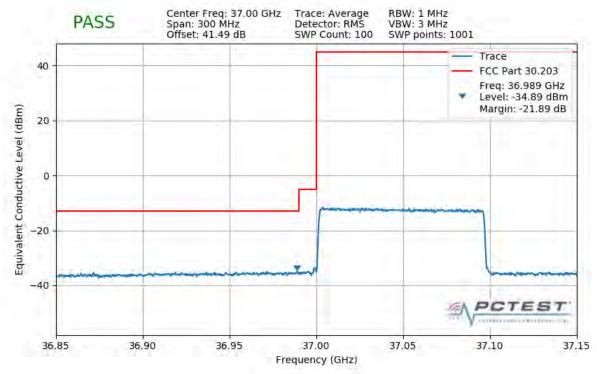


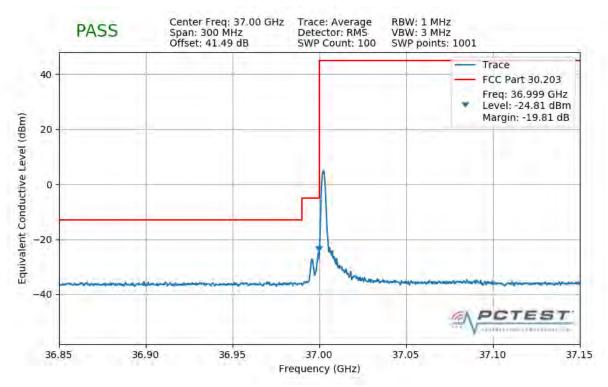
#### Plot 7-532. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 210 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 318 of 355
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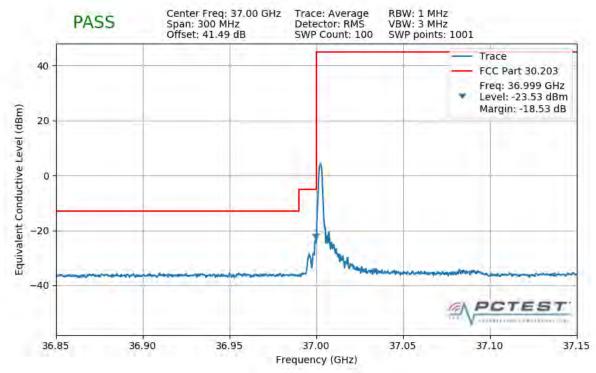




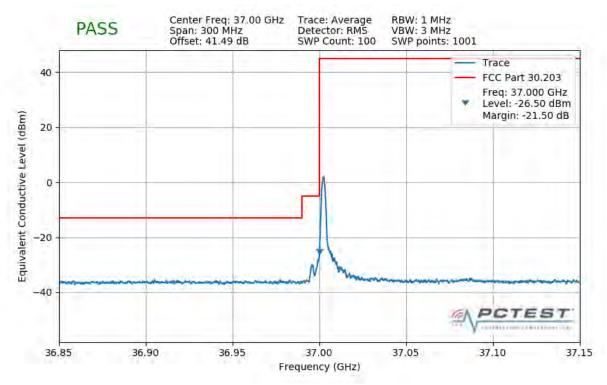


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNC	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 210 of 255
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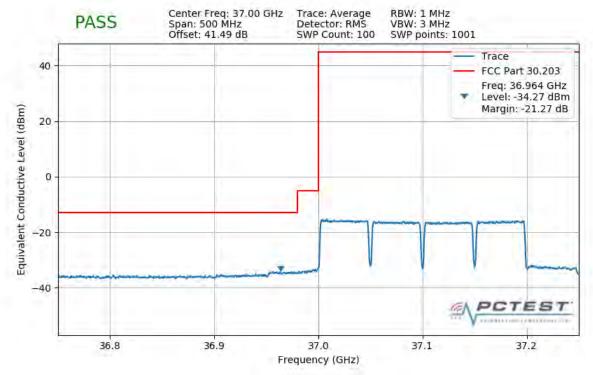




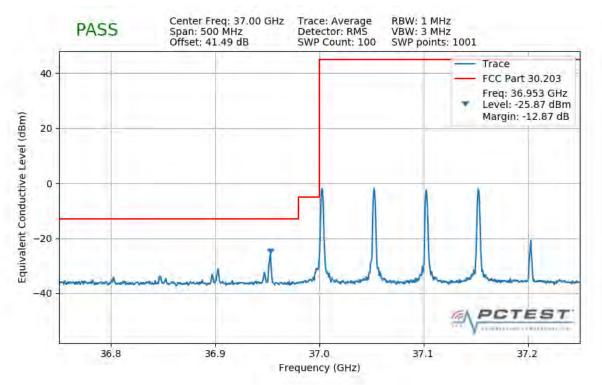
#### Plot 7-536. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSONG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 220 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 320 of 355
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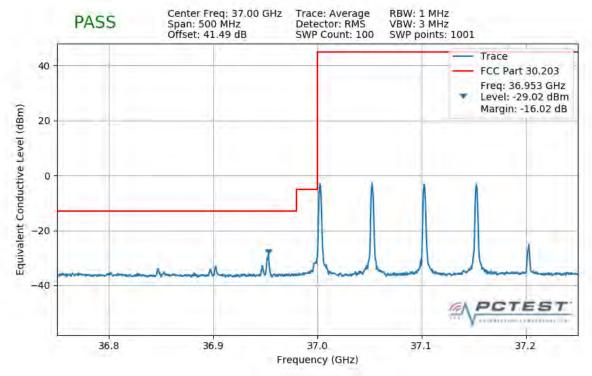




