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DATE: 10 July 2014

I.T.L. (PRODUCT TESTING) LTD.

FCC Radio Test Report

for

Telrad Networks Ltd.

Equipment under test:

BreezeCompact 3000 Base Station

CMP3000-B41-2496-2690MHz

Written by: _____
D. Shidlowsky, Documentation

Approved by: _____
A. Sharabi, Test Engineer

Approved by: For/ _____
I. Raz, EMC Laboratory Manager

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Measurement/Technical Report for

Telrad Networks Ltd.

BreezeCompact 3000 Base Station

CMP3000-B41-2496-2690MHz

FCC ID: ARA-COMPACT2X

This report concerns:	Original Grant: X Class II change: Class I change:
Equipment type:	Licensed Non-Broadcast Transmitter
Limits used: 47CFR Part 27	

Measurement procedure used is ANSI C63.4-2003.
Substitution Method used as in ANSI/TIA-603-C: 2004

Application for Certification prepared by:

David Shidlowsky
ITL (Product Testing) Ltd.
Kfar Bin Nun
D.N. Shimshon 9978000
Israel
e-mail emc@itl.co.il

Applicant for this device: (different from "prepared by")

Klara Milman
Telrad Networks Ltd.
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Lod 711600
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1. General Information

1.1 Administrative Information

Manufacturer:	Telrad Networks Ltd.
Manufacturer's Address:	1 Batsheva St. P.O.B. 6118 Lod 711600 Israel Tel: +972-73-246-7651 Fax: +972-73-246-7504
Manufacturer's Representative:	Klara Milman Guy Bakalzuk
Equipment Under Test (E.U.T):	BreezeCompact 3000 Base Station
Equipment Model No.:	CMP3000-B41-2496-2690MHz
Serial Number No.:	95000850
Date of Receipt of E.U.T:	17.06.2014
Start of Test:	17.06.2014
End of Test:	19.06.2014
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 9978000
Test Specifications:	FCC Part 27

1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by 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.), Registration No. 90715.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025B-1.

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

Breeze Compact 2.5G Base station is a high capacity, IP services oriented Broadband Wireless Access system.
Breeze Compact 2.5G is digital modulated TDD system covering 2496 MHz up to 2690 range. The system contains an all outdoor base station unit.
The basic base station system configuration is contains power supply, MODEM and based on RF IC radio.

The following describes the transmit path and receive path of the Breeze Compact 2.5G.
Note: The ODU consists of four identical RF radio paths based on two identical RF IC chipsets, all paths terminated with antenna ports. Only two radio paths that based on one RF IC are described in the detailed block diagram.
The DC voltage applied to the final RF amplifying device is 28VDC.

Transmit mode:
The signal flow in transmit mode is as follows: The IQ signal passes from the Modem to radio part, and converted to required RF frequency by RF IC then the signal passes thru combo Balun+BPF, GVA-63+ and MGA635P8 amplifiers, amplified again by MGA-22033, then passes thru cable to high power card and amplified again by BLF6G27-10G and BLF7G27L-90P.
The amplified signal passes thru circulator and cavity filter (2496-2690MHz) directly to antenna port.

Receive mode:
The signal flow in the receive mode is as follows: The unit antenna receives the signal. The received signal passes thru cavity filter (2496-2690MHz), circulator and TX/RX switch. The LNA MGA635P8, combo Balun+BPF directly to the RF IC, converted to IQ signal and directed to the Modem.

1.4 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing 21 November 2012).
I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

1.6 Measurement Uncertainty

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

2. System Test Configuration

2.1 Justification

The base station continuously transmitted during the tests while communicating with a subscriber unit for configuration purposes only.

The compact 3000 2496-2690MHz units containing 4 identical and independent TX & RX chains.

In 4X4 1 carrier 1 sector configuration all TX & RX chains are transmitting/receiving on the same freq.

In 2X4 1 carrier 1 sector configuration only 2 TX & 4 RX chains are transmitting/receiving on the same freq.

In 4X4 2 carrier 1 sector configuration all TX & RX chains are transmitting/receiving on 2 different freq.

In 4X4 2 carrier 2 sector configuration all TX & RX chains are transmitting/receiving on 2 different freq on 2 different geographical area.

In all configurations the RF parameters and performances are identical.

Due to the similarity of the RF chains, tests were performed only on one port, except peak output power test which was repeated for each RF port independently.

The base station was configured to transmit at maximum output power rate in the frequency band 2496 MHz to 2690 MHz with two bandwidths (5 and 10 MHz) at three representative channels and three modulations.

The unit is powered from 48 VDC.

2.2 EUT Exercise Software

Compact 2.x Software Release 5.1 software was used.

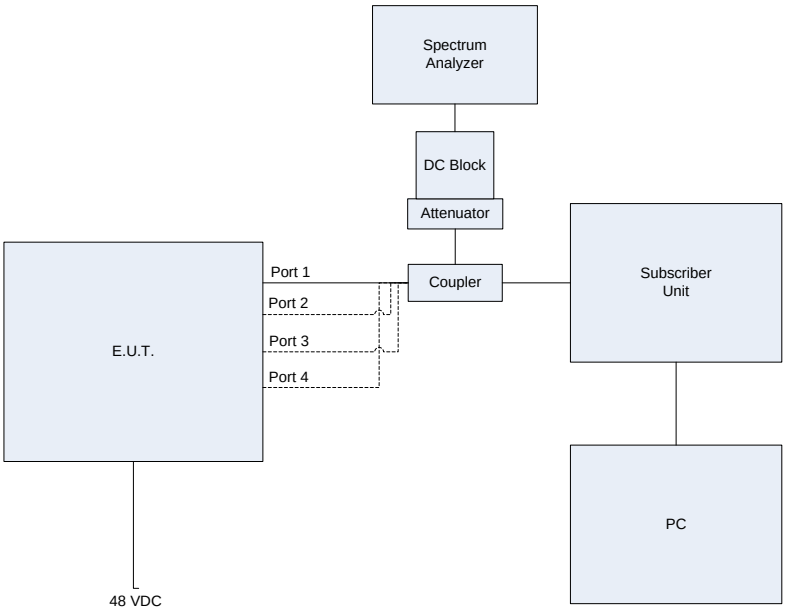
2.3 Special Accessories

No special accessories were needed in order to achieve compliance.

2.4 Equipment Modifications

No modifications were necessary in order to achieve compliance.

2.5 Configuration of Tested System



Note: Each antenna port was tested separately connected via the coupler to the subscriber unit and spectrum analyzer.

Figure 1. Conducted Emission From Antenna Ports Test Set-up

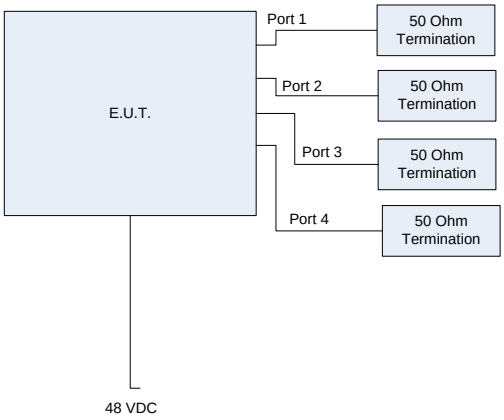


Figure 2. Radiated Emission Test Set-up

3. Test Set-up Photos

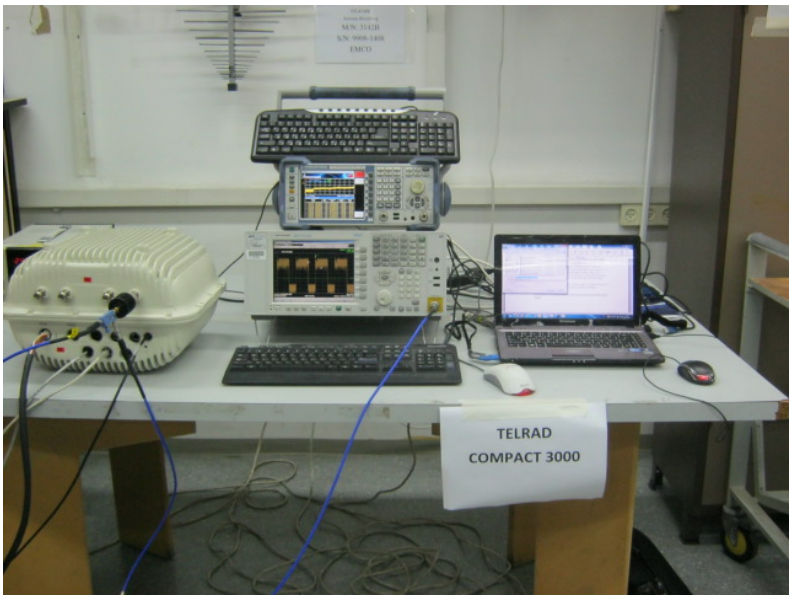


Figure 3. Conducted Emission From Antenna Port Tests

Figure 4. Radiated Emission Test

Figure 5. Radiated Emission Test

Figure 6. Radiated Emission Test

Figure 7. Radiated Emission Test

Figure 8. Frequency Stability Test

4. Maximum Peak Output Power 5 MHz Bandwidth

4.1 Test Specification

FCC Part 27, Sub-part C (27.50(h)(1))

4.2 Test procedure

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB. The E.U.T. RF output was OFDMA modulated with QPSK, 16QAM and 64QAM, at 5 MHz BW.

Special attention was taken to prevent Spectrum Analyzer RF input overload. Tested frequencies: 2498.5 MHz, 2593.0 MHz and 2687.5 MHz

According to 47 CFR Part 2 section § 2.1046 and Part 27 section § 27.50(h)(1), the maximum EIRP of a base station shall not exceed 63 + 10 log (X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition.

As to the limit, the X is 10 MHz and Y is 6 MHz for the EUT, so the limit is calculated to be 63 + 10 log (5 MHz/6 MHz) = 62.2 dBm.

Antenna type: Manual tilt panel antenna (Gain: 18 dBi) with N type connector.

4.1 Test Results

Operation Frequency	Modulation	Reading				4 Ports MIMO Calculated	Specification*	Margin
		Port 1	Port 2	Port 3	Port 4			
(MHz)		(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
2498.50	QPSK	38.80	38.64	38.62	38.76	44.73	62.2	-17.47
	16QAM	38.80	38.59	38.77	38.85	44.77	62.2	-17.43
	64QAM	38.68	38.50	38.57	38.89	44.68	62.2	-17.52
2593.00	QPSK	38.56	38.06	38.40	38.60	44.43	62.2	-17.77
	16QAM	38.50	38.20	38.49	38.72	44.50	62.2	-17.70
	64QAM	38.46	38.14	38.53	38.42	44.41	62.2	-17.79
2687.50	QPSK	38.34	38.74	38.56	38.52	44.56	62.2	-17.64
	16QAM	38.56	38.78	38.58	38.66	44.67	62.2	-17.53
	64QAM	38.61	38.57	38.52	38.55	44.58	62.2	-17.62

* Limit = 63 + 10 log (5/6) dBm

Table 1 Maximum Peak Power Output 5kHz Test Results Table

See additional information in Figure 9 to Figure 44.

