



MEASUREMENT REPORT

FCC Part 27 LTE Band 4

Applicant Name:

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

Date of Testing:

Sept. 27- Oct.4, 2012

Test Site/Location:

PCTEST Lab., Columbia, MD, USA

Test Report Serial No.:

0Y1209261424.A3L

FCC ID : A3LSCHR950

APPLICANT: SAMSUNG ELECTRONICS CO., LTD.

Application Type:

Class II Permissive Change

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s):

§2; §27

EUT Type:

Portable Handset

Model(s):

SCH-R950

Test Device Serial No.:

identical prototype [S/N: "FCC#3"]

Class II Perm. Change:

Antenna position for LTE Band 4

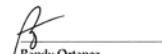
Original Grant Date:

October 2, 2012

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE Band 4	1712.5 - 1752.5	4M48G7W	QPSK	0.0330	15.23
LTE Band 4	1712.5 - 1752.5	4M48W7W	16QAM	0.0270	14.33
LTE Band 4	1715 - 1750	8M93G7W	QPSK	0.0390	15.91
LTE Band 4	1715 - 1750	8M94W7W	16QAM	0.0290	14.62

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

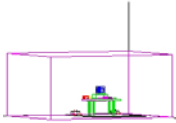


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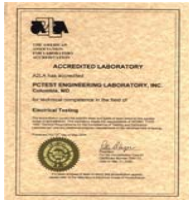


§2.1033 General Information

APPLICANT: Samsung Electronics Co., Ltd.
APPLICANT ADDRESS: 416 Maetan 3-Dong, Yeongtong-gu
 Suwon-si, Gyeonggi-do, 443-742, Republic of Korea
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 7185 Oakland Mills Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §27
BASE MODEL: SCH-R950
FCC ID: A3LSCHR950
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
Test Device Serial No.: "FCC#3" ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST: Sept. 27- Oct.4, 2012
TEST REPORT S/N: 0Y1209261424.A3L

Test Facility / Accreditations

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



- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2 Testing Facility

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

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on February 15, 2012.

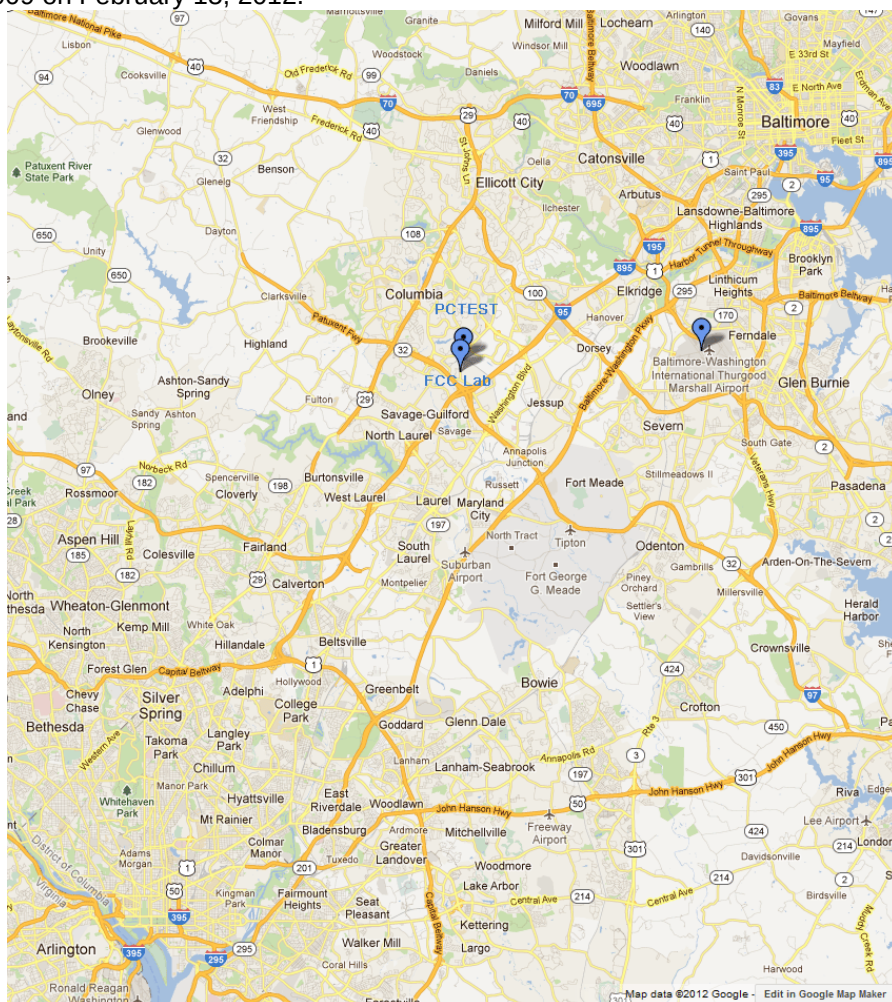


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSCHR950**. 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 Rev 0 (BC0, BC15, BC1), Band 2, 4, 5, 12 (5MHz/10MHz BW) LTE, 802.11a/b/g/n 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..

Per 15.19; Docket 95-19

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

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

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

Please see attachment for FCC ID label and label location.

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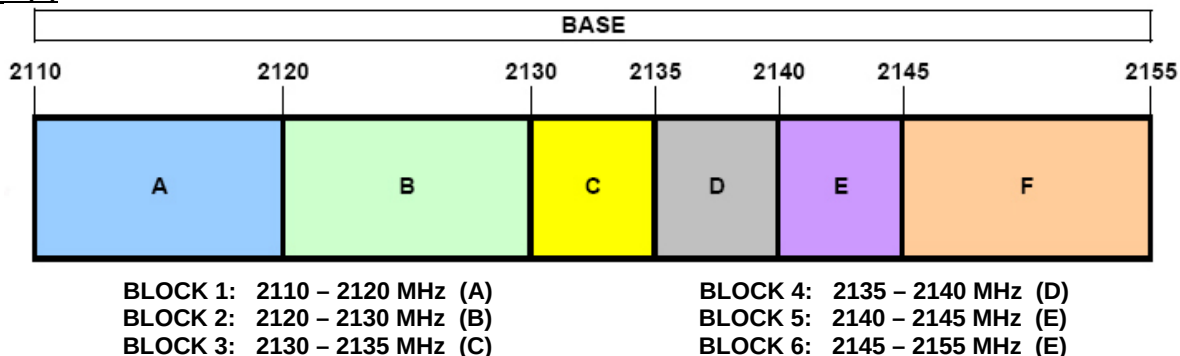
3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-C-2004) was used in the measurement of the **Samsung Portable Handset** FCC ID: **A3LSCHR950**.

