



FCC CFR47 PART 15 SUBPART C

**ANT+
CERTIFICATION TEST REPORT**

FOR

GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac, NFC & ANT

MODEL NUMBER: SM-N7505

FCC ID: A3LSMN7505

REPORT NUMBER: 13U16698-7

ISSUE DATE: JANUARY 5, 2013

**Prepared for
SAMSUNG ELECTRONICS CO., LTD.
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY
GYEONGGI-DO, 443-742, SOUTH KOREA**

**Prepared by
UL VERIFICATION SERVICES INC.
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NVLAP LAB CODE 200065-0

Revision History

| <u>Rev.</u> | <u>Issue Date</u> | <u>Revisions</u> | <u>Revised By</u> |
|-------------|-------------------|------------------|-------------------|
| -- | 1/5/14 | Initial Issue | P. Kim |

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO, 443-742, SOUTH KOREA

EUT DESCRIPTION: GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac, NFC & ANT

MODEL: SM-N7505

SERIAL NUMBER: R31DB1SV13P

DATE TESTED: DECEMBER 9, 2013 – JANUARY 5, 2014

| APPLICABLE STANDARDS | |
|--------------------------|--------------|
| STANDARD | TEST RESULTS |
| CFR 47 Part 15 Subpart C | PASS |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:



PHILIP KIM
WiSE PROGRAM MANAGER
UL Verification Services Inc.

Tested By:



STEVEN TRAN
WiSE TEST TECHNICIAN
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB |
| Radiated Disturbance, 30 to 18000 MHz | 4.94 dB |

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac, NFC & ANT.

5.2. MAXIMUM OUTPUT FUNDAMENTAL FIELD STRENGTH

The ANT+ mode has maximum output fundamental field strength as follows:

| Frequency Range (MHz) | Mode | Peak E-field Strength (dBuV/m) | Avg E-field Strength (dBuV/m) | Distance (m) |
|-----------------------|-------|--------------------------------|-------------------------------|--------------|
| 2402 - 2480 | ANT + | 57.20 | 9.24 | 3.00 |

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -1.51 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

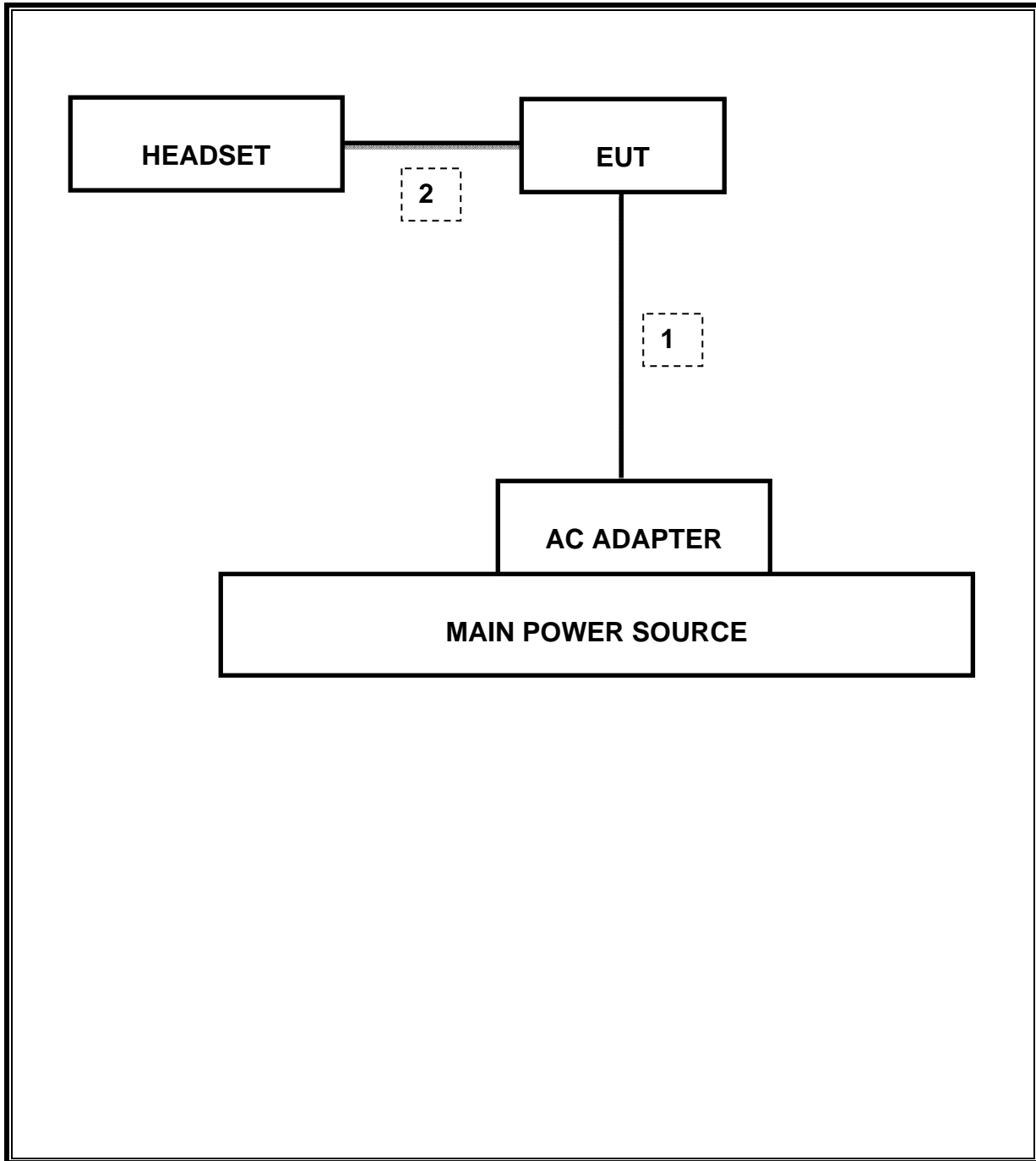
| Support Equipment List | | | | |
|------------------------|--------------|----------|---------------|--------|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| AC Adapter | Samsung | SM-N7505 | FK-383-A | N/A |
| Earphone | Samsung | Samsung | N/A | N/A |

I/O CABLES

| I/O Cable List | | | | | | |
|----------------|----------|----------------------|----------------|------------|------------------|---------|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | DC Power | 1 | Mini-USB | Shielded | 1.2m | N/A |
| 2 | Audio | 1 | Mini-Jack | Unshielded | 1m | N/A |