JUDGEMENT: Passed by 17.43 dB

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

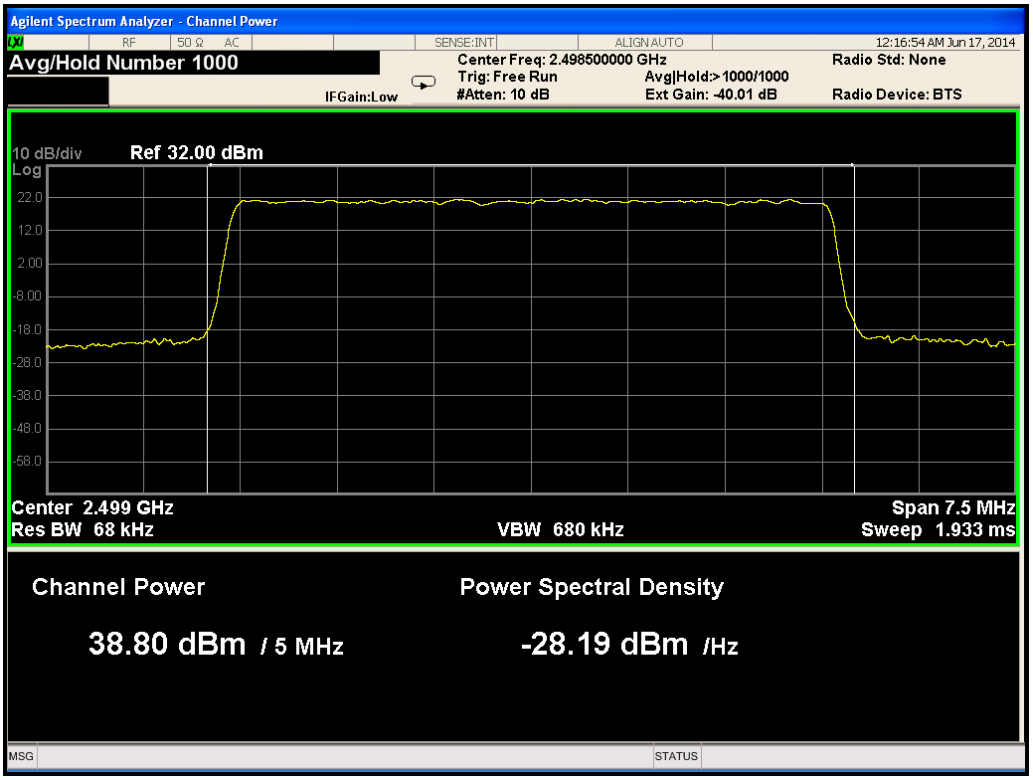


Figure 9.— 2498.50 MHz QPSK Port 1

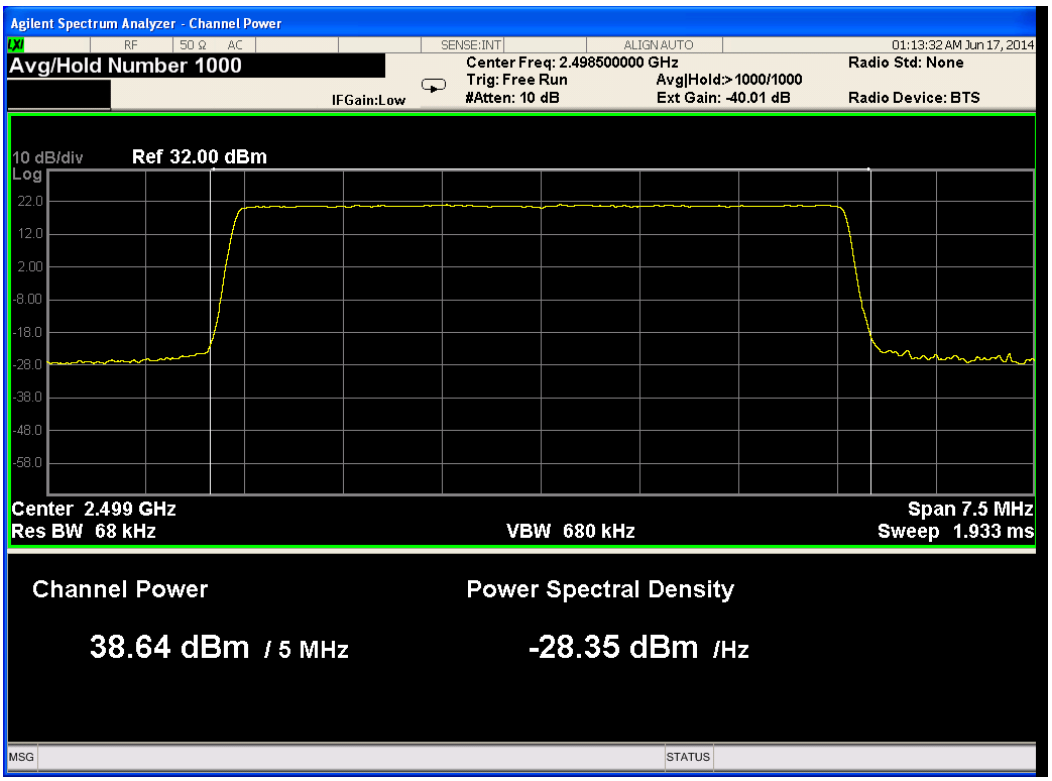


Figure 10.— 2498.50 MHz QPSK Port 2

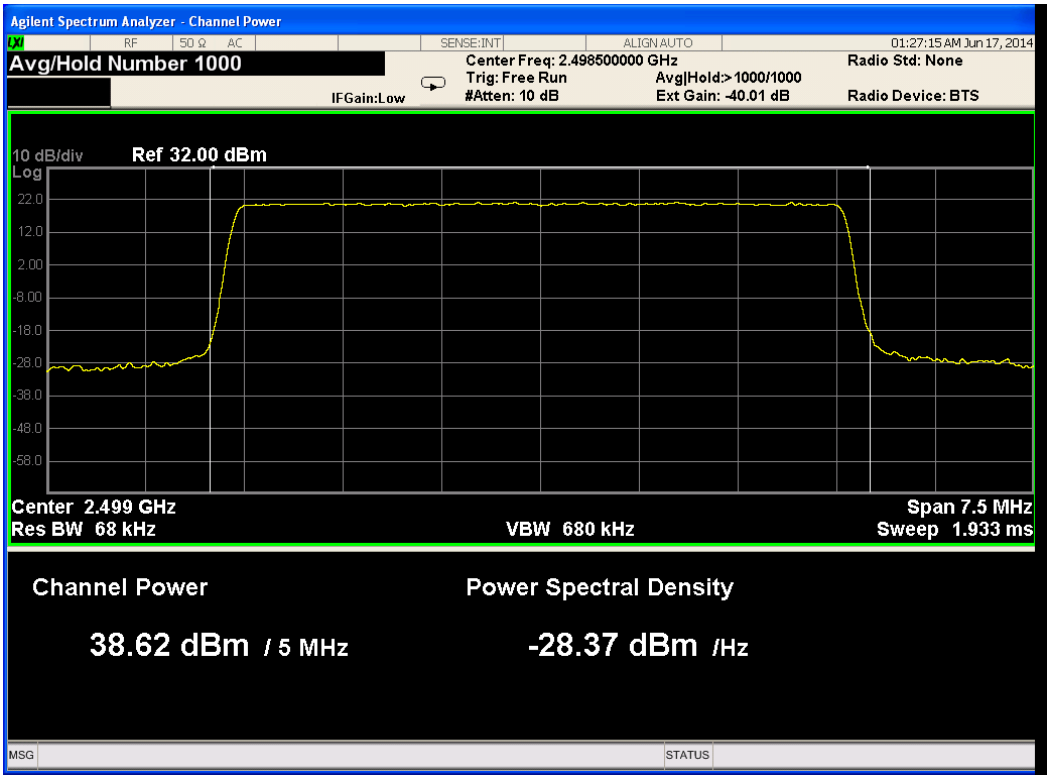


Figure 11.— 2498.50 MHz QPSK Port 3

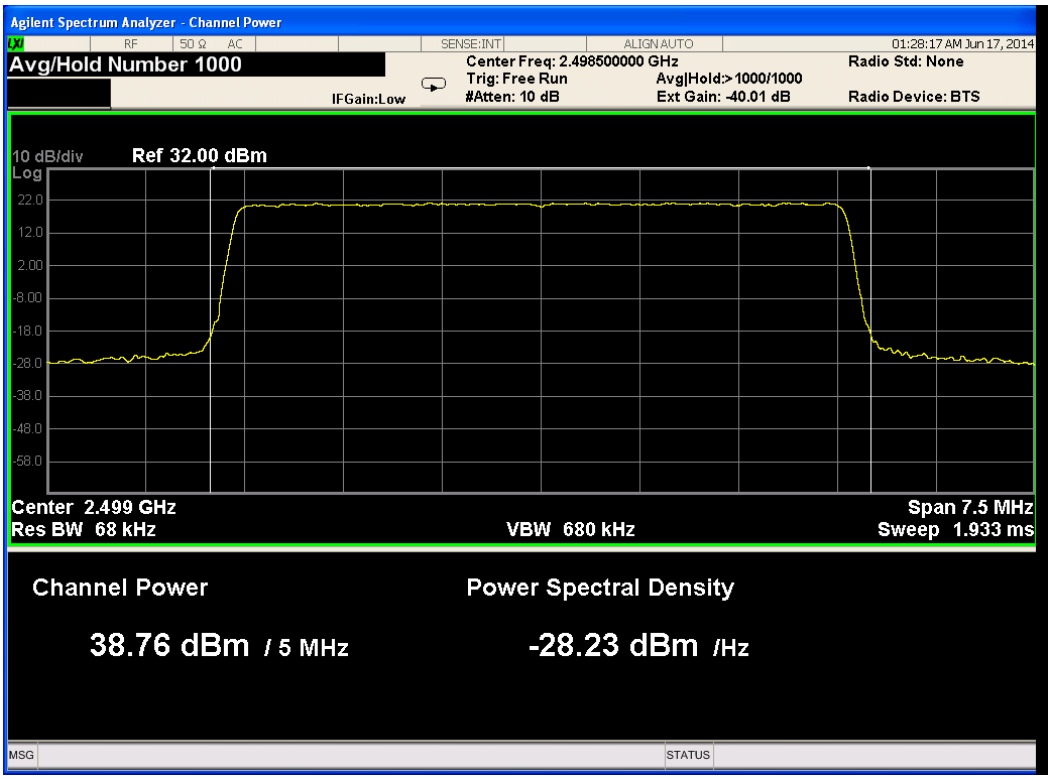


Figure 12.— 2498.50 MHz QPSK Port 4

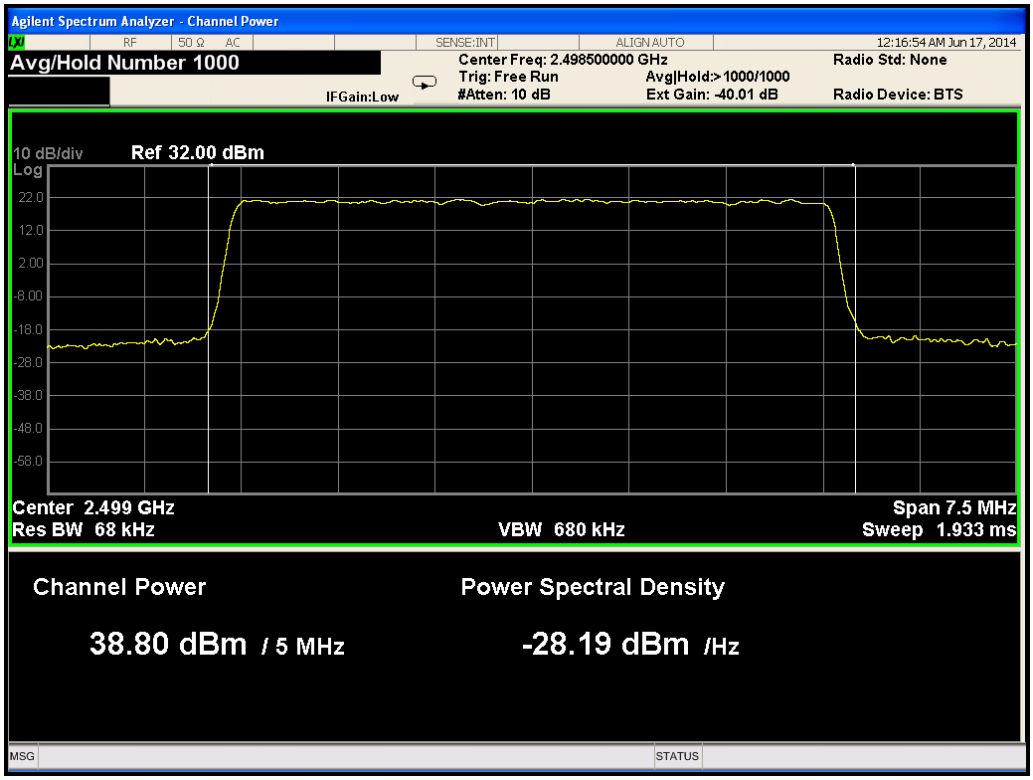


Figure 13.— 2498.50 MHz 16QAM Port1

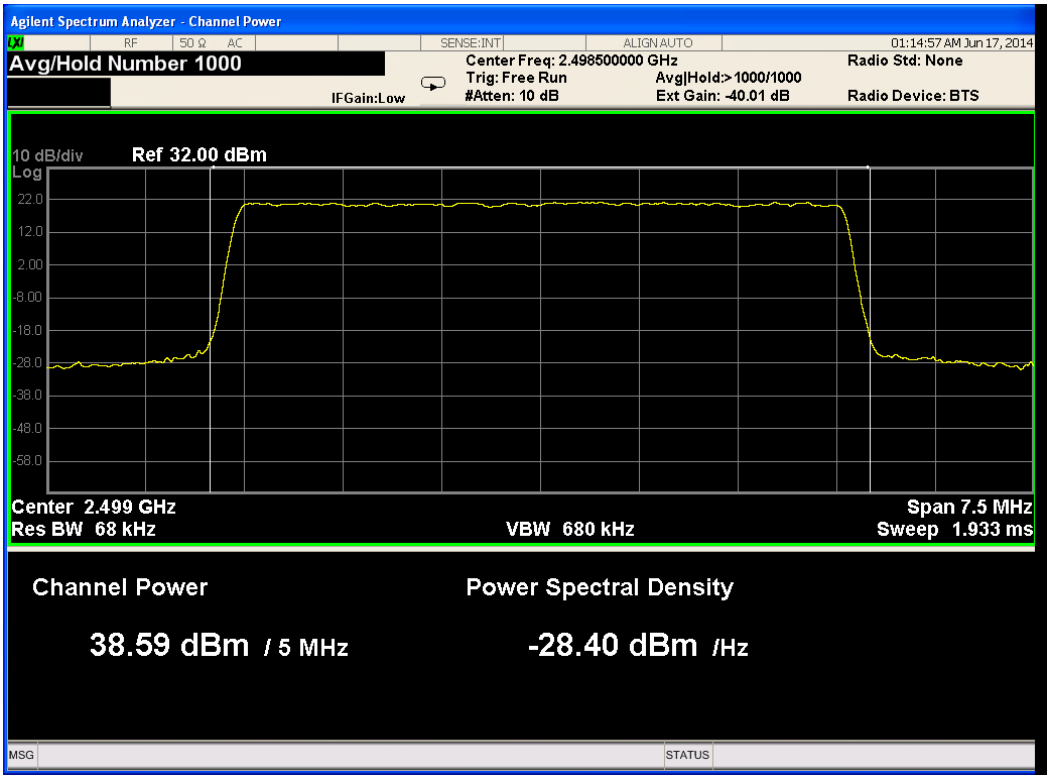


Figure 14.— 2498.50 MHz 16QAM Port2

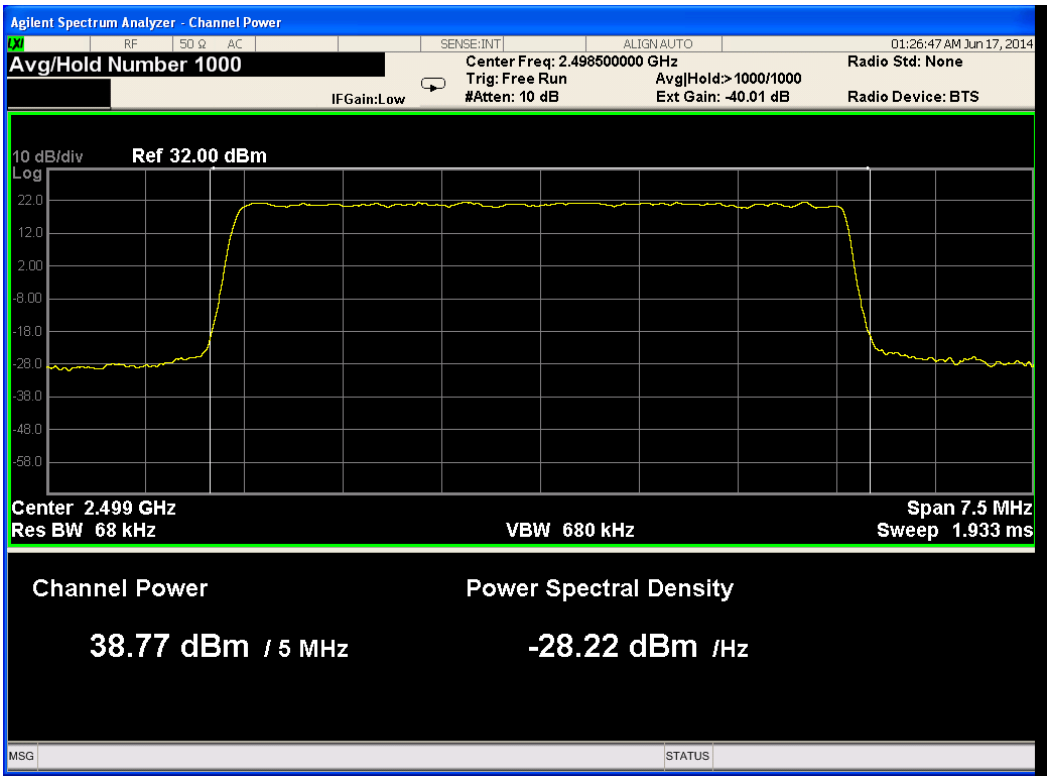


Figure 15.— 2498.50 MHz 16QAM Port3

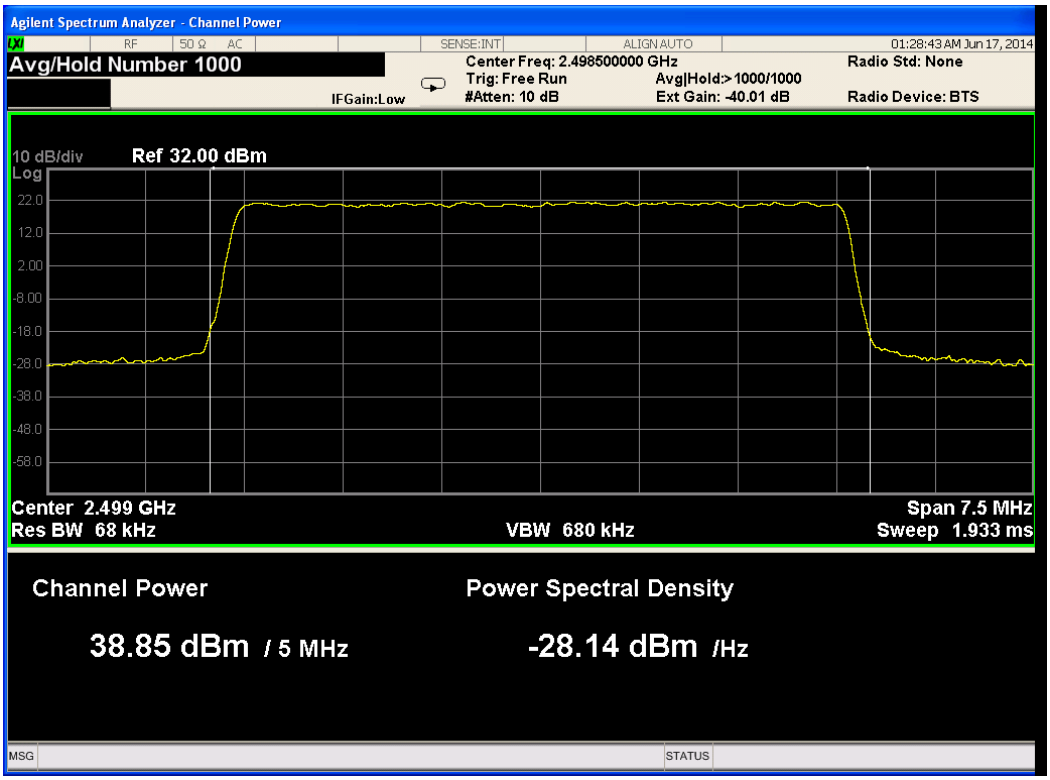


Figure 16.— 2498.5. MHz 16QAM Port4

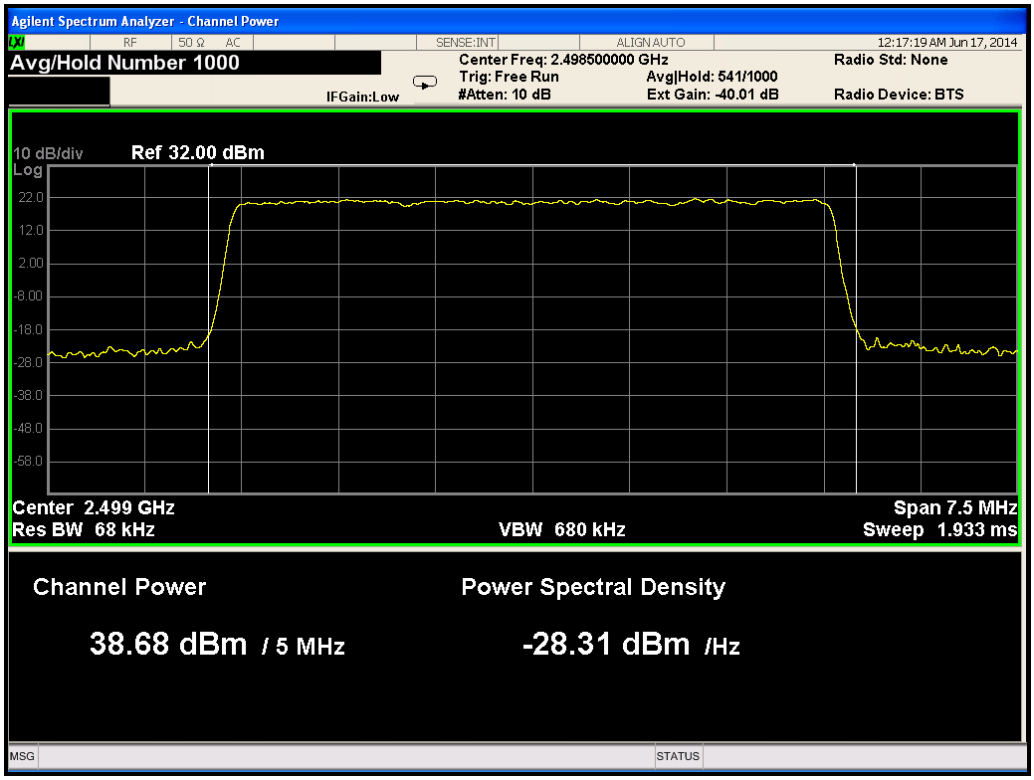


Figure 17.— 2498.50 MHz 64QAM Port 1

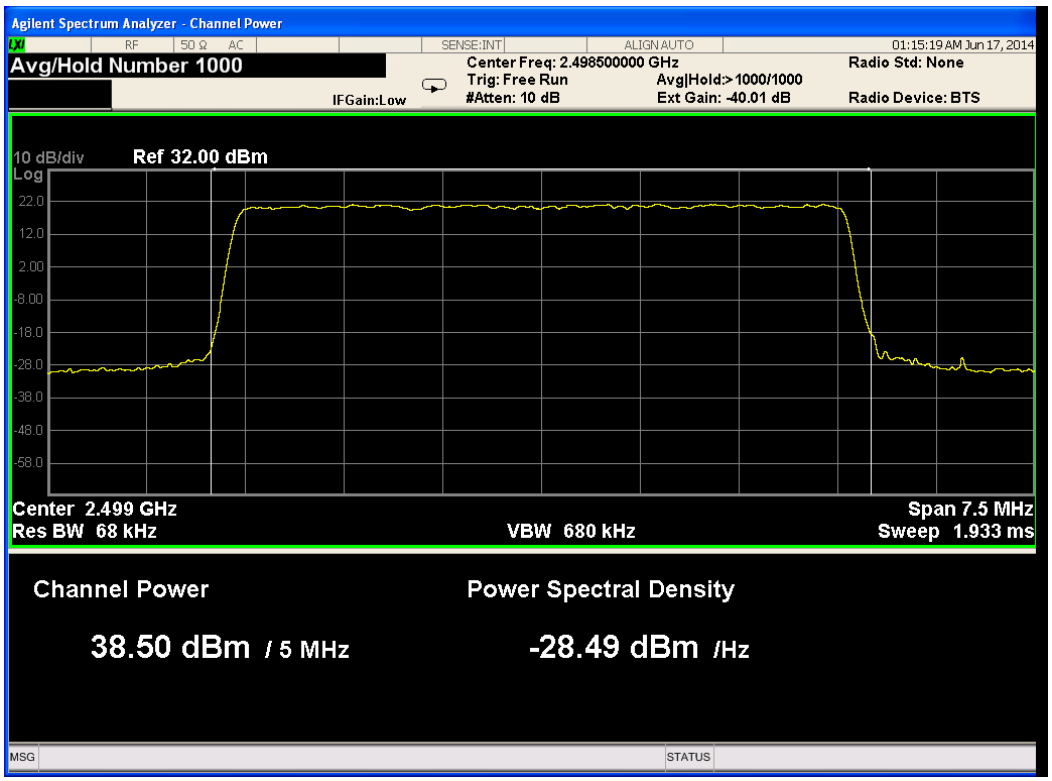


Figure 18.— 2498.50 MHz 64QAM Port 2

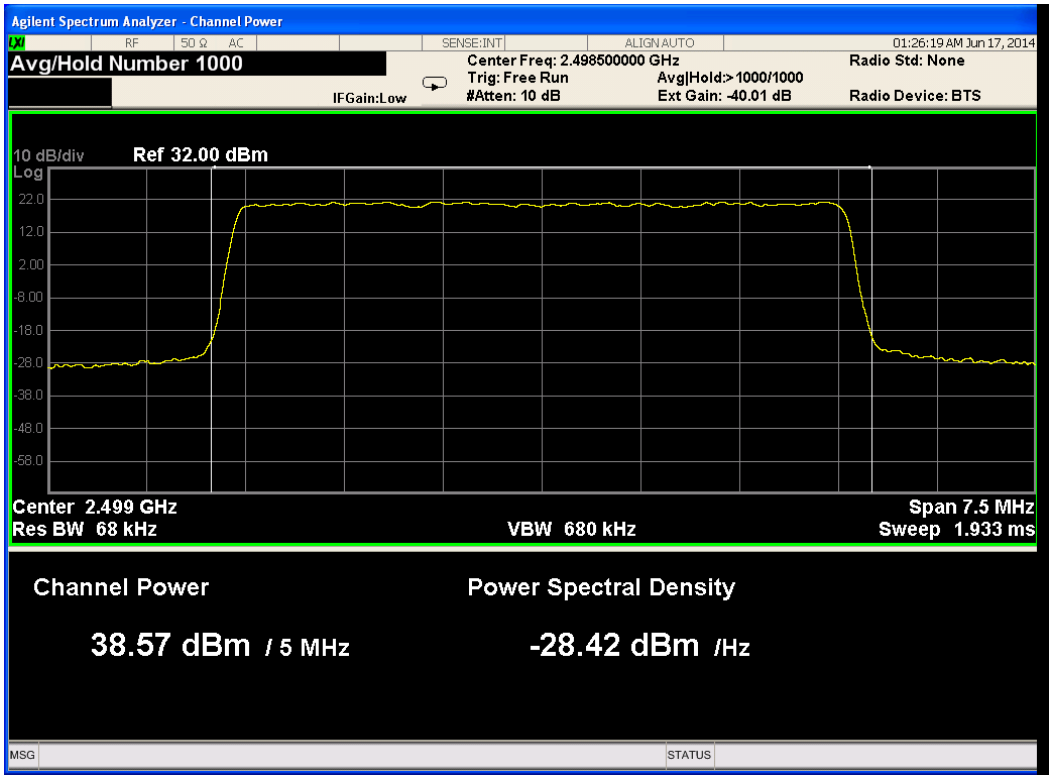


Figure 19.— 2498.50 MHz 64QAM Port 3

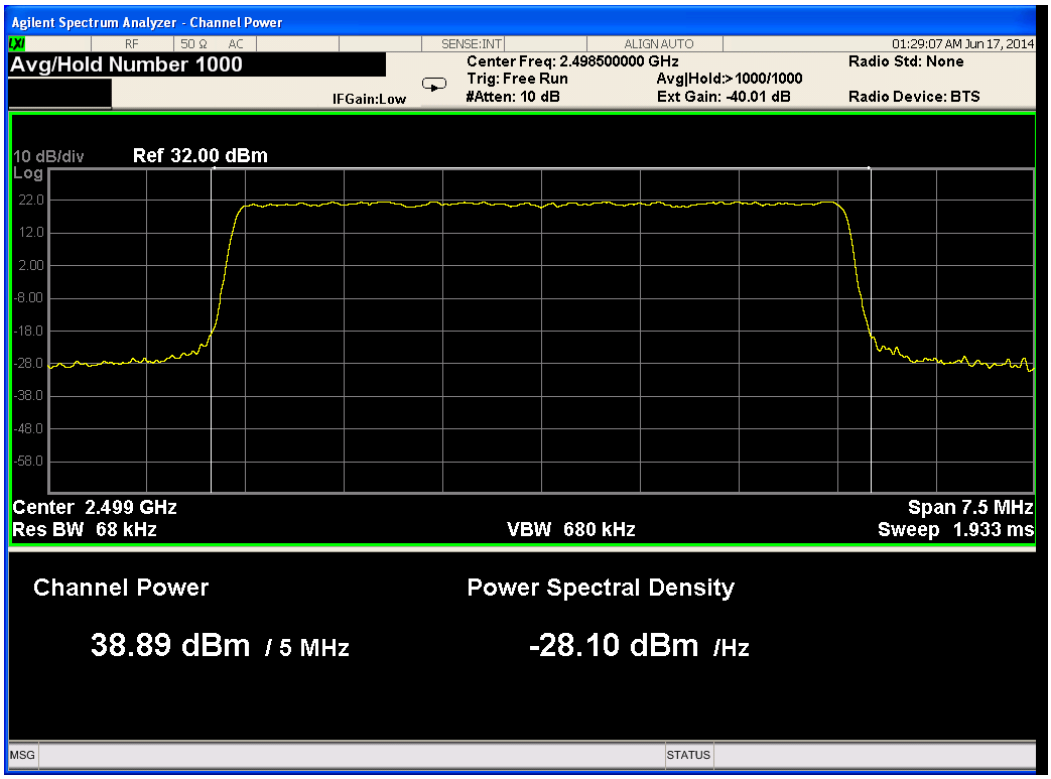


Figure 20.— 2498.50 MHz 64QAM Port 4

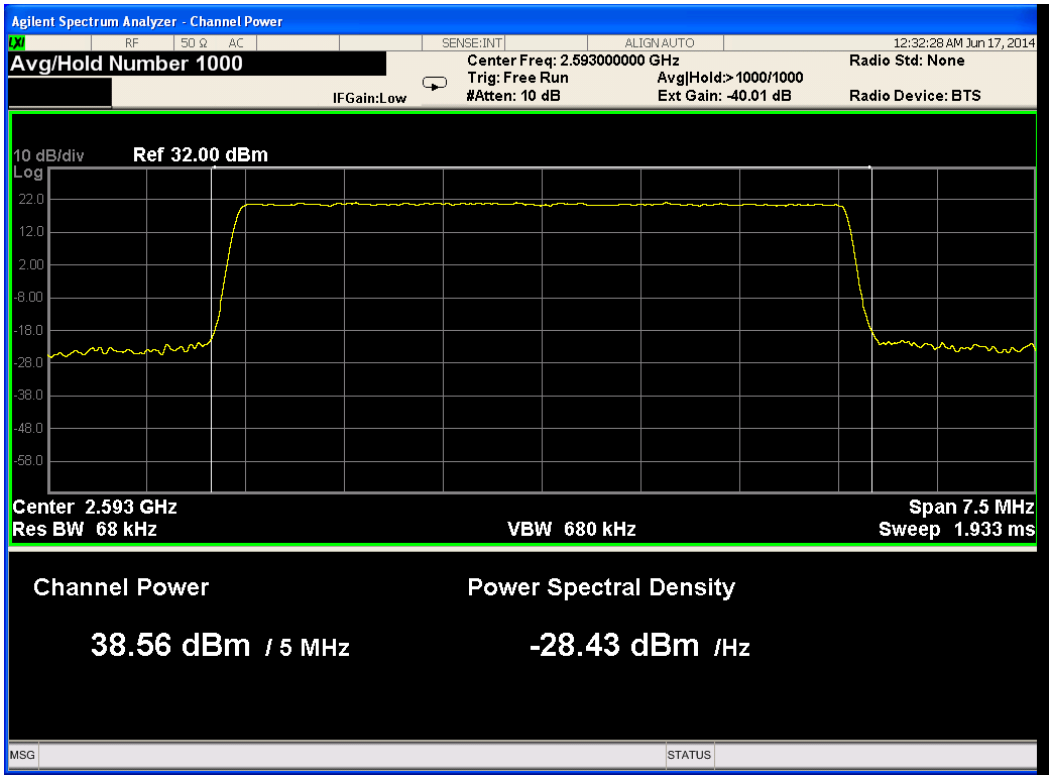


Figure 21.— 2593.00 MHz QPSK Port 1

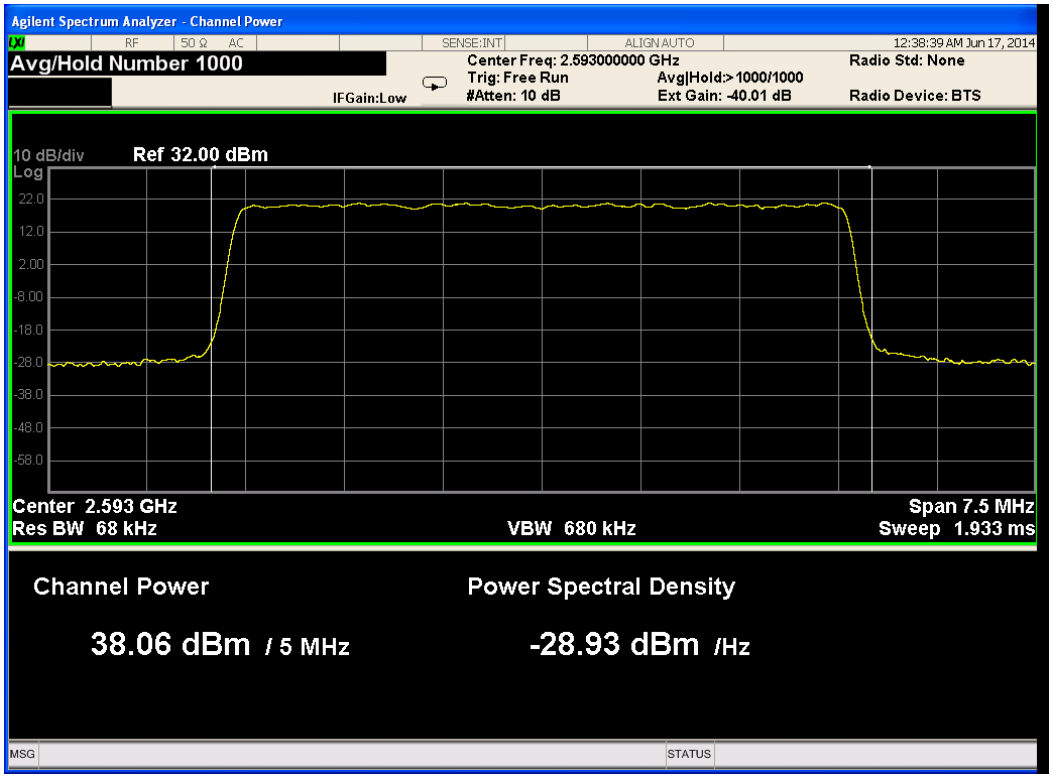


Figure 22.— 2593.00 MHz QPSK Port 2

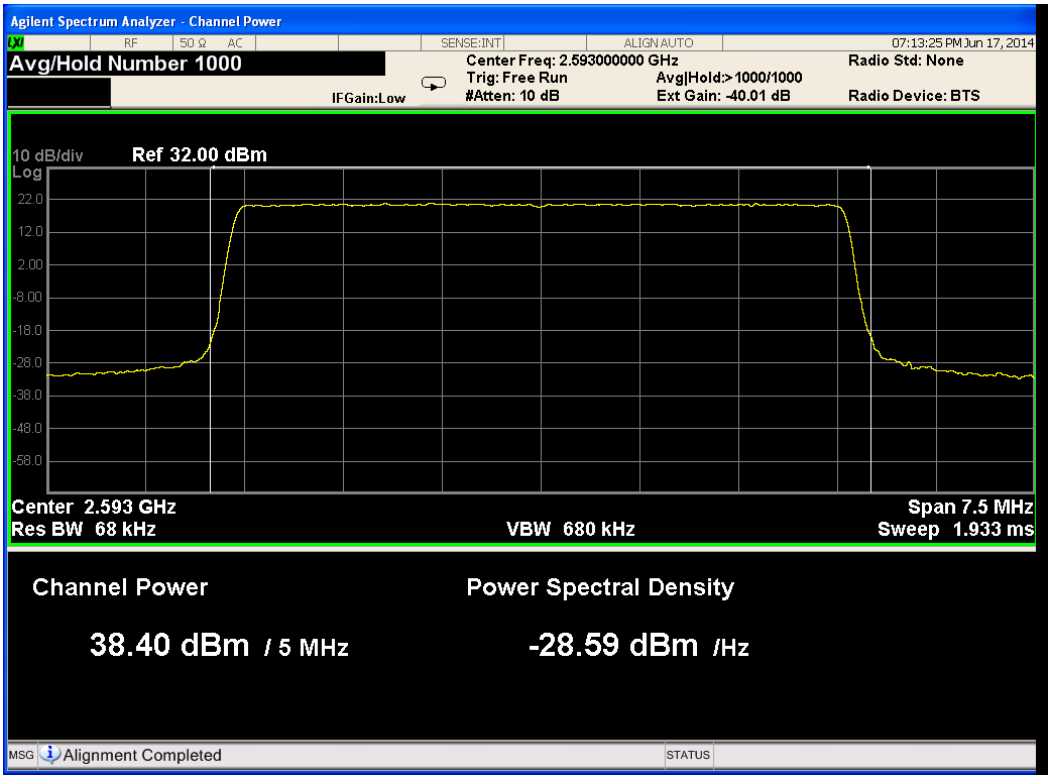


Figure 23.— 2593.00 MHz QPSK Port 3

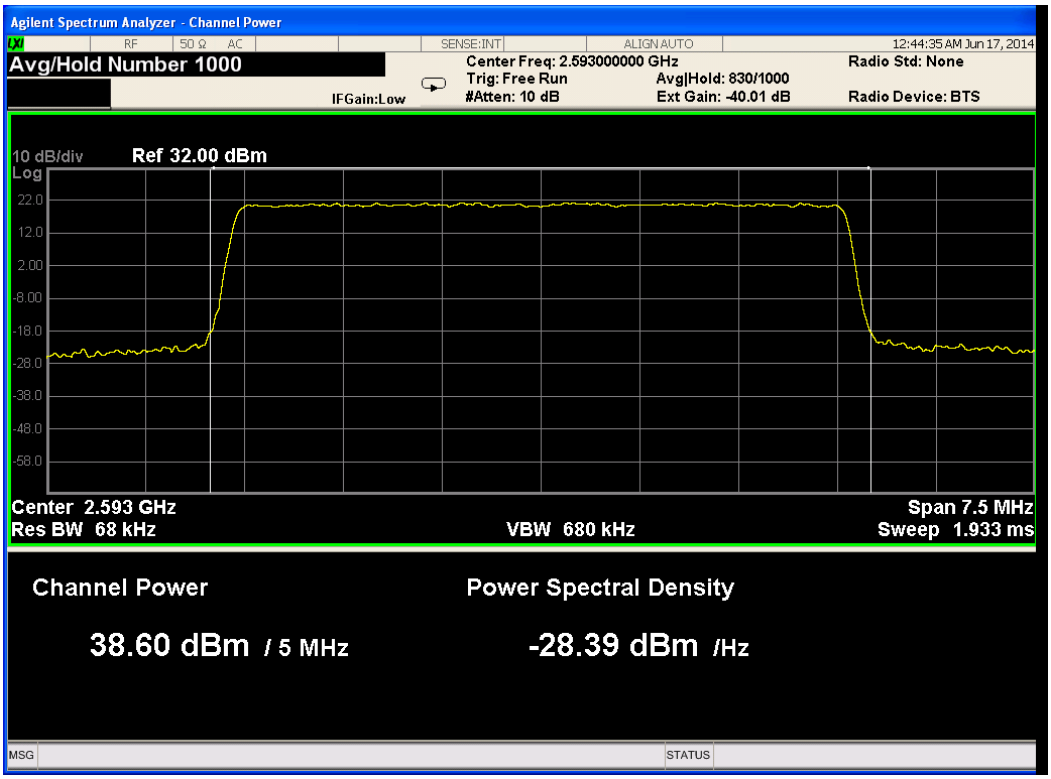


Figure 24.— 2593.00 MHz QPSK Port 4

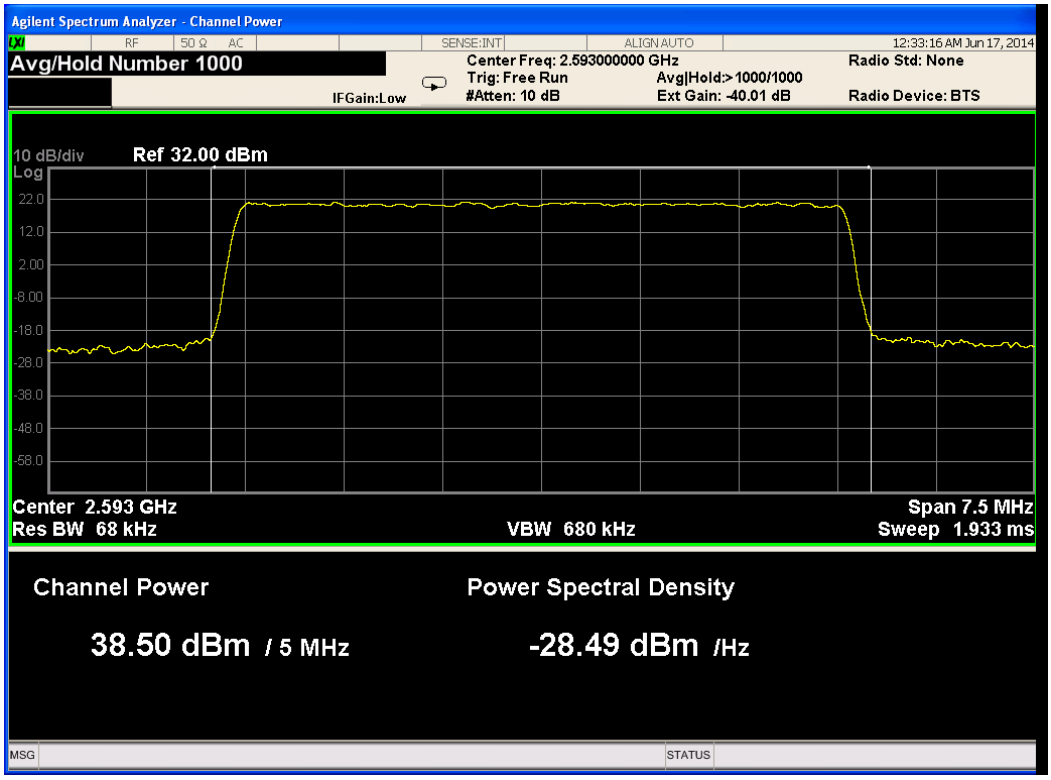


Figure 25.— 2593.00 MHz 16QAM Port 1

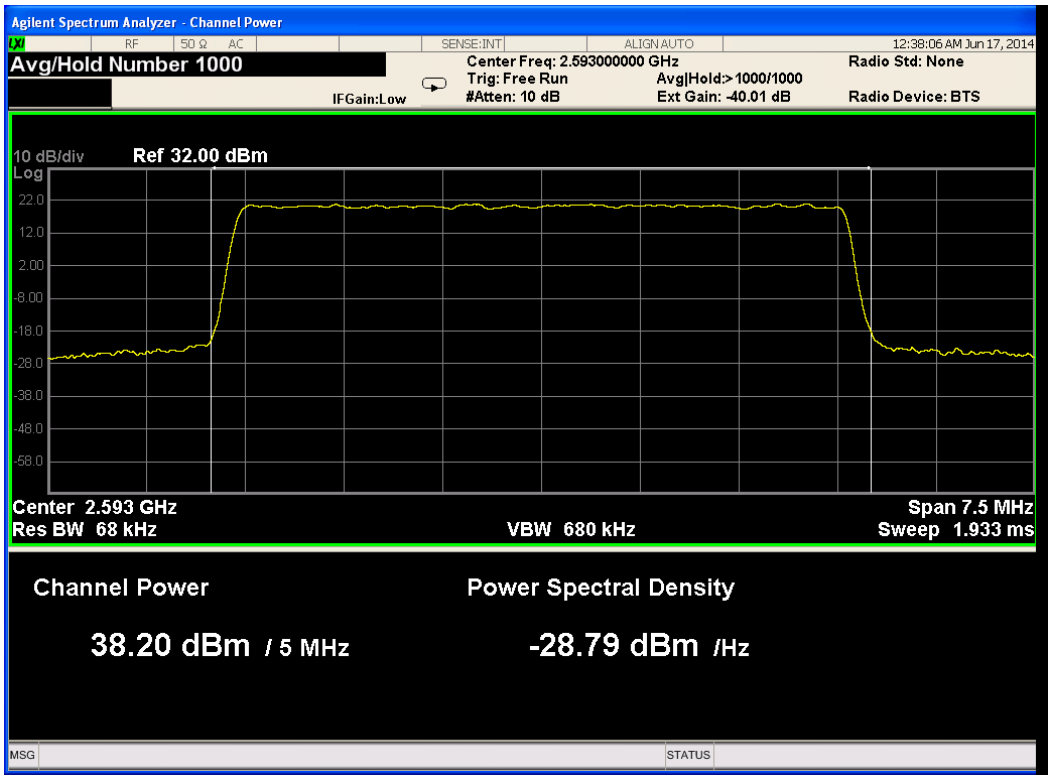


Figure 26.— 2593.00 MHz 16QAM Port 2

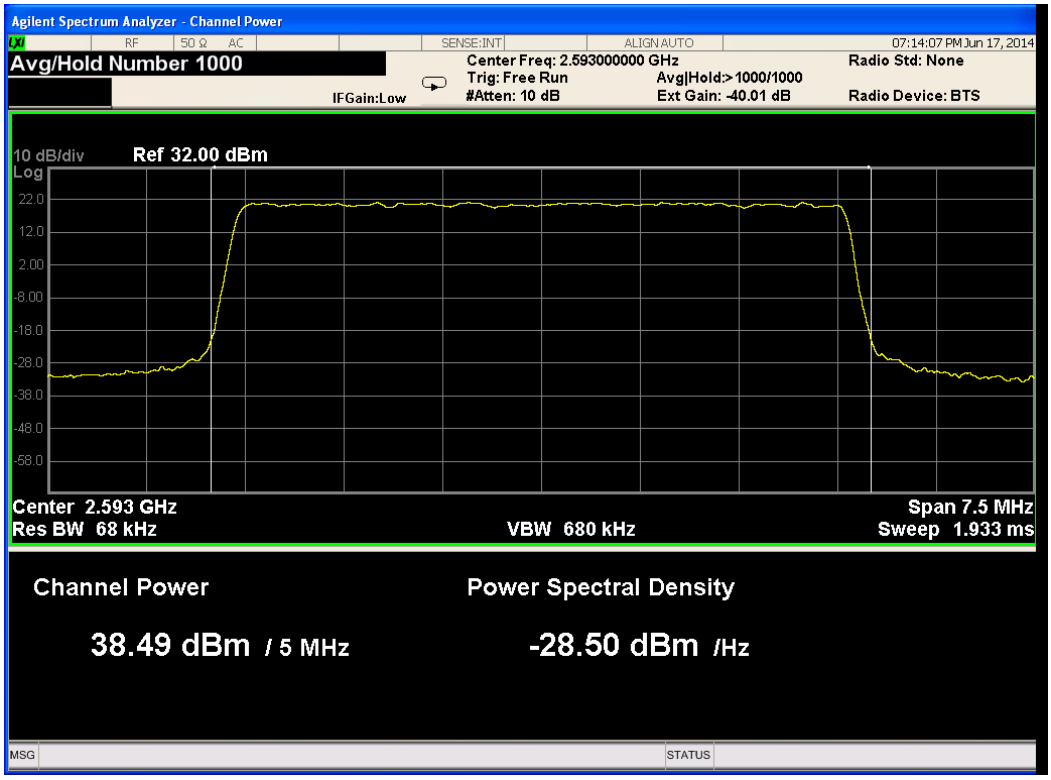


Figure 27.— 2593.00 MHz 16QAM Port 3

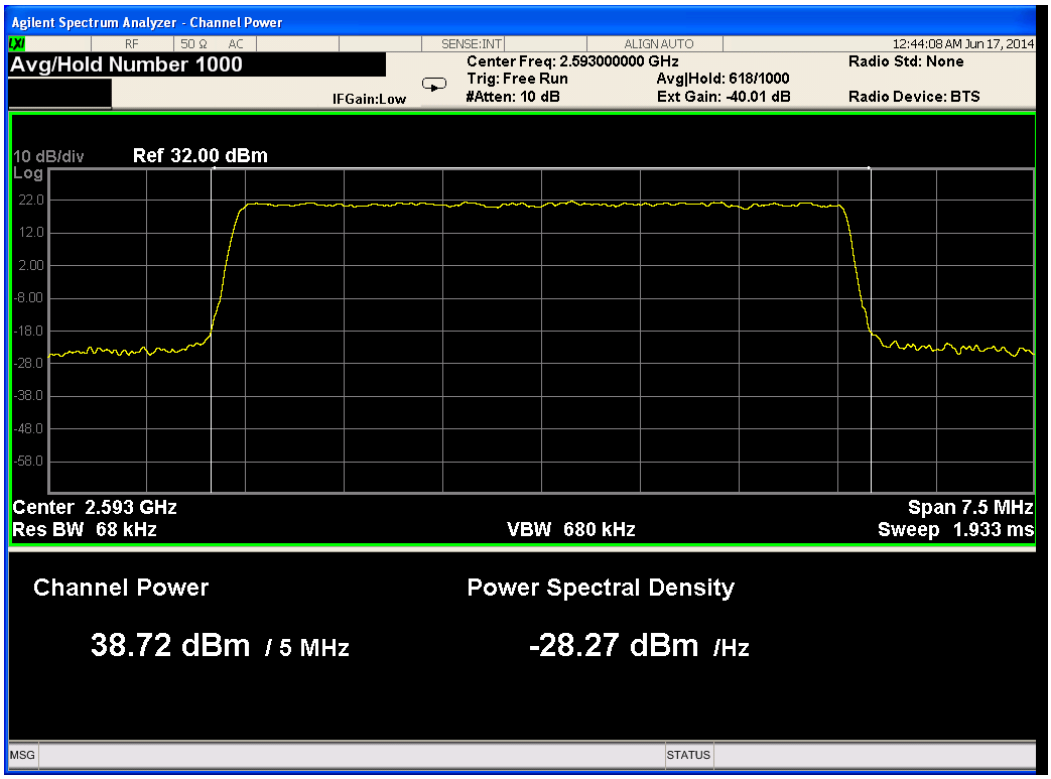


Figure 28.— 2593.00 MHz 16QAM Port 4

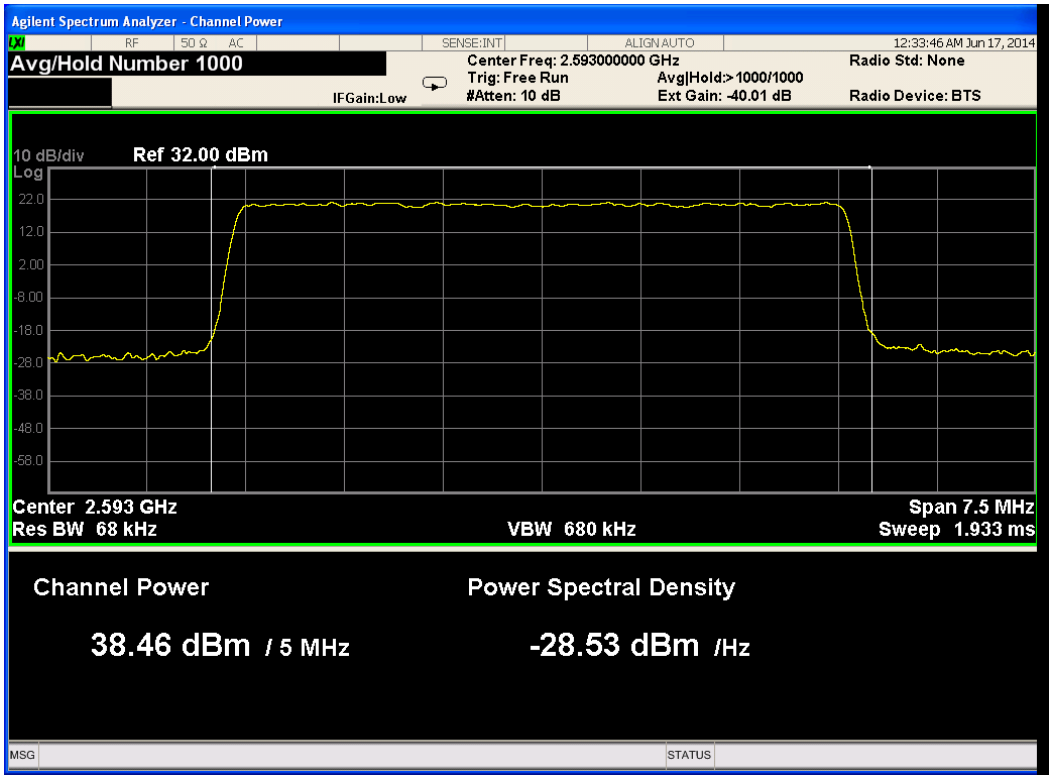


Figure 29.— 2593.00 MHz 64QAM Port 1

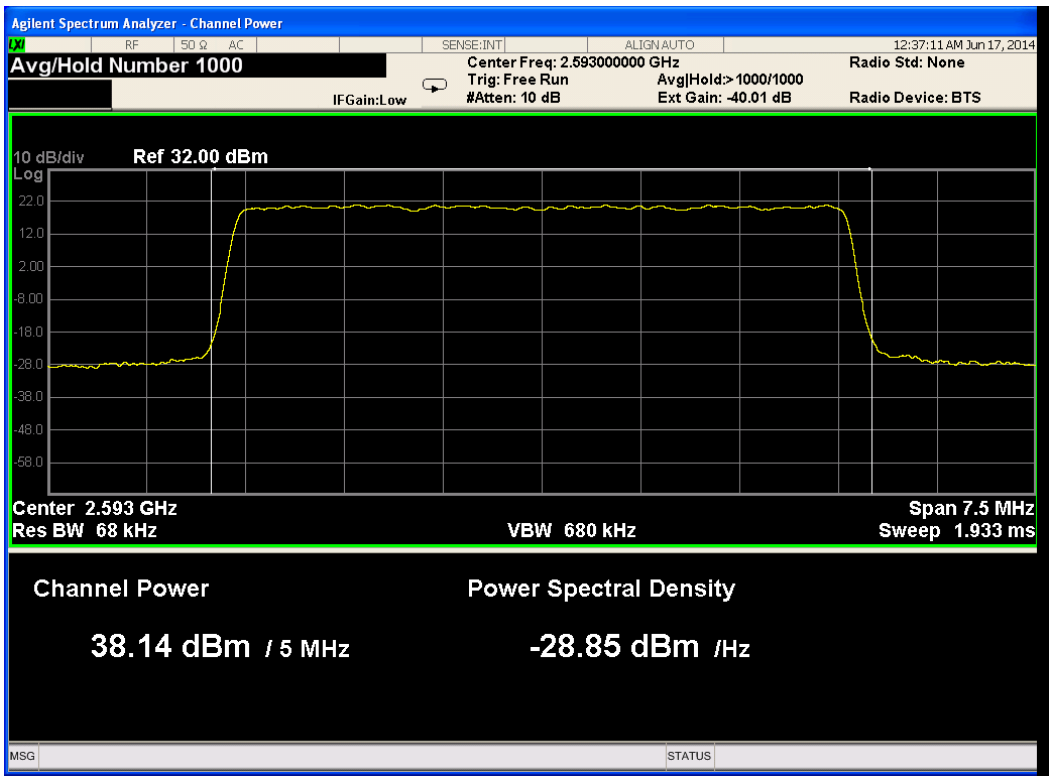


Figure 30.— 2593.00 MHz 64QAM Port 2

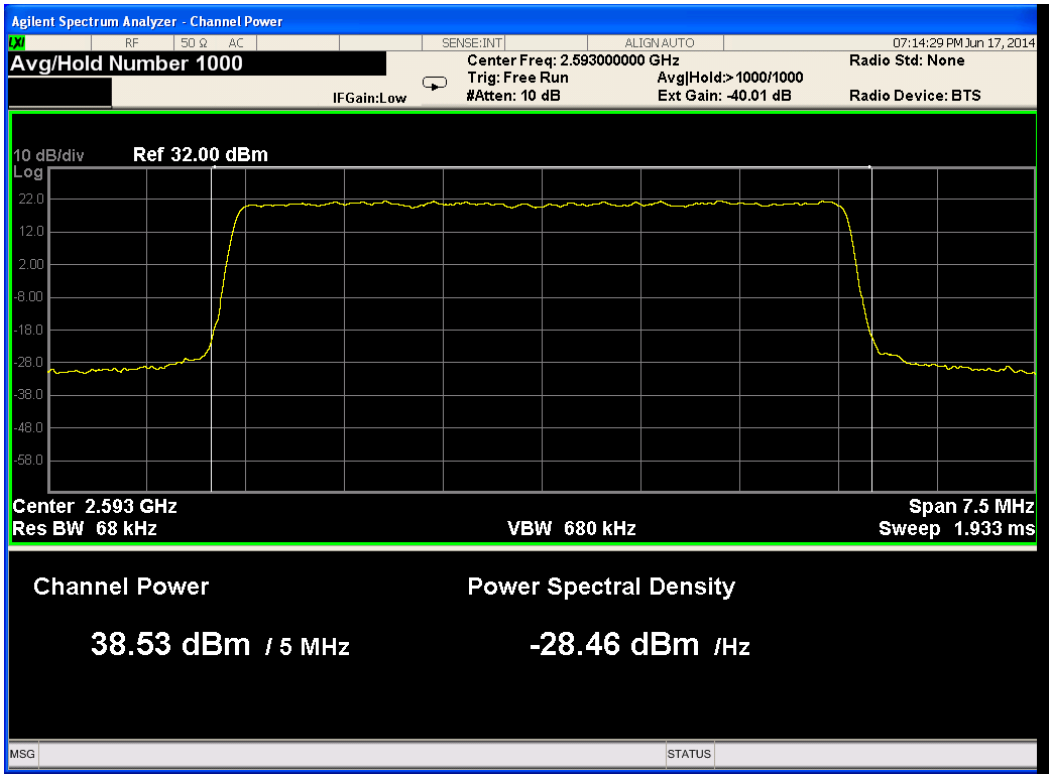


Figure 31.— 2593.00 MHz 64QAM Port 3

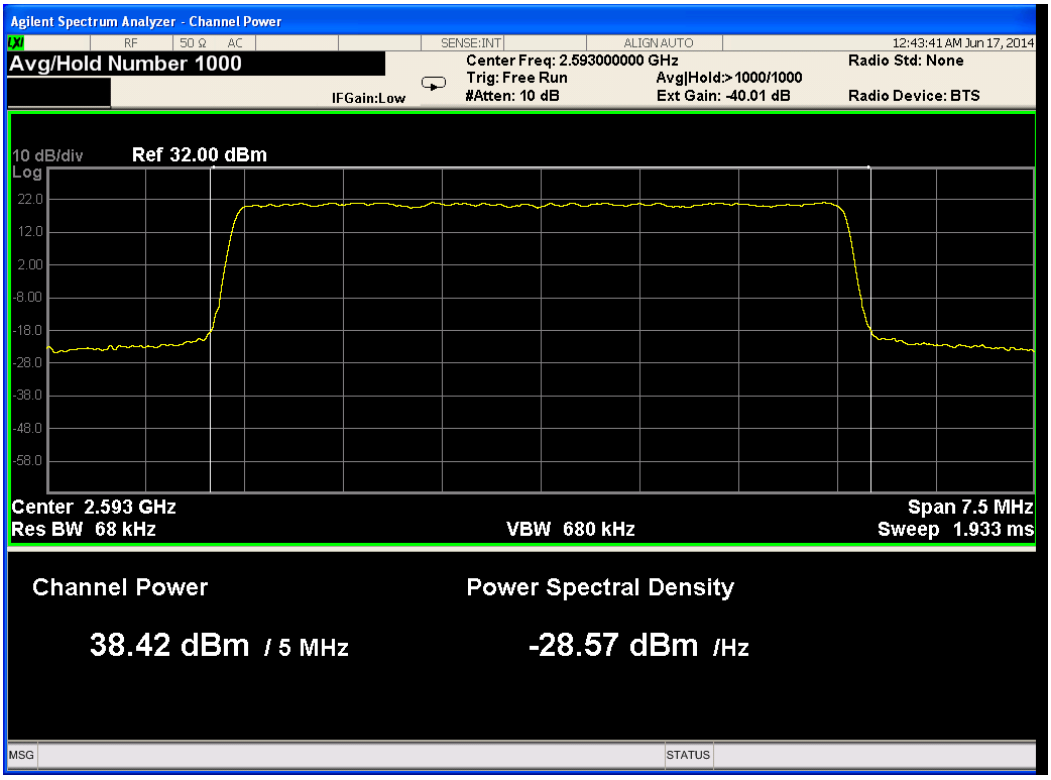


Figure 32.— 2593.00 MHz 64QAM Port 4

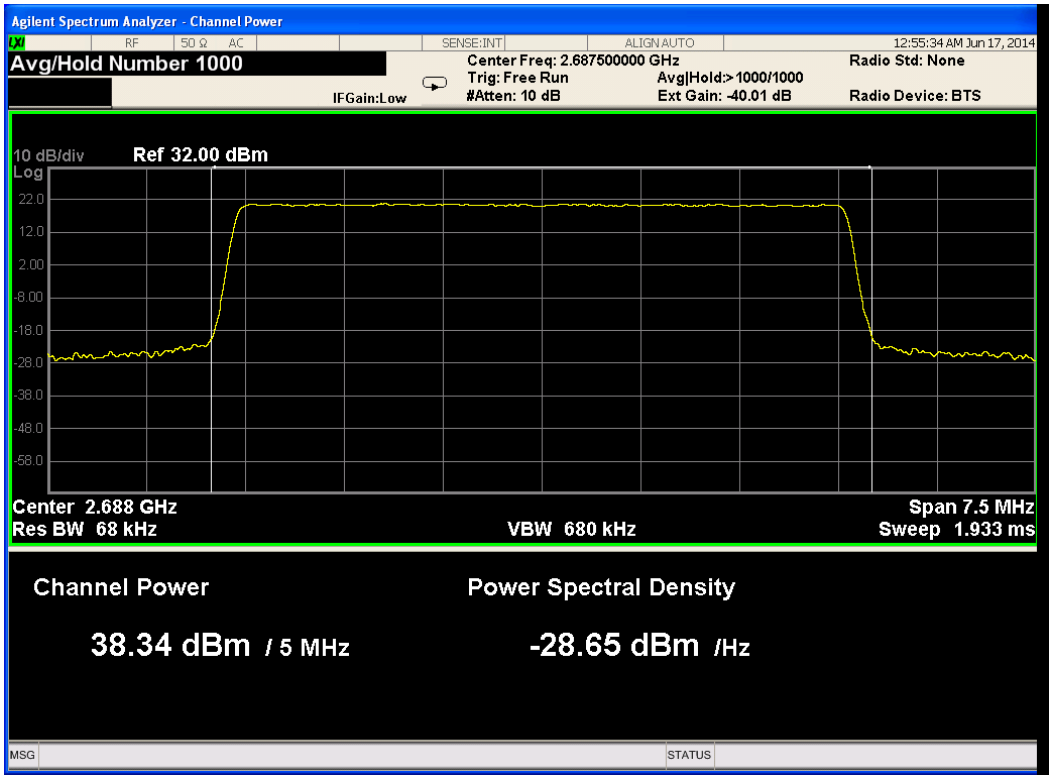


Figure 33.— 2687.50 MHz QPSK Port 1

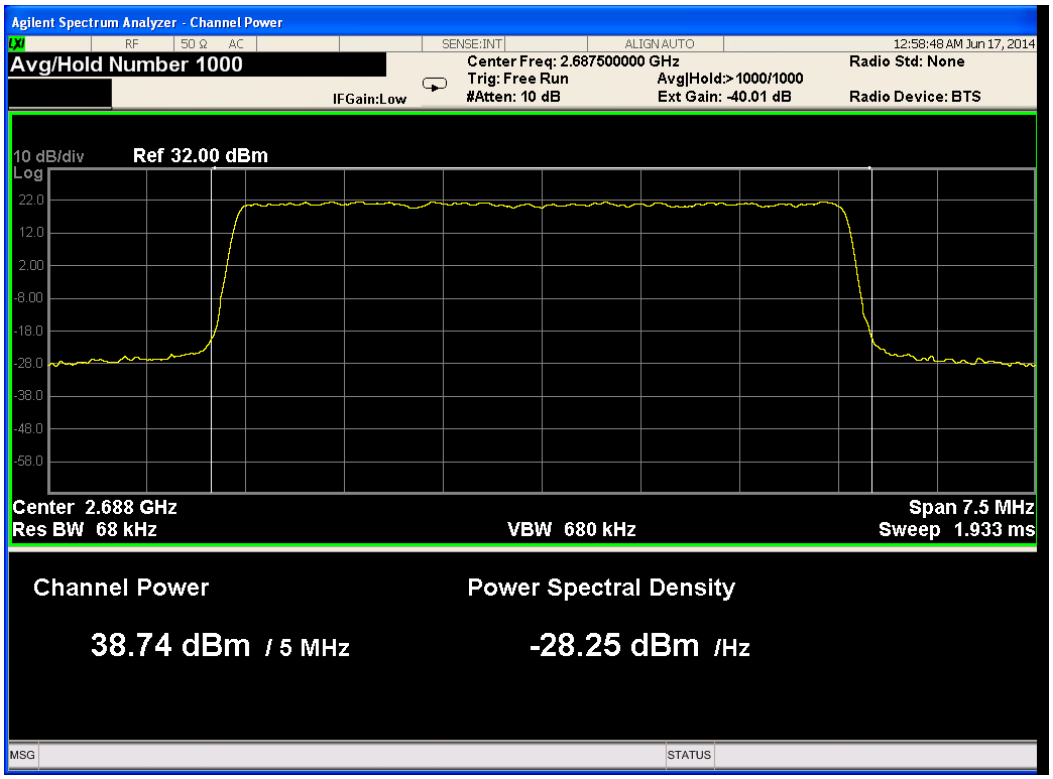


Figure 34.— 2687.50 MHz QPSK Port 2

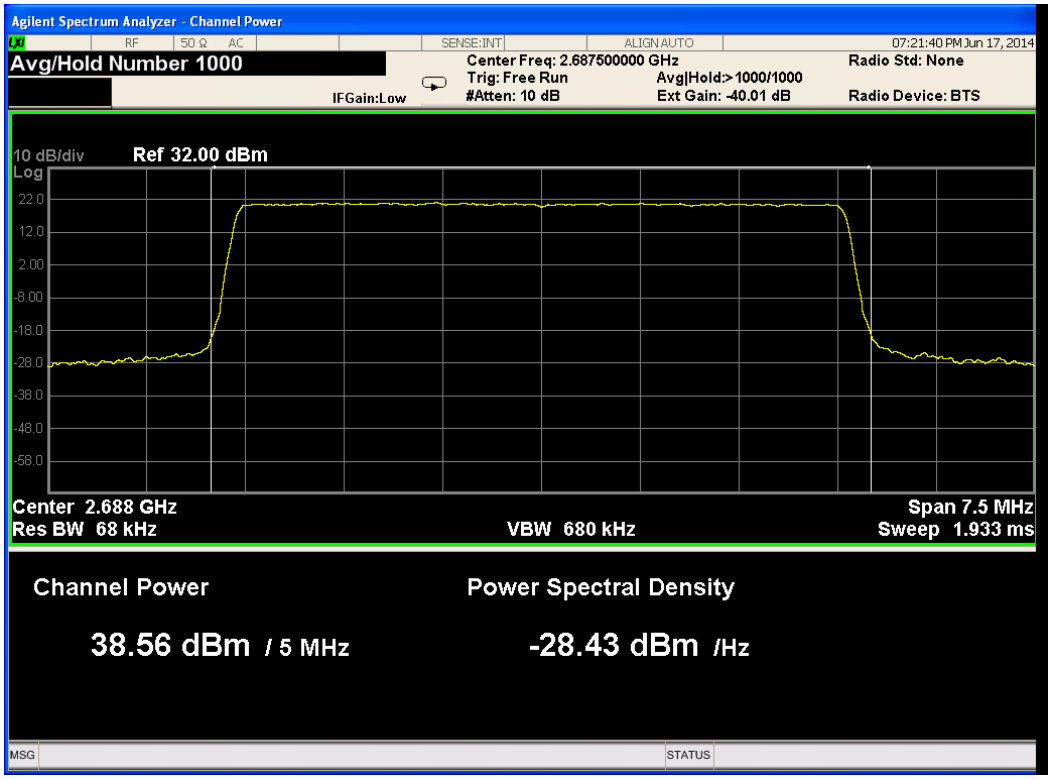


Figure 35.— 2687.50 MHz QPSK Port 3

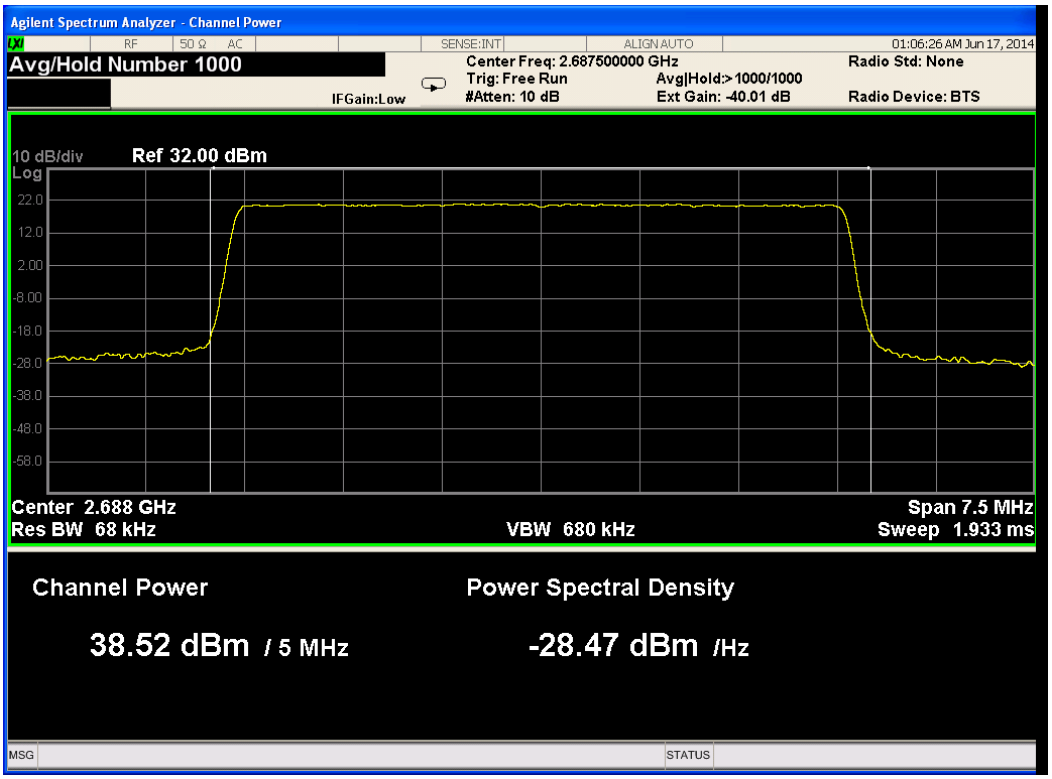


Figure 36.— 2687.50 MHz QPSK Port 4

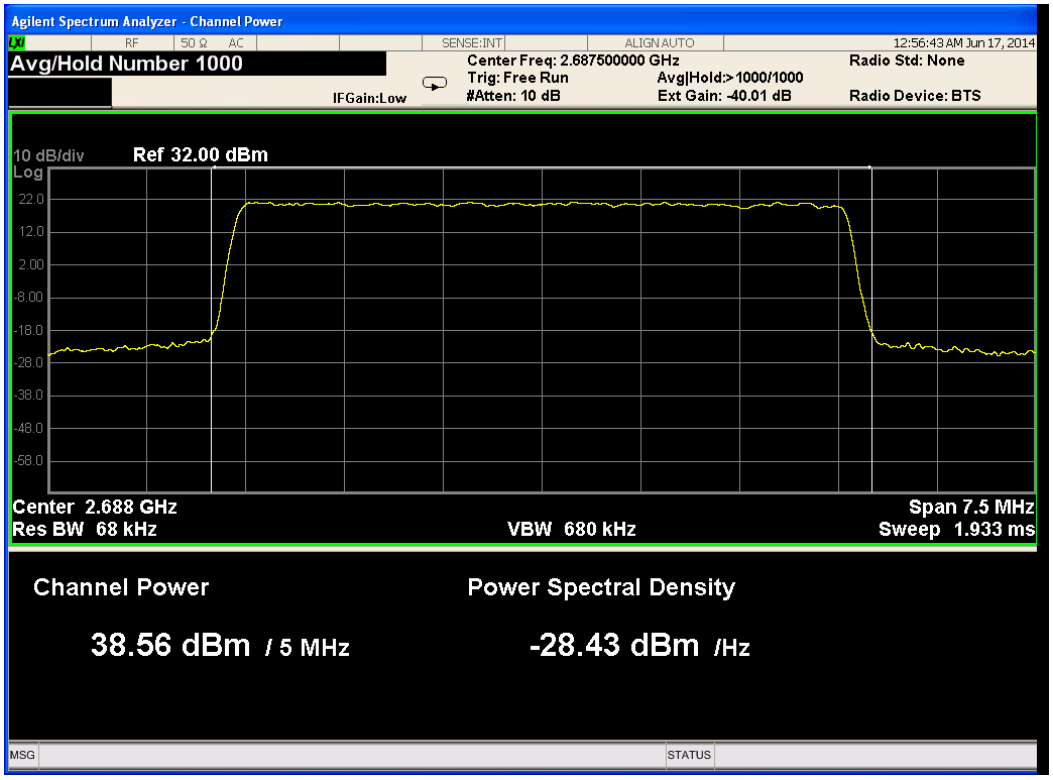


Figure 37.— 2687.50 MHz 16QAM Port 1

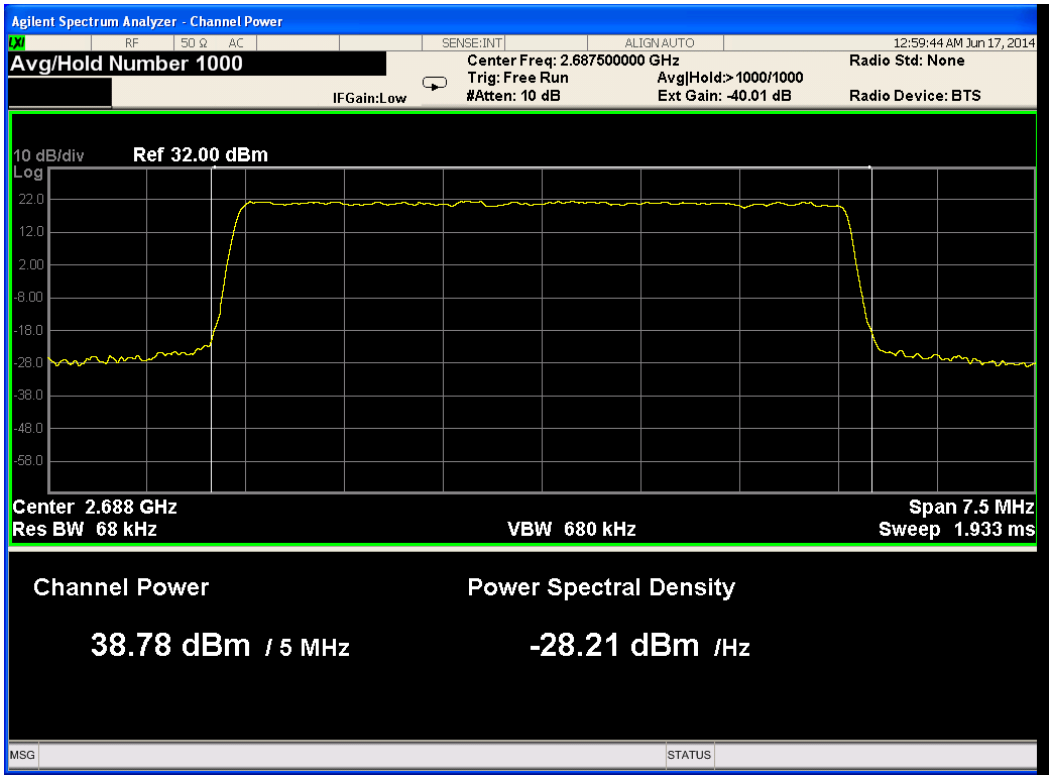


Figure 38.— 2687.50 MHz 16QAM Port 2

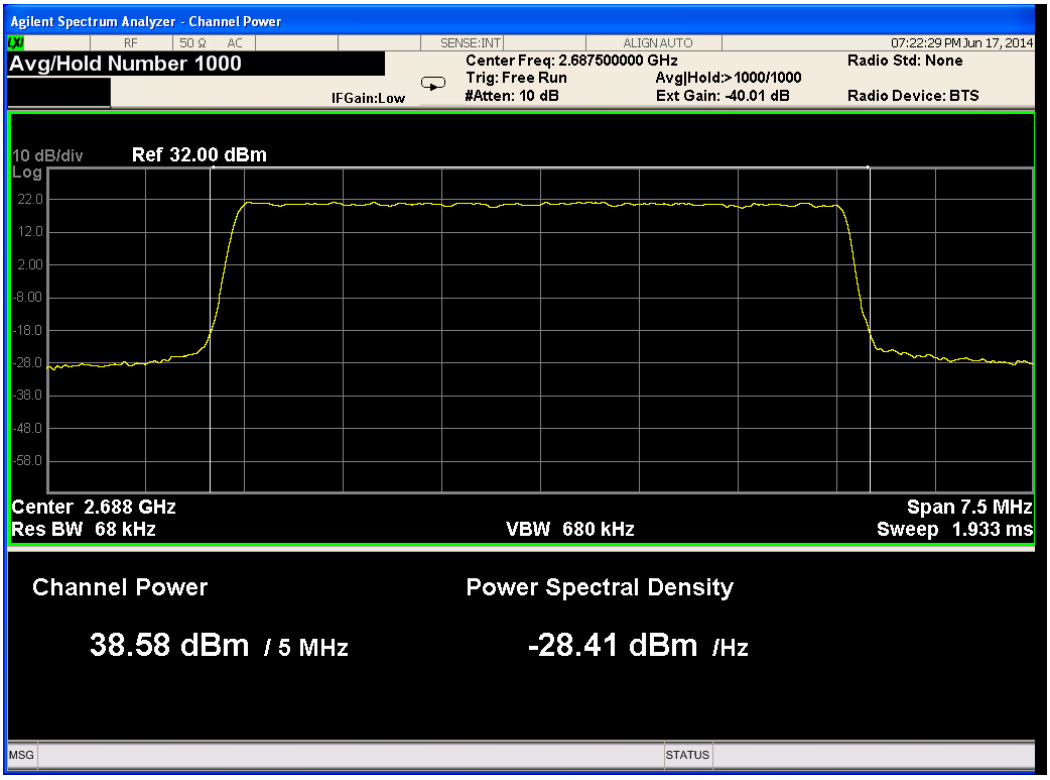


Figure 39.— 2687.50 MHz 16QAM Port 3

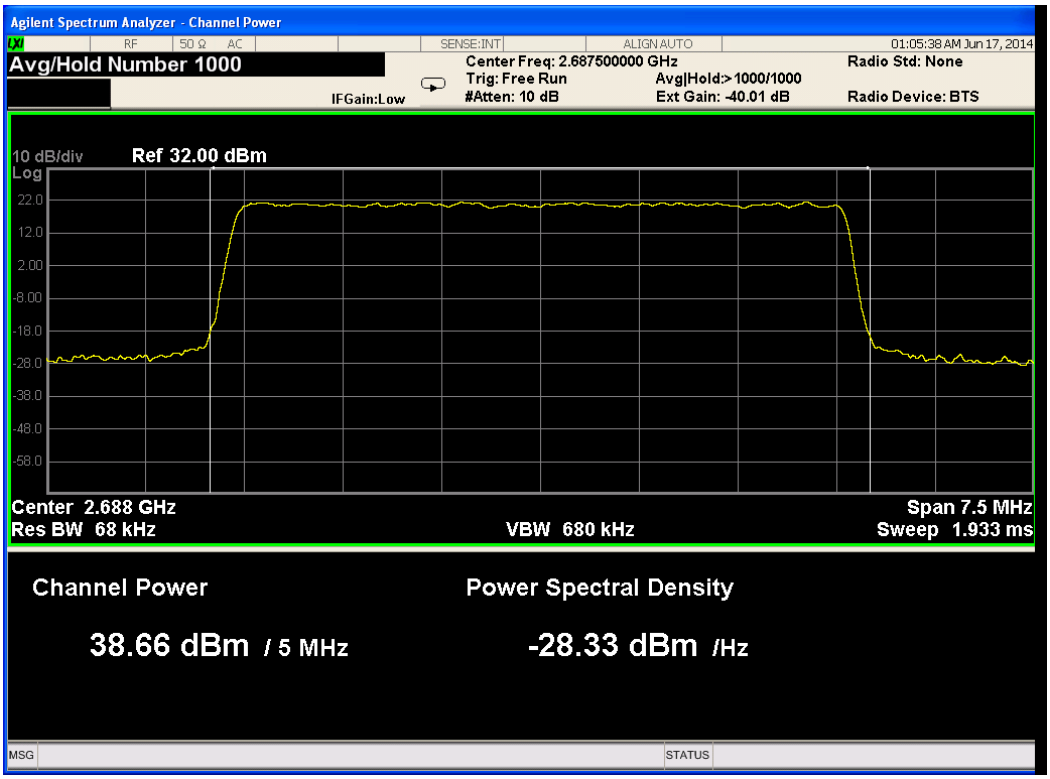


Figure 40.— 2687.50 MHz 16QAM Port 4

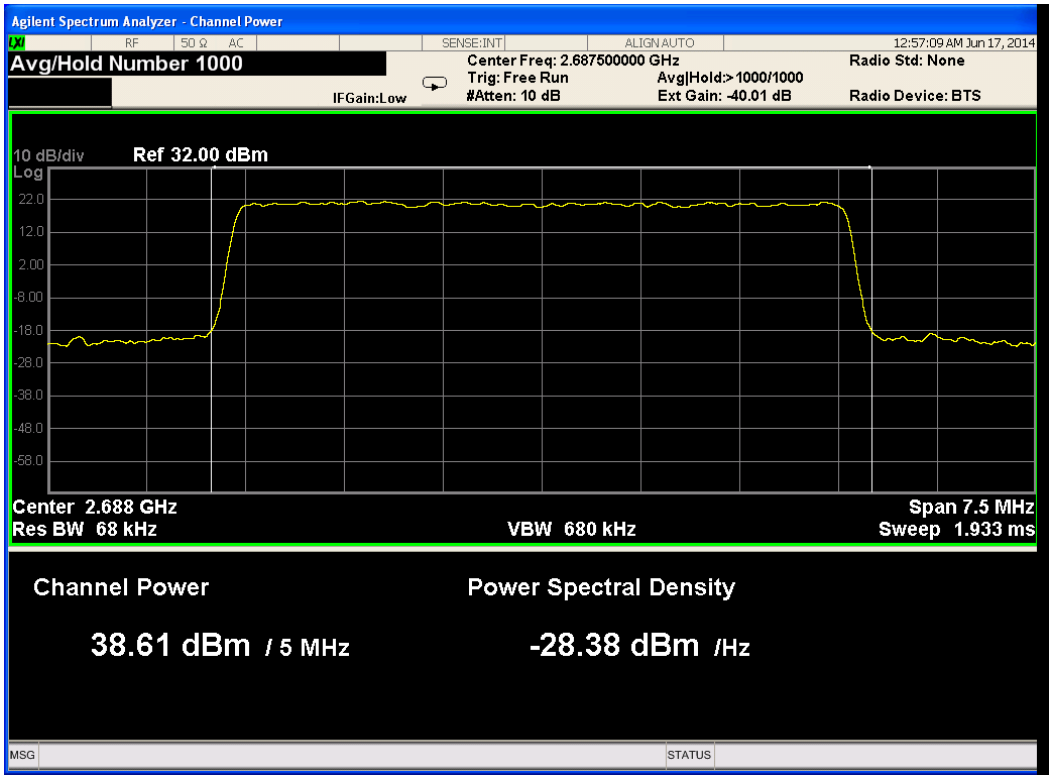


Figure 41.— 2687.50 MHz 64QAM Port 1

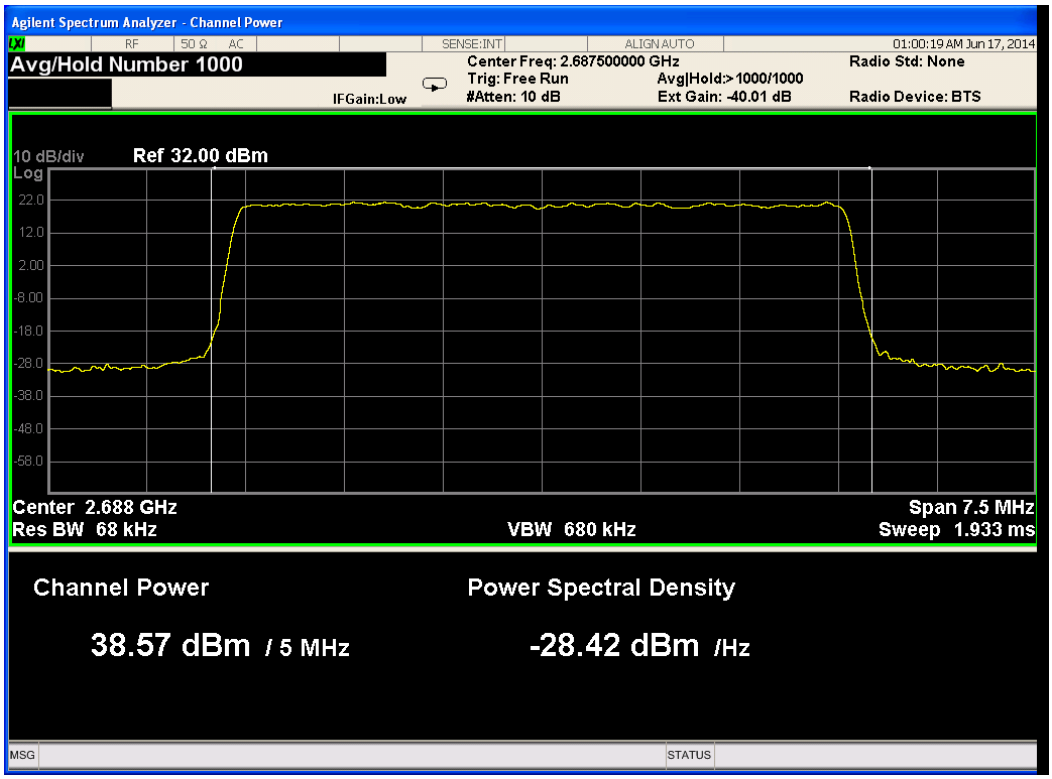


Figure 42.— 2687.50 MHz 64QAM Port 2

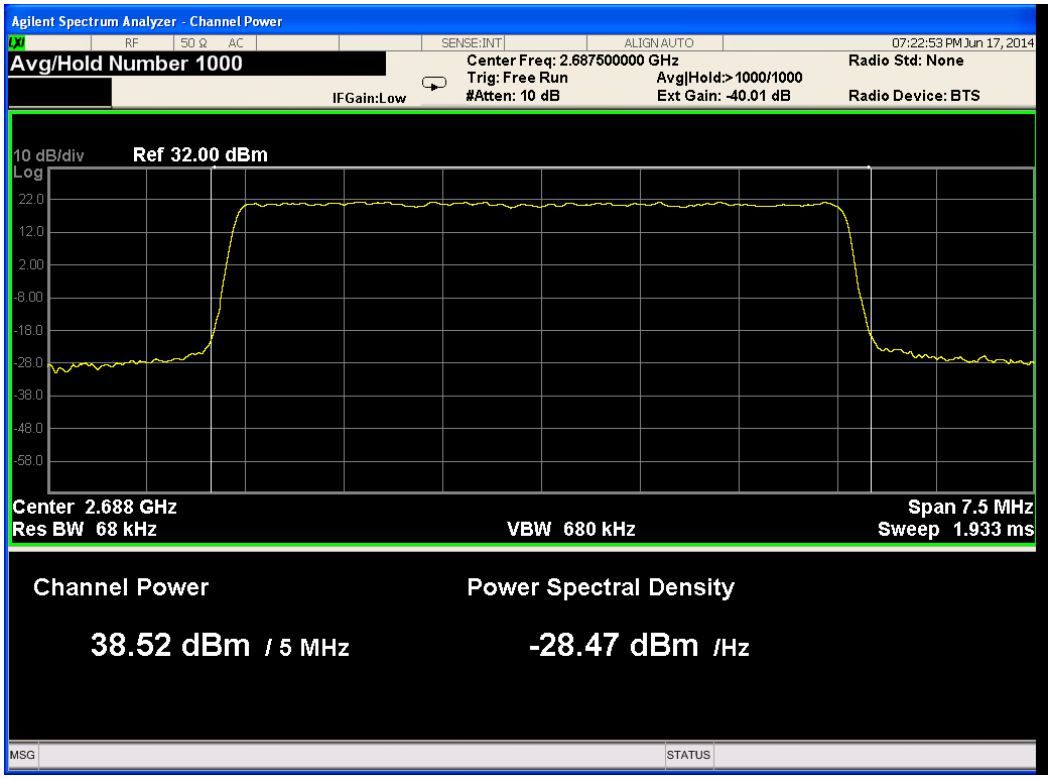


Figure 43.— 2687.50 MHz 64QAM Port 3

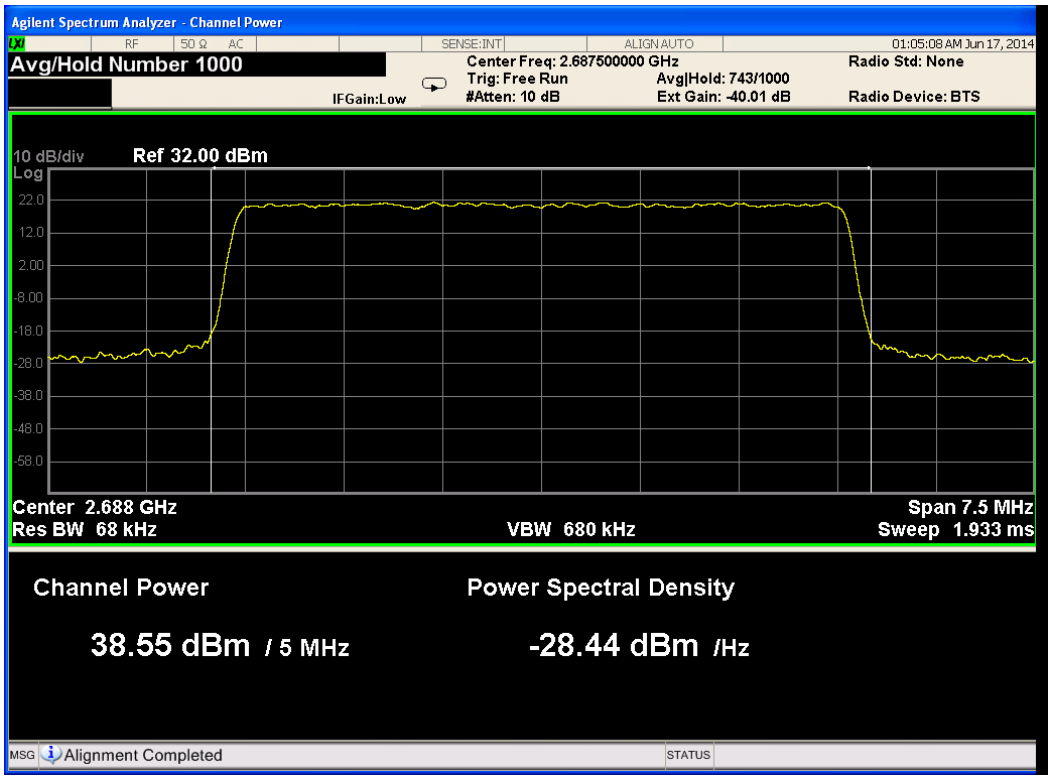


Figure 44.— 2687.50 MHz 64QAM Port 4

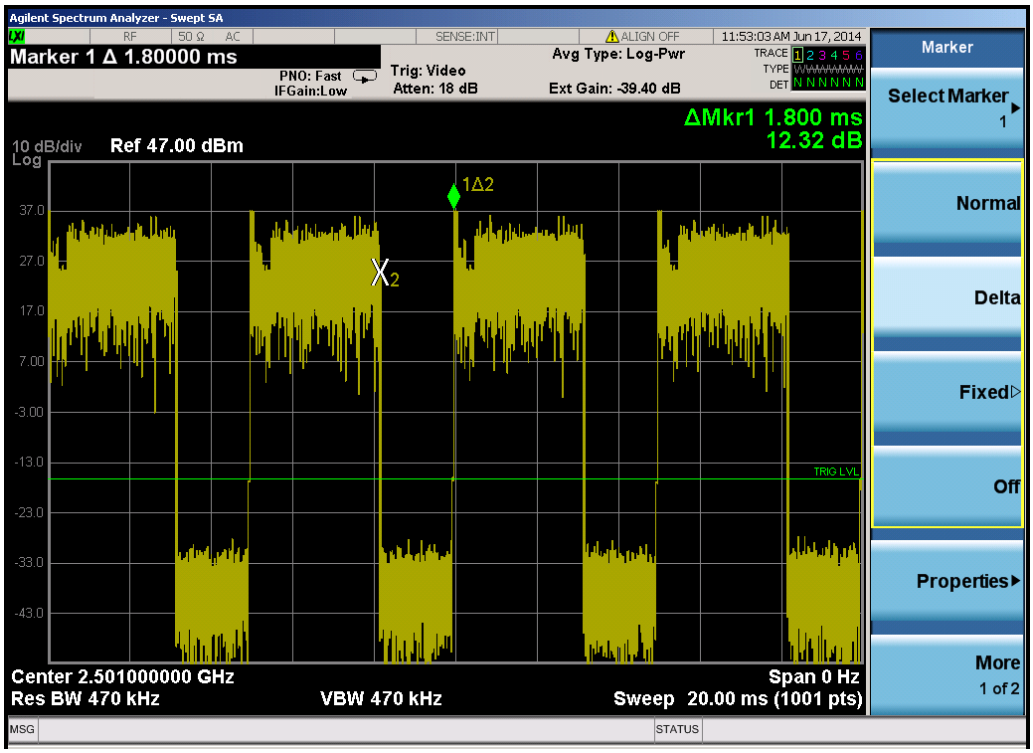


Figure 45 Duty Cycle E.U.T. Off

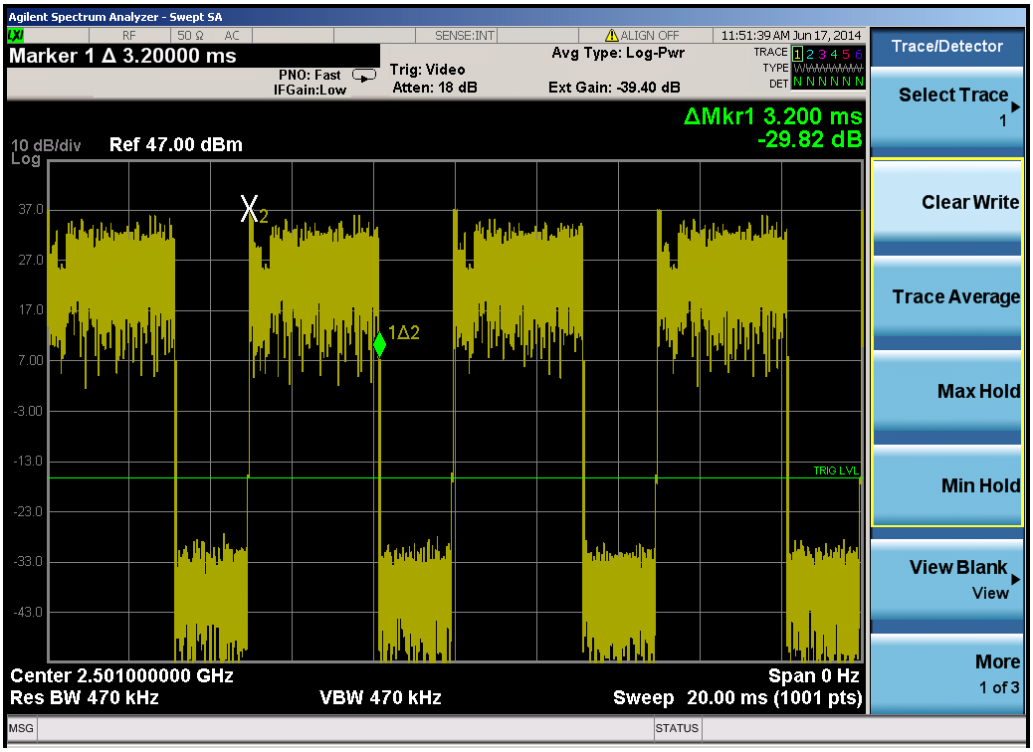


Figure 46 Duty Cycle E.U.T. On

4.2 Test Equipment Used

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 2 Test Equipment Used Maximum Peak Output Power 5MHz Bandwidth

5. Maximum Peak Output Power 10 MHz Bandwidth

5.1 Test Specification

FCC Part 27, Sub-part C (27.50(h)(1))

5.2 Test procedure

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB. The E.U.T. RF output was OFDMA modulated with QPSK, 16QAM and 64QAM, at 10 MHz BW.

Special attention was taken to prevent Spectrum Analyzer RF input overload. Tested frequencies: 2501.0 MHz, 2593.0 MHz and 2685.0 MHz

According to 47 CFR Part 2 section § 2.1046 and Part 27 section § 27.50(h)(1), the maximum EIRP of a base station shall not exceed 63 + 10 log (X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition.

As to the limit, the X is 10 MHz and Y is 6 MHz for the EUT, so the limit is calculated to be 63 + 10 log (10 MHz/12 MHz) = 62.2 dBm.

Antenna type: Manual tilt panel antenna (Gain: 18 dBi) with N type connector.

5.3 Test Results

Operation Frequency	Modulation	Reading				4 Ports MIMO Calculated	Specification*	Margin
		Port 1	Port 2	Port 3	Port 4			
(MHz)		(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
2501.00	QPSK	38.59	38.65	38.66	38.51	44.62	62.2	-17.58
	16QAM	38.70	38.80	38.70	38.62	44.73	62.2	-17.47
	64QAM	38.61	38.40	38.37	38.42	44.47	62.2	-17.73
2593.00	QPSK	38.47	38.58	38.51	38.50	44.54	62.2	-17.66
	16QAM	38.69	38.63	38.62	38.82	44.71	62.2	-17.49
	64QAM	38.22	38.38	38.29	38.59	44.39	62.2	-17.81
2685.00	QPSK	38.54	38.26	38.33	38.31	44.38	62.2	-17.82
	16QAM	38.61	38.49	38.46	38.37	44.50	62.2	-17.70
	64QAM	38.26	38.28	38.04	38.35	44.25	62.2	-17.95

* Limit = 63 + 10log(10/12) dBm

Table 3 Maximum Peak Power Output 10 MHz Bandwidth Test results Table

See additional information in Figure 47 to Figure 82.