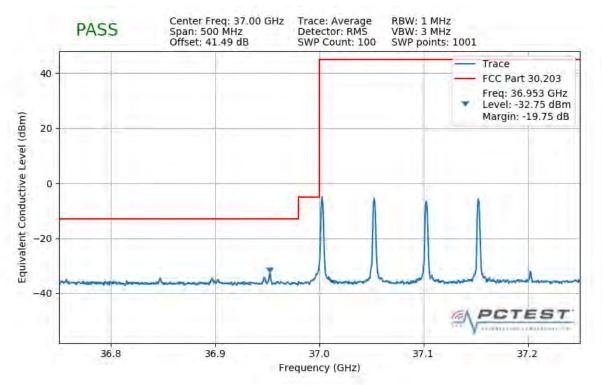


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 221 of 255	
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset	Page 321 of 355	
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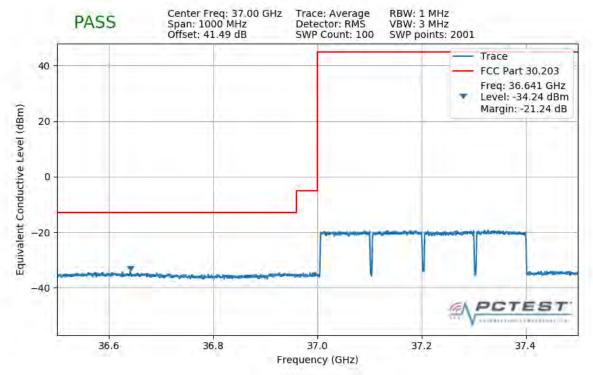




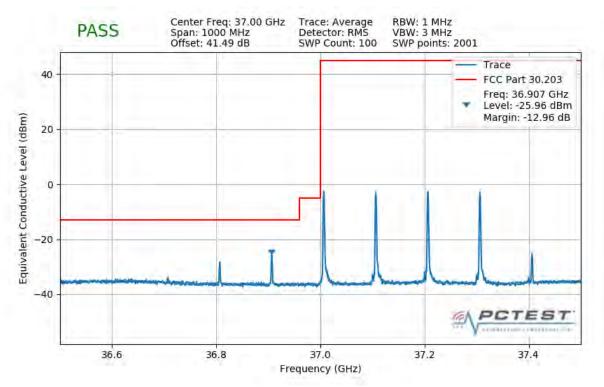


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Test Report S/N:	Test Dates:	EUT Type:		Dage 200 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 322 of 355
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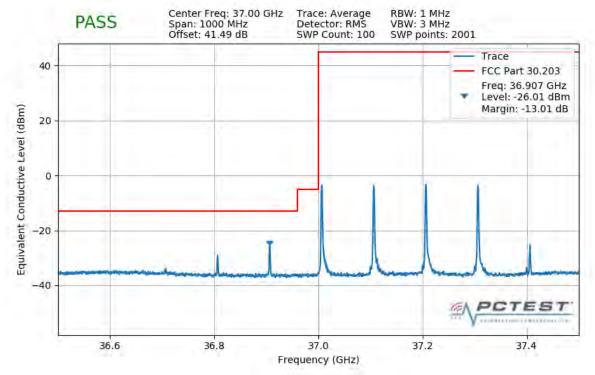




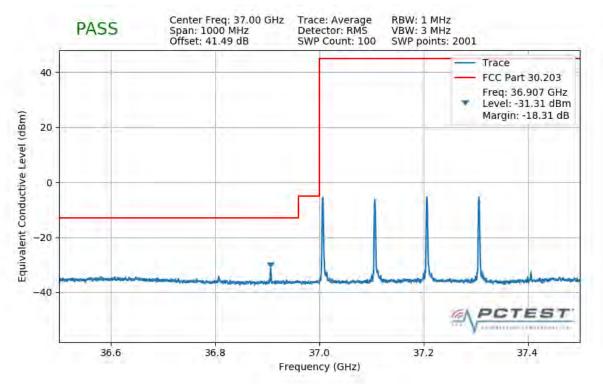


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Test Report S/N:	Test Dates:	EUT Type:		Dage 202 of 255	
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 323 of 355	
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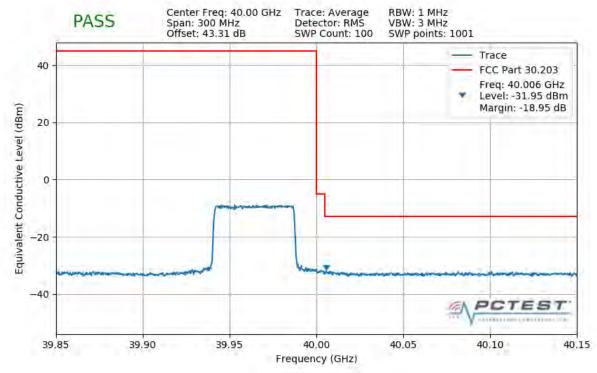




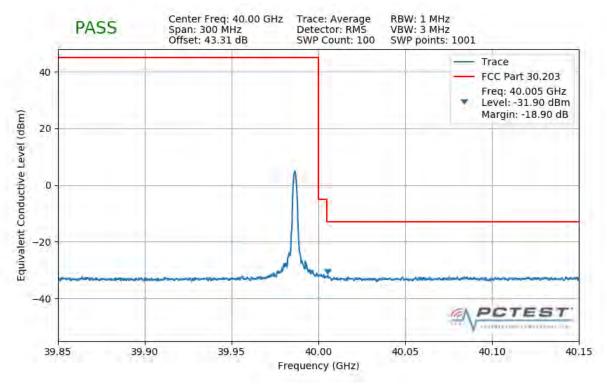


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Test Report S/N:	Test Dates:	EUT Type:		Dage 224 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 324 of 355
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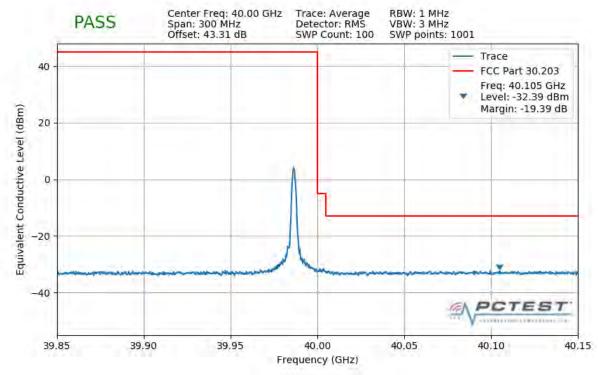




