



MEASUREMENT REPORT

FCC Part 22, 24 & 27 LTE

Applicant Name:

Samsung Electronics, Co. Ltd.
18600 Broadwick St.
Rancho Dominguez, CA 90220
United States

Date of Testing:

March 8 - April 9, 2012

Test Site/Location:

PCTEST Lab., Columbia, MD, USA

Test Report Serial No.:

0Y1203080270.A3L

FCC ID : A3LSCHI405U

APPLICANT: SAMSUNG ELECTRONICS, CO. LTD.

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s):

§2; §22; §24; §27

EUT Type:

Portable Handset

Model(s):

SCH-I405

Test Device Serial No.:

identical prototype [S/N: 17]

LTE Band	Bandwidth (MHz)	Tx Frequency (MHz)	Modulation	Emission Designator	ERP/EIRP	
					Max. Power (W)	Max. Power (dBm)
12	5	701.5 - 713.5	QPSK	4M48G7D	0.101	20.02
12	5	701.5 - 713.5	16QAM	4M47W7D	0.108	20.32
12	10	704 - 711	QPSK	8M89G7D	0.131	21.16
12	10	704 - 711	16QAM	8M94W7D	0.114	20.56
5	1.4	824.7 - 848.3	QPSK	1M09G7D	0.109	20.39
5	1.4	824.7 - 848.3	16QAM	1M09W7D	0.109	20.39
5	3	825.5 - 847.5	QPSK	2M69G7D	0.097	19.88
5	3	825.5 - 847.5	16QAM	2M71W7D	0.109	20.38
5	5	826.5 - 846.5	QPSK	4M46G7D	0.108	20.34
5	5	826.5 - 846.5	16QAM	4M47W7D	0.111	20.44
4	5	1712.5 - 1752.5	QPSK	4M49G7D	0.116	20.64
4	5	1712.5 - 1752.5	16QAM	4M47W7D	0.086	19.34
4	10	1715 - 1750	QPSK	8M95G7D	0.173	22.37
4	10	1715 - 1750	16QAM	8M91W7D	0.131	21.17
2	1.4	1850.7 - 1909.3	QPSK	1M08G7D	0.170	22.30
2	1.4	1850.7 - 1909.3	16QAM	1M08W7D	0.129	21.10
2	3	1851.5 - 1908.5	QPSK	2M68G7D	0.190	22.80
2	3	1851.5 - 1908.5	16QAM	2M69W7D	0.135	21.30
5	5	1852.5 - 1907.5	QPSK	4M46G7D	0.173	22.39
5	5	1852.5 - 1907.5	16QAM	4M46W7D	0.123	20.89

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.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.


Randy Ortner
President



FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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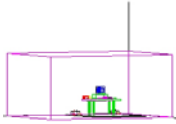
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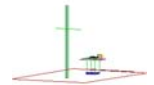
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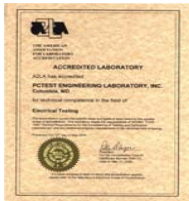


§2.1033 General Information

APPLICANT: Samsung Electronics, Co. Ltd.
APPLICANT ADDRESS: 18600 Broadwick St.
 Rancho Dominguez, CA 90220, United States
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §22; §24; §27
BASE MODEL: SCH-I405
FCC ID: A3LSCHI405U
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
FREQUENCY TOLERANCE: $\pm 0.00025\%$ (2.5 ppm)
Test Device Serial No.: 17 ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST: March 8 - April 9, 2012
TEST REPORT S/N: 0Y1203080270.A3L

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab. located in Columbia, MD 21045, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451A-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451A-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.



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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) 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 Industry Canada Certification and Engineering Bureau.

1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Internt'l (BWI) airport, the city of Baltimore and the Washington, DC area. (See Figure 1-1).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 28, 2009.

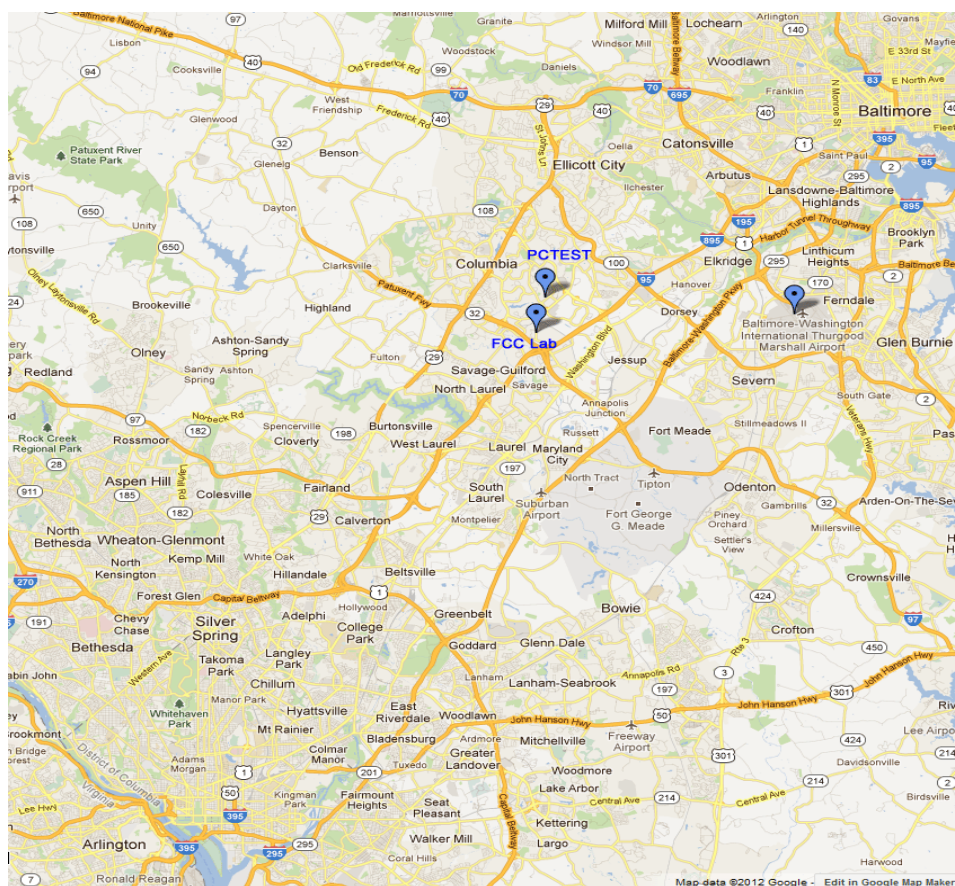


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSCHI405U**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA/EvDO Rev0/A (BC0, BC1); Band 2,5 LTE with 1.4/3/5MHz Bandwidth and Band 4,12 LTE with 5/10MHz Bandwidth; 802.11a/b/g/n WLAN; 802.11a/n UNII; Bluetooth (1x,EDR)

2.3 EMI Suppression Device(s)/Modifications

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

2.4 Labeling Requirements

Per 2.925

The FCC identifier shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase..

Per 15.19; Docket 95-19

In addition to this requirement, a device subject to certification shall be labeled as follows:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

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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-C-2004) was used in the measurement of the **Samsung Portable Handset** FCC ID: **A3LSCHI405U**.

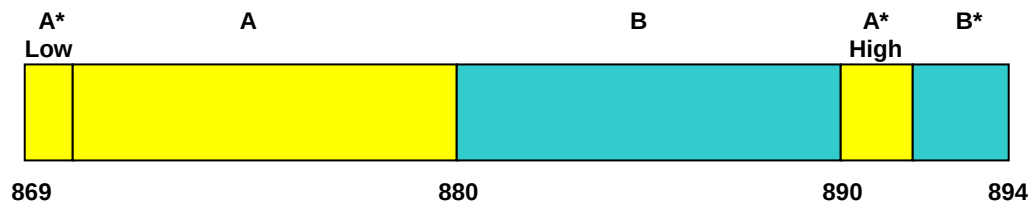
3.2 Block A Frequency Range

§27.5(c)

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.

3.3 Cellular - Base Frequency Blocks



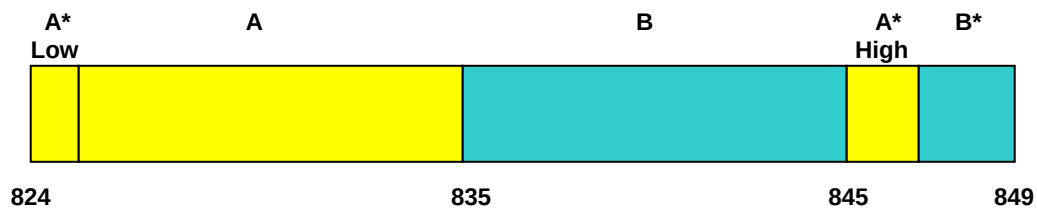
BLOCK 1: 869 – 880 MHz (A* Low + A)

BLOCK 3: 890 – 891.5 MHz (A* High)

BLOCK 2: 880 – 890 MHz (B)

BLOCK 4: 891.5 – 894 MHz (B*)

3.4 Cellular - Mobile Frequency Blocks



BLOCK 1: 824 – 835 MHz (A* Low + A)

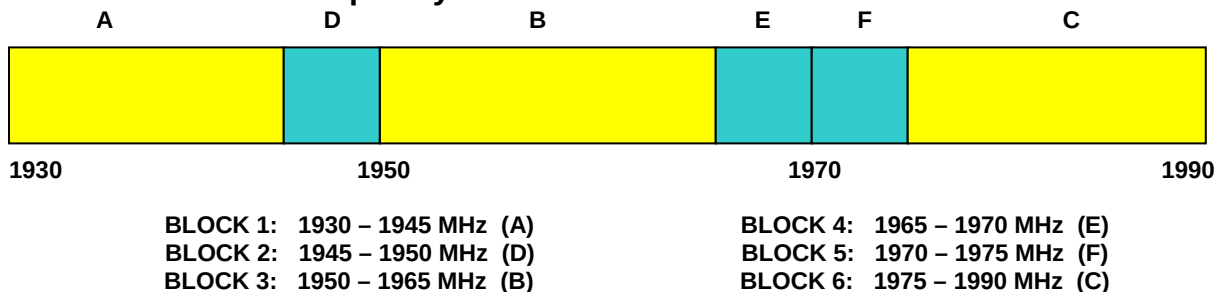
BLOCK 3: 845 – 846.5 MHz (A* High)

BLOCK 2: 835 – 845 MHz (B)

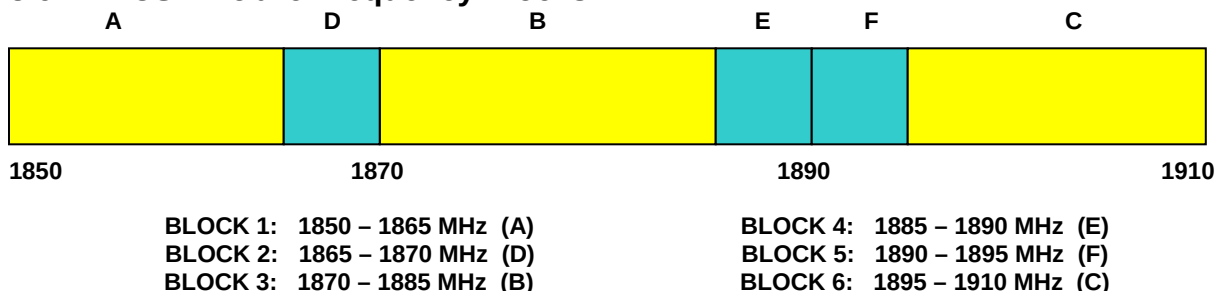
BLOCK 4: 846.5 – 849 MHz (B*)

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3.5 PCS - Base Frequency Blocks

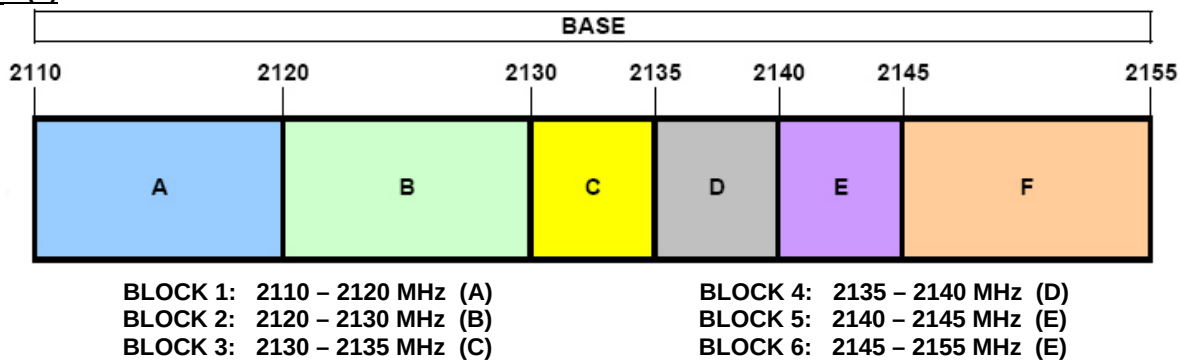


3.6 PCS - Mobile Frequency Blocks



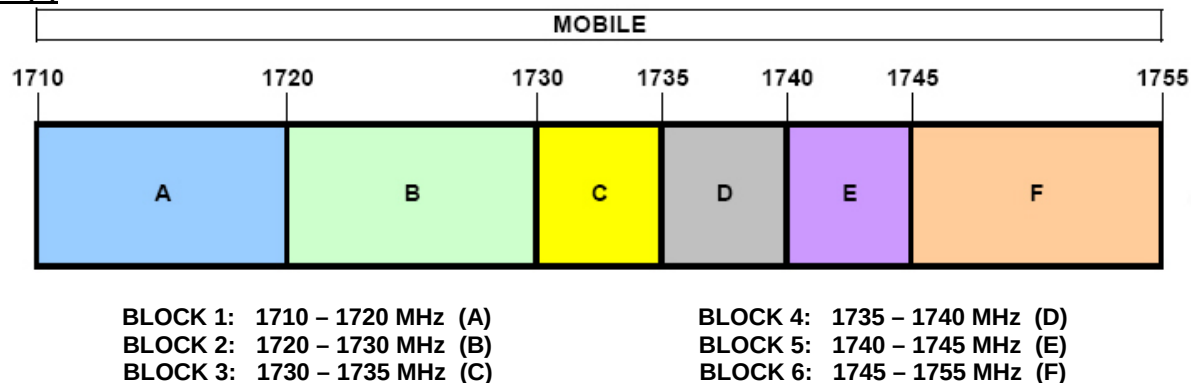
3.7 AWS - Base Frequency Blocks

§27.5(h)



3.8 AWS - Mobile Frequency Blocks

§27.5(h)



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3.9 Occupied Bandwidth

§2.1049, RSS-Gen (4.6.1)

The implementation of this test is performed by the spectrum analyzer's occupied bandwidth function. 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.

3.10 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, 22.917(a), 24.238(a)(b); RSS-132 (4.5.1), RSS-133 (6.5.1), §27.53(g)(h)

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. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. 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.

3.11 Peak-Average Ratio

§24.232(d), §27.50(d)(5), RSS-133 (6.4)

A peak to average ratio measurement is performed at the conducted port of the EUT. For LTE signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

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3.12 Radiated Power and Radiated Spurious Emissions

§2.1053, §22.913(a)(2), 22.917(a), 24.232(c), 24.238(a), §27.53(g)(h), 27.50(d)(4), 27.50(c)(10), RSS-132(4.5.1.2), RSS-133 (6.5.1)

Radiated spurious emissions are investigated indoors in a semi-anechoic chamber to determine the frequencies producing the worst case emissions. Final measurements for radiated power and radiated spurious emissions are performed on the 3 meter OATS per the guidelines of ANSI/TIA-603-C-2004. The measurement area is situated on an 18 meter x 20 meter galvanized 1/2" hardware cloth as the conducting ground plane. This material is sewn together in sections 4 feet wide and 60 feet long. A total of eighteen sections are required to cover the entire measurement area. Sections are laid across the width of the pad, overlapped 1" and sewn and soldered together at intervals of 3" (7.6 cm.) The terrain of the test site is reasonably flat and level. Power and cable to the test site are buried 18" deep into the ground outside the perimeter of the site. An all-weather non-metallic housing is situated on a 2 x 3 meter area adjacent to the measurement area to house the test equipment. The equipment under test was transmitting while connected to its integral antenna and is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. 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. Emissions are also investigated with the receive antenna horizontally and vertically polarized. The level of the maximized emission is recorded with the spectrum analyzer using a peak detector with RBW = 1MHz, VBW = 3MHz for emissions greater than 1GHz. For emissions below 1GHz, the spectrum analyzer is set to RBW = 100kHz and VBW = 300kHz.

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 $43 + 10\log_{10}(\text{Power [Watts]})$ specified in 22.917(a), 24.238(a), and 27.53(g)(h).

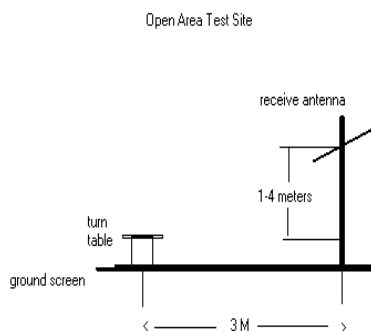


Figure 3-1. Diagram of 3-meter outdoor test range

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3.13 Frequency Stability / Temperature Variation

§2.1055, 22.355, 24.235, §27.54, RSS-132 (4.3), RSS-133 (6.3)

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.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

Time Period and Procedure:

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 one minute 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 sufficient stabilization period at each temperature shall be used prior to each frequency requirement.

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4.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTX1	Licensed Transmitter Cable Set	1/25/2012	Annual	1/25/2013	N/A
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	6/7/2011	Annual	6/7/2012	N/A
-	RE2	Radiated Emissions Cable Set (VHF/UHF)	2/13/2012	Annual	2/13/2013	N/A
Agilent	8447D	Broadband Amplifier	3/17/2011	Annual	3/17/2012	1937A03348
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	2/15/2012	Annual	2/15/2013	3008A00985
Agilent	E4448A	PSA (3Hz-50GHz) Spectrum Analyzer	2/15/2012	Annual	2/15/2013	US42510244
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/8/2011	Annual	4/8/2012	MY45470194
Agilent	N9020A	MXA Signal Analyzer	10/10/2011	Annual	10/10/2012	US46470561
Agilent	N9038A	MXE EMI Receiver	8/5/2011	Annual	8/5/2012	MY51210133
Emco	3115	Horn Antenna (1-18GHz)	4/8/2010	Biennial	4/8/2012	9205-3874
Espec	ESX-2CA	Environmental Chamber	4/21/2011	Annual	4/21/2012	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Annual	7/22/2012	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	5/31/2011	Annual	5/31/2012	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	10/1/2010	Biennial	10/1/2012	128337
Mini-Circuits	VHF-1300+	High Pass Filter	2/7/2012	Annual	2/7/2013	30716
Mini-Circuits	VHF-1200+	High Pass Filter	1/15/2012	Annual	1/15/2013	30923
Mini-Circuits	VHF-3100+	High Pass Filter	1/15/2012	Annual	1/15/2013	30841
Pasternack	PE2208-6	Bidirectional Coupler	6/3/2011	Annual	6/3/2012	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	6/1/2011	Annual	6/1/2012	833855/0010
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/5/2011	Annual	8/5/2012	112347
Rohde & Schwarz	RS-PR18	1-18 GHz Pre-Amplifier	6/9/2011	Annual	6/9/2012	100071
Rohde & Schwarz	RS-PR26	18-26.5 GHz Pre-Amplifier	6/9/2011	Annual	6/9/2012	100040
Rohde & Schwarz	ESU26	EMI Test Receiver	4/27/2011	Annual	4/27/2012	100342
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/14/2011	Biennial	11/14/2013	9105-2404
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Tx	11/14/2011	Biennial	11/14/2013	9105-2403
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	1/26/2012	Biennial	1/26/2014	A051107
Sunol	DRH-118	Horn Antenna (1-18 GHz)	6/17/2011	Biennial	6/17/2013	A042511

Table 4-1. Test Equipment

Note: Although the calibration due date of the Agilent 8447D Broadband Amplifier is 3/17/2012, it was utilized for testing prior to this date.

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5.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Amplitude/Angle Modulated

16QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Combination (Audio/Data)

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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6.0 TEST RESULTS

6.1 Summary

Company Name: Samsung Electronics, Co. Ltd.
 FCC ID: A3LSCHI405U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
TRANSMITTER MODE (TX)						
2.1049	RSS-Gen (4.6.1) RSS-133 (2.3)	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0, 8.0, 9.0, 10.0
2.1051, 22.917(a), 24.238(a), 27.53(g)(h)	RSS-133 (6.5.1)	Band Edge / Conducted Spurious Emissions	$< 43 + 10\log_{10}(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions		PASS	Section 7.0, 8.0, 9.0, 10.0
24.232(d), 27.50(d)(5)	RSS-133 (6.4)	Peak-Average Ratio	$< 13 \text{ dB}$		PASS	Section 9.0, 10.0
2.1046	RSS-132 (4.4) RSS-133 (4.1)	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
22.913(a)(2)	RSS-132 (4.4) [SRSP-503(5.1.3)]	Effective Radiated Power (Band 5)	$< 7 \text{ Watts max. ERP}$	RADIATED	PASS	Section 6.2
27.50(c)(10)	N/A	Effective Radiated Power (Band 12)	$< 3 \text{ Watts max. ERP}$		PASS	Section 6.2
24.232(c)	RSS-133 (6.4) [SRSP-510(5.1.2)]	Equivalent Isotropic Radiated Power (Band 2)	$< 2 \text{ Watts max. EIRP}$		PASS	Section 6.3
27.50(d)(4)	N/A	Equivalent Isotropic Radiated Power (Band 4)	$< 1 \text{ Watts max. EIRP}$		PASS	Section 6.3
2.1053, 27.53(g)(h), 22.917(a), 24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Undesirable Emissions	$< 43 + 10\log_{10}(P[\text{Watts}])$ for all out-of-band emissions		PASS	Section 6.4, 6.5, 6.6, 6.7, 6.8
2.1055, 27.54, 22.355, 24.235	RSS-132 (4.3) RSS-133 (6.3)	Frequency Stability	$< 2.5 \text{ ppm}$		PASS	Section 6.9, 6.10, 6.11, 6.12

Table 6-1. Summary of 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 shown in Sections 7, 8, 9, and 10 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.

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6.2 Effective Radiated Power (ERP)

§22.913(a)(2), §27.50(c)(10)

	Freq [MHz]	BW [MHz]	Mod.	RB Size / Offset	Battery	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
Band 12 LTE	701.50	5	QPSK	1 / 12	Standard	-18.90	16.43	1.96	H	18.39	0.069	34.77	-16.38
	707.50	5	QPSK	1 / 12	Standard	-17.80	17.53	2.14	H	19.67	0.093	34.77	-15.10
	713.50	5	QPSK	1 / 12	Standard	-17.60	17.73	2.29	H	20.02	0.101	34.77	-14.75
	701.50	5	16-QAM	1 / 12	Standard	-18.60	16.73	1.96	H	18.69	0.074	34.77	-16.08
	707.50	5	16-QAM	1 / 12	Standard	-17.60	17.73	2.14	H	19.87	0.097	34.77	-14.90
	713.50	5	16-QAM	1 / 12	Standard	-17.30	18.03	2.29	H	20.32	0.108	34.77	-14.45
	704.00	10	QPSK	1 / 25	Standard	-18.20	17.13	2.03	H	19.16	0.082	34.77	-15.61
	707.50	10	QPSK	1 / 25	Standard	-16.90	18.43	2.14	H	20.57	0.114	34.77	-14.20
	711.00	10	QPSK	1 / 25	Standard	-16.40	18.93	2.23	H	21.16	0.131	34.77	-13.61
	704.00	10	16-QAM	1 / 25	Standard	-18.40	16.93	2.04	H	18.97	0.079	34.77	-15.80
	707.50	10	16-QAM	1 / 25	Standard	-17.70	17.63	2.14	H	19.77	0.095	34.77	-15.00
	711.00	10	16-QAM	1 / 25	Standard	-17.00	18.33	2.23	H	20.56	0.114	34.77	-14.21

Table 6-2. ERP Data (Band 12)

	Freq [MHz]	BW [MHz]	Mod.	RB Size / Offset	Battery	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
Band 5 LTE	824.70	1.4	QPSK	1 / 0	Standard	-18.20	13.64	4.66	H	18.30	0.068	38.45	-20.15
	836.50	1.4	QPSK	1 / 0	Standard	-18.60	13.24	4.80	H	18.04	0.064	38.45	-20.41
	848.30	1.4	QPSK	1 / 0	Standard	-16.40	15.44	4.95	H	20.39	0.109	38.45	-18.06
	824.70	1.4	16-QAM	1 / 0	Standard	-18.40	13.44	4.66	H	18.10	0.065	38.45	-20.35
	836.50	1.4	16-QAM	1 / 0	Standard	-18.50	13.34	4.80	H	18.14	0.065	38.45	-20.31
	848.30	1.4	16-QAM	1 / 0	Standard	-16.40	15.44	4.95	H	20.39	0.109	38.45	-18.06
	825.50	3	QPSK	1 / 0	Standard	-19.20	12.64	4.67	H	17.31	0.054	38.45	-21.14
	836.50	3	QPSK	1 / 0	Standard	-18.04	13.80	4.80	H	18.60	0.073	38.45	-19.85
	847.50	3	QPSK	1 / 0	Standard	-16.90	14.94	4.94	H	19.88	0.097	38.45	-18.57
	825.50	3	16-QAM	1 / 0	Standard	-18.80	13.04	4.67	H	17.71	0.059	38.45	-20.74
	836.50	3	16-QAM	1 / 0	Standard	-17.80	14.04	4.80	H	18.84	0.077	38.45	-19.61
	847.50	3	16-QAM	1 / 0	Standard	-16.40	15.44	4.94	H	20.38	0.109	38.45	-18.07
	826.50	5	QPSK	1 / 0	Standard	-18.40	13.44	4.68	H	18.12	0.065	38.45	-20.33
	836.50	5	QPSK	1 / 0	Standard	-16.30	15.54	4.80	H	20.34	0.108	38.45	-18.11
	846.50	5	QPSK	1 / 0	Standard	-16.90	14.94	4.93	H	19.87	0.097	38.45	-18.58
	826.50	5	16-QAM	1 / 0	Standard	-18.20	13.64	4.68	H	18.32	0.068	38.45	-20.13
	836.50	5	16-QAM	1 / 0	Standard	-16.20	15.64	4.80	H	20.44	0.111	38.45	-18.01
	846.50	5	16-QAM	1 / 0	Standard	-16.70	15.14	4.93	H	20.07	0.102	38.45	-18.38

Table 6-3. ERP Data (Band 5)

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. In Band 12 LTE, the highest power was found in QPSK modulation with RB size = 1 and RB offset = 12 (5MHz BW) and RB offset = 25 (10MHz BW). In Band 5 LTE, the highest power was found in 16-QAM modulation with RB size = 1 and RB offset = 0.

2. This unit was tested with its standard battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. For both Band 12 and Band 5, the worst case test configuration was found while the EUT was in the horizontal position and in the slide in setup. The data reported in the table above was measured in this test setup.

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6.3 Equivalent Isotropic Radiated Power (EIRP)

§27.50(d)(4), §24.232(c)

	Freq [MHz]	BW [MHz]	Mod.	RB Size / Offset	Battery	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
Band 4 LTE	1712.50	5	QPSK	1 / 0	Standard	-17.40	12.17	8.47	H	20.64	0.116	30.00	-9.36
	1732.50	5	QPSK	1 / 0	Standard	-19.80	9.77	8.54	H	18.31	0.068	30.00	-11.69
	1752.50	5	QPSK	1 / 0	Standard	-18.00	11.57	8.60	H	20.17	0.104	30.00	-9.83
	1712.50	5	16-QAM	1 / 0	Standard	-18.70	10.87	8.47	H	19.34	0.086	30.00	-10.66
	1732.50	5	16-QAM	1 / 0	Standard	-20.50	9.07	8.54	H	17.61	0.058	30.00	-12.39
	1752.50	5	16-QAM	1 / 0	Standard	-19.10	10.47	8.60	H	19.07	0.081	30.00	-10.93
	1715.00	10	QPSK	1 / 0	Standard	-17.10	12.47	8.48	H	20.95	0.125	30.00	-9.05
	1732.50	10	QPSK	1 / 0	Standard	-17.80	11.77	8.54	H	20.31	0.107	30.00	-9.69
	1750.00	10	QPSK	1 / 0	Standard	-15.80	13.77	8.60	H	22.37	0.173	30.00	-7.63
	1715.00	10	16-QAM	1 / 0	Standard	-18.40	11.17	8.48	H	19.65	0.092	30.00	-10.35
	1732.50	10	16-QAM	1 / 0	Standard	-18.50	11.07	8.54	H	19.61	0.091	30.00	-10.39
	1750.00	10	16-QAM	1 / 0	Standard	-17.00	12.57	8.60	H	21.17	0.131	30.00	-8.83

Table 6-4. EIRP Data (Band 4)

	Freq [MHz]	BW [MHz]	Mod.	RB Size / Offset	Battery	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
Band 2 LTE	1850.70	1.4	QPSK	1 / 5	Standard	-18.20	13.45	8.56	H	22.01	0.159	33.01	-11.00
	1880.00	1.4	QPSK	1 / 5	Standard	-17.90	13.75	8.55	H	22.30	0.170	33.01	-10.71
	1909.30	1.4	QPSK	1 / 5	Standard	-18.00	13.65	8.53	H	22.18	0.165	33.01	-10.83
	1850.70	1.4	16-QAM	1 / 5	Standard	-19.50	12.15	8.56	H	20.71	0.118	33.01	-12.30
	1880.00	1.4	16-QAM	1 / 5	Standard	-19.10	12.55	8.55	H	21.10	0.129	33.01	-11.91
	1909.30	1.4	16-QAM	1 / 5	Standard	-19.60	12.05	8.53	H	20.58	0.114	33.01	-12.43
	1851.50	3	QPSK	1 / 14	Standard	-18.30	13.35	8.56	H	21.91	0.155	33.01	-11.10
	1880.00	3	QPSK	1 / 14	Standard	-17.40	14.25	8.55	H	22.80	0.190	33.01	-10.21
	1908.50	3	QPSK	1 / 14	Standard	-18.00	13.65	8.54	H	22.19	0.165	33.01	-10.82
	1851.50	3	16-QAM	1 / 14	Standard	-19.80	11.85	8.56	H	20.41	0.110	33.01	-12.60
	1880.00	3	16-QAM	1 / 14	Standard	-18.90	12.75	8.55	H	21.30	0.135	33.01	-11.71
	1908.50	3	16-QAM	1 / 14	Standard	-19.30	12.35	8.54	H	20.89	0.123	33.01	-12.12
	1852.50	5	QPSK	1 / 24	Standard	-19.40	12.25	8.56	H	20.81	0.120	33.01	-12.20
	1880.00	5	QPSK	1 / 24	Standard	-17.90	13.75	8.55	H	22.30	0.170	33.01	-10.71
	1907.50	5	QPSK	1 / 24	Standard	-17.80	13.85	8.54	H	22.39	0.173	33.01	-10.62
	1852.50	5	16-QAM	1 / 24	Standard	-20.50	11.15	8.56	H	19.71	0.093	33.01	-13.30
	1880.00	5	16-QAM	1 / 24	Standard	-19.50	12.15	8.55	H	20.70	0.117	33.01	-12.31
	1907.50	5	16-QAM	1 / 24	Standard	-19.30	12.35	8.54	H	20.89	0.123	33.01	-12.12

Table 6-5. EIRP Data (Band 2)

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. In Band 4 LTE, the highest power was found in QPSK modulation with RB size = 1 and RB offset = 0. In Band 2 LTE, the highest power was also found in QPSK modulation with RB size = 1 and RB offset equal to the maximum allowed.
2. This unit was tested with its standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. For both Band 4 and Band 2, the worst case test configuration was found while the EUT was in the horizontal position and slide out setup. The data reported in the table above was measured in this test setup.

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6.4 Band 12 Radiated Spurious Emissions

§2.1053, §27.53(g)

Note: In Band 12 LTE, all bandwidths, RB configurations, and modulations were investigated. The worst case radiated spurious emissions were found with 10MHz Bandwidth, RB size = 1, RB offset = 25, and QPSK modulation. The tables below in this section are reported in this configuration.

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 704.00 MHz
 MEASURED OUTPUT POWER: 19.16 dBm = 0.082 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.16 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1408.00	-37.39	3.63	-33.76	H	52.9
2112.00	-48.11	3.90	-44.22	H	63.4
2816.00	-47.56	5.01	-42.55	H	61.7
3520.00	-52.43	6.25	-46.18	H	65.3
4224.00	-91.67	7.23	-84.44	H	103.6
4928.00	-90.66	7.86	-82.80	H	102.0

Table 6-6. Radiated Spurious Data - 10MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide in setup. The data reported in the table above was measured in this test setup.

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Band 12 Radiated Spurious Measurements (continued)

§2.1053, §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 707.50 MHz
 MEASURED OUTPUT POWER: 20.57 dBm = 0.114 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.57 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1415.00	-37.53	3.68	-33.85	H	54.4
2122.50	-43.20	3.92	-39.29	H	59.9
2830.00	-45.86	5.02	-40.83	H	61.4
3537.50	-51.33	6.25	-45.08	H	65.6
4245.00	-91.64	7.25	-84.39	H	105.0
4952.50	-90.63	7.90	-82.73	H	103.3

Table 6-7. Radiated Spurious Data - 10MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide in setup. The data reported in the table above was measured in this test setup.