JUDGEMENT: Passed by 17.47 dB

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

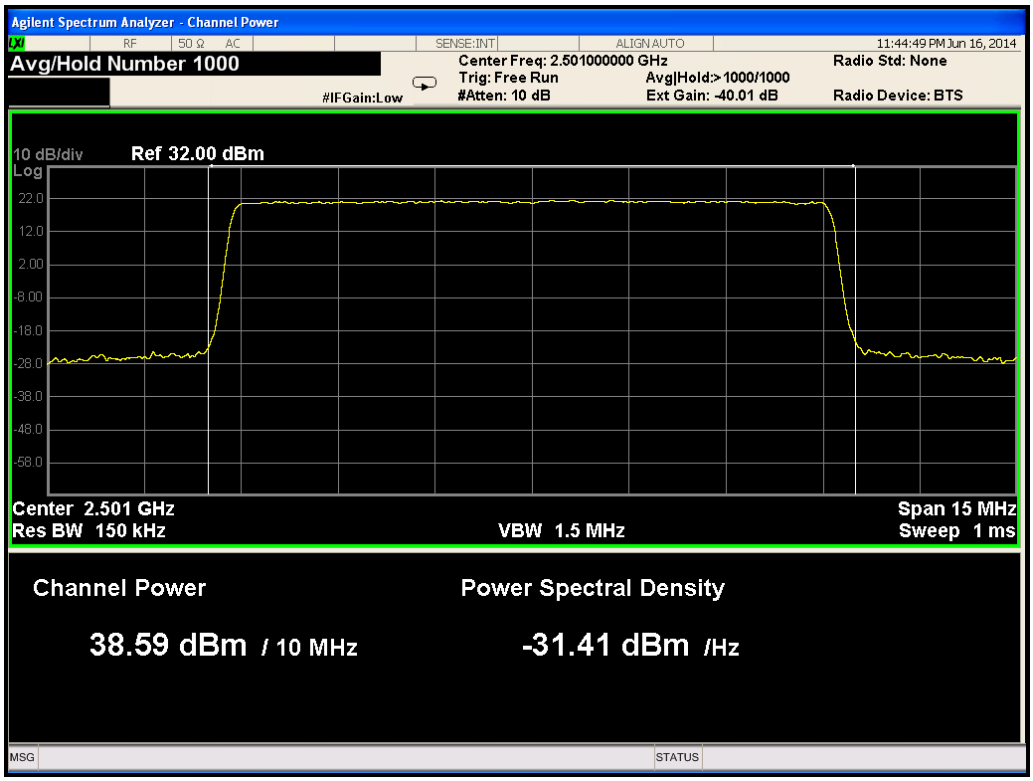


Figure 47.— 2501.00 MHz QPSK Port 1

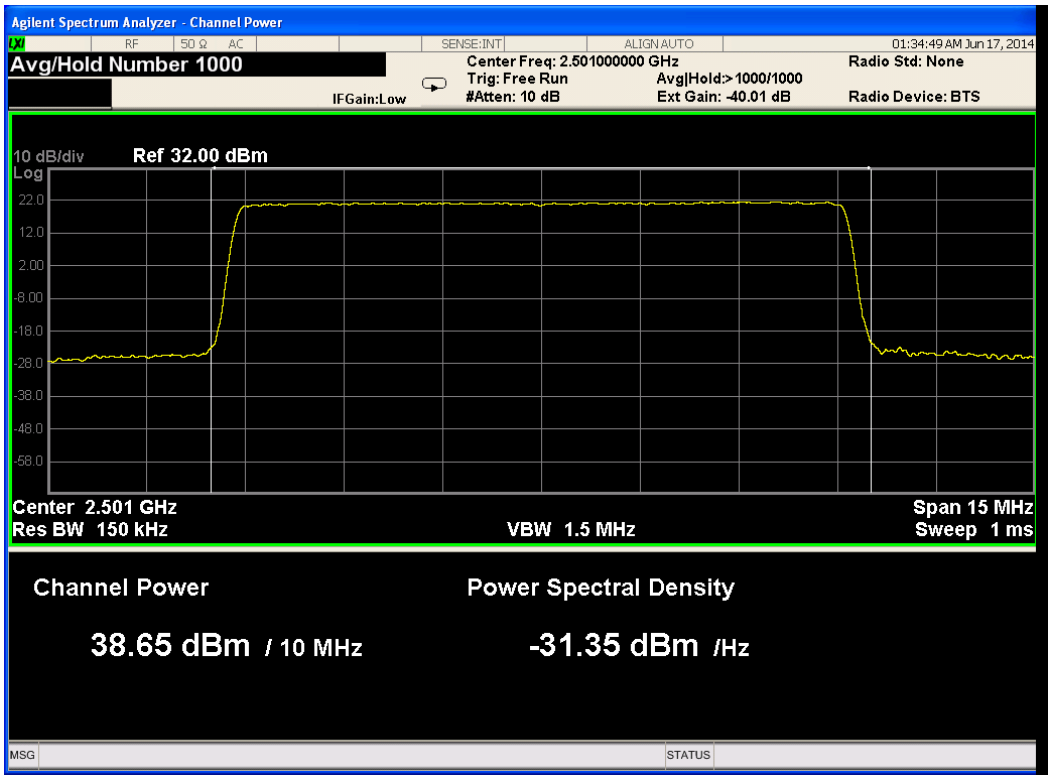


Figure 48.— 2501.00 MHz QPSK Port 2

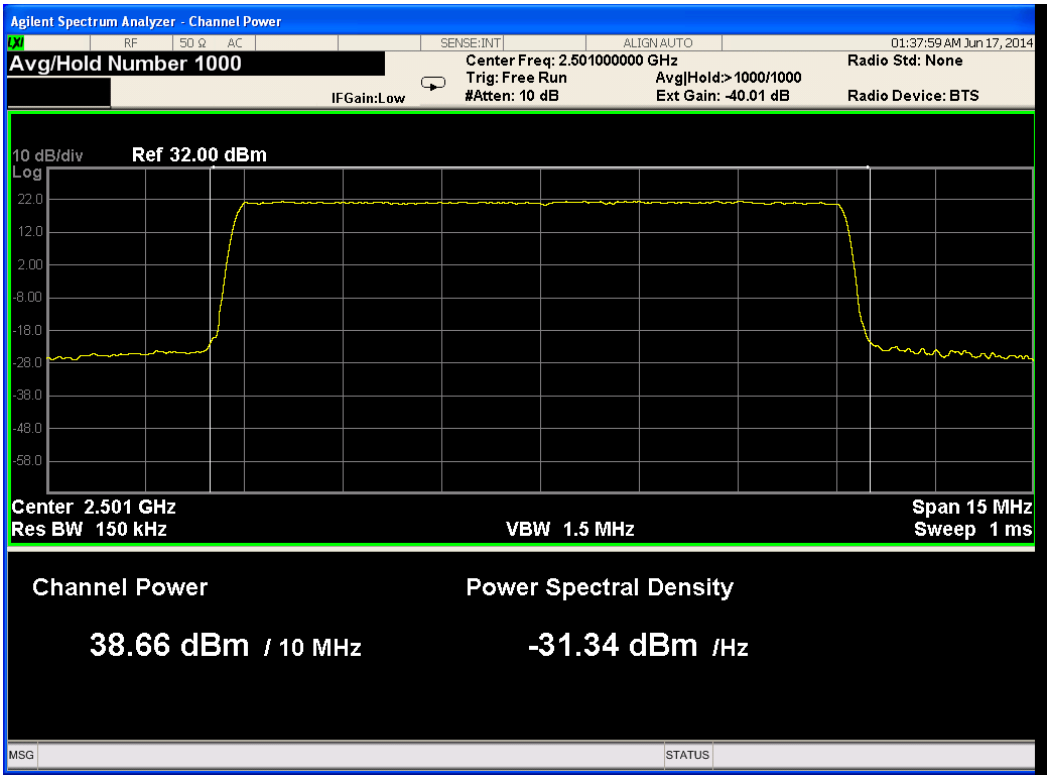


Figure 49.— 2501.00 MHz QPSK Port 3

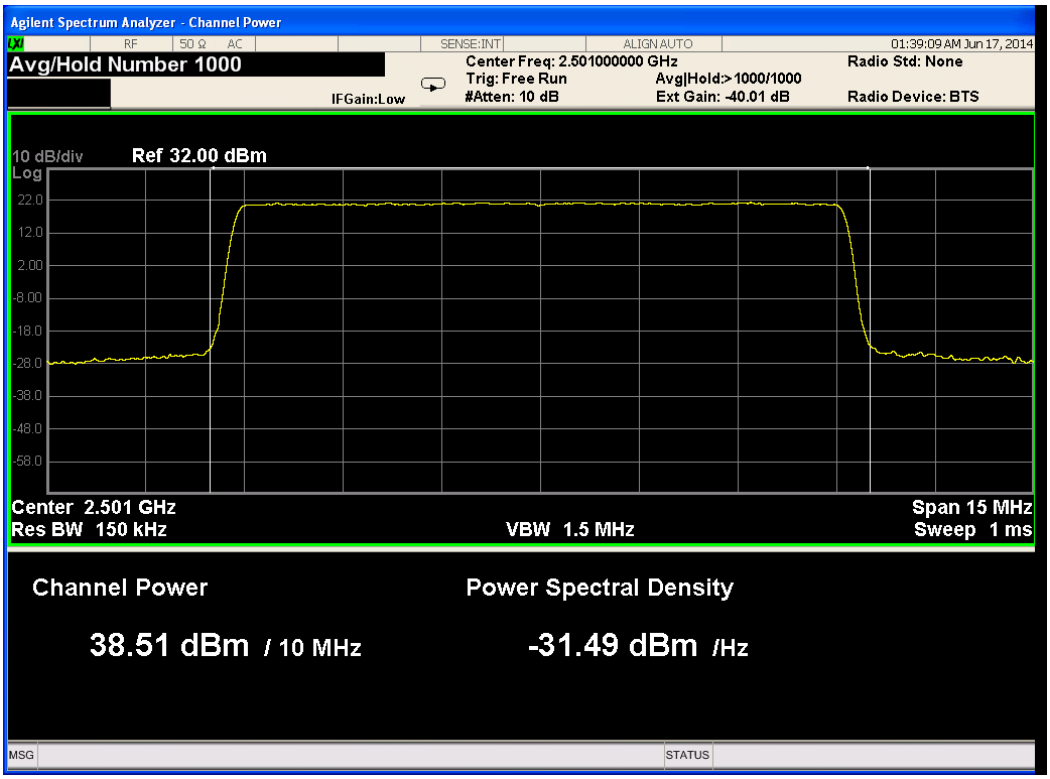


Figure 50.— 2501.00 MHz QPSK Port 4

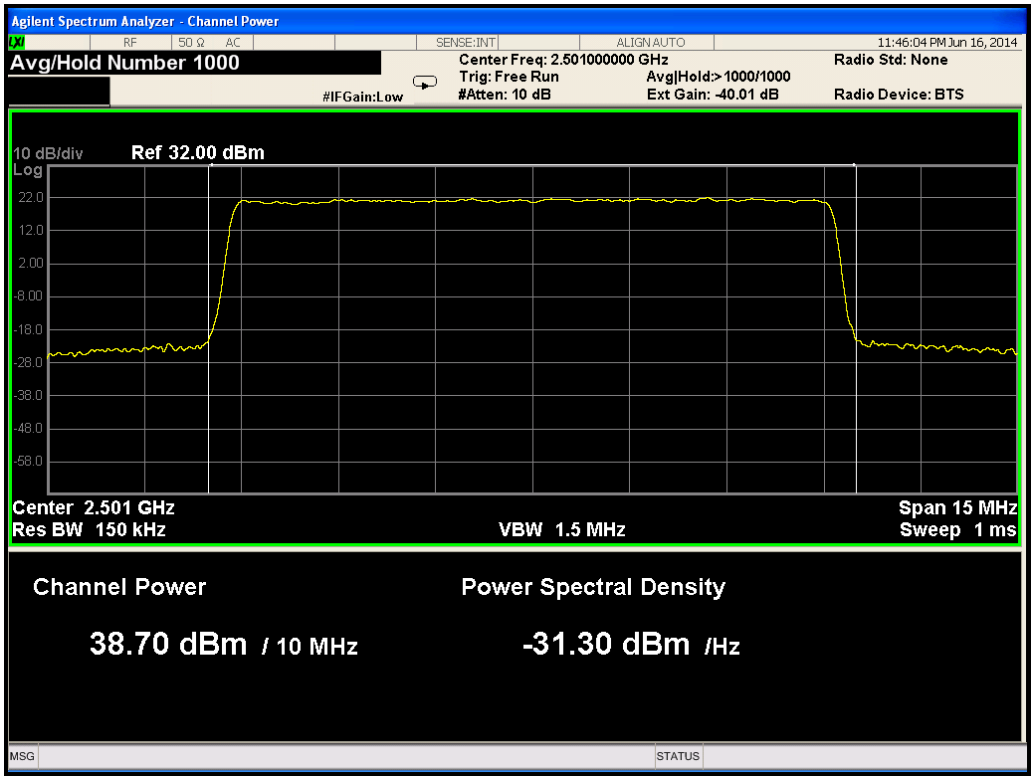


Figure 51.— 2501.00 MHz 16QAM Port 1

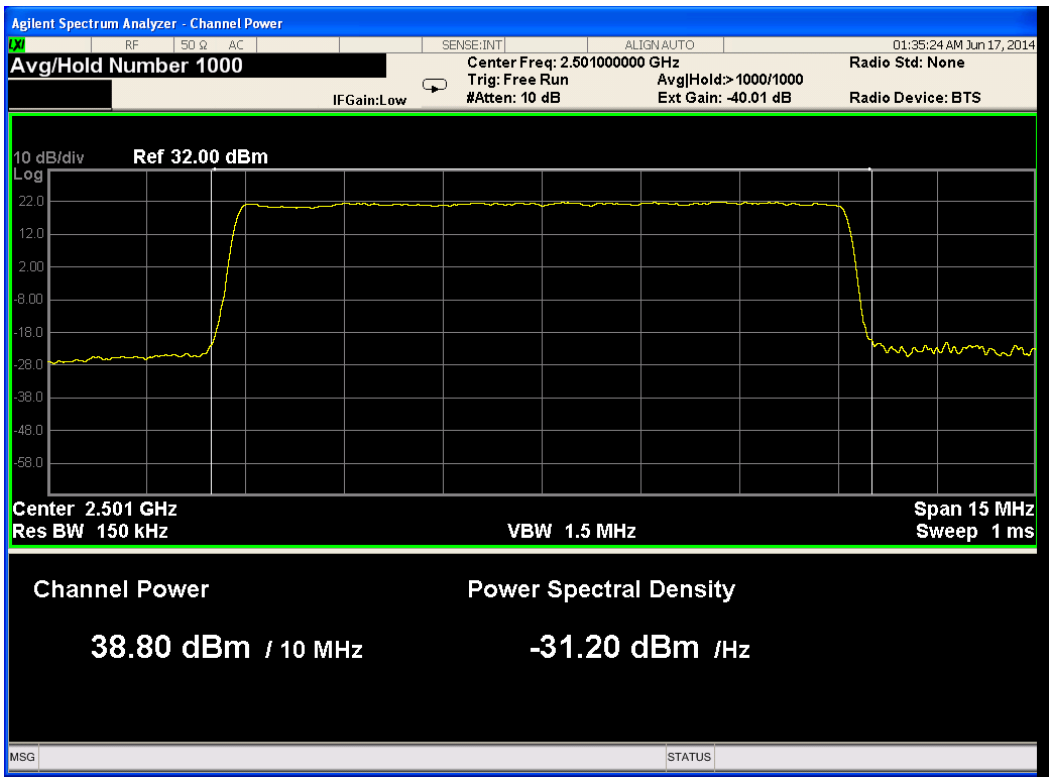


Figure 52.— 2501.00 MHz 16QAM Port 2

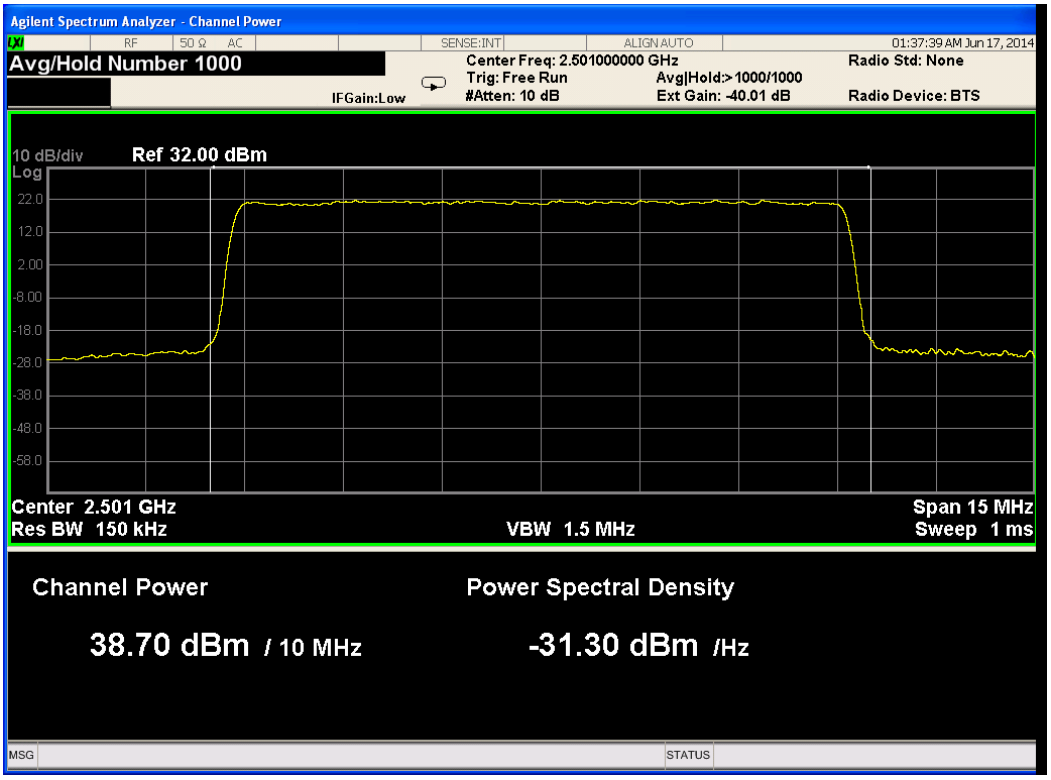


Figure 53.— 2501.00 MHz 16QAM Port 3

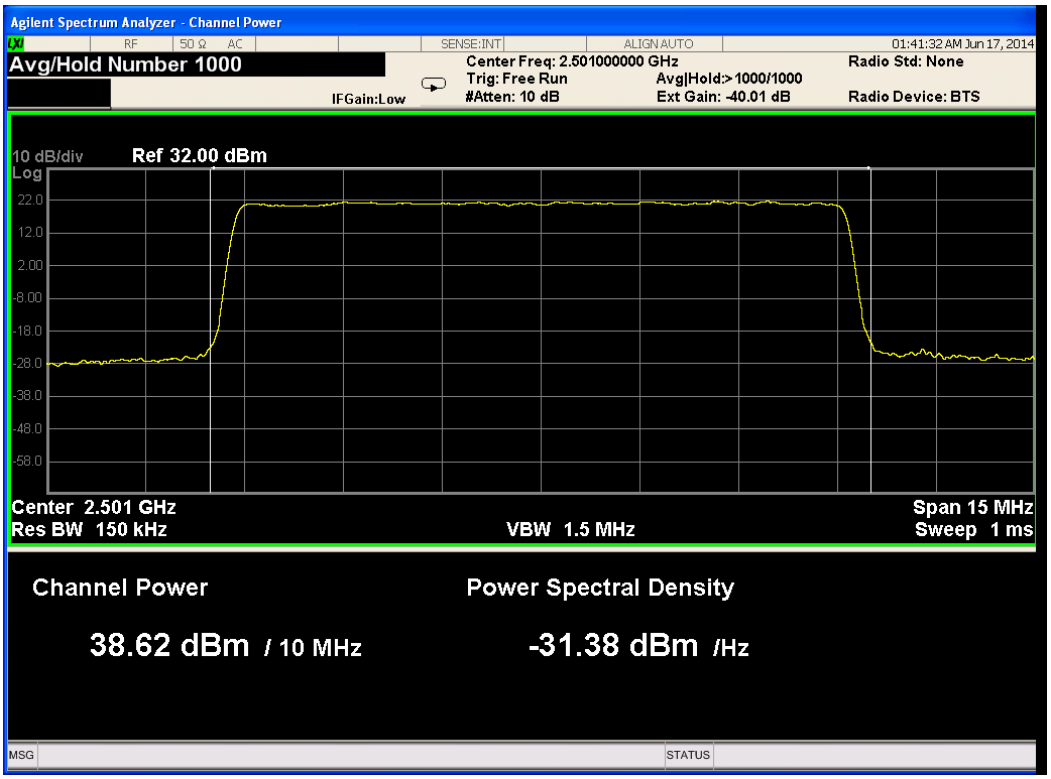


Figure 54.— 2501.00 MHz 16QAM Port 4

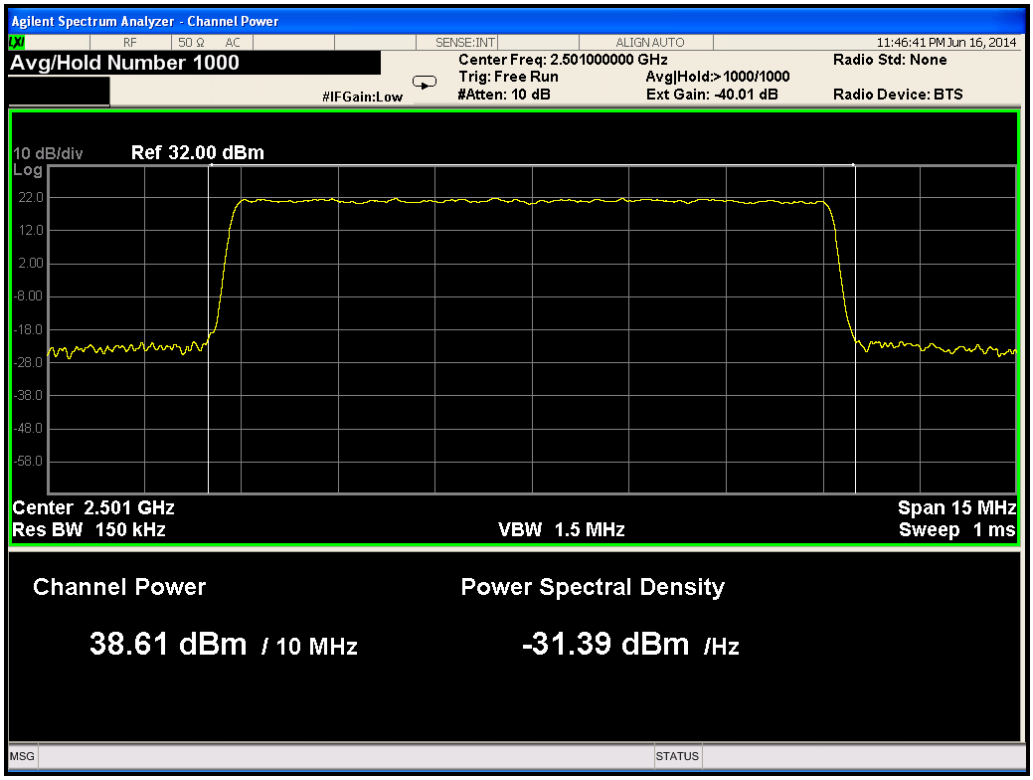


Figure 55.— 2501.00 MHz 64QAM Port 1

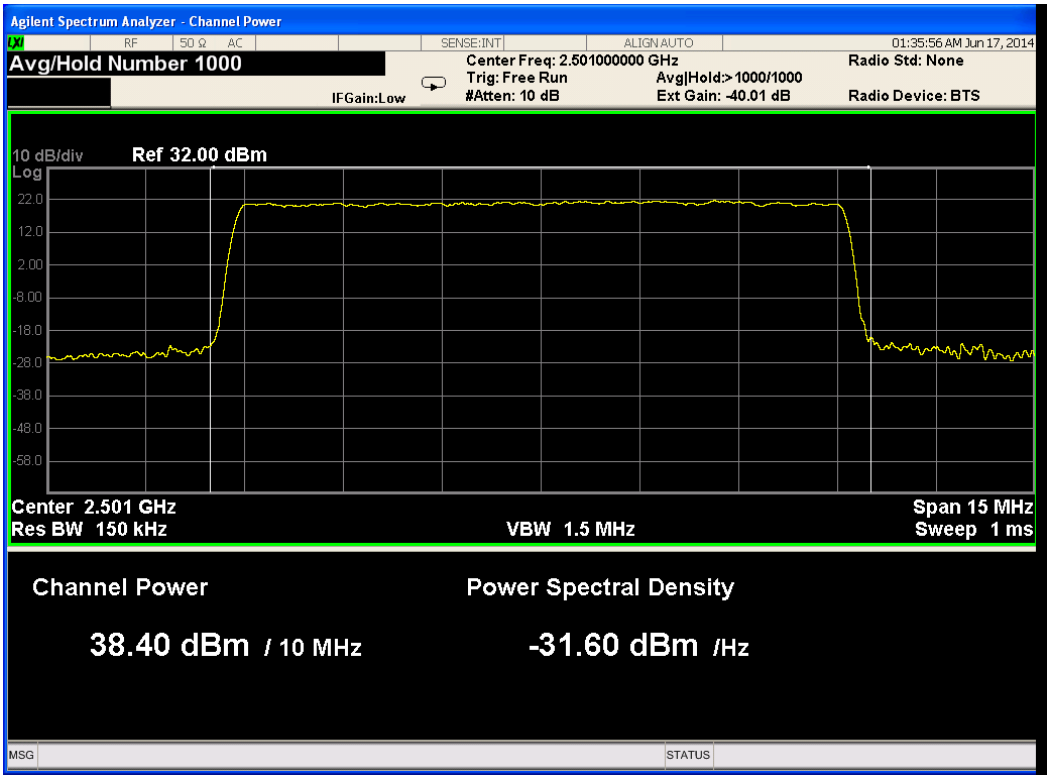


Figure 56.— 2501.00 MHz 64QAM Port 2

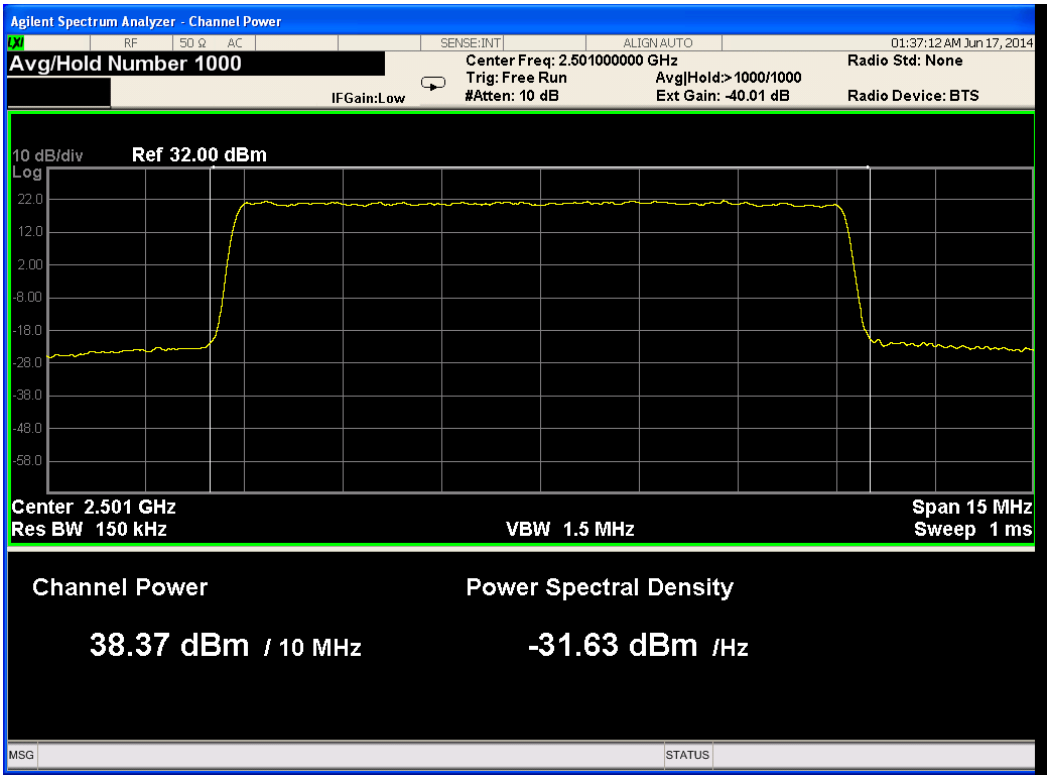


Figure 57.— 2501.00 MHz 64QAM Port 3

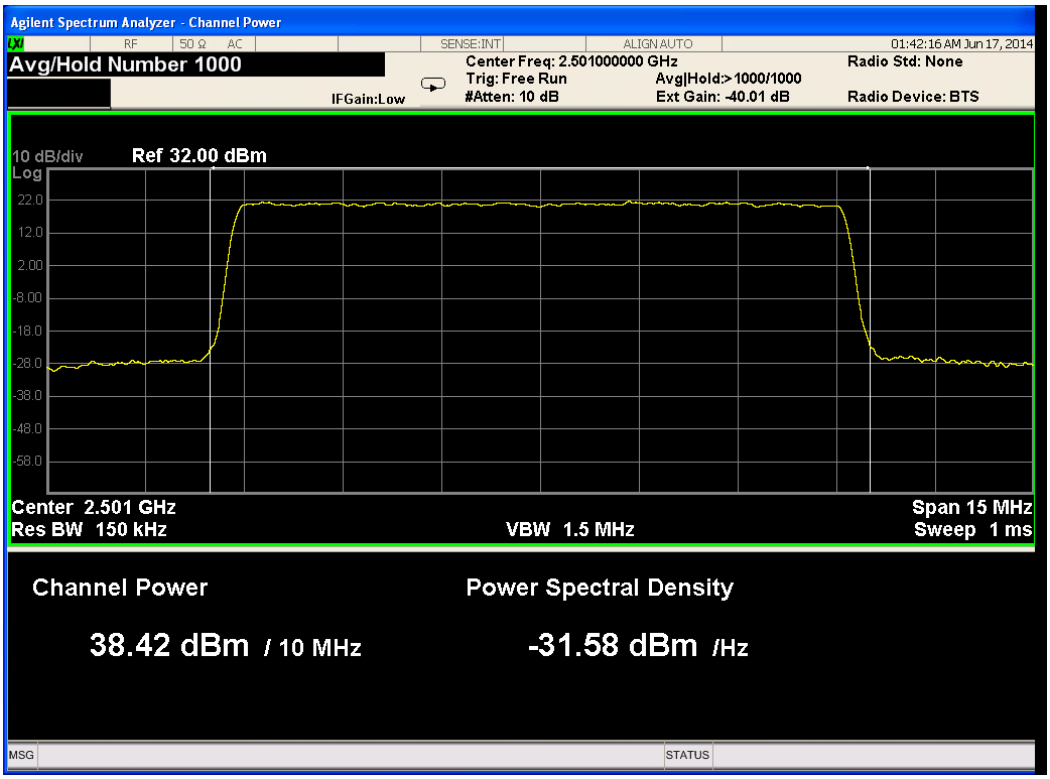


Figure 58.— 2501.00 MHz 64QAM Port 4

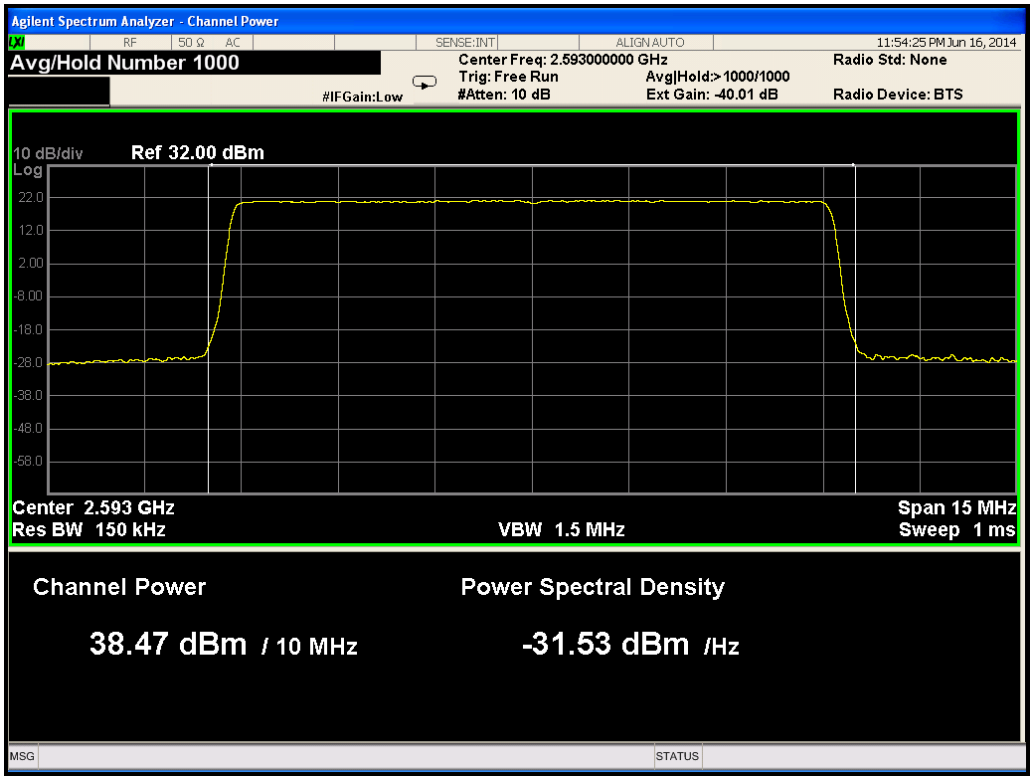


Figure 59.— 2593.00 MHz QPSK Port 1

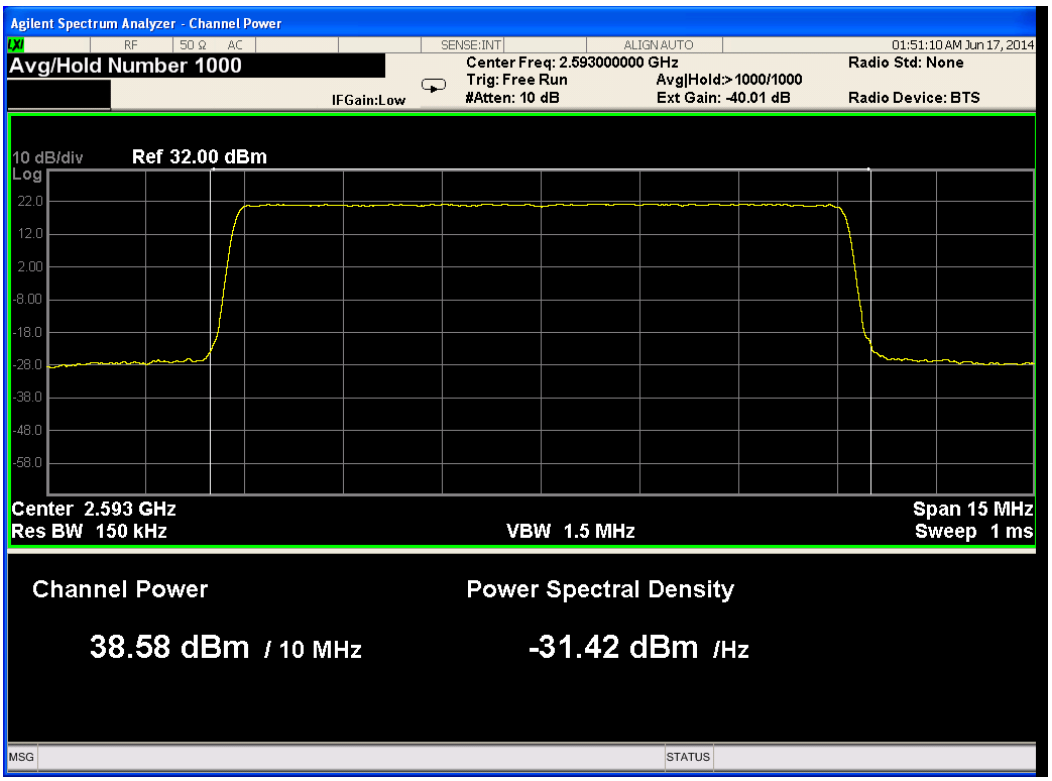


Figure 60.— 2593.00 MHz QPSK Port 2

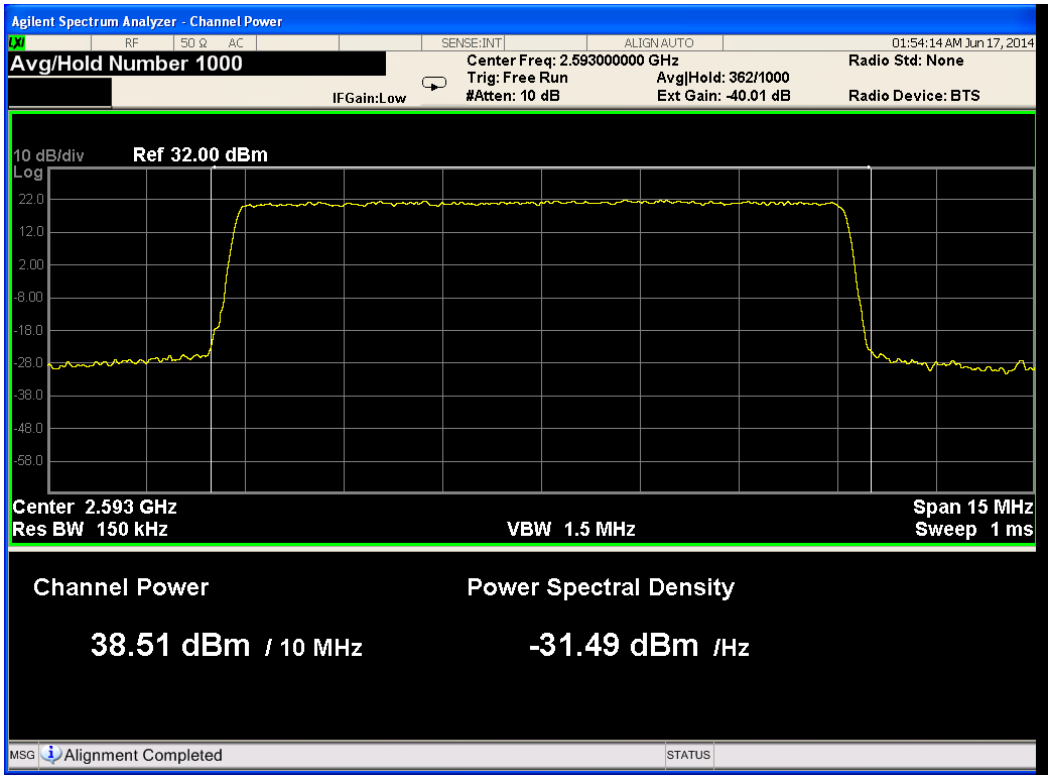


Figure 61.— 2593.00 MHz QPSK Port 3

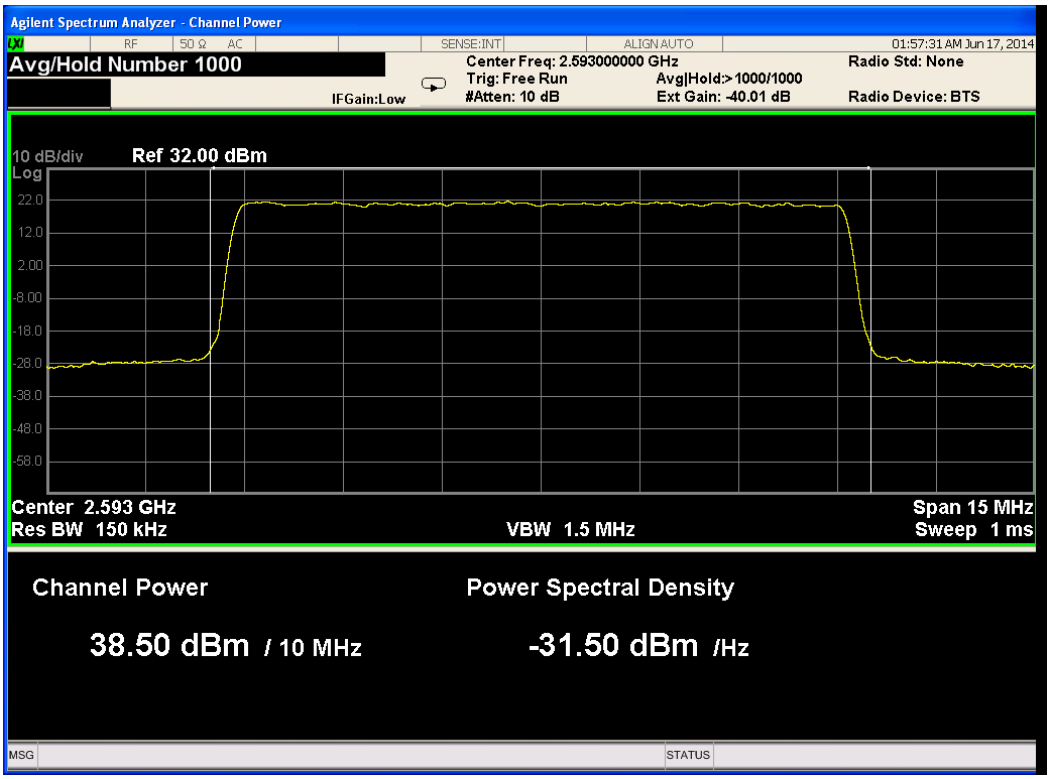


Figure 62.— 2593.00 MHz QPSK Port 4

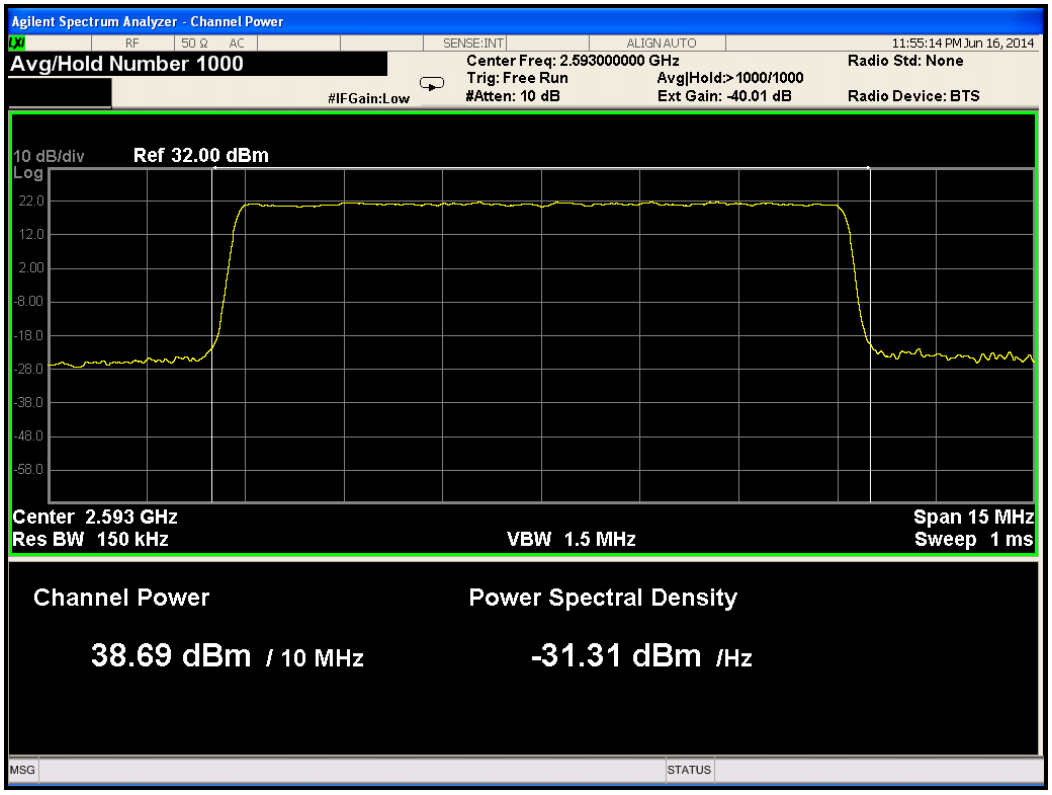


Figure 63.— 2593.00 MHz 16QAM Port 1

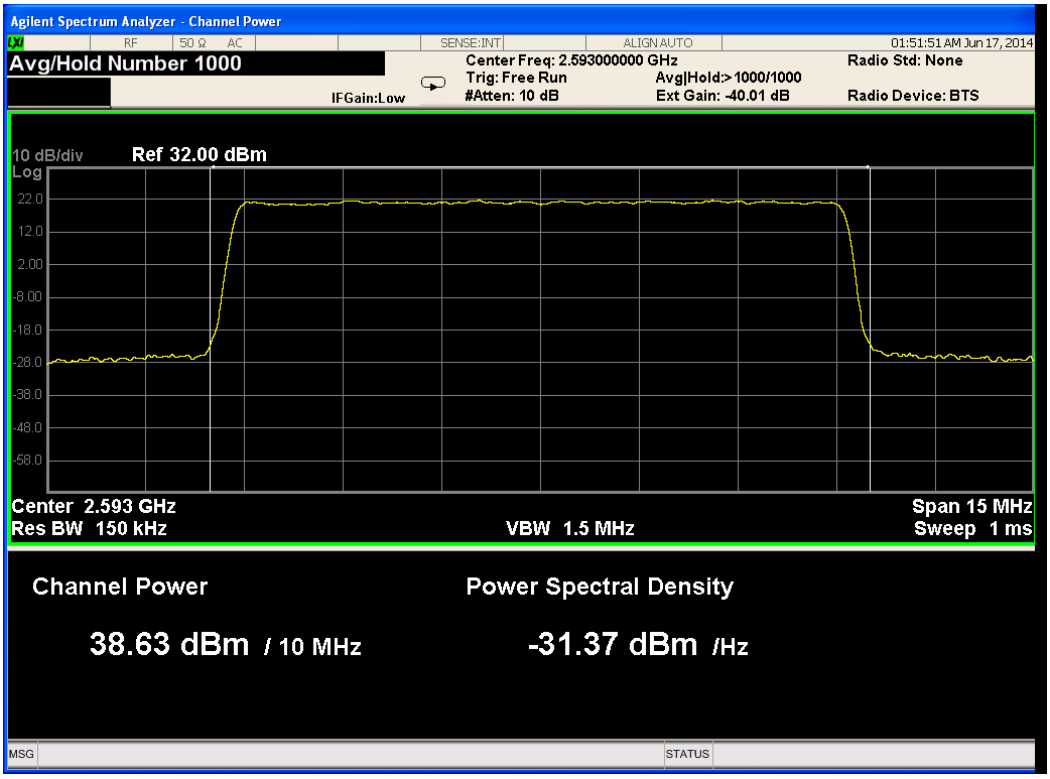


Figure 64.— 2593.00 MHz 16QAM Port 2

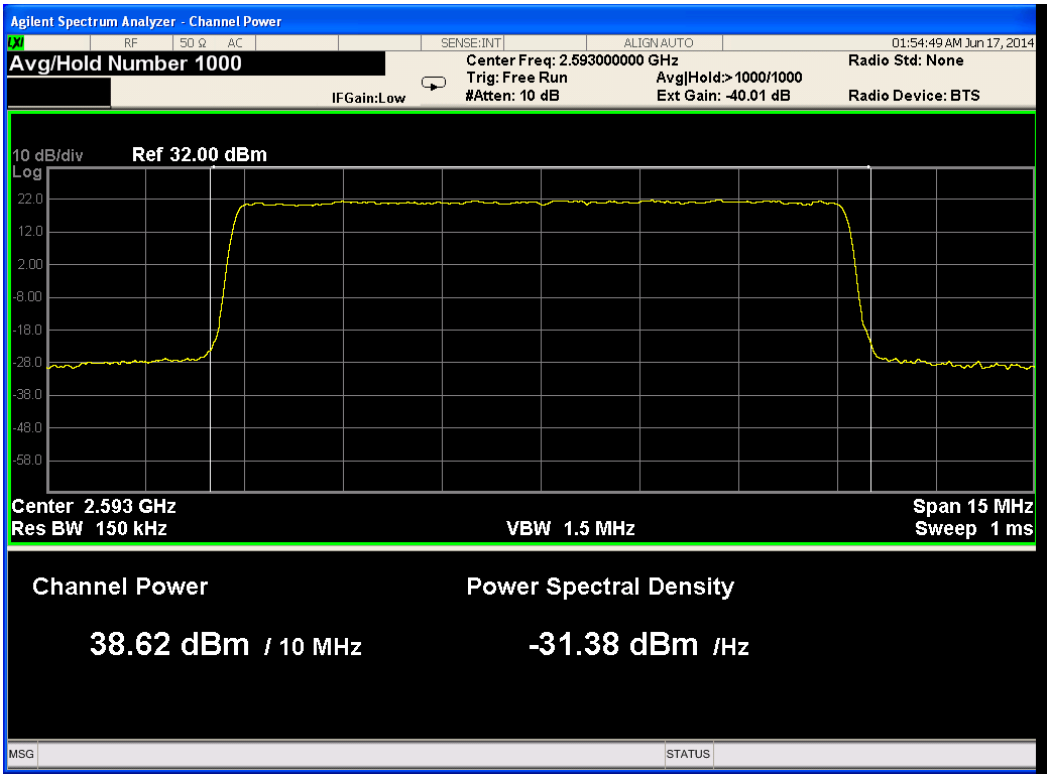


Figure 65.— 2593.00 MHz 16QAM Port 3

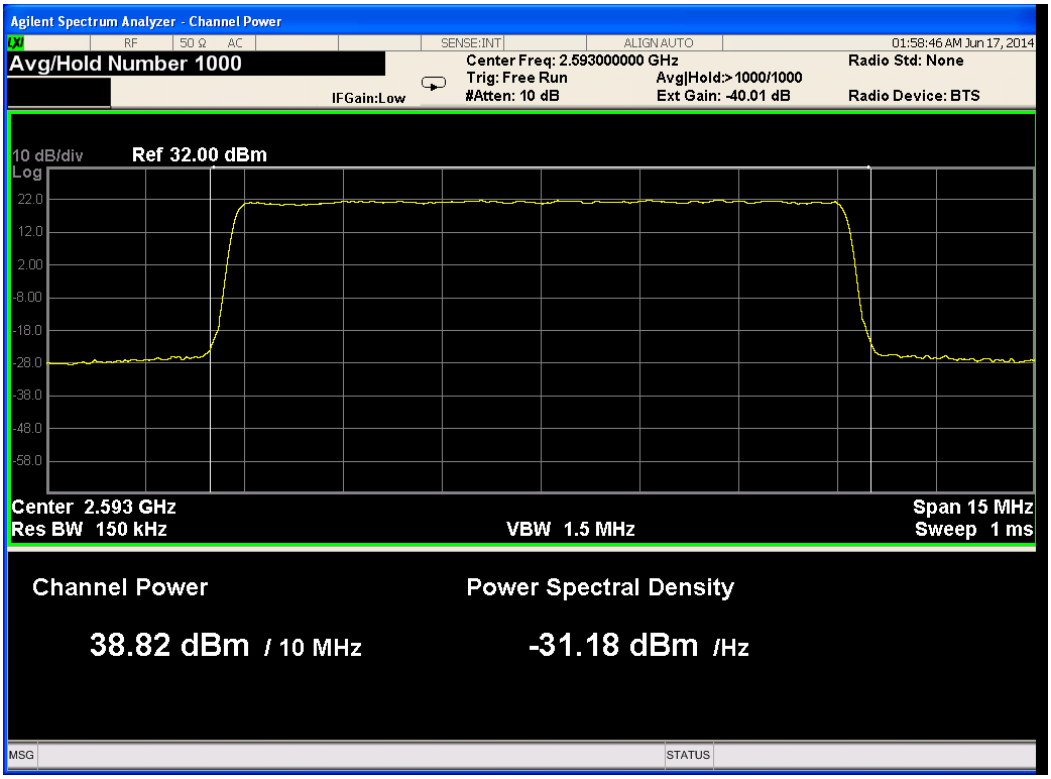


Figure 66.— 2593.00 MHz 16QAM Port 4

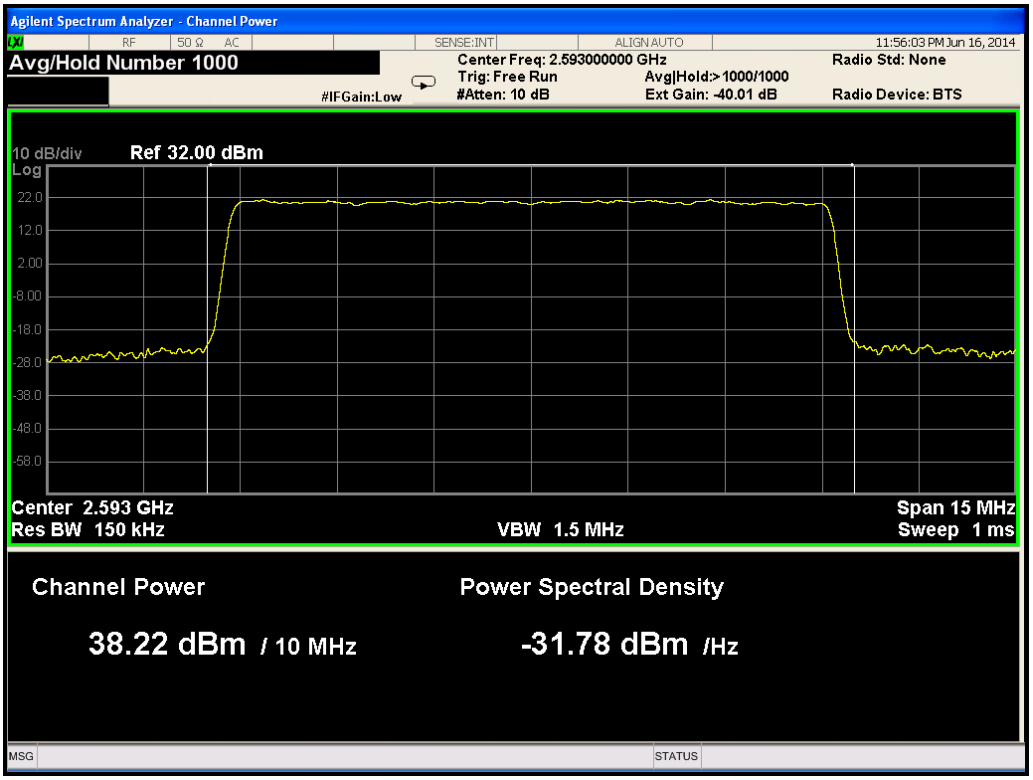


Figure 67.— 2593.00 MHz 64QAM Port 1

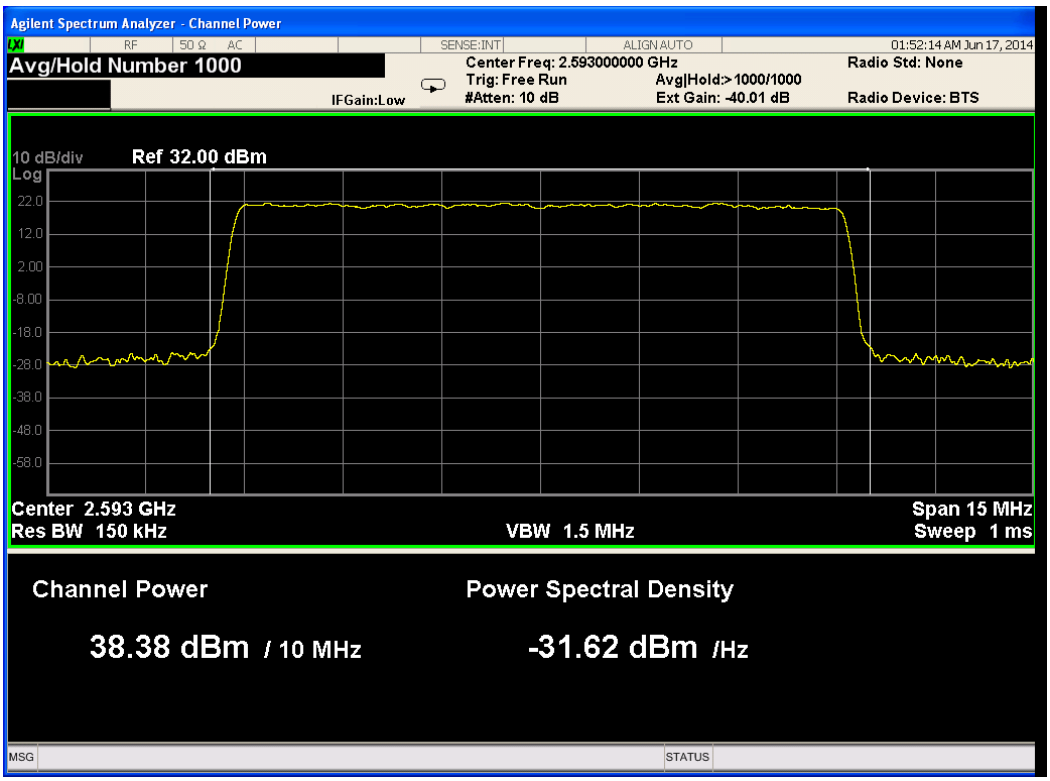


Figure 68.— 2593.00 MHz 64QAM Port 2

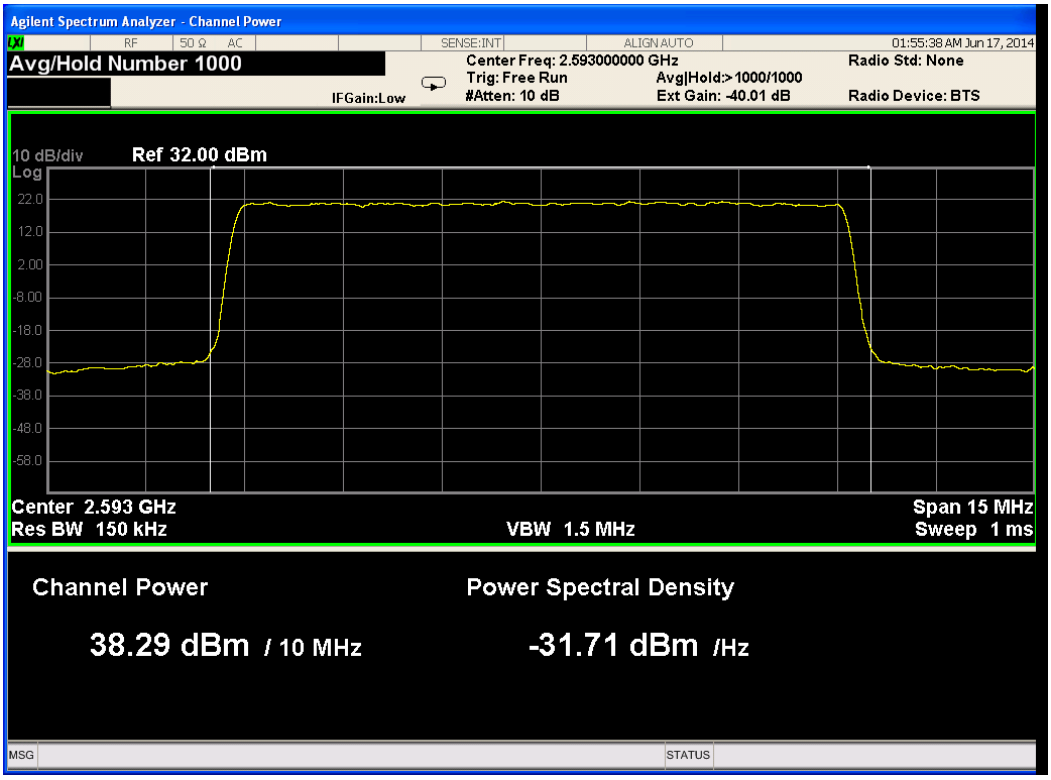


Figure 69.— 2593.00 MHz 64QAM Port 3

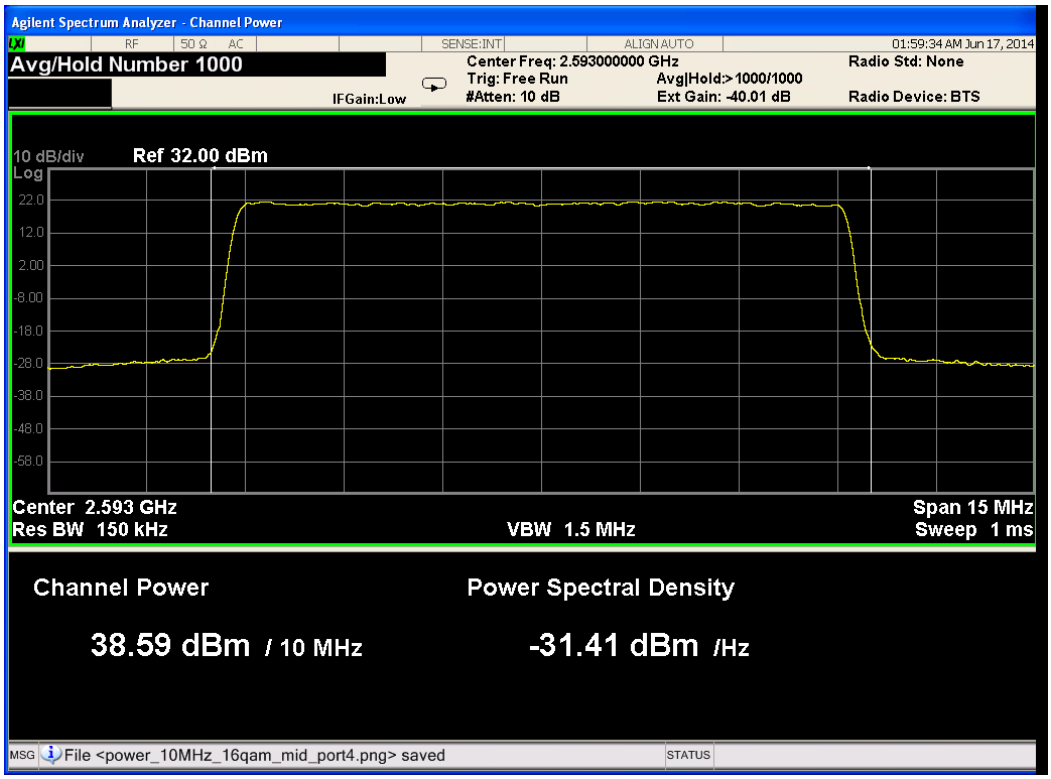


Figure 70.— 2593.00 MHz 64QAM Port 4

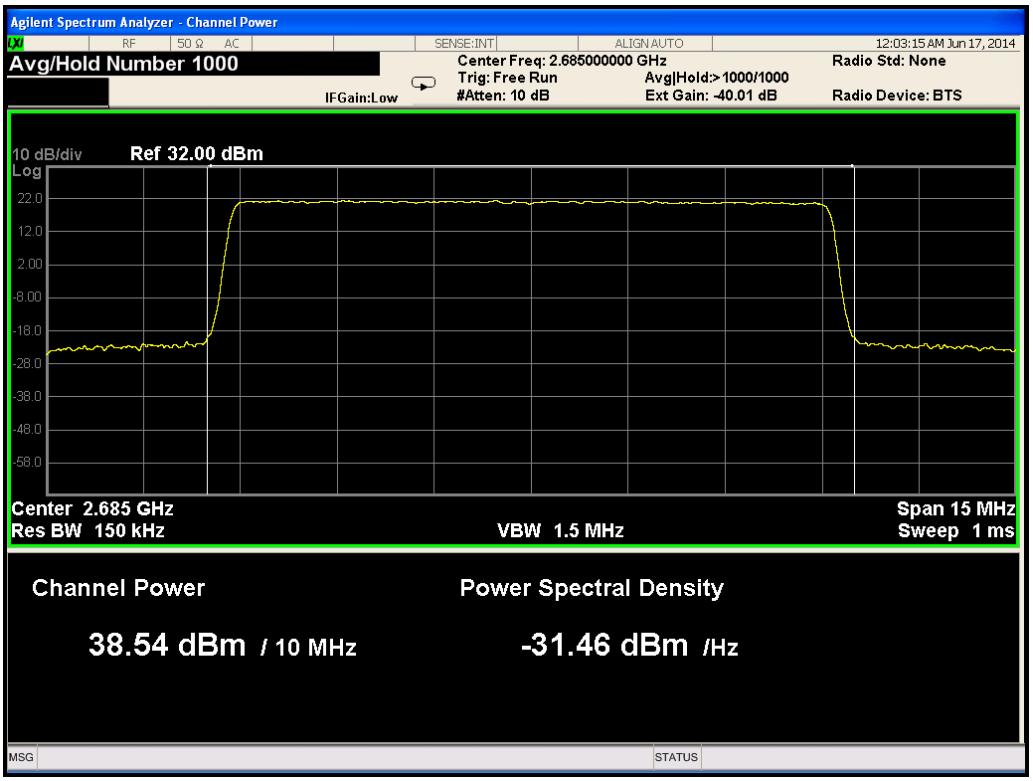


Figure 71.— 2685.00 MHz QPSK Port 1

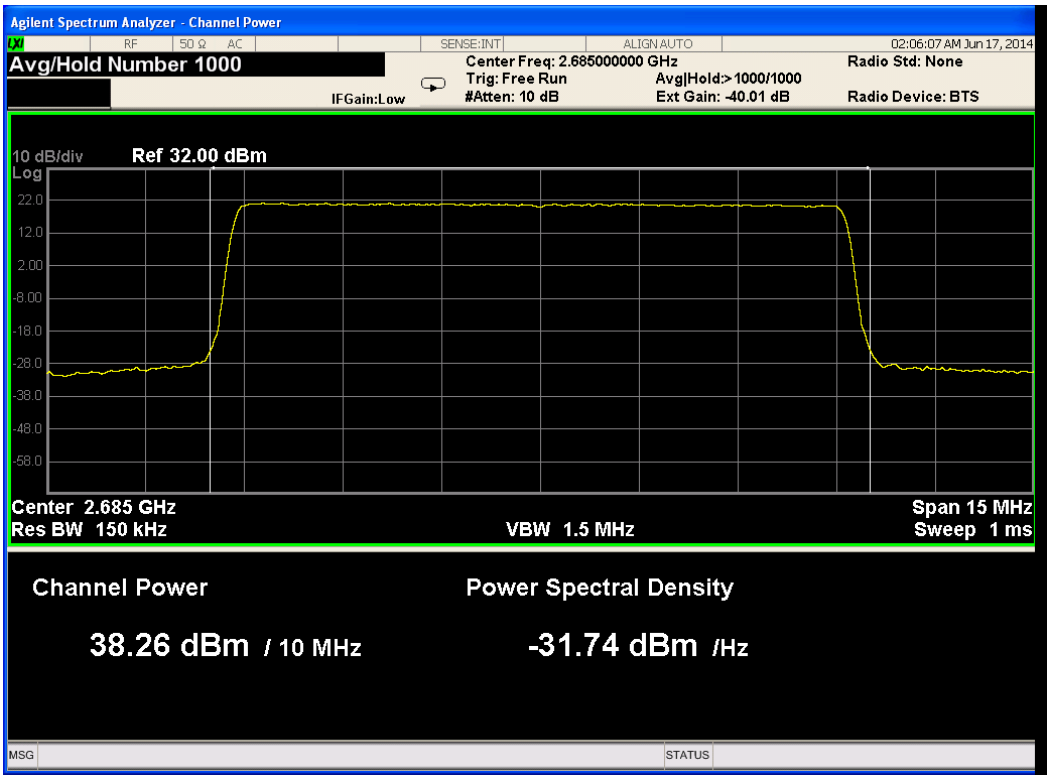


Figure 72.— 2685.00 MHz QPSK Port 2

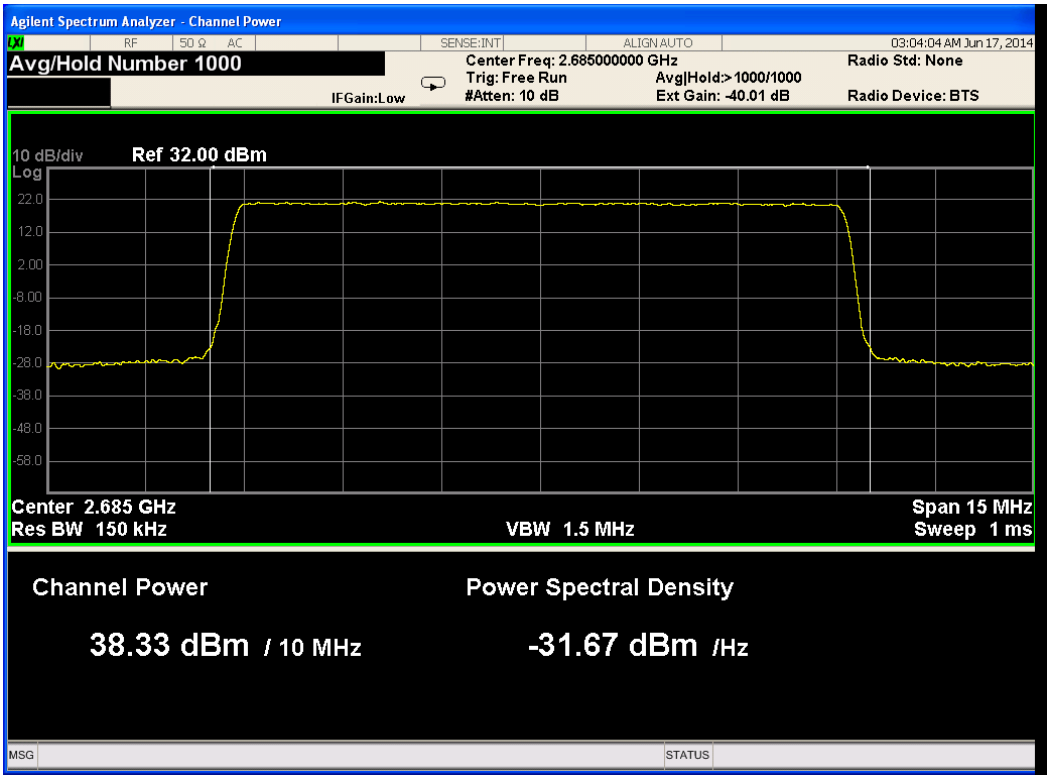


Figure 73.— 2685.00 MHz QPSK Port 3

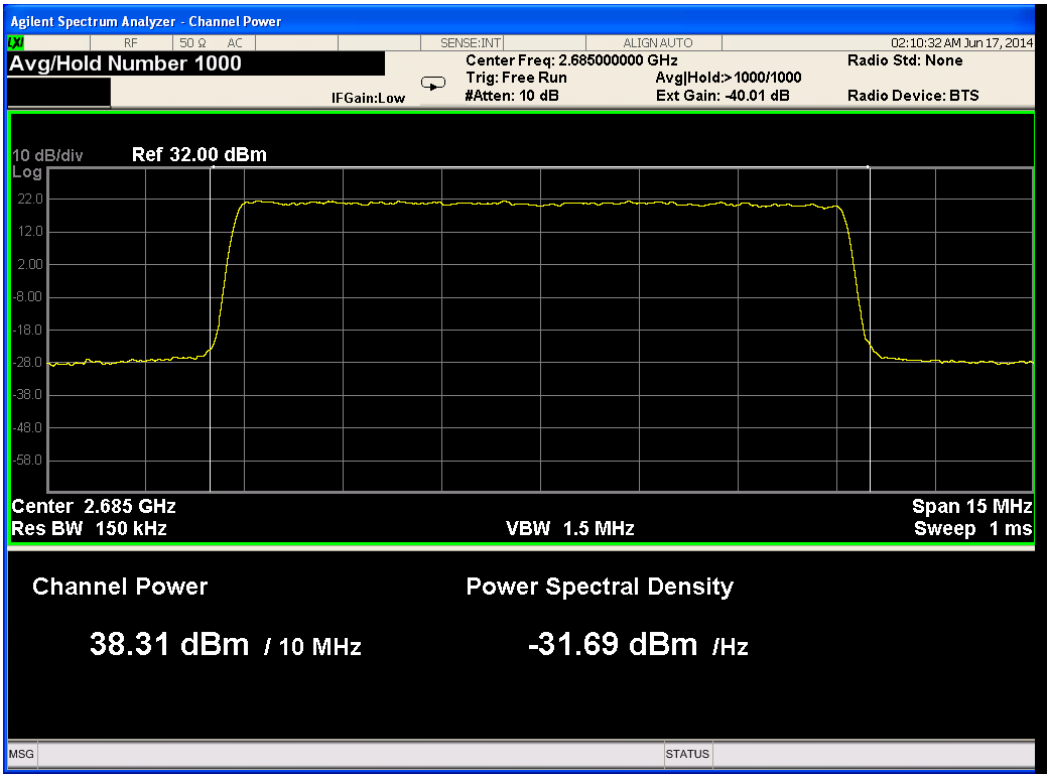


Figure 74.— 2685.00 MHz QPSK Port 4

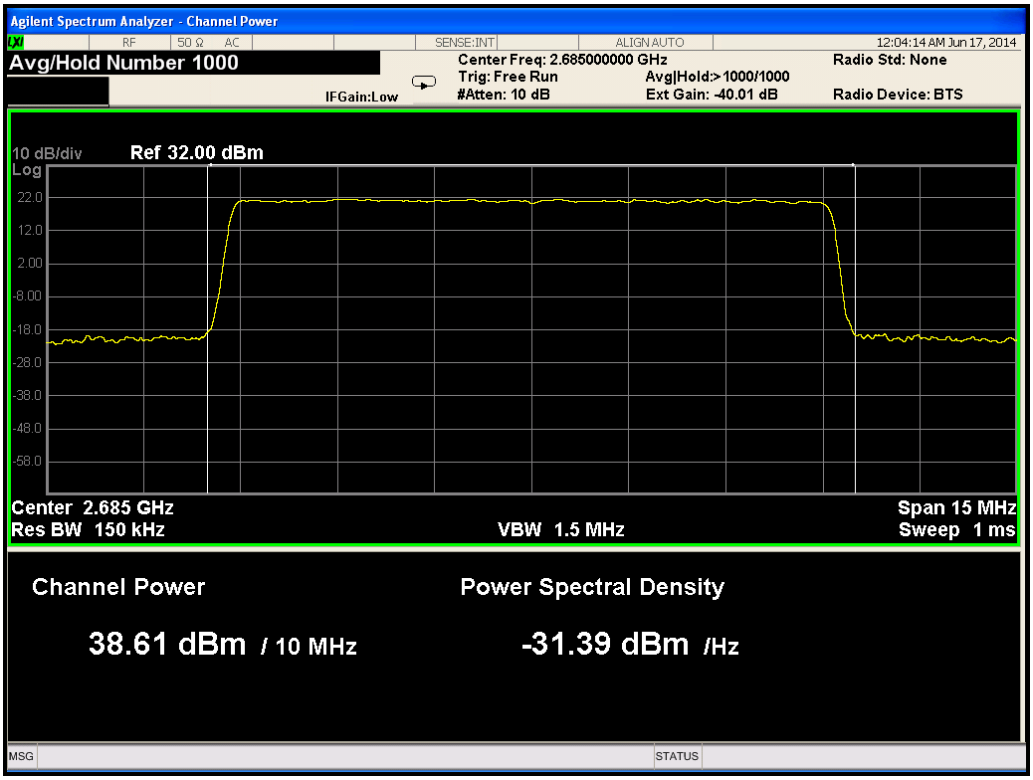


Figure 75.— 2685.00 MHz 16QAM Port 1

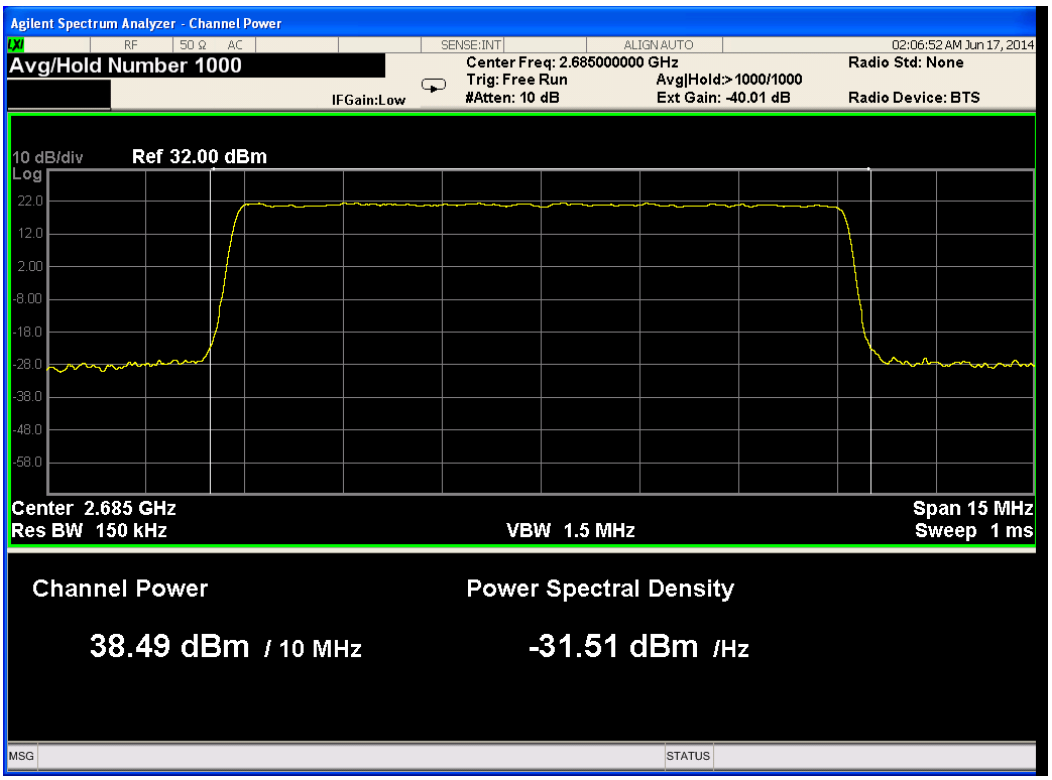


Figure 76.— 2685.00 MHz 16QAM Port 2

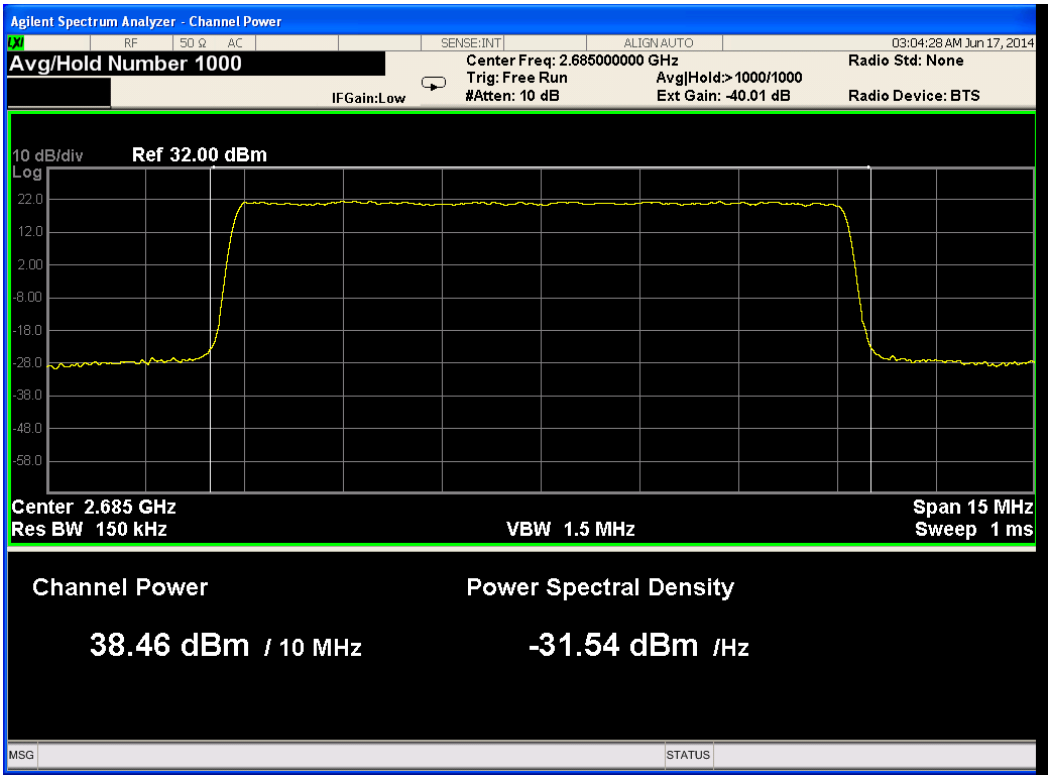


Figure 77.— 2685.00 MHz 16QAM Port 3

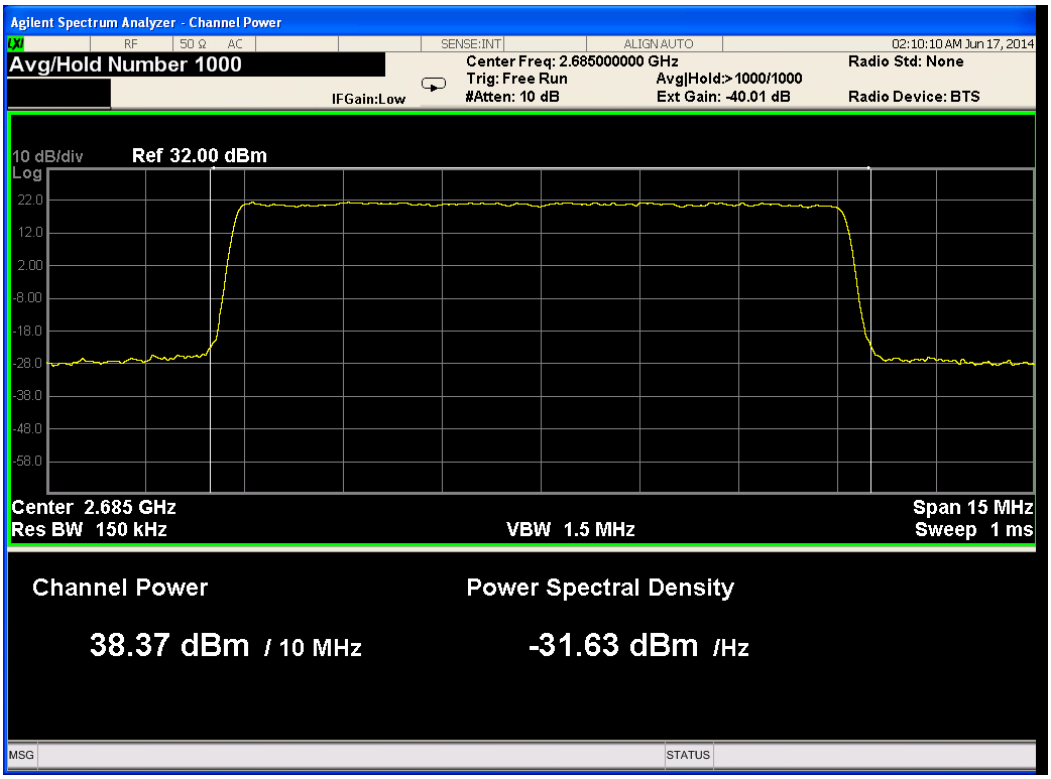


Figure 78.— 2685.00 MHz 16QAM Port 4

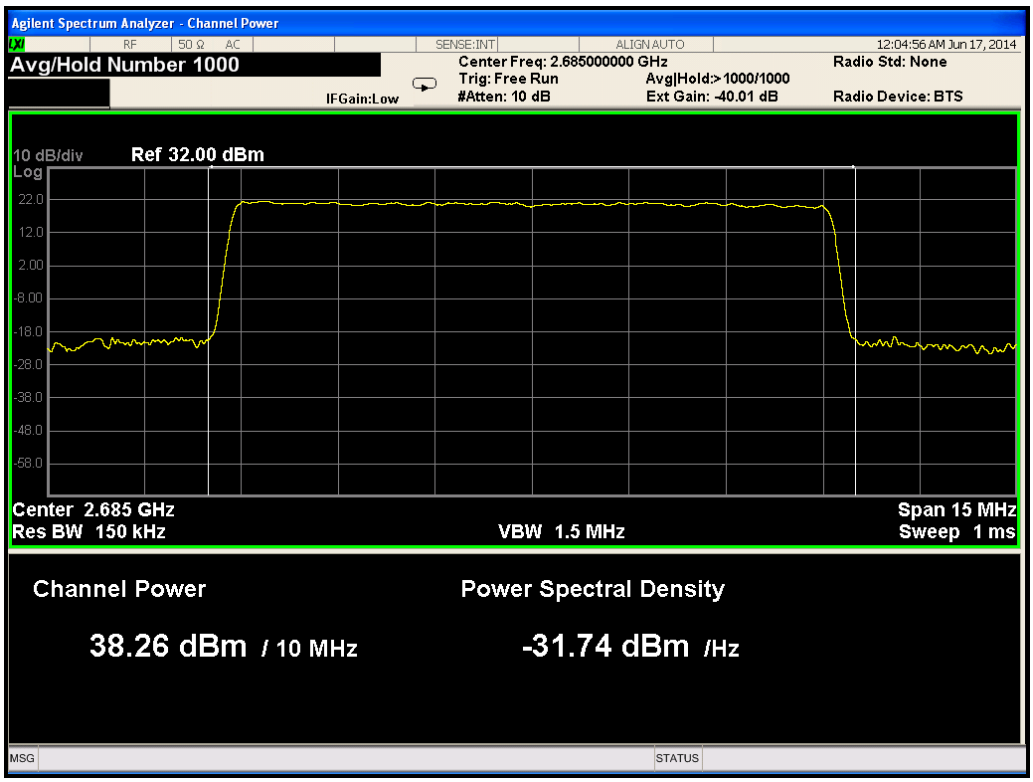


Figure 79.— 2685.00 MHz 64QAM Port 1

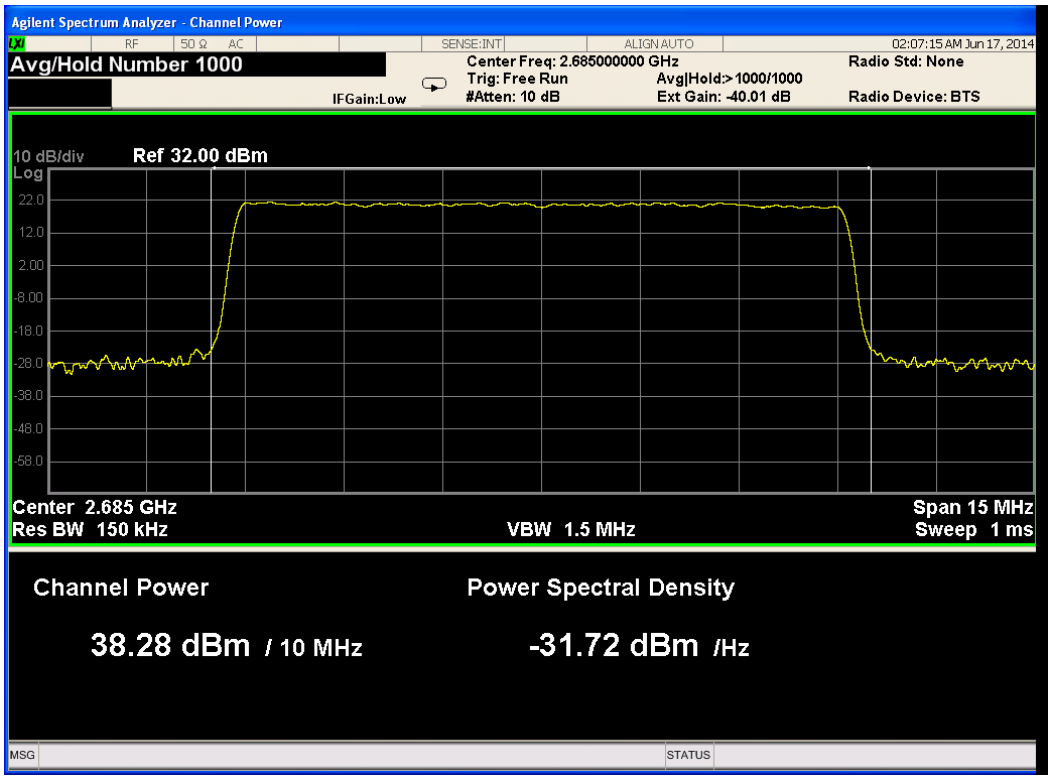


Figure 80.— 2685.00 MHz 64QAM Port 2

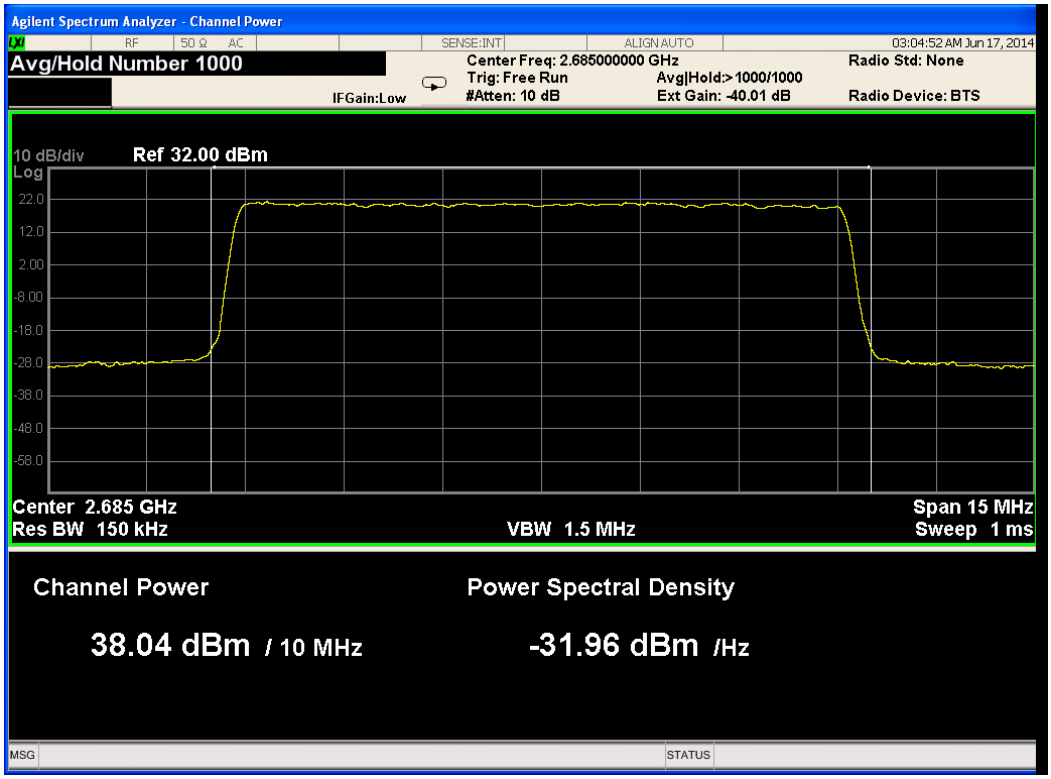


Figure 81.— 2685.00 MHz 64QAM Port 3

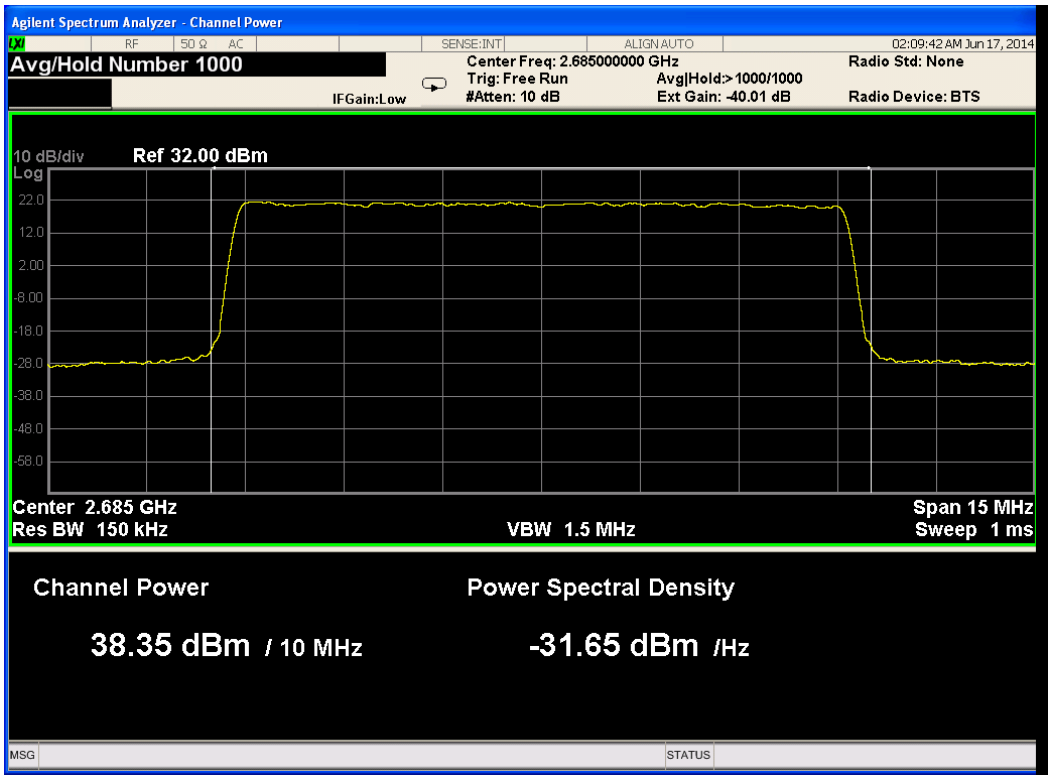


Figure 82.— 2685.00 MHz 64QAM Port 4

5.4 Test Equipment Used.

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 4 Test Equipment Used Maximum Peak Output Power 10 MHz Bandwidth

6. Spectral Power Density 5 MHz Bandwidth

6.1 Test Specification

FCC Part 27, Sub-part C (27.50(h)(4))

6.2 Test procedure

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB. The E.U.T. RF output was OFDMA modulated with QPSK, 16QAM and 64QAM, at 5 MHz BW. Power spectral density was measured over 100 kHz RBW.

Special attention was taken to prevent Spectrum Analyzer RF input overload. Tested frequencies: 2498.50 MHz, 2593.00 MHz and 2687.50 MHz

Antenna type: Manual tilt panel antenna (Gain: 18 dBi) with N type connector.

6.3 Test Results

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain (dBi)	Spectral Power Density (dBm)	Specification (dBm)	Margin (dB)
2498.50	QPSK	21.63	18	39.63	45.2	-5.57
	16QAM	21.81	18	39.81	45.2	-5.39
	64QAM	21.69	18	39.69	45.2	-5.51
2593.00	QPSK	21.57	18	39.57	45.2	-5.63
	16QAM	21.51	18	39.51	45.2	-5.69
	64QAM	21.47	18	39.47	45.2	-5.73
2687.50	QPSK	21.35	18	39.35	45.2	-5.85
	16QAM	21.57	18	39.57	45.2	-5.63
	64QAM	21.62	18	39.62	45.2	-5.58

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 83 to Figure 118.

Table 5 Spectral Power Density 5 MHz Bandwidth Port 1

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain (dBi)	Spectral Power Density (dBm)	Specification (dBm)	Margin (dB)
2498.50	QPSK	21.65	18	39.65	45.2	-5.55
	16QAM	21.60	18	39.60	45.2	-5.60
	64QAM	21.51	18	39.51	45.2	-5.69
2593.00	QPSK	21.07	18	39.07	45.2	-6.13
	16QAM	21.21	18	39.21	45.2	-5.99
	64QAM	21.15	18	39.15	45.2	-6.05
2687.50	QPSK	21.75	18	39.75	45.2	-5.45
	16QAM	21.79	18	39.79	45.2	-5.41
	64QAM	21.58	18	39.58	45.2	-5.62

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 83 to Figure 118.

Table 6 Spectral Power Density 5 MHz Bandwidth Port 2

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain (dBi)	Spectral Power Density (dBm)	Specification (dBm)	Margin (dB)
2498.50	QPSK	21.63	18	39.63	45.2	-5.57
	16QAM	21.78	18	39.78	45.2	-5.42
	64QAM	21.58	18	39.58	45.2	-5.62
2593.00	QPSK	21.41	18	39.41	45.2	-5.79
	16QAM	21.50	18	39.50	45.2	-5.70
	64QAM	21.54	18	39.54	45.2	-5.66
2687.50	QPSK	21.57	18	39.57	45.2	-5.63
	16QAM	21.59	18	39.59	45.2	-5.61
	64QAM	21.53	18	39.53	45.2	-5.67

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 83 to Figure 118.

Table 7 Spectral Power Density 5 MHz Bandwidth Port 3

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain (dBi)	Spectral Power Density (dBm)	Specification (dBm)	Margin (dB)
2498.50	QPSK	21.77	18	39.77	45.2	-5.43
	16QAM	21.86	18	39.86	45.2	-5.34
	64QAM	21.9	18	39.90	45.2	-5.30
2593.00	QPSK	21.61	18	39.61	45.2	-5.59
	16QAM	21.73	18	39.73	45.2	-5.47
	64QAM	21.43	18	39.43	45.2	-5.77
2687.50	QPSK	21.53	18	39.53	45.2	-5.67
	16QAM	21.67	18	39.67	45.2	-5.53
	64QAM	21.56	18	39.56	45.2	-5.64

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 83 to Figure 118.