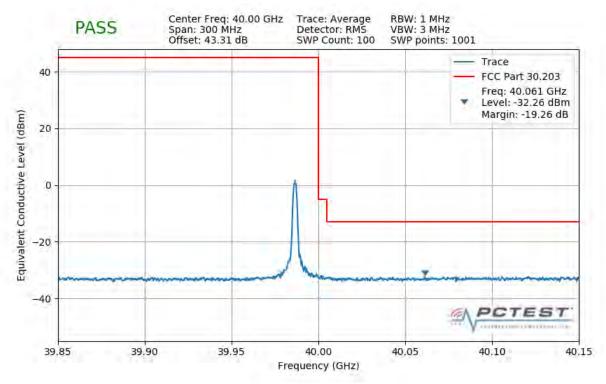


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Test Report S/N:	Test Dates:	EUT Type:		Dogo 225 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 325 of 355
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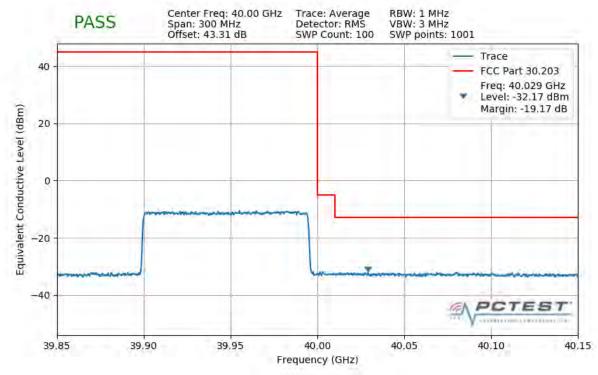




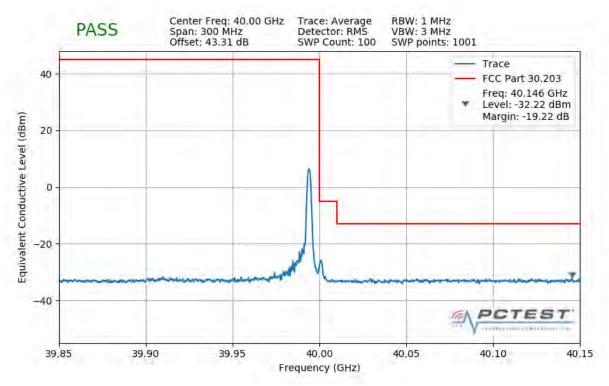


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSONG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 206 of 255	
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 326 of 355	
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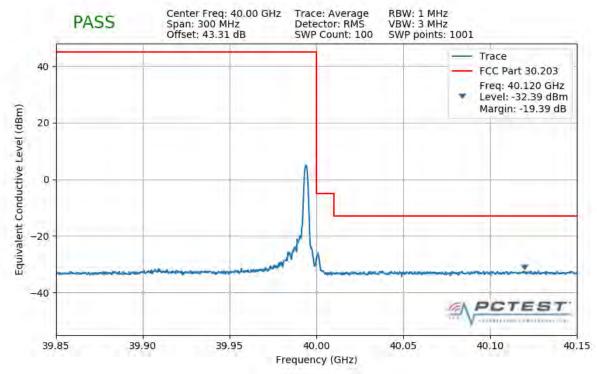




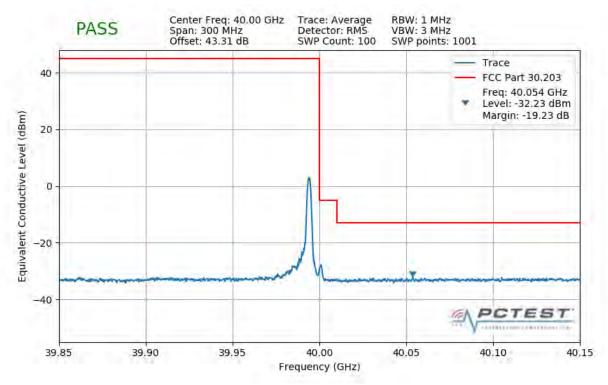
#### Plot 7-550. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSOND	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 227 of 255
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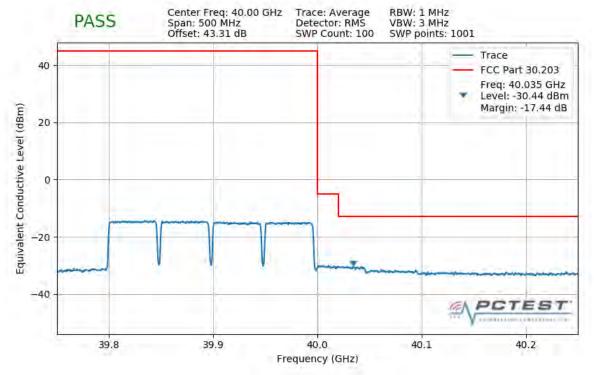




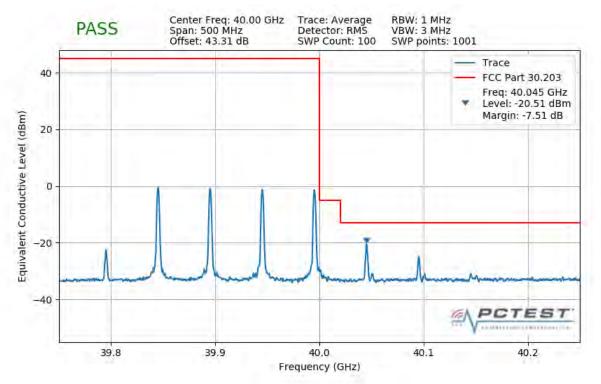
#### Plot 7-552. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNE	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 200 of 255
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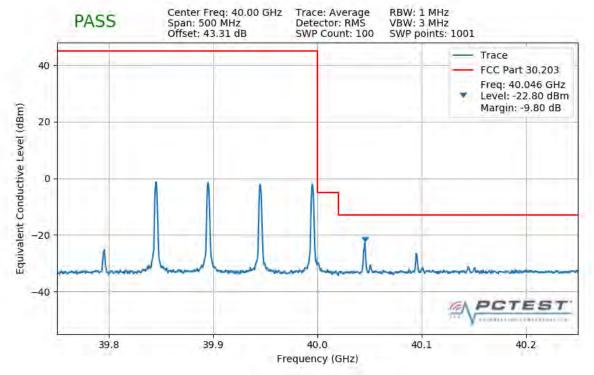




