



DATE: 7 December 2020

**I.T.L. (PRODUCT TESTING) LTD.
FCC Radio Test Report
For**

**Corning Optical Communication Wireless
Equipment under test:**

**ONE - Optical Network Evolution Wireless
Platform**

MRU (Mid Power Remote Unit)

(CELL/ESMR Section)

Tested by:

M. Zohar

Approved by:

D. Shidlowsky

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This report relates only to items tested.



Measurement/Technical Report for Corning Optical Communication Wireless ONE - Optical Network Evolution Wireless Platform

FCC ID: OJF1MRU85CR

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

Equipment type: B21 - Part 20 Industrial Booster (CMRS)

Limits used: 47CFR Parts 2; 20; 22; 90

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

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

Application for Certification
prepared by:

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Applicant for this device:

(different from "prepared by")

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1 General Information

1.1 Administrative Information

Manufacturer:	Corning Optical Communication Wireless
Manufacturer's Address:	8253 1st Street Vienna, VA 22812 U.S.A. Tel: +1-703 855-1773
Manufacturer's Representative:	Isaac Nissan
Equipment Under Test (E.U.T):	ONE - Optical Network Evolution Wireless Platform
Equipment Model No.:	MRU (Mid Power Remote Unit)
Equipment Serial No.:	Not Designated
Date of Receipt of E.U.T:	September 01, 2020
Start of Test:	September 01, 2020
End of Test:	November 12, 2020
Test Laboratory Location:	I.T.L (Product Testing) Ltd. 1 Batsheva St, Lod, Israel 7116002
Test Specifications:	FCC Parts 2; 20, 22, 90



1.2 List of Accreditations

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

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation Number is IL1005.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-20025, R-2729, T-20028, G-20068.
5. Department of Innovation, Science and Economic Development (ISED) Canada, CAB identifier: IL1002.

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

1.3 Product Description

Modular 7 band Enabled Mid Power Neutral Host Solution –

Supported modular frequency bands

700, ESMR+CELL, PCS, AWS, WCS

Integrated 2.5 GHz expansion ready

Composite Output Power

AWS: 34dBm

PCS, WCS: 33dBm

700, ESMR & CELL: 30dBm

Specifications

100% Modularity

NEBS Class 2 Compliant

Small Footprint – 6 Rack Units

Highlights:

Extended ONE platform design Diversity

100% modular component design

Composite output power: 2W

Small Compact Form Factor (6U)

Non-Service Impacting Upgrades

Lower initial deployment costs

1.4 Test Methodology

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

1.5 Test Facility

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

1.6 Measurement Uncertainty

Conducted Emission (CISPR 11, EN 55011, CISPR 32, EN 55032, ANSI C63.4)

0.15 – 30 MHz:

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

± 3.44 dB

Radiated Emission (CISPR 11, EN 55011, CISPR 32, EN 55032, ANSI C63.4) for open site 30-1000MHz:

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

± 4.98 dB



2 System Test Configuration

2.1 *Justification*

1. The E.U.T was originally FCC certified on 09/14/2016. It originally supported cellular 3G&4G technology.
2. Currently the manufacturer has made the following C2PC changes:
Enabling the use of 5G technology via software changes only with the same operation bands. No changes have been made to the hardware.
3. The following tests were performed: RF Output Power, Occupied Bandwidth and Spurious Emissions.
4. The EUT meets the requirements of a C2PC.

2.2 *EUT Exercise Software*

The Element Management System ver. 2.0 used for commands delivery. These commands are used to enable/disable the EUT transmission. EUT Embedded SW versions is mru_da64_20_02.bin.

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

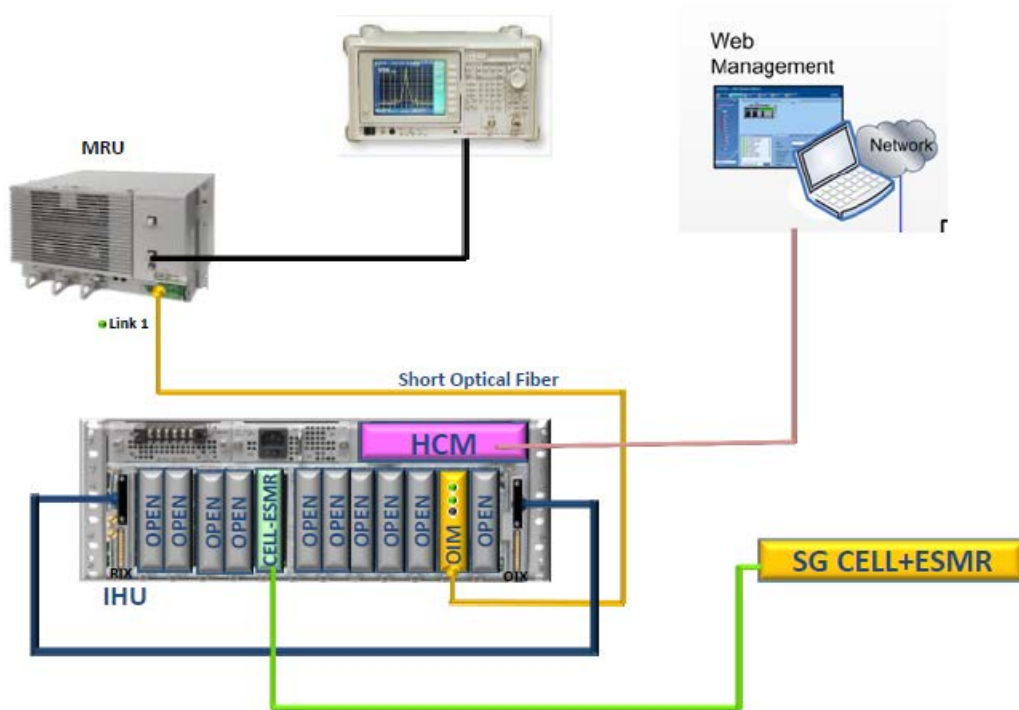


Figure 1. Conducted Test Set-Up

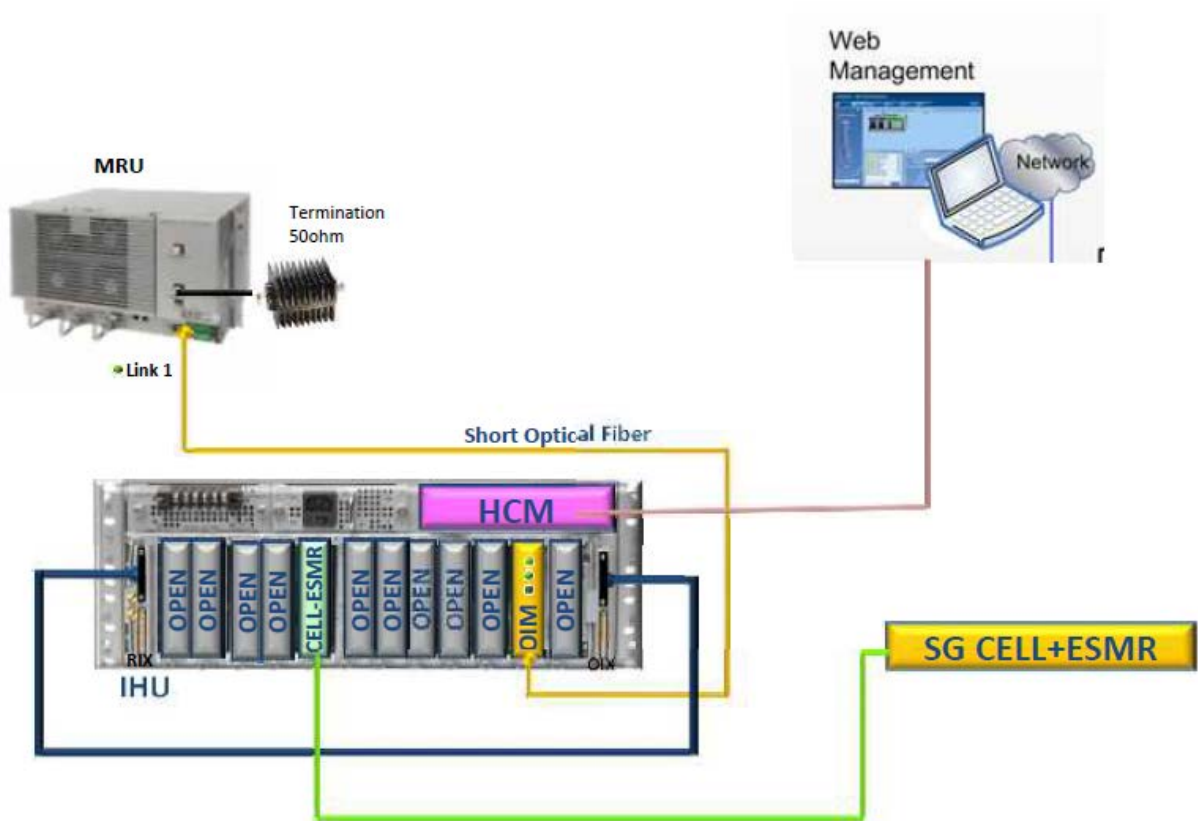


Figure 2. Radiated Test Set-Up

3 Test Set-Up Photos

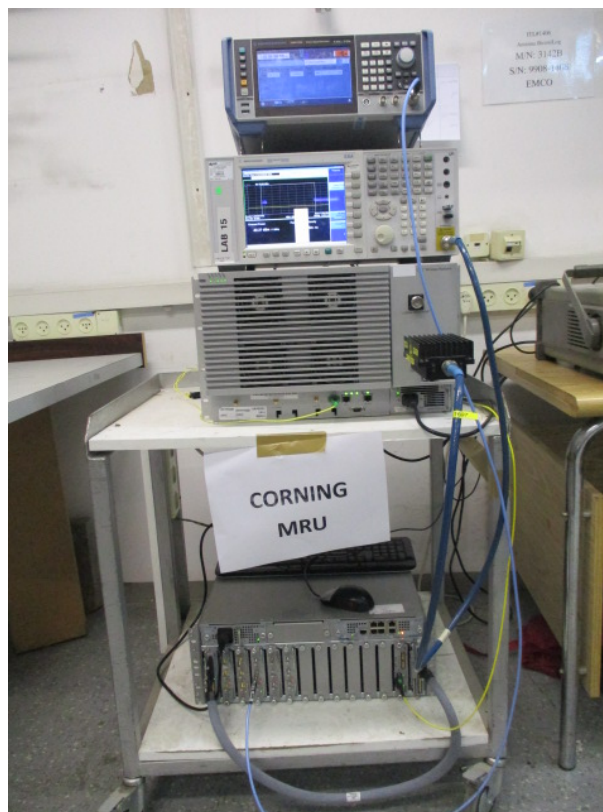


Figure 3. Conducted Emission From Antenna Port Tests

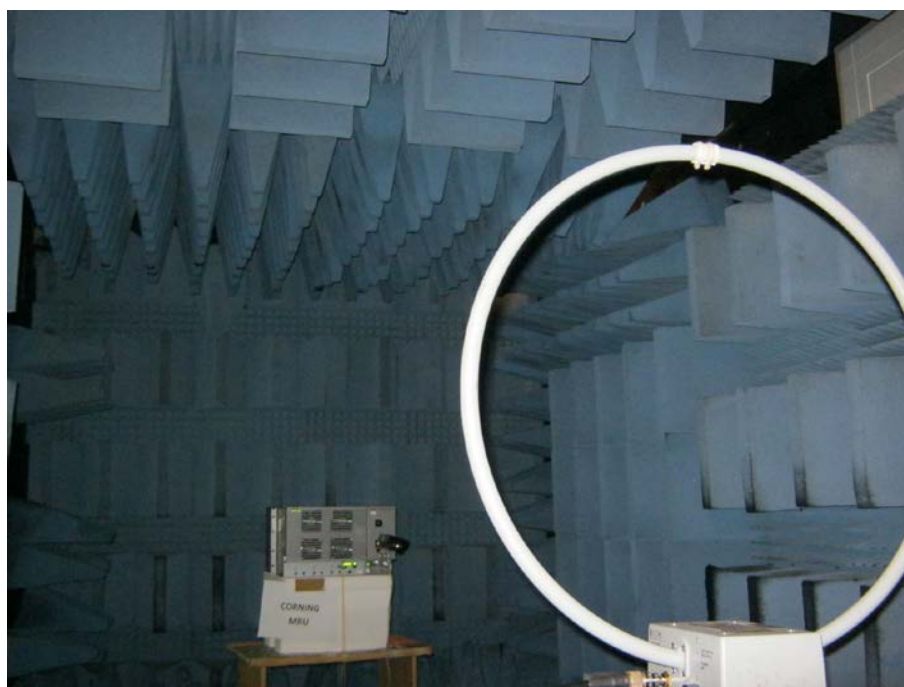


Figure 4. Radiated Emission Test 9kHz - 30MHz



Figure 5. Radiated Emission Test 30 - 200 MHz



Figure 6. Radiated Emission Test 200 - 1000MHz



Figure 7. Radiated Emission Test 1-10GHz



4 RF Power Output

4.1 Test Specification

Parts 22; 90

4.2 Test Procedure

(Temperature (22°C)/ Humidity (60%RH))

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (41.0 dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.

4.3 Test Results

JUDGEMENT: Passed

See additional information in Table 1 to Table 4 and Figure 8 to Figure 175.

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (dBm)
16QAM	5	15	864.5	30.07
		30	864.5	30.36
		15	878.0	30.00
		30	878.0	30.33
		15	891.5	29.44
		30	891.5	29.98
	10	15	867.0	30.12
		30	867.0	30.43
		60	867.0	30.48
		15	878.0	29.97
		30	878.0	30.03
		60	878.0	30.08
		15	889.0	29.97
		30	889.0	30.21
		60	889.0	29.90
	15	15	869.0	29.99
		30	869.0	29.97
		60	869.0	30.07
		15	878.0	30.08
		30	878.0	29.88
		60	878.0	29.85
		15	886.5	30.01
		30	886.5	30.15
		60	886.5	29.68
	20	15	872.0	30.04
		30	872.0	30.15
		60	872.0	30.31
		15	878.0	30.06
		30	878.0	30.45
		60	878.0	29.61
		15	884.0	29.85
		30	884.0	30.00
		60	884.0	30.09
	25	15	874.5	30.04
		30	874.5	30.51
		60	874.5	30.32
		15	878.0	30.04
		30	878.0	30.16
		60	878.0	29.96
		15	881.5	29.95
		30	881.5	29.91
		60	881.5	30.08

Table 1 RF Power Output 16QAM

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (dBm)
64QAM	5	15	864.5	30.34
		30	864.5	30.39
		15	878.0	29.59
		30	878.0	29.93
		15	891.5	30.46
		30	891.5	29.81
	10	15	867.0	30.13
		30	867.0	29.94
		60	867.0	29.92
		15	878.0	29.97
		30	878.0	29.58
		60	878.0	30.18
		15	889.0	29.99
		30	889.0	29.99
		60	889.0	30.15
	15	15	869.5	30.14
		30	869.5	29.96
		60	869.5	30.37
		15	878.0	30.64
		30	878.0	30.05
		60	878.0	30.07
		15	886.5	30.09
		30	886.5	29.98
		60	886.5	29.77
	20	15	872.0	30.46
		30	872.0	30.00
		60	872.0	30.37
		15	878.0	30.28
		30	878.0	30.43
		60	878.0	29.81
		15	884.0	29.88
		30	884.0	29.88
		60	884.0	29.74
	25	15	874.5	30.04
		30	874.5	30.10
		60	874.5	30.13
		15	878.5	29.75
		30	878.5	30.10
		60	878.5	30.08
		15	881.5	30.38
		30	881.5	30.09
		60	881.5	29.90

Table 2 RF Power Output 64QAM

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (dBm)
256QAM	5	15	864.5	30.14
		30	864.5	29.93
		15	878.0	29.68
		30	878.0	29.98
		15	891.5	30.27
		30	891.5	30.04
	10	15	867.0	29.97
		30	867.0	30.23
		60	867.0	30.48
		15	878.0	30.38
		30	878.0	30.10
		60	878.0	30.15
		15	889.0	30.66
		30	889.0	30.50
		60	889.0	30.01
	15	15	869.5	30.38
		30	869.5	30.09
		60	869.5	30.23
		15	878.0	30.09
		30	878.0	30.02
		60	878.0	30.35
		15	886.0	30.04
		30	886.0	30.15
		60	886.0	30.09
	20	15	872.0	30.03
		30	872.0	30.06
		60	872.0	30.08
		15	878.0	30.00
		30	878.0	30.01
		60	878.0	30.50
		15	884.0	30.01
		30	884.0	30.21
		60	884.0	30.02
	25	15	874.5	30.16
		30	874.5	30.09
		60	874.5	30.02
		15	878.0	30.30
		30	878.0	29.77
		60	878.0	30.13
		15	881.5	30.06
		30	881.5	30.31
		60	881.5	30.37