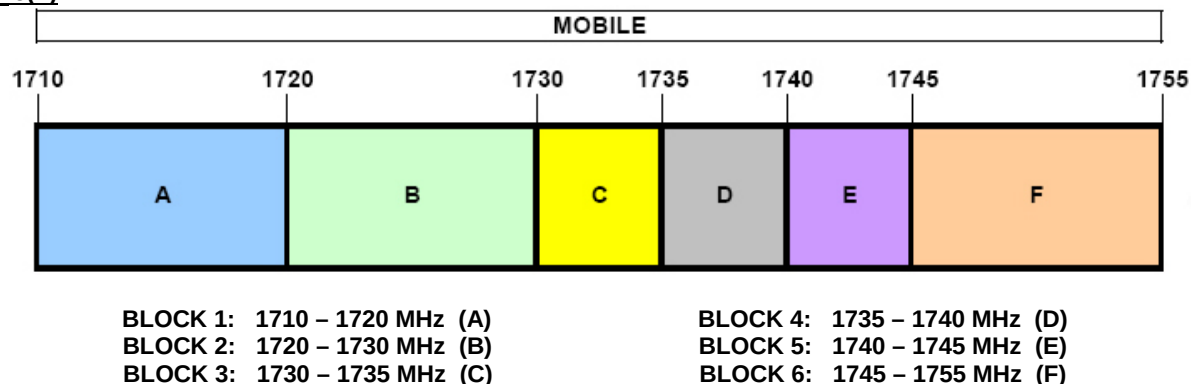
3.2 AWS - Base Frequency Blocks

§27.5(h)



3.3 AWS - Mobile Frequency Blocks

§27.5(h)



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3.4 Occupied Bandwidth

§2.1049, RSS-Gen (4.6.1)

The implementation of this test is performed by the spectrum analyzer's occupied bandwidth function. The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

3.5 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, §27.53(g)(h)

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

3.6 Peak-Average Ratio

§27.50(d)(5)

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

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3.7 Radiated Power and Radiated Spurious Emissions

§2.1053, §27.53(g)(h), 27.50(d)(4), 27.50(c)(10)

Radiated spurious emissions are investigated indoors in a semi-anechoic chamber to determine the frequencies producing the worst case emissions. Final measurements for radiated power and radiated spurious emissions are performed on the 3 meter OATS per the guidelines of ANSI/TIA-603-C-2004. The measurement area is situated on an 18 meter x 20 meter galvanized 1/2" hardware cloth as the conducting ground plane. This material is sewn together in sections 4 feet wide and 60 feet long. A total of eighteen sections are required to cover the entire measurement area. Sections are laid across the width of the pad, overlapped 1" and sewn and soldered together at intervals of 3" (7.6 cm.) The terrain of the test site is reasonably flat and level. Power and cable to the test site are buried 18" deep into the ground outside the perimeter of the site. An all-weather non-metallic housing is situated on a 2 x 3 meter area adjacent to the measurement area to house the test equipment. The equipment under test was transmitting while connected to its integral antenna and is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Emissions are also investigated with the receive antenna horizontally and vertically polarized. The level of the maximized emission is recorded with the spectrum analyzer using a peak detector with RBW = 1MHz, VBW = 3MHz for emissions greater than 1GHz. For emissions below 1GHz, the spectrum analyzer is set to RBW = 100kHz and VBW = 300kHz.

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

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

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

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$ specified in 27.53(g)(h).

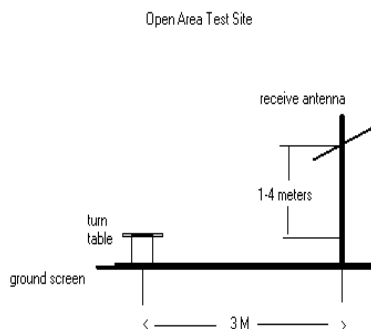


Figure 3-1. Diagram of 3-meter outdoor test range

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3.8 SVLTE Transmission Capabilities

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

No.	Capable Transmit Configurations
1	1X CDMA 850 Voice + LTE 700 MHz Data
2	1X CDMA 1700 Voice + LTE 700 MHz Data
3	1X CDMA 1900 Voice + LTE 700 MHz Data
4	1X CDMA 850 Voice + LTE 800 MHz Data
5	1X CDMA 1700 Voice + LTE 800 MHz Data
6	1X CDMA 1900 Voice + LTE 800 MHz Data
7	1X CDMA 850 Voice + LTE 1700 MHz Data
8	1X CDMA 1700 Voice + LTE 1700 MHz Data
9	1X CDMA 1900 Voice + LTE 1700 MHz Data
10	1X CDMA 850 Voice + LTE 1900 MHz Data
11	1X CDMA 1700 Voice + LTE 1900 MHz Data
12	1X CDMA 1900 Voice + LTE 1900 MHz Data

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 shown in this report.

3.9 Frequency Stability / Temperature Variation

§2.1055, §27.54

The frequency stability of the transmitter is measured by:

- Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- 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. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency for Part 22.

Time Period and Procedure:

- The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 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.
- Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A sufficient stabilization period at each temperature shall be used prior to each frequency requirement.

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4.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTX1	Licensed Transmitter Cable Set	1/25/2012	Annual	1/25/2013	N/A
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	7/10/2012	Annual	7/10/2013	N/A
Agilent	8447D	Broadband Amplifier	5/8/2012	Annual	5/8/2013	1937A03348
Agilent	N9020A	MXA Signal Analyzer	10/10/2011	Annual	10/10/2012	US46470561
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	Annual	5/30/2013	135427
Mini-Circuits	VHF-3100+	High Pass Filter	1/15/2012	Annual	1/15/2013	30841
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	N/A		N/A	100976
Rohde & Schwarz	RS-PR18	1-18 GHz Pre-Amplifier	6/26/2012	Annual	6/26/2013	100071
Rohde & Schwarz	RS-PR26	18-26.5 GHz Pre-Amplifier	5/30/2012	Annual	5/30/2013	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

Note:

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 2nd Harmonic (1564 MHz)