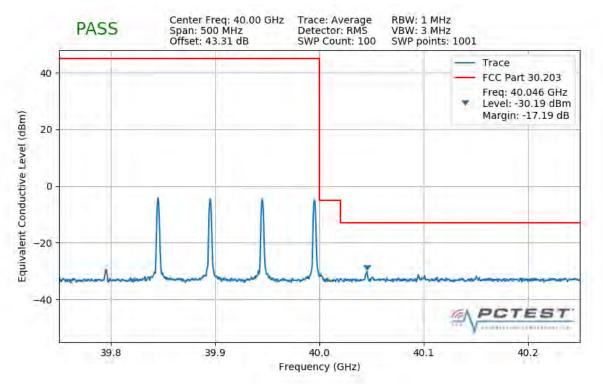
#### Plot 7-554. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Daga 220 of 255		
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset	Page 329 of 355		
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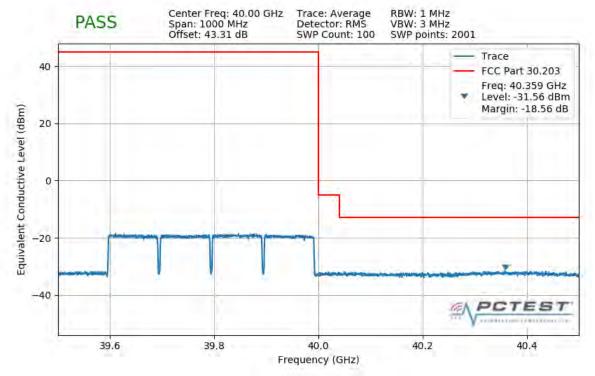




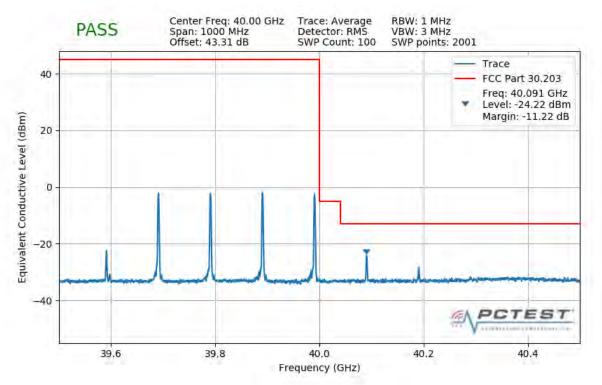


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Test Report S/N:	Test Dates:	EUT Type:		Dage 220 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 330 of 355
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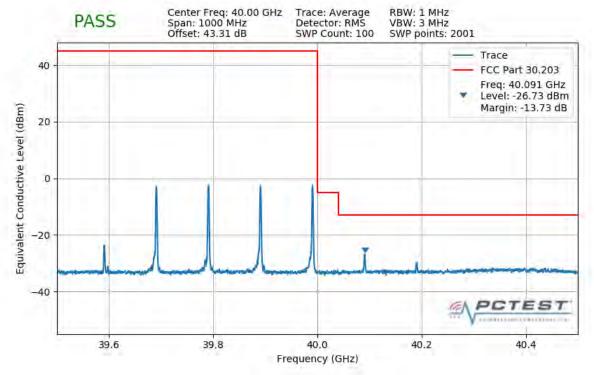




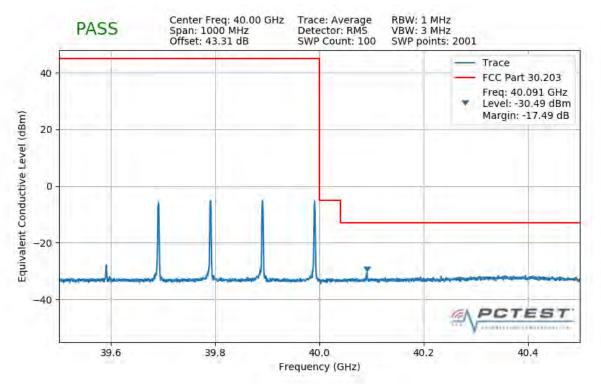


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSONE	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 221 of 255
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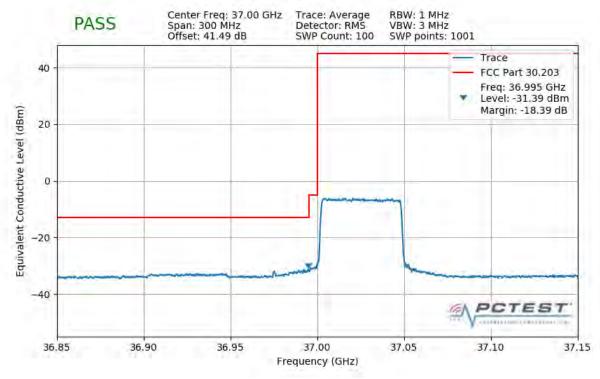




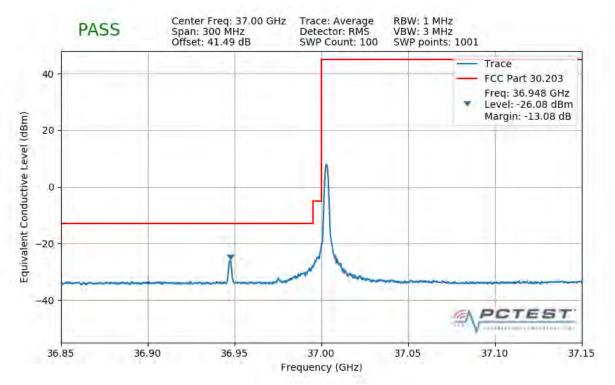
#### Plot 7-560. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 222 of 255
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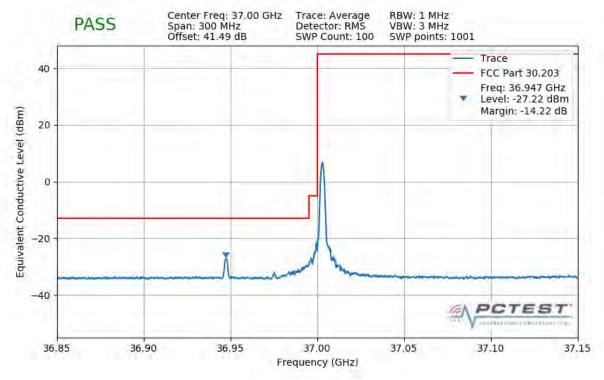


