



FCC CFR47 PART 15 SUBPART C

DTS Wireless LAN

CERTIFICATION TEST REPORT

FOR

CDMA Watch + Bluetooth/BLE and DTS b/g/n

MODEL NUMBER : SM-R735V

FCC ID: A3LSMR735C

REPORT NUMBER: 16K22865-E1V3

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| V1 | 02/22/16 | Initial issue | Junwhan Lee |
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| V3 | 02/29/16 | Revised test setup photo (portable) | Junwhan Lee |

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: CDMA Watch + Bluetooth/BLE and DTS b/g/n
MODEL NUMBER: SM-R735C
SERIAL NUMBER: A0000047485158, A0000047485152 (RADIATED);
A000004748515A (CONDUCTED)
DATE TESTED: FEB 17, 2016 - FEB 19, 2016

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

UL Korea, Ltd. 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 Korea, Ltd. 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 Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. 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 IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Korea, Ltd. By:



CY Choi
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:



Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

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 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| |
|---|
| 218 Maeyeong-ro |
| <input checked="" type="checkbox"/> Chamber 1 |
| <input checked="" type="checkbox"/> Chamber 2 |

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

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 | 2.32 dB |
| Radiated Disturbance, Below 1GHz | 4.14 dB |
| Radiated Disturbance, Above 1 GHz | 5.97 dB |

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is CDMA Watch + Bluetooth/BLE and DTS b/g/n.
This test report addresses the DTS (WLAN) operational mode.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted output power as follows:

| Frequency Range [MHz] | Mode | Output Power [dBm] | Output Power [mW] |
|--------------------------|--------------|-----------------------|----------------------|
| 2412 - 2462 | 802.11b | 16.67 | 46.45 |
| | 802.11g | 13.40 | 21.88 |
| | 802.11n HT20 | 12.37 | 17.26 |

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antennas, with a antenna's maximum gain of -6.8 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 and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20 mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

| Support Equipment List | | | | |
|------------------------|--------------|-------------|----------------|------------|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| Adapter | SAMSUNG | EP-TA20JWE | R37GB7Q0FK2SE3 | N/A |
| Data Cable | SAMSUNG | EP-DG925UWZ | N/A | N/A |
| Wireless Charger | SAMSUNG | EP-OR720 | RF7G91V4JKJTYS | A3LEPOR720 |

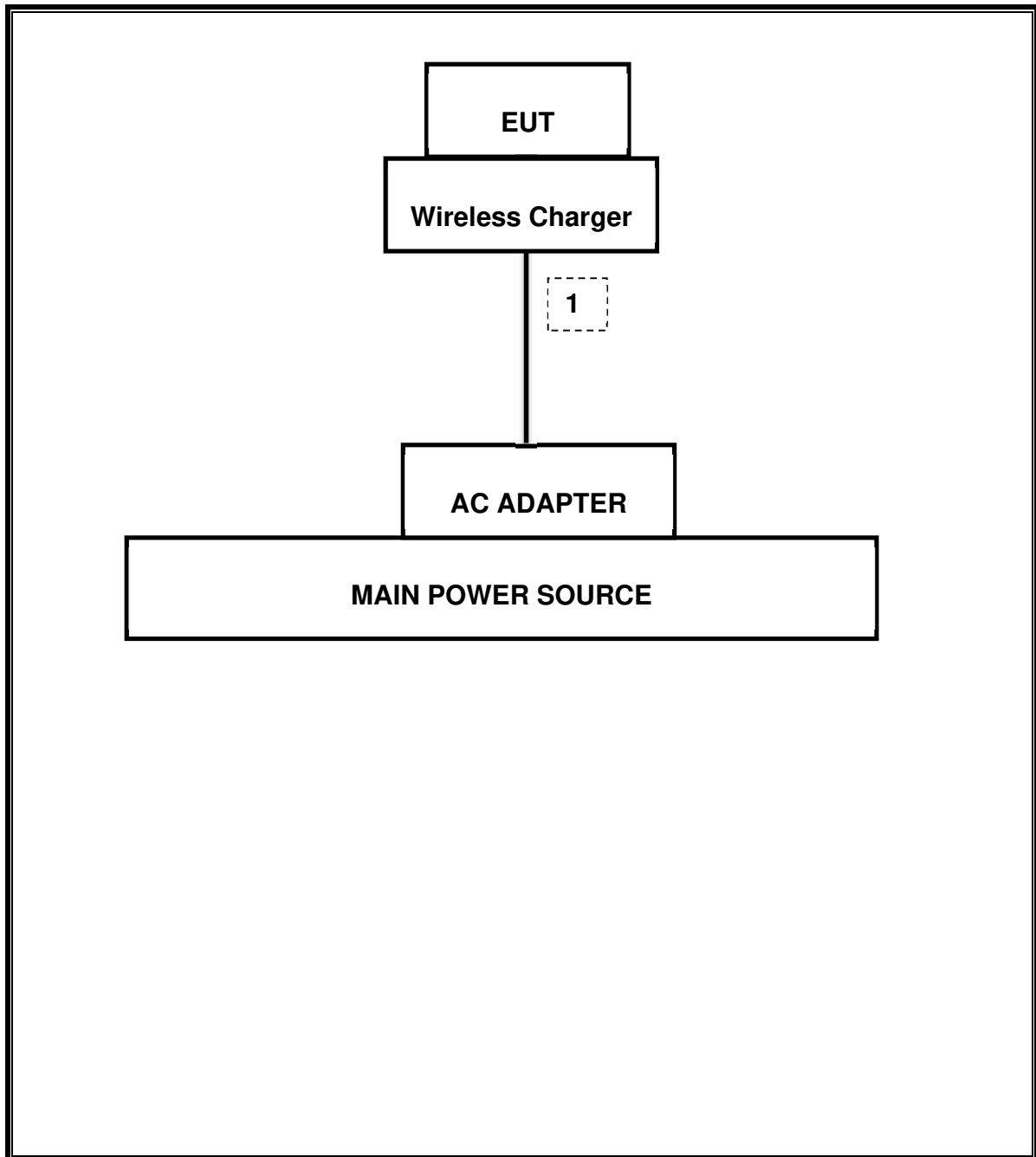
I/O CABLES

| 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 | 0.8m | N/A |

TEST SETUP

The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable DTS mode.

SETUP DIAGRAM FOR TESTS



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 | S/N | Cal Due |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK | VULB9163 | 750 | 11-17-16 |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK | VULB9163 | 749 | 04-25-17 |
| Antenna, Horn, 18 GHz | ETS | 3115 | 00167211 | 09-20-16 |
| Antenna, Horn, 18 GHz | ETS | 3115 | 00161451 | 05-17-17 |
| Antenna, Horn, 18 GHz | ETS | 3117 | 00168724 | 06-17-17 |
| Antenna, Horn, 18 GHz | ETS | 3117 | 00168717 | 06-17-17 |
| Antenna, Horn, 40 GHz | ETS | 3116C | 00166155 | 09-23-16 |
| Antenna, Horn, 40 GHz | ETS | 3116C-PA | 00168841 | 08-24-17 |
| Preamplifier, 1000 MHz | Sonoma | 310N | 341282 | 08-18-16 |
| Preamplifier, 1000 MHz | Sonoma | 310N | 351741 | 08-18-16 |
| Preamplifier, 18 GHz | Miteq | AFS42-00101800-25-S-42 | 1876511 | 08-18-16 |
| Preamplifier, 18 GHz | Miteq | AFS42-00101800-25-S-42 | 1896138 | 08-18-16 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | N9030A | MY54170614 | 08-19-16 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | N9030A | MY54490312 | 08-19-16 |
| Bluetooth Tester | TESCOM | TC-3000C | 3000C000546 | 08-18-16 |
| Average Power Sensor | R&S | NRZ-Z91 | 102681 | 08-18-16 |
| Average Power Sensor | Agilent / HP | U2000 | MY54270007 | 08-18-16 |
| EMI Test Receive, 40 GHz | R&S | ESU40 | 100439 | 08-19-16 |
| EMI Test Receive, 40 GHz | R&S | ESU40 | 100457 | 08-19-16 |
| EMI Test Receive, 3 GHz | R&S | ESR3 | 101832 | 08-19-16 |
| Attenuator / Switch driver | HP | 11713A | 3748A04272 | N/A |
| Low Pass Filter 3GHz | Micro-Tronics | LPS17541 | 009 | 08-18-16 |
| Low Pass Filter 3GHz | Micro-Tronics | LPS17541 | 015 | 08-18-16 |
| High Pass Filter 5GHz | Micro-Tronics | HPS17542 | 009 | 08-18-16 |
| High Pass Filter 6GHz | Micro-Tronics | HPM17543 | 010 | 08-18-16 |
| High Pass Filter 5GHz | Micro-Tronics | HPS17542 | 016 | 08-18-16 |
| High Pass Filter 6GHz | Micro-Tronics | HPM17543 | 015 | 08-18-16 |
| LISN | R&S | ENV-216 | 101836 | 08-19-16 |
| LISN | R&S | ENV-216 | 101837 | 08-19-16 |

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r04: Measurement Procedure §9.2.3.1 AVGP is used for average power and §10.5 AVGPS-2 is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

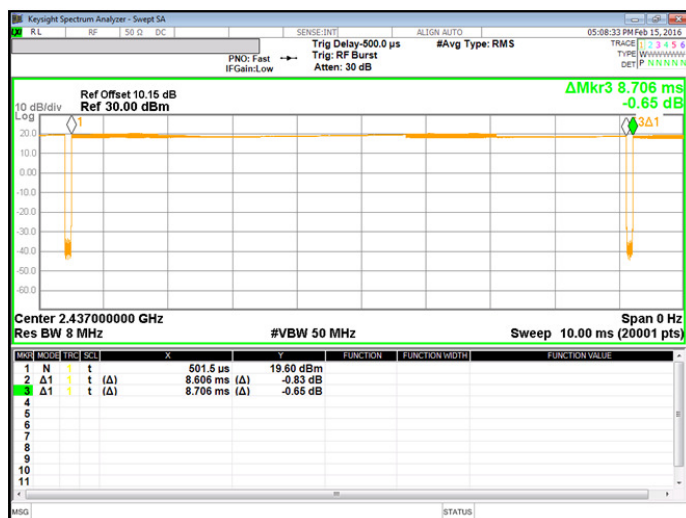
8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

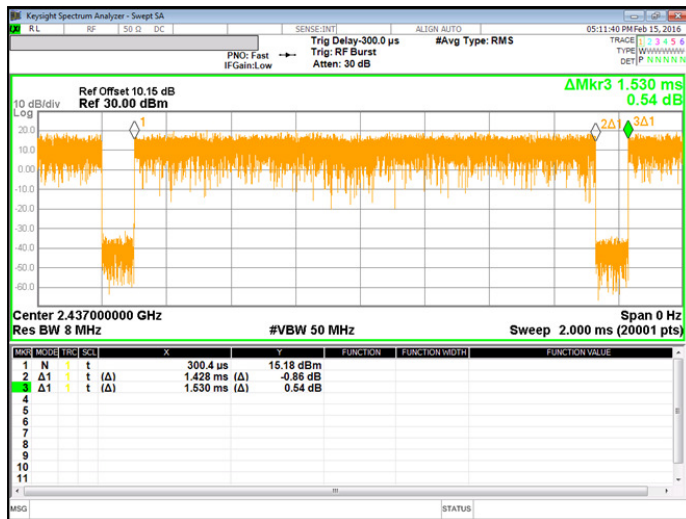
None; for reporting purposes only.

