



# PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA  
Tel. 410.290.6652 / Fax 410.290.6654  
<http://www.pctestlab.com>



## MEASUREMENT REPORT FCC PART 15.247 / IC RSS-210 WLAN 802.11b/g/n

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

**Date of Testing:**  
4/11/2012  
**Test Site/Location:**  
PCTEST Lab, Columbia, MD, USA  
**Test Report Serial No.:**  
OY1204060430.A3L

|                   |                                      |
|-------------------|--------------------------------------|
| <b>FCC ID:</b>    | <b>A3LSCHI519</b>                    |
| <b>APPLICANT:</b> | <b>Samsung Electronics Co., Ltd.</b> |

**Application Type:** Certification  
**Model(s):** SCH-I519  
**EUT Type:** Portable Handset  
**FCC Classification:** Digital Transmission System (DTS)  
**FCC Rule Part(s):** Part 15.247  
**IC Specification(s):** RSS-210 Issue 8  
**Test Procedure(s):** ANSI C63.4-2003, KDB 558074

| Mode    | Tx Frequency<br>(MHz) | Avg Conducted         |                        | Peak Conducted        |                        |
|---------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|
|         |                       | Max.<br>Power<br>(mW) | Max.<br>Power<br>(dBm) | Max.<br>Power<br>(mW) | Max.<br>Power<br>(dBm) |
| 802.11b | 2412 - 2462           | 37.844                | 15.78                  | 62.087                | 17.93                  |
| 802.11g | 2412 - 2462           | 30.061                | 14.78                  | 139.959               | 21.46                  |
| 802.11n | 2412 - 2462           | 16.982                | 12.30                  | 85.114                | 19.30                  |

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 ANSI C63.4-2003. 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

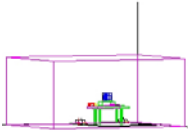


|                                             |                                                                                     |                                                                        |                                                                                       |                                        |
|---------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSCHI519                   |  | <b>FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br/>(CERTIFICATION)</b> |  | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>OY1204060430.A3L | <b>Test Dates:</b><br>4/11/2012                                                     | <b>EUT Type:</b><br>Portable Handset                                   |                                                                                       | Page 1 of 40                           |

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## MEASUREMENT REPORT

### FCC Part 15.247

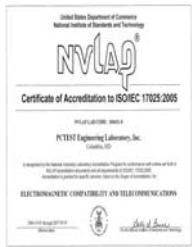
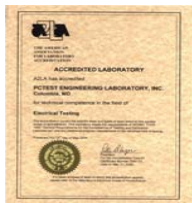


#### § 2.1033 General Information

**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:** 6660-B Dobbin Road, Columbia, MD 21045 USA  
**FCC RULE PART(S):** Part 15.247  
**IC SPECIFICATION(S):** RSS-210 Issue 8  
**MODEL NAME:** SCH-I519  
**FCC ID:** A3LSCHI519  
**Test Device Serial No.:** FJ-089-C; FJ-089-D ☐ Production ☒ Pre-Production ☐ Engineering  
**FCC CLASSIFICATION:** Digital Transmission System (DTS)  
**DATE(S) OF TEST:** 4/11/2012  
**TEST REPORT S/N:** OY1204060430.A3L

#### Test Facility / Accreditations

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



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

|                                             |                                                                                     |                                                                    |                                                                                       |                                        |
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| <b>Test Report S/N:</b><br>OY1204060430.A3L | <b>Test Dates:</b><br>4/11/2012                                                     | <b>EUT Type:</b><br>Portable Handset                               |                                                                                       | Page 3 of 40                           |

## 1.0 INTRODUCTION

### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) 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 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Intern'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 10, 2012

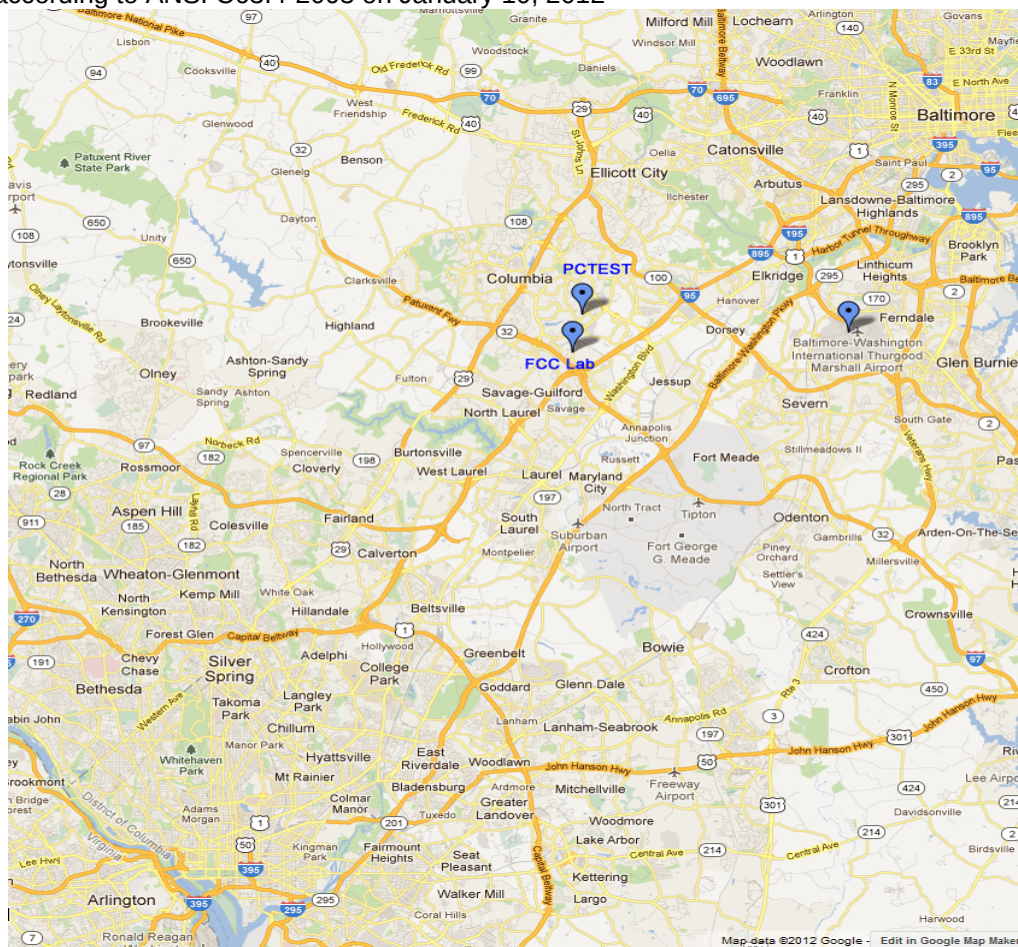


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Electronics, Co. Ltd. Portable Handset FCC ID: A3LSCHI519**. The test data contained in this report pertains only to the emissions due to the EUT's WLAN transmitter.

### 2.2 Device Capabilities

This device contains the following capabilities:

850 CDMA/EvDO Rev0/A (BC0), 1900 GSM/GPRS/EDGE, 802.11b/g/n WLAN, Bluetooth (1x,EDR)

### 2.3 Test Configuration

The Samsung Electronics, Co. Ltd. Portable Handset FCC ID: A3LSCHI519 was tested per the guidance of ANSI C63.10-2009 and KDB 558074. See Sections 3.2, 3.3, and 6.1 of this test report for a description of the AC line conducted emissions, radiated emissions, and antenna port conducted emissions test setups, respectively.

### 2.4 EMI Suppression Device(s)/Modifications

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

### 2.5 Labeling Requirements

Per 15.19; Docket 95-19

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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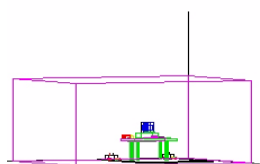
## 3.0 DESCRIPTION OF TEST

### 3.1 Evaluation Procedure

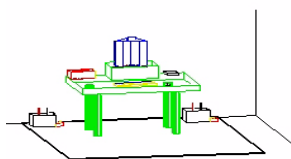
The measurement procedures described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2003) and the guidance provided in KDB 558074 were used in the measurement of the **Samsung Electronics, Co. Ltd. Portable Handset FCC ID: A3LSCHI519**.

Deviation from measurement procedure.....None

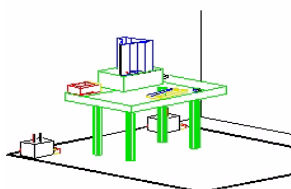
### 3.2 AC Line Conducted Emissions



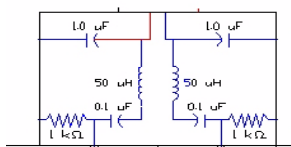
**Figure 3-1. Shielded Enclosure Line-Conducted Test Facility**



**Figure 3-2. Line Conducted Emission Test Set-Up**



**Figure 3-3. Wooden Table & Bonded LISNs**



**Figure 3-4. LISN Schematic Diagram**

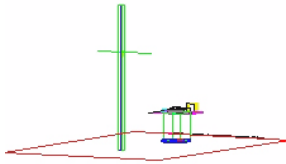
The line-conducted facility is located inside a 16'x20'x10' shielded enclosure, manufactured by Ray Proof Series 81 (see Figure 3-1). The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 1.5m away from the sidewall of the shielded room (see Figure 3-2). Two 10kHz-30MHz, 50Ω/50μH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room (see Figure 3-3). Power to the LISNs are filtered by a high-current high-insertion loss Ray Proof power line filter (100dB 14Hz-10GHz). The purpose of the filter is to attenuate ambient signal interference and this filter is also bonded to the shielded enclosure. All electrical cables are shielded by braided tinned copper zipper tubing with an inner diameter of ½".

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the Solar LISN. The LISN schematic diagram is shown (see Figure 3-4). All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

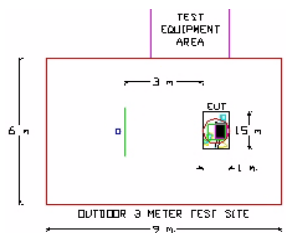
Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements. The bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission emission. Each emission was maximized by varying: power lines, the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment, and powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable; whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz bandwidth for final measurements. Each emission reported was calibrated using a signal generator.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
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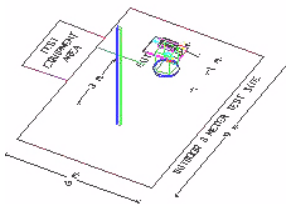
### 3.3 Radiated Emissions



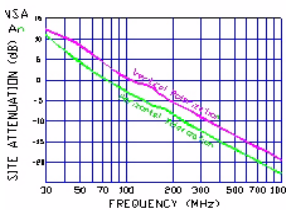
**Figure 3-5. 3-Meter Test Site**



**Figure 3-6. Dimensions of Outdoor Test Site**



**Figure 3-7. Turntable and System Setup**



**Figure 3-8. Normalized Site Attenuation Curves (H&V)**

The radiated test facilities consisted of an indoor semi-anechoic chamber used for exploratory measurements and an open area test site (OATS) used for final measurements. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies higher than the upper frequency range of the broadband antenna used for testing, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used.

Exploratory measurements were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of a 0.8 meter high non-metallic 1 x 1.5 meter table (see Figure 3-7). The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, turntable azimuth, and receive antenna height was noted for each frequency found. To record the exploratory measurements, the analyzers' detector function was set to peak mode and the bandwidth was set to 100kHz.

Final measurements were made on the OATS at 3 meter test range using calibrated, linearly polarized broadband or horn antennas (see Figure 3-5). 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 (see Figure 3-6). The test set-up was again placed on top of the same a 0.8 meter high non-metallic 1 x 1.5 meter table on the OATS as used for exploratory measurements in the indoor chamber. The test set-up was re-configured to the same setup that was previously determined through exploratory measurements to have produced the worst case emissions. The spectrum analyzer was set to the frequencies found to have caused the highest radiated disturbances with respect to the limit during preliminary radiated measurements. The turntable containing the system was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was re-maximized by varying: the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment, powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable, and changing the polarity of the receive antenna, whichever produced the worst-case emissions. To record the final measurements, the analyzer detector function was set to CISPR quasi-peak mode and the bandwidth of the spectrum analyzer was set to 100kHz for frequencies below 1GHz or 1MHz for frequencies above 1GHz. For average measurements above 1GHz, the analyzer was set to peak detector with a reduced VBW setting (RBW = 1MHz, VBW = 10Hz). Each emission reported was calibrated using a signal generator. The Theoretical Normalized Site Attenuation Curves for both horizontal and vertical polarization are shown in Figure 3-8.

|                                      |                                               |                                                                |                |                                 |
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| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 7 of 40                    |

## 4.0 ANTENNA REQUIREMENTS

### Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna(s) of the Portable Handset are **permanently attached**.
- There are no provisions for connection to an external antenna.

### Conclusion:

The **Samsung Electronics, Co. Ltd. Portable Handset FCC ID: A3LSCHI519** unit complies with the requirement of §15.203.

| Ch. | Frequency (MHz) | Ch. | Frequency (MHz) |
|-----|-----------------|-----|-----------------|
| 1   | 2412            | 7   | 2442            |
| 2   | 2417            | 8   | 2447            |
| 3   | 2422            | 9   | 2452            |
| 4   | 2427            | 10  | 2457            |
| 5   | 2432            | 11  | 2462            |
| 6   | 2437            |     |                 |

**Table 4-1. Frequency / Channel Operations**

|                                             |                                                                                     |                                                                    |                                                                                       |                                        |
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## 5.0 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 |
|-----------------|-----------|--------------------------------|------------|--------------|------------|---------------|
| Agilent         | 8449B     | (1-26.5GHz) Pre-Amplifier      | 2/15/2012  | Annual       | 2/15/2013  | 3008A00985    |
| Agilent         | N9020A    | MXA Signal Analyzer            | 10/10/2011 | Annual       | 10/10/2012 | US46470561    |
| Agilent         | N9038A    | MXE EMI Receiver               | 8/5/2011   | Annual       | 8/5/2012   | MY51210133    |
| Anritsu         | MA2411B   | Pulse Sensor                   | 10/13/2011 | Annual       | 10/13/2012 | 1027293       |
| Anritsu         | ML2495A   | Power Meter                    | 10/13/2011 | Annual       | 10/13/2012 | 1039008       |
| Emco            | 3816/2    | LISN                           | 11/3/2010  | Biennial     | 11/3/2012  | 9707-1079     |
| 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        |
| Mini-Circuits   | VHF-3100+ | High Pass Filter               | 2/7/2012   | Annual       | 2/7/2013   | 31144         |
| Rohde & Schwarz | RS-PR18   | 1-18 GHz Pre-Amplifier         | 6/9/2011   | Annual       | 6/9/2012   | 100071        |
| Rohde & Schwarz | RS-PR26   | 18-26.5 GHz Pre-Amplifier      | 6/9/2011   | Annual       | 6/9/2012   | 100040        |
| Rohde & Schwarz | ESU26     | EMI Test Receiver              | 4/27/2011  | Annual       | 4/27/2012  | 100342        |
| Sunol           | DRH-118   | Horn Antenna (1 - 18GHz)       | 7/5/2011   | Biennial     | 7/5/2013   | A050307       |

**Table 5-1. Annual Test Equipment Calibration Schedule**

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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## 6.0 TEST RESULTS

