



# PCTEST ENGINEERING LABORATORY, INC.

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<http://www.pctestlab.com>



## MEASUREMENT REPORT FCC PART 15.247 Bluetooth (Low Energy)

**Applicant Name:**

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

**Date of Testing:**

April 18- May 10, 2013

**Test Site/Location:**

PCTEST Lab, Columbia, MD, USA

**Test Report Serial No.:**

0Y1304220683.A3L

**FCC ID:**

A3LGTI9295

**APPLICANT:**

Samsung Electronics Co., Ltd.

**Application Type:**

Certification

**Model:**

GT-I9295

**EUT Type:**

Portable Handset

**Max. RF Output Power:**

3.191 mW (5.04 dBm) Peak Conducted

**Frequency Range:**

2402 - 2480 MHz

**FCC Classification:**

Digital Transmission System (DTS)

**FCC Rule Part(s):**

Part 15.247

**Test Procedure(s):**

KDB 558074 v03r01

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 KDB 558074 v03r01. 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.

  
Randy Ortanez  
President



|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LGTI9295                   |  | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013                                               | EUT Type:<br>Portable Handset                                |                                                                                       | Page 1 of 35                    |

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| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013                                               | EUT Type:<br>Portable Handset                                |                                                                                       | Page 2 of 35                    |



## MEASUREMENT REPORT

### FCC Part 15.247



#### § 2.1033 General Information

**APPLICANT:** Samsung Electronics Co., Ltd.  
**APPLICANT ADDRESS:** 129, Samsung-ro, Yeongtong-gu  
 Suwon-city, Gyeonggi-do, 443-803, Republic of Korea  
**TEST SITE:** PCTEST ENGINEERING LABORATORY, INC.  
**TEST SITE ADDRESS:** 7185 Oakland Mills Road, Columbia, MD 21046 USA  
**FCC RULE PART(S):** Part 15.247  
**IC SPECIFICATION(S):** RSS-210 Issue 8  
**FCC ID:** A3LGTI9295  
**Test Device Serial No.:** FK 110 B, FK 110 D ☐ Production ☒ Pre-Production ☐ Engineering  
**FCC CLASSIFICATION:** Digital Transmission System (DTS)  
**DATE(S) OF TEST:** April 18- May 10, 2013  
**TEST REPORT S/N:** 0Y1304220683.A3L

#### Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-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 (2451B-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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## 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 C63.4-2009 on January 10, 2012.

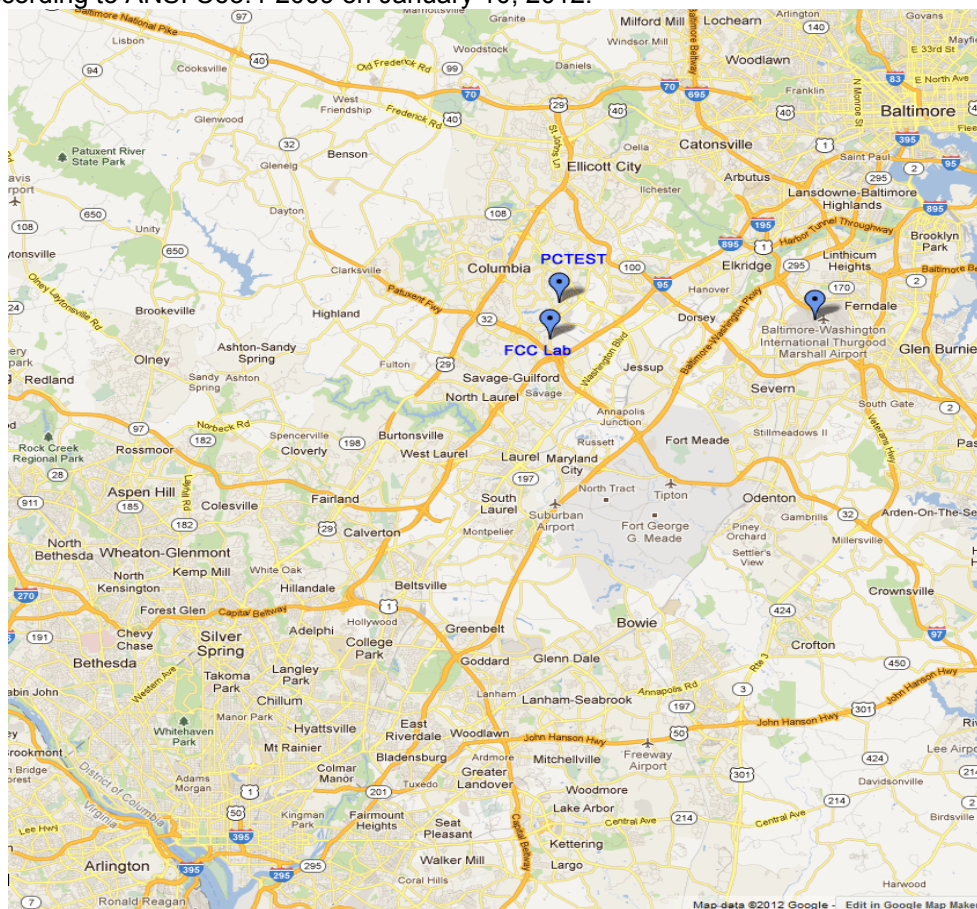


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LGTI9295**. The data found in this test report was taken with the EUT operating in Bluetooth low energy mode. While in low energy mode, the Bluetooth transmitter hops pseudo-randomly between 40 channels, three of which are “advertising channels”. When the transmitter is hopping only between the three advertising channels, the EUT does not fall under the category of a “hopper” as defined in 15.247(a)(iii) which states that a “frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.” As operation on only the advertising channels does not qualify the EUT as a hopper, the EUT is certified as a DTS device in this mode. The data found in this report is representative of the device when it transmits on its advertising channels. Typical Bluetooth operation is covered under the DSS report found with this application.

### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Band 5 (1.4, 3, 5, and 10MHz BW) LTE, 802.11a/b/g/n/ac WLAN (DTS/NIJ), Bluetooth (1x,EDR, LE), NFC

### 2.3 Test Configuration

The Samsung Portable Handset FCC ID: A3LGTI9295 was tested per the guidance of KDB 558074 v03r01. ANSI C63.10-2009 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 6.9, 3.2, 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(a)(5).

Please see attachment for FCC ID label and label location.

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
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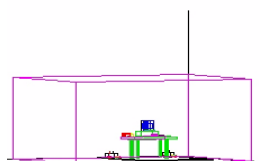
## 3.0 DESCRIPTION OF TEST

### 3.1 Evaluation Procedure

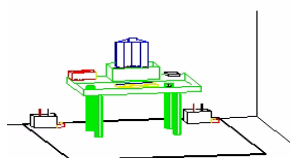
The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009), and the guidance provided in KDB 558074 v03r01 were used in the measurement of the **Samsung Portable Handset FCC ID: A3LGTI9295**.

Deviation from measurement procedure.....None

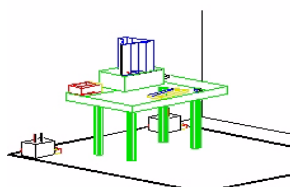
### 3.2 AC Line Conducted Emissions



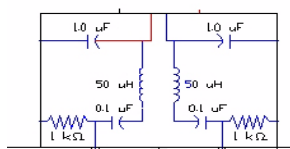
**Figure 3-1. Shielded Enclosure Line-Conducted Test Facility**



**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".

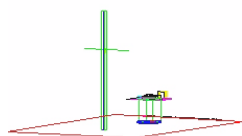
The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the Solar LISN. The LISN schematic diagram is 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.

Line conducted emissions test results are shown in Section 6.9. Automated test software was used to perform the AC line conducted emissions testing. Automated measurement software utilized is the PCTEST Conduction Automatic Measurement, Version 2.7.

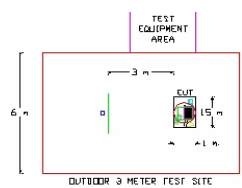
|                                      |                                                                                     |                                                              |                                                                                       |                       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



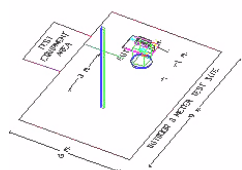
**Figure 3-5. 3-Meter Test Site**

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.



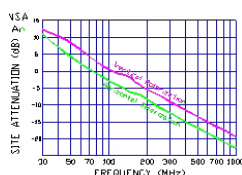
**Figure 3-6. Dimensions of Outdoor Test Site**

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.



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

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.



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

|                                      |                                                                                     |                                                           |                                                                                       |                                 |
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## 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 Portable Handset FCC ID: A3LGTI9295** unit complies with the requirement of §15.203.

