

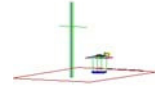


PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT FCC PART 15.249 ANT+

Applicant Name:
Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea


Date of Testing:
3/13 - 3/24/2017
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M1703100103-09.A3L

| | |
|-------------------|--------------------------------------|
| FCC ID: | A3LSMG950N |
| APPLICANT: | Samsung Electronics Co., Ltd. |

Application Type: Class II Permissive Change
Model: SM-G950N
EUT Type: Portable Handset
Frequency Range: 2402 – 2480MHz
FCC Classification: Low Power Communications Device Transmitter (DXX)
FCC Rule Part(s): Part 15 Subpart C (15.249)
Test Procedure(s): ANSI C63.10-2013, KDB 648474 D03 v01r04
Class II Permissive Change: Please see FCC change document
Original Grant Date: 3/10/2017

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 C63.10-2013. 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: A3LSMG950N |  | FCC Pt. 15.249 ANT+ TEST REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
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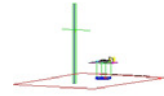
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MEASUREMENT REPORT

FCC Part 15.249

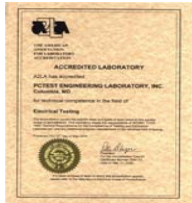


§ 2.1033 General Information

APPLICANT: Samsung Electronics Co., Ltd.
APPLICANT ADDRESS: 129, Samsung-ro,
 Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 7185 Oakland Mills Road, Columbia, MD 21046 USA
FCC RULE PART(S): Part 15 Subpart C (15.249)
MODEL: SM-G950N
FCC ID: A3LSMG950N
Test Device Serial No.: E3D05 Production Pre-Production Engineering
FCC CLASSIFICATION: Low Power Communications Device Transmitter (DXX)
DATE(S) OF TEST: 3/13 - 3/24/2017
TEST REPORT S/N: 1M1703100103-09.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't'l (BWI) airport, the city of Baltimore and the Washington, DC area. (See Figure 1-1).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2014 on January 22, 2015.

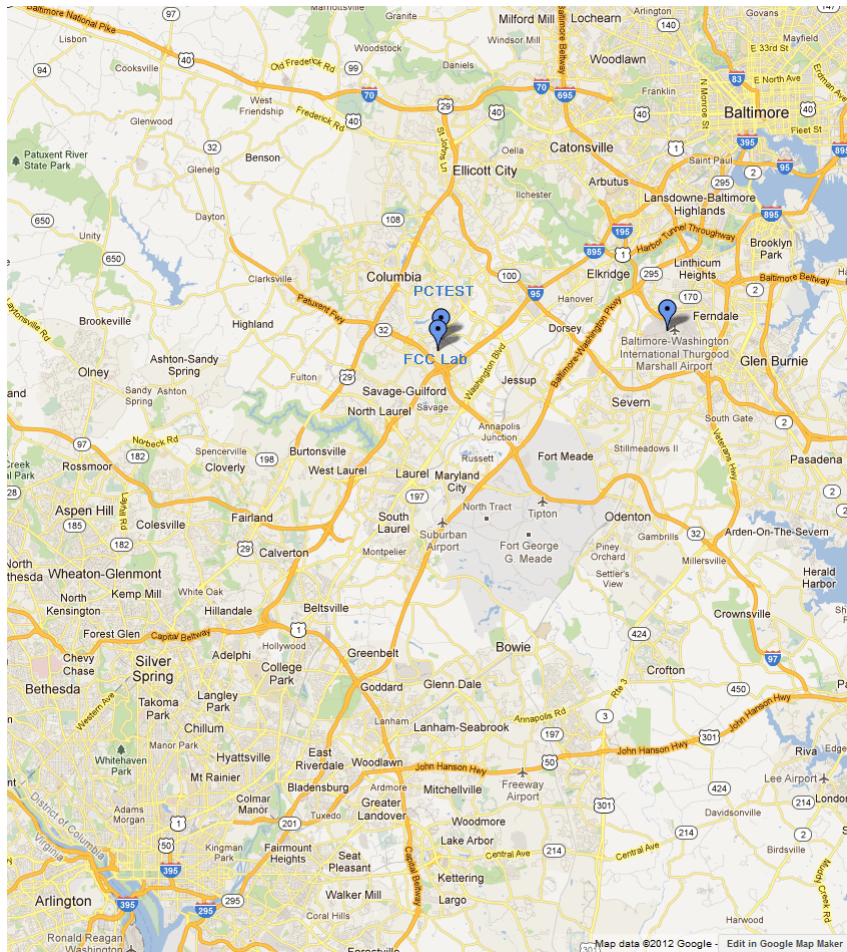


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMG950N**. The test data contained in this report pertains only to the emissions due to the EUT's ANT+ transmitter.

