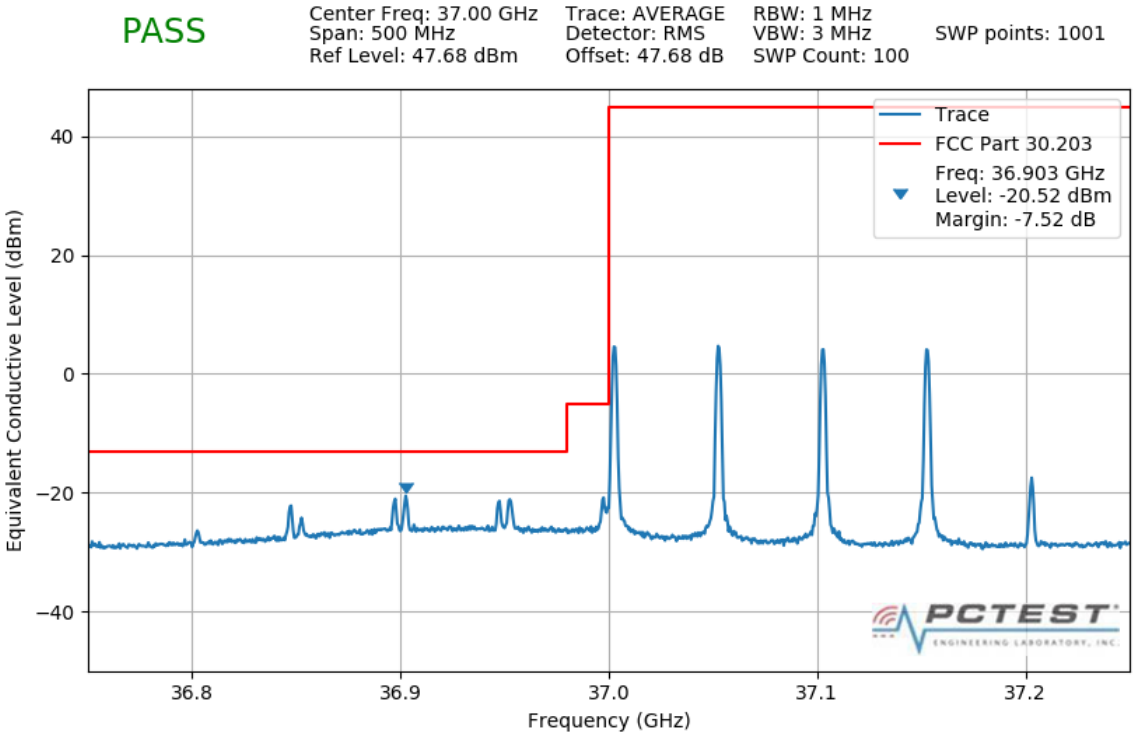
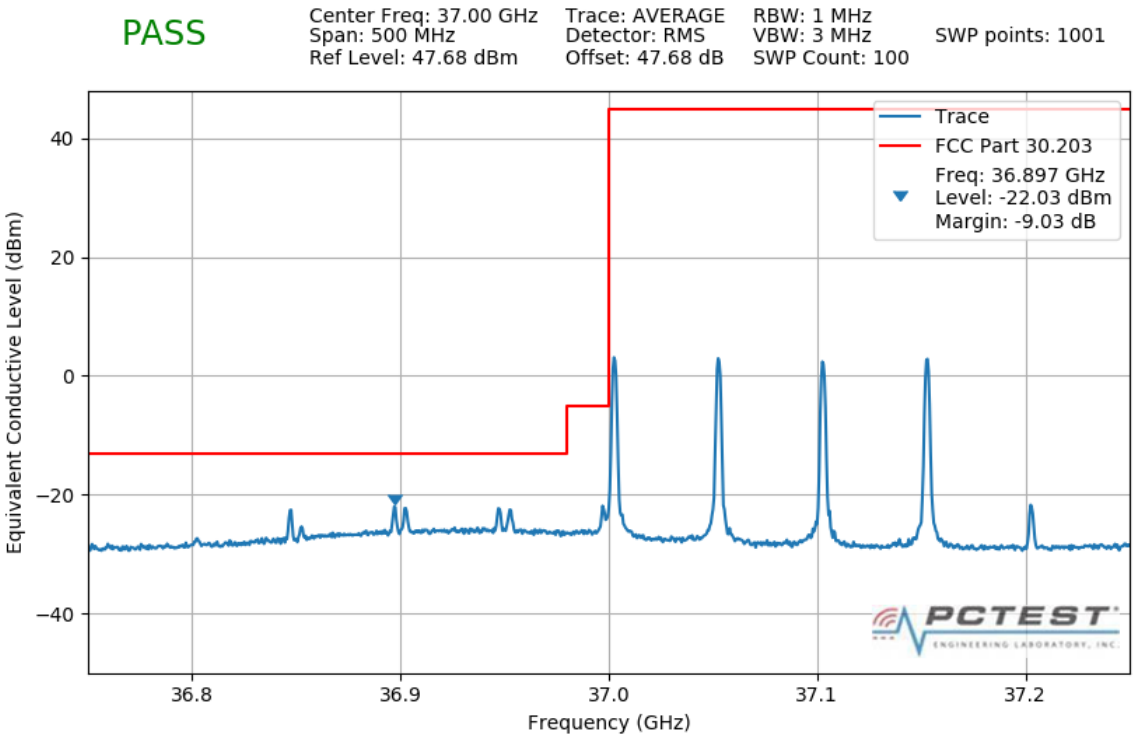
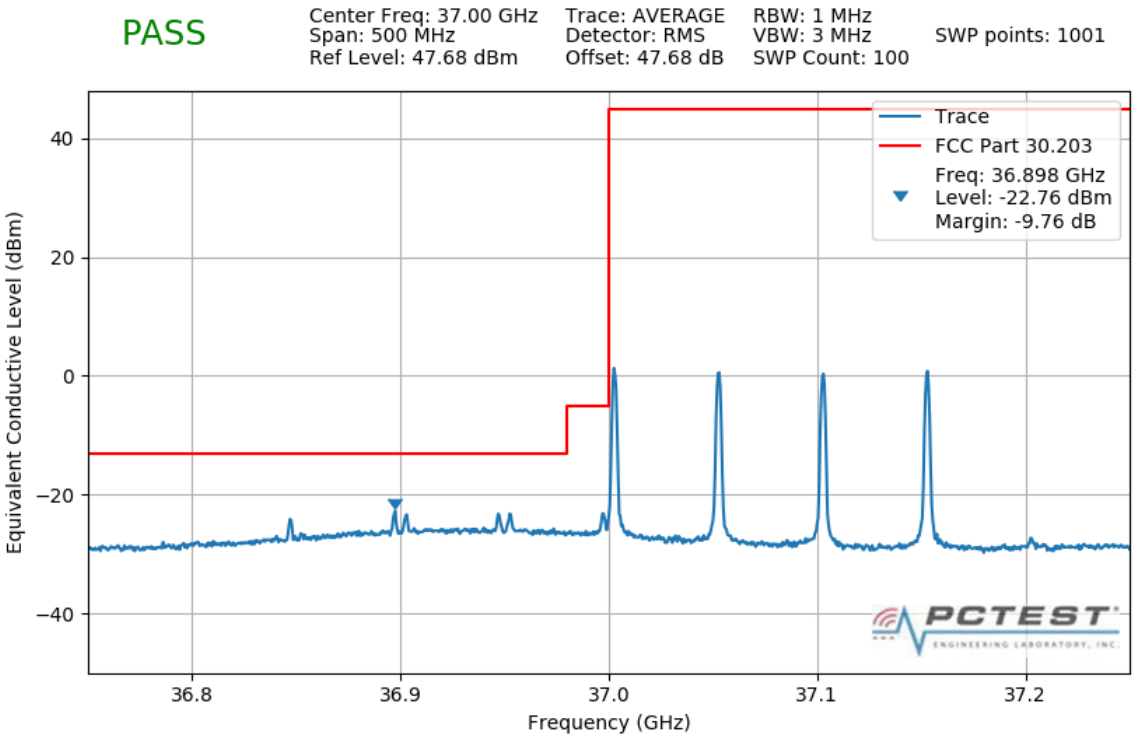


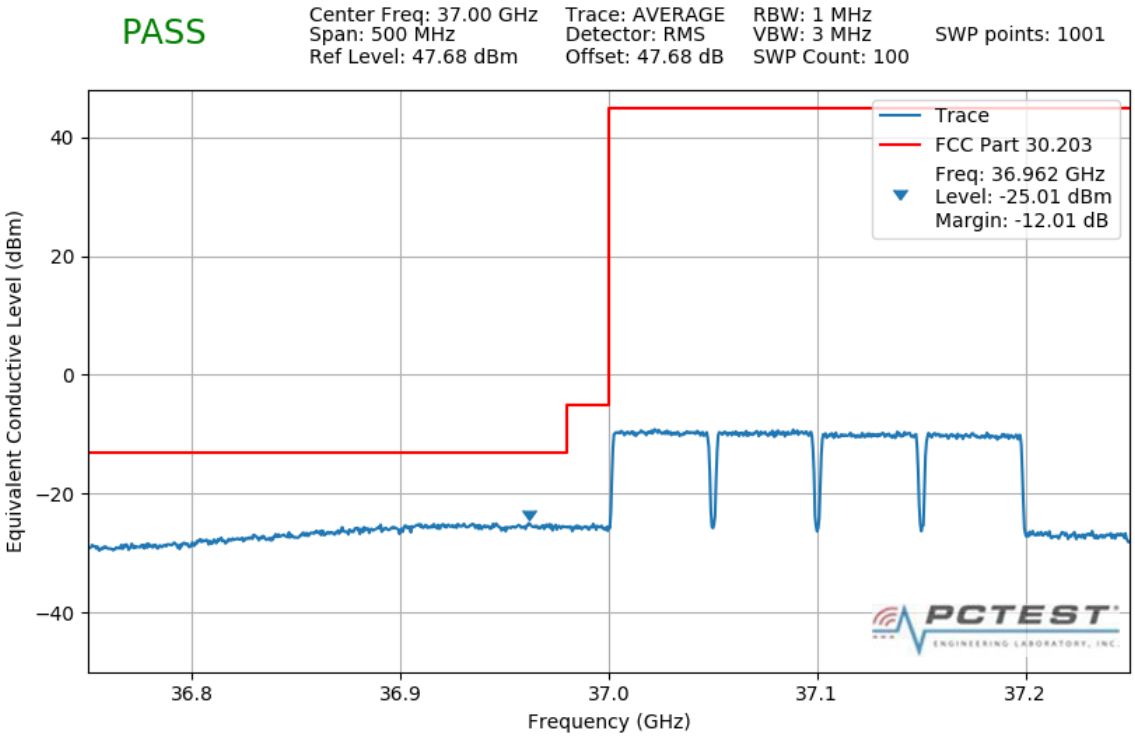
Plot 7-451. Band Edge Plot (4CC 50M QPSK Low Channel – 1 RB 0 offset)



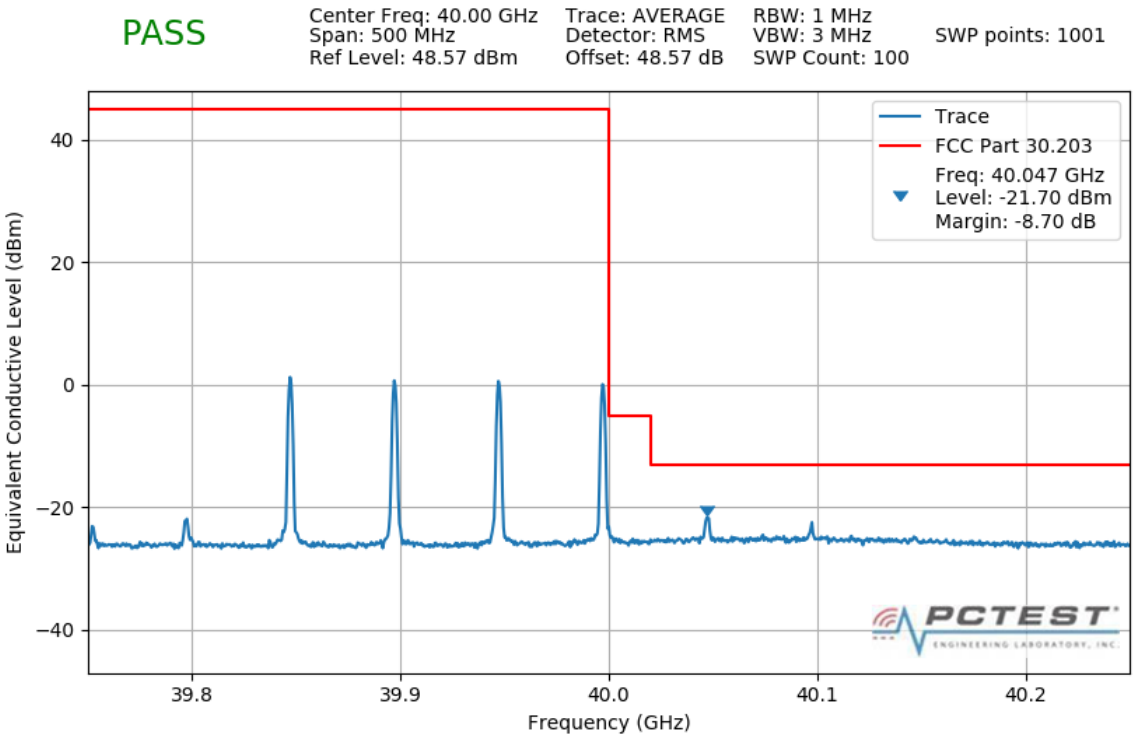
Plot 7-452. Band Edge Plot (4CC 50M 16QAM Low Channel – 1 RB 0 offset)



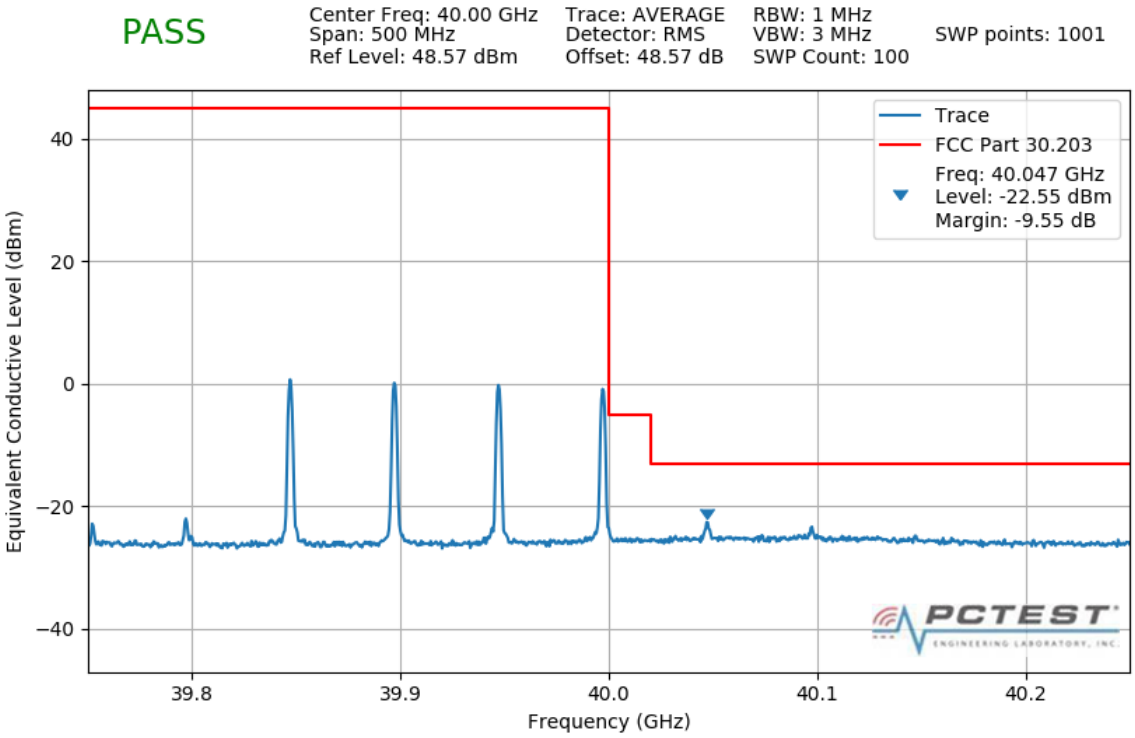
Plot 7-453. Band Edge Plot (4CC 50M 64QAM Low Channel – 1 RB 0 offset)



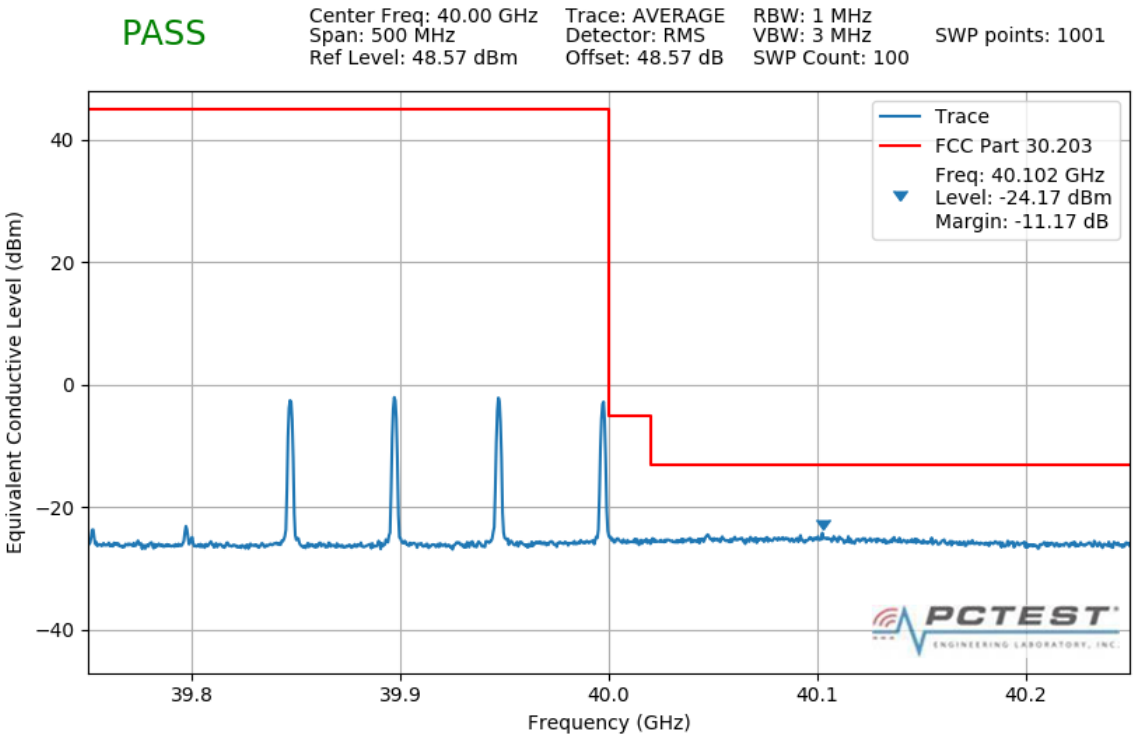
Plot 7-454. Band Edge Plot (4CC 50M QPSK Low Channel – 32 RB 0 offset)



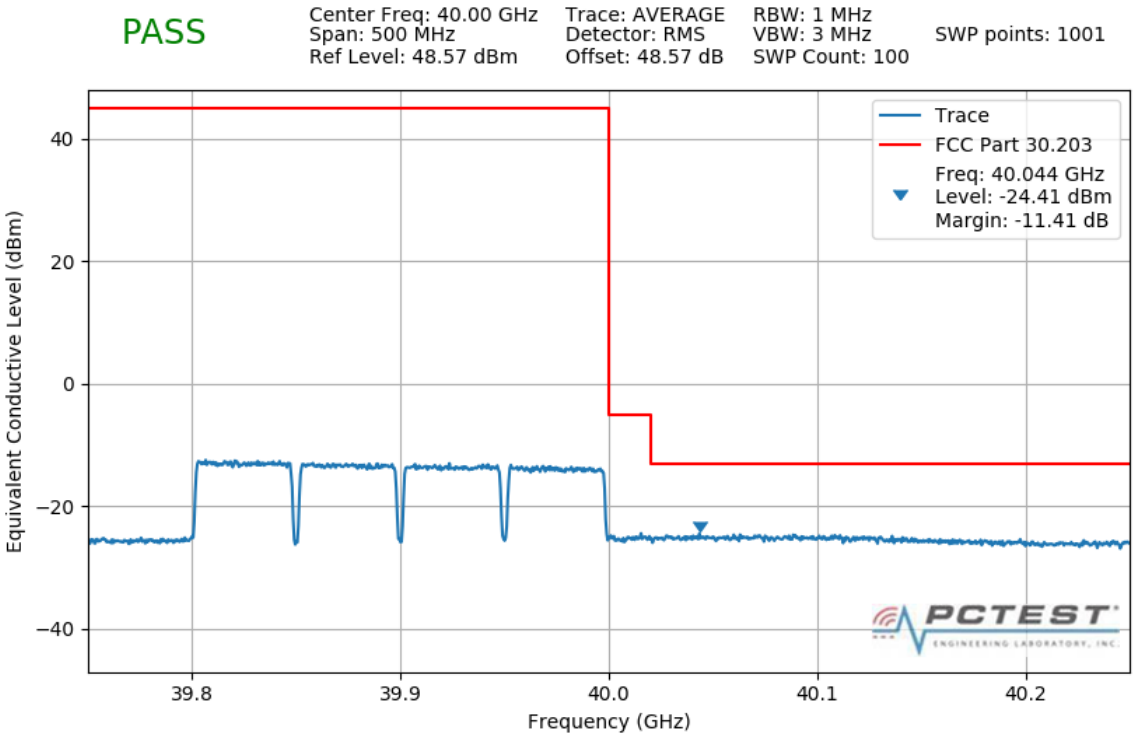
Plot 7-455. Band Edge Plot (4CC 50M QPSK Hi Channel– 1 RB 31 offset)



Plot 7-456. Band Edge Plot (4CC 50M 16QAM Hi Channel– 1 RB 31 offset)

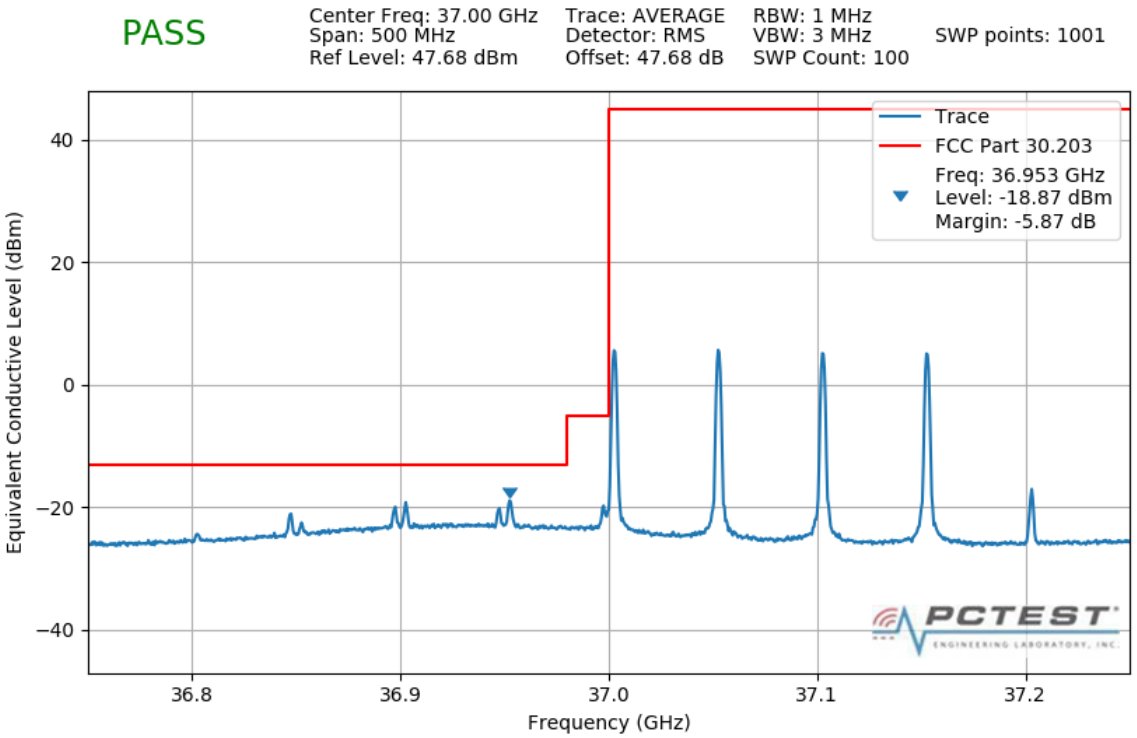


Plot 7-457. Band Edge Plot (4CC 50M 64QAM Hi Channel – 1 RB 31 offset)