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 0   | 2402            |
| :   | :               |
| 19  | 2440            |
| :   | :               |
| 39  | 2480            |

**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 |
|---------------|-----------|----------------------------------------|------------|--------------|------------|---------------|
| -             | BT1       | Bluetooth Cable Set                    | 1/17/2013  | Annual       | 1/17/2014  | N/A           |
| -             | RE1       | Radiated Emissions Cable Set (UHF/EHF) | 3/29/2013  | Annual       | 3/29/2014  | N/A           |
| -             | RE2       | Radiated Emissions Cable Set (VHF/UHF) | 3/29/2013  | Annual       | 3/29/2014  | N/A           |
| -             | BT2       | Bluetooth Cable Set                    | 1/17/2013  | Annual       | 1/17/2014  | N/A           |
| Agilent       | 8449B     | (1-26.5GHz) Pre-Amplifier              | 4/17/2013  | Annual       | 4/17/2014  | 3008A00985    |
| Agilent       | 85650A    | Quasi-Peak Adapter                     | 4/17/2013  | Annual       | 4/17/2014  | 2043A00301    |
| Agilent       | 8566B     | (100Hz-22GHz) Spectrum Analyzer        | 4/17/2013  | Annual       | 4/17/2014  | 2542A11898    |
| Agilent       | N9038A    | MXE EMI Receiver                       | 12/8/2012  | Annual       | 12/8/2013  | MY51210133    |
| Agilent       | N9030A    | PXA Signal Analyzer (44GHz)            | 1/11/2013  | Annual       | 1/11/2014  | MY52350166    |
| Agilent       | N9020A    | MXA Signal Analyzer                    | 10/9/2012  | Annual       | 10/9/2013  | US46470561    |
| Anritsu       | ML2495A   | Power Meter                            | 10/11/2012 | Annual       | 10/11/2013 | 1039008       |
| Emco          | 3816/2    | LISN                                   | 2/12/2013  | Biennial     | 2/12/2015  | 9707-1077     |
| Emco          | 3816/2    | LISN                                   | 2/12/2013  | Biennial     | 2/12/2015  | 9707-1079     |
| Mini-Circuits | VHF-3100+ | High Pass Filter                       | 1/21/2013  | Annual       | 1/21/2014  | 31144         |
| 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: A3LGTI9295  
 FCC Classification: Digital Transmission System (DTS)  
 Number of Channels: 40

| 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        | Sections 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                                             | ≥ 20dBc                                                                                                 |                | 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       |

**Table 6-1. Summary of Test Results**

#### Notes:

1. All modes of operation 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.
4. For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Bluetooth LE Automation", Version 1.8.

|                                      |                                                                                     |                                                           |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013                                               | EUT Type:<br>Portable Handset                             |                                                                                       | Page 10 of 35                   |

## 6.2 6dB Bandwidth Measurement – Bluetooth (LE)

§15.247(a)(2); RSS-210 [A8.2]

### Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the transmitter antenna terminal of the EUT while the EUT is operating at maximum power and at the appropriate frequencies. All modes of operation were investigated and the worst case configuration results are reported in this section.

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

### Test Procedure Used

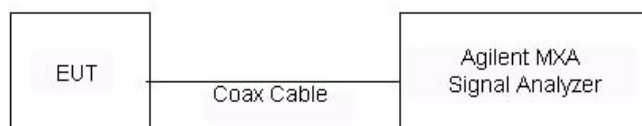
KDB 558074 v03r01 – Section 8.2 Option 2

### Test Settings

1. RBW = 100kHz
2. VBW  $\geq 3 \times$  RBW
3. Detector = Peak
4. Trace mode = max hold
5. Sweep = auto couple
6. The trace was allowed to stabilize
7. The automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 6dB bandwidth measurement. The “X” dB bandwidth parameter was set to  $X = 6$ . The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 6-1. Test Instrument & Measurement Setup**

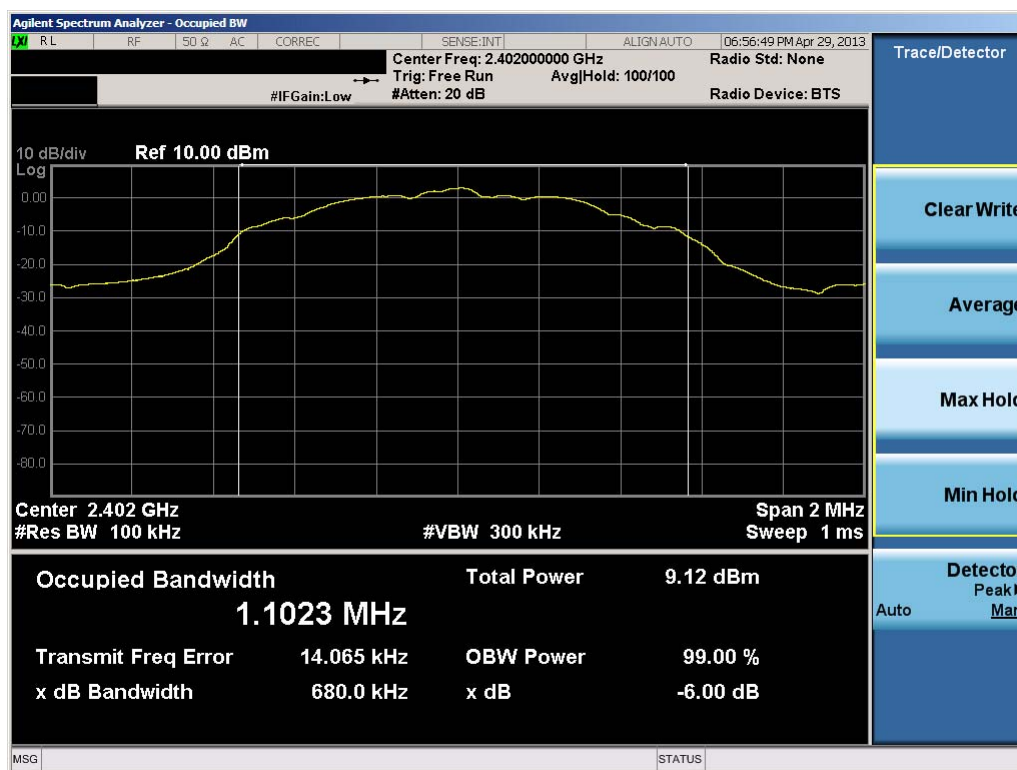
### Test Notes

None

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LGT19295                   |  | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
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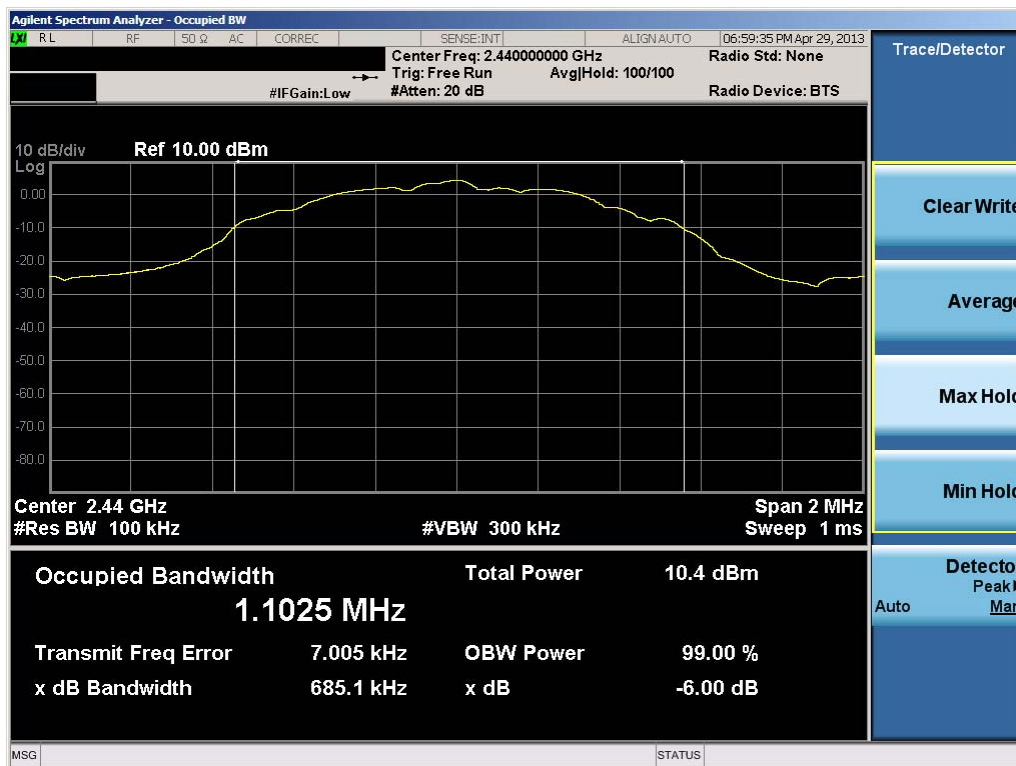
| Frequency [MHz] | Channel No. | Bluetooth Mode | Measured Bandwidth [kHz] | Minimum Bandwidth [kHz] | Pass / Fail |
|-----------------|-------------|----------------|--------------------------|-------------------------|-------------|
| 2402            | 0           | LE             | 680.0                    | 500                     | Pass        |
| 2440            | 19          | LE             | 685.1                    | 500                     | Pass        |
| 2480            | 39          | LE             | 683.7                    | 500                     | Pass        |