8.1. ON TIME AND DUTY CYCLE RESULTS

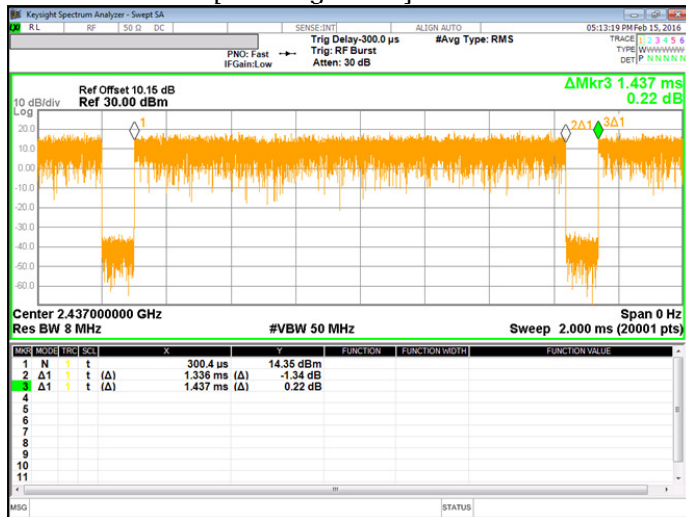
| Mode | ON Time B [msec] | Period [msec] | Duty Cycle x [linear] | Duty Cycle [%] | Duty Cycle Correction Factor [dB] | 1/T Minimum VBW [kHz] |
|----------------------|------------------------|------------------|-----------------------------|----------------------|---|-----------------------------|
| 2400MHz Bands | | | | | | |
| 802.11b | 8.606 | 8.706 | 0.989 | 98.9% | 0.00 | 0.010 |
| 802.11g | 1.428 | 1.53 | 0.933 | 93.3% | 0.30 | 0.700 |
| 802.11n HT20 | 1.336 | 1.437 | 0.930 | 93.0% | 0.32 | 0.749 |



[802.11b Mode]



[802.11g Mode]



[802.11n Mode]

9. SUMMARY TABLE

| FCC Part Section | Test Description | Test Limit | Test Condition | Test Result | Worst Case |
|--------------------|---|------------|----------------------|-------------|-------------------|
| 15.247 (a)(2) | Occupied Band width (6dB) | >500KHz | Conducted | Pass | 9.036 MHz |
| 2.1051, 15.247 (d) | Band Edge / Conducted Spurious Emission | -30dBc | | Pass | -30.153 dBm |
| 15.247 | TX conducted output power | <30dBm | | Pass | 16.67 dBm |
| 15.247 | PSD | <8dBm | | Pass | -14.18 dBm |
| 15.207 (a) | AC Power Line conducted emissions | Section 10 | Power Line conducted | Pass | 46.87 dBuV (PK) |
| 15.205, 15.209 | Radiated Spurious Emission | < 54dBuV/m | Radiated | Pass | 48.93 dBuV/m (AV) |

10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r04: The transmitter output is connected to a spectrum analyzer with the RBW set to 100kHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

10.1.1. 802.11b MODE IN THE 2.4 GHz BAND

| Channel | Frequency [MHz] | 6 dB Bandwidth [MHz] | Minimum Limit [MHz] |
|---------|-----------------|----------------------|---------------------|
| Low | 2412 | 10.020 | 0.5 |
| Mid | 2437 | 9.043 | 0.5 |
| High | 2462 | 9.036 | 0.5 |
| Worst | | 9.036 | 0.5 |

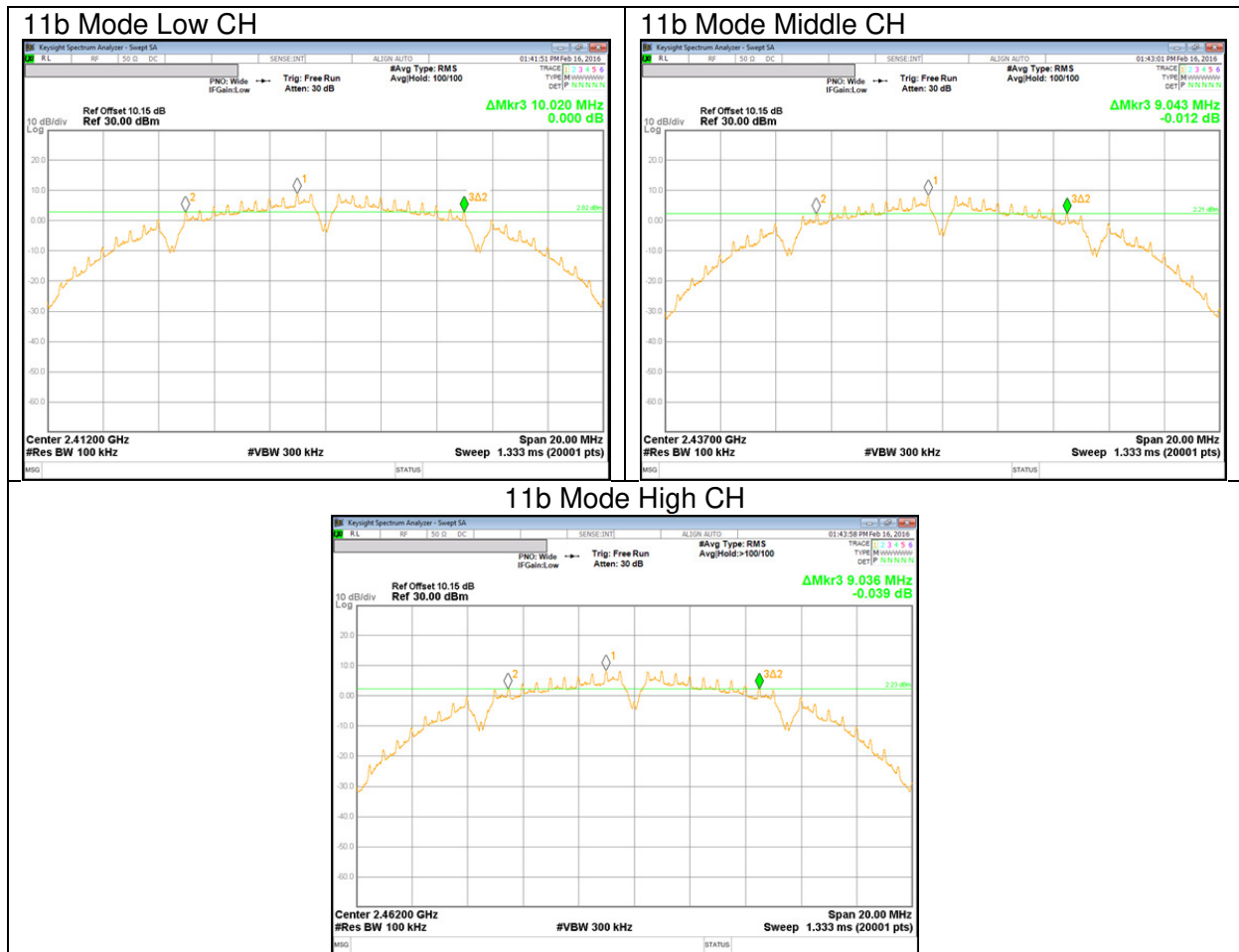
10.1.2. 802.11g MODE IN THE 2.4 GHz BAND

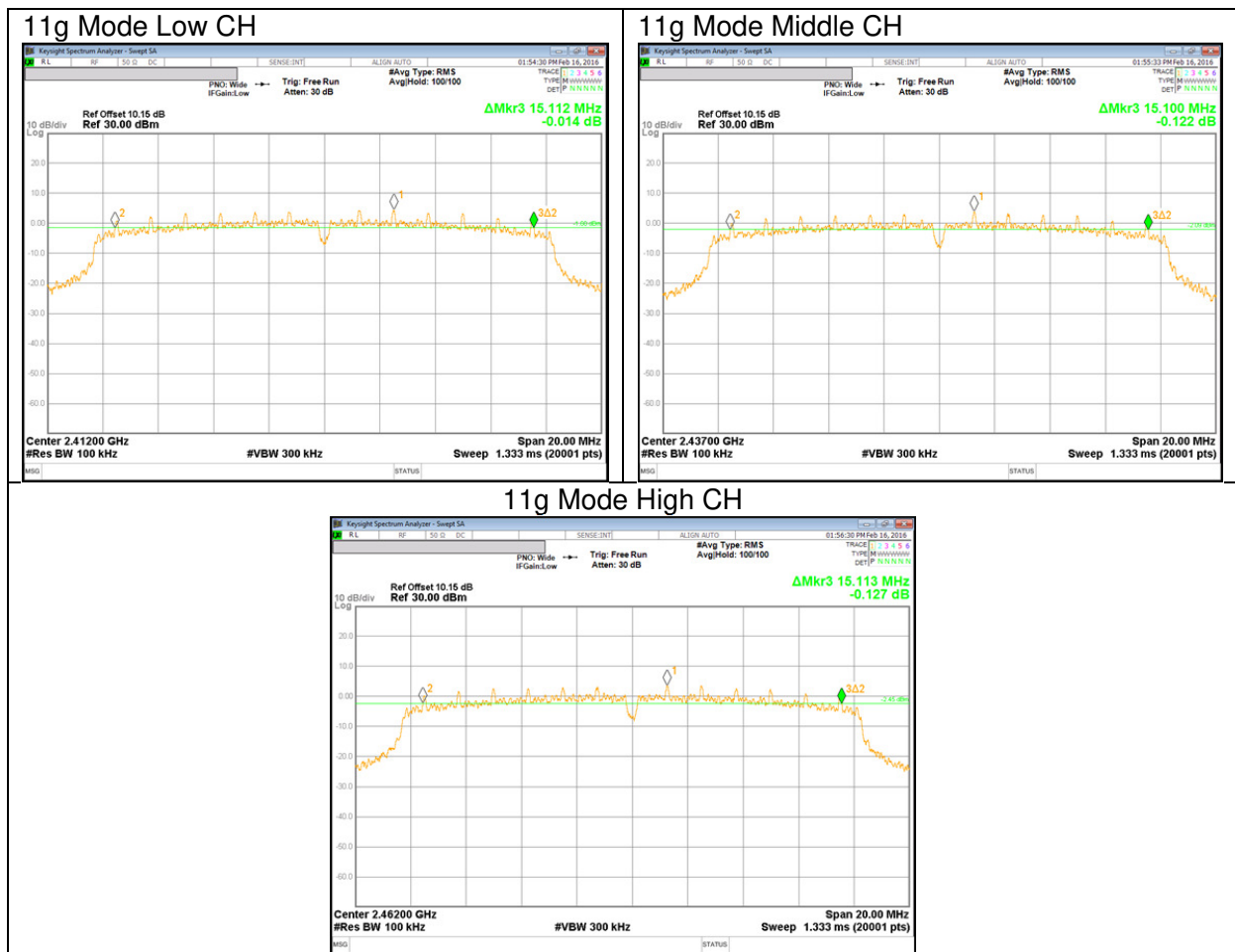
| Channel | Frequency [MHz] | 6 dB Bandwidth [MHz] | Minimum Limit [MHz] |
|---------|-----------------|----------------------|---------------------|
| Low | 2412 | 15.112 | 0.5 |
| Mid | 2437 | 15.100 | 0.5 |
| High | 2462 | 15.113 | 0.5 |
| Worst | | 15.100 | 0.5 |

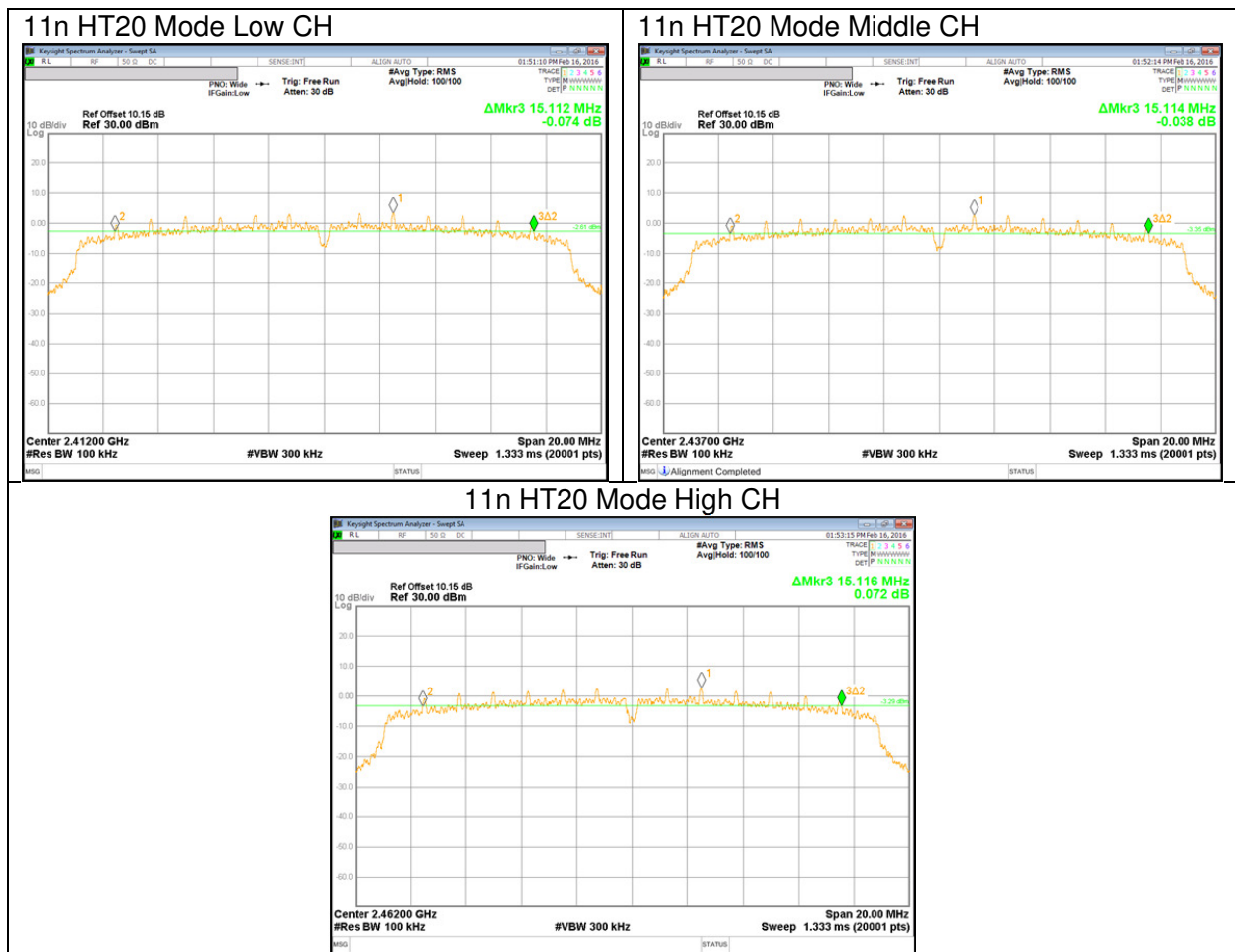
10.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

| Channel | Frequency [MHz] | 6 dB Bandwidth [MHz] | Minimum Limit [MHz] |
|---------|-----------------|----------------------|---------------------|
| Low | 2412 | 15.112 | 0.5 |
| Mid | 2437 | 15.114 | 0.5 |
| High | 2462 | 15.116 | 0.5 |
| Worst | | 15.112 | 0.5 |