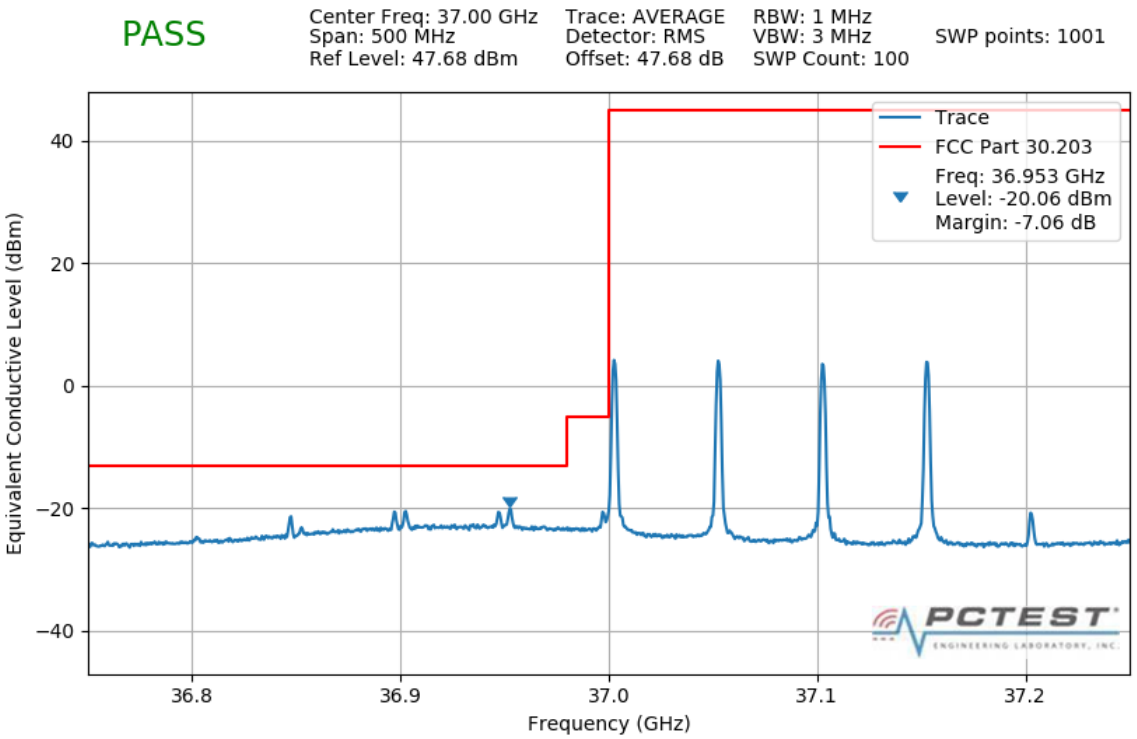


Plot 7-458. Band Edge Plot (4CC 50M QPSK Hi Channel– 32 RB 0 offset)

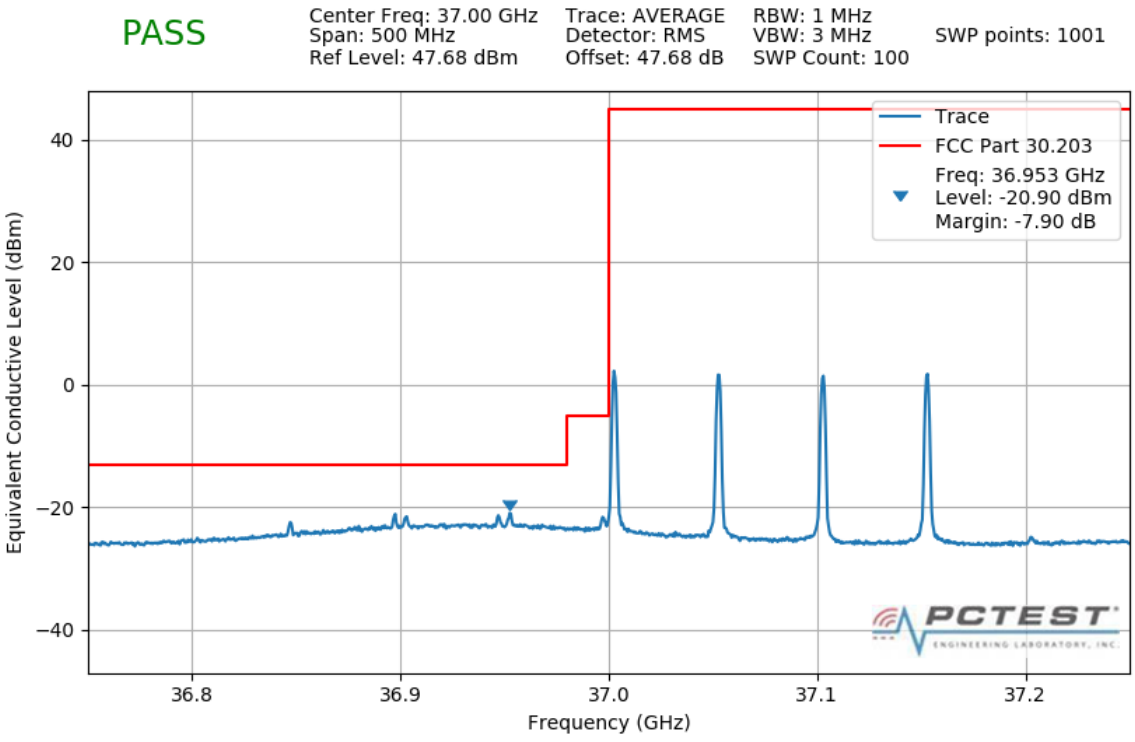
QTM 1 - H + V



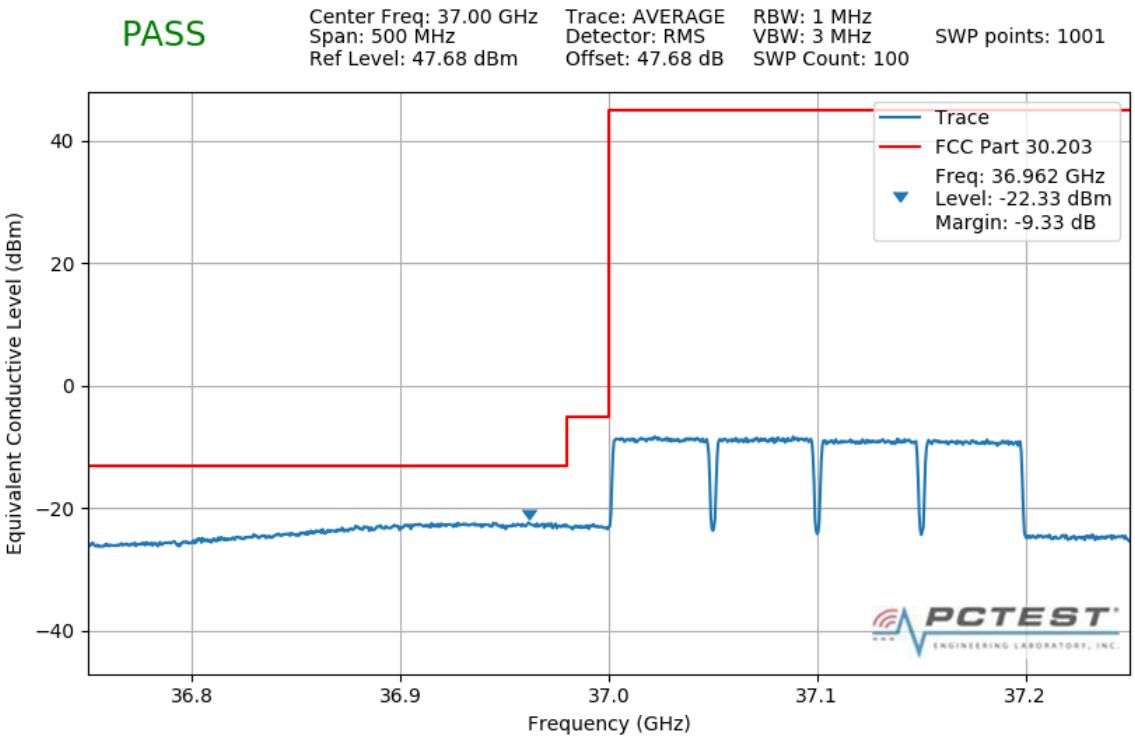
Plot 7-459. Band Edge Plot (4CC 50M QPSK Low Channel – 1 RB 0 offset)



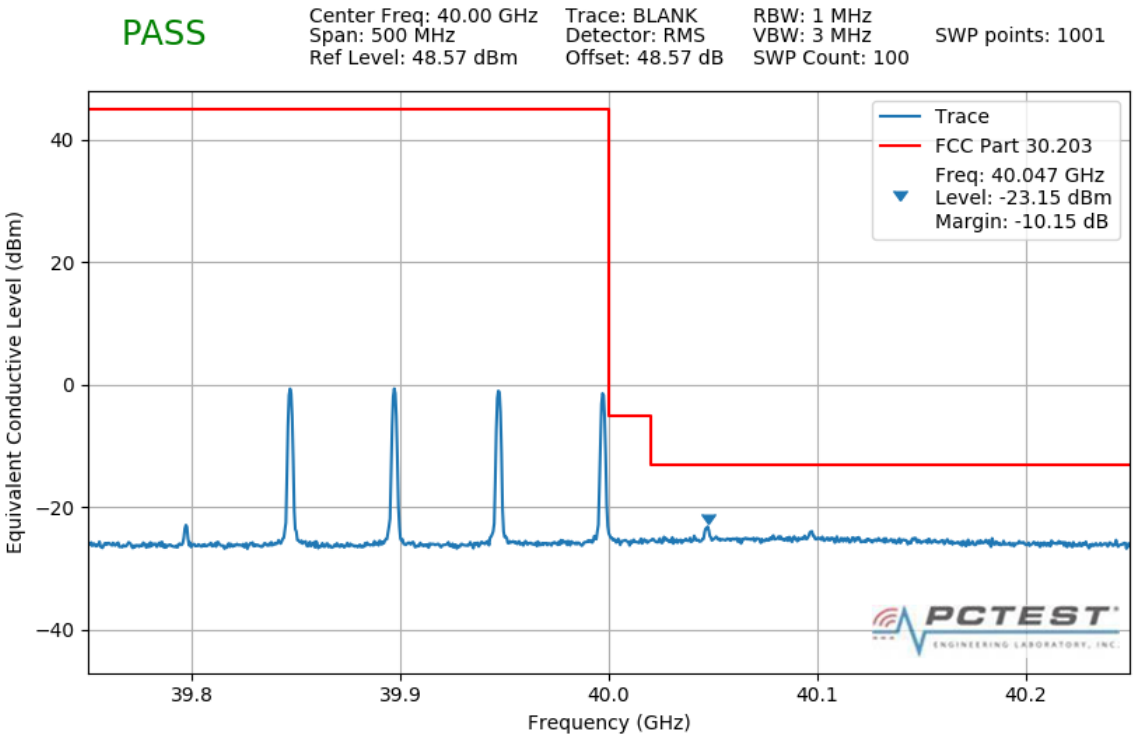
Plot 7-460. Band Edge Plot (4CC 50M 16QAM Low Channel – 1 RB 0 offset)



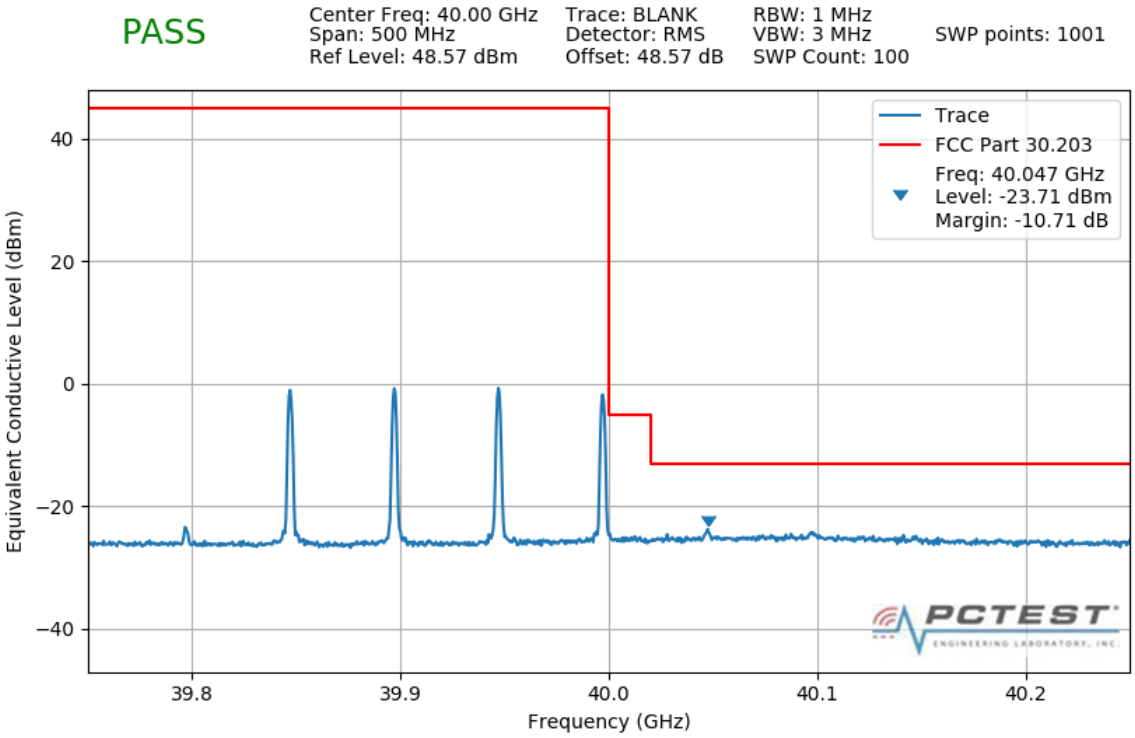
Plot 7-461. Band Edge Plot (4CC 50M 64QAM Low Channel – 1 RB 0 offset)



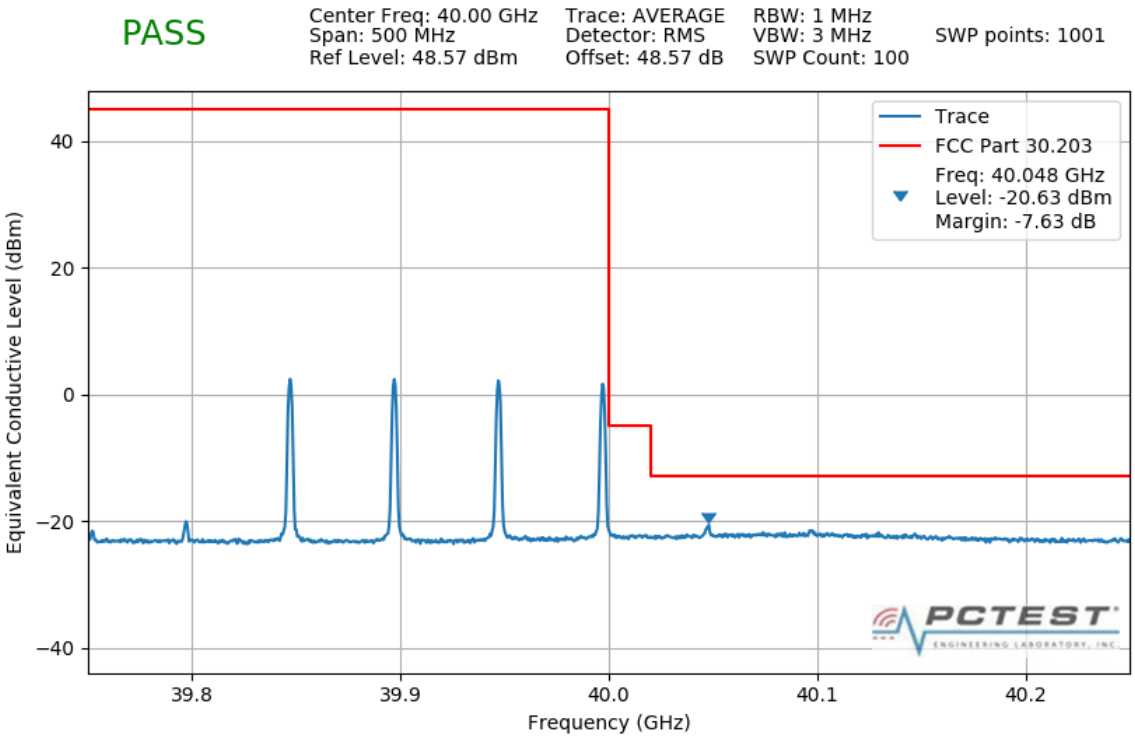
Plot 7-462. Band Edge Plot (4CC 50M QPSK Low Channel – 32 RB 0 offset)



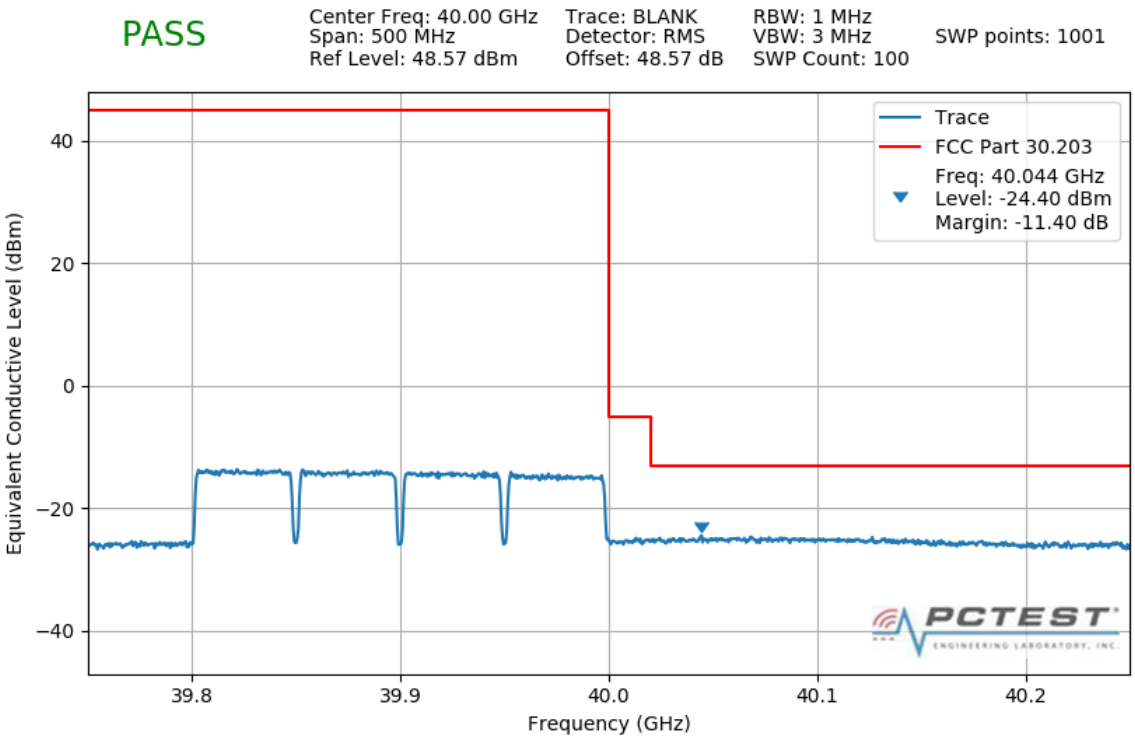
Plot 7-463. Band Edge Plot (4CC 50M QPSK Hi Channel– 1 RB 0 offset)



Plot 7-464. Band Edge Plot (4CC 50M 16QAM Hi Channel– 1 RB 0 offset)

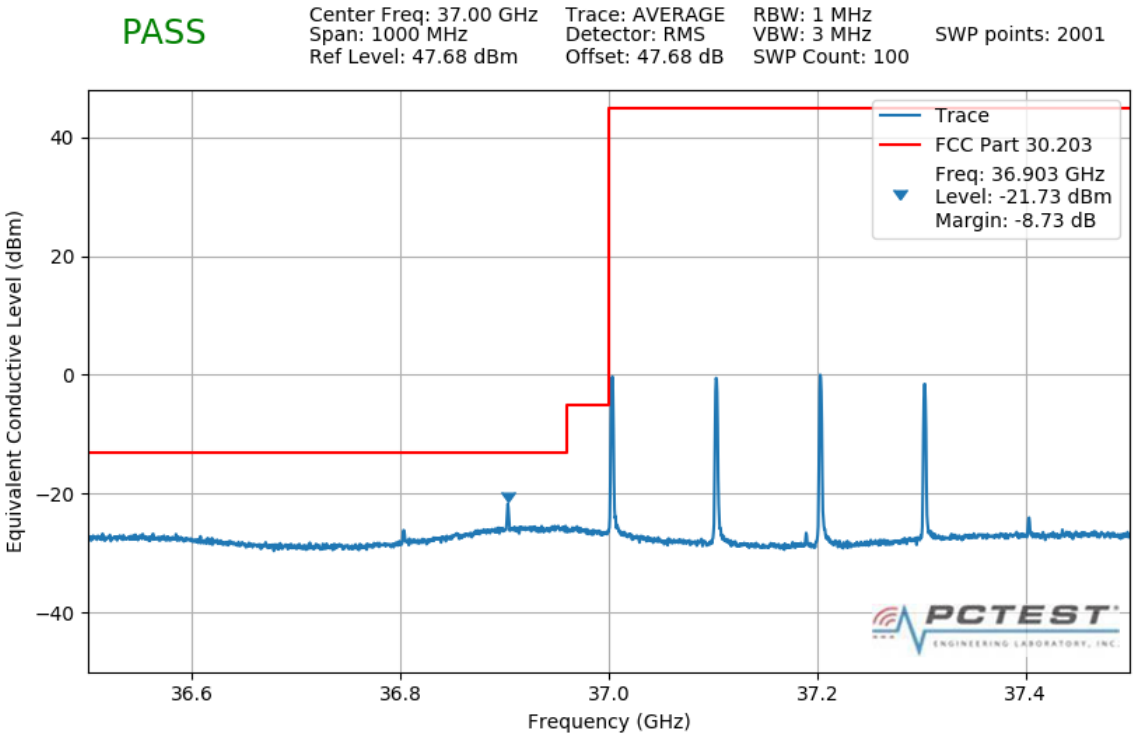


Plot 7-465. Band Edge Plot (4CC 50M 64QAM Hi Channel – 1 RB 0 offset)