TEST SETUP

The EUT is set to continuously transmit in ANT + test mode



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List | | | | | |
|-------------------------------|----------------|-------------|--------|----------|----------|
| Description | Manufacturer | Model | Asset | Cal Date | Cal Due |
| Antenna, Biconolog, 30MHz-1 G | Sunol Sciences | JB1 | C01171 | 03/23/13 | 02/13/14 |
| Antenna, Horn, 18GHz | EMCO | 3115 | C00783 | 10/25/13 | 10/25/14 |
| Antenna, Horn, 25.5 GHz | ARA | MWH-1826/B | C00980 | 11/14/13 | 11/14/14 |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C00580 | 01/28/13 | 01/28/14 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C01052 | 10/22/13 | 10/22/14 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C01069 | 12/20/13 | 12/20/14 |
| CBT Bluetooth Tester | R & S | CBT | None | 07/12/13 | 07/12/14 |
| Peak Power Meter | Agilent / HP | E4416A | C00963 | 12/13/13 | 12/13/14 |
| Peak / Average Power Sensor | Agilent / HP | E9327A | C00964 | 12/13/13 | 12/13/14 |
| LISN, 30 MHz | FCC | 50/250-25-2 | C00626 | 01/14/13 | 01/14/14 |
| Reject Filter, 2.4GHz | Micro-Tronics | BRM50702 | N02684 | CNR | CNR |

7. LIMITS AND RESULTS

7.1. 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

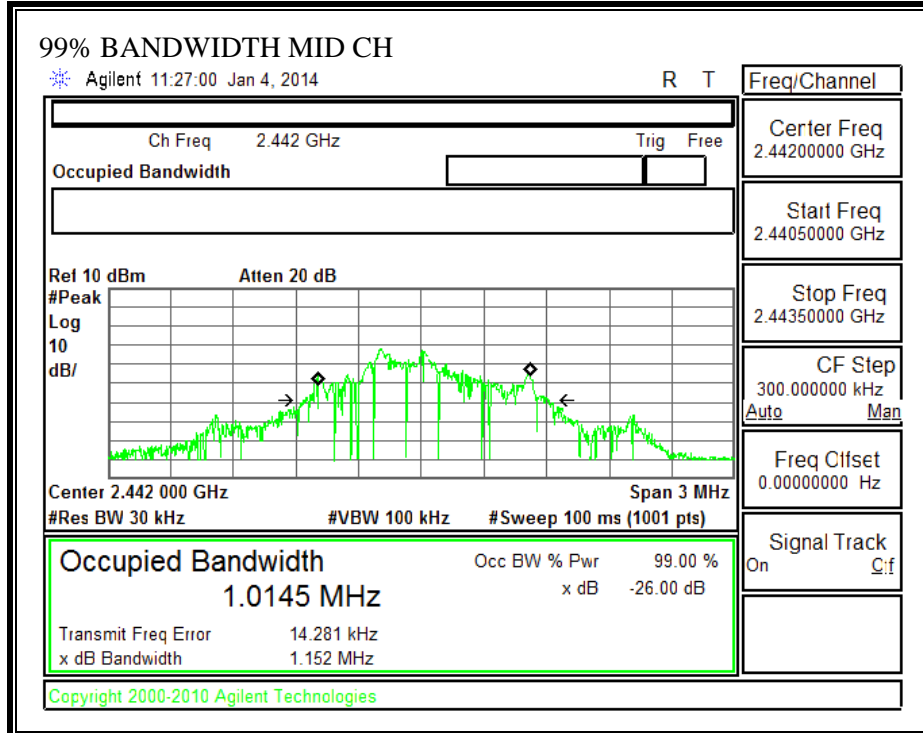
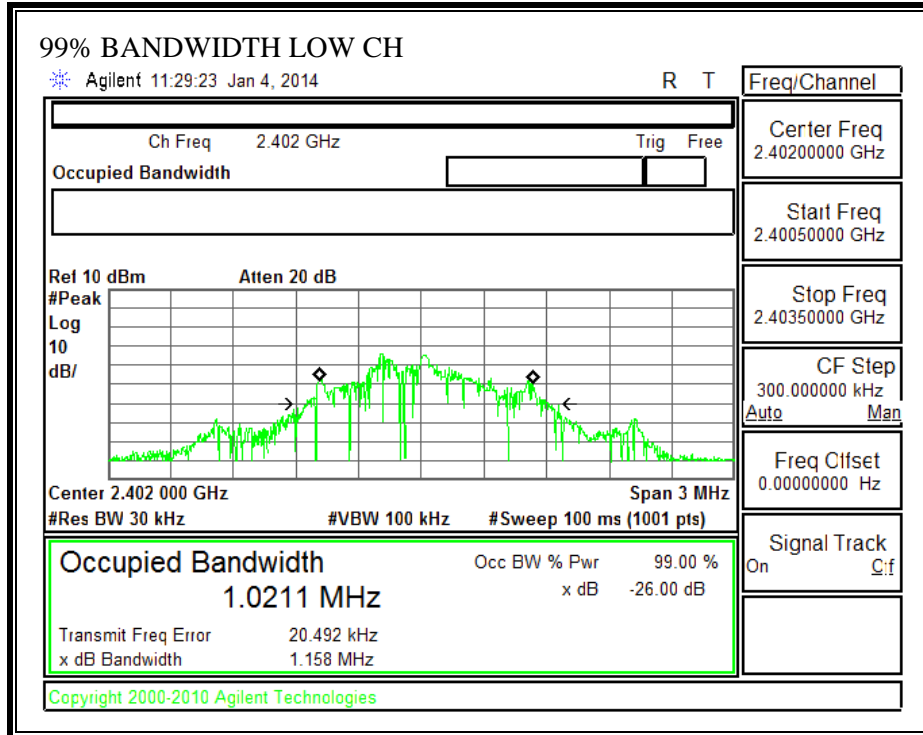
TEST PROCEDURE