10.1.4. 6 dB BANDWIDTH PLOTS







10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.2.1. 802.11b MODE IN THE 2.4 GHz BAND

| Channel | Frequency [MHz] | 99% Bandwidth [MHz] |
|---------|-----------------|---------------------|
| Low | 2412 | 14.138 |
| Mid | 2437 | 14.202 |
| High | 2462 | 14.174 |
| Worst | | 14.202 |

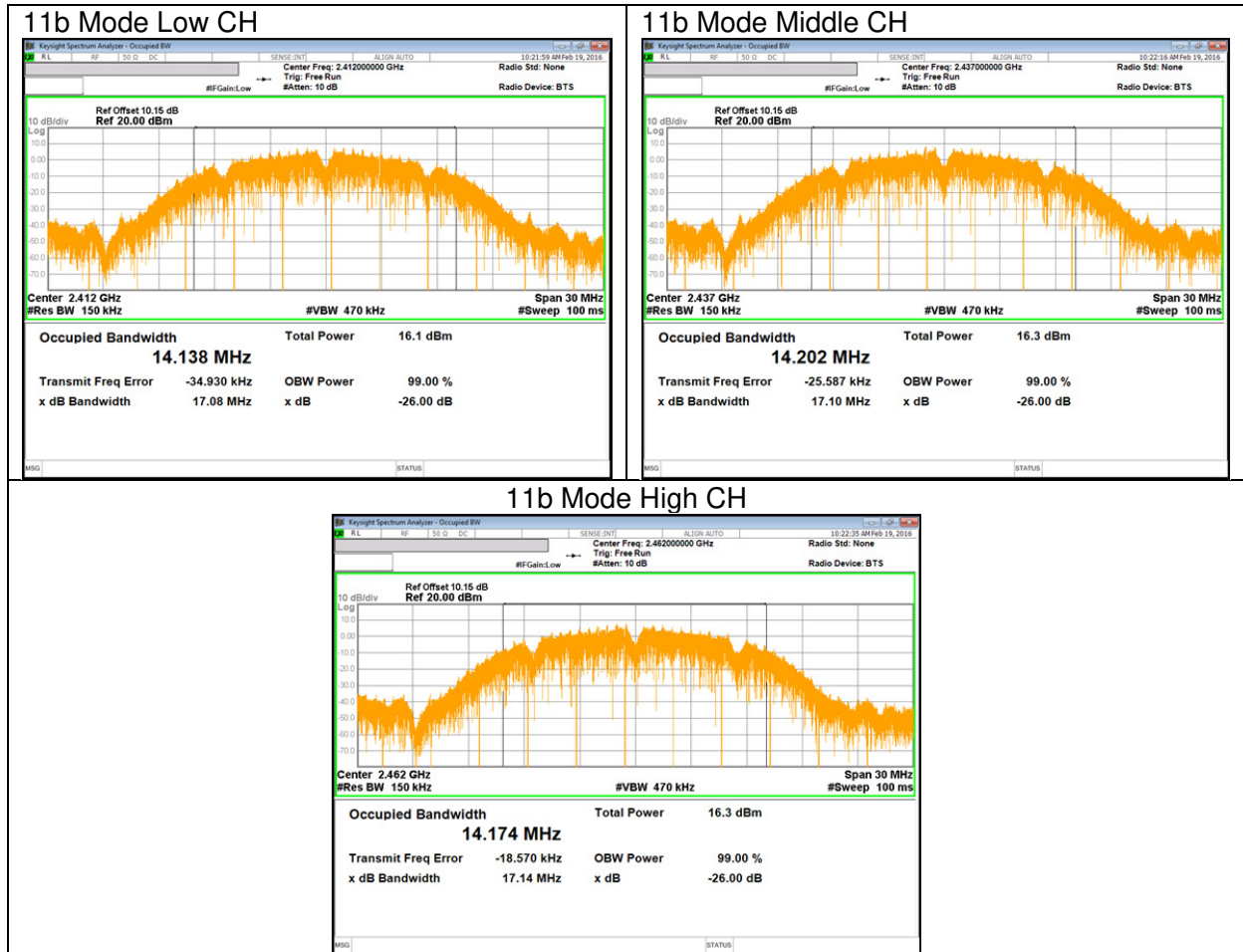
10.2.2. 802.11g MODE IN THE 2.4 GHz BAND

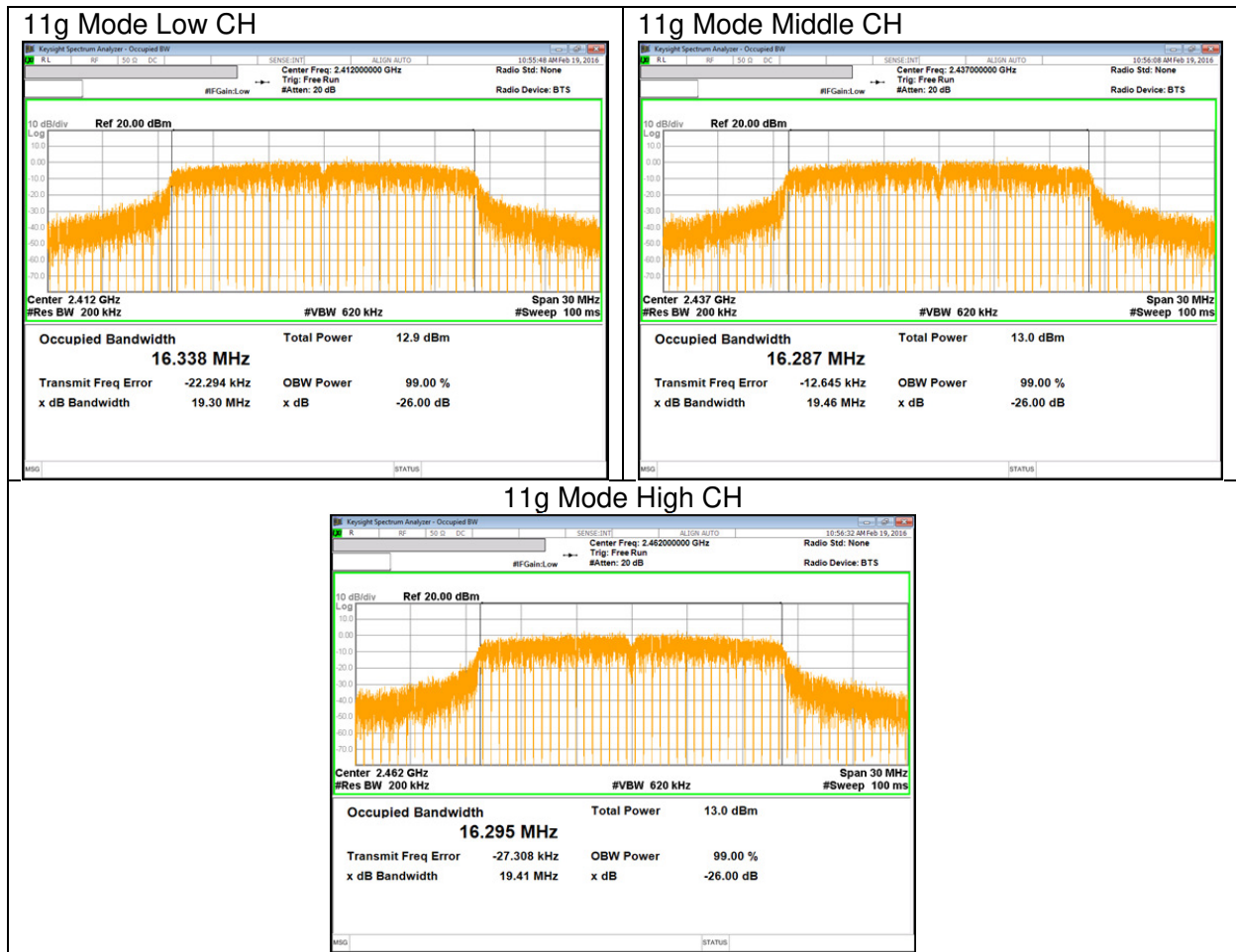
| Channel | Frequency [MHz] | 99% Bandwidth [MHz] |
|---------|-----------------|---------------------|
| Low | 2412 | 16.338 |
| Mid | 2437 | 16.287 |
| High | 2462 | 16.295 |
| Worst | | 16.338 |

10.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

| Channel | Frequency [MHz] | 99% Bandwidth [MHz] |
|---------|-----------------|---------------------|
| Low | 2412 | 17.436 |
| Mid | 2437 | 17.449 |
| High | 2462 | 17.457 |
| Worst | | 17.457 |

10.2.4. 99% BANDWIDTH PLOTS







10.3. OUTPUT POWER

LIMITS

FCC §15.247

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.1 dB (including 10 dB pad and 0.1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Duty cycle correction factor is already added to the average output power results for duty cycle factor < 98%. (802.11g, 802.11n mode)

RESULTS

10.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

| Channel | Frequency [MHz] | Directional Gain Primary [dBi] | FCC Power Limit [dBm] | IC Power Limit [dBm] | IC EIRP Limit [dBm] | Max Power [dBm] |
|---------|--------------------|---|--------------------------------|-------------------------------|------------------------------|-----------------------|
| Low | 2412 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |
| Mid | 2437 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |
| High | 2462 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |

Results

| Channel | Frequency [MHz] | Primary Meas Power [dBm] | Total Corr'd Power [dBm] | Power Limit [dBm] | Margin [dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-------------------------|----------------|
| Low | 2412 | 16.57 | 16.57 | 30.00 | -13.43 |
| Mid | 2437 | 16.56 | 16.56 | 30.00 | -13.44 |
| High | 2462 | 16.67 | 16.67 | 30.00 | -13.33 |
| Worst | | | 16.67 | 30.00 | -13.33 |

10.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

| Channel | Frequency [MHz] | Directional Gain Primary [dBi] | FCC Power Limit [dBm] | IC Power Limit [dBm] | IC EIRP Limit [dBm] | Max Power [dBm] |
|---------|--------------------|---|--------------------------------|-------------------------------|------------------------------|-----------------------|
| Low | 2412 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |
| Mid | 2437 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |
| High | 2462 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |

Results

| Channel | Frequency [MHz] | Primary Meas Power [dBm] | Total Corr'd Power [dBm] | Power Limit [dBm] | Margin [dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-------------------------|----------------|
| Low | 2412 | 13.13 | 13.13 | 30.00 | -16.87 |
| Mid | 2437 | 13.26 | 13.26 | 30.00 | -16.74 |
| High | 2462 | 13.40 | 13.40 | 30.00 | -16.60 |
| Worst | | | 13.40 | 30.00 | -16.60 |

10.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

| Channel | Frequency [MHz] | Directional Gain Primary [dBi] | FCC Power Limit [dBm] | IC Power Limit [dBm] | IC EIRP Limit [dBm] | Max Power [dBm] |
|---------|--------------------|---|--------------------------------|-------------------------------|------------------------------|-----------------------|
| Low | 2412 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |
| Mid | 2437 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |
| High | 2462 | -6.80 | 30.00 | 30.00 | 36.00 | 30.00 |

Results

| Channel | Frequency [MHz] | Primary Meas Power [dBm] | Total Corr'd Power [dBm] | Power Limit [dBm] | Margin [dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-------------------------|----------------|
| Low | 2412 | 12.11 | 12.11 | 30.00 | -17.89 |
| Mid | 2437 | 12.25 | 12.25 | 30.00 | -17.75 |
| High | 2462 | 12.37 | 12.37 | 30.00 | -17.63 |
| Worst | | | 12.37 | 30.00 | -17.63 |

10.4. PSD

LIMITS

FCC §15.247

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Power Spectral Density was performed utilizing the "Method AVGPS-2" under KDB558074 D01 DTS Meas Guidance v03r04

RESULTS

10.4.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

| Channel | Frequency [MHz] | PSD Meas [dBm] | Duty Factor [dB] | Final PSD [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------|------------------|-----------------|-------------|-------------|
| Low | 2412 | -14.424 | 0.00 | -14.424 | 8.00 | -22.424 |
| Mid | 2437 | -14.218 | 0.00 | -14.218 | 8.00 | -22.218 |
| High | 2462 | -14.180 | 0.00 | -14.180 | 8.00 | -22.180 |