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

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6.0 TEST RESULTS

6.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSCHR950
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0
2.1051, 27.53(g)(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
27.50(d)(5)	Peak-Average Ratio	$< 13 \text{ dB}$		PASS	Section 7.0
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4)	$< 1 \text{ Watts max. EIRP}$	RADIATED	PASS	Section 6.2
2.1053, 27.53(g)(h)	Undesirable Emissions	$< 43 + 10\log_{10}(P[\text{Watts}])$ for all out-of-band emissions		PASS	Section 6.3
2.1055, 27.54	Frequency Stability	Fundamental emissions stay within authorized frequency block.		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 Sections 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 Equivalent Isotropic Radiated Power (EIRP)

§27.50(d)(4)

	Freq [MHz]	BW [MHz]	Mod.	Battery	RB Size/Offset	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
Band 4 LTE	1712.5	5	QPSK	Standard	1/24	-25.21	6.06	8.47	H	14.53	0.028	-15.47
	1732.5	5	QPSK	Standard	1/0	-24.58	6.69	8.54	H	15.23	0.033	-14.77
	1752.5	5	QPSK	Standard	1/24	-26.58	4.69	8.60	H	13.29	0.021	-16.71
	1712.5	5	16-QAM	Standard	1/24	-26.36	4.91	8.47	H	13.38	0.022	-16.62
	1732.5	5	16-QAM	Standard	1/0	-25.48	5.79	8.54	H	14.33	0.027	-15.67
	1752.5	5	16-QAM	Standard	1/24	-27.66	3.61	8.60	H	12.21	0.017	-17.79
	1715.0	10	QPSK	Standard	1/49	-24.92	6.35	8.47	H	14.82	0.030	-15.18
	1732.5	10	QPSK	Standard	1/0	-23.90	7.37	8.54	H	15.91	0.039	-14.09
	1750.0	10	QPSK	Standard	1/49	-26.54	4.73	8.60	H	13.33	0.022	-16.67
	1715.0	10	16-QAM	Standard	1/49	-26.26	5.01	8.47	H	13.48	0.022	-16.52
	1732.5	10	16-QAM	Standard	1/0	-25.19	6.08	8.54	H	14.62	0.029	-15.38
	1750.0	10	16-QAM	Standard	1/49	-28.83	2.44	8.60	H	11.04	0.013	-18.96

Table 6-2. EIRP Data (Band 4)

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. In Band 4 the highest power was found in QPSK modulation with RB size = 1 and RB offset = 0 with a bandwidth of 10MHz.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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6.3 Band 4 Radiated Spurious Emissions §2.1053, §27.53(h)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1715.00 MHz
 CHANNEL: 20000
 MEASURED OUTPUT POWER: 14.82 dBm = 0.030 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W)$ 27.82 dBc

FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3430.00	-45.46	8.09	-37.37	H	52.19
5145.00	-59.80	10.21	-49.59	H	64.41
6860.00	-63.46	11.31	-52.15	H	66.97
8575.00	-63.41	13.02	-50.39	H	65.21
10290.00	-89.78	13.01	-76.77	H	91.58
12005.00	-56.43	13.21	-43.22	H	58.04

Table 6-3. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. In Band 4 the highest power was found in QPSK modulation with RB size = 1 and RB offset = 0 with a bandwidth of 10MHz.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 4 Radiated Spurious Measurements (continued)

§2.1053, §27.53(h)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 15.91 dBm = 0.039 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 28.91 dBc

FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3465.00	-47.13	8.26	-38.86	H	54.77
5197.50	-63.66	10.26	-53.40	H	69.32
6930.00	-62.84	11.42	-51.42	H	67.33
8662.50	-62.89	13.07	-49.82	H	65.73
10395.00	-89.82	13.12	-76.70	H	92.61
12127.50	-86.41	13.25	-73.16	H	89.07

Table 6-4. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. In Band 4 the highest power was found in QPSK modulation with RB size = 1 and RB offset = 0 with a bandwidth of 10MHz.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 4 Radiated Spurious Measurements (continued)

§2.1053, §27.53(h)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1750.00 MHz
 CHANNEL: 20350
 MEASURED OUTPUT POWER: 13.33 dBm = 0.022 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) = 26.33$ dBc

FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3500.00	-42.83	8.40	-34.43	H	47.76
5250.00	-61.35	10.32	-51.03	H	64.36
7000.00	-63.91	11.51	-52.40	H	65.72
8750.00	-92.62	13.11	-79.51	H	92.83
10500.00	-89.67	13.20	-76.47	H	89.80
12250.00	-85.91	13.31	-72.60	H	85.93

Table 6-5. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. In Band 4 the highest power was found in QPSK modulation with RB size = 1 and RB offset = 0 with a bandwidth of 10MHz.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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6.4 Band 4 Frequency Stability Measurements

§2.1055, 27.54

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)	1,732,500,013	13	0.00000076
100 %		- 30	1,732,500,023	23	0.00000133
100 %		- 20	1,732,500,017	17	0.00000100
100 %		- 10	1,732,499,982	-18	-0.00000105
100 %		0	1,732,500,003	3	0.00000020
100 %		+ 10	1,732,500,024	24	0.00000139
100 %		+ 20	1,732,500,016	16	0.00000092
100 %		+ 30	1,732,500,001	1	0.00000006
100 %		+ 40	1,732,500,005	5	0.00000027
100 %		+ 50	1,732,499,984	-16	-0.00000093
115 %	4.37	+ 20	1,732,499,993	-7	-0.00000043
85 %	3.23	+ 20	1,732,500,015	15	0.00000084

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

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Band 4 Frequency Stability Measurements (Cont'd)