Table 6-2. Conducted Bandwidth Measurements

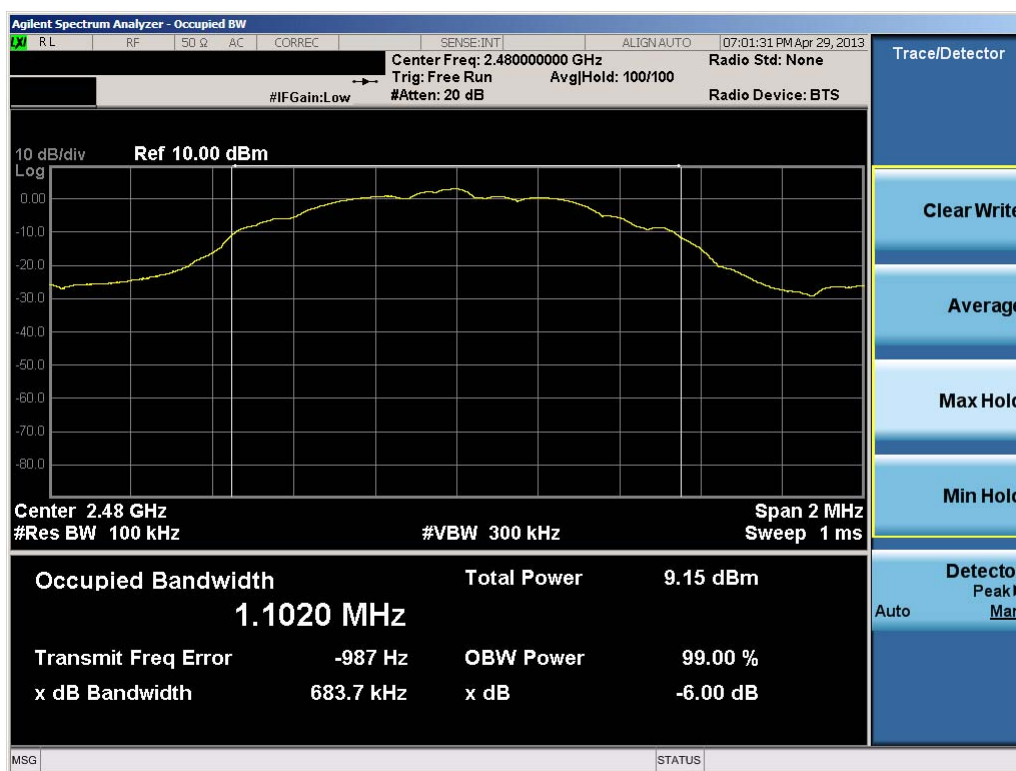


Plot 6-1. 6dB Bandwidth Plot (Bluetooth (LE) – Ch. 0)

|                                      |                                                                                     |                                                           |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LGT19295                   |  | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
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Plot 6-2. 6dB Bandwidth Plot (Bluetooth (LE) – Ch. 19)



Plot 6-3. 6dB Bandwidth Plot (Bluetooth (LE) – Ch. 39)

|                                      |                                                                                                                                                  |                               |                                                                                                                       |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| FCC ID: A3LGT19295                   |  FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) |                               |  Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013                                                                                                            | EUT Type:<br>Portable Handset |                                                                                                                       |

## 6.3 Output Power Measurement – Bluetooth (LE)

§15.247(b)(3); RSS-210 [A8.4]

### Test Overview and Limits

The transmitter antenna terminal of the EUT is connected to the input of a spectrum analyzer. Measurements are made while the EUT is operating at maximum power and at the appropriate frequencies.

***The maximum permissible conducted output power is 1 Watt.***

### Test Procedure Used

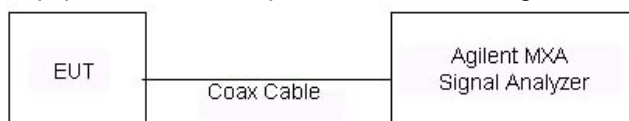
KDB 558074 v03r01 – Section 9.1.1

### Test Settings

1. RBW = 3MHz
2. VBW = 50MHz
3. Span  $\geq 3 \times$  RBW
4. Sweep = auto couple
5. Detector = Peak
6. Trace mode = max hold
7. The trace was allowed to stabilize

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 6-2. Test Instrument & Measurement Setup**

### Test Notes

None

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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| Frequency [MHz] | Channel No. | Bluetooth Mode | Peak Conducted Power |       |
|-----------------|-------------|----------------|----------------------|-------|
|                 |             |                | [dBm]                | [mW]  |
| 2402            | 0           | LE             | 3.719                | 2.355 |
| 2440            | 19          | LE             | 5.039                | 3.191 |
| 2480            | 39          | LE             | 3.790                | 2.393 |

Table 6-3. Conducted Output Power Measurements (Bluetooth (LE))

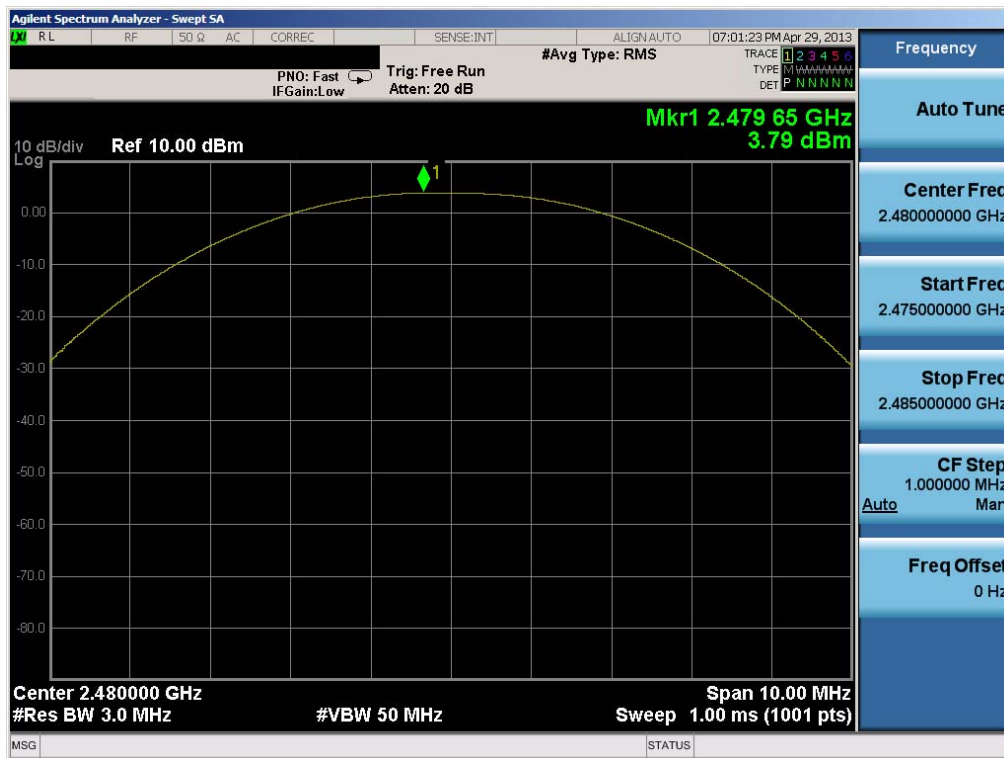


Plot 6-4. Peak Power Plot (Bluetooth (LE) – Ch. 0)

|                                      |                                                                                     |                                                           |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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Plot 6-5. Peak Powery Plot (Bluetooth (LE) – Ch. 19)



Plot 6-6. Peak Power Plot (Bluetooth (LE) – Ch. 39)

|                                      |                                               |                                                              |                |                                 |
|--------------------------------------|-----------------------------------------------|--------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LGT19295                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013         | EUT Type:<br>Portable Handset                                |                | Page 16 of 35                   |

## 6.4 Power Spectral Density – Bluetooth (LE)

§15.247(e); RSS-210 [A8.2]

### Test Overview and Limit

The peak power density is measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power and at the appropriate frequencies.

