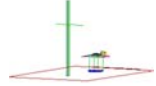




PCTEST ENGINEERING LABORATORY, INC.

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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:
May 3-4, 2012
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0Y1204120457.A3L

FCC ID: A3LSCHI200

APPLICANT: SAMSUNG ELECTRONICS CO., LTD.

Application Type: Certification
FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s): §2; §27
EUT Type: Portable Handset
Tx Frequency Range: 782MHz (LTE - Band 13)
Tx LTE Bandwidth: 10MHz
Max. RF Output Power: 0.096 W ERP (19.84 dBm) (QPSK), 0.086 W ERP (19.34 dBm) (16-QAM)
Emission Designator(s): 8M97G7D (QPSK) / 8M91W7D (16-QAM)
Test Device Serial No.: identical prototype [S/N: 20APR-1]

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 Ortanez
President



FCC ID: A3LSCHI200		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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FCC Part 27

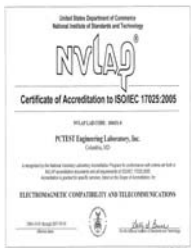


§2.1033 General Information

APPLICANT: Samsung Electronics Co., Ltd.
APPLICANT ADDRESS: 416 Maetan 3-Dong, Yeongtong-gu
 Suwon-si, Gyeonggi-do
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §27
FCC ID: A3LSCHI200
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
EMISSION DESIGNATOR(S): 8M97G7D (QPSK) / 8M91W7D (16-QAM)
MODULATIONS: QPSK, 16-QAM (Uplink)
FREQUENCY TOLERANCE: Emission must remain in band
Test Device Serial No.: 20APR-1 ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST: May 3-4, 2012
TEST REPORT S/N: 0Y1204120457.A3L

Test Facility / Accreditations

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



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- 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.
- 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.

1.2 Testing Facility

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

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



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

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSCHI200**. The test data contained in this report pertains to the emissions from the EUT's LTE operation. When testing in SVLTE mode, test data reported herein pertains to emissions from both LTE and CDMA operations. The CMW500 call box was used to set the EUT to transmit at full power. Each available modulation type (i.e. QPSK, 16-QAM) and RB size/RB offset combination was tested to determine the configuration producing the highest power and the worst case emissions.

2.2 EUT Capabilities

850/1900 CDMA/EvDO Rev0 (BC0, BC1), Band 13 LTE (SVLTE), 802.11a/b/g/n WLAN, 802.11a/n UNII, 5GHz 802.11n 40MHz Bandwidth, 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.

Per 15.19; Docket 95-19

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

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

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

Please see attachment for FCC ID label and label location.

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3.0 DESCRIPTION OF TESTS

3.1 Occupied Bandwidth Emission Limits

§2.1049, §27.53(l)(6)

The occupied bandwidth was measured using the spectrum analyzer's automatic "Occupied Bandwidth" feature. 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. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

3.2 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.

3.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, §27.53(c)

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

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3.4 Radiated Power and Radiated Spurious Emissions

§27.53 (f)

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 is 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 22.917(a) and 24.238(a).

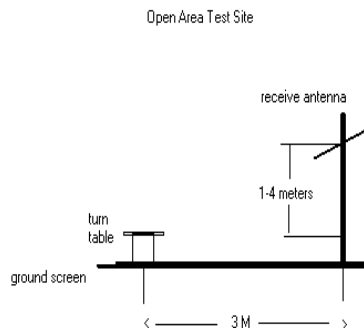


Figure 3-1. Diagram of 3-meter outdoor test range

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3.5 Frequency Stability / Temperature Variation

§2.1055, §27.54

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.

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
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	6/7/2011	Annual	6/7/2012	N/A
-	RE2	Radiated Emissions Cable Set (VHF/UHF)	2/13/2012	Annual	2/13/2013	N/A
-	LTX2	Licensed Transmitter Cable Set	2/17/2012	Annual	2/17/2013	N/A
Agilent	8447D	Broadband Amplifier	5/8/2012	Annual	5/8/2013	1937A03348
Agilent	E4432B	ESG-D Series Signal Generator	3/15/2012	Annual	3/15/2013	US40053896
Agilent	E5515C	Wireless Communications Test Set	10/14/2011	Annual	10/14/2012	GB41450275
Agilent	N9020A	MXA Signal Analyzer	10/10/2011	Annual	10/10/2012	US46470561
Espec	ESX-2CA	Environmental Chamber	5/21/2011	Annual	5/21/2012	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Annual	7/22/2012	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	5/31/2011	Annual	5/31/2012	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	10/1/2010	Biennial	10/1/2012	128337
Mini-Circuits	VHF-3100+	High Pass Filter	2/7/2012	Annual	2/7/2013	31144
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/25/2011	Annual	8/25/2012	100976
Rohde & Schwarz	RS-PR18	1-18 GHz Pre-Amplifier	6/9/2011	Annual	6/9/2012	100071
Rohde & Schwarz	RS-PR26	18-26.5 GHz Pre-Amplifier	6/9/2011	Annual	6/9/2012	100040
Rohde & Schwarz	ESU26	EMI Test Receiver	12/15/2011	Annual	12/15/2012	100342
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	1/26/2012	Biennial	1/26/2014	A051107

Table 4-1. Test Equipment

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5.0 SAMPLE CALCULATIONS

Note: Bandwidth and EIRP values listed below in this section are not representative of actual measurements. They are listed as examples only.

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 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: A3LSCHI200
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (Tx)					
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0
2.1051, 27.53(c)(2), 27.53(c)(4)	Band Edge / Conducted Spurious Emissions (*)	< 43 + 10log ₁₀ (P[Watts]) < 65 + 10log ₁₀ (P[Watts]) in a 6.25kHz bandwidth for emissions in the 763 – 775MHz and 793 – 805MHz bands		PASS	Section 7.0
2.1046	Transmitter Conducted Output Power Measurements	N/A		N/A	See RF Exposure Report
2.1055, 27.54	Frequency Stability	Fundamental emissions must stay within the allotted band		PASS	Section 0
27.50(b)(10)	Effective Radiated Power	< 3 Watts max. ERP	RADIATED	PASS	Section 6.2
2.1053, 27.53(c)(2) 27.53(c)(4)	Undesirable Out-of-Band Emissions	< 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 6.3
2.1053, 27.53(f)	Undesirable Emissions in the 1559 – 1610MHz band	< -40dBm/MHz EIRP (wideband) < -50dBm EIRP (narrowband)		PASS	Section 6.4

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 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 Output Data

§27.50(b)(10)

Freq [MHz]	Mod.	Battery	RB Size / Offset	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Limit [dBm]	Margin [dBm]
782.00	QPSK	Standard	50 / 0	-19.150	15.75	3.94	H	19.69	0.093	34.77	-15.08
782.00	16-QAM	Standard	50 / 0	-19.600	15.30	3.94	H	19.24	0.084	34.77	-15.53
782.00	QPSK	Standard	1 / 0	-19.000	15.90	3.94	H	19.84	0.096	34.77	-14.93
782.00	16-QAM	Standard	1 / 0	-19.500	15.40	3.94	H	19.34	0.086	34.77	-15.43

Table 6-2. Effective Radiated Power Output Data

Notes:

1. This device was tested under all configurations and the worst case radiated power is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

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6.3 LTE Radiated Measurements

§2.1053, §27.53(c)(2)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 782.00 MHz
 MEASURED OUTPUT POWER: 19.84 dBm = 0.096 W
 MODULATION SIGNAL: QPSK
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.84 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
2346.00	-55.30	8.67	-46.63	H	66.5
3128.00	-95.44	8.73	-86.71	H	106.5
3910.00	-93.78	8.92	-84.86	H	104.7
4692.00	-94.44	11.21	-83.24	H	103.1

Table 6-3. Radiated Spurious Data (QPSK Modulation)

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI200		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.4 LTE Radiated Measurements in 1559 – 1610MHz Band

§2.1053, §27.53(f)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 782.00 MHz
 MEASURED OUTPUT POWER: 19.84 dBm = 0.096 W
 BANDWIDTH: 10 Mhz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

FREQUENCY (MHz)	EMISSION TYPE	Mod.	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	MARGIN (dB)
1573.10	WIDEBAND	QPSK	-61.34	8.43	-52.90	H	-12.90
1572.80	WIDEBAND	16QAM	-62.54	8.43	-54.11	H	-14.11

Table 6-4. Radiated Spurious Data

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

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6.5 SVLTE Radiated Spurious Measurements

§2.1053, §27.53(c)(2)

Intermodulation distortion (IMD) was investigated while both LTE and CDMA were operating simultaneously. Both LTE and CDMA were set to maximum power during testing. The 2nd and 3rd order IMD produce the highest radiated spurious emissions. Both QPSK and 16-QAM modulation were investigated for LTE and the worst case emissions were found in QPSK modulation. Only the worst case out-of-band emissions within 20dB of the limit are reported below.