2.2 Device Capabilities

This device contains the following capabilities:

1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC, ANT+

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 00 | 2402 |
| : | : |
| 39 | 2441 |
| : | : |
| 78 | 2480 |

Table 2-1. Frequency/ Channel Operations

Note: This device is capable of operating in hopping and non-hopping mode. The EUT can hop between 79 different channels in the 2400 – 2483.5MHz band.



2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.10-2013. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing. See Section 3.2 for radiated emissions test setups.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on a certified wireless charging pad (WCP) while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

2.4 EMI Suppression Device(s)/Modifications

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

| | | | | |
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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedure described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) was used in the measurement of the EUT.

Deviation from measurement procedure.....None

3.2 Radiated Emissions



The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. A raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. A 72.4cm high PVC support structure is placed on top of the turntable. A 3" (~7.6cm) sheet of high density polystyrene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm. For measurements above 1GHz, a high density expanded polystyrene block is placed on top of the test table to bring the total table height to 1.5m.

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 above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes 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 the 1 x 1.5 meter table. 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, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT 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 maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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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 antennas of the EUT are **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:



The EUT complies with the requirement of §15.203.

| | | | | |
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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

| Contribution | Expanded Uncertainty (\pm dB) |
|----------------------------------|----------------------------------|
| Conducted Bench Top Measurements | 1.13 |
| Line Conducted Disturbance | 3.09 |
| Radiated Disturbance (<1GHz) | 4.98 |
| Radiated Disturbance (>1GHz) | 5.07 |
| Radiated Disturbance (>18GHz) | 5.09 |



| | | | | |
|---|---|---|---|---------------------------------|
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6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2006.

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|-----------------|--------------------|--|-----------|--------------|-----------|----------------------|
| - | RE1 | Radiated Emissions Cable Set (UHF/EHF) | 7/11/2016 | Annual | 7/11/2017 | RE1 |
| Com-Power | AL-130 | 9kHz - 30MHz Loop Antenna | 7/30/2015 | Biennial | 7/30/2017 | 121034 |
| Com-Power | PAM-103 | Pre-Amplifier (1-1000MHz) | 7/6/2016 | Annual | 7/6/2017 | 441119 |
| Com-Power | PAM-103 | Pre-Amplifier (1-1000MHz) | 7/11/2016 | Annual | 7/11/2017 | 441128 |
| Emco | 3115 | Horn Antenna (1-18GHz) | 3/10/2016 | Biennial | 3/10/2018 | 9704-5182 |
| EMCO | 3160-09 | Small Horn (18 - 26.5GHz) | 8/23/2016 | Biennial | 8/23/2018 | 135427 |
| Huber+Suhner | Sucoflex 102A | 40GHz Radiated Cable | 10/3/2016 | Annual | 10/3/2017 | 251425001 |
| K & L | 11SH10-3075/U18000 | High Pass Filter | 7/11/2016 | Annual | 7/11/2017 | 11SH10-3075/U18000-2 |
| K & L | 11SH10-3075/U18000 | High Pass Filter | 7/6/2016 | Annual | 7/6/2017 | 11SH10-3075/U18000-1 |
| PCTEST | - | EMC Switch System | 7/11/2016 | Annual | 7/11/2017 | NM1 |
| PCTEST | - | EMC Switch System | 7/6/2016 | Annual | 7/6/2017 | NM2 |
| Rhode & Schwarz | TS-PR18 | Pre-Amplifier | 7/6/2016 | Annual | 7/6/2017 | 101622 |
| Rohde & Schwarz | TS-PR18 | 1-18 GHz Pre-Amplifier | 7/11/2016 | Annual | 7/11/2017 | 100071 |
| Rohde & Schwarz | TS-PR26 | 18-26.5 GHz Pre-Amplifier | 4/7/2016 | Annual | 4/7/2017 | 100040 |
| Rohde & Schwarz | ESU26 | EMI Test Receiver (26.5GHz) | 5/16/2016 | Annual | 5/16/2017 | 100342 |
| Rohde & Schwarz | ESU40 | EMI Test Receiver (40GHz) | 7/15/2016 | Annual | 7/15/2017 | 100348 |
| Seekonk | NC-100 | Torque Wrench 5/16", 8" lbs | 3/2/2016 | Biennial | 3/2/2018 | N/A |
| Sunol | DRH-118 | Horn Antenna (1-18GHz) | 7/30/2015 | Biennial | 7/30/2017 | A050307 |
| Sunol | JB5 | Bi-Log Antenna (30M - 5GHz) | 3/14/2016 | Biennial | 3/14/2018 | A051107 |

Table 6-1. Annual Test Equipment Calibration Schedule

| | | | | |
|--|---|---|---|--|
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7.0 TEST RESULTS

7.1 Summary



Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMG950N
 Method/System: Frequency Hopping Spread Spectrum (FHSS)
 Number of Channels: 79

| FCC Part Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|------------------------------|---|--|----------------|-------------|-------------------|
| 15.35(c) | Duty Cycle Calculation | N/A | RADIATED | N/A | Section 7.2 |
| 15.249(a)(e) | Fundamental Field Strength Level | < 50 mV/m | | PASS | Section 7.3 |
| 15.249(a)(e) | Harmonic Field Strength Level | < 500 μ V/m | | PASS | Section 7.4 |
| 15.205, 15.209, 15.249(d)(e) | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | < 15.209 limits or 50dB below the level of the fundamental | | PASS | Sections 7.4, 7.5 |

Table 7-1. 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) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Chamber Automation," Version 1.1.5.

