



ISRAEL TESTING LABORATORIES
Global Certifications You Can Trust



DATE: 27 January 2020

I.T.L. (PRODUCT TESTING) LTD.
FCC Radio Test Report
for
Corning Optical Communication Wireless
Equipment under test:

Building Wireless System (BWS) v1.0

Low Power Radio (LPR)
(AWS-3 Section)

Tested by:


I. Kaganovich

Approved by:


D. Shidlowsky

This report must not be reproduced, except in full, without the written permission of I.T.L. (Product Testing) Ltd.
This report relates only to items tested.



Measurement/Technical Report for
Corning Optical Communication Wireless
Building Wireless System (BWS) v1.0
Low Power Radio (LPR)

FCC ID: OJF1LPR

This report concerns: Original Grant: X
 Class II change:
 Class I change:

Equipment type: Part 20 Industrial Booster (CMRS)

Limits used: 47CFR Parts 2; 27

Measurement procedure used is KDB 935210 D05 v01r03 April 2019 and
ANSI IEEE C63.26-2015

Substitution Method used as in ANSI TIA-603-E-2016

Application for Certification
prepared by:
 R. Pinchuck
 ITL (Product Testing) Ltd.
 1 Bat Sheva St.
 Lod 7120101
 Israel
 e-mail rpinchuck@itl.co.il

Applicant for this device:
(different from "prepared by")
Isaac Nissan
Corning Optical Communication Wireless
8253 1st Street
Vienna, VA 22812
U.S.A.
Tel: +1-703 855-1773
E-mail: NissanI@corning.com



TABLE OF CONTENTS

1. GENERAL INFORMATION	5
1.1 Administrative Information	5
1.2 List of Accreditations	6
1.3 Product Description	7
1.4 Test Methodology	7
1.5 Test Facility	7
1.6 Measurement Uncertainty	7
2. SYSTEM TEST CONFIGURATION	8
2.1 Justification	8
2.2 EUT Exercise Software	8
2.3 Special Accessories	8
2.4 Equipment Modifications	8
2.5 Configuration of Tested System	10
3. TEST SET-UP PHOTOS	12
4. RF POWER OUTPUT AWS	15
4.1 Test Specification	15
4.2 Test Procedure	15
4.3 Test Limit	15
4.4 Test Results	16
4.5 Test Equipment Used; RF Power Output AWS	36
5. OCCUPIED BANDWIDTH AWS	37
5.1 Test Specification	37
5.2 Test Procedure	37
5.3 Test Limit	37
5.4 Test Results	37
5.5 Test Equipment Used; Occupied Bandwidth	48
6. SPURIOUS EMISSIONS AT ANTENNA TERMINALS AWS	49
6.1 Test Specification	49
6.2 Test Procedure	49
6.3 Test Limit	49
6.4 Test Results	49
6.5 Test Equipment Used; Spurious Emissions at Antenna Terminals AWS	62
7. BAND EDGE SPECTRUM AWS	63
7.1 Test Specification	63
7.2 Test Procedure	63
7.3 Test Limit	63
7.4 Test Results	64
7.5 Test Equipment Used; Band Edge Spectrum AWS	71
8. SPURIOUS RADIATED EMISSION AWS	72
8.1 Test Specification	72
8.2 Test Procedure	72
8.3 Test Limit	73
8.4 Test Results	73
8.5 Test Instrumentation Used, Radiated Measurements AWS-3	74
9. OUT-OF-BAND REJECTION (AWS-3)	75
9.1 Test Specification	75
9.2 Test Procedure	75
9.3 Test Limit	75
9.4 Test Results	75
9.5 Test Equipment Used; Out-of-Band Rejection	76



10.	APPENDIX A - CORRECTION FACTORS	77
10.1	Correction factors for RF OATS Cable 35m.....	77
10.2	Correction Factors for RF Cable for Anechoic Chamber.....	78
10.3	Correction Factors for Active Loop Antenna	79
10.4	Correction Factors for Biconical Antenna	80
10.5	Correction Factors for Log Periodic Antenna	81
10.6	Correction Factors for Double – Ridged Waveguide Horn ANTENNA 3 meter range;	82
10.7	Correction Factors for Horn Antenna Model	83
10.8	Correction factors for Horn Antenna Ka Band.....	84



1. General Information

1.1 Administrative Information

Manufacturer:	Corning Optical Communication Wireless
Manufacturer's Address:	8253 1 st Street Vienna, VA 22182 U.S.A. Tel: +1-703-855-1773
Manufacturer's Representative:	Isaac Nissan
Equipment Under Test (E.U.T):	Building Wireless System (BWS) v1.0
Equipment Model No.:	Low Power Radio (LPR)
Equipment Serial No.:	704A055003
Date of Receipt of E.U.T:	October 3, 2019
Start of Test:	October 3, 2019
End of Test:	December 24, 2019
Test Laboratory Location	I.T.L (Product Testing) Ltd. 1 Batsheva St, Lod, Israel 7116002
Test Specifications:	FCC Parts 2; 27



1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by/registered with the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation Number is IL1005.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. Department of Innovation, Science and Economic Development (ISED) Canada, CAB identifier: IL1002

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.



1.3 Product Description

Corning's BWS™ platform 1.0 is the first fully-digital, end-to-end in-building cellular solution, for medium size venues.

Corning's Low Power Radio (LPR) units are the end-point antennas connected by optical cable to the BWS system Digital Router Unit (DRU) (distribution/routing of RF samples via CPRI stream), and to the system Power Supply Unit (PSU) for power.

LPR is the first release of Corning's fully-digital radio remote unit, providing plug-and-play, cost-effective processing, minimizing power loss and noise.

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in KDB 935210 D05 v01r03 April 2019 and ANSI/TIA-603-E-2016. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

Both conducted and radiated emissions tests were performed at I.T.L.'s testing facility in Lod, Israel. I.T.L.'s EMC Laboratory is accredited by A2LA, certificate No. 1152.01 and its FCC Designation Number is IL1005.

1.6 Measurement Uncertainty

Conducted Emission

Conducted Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)
0.15 – 30 MHz:

Expanded Uncertainty (95% Confidence, K=2):
± 3.44 dB

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)
for open site:
30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):
± 4.96 dB

1 GHz to 6 GHz

Expanded Uncertainty (95% Confidence, K=2):
±5.19 dB

>6 GHz

Expanded Uncertainty (95% Confidence, K=2):
±5.51 dB

2. System Test Configuration

2.1 Justification

- 2.1.1 The test setup was configured to closely resemble the standard installation.
- 2.1.2 The EUT consists of the LPR (Low-Power Remote Module) which is connected with the head-end ICRAN equipment (BBU and DRU) using fiber optic cable.
- 2.1.3 The RF source signals are represented in the setup by BBU unit.
- 2.1.4 An "Exercise" SW on the computer was used to enable/disable transmission of the EUT, while the EUT output was connected to the spectrum analyzer.
- 2.1.5 The system was tested under maximum gain conditions.
- 2.1.6 Only peak power testing was done on the both ports, all other testing was performed 1 port (see customer declaration on following page regarding the identical ports).
- 2.1.7 Testing was performed on the following configuration:

Frequency Range (MHz)		
Service/Band	Downlink (DL)	Technology
AWS-3	2110-2200	LTE, QPSK

2.2 EUT Exercise Software

vHCM SW ver. 1.0 used for commands delivery. These commands are used to enable/disable the EUT transmission.

EUT Embedded SW versions are:

DRU ver dru_d719_10_25

LPR ver LPR_D803_01.63

2.3 Special Accessories

No special accessories were needed in order to achieve compliance.

2.4 Equipment Modifications

No modifications were necessary in order to achieve compliance.



CORNING

Declaration

Date: December 25, 2019

RE: Corning Optical Communication Wireless
P/N: LPR-3C-2A2P2W-10
FCC ID: OJF1LPR

I hereby declare that the MIMO stream 1 and MIMO stream 2 of the LPR-3C-2A2P2W-10 have the identical RF chain including antenna gain of 2dBi.

Authorized Signature:

Printed Name:


Isaac Nissan

2.5 Configuration of Tested System

Product Name	Building Wireless System (BWS) v1.0
Model Name	Low Power Radio (LPR)
Working voltage	100-240VAC/48VDC
Mode of operation	Industrial Booster for AWS-3 band
Modulations	LTE (16QAM), LTE (64QAM), QPSK
Assigned Frequency Range	2110MHz-2200MHz
Transmit power	~15.0dBm
Antenna Gain	2dBi
DATA rate	N/A
Modulation BW	5MHz, 10MHz; 15MHz; 20MHz
DC Voltage and DC current applied to the final amplifying device	36-60VDC(nominal voltage 48V)/ 2A

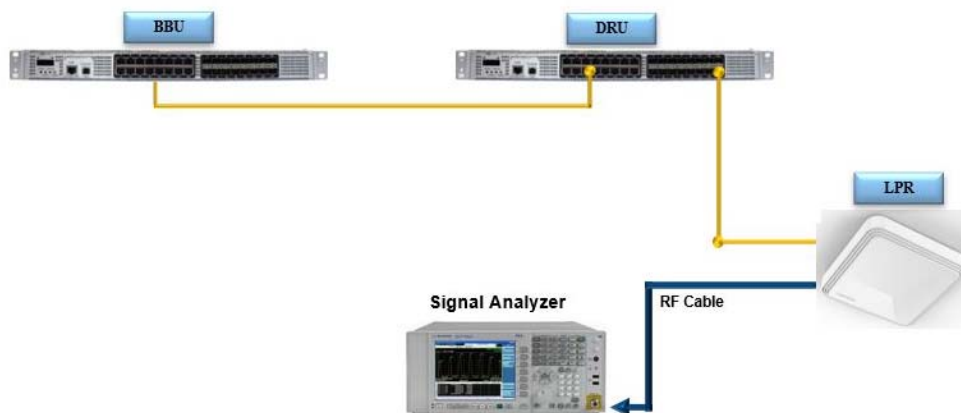


Figure 1. Conducted Test Set-Up

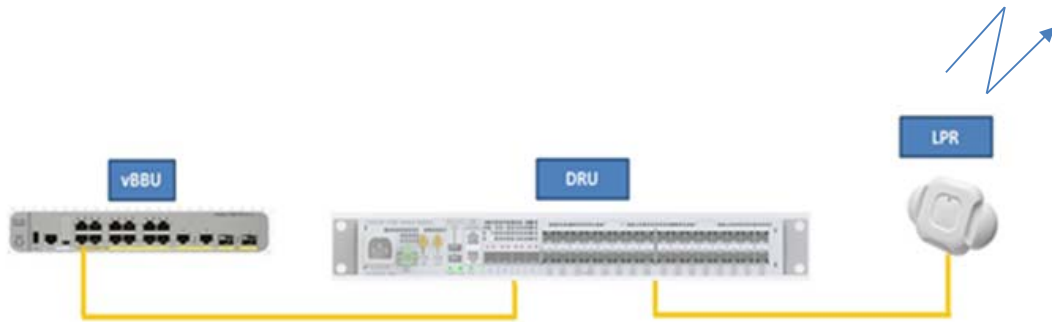


Figure 2. Radiated Test Set-Up

3. Test Set-Up Photos

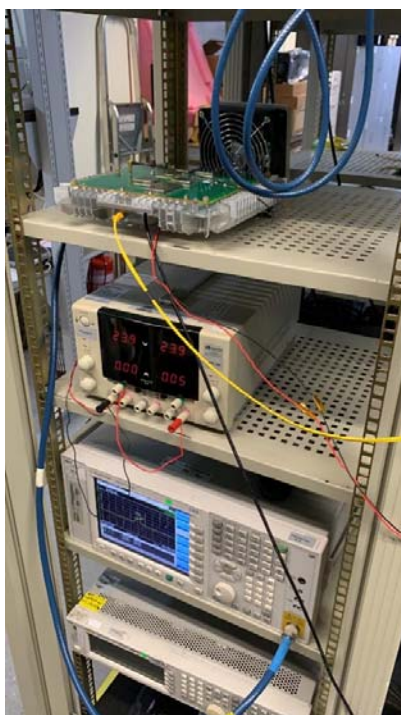


Figure 3. Conducted Test Set-Up

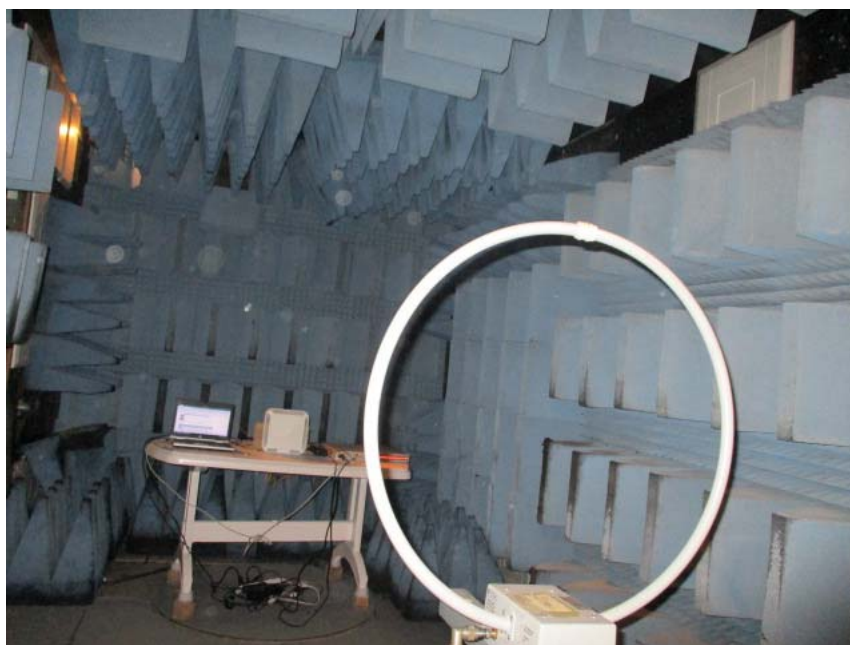


Figure 4. Radiated Emission Test, 0.009-30MHz



Figure 5. Radiated Emission Test, 30-200MHz



Figure 6. Radiated Emission Test, 200-1000MHz



Figure 7. Radiated Emission Test, 1-18GHz



Figure 8. Radiated Emission Test, 18-26.5GHz



4. RF Power Output AWS

4.1 Test Specification

FCC Part 27, Subpart C, Section: 27.50(d)

4.2 Test Procedure

(Temperature (22°C)/ Humidity (38%RH))

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an appropriate coaxial cable. Special attention was taken to prevent Spectrum Analyzer RF input overload.

4.3 Test Limit

The power limit is 1640W/MHz (62.1 dBm/MHz).