10.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

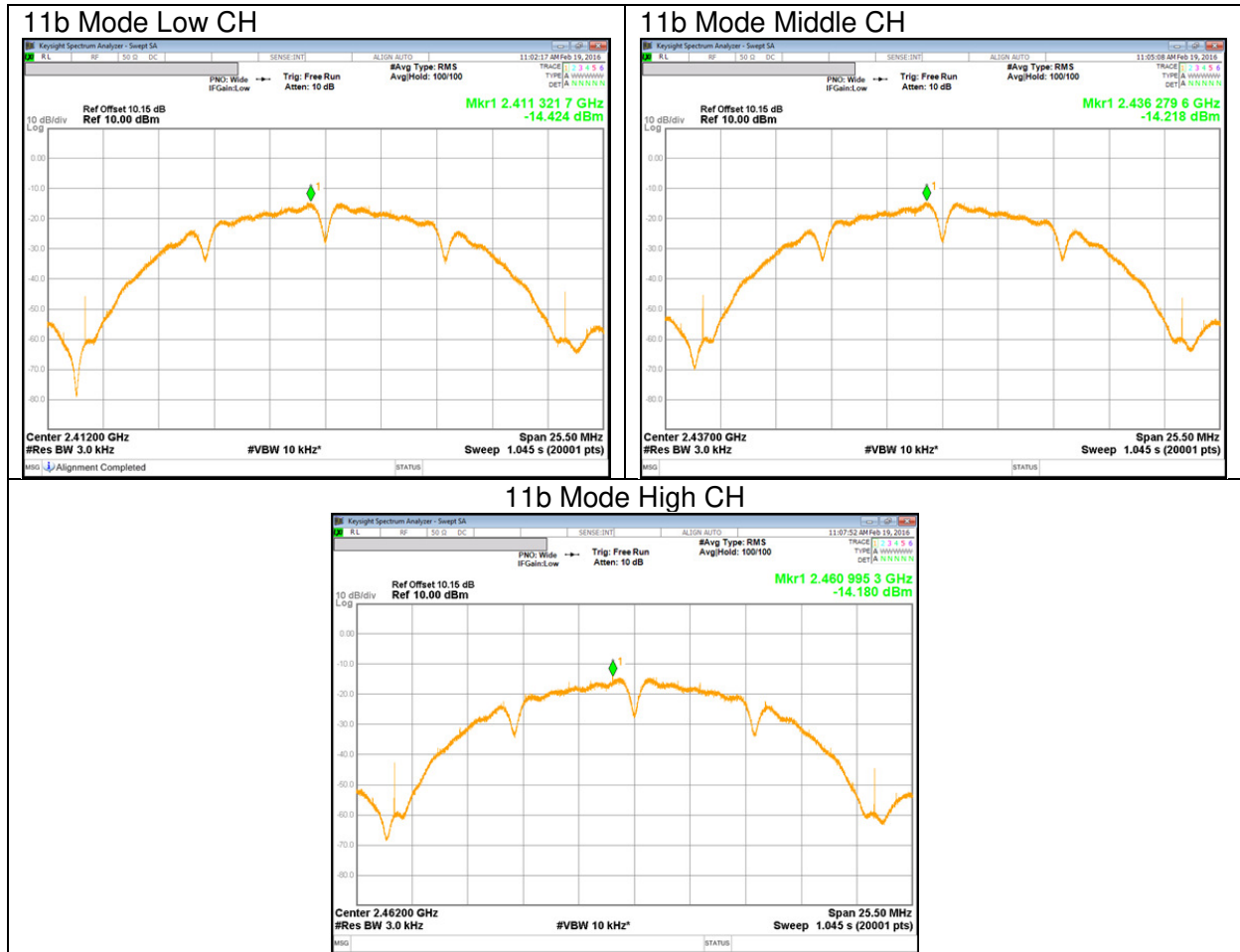
| Channel | Frequency [MHz] | PSD Meas [dBm] | Duty Factor [dB] | Final PSD [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------|------------------|-----------------|-------------|-------------|
| Low | 2412 | -20.504 | 0.30 | -20.204 | 8.00 | -28.504 |
| Mid | 2437 | -20.453 | 0.30 | -20.153 | 8.00 | -28.453 |
| High | 2462 | -20.065 | 0.30 | -19.765 | 8.00 | -28.065 |

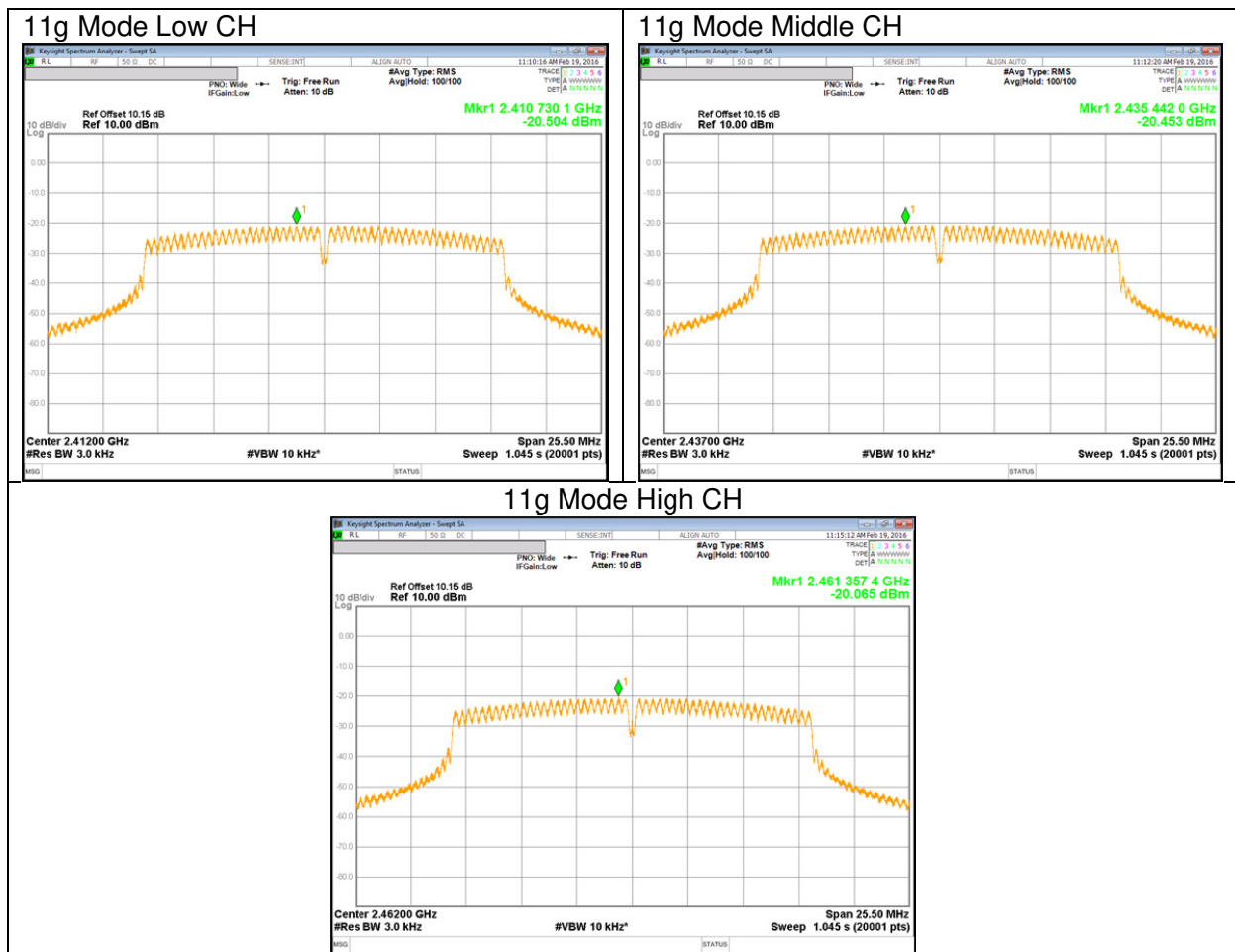
10.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

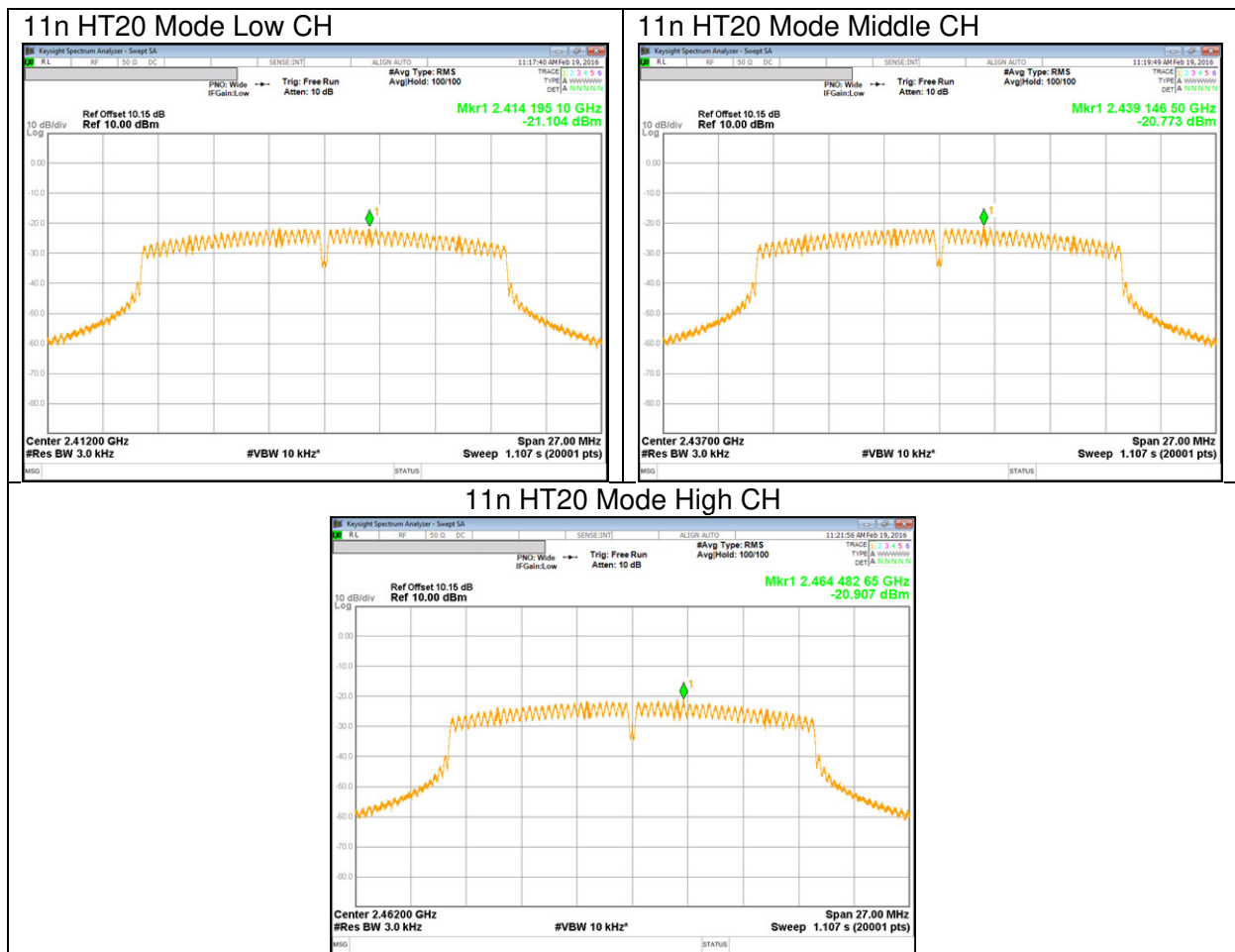
PSD Results

| Channel | Frequency [MHz] | PSD Meas [dBm] | Duty Factor [dB] | Final PSD [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------|------------------|-----------------|-------------|-------------|
| Low | 2412 | -21.104 | 0.32 | -20.784 | 8.00 | -29.104 |
| Mid | 2437 | -20.773 | 0.32 | -20.453 | 8.00 | -28.773 |
| High | 2462 | -20.907 | 0.32 | -20.587 | 8.00 | -28.907 |