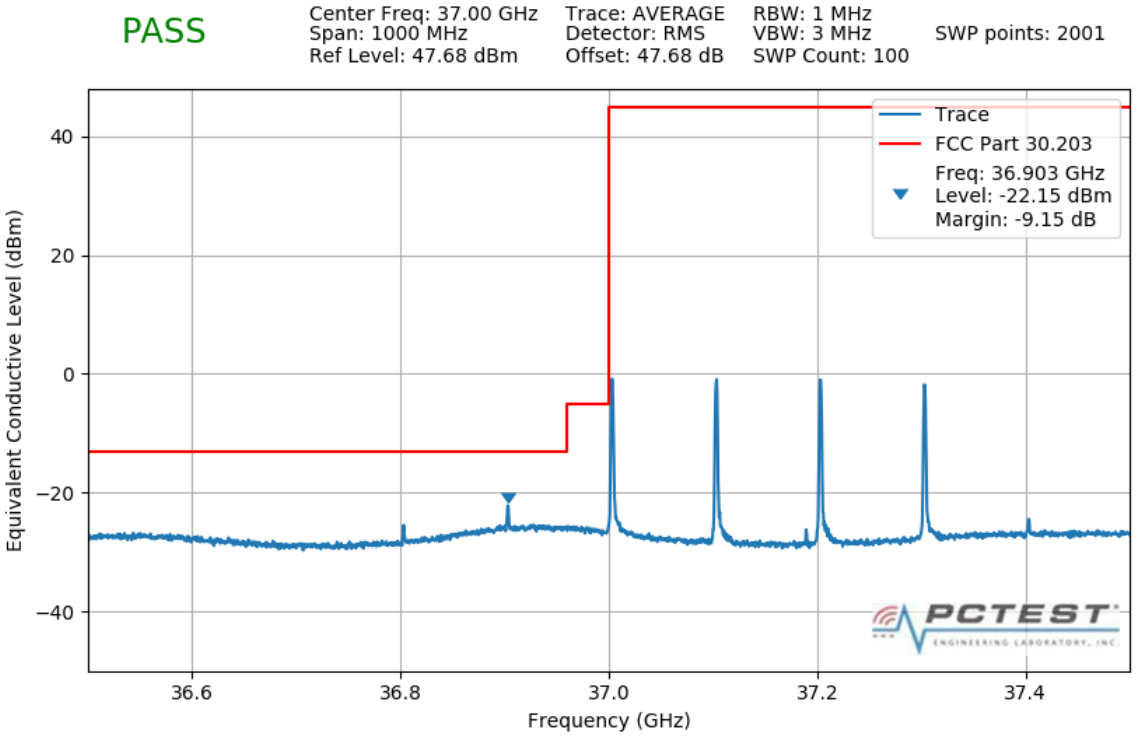


Plot 7-466. Band Edge Plot (4CC 50M QPSK Hi Channel– 32 RB 0 offset)

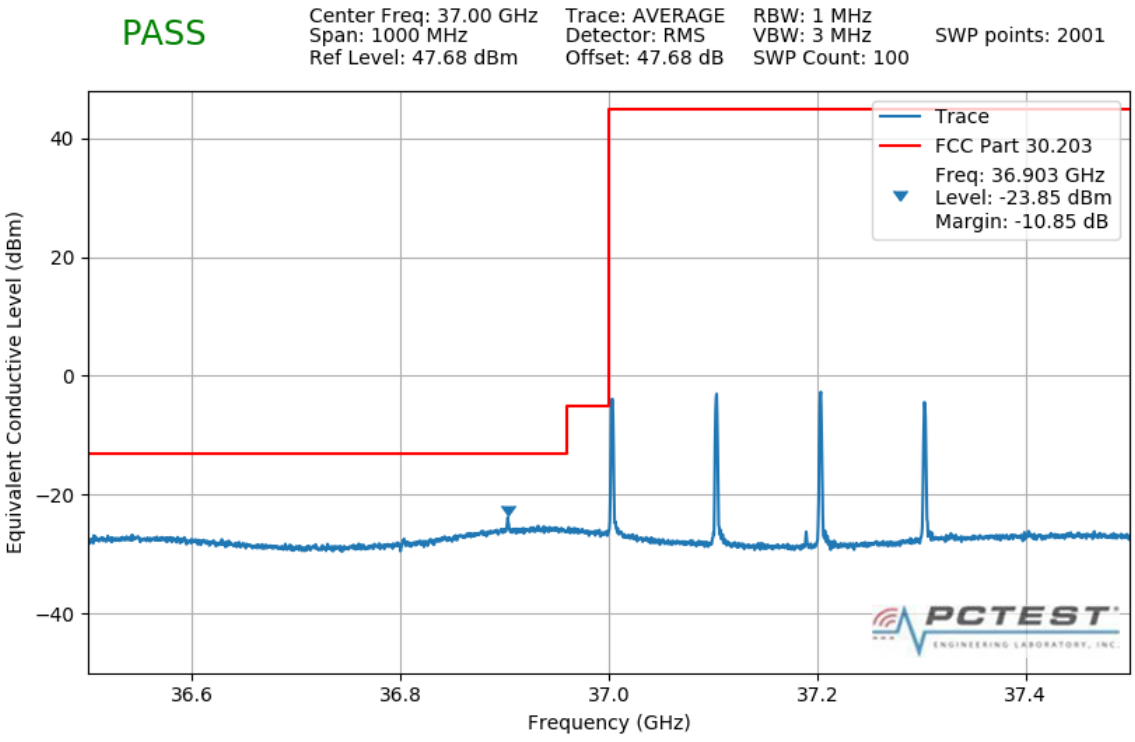
7.5.9 N260 4CC 100MHz Bandwidth Band Edges
QTM 0 - H



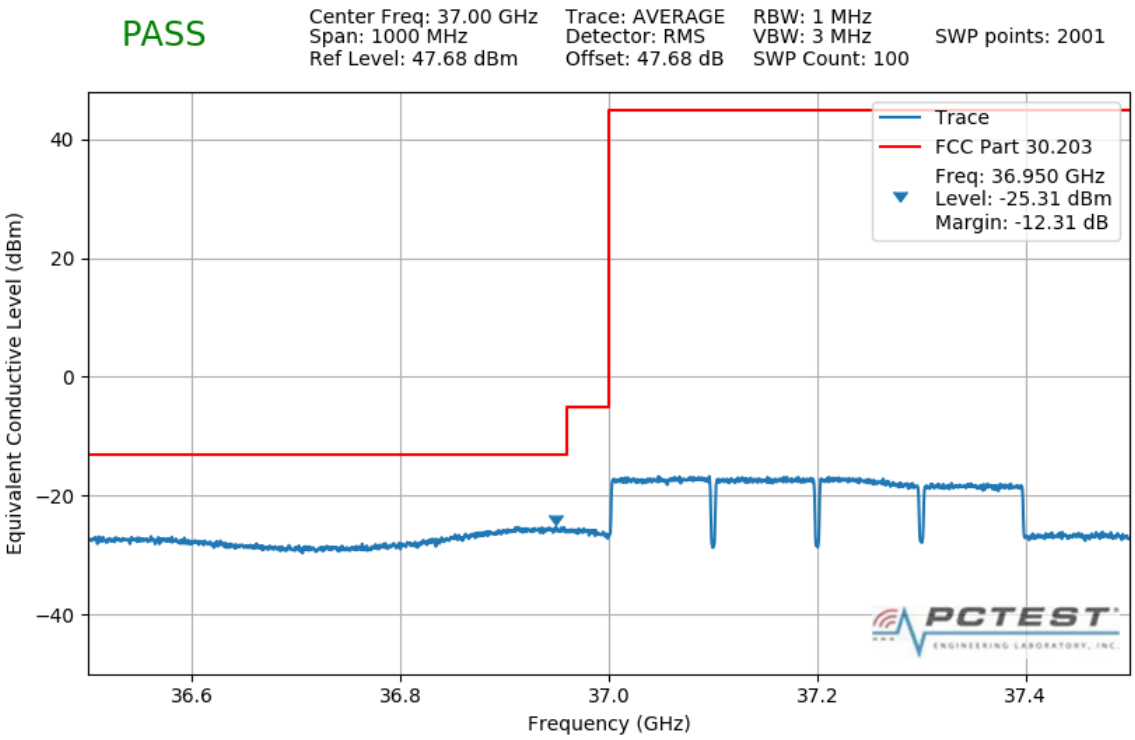
Plot 7-467. Band Edge Plot (4CC 100M QPSK Low Channel – 1 RB 0 offset)



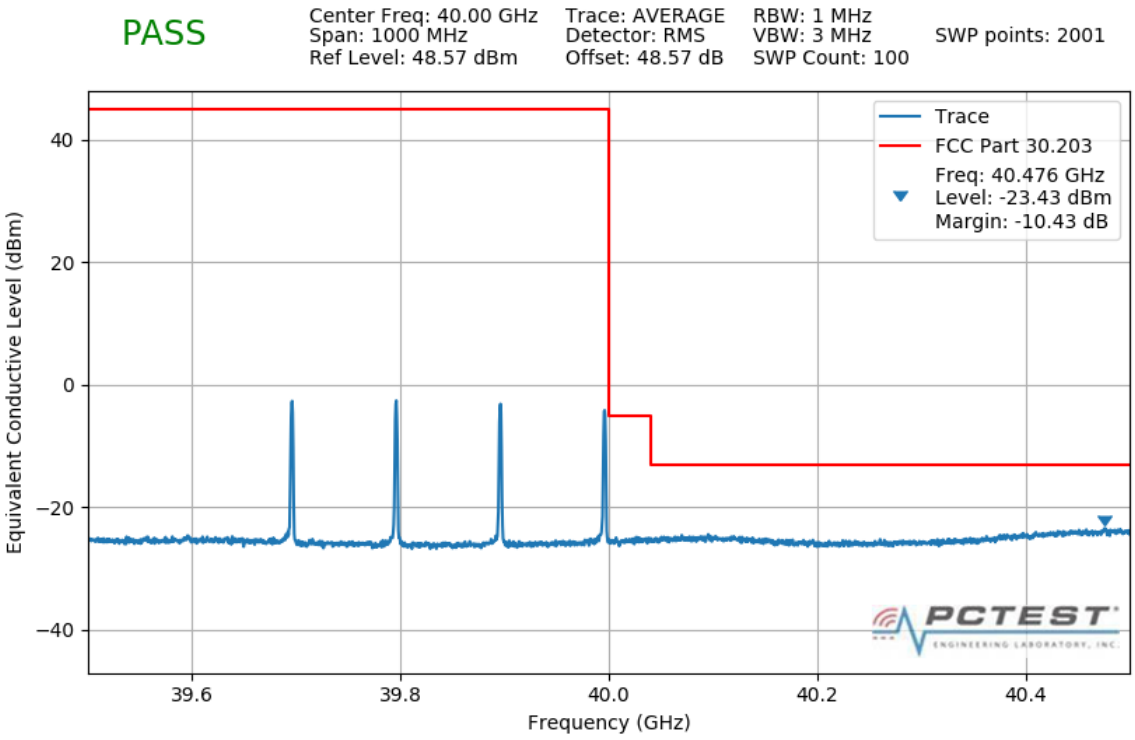
Plot 7-468. Band Edge Plot (4CC 100M 16QAM Low Channel – 1 RB 0 offset)



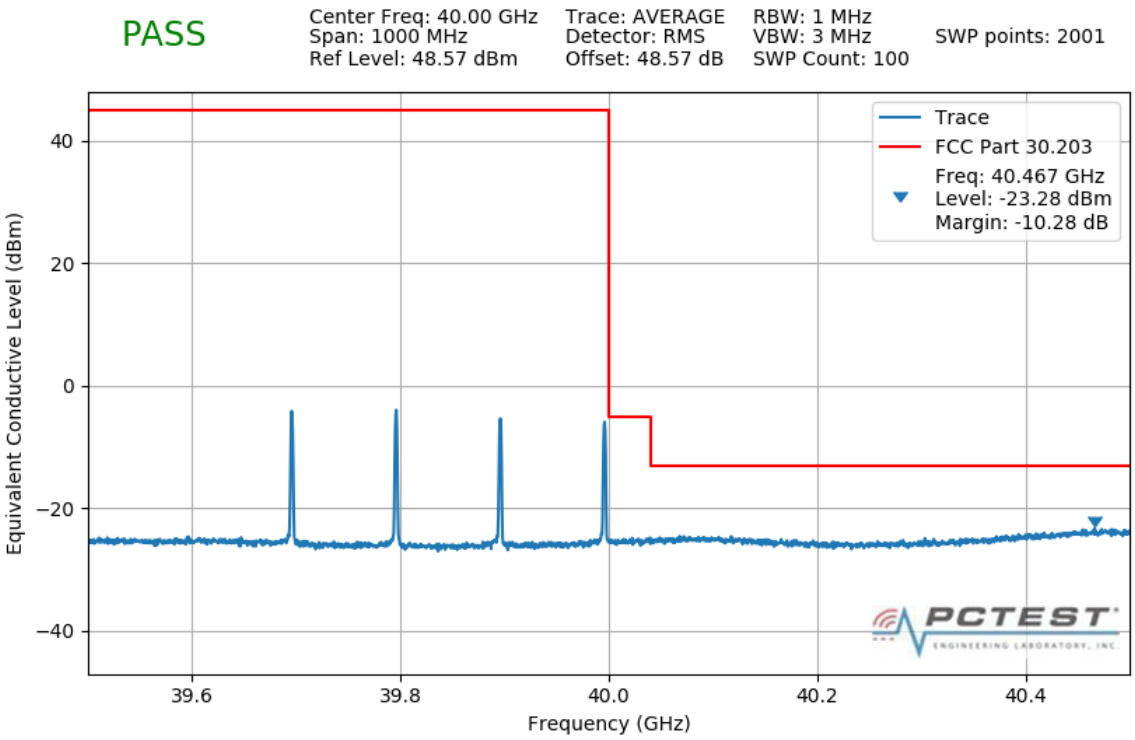
Plot 7-469. Band Edge Plot (4CC 100M 64QAM Low Channel – 1 RB 0 offset)



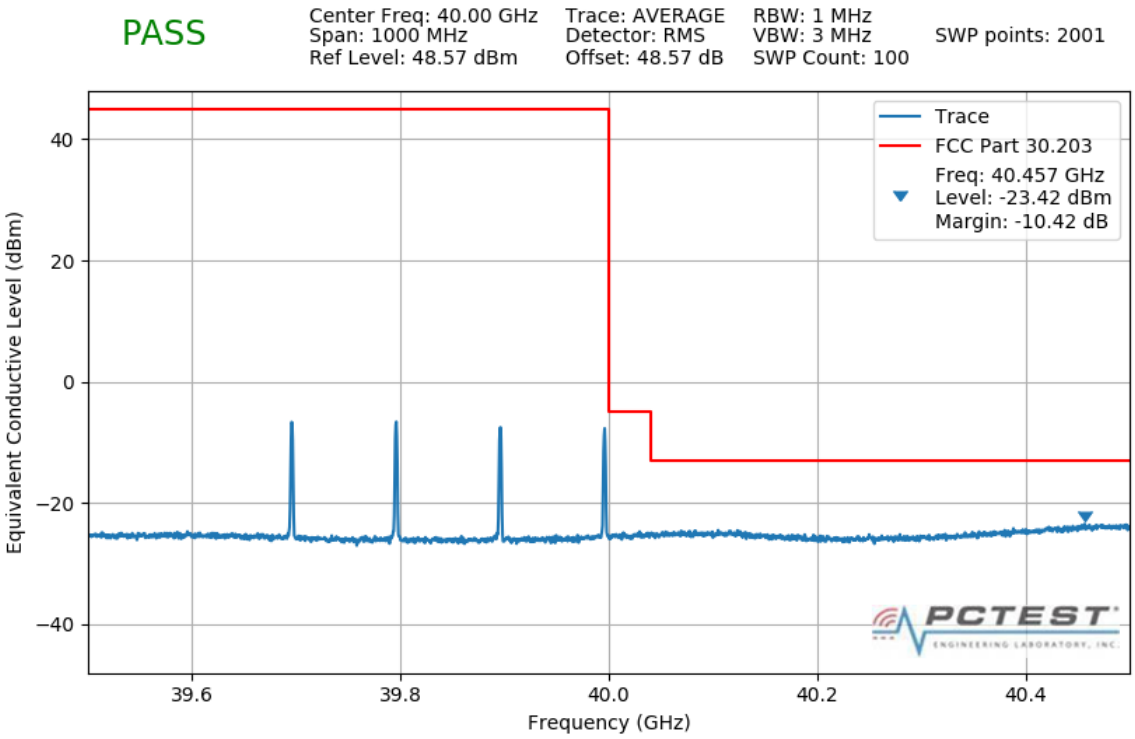
Plot 7-470. Band Edge Plot (4CC 100M QPSK Low Channel – 66 RB 0 offset)



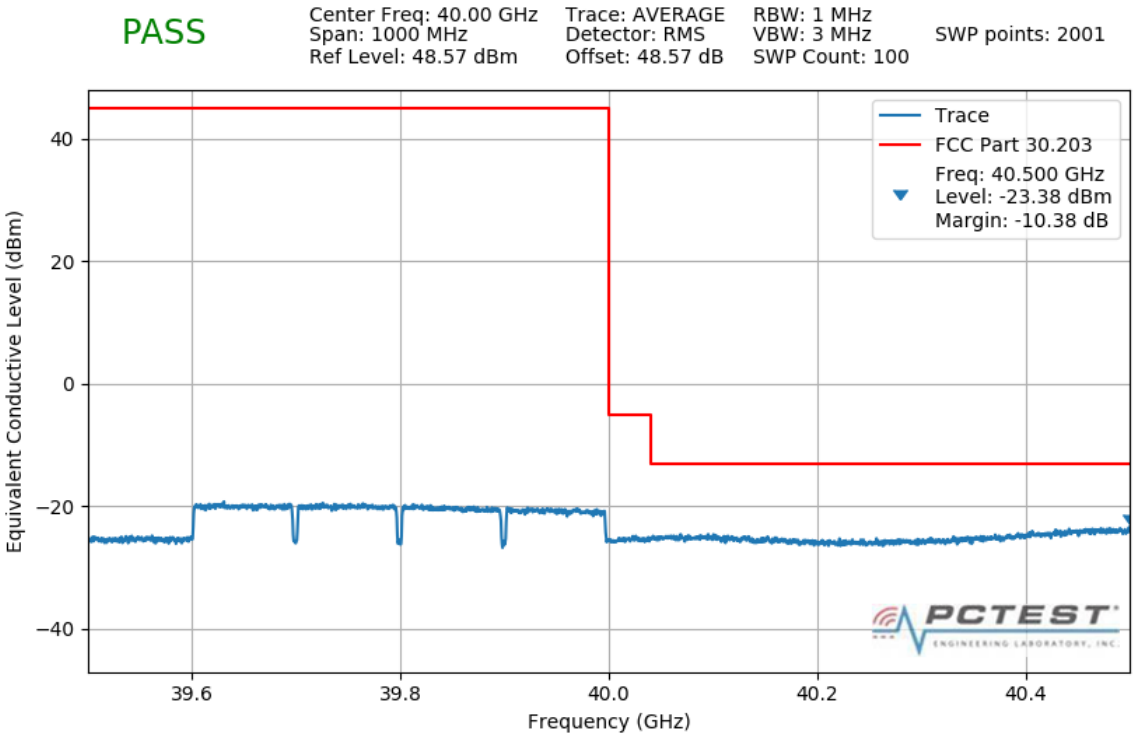
Plot 7-471. Band Edge Plot (4CC 100M QPSK Hi Channel– 1 RB 65 offset)



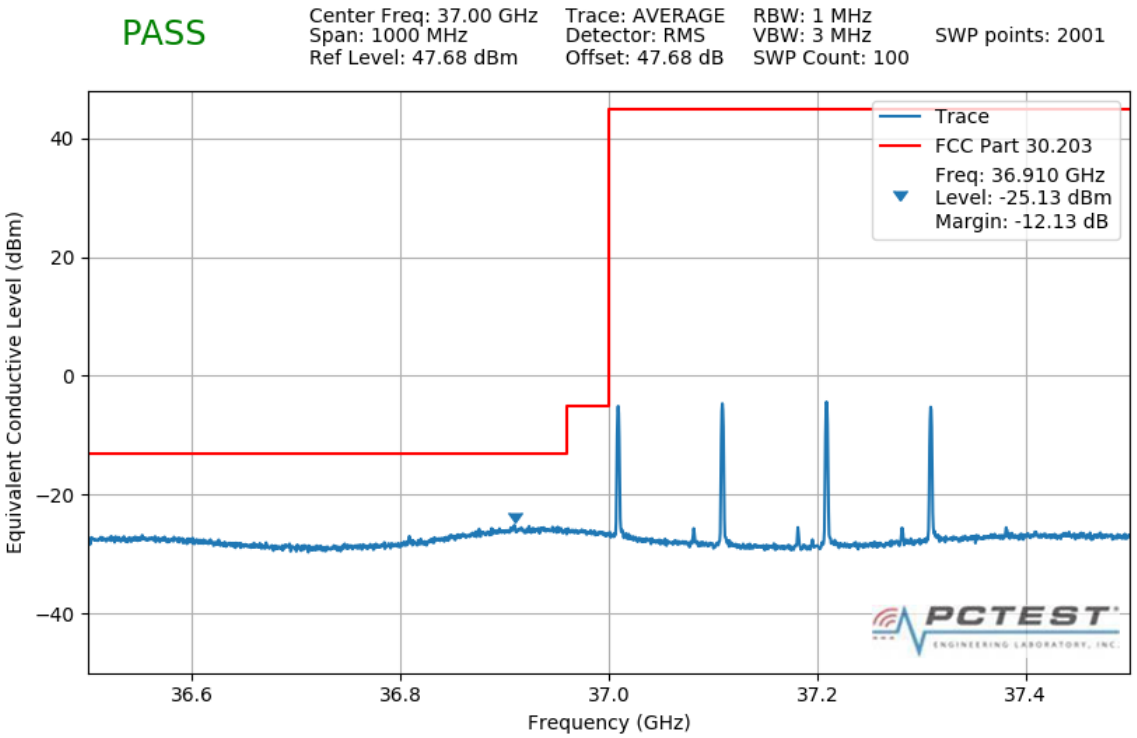
Plot 7-472. Band Edge Plot (4CC 100M 16QAM Hi Channel– 1 RB 65 offset)



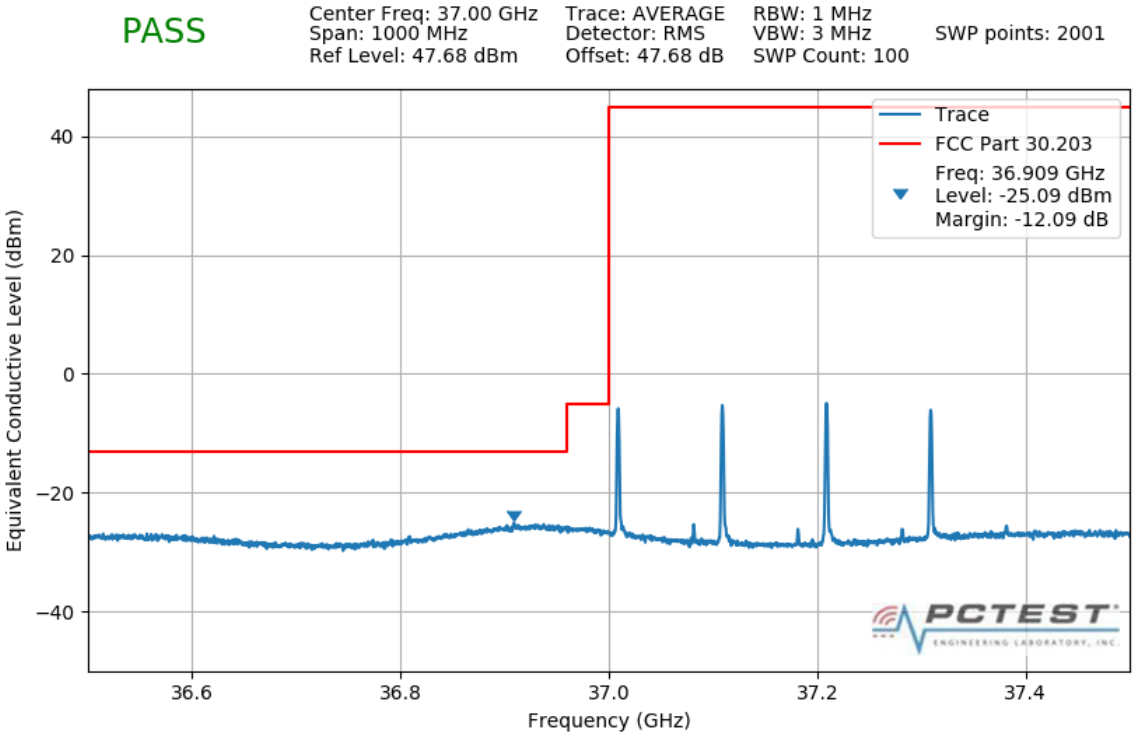
Plot 7-473. Band Edge Plot (4CC 100M 64QAM Hi Channel – 1 RB 0 offset)



