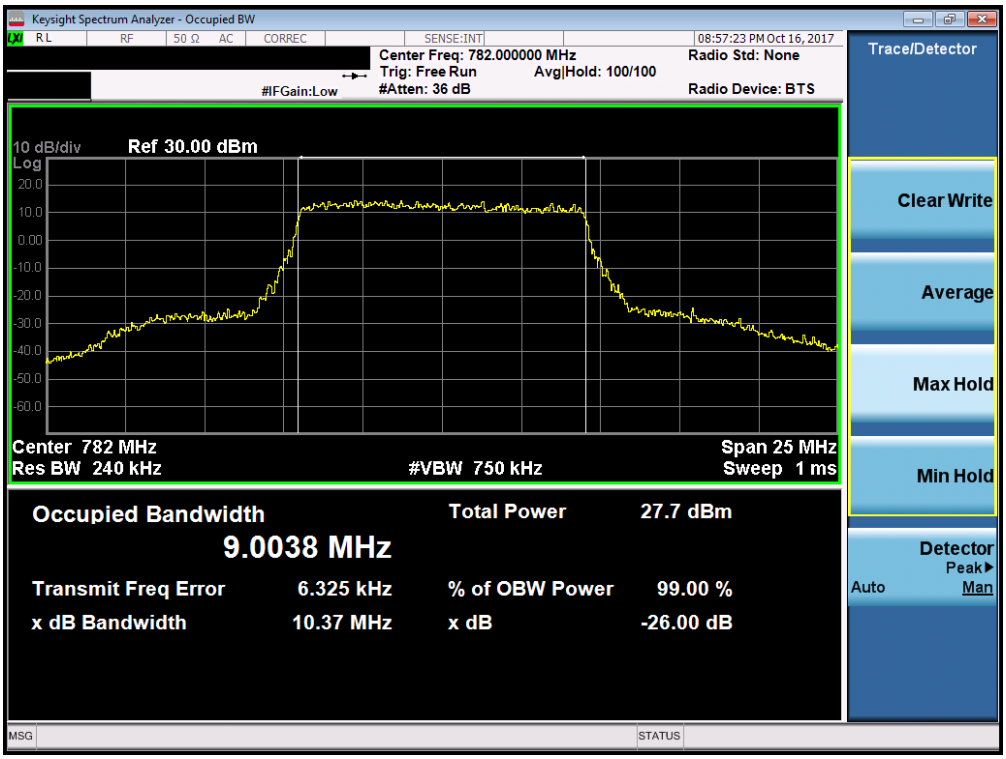
Plot 7-17. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

Band 13

Plot 7-18. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

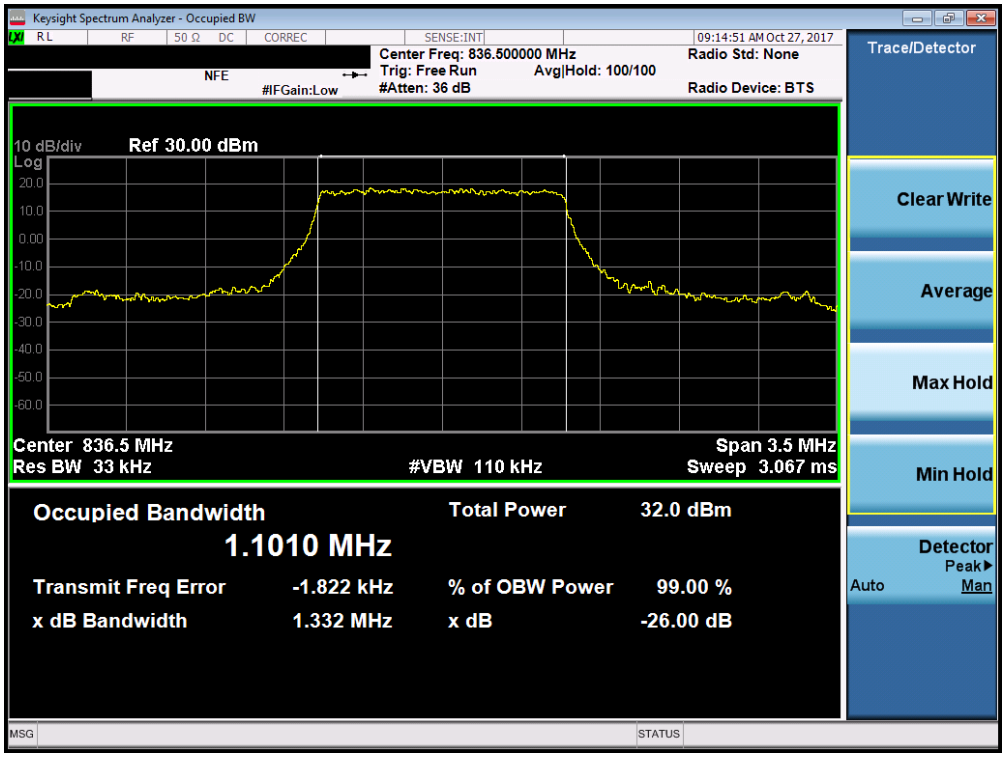


Plot 7-19. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)

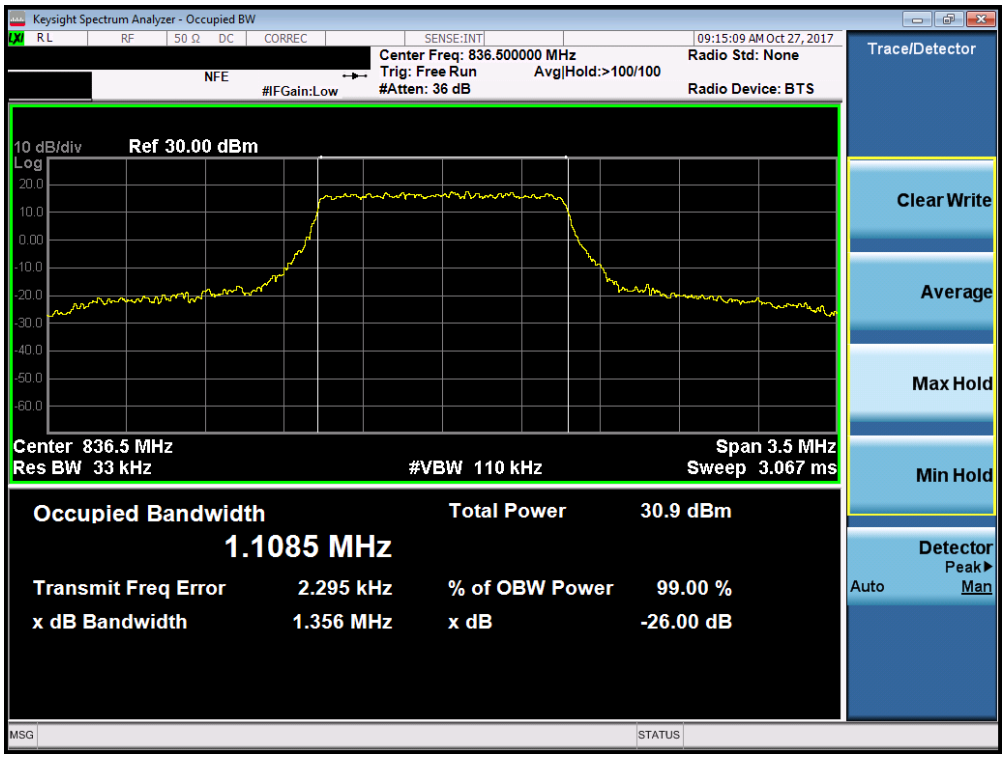


Plot 7-20. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

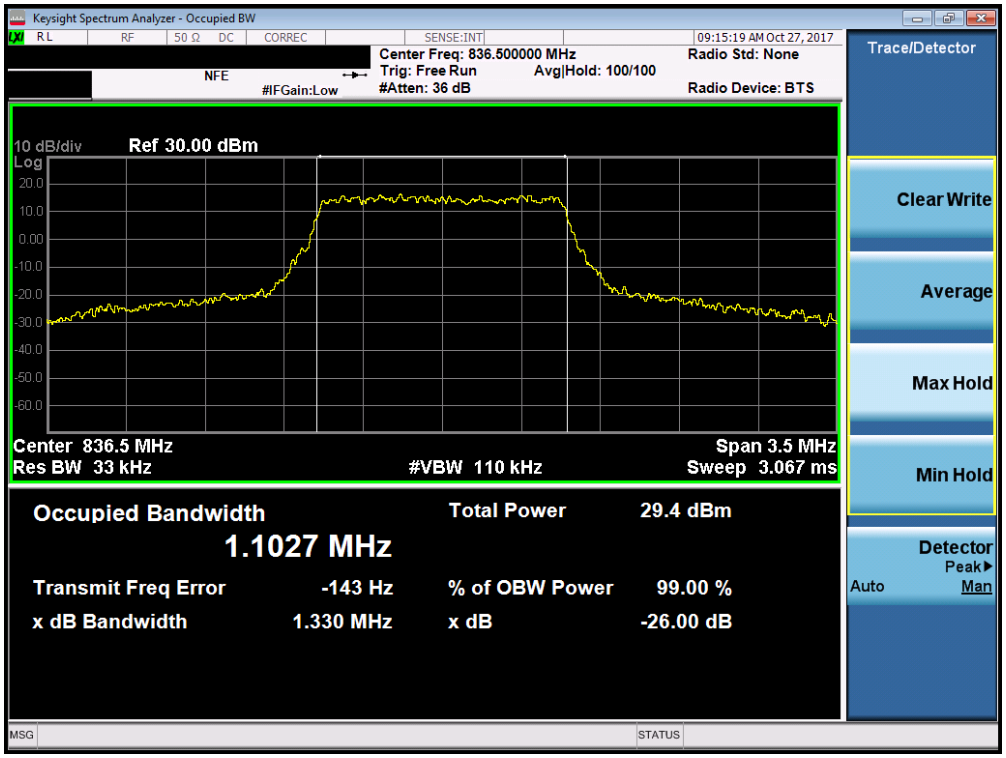
Band 5/26



Plot 7-21. Occupied Bandwidth Plot (Band 5/26 - 1.4MHz QPSK - Full RB Configuration)

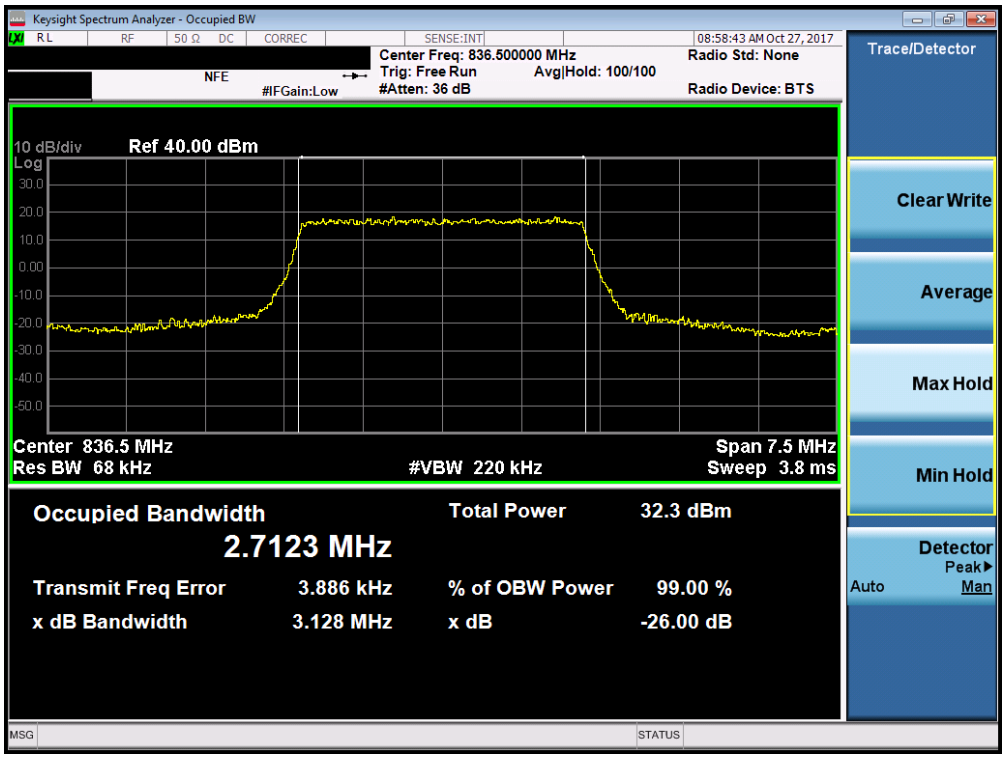


Plot 7-22. Occupied Bandwidth Plot (Band 5/26 - 1.4MHz 16-QAM - Full RB Configuration)

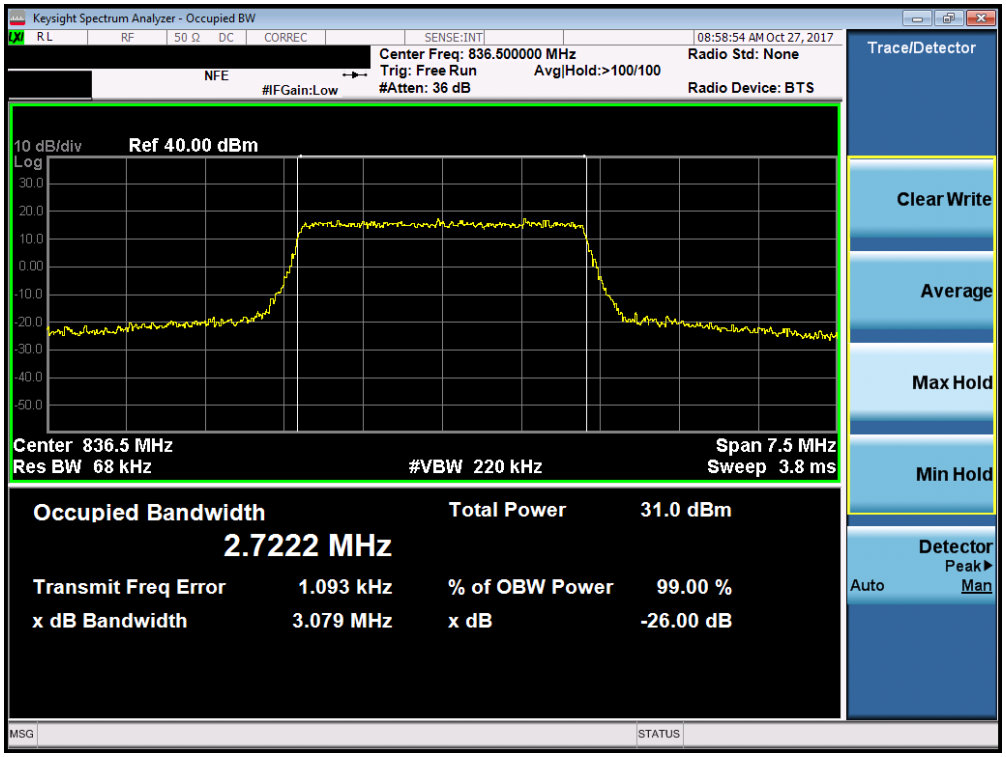


Plot 7-23. Occupied Bandwidth Plot (Band 5/26 - 1.4MHz 64-QAM - Full RB Configuration)

Band 5/26

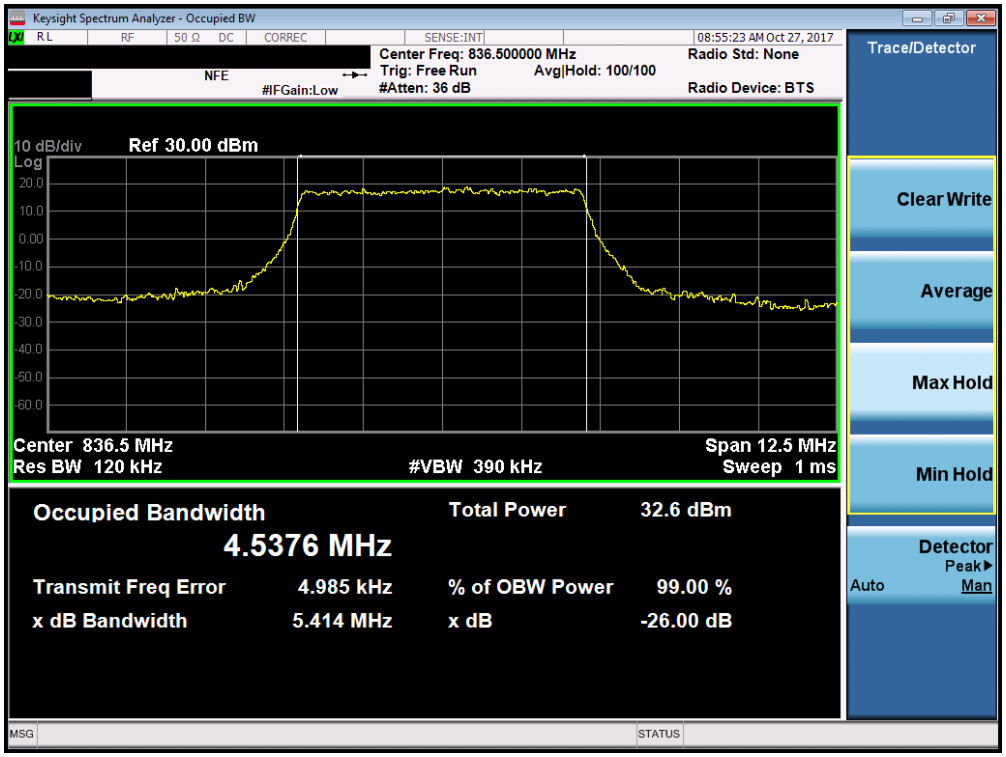


Plot 7-24. Occupied Bandwidth Plot (Band 5/26 - 3.0MHz QPSK - Full RB Configuration)

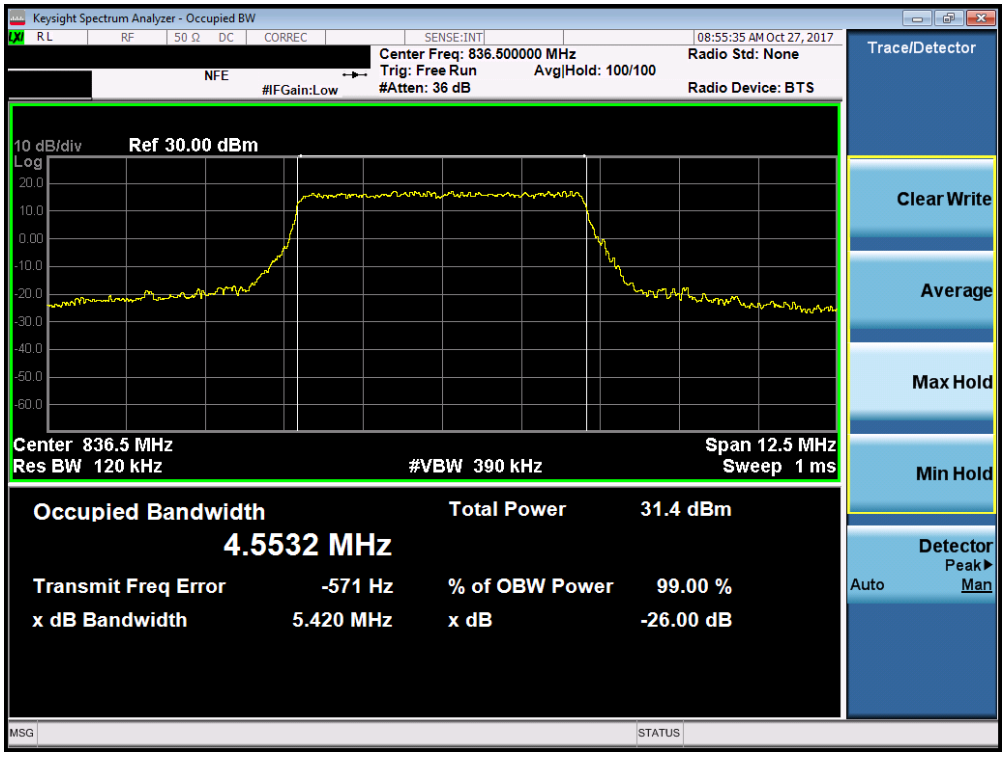


Plot 7-25. Occupied Bandwidth Plot (Band 5/26 - 3.0MHz 16-QAM - Full RB Configuration)

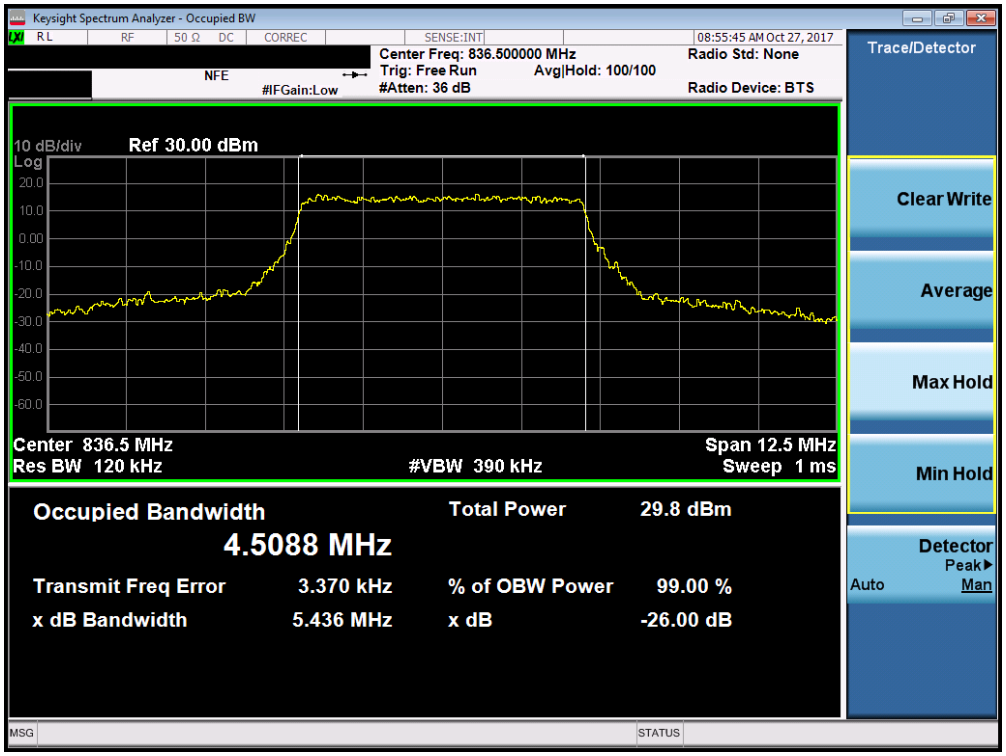
Plot 7-26. Occupied Bandwidth Plot (Band 5/26 - 3.0MHz 64-QAM - Full RB Configuration)



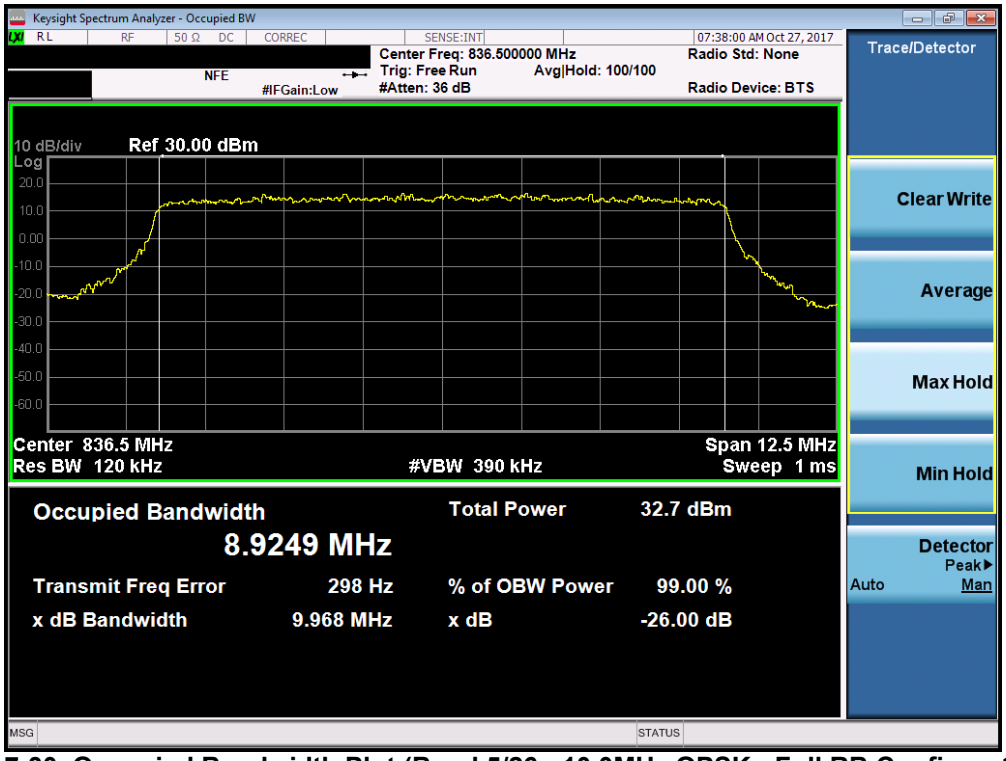
Plot 7-27. Occupied Bandwidth Plot (Band 5/26 - 5.0MHz QPSK - Full RB Configuration)



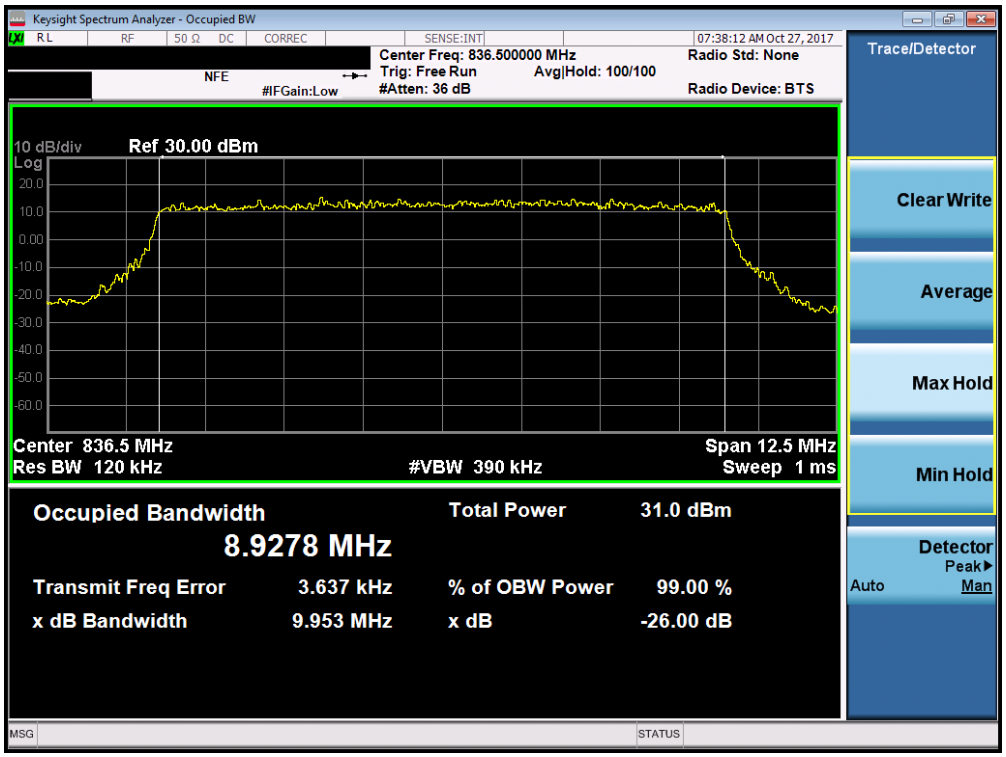
Plot 7-28. Occupied Bandwidth Plot (Band 5/26 - 5.0MHz 16-QAM - Full RB Configuration)



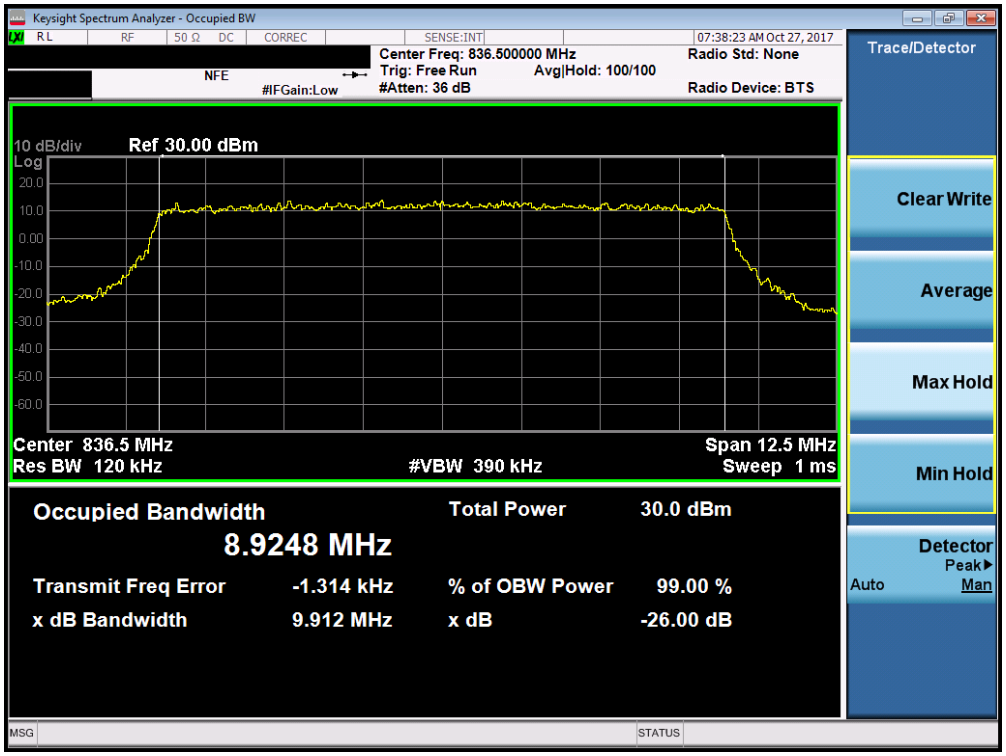
Plot 7-29. Occupied Bandwidth Plot (Band 5/26 - 5.0MHz 64-QAM - Full RB Configuration)



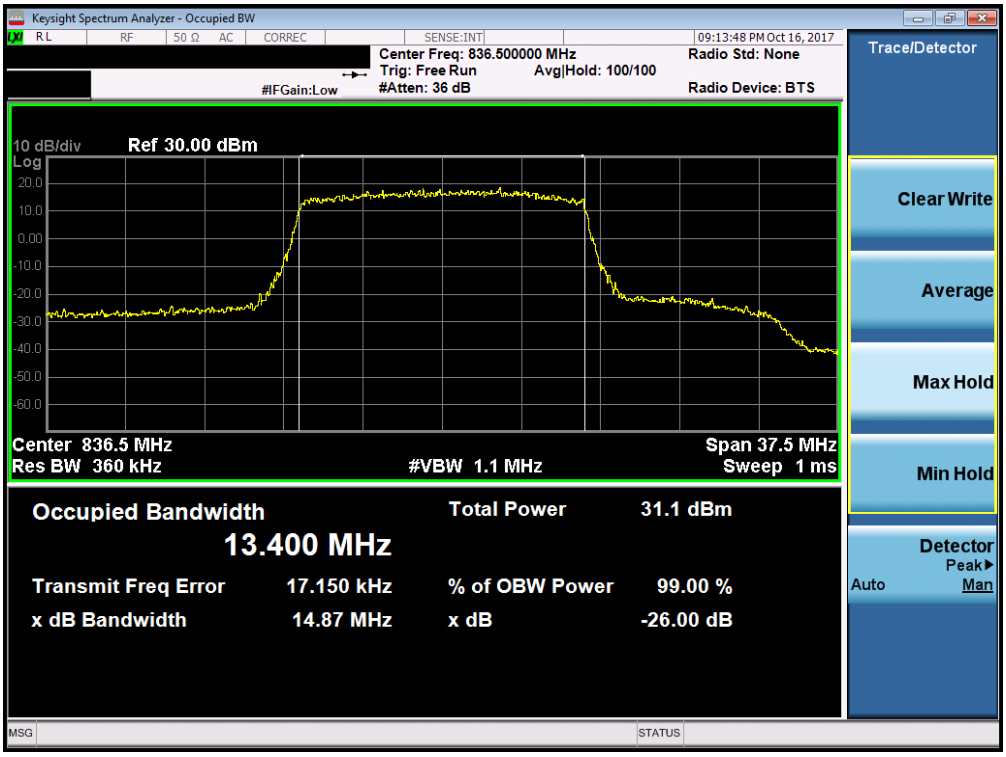
Plot 7-30. Occupied Bandwidth Plot (Band 5/26 - 10.0MHz QPSK - Full RB Configuration)