### 6.1 Summary

Company Name: Samsung Electronics Co., Ltd.  
 FCC ID: A3LSCHI519  
 FCC Classification: Digital Transmission System (DTS)  
 Data Rate(s) Tested: 1Mbps, 2Mbps, 5.5Mbps, 11Mbps (b)  
6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps (g)  
6.5/7.2Mbps, 13/14.4Mbps, 19.5/21.7Mbps, 26/28.9Mbps, 39/43.3Mbps,  
52/57.8Mbps, 58.5/65Mbps, 65/72.2Mbps (n – 20MHz)

| FCC Part Section(s)                           | RSS Section(s)    | Test Description                                                               | Test Limit                                                                                              | Test Condition                   | Test Result | Reference            |
|-----------------------------------------------|-------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------|-------------|----------------------|
| <b>TRANSMITTER MODE (TX)</b>                  |                   |                                                                                |                                                                                                         |                                  |             |                      |
| 15.247(a)(2)                                  | RSS-210 [A8.2]    | 6dB Bandwidth                                                                  | > 500kHz                                                                                                | CONDUCTED                        | PASS        | Section 6.2          |
| 15.247(b)(3)                                  | RSS-210 [A8.4]    | Transmitter Output Power                                                       | < 1 Watt                                                                                                |                                  | PASS        | Section 6.3          |
| 15.247(e)                                     | RSS-210 [A8.2]    | Transmitter Power Spectral Density                                             | < 8dBm / 3kHz Band                                                                                      |                                  | PASS        | Section 6.4          |
| 15.247(d)                                     | RSS-210 [A8.5]    | Band Edge / Out-of-Band Emissions                                              | < 30dBc (Average)                                                                                       |                                  | PASS        | Sections 6.5, 6.6    |
| 15.205<br>15.209                              | RSS-210 [A8.5]    | General Field Strength Limits (Restricted Bands and Radiated Emission Limits)  | Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-210 table 3 limits) | RADIATED                         | PASS        | Sections 6.7, 6.8    |
| 15.207                                        | RSS-Gen [7.2.2]   | AC Conducted Emissions 150kHz – 30MHz                                          | < FCC 15.207 limits or < RSS-Gen table 2 limits                                                         | LINE CONDUCTED                   | PASS        | Section 6.9          |
| <b>RECEIVER MODE (RX) / DIGITAL EMISSIONS</b> |                   |                                                                                |                                                                                                         |                                  |             |                      |
| 15.107                                        | RSS-Gen [7.2.2]   | AC Conducted Emissions 150kHz – 30MHz                                          | < FCC 15.107 limits or < RSS-Gen table 2 limits                                                         | LINE CONDUCTED                   | PASS        | Part 15B Test Report |
| 15.109                                        | RSS-Gen [7.2.3.2] | General Field Strength Limits (Restricted Bands and Radiated Emissions Limits) | < FCC 15.109 limits or < RSS-210 table 3 limits                                                         | RADIATED (30MHz-1GHz) (1-25 GHz) | PASS        | Part 15B Test Report |

**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 this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer 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 and attenuators.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               | Page 10 of 40                                                                         |                                 |

## 6.2 6dB Bandwidth Measurement – 802.11b/g/n

### §15.247(a)(2); RSS-210 [A8.2]

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

*The minimum permissible 6dB bandwidth is 500 kHz.*

| Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Bandwidth [MHz] | Minimum Bandwidth [MHz] | Pass / Fail |
|-----------------|-------------|-------------|------------------|--------------------------|-------------------------|-------------|
| 2412            | 1           | b           | 1                | 10.25                    | 0.500                   | Pass        |
| 2437            | 6           | b           | 1                | 10.25                    | 0.500                   | Pass        |
| 2462            | 11          | b           | 1                | 10.24                    | 0.500                   | Pass        |
| 2412            | 1           | g           | 6                | 16.38                    | 0.500                   | Pass        |
| 2437            | 6           | g           | 6                | 16.39                    | 0.500                   | Pass        |
| 2462            | 11          | g           | 6                | 16.33                    | 0.500                   | Pass        |
| 2412            | 1           | n           | 6.5/7.2 (MCS0)   | 17.62                    | 0.500                   | Pass        |
| 2437            | 6           | n           | 6.5/7.2 (MCS0)   | 17.61                    | 0.500                   | Pass        |
| 2462            | 11          | n           | 6.5/7.2 (MCS0)   | 17.61                    | 0.500                   | Pass        |

Table 6-2. Conducted Bandwidth Measurements

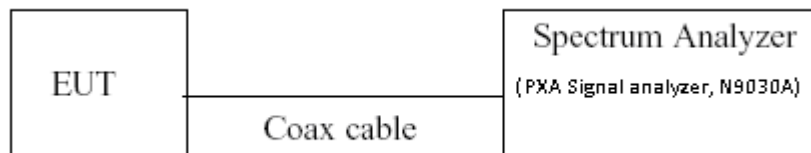
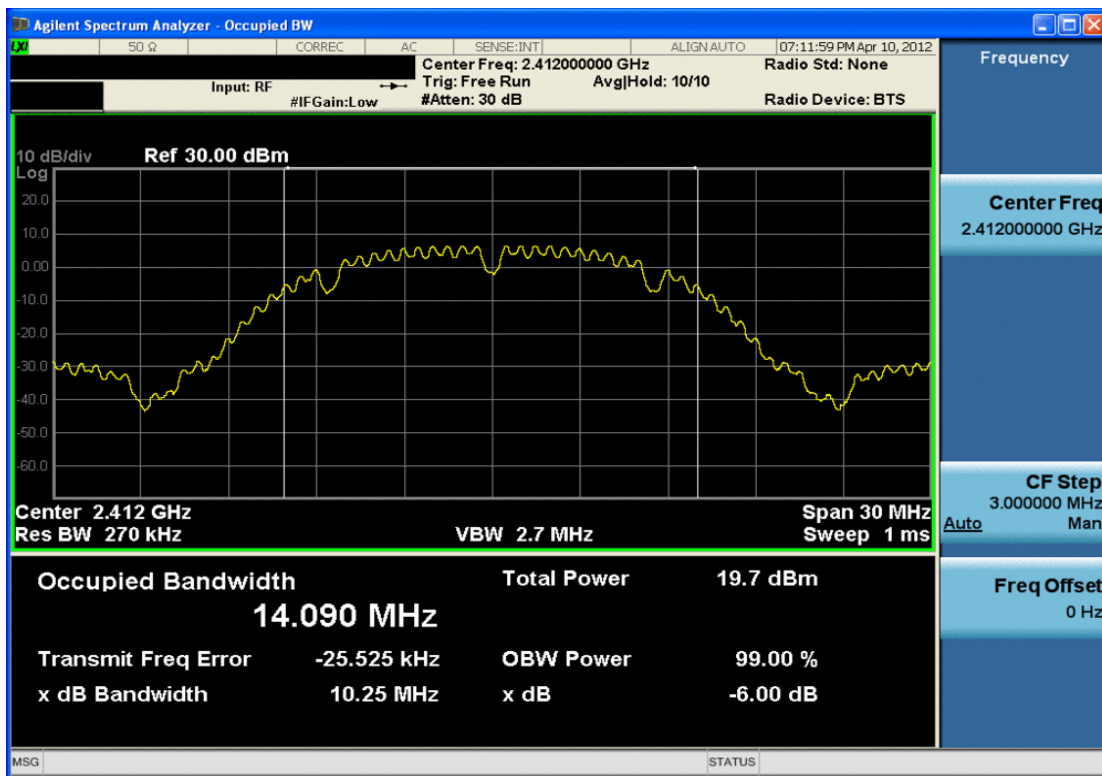
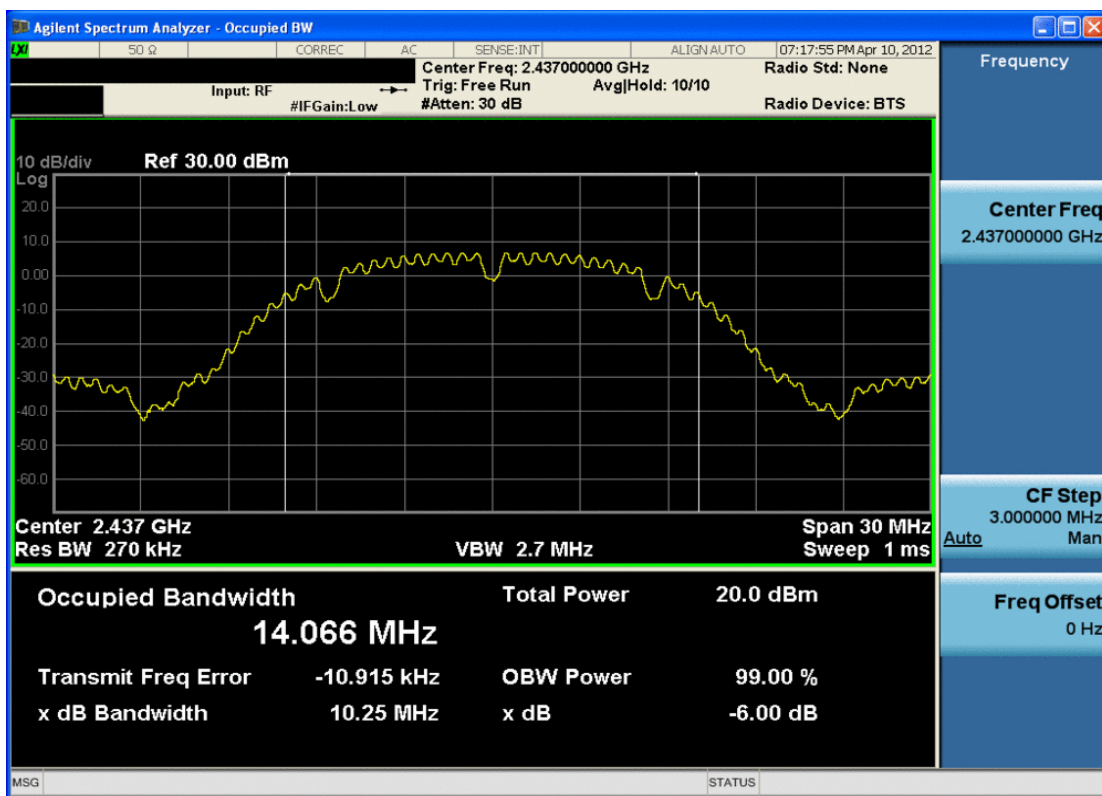


Figure 6-1. Test Instrument & Measurement Setup

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 11 of 40                   |

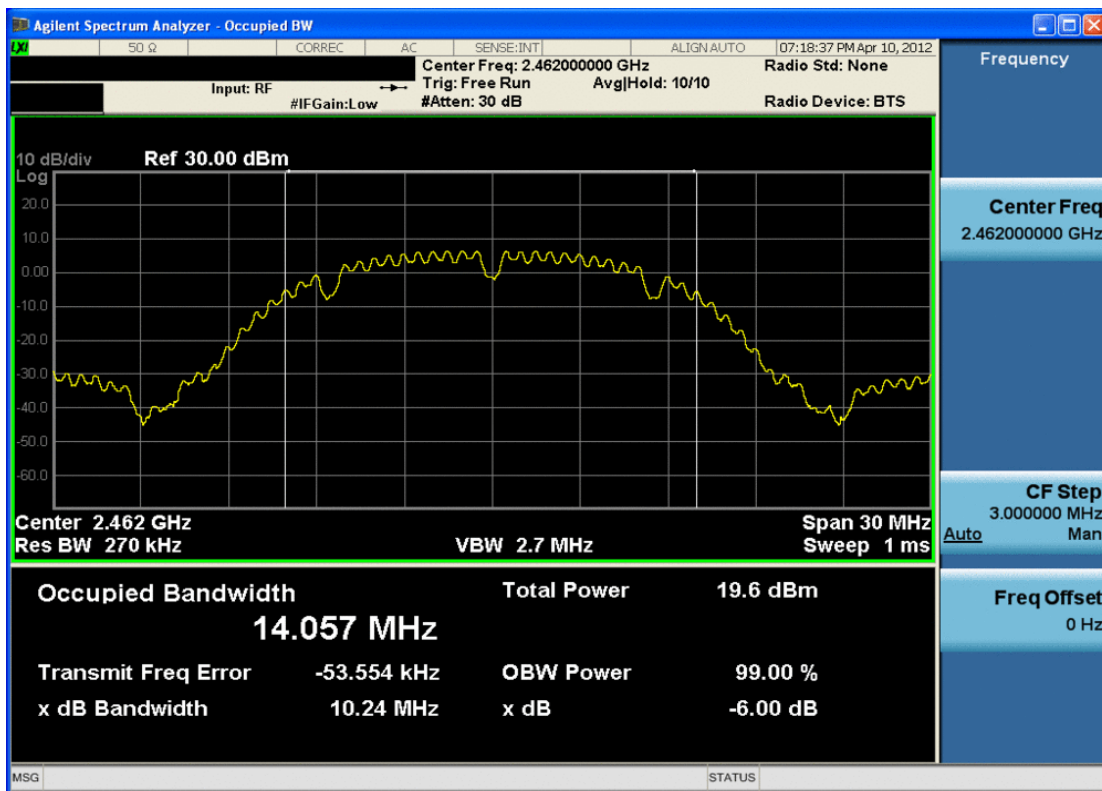


Plot 6-1. 6dB Bandwidth Plot (802.11b – Ch. 1)

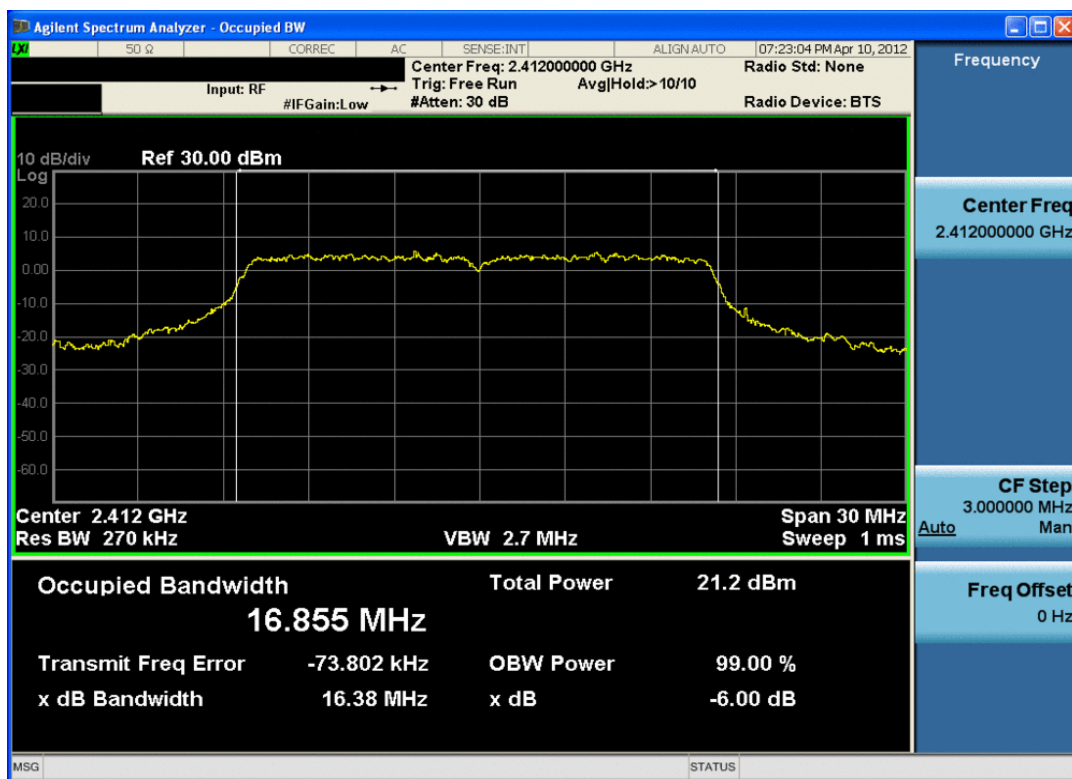


Plot 6-2. 6dB Bandwidth Plot (802.11b – Ch. 6)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 12 of 40                   |