§2.1055, 27.54

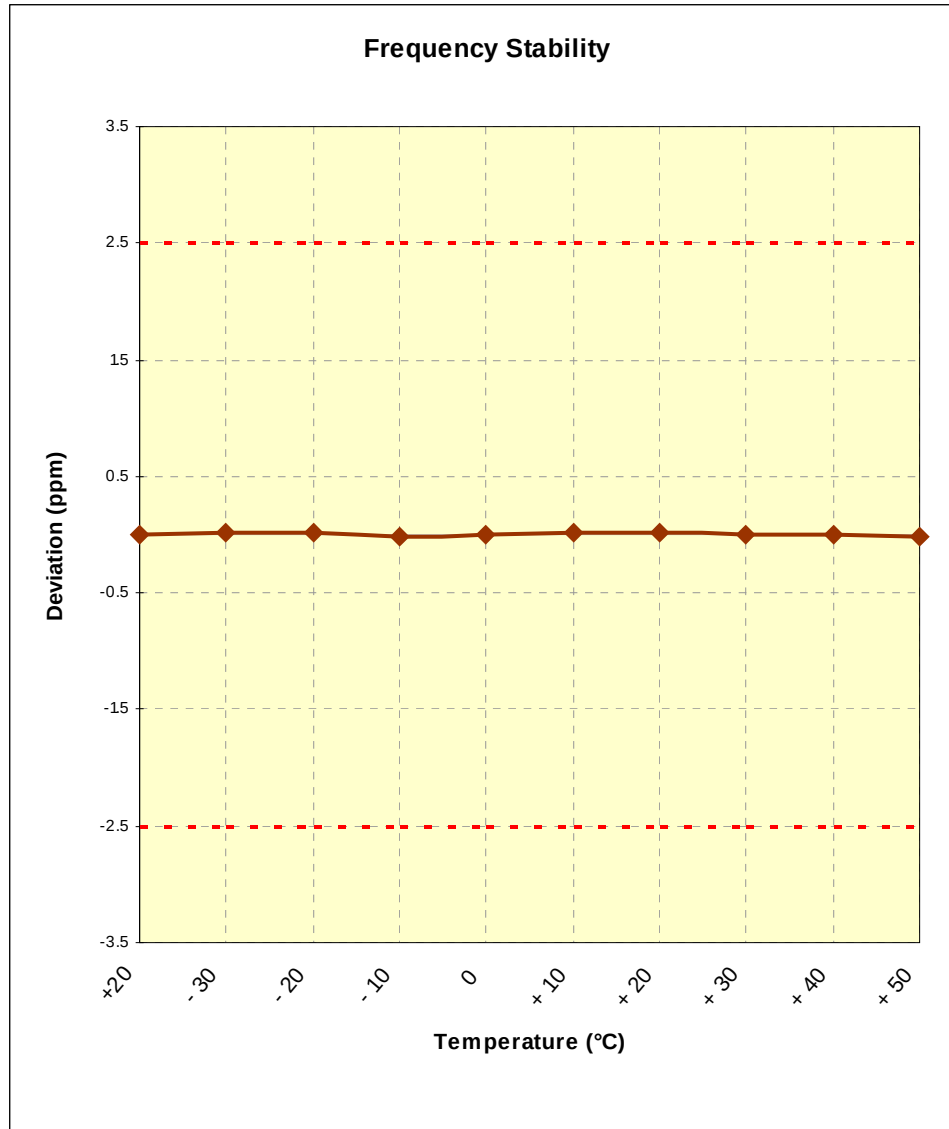


Figure 6-1. Frequency Stability Graph (Band 4)

FCC ID: A3LSCHR950		FCC Pt. 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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7.0 BAND 4 PLOTS OF EMISSIONS



Plot 7-1. Lower Band Edge Plot (5MHz QPSK – RB Size 25)



Plot 7-2. Lower Band Edge Plot (10MHz QPSK – RB Size 50)

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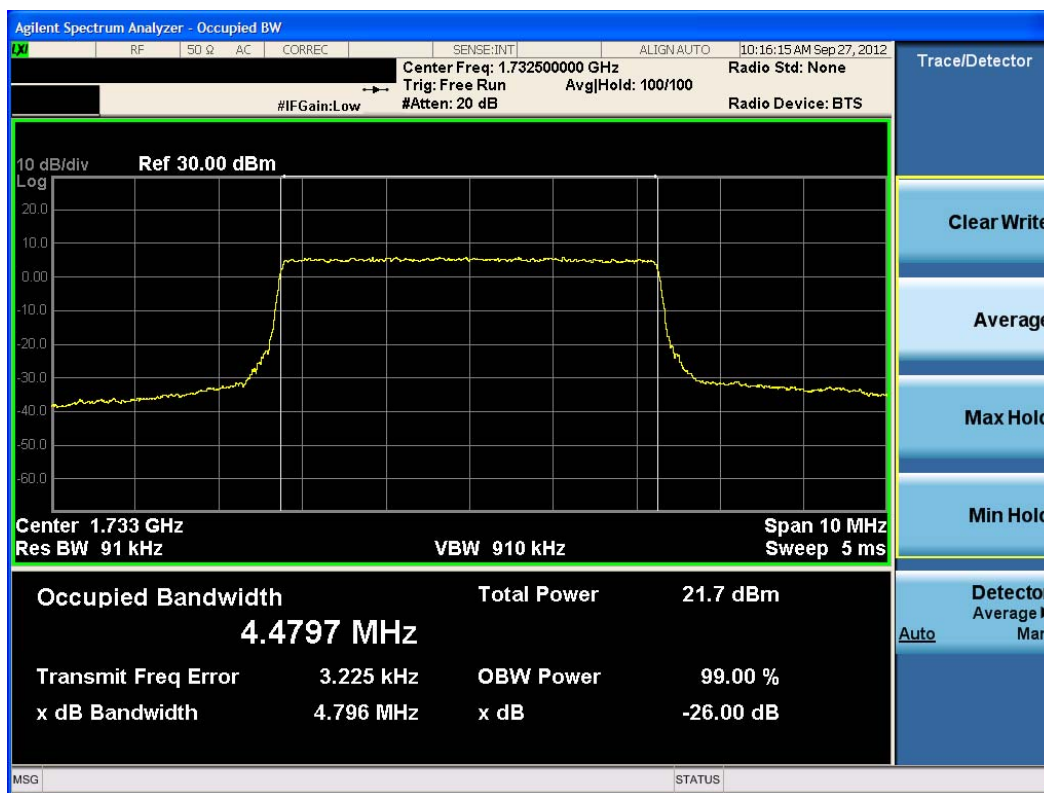


Plot 7-3. Lower Extended Band Edge Plot (5MHz QPSK– RB Size 25)