*The maximum permissible power spectral density is 8 dBm in any 3 kHz band.*

### Test Procedure Used

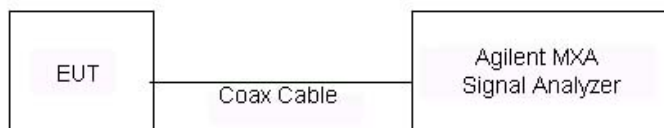
KDB 558074 v03r01 – Section 10.2 Method PKPSD

### Test Settings

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the DTS channel bandwidth
3. RBW = 10kHz
4. VBW = 1MHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



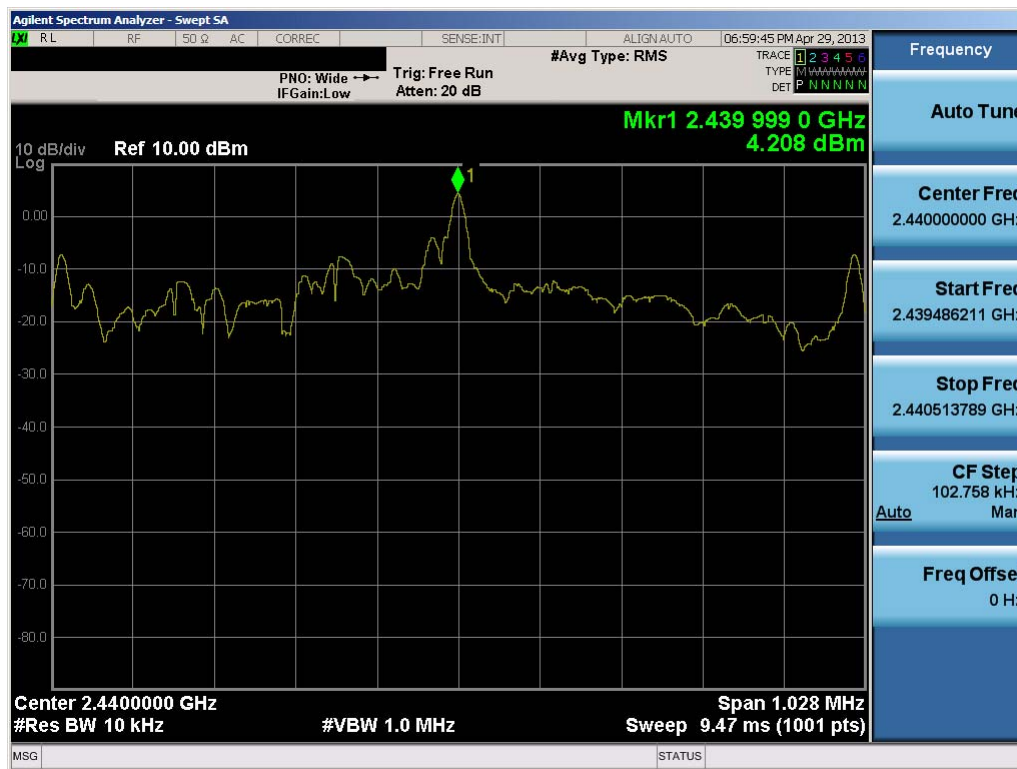
**Figure 6-3. Test Instrument & Measurement Setup**

### Test Notes

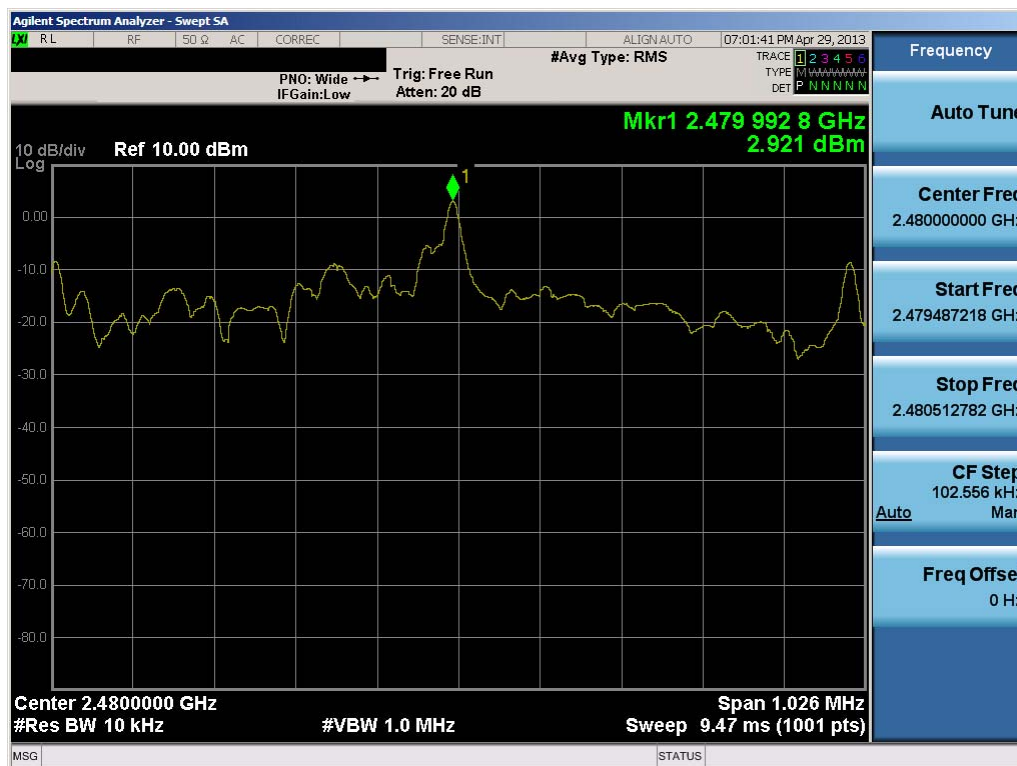
None

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LGTI9295                   |  | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013                                               | EUT Type:<br>Portable Handset                                |                                                                                       | Page 17 of 35                   |





Plot 6-8. Power Spectral Density Plot (Bluetooth (LE) – Ch. 19)



Plot 6-9. Power Spectral Density Plot (Bluetooth (LE) – Ch. 39)

|                                      |                                               |                                                              |                |                                 |
|--------------------------------------|-----------------------------------------------|--------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LGT19295                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
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## 6.5 Conducted Emissions at the Band Edge

**§15.247(d); RSS-210 [A8.5]**

### **Test Overview and Limit**

For the following out of band conducted spurious emissions plots at the band edge, the EUT was set to transmit at maximum power with the largest packet size available. These settings produced the worst-case emissions.

***The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth.***

### **Test Procedure Used**

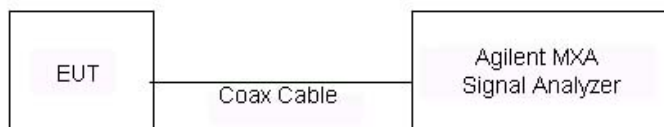
KDB 558074 v03r01 – Section 11.2

### **Test Settings**

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW = 100kHz
4. VBW = 300kHz
5. Detector = Peak
6. Number of sweep points  $\geq 2 \times \text{Span/RBW}$
7. Trace mode = max hold
8. Sweep time = auto couple
9. The trace was allowed to stabilize

### **Test Setup**

The EUT and measurement equipment were set up as shown in the diagram below.