#### Plot 7-562. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

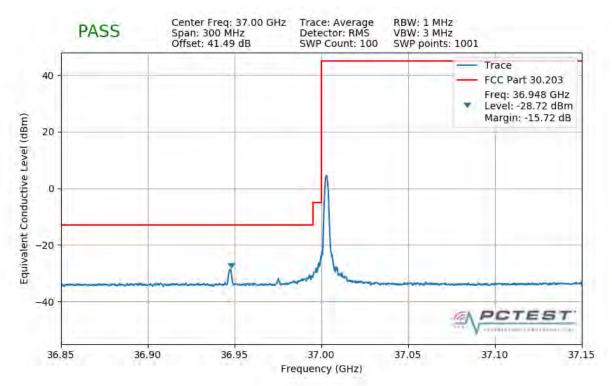
FCC ID: A3LSMG977T	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSONE	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 222 of 255
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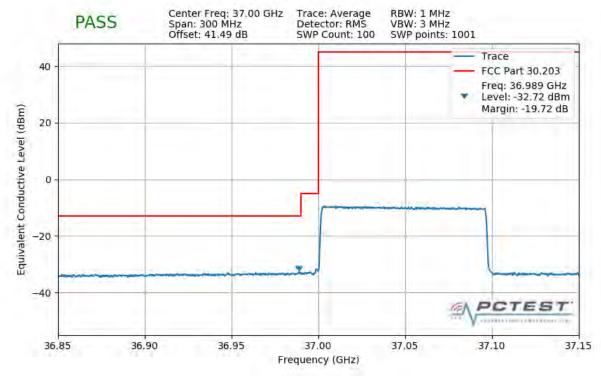




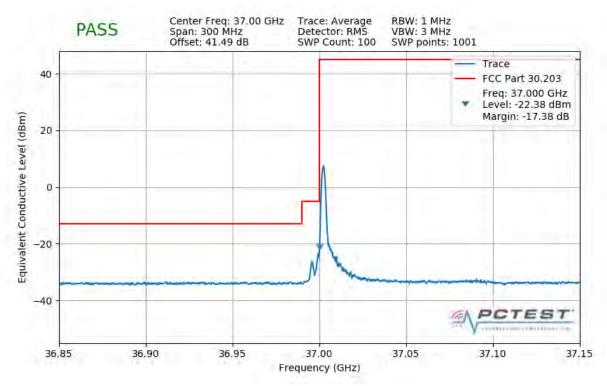
#### Plot 7-564. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 224 of 255
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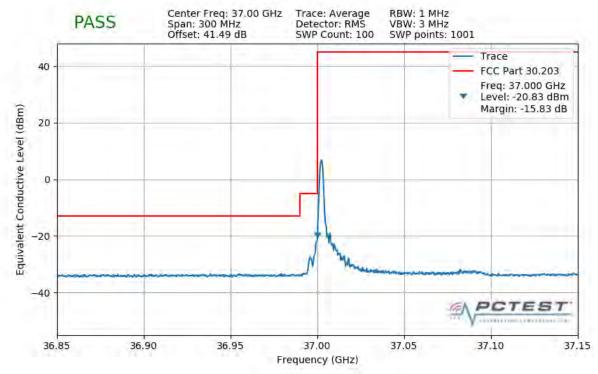




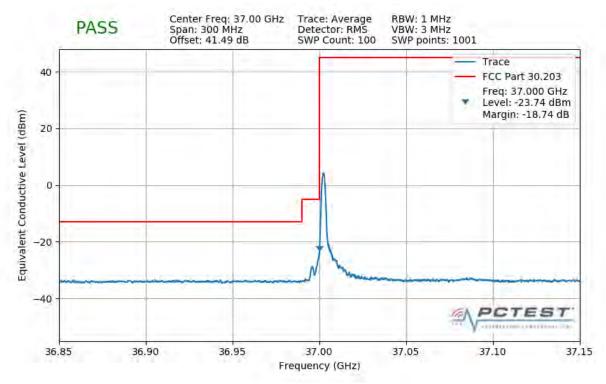
#### Plot 7-566. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 225 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 335 of 355
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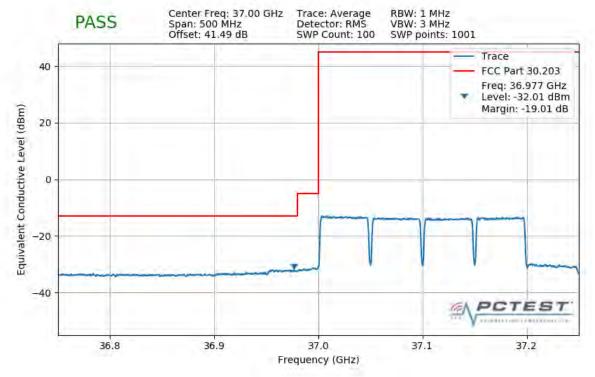




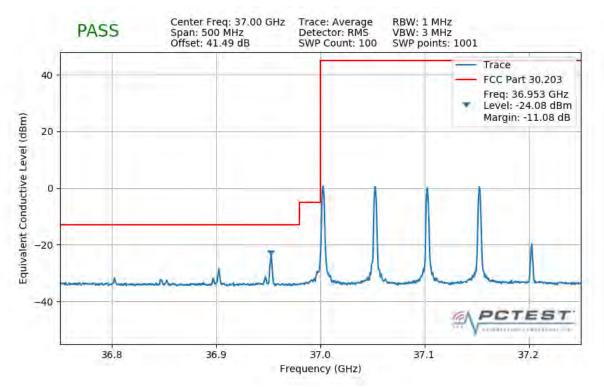


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 200 at 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset	Page 336 of 355
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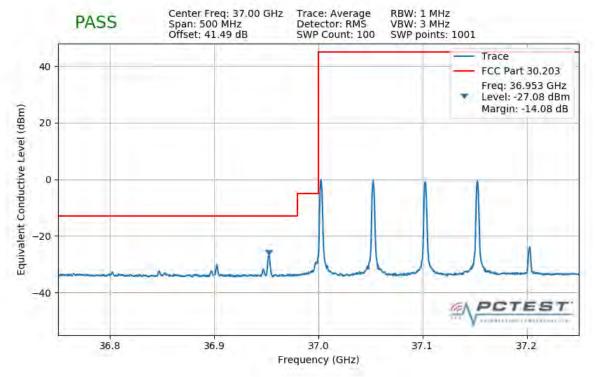