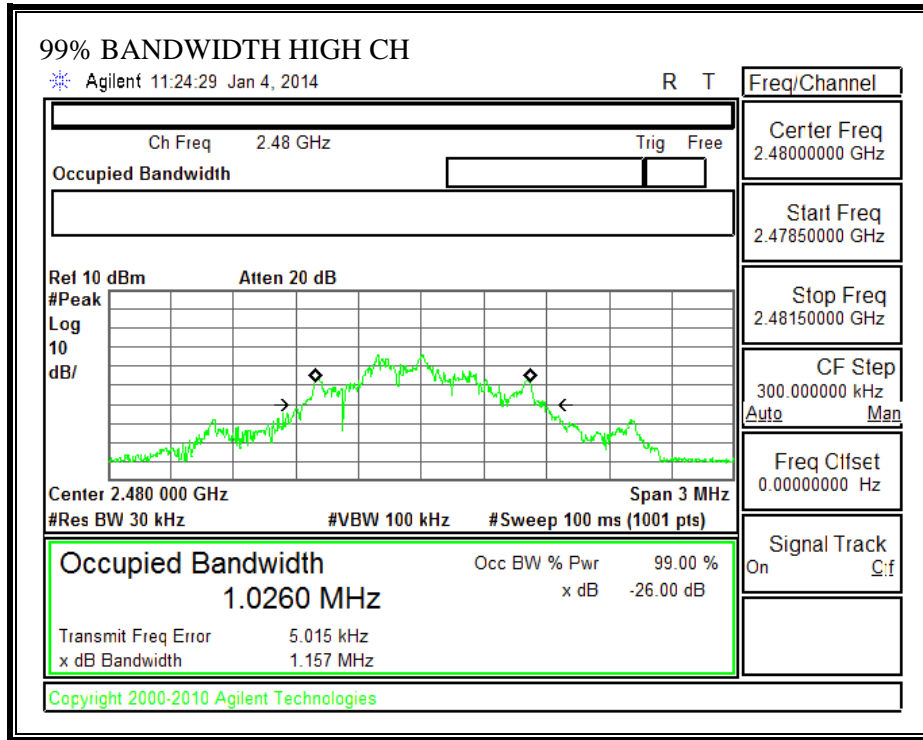
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---------|-----------------|---------------------|
| Low | 2402 | 1.0211 |
| Middle | 2442 | 1.0145 |
| High | 2480 | 1.026 |

99% BANDWIDTH





7.2. TRANSMITTER RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.4

LIMIT

IC RSS-210, A2.9
FCC 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz.

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------|--|--|
| 902–928 MHz | 50 | 500 |
| 2400–2483.5 MHz | 50 | 500 |
| 5725–5875 MHz | 50 | 500 |
| 24.0–24.25 GHz | 250 | 2500 |

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

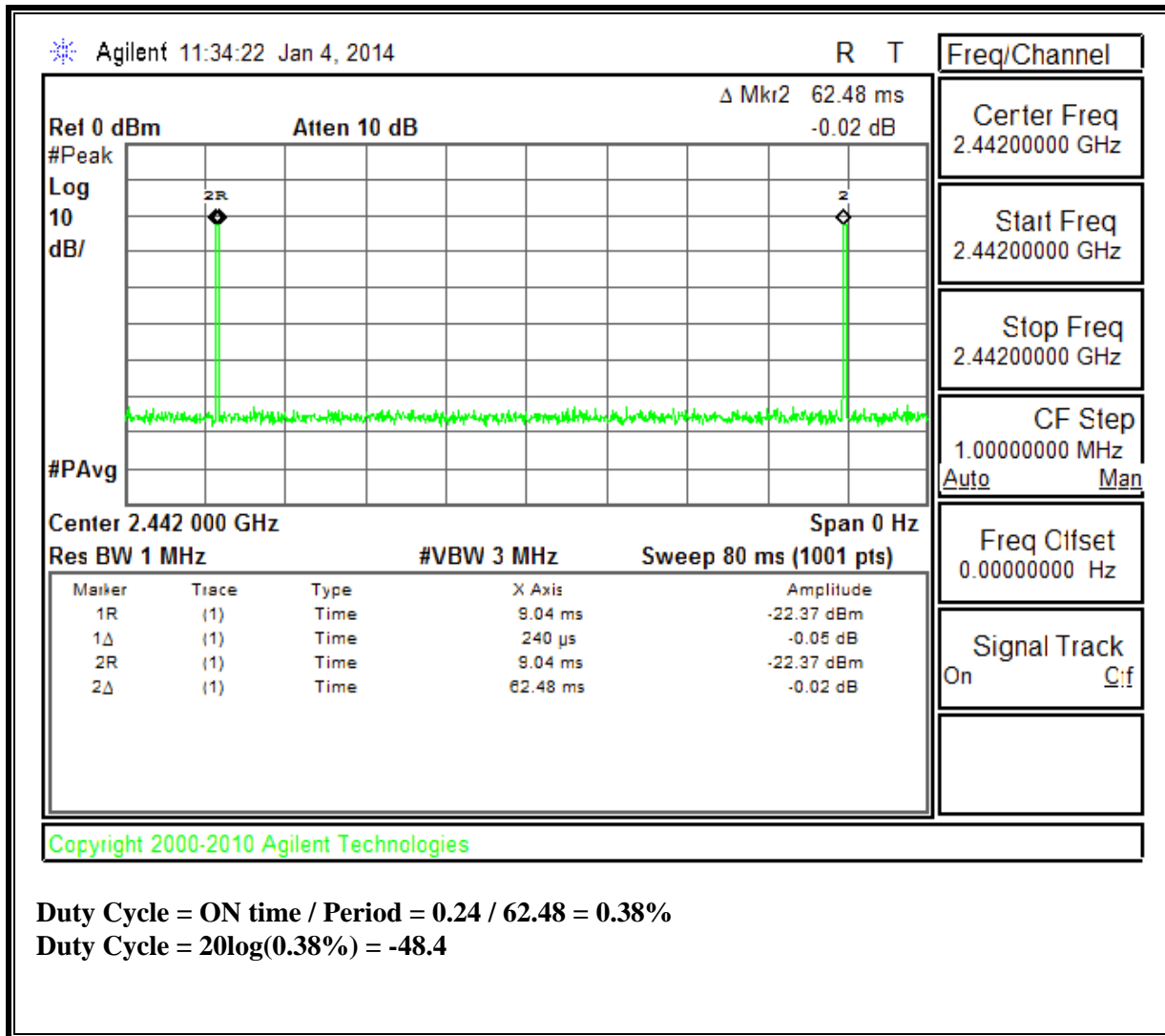
(e) As shown in Sec. 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 ** | 3 |
| 88-216 | 150 ** | 3 |
| 216-960 | 200 ** | 3 |
| Above 960 | 500 | 3 |


** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

RESULTS

7.2.1. DUTY CYCLE



7.2.2. FUNDAMENTAL FREQUENCY RADIATED EMISSION



FCC, VCCI, CISPR, CE, AUSTEL, NZ
 UL, CSA, TUV, BSMI, DHHS, NVLAP
 47173 BENICIA STREET, FREMONT, CA 94538, USA

Project #: 13U16698
Report #: 13U16698
Date & Time: 01/04/14
Test Engr: Charles Vergonio

Company: Samsung
EUT Description: GSM/WCDMA Phone + Bluetooth & WLAN (2.4GHz & 5GHz) and NFC BAR PHONE
Test Configuration: Y-Position (EUT Standup)
Type of Test: FCC IIC
Mode of Operation: Transmitting : ANT+ mode

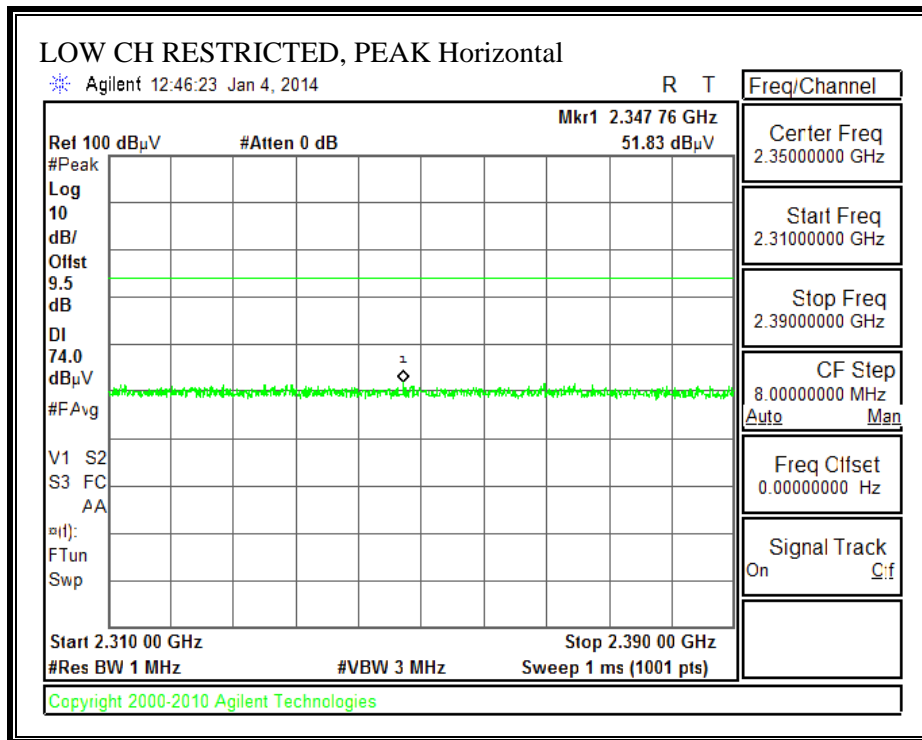
M% = ((t1+t2+t3+...)/T) * 66.83% = 0.38%

| |
|--|
| Av Reading = Pk Reading + 20*log(M%) |
| 20 * log (M%) = -48.40 |

| Freq. (MHz) | Pk Rdg (dBuV) | Av Rdg (dBuV) | AF (dB) | Closs (dB) | Pre-amp (dB) | Pk Level (dBuV/m) | Av Level (dBuV/m) | Pk Limit FCC_B | Av Limit FCC_B | Pk Margin (dB) | Avg Margin (dB) | Pol (H/V) | Az (Deg) | Height (Meter) |
|----------------|------------------|------------------|------------|---------------|-----------------|----------------------|----------------------|-------------------|-------------------|-------------------|--------------------|--------------|-------------|-------------------|
| Low channel | | | | | | | | | | | | | | |
| 2402.00 | 53.99 | 5.59 | 32.10 | -22.80 | 0.00 | 63.29 | 14.89 | 114.00 | 94.00 | -50.71 | -79.11 | 3mV | 0.00 | 1.00 |
| 2402.00 | 56.76 | 8.36 | 32.10 | -22.80 | 0.00 | 66.06 | 17.66 | 114.00 | 94.00 | -47.94 | -76.34 | 3mH | 0.00 | 2.00 |
| Mid channel | | | | | | | | | | | | | | |
| 2442.00 | 55.73 | 7.33 | 32.10 | -22.80 | 0.00 | 65.03 | 16.63 | 114.00 | 94.00 | -48.97 | -77.37 | 3mV | 0.00 | 1.00 |
| 2442.00 | 57.20 | 8.80 | 32.10 | -22.80 | 0.00 | 66.50 | 18.10 | 114.00 | 94.00 | -47.50 | -75.90 | 3mH | 0.00 | 2.00 |
| High channel | | | | | | | | | | | | | | |
| 2480.00 | 55.13 | 6.73 | 32.10 | -22.80 | 0.00 | 64.43 | 16.03 | 114.00 | 94.00 | -49.57 | -77.97 | 3mV | 0.00 | 1.00 |
| 2480.00 | 55.11 | 6.71 | 32.10 | -22.80 | 0.00 | 64.41 | 16.01 | 114.00 | 94.00 | -49.59 | -77.99 | 3mH | 0.00 | 2.00 |

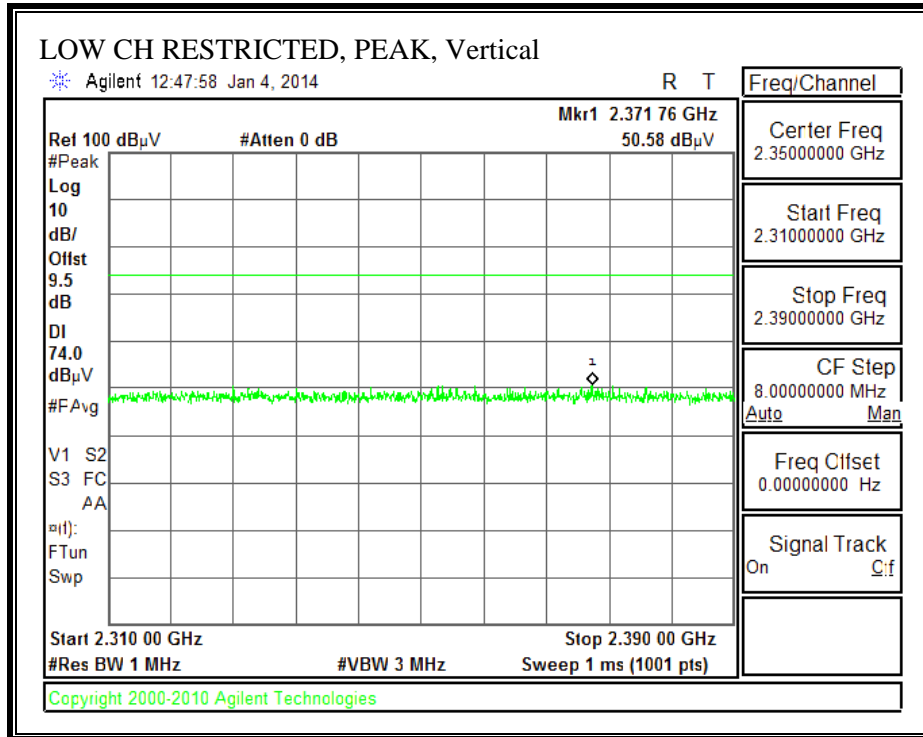
7.2.3. TRANSMITTER RESTRICTED BAND EDGES