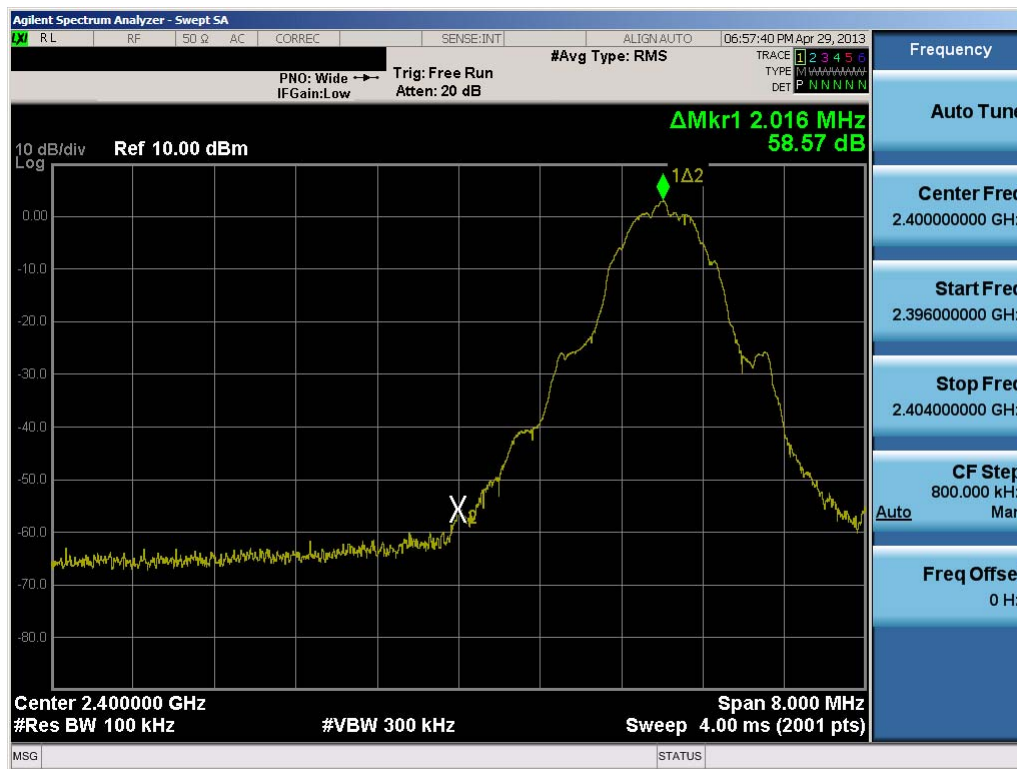


**Figure 6-4. Test Instrument & Measurement Setup**

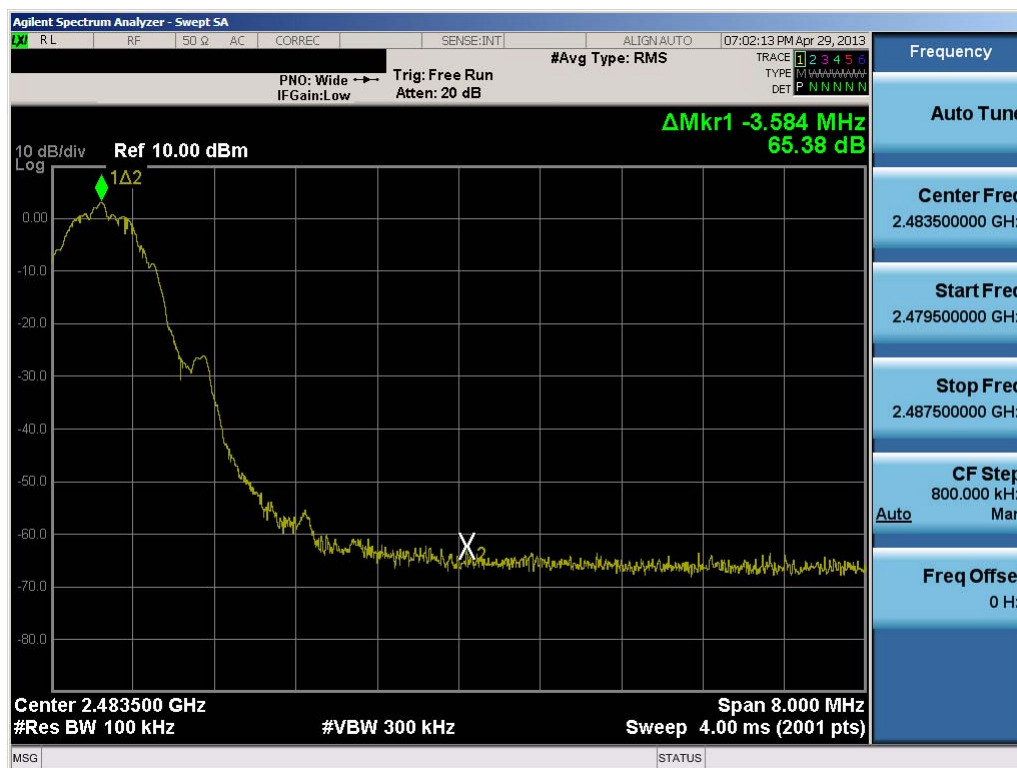
### **Test Notes**

None

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013                                               | EUT Type:<br>Portable Handset                                |                                                                                       | Page 20 of 35                   |



Plot 6-10. Band Edge Plot (Bluetooth (LE) – Ch. 0)



Plot 6-11. Band Edge Plot (Bluetooth (LE) – Ch. 39)

|                                      |                                               |                                                              |                |                                 |
|--------------------------------------|-----------------------------------------------|--------------------------------------------------------------|----------------|---------------------------------|
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## 6.6 Conducted Spurious Emissions

**§15.247(d); RSS-210 [A8.5]**

### Test Overview and Limit

For the following out of band conducted spurious emissions plots, the EUT was set to transmit at maximum power with the largest packet size available. The worst case spurious emissions were found in this configuration.

***The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the procedure in Section 11.1 of KDB 558074 v03r01.***

### Test Procedure Used

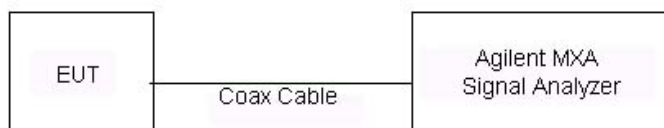
KDB 558074 v03r01 – Section 11.2

### Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



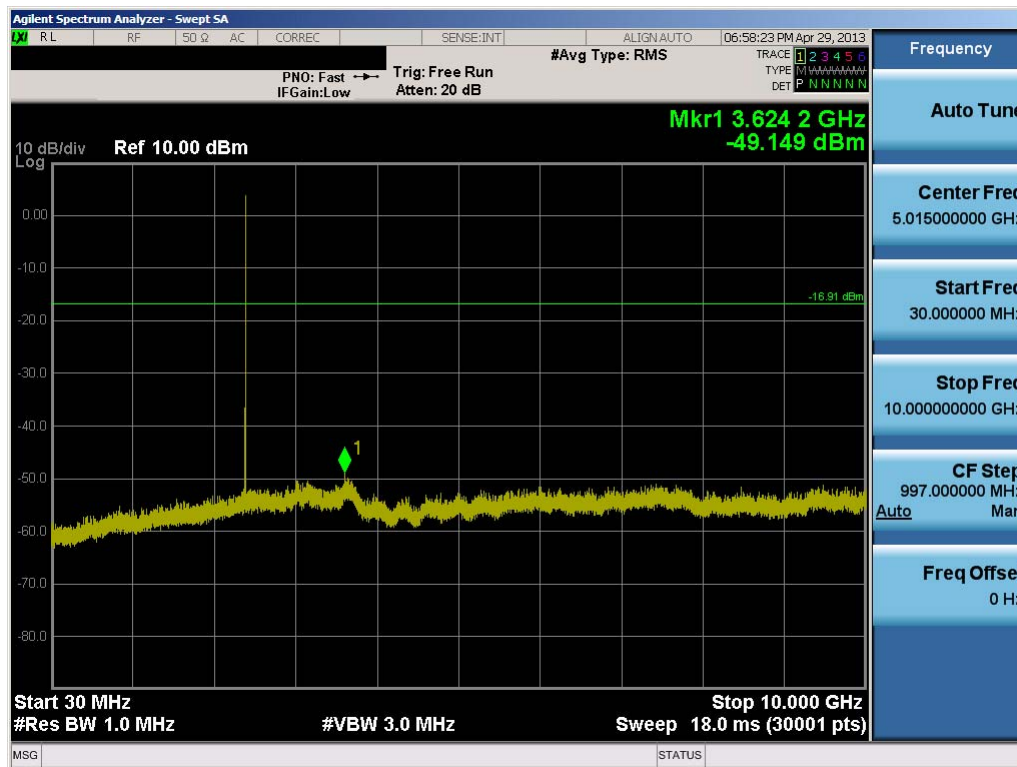
**Figure 6-5. Test Instrument & Measurement Setup**

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LGTI9295                   |  | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
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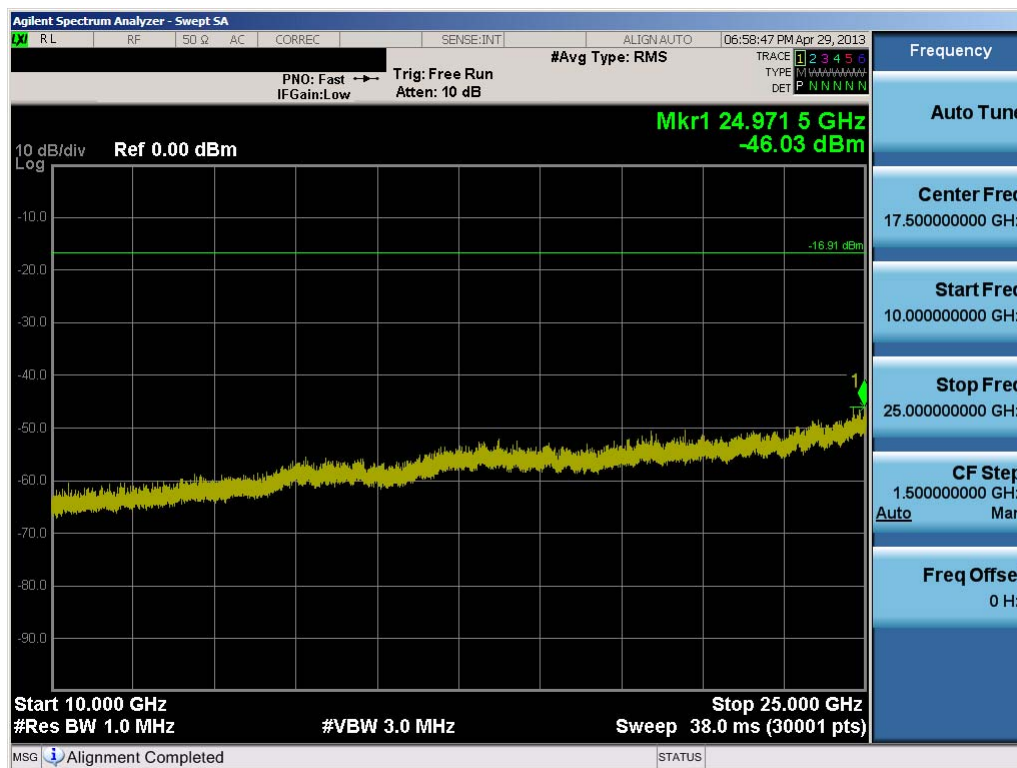
## Test Notes