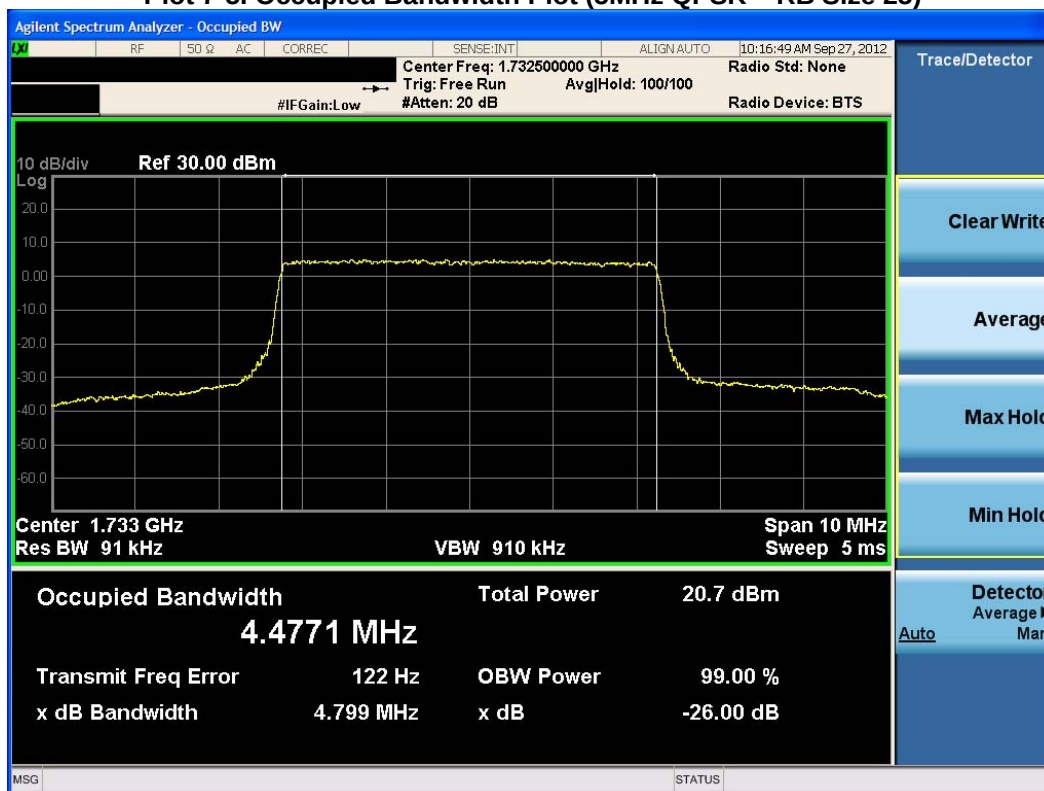


Plot 7-4. Lower Extended Band Edge Plot (10MHz QPSK- RB Size 50)

FCC ID: A3LSCHR950	 FCC Pt. 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) 		Reviewed by: Quality Manager
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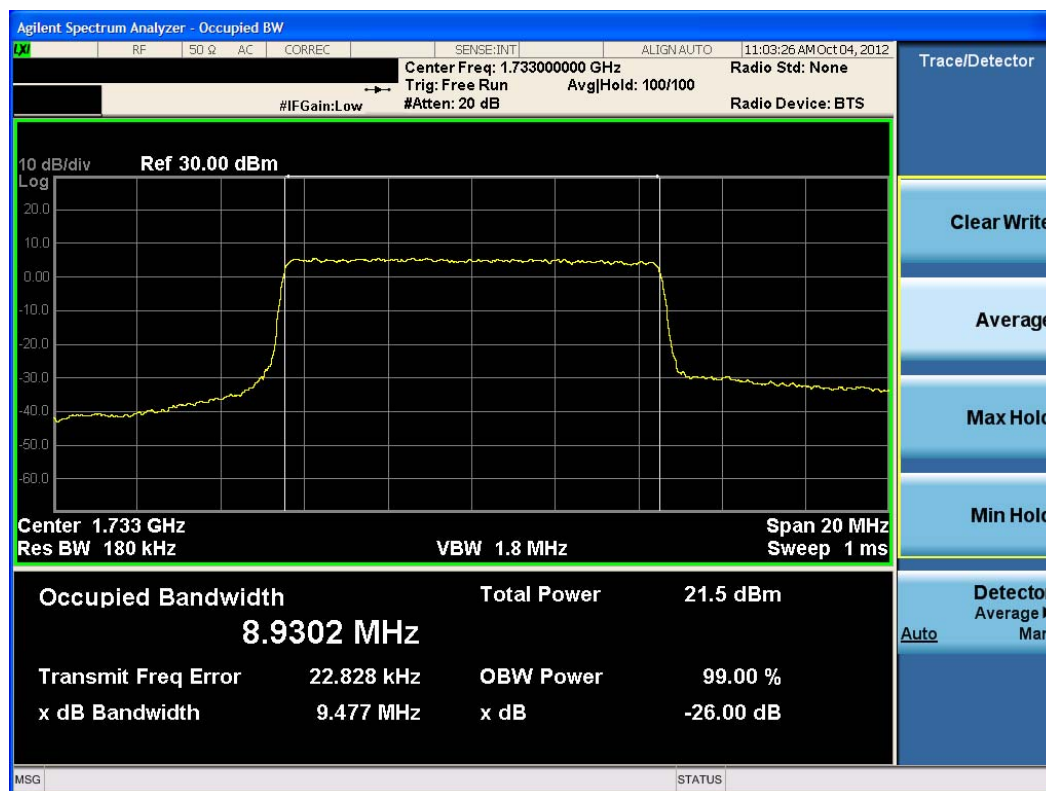


Plot 7-5. Occupied Bandwidth Plot (5MHz QPSK – RB Size 25)

