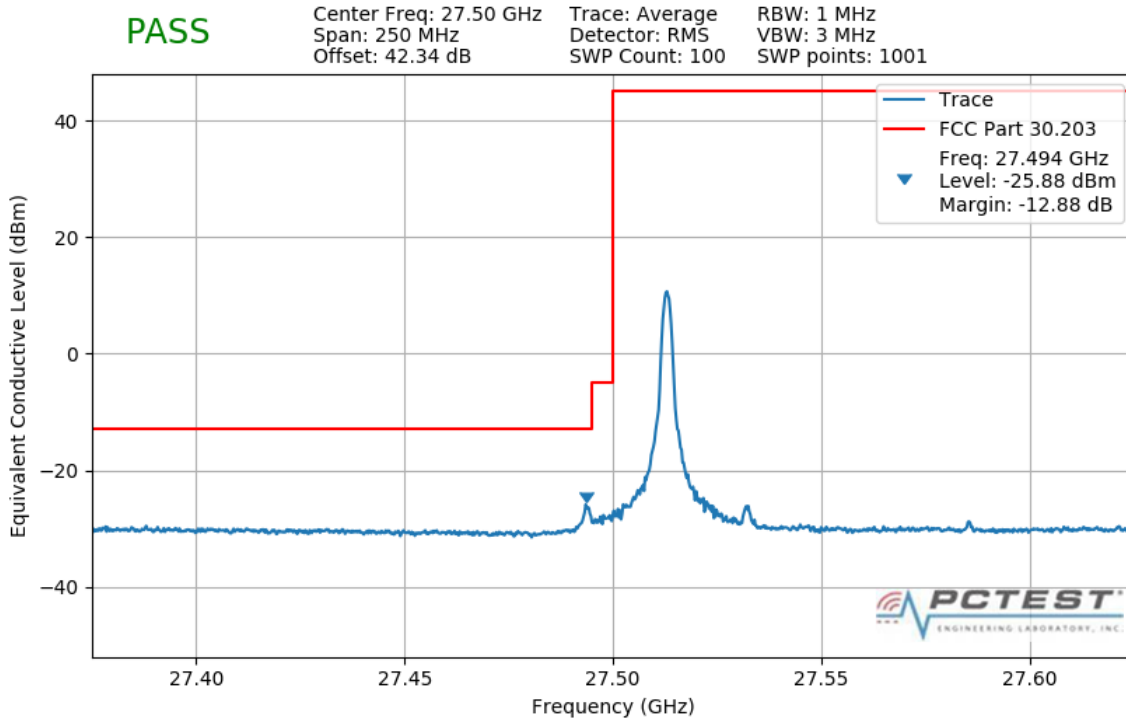
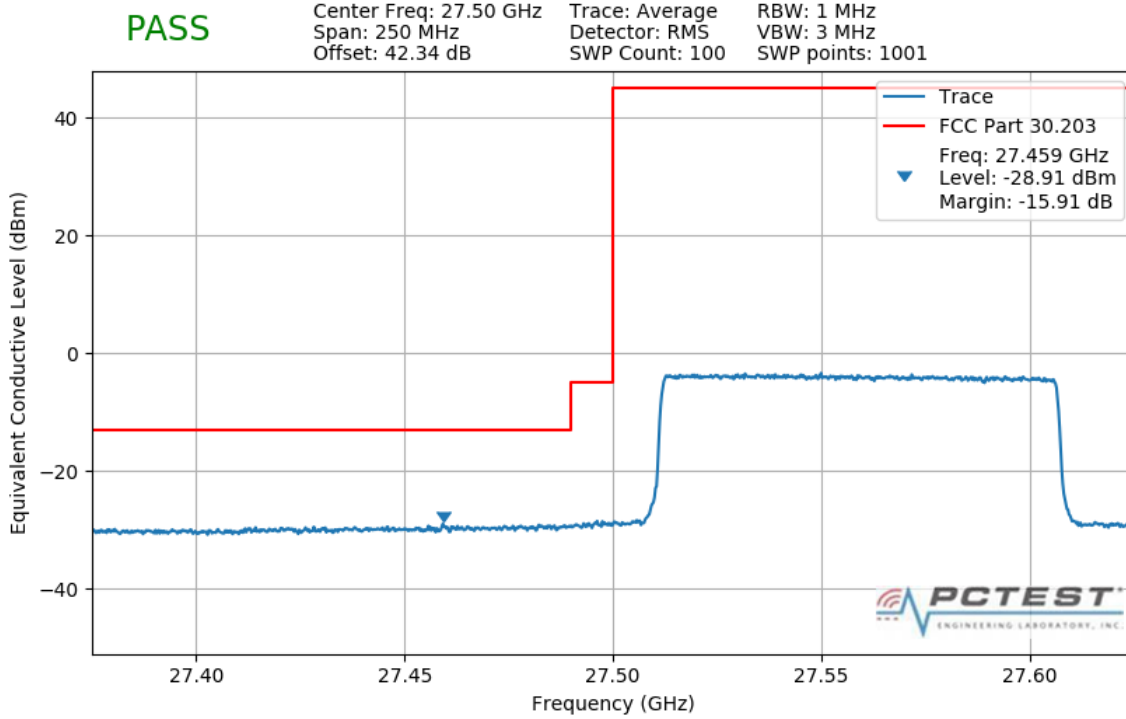


