

## MEASUREMENT REPORT FCC Part 24 & 27 LTE

**Applicant Name:**  
 Samsung Electronics Co., Ltd.  
 129, Samsung-ro, Yeongtong-gu  
 Suwon-city, Gyeonggi-do, 443-803  
 Republic of Korea

**Date of Testing:**  
 3/27-4/2/2013  
**Test Site/Location:**  
 PCTEST Lab., Columbia, MD, USA  
**Test Report Serial No.:**  
 0Y1303260544.A3L

<b>FCC ID :</b>	<b>A3LSCHR970C</b>
<b>APPLICANT:</b>	<b>SAMSUNG ELECTRONICS CO., LTD.</b>



**FCC Classification:** PCS Licensed Transmitter Held to Ear (PCE)  
**FCC Rule Part(s):** §2; §24; §27  
**EUT Type:** Portable Handset  
**Model(s):** SCH-R970C  
**Test Device Serial No.:** identical prototype [S/N: 7, 8]

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE Band 4	1712.5 - 1752.5	4M51G7W	QPSK	0.179	22.54
LTE Band 4	1712.5 - 1752.5	4M49W7W	16QAM	0.139	21.43
LTE Band 4	1715 - 1750	8M97G7W	QPSK	0.161	22.06
LTE Band 4	1715 - 1750	8M99W7W	16QAM	0.127	21.04
LTE Band 2	1852.5 - 1907.5	4M50G7W	QPSK	0.078	18.92
LTE Band 2	1852.5 - 1907.5	4M50W7W	16QAM	0.062	17.90
LTE Band 2	1855 - 1905	8M97G7W	QPSK	0.094	19.73
LTE Band 2	1855 - 1905	8M96W7W	16QAM	0.077	18.85
LTE Band 25	1852.5 - 1912.5	4M50G7W	QPSK	0.108	20.33
LTE Band 25	1852.5 - 1912.5	4M51W7W	16QAM	0.085	19.29
LTE Band 25	1855 - 1910	8M99G7W	QPSK	0.094	19.74
LTE Band 25	1855 - 1910	8M97W7W	16QAM	0.074	18.70

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.



  
 Raindy Ortanez  
 President

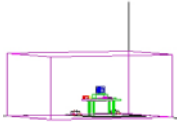


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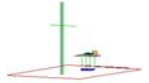
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# MEASUREMENT REPORT

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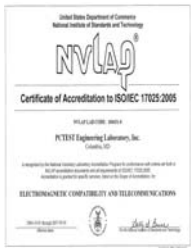
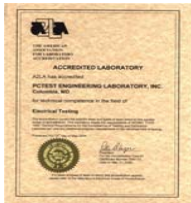


### §2.1033 General Information



**APPLICANT:** Samsung Electronics Co., Ltd.  
**APPLICANT ADDRESS:** 129, Samsung-ro, Yeongtong-gu  
 Suwon-city, Gyeonggi-do, 443-803, 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; §24; §27  
**BASE MODEL:** SCH-R970C  
**FCC ID:** A3LSCHR970C  
**FCC CLASSIFICATION:** PCS Licensed Transmitter Held to Ear (PCE)  
**FREQUENCY TOLERANCE:** ±0.00025 % (2.5 ppm)  
**Test Device Serial No.:** 7, 8       Production     Pre-Production     Engineering  
**DATE(S) OF TEST:** 3/27-4/2/2013  
**TEST REPORT S/N:** 0Y1303260544.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 Intern't'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.

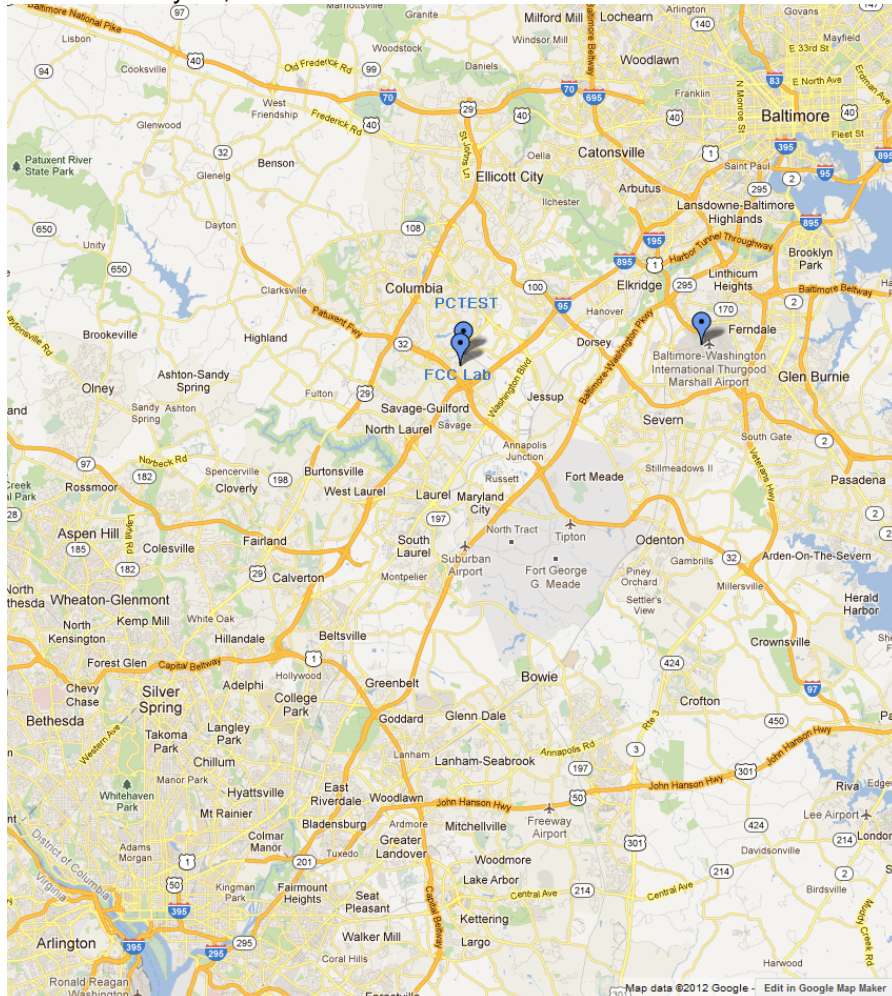


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSCHR970C**. 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:

850/1700/1900 CDMA/EvDO Rev0/A (BC0, BC1, BC15), Band 2, 4, 25 LTE (5MHz and 10MHz BW), 802.11a/b/g/n/ac WLAN (DTS/NII), Bluetooth (1x,EDR, LE), NFC



### 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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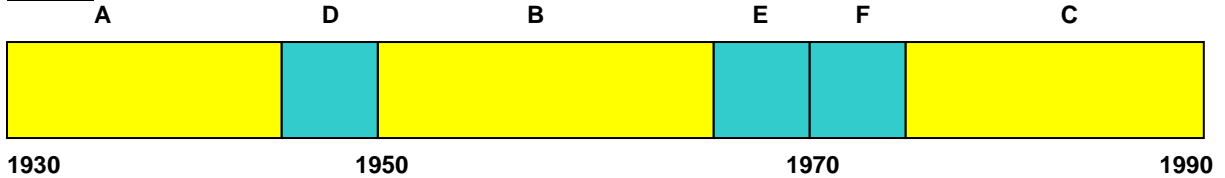
## 3.0 DESCRIPTION OF TESTS

### 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 Handset** FCC ID: **A3LSCHR970C**.

### 3.2 PCS - Base Frequency Blocks

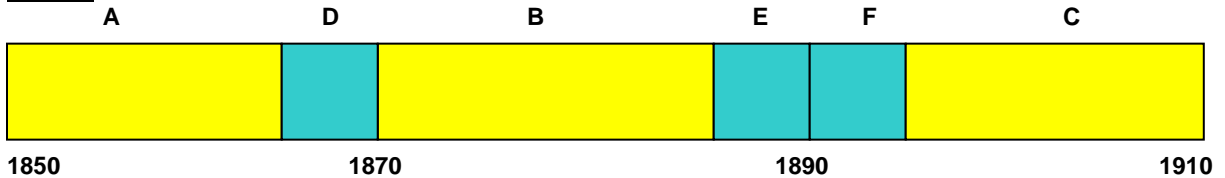
§24.229



- |                              |                              |
|------------------------------|------------------------------|
| BLOCK 1: 1930 – 1945 MHz (A) | BLOCK 4: 1965 – 1970 MHz (E) |
| BLOCK 2: 1945 – 1950 MHz (D) | BLOCK 5: 1970 – 1975 MHz (F) |
| BLOCK 3: 1950 – 1965 MHz (B) | BLOCK 6: 1975 – 1990 MHz (C) |

### 3.3 PCS - Mobile Frequency Blocks

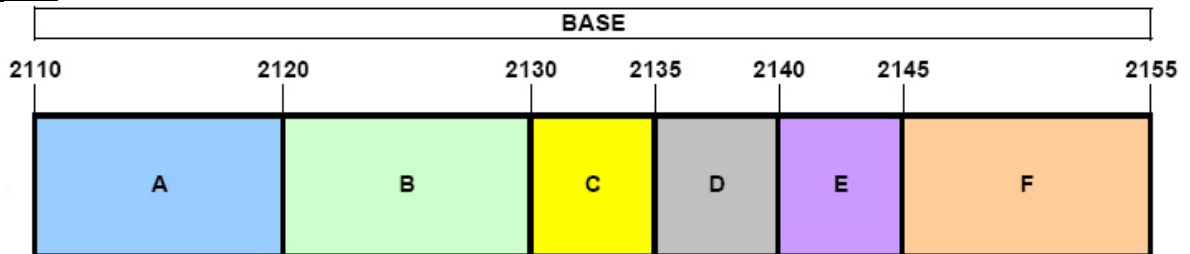
§24.229





- |                              |                              |
|------------------------------|------------------------------|
| BLOCK 1: 1850 – 1865 MHz (A) | BLOCK 4: 1885 – 1890 MHz (E) |
| BLOCK 2: 1865 – 1870 MHz (D) | BLOCK 5: 1890 – 1895 MHz (F) |
| BLOCK 3: 1870 – 1885 MHz (B) | BLOCK 6: 1895 – 1910 MHz (C) |

### 3.4 AWS - Base Frequency Blocks

§27.5(h)

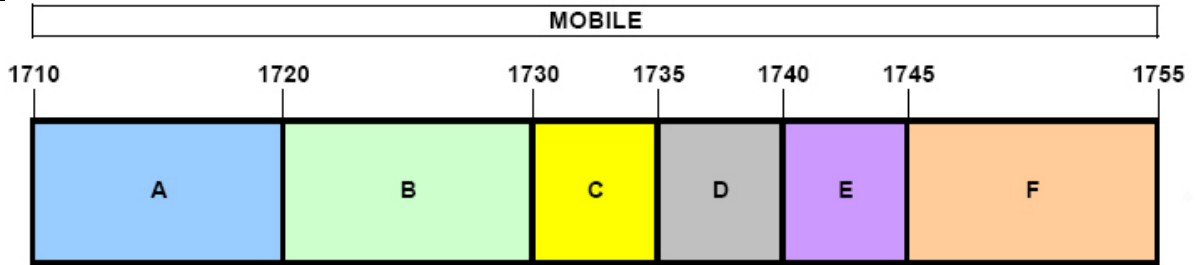


- |                              |                              |
|------------------------------|------------------------------|
| BLOCK 1: 2110 – 2120 MHz (A) | BLOCK 4: 2135 – 2140 MHz (D) |
| BLOCK 2: 2120 – 2130 MHz (B) | BLOCK 5: 2140 – 2145 MHz (E) |
| BLOCK 3: 2130 – 2135 MHz (C) | BLOCK 6: 2145 – 2155 MHz (F) |

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### 3.5 AWS - Mobile Frequency Blocks

§27.5(h)



BLOCK 1: 1710 – 1720 MHz (A)

BLOCK 2: 1720 – 1730 MHz (B)

BLOCK 3: 1730 – 1735 MHz (C)

BLOCK 4: 1735 – 1740 MHz (D)

BLOCK 5: 1740 – 1745 MHz (E)

BLOCK 6: 1745 – 1755 MHz (F)

### 3.6 Occupied Bandwidth

§2.1049 RSS-133(2.3) 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.

### 3.7 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051 §24.238(a)(b) §27.53(h) RSS-133(6.5.1) 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 10<sup>th</sup> 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 for PCS band, AWS band. 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 for PCS band, AWS band. 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.

### 3.8 Peak-Average Ratio

§24.232(d) §27.50(d.5) RSS-133(6.4) 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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### 3.9 SVLTE

**§2.1053 §22.917(a) §24.238(a) §27.53(h) RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)**

This device is capable of operating in SVLTE mode in the following cases:



No.	Capable Transmit Configurations	Head	Body-Worn Accessory	Hot Spot	Note
		IEEE 1528, Supp C	Supplement C	FCC KDB 941225 D06 edges/sides	
1	1X CDMA Voice + LTE Data	√	√	N/A	SVLTE
2	1X CDMA Voice + LTE Data + 2.4 GHz WIFI	√	√	√	Voice and LTE+WIFI Hotspot
3	1X CDMA Voice + LTE Data + 2.4 GHz Bluetooth	N/A	√	N/A	Voice and LTE+Bluetooth
4	1X CDMA Voice + 2.4 GHz WIFI	√	√	N/A	1X voice and WIFI Data
5	1X CDMA Voice + 2.4 GHz Bluetooth	N/A	√	N/A	1X voice and Bluetooth
6	1X CDMA Voice + 5 GHz WIFI	√	√	N/A	1X voice and WIFI Data
7	1X/EVDO Data + 2.4 GHz WIFI	√	√	√	EVDO+WIFI Hotspot
8	1X/EVDO Data + 2.4 GHz Bluetooth	N/A	√	N/A	EVDO+Bluetooth
9	LTE Data + 2.4 GHz WIFI	√	√	√	LTE+WIFI Hotspot
10	LTE Data + 2.4 GHz Bluetooth	N/A	√	N/A	LTE+Bluetooth
11	1X/EVDO Data + 5 GHz WIFI	N/A	N/A	N/A	
12	1X CDMA Voice + LTE Data + 5 GHz WIFI	N/A	N/A	N/A	
13	1X CDMA Voice + EVDO	N/A	N/A	N/A	Not available by HW (Non-SVDO)
14	EVDO data + LTE Data	N/A	N/A	N/A	Not available by SW
15	LTE Data + 5 GHz WIFI	N/A	N/A	N/A	Not available by SW

Notes:

1. CDMA and EVDO share the same antenna path and cannot transmit simultaneously. (Non-SVDO)
2. 2.4 GHz WLAN, 2.4 GHz Bluetooth, and 5 GHz WLAN share the same antenna path and cannot transmit simultaneously.

**Table 3-1. SVLTE Transmit Configurations**

All modes of SVLTE operation were investigated. It was determined that this device did not produce any intermodulation products that were within 25dB of the spurious emission limit so the emissions are not reported herein.

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### 3.10 Radiated Power and Radiated Spurious Emissions

§2.1053 §24.232(c) §24.238(a) §27.50(d.4) RSS-133(6.4) RSS-133(6.5.1) RSS-139(6.5.1)

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 78cm high PVC support structure is placed on top of the turntable. A ¾" (~1.9cm) sheet of high density polyethylene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.


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

Per the guidance of ANSI/TIA-603-C-2004, 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 22.917(a) and 24.238(a).

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### 3.11 Frequency Stability / Temperature Variation

§2.1055 §24.229 §24.235 §27.5(h) §27.54 RSS-133(6.3) 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 24 and 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	1/17/2013	Annual	1/17/2014	N/A
-	LTx2	Licensed Transmitter Cable Set	1/17/2013	Annual	1/17/2014	N/A
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	3/29/2013	Annual	3/29/2014	N/A
Agilent	8447D	Broadband Amplifier	5/8/2012	Annual	5/8/2013	1937A03348
Agilent	E8267C	Vector Signal Generator	10/10/2011	Biennial	10/10/2013	US42340152
Agilent	N5183A	MXG Analog Signal Generator	1/6/2013	Annual	1/6/2014	MY50141900
Agilent	N9020A	MXA Signal Analyzer	10/9/2012	Annual	10/9/2013	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	1/11/2013	Annual	1/11/2014	MY52350166
Agilent	N9038A	MXE EMI Receiver	12/8/2012	Annual	12/8/2013	MY51210133
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	3160-09	18-26.5 GHz Standard Gain Horn	5/30/2012	Biennial	5/30/2014	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	11/7/2012	Biennial	11/7/2014	128338
Mini-Circuits	SSG-4000HP	USB Synthesized Signal Generator	N/A		N/A	11208010032
Mini-Circuits	TVA-11-422	RF Power Amp	N/A		N/A	QA1303002
Mini-Circuits	VHF-1200+	High Pass Filter	1/17/2013	Annual	1/17/2014	30923
Mini-Circuits	VHF-3100+	High Pass Filter	1/17/2013	Annual	1/17/2014	30841
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	N/A		N/A	103962
Rohde & Schwarz	ESU26	EMI Test Receiver	2/25/2013	Annual	2/25/2014	100342
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	6/26/2012	Annual	6/26/2013	100071
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/14/2011	Biennial	11/14/2013	9105-2404
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Sunol	DRH-118	Horn Antenna (1-18 GHz)	6/17/2011	Biennial	6/17/2013	A042511

**Table 4-1. Test Equipment**

**Notes:**

- Care was taken to ensure that the equipments listed above were utilized between the calibration dates and calibration due dates.
- Equipment used for signaling with a calibration date of "N/A" shown in this list was only used for maintaining a link between the piece of equipment and the EUT. This equipment was not used to make direct calibrated measurements.

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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 2<sup>nd</sup> 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: A3LSCHR970C  
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)  
 Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
<b>TRANSMITTER MODE (TX)</b>					
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section, 7.0, 8.0, 9.0
2.1051 24.238(a) 27.53(h)	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
24.232(d) 27.50(d.5)	Peak-Average Ratio	$< 13$ dB		PASS	Section 7.0, 8.0, 9.0
2.1046	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
24.232(c)	Equivalent Isotropic Radiated Power (Band 2 25)	$< 2$ Watts max. EIRP	RADIATED	PASS	Section 6.2
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 4)	$< 1$ Watts max. EIRP		PASS	Section 6.2
2.1053 24.238(a) 27.53(h)	Undesirable Emissions	$> 43 + 10\log_{10}(P[\text{Watts}])$ for all out-of-band emissions		PASS	Section, 6.3, 6.4, 6.5
2.1055.22.355 24.229 24.235 27.5(h) 27.54	Frequency Stability	Fundamental emissions stay within authorized frequency block (Part 24, 27)		PASS	Section, 6.6, 6.7, 6.8

**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 Section 7.0 8.0 9.0 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.
- 4) This device supports a wireless charging cover. Per KDB 648474 D03 v01r01, spurious emissions measurement data was also investigated with the wireless charging battery cover. The handset was placed on the representative charging pad under normal conditions and in a simulated call configuration. When the EUT is placed on the wireless charging pad, the charging sequence of the WCP was initiated and its magnetic field was generated as was confirmed by the EUT going into a charging condition. Only worst case emissions are shown in this report.

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## 6.2 Equivalent Isotropic Radiated Power (EIRP)

§24.232(c) §27.50(d.4) RSS-133(6.4) RSS-139(6.4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery Cover	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	12.65	9.89	H	22.54	0.179	-7.46
1732.50	5	QPSK	Standard	1 / 0	12.19	9.85	H	22.04	0.160	-7.96
1752.50	5	QPSK	Standard	1 / 24	11.14	9.80	H	20.94	0.124	-9.06
1712.50	5	16-QAM	Standard	1 / 0	11.54	9.89	H	21.43	0.139	-8.57
1732.50	5	16-QAM	Standard	1 / 0	11.09	9.85	H	20.94	0.124	-9.06
1752.50	5	16-QAM	Standard	1 / 24	9.98	9.80	H	19.78	0.095	-10.22
1715.00	10	QPSK	Standard	1 / 49	12.17	9.89	H	22.06	0.161	-7.94
1732.50	10	QPSK	Standard	1 / 49	12.02	9.85	H	21.87	0.154	-8.13
1750.00	10	QPSK	Standard	1 / 0	11.98	9.80	H	21.78	0.151	-8.22
1715.00	10	16-QAM	Standard	1 / 49	11.15	9.89	H	21.04	0.127	-8.96
1732.50	10	16-QAM	Standard	1 / 49	10.85	9.85	H	20.70	0.117	-9.30
1750.00	10	16-QAM	Standard	1 / 0	10.90	9.80	H	20.70	0.118	-9.30
1712.50	5	QPSK	WCC	1 / 0	7.22	9.89	H	17.11	0.051	-12.89

**Table 6-2. EIRP Data (Band 4)**

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery Cover	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1852.50	5	QPSK	Standard	1 / 0	9.32	9.59	H	18.91	0.078	-14.10
1880.00	5	QPSK	Standard	1 / 24	9.39	9.53	H	18.92	0.078	-14.09
1907.50	5	QPSK	Standard	1 / 24	9.00	9.48	H	18.48	0.070	-14.53
1852.50	5	16-QAM	Standard	1 / 0	8.12	9.59	H	17.71	0.059	-15.30
1880.00	5	16-QAM	Standard	1 / 24	8.37	9.53	H	17.90	0.062	-15.11
1907.50	5	16-QAM	Standard	1 / 24	7.97	9.48	H	17.45	0.056	-15.56
1855.00	10	QPSK	Standard	1 / 0	10.14	9.59	H	19.73	0.094	-13.28
1880.00	10	QPSK	Standard	1 / 49	9.92	9.53	H	19.45	0.088	-13.56
1905.00	10	QPSK	Standard	1 / 0	9.75	9.48	H	19.23	0.084	-13.78
1855.00	10	16-QAM	Standard	1 / 0	9.26	9.59	H	18.85	0.077	-14.16
1880.00	10	16-QAM	Standard	1 / 49	8.87	9.53	H	18.40	0.069	-14.61
1905.00	10	16-QAM	Standard	1 / 0	8.75	9.48	H	18.23	0.067	-14.78
1855.00	10	QPSK	WCC	1 / 0	8.75	9.59	H	18.34	0.068	-14.67

**Table 6-3. EIRP Data (Band 2)**

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery Cover	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1852.50	5	QPSK	Standard	1 / 0	10.74	9.59	H	20.33	0.108	-12.68
1882.50	5	QPSK	Standard	1 / 24	9.62	9.53	H	19.15	0.082	-13.86
1912.50	5	QPSK	Standard	1 / 24	9.90	9.47	H	19.37	0.087	-13.64
1852.50	5	16-QAM	Standard	1 / 0	9.70	9.59	H	19.29	0.085	-13.72
1882.50	5	16-QAM	Standard	1 / 24	8.56	9.53	H	18.09	0.064	-14.92
1912.50	5	16-QAM	Standard	1 / 24	8.66	9.47	H	18.13	0.065	-14.88
1855.00	10	QPSK	Standard	1 / 0	10.15	9.59	H	19.74	0.094	-13.27
1882.50	10	QPSK	Standard	1 / 49	10.05	9.53	H	19.58	0.091	-13.43
1910.00	10	QPSK	Standard	1 / 49	10.27	9.47	H	19.74	0.094	-13.27
1855.00	10	16-QAM	Standard	1 / 0	9.05	9.59	H	18.64	0.073	-14.37
1882.50	10	16-QAM	Standard	1 / 49	9.03	9.53	H	18.56	0.072	-14.45
1910.00	10	16-QAM	Standard	1 / 49	9.23	9.47	H	18.70	0.074	-14.31
1852.50	5	QPSK	WCC	1 / 0	8.35	9.59	H	17.94	0.062	-15.07

**Table 6-4. EIRP Data (Band 25)**

**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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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### 6.3 Band 4 Radiated Spurious Emissions §2.1053 §27.53(h) RSS-139(6.5.1)

#### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1712.50 MHz  
 MEASURED OUTPUT POWER: 22.54 dBm = 0.179 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  35.54 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3425.00	-46.70	8.09	-38.60	H	61.14
5137.50	-52.90	10.21	-42.69	H	65.23
6850.00	-80.49	11.31	-69.18	H	91.72
8562.50	-79.97	13.02	-66.95	H	89.49
10275.00	-47.89	13.01	-34.88	H	57.42
11987.50	-74.26	13.21	-61.05	H	83.59

**Table 6-5. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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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  
 MEASURED OUTPUT POWER: 22.04 dBm = 0.160 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  35.04 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3465.00	-53.39	8.26	-45.12	H	67.16
5197.50	-55.50	10.26	-45.24	H	67.28
6930.00	-55.33	11.42	-43.91	H	65.95
8662.50	-79.92	13.07	-66.86	H	88.89
10395.00	-51.63	13.12	-38.52	H	60.55
12127.50	-74.05	13.25	-60.80	H	82.84

**Table 6-6. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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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: 1752.50 MHz  
 MEASURED OUTPUT POWER: 20.94 dBm = 0.124 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  33.94 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3505.00	-54.74	8.40	-46.34	H	67.28
5257.50	-56.57	10.32	-46.25	H	67.20
7010.00	-80.17	11.51	-68.66	H	89.60
8762.50	-79.86	13.11	-66.75	H	87.70
10515.00	-50.72	13.20	-37.52	H	58.47
12267.50	-73.90	13.31	-60.58	H	81.53

**Table 6-7. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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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 with WCC**


OPERATING FREQUENCY: 1712.50 MHz  
 MEASURED OUTPUT POWER: 17.11 dBm = 0.051 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  30.11 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3425.00	-41.16	8.09	-33.06	H	50.17
5137.50	-53.07	10.21	-42.86	H	59.97
6850.00	-80.49	11.31	-69.18	H	86.29
8562.50	-79.97	13.02	-66.95	H	84.06
10275.00	-47.53	13.01	-34.52	H	51.63
11987.50	-74.26	13.21	-61.05	H	78.16

**Table 6-8. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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## 6.4 Band 2 Radiated Spurious Emissions

§2.1053 §24.238(a) RSS-133(6.5.1)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1855.00 MHz  
 MEASURED OUTPUT POWER: 19.73 dBm = 0.094 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  32.73 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3710.00	-49.44	8.40	-41.04	H	60.77
5565.00	-50.15	10.63	-39.52	H	59.25
7420.00	-80.00	11.84	-68.16	H	87.89
9275.00	-79.36	13.29	-66.07	H	85.80
11130.00	-46.45	13.50	-32.95	H	52.67
12985.00	-72.44	13.68	-58.76	H	78.49

**Table 6-9. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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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: 19.45 dBm = 0.088 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  32.45 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-55.51	8.42	-47.08	H	66.53
5640.00	-52.43	10.66	-41.77	H	61.22
7520.00	-79.89	11.92	-67.96	H	87.42
9400.00	-79.01	13.24	-65.77	H	85.22
11280.00	-46.83	13.49	-33.34	H	52.79
13160.00	-72.08	13.83	-58.25	H	77.70

**Table 6-10. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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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: 1905.00 MHz  
 MEASURED OUTPUT POWER: 19.23 dBm = 0.084 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  32.23 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3810.00	-51.42	8.55	-42.88	H	62.11
5715.00	-52.46	10.69	-41.77	H	61.00
7620.00	-79.89	12.05	-67.85	H	87.08
9525.00	-78.71	13.20	-65.51	H	84.74
11430.00	-43.98	13.43	-30.55	H	49.78
13335.00	-72.37	14.00	-58.36	H	77.59

**Table 6-11. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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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 with WCC**



OPERATING FREQUENCY: 1855.00 MHz  
 MEASURED OUTPUT POWER: 18.34 dBm = 0.068 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  31.34 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3710.00	-43.55	8.40	-35.15	H	53.49
5565.00	-46.73	10.63	-36.10	H	54.44
7420.00	-80.00	11.84	-68.16	H	86.50
9275.00	-79.36	13.29	-66.07	H	84.41
11130.00	-46.15	13.50	-32.65	H	50.98
12985.00	-72.44	13.68	-58.76	H	77.10

**Table 6-12. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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## 6.5 Band 25 Radiated Spurious Emissions

§2.1053 §24.238(a) RSS-133(6.5.1)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1852.50 MHz  
 MEASURED OUTPUT POWER: 20.33 dBm = 0.108 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  33.33 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3705.00	-48.52	8.40	-40.12	H	60.45
5557.50	-49.81	10.63	-39.18	H	59.51
7410.00	-80.00	11.84	-68.16	H	88.49
9262.50	-48.75	13.29	-35.46	H	55.79
11115.00	-43.41	13.50	-29.91	H	50.23
12967.50	-72.44	13.68	-58.76	H	79.09

**Table 6-13. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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**Band 25 Radiated Spurious Measurements (continued)**  
**§2.1053 §24.238(a) RSS-133(6.5.1)**

**Field Strength of SPURIOUS Radiation**



OPERATING FREQUENCY: 1882.50 MHz  
 MEASURED OUTPUT POWER: 19.15 dBm = 0.082 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  32.15 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3765.00	-53.74	8.44	-45.30	H	64.45
5647.50	-51.66	10.66	-41.00	H	60.15
7530.00	-79.89	11.94	-67.95	H	87.10
9412.50	-78.97	13.23	-65.74	H	84.88
11295.00	-75.76	13.48	-62.28	H	81.42
13177.50	-72.05	13.84	-58.21	H	77.35

**Table 6-14. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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**Band 25 Radiated Spurious Measurements (continued)**  
**§2.1053 §24.238(a) RSS-133(6.5.1)**

**Field Strength of SPURIOUS Radiation**


OPERATING FREQUENCY: 1912.50 MHz  
 MEASURED OUTPUT POWER: 19.37 dBm = 0.087 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  32.37 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3825.00	-48.70	8.57	-40.13	H	59.50
5737.50	-54.04	10.69	-43.35	H	62.72
7650.00	-79.89	12.07	-67.82	H	87.19
9562.50	-53.22	13.20	-40.02	H	59.39
11475.00	-44.11	13.42	-30.70	H	50.07
13387.50	-72.55	14.04	-58.51	H	77.88

**Table 6-15. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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**Band 25 Radiated Spurious Measurements (continued)**  
**§2.1053 §24.238(a) RSS-133(6.5.1)**

**Field Strength of SPURIOUS Radiation with WCC**


OPERATING FREQUENCY: 1852.50 MHz  
 MEASURED OUTPUT POWER: 17.94 dBm = 0.062 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  30.94 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3705.00	-41.58	8.40	-33.18	H	51.12
5557.50	-47.63	10.63	-37.00	H	54.94
7410.00	-80.00	11.84	-68.16	H	86.10
9262.50	-79.36	13.29	-66.07	H	84.01
11115.00	-47.40	13.50	-33.90	H	51.83
12967.50	-72.44	13.68	-58.76	H	76.70

**Table 6-16. 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 QPSK modulation and 1 RB configurations
2. This unit was tested with a battery(Model No: B600BU) which incorporates a RFID antenna. The unit was tested with both the standard back cover, which does not permit wireless charging of the device, as well as the wireless charging cover
3. The worst case test configuration was found in the horizontal setup.