Note: The tables below show test results for low, middle, and high channel for Cellular and PCS CDMA while LTE was set to transmit with 1RB, offset 25 in QPSK modulation at 782Mhz. This produced worst case emissions.

CDMA OPERATING FREQ (f2):	824.70	MHz
LTE OPERATING FREQ (f1):	782.00	MHz
MODULATION SIGNAL:	CDMA / QPSK	
LTE BANDWIDTH:	10	MHz
LTE RB SIZE / OFFSET	1 / 25	
DISTANCE:	3	meters
LIMIT:	-13	dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	867.40	-34.07	5.51	-28.56	H	-15.6

Table 6-5. Radiated Spurious Data (SVLTE)

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 25 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

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SVLTE Radiated Spurious Measurements (Continued)

§2.1053, §27.53(c)(2)

CDMA OPERATING FREQ (f2): 836.52 MHz
 LTE OPERATING FREQ (f1): 782.00 MHz
 MODULATION SIGNAL: CDMA / QPSK
 LTE BANDWIDTH: 10 MHz
 LTE RB SIZE / OFFSET: 1 / 25
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	891.04	-32.68	5.43	-27.25	H	-14.2

Table 6-6. Radiated Spurious Data (SVLTE)

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 25 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI200		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Measurements (Continued)

§2.1053, §27.53(c)(2)

CDMA OPERATING FREQ (f2): 848.31 MHz
 LTE OPERATING FREQ (f1): 782.00 MHz
 MODULATION SIGNAL: CDMA / QPSK
 LTE BANDWIDTH: 10 MHz
 LTE RB SIZE / OFFSET: 1 / 25
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	914.62	-34.13	7.29	-26.84	H	-13.8

Table 6-7. Radiated Spurious Data (SVLTE)

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 25 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI200		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Measurements (Continued)

§2.1053, §27.53(c)(2)

CDMA OPERATING FREQ (f2): 1851.25 MHz
 LTE OPERATING FREQ (f1): 782.00 MHz
 MODULATION SIGNAL: CDMA / QPSK
 LTE BANDWIDTH: 10 MHz
 LTE RB SIZE / OFFSET: 1 / 25
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	2920.50	-31.36	7.24	-24.12	H	-11.1
2nd	f1+f2	2633.25	-24.73	6.10	-18.63	H	-5.6
2nd	f2-f1	1069.25	-25.36	2.61	-22.75	H	-9.7

Table 6-8. Radiated Spurious Data (SVLTE)

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 25 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI200		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Measurements (Continued)

§2.1053, §27.53(c)(2)

CDMA OPERATING FREQ (f2): 1880.00 MHz
 LTE OPERATING FREQ (f1): 782.00 MHz
 MODULATION SIGNAL: CDMA / QPSK
 LTE BANDWIDTH: 10 MHz
 LTE RB SIZE / OFFSET: 1 / 25
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f2-f1	2978.00	-24.86	5.43	-19.43	H	-6.4
2nd	f1+f2	2662.00	-27.77	10.42	-17.35	H	-4.4
2nd	f2-f1	1098.00	-23.33	2.93	-20.40	H	-7.4

Table 6-9. Radiated Spurious Data (SVLTE)

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 25 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI200		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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SVLTE Radiated Spurious Measurements (Continued)

§2.1053, §27.53(c)(2)

CDMA OPERATING FREQ (f2): 1908.75 MHz
 LTE OPERATING FREQ (f1): 782.00 MHz
 MODULATION SIGNAL: CDMA / QPSK
 LTE BANDWIDTH: 10 MHz
 LTE RB SIZE / OFFSET: 1 / 25
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
2nd	f1+f2	2690.75	-25.69	8.40	-17.29	H	-4.3
2nd	f2-f1	1126.75	-24.39	3.24	-21.15	H	-8.1

Table 6-10. Radiated Spurious Data (SVLTE)

Notes:

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 25 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.
2. Emissions from the EUT were investigated while the unit was powered by a standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSCHI200		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.6 LTE Frequency Stability Measurements

\$2.1055, \$27.54

OPERATING FREQUENCY: <u>782,000,000</u> Hz					
REFERENCE VOLTAGE: <u>3.8</u> VDC					
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	782,000,005	5	0.000001
100 %		- 30	782,000,008	8	0.000001
100 %		- 20	782,000,005	5	0.000001
100 %		- 10	782,000,009	9	0.000001
100 %		0	782,000,005	5	0.000001
100 %		+ 10	782,000,006	6	0.000001
100 %		+ 20	782,000,004	4	0.000001
100 %		+ 30	782,000,009	9	0.000001
100 %		+ 40	782,000,013	13	0.000002
100 %		+ 50	782,000,016	16	0.000002
115 %	4.37	+ 20	782,000,006	6	0.000001
BATT. ENDPOINT	3.40	+ 20	782,000,007	7	0.000001

Table 6-11. Frequency Stability Data

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LTE Frequency Stability Measurements (Cont'd)

