



MEASUREMENT REPORT

FCC Part 27 LTE

Applicant Name:

Samsung Electronics Co., Ltd.
416 Maetan 3-Dong, Yeongtong-gu
Suwon-si, Gyeonggi-do
443-742, Republic of Korea

Date of Testing:

10/26/12 - 12/03/12

Test Site/Location:

PCTEST Lab., Columbia, MD, USA

Test Report Serial No.:

0Y1210221538.A3L

FCC ID :

A3LSCHI925

APPLICANT:

SAMSUNG ELECTRONICS CO., LTD.

FCC Classification:

PCS Licensed Transmitter (PCB)

FCC Rule Part(s):

§2; §27

EUT Type:

Portable Tablet

Model(s):

SCH-I925

Test Device Serial No.:

identical prototype [S/N: FCC #J ERP.EIRP]

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE Band 13	782	8M92G7D	QPSK	0.081	19.09
LTE Band 13	782	8M92W7D	16QAM	0.060	17.80
LTE Band 4	1712.5 - 1752.5	4M50G7D	QPSK	0.277	24.43
LTE Band 4	1712.5 - 1752.5	4M50W7D	16QAM	0.212	23.26
LTE Band 4	1715 - 1750	8M96G7D	QPSK	0.341	25.32
LTE Band 4	1715 - 1750	8M99W7D	16QAM	0.245	23.89
LTE Band 4	1717.5 - 1747.5	13M4G7D	QPSK	0.331	25.20
LTE Band 4	1717.5 - 1747.5	13M4W7D	16QAM	0.254	24.05
LTE Band 4	1720 - 1745	17M9G7D	QPSK	0.369	25.67
LTE Band 4	1720 - 1745	17M9W7D	16QAM	0.286	24.56

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 Ortaez
President

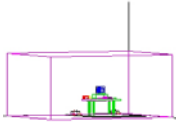


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Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet	Page 1 of 55

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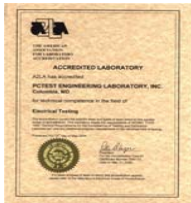


§2.1033 General Information

APPLICANT: Samsung Electronics Co., Ltd.
APPLICANT ADDRESS: 416 Maetan 3-Dong, Yeongtong-gu
 Suwon-si, Gyeonggi-do, 443-742, Republic of Korea
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 7185 Oakland Mills Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §27
BASE MODEL: SCH-I925
FCC ID: A3LSCHI925
FCC CLASSIFICATION: PCS Licensed Transmitter (PCB)
FREQUENCY TOLERANCE: $\pm 0.00025\%$ (2.5 ppm)
Test Device Serial No.: FCC #J ERP.EIRP ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST: 10/26/12 - 12/03/12
TEST REPORT S/N: 0Y1210221538.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. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- 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.
- 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 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 located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. 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 February 15, 2012.

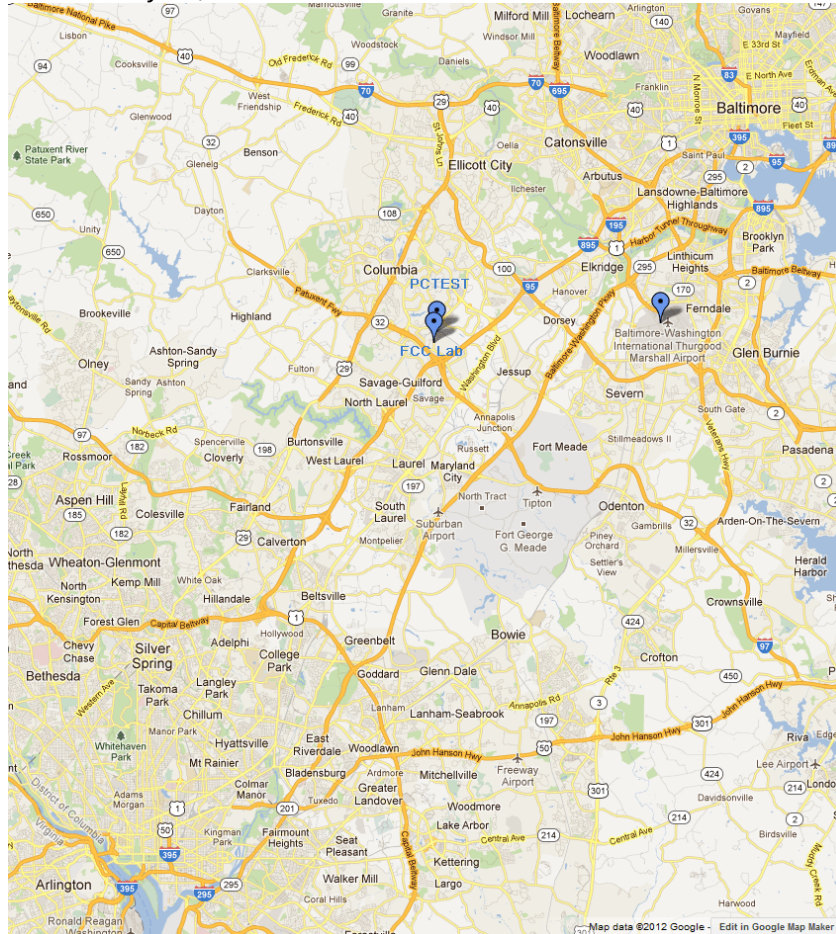


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Tablet FCC ID: A3LSCHI925**. 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), 850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Band 4 (5/10/15/20 MHz BW), Band 13 (10MHz BW) LTE, 802.11a/b/g/n WLAN (DTS/NII), Bluetooth (1x,EDR, LE)

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.

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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 Tablet FCC ID: A3LSCHI925**.

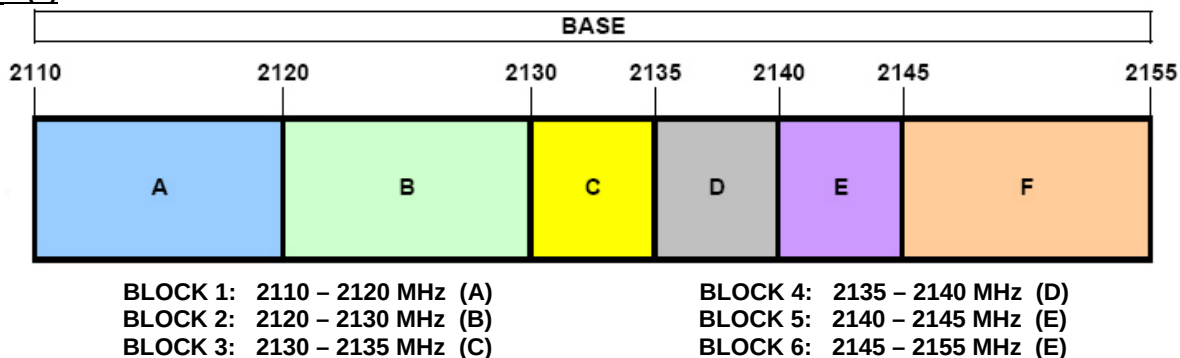
3.1 Block C Frequency Range

§27.5(b)(3)

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.

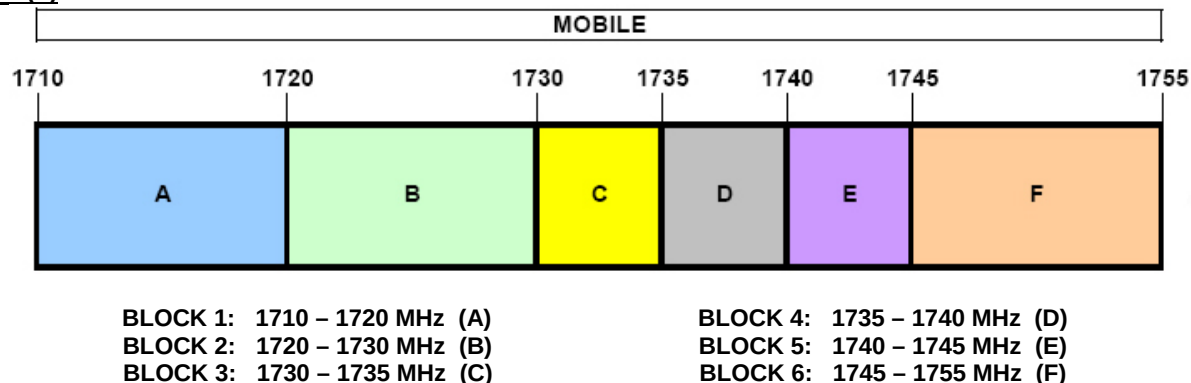
3.2 AWS - Base Frequency Blocks

§27.5(h)



3.3 AWS - Mobile Frequency Blocks

§27.5(h)



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3.4 Occupied Bandwidth

§2.1049 RSS-139(2.3)

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.

3.5 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051 §27.53(f) §27.53(h)(c) RSS-139(6.5.1)

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 100 kHz or greater for Cell band and 776 - 788 MHz band, or 1 MHz or greater for PCS band, AWS band, BRS and EBS stations. For AWS, 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. For 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. 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.

3.6 Peak-Average Ratio

§27.50(d.5) RSS-139 (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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3.7 Radiated Power and Radiated Spurious Emissions

§2.1053 §27.50(b.10) §27.50(d.4) §27.53(f) RSS-139 (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 $43 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$ specified in 27.53(g)(h).

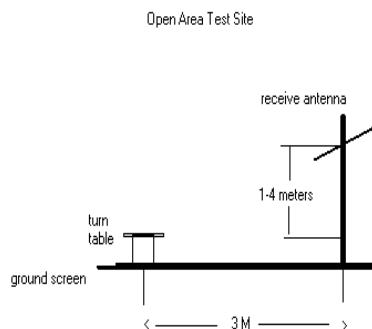


Figure 3-1. Diagram of 3-meter Test Range

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3.8 Frequency Stability / Temperature Variation

§2.1055 §27.5(b) §27.5(h) §27.54 RSS-139 (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 for Part 27.

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)	7/10/2012	Annual	7/10/2013	N/A
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/5/2012	Annual	4/5/2013	MY45470194
Agilent	N9030A	PXA Signal Analyzer	2/23/2012	Annual	2/23/2013	MY49432391
Anritsu	MA2411B	Pulse Sensor	9/19/2012	Annual	9/19/2013	1027293
Anritsu	ML2495A	Power Meter	10/11/2012	Annual	10/11/2013	1039008
Espec	ESX-2CA	Environmental Chamber	4/4/2012	Annual	4/4/2013	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Biennial	7/22/2013	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	11/7/2012	Biennial	11/7/2014	128338
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
Rohde & Schwarz	CMU200	Base Station Simulator	5/22/2012	Annual	5/22/2013	109892
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	6/26/2012	Annual	6/26/2013	100071
Rohde & Schwarz	ESU26	EMI Test Receiver	12/15/2011	Annual	12/15/2012	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
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	7/5/2011	Biennial	7/5/2013	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	1/26/2012	Biennial	1/26/2014	A051107

Table 4-1. Test Equipment

Note:

The Quad Ridge Horn Antenna was used after the calibration date of 11/7/2012.

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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: A3LSCHI925
 FCC Classification: PCS Licensed Transmitter (PCB)
 Mode(s): LTE

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
TRANSMITTER MODE (TX)						
2.1049	RSS-139 (2.3)	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0 8.0
2.1051 27.53(f) 27.53(h)	RSS-139 (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
27.50(d.5)	RSS-139 (6.4)	Peak-Average Ratio	$< 13 \text{ dB}$		PASS	Section 8.0
2.1046	RSS-139 (4.1)	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
27.50(b.10)	N/A	Effective Radiated Power (Band 13)	$< 3 \text{ Watts max. ERP}$	RADIATED	PASS	Section 6.2
27.50(d.4)	RSS-139 (6.4)	Equivalent Isotropic Radiated Power (Band 4)	$< 1 \text{ Watts max. EIRP}$		PASS	Section 6.3
2.1053 27.53(f) 27.53(h)	RSS-139 (6.5.1)	Undesirable Emissions	$< 43 + 10\log_{10}(P[\text{Watts}])$ for all out-of-band emissions		PASS	Section 6.4 6.5
2.1055 27.5(b) 27.5(h) 27.54	RSS-139 (6.3)	Frequency Stability	Fundamental emissions stay within authorized frequency block (Part 27)		PASS	Section 6.6 6.7

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 7.0 and 8.0 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)

§27.50(b.10)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Margin [dB]
782.00	10	QPSK	Standard	1/0	15.70	3.39	H	19.09	0.081	-15.68
782.00	10	16QAM	Standard	1/0	14.23	3.57	H	17.80	0.060	-16.97

Table 6-2. ERP Data (Band 13)

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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6.3 Equivalent Isotropic Radiated Power (EIRP)

§27.50(d.4) RSS-139 (6.4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1712.50	5	QPSK	Standard	1/0	15.96	8.47	H	24.43	0.277	-5.57
1732.50	5	QPSK	Standard	1/0	15.80	8.54	H	24.34	0.272	-5.66
1752.50	5	QPSK	Standard	1/0	15.45	8.60	H	24.05	0.254	-5.95
1712.50	5	16-QAM	Standard	1/0	14.79	8.47	H	23.26	0.212	-6.74
1732.50	5	16-QAM	Standard	1/0	14.64	8.54	H	23.18	0.208	-6.82
1752.50	5	16-QAM	Standard	1/0	14.29	8.60	H	22.89	0.194	-7.11
1715.00	10	QPSK	Standard	1/49	16.04	8.47	H	24.51	0.282	-5.49
1732.50	10	QPSK	Standard	1/49	16.78	8.54	H	25.32	0.341	-4.68
1750.00	10	QPSK	Standard	1/0	16.05	8.60	H	24.65	0.292	-5.35
1715.00	10	16-QAM	Standard	1/49	14.91	8.47	H	23.38	0.218	-6.62
1732.50	10	16-QAM	Standard	1/49	15.35	8.54	H	23.89	0.245	-6.11
1750.00	10	16-QAM	Standard	1/0	14.58	8.60	H	23.18	0.208	-6.82
1717.50	15	QPSK	Standard	1/74	16.31	8.47	H	24.78	0.300	-5.22
1732.50	15	QPSK	Standard	1/0	16.66	8.54	H	25.20	0.331	-4.80
1747.50	15	QPSK	Standard	1/74	15.88	8.60	H	24.48	0.280	-5.52
1717.50	15	16-QAM	Standard	1/74	15.06	8.47	H	23.53	0.225	-6.47
1732.50	15	16-QAM	Standard	1/0	15.51	8.54	H	24.05	0.254	-5.95
1747.50	15	16-QAM	Standard	1/74	15.05	8.60	H	23.65	0.232	-6.35
1720.00	20	QPSK	Standard	1/99	17.20	8.47	H	25.67	0.369	-4.33
1732.50	20	QPSK	Standard	1/99	16.73	8.54	H	25.27	0.337	-4.73
1745.00	20	QPSK	Standard	1/0	16.88	8.60	H	25.48	0.353	-4.52
1720.00	20	16-QAM	Standard	1/99	16.06	8.47	H	24.53	0.284	-5.47
1732.50	20	16-QAM	Standard	1/99	15.47	8.54	H	24.01	0.252	-5.99
1745.00	20	16-QAM	Standard	1/0	15.96	8.60	H	24.56	0.286	-5.44

Table 6-3. EIRP Data (Band 4)

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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6.4 Band 13 Radiated Spurious Emissions

§2.1053 §27.53(f)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 19.09 dBm = 0.081 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.09 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
2346.00	-56.01	3.59	-52.42	H	71.50
3128.00	-80.46	5.20	-75.26	H	94.35
3910.00	-79.99	6.64	-73.35	H	92.44
4692.00	-80.47	7.48	-72.99	H	92.07
5474.00	-79.98	8.42	-71.56	H	90.64

Table 6-4. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 1 RB, 0 offset.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the vertical position.