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



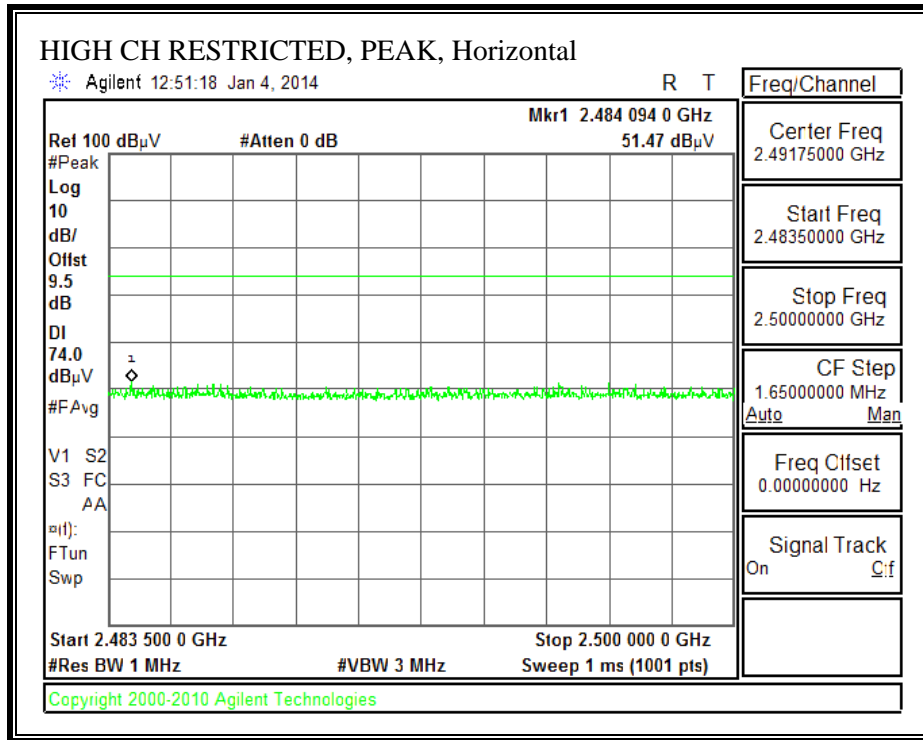
Note: Corrected Average Reading = 51.83 – 48.4 = 3.43
 Passing Margin = 3.43 – 54 = -50.57 dB

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



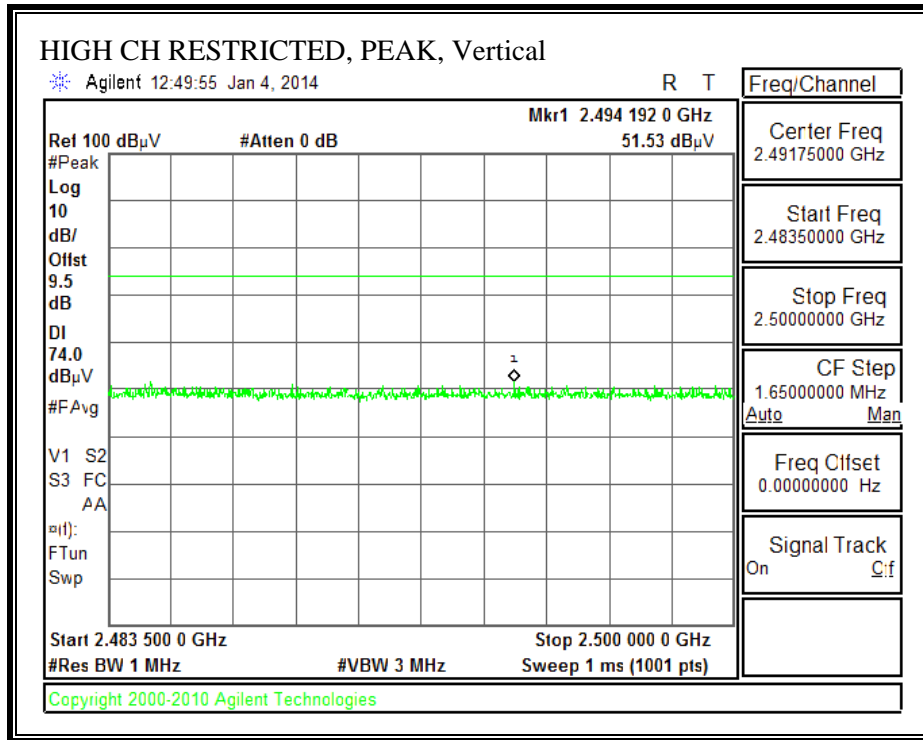
Note: Corrected Average Reading = 50.58 – 48.4 = 2.18
 Passing Margin = 2.18 – 54 = -51.82 dB

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



Note: Corrected Average Reading = 51.47 – 48.4 = 3.07
 Passing Margin = 3.07 – 54 = -50.93 dB


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Note: Corrected Average Reading = 51.53 – 48.4 = 3.13
 Passing Margin = 3.13 – 54 = -50.87 dB

HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

HARMONICS



FCC, VCCI, CISPR, CE, AUSTEL, NZ
 UL, CSA, TUV, BSMI, DHHS, NVLAP
 47173 BENICIA STREET, FREMONT, CA 94538, USA

Project #: 13U16698
Report #: 13U16698
Date & Time: 01/04/14
Test Engr: Charles Vergonio