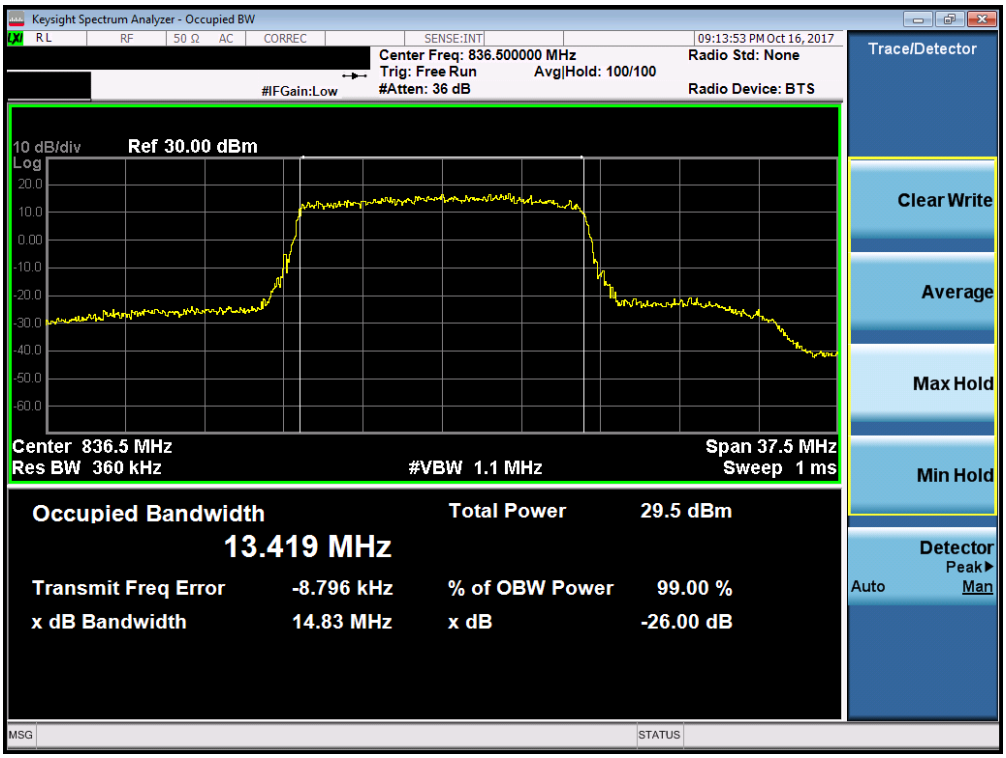
Plot 7-31. Occupied Bandwidth Plot (Band 5/26 - 10.0MHz 16-QAM - Full RB Configuration)



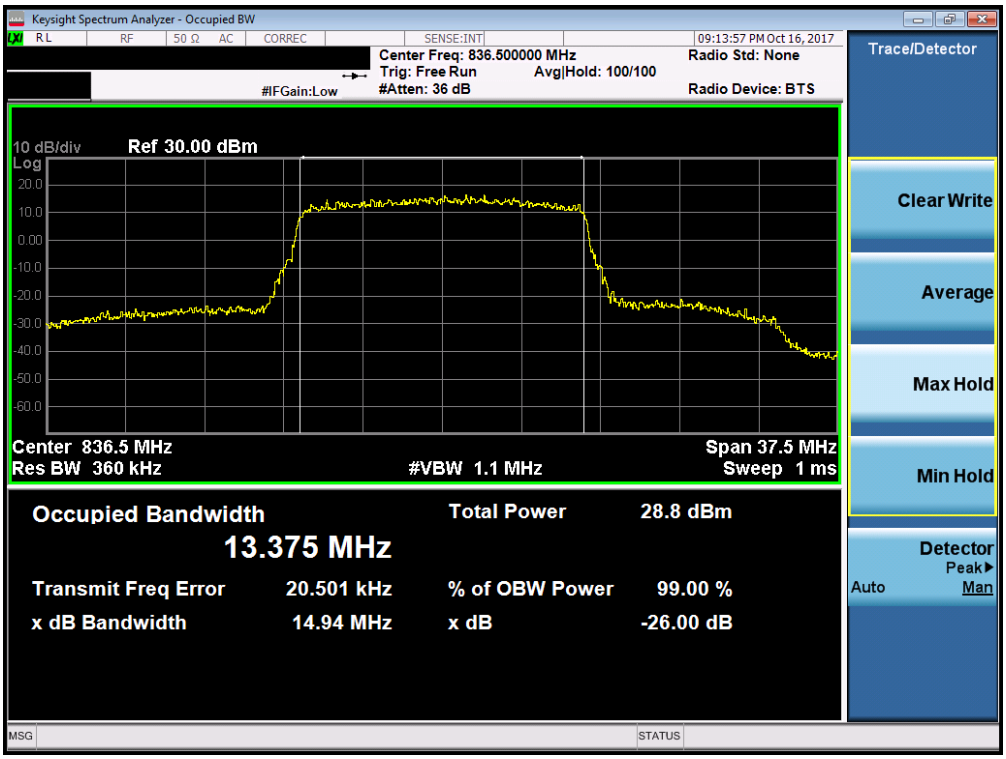
Plot 7-32. Occupied Bandwidth Plot (Band 5/26 - 10.0MHz 64-QAM - Full RB Configuration)



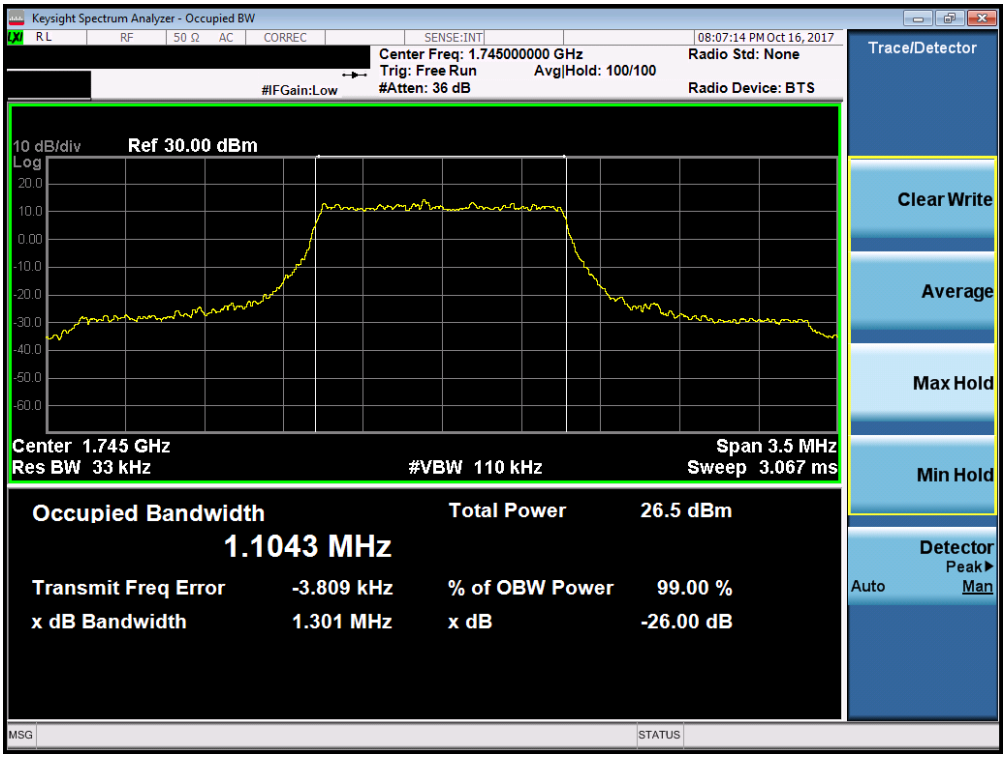
Plot 7-33. Occupied Bandwidth Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)



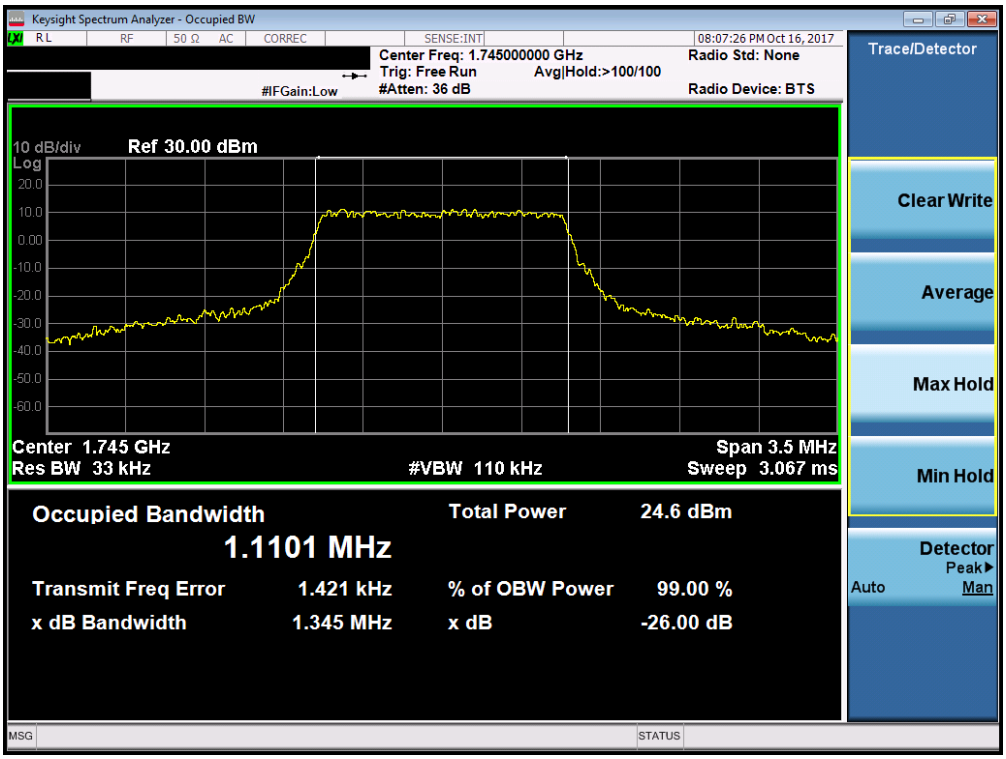
Plot 7-34. Occupied Bandwidth Plot (Band 26 - 15.0MHz 16-QAM - Full RB Configuration)



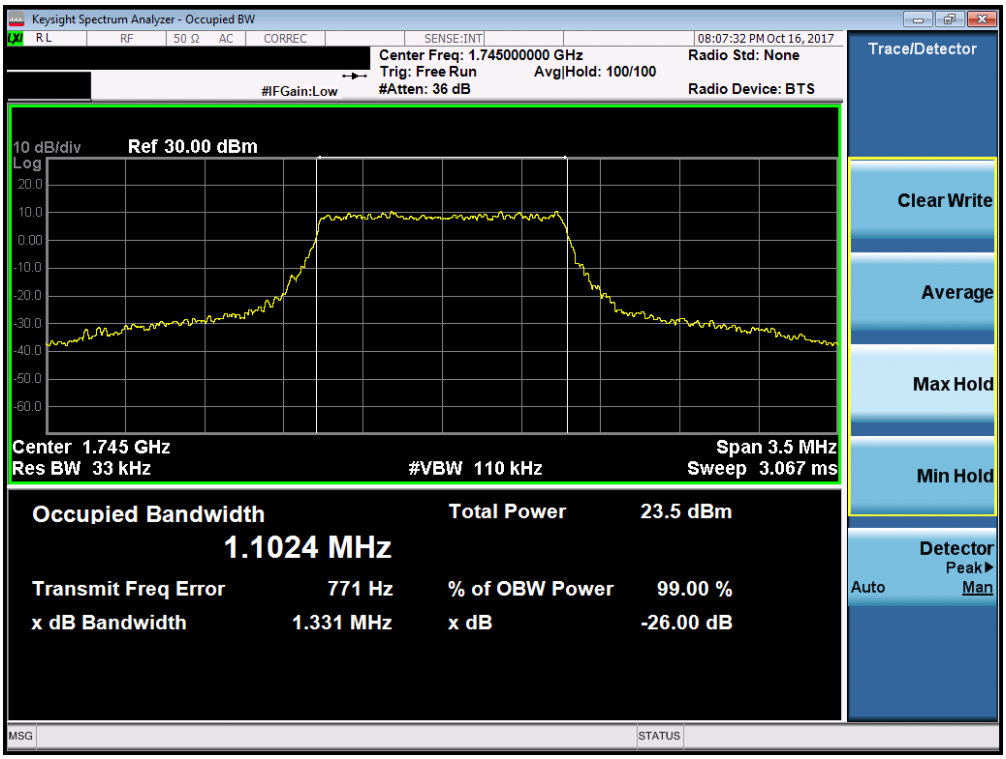
Plot 7-35. Occupied Bandwidth Plot (Band 26 - 15.0MHz 64-QAM - Full RB Configuration)



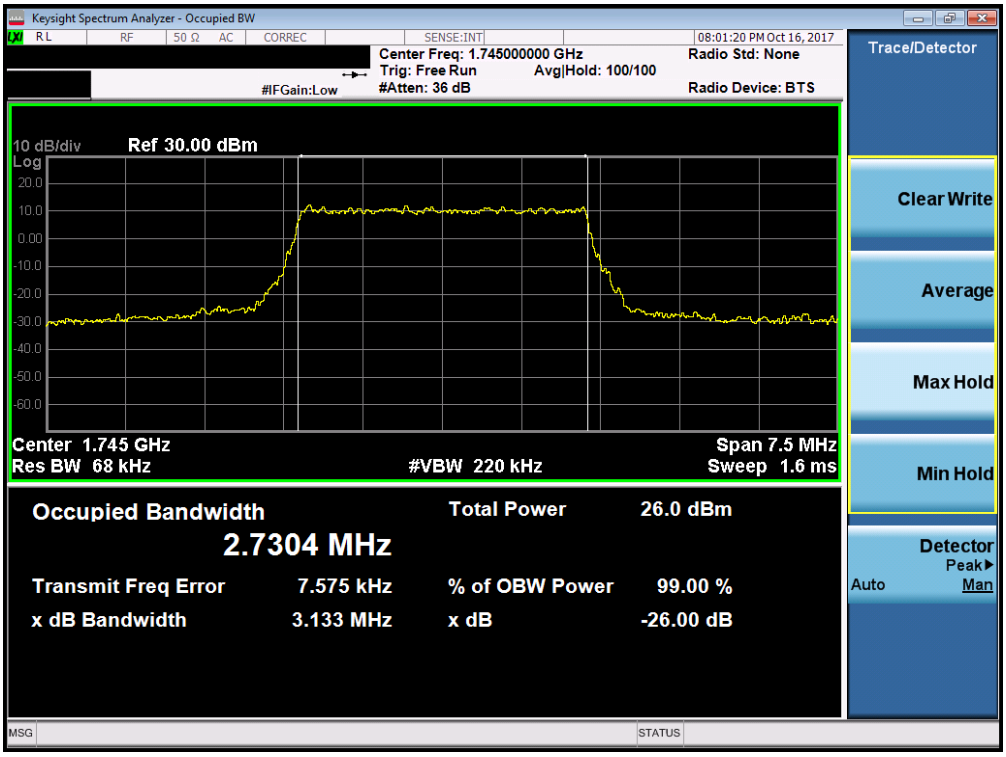
Plot 7-36. Occupied Bandwidth Plot (Band 4/66 - 1.4MHz QPSK - Full RB Configuration)



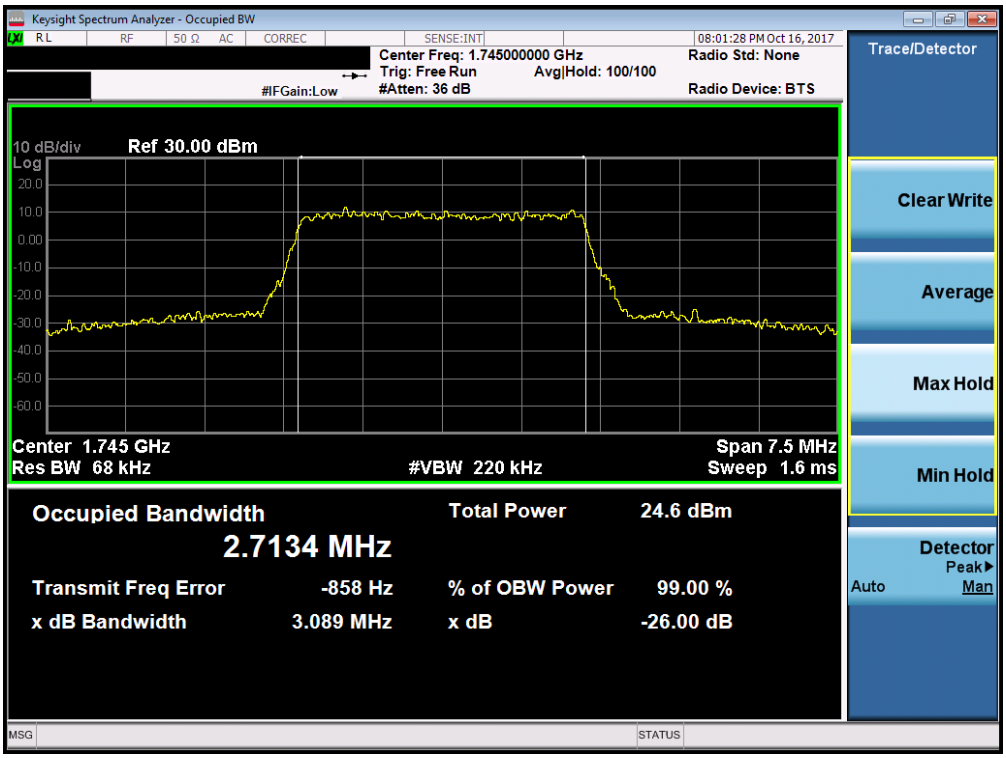
Plot 7-37. Occupied Bandwidth Plot (Band 4/66 - 1.4MHz 16-QAM - Full RB Configuration)



Plot 7-38. Occupied Bandwidth Plot (Band 4/66 - 1.4MHz 64-QAM - Full RB Configuration)

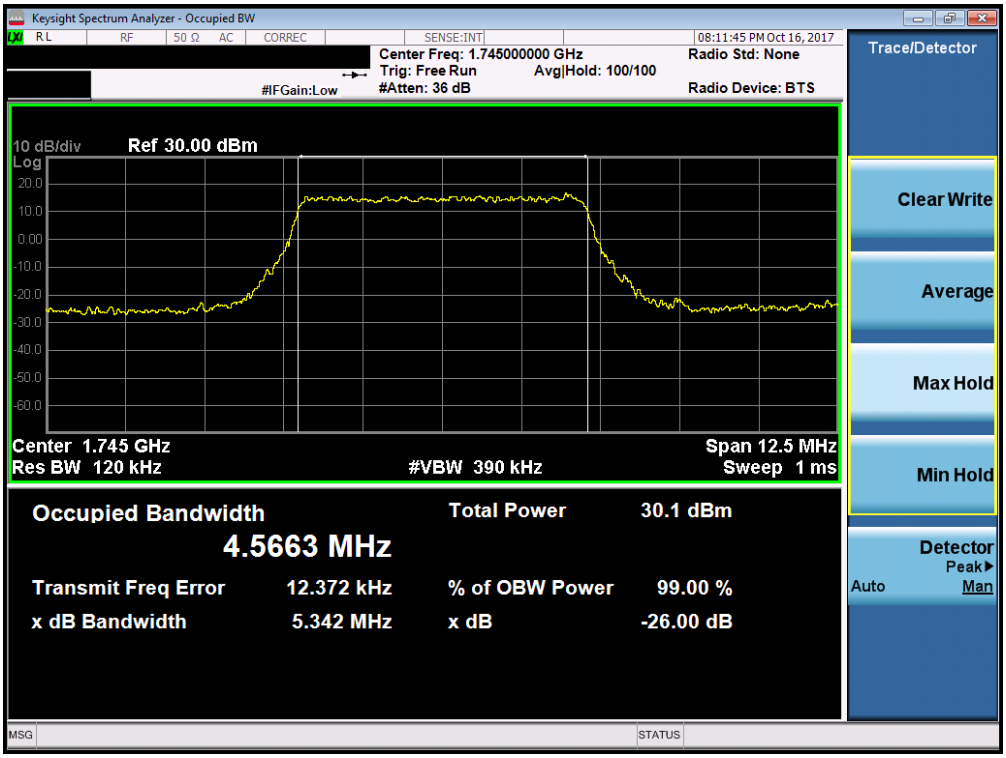


Plot 7-39. Occupied Bandwidth Plot (Band 4/66 - 3.0MHz QPSK - Full RB Configuration)

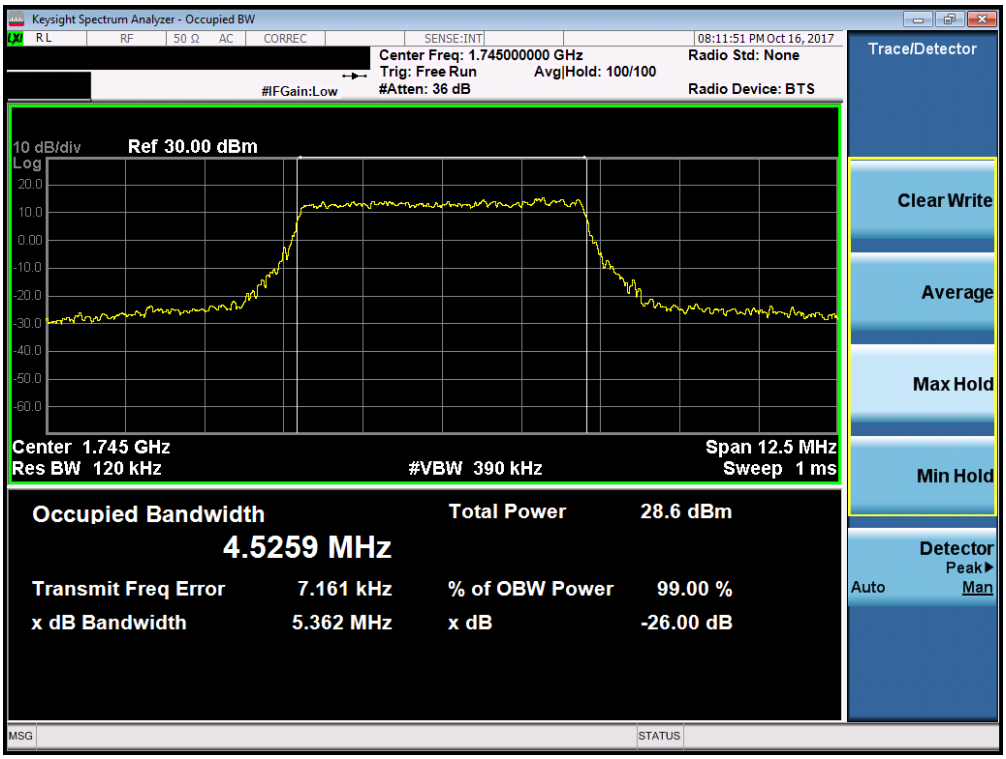


Plot 7-40. Occupied Bandwidth Plot (Band 4/66 - 3.0MHz 16-QAM - Full RB Configuration)

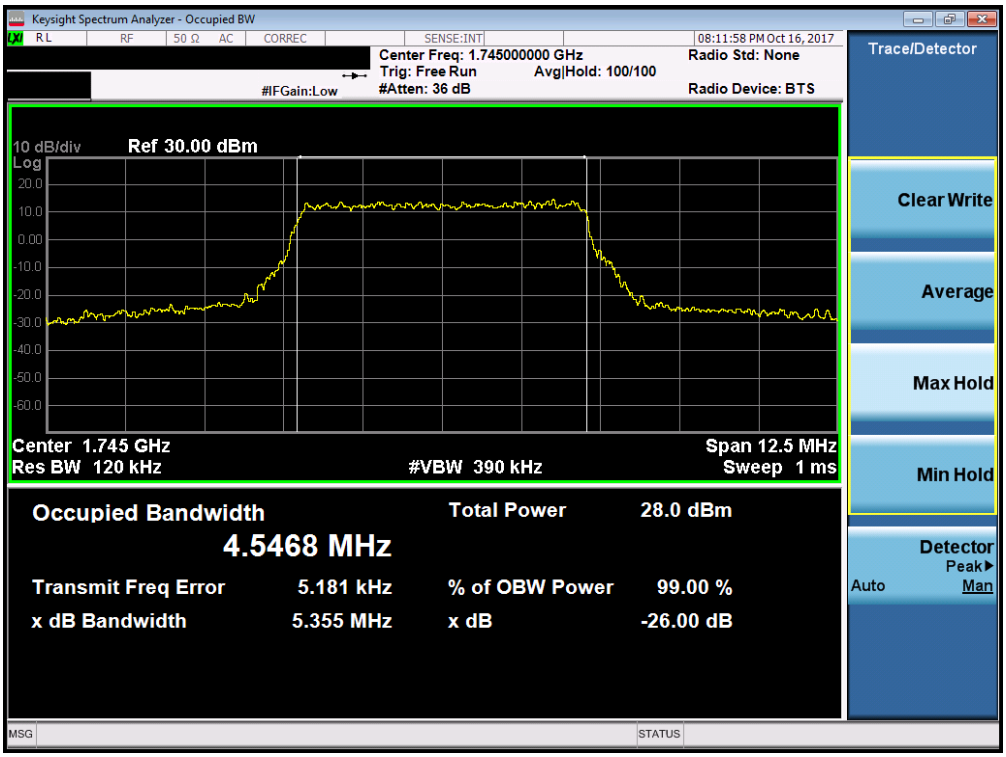
Plot 7-41. Occupied Bandwidth Plot (Band 4/66 - 3.0MHz 64-QAM - Full RB Configuration)



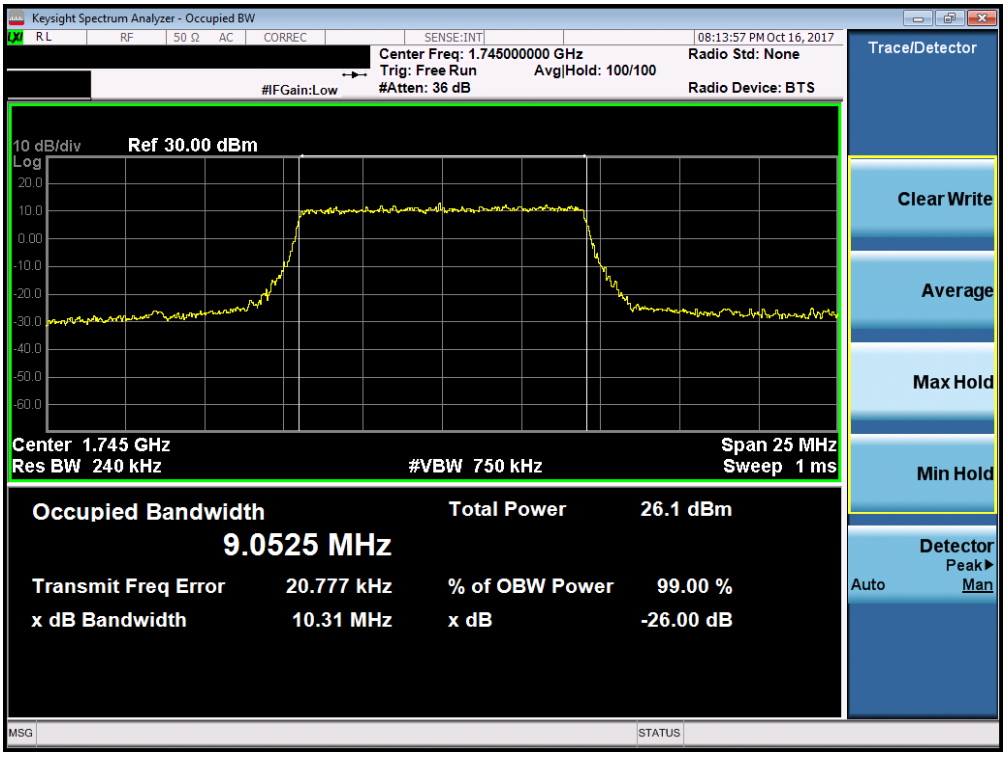
Plot 7-42. Occupied Bandwidth Plot (Band 4/66 - 5.0MHz QPSK - Full RB Configuration)



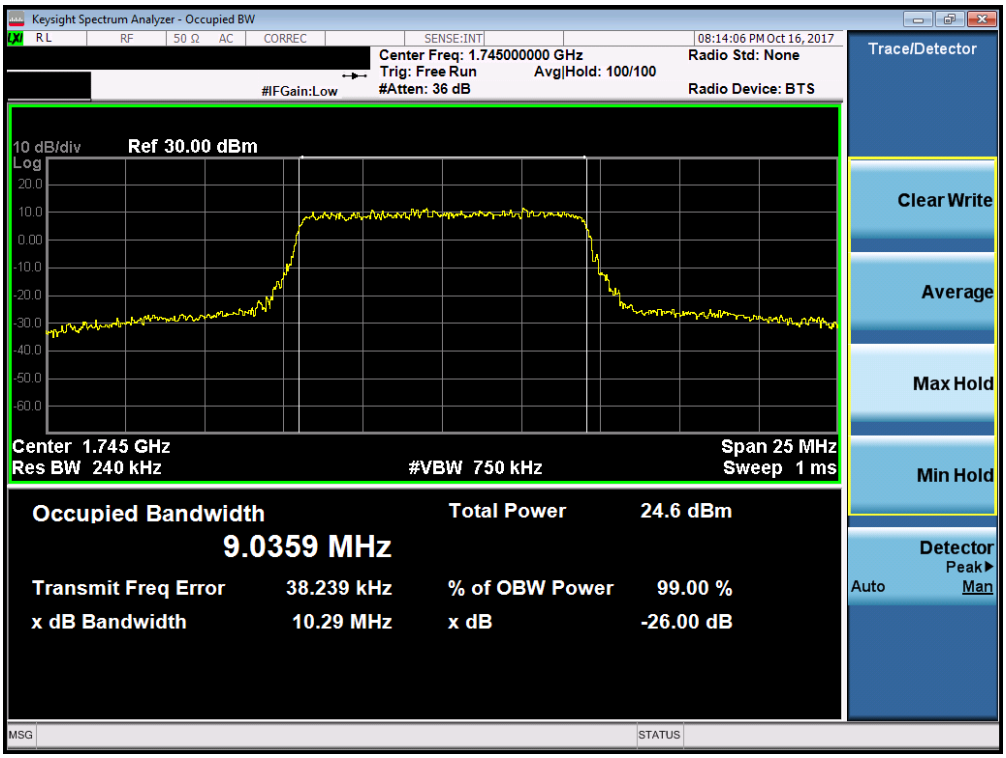
Plot 7-43. Occupied Bandwidth Plot (Band 4/66 - 5.0MHz 16-QAM - Full RB Configuration)