4.4 Test Results

Modulation	Operation Frequency (MHz)	Port1 Reading (dBm)	Port1 Reading (Watts)	Port2 Reading (dBm)	Port1 Reading (Watts)	EIRP* (dBm)	Limit (dBm)	Margin (dB)
QPSK	2112.5	20.1	0.102	20.2	0.105	25.16	62.1	-36.94
	2155.0	20.6	0.115	20.4	0.110	25.51	62.1	-36.59
	2197.5	20.7	0.117	20.3	0.107	25.51	62.1	-36.59
16QAM	2112.5	20.2	0.105	20.2	0.105	25.21	62.1	-36.89
	2155.0	20.6	0.115	20.5	0.112	25.56	62.1	-36.54
	2197.5	20.6	0.115	20.3	0.107	25.46	62.1	-36.64
64QAM	2112.5	20.2	0.105	20.0	0.100	25.11	62.1	-36.99
	2155.0	20.7	0.117	20.4	0.110	25.56	62.1	-36.54
	2197.5	20.7	0.117	20.1	0.102	25.42	62.1	-36.68

Figure 9. RF Power Output, 5MHz BW

Modulation	Operation Frequency (MHz)	Port1 Reading (dBm)	Port1 Reading (Watts)	Port2 Reading (dBm)	Port1 Reading (Watts)	EIRP* (dBm)	Limit (dBm)	Margin (dB)
QPSK	2115.0	20.3	0.107	20.2	0.105	25.26	62.1	-36.84
	2155.0	20.6	0.115	20.4	0.110	25.51	62.1	-36.59
	2195.0	20.7	0.117	19.5	0.089	25.15	62.1	-36.95
16QAM	2115.0	20.3	0.107	20.2	0.105	25.26	62.1	-36.84
	2155.0	20.7	0.117	20.4	0.110	25.56	62.1	-36.54
	2195.0	19.7	0.093	20.6	0.115	25.18	62.1	-36.92
64QAM	2115.0	20.4	0.110	19.9	0.098	25.17	62.1	-36.93
	2155.0	20.7	0.117	20.4	0.110	25.56	62.1	-36.54
	2195.0	20.7	0.117	20.3	0.107	25.51	62.1	-36.59

Figure 10. RF Power Output, 10MHz BW

Modulation	Operation Frequency	Port1 Reading	Port1 Reading	Port2 Reading	Port1 Reading	EIRP*	Limit	Margin
	(MHz)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(dBm)	(dB)
QPSK	2117.5	20.5	0.112	20.3	0.107	25.41	62.1	-36.69
	2155.0	20.7	0.117	20.6	0.115	25.66	62.1	-36.44
	2192.5	19.9	0.098	20.0	0.100	24.96	62.1	-37.14
16QAM	2117.5	20.5	0.112	20.1	0.102	25.31	62.1	-36.79
	2155.0	20.8	0.120	20.6	0.115	25.71	62.1	-36.39
	2192.5	19.9	0.098	20.6	0.115	25.27	62.1	-36.83
64QAM	2117.5	20.5	0.112	20.5	0.112	25.51	62.1	-36.59
	2155.0	20.8	0.120	20.5	0.112	25.66	62.1	-36.44
	2192.5	19.9	0.098	20.0	0.100	24.96	62.1	-37.14

Figure 11. RF Power Output, 15MHz BW

Modulation	Operation Frequency	Port1 Reading	Port1 Reading	Port2 Reading	Port1 Reading	EIRP*	Limit	Margin
	(MHz)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(dBm)	(dB)
QPSK	2120.0	20.5	0.112	20.3	0.107	25.41	62.1	-36.69
	2155.0	20.7	0.117	20.6	0.115	25.66	62.1	-36.44
	2190.0	19.9	0.098	20.0	0.100	24.96	62.1	-37.14
16QAM	2120.0	20.5	0.112	20.1	0.102	25.31	62.1	-36.79
	2155.0	20.8	0.120	20.6	0.115	25.71	62.1	-36.39
	2190.0	19.9	0.098	20.6	0.115	25.27	62.1	-36.83
64QAM	2120.0	20.5	0.112	20.5	0.112	25.51	62.1	-36.59
	2155.0	20.8	0.120	20.5	0.112	25.66	62.1	-36.44
	2190.0	19.9	0.098	20.0	0.100	24.96	62.1	-37.14

Figure 12. RF Power Output, 20MHz BW

*Note – EIRP was calculated by adding both Port readings in W, then converting to dBm and adding the antenna gain.

JUDGEMENT: Passed

See additional information in *Figure 13 to Figure 84*.



Antenna Port:

1

Modulation:

64QAM

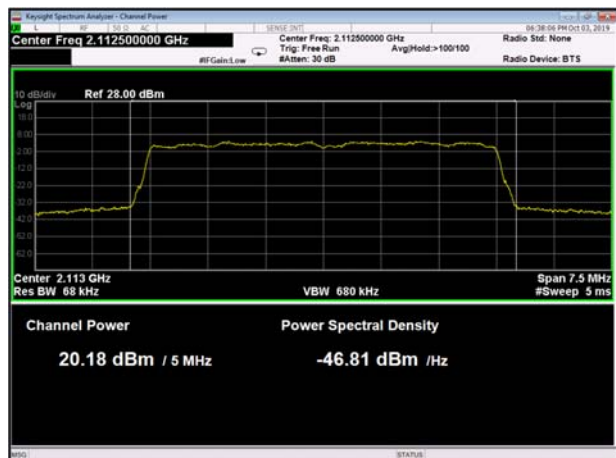


Figure 13. 5MHz BW, 2112.5MHz

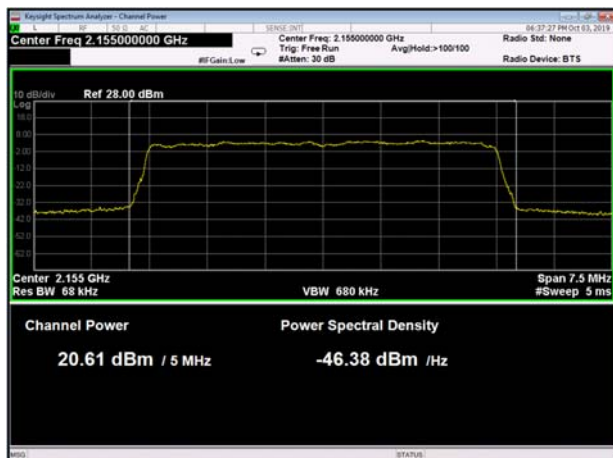


Figure 14. 5MHz BW, 2155MHz

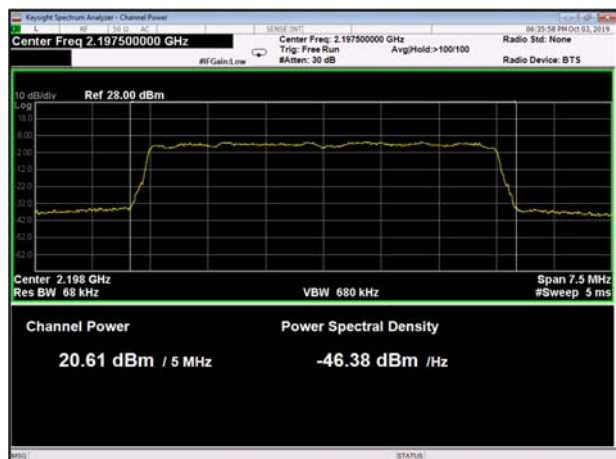


Figure 15 5MHz BW, 2197.5MHz

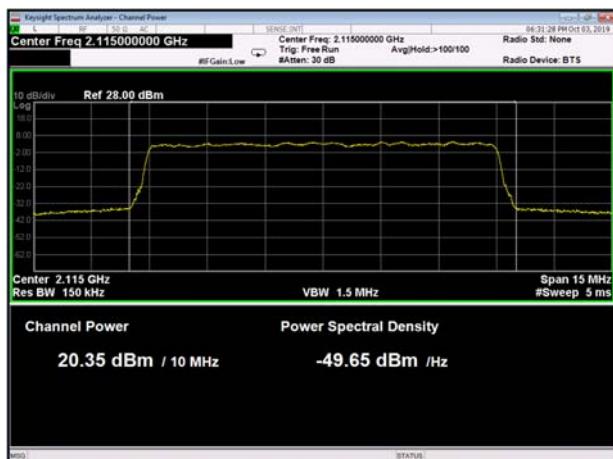
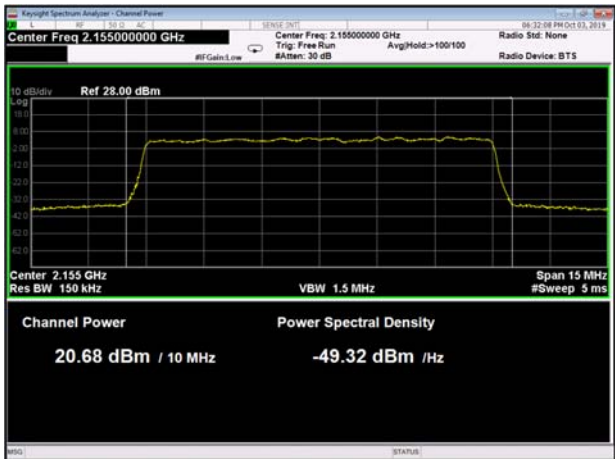
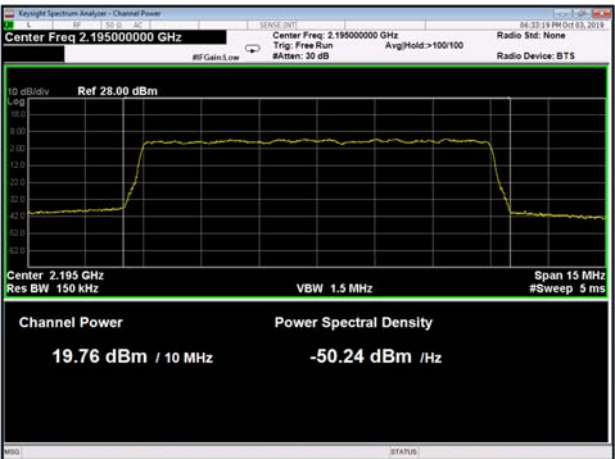
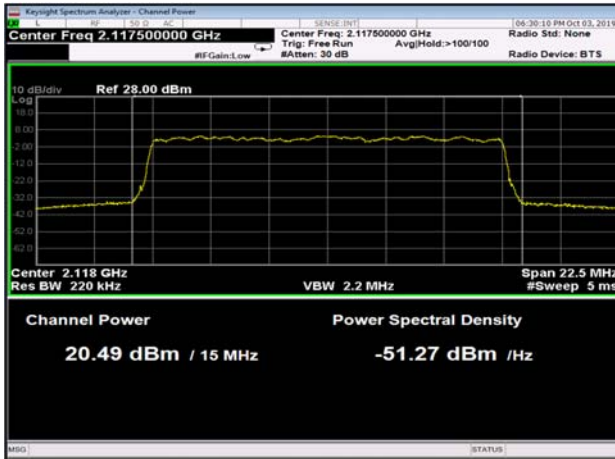
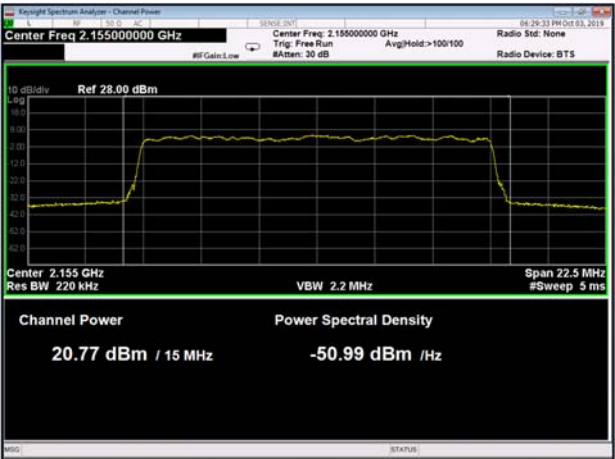
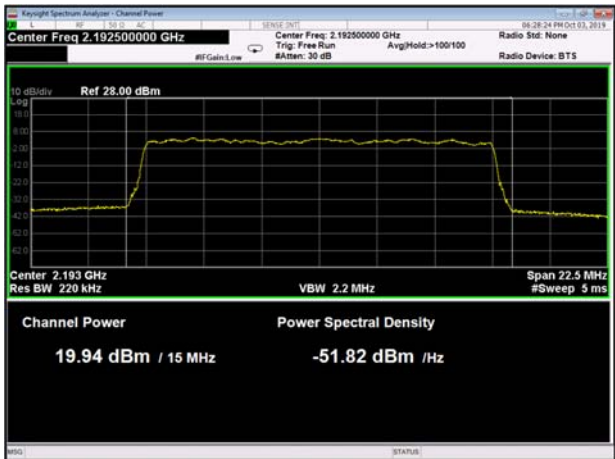
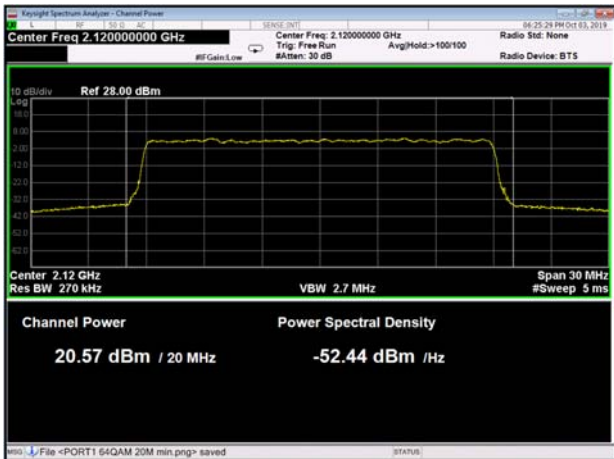
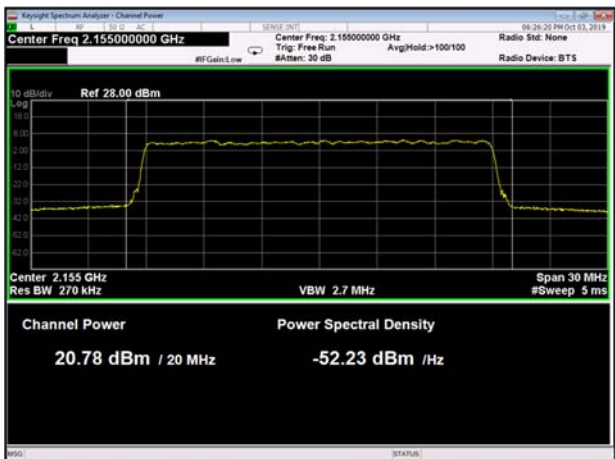
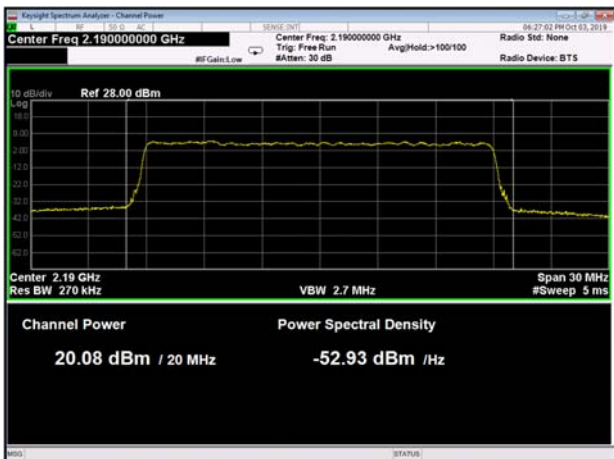


Figure 16 10MHz BW, 2115MHz



Antenna Port:	1
Modulation:	64QAM
	
Figure 17 10MHz BW, 2155MHz	Figure 18 10MHz BW, 2195MHz
	
Figure 19 15MHz BW, 2117.5MHz	Figure 20 15MHz BW, 2155MHz



Antenna Port:	1
Modulation:	64QAM
	
Figure 21 15MHz BW, 2192.5MHz	Figure 22 20MHz BW, 2120MHz
	
Figure 23 20MHz BW, 2155MHz	Figure 24 20MHz BW, 2190MHz



Antenna Port:

1

Modulation:

16QAM

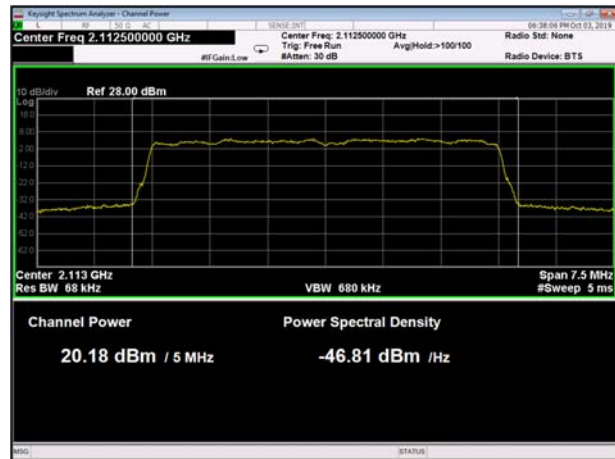


Figure 25 5MHz BW, 2112.5MHz

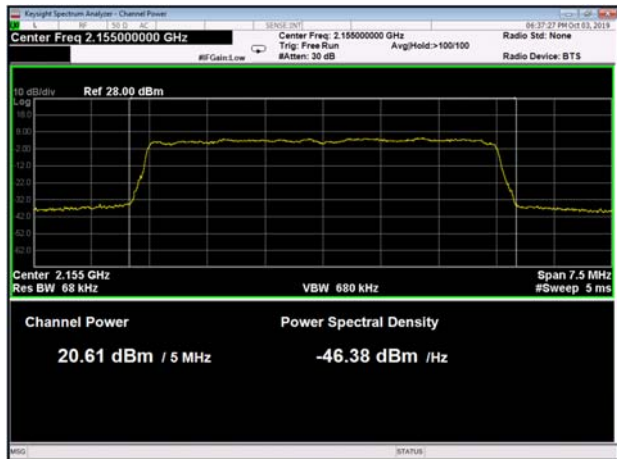


Figure 26 5MHz BW, 2155MHz

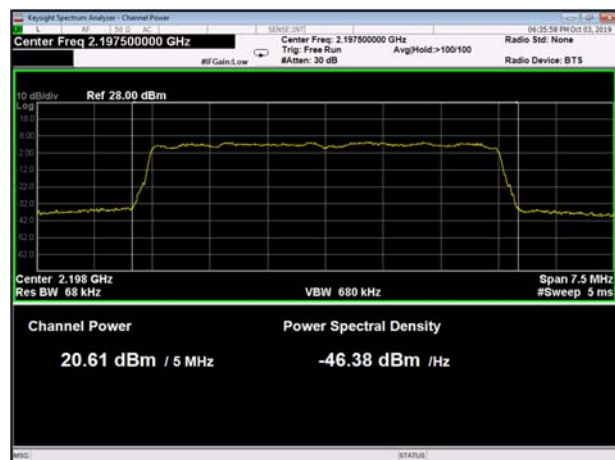


Figure 27 5MHz BW, 2197.5MHz

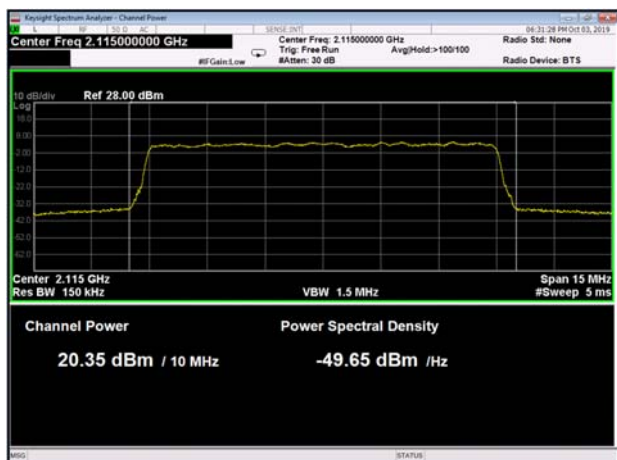


Figure 28 10MHz BW, 2115MHz



Antenna Port:

1

Modulation:

16QAM

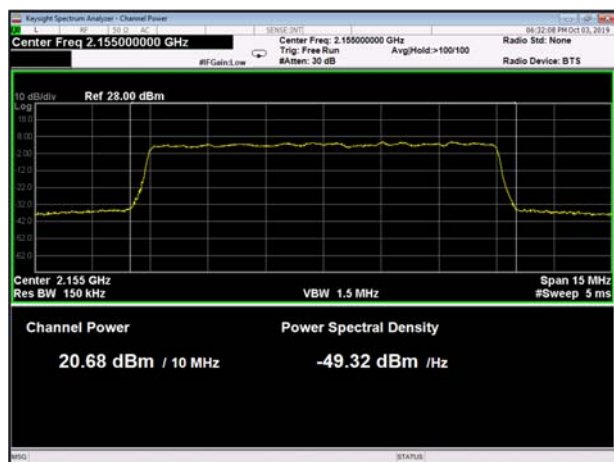


Figure 29 10MHz BW, 2155MHz

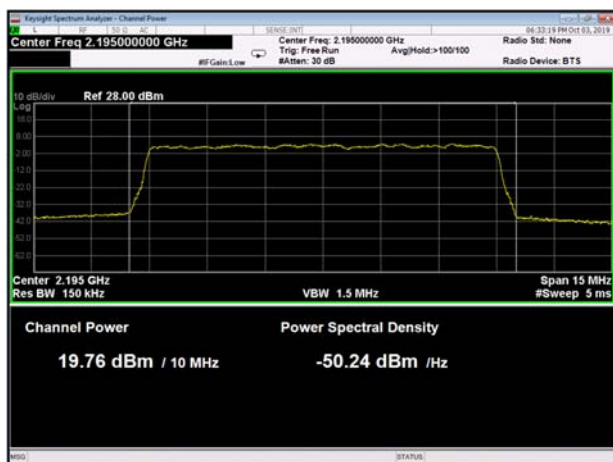


Figure 30 10MHz BW, 2195MHz

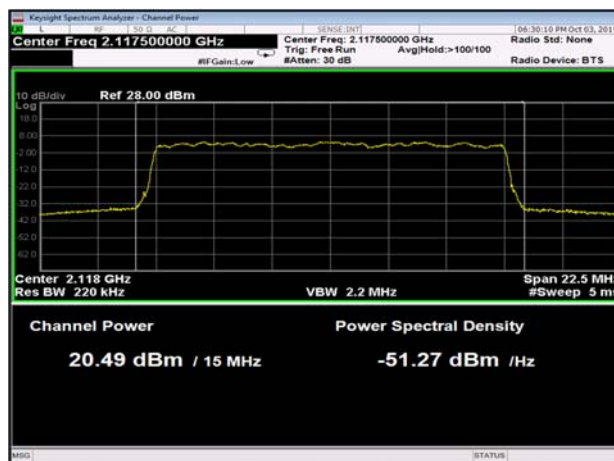


Figure 31 15MHz BW, 2117.5MHz

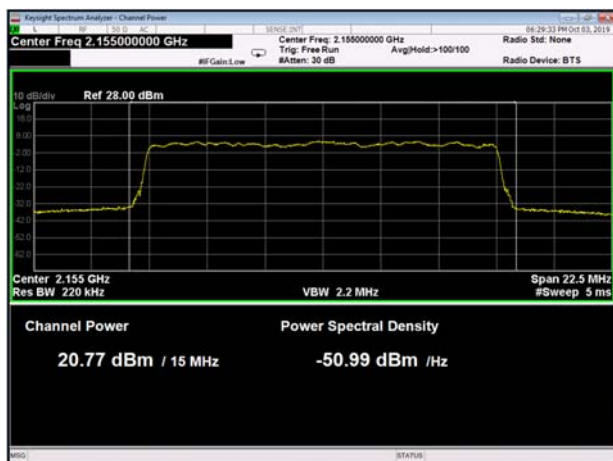


Figure 32 15MHz BW, 2155MHz



Antenna Port:

1

Modulation:

16QAM

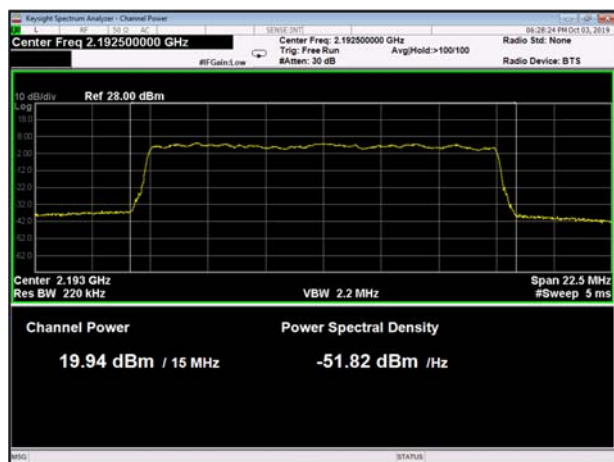


Figure 33 15MHz BW, 2192.5MHz

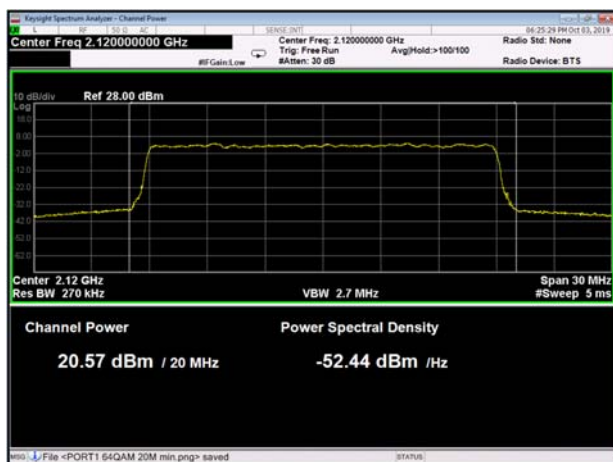


Figure 34 20MHz BW, 2120MHz

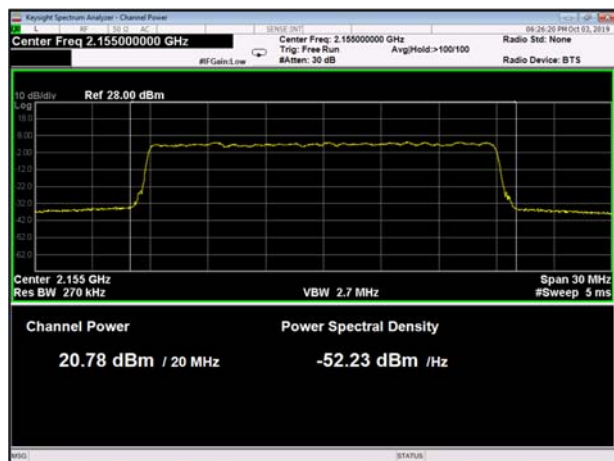


Figure 35 20MHz BW, 2155MHz

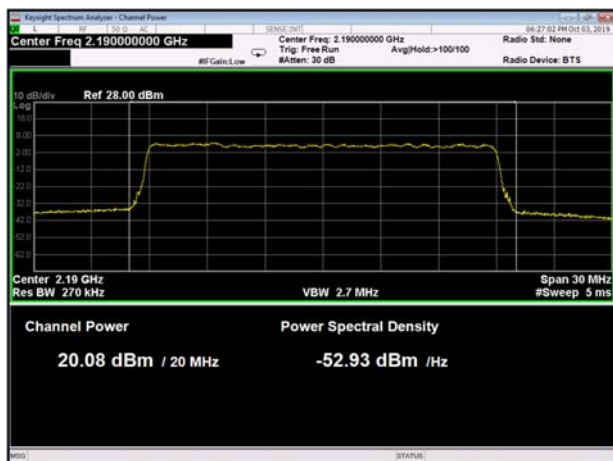
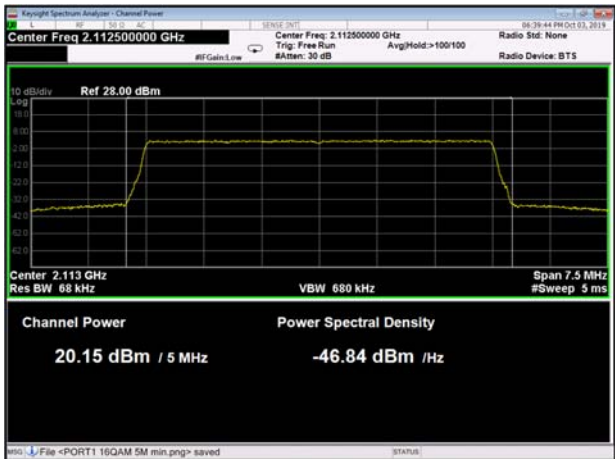
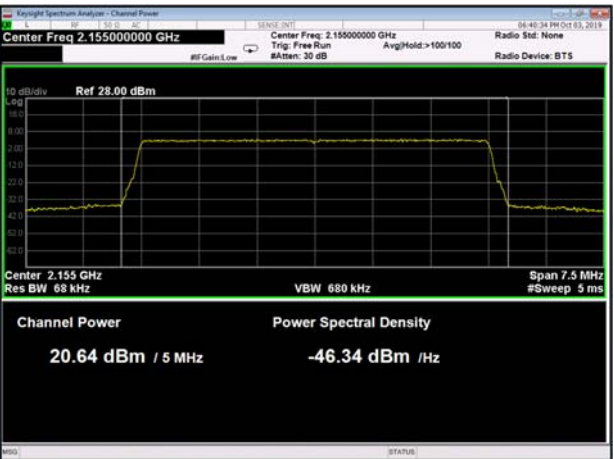
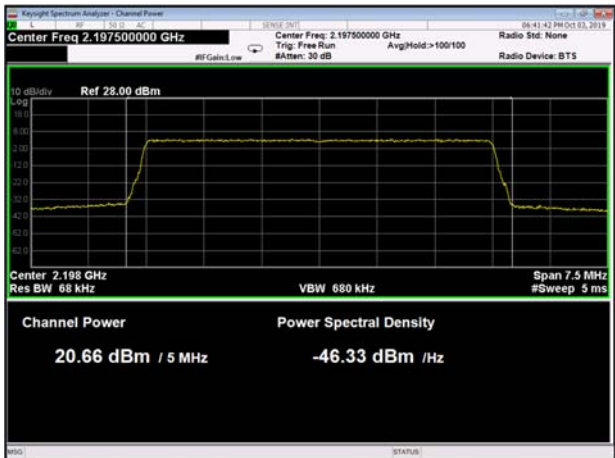
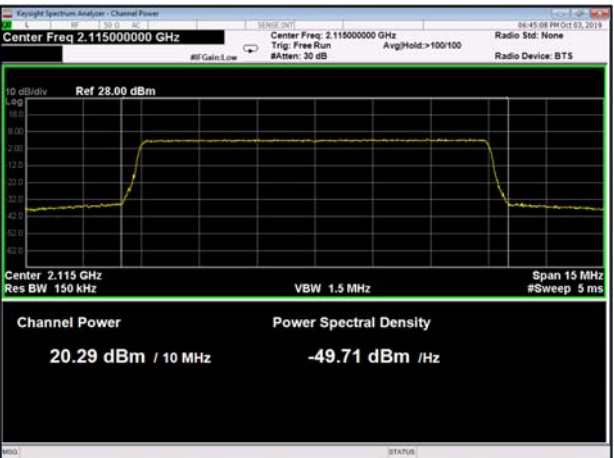
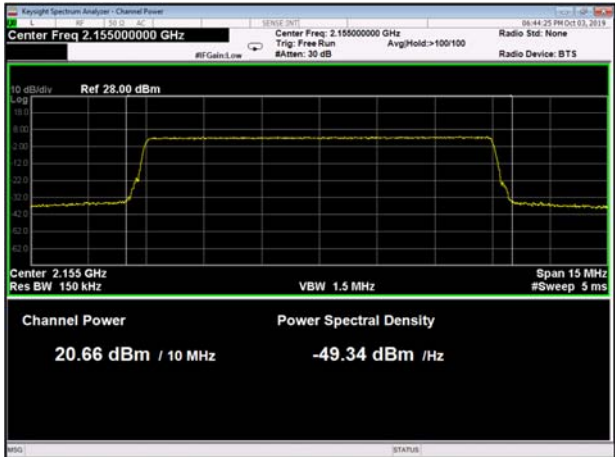
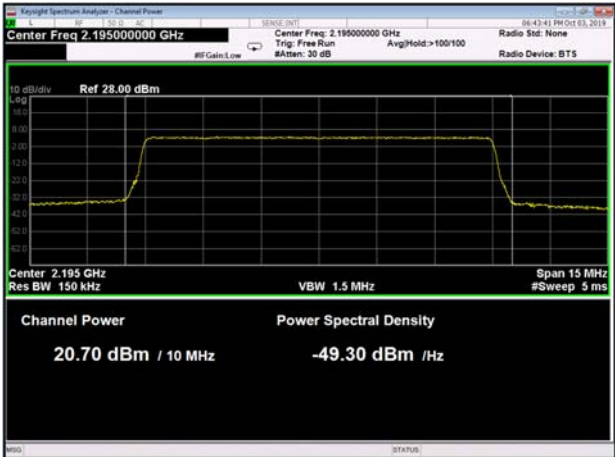
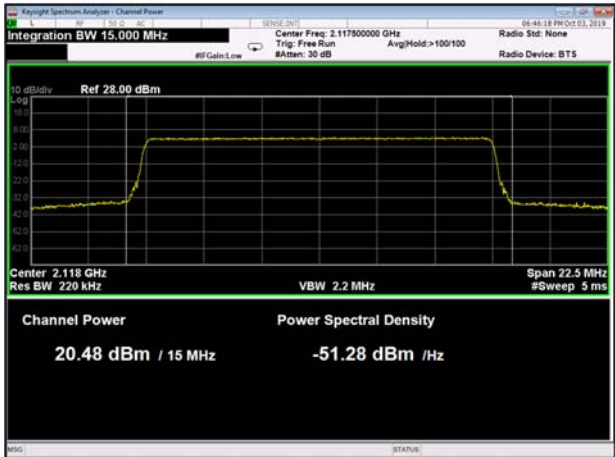
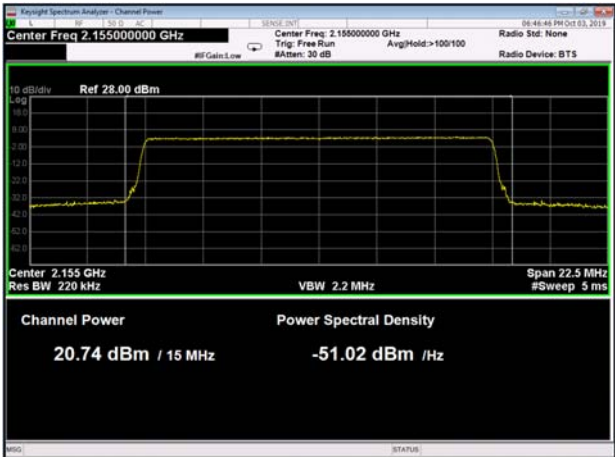