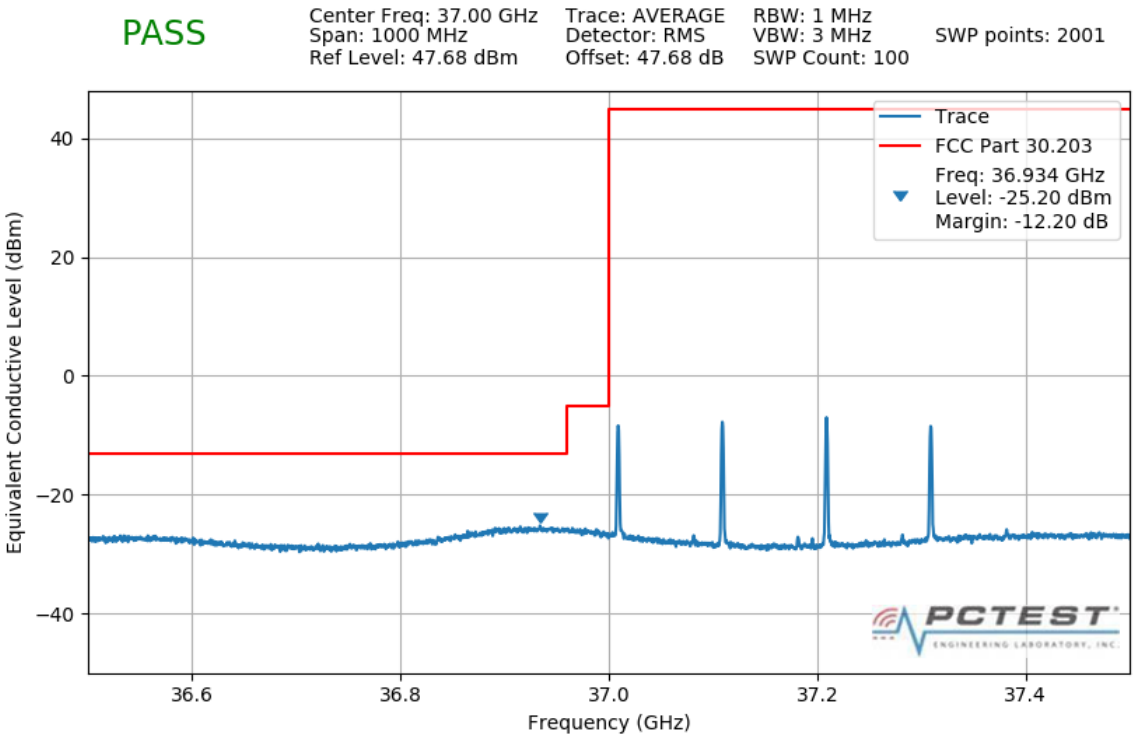
Plot 7-474. Band Edge Plot (4CC 100M QPSK Hi Channel– 66 RB 0 offset)



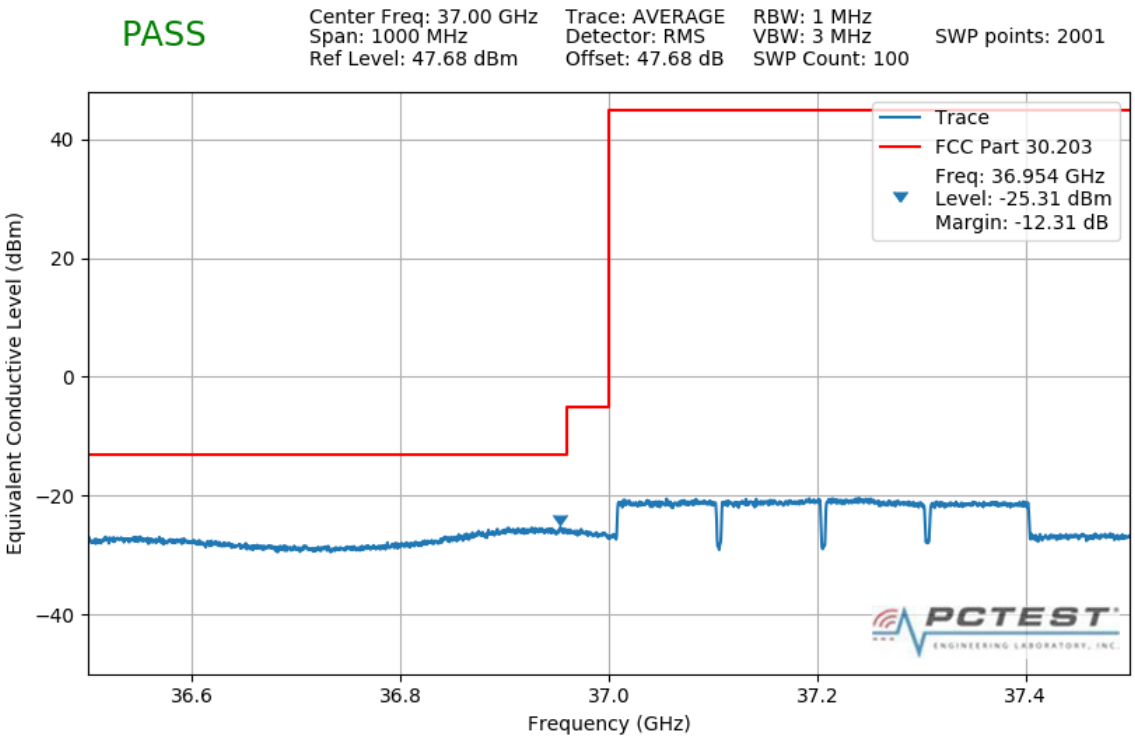
Plot 7-475. Band Edge Plot (4CC 100M QPSK Low Channel – 1 RB 0 offset)



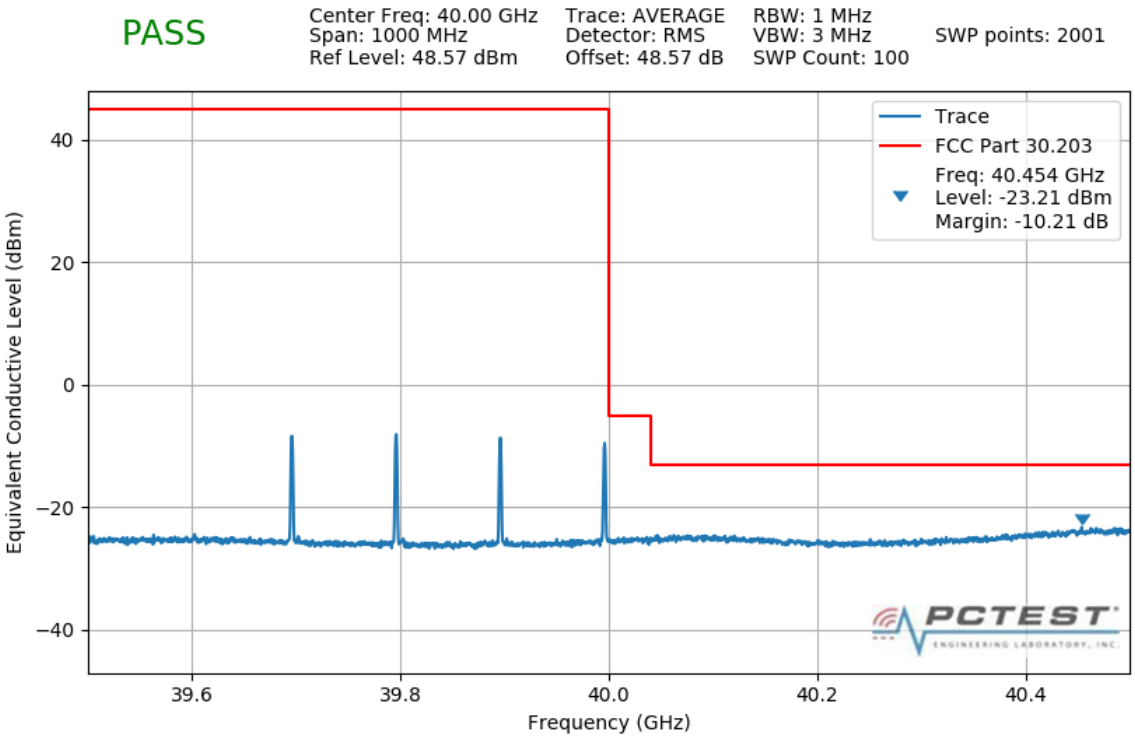
Plot 7-476. Band Edge Plot (4CC 100M 16QAM Low Channel – 1 RB 0 offset)



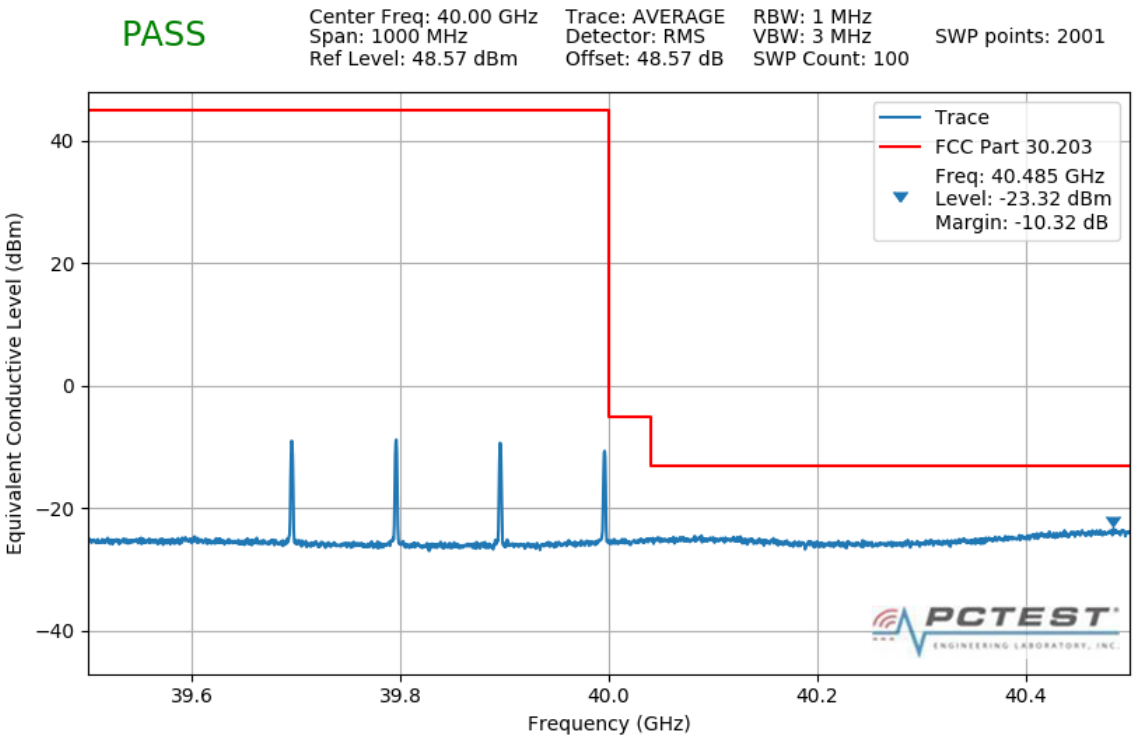
Plot 7-477. Band Edge Plot (4CC 100M 64QAM Low Channel – 1 RB 0 offset)



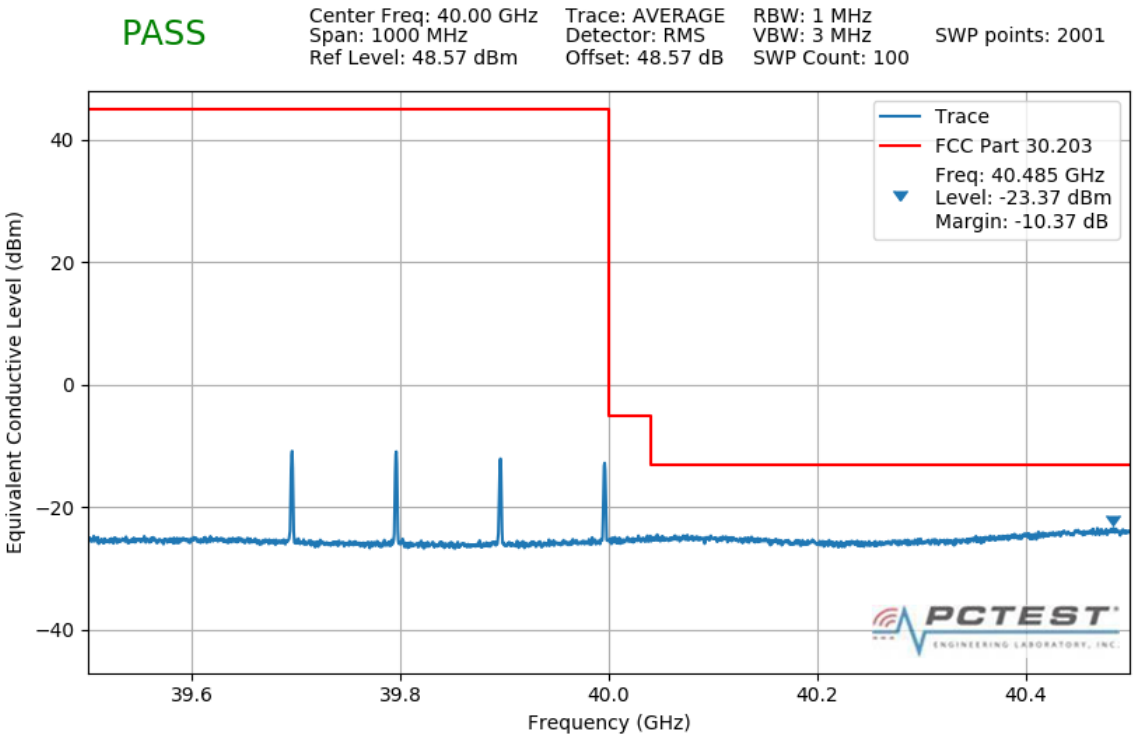
Plot 7-478. Band Edge Plot (4CC 100M QPSK Low Channel – 32 RB 0 offset)



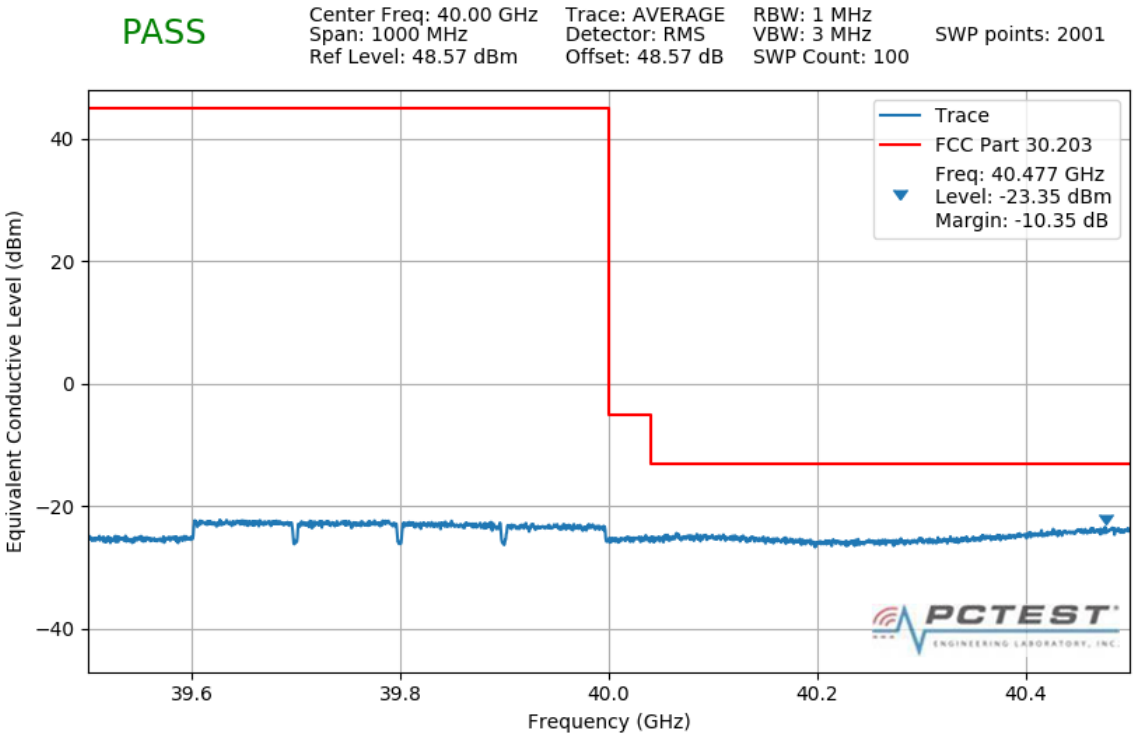
Plot 7-479. Band Edge Plot (4CC 100M QPSK Hi Channel– 1 RB 65 offset)



Plot 7-480. Band Edge Plot (4CC 100M 16QAM Hi Channel– 1 RB 65 offset)

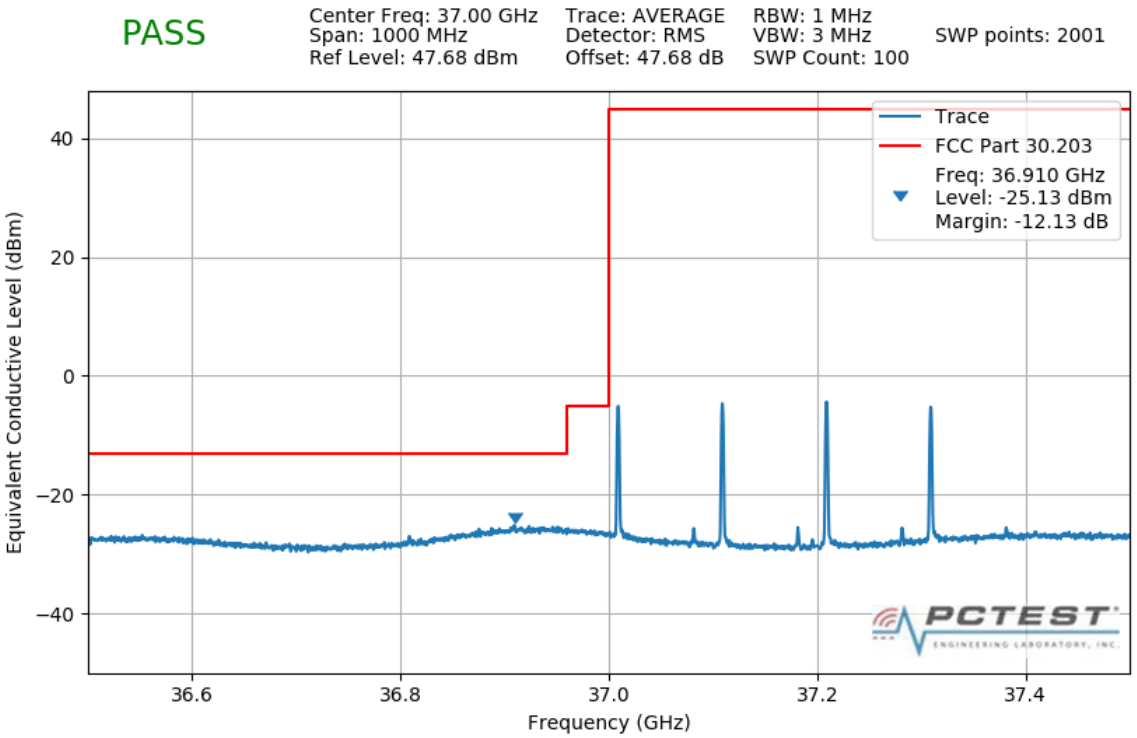


Plot 7-481. Band Edge Plot (4CC 100M 64QAM Hi Channel – 1 RB 65 offset)

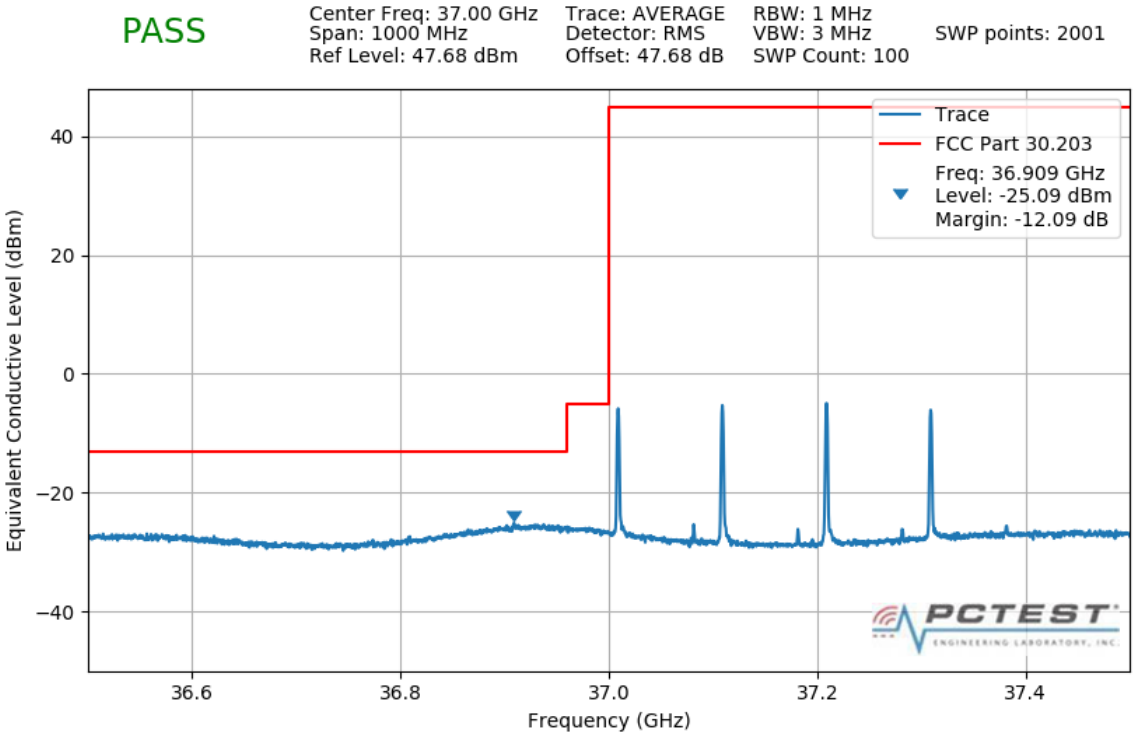


Plot 7-482. Band Edge Plot (4CC 100M QPSK Hi Channel– 66 RB 0 offset)