**Plot 7-539. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)**

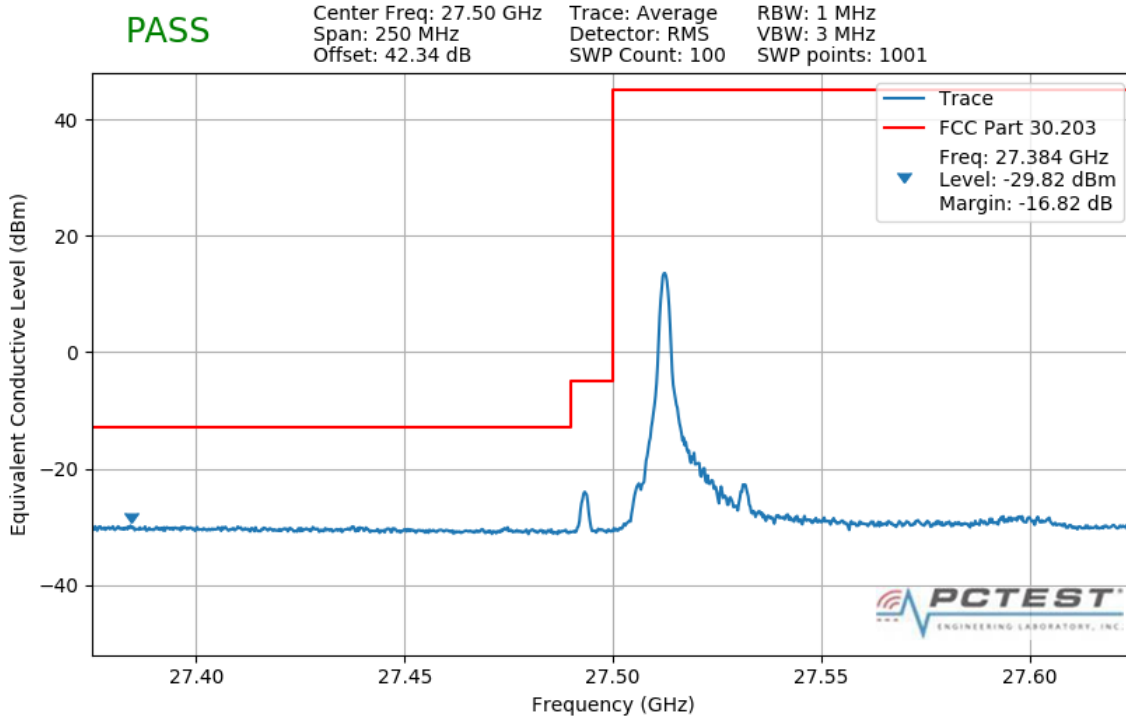


**Plot 7-540. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 317 of 337

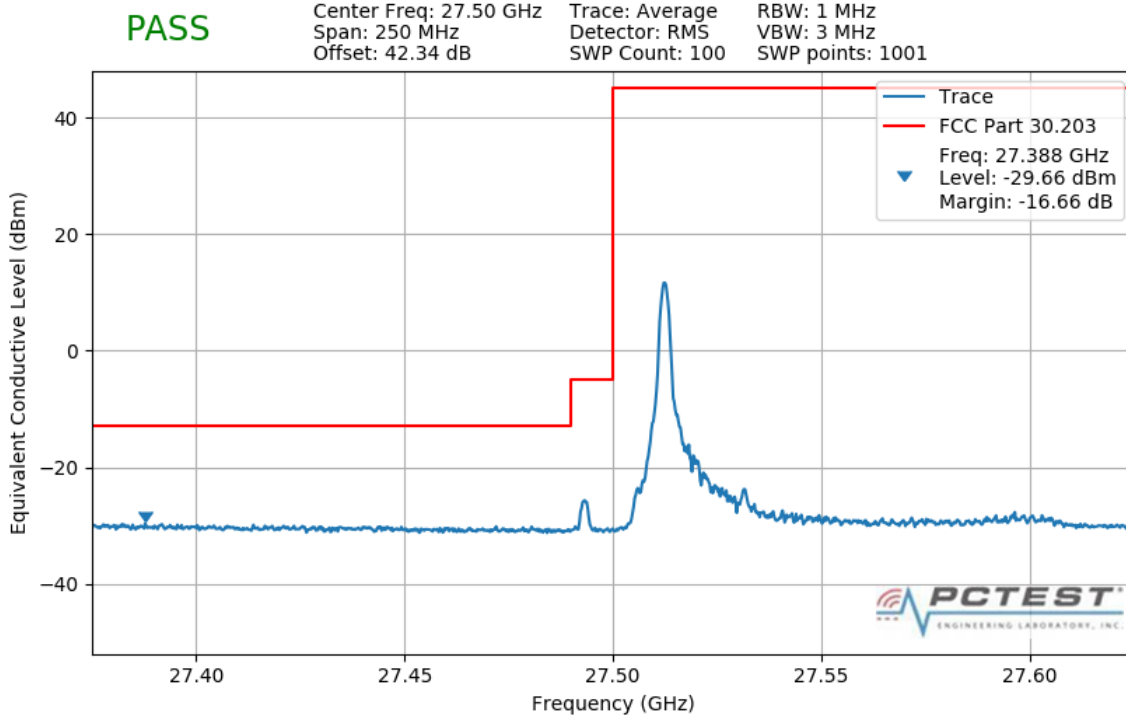


**Plot 7-541. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)**

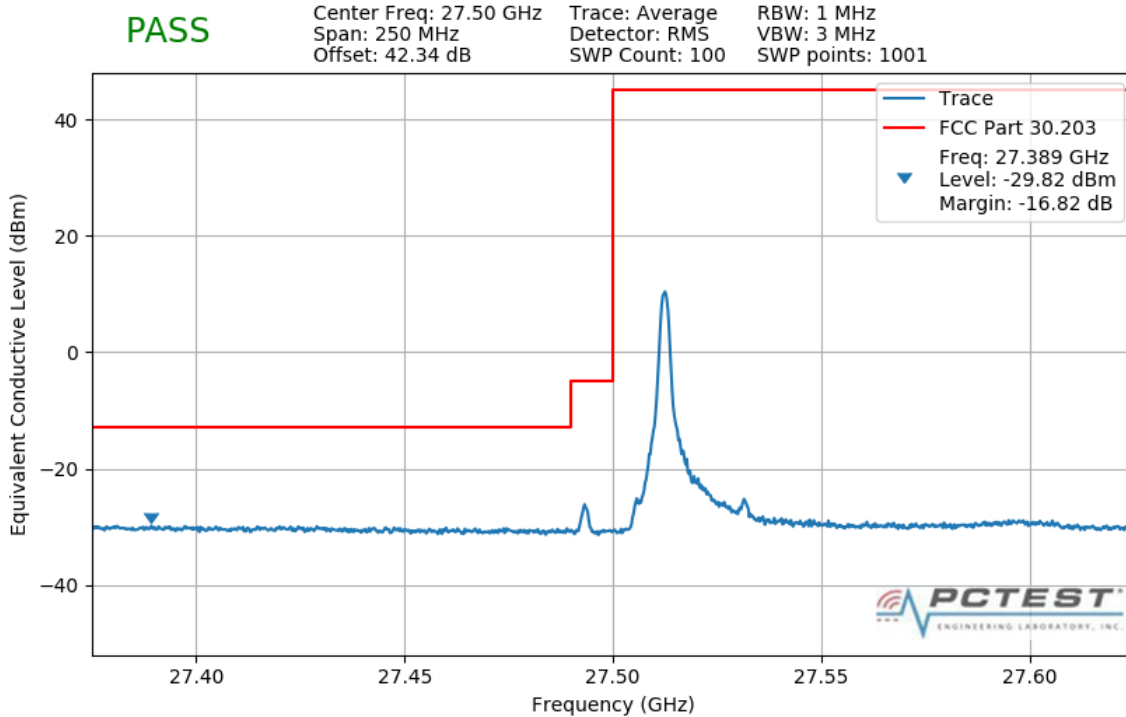


**Plot 7-542. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)**

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 318 of 337

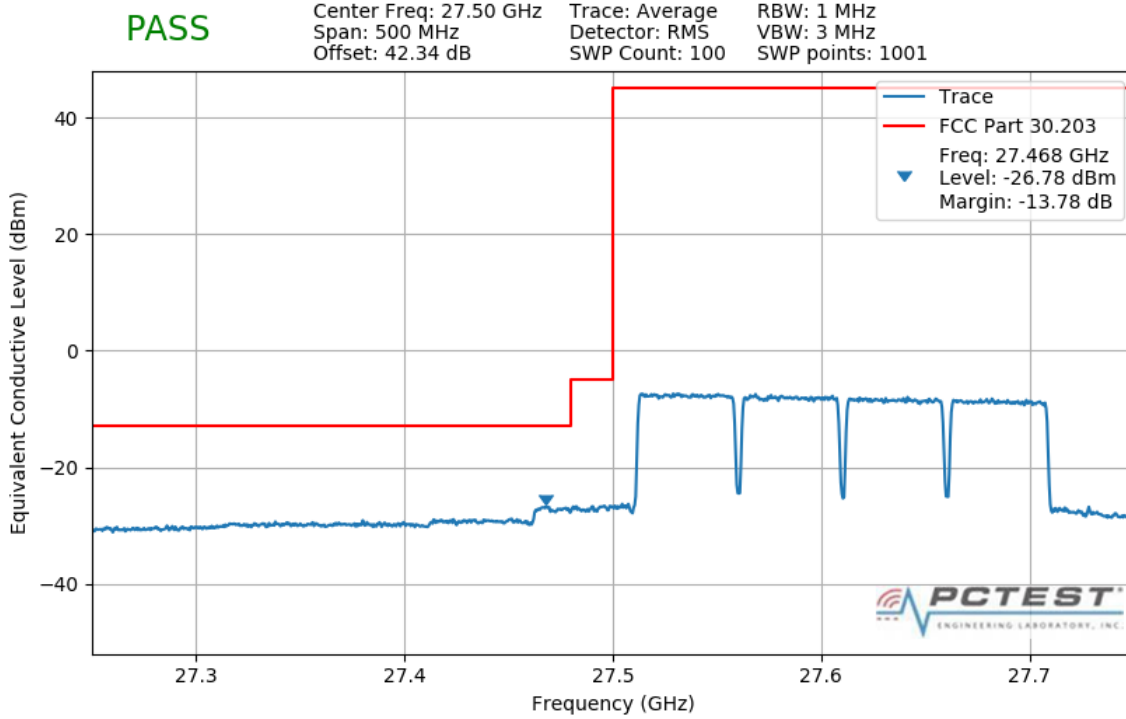


**Plot 7-543. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)**

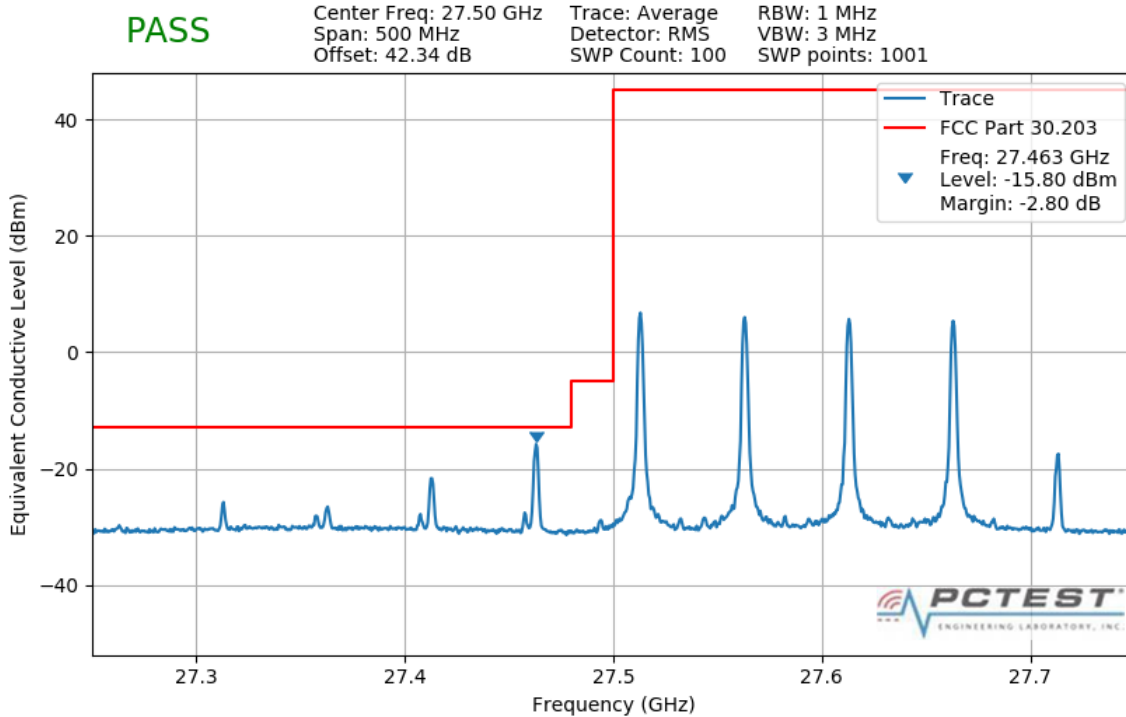