§2.1055, §27.54

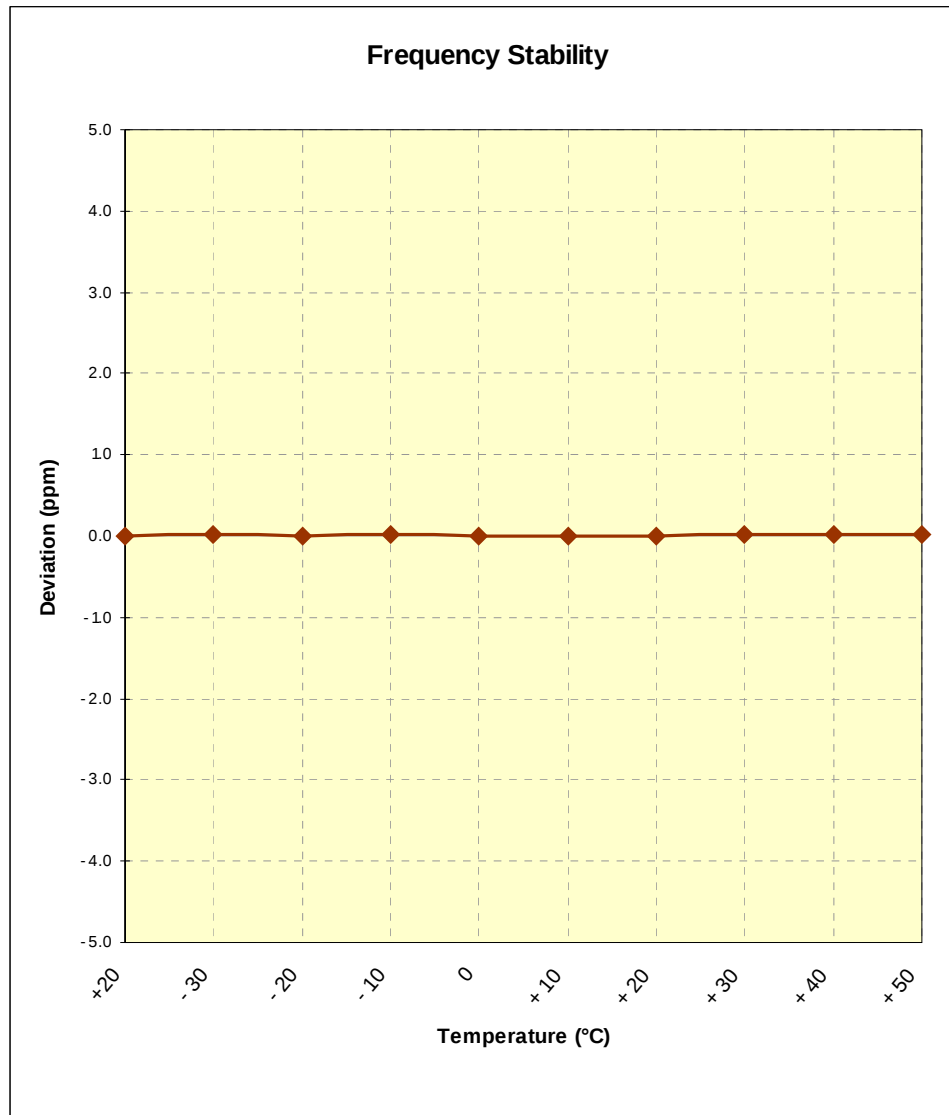
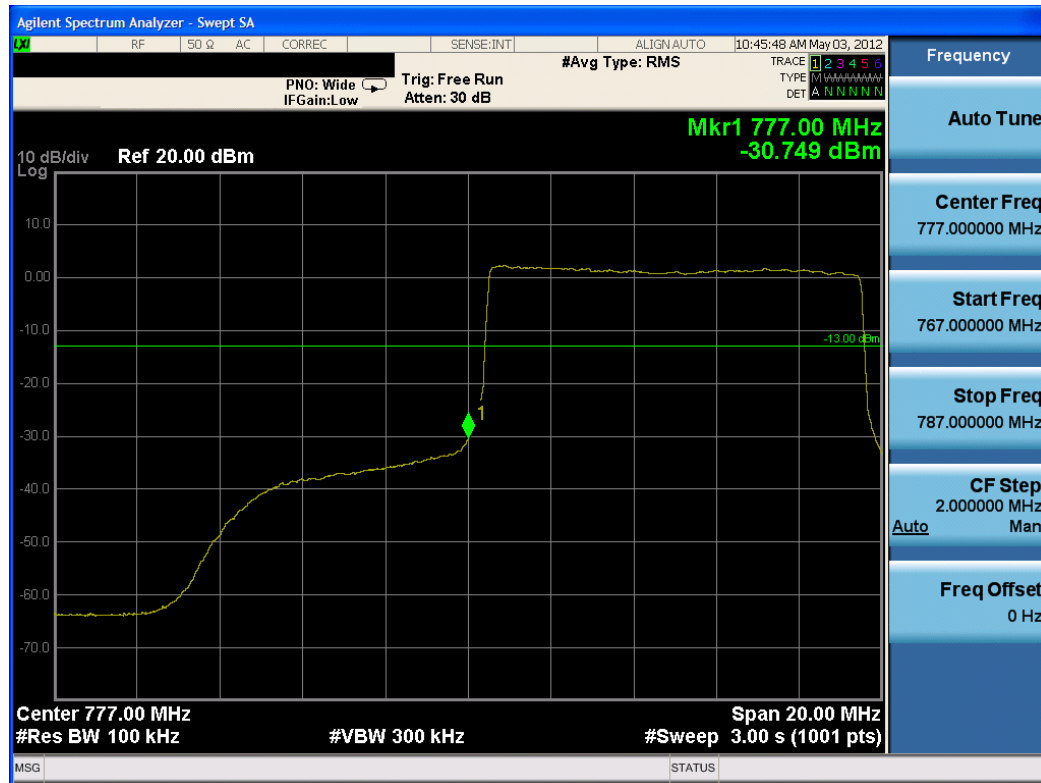


Figure 6-1. Frequency Stability Graph

FCC ID: A3LSCHI200	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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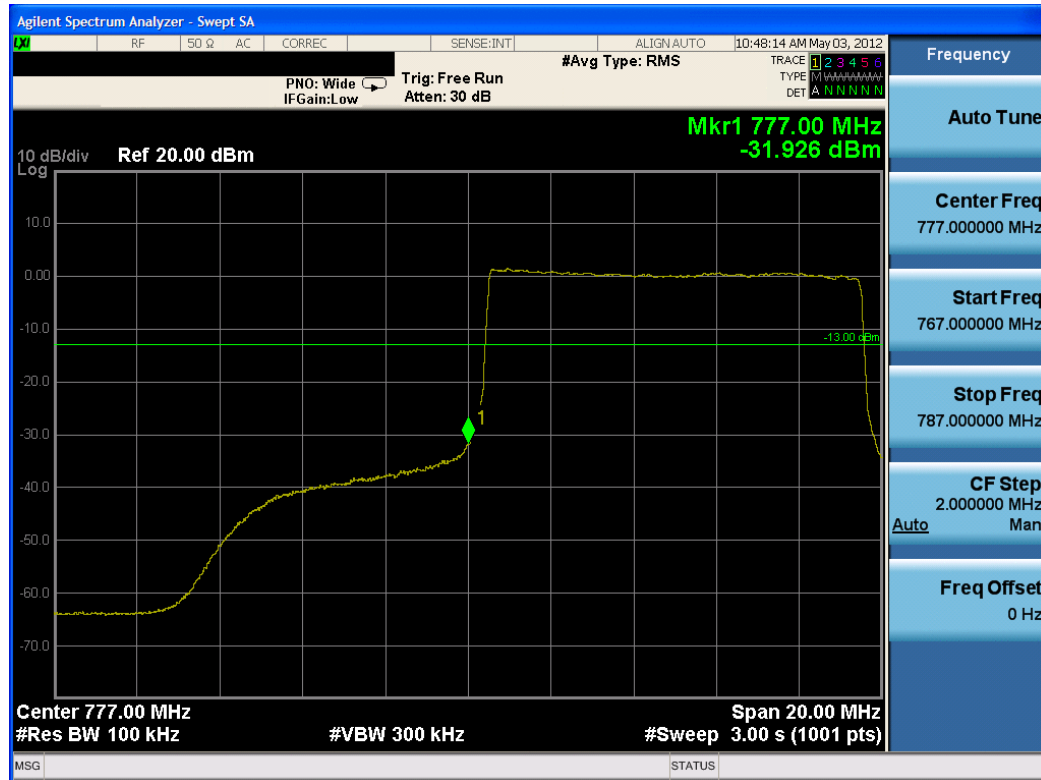
7.0 PLOT(S) OF EMISSIONS

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 $-35\text{dBm} + 2.04\text{dB} = -32.96\text{dBm}$.

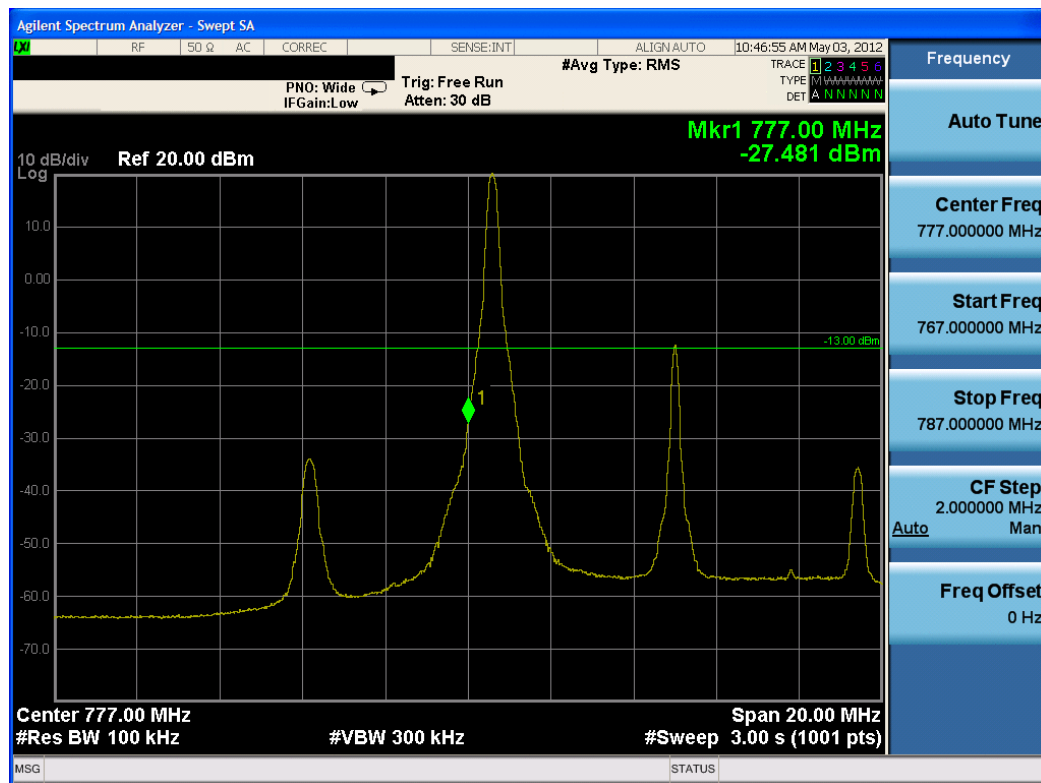


Plot 7-1. Lower Band Edge Plot (QPSK – RB Size 50)