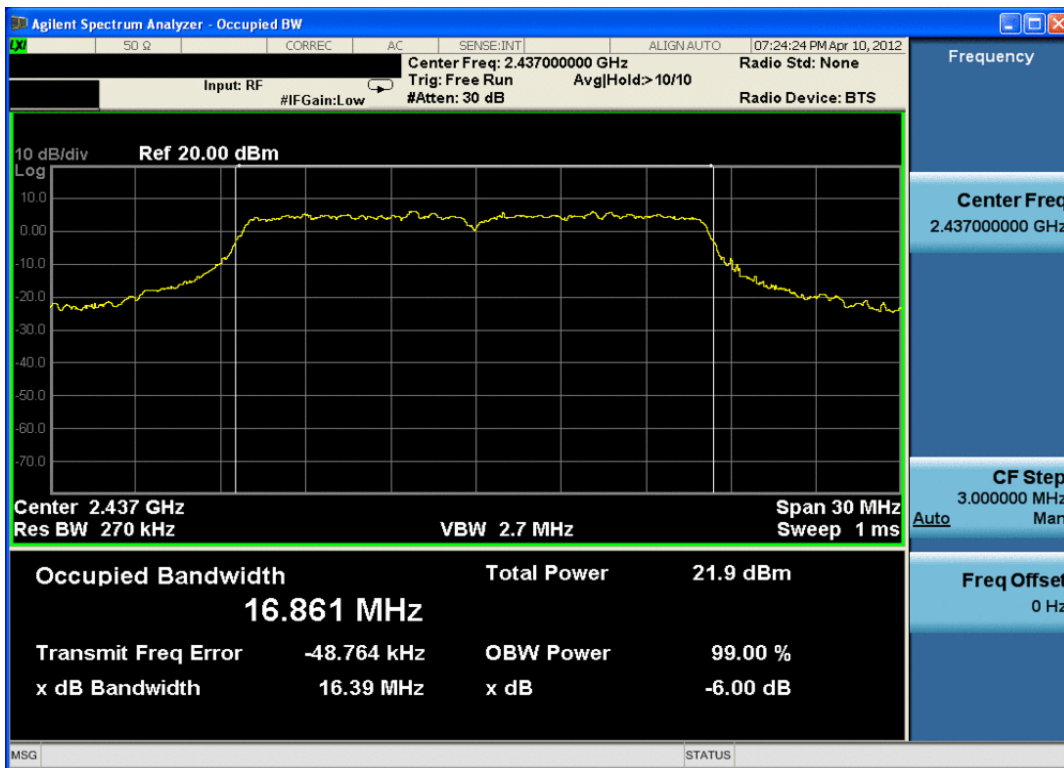
Plot 6-3. 6dB Bandwidth Plot (802.11b – Ch. 11)



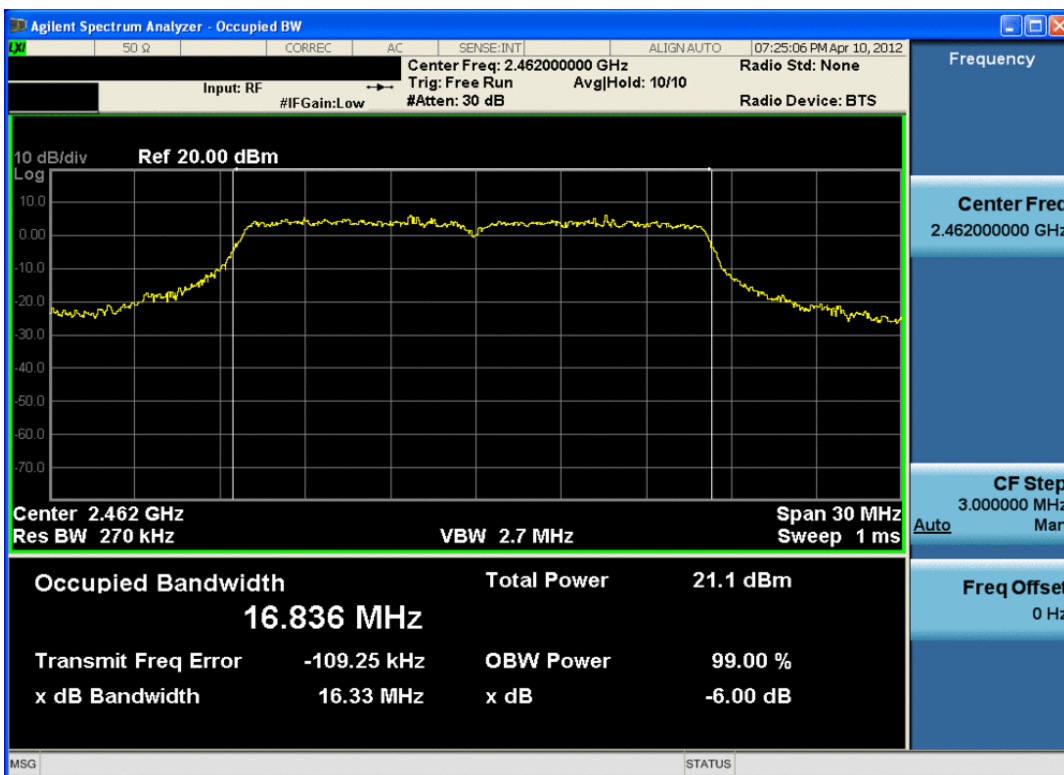
Plot 6-4. 6dB Bandwidth Plot (802.11g – Ch. 1)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 13 of 40                   |



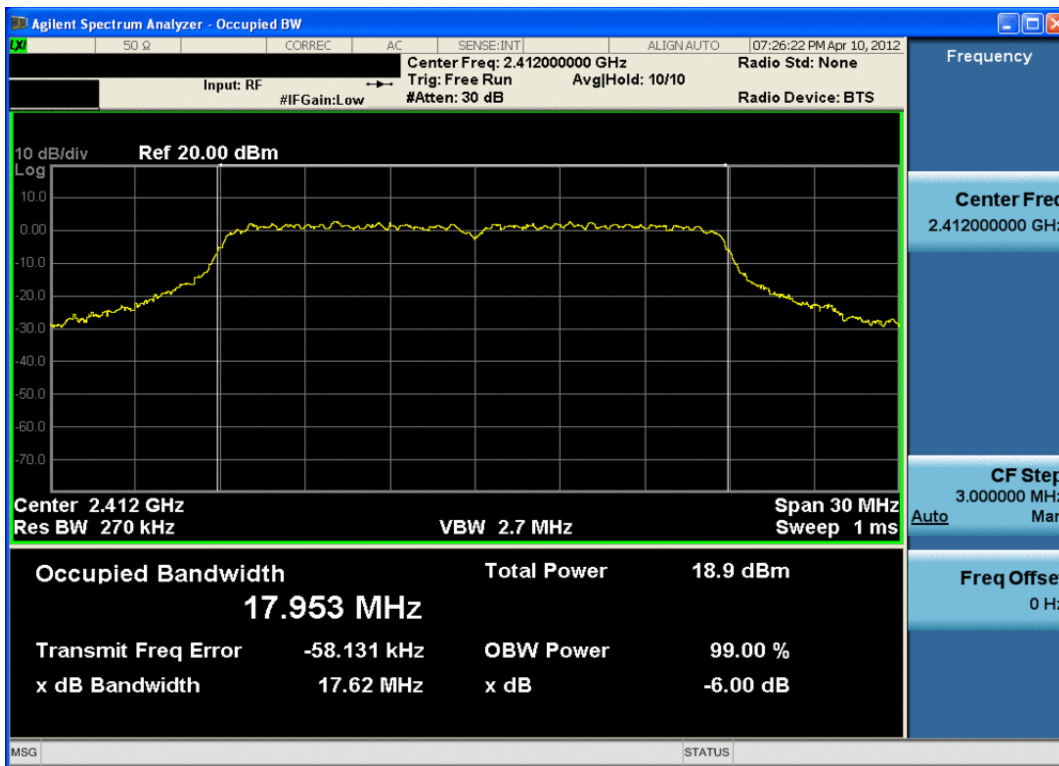


Plot 6-5. 6dB Bandwidth Plot (802.11g – Ch. 6)

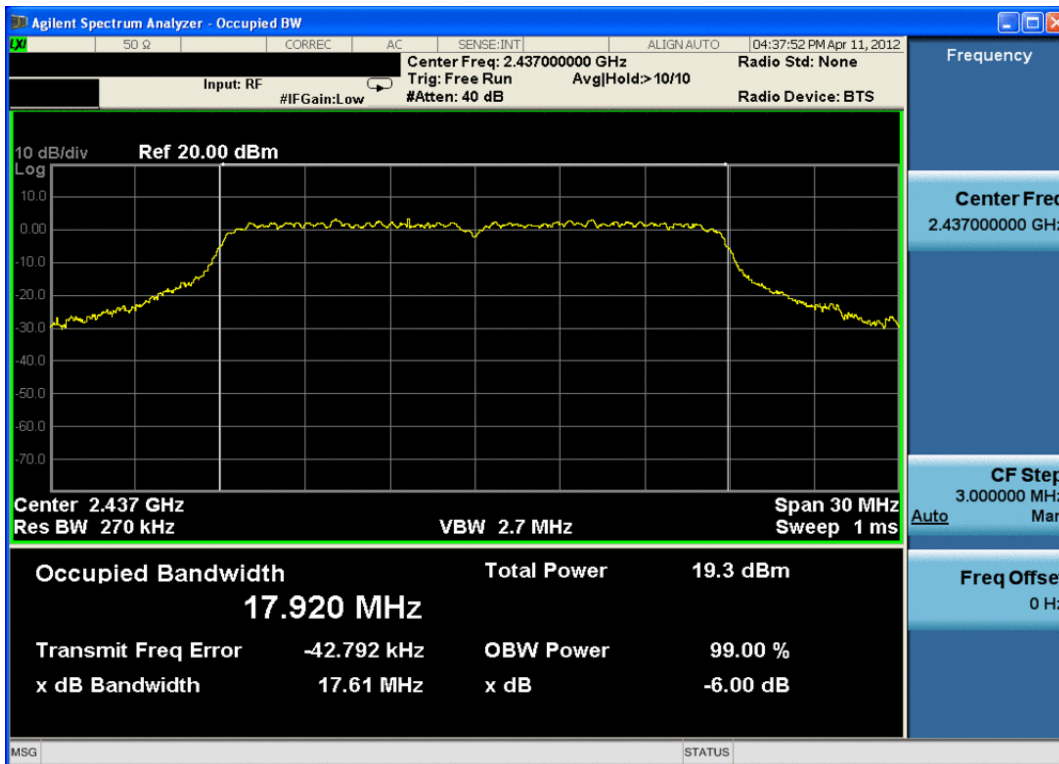


Plot 6-6. 6dB Bandwidth Plot (802.11g – Ch. 11)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 14 of 40                   |

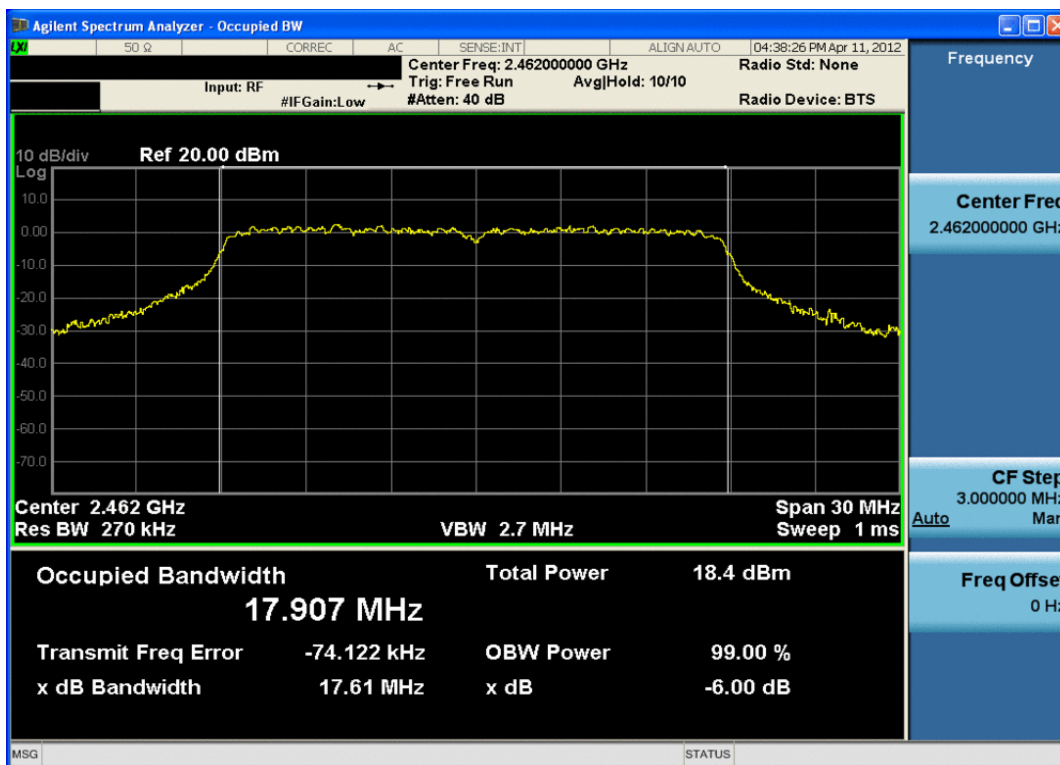


Plot 6-7. 6dB Bandwidth Plot (802.11n – Ch. 1)



Plot 6-8. 6dB Bandwidth Plot (802.11n – Ch. 6)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 15 of 40                   |



Plot 6-9. 6dB Bandwidth Plot (802.11n – Ch. 11)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 16 of 40                   |

### 6.3 Output Power Measurement – 802.11b/g/n

§15.247(b)(3); RSS-210 [A8.4]

The transmit antenna terminal of the EUT is connected to the input of an RF power sensor. Measurement is made using a broadband power meter capable of making peak and average power measurements while the EUT is operating in transmission mode at the appropriate frequencies. **The maximum permissible conducted output power is 1 Watt.**

| Mode    | Freq<br>[MHz] | Chan | Det  | 802.11b Conducted Power [dBm] |       |       |       |
|---------|---------------|------|------|-------------------------------|-------|-------|-------|
|         |               |      |      | Data Rate [Mbps]              |       |       |       |
|         |               |      |      | 1                             | 2     | 5.5   | 11    |
| 802.11b | 2412          | 1    | AVG  | 15.70                         | 15.60 | 15.68 | 15.67 |
|         |               |      | PEAK | 17.78                         | 17.74 | 17.75 | 17.76 |
| 802.11b | 2437          | 6    | AVG  | 15.78                         | 15.73 | 15.77 | 15.75 |
|         |               |      | PEAK | 17.85                         | 17.85 | 17.86 | 17.85 |
| 802.11b | 2462          | 11   | AVG  | 15.53                         | 15.52 | 15.50 | 15.65 |
|         |               |      | PEAK | 17.67                         | 17.62 | 17.93 | 17.80 |

Table 6-3. Conducted Output Power Measurements (802.11b)

| Mode    | Freq<br>[MHz] | Chan | Det  | 802.11g Conducted Power [dBm] |       |       |       |       |       |       |       |
|---------|---------------|------|------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
|         |               |      |      | Data Rate [Mbps]              |       |       |       |       |       |       |       |
|         |               |      |      | 6                             | 9     | 12    | 18    | 24    | 36    | 48    | 54    |
| 802.11g | 2412          | 1    | AVG  | 14.61                         | 14.58 | 14.60 | 14.62 | 10.88 | 10.91 | 10.99 | 11.03 |
|         |               |      | PEAK | 21.04                         | 21.04 | 21.25 | 20.81 | 18.86 | 18.36 | 18.36 | 18.64 |
| 802.11g | 2437          | 6    | AVG  | 14.74                         | 14.72 | 14.73 | 14.78 | 11.06 | 11.00 | 11.01 | 11.03 |
|         |               |      | PEAK | 21.24                         | 21.20 | 21.44 | 21.02 | 19.24 | 18.61 | 18.36 | 19.11 |
| 802.11g | 2462          | 11   | AVG  | 14.46                         | 14.43 | 14.50 | 14.56 | 10.62 | 10.62 | 10.73 | 10.70 |
|         |               |      | PEAK | 21.13                         | 21.17 | 21.46 | 20.90 | 19.05 | 18.43 | 18.15 | 18.37 |