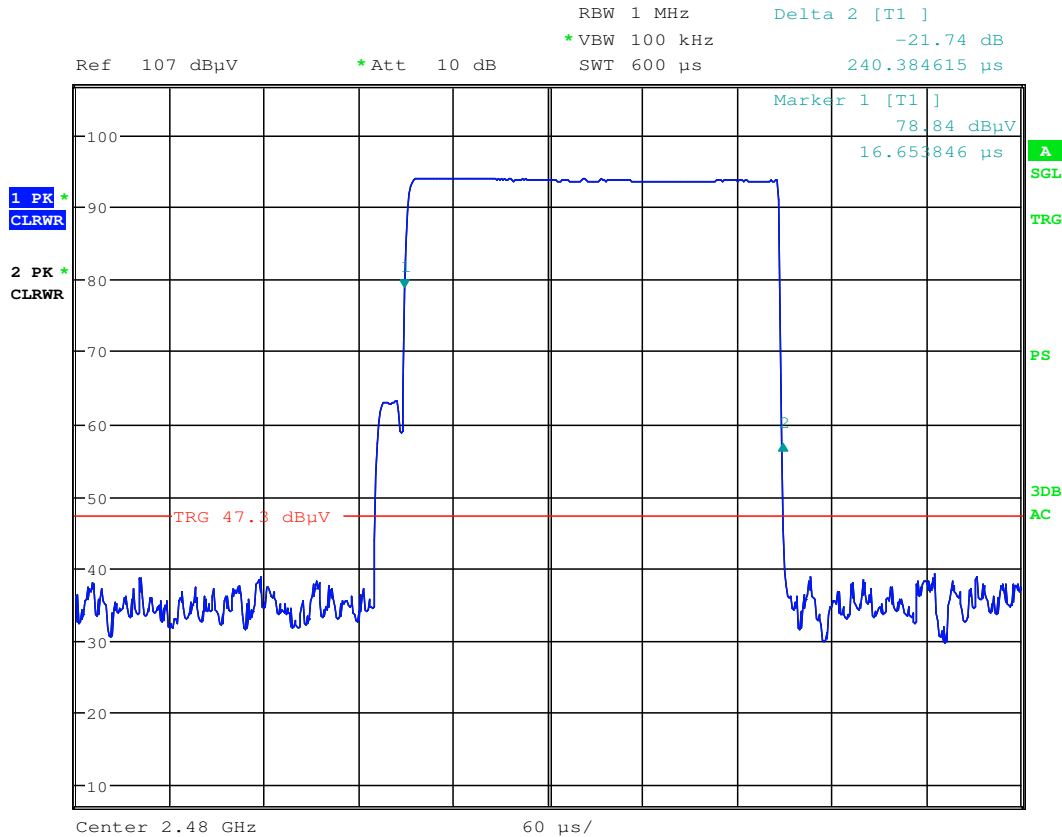
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7.2 Duty Cycle Calculation

§15.35(c)

Per FCC Part 15.35(c), an average radiated field strength can be determined by applying a duty cycle correction factor to a measured peak radiated field strength level. The duty cycle correction factor is determined based on the worst case operation over a 100ms time period on any given channel. Two plots are included below to determine the appropriate duty cycle correction factor.

In Plot 7-1 below, it is shown that the pulse width for one transmission burst of the ANT+ transmitter while operating in non-hopping mode is 240.4 μ s.