10.4.4. PSD PLOTS







10.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

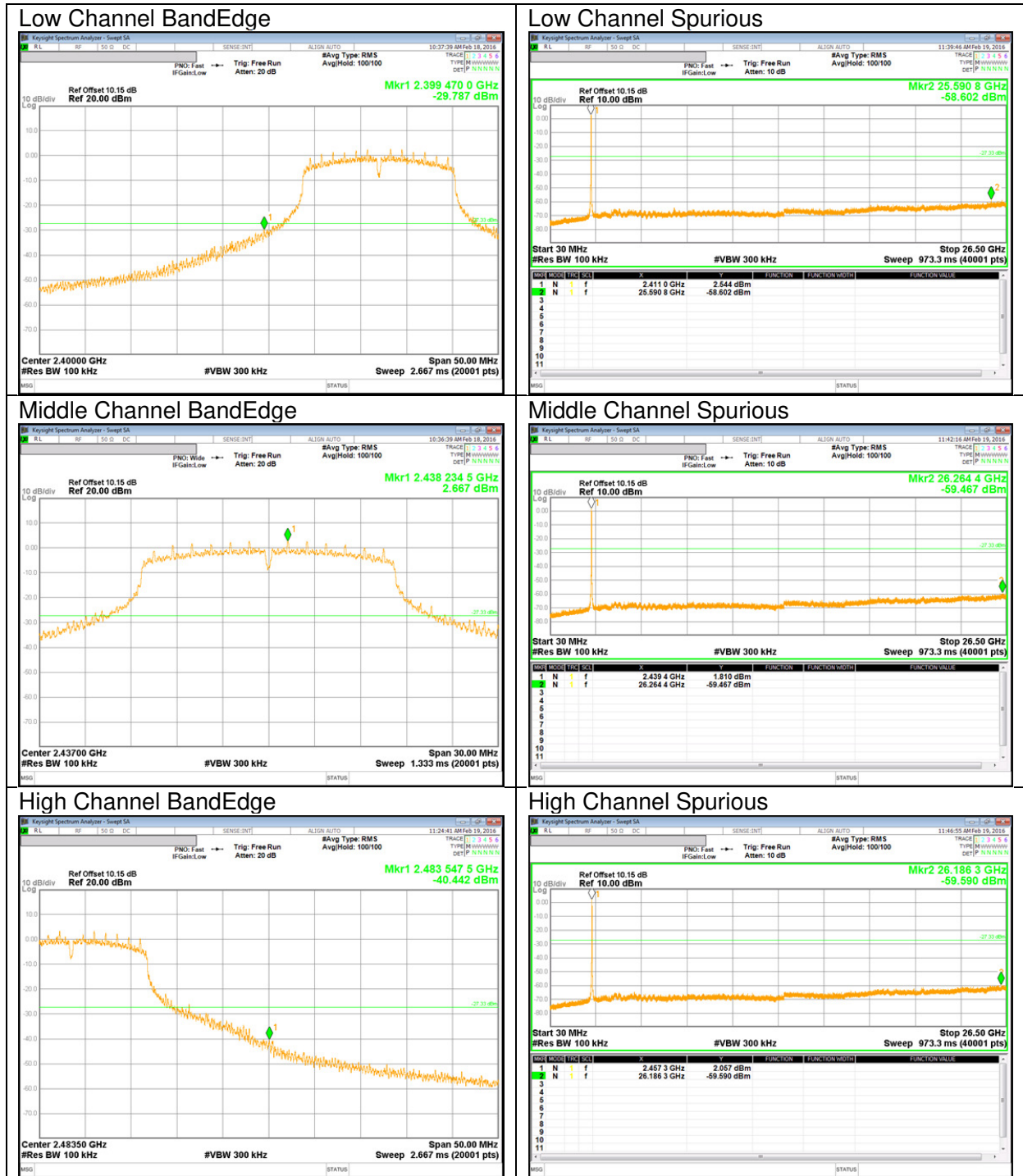
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

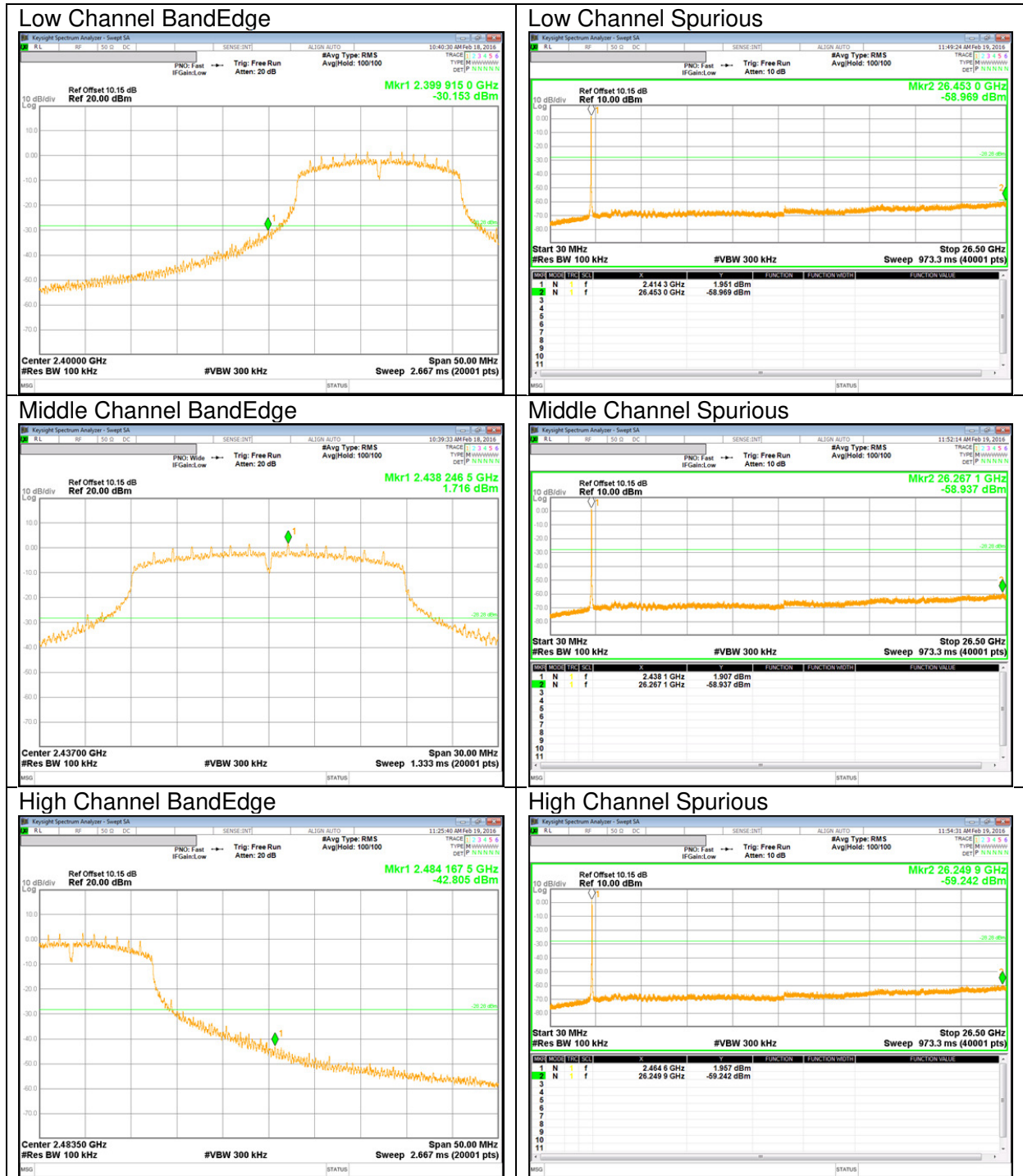
10.5.1. 802.11b MODE IN THE 2.4 GHz BAND



10.5.2. 802.11g MODE IN THE 2.4 GHz BAND



10.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND



11. RADIATED TEST RESULTS

11.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|-----------------------|------------------------------------|--------------------------------------|
| 30 - 88 | 100 | 40 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor = $10\log(1/x)$ For this sample B mode = 0dB (duty cycle >98%); G mode = 0.30dB; N mode = 0.32dB.

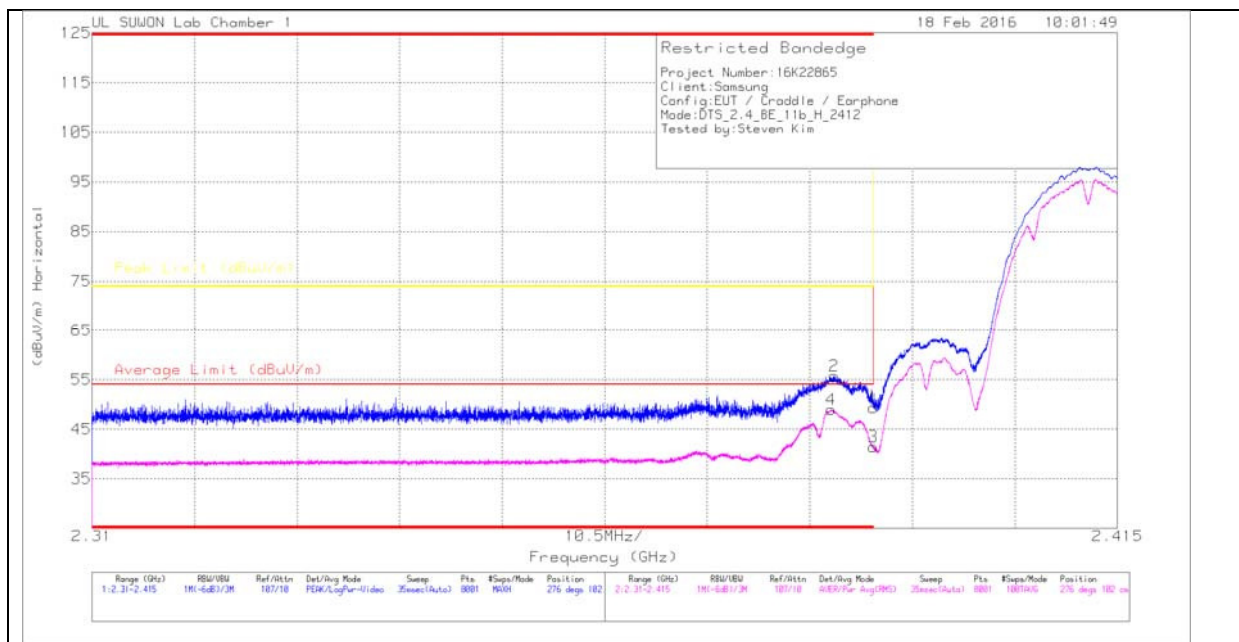
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

11.2. TRANSMITTER ABOVE 1 GHz

11.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

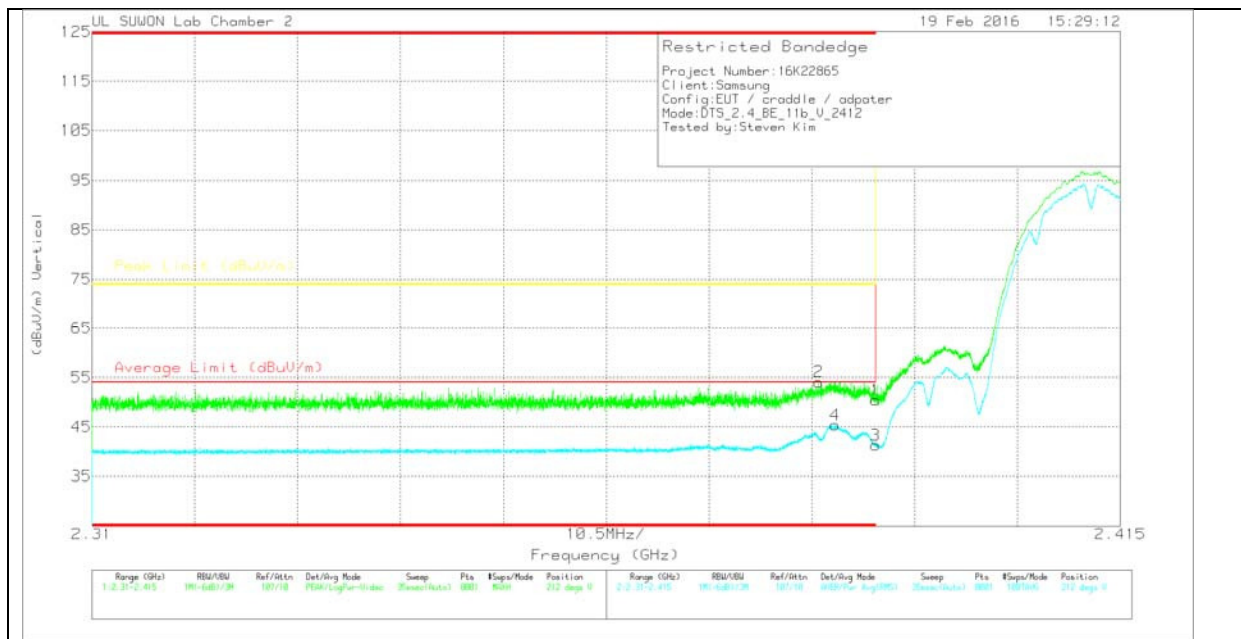
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 17_150619) | Path_2 | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|--------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.39 | 46.57 | Pk | 31.8 | -29 | 0 | 49.37 | - | - | 74 | -24.63 | 276 | 102 | H |
| 2 | * 2.386 | 52.91 | Pk | 31.8 | -29 | 0 | 55.71 | - | - | 74 | -18.29 | 276 | 102 | H |
| 3 | * 2.39 | 38.68 | RMS | 31.8 | -29 | 0 | 41.48 | 54 | -12.52 | - | - | 276 | 102 | H |
| 4 | * 2.386 | 46.13 | RMS | 31.8 | -29 | 0 | 48.93 | 54 | -5.07 | - | - | 276 | 102 | H |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.39 | 38.22 | Pk | 31.7 | -19.5 | 0 | 50.42 | - | - | 74 | -23.58 | 212 | 297 | V |
| 2 | * 2.384 | 41.9 | Pk | 31.7 | -19.5 | 0 | 54.1 | - | - | 74 | -19.9 | 212 | 297 | V |
| 3 | * 2.39 | 29.15 | RMS | 31.7 | -19.5 | 0 | 41.35 | 54 | -12.65 | - | - | 212 | 297 | V |
| 4 | * 2.386 | 33.17 | RMS | 31.7 | -19.5 | 0 | 45.37 | 54 | -8.63 | - | - | 212 | 297 | V |