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6.5 Band 4 Radiated Spurious Emissions

§2.1053 §27.53(h) RSS-139 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1720.00 MHz
 CHANNEL: 20050
 MEASURED OUTPUT POWER: 25.67 dBm = 0.369 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 38.67 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3440.00	-47.45	8.09	-39.36	H	65.03
5160.00	-83.75	10.21	-73.55	H	99.21
6880.00	-82.51	11.31	-71.19	H	96.86
8600.00	-82.93	13.02	-69.91	H	95.58
10320.00	-79.78	13.01	-66.77	H	92.43
12040.00	-76.91	13.21	-63.70	H	89.37

Table 6-5. Radiated Spurious Data

NOTES:

3. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 1 RB, 99 offset.
1. This unit was tested with its standard battery.
2. The worst case test configuration was found in the horizontal position.

FCC ID: A3LSCHI925		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 4 Radiated Spurious Measurements (continued)

§2.1053 §27.53(h) RSS-139 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 25.27 dBm = 0.337 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 38.27$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3465.00	-52.03	8.26	-43.76	H	69.03
5197.50	-83.73	10.26	-73.47	H	98.74
6930.00	-82.63	11.42	-71.21	H	96.48
8662.50	-82.78	13.07	-69.71	H	94.98
10395.00	-79.82	13.12	-66.70	H	91.97
12127.50	-76.41	13.25	-63.16	H	88.43

Table 6-6. Radiated Spurious Data

NOTES:

- This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 1 RB, 99 offset.
- This unit was tested with its standard battery.
- The worst case test configuration was found in the horizontal position.

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Band 4 Radiated Spurious Measurements (continued)

§2.1053 §27.53(h) RSS-139 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1745.00 MHz
 CHANNEL: 20300
 MEASURED OUTPUT POWER: 25.48 dBm = 0.353 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 38.48$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3490.00	-48.70	8.40	-40.30	H	65.78
5235.00	-57.40	10.32	-47.08	H	72.56
6980.00	-82.72	11.51	-71.21	H	96.69
8725.00	-82.62	13.11	-69.51	H	94.98
10470.00	-79.67	13.20	-66.47	H	91.95
12215.00	-75.91	13.31	-62.60	H	88.08

Table 6-7. Radiated Spurious Data

NOTES:

- This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 1 RB, 0 offset.
- This unit was tested with its standard battery.
- The worst case test configuration was found in the horizontal position.

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6.6 Band 13 Frequency Stability Measurements

§2.1055 §27.5(b) §27.54

OPERATING FREQUENCY: 782,000,000 Hz

CHANNEL: 23230

REFERENCE VOLTAGE: 3.7 VDC

BANDWIDTH: 10 MHz

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	781,999,989	-11	-0.0000014
100 %		- 30	781,999,988	-12	-0.0000015
100 %		- 20	781,999,996	-4	-0.0000005
100 %		- 10	781,999,983	-17	-0.0000021
100 %		0	781,999,982	-18	-0.0000023
100 %		+ 10	781,999,991	-9	-0.0000011
100 %		+ 20	781,999,981	-19	-0.0000024
100 %		+ 30	781,999,986	-14	-0.0000018
100 %		+ 40	781,999,989	-11	-0.0000014
100 %		+ 50	781,999,989	-11	-0.0000014
115 %	4.26	+ 20	781,999,994	-6	-0.0000007
85 %	3.40	+ 20	781,999,988	-12	-0.0000015

Table 6-8. 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 (Cont'd)

§2.1055 §27.5(b) §27.54

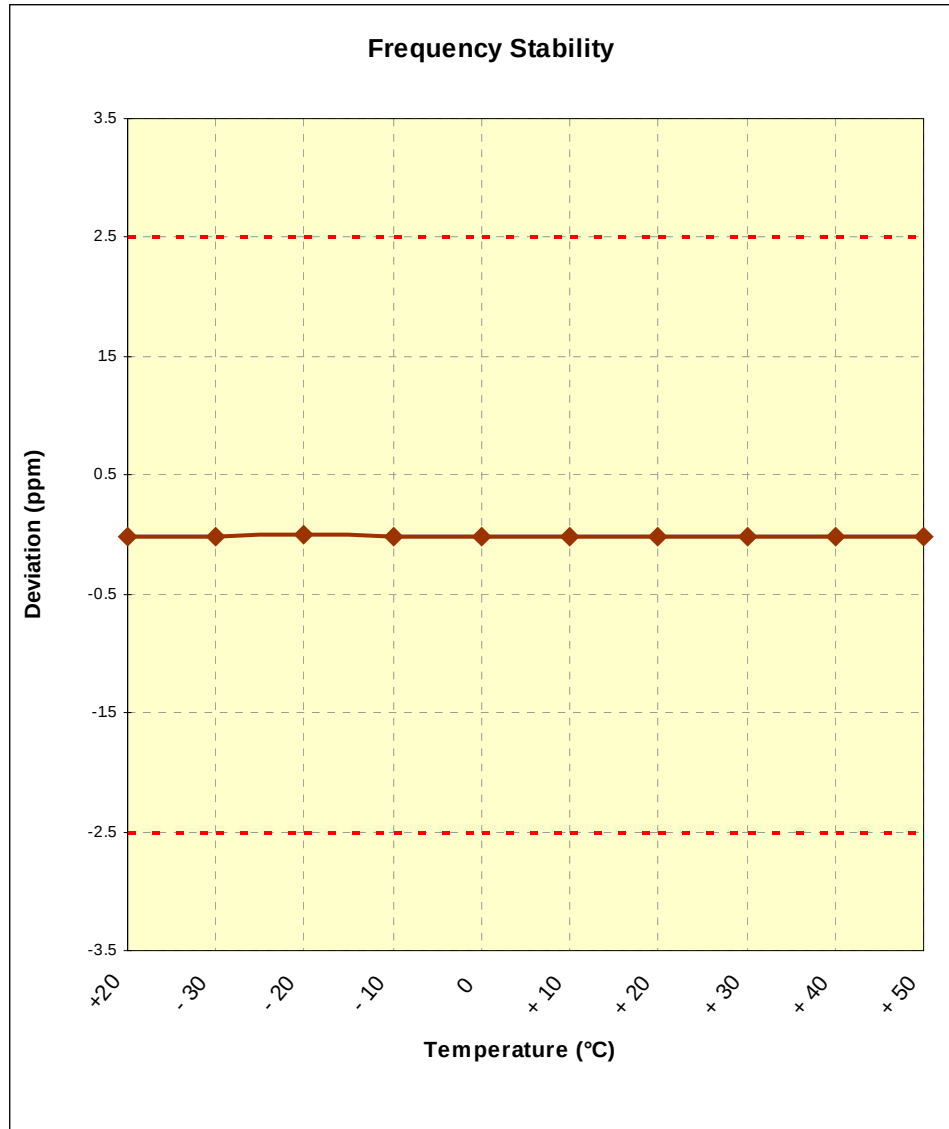


Figure 6-1. Frequency Stability Graph (Band 13)

FCC ID: A3LSCHI925	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		 Reviewed by: Quality Manager
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6.7 Band 4 Frequency Stability Measurements

§2.1055 §27.5(h) §27.54 RSS-139 (6.3)

OPERATING FREQUENCY: 1,732,500,000 Hz

CHANNEL: 20175

REFERENCE VOLTAGE: 3.7 VDC

BANDWIDTH: 20 MHz

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	1,732,499,996	-4	-0.00000024
100 %		- 30	1,732,499,994	-6	-0.00000035
100 %		- 20	1,732,499,987	-13	-0.00000073
100 %		- 10	1,732,499,997	-3	-0.00000020
100 %		0	1,732,499,994	-6	-0.00000032
100 %		+ 10	1,732,499,987	-13	-0.00000075
100 %		+ 20	1,732,499,991	-9	-0.00000052
100 %		+ 30	1,732,499,989	-11	-0.00000064
100 %		+ 40	1,732,499,994	-6	-0.00000034
100 %		+ 50	1,732,499,985	-15	-0.00000086
115 %	4.26	+ 20	1,732,499,993	-7	-0.00000043
85 %	3.40	+ 20	1,732,499,994	-6	-0.00000033

Table 6-9. Frequency Stability Data (Band 4)

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: A3LSCHI925	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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Band 4 Frequency Stability Measurements (Cont'd)

§2.1055 §27.5(h) §27.54 RSS-139 (6.3)

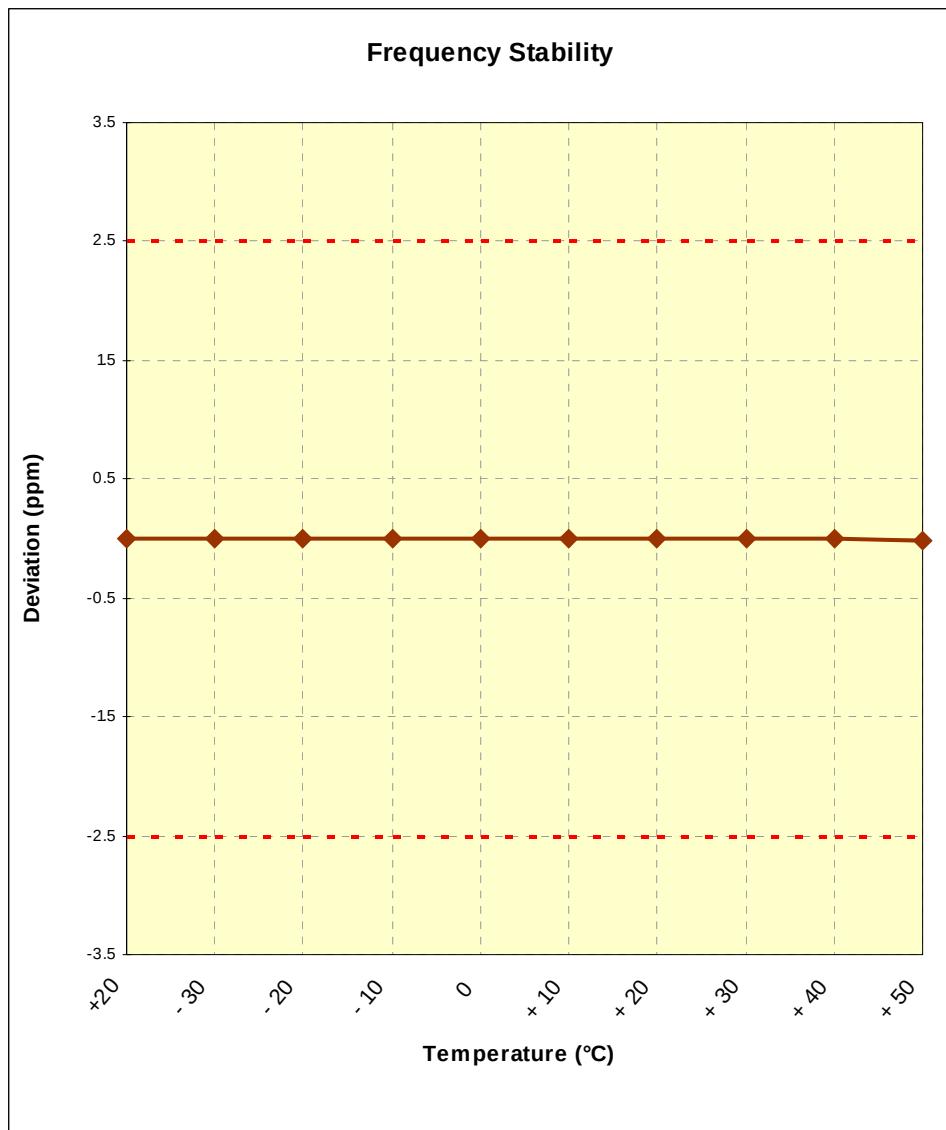
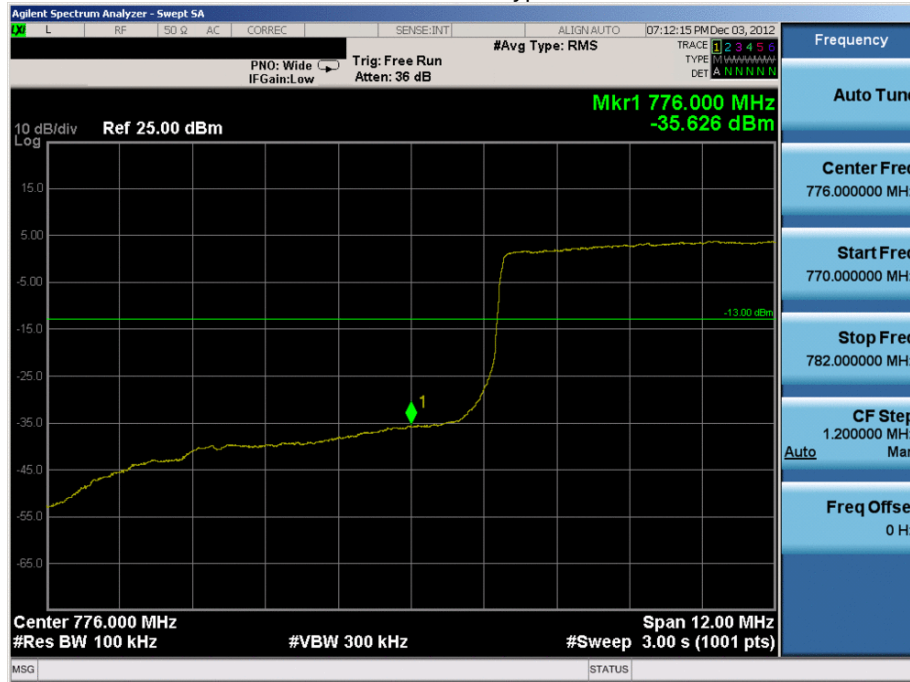


Figure 6-2. Frequency Stability Graph (Band 4)