Table 8 Spectral Power Density 5 MHz Bandwidth Port 4

JUDGEMENT: Passed by dB

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

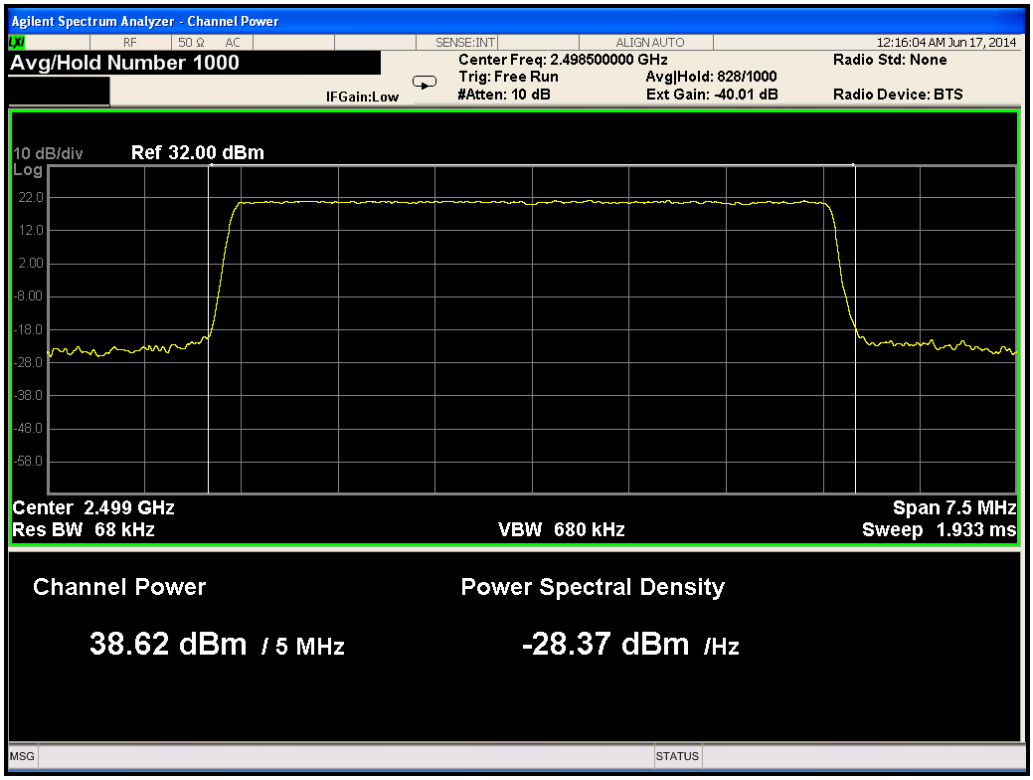


Figure 83.— 2498.50 MHz QPSK Port 1

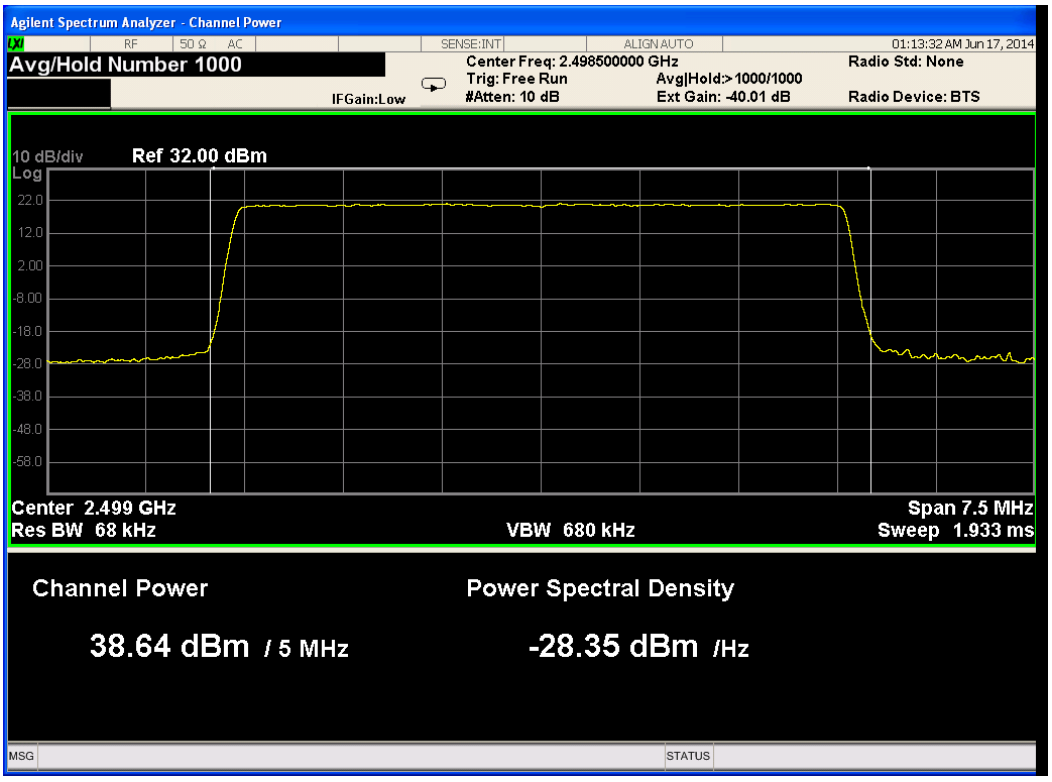


Figure 84.— 2498.50 MHz QPSK Port 2

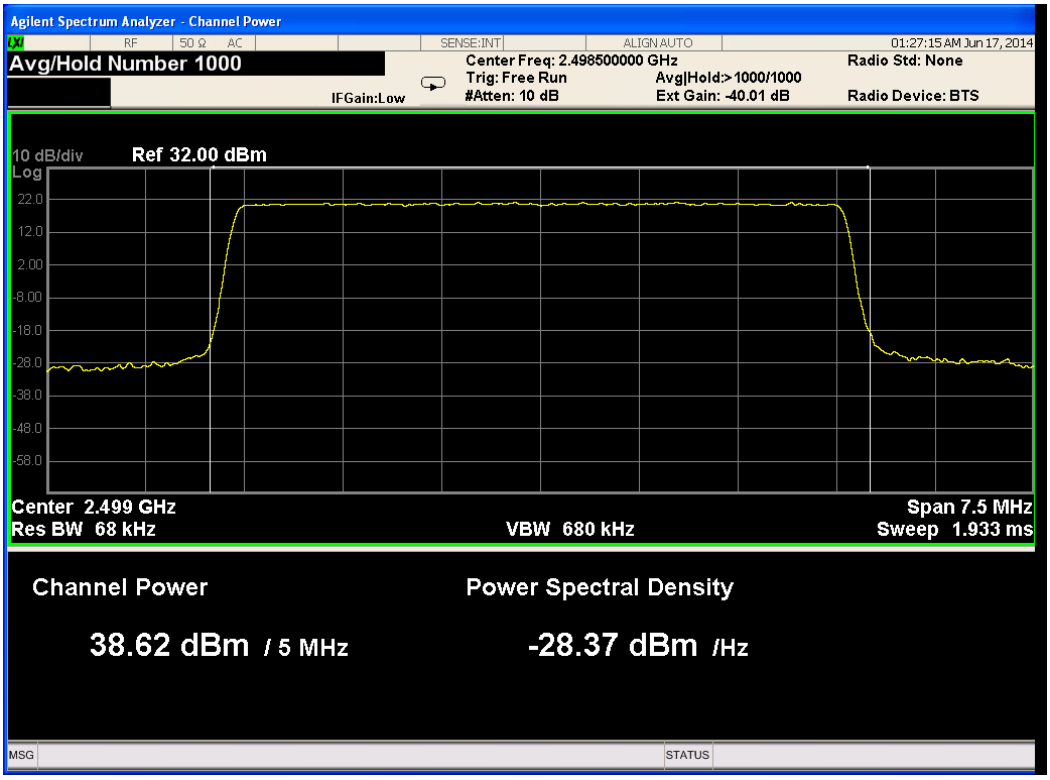


Figure 85.— 2498.50 MHz QPSK Port 3

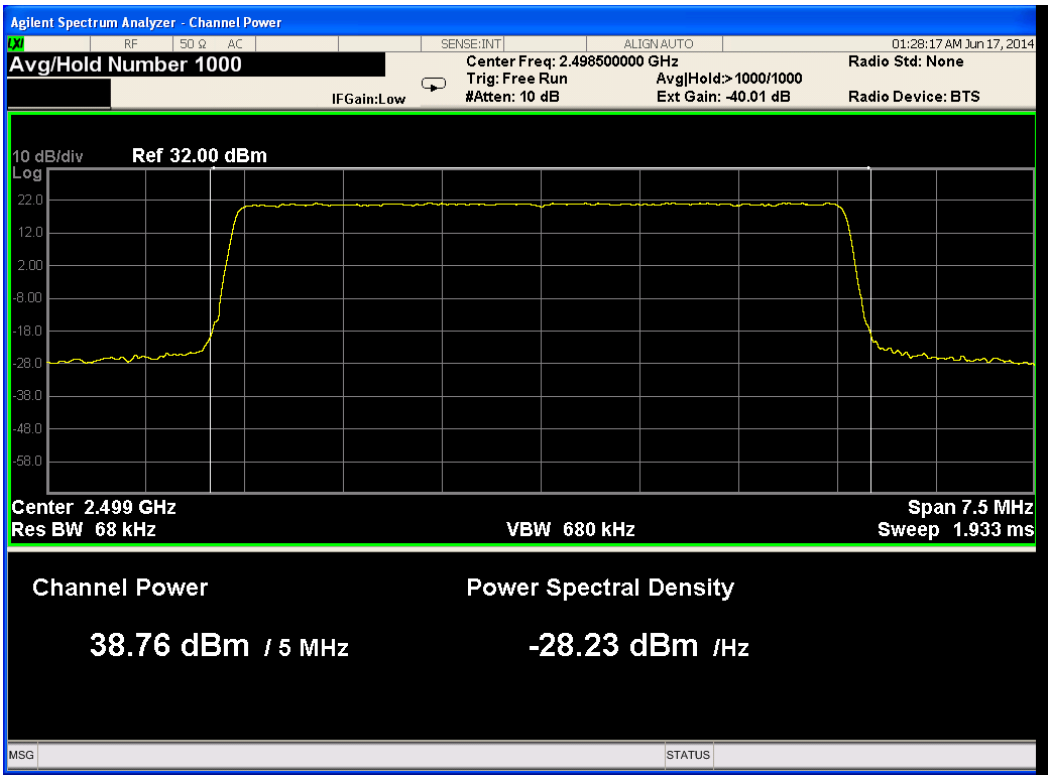


Figure 86.— 2498.50 MHz QPSK Port 4

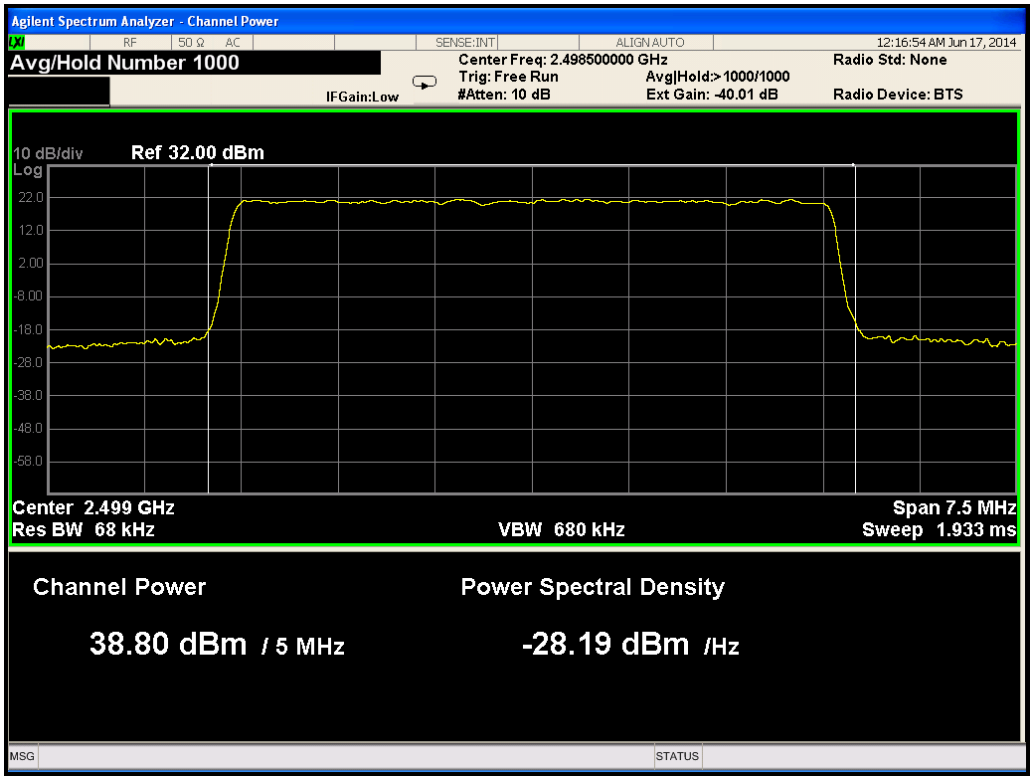


Figure 87.— 2498.50 MHz 16QAM Port1

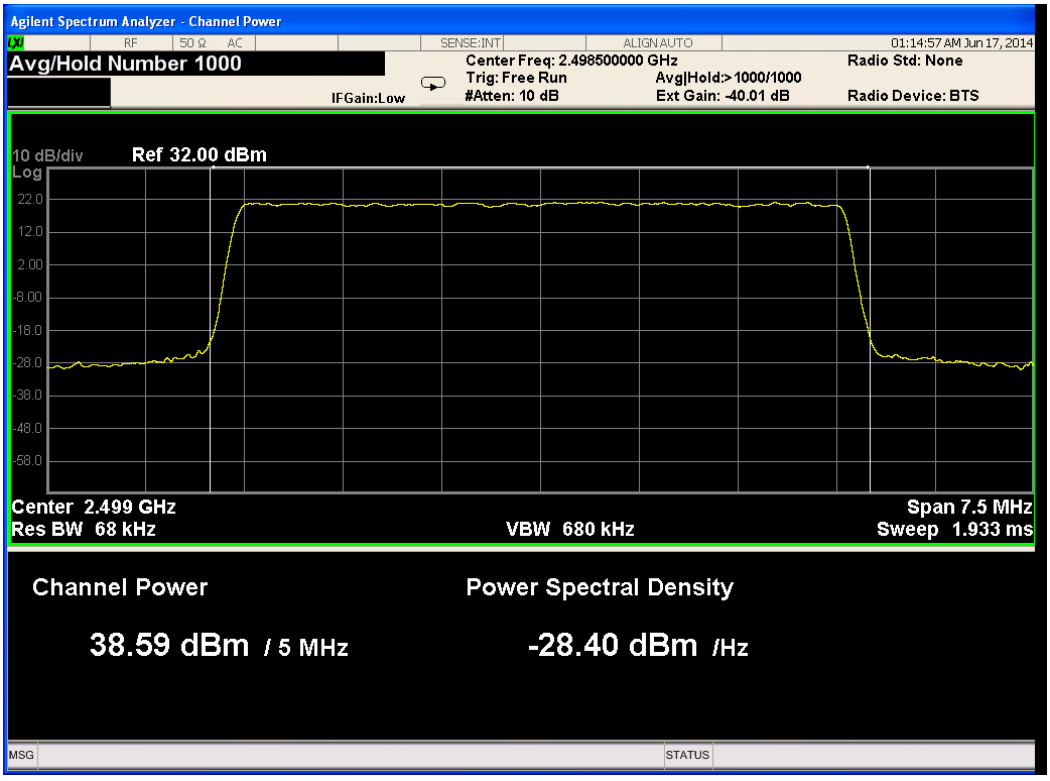


Figure 88.— 2498.50 MHz 16QAM Port2

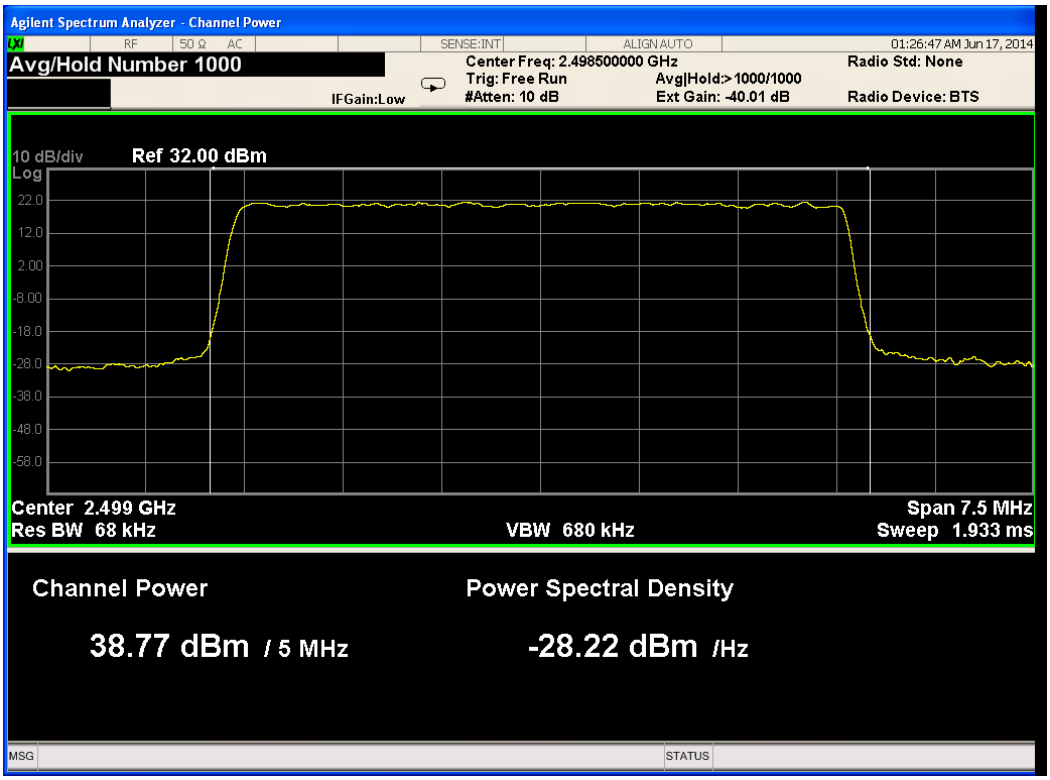


Figure 89.— 2498.50 MHz 16QAM Port3

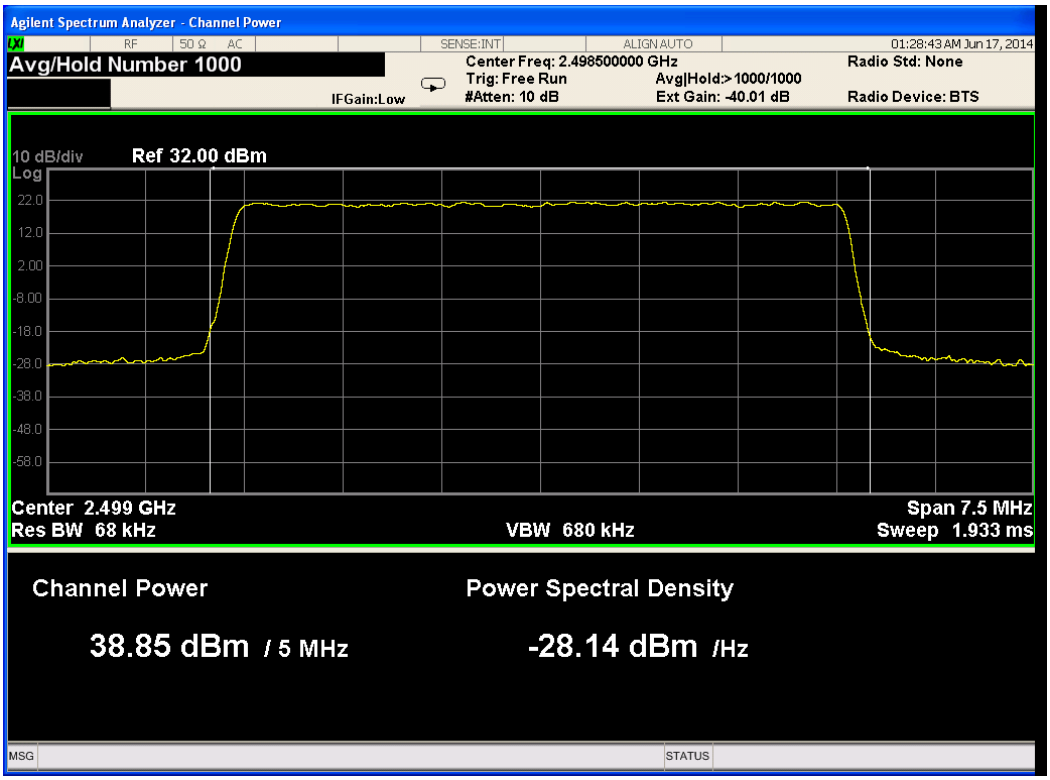


Figure 90.— 2498.5. MHz 16QAM Port4

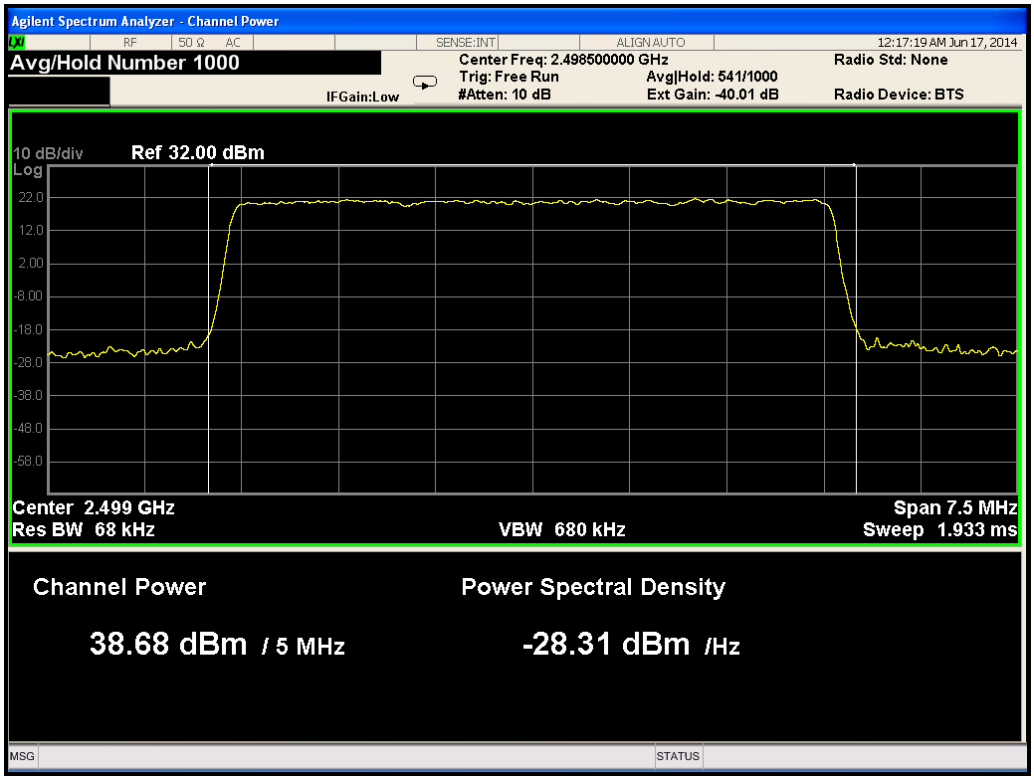


Figure 91.— 2498.50 MHz 64QAM Port 1

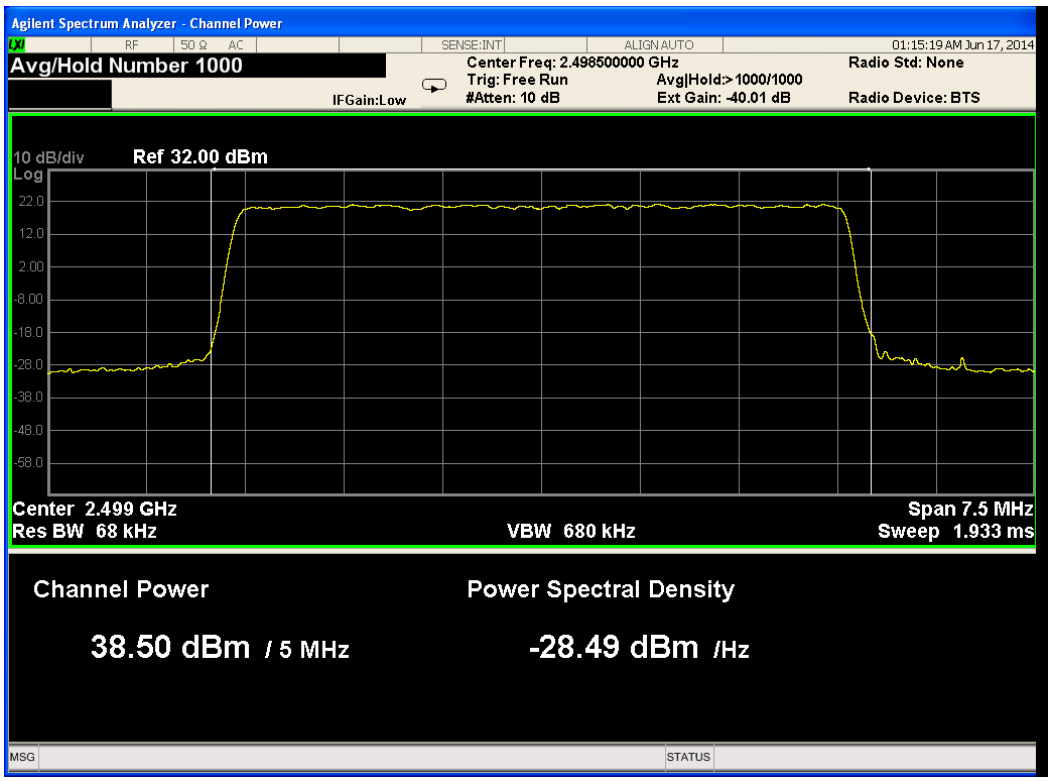


Figure 92.— 2498.50 MHz 64QAM Port 2

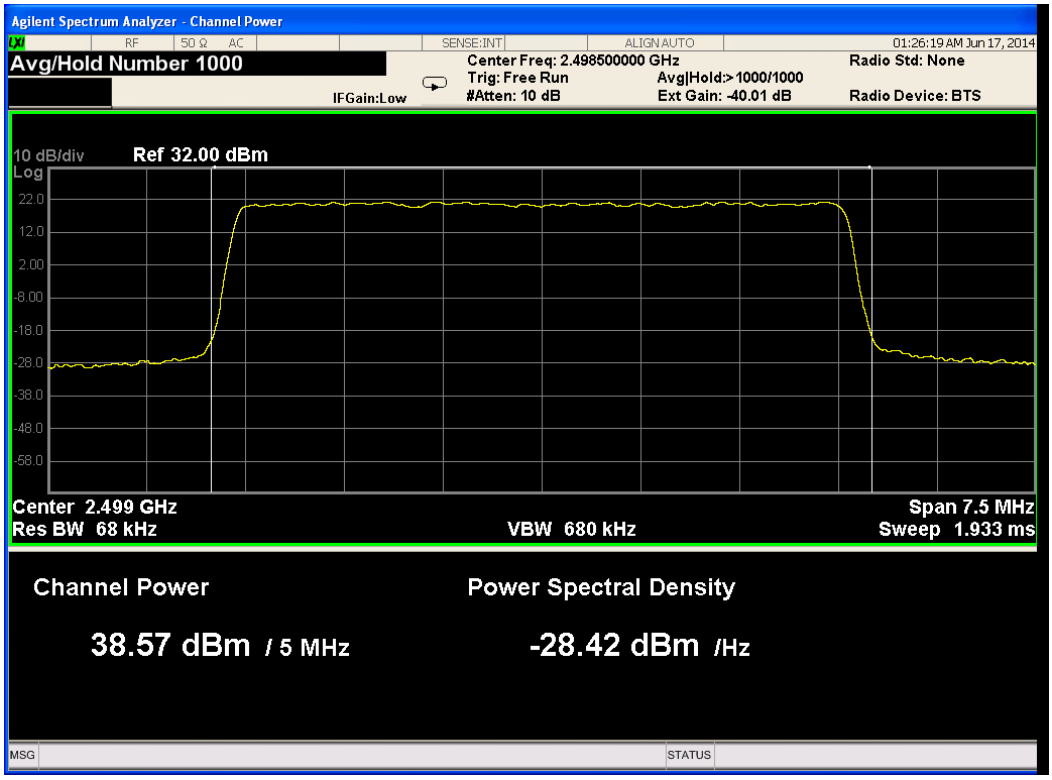


Figure 93.— 2498.50 MHz 64QAM Port 3

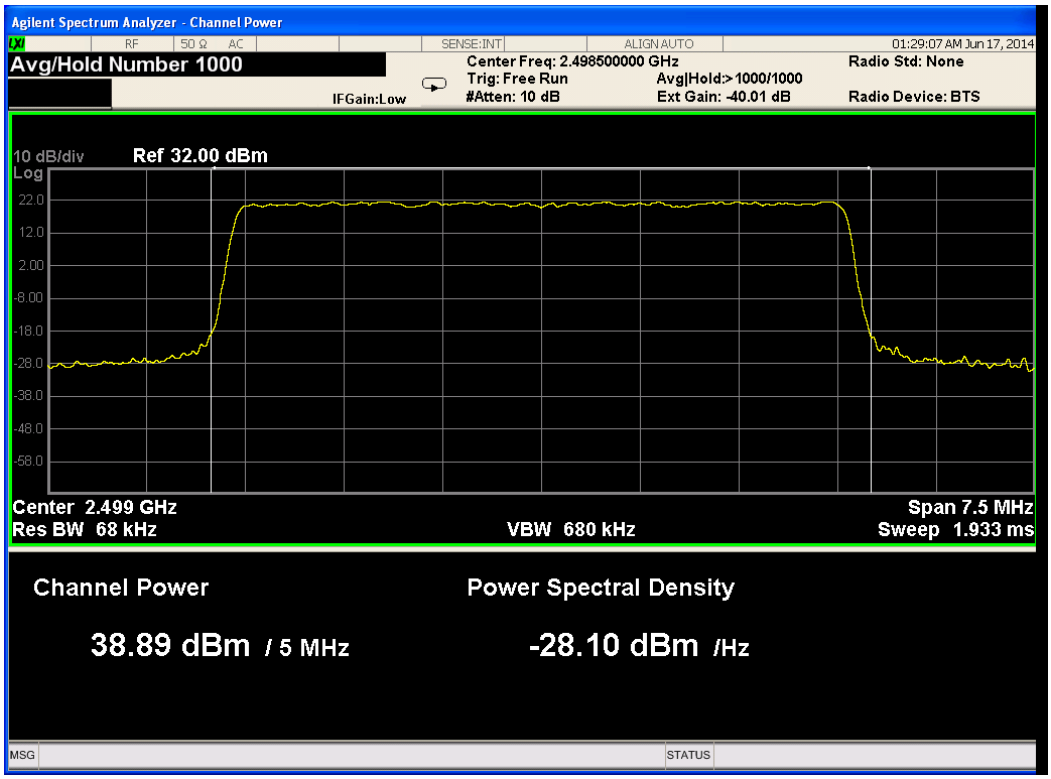


Figure 94.— 2498.50 MHz 64QAM Port 4

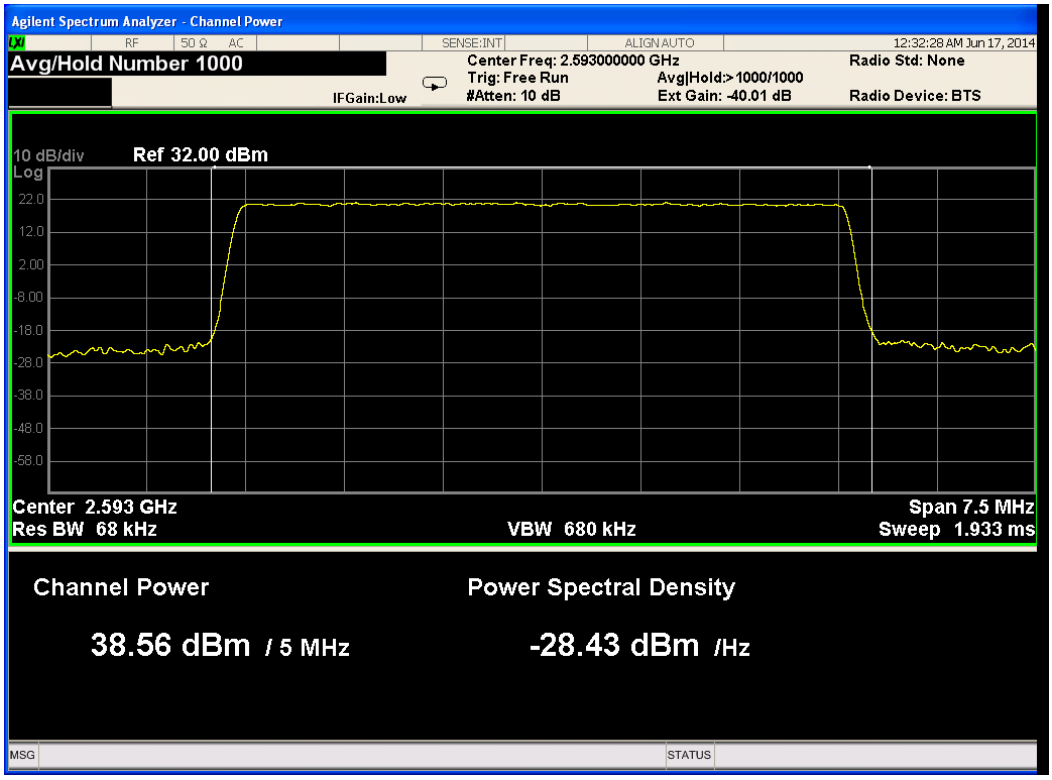


Figure 95.— 2593.00 MHz QPSK Port 1

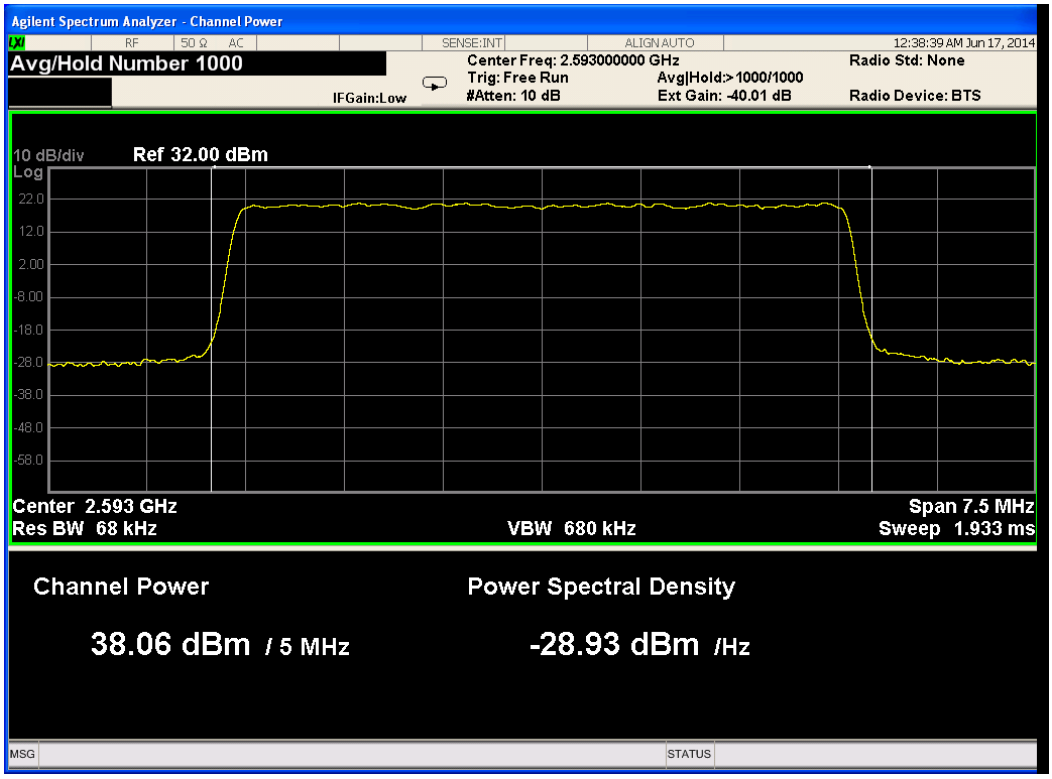


Figure 96.— 2593.00 MHz QPSK Port 2

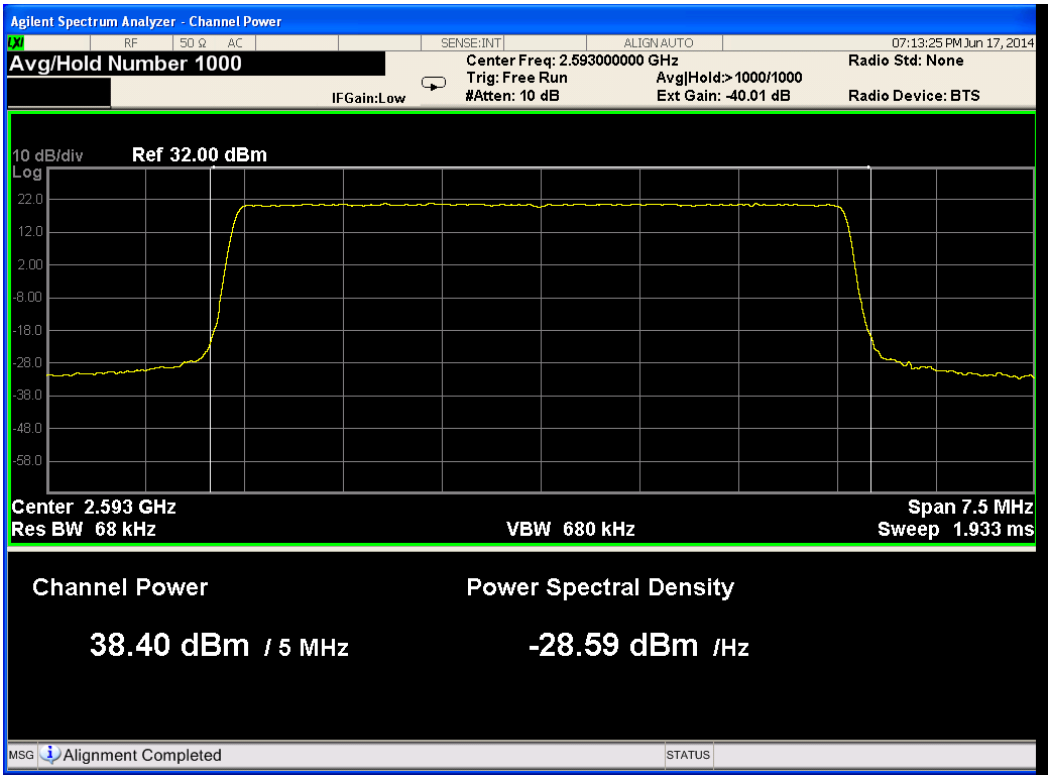


Figure 97.— 2593.00 MHz QPSK Port 3

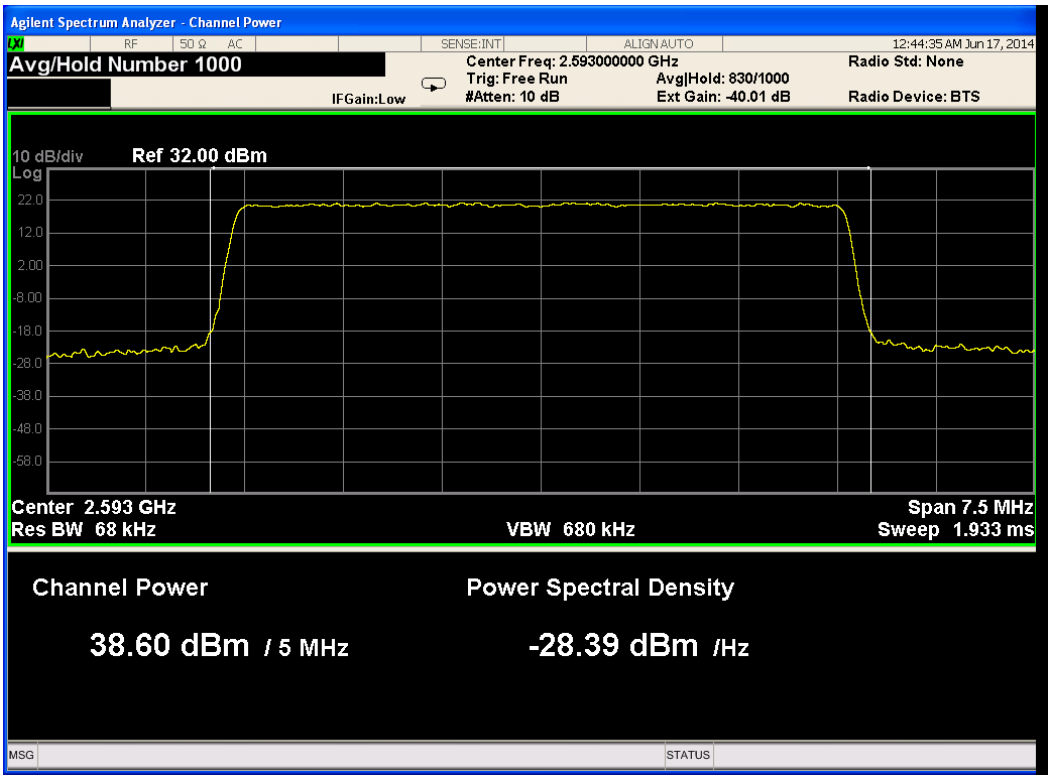


Figure 98.— 2593.00 MHz QPSK Port 4

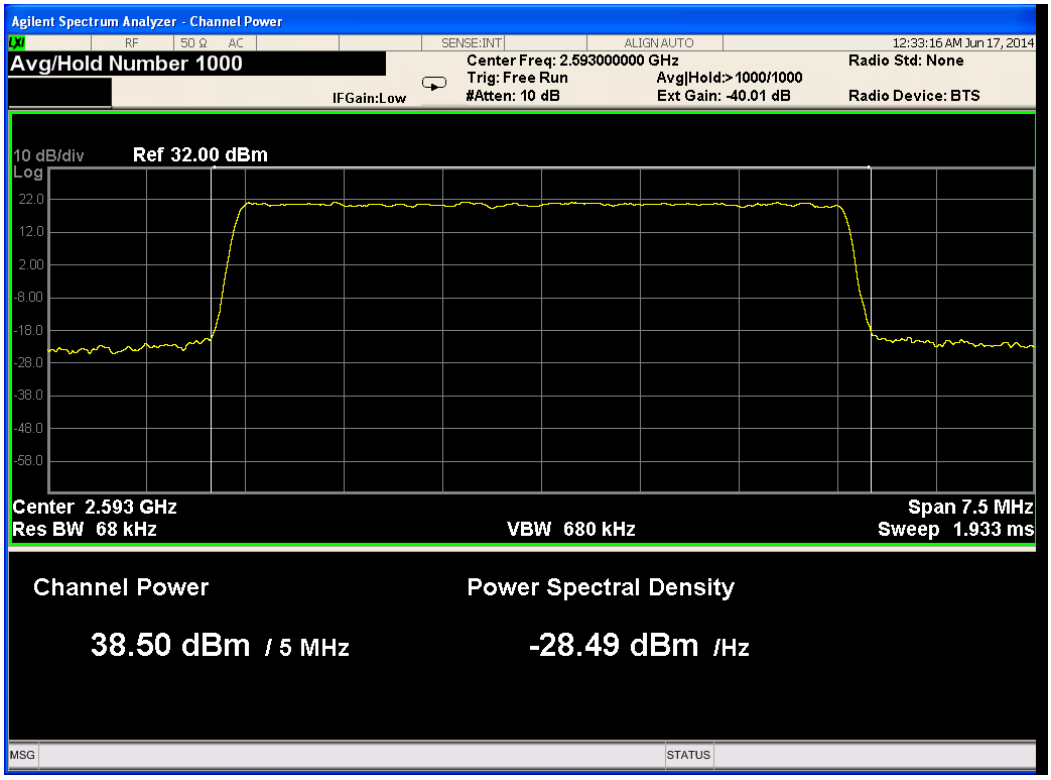


Figure 99.— 2593.00 MHz 16QAM Port 1

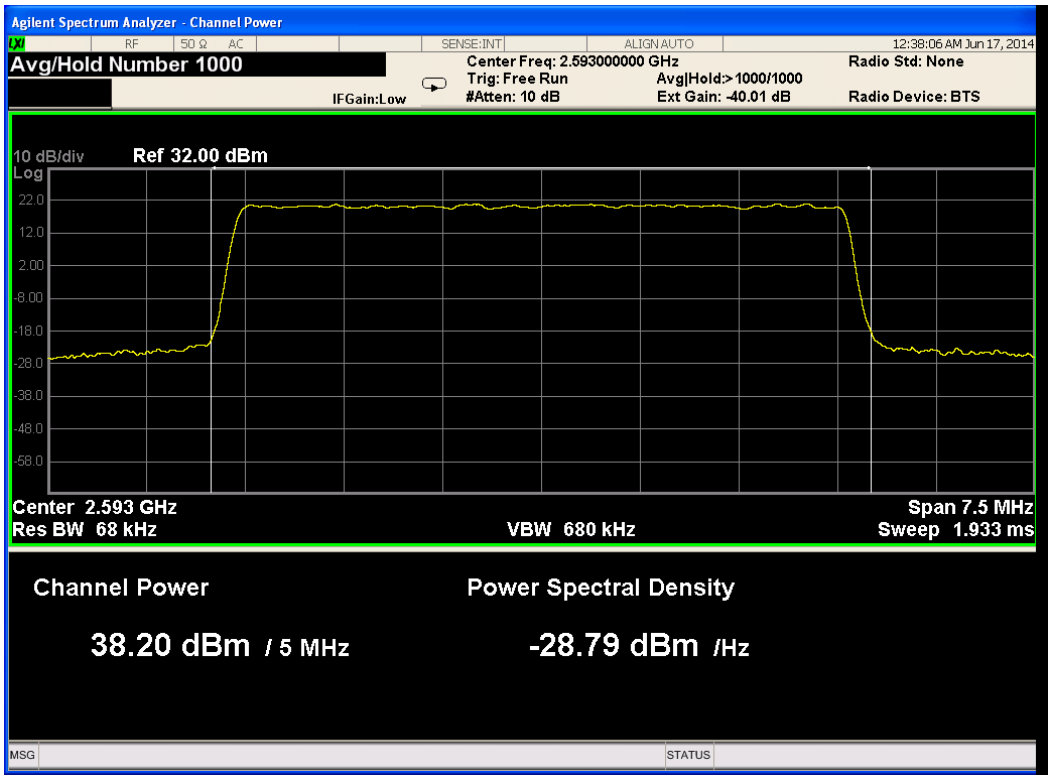


Figure 100.— 2593.00 MHz 16QAM Port 2

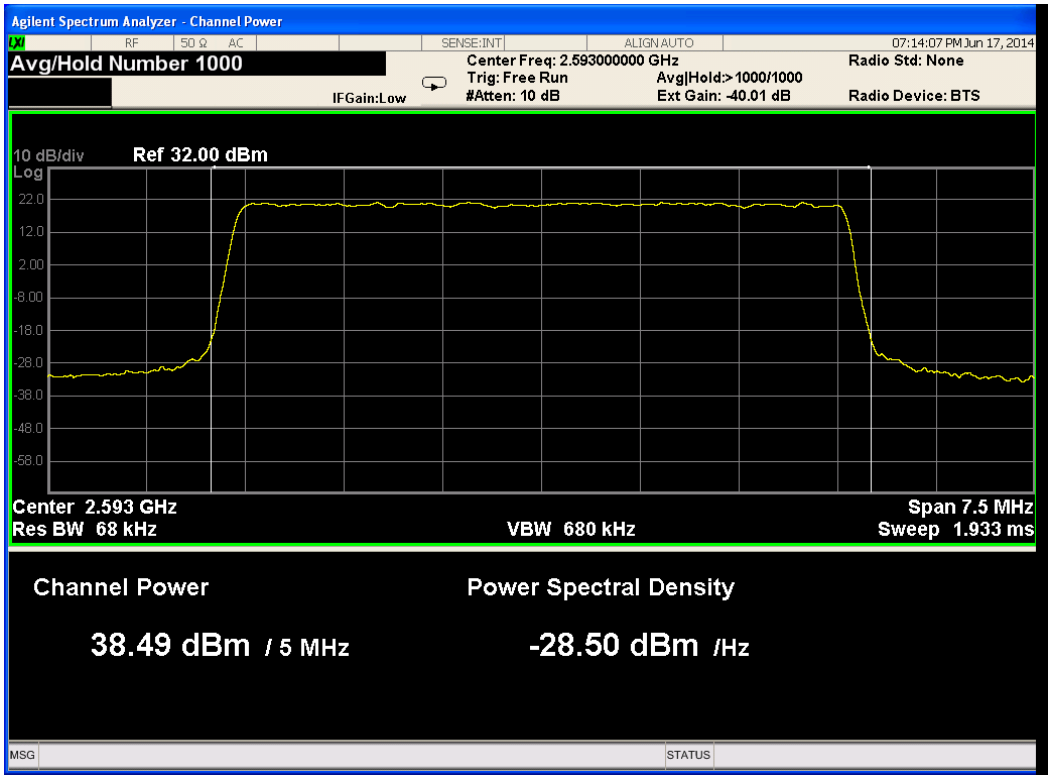


Figure 101.— 2593.00 MHz 16QAM Port 3

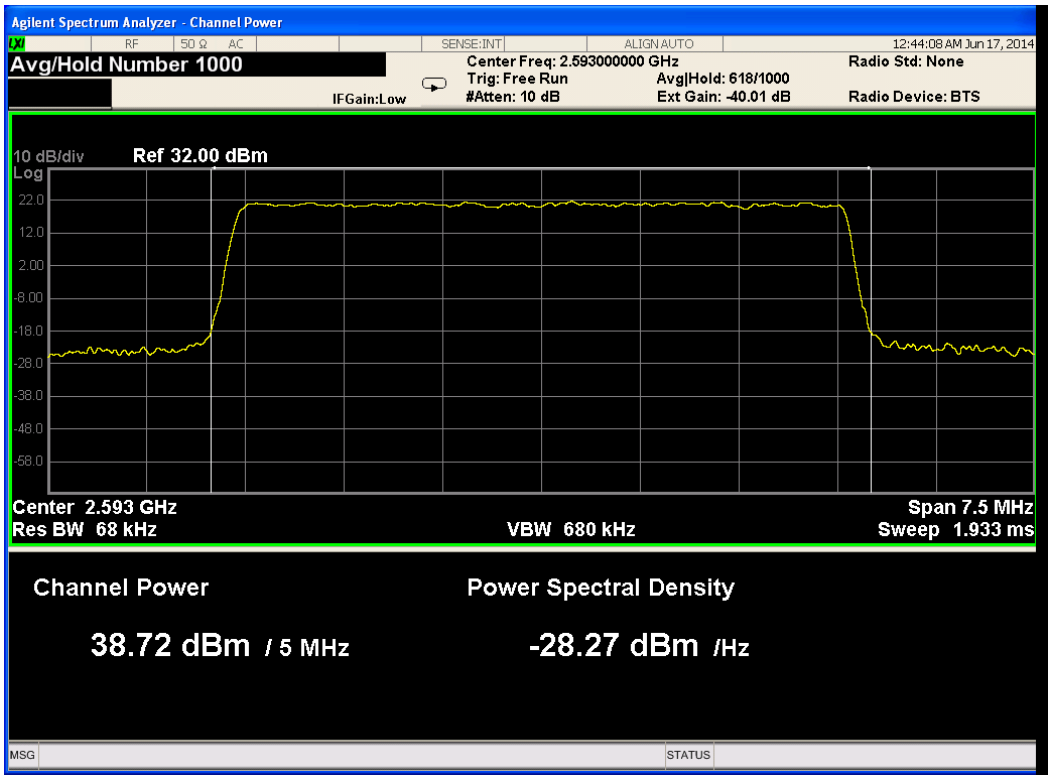


Figure 102.— 2593.00 MHz 16QAM Port 4

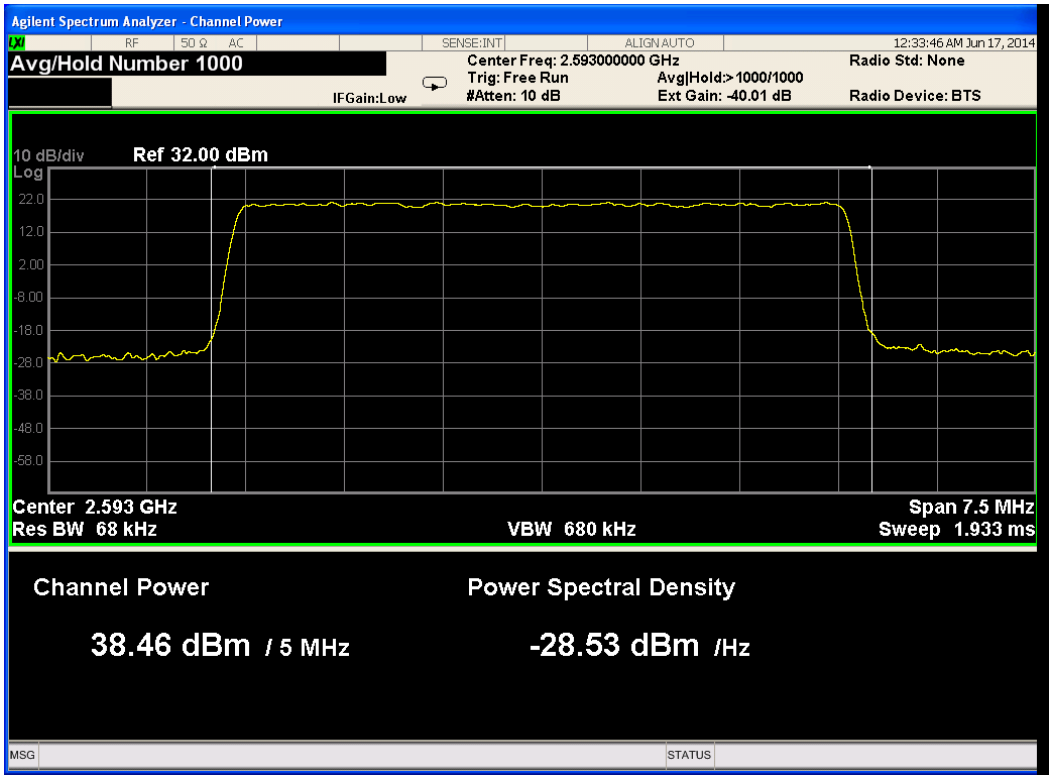


Figure 103.— 2593.00 MHz 64QAM Port 1

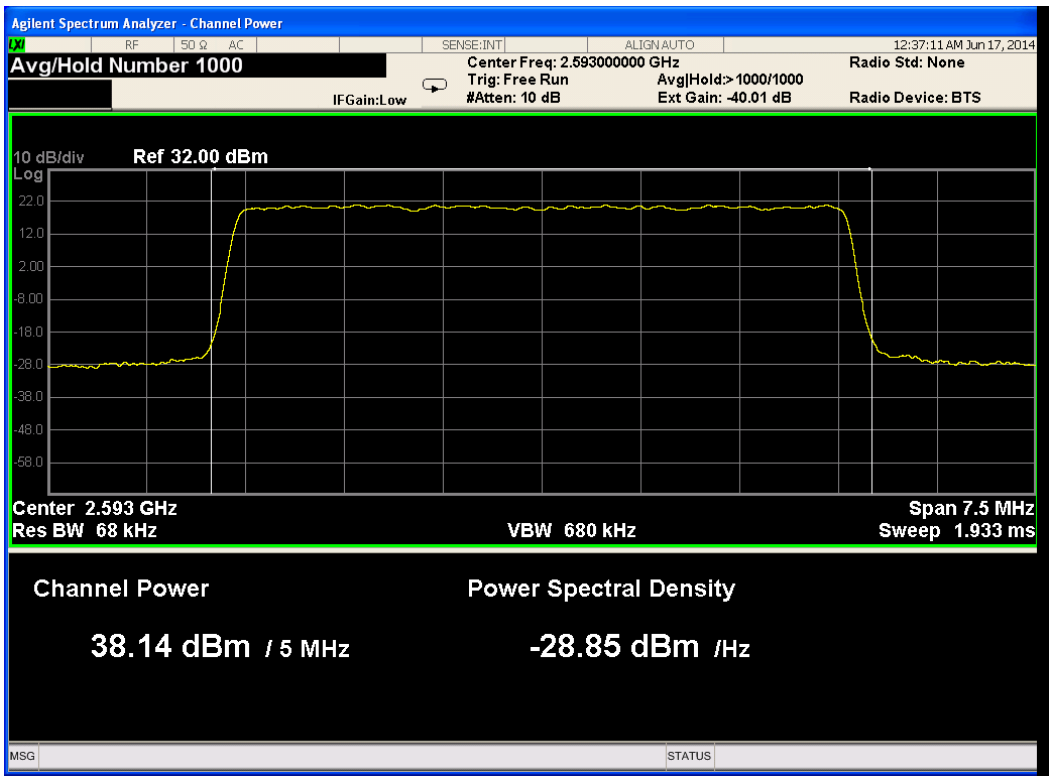


Figure 104.— 2593.00 MHz 64QAM Port 2

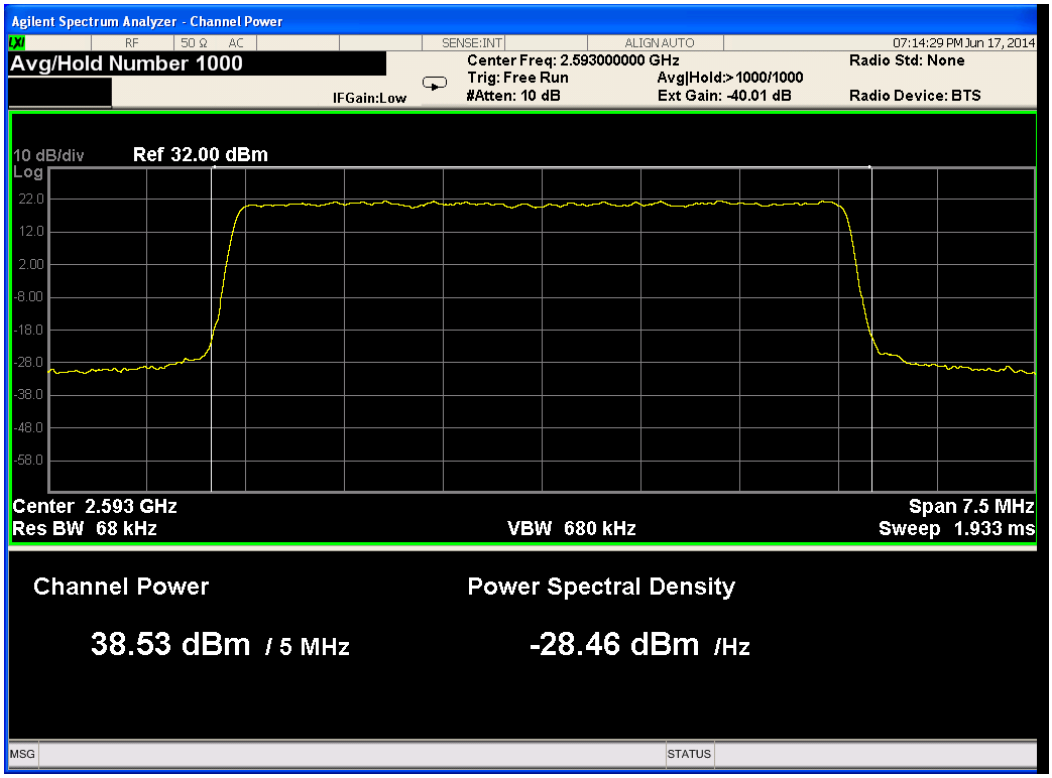


Figure 105.— 2593.00 MHz 64QAM Port 3

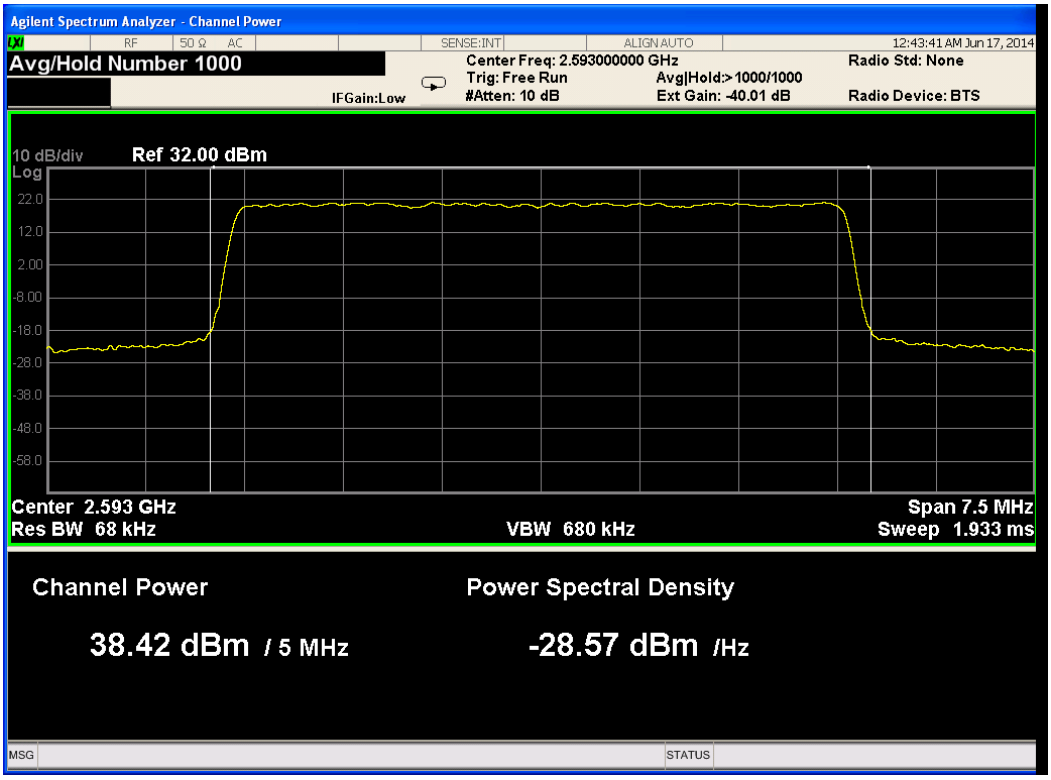


Figure 106.— 2593.00 MHz 64QAM Port 4

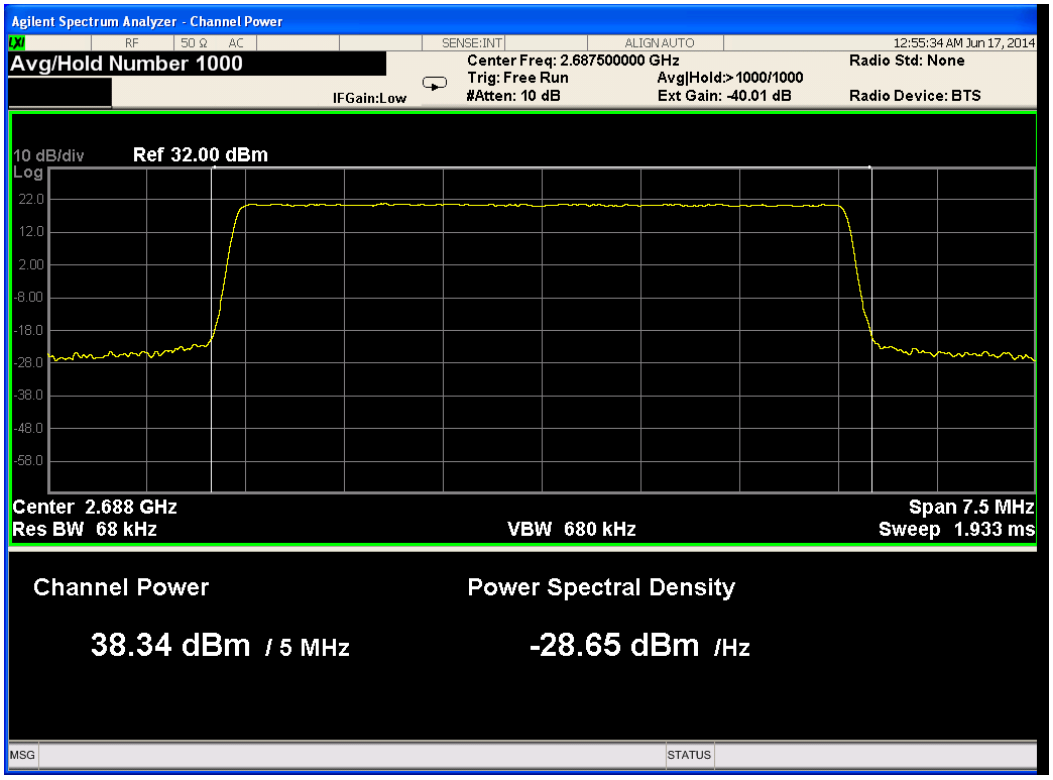


Figure 107.— 2687.50 MHz QPSK Port 1

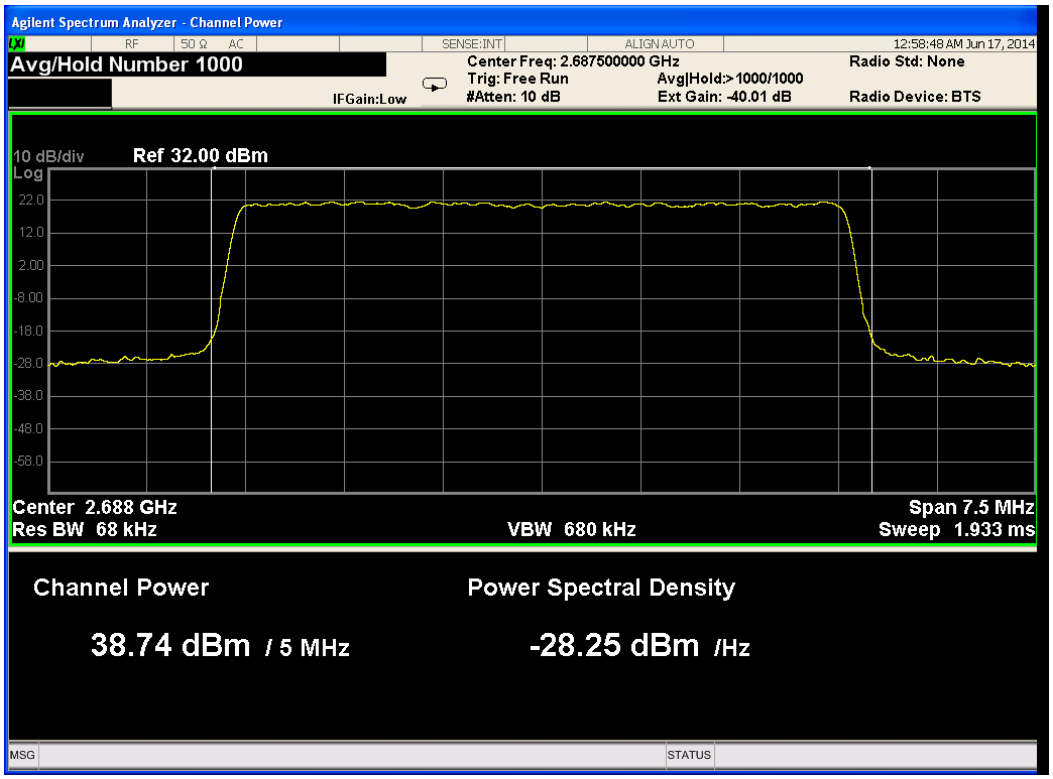


Figure 108.— 2687.50 MHz QPSK Port 2

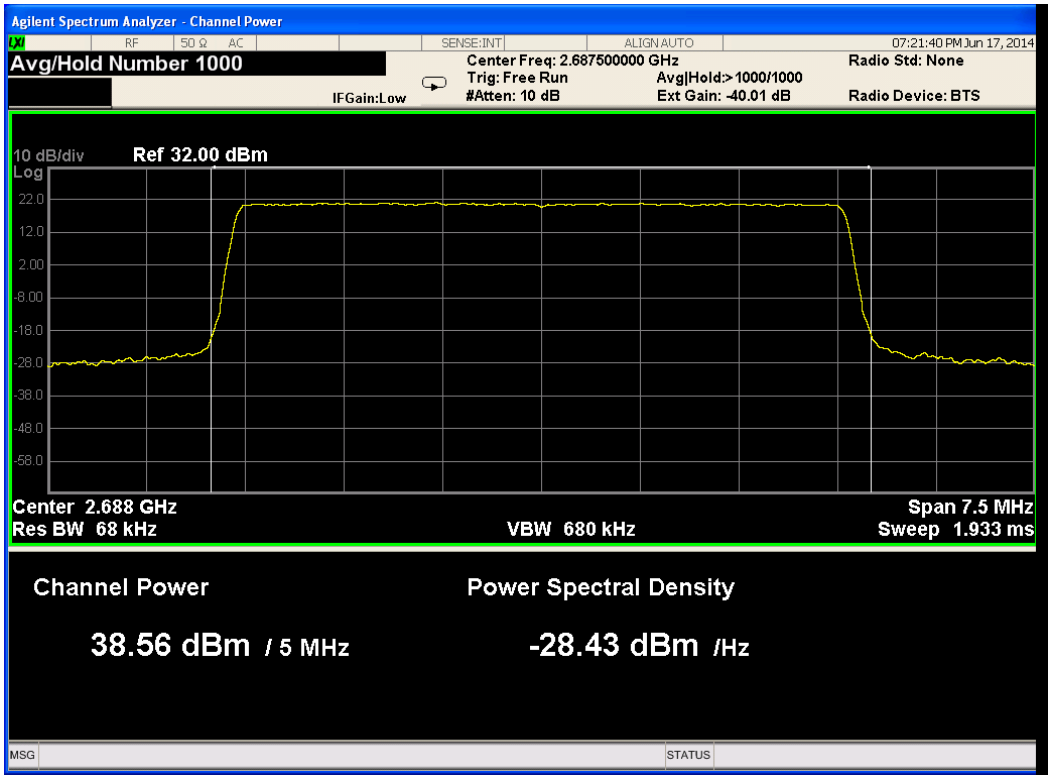


Figure 109.— 2687.50 MHz QPSK Port 3

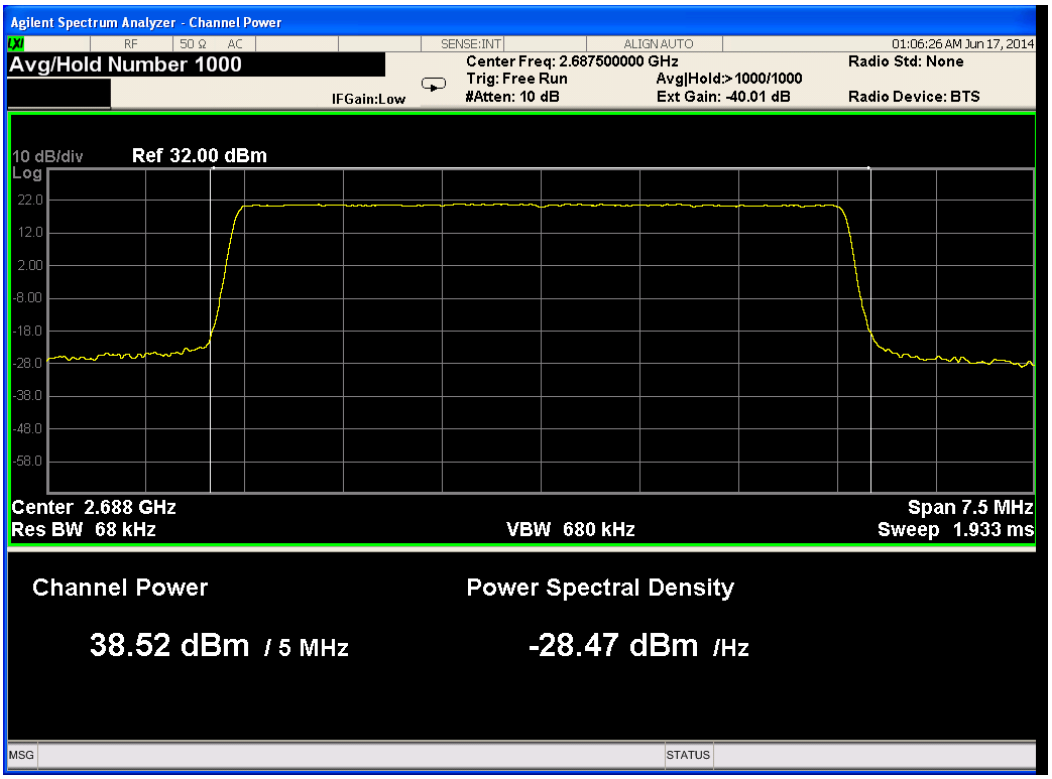


Figure 110.— 2687.50 MHz QPSK Port 4

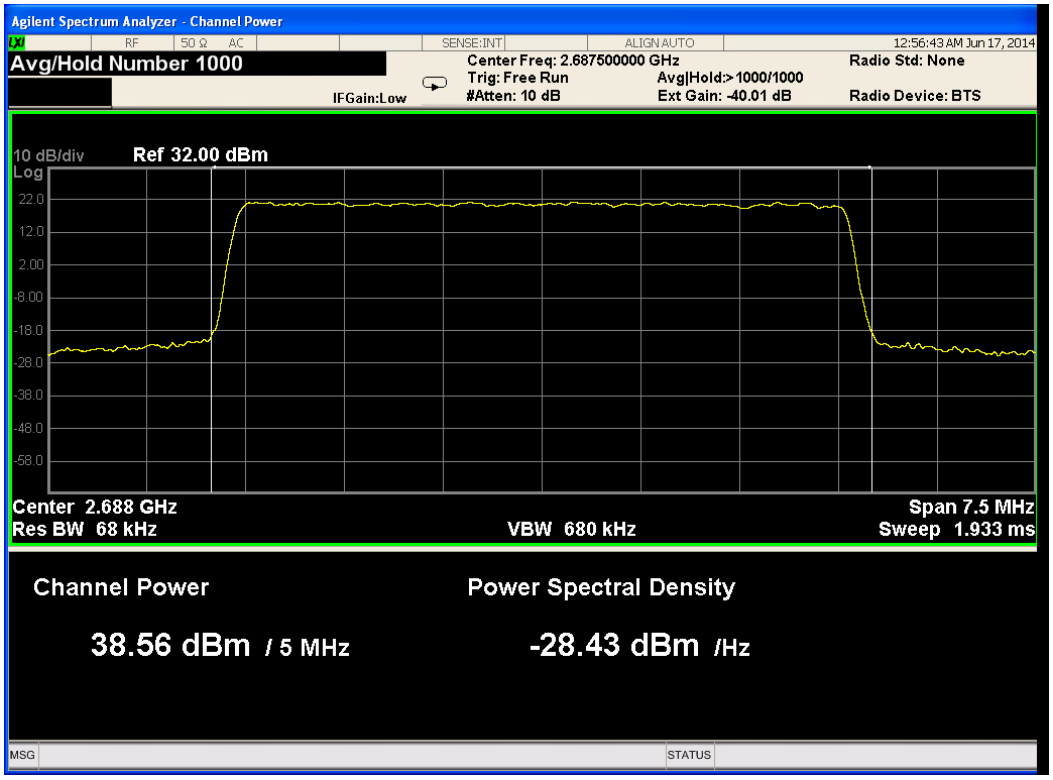


Figure 111.— 2687.50 MHz 16QAM Port 1

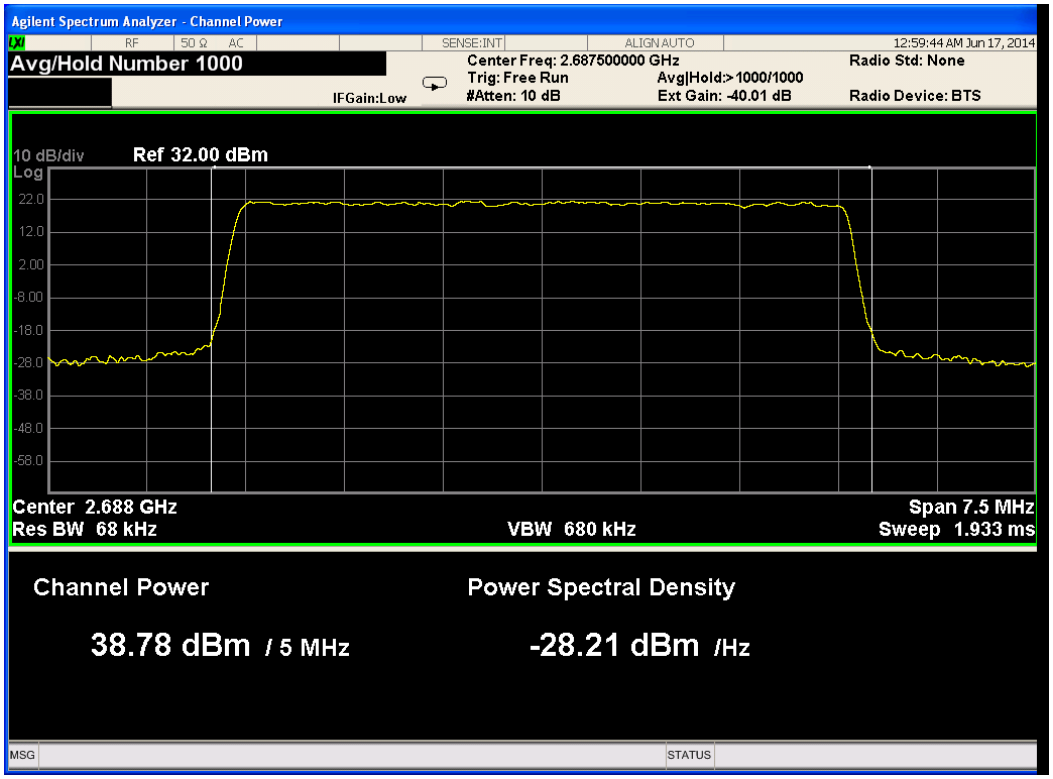


Figure 112.— 2687.50 MHz 16QAM Port 2

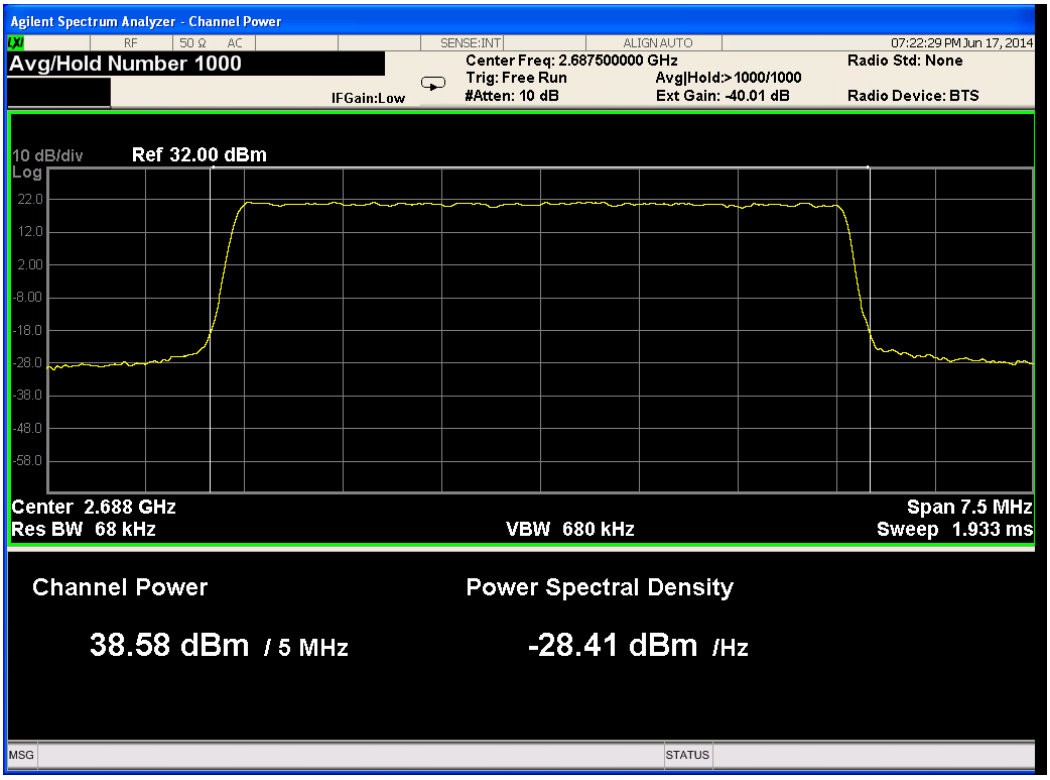


Figure 113.— 2687.50 MHz 16QAM Port 3

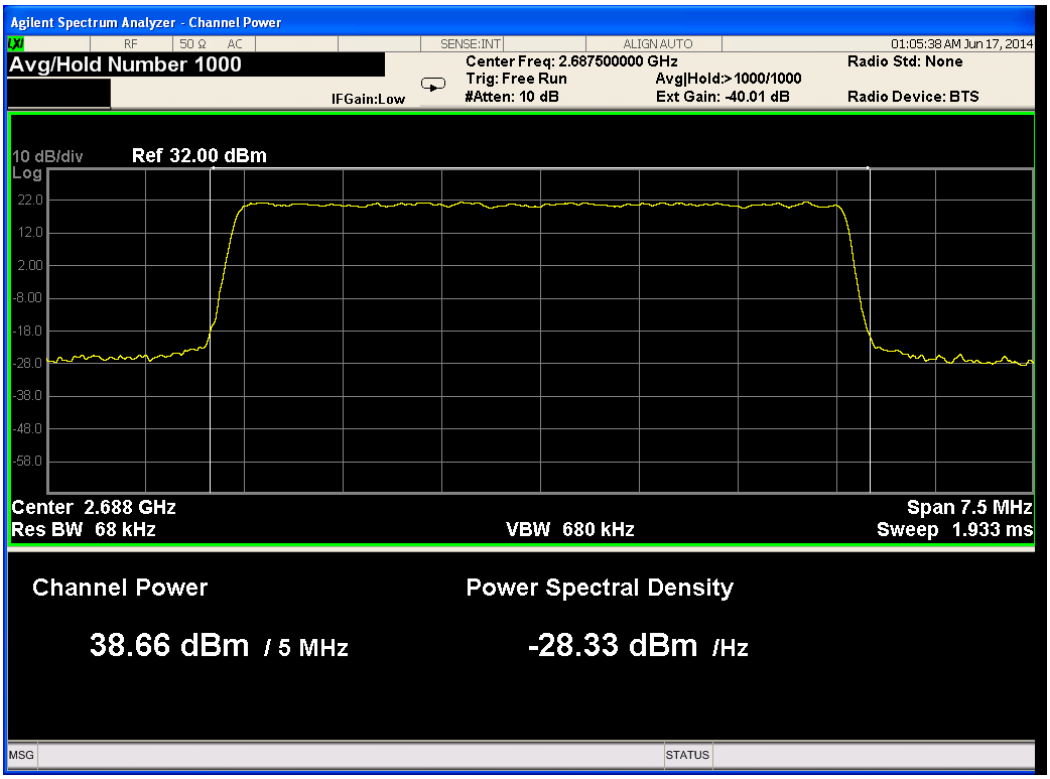


Figure 114.— 2687.50 MHz 16QAM Port 4

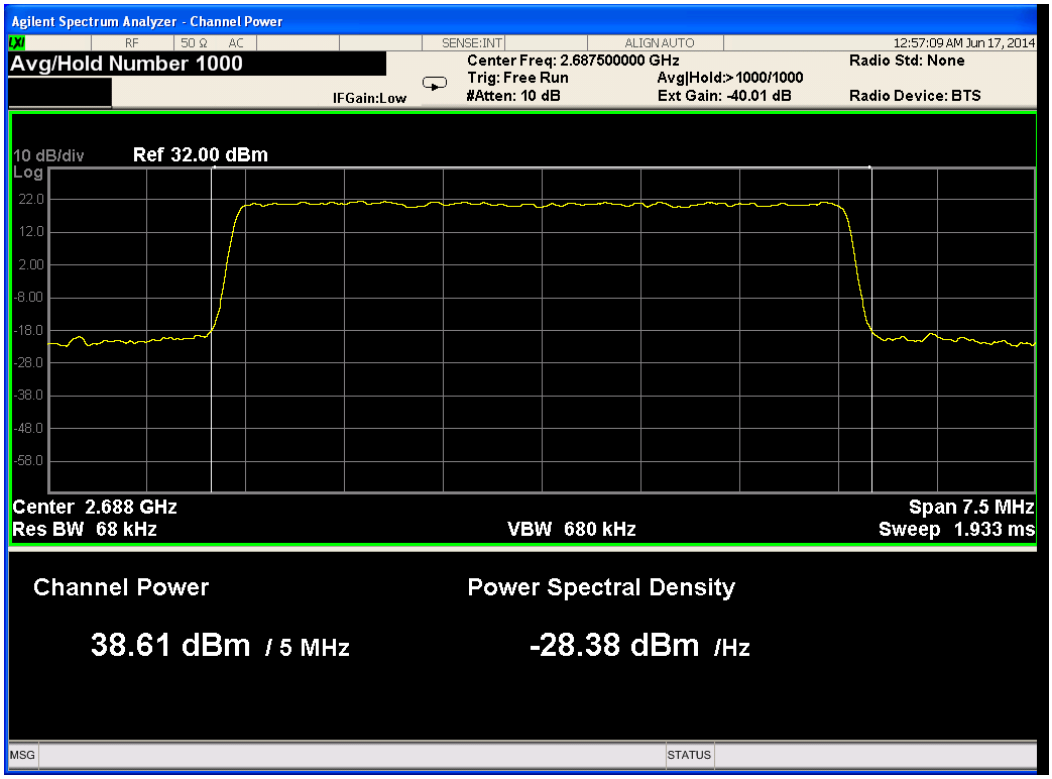


Figure 115.— 2687.50 MHz 64QAM Port 1

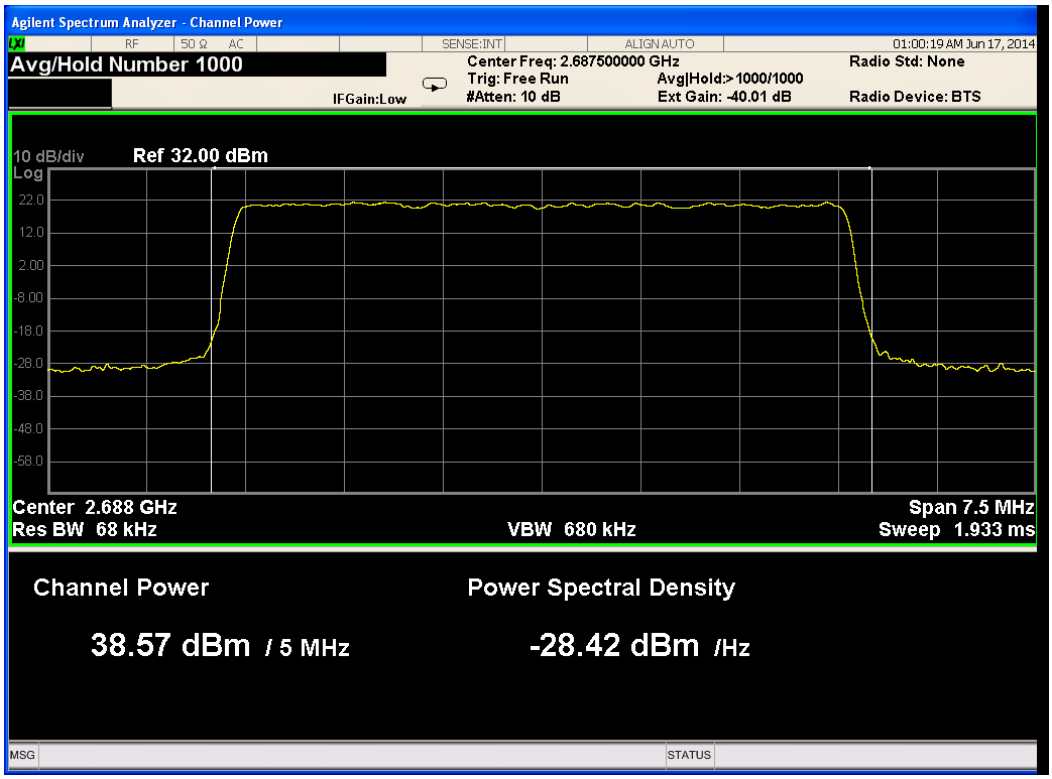


Figure 116.— 2687.50 MHz 64QAM Port 2

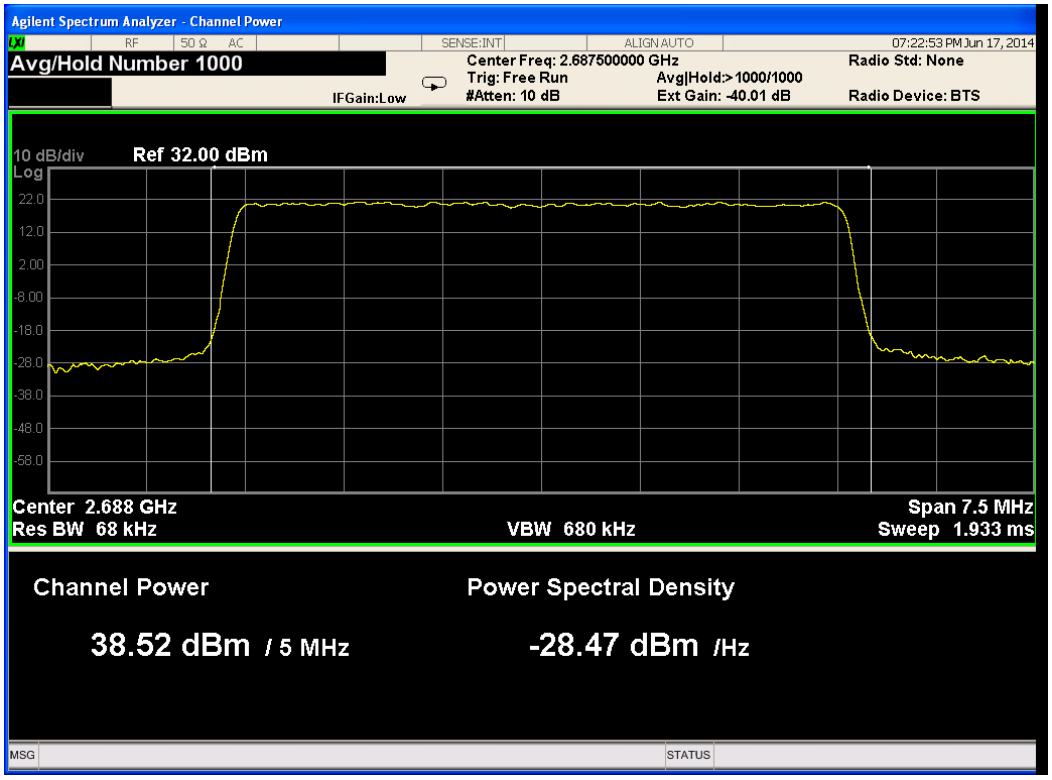


Figure 117.— 2687.50 MHz 64QAM Port 3

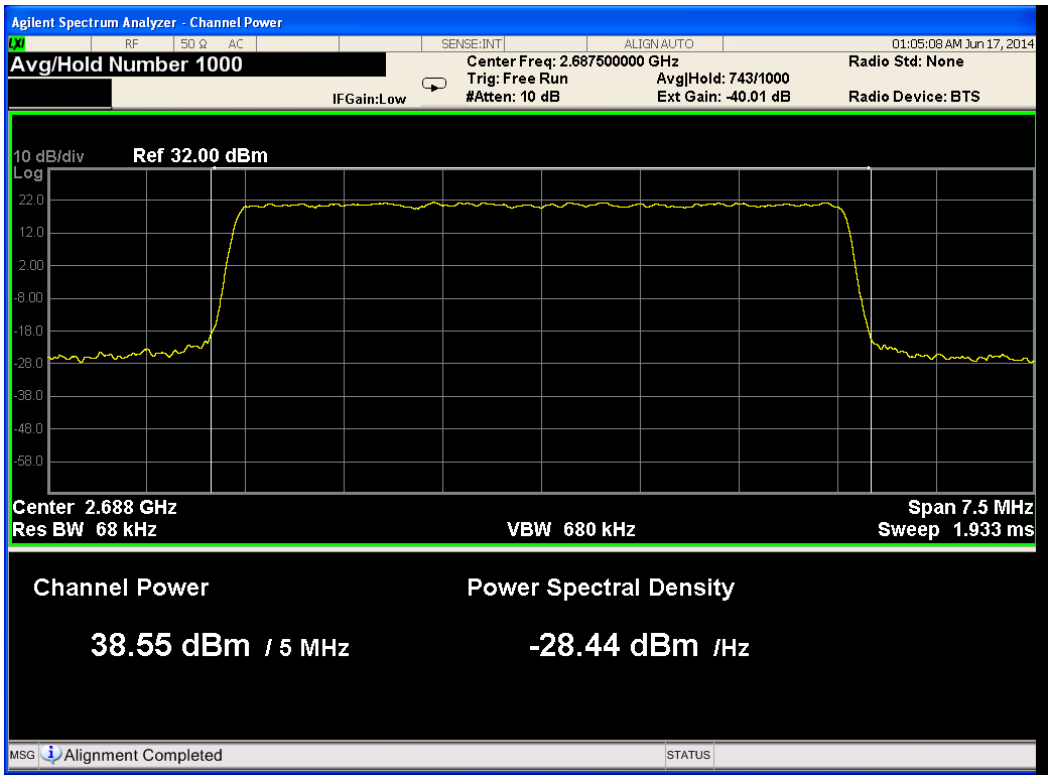


Figure 118.— 2687.50 MHz 64QAM Port 4

6.4 Test Equipment Used.

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 9 Test Equipment Used Spectral Density 5 MHz Bandwidth

7. Spectral Power Density 10 MHz Bandwidth

7.1 Test Specification

FCC Part 27, Sub-part C (27.50(h)(4))

7.2 Test procedure

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB. The E.U.T. RF output was OFDMA modulated with QPSK, 16QAM and 64QAM, at 10MHz BW. Power spectral density was measured over 100 kHz RBW.