Table 3 RF Power Output 256QAM

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (dBm)
QPSK	5	15	864.5	30.33
		30	864.5	30.07
		15	878.0	30.16
		30	878.0	30.12
		15	891.5	30.37
		30	891.5	30.26
	10	15	867.0	30.01
		30	867.0	30.49
		60	867.0	30.21
		15	878.0	29.41
		30	878.0	29.86
		60	878.0	30.38
		15	889.0	29.94
		30	889.0	29.98
		60	889.0	30.06
	15	15	869.5	30.21
		30	869.5	30.27
		60	869.5	30.14
		15	878.0	29.99
		30	878.0	30.52
		60	878.0	29.96
		15	886.5	30.08
		30	886.5	29.88
		60	886.5	30.09
	20	15	872.0	29.92
		30	872.0	29.81
		60	872.0	30.37
		15	878.0	29.24
		30	878.0	30.13
		60	878.0	30.21
		15	884.0	30.0
		30	884.0	30.11
		60	884.0	30.15
	25	15	874.5	30.01
		30	874.5	30.06
		60	874.5	30.05
		15	878.0	30.18
		30	878.0	30.29
		60	878.0	30.27
		15	881.5	30.14
		30	881.5	30.07
		60	881.5	30.36

Table 4 RF Power Output QPSK

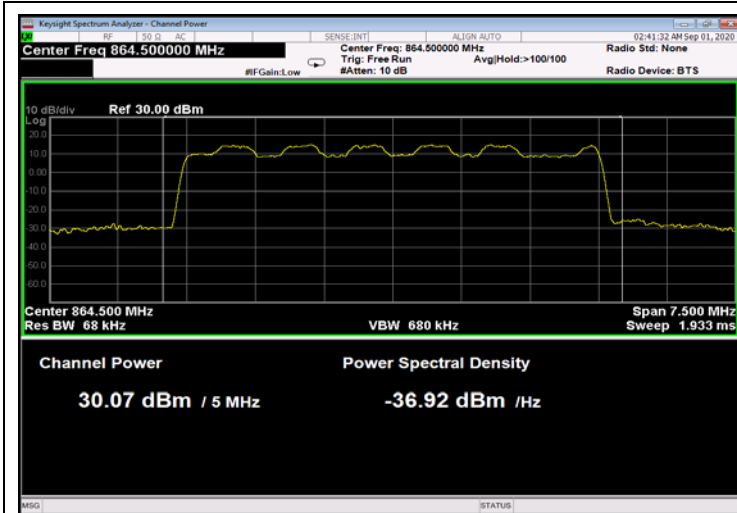


Figure 8: 16QAM 5MHz B.W.; 864.5MHz, 15kHz

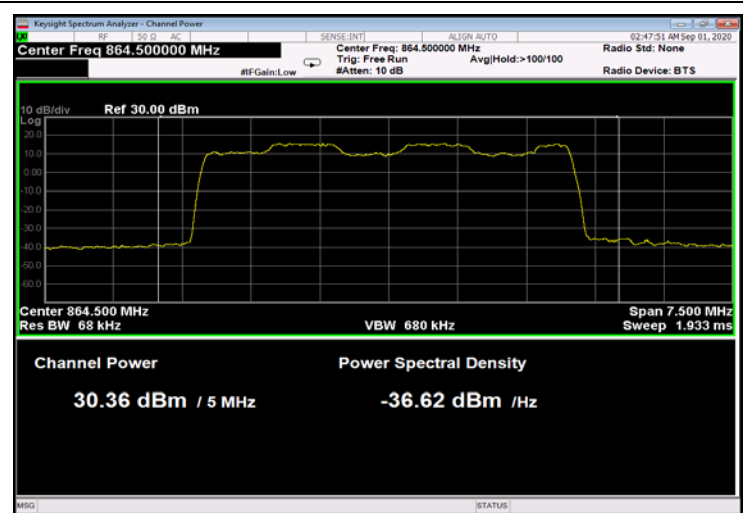


Figure 9: 16QAM 5MHz B.W.; 864.5MHz, 30kHz

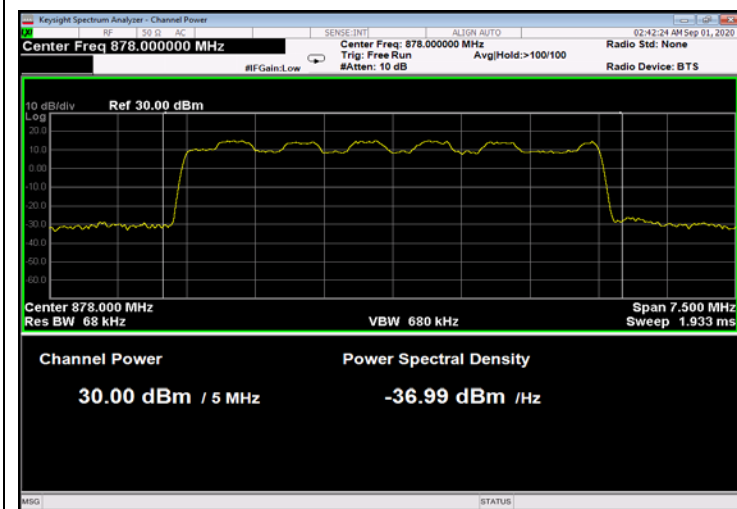


Figure 10: 16QAM 5MHz B.W.; 878.0MHz, 15kHz

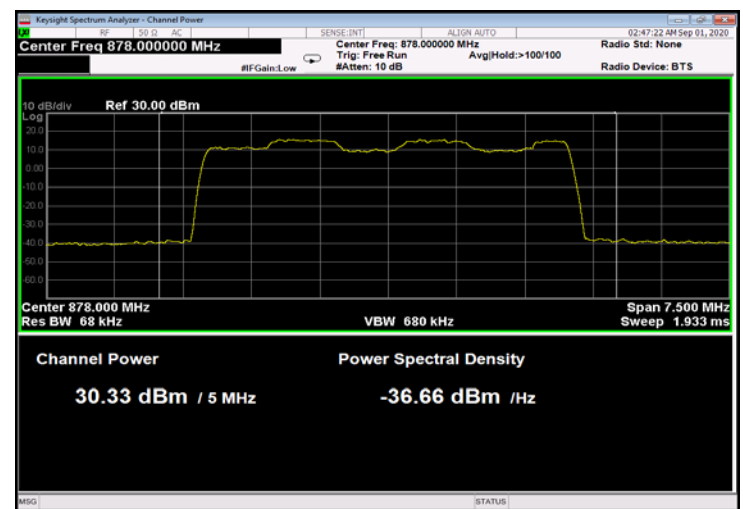


Figure 11: 16QAM 5MHz B.W.; 878.0MHz, 30kHz

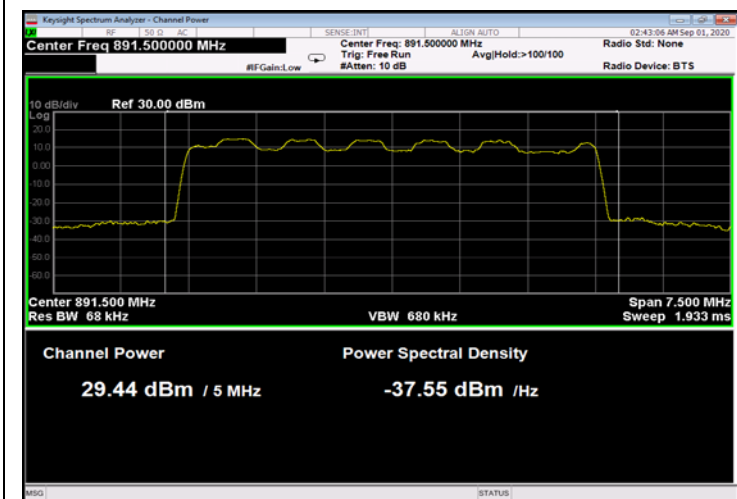