1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
2. The display line shown in the following plots denotes the limit at 20dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 20dB below the level of the fundamental in a 1MHz bandwidth.
3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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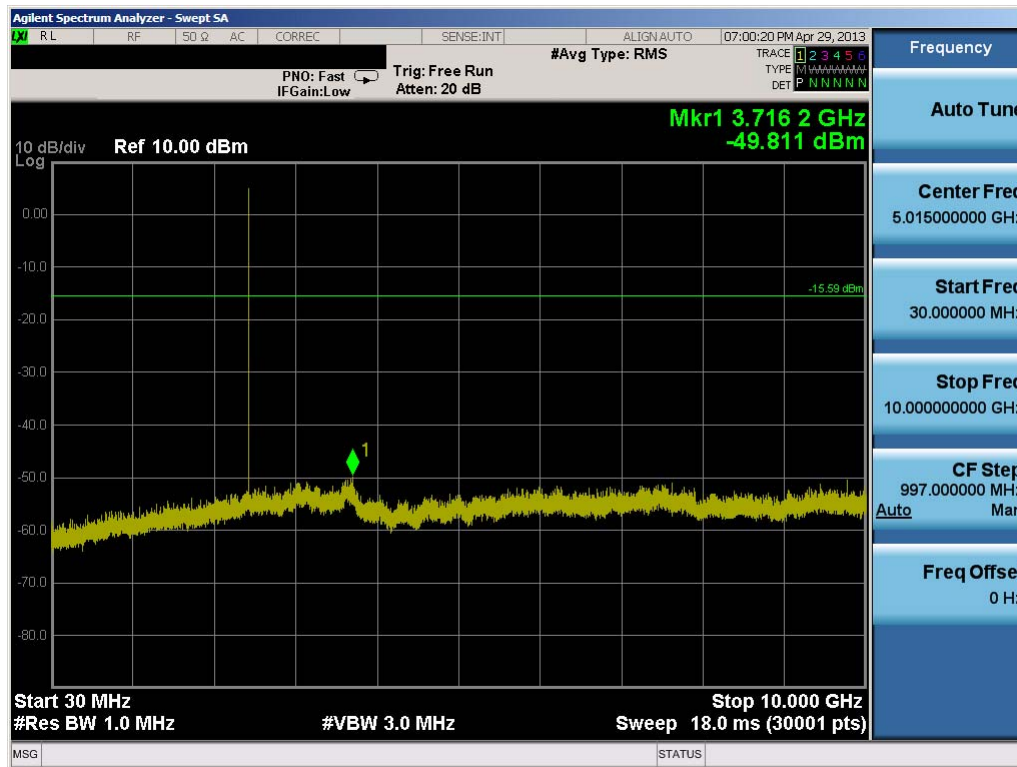


Plot 6-12. Conducted Spurious Plot (Bluetooth (LE) – Ch. 0)

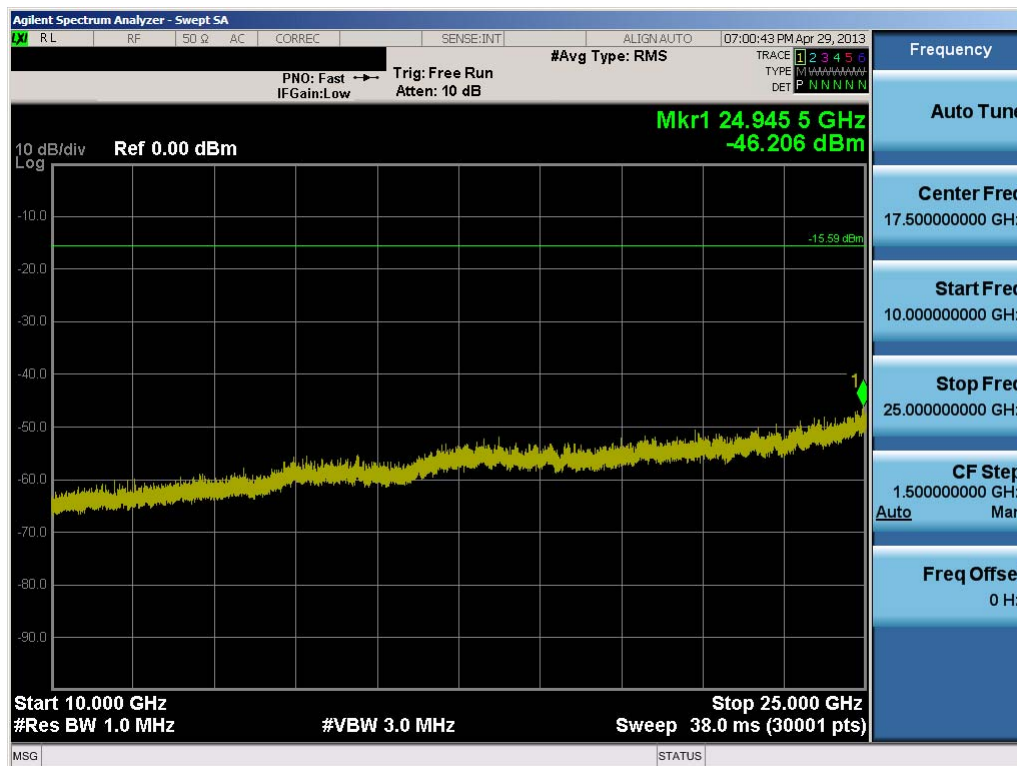


Plot 6-13. Conducted Spurious Plot (Bluetooth (LE) – Ch. 0)

|                                      |                                               |                                                              |                |                                 |
|--------------------------------------|-----------------------------------------------|--------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LGT9295                    | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013         | EUT Type:<br>Portable Handset                                |                | Page 24 of 35                   |

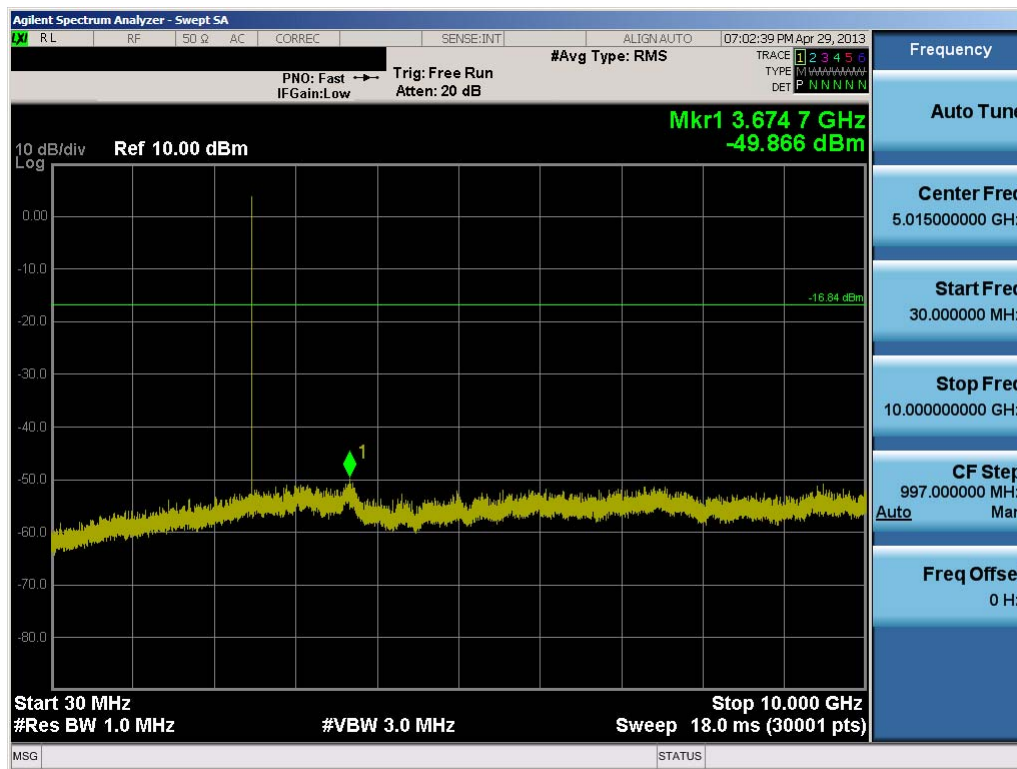


Plot 6-14. Conducted Spurious Plot (Bluetooth (LE) – Ch. 19)

