



MEASUREMENT REPORT

LTE

Applicant Name:

Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:

10/23/2018 - 1/18/2019

Test Site/Location:

PCTEST Lab. Columbia, MD, USA

Test Report Serial No.:

1M1901240016-03.A3L

FCC ID:

A3LSCV41

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

SCV41

EUT Type:

Portable Handset

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s):

22, 24, & 27

Test Procedure(s):

ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01,
KDB 648474 D03 v01r04

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



Randy Ortanez
President

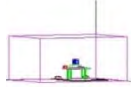


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T A B L E O F C O N T E N T S

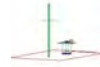
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FCC Part 22, 24, & 27



Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 12	27	699.7 - 715.3	0.171	22.33	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.130	21.13	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.092	19.66	1M09W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.172	22.35	2M72G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.123	20.88	2M72W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.104	20.17	2M72W7D	64QAM
LTE Band 12	27	701.5 - 713.5	0.152	21.83	4M57G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.124	20.95	4M52W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.089	19.51	4M53W7D	64QAM
LTE Band 12	27	704 - 711	0.218	23.38	9M03G7D	QPSK
LTE Band 12	27	704 - 711	0.178	22.50	9M00W7D	16QAM
LTE Band 12	27	704 - 711	0.128	21.06	9M03W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.154	21.87	4M54G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.134	21.28	4M53W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.109	20.37	4M53W7D	64QAM
LTE Band 13	27	782	0.145	21.63	9M01G7D	QPSK
LTE Band 13	27	782	0.118	20.73	9M02W7D	16QAM
LTE Band 13	27	782	0.097	19.88	9M00W7D	64QAM
LTE Band 5	22H	824.7 - 848.3	0.150	21.76	1M10G7D	QPSK
LTE Band 5	22H	824.7 - 848.3	0.135	21.29	1M11W7D	16QAM
LTE Band 5	22H	824.7 - 848.3	0.103	20.12	1M09W7D	64QAM
LTE Band 5	22H	825.5 - 847.5	0.153	21.86	2M72G7D	QPSK
LTE Band 5	22H	825.5 - 847.5	0.131	21.16	2M72W7D	16QAM
LTE Band 5	22H	825.5 - 847.5	0.107	20.29	2M71W7D	64QAM
LTE Band 5	22H	826.5 - 846.5	0.172	22.35	4M59G7D	QPSK
LTE Band 5	22H	826.5 - 846.5	0.138	21.39	4M54W7D	16QAM
LTE Band 5	22H	826.5 - 846.5	0.116	20.64	4M56W7D	64QAM
LTE Band 5	22H	829 - 844	0.167	22.24	9M03G7D	QPSK
LTE Band 5	22H	829 - 844	0.142	21.53	9M03W7D	16QAM
LTE Band 5	22H	829 - 844	0.112	20.50	9M02W7D	64QAM

EUT Overview (<1GHz - Low Bands)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.179	22.54	4M54G7D	QPSK
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.166	22.21	4M52W7D	16QAM
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.149	21.72	4M51W7D	64QAM
LTE Band 41 (PC3)	27	2501 - 2685	0.203	23.07	9M00G7D	QPSK
LTE Band 41 (PC3)	27	2501 - 2685	0.183	22.62	9M05W7D	16QAM
LTE Band 41 (PC3)	27	2501 - 2685	0.161	22.08	9M00W7D	64QAM
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.210	23.23	13M5G7D	QPSK
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.172	22.36	13M5W7D	16QAM
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.144	21.59	13M5W7D	64QAM
LTE Band 41 (PC3)	27	2506 - 2680	0.178	22.50	18M0G7D	QPSK
LTE Band 41 (PC3)	27	2506 - 2680	0.153	21.85	18M0W7D	16QAM
LTE Band 41 (PC3)	27	2506 - 2680	0.135	21.31	18M0W7D	64QAM

EUT Overview (>2GHz - High Bands)

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISSED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISSED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSCV41**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 0038M, 1082M, 1179M, 0050M, 1218M, 0263M, 0231M, 0245M, 0220M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, ANT+

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT placed flush against the flat surface of authorized wireless charging pad (WCP) Model:EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The WCP is designed with the flat charging surface angled 45 degrees relative to a horizontal surface on which the WCP rests. The worst case radiated emissions data is shown in this report.

2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

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3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

3.2 Block C Frequency Range

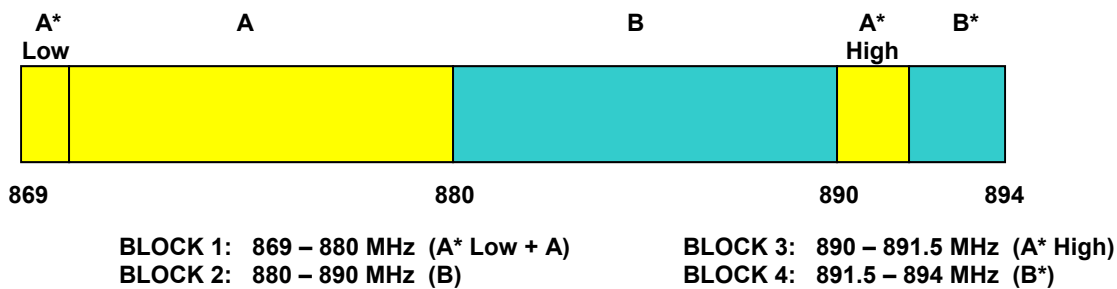
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results do not satisfy the applicable reserve price, the spectrum in the 746-757 MHz and 776-787 MHz bands will instead be made available for assignment at a subsequent auction as follows: (i) Two paired channels of 6 megahertz each available for assignment in Block C1 in the 746-752 MHz and 776-782 MHz bands. (ii) Two paired channels of 5 megahertz each available for assignment in Block C2 in the 752-757 MHz and 782-787 MHz bands.

3.3 Block A Frequency Range

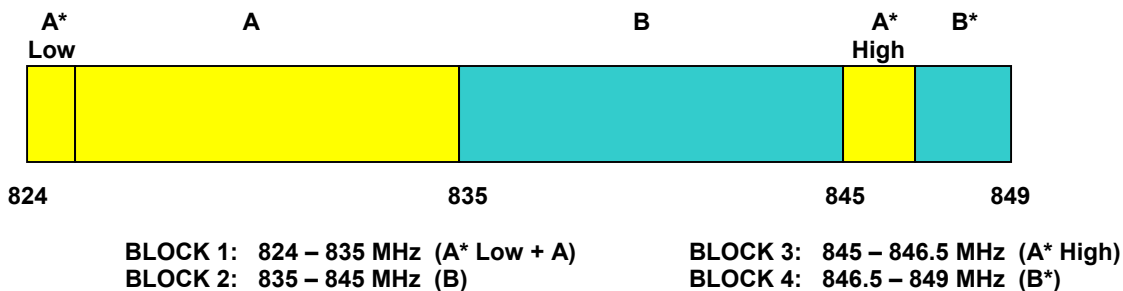
698-746 MHz band. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.4 Cellular - Base Frequency Blocks



3.5 Cellular - Mobile Frequency Blocks



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3.9 Radiated Power and Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168 D01 v03r01.

Per the guidance of ANSI/TIA-603-E-2016, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_d \text{ [dBm]} = P_g \text{ [dBm]} - \text{cable loss [dB]} + \text{antenna gain [dBd/dBi]}$$

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_g \text{ [dBm]} - \text{cable loss [dB]}$.

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10\log_{10}(\text{Power [Watts]})$. For Band 7 and 41, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of $55 + 10\log_{10}(\text{Power [Watts]})$. For Band 30, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of $70 + 10\log_{10}(\text{Power [Watts]})$.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

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4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty ($\pm$ dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTX2	Licensed Transmitter Cable Set	1/23/2018	Annual	1/23/2019	LTX2
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	5/25/2018	Annual	5/25/2019	MY52350166
Anritsu	MT8821C	Radio Communication Analyzer	7/24/2018	Annual	7/24/2019	6201664756
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	9/17/2018	Annual	9/17/2019	441119
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Espec	ESX-2CA	Environmental Chamber	3/28/2018	Annual	3/28/2019	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
Huber + Suhner	Sucoflex 102A	40GHz Radiated Cable Set	1/23/2018	Annual	1/23/2019	251425001
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/20/2018	Annual	3/20/2019	MY49430494
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11401010036
Mini Circuits	TVA-11-422	RF Power Amp	N/A		N/A	QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A		N/A	11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	9/25/2018	Annual	9/25/2019	102060
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	5/21/2018	Annual	5/21/2019	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/25/2018	Annual	6/25/2019	102133
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	7/16/2018	Biennial	7/16/2020	101073
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	1/24/2018	Annual	1/24/2019	100040
Seekonk	NC-100	Torque Wrench	12/28/2017	Annual	12/28/2018	N/A
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107

Table 5-1. Test Equipment

Notes:

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was –81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of –81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of –30.9 dBm yielding –24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80).

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7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSCV41
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
2.1051 2.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Out of Band Emissions	> 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Section 7.3, 7.4
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)		PASS	Section 7.3, 7.4
2.1046	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
2.1055 22.355 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 27)		PASS	Section 7.9

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 0
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12, 13)	< 3 Watts max. ERP		PASS	Section 0
27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 41)	< 2 Watts max. EIRP		PASS	Section 0
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 0
2.1053 22.917(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions (Band 12, 5)	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz		PASS	Section 7.7
27.53(m)	Undesirable Emissions (Band 41)	Undesirable emissions must meet the limits detailed in 27.53(m)		PASS	Section 7.7

Table 7-2. Summary of Radiated Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots (Sections 7.2, 7.3, 7.4) were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "LTE Automation," Version 5.1.
- 5) For operation <1GHz, the EIRP limits in the table above are referenced to the specifications written in the relevant Radio Standards Specifications for Innovation, Science, and Economic Development Canada.

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7.2 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 4.2

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-1. Test Instrument & Measurement Setup

Test Notes

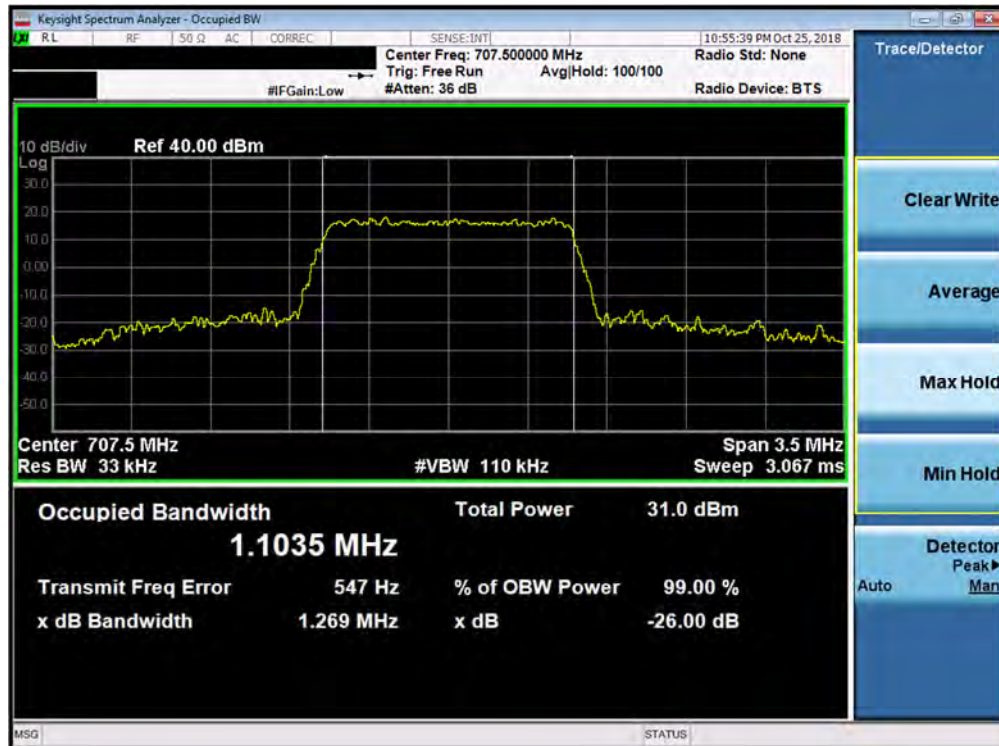
None.

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12

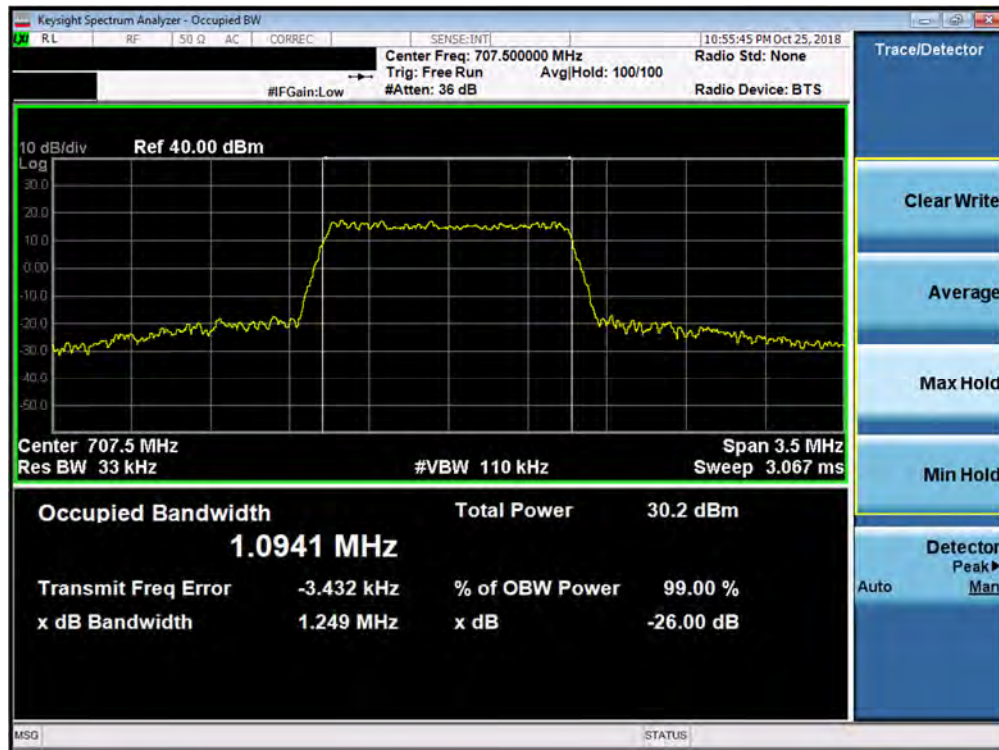


Plot 7-1. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

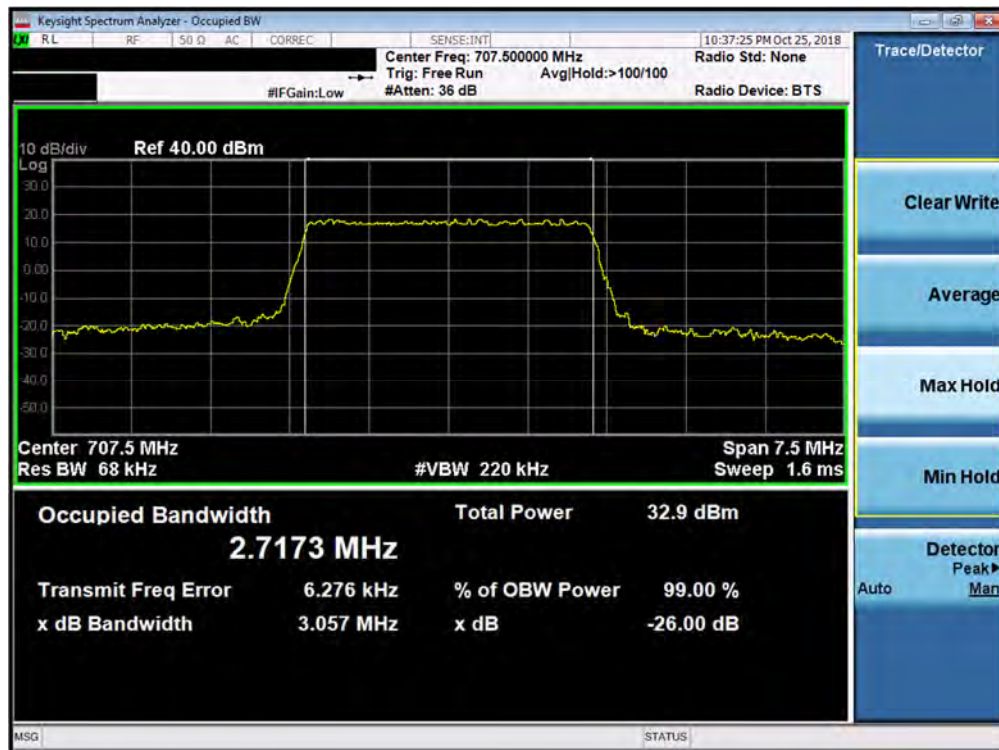


Plot 7-2. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 15 of 116

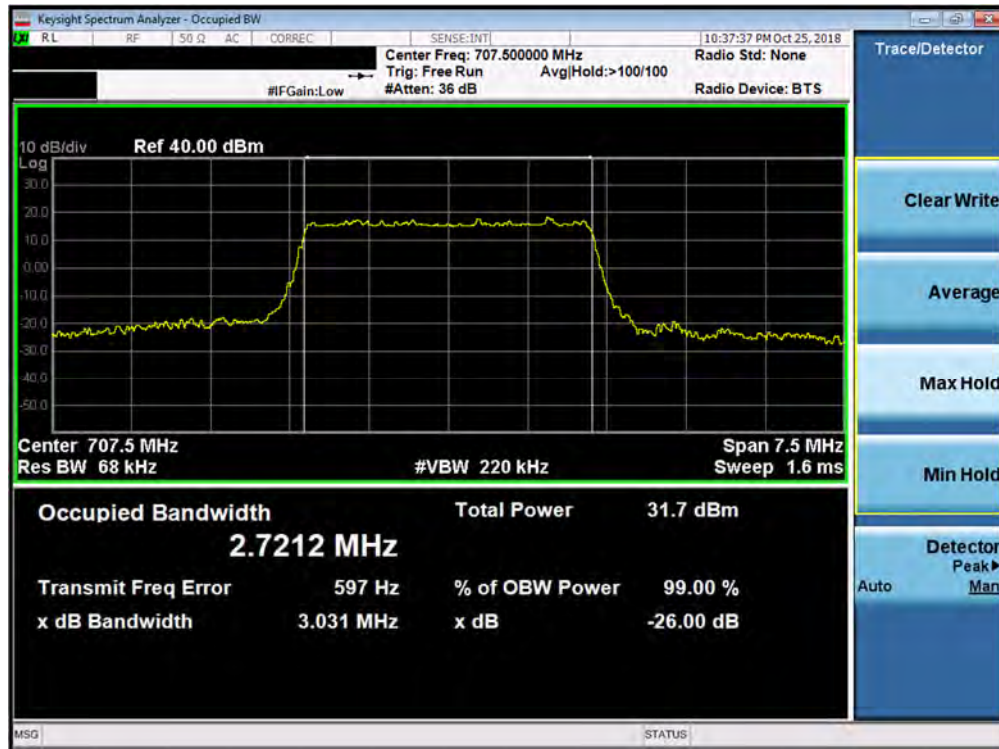


Plot 7-3. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

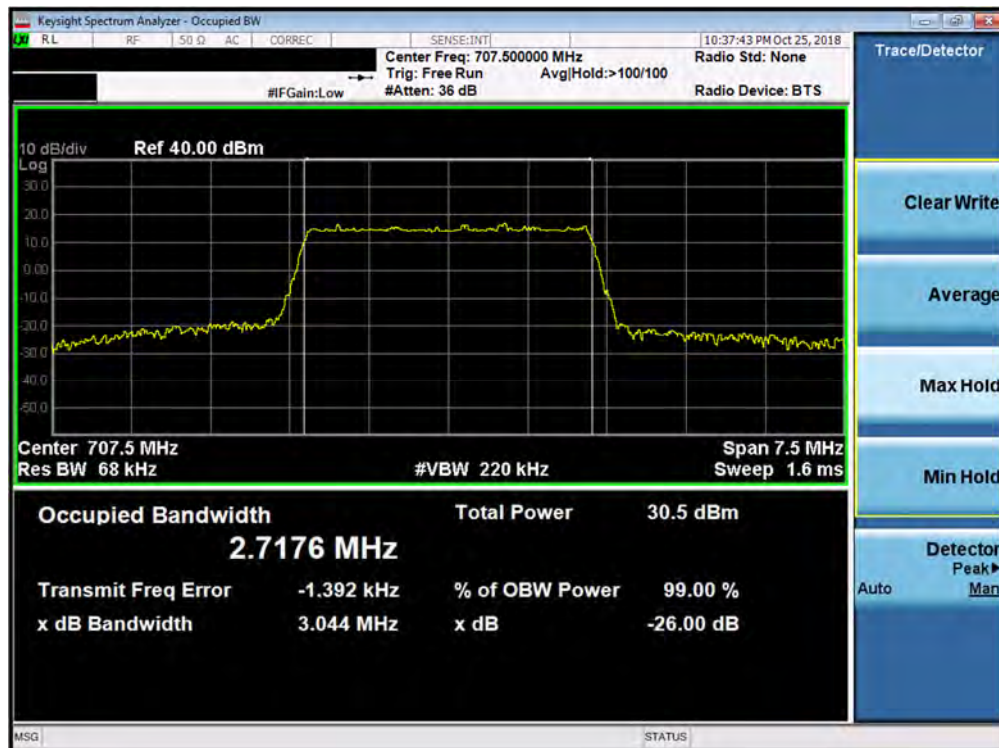


Plot 7-4. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 16 of 116



Plot 7-5. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

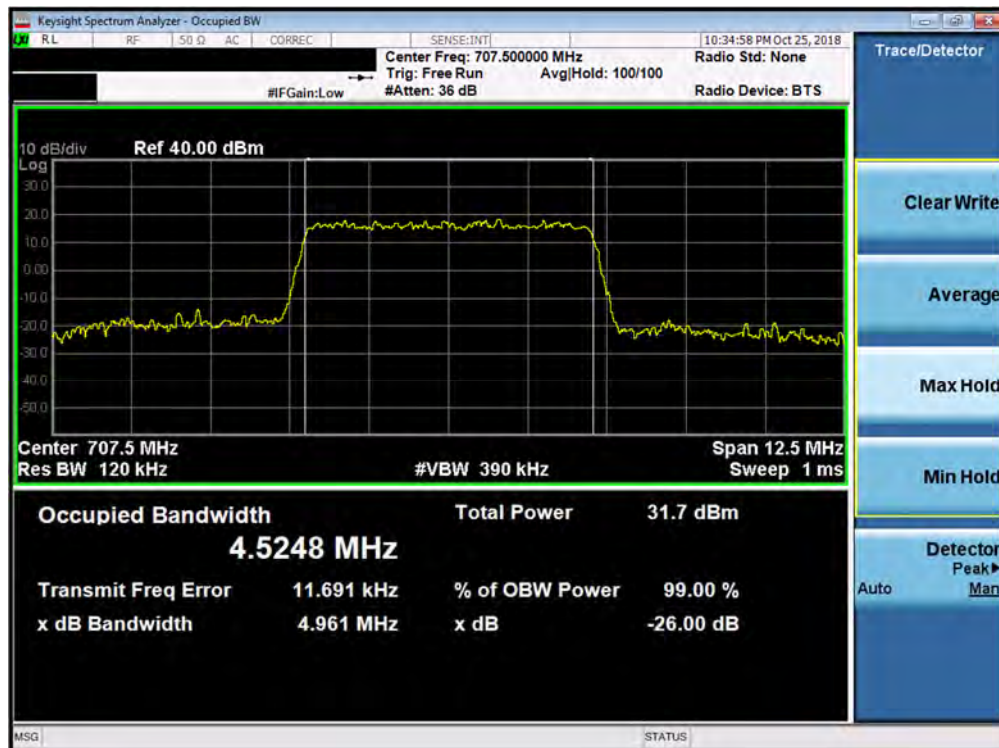


Plot 7-6. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-7. Occupied Bandwidth Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

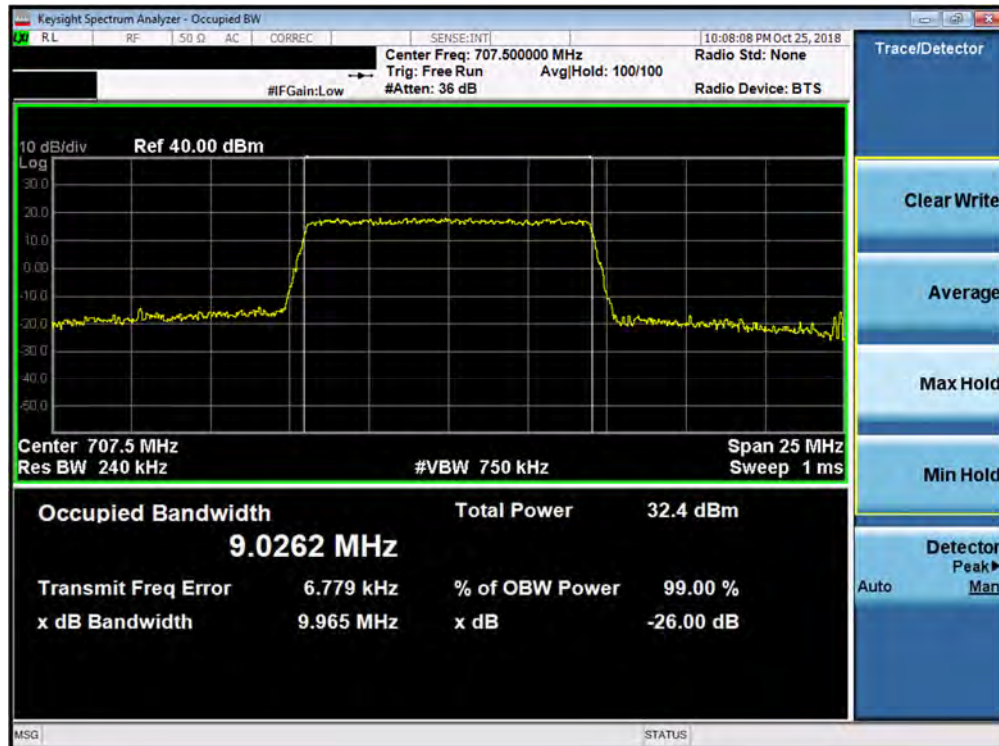


Plot 7-8. Occupied Bandwidth Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 18 of 116

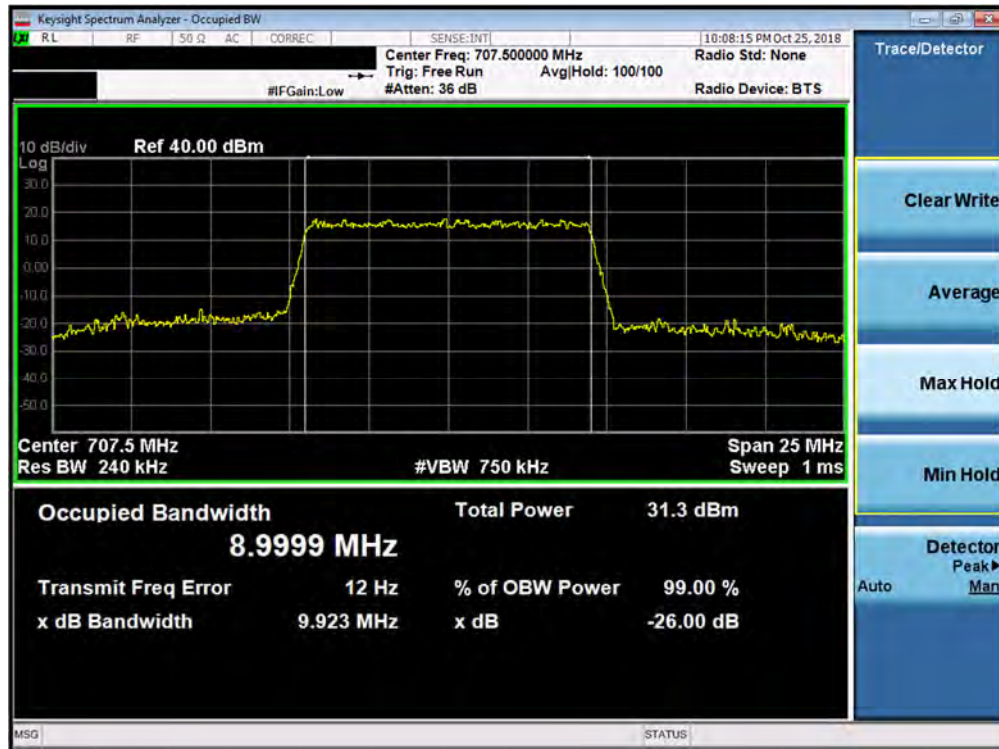


Plot 7-9. Occupied Bandwidth Plot (Band 12 - 5.0MHz 64-QAM - Full RB Configuration)

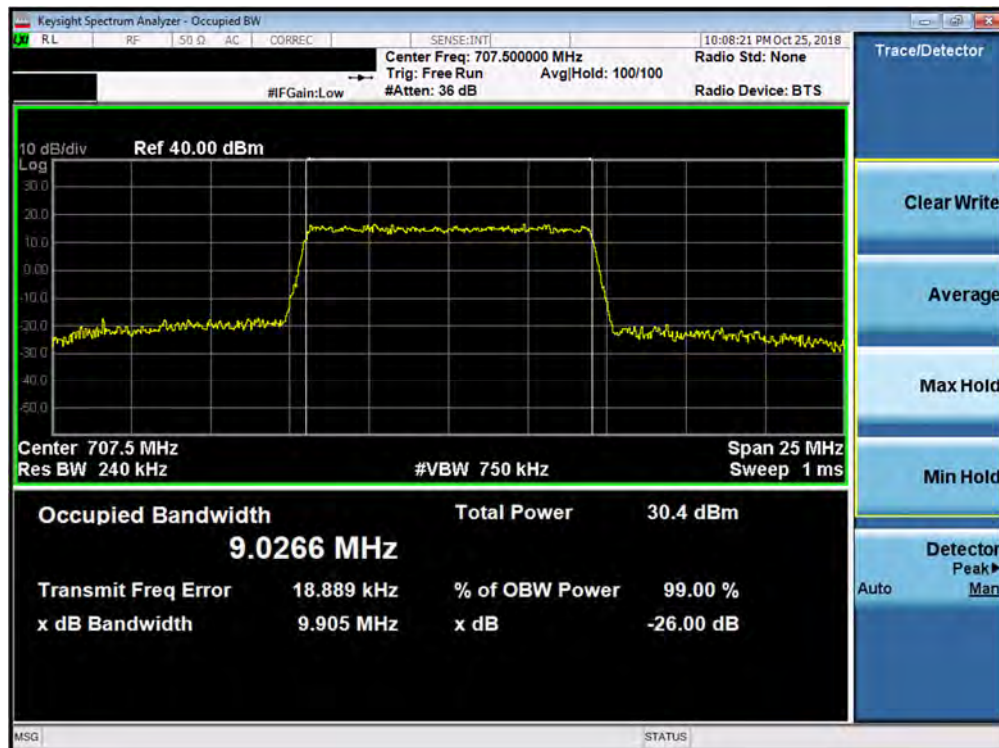


Plot 7-10. Occupied Bandwidth Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 19 of 116



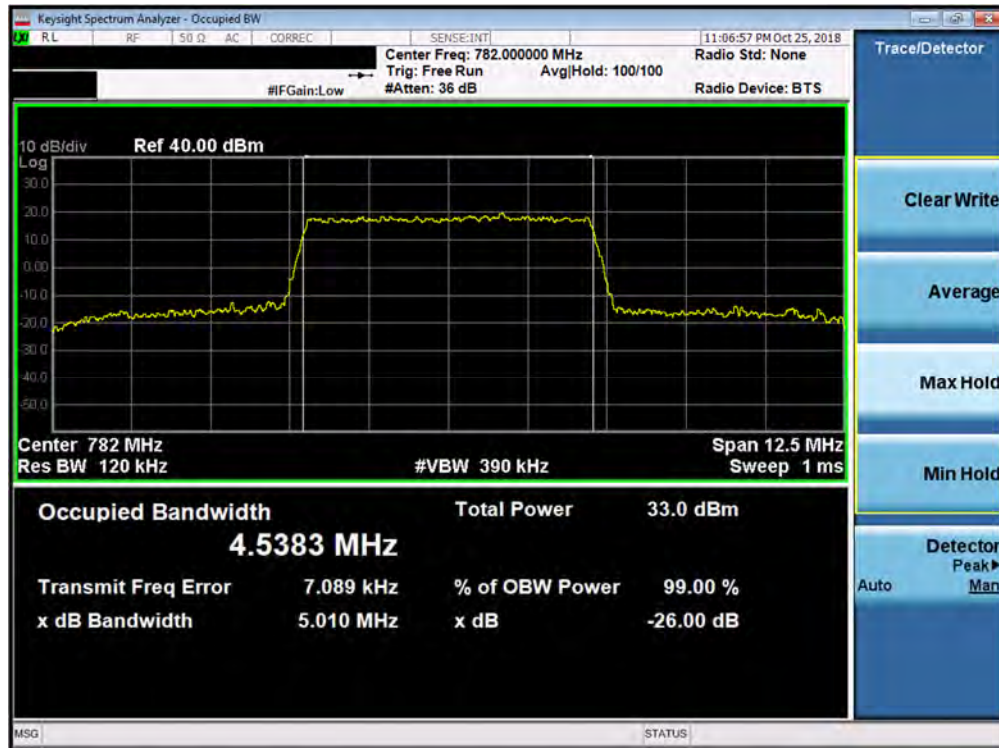
Plot 7-11. Occupied Bandwidth Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)



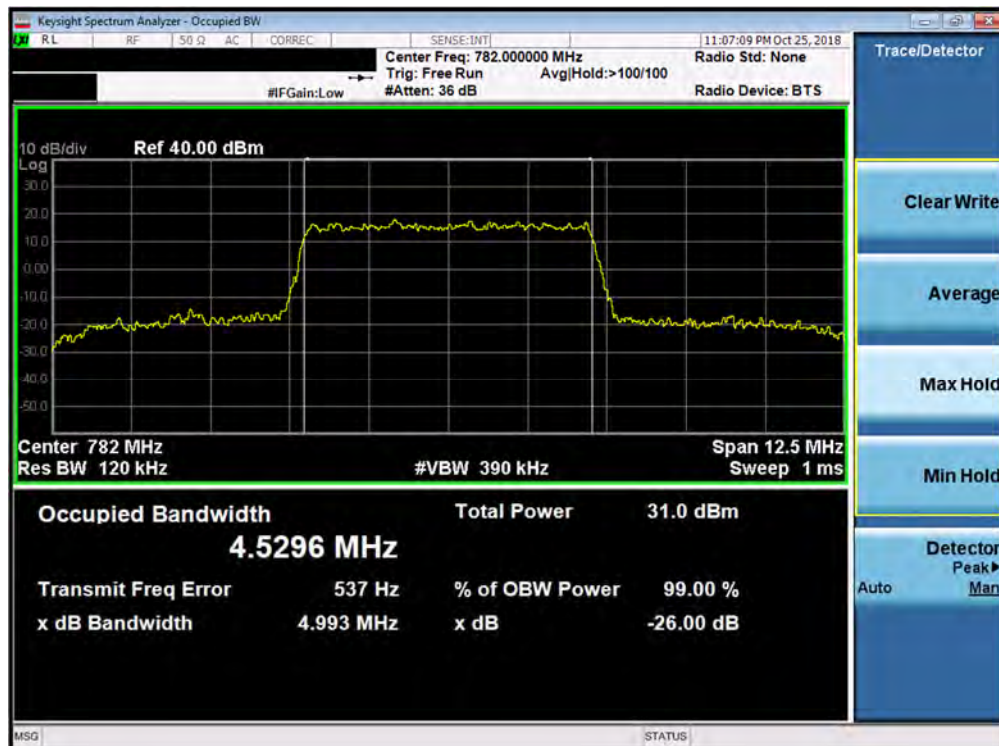
Plot 7-12. Occupied Bandwidth Plot (Band 12 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 20 of 116

Band 13

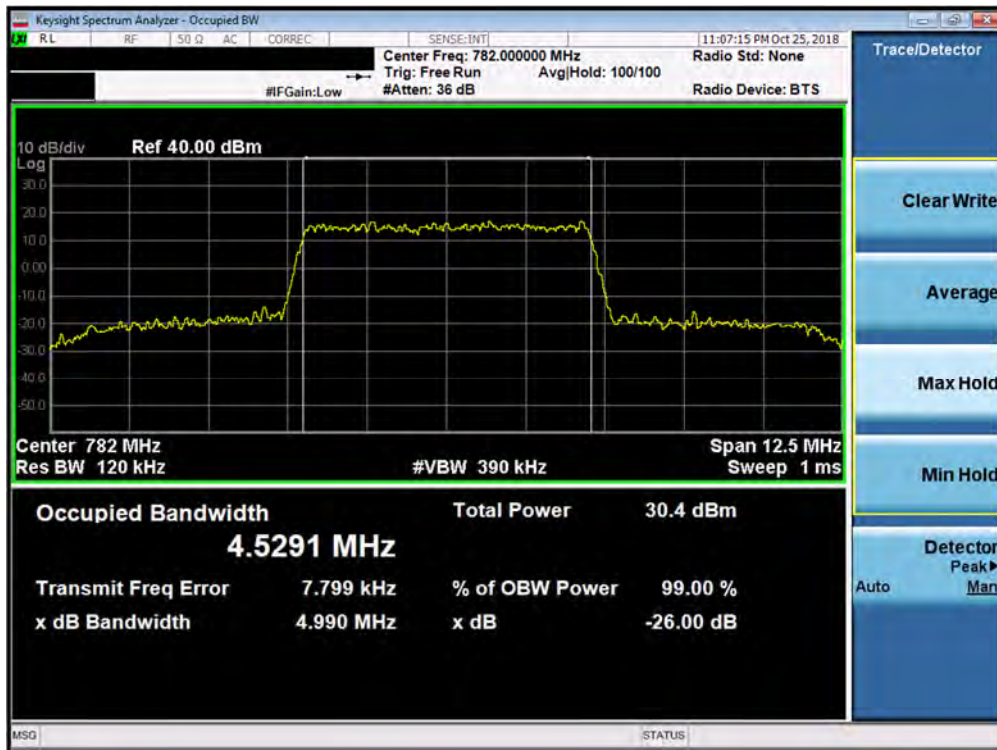


Plot 7-13. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

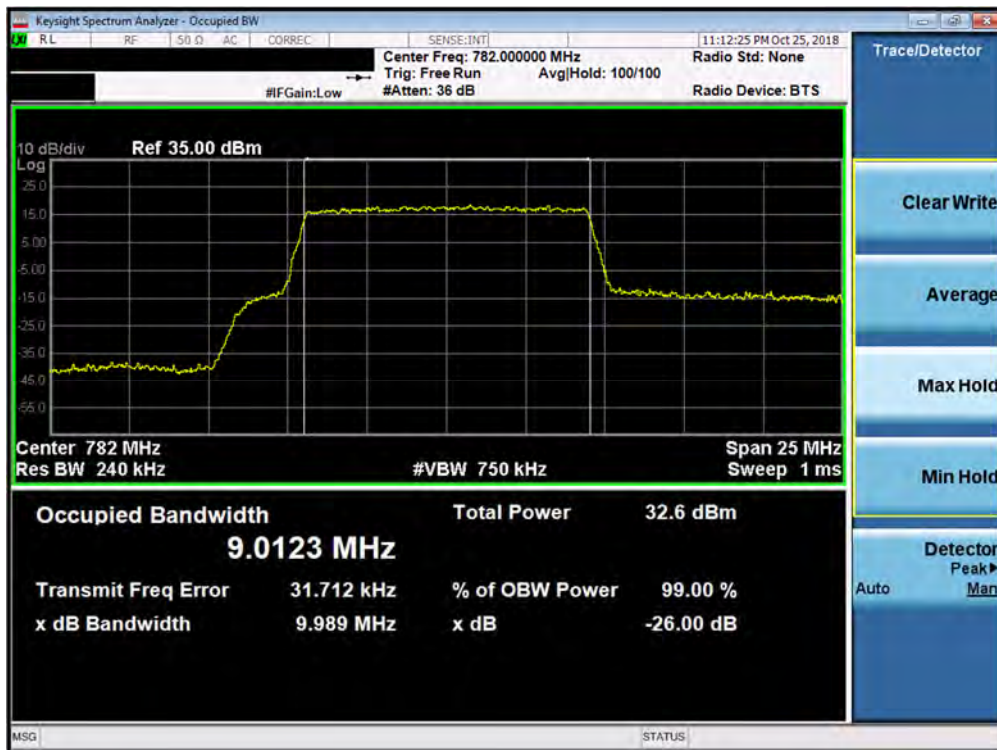


Plot 7-14. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSCV41			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 21 of 116		