Figure 12: 16QAM 5MHz B.W.; 891.5MHz, 15kHz

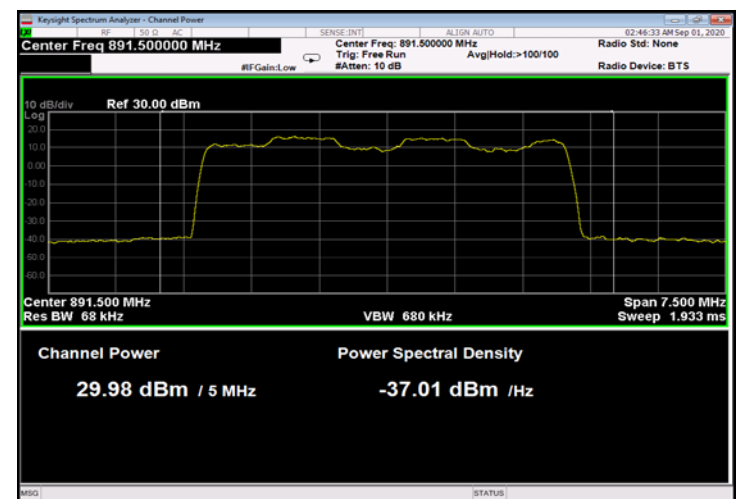


Figure 13: 16QAM 5MHz C.S.; 891.5MHz, 30kHz

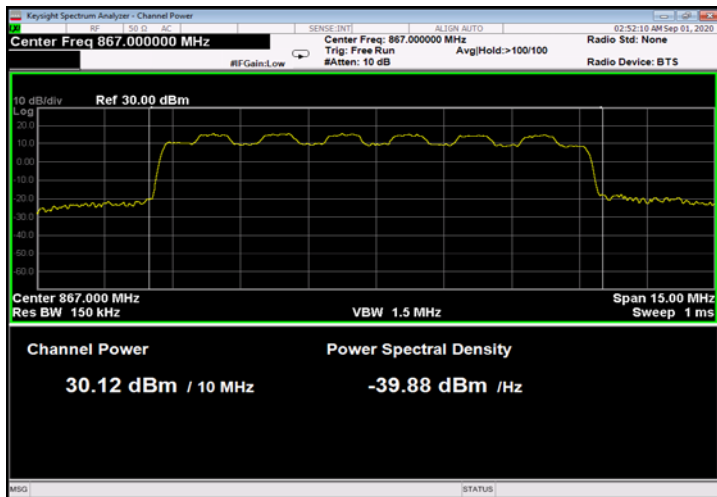


Figure 14: 16QAM 10MHz B.W.; 867.0MHz, 15kHz

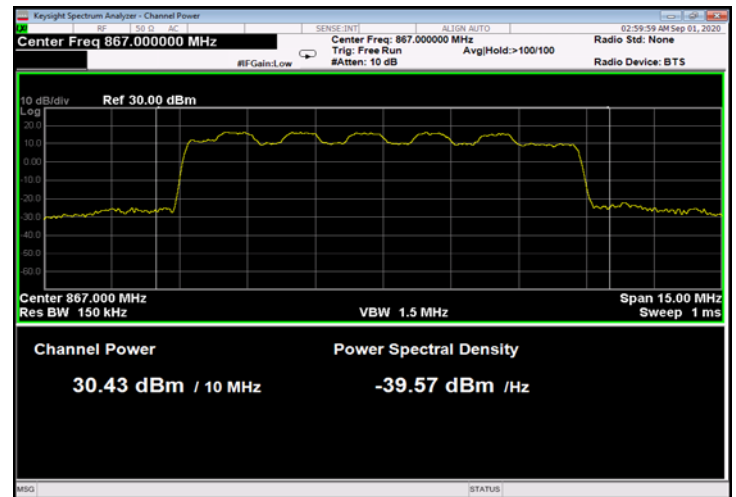


Figure 15: 16QAM 10MHz B.W.; 867.0MHz, 30kHz

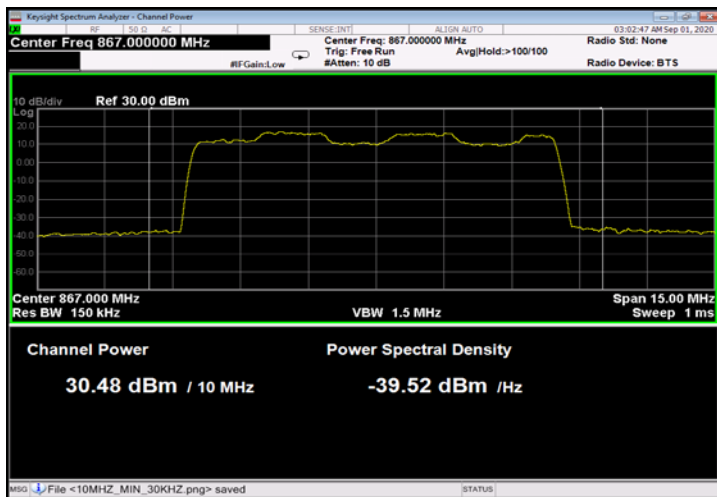


Figure 16: 16QAM 10MHz B.W.; 867.0MHz, 60kHz

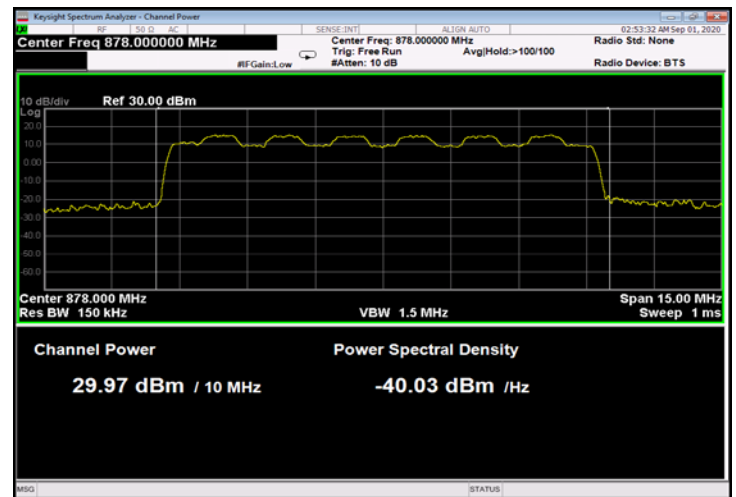


Figure 17: 16QAM 10MHz B.W.; 878.0MHz, 15kHz

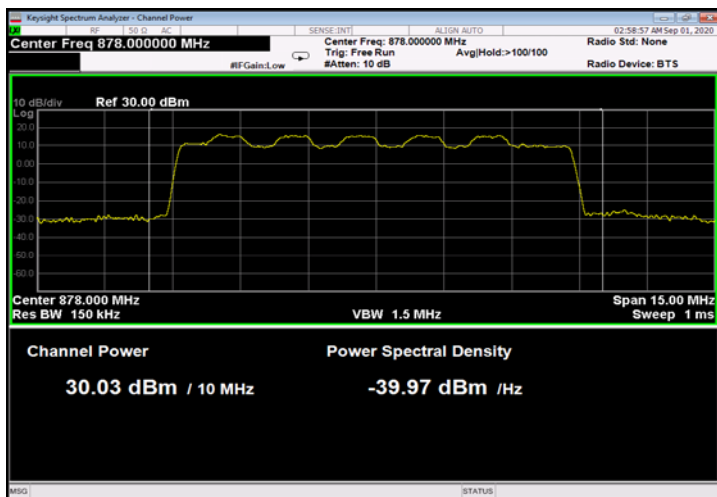


Figure 18: 16QAM 10MHz B.W.; 878.0MHz, 30kHz

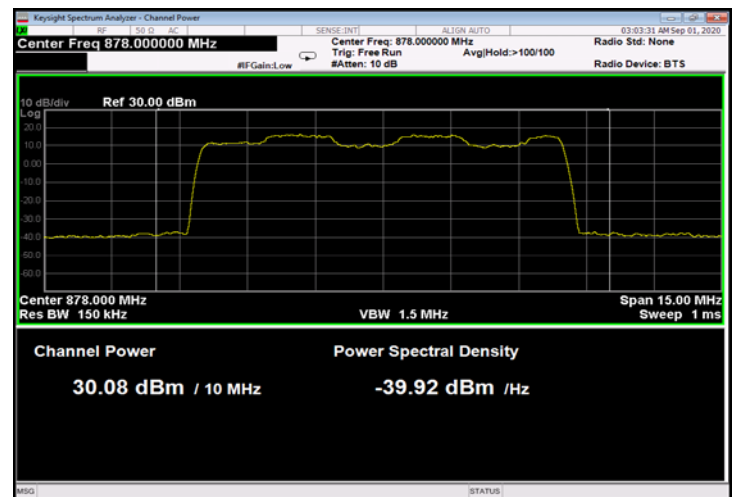


Figure 19: 16QAM 10MHz B.W.; 878.0MHz, 60kHz

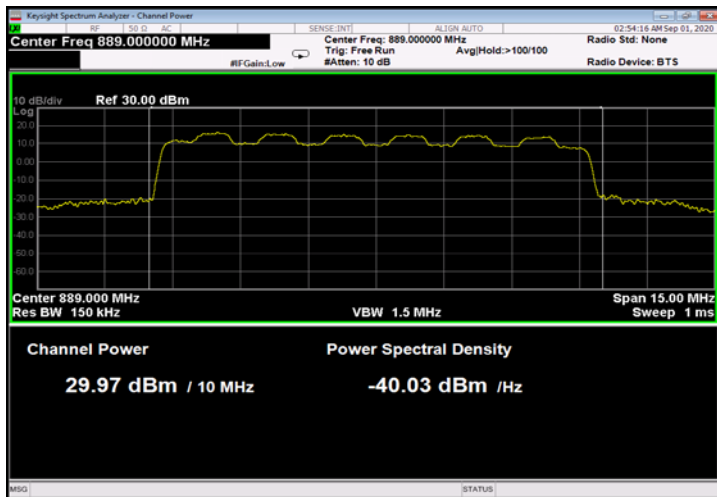


Figure 20: 16QAM 10MHz B.W.; 889.0MHz, 15kHz

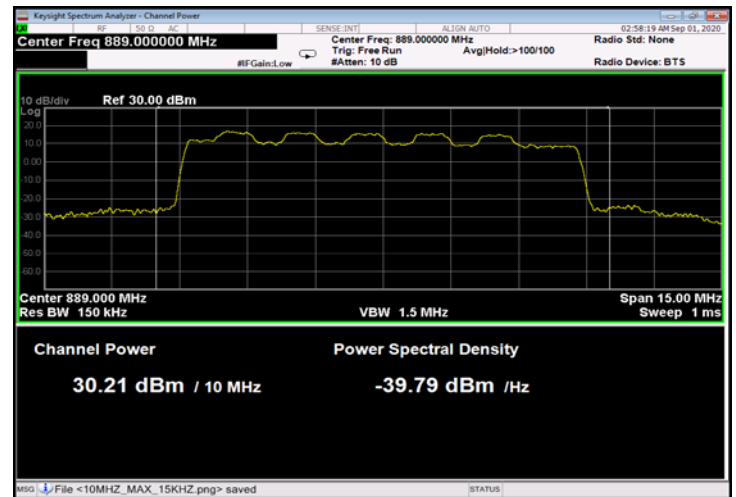


Figure 21: 16QAM 10MHz B.W.; 889.MHz, 30kHz

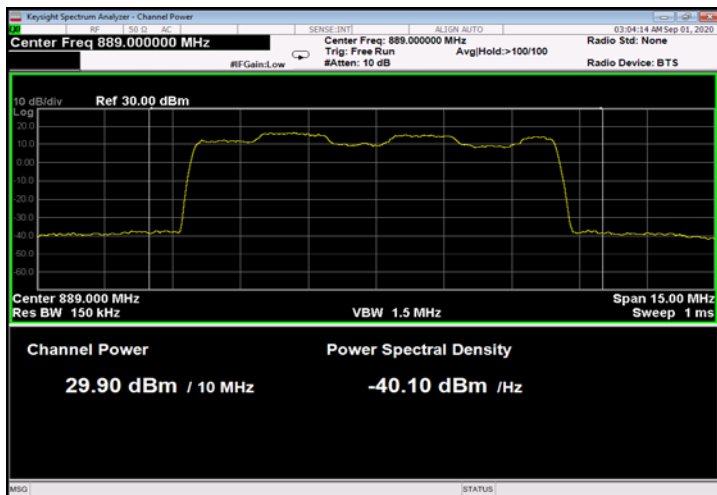


Figure 22: 16QAM 10MHz B.W.; 889.0MHz, 60kHz

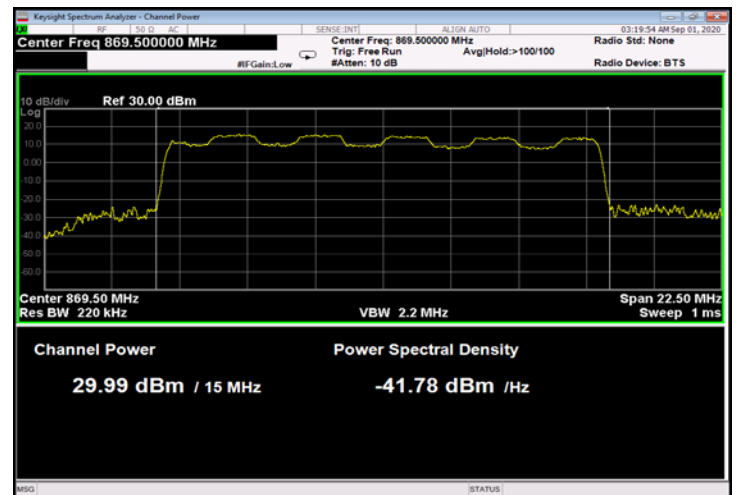


Figure 23: 16QAM 15MHz B.W.; 869.0MHz, 15kHz

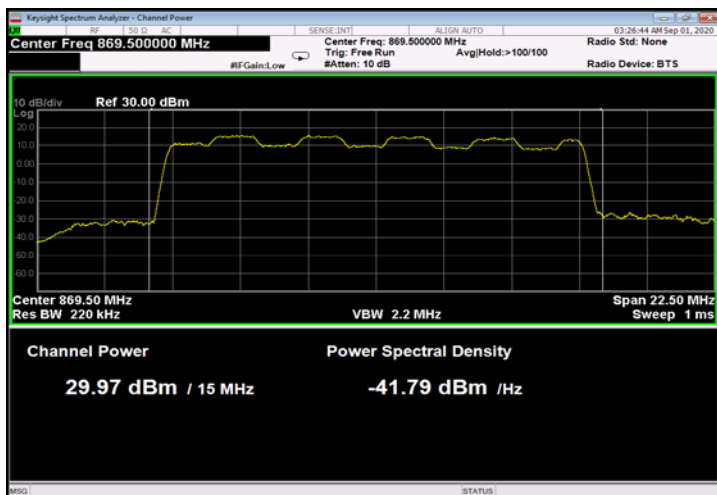


Figure 24: 16QAM 15MHz B.W.; 869.0MHz, 30kHz

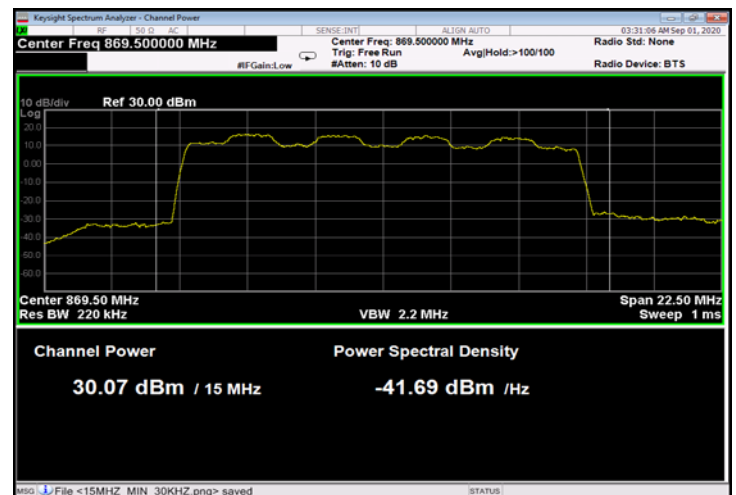


Figure 25: 16QAM 10MHz B.W.; 869.0MHz, 60kHz

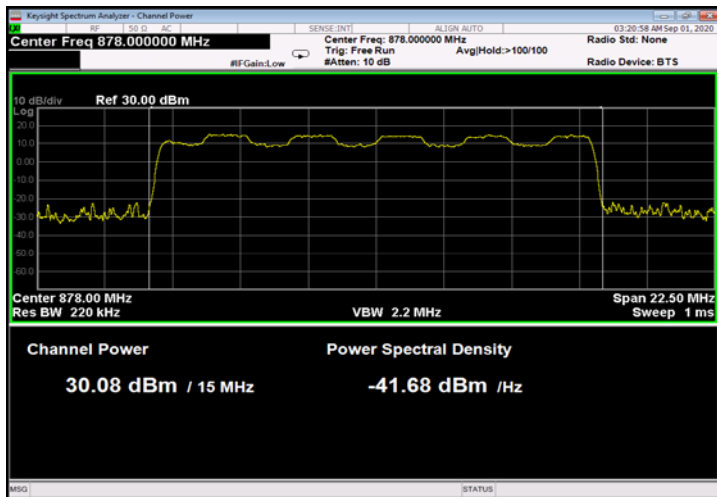


Figure 26: 16QAM 15MHz B.W.; 878.0MHz, 15kHz