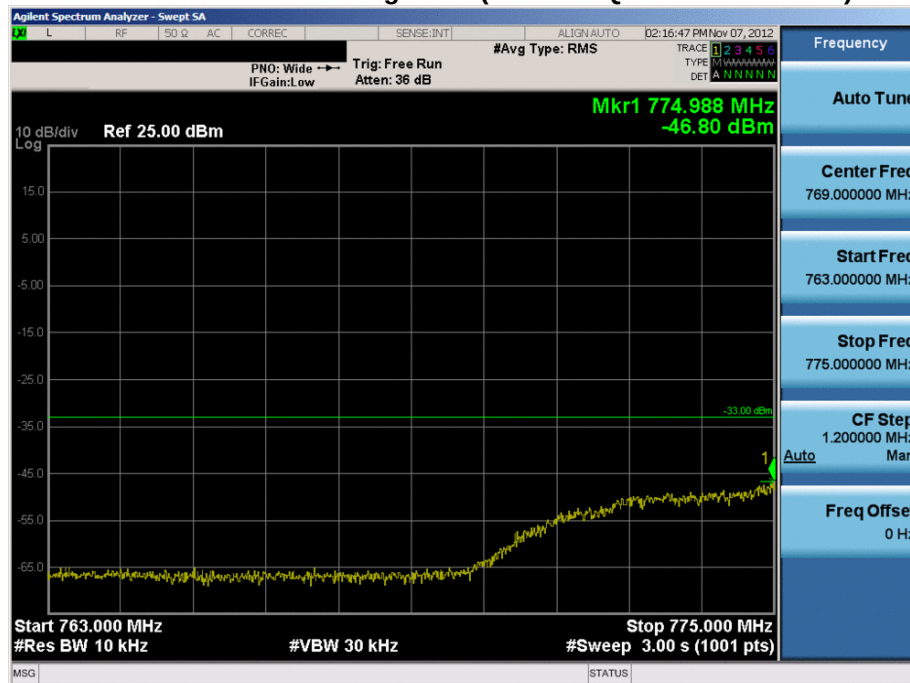
FCC ID: A3LSCHI925	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		 Reviewed by: Quality Manager
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7.0 BAND 13 PLOTS OF EMISSIONS

For all plots in Section 7.0 showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit is $65 + 10\log_{10}(P[\text{Watts}]) = -35\text{dBm}$ in a 6.25kHz bandwidth. Since it was not possible to set the resolution bandwidth to 6.25kHz with the available equipment, a bandwidth of 10kHz was used instead to show compliance. By using a 10kHz bandwidth, the limit was adjusted by $10\log_{10}(10\text{kHz}/6.25\text{kHz}) = 2.04\text{dB}$. Thus, the limit shown in all plots in the 763 – 775MHz and 793 – 805MHz bands for all available modulation types was $-35\text{dBm} + 2.04\text{dB} = -32.96\text{dBm}$.

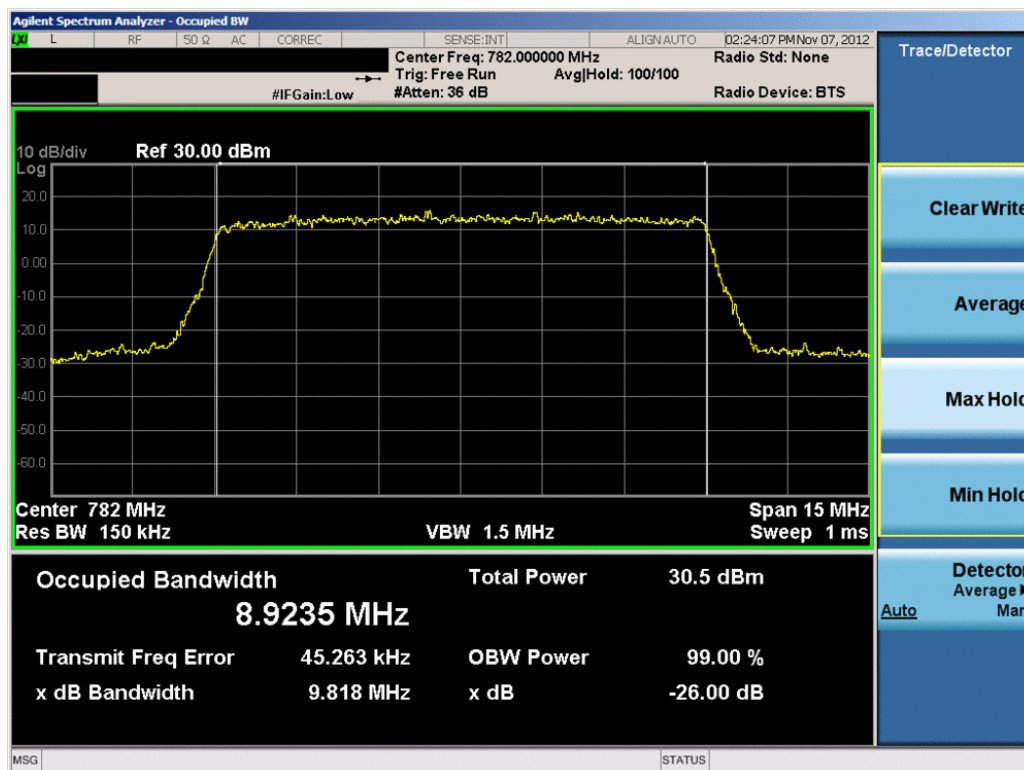


Plot 7-1. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

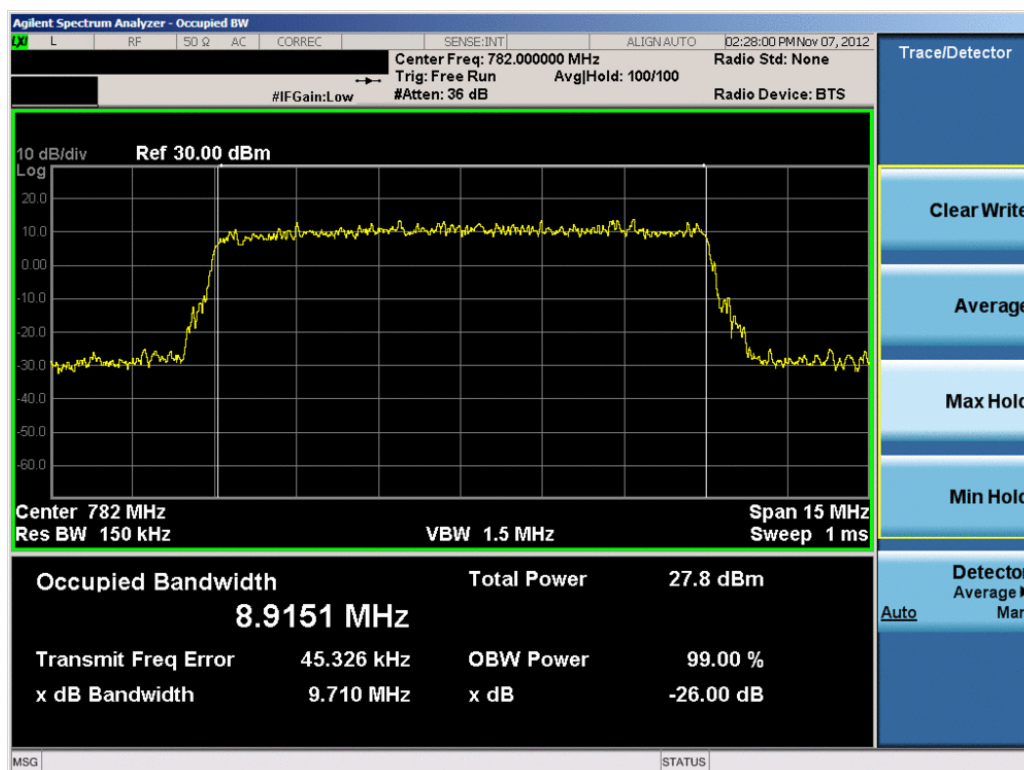


Plot 7-2. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHI925	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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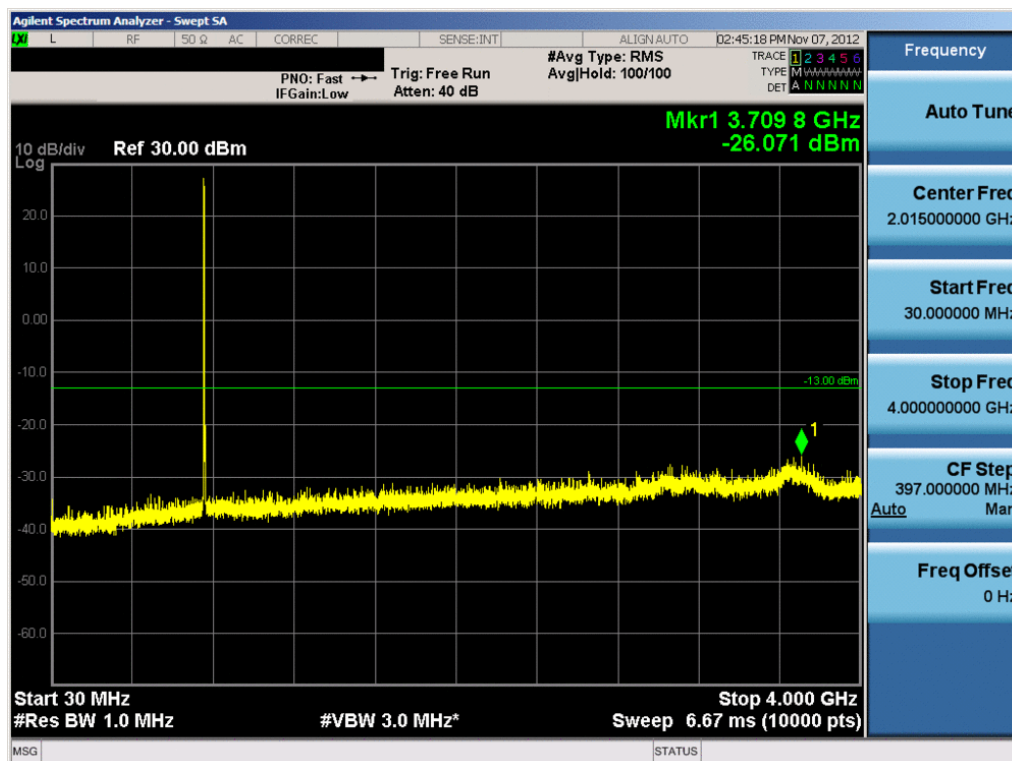


Plot 7-3. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

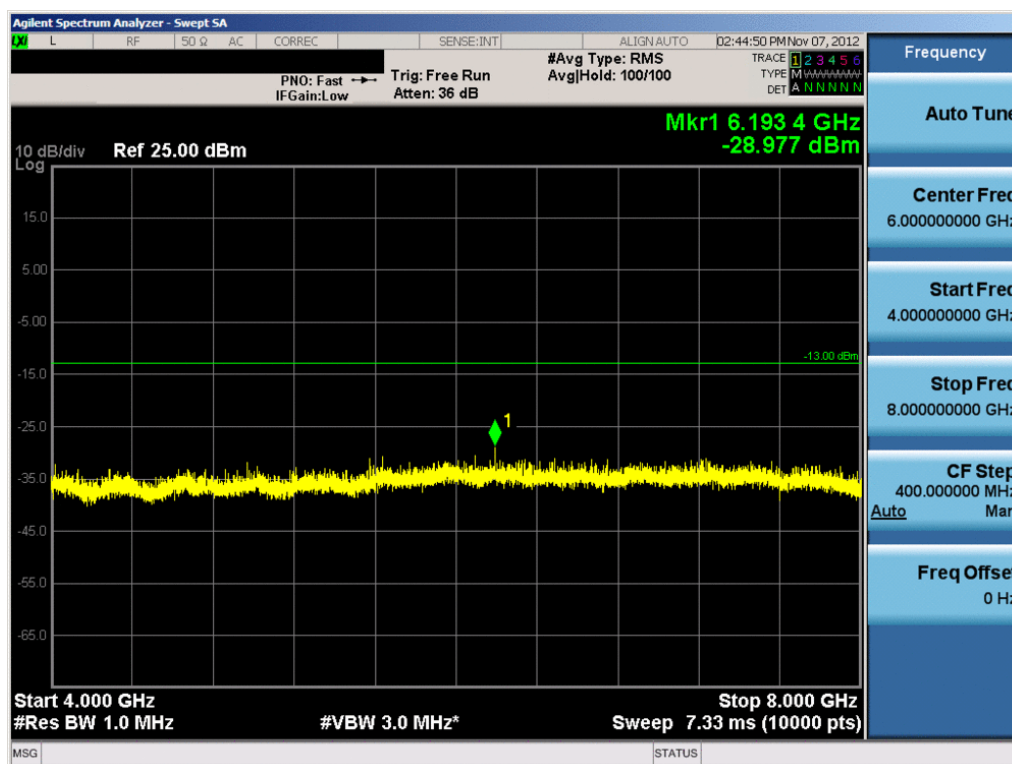


Plot 7-4. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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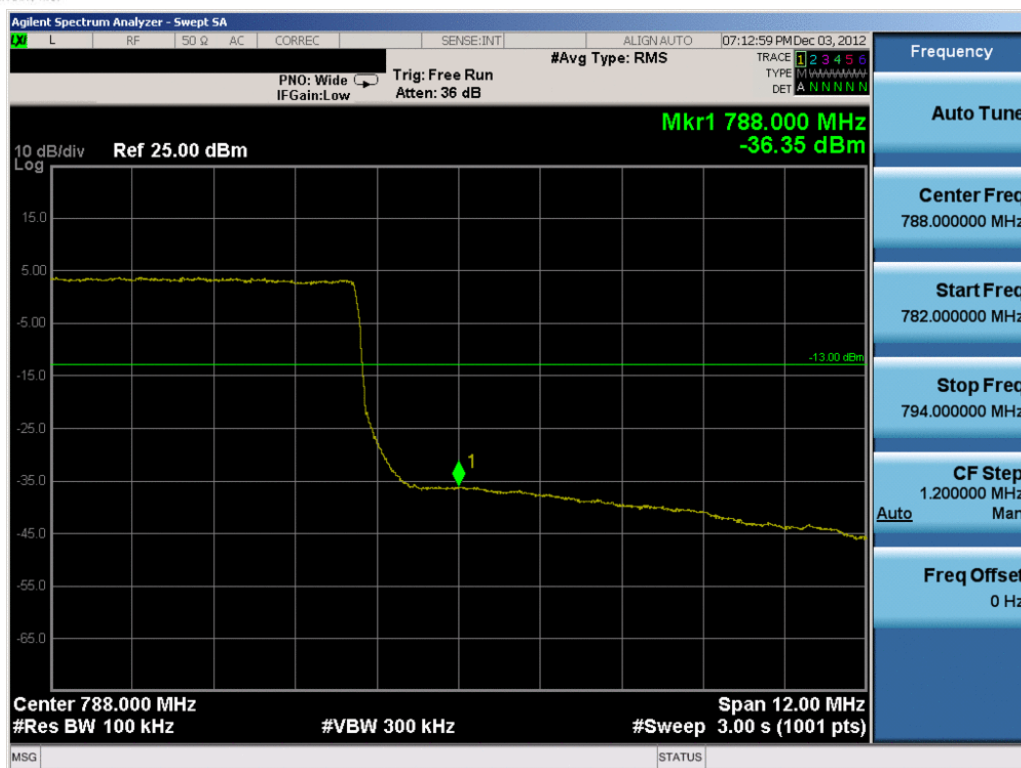