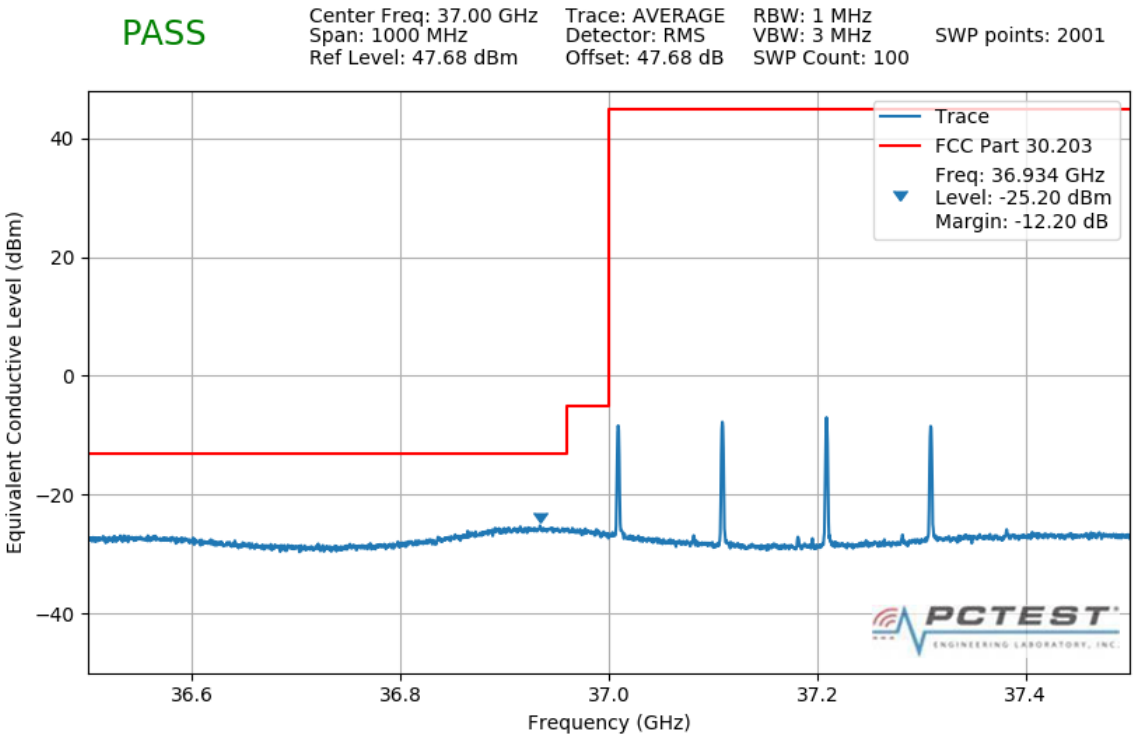
QTM 0 - H + V



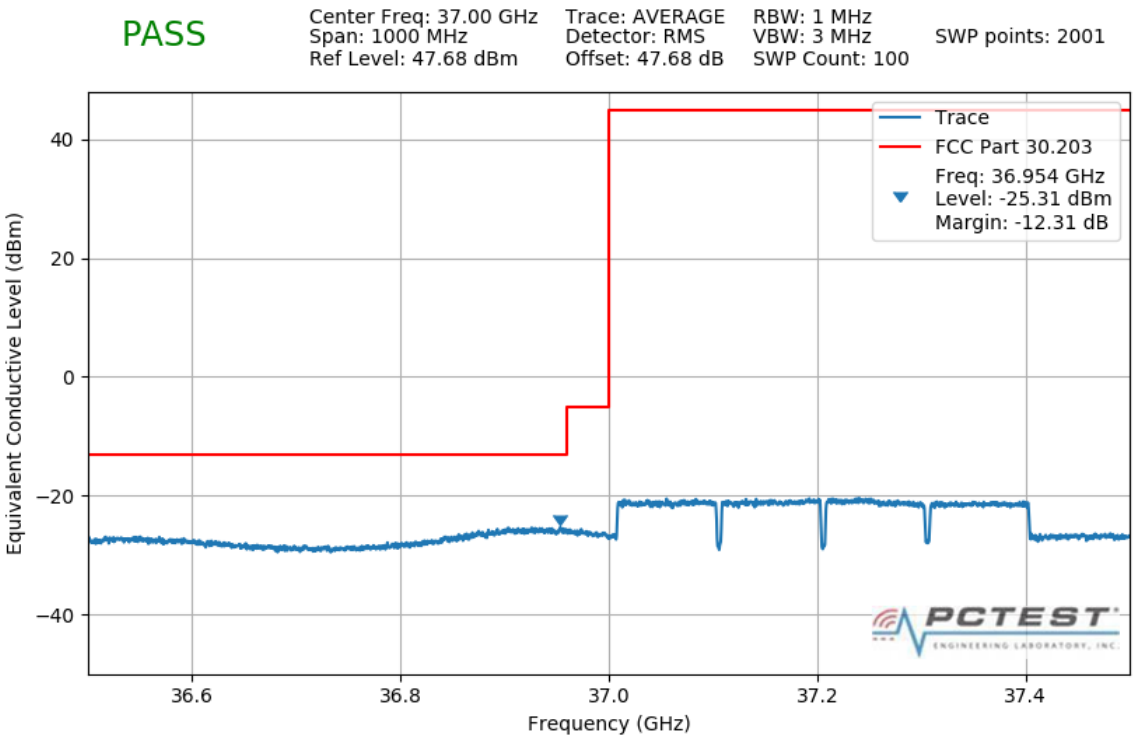
Plot 7-483. Band Edge Plot (4CC 100M QPSK Low Channel – 1 RB 0 offset)



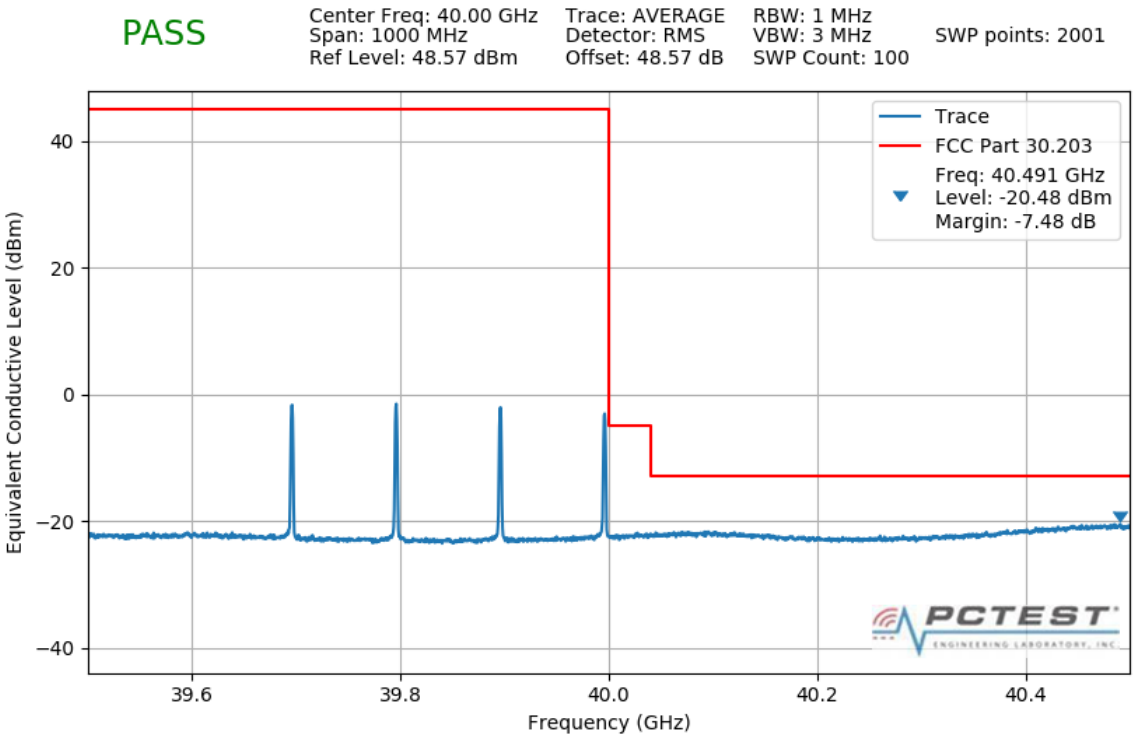
Plot 7-484. Band Edge Plot (4CC 100M 16QAM Low Channel – 1 RB 0 offset)



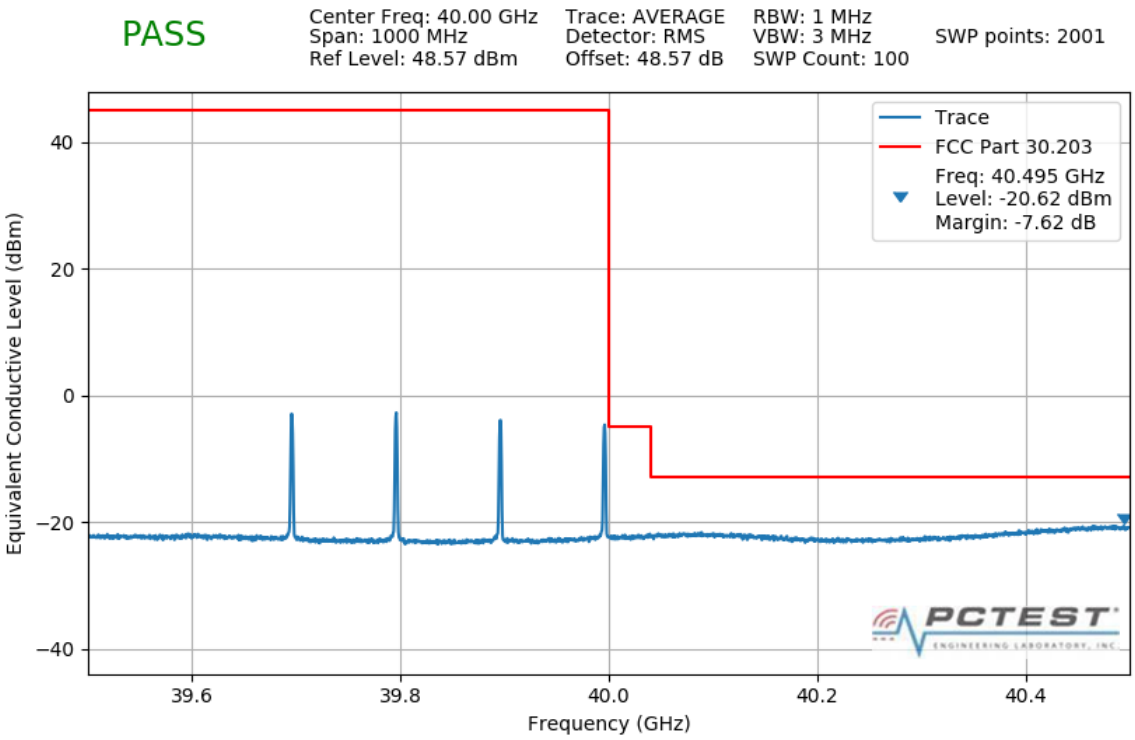
Plot 7-485. Band Edge Plot (4CC 100M 64QAM Low Channel – 1 RB 0 offset)



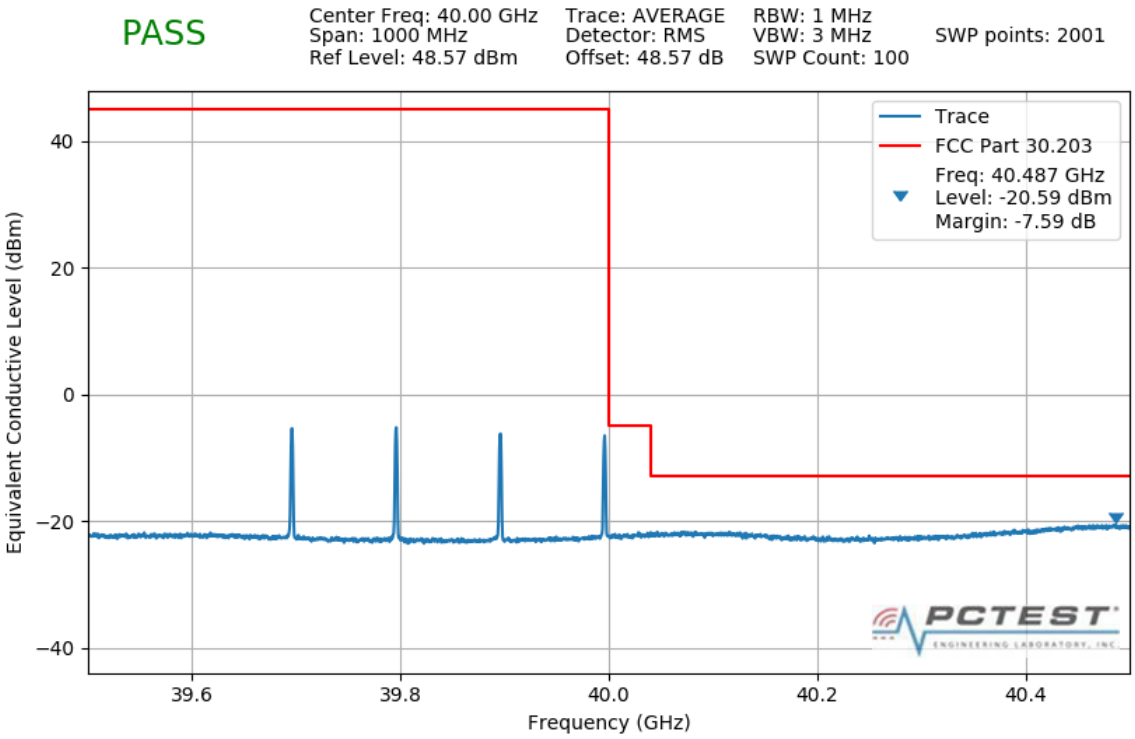
Plot 7-486. Band Edge Plot (4CC 100M QPSK Low Channel – 66 RB 0 offset)



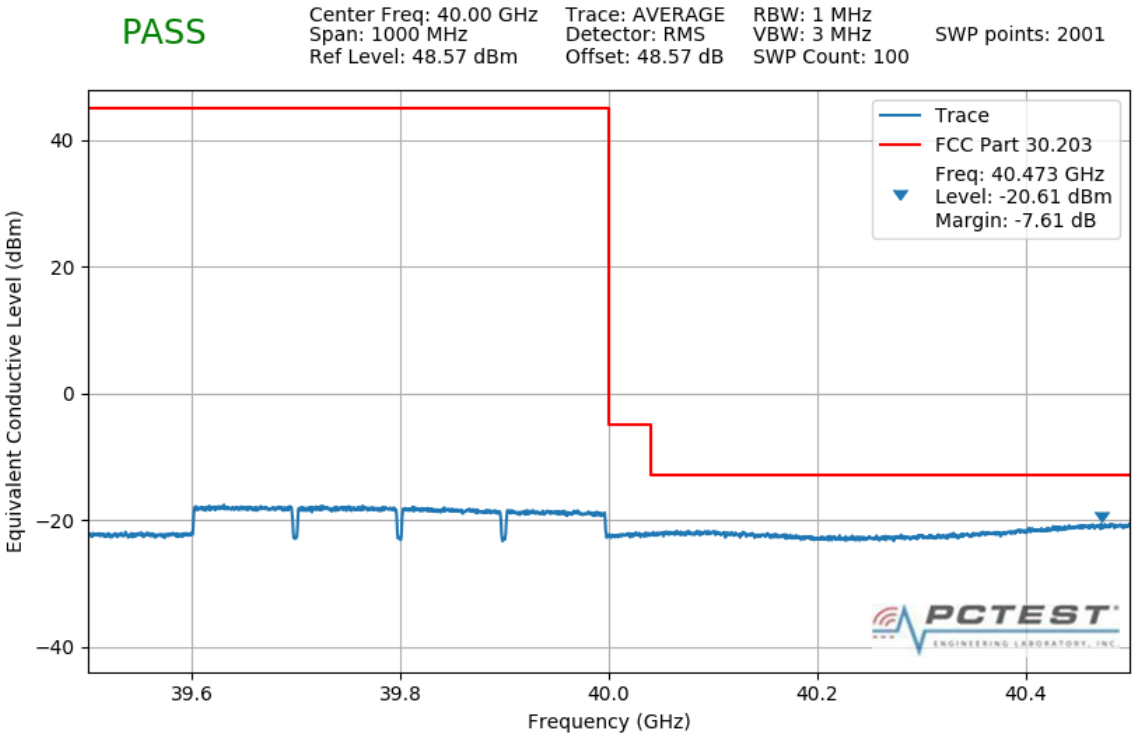
Plot 7-487. Band Edge Plot (4CC 100M QPSK Hi Channel– 1 RB 65 offset)



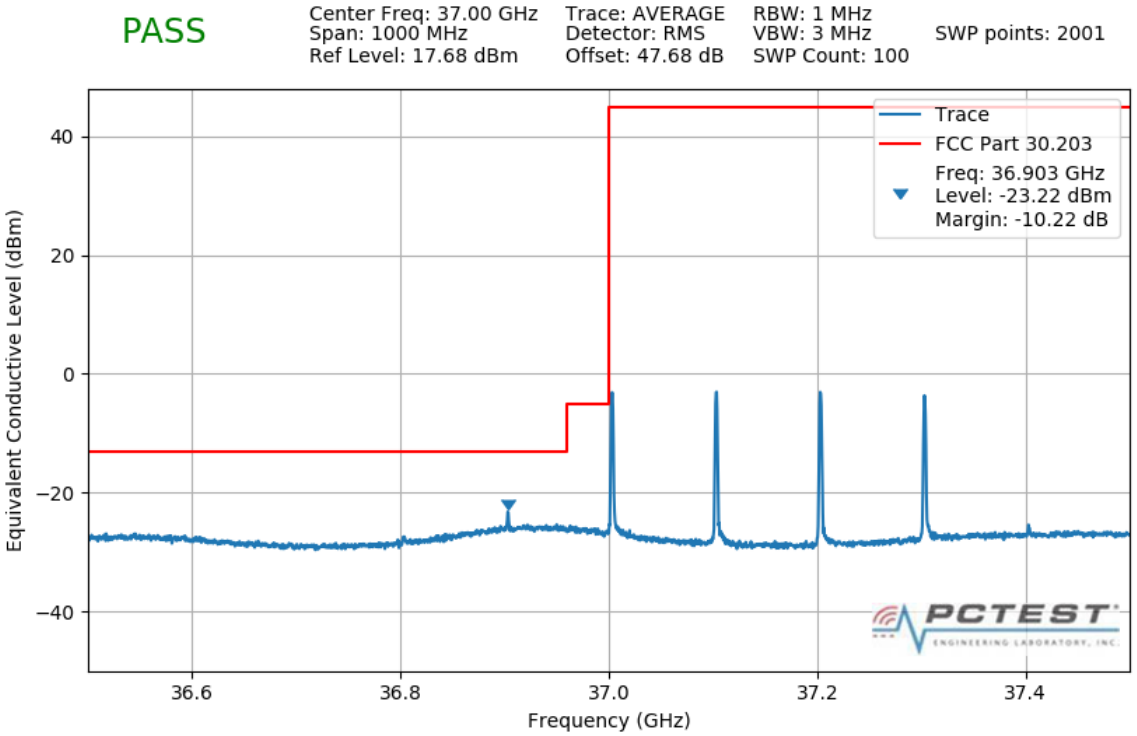
Plot 7-488. Band Edge Plot (4CC 100M 16QAM Hi Channel– 1 RB 65 offset)



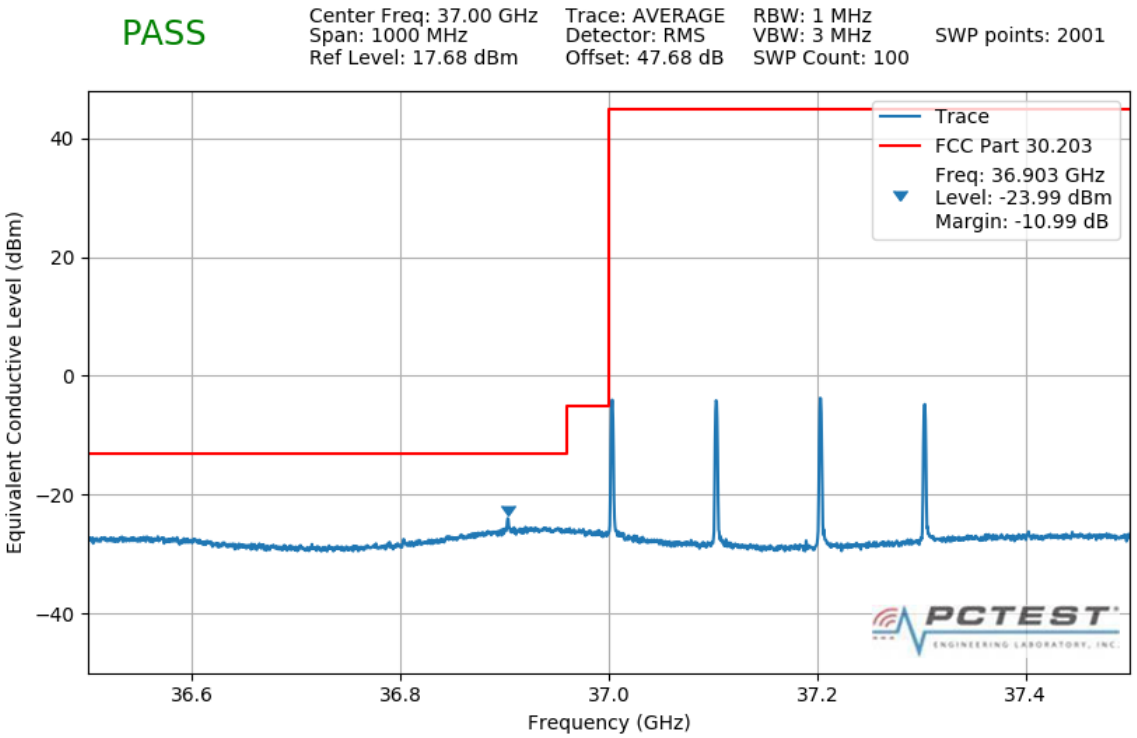
Plot 7-489. Band Edge Plot (4CC 100M 64QAM Hi Channel – 1 RB 65 offset)



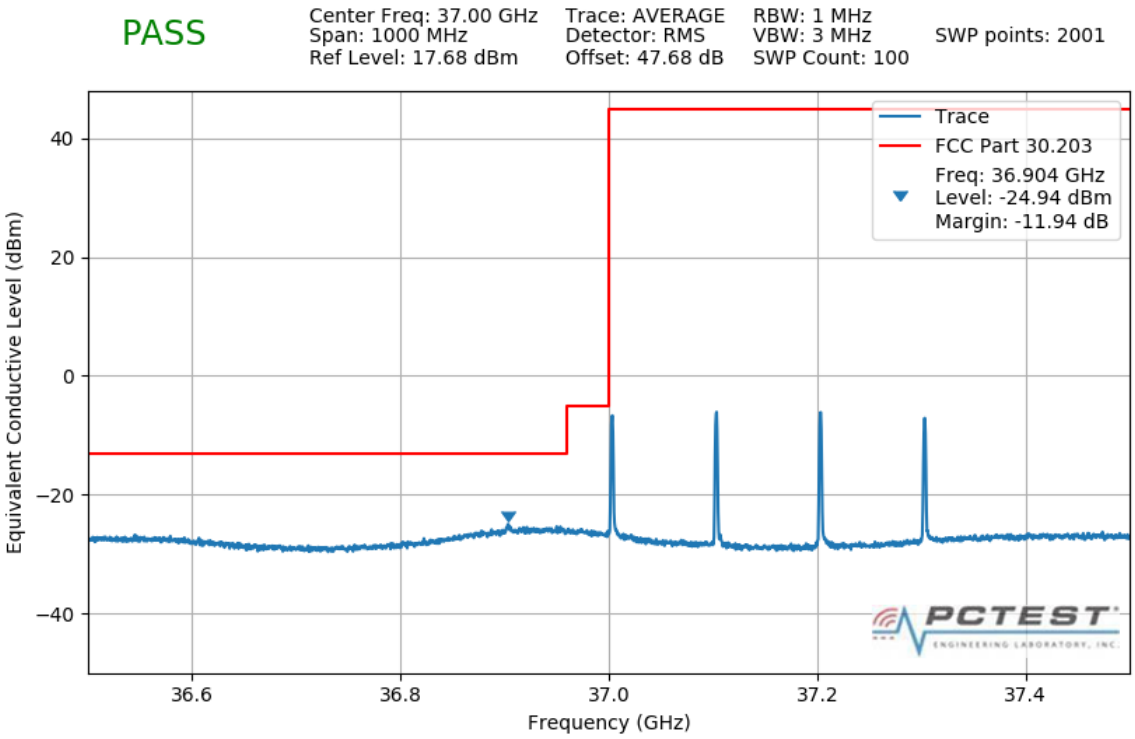
Plot 7-490. Band Edge Plot (4CC 100M QPSK Hi Channel– 66 RB 0 offset)