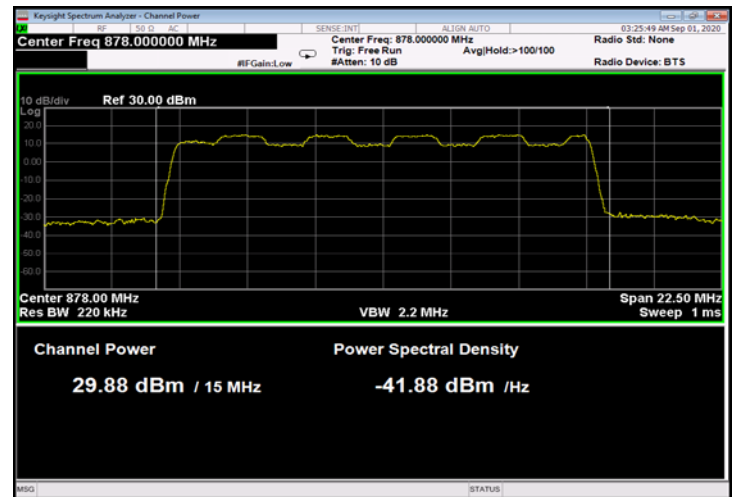


Figure 27: 16QAM 15MHz B.W.; 878.0MHz, 30kHz

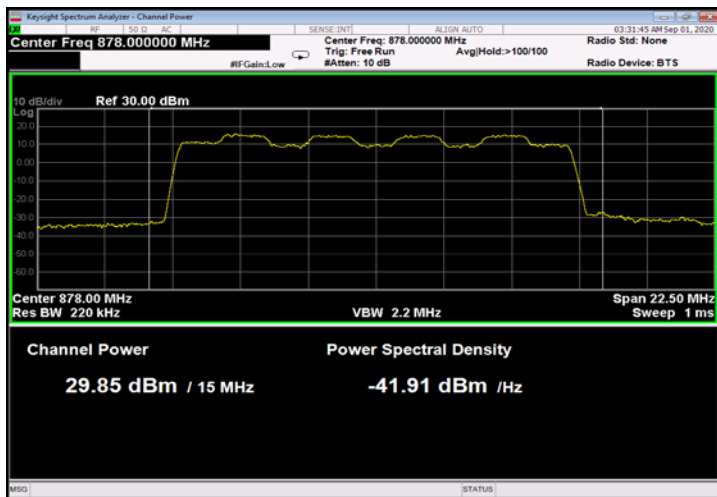


Figure 28: 16QAM 15MHz B.W.; 878.0MHz, 60kHz

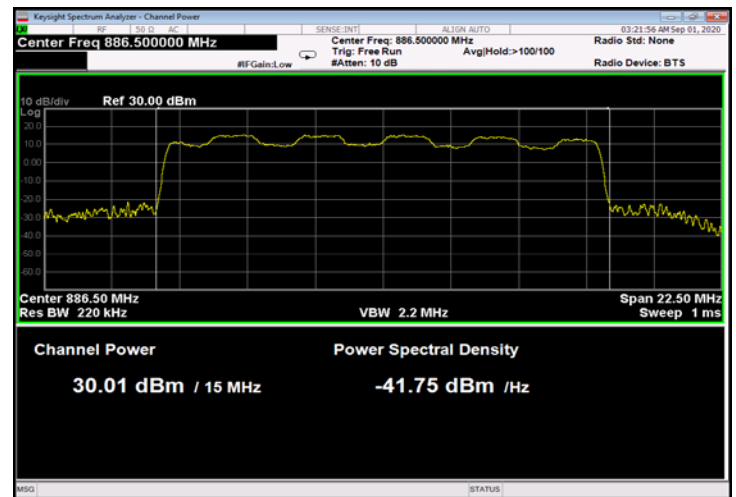


Figure 29: 16QAM 15MHz B.W.; 886.5MHz, 15kHz

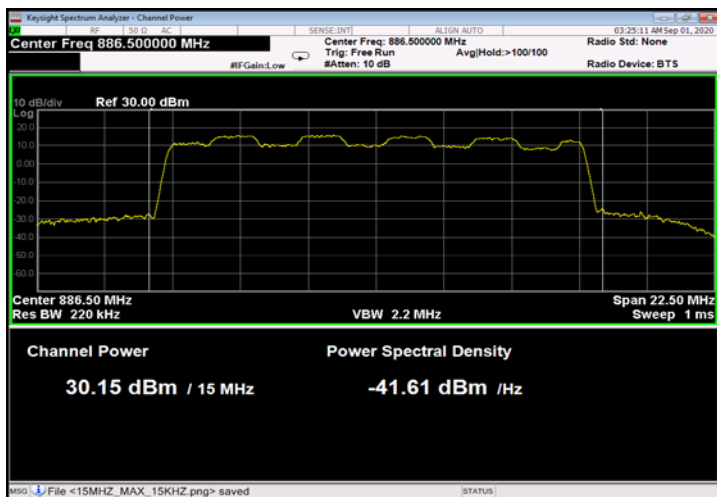


Figure 30: 16QAM 15MHz B.W.; 886.5MHz, 30kHz

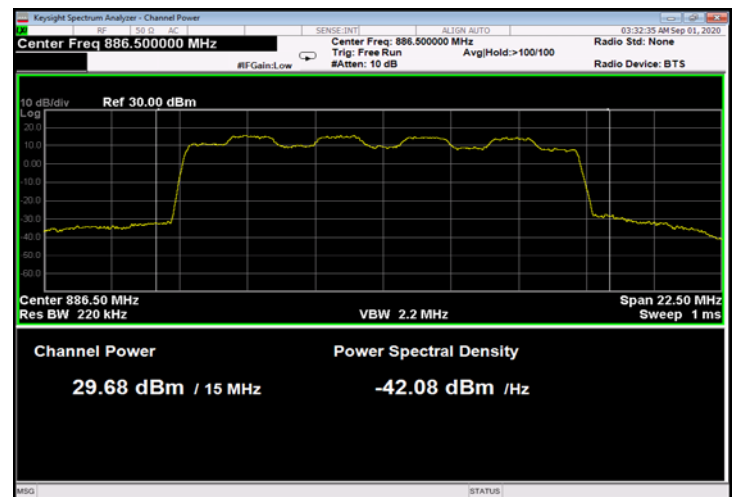


Figure 31: 16QAM 15MHz B.W.; 886.5MHz, 60kHz

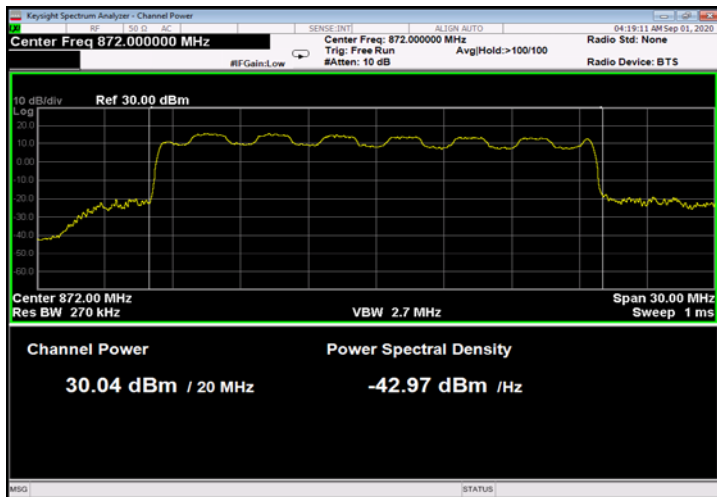


Figure 32: 16QAM 20MHz B.W.; 872.0MHz, 15kHz

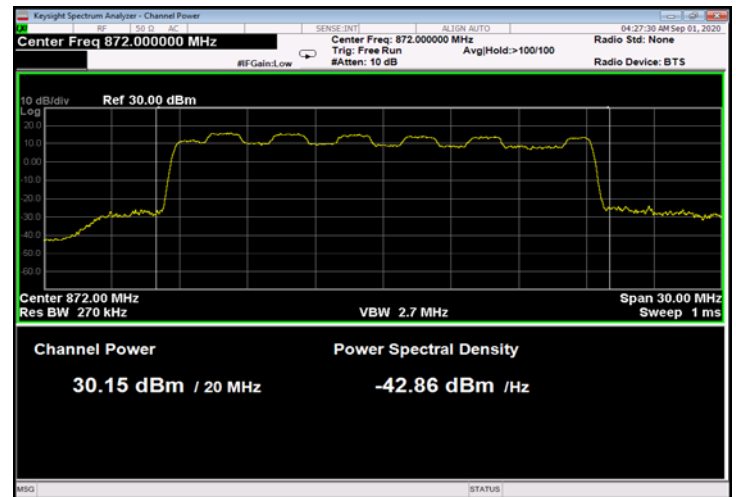


Figure 33: 16QAM 20MHz B.W.; 872.0MHz, 30kHz

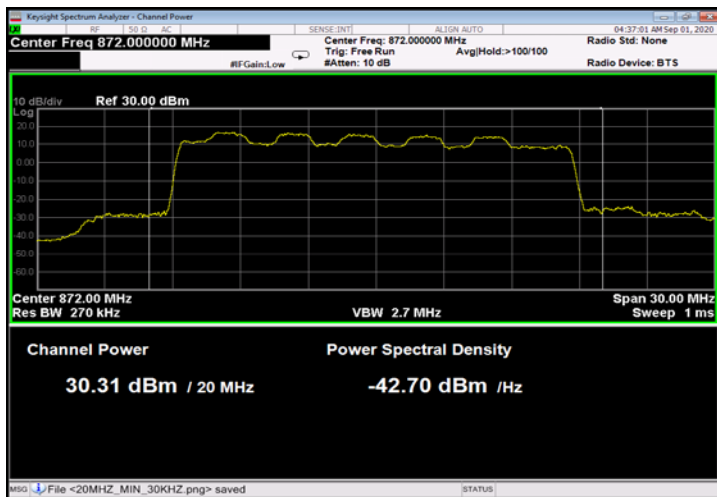


Figure 34: 16QAM 20MHz B.W.; 872.0MHz, 60kHz

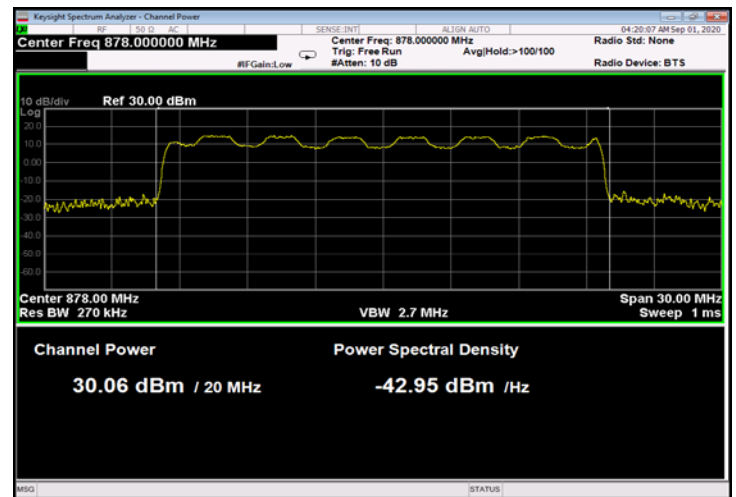


Figure 35: 16QAM 20MHz B.W.; 878.0MHz, 15kHz

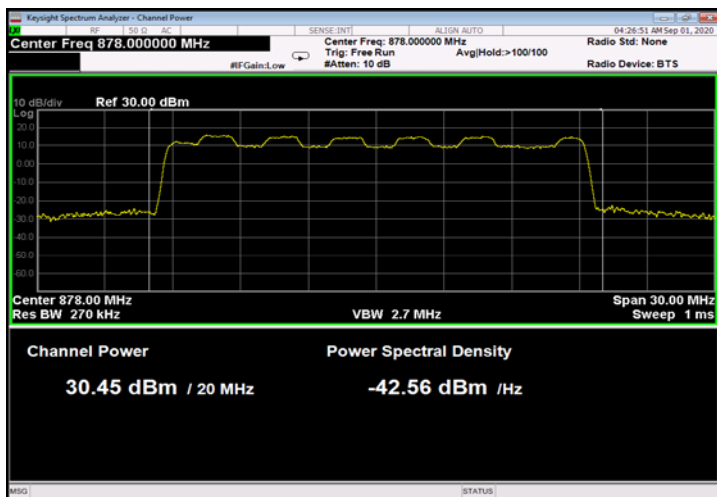


Figure 36: 16QAM 20MHz B.W.; 878.0MHz, 30kHz

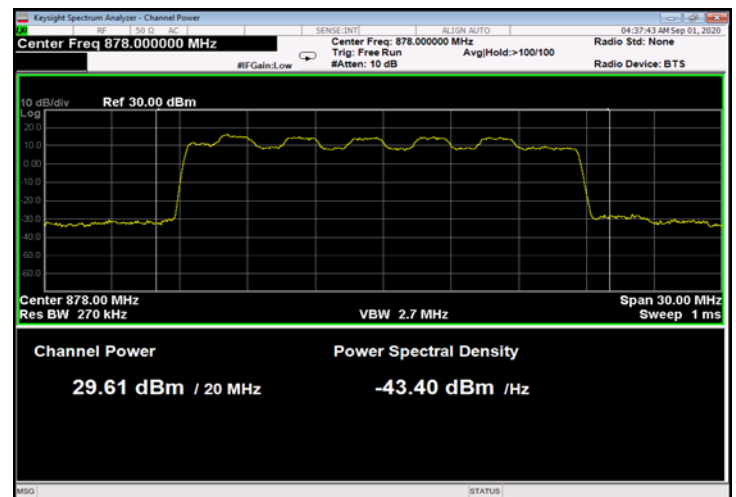


Figure 37: 16QAM 20MHz B.W.; 878.0MHz, 60kHz

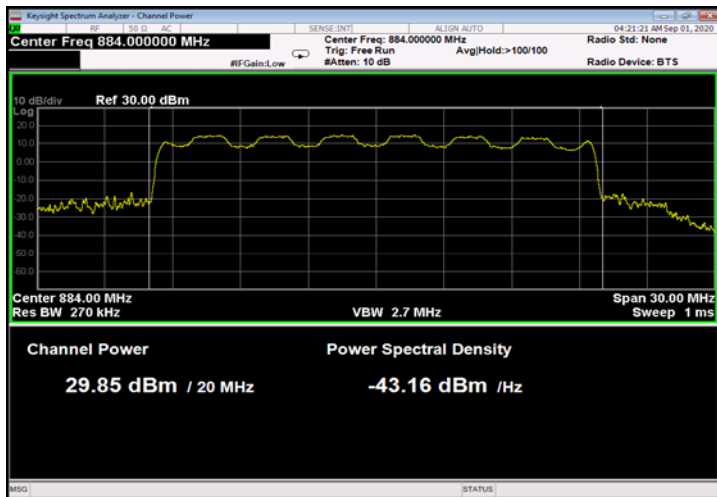


Figure 38: 16QAM 20MHz B.W.; 884.0MHz, 15kHz

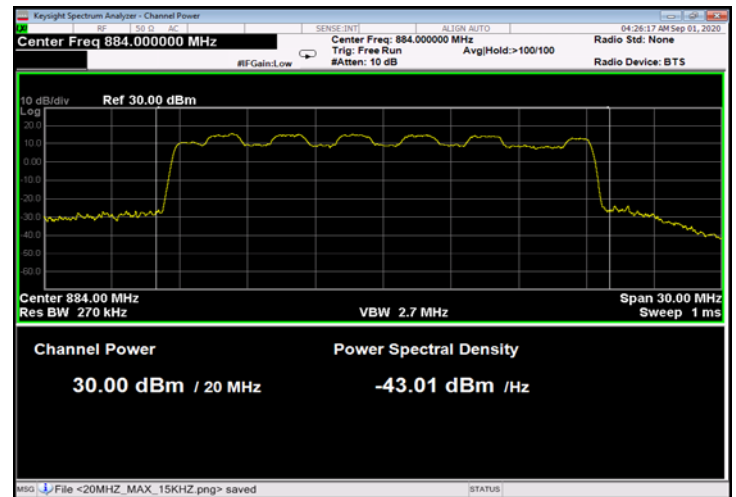


Figure 39: 16QAM 20MHz B.W.; 884.0MHz, 30kHz

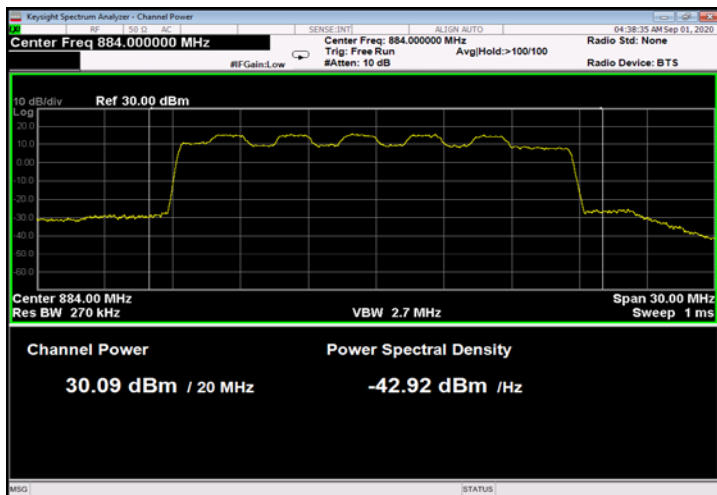


Figure 40: 16QAM 20MHz B.W.; 884.0MHz, 60kHz