Plot 7-5. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0)

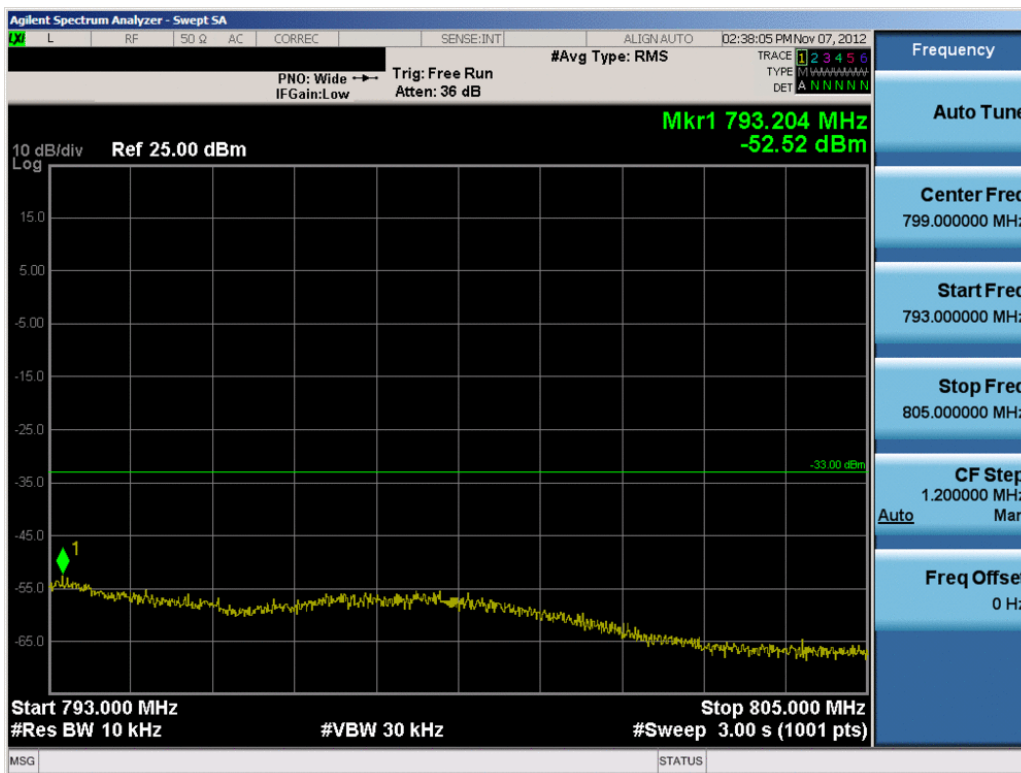


Plot 7-6. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0)

FCC ID: A3LSCHI925	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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Plot 7-7. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

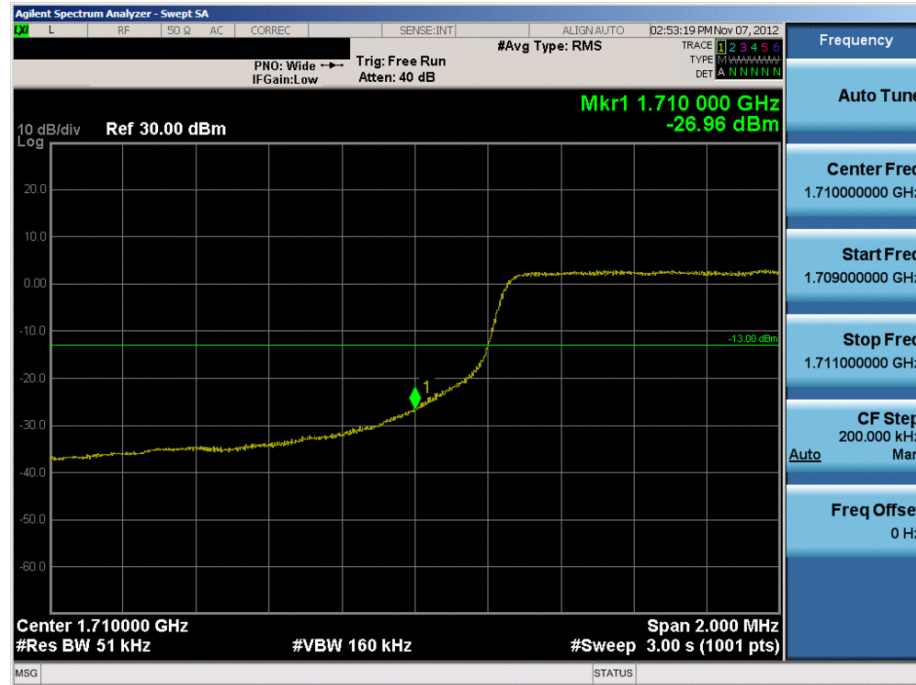


Plot 7-8. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

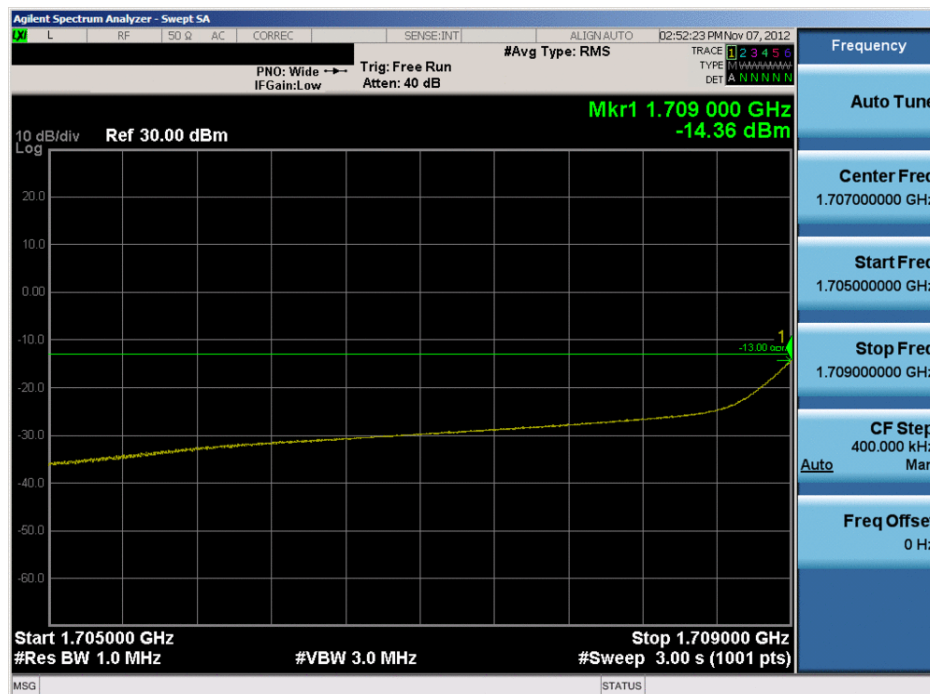
FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 26 of 55

8.0 BAND 4 PLOTS OF EMISSIONS

Note: All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported below.

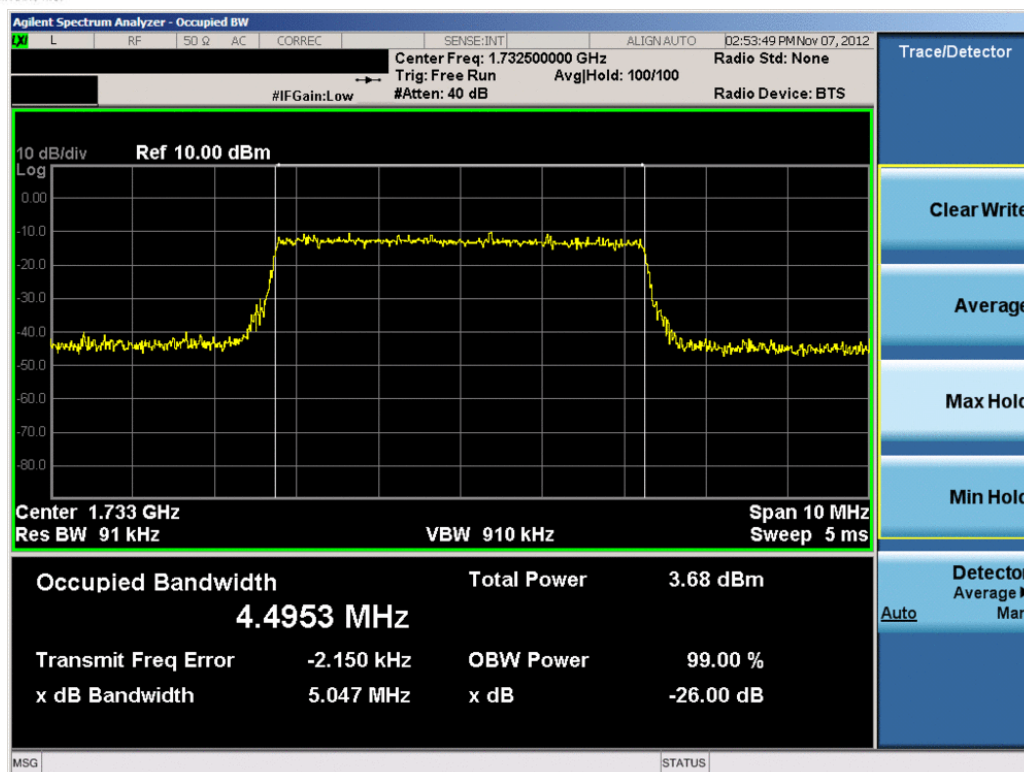


Plot 8-1. Lower Band Edge Plot (5.0MHz QPSK - RB Size 25)

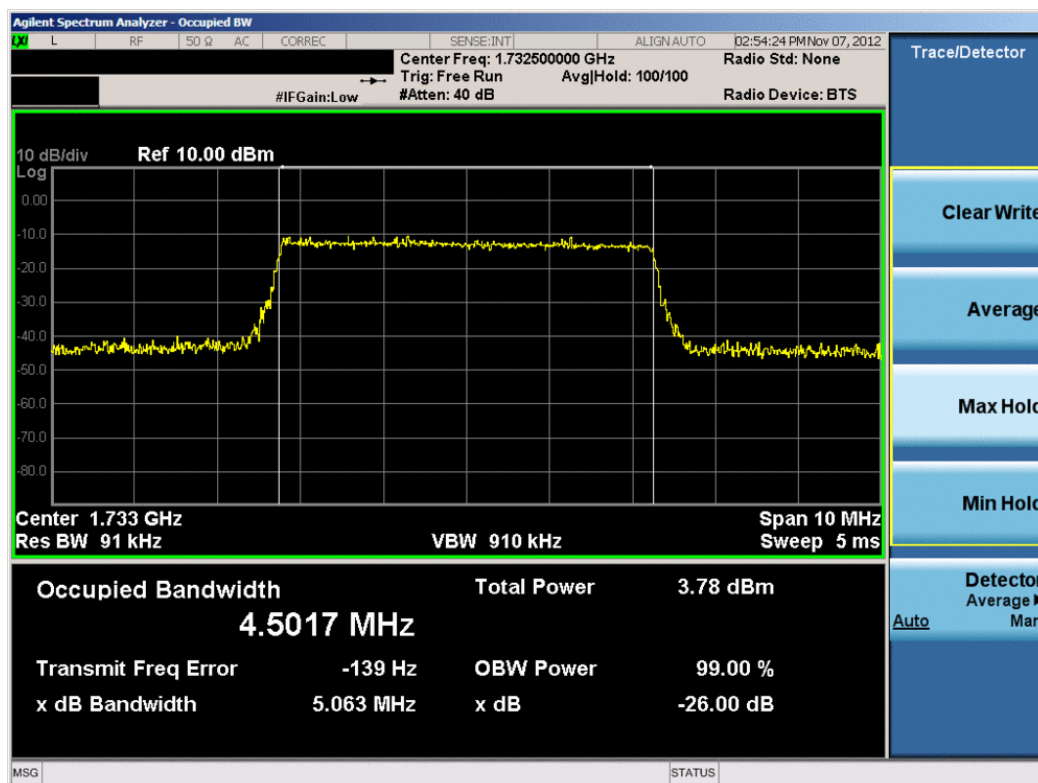


Plot 8-2. Lower Extended Band Edge Plot (5.0MHz QPSK - RB Size 25)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 27 of 55

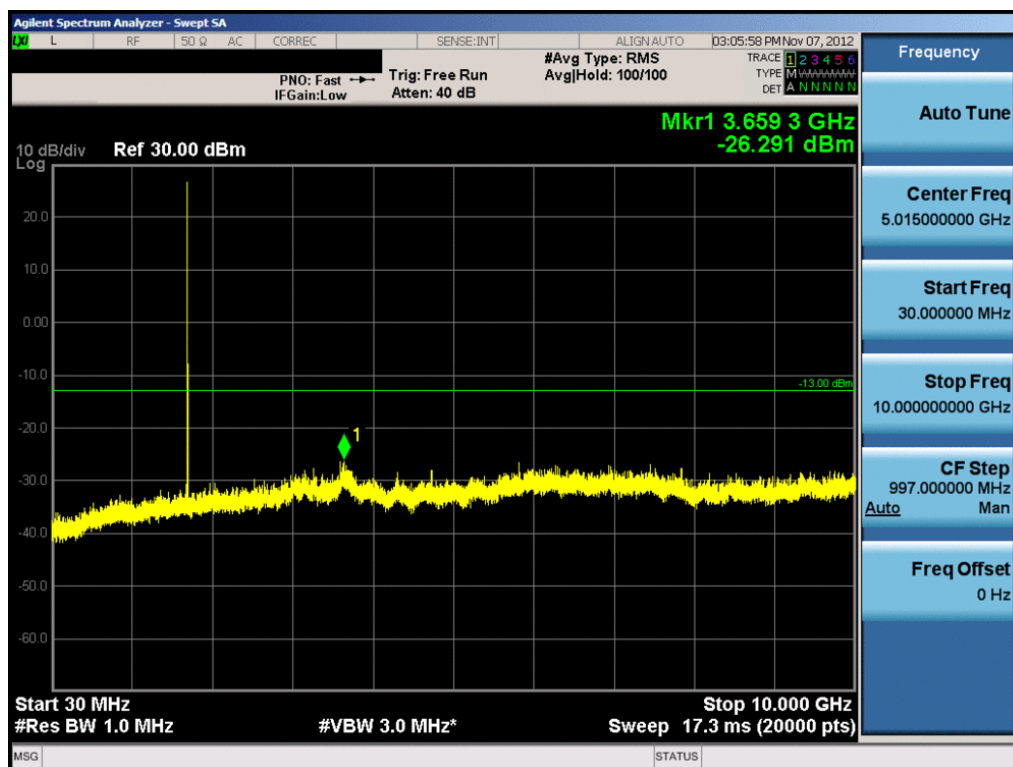


Plot 8-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)