Special attention was taken to prevent Spectrum Analyzer RF input overload. Tested frequencies: 2501.00 MHz, 2593.00 MHz and 2685.00 MHz

Antenna type: Manual tilt panel antenna (Gain: 18 dBi) with N type connector.

7.3 Test Results

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain	Spectral Power Density	Specification (dBm)	Margin (dB)
2501.00	QPSK	18.59	18	36.59	45.2	-8.61
	16QAM	18.70	18	36.70	45.2	-8.50
	64QAM	18.61	18	36.61	45.2	-8.59
2593.00	QPSK	18.47	18	36.47	45.2	-8.73
	16QAM	18.69	18	36.69	45.2	-8.51
	64QAM	18.22	18	36.22	45.2	-8.98
2685.00	QPSK	18.54	18	36.54	45.2	-8.66
	16QAM	18.61	18	36.61	45.2	-8.59
	64QAM	18.26	18	36.26	45.2	-8.94

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 119 to Figure 154.

Table 10 Spectral Power Density 10 MHz Bandwidth Test Results Table Port 1

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain	Spectral Power Density	Specification (dBm)	Margin (dB)
2501.00	QPSK	18.65	18	36.65	45.2	-8.55
	16QAM	18.80	18	36.80	45.2	-8.40
	64QAM	18.40	18	36.40	45.2	-8.80
2593.00	QPSK	18.58	18	36.58	45.2	-8.62
	16QAM	18.63	18	36.63	45.2	-8.57
	64QAM	18.38	18	36.38	45.2	-8.82
2685.00	QPSK	18.26	18	36.26	45.2	-8.94
	16QAM	18.49	18	36.49	45.2	-8.71
	64QAM	18.28	18	36.28	45.2	-8.92

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 119 to Figure 154.

Table 11 Spectral Power Density 10 MHz Bandwidth Test Results Table Port 2

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain	Spectral Power Density	Specification (dBm)	Margin (dB)
2501.00	QPSK	18.66	18	36.66	45.2	-8.54
	16QAM	18.70	18	36.70	45.2	-8.50
	64QAM	18.37	18	36.37	45.2	-8.83
2593.00	QPSK	18.51	18	36.51	45.2	-8.69
	16QAM	18.62	18	36.62	45.2	-8.58
	64QAM	18.29	18	36.29	45.2	-8.91
2685.00	QPSK	18.33	18	36.33	45.2	-8.87
	16QAM	18.46	18	36.46	45.2	-8.74
	64QAM	18.04	18	36.04	45.2	-9.16

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 119 to Figure 154.

Table 12 Spectral Power Density 10 MHz Bandwidth Test Results Table Port 3

Operation Frequency (MHz)	Modulation	Reading* (dBm)	Antenna Gain	Spectral Power Density	Specification (dBm)	Margin (dB)
2501.00	QPSK	18.51	18	36.51	45.2	-8.69
	16QAM	18.62	18	36.62	45.2	-8.58
	64QAM	18.42	18	36.42	45.2	-8.78
2593.00	QPSK	18.50	18	36.50	45.2	-8.70
	16QAM	18.82	18	36.82	45.2	-8.38
	64QAM	18.59	18	36.59	45.2	-8.61
2685.00	QPSK	18.31	18	36.31	45.2	-8.89
	16QAM	18.37	18	36.37	45.2	-8.83
	64QAM	18.35	18	36.35	45.2	-8.85

*- Spectral power density, dBm/100kHz = Spectrum analyzer reading, dBm/Hz + 50 dB
See additional information in Figure 119 to Figure 154.