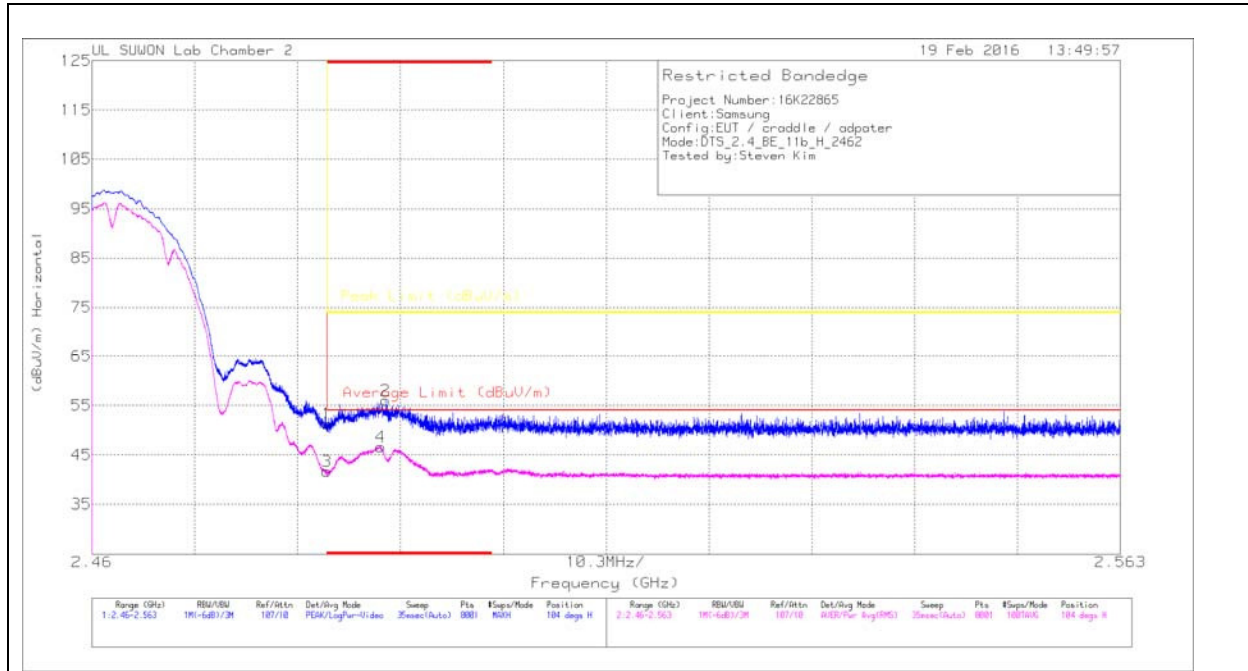
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

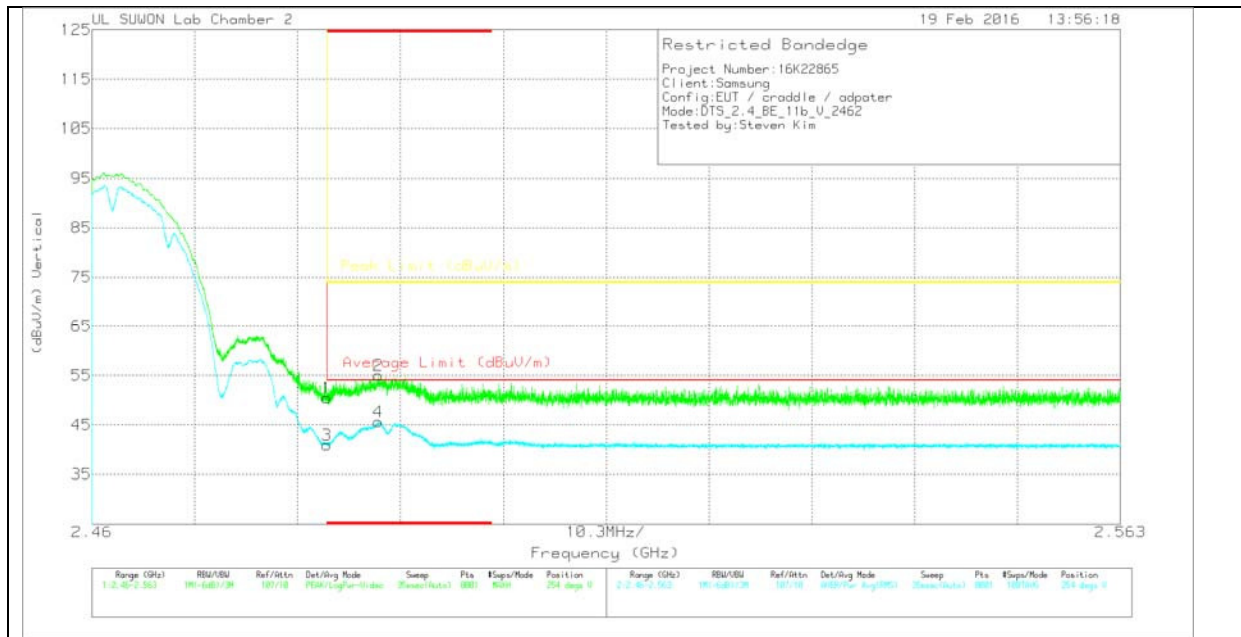
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.484 | 38.91 | Pk | | -19.4 | 0 | 51.31 | - | - | 74 | -22.69 | 104 | 145 | H |
| 2 | * 2.489 | 43.59 | Pk | | -19.4 | 0 | 55.99 | - | - | 74 | -18.01 | 104 | 145 | H |
| 3 | * 2.484 | 29.28 | RMS | | -19.4 | 0 | 41.68 | 54 | -12.32 | - | - | 104 | 145 | H |
| 4 | * 2.489 | 34.27 | RMS | | -19.4 | 0 | 46.67 | 54 | -7.33 | - | - | 104 | 145 | H |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.484 | 38.08 | Pk | 31.8 | -19.4 | 0 | 50.48 | - | - | 74 | -23.52 | 254 | 291 | V |
| 2 | * 2.489 | 42.63 | Pk | 31.8 | -19.4 | 0 | 55.03 | - | - | 74 | -18.97 | 254 | 291 | V |
| 3 | * 2.484 | 28.52 | RMS | 31.8 | -19.4 | 0 | 40.92 | 54 | -13.08 | - | - | 254 | 291 | V |
| 4 | * 2.489 | 33.19 | RMS | 31.8 | -19.4 | 0 | 45.59 | 54 | -8.41 | - | - | 254 | 291 | V |

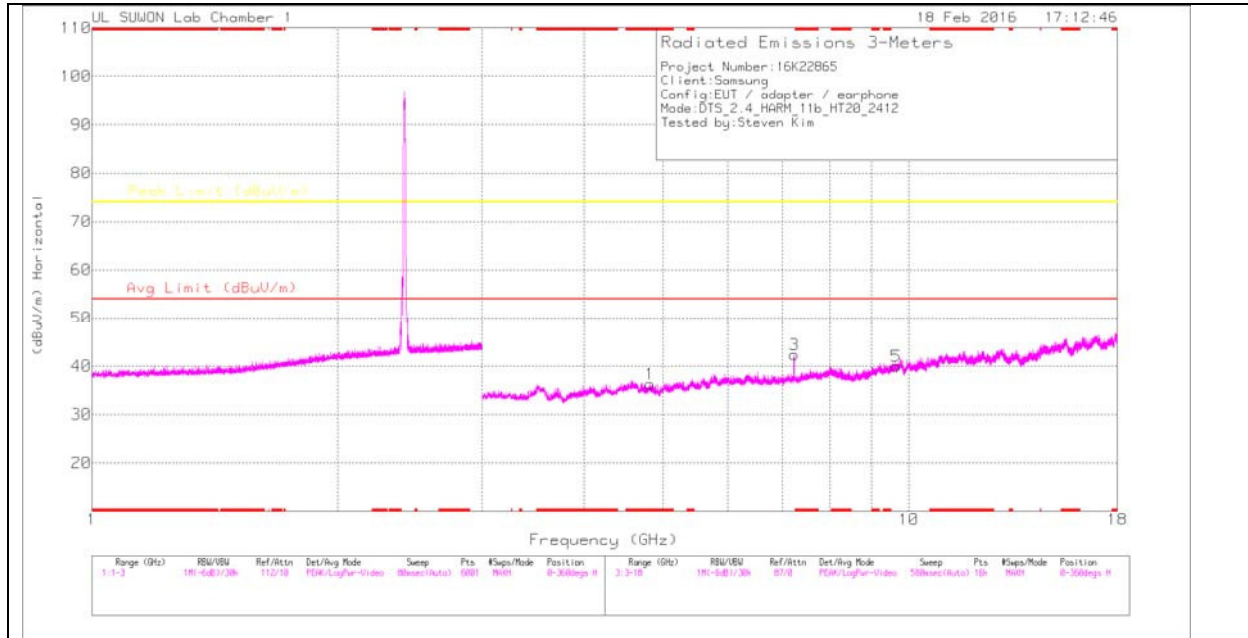
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

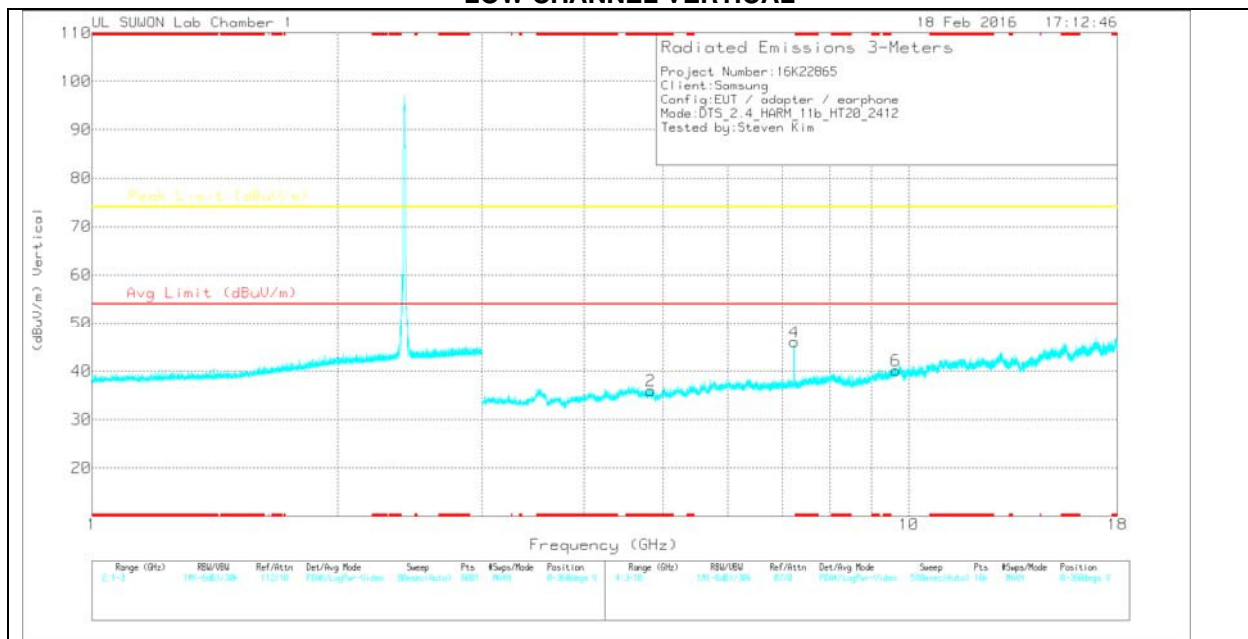
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 17)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.823 | 36.08 | PK | 34 | -33.8 | 0 | 36.28 | - | - | 74 | -37.72 | 0-360 | 100 | H |
| 3 | 7.235 | 37.6 | PK | 35.7 | -30.9 | 0 | 42.4 | - | - | 74 | -31.6 | 0-360 | 200 | H |
| 5 | 9.647 | 30.26 | PK | 37.1 | -27.4 | 0 | 39.96 | - | - | 74 | -34.04 | 0-360 | 100 | H |
| 2 | * 4.826 | 35.75 | PK | 34 | -33.8 | 0 | 35.95 | - | - | 74 | -38.05 | 0-360 | 200 | V |
| 4 | 7.237 | 41.22 | PK | 35.7 | -30.9 | 0 | 46.02 | - | - | 74 | -27.98 | 0-360 | 100 | V |
| 6 | 9.646 | 30.42 | PK | 37.1 | -27.4 | 0 | 40.12 | - | - | 74 | -33.88 | 0-360 | 200 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