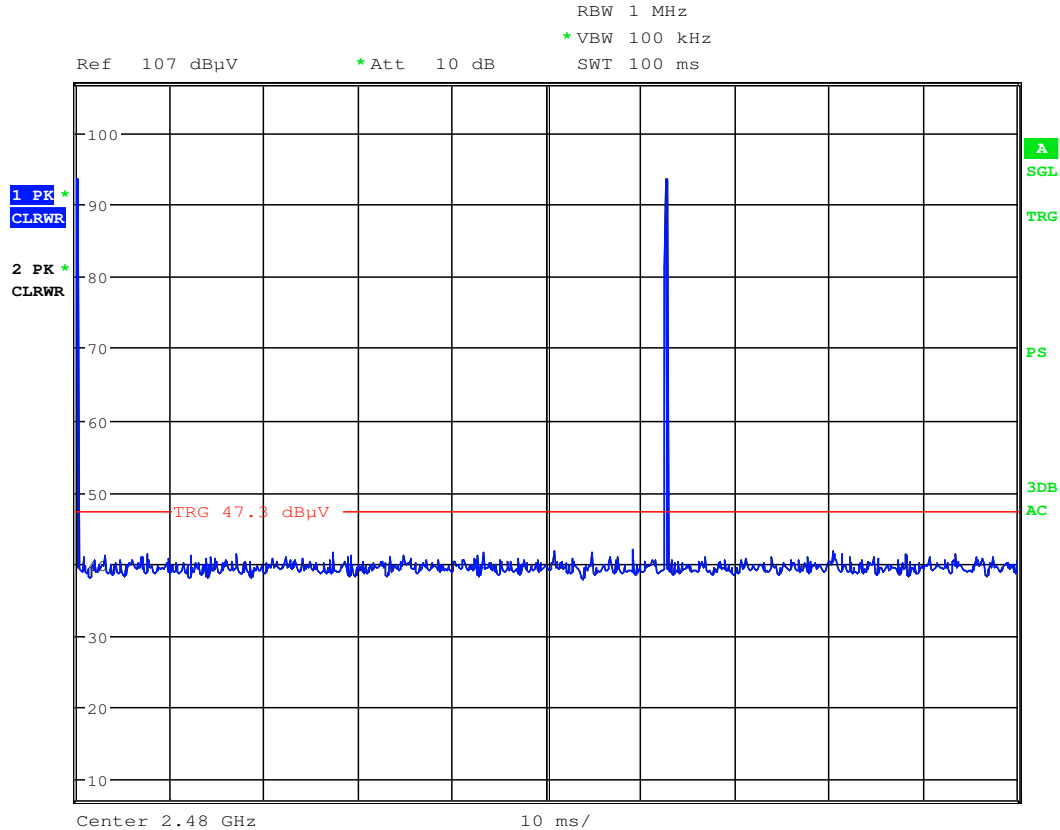
Date: 27.JAN.2017 14:28:20

Plot 7-1. Pulse Width Measurement

| | | | | |
|---|---------------------------------|---|--|---------------------------------|
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Duty Cycle Calculation §15.35(c)

In Plot 7-2 below, a video trigger is used to determine the maximum number of times the transmitter operates at maximum power over a 100ms period.



Date: 27.JAN.2017 14:30:03

Plot 7-2. Worst Case 100ms Operation

Since it is determined that the transmitter burst appears a maximum of 2 times over a 100ms window with a pulse width of N/Aμs, then the appropriate duty cycle correction factor is determined from the following formula, based on 15.35(c):

$$\begin{aligned} \text{DCCF} &= 20\log_{10}(\text{number of hits} \times (\text{worst case 100ms operation} / 100\text{ms})) \\ &= 20\log_{10}(2 \times (0.2404\text{ms}/100\text{ms})) = -46.36\text{dB} \end{aligned}$$

DCCF = -46.36dB

| | | | | |
|---|---------------------------------|---|--|---------------------------------|
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7.3 Fundamental Field Strength Level Measurement §15.249(a)(e)

Measurement is made while the EUT is operating in non-hopping transmission mode. The field strengths shown below were measured using a spectrum analyzer. Peak field strength measurements are performed in the analyzers' swept spectrum mode using a peak detector with RBW = 3MHz and VBW ≥ RBW. Average field strength data is determined by applying the duty cycle correction factor (DCCF) found in Section 7.2 to the measured peak field strength values.



The maximum permissible average field strength level is 50mV/m (93.98dBμV/m). The maximum permissible peak field strength level is 500mV/m (113.98 dBμV/m).

| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBμV/m] | Duty Cycle Correction [dB] | Corrected Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------|-----------------|---------------------|----------------------------|----------------------|-------------|-------------------------|----------------------------|-----------------------------------|----------------|-------------|
| 2441.00 | Peak | H | 221 | 270 | 1.50 | -1.78 | 106.72 | -46.36 | 60.36 | 93.98 | -33.62 |
| 2441.00 | Peak | H | 221 | 270 | 1.50 | -1.78 | 106.72 | 0.00 | 106.72 | 113.98 | -7.26 |

Table 7-2. Field Strength Measurements

| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBμV/m] | Duty Cycle Correction [dB] | Corrected Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------|-----------------|---------------------|----------------------------|----------------------|-------------|-------------------------|----------------------------|-----------------------------------|----------------|-------------|
| 2441.00 | Peak | H | 236 | 293 | -0.03 | -1.78 | 105.19 | -46.36 | 58.83 | 93.98 | -35.15 |
| 2441.00 | Peak | H | 236 | 293 | -0.03 | -1.78 | 105.19 | 0.00 | 105.19 | 113.98 | -8.79 |

Table 7-3. Field Strength Measurements with WCP

| | | | | |
|---|---|---|---|---------------------------------|
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7.4 Radiated Spurious Emission Measurements

§15.205 §15.209 §15.249 (d)(e)

| Frequency | Field Strength [$\mu\text{V}/\text{m}$] | Measured Distance [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 7-4. Radiated Limits