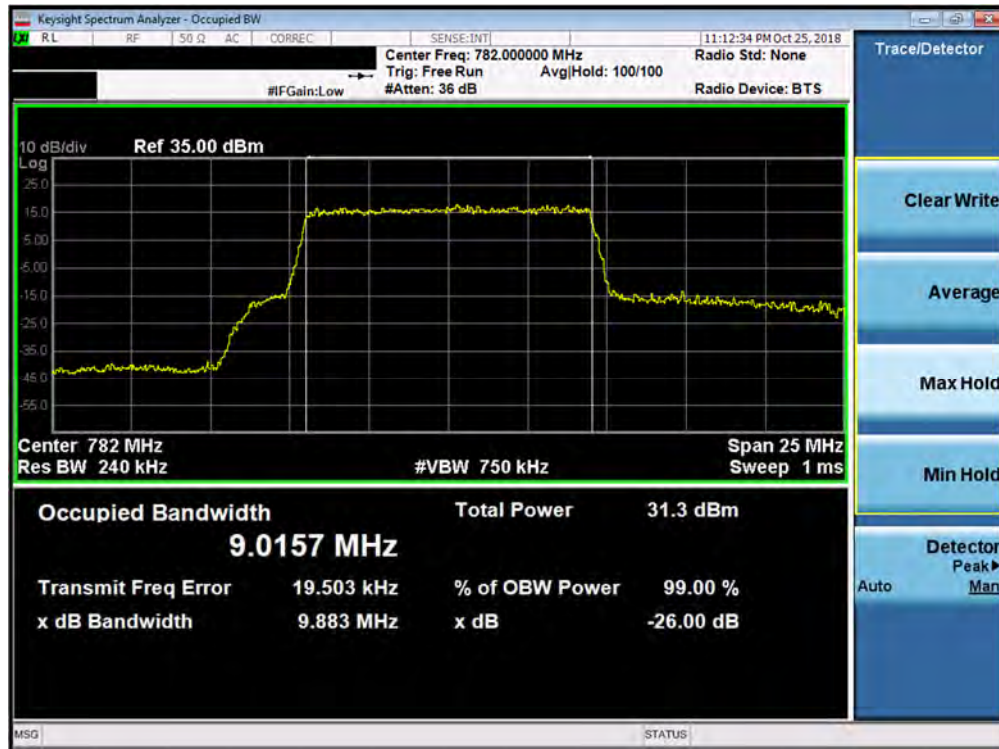


Plot 7-15. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

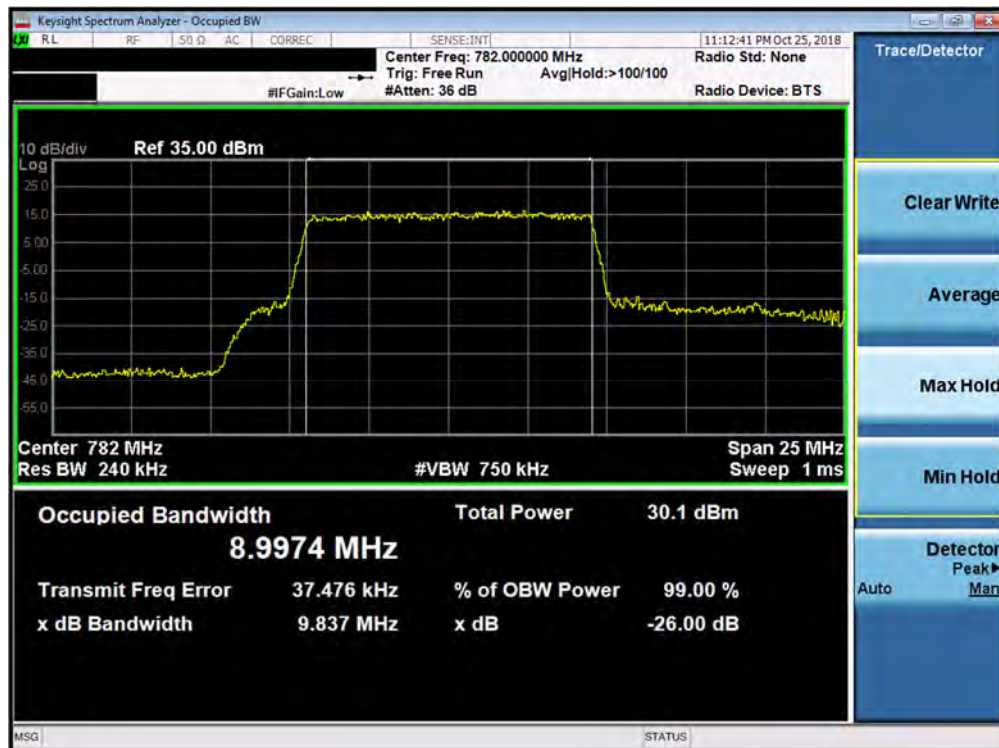


Plot 7-16. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 22 of 116



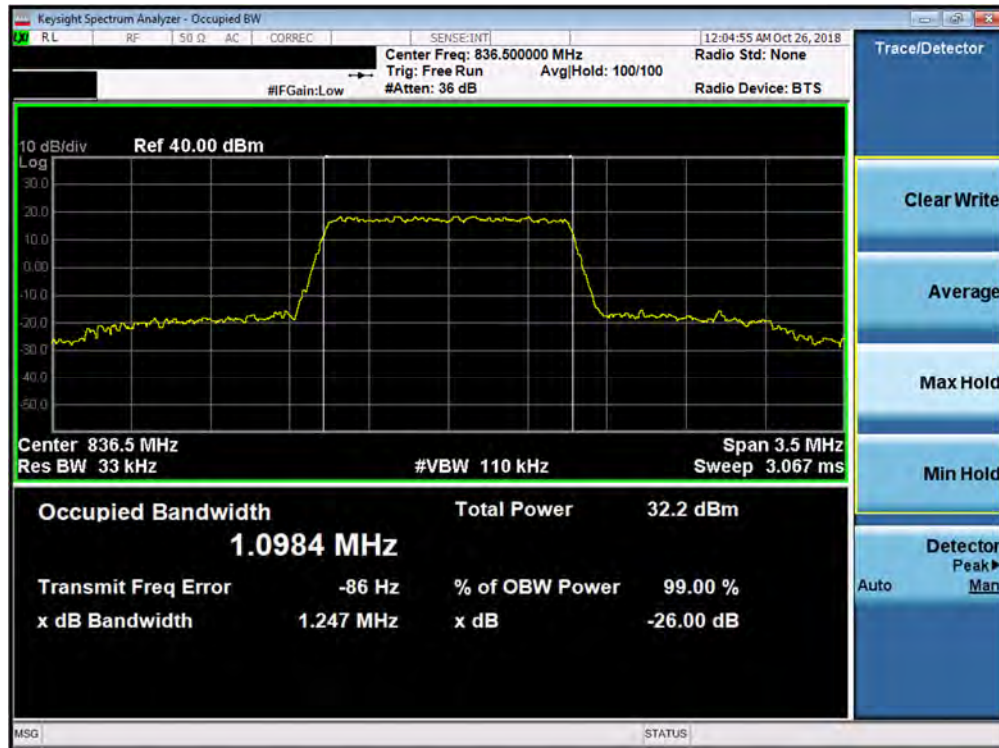
Plot 7-17. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



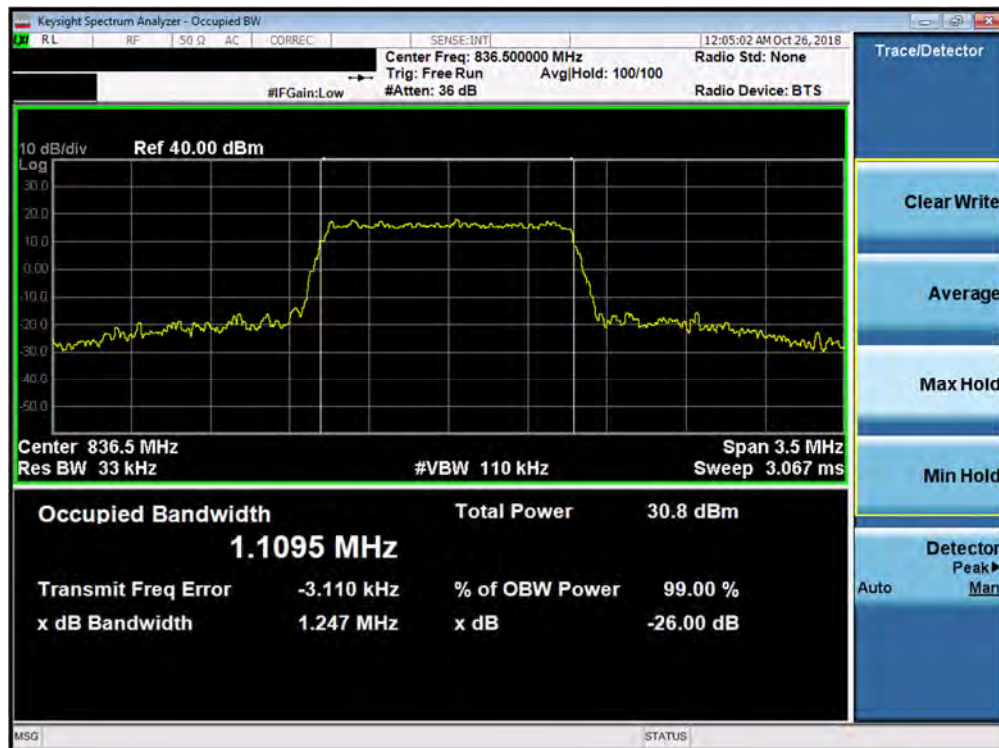
Plot 7-18. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 23 of 116

Band 5

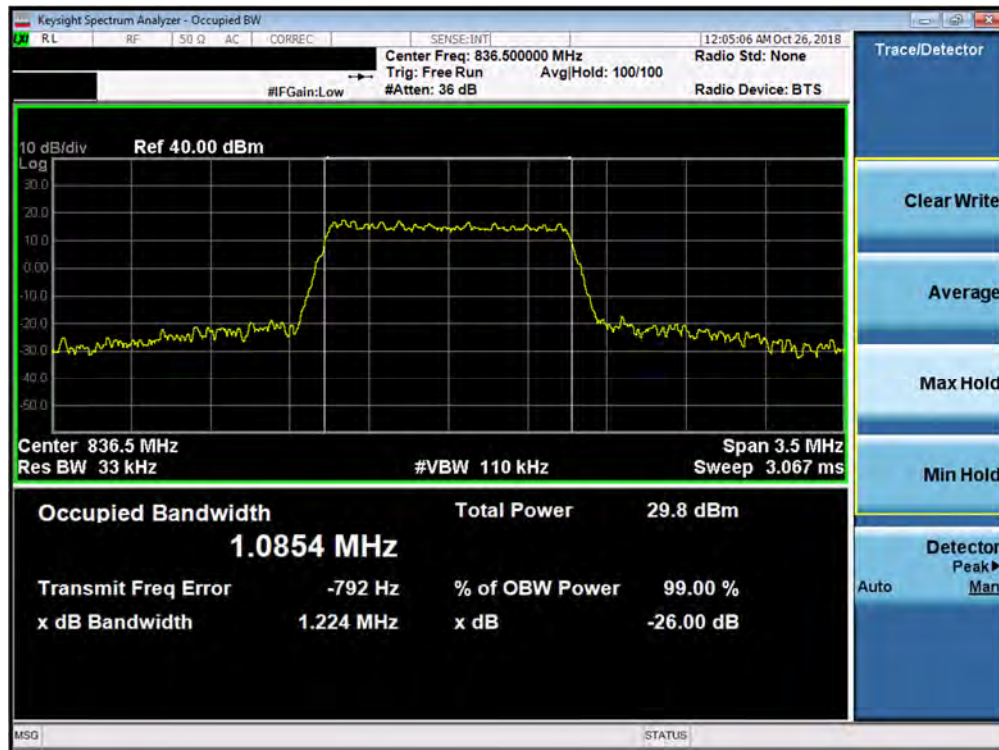


Plot 7-19. Occupied Bandwidth Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

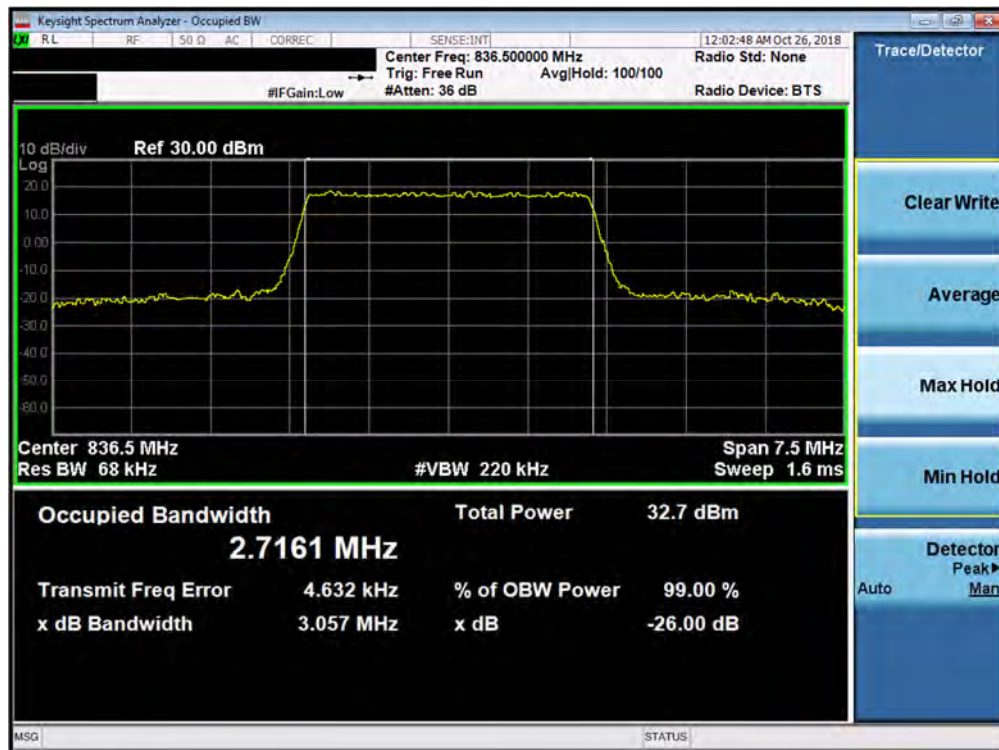


Plot 7-20. Occupied Bandwidth Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 24 of 116

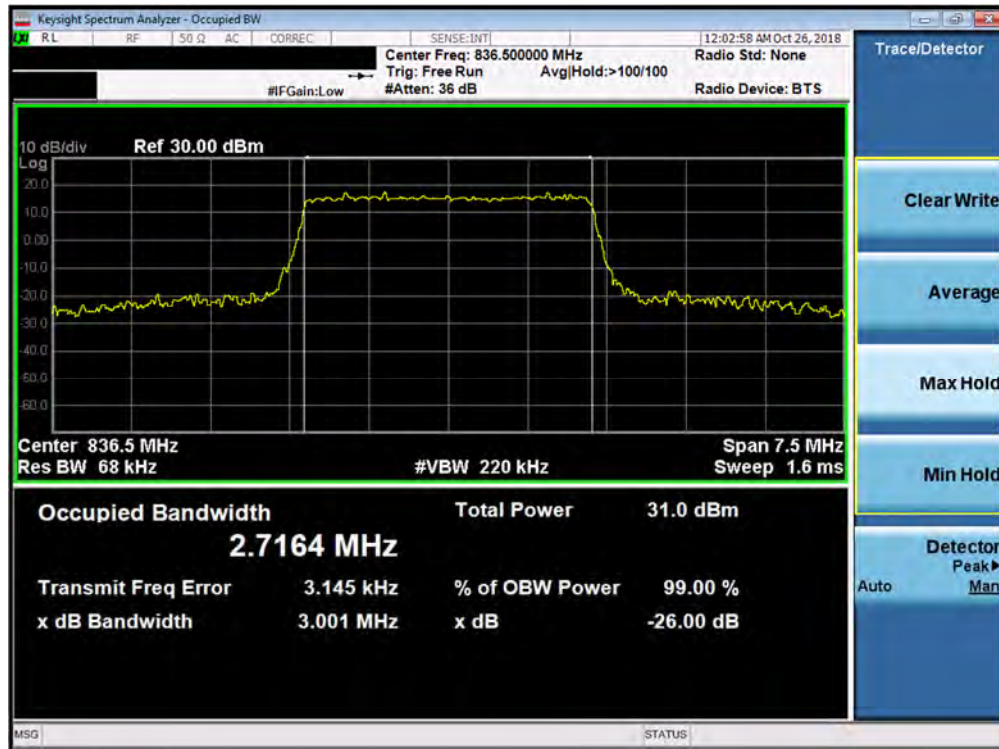


Plot 7-21. Occupied Bandwidth Plot (Band 5 - 1.4MHz 64-QAM - Full RB Configuration)

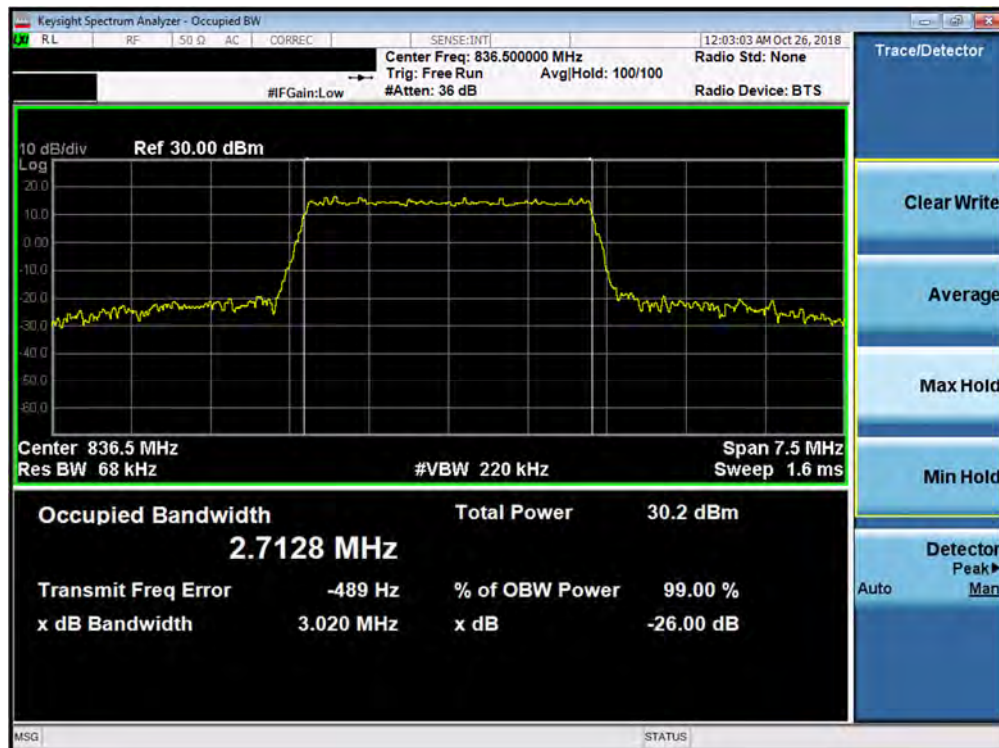


Plot 7-22. Occupied Bandwidth Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 25 of 116

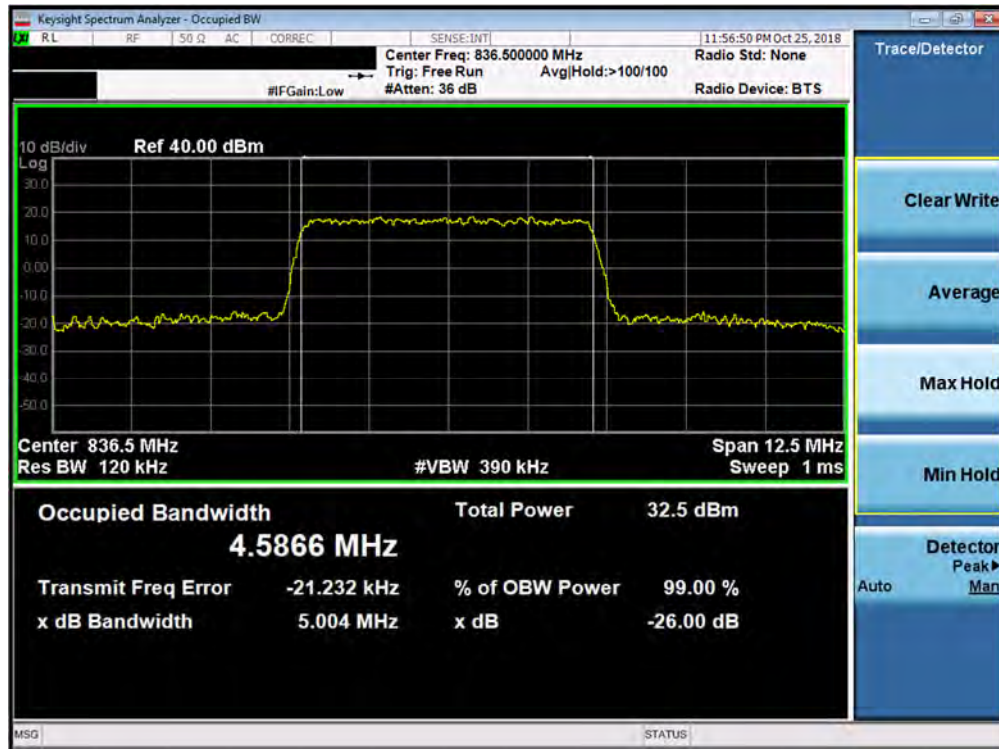


Plot 7-23. Occupied Bandwidth Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)

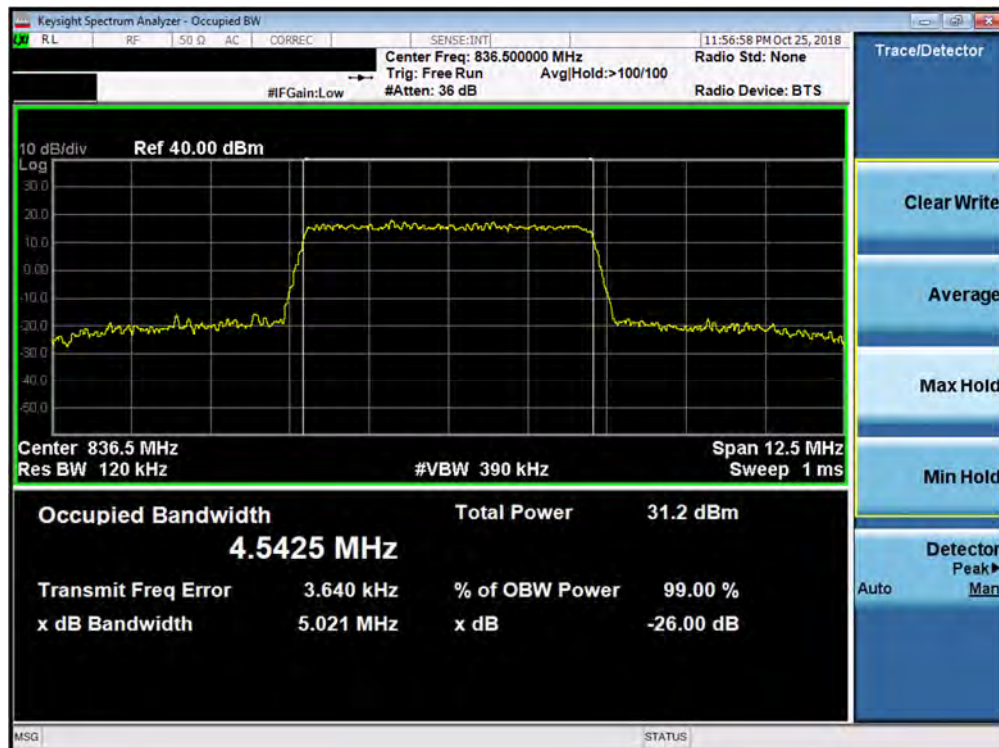


Plot 7-24. Occupied Bandwidth Plot (Band 5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 26 of 116

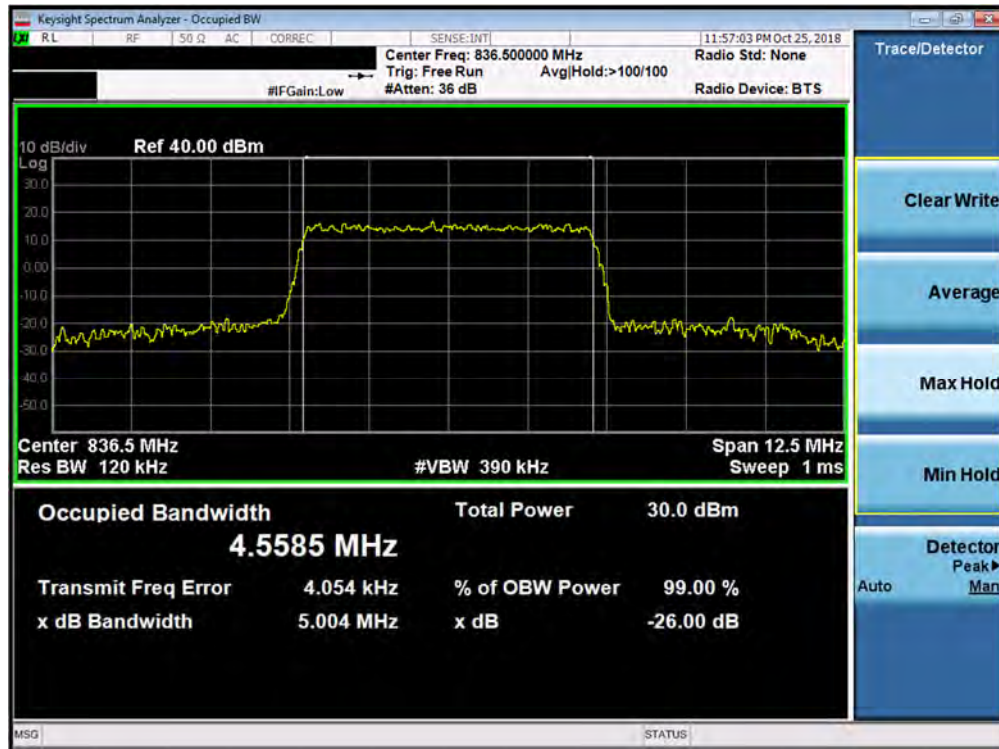


Plot 7-25. Occupied Bandwidth Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 27 of 116



Plot 7-27. Occupied Bandwidth Plot (Band 5 - 5.0MHz 64-QAM - Full RB Configuration)

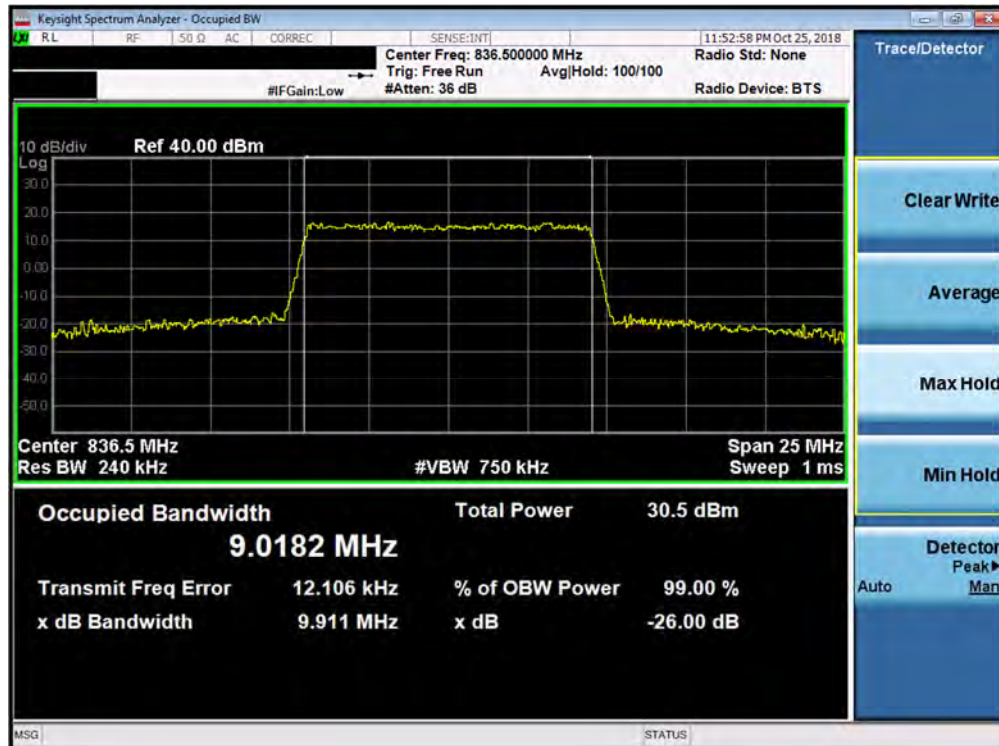


Plot 7-28. Occupied Bandwidth Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 28 of 116



Plot 7-29. Occupied Bandwidth Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)



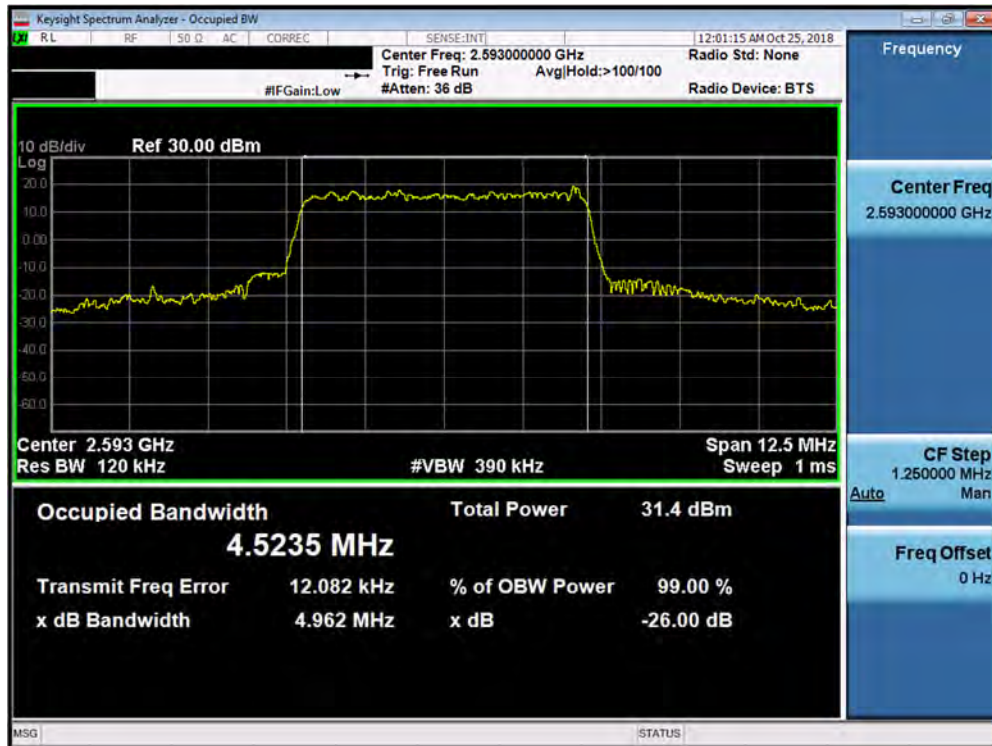
Plot 7-30. Occupied Bandwidth Plot (Band 5 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 29 of 116

Band 41 (PC3)

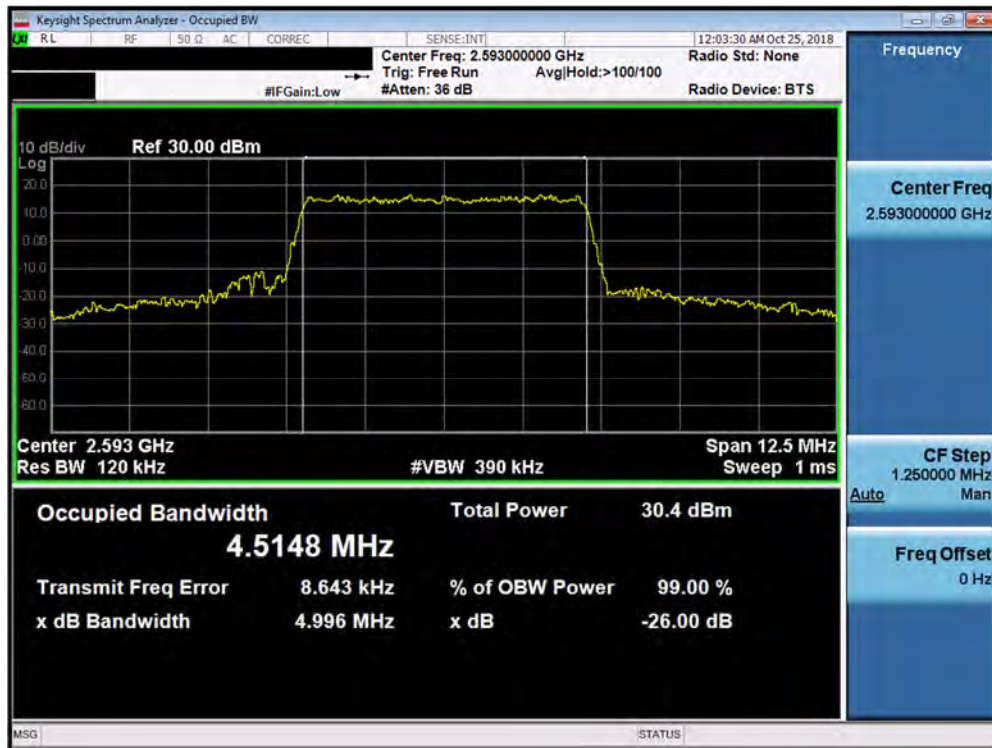


Plot 7-31. Occupied Bandwidth Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 30 of 116

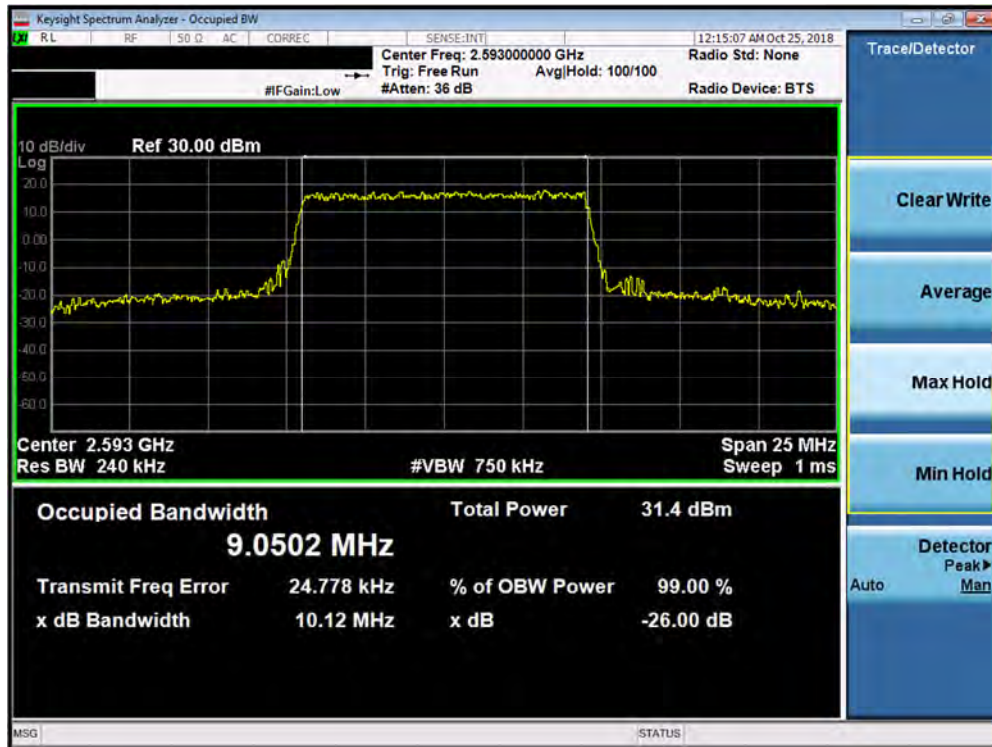


Plot 7-33. Occupied Bandwidth Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-34. Occupied Bandwidth Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 31 of 116

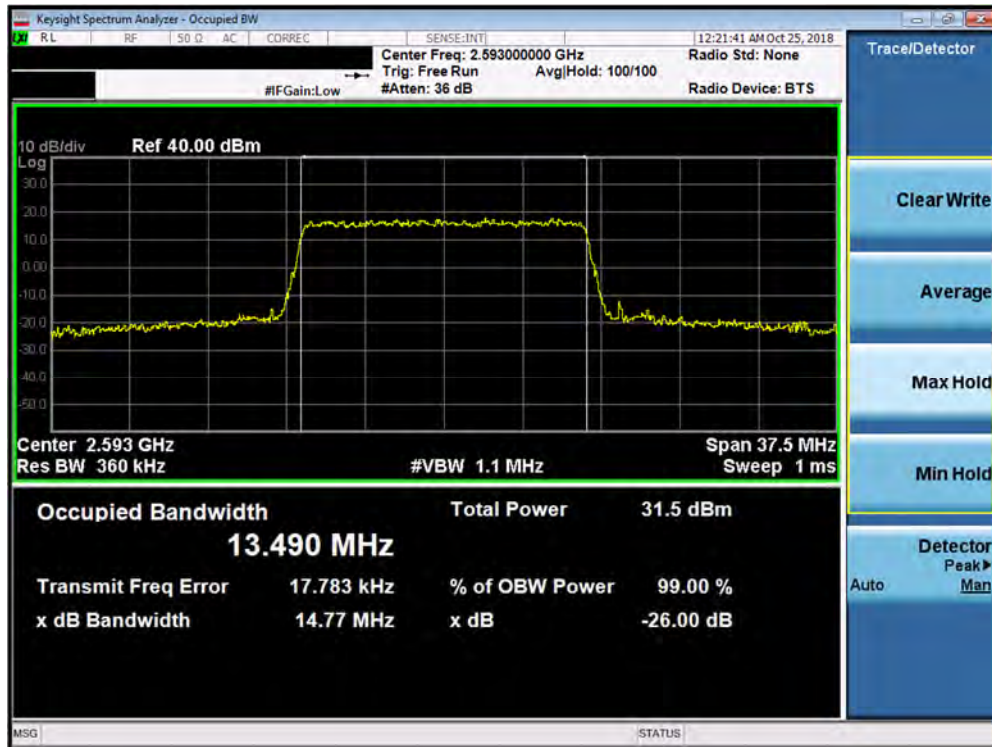


Plot 7-35. Occupied Bandwidth Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)