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## 6.6 Band 4 Frequency Stability Measurements

§2.1055 §22.355 §27.5(h) §27.54 RSS-139(6.3)



OPERATING FREQUENCY: 1,732,500,000 Hz  
 CHANNEL: 20175  
 REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (° C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,499,991	-9	-0.000001
100 %		- 30	1,732,500,008	8	0.000000
100 %		- 20	1,732,499,992	-8	0.000000
100 %		- 10	1,732,500,004	4	0.000000
100 %		0	1,732,500,005	5	0.000000
100 %		+ 10	1,732,500,014	14	0.000001
100 %		+ 20	1,732,499,990	-10	-0.000001
100 %		+ 30	1,732,499,985	-15	-0.000001
100 %		+ 40	1,732,499,982	-18	-0.000001
100 %		+ 50	1,732,500,009	9	0.000001
115 %	4.37	+ 20	1,732,499,982	-18	-0.000001
BATT. ENDPOINT	3.50	+ 20	1,732,499,990	-10	-0.000001

**Table 6-17. Frequency Stability Data (Band 4)**

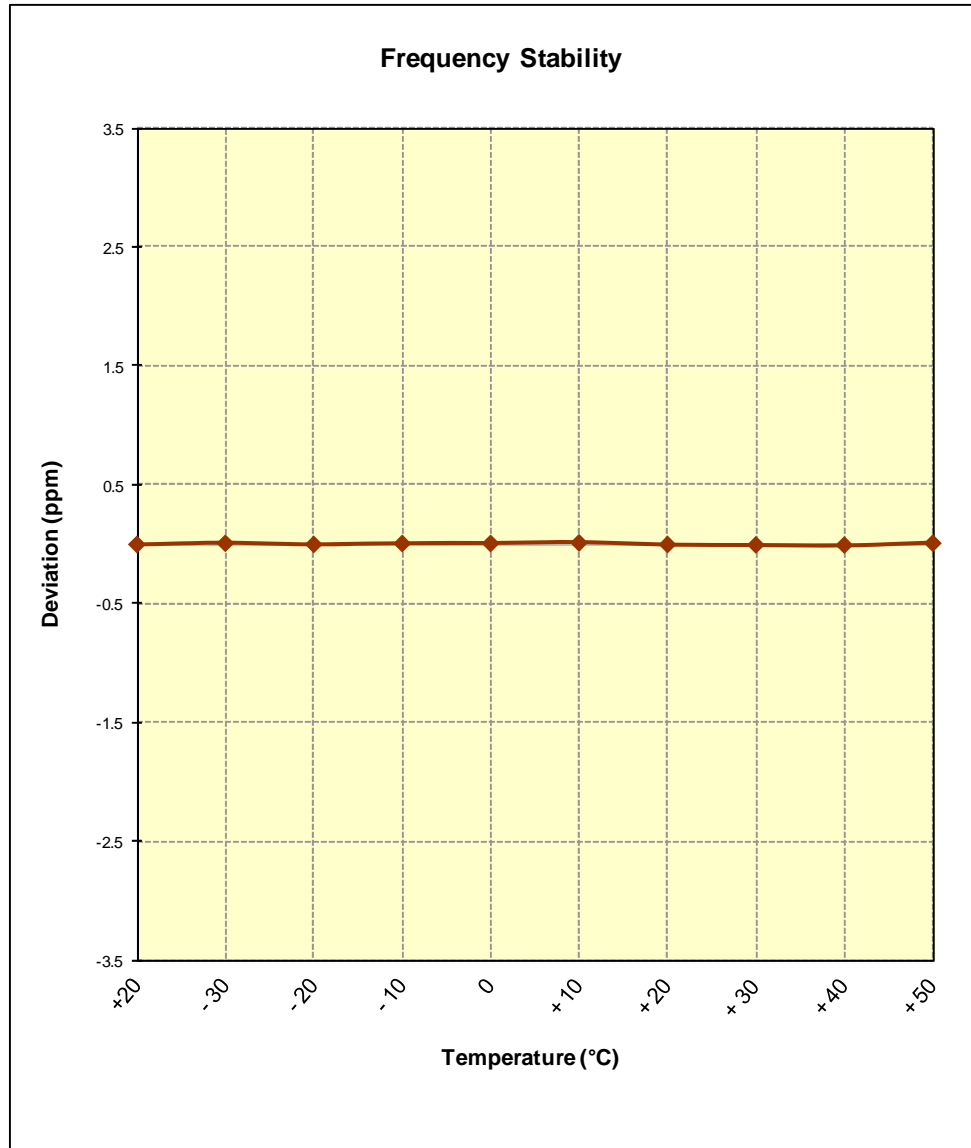
**Note:**

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.



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**Band 4 Frequency Stability Measurements (Cont'd)**

§2.1055 §22.355 §27.5(h) §27.54 RSS-139(6.3)



**Figure 6-1. Frequency Stability Graph (Band 4)**

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## 6.7 Band 2 Frequency Stability Measurements

§2.1055 §22.355 §24.229 §24.235 RSS-133(6.3)



OPERATING FREQUENCY: 1,880,000,000 Hz  
 CHANNEL: 18900  
 REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (° C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,880,000,006	6	0.000000
100 %		- 30	1,880,000,017	17	0.000001
100 %		- 20	1,879,999,990	-10	-0.000001
100 %		- 10	1,880,000,000	0	0.000000
100 %		0	1,880,000,010	10	0.000001
100 %		+ 10	1,879,999,999	-1	0.000000
100 %		+ 20	1,879,999,981	-19	-0.000001
100 %		+ 30	1,880,000,010	10	0.000001
100 %		+ 40	1,879,999,986	-14	-0.000001
100 %		+ 50	1,880,000,014	14	0.000001
115 %	4.37	+ 20	1,879,999,994	-6	0.000000
BATT. ENDPOINT	3.50	+ 20	1,880,000,000	0	0.000000

**Table 6-18. Frequency Stability Data (Band 2)**

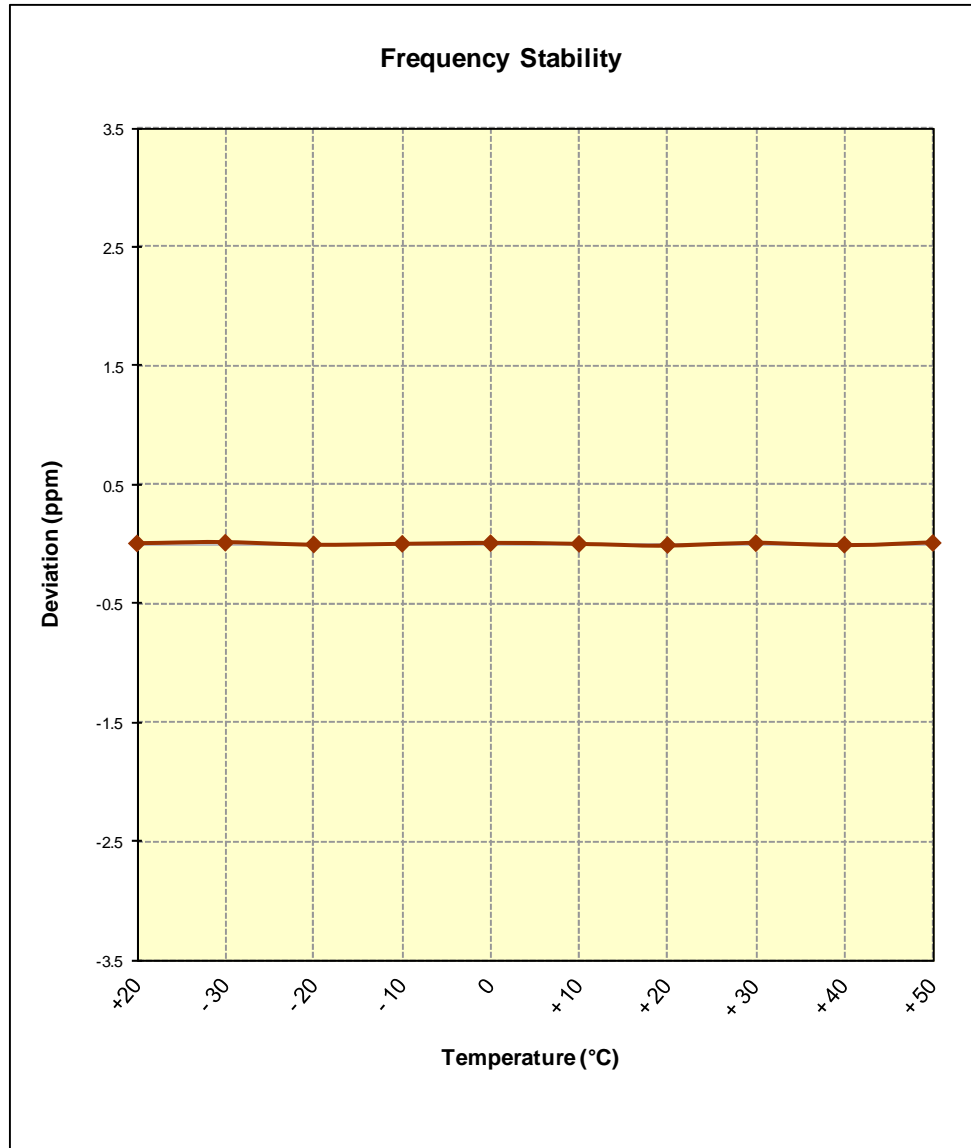
**Note:**

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: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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**Band 2 Frequency Stability Measurements (Cont'd)**

§2.1055 §22.355 §22.229 §24.235 RSS-133(6.3)



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

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## 6.8 Band 25 Frequency Stability Measurements

§2.1055 §22.355 §24.229 §24.235 RSS-133(6.3)

OPERATING FREQUENCY: 1,882,500,000 Hz

CHANNEL: 26365



REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (° C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,882,499,998	-2	0.000000
100 %		- 30	1,882,499,997	-3	0.000000
100 %		- 20	1,882,499,980	-20	-0.000001
100 %		- 10	1,882,499,990	-10	-0.000001
100 %		0	1,882,499,998	-2	0.000000
100 %		+ 10	1,882,499,989	-11	-0.000001
100 %		+ 20	1,882,499,987	-13	-0.000001
100 %		+ 30	1,882,500,005	5	0.000000
100 %		+ 40	1,882,500,017	17	0.000001
100 %		+ 50	1,882,500,001	1	0.000000
115 %	4.37	+ 20	1,882,500,011	11	0.000001
BATT. ENDPOINT	3.50	+ 20	1,882,500,000	0	0.000000

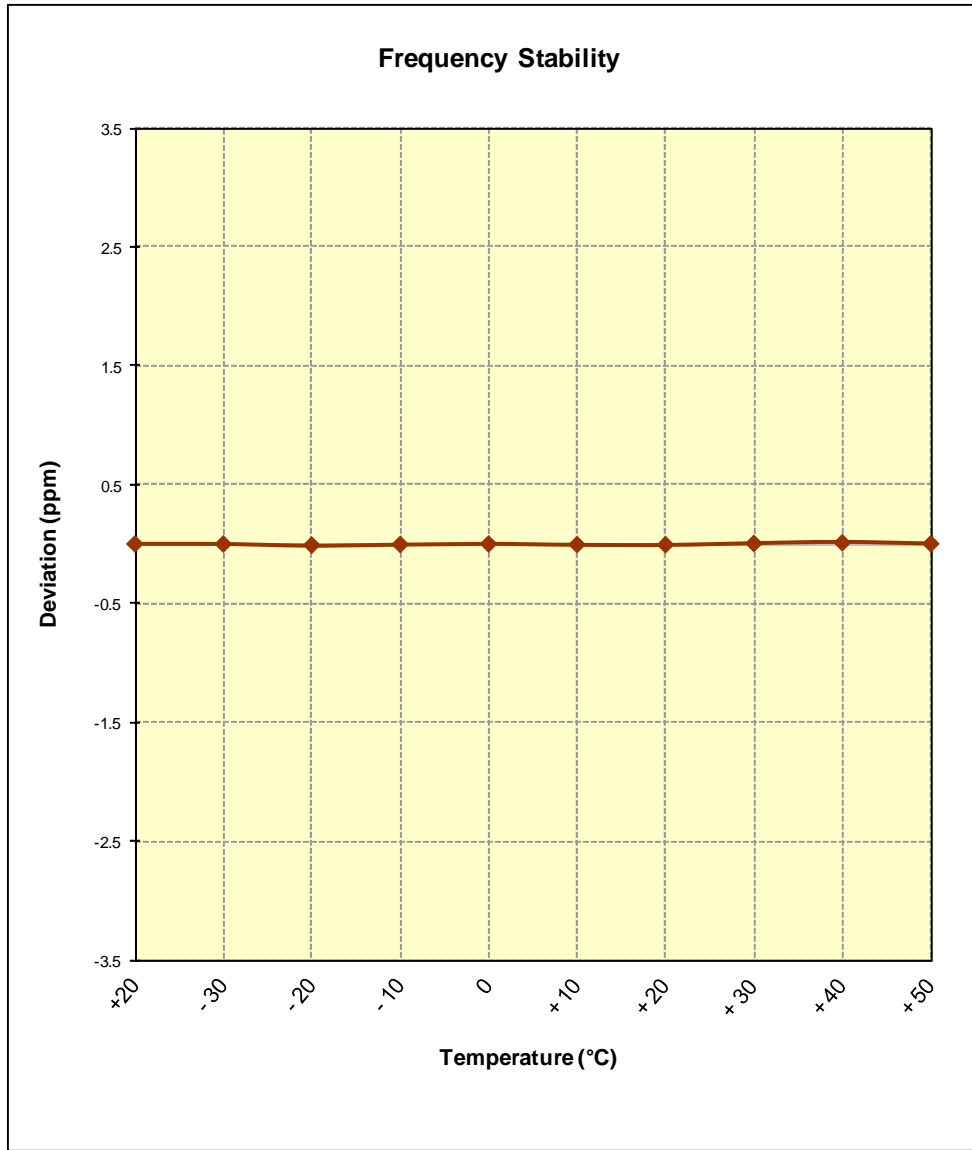
Table 6-19. Frequency Stability Data (Band 25)

**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 25 Frequency Stability Measurements (Cont'd)**  
**§2.1055 §22.355 §24.229 §24.235 RSS-133(6.3)**

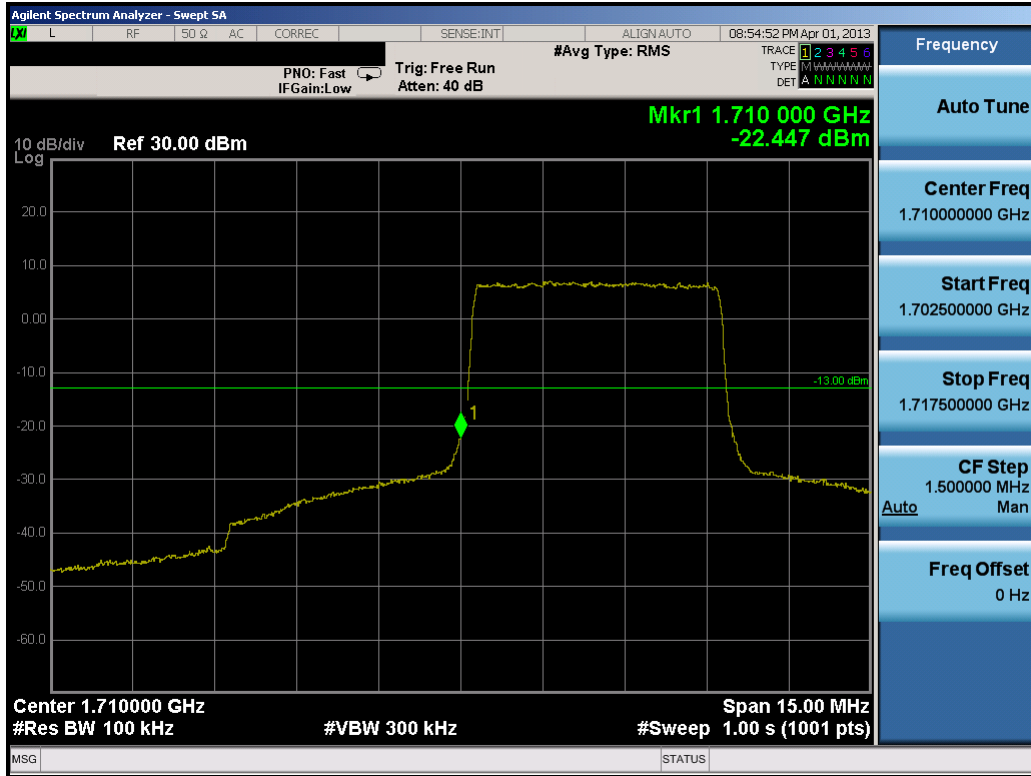


**Figure 6-3. Frequency Stability Graph (Band 25)**

<b>FCC ID:</b> A3LSCHR970C		<b>FCC Pt. 24 &amp; 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1303260544.A3L	<b>Test Dates:</b> 3/27-4/2/2013	<b>EUT Type:</b> Portable Handset	Page 33 of 79	

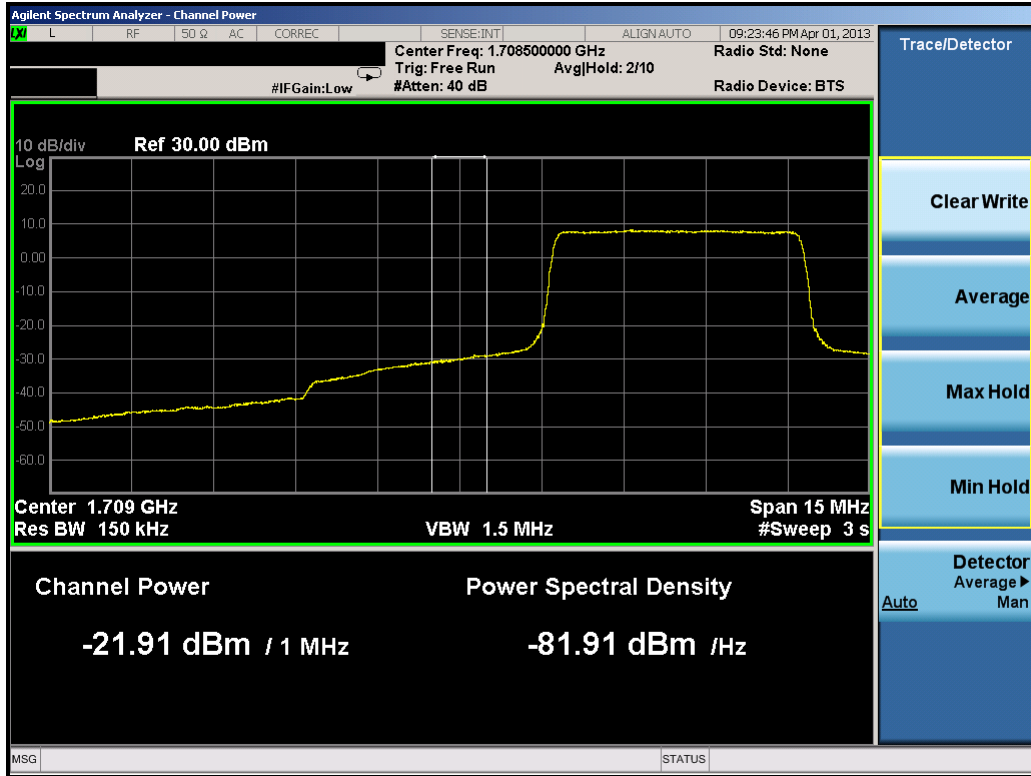
## 7.0 BAND 4 PLOTS OF EMISSIONS

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

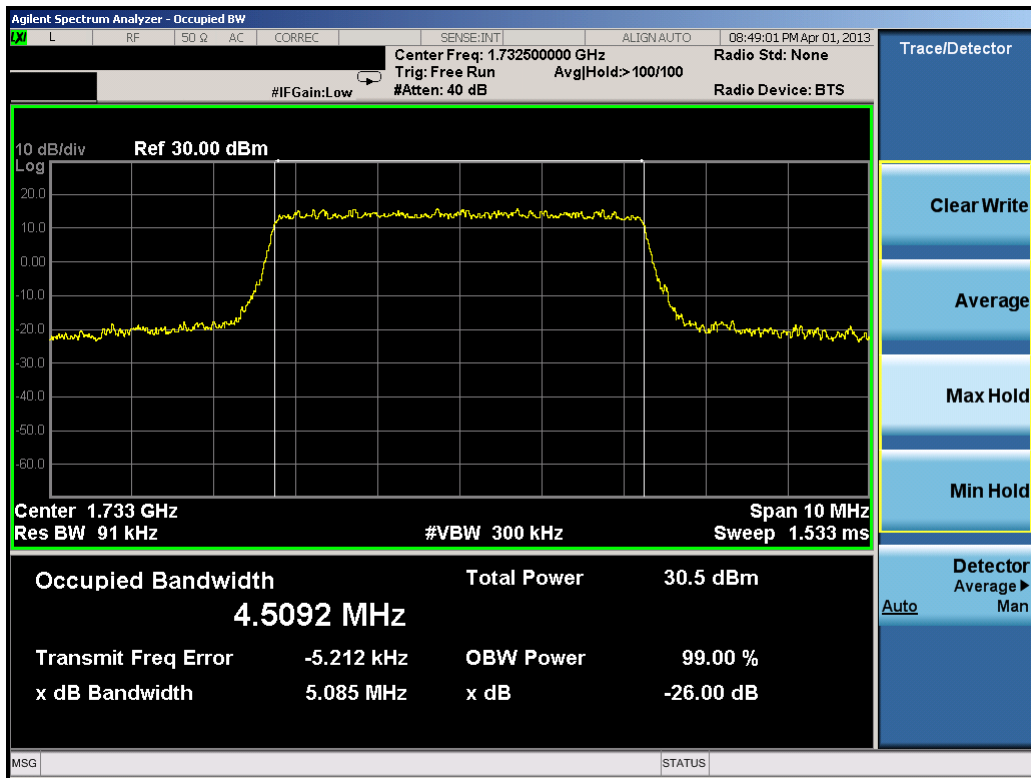


**Plot 7-1. Lower Band Edge Plot (5.0MHz QPSK – RB Size 25)**

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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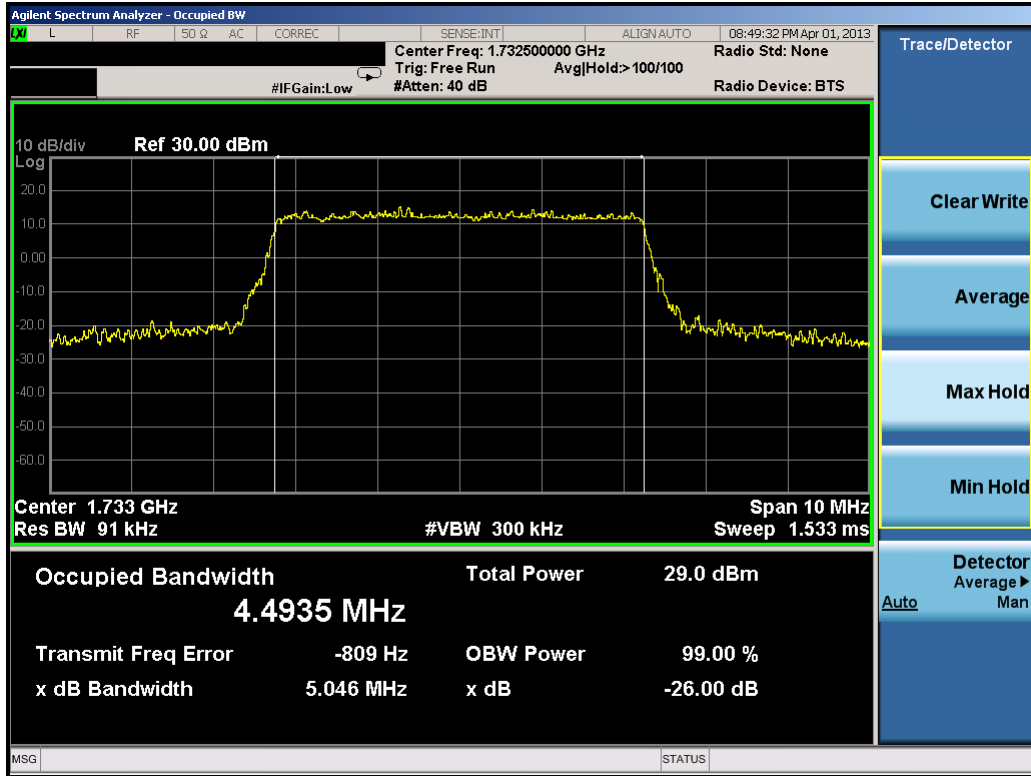


Plot 7-2. Lower Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

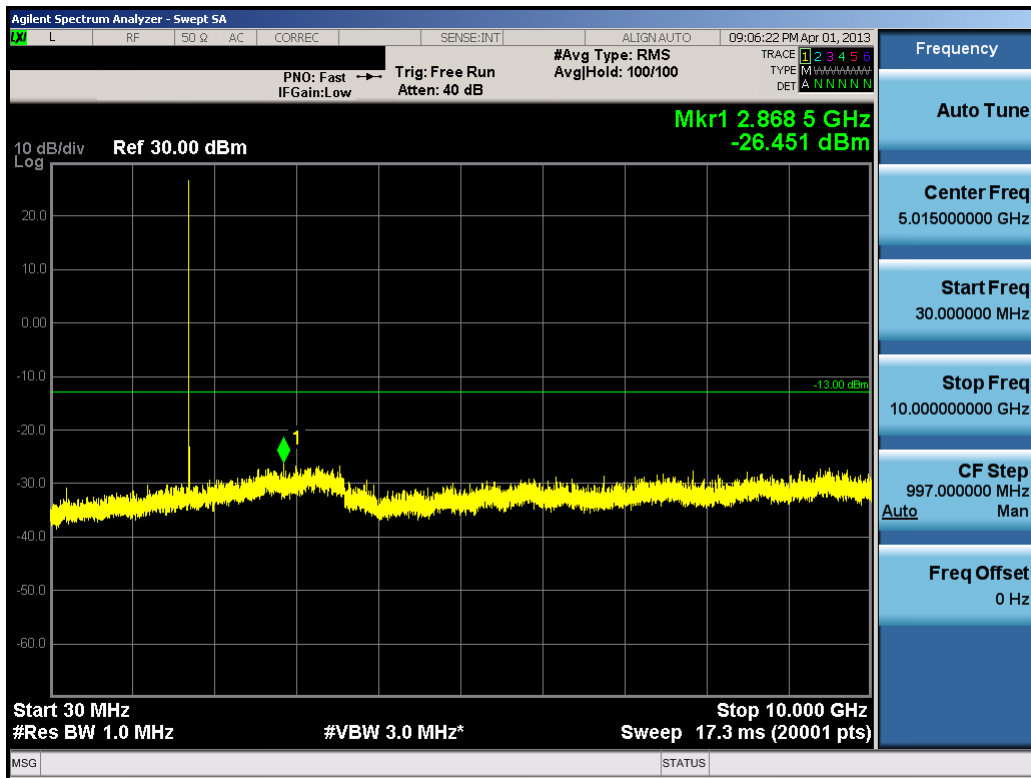


Plot 7-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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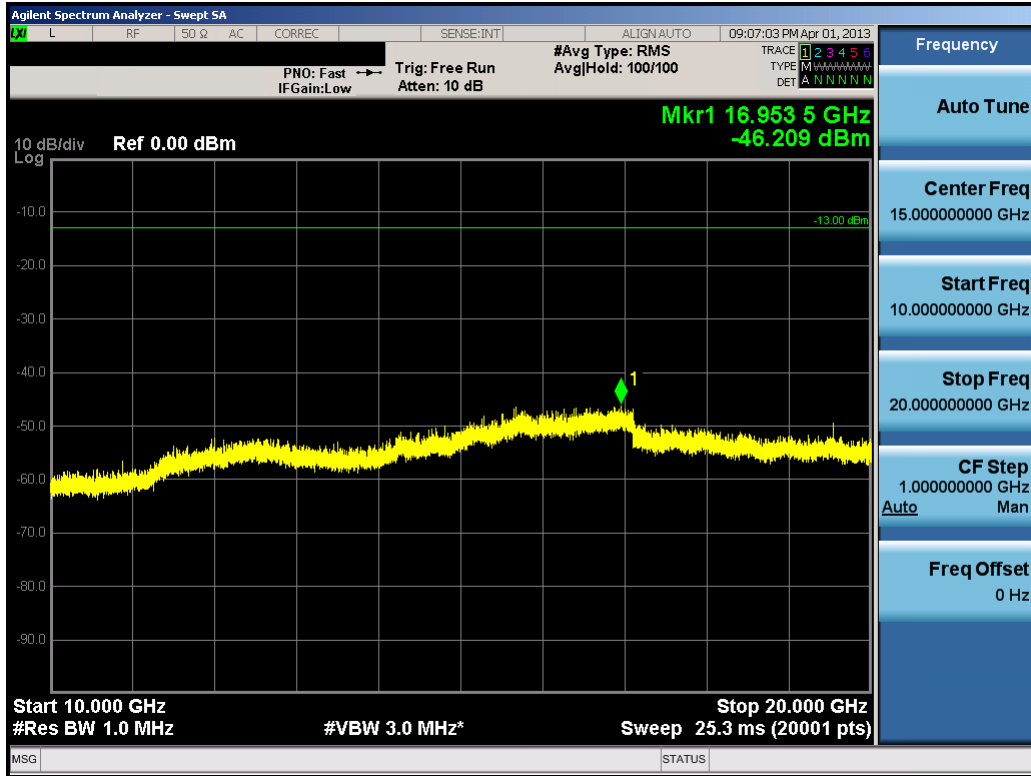