Test Setup

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

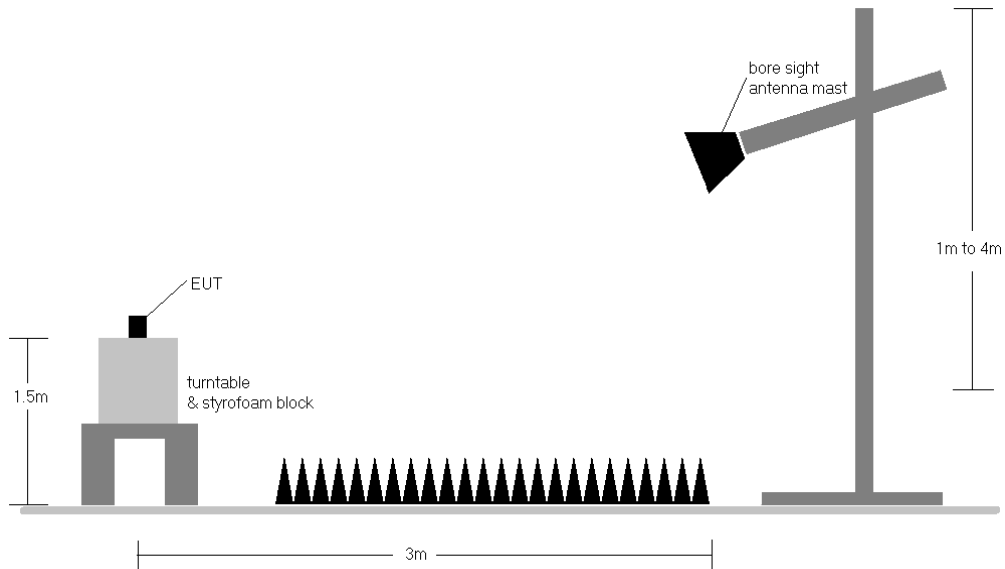


Figure 7-1. Radiated Test Setup



| | | | | |
|---|---------------------------------|---|--|---------------------------------|
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Sample Calculation

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

Test Notes

1. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported. There were no non-harmonic emissions detected whose levels were within 20dB of the applicable limits so only harmonic emissions data is shown in this section.
2. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-4. Per 15.249(d), the radiated emissions limits from 15.209 were used since they were less than the limit of 50dB of attenuation from the measured fundamental field strength level.
3. Peak measurements > 1GHz using RBW = 1MHz and VBW = 3MHz.
4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
5. This unit was tested with its standard battery.
6. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

| | | | | |
|---|---|---|---|---------------------------------|
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Radiated Spurious Emission Measurements

§15.205 §15.209 §15.249 (d)(e)

Worst Case Mode: ANT+ (non-hopping)
 Measurement Distance: 3 Meters
 Operating Frequency: 2480MHz
 Channel: 78



| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Duty Cycle Correction [dB] | Corrected Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|-----------------|----------|-----------------|---------------------|----------------------------|----------------------|-------------|-------------------------|----------------------------|-----------------------------------|----------------|-------------|
| 4960.00 | Peak | H | - | - | -58.35 | 0.66 | 49.31 | -46.36 | 2.95 | 53.98 | -51.03 |
| 4960.00 | Peak | H | - | - | -58.35 | 0.66 | 49.31 | 0.00 | 49.31 | 73.98 | -24.67 |
| 7440.00 | Peak | H | - | - | -58.77 | 10.29 | 58.52 | -46.36 | 12.16 | 53.98 | -41.82 |
| 7440.00 | Peak | H | - | - | -58.77 | 10.29 | 58.52 | 0.00 | 58.52 | 73.98 | -15.46 |
| 12400.00 | Peak | H | - | - | -60.02 | 16.05 | 63.03 | -46.36 | 16.67 | 53.98 | -37.31 |
| 12400.00 | Peak | H | - | - | -60.02 | 16.05 | 63.03 | 0.00 | 63.03 | 73.98 | -10.95 |

Table 7-5. Radiated Measurements

Worst Case Mode: ANT+ (non-hopping)
 Measurement Distance: 3 Meters
 Operating Frequency: 2480MHz
 Channel: 78

| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Duty Cycle Correction [dB] | Corrected Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|-----------------|----------|-----------------|---------------------|----------------------------|----------------------|-------------|-------------------------|----------------------------|-----------------------------------|----------------|-------------|
| 4960.00 | Peak | H | - | - | -60.35 | 0.66 | 47.31 | -46.36 | 0.95 | 53.98 | -53.03 |
| 4960.00 | Peak | H | - | - | -60.35 | 0.66 | 47.31 | 0.00 | 47.31 | 73.98 | -26.67 |
| 7440.00 | Peak | H | - | - | -57.14 | 10.29 | 60.15 | -46.36 | 13.79 | 53.98 | -40.19 |
| 7440.00 | Peak | H | - | - | -57.14 | 10.29 | 60.15 | 0.00 | 60.15 | 73.98 | -13.83 |
| 12400.00 | Peak | H | - | - | -59.10 | 16.05 | 63.95 | -46.36 | 17.59 | 53.98 | -36.39 |
| 12400.00 | Peak | H | - | - | -59.10 | 16.05 | 63.95 | 0.00 | 63.95 | 73.98 | -10.03 |