Company: Samsung

EUT Description: GSM/WCDMA Phone + Bluetooth & WLAN (2.4GHz & 5GHz) and NFC BAR PHONE

Test Configuration: Y-Position (EUT Standup)

Type of Test: FCC /IC Harmonics

Mode of Operation: Transmitting : ANT+ mode

M% = ((t1+t2+t3+...)/T) * 66.83% = 0.38%

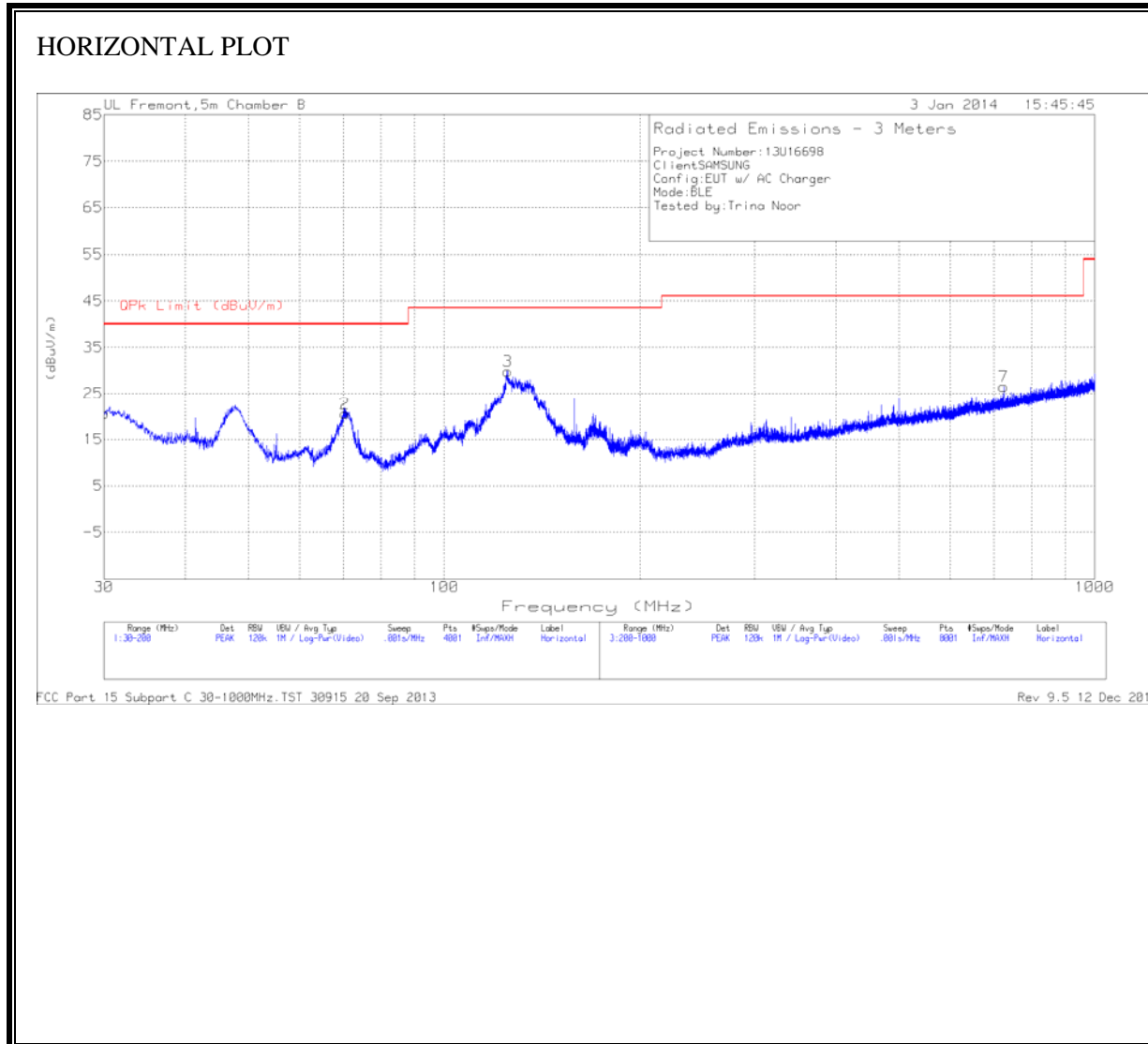
Av Reading = Pk Reading + 20*log(M%)