FCC ID: A3LSCHI200	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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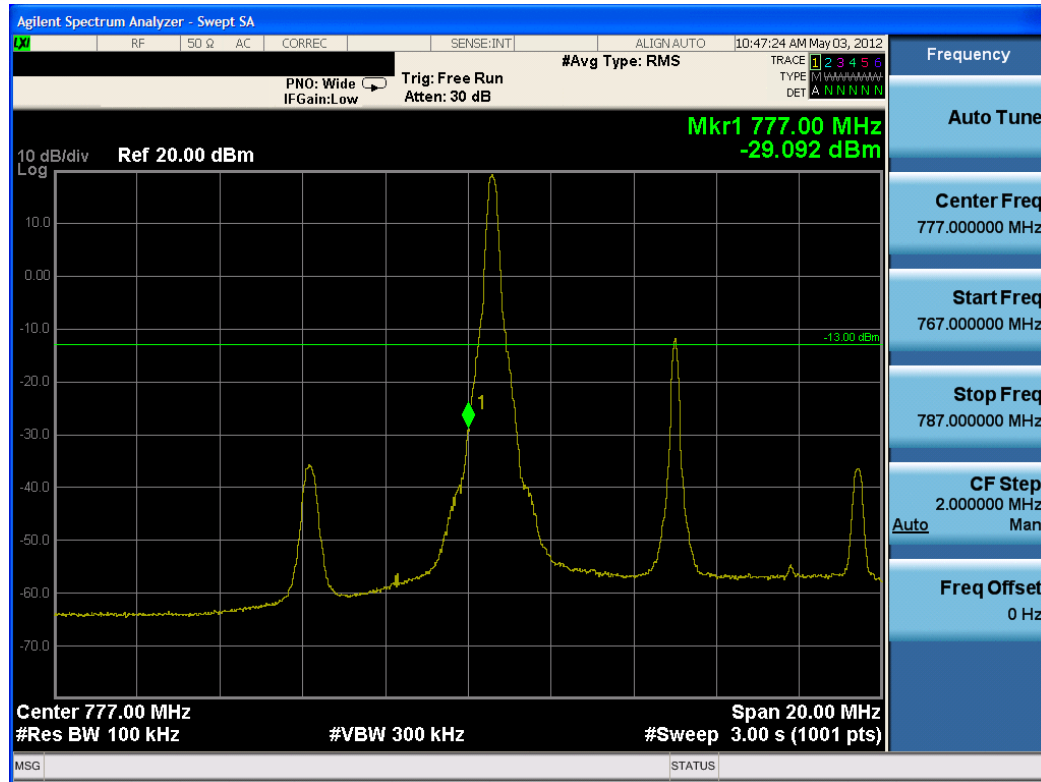


Plot 7-2. Lower Band Edge Plot (16-QAM – RB Size 50)

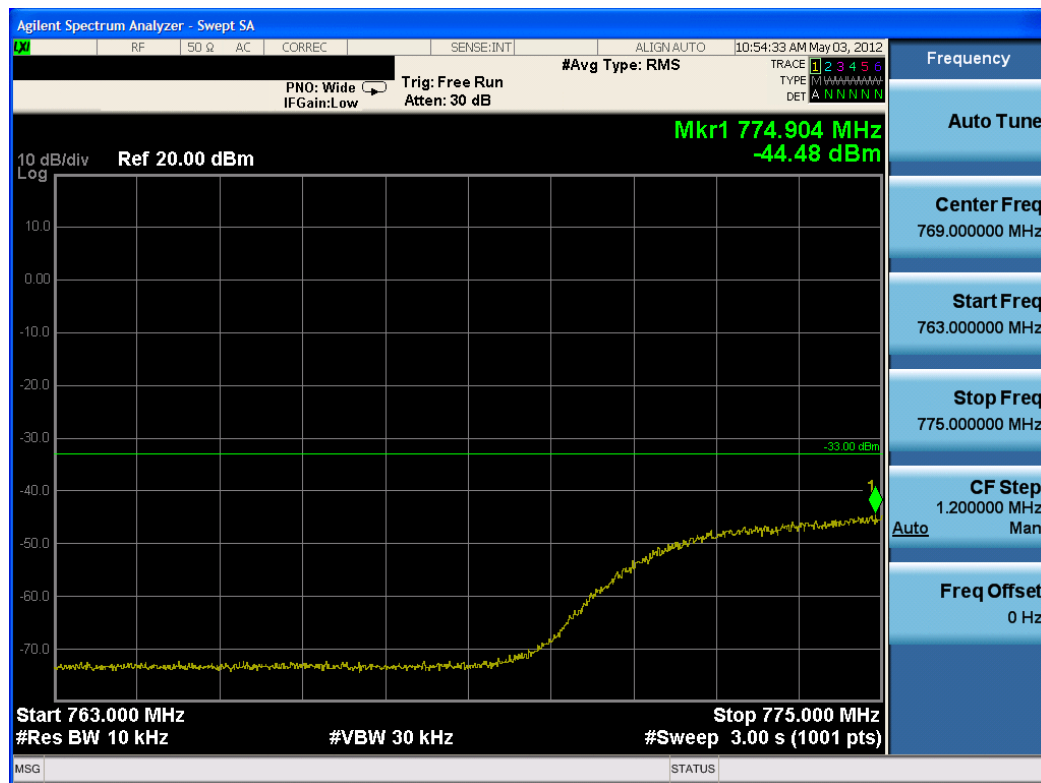


Plot 7-3. Lower Band Edge Plot (QPSK – RB Size 1, Offset 0)

FCC ID: A3LSCHI200	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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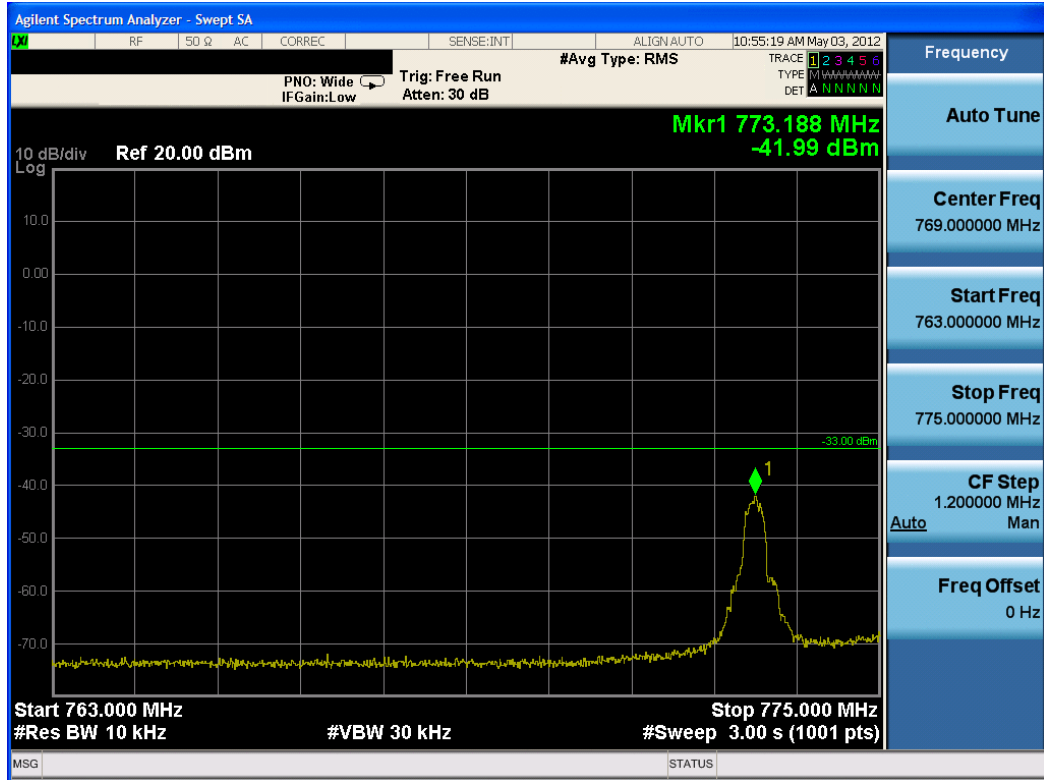