**Plot 7-544. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 319 of 337

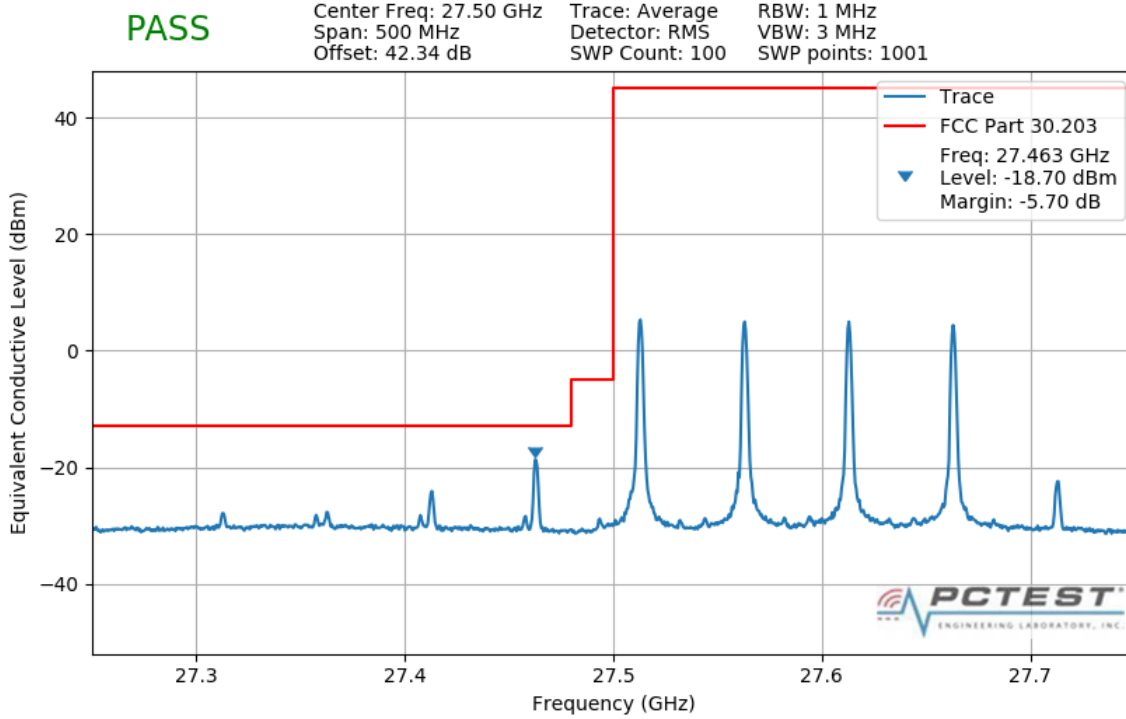


**Plot 7-545. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)**

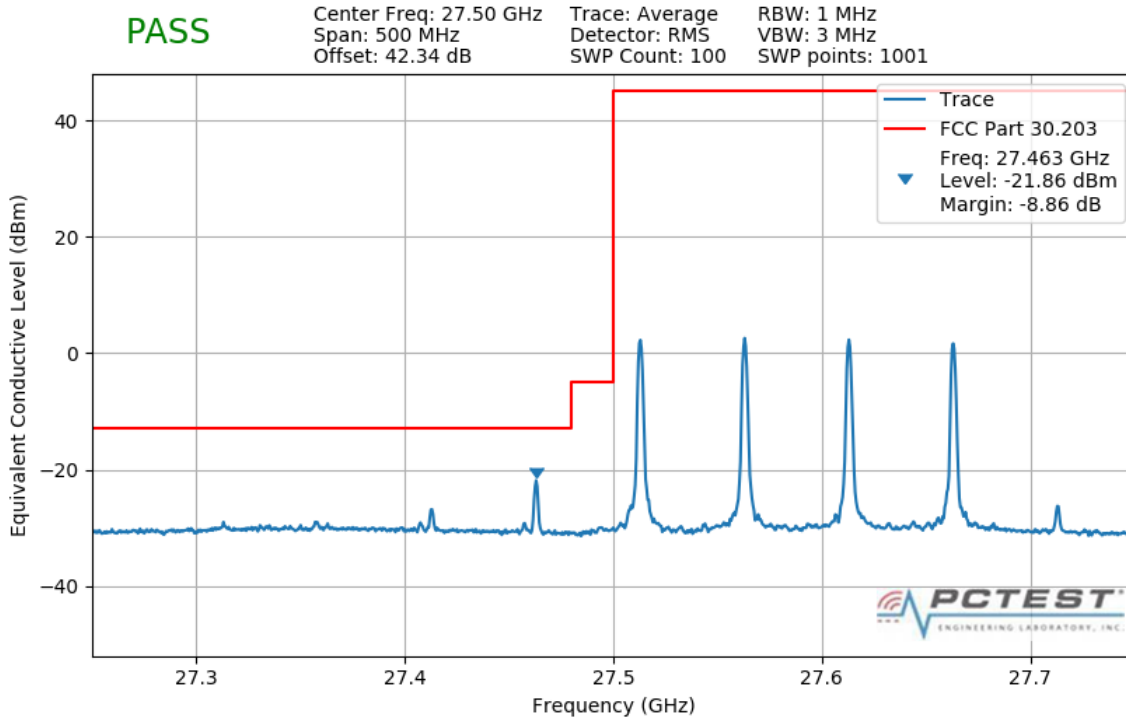


**Plot 7-546. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)**

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 320 of 337

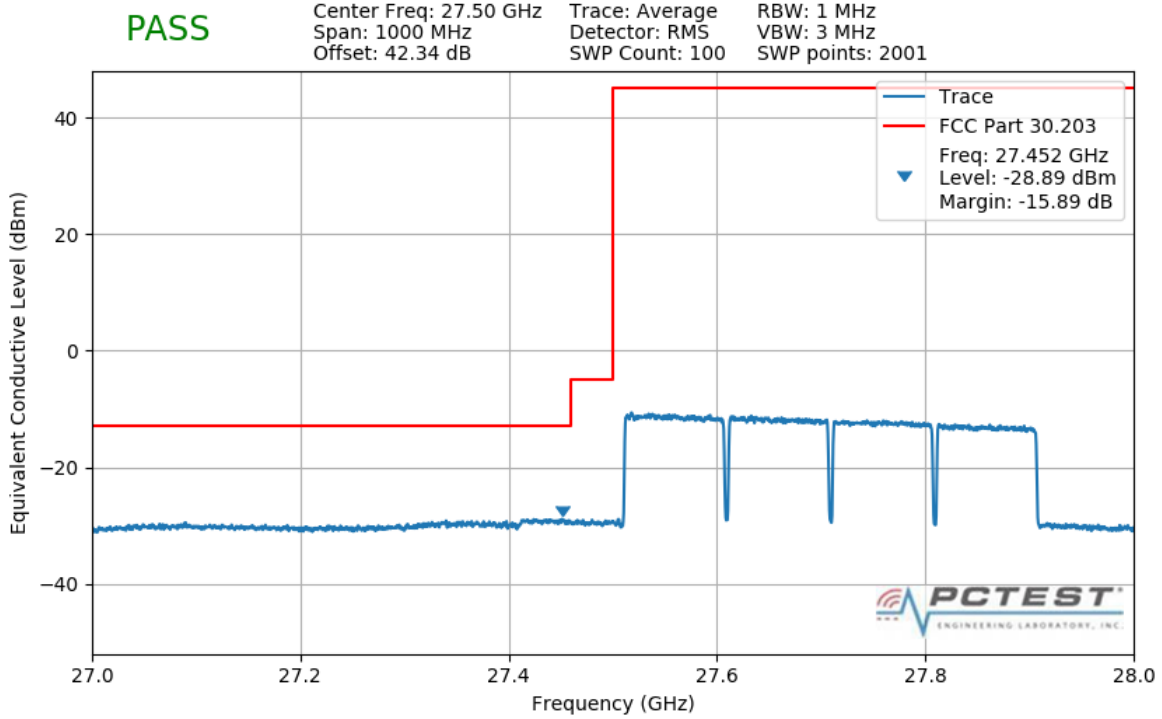


**Plot 7-547. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)**

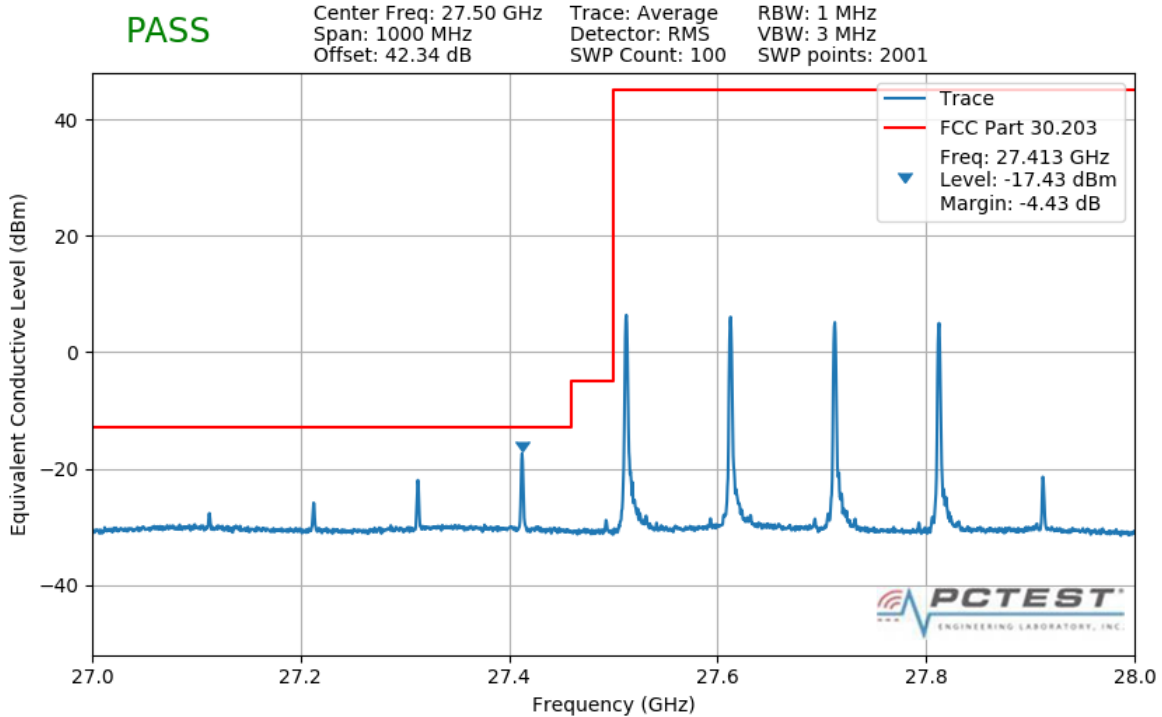


**Plot 7-548. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 321 of 337

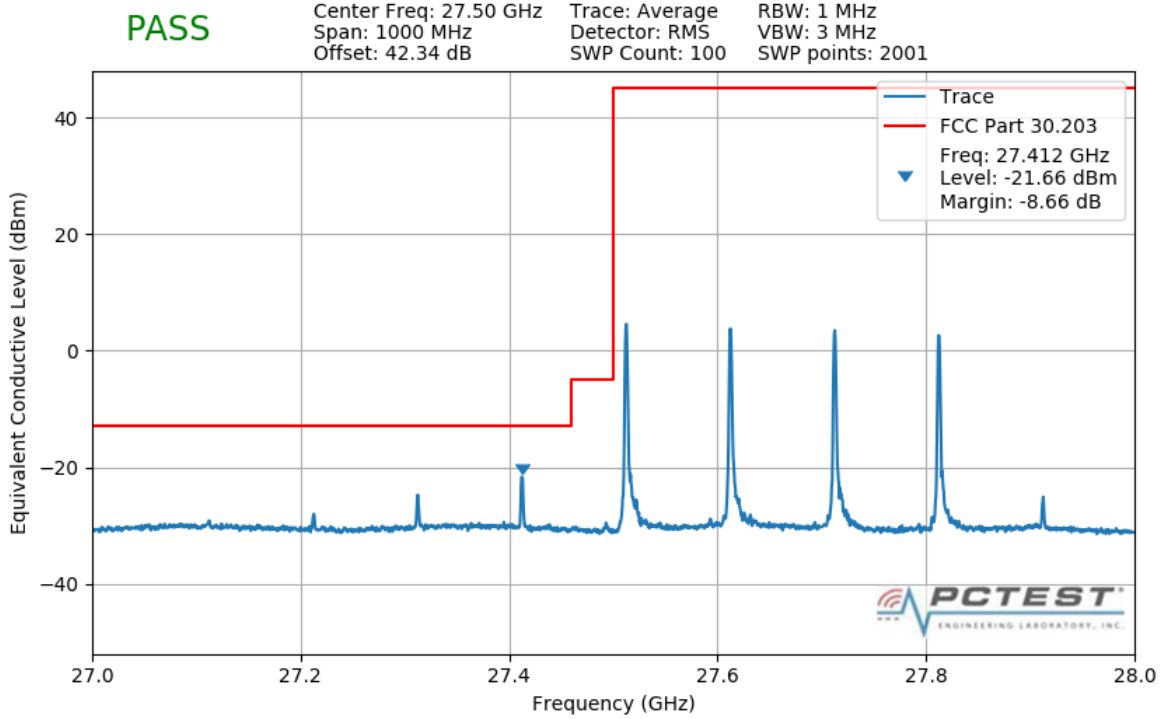