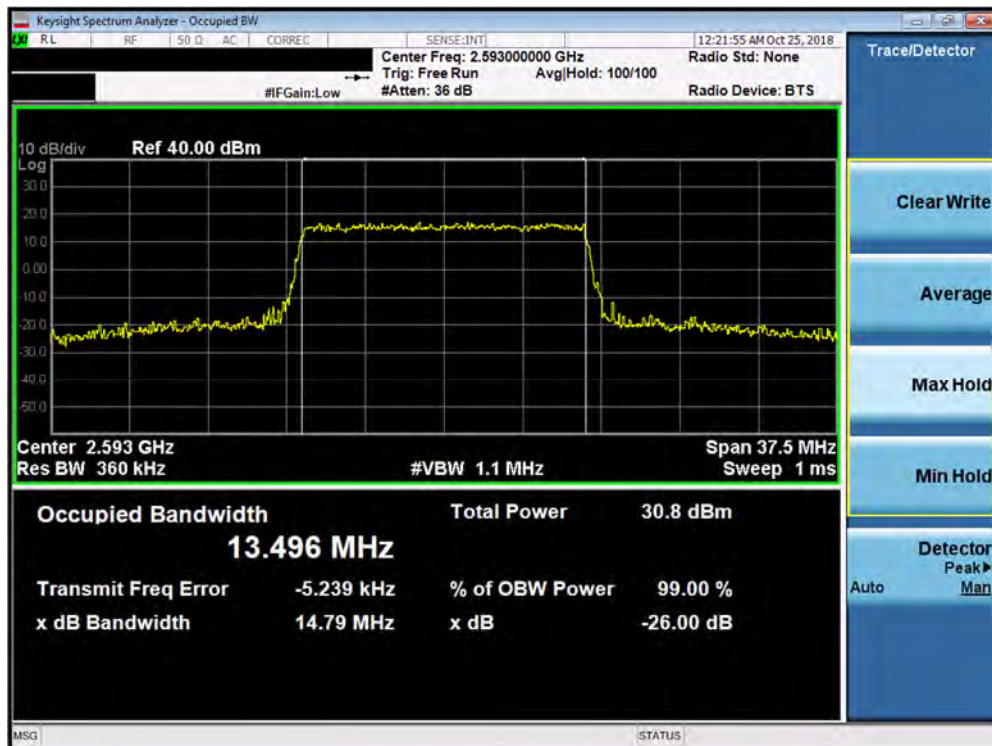


Plot 7-36. Occupied Bandwidth Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 32 of 116

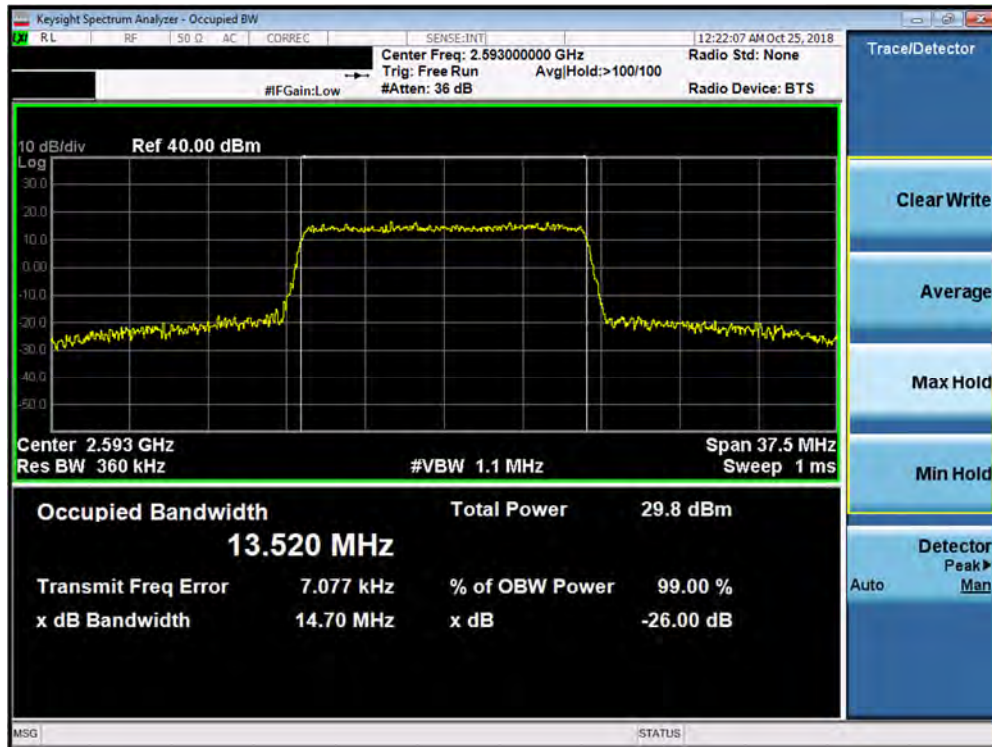


Plot 7-37. Occupied Bandwidth Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-38. Occupied Bandwidth Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 33 of 116

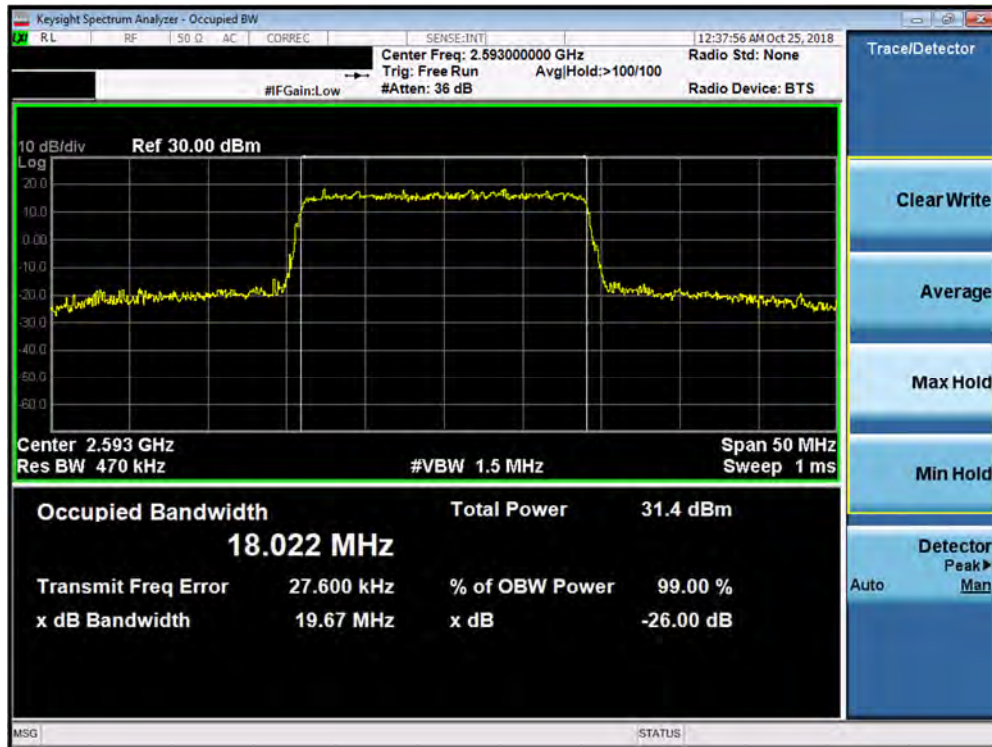


Plot 7-39. Occupied Bandwidth Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 34 of 116



Plot 7-41. Occupied Bandwidth Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-42. Occupied Bandwidth Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSCV41	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 35 of 116	

7.3 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is $43 + 10\log_{10}(P_{\text{Watts}})$, where P is the transmitter power in Watts.

For Band 41, the minimum permissible attenuation level of any spurious emission is $55 + 10\log_{10}(P_{\text{Watts}})$.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



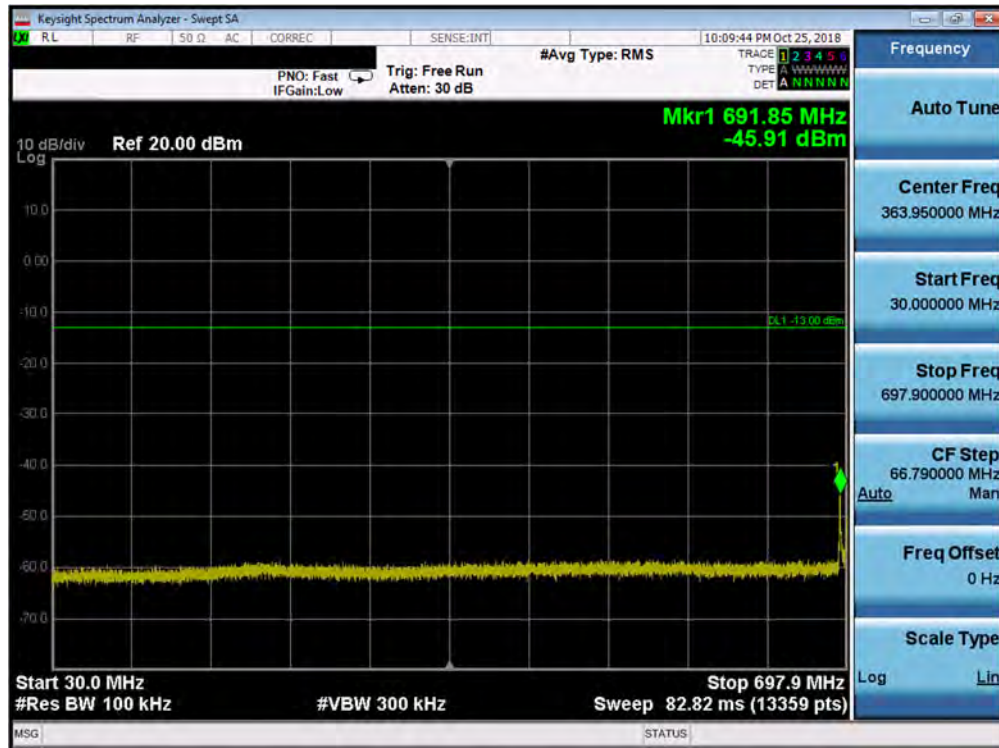
Figure 7-2. Test Instrument & Measurement Setup

Test Notes

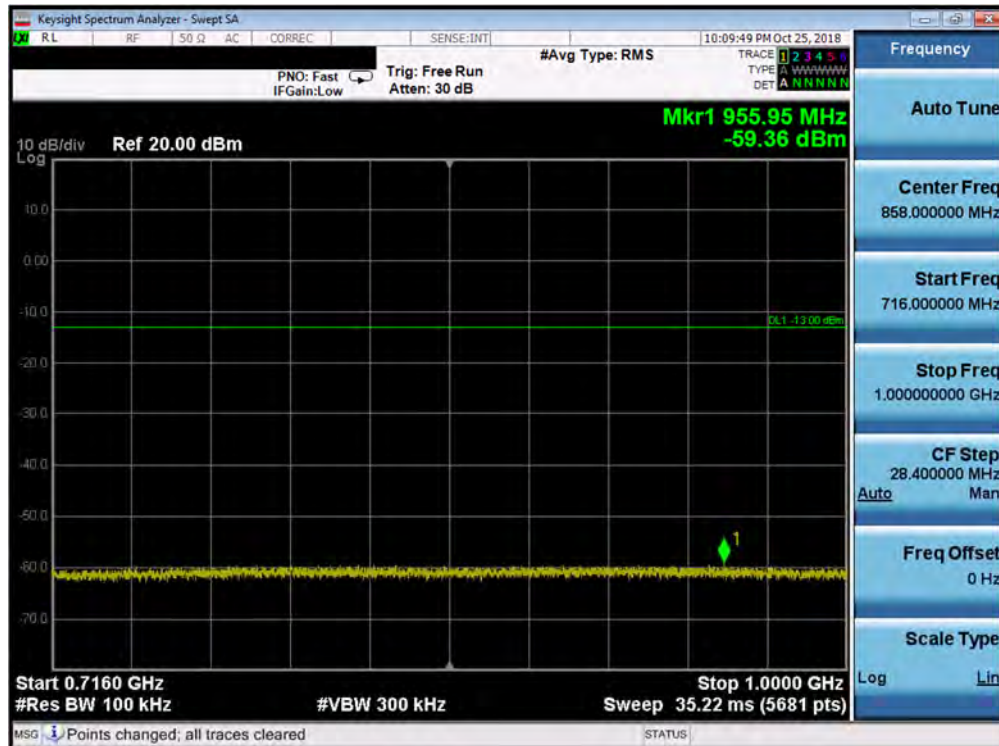
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

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Band 12

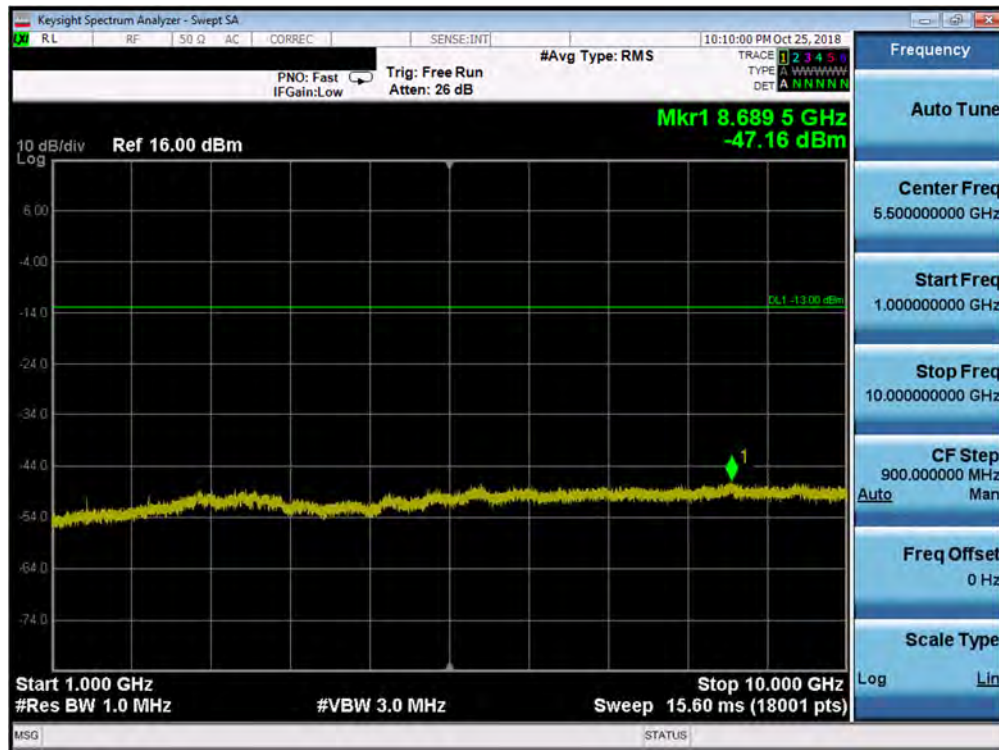


Plot 7-43. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

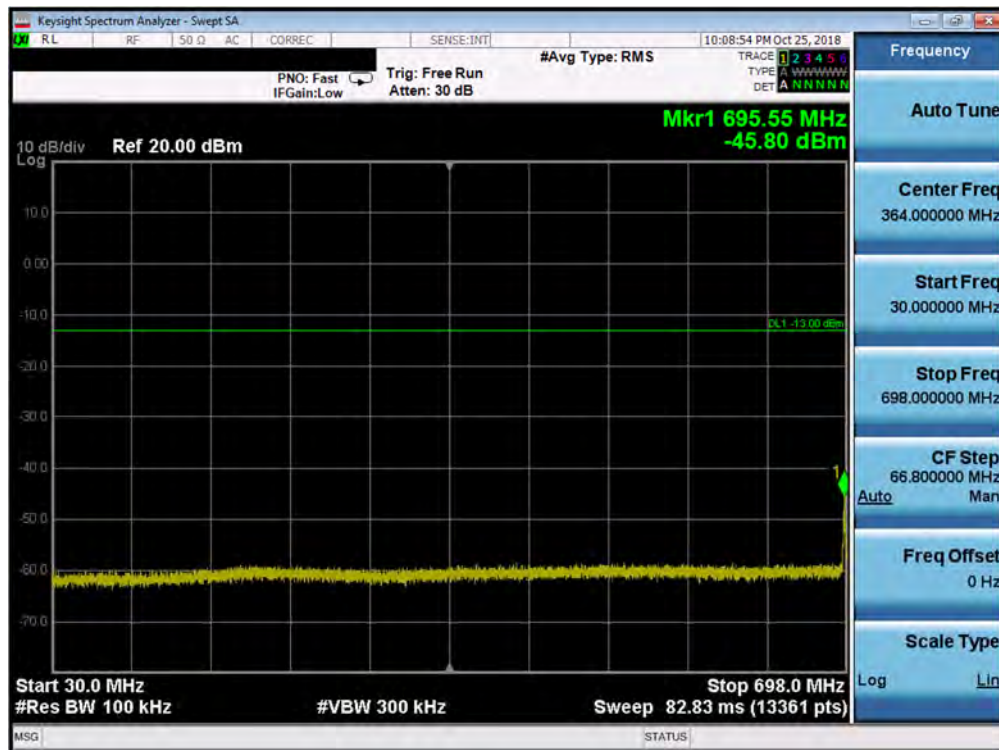


Plot 7-44. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSCV41	MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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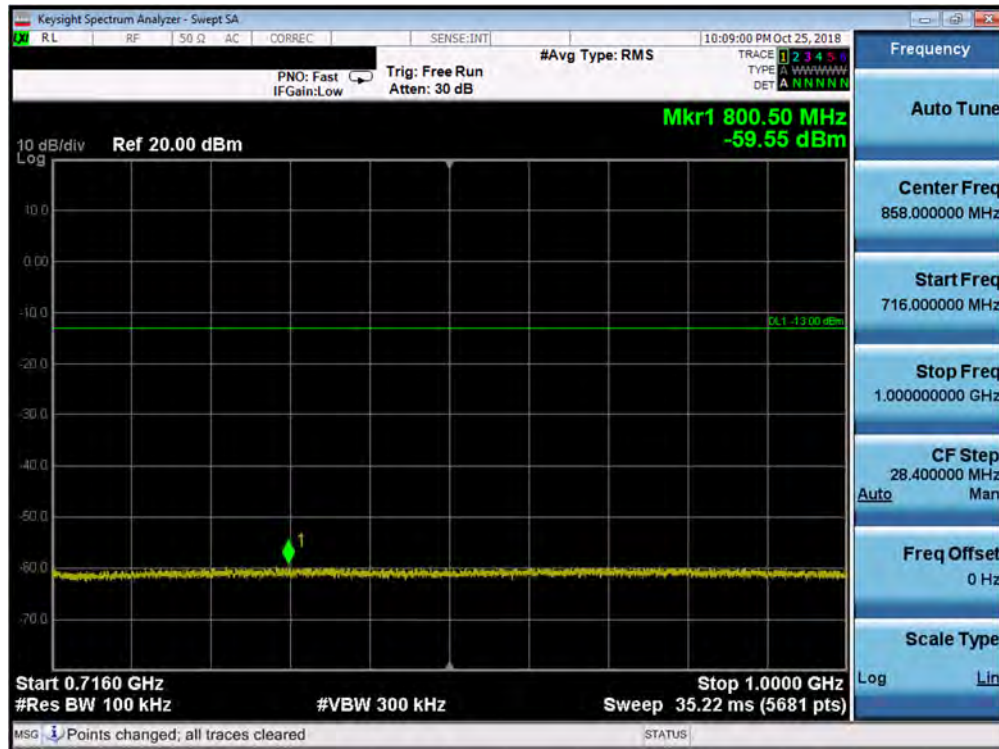


Plot 7-45. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

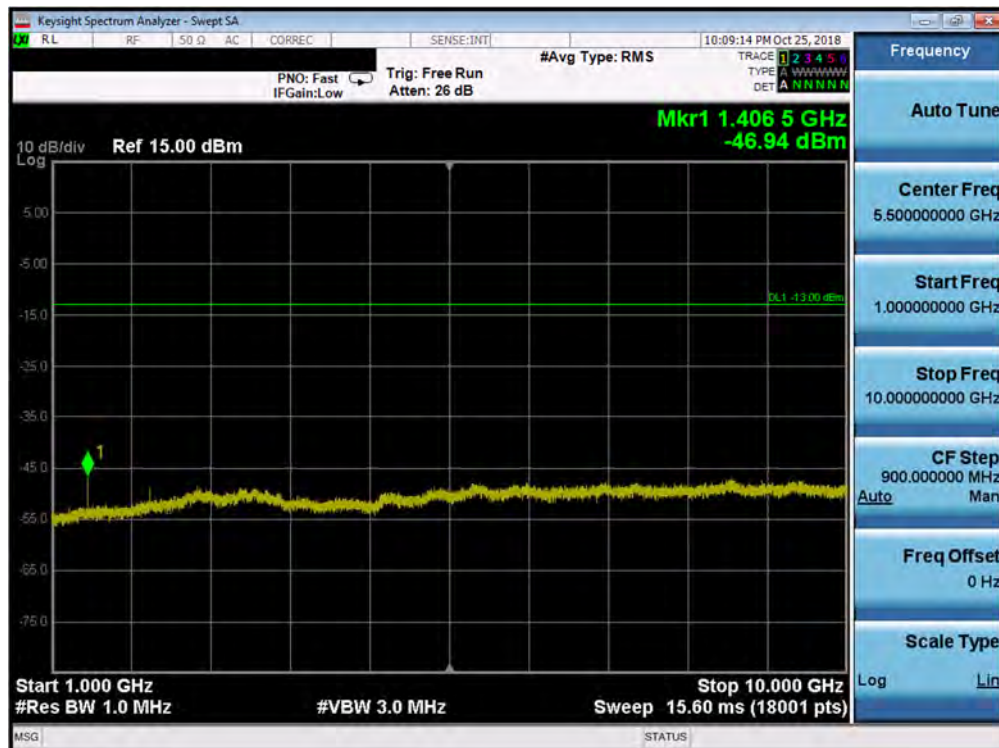


Plot 7-46. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 38 of 116

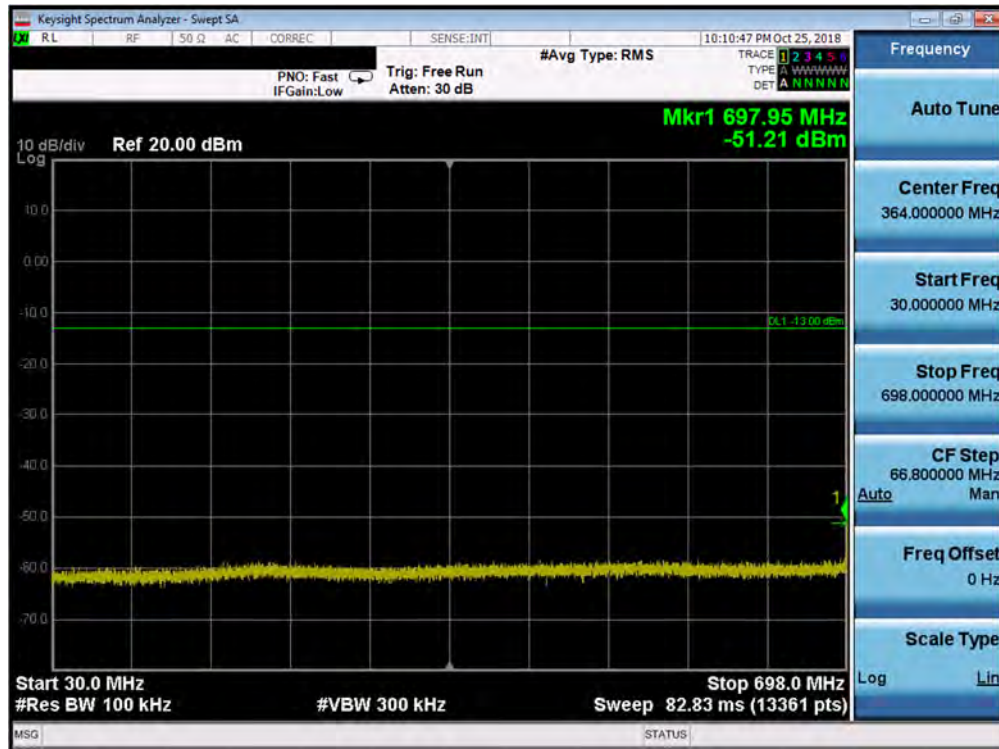


Plot 7-47. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

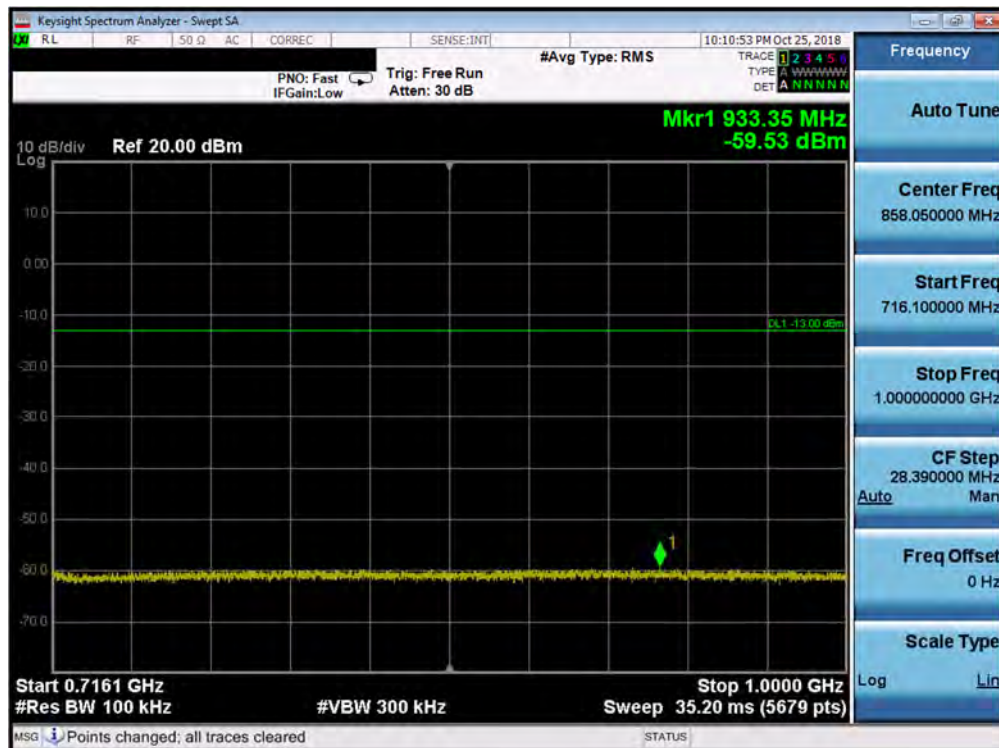


Plot 7-48. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 39 of 116

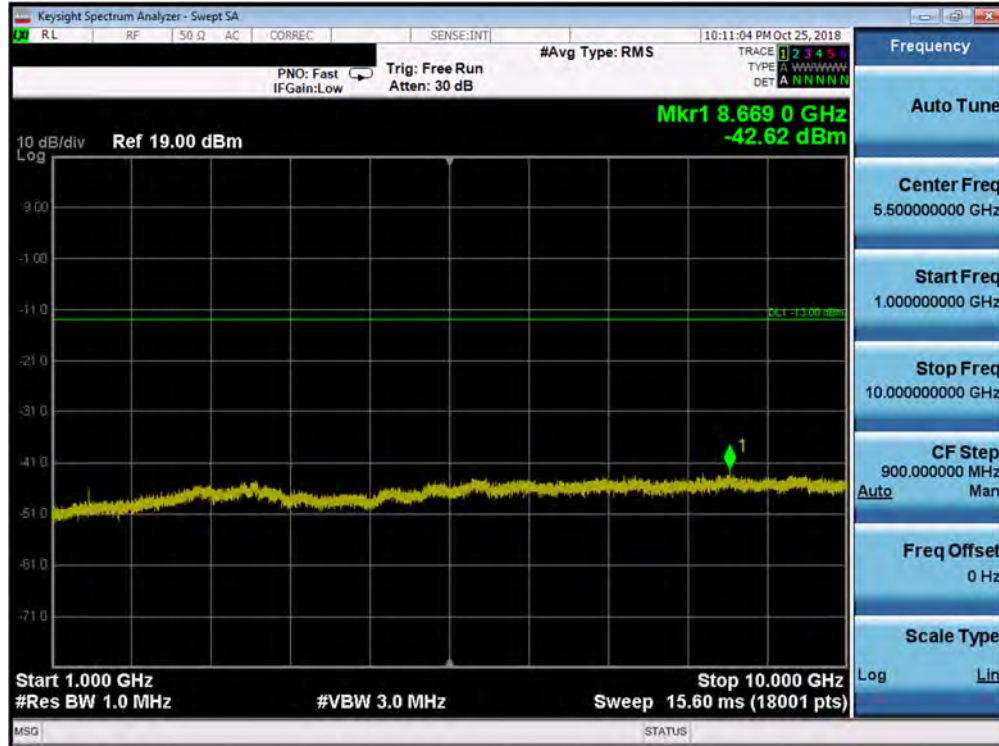


Plot 7-49. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-50. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

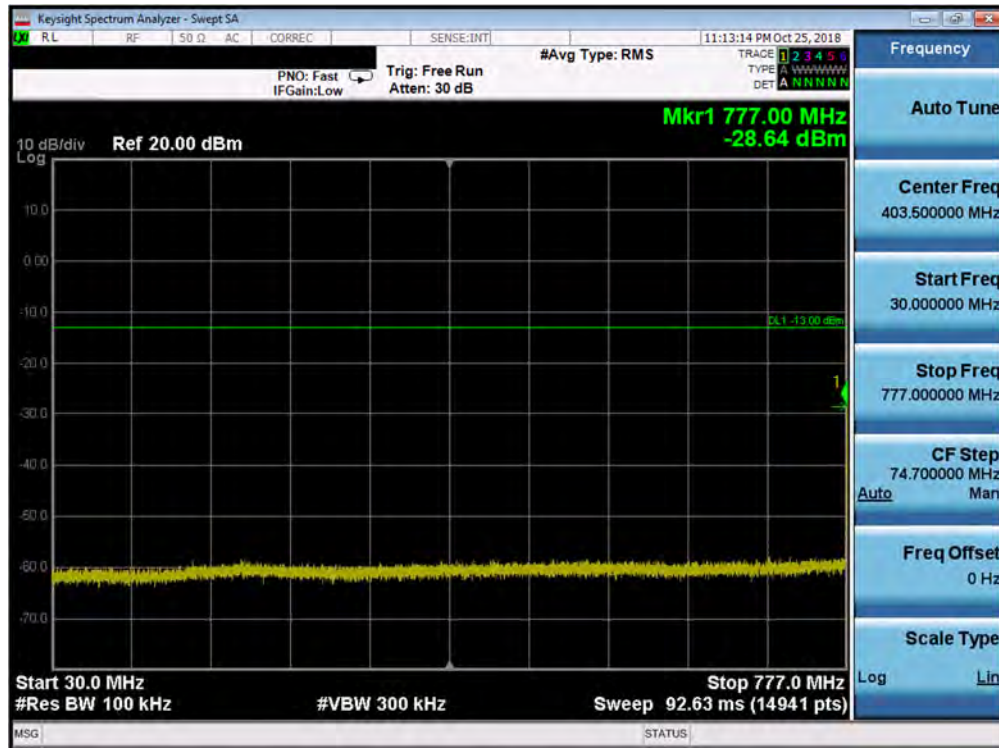
FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 40 of 116



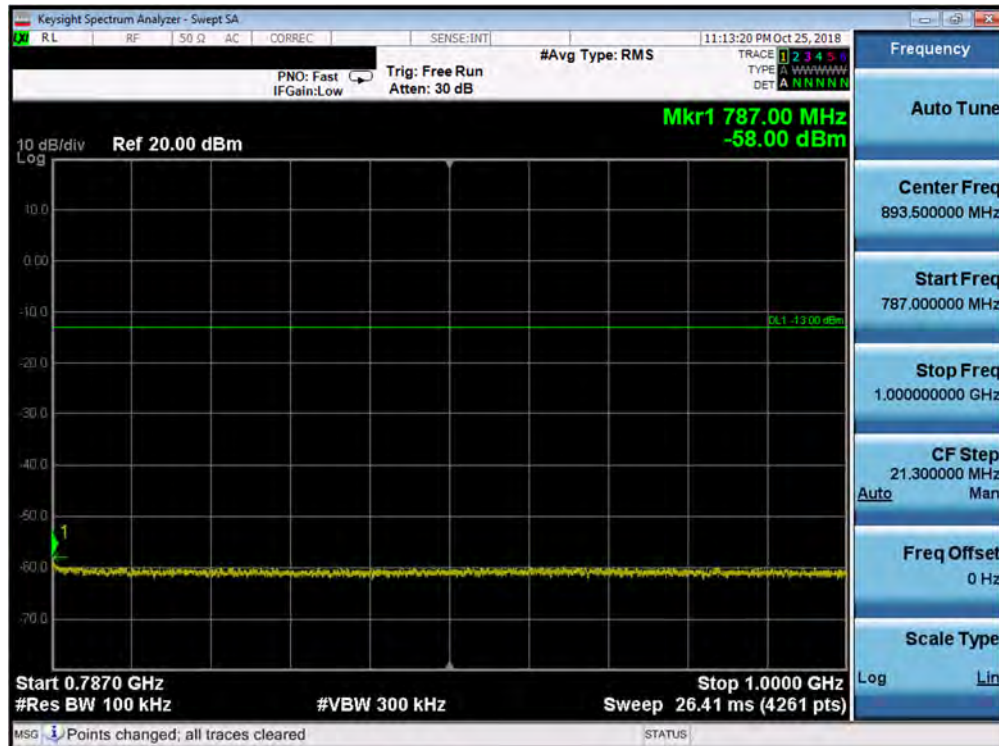
Plot 7-51. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 41 of 116

Band 13

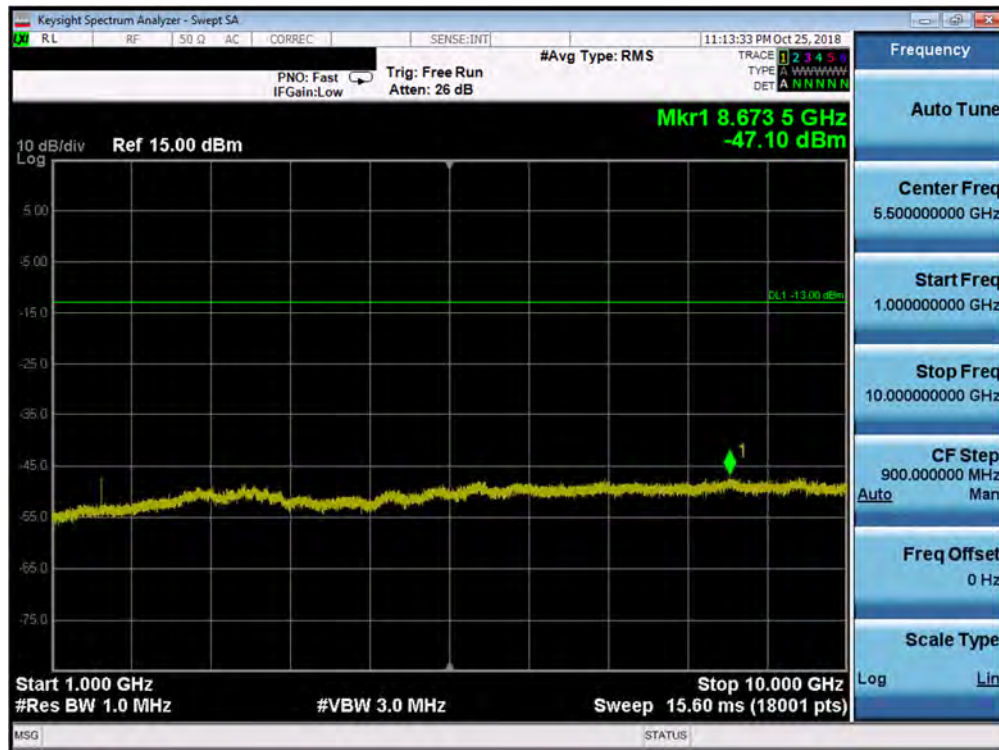


Plot 7-52. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)



Plot 7-53. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

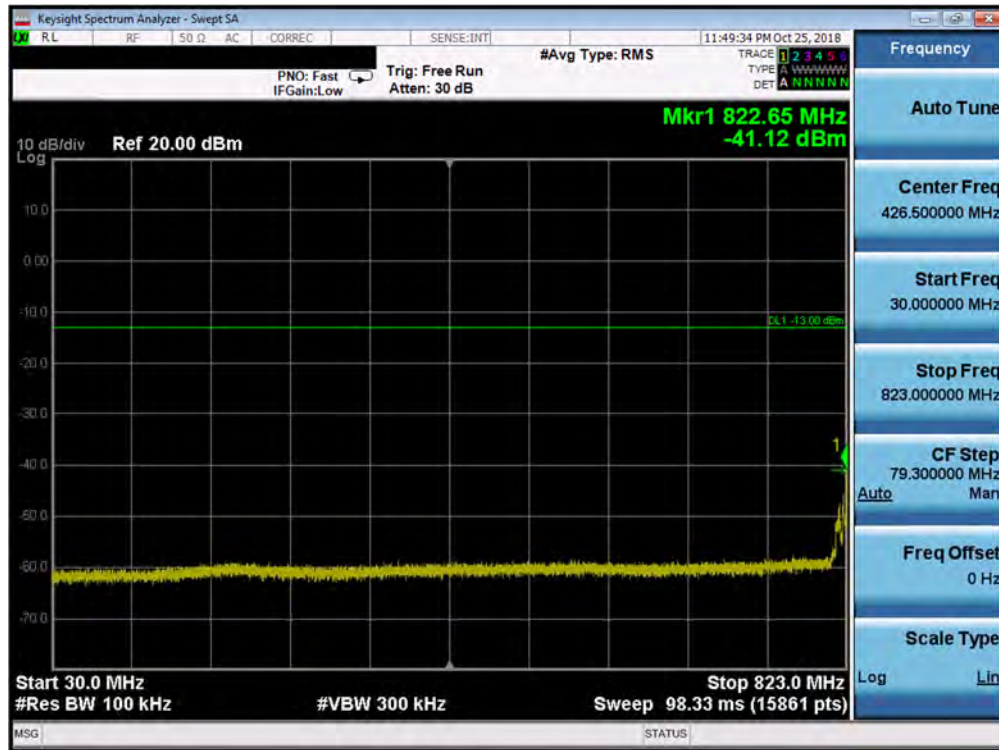
FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 42 of 116



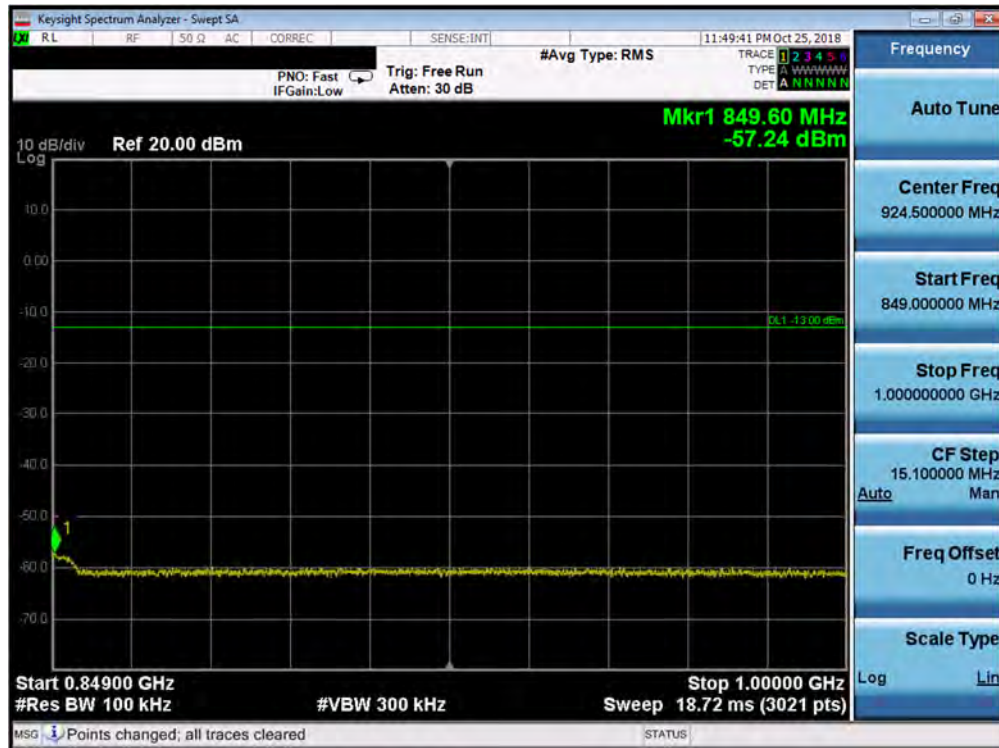
Plot 7-54. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 43 of 116