Table 6-4. 802.11g Conducted Output Power Measurements

| Mode    | Freq<br>[MHz] | Chan | Det  | 802.11n (2.4GHz) Conducted Power [dBm] |         |           |         |         |         |         |         |
|---------|---------------|------|------|----------------------------------------|---------|-----------|---------|---------|---------|---------|---------|
|         |               |      |      | Data Rate [Mbps]                       |         |           |         |         |         |         |         |
|         |               |      |      | 6.5/7.2                                | 13/14.4 | 19.5/21.7 | 26/28.9 | 39/43.4 | 52/57.8 | 58.5/65 | 65/72.2 |
| 802.11n | 2412          | 1    | AVG  | 12.15                                  | 12.13   | 12.23     | 8.20    | 8.22    | 8.32    | 8.31    | 8.37    |
|         |               |      | PEAK | 18.96                                  | 19.29   | 19.06     | 15.65   | 15.53   | 15.63   | 16.27   | 16.05   |
| 802.11n | 2437          | 6    | AVG  | 12.27                                  | 12.11   | 12.30     | 8.37    | 8.31    | 8.33    | 8.43    | 8.36    |
|         |               |      | PEAK | 19.19                                  | 19.28   | 19.19     | 15.90   | 15.67   | 15.69   | 16.15   | 16.18   |
| 802.11n | 2462          | 11   | AVG  | 11.89                                  | 11.97   | 11.95     | 8.07    | 8.07    | 8.07    | 8.10    | 8.11    |
|         |               |      | PEAK | 18.84                                  | 19.30   | 19.02     | 15.56   | 15.53   | 15.58   | 15.97   | 15.74   |

Table 6-5. 802.11n (2.4GHz) Conducted Output Power Measurements

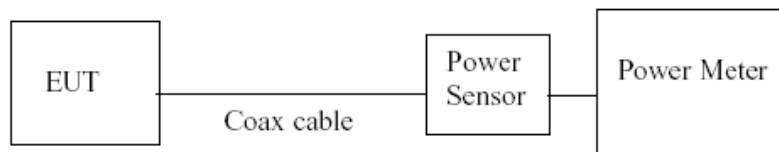


Figure 6-2. Test Instrument & Measurement Setup

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 17 of 40                   |

## 6.4 Power Spectral Density (802.11b/g/n)

### §15.247(e); RSS-210 [A8.2]

The power spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies. **The maximum permissible power spectral density is 8 dBm in any 3 kHz band.**

Per the guidance on power spectral density measurements given in KDB 558074, the spectrum is measured with a 100kHz bandwidth using an average detector. The measured spectrum is compared to the 8dBm/3kHz limit given in 15.247(e) by applying a bandwidth correction factor equal to  $10\log(3\text{kHz}/100\text{kHz}) = -15.23\text{dB}$ .

| Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Power Spectral Density [dBm] | Bandwidth Correction Factor [dB] | Corrected Power Spectral Density [dBm] | Maximum Permissible Power Density [dBm / 3kHz] | Margin [dB] |
|-----------------|-------------|-------------|------------------|---------------------------------------|----------------------------------|----------------------------------------|------------------------------------------------|-------------|
| 2412            | 1           | b           | 1                | -2.35                                 | -15.23                           | -17.58                                 | 8.0                                            | -25.58      |
| 2437            | 6           | b           | 1                | -2.16                                 | -15.23                           | -17.39                                 | 8.0                                            | -25.39      |
| 2462            | 11          | b           | 1                | -2.46                                 | -15.23                           | -17.69                                 | 8.0                                            | -25.69      |
| 2412            | 1           | g           | 6                | -5.94                                 | -15.23                           | -21.17                                 | 8.0                                            | -29.17      |
| 2437            | 6           | g           | 6                | -5.57                                 | -15.23                           | -20.80                                 | 8.0                                            | -28.80      |
| 2462            | 11          | g           | 6                | -5.95                                 | -15.23                           | -21.18                                 | 8.0                                            | -29.18      |
| 2412            | 1           | n           | 6.5/7.2 (MCS0)   | -8.18                                 | -15.23                           | -23.41                                 | 8.0                                            | -31.41      |
| 2437            | 6           | n           | 6.5/7.2 (MCS0)   | -7.83                                 | -15.23                           | -23.06                                 | 8.0                                            | -31.06      |
| 2462            | 11          | n           | 6.5/7.2 (MCS0)   | -8.09                                 | -15.23                           | -23.32                                 | 8.0                                            | -31.32      |

Table 6-6. Conducted Power Density Measurements

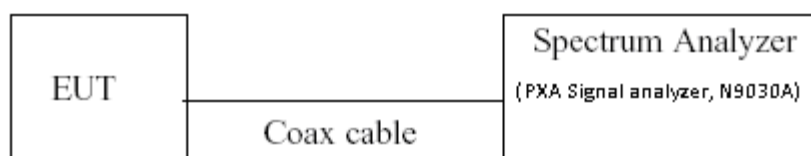
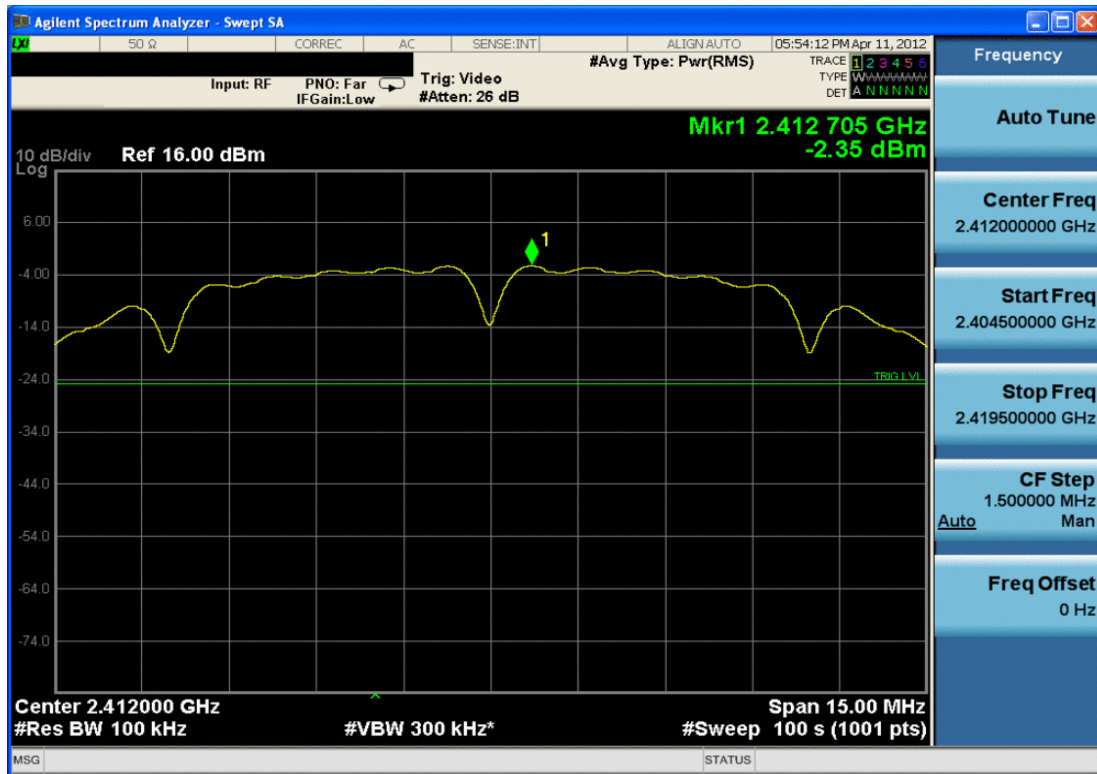
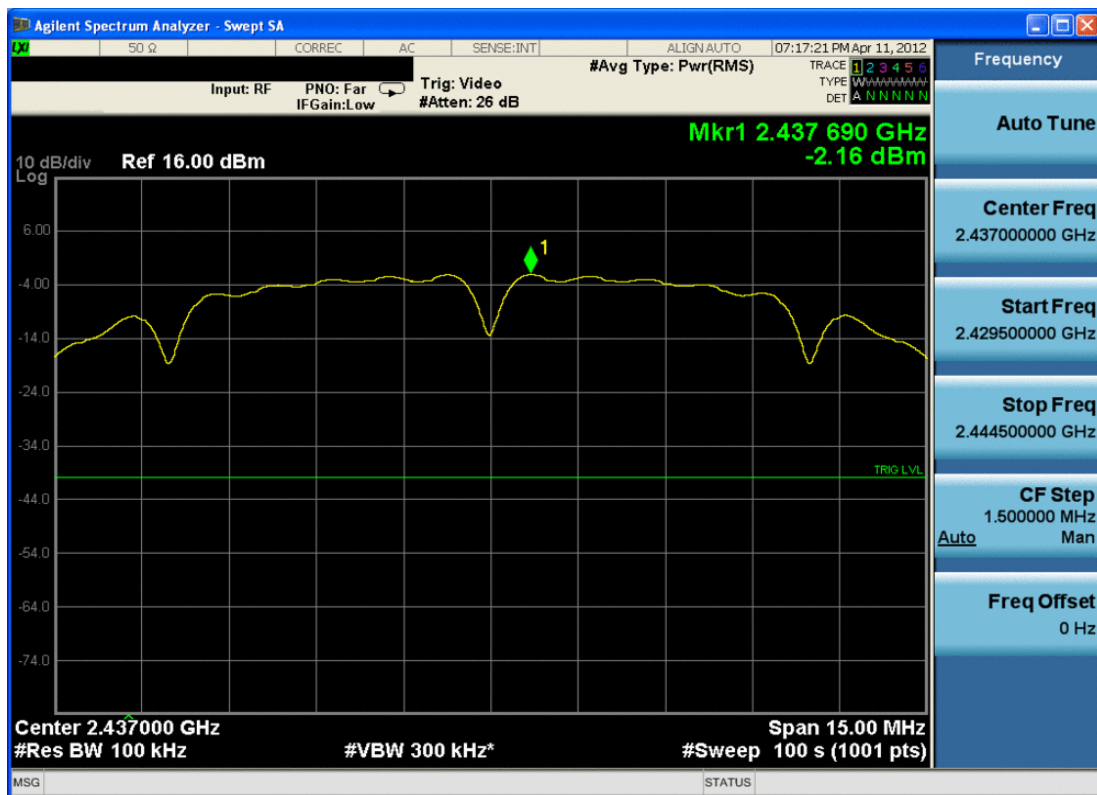


Figure 6-3. Test Instrument & Measurement Setup

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 18 of 40                   |



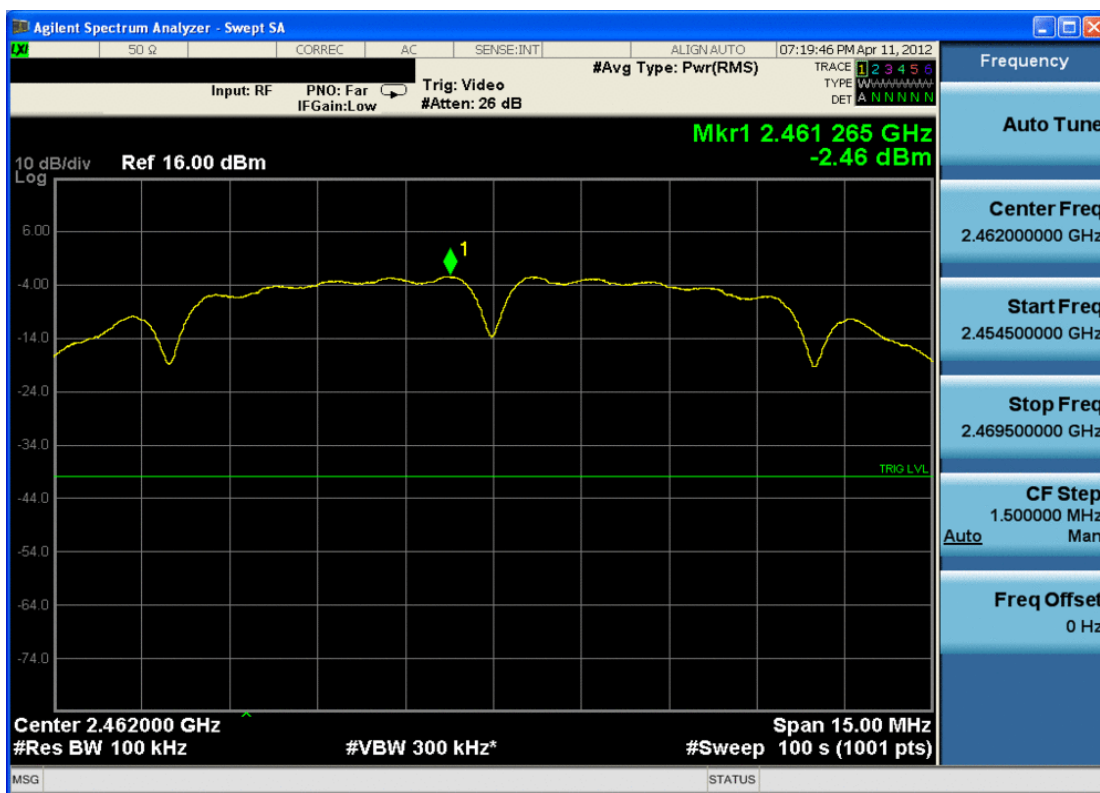
Plot 6-10. Power Spectral Density Plot (802.11b - Ch. 1)



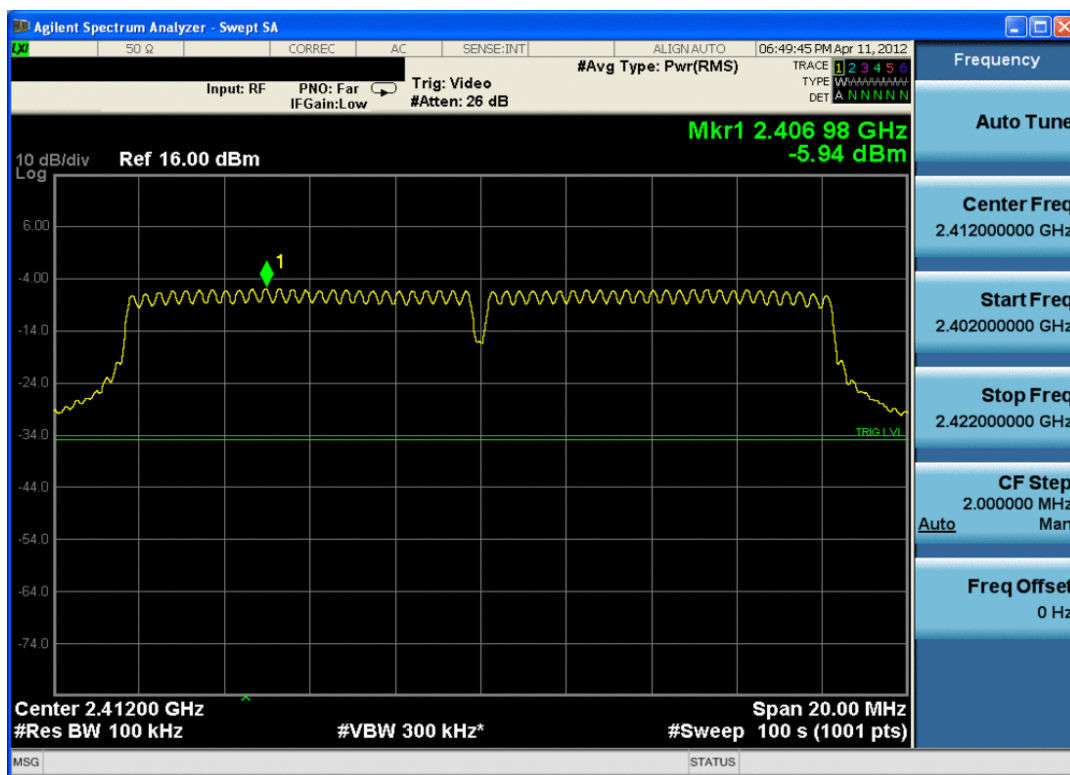
Plot 6-11. Power Spectral Density Plot (802.11b - Ch. 6)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 19 of 40                   |