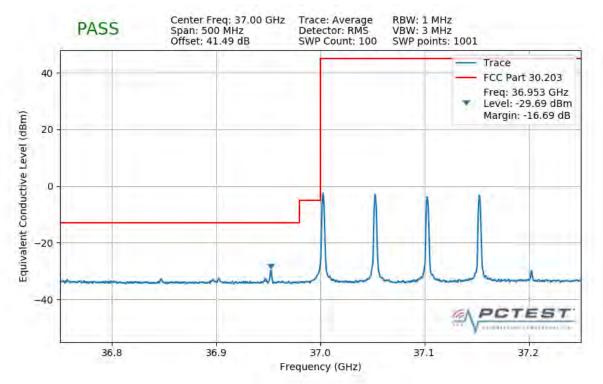


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 227 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 337 of 355
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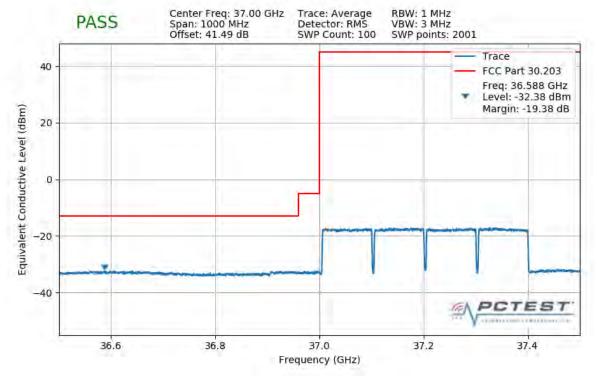




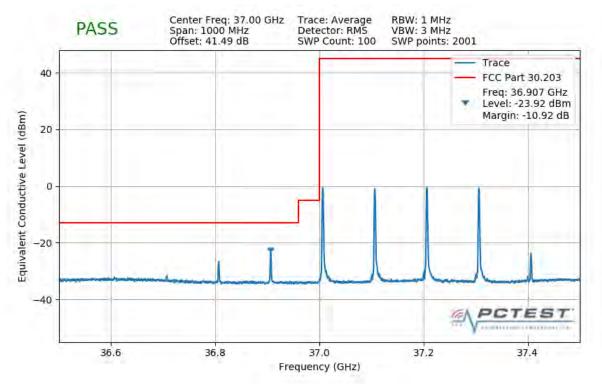


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 220 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 338 of 355
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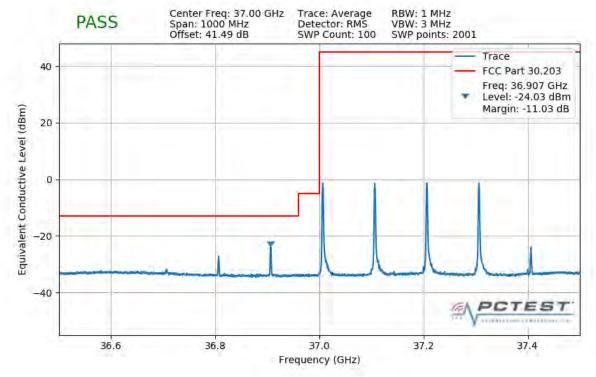




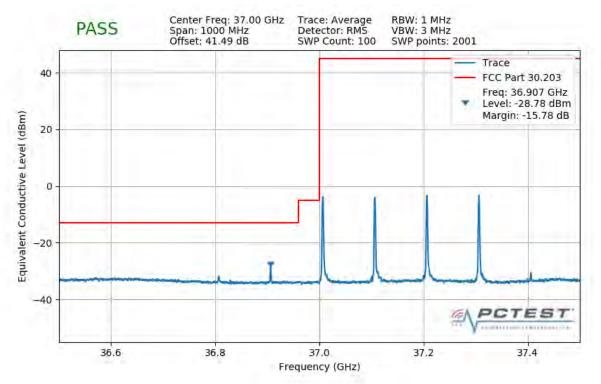


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSONE	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 220 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 339 of 355
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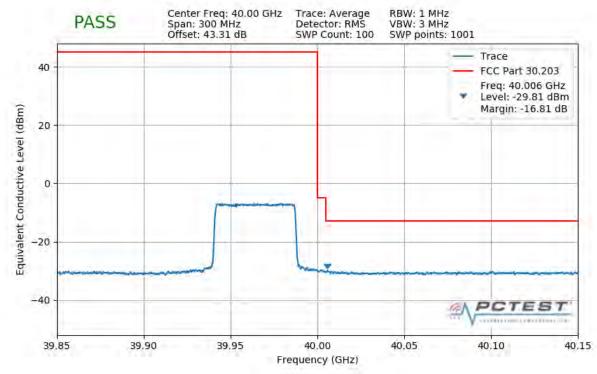




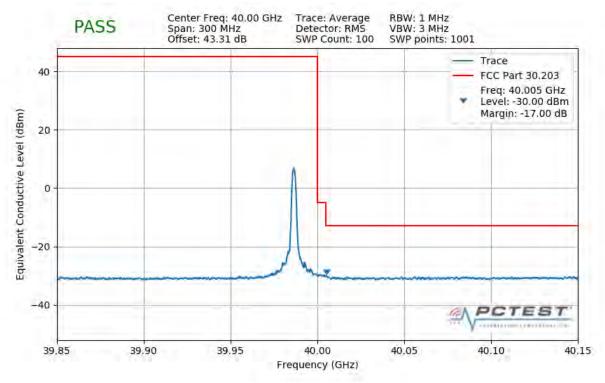


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNC	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 240 of 255
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 340 of 355
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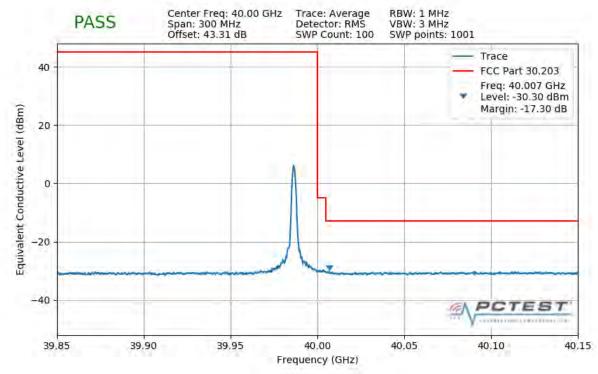