Band 5

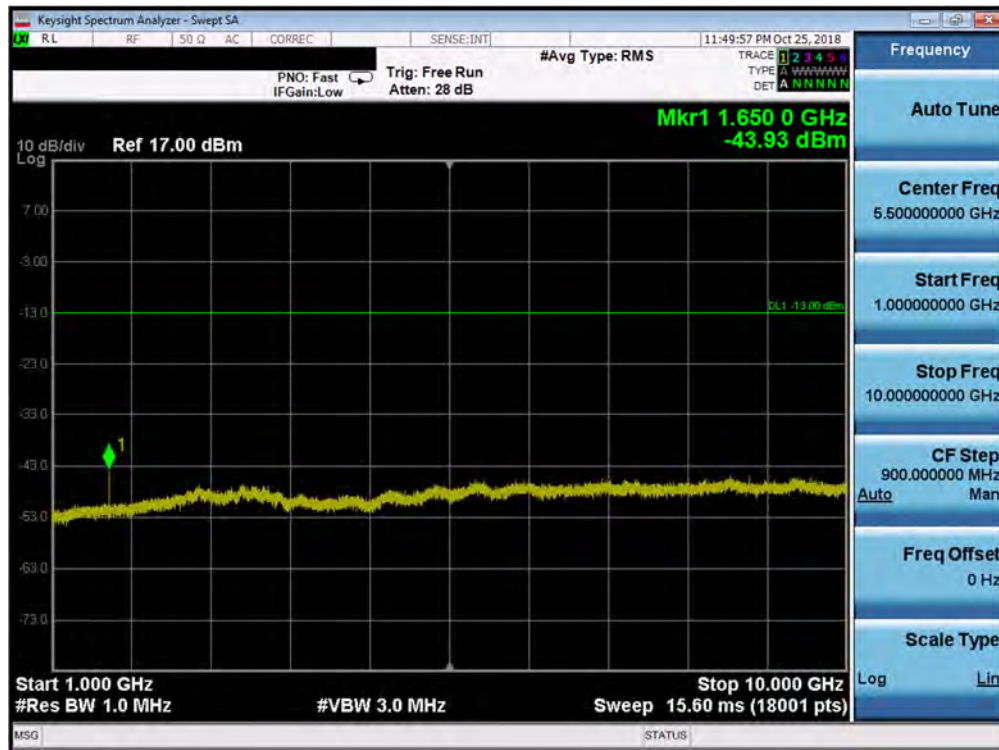


Plot 7-55. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

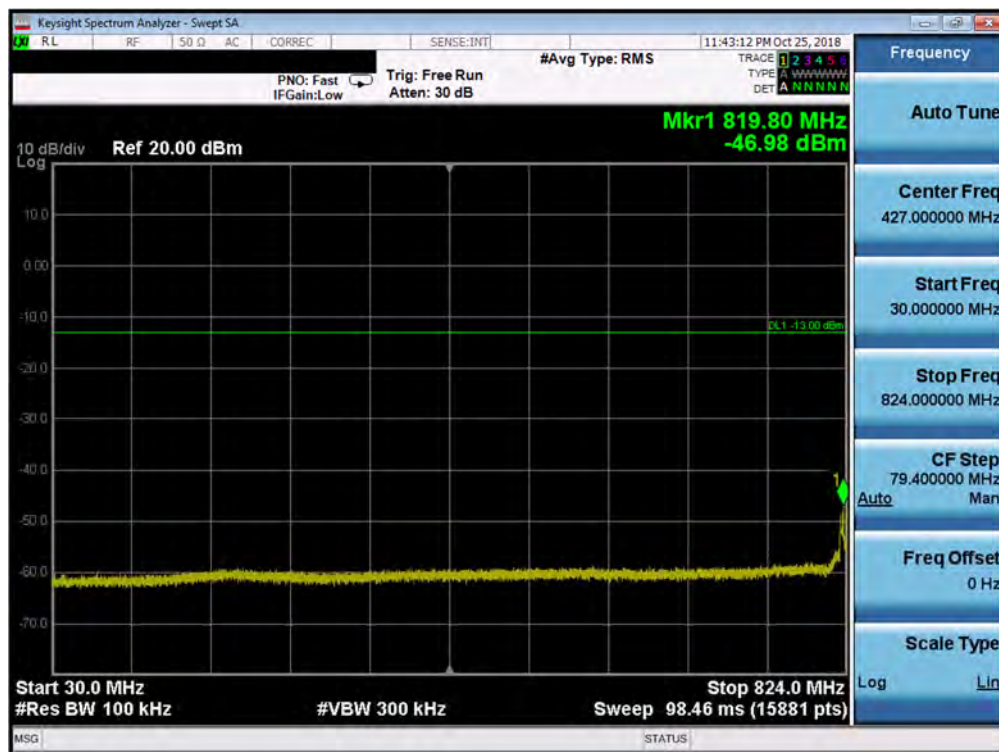


Plot 7-56. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 44 of 116

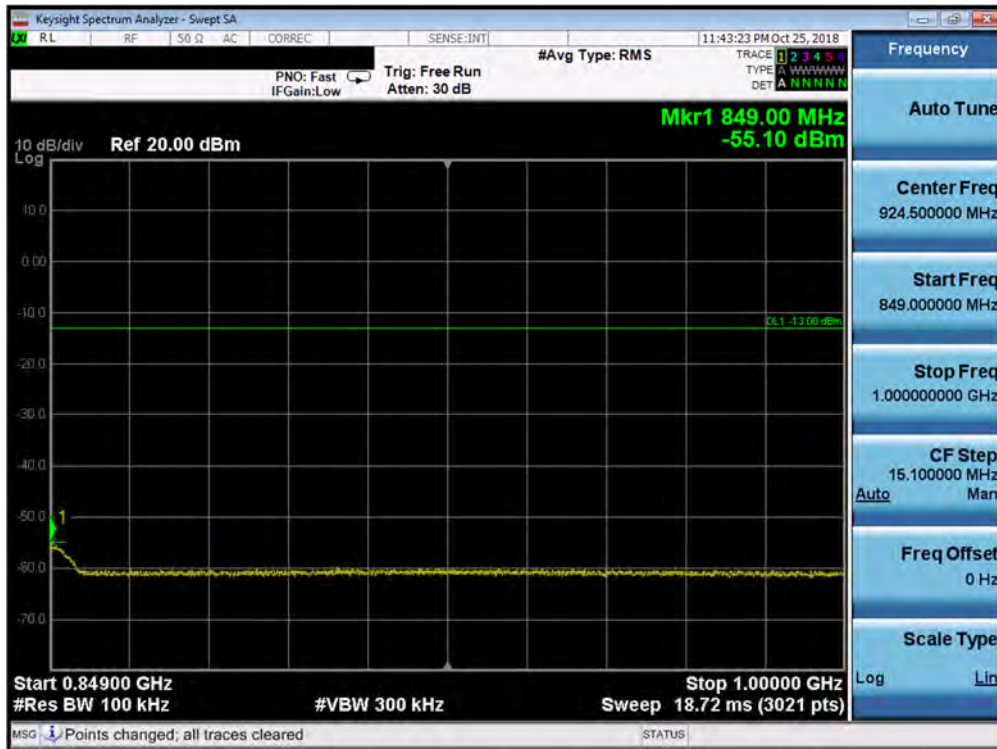


Plot 7-57. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

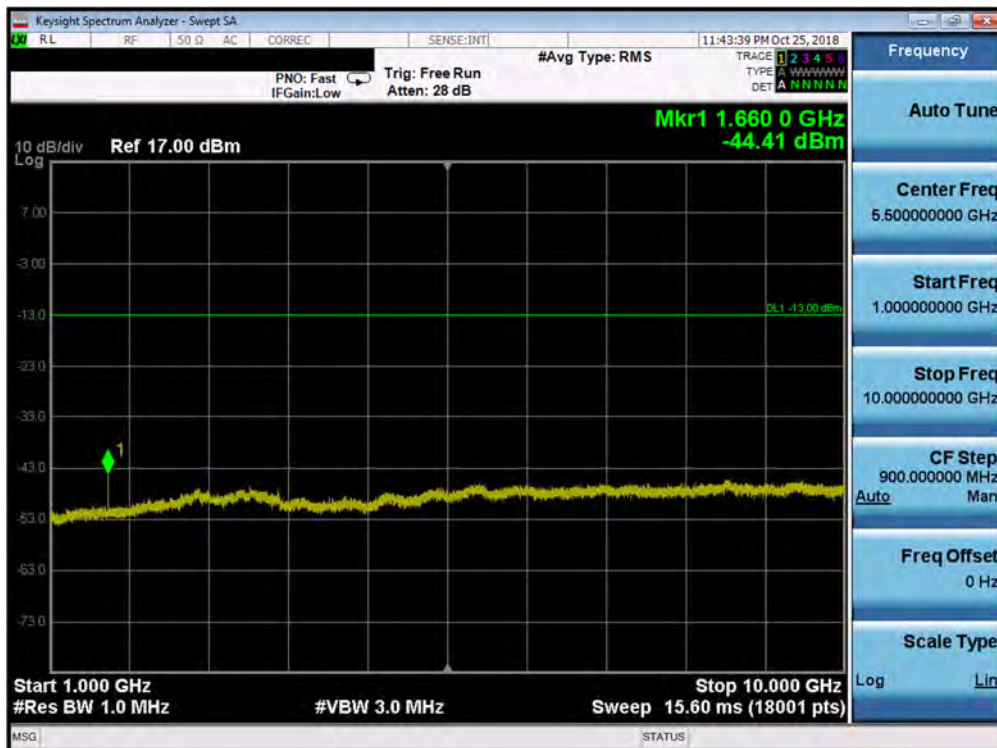


Plot 7-58. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 45 of 116

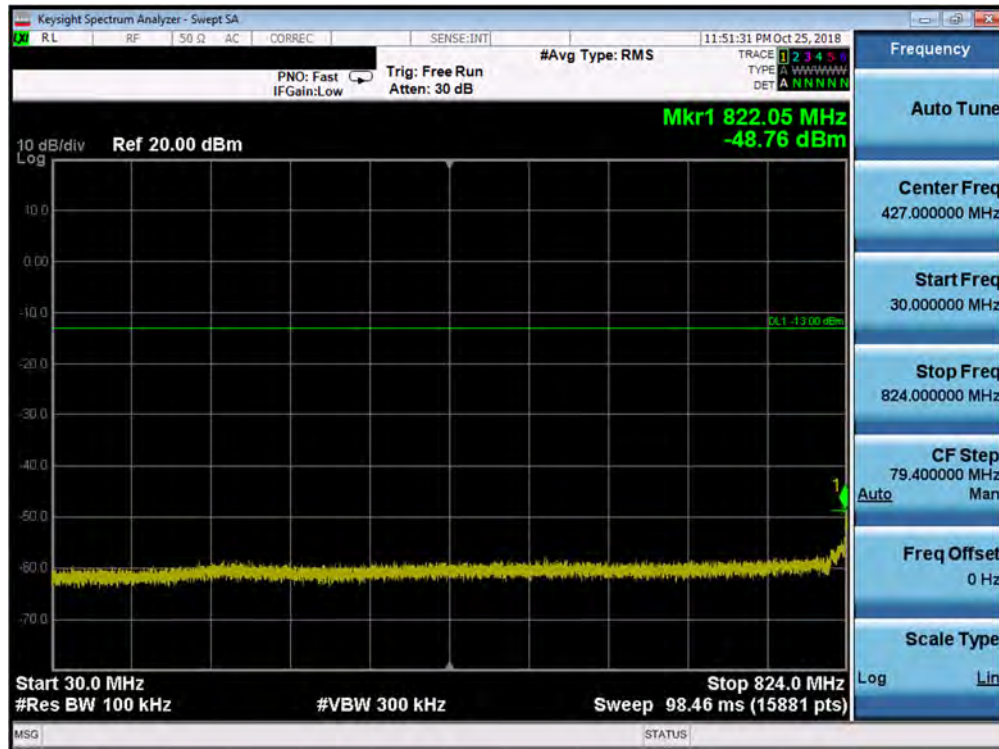


Plot 7-59. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

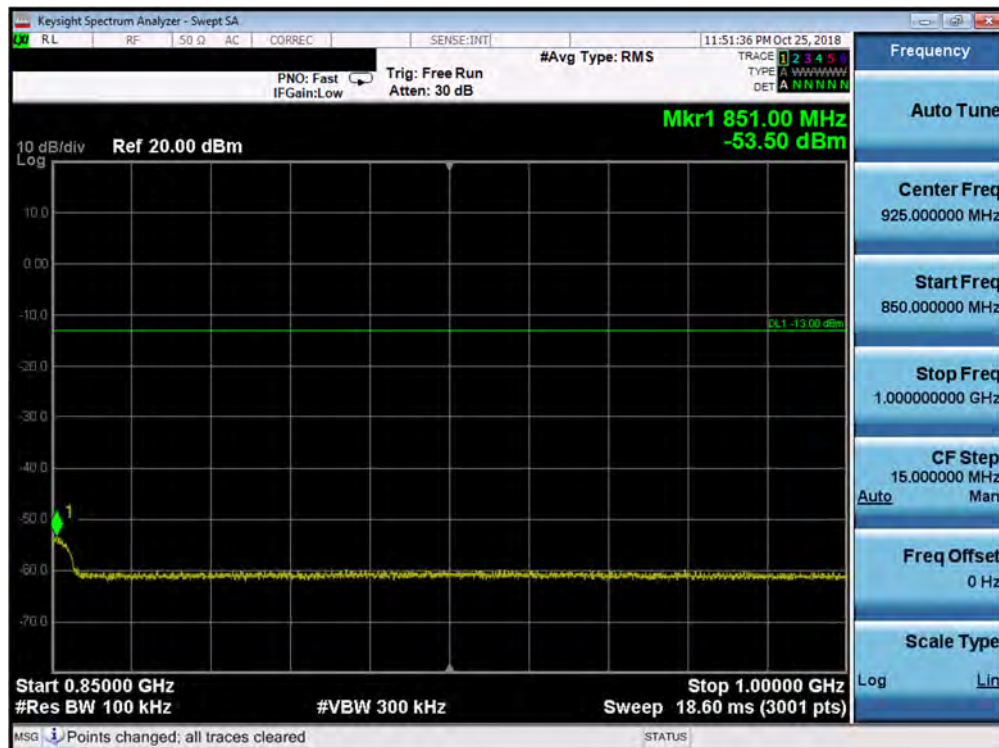


Plot 7-60. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSCV41	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 46 of 116

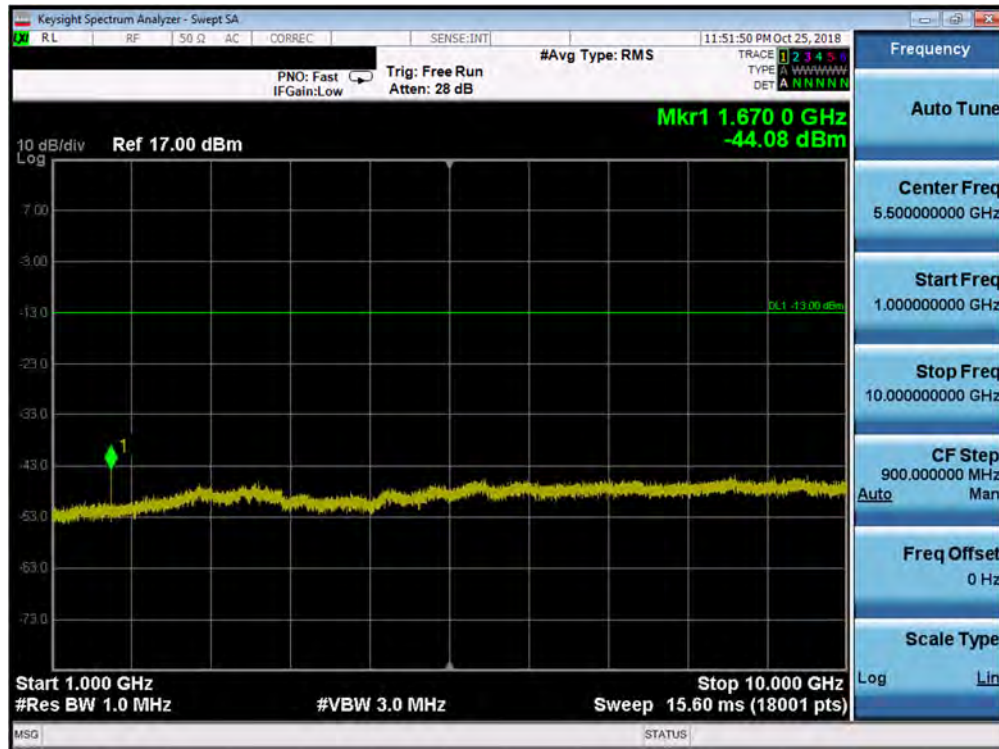


Plot 7-61. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-62. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

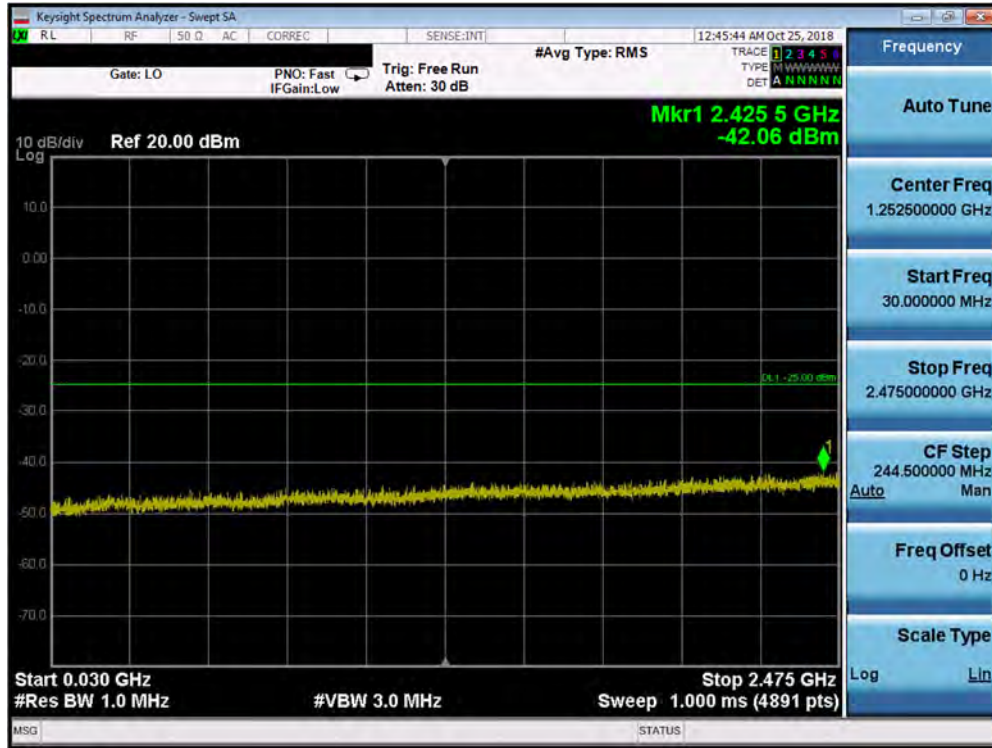
FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 47 of 116



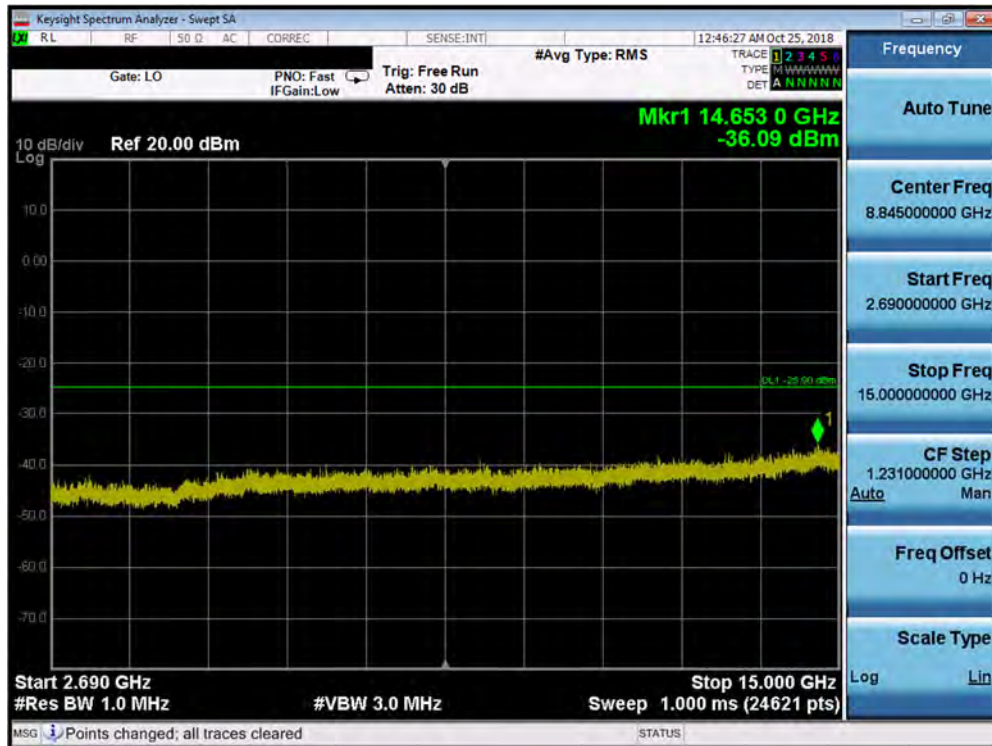
Plot 7-63. Conducted Spurious Plot (Band 5 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSCV41	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 48 of 116

Band 41 (PC3)

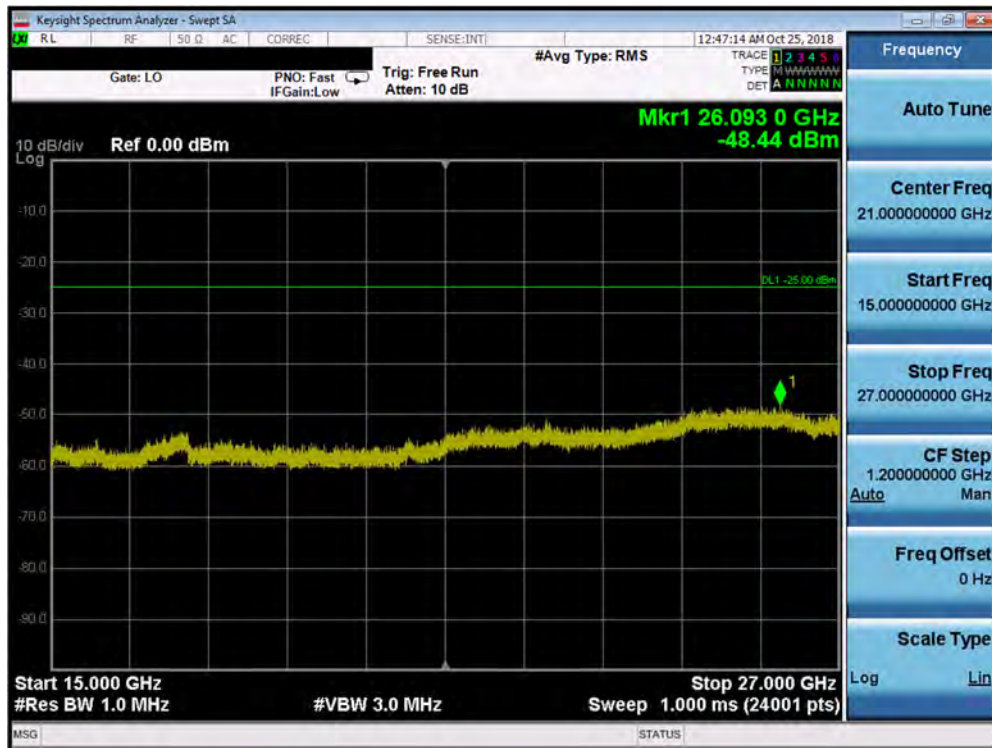


Plot 7-64. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

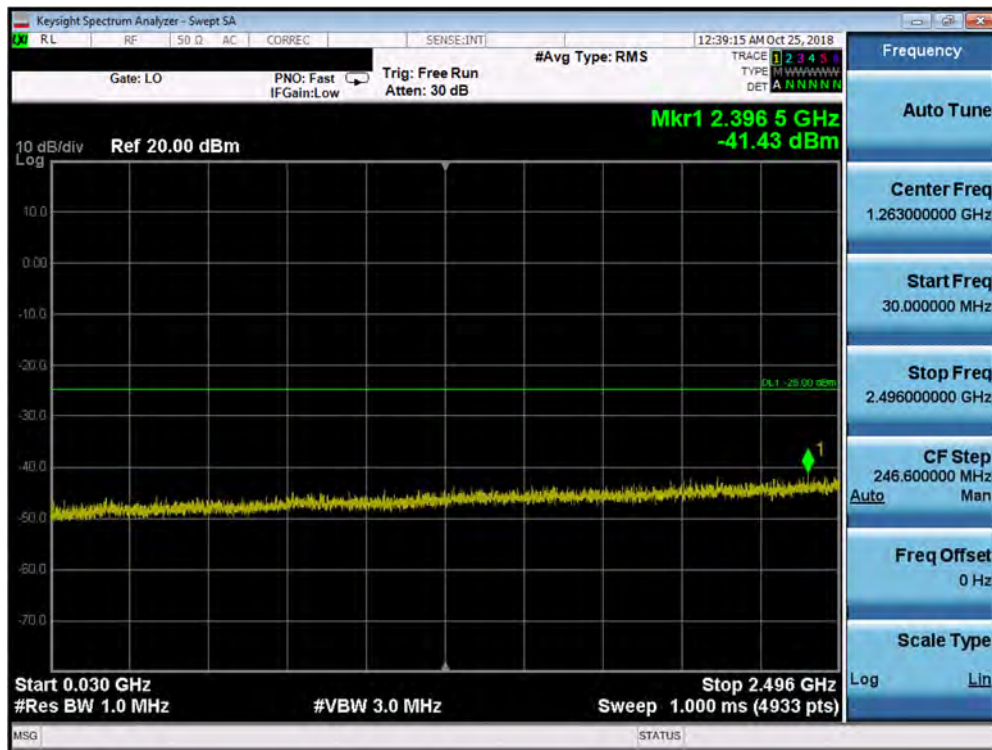


Plot 7-65. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSCV41	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 49 of 116	

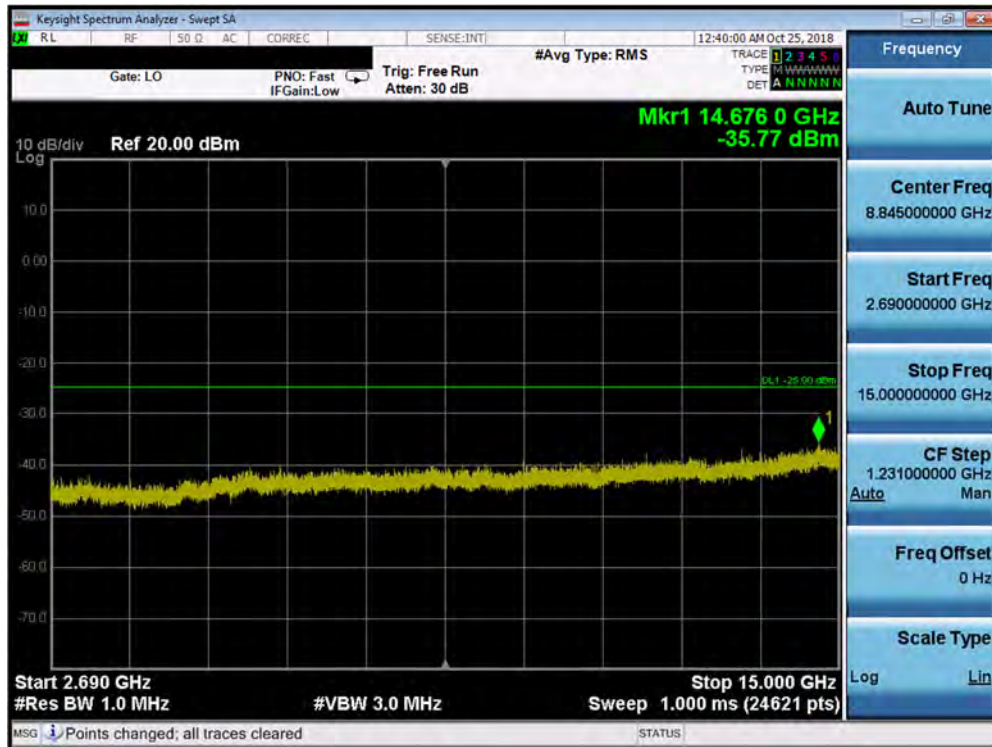


Plot 7-66. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

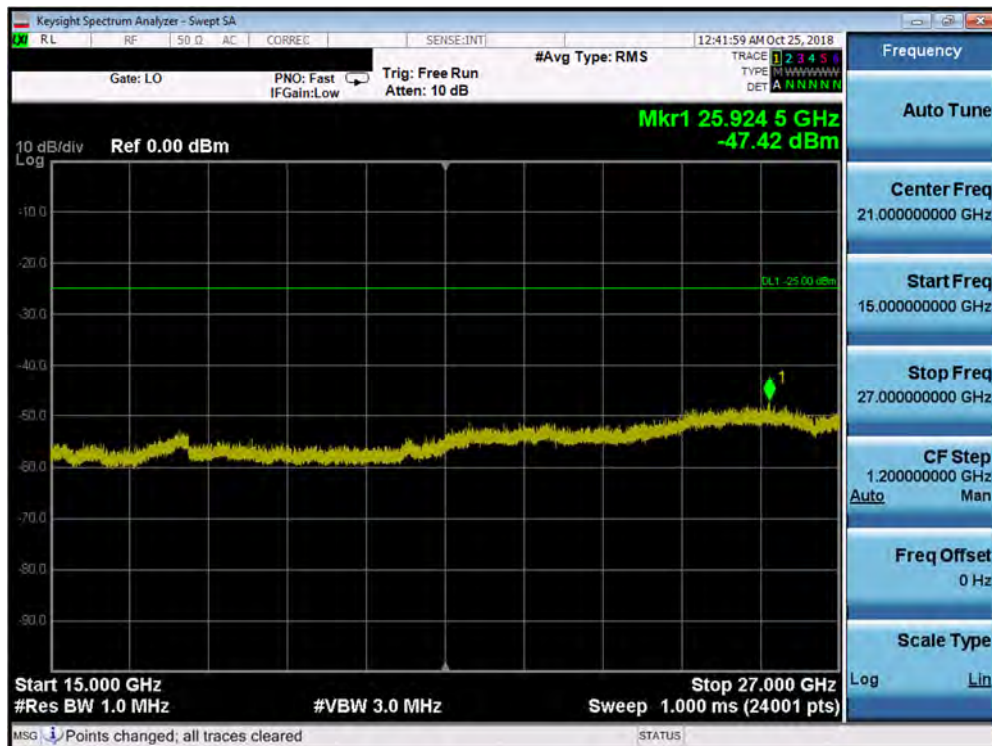


Plot 7-67. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 50 of 116

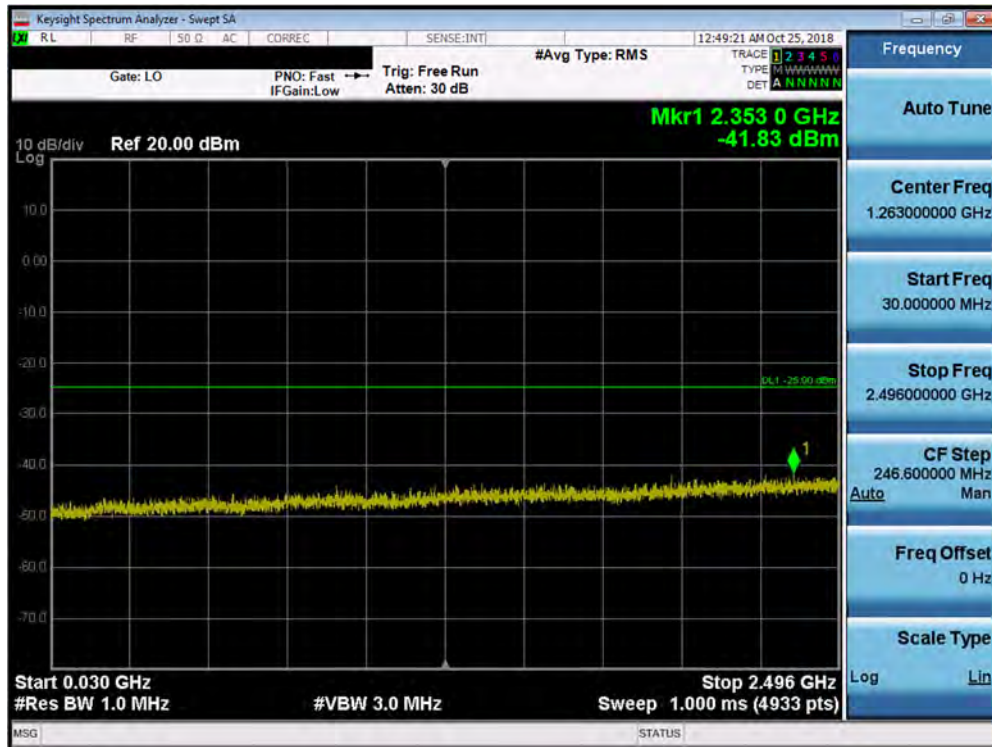


Plot 7-68. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

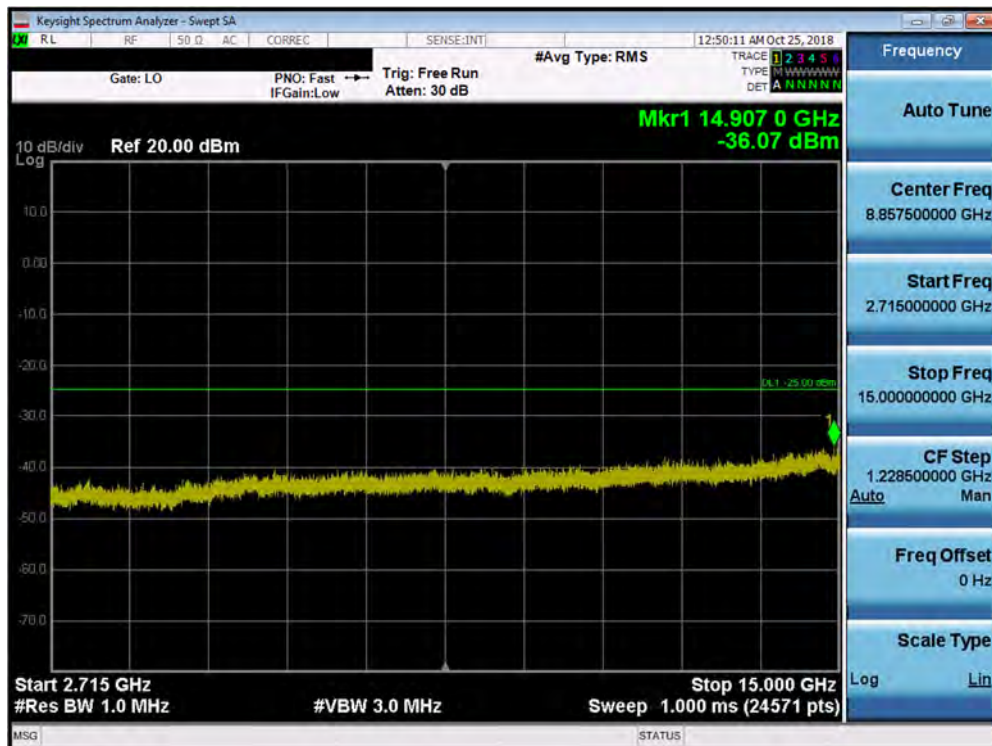


Plot 7-69. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 51 of 116

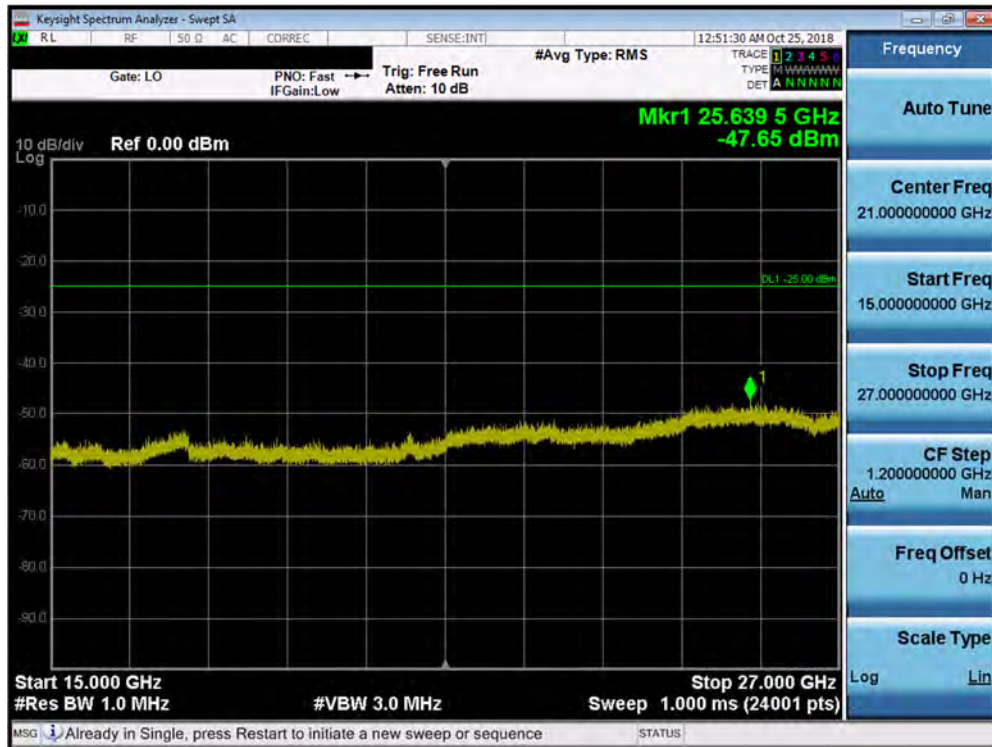


Plot 7-70. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-71. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 52 of 116



Plot 7-72. Conducted Spurious Plot (Band 41 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 53 of 116

7.4 Band Edge Emissions at Antenna Terminal

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is $43 + 10\log_{10}(P_{\text{Watts}})$, where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 41 is as noted in the Test Notes on the following page.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW $\geq$ 1% of the emission bandwidth
4. VBW $\geq$ 3 x RBW
5. Detector = RMS
6. Number of sweep points $\geq$ 2 x Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-3. Test Instrument & Measurement Setup

FCC ID: A3LSCV41	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Test Notes

Per 22.917(b) and 27.53(h), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

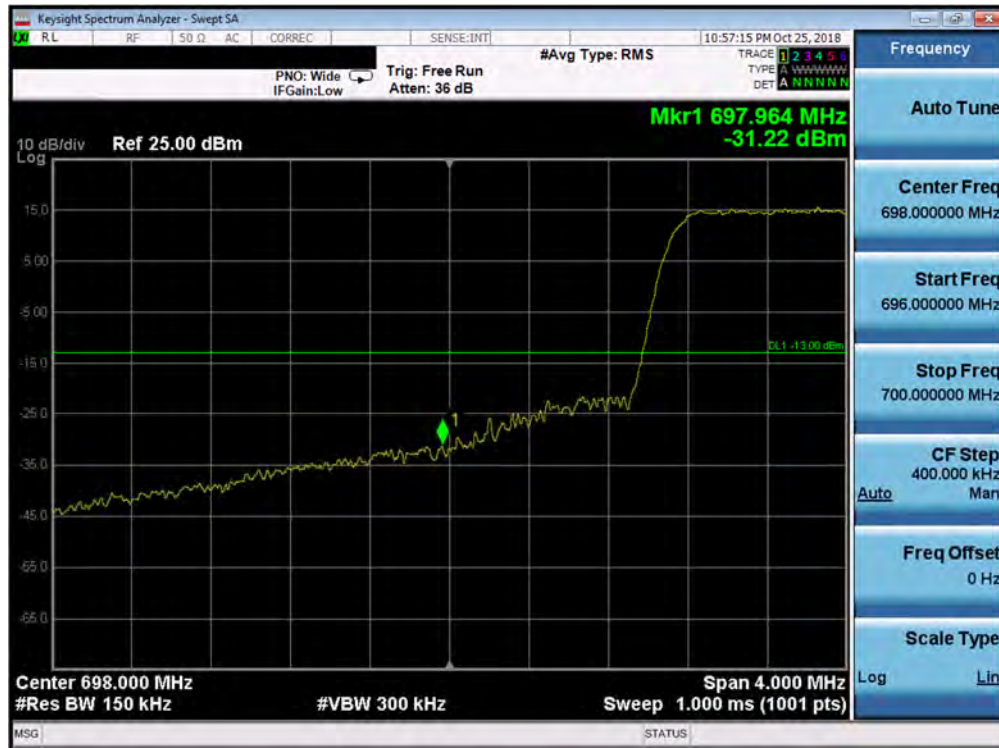
Per 27.53(c)(5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c)(4) is $65 + 10\log_{10}(P) = -35\text{dBm}$ in a 6.25kHz bandwidth.