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Band 12 Radiated Spurious Measurements (continued)

§2.1053, §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 711.00 MHz
 MEASURED OUTPUT POWER: 21.16 dBm = 0.131 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 34.16 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1422.00	-35.86	3.73	-32.13	H	53.3
2133.00	-43.80	3.94	-39.86	H	61.0
2844.00	-41.94	5.04	-36.90	H	58.1
3555.00	-51.75	6.25	-45.50	H	66.7
4266.00	-91.60	7.25	-84.35	H	105.5
4977.00	-90.63	7.94	-82.69	H	103.8

Table 6-8. Radiated Spurious Data - 10MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide in setup. The data reported in the table above was measured in this test setup.

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6.5 Band 5 Radiated Spurious Emissions

§2.1053, 22.917(a); RSS-132 (4.5.1)

Note: In Band 5 LTE, all bandwidths, RB configurations, and modulations were investigated. The worst case radiated spurious emissions were found with 5MHz Bandwidth, RB size = 1, RB offset = 0, and 16-QAM modulation. The tables below in this section are reported in this configuration.

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 826.50 MHz
 MEASURED OUTPUT POWER: 18.32 dBm = 0.068 W
 MODULATION SIGNAL: 16-QAM
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.32 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1653.00	-41.43	2.55	-38.88	H	57.2
2479.50	-36.62	2.86	-33.76	H	52.1
3306.00	-41.55	5.48	-36.07	H	54.4
4132.50	-29.09	7.07	-22.03	H	40.3
4959.00	-55.92	7.89	-48.03	H	66.4
5785.50	-49.83	8.52	-41.31	H	59.6

Table 6-9. Radiated Spurious Data - 5MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide in setup. The data reported in the table above was measured in this test setup.

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Band 5 Radiated Spurious Measurements (continued)

§2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 836.50 MHz
 MEASURED OUTPUT POWER: 20.44 dBm = 0.111 W
 MODULATION SIGNAL: 16-QAM
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.44 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.00	-41.39	2.34	-39.05	H	59.5
2509.50	-36.89	2.84	-34.06	H	54.5
3346.00	-41.29	5.64	-35.65	H	56.1
4182.50	-30.97	7.14	-23.82	H	44.3
5019.00	-49.96	7.97	-41.99	H	62.4
5855.50	-49.64	8.46	-41.17	H	61.6

Table 6-10. Radiated Spurious Data- 5MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide in setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 5 Radiated Spurious Measurements (continued)

§2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 846.50 MHz
 MEASURED OUTPUT POWER: 20.07 dBm = 0.102 W
 MODULATION SIGNAL: 16-QAM
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.07 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1693.00	-29.66	2.13	-27.53	H	47.6
2539.50	-40.47	3.11	-37.36	H	57.4
3386.00	-42.82	5.80	-37.02	H	57.1
4232.50	-35.63	7.22	-28.40	H	48.5
5079.00	-56.04	8.01	-48.03	H	68.1
5925.50	-49.90	8.41	-41.50	H	61.6

Table 6-11. Radiated Spurious Data - 5MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide in setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.6 Band 4 Radiated Spurious Emissions

§2.1053, §27.53(h)

Note: In Band 4 LTE, all bandwidths, RB configurations, and modulations were investigated. The worst case radiated spurious emissions were found with 10MHz Bandwidth, RB size = 1, RB offset = 0, and QPSK modulation. The tables below in this section are reported in this configuration.

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1715.00 MHz
 MEASURED OUTPUT POWER: 20.95 dBm = 0.125 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.95 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3430.00	-46.37	9.35	-37.03	H	58.0
5145.00	-35.13	10.96	-24.18	H	45.1
6860.00	-36.38	10.52	-25.86	H	46.8
8575.00	-45.22	11.07	-34.14	H	55.1
10290.00	-54.50	12.47	-42.03	H	63.0
12005.00	-48.48	12.42	-36.06	H	57.0

Table 6-12. Radiated Spurious Data - 10MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide out setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 4 Radiated Spurious Measurements (continued)

§2.1053, §27.53(h)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1732.50 MHz
 MEASURED OUTPUT POWER: 20.31 dBm = 0.107 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.31 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3465.00	-46.93	9.47	-37.47	H	57.8
5197.50	-37.95	10.87	-27.08	H	47.4
6930.00	-39.00	10.68	-28.32	H	48.6
8662.50	-44.85	11.25	-33.60	H	53.9
10395.00	-51.40	12.52	-38.88	H	59.2
12127.50	-47.99	12.28	-35.71	H	56.0

Table 6-13. Radiated Spurious Data - 10MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide out setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 4 Radiated Spurious Measurements (continued)

§2.1053, §27.53(h)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1750.00 MHz
 MEASURED OUTPUT POWER: 22.37 dBm = 0.173 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.37 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3500.00	-52.87	9.58	-43.30	H	65.7
5250.00	-39.79	10.57	-29.22	H	51.6
7000.00	-32.54	10.86	-21.68	H	44.1
8750.00	-51.77	11.50	-40.27	H	62.6
10500.00	-51.53	12.55	-38.98	H	61.3
12250.00	-48.36	12.38	-35.98	H	58.4

Table 6-14. Radiated Spurious Data - 10MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide out setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.7 Band 2 Radiated Spurious Emissions

§2.1053, 24.238(a); RSS-133 (6.5.1)

Note: In Band 2 LTE, all bandwidths, RB configurations, and modulations were investigated. The worst case radiated spurious emissions were found with 5MHz Bandwidth, RB size = 1, RB offset = 24, and QPSK modulation. The tables below in this section are reported in this configuration.

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1852.50 MHz
 MEASURED OUTPUT POWER: 20.81 dBm = 0.120 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.81 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3705.00	-46.19	9.62	-36.58	H	57.4
5557.50	-45.20	10.61	-34.59	H	55.4
7410.00	-36.03	10.84	-25.18	H	46.0
9262.50	-49.54	12.20	-37.34	H	58.1
11115.00	-48.88	12.86	-36.02	H	56.8
12967.50	-84.60	12.69	-71.90	H	92.7

Table 6-15. Radiated Spurious Data - 5MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide out setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 2 Radiated Spurious Measurements (continued)

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz
 MEASURED OUTPUT POWER: 22.30 dBm = 0.170 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) = 35.30$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-49.40	9.30	-40.10	H	62.4
5640.00	-42.19	10.89	-31.30	H	53.6
7520.00	-38.18	10.85	-27.32	H	49.6
9400.00	-47.53	12.17	-35.35	H	57.7
11280.00	-48.15	13.05	-35.10	H	57.4
13160.00	-84.30	12.70	-71.60	H	93.9

Table 6-16. Radiated Spurious Data- 5MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide out setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 2 Radiated Spurious Measurements (continued)

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1907.50 MHz
 MEASURED OUTPUT POWER: 22.39 dBm = 0.173 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.39 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3815.00	-46.10	9.05	-37.05	H	59.4
5722.50	-40.08	11.07	-29.01	H	51.4
7630.00	-39.09	11.11	-27.98	H	50.4
9537.50	-54.64	12.35	-42.29	H	64.7
11445.00	-47.74	13.22	-34.51	H	56.9
13352.50	-84.23	12.97	-71.25	H	93.6

Table 6-17. Radiated Spurious Data - 5MHz Bandwidth

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found while the EUT was in the horizontal position and in the slide out setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.8 SVLTE Radiated Spurious Emissions

§2.1053, §27.53(g)(h), §22.917(a), §24.238(a)

During SVLTE testing, LTE and CDMA are simultaneously operating at maximum power. The EUT was connected to CMW500 with LTE transmitting at max power with 1 RB in the QPSK modulation. The EUT was connected to CMU200 with CDMA transmitting at max power with RC3/S055 All-Up Bits.

2nd and 3rd order Intermodulation noise were investigated as they produced significant emissions during SVLTE. Higher order intermodulation noise were investigated but did not produce significant emissions within 20dB of the limit. Low, mid, and high channels were investigated for Cellular/PCS CDMA. Various LTE bandwidths, RB configurations, and modulations were investigated. Worst case emissions are reported below.

Field Strength of SPURIOUS Radiation

CDMA OPERATING FREQ (f2):	824.70	MHz
LTE OPERATING FREQ (f1):	707.50	MHz
MODULATION SIGNAL:	CDMA / QPSK	
LTE BANDWIDTH:	10	MHz
LTE RB SIZE / OFFSET	1 / 25	
DISTANCE:	3	meters
LIMIT:	-13	dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	941.90	-35.01	2.15	-32.86	H	-19.9
3rd	2f1+f2	2239.70	-67.48	6.28	-61.20	H	-48.2
3rd	2f2+f1	2356.90	-60.59	5.68	-54.91	H	-41.9
2nd	f1+f2	1532.20	-59.51	6.03	-53.48	H	-40.5

Table 6-18. SVLTE RSE (Low chan. Cell. CDMA, Band 12 LTE)

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup, while in the slide in position. The data reported in the tables above was measured in this test setup.

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SVLTE Radiated Spurious Emissions (continued)

§2.1053, §27.53(g)(h), §22.917(a), §24.238(a)

Field Strength of SPURIOUS Radiation

CDMA OPERATING FREQ (f1): 836.52 MHz
 LTE OPERATING FREQ (f2): 1880.00 MHz
 MODULATION SIGNAL: CDMA / QPSK
 LTE BANDWIDTH: 5 MHz
 LTE RB SIZE / OFFSET: 1 / 12
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	2923.48	-29.86	7.24	-22.62	H	-9.6
3rd	2f1+f2	3553.04	-58.14	8.40	-49.74	H	-36.7
3rd	2f2+f1	4596.52	-49.69	9.52	-40.17	H	-27.2
2nd	f1+f2	2716.52	-23.65	6.82	-16.83	H	-3.8
2nd	f2-f1	1043.48	-23.30	2.31	-20.99	H	-8.0

Table 6-19. SVLTE RSE (Mid chan Cell. CDMA, Band 2 LTE)

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup, while in the slide in position. The data reported in the tables above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Emissions (continued)

§2.1053, §27.53(g)(h), §22.917(a), §24.238(a)

Field Strength of SPURIOUS Radiation

CDMA OPERATING FREQ (f2): 848.31 MHz
 LTE OPERATING FREQ (f1): 826.50 MHz
 MODULATION SIGNAL: CDMA / 16QAM
 LTE BANDWIDTH: 5 MHz
 LTE RB SIZE / OFFSET: 1 / 12
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f1-f2	804.69	-40.30	5.43	-34.87	H	-21.9
3rd	2f2-f1	870.12	-31.57	5.86	-25.71	H	-12.7
3rd	2f1+f2	2501.31	-47.03	10.42	-36.61	H	-23.6
3rd	2f2+f1	2523.12	-60.73	10.59	-50.14	H	-37.1
2nd	f1+f2	1674.81	-48.72	8.40	-40.32	H	-27.3

Table 6-20. SVLTE RSE (High chan. Cell. CDMA, Band 5 LTE)

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup, while in the slide in position. The data reported in the tables above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Emissions (continued)

§2.1053, §27.53(g)(h), §22.917(a), §24.238(a)

Field Strength of SPURIOUS Radiation

CDMA OPERATING FREQ (f1):	1851.25	MHz
LTE OPERATING FREQ (f2):	1907.50	MHz
MODULATION SIGNAL:	CDMA / QPSK	
LTE BANDWIDTH:	5	MHz
LTE RB SIZE / OFFSET	1 / 12	
DISTANCE:	3	meters
LIMIT:	-13	dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f1-f2	1795.00	-27.74	4.10	-23.64	H	-10.6
3rd	2f2-f1	1963.75	-29.40	5.51	-23.88	H	-10.9
3rd	2f1+f2	5610.00	-54.56	10.64	-43.91	H	-30.9
3rd	2f2+f1	5666.25	-56.95	10.67	-46.29	H	-33.3
2nd	f1+f2	3758.75	-57.40	8.42	-48.98	H	-36.0

Table 6-21. SVLTE RSE (Low chan. PCS CDMA, Band 2 LTE)

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup, while in the slide in position. The data reported in the tables above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Emissions (continued)

§2.1053, §27.53(g)(h), §22.917(a), §24.238(a)

Field Strength of SPURIOUS Radiation

CDMA OPERATING FREQ (f2): 1880.00 MHz
 LTE OPERATING FREQ (f1): 1732.50 MHz
 MODULATION SIGNAL: CDMA / QPSK
 LTE BANDWIDTH: 10 MHz
 LTE RB SIZE / OFFSET: 1 / 25
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f1-f2	1585.00	-30.98	5.43	-25.54	H	-12.5
3rd	2f2-f1	2027.50	-27.35	5.86	-21.49	H	-8.5
3rd	2f1+f2	5345.00	-43.76	10.42	-33.34	H	-20.3
3rd	2f2+f1	5492.50	-54.30	10.59	-43.71	H	-30.7
2nd	f1+f2	3612.50	-45.43	8.40	-37.03	H	-24.0

Table 6-22. SVLTE RSE (Mid chan. PCS CDMA, Band 4 LTE)

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup, while in the slide in position. The data reported in the tables above was measured in this test setup.

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Emissions (continued)

§2.1053, §27.53(g)(h), §22.917(a), §24.238(a)

Field Strength of SPURIOUS Radiation

CDMA OPERATING FREQ (f2): 1908.75 MHz
 LTE OPERATING FREQ (f1): 836.50 MHz
 MODULATION SIGNAL: CDMA / 16QAM
 LTE BANDWIDTH: 5 MHz
 LTE RB SIZE / OFFSET: 1 / 12
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	2981.00	-37.81	7.29	-30.52	H	-17.5
3rd	2f1+f2	3581.75	-67.88	8.40	-59.48	H	-46.5
3rd	2f2+f1	4654.00	-65.89	9.59	-56.30	H	-43.3
2nd	f1+f2	2745.25	-34.28	7.06	-27.22	H	-14.2
2nd	f2-f1	1072.25	-33.99	2.64	-31.35	H	-18.3

Table 6-23. SVLTE RSE (High chan. PCS CDMA, Band 5 LTE)

NOTES:

1. This unit was tested with its standard battery.
2. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup, while in the slide in position. The data reported in the tables above was measured in this test setup.

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6.9 Band 12 Frequency Stability Measurements

§2.1055, 27.54

OPERATING FREQUENCY: 707,500,000.0 Hz

REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	707,500,003	3	0.000000
100 %		- 30	707,500,002	2	0.000000
100 %		- 20	707,500,003	3	0.000000
100 %		- 10	707,500,001	1	0.000000
100 %		0	707,500,004	4	0.000001
100 %		+ 10	707,500,006	6	0.000001
100 %		+ 20	707,500,004	4	0.000001
100 %		+ 30	707,500,002	2	0.000000
100 %		+ 40	707,500,001	1	0.000000
100 %		+ 50	707,500,006	6	0.000001
115 %	4.26	+ 20	707,500,007	7	0.000001
85 %	3.15	+ 20	707,500,004	4	0.000001

Table 6-24. Frequency Stability Data (Band 12)

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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Band 12 Frequency Stability Measurements (Cont'd) **§2.1055, 27.54**

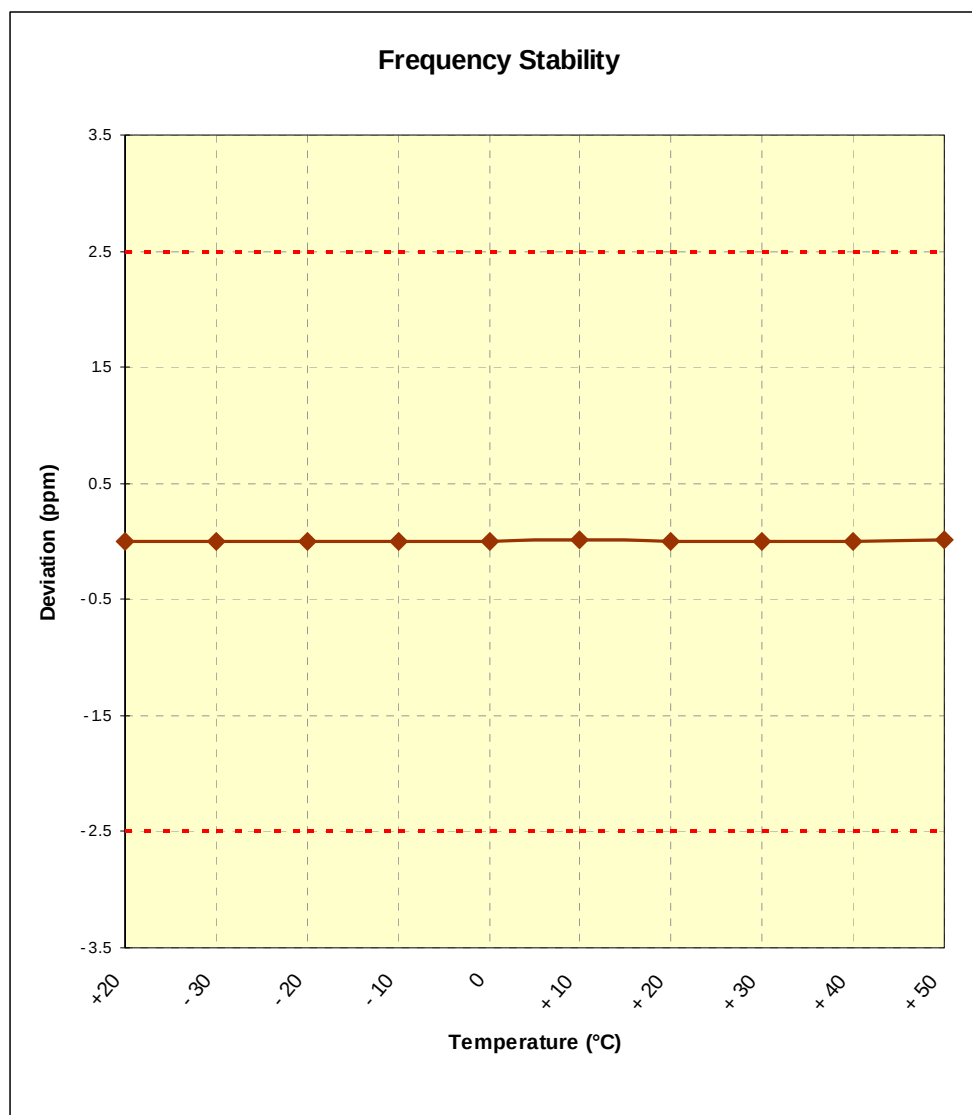


Figure 6-1. Frequency Stability Graph (Band 12)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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6.10 Band 5 Frequency Stability Measurements

§2.1055, 22.355; RSS-132 (4.3)

OPERATING FREQUENCY: 836,500,000 Hz

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	836,500,003	3	0.000000
100 %		- 30	836,500,002	2	0.000000
100 %		- 20	836,500,005	5	0.000001
100 %		- 10	836,500,003	3	0.000000
100 %		0	836,500,002	2	0.000000
100 %		+ 10	836,500,005	5	0.000001
100 %		+ 20	836,500,003	3	0.000000
100 %		+ 30	836,500,006	6	0.000001
100 %		+ 40	836,500,003	3	0.000000
100 %		+ 50	836,500,003	3	0.000000
115 %	4.26	+ 20	836,500,005	5	0.000001
85 %	3.15	+ 20	836,500,007	7	0.000001

Table 6-25. Frequency Stability Data (Band 5)

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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Band 5 Frequency Stability Measurements (Cont'd)

§2.1055, 22.355; RSS-132 (4.3)

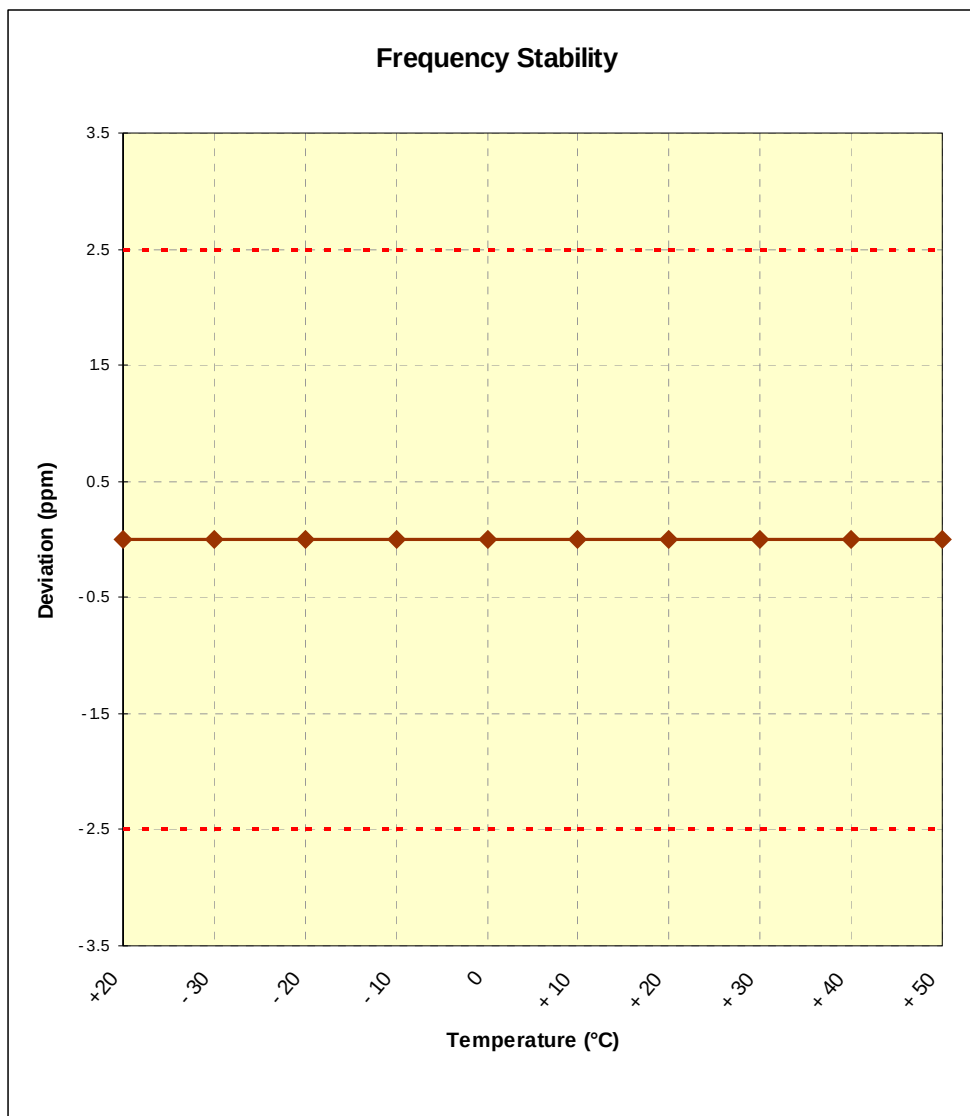


Figure 6-2. Frequency Stability Graph (Band 5)

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.11 Band 4 Frequency Stability Measurements

§2.1055, 27.54

OPERATING FREQUENCY: 1,732,500,000 Hz

REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	1,732,500,003	3	0.00000017
100 %		- 30	1,732,500,003	3	0.00000017
100 %		- 20	1,732,500,006	6	0.00000035
100 %		- 10	1,732,500,003	3	0.00000017
100 %		0	1,732,500,002	2	0.00000012
100 %		+ 10	1,732,500,006	6	0.00000035
100 %		+ 20	1,732,500,005	5	0.00000029
100 %		+ 30	1,732,500,003	3	0.00000017
100 %		+ 40	1,732,500,002	2	0.00000012
100 %		+ 50	1,732,500,006	6	0.00000035
115 %	4.26	+ 20	1,732,500,006	6	0.00000035
85 %	3.15	+ 20	1,732,500,007	7	0.00000040

Table 6-26. Frequency Stability Data (Band 4)

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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Band 4 Frequency Stability Measurements (Cont'd)

§2.1055, 27.54

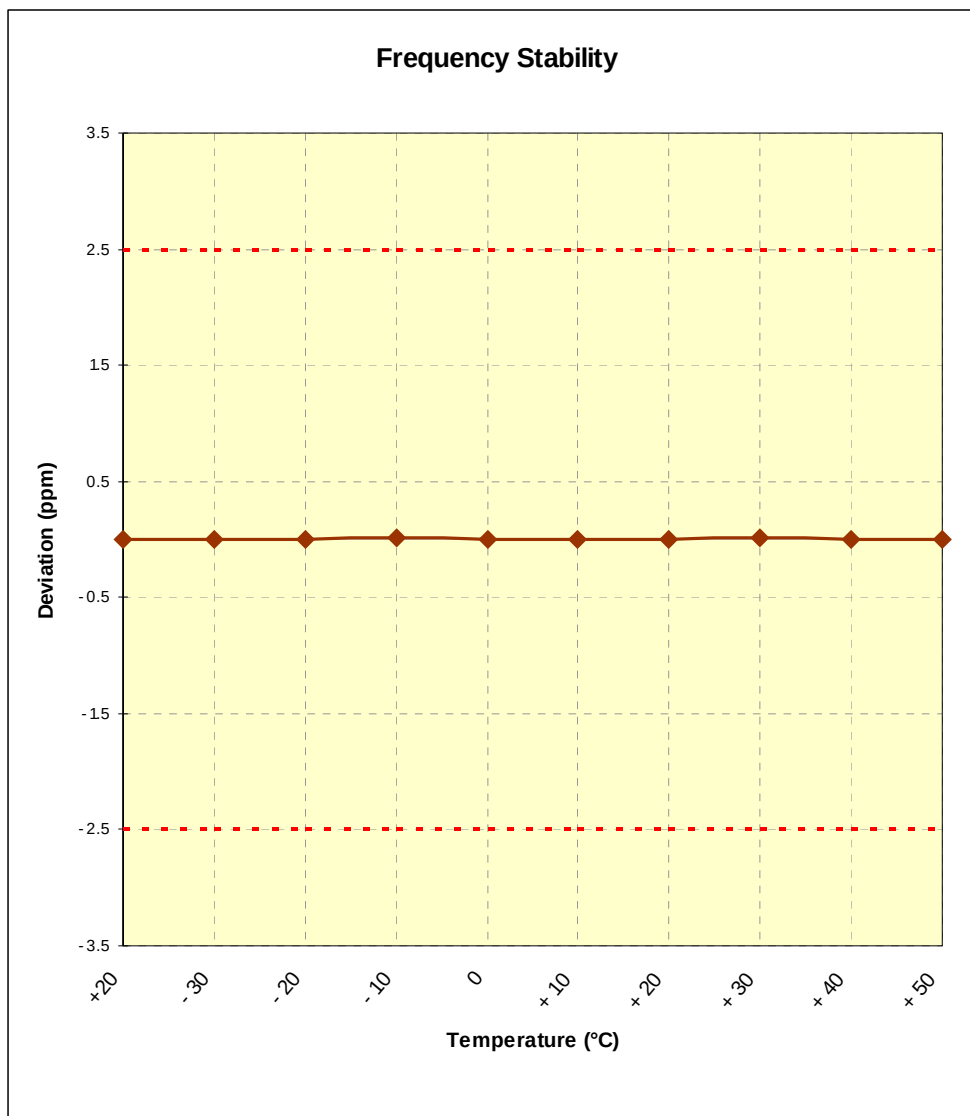


Figure 6-3. Frequency Stability Graph (Band 4)

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.12 Band 2 Frequency Stability Measurements

§2.1055, 24.235, RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	1,880,000,004	4	0.0000002
100 %		- 30	1,880,000,005	5	0.0000003
100 %		- 20	1,880,000,003	3	0.0000002
100 %		- 10	1,880,000,006	6	0.0000003
100 %		0	1,880,000,003	3	0.0000002
100 %		+ 10	1,880,000,004	4	0.0000002
100 %		+ 20	1,880,000,006	6	0.0000003
100 %		+ 30	1,880,000,007	7	0.0000004
100 %		+ 40	1,880,000,004	4	0.0000002
100 %		+ 50	1,880,000,003	3	0.0000002
115 %	4.26	+ 20	1,880,000,006	6	0.0000003
85 %	3.15	+ 20	1,880,000,004	4	0.0000002

Table 6-27. Frequency Stability Data (Band 2)

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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Band 2 Frequency Stability Measurements (Cont'd)

§2.1055, 24.235, RSS-133 (6.3)

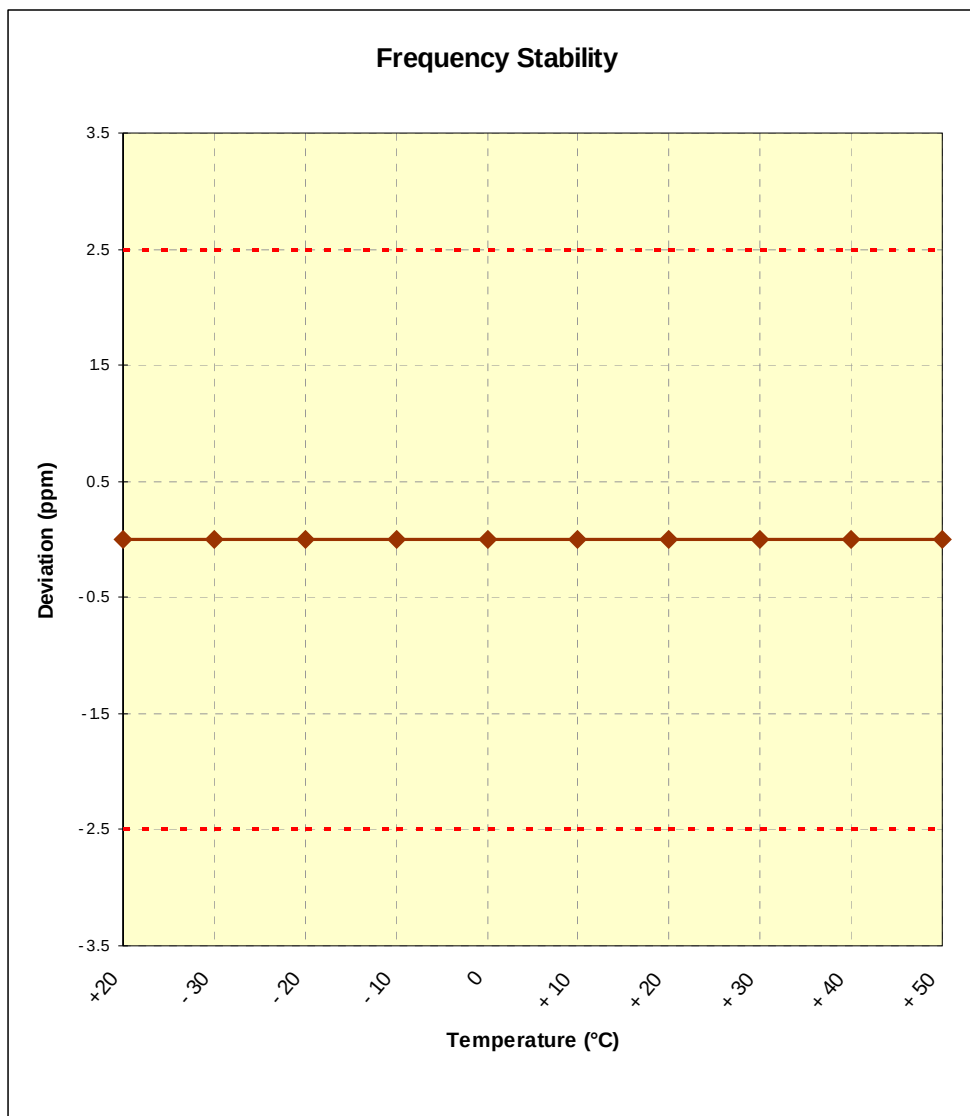
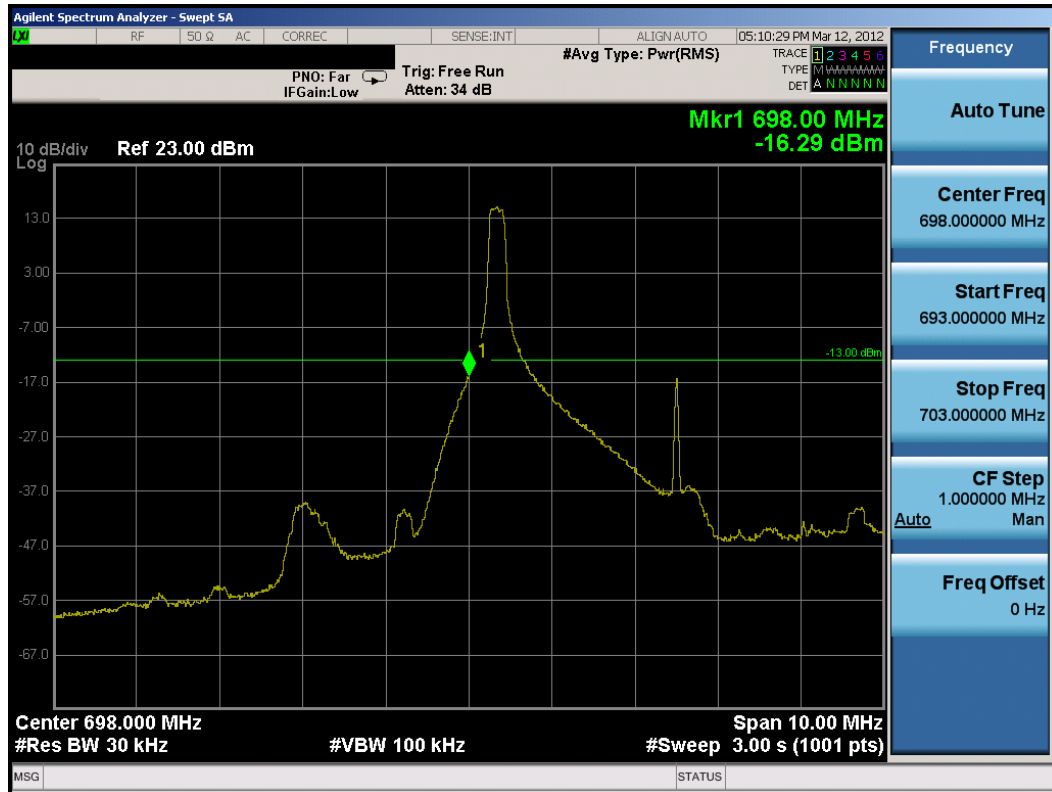


Figure 6-4. Frequency Stability Graph (Band 2)

FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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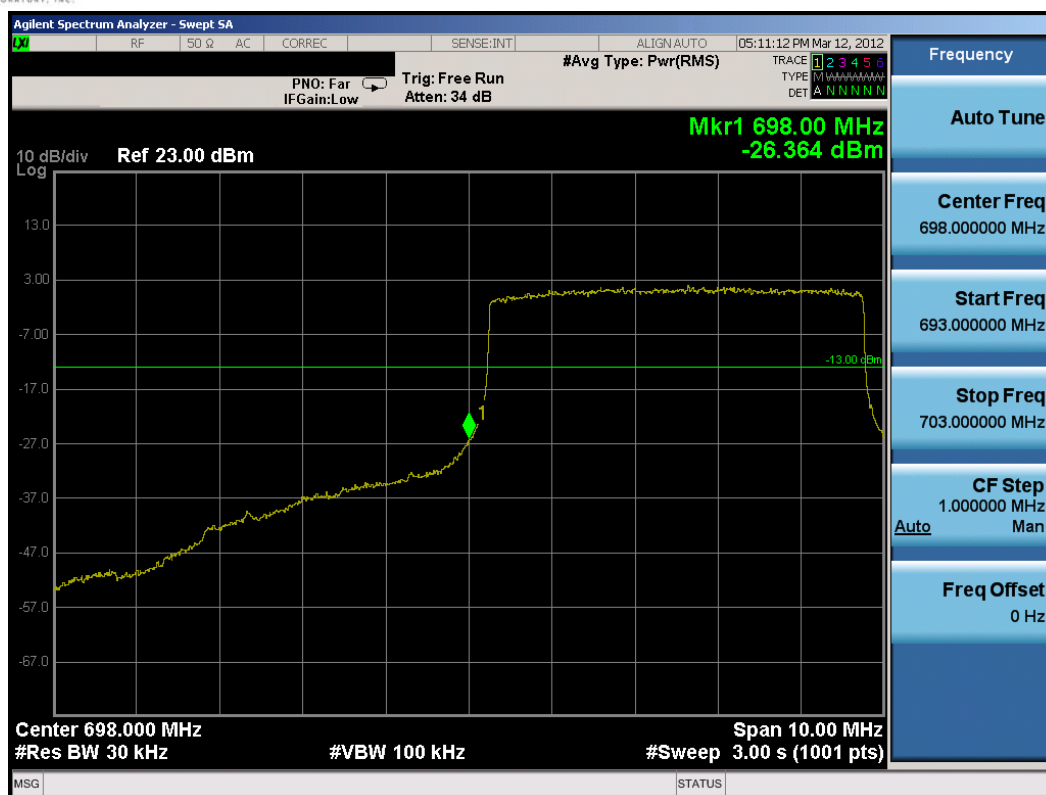
7.0 BAND 12 PLOTS OF EMISSIONS

Note: All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported below. Several band edge plots uses a resolution bandwidth of 30kHz because this is allowed per Part 27.53(g) regarding the 100kHz immediately outside and adjacent to the licensee's frequency block.