Table 13 Spectral Power Density 10 MHz Bandwidth Test Results Table Port 4

JUDGEMENT: Passed by dB

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

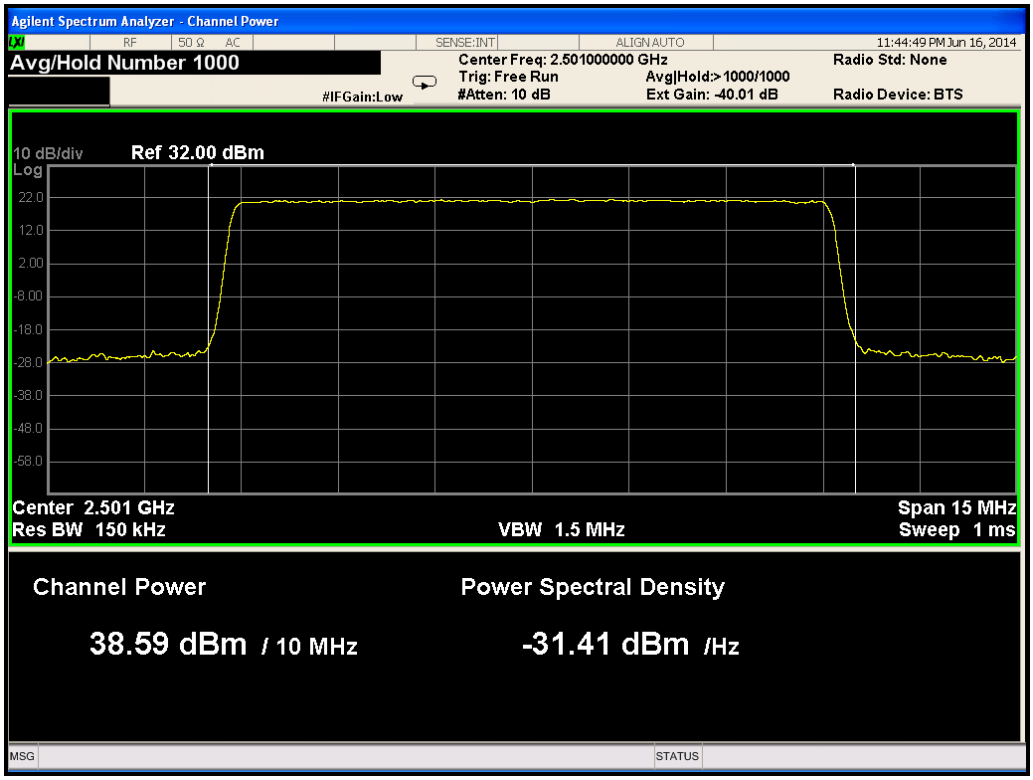


Figure 119.— 2501.00 MHz QPSK Port 1

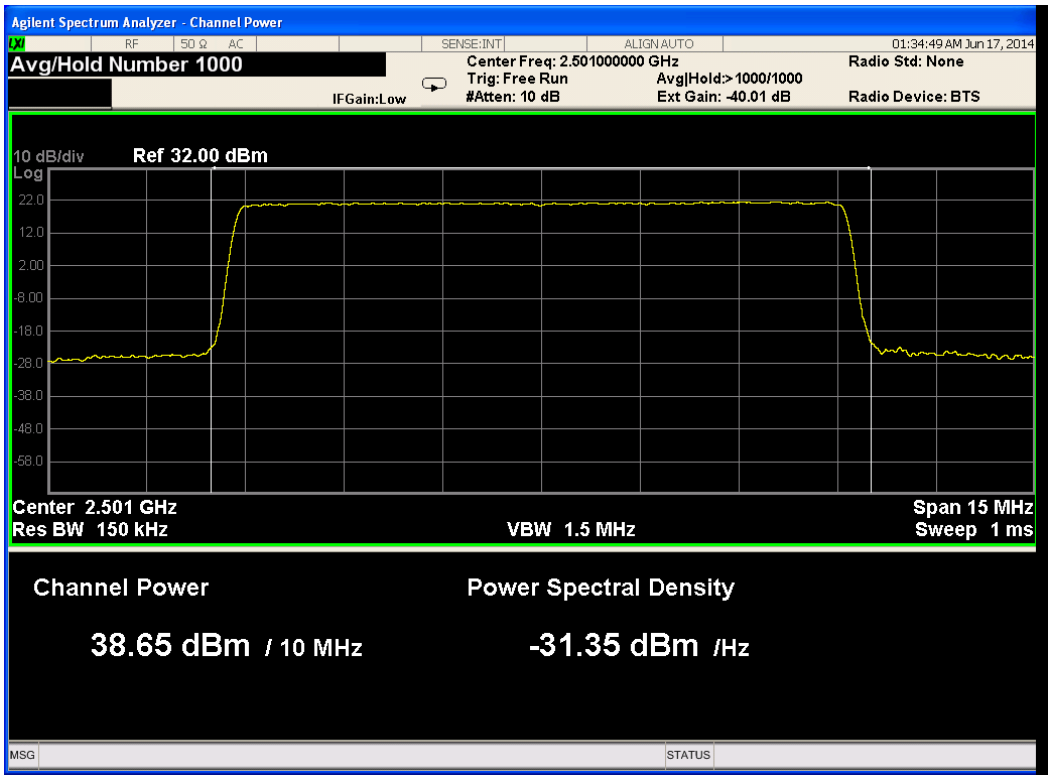


Figure 120.— 2501.00 MHz QPSK Port 2

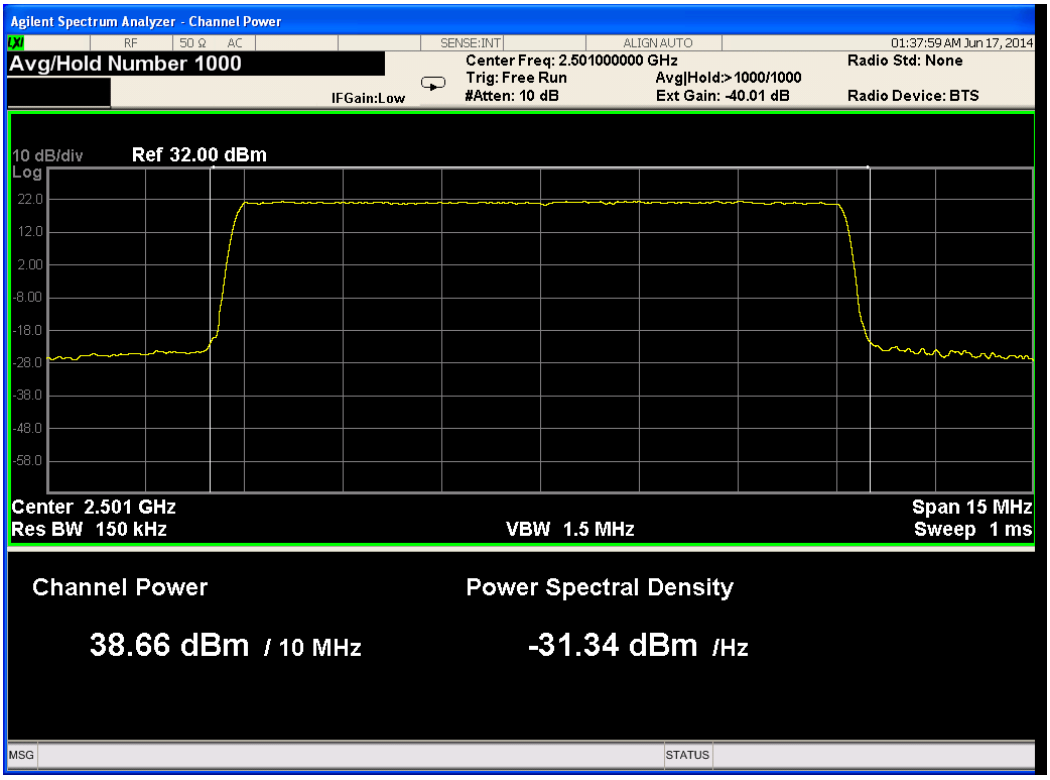


Figure 121.— 2501.00 MHz QPSK Port 3

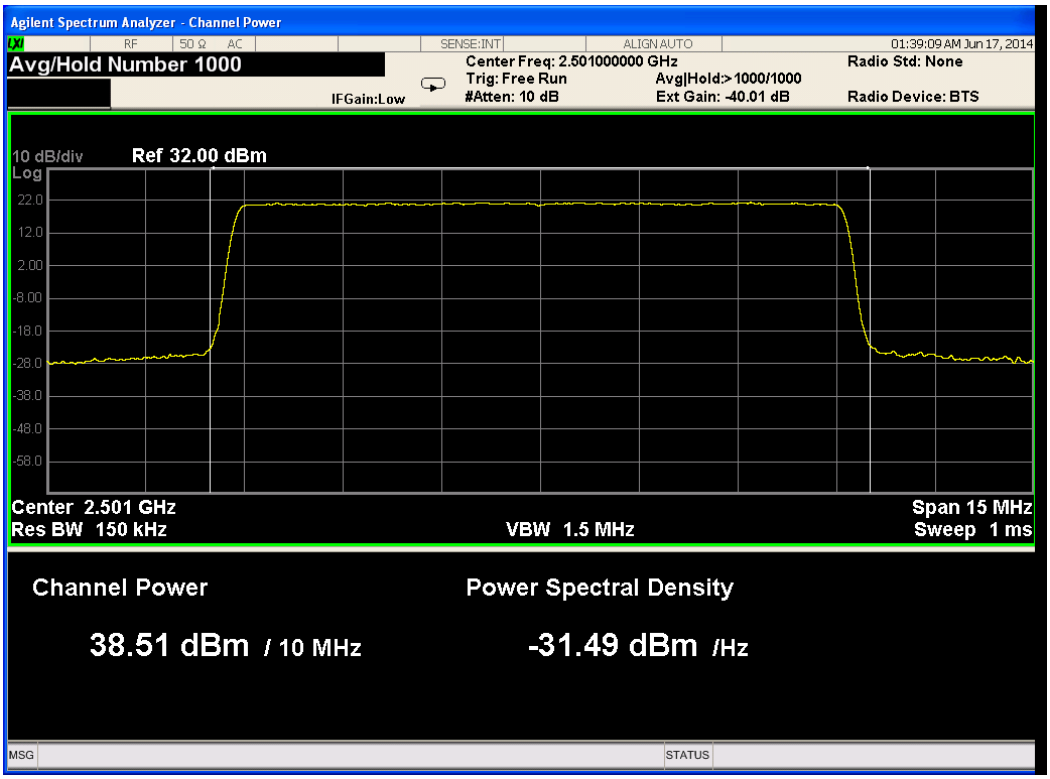


Figure 122.— 2501.00 MHz QPSK Port 4

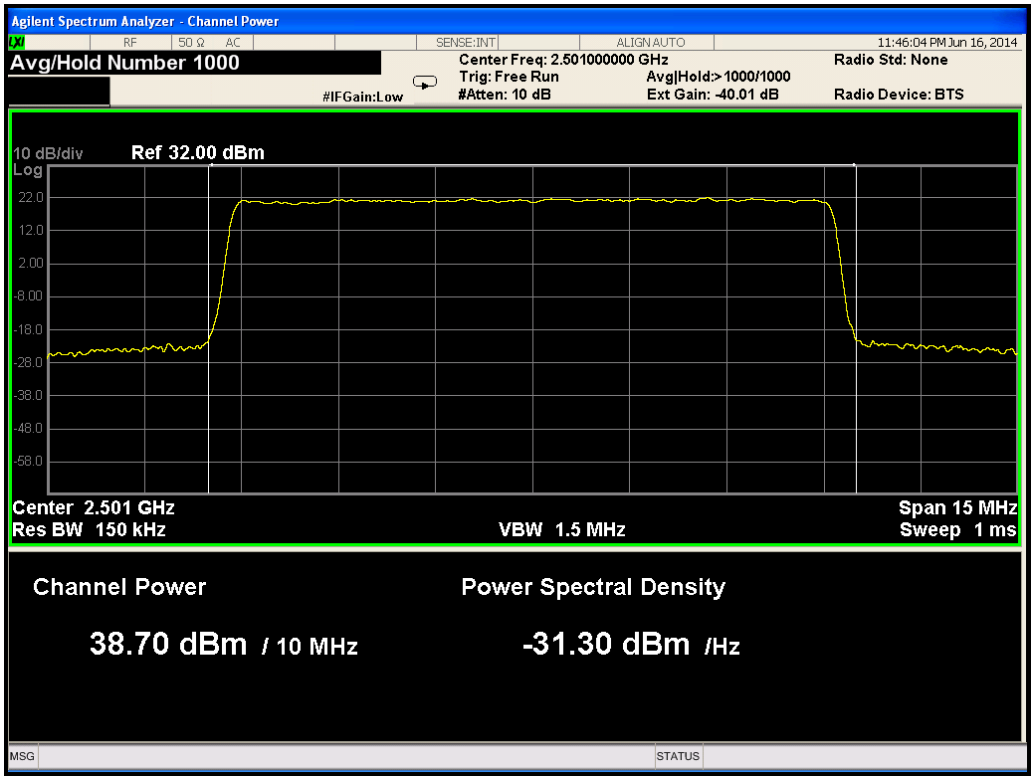


Figure 123.— 2501.00 MHz 16QAM Port 1

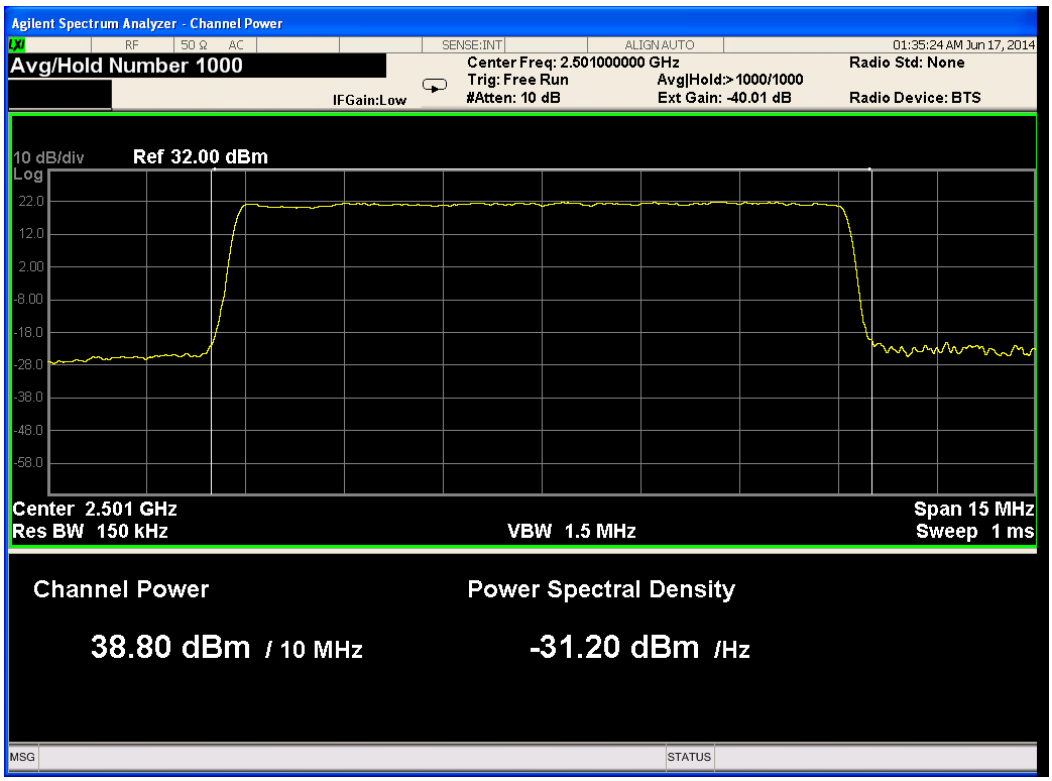


Figure 124.— 2501.00 MHz 16QAM Port 2

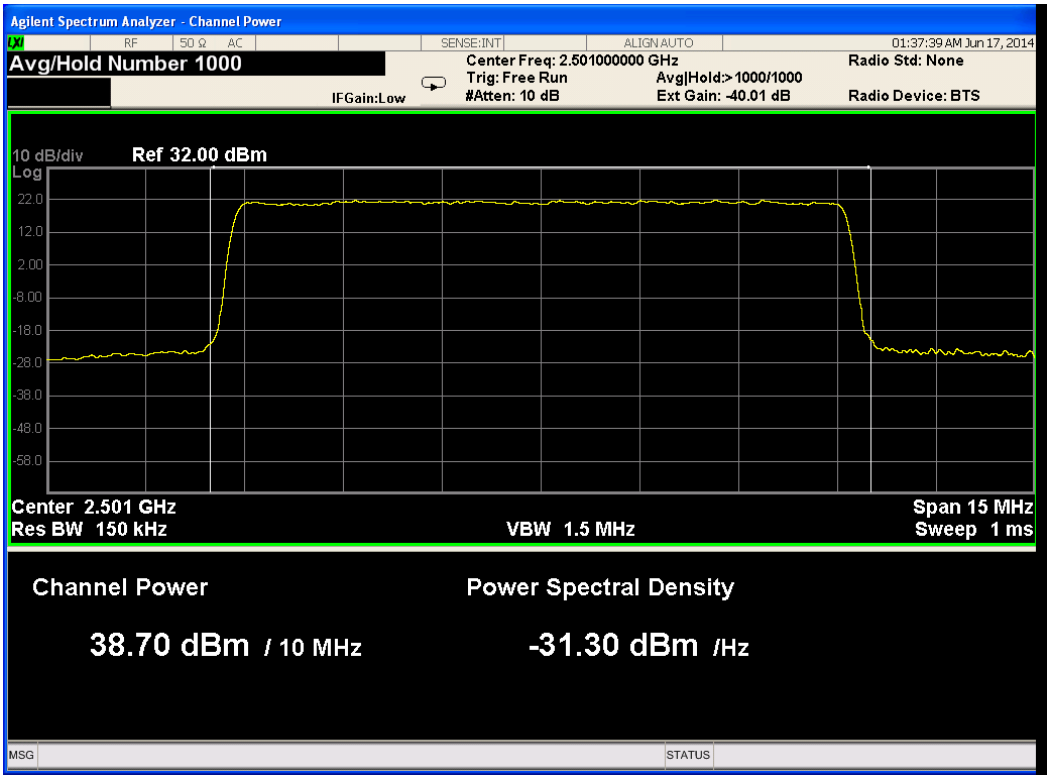


Figure 125.— 2501.00 MHz 16QAM Port 3

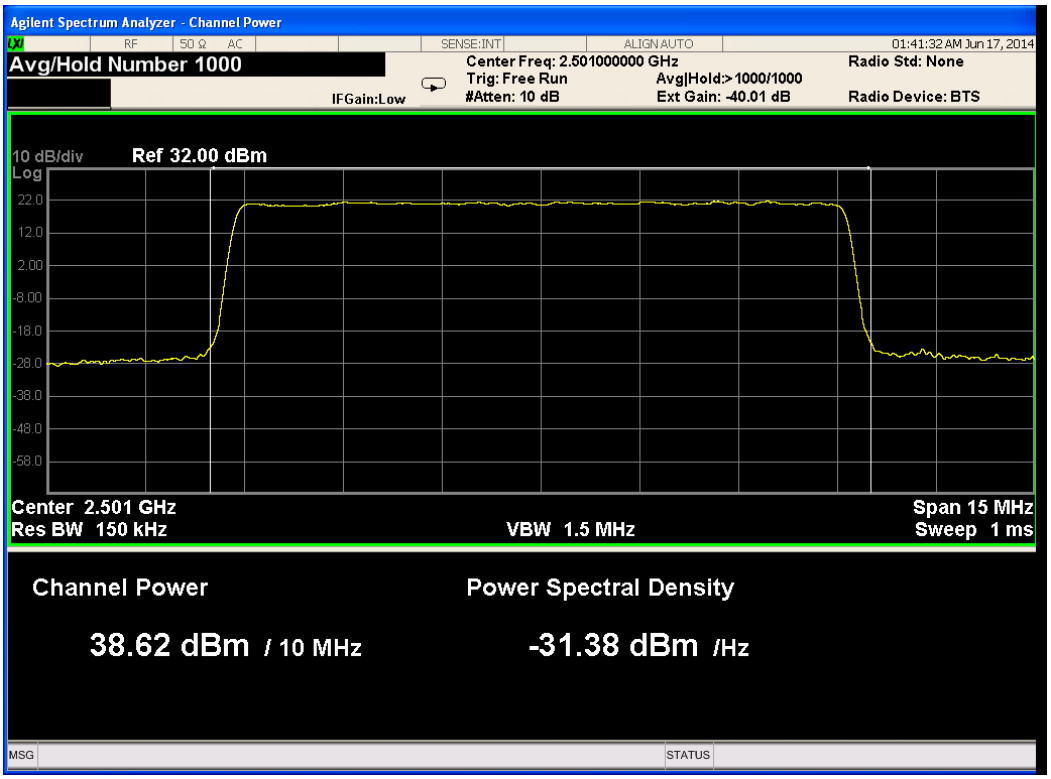


Figure 126.— 2501.00 MHz 16QAM Port 4

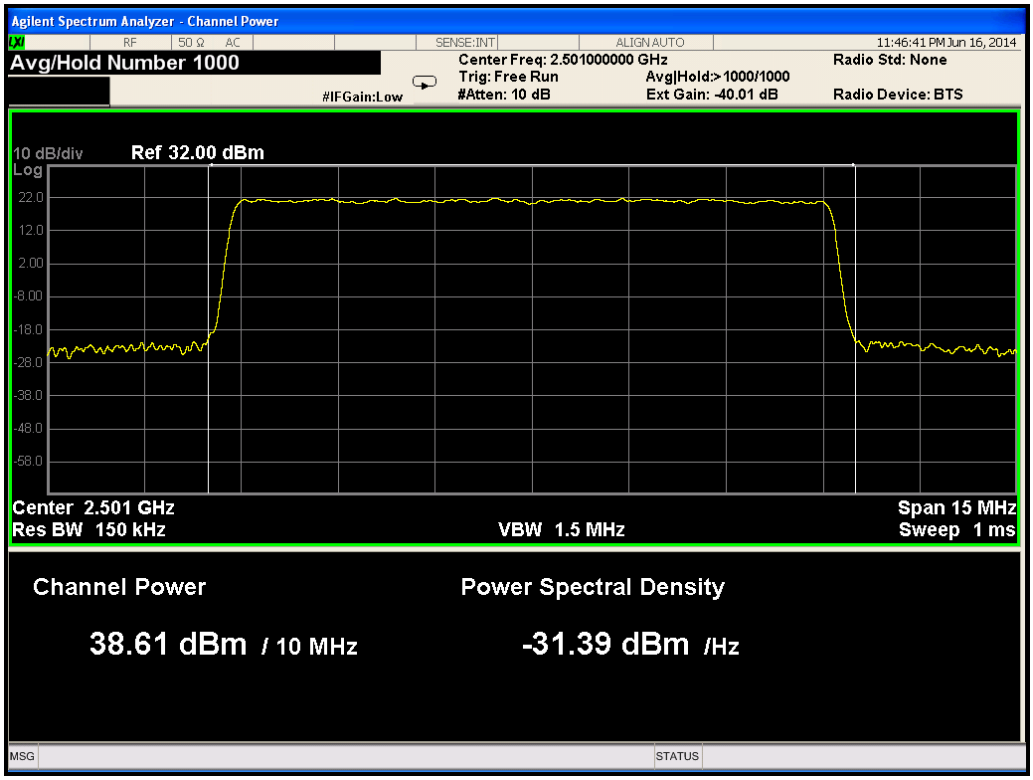


Figure 127.— 2501.00 MHz 64QAM Port 1

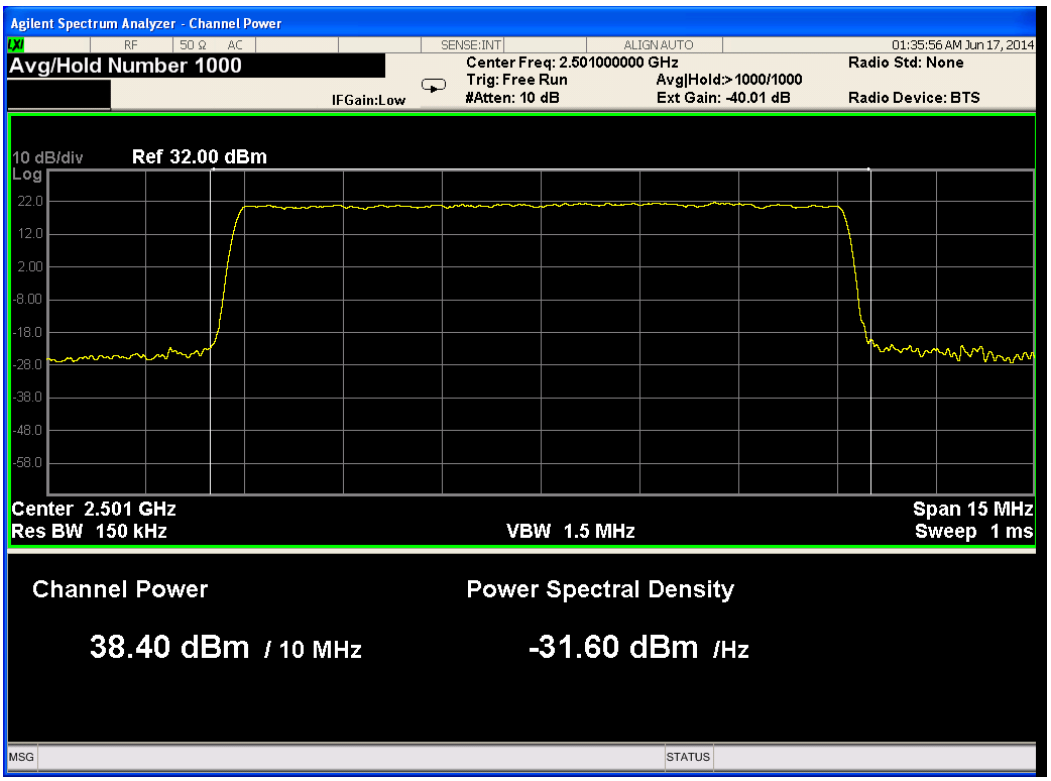


Figure 128.— 2501.00 MHz 64QAM Port 2

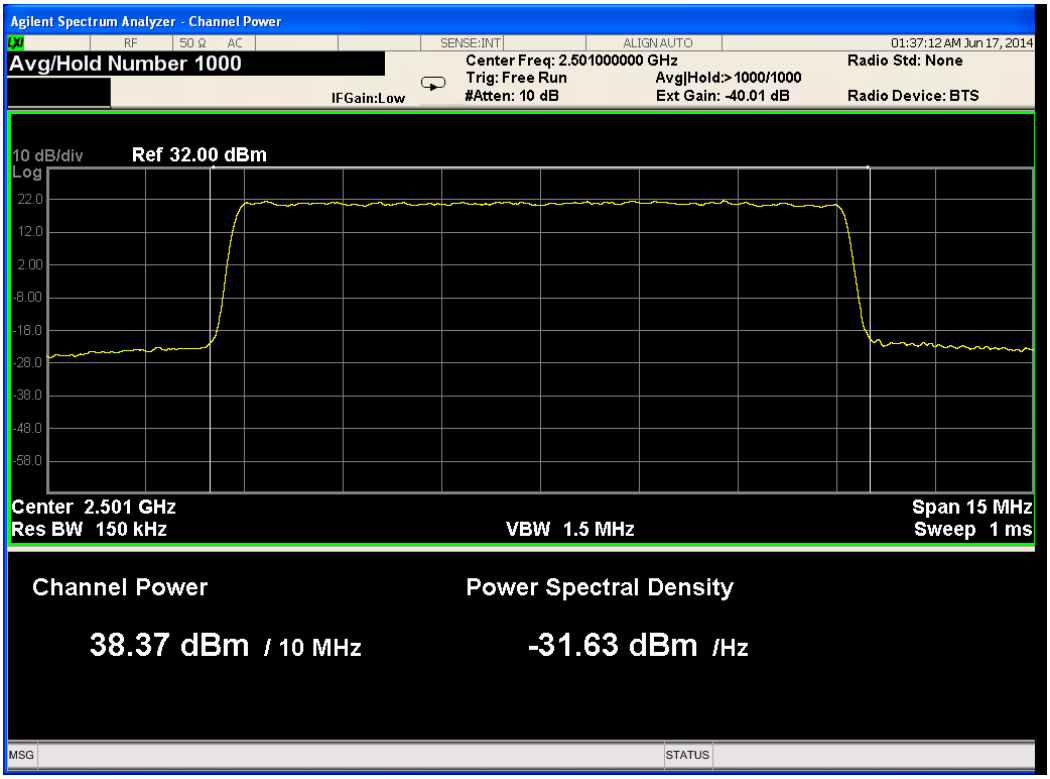


Figure 129.— 2501.00 MHz 64QAM Port 3

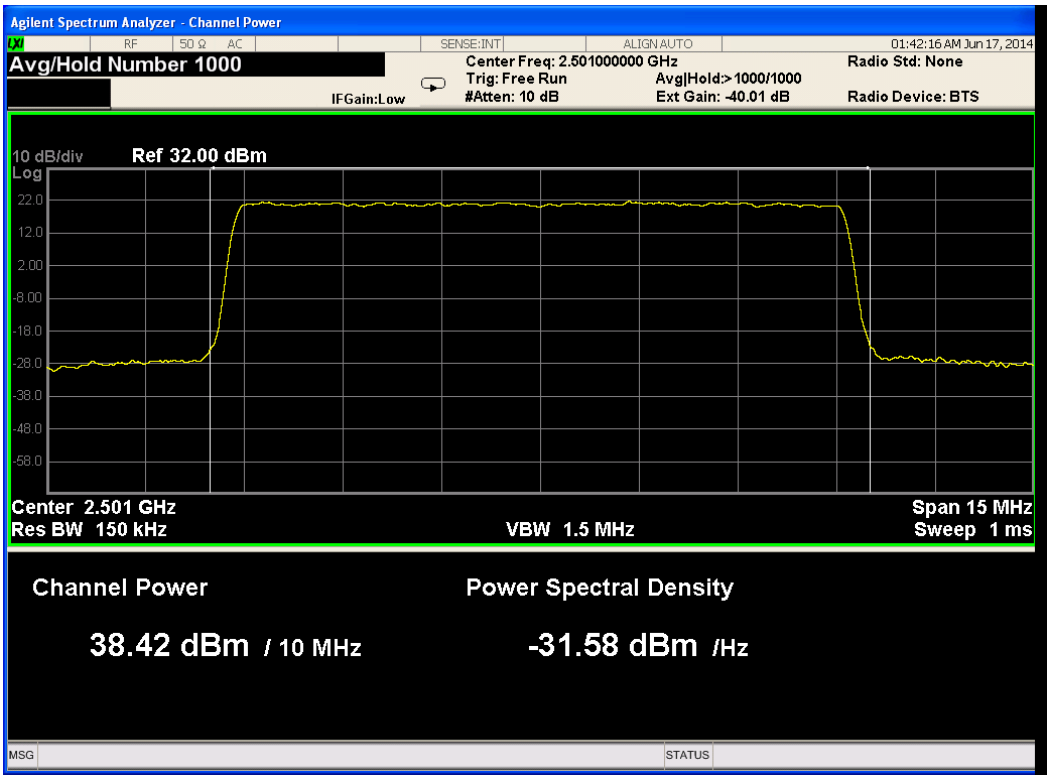


Figure 130.— 2501.00 MHz 64QAM Port 4

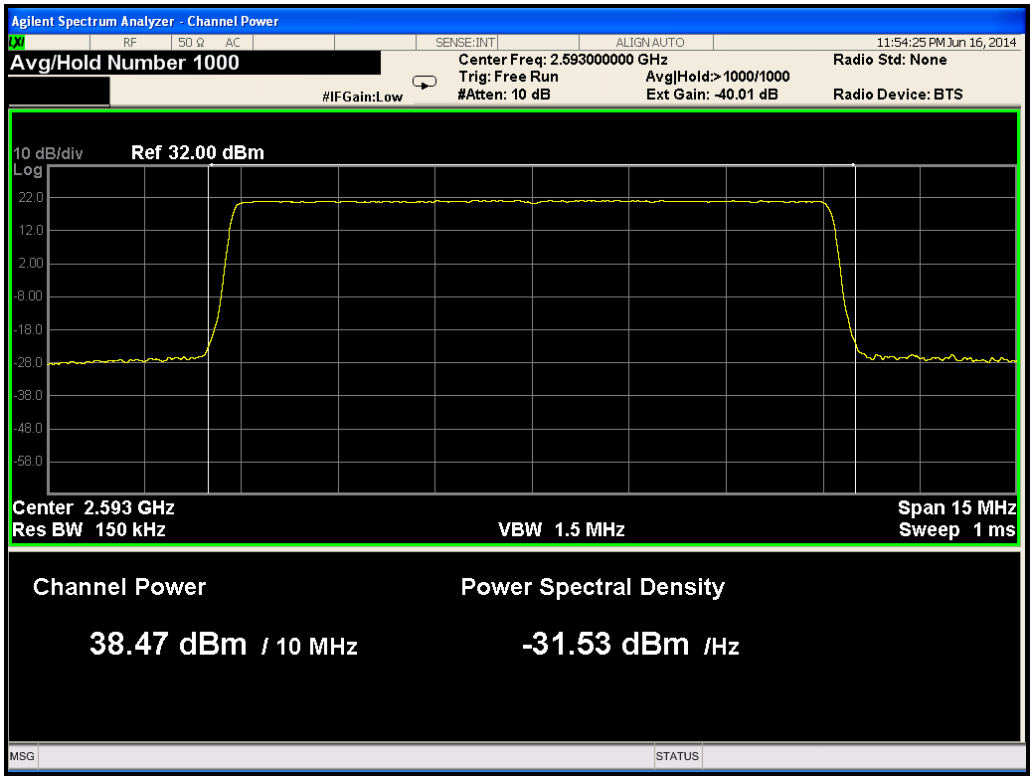


Figure 131.— 2593.00 MHz QPSK Port 1

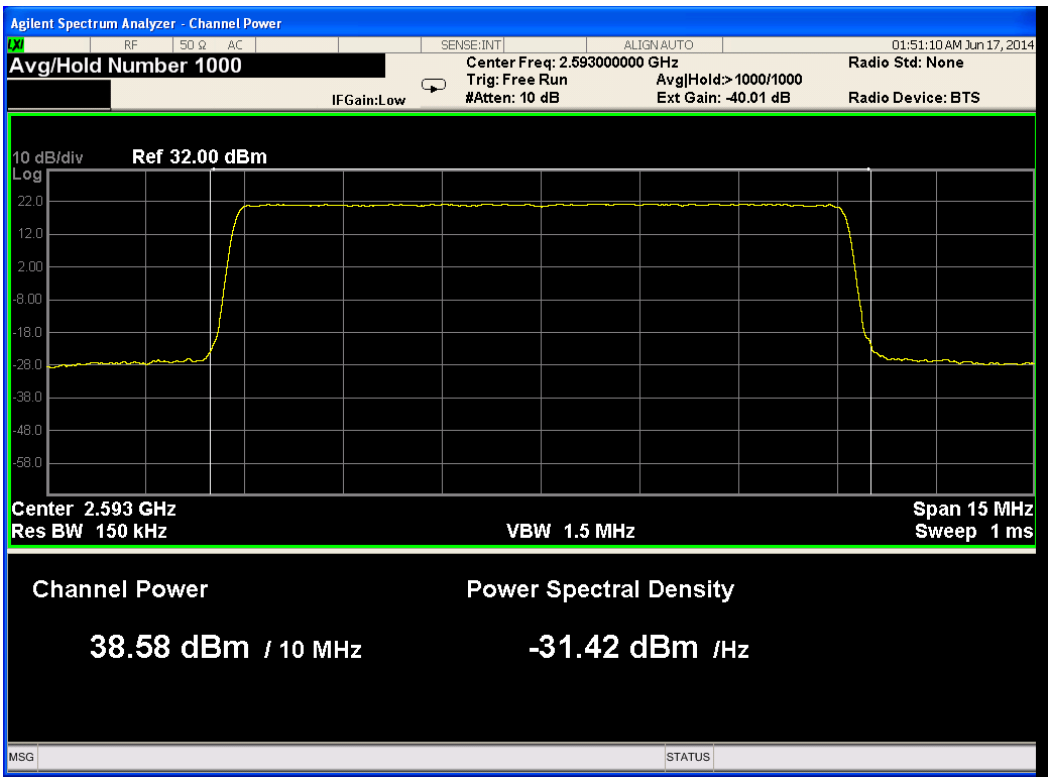


Figure 132.— 2593.00 MHz QPSK Port 2

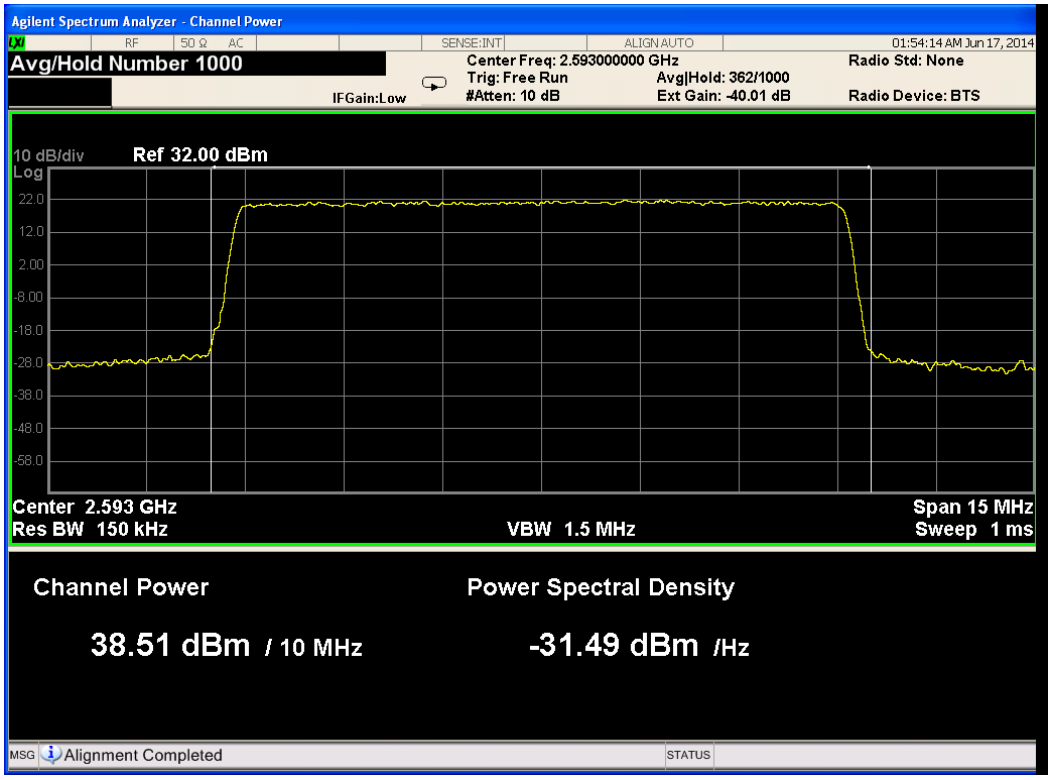


Figure 133.— 2593.00 MHz QPSK Port 3

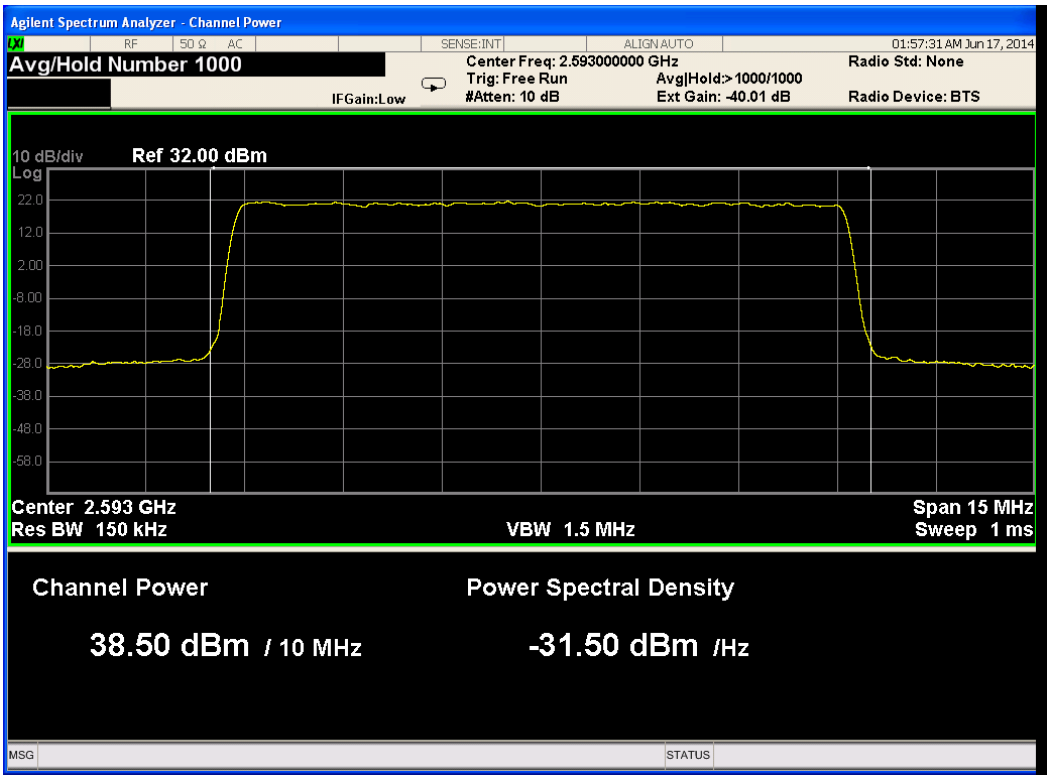


Figure 134.— 2593.00 MHz QPSK Port 4

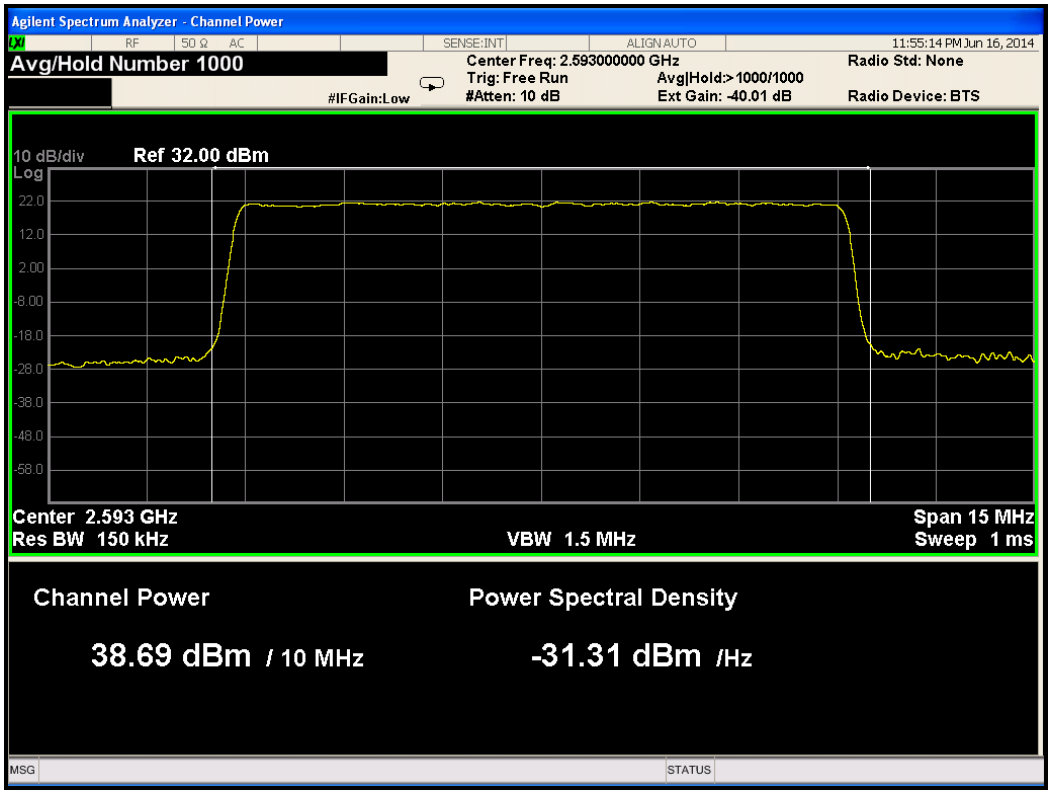


Figure 135.— 2593.00 MHz 16QAM Port 1

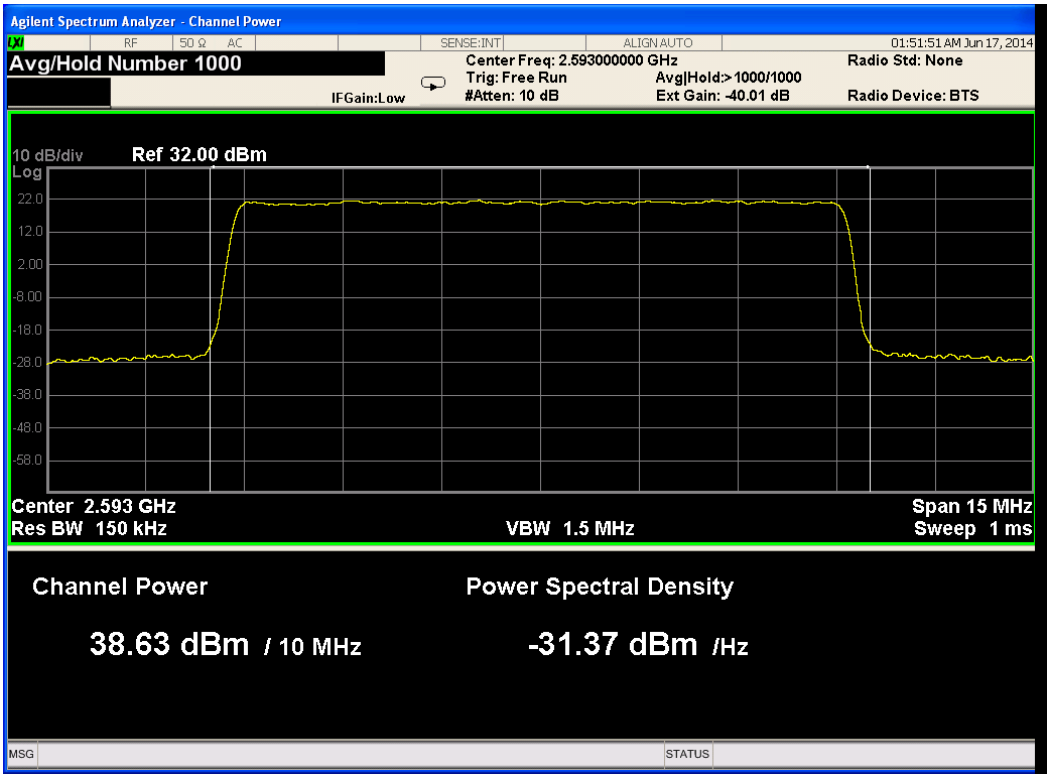


Figure 136.— 2593.00 MHz 16QAM Port 2

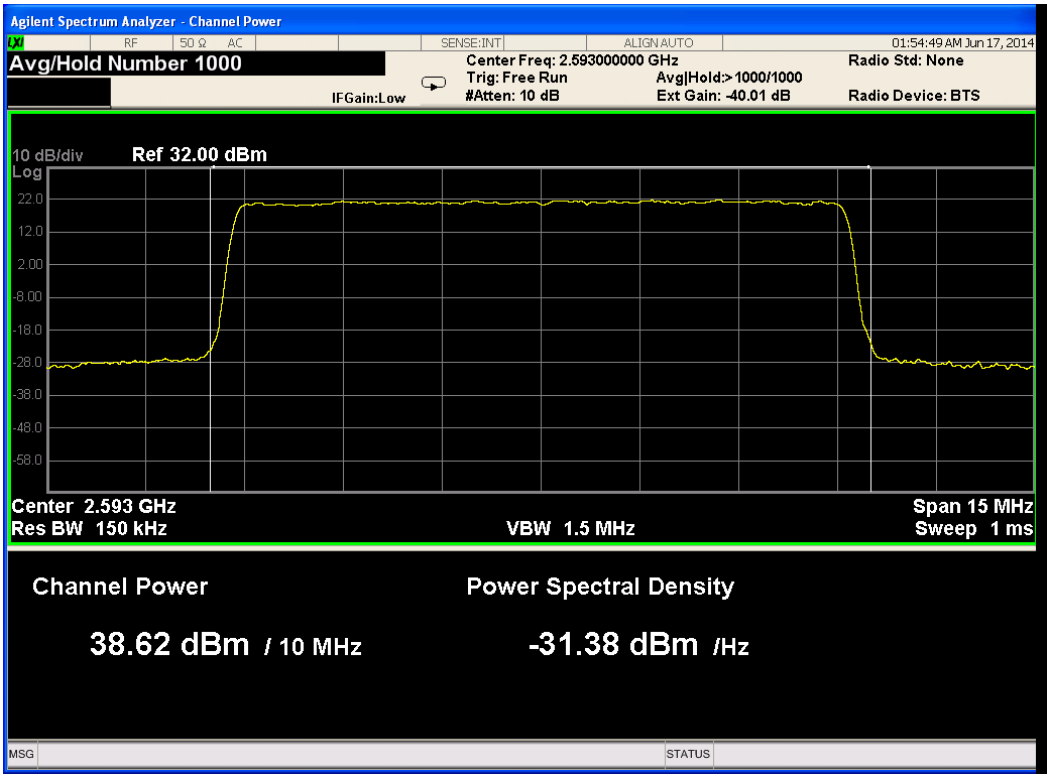


Figure 137.— 2593.00 MHz 16QAM Port 3

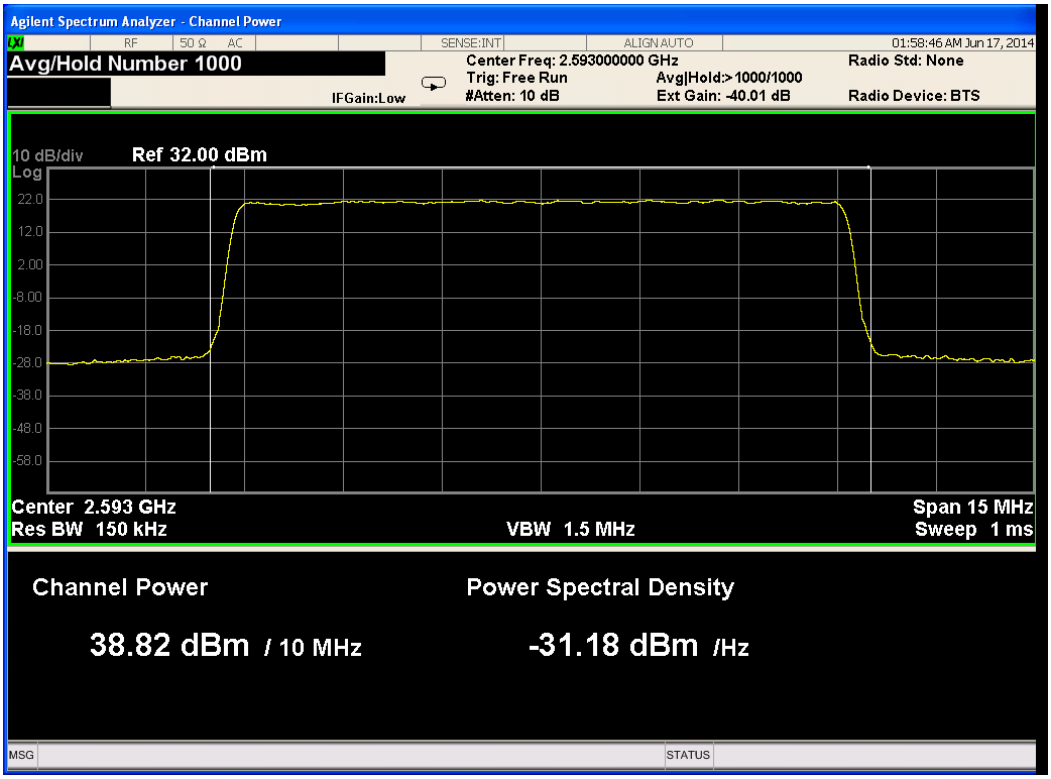


Figure 138.— 2593.00 MHz 16QAM Port 4

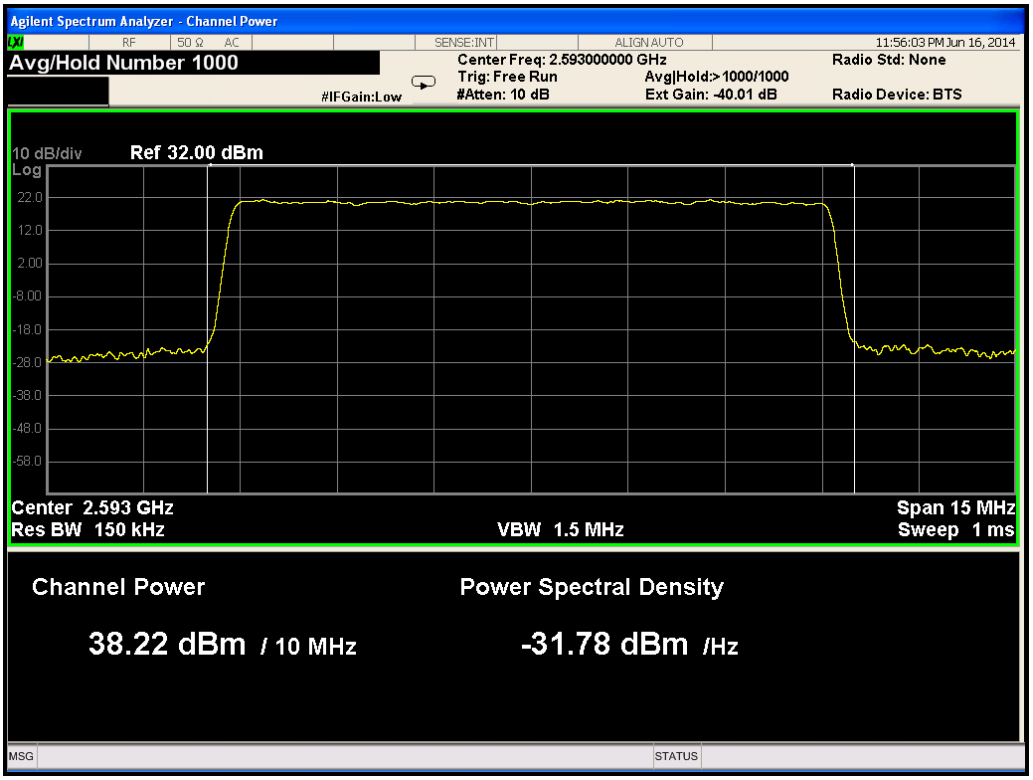


Figure 139.— 2593.00 MHz 64QAM Port 1

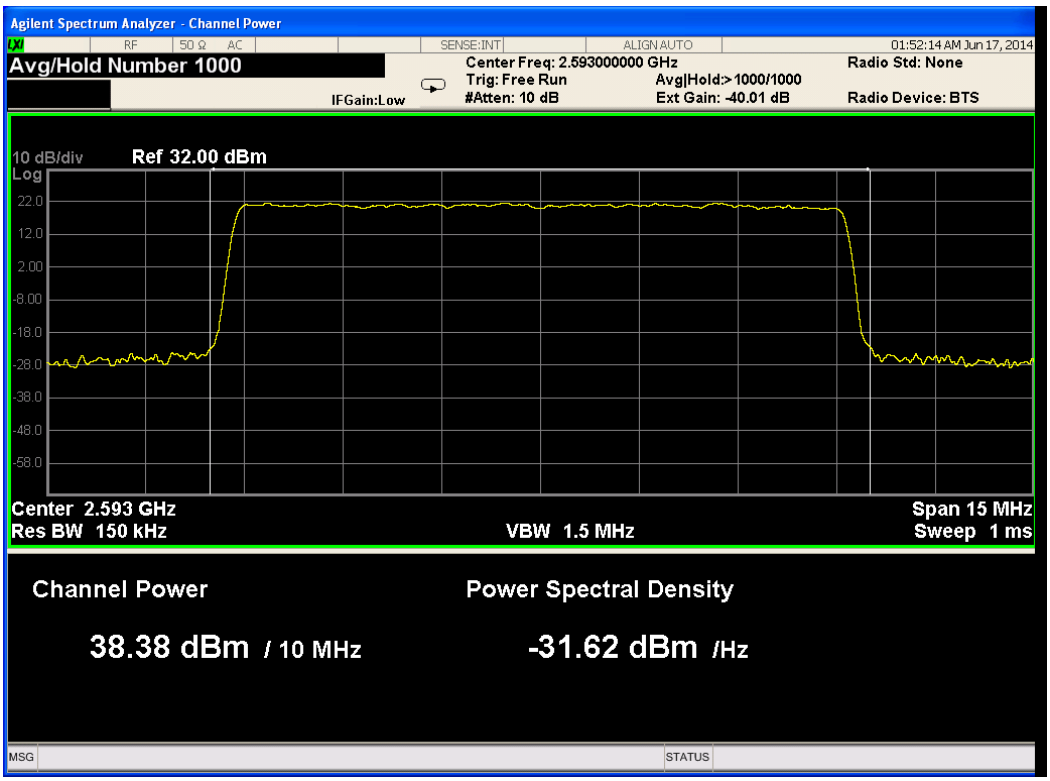


Figure 140.— 2593.00 MHz 64QAM Port 2

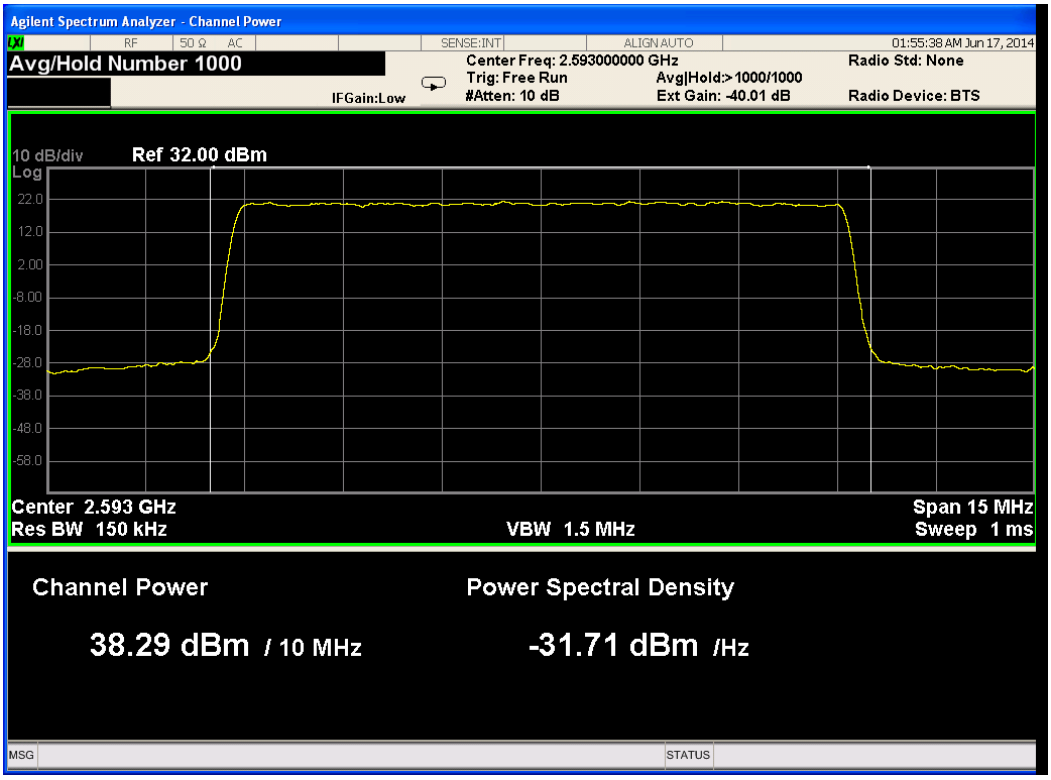


Figure 141.— 2593.00 MHz 64QAM Port 3

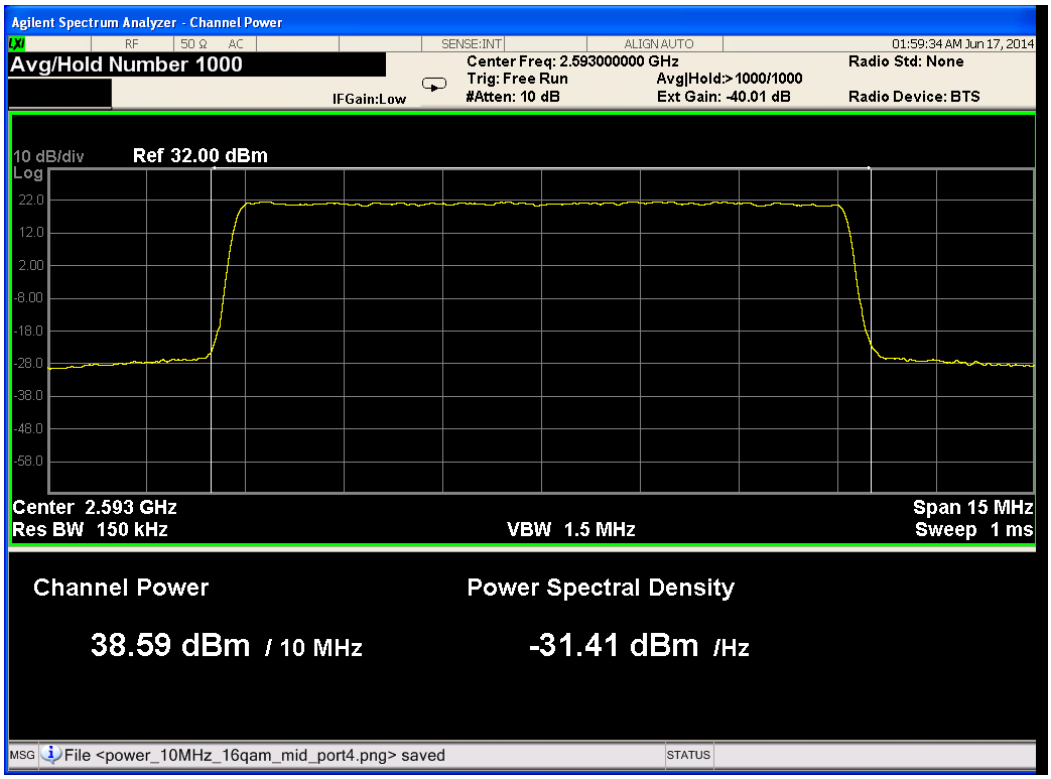


Figure 142.— 2593.00 MHz 64QAM Port 4

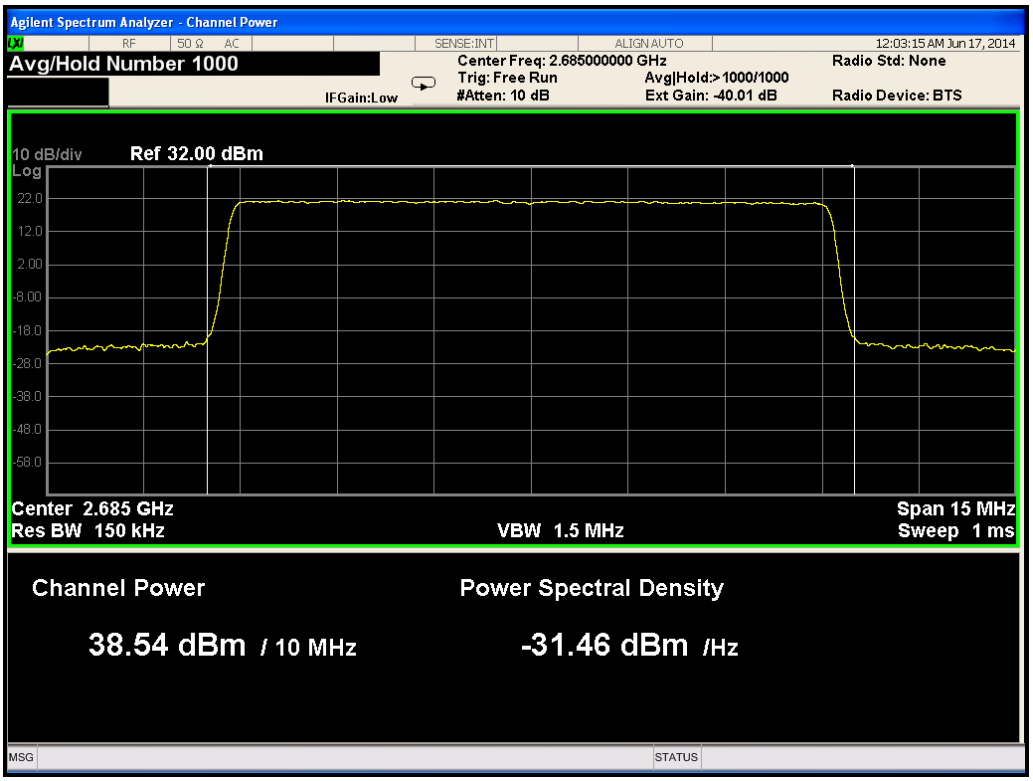


Figure 143.— 2685.00 MHz QPSK Port 1

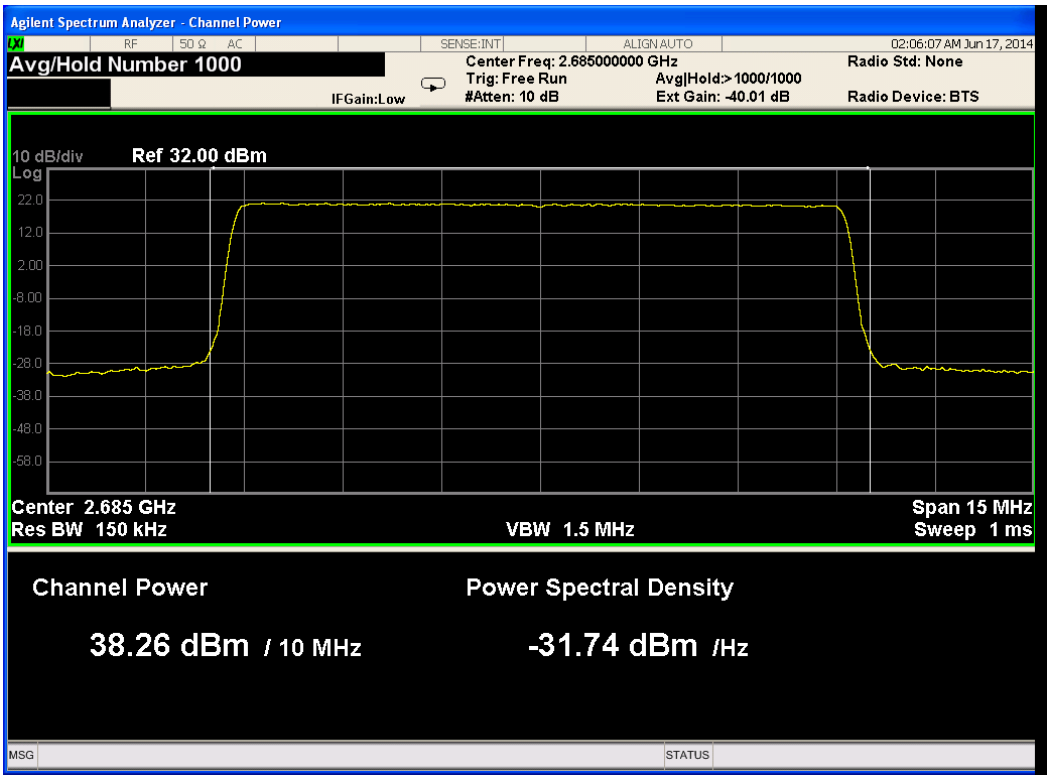


Figure 144.— 2685.00 MHz QPSK Port 2

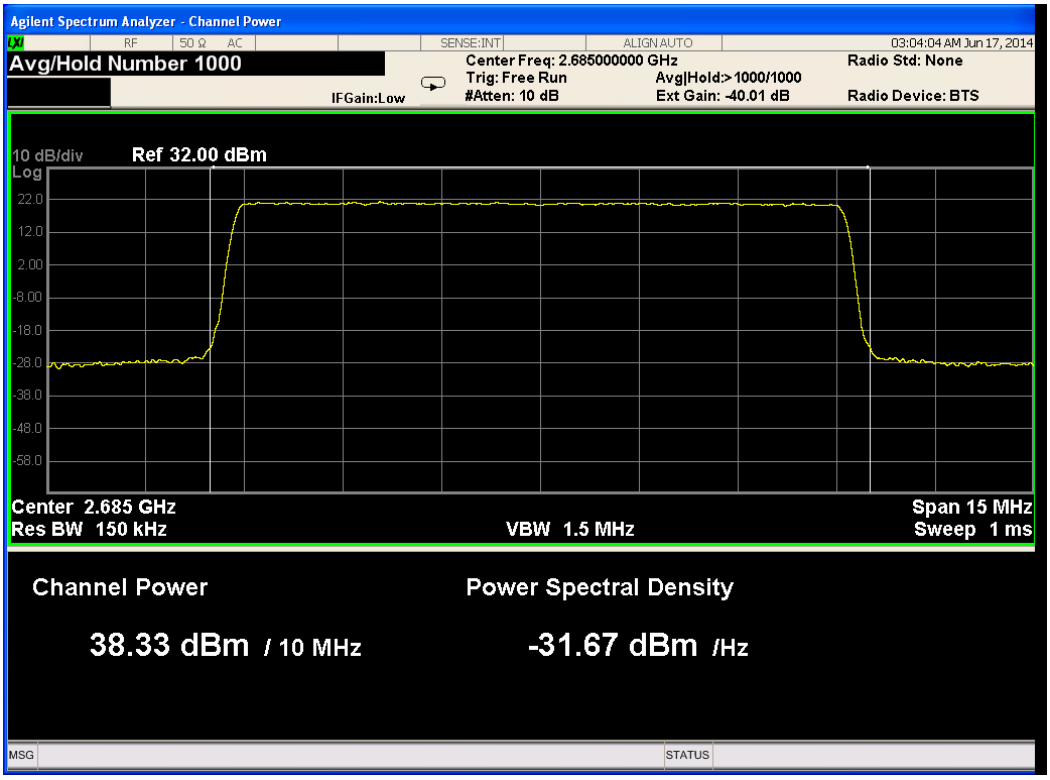


Figure 145.— 2685.00 MHz QPSK Port 3

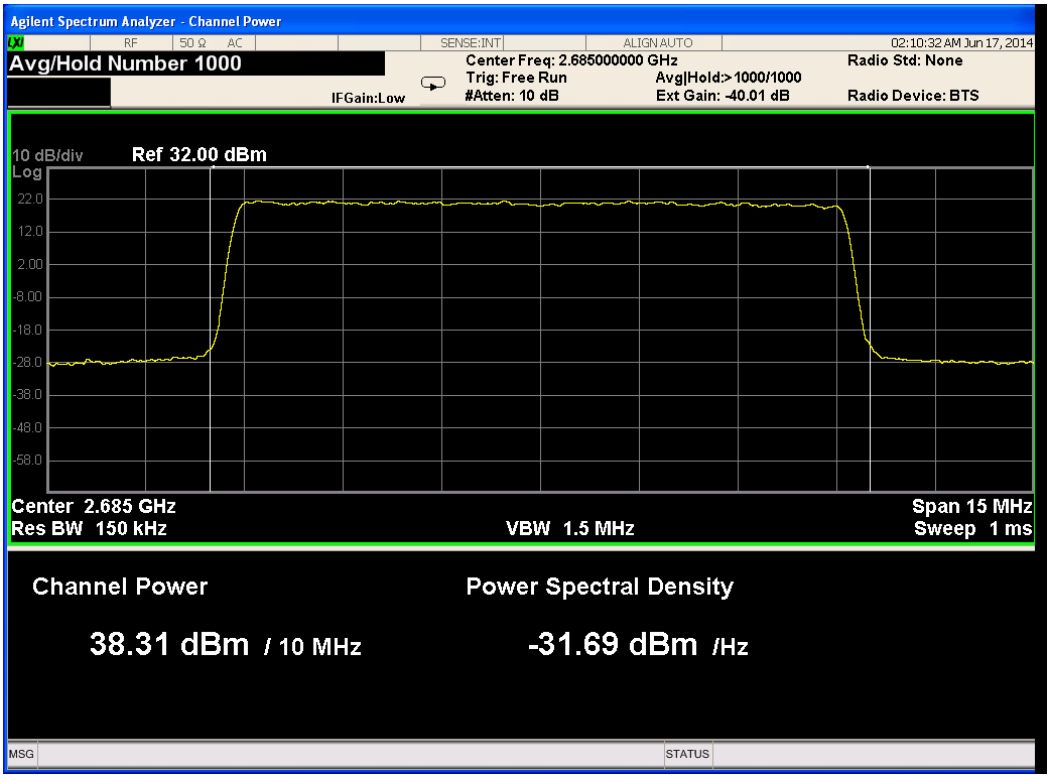


Figure 146.— 2685.00 MHz QPSK Port 4

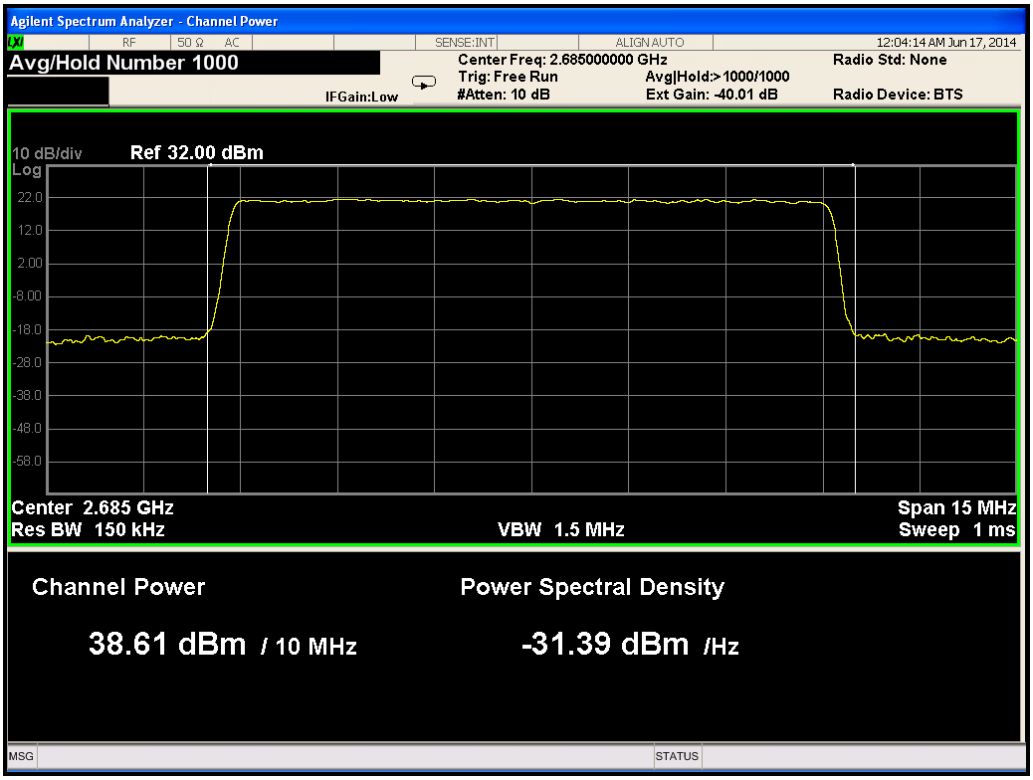


Figure 147.— 2685.00 MHz 16QAM Port 1

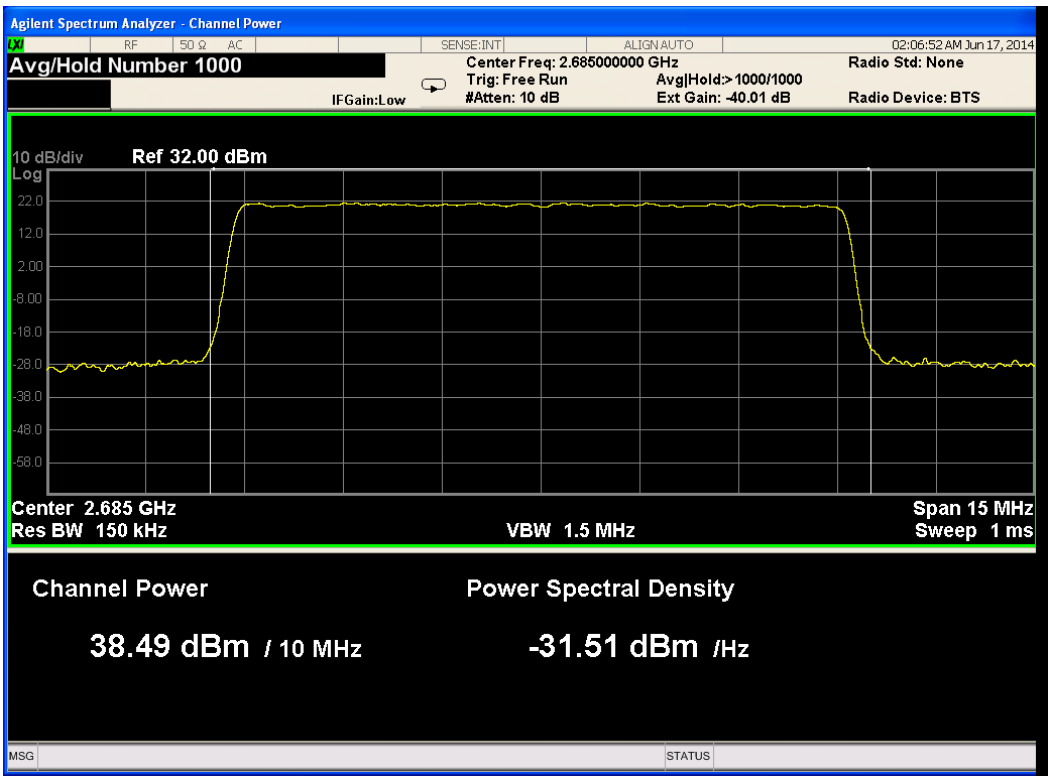


Figure 148.— 2685.00 MHz 16QAM Port 2

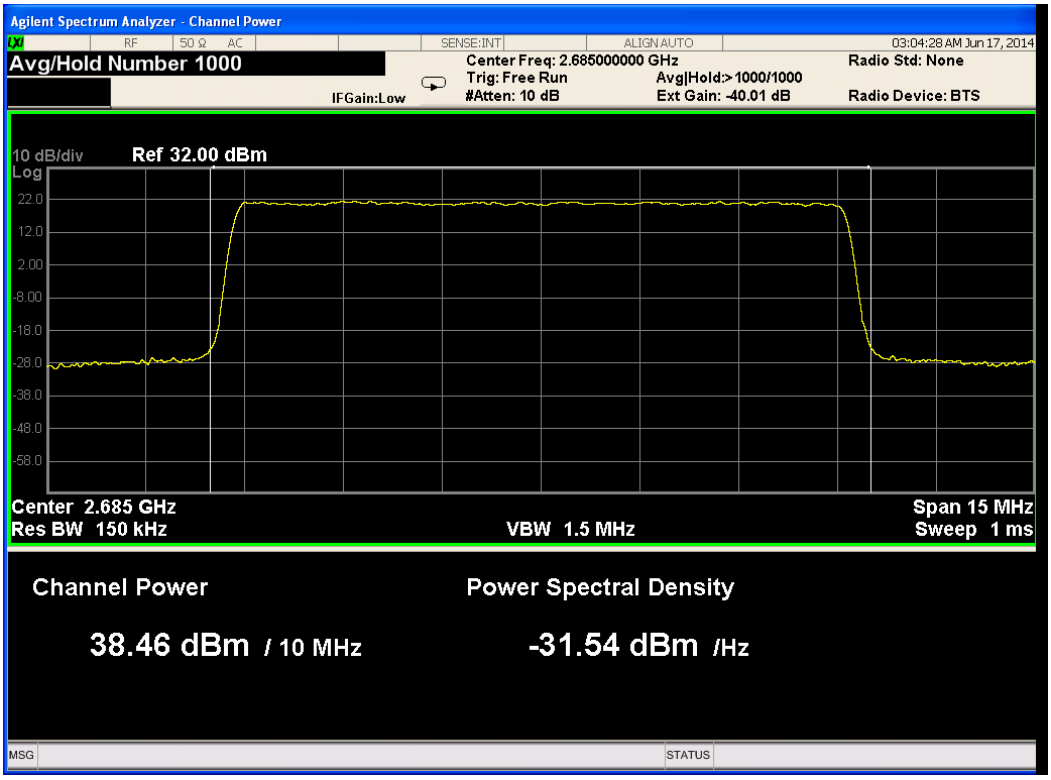


Figure 149.— 2685.00 MHz 16QAM Port 3

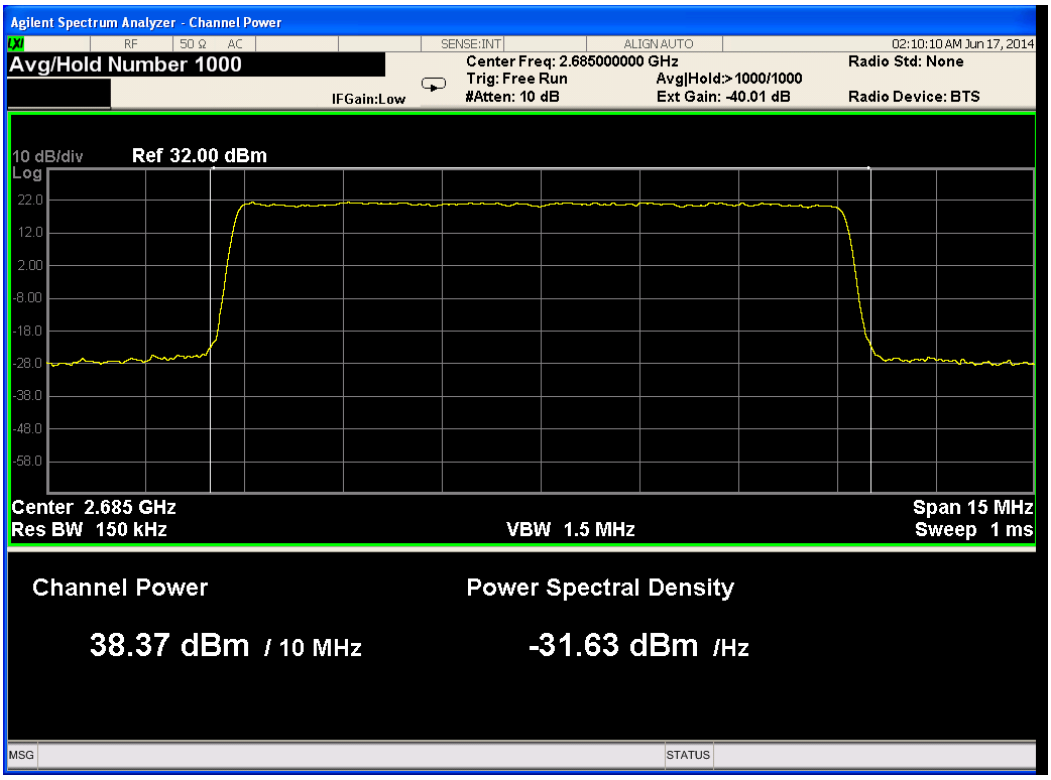


Figure 150.— 2685.00 MHz 16QAM Port 4

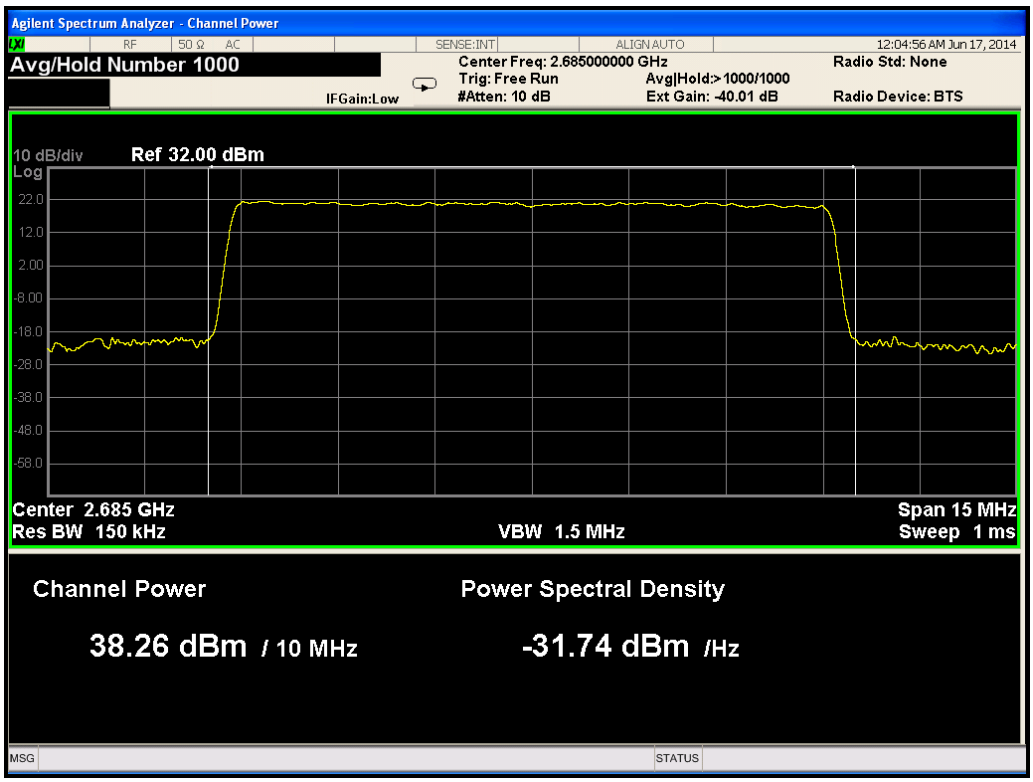


Figure 151.— 2685.00 MHz 64QAM Port 1

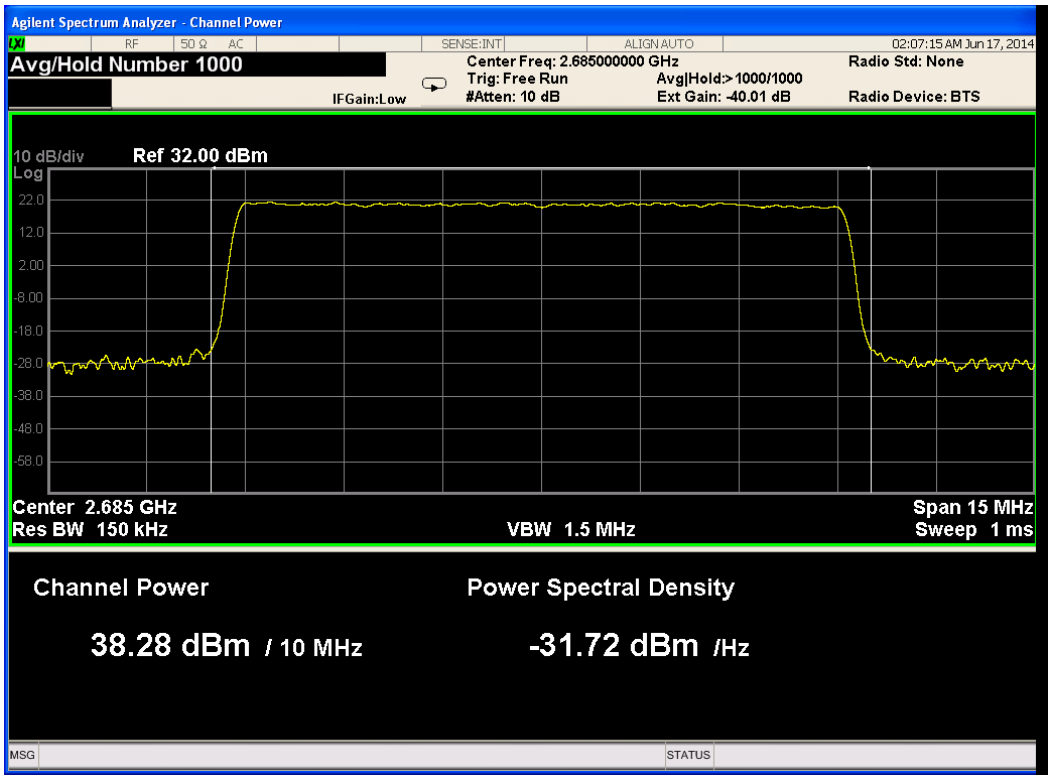


Figure 152.— 2685.00 MHz 64QAM Port 2

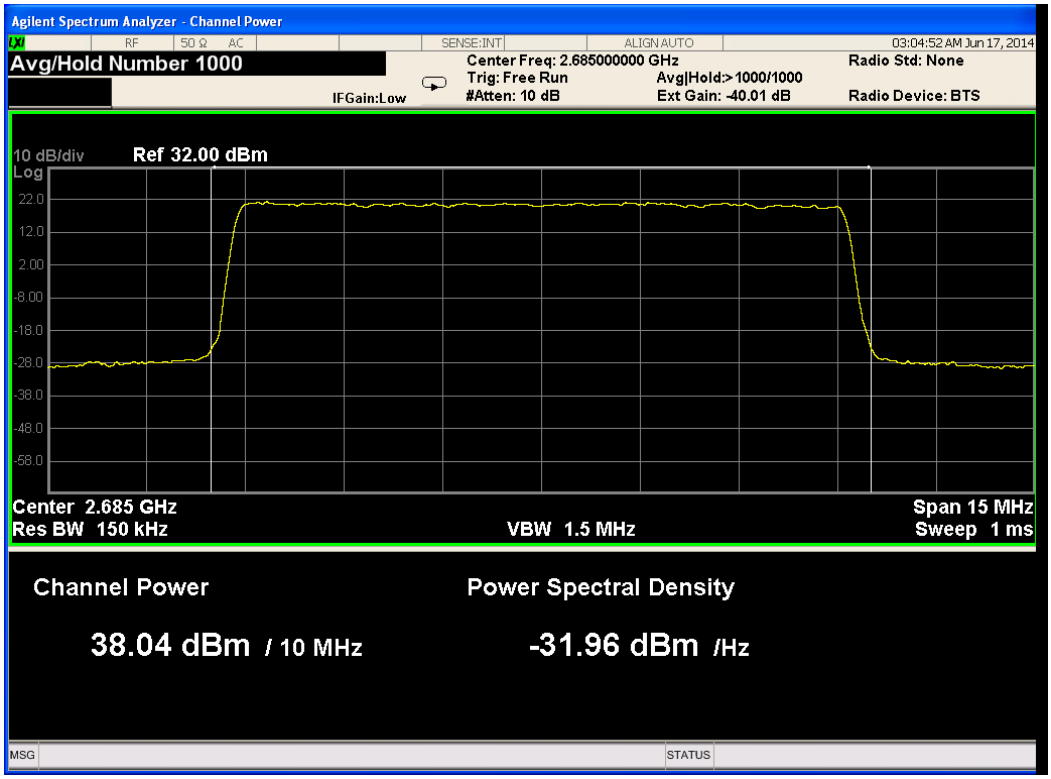


Figure 153.— 2685.00 MHz 64QAM Port 3

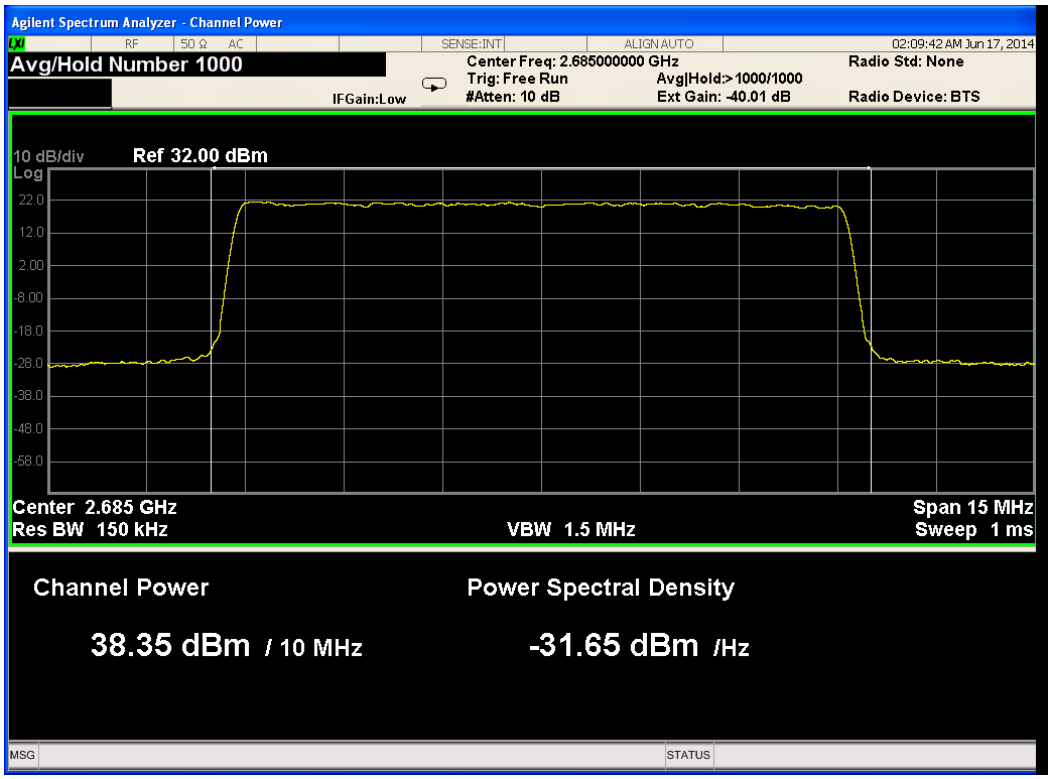


Figure 154.— 2685.00 MHz 64QAM Port 4

7.1 Test Equipment Used.

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 14 Test Equipment Used Maximum Spectral Density 10 MHz Bandwidth

8. Occupied Bandwidth 5 MHz Bandwidth

8.1 Test Specification

FCC Part 2, Section 1049

8.2 Test Procedure

The E.U.T. was set to the applicable test frequency with OFDMA modulations and 5 MHZ bandwidth in the 2498.5-2687.5MHz
The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB. The spectrum analyzer was set to proper resolution B.W.
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limit, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.
Occupied bandwidth measured was repeated in the input terminal of the E.U.T.

8.3 Test Results

Operating Frequency (MHz)	Modulation	Reading (26dBc) (MHz)
2498.50	QPSK	4.5889
	16QAM	4.5892
	64QAM	4.5898
2593.00	QPSK	4.5930
	16QAM	4.5881
	64QAM	4.5885
2687.50	QPSK	4.5915
	16QAM	4.5887
	64QAM	4.5905

Table 15 Occupied Bandwidth Test results Table 5 MHz Bandwidth

See additional information in Figure 155 to Figure 163.

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

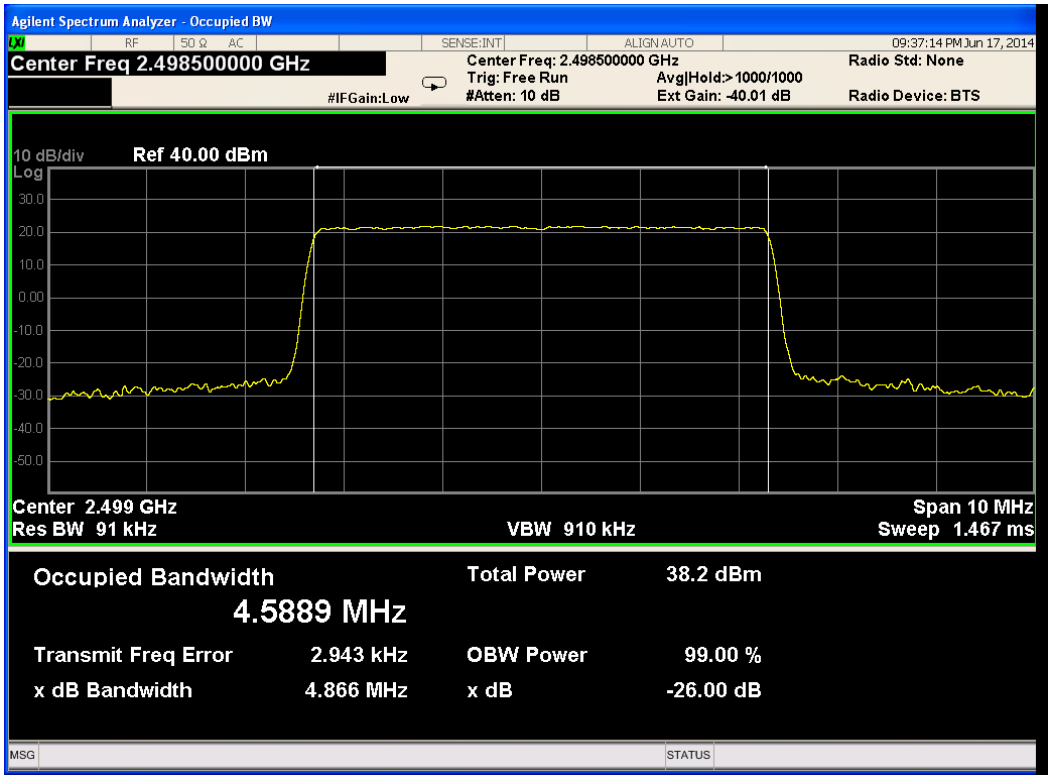


Figure 155.— 2498.50 MHz QPSK

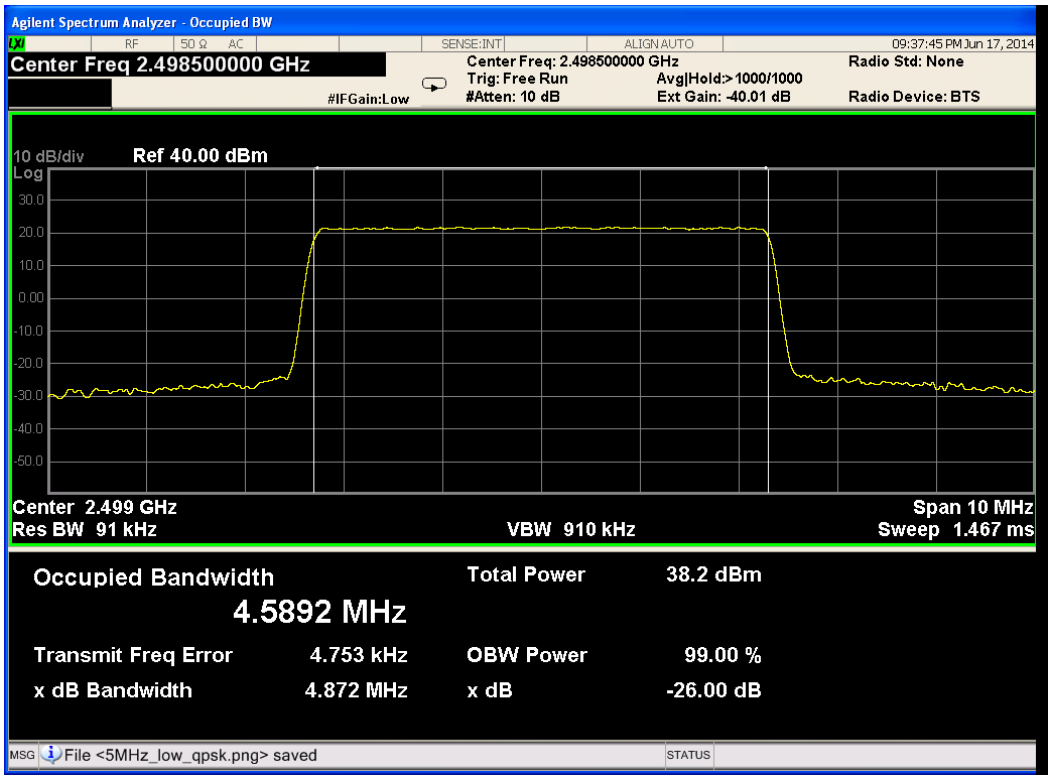


Figure 156.— 2498.50 MHz 16QAM

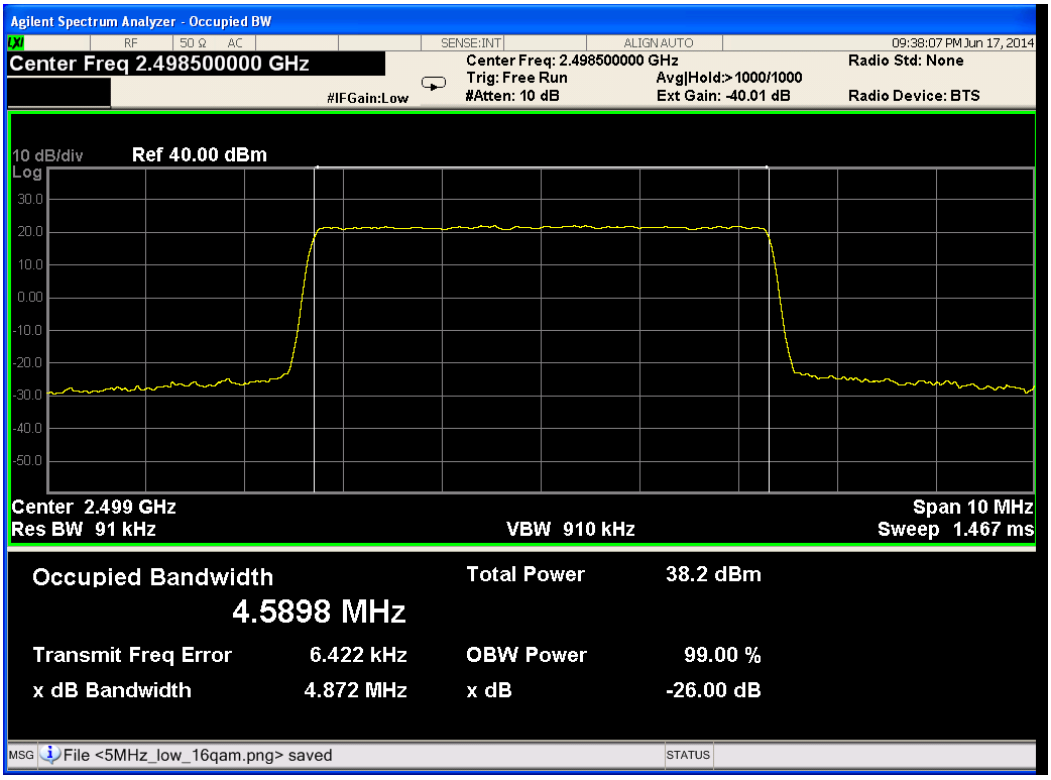


Figure 157.— 2498.50 MHz 64 QAM

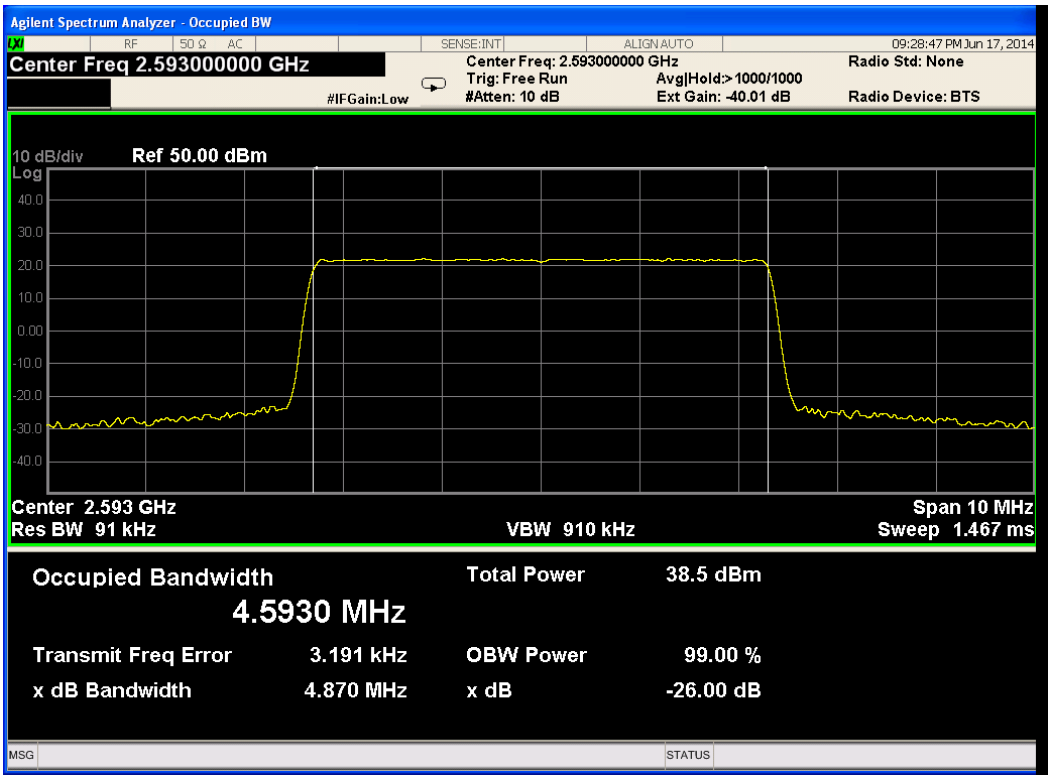


Figure 158.— 2593.00 MHz QPSK

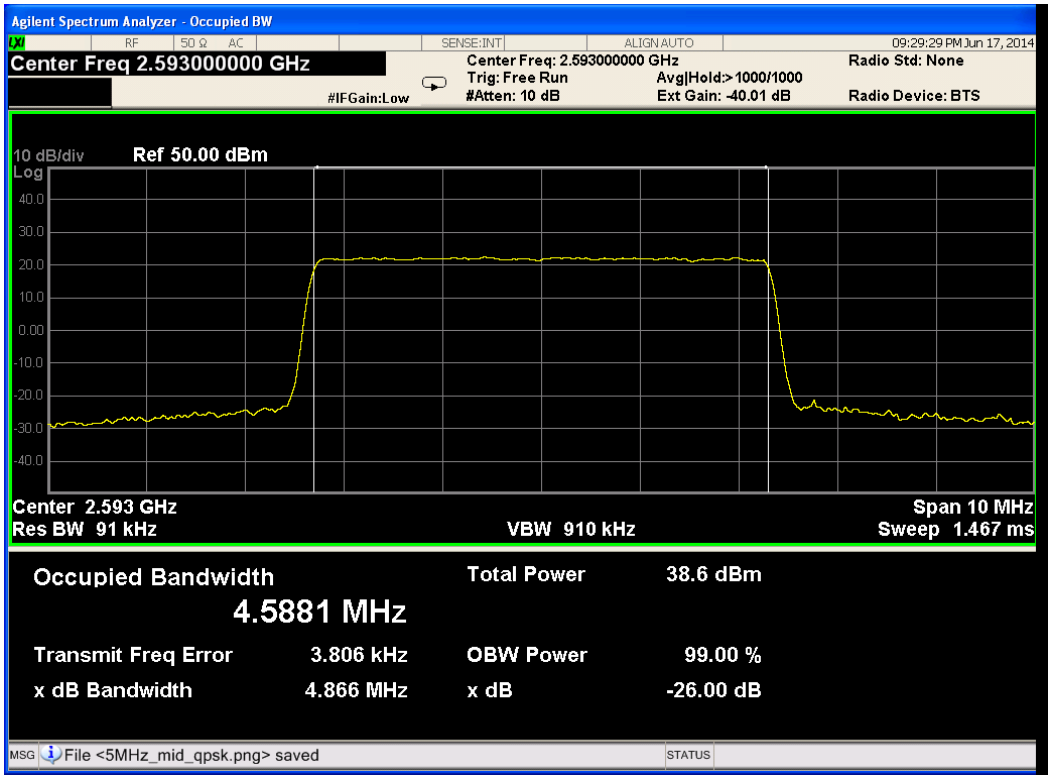


Figure 159.— 2593.00 MHz 16QAM

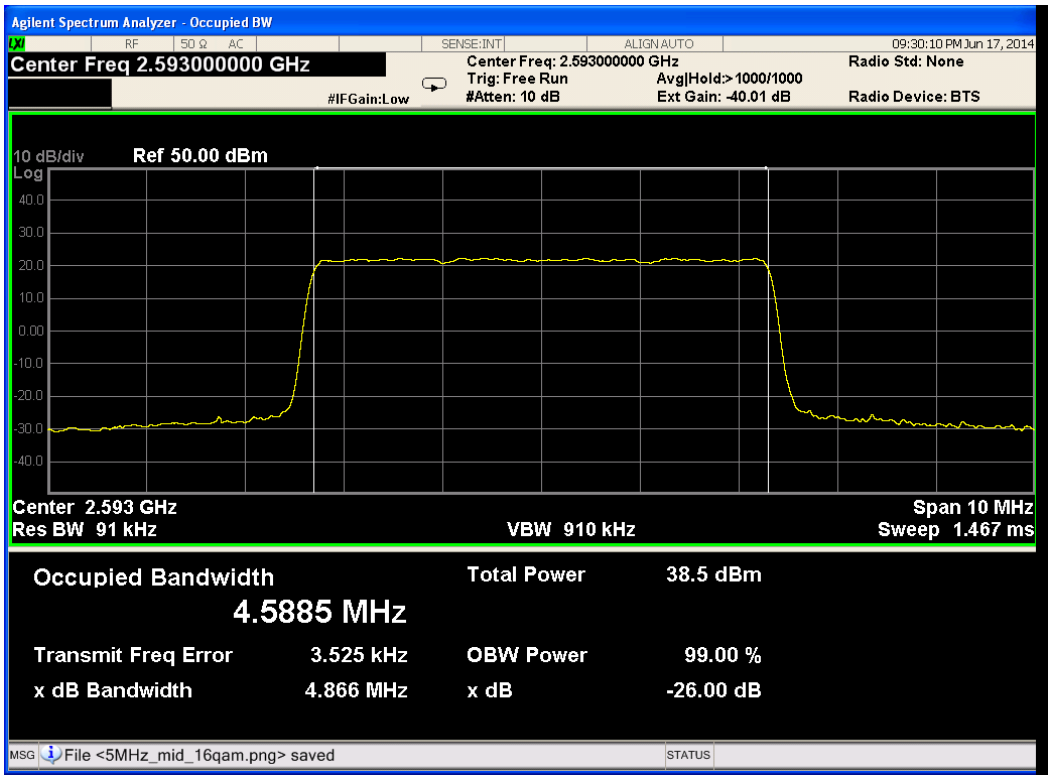


Figure 160.— 2593.00 MHz 64 QAM

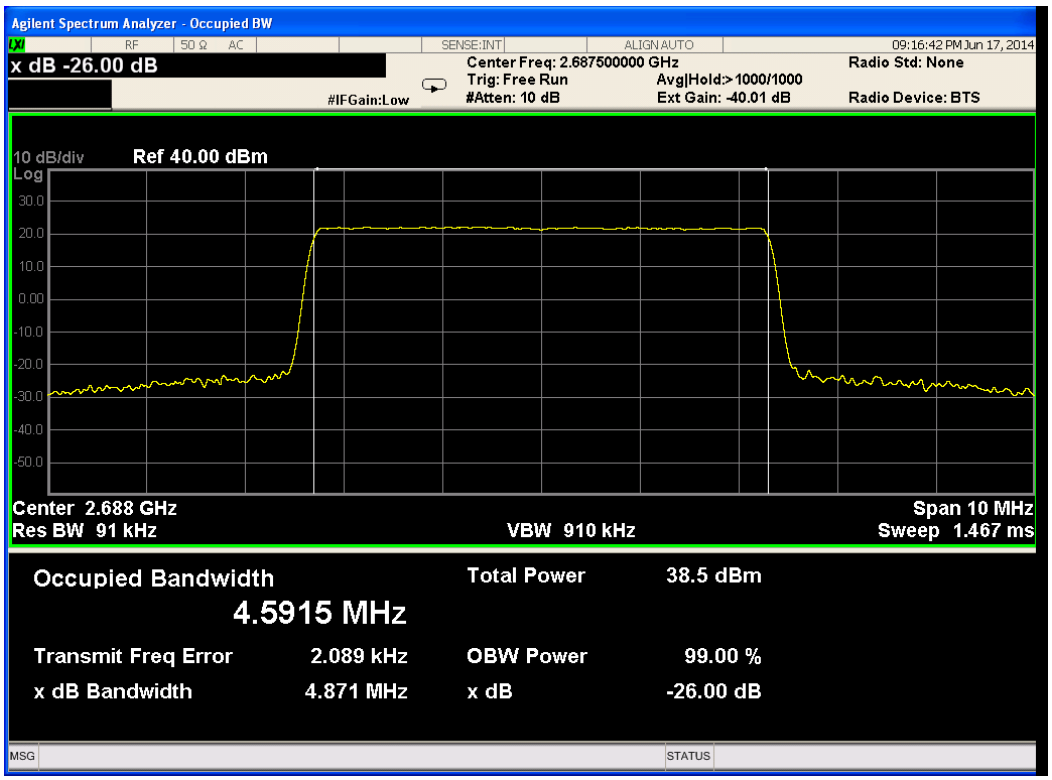


Figure 161.— 2687.50 MHz QPSK

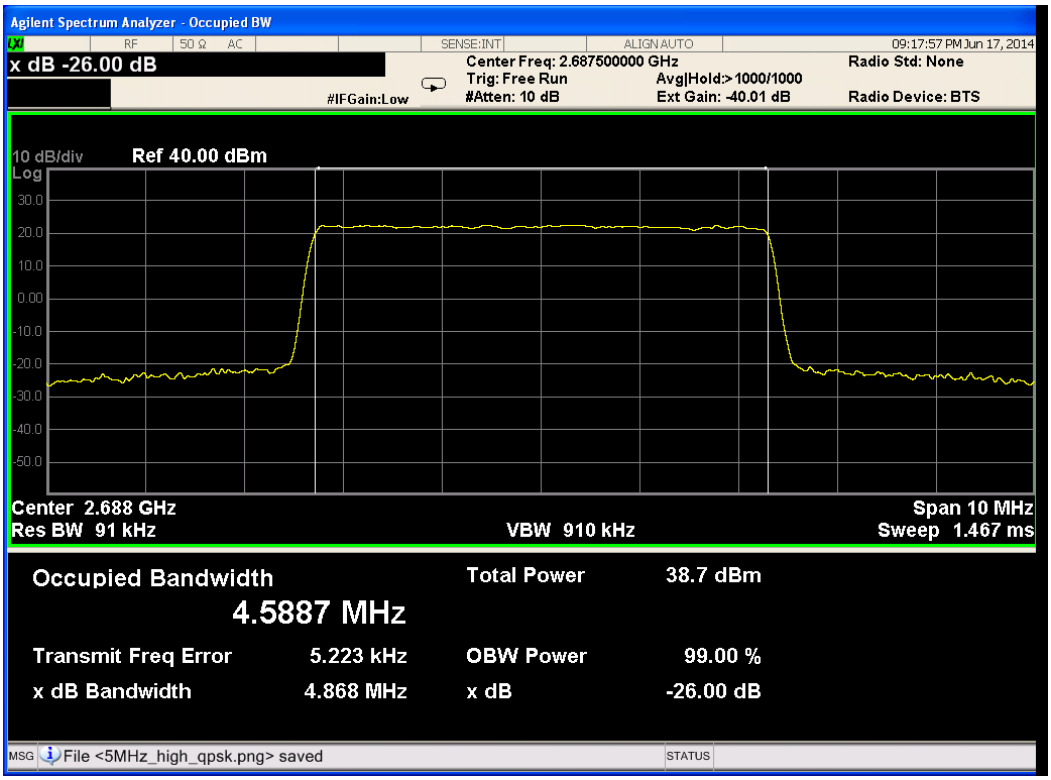


Figure 162.— 2687.50 MHz 16 QAM

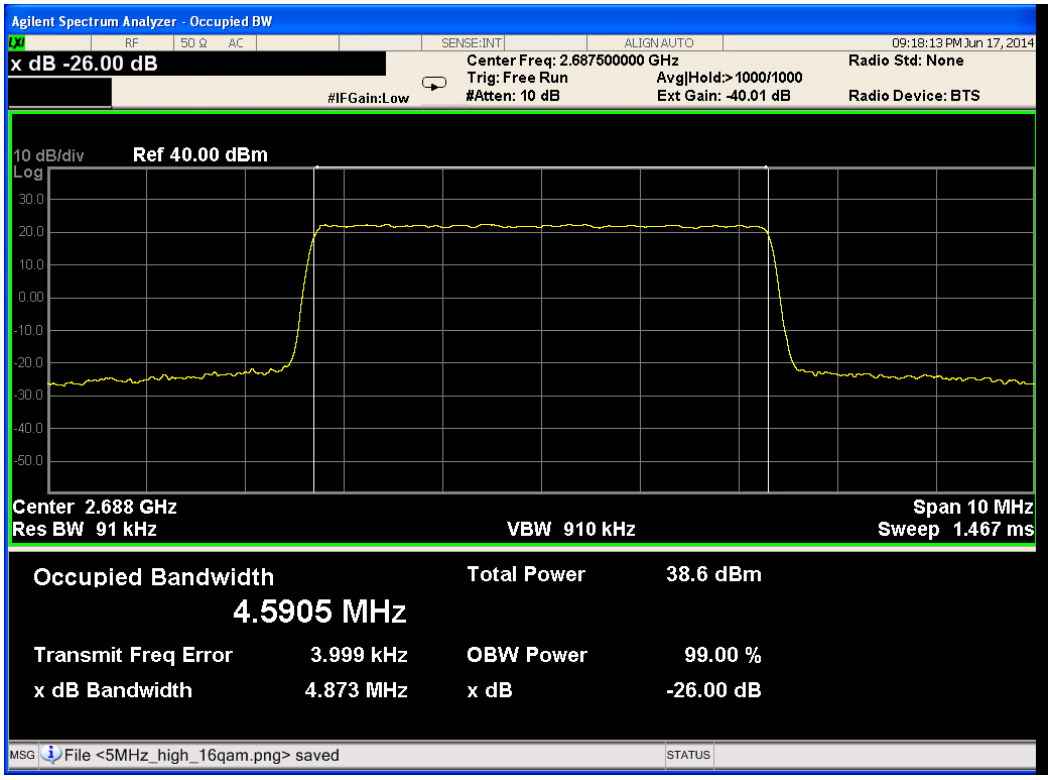


Figure 163.— 2687.50 MHz 64 QAM

8.4 Test Equipment Used.

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 16 Test Equipment Used Occupied Bandwidth 5 MHz Bandwidth

9. Occupied Bandwidth 10 MHz Bandwidth

9.1 Test Specification

FCC Part 2, Section 1049

9.2 Test Procedure

The E.U.T. was set to the applicable test frequency with OFDMA modulations and 10MHZ bandwidth in the 2501.0-2685.0MHz
The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB. The spectrum analyzer was set to proper resolution B.W.
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limit, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.
Occupied bandwidth measured was repeated in the input terminal of the E.U.T.

9.3 Test Results

Operating Frequency (MHz)	Modulation	Reading (26dBc) (MHz)
2501.00	QPSK	9.1463
	16QAM	9.1407
	64QAM	9.1427
2696.00	QPSK	9.1521
	16QAM	9.1482
	64QAM	9.1459
2685.00	QPSK	9.1420
	16QAM	9.1445
	64QAM	9.1397

Table 17 Occupied Bandwidth Test Results Table 10 MHz Bandwidth

See additional information in Figure 164 to Figure 172.

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

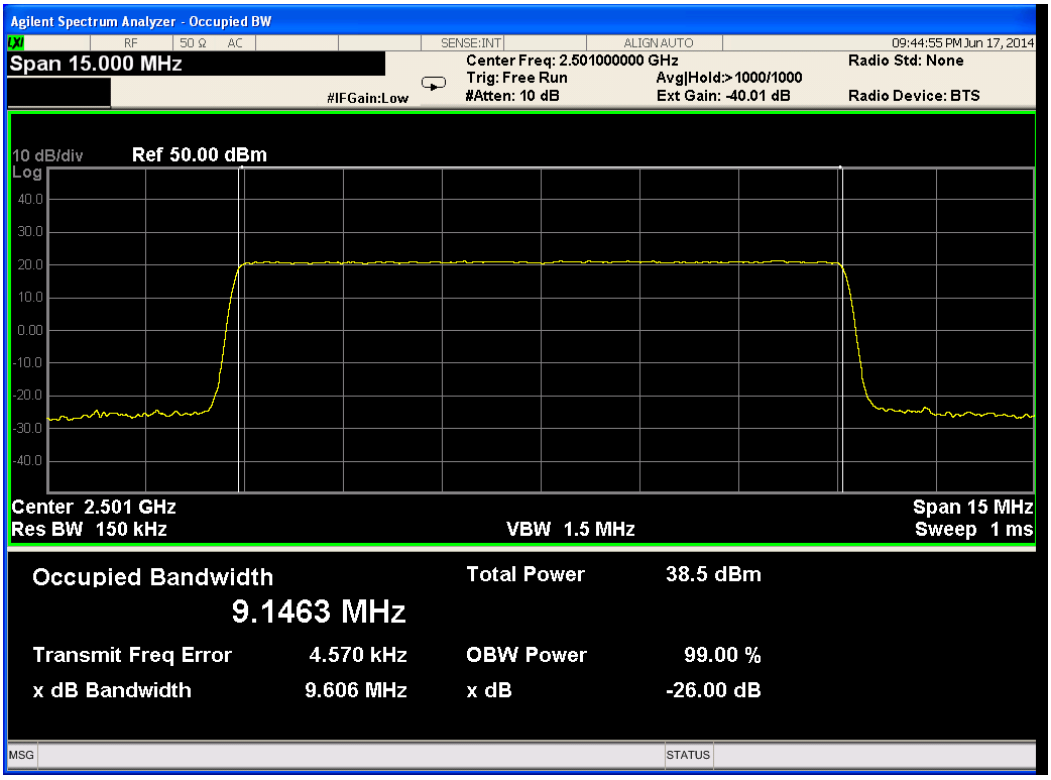


Figure 164.— 2501.00 MHz QPSK

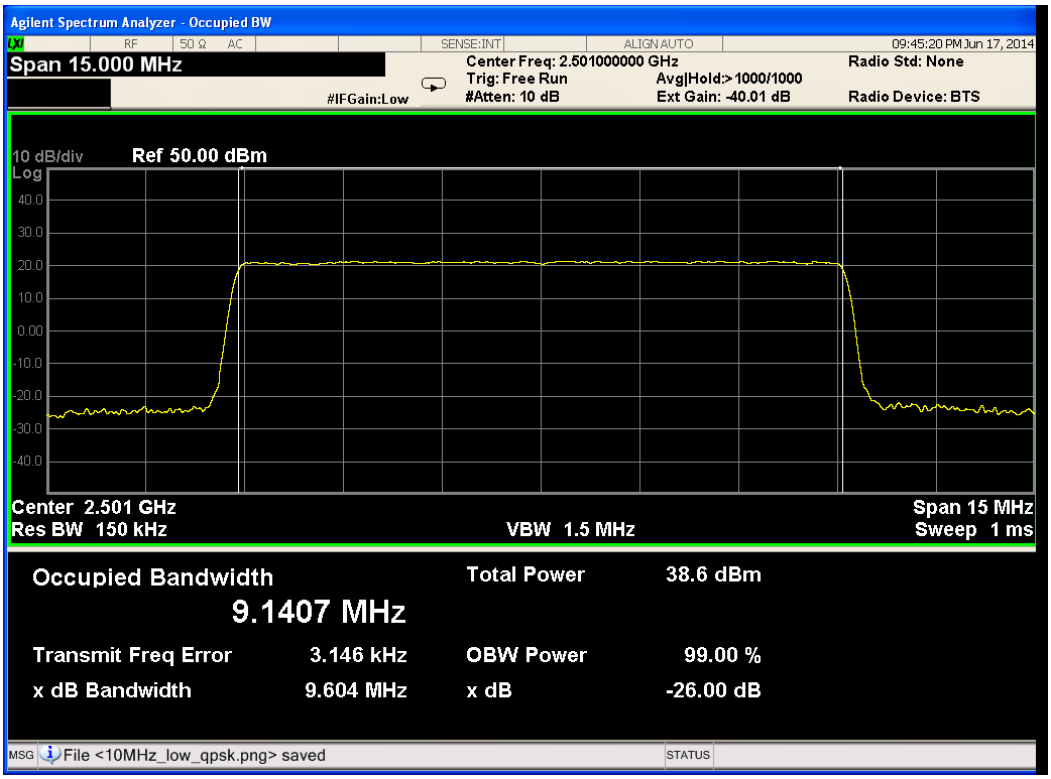


Figure 165.— 2501.00 MHz 16QAM

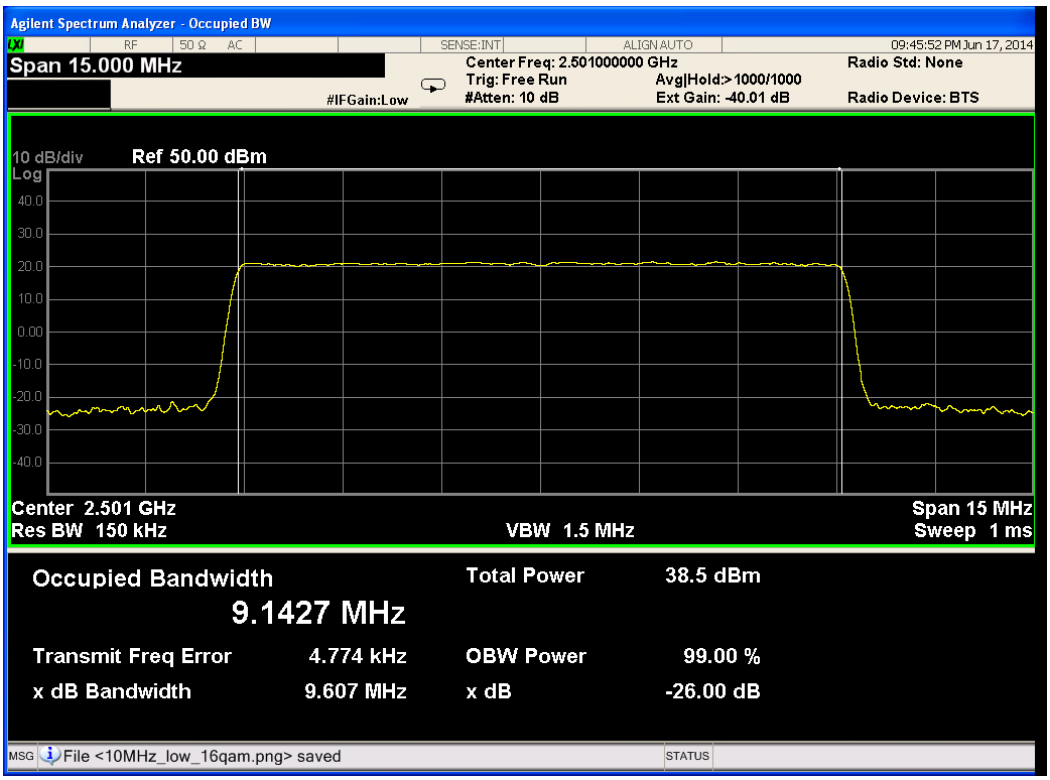


Figure 166.— 2501.00 MHz 64 QAM

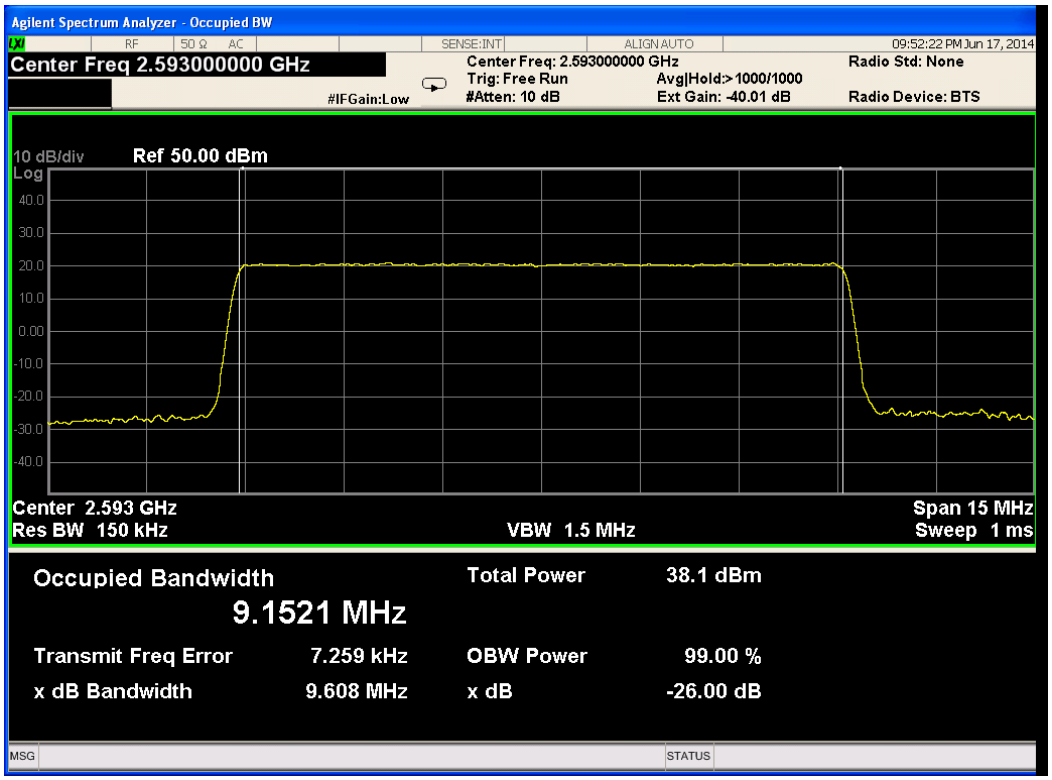


Figure 167.— 2593.00 MHz QPSK

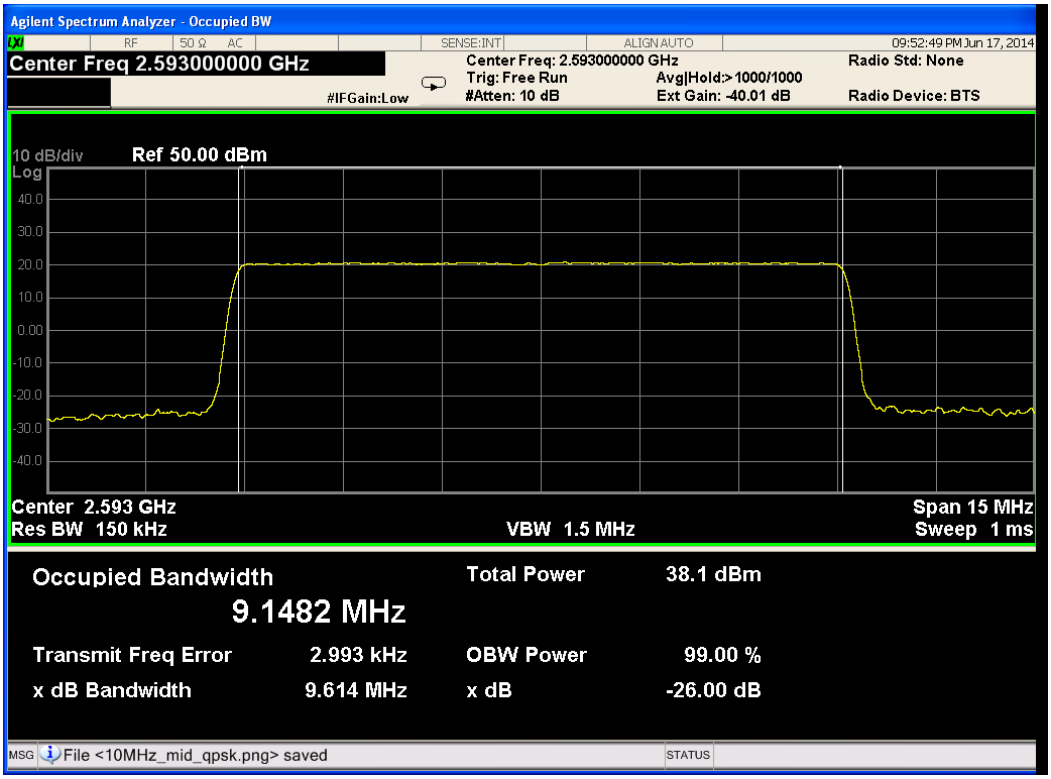


Figure 168.— 2593.00 MHz 16QAM

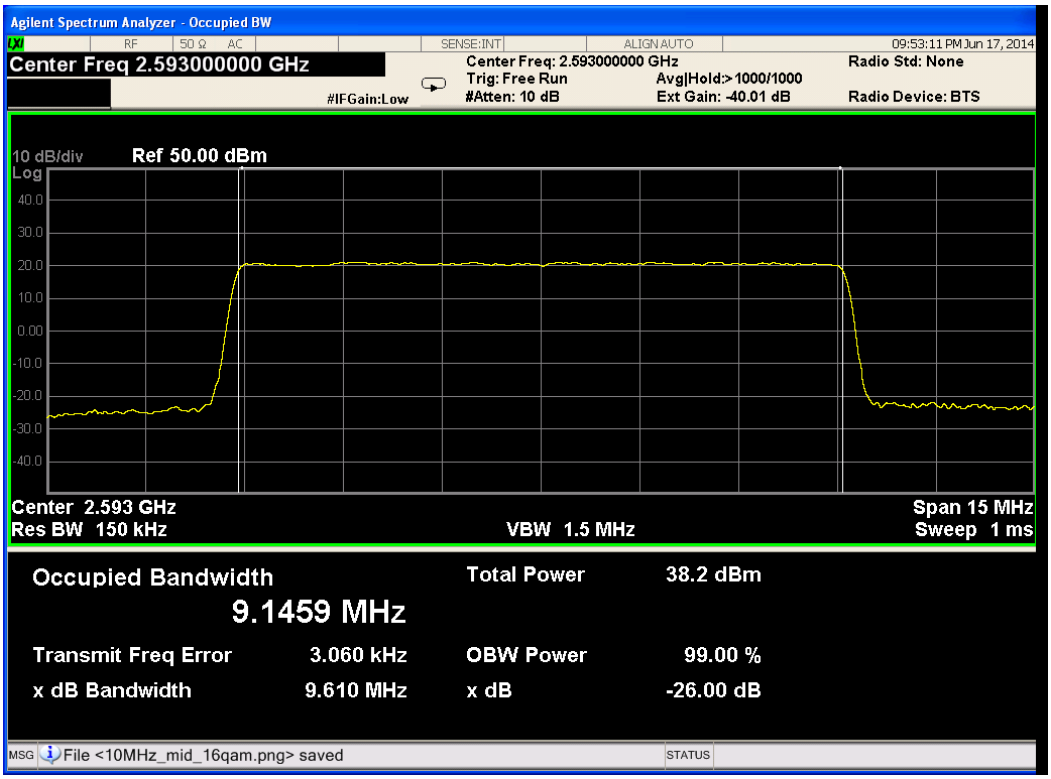


Figure 169.— 2593.00 MHz 64 QAM

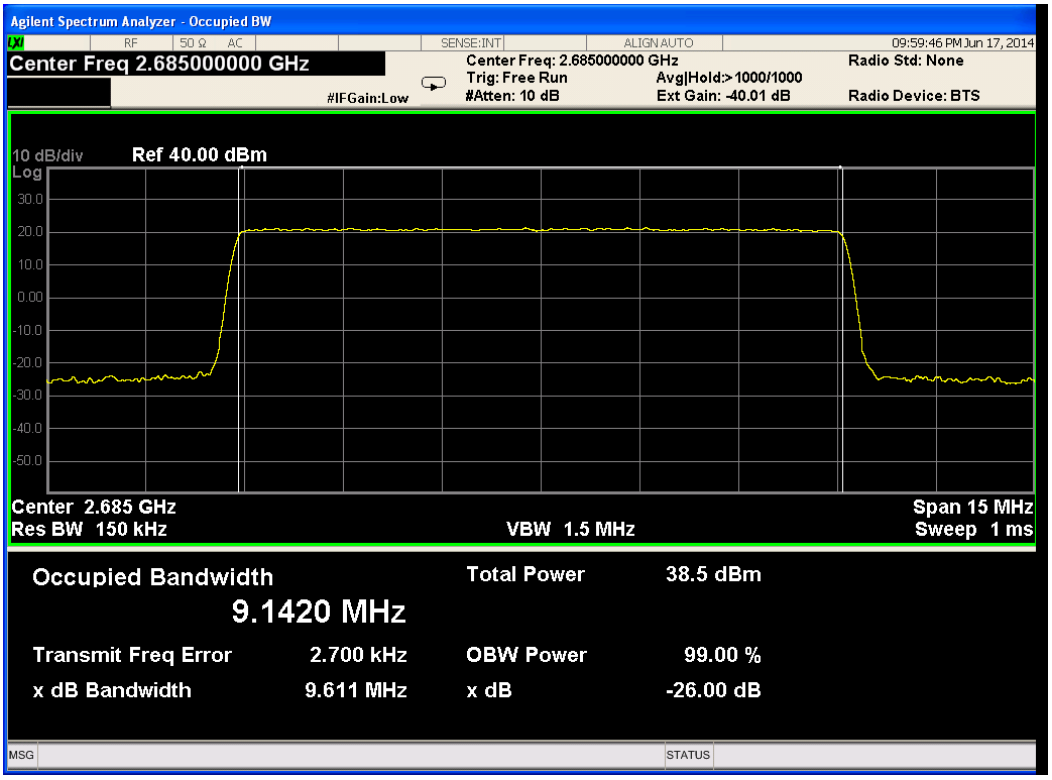


Figure 170.— 2685.00 MHz QPSK

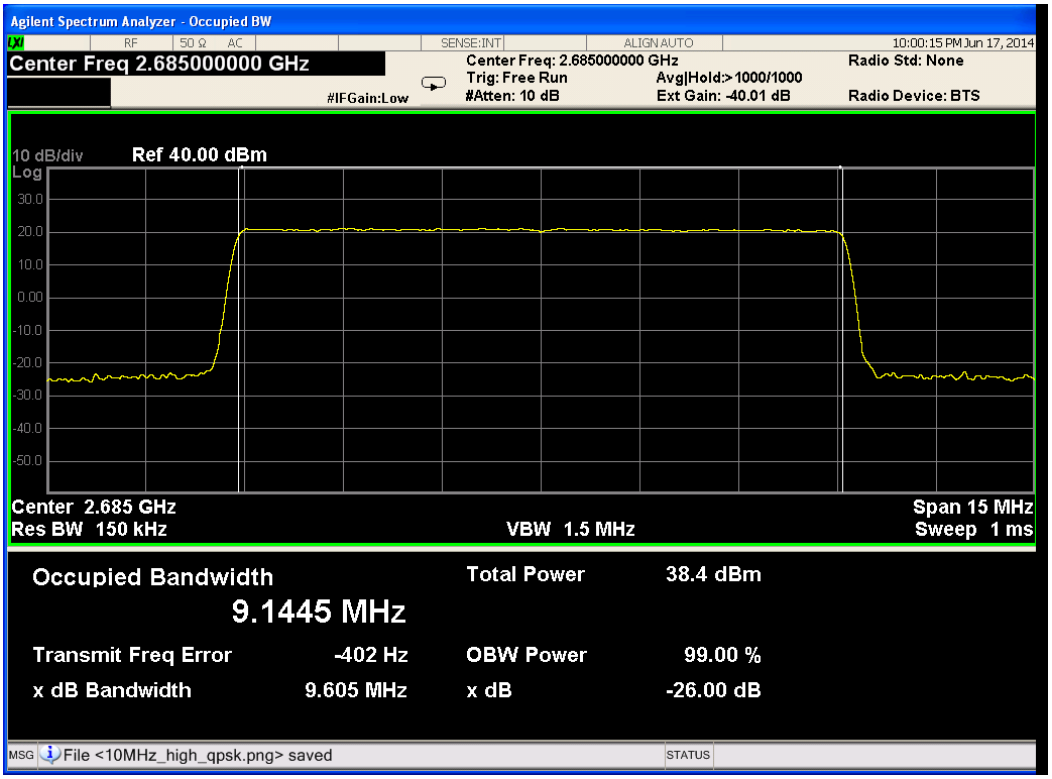


Figure 171.— 2685.00 MHz 16 QAM

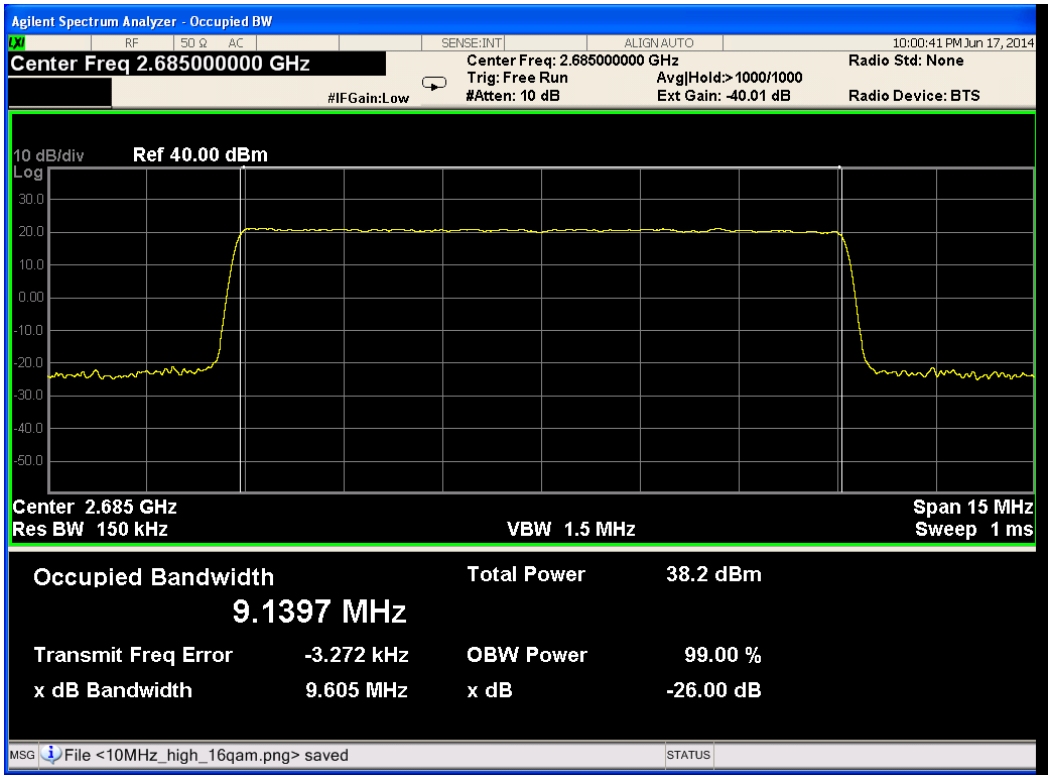


Figure 172.— 2685.00 MHz 64 QAM

9.4 Test Equipment Used.

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 18 Test Equipment Used Occupied Bandwidth 10 MHz Bandwidth

10. Out of Band Emissions At Antenna Terminals 5 MHz Bandwidth

10.1 Test Specification

FCC Part 27, Sub-part C, Section 27.53 (m)(2)

10.2 Test procedure

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at 43 + 10 log (P) dB. The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB.