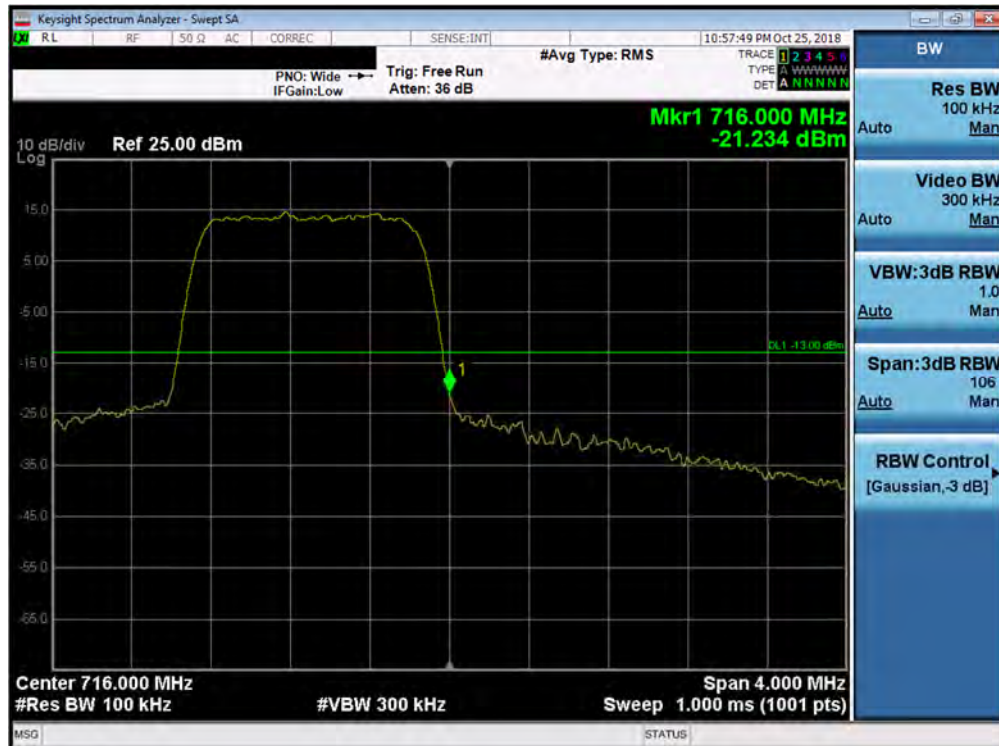
Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz.

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12

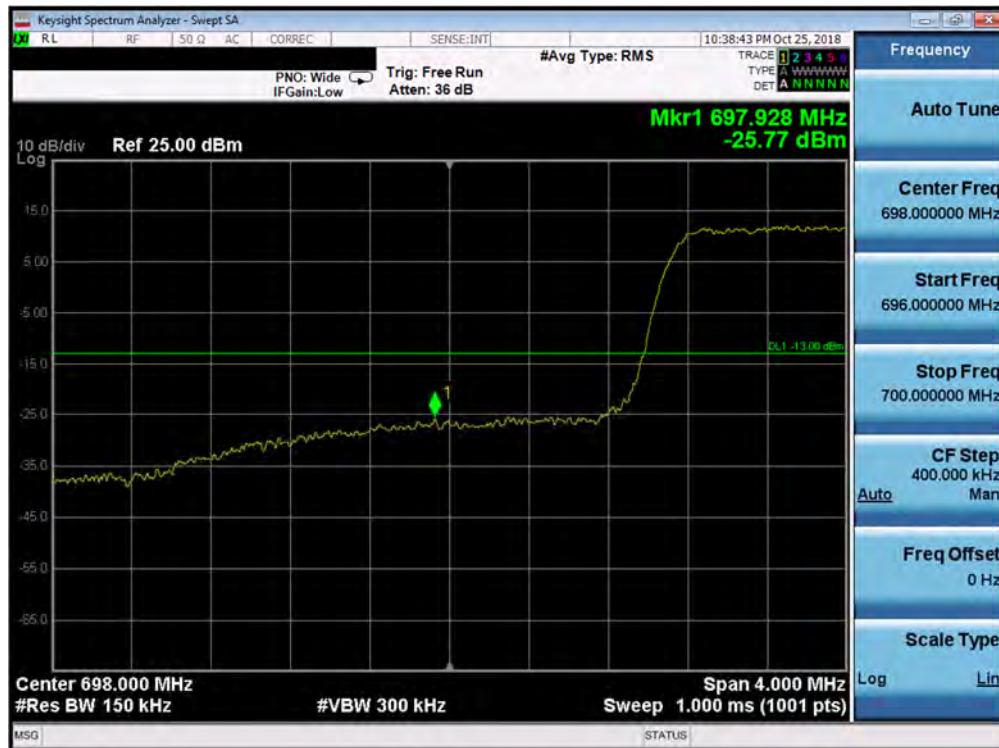


Plot 7-73. Lower Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

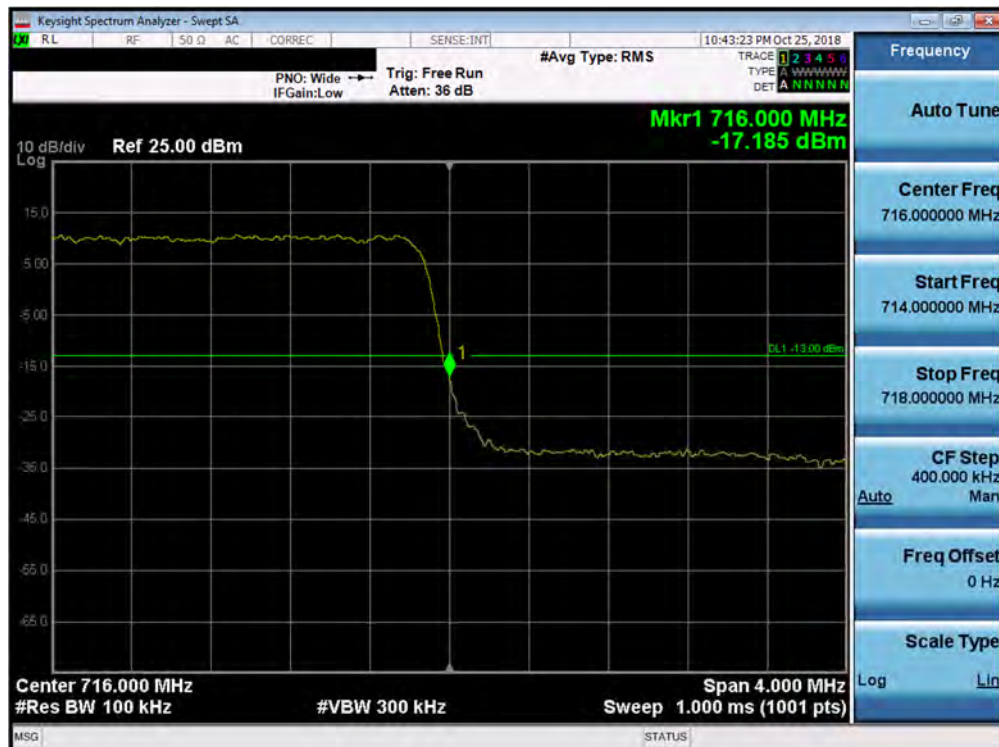


Plot 7-74. Upper Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 56 of 116

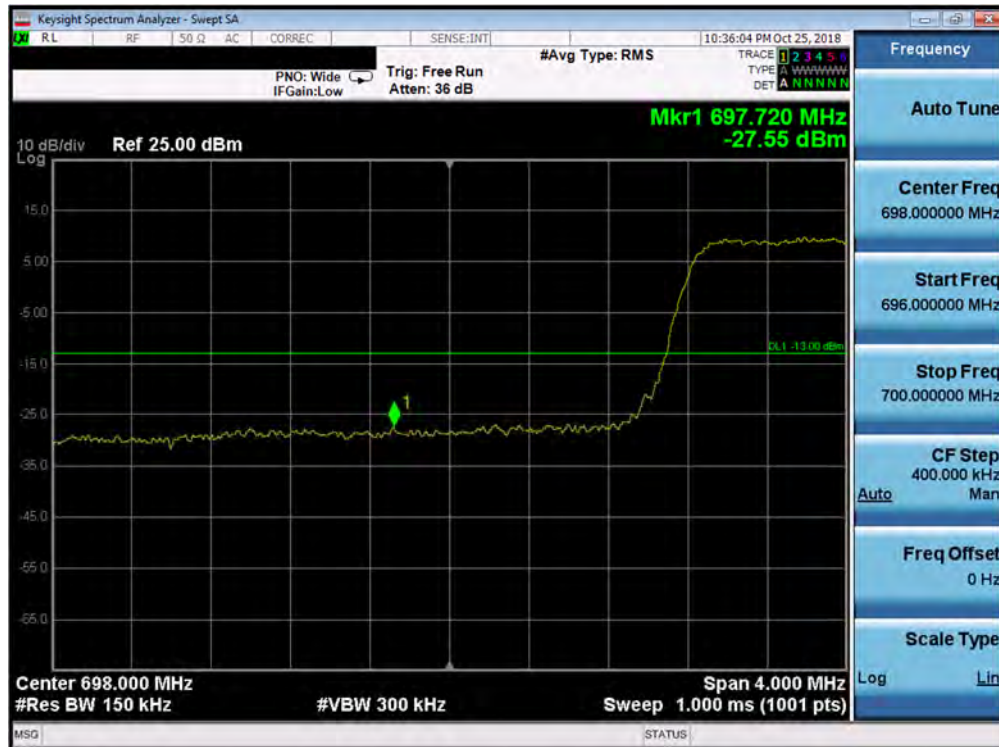


Plot 7-75. Lower Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

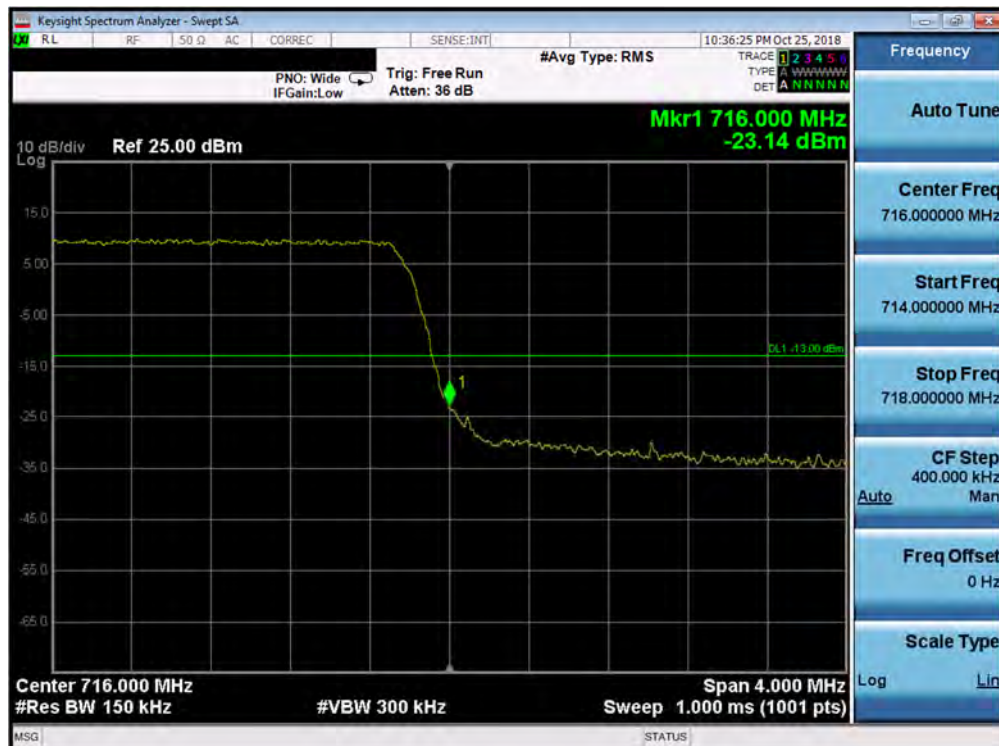


Plot 7-76. Upper Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 57 of 116		

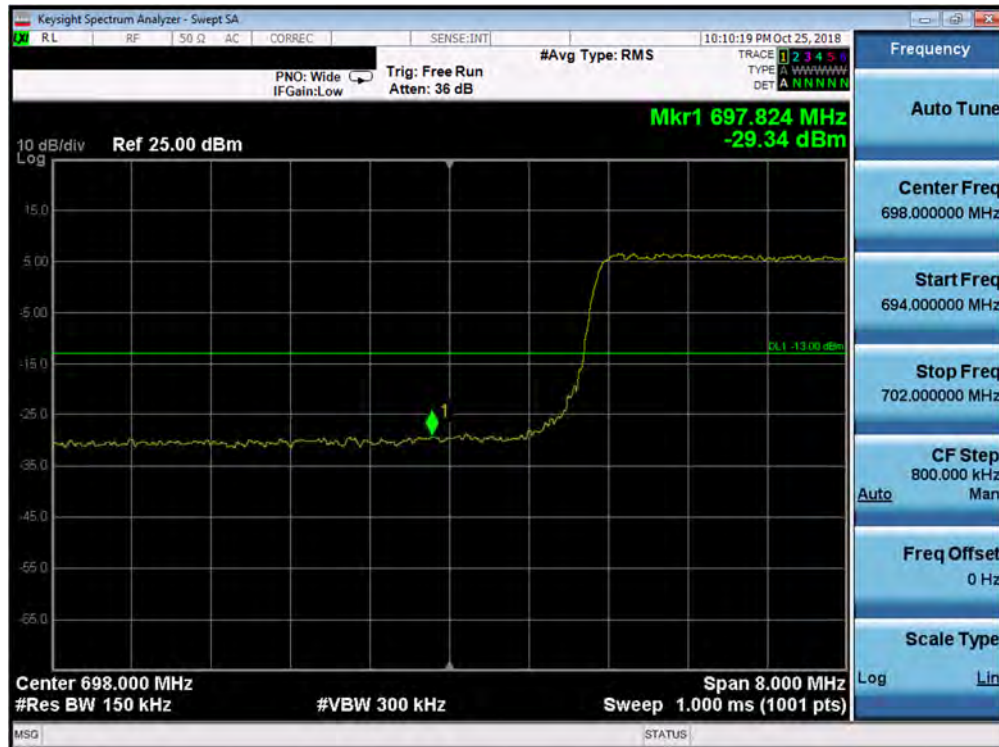


Plot 7-77. Lower Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

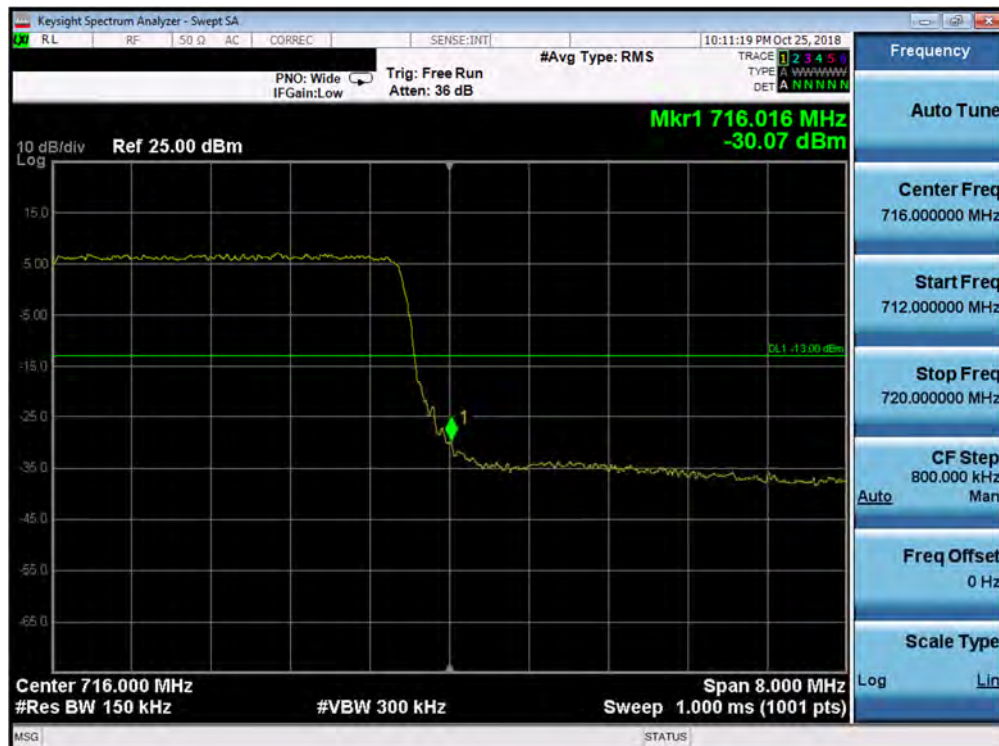


Plot 7-78. Upper Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 58 of 116



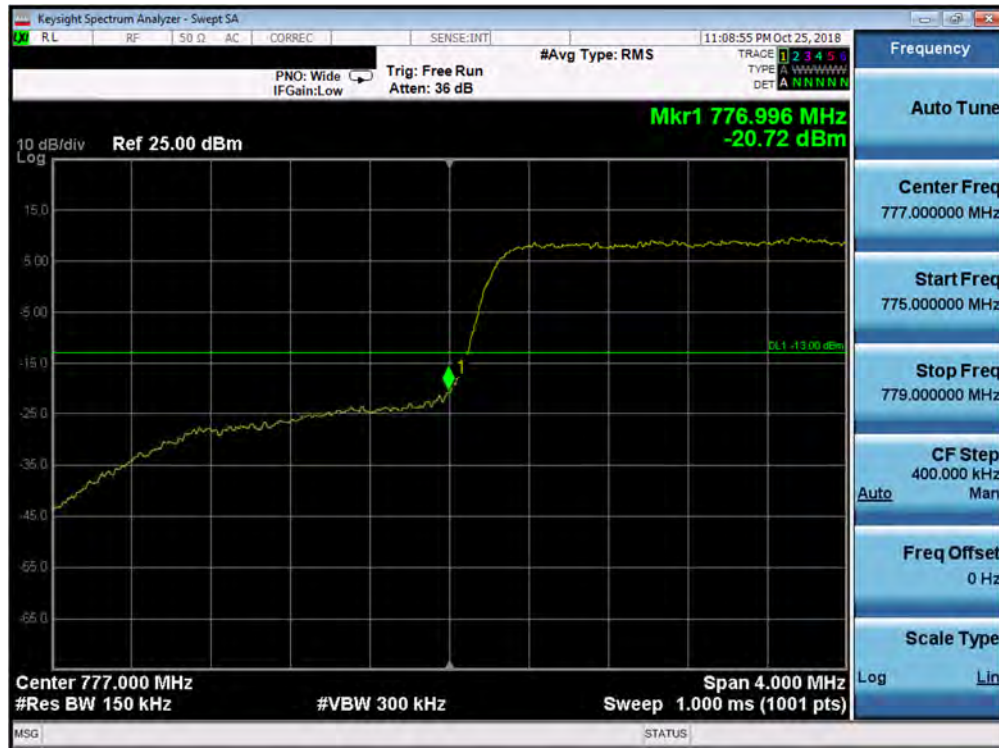
Plot 7-79. Lower Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)



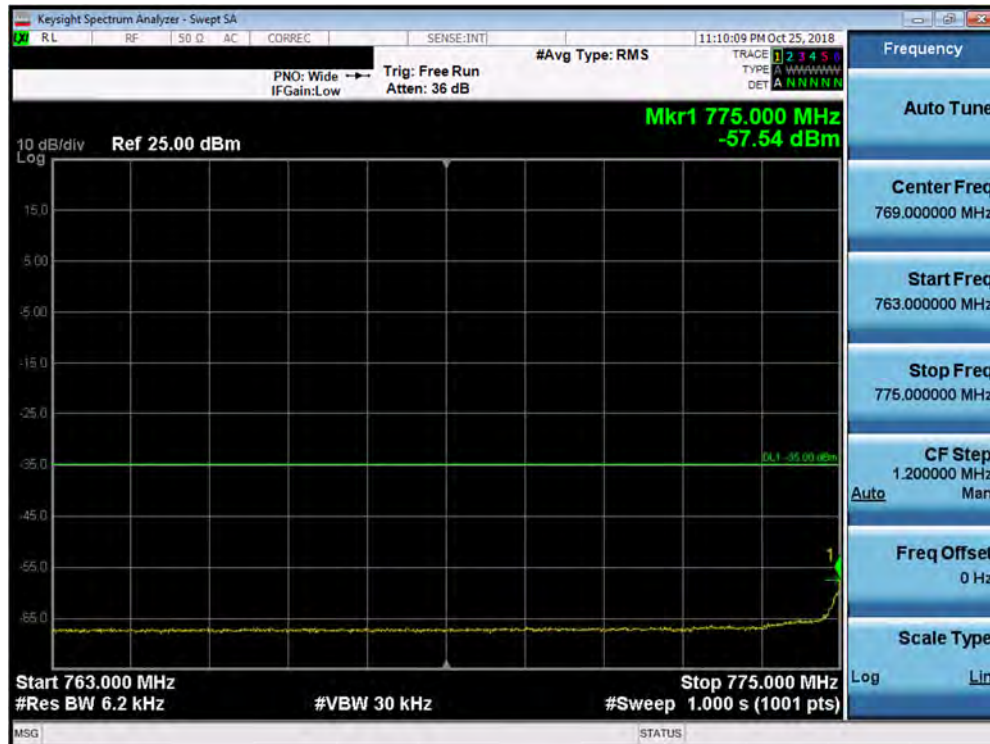
Plot 7-80. Upper Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Band 13



Plot 7-81. Lower Band Edge Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-82. Lower Emission Mask Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 60 of 116

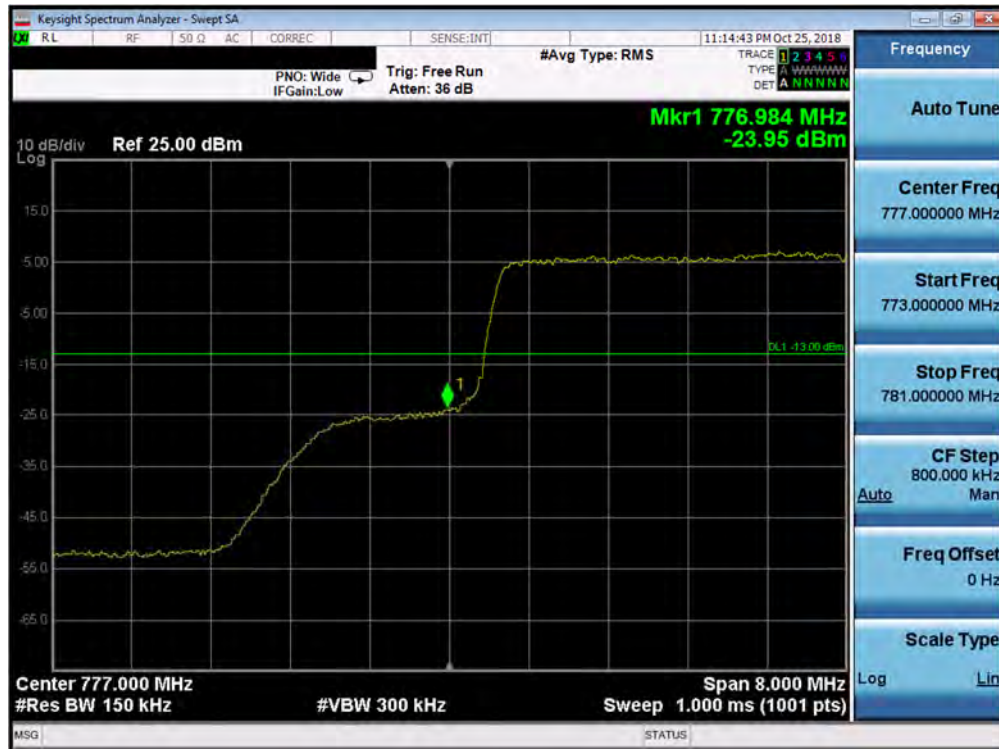


Plot 7-83. Upper Band Edge Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

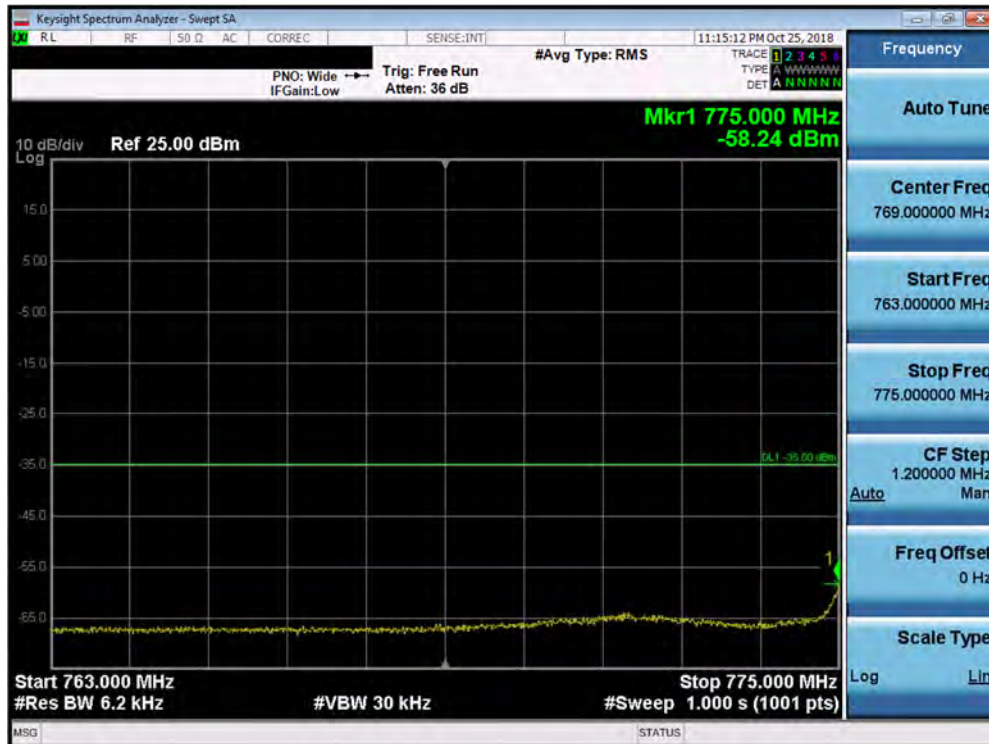


Plot 7-84. Upper Emission Mask Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 61 of 116

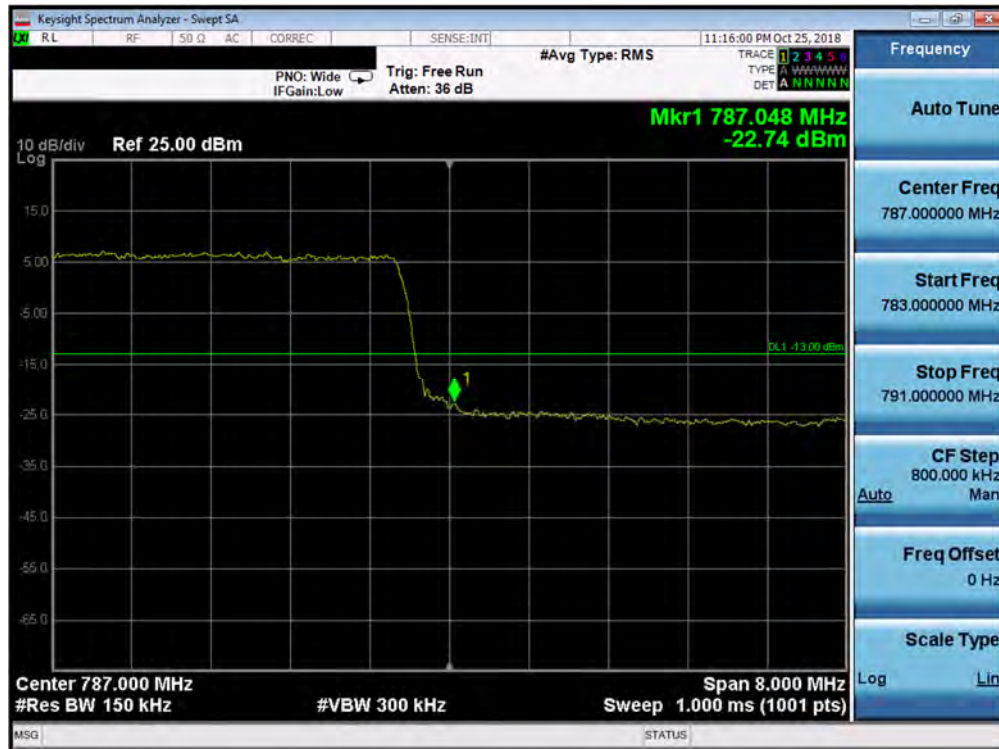


Plot 7-85. Lower Band Edge Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-86. Lower Emission Mask Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 62 of 116



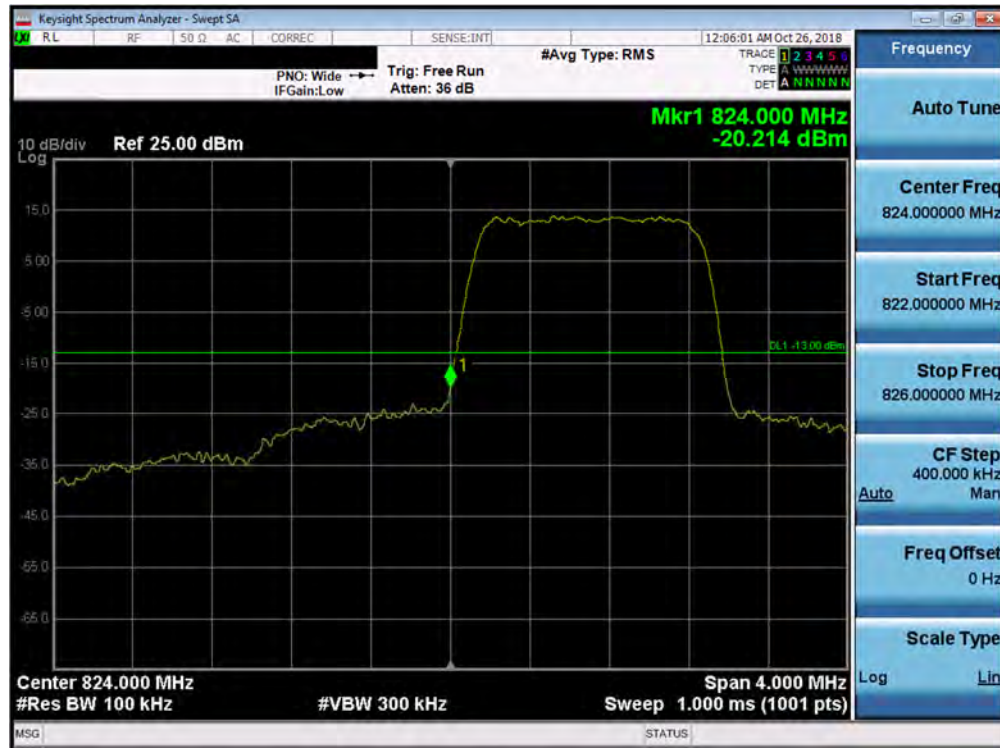
Plot 7-87. Upper Band Edge Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)



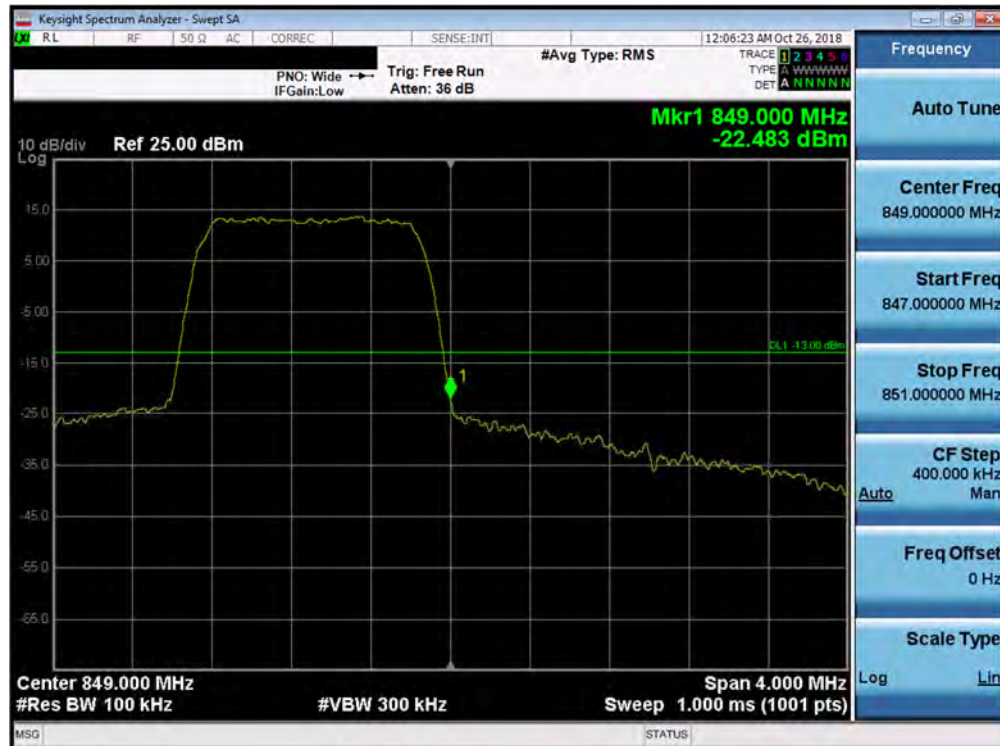
Plot 7-88. Upper Emission Mask Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 63 of 116