Radiated Emissions

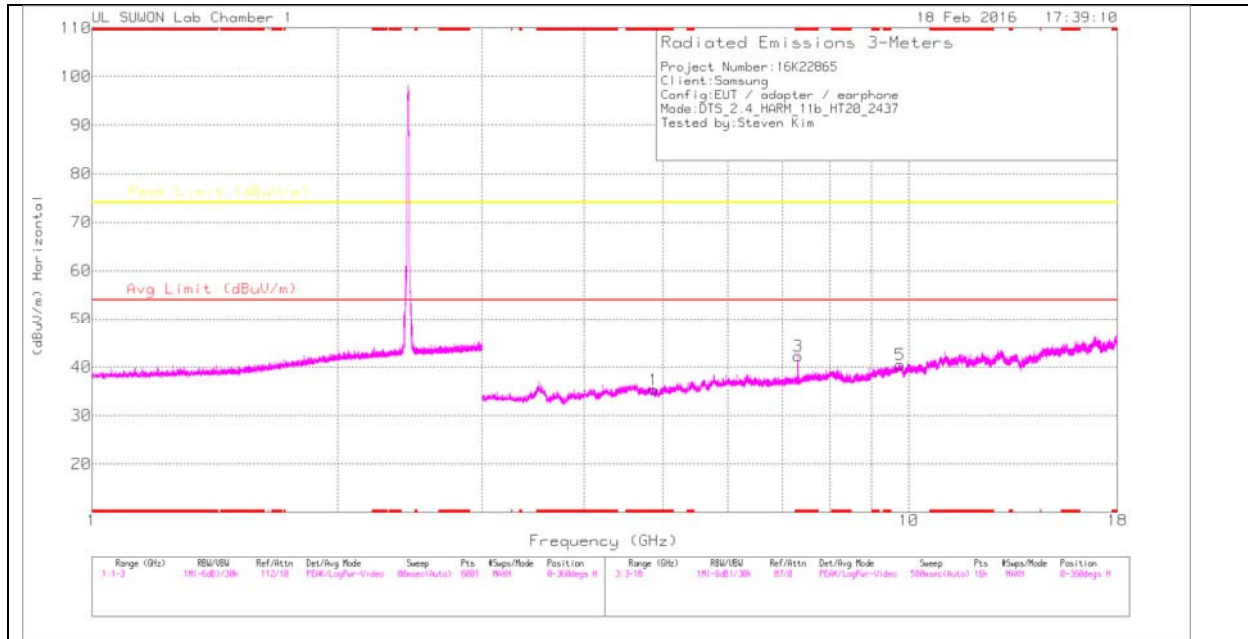
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|-------------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 7.237 | 45.78 | PK2 | 35.7 | -30.9 | 0 | 50.58 | - | - | 74 | -23.42 | 214 | 283 | H |
| 7.237 | 34.79 | MAv1 | 35.7 | -30.9 | 0 | 39.59 | 54 | - 14.41 | - | - | 214 | 283 | H |
| 7.237 | 49.78 | PK2 | 35.7 | -30.9 | 0 | 54.58 | - | - | 74 | -19.42 | 163 | 100 | V |
| 7.237 | 42.52 | MAv1 | 35.7 | -30.9 | 0 | 47.32 | 54 | - 6.68 | - | - | 163 | 100 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

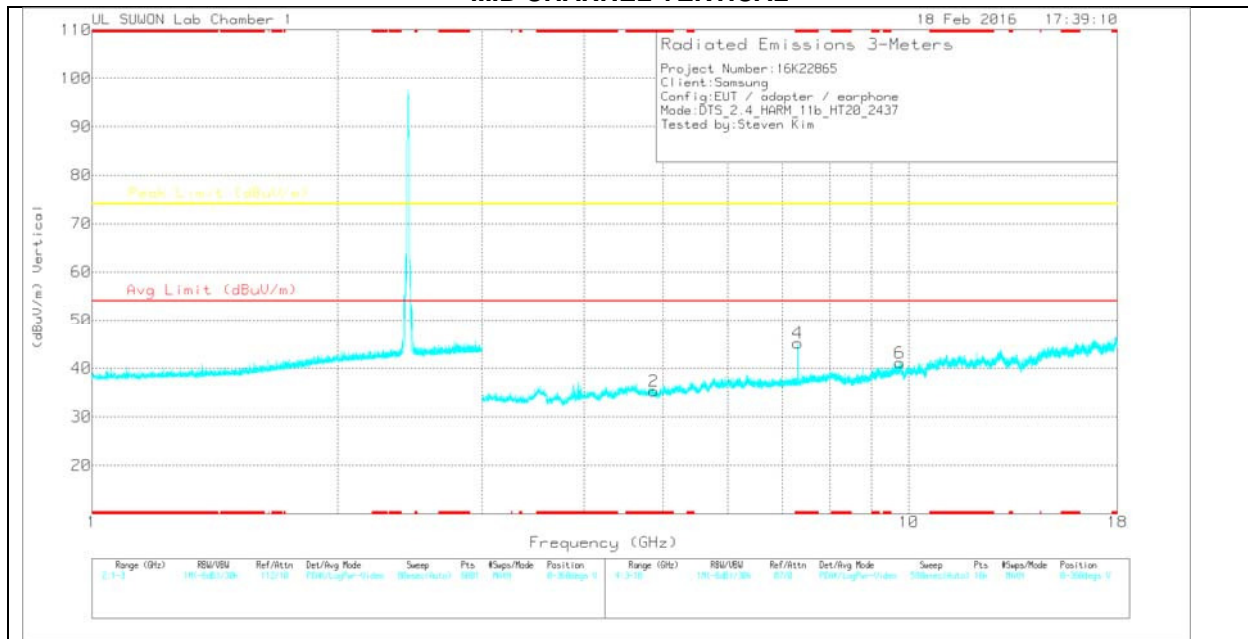
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.874 | 35.31 | PK | 34 | -34 | 0 | 35.31 | - | - | 74 | -38.69 | 0-360 | 100 | H |
| 3 | * 7.311 | 37.48 | PK | 35.7 | -30.9 | 0 | 42.28 | - | - | 74 | -31.72 | 0-360 | 200 | H |
| 5 | 9.754 | 30 | PK | 37.2 | -26.7 | 0 | 40.5 | - | - | 74 | -33.5 | 0-360 | 100 | H |
| 2 | * 4.875 | 35.3 | PK | 34 | -34 | 0 | 35.3 | - | - | 74 | -38.7 | 0-360 | 100 | V |
| 4 | * 7.31 | 40.43 | PK | 35.7 | -30.9 | 0 | 45.23 | - | - | 74 | -28.77 | 0-360 | 100 | V |
| 6 | 9.748 | 30.73 | PK | 37.2 | -26.8 | 0 | 41.13 | - | - | 74 | -32.87 | 0-360 | 100 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

Radiated Emissions

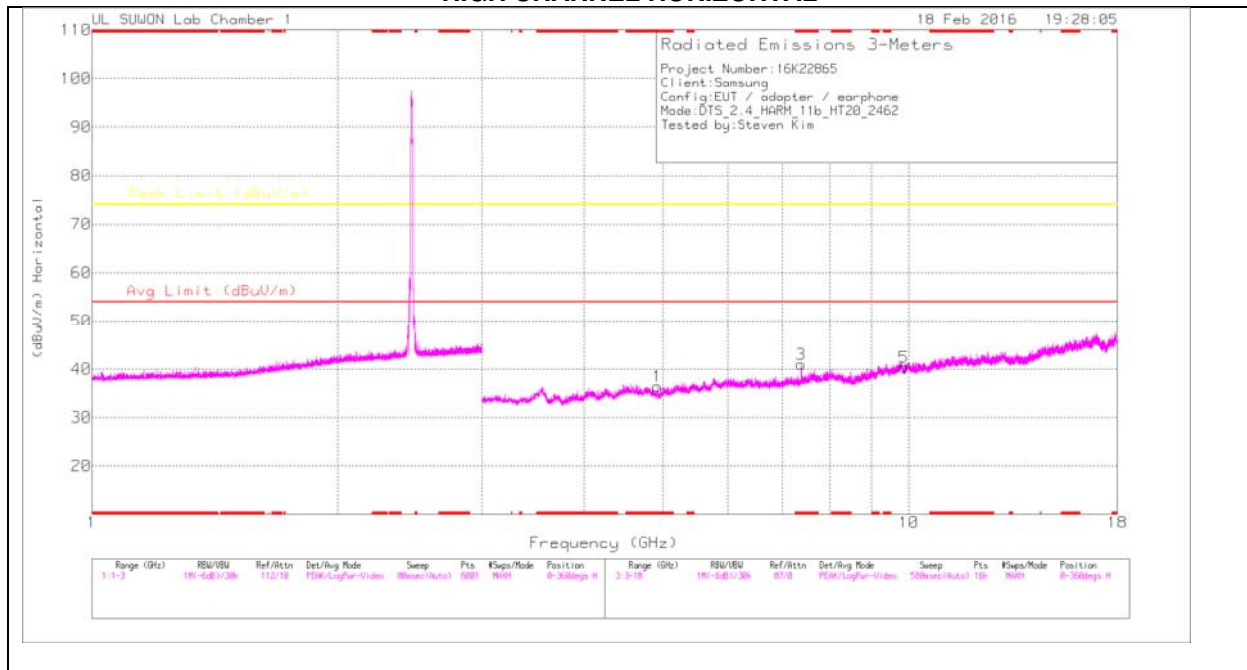
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| * 7.311 | 46.92 | PK2 | 35.7 | -30.9 | 0 | 51.72 | - | - | 74 | -22.28 | 141 | 375 | H |
| * 7.312 | 38.14 | MAv1 | 35.7 | -30.9 | 0 | 42.94 | 54 | -11.06 | - | - | 141 | 375 | H |
| * 7.311 | 49.17 | PK2 | 35.7 | -30.9 | 0 | 53.97 | - | - | 74 | -20.03 | 34 | 101 | V |
| * 7.312 | 41.11 | MAv1 | 35.7 | -30.9 | 0 | 45.91 | 54 | -8.09 | - | - | 34 | 101 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

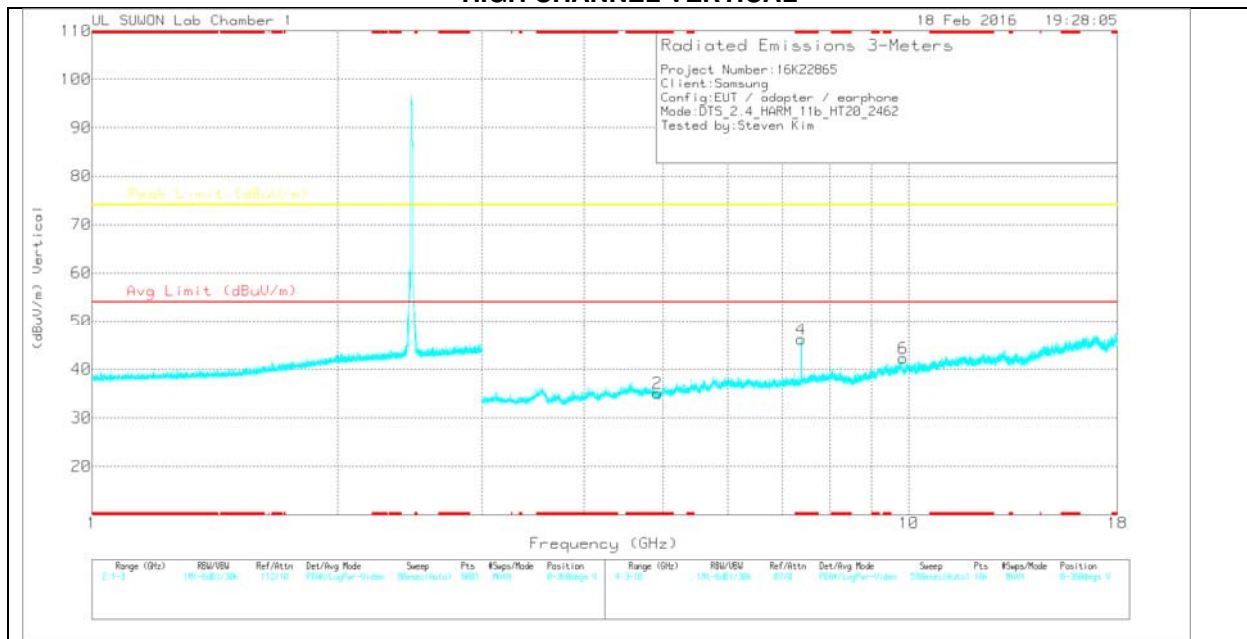
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.924 | 36.4 | PK | 34 | -34 | 0 | 36.4 | - | - | 74 | -37.6 | 0-360 | 100 | H |
| 3 | * 7.385 | 35.87 | PK | 35.8 | -30.7 | 0 | 40.97 | - | - | 74 | -33.03 | 0-360 | 200 | H |
| 5 | 9.852 | 30.72 | PK | 37.3 | -27.7 | 0 | 40.32 | - | - | 74 | -33.68 | 0-360 | 200 | H |
| 2 | * 4.926 | 35.06 | PK | 34 | -34 | 0 | 35.06 | - | - | 74 | -38.94 | 0-360 | 100 | V |
| 4 | * 7.385 | 41.04 | PK | 35.8 | -30.7 | 0 | 46.14 | - | - | 74 | -27.86 | 0-360 | 100 | V |
| 6 | 9.848 | 32.51 | PK | 37.3 | -27.6 | 0 | 42.21 | - | - | 74 | -31.79 | 0-360 | 100 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| * 7.388 | 46.25 | PK2 | 35.8 | -30.7 | 0 | 51.35 | - | - | 74 | -22.65 | 124 | 363 | H |
| * 7.387 | 35.86 | MAv1 | 35.8 | -30.7 | 0 | 40.96 | 54 | -13.04 | - | - | 124 | 363 | H |
| * 7.387 | 49.37 | PK2 | 35.8 | -30.7 | 0 | 54.47 | - | - | 74 | -19.53 | 21 | 100 | V |
| * 7.385 | 41.28 | MAv1 | 35.8 | -30.7 | 0 | 46.38 | 54 | -7.62 | - | - | 21 | 100 | V |