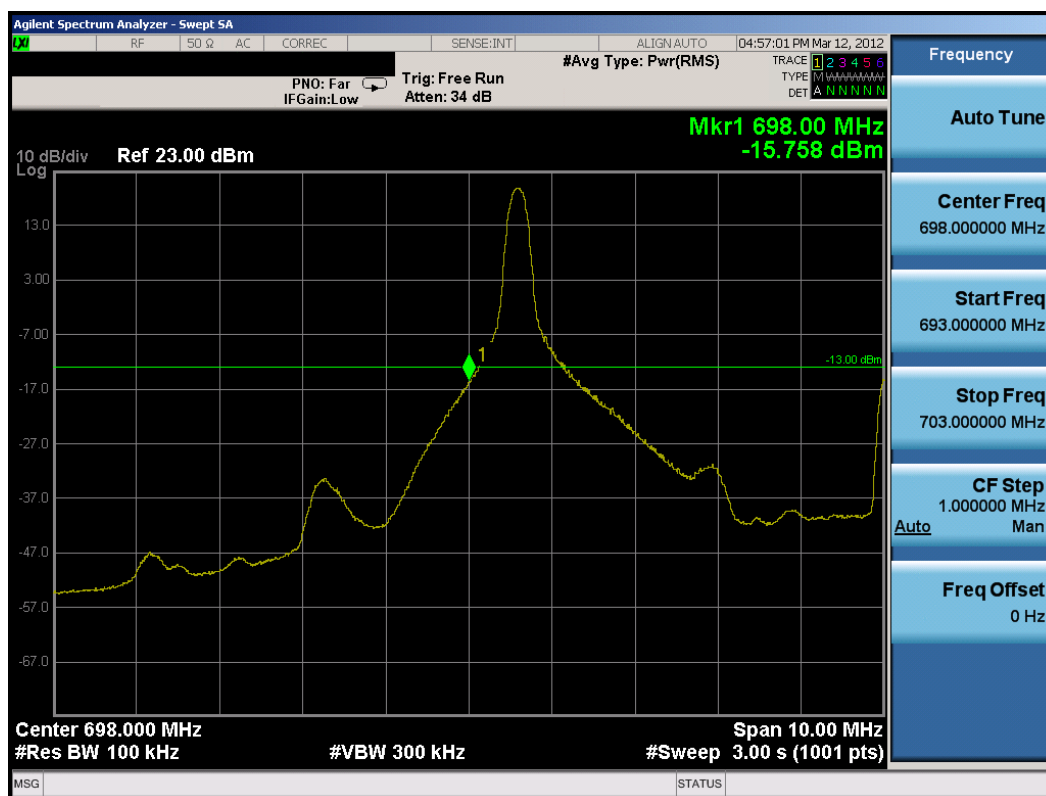


Plot 7-1. Lower Band Edge Plot (5MHz QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 43 of 134

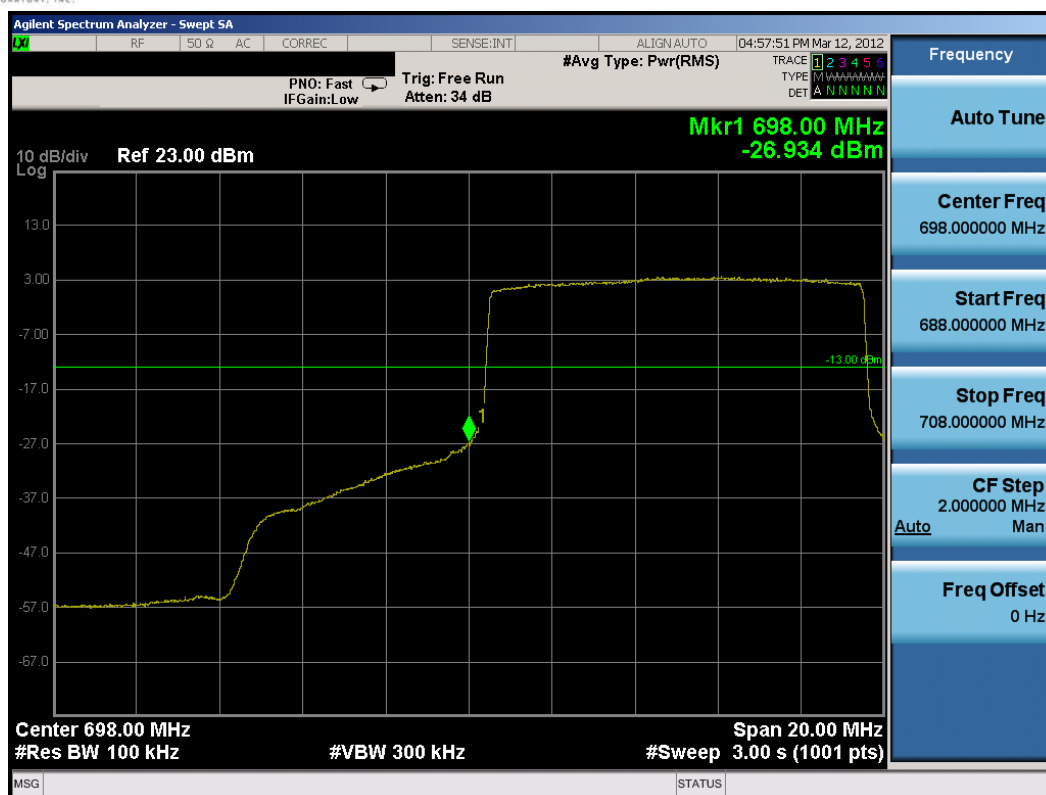


Plot 7-2. Lower Band Edge Plot (5MHz QPSK – RB Size 25, Offset 0)

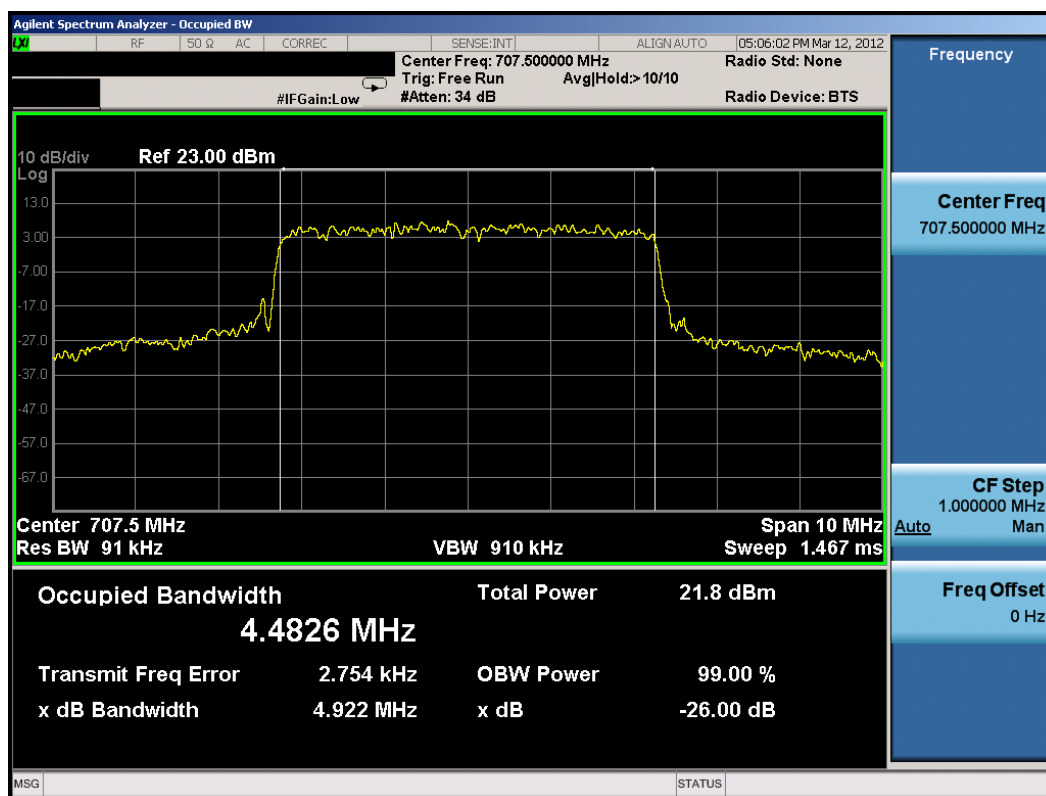


Plot 7-3. Lower Band Edge Plot (10MHz QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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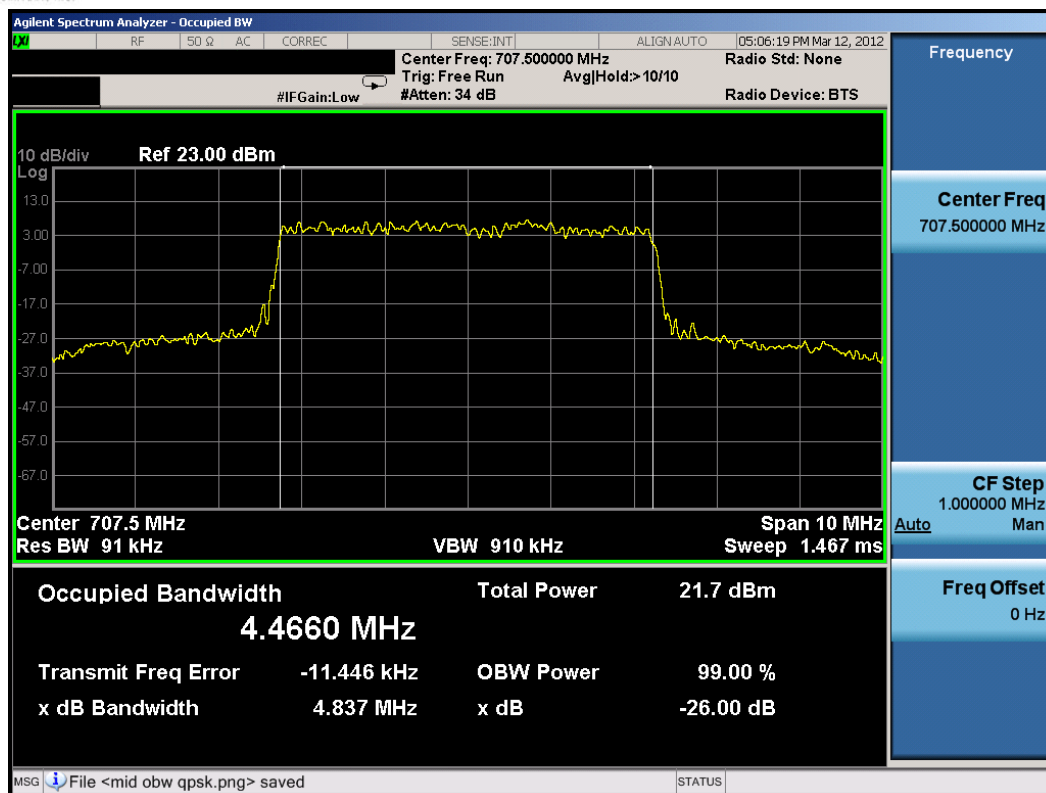


Plot 7-4. Lower Band Edge Plot (10MHz QPSK – RB Size 50, Offset 0)

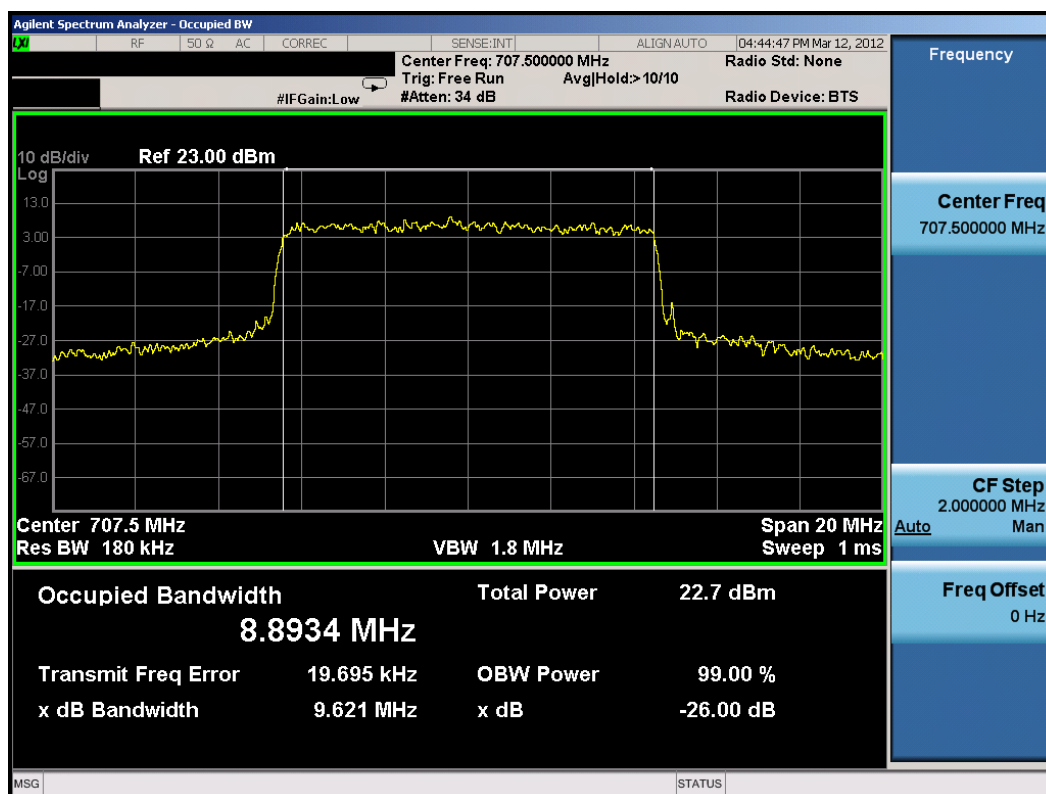


Plot 7-5. Occupied Bandwidth Plot (5MHz QPSK – RB Size 25)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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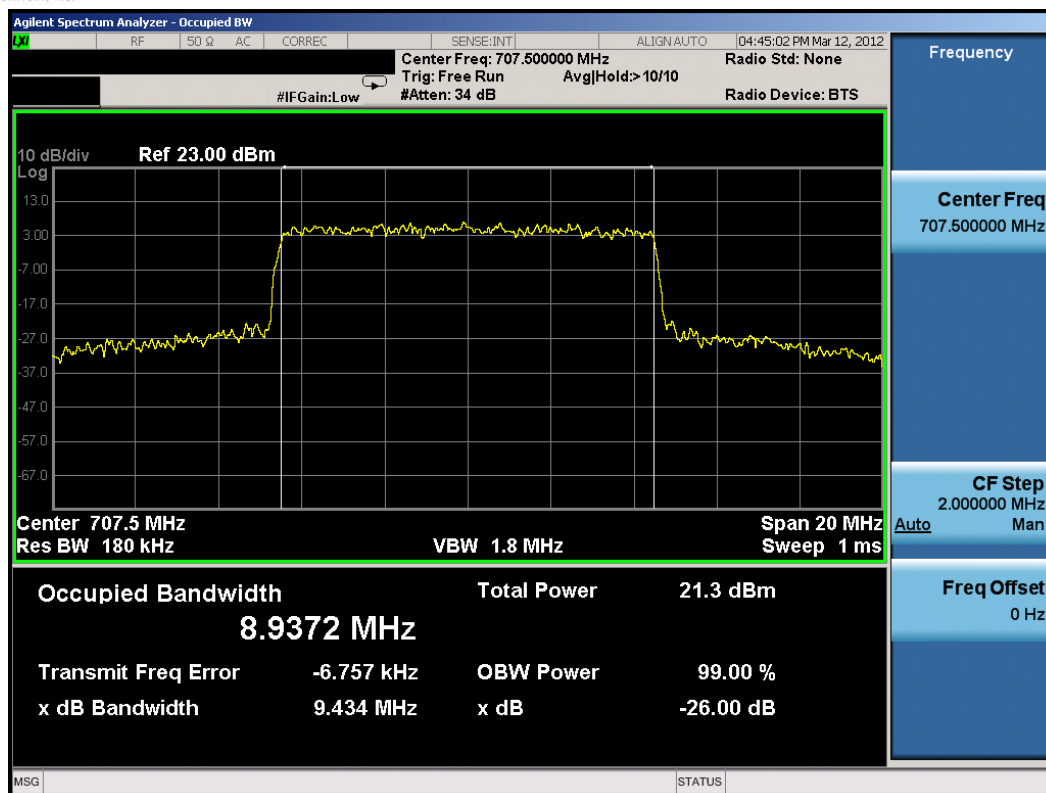


Plot 7-6. Occupied Bandwidth Plot (5MHz 16-QAM – RB Size 25)

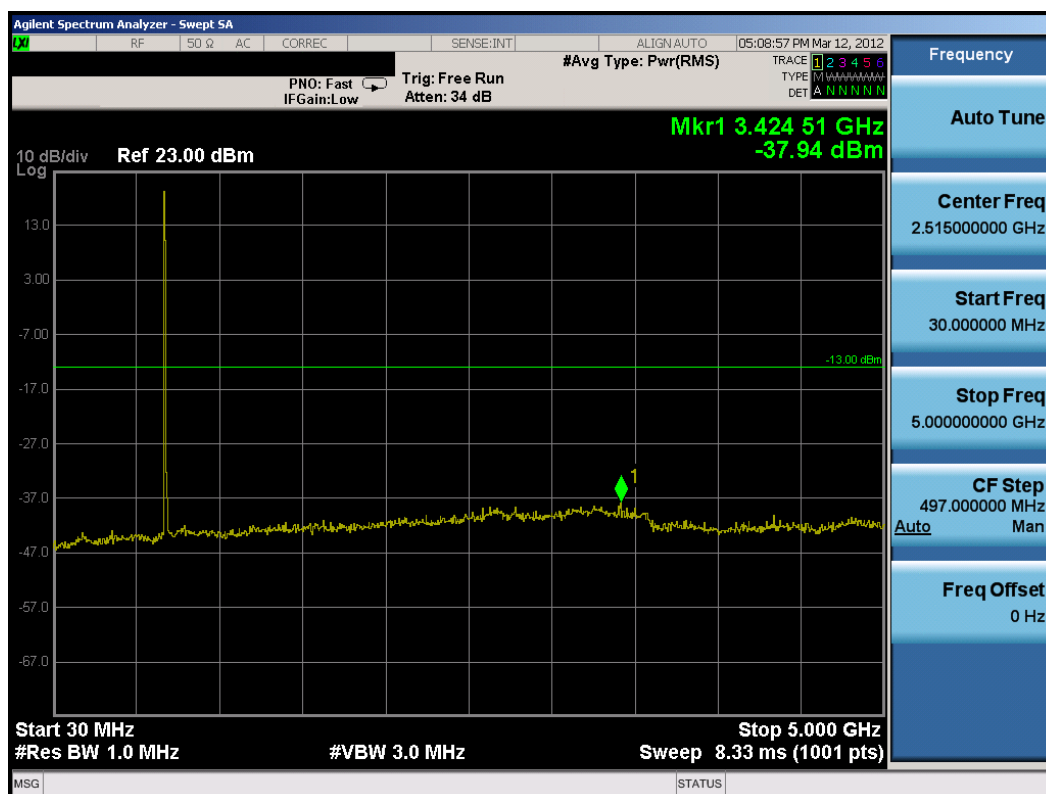


Plot 7-7. Occupied Bandwidth Plot (10MHz QPSK – RB Size 50)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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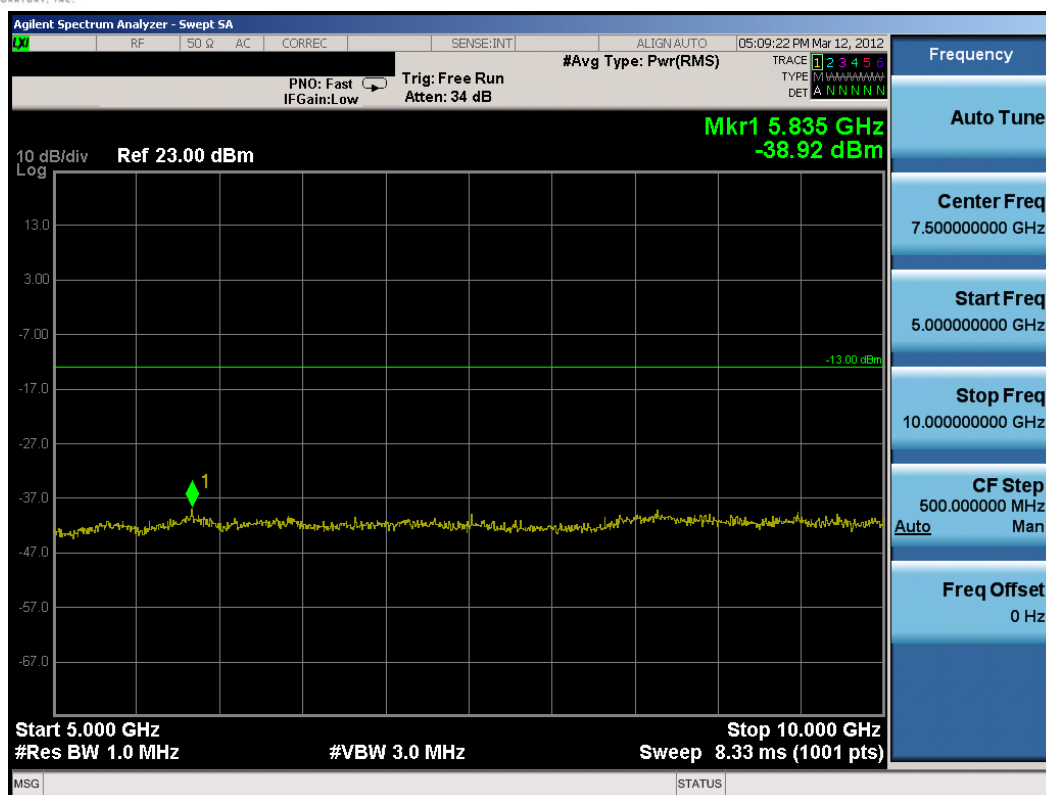


Plot 7-8. Occupied Bandwidth Plot (10MHz 16-QAM – RB Size 50)

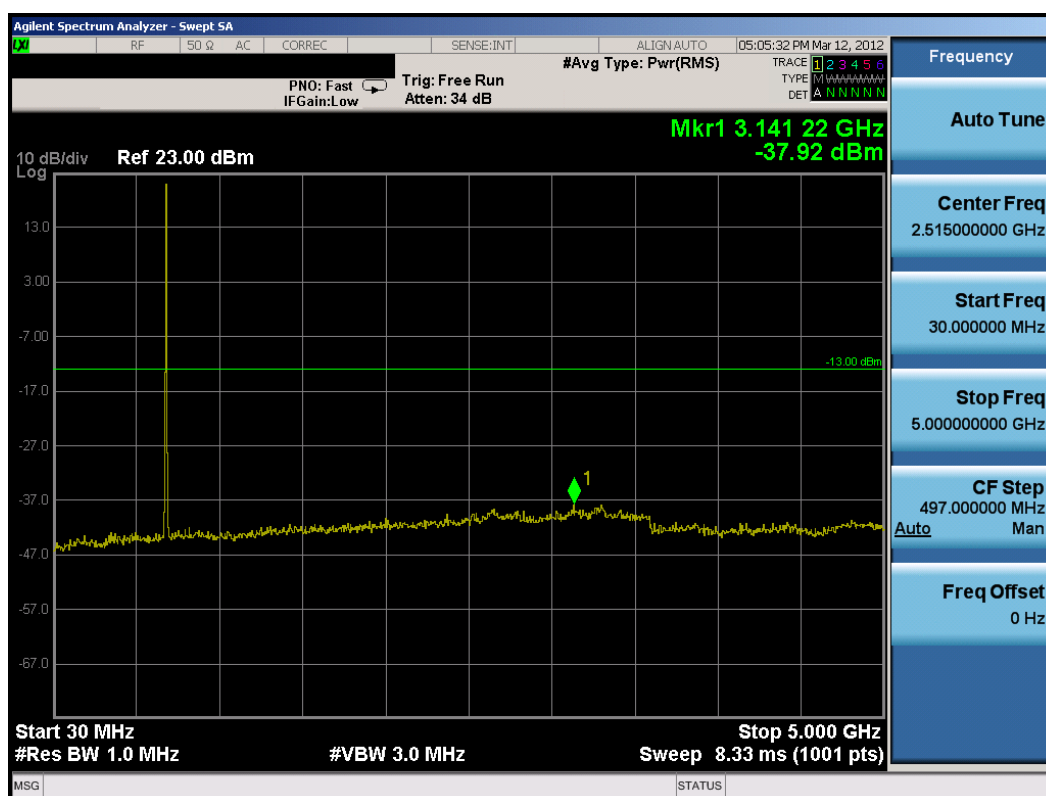


Plot 7-9. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 47 of 134

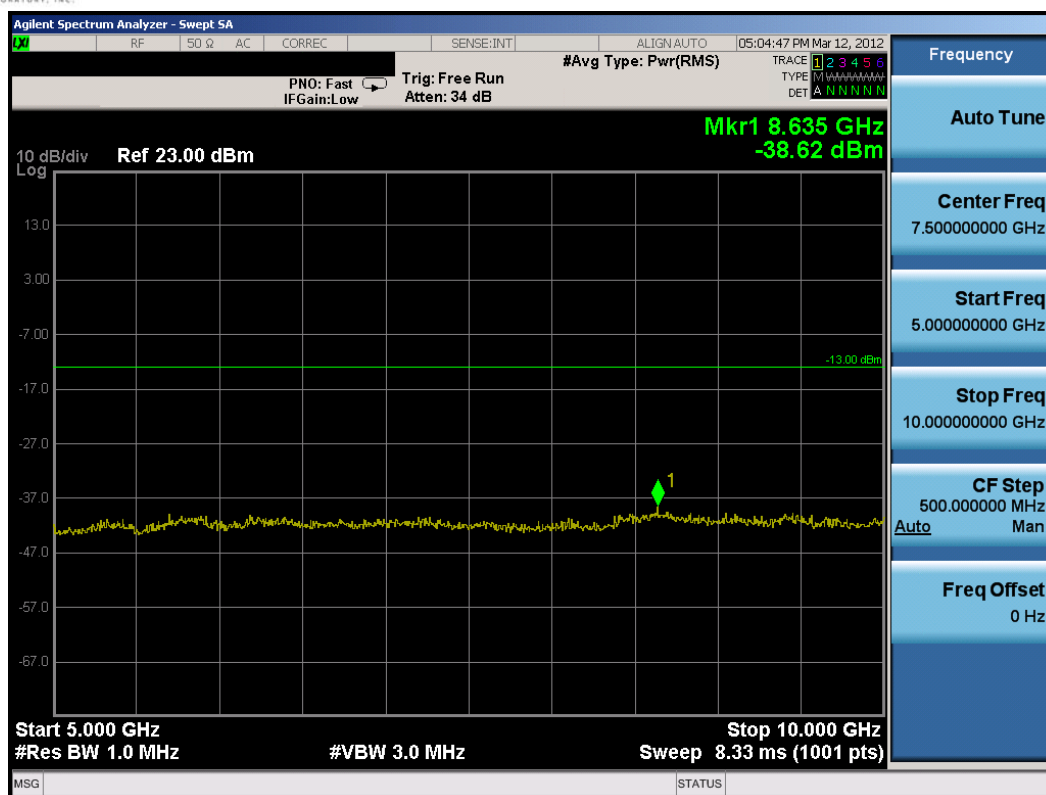


Plot 7-10. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

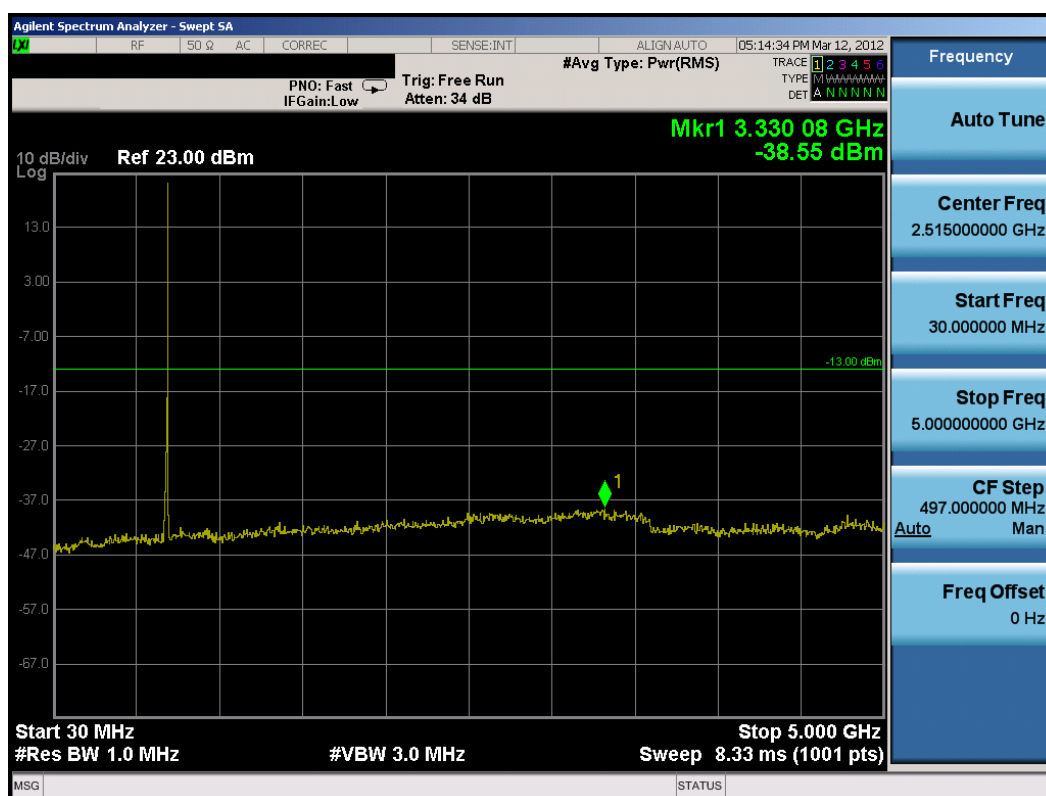


Plot 7-11. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset	Page 48 of 134