20 * log (M%) = -48.40

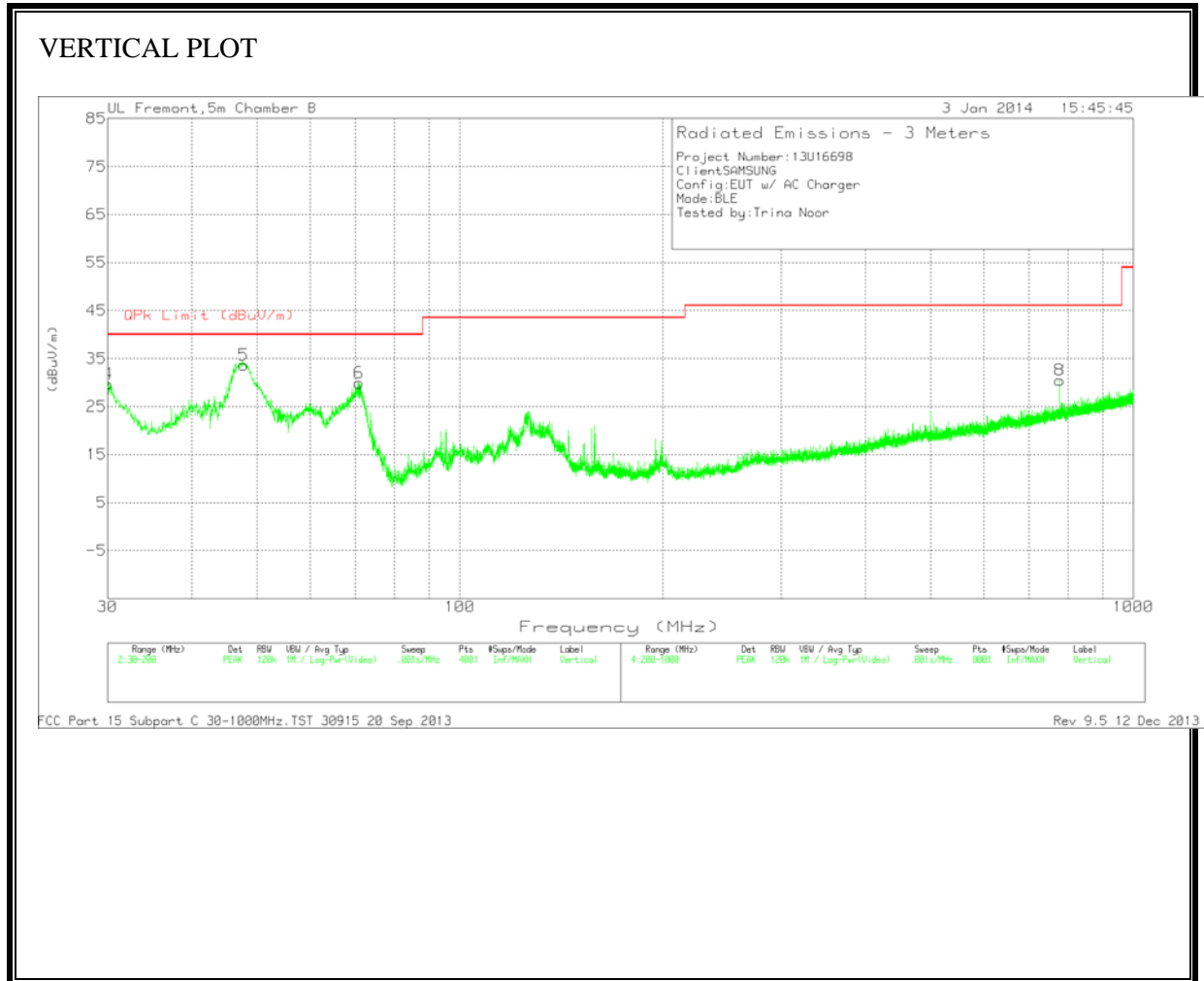
| Freq. (MHz) | Pk Rdg (dBuV) | Av Rdg (dBuV) | AF (dB) | Closs (dB) | Pre-amp (dB) | Pk Level (dBuV/m) | Av Level (dBuV/m) | Pk Limit FCC B | Av Limit FCC B | Pk Margin (dB) | Avg Margin (dB) | Pol (H/V) | Az (Deg) | Height (Meter) |
|----------------|------------------|------------------|------------|---------------|-----------------|----------------------|----------------------|-------------------|-------------------|-------------------|--------------------|--------------|-------------|-------------------|
| Low channel | | | | | | | | | | | | | | |
| 4804.00 | 26.17 | 15.39 | 32.10 | -22.80 | 0.00 | 35.47 | 24.69 | 74.00 | 54.00 | -38.53 | -29.31 | 3mV | 0.00 | 1.00 |
| 4804.00 | 26.16 | 15.51 | 32.10 | -22.80 | 0.00 | 35.46 | 24.81 | 74.00 | 54.00 | -38.54 | -29.19 | 3mH | 0.00 | 2.00 |
| Mid channel | | | | | | | | | | | | | | |
| 4884.00 | 25.99 | 15.45 | 32.10 | -22.80 | 0.00 | 35.29 | 24.75 | 74.00 | 54.00 | -38.71 | -29.25 | 3mV | 0.00 | 1.00 |
| 4884.00 | 25.89 | 15.49 | 32.10 | -22.80 | 0.00 | 35.19 | 24.79 | 74.00 | 54.00 | -38.81 | -29.21 | 3mH | 0.00 | 2.00 |
| High channel | | | | | | | | | | | | | | |
| 4960.00 | 25.82 | 15.25 | 32.10 | -22.80 | 0.00 | 35.12 | 24.55 | 74.00 | 54.00 | -38.88 | -29.45 | 3mV | 0.00 | 1.00 |
| 4960.00 | 25.95 | 15.51 | 32.10 | -22.80 | 0.00 | 35.25 | 24.81 | 74.00 | 54.00 | -38.75 | -29.19 | 3mH | 0.00 | 2.00 |

7.2.4. SPURIOUS BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (VERTICAL)



Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T243 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 1 | 30.0425 | 28.65 | PK | 20.9 | -28.9 | 20.65 | 40 | -19.35 | 0-360 | 200 | H |
| 4 | 30.0425 | 37.68 | PK | 20.9 | -28.9 | 29.68 | 40 | -10.32 | 0-360 | 101 | V |
| 5 | 47.765 | 53.63 | PK | 8.6 | -28.6 | 33.63 | 40 | -6.37 | 0-360 | 101 | V |
| 2 | 70.4175 | 41.06 | PK | 7.9 | -28.4 | 20.56 | 40 | -19.44 | 0-360 | 200 | H |
| 6 | 70.8425 | 50.42 | PK | 7.9 | -28.4 | 29.92 | 40 | -10.08 | 0-360 | 101 | V |
| 3 | 125.2 | 43.55 | PK | 14.1 | -27.8 | 29.85 | 43.52 | -13.67 | 0-360 | 200 | H |
| 7 | 724.5 | 30.65 | PK | 20.4 | -24.5 | 26.55 | 46.02 | -19.47 | 0-360 | 300 | H |
| 8 | 777.3 | 33.5 | PK | 21.1 | -24.1 | 30.5 | 46.02 | -15.52 | 0-360 | 101 | V |

PK - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 20 Sep 2013 Rev 9.5 12 Dec 2013

7.3. RECEIVER RADIATED EMISSION

TEST PROCEDURE

ANSI C63.4

LIMIT

IC RSS-210
FCC 15.249

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009–0.490 | 2400/F(kHz) | 300 |
| 0.490–1.705 | 24000/F(kHz) | 30 |
| 1.705–30.0 | 30 | 30 |
| 30–88 | 100 ** | 3 |
| 88–216 | 150 ** | 3 |
| 216–960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

RESULTS

The EUT is set to continuously transmit in ANT + test mode only,. Skip receiver mode

8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|-----------------------------|------------------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4 - 2009