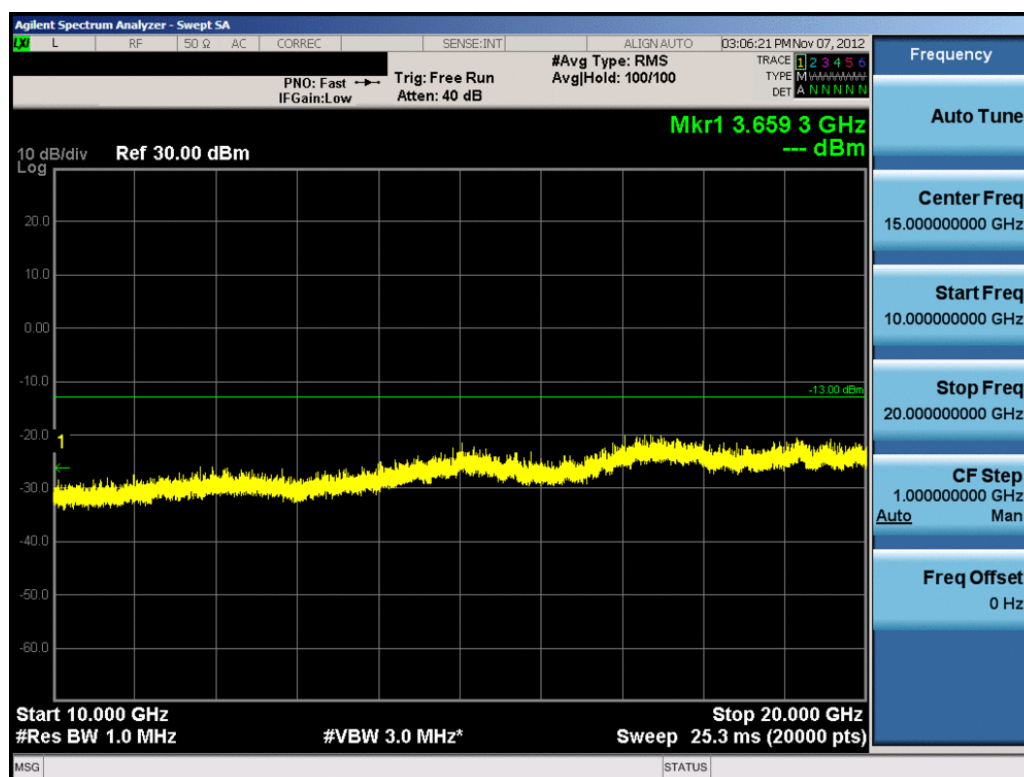


Plot 8-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 28 of 55

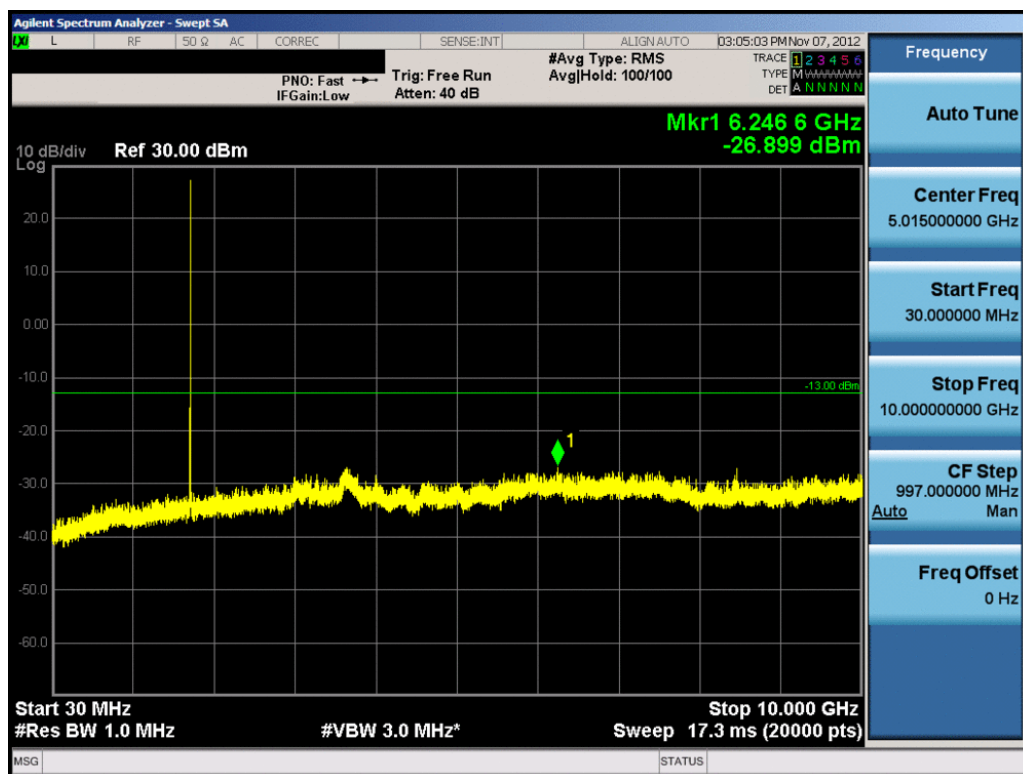


Plot 8-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

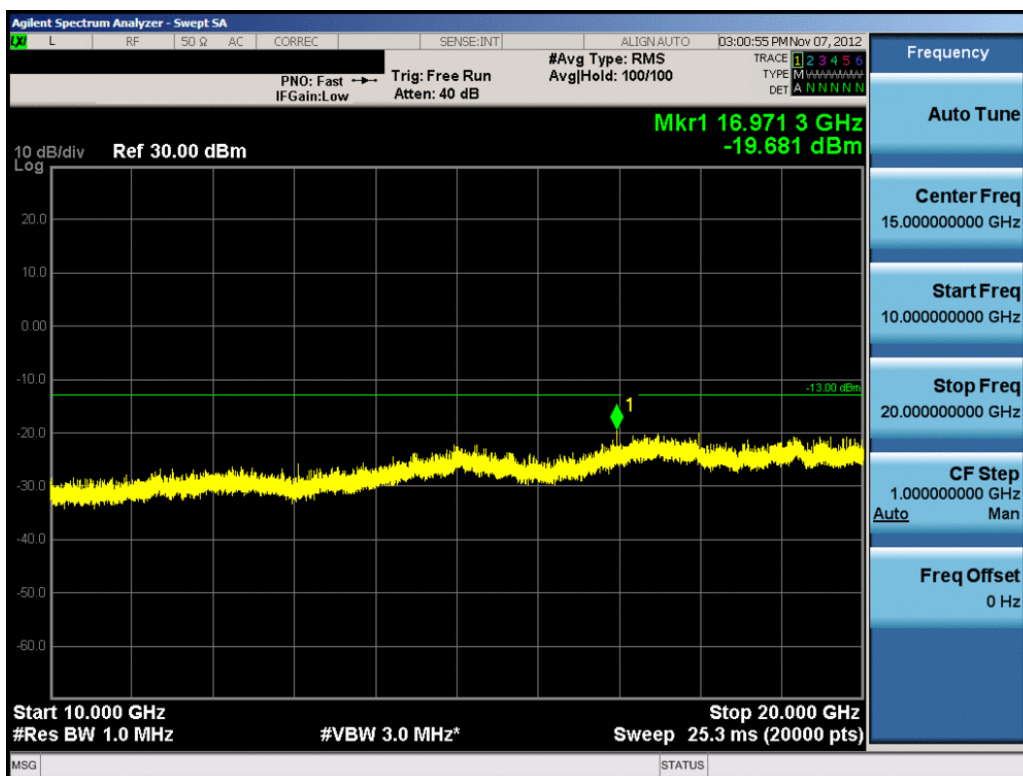


Plot 8-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 29 of 55

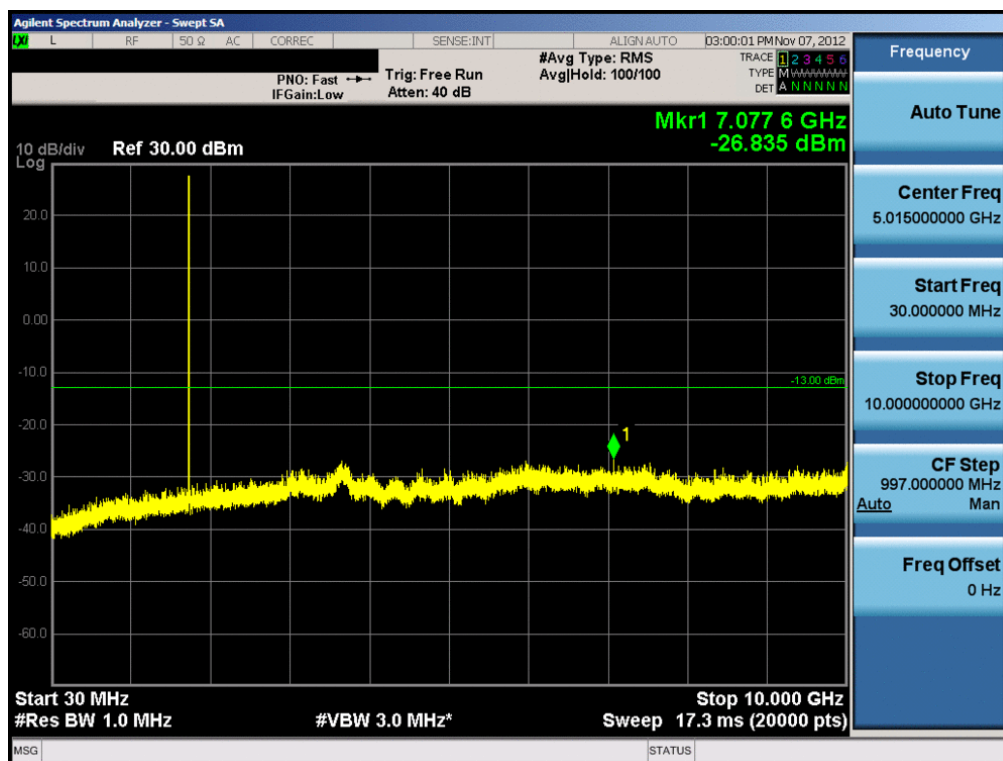


Plot 8-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

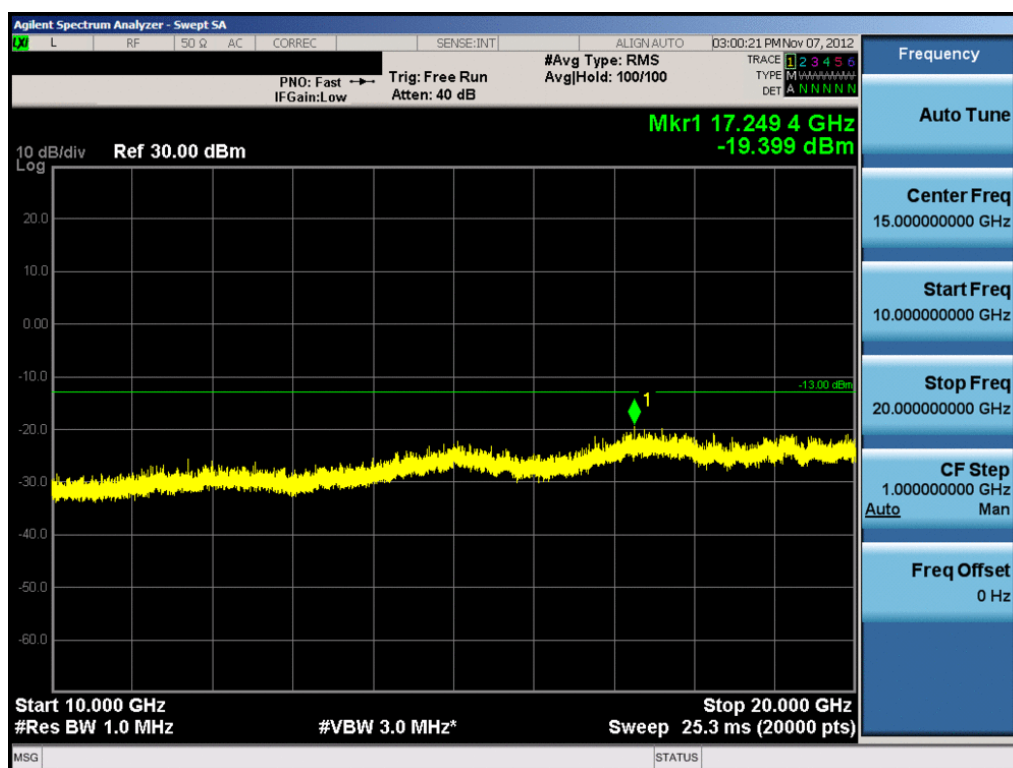


Plot 8-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHI925	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 30 of 55