**Plot 7-549. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)**

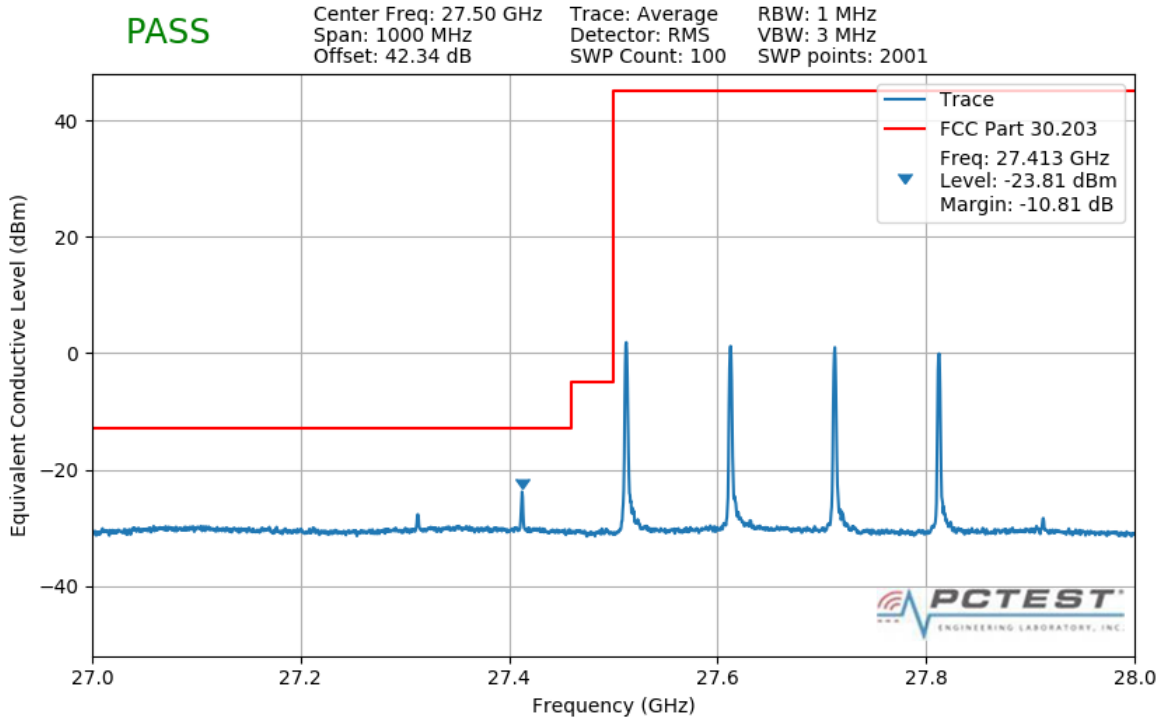


**Plot 7-550. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)**

FCC ID: A3LSMG977U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 322 of 337

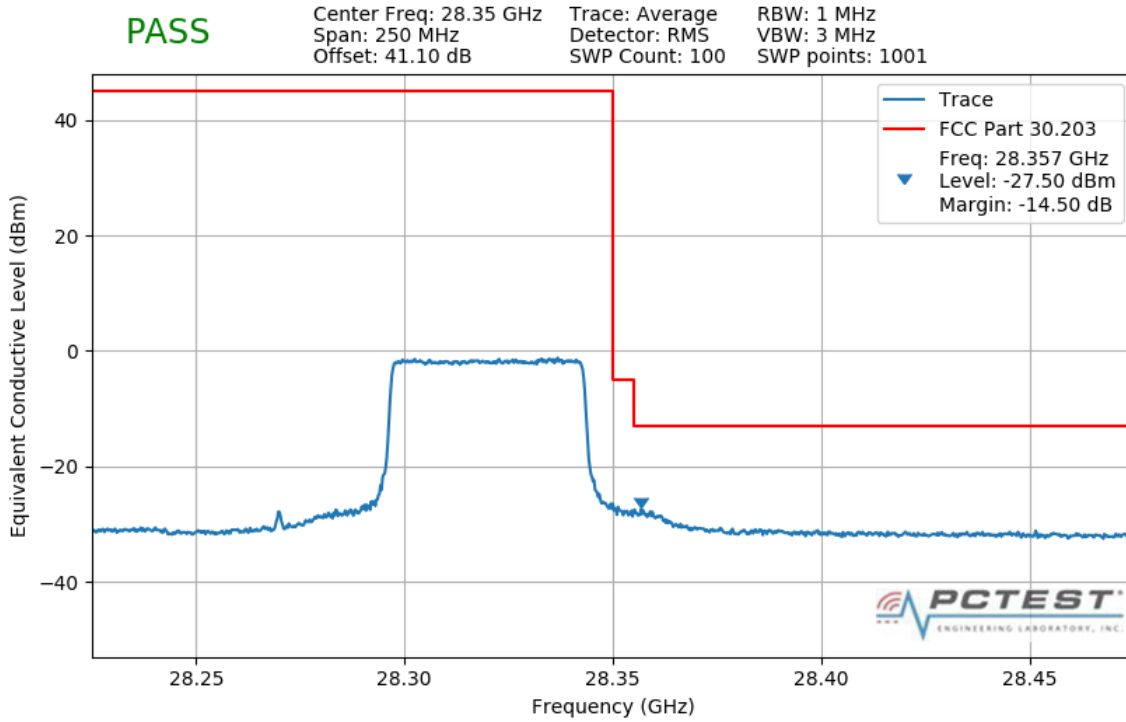


**Plot 7-551. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)**

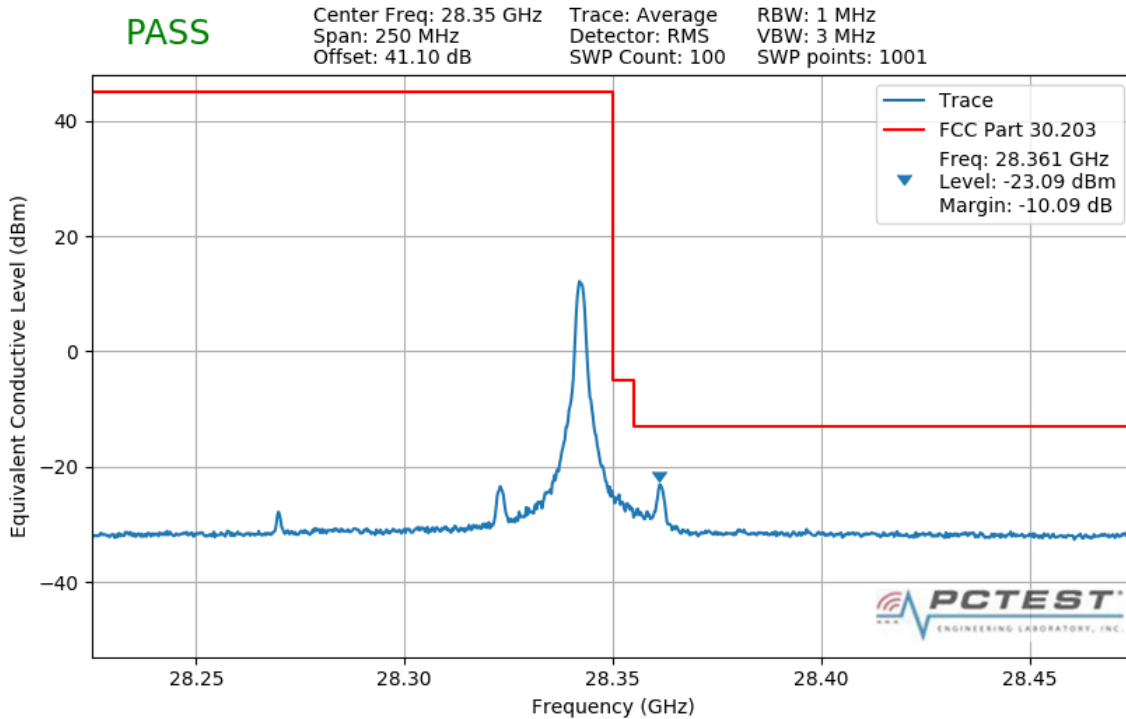


**Plot 7-552. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT</b> (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 323 of 337



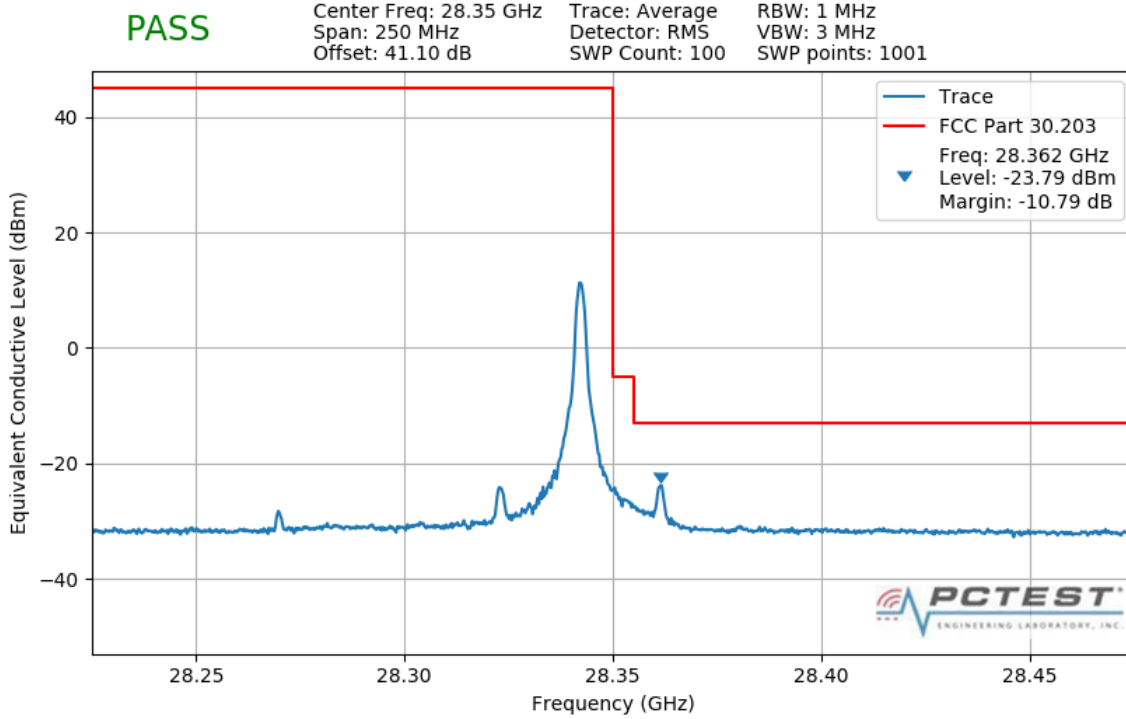
**Plot 7-553. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)**