Table 7-6. Radiated Measurements with WCP

| | | | | |
|---|---|---|---|---------------------------------|
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7.5 Radiated Restricted Band Edge Measurements

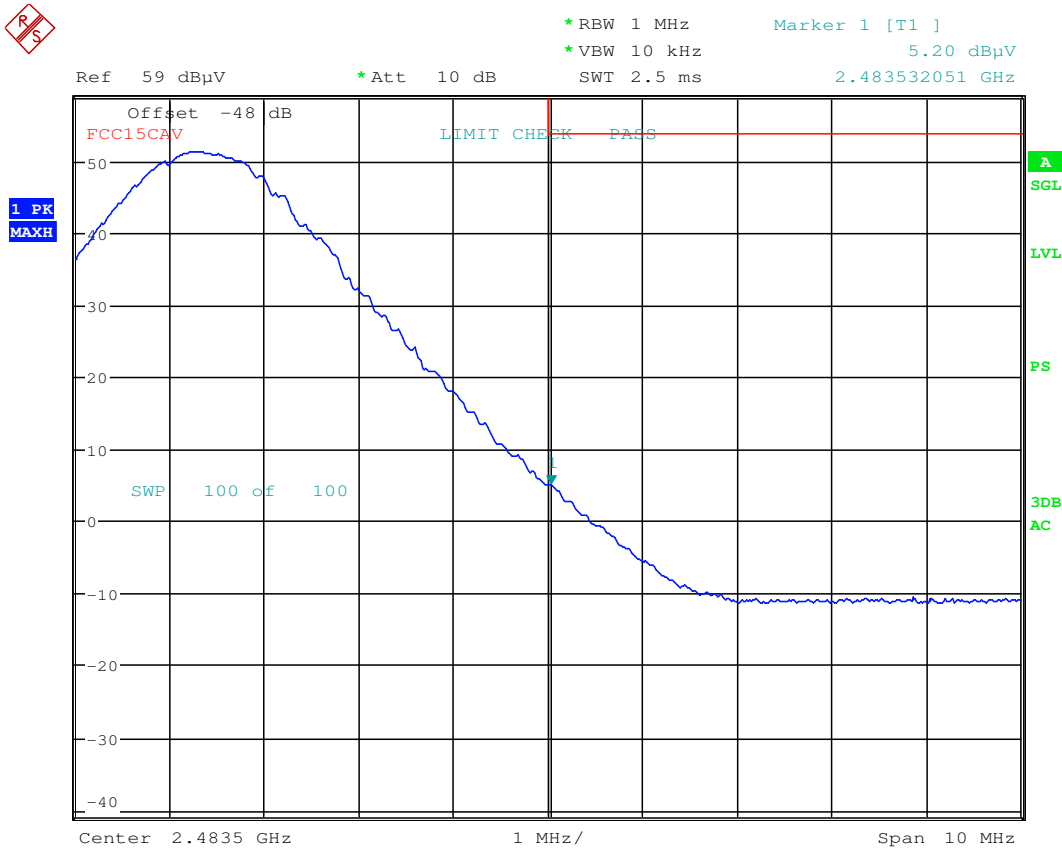
§15.205 §15.209 §15.249 (d)

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting. Two different amplitude offsets were used depending on whether peak or average measurements were measured. The average measurements use a duty cycle correction factor (DCCF).

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Worst Case Mode: ANT+ (non-hopping)
 Measurement Distance: 3 Meters
 Operating Frequency: 2480MHz
 Back Cover: Standard
 Channel: 78