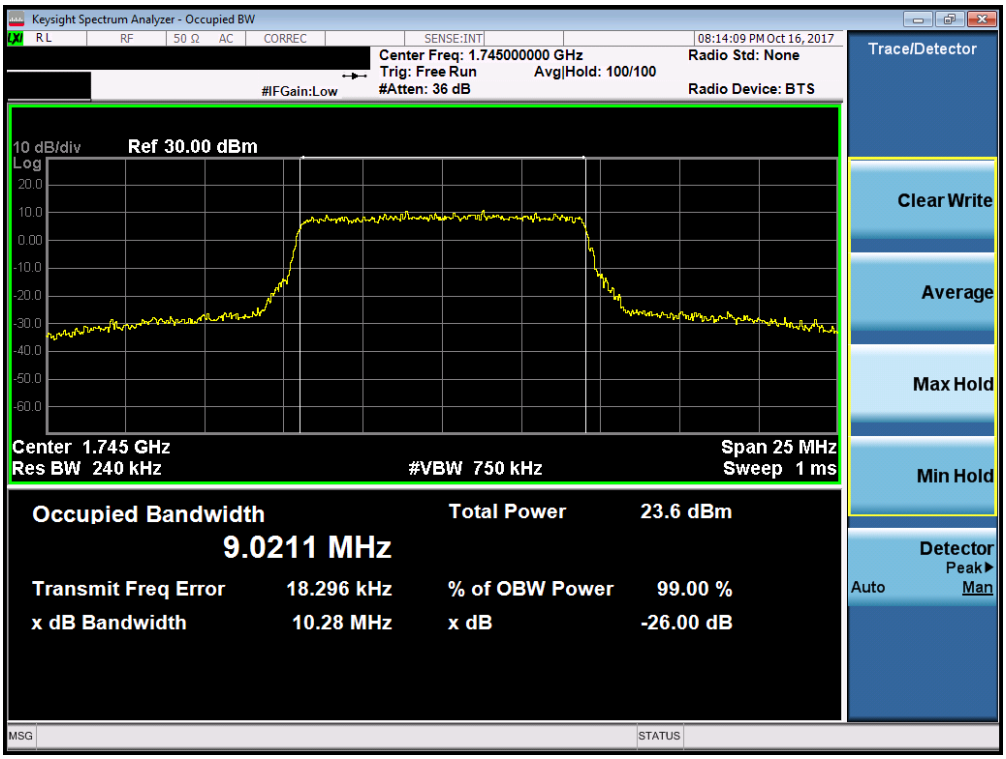
Plot 7-44. Occupied Bandwidth Plot (Band 4/66 - 5.0MHz 64-QAM - Full RB Configuration)



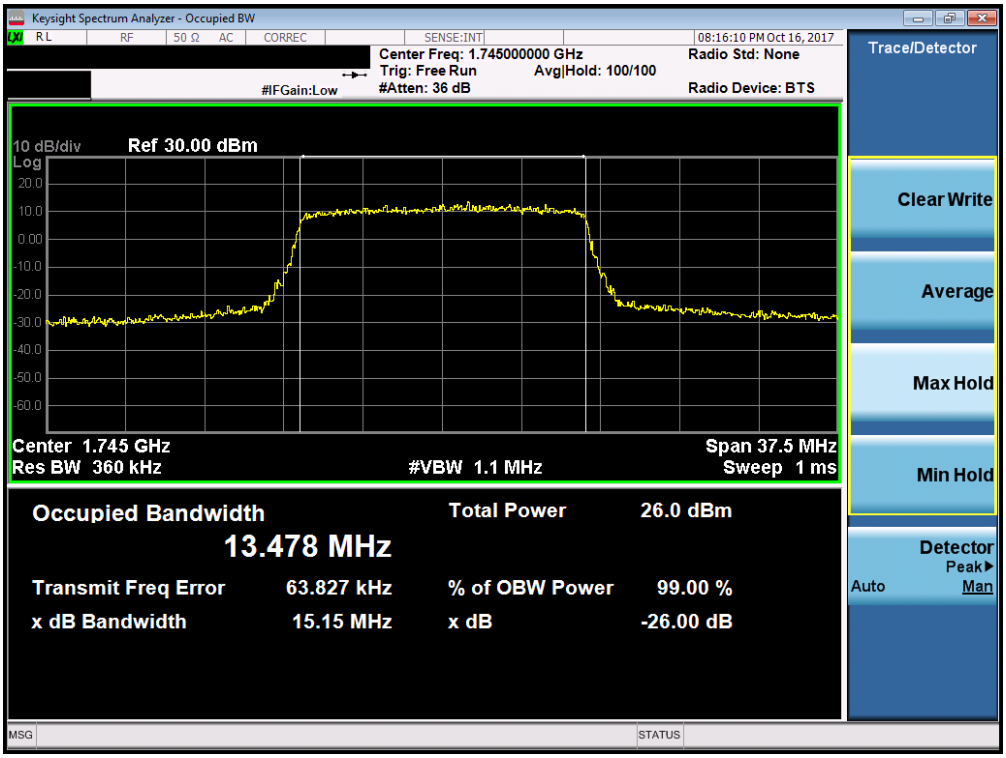
Plot 7-45. Occupied Bandwidth Plot (Band 4/66 - 10.0MHz QPSK - Full RB Configuration)



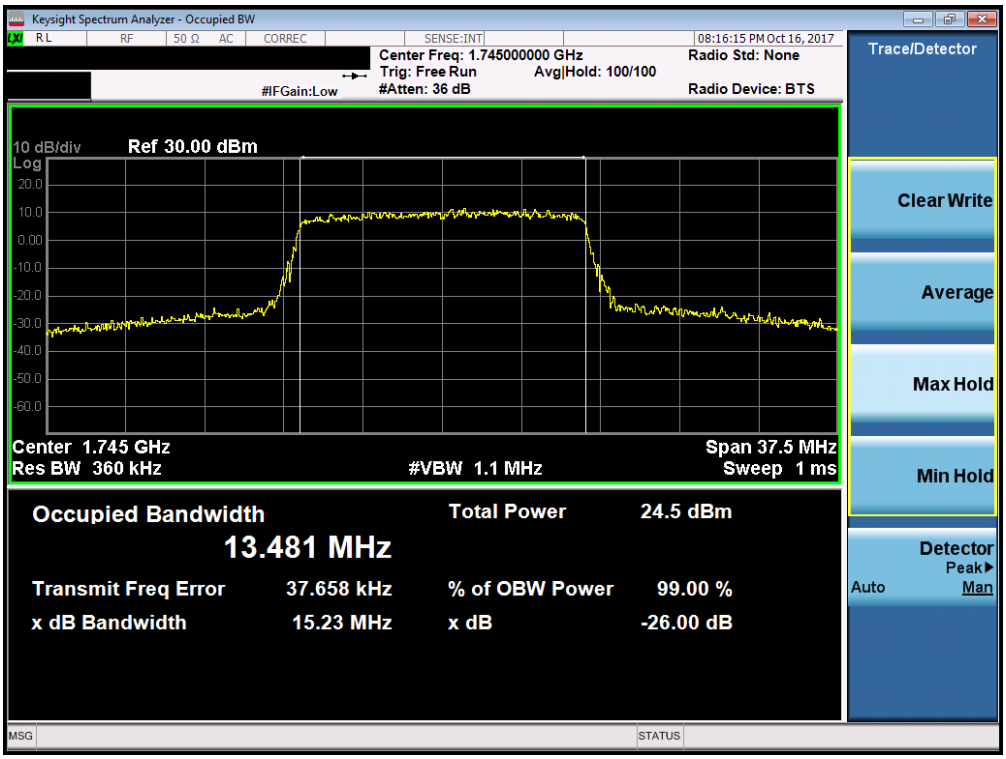
Plot 7-46. Occupied Bandwidth Plot (Band 4/66 - 10.0MHz 16-QAM - Full RB Configuration)



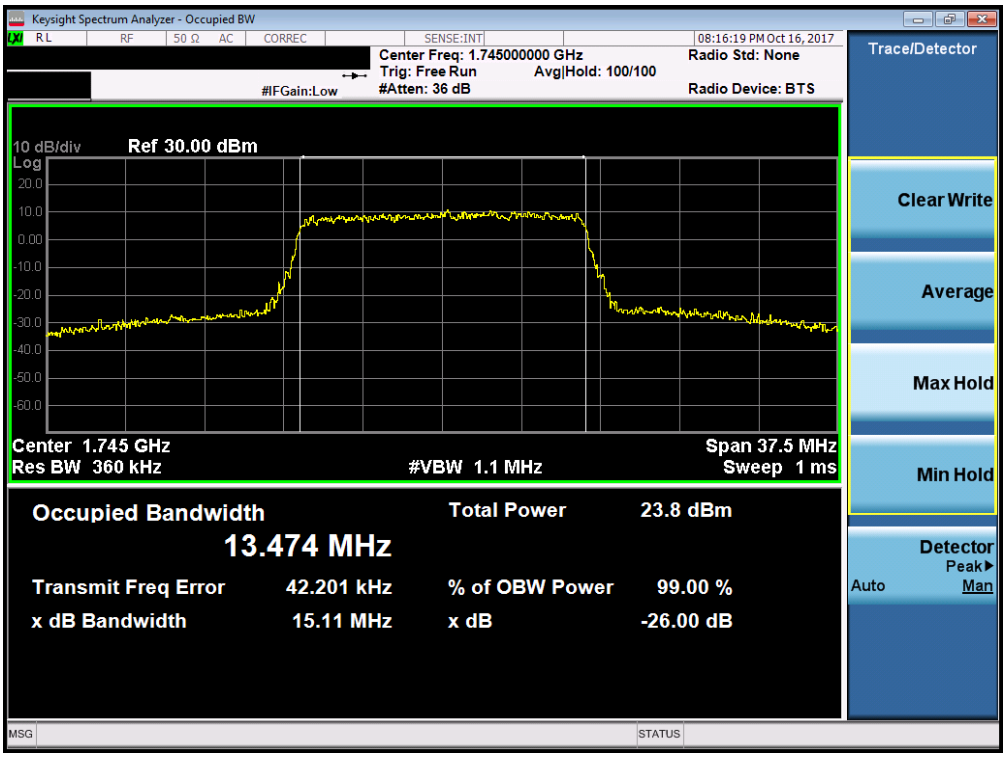
Plot 7-47. Occupied Bandwidth Plot (Band 4/66 - 10.0MHz 64-QAM - Full RB Configuration)



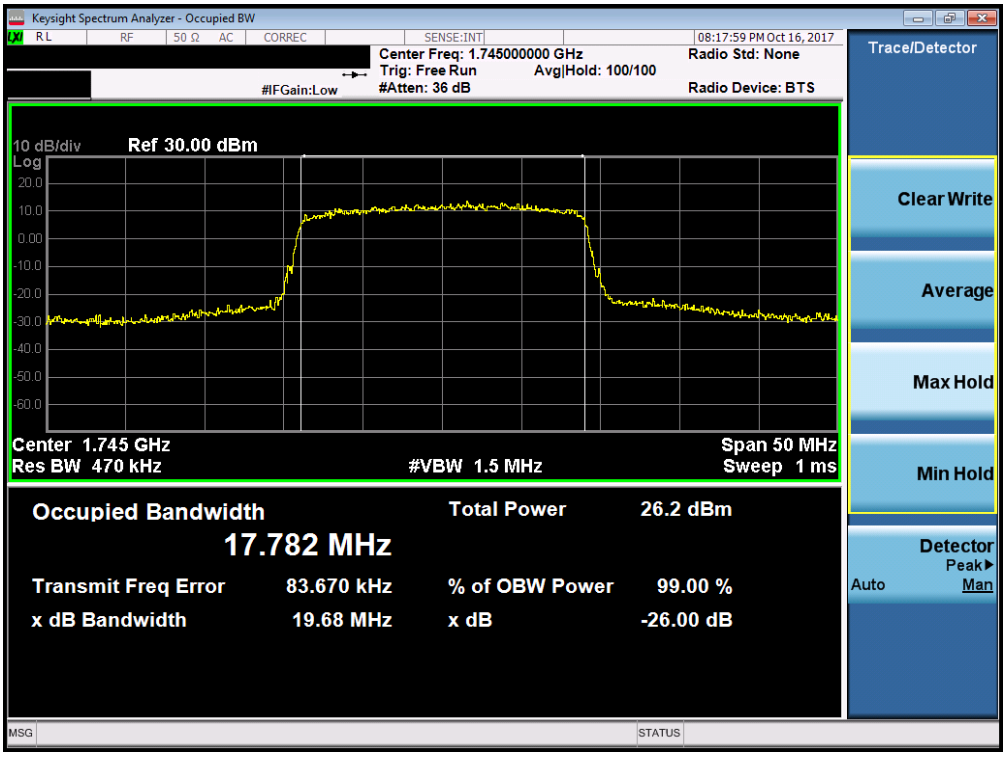
Plot 7-48. Occupied Bandwidth Plot (Band 4/66 - 15.0MHz QPSK - Full RB Configuration)



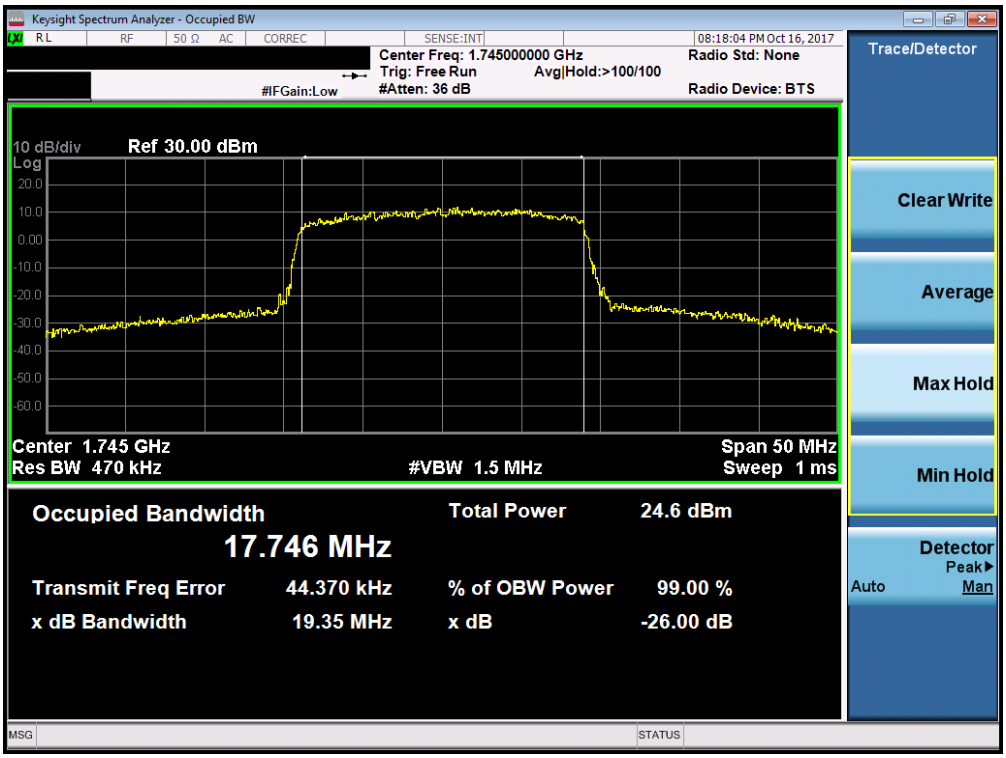
Plot 7-49. Occupied Bandwidth Plot (Band 4/66 - 15.0MHz 16-QAM - Full RB Configuration)



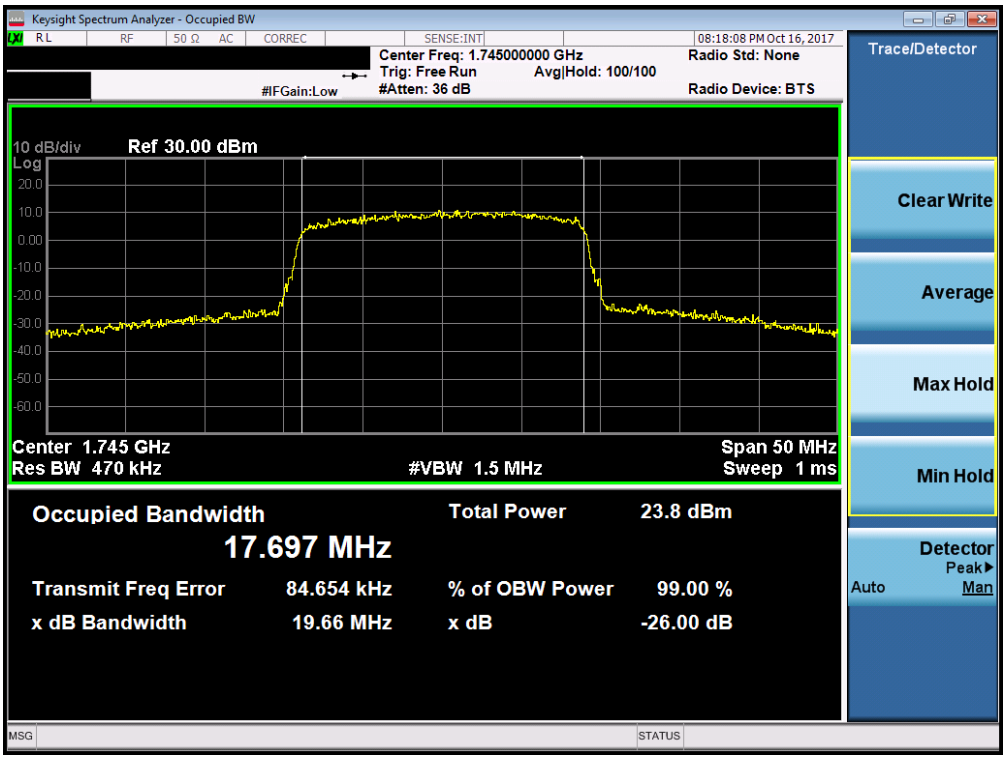
Plot 7-50. Occupied Bandwidth Plot (Band 4/66 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-51. Occupied Bandwidth Plot (Band 4/66 - 20.0MHz QPSK - Full RB Configuration)

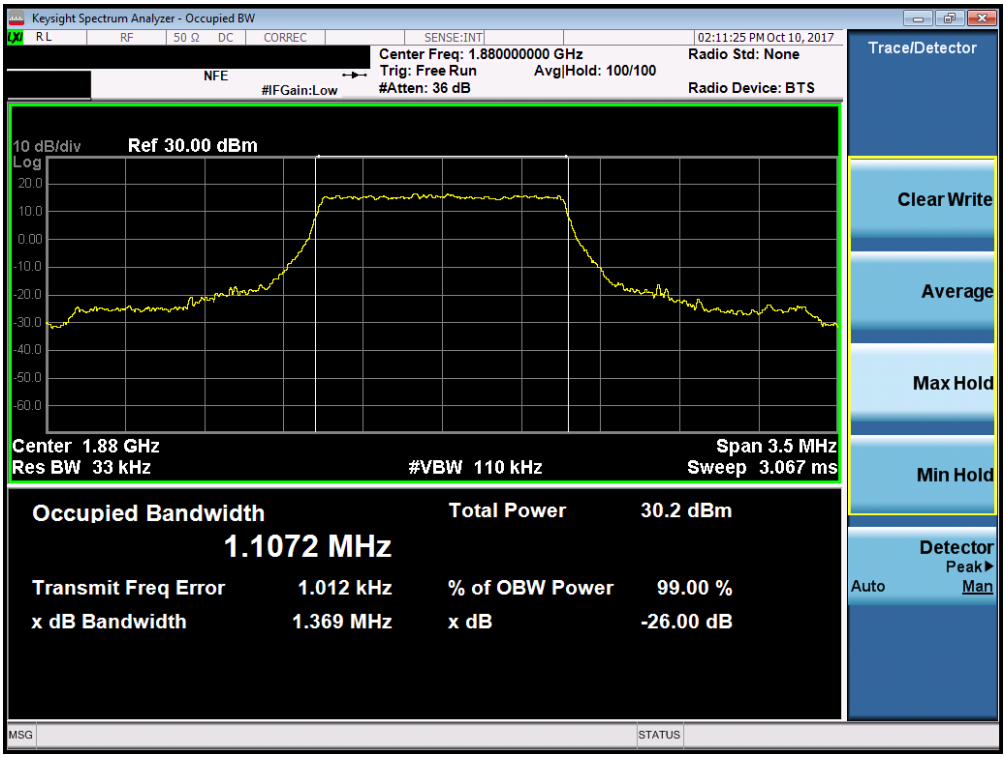


Plot 7-52. Occupied Bandwidth Plot (Band 4/66 - 20.0MHz 16-QAM - Full RB Configuration)

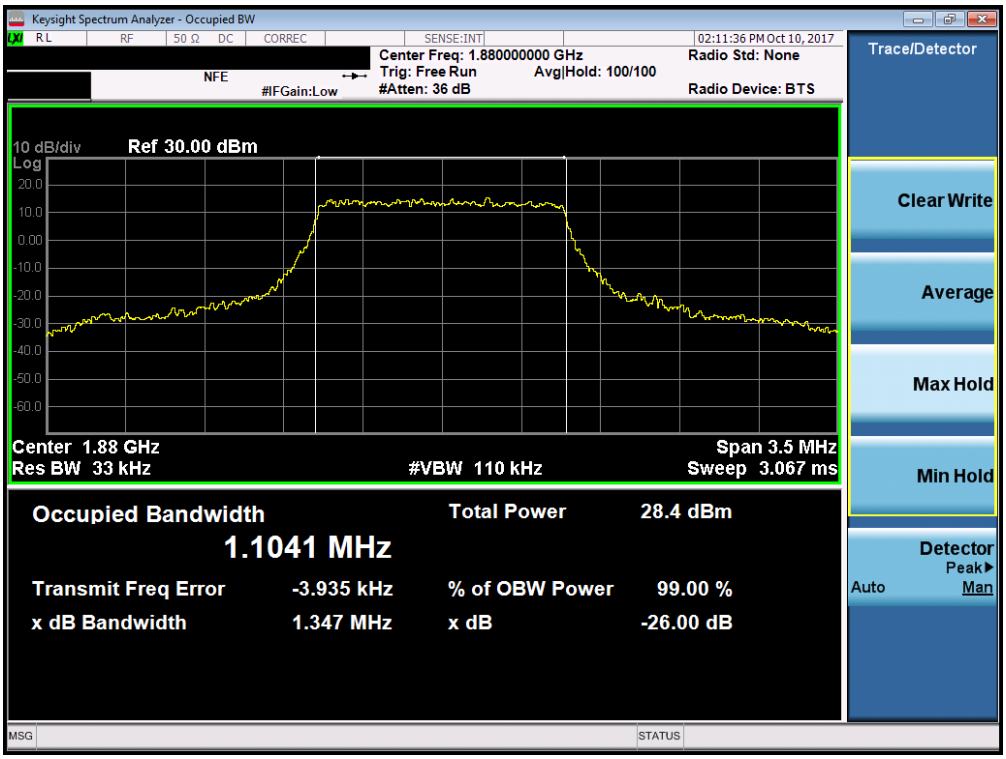


Plot 7-53. Occupied Bandwidth Plot (Band 4/66 - 20.0MHz 64-QAM - Full RB Configuration)

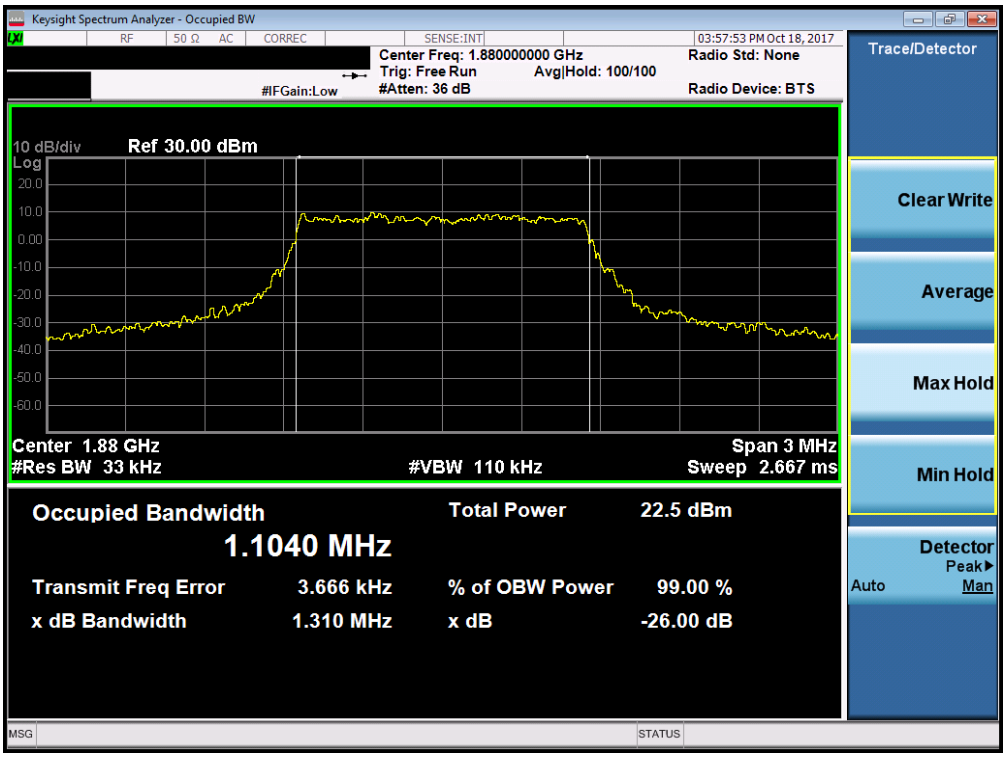
Band 2



Plot 7-54. Occupied Bandwidth Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



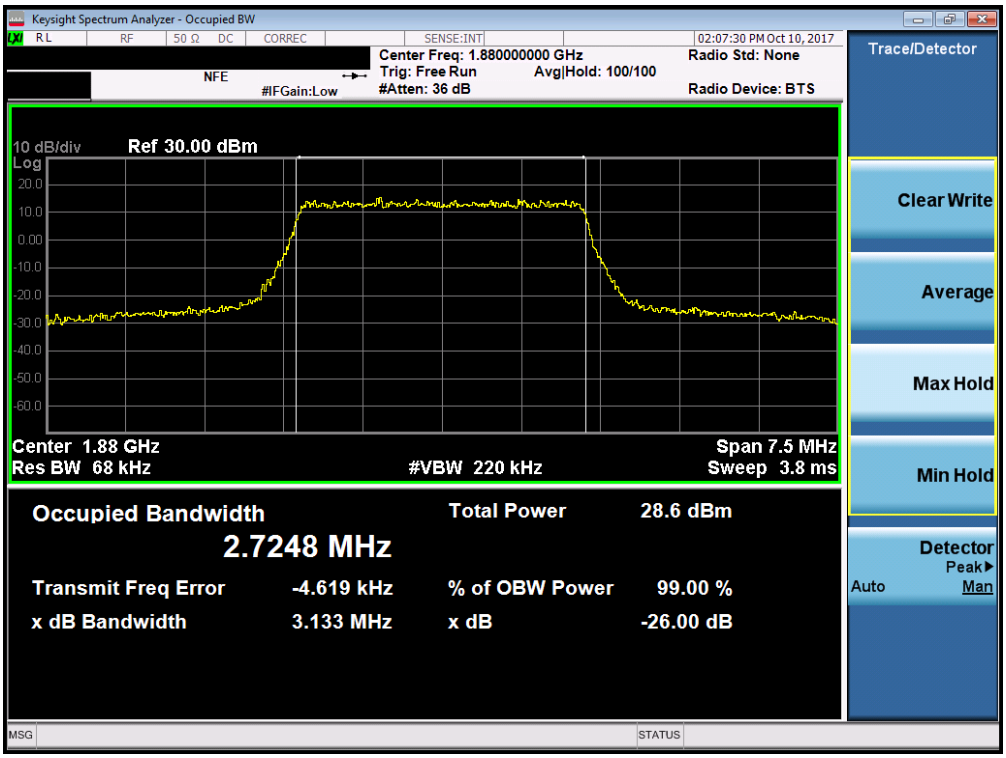
Plot 7-55. Occupied Bandwidth Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)



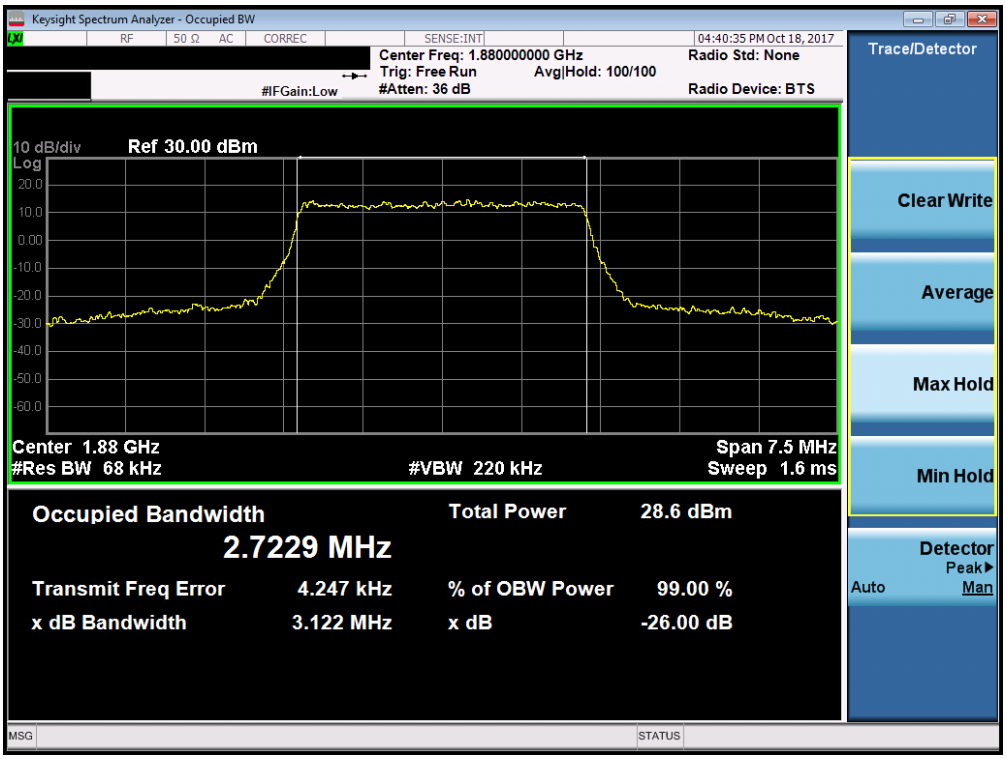
Plot 7-56. Occupied Bandwidth Plot (Band 2 - 1.4MHz 64-QAM - Full RB Configuration)

Band 2

Plot 7-57. Occupied Bandwidth Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