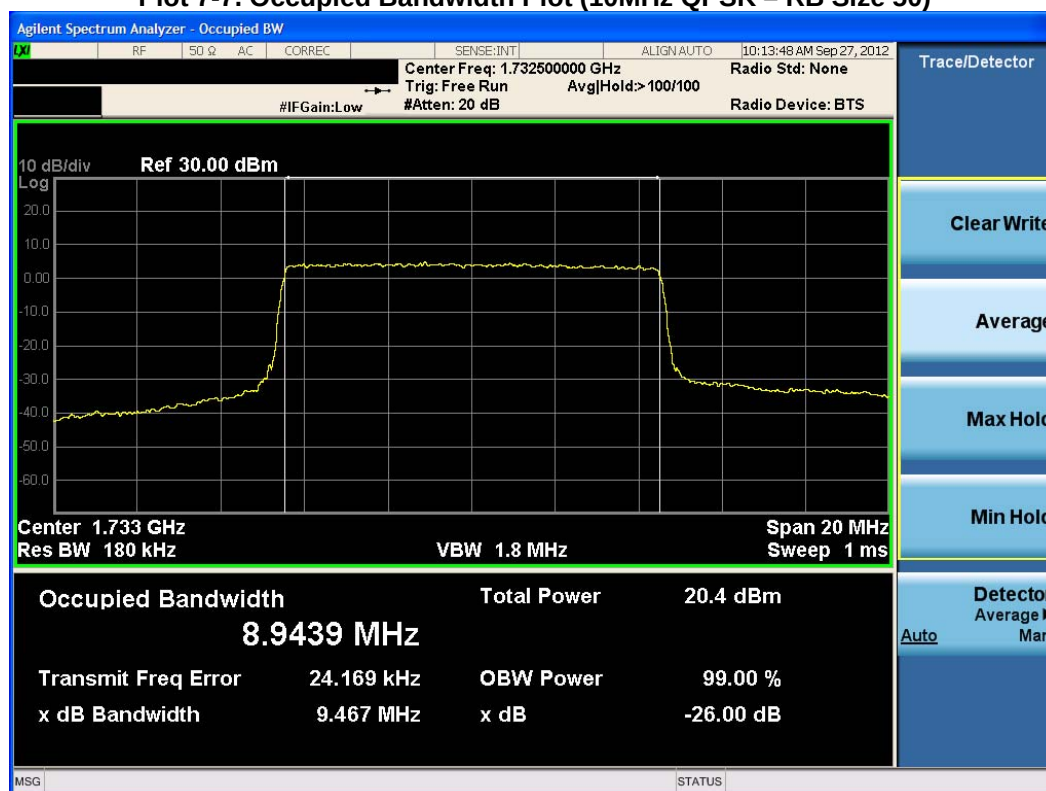


Plot 7-6. Occupied Bandwidth Plot (5MHz 16-QAM – RB Size 25)

FCC ID: A3LSCHR950	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	SAMSUNG	Reviewed by: Quality Manager
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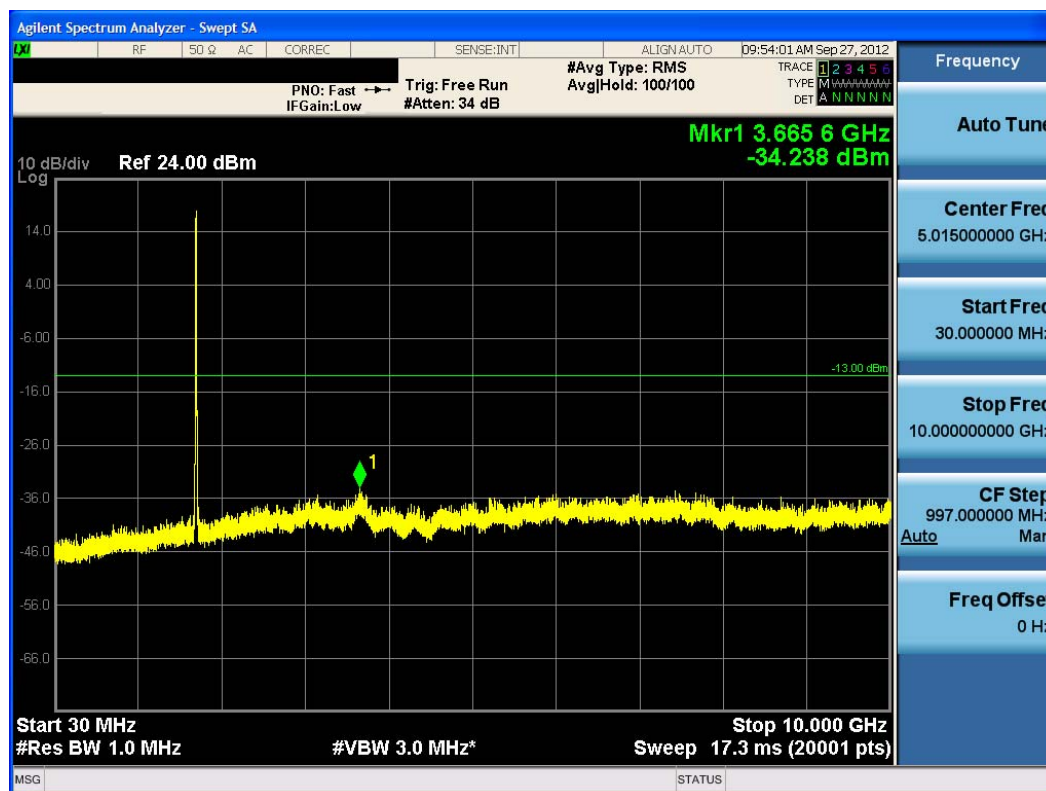


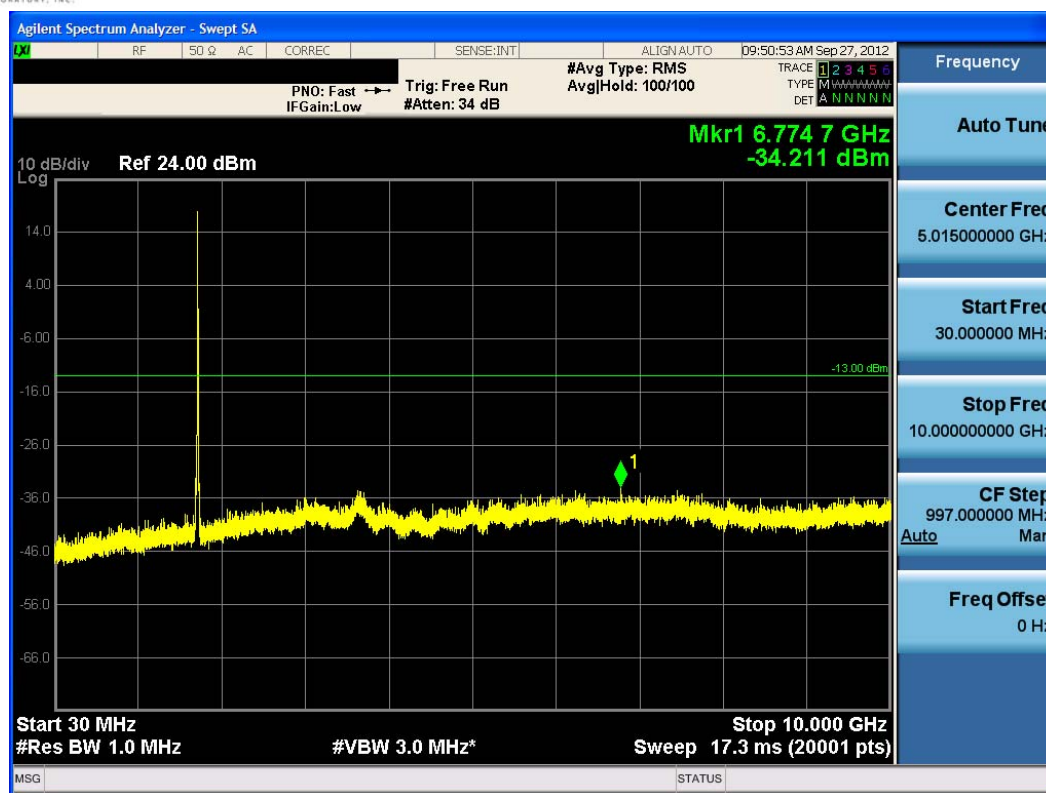
Plot 7-7. Occupied Bandwidth Plot (10MHz QPSK – RB Size 50)