Band 5

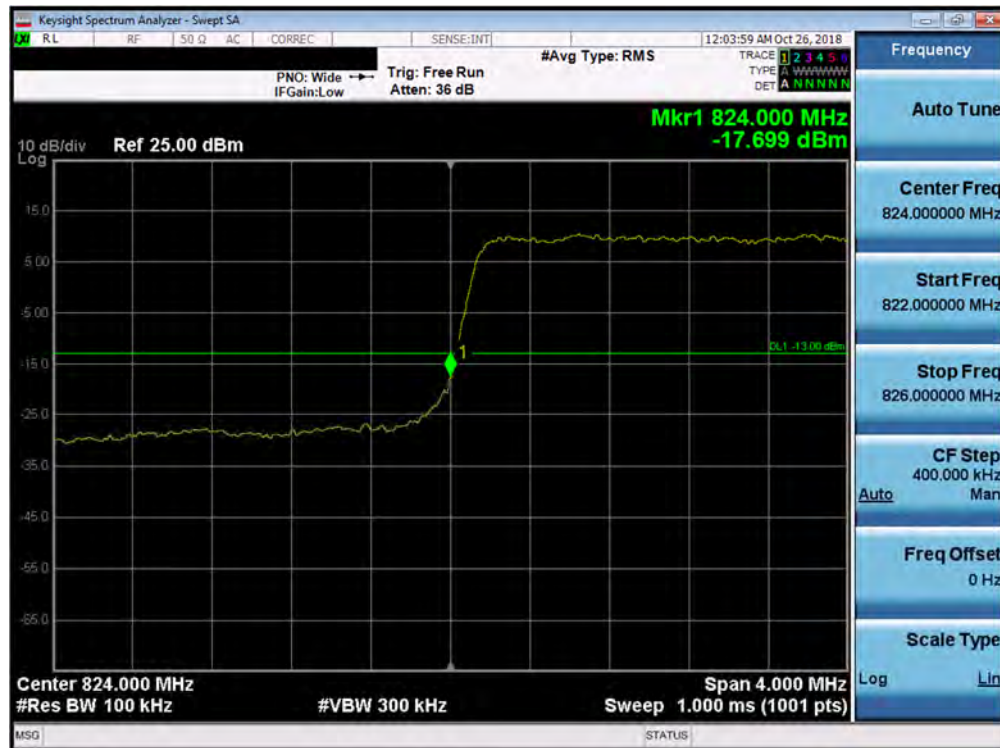


Plot 7-89. Lower Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

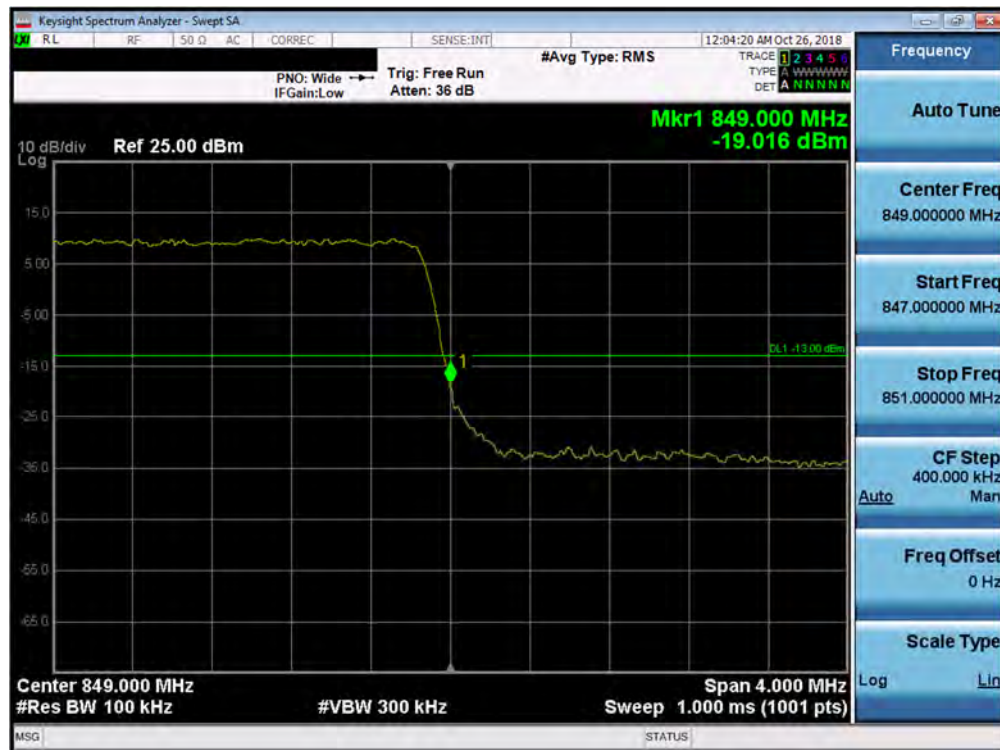


Plot 7-90. Upper Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 64 of 116

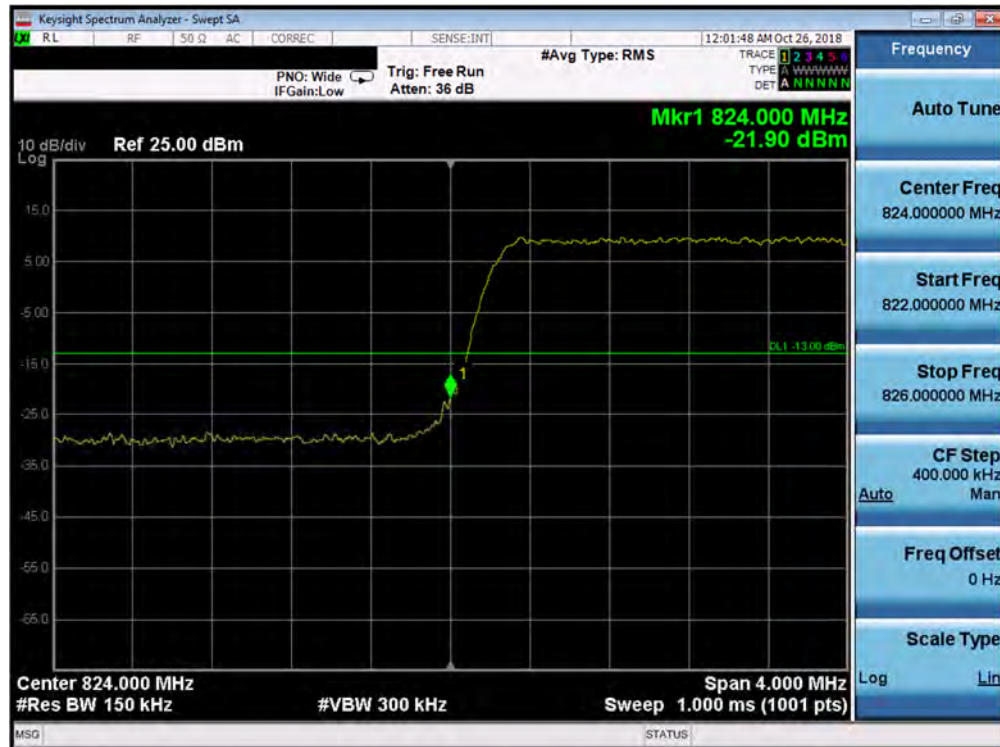


Plot 7-91. Lower Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

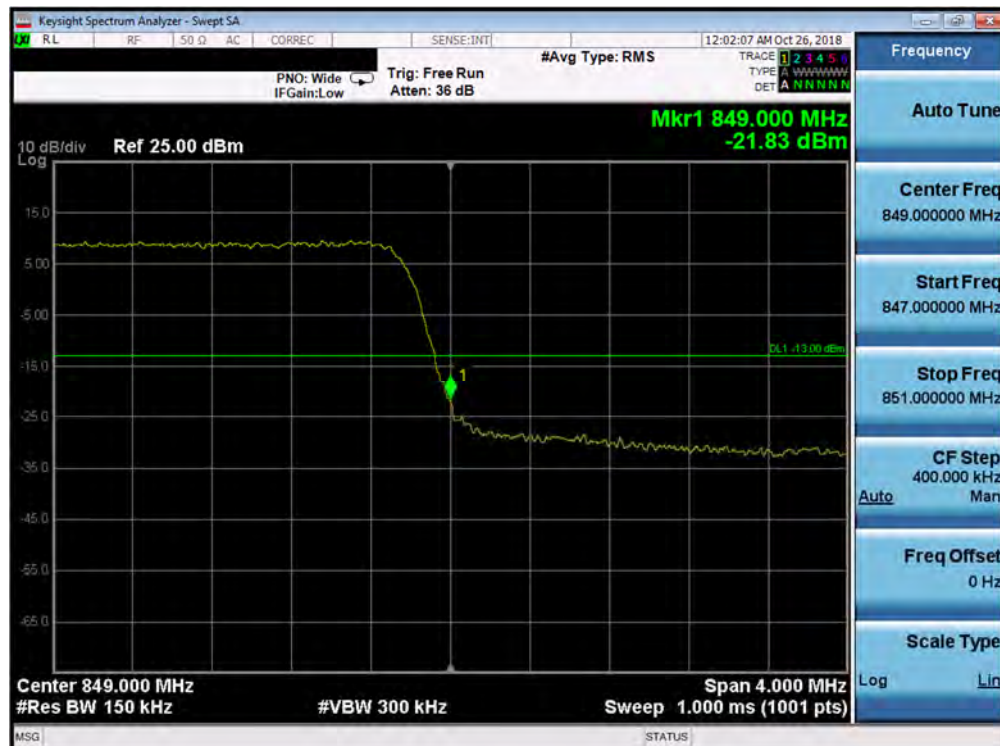


Plot 7-92. Upper Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 65 of 116

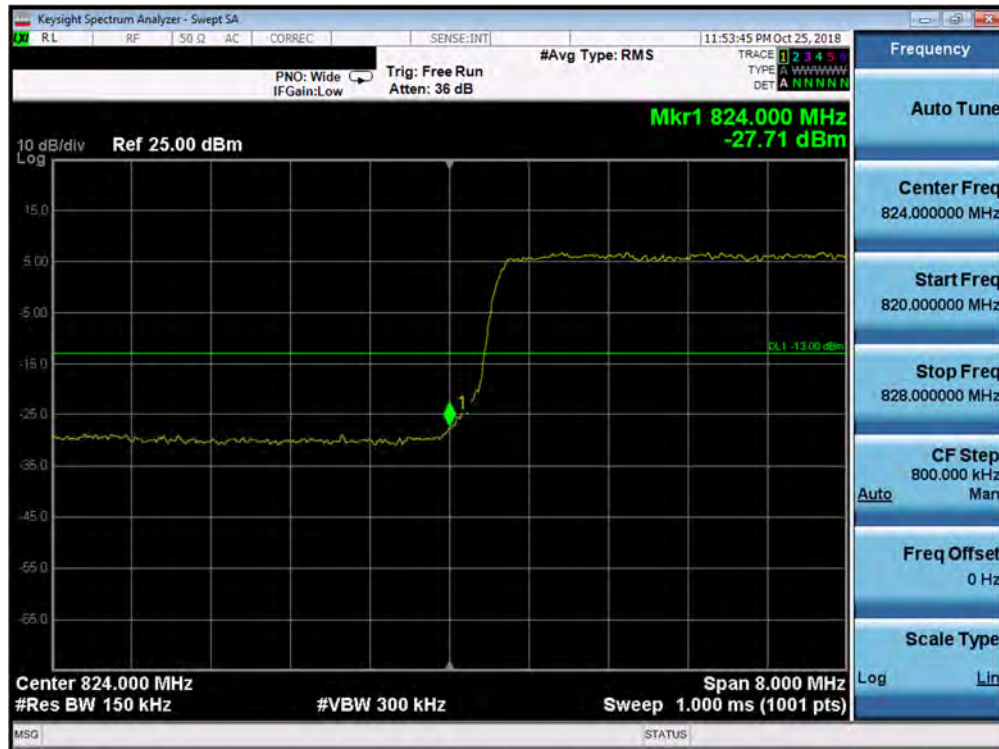


Plot 7-93. Lower Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

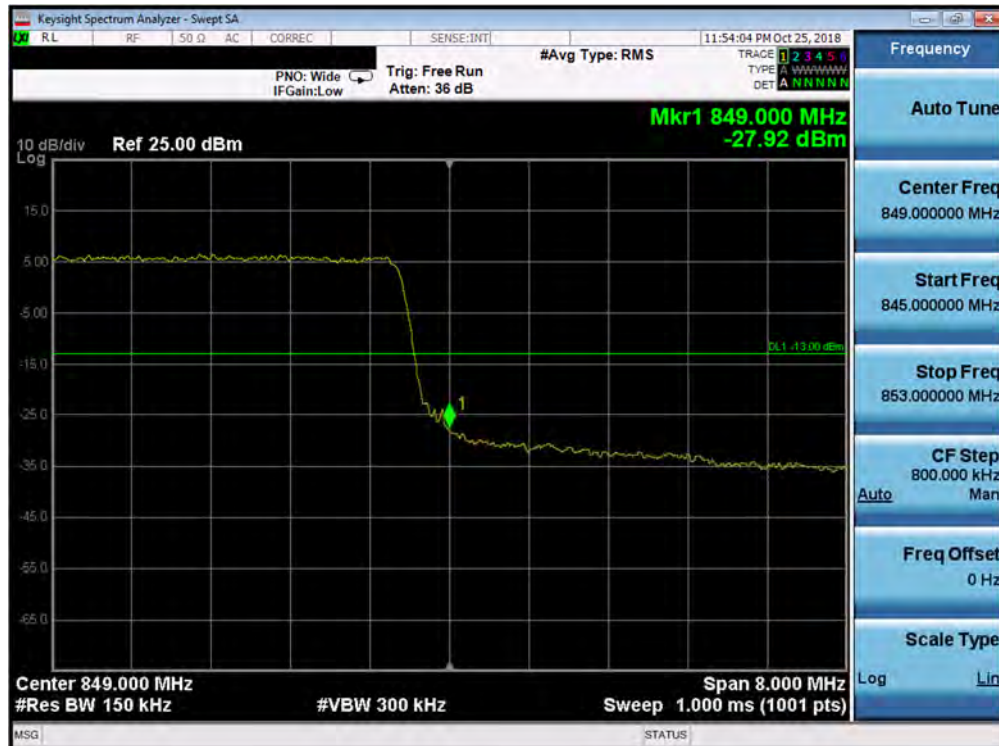


Plot 7-94. Upper Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 66 of 116



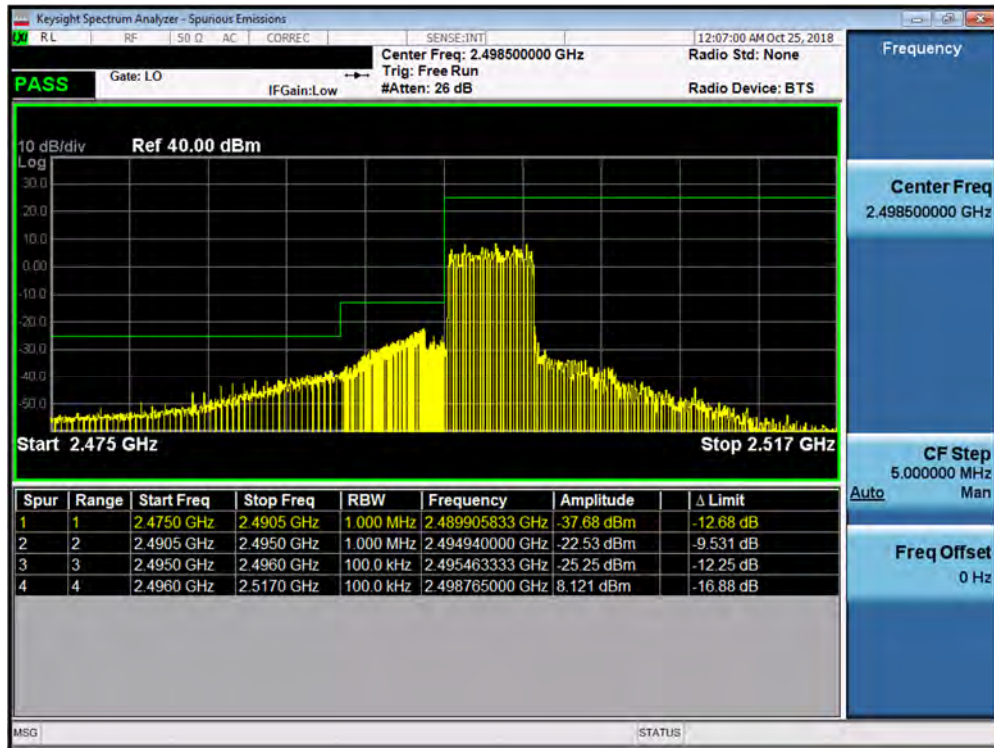
Plot 7-95. Lower Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)



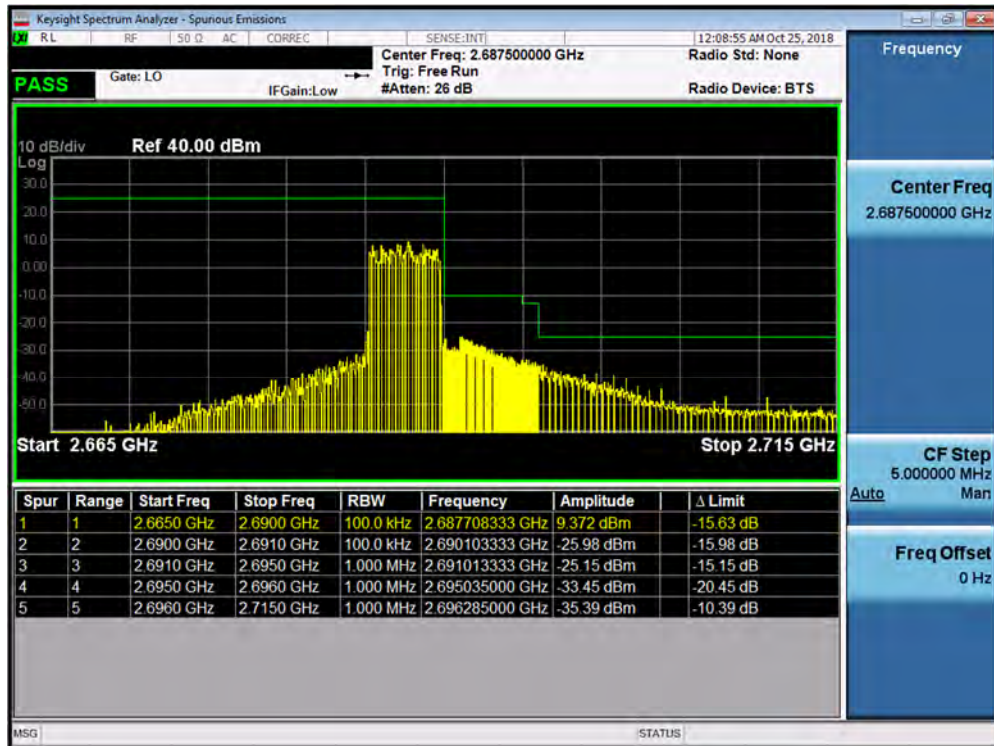
Plot 7-96. Upper Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 67 of 116

Band 41 (PC3)

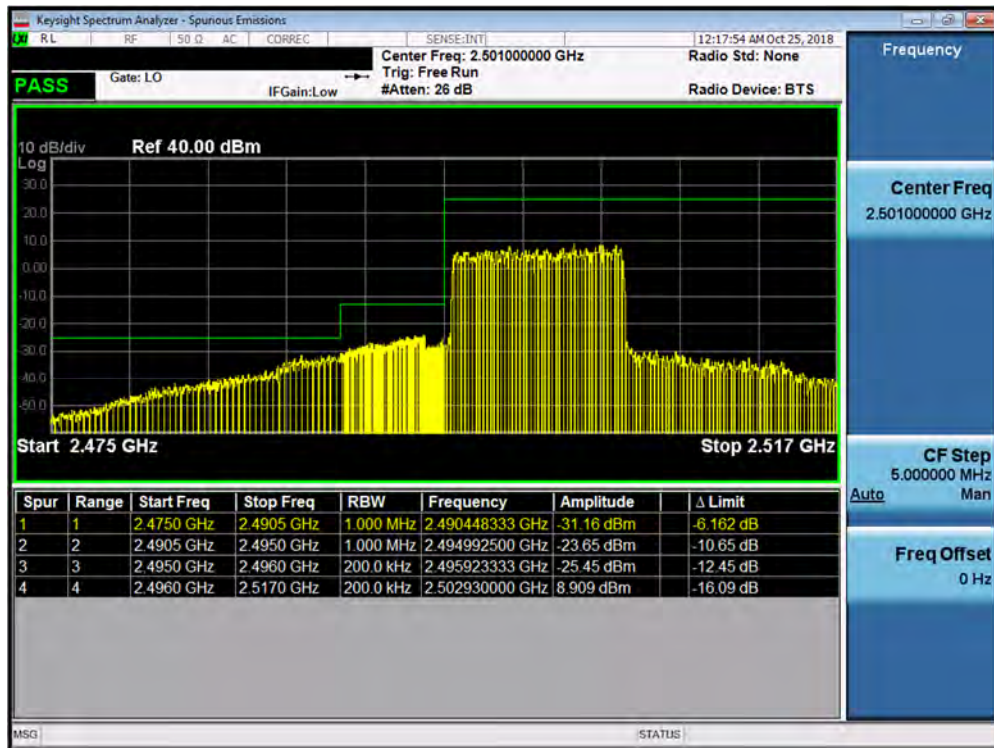


Plot 7-97. Lower ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)

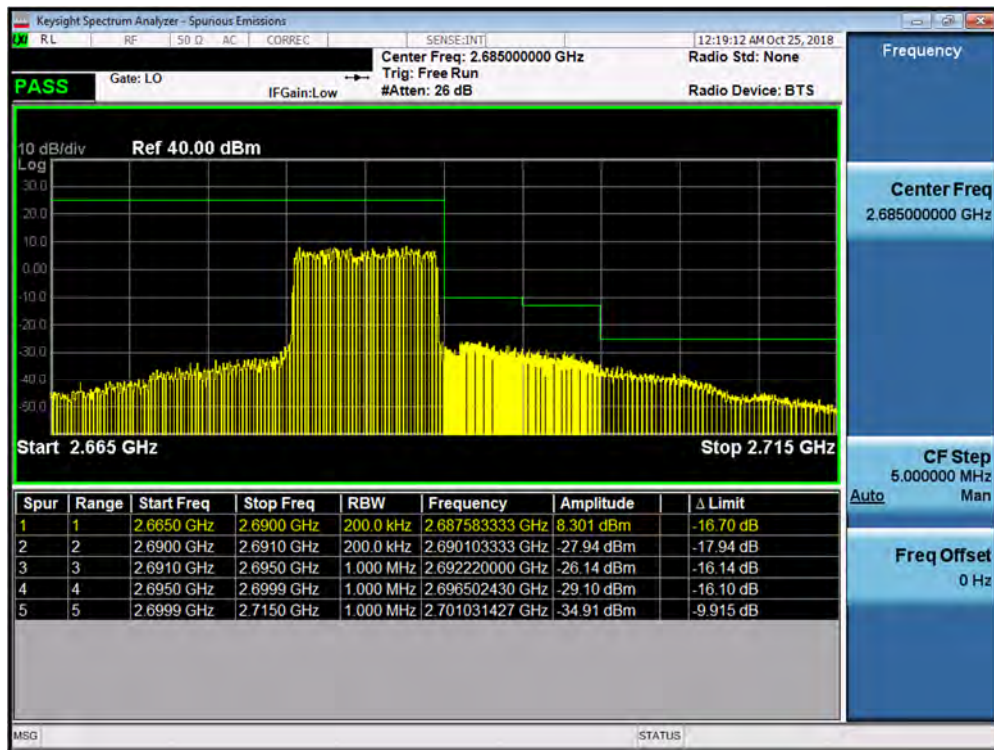


Plot 7-98. Upper ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 68 of 116		

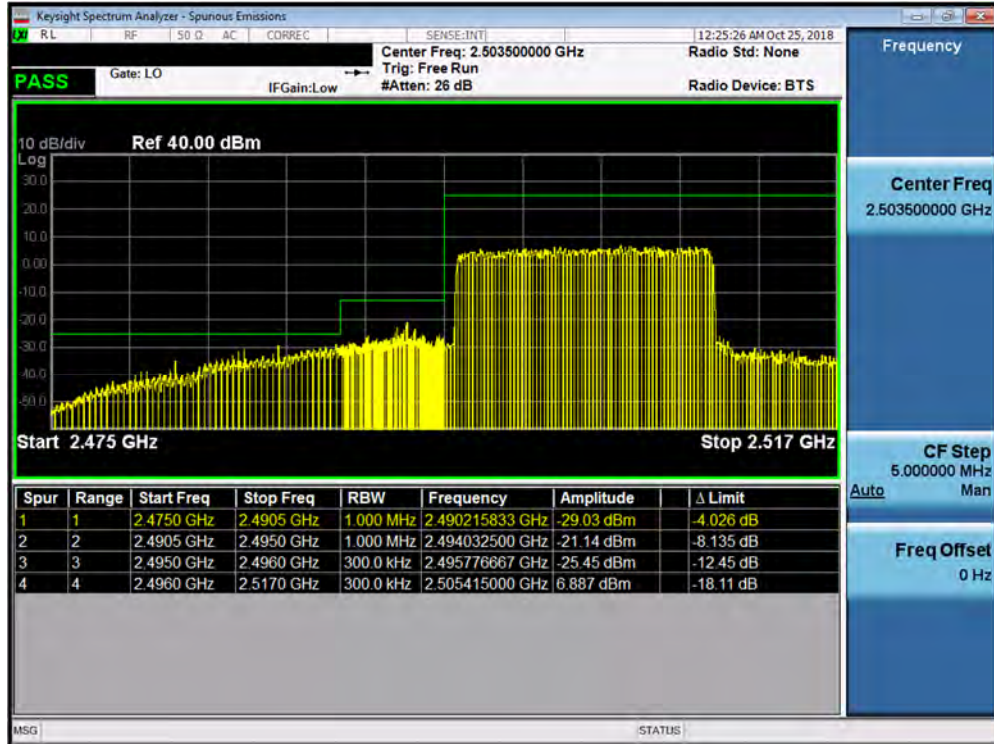


Plot 7-99. Lower ACP Plot (Band 41 PC3- 10.0MHz QPSK - Full RB Configuration)

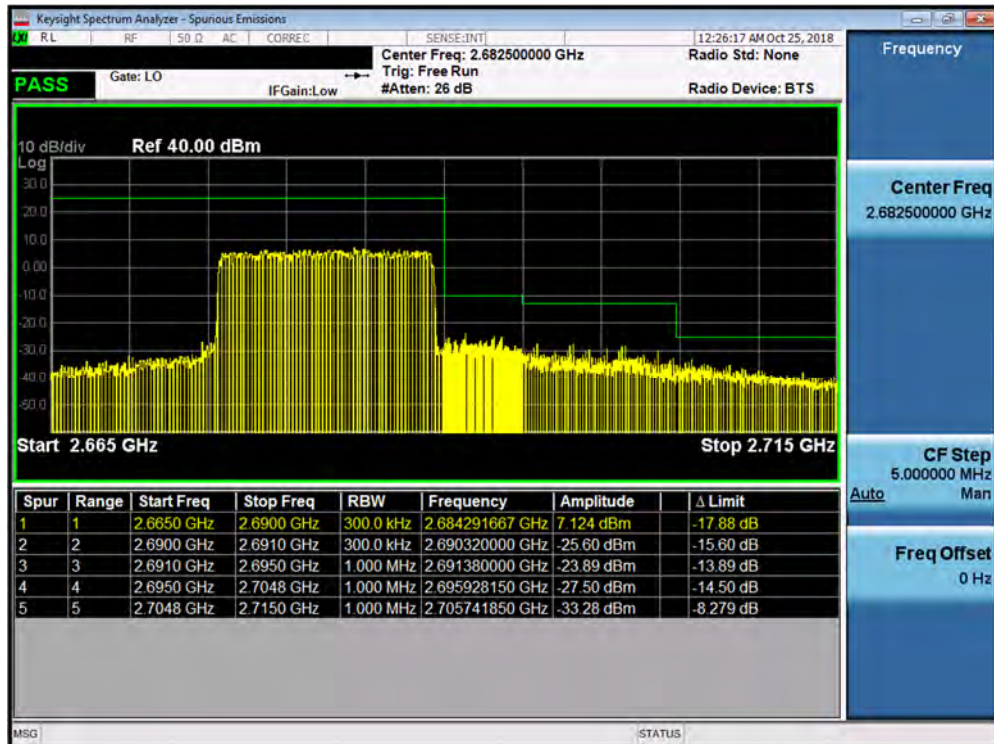


Plot 7-100. Upper ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 69 of 116	

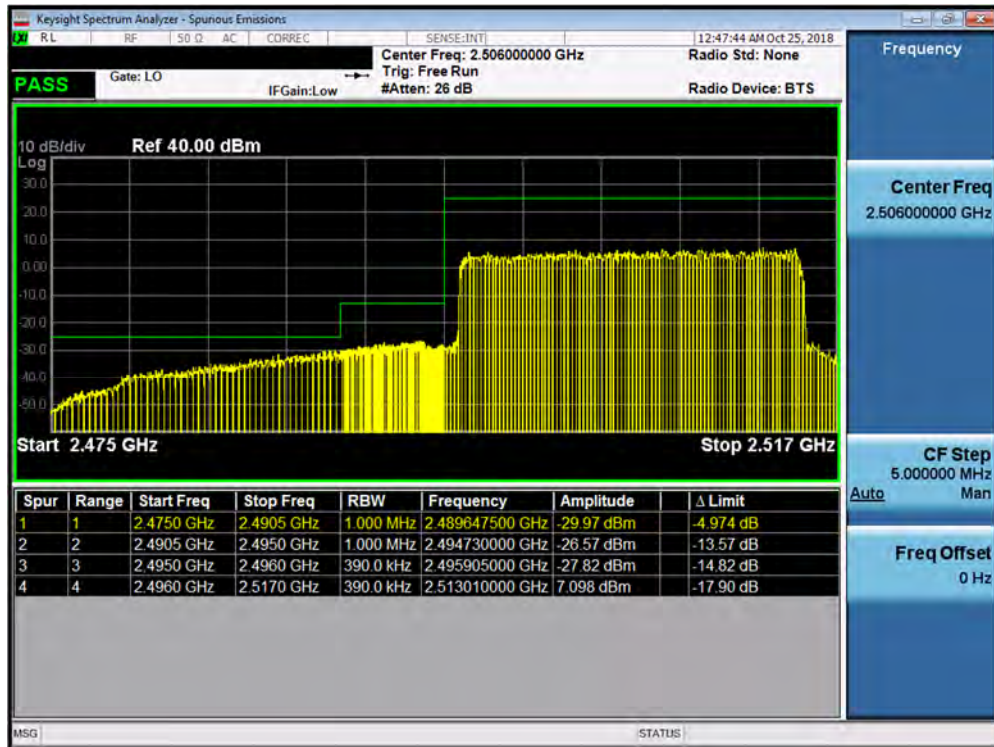


Plot 7-101. Lower ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)

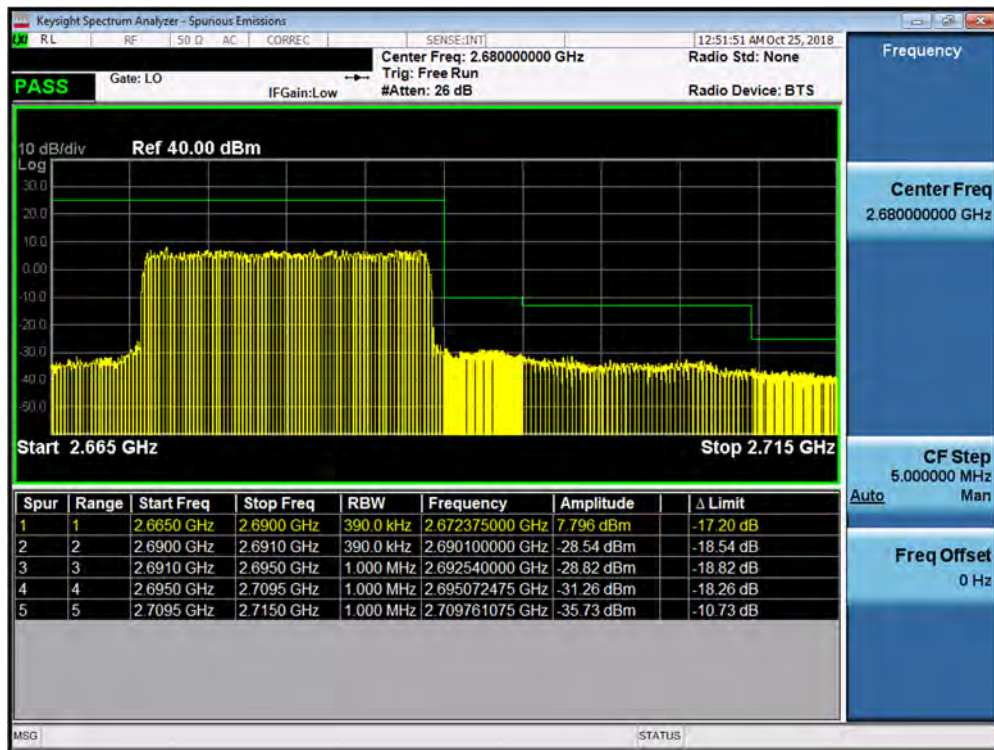


Plot 7-102. Upper ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 70 of 116



Plot 7-103. Lower ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-104. Upper ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 71 of 116

7.5 Uplink Carrier Aggregation

§27.53(m)

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

For Band 41, the minimum permissible attenuation level of any spurious emission is $55 + 10\log_{10}(P_{[Watts]})$.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-4. Test Instrument & Measurement Setup

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 72 of 116

Test Notes

1. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-503 and 7-504 below, with both carriers set to transmit using 1RB.
2. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 73 of 116

Uplink CA Configuration 41C (PC3)

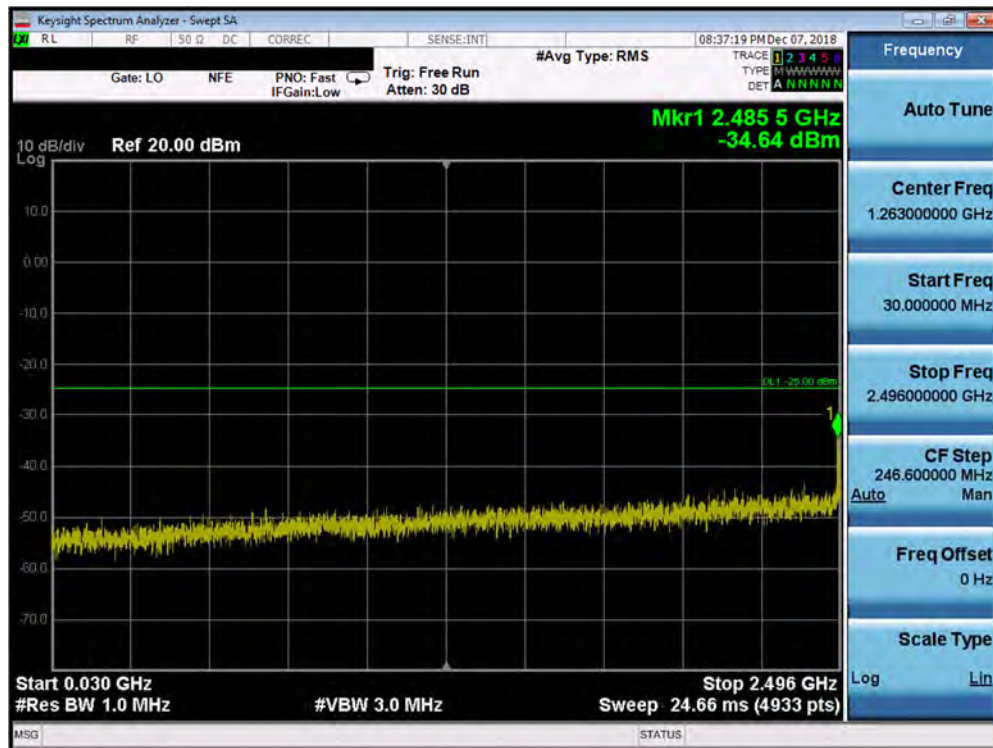
Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power [dBm]
Max	LTE B41	5	39675	2498.5	QPSK	1	24	LTE B41	20	39792	2510.2	QPSK	1	0	24.67
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	15	39820	2513	QPSK	1	0	23.62
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	20	39844	2515.4	QPSK	1	0	24.21
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	10	39845	2515.5	QPSK	1	0	24.26
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	15	39875	2518.5	QPSK	1	0	24.22
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	20	39896	2520.6	QPSK	1	0	24.25
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	5	39867	2517.7	QPSK	1	0	24.27
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	10	39894	2520.4	QPSK	1	0	24.30
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	15	39921	2523.1	QPSK	1	0	23.78
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.74
Max	LTE B41	5	40620	2593	QPSK	1	24	LTE B41	20	40737	2604.7	QPSK	1	0	24.59
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	15	40740	2605	QPSK	1	0	24.23
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	24.45
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	10	40740	2605	QPSK	1	0	24.26
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	24.14
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	24.24
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	5	40737	2604.7	QPSK	1	0	24.33
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	24.29
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	24.14
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	24.77
Max	LTE B41	5	41565	2687.5	QPSK	1	0	LTE B41	20	41448	2675.8	QPSK	1	99	24.21
Max	LTE B41	10	41540	2685	QPSK	1	0	LTE B41	15	41420	2673	QPSK	1	74	23.85
Max	LTE B41	10	41540	2685	QPSK	1	0	LTE B41	20	41396	2670.6	QPSK	1	99	24.10
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	10	41395	2670.5	QPSK	1	49	23.73
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	15	41365	2667.5	QPSK	1	74	23.71
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	20	41344	2665.4	QPSK	1	99	23.63
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	5	41373	2668.3	QPSK	1	24	23.42
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	10	41346	2665.6	QPSK	1	49	23.71
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	15	41319	2662.9	QPSK	1	74	23.68
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	24.23

Table 7-3. Conducted Powers (41C – PC3)

FCC ID: A3LSCV41			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 74 of 116	

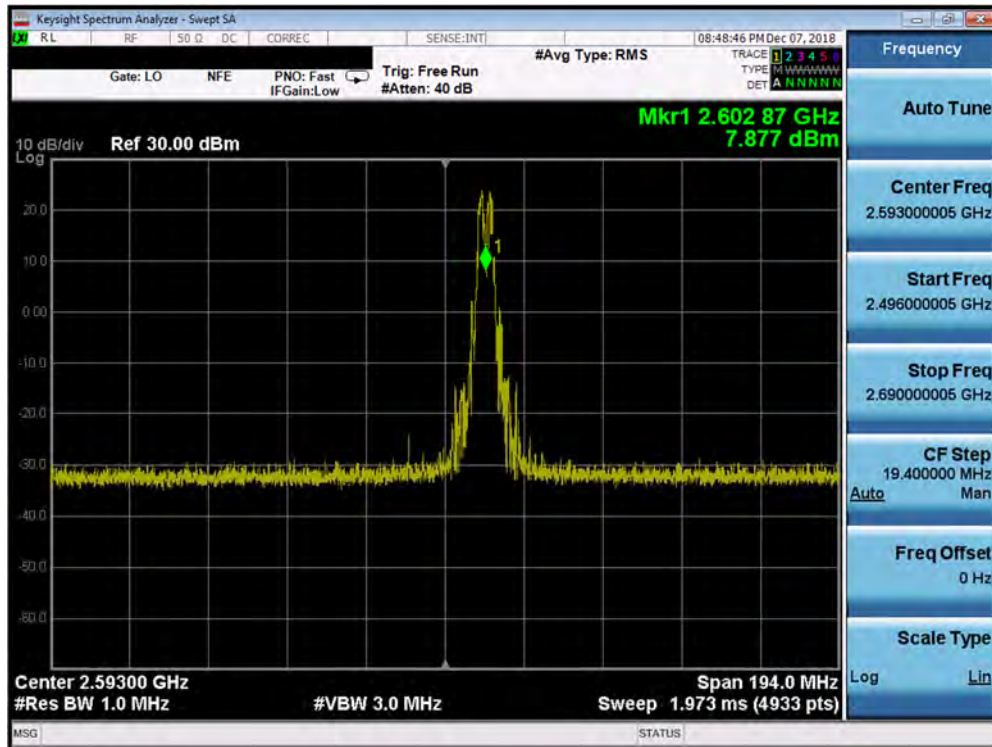
Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	20.98
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	21.46
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	18.64
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	22.70
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	25.62
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	25.12
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	24.12
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	23.32
Max	LTE B41	20	39750	2506	256-QAM	100	0	LTE B41	20	39948	2525.8	256-QAM	100	0	22.05

Table 7-4. Conducted Powers (41C – PC3 with Various Combinations for 20MHz Channel Bandwidth)