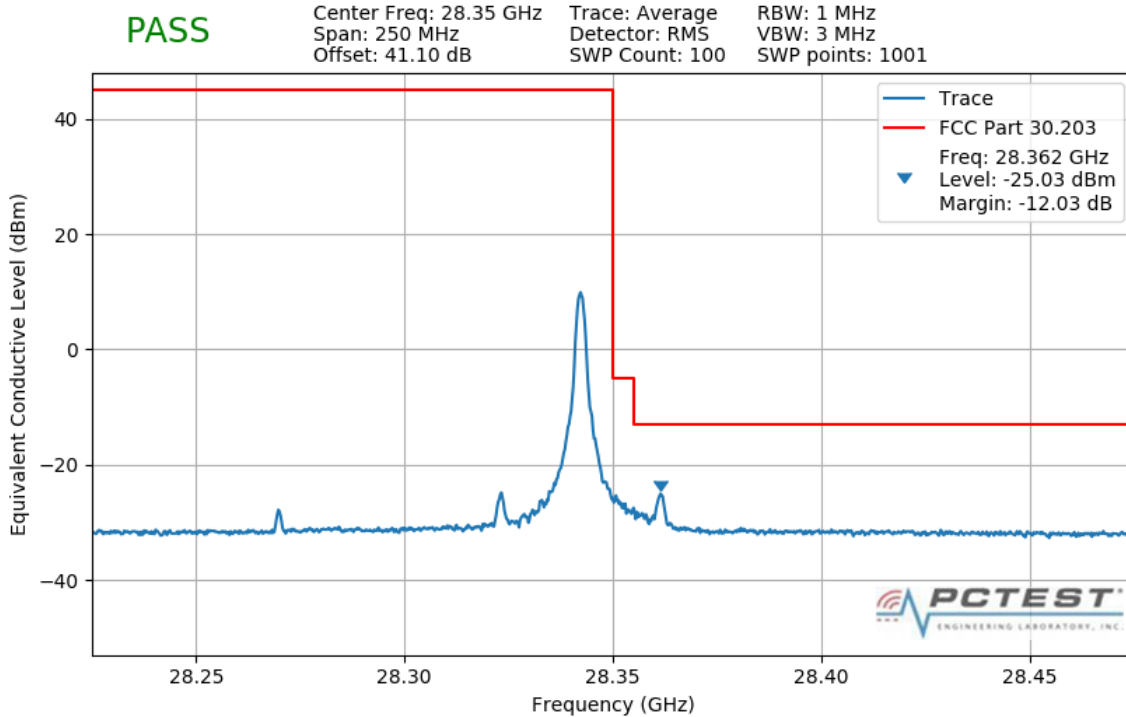
**Plot 7-554. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)**