Plot 7-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

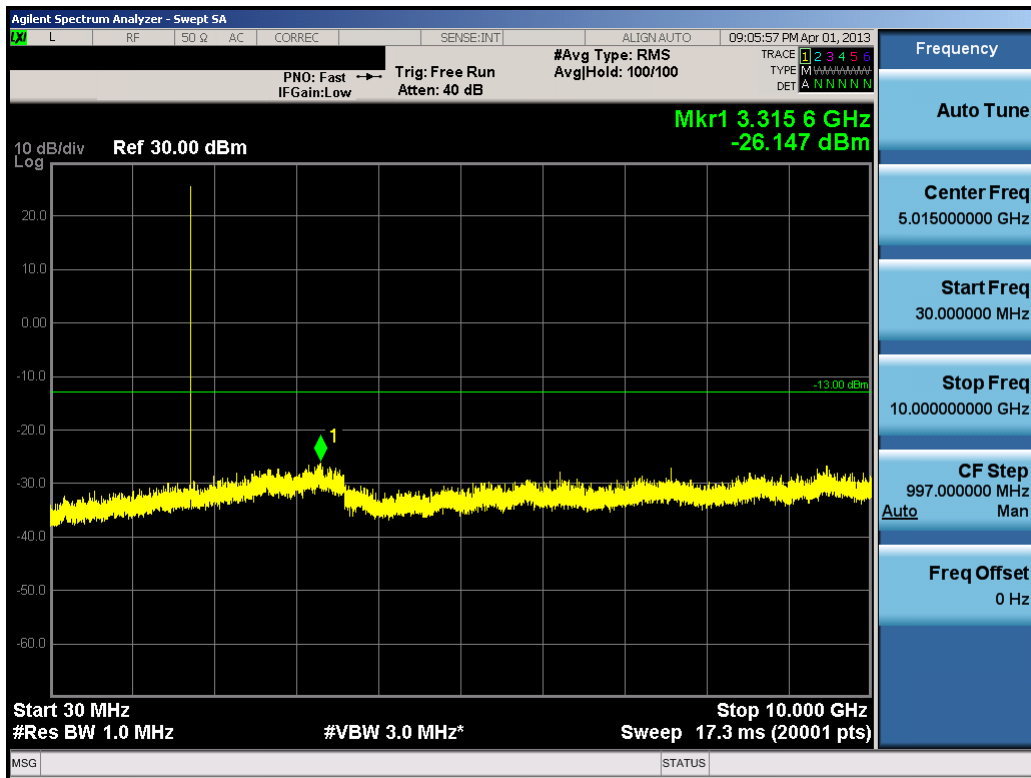


Plot 7-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
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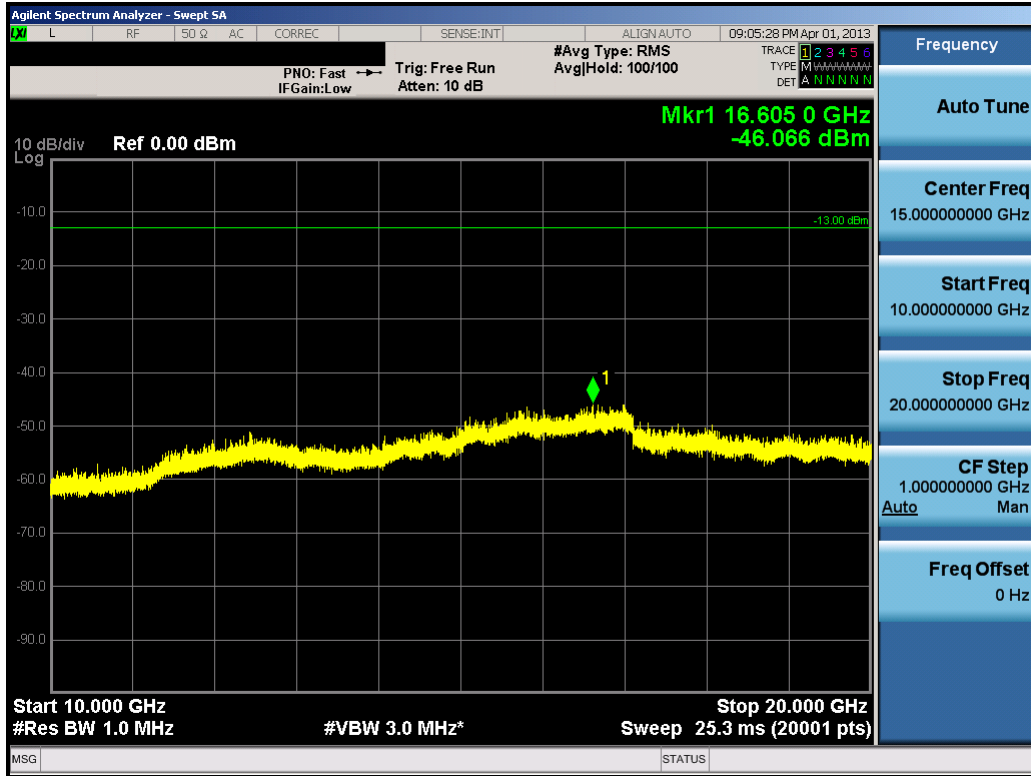


Plot 7-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

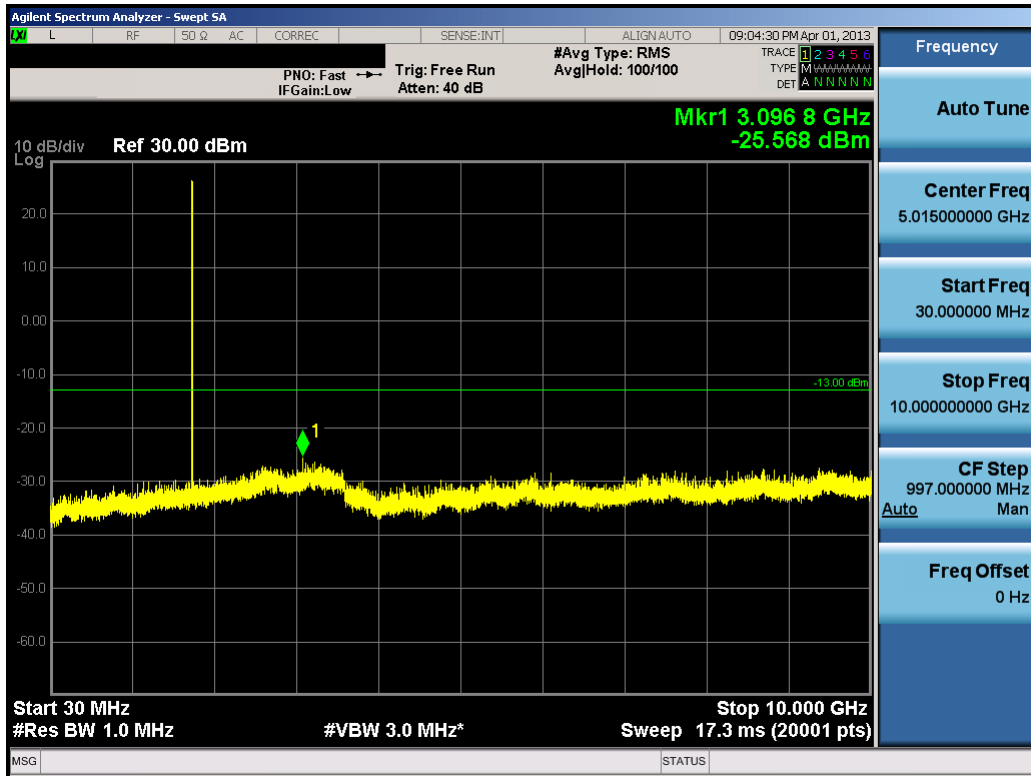


Plot 7-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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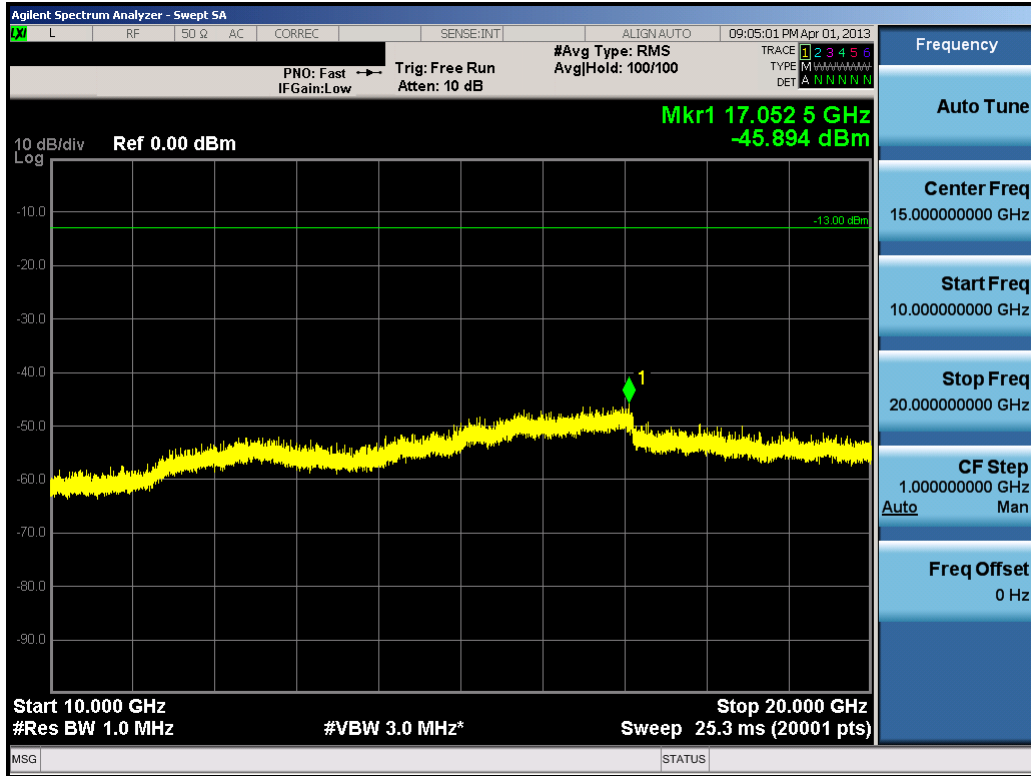


Plot 7-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-9. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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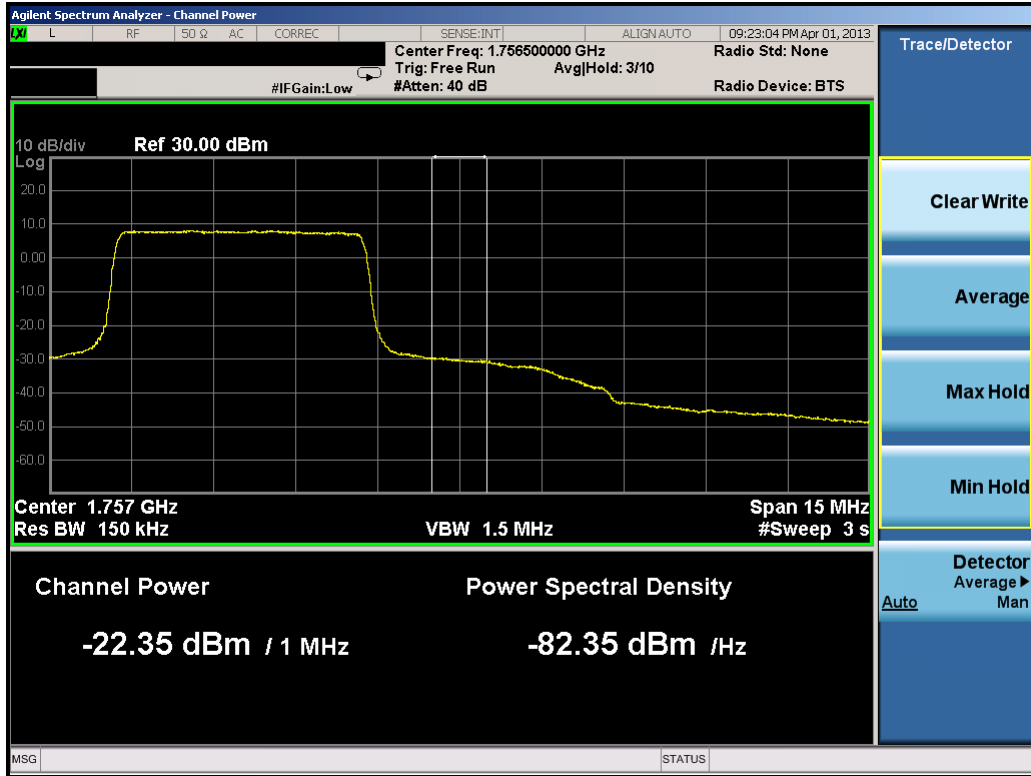


Plot 7-10. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

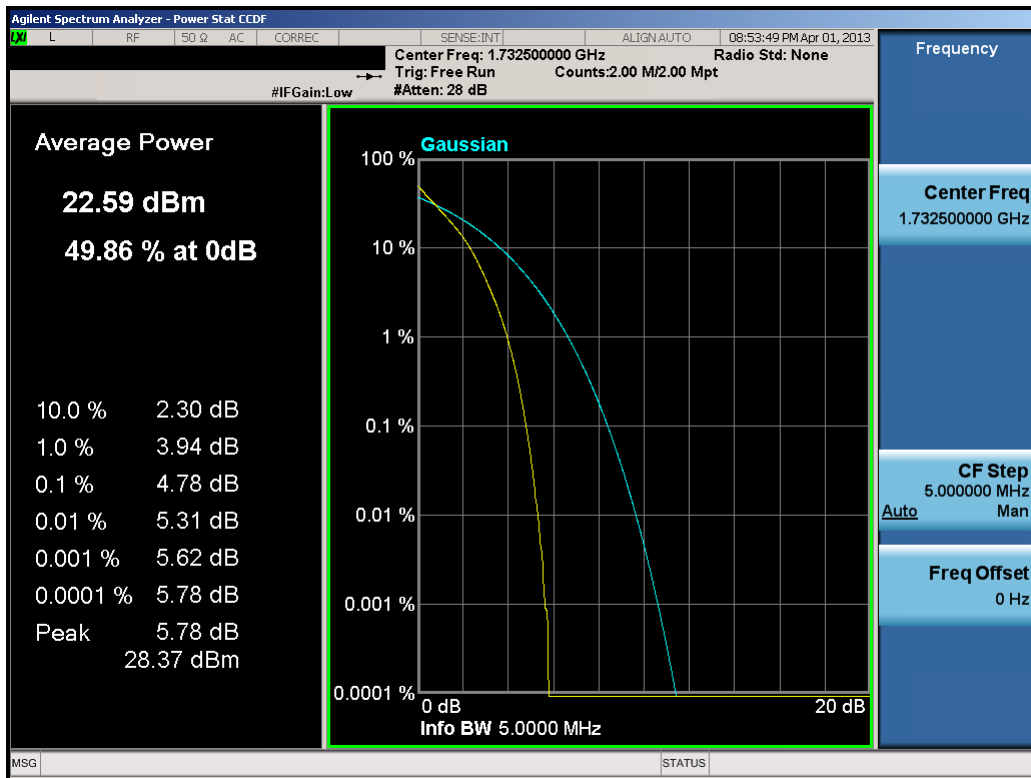


Plot 7-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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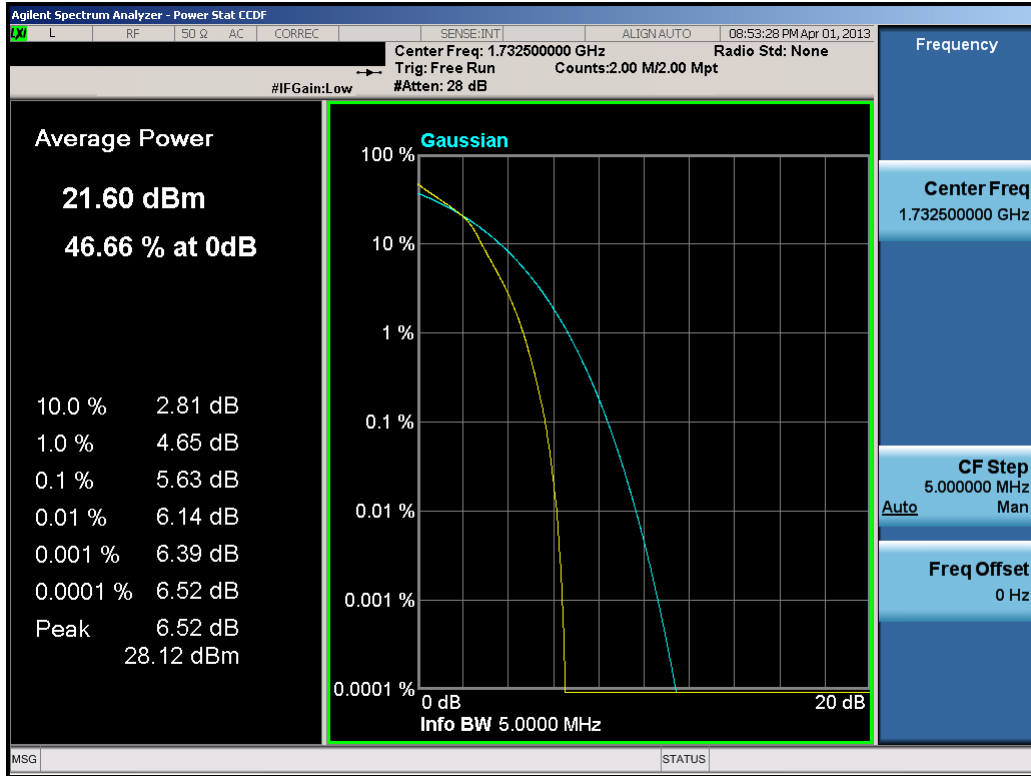


Plot 7-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)



Plot 7-13. PAR Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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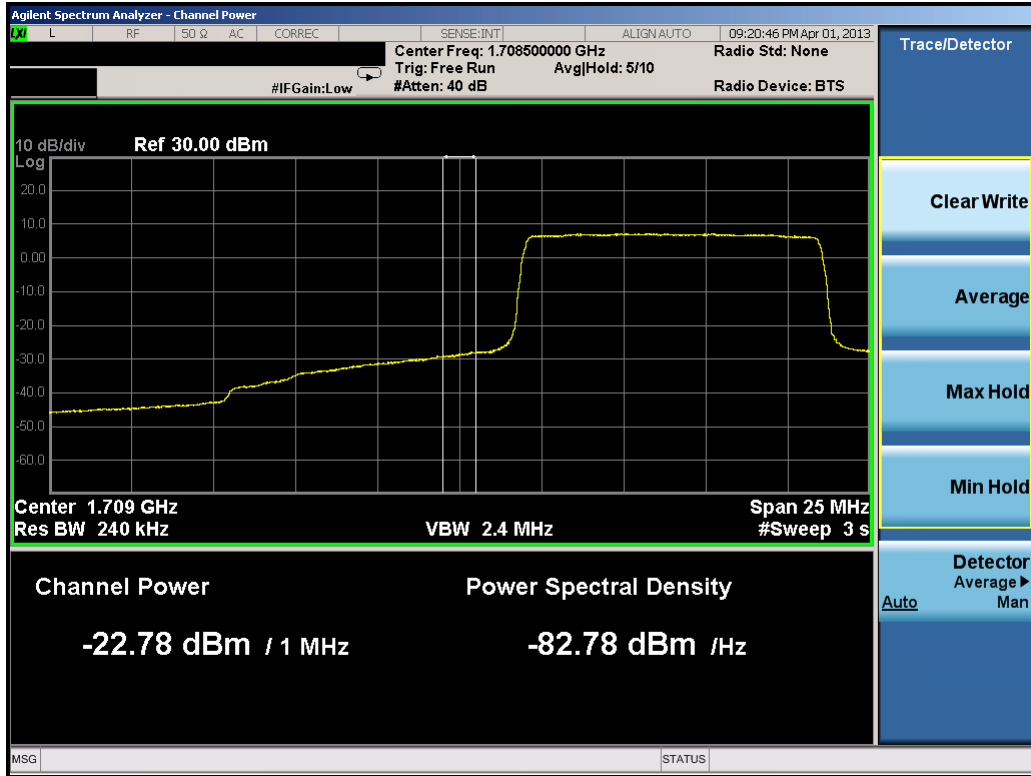


Plot 7-14. PAR Plot (5.0MHz 16-QAM – RB Size 25)