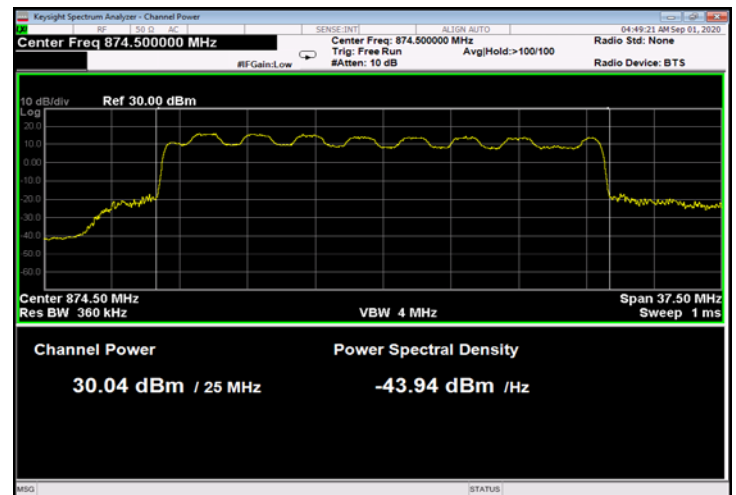


Figure 41: 16QAM 25MHz B.W.; 874.5MHz, 15kHz

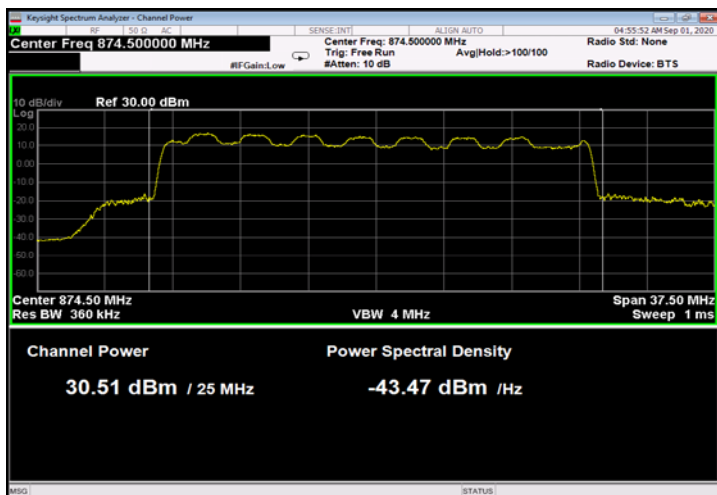


Figure 42: 16QAM 25MHz B.W.; 874.5MHz, 30kHz

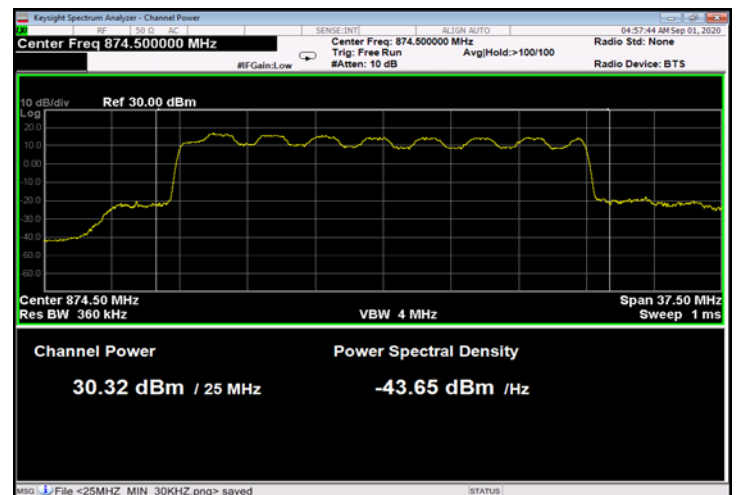


Figure 43: 16QAM 25MHz B.W.; 874.5MHz, 60kHz

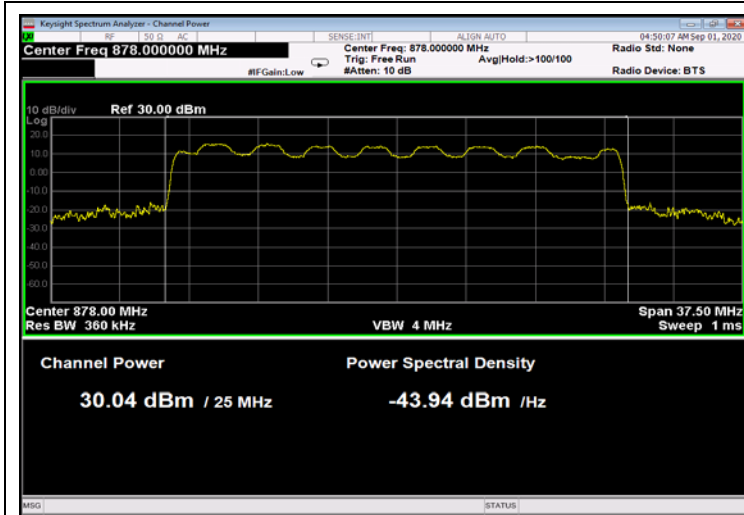


Figure 44: 16QAM 25MHz B.W.; 878.0MHz, 15kHz

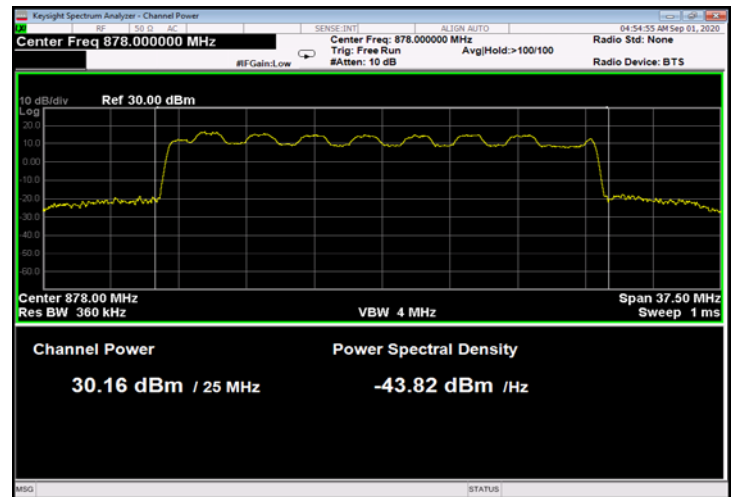


Figure 45: 16QAM 25MHz B.W.; 878.0MHz, 30kHz

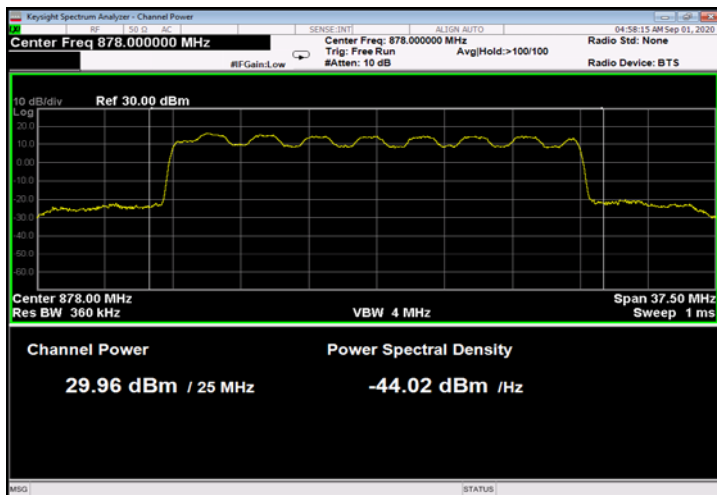


Figure 46: 16QAM 25MHz B.W.; 878.0MHz, 60kHz

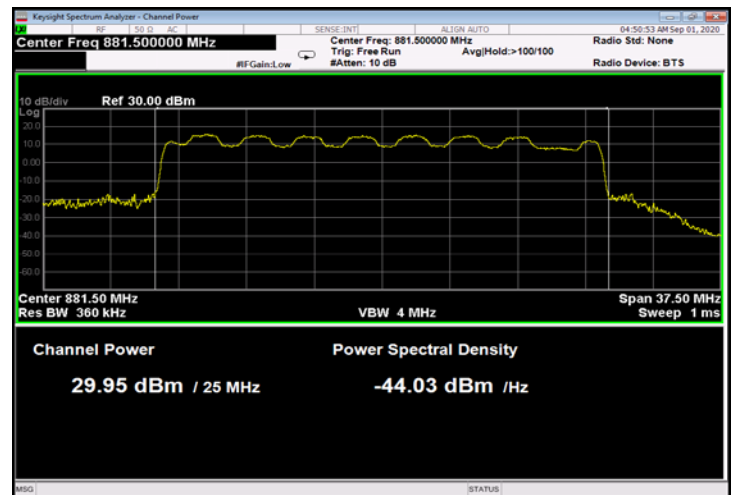


Figure 47: 16QAM 25MHz B.W.; 881.5MHz, 15kHz

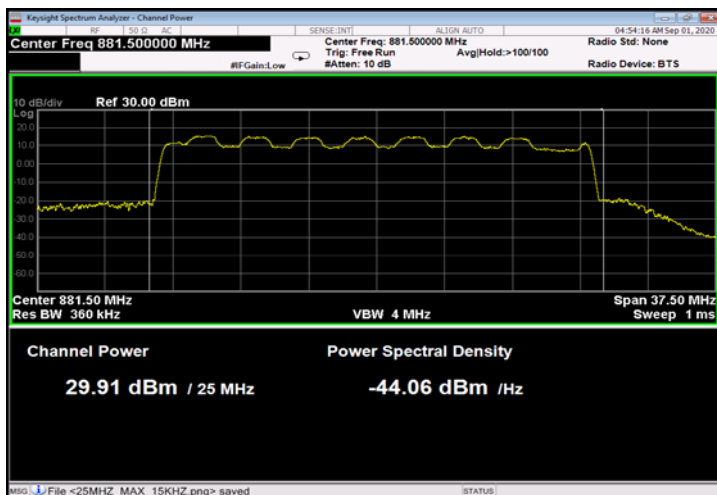


Figure 48: 16QAM 25MHz B.W.; 881.5MHz, 30kHz

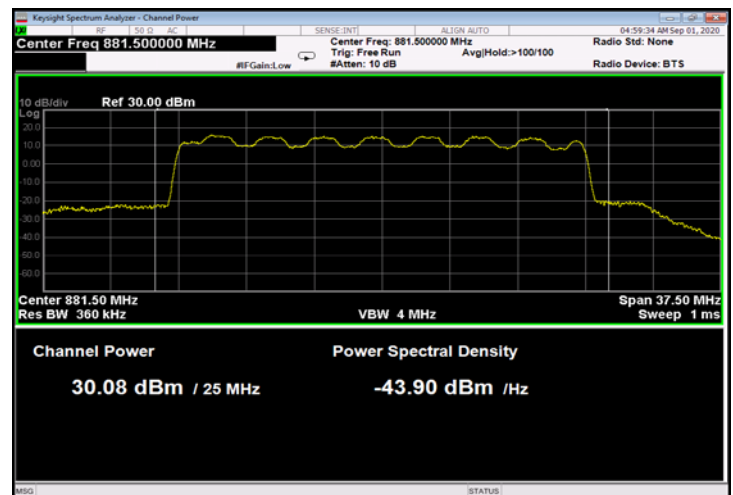


Figure 49: 16QAM 25MHz B.W.; 881.5MHz, 60kHz

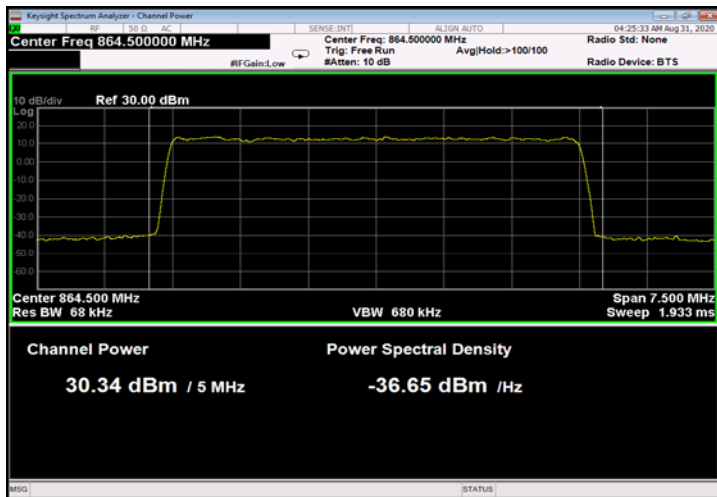


Figure 50: 64QAM 5MHz B.W.; 864.5MHz, 15kHz

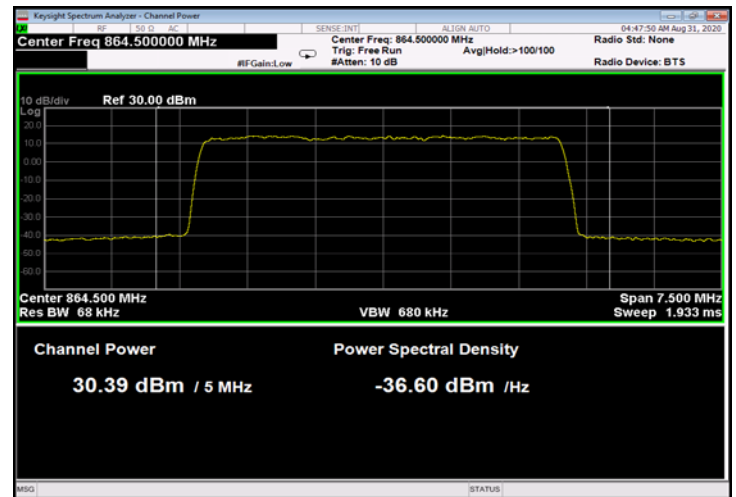


Figure 51: 64QAM 5MHz B.W.; 864.5MHz, 30kHz

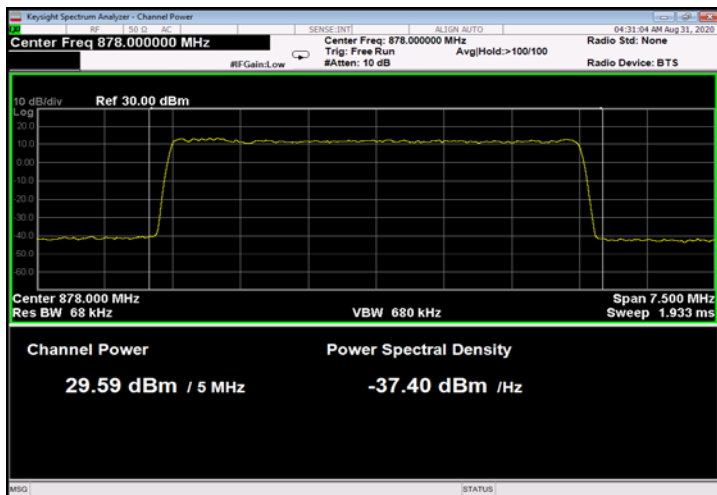


Figure 52: 64QAM 5MHz B.W.; 878.0MHz, 15kHz

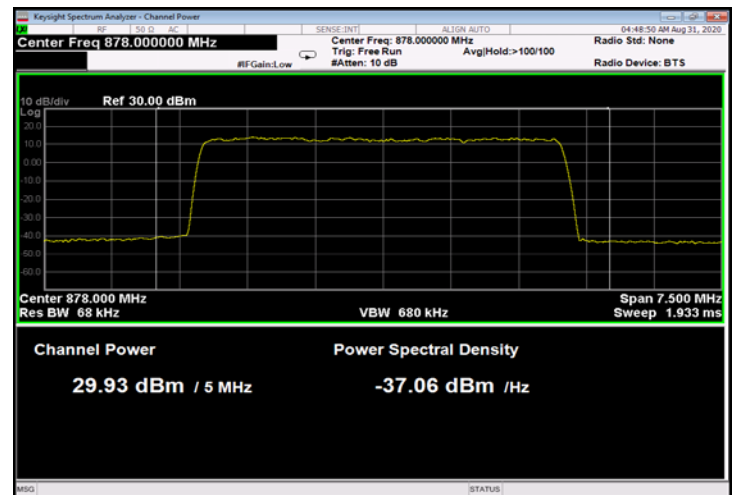


Figure 53: 64QAM 5MHz B.W.; 878.0MHz, 30kHz

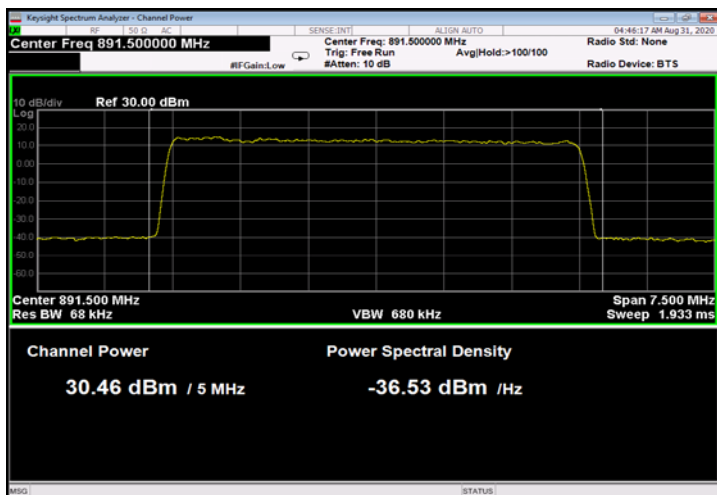


Figure 54: 64QAM 5MHz B.W.; 891.5MHz, 15kHz

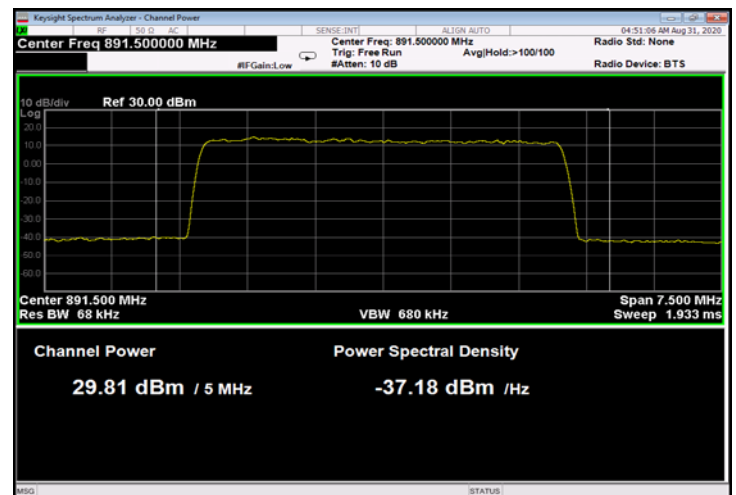