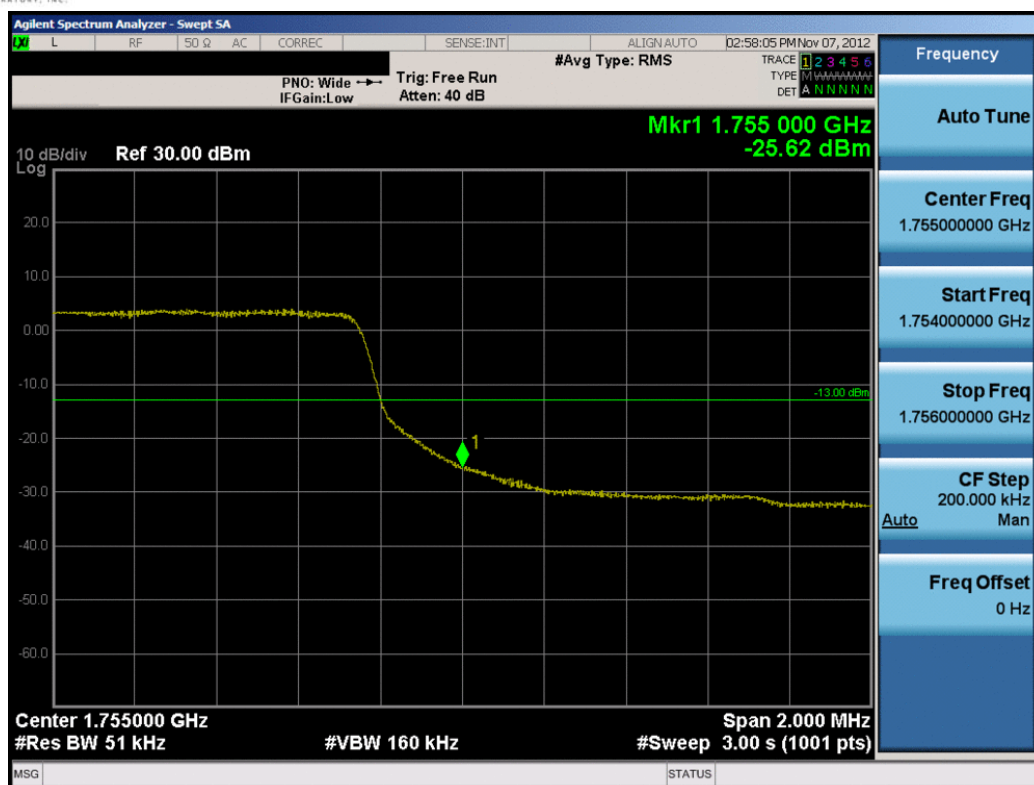


Plot 8-9. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

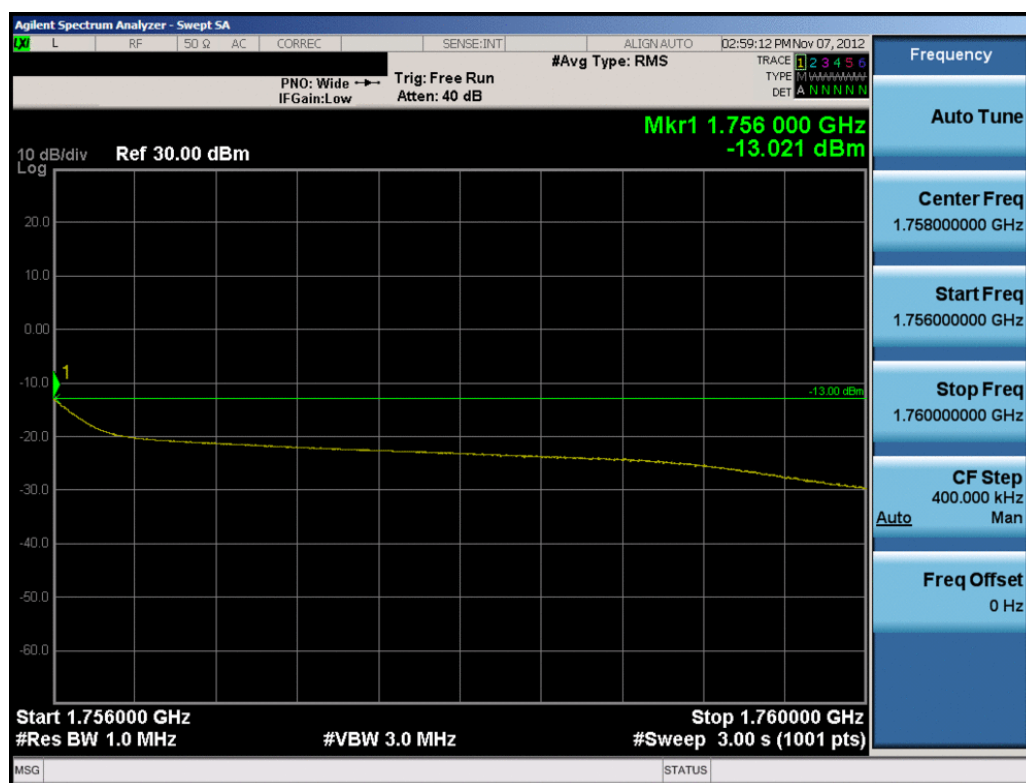


Plot 8-10. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC. FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet	Page 31 of 55

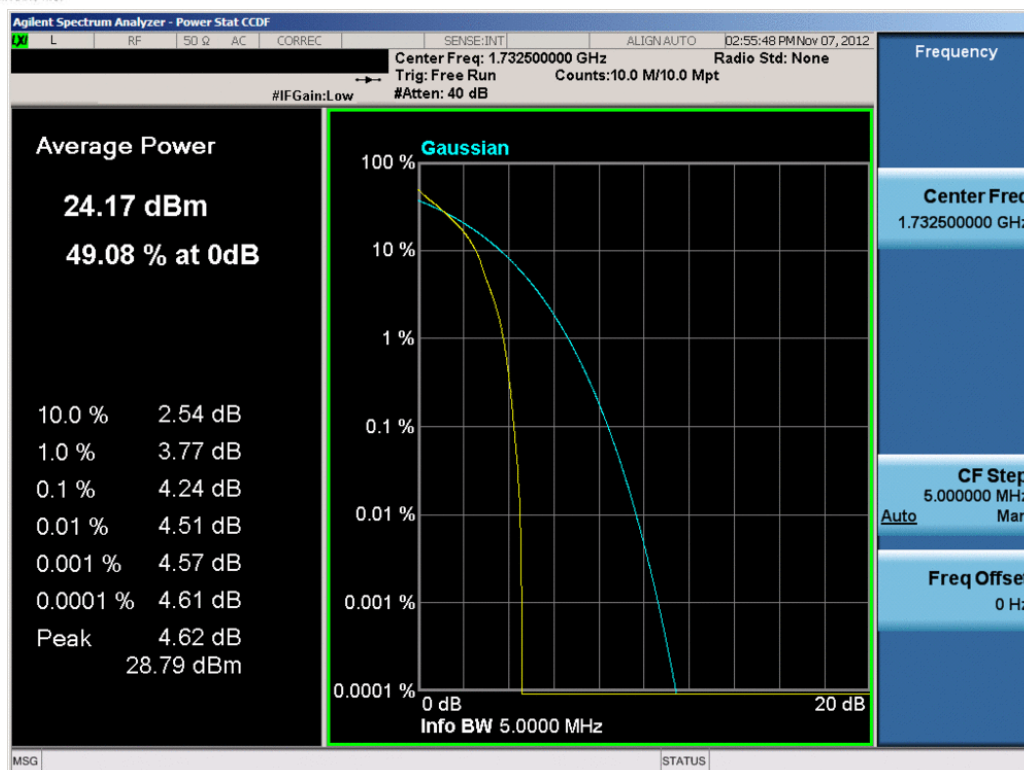


Plot 8-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

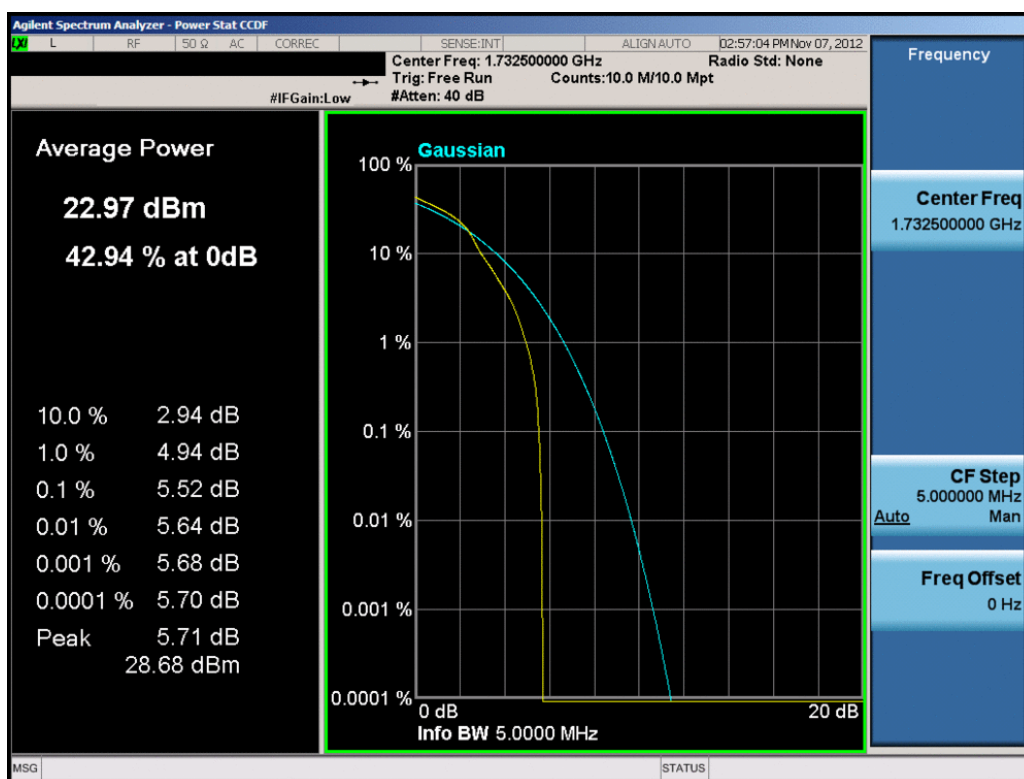


Plot 8-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 32 of 55

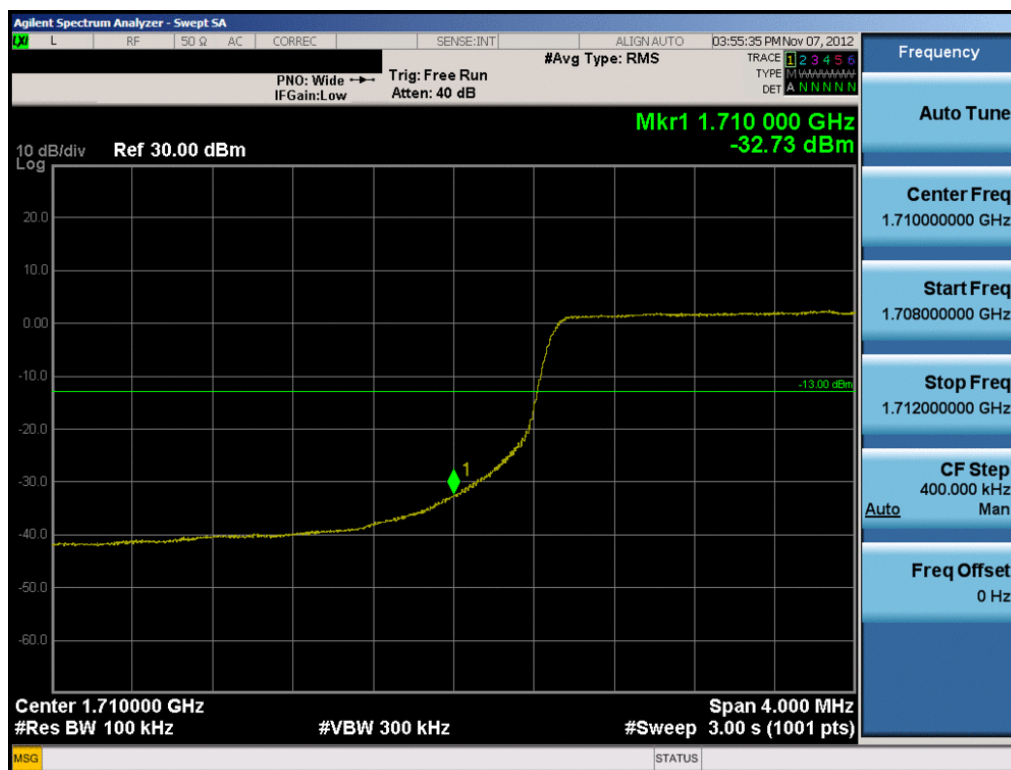


Plot 8-13. PAR Plot (5.0MHz QPSK – RB Size 25)

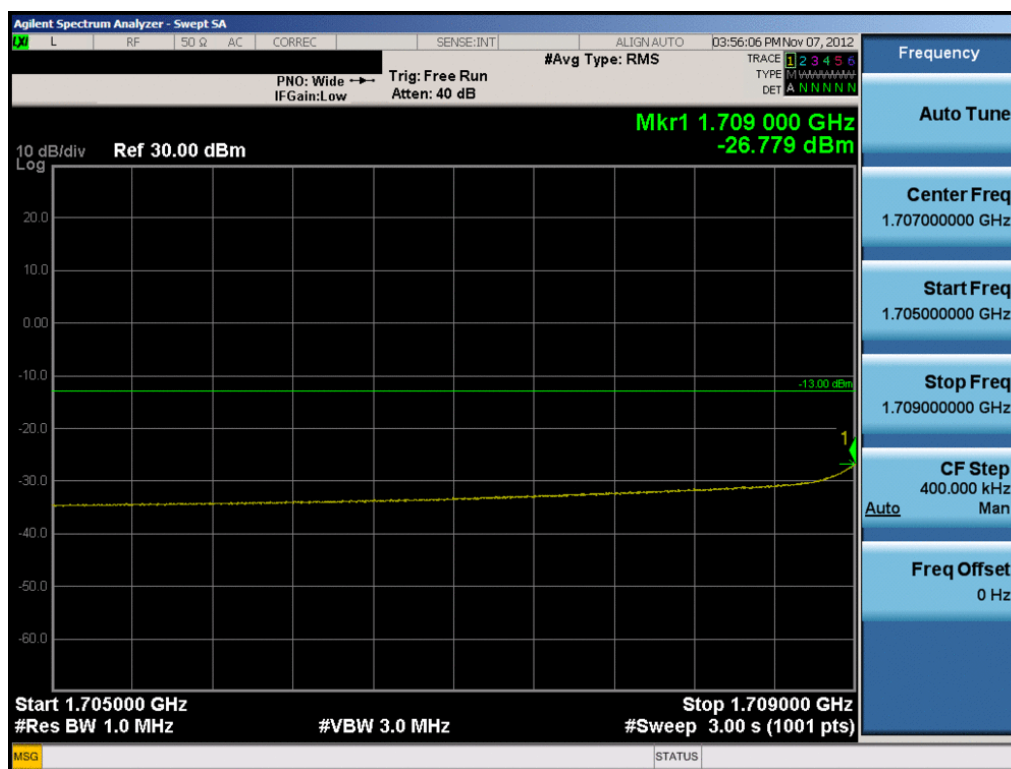


Plot 8-14. PAR Plot (5.0MHz 16-QAM – RB Size 25)

FCC ID: A3LSCHI925	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 33 of 55