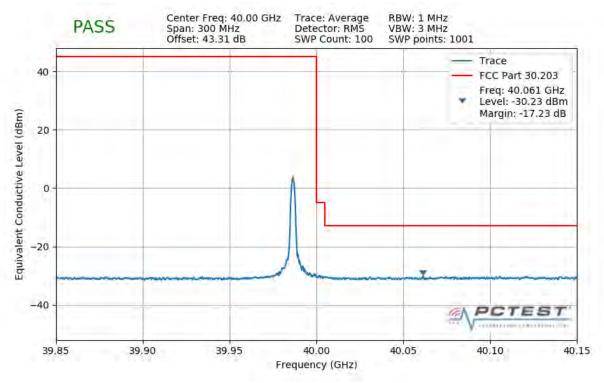


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Daga 244 of 255		
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset	Page 341 of 355		
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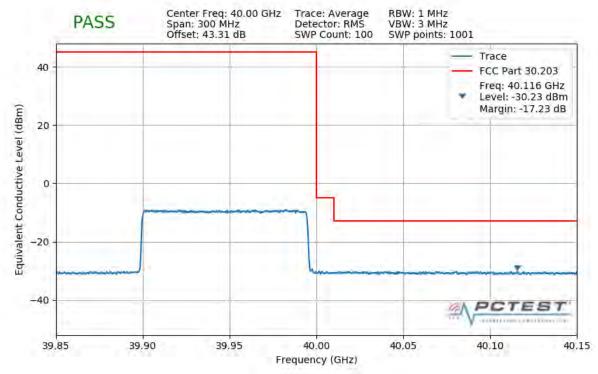




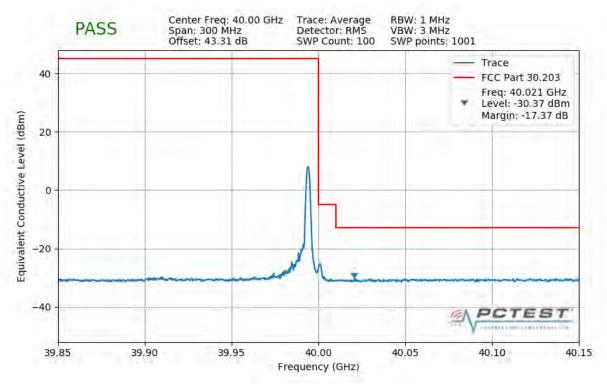
#### Plot 7-580. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 242 of 255	
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 342 of 355	
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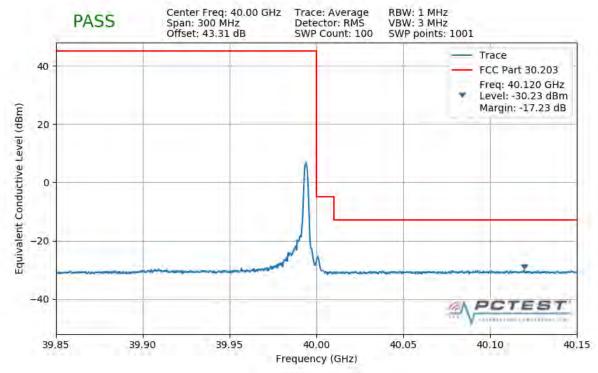




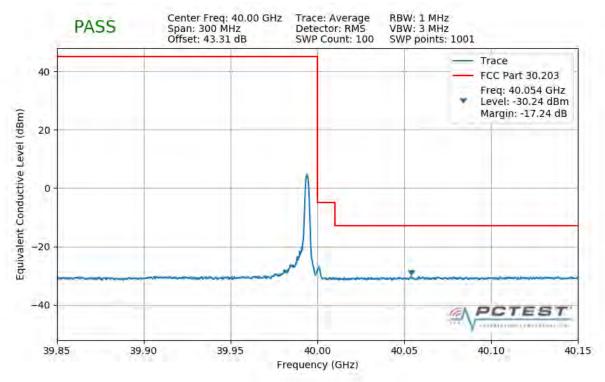
#### Plot 7-582. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	SAMSOND	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 242 of 255		
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset		Page 343 of 355		
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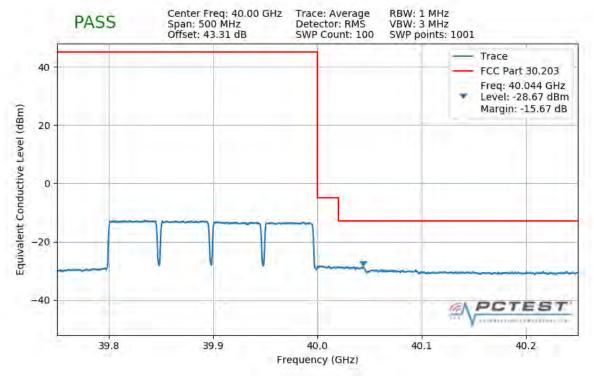




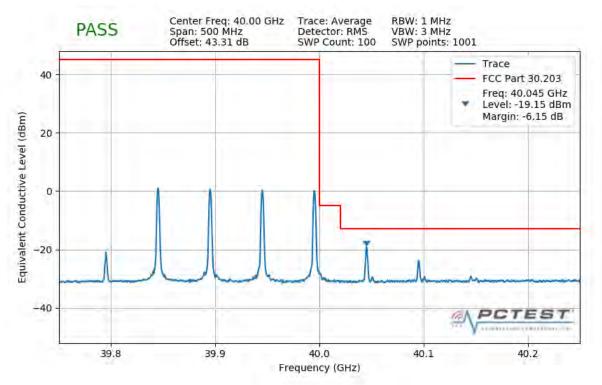


FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 244 af 255		
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset	Page 344 of 355		
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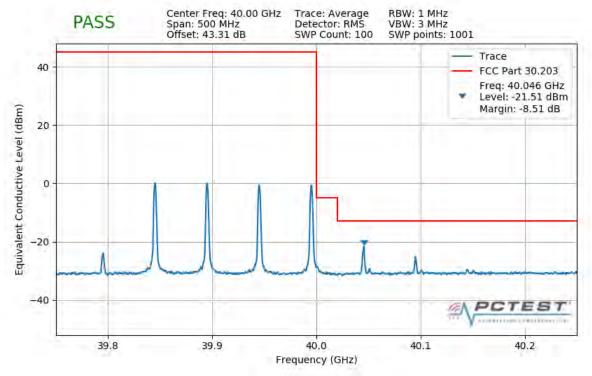