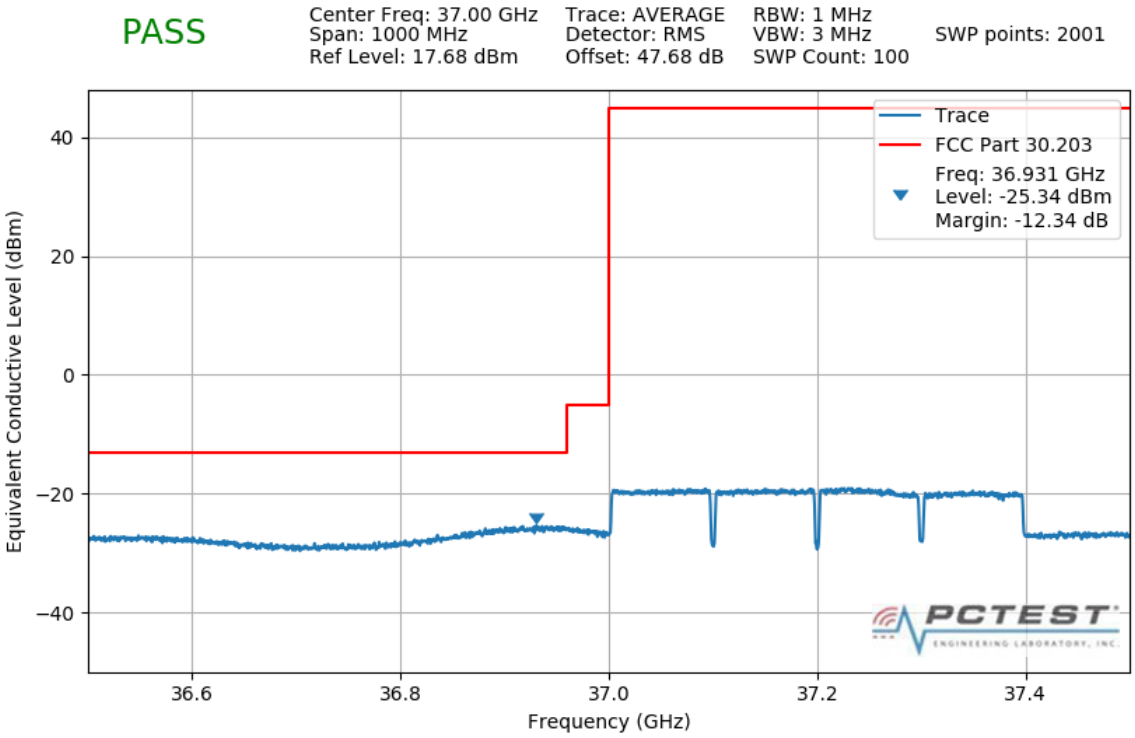
Plot 7-491. Band Edge Plot (4CC 100M QPSK Low Channel – 1 RB 0 offset)



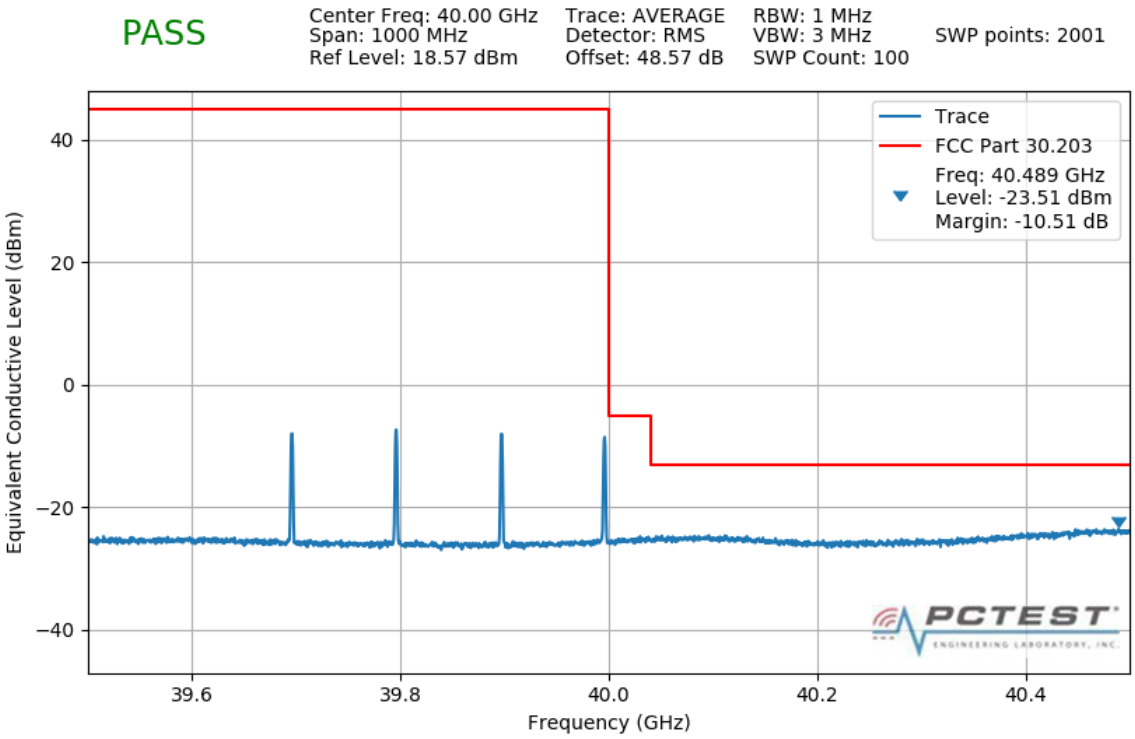
Plot 7-492. Band Edge Plot (4CC 100M 16QAM Low Channel – 1 RB 0 offset)



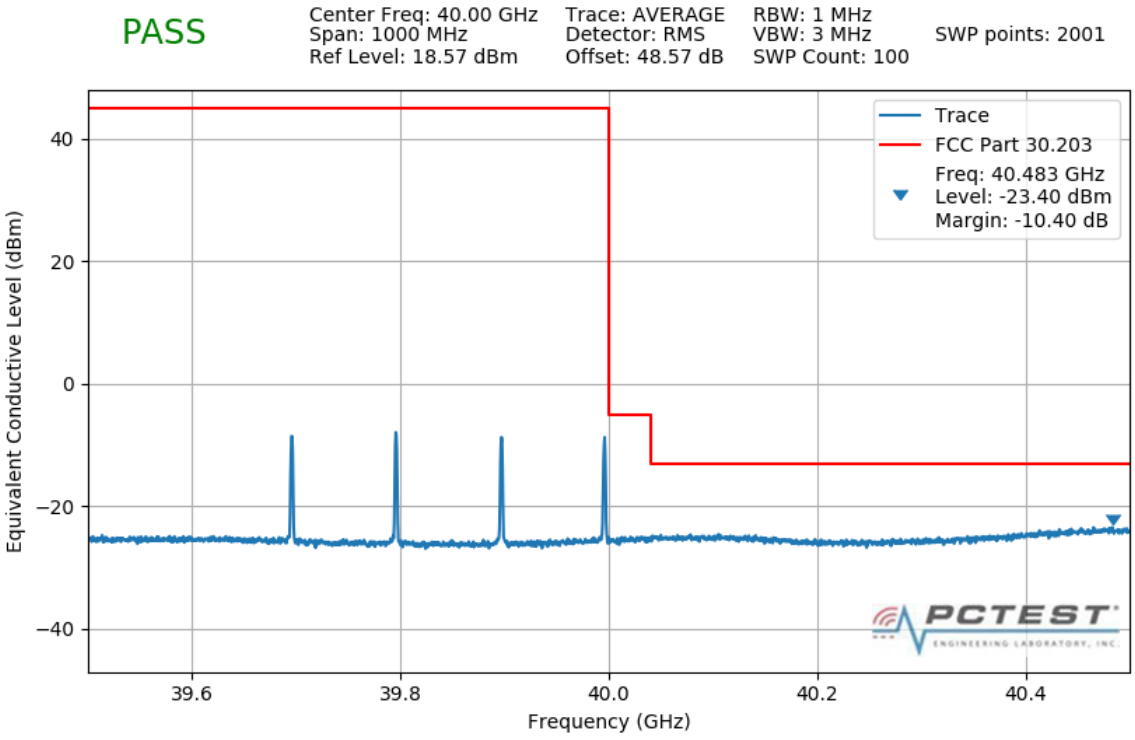
Plot 7-493. Band Edge Plot (4CC 100M 64QAM Low Channel – 1 RB 0 offset)



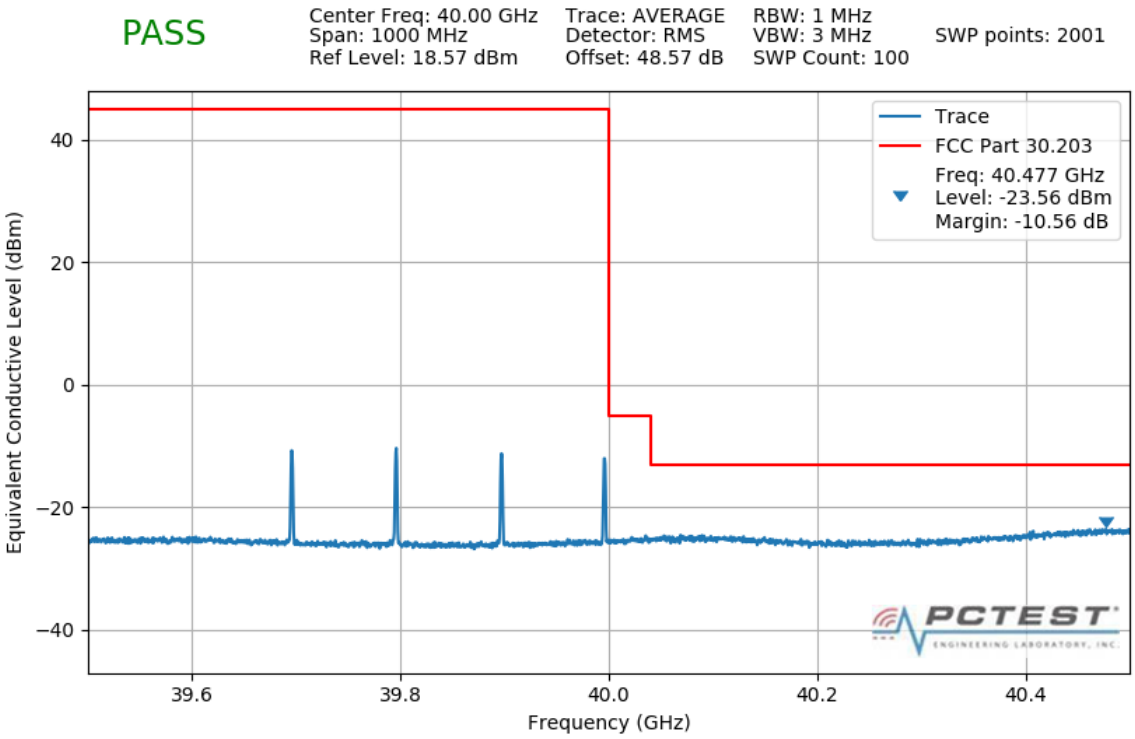
Plot 7-494. Band Edge Plot (4CC 100M QPSK Low Channel – 66 RB 0 offset)



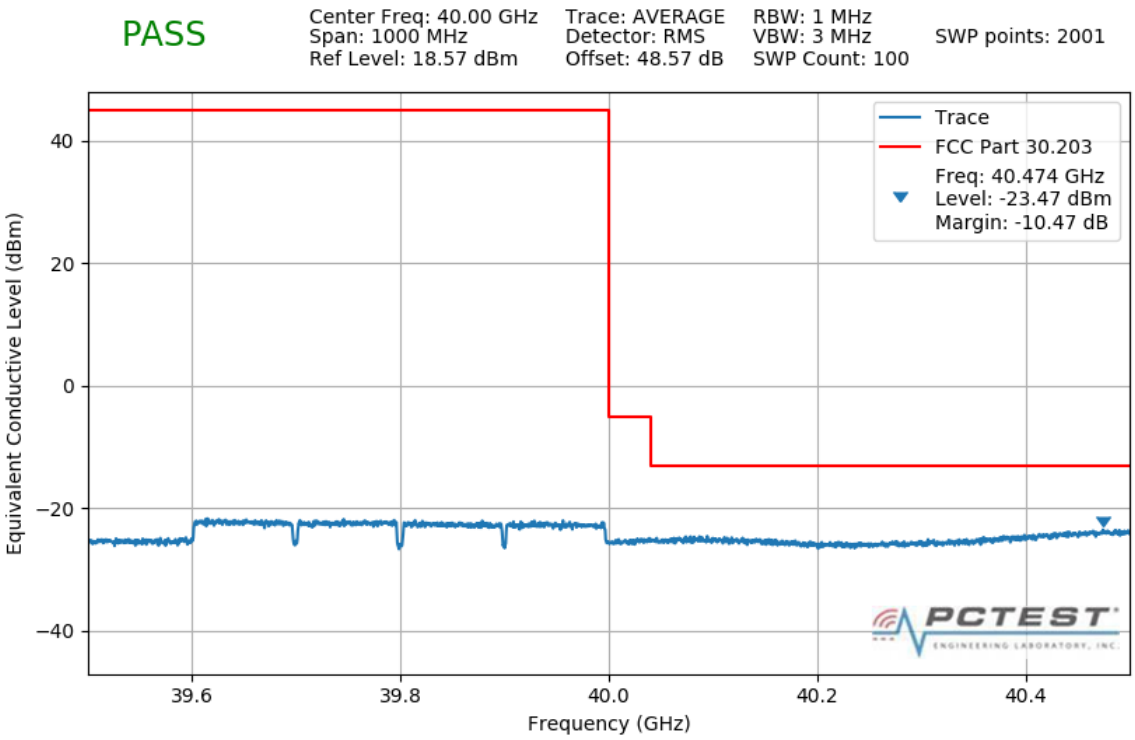
Plot 7-495. Band Edge Plot (4CC 100M QPSK Hi Channel– 1 RB 65 offset)



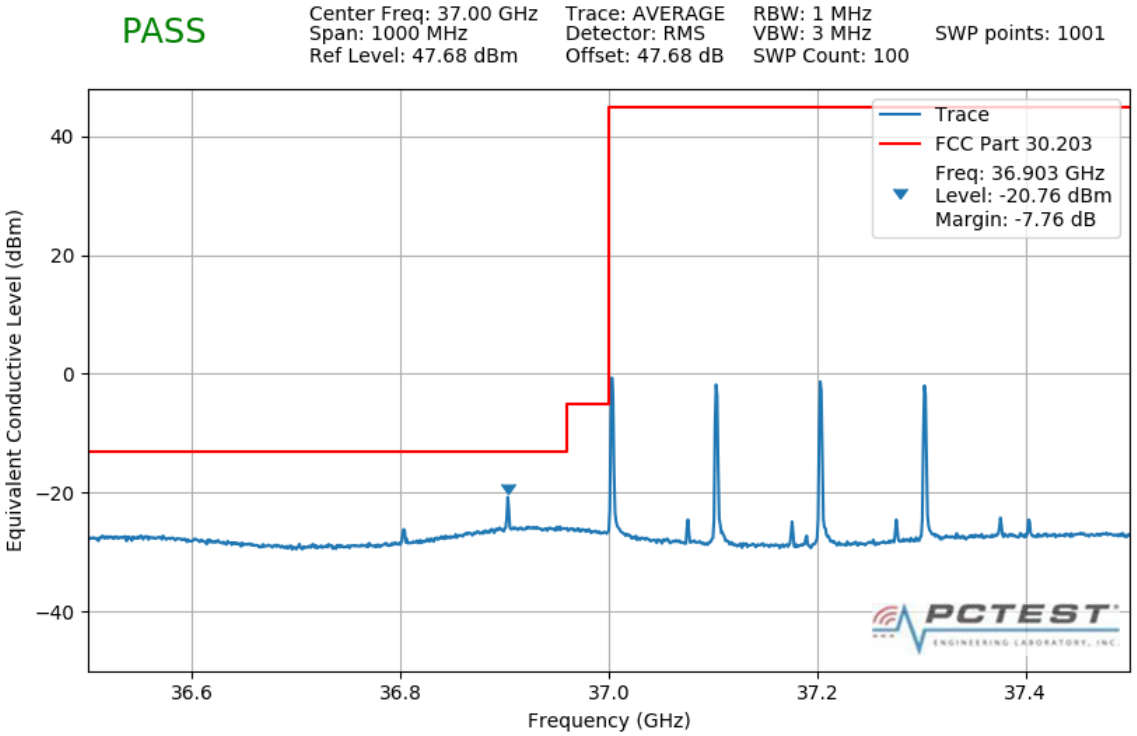
Plot 7-496. Band Edge Plot (4CC 100M 16QAM Hi Channel– 1 RB 65 offset)



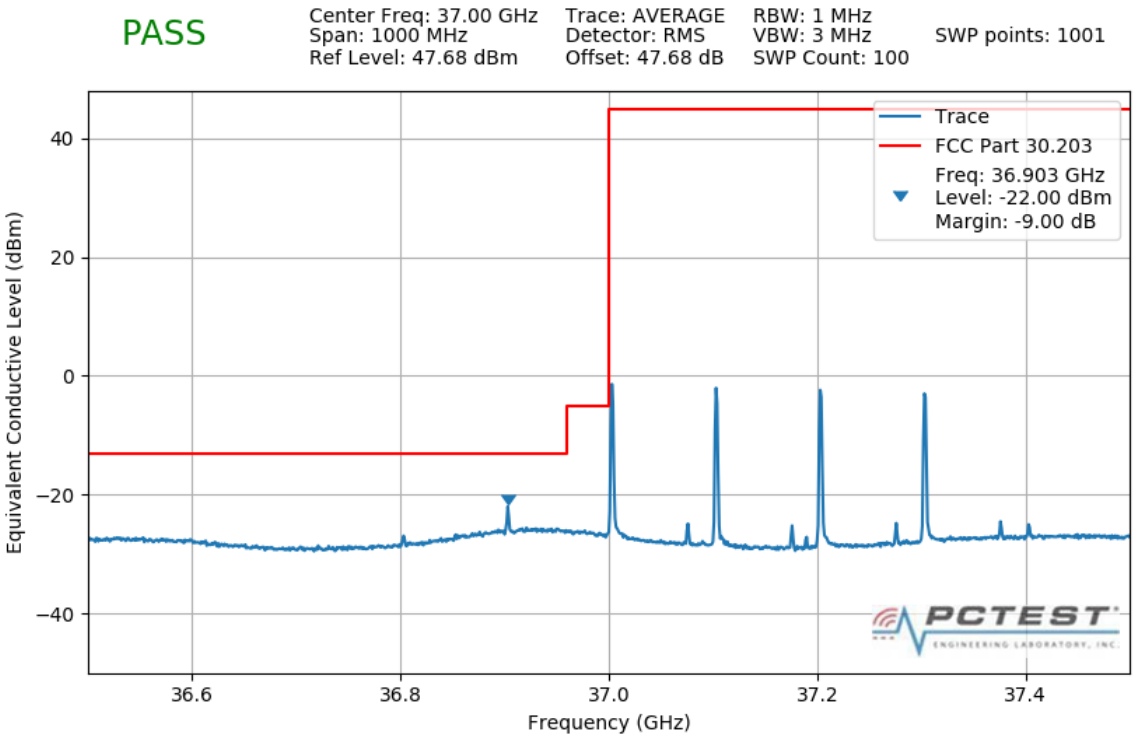
Plot 7-497. Band Edge Plot (4CC 100M 64QAM Hi Channel – 1 RB 65 offset)



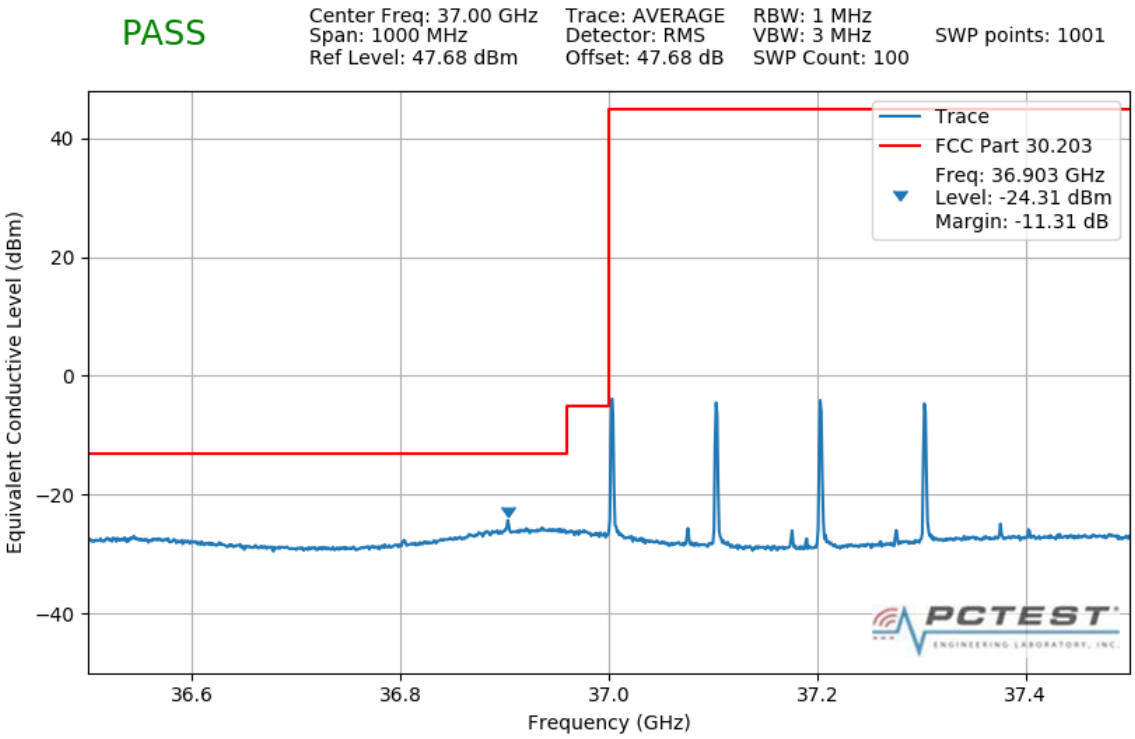
Plot 7-498. Band Edge Plot (4CC 100M QPSK Hi Channel– 66 RB 0 offset)