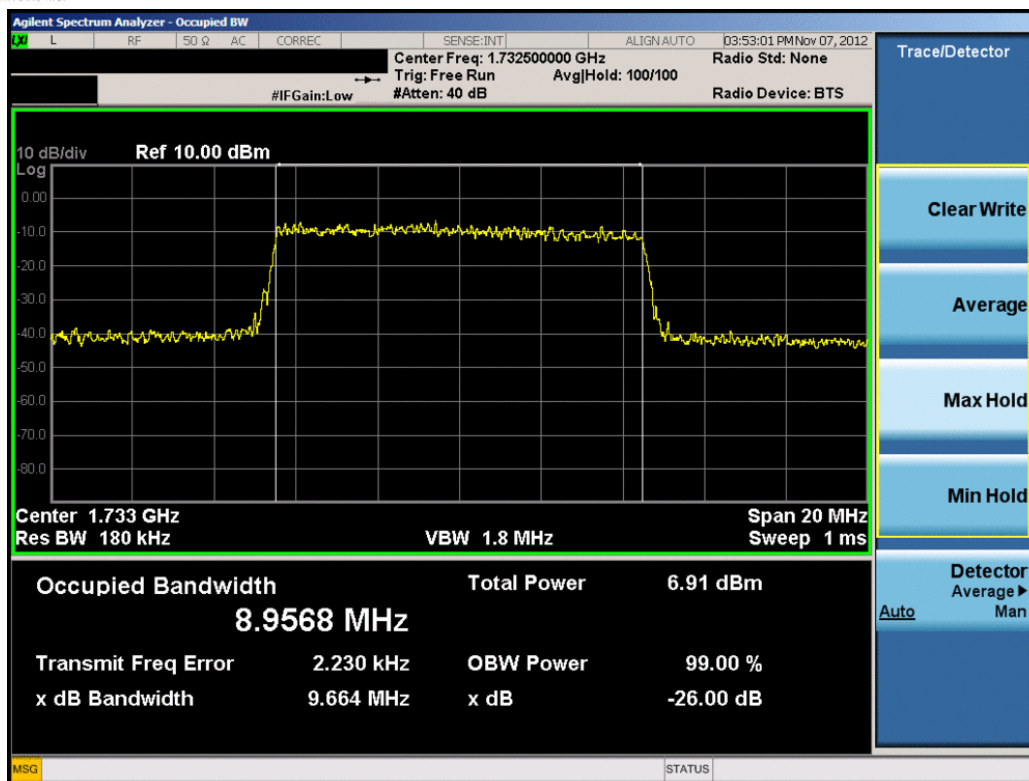


Plot 8-15. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

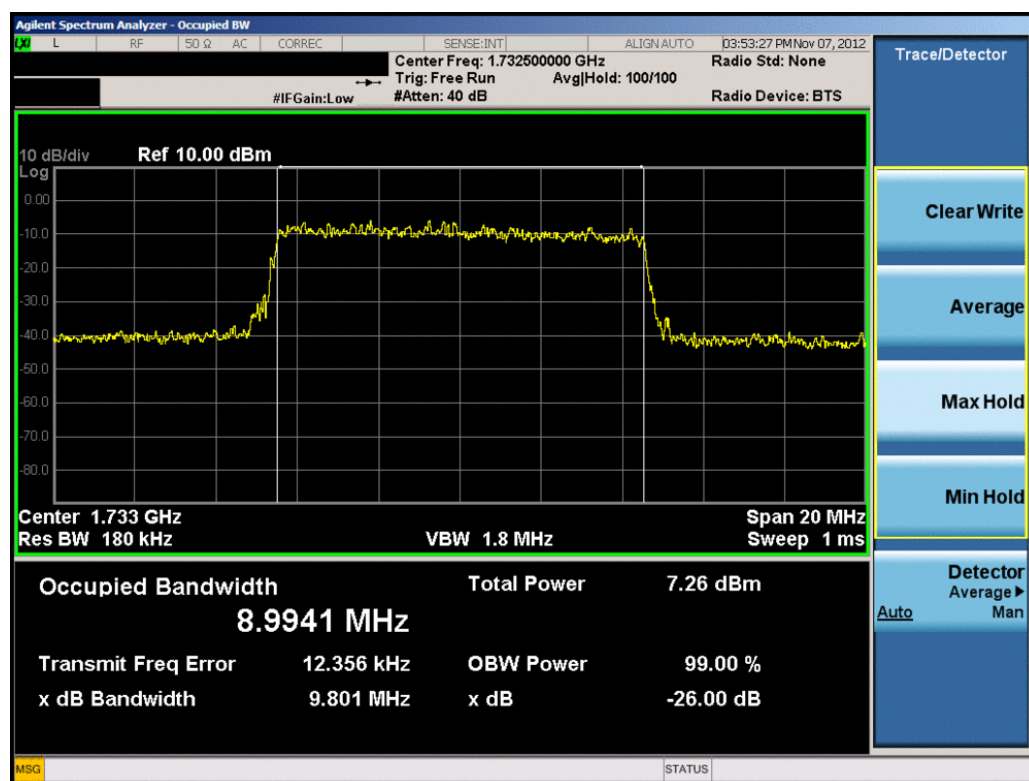


Plot 8-16. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 34 of 55

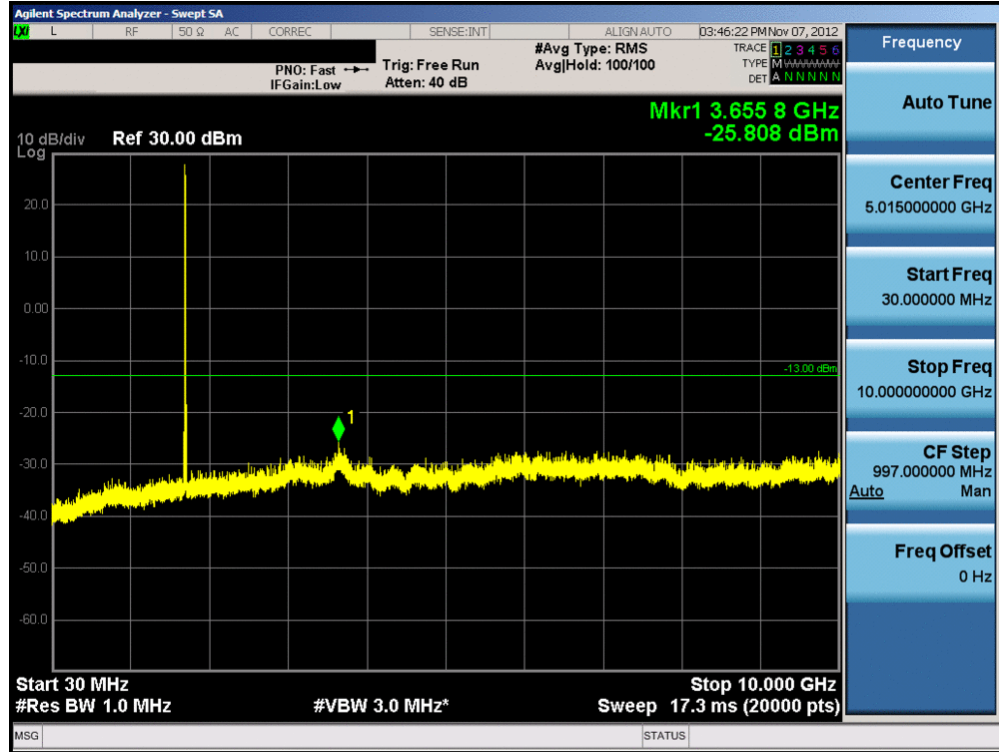


Plot 8-17. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

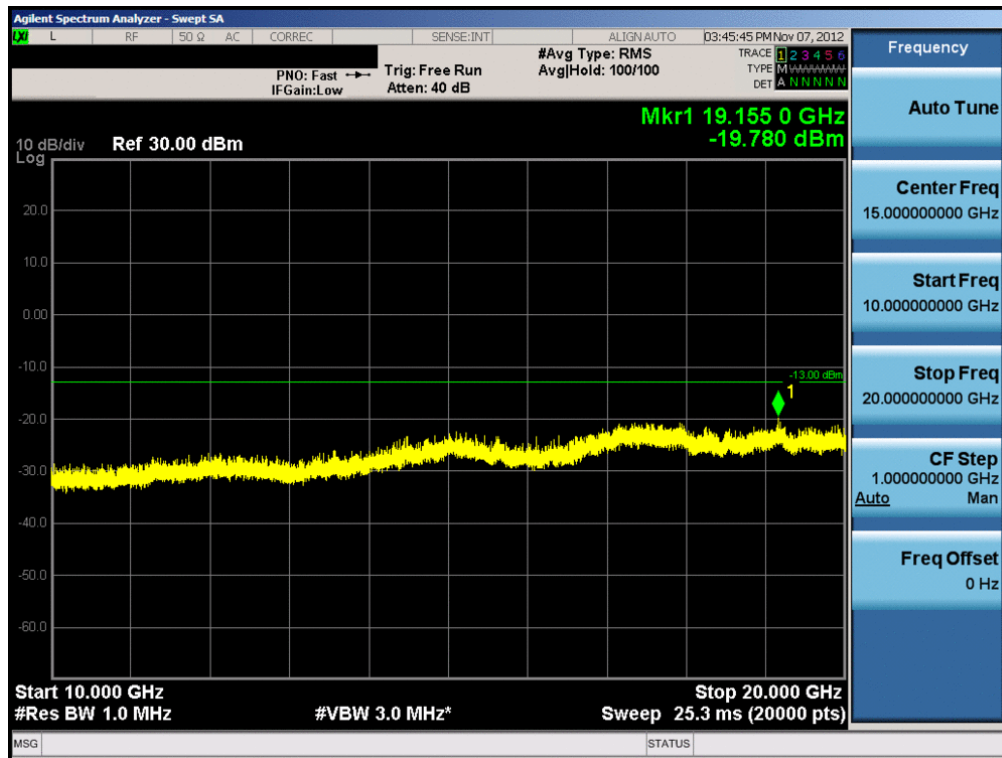


Plot 8-18. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 35 of 55

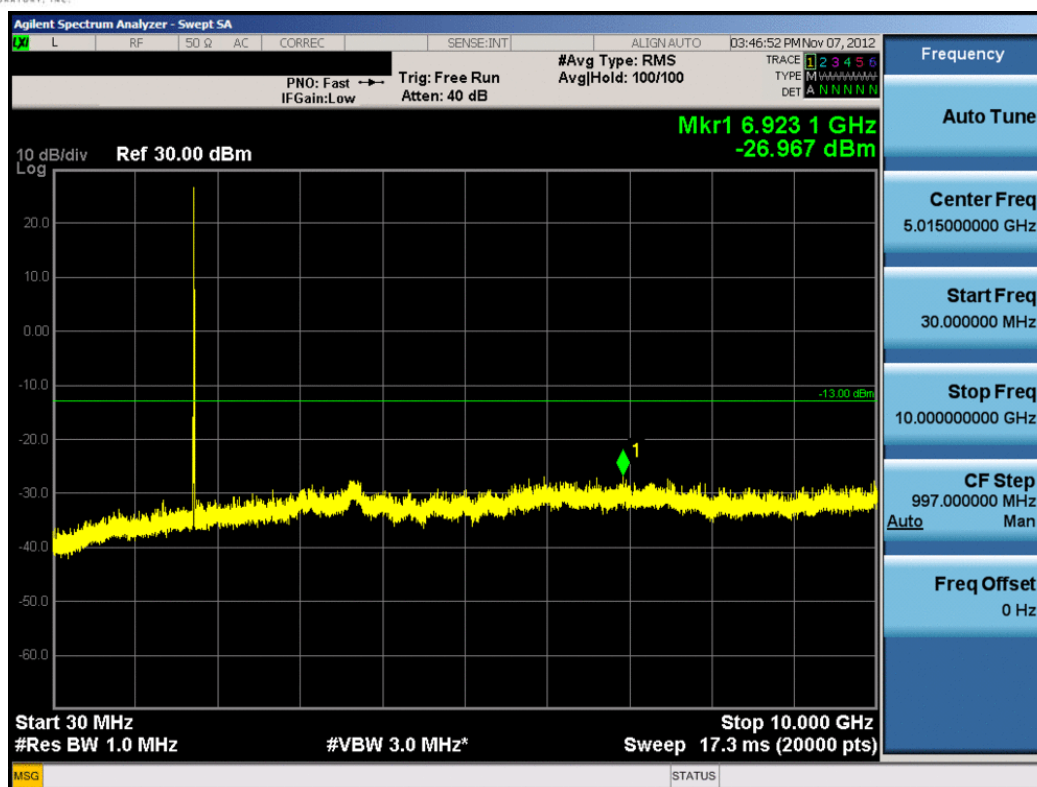


Plot 8-19. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

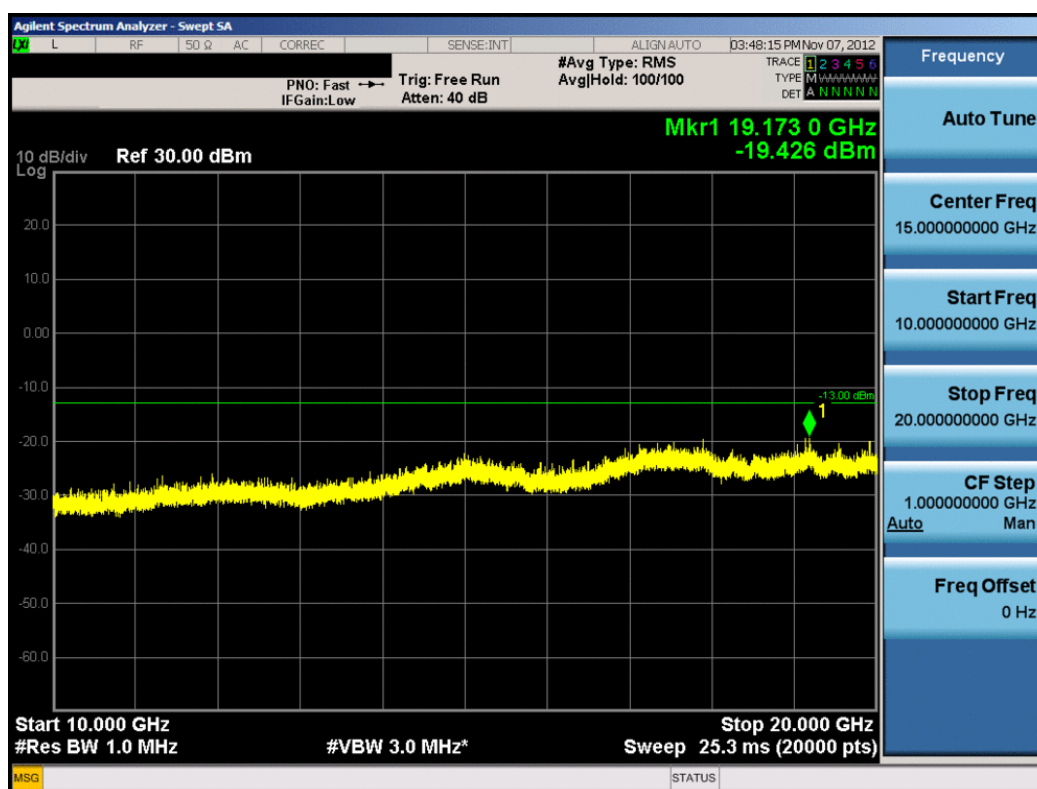


Plot 8-20. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHI925	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet	Page 36 of 55	