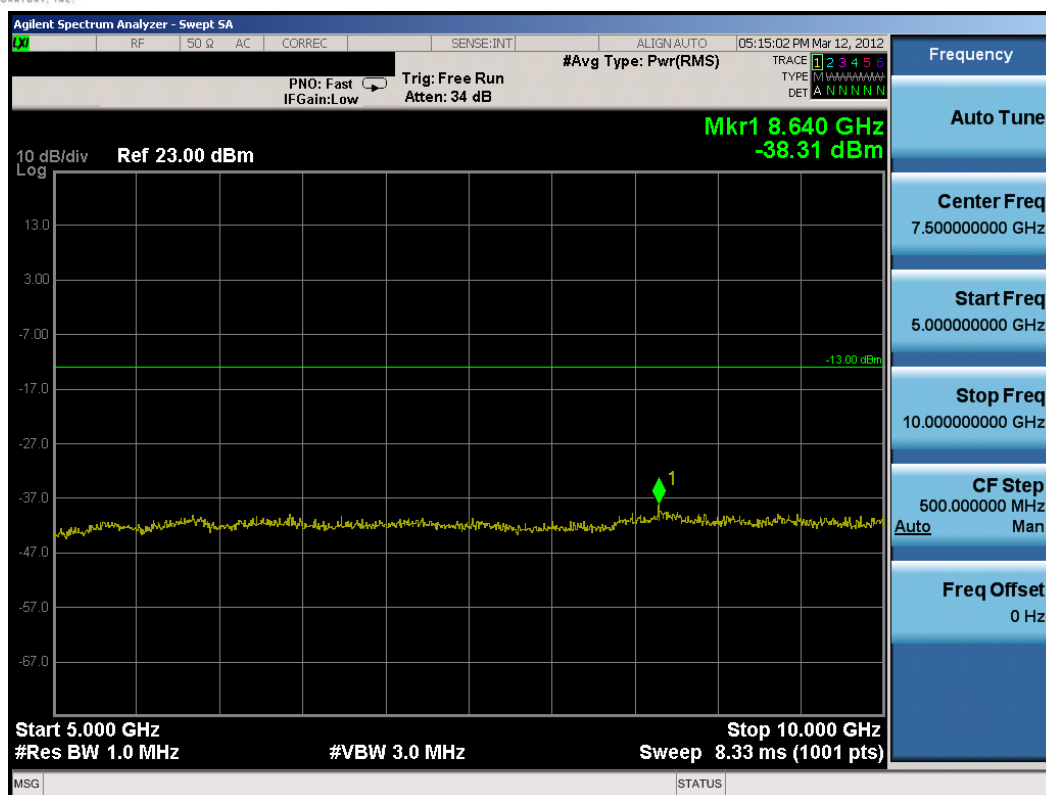


Plot 7-12. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

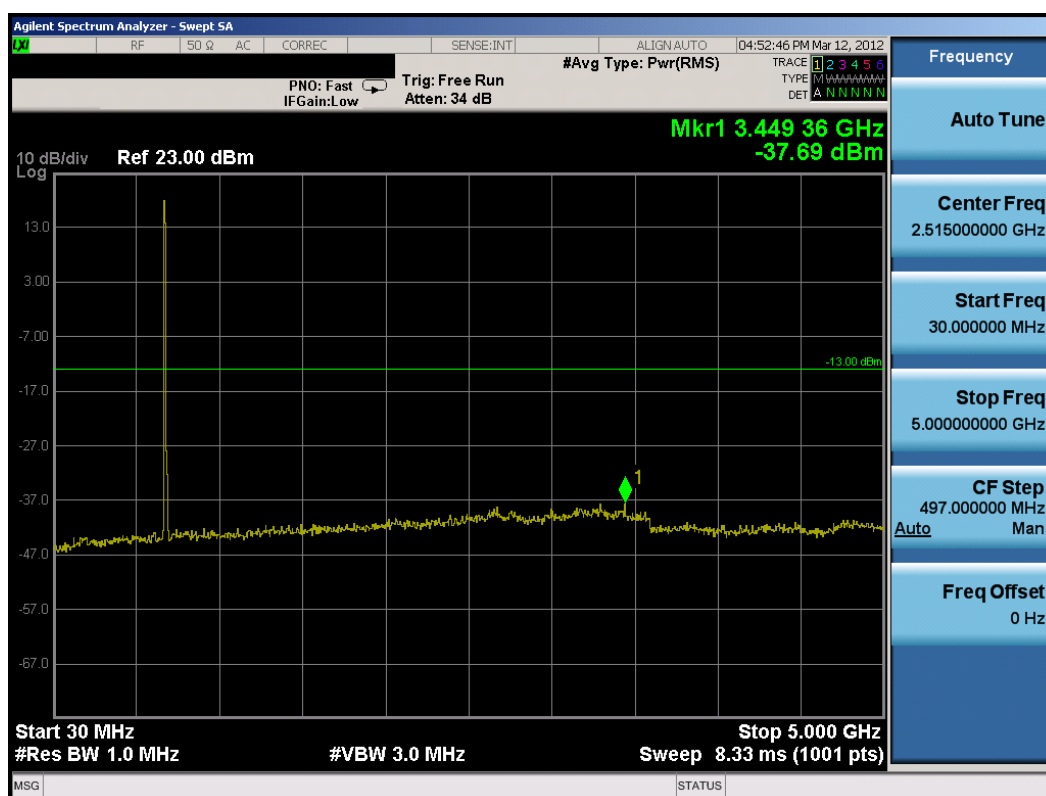


Plot 7-13. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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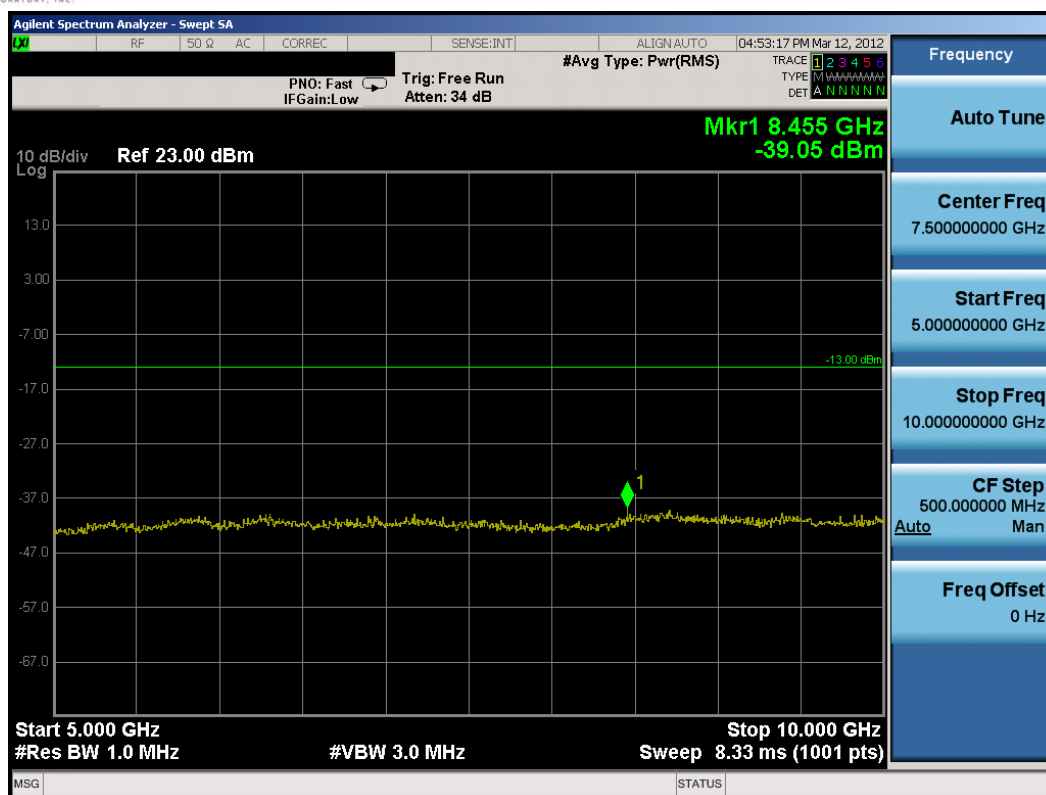


Plot 7-14. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

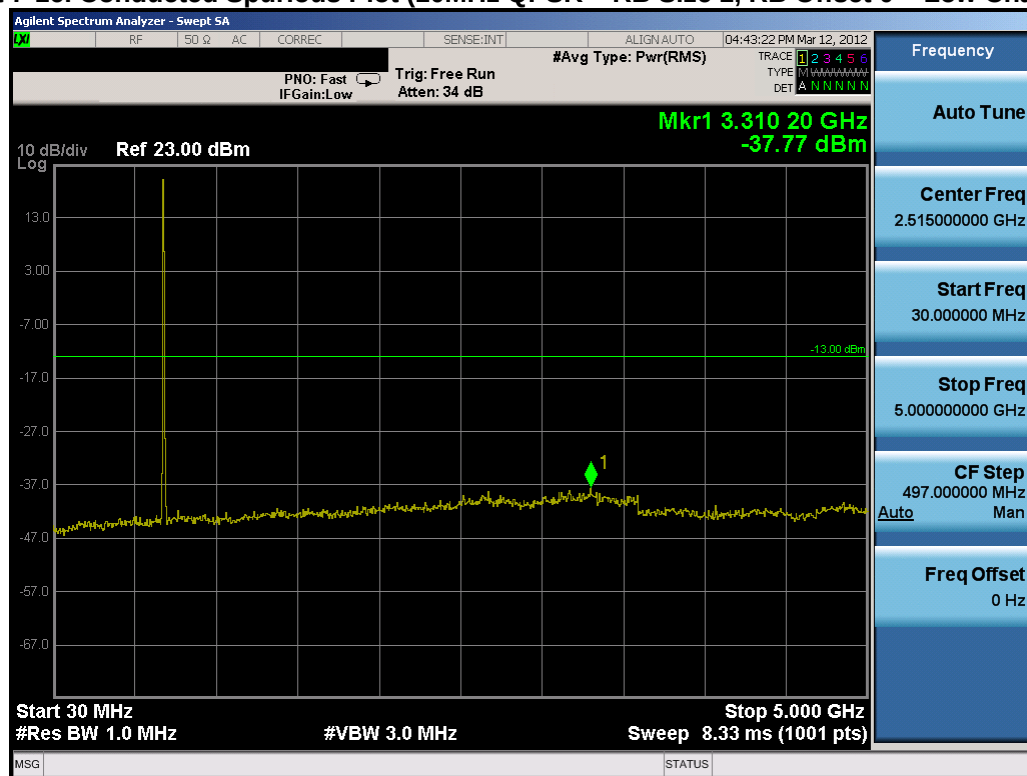


Plot 7-15. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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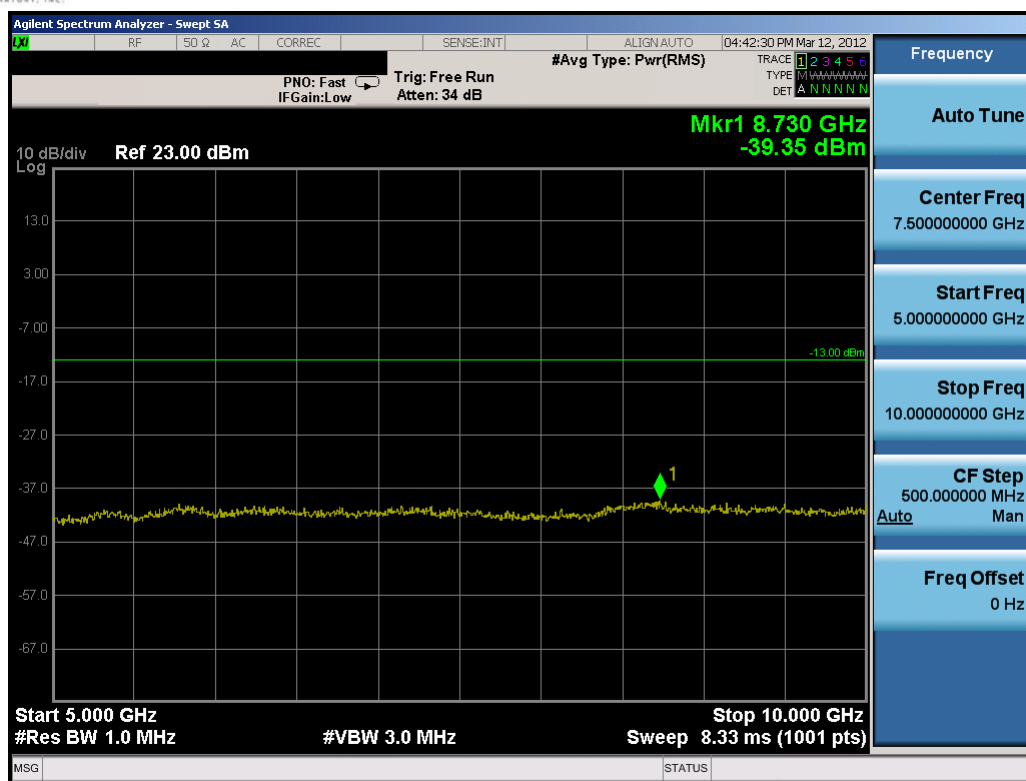


Plot 7-16. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

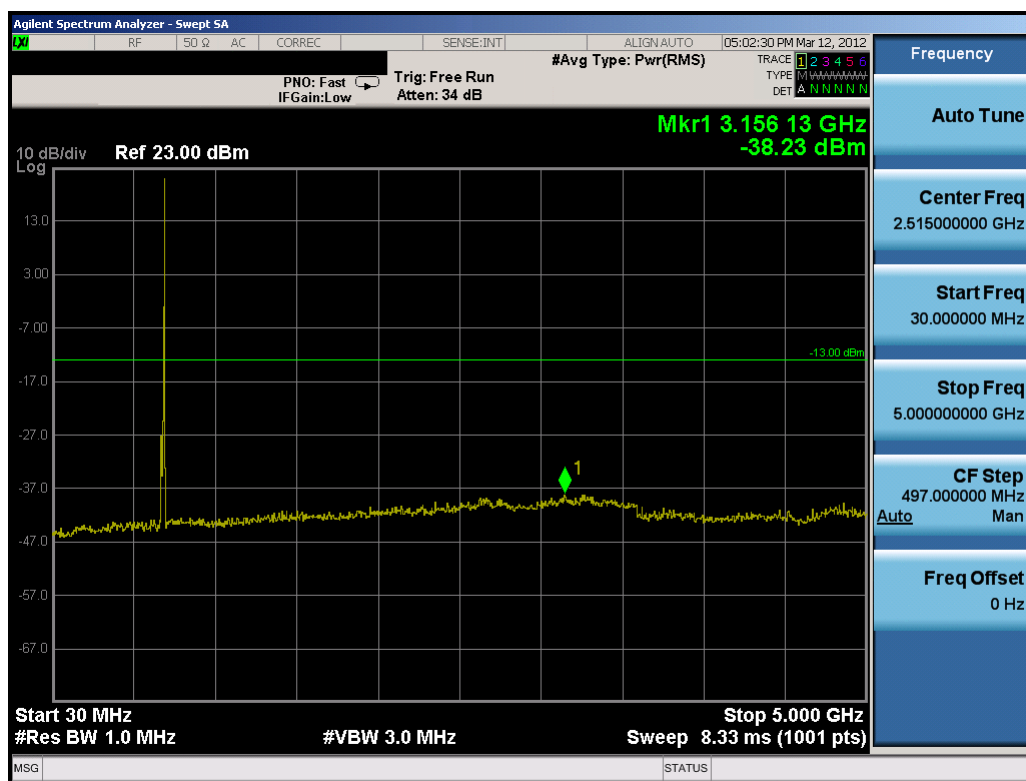


Plot 7-17. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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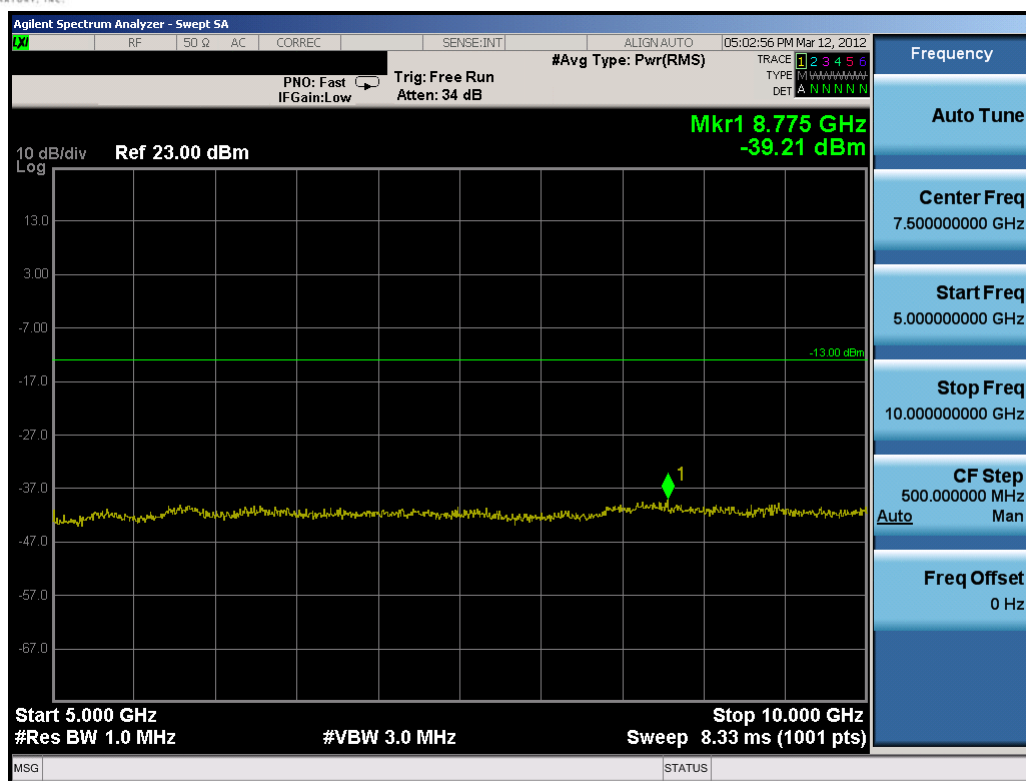


Plot 7-18. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

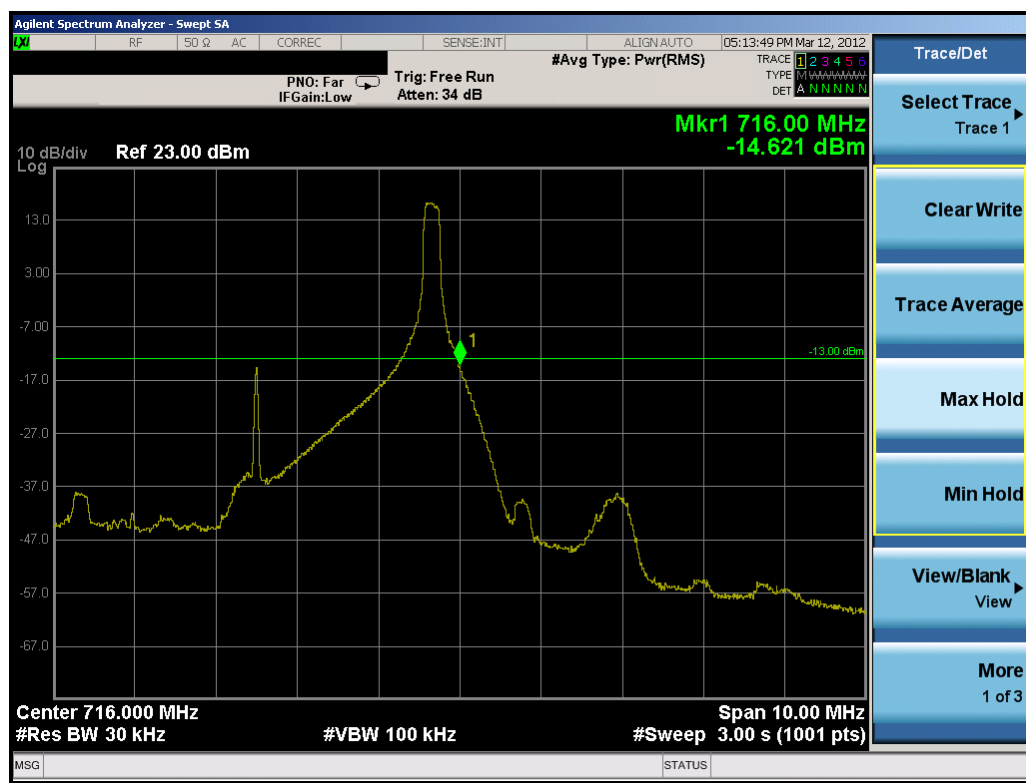


Plot 7-19. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 7-20. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

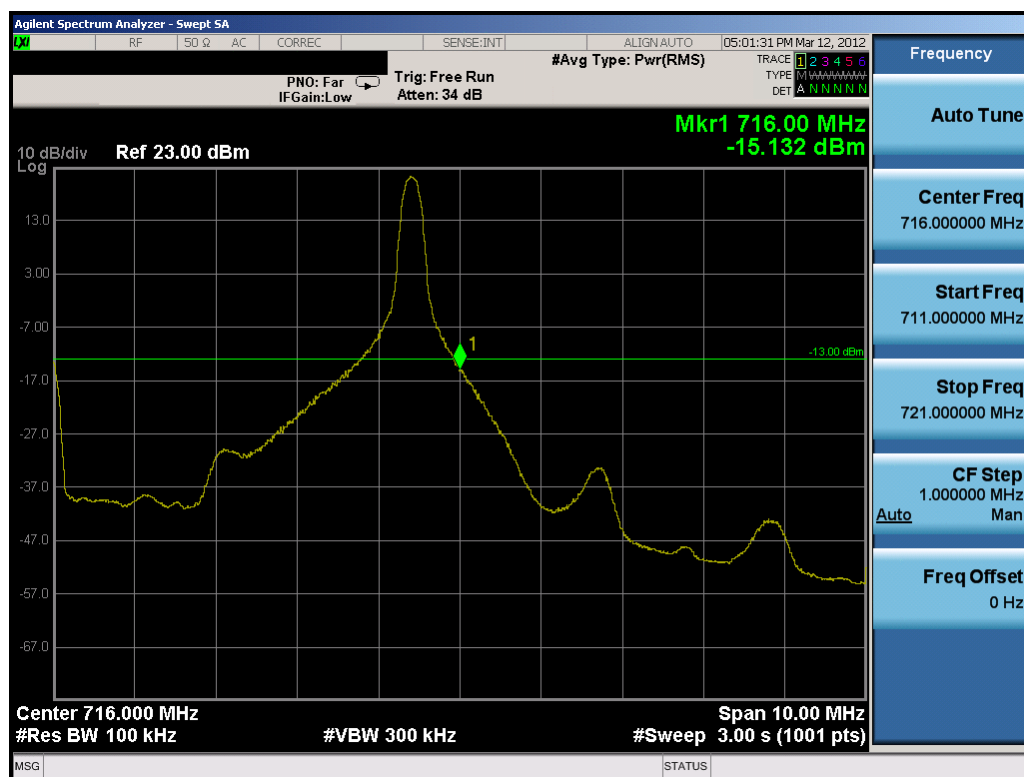


Plot 7-21. Upper Band Edge Plot (5MHz QPSK – RB Size 1, Offset 24)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 7-22. Upper Band Edge Plot (5MHz QPSK – RB Size 25, Offset 0)

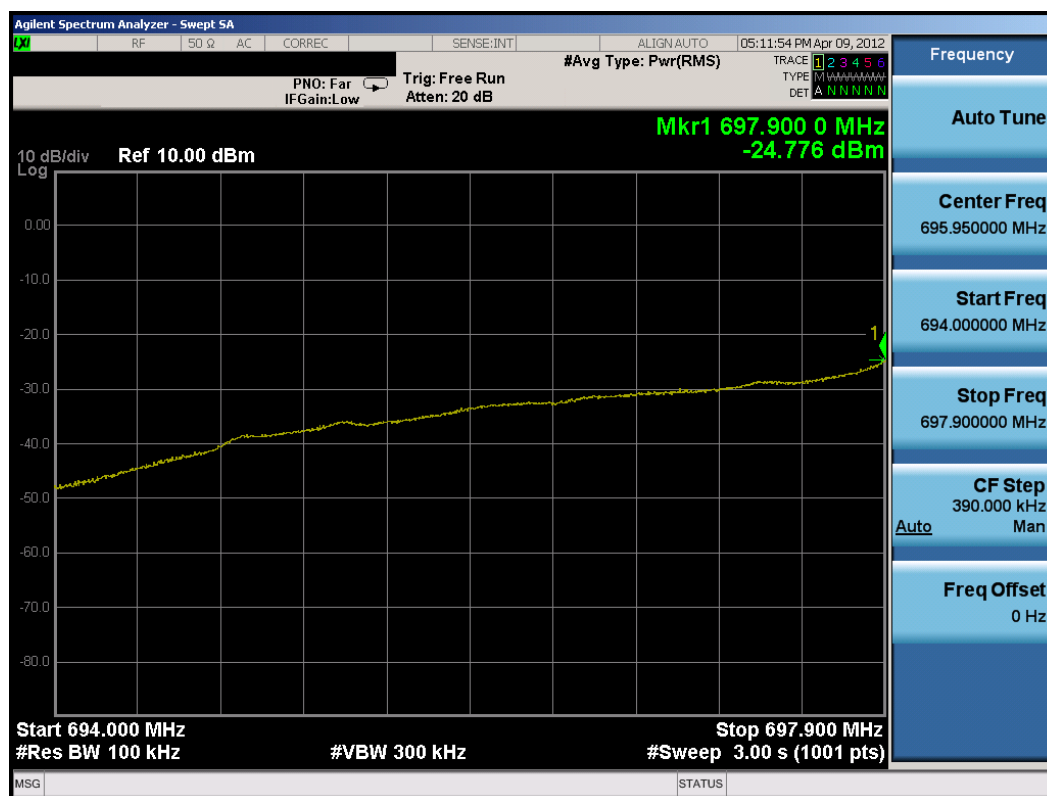


Plot 7-23. Upper Band Edge Plot (10MHz QPSK – RB Size 1, Offset 49)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 54 of 134

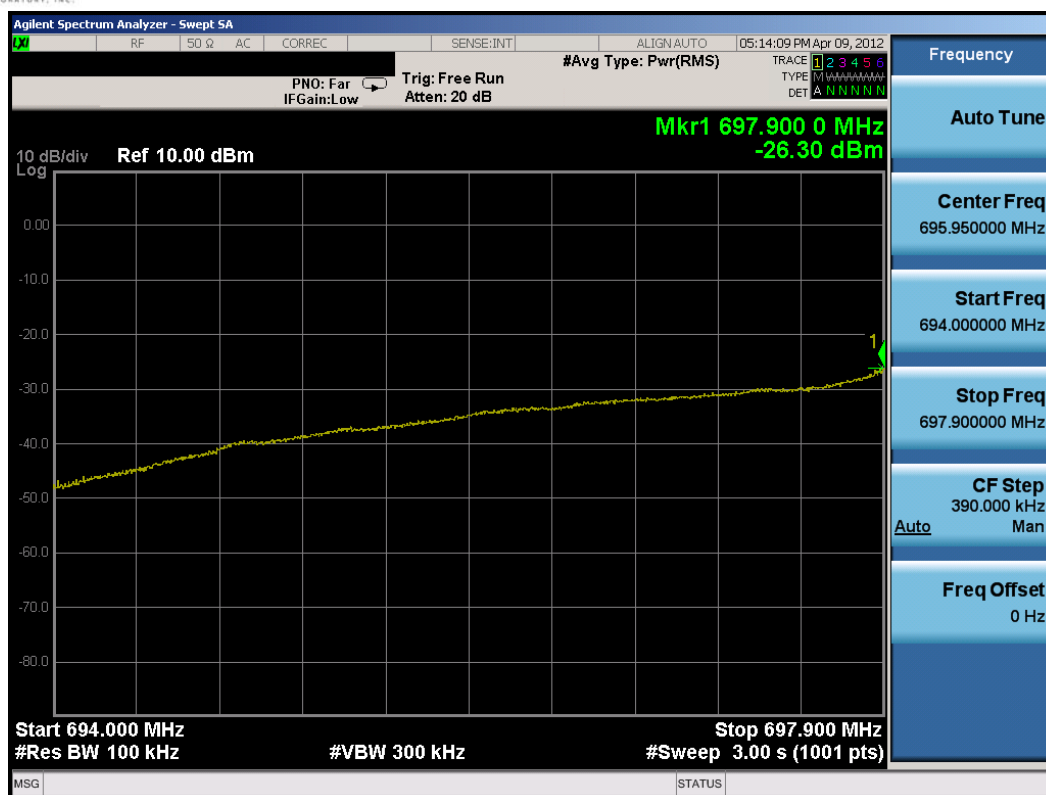


Plot 7-24. Upper Band Edge Plot (10MHz QPSK – RB Size 50, Offset 0)

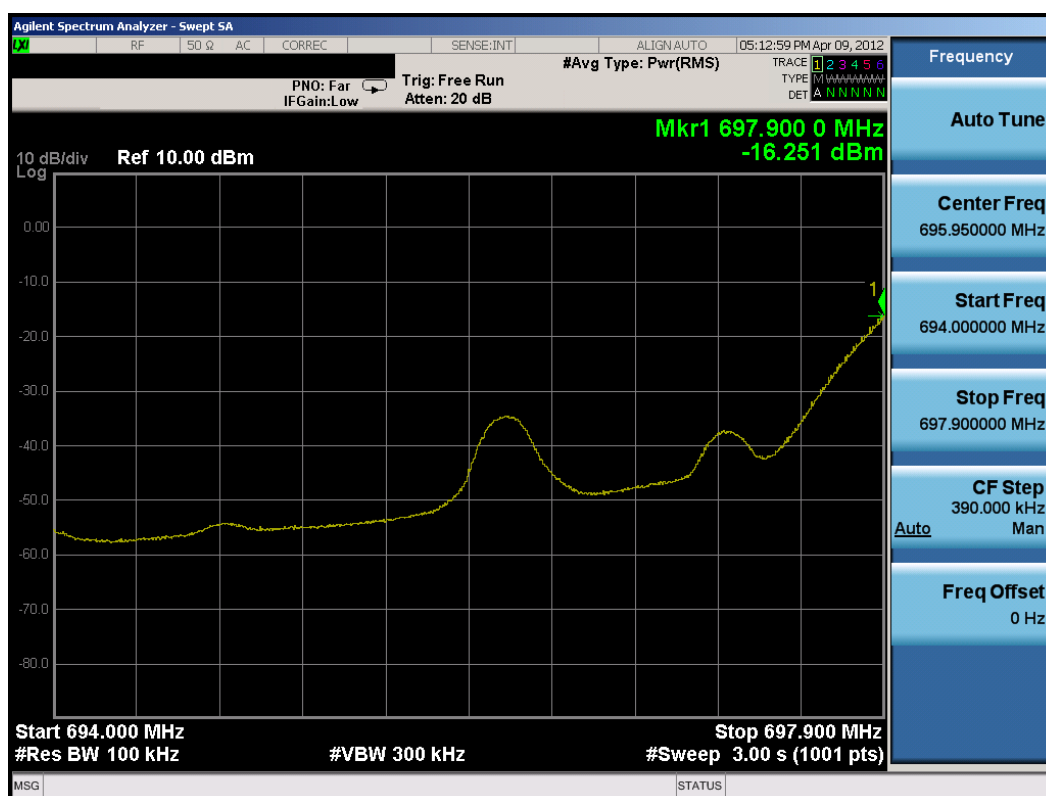


Plot 7-25. Lower Extended Band Edge Plot (5MHz QPSK – RB Size 25)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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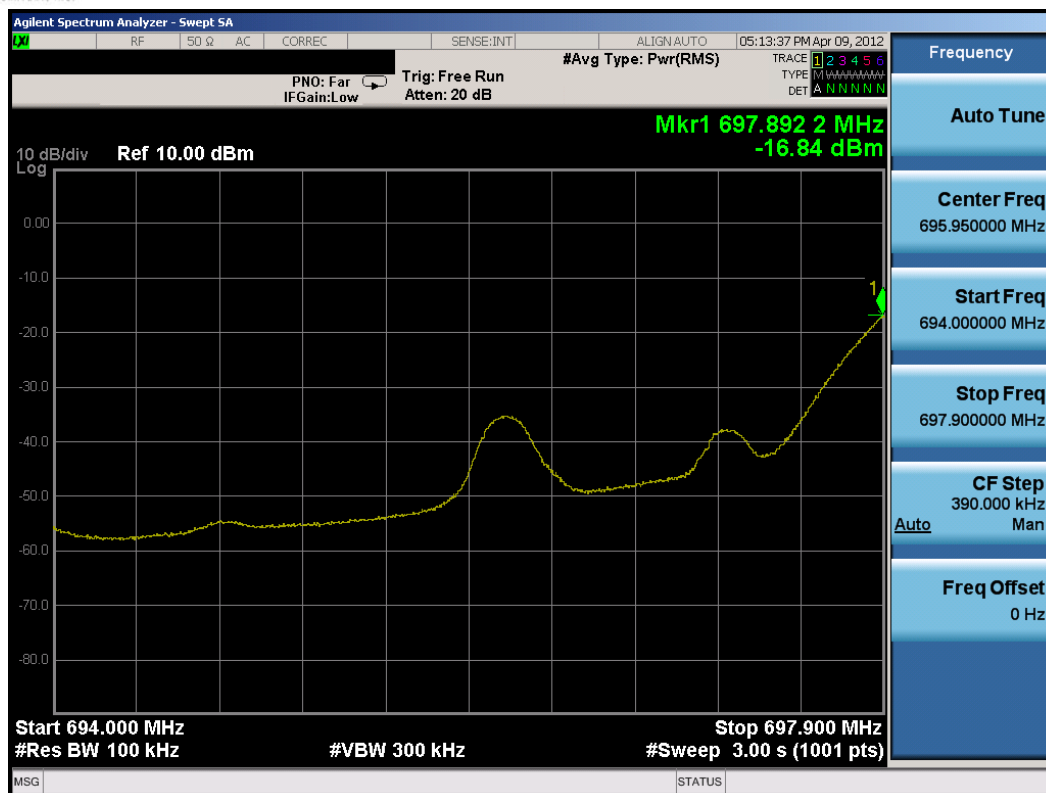