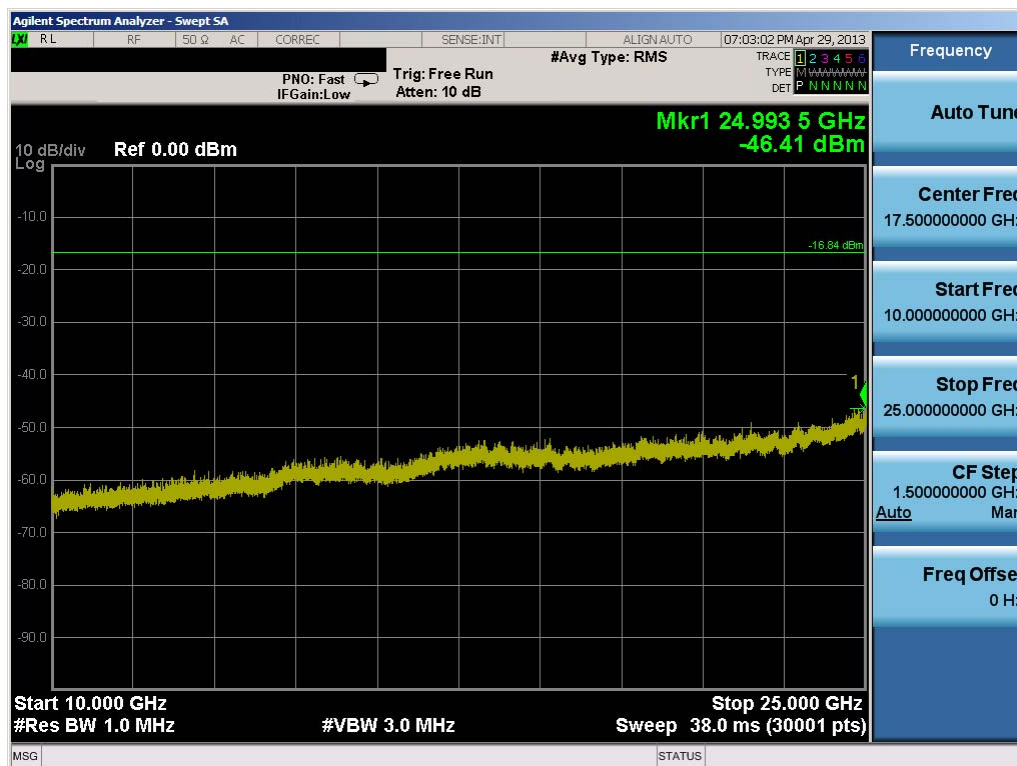


Plot 6-15. Conducted Spurious Plot (Bluetooth (LE) – Ch. 19)

|                                      |                                               |                                                              |                |                                 |
|--------------------------------------|-----------------------------------------------|--------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LGT9295                    | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
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Plot 6-16. Conducted Spurious Plot (Bluetooth (LE) – Ch. 39)



Plot 6-17. Conducted Spurious Plot (Bluetooth (LE) – Ch. 39)

|                                      |                                               |                                                              |                |                                 |
|--------------------------------------|-----------------------------------------------|--------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LGT9295                    | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH (LE) TEST REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013         | EUT Type:<br>Portable Handset                                |                | Page 26 of 35                   |

## 6.7 Radiated Spurious Emission Measurements

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

### Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power and at the appropriate frequencies. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

***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 6-5 per Section 15.209.***

| Frequency         | Field Strength<br>[μV/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 6-5. Radiated Limits**

### Test Procedures Used

KDB 558074 v03r01 – Section 12.2.4 (peak power measurements)

KDB 558074 v03r01 – Section 12.2.5 (average power measurements)

### Test Settings

#### **Average Field Strength Measurements per Section 12.2.5.3 of KDB 558074 v03r01**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3kHz > 1/T
4. Averaging type was set to RMS to ensure that video filtering was applied in the power domain
5. Detector = peak
6. Sweep time = auto
7. Trace mode = max hold
8. Trace was allowed to run for at least 50 times (1/duty cycle) traces

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
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| Test Report S/N:<br>0Y1304220683.A3L | Test Dates:<br>April 18- May 10, 2013                                               | EUT Type:<br>Portable Handset                                |                                                                                       | Page 27 of 35                   |

### Peak Field Strength Measurements per Section 12.2.4 of KDB 558074 v03r01

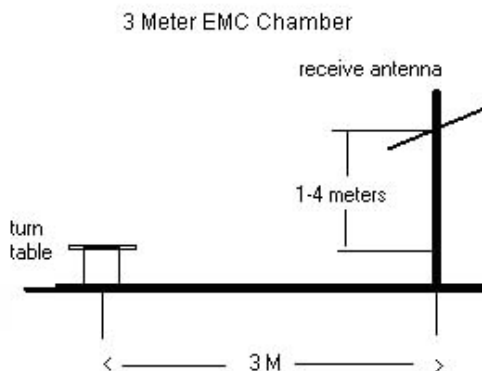
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW is set depending on measurement frequency, as specified in Table 6-6 below
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

| Frequency    | RBW          |
|--------------|--------------|
| 9 – 150kHz   | 200 – 300Hz  |
| 0.15 – 30MHz | 9 – 10kHz    |
| 30 – 1000MHz | 100 – 120kHz |
| > 1000MHz    | 1MHz         |

**Table 6-6. RBW as a Function of Frequency**

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 6-6. Test Instrument & Measurement Setup**

### Test Notes

1. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 558074 v03r01 were not used to evaluate this device for compliance to radiated limits. All radiated spurious emissions levels were measured in a radiated test setup per the guidance in Section 12.2.7 of KDB 558074 v03r01.
2. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-5.
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.

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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5. The spectrum is measured from 9kHz to the 10th 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. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
6. Average measurements were recorded using a VBW of 3kHz, per Section 12.2.5.3 of KDB 558074 v03r01, since 1/T is equal to just under 3kHz. This method was used because the EUT could not be configured to operate with a duty cycle > 98%. Both average and peak measurements were made using a peak detector
7. Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
8. Average levels at -135dBm and peak levels at -125dBm represent the analyzer noise floor and signify that no emission was detected.
9. No significant radiated band edge emissions were found in the 2310 – 2390MHz restricted band.

## **Sample Calculations**

### **Determining Spurious Emissions Levels**

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

### **Radiated Band Edge Measurement Offset**

- o The amplitude offset shown in the radiated restricted band edge plots in Section 6.8 was calculated using the formula:

$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + 10 \text{ dB Attenuator}) - \text{Preamplifier Gain}$$

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## Radiated Spurious Emission Measurements (Cont'd)

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

Bluetooth Mode: LE

Distance of Measurements: 3 Meters

Operating Frequency: 2402MHz

Channel: 0

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|-------------------------|----------------|-------------|
| 4804.00         | -108.21              | Avg      | H         | 42.14     | 40.92                   | 53.98          | -13.05      |
| 4804.00         | -96.63               | Peak     | H         | 42.14     | 52.51                   | 73.98          | -21.47      |
| 12010.00        | -135.00              | Avg      | H         | 65.78     | 37.78                   | 53.98          | -16.20      |
| 12010.00        | -125.00              | Peak     | H         | 65.78     | 47.78                   | 73.98          | -26.20      |

**Table 6-7. Radiated Measurements @ 3 meters**

Bluetooth Mode: LE

Distance of Measurements: 3 Meters

Operating Frequency: 2440MHz

Channel: 19

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|-------------------------|----------------|-------------|
| 4880.00         | -108.53              | Avg      | H         | 42.28     | 40.75                   | 53.98          | -13.23      |
| 4880.00         | -97.03               | Peak     | H         | 42.28     | 52.24                   | 73.98          | -21.74      |
| 7320.00         | -135.00              | Avg      | H         | 48.89     | 20.89                   | 53.98          | -33.09      |
| 7320.00         | -125.00              | Peak     | H         | 48.89     | 30.89                   | 73.98          | -43.09      |
| 12200.00        | -135.00              | Avg      | H         | 69.28     | 41.28                   | 53.98          | -12.70      |
| 12200.00        | -125.00              | Peak     | H         | 69.28     | 51.28                   | 73.98          | -22.70      |

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

|                                      |                                                                                     |                                                           |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## Radiated Spurious Emission Measurements (Cont'd)