Date: 24.MAR.2017 15:25:33

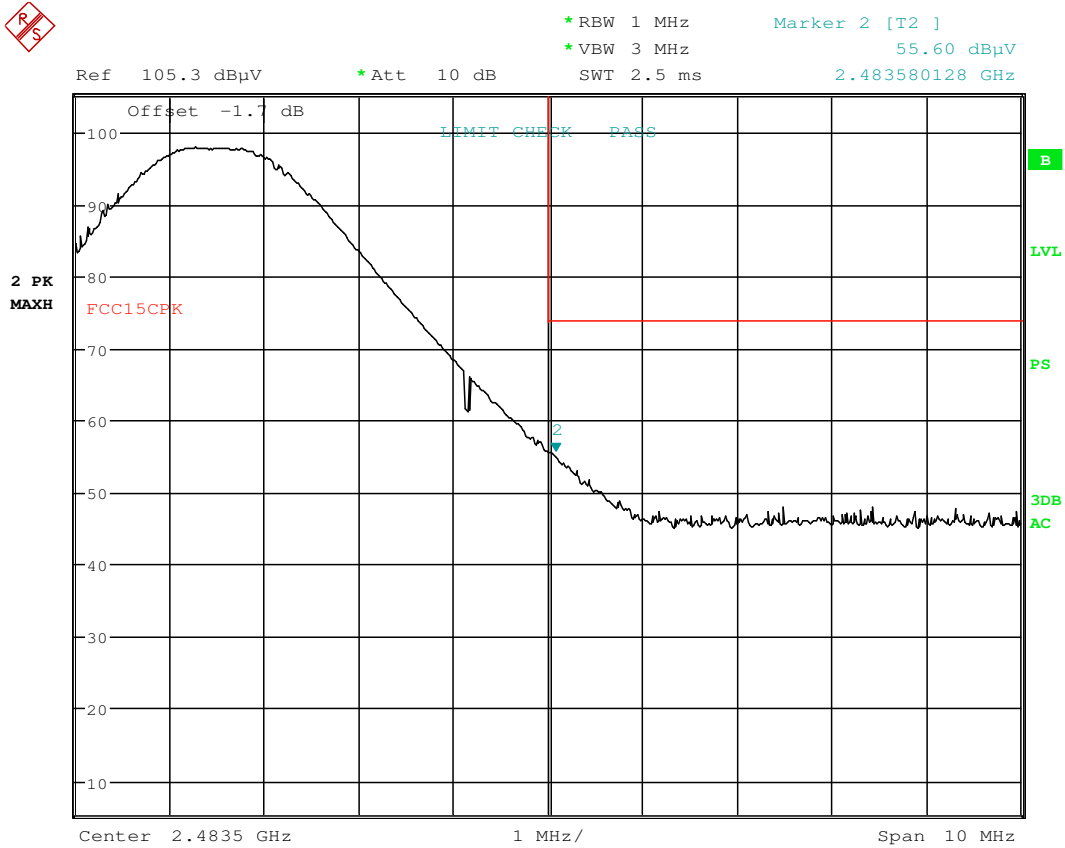
Plot 7-3. Radiated Restricted Upper Band Edge Measurement (Average)

| | | | | |
|---|---------------------------------|---|--|---------------------------------|
| FCC ID: A3LSMG950N | | FCC Pt. 15.249 ANT+ TEST REPORT (CLASS II PERMISSIVE CHANGE) | | Approved by: Quality Manager |
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Radiated Restricted Band Edge Measurements §15.205 §15.209 §15.249 (d)

The amplitude offset shown in the following plots for peak measurements was calculated using the formula:

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



Date: 24.MAR.2017 15:27:30

Plot 7-4. Radiated Restricted Upper Band Edge Measurement (Peak)

| | | | | |
|---|---------------------------------|---|--|---------------------------------|
| FCC ID: A3LSMG950N | | FCC Pt. 15.249 ANT+ TEST REPORT (CLASS II PERMISSIVE CHANGE) | | Approved by: Quality Manager |
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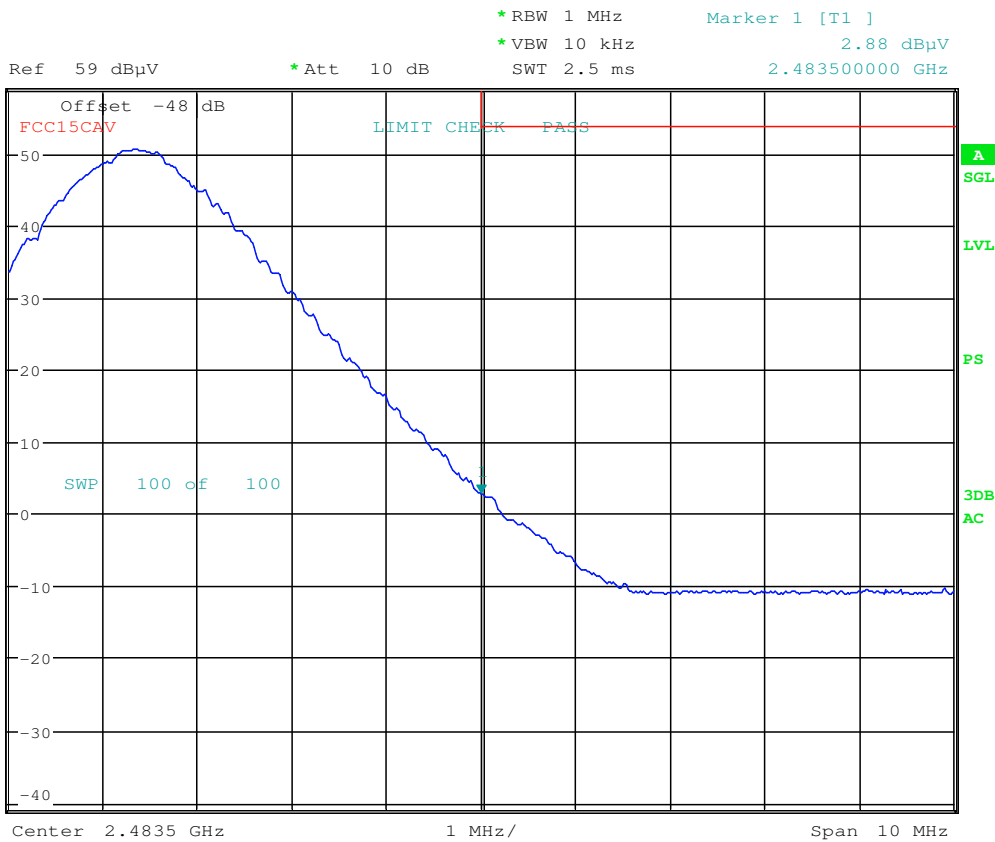
Radiated Restricted Band Edge Measurements