Plot 7-4. Lower Band Edge Plot (16-QAM – RB Size 1, Offset 0)

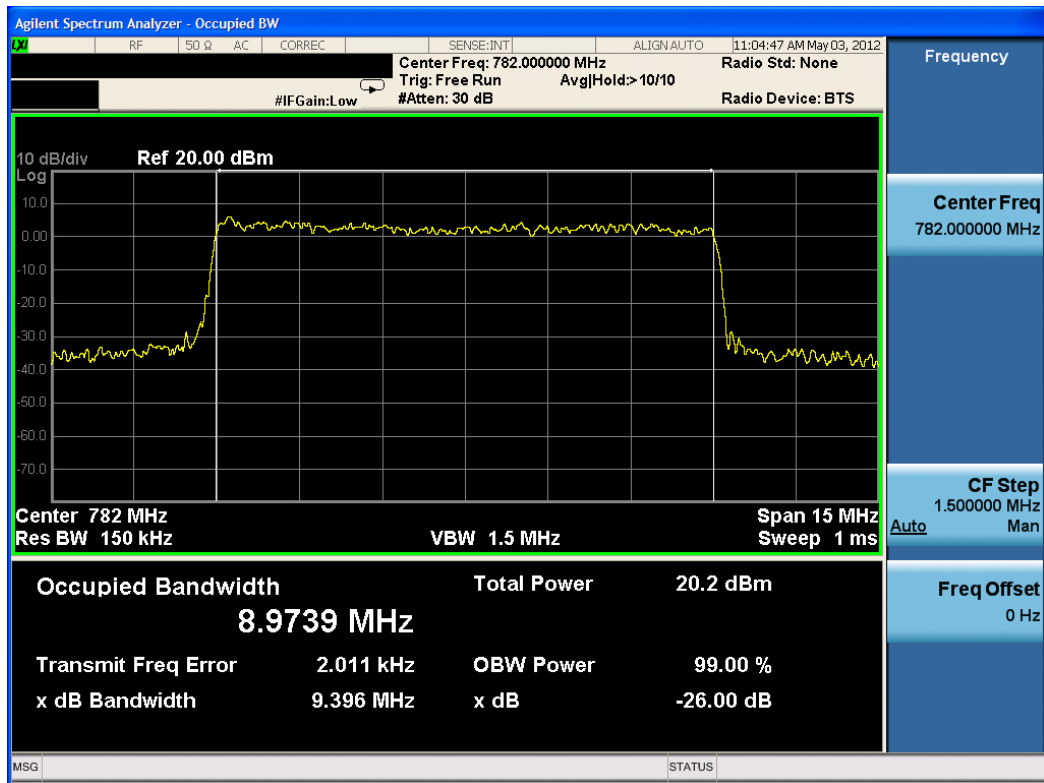


Plot 7-5. Lower Emission Mask (763 – 775MHz) Plot (QPSK – RB Size 50)

FCC ID: A3LSCHI200	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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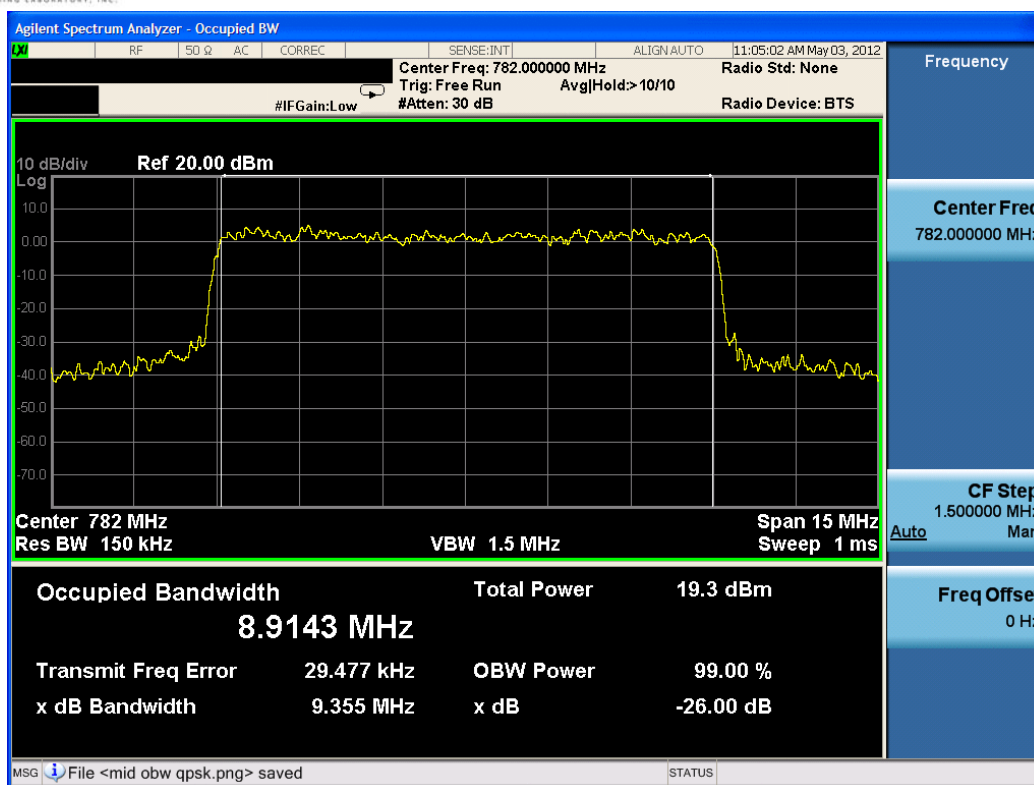


Plot 7-6. Lower Emission Mask (763 – 775MHz) Plot (QPSK – RB Size 1)