Figure 55: 64QAM 5MHz B.W.; 891.5MHz, 30kHz

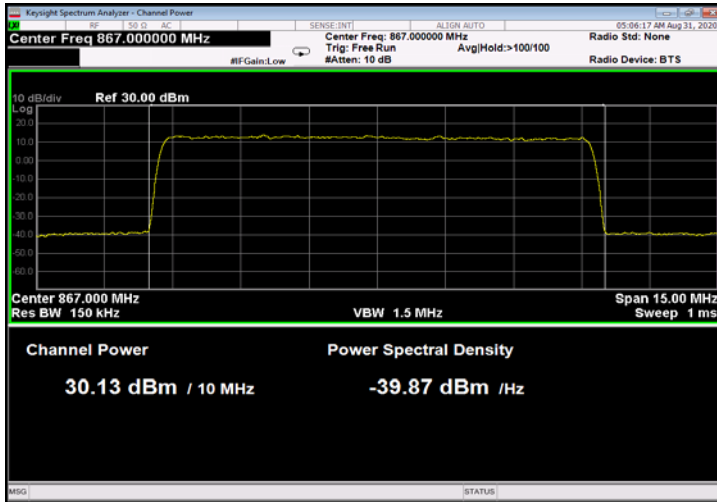


Figure 56: 64QAM 10MHz B.W.; 867.0MHz, 15kHz

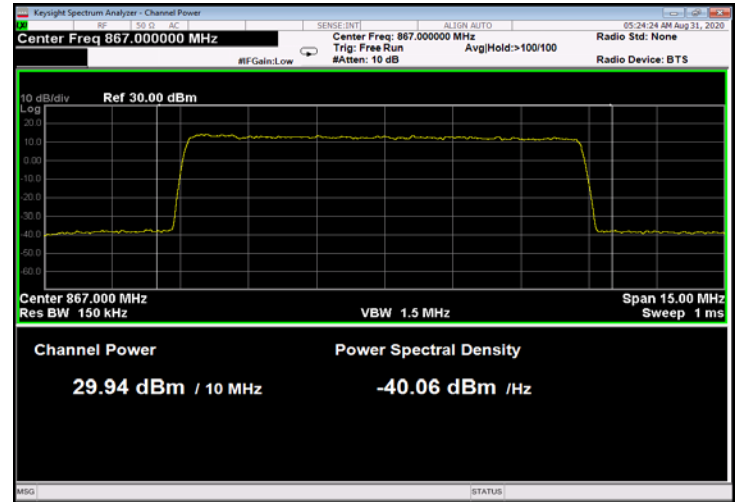


Figure 57: 64QAM 10MHz B.W.; 867.0MHz, 30kHz

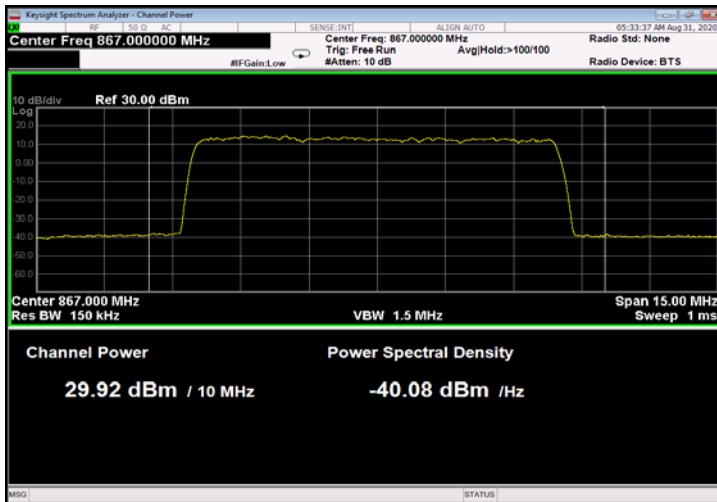


Figure 58: 64QAM 10MHz B.W.; 867.0MHz, 60kHz

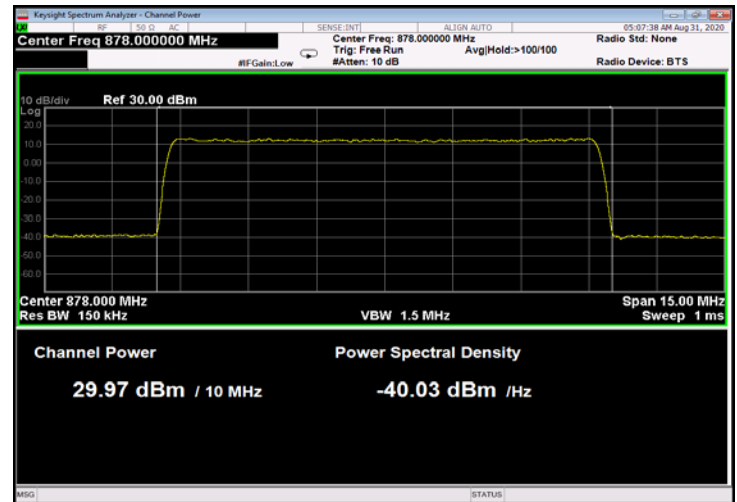


Figure 59: 64QAM 10MHz B.W.; 878.0MHz, 15kHz

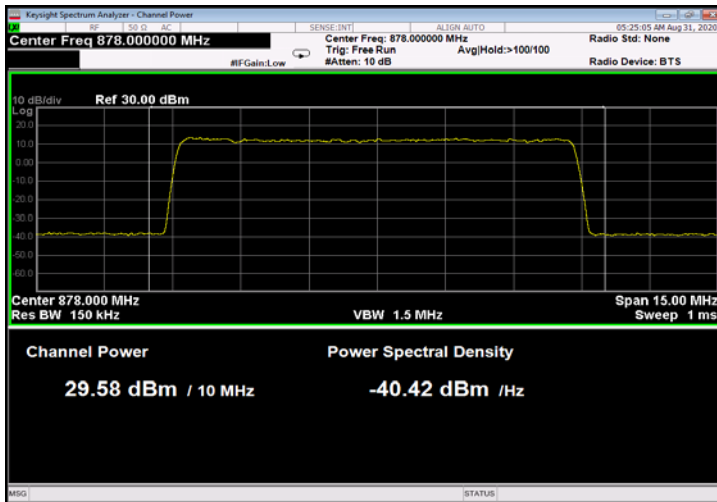


Figure 60: 64QAM 10MHz B.W.; 878.0MHz, 30kHz

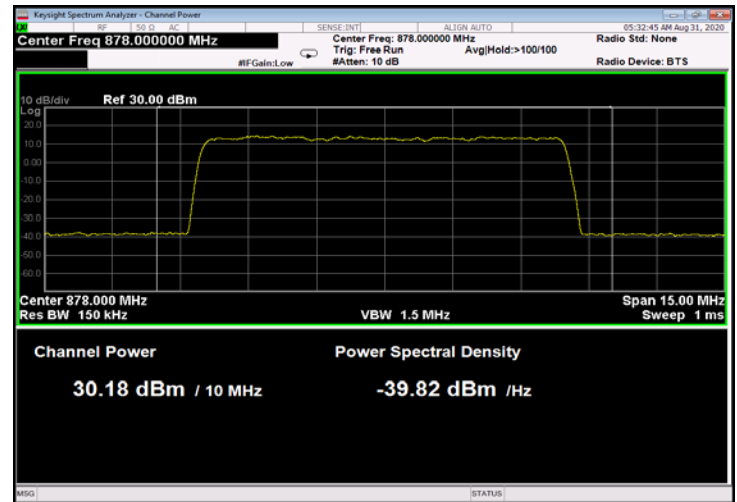


Figure 61: 64QAM 5MHz B.W.; 878.0MHz, 60kHz

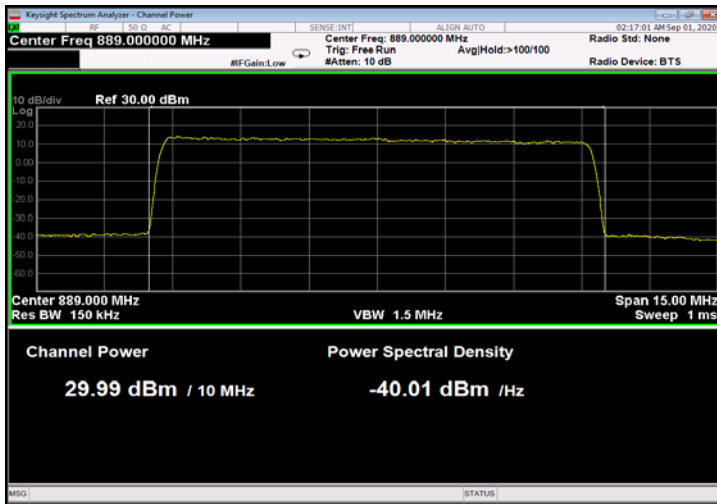


Figure 62: 64QAM 10MHz B.W.; 889.0MHz, 15kHz

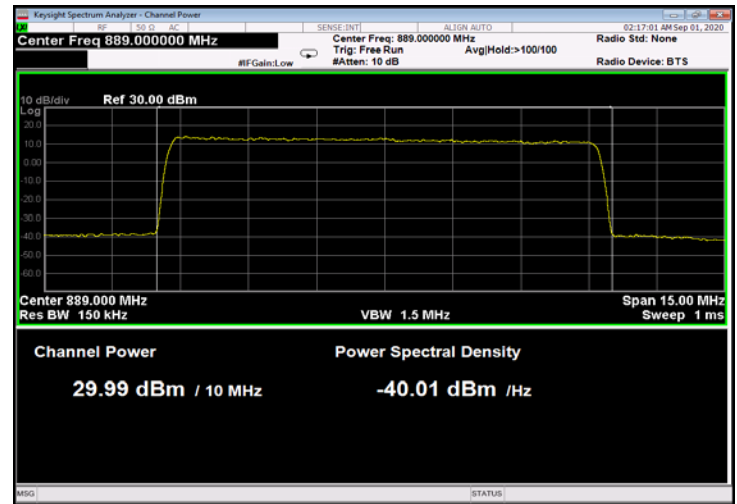


Figure 63: 64QAM 10MHz B.W.; 889.0MHz, 30kHz

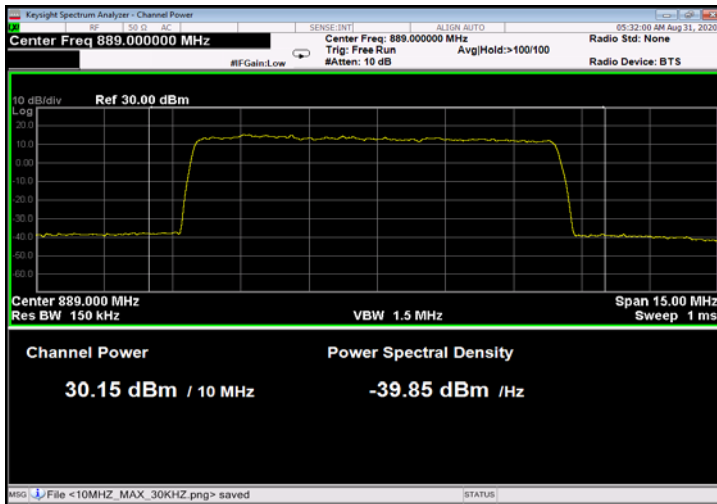


Figure 64: 64QAM 10MHz B.W.; 889.0MHz, 60kHz

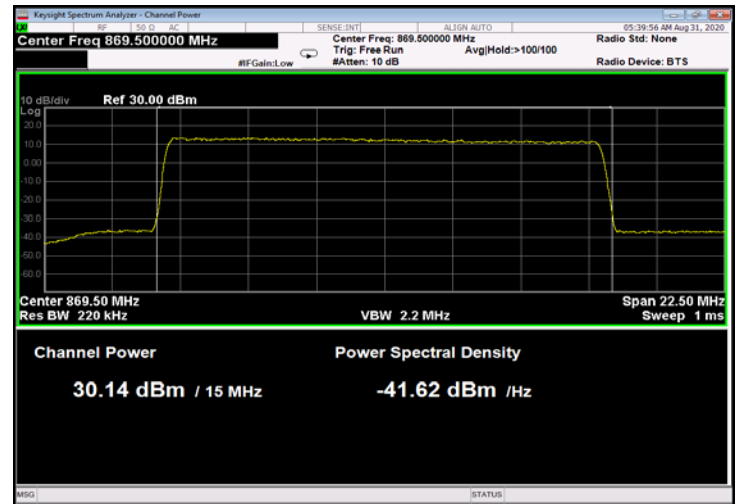


Figure 65: 64QAM 15MHz B.W.; 869.5MHz, 15kHz

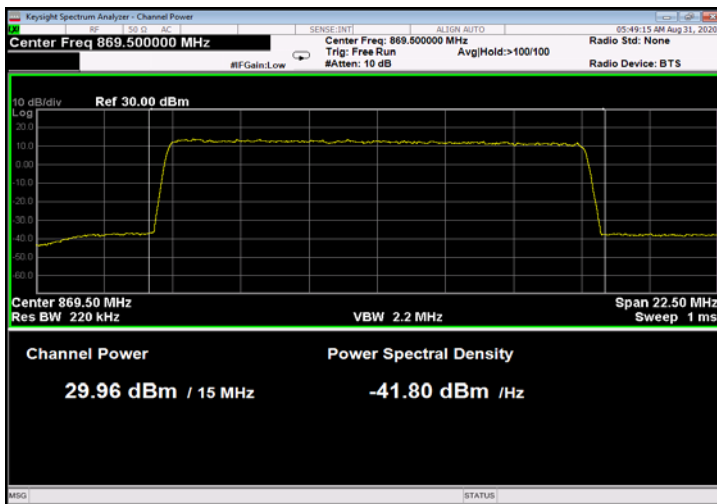


Figure 66: 64QAM 15MHz B.W.; 869.5MHz, 30kHz

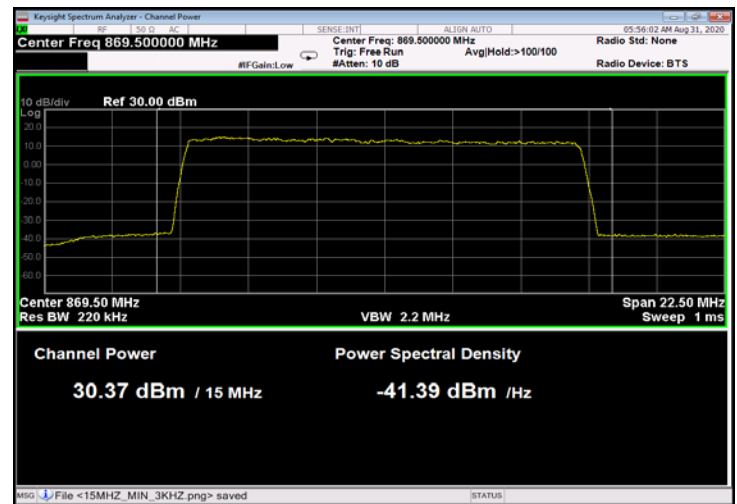


Figure 67: 64QAM 15MHz B.W.; 869.5MHz, 60kHz

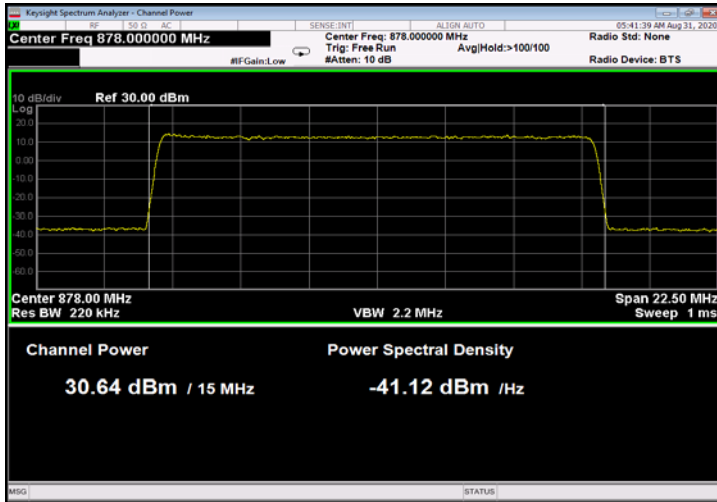


Figure 68: 64QAM 15MHz B.W.; 878.0MHz, 15kHz

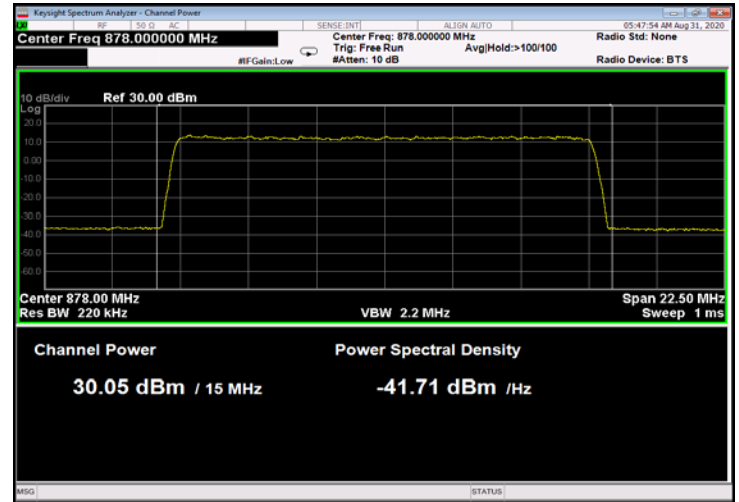