Figure 36 20MHz BW, 2190MHz



Antenna Port:	1
Modulation:	QPSK
	
Figure 37 5MHz BW, 2112.5MHz	Figure 38 5MHz BW, 2155MHz
	
Figure 39 5MHz BW, 2197.5MHz	Figure 40 10MHz BW, 2115MHz



Antenna Port:	1
Modulation:	QPSK
	
Figure 41 10MHz BW, 2155MHz	Figure 42 10MHz BW, 2195MHz
	
Figure 43 15MHz BW, 2117.5MHz	Figure 44 15MHz BW, 2155MHz



Antenna Port:

1

Modulation:

QPSK

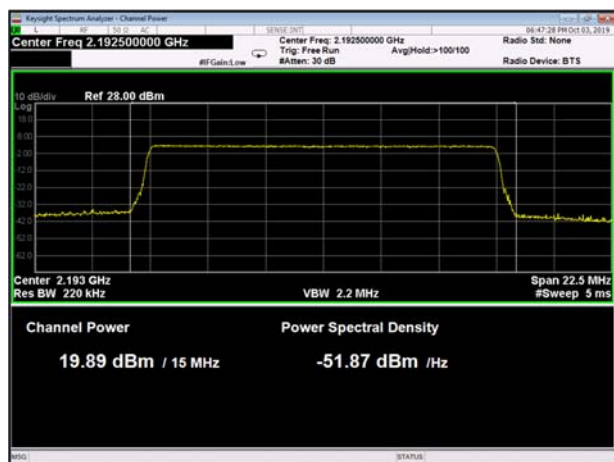


Figure 45 15MHz BW, 2192.5MHz

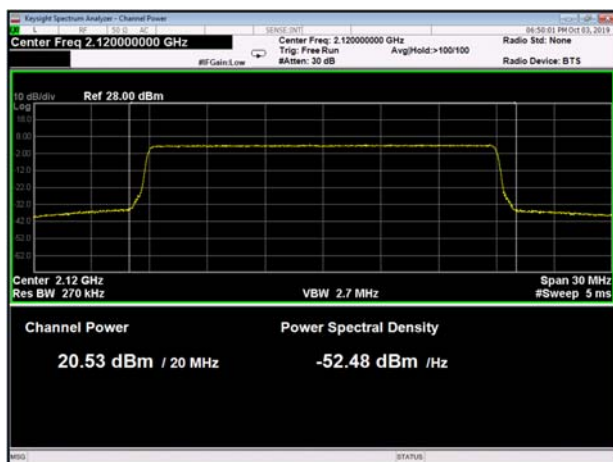


Figure 46 20MHz BW, 2120MHz

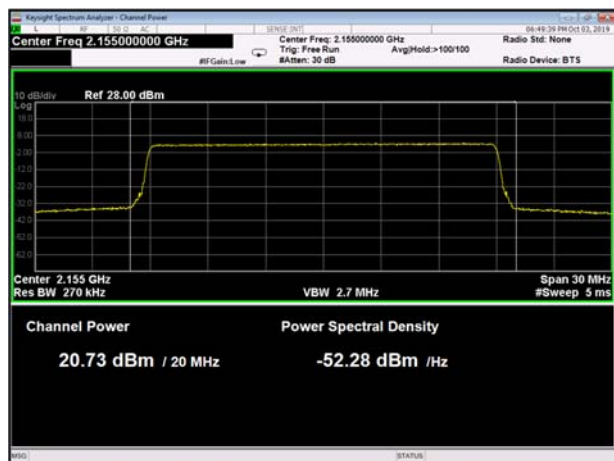


Figure 47 20MHz BW, 2155MHz

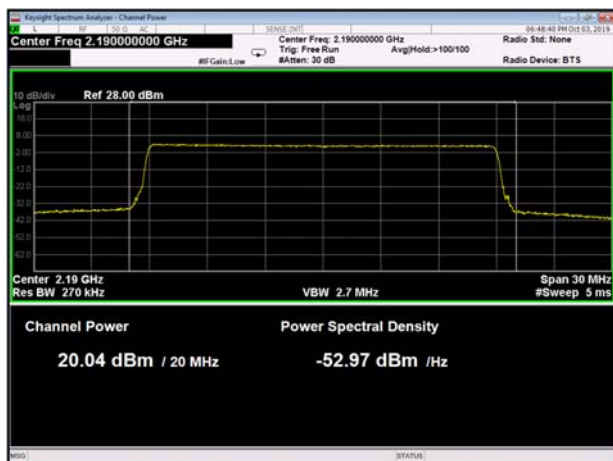


Figure 48 20MHz BW, 2190MHz



Antenna Port:

2

Modulation:

64QAM

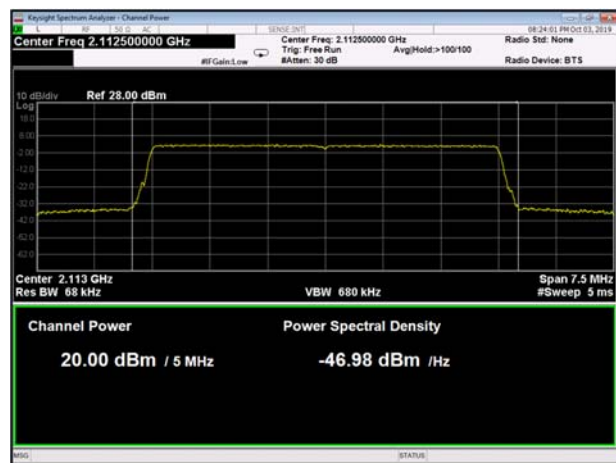


Figure 49 5MHz BW, 2112.5MHz

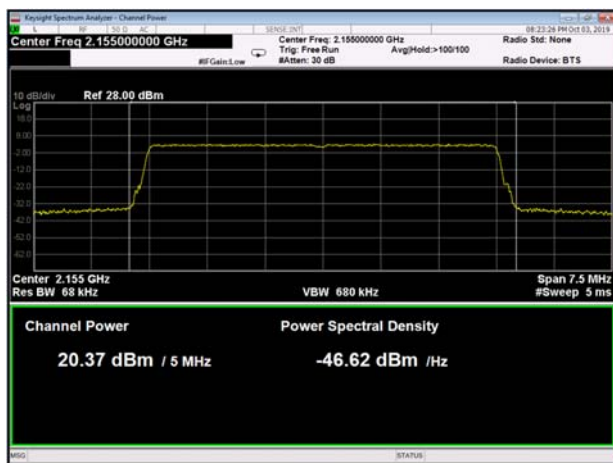


Figure 50 5MHz BW, 2155MHz

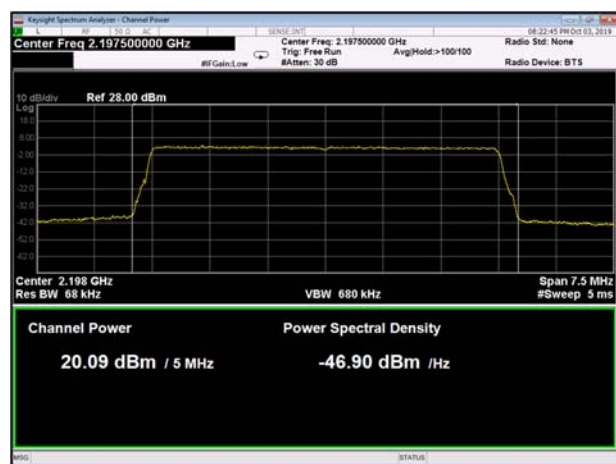


Figure 51 5MHz BW, 2197.5MHz

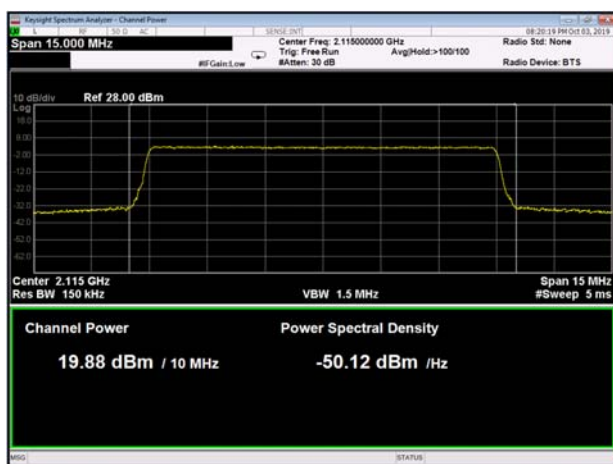
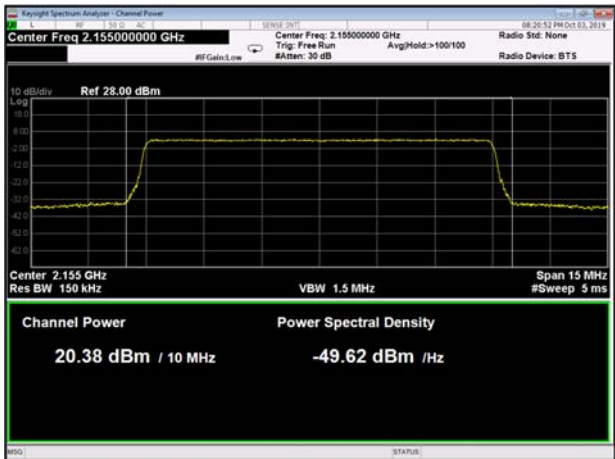
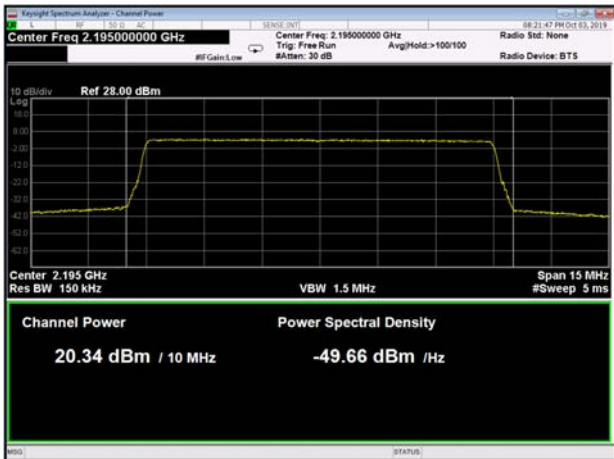
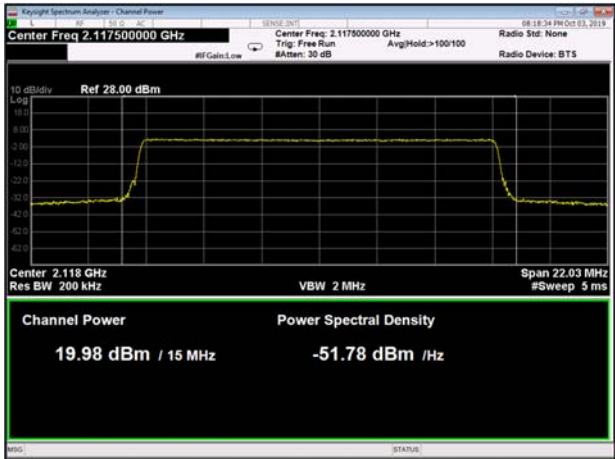
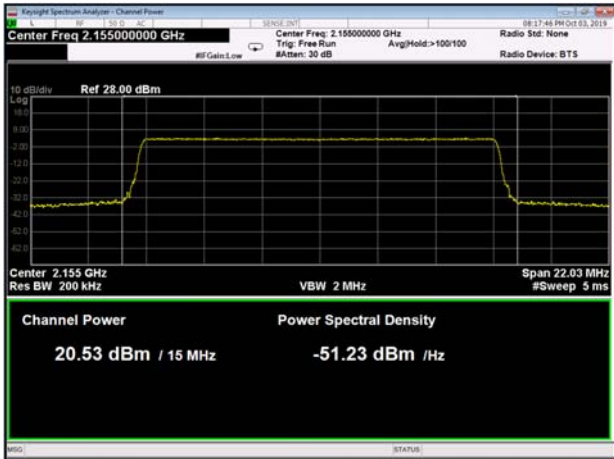


Figure 52 10MHz BW, 2115MHz



Antenna Port:	2
Modulation:	64QAM
	
Figure 53 10MHz BW, 2155MHz	Figure 54 10MHz BW, 2195MHz
	
Figure 55 15MHz BW, 2117.5MHz	Figure 56 15MHz BW, 2155MHz



Antenna Port:

2

Modulation:

64QAM

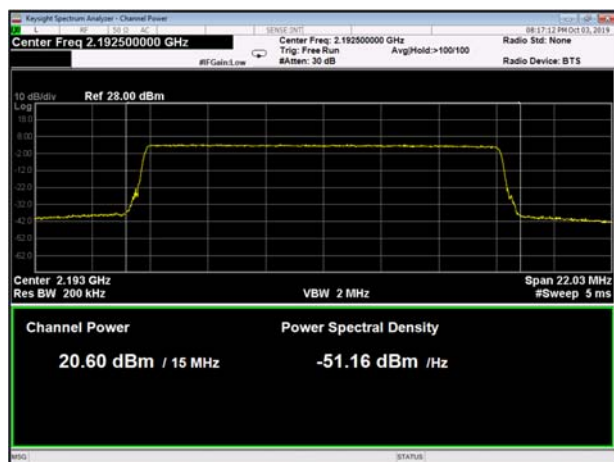


Figure 57 15MHz BW, 2192.5MHz

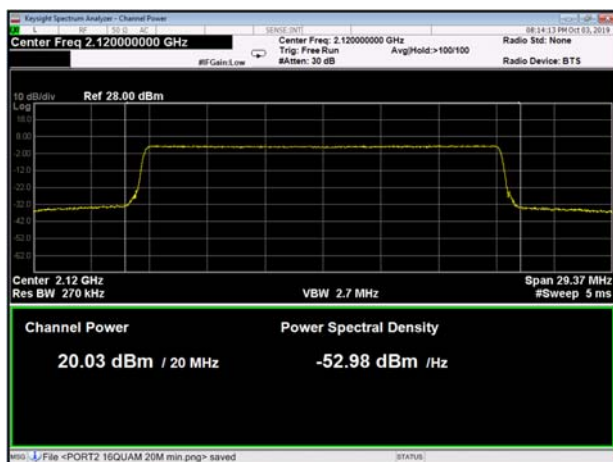


Figure 58 20MHz BW, 2120MHz

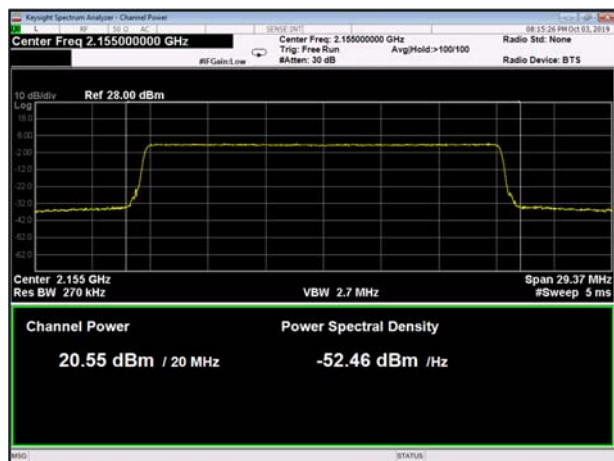


Figure 59 20MHz BW, 2155MHz

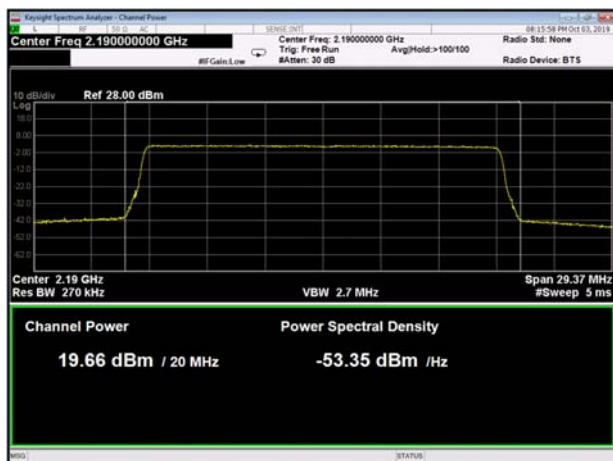


Figure 60 20MHz BW, 2190MHz



Antenna Port:

2

Modulation:

16QAM

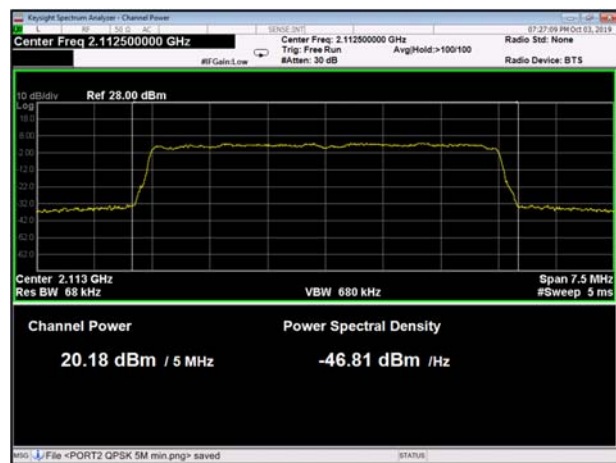


Figure 61 5MHz BW, 2112.5MHz

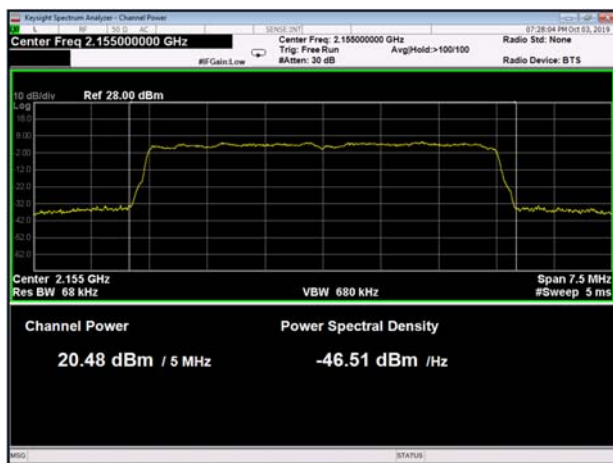


Figure 62 5MHz BW, 2155MHz

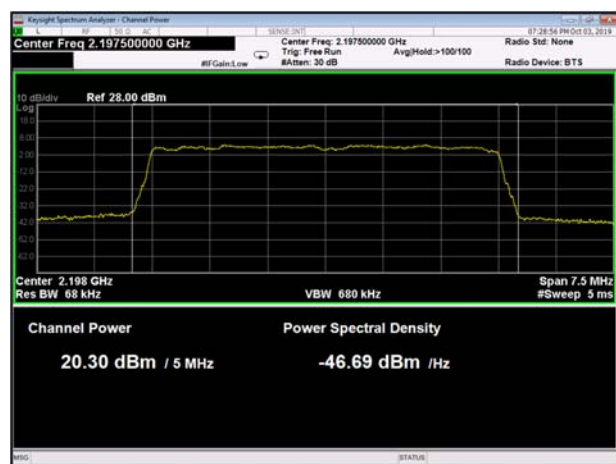


Figure 63 5MHz BW, 2197.5MHz

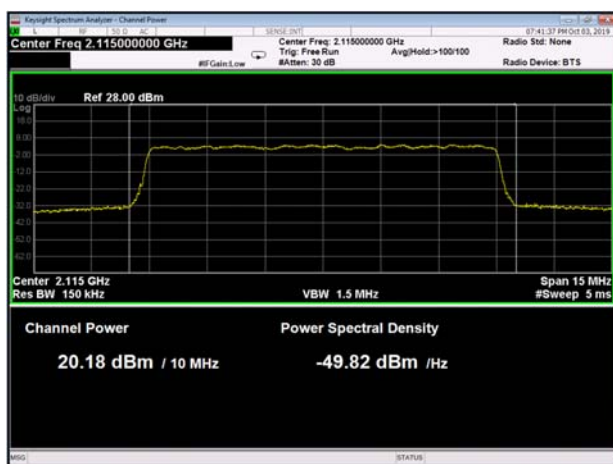
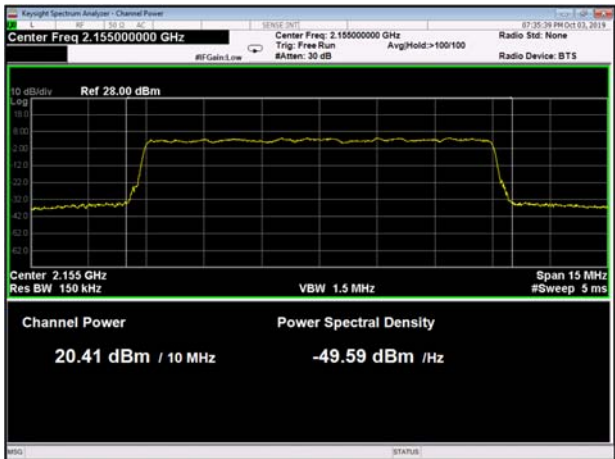
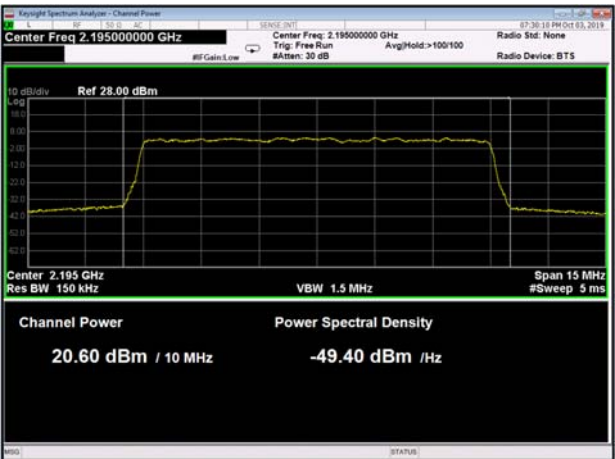
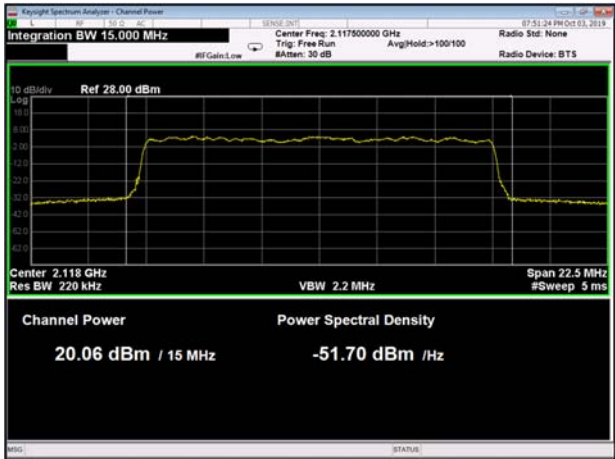
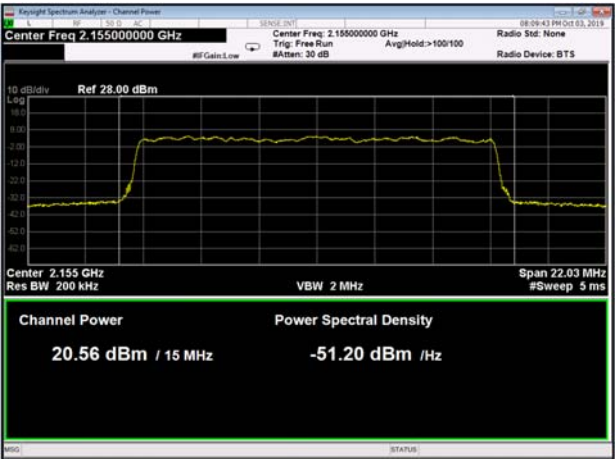
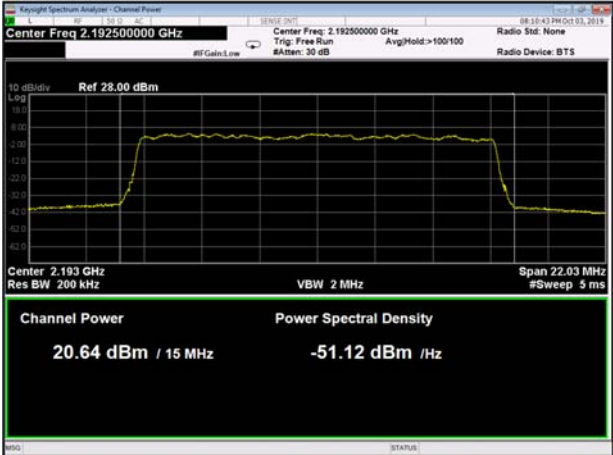
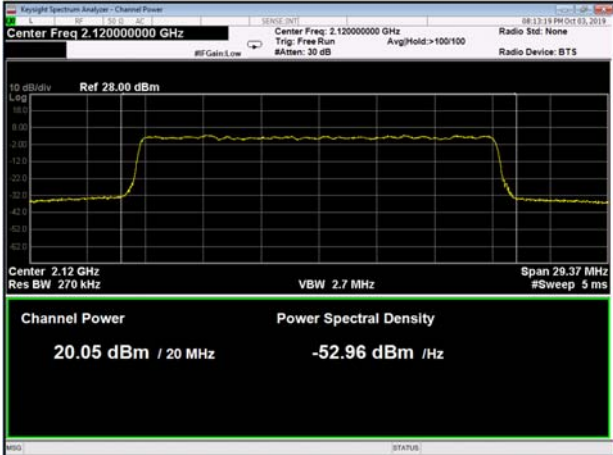
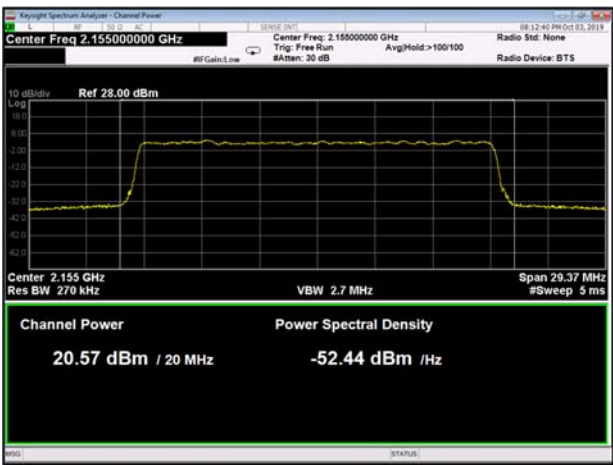
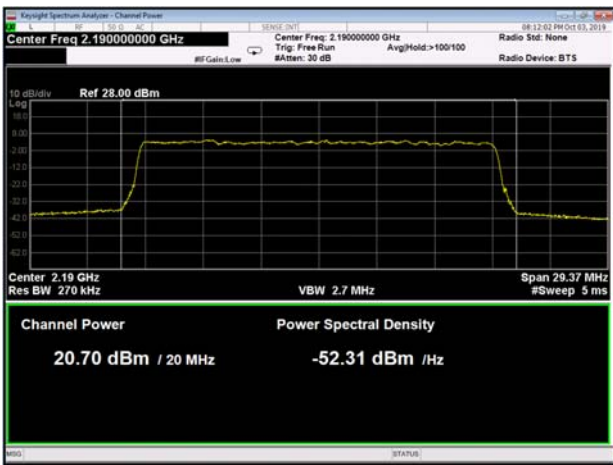


Figure 64 10MHz BW, 2115MHz

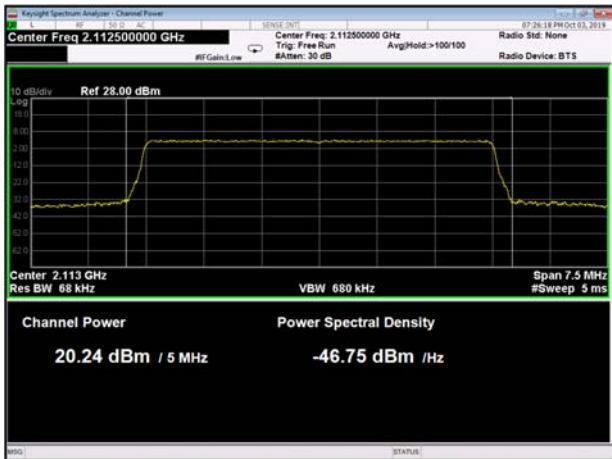
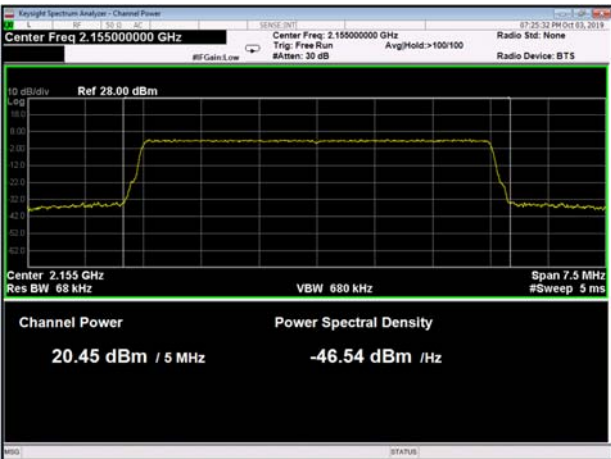
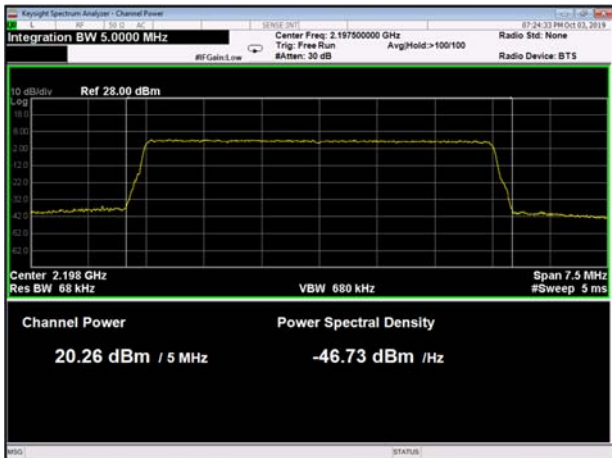
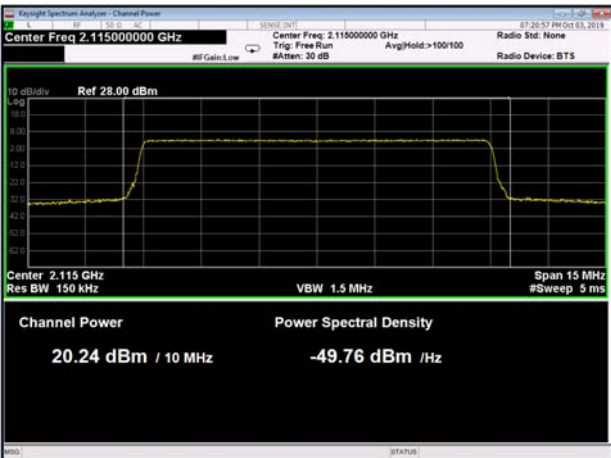