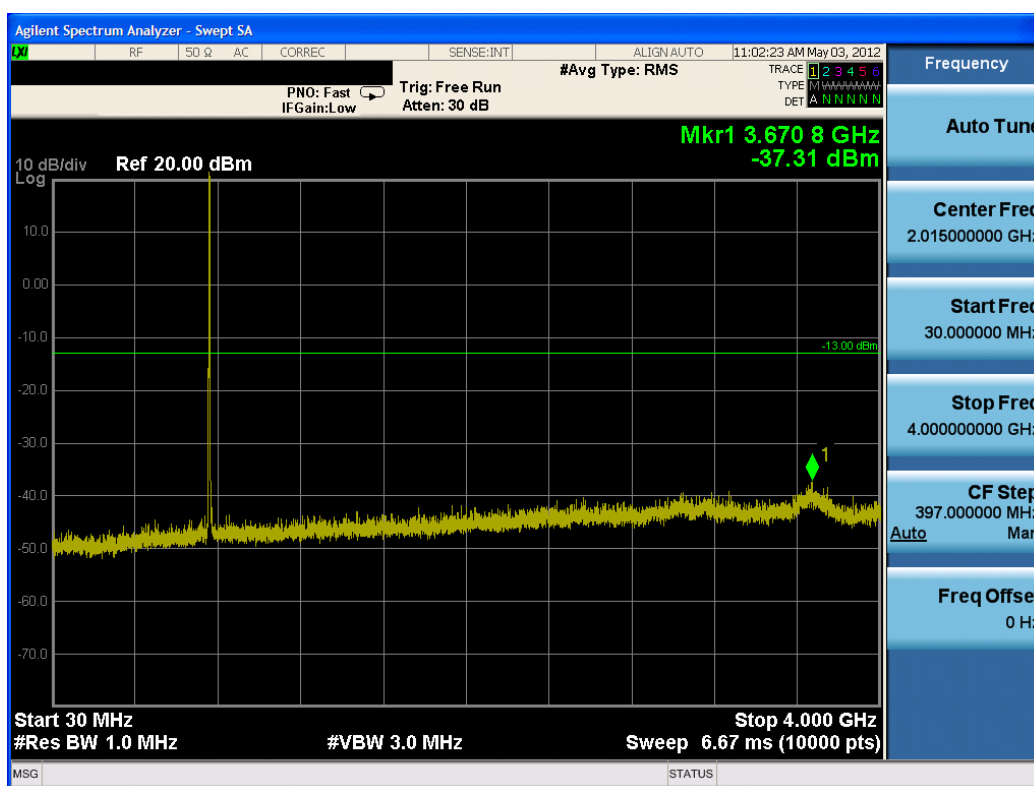


Plot 7-7. Occupied Bandwidth Plot (QPSK – RB Size 50)

FCC ID: A3LSCHI200	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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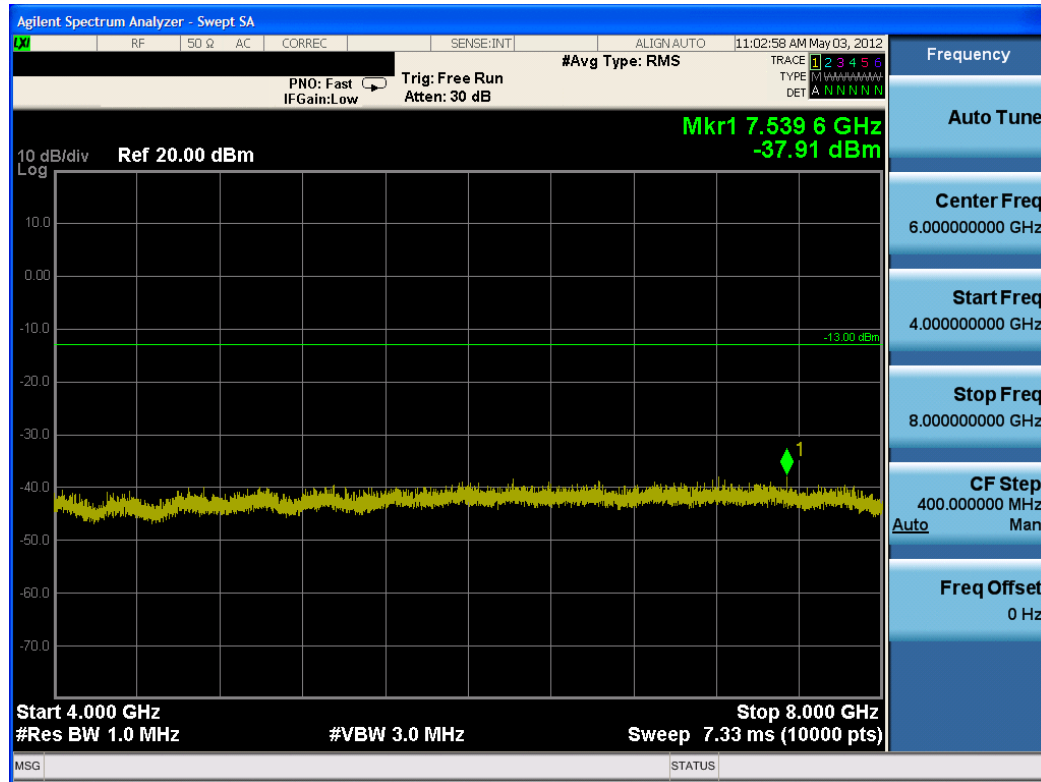


Plot 7-8. Occupied Bandwidth Plot (16-QAM – RB Size 50)

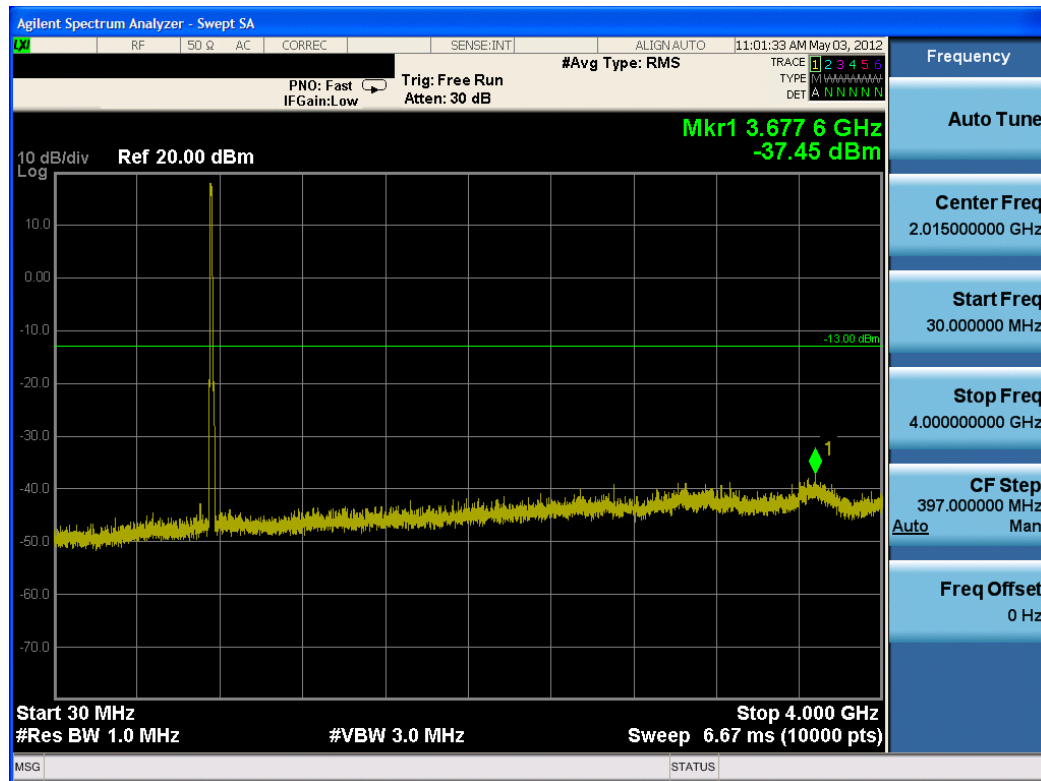


Plot 7-9. Conducted Spurious Plot (QPSK – RB Size 1, RB Offset 49)