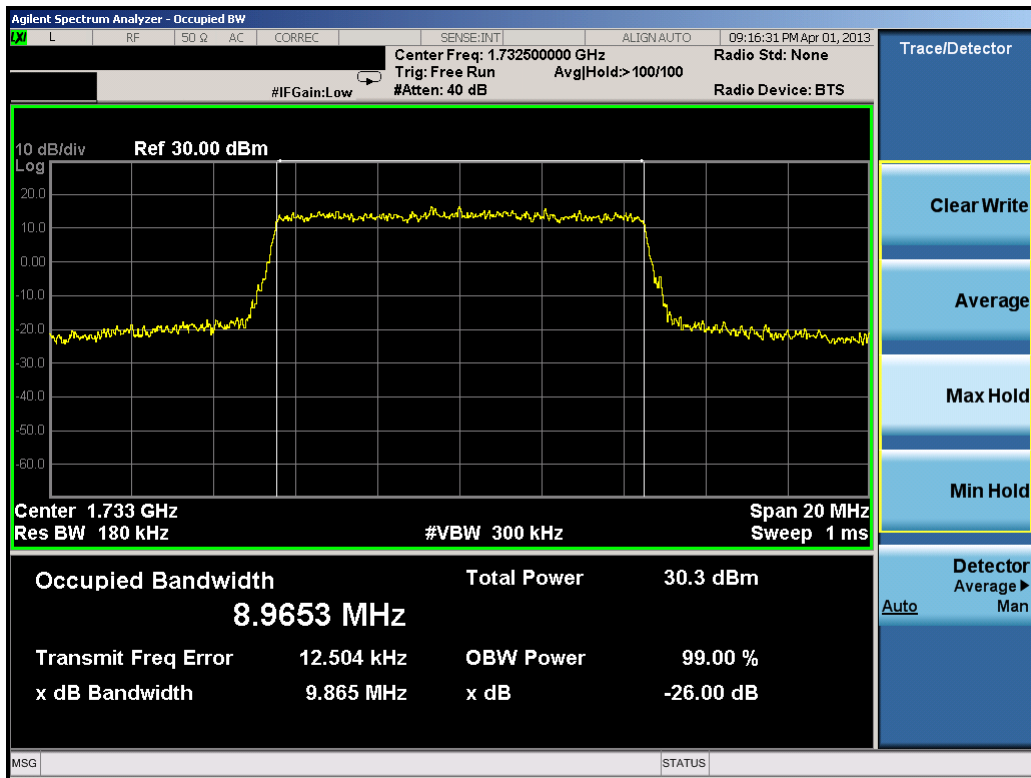


Plot 7-15. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 41 of 79

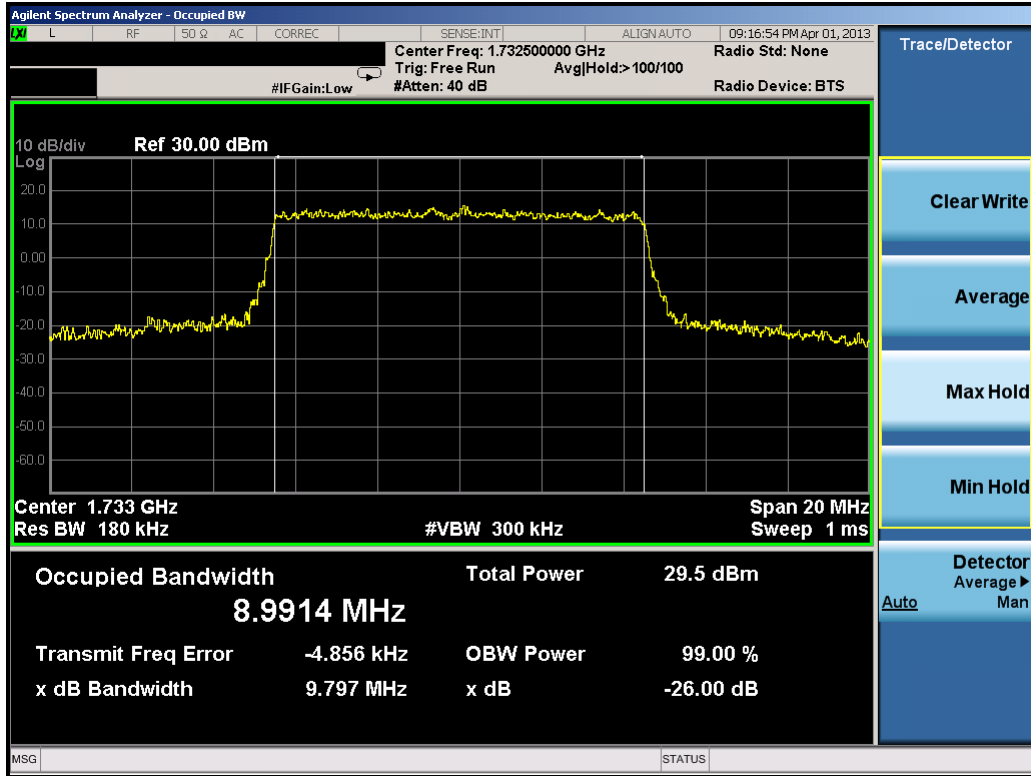


Plot 7-16. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

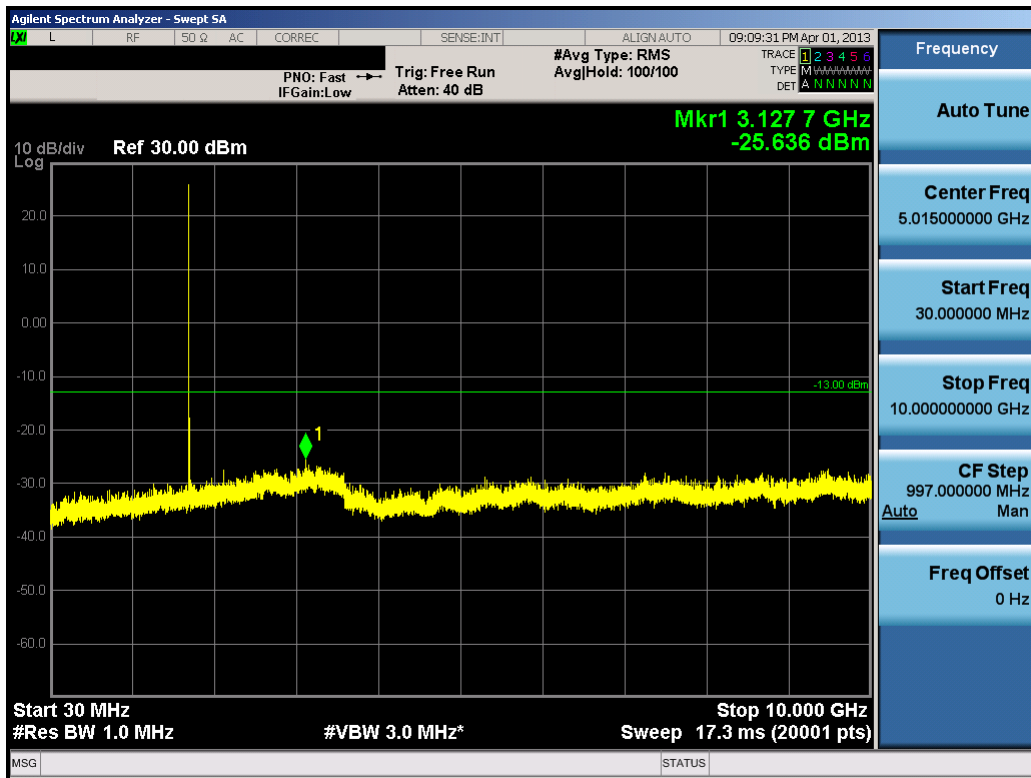


Plot 7-17. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 42 of 79

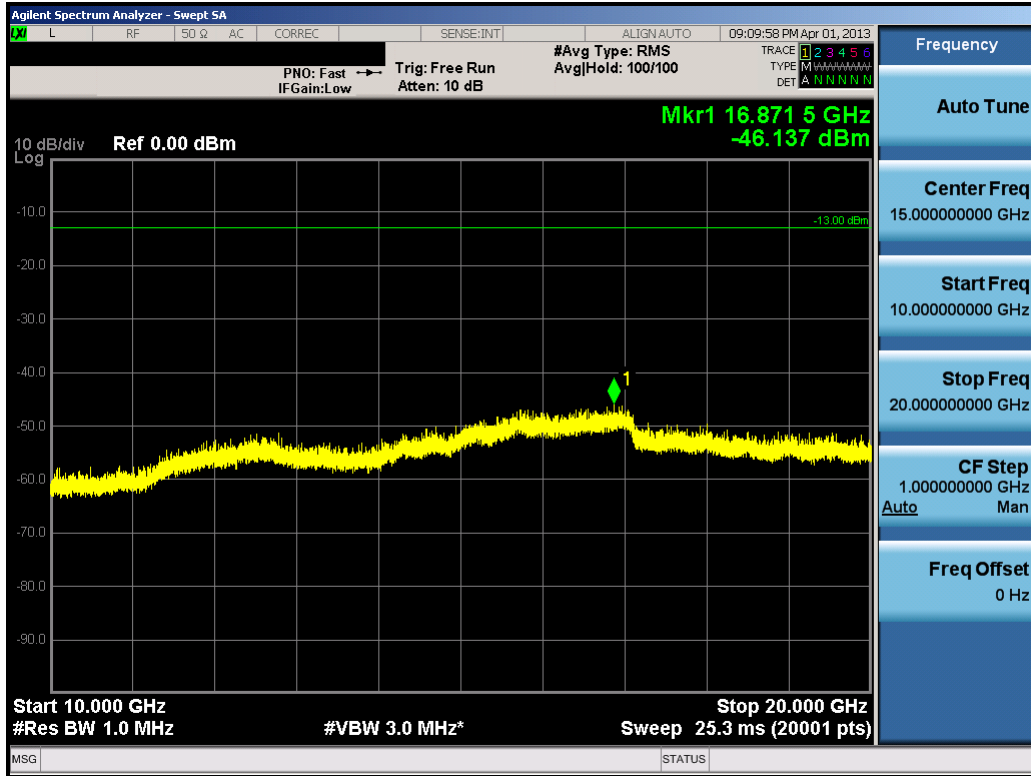


Plot 7-18. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

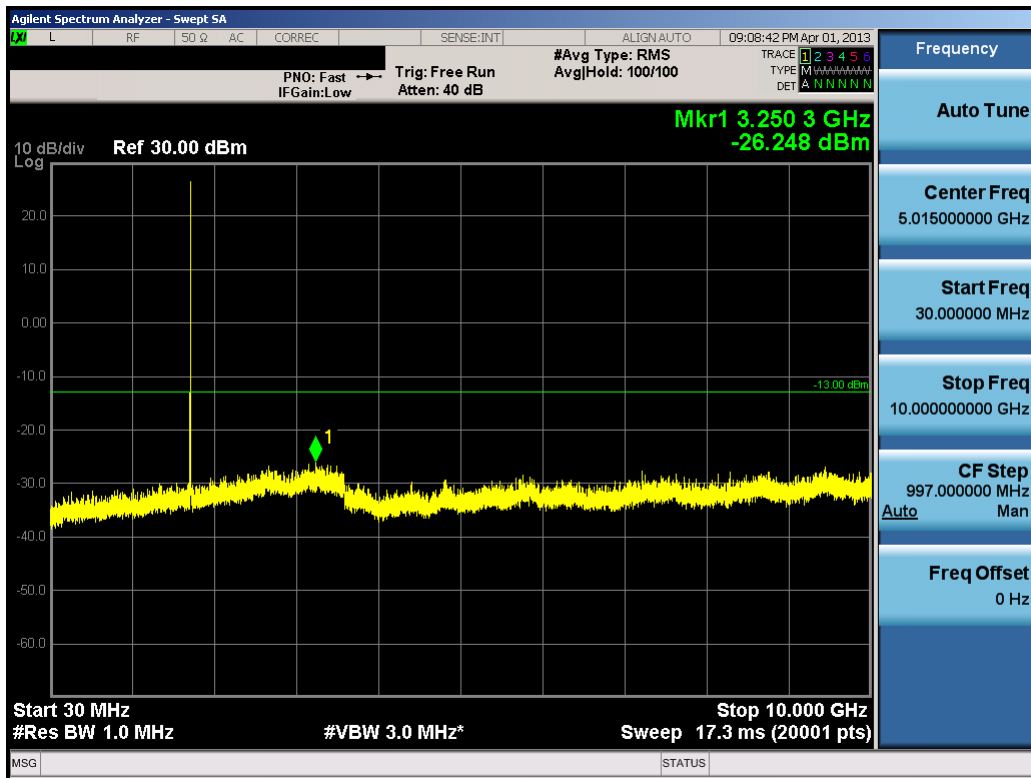


Plot 7-19. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 43 of 79

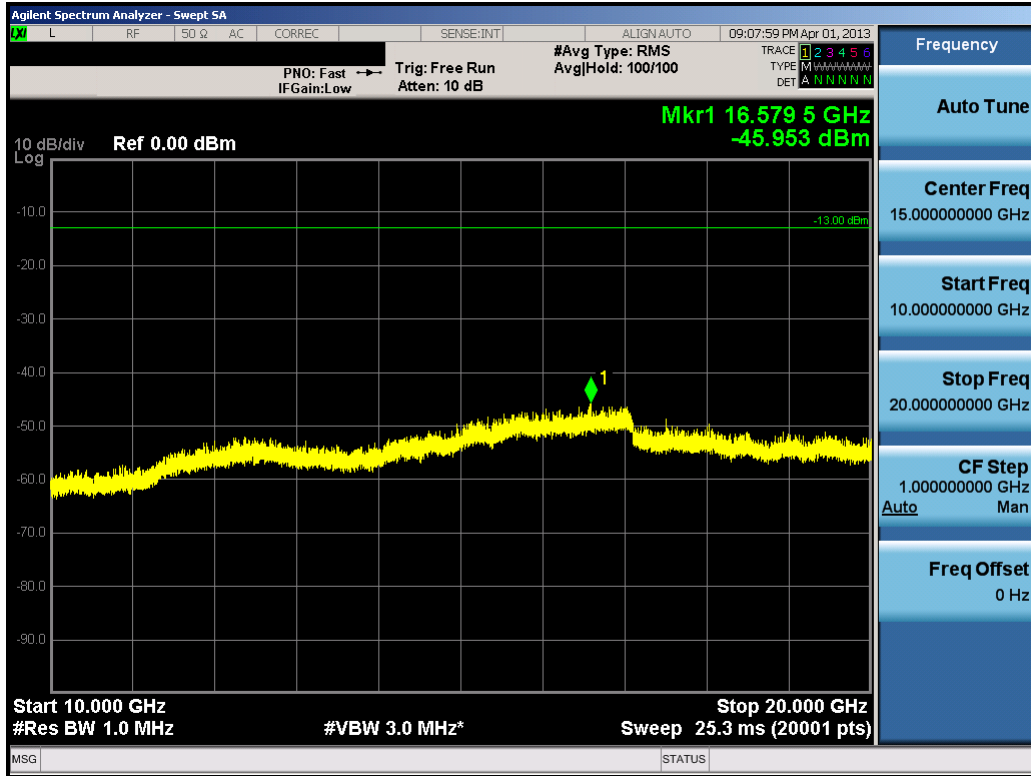


Plot 7-20. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

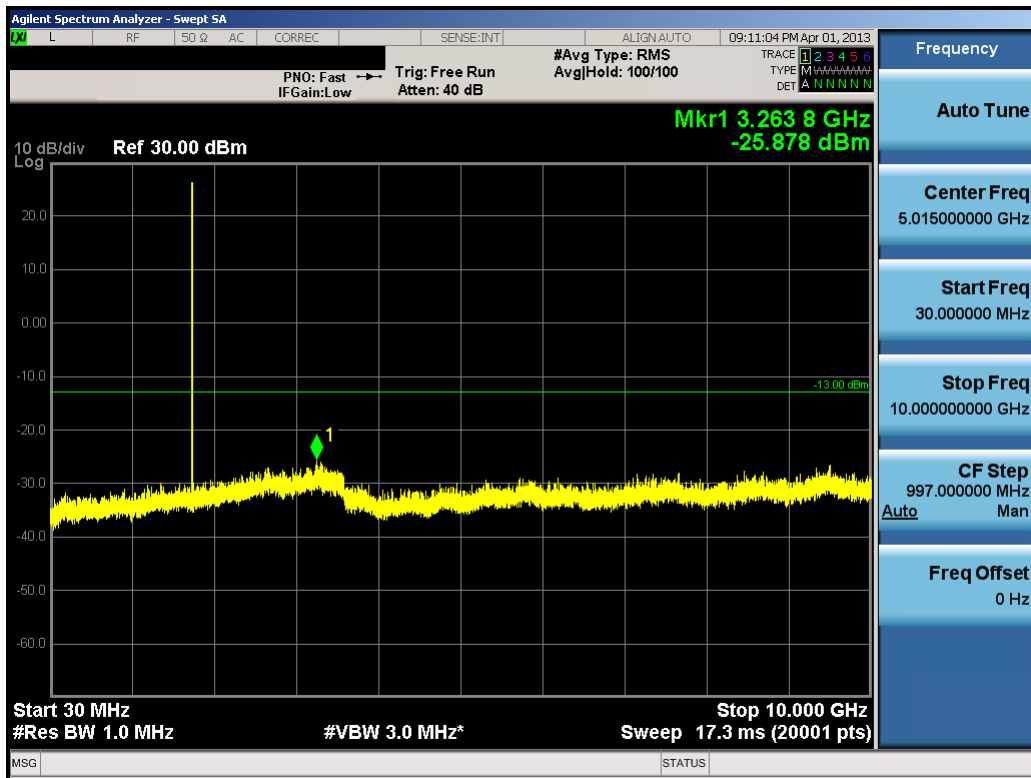


Plot 7-21. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 44 of 79

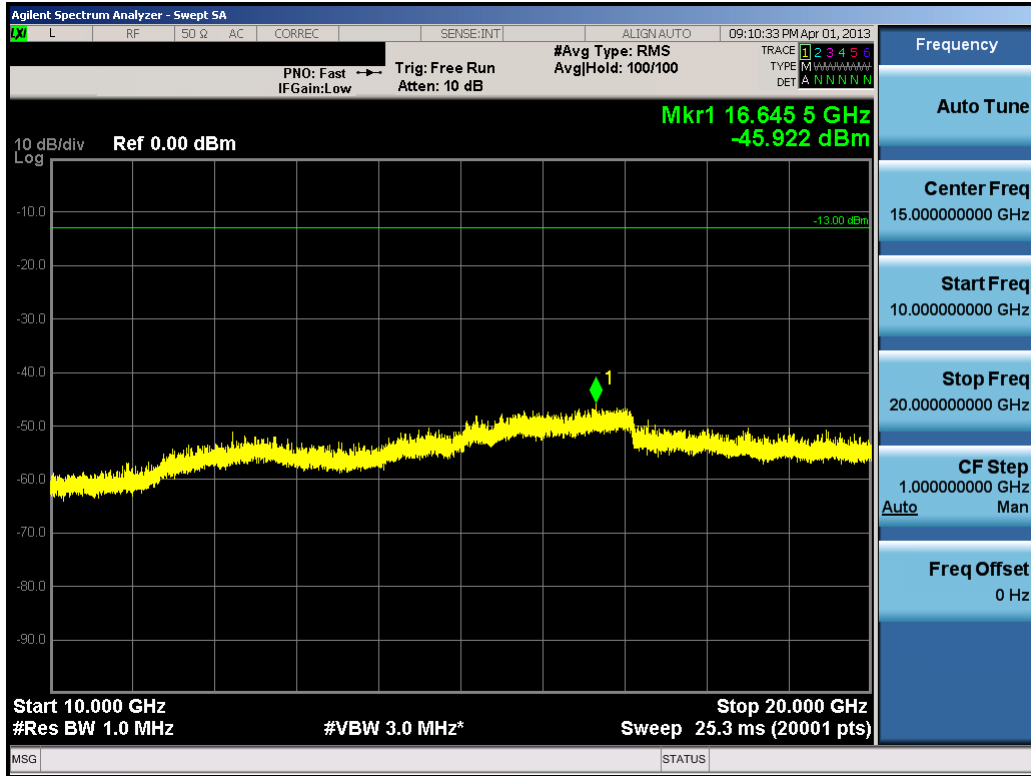


Plot 7-22. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-23. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 45 of 79

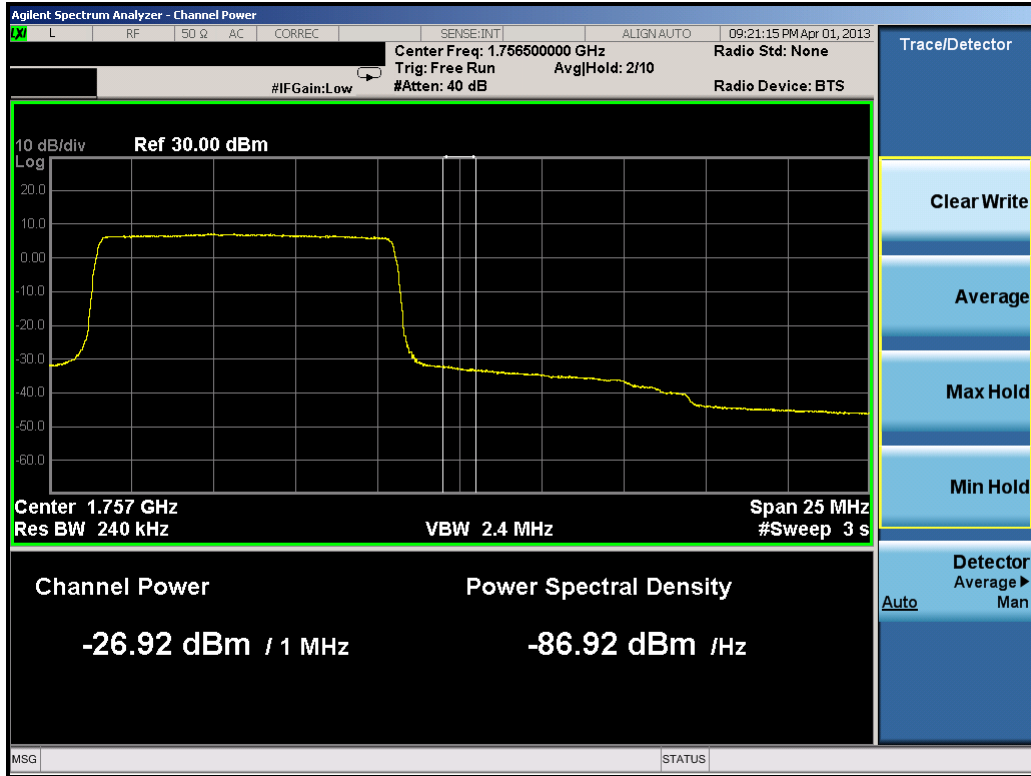


Plot 7-24. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

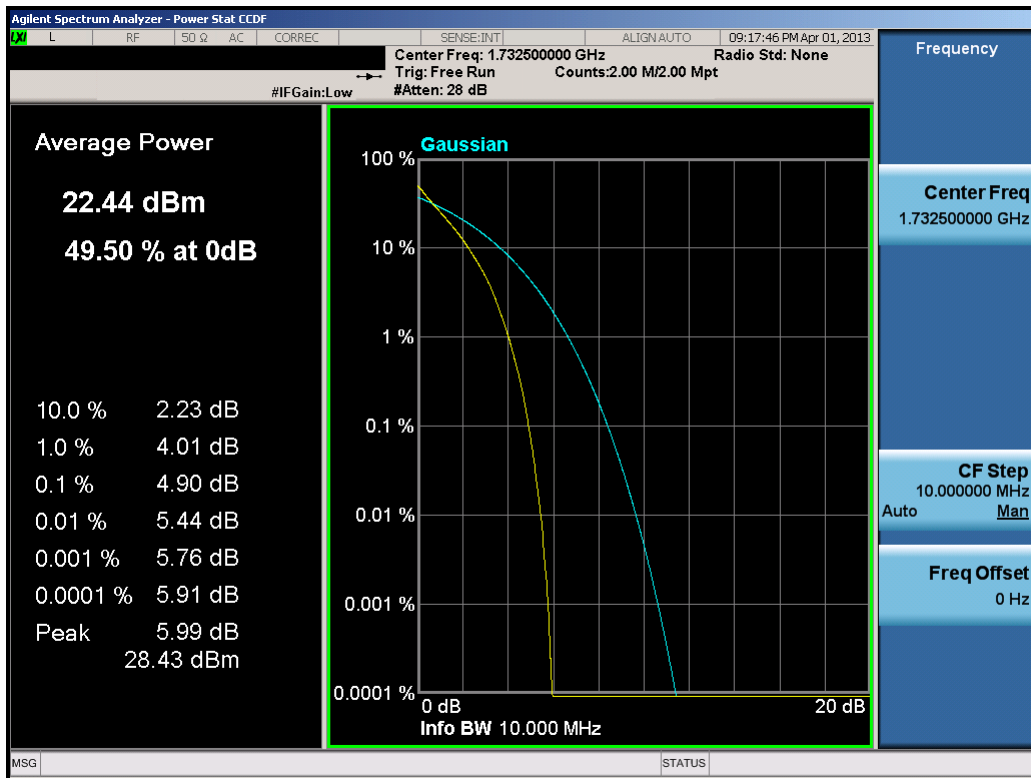


Plot 7-25. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 46 of 79

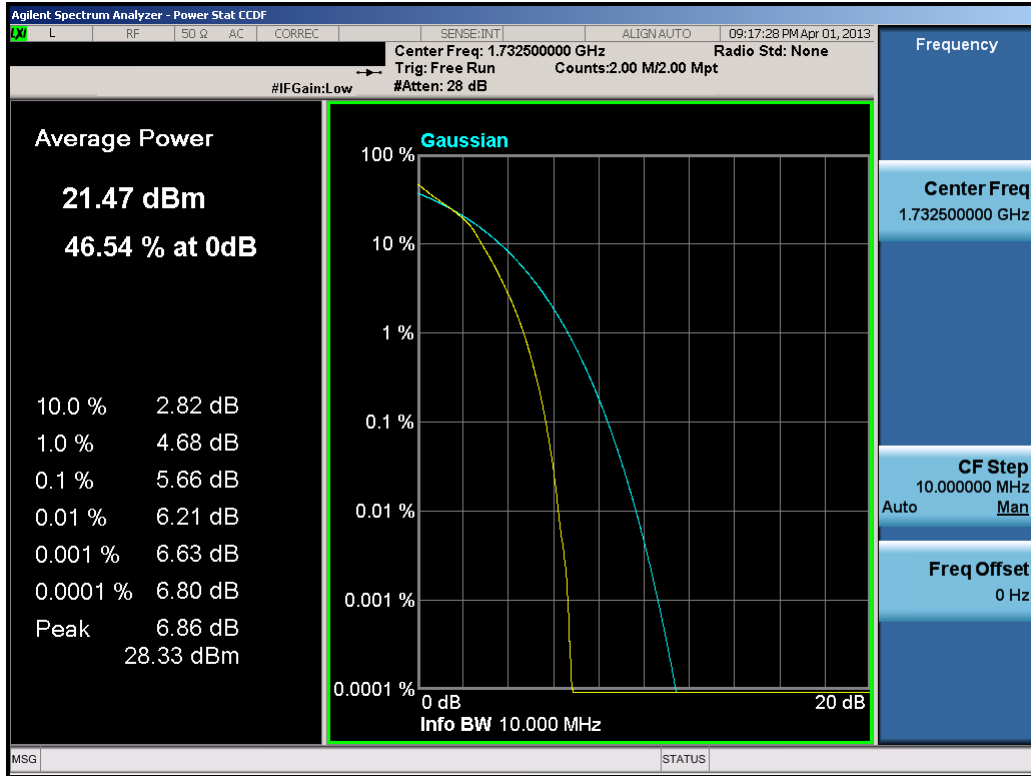


Plot 7-26. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)