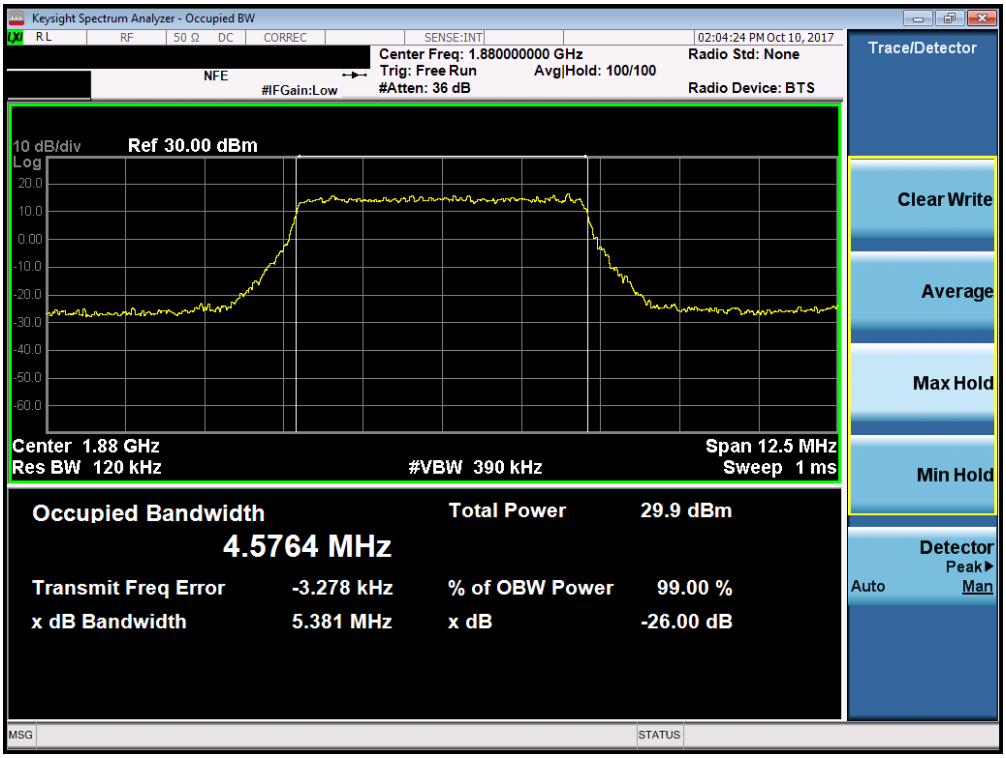


Plot 7-58. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

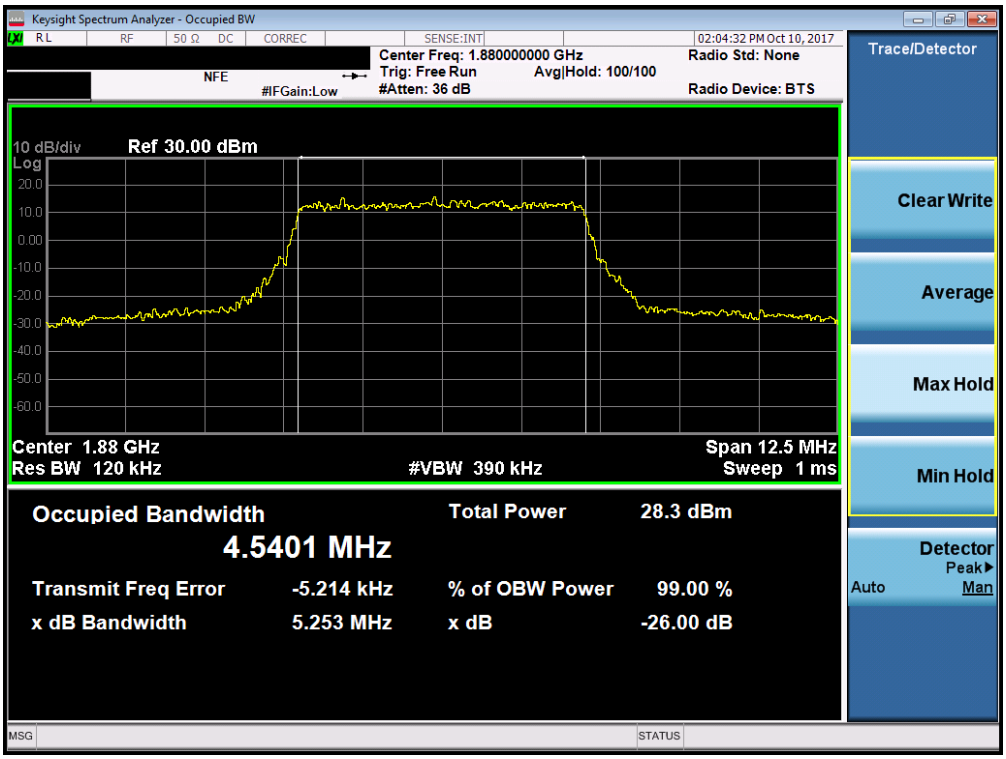


Plot 7-59. Occupied Bandwidth Plot (Band 2 - 3.0MHz 64-QAM - Full RB Configuration)

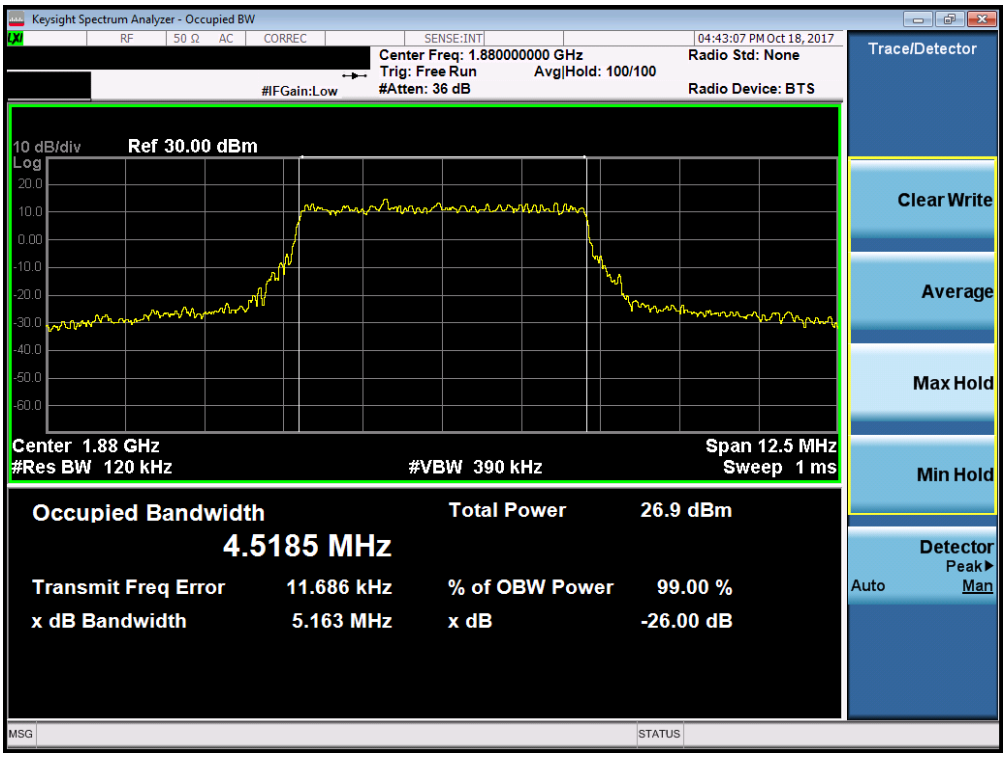
Band 2



Plot 7-60. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



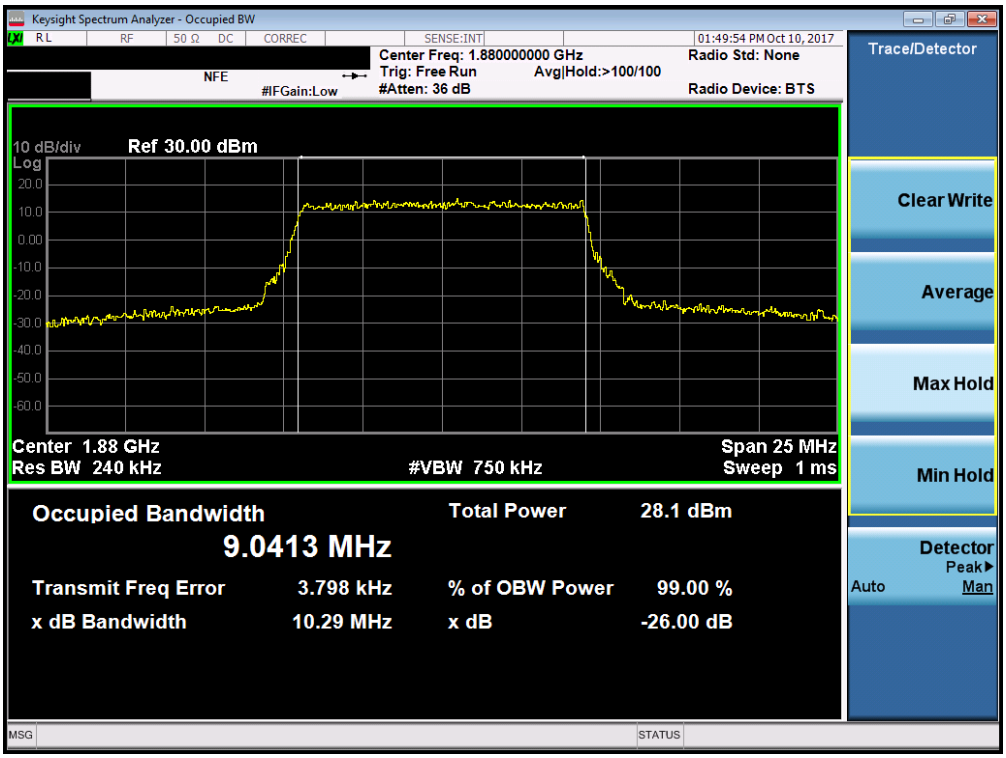
Plot 7-61. Occupied Bandwidth Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)



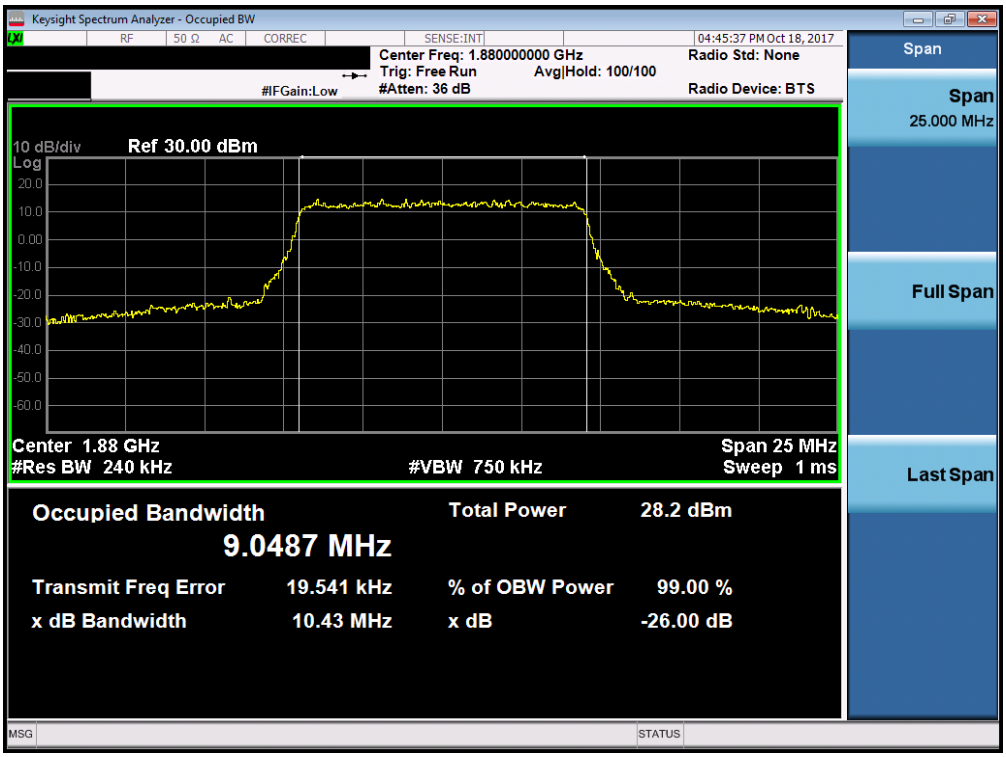
Plot 7-62. Occupied Bandwidth Plot (Band 2 - 5.0MHz 64-QAM - Full RB Configuration)

Band 2

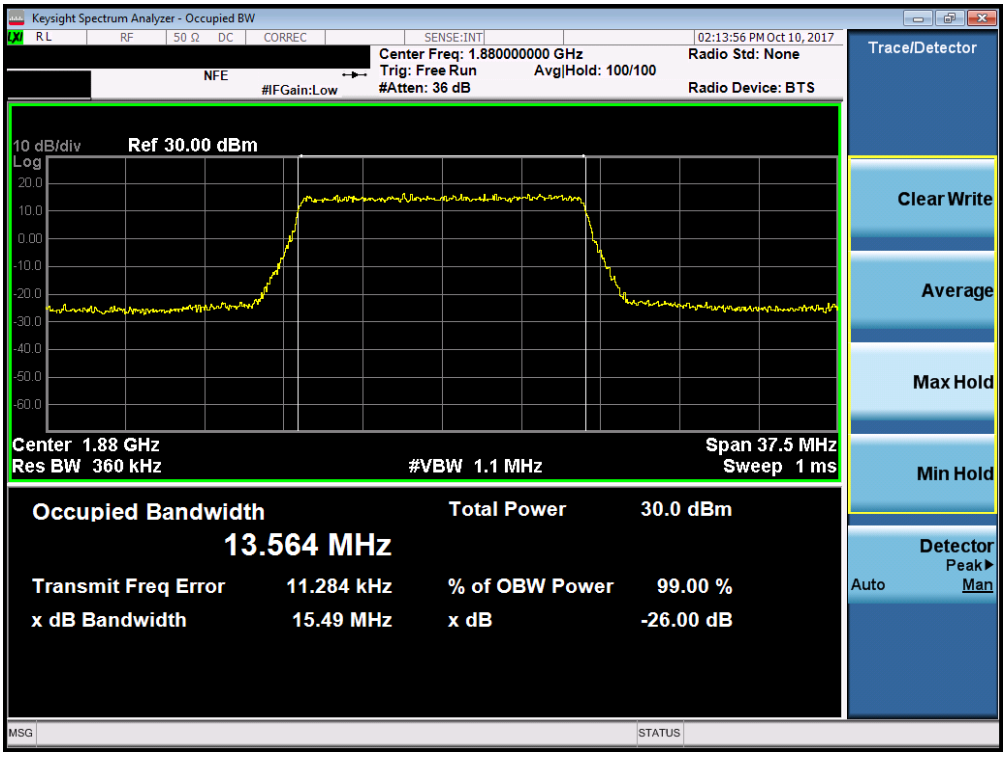
Plot 7-63. Occupied Bandwidth Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



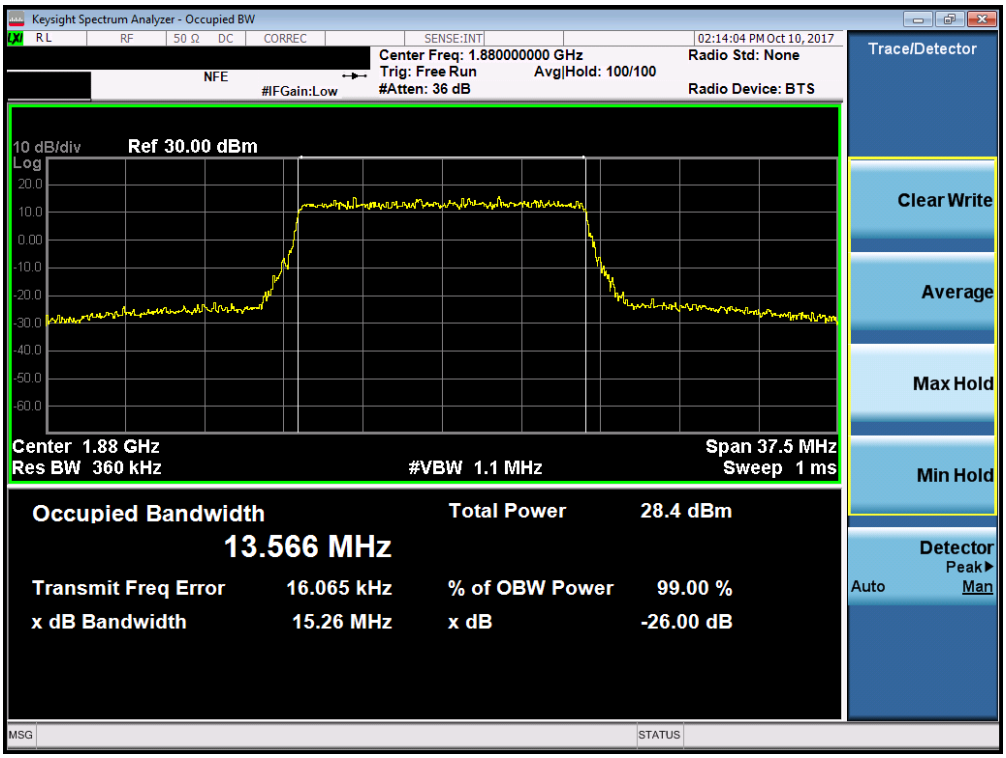
Plot 7-64. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)



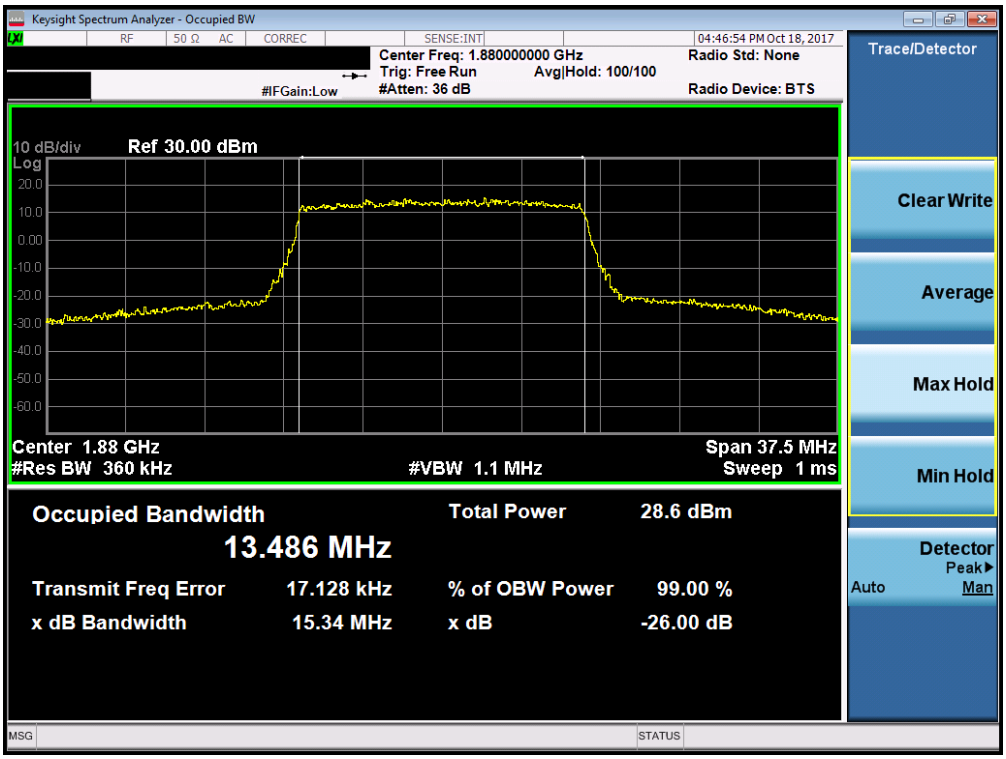
Plot 7-65. Occupied Bandwidth Plot (Band 2 - 10.0MHz 64-QAM - Full RB Configuration)



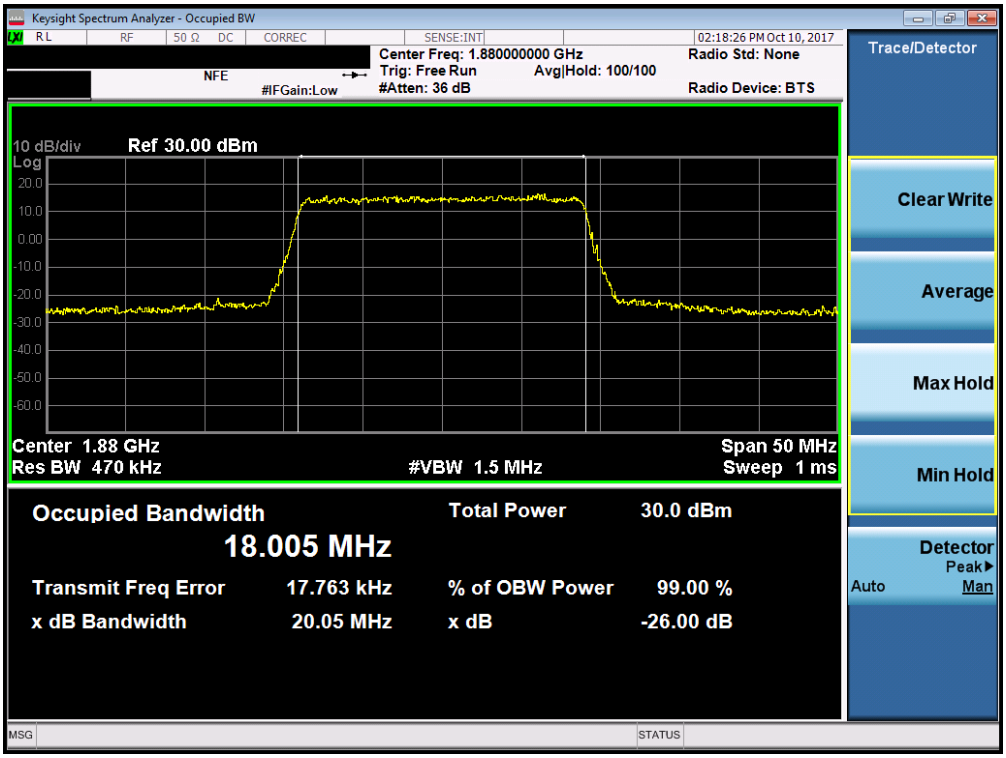
Plot 7-66. Occupied Bandwidth Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



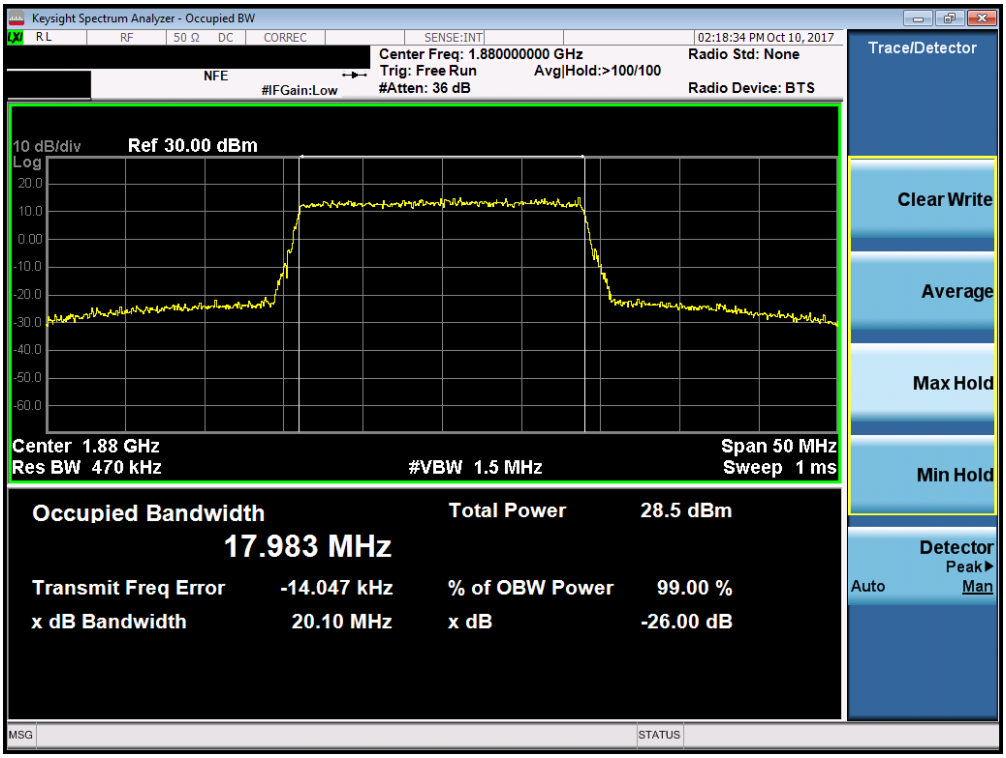
Plot 7-67. Occupied Bandwidth Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)



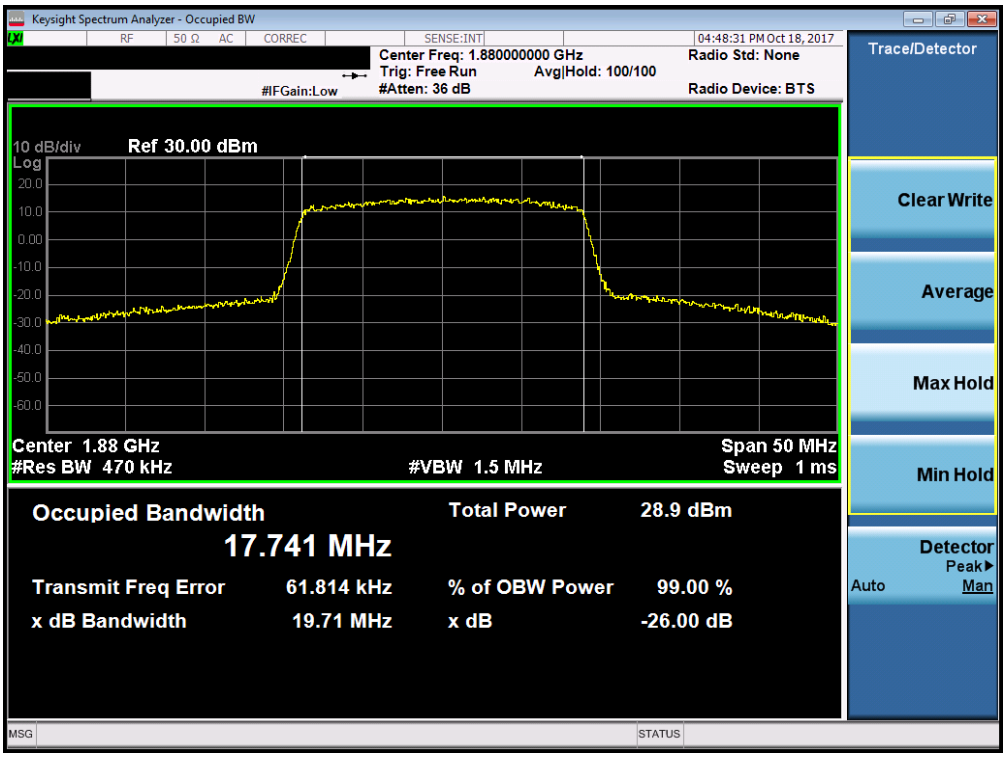
Plot 7-68. Occupied Bandwidth Plot (Band 2 - 15.0MHz 64-QAM - Full RB Configuration)



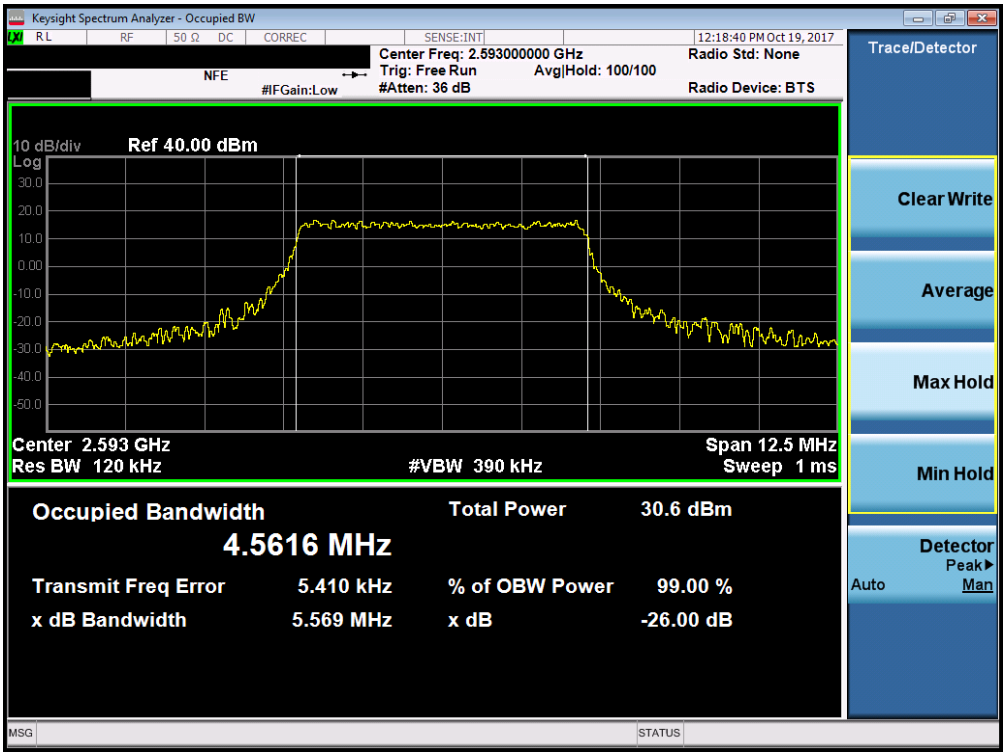
Plot 7-69. Occupied Bandwidth Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-70. Occupied Bandwidth Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

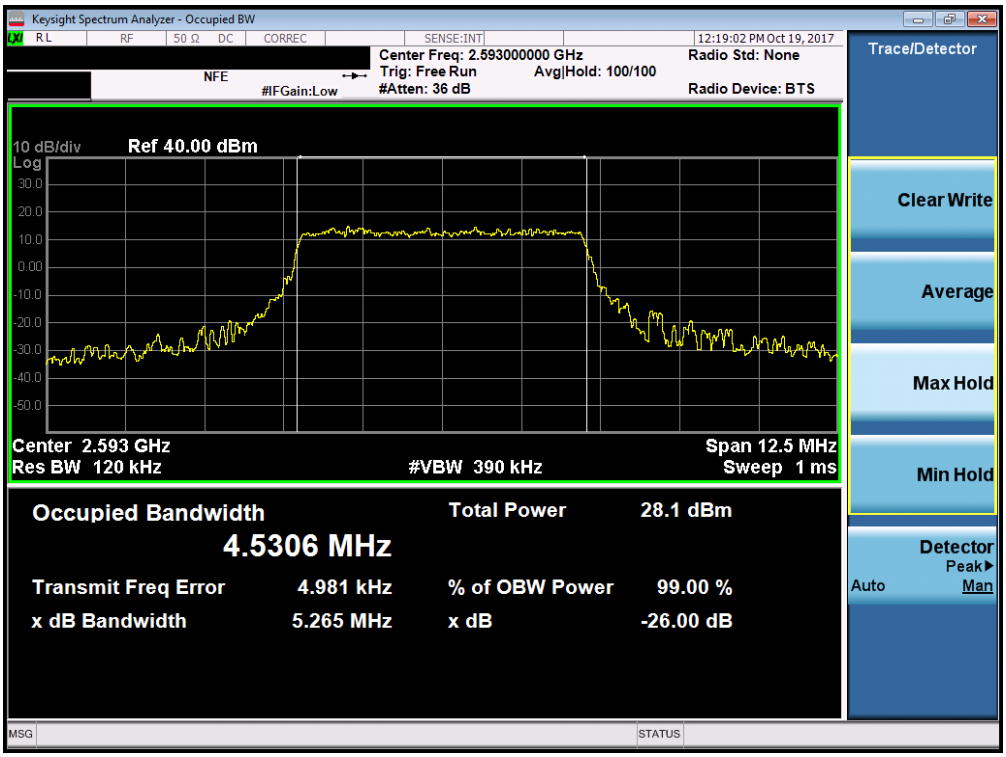


Plot 7-71. Occupied Bandwidth Plot (Band 2 - 20.0MHz 64-QAM - Full RB Configuration)