FCC ID: A3LSCHI200	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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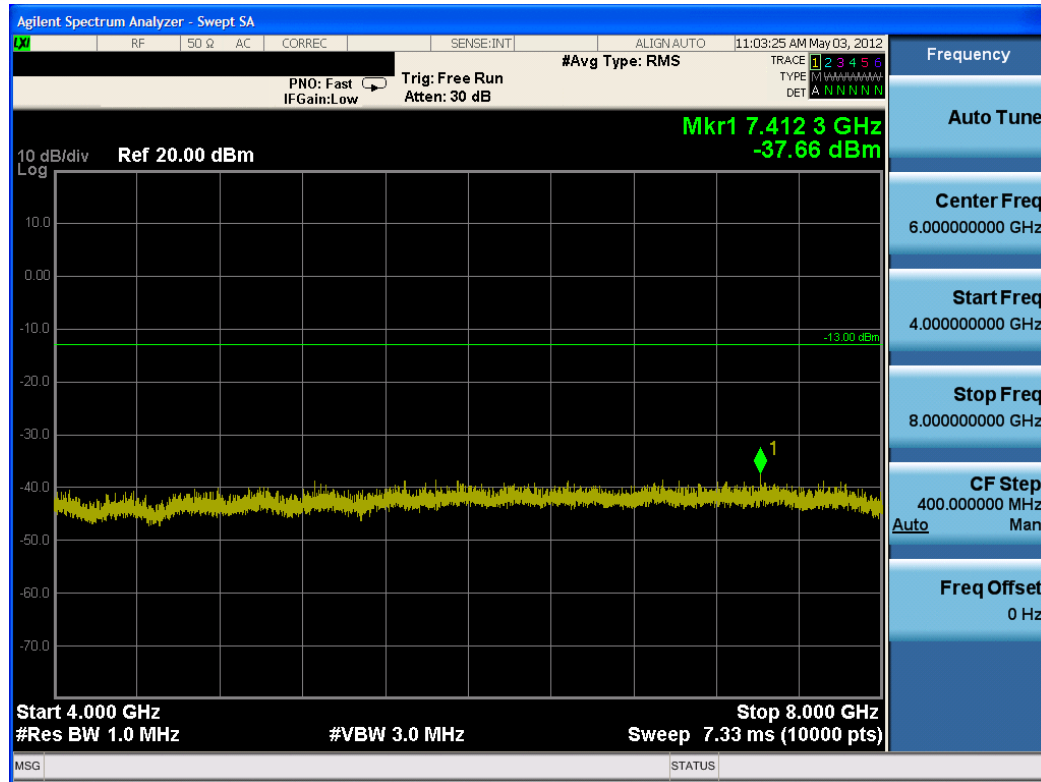


Plot 7-10. Conducted Spurious Plot (QPSK – RB Size 1, RB Offset 49)



Plot 7-11. Conducted Spurious Plot (QPSK – RB Size 50)

FCC ID: A3LSCHI200	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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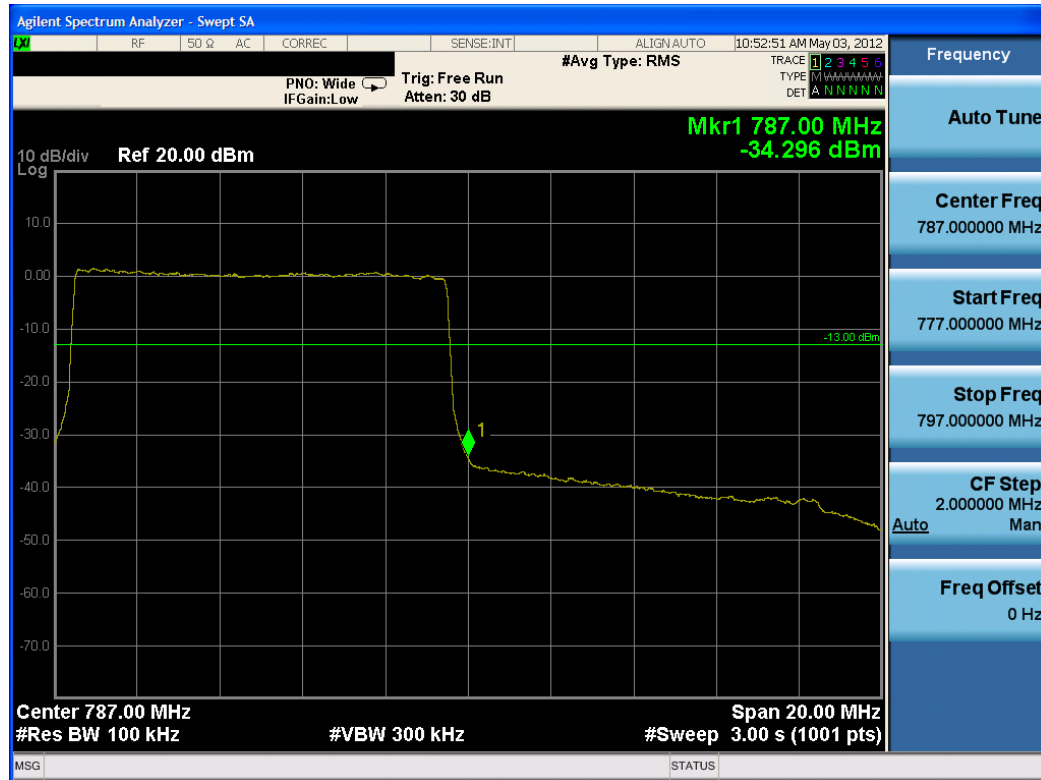


Plot 7-12. Conducted Spurious Plot (QPSK – RB Size 50)

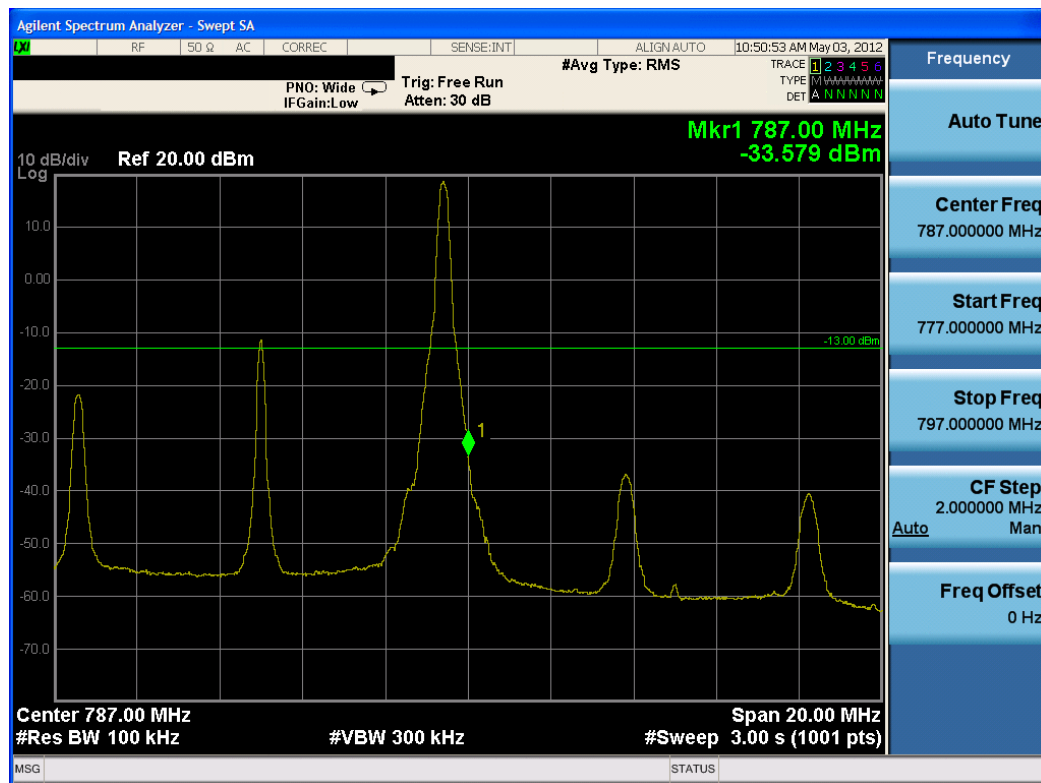


Plot 7-13. Upper Band Edge Plot (QPSK – RB Size 50)