Antenna Port:	2
Modulation:	16QAM
	
Figure 65 10MHz BW, 2155MHz	Figure 66 10MHz BW, 2195MHz
	
Figure 67 15MHz BW, 2117.5MHz	Figure 68 15MHz BW, 2155MHz

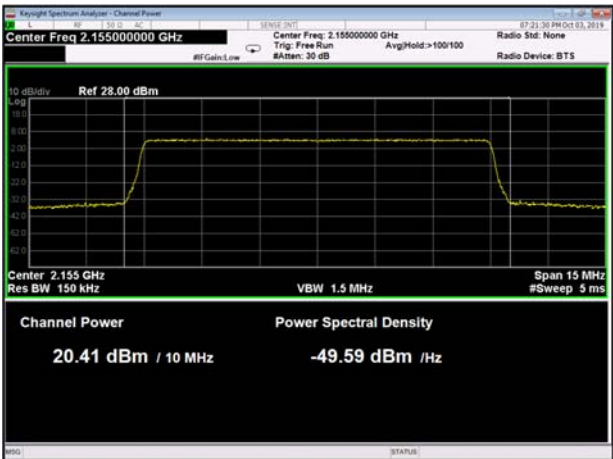
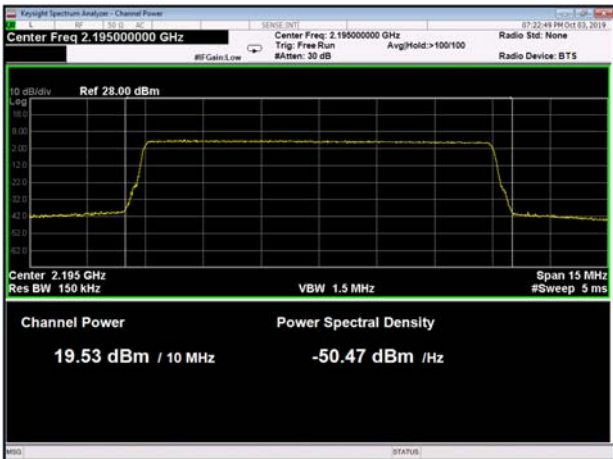
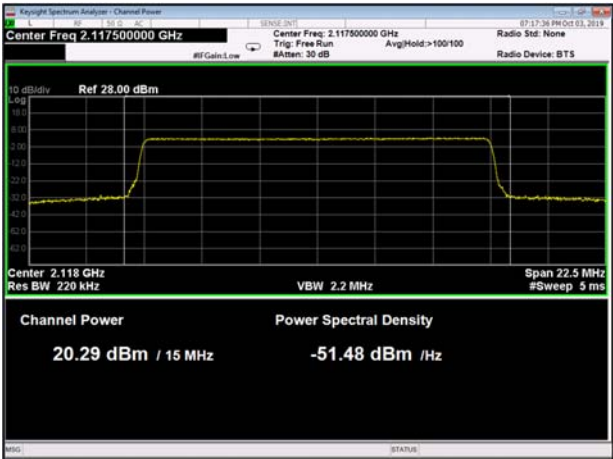
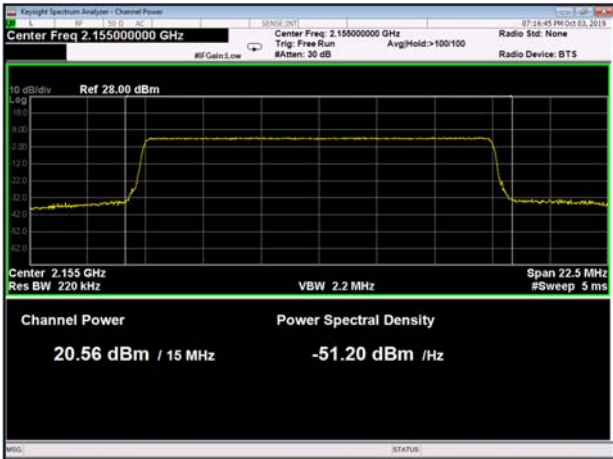


Antenna Port:	2
Modulation:	16QAM
	
Figure 69 15MHz BW, 2192.5MHz	Figure 70 20MHz BW, 2120MHz
	
Figure 71 20MHz BW, 2155MHz	Figure 72 20MHz BW, 2190MHz

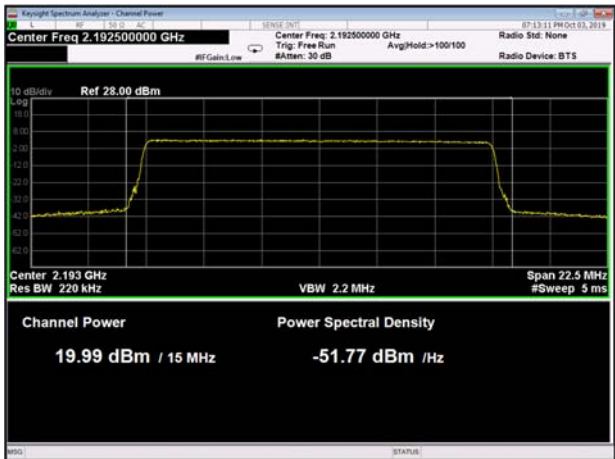
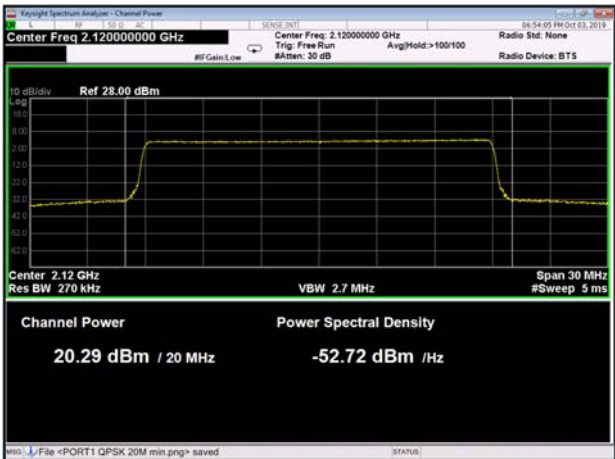
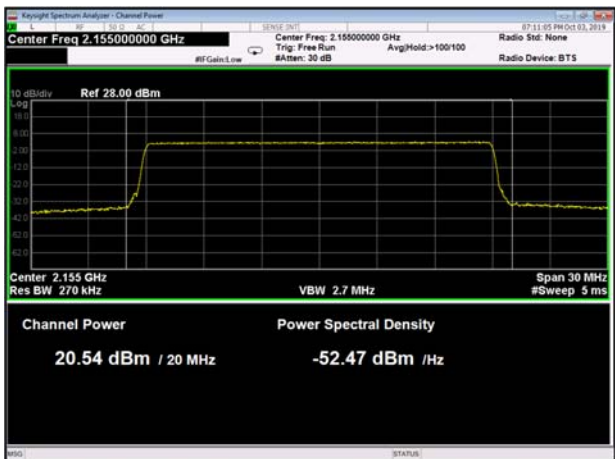
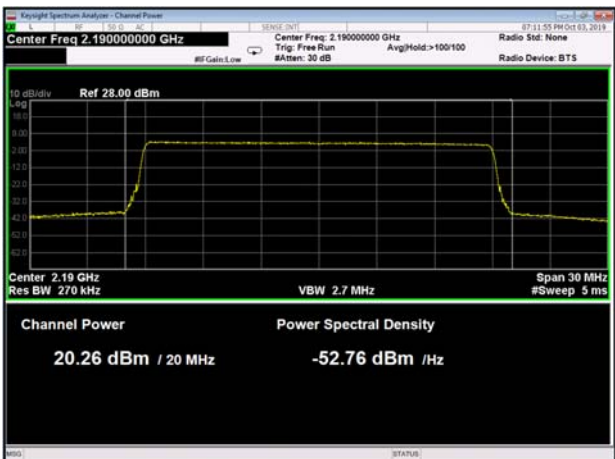


Antenna Port:	2
Modulation:	QPSK
	
Figure 73 5MHz BW, 2112.5MHz	Figure 74 5MHz BW, 2155MHz
	
Figure 75 5MHz BW, 2197.5MHz	Figure 76 10MHz BW, 2115MHz



Antenna Port:	2
Modulation:	QPSK
	
Figure 77 10MHz BW, 2155MHz	Figure 78 10MHz BW, 2195MHz
	
Figure 79 15MHz BW, 2117.5MHz	Figure 80 15MHz BW, 2155MHz



Antenna Port:	2
Modulation:	QPSK
	
Figure 81 15MHz BW, 2192.5MHz	Figure 82 20MHz BW, 2120MHz
	
Figure 83 20MHz BW, 2155MHz	Figure 84 20MHz BW, 2190MHz



4.5 Test Equipment Used; RF Power Output AWS

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY52220686	November 28, 2018	November 28, 2020
Vector Signal Generator	VIAVI	MTS 5800	WMNK00716 90263	July 1, 2018	July 1, 2021

Figure 85 Test Equipment Used

5. Occupied Bandwidth AWS

5.1 Test Specification

FCC Part 2, Section 2.1049

5.2 Test Procedure

(Temperature (22°C)/ Humidity (38%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an appropriate coaxial cable (loss=0.8 dB). The spectrum analyzer was set to proper resolution B.W.

OBW function (99%) was employed for this evaluation.

5.3 Test Limit

N/A

5.4 Test Results

Modulation	Operating Frequency [MHz]	Output Reading [MHz]
QPSK	2112.5	4.5
	2155.0	4.5
	2197.5	4.5
16QAM	2112.5	4.5
	2155.0	4.5
	2197.5	4.5
64QAM	2112.5	4.5
	2155.0	4.5
	2197.5	4.5

Figure 86. Occupied Bandwidth AWS 1-3, 5MHz BW

Modulation	Operating Frequency [MHz]	Output Reading [MHz]
QPSK	2115.0	9.0
	2155.0	9.0
	2195.0	9.0
16QAM	2115.0	9.0
	2155.0	9.0
	2195.0	9.0
64QAM	2115.0	9.0
	2155.0	9.0
	2195.0	9.0

Figure 87. Occupied Bandwidth AWS 1-3, 10MHz BW

Modulation	Operating Frequency [MHz]	Output Reading [MHz]
QPSK	2117.5	13.5
	2155.0	13.5
	2192.5	13.5
16QAM	2117.5	13.5
	2155.0	13.5
	2192.5	13.5
64QAM	2117.5	13.5
	2155.0	13.5
	2192.5	13.5

Figure 88. Occupied Bandwidth AWS 1-3, 15MHz BW

Modulation	Operating Frequency [MHz]	Output Reading [MHz]
QPSK	2120.0	18.0
	2155.0	18.0
	2190.0	18.0
16QAM	2120.0	18.0
	2155.0	18.0
	2190.0	18.0
64QAM	2120.0	18.1
	2155.0	18.0
	2190.0	18.0

Figure 89. Occupied Bandwidth AWS 1-3, 20MHz BW

JUDGEMENT: Passed

See additional information in *Figure 90 to Figure 125*.



Antenna Port:

1

Modulation:

64QAM

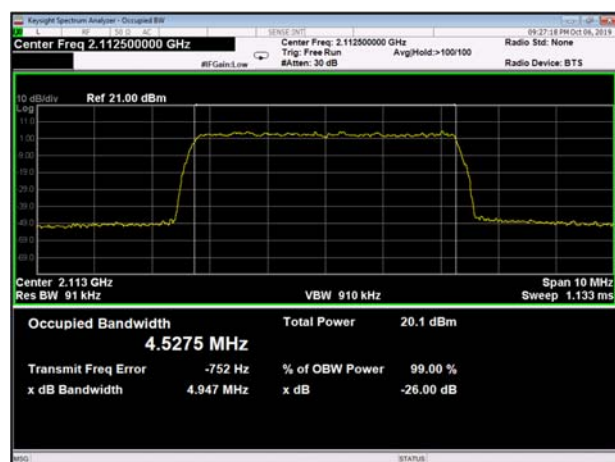


Figure 90 5MHz BW, 2112.5MHz

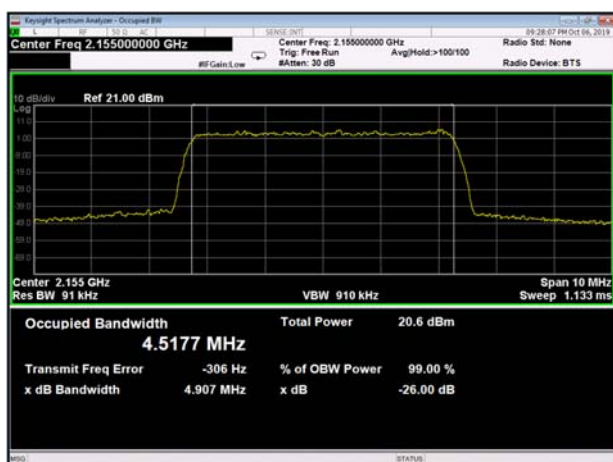


Figure 91 5MHz BW, 2155MHz

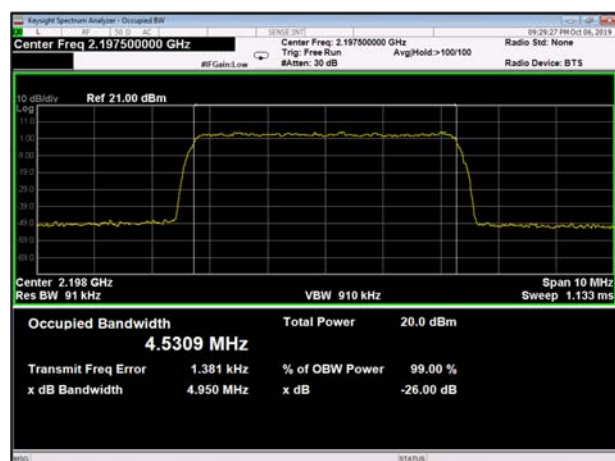


Figure 92 5MHz BW, 2197.5MHz

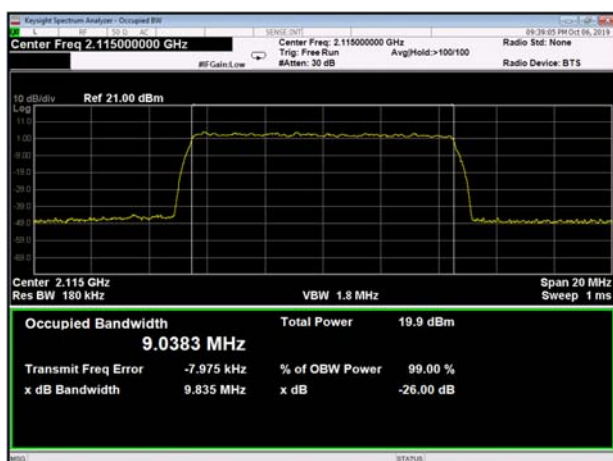


Figure 93 10MHz BW, 2115MHz



Antenna Port:

1

Modulation:

64QAM

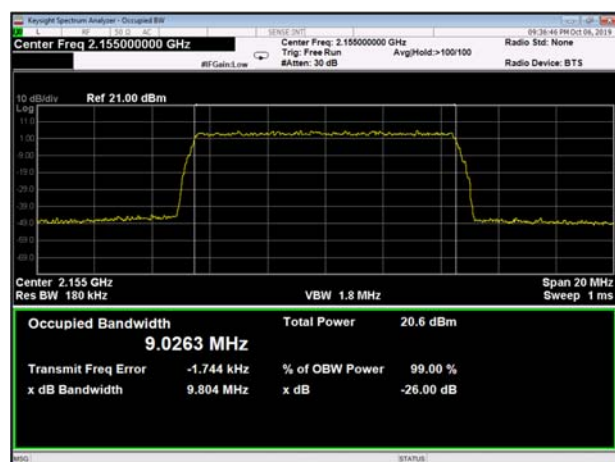


Figure 94 10MHz BW, 2155MHz

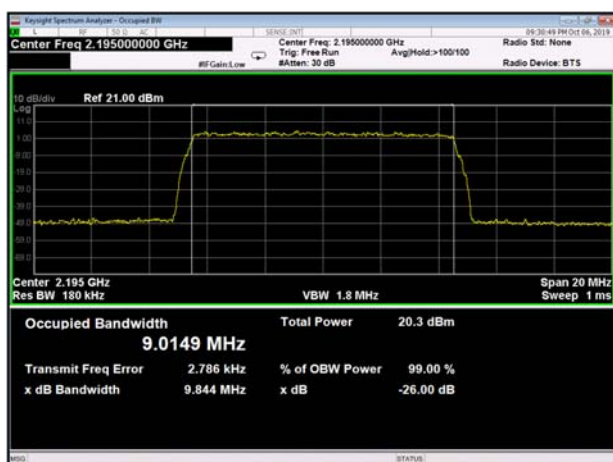


Figure 95 10MHz BW, 2195MHz

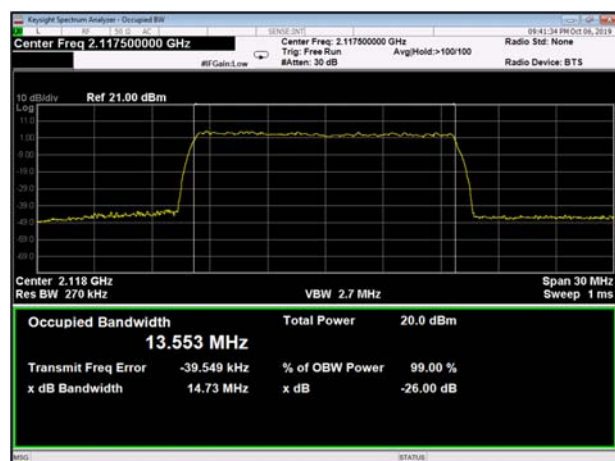


Figure 96 15MHz BW, 2117.5MHz

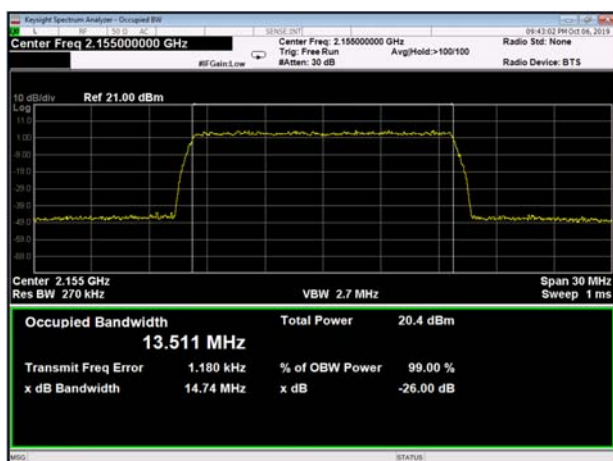


Figure 97 15MHz BW, 2155MHz



Antenna Port:

1

Modulation:

64QAM

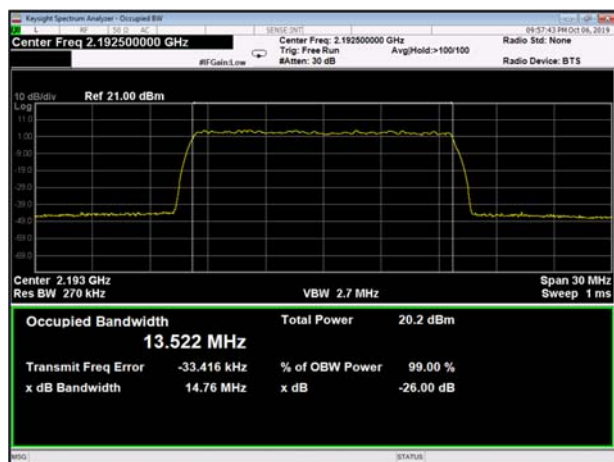


Figure 98 15MHz BW, 2192.5MHz

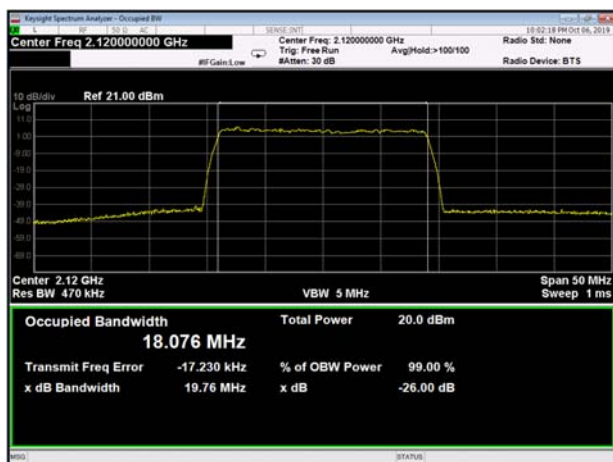


Figure 99 20MHz BW, 2120MHz

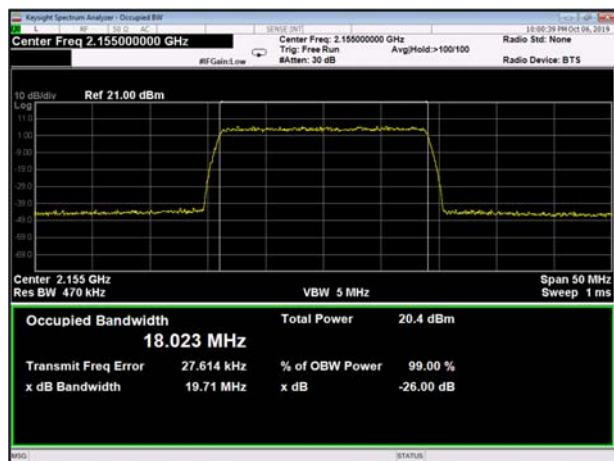


Figure 100 20MHz BW, 2155MHz

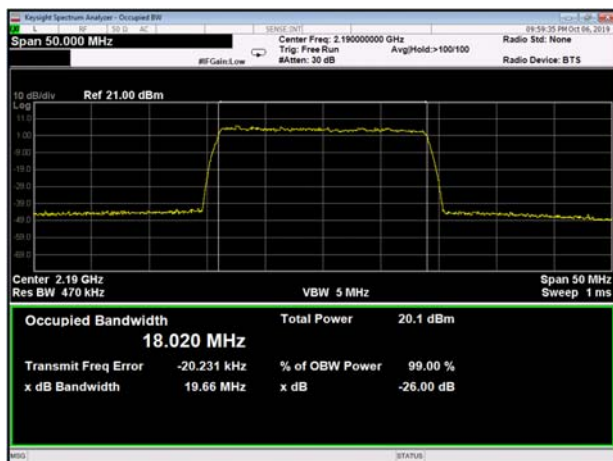


Figure 101 20MHz BW, 2190MHz



Antenna Port:

1

Modulation:

16QAM

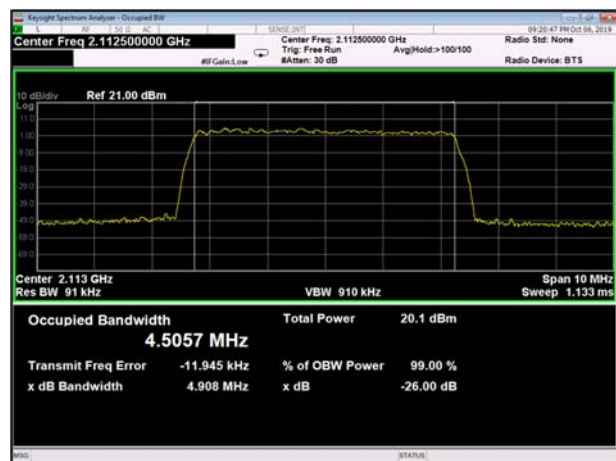


Figure 102 5MHz BW, 2112.5MHz

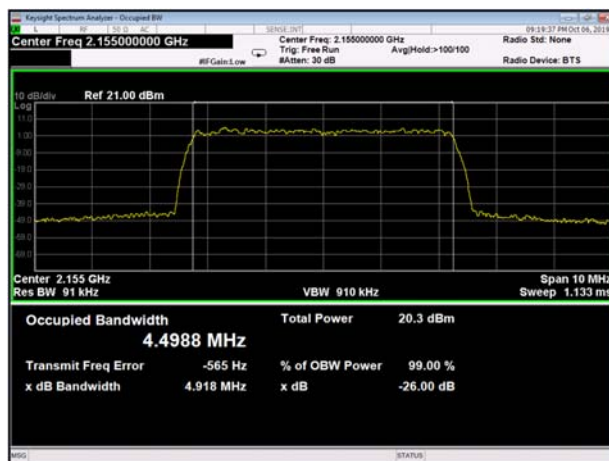


Figure 103 5MHz BW, 2155MHz

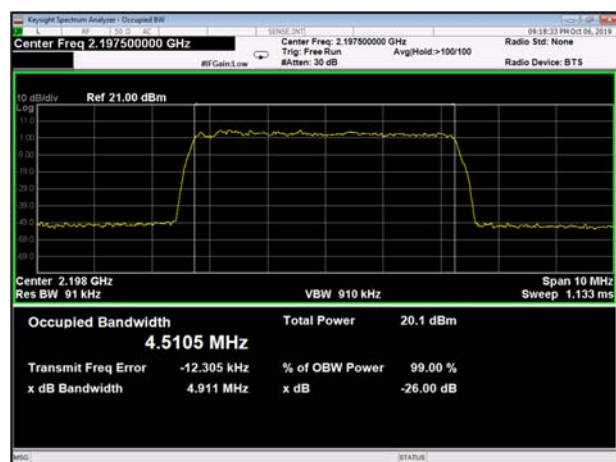


Figure 104 5MHz BW, 2197.5MHz

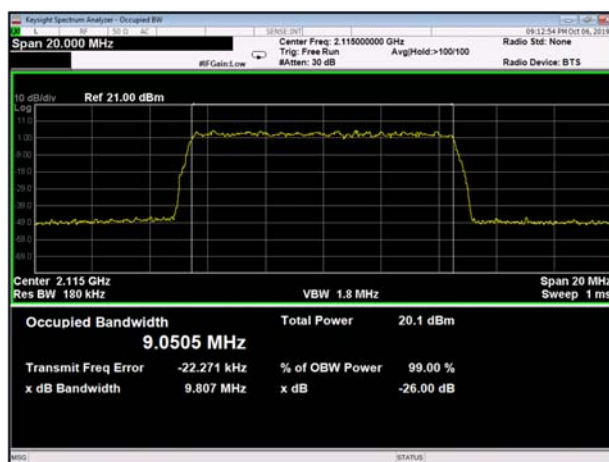


Figure 105 10MHz BW, 2115MHz



Antenna Port:

1

Modulation:

16QAM

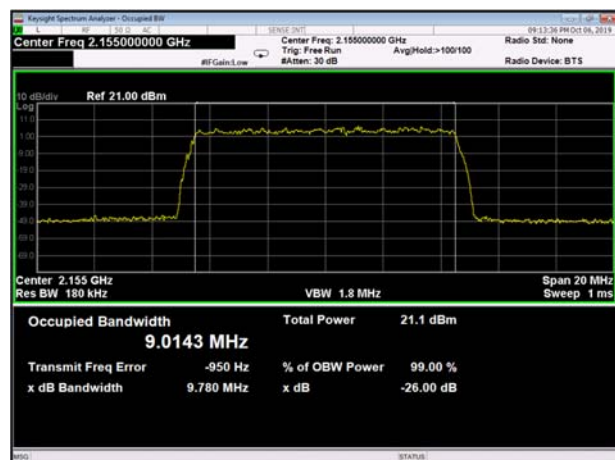


Figure 106 10MHz BW, 2155MHz

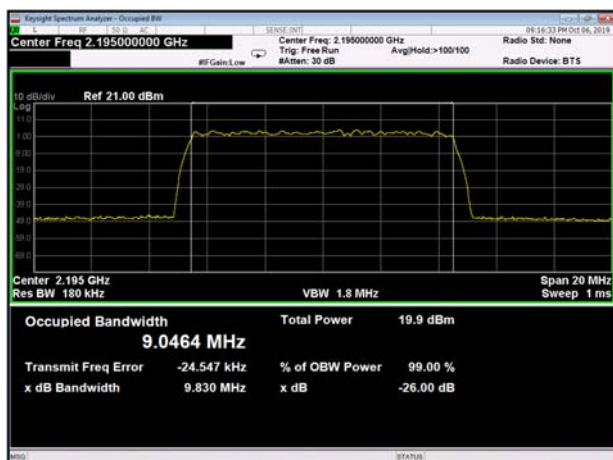


Figure 107 10MHz BW, 2195MHz

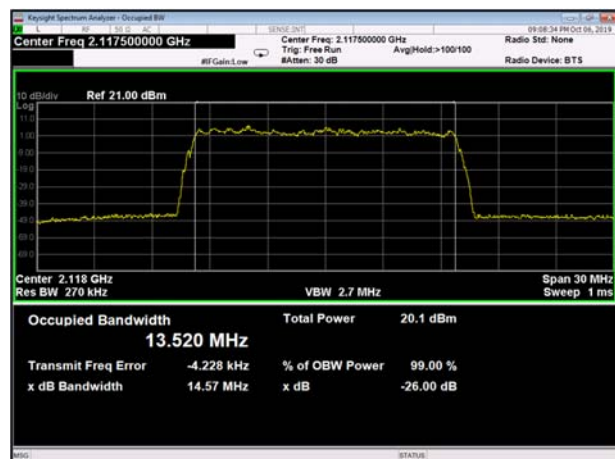


Figure 108 15MHz BW, 2117.5MHz

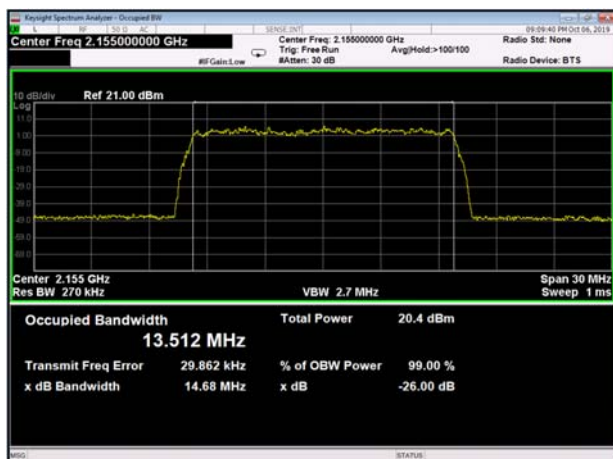


Figure 109 15MHz BW, 2155MHz



Antenna Port:

1

Modulation:

16QAM

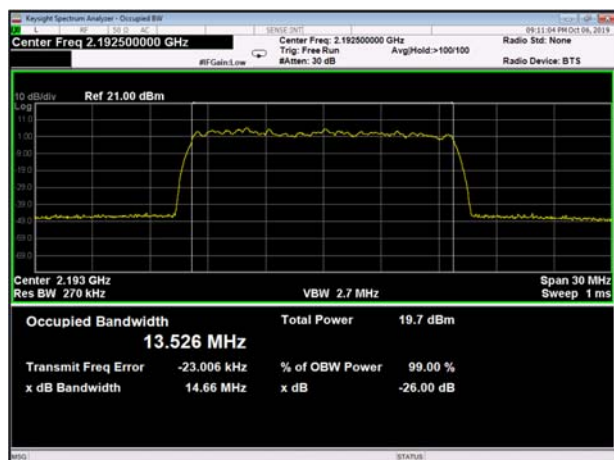


Figure 110 15MHz BW, 2192.5MHz

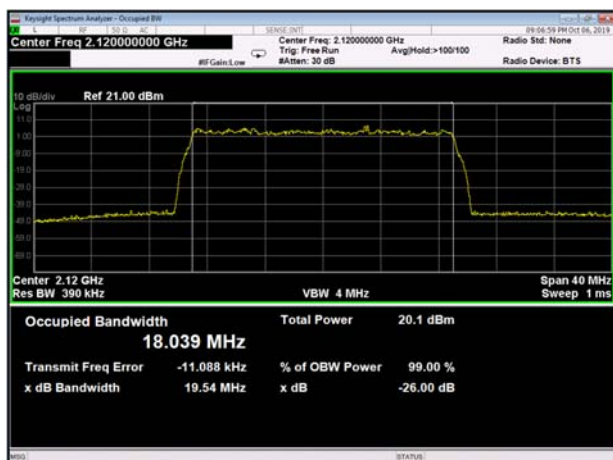


Figure 111 20MHz BW, 2120MHz

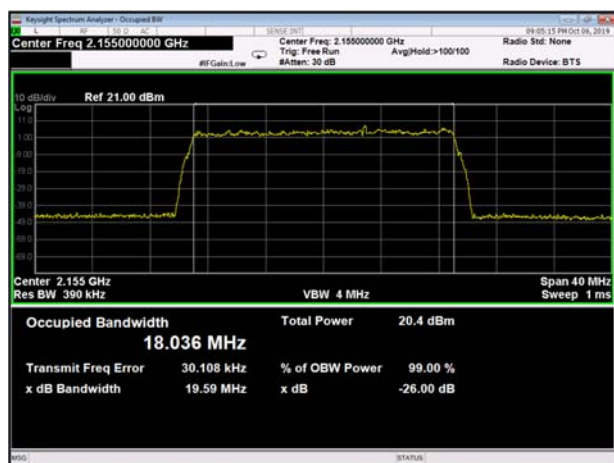


Figure 112 20MHz BW, 2155MHz

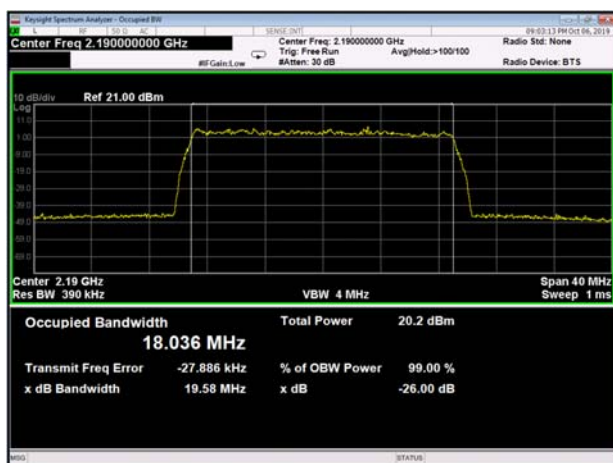


Figure 113 20MHz BW, 2190MHz



Antenna Port:

1

Modulation:

QPSK

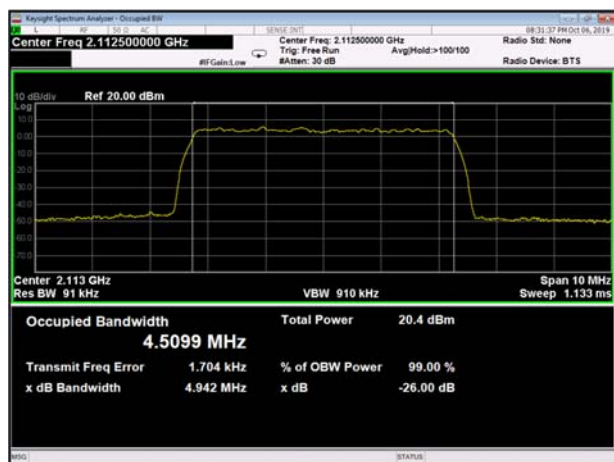


Figure 114 5MHz BW, 2112.5MHz

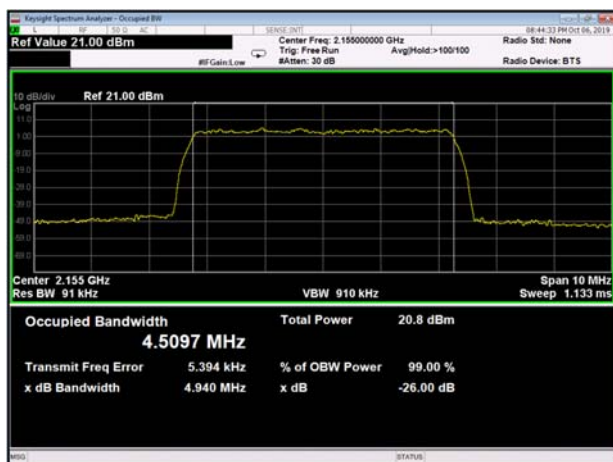


Figure 115 5MHz BW, 2155MHz

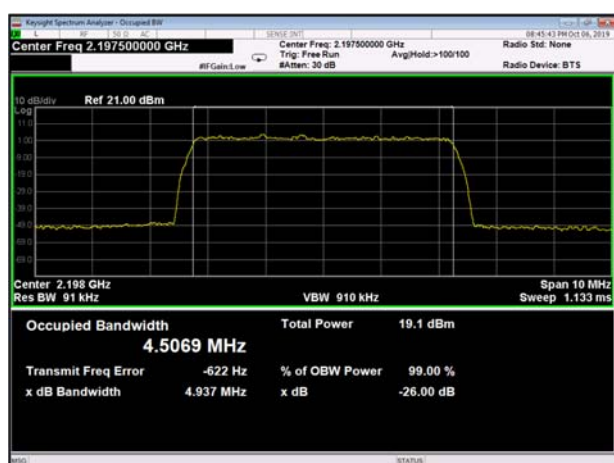


Figure 116 5MHz BW, 2197.5MHz

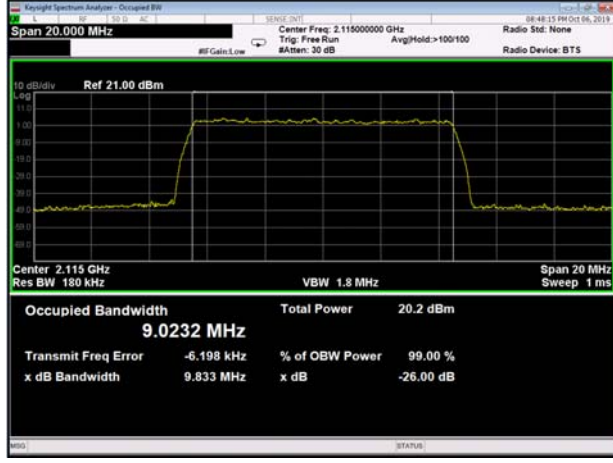


Figure 117 10MHz BW, 2115MHz



Antenna Port:

1

Modulation:

QPSK

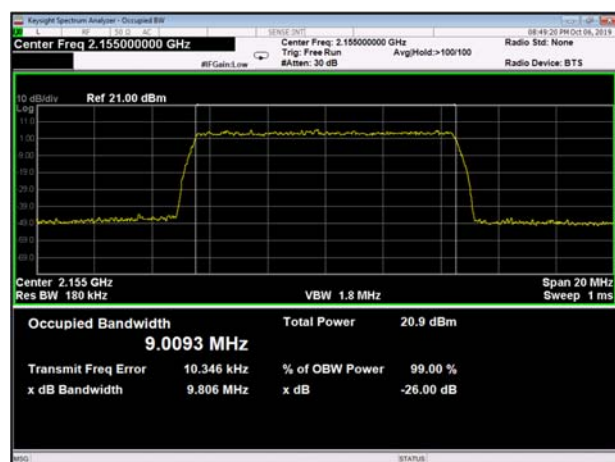


Figure 118 10MHz BW, 2155MHz

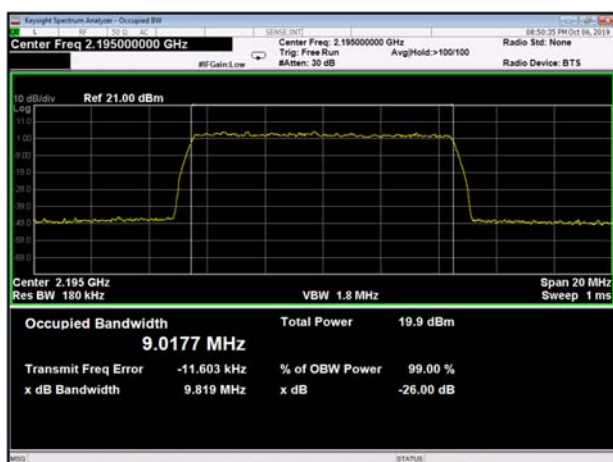


Figure 119 10MHz BW, 2195MHz

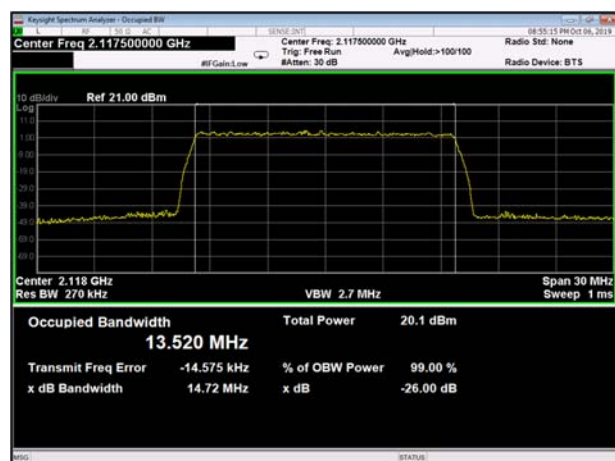


Figure 120 15MHz BW, 2117.5MHz

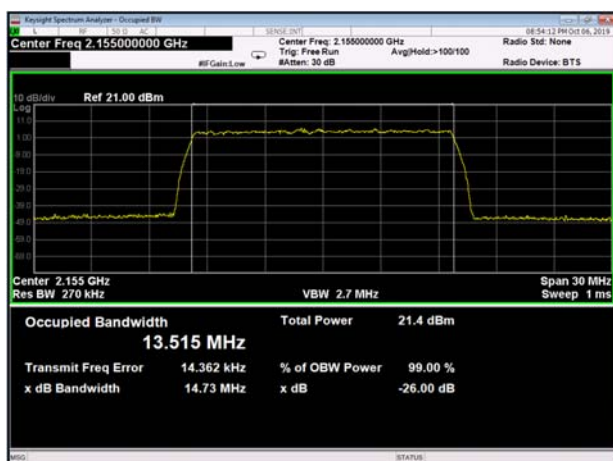


Figure 121 15MHz BW, 2155MHz



Antenna Port:

1

Modulation:

QPSK

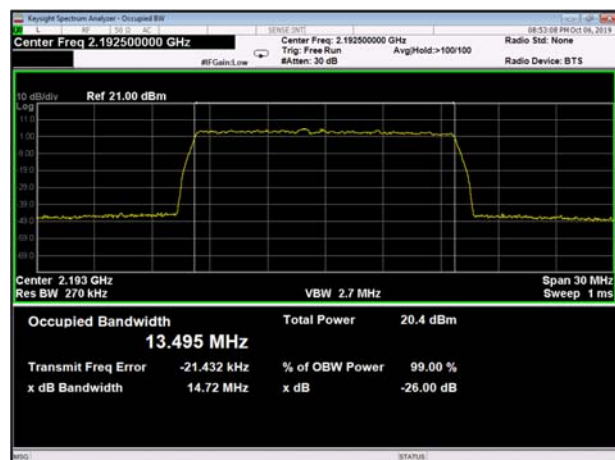


Figure 122 15MHz BW, 2192.5MHz

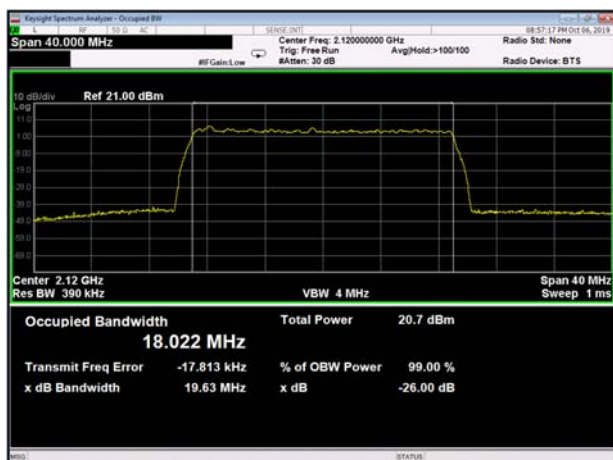


Figure 123 20MHz BW, 2120MHz

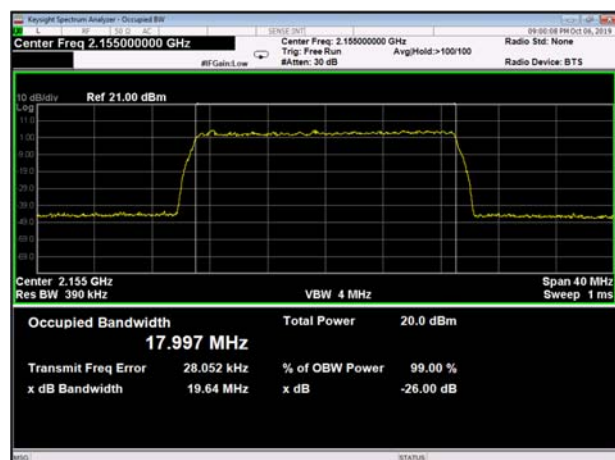


Figure 124 20MHz BW, 2155MHz

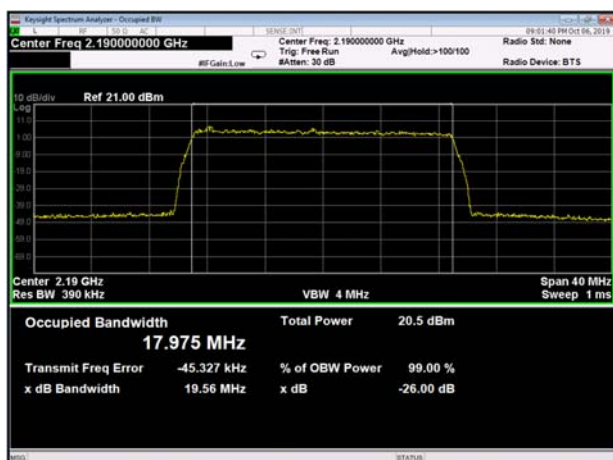


Figure 125 20MHz BW, 2190MHz



5.5 Test Equipment Used; Occupied Bandwidth

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY52220686	November 28, 2018	November 28, 2020
Vector Signal Generator	VIAVI	MTS 5800	WMNK00716 90263	July 1, 2018	July 1, 2021

Table 1 Test Equipment Used