Plot 7-26. Lower Extended Band Edge Plot (5MHz 16QAM – RB Size 25)

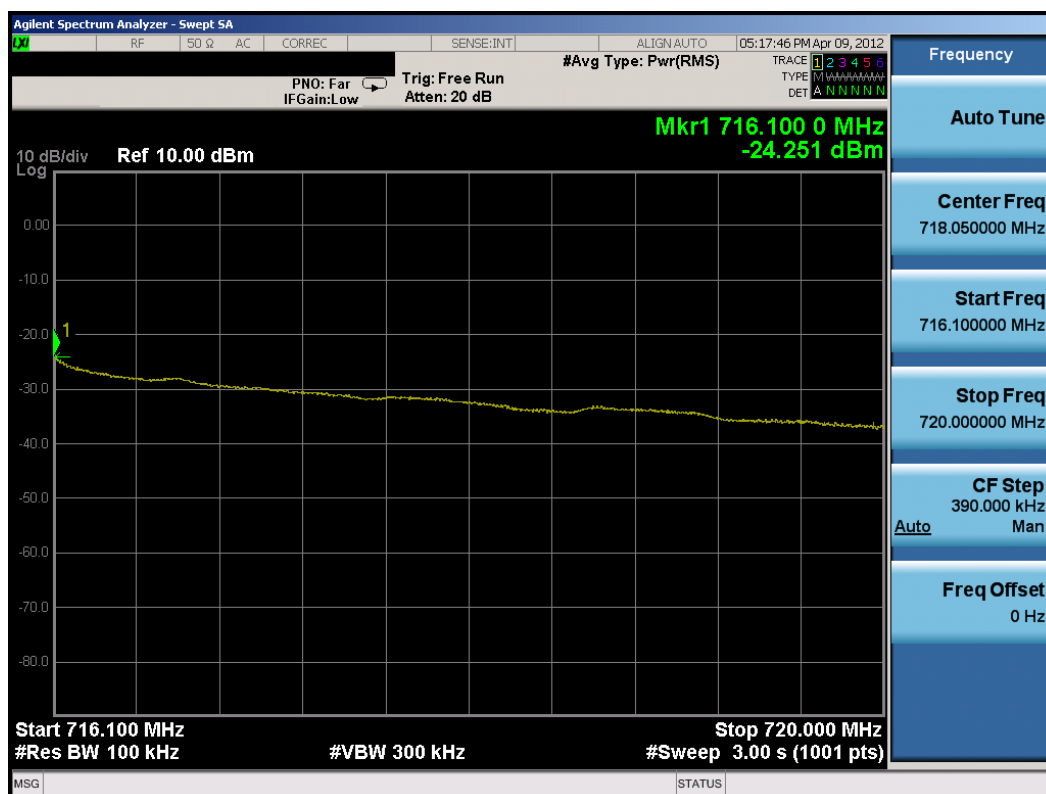


Plot 7-27. Lower Extended Band Edge Plot (5MHz QPSK – RB Size 1)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset	Page 56 of 134

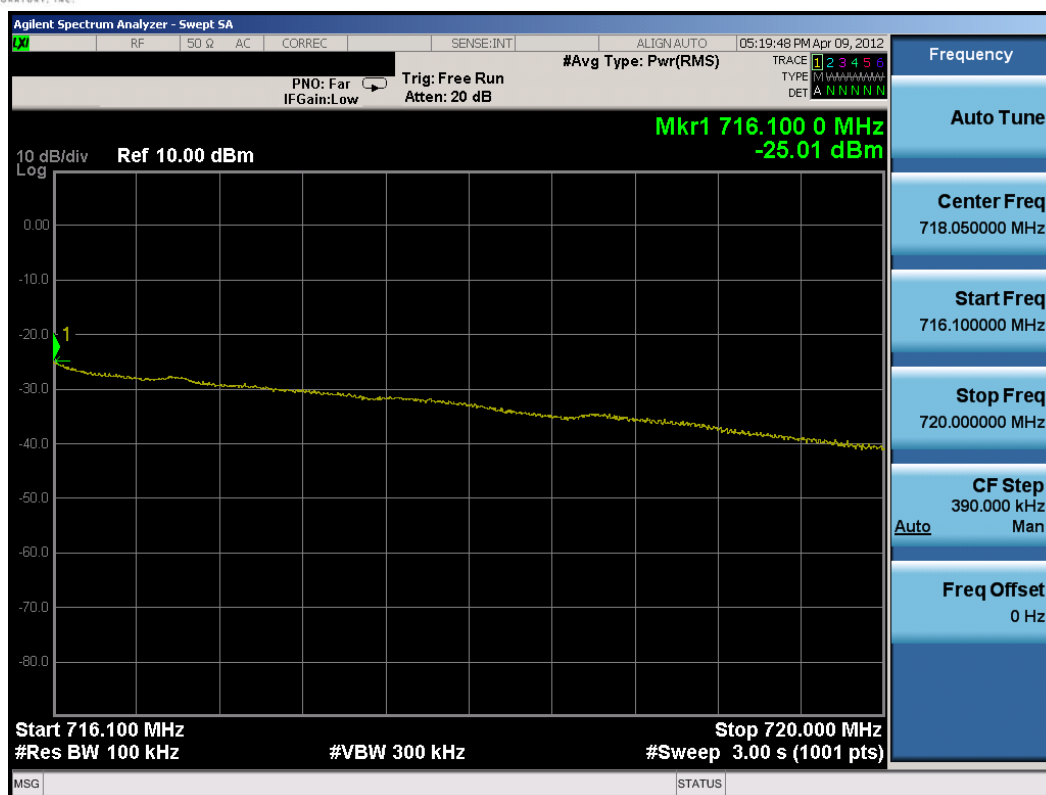


Plot 7-28. Lower Extended Band Edge Plot (5MHz 16QAM – RB Size 1)

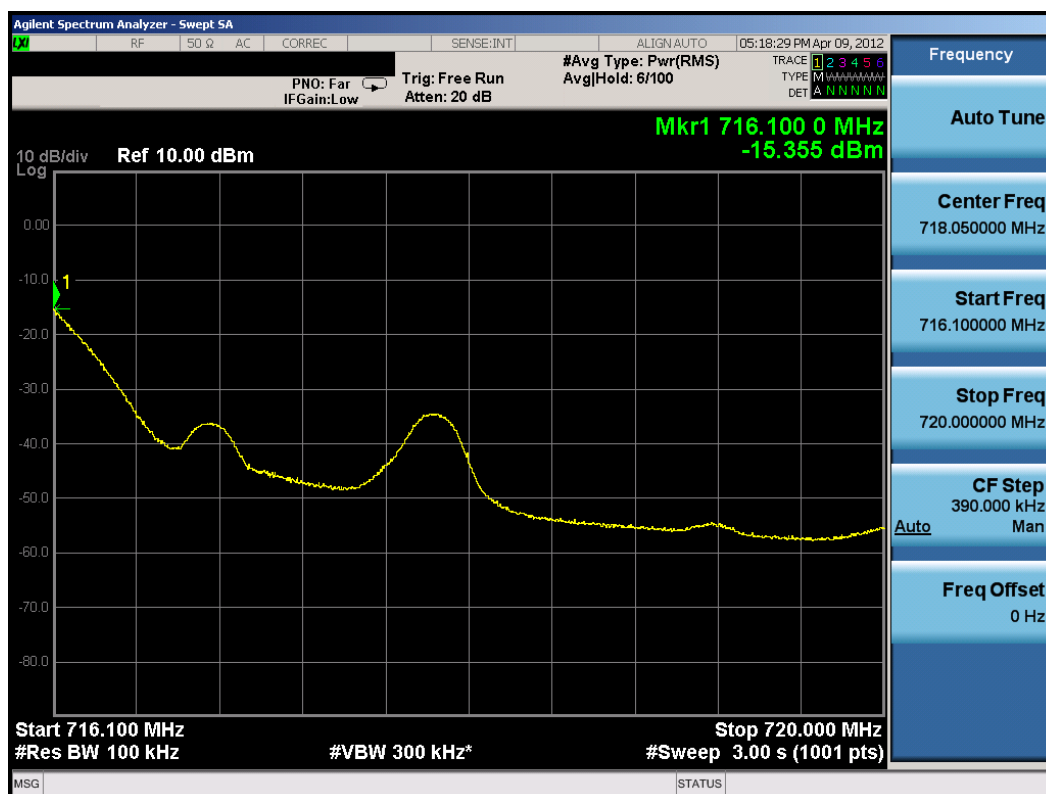


Plot 7-29. Upper Extended Band Edge Plot (5MHz QPSK – RB Size 25)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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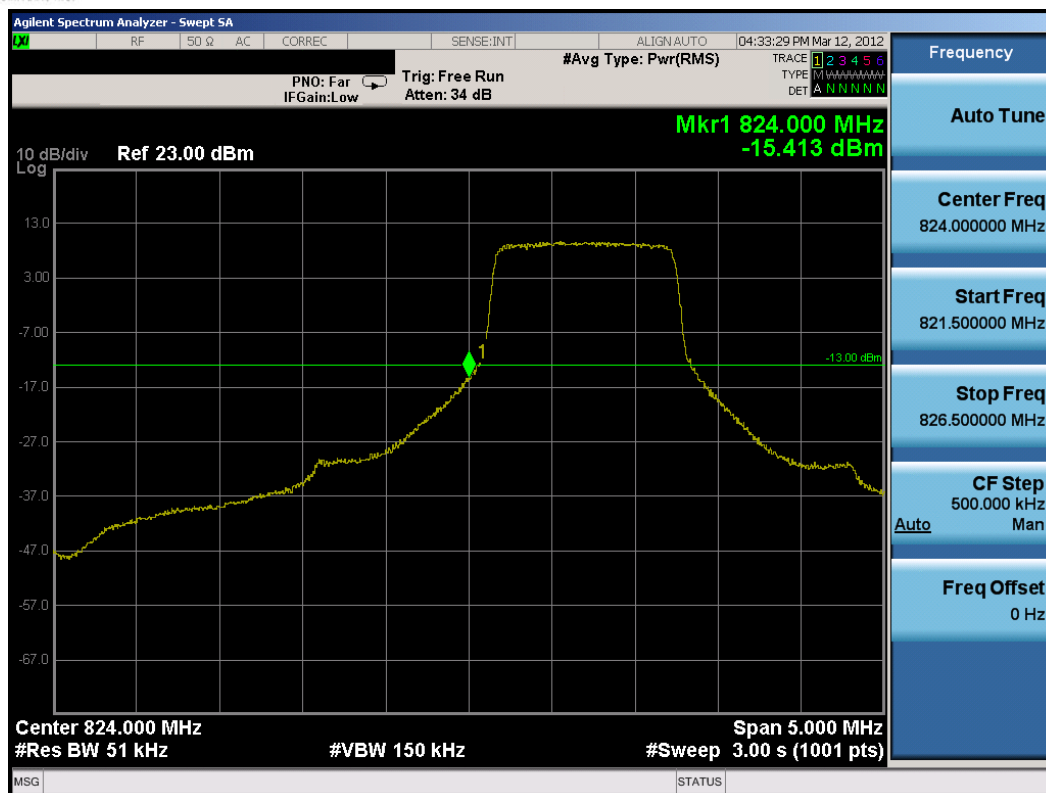


Plot 7-30. Upper Extended Band Edge Plot (5MHz 16QAM – RB Size 25)

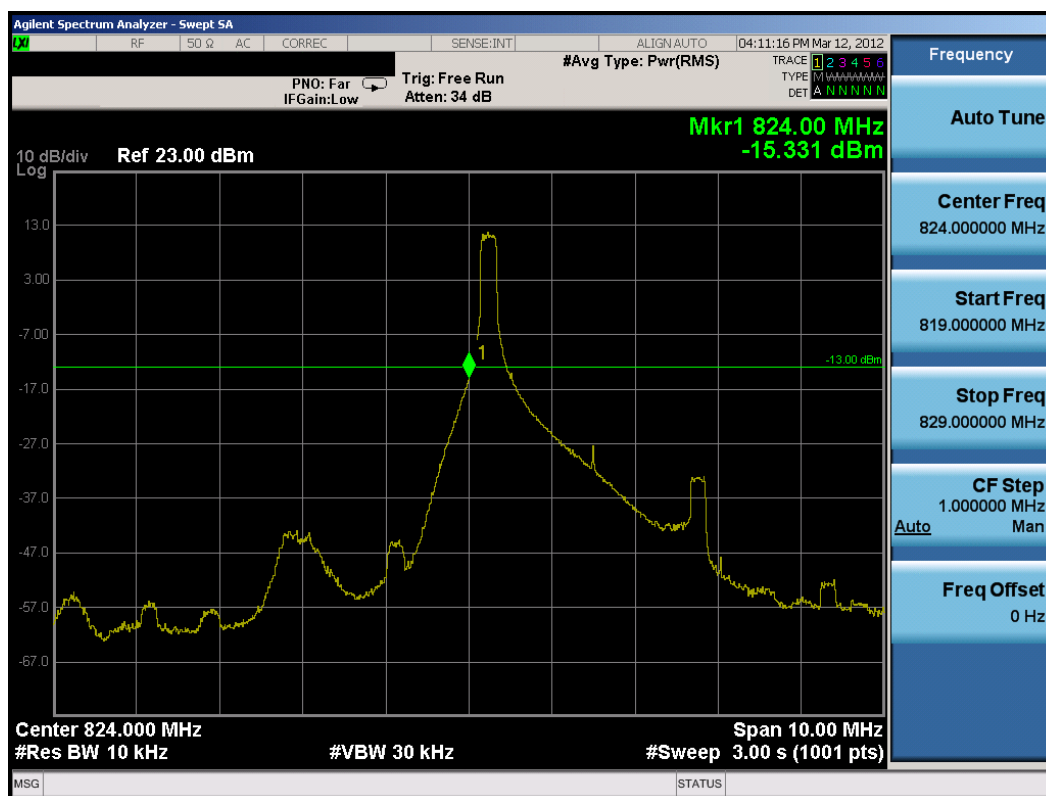


Plot 7-31. Upper Extended Band Edge Plot (5MHz QPSK – RB Size 1)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 58 of 134

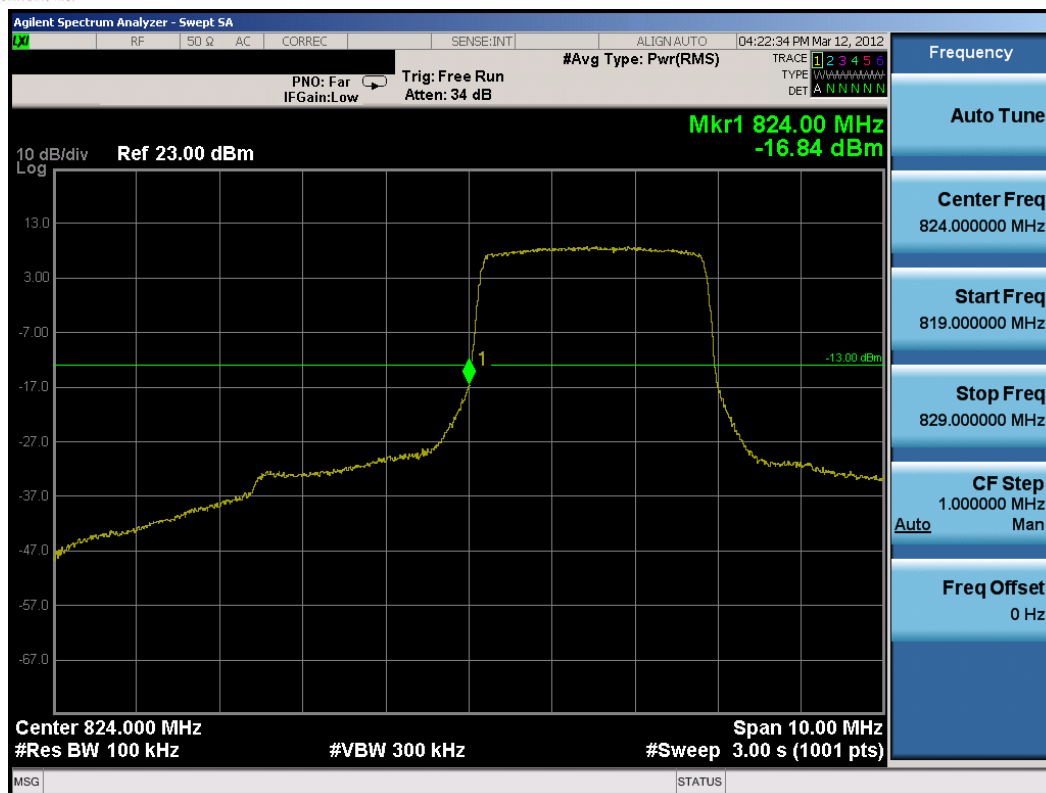


Plot 8-2. Lower Band Edge Plot (1.4MHz QPSK – RB Size 6, Offset 0)

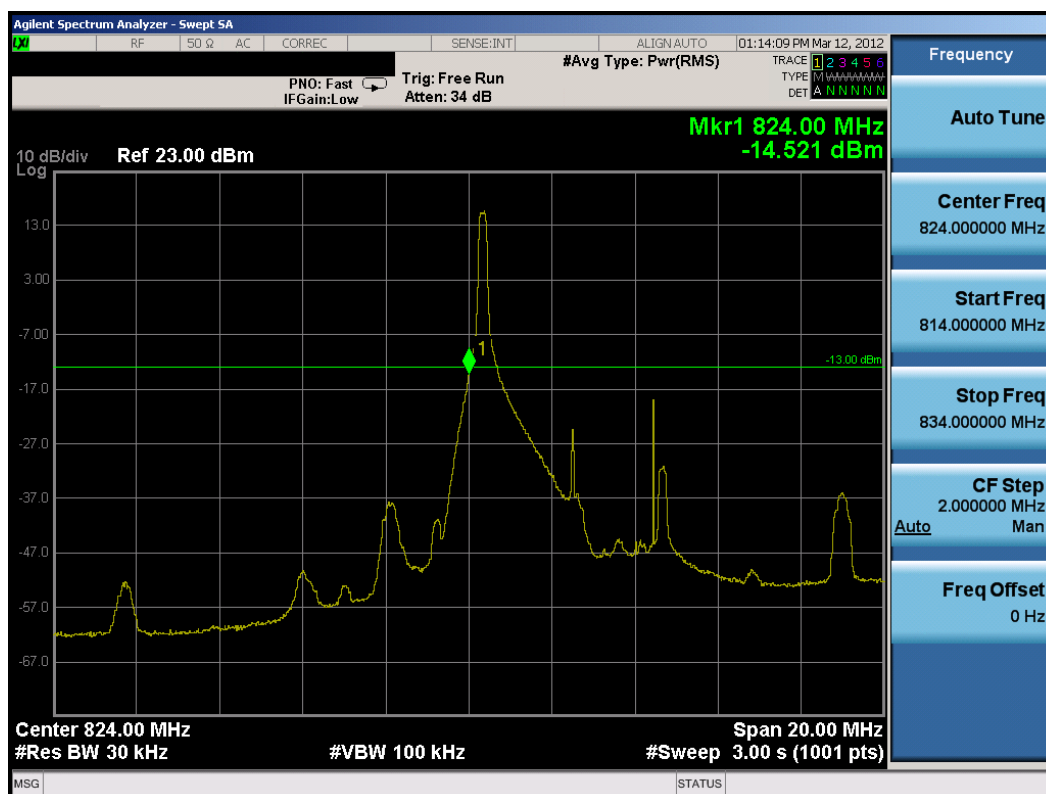


Plot 8-3. Lower Band Edge Plot (3MHz QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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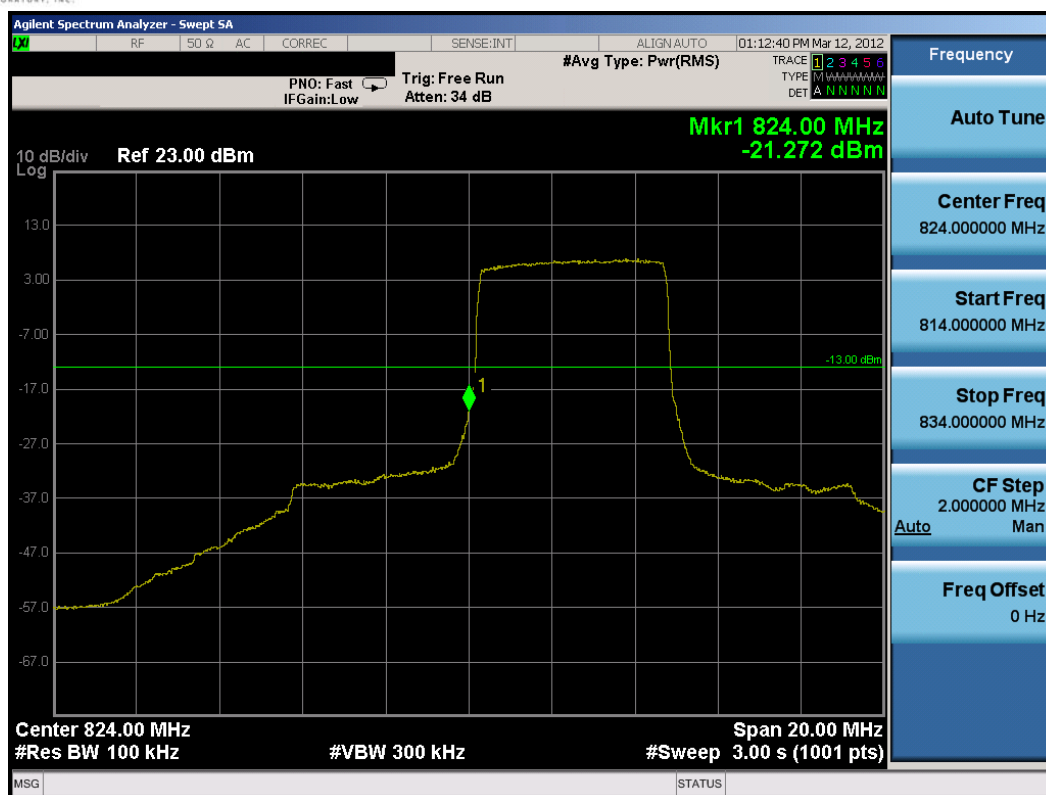


Plot 8-4. Lower Band Edge Plot (3MHz QPSK – RB Size 15, Offset 0)

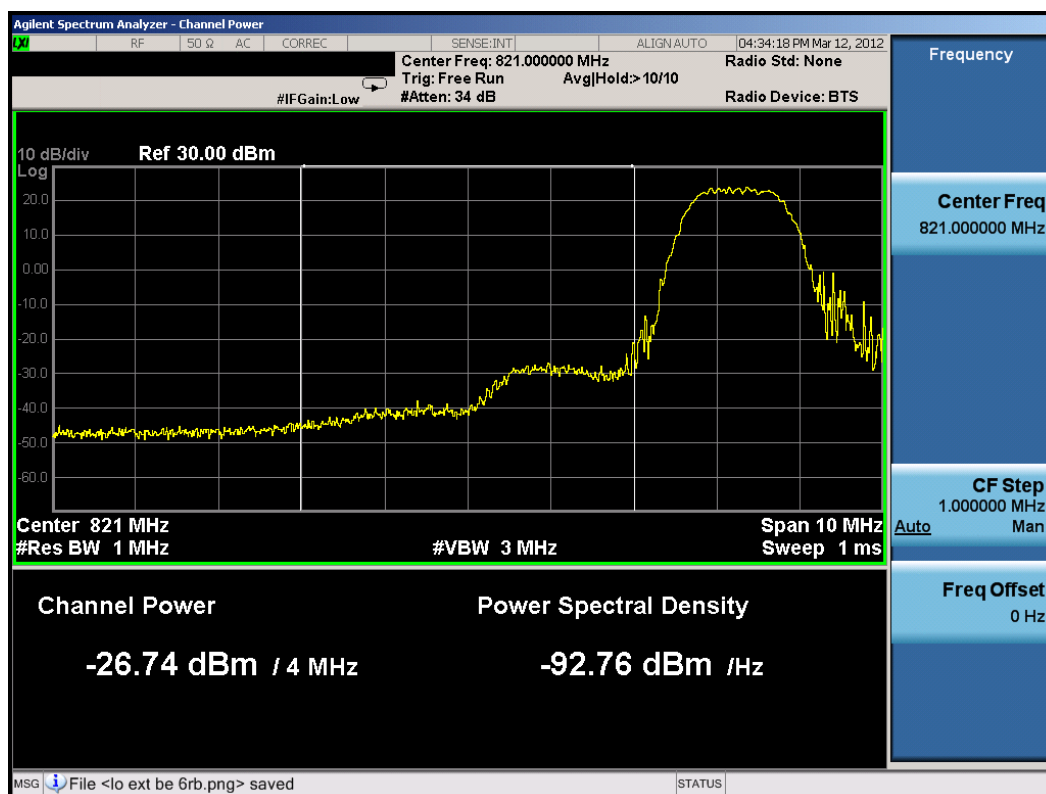


Plot 8-5. Lower Band Edge Plot (5MHz QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 62 of 134

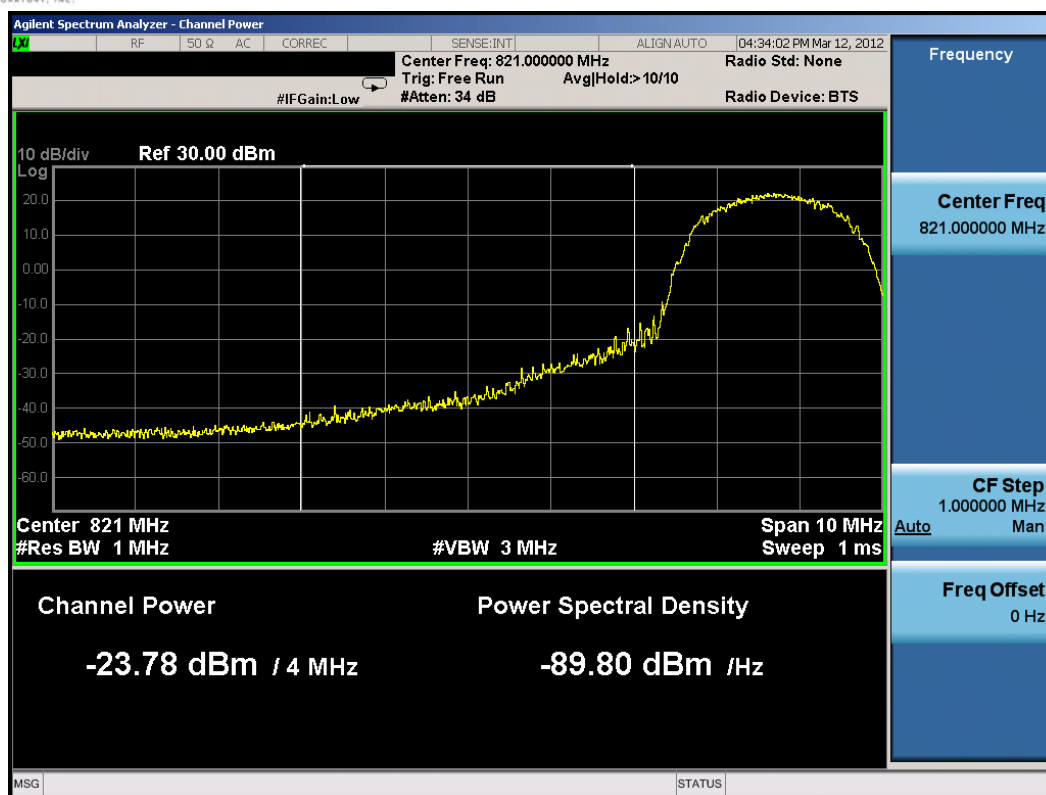


Plot 8-6. Lower Band Edge Plot (5MHz QPSK – RB Size 25, Offset 0)

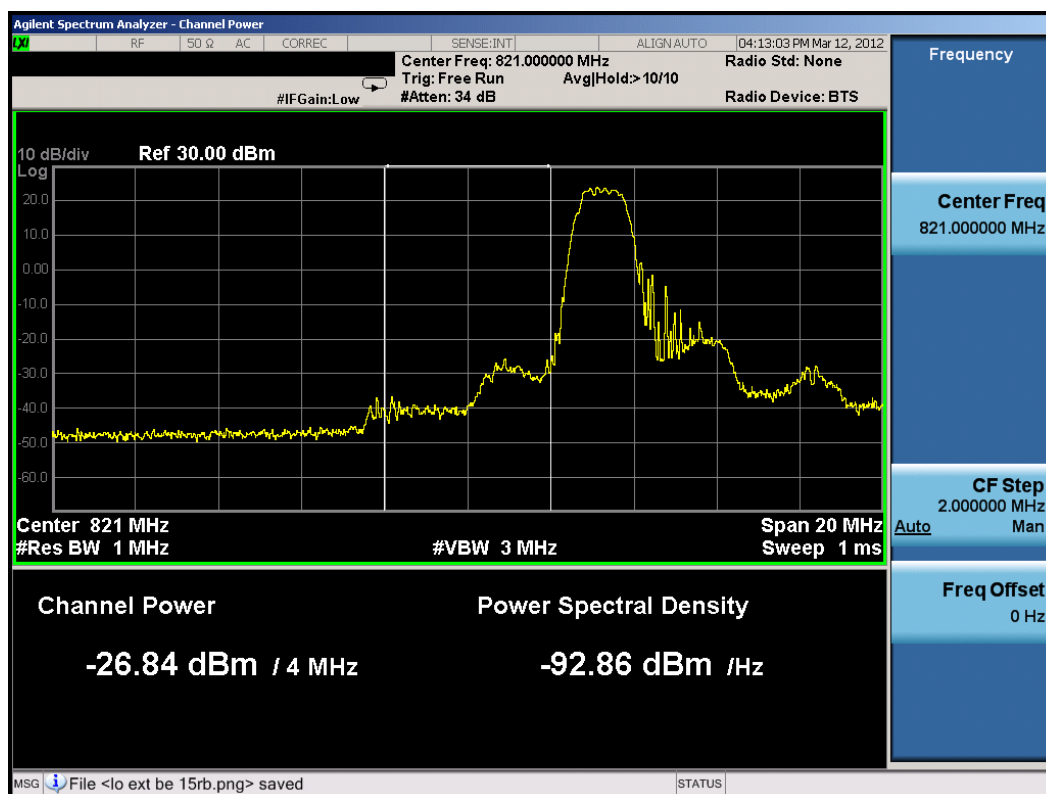


Plot 8-7. Lower Extended Band Edge Plot (1.4MHz QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 63 of 134

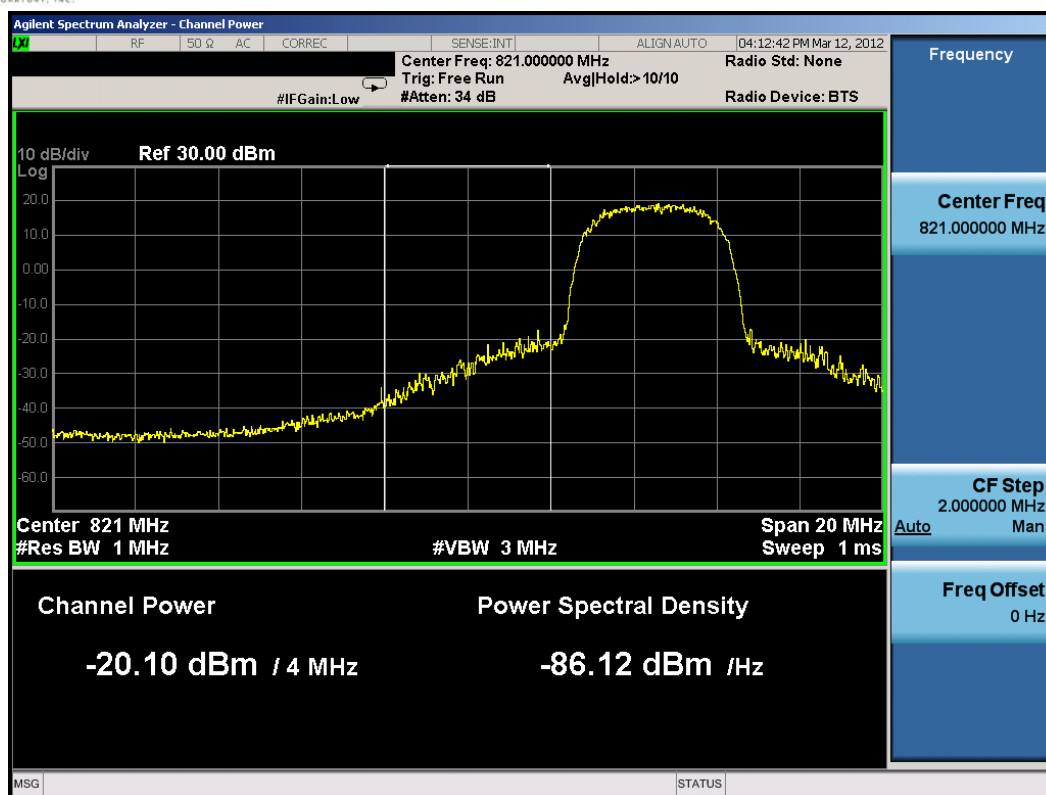


Plot 8-8. Lower Extended Band Edge Plot (1.4MHz QPSK – RB Size 6, Offset 0)