§15.205 §15.209 §15.249 (d)

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Worst Case Mode: ANT+ (non-hopping)
 Measurement Distance: 3 Meters
 Operating Frequency: 2480MHz
 Back Cover: Standard
 Channel: 78



Date: 24.MAR.2017 15:32:34

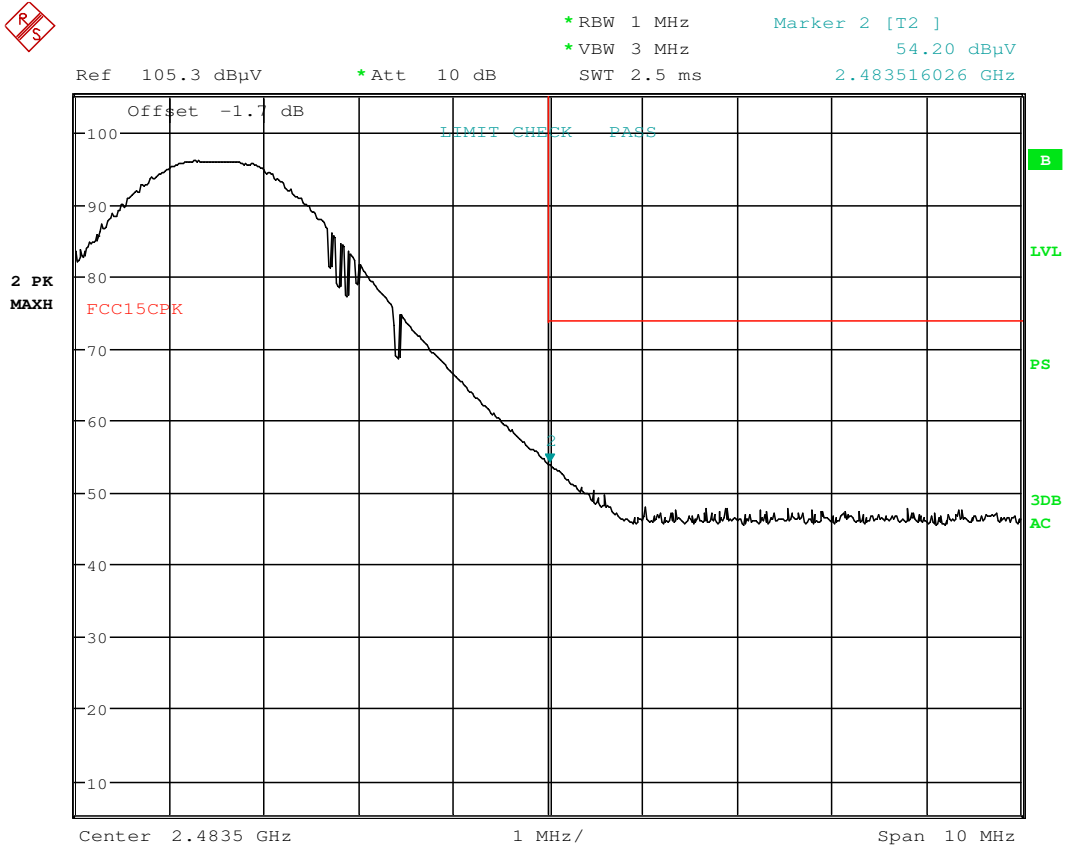
Plot 7-5. Radiated Restricted Upper Band Edge Measurement with WCP (Average)

| | | | | |
|---|---------------------------------|---|--|---------------------------------|
| FCC ID: A3LSMG950N | | FCC Pt. 15.249 ANT+ TEST REPORT (CLASS II PERMISSIVE CHANGE) | | Approved by: Quality Manager |
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Radiated Restricted Band Edge Measurements §15.205 §15.209 §15.249 (d)

The amplitude offset shown in the following plots for peak measurements was calculated using the formula:

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





Date: 24.MAR.2017 15:34:51

Plot 7-6. Radiated Restricted Upper Band Edge Measurement with WCP (Peak)

| | | | | |
|---|---------------------------------|---|--|---------------------------------|
| FCC ID: A3LSMG950N | | FCC Pt. 15.249 ANT+ TEST REPORT (CLASS II PERMISSIVE CHANGE) | | Approved by: Quality Manager |
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG950N** is in compliance with Part 15 Subpart C (15.249) of the FCC Rules.

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