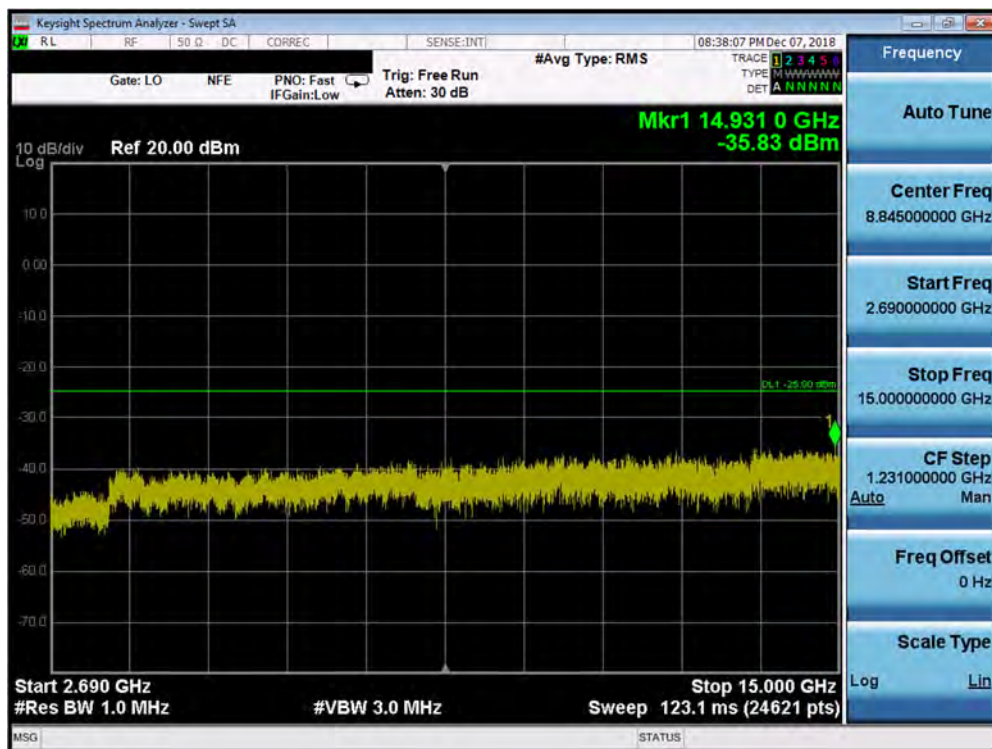


Plot 7-105. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 75 of 116

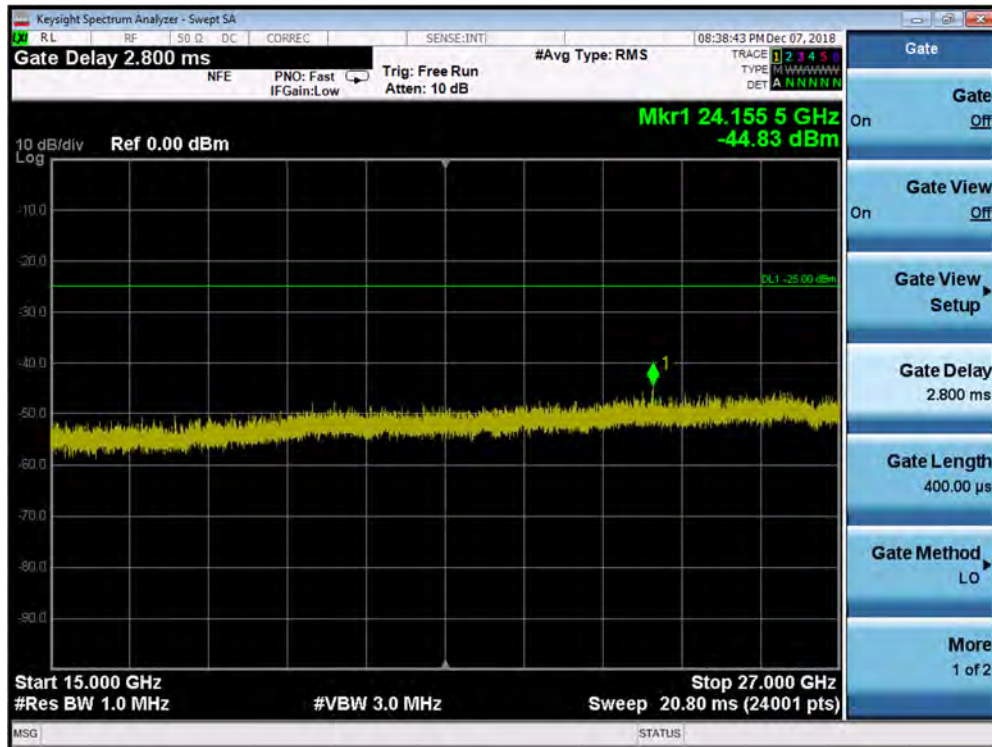


Plot 7-106. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

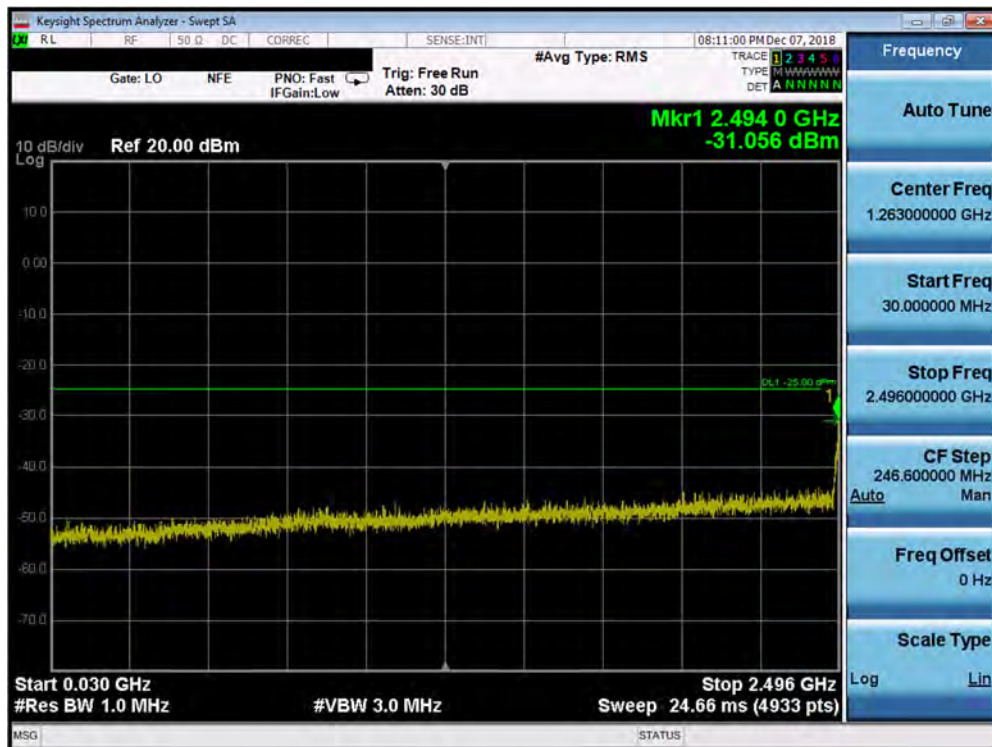


Plot 7-107. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 76 of 116

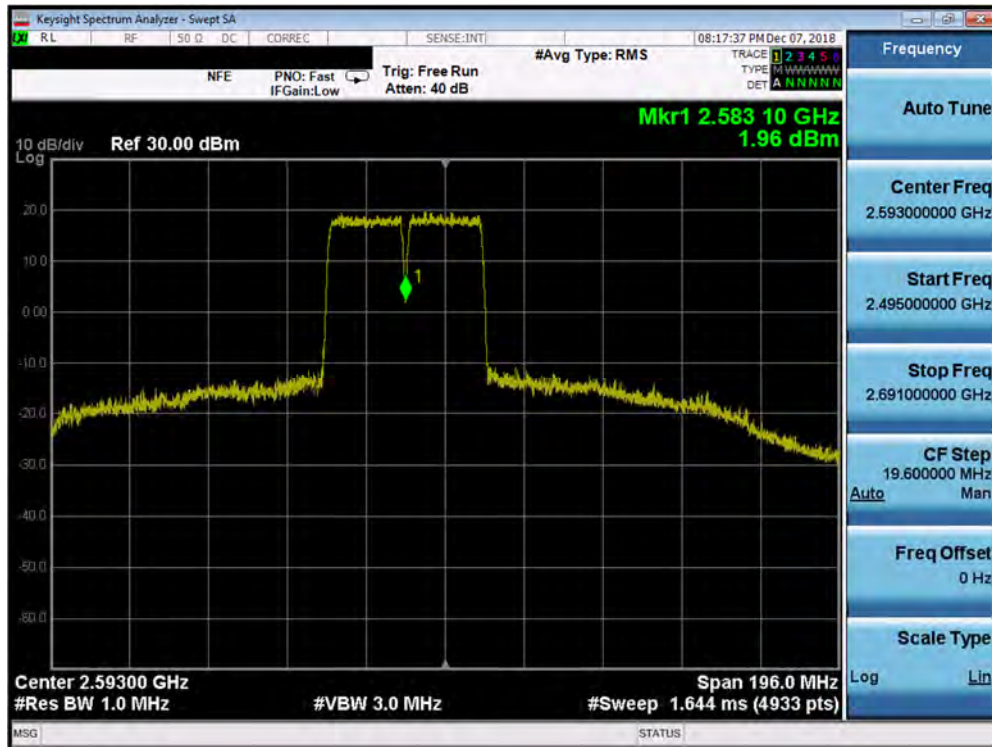


Plot 7-108. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

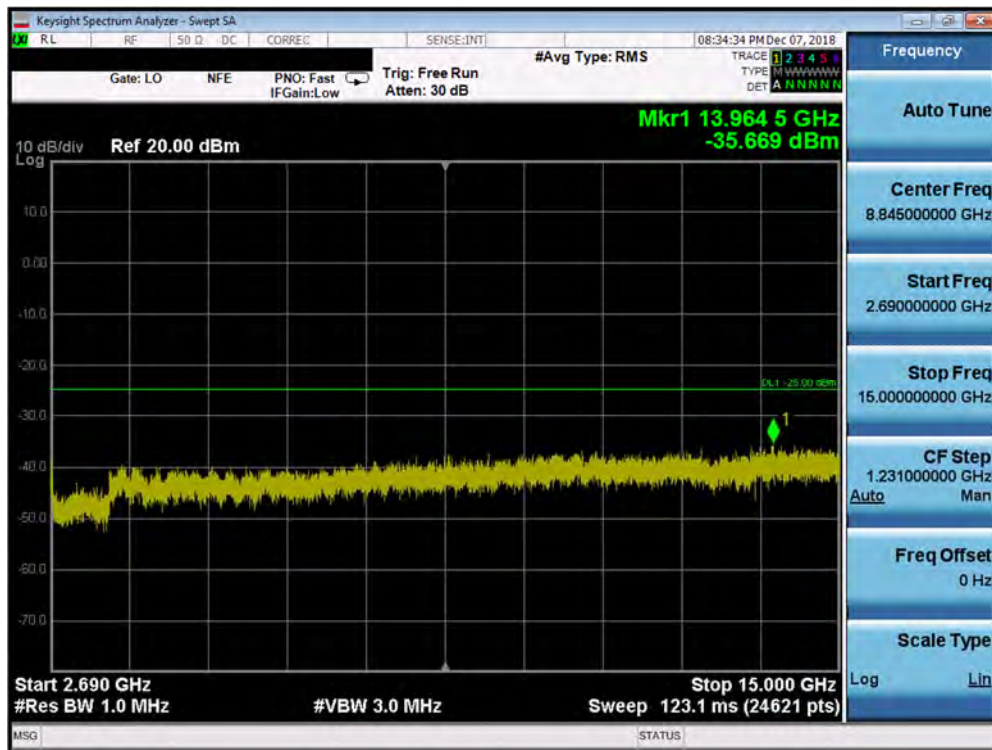


Plot 7-109. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 77 of 116

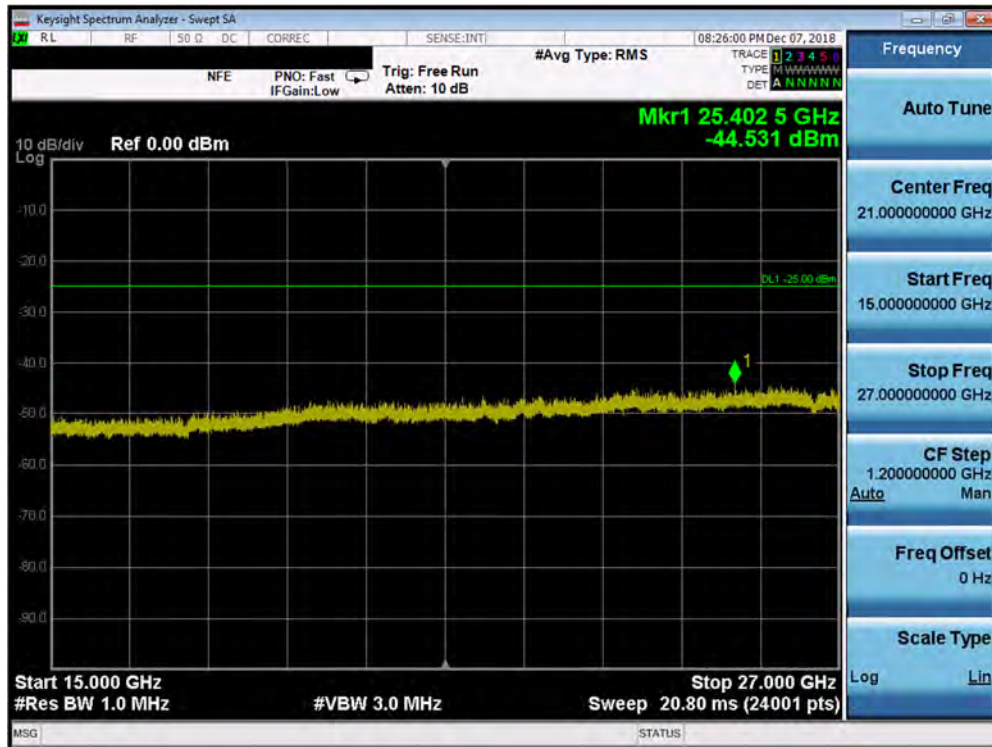


Plot 7-110. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

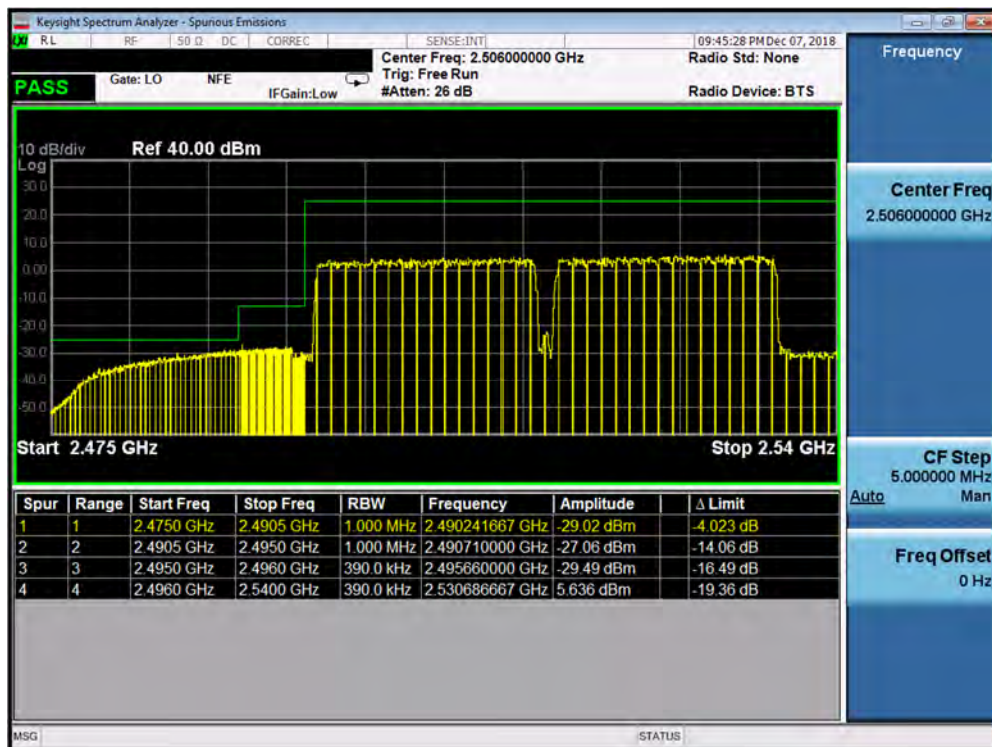


Plot 7-111. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 78 of 116

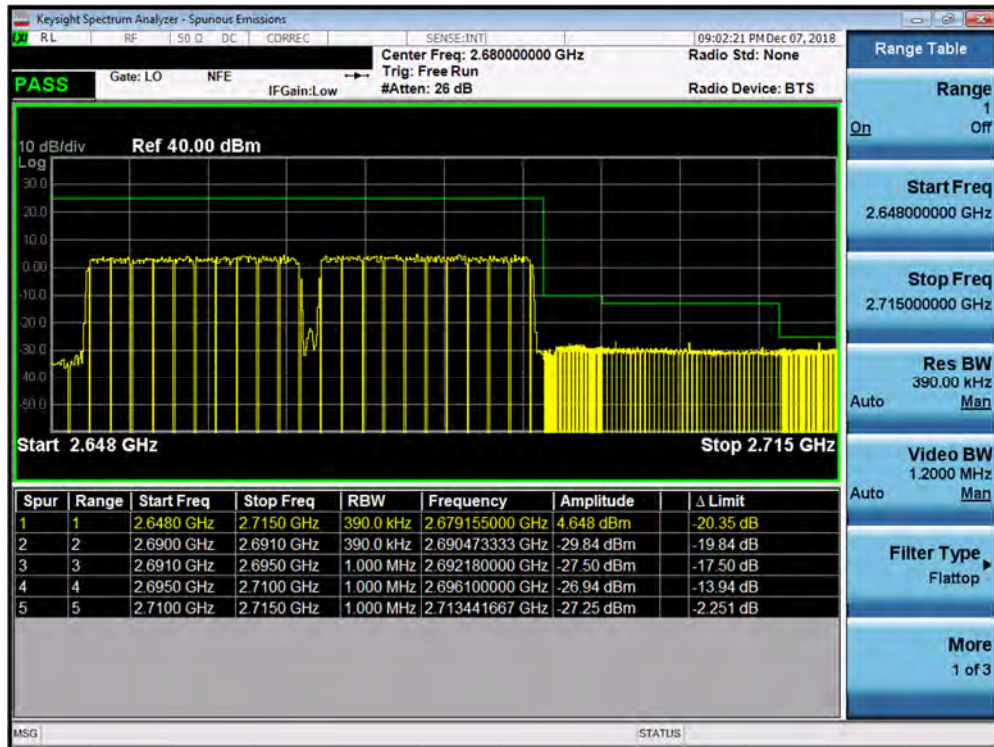


Plot 7-112. Conducted Spurious Plot (Band 41C – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-113. Lower ACP Plot (Band 41C – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSCV41			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 79 of 116	



Plot 7-114. Upper ACP Plot (Band 41C – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSCV41	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 80 of 116

7.6 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

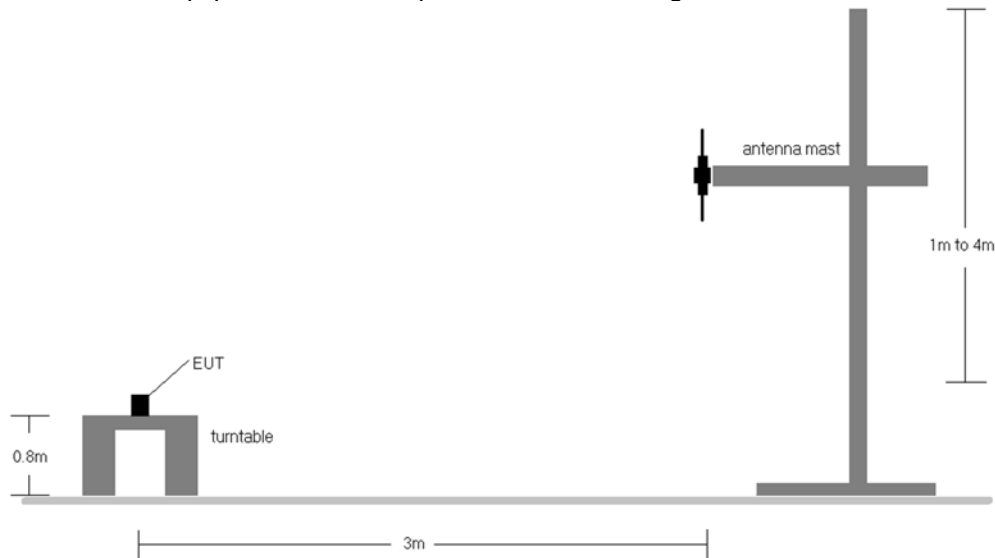


Figure 7-5. Radiated Test Setup <1GHz

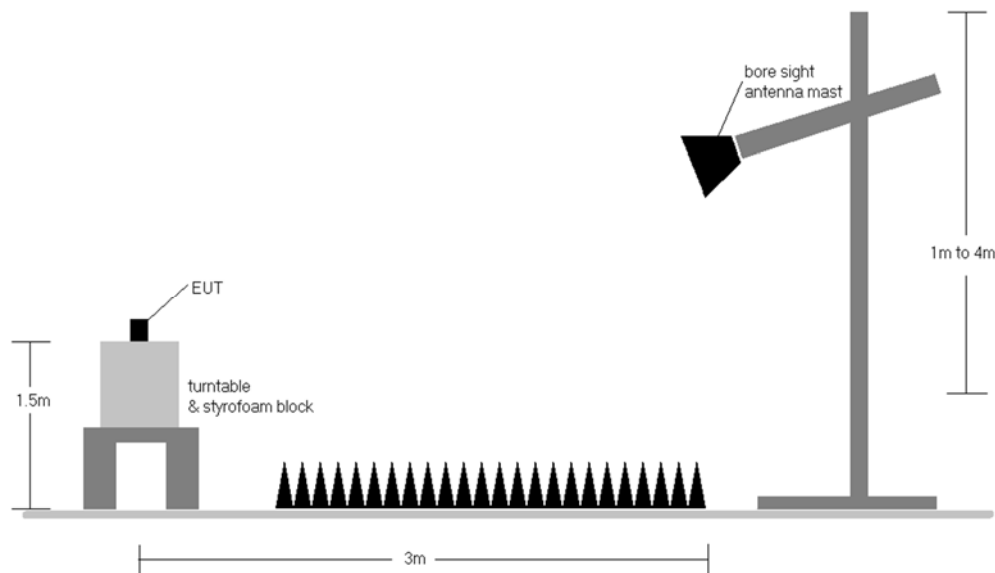


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	264	244	1 / 0	15.82	4.00	17.67	0.058	34.77	-17.10
707.50	1.4	QPSK	H	264	244	1 / 0	16.58	4.22	18.65	0.073	34.77	-16.13
715.30	1.4	QPSK	H	264	244	1 / 0	17.89	4.44	20.18	0.104	34.77	-14.59
715.30	1.4	16-QAM	H	264	244	1 / 0	16.69	4.44	18.98	0.079	34.77	-15.79
715.30	1.4	64-QAM	H	264	244	1 / 0	15.22	4.44	17.51	0.056	34.77	-17.26
700.50	3	QPSK	H	264	243	1 / 14	16.92	4.01	18.78	0.076	34.77	-15.99
707.50	3	QPSK	H	264	243	1 / 14	17.68	4.22	19.75	0.094	34.77	-15.03
714.50	3	QPSK	H	264	243	1 / 0	17.94	4.41	20.20	0.105	34.77	-14.57
714.50	3	16-QAM	H	264	243	1 / 14	16.47	4.41	18.73	0.075	34.77	-16.04
714.50	3	64-QAM	H	264	243	1 / 14	15.76	4.41	18.02	0.063	34.77	-16.75
701.50	5	QPSK	H	267	256	1 / 0	16.93	4.04	18.82	0.076	34.77	-15.95
707.50	5	QPSK	H	267	256	1 / 24	17.61	4.22	19.68	0.093	34.77	-15.10
713.50	5	QPSK	H	267	256	1 / 0	17.39	4.39	19.63	0.092	34.77	-15.14
707.50	5	16-QAM	H	267	256	1 / 24	16.73	4.22	18.80	0.076	34.77	-15.98
707.50	5	64-QAM	H	267	256	1 / 24	15.29	4.22	17.36	0.054	34.77	-17.42
704.00	10	QPSK	H	265	235	1 / 49	18.89	4.12	20.86	0.122	34.77	-13.92
707.50	10	QPSK	H	265	235	1 / 49	19.16	4.22	21.23	0.133	34.77	-13.55
711.00	10	QPSK	H	265	235	1 / 49	17.89	4.32	20.06	0.101	34.77	-14.72
707.50	10	16-QAM	H	265	235	1 / 49	18.28	4.22	20.35	0.108	34.77	-14.43
707.50	10	64-QAM	H	265	235	1 / 49	16.84	4.22	18.91	0.078	34.77	-15.87
707.50	10	QPSK	V	418	312	1 / 49	14.36	3.90	16.11	0.041	34.77	-18.66
707.50	10 (WCP)	QPSK	H	255	234	1 / 49	17.19	4.22	19.26	0.084	34.77	-15.52

Table 7-5. ERP Data (Band 12)

FCC ID: A3LSCV41	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	335	95	1 / 24	19.94	1.32	19.11	0.081	34.77	-15.66
782.00	5	QPSK	H	349	97	1 / 24	20.54	1.33	19.72	0.094	34.77	-15.05
784.50	5	QPSK	H	324	103	1 / 24	20.42	1.34	19.61	0.091	34.77	-15.16
782.00	5	16-QAM	H	349	97	1 / 24	19.95	1.33	19.13	0.082	34.77	-15.64
782.00	5	64-QAM	H	349	97	1 / 24	19.04	1.33	18.22	0.066	34.77	-16.55
782.00	10	QPSK	H	351	84	1 / 49	20.30	1.33	19.48	0.089	34.77	-15.29
782.00	10	16-QAM	H	351	84	1 / 49	19.40	1.33	18.58	0.072	34.77	-16.19
782.00	10	64-QAM	H	351	84	1 / 49	18.55	1.33	17.73	0.059	34.77	-17.04
782.00	5	QPSK	V	73	316	1 / 24	9.08	1.33	8.26	0.007	34.77	-26.51
782.00	5 (WCP)	QPSK	H	363	283	1 / 24	19.74	1.33	18.92	0.078	34.77	-15.85

Table 7-6. ERP Data (Band 13)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	347	10	1 / 0	20.26	1.50	19.61	0.091	38.45	-18.84
836.50	1.4	QPSK	H	1	4	3 / 2	20.23	1.50	19.58	0.091	38.45	-18.87
848.30	1.4	QPSK	H	332	3	3 / 2	19.69	1.50	19.04	0.080	38.45	-19.41
824.70	1.4	16-QAM	H	347	10	1 / 5	19.79	1.50	19.14	0.082	38.45	-19.31
824.70	1.4	64-QAM	H	347	10	1 / 0	18.62	1.50	17.97	0.063	38.45	-20.48
825.50	3	QPSK	H	1	11	1 / 0	20.36	1.50	19.71	0.094	38.45	-18.74
836.50	3	QPSK	H	358	13	1 / 14	19.93	1.50	19.28	0.085	38.45	-19.17
847.50	3	QPSK	H	356	6	1 / 0	20.28	1.50	19.63	0.092	38.45	-18.82
825.50	3	16-QAM	H	1	11	1 / 14	19.66	1.50	19.01	0.080	38.45	-19.44
825.50	3	64-QAM	H	1	11	1 / 14	18.79	1.50	18.14	0.065	38.45	-20.31
826.50	5	QPSK	H	5	4	1 / 24	20.74	1.50	20.09	0.102	38.45	-18.36
836.50	5	QPSK	H	1	6	1 / 0	20.85	1.50	20.20	0.105	38.45	-18.25
846.50	5	QPSK	H	5	4	1 / 0	20.24	1.50	19.59	0.091	38.45	-18.86
836.50	5	16-QAM	H	1	6	1 / 24	19.89	1.50	19.24	0.084	38.45	-19.21
836.50	5	64-QAM	H	1	6	1 / 0	19.14	1.50	18.49	0.071	38.45	-19.96
829.00	10	QPSK	H	1	10	1 / 0	20.74	1.50	20.09	0.102	38.45	-18.36
836.50	10	QPSK	H	4	4	1 / 0	20.72	1.50	20.07	0.102	38.45	-18.38
844.00	10	QPSK	H	355	362	1 / 49	20.24	1.50	19.59	0.091	38.45	-18.86
829.00	10	16-QAM	H	1	10	1 / 0	20.03	1.50	19.38	0.087	38.45	-19.07
829.00	10	64-QAM	H	1	10	1 / 49	19.00	1.50	18.35	0.068	38.45	-20.10
836.50	5	QPSK	V	120	289	1 / 0	17.95	1.50	17.30	0.054	38.45	-21.15
836.50	5 (WCP)	QPSK	H	1	6	1 / 0	18.99	1.50	18.34	0.068	38.45	-20.11

Table 7-7. ERP Data (Band 5)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	105	295	1 / 0	14.83	7.71	22.54	0.179	33.01	-10.47
2593.00	5	QPSK	H	110	301	1 / 0	14.47	7.52	21.99	0.158	33.01	-11.02
2687.50	5	QPSK	H	110	301	1 / 0	14.00	7.90	21.90	0.155	33.01	-11.11
2502.50	5	16-QAM	H	105	295	1 / 0	14.50	7.71	22.21	0.166	33.01	-10.80
2502.50	5	64-QAM	H	105	295	1 / 0	14.01	7.71	21.72	0.149	33.01	-11.29
2505.00	10	QPSK	H	102	294	1 / 49	15.36	7.71	23.07	0.203	33.01	-9.94
2593.00	10	QPSK	H	110	299	1 / 49	14.86	7.53	22.39	0.173	33.01	-10.62
2685.00	10	QPSK	H	110	299	1 / 0	14.42	7.90	22.32	0.171	33.01	-10.69
2505.00	10	16-QAM	H	102	294	1 / 49	14.91	7.71	22.62	0.183	33.01	-10.39
2505.00	10	64-QAM	H	102	294	1 / 0	14.37	7.71	22.08	0.161	33.01	-10.93
2507.50	15	QPSK	H	104	298	1 / 0	15.52	7.71	23.23	0.210	33.01	-9.78
2593.00	15	QPSK	H	110	300	1 / 74	14.55	7.53	22.08	0.161	33.01	-10.93
2682.50	15	QPSK	H	110	300	1 / 0	14.15	7.89	22.04	0.160	33.01	-10.97
2507.50	15	16-QAM	H	104	298	1 / 74	14.65	7.71	22.36	0.172	33.01	-10.65
2507.50	15	64-QAM	H	104	298	1 / 0	13.88	7.71	21.59	0.144	33.01	-11.42
2510.00	20	QPSK	H	104	297	1 / 99	14.79	7.71	22.50	0.178	33.01	-10.51
2593.00	20	QPSK	H	114	295	1 / 0	14.19	7.54	21.73	0.149	33.01	-11.29
2680.00	20	QPSK	H	114	295	1 / 0	14.08	7.89	21.97	0.157	33.01	-11.04
2510.00	20	16-QAM	H	104	297	1 / 99	14.14	7.71	21.85	0.153	33.01	-11.16
2510.00	20	64-QAM	H	104	297	1 / 0	13.60	7.71	21.31	0.135	33.01	-11.70
2507.50	15	QPSK	H	126	69	1 / 0	12.61	7.88	20.49	0.112	33.01	-12.52
2507.50	15 (WCP)	QPSK	H	119	251	1 / 0	14.09	7.71	21.80	0.151	33.01	-11.21

Table 7-8. EIRP Data (Band 41 – PC3)

FCC ID: A3LSCV41	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 86 of 116

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

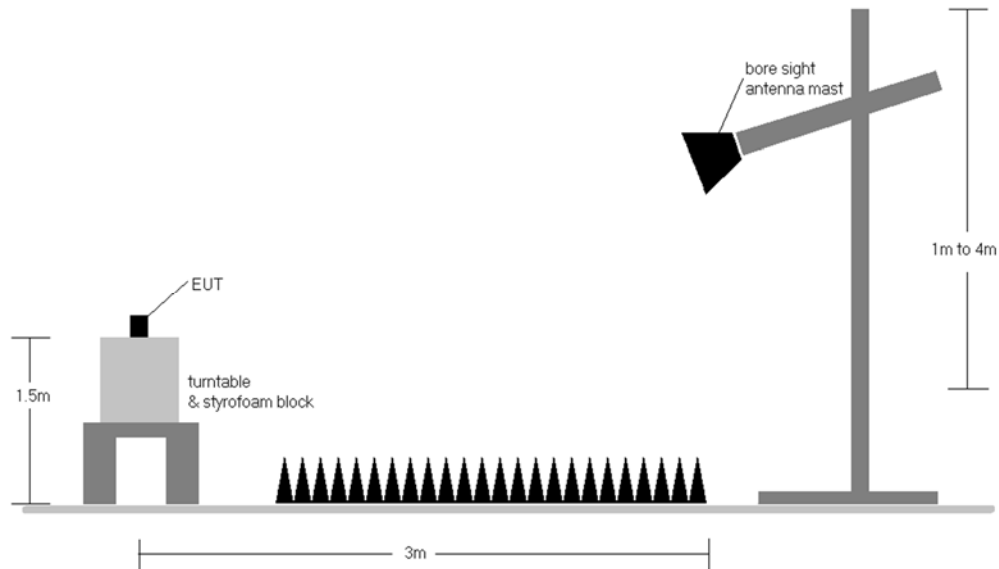


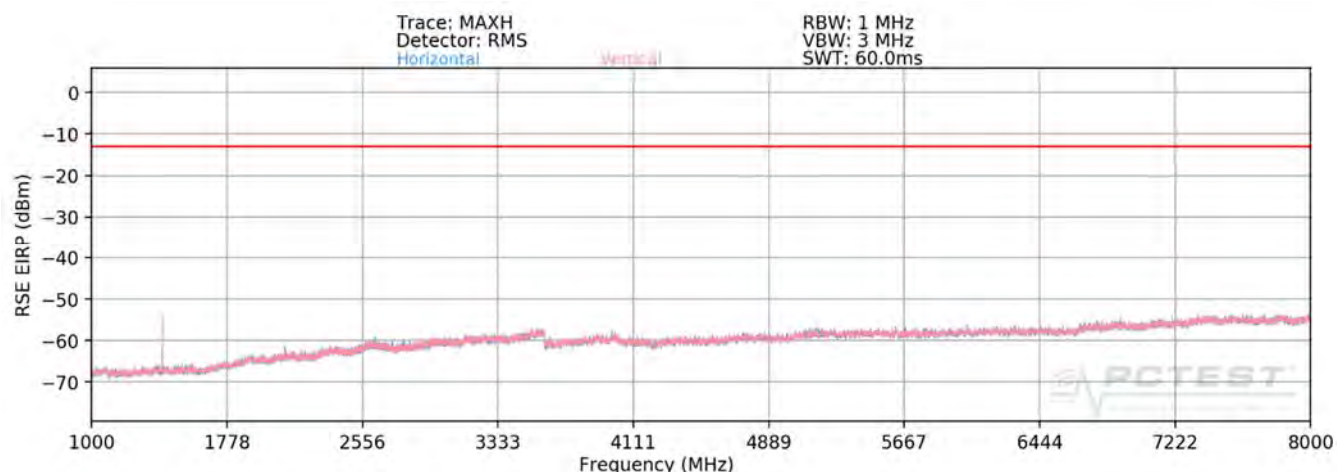
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

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Band 12



Plot 7-115. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY: 704.00 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 10.0 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	H	149	202	-60.93	2.30	-58.63	-45.6
2112.00	H	-	-	-66.92	3.12	-63.80	-50.8
2816.00	H	-	-	-68.53	4.82	-63.71	-50.7

Table 7-9. Radiated Spurious Data (Band 12 – Low Channel)

FCC ID: A3LSCV41	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 707.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	151	199	-58.46	2.39	-56.06	-43.1
2122.50	H	-	-	-67.15	3.14	-64.01	-51.0
2830.00	H	-	-	-68.29	4.87	-63.43	-50.4

Table 7-10. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY: 711.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	H	139	193	-58.18	2.53	-55.66	-42.7
2133.00	H	-	-	-67.40	3.11	-64.29	-51.3
2844.00	H	-	-	-68.00	4.91	-63.09	-50.1

Table 7-11. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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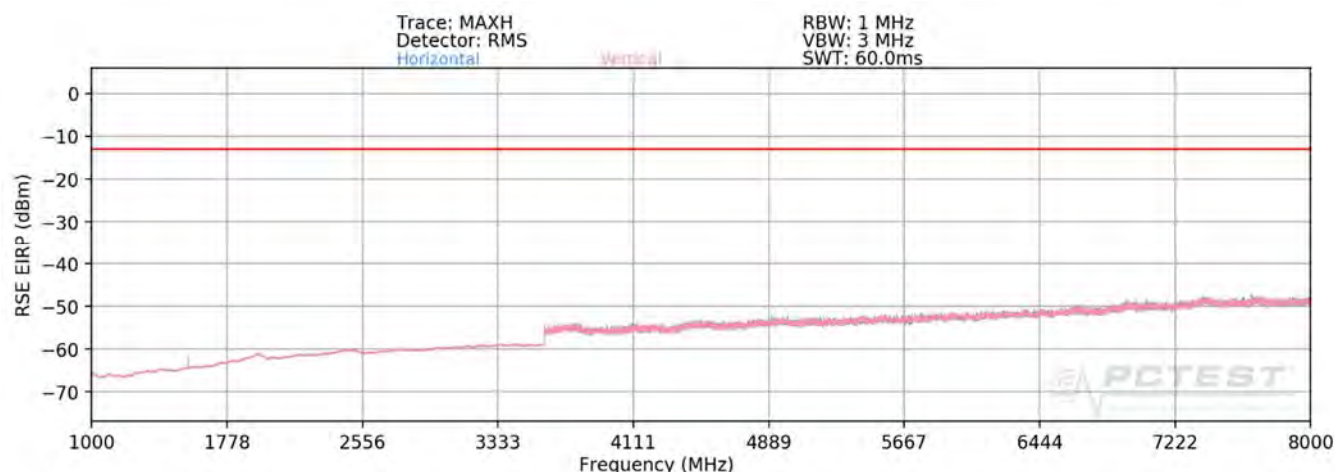
OPERATING FREQUENCY: 711.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	H	156	1711	-58.71	2.53	-56.19	-43.2
2133.00	H	-	-	-67.64	3.11	-64.53	-51.5
2844.00	H	-	-	-68.06	4.91	-63.15	-50.1

Table 7-12. Radiated Spurious Data with WCP (Band 12 – High Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13



Plot 7-116. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY: 779.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2338.50	H	-	-	-66.60	3.61	-62.99	-50.0
3118.00	H	-	-	-68.04	5.71	-62.34	-49.3

Table 7-13. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY: 782.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	-	-	-67.71	3.64	-64.07	-51.1
3128.00	H	-	-	-68.10	5.73	-62.37	-49.4

Table 7-14. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY: 784.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2353.50	H	-	-	-67.60	3.66	-63.94	-50.9
3138.00	H	-	-	-68.59	5.76	-62.83	-49.8

Table 7-15. Radiated Spurious Data (Band 13 – High Channel)

MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	199	205	-69.00	3.00	-66.00	-26.0
1564.00	H	240	194	-67.86	2.93	-64.92	-24.9
1569.00	H	-	-	-70.42	2.86	-67.56	-27.6

Table 7-16. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY: 782.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	-	-	-68.05	3.64	-64.41	-51.4
3128.00	H	-	-	-68.16	5.73	-62.43	-49.4

Table 7-17. Radiated Spurious Data with WCP (Band 13 –Mid Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 92 of 116

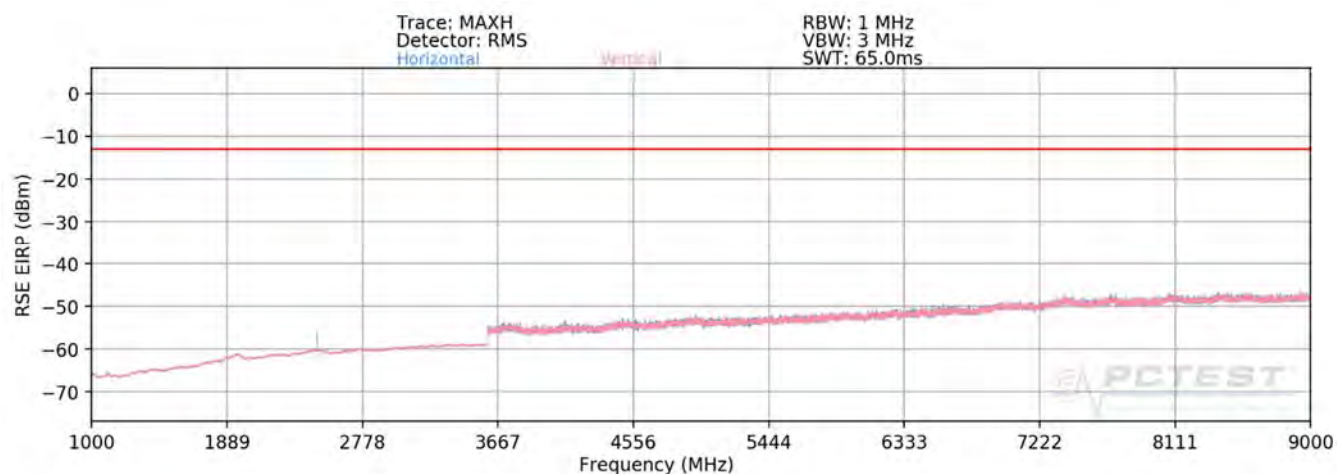
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	121	11	-68.91	2.93	-65.97	-26.0

Table 7-18. Radiated Spurious Data wit WCP (Band 13 – 1559-1610MHz Band)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 93 of 116

Band 5



Plot 7-117. Radiated Spurious Plot above 1GHz (Band 5)

OPERATING FREQUENCY: 826.50 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 5.0 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1653.00	V	-	-	-69.34	3.61	-65.73	-52.7
2479.50	V	-	-	-67.26	4.23	-63.03	-50.0
3306.00	V	-	-	-67.65	5.80	-61.85	-48.9

Table 7-19. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 94 of 116

OPERATING FREQUENCY: 836.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	-	-	-69.34	3.62	-65.72	-52.7
2509.50	V	-	-	-66.75	4.33	-62.41	-49.4
3346.00	V	-	-	-67.50	5.92	-61.58	-48.6

Table 7-20. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY: 846.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.00	V	-	-	-69.32	3.63	-65.69	-52.7
2539.50	V	-	-	-67.50	4.52	-62.99	-50.0
3386.00	V	-	-	-67.76	6.09	-61.67	-48.7