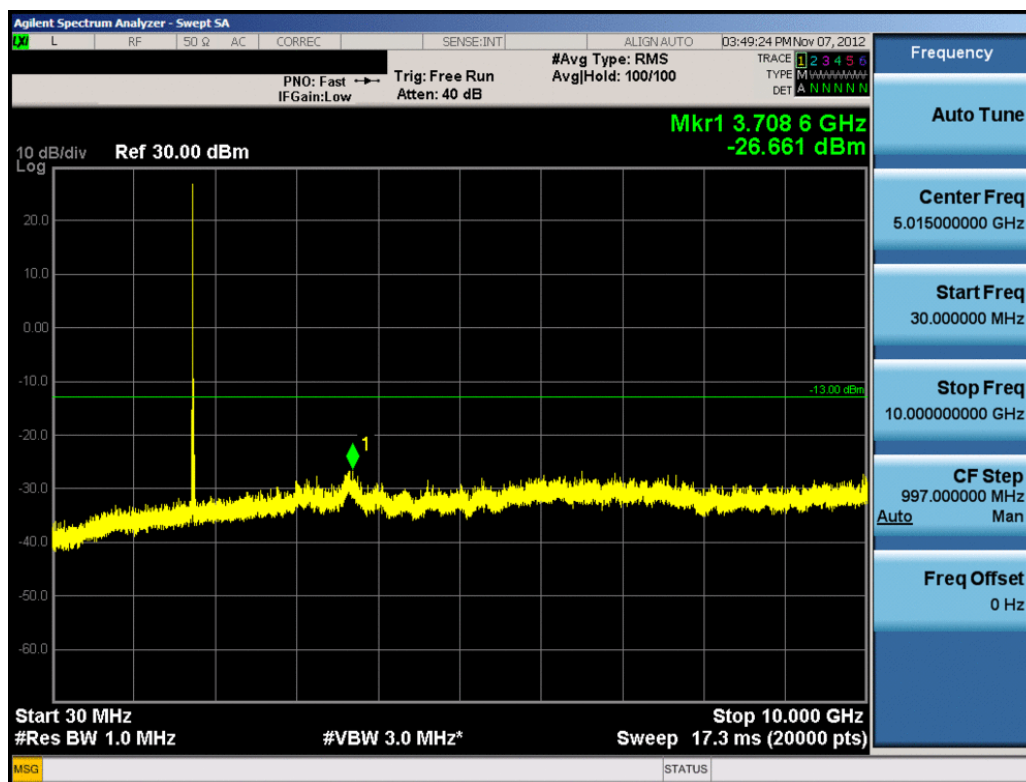


Plot 8-21. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

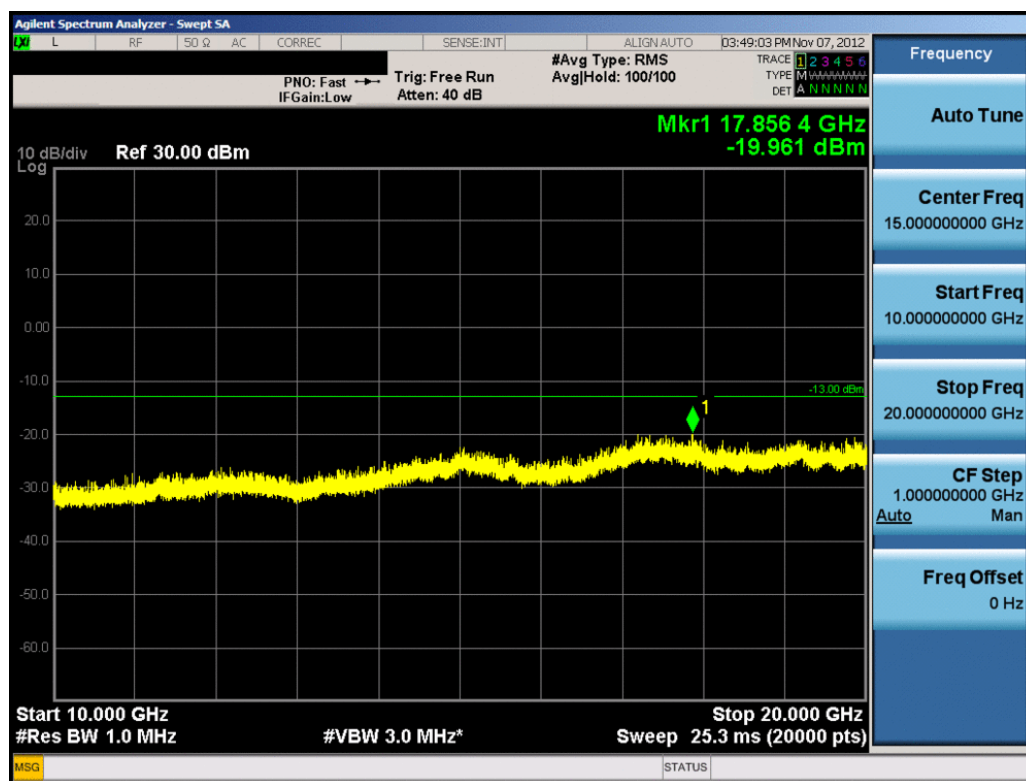


Plot 8-22. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 37 of 55

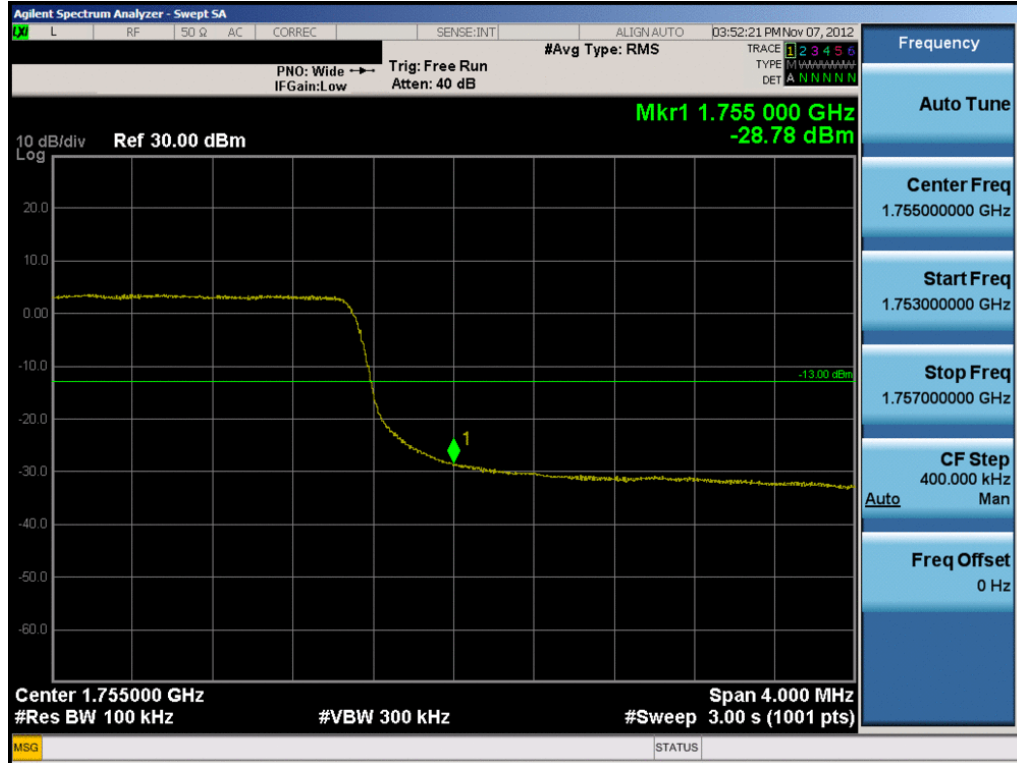


Plot 8-23. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

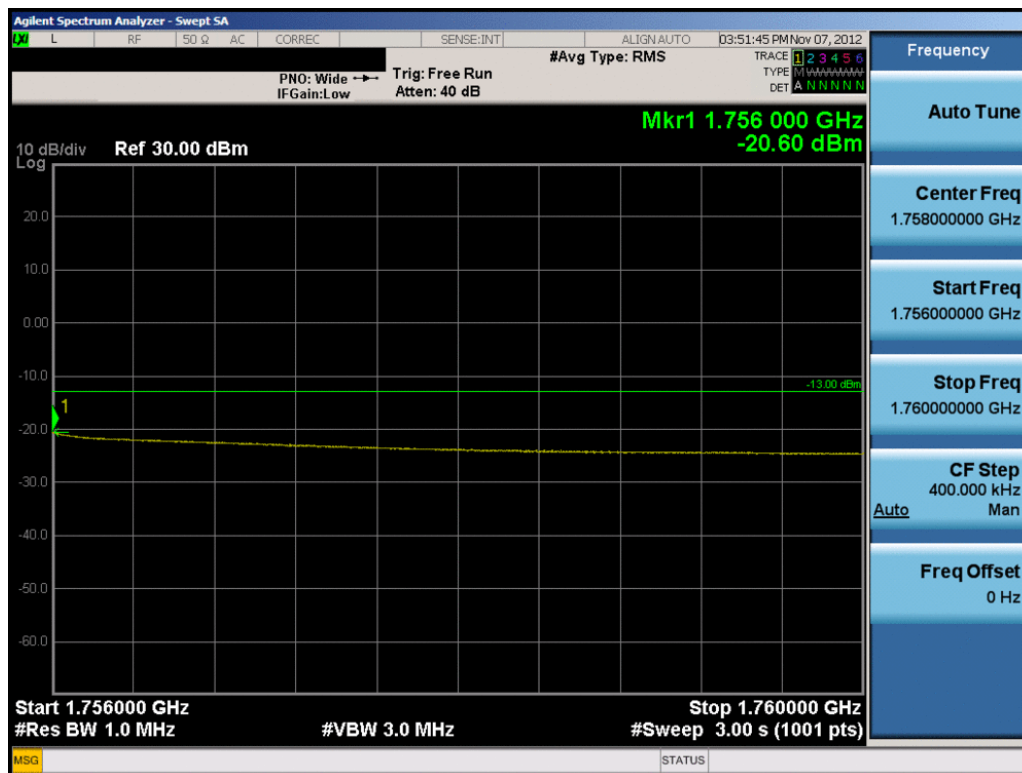


Plot 8-24. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 38 of 55

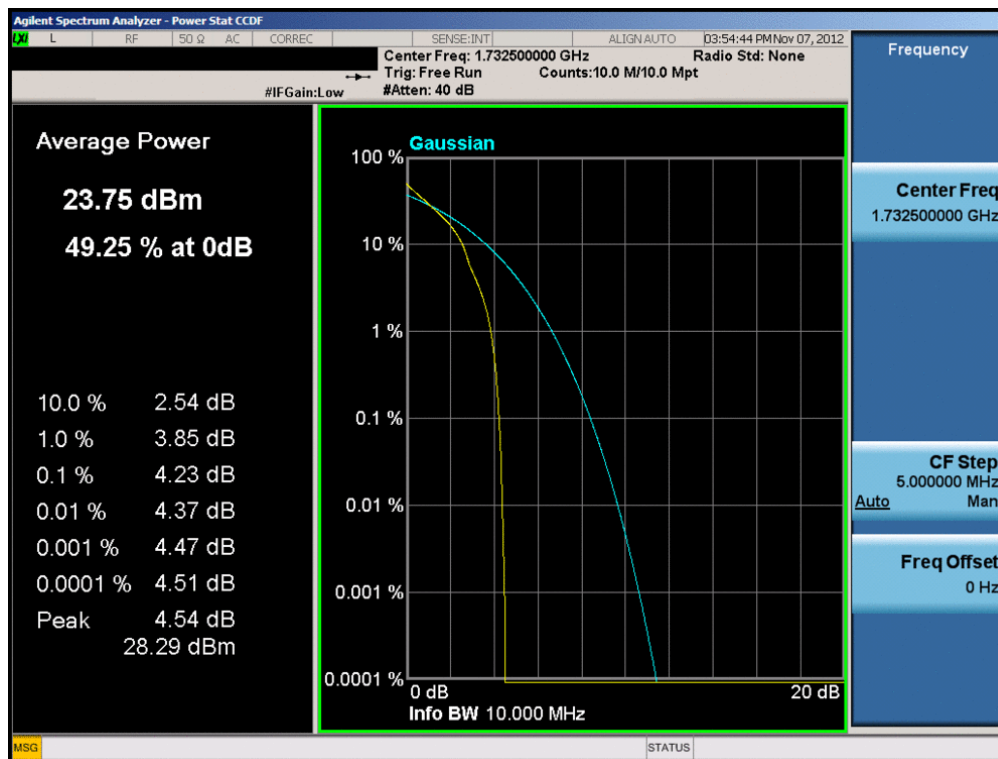


Plot 8-25. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

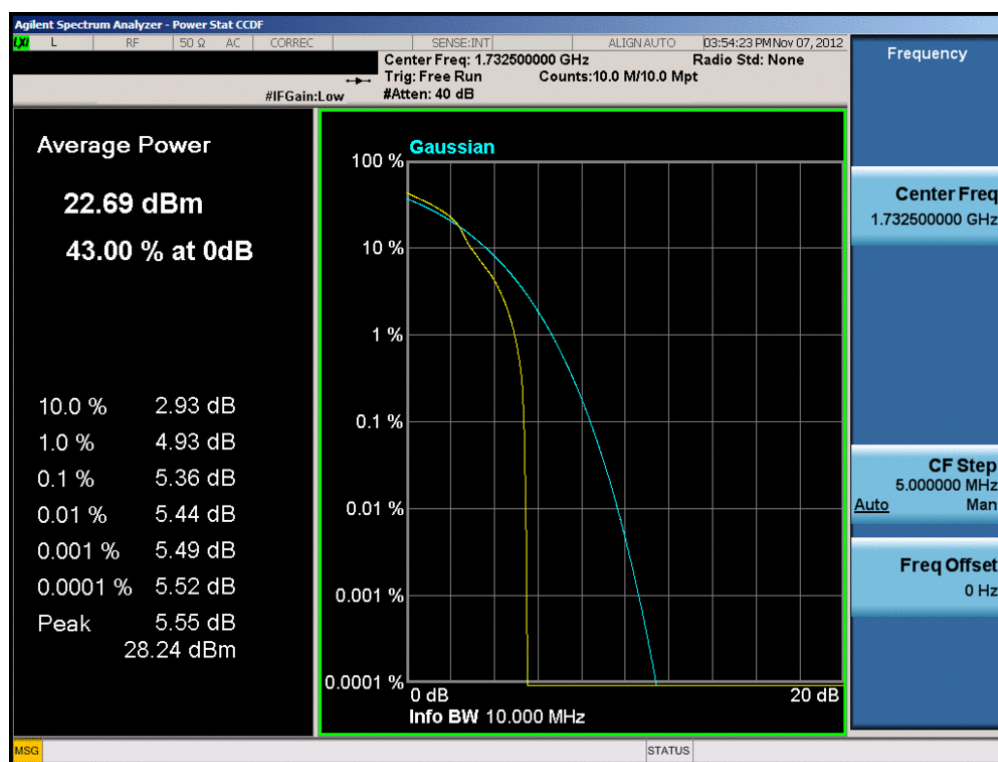


Plot 8-26. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHI925	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet		Page 39 of 55



Plot 8-27. PAR Plot (10.0MHz QPSK – RB Size 50)



Plot 8-28. PAR Plot (10.0MHz 16-QAM – RB Size 50)

FCC ID: A3LSCHI925			FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1210221538.A3L	Test Dates: 10/26/12 - 12/03/12	EUT Type: Portable Tablet			Page 40 of 55