FCC ID: A3LSCHI200	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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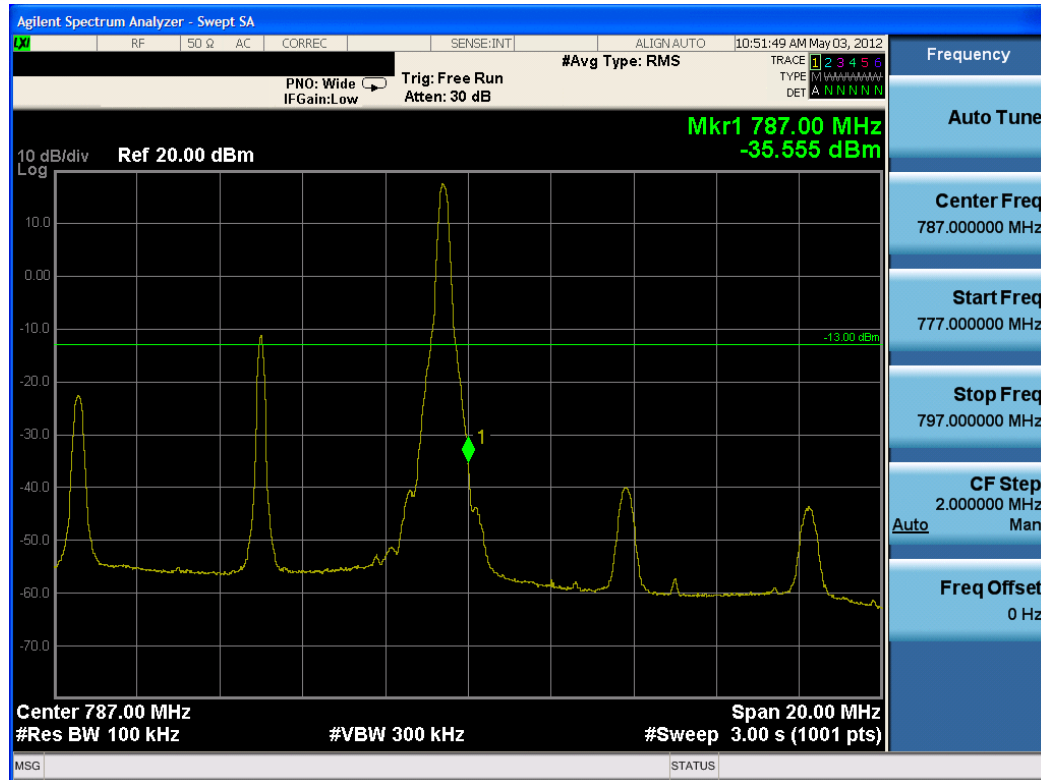


Plot 7-14. Upper Band Edge Plot (16-QAM – RB Size 50)

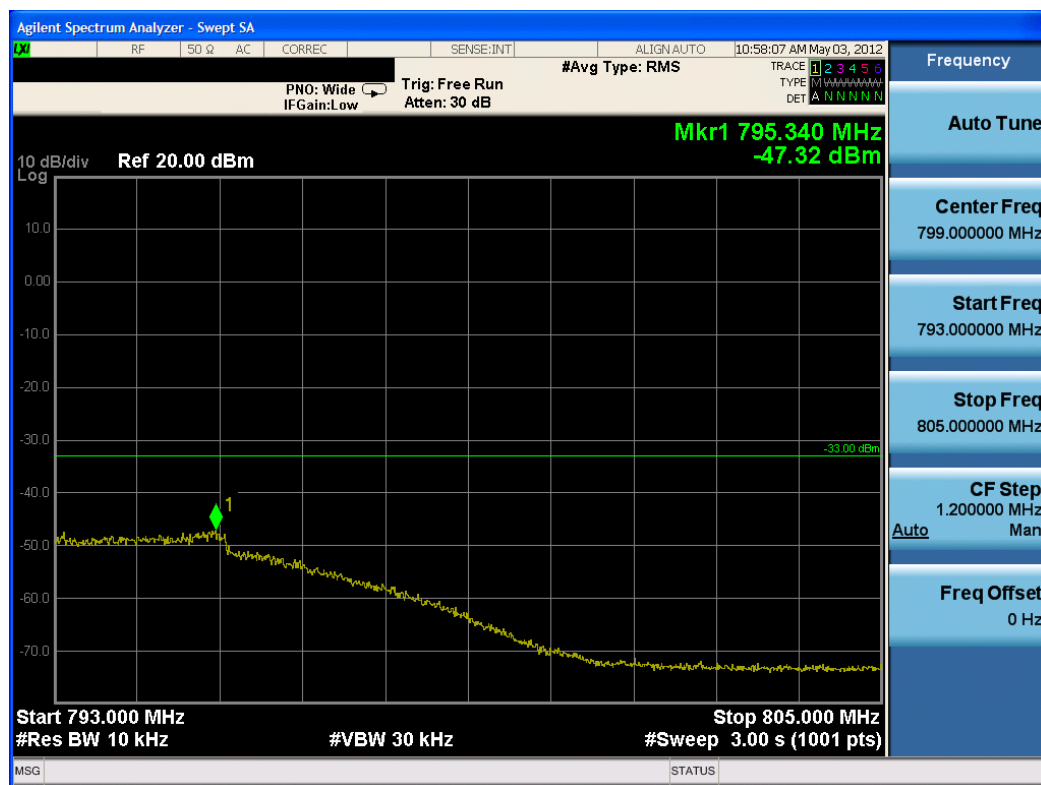


Plot 7-15. Upper Band Edge Plot (QPSK – RB Size 1, Offset 49)

FCC ID: A3LSCHI200	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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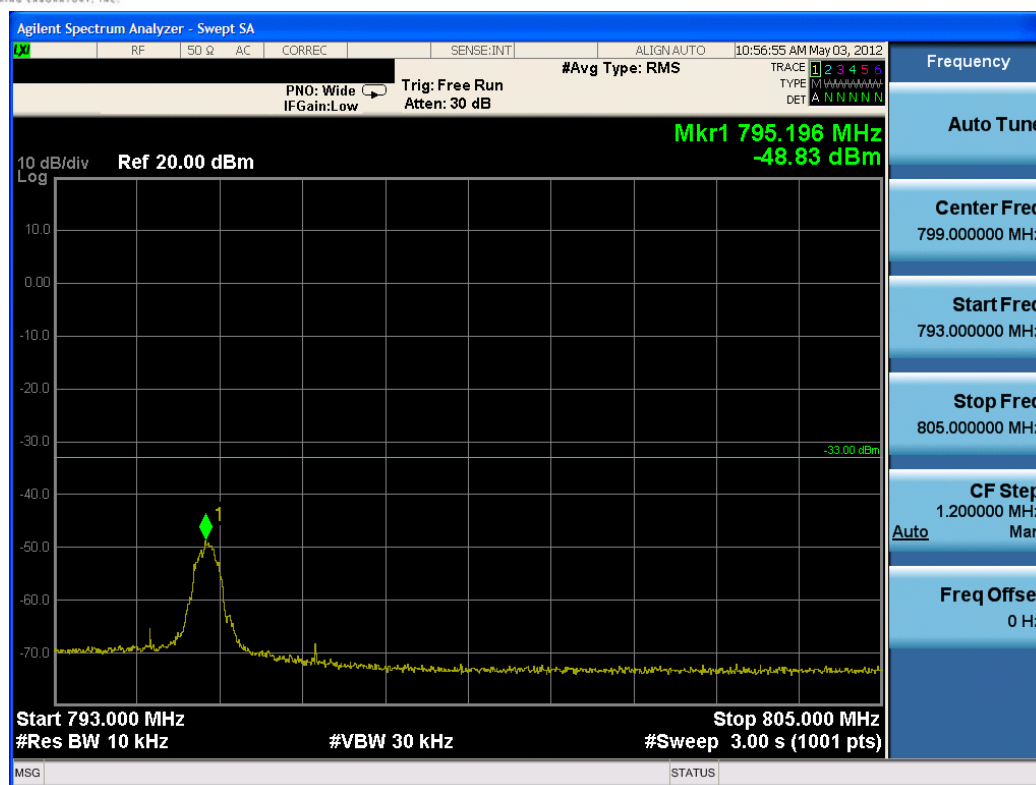


Plot 7-16. Upper Band Edge Plot (16-QAM – RB Size 1, Offset 49)



Plot 7-17. Upper Emission Mask (793 – 805MHz) Plot (QPSK – RB Size 50)

FCC ID: A3LSCHI200	 FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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Plot 7-18. Upper Emission Mask (793 – 805MHz) Plot (QPSK – RB Size 1RB, Offset 49)

FCC ID: A3LSCHI200	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSCHI200** complies with all the requirements of Parts 2 and 27 of the FCC rules.

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Test Report S/N: 0Y1204120457.A3L	Test Dates: May 3-4, 2012	EUT Type: Portable Handset		Page 33 of 33