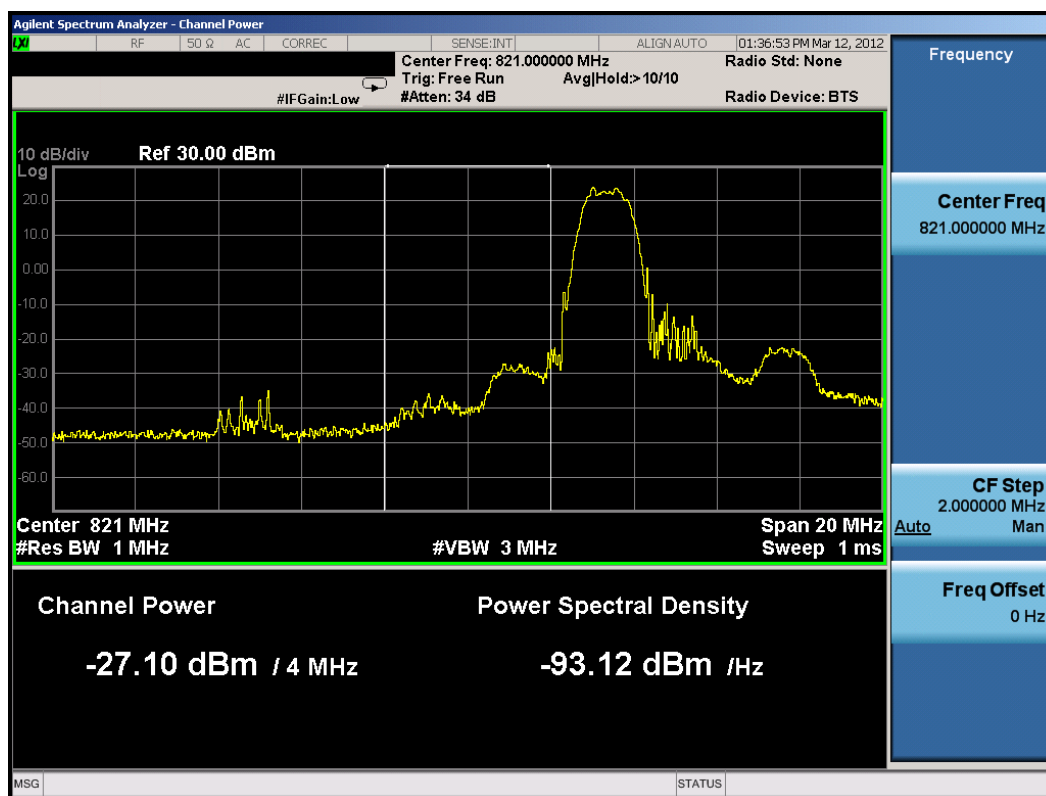


Plot 8-9. Lower Extended Band Edge Plot (3MHz QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 64 of 134



Plot 8-10. Lower Extended Band Edge Plot (3MHz QPSK – RB Size 15, Offset 0)

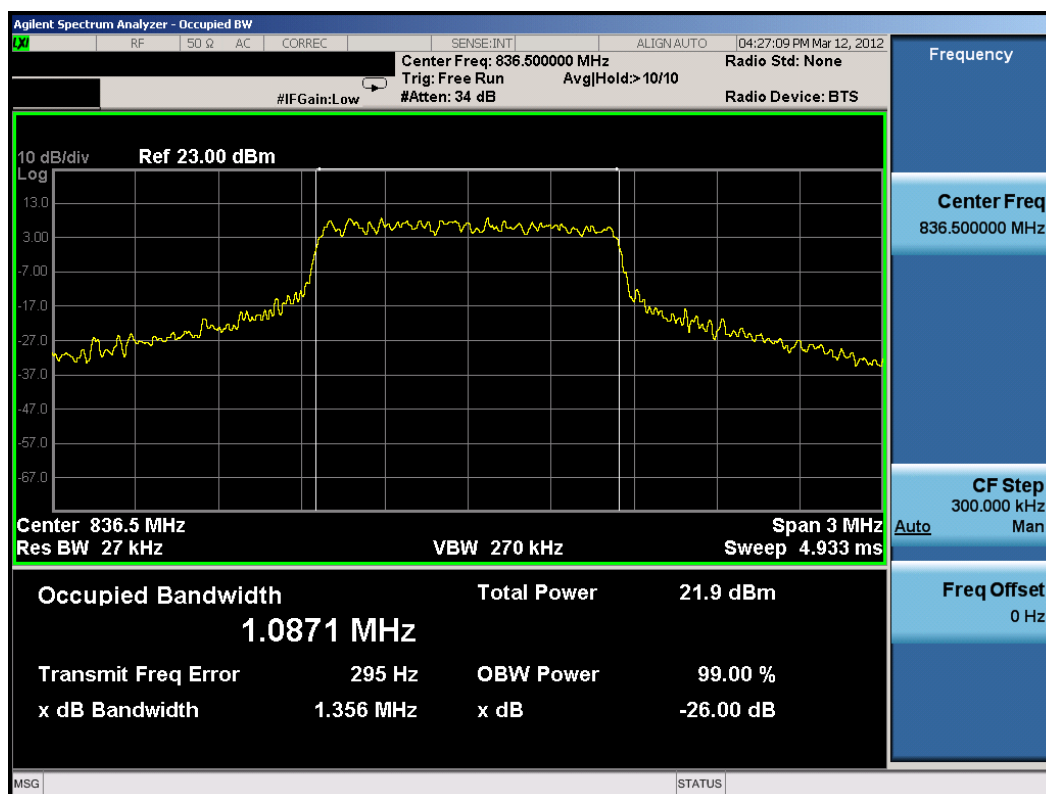


Plot 8-11. Lower Extended Band Edge Plot (5MHz QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 65 of 134

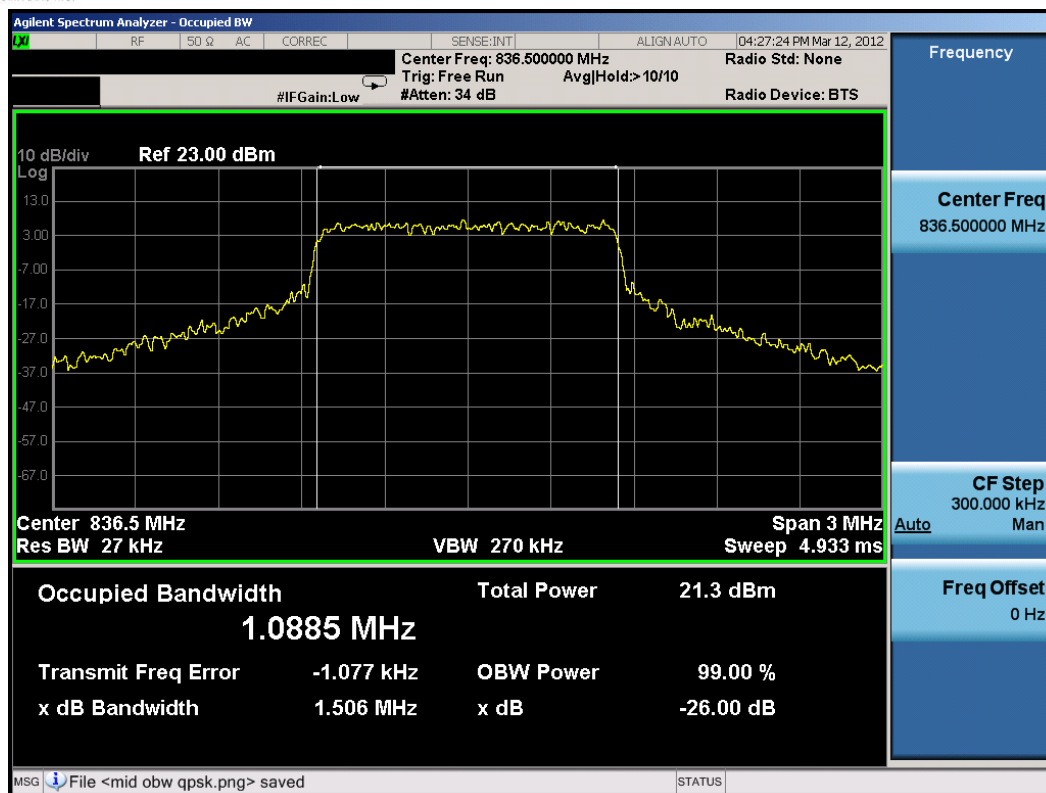


Plot 8-12. Lower Extended Band Edge Plot (5MHz QPSK – RB Size 25, Offset 0)

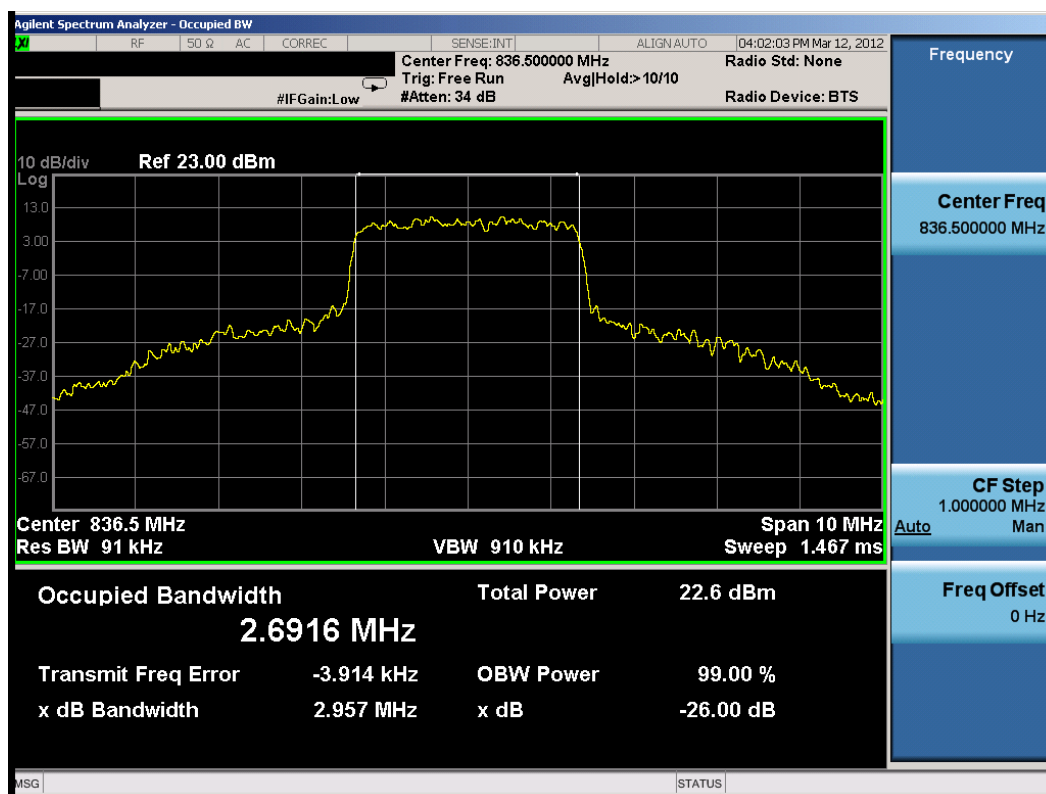


Plot 8-13. Occupied Bandwidth Plot (1.4MHz QPSK – RB Size 6)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 66 of 134

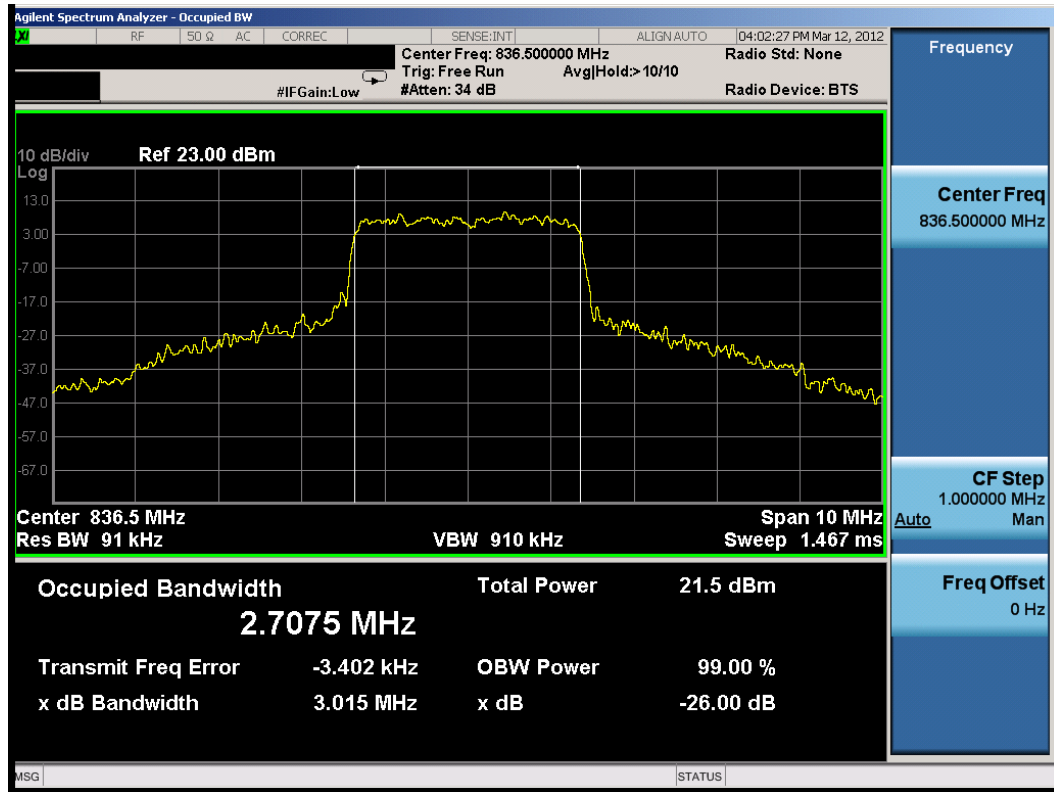


Plot 8-14. Occupied Bandwidth Plot (1.4MHz 16-QAM – RB Size 6)

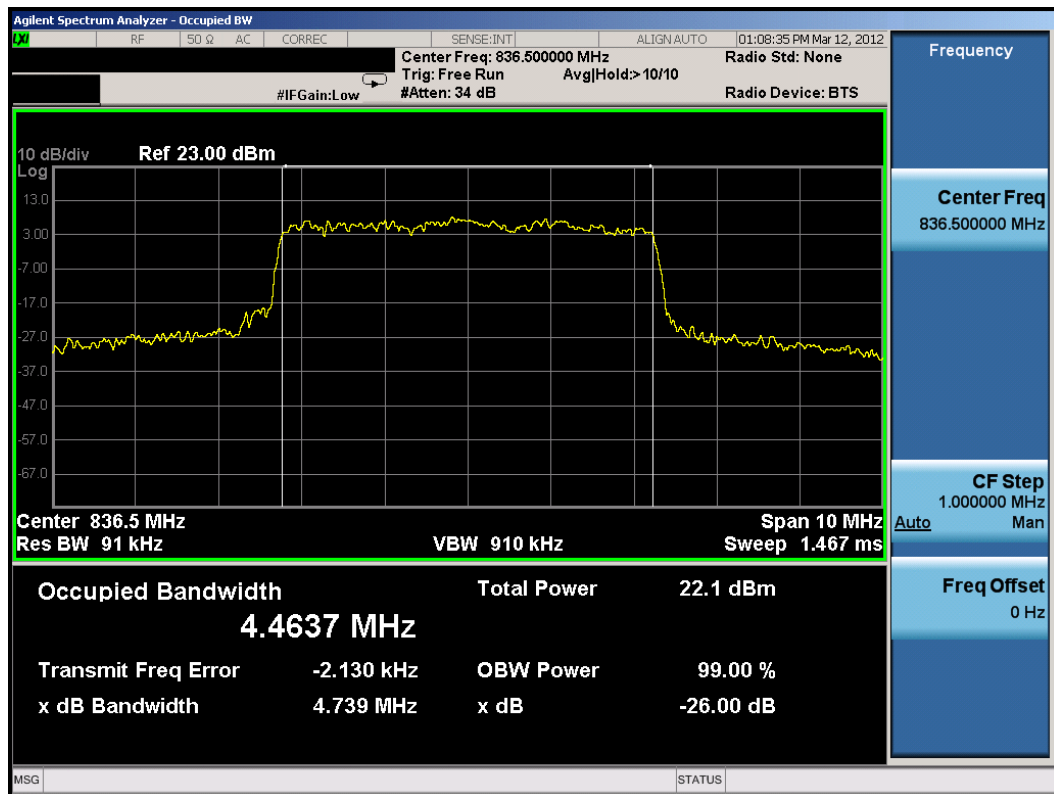


Plot 8-15. Occupied Bandwidth Plot (3MHz QPSK – RB Size 15)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 67 of 134

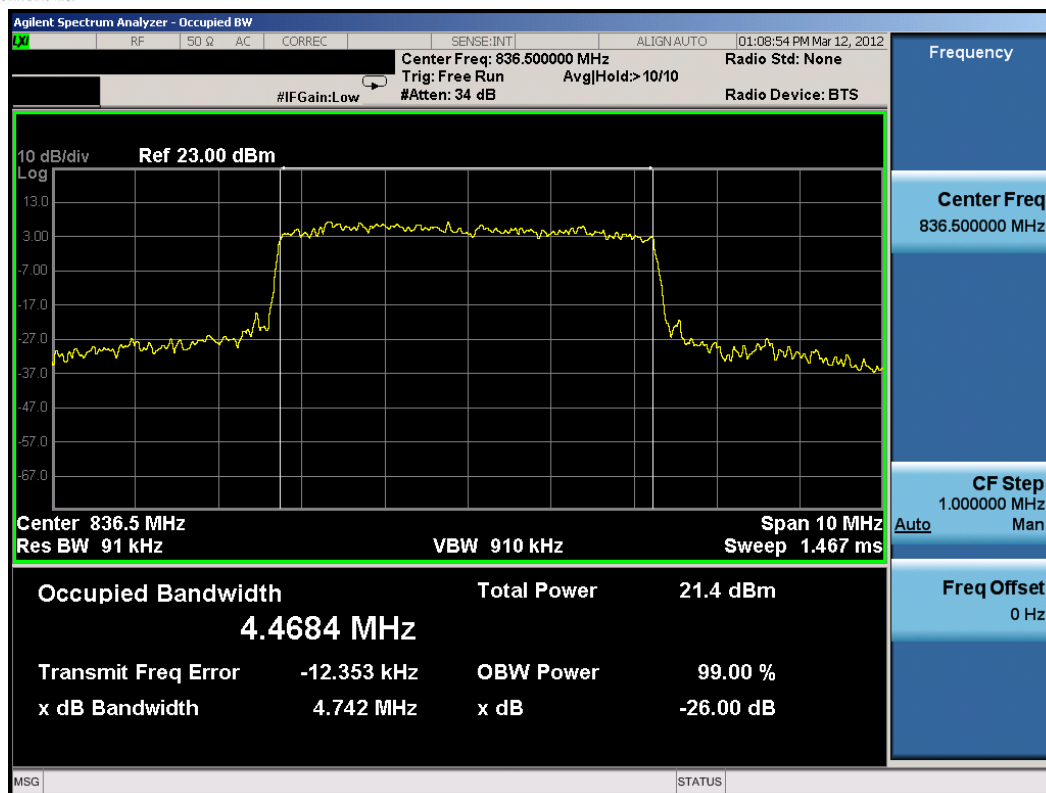


Plot 8-16. Occupied Bandwidth Plot (3MHz 16-QAM – RB Size 15)

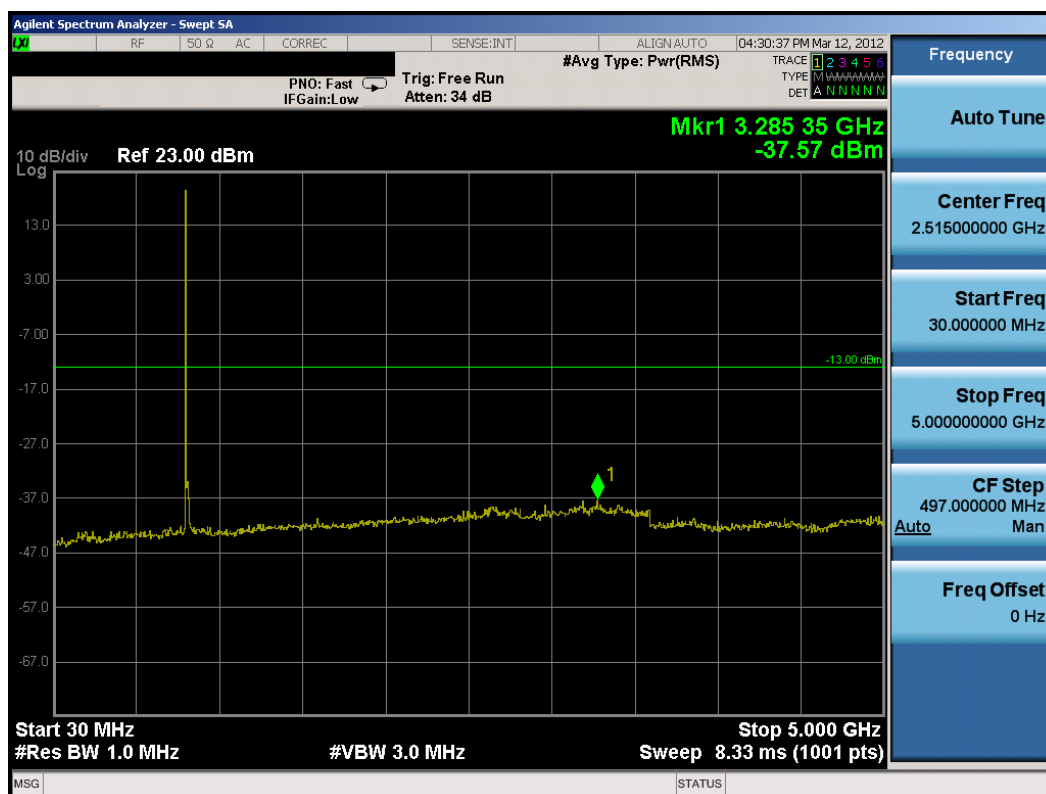


Plot 8-17. Occupied Bandwidth Plot (5MHz QPSK – RB Size 25)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 68 of 134

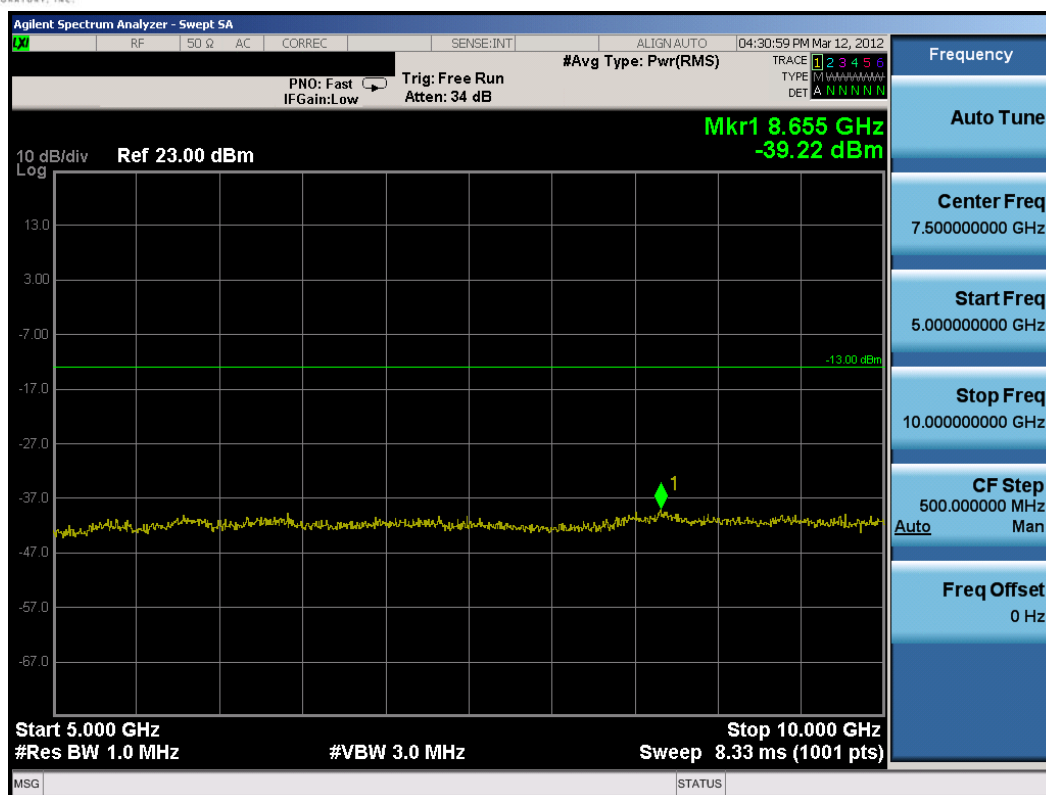


Plot 8-18. Occupied Bandwidth Plot (5MHz 16-QAM – RB Size 25)

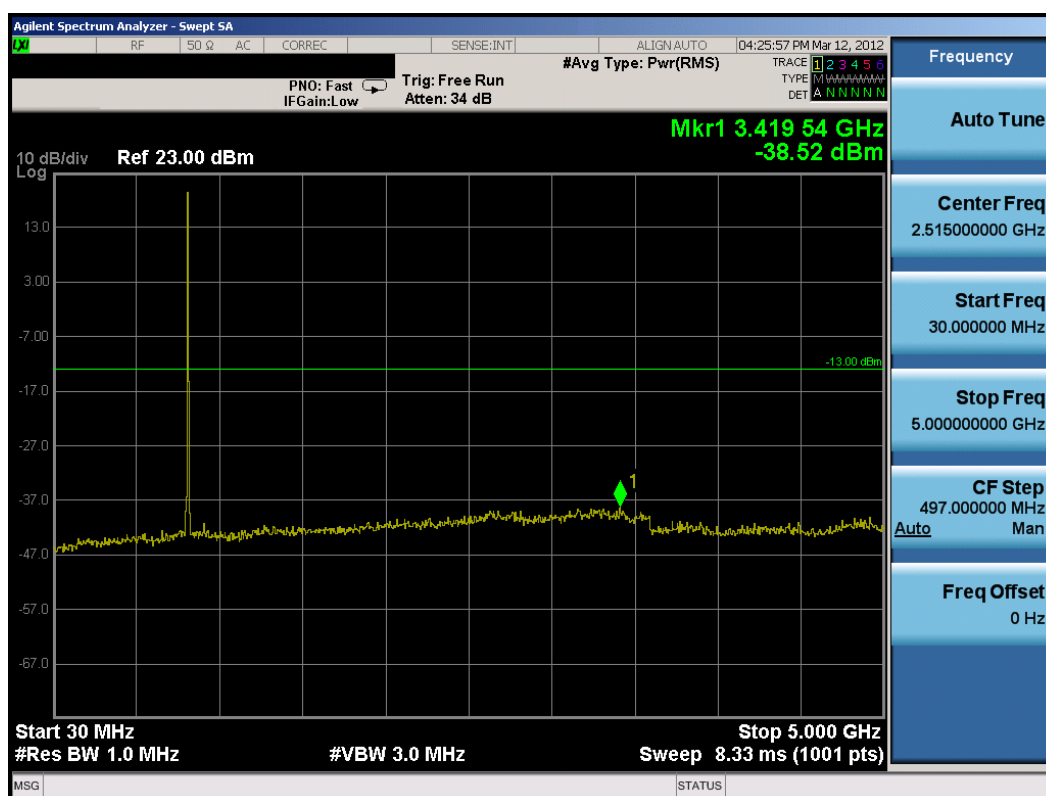


Plot 8-19. Conducted Spurious Plot (1.4MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 69 of 134

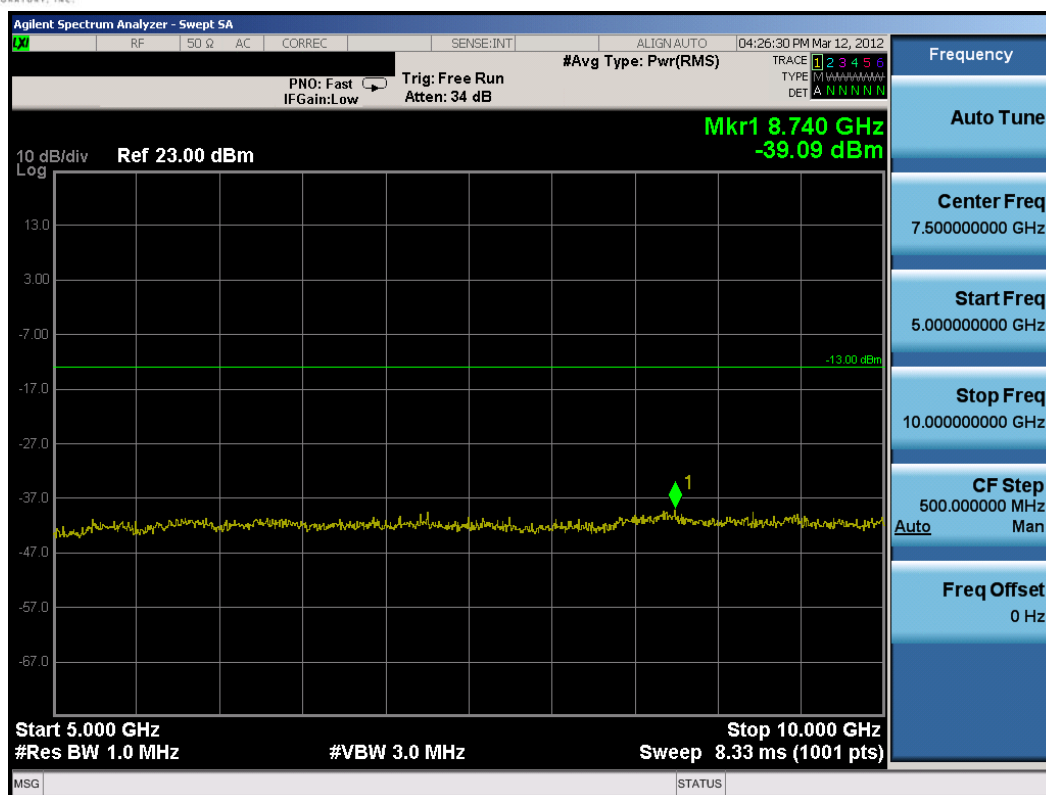


Plot 8-20. Conducted Spurious Plot (1.4MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

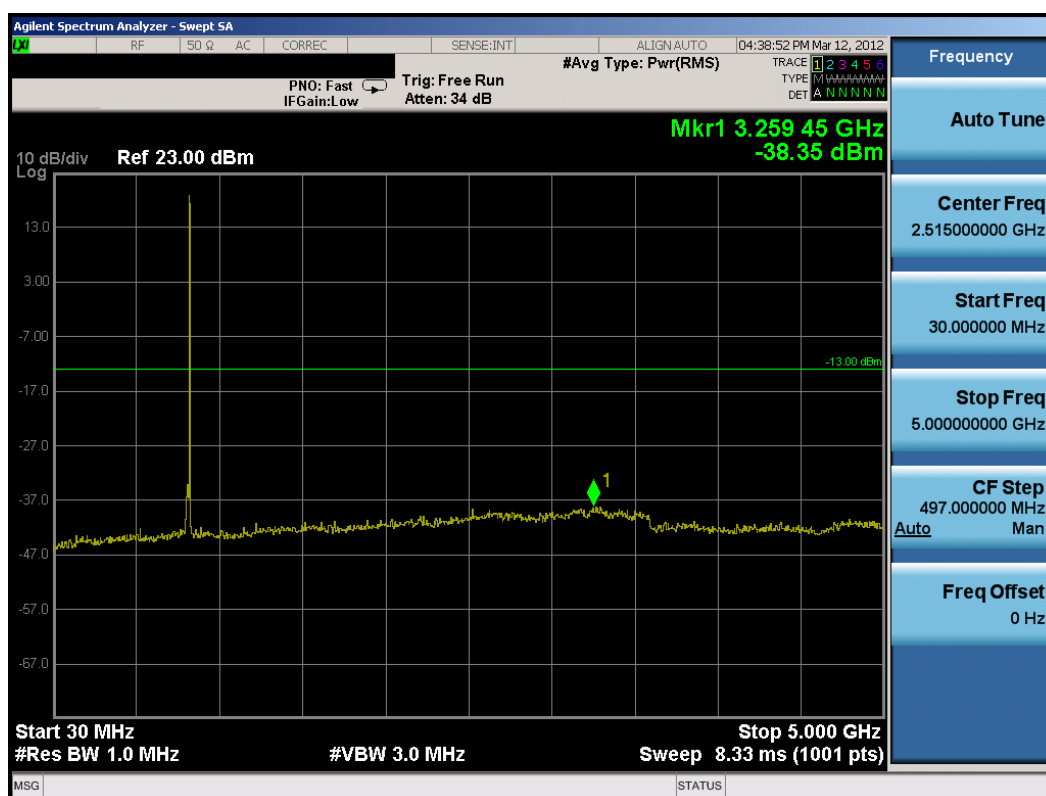


Plot 8-21. Conducted Spurious Plot (1.4MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset	Page 70 of 134