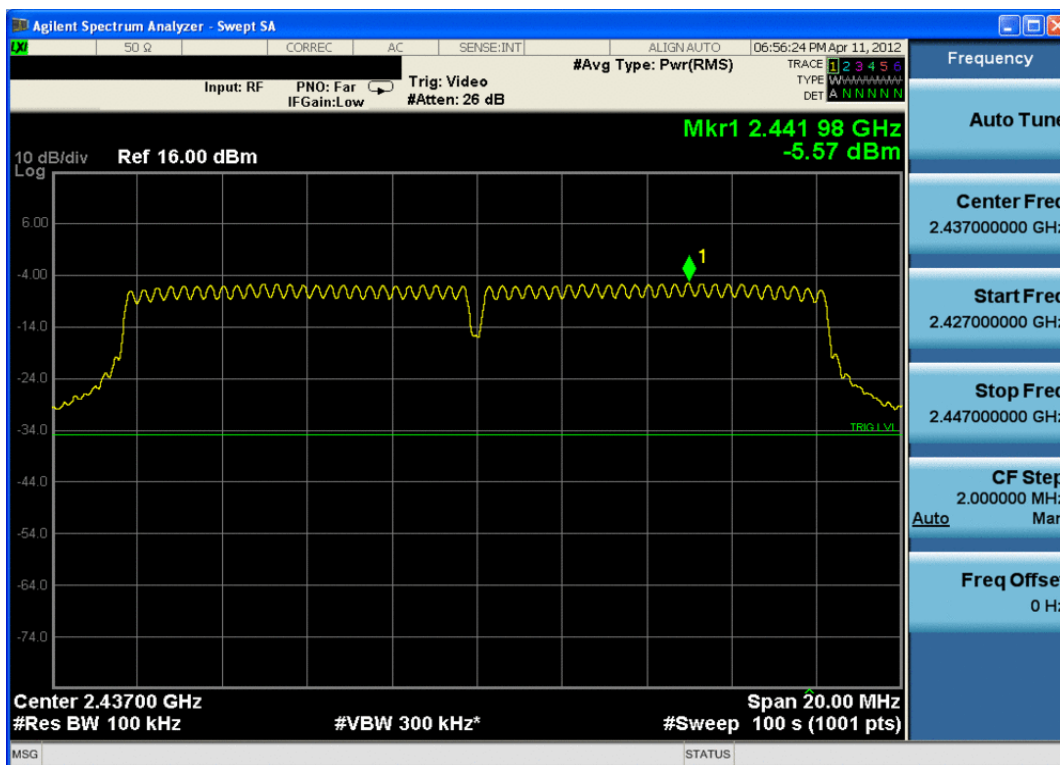


Plot 6-12. Power Spectral Density Plot (802.11b – Ch. 11)

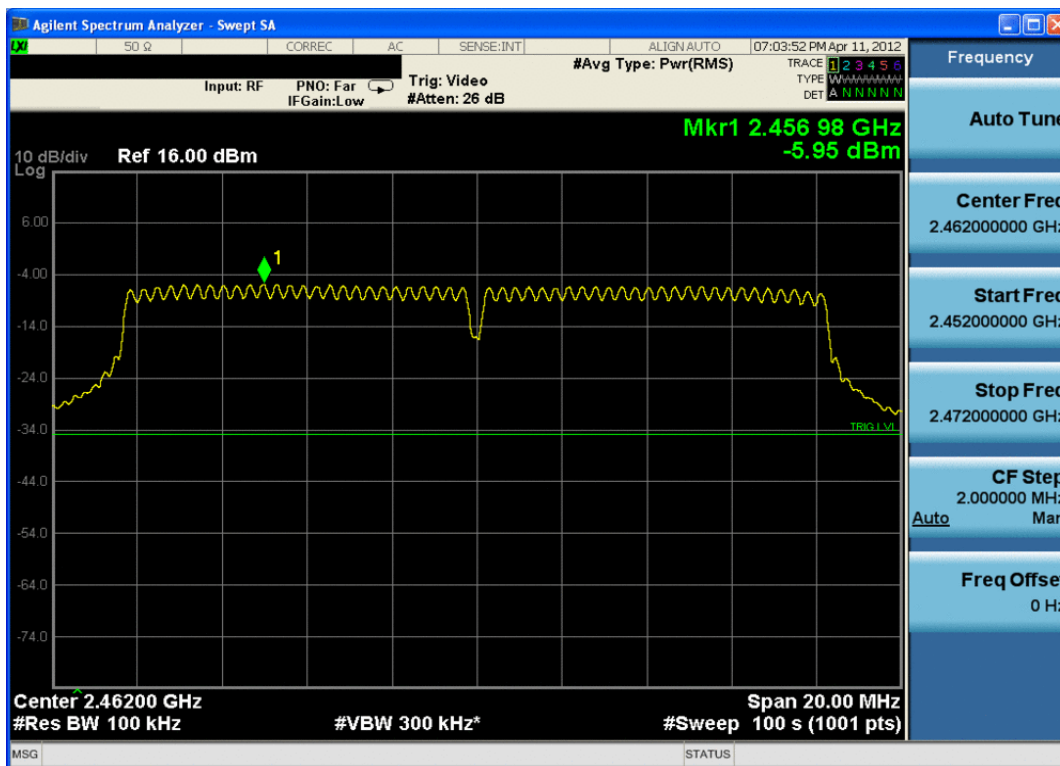


Plot 6-13. Power Spectral Density Plot (802.11g – Ch. 1)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 20 of 40                   |

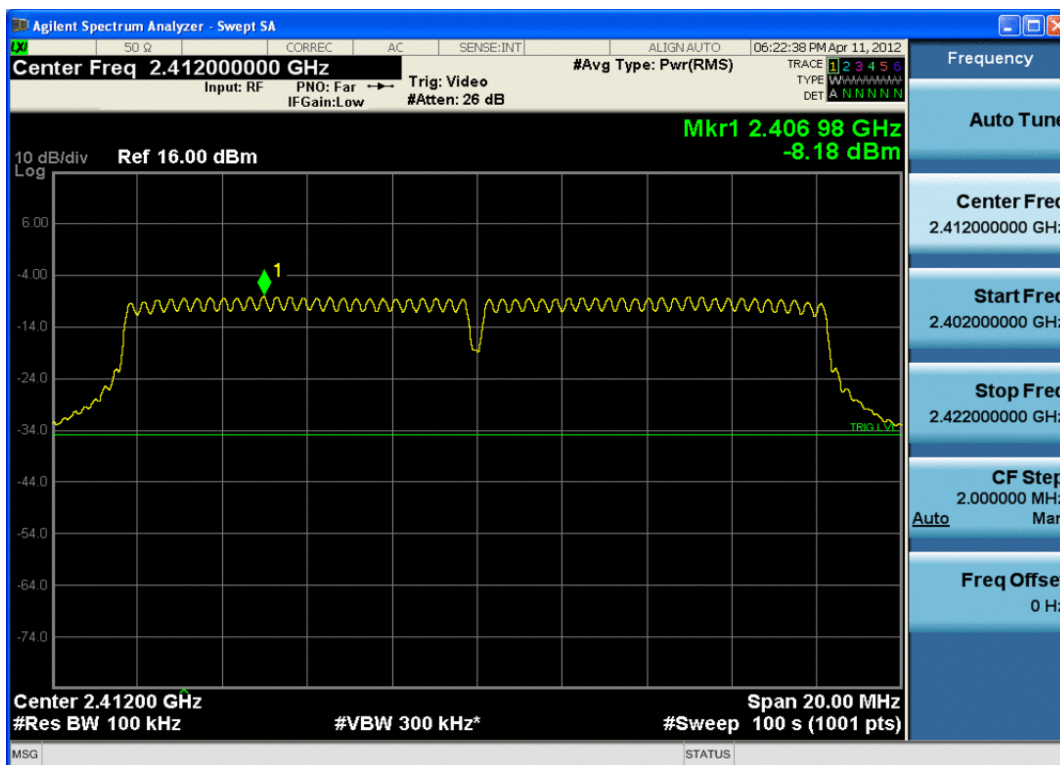


### Plot 6-14. Power Spectral Density Plot (802.11g – Ch. 6)

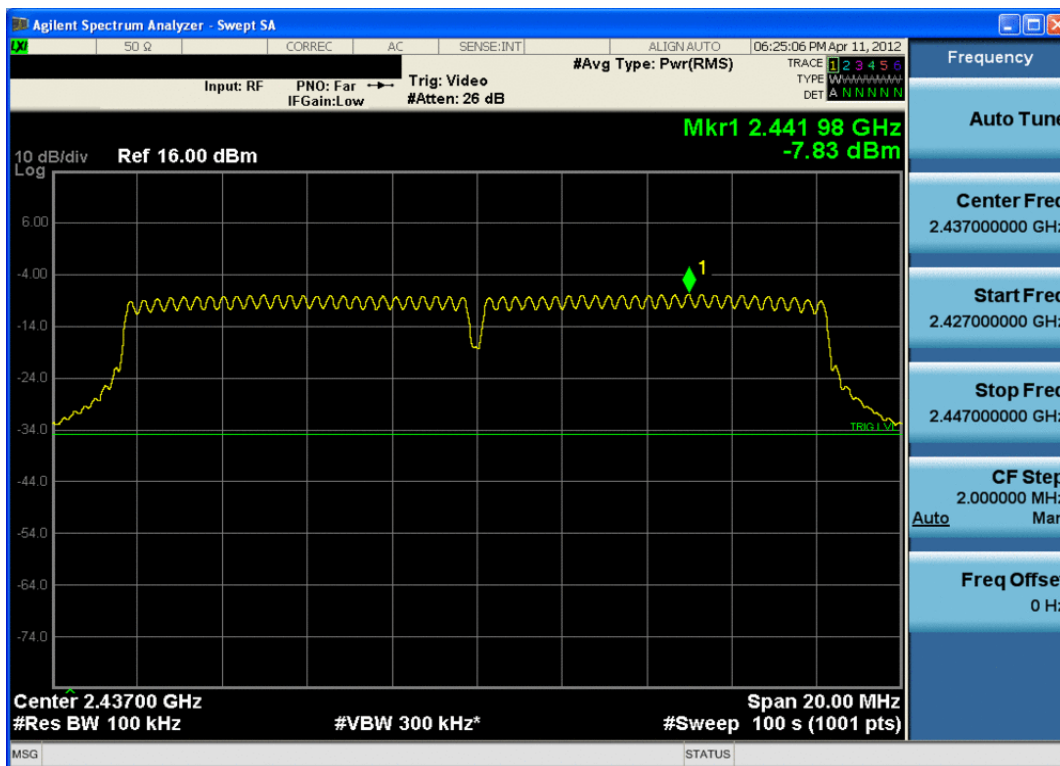


### Plot 6-15. Power Spectral Density Plot (802.11g – Ch. 11)

|                                      |                                                                                                                                                                                                                                                  |                               |                                 |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSCH1519                   |  <b>FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br/>(CERTIFICATION)</b>  |                               | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                                                                                                                                                                                         | EUT Type:<br>Portable Handset | Page 21 of 40                   |

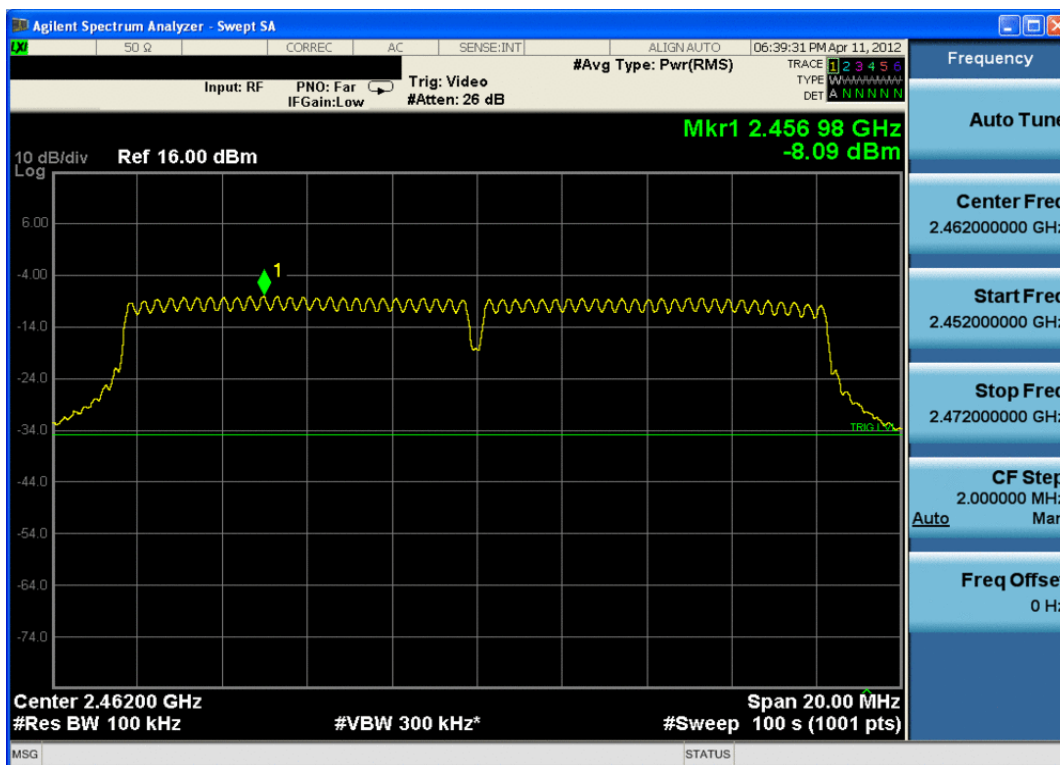


Plot 6-16. Power Spectral Density Plot (802.11n – Ch. 1)



Plot 6-17. Power Spectral Density Plot (802.11n – Ch. 6)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 22 of 40                   |



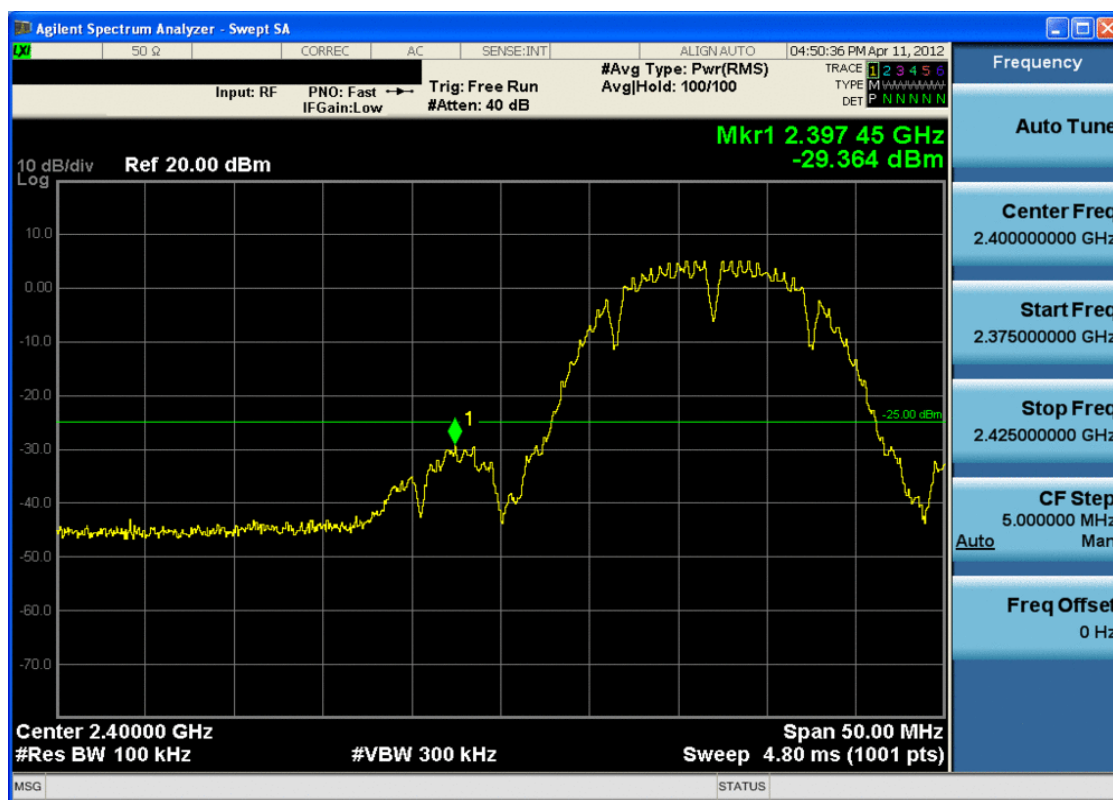
### Plot 6-18. Power Spectral Density Plot (802.11n – Ch. 11)

## 6.5 Conducted Emissions at the Band Edge

### §15.247(d); RSS-210 [A8.5]

For the following out of band conducted spurious emissions plots at the band edge, the EUT was set at a data rate of 1Mbps for “b” mode, 6 Mbps for “g” mode and 6.5/7.2Mbps for “n” mode. These settings produced the worst-case emissions.