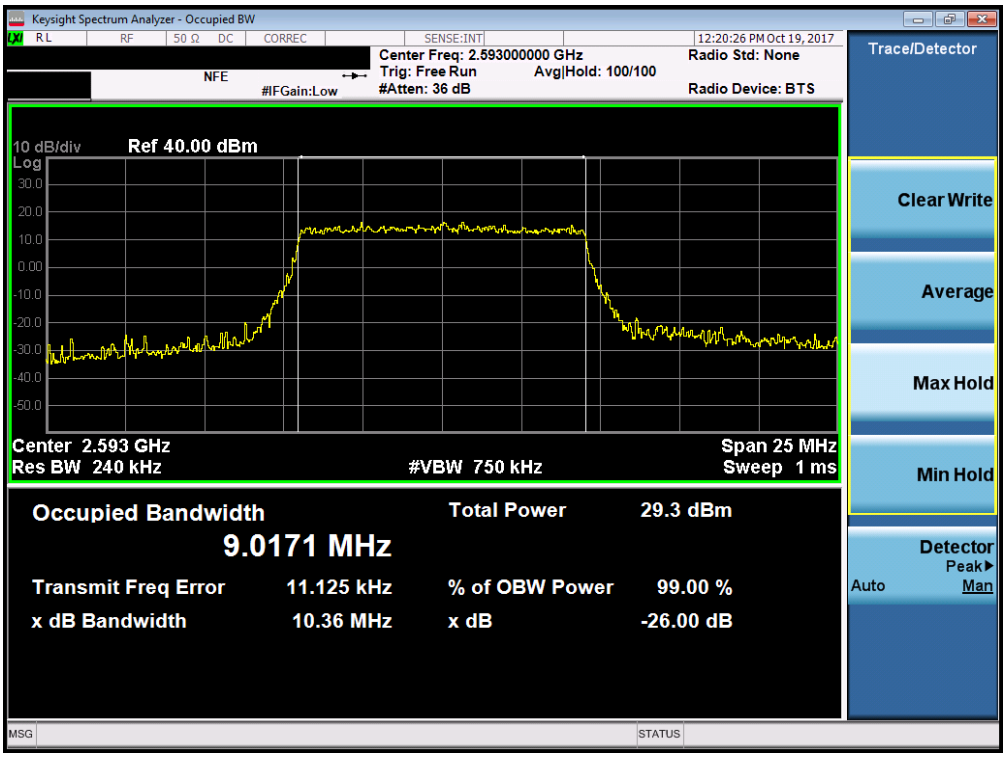
Plot 7-72. Occupied Bandwidth Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

Plot 7-73. Occupied Bandwidth Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

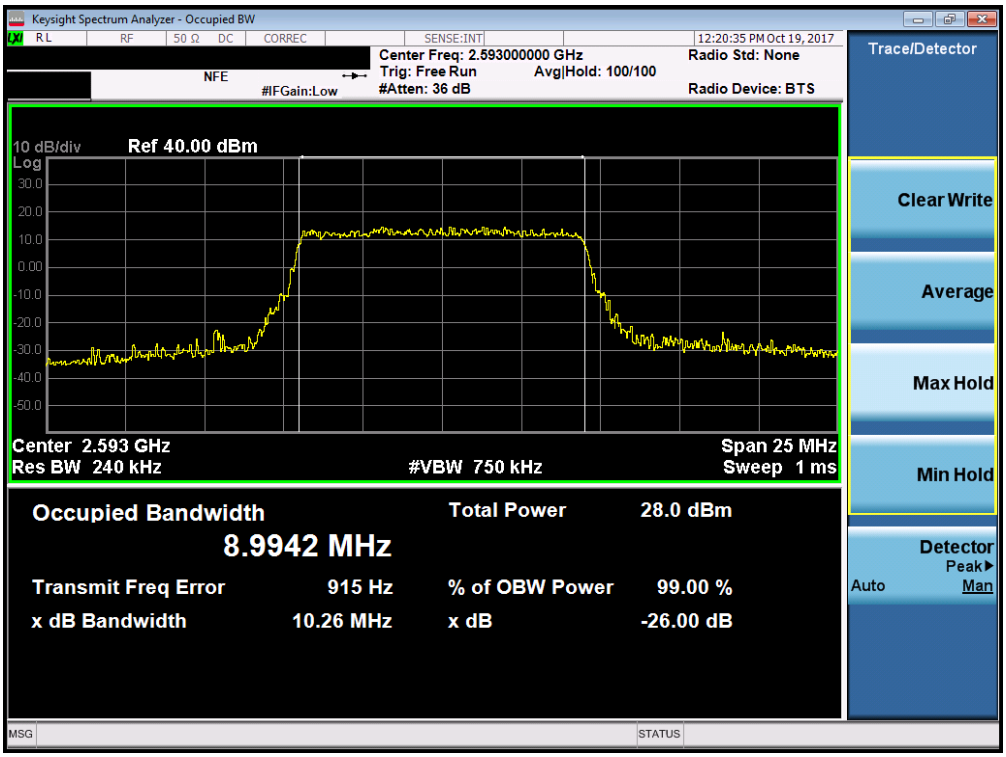


Plot 7-74. Occupied Bandwidth Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)

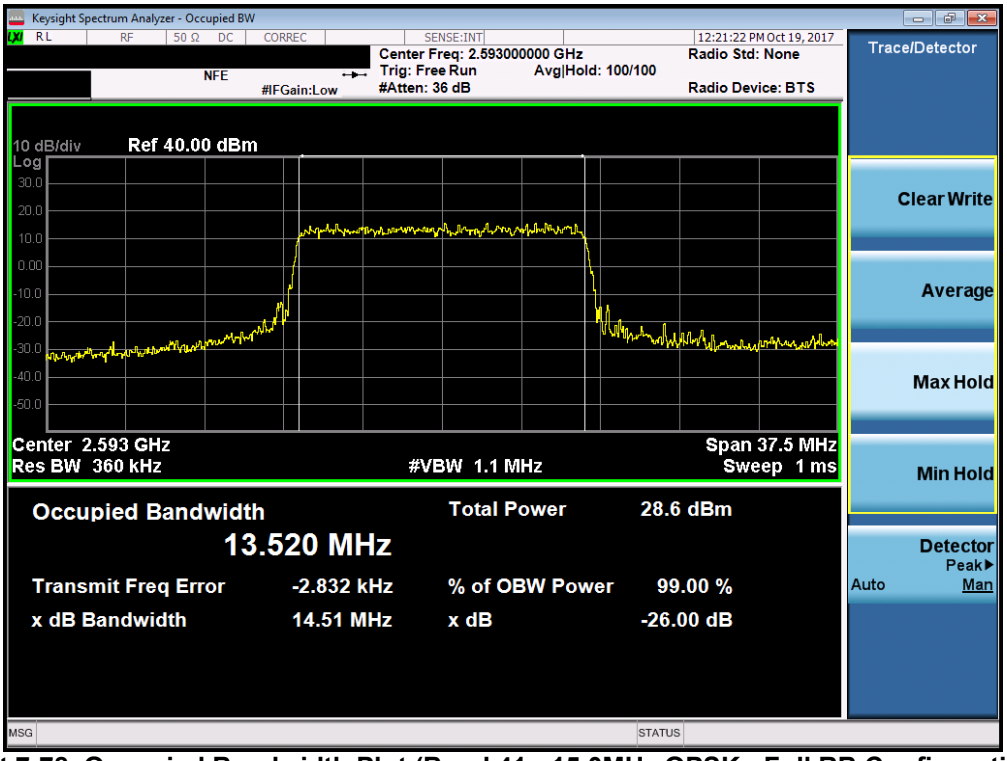
Plot 7-75. Occupied Bandwidth Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)



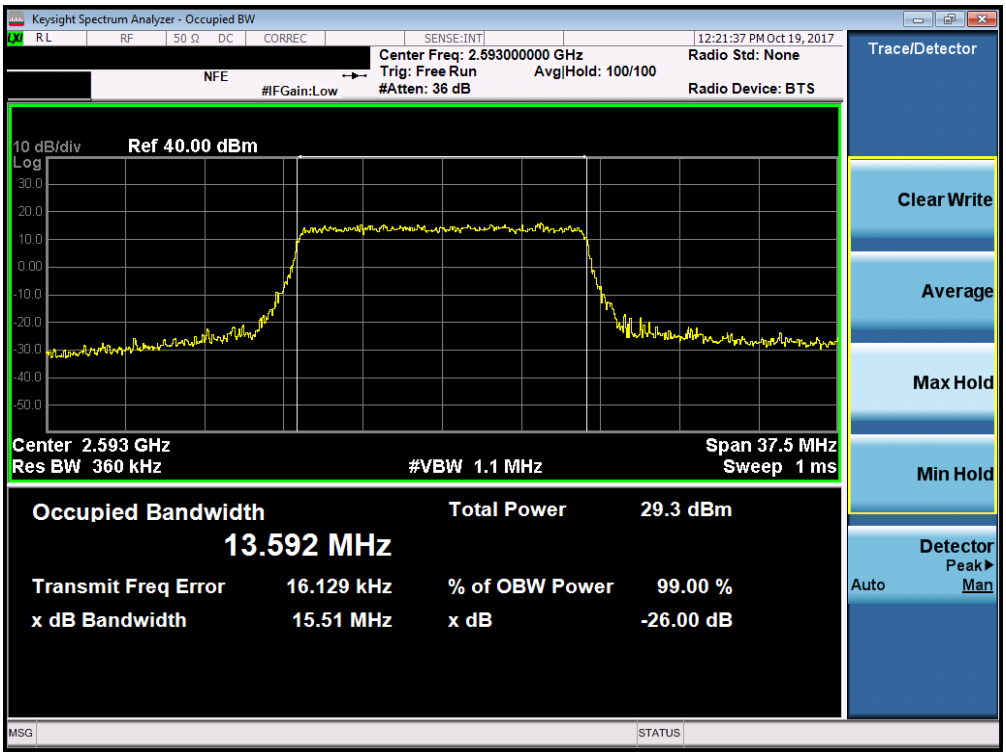
Plot 7-76. Occupied Bandwidth Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)



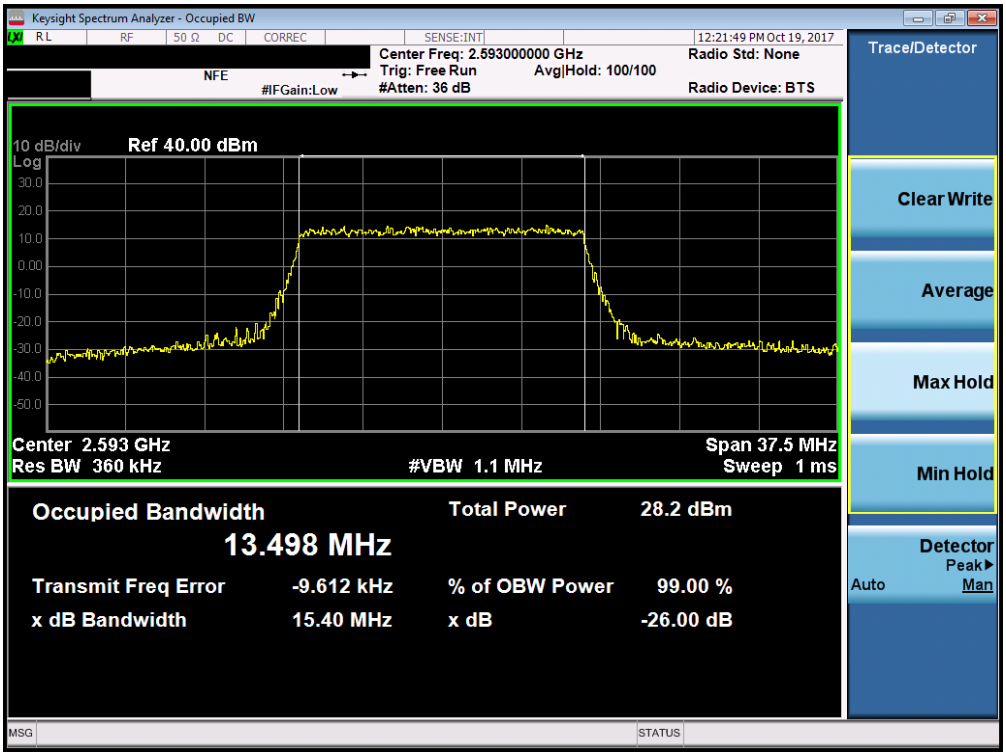
Plot 7-77. Occupied Bandwidth Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)



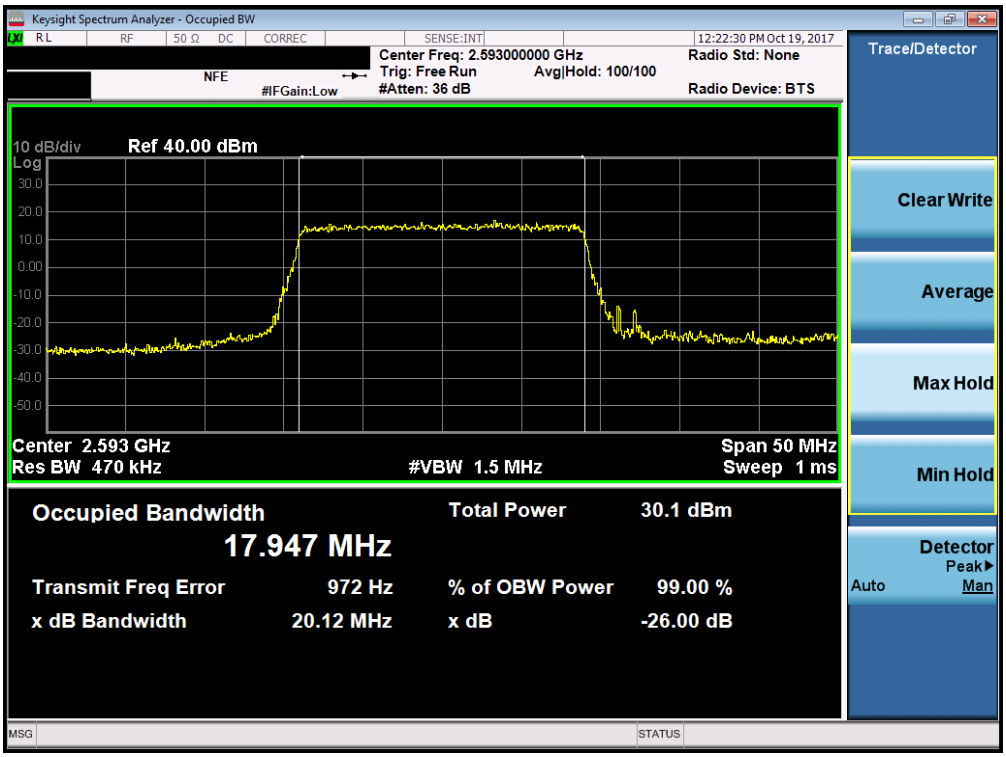
Plot 7-78. Occupied Bandwidth Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



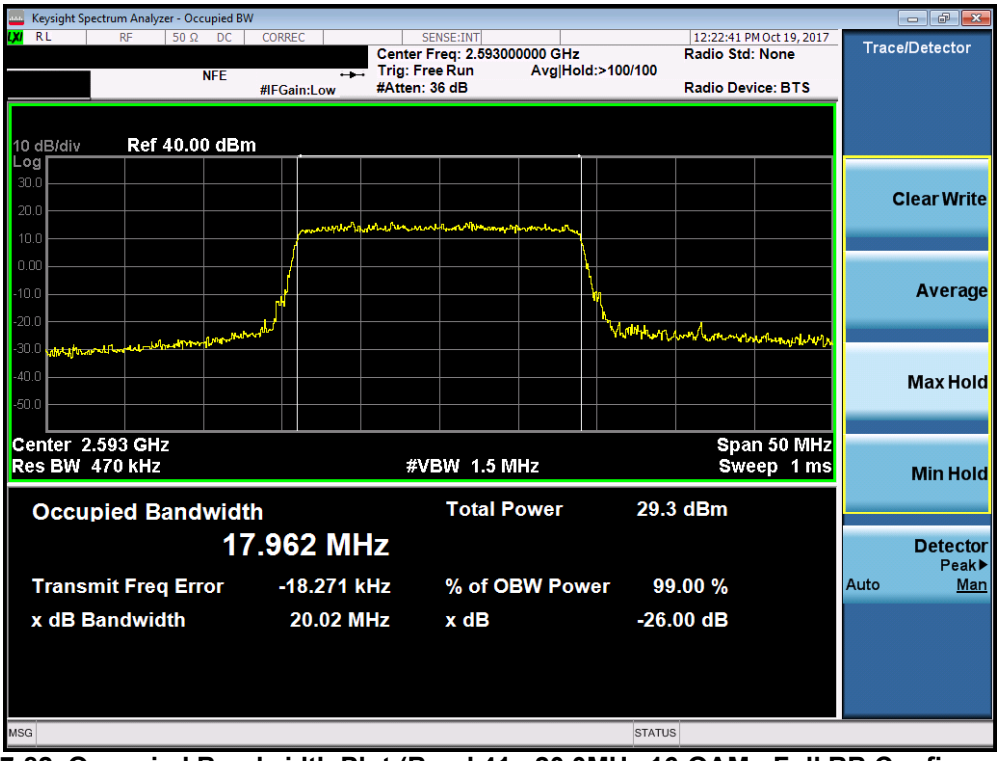
Plot 7-79. Occupied Bandwidth Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)



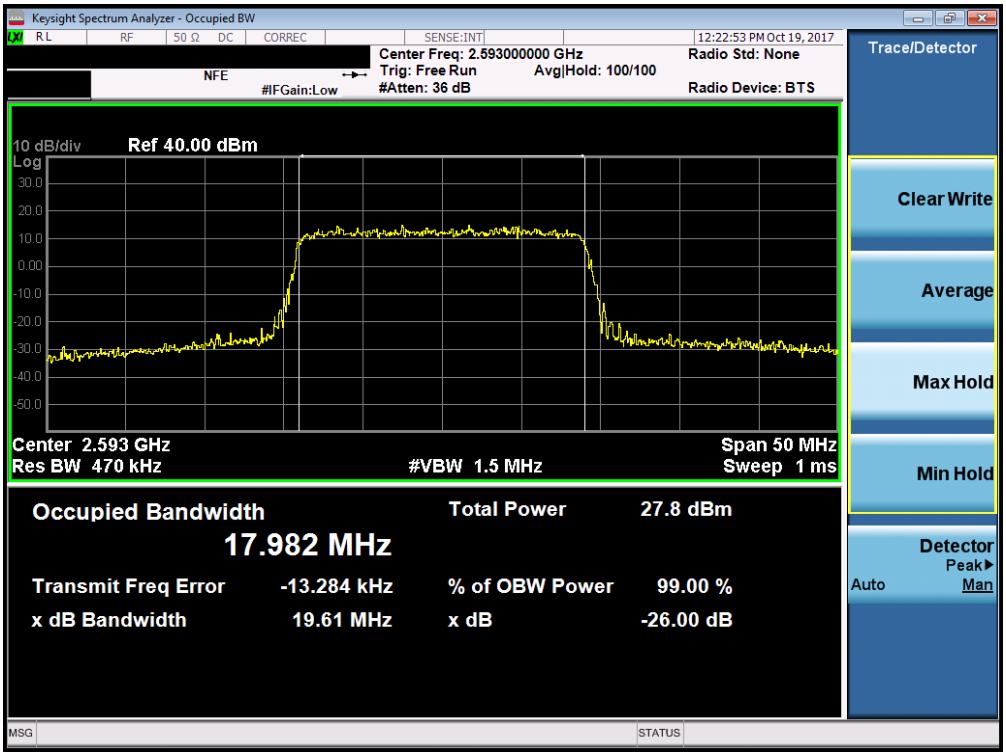
Plot 7-80. Occupied Bandwidth Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-81. Occupied Bandwidth Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-82. Occupied Bandwidth Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-83. Occupied Bandwidth Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)

7.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051 §22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h) RSS-130(4.6) RSS-132(5.5) 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 + $\log_{10}(P_{[Watts]})$, 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.

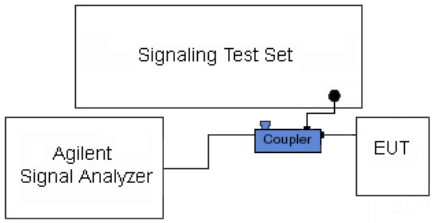
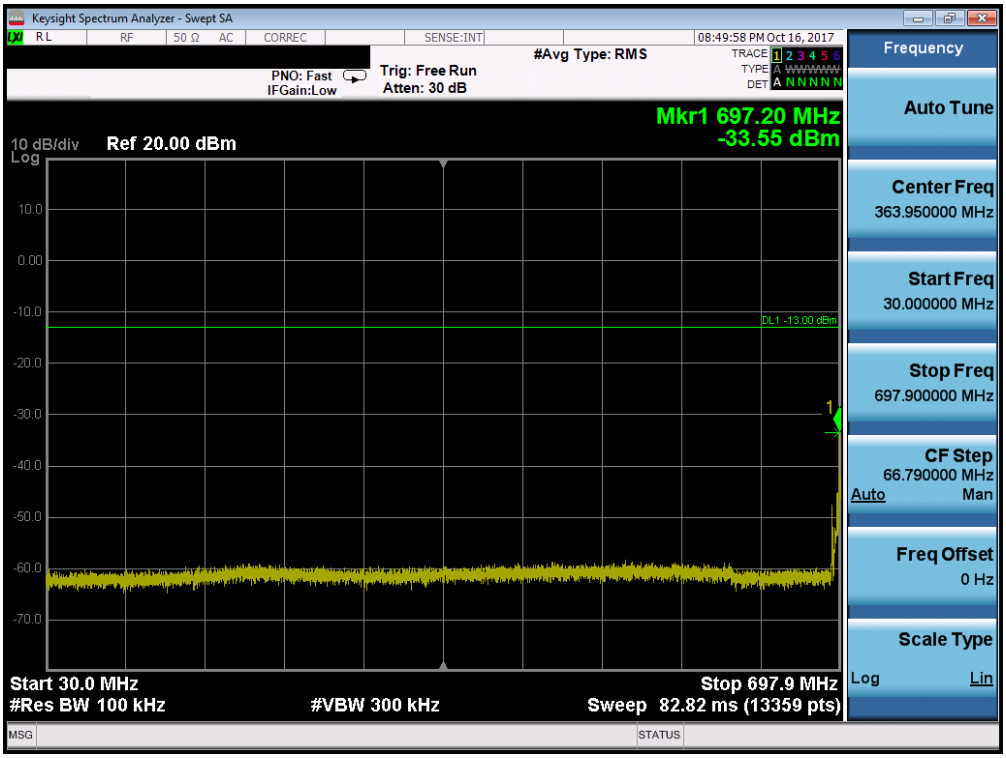


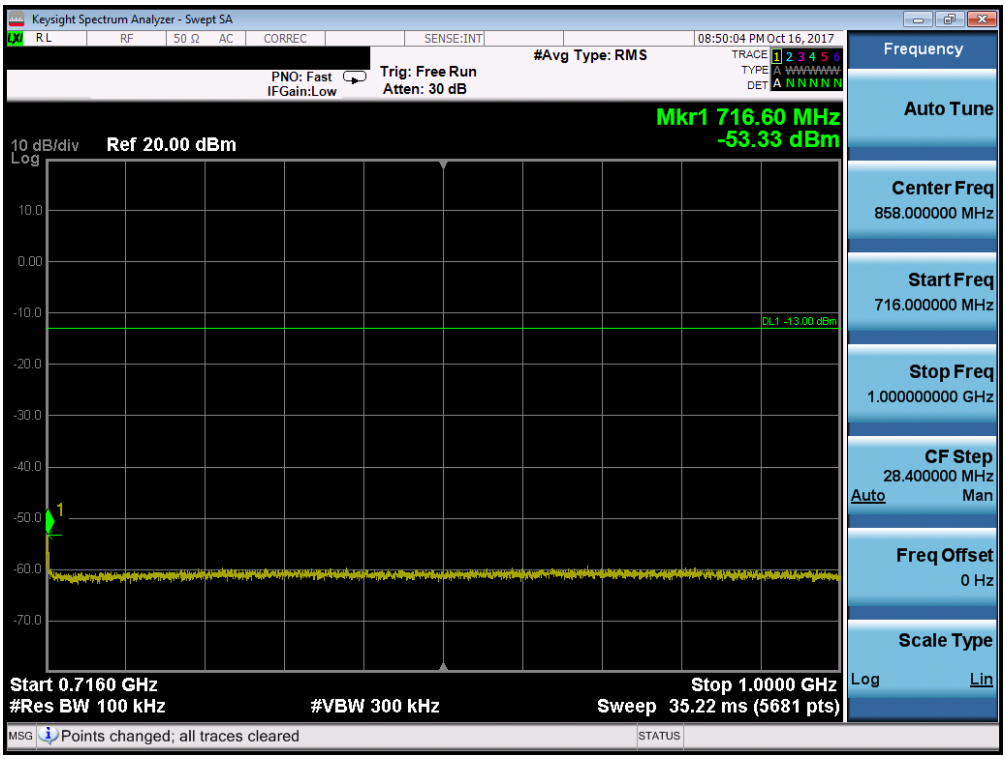
Figure 7-2. Test Instrument & Measurement Setup

Test Notes

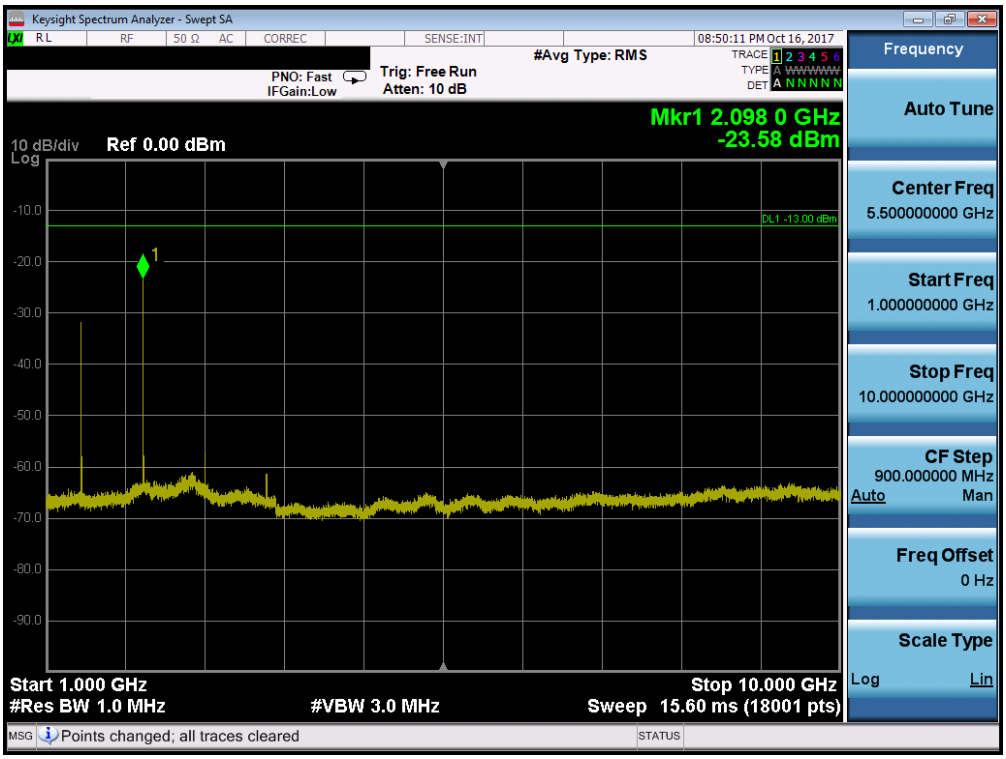
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the 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.