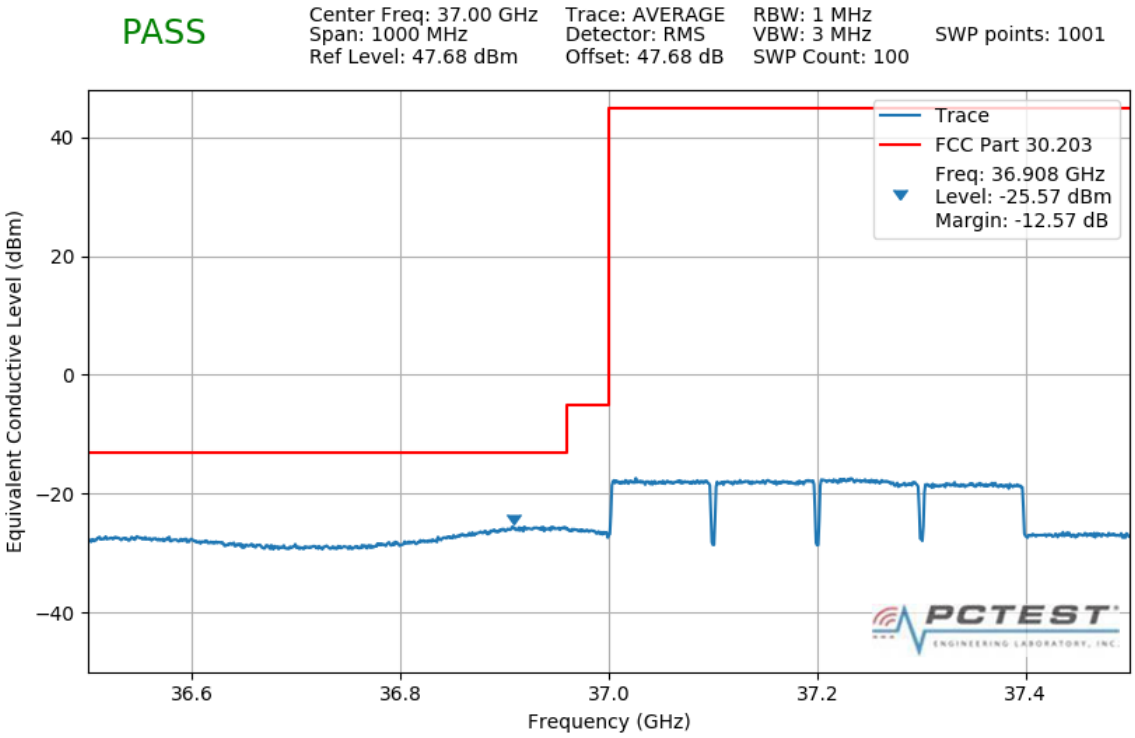
Plot 7-499. Band Edge Plot (4CC 100M QPSK Low Channel – 1 RB 0 offset)



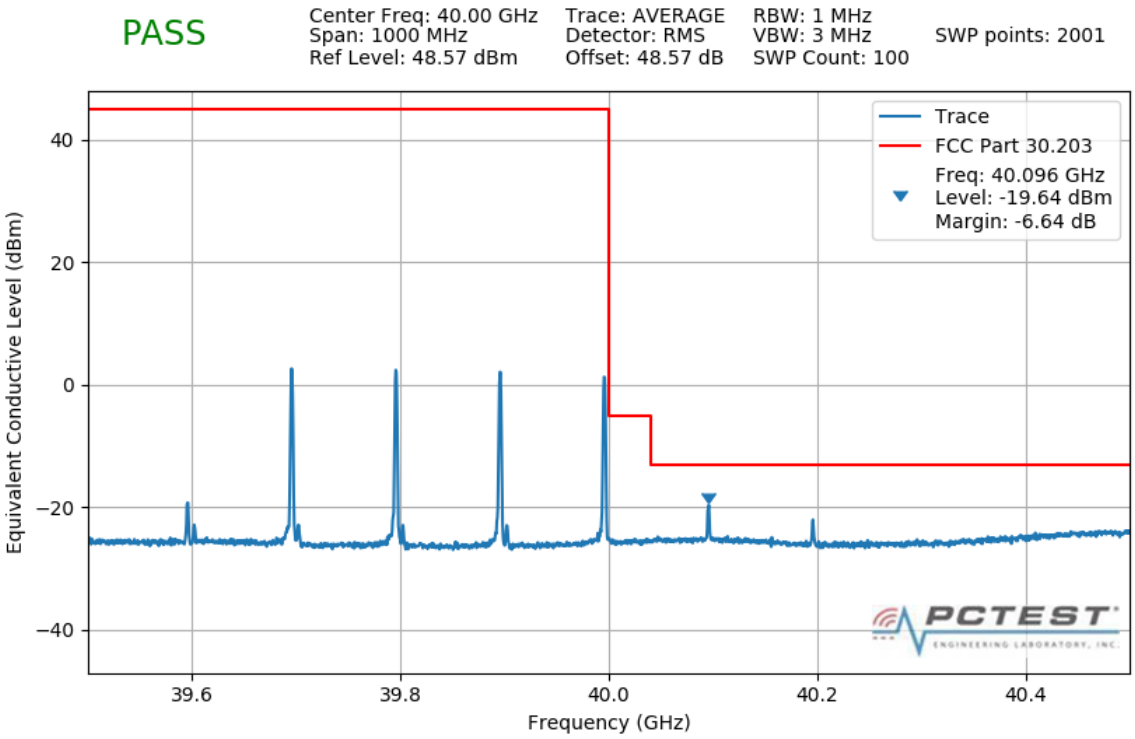
Plot 7-500. Band Edge Plot (4CC 100M 16QAM Low Channel – 1 RB 0 offset)



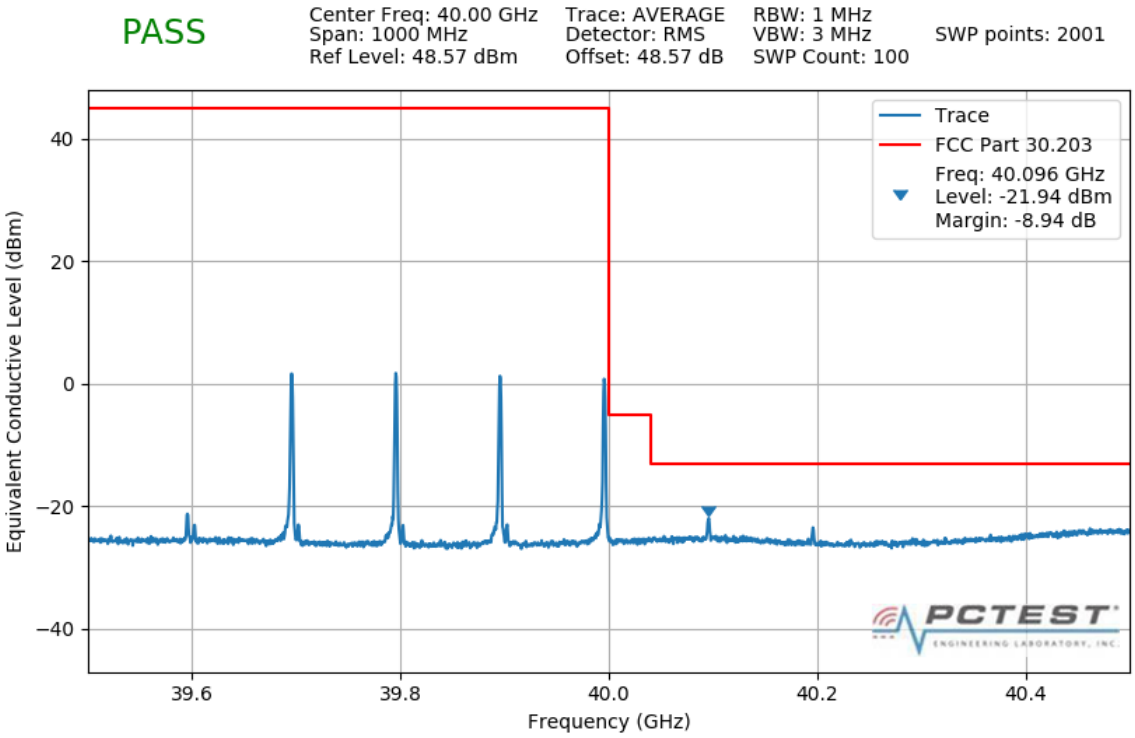
Plot 7-501. Band Edge Plot (4CC 100M 64QAM Low Channel – 1 RB 0 offset)



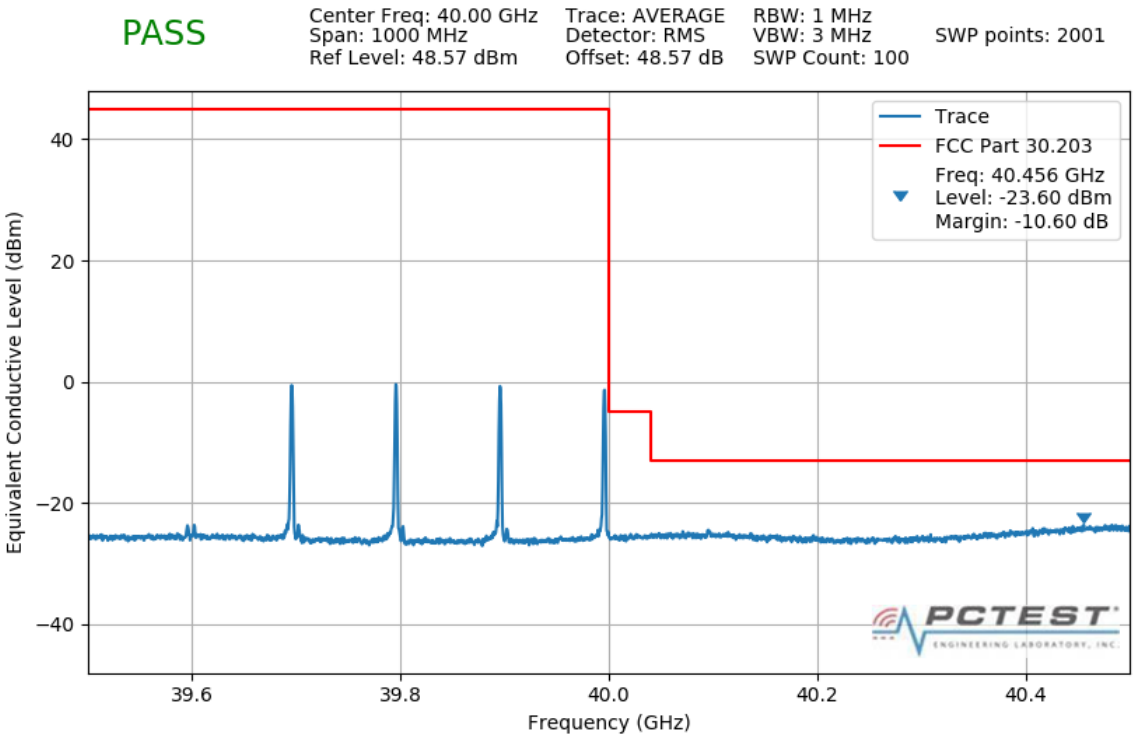
Plot 7-502. Band Edge Plot (4CC 100M QPSK Low Channel – 66 RB 0 offset)



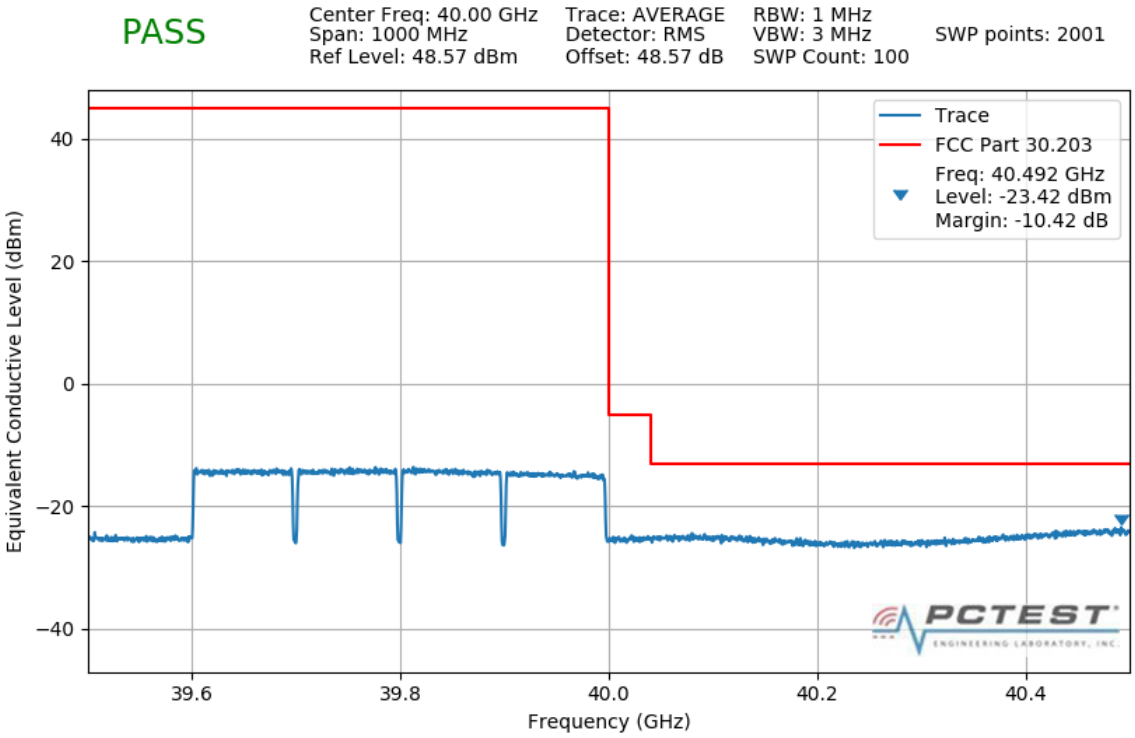
Plot 7-503. Band Edge Plot (4CC 100M QPSK Hi Channel– 1 RB 65 offset)



Plot 7-504. Band Edge Plot (4CC 100M 16QAM Hi Channel– 1 RB 65 offset)

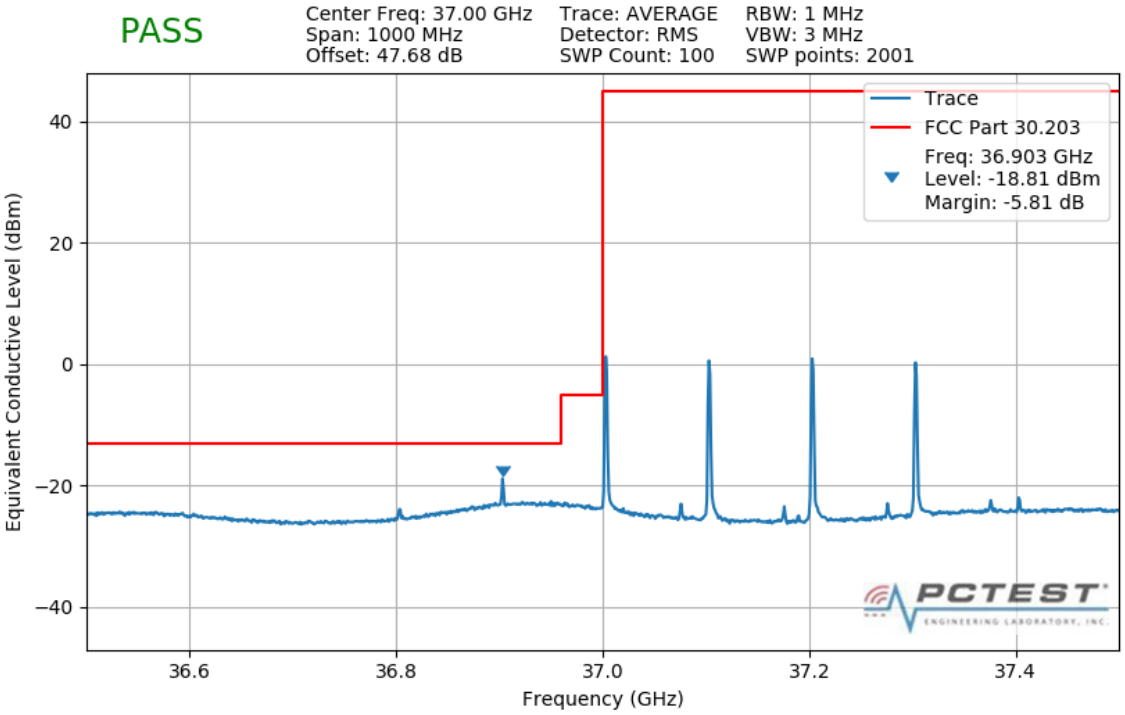


Plot 7-505. Band Edge Plot (4CC 100M 64QAM Hi Channel – 1 RB 65 offset)

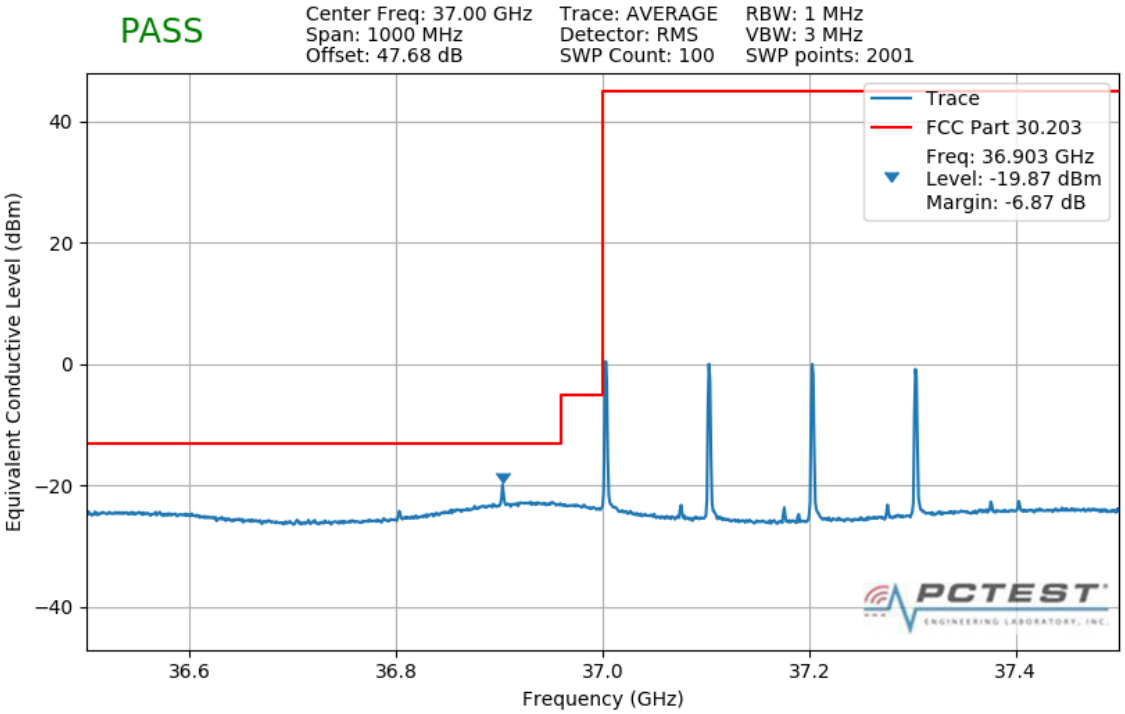


Plot 7-506. Band Edge Plot (4CC 100M QPSK Hi Channel– 66 RB 0 offset)

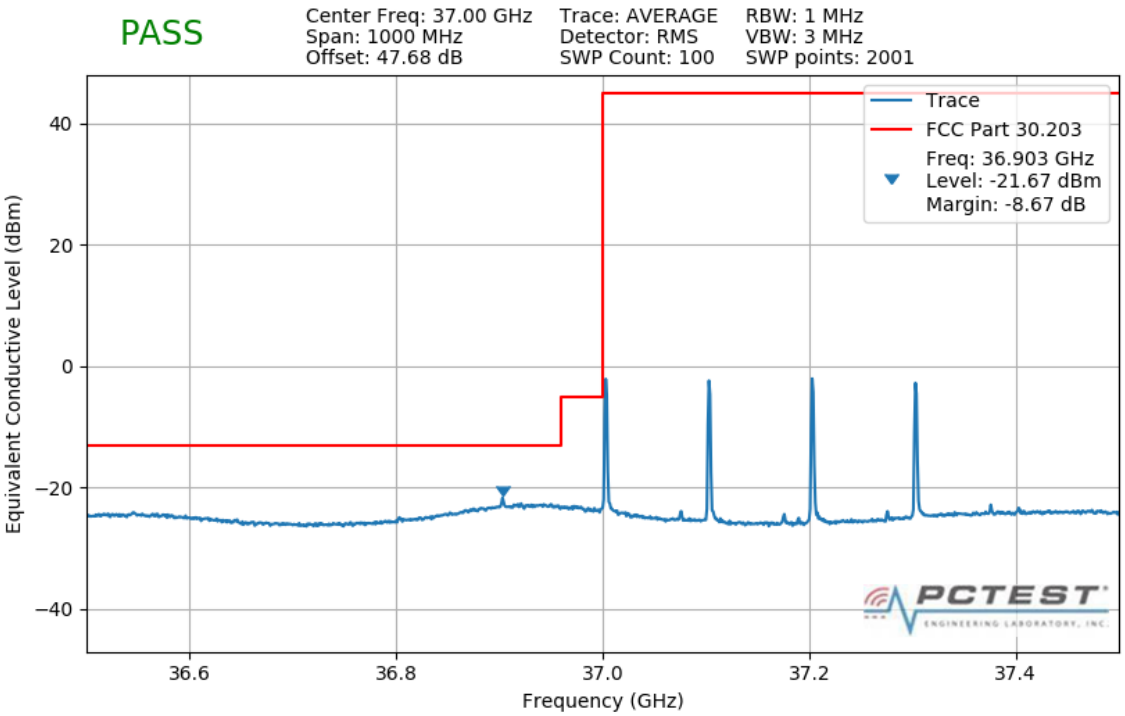
QTM 1 - H + V



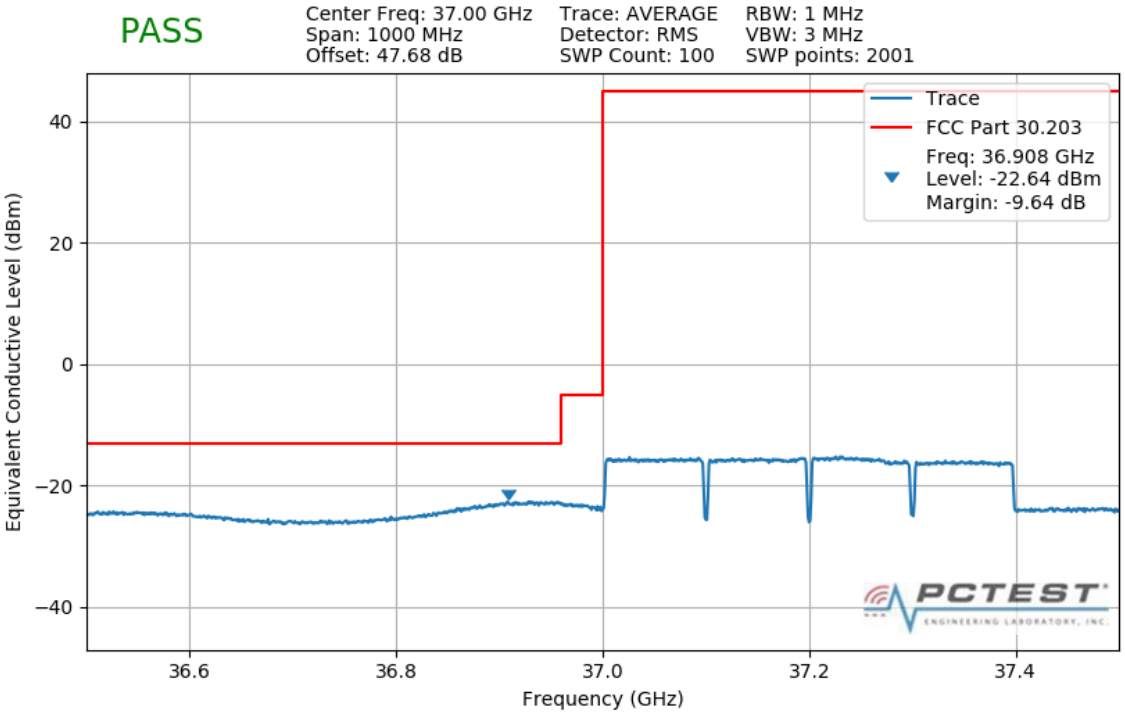
Plot 7-507. Band Edge Plot (4CC 100M QPSK Low Channel – 1 RB 0 offset)