Per the guidance of KDB 558074, section 5.4.1.1, the reference level for out of band emissions is established from the plots of this section since the band edge emissions are measured with a RBW of 100kHz. This reference level is then used as the limit in subsequent plots for out of band spurious emissions shown in Section 6.6.



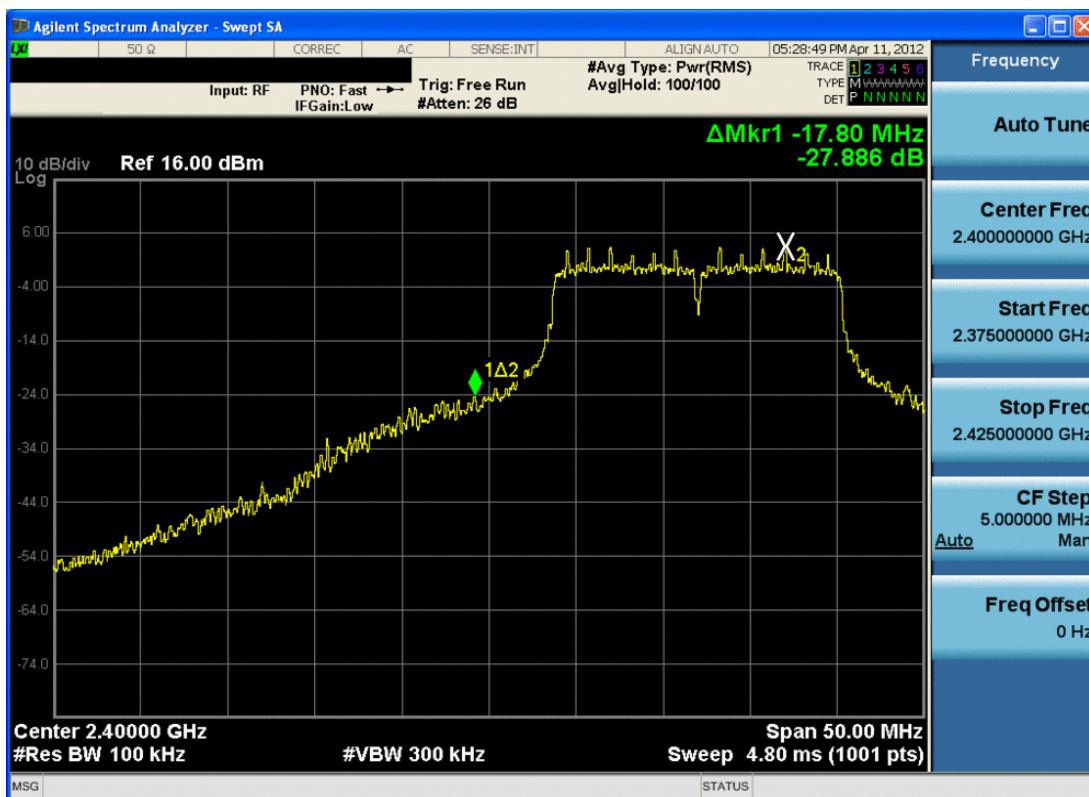
Plot 6-19. Band Edge Plot (802.11b – Ch. 1)

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 24 of 40                   |





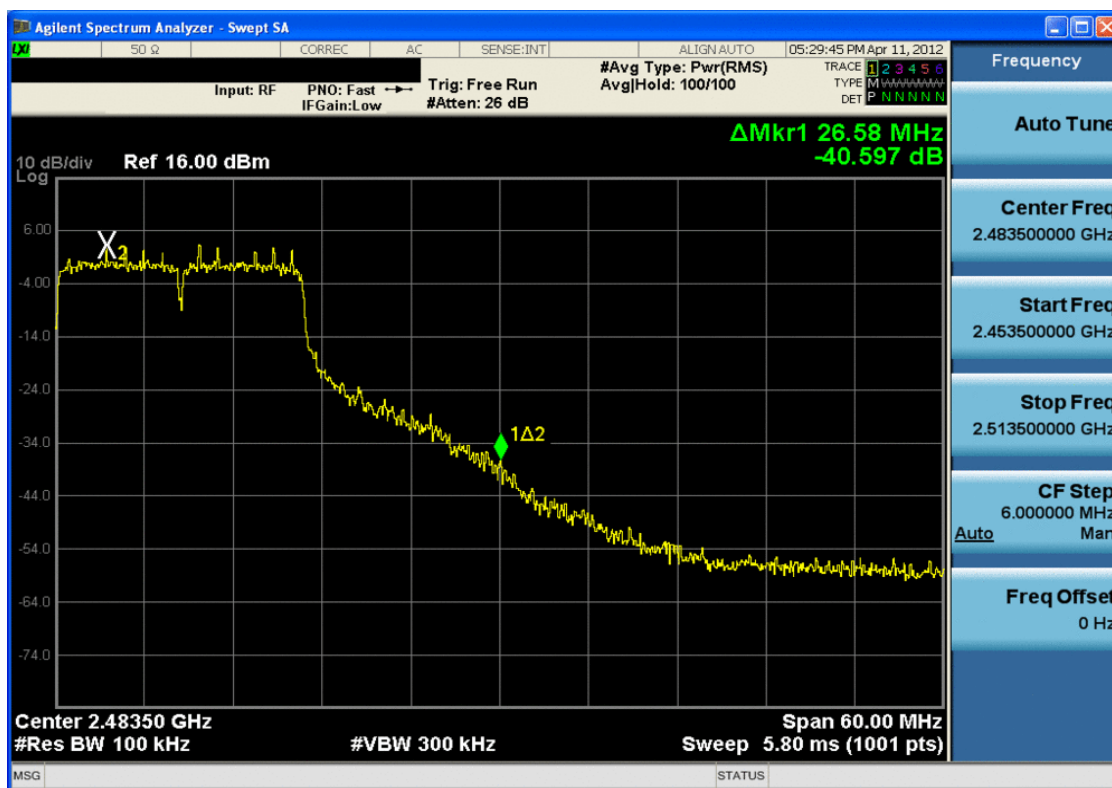
Plot 6-20. Band Edge Plot (802.11b – Ch. 11)



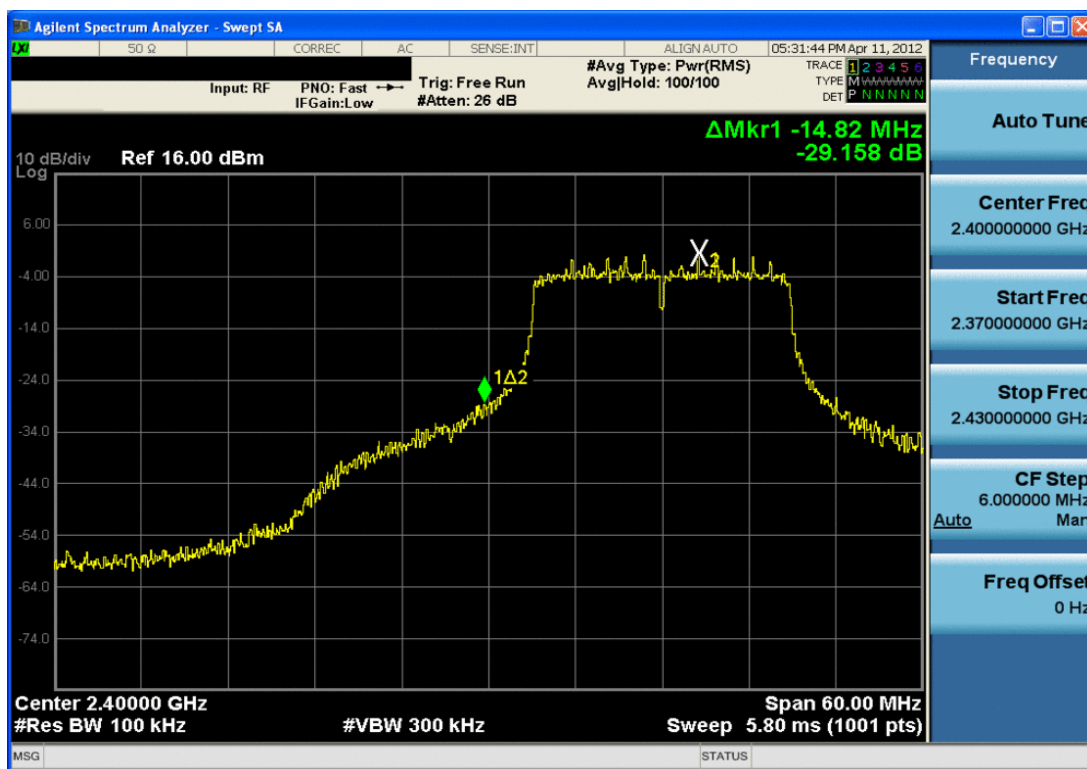
Plot 6-21. Band Edge Plot (802.11g – Ch. 1)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 25 of 40                   |



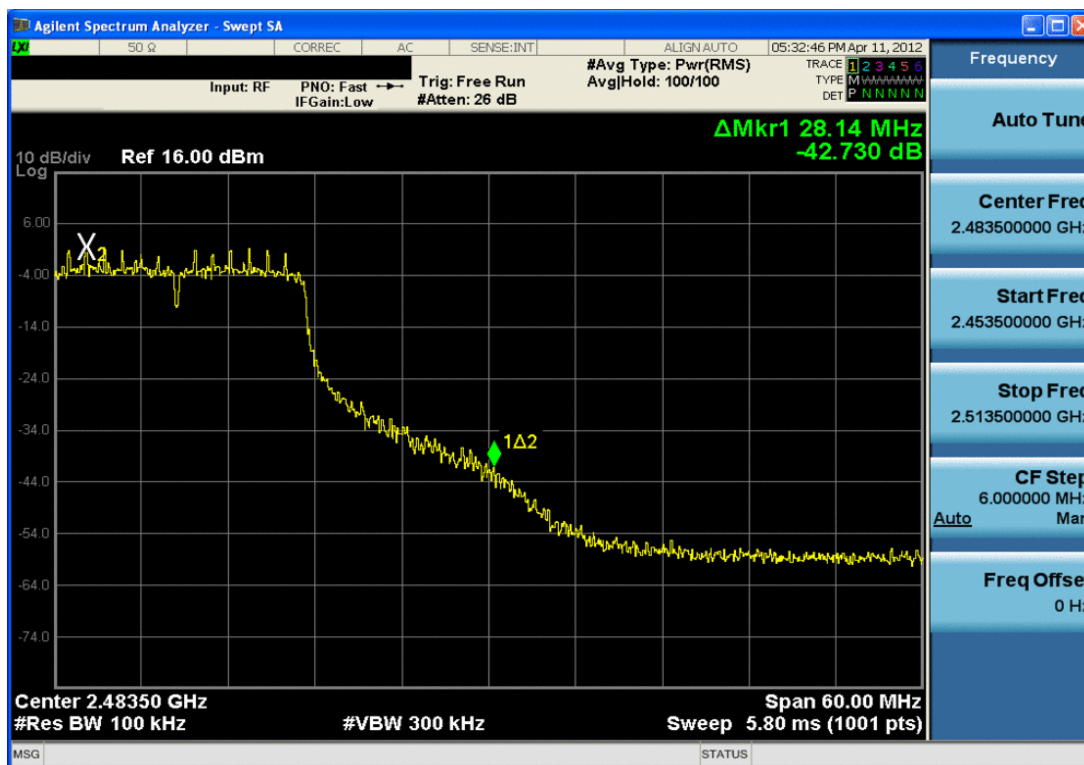


Plot 6-22. Band Edge Plot (802.11g – Ch. 11)



Plot 6-23. Band Edge Plot (802.11n – Ch. 1)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 26 of 40                   |



Plot 6-24. Band Edge Plot (802.11n – Ch. 11)

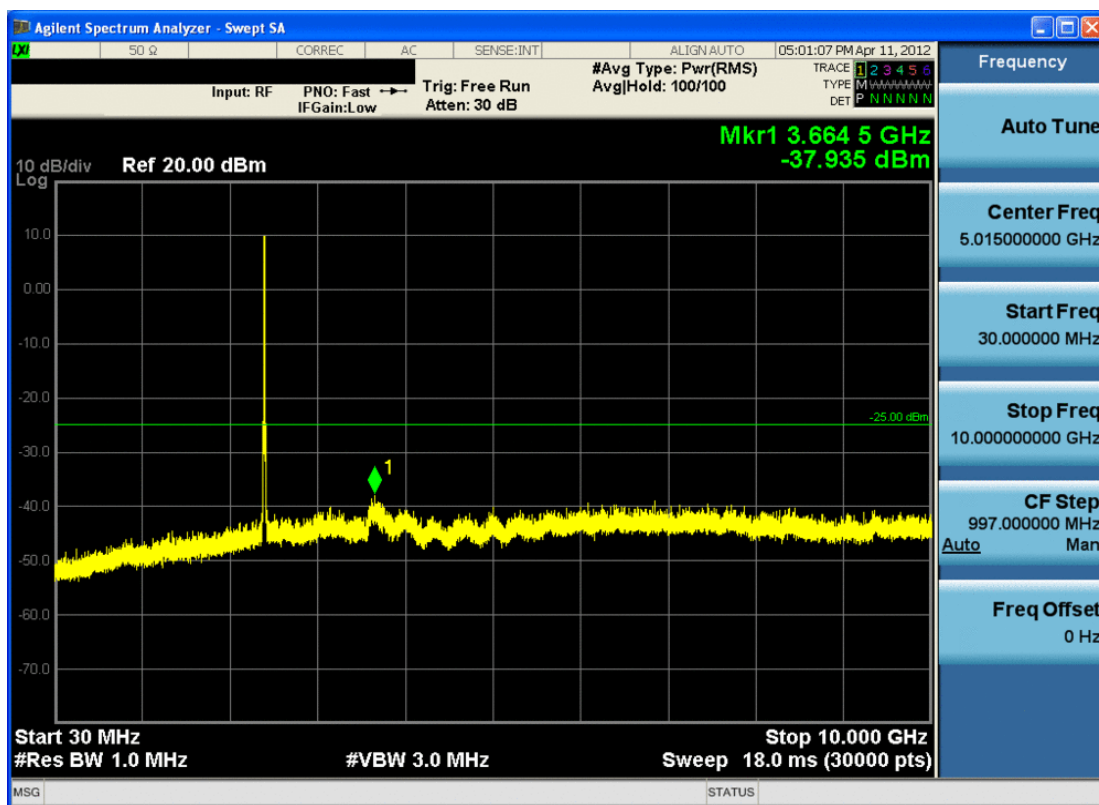
|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 27 of 40                   |