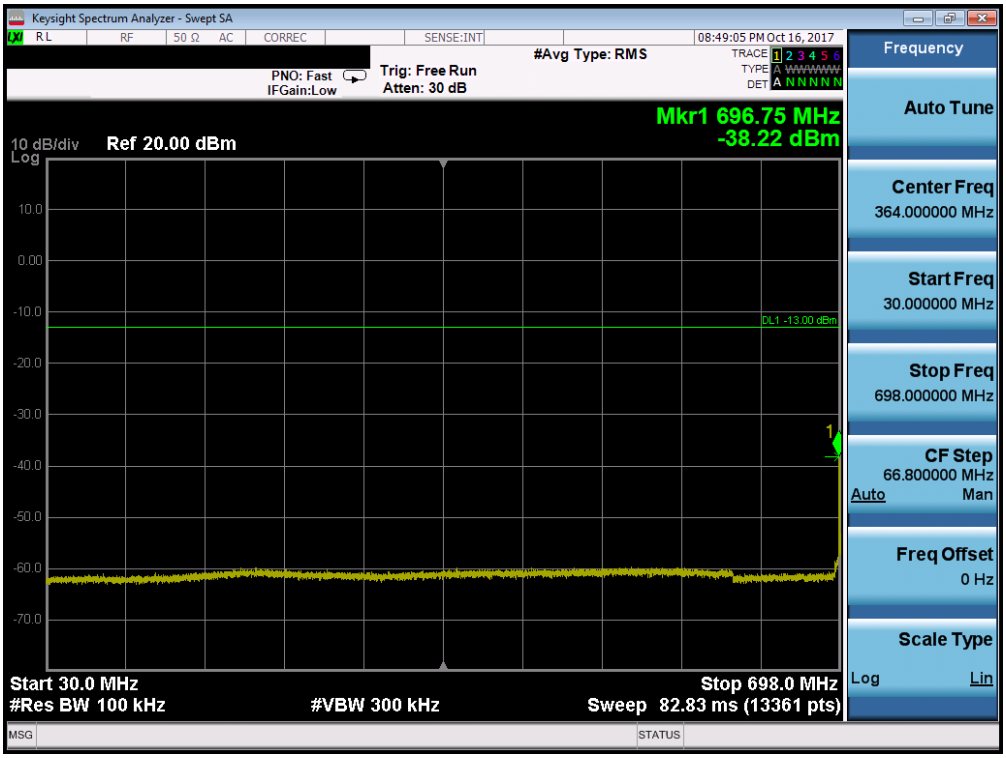
Plot 7-84. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



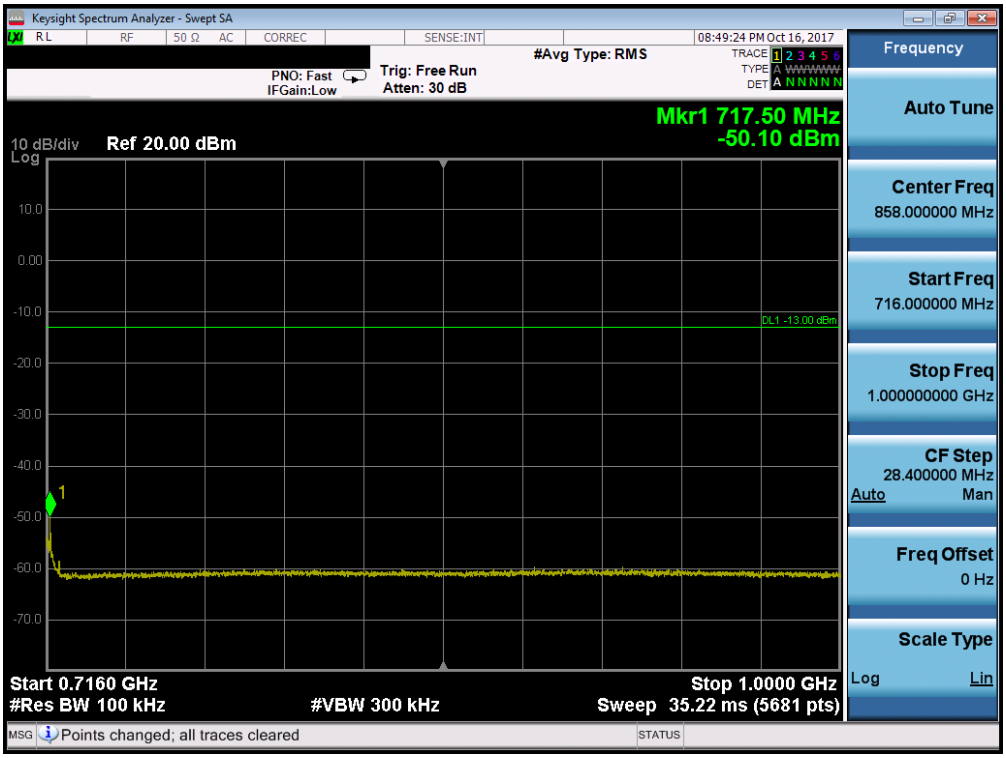
Plot 7-85. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



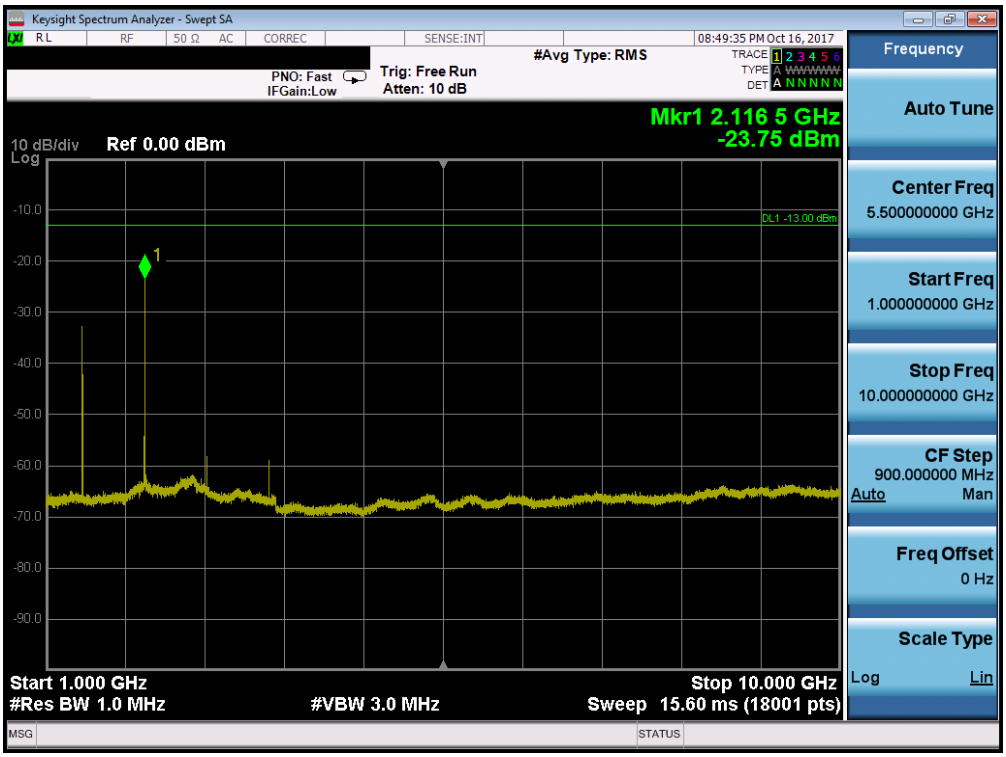
Plot 7-86. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



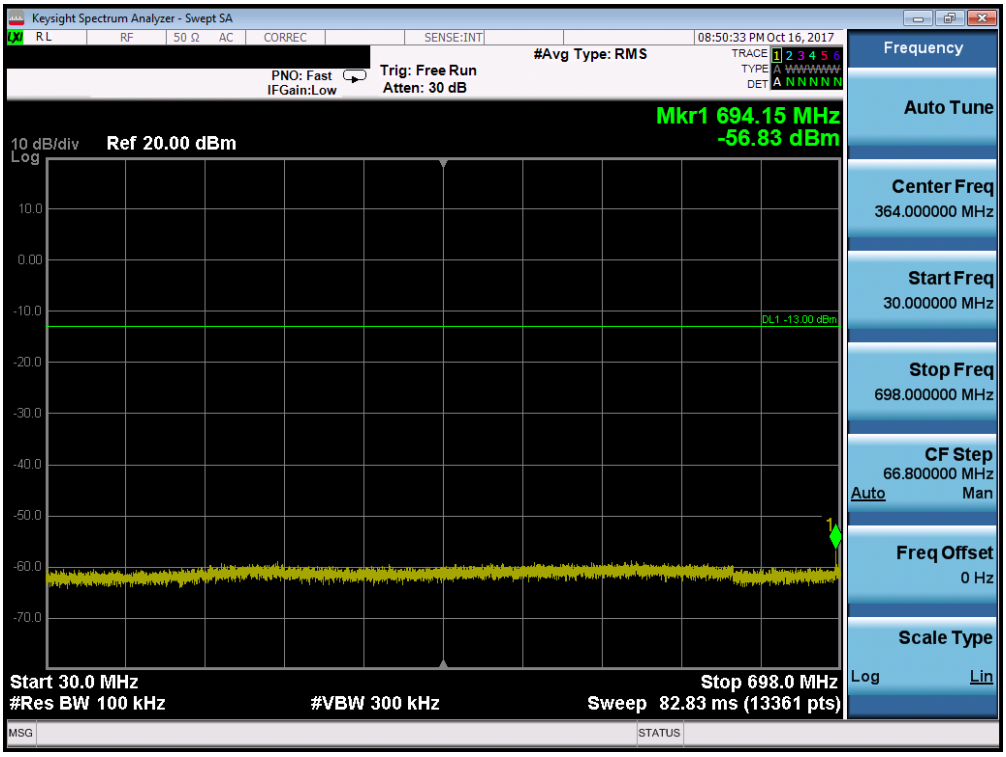
Plot 7-87. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



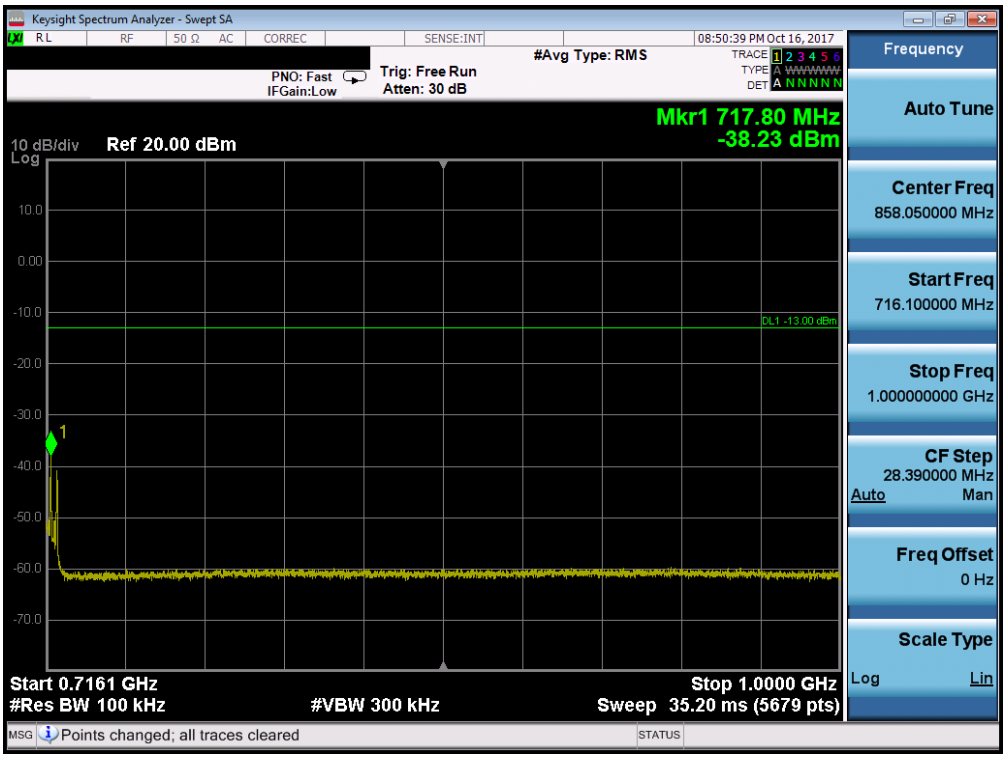
Plot 7-88. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



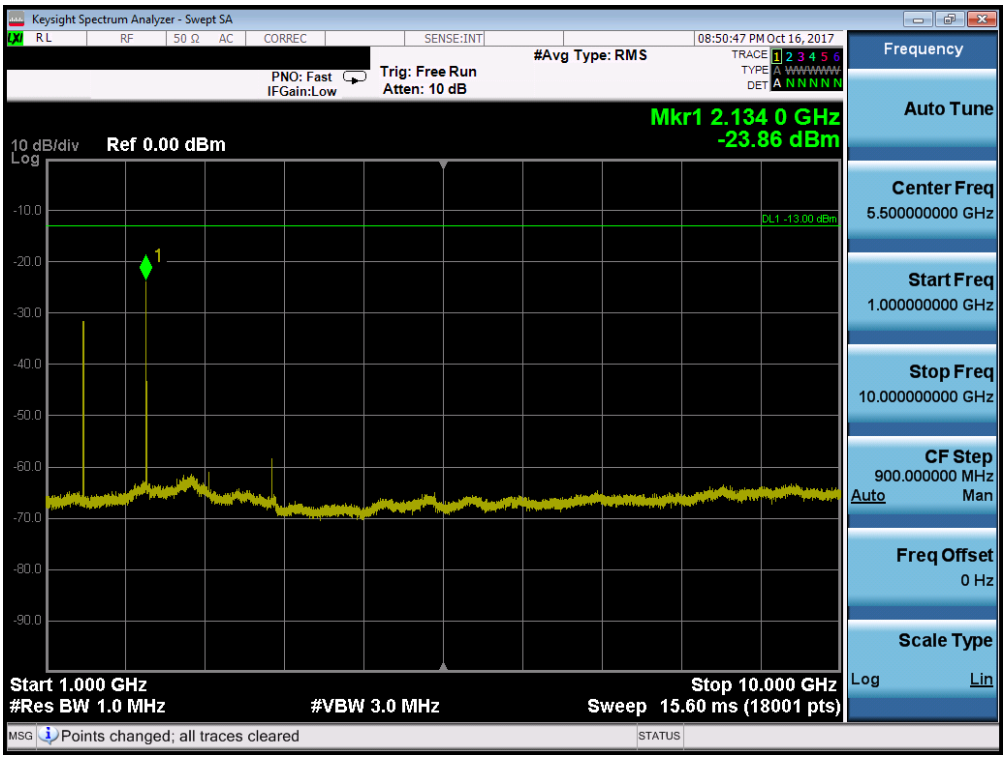
Plot 7-89. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



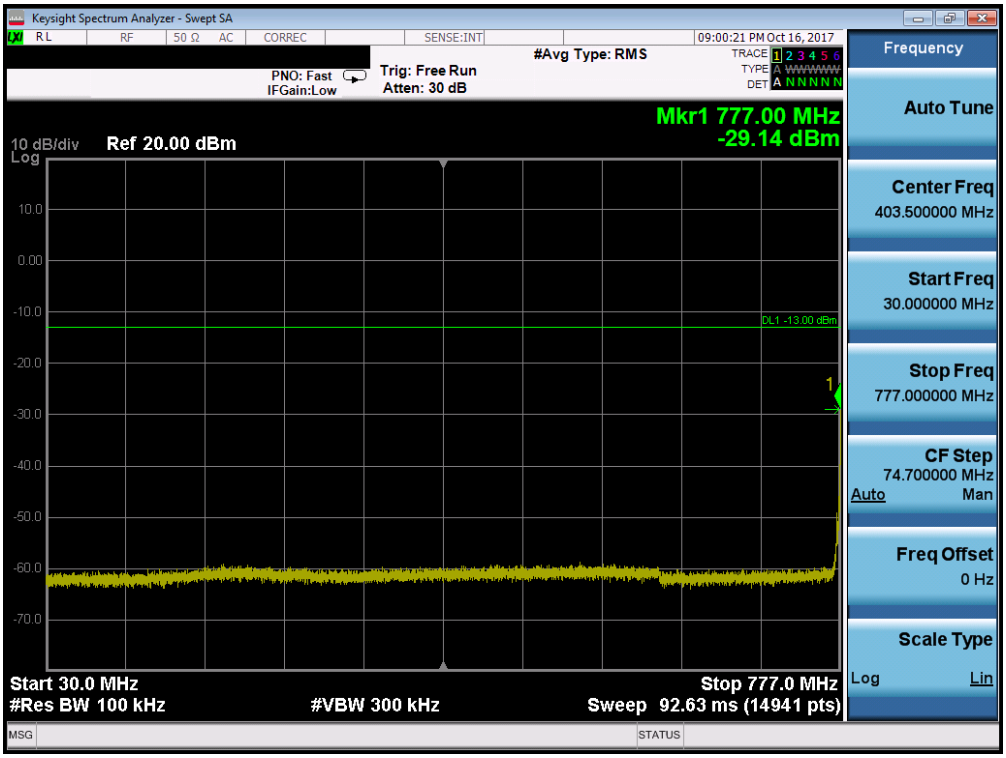
Plot 7-90. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



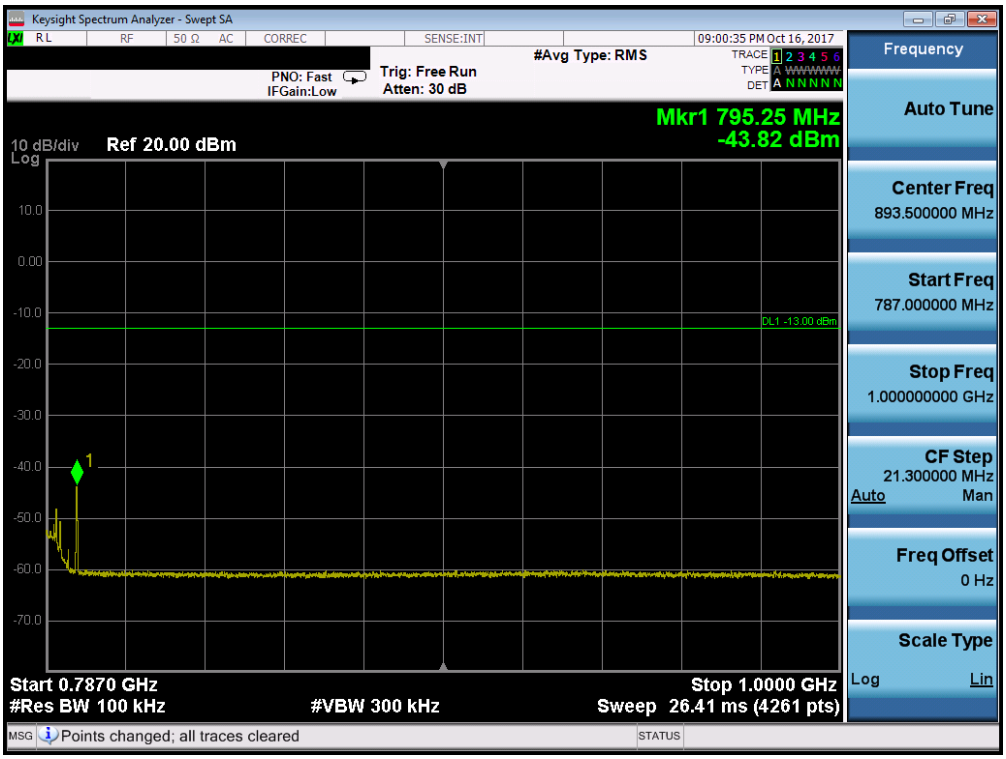
Plot 7-91. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



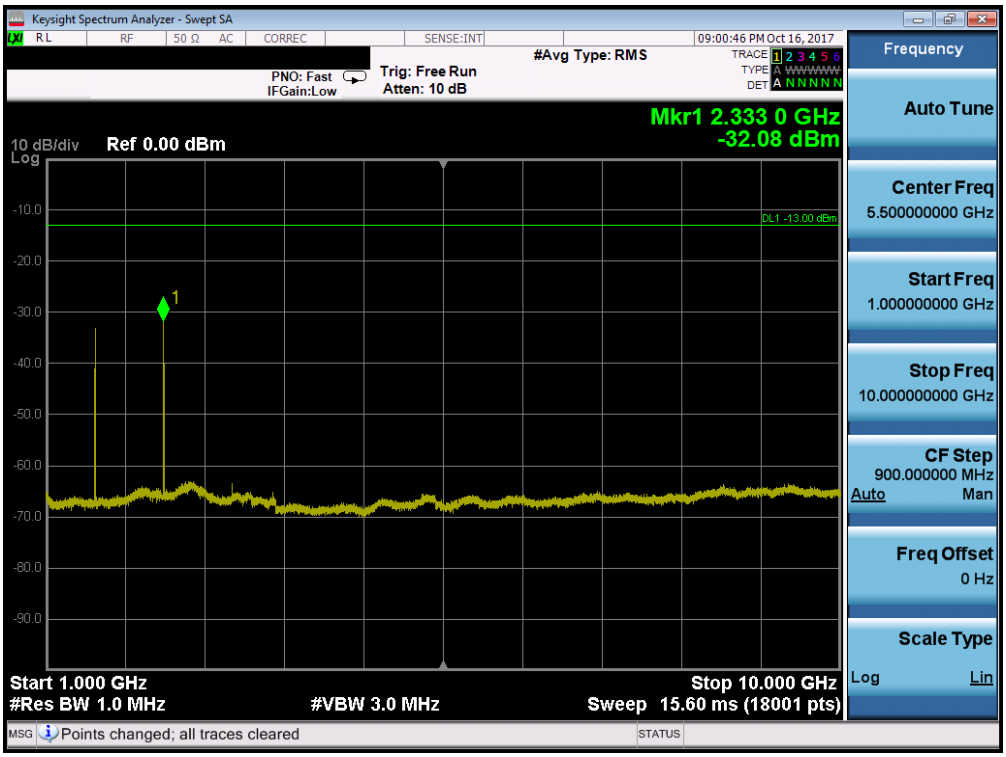
Plot 7-92. Conducted Spurious Plot (Band 12/17 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



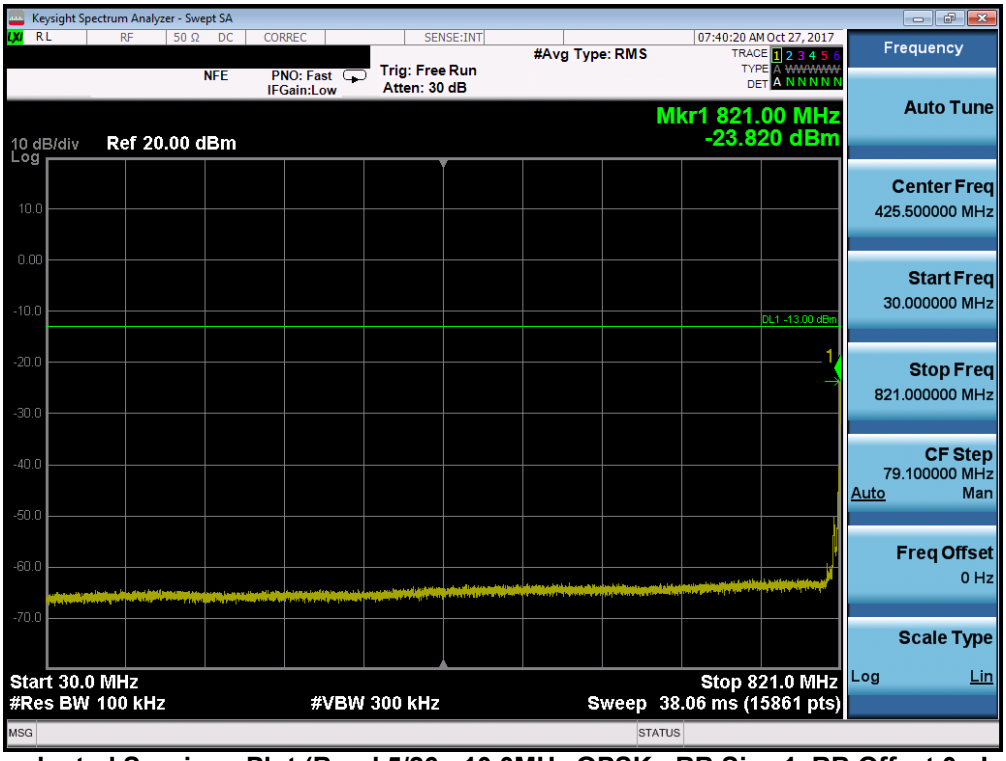
Plot 7-93. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)



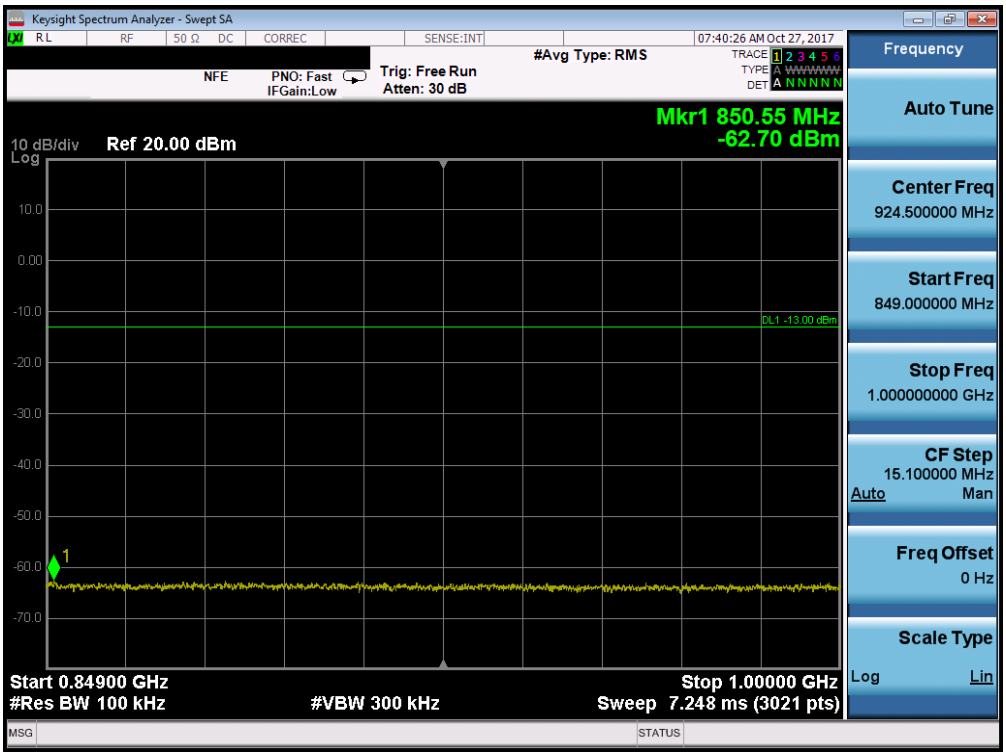
Plot 7-94. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)



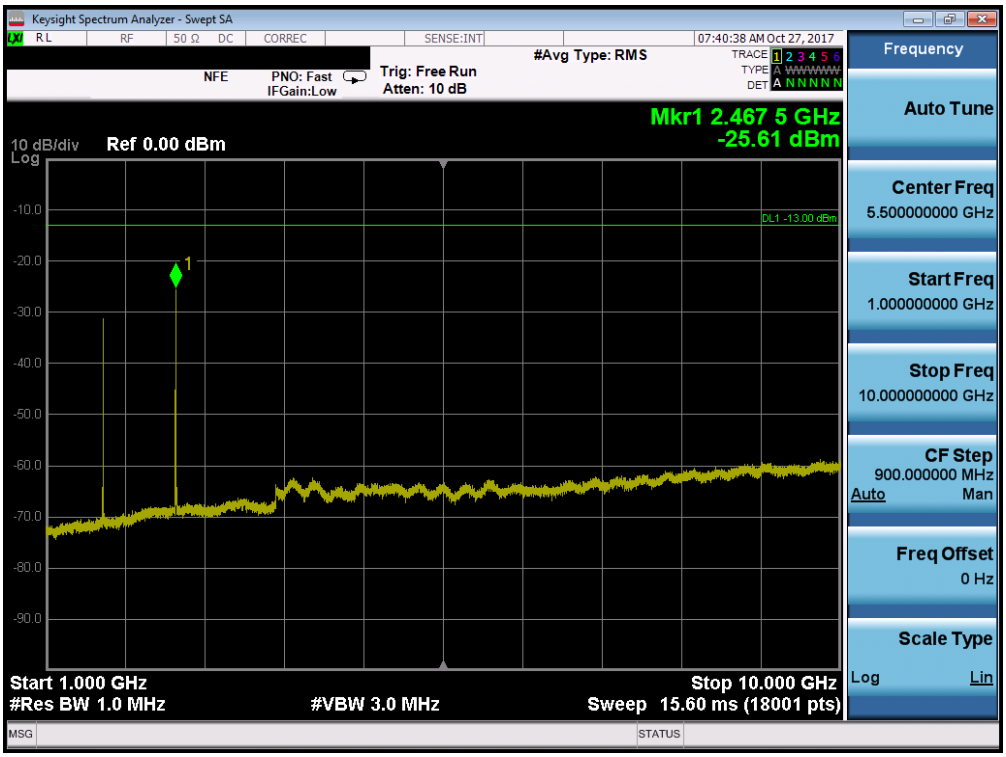
Plot 7-95. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)