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 324 of 337



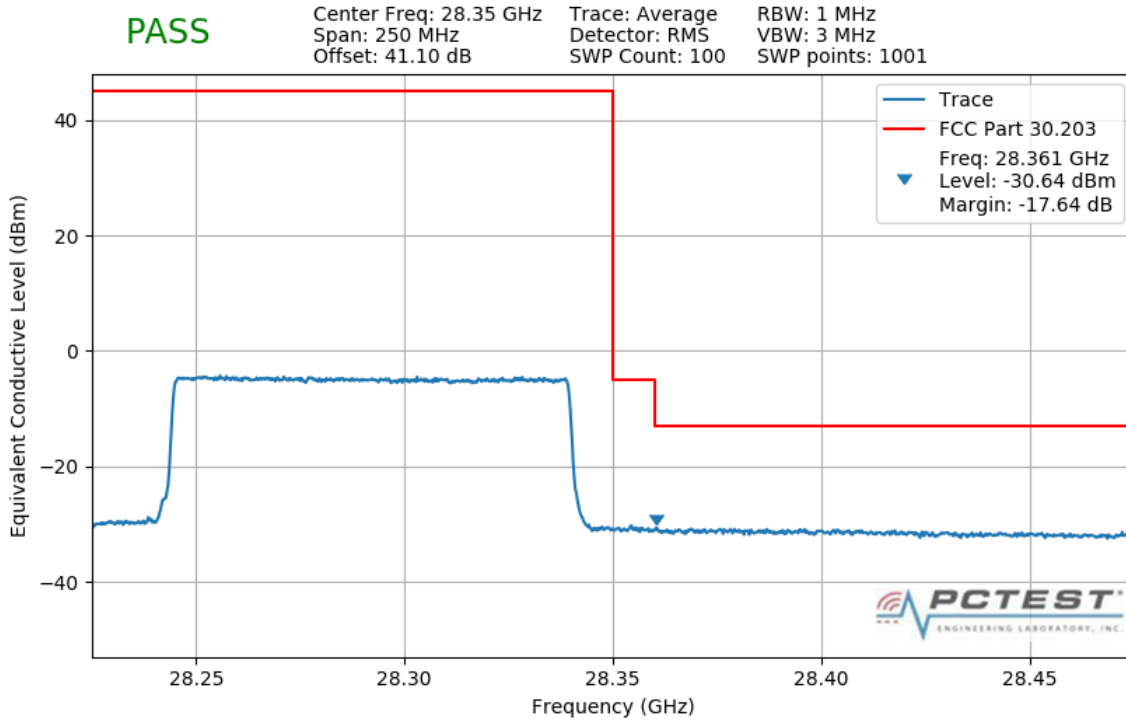


**Plot 7-555. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)**

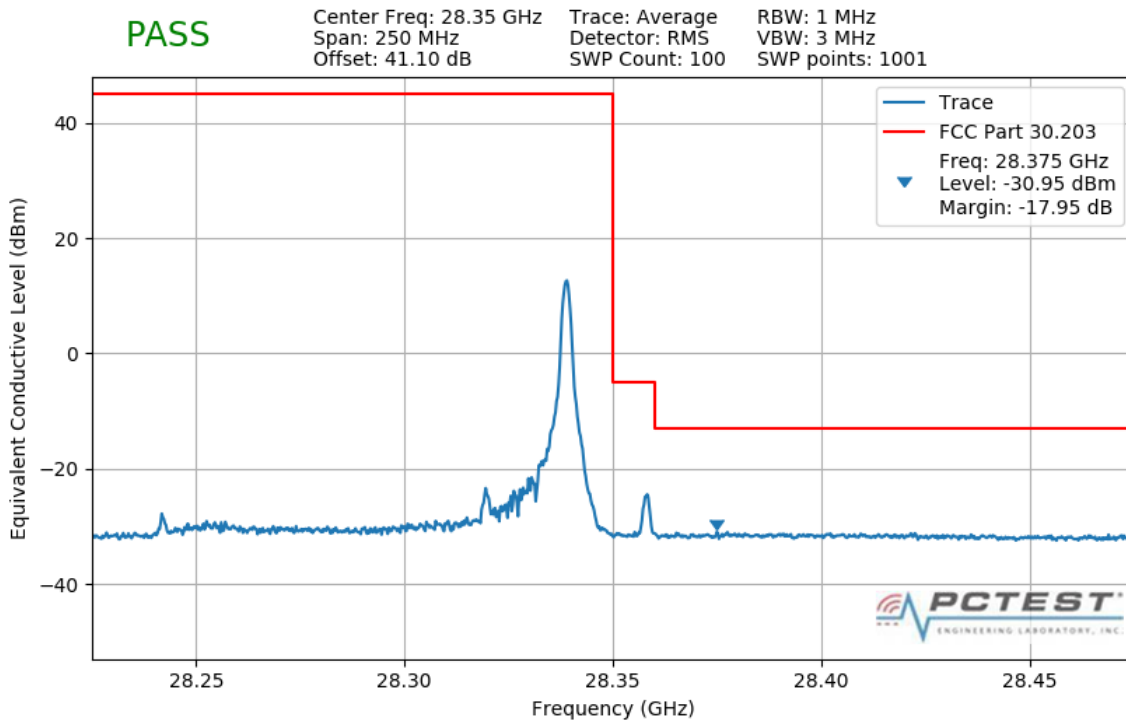


**Plot 7-556. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 325 of 337

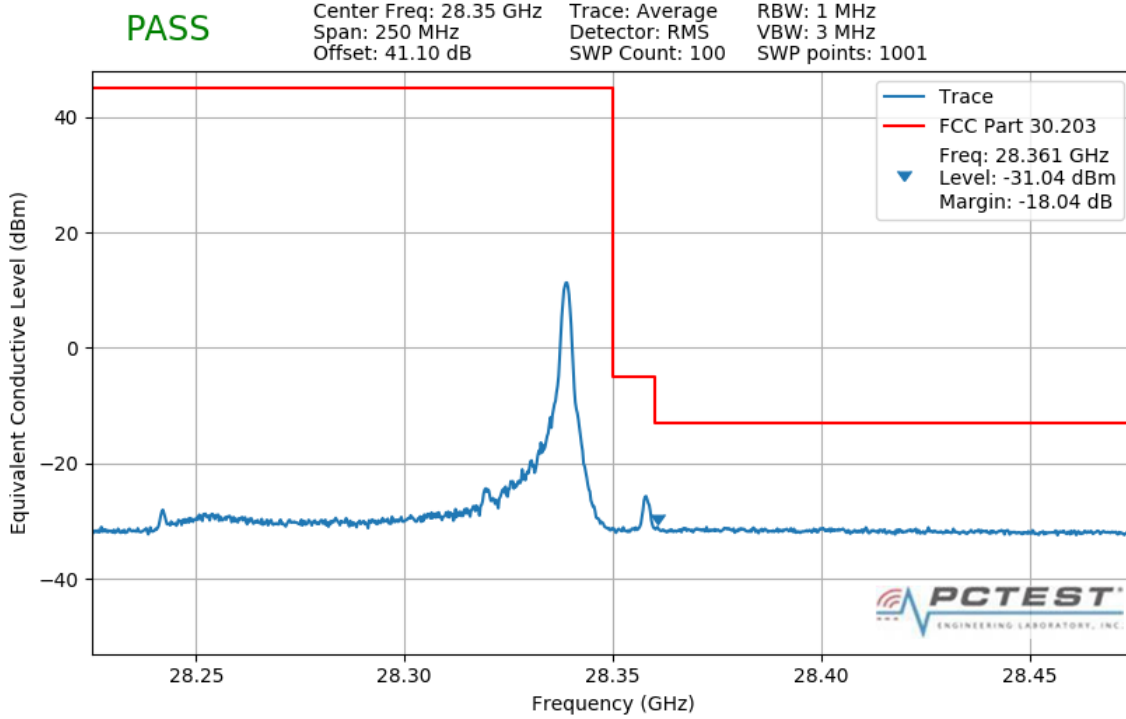


**Plot 7-557. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)**

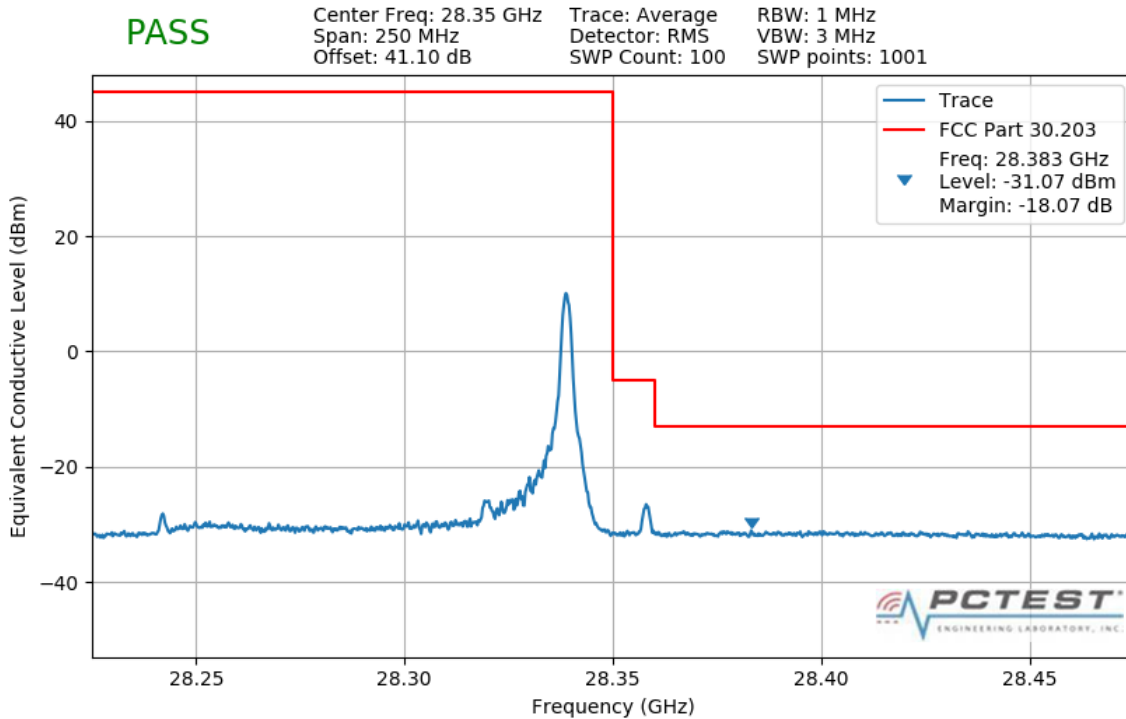


**Plot 7-558. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)**

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 326 of 337