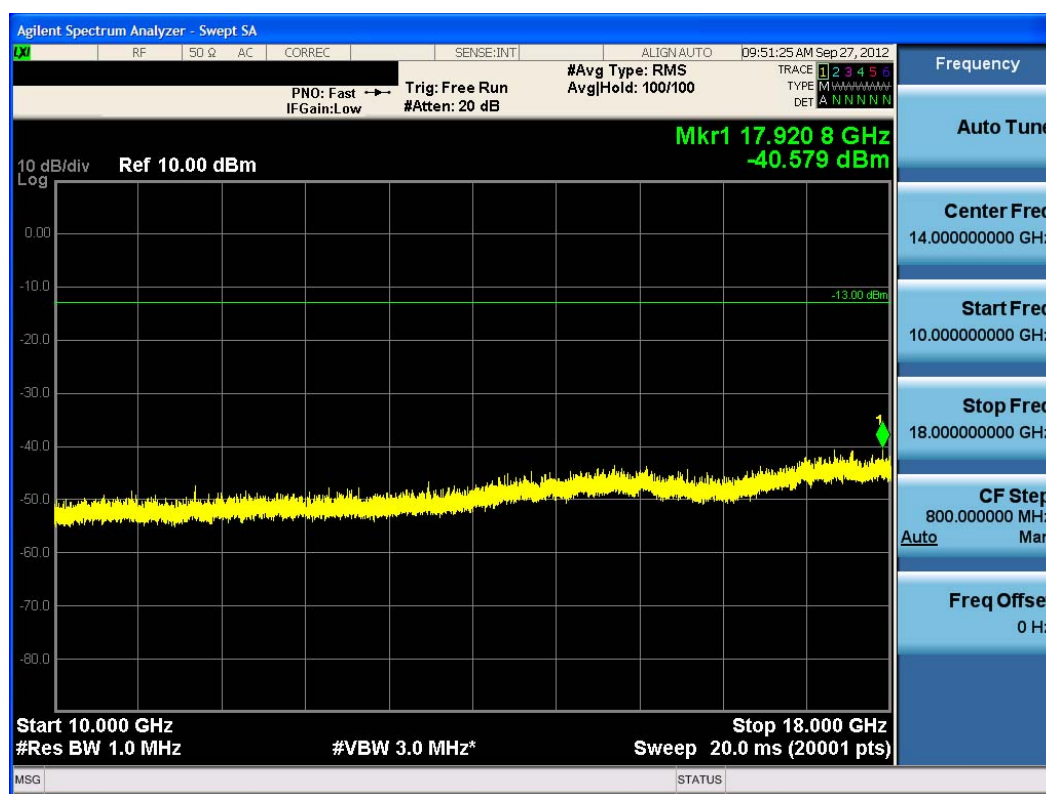
Plot 7-8. Occupied Bandwidth Plot (10MHz 16-QAM – RB Size 50)

FCC ID: A3LSCHR950	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	SAMSUNG	Reviewed by: Quality Manager
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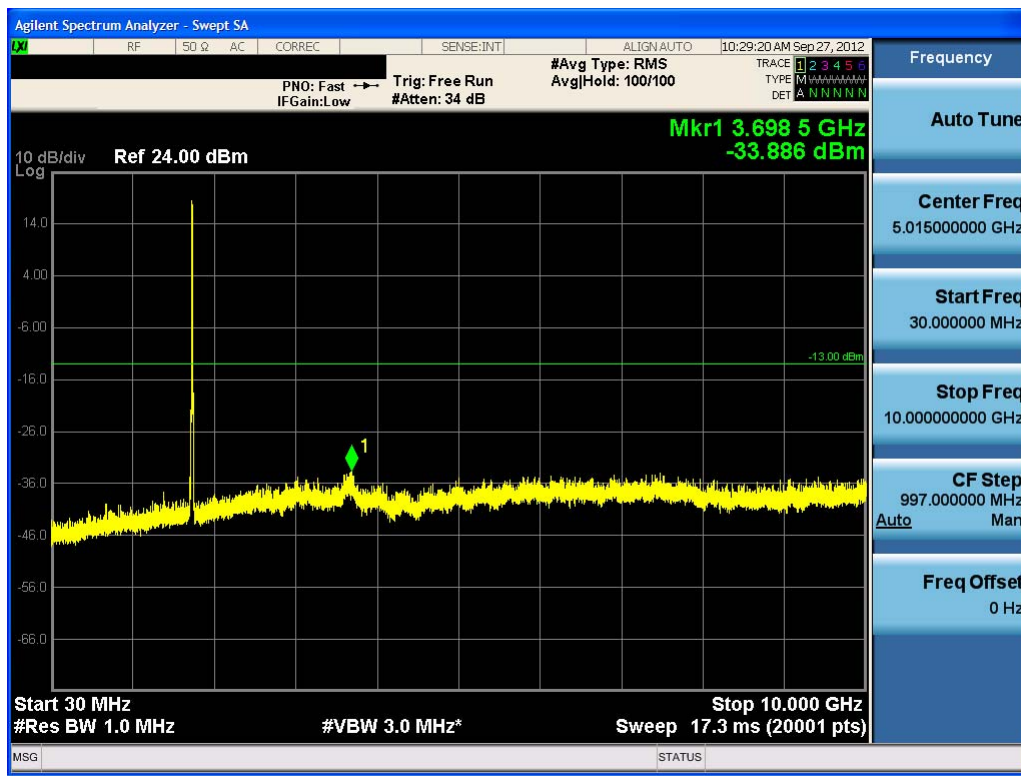