Plot 7-96. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

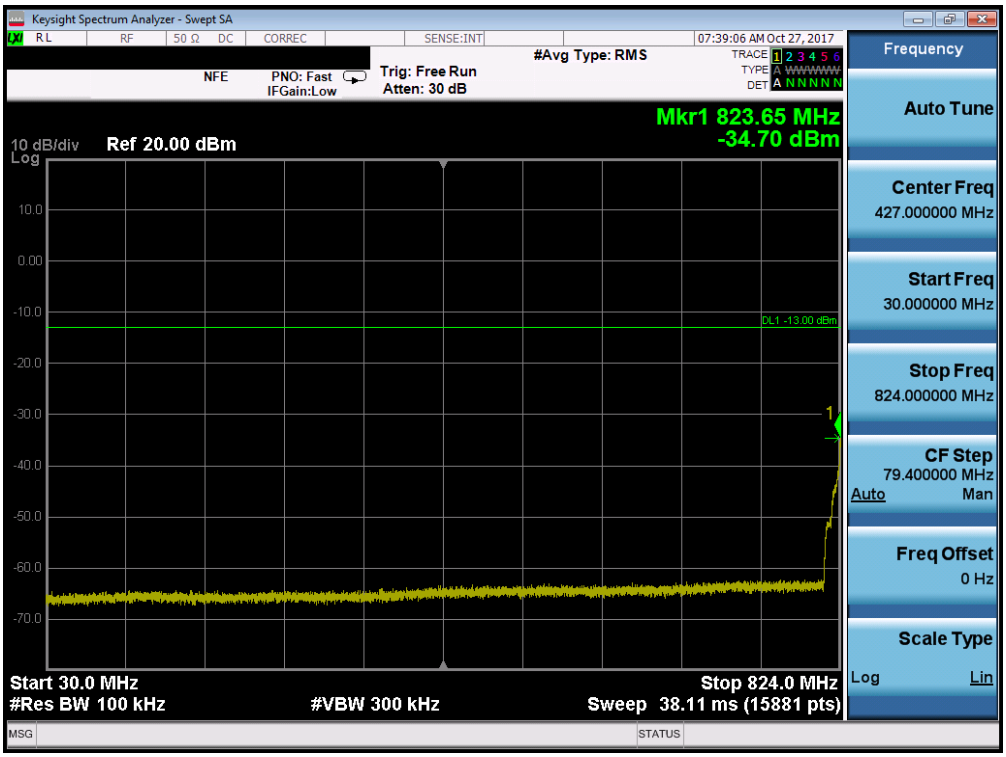


Plot 7-97. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

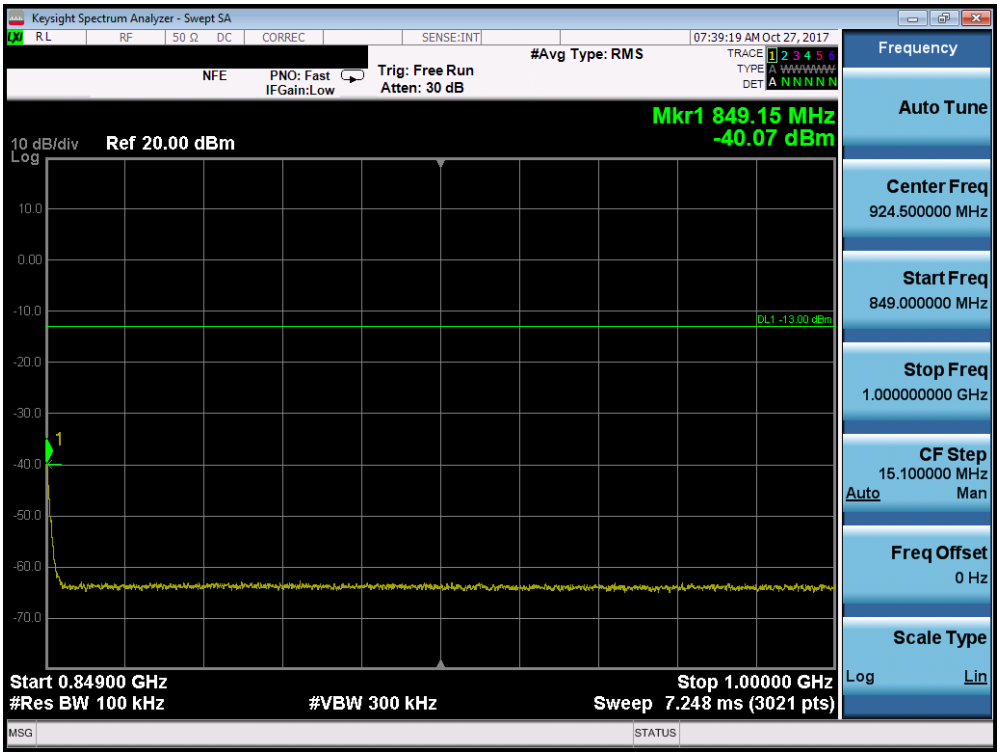


Plot 7-98. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

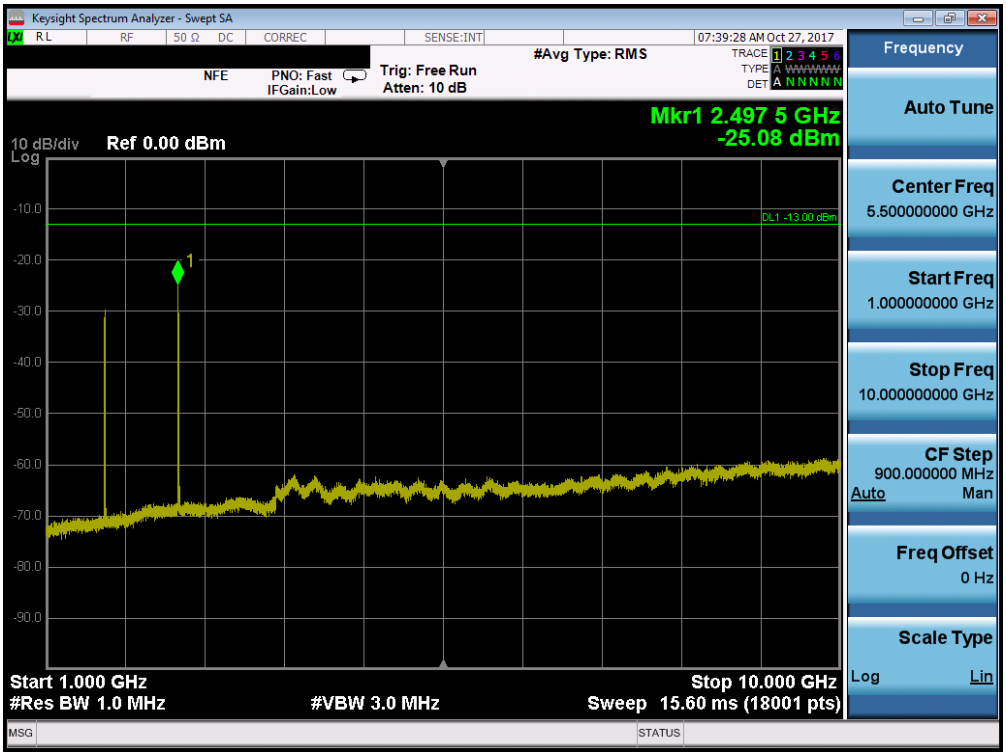
Band 5/26



Plot 7-99. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

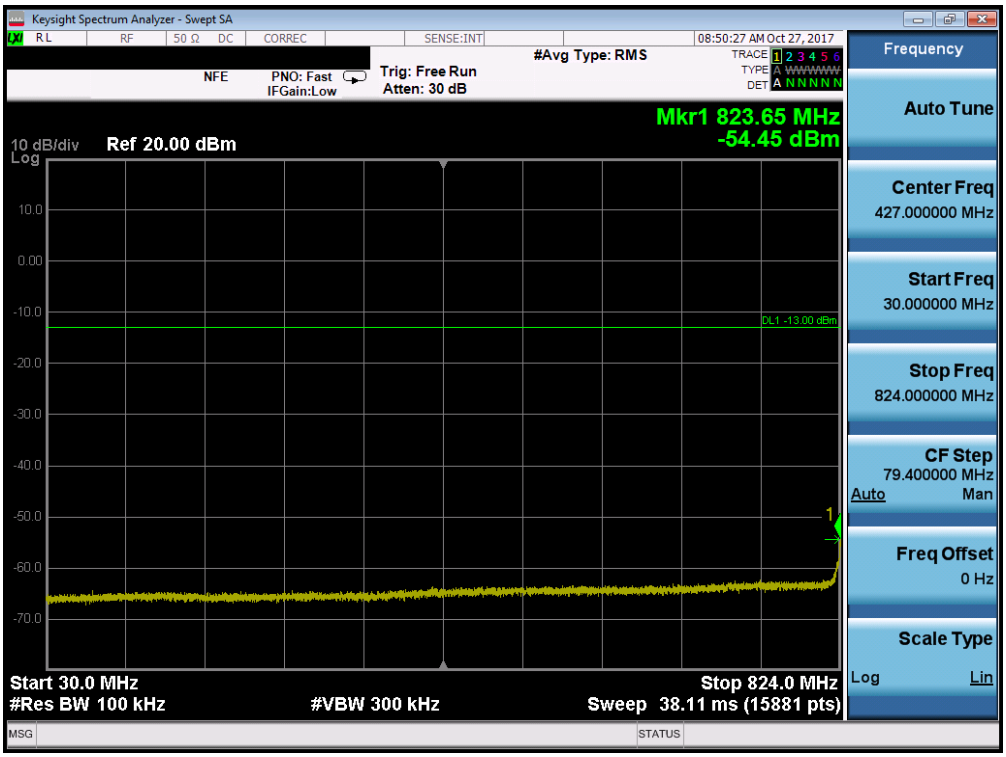


Plot 7-100. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

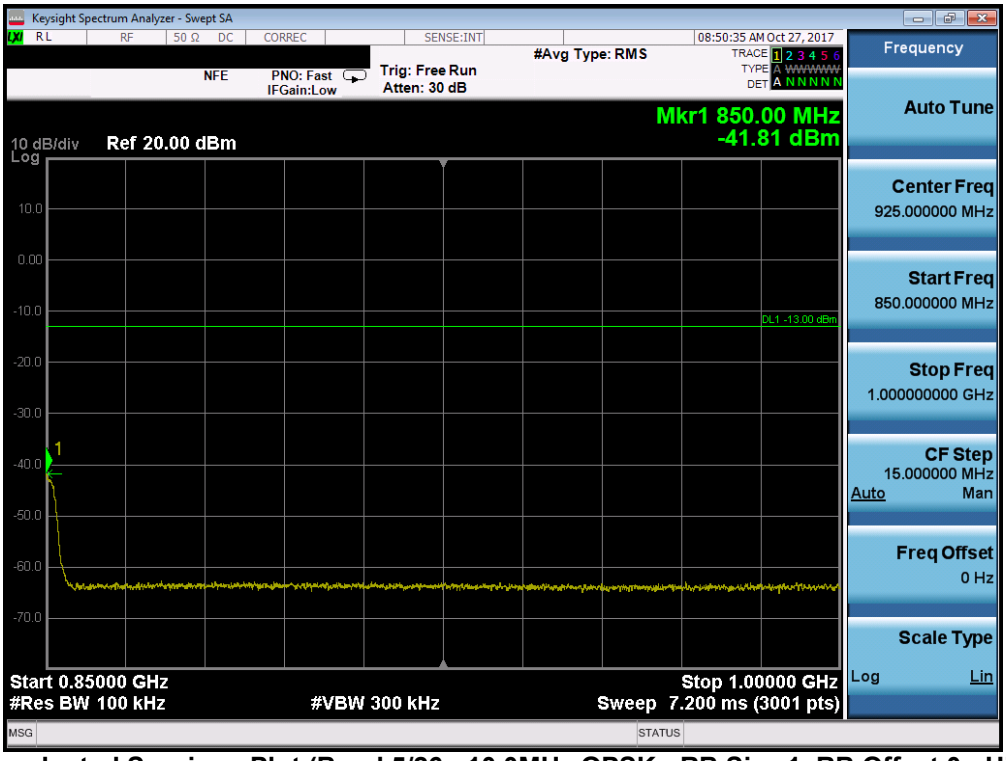


Plot 7-101. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

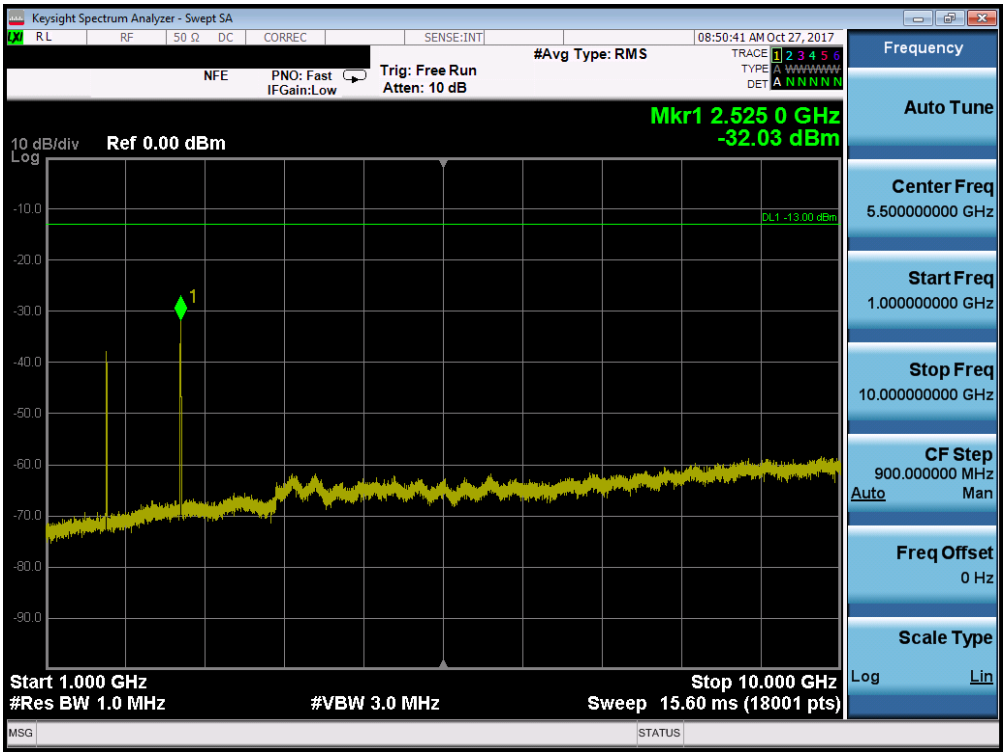
Band 5/26



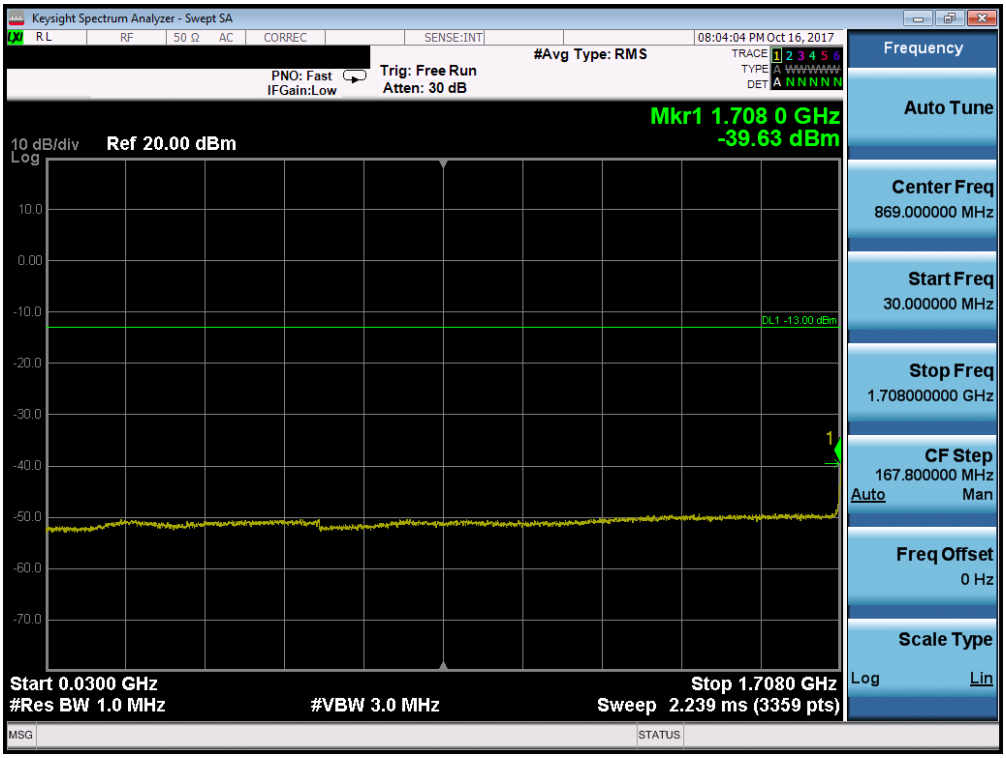
Plot 7-102. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



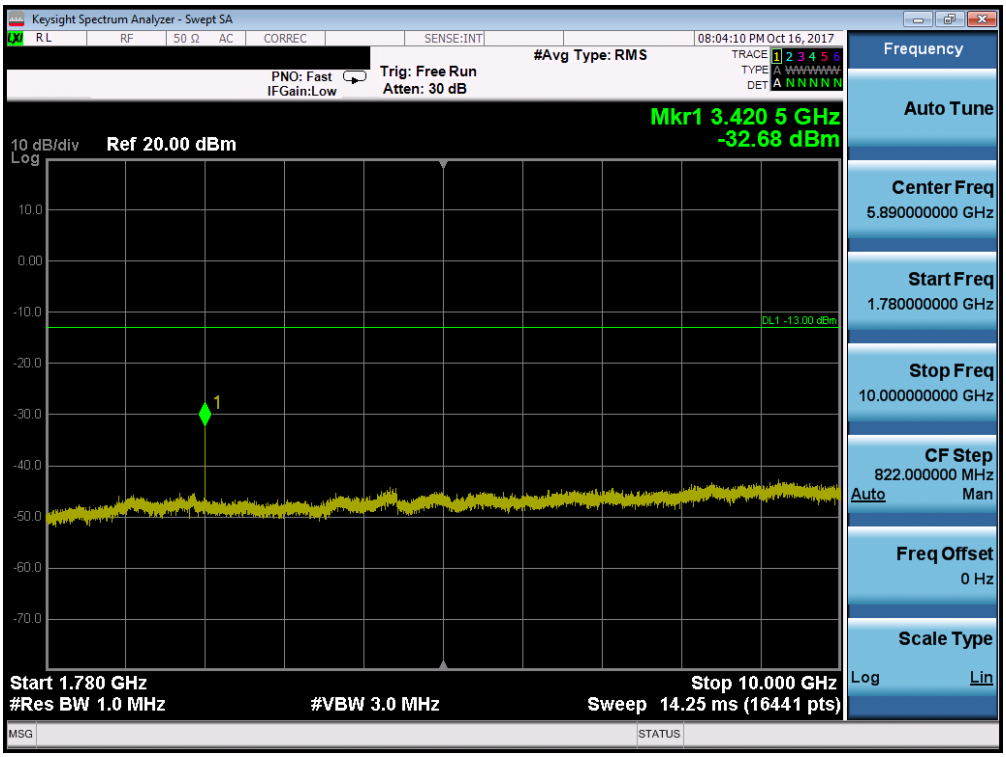
Plot 7-103. Conducted Spurious Plot (Band 5/26 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-104. Conducted Spurious Plot (Band 5/26- 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



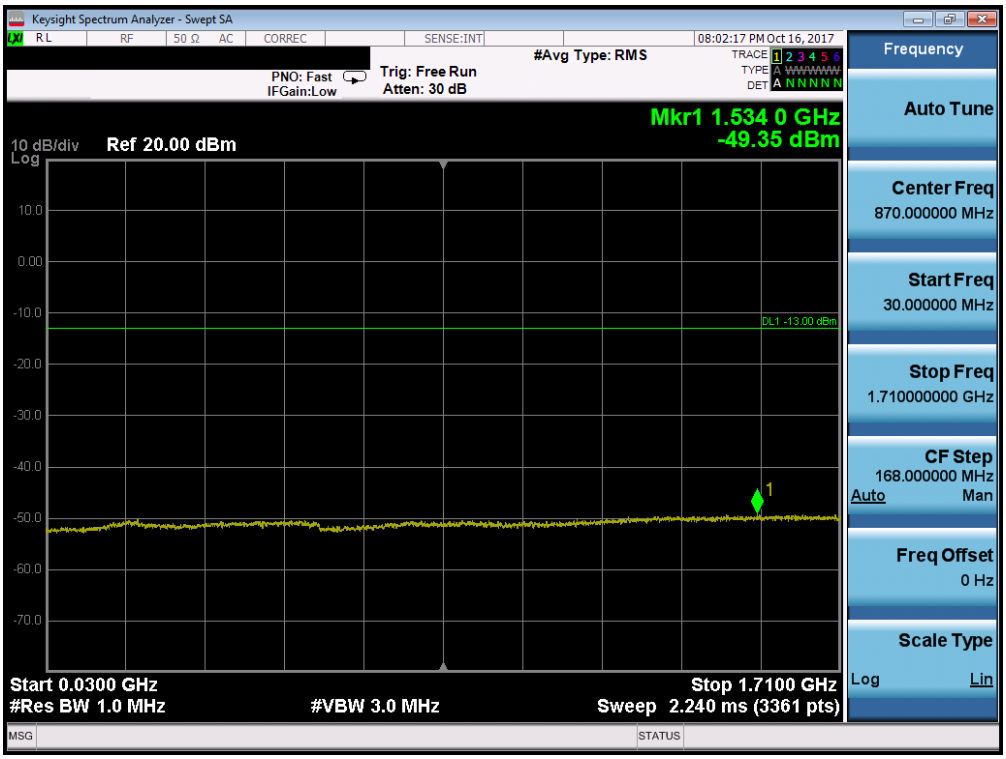
Plot 7-105. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



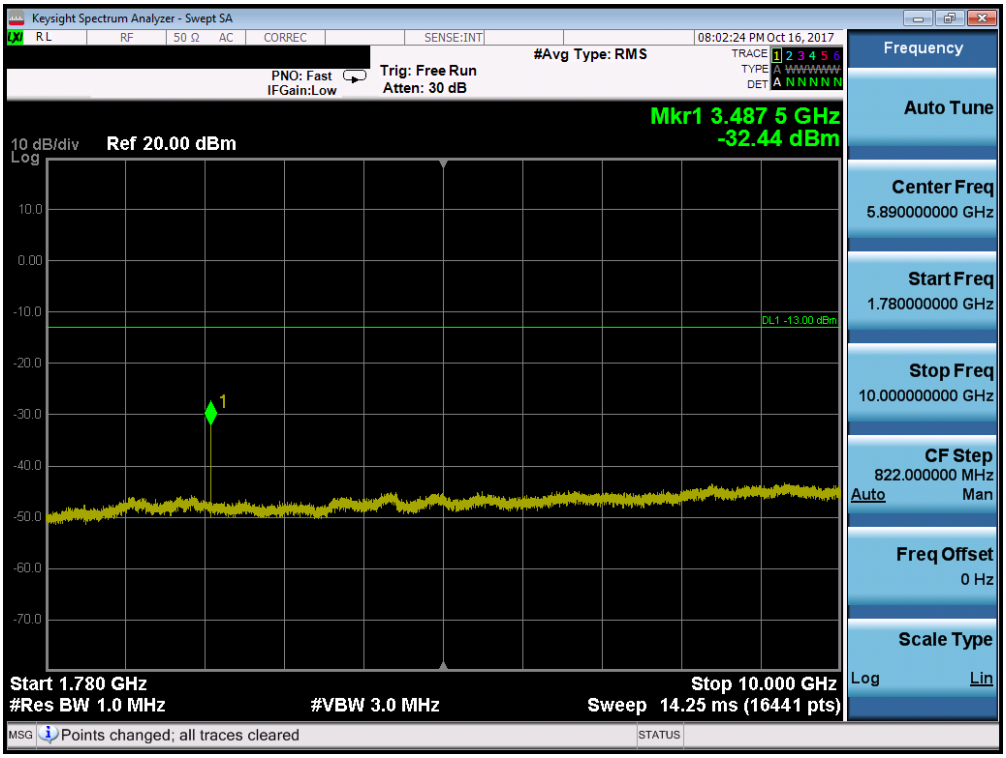
Plot 7-106. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

Plot 7-107. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

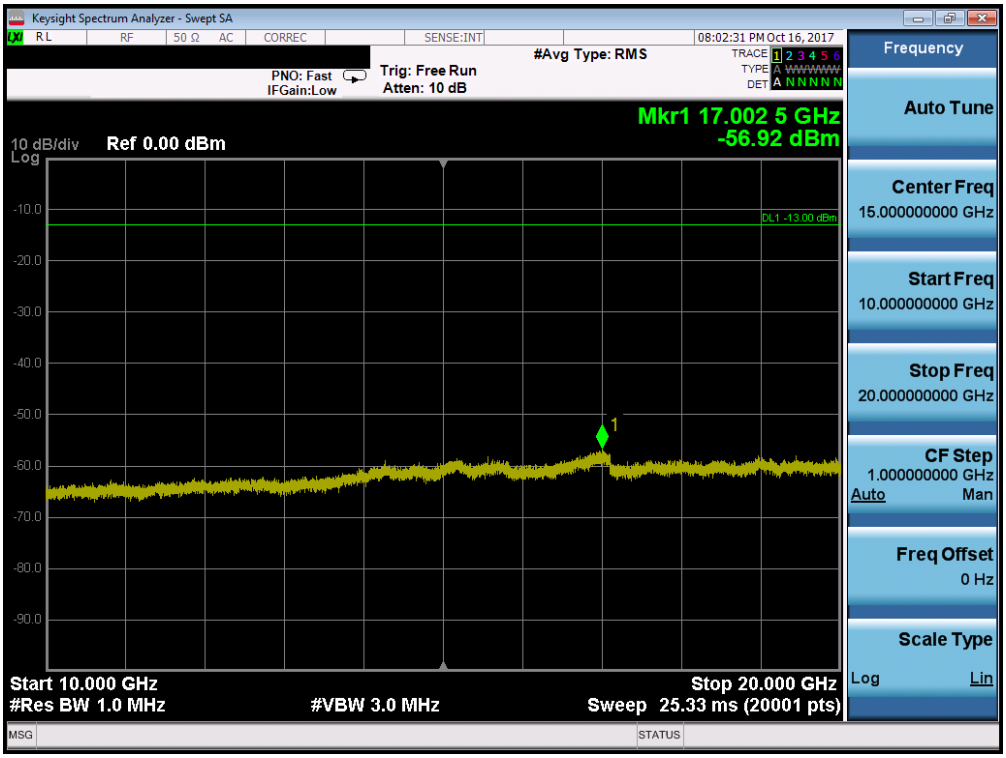
Band 4/66



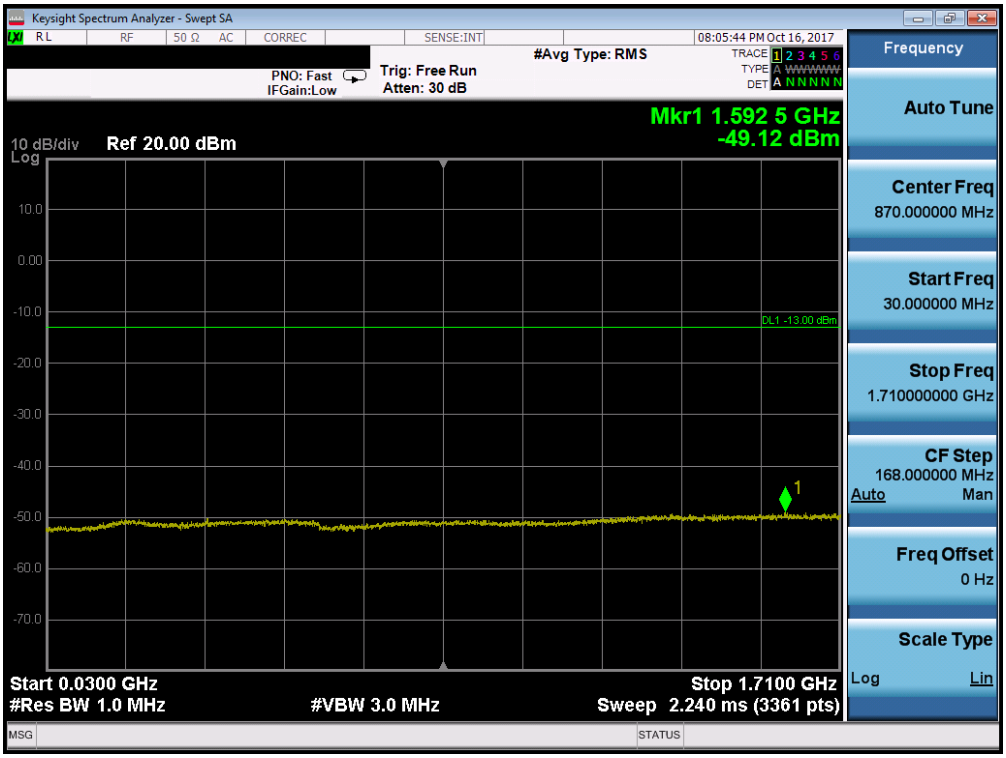
Plot 7-108. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



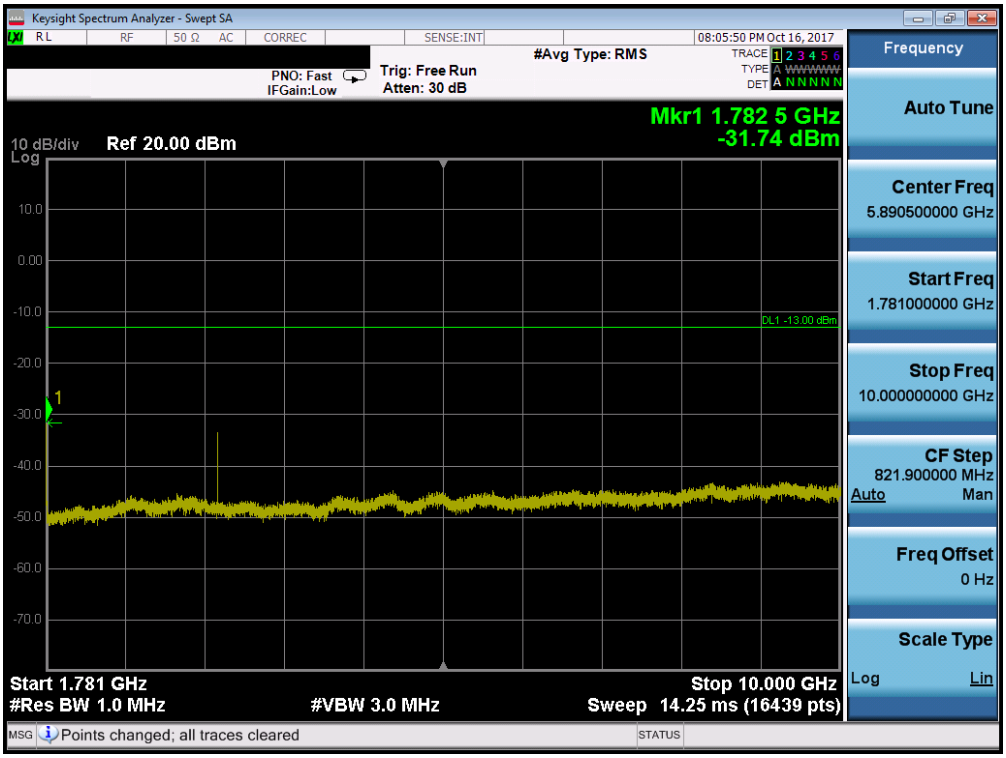
Plot 7-109. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



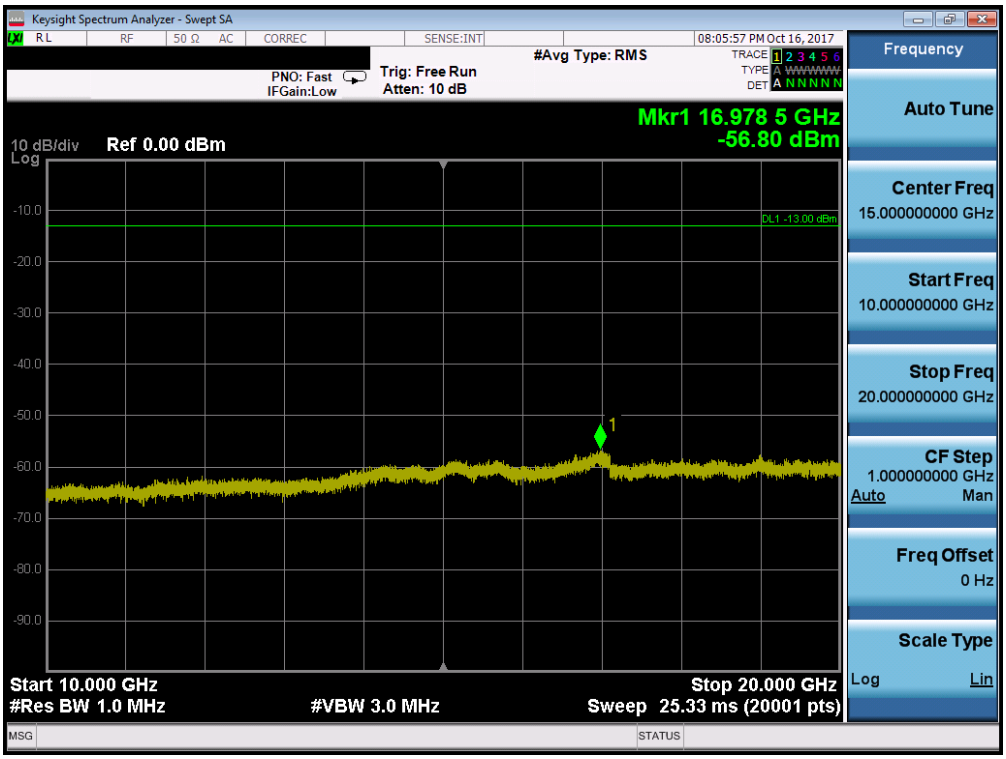
Plot 7-110. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-111. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

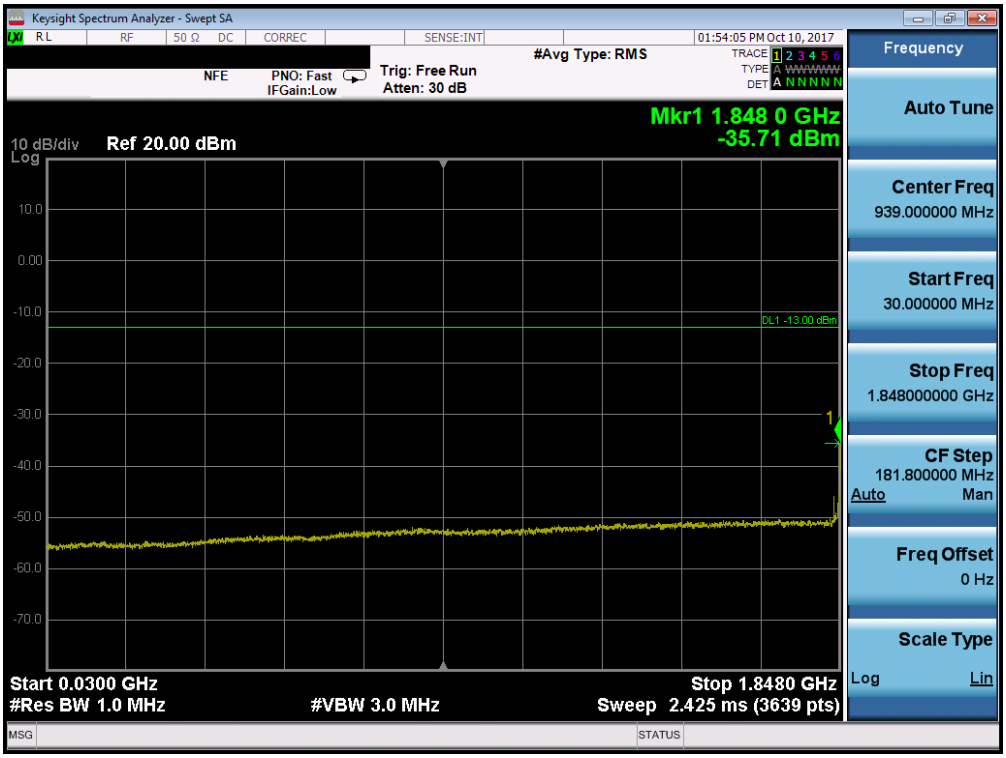


Plot 7-112. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



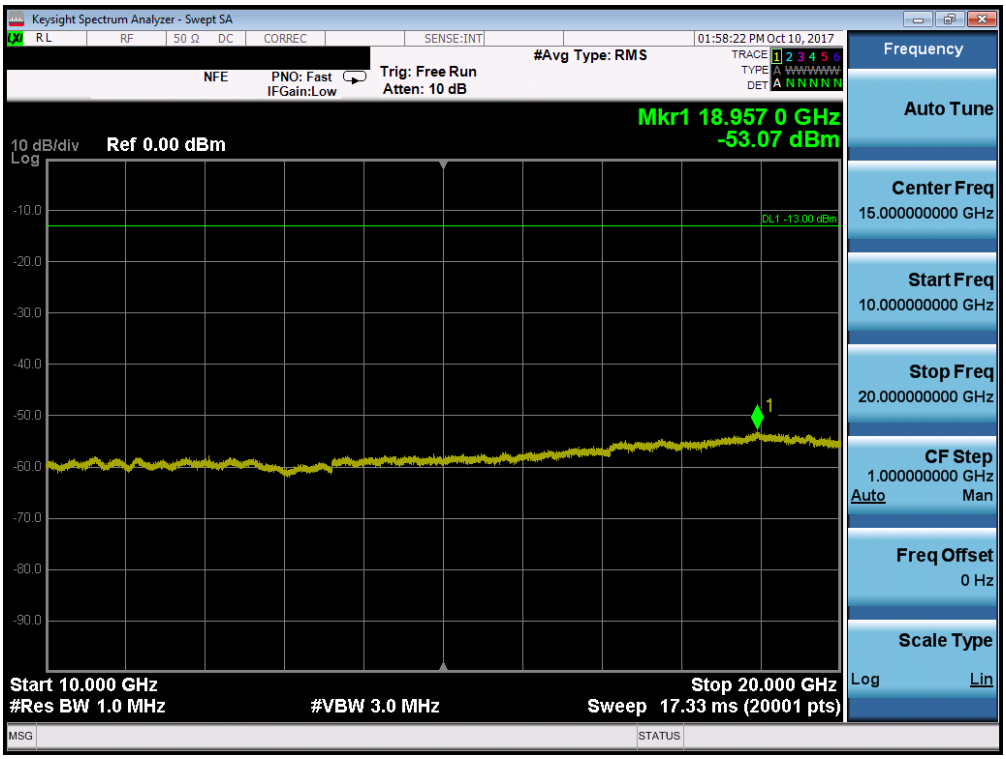
Plot 7-113. Conducted Spurious Plot (Band 4/66 - 3.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