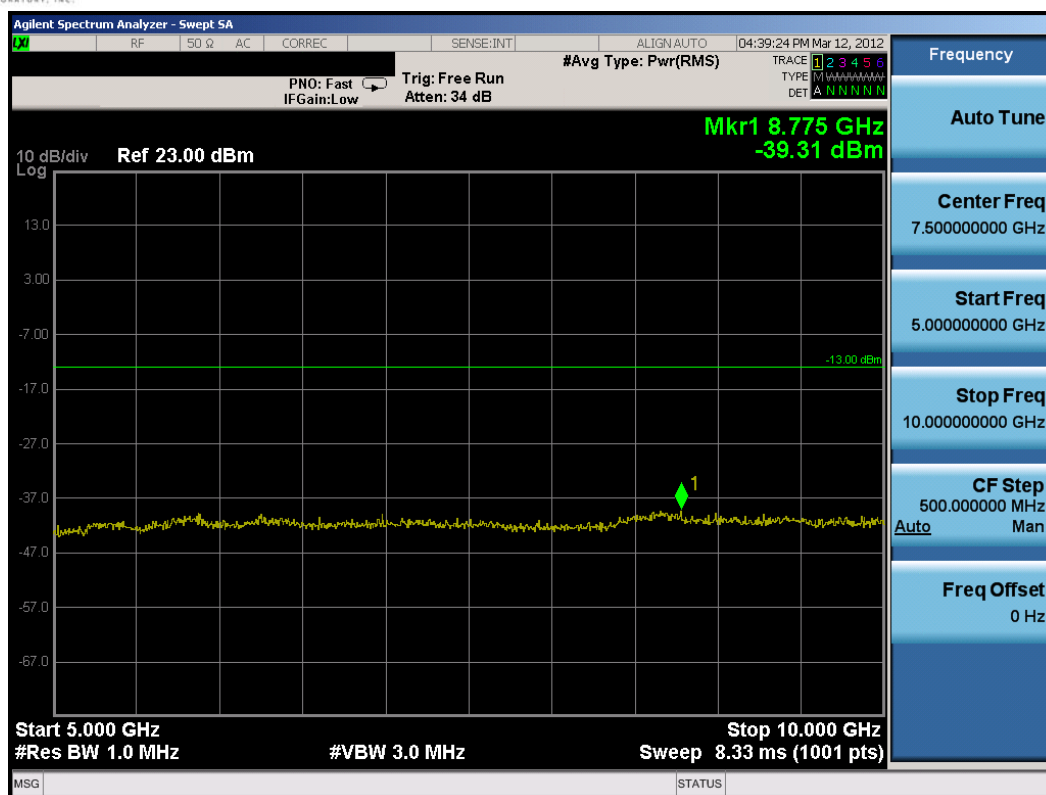


Plot 8-22. Conducted Spurious Plot (1.4MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

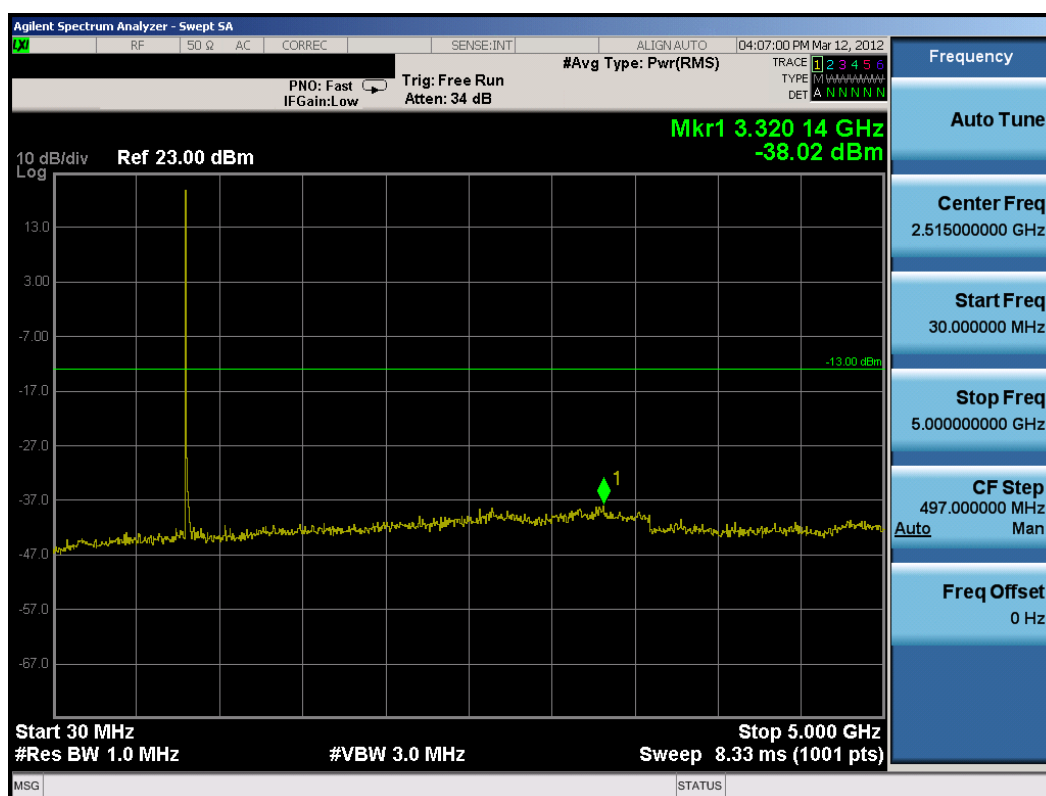


Plot 8-23. Conducted Spurious Plot (1.4MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 71 of 134

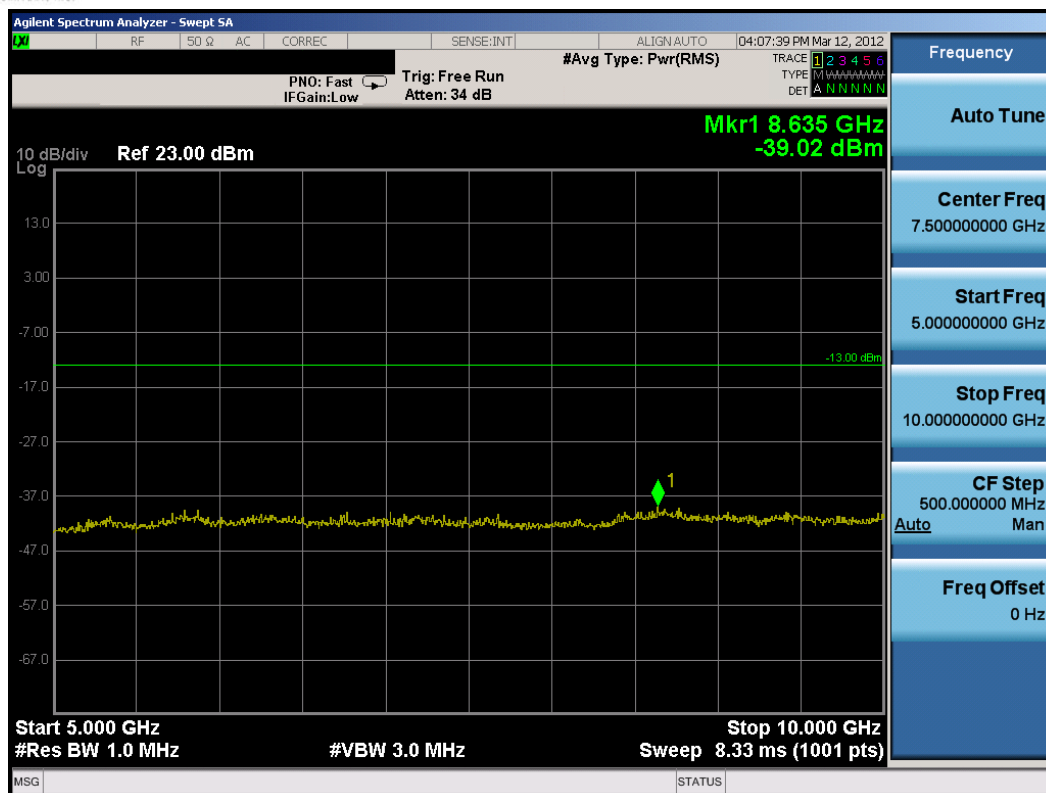


Plot 8-24. Conducted Spurious Plot (1.4MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

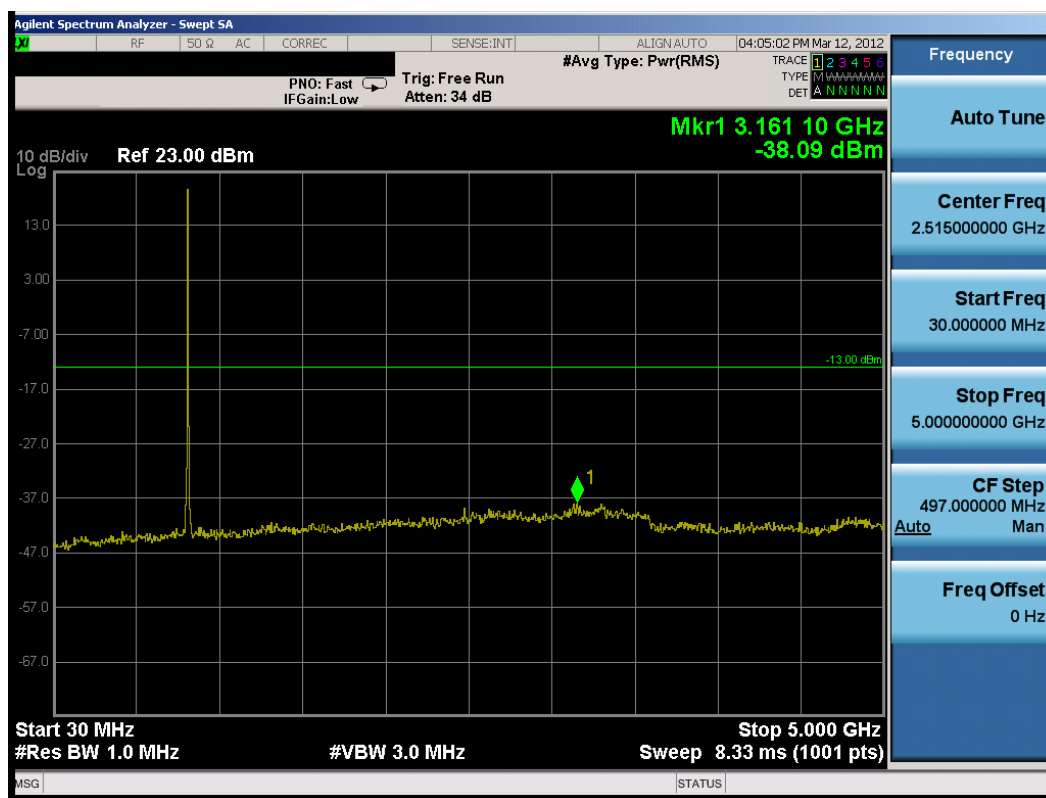


Plot 8-25. Conducted Spurious Plot (3MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset	Page 72 of 134

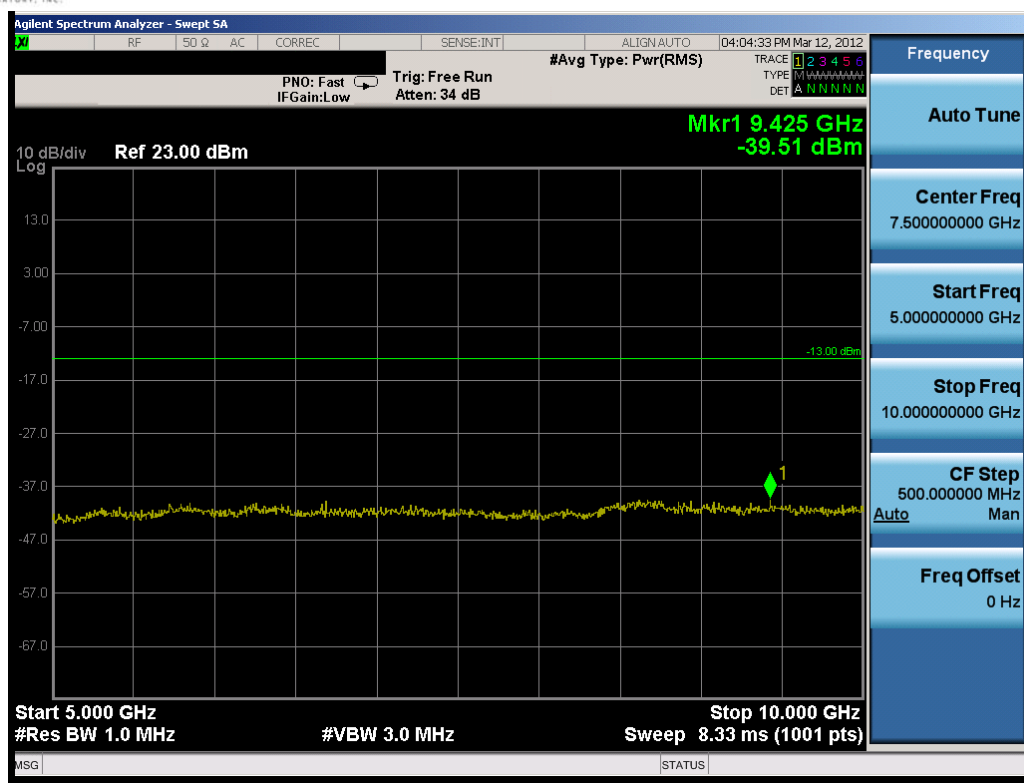


Plot 8-26. Conducted Spurious Plot (3MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

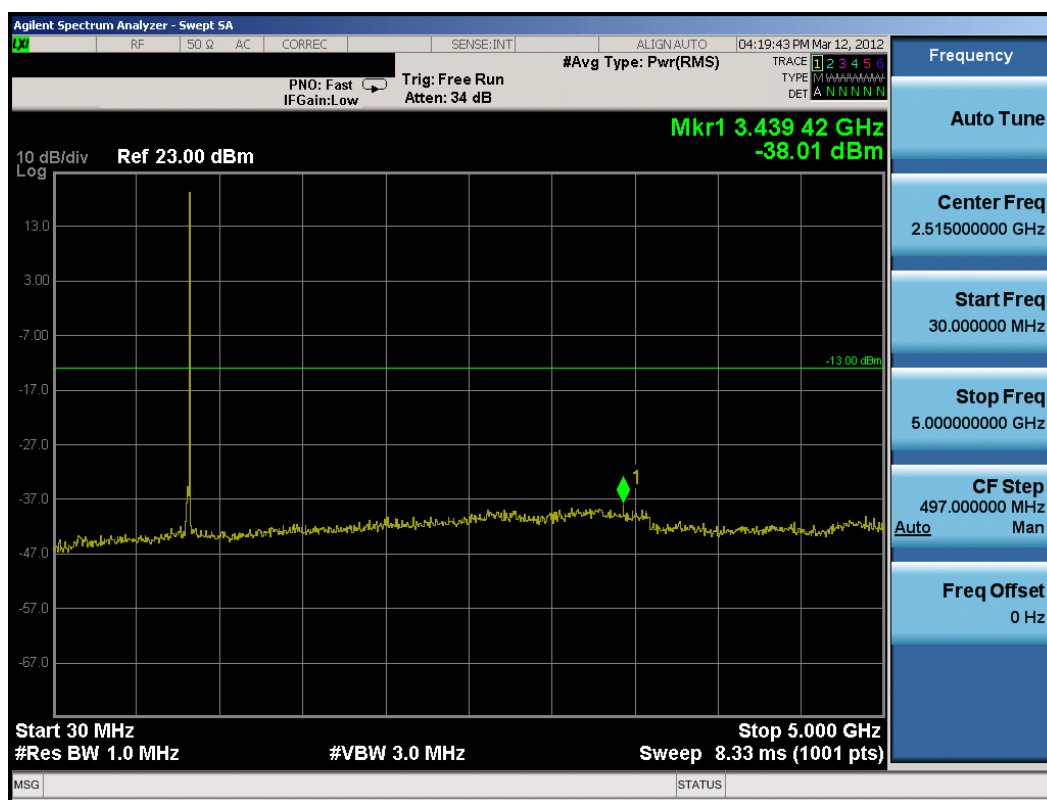


Plot 8-27. Conducted Spurious Plot (3MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset	Page 73 of 134	

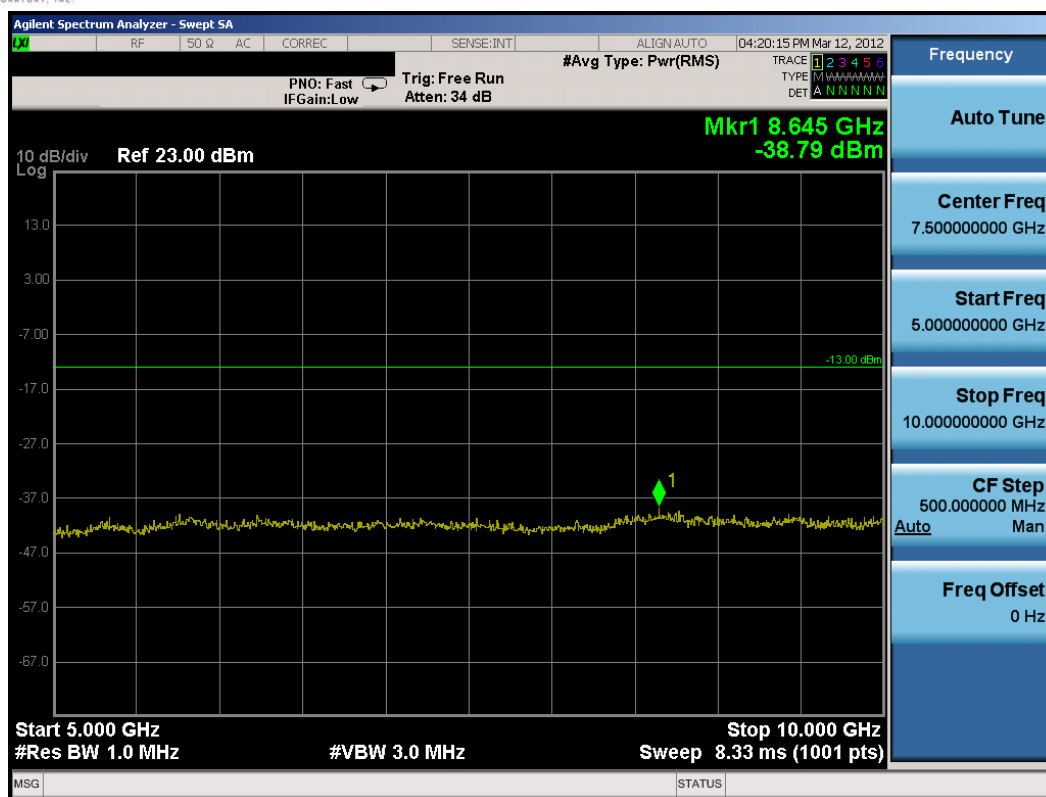


Plot 8-28. Conducted Spurious Plot (3MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

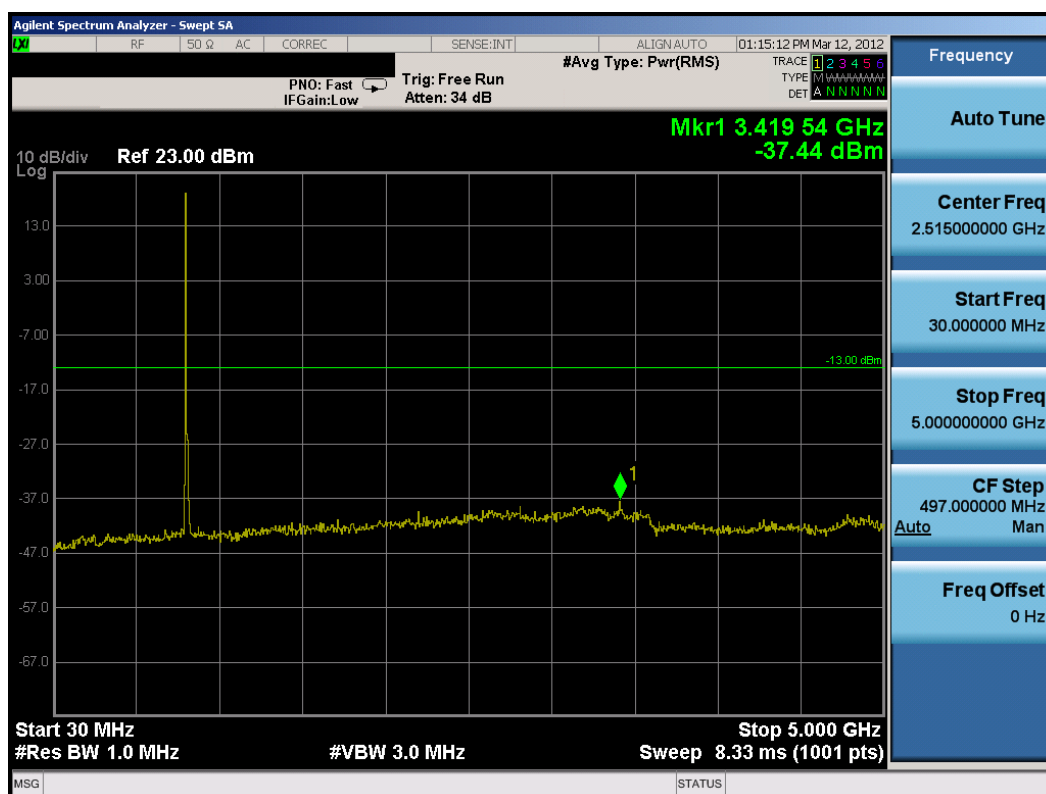


Plot 8-29. Conducted Spurious Plot (3MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 74 of 134

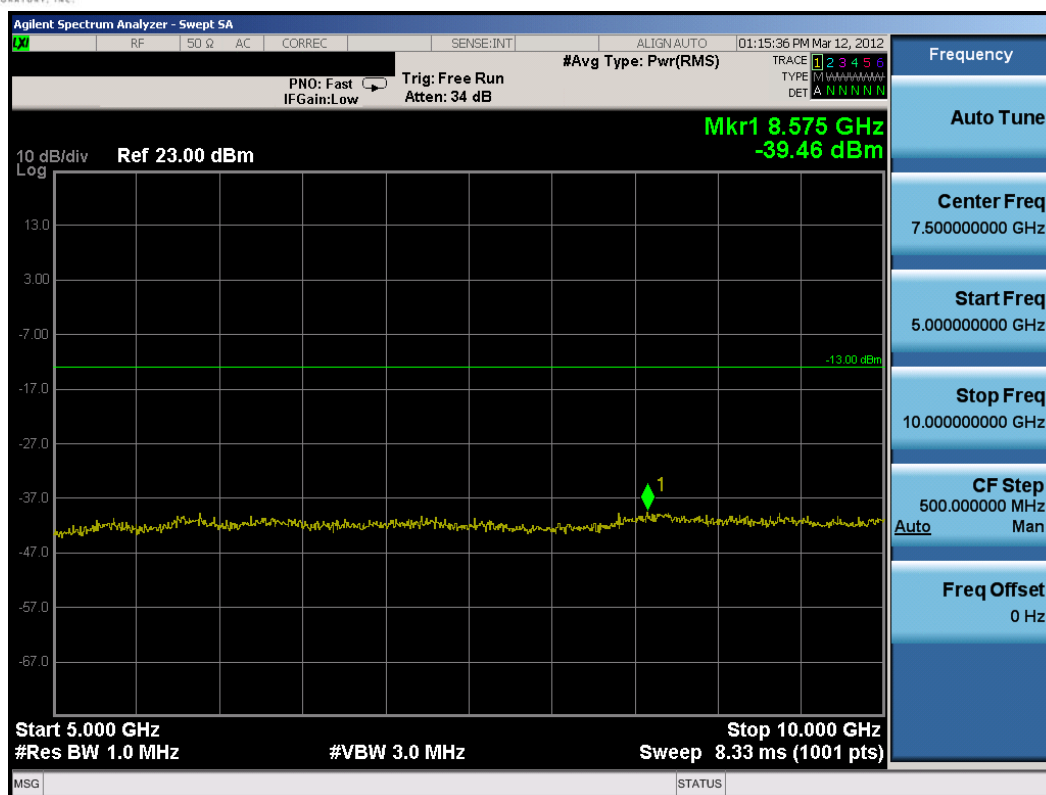


Plot 8-30. Conducted Spurious Plot (3MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