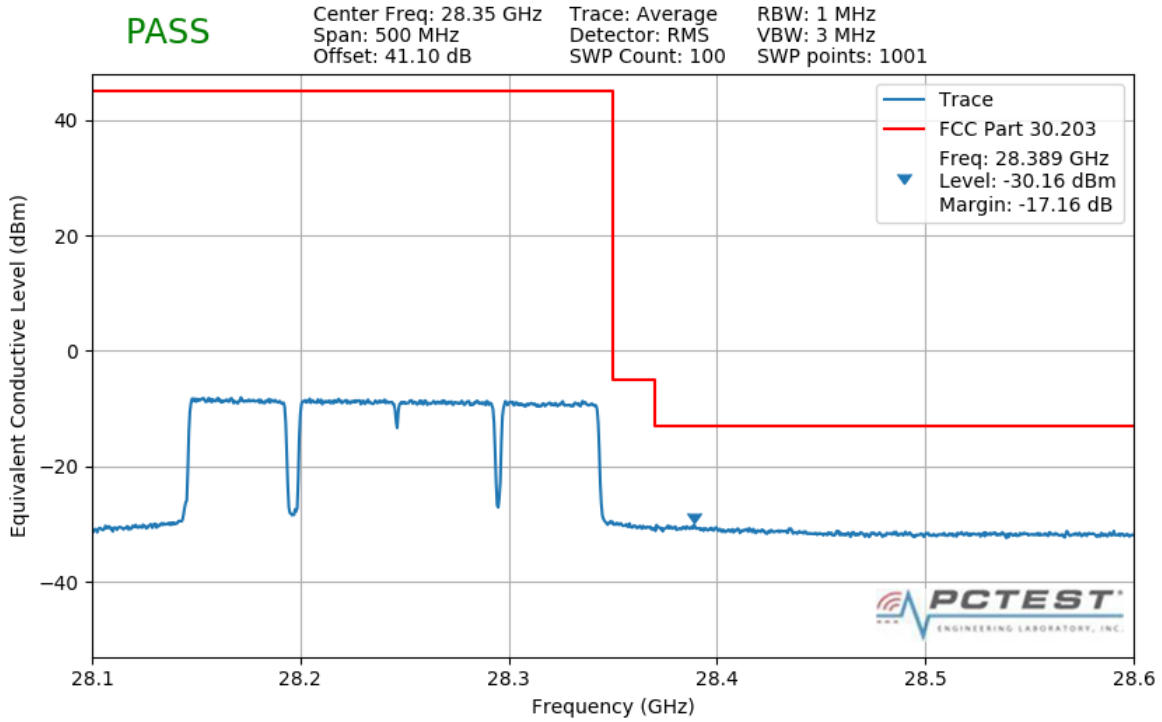


**Plot 7-559. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)**

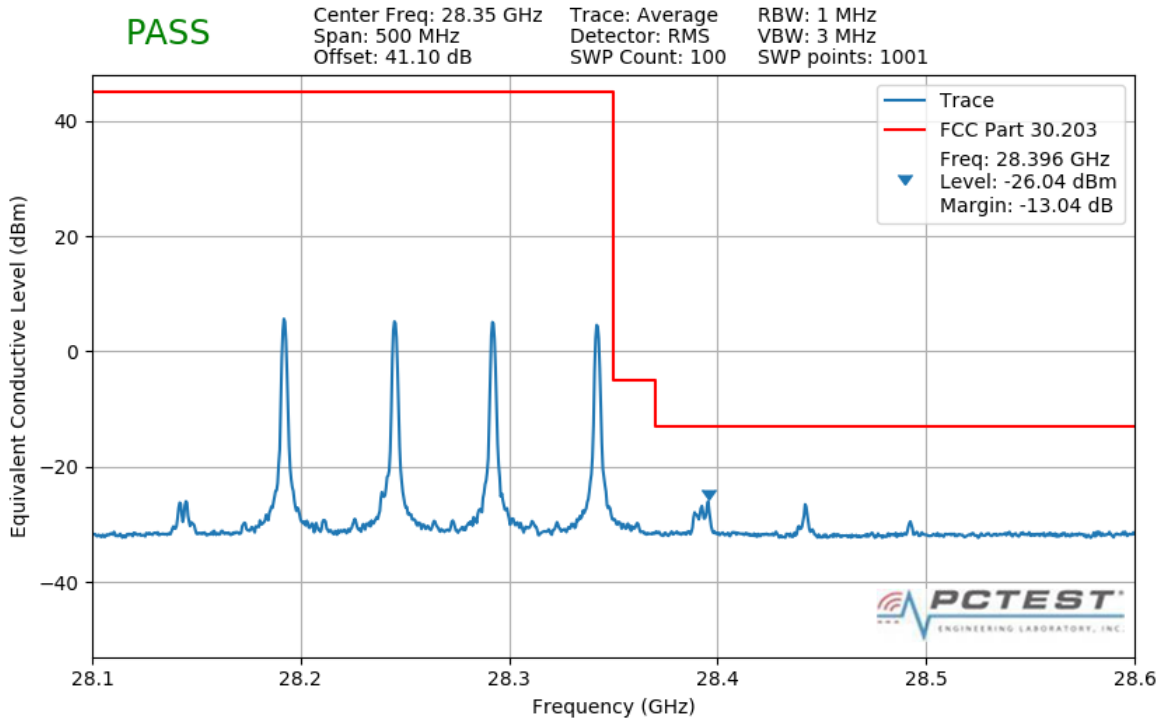


**Plot 7-560. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 327 of 337

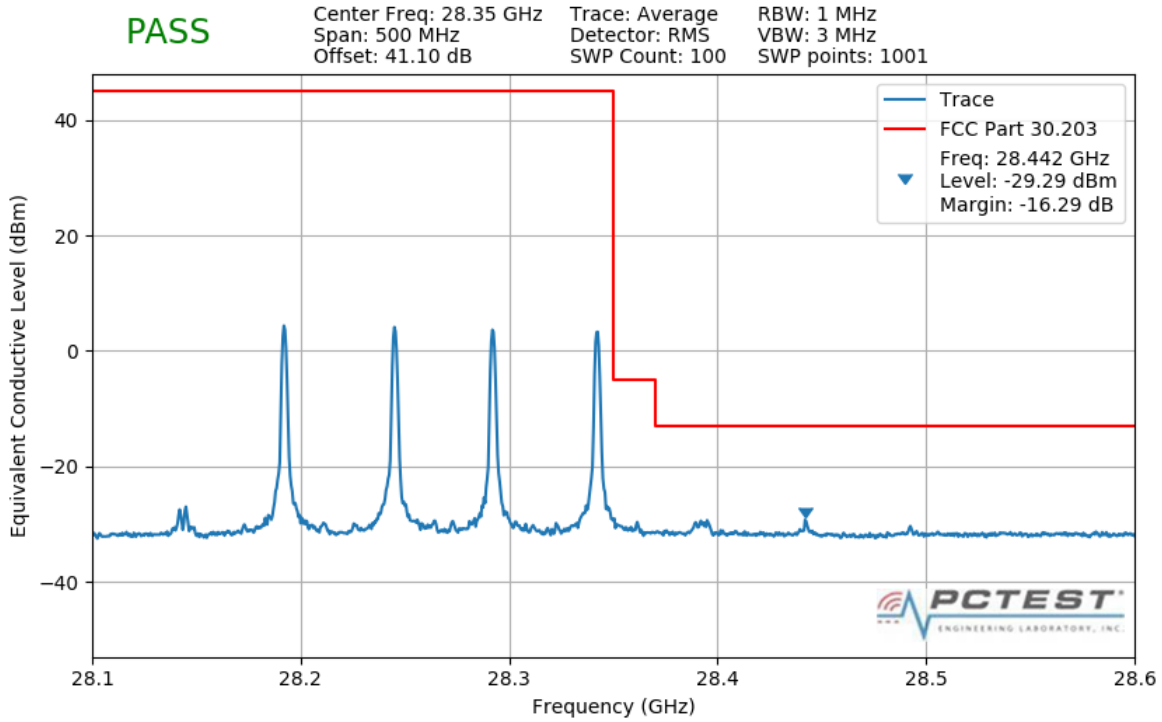


**Plot 7-561. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)**

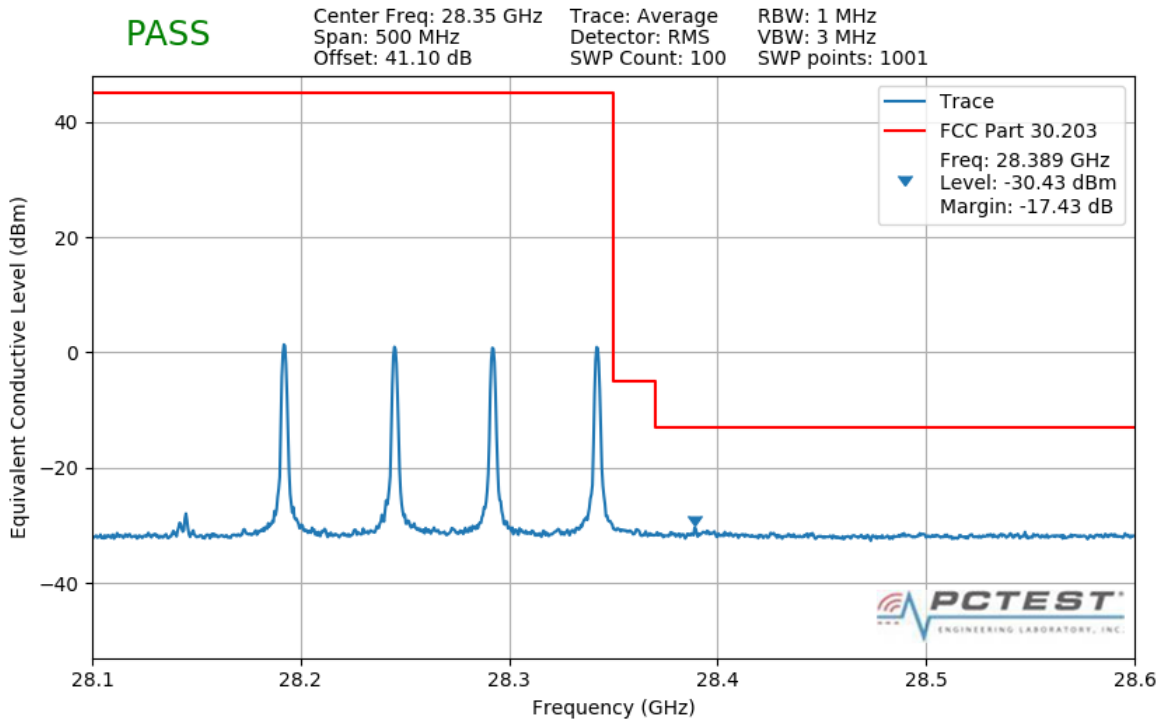


**Plot 7-562. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)**

FCC ID: A3LSMG977U	 <b>MEASUREMENT REPORT</b> (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 328 of 337