## 6.6 Conducted Spurious Emissions

### §15.247(d); RSS-210 [A8.5]

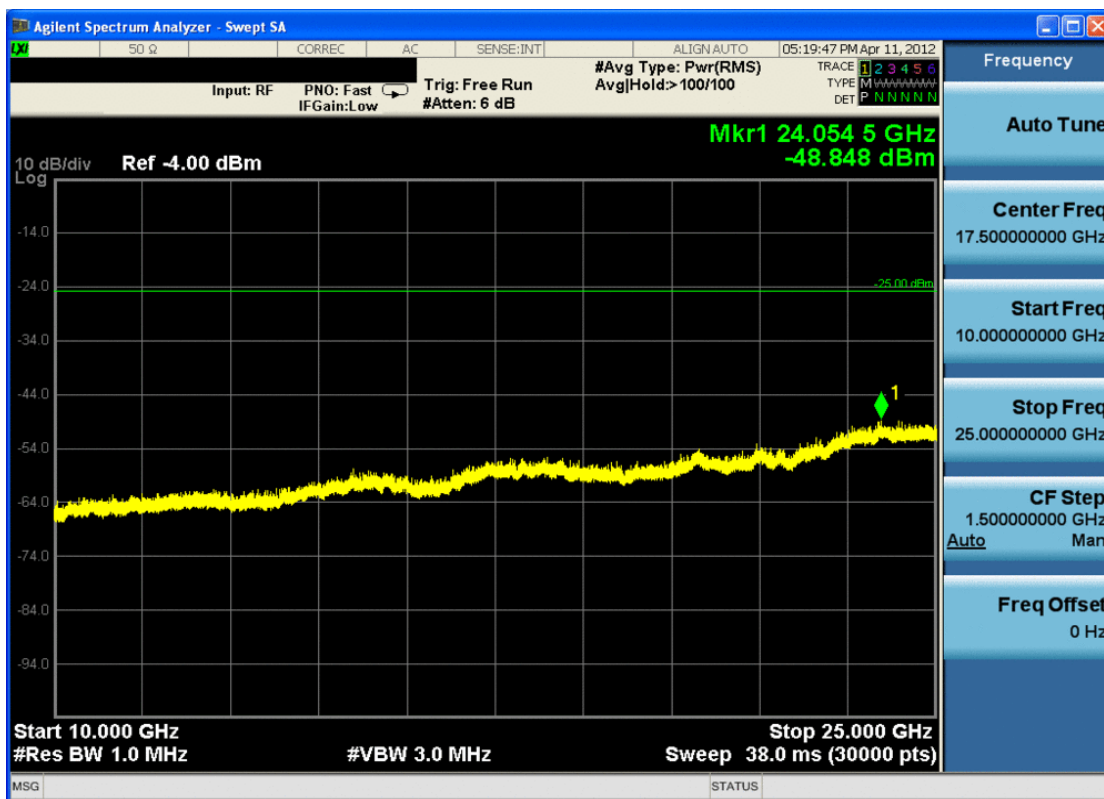
For the following out of band conducted spurious emissions plots, the EUT was investigated in all available data rates for “b”, “g”, and “n” modes. The worst case spurious emissions were found while transmitting in “b” mode at 1 Mbps and are shown in the plots below.

The display line shown in the following plots denotes the limit at 30dB below the fundamental emission level measured in a 100kHz bandwidth, as determined in Section 6.5 of this report. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 30dB below the level of the fundamental in a 1MHz bandwidth.

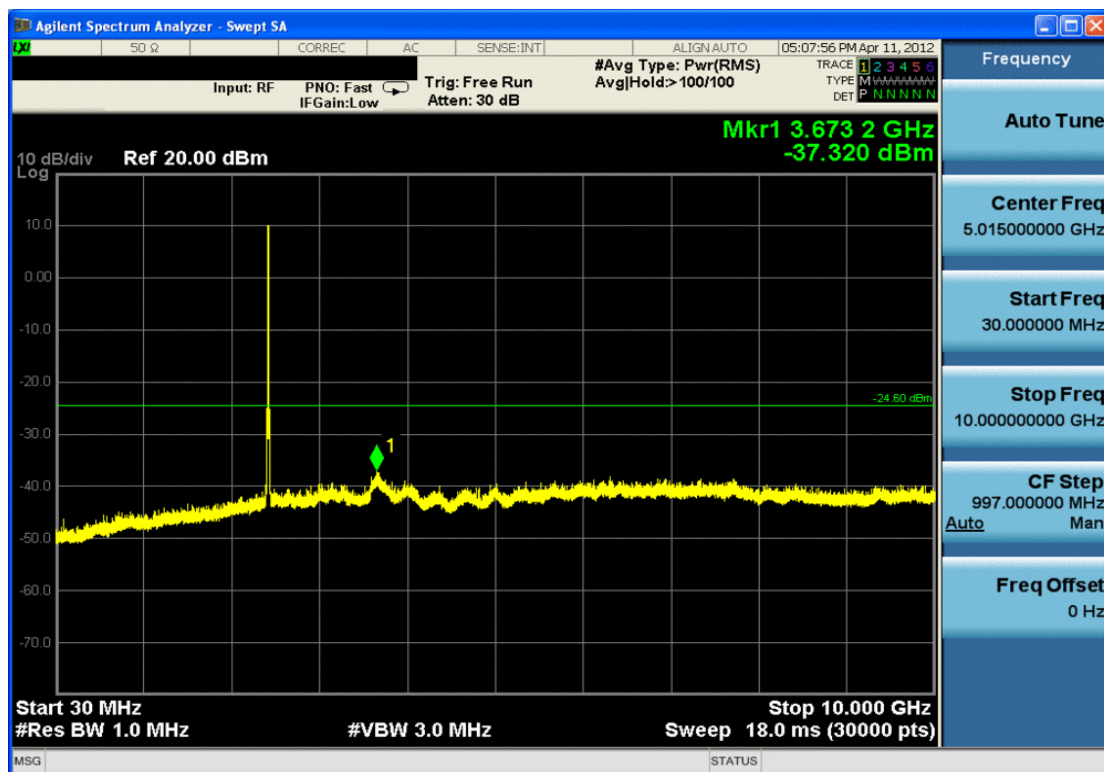


Plot 6-25. Conducted Spurious Plot (802.11b – Ch. 1)

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 28 of 40                   |

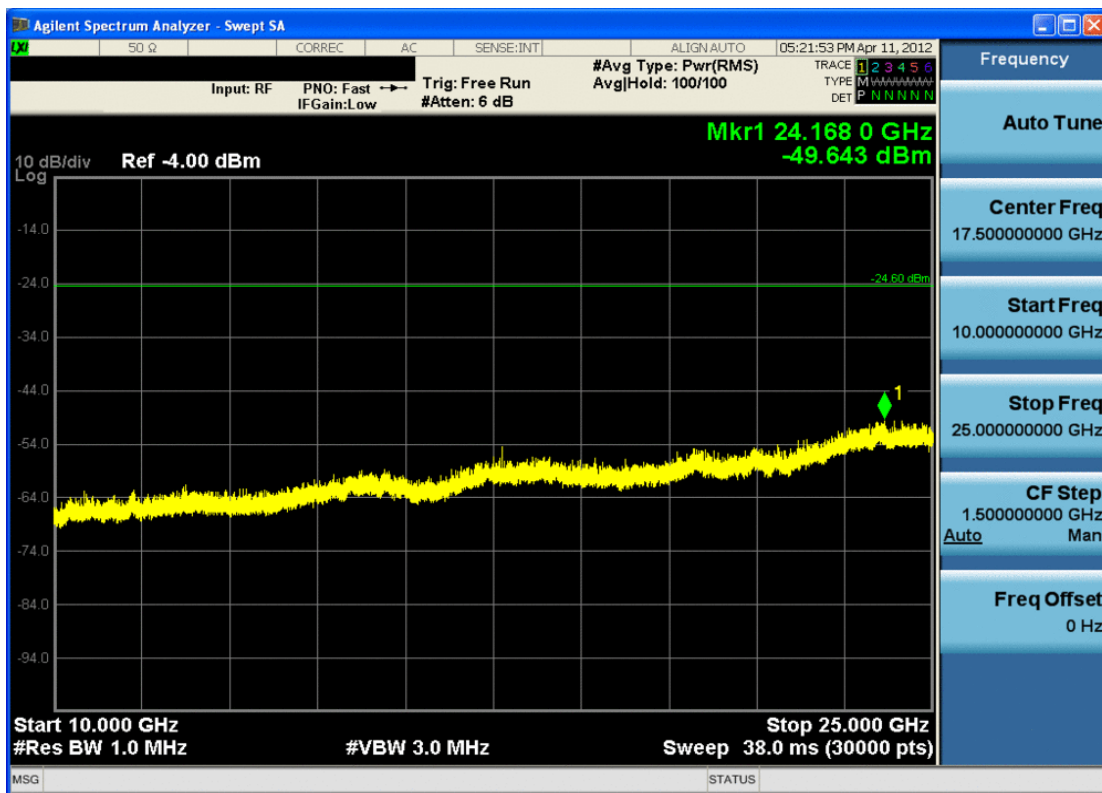


Plot 6-26. Conducted Spurious Plot (802.11b – Ch. 1)

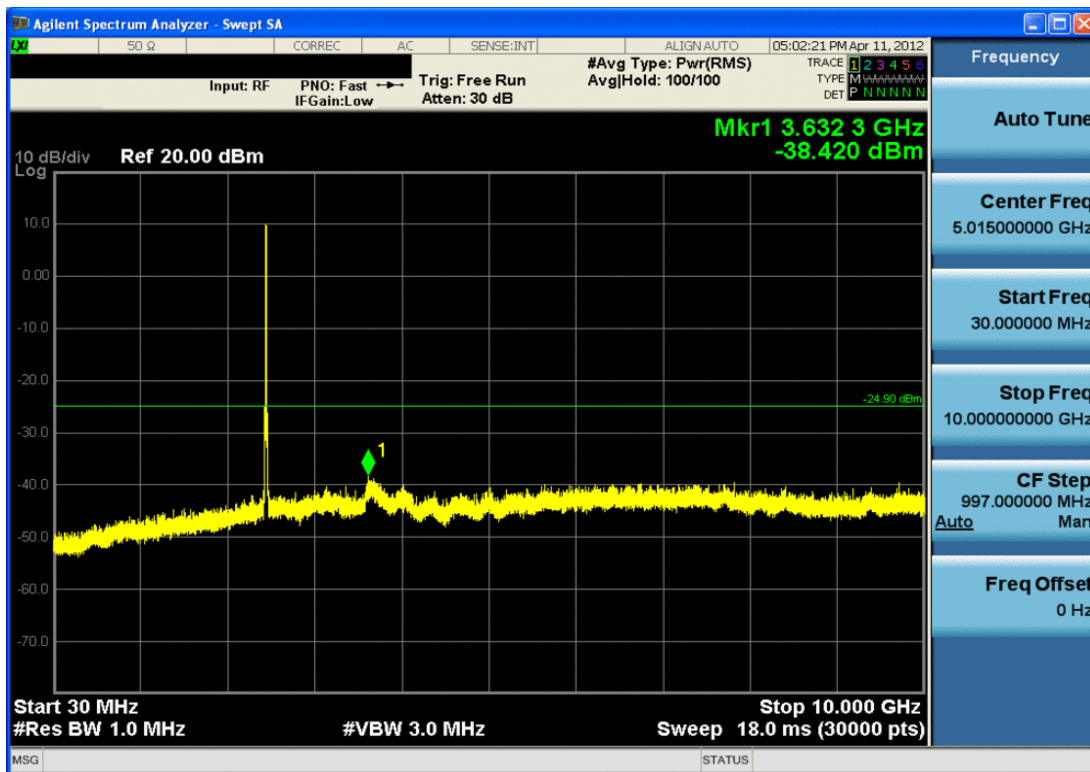


Plot 6-27. Conducted Spurious Plot (802.11b – Ch. 6)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 29 of 40                   |



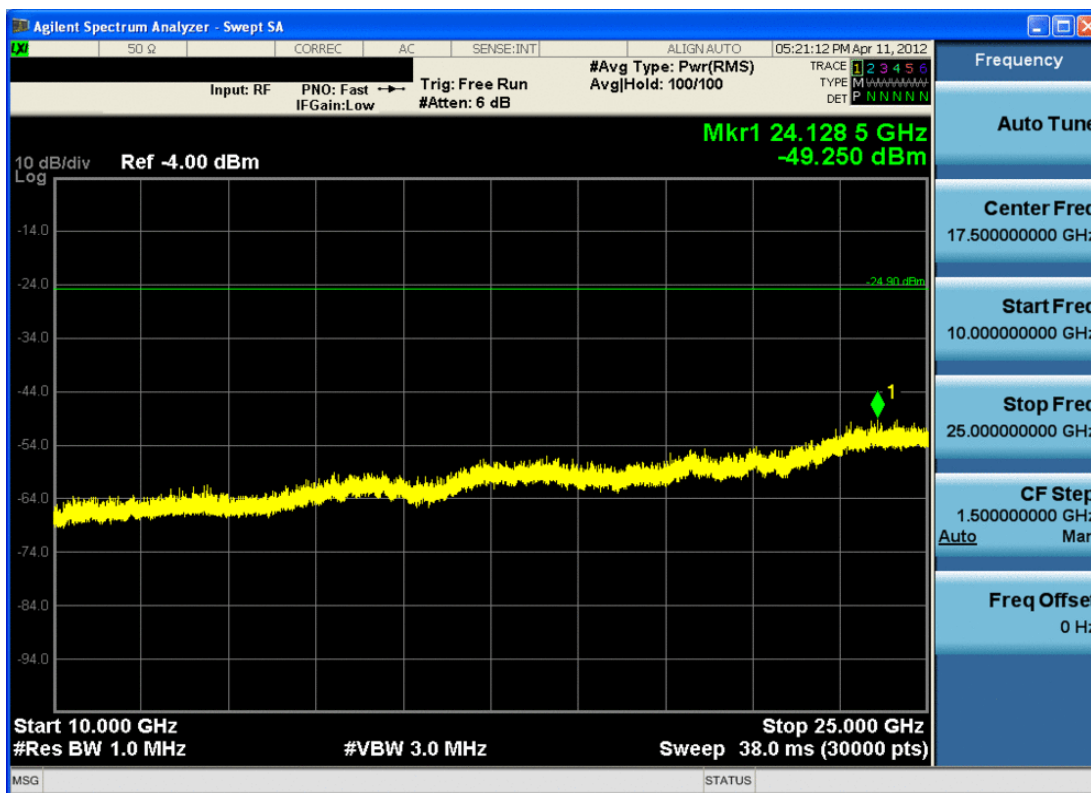
Plot 6-28. Conducted Spurious Plot (802.11b – Ch. 6)



Plot 6-29. Conducted Spurious Plot (802.11b – Ch. 11)

|                                      |                                               |                                                                |                |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSCHI519                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                      | EUT Type:<br>Portable Handset                                  |                | Page 30 of 40                   |





### Plot 6-30. Conducted Spurious Plot (802.11b – Ch. 11)

|                                      |                                                                                                                                                                                                                                                  |                               |                                 |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSCH1519                   |  <b>FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br/>(CERTIFICATION)</b>  |                               | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                                                                                                                                                                                         | EUT Type:<br>Portable Handset | Page 31 of 40                   |

## 6.7 Radiated Spurious Emission Measurements

§15.205, §15.209, §15.247(d); RSS-210 [A8.5]

The EUT was tested from 9kHz up to the tenth harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 6-7 per Section 15.209.