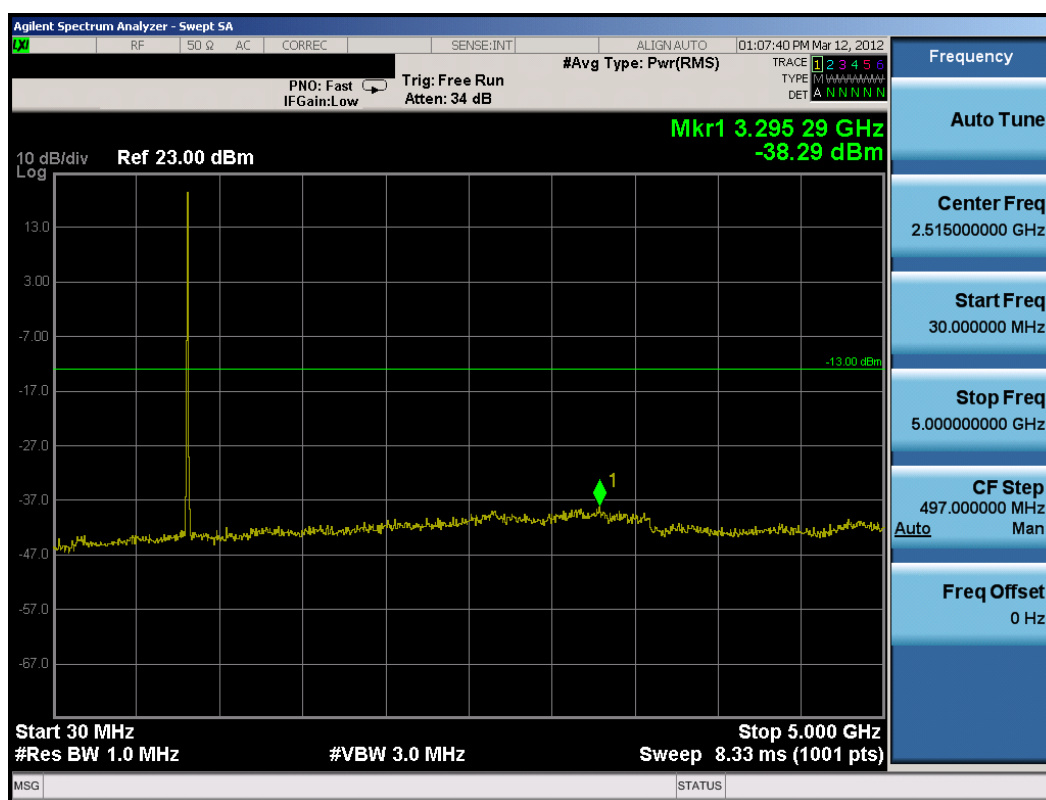


Plot 8-31. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 75 of 134

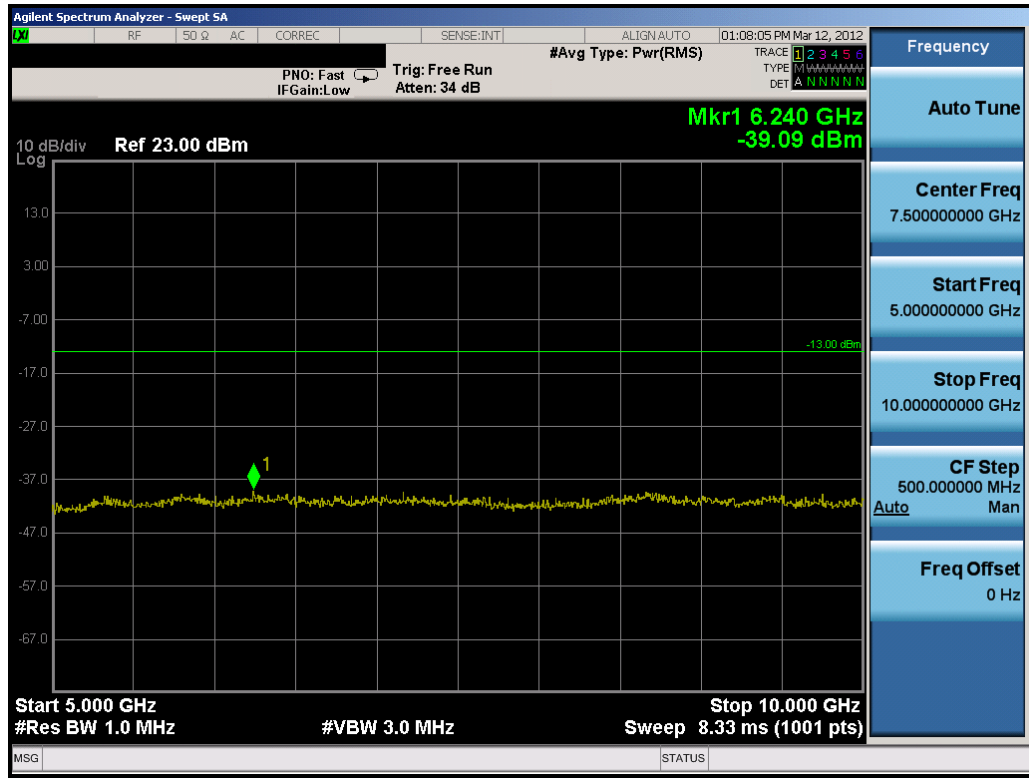


Plot 8-32. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

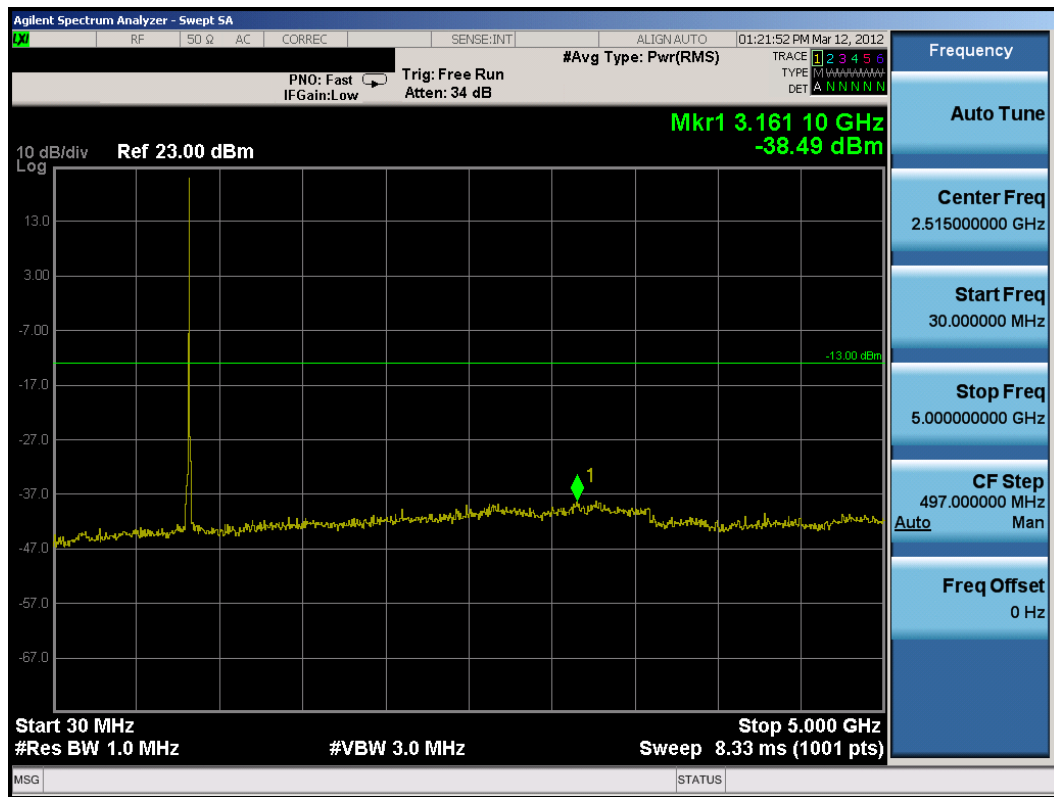


Plot 8-33. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 76 of 134

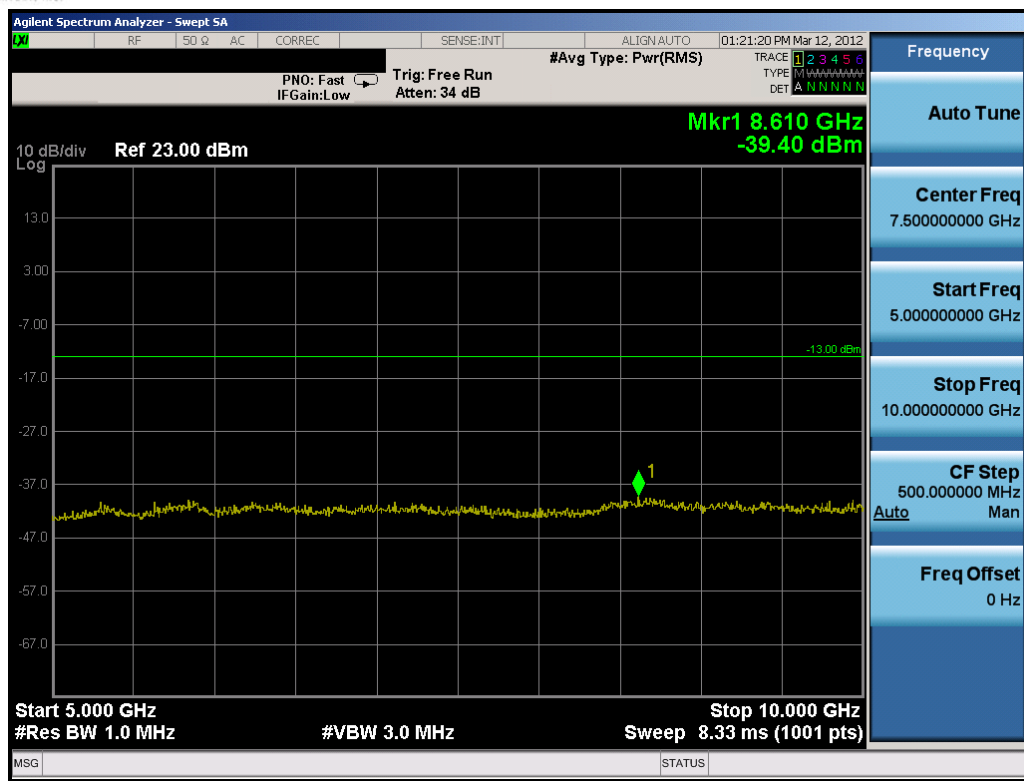


Plot 8-34. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

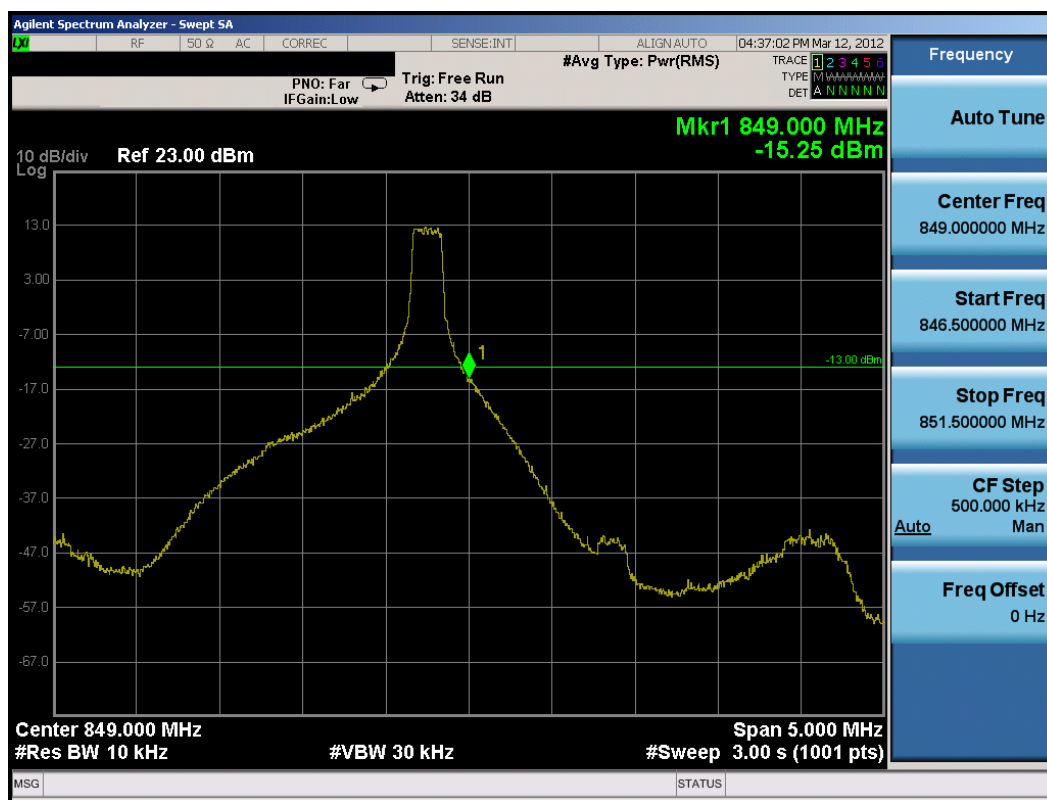


Plot 8-35. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 77 of 134

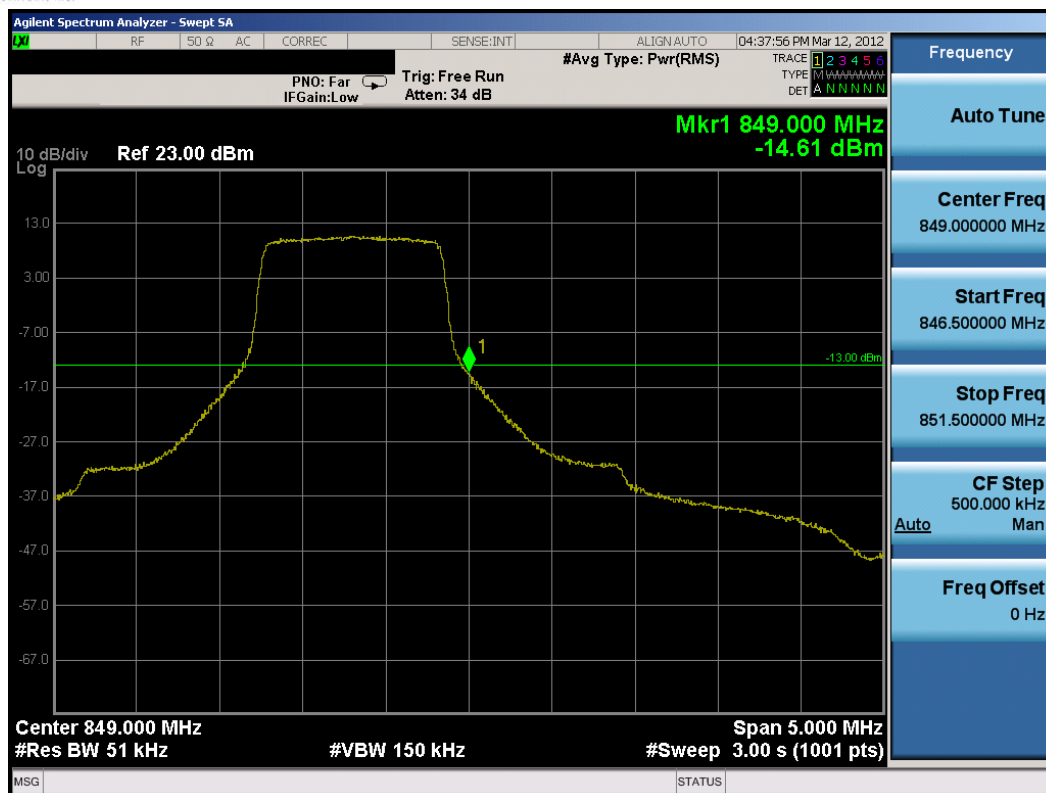


Plot 8-36. Conducted Spurious Plot (5MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

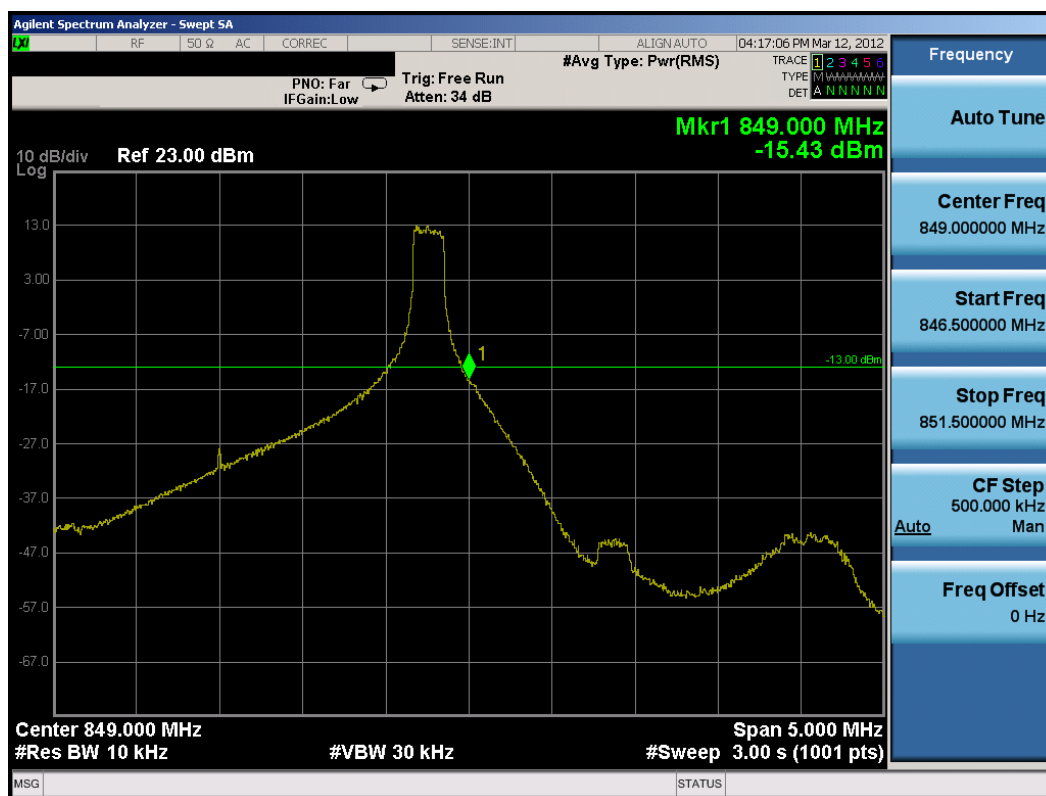


Plot 8-37. Upper Band Edge Plot (1.4MHz QPSK – RB Size 1, Offset 5)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 78 of 134

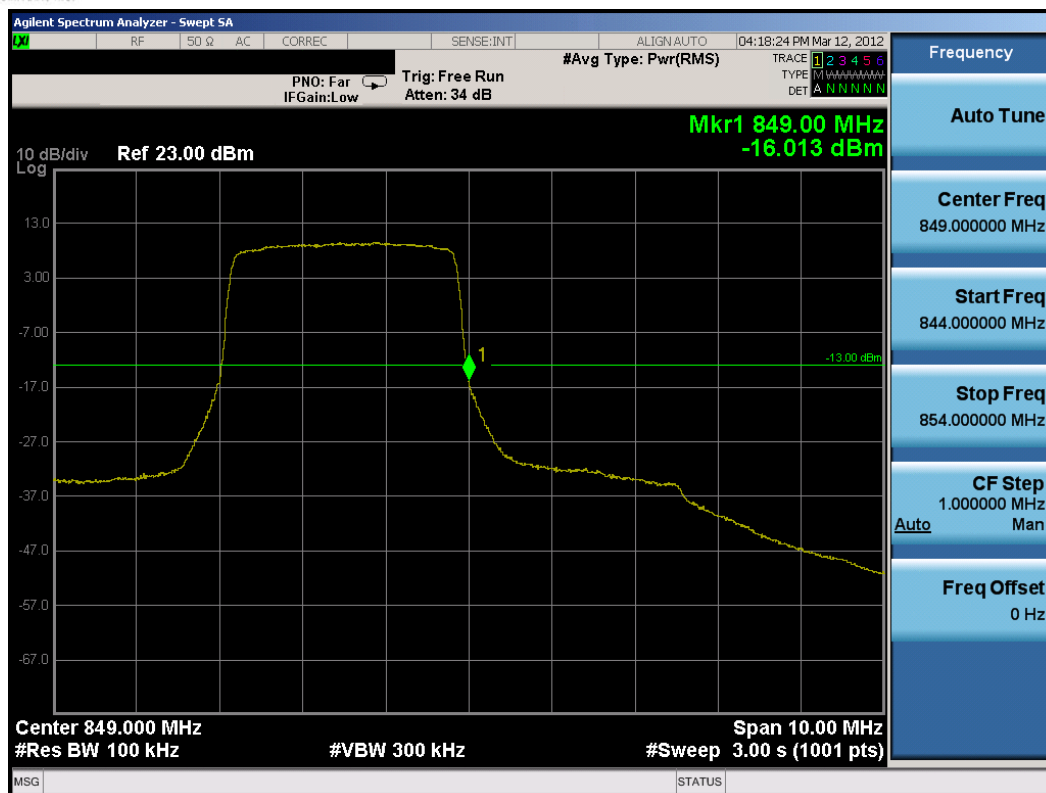


Plot 8-38. Upper Band Edge Plot (1.4MHz QPSK – RB Size 6, Offset 0)

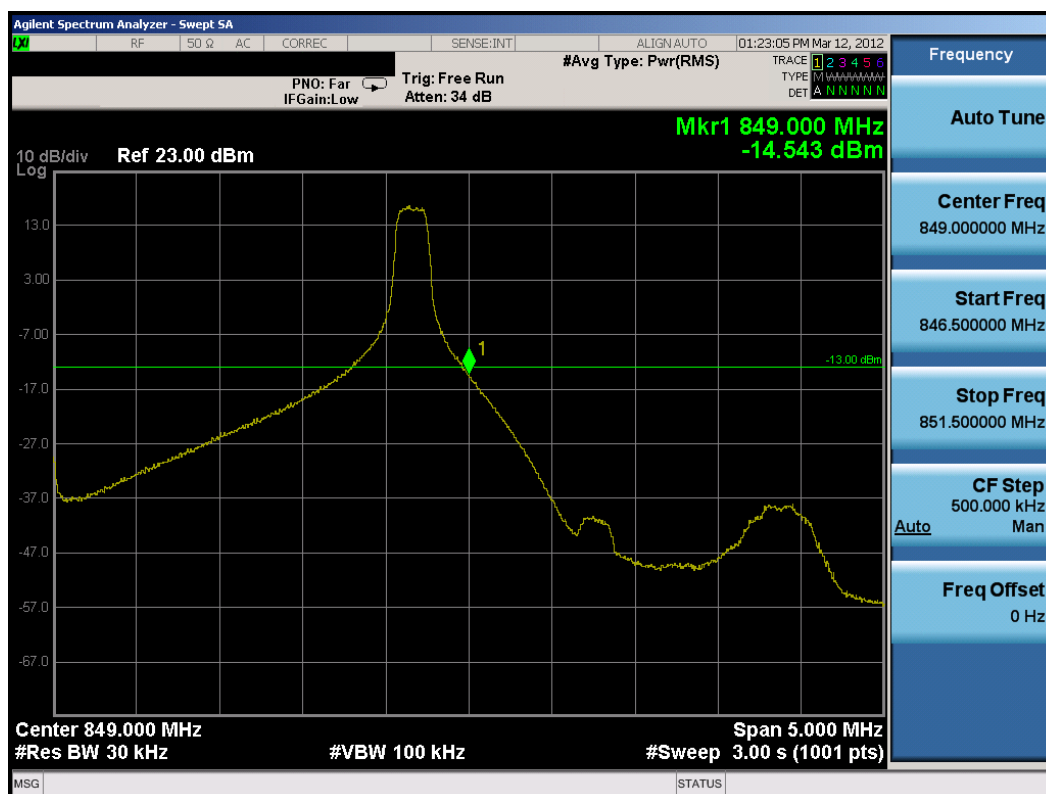


Plot 8-39. Upper Band Edge Plot (3MHz QPSK – RB Size 1, Offset 14)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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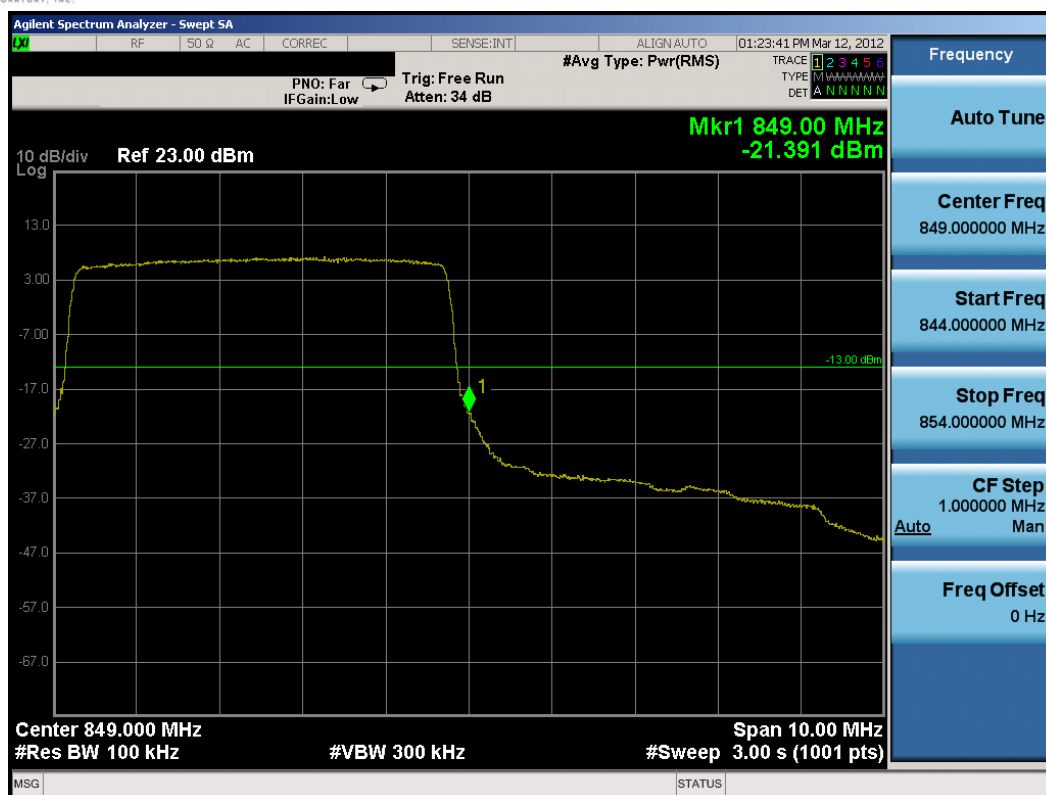


Plot 8-40. Upper Band Edge Plot (3MHz QPSK – RB Size 15, Offset 0)

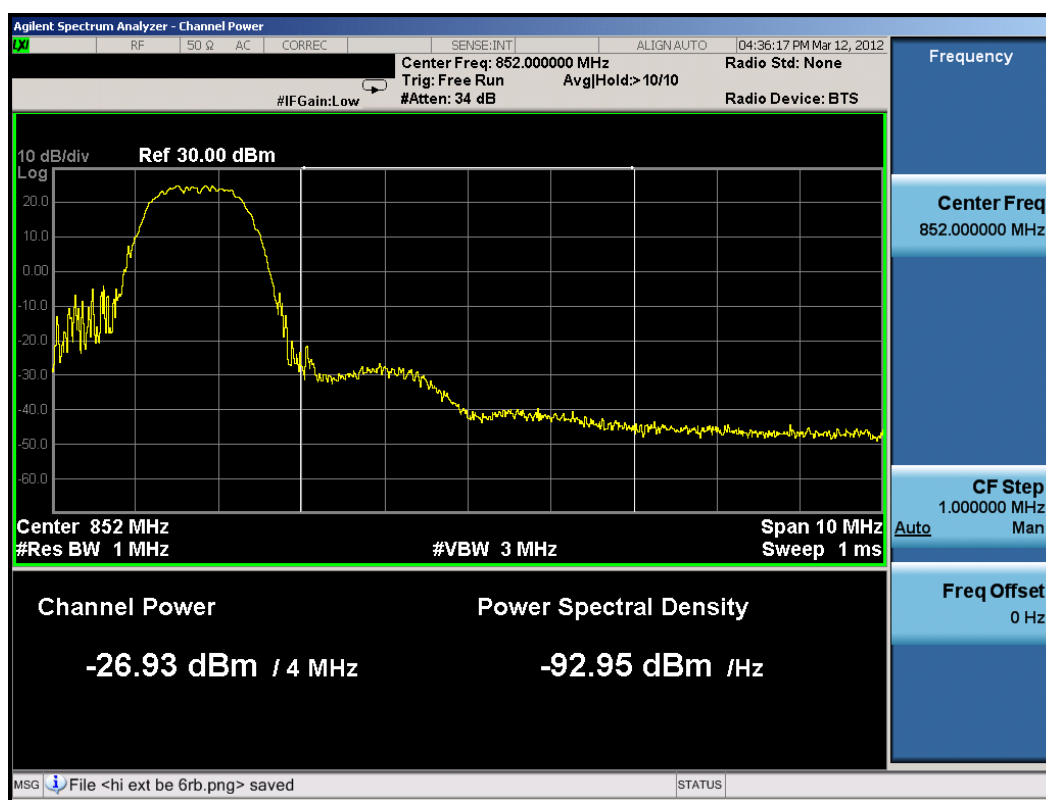


Plot 8-41. Upper Band Edge Plot (5MHz QPSK – RB Size 1, Offset 24)

FCC ID: A3LSCHI405U	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset	Page 80 of 134

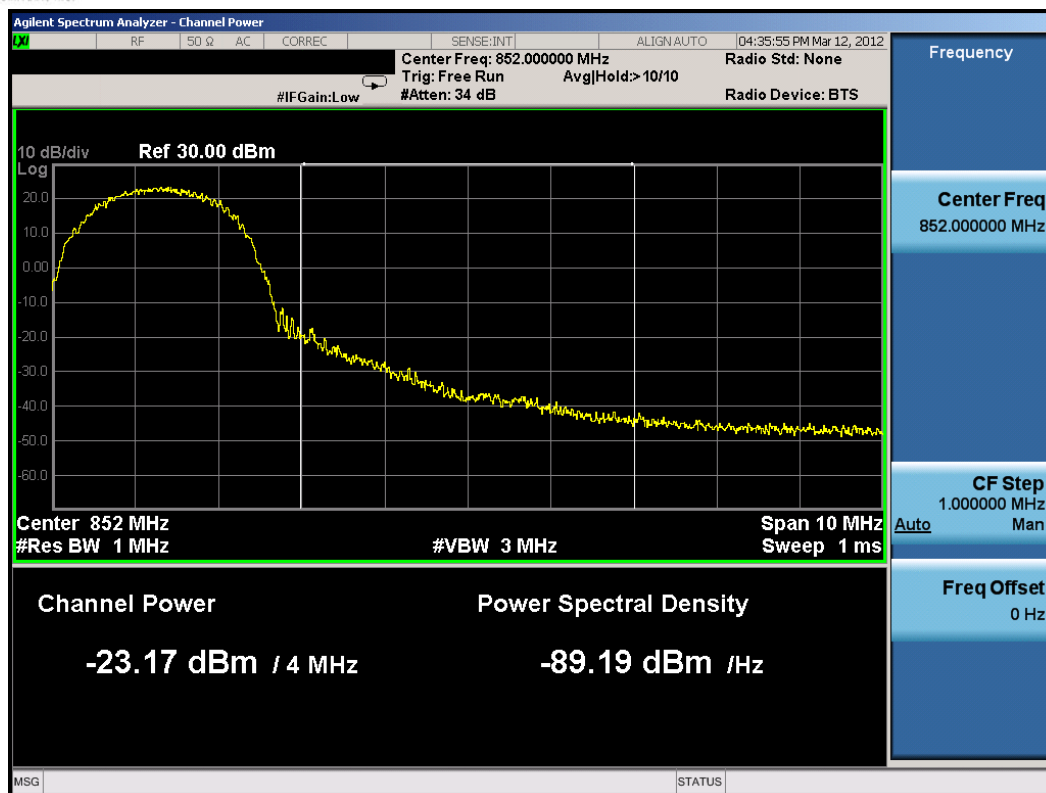


Plot 8-42. Upper Band Edge Plot (5MHz QPSK – RB Size 25, Offset 0)

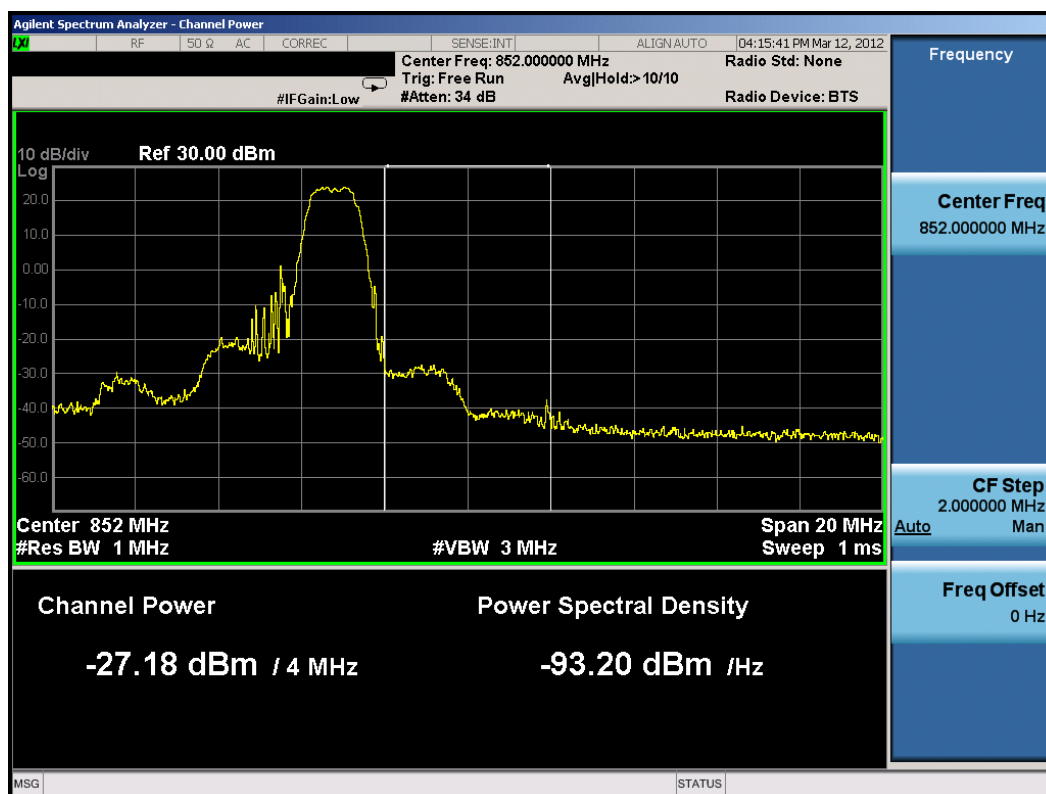


Plot 8-43. Upper Extended Band Edge Plot (1.4MHz QPSK – RB Size 1, Offset 5)

 			
FCC ID: A3LSCHI405U		FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset	Reviewed by: Quality Manager Page 81 of 134

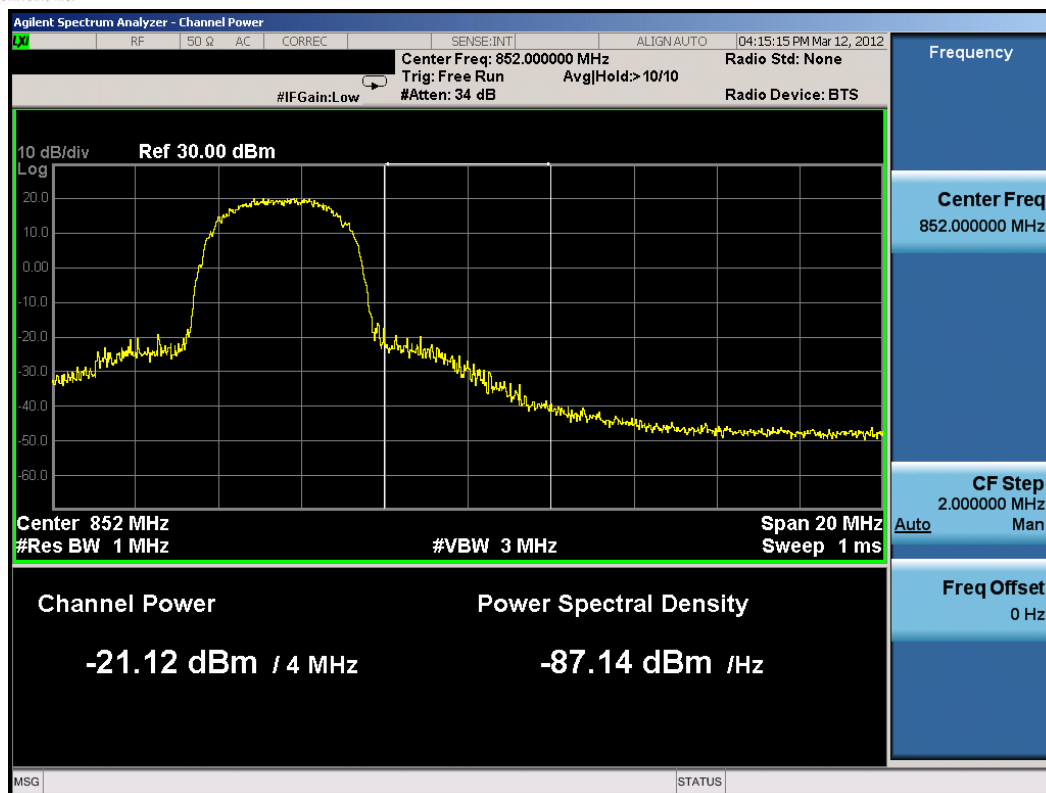


Plot 8-44. Upper Extended Band Edge Plot (1.4MHz QPSK – RB Size 6, Offset 0)

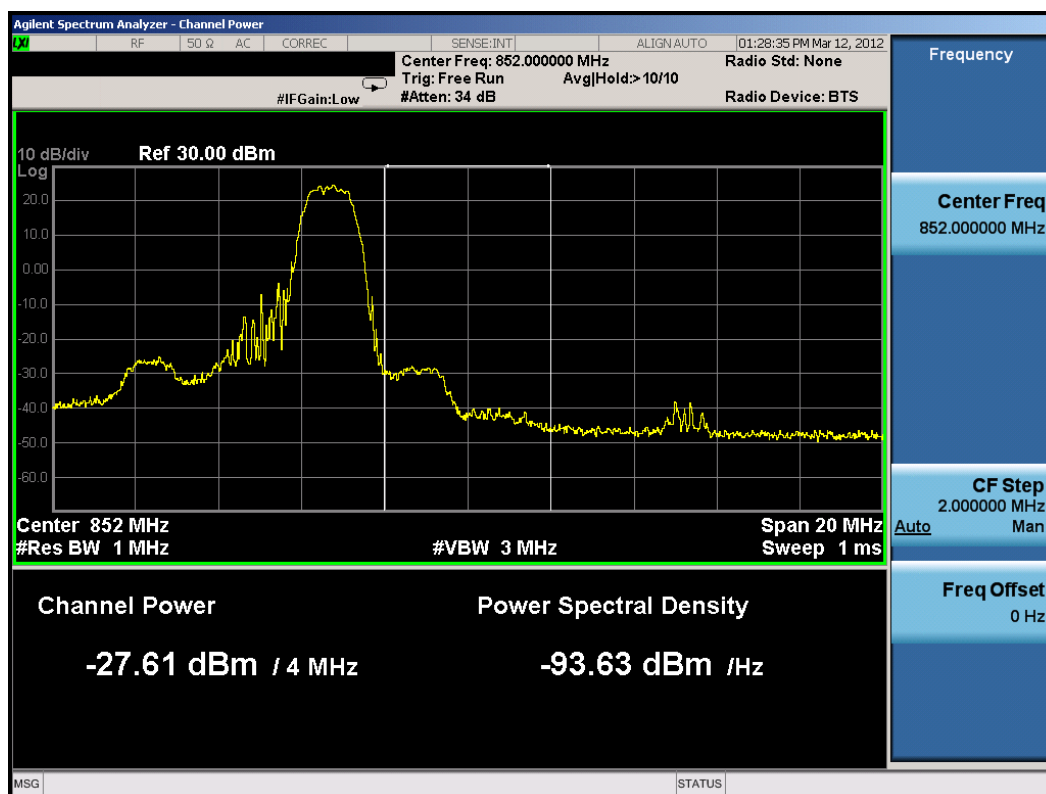


Plot 8-45. Upper Extended Band Edge Plot (3MHz QPSK – RB Size 1, Offset 14)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 8-46. Upper Extended Band Edge Plot (3MHz QPSK – RB Size 15, Offset 0)



Plot 8-47. Upper Extended Band Edge Plot (5MHz QPSK – RB Size 1, Offset 24)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 83 of 134



Plot 8-48. Upper Extended Band Edge Plot (5MHz QPSK – RB Size 25, Offset 0)

FCC ID: A3LSCHI405U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203080270.A3L	Test Dates: March 8 - April 9, 2012	EUT Type: Portable Handset		Page 84 of 134