Plot 7-27. PAR Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 47 of 79

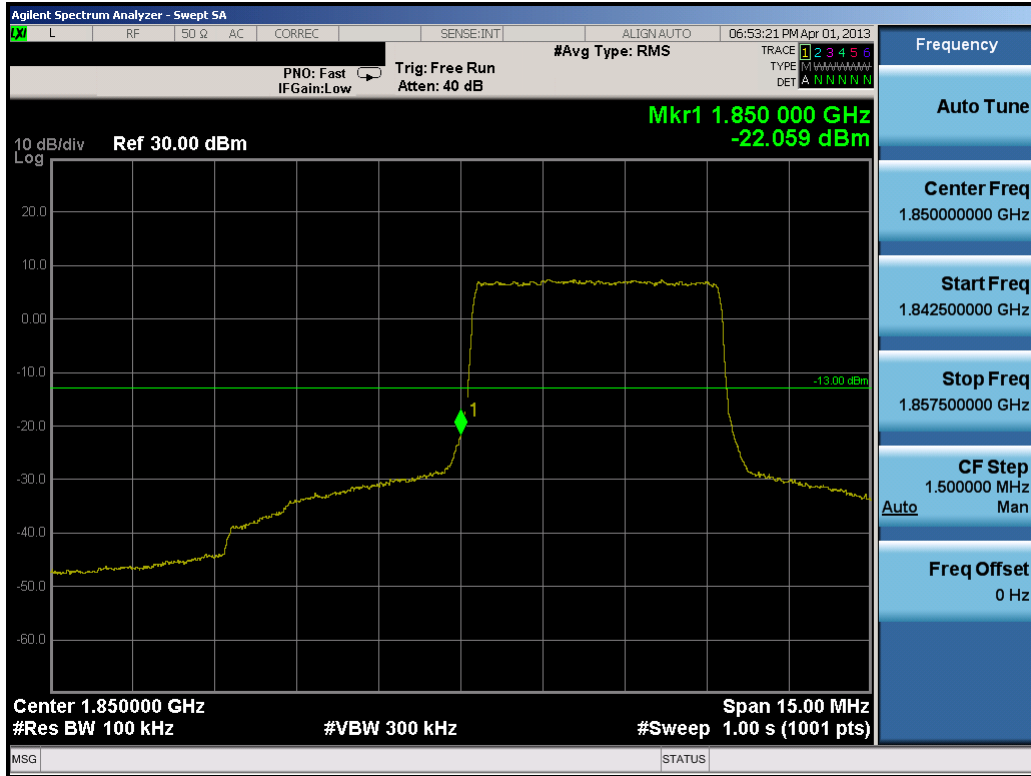


**Plot 7-28. PAR Plot (10.0MHz 16-QAM – RB Size 50)**

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 48 of 79

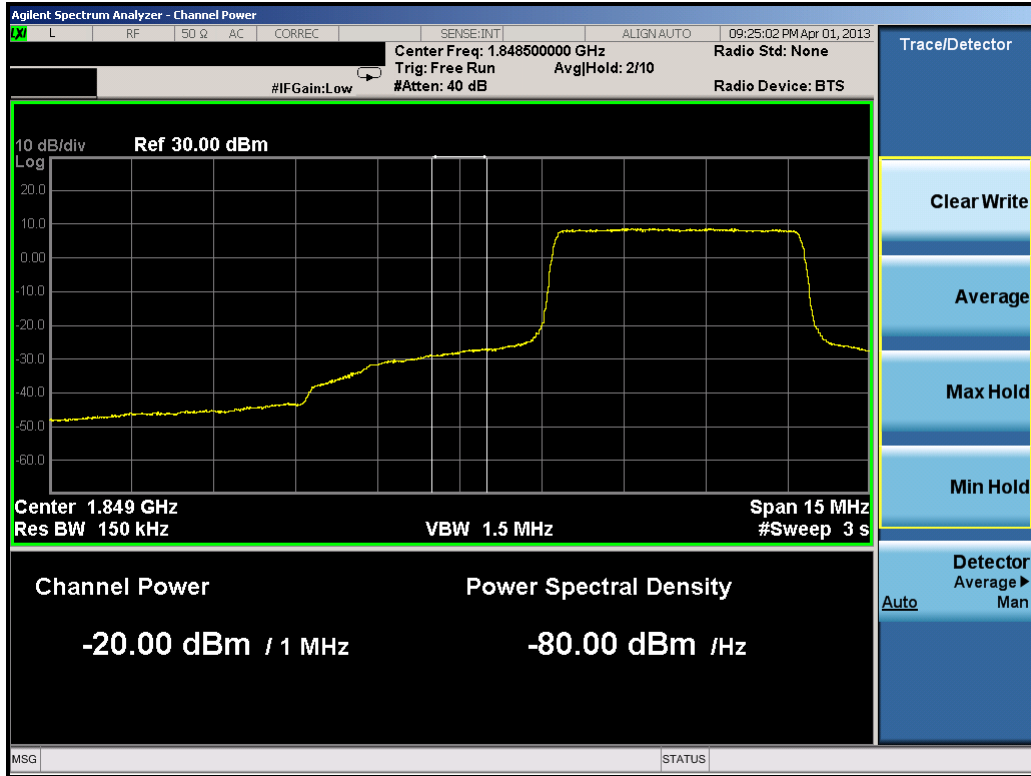
## 8.0 BAND 2 PLOTS OF EMISSIONS

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

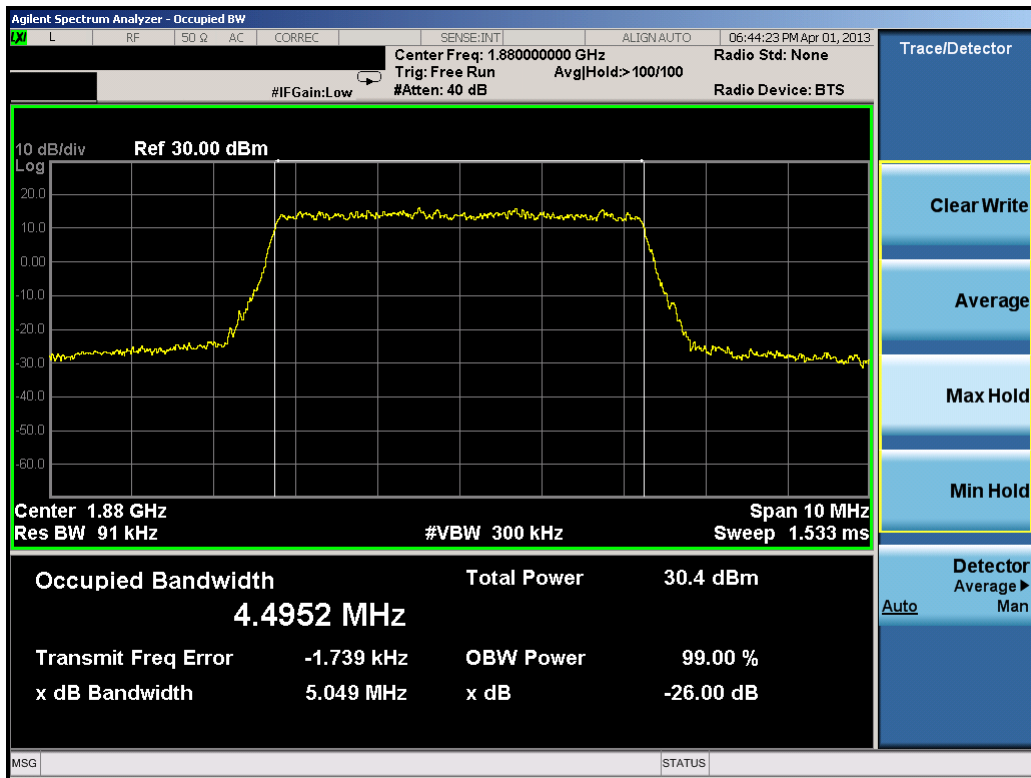


**Plot 8-1. Lower Band Edge Plot (5.0MHz QPSK – RB Size 25)**

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 49 of 79

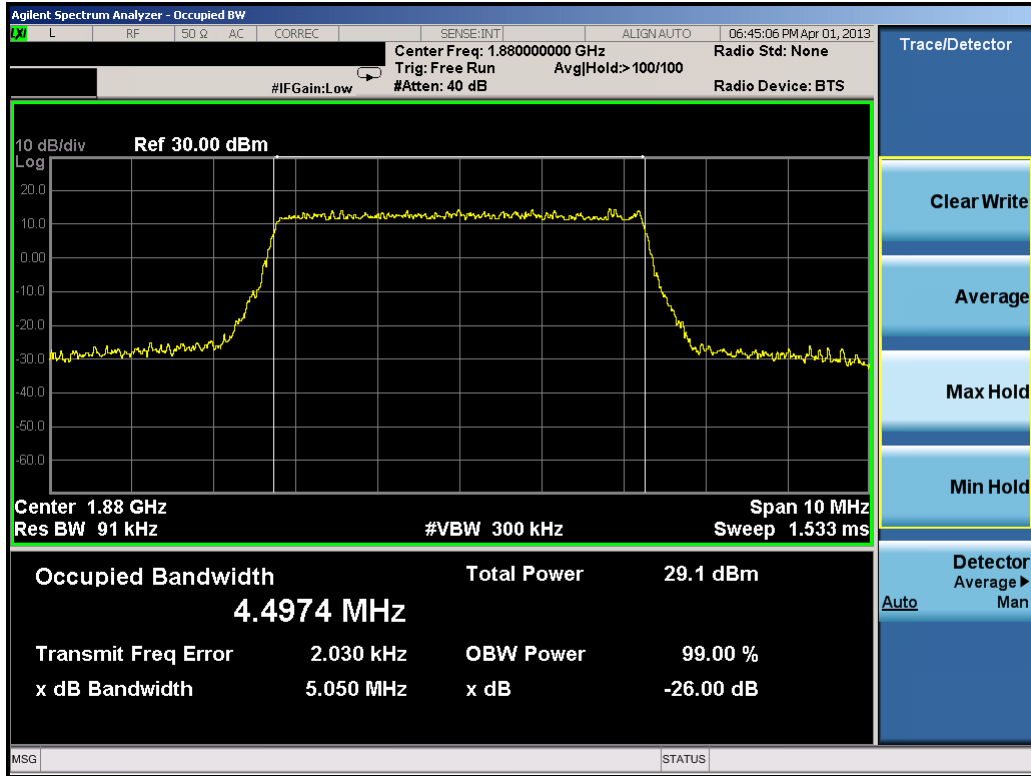


Plot 8-2. Lower Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

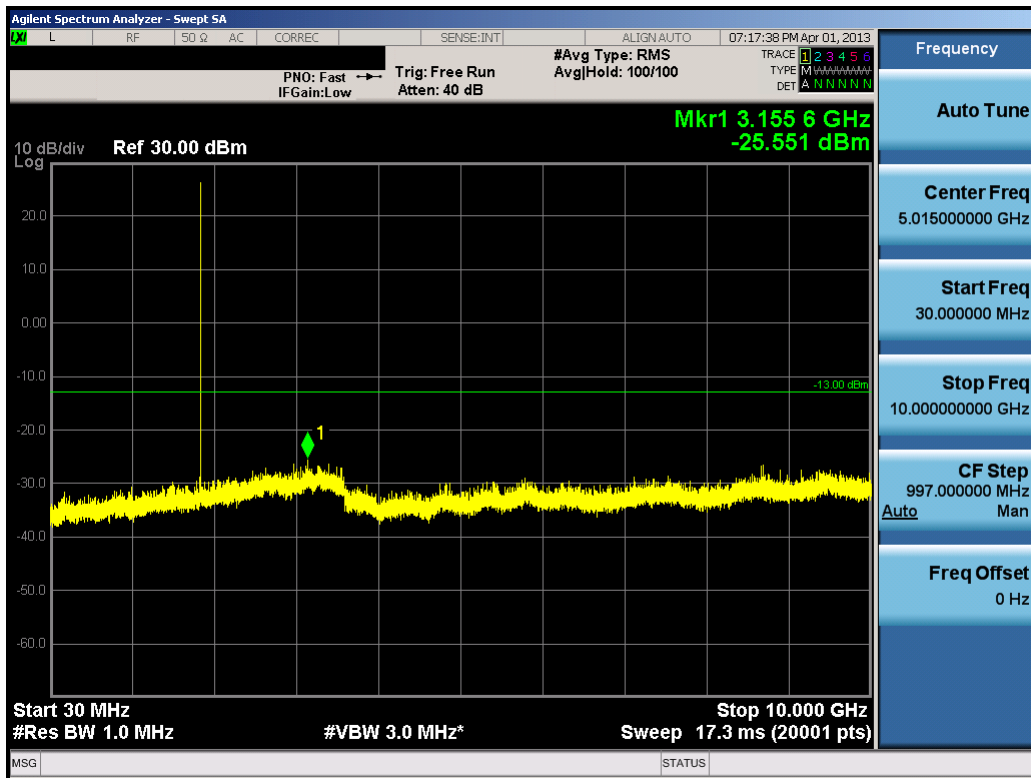


Plot 8-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 50 of 79

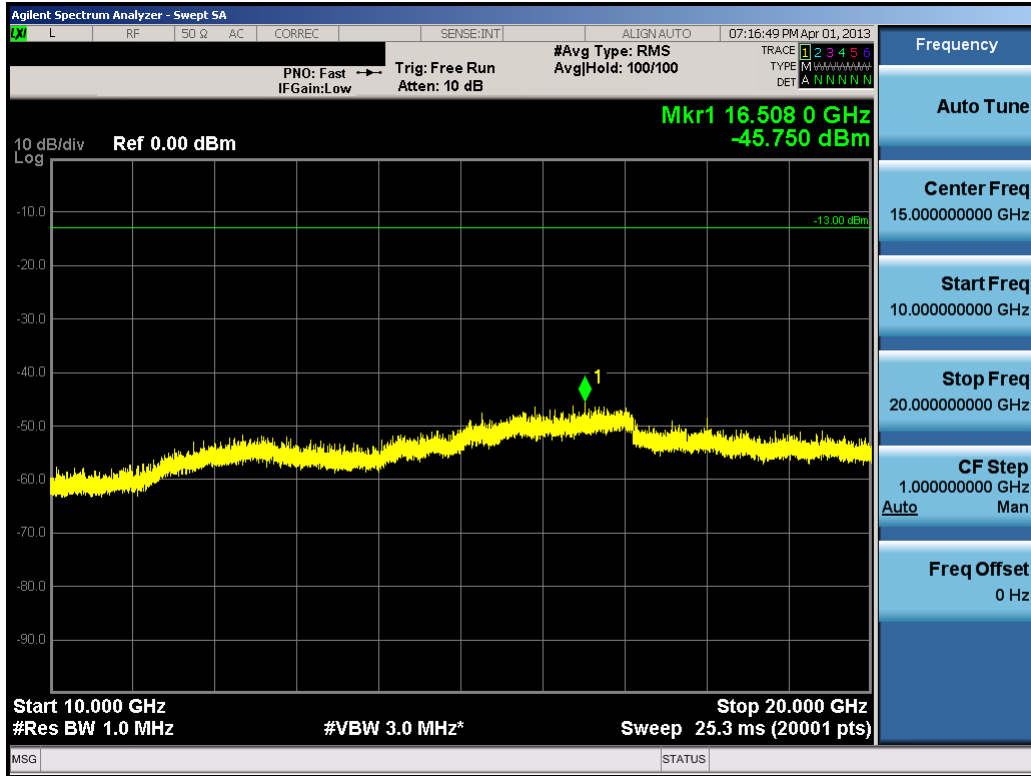


Plot 8-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

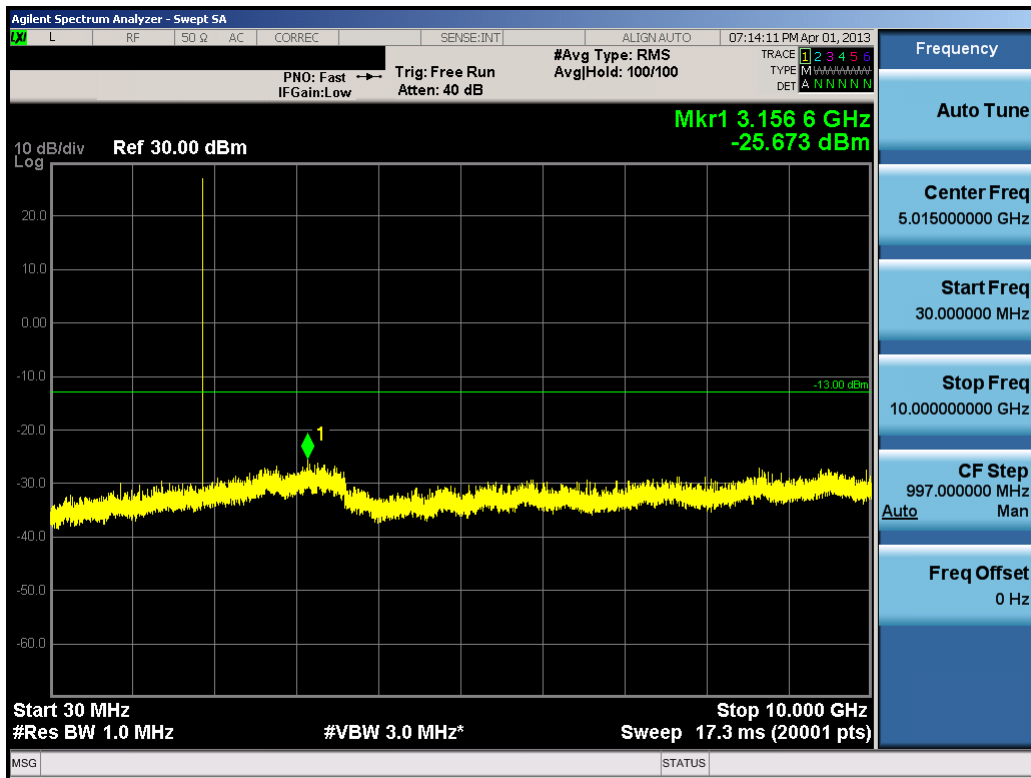


Plot 8-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 51 of 79

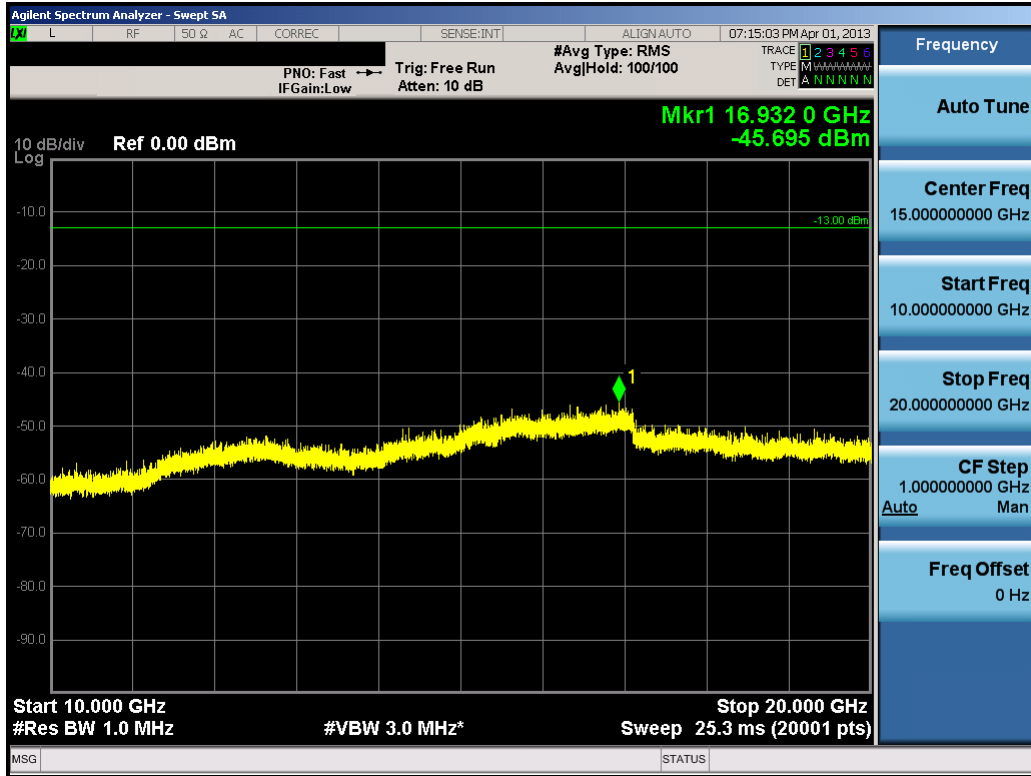


Plot 8-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

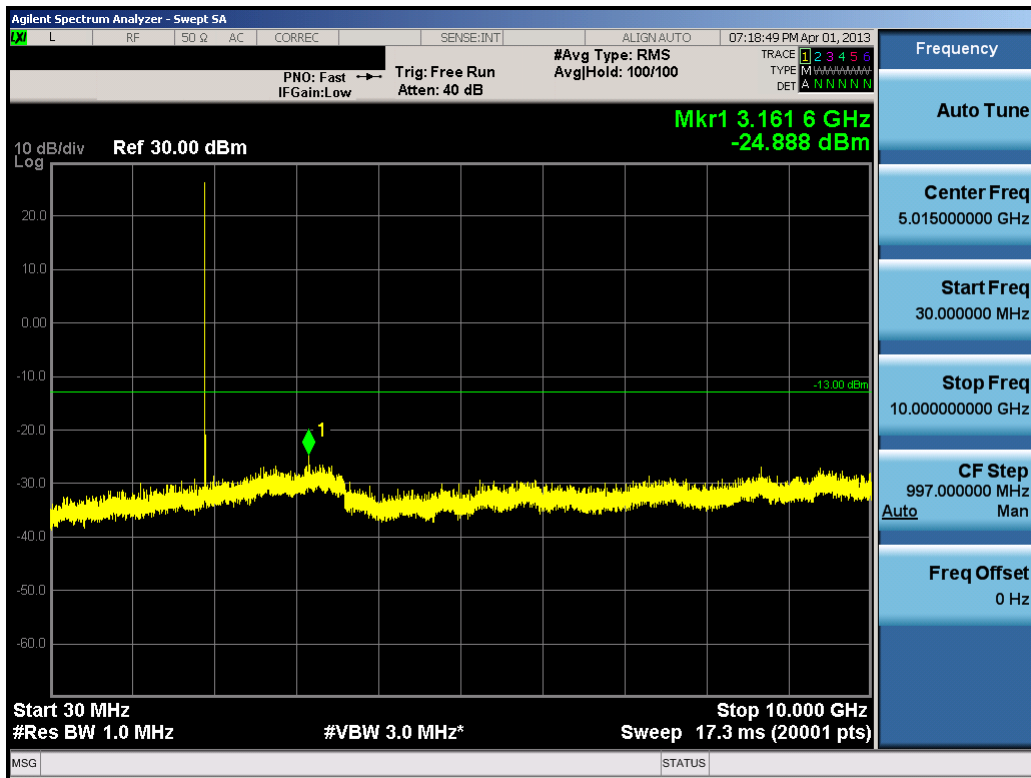


Plot 8-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 52 of 79

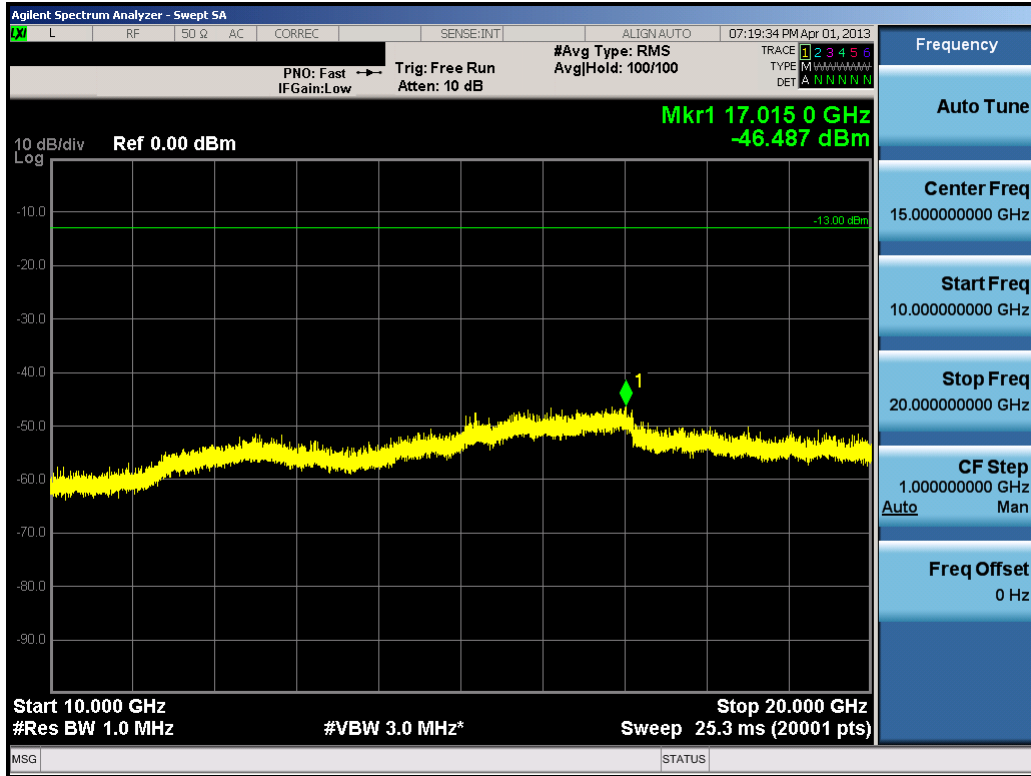


Plot 8-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

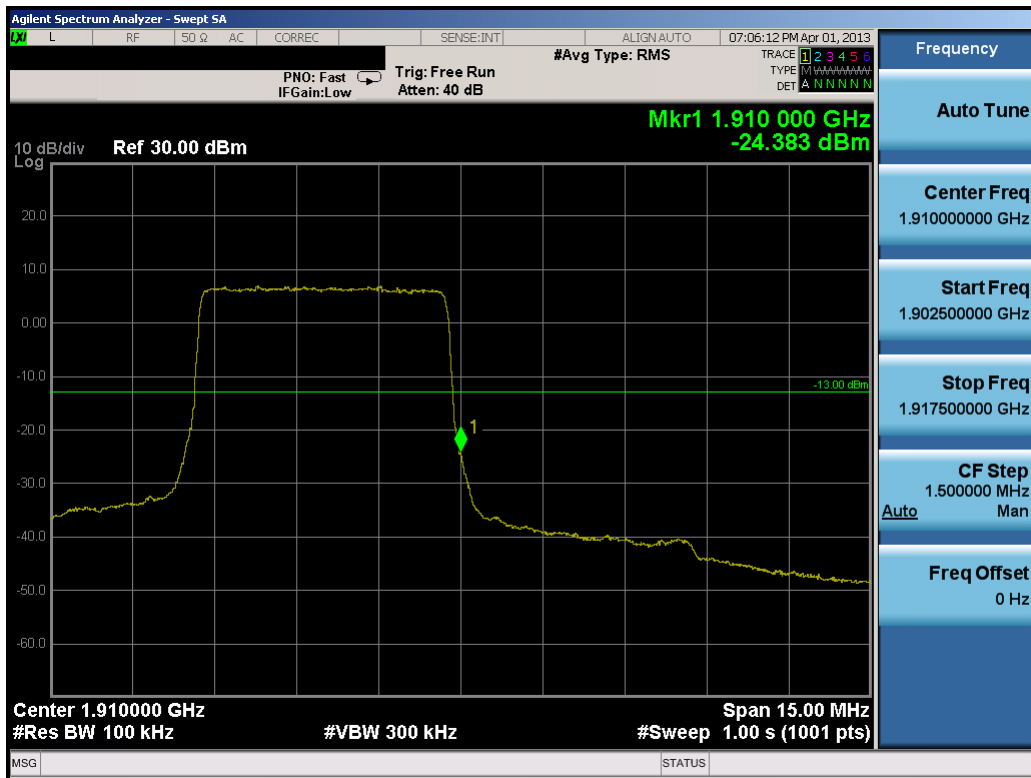


Plot 8-9. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 53 of 79



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

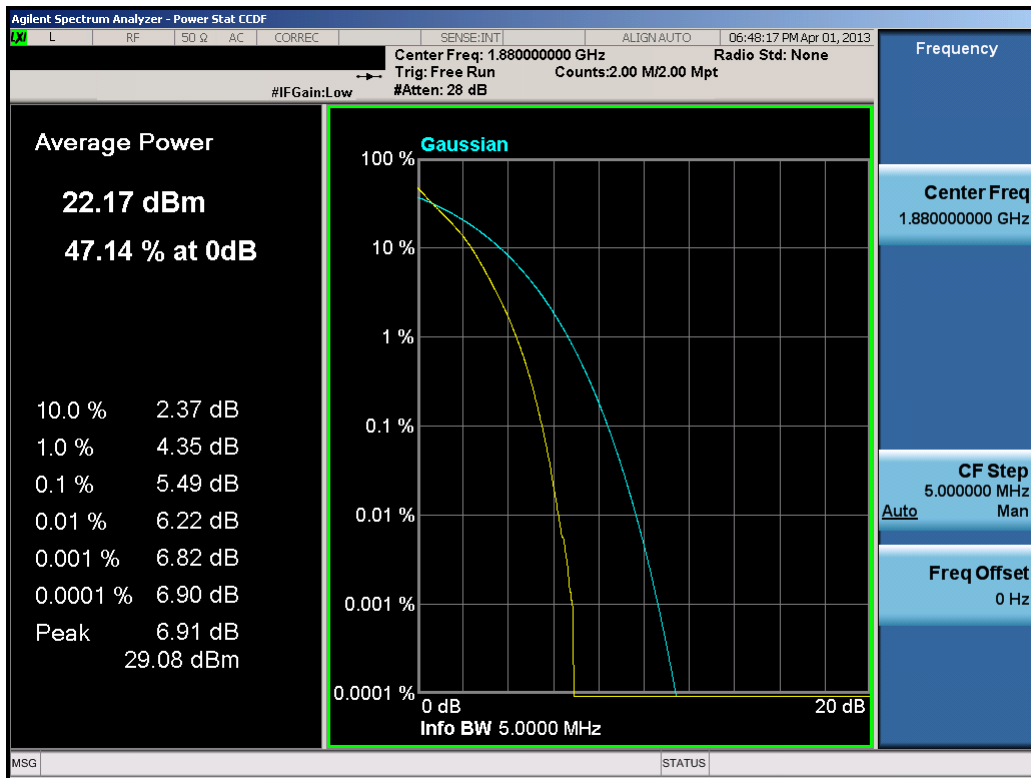


Plot 8-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 54 of 79

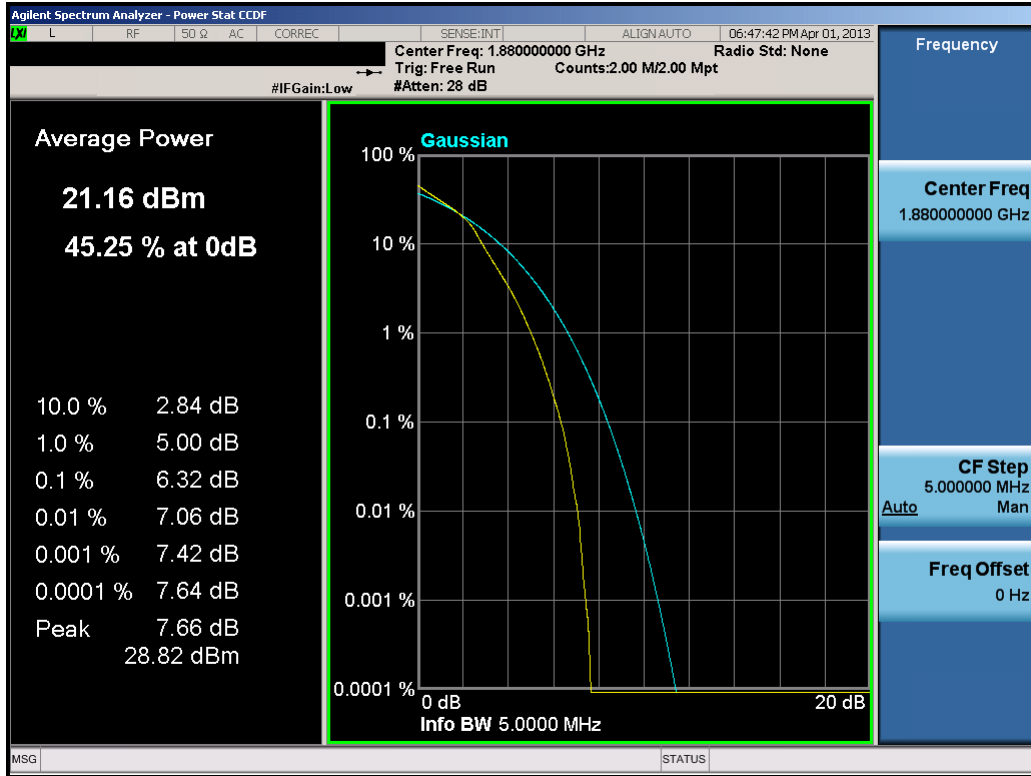


Plot 8-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

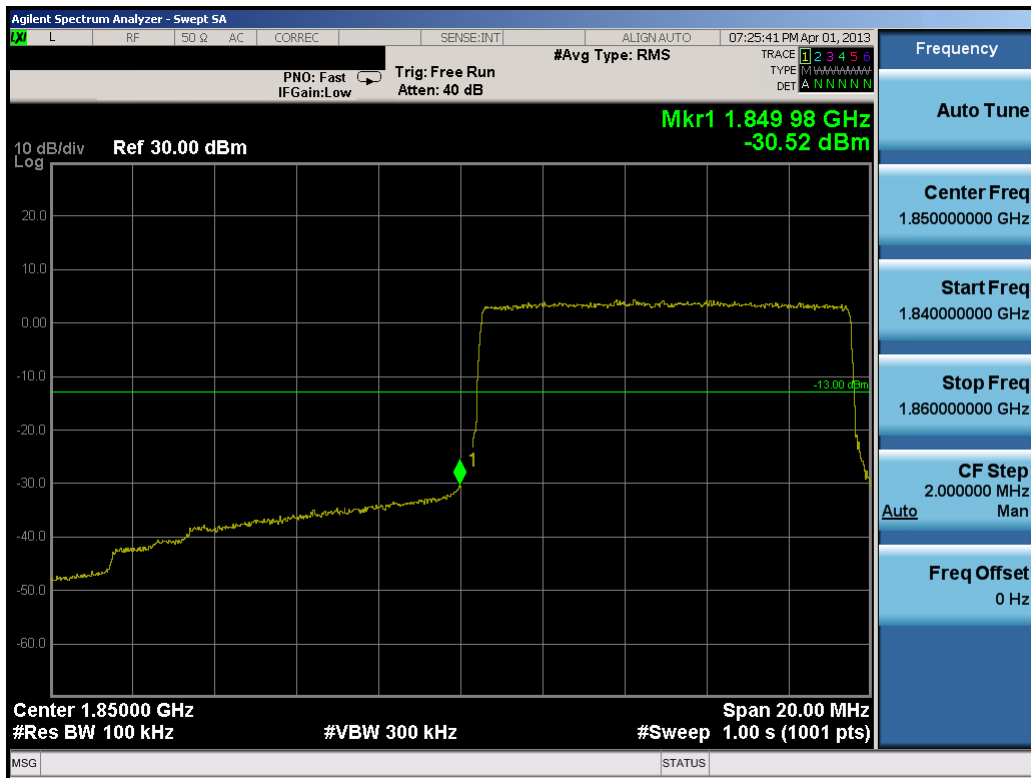


Plot 8-13. PAR Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 55 of 79



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

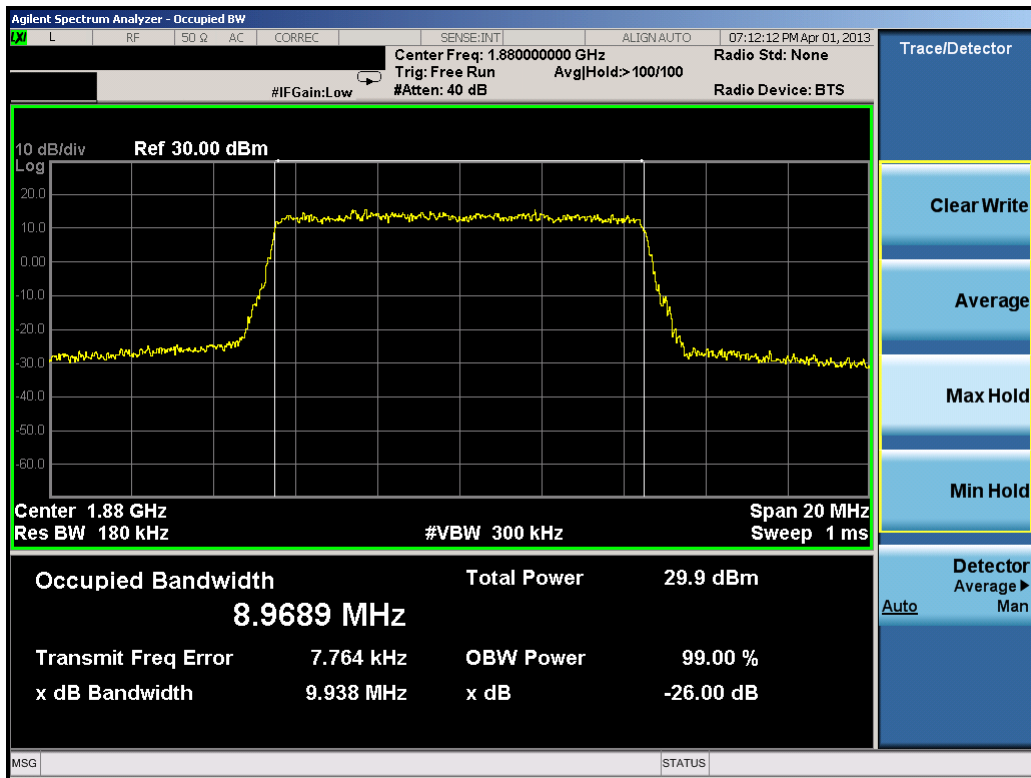


Plot 8-15. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 56 of 79