Figure 69: 64QAM 15MHz B.W.; 878.0MHz, 30kHz

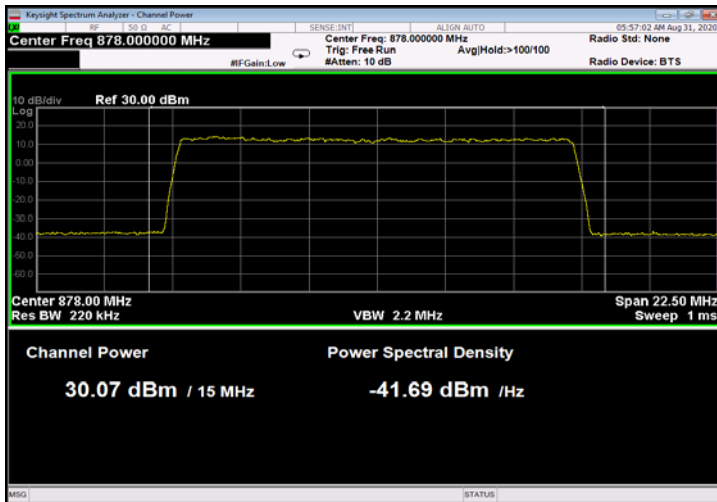


Figure 70: 64QAM 15MHz B.W.; 878.0MHz, 60kHz

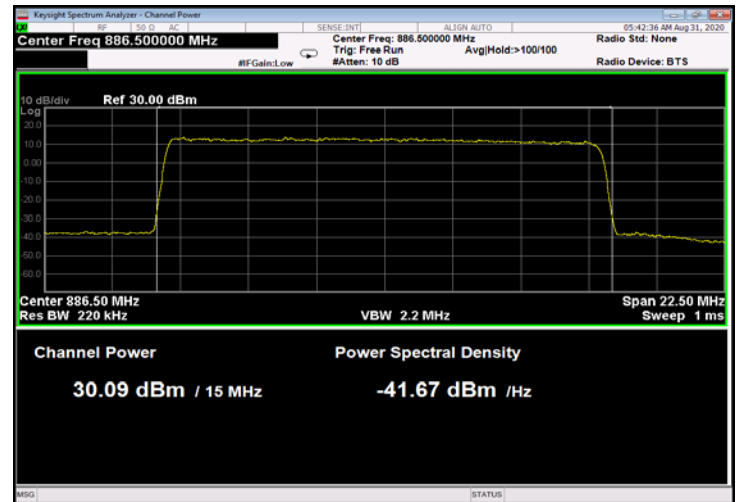


Figure 71: 64QAM 15MHz B.W.; 886.5MHz, 15kHz

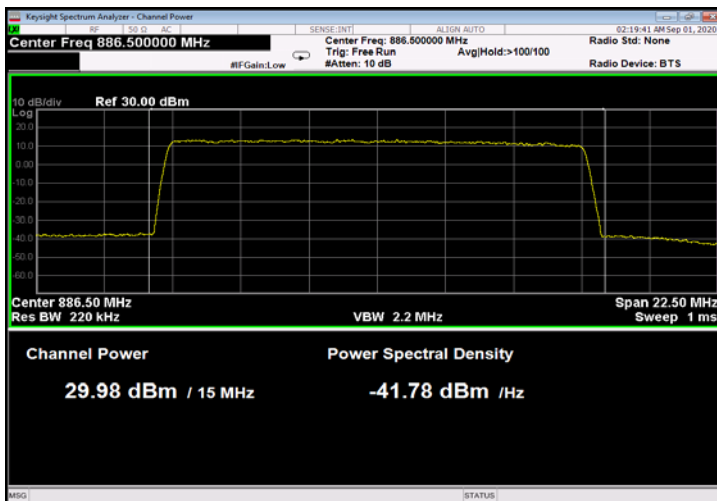


Figure 72: 64QAM 15MHz B.W.; 886.5MHz, 30kHz

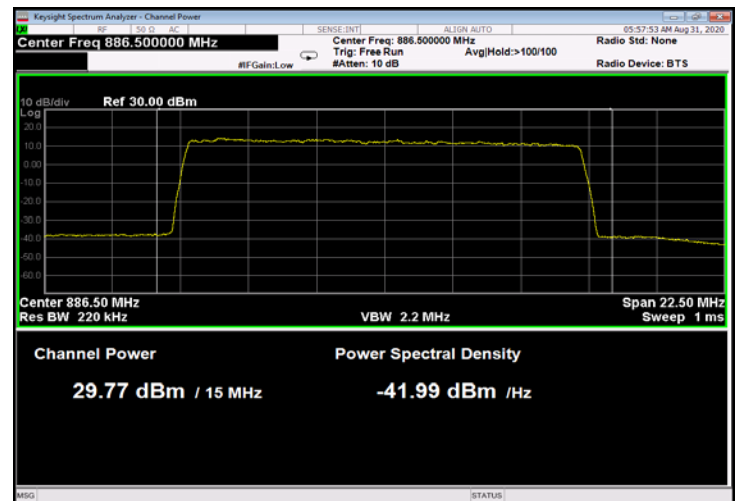


Figure 73: 64QAM 15MHz B.W.; 886.5MHz, 60kHz

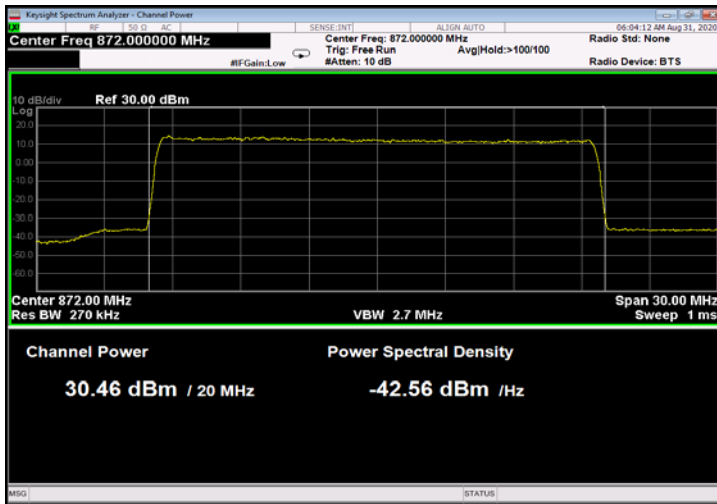


Figure 74: 64QAM 20MHz B.W.; 872.0MHz, 15kHz

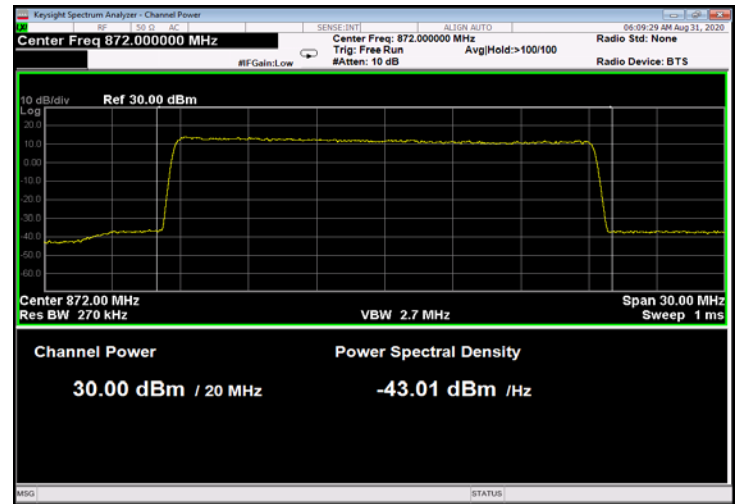


Figure 75: 64QAM 20MHz B.W.; 872.0MHz, 30kHz

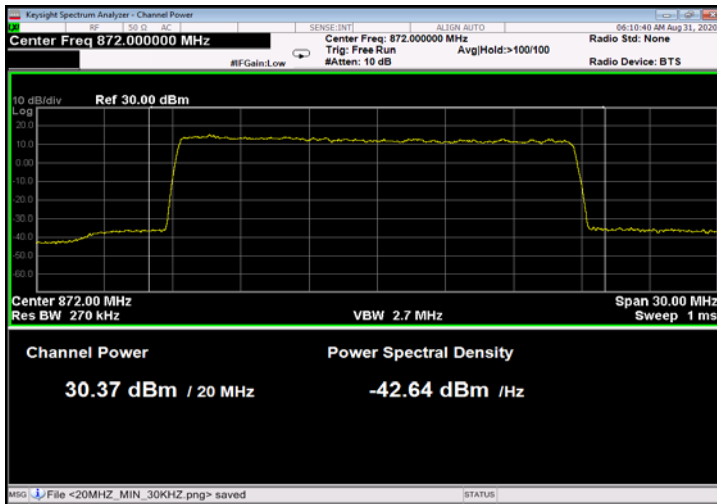


Figure 76: 64QAM 20MHz B.W.; 872.0MHz, 60kHz

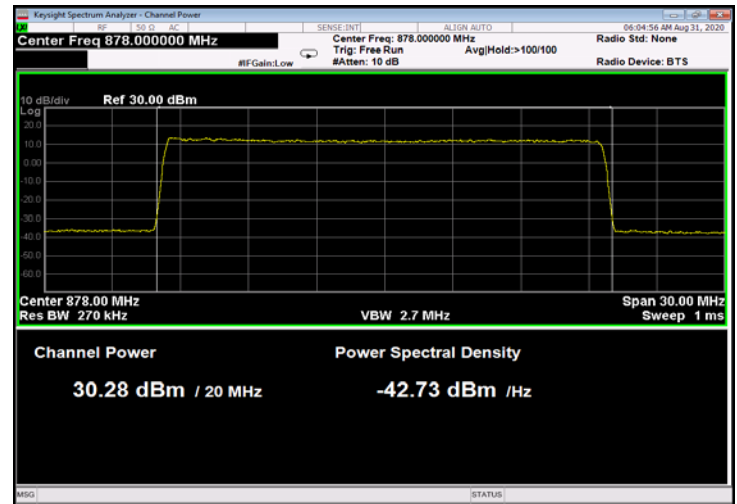


Figure 77: 64QAM 20MHz B.W.; 878.0MHz, 15kHz

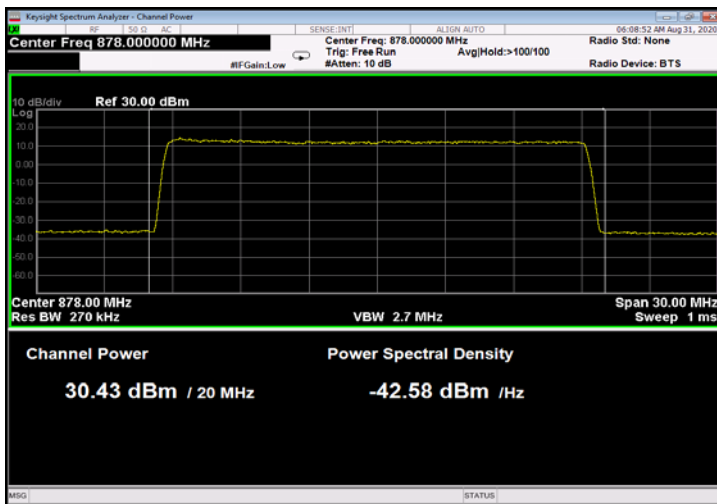


Figure 78: 64QAM 20MHz B.W.; 878.0MHz, 30kHz

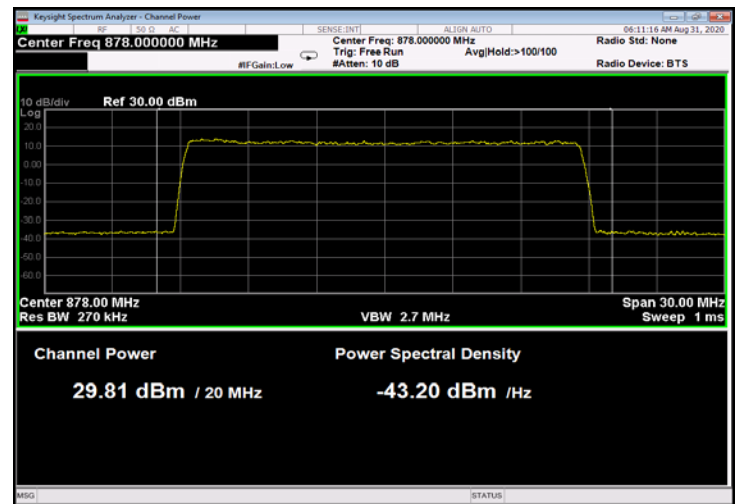


Figure 79: 64QAM 20MHz B.W.; 878.0MHz, 60kHz

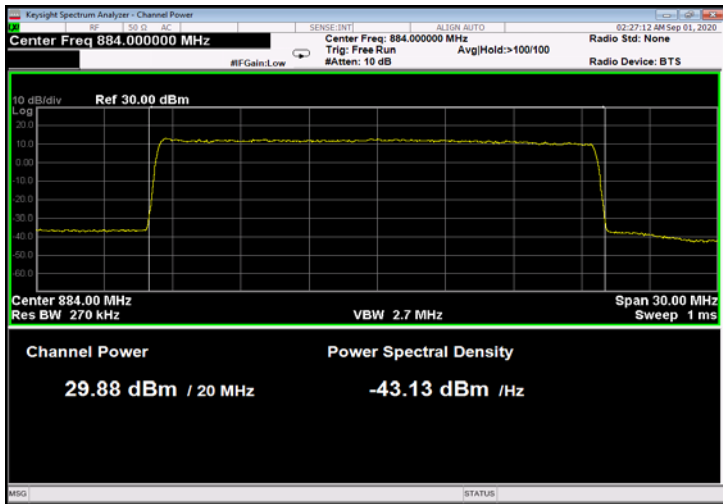


Figure 80: 64QAM 20MHz B.W.; 884.0MHz, 15kHz

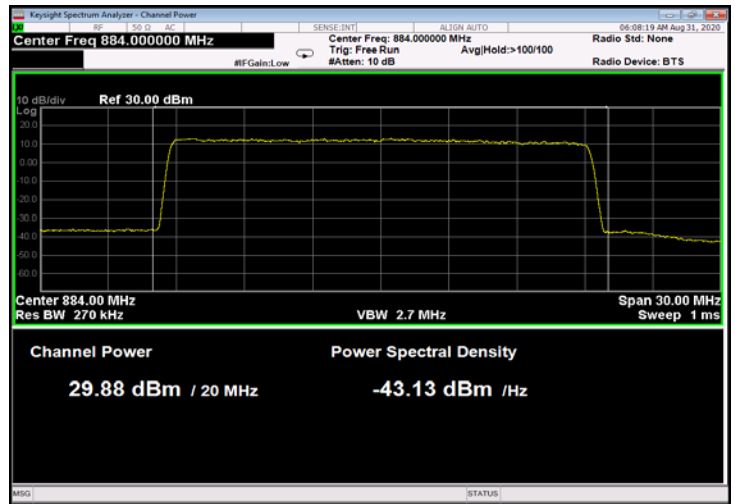


Figure 81: 64QAM 20MHz B.W.; 884.0MHz, 30kHz

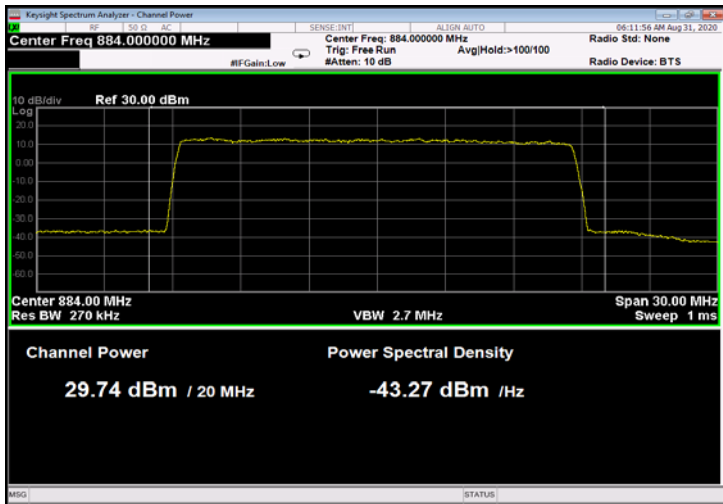


Figure 82: 64QAM 20MHz B.W.; 884.0MHz, 60kHz

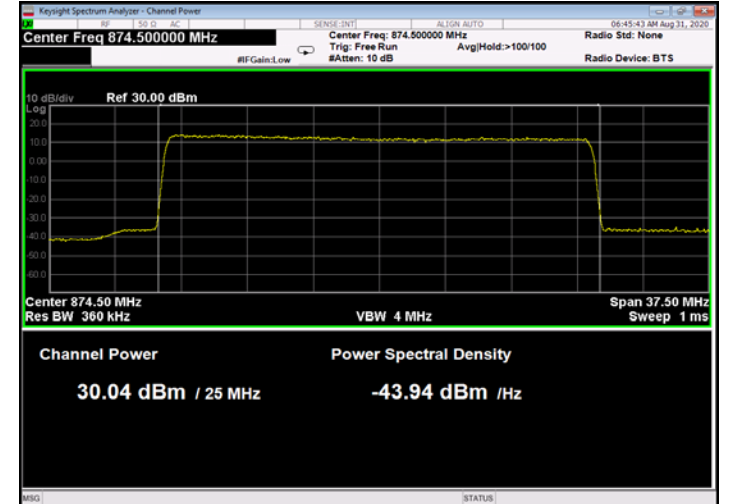


Figure 83: 64QAM 25MHz B.W.; 874.5 MHz, 15kHz