Plot 7-11. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-12. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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Plot 7-13. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-14. Conducted Spurious Plot (10MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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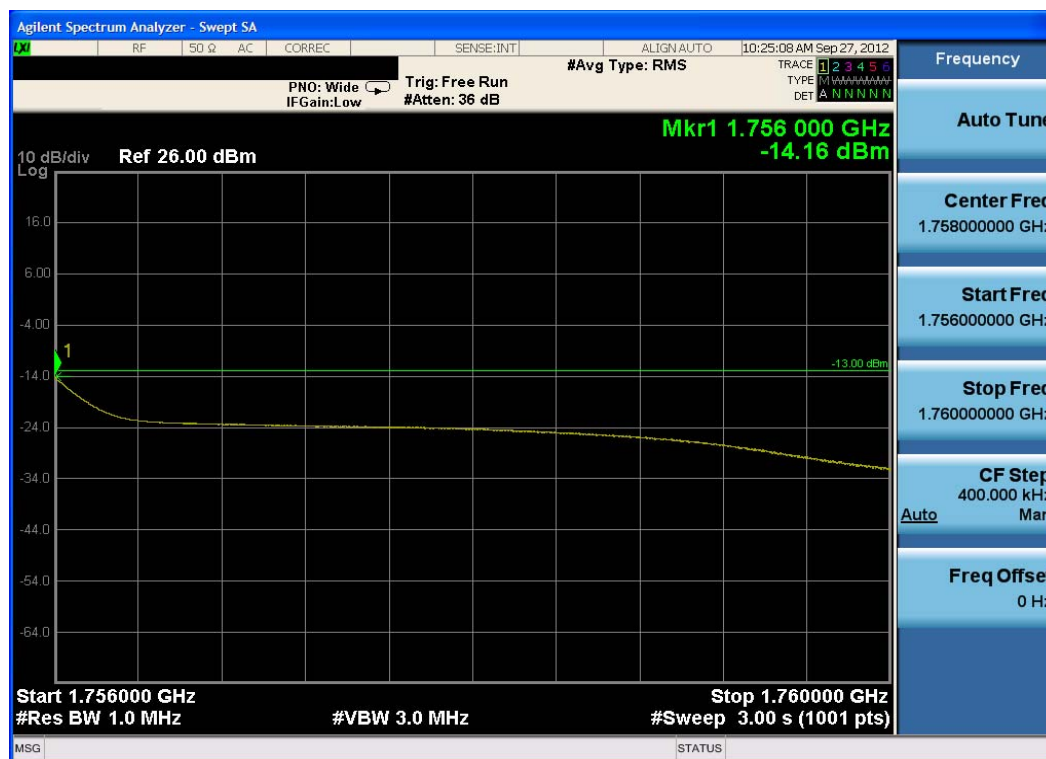


Plot 7-15. Upper Band Edge Plot (5MHz QPSK – RB Size 25)

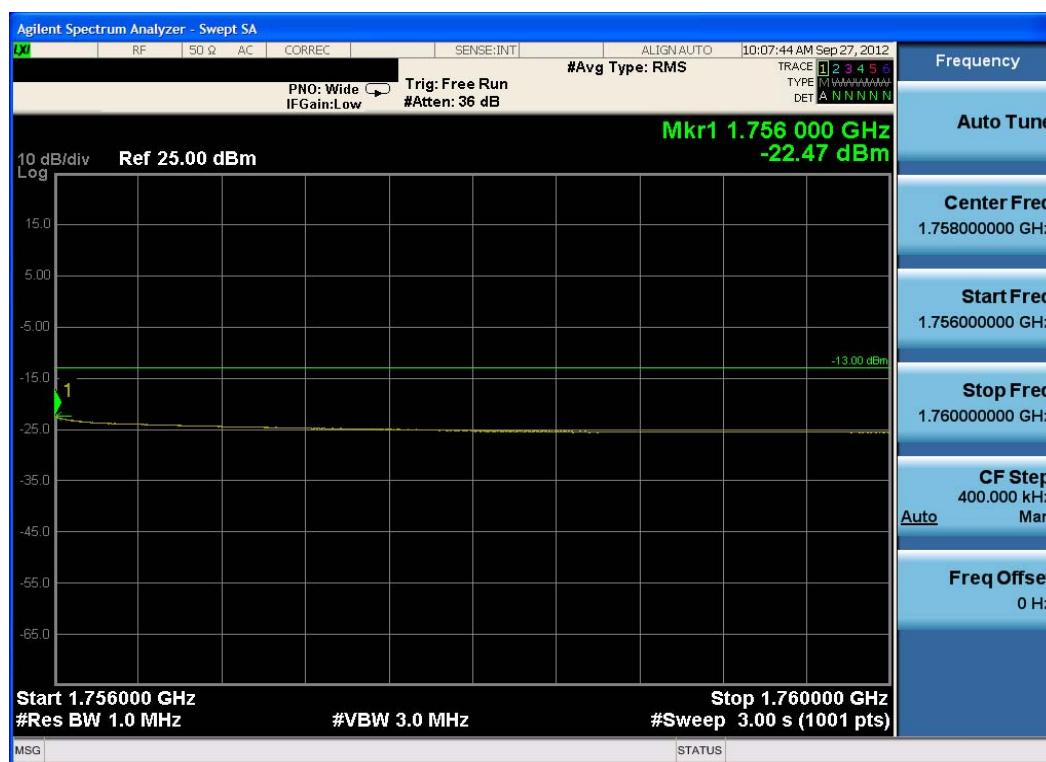


Plot 7-16. Upper Band Edge Plot (10MHz QPSK – RB Size 50)

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Plot 7-17. Upper Extended Band Edge Plot (5MHz QPSK- RB Size 25)



Plot 7-18. Upper Extended Band Edge Plot (10MHz QPSK- RB Size 50)

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Plot 7-19. PAR Plot (5MHz QPSK – RB Size 25)



Plot 7-20. PAR Plot (5MHz 16QAM – RB Size 25)

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Plot 7-21. PAR Plot (10MHz QPSK – RB Size 50)



Plot 7-22. PAR Plot (10MHz 16QAM – RB Size 50)

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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: A3LSCHR950** complies with all the requirements of Parts 2 and 27 of the FCC rules for LTE operation only.

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