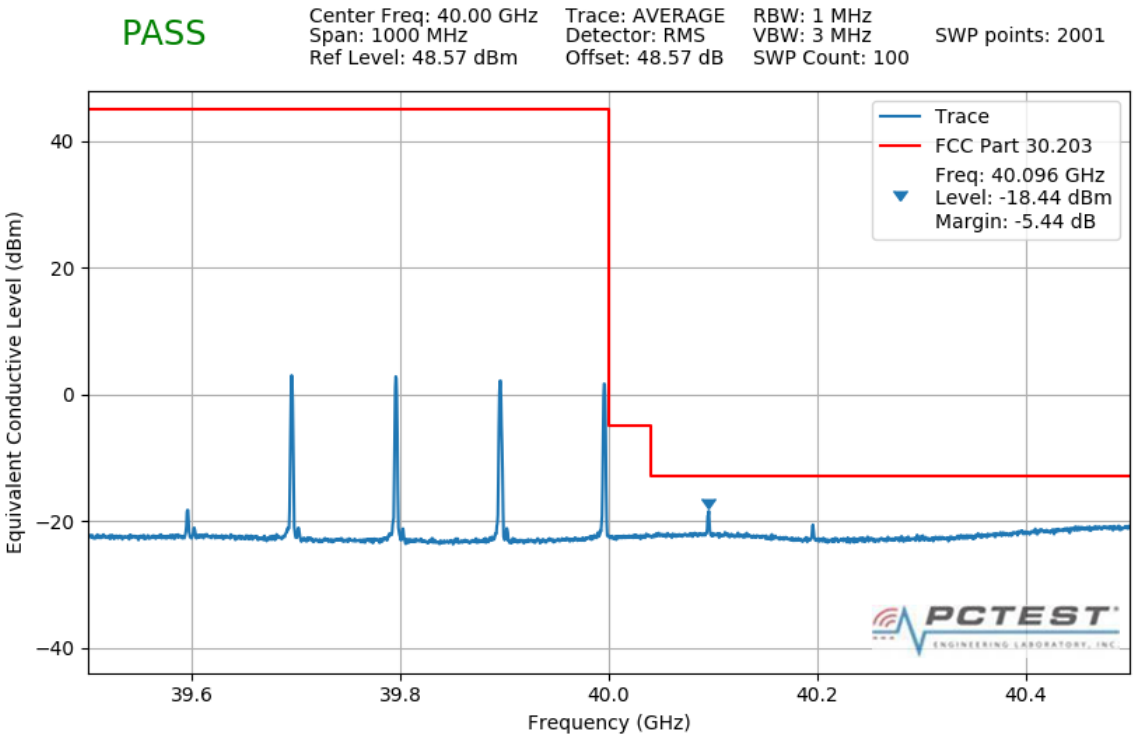
Plot 7-508. Band Edge Plot (4CC 100M 16QAM Low Channel – 1 RB 0 offset)



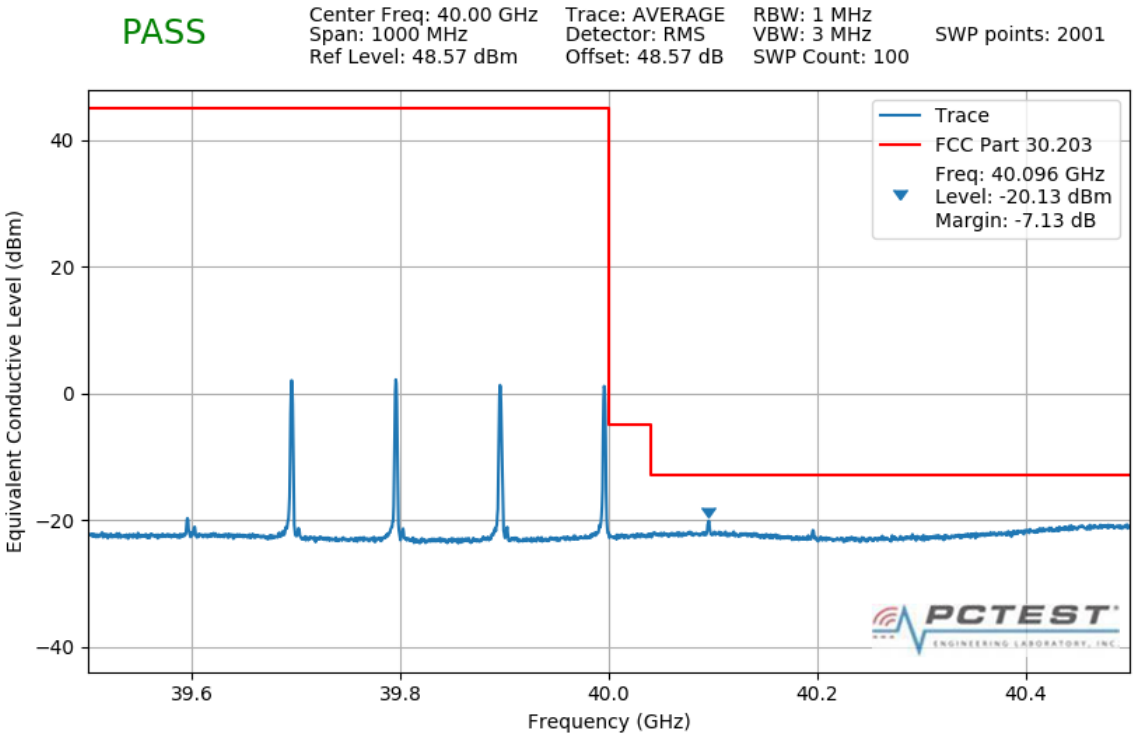
Plot 7-509. Band Edge Plot (4CC 100M 64QAM Low Channel – 1 RB 0 offset)



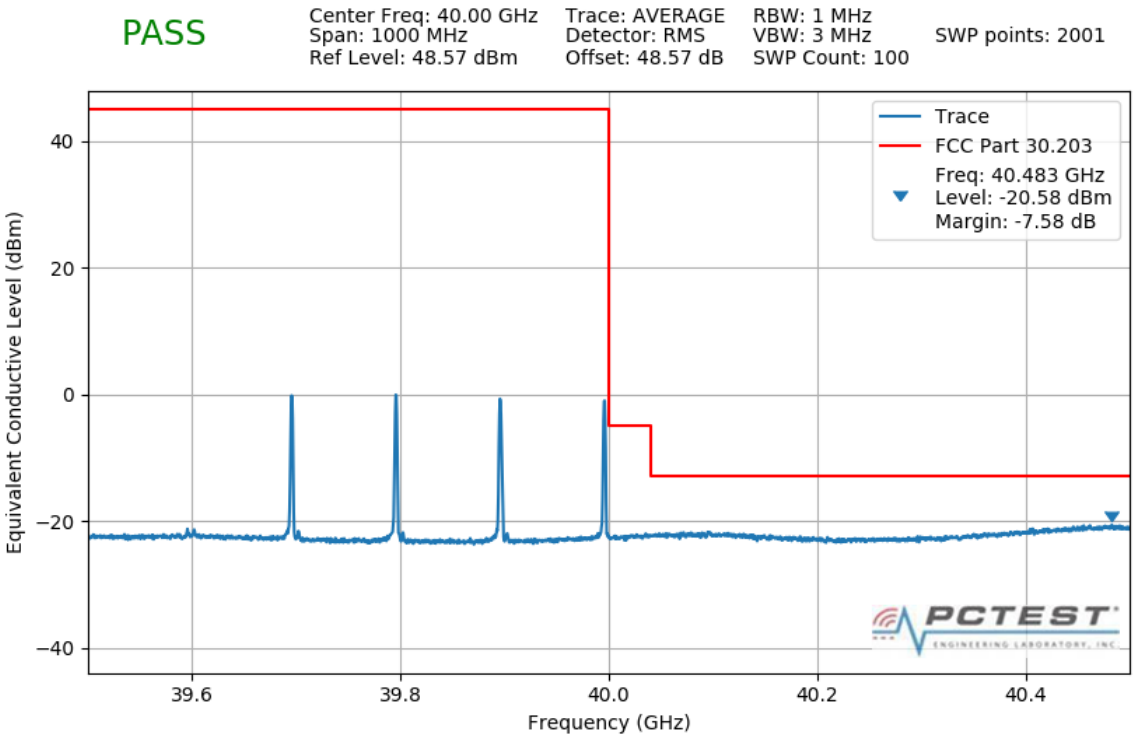
Plot 7-510. Band Edge Plot (4CC 100M QPSK Low Channel – 32 RB 0 offset)



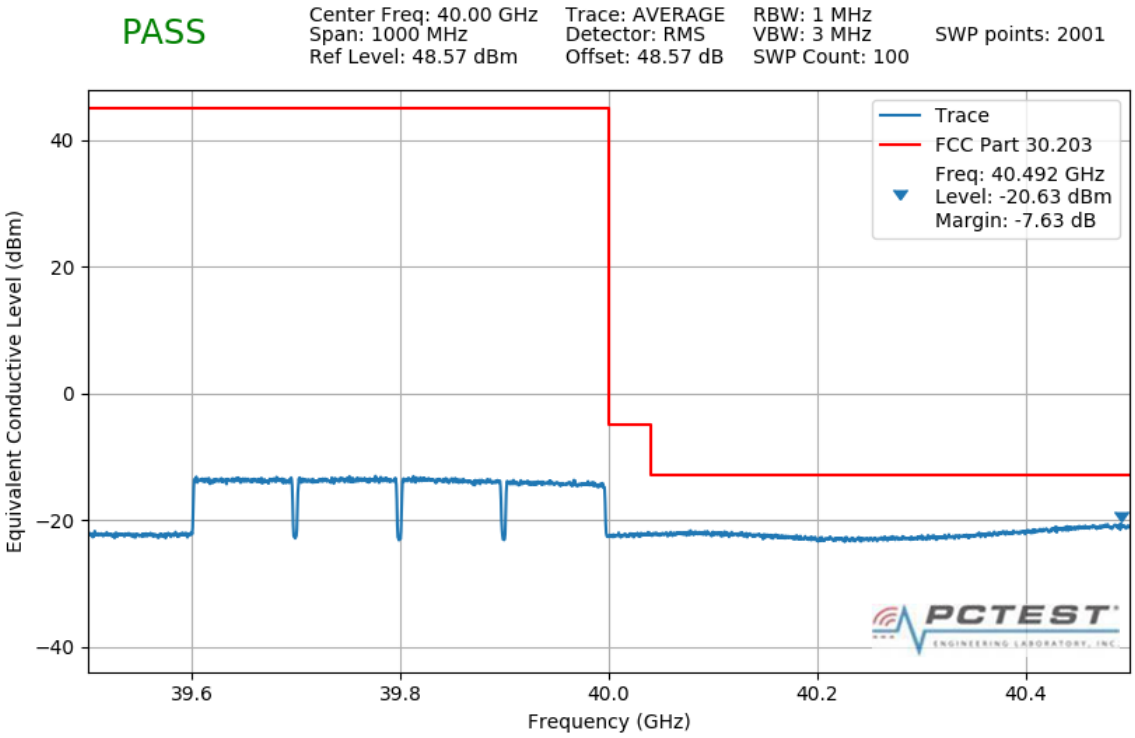
Plot 7-511. Band Edge Plot (4CC 100M QPSK Hi Channel– 1 RB 0 offset)



Plot 7-512. Band Edge Plot (4CC 100M 16QAM Hi Channel– 1 RB 0 offset)



Plot 7-513. Band Edge Plot (4CC 100M 64QAM Hi Channel – 1 RB 0 offset)



Plot 7-514. Band Edge Plot (4CC 100M QPSK Hi Channel– 32 RB 0 offset)

7.6 Frequency Stability / Temperature Variation

§2.1055

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Procedure Used

ANSI C63.26-2015 Section 5.6

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

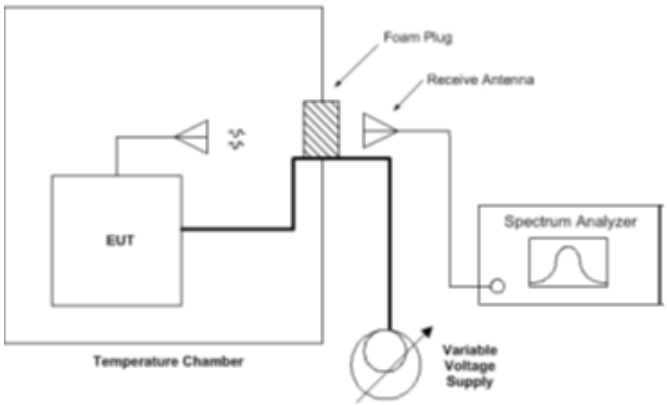


Figure 7-1. Test Instrument & Measurement Setup

The EUT was measured using horn antenna connected to a spectrum analyzer. The EUT was placed inside an environmental chamber.

Test Notes

None

Frequency Stability Measurements

§2.1055

OPERATING FREQUENCY: 27,923,520,000 Hz

CHANNEL: 2077891

REFERENCE VOLTAGE: 4.20 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	- 30	27,923,420,137	99,863	0.0003576
100 %		- 20	27,923,757,355	-237,355	-0.0008500
100 %		- 10	27,923,705,059	-185,059	-0.0006627
100 %		0	27,923,739,827	-219,827	-0.0007872
100 %		+ 10	27,923,751,372	-231,372	-0.0008286
100 %		+ 20	27,923,675,293	-155,293	-0.0005561
100 %		+ 30	27,923,550,019	-30,019	-0.0001075
100 %		+ 40	27,923,478,001	41,999	0.0001504
100 %		+ 50	27,923,340,540	179,460	0.0006427
BATT. ENDPOINT	3.59	+ 20	27,923,448,913	71,087	0.0002546

Table 7-34. Frequency Stability Data

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Frequency Stability Measurements

§2.1055

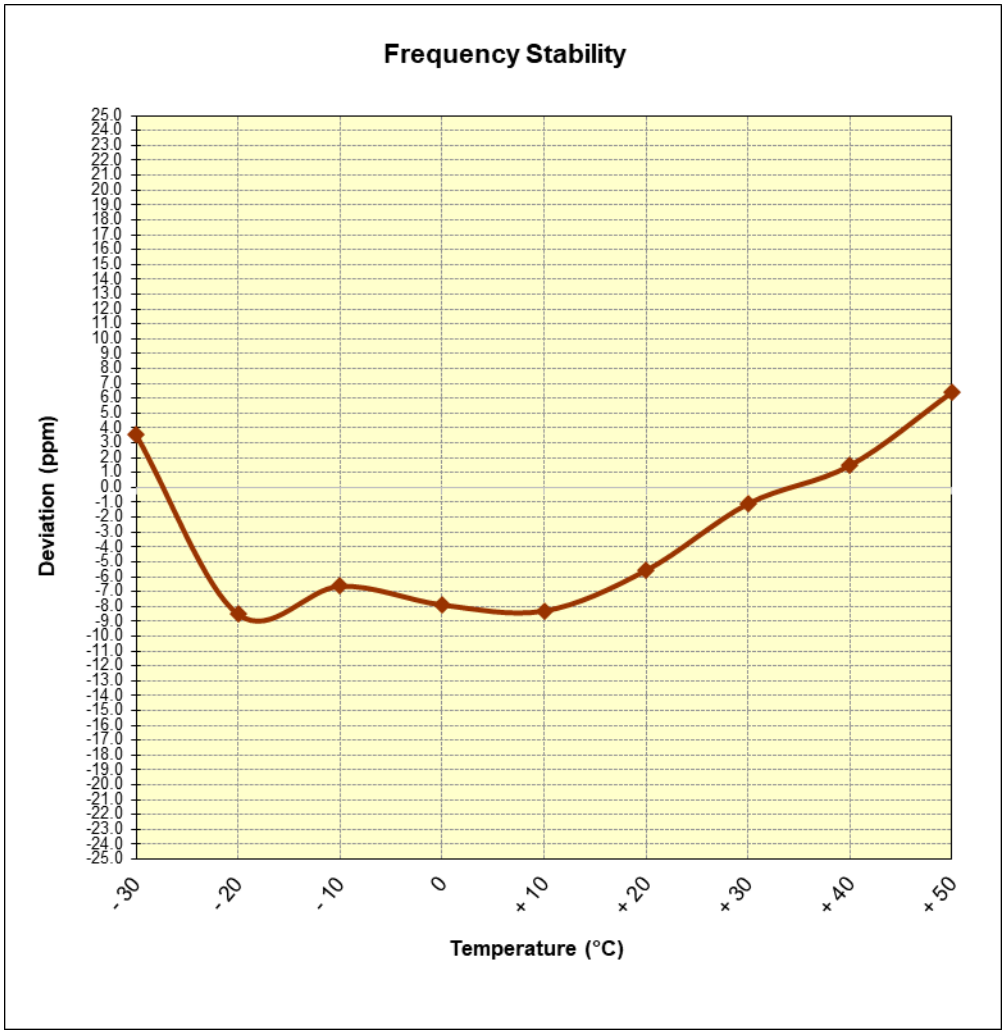


Figure 7-2. Frequency Stability Graph

Frequency Stability Measurements

§2.1055

OPERATING FREQUENCY:	38,498,880,000	Hz
CHANNEL:	2253313	
REFERENCE VOLTAGE:	4.20	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	- 30	38,499,275,557	-395,557	-0.0010275
100 %		- 20	38,499,579,390	-699,390	-0.0018167
100 %		- 10	38,498,968,937	-88,937	-0.0002310
100 %		0	38,498,960,632	-80,632	-0.0002094
100 %		+ 10	38,498,960,632	-80,632	-0.0002094
100 %		+ 20	38,498,668,888	211,112	0.0005484
100 %		+ 30	38,498,687,693	192,307	0.0004995
100 %		+ 40	38,498,497,406	382,594	0.0009938
100 %		+ 50	38,498,735,193	144,807	0.0003761
BATT. ENDPOINT	3.59	+ 20	38,498,545,542	334,458	0.0008687

Table 7-35. Frequency Stability Data

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Frequency Stability Measurements

§2.1055

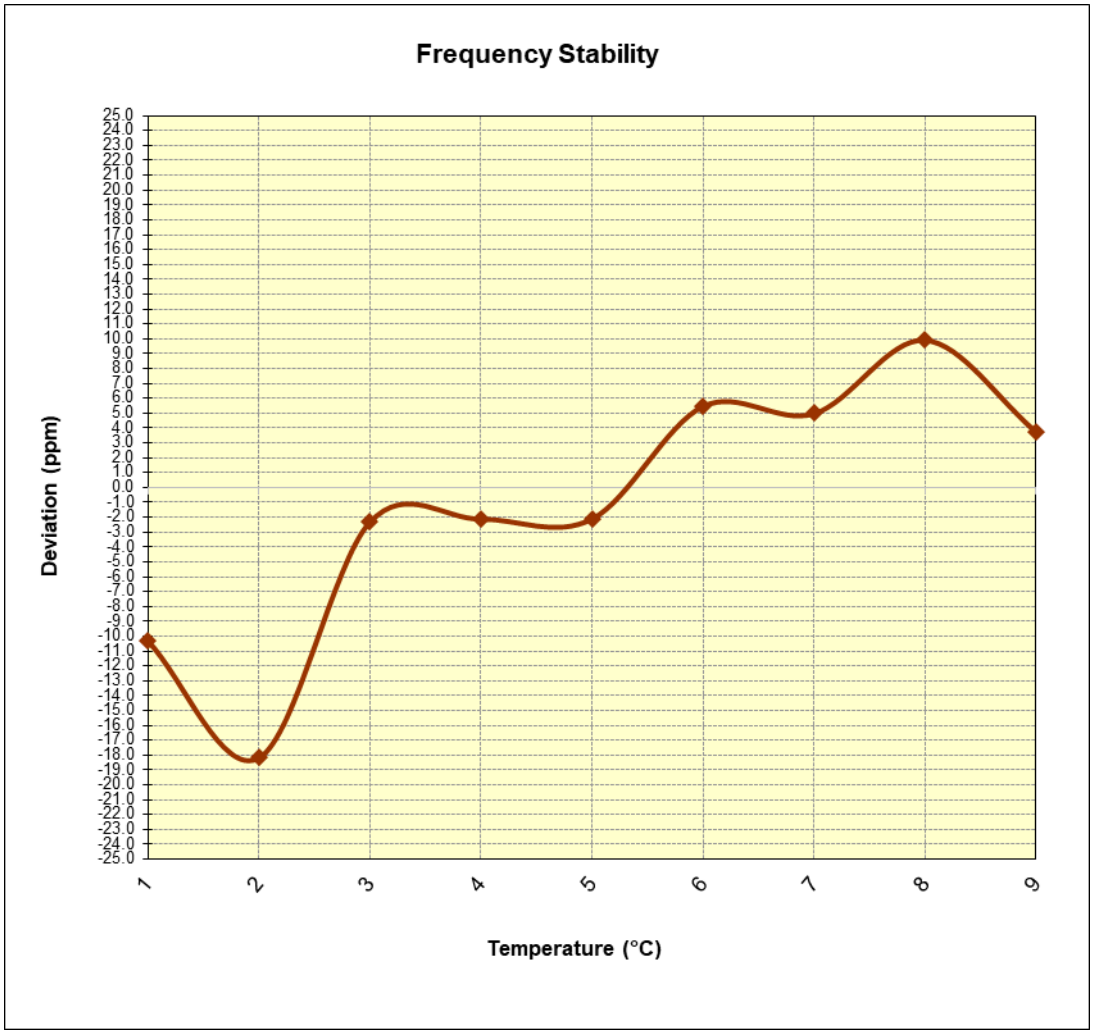


Figure 7-3. Frequency Stability Graph

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFV450VM** complies with all the requirements of Part 30.

9.0 APPENDIX A

9.1 Virginia Diodes Mixer Verification Certificate

Virginia Diodes, Inc

Virginia Diodes, Inc.

Certificate of Conformance

To: PCTEST Engineering Laboratory
6660-B Dobbin Road
Columbia, MD 21045
United States

From: Virginia Diodes, Inc

Packing List No: 181177
Shipping Date: 05/14/18
Today's Date: 05/14/18
PO Number: 180416.DP1R

Attention: Yelena Wedekind
Phone: 410-290-6652

Quantity Shipped	Unit	Description	Order-Job Number
1	EA	VDIWR12.0SAX WR12SAX - Spectrum Analyzer Extension Module / SN: SAX 252	18171A-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature
Virginia Diodes, Inc

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Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: PCTEST Engineering Laboratory
6660-B Dobbin Road
Columbia, MD 21045
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 181120 **Today's Date:** 05/08/18
Shipping Date: 05/08/18 **PO Number:** 180416.DP1R

Attn: Yelena Wedekind

Phone: 1-410-290-6652

Quantity Shipped	Unit	Description	Order-Job Number
1	EA	VDIWR8.0SAX WR8.0SAX - Spectrum Analyzer Extension Module; SN: SAX 253.	18171B-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature
Virginia Diodes, Inc

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Virginia Diodes, Inc
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Suite 309
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Fax: 434-297-3258

Certificate of Conformance

To: PCTEST Engineering Laboratory
6660-B Dobbin Road
Columbia, MD 21045
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 181247
Shipping Date: 05/21/18
Today's Date: 05/22/18
PO Number: 180416.DP1R

Attn: Yelena Wedekind

Phone: 1-410-290-6652

Quantity Shipped	Unit	Description	Order-Job Number
1	EA	VDIWR5.1SAX WR5.1SAX - Spectrum Analyzer Extension Module; SN: SAX 254.	18171C-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature
Virginia Diodes, Inc

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