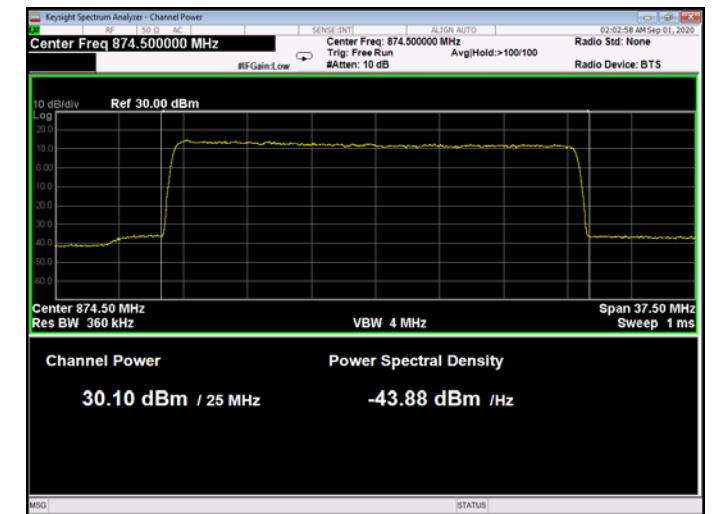


Figure 84: 64QAM 25MHz B.W.; 874.5MHz, 30kHz

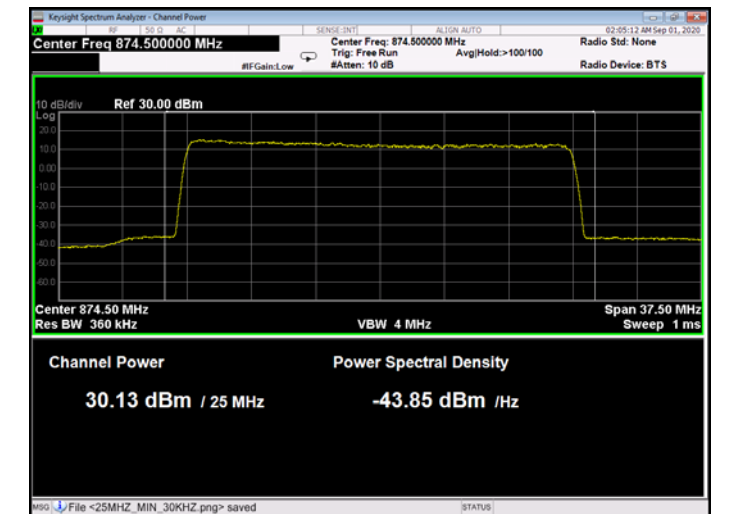


Figure 85: 64QAM 25MHz B.W.; 874.5MHz, 60kHz

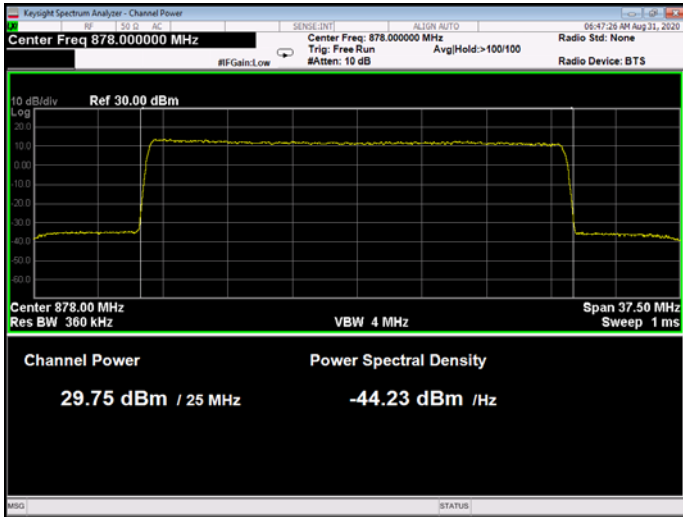


Figure 86: 64QAM 25MHz B.W.; 878.5MHz, 15kHz

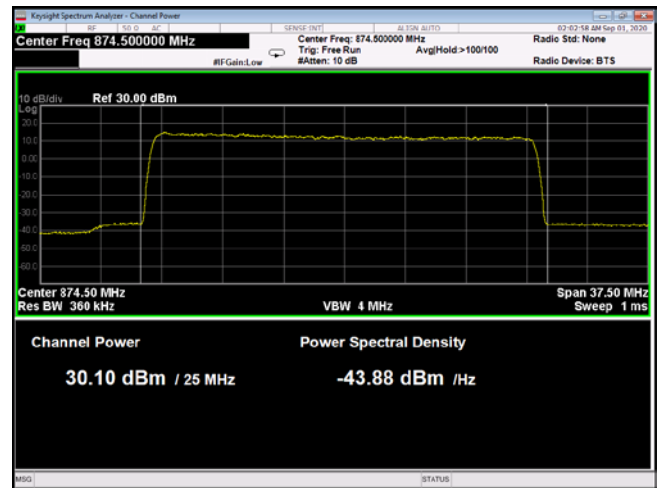


Figure 87: 64QAM 25MHz B.W.; 878.5MHz, 30kHz

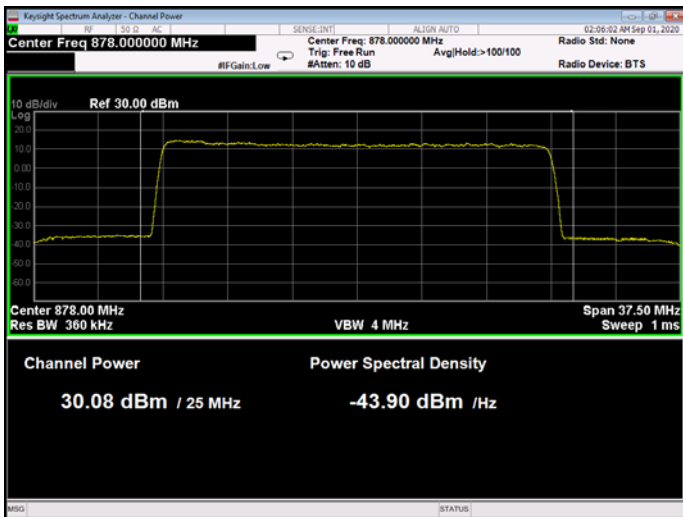


Figure 88: 64QAM 25MHz B.W.; 878.5MHz, 60kHz

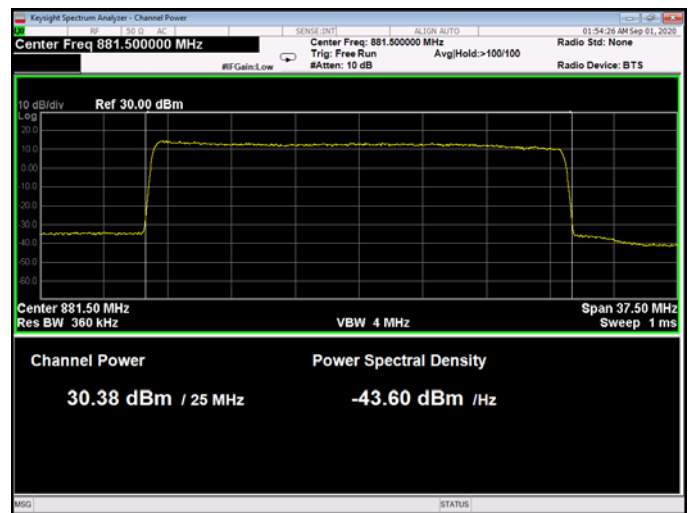


Figure 89: 64QAM 25MHz B.W.; 881.5MHz, 15kHz

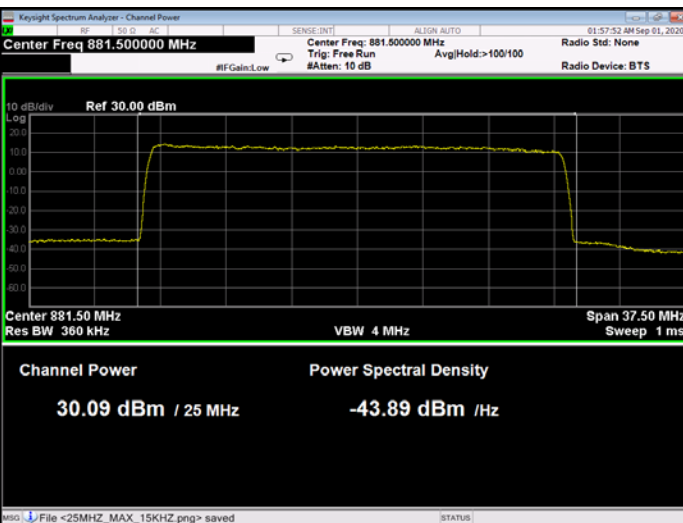


Figure 90: 64QAM 25MHz B.W.; 881.5MHz, 30kHz

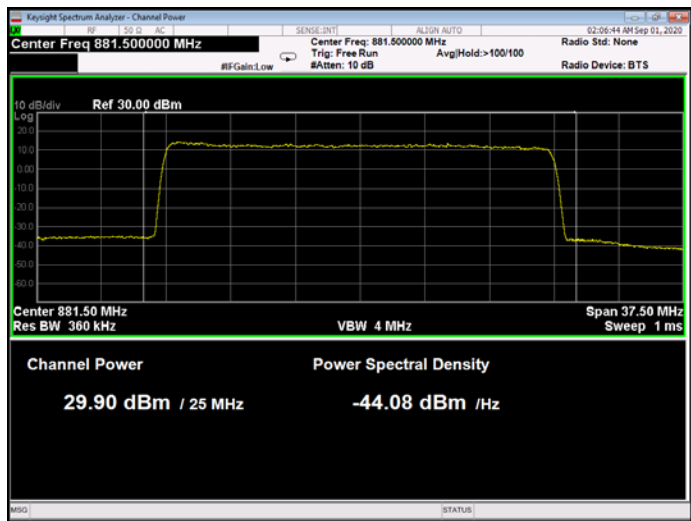


Figure 91: 64QAM 25MHz B.W.; 881.5MHz, 60kHz

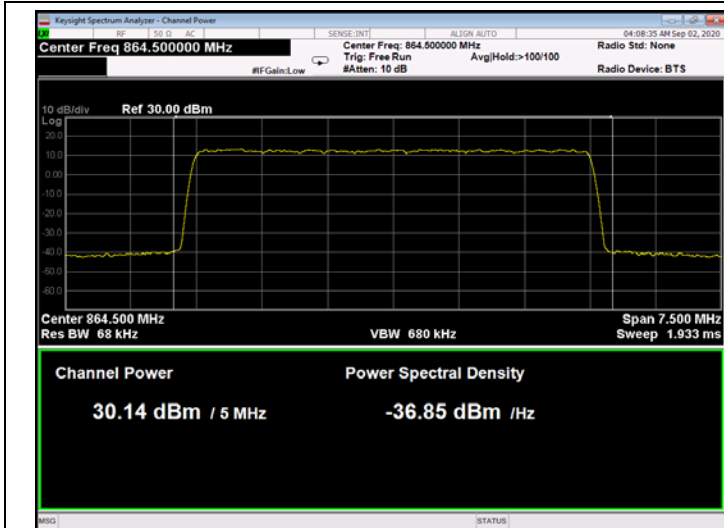


Figure 92: 256QAM 5MHz B.W.; 864.5MHz, 15kHz

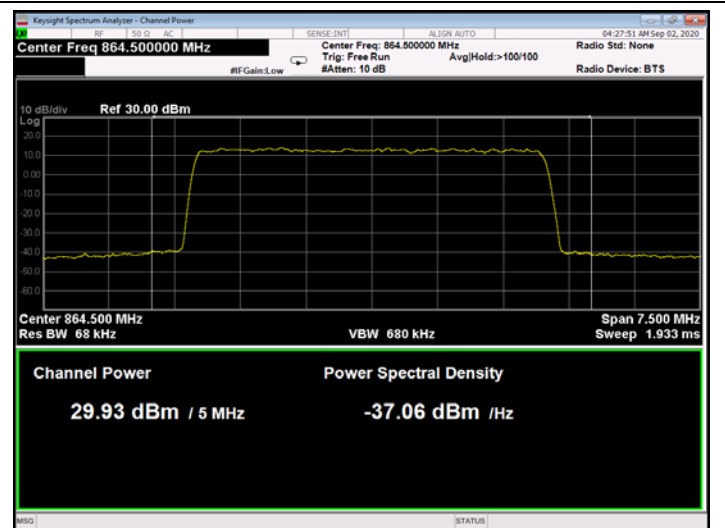


Figure 93: 256QAM 10MHz B.W.; 864.5MHz, 30kHz

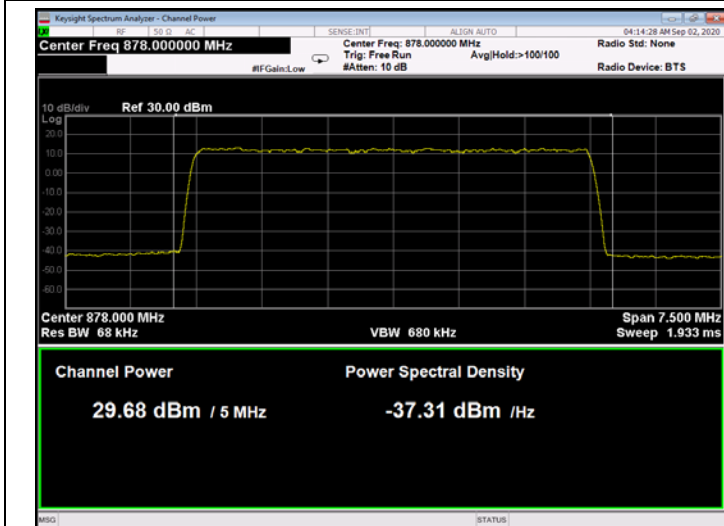


Figure 94: 256QAM 5MHz B.W.; 878.0MHz, 15kHz

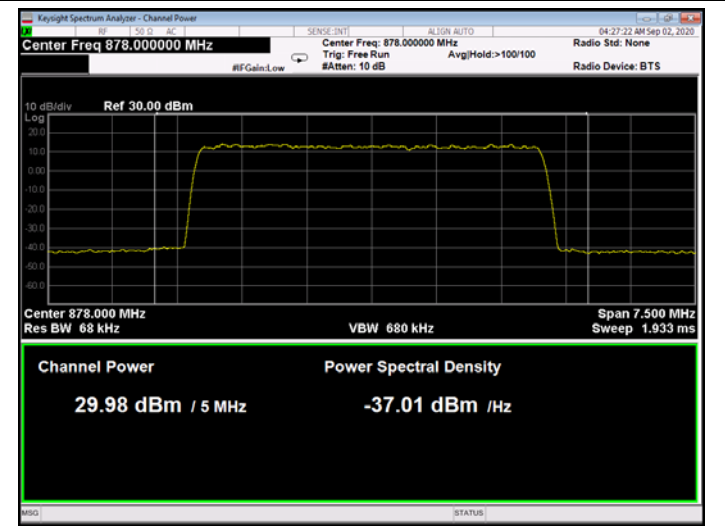


Figure 95: 256QAM 5MHz B.W.; 878.0MHz, 30kHz

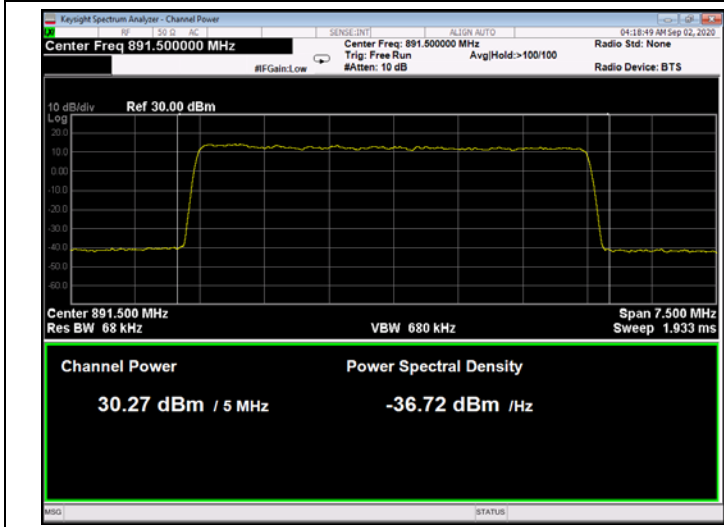


Figure 96: 256QAM 5MHz B.W.; 891.5MHz, 15kHz

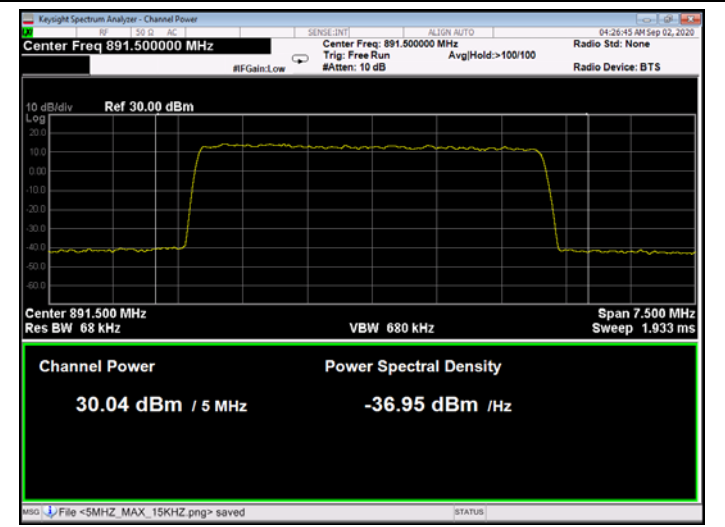


Figure 97: 256QAM 5MHz B.W.; 891.5MHz, 30kHz