Table 7-21. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 95 of 116

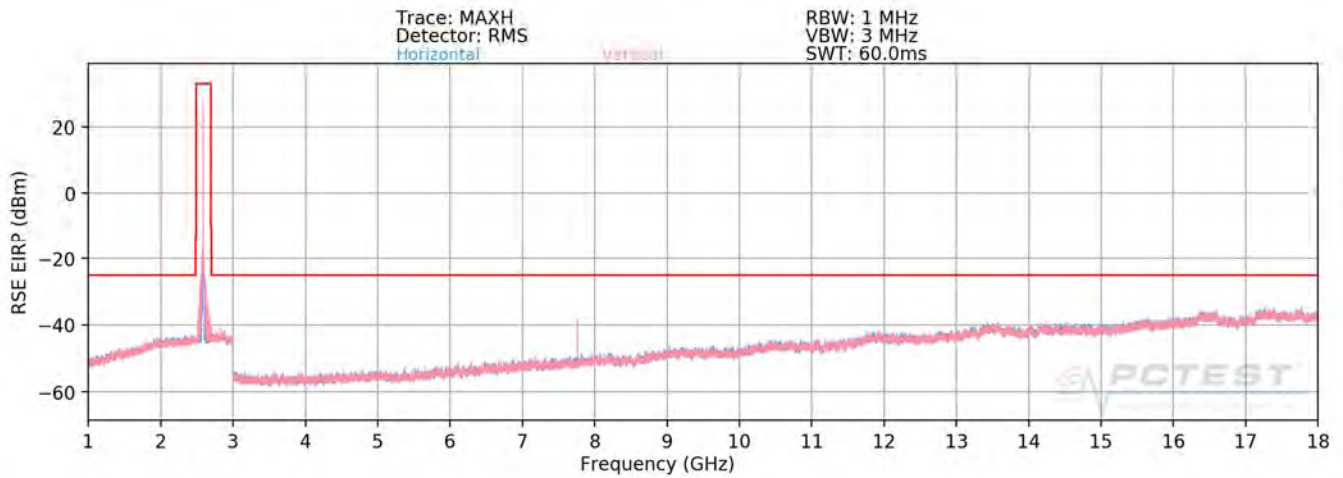
OPERATING FREQUENCY: 836.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	-	-	-70.22	3.62	-66.60	-53.6
2509.50	V	-	-	-66.84	4.33	-62.50	-49.5

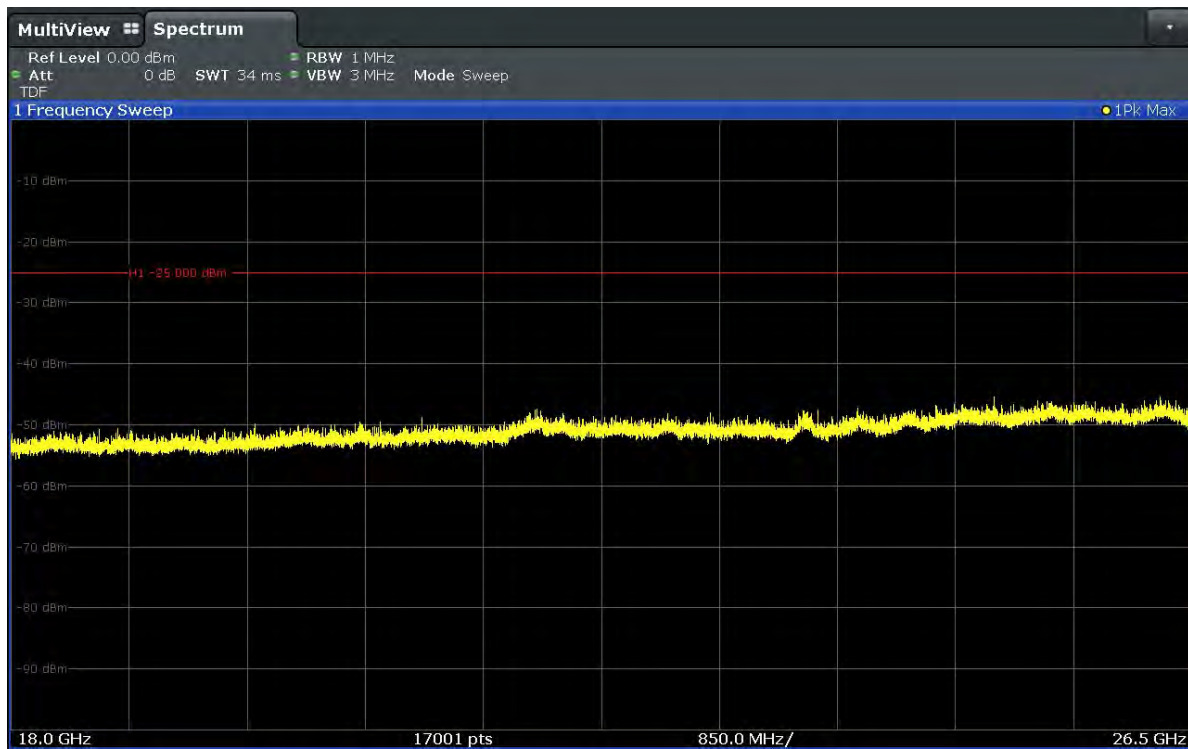
Table 7-22. Radiated Spurious Data with WCP (Band 5 – Mid Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 96 of 116

Band 41 – PC3

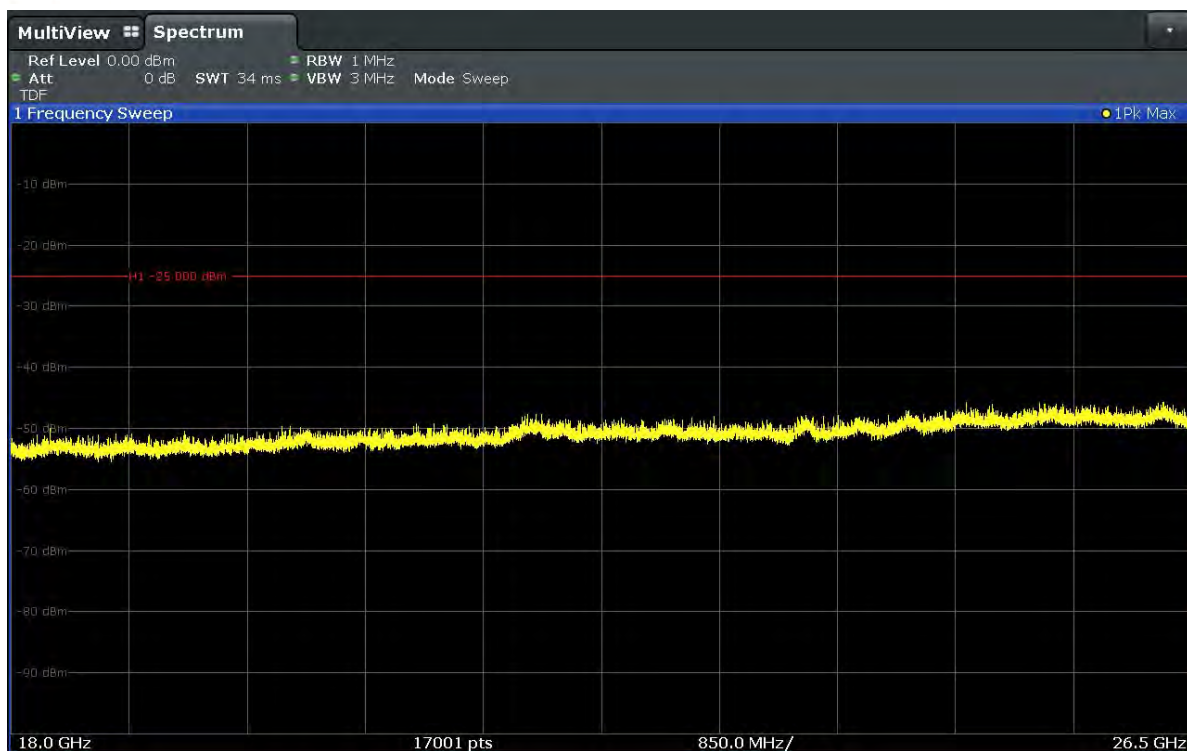


Plot 7-118. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC3)



Plot 7-119. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 PC3 - H)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 97 of 116



Plot 7-120. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 PC3 - V)

OPERATING FREQUENCY: 2507.50 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 15.0 MHz

DISTANCE: 3 meters

LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5015.00	H	130	356	-54.39	8.56	-45.83	-20.8
7522.50	H	199	27	-50.00	8.46	-41.55	-16.5
10030.00	H	-	-	-54.50	9.85	-44.65	-19.6

Table 7-23. Radiated Spurious Data (Band 41 PC3 – Low Channel)

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 98 of 116

OPERATING FREQUENCY: 2593.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	124	311	-54.24	8.70	-45.54	-20.5
7779.00	H	360	278	-48.38	8.69	-39.70	-14.7
10372.00	H	-	-	-53.03	9.62	-43.40	-18.4

Table 7-24. Radiated Spurious Data (Band 41 PC3 – Mid Channel)

OPERATING FREQUENCY: 2682.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5365.00	H	131	122	-50.84	8.70	-42.14	-17.1
8047.50	H	-	-	-55.49	8.95	-46.53	-21.5
10730.00	H	-	-	-52.22	9.32	-42.90	-17.9

Table 7-25. Radiated Spurious Data (Band 41 PC3 – High Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 99 of 116

OPERATING FREQUENCY: 2593.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	133	22	-55.74	8.70	-47.04	-22.0
7779.00	H	151	69	-50.12	8.69	-41.44	-16.4
10372.00	H	-	-	-53.12	9.62	-43.49	-18.5

Table 7-26. Radiated Spurious Data with WCP (Band 41 PC3 – Mid Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 100 of 116

7.8 Uplink Carrier Aggregation Radiated Measurements

\$2.1053, \$27.53(m)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. No. of sweep points $\geq 2 \times$ span / RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

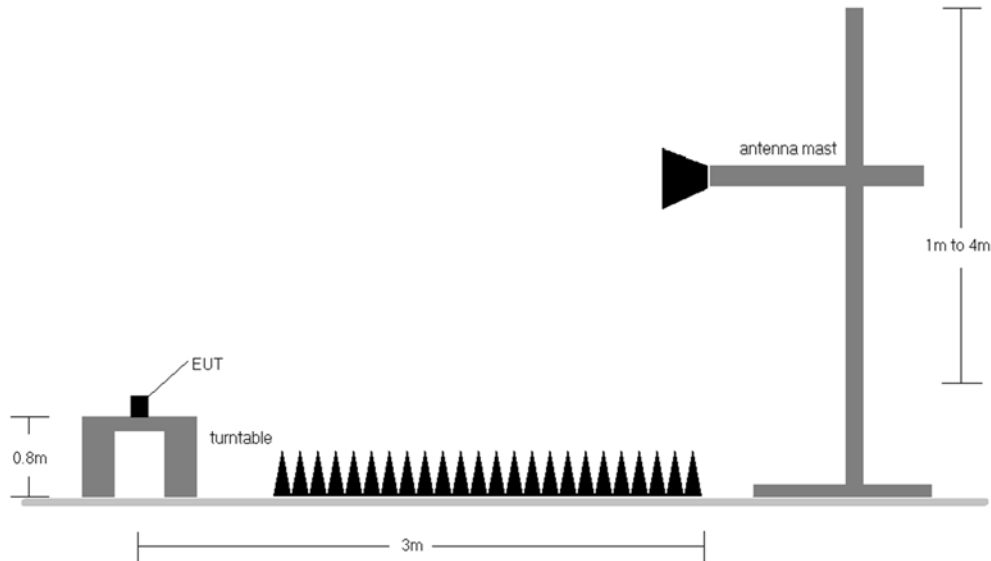


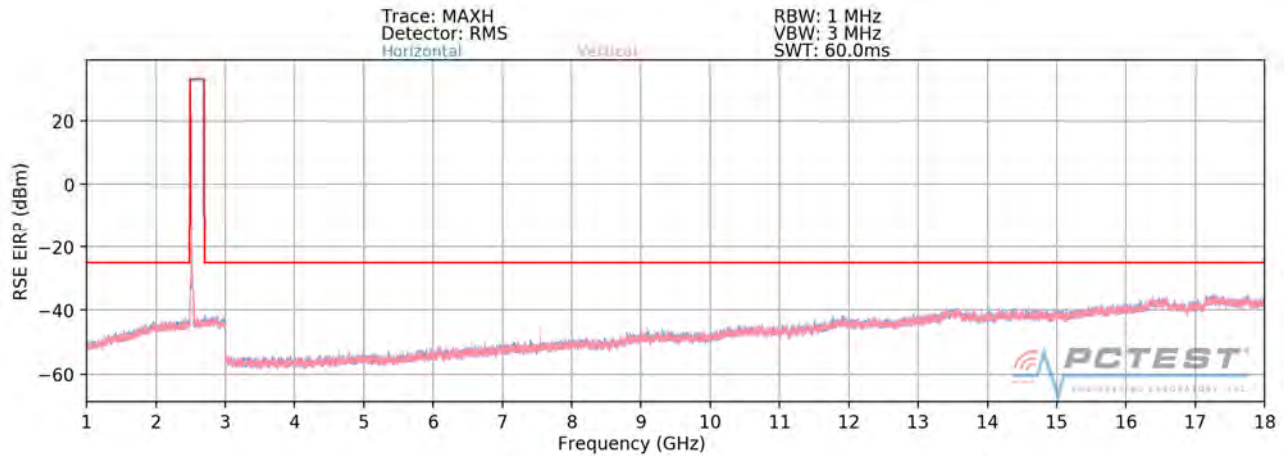
Figure 7-8. Test Instrument & Measurement Setup

Test Notes

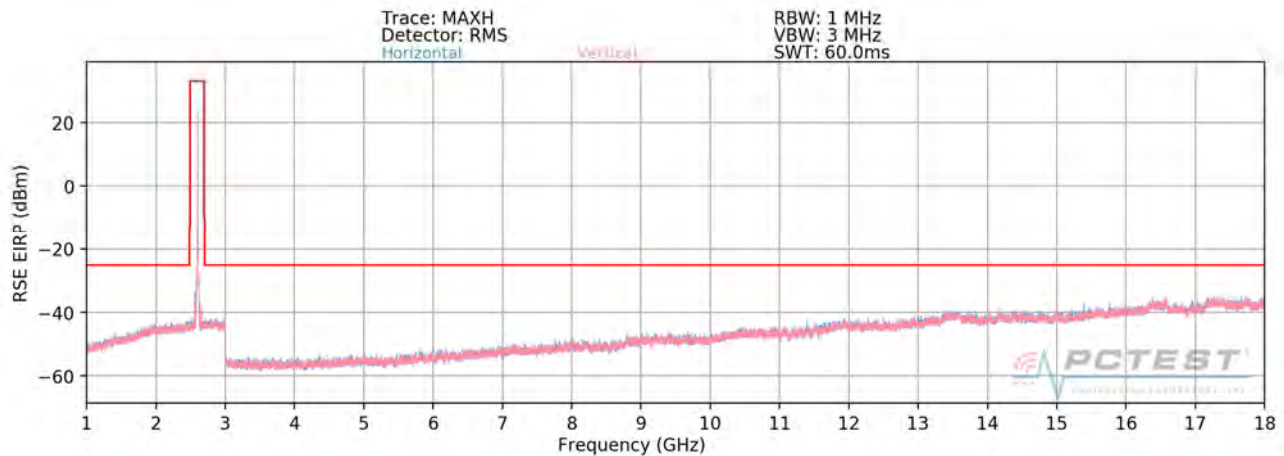
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 6) No significant emissions were found as a result of two uplink carriers operating contiguously.

FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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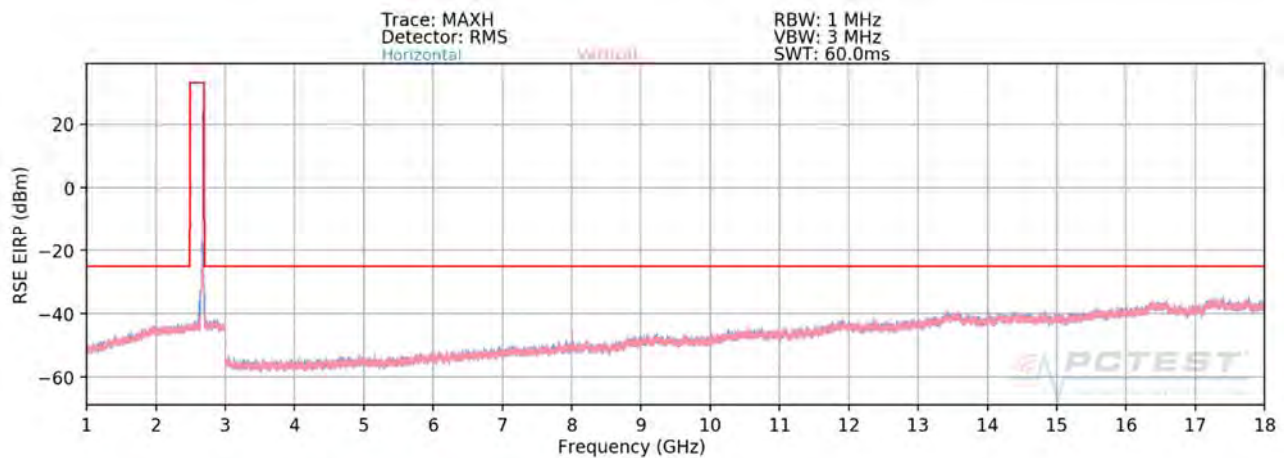
Uplink CA Configuration 41C (PC3)



Plot 7-121. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

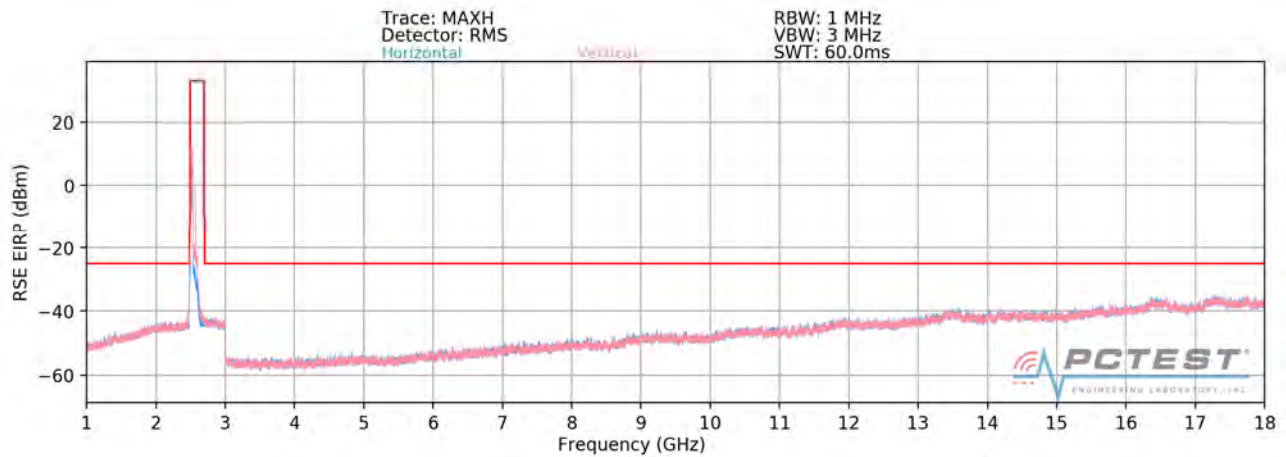


Plot 7-122. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

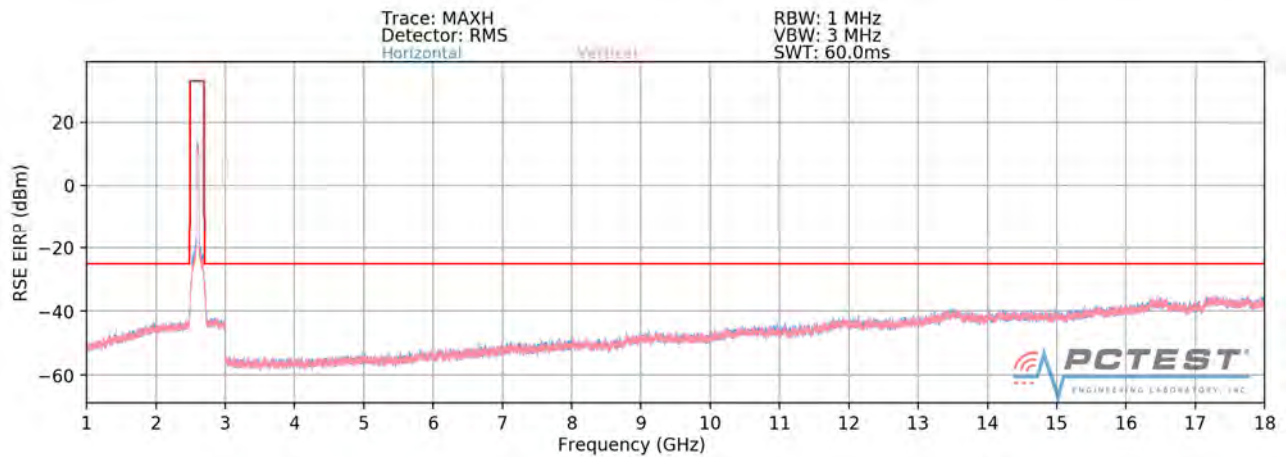


Plot 7-123. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

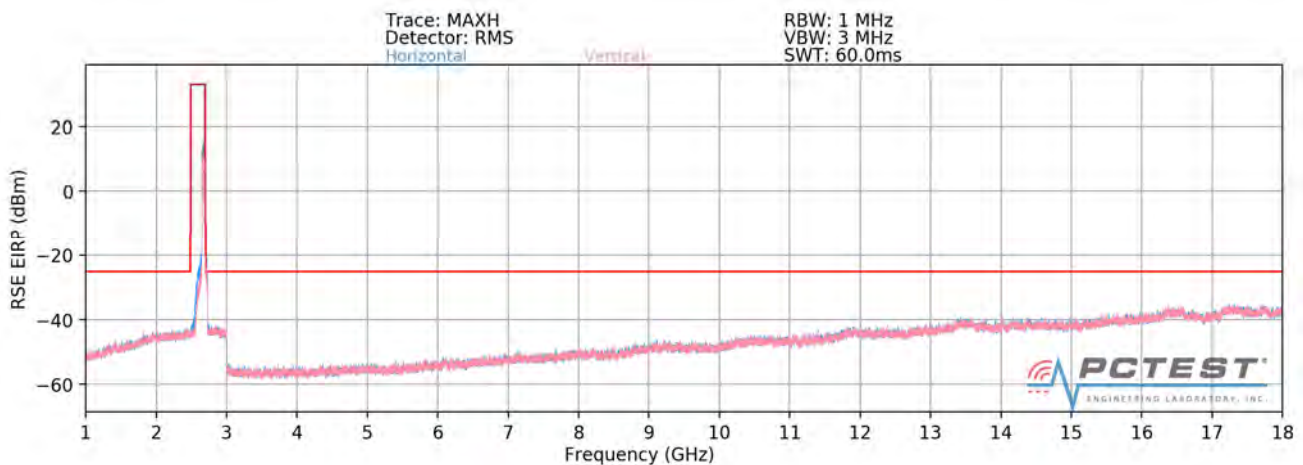
FCC ID: A3LSCV41	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 103 of 116



Plot 7-124. Radiated Spurious Plot (ULCA 41C PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Low Channel)



Plot 7-125. Radiated Spurious Plot (ULCA 41C PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Mid Channel)



Plot 7-126. Radiated Spurious Plot (ULCA 41C PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – High Channel)

FCC ID: A3LSCV41	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240016-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 104 of 116

OPERATING FREQUENCY (PCC): 2506.00 MHz
 OPERATING FREQUENCY (SCC): 2525.80 MHz
 CHANNEL (PCC): 39750
 CHANNEL (SCC): 39948
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	V	-	-	-58.47	8.75	-49.72	-24.7
7518.00	V	103	23	-53.28	9.32	-43.96	-19.0
10024.00	V	-	-	-54.24	9.80	-44.44	-19.4
12530.00	V	-	-	-49.55	8.87	-40.69	-15.7

Table 7-27. Radiated Spurious Data (ULCA 41C - PC3 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC): 2593.00 MHz
 OPERATING FREQUENCY (SCC): 2612.80 MHz
 CHANNEL (PCC): 40620
 CHANNEL (SCC): 40818
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	V	-	-	-60.21	9.03	-51.19	-26.2
7779.00	V	107	25	-55.66	9.29	-46.37	-21.4
10372.00	V	-	-	-54.14	9.50	-44.64	-19.6
12965.00	V	-	-	-49.47	8.75	-40.72	-15.7

Table 7-28. Radiated Spurious Data (ULCA 41C - PC3 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY (PCC): 2680.00 MHz
 OPERATING FREQUENCY (SCC): 2660.20 MHz
 CHANNEL (PCC): 41490
 CHANNEL (SCC): 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	-	-	-59.48	8.99	-50.49	-25.5
8040.00	V	106	19	-49.68	9.35	-40.33	-15.3
10720.00	V	-	-	-51.64	9.39	-42.25	-17.3
13400.00	V	-	-	-47.18	8.67	-38.51	-13.5

Table 7-29. Radiated Spurious Data (ULCA 41C- PC3 - PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

OPERATING FREQUENCY: 2680.00 MHz
 OPERATING FREQUENCY: 2660.20 MHz
 CHANNEL: 41490
 CHANNEL: 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	-	-	-61.98	8.99	-52.99	-28.0
8040.00	V	247	71	-58.21	9.35	-48.86	-23.9
10720.00	V	-	-	-55.92	9.39	-46.53	-21.5
13400.00	V	-	-	-52.09	8.67	-43.42	-18.4

Table 7-30. Radiated Spurious Data with WCP (ULCA 41C - PC3 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

FCC ID: A3LSCV41	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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7.9 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. 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.

For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

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 connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 4.31 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	707,499,743	-298	-0.0000421
100 %		- 20	707,500,401	360	0.0000509
100 %		- 10	707,500,191	150	0.0000212
100 %		0	707,500,485	444	0.0000628
100 %		+ 10	707,499,880	-161	-0.0000228
100 %		+ 20	707,499,990	-51	-0.0000072
100 %		+ 30	707,500,138	97	0.0000137
100 %		+ 40	707,500,041	0	0.0000000
100 %		+ 50	707,499,658	-383	-0.0000541
BATT. ENDPOINT	3.48	+ 20	707,500,030	-11	-0.0000016

Table 7-31. Frequency Stability Data (Band 12)

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: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12 Frequency Stability Measurements

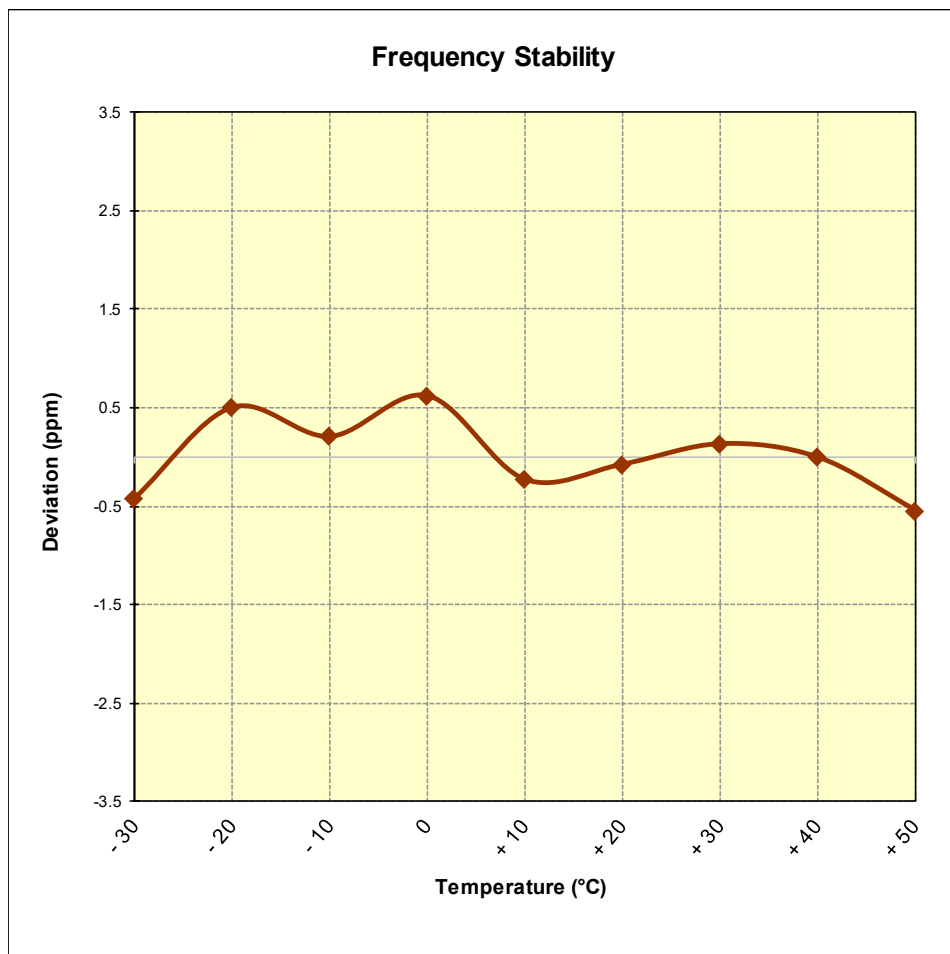


Figure 7-9. Frequency Stability Graph (Band 12)

FCC ID: A3LSCV41		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz
 CHANNEL: 23230
 REFERENCE VOLTAGE: 4.31 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	782,000,378	125	0.0000160
100 %		- 20	782,000,131	-122	-0.0000156
100 %		- 10	781,999,873	-380	-0.0000486
100 %		0	782,000,564	311	0.0000398
100 %		+ 10	782,000,091	-162	-0.0000207
100 %		+ 20	782,000,594	341	0.0000436
100 %		+ 30	782,000,330	77	0.0000098
100 %		+ 40	782,000,192	-61	-0.0000078
100 %		+ 50	782,000,223	-30	-0.0000038
BATT. ENDPOINT	3.48	+ 20	782,000,632	379	0.0000485

Table 7-32. Frequency Stability Data (Band 13)

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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Band 13 Frequency Stability Measurements

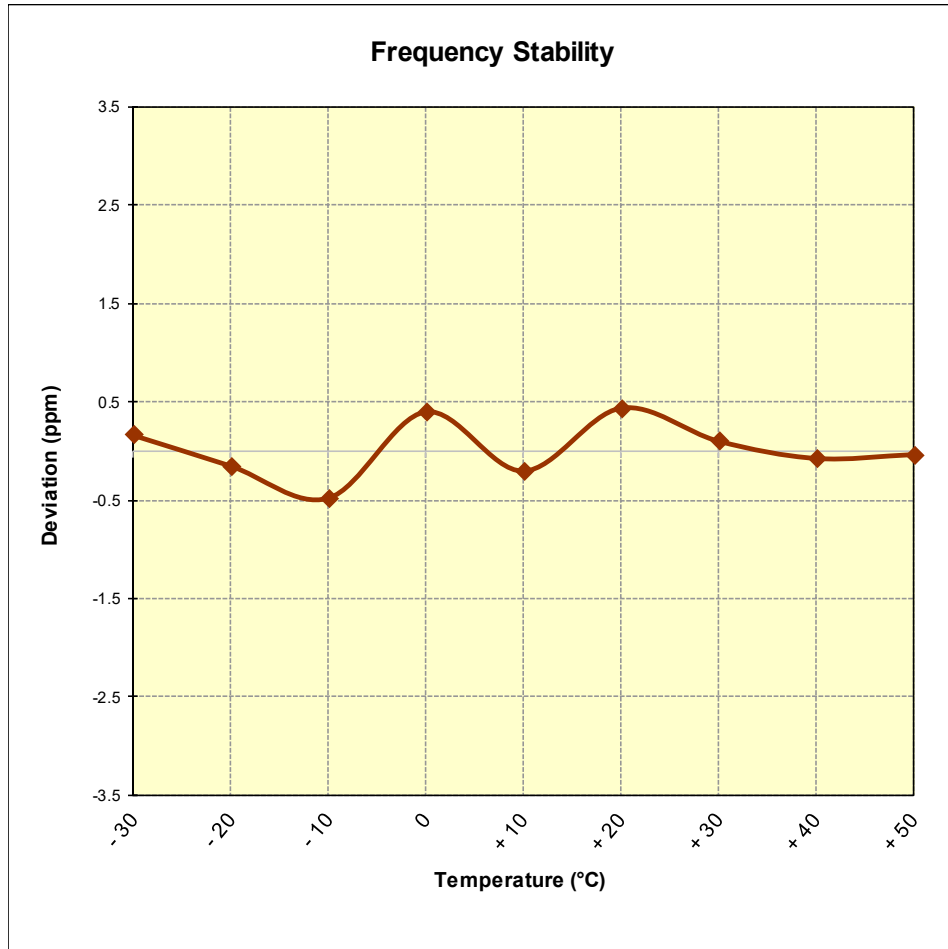


Figure 7-10. Frequency Stability Graph (Band 13)

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Band 5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz
 CHANNEL: 20525
 REFERENCE VOLTAGE: 4.31 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	836,499,657	-51	-0.0000061
100 %		- 20	836,500,061	353	0.0000422
100 %		- 10	836,499,352	-356	-0.0000426
100 %		0	836,499,429	-279	-0.0000334
100 %		+ 10	836,499,754	46	0.0000055
100 %		+ 20	836,499,616	-92	-0.0000110
100 %		+ 30	836,499,481	-227	-0.0000271
100 %		+ 40	836,499,909	201	0.0000240
100 %		+ 50	836,499,722	14	0.0000017
BATT. ENDPOINT	3.48	+ 20	836,499,469	-239	-0.0000286

Table 7-33. Frequency Stability Data (Band 5)

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Band 5 Frequency Stability Measurements

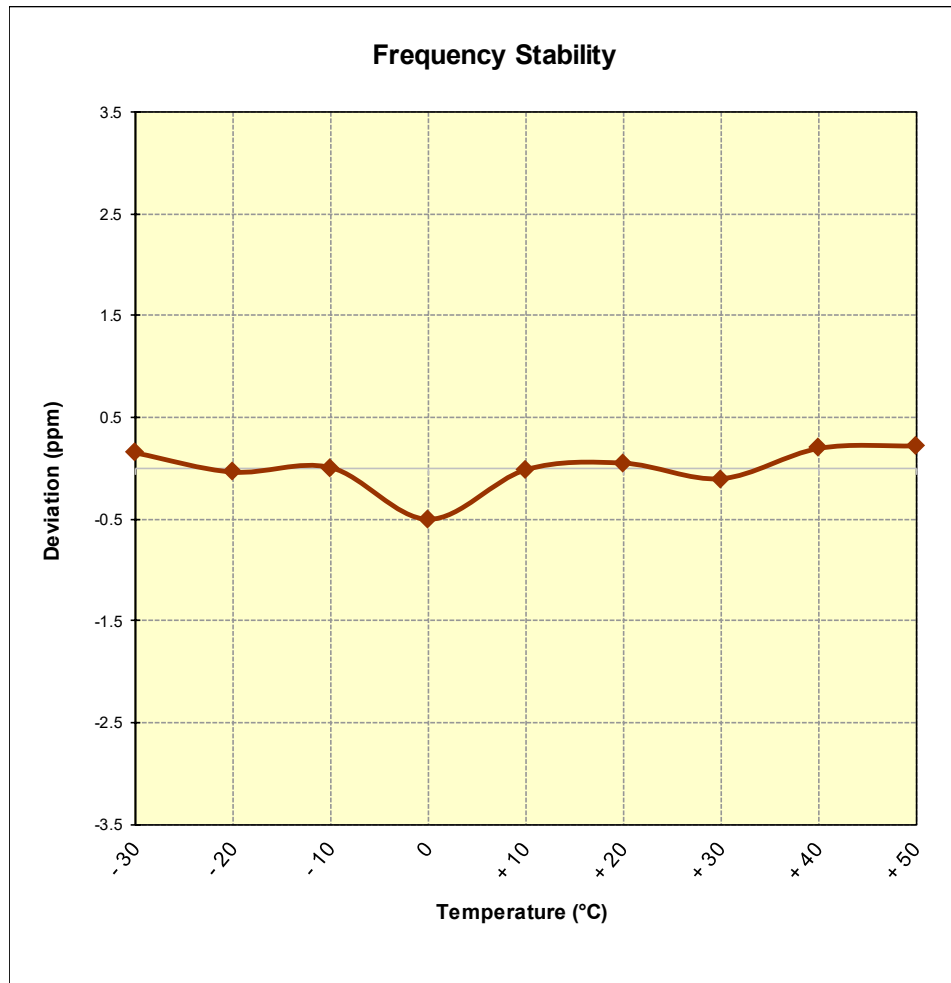


Figure 7-11. Frequency Stability Graph (Band 5)

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Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz
 CHANNEL: 40620
 REFERENCE VOLTAGE: 4.31 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	2,592,999,830	-433	-0.0000167
100 %		- 20	2,593,000,096	-167	-0.0000064
100 %		- 10	2,593,000,226	-37	-0.0000014
100 %		0	2,593,000,198	-65	-0.0000025
100 %		+ 10	2,593,000,158	-105	-0.0000040
100 %		+ 20	2,593,000,337	74	0.0000029
100 %		+ 30	2,593,000,220	-43	-0.0000017
100 %		+ 40	2,593,000,189	-74	-0.0000029
100 %		+ 50	2,593,000,672	409	0.0000158
BATT. ENDPOINT	3.48	+ 20	2,592,999,923	-340	-0.0000131

Table 7-34. Frequency Stability Data (Band 41)

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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Band 41 Frequency Stability Measurements

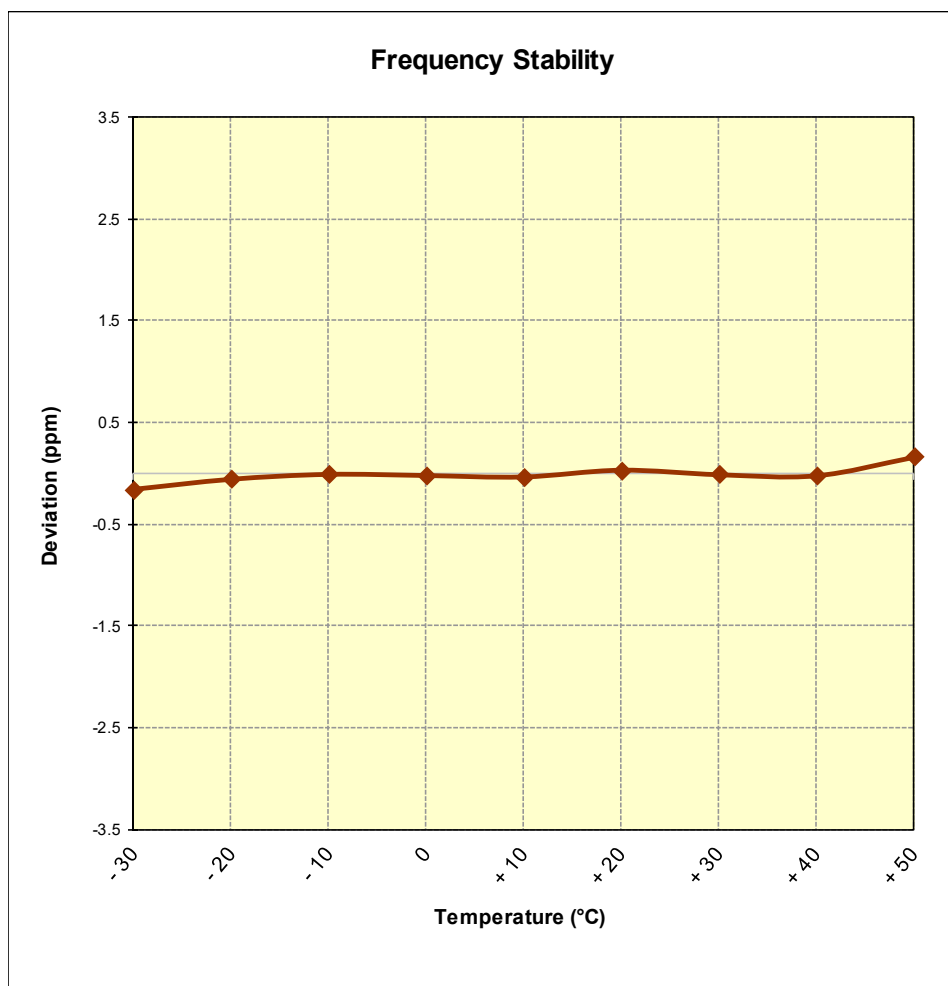


Figure 7-12. Frequency Stability Graph (Band 41)

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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: A3LSCV41** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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