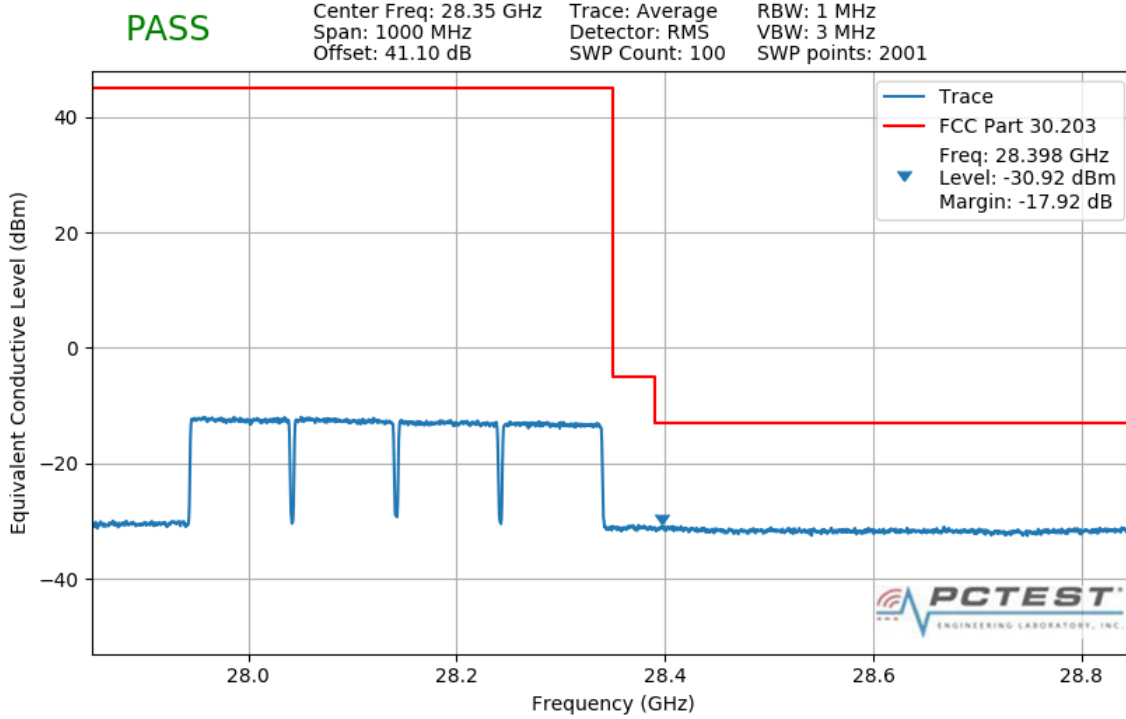


**Plot 7-563. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)**

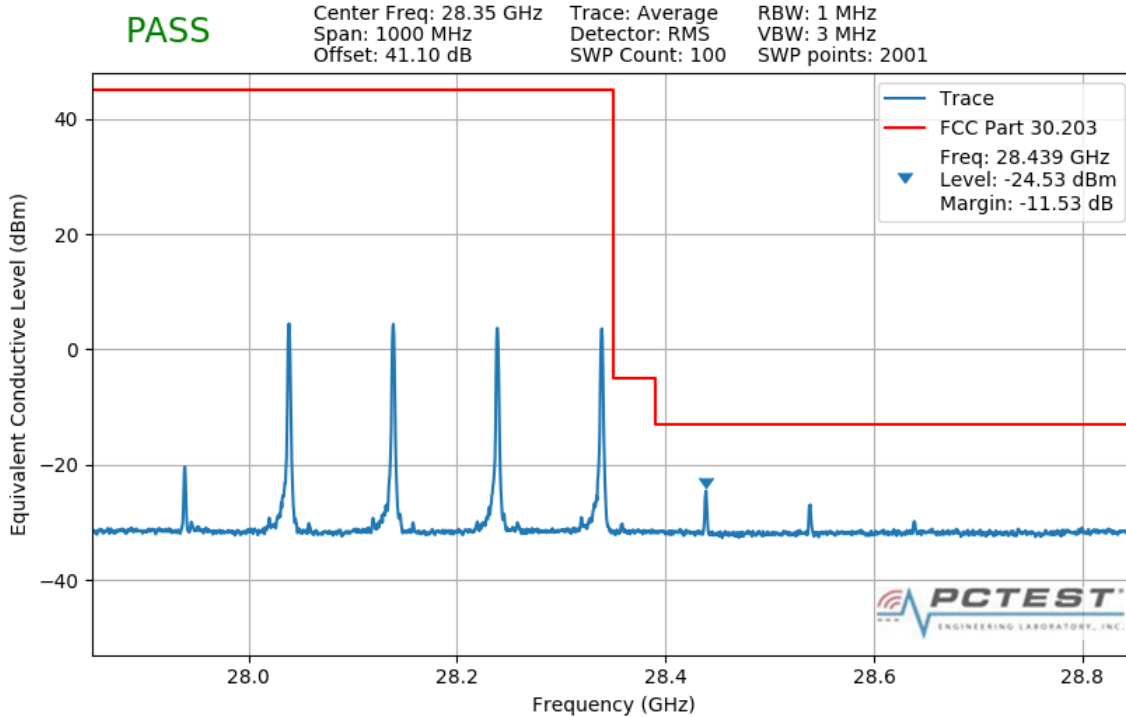


**Plot 7-564. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 329 of 337

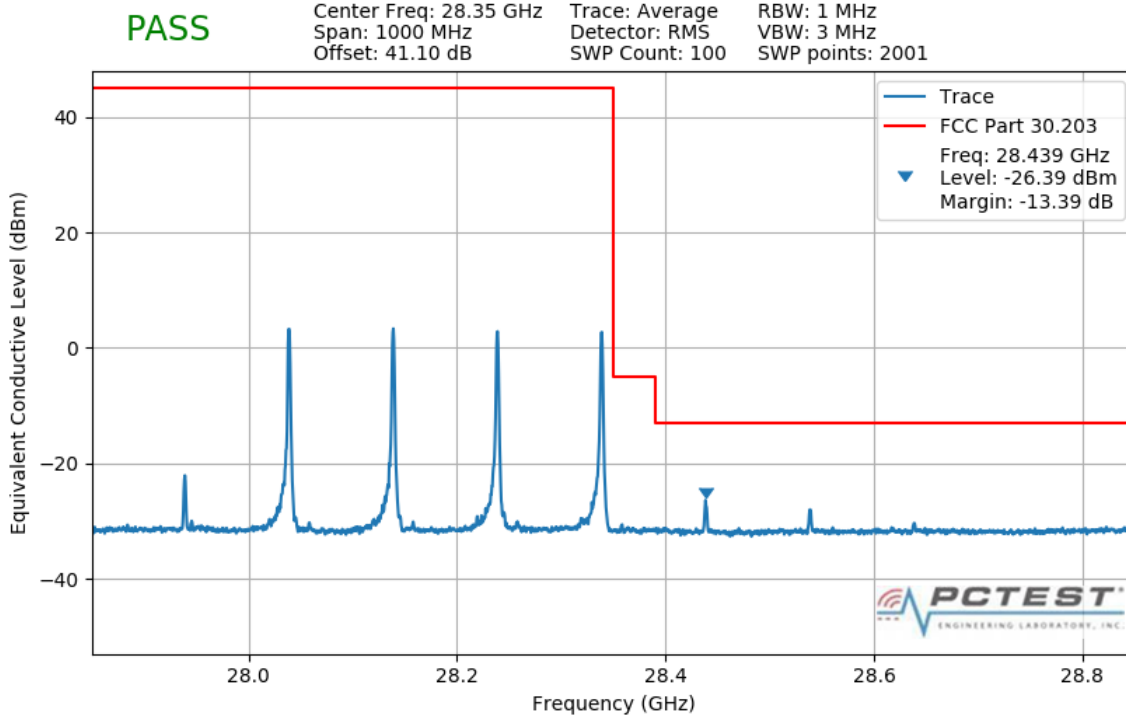


**Plot 7-565. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)**

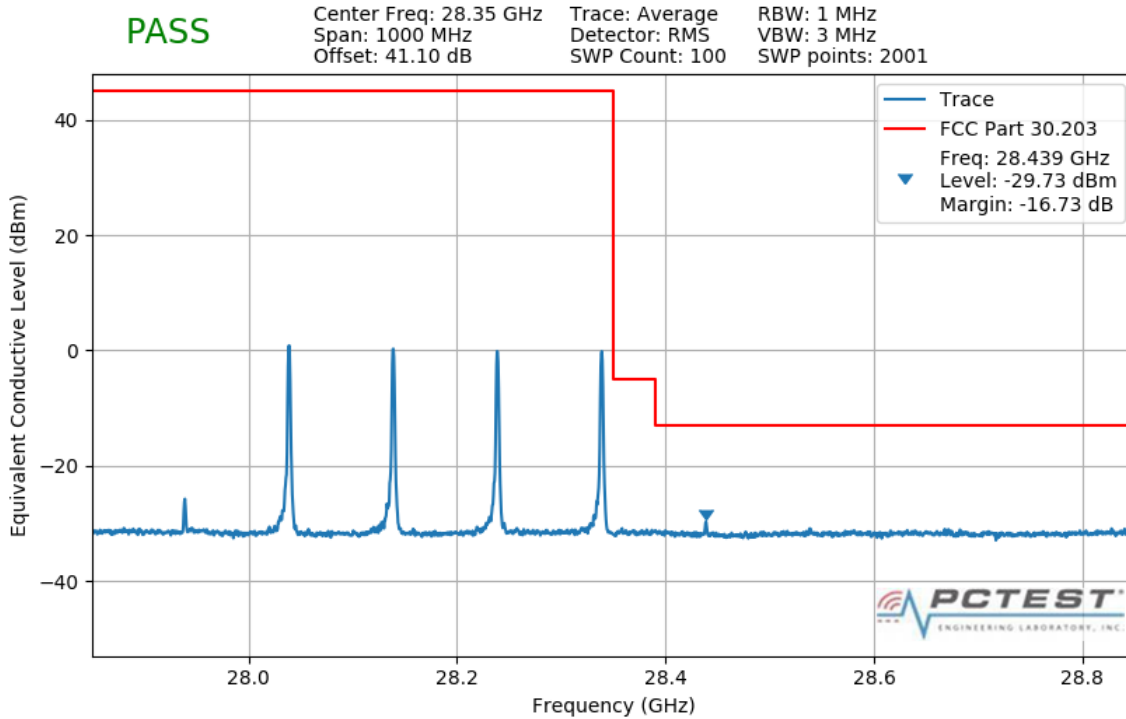


**Plot 7-566. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)**

FCC ID: A3LSMG977U	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 330 of 337



**Plot 7-567. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)**



**Plot 7-568. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)**

FCC ID: A3LSMG977U	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 331 of 337

## 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 C63.5-2015 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

The EUT was measured using horn antenna connected to a spectrum analyzer. The EUT was placed inside an environmental chamber. Using a foam plug, the horn antenna measured the frequency of the fundamental signal.

#### Test Notes

The Frequency Deviation column in the table below is the amount of deviation measured from the center frequency of the Reference measurement (first row).

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Frequency Stability Measurements

\$2.1055

OPERATING FREQUENCY: 27,923,520,000 Hz  
 CHANNEL: 2077100  
 REFERENCE VOLTAGE: 4.33 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	27,924,065,329	-545,329	-0.0019529
100 %		- 20	27,924,008,817	-488,817	-0.0017506
100 %		- 10	27,923,927,616	-407,616	-0.0014598
100 %		0	27,924,056,446	-536,446	-0.0019211
100 %		+ 10	27,924,019,969	-499,969	-0.0017905
100 %		+ 20	27,923,873,982	-353,982	-0.0012677
100 %		+ 30	27,923,894,432	-374,432	-0.0013409
100 %		+ 40	27,923,908,788	-388,788	-0.0013923
100 %		+ 50	27,923,931,168	-411,168	-0.0014725
BATT. ENDPOINT		3.46	+ 20	27,923,901,226	-381,226

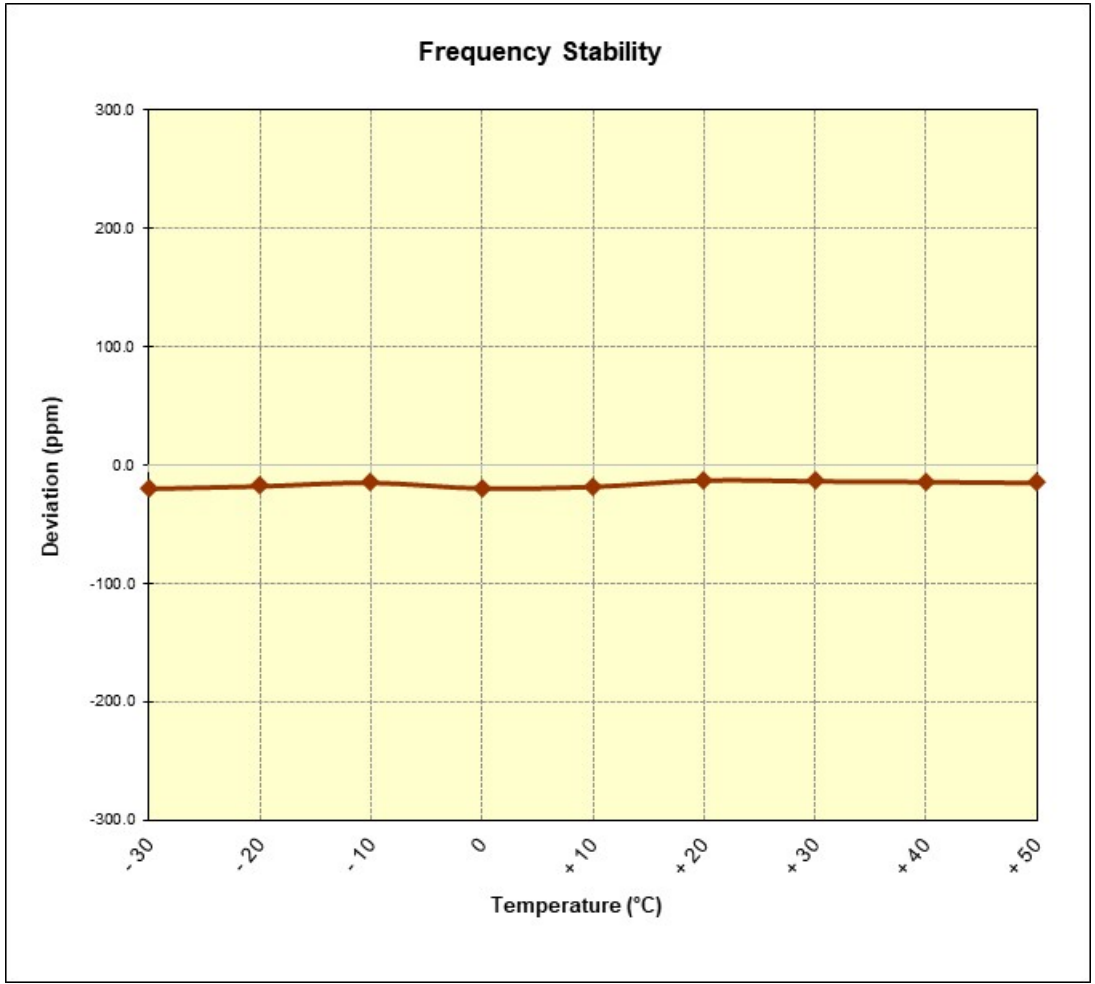
**Table 7-36. Frequency Stability Data**

**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.

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 333 of 337	

**Frequency Stability Measurements**  
§2.1055



**Figure 7-1. Frequency Stability Graph**

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 334 of 337	

## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG977U** complies with all the requirements of Part 30.

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1901100003-06-R1.A3L	<b>Test Dates:</b> 01/22/2019 - 03/25/2019	<b>EUT Type:</b> Portable Handset	Page 335 of 337	

# 9.0 APPENDIX A

## 9.1 VDI Mixer Verification Certificate



**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

**Shipping Date:** 05/14/18
**Today's Date:** 05/14/18

Quantity	<u>Shipped</u>	<u>Unit</u>	<u>Description</u>
1	EA		VDIWR12.0SAX WR12SAX - Spectrum Analyzer Extension Module / SN: SAX 252

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

FCC ID: A3LSMG977U	 <b>MEASUREMENT REPORT</b> <b>(CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1901100003-06-R1.A3L	<b>Test Dates:</b> 01/22/2019 - 03/25/2019	<b>EUT Type:</b> Portable Handset	Page 336 of 337



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

**Certificate of Conformance**

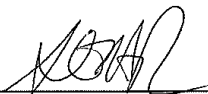
To: PCTEST Engineering Laboratory  
 6660-B Dobbin Road  
 Columbia, MD 21045  
 United States

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

Shipping Date: 05/08/18                      Today's Date: 05/08/18

Quantity	Shipped	Unit	Description
1	EA		VDIWR8.0SAX WR8.0SAX - Spectrum Analyzer Extension Module; SN: SAX 253.

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

FCC ID: A3LSMG977U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M1901100003-06-R1.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 337 of 337	