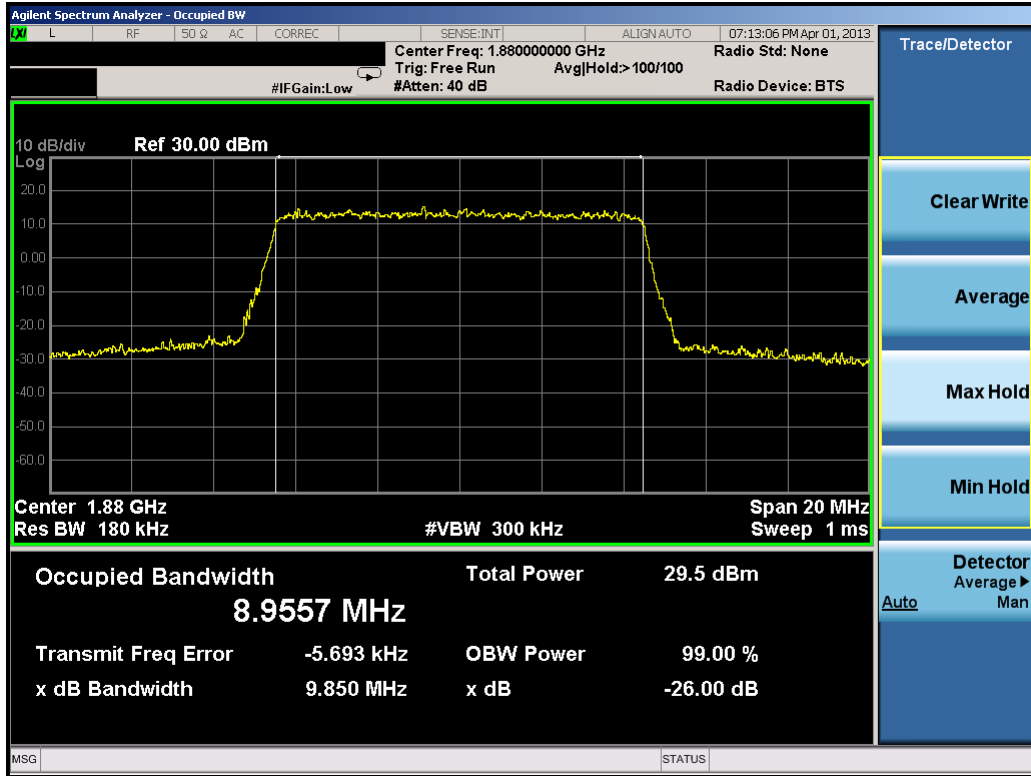


Plot 8-16. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

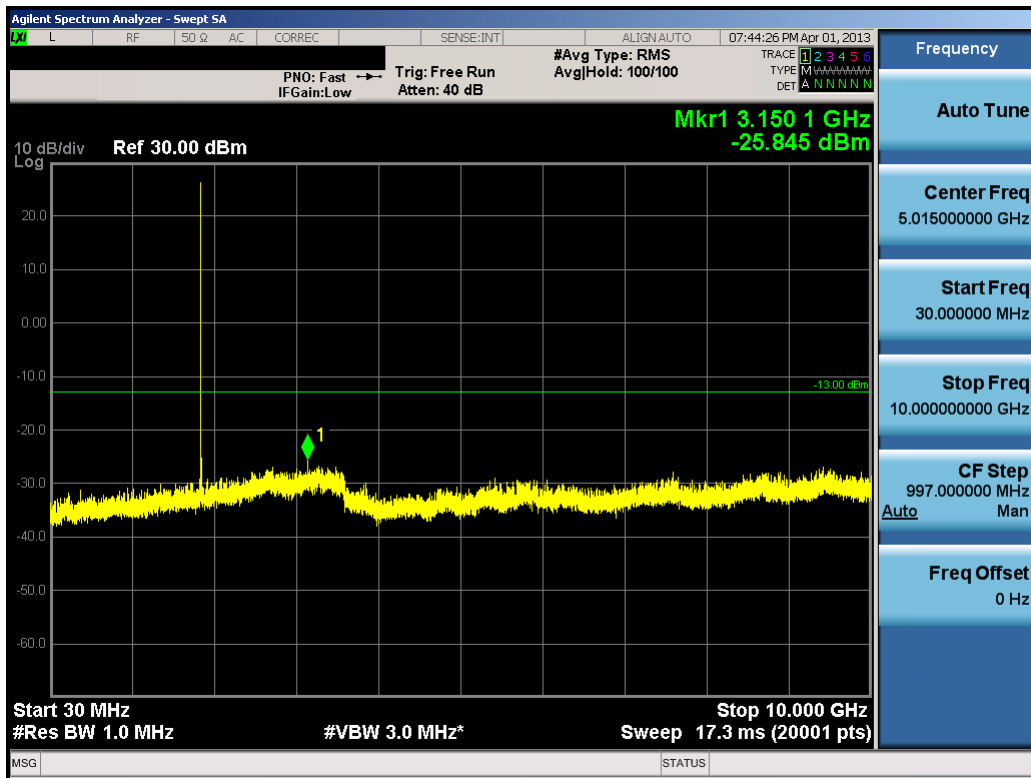


Plot 8-17. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 57 of 79

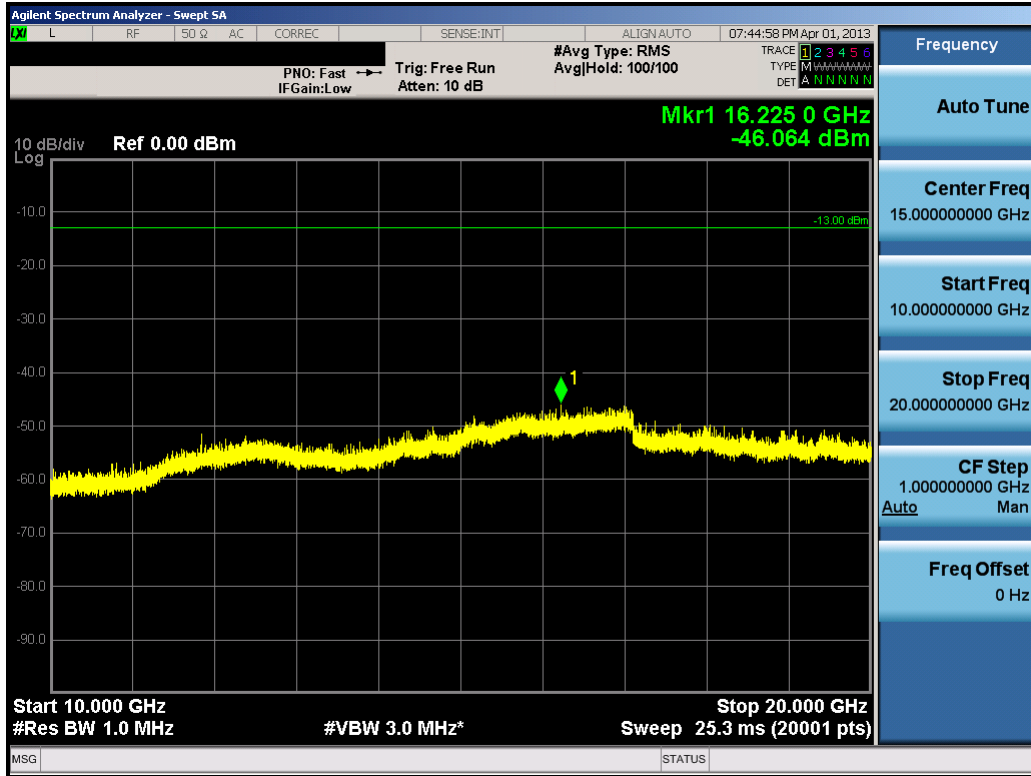


Plot 8-18. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

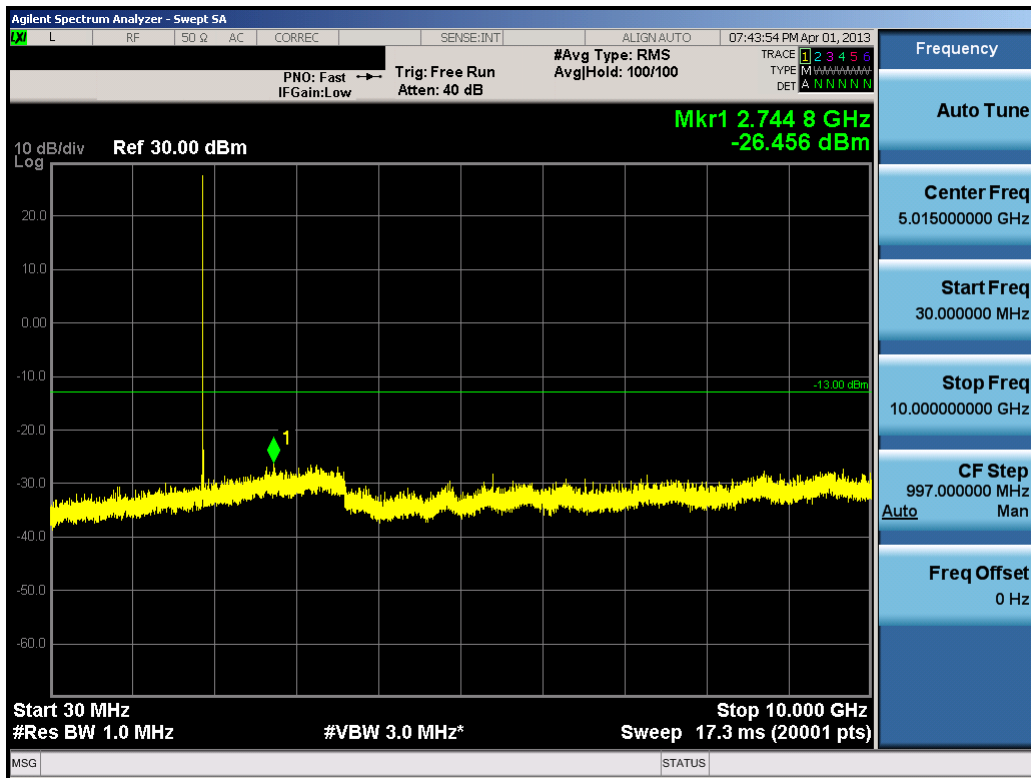


Plot 8-19. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 58 of 79

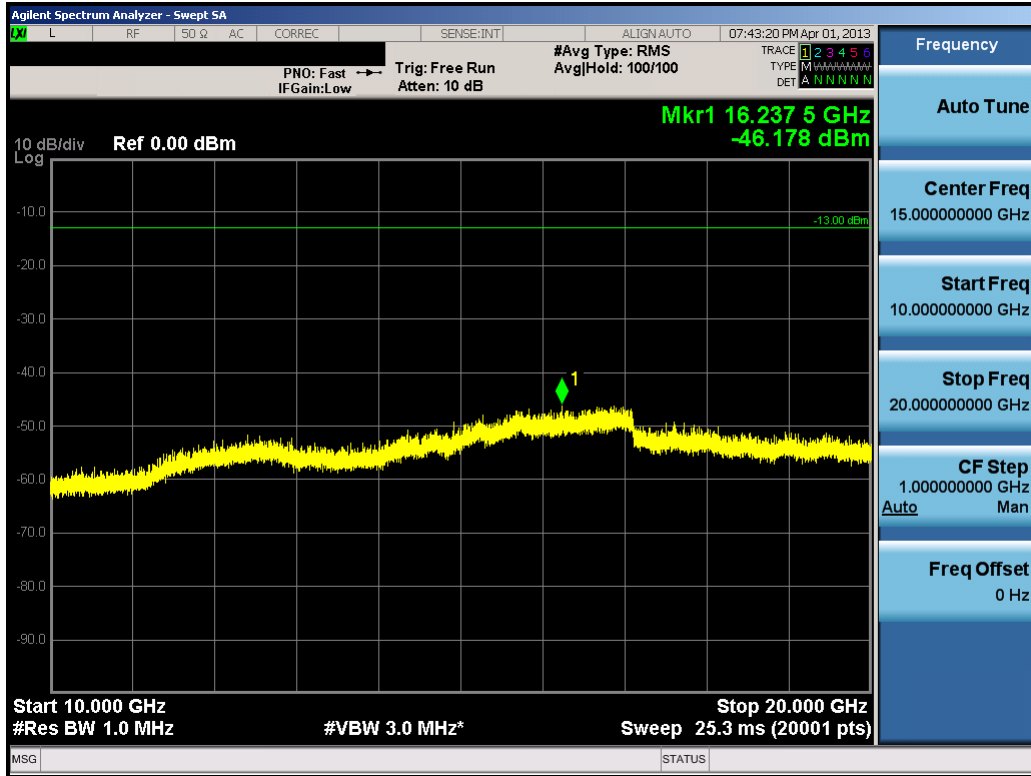


Plot 8-20. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

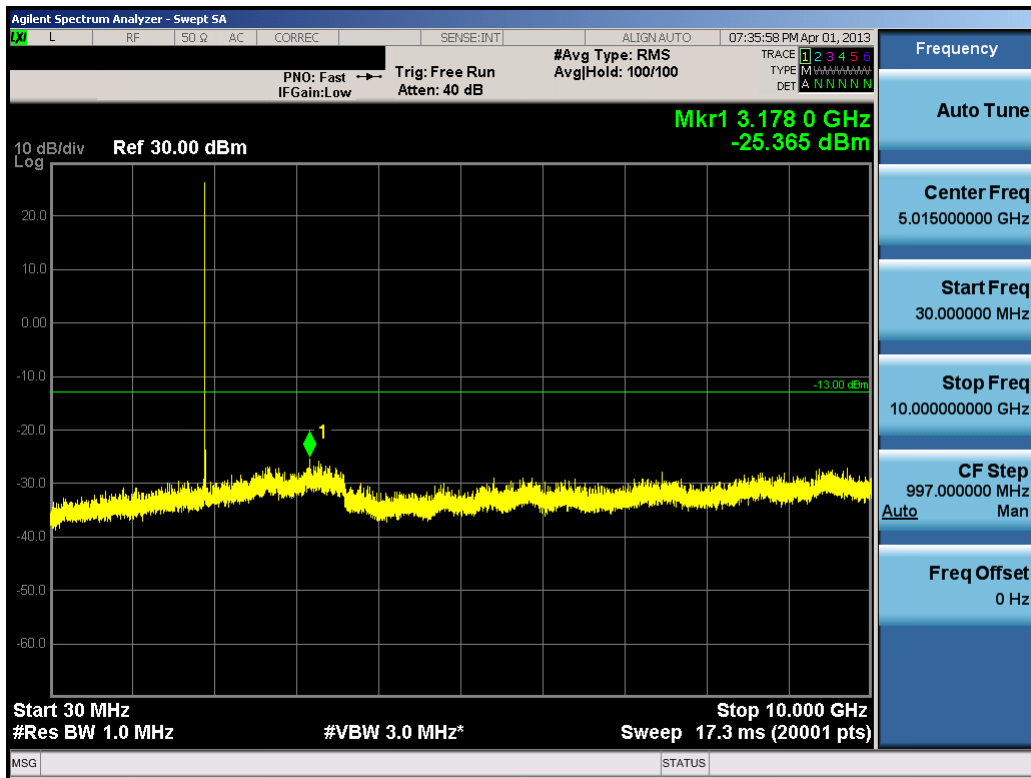


Plot 8-21. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 59 of 79

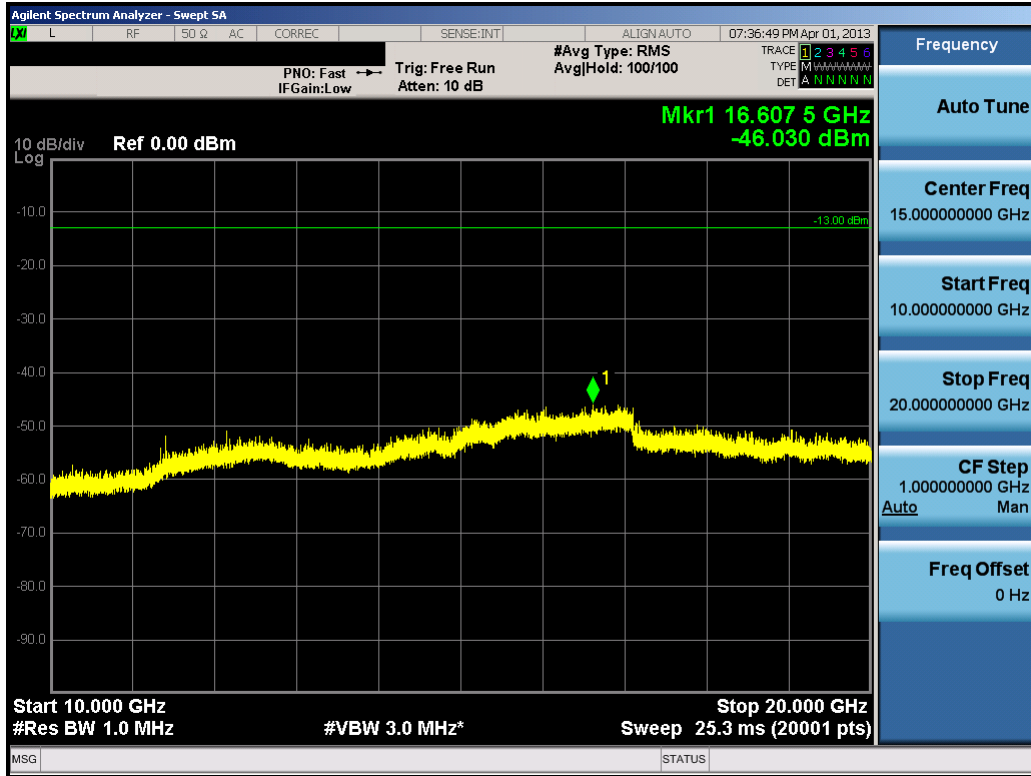


Plot 8-22. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



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

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 60 of 79

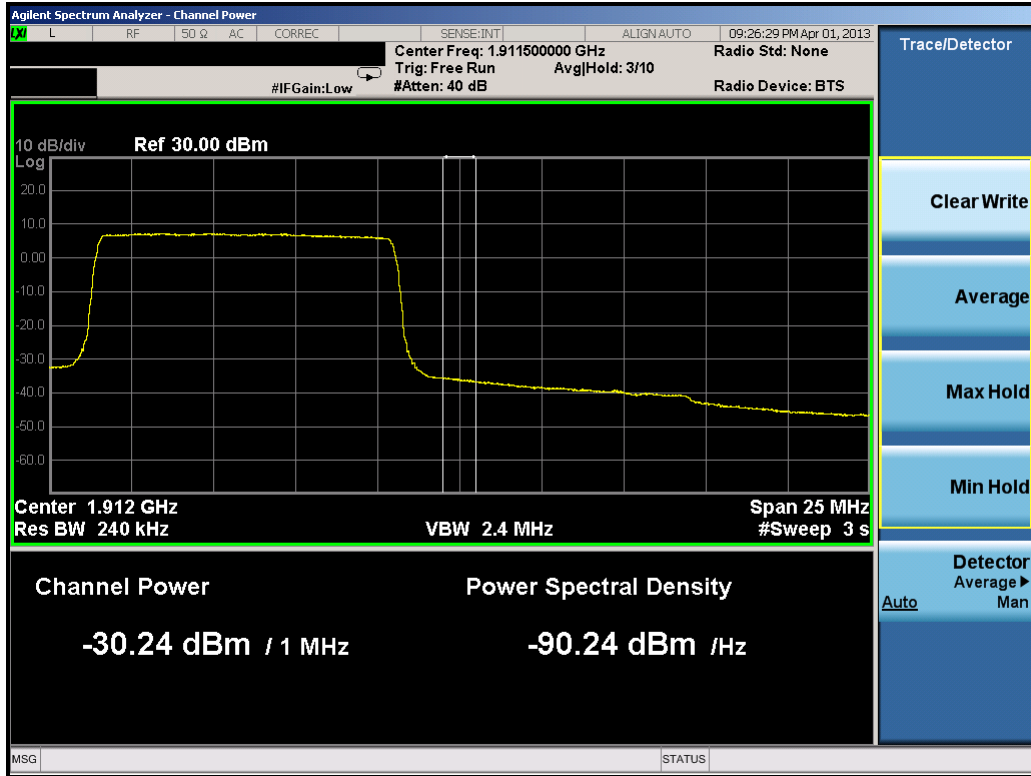


Plot 8-24. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

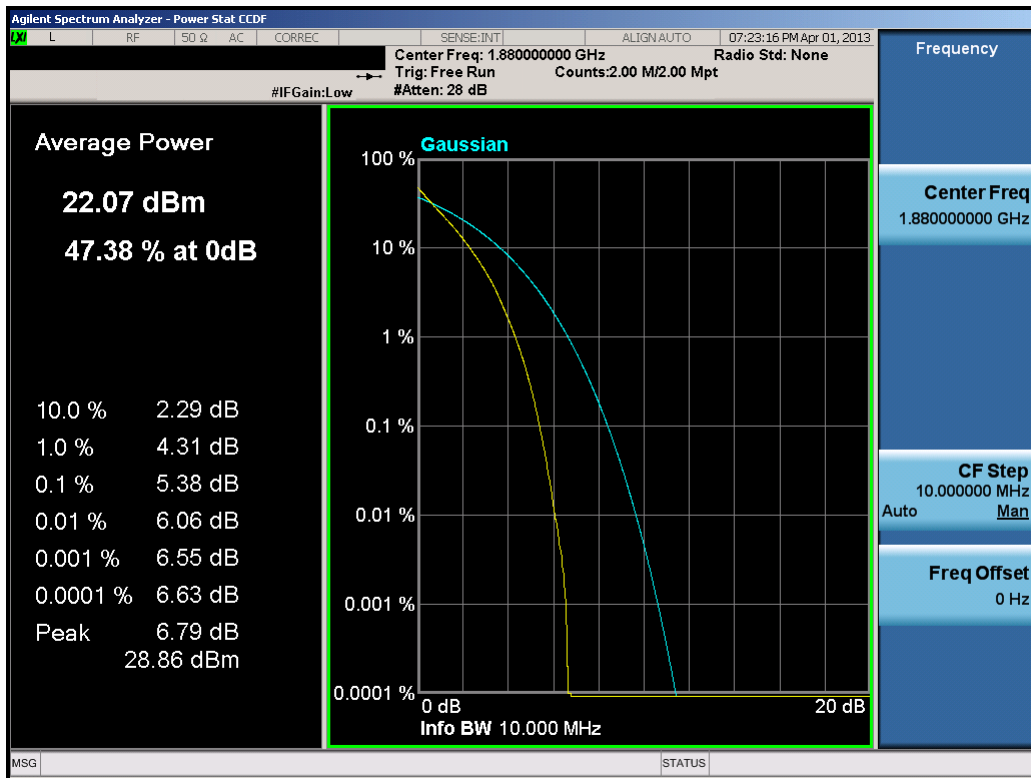


Plot 8-25. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 61 of 79

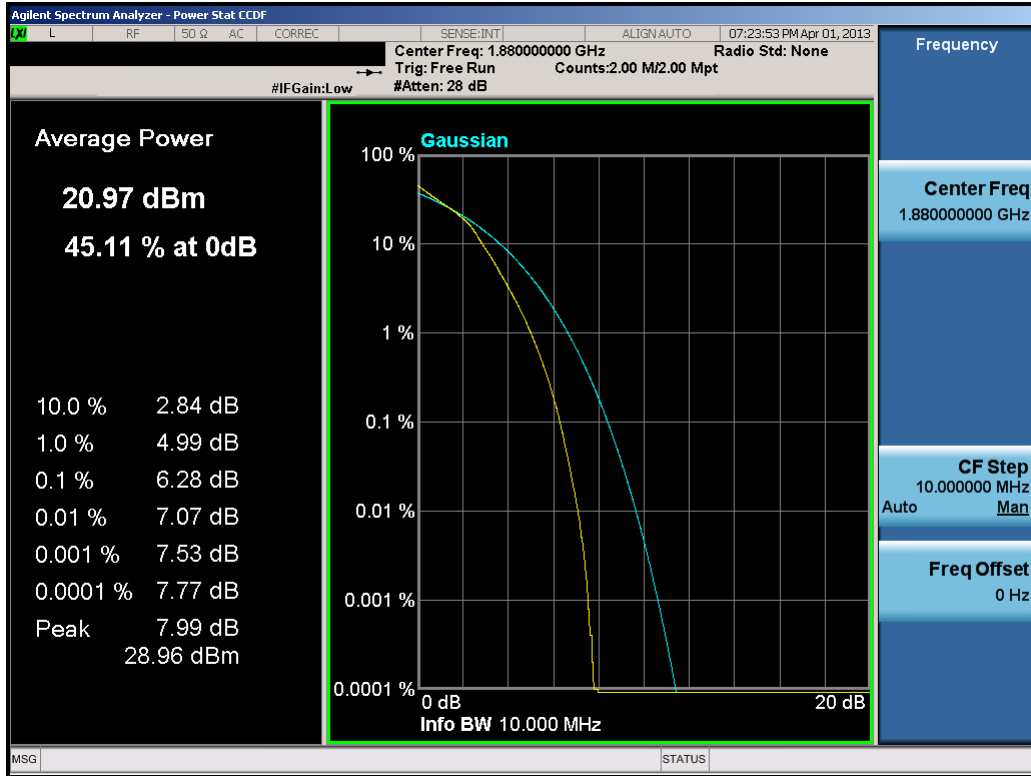


Plot 8-26. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)



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

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 62 of 79

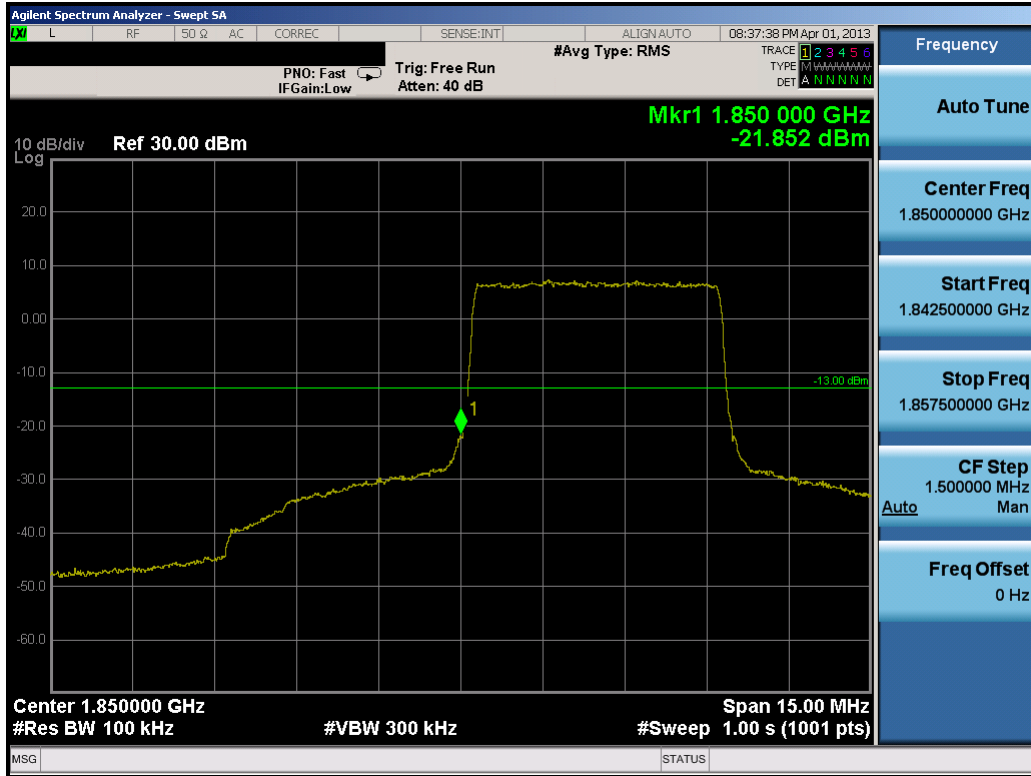


**Plot 8-28. PAR Plot (10.0MHz 16-QAM – RB Size 50)**

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 63 of 79

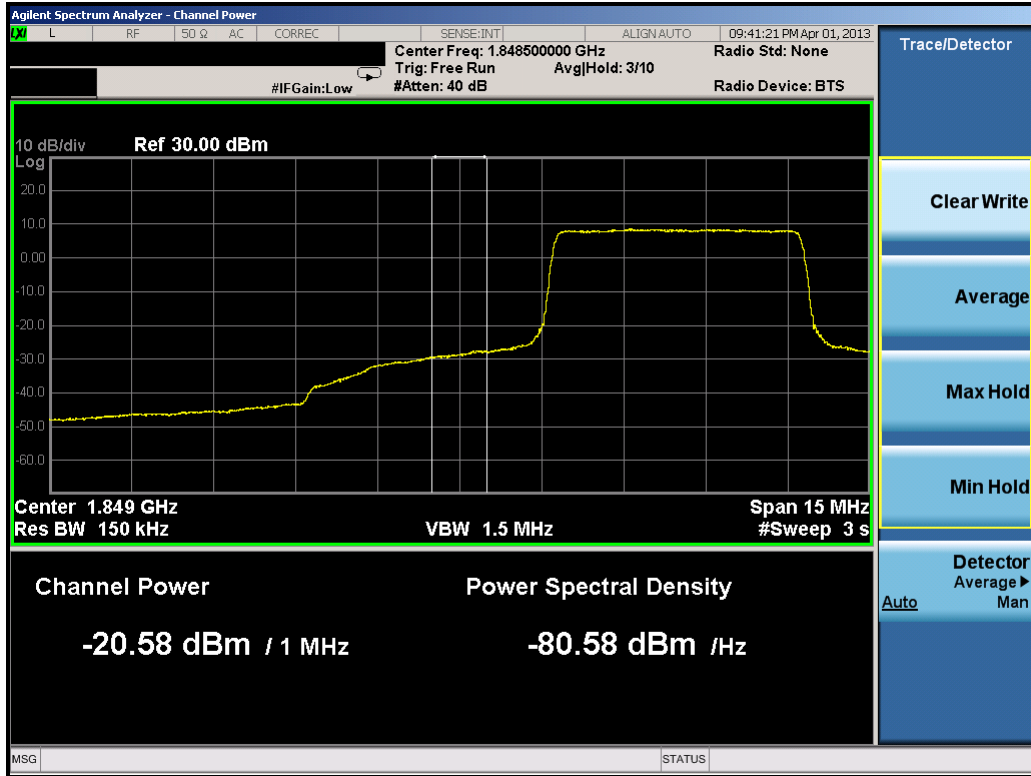
## 9.0 BAND 25 PLOTS OF EMISSIONS

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

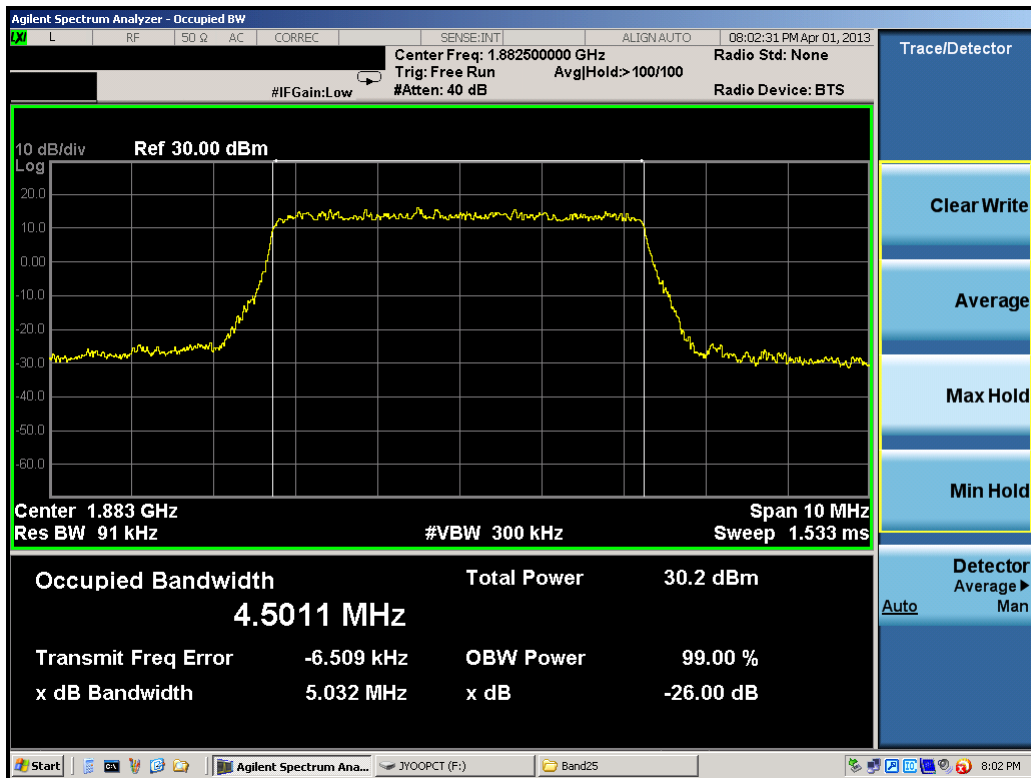


**Plot 9-1. Lower Band Edge Plot (5.0MHz QPSK – RB Size 25)**

<b>FCC ID:</b> A3LSCHR970C		<b>FCC Pt. 24 &amp; 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1303260544.A3L	<b>Test Dates:</b> 3/27-4/2/2013	<b>EUT Type:</b> Portable Handset	Page 64 of 79	