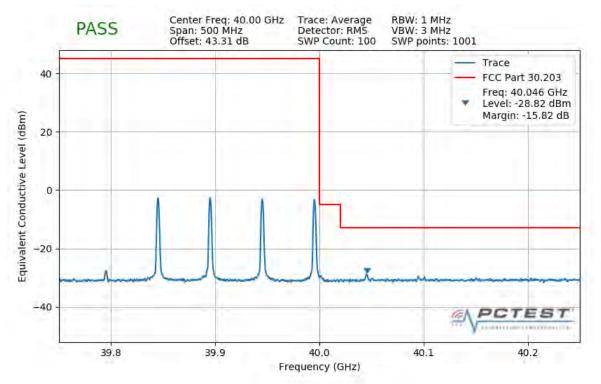
#### Plot 7-586. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 045 at 055		
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset	Page 345 of 355		
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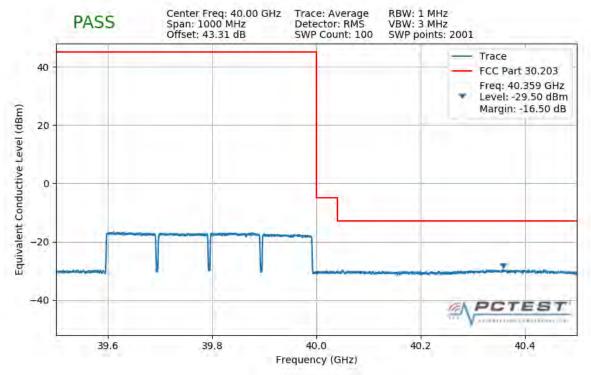




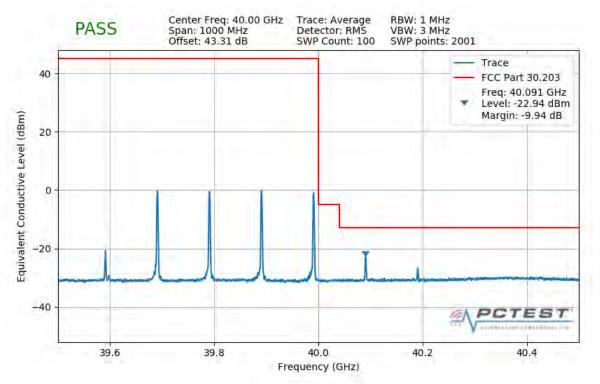
#### Plot 7-588. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	De r.a. 0.40 at 055		
1M1903060032-22.A3L	01/22 - 05/08/2019	Portable Handset	Page 346 of 355		
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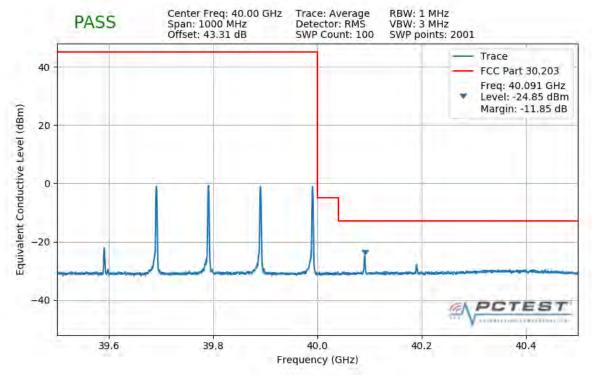




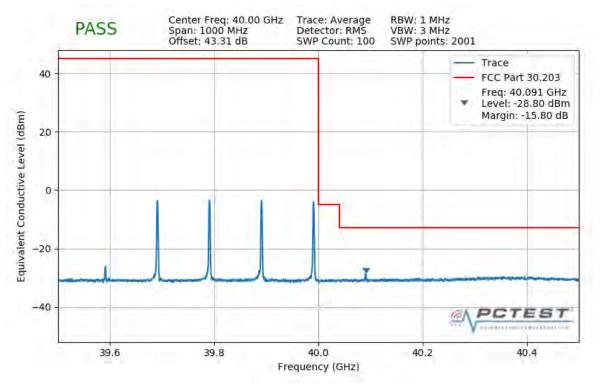
#### Plot 7-590. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dago 247 of 255		
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#### Plot 7-592. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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## 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).

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### Frequency Stability Measurements

<u>§2.1055</u>

OPERATING FREQUENCY:	38,496,360,000	Hz
CHANNEL:	2254123	_
REFERENCE VOLTAGE:	4.33	VDC

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	38,496,190,248	169,752	0.000441
100 %		- 20	38,495,914,531	445,469	0.001157
100 %		- 10	38,496,679,846	-319,846	-0.000831
100 %		0	38,496,629,266	-269,266	-0.000699
100 %		+ 10	38,496,180,622	179,378	0.000466
100 %		+ 20	38,495,976,232	383,768	0.000997
100 %		+ 30	38,495,519,063	840,937	0.002184
100 %		+ 40	38,495,600,004	759,996	0.001974
100 %		+ 50	38,495,593,545	766,455	0.001991
BATT. ENDPOINT	3.46	+ 20	38,496,195,992	164,008	0.000004

Table 7-40. 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.

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# Frequency Stability Measurements §2.1055

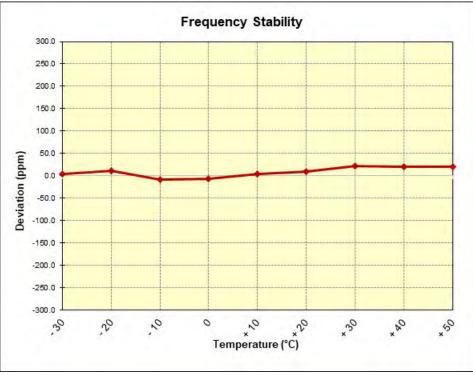


Figure 7-1. Frequency Stability Graph

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### 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG977T** complies with all the requirements of Part 30.

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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

1

#### Shipped Unit Description

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

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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



- 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

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#### Virginia Diodes, Inc 979 2nd St. SE

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 Chariottesville, VA 22902

Shipping Date: 05/21/18

Today's Date: 05/22/18

Quantity

Shipped Unit ΕA 1

Description VDIWR5.1SAX WR5.1SAX - Spectrum Analyzer Extension Module; SN: SAX 254.

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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