10.3 Test Results

See plots in Figure 173 to Figure 181.

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

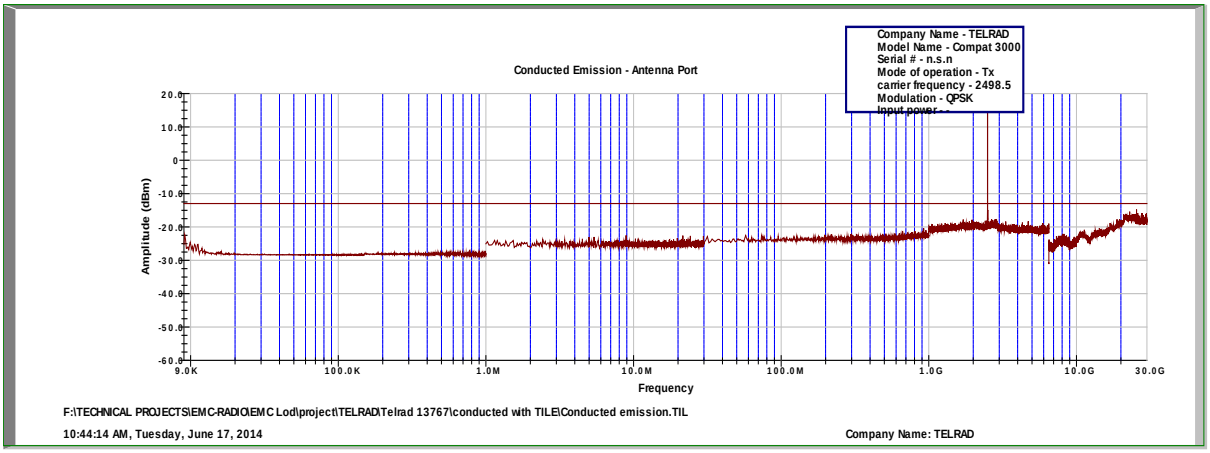


Figure 173.— 2498.50 MHz QPSK

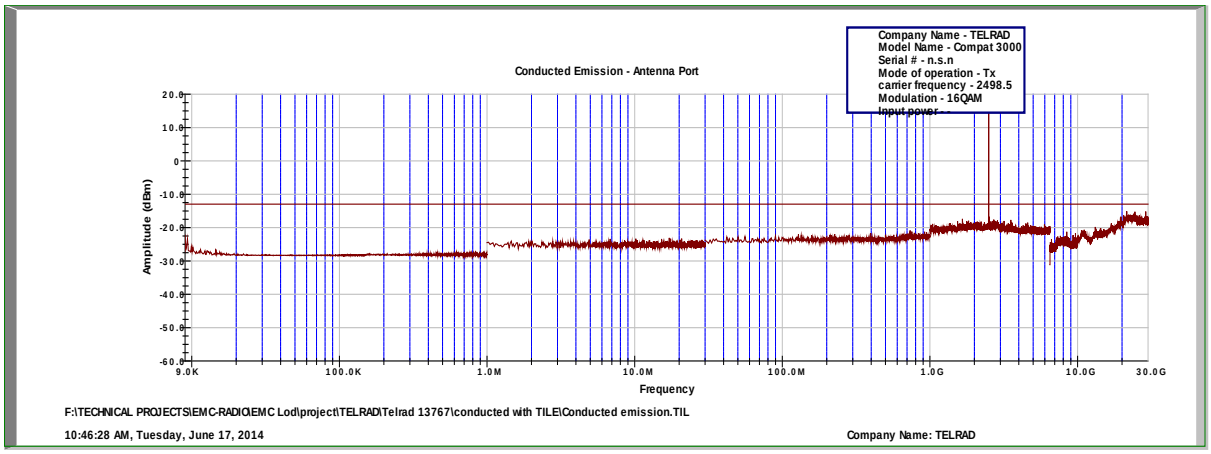


Figure 174.— 2498.50 MHz 16QAM

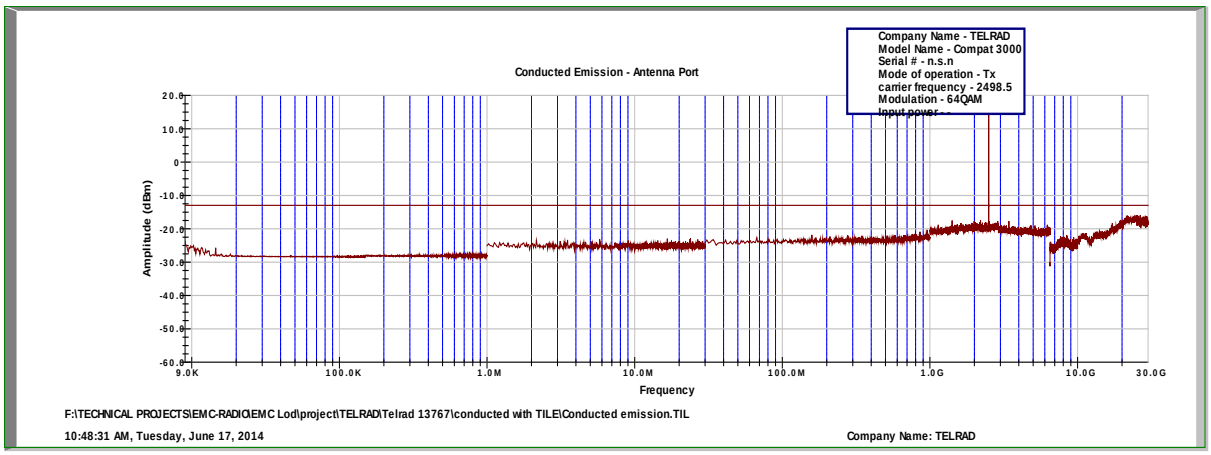


Figure 175.— 2498.50 MHz 64QAM

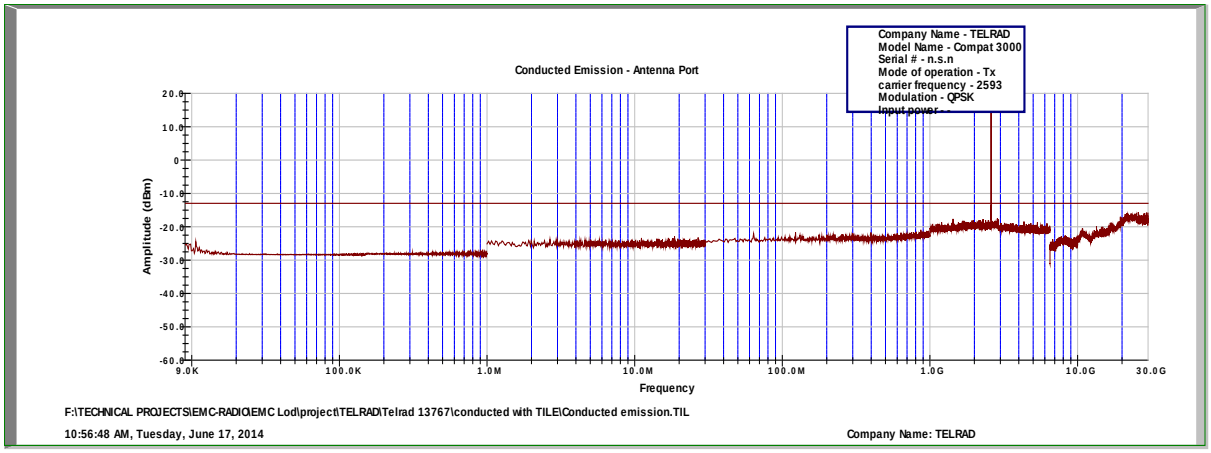


Figure 176.— 2593.00 MHz QPSK

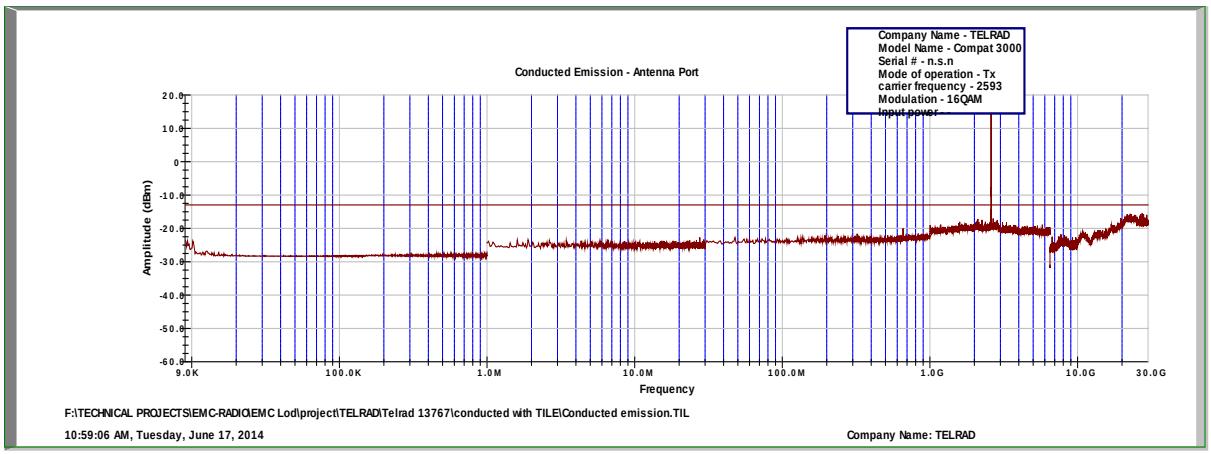


Figure 177.— 2593.00 MHz 16QAM

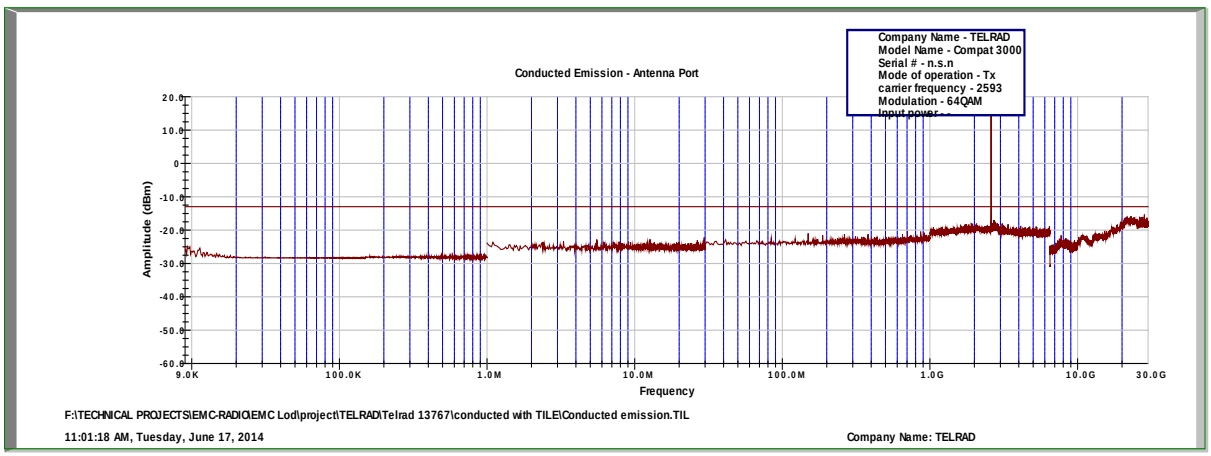


Figure 178.— 2593.00 MHz 64QAM

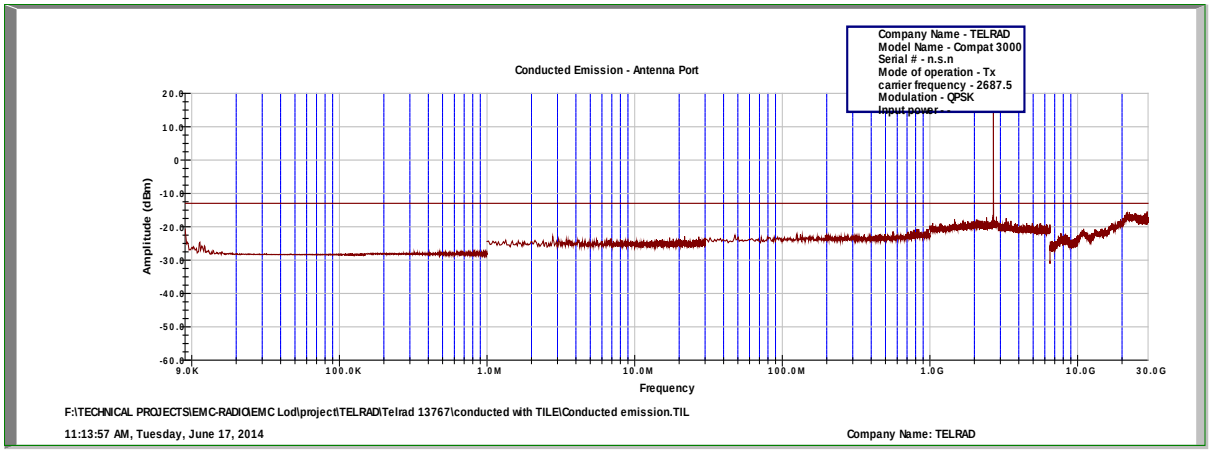


Figure 179.— 2687.50 MHz QPSK

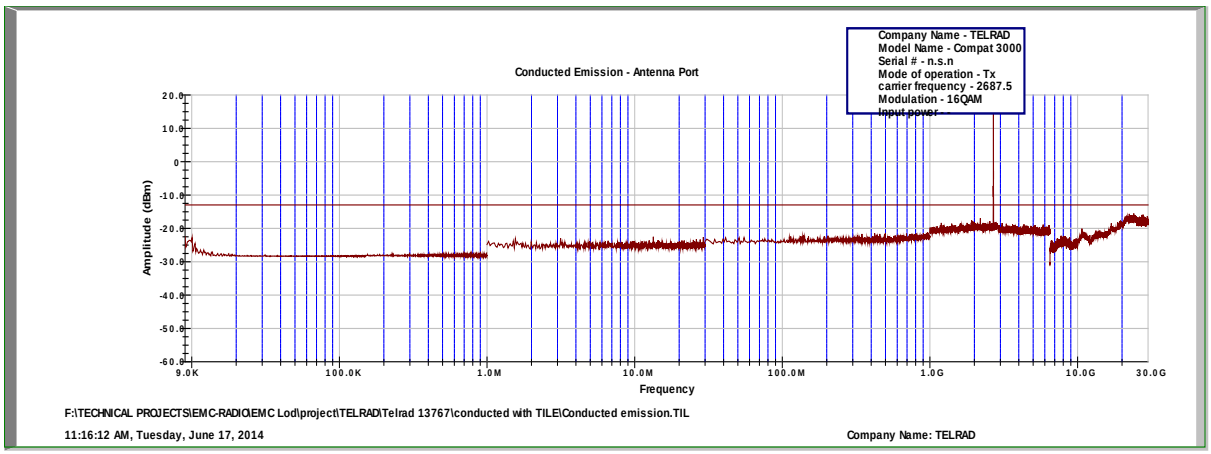


Figure 180.— 2687.50 MHz 16QAM

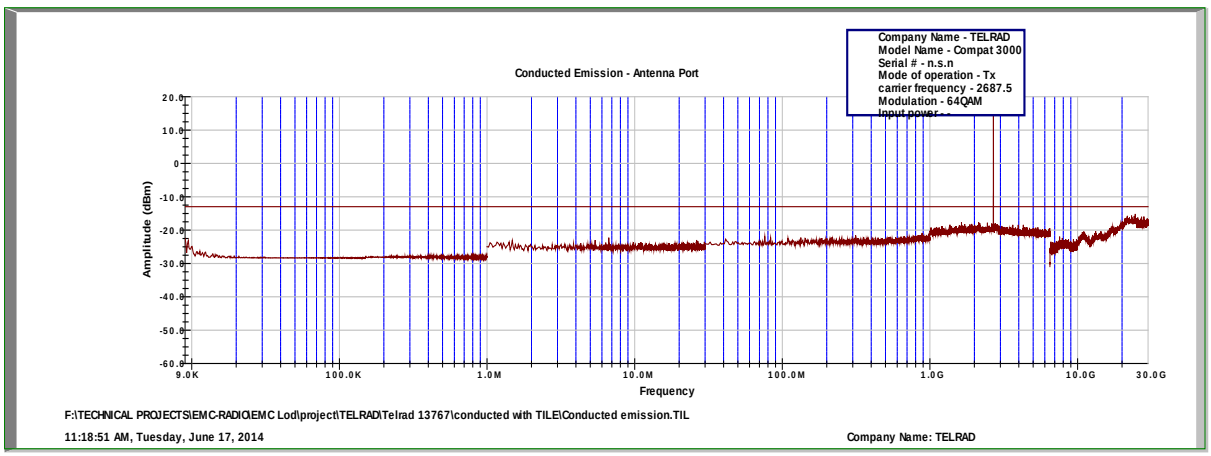


Figure 181.— 2687.50 MHz 64QAM

10.4 Test Equipment Used.

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 19 Test Equipment Used Out of Band Emissions At antenna Terminals 5 MHz Bandwidth

11. Out of Band Emissions at Antenna Terminals 10 MHz Bandwidth

11.1 Test Specification

FCC Part 27, Sub-part C, Section 27.53 (m)(2)

11.2 Test procedure

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at 43 + 10 log (P) dB. The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block. Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB.

11.3 Test Results

See plots in Figure 182 to Figure 190.

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

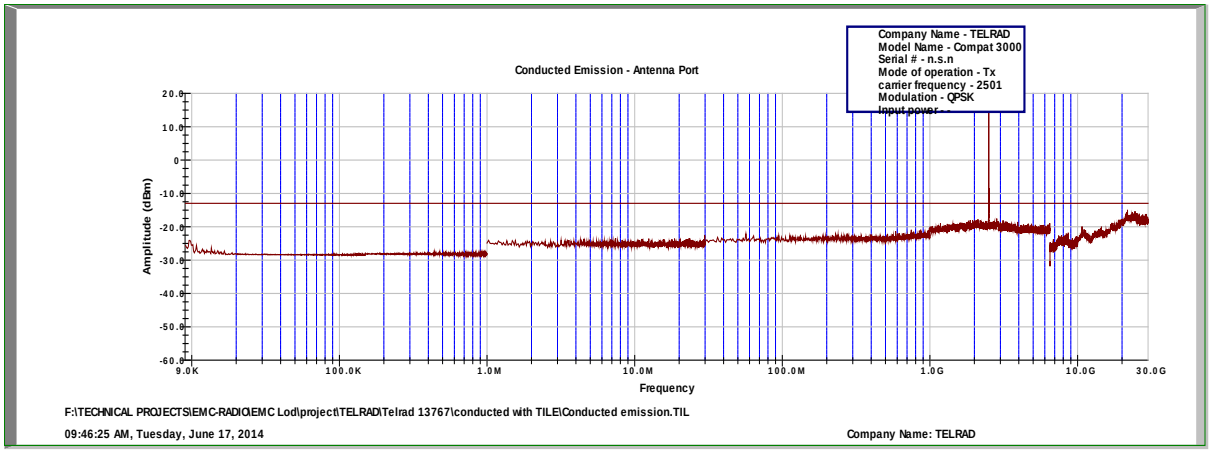


Figure 182.— 2501.00 MHz QPSK

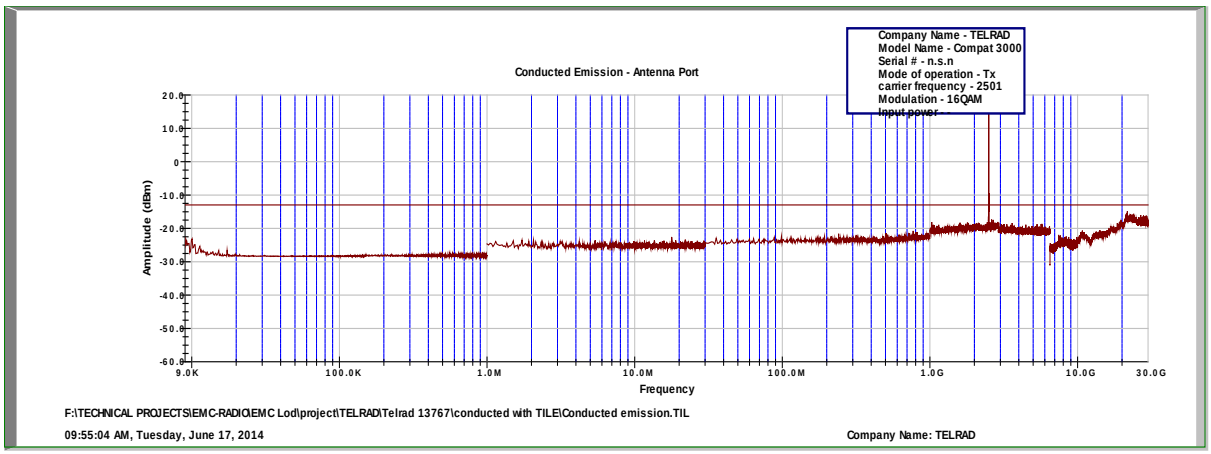


Figure 183.— 2501.00 MHz 16QAM

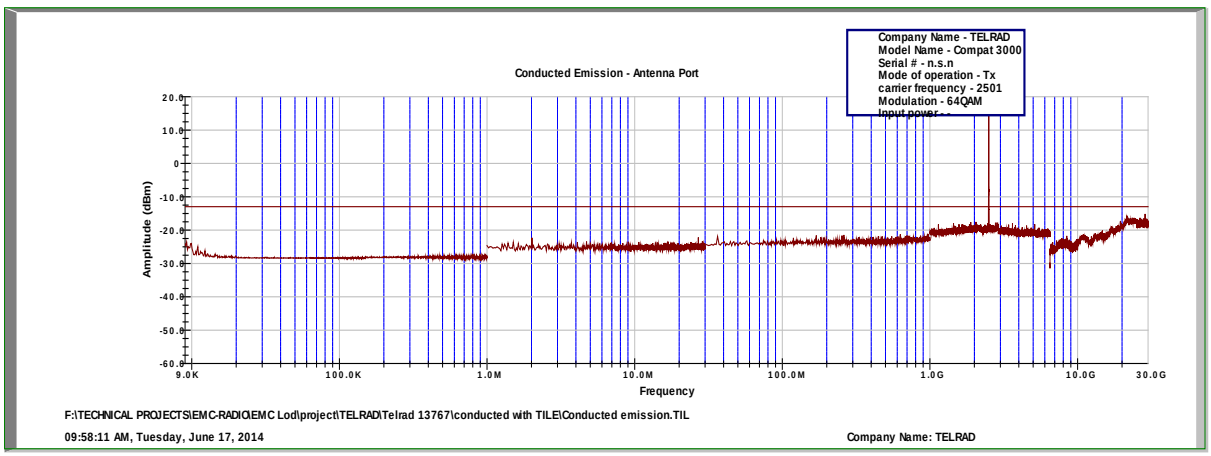


Figure 184.— 2501.00 MHz 64QAM

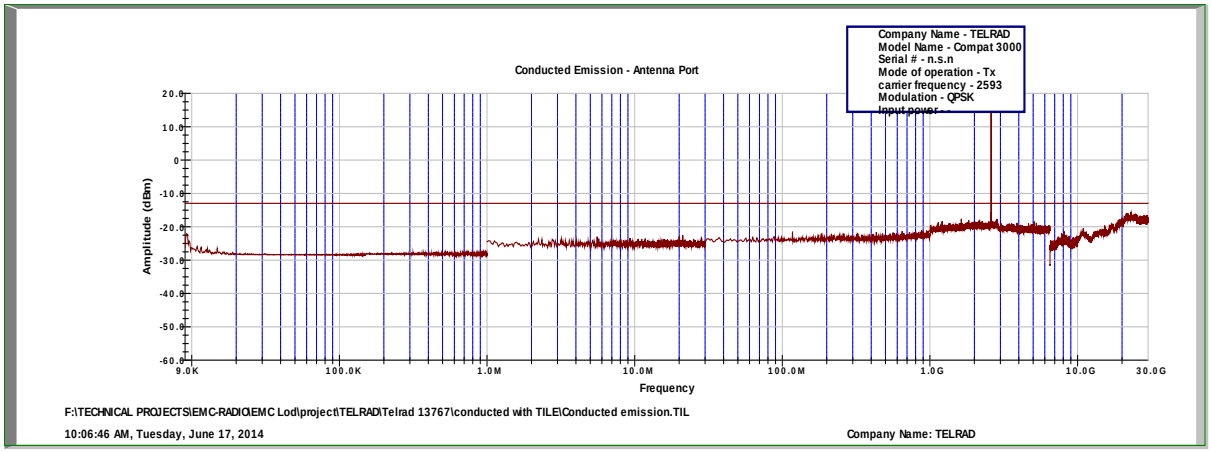


Figure 185.— 2593.00 MHz QPSK

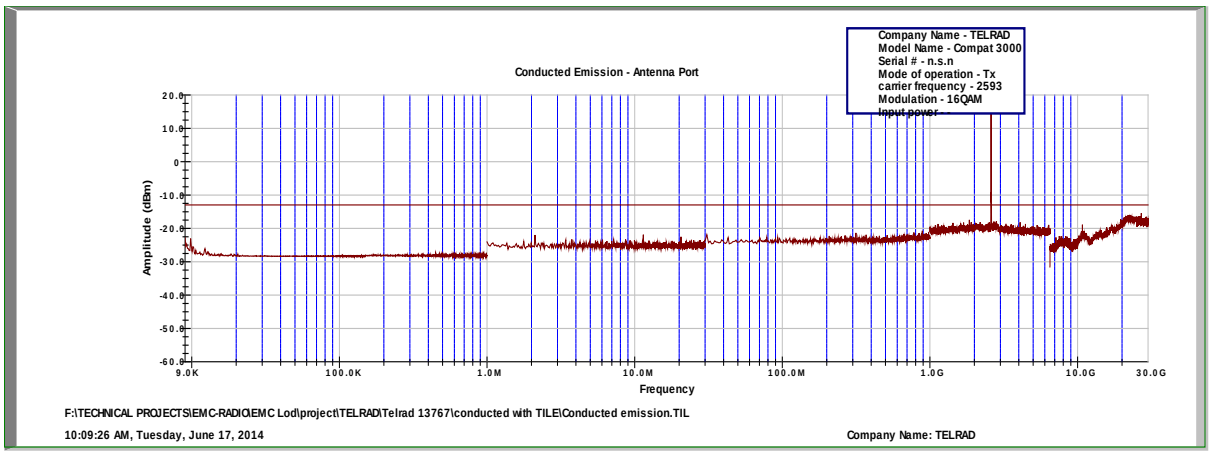


Figure 186.— 2593.00 MHz 16QAM

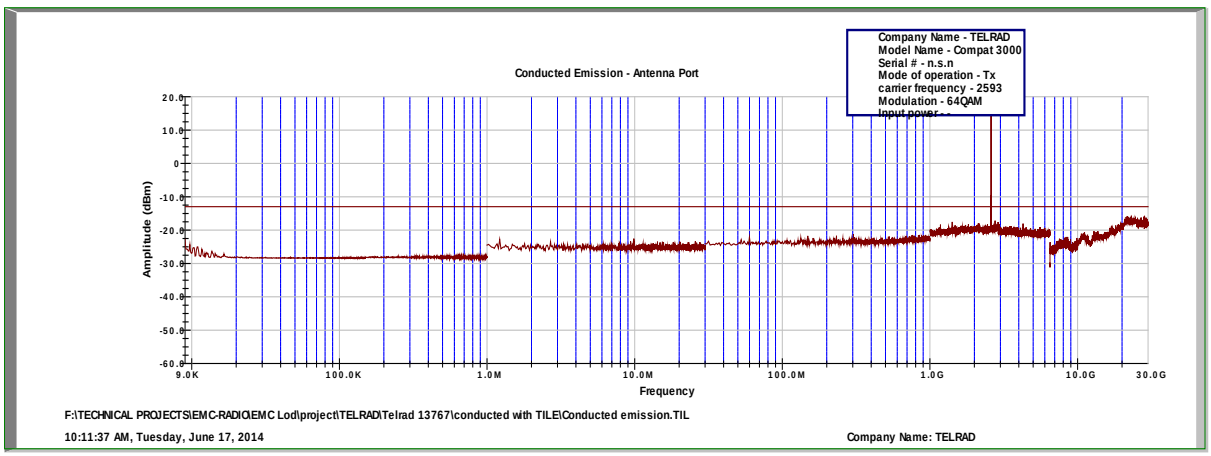


Figure 187.— 2593.00 MHz 64QAM

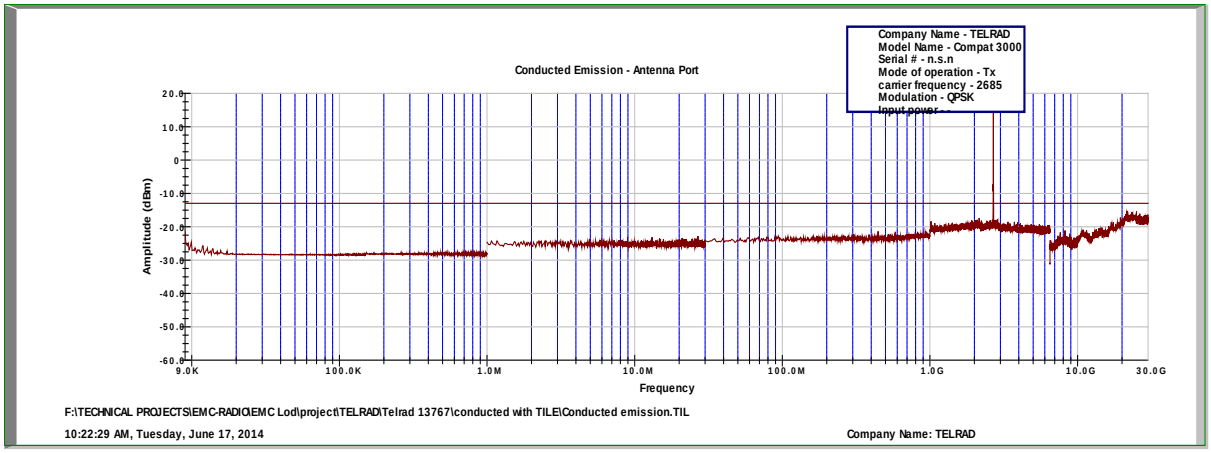


Figure 188.— 2685.00 MHz QPSK

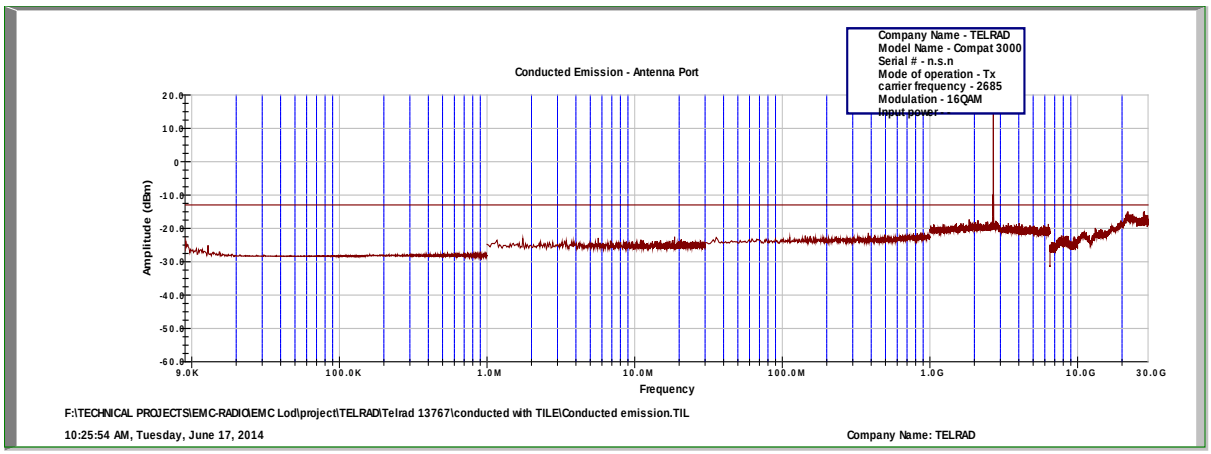


Figure 189.— 2685.00 MHz 16QAM

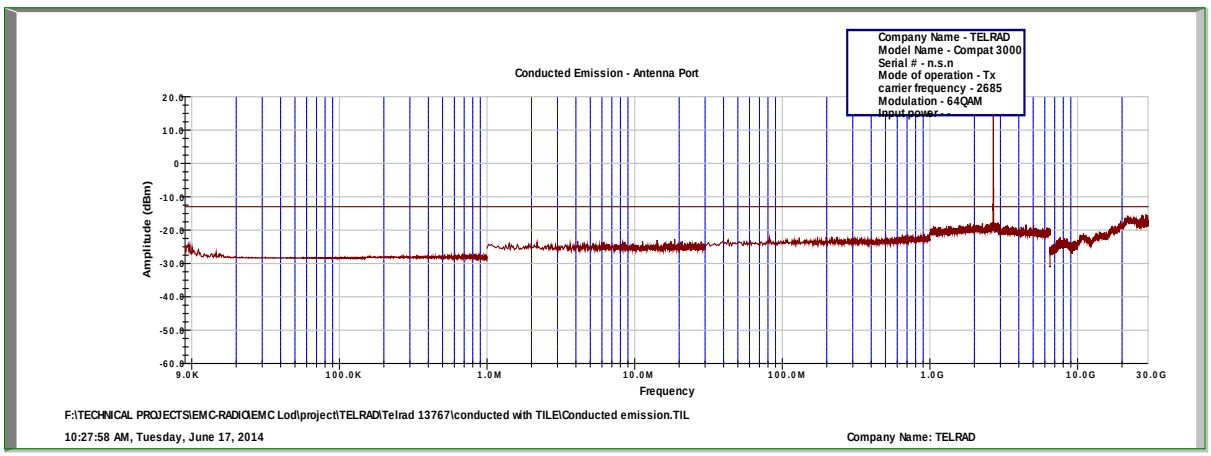


Figure 190.— 2685.00 MHz 64QAM

11.4 Test Equipment Used

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 20 Test Equipment Used Conducted Spurious Emissions 10 MHz Bandwidth

12. Band Edge Spectrum 5 MHz Bandwidth

12.1 Test Specification

FCC Part 27, Sub-part C, Section 27.53 (m 4-6)

12.2 Test procedure

Enclosed are spectrum analyzer plots for the lowest operation frequency and the highest operation frequency in which the E.U.T. is planned to be used.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + log (P) dB, yielding –13dBm.
The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block.
Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB.
The spectrum analyzer was set to 100 kHz R.B.W (1% from 5MHz).

12.3 Test Results

Operation Frequency (MHz)	Modulation	Band Edge Frequency (MHz)	Reading (dBm)	Specification (dBm)
2498.50	QPSK	2495.95	-22.475	-13.0
	QPSK	2501.05	-22.242	-13.0
	16QAM	2495.95	-20.469	-13.0
	16QAM	2501.05	-21.887	-13.0
	64QAM	2495.95	-22.616	-13.0
	64QAM	2501.05	-21.590	-13.0
2596.00	QPSK	2590.45	-22.123	-13.0
	QPSK	2595.55	-22.464	-13.0
	16QAM	2590.45	-21.661	-13.0
	16QAM	2595.55	-20.409	-13.0
	64QAM	2590.45	-22.609	-13.0
	64QAM	2595.55	-21.368	-13.0
2687.50	QPSK	2684.95	-17.377	-13.0
	QPSK	2690.05	-21.180	-13.0
	16QAM	2684.95	-19.423	-13.0
	16QAM	2690.05	-19.242	-13.0
	64QAM	2684.95	-22.529	-13.0
	64QAM	2690.05	-19.362	-13.0

Table 21 Band Edge Spectrum Test Results Table 5 MHz Bandwidth

See additional information in Figure 191 to Figure 208.

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

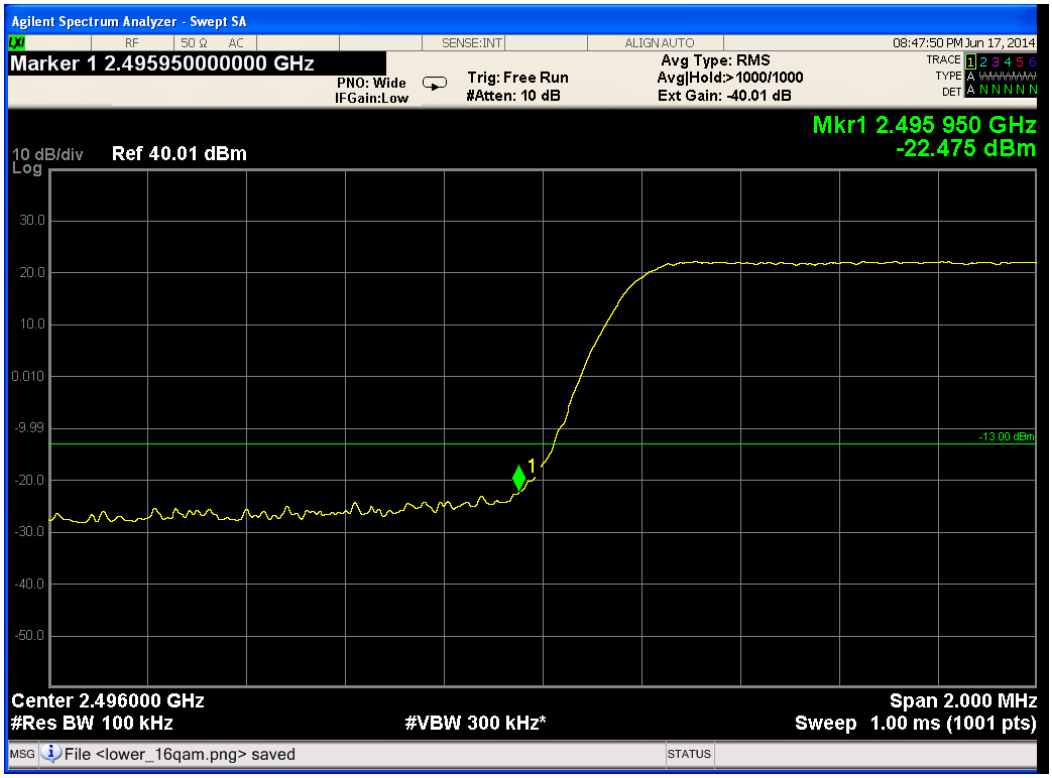


Figure 191.— 2498.5 MHz QPSK

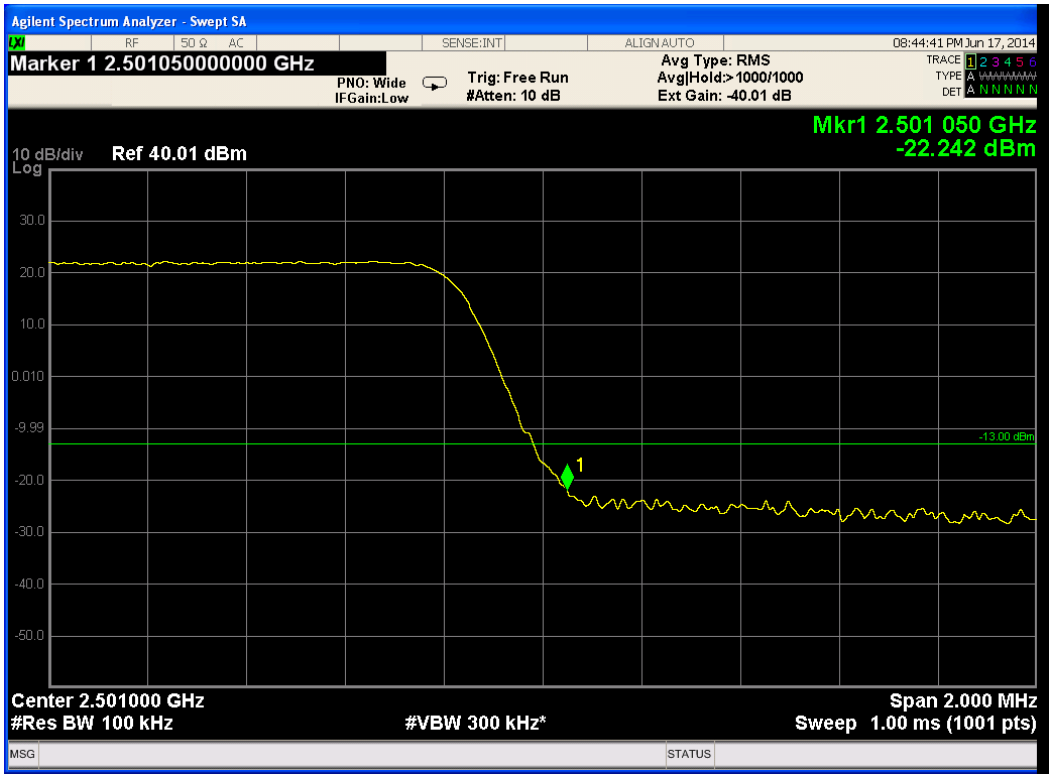


Figure 192.— 2498.50 MHz QPSK

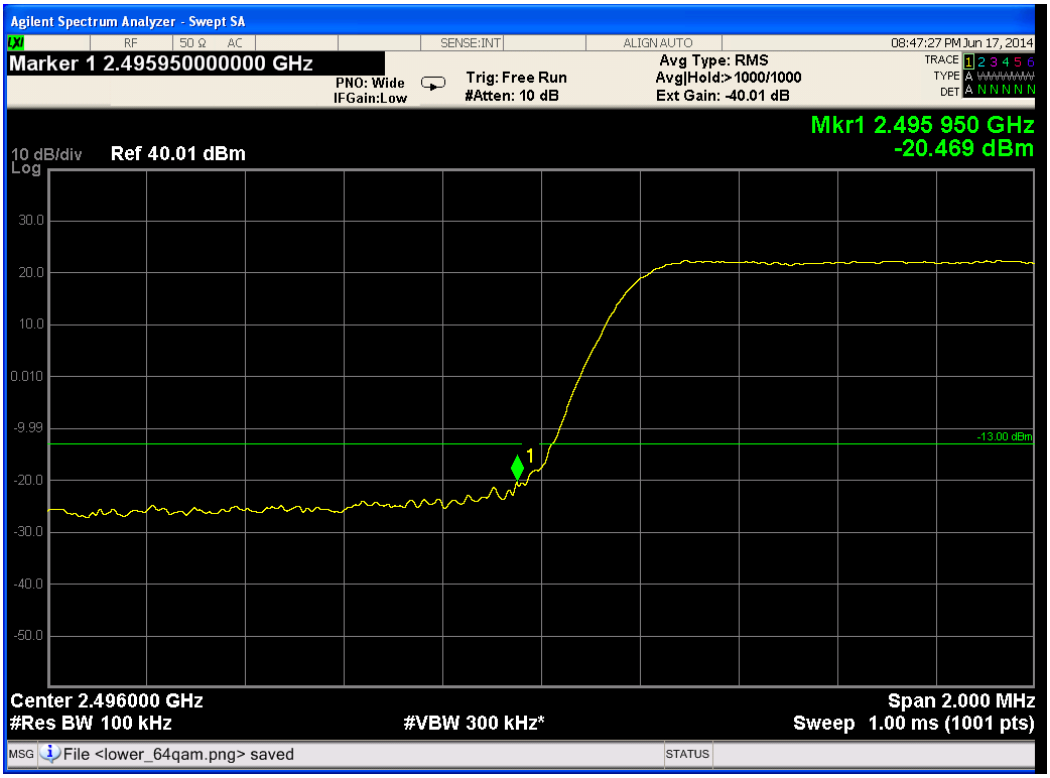


Figure 193.— 2498.50 16QAM

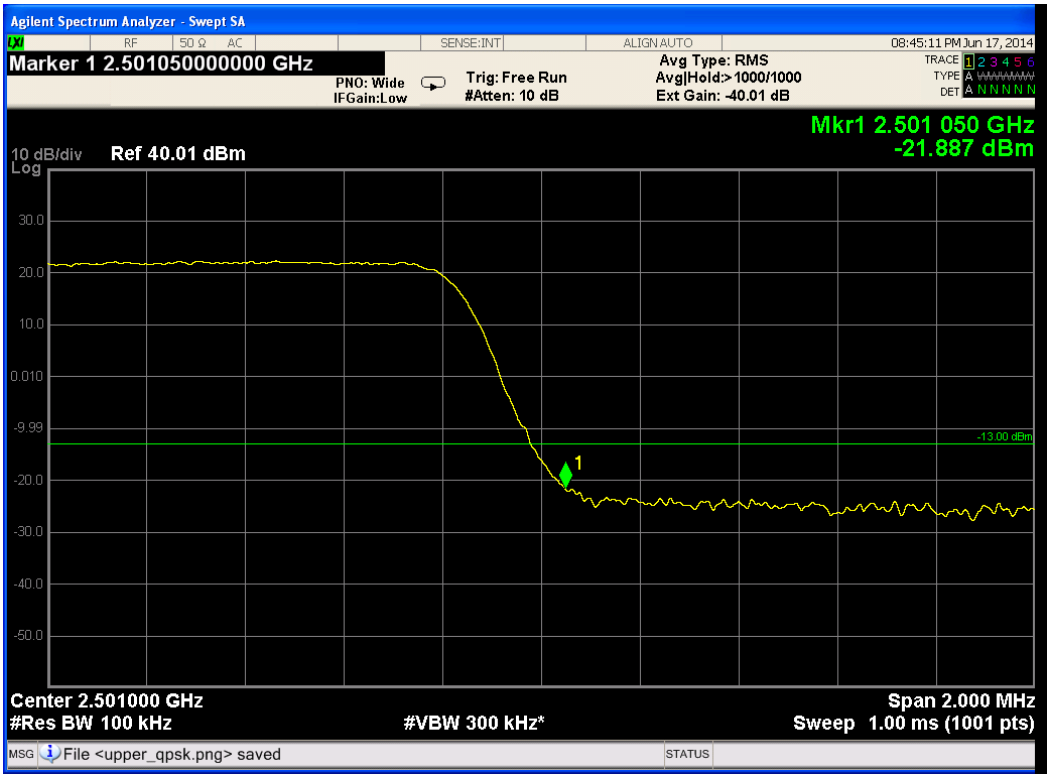


Figure 194.— 2498.50 MHz 16QAM

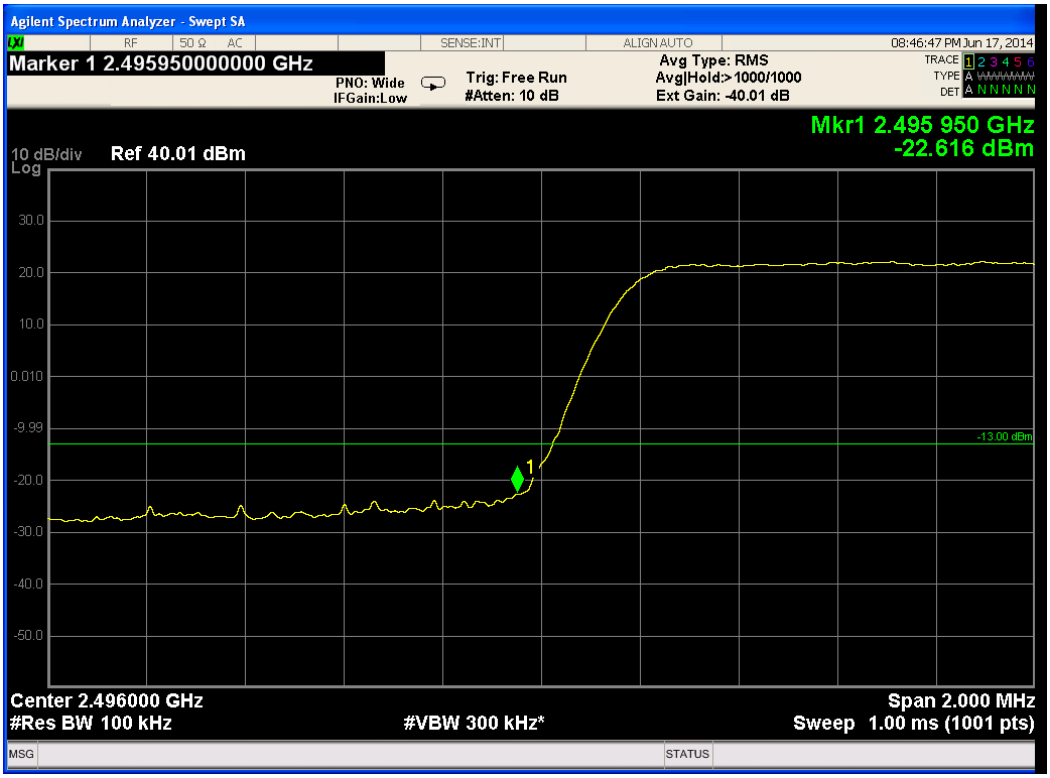


Figure 195.— 2498.50 MHz 64QAM

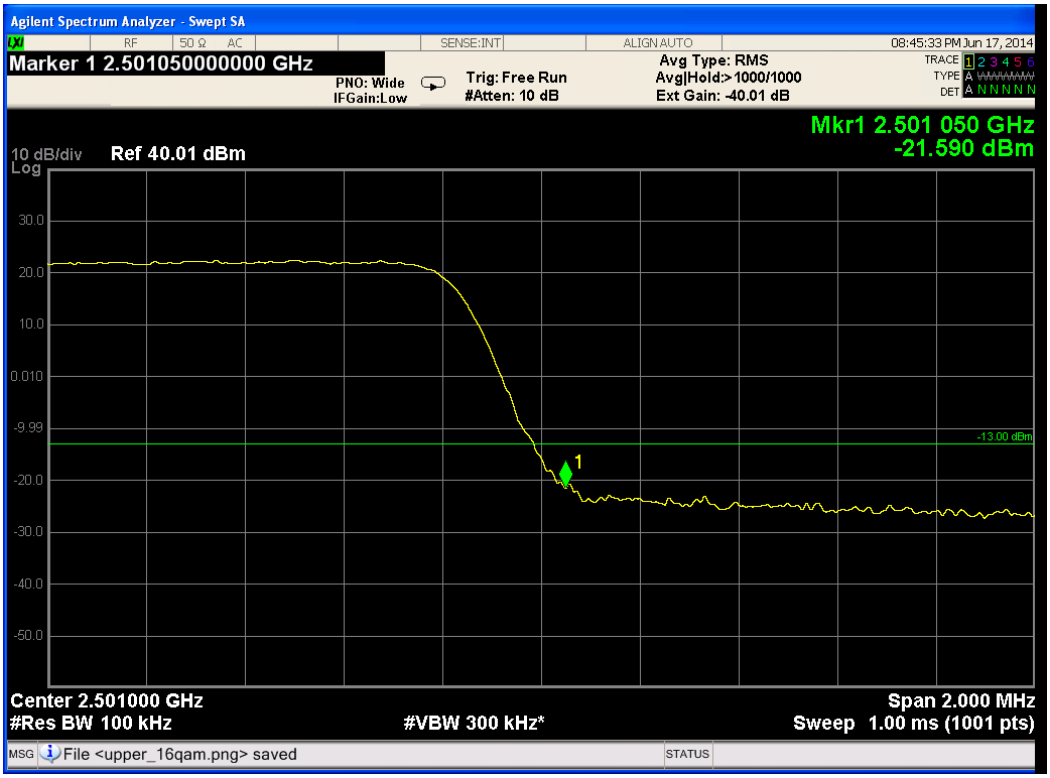


Figure 196.— 2498.50 MHz 64QAM

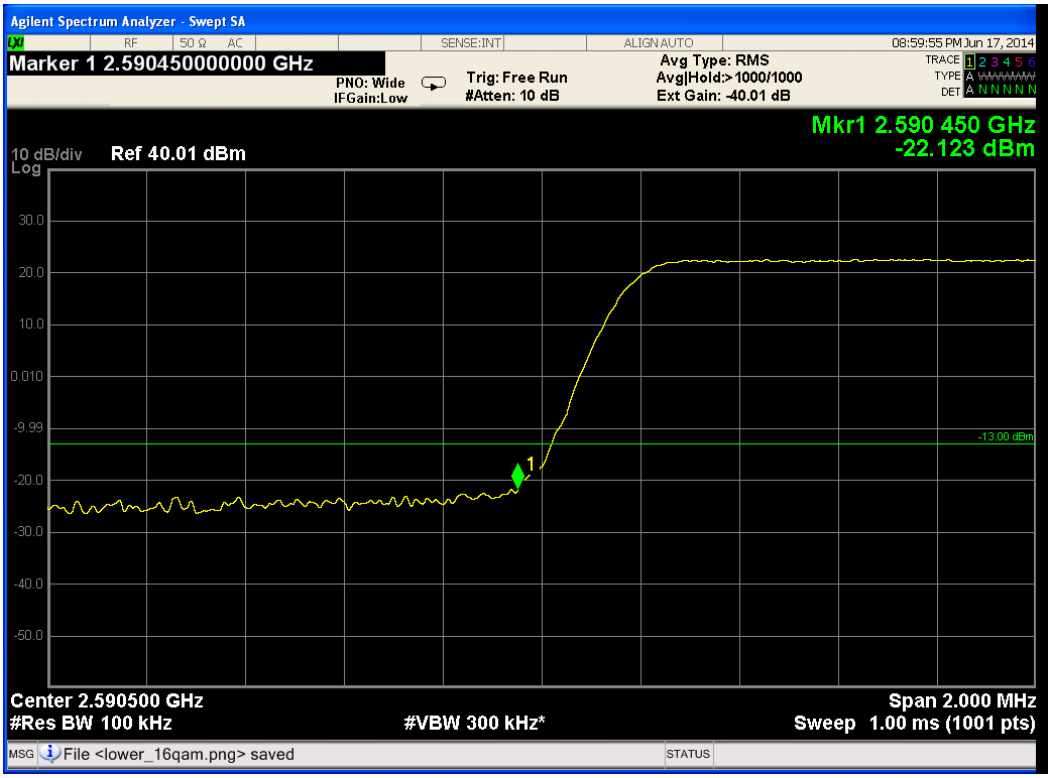


Figure 197.— 2593.00 MHz QPSK

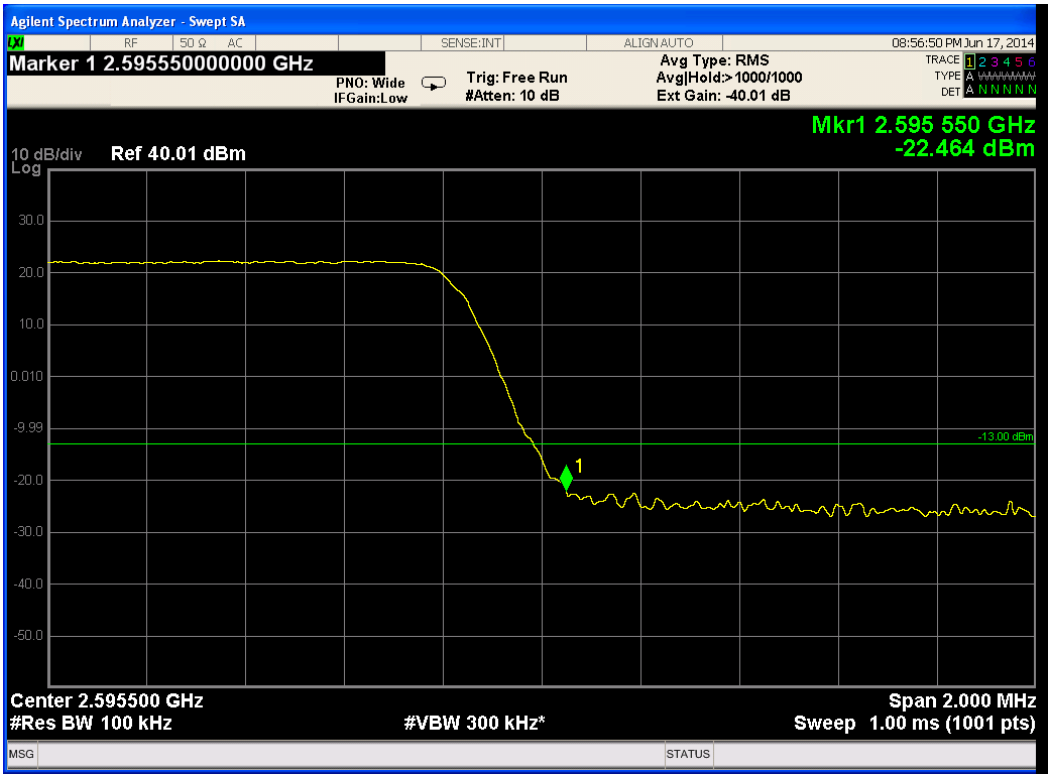


Figure 198.— 2593.00 MHz QPSK

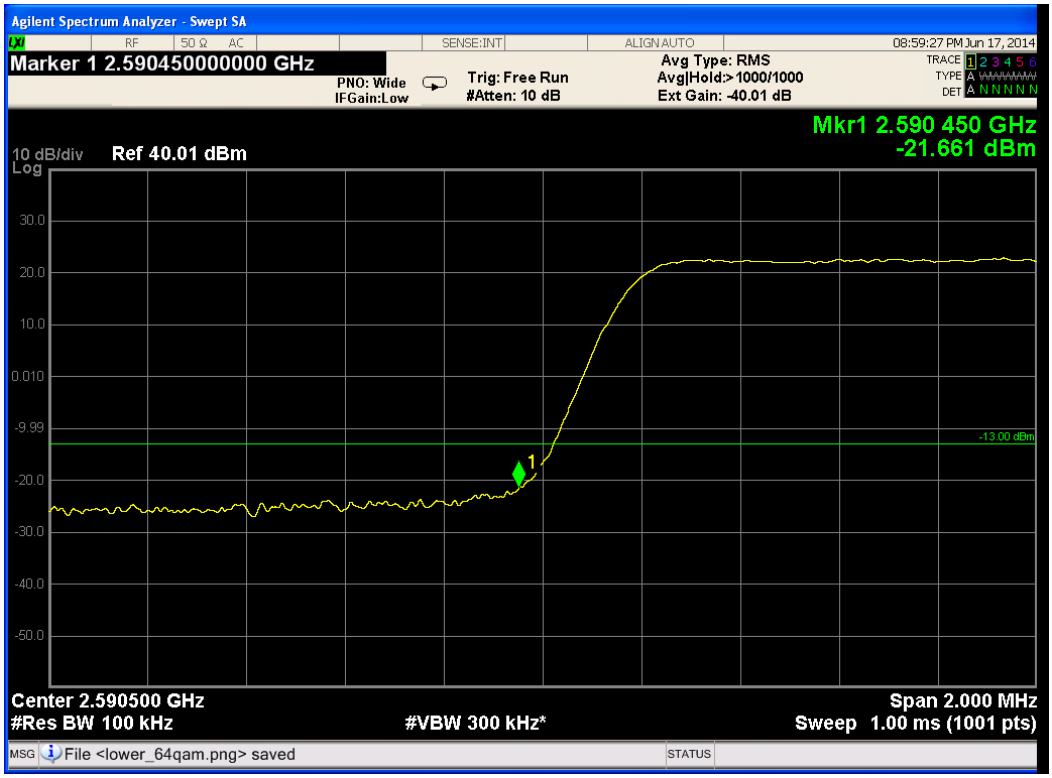


Figure 199.— 2593.00 MHz 16QAM

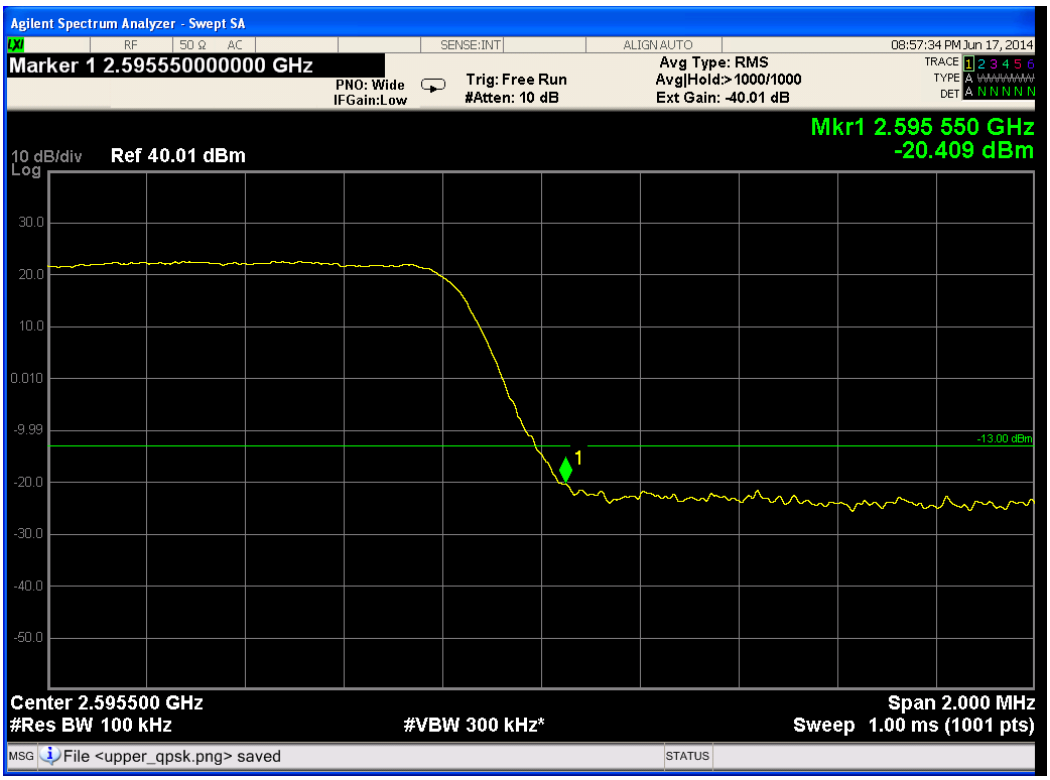


Figure 200.— 2593.00 MHz 16QAM

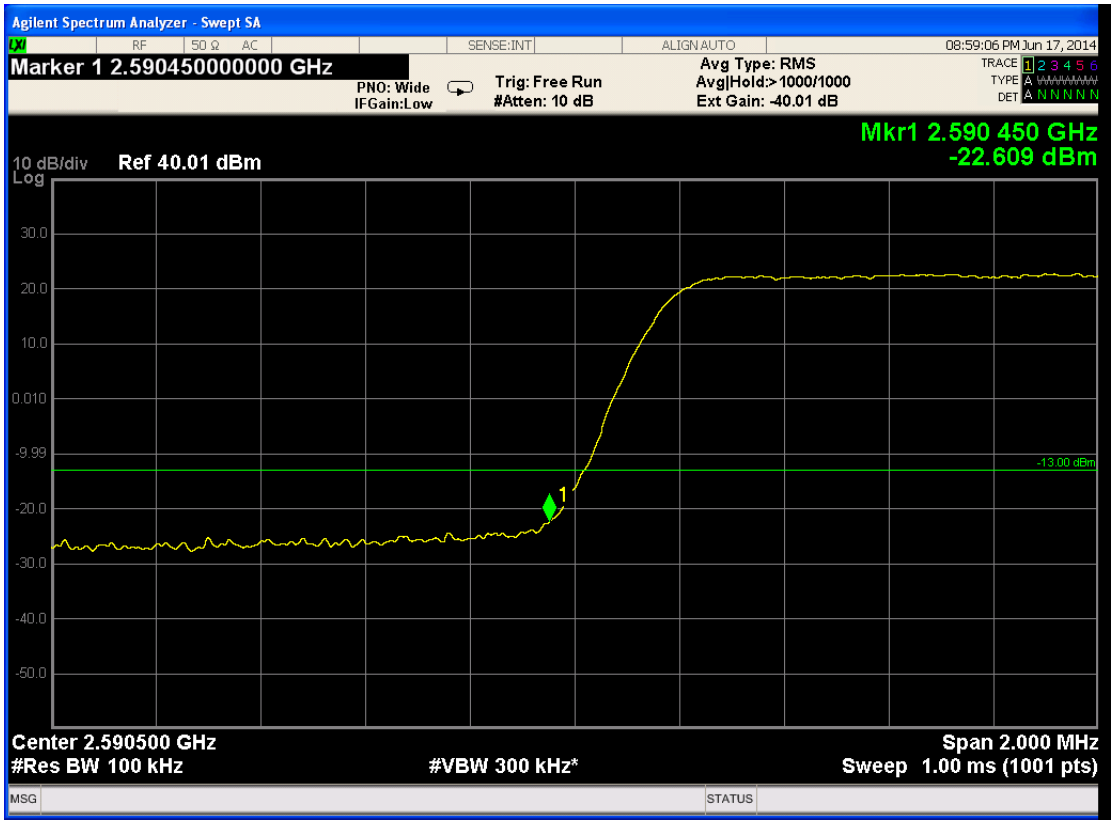


Figure 201.— 2593.00 MHz 64QAM

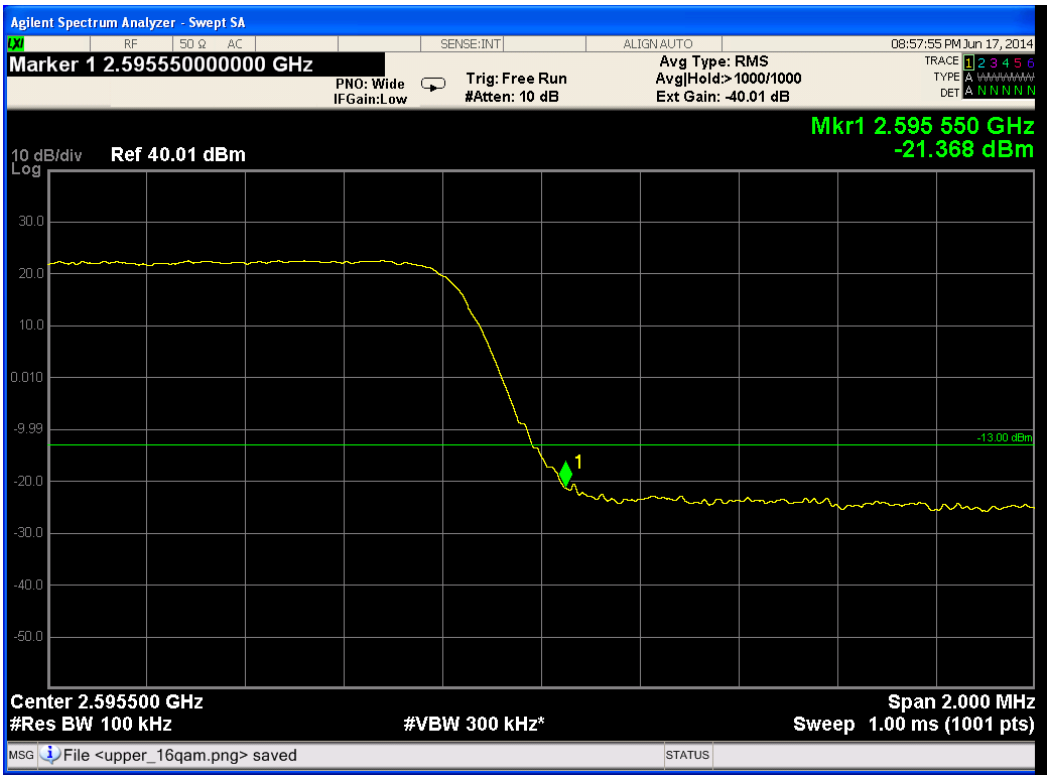


Figure 202.— 2593.00 MHz 64QAM

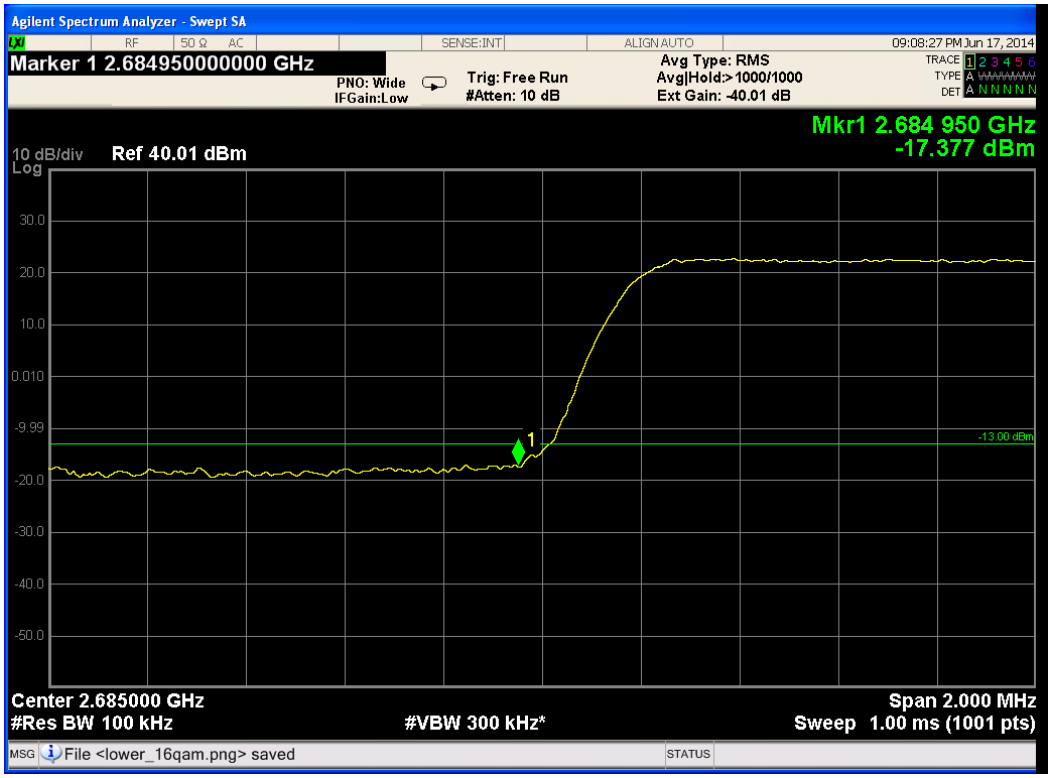


Figure 203.— 2687.50 MHz QPSK

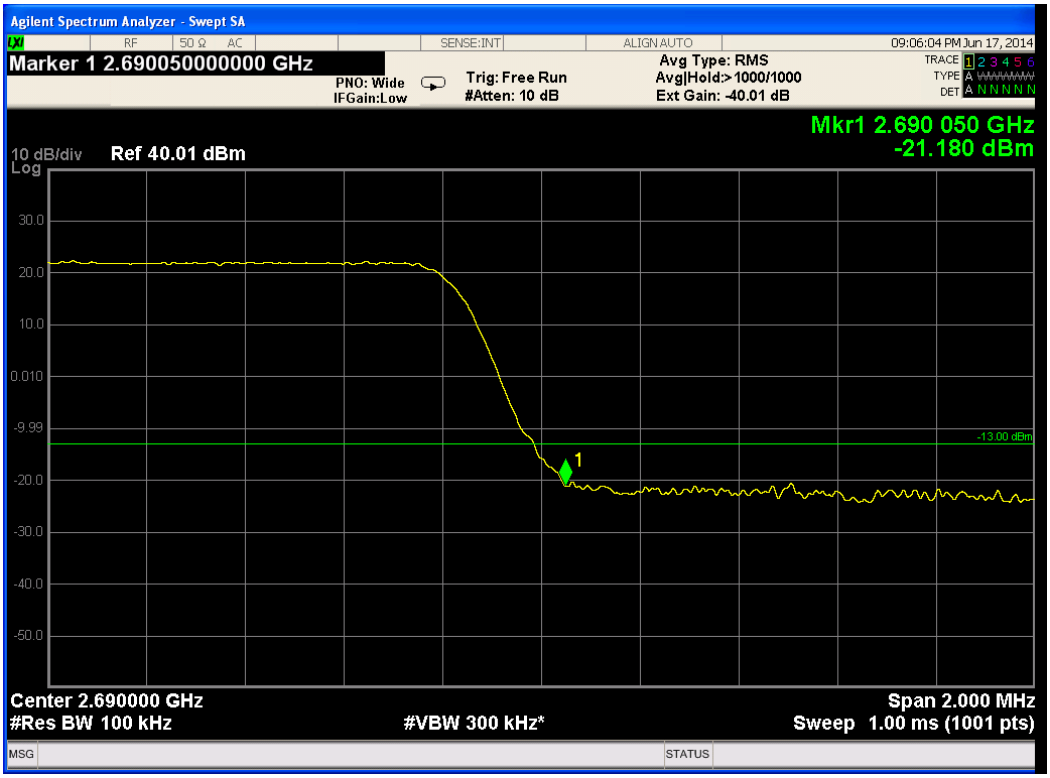


Figure 204.— 2687.50 MHz QPSK

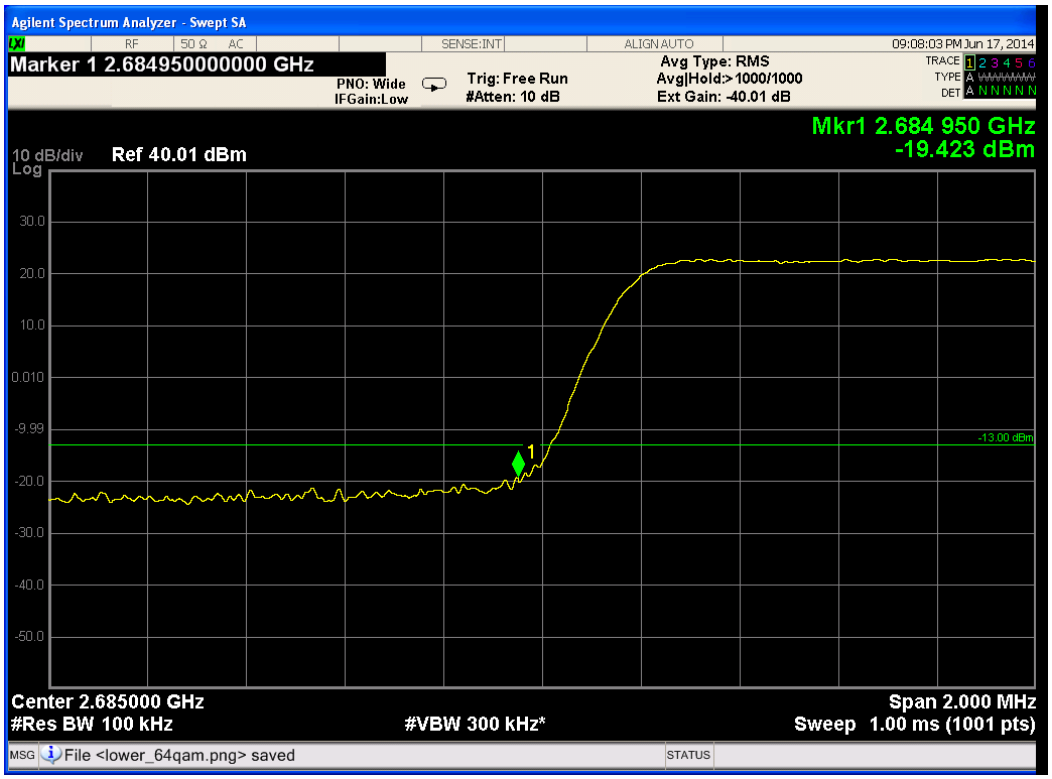


Figure 205.— 2687.50 MHz 16QAM

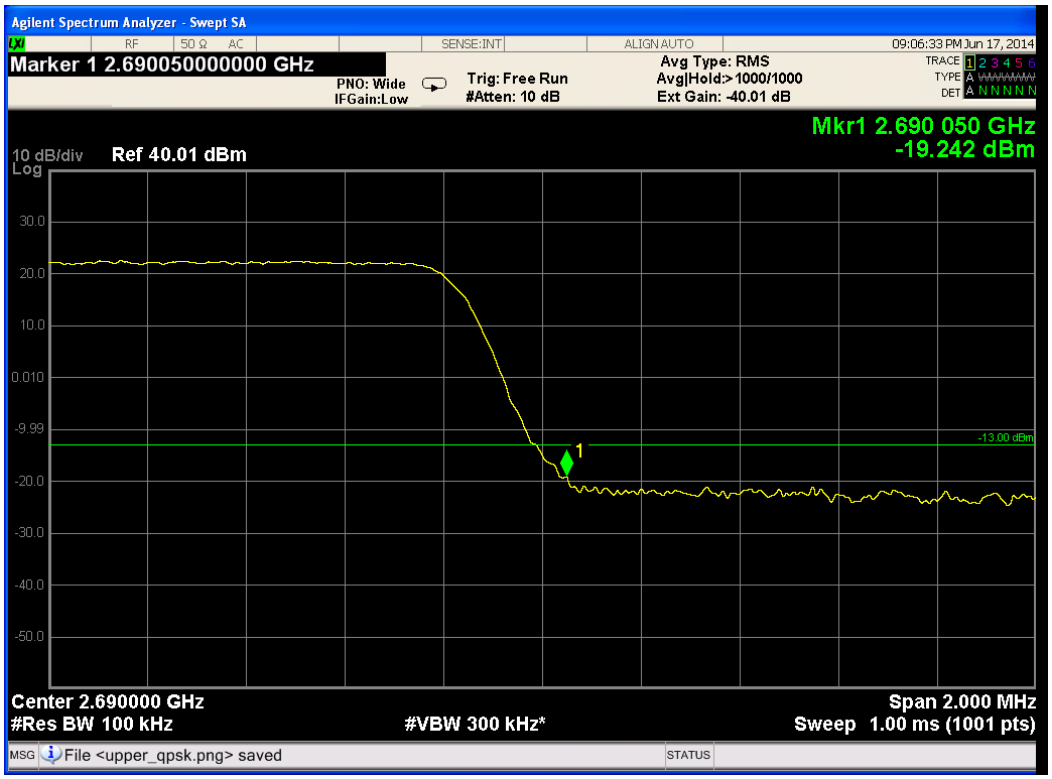


Figure 206.— 2687.50 MHz 16QAM

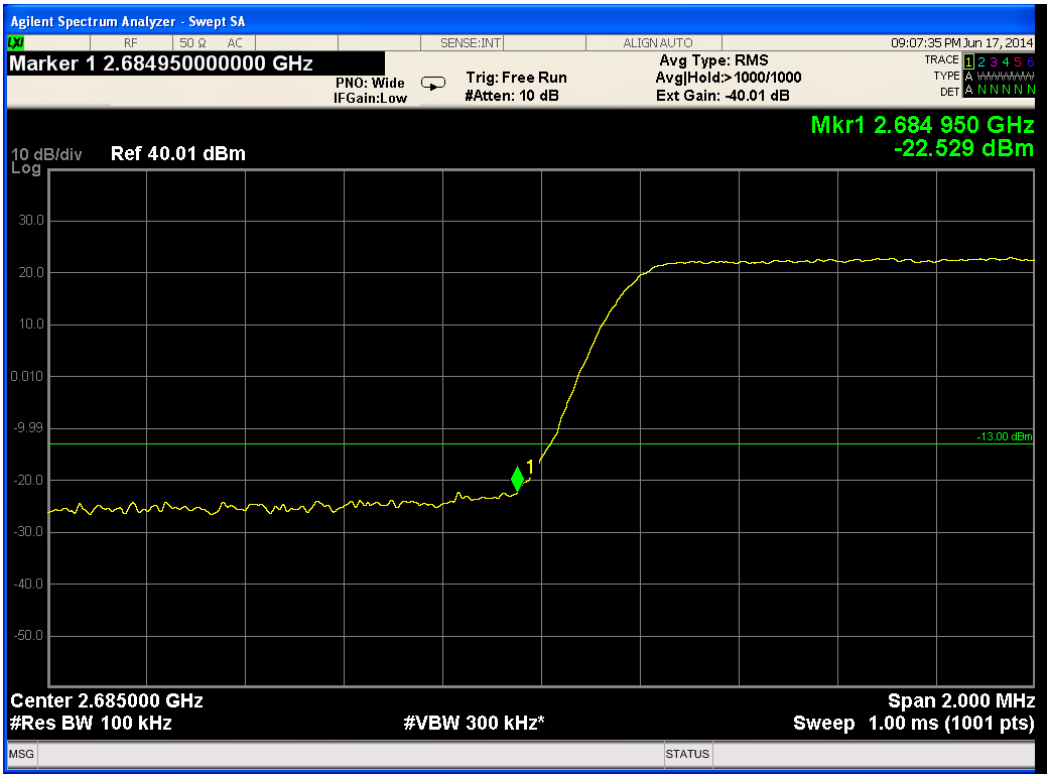


Figure 207.— 2687.50 MHz 64QAM

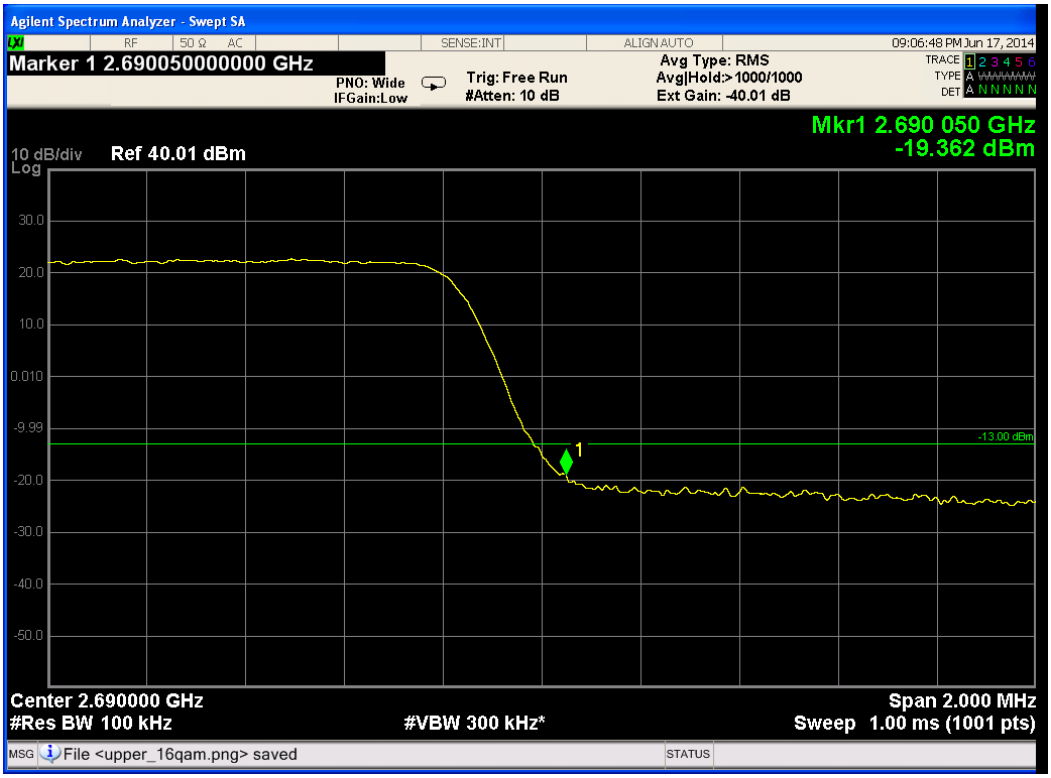


Figure 208.— 2687.50 MHz 64QAM

12.4 Test Equipment Used

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 22 Test Equipment Used Band Edge spectrum 5 MHz Bandwidth

13. Band Edge Spectrum 10 MHz Bandwidth

13.1 Test Specification

FCC Part 27, Sub-part C, Section 27.53 (m 4-6)

13.2 Test procedure

Enclosed are spectrum analyzer plots for the lowest operation frequency and the highest operation frequency in which the E.U.T. is planned to be used.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + log (P) dB, yielding –13dBm.
The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator, an appropriate coaxial cable, coupler, and DC block.
Including the duty cycle (see Figure 45 to Figure 46), the external gain was -40.01 dB.
The spectrum analyzer was set to 100kHz R.B.W (1% from 10MHz).