All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section. All measurements shown in this section were obtained using traditional radiated test methods as defined in C63.10-2009. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 558074 were not used to evaluate this device.

| Frequency         | Field Strength<br>[ $\mu\text{V/m}$ ] | Measured Distance<br>[Meters] |
|-------------------|---------------------------------------|-------------------------------|
| 0.009 – 0.490 MHz | 2400/F (kHz)                          | 300                           |
| 0.490 – 1.705 MHz | 24000/F (kHz)                         | 30                            |
| 1.705 – 30.00 MHz | 30                                    | 30                            |
| 30.00 – 88.00 MHz | 100                                   | 3                             |
| 88.00 – 216.0 MHz | 150                                   | 3                             |
| 216.0 – 960.0 MHz | 200                                   | 3                             |
| Above 960.0 MHz   | 500                                   | 3                             |

**Table 6-7. Radiated Limits**

### Sample Calculations

- o Field Strength Level [ $\text{dB}\mu\text{V/m}$ ] = Analyzer Level [ $\text{dBm}$ ] + 107 + AFCL [ $\text{dB/m}$ ]
- o AFCL [ $\text{dB/m}$ ] = Antenna Factor [ $\text{dB/m}$ ] + Cable Loss [ $\text{dB}$ ]
- o Margin [ $\text{dB}$ ] = Field Strength Level [ $\text{dB}\mu\text{V/m}$ ] – Limit [ $\text{dB}\mu\text{V/m}$ ]

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                                  |                                                                                       | Page 32 of 40                   |

## Radiated Spurious Emission Measurements (Cont'd)

§15.205, §15.209, §15.247(d); RSS-210 [A8.5]

Worst Case Mode: 802.11b

Worst Case Transfer Rate: 1 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 2412MHz

Channel: 01

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB/m] | Field Strength [dB $\mu$ V/m] | Limit [dB $\mu$ V/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-------------|-------------------------------|----------------------|-------------|
| 4824.00         | -106.86              | Avg      | H         | 42.15       | 42.29                         | 53.98                | -11.69      |
| 4824.00         | -97.09               | Peak     | H         | 42.15       | 52.05                         | 73.98                | -21.92      |
| 12060.00        | -135.00              | Avg      | H         | 58.50       | 30.50                         | 53.98                | -23.48      |
| 12060.00        | -125.00              | Peak     | H         | 58.50       | 40.50                         | 73.98                | -33.48      |

**Table 6-8. Radiated Measurements @ 3 meters**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-7.
2. For frequencies > 1GHz, average measurements are recorded using RBW = 1MHz, VBW = 10Hz. Peak measurements are recorded using RBW = 1MHz, VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500  $\mu$ V/m (54dB $\mu$ /m) at 3 meters radiated.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 33 of 40                   |

## Radiated Spurious Emission Measurements (Cont'd)

§15.205, §15.209, §15.247(d); RSS-210 [A8.5]

Worst Case Mode: 802.11b

Worst Case Transfer Rate: 1 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 2437MHz

Channel: 06

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB/m] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-------------|-------------------------|----------------|-------------|
| 4874.00         | -107.21              | Avg      | H         | 42.21       | 42.00                   | 53.98          | -11.98      |
| 4874.00         | -96.56               | Peak     | H         | 42.21       | 52.65                   | 73.98          | -21.33      |
| 7311.00         | -135.00              | Avg      | H         | 48.81       | 20.81                   | 53.98          | -33.17      |
| 7311.00         | -125.00              | Peak     | H         | 48.81       | 30.81                   | 73.98          | -43.17      |
| 12185.00        | -135.00              | Avg      | H         | 58.78       | 30.78                   | 53.98          | -23.20      |
| 12185.00        | -125.00              | Peak     | H         | 58.78       | 40.78                   | 73.98          | -33.20      |

**Table 6-9. Radiated Measurements @ 3 meters**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-7.
2. For frequencies > 1GHz, average measurements are recorded using RBW = 1MHz, VBW = 10Hz. Peak measurements are recorded using RBW = 1MHz, VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 34 of 40                   |

## Radiated Spurious Emission Measurements (Cont'd)

§15.205, §15.209, §15.247(d); RSS-210 [A8.5]

Worst Case Mode: 802.11b

Worst Case Transfer Rate: 1 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 2462MHz

Channel: 11

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB/m] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-------------|-------------------------|----------------|-------------|
| 4924.00         | -107.44              | Avg      | H         | 42.30       | 41.86                   | 53.98          | -12.12      |
| 4924.00         | -96.34               | Peak     | H         | 42.30       | 52.96                   | 73.98          | -21.02      |
| 7386.00         | -135.00              | Avg      | H         | 48.80       | 20.80                   | 53.98          | -33.18      |
| 7386.00         | -125.00              | Peak     | H         | 48.80       | 30.80                   | 73.98          | -43.18      |
| 12310.00        | -135.00              | Avg      | H         | 58.82       | 30.82                   | 53.98          | -23.16      |
| 12310.00        | -125.00              | Peak     | H         | 58.82       | 40.82                   | 73.98          | -33.16      |

**Table 6-10. Radiated Measurements @ 3 meters**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-7.
2. For frequencies > 1GHz, average measurements are recorded using RBW = 1MHz, VBW = 10Hz. Peak measurements are recorded using RBW = 1MHz, VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 35 of 40                   |



## 6.8 Radiated Restricted Band Edge Measurements

§15.205, §15.209, §15.247(d); RSS-210 [A8.5]

Worst Case Mode: 802.11g

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 2412MHz

Channel: 1

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB/m] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-------------|-------------------------|----------------|-------------|
| 2390.00         | -89.73               | Avg      | H         | 35.92       | 53.19                   | 53.98          | -0.79       |
| 2390.00         | -72.90               | Peak     | H         | 35.92       | 70.02                   | 73.98          | -3.96       |
| 2389.67         | -90.13               | Avg      | H         | 35.92       | 52.78                   | 53.98          | -1.20       |
| 2389.67         | -73.88               | Peak     | H         | 35.92       | 69.04                   | 73.98          | -4.94       |
| 2387.72         | -95.13               | Avg      | H         | 35.91       | 47.78                   | 53.98          | -6.20       |
| 2387.72         | -79.01               | Peak     | H         | 35.91       | 63.91                   | 73.98          | -10.07      |

**Table 6-11. Radiated Restricted Band Edge Measurements (2310 – 2390MHz)**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-7.
2. For frequencies > 1GHz, average measurements are recorded using RBW = 1MHz, VBW = 10Hz. Peak measurements are recorded using RBW = 1MHz, VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 36 of 40                   |

## Radiated Restricted Band Edge Measurements (Cont'd)

§15.205, §15.209, §15.247(d); RSS-210 [A8.5]

Worst Case Mode: 802.11g

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 2462MHz

Channel: 11

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB/m] | Field Strength [dB $\mu$ V/m] | Limit [dB $\mu$ V/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-------------|-------------------------------|----------------------|-------------|
| 2483.50         | -92.17               | Avg      | H         | 36.32       | 51.15                         | 53.98                | -2.83       |
| 2483.50         | -76.11               | Peak     | H         | 36.32       | 67.21                         | 73.98                | -6.77       |
| 2483.89         | -92.87               | Avg      | H         | 36.32       | 50.45                         | 53.98                | -3.53       |
| 2483.89         | -78.76               | Peak     | H         | 36.32       | 64.56                         | 73.98                | -9.42       |
| 2483.91         | -92.82               | Avg      | H         | 36.33       | 50.51                         | 53.98                | -3.47       |
| 2483.91         | -79.38               | Peak     | H         | 36.33       | 63.94                         | 73.98                | -10.03      |

**Table 6-12. Radiated Restricted Band Edge Measurements (2483.5 – 2500MHz)**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-7.
2. For frequencies > 1GHz, average measurements are recorded using RBW = 1MHz, VBW = 10Hz. Peak measurements are recorded using RBW = 1MHz, VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500  $\mu$ V/m (54dB $\mu$ /m) at 3 meters radiated.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 37 of 40                   |

## 6.9 Line-Conducted Test Data

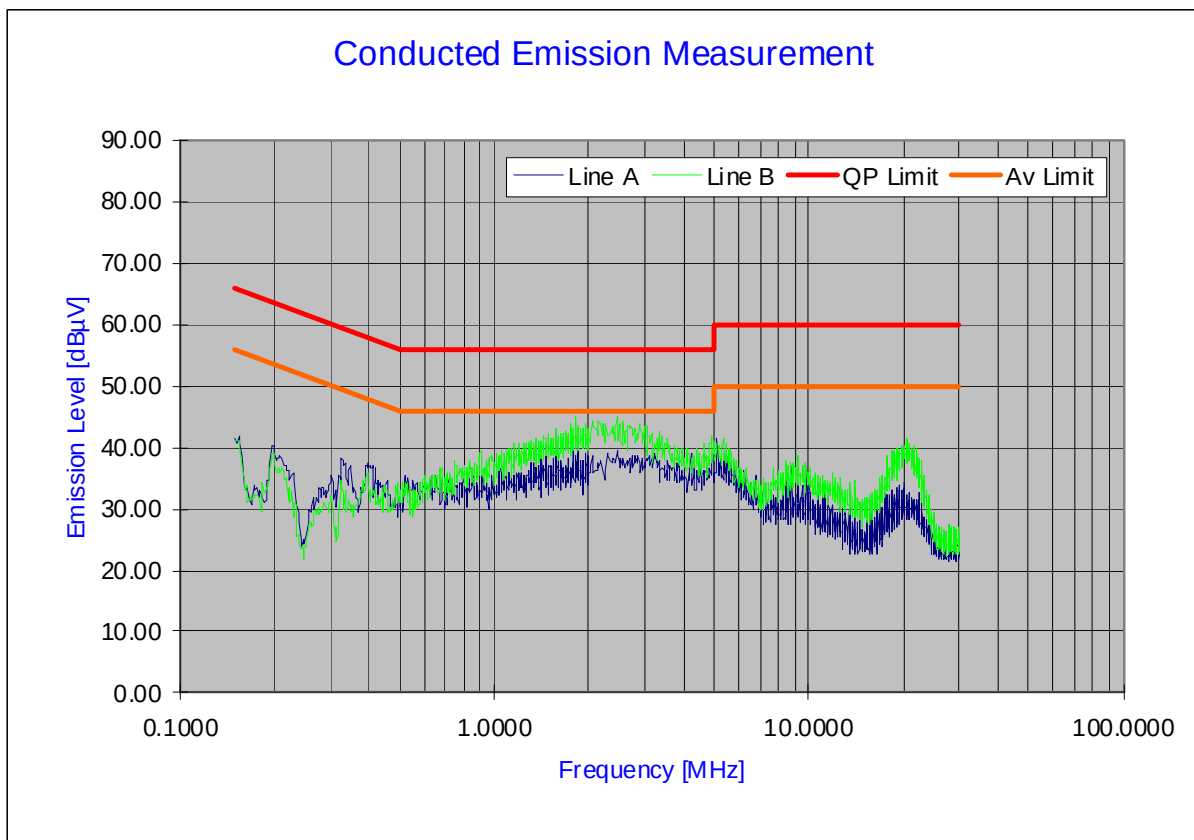
§15.207; RSS-Gen [7.2.2]

# PCTEST Engineering Laboratory Inc.

Company : Samsung Electronics, Co. Ltd.  
 Model Number : SCH-I519  
 FCC ID Code : A3LSCHI519  
 Standard : FCC Part 15C, 15.207

Power Source : AC120V/60Hz  
 Tested Date : 04/11/2012  
 Note : Tested with WLAN b ON

### Conducted Emission Measurement



Plot 6-31. Line Conducted Plot with 802.11b

#### Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11b mode using 1Mbps on Channel 6. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot are made using a peak detector.
5. Deviations to the Specifications: None.

|                                      |                                                                                     |                                                             |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                               |                                                                                       | Page 38 of 40                   |

## Line-Conducted Test Data (Cont'd)

§15.207; RSS-Gen [7.2.2]

| No. | Line | Frequency<br>[MHz] | Factor<br>[dB] | QP<br>[dBμV] | Limit<br>[dBμV] | Margin<br>[dB] | Average<br>[dBμV] | Limit<br>[dBμV] | Margin<br>[dB] |
|-----|------|--------------------|----------------|--------------|-----------------|----------------|-------------------|-----------------|----------------|
| 1   | A    | 1.434              | 7.10           | 28.57        | 56.00           | -27.43         | 20.08             | 46.00           | -25.92         |
| 2   | A    | 1.441              | 7.10           | 28.16        | 56.00           | -27.84         | 19.53             | 46.00           | -26.47         |
| 3   | A    | 1.566              | 7.11           | 29.39        | 56.00           | -26.61         | 20.23             | 46.00           | -25.77         |
| 4   | A    | 1.587              | 7.11           | 29.45        | 56.00           | -26.55         | 20.81             | 46.00           | -25.19         |
| 5   | A    | 1.782              | 7.13           | 29.31        | 56.00           | -26.69         | 20.58             | 46.00           | -25.42         |
| 6   | A    | 1.834              | 7.14           | 29.78        | 56.00           | -26.22         | 20.25             | 46.00           | -25.75         |
| 7   | A    | 1.971              | 7.15           | 29.27        | 56.00           | -26.73         | 20.51             | 46.00           | -25.49         |
| 8   | A    | 2.489              | 7.21           | 30.75        | 56.00           | -25.25         | 21.32             | 46.00           | -24.68         |
| 9   | A    | 4.205              | 7.36           | 27.92        | 56.00           | -28.08         | 20.48             | 46.00           | -25.52         |
| 10  | A    | 4.936              | 7.41           | 29.74        | 56.00           | -26.26         | 21.33             | 46.00           | -24.67         |
| 11  | B    | 1.547              | 7.11           | 32.85        | 56.00           | -23.15         | 23.16             | 46.00           | -22.84         |
| 12  | B    | 1.724              | 7.13           | 33.23        | 56.00           | -22.77         | 23.54             | 46.00           | -22.46         |
| 13  | B    | 1.813              | 7.13           | 34.23        | 56.00           | -21.77         | 23.65             | 46.00           | -22.35         |
| 14  | B    | 1.855              | 7.13           | 34.00        | 56.00           | -22.00         | 23.86             | 46.00           | -22.14         |
| 15  | B    | 1.906              | 7.14           | 33.30        | 56.00           | -22.70         | 23.89             | 46.00           | -22.11         |
| 16  | B    | 1.933              | 7.14           | 34.46        | 56.00           | -21.54         | 23.89             | 46.00           | -22.11         |
| 17  | B    | 1.972              | 7.15           | 33.91        | 56.00           | -22.09         | 23.76             | 46.00           | -22.24         |
| 18  | B    | 2.008              | 7.15           | 34.29        | 56.00           | -21.71         | 23.46             | 46.00           | -22.54         |
| 19  | B    | 2.156              | 7.17           | 34.87        | 56.00           | -21.13         | 24.46             | 46.00           | -21.54         |
| 20  | B    | 2.506              | 7.21           | 34.47        | 56.00           | -21.53         | 24.10             | 46.00           | -21.90         |

Table 6-13. Line Conducted Data with 802.11b

### Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11b mode using 1Mbps on Channel 6. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBμV) – Limit (dBμV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSCHI519                   |  | FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>OY1204060430.A3L | Test Dates:<br>4/11/2012                                                            | EUT Type:<br>Portable Handset                                  |                                                                                       | Page 39 of 40                   |

## 7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Electronics, Co. Ltd. Portable Handset FCC ID: A3LSCHI519** is in compliance with Part 15C of the FCC Rules and RSS-210 of the Industry Canada Rules.

|                                             |                                                                                     |                                                                    |                                                                                       |                                        |
|---------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSCHI519                   |  | <b>FCC Pt. 15.247 WLAN 802.11b/g/n TEST REPORT (CERTIFICATION)</b> |  | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>OY1204060430.A3L | <b>Test Dates:</b><br>4/11/2012                                                     | <b>EUT Type:</b><br>Portable Handset                               | Page 40 of 40                                                                         |                                        |