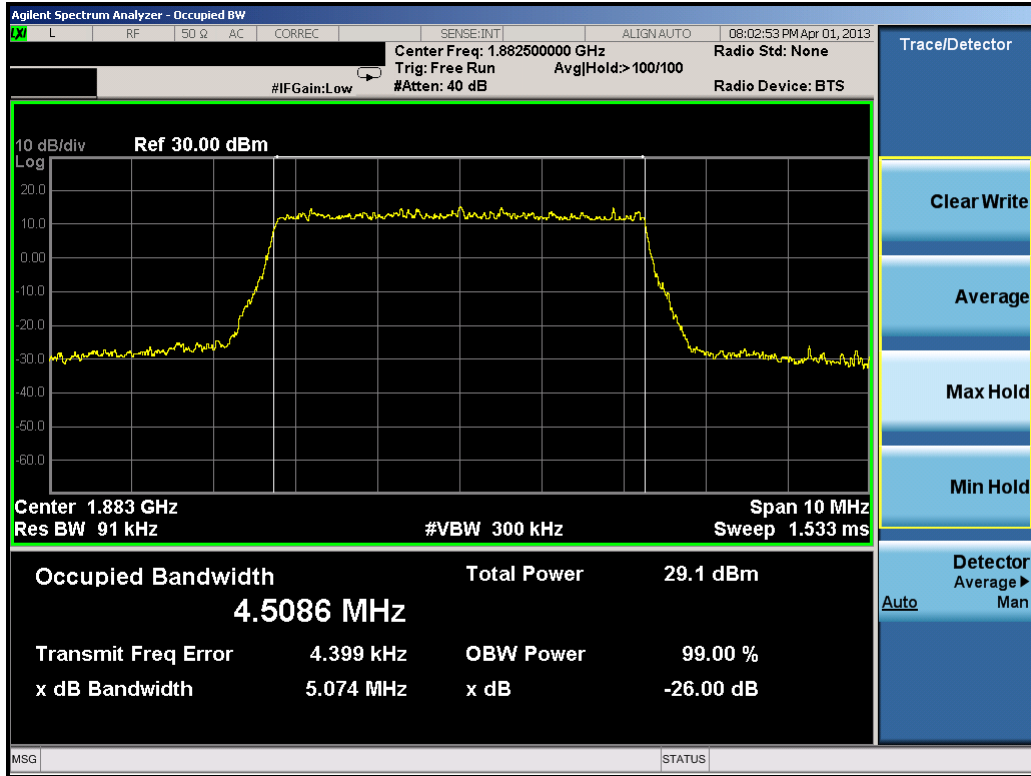


Plot 9-2. Lower Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

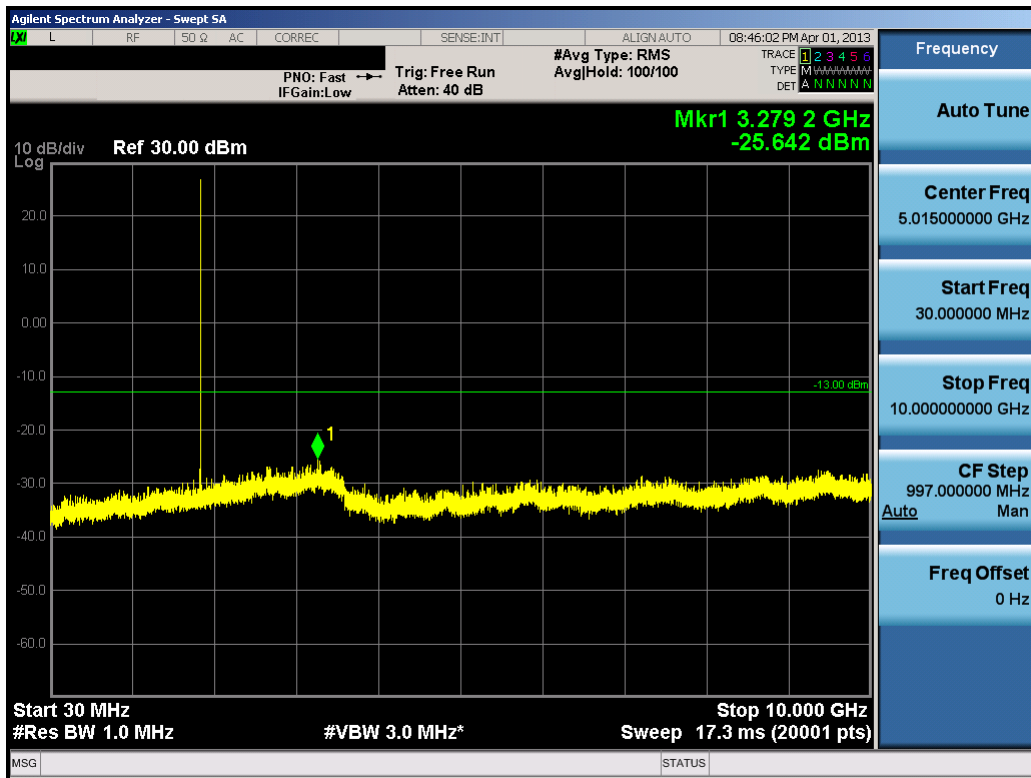


Plot 9-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 65 of 79

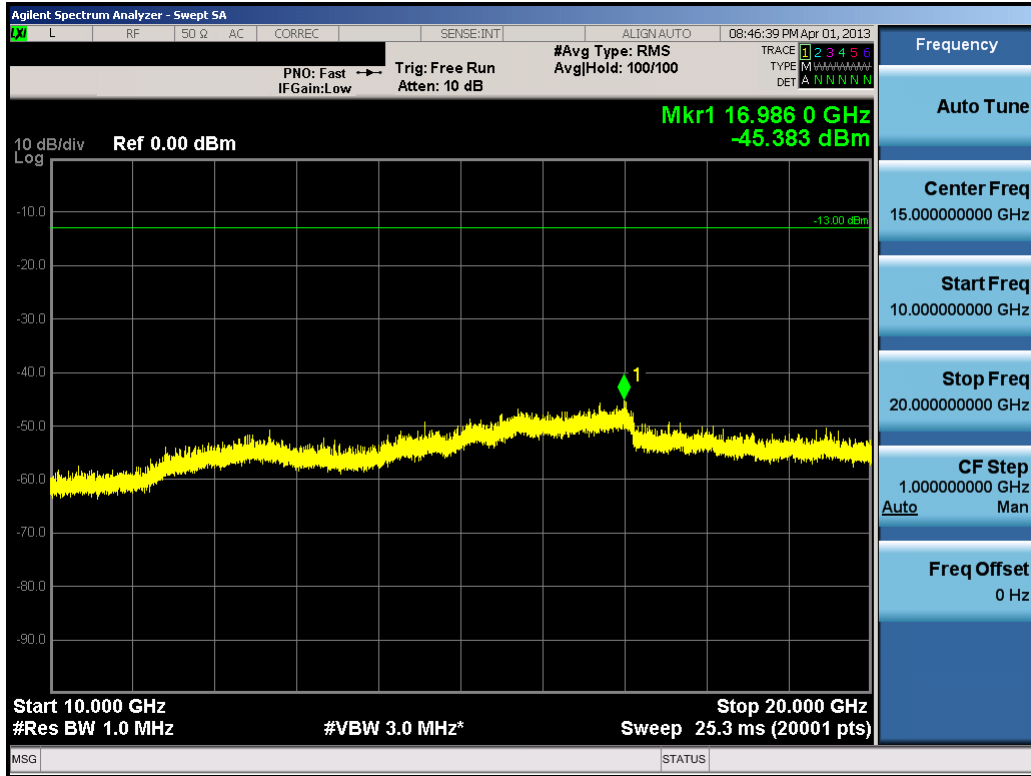


Plot 9-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

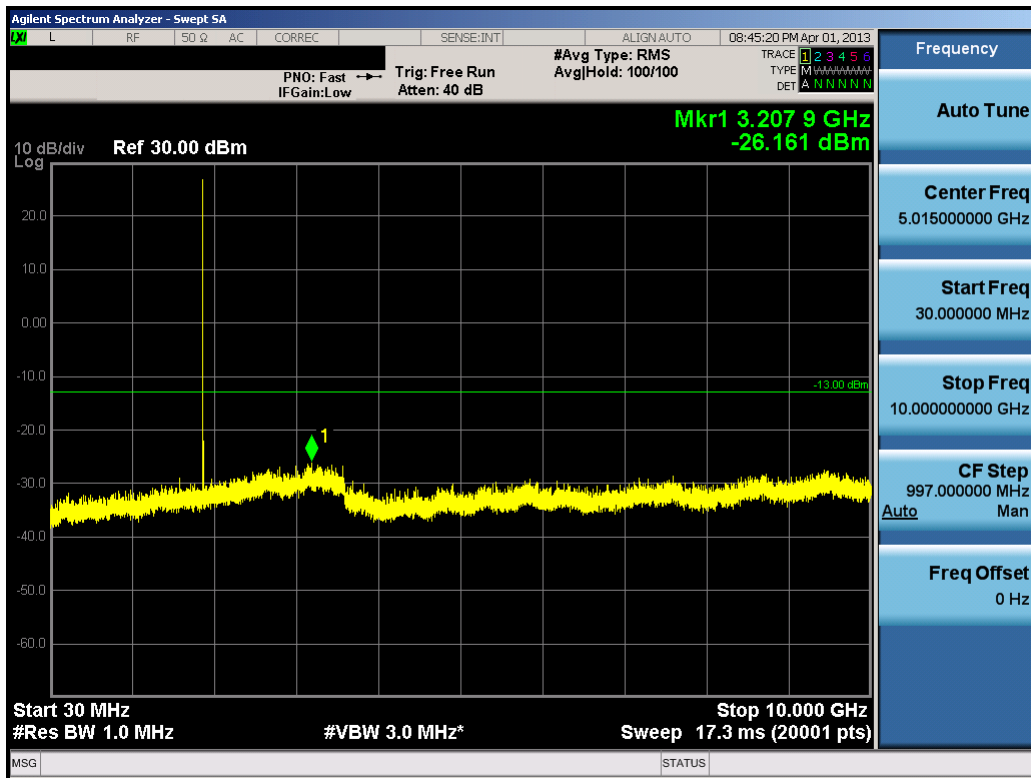


Plot 9-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 66 of 79

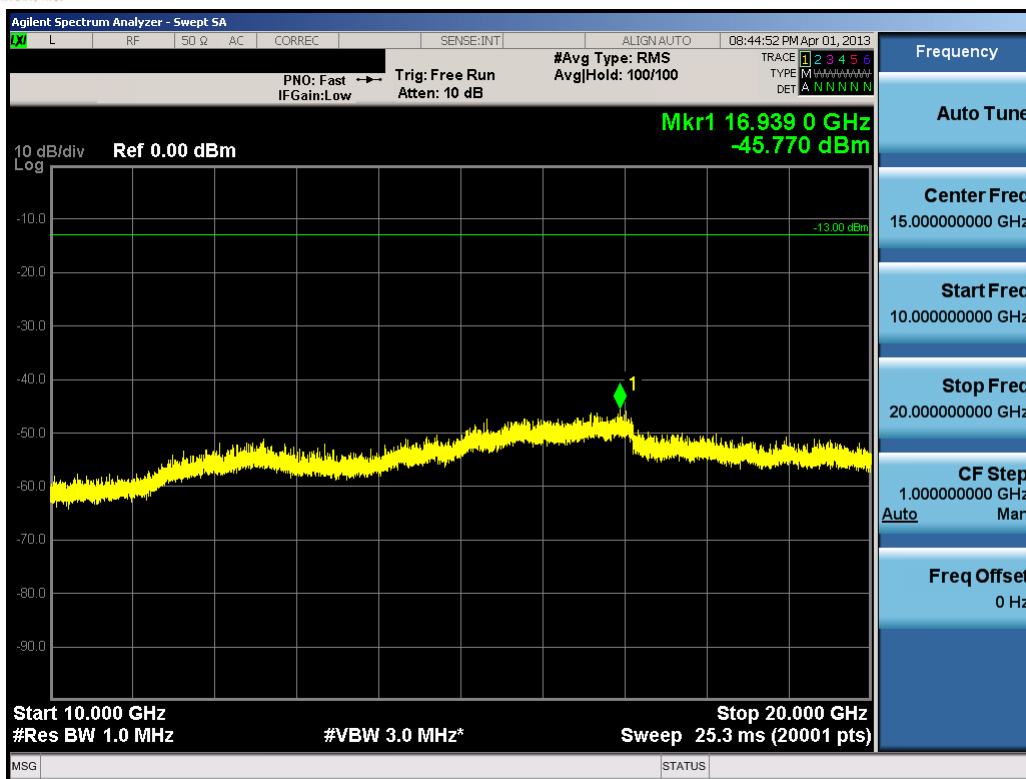


Plot 9-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

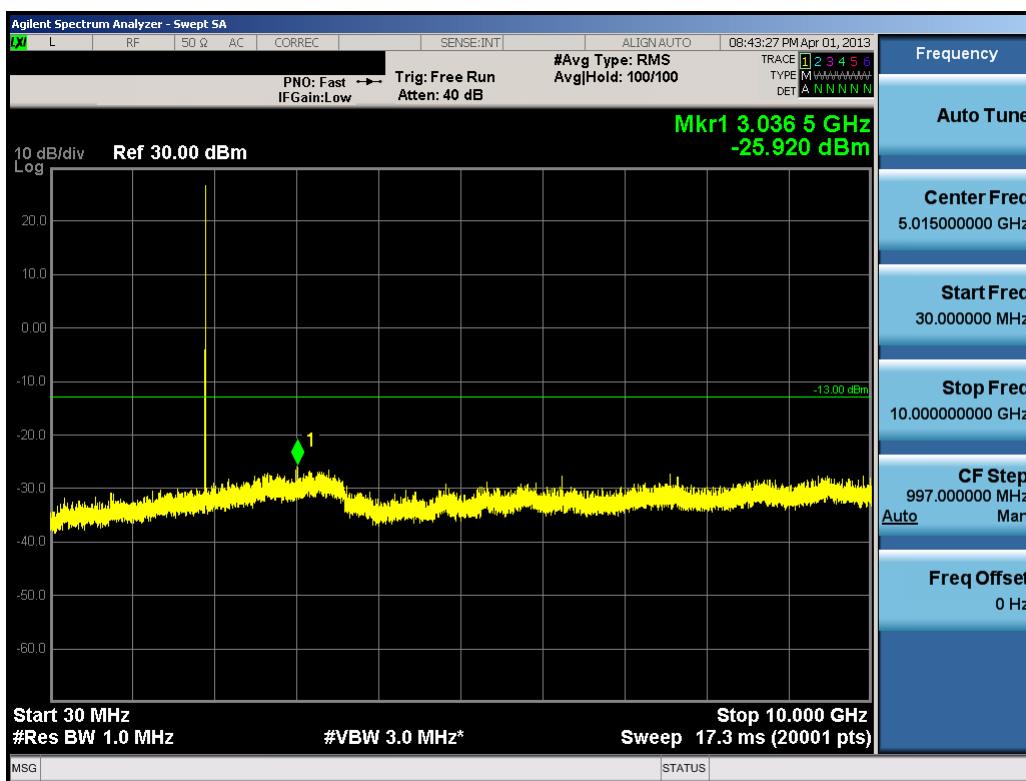


Plot 9-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 67 of 79

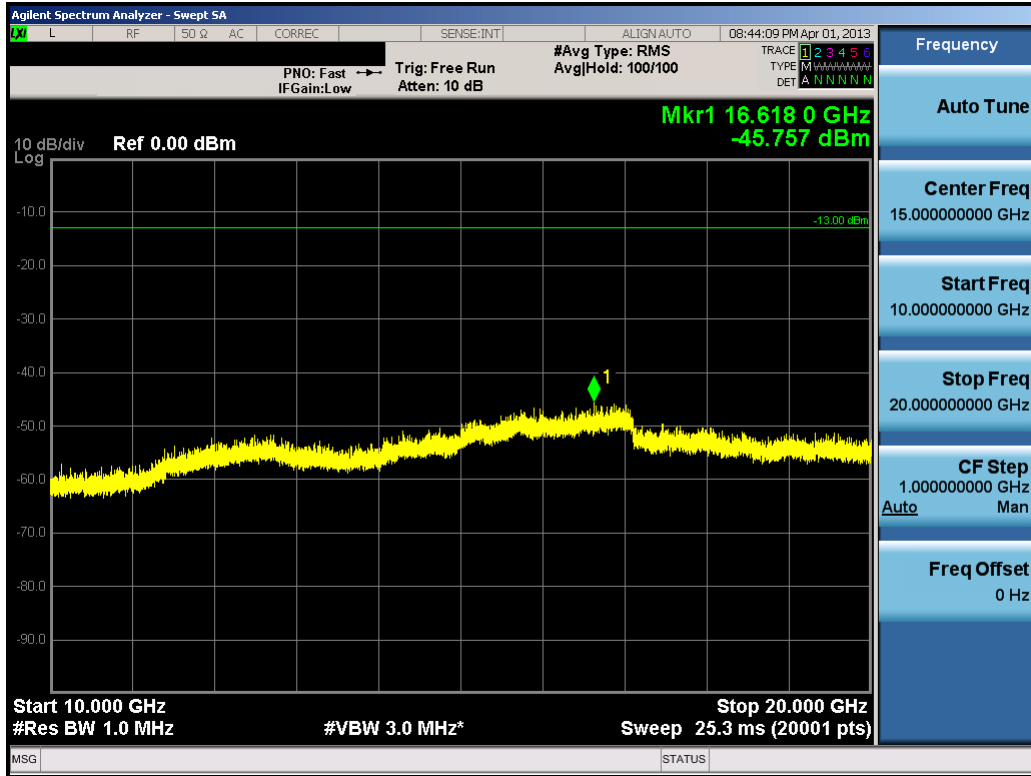


Plot 9-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



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

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 68 of 79



Plot 9-10. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

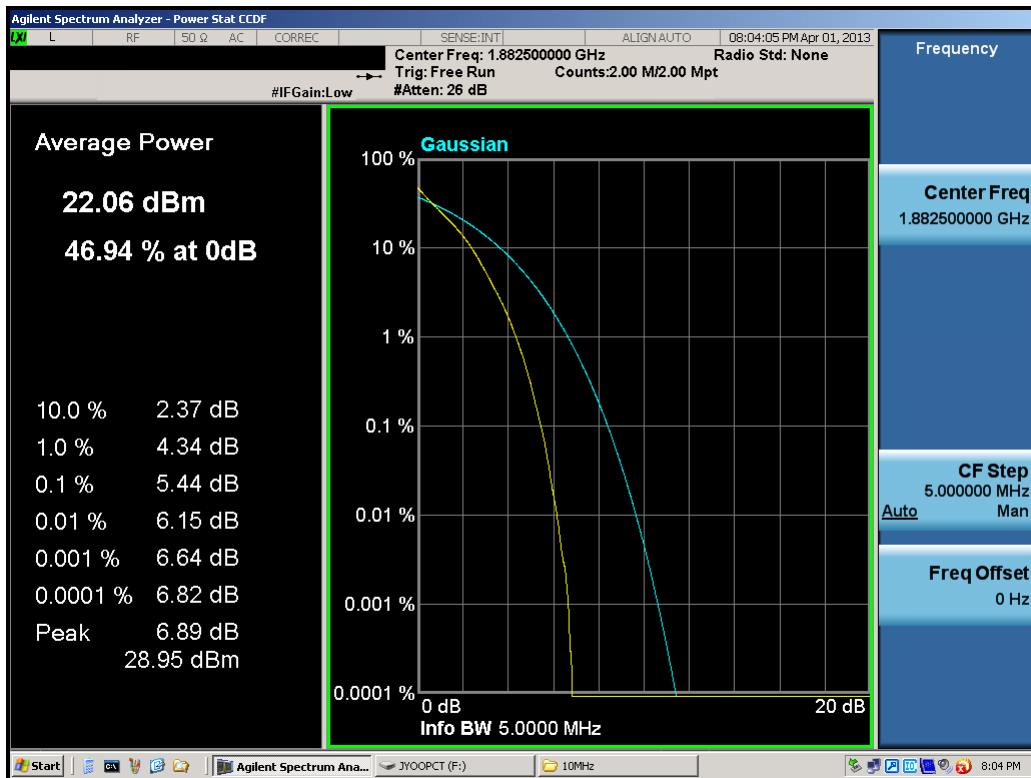


Plot 9-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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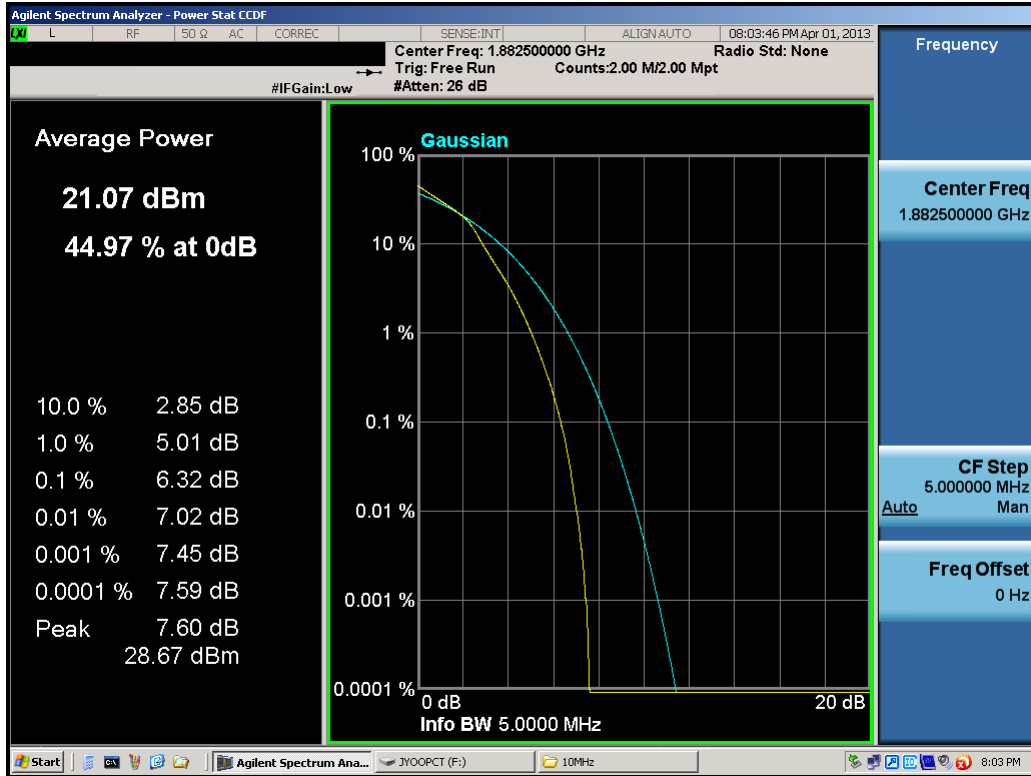


Plot 9-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

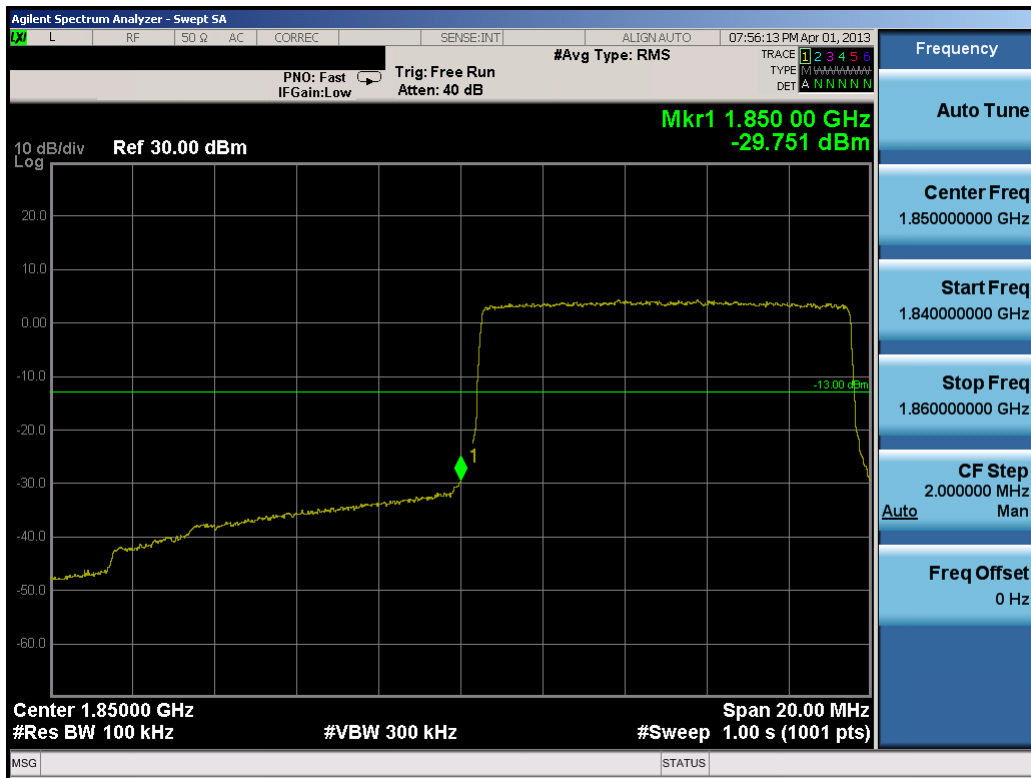


Plot 9-13. PAR Plot (5.0MHz QPSK – RB Size 25)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 70 of 79

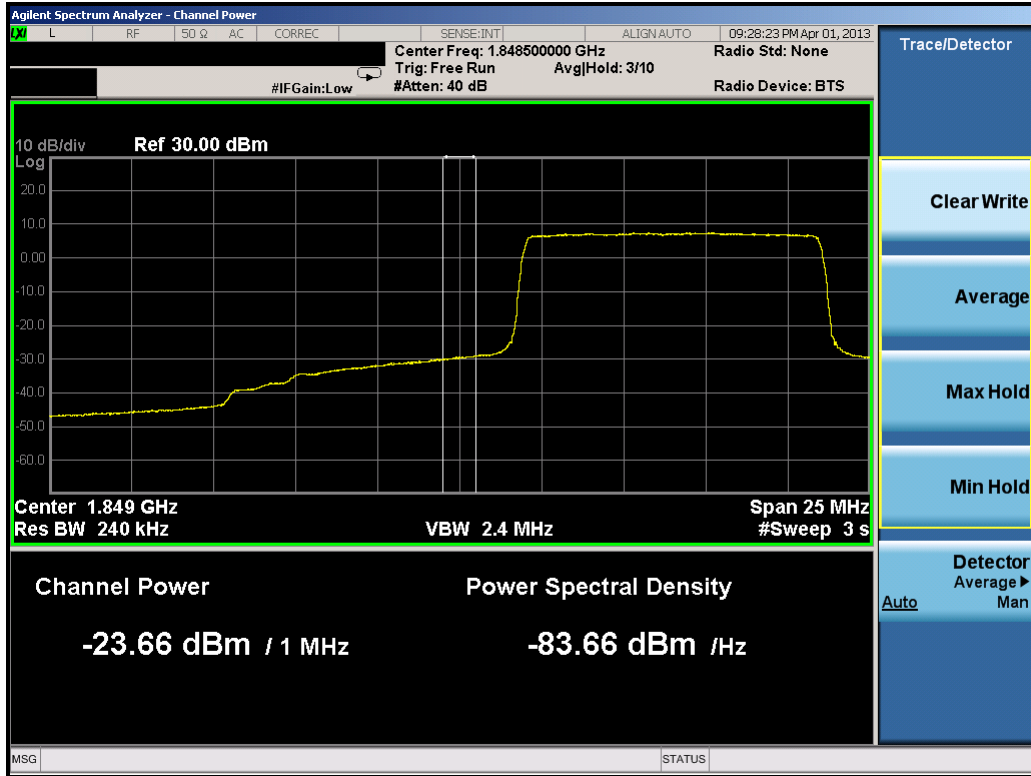


Plot 9-14. PAR Plot (5.0MHz 16-QAM – RB Size 25)