13.3 Test Results

Operation Frequency (MHz)	Modulation	Band Edge Frequency (MHz)	Reading (dBm)	Specification (dBm)
2501.00	QPSK	2495.95	-25.887	-13.0
	QPSK	2506.05	-26.228	-13.0
	16QAM	2495.95	-24.321	-13.0
	16QAM	2506.05	-26.433	-13.0
	64QAM	2495.95	-24.049	-13.0
	64QAM	2506.05	-26.169	-13.0
2593.00	QPSK	2587.95	-27.910	-13.0
	QPSK	2598.098	-26.989	-13.0
	16QAM	2587.95	-27.080	-13.0
	16QAM	2598.098	-25.429	-13.0
	64QAM	2587.95	-26.327	-13.0
	64QAM	2598.098	-25.424	-13.0
2685.00	QPSK	2679.95	-22.553	-13.0
	QPSK	2690.05	-24.228	-13.0
	16QAM	2679.95	-22.375	-13.0
	16QAM	2690.05	-23.422	-13.0
	64QAM	2679.95	-22.697	-13.0
	64QAM	2690.05	-22.281	-13.0

Table 23 Band Edge Spectrum Test Results Table

See additional information in Figure 209 to Figure 226.

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

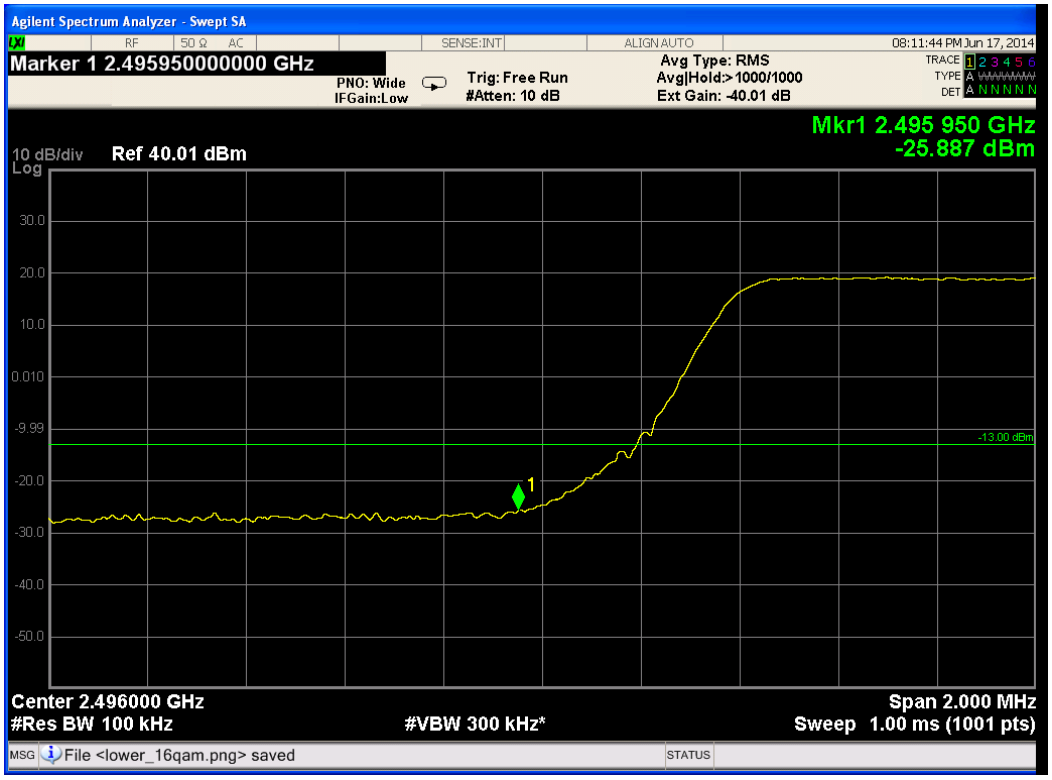


Figure 209.— 2501.00 MHz QPSK

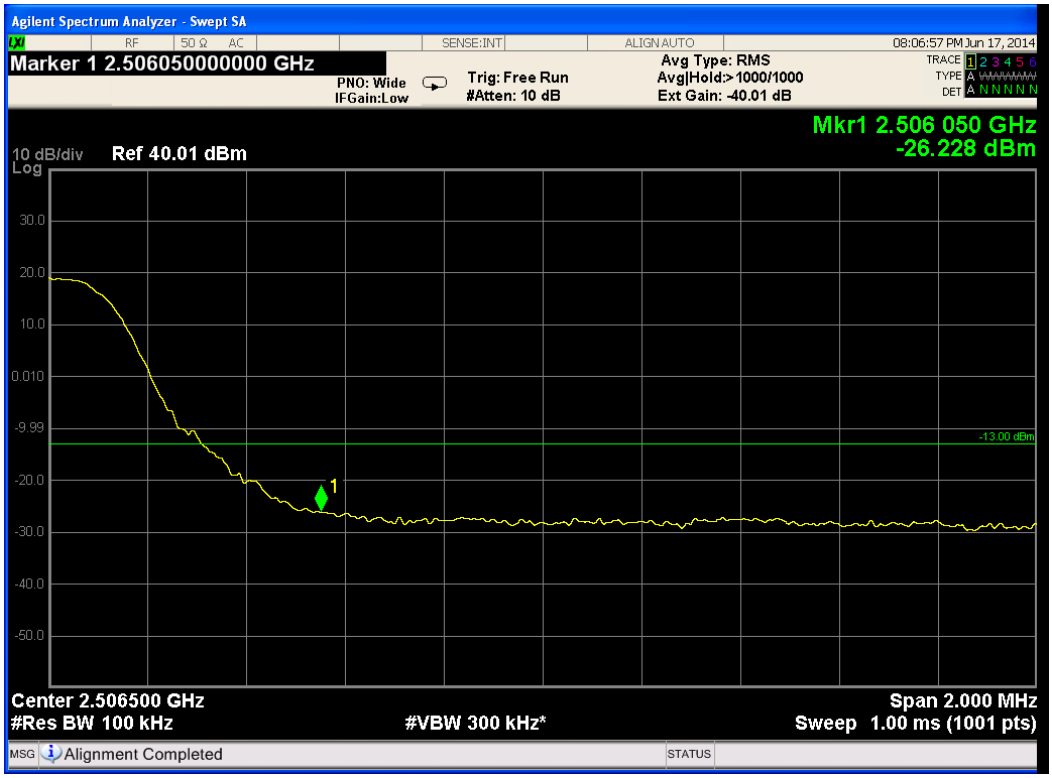


Figure 210.— 2501.00 MHz QPSK

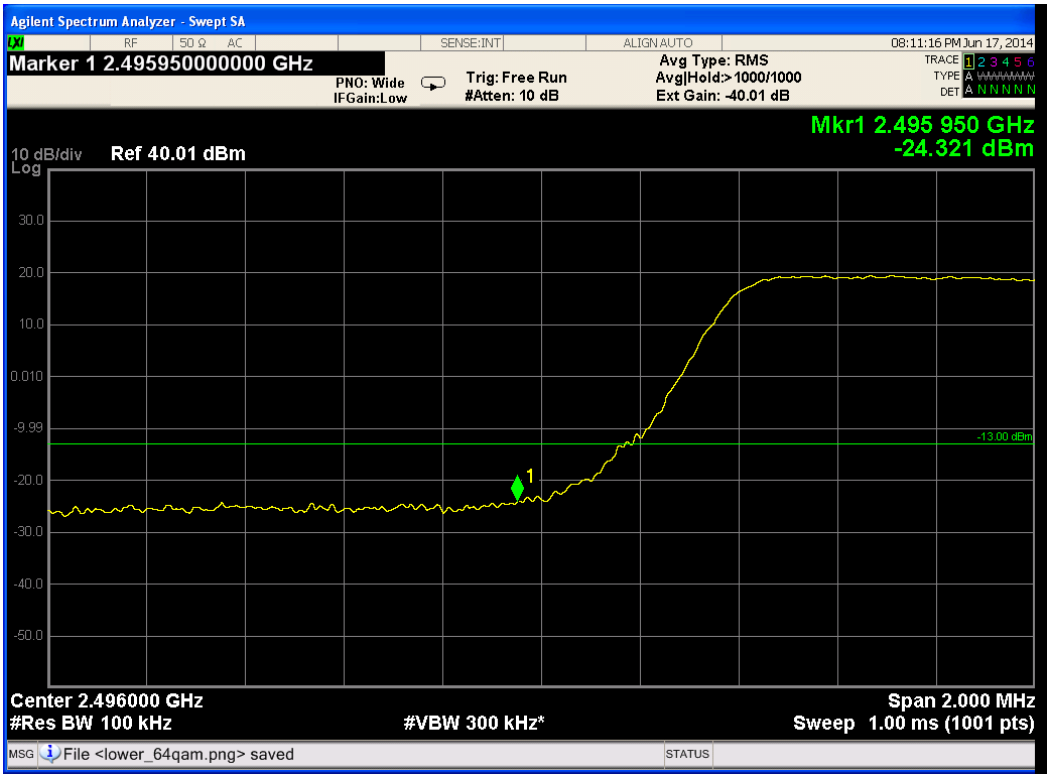


Figure 211.— 2501.00 16QAM

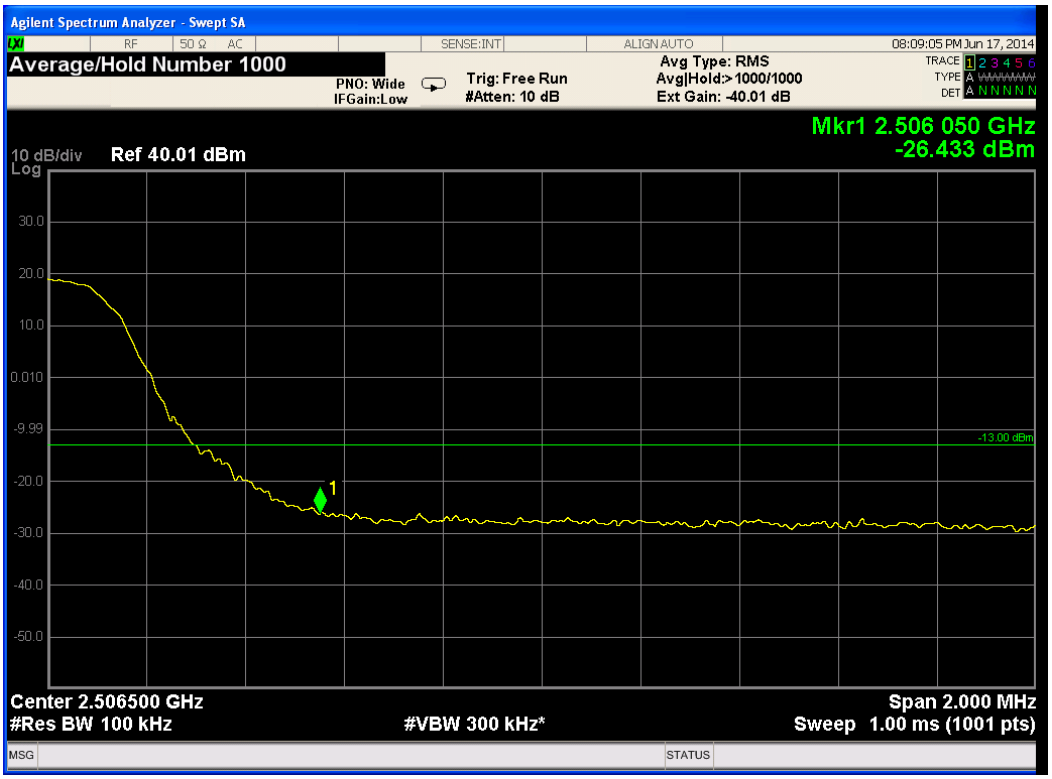


Figure 212.— 2501.00 MHz 16QAm

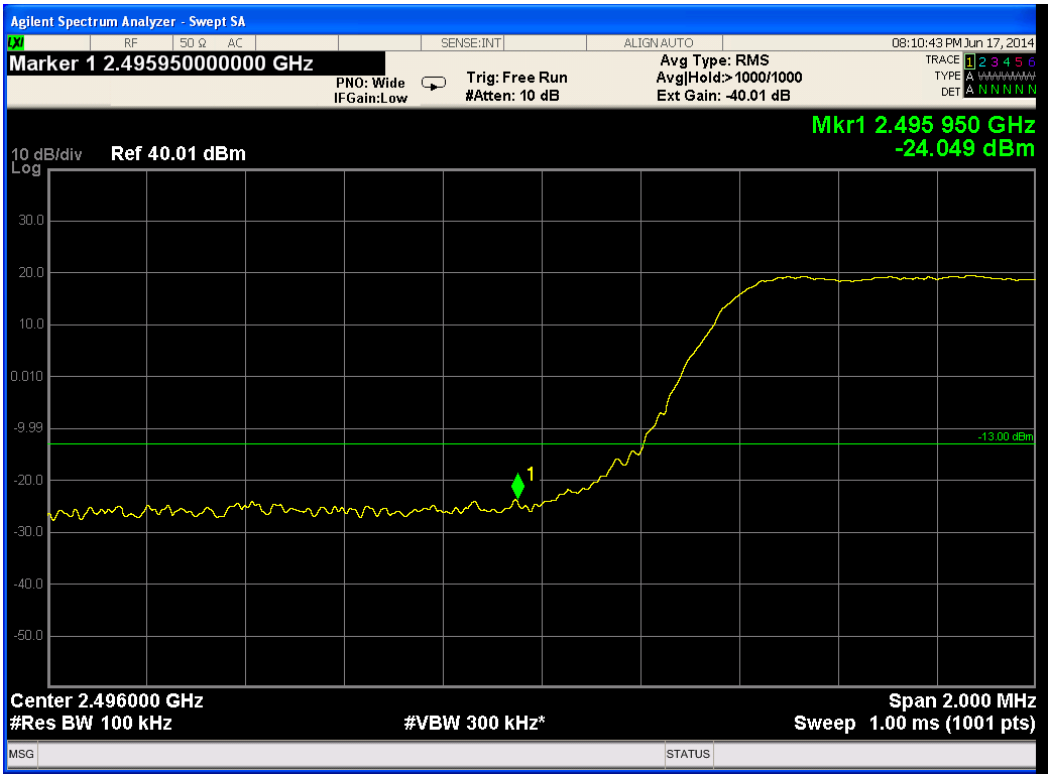


Figure 213.— 2501.00 MHz 64QAm

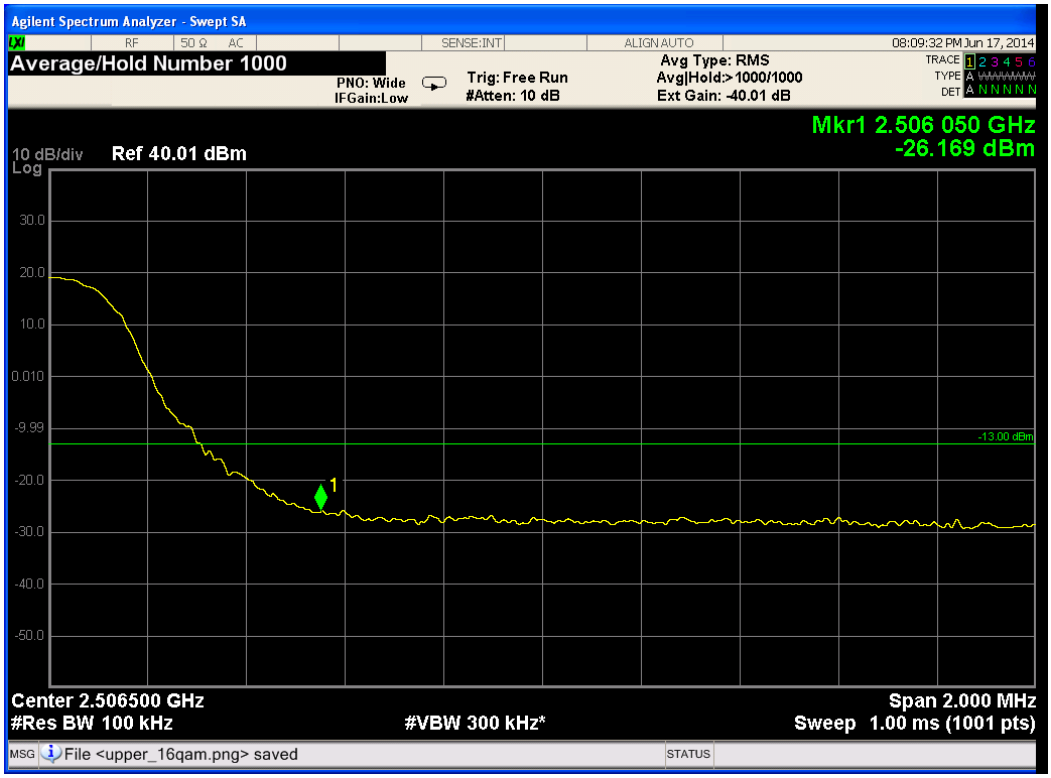


Figure 214.— 2501.00 MHz 64QAM

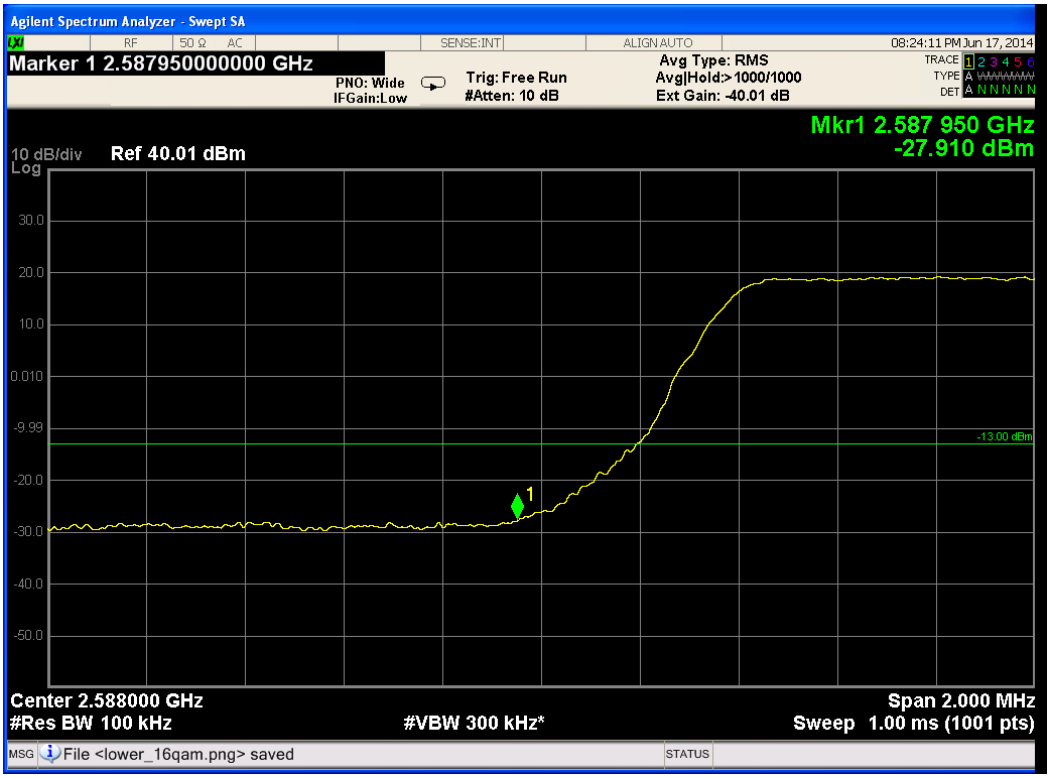


Figure 215.— 2593.00 MHz QPSK

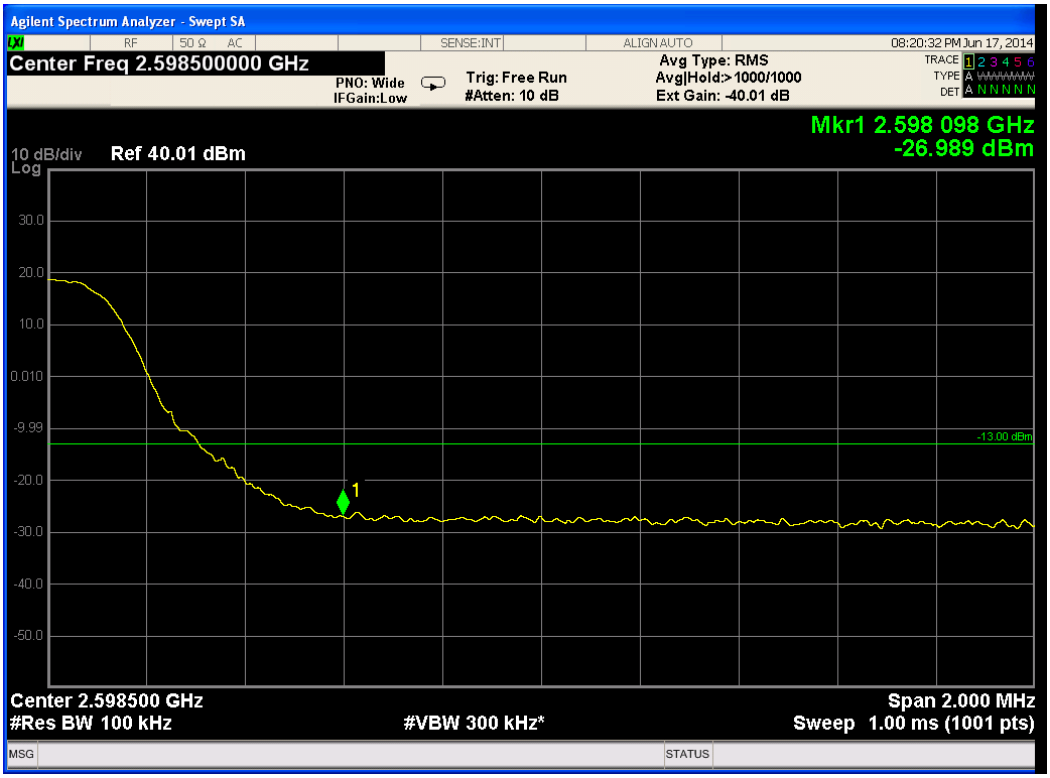


Figure 216.— 2593.00 MHz QPSK

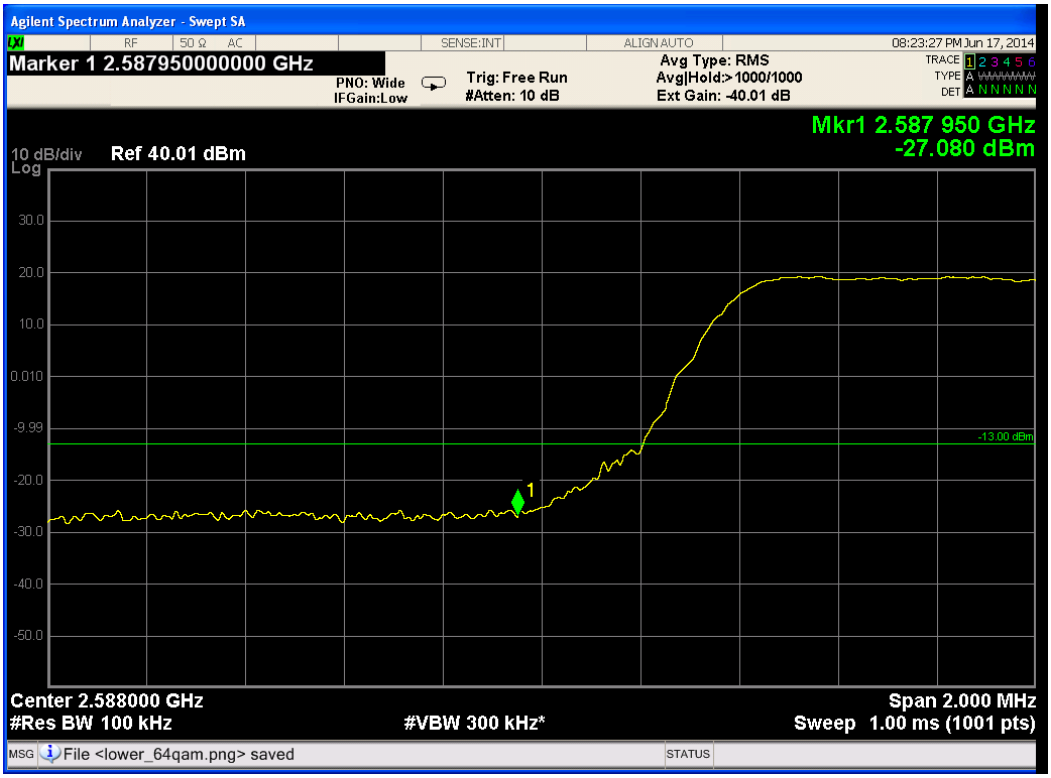


Figure 217.— 2593.00 MHz 16QAM

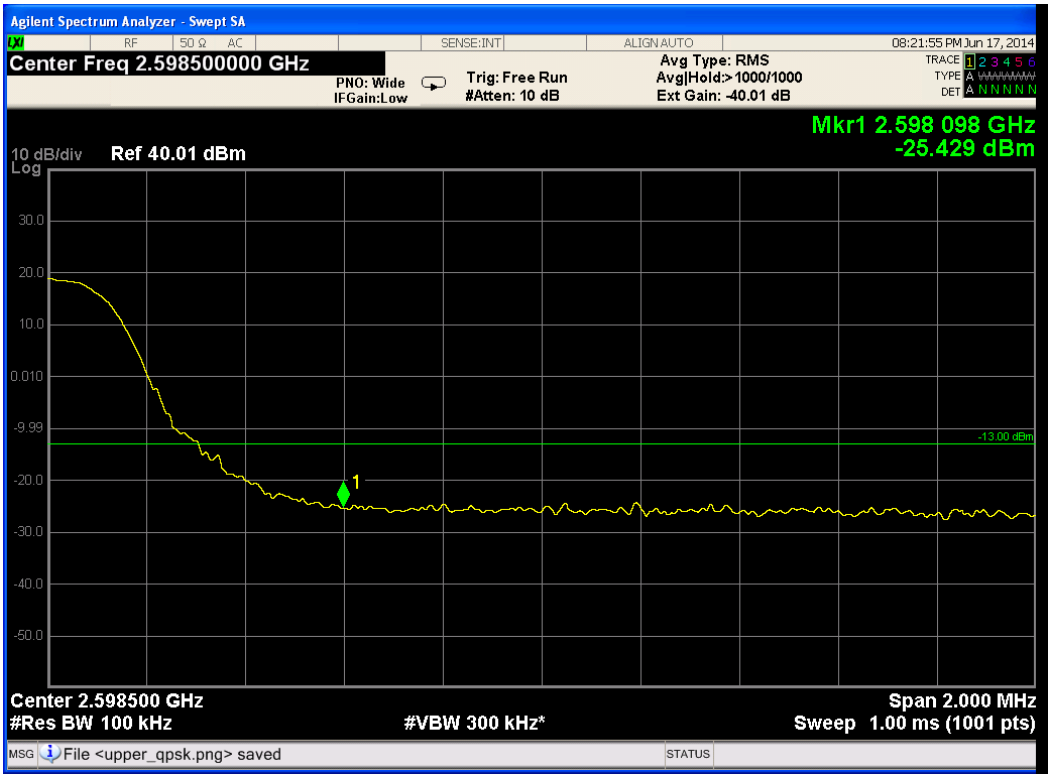


Figure 218.— 2593.00 MHz 16QAM

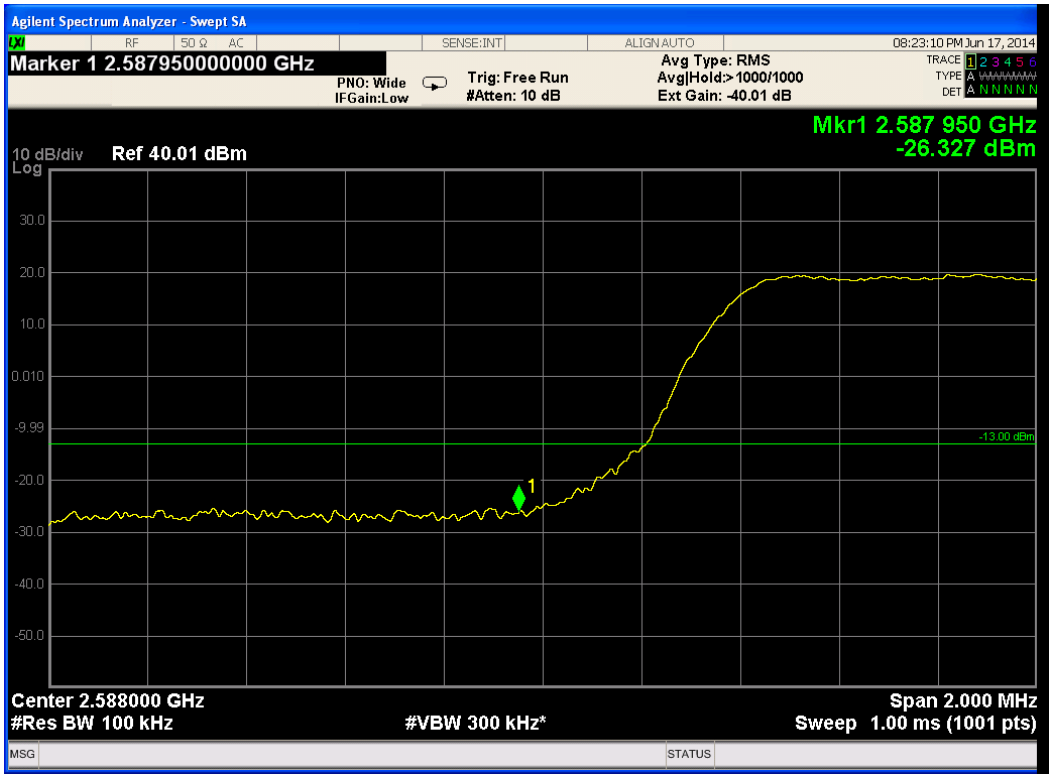


Figure 219.— 2593.00 MHz 64QAM

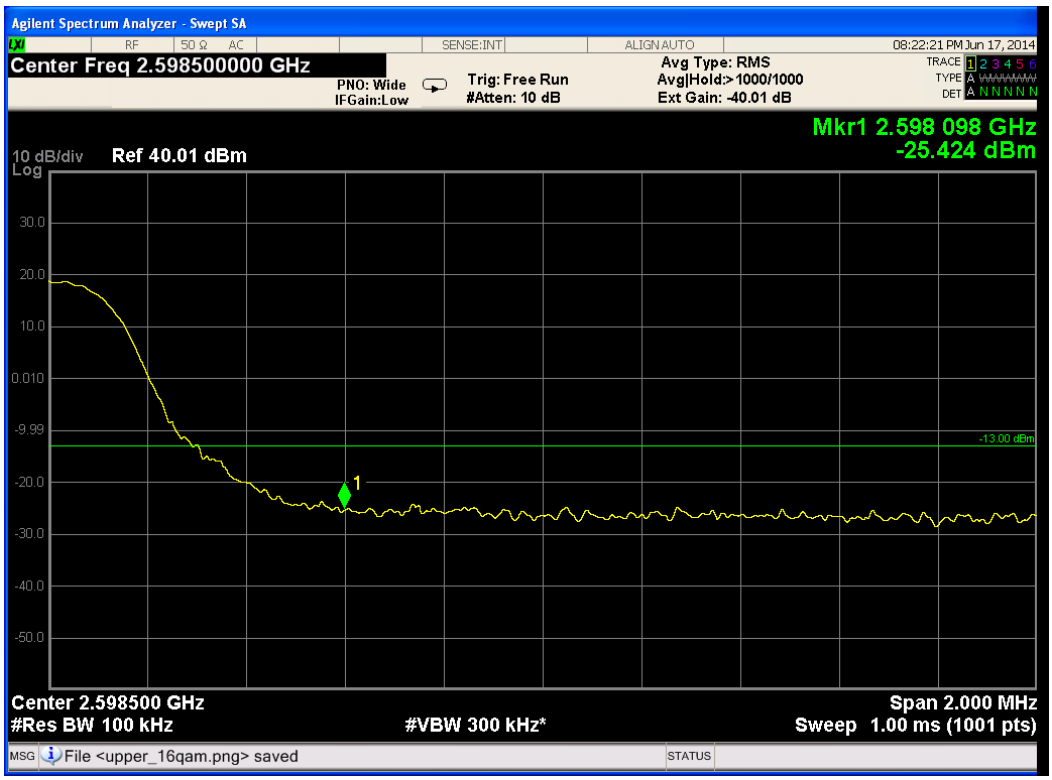


Figure 220.— 2593.00 MHz 64QAM

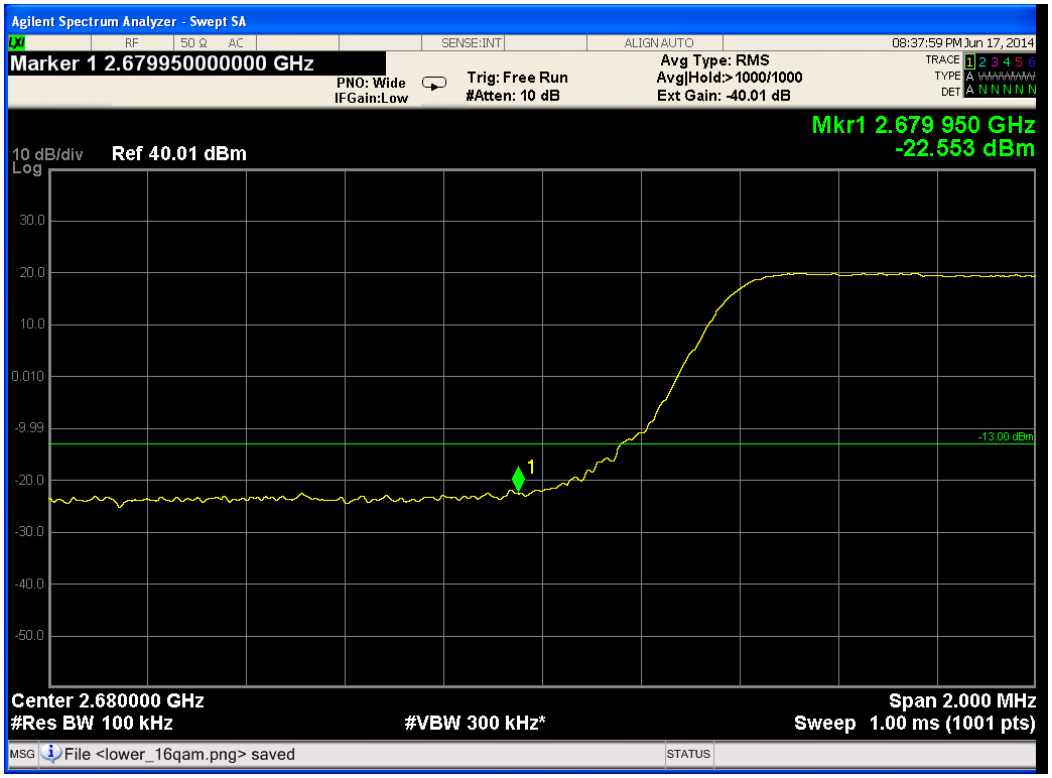


Figure 221.— 2685.00 MHz QPSK

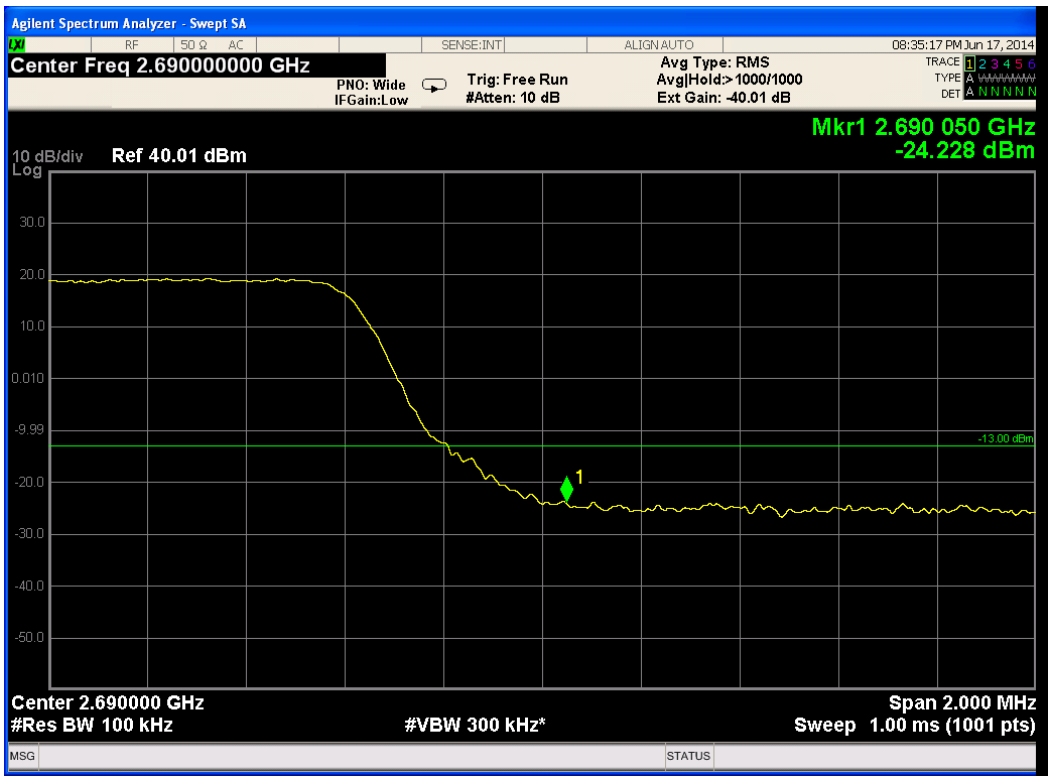


Figure 222.— 2685.00 MHz QPSK

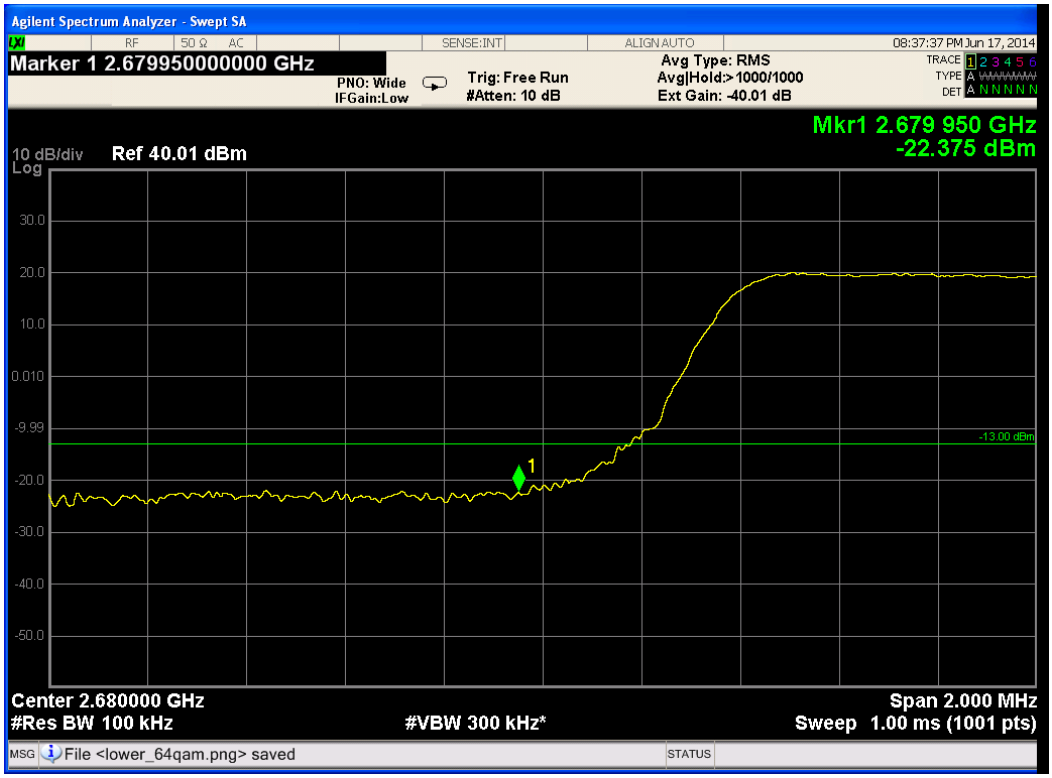


Figure 223.— 2685.00 MHz 16QAM

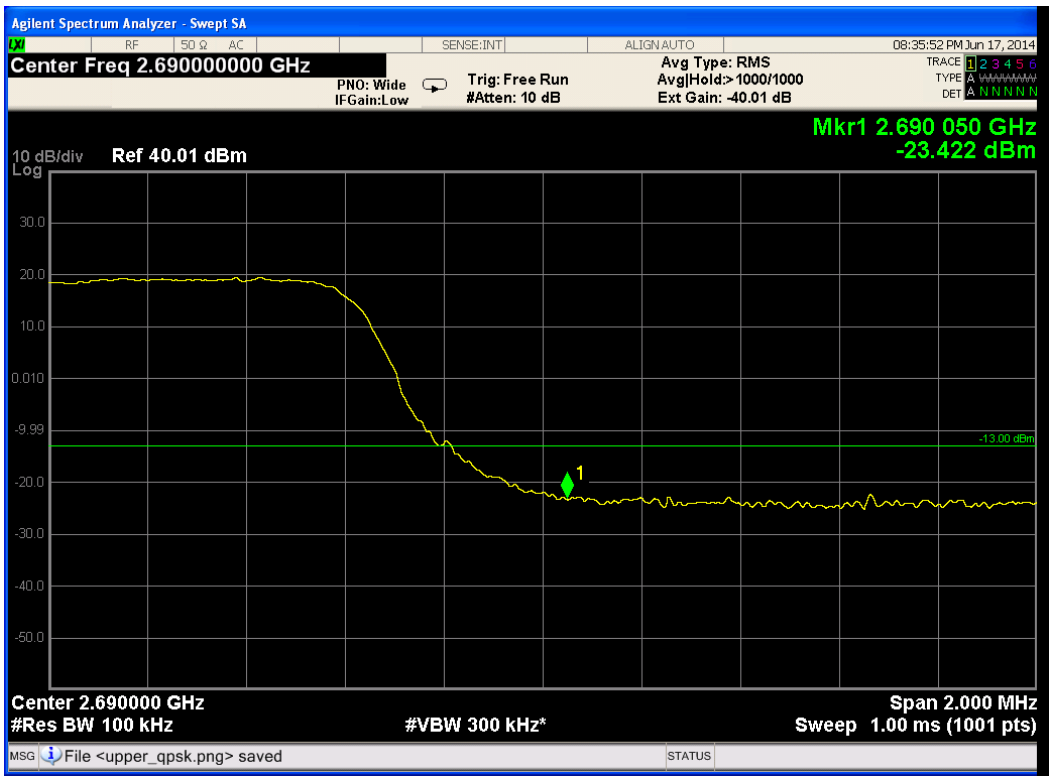


Figure 224.— 2685.00 MHz 16QAM

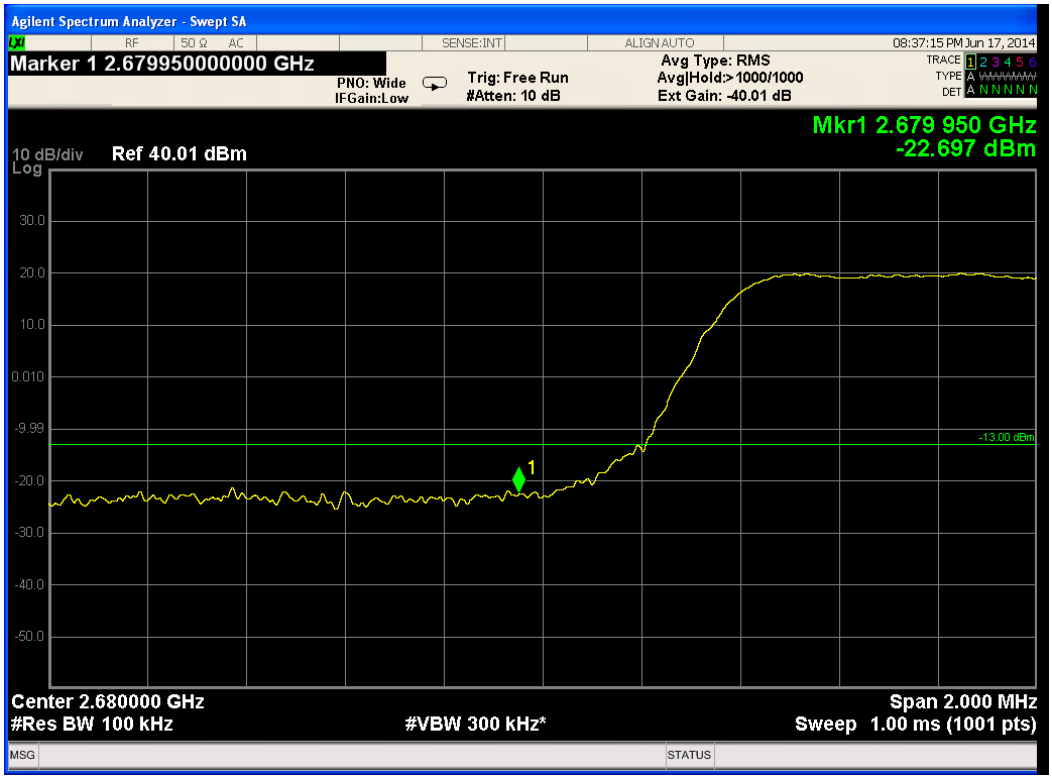


Figure 225.— 2685.00 MHz 64QAM

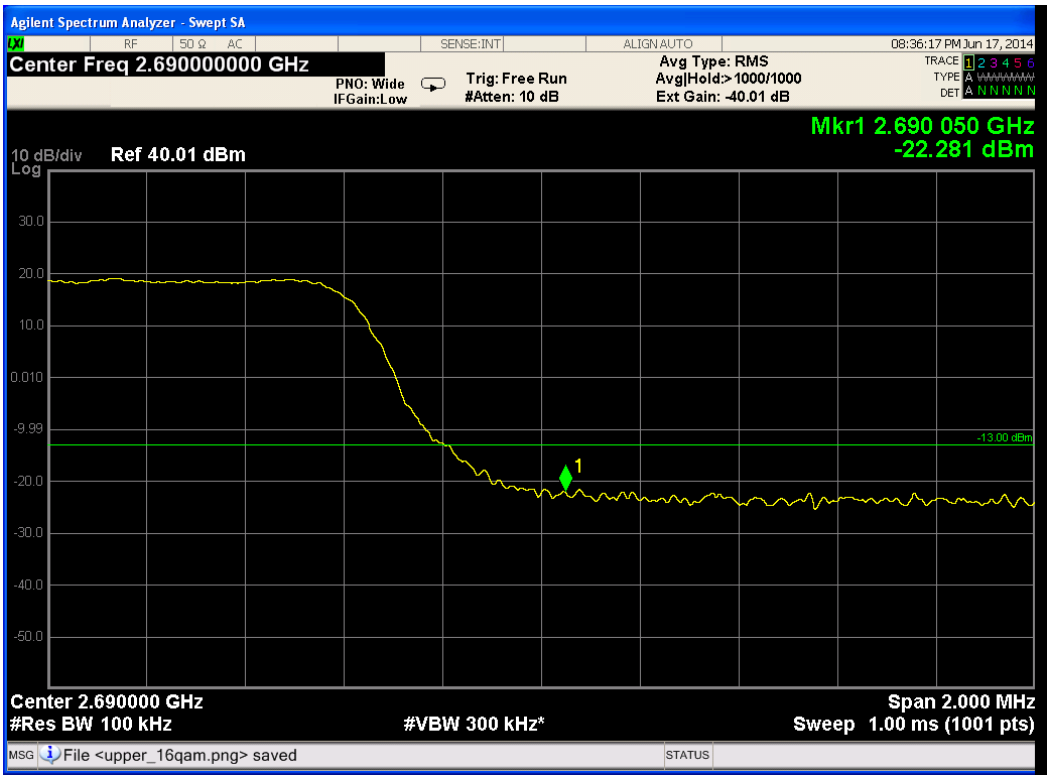


Figure 226.— 2685.00 MHz 64QAM

13.4 Test Equipment Used

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Agilent	N9010A	MY49060238	June 10, 2014	1 Year
Attenuator	INMET	6B20W-10dB	-	June 16, 2014	1 Year
Coupler	Pulsar	CS06-B57-436/9	-	June 16, 2014	1 Year
Attenuator	MINICIRCUIT	MCL-BW-S20W2+	-	June 16, 2014	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year

Table 24 Test Equipment Used Band Edge spectrum 10 MHz Bandwidth

14. Spurious Radiated Emission 5 and 10 MHz Bandwidth

14.1 Test Specification

FCC, Part 27, Sub-part C Section 27.53 (g)

14.2 Test Procedure

The test method was based on ANSI/TIA-603-B: 2002, Section 2.2.12 Unwanted Emissions: Radiated Spurious.
The power of any emission outside of the authorized operating frequency ranges (2489.50-2687.50 MHz) must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB, yielding –13dBm.

(a) The E.U.T. operation mode and test set-up are as described in Section 3. A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 1.
The frequency range 9 kHz-27 GHz was scanned, and the list of the highest emissions was verified and updated accordingly.
The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.
The emissions were measured at a distance of 3 meters.

(b) The E.U.T. was replaced by a substitution antenna (dipole 30MHz-1GHz, Horn Antenna above 1GHz) driven by a signal generator. The height was readjusted for maximum reading. The signal generator level was adjusted to obtain the same reading on the EMI receiver as in step (a).
The signals observed in step (a) were converted to radiated power using:
P_d(dBm) = P_g(dBm) – Cable Loss (dB) + Substitution Antenna Gain (dB)
P_d = Dipole equivalent power (result).
P_g = Signal generator output level.

The E.U.T. was operated at the frequency of 2498.00, 2593.00, and 2685.00 MHz with QPSK, 16QAM, and 64QAM modulations with 5 MHz bandwidth and frequency of 2501.00, 2593.00, and 2685.00 MHz with QPSK, 16QAM, and 64QAM modulations with 10 MHz bandwidth.
The worst case results using 64QAM modulation and both 5 and 10 MHz bandwidth were recorded.

14.3 Test Results

JUDGEMENT: Passed by 16.80 dB (5 MHz Bandwidth)

JUDGEMENT: Passed by 21.10 dB (10 MHz Bandwidth)

The E.U.T met the requirements of the FCC, Part 27, Sub-part C, Section 27.53 (g) specifications.

See details in Table 25 to Table 26.

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

Spurious Radiated Emission

E.U.T Description BreezeCompact 3000 Base Station
Type CMP3000-B41-2496-2690MHz
Part Number: 95000850

Specification: FCC Part 27 Sub-part C Section 27.53(g)

5 MHz Bandwidth

Carrier Channel (MHz)	Freq. (MHz)	Antenna Pol.	Maximum Peak Level (dBµV/m)	Signal Generator RF Output (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Effective Radiated Power Level (dBm)	Spec. (dBm)	Margin (dB)
2498.50	4997.00	V	68.0	-34.9	4.6	9.7	-29.8	-13.0	-16.80
2498.50	4997.00	H	59.7	-42.68	4.6	9.7	-37.58	-13.0	-24.58
2593.00	5192.00	V	55.7	-47.1	4.9	9.78	-42.22	-13.0	-29.22
2593.00	5192.00	H	61.3	-40.32	4.9	9.78	-35.44	-13.0	-22.44
2687.5	5375.00	V	56.4	-45.87	4.9	9.86	-40.91	-13.0	-27.91
2687.50	5375.00	H	52.2	-48.7	4.9	9.86	-43.74	-13.0	-30.74
2498.50	7495.50	V	53.9	-47.27	6.05	10.4	-42.92	-13.0	-29.92
2498.50	7495.50	H	53.9	-44.63	6.05	10.4	-40.28	-13.0	-27.28
2593.00	7788.00	V	55.1	-45.16	6.8	10.52	-41.44	-13.0	-28.44
2593.00	7788.00	H	55.0	-40.77	6.8	10.52	-37.05	-13.0	-24.05
2687.5	8062.50	V	55.9	-43.58	6.8	10.58	-39.8	-13.0	-26.80
2687.50	8062.50	H	55.9	-38.87	6.8	10.58	-35.09	-13.0	-22.09

Table 25 Spurious Radiated Emission Test Results Table 5 MHz Bandwidth

Spurious Radiated Emission

E.U.T Description BreezeCompact 3000 Base Station
Type CMP3000-B41-2496-2690MHz
Part Number: 95000850

Specification: FCC Part 27 Sub-part C Section 27.53(g)

10 MHz Bandwidth

Carrier Channel (MHz)	Freq. (MHz)	Antenna Pol.	Maximum Peak Level (dBµV/m)	Signal Generator RF Output (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Effective Radiated Power Level (dBm)	Spec. (dBm)	Margin (dB)
2501.00	5002.00	V	63.7	-39.2	4.6	9.7	-34.1	-13.0	-21.10
2501.00	5002.00	H	59.9	-42.48	4.6	9.7	-37.38	-13.0	-24.38
2593.00	5192.00	V	63.0	-39.8	4.9	9.78	-34.92	-13.0	-21.92
2593.00	5192.00	H	58.8	-42.82	4.9	9.78	-37.94	-13.0	-24.94
2685.00	5370.00	V	57.4	-44.87	4.9	9.86	-39.91	-13.0	-26.91
2685.00	5370.00	H	51.3	-49.6	4.9	9.86	-44.64	-13.0	-31.64
2501.00	7503.00	V	52.9	-48.27	6.05	10.4	-43.92	-13.0	-30.92
2501.00	7503.00	H	52.9	-45.63	6.05	10.4	-41.28	-13.0	-28.28
2593.00	7779.00	V	54.9	-45.36	6.8	10.52	-41.64	-13.0	-28.64
2593.00	7779.00	H	54.9	-40.87	6.8	10.52	-37.15	-13.0	-24.15
2685.00	8055.00	V	56.0	-43.48	6.8	10.58	-39.7	-13.0	-26.70
2685.00	8055.00	H	55.9	-38.87	6.8	10.58	-35.09	-13.0	-22.09

Table 26 Spurious Radiated Emission Test Results Table 10 MHz Bandwidth

14.4 Test Instrumentation Used

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1Year
RF Filter Section	HP	85420E	3705A00248	January 15, 2014	1Year
Antenna Biconical	EMCO	3104	2606	August 30, 2013	2Years
Antenna Log Periodic	ARA	LPD-2010/A	1038	April 2, 2013	2 Year
Horn Antenna	ETS	3115	29845	March 14, 2012	3 Years
Horn Antenna	ARA	SWH-28	1007	March 30, 2014	3 Years
Low Noise Amplifier	Narda	LNA-DBS-0411N313	013	August 21, 2013	1 Year
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	August 28, 2013	1 Year
Spectrum Analyzer	HP	8592L	3826A01204	February 28, 2014	1 Year
Spectrum Analyzer	HP	8564E	3442A00275	March 2, 2014	1 Year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

Table 27 Test Equipment Used Spurious Radiated Emission 5MHz and 10 MHz Bandwidth

15. Frequency Stability 5 and 10 MHz Bandwidth

15.1 Test Specification

Part 27 Sub-part C Section 27.54

15.2 Test Procedure

The E.U.T operation mode and test setup are as described in Section 2. The E.U.T. was operated with a CW signal in the downlink path.

The E.U.T. was placed inside a temperature chamber. The E.U.T. was operated from 40, 48 and 55 VDC at normal temperature and the chamber temperature was set to +25°C.

The spectrum analyzer was set to 10.0 kHz span and 1.0 kHz RBW, and 1.0 kHz VBW.

The carrier frequency was measured and recorded (reference frequency reading).

The carrier frequency measurement was repeated for:

(a). -30°C and 48 VDC

(b). -20°C and 48 VDC

(c). -10°C and 48 VDC

(d). 0°C and 48 VDC

(e). +10°C and 48 VDC

(f). +20°C and 48 VDC

(g). +40°C and 48 VDC

(h). +50°C and 48 VDC

The carrier frequency was measured and recorded after at least 20 minutes of exposing the E.U.T. to the temperature.

The E.U.T. was operated at 2498.50 and 2687.50 MHz for 5 MHz bandwidth, and 2501.00 and 2685.00 MHz for 10 MHz bandwidth.

15.3 Test Results

The E.U.T met the requirements of Part 27 Sub-part C, Section 27.54 specification.

The details of the results are given in Table 28.

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: _____ Date: 16.07.14

Typed/Printed Name: A. Sharabi

Frequency Stability

E.U.T Description BreezeCompact 3000 Base Station
Type CMP3000-B41-2496-2690MHz
Part Number: 95000850

Specification: FCC Part 27 Sub-part C Section 27.54

		5 MHz Bandwidth		10 MHz Bandwidth	
Temperature (°C)	**Voltage** (VDC)	**Frequency** (MHz)	**Frequency** (MHz)	**Frequency** (MHz)	**Frequency** (MHz)
		2498.5000	2687.5000	2501.0000	2685.0000
25	40	2498.5001	2687.5002	2501.0002	2685.0001
	48	2498.5001	2687.5002	2501.0000	2685.0003
	55	2498.5000	2687.5001	2501.0004	2685.0001
-30	48	2498.5002	2687.5002	2501.0002	2685.0002
-20	48	2498.5000	2687.5002	2501.0002	2685.0000
-10	48	2498.5001	2687.5002	2501.0002	2685.0002
0	48	2498.5000	2687.5001	2501.0002	2685.0001
+10	48	2498.5000	2687.5001	2501.0003	2685.0001
+20	48	2498.5001	2687.5001	2501.0002	2685.0001
+40	48	2498.5001	2687.5002	2501.0003	2685.0002
+50	48	2498.5000	2687.5002	2501.0002	2685.0002

Table 28 Frequency Stability Test Results Table

15.4 Test Instruments Used

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration	Period
Spectrum Analyzer	Rodhe & Schwarz	FSL6	100194	December 01, 2013	1 Year
Cable	MINICIRCUIT	CBL-6FT-SMSM+	-	June 16, 2014	1 Year
Environmental Chamber	THERMOTRON CORP	SM 32C Mini Max	25-1030	N/A*	N/A
Calibration Meter	Mastech	MS-7212	00A386	March 17, 2014	1 Year
Digital Voltage Meter	Escort	EDM1111A	10313121	March 3, 2014	1 Year
Variable Voltage Transformer	Variac Voltage Co.	-	-	N/A	N/A

Table 29 Test Instruments Used Frequency Stability 5 MHz and 10 MHz Bandwidth

* Calibration meter listed above is used to calibrate the environmental chamber before the beginning of the test.

16. APPENDIX A - CORRECTION FACTORS

16.1 Correction factors for CABLE

from EMI receiver to test antenna at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3
20.0	0.6
30.0	0.8
40.0	0.9
50.0	1.1
60.0	1.2
70.0	1.3
80.0	1.4
90.0	1.6
100.0	1.7
150.0	2.0
200.0	2.3
250.0	2.7
300.0	3.1
350.0	3.4
400.0	3.7
450.0	4.0
500.0	4.3
600.0	4.7
700.0	5.3
800.0	5.9
900.0	6.3
1000.0	6.7

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
1200.0	7.3
1400.0	7.8
1600.0	8.4
1800.0	9.1
2000.0	9.9
2300.0	11.2
2600.0	12.2
2900.0	13.0

NOTES:

1. The cable type is RG-214.

2. The overall length of the cable is 27 meters.

3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".

16.2 Correction factors for CABLE

from EMI receiver to test antenna at 3 meter range.

FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.2
2.0	1.6
3.0	2.0
4.0	2.4
5.0	3.0
6.0	3.4
7.0	3.8
8.0	4.2
9.0	4.6
10.0	5.0
12.0	5.8

NOTES:

1. The cable type is RG-8.

2. The overall length of the cable is 10 meters.

16.3 Correction factors for CABLE

from spectrum analyzer to test antenna above 2.9 GHz

FREQUENCY (GHz)	CORRECTION FACTOR (dB)	FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.9	14.0	9.1
2.0	2.7	15.0	9.5
3.0	3.5	16.0	9.9
4.0	4.2	17.0	10.2
5.0	4.9	18.0	10.4
6.0	5.5	19.0	10.7
7.0	6.0	20.0	10.9
8.0	6.5	21.0	11.2
9.0	7.0	22.0	11.6
10.0	7.5	23.0	11.9
11.0	7.9	24.0	12.3
12.0	8.3	25.0	12.6
13.0	8.7	26.0	13.0

NOTES:

1. The cable type is SUCOFLEX 104 E manufactured by SUHNER.

2. The cable is used for measurements above 2.9 GHz.

3. The overall length of the cable is 10 meters.

16.4 Correction factors for LOG PERIODIC ANTENNA

Type LPD 2010/A
at 3 and 10 meter ranges.

Distance of 3 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.1
250.0	10.2
300.0	12.5
400.0	15.4
500.0	16.1
600.0	19.2
700.0	19.4
800.0	19.9
900.0	21.2
1000.0	23.5

Distance of 10 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.0
250.0	10.1
300.0	11.8
400.0	15.3
500.0	15.6
600.0	18.7
700.0	19.1
800.0	20.2
900.0	21.1
1000.0	23.2

NOTES:

1. *Antenna serial number is 1038.*
2. *The above lists are located in file number 38M3O.ANT for a 3 meter range, and file number 38M100.ANT for a 10 meter range.*
3. *The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".*

16.5 Correction factors for Biconical ANTENNA

at 3 meter

FREQUENCY (MHz)	AFE (dB/m)
30	14.5
40	12.8
50	12.7
60	11.2
70	8.7
80	7.5
90	13.0
100	12.3
120	12.5
140	11.2

FREQUENCY (MHz)	AFE (dB/m)
160	14.8
180	16.4
200	16.0
250	17.8
300	20.7

NOTES:

1. *Antenna Model number is 3104; serial number is 2606.*
2. *The above lists are located in file number 38M3O.ANT for a 3 meter range, and file number 38M100.ANT for a 10 meter range.*
3. *The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".*

16.6 Correction factors forDouble-Ridged Waveguide Horn

Model: 3115, S/N 29845
at 3 meter range.

FREQUENCY (GHz)	ANTENNA FACTOR (dB 1/m)	ANTENNA Gain (dBi)	FREQUENCY (GHz)	ANTENNA FACTOR (dB 1/m)	ANTENNA Gain (dBi)
1.0	24.8	5.4	10.0	38.8	11.4
1.5	26.1	7.6	10.5	38.9	11.8
2.0	28.6	7.7	11.0	39.0	12.1
2.5	29.8	8.4	11.5	39.6	11.8
3.0	31.4	8.4	12.0	39.8	12.0
3.5	32.4	8.7	12.5	39.6	12.5
4.0	33.7	8.6	13.0	40.0	12.5
4.5	33.4	9.9	13.5	39.8	13.0
5.0	34.5	9.7	14.0	40.2	13.0
5.5	35.1	9.9	14.5	40.6	12.9
6.0	35.4	10.4	15.0	41.3	12.4
6.5	35.6	10.8	15.5	39.5	14.6
7.0	36.2	10.9	16.0	38.8	15.5
7.5	37.3	10.4	16.5	40.0	14.6
8.0	37.7	10.6	17.0	41.4	13.4
8.5	38.3	10.5	17.5	44.8	10.3
9.0	38.5	10.8	18.0	47.2	8.1
9.5	38.7	11.1			

16.7 Correction factors for Horn Antenna

Model: SWH-28
at 1 meter range.

FREQUENCY (GHz)	AFE (dB /m)	Gain (dB1)
18.0	40.3	16.1
19.0	40.3	16.3
20.0	40.3	16.1
21.0	40.3	16.3
22.0	40.4	16.8
23.0	40.5	16.4
24.0	40.5	16.6
25.0	40.5	16.7
26.0	40.6	16.4

16.8 Correction factors for Horn Antenna

Model: V637

FREQUENCY (GHz)	AFE (dB /m)	Gain (dB1)
26.0	43.6	14.9
27.0	43.7	15.1
28.0	43.8	15.3
29.0	43.9	15.5
30.0	43.9	15.8
31.0	44.0	16.0
32.0	44.1	16.2
33.0	44.1	16.4
34.0	44.1	16.7
35.0	44.2	16.9
36.0	44.2	17.1
37.0	44.2	17.4
38.0	44.2	17.6
39.0	44.2	17.8
40.0	44.2	18.0