RESULTS

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L1 (dB) | LC Cables 1&3 (dB) | Corrected Reading dB(uVolts) | CISPR 11/22 Class B Quasi-peak | Margin to Limit (dB) | CISPR 11/22 Class B Average | Margin to Limit (dB) |
|--------|-----------------|----------------------|-----|----------------|--------------------|------------------------------|--------------------------------|----------------------|-----------------------------|----------------------|
| 1 | .15 | 47.33 | PK | .1 | 0 | 47.43 | 66 | -18.57 | - | - |
| 2 | .15 | 27.32 | Av | .1 | 0 | 27.42 | - | - | 56 | -28.58 |
| 3 | .2715 | 48.19 | PK | .1 | 0 | 48.29 | 61.1 | -12.81 | - | - |
| 4 | .2715 | 30.28 | Av | .1 | 0 | 30.38 | - | - | 51.1 | -20.72 |
| 5 | 4.5285 | 43.94 | PK | .1 | .1 | 44.14 | 56 | -11.86 | - | - |
| 6 | 4.5285 | 20.17 | Av | .1 | .1 | 20.37 | - | - | 46 | -25.63 |
| 7 | 13.5555 | 30.39 | PK | .2 | .2 | 30.79 | 60 | -29.21 | - | - |
| 8 | 13.5555 | 20.65 | Av | .2 | .2 | 21.05 | - | - | 50 | -28.95 |
| 9 | 27.123 | 27.49 | PK | .5 | .3 | 28.29 | 60 | -31.71 | - | - |
| 10 | 27.123 | 1.61 | Av | .5 | .3 | 2.41 | - | - | 50 | -47.59 |

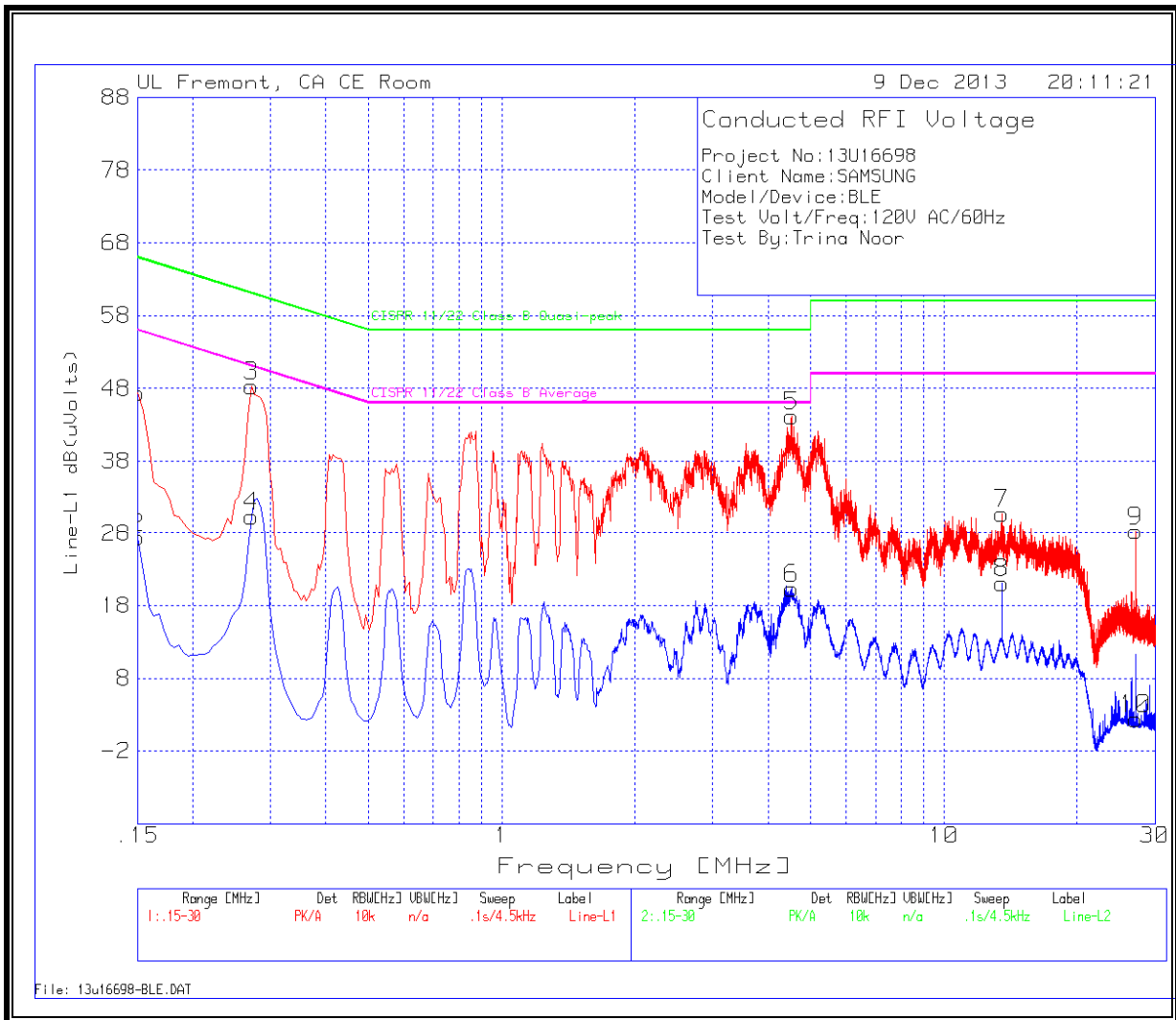
Line-L2 .15 - 30MHz

Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L2 (dB) | LC Cables 2&3 (dB) | Corrected Reading dB(uVolts) | CISPR 11/22 Class B Quasi-peak | Margin to Limit (dB) | CISPR 11/22 Class B Average | Margin to Limit (dB) |
|--------|-----------------|----------------------|-----|----------------|--------------------|------------------------------|--------------------------------|----------------------|-----------------------------|----------------------|
| 11 | .15 | 47.51 | PK | .1 | 0 | 47.61 | 66 | -18.39 | - | - |
| 12 | .15 | 23.77 | Av | .1 | 0 | 23.87 | - | - | 56 | -32.13 |
| 13 | .2715 | 47.72 | PK | .1 | 0 | 47.82 | 61.1 | -13.28 | - | - |
| 14 | .2715 | 28.02 | Av | .1 | 0 | 28.12 | - | - | 51.1 | -22.98 |
| 15 | 5.181 | 40.19 | PK | .1 | .1 | 40.39 | 60 | -19.61 | - | - |
| 16 | 5.181 | 18.51 | Av | .1 | .1 | 18.71 | - | - | 50 | -31.29 |
| 17 | 13.6545 | 27 | PK | .2 | .2 | 27.4 | 60 | -32.6 | - | - |
| 18 | 13.6545 | 12.29 | Av | .2 | .2 | 12.69 | - | - | 50 | -37.31 |

PK - Peak detector
 Av - average detection

LINE 1 RESULTS



LINE 2 RESULTS