Band 2



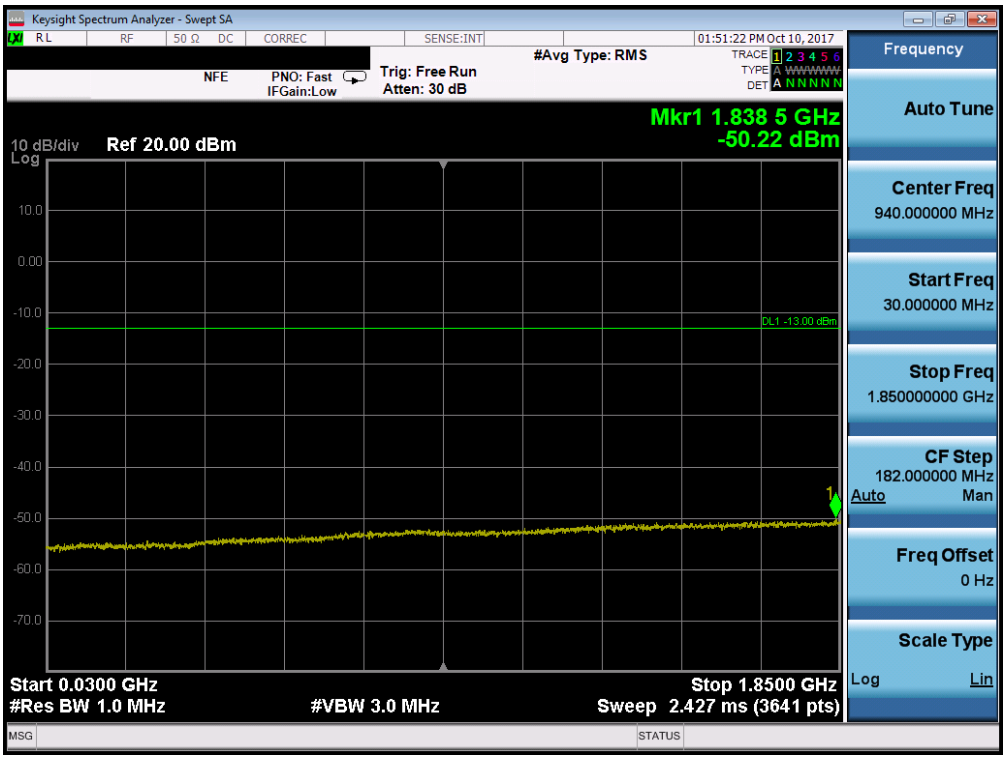
Plot 7-114. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

Plot 7-115. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



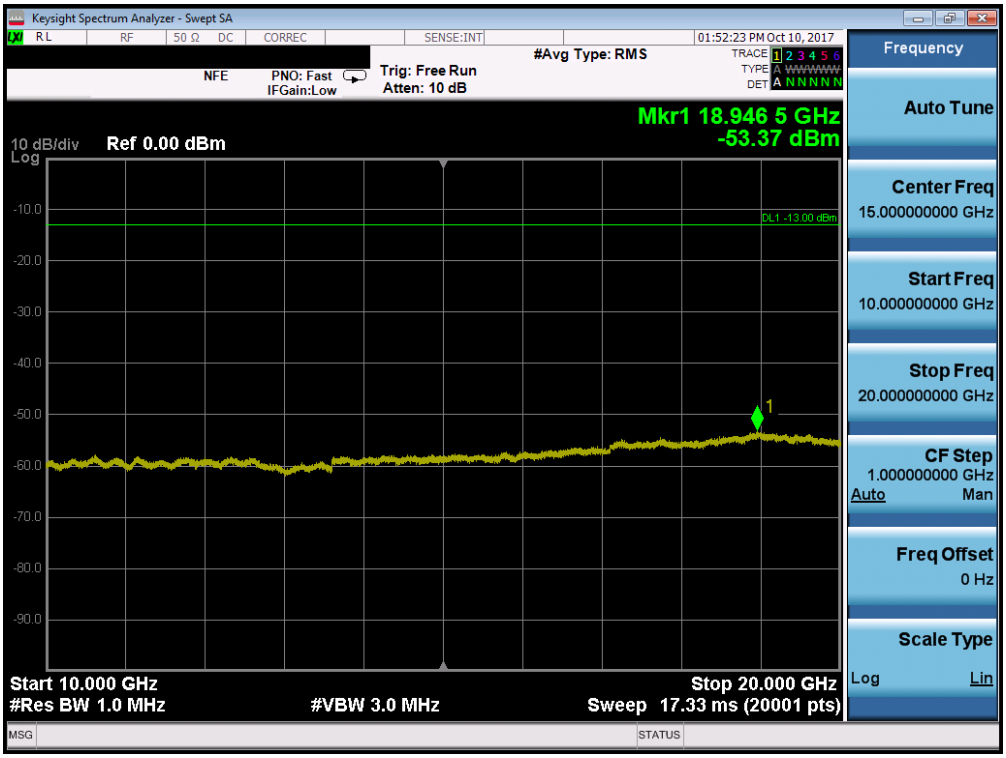
Plot 7-116. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

Band 2



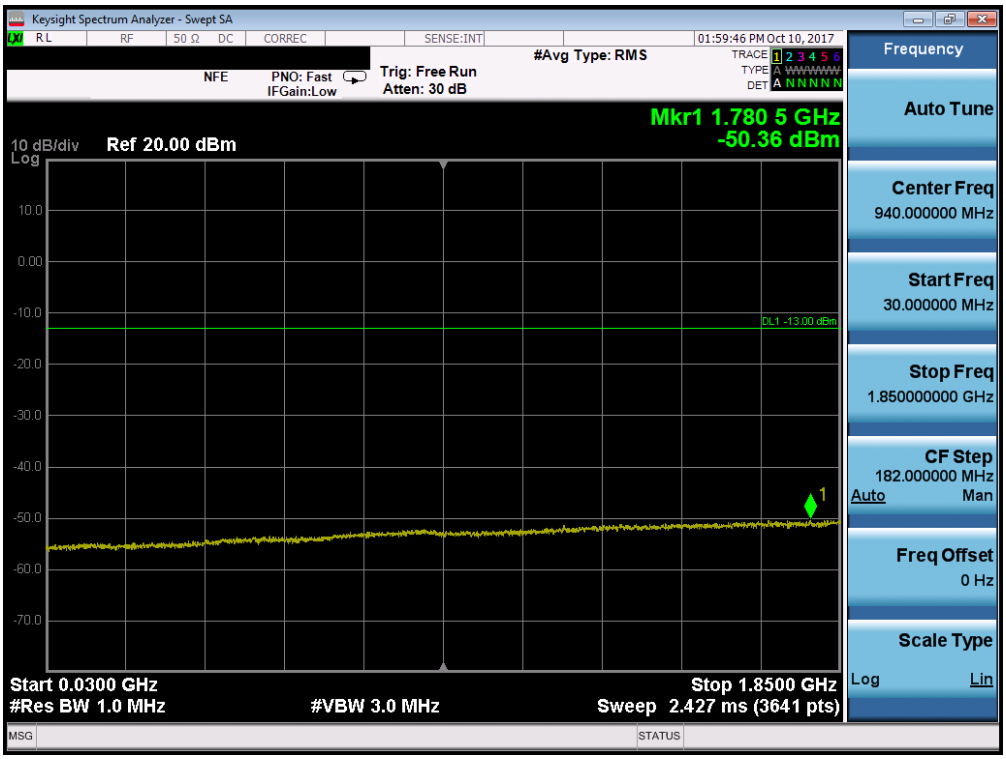
Plot 7-117. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

Plot 7-118. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

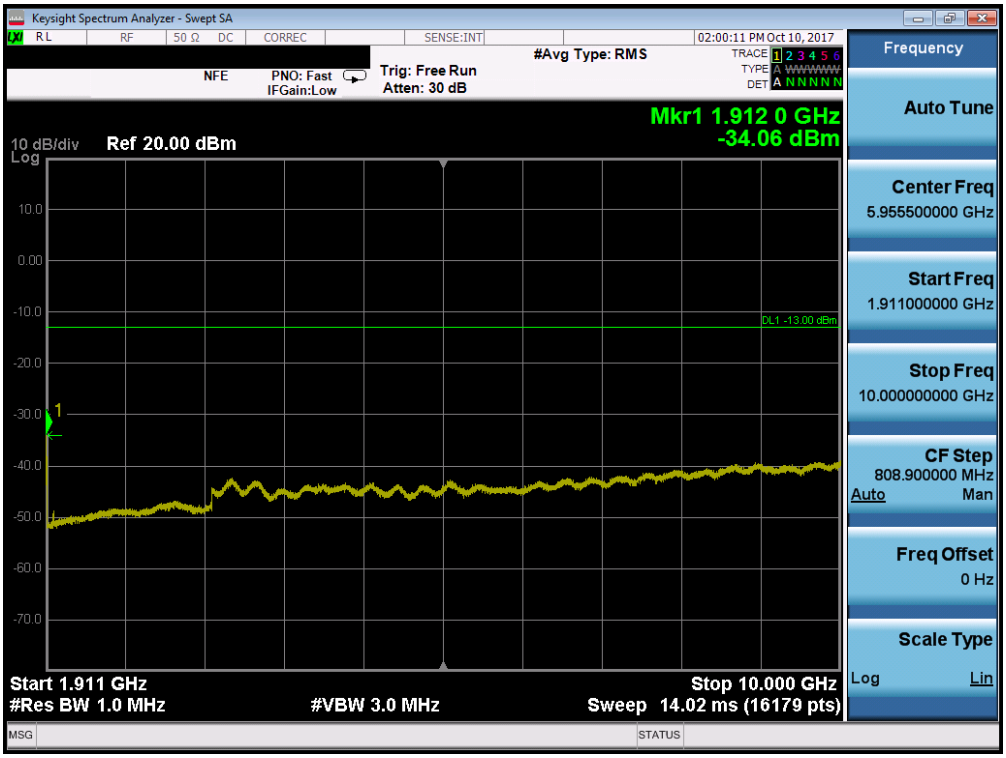


Plot 7-119. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

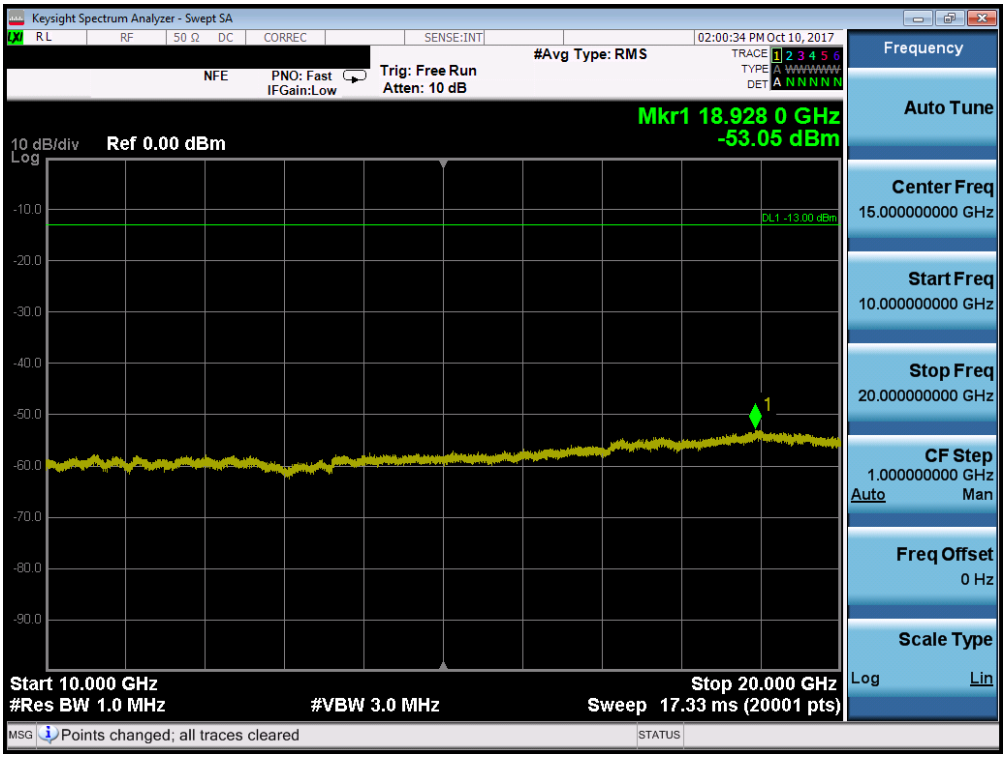
Band 2



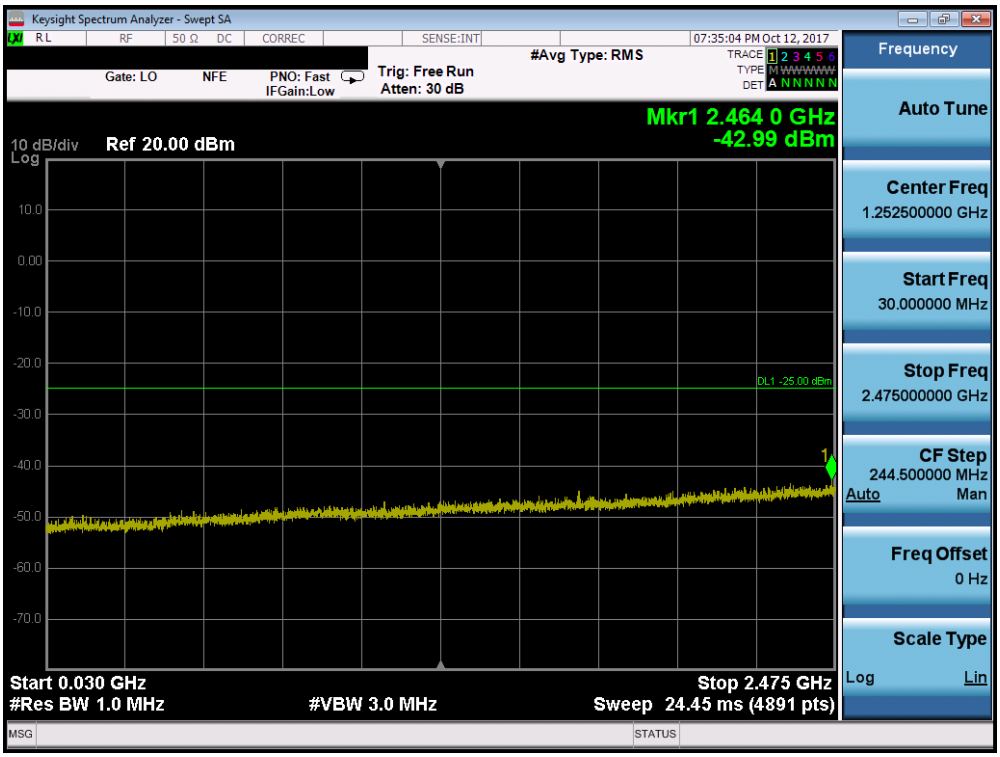
Plot 7-120. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



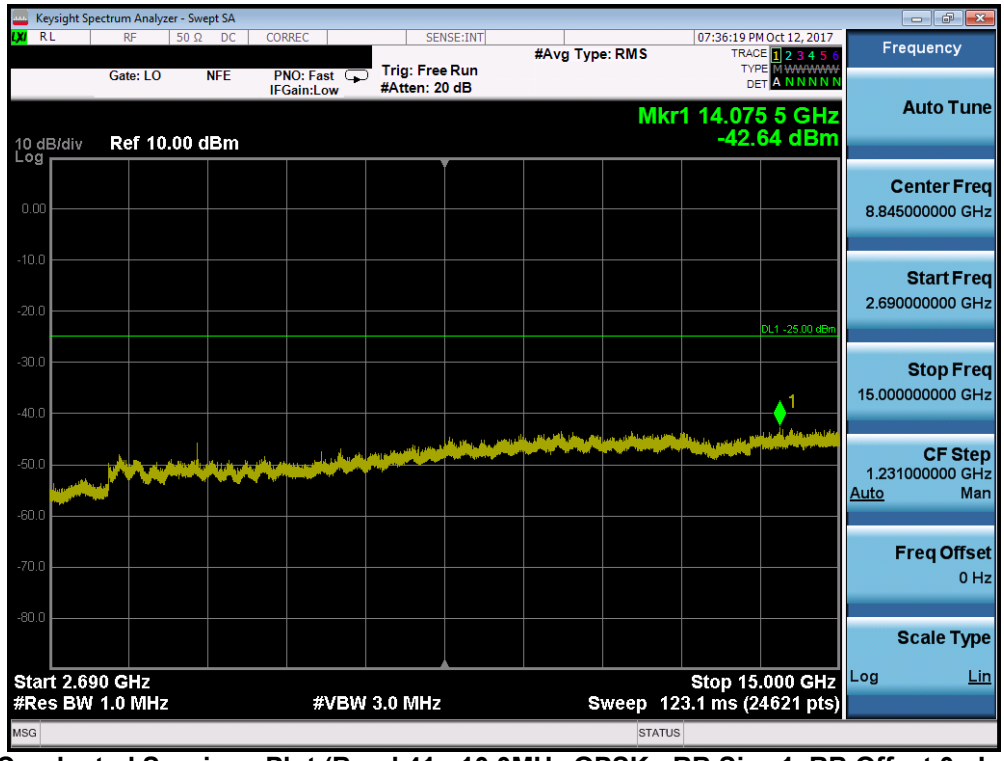
Plot 7-121. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-122. Conducted Spurious Plot (Band 2 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

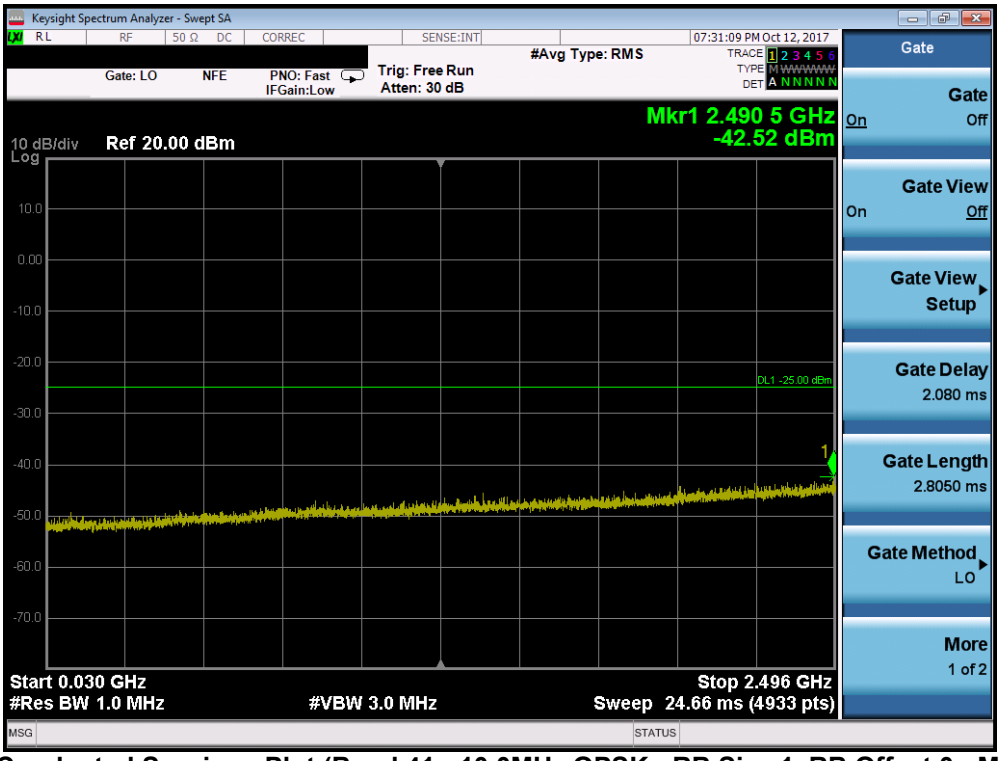


Plot 7-123. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



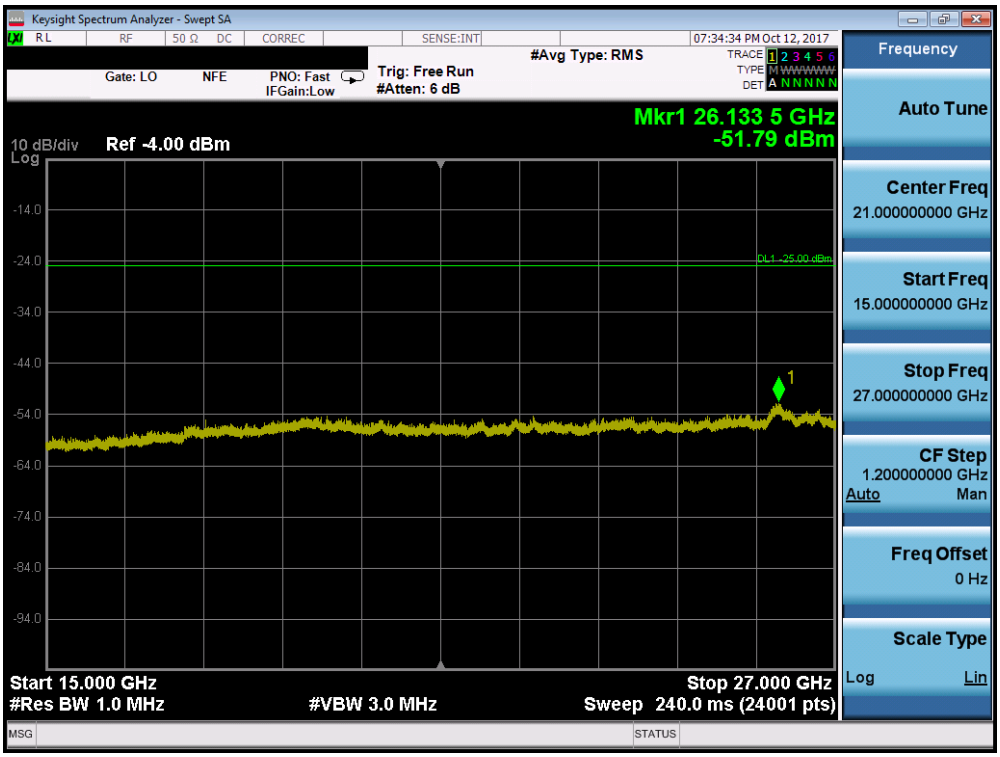
Plot 7-124. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

Plot 7-125. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

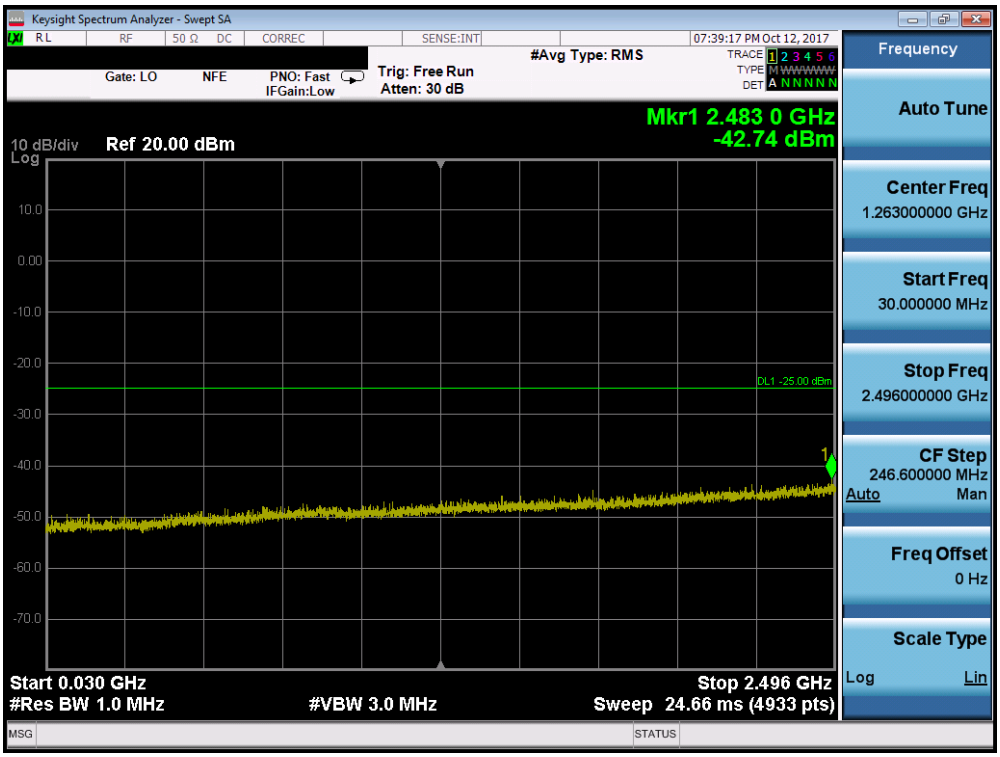


Plot 7-126. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

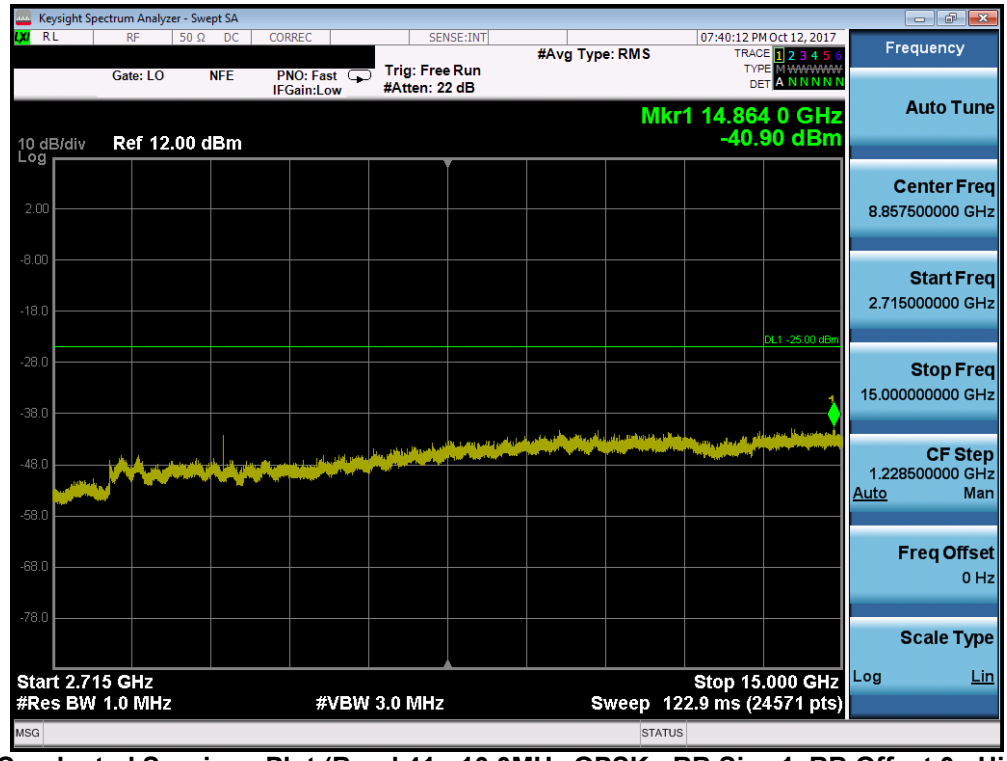
Plot 7-127. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



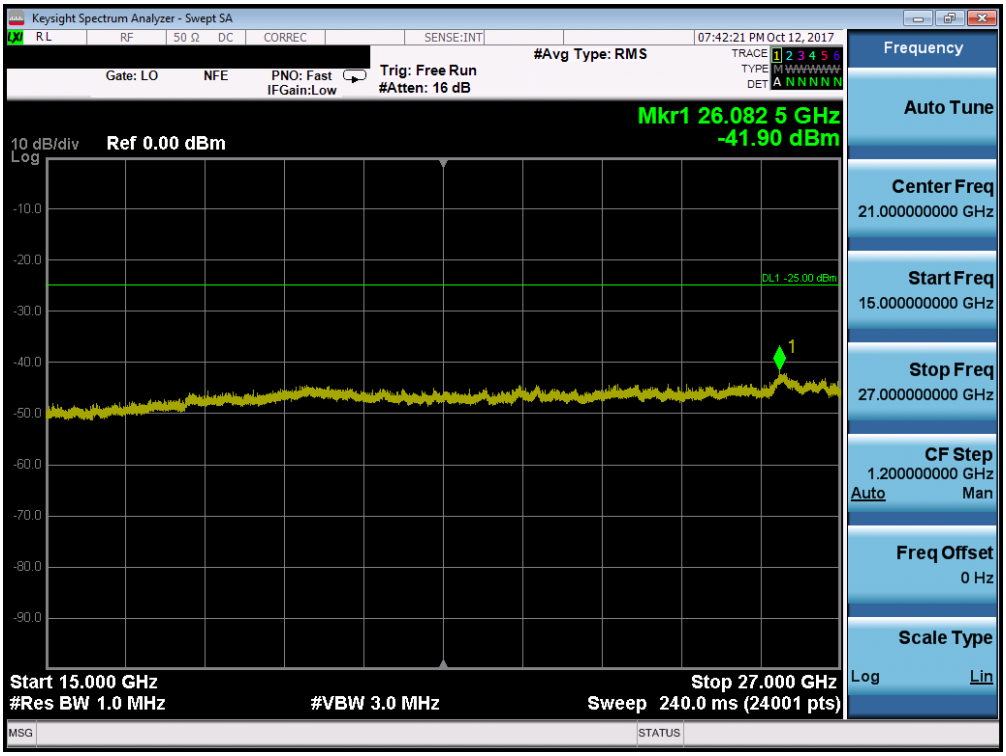
Plot 7-128. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-129. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-130. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-131. Conducted Spurious Plot (Band 41 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)