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

Bluetooth Mode: LE

Distance of Measurements: 3 Meters

Operating Frequency: 2480MHz

Channel: 39

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|-------------------------|----------------|-------------|
| 4960.00         | -108.05              | Avg      | H         | 42.49     | 41.44                   | 53.98          | -12.54      |
| 4960.00         | -97.86               | Peak     | H         | 42.49     | 51.63                   | 73.98          | -22.35      |
| 7440.00         | -135.00              | Avg      | H         | 49.04     | 21.04                   | 53.98          | -32.94      |
| 7440.00         | -125.00              | Peak     | H         | 49.04     | 31.04                   | 73.98          | -42.94      |
| 12400.00        | -135.00              | Avg      | H         | 71.87     | 43.87                   | 53.98          | -10.11      |
| 12400.00        | -125.00              | Peak     | H         | 71.87     | 53.87                   | 73.98          | -20.11      |

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

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## 6.8 Radiated Restricted Band Edge Measurements

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

Bluetooth Mode: LE

Distance of Measurements: 3 Meters

Operating Frequency: 2480MHz

Channel: 39

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|-------------------------|----------------|-------------|
| 2483.50         | -107.57              | Avg      | H         | 36.29     | 35.71                   | 53.98          | -18.26      |
| 2483.50         | -98.53               | Peak     | H         | 36.29     | 44.76                   | 73.98          | -29.22      |
| 2486.11         | -109.19              | Avg      | H         | 36.29     | 34.10                   | 53.98          | -19.88      |
| 2486.11         | -97.73               | Peak     | H         | 36.29     | 45.56                   | 73.98          | -28.42      |
| 2488.07         | -109.19              | Avg      | H         | 36.30     | 34.11                   | 53.98          | -19.87      |
| 2488.07         | -98.60               | Peak     | H         | 36.30     | 44.69                   | 73.98          | -29.29      |

**Table 6-10. Radiated Restricted Band Edge Measurements (2483.5 – 2500MHz)**

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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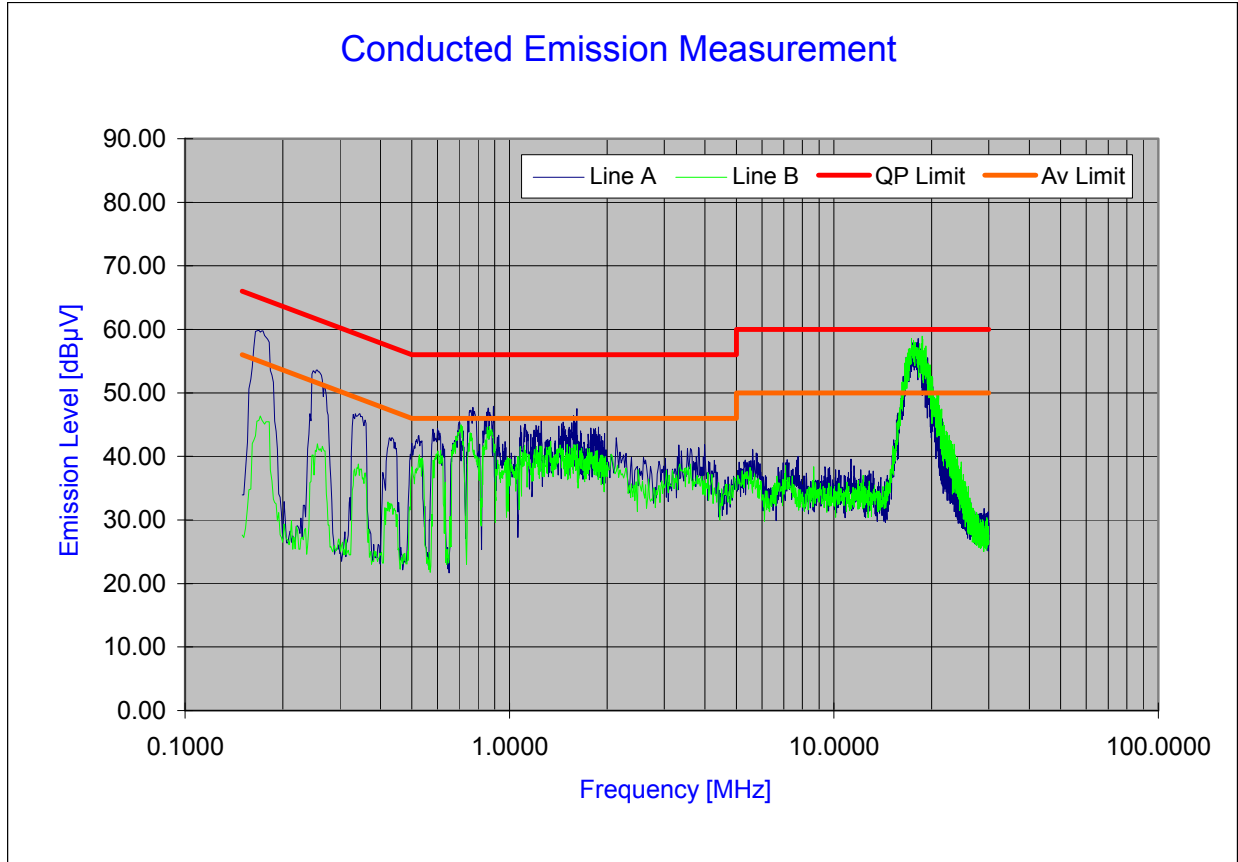
## 6.9 Line-Conducted Test Data

§15.207; RSS-Gen [7.2.2]

# PCTEST Engineering Laboratory Inc.

Company : Samsung Electronics Co., Ltd.  
FCC ID Code : A3LGTI9295  
Standard : FCC Part 15C, 15.207

Power Source : AC120V/60Hz  
Tested Date : 04/29/2013  
Note : Tested with BT LE mode ON



**Plot 6-18. Line Conducted Plot with Bluetooth LE**

### Notes:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3.  $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4.  $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5.  $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## 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    | 0.183              | 6.86           | 48.95        | 64.33           | -15.38         | 37.20             | 54.33           | -17.13         |
| 2   | A    | 0.269              | 6.90           | 43.25        | 61.14           | -17.89         | 32.28             | 51.14           | -18.86         |
| 3   | A    | 16.608             | 8.22           | 48.82        | 60.00           | -11.18         | 39.95             | 50.00           | -10.05         |
| 4   | A    | 16.709             | 8.23           | 49.73        | 60.00           | -10.27         | 40.96             | 50.00           | -9.04          |
| 5   | A    | 16.798             | 8.23           | 50.10        | 60.00           | -9.90          | 41.33             | 50.00           | -8.67          |
| 6   | A    | 17.485             | 8.29           | 51.71        | 60.00           | -8.29          | 43.09             | 50.00           | -6.91          |
| 7   | A    | 17.745             | 8.31           | 51.84        | 60.00           | -8.16          | 42.85             | 50.00           | -7.15          |
| 8   | A    | 18.042             | 8.33           | 52.06        | 60.00           | -7.94          | 41.79             | 50.00           | -8.21          |
| 9   | A    | 18.177             | 8.34           | 51.46        | 60.00           | -8.54          | 41.12             | 50.00           | -8.88          |
| 10  | A    | 19.489             | 8.43           | 46.90        | 60.00           | -13.10         | 35.34             | 50.00           | -14.66         |
| 11  | B    | 16.858             | 8.30           | 49.79        | 60.00           | -10.21         | 41.68             | 50.00           | -8.32          |
| 12  | B    | 17.183             | 8.33           | 51.58        | 60.00           | -8.42          | 42.64             | 50.00           | -7.36          |
| 13  | B    | 17.357             | 8.35           | 52.06        | 60.00           | -7.94          | 43.30             | 50.00           | -6.70          |
| 14  | B    | 18.296             | 8.42           | 51.56        | 60.00           | -8.44          | 40.52             | 50.00           | -9.48          |
| 15  | B    | 18.340             | 8.43           | 51.26        | 60.00           | -8.74          | 40.25             | 50.00           | -9.75          |
| 16  | B    | 18.654             | 8.45           | 50.72        | 60.00           | -9.28          | 38.12             | 50.00           | -11.88         |
| 17  | B    | 18.827             | 8.46           | 50.56        | 60.00           | -9.44          | 37.79             | 50.00           | -12.21         |
| 18  | B    | 18.883             | 8.47           | 50.62        | 60.00           | -9.38          | 37.82             | 50.00           | -12.18         |
| 19  | B    | 19.096             | 8.48           | 49.85        | 60.00           | -10.15         | 37.34             | 50.00           | -12.66         |
| 20  | B    | 19.181             | 8.49           | 50.14        | 60.00           | -9.86          | 36.73             | 50.00           | -13.27         |

**Table 6-11. Line Conducted Data with Bluetooth LE**

### Notes:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
4. QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
5. Margin (dB) = QP/AV Limit (dBμV) - QP/AV Level (dBμV)
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## 7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset** **FCC ID: A3LGTI9295** is in compliance with Part 15C of the FCC Rules.

|                                      |                                                                                     |                                                              |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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