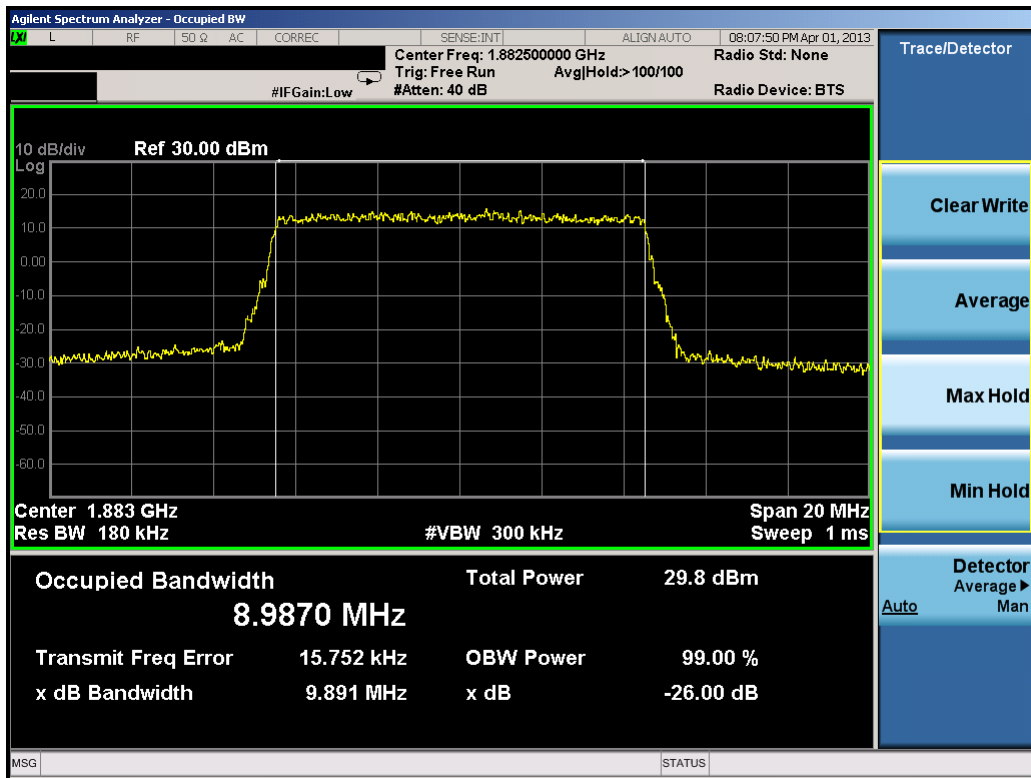


Plot 9-15. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
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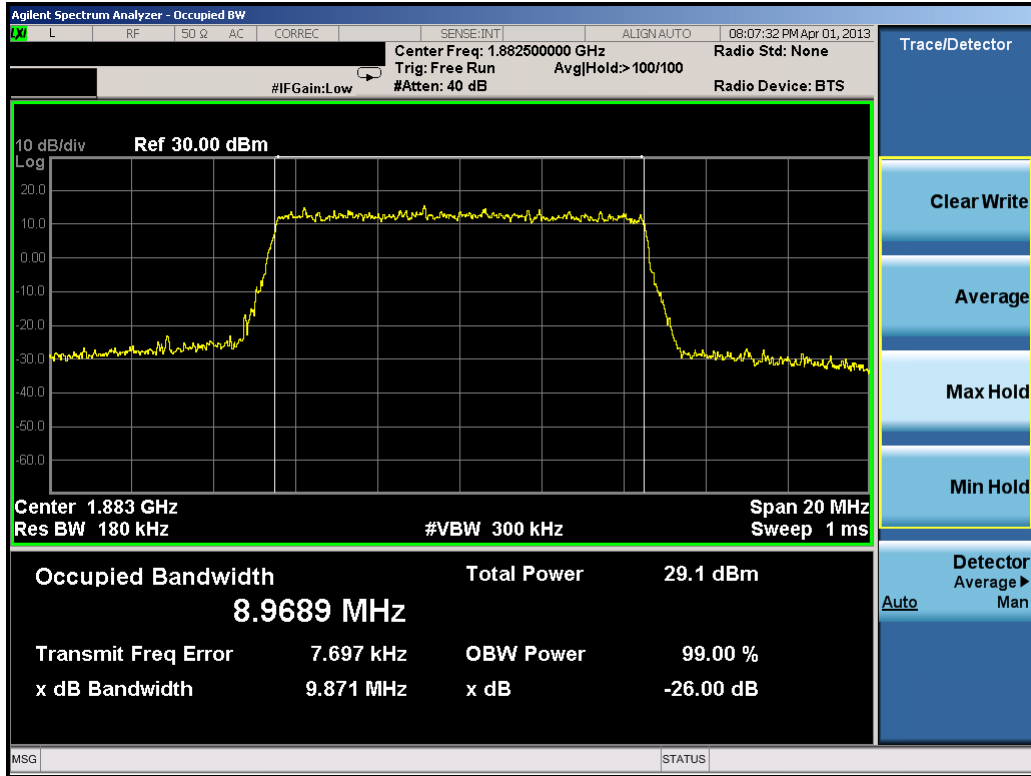


Plot 9-16. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

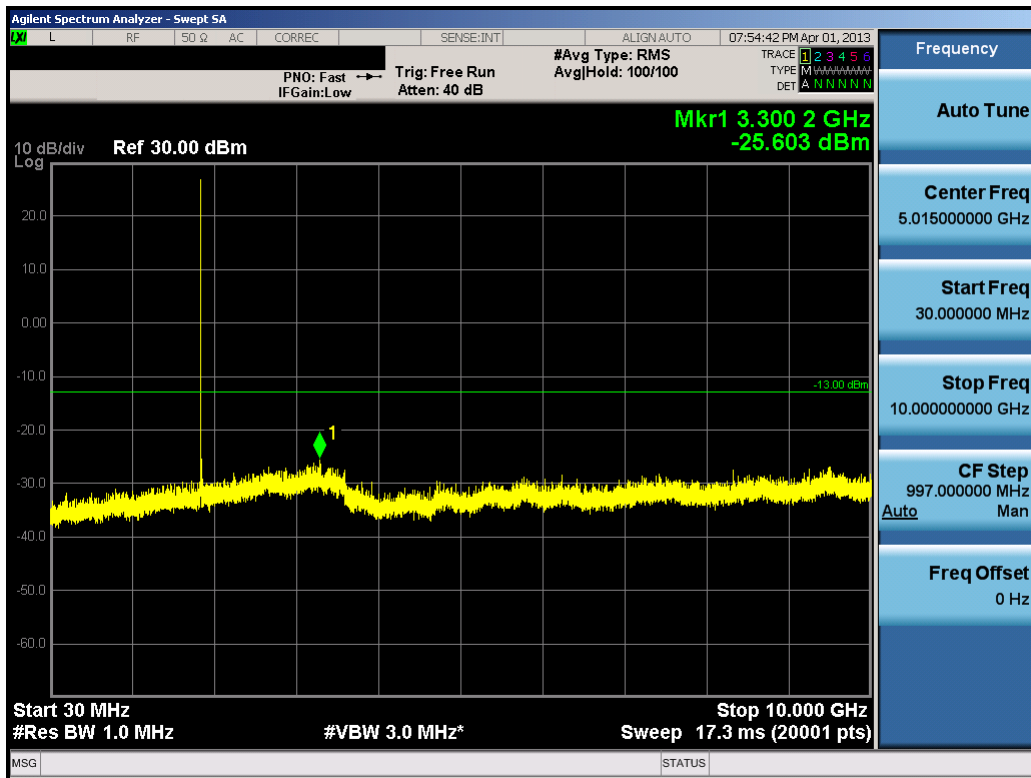


Plot 9-17. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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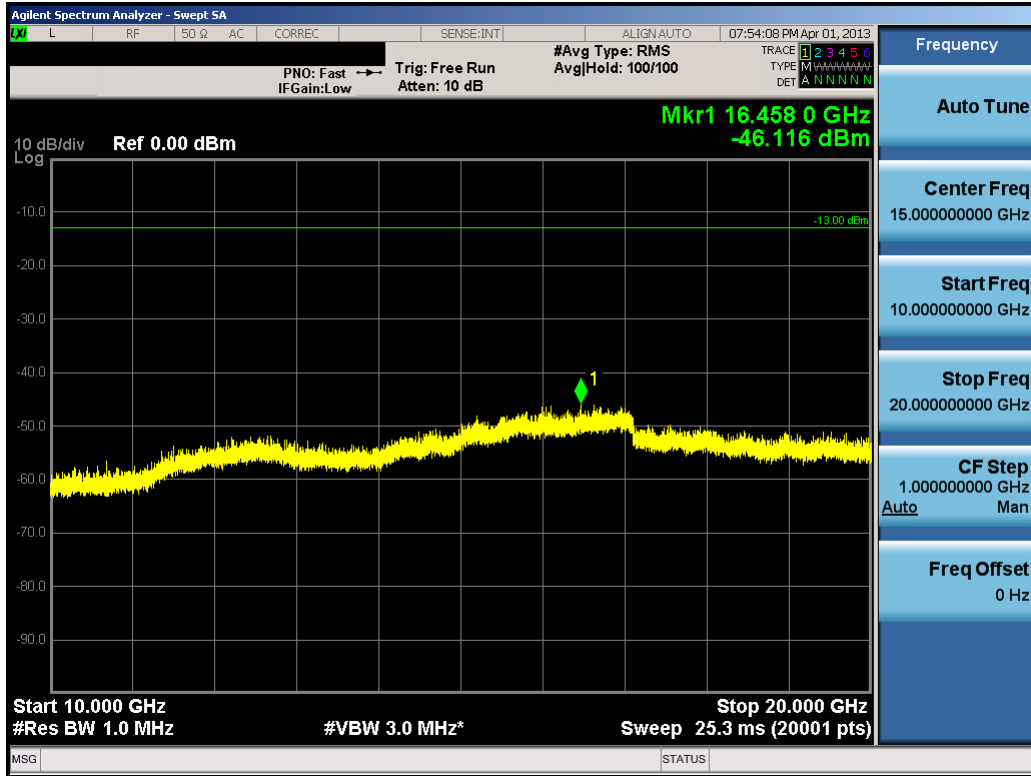


Plot 9-18. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

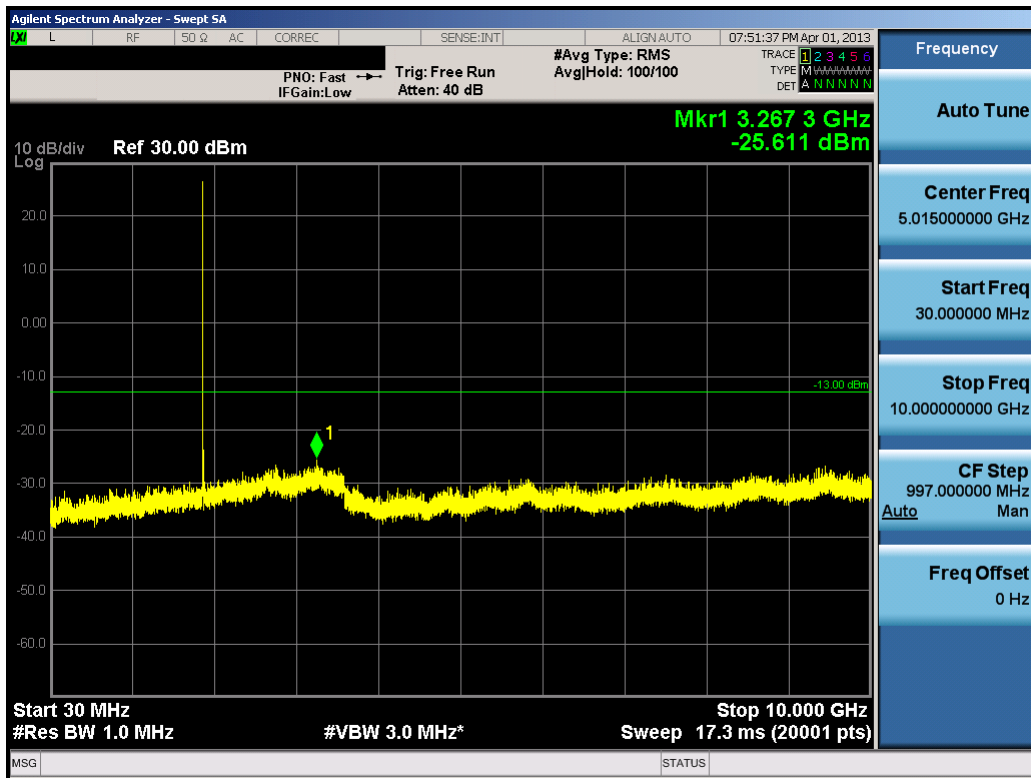


Plot 9-19. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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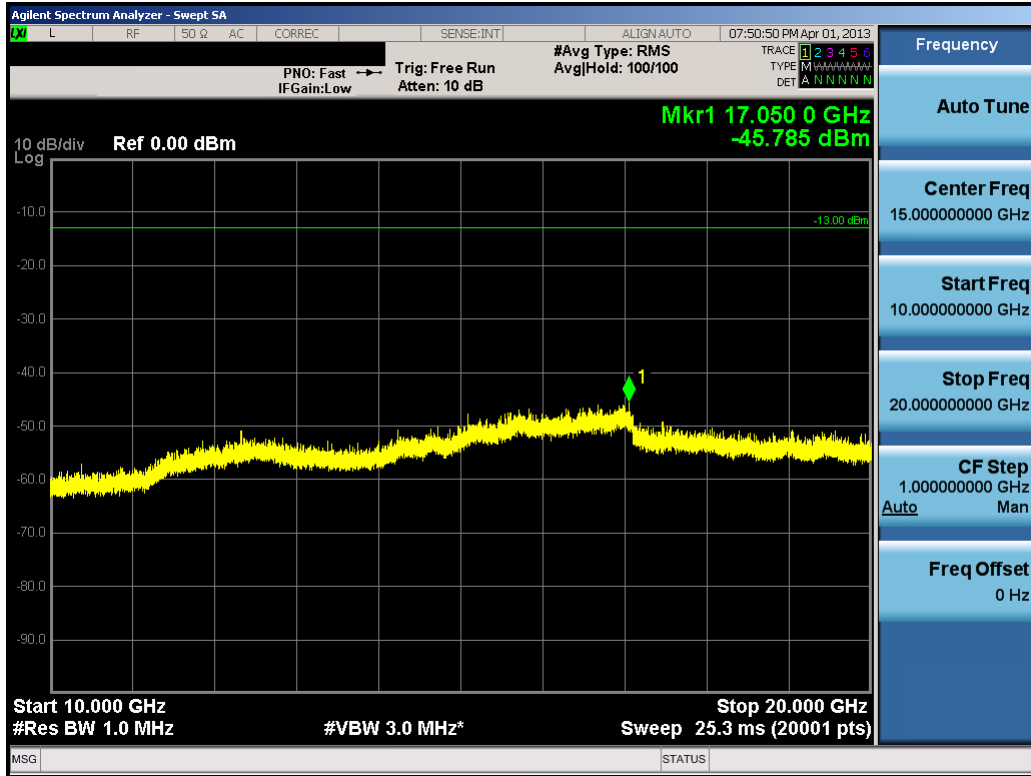


Plot 9-20. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

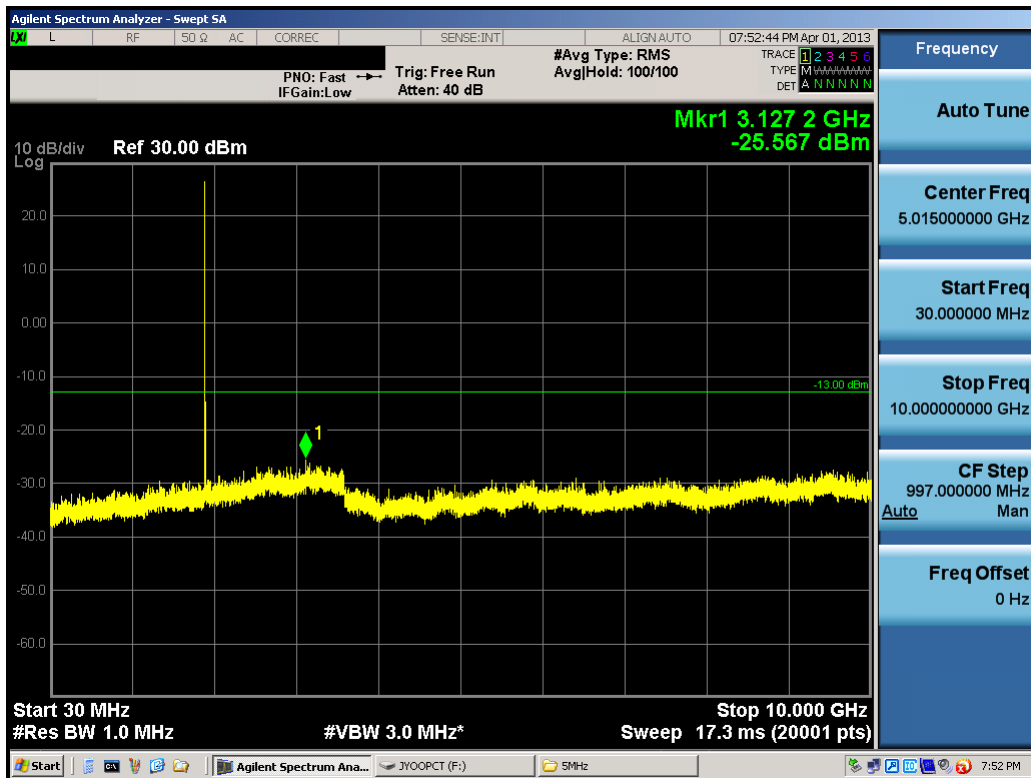


Plot 9-21. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSCHR970C	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 74 of 79

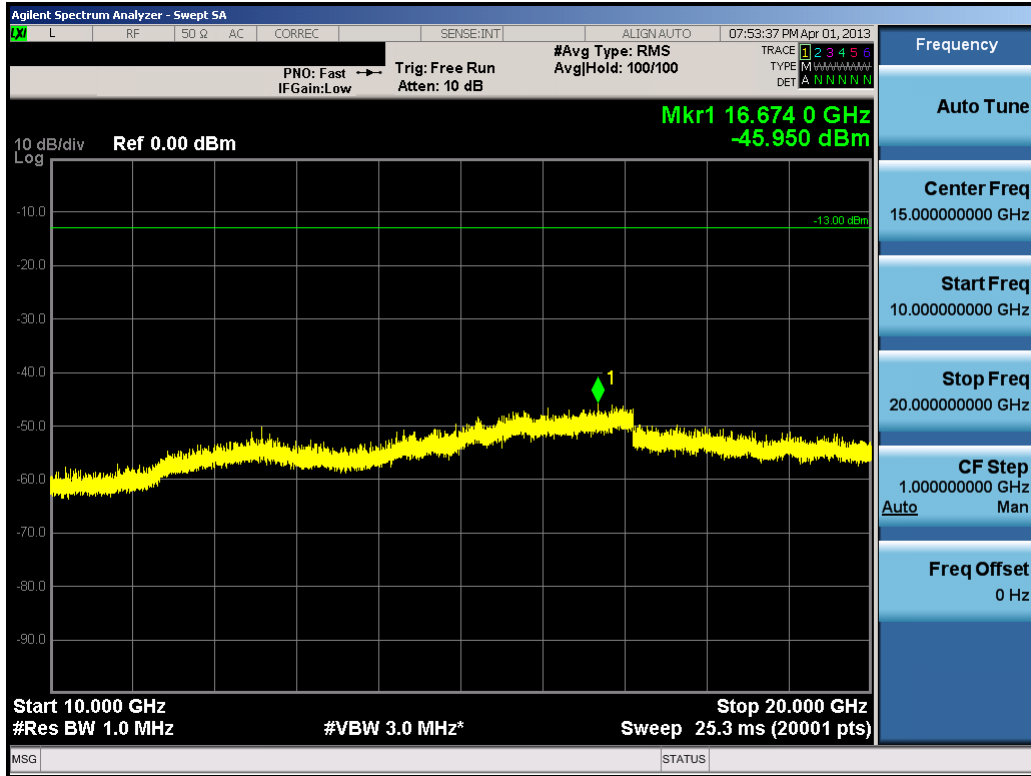


Plot 9-22. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 9-23. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
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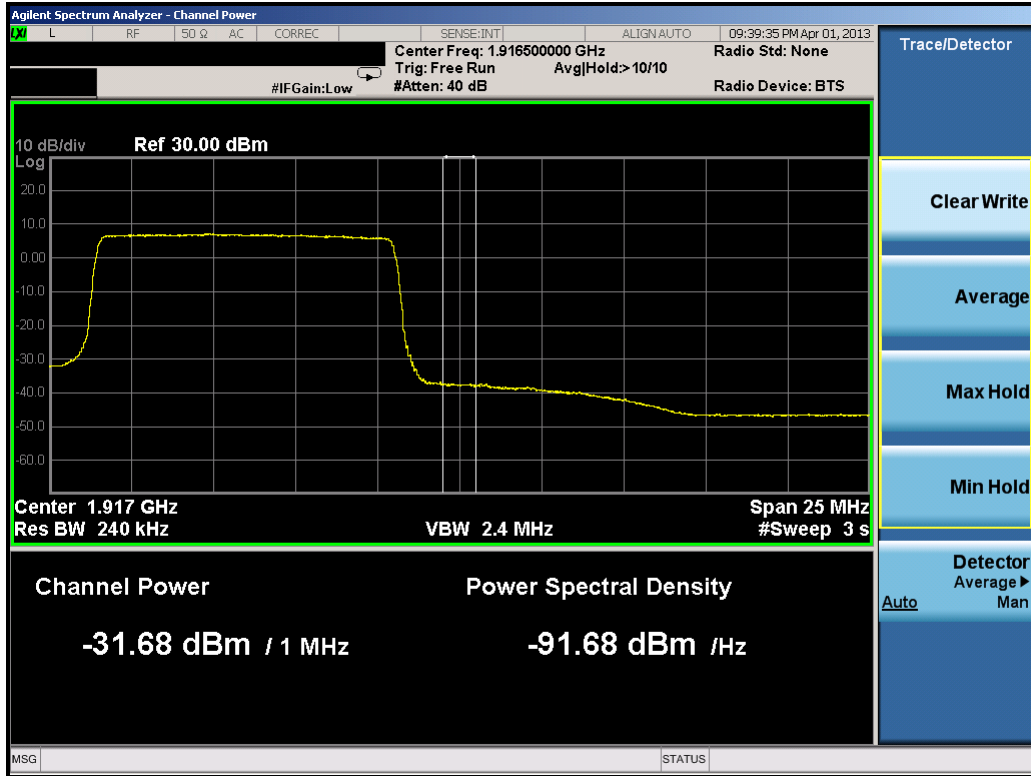


Plot 9-24. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

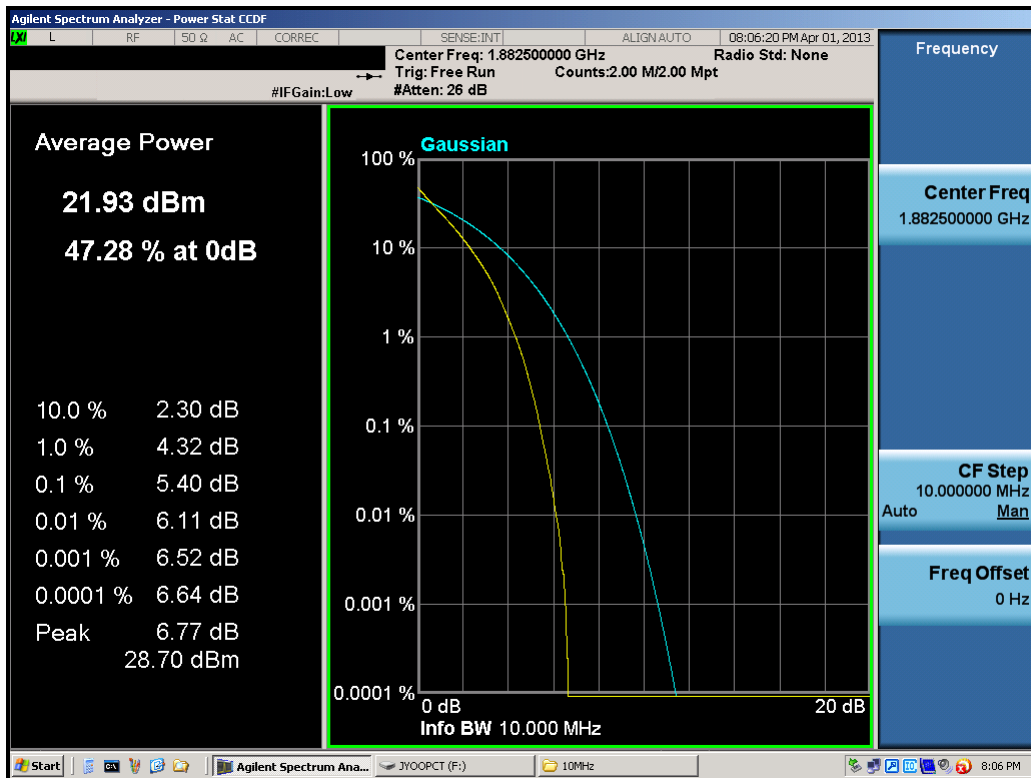


Plot 9-25. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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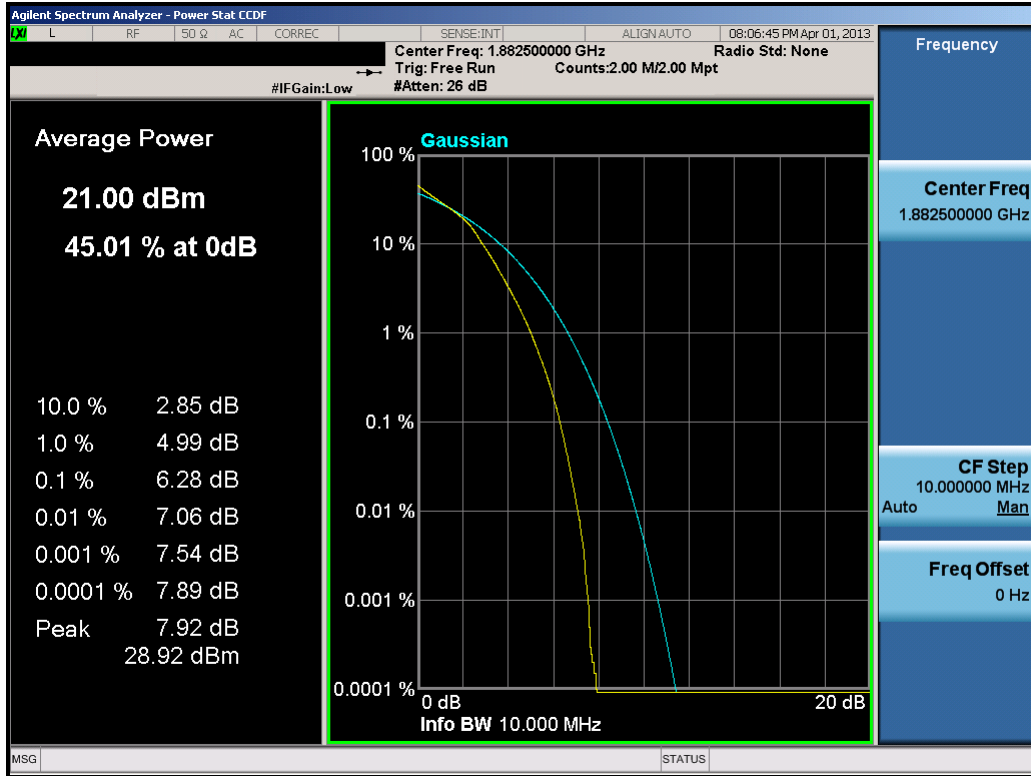


Plot 9-26. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)



Plot 9-27. PAR Plot (10.0MHz QPSK – RB Size 50)

FCC ID: A3LSCHR970C	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Reviewed by: Quality Manager
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Plot 9-28. PAR Plot (10.0MHz 16-QAM – RB Size 50)

FCC ID: A3LSCHR970C		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303260544.A3L	Test Dates: 3/27-4/2/2013	EUT Type: Portable Handset		Page 78 of 79

## 10.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSCHR970C** complies with all the requirements of Parts 2, 24, 27 of the FCC rules for LTE operation only.

FCC ID: A3LSCHR970C		<b>FCC Pt. 24 &amp; 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1303260544.A3L	<b>Test Dates:</b> 3/27-4/2/2013	<b>EUT Type:</b> Portable Handset	Page 79 of 79	