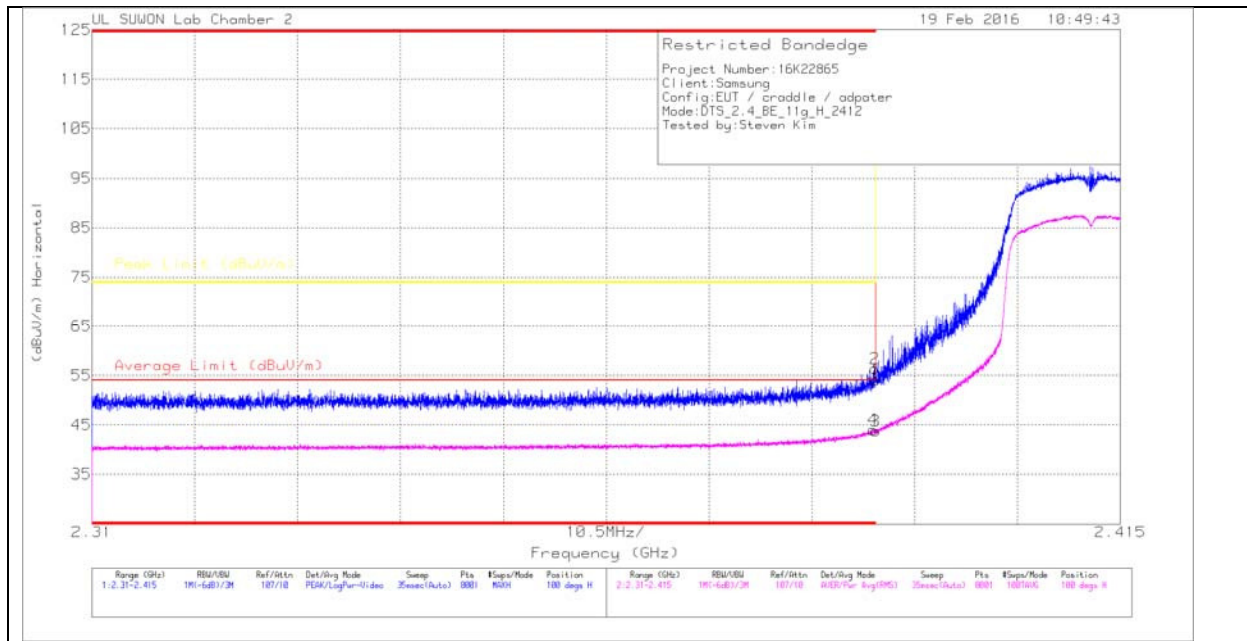
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

11.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND
RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

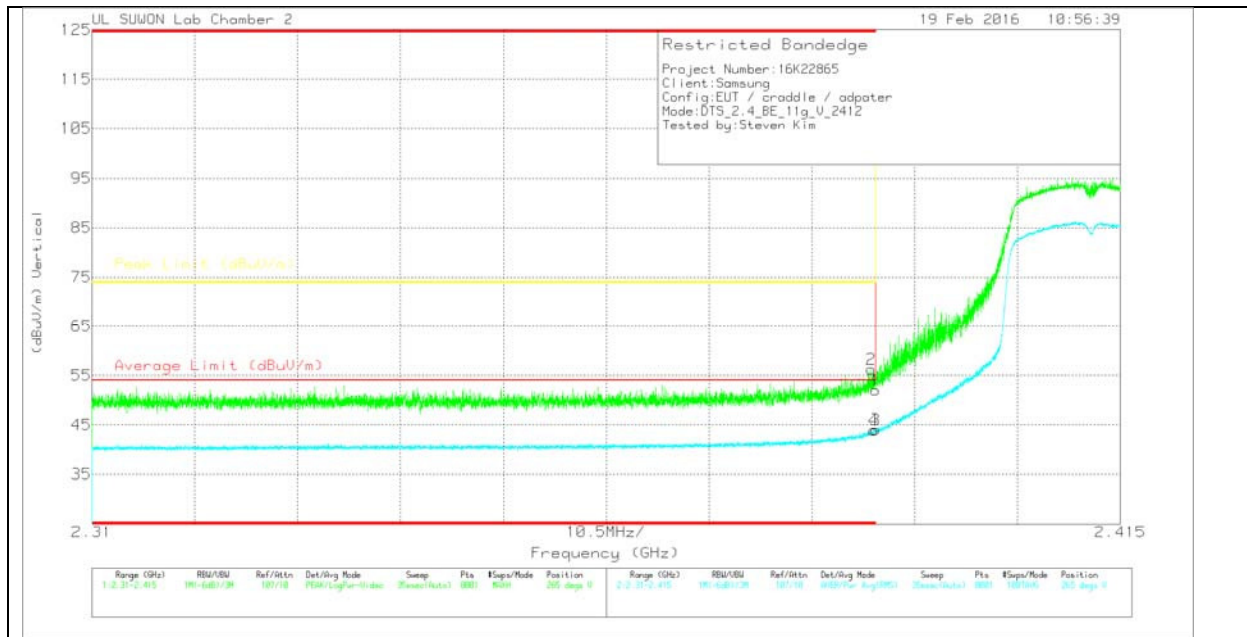
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.39 | 41.81 | Pk | | | 0 | 54.01 | - | - | 74 | -19.99 | 100 | 302 | H |
| 2 | * 2.39 | 44.24 | Pk | | | 0 | 56.44 | - | - | 74 | -17.56 | 100 | 302 | H |
| 3 | * 2.39 | 31.22 | RMS | | | .3 | 43.72 | 54 | -10.28 | - | - | 100 | 302 | H |
| 4 | * 2.39 | 31.49 | RMS | | | .3 | 43.99 | 54 | -10.01 | - | - | 100 | 302 | H |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.39 | 39.82 | Pk | 31.7 | -19.5 | 0 | 52.02 | - | - | 74 | -21.98 | 265 | 117 | V |
| 2 | * 2.39 | 44.09 | Pk | 31.7 | -19.5 | 0 | 56.29 | - | - | 74 | -17.71 | 265 | 117 | V |
| 3 | * 2.39 | 31.52 | RMS | 31.7 | -19.5 | .3 | 44.02 | 54 | -9.98 | - | - | 265 | 117 | V |
| 4 | * 2.39 | 31.42 | RMS | 31.7 | -19.5 | .3 | 43.92 | 54 | -10.08 | - | - | 265 | 117 | V |

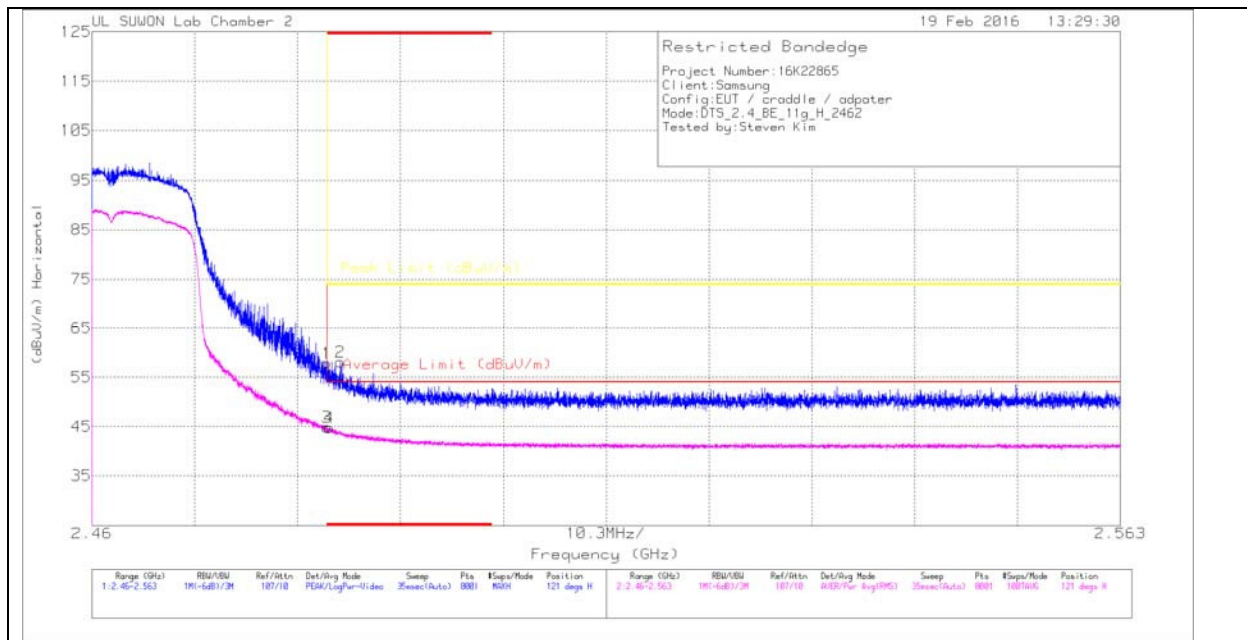
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

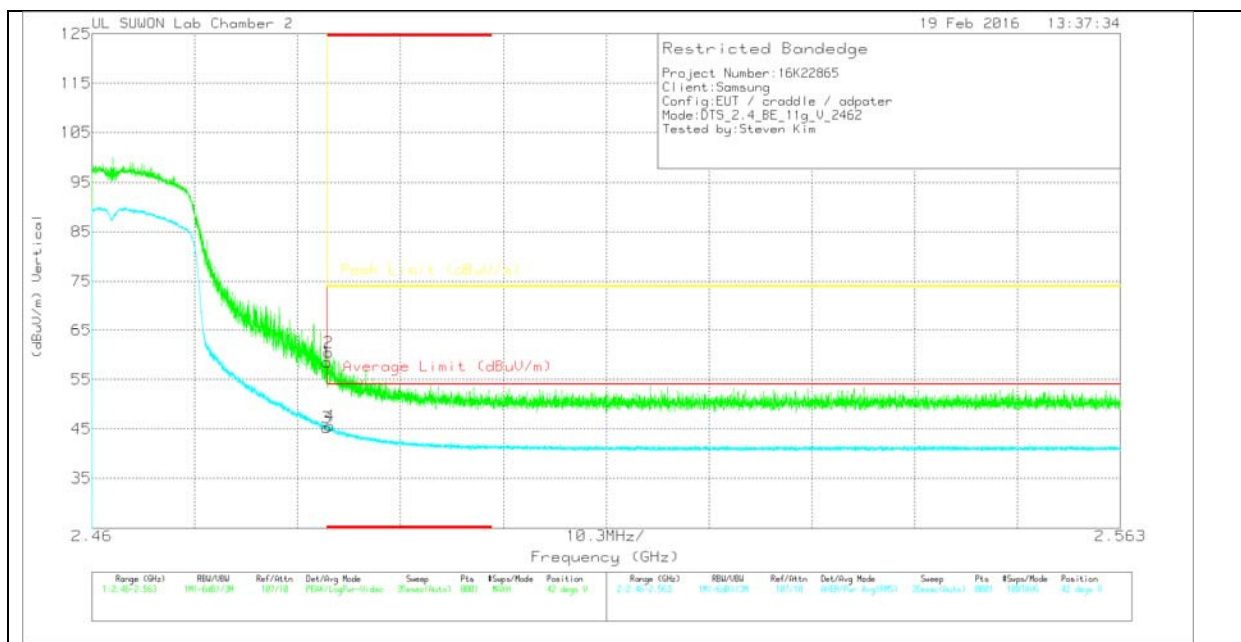
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.484 | 45.49 | Pk | 31.8 | -19.4 | 0 | 57.89 | - | - | 74 | -16.11 | 121 | 283 | H |
| 2 | * 2.485 | 45.77 | Pk | 31.8 | -19.4 | 0 | 58.17 | - | - | 74 | -15.83 | 121 | 283 | H |
| 3 | * 2.484 | 32.21 | RMS | 31.8 | -19.4 | .3 | 44.91 | 54 | -9.09 | - | - | 121 | 283 | H |
| 4 | * 2.484 | 32.02 | RMS | 31.8 | -19.4 | .3 | 44.72 | 54 | -9.28 | - | - | 121 | 283 | H |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.484 | 46.07 | Pk | 31.8 | -19.4 | 0 | 58.47 | - | - | 74 | -15.53 | 42 | 349 | V |
| 2 | * 2.484 | 48.11 | Pk | 31.8 | -19.4 | 0 | 60.51 | - | - | 74 | -13.49 | 42 | 349 | V |
| 3 | * 2.484 | 32.55 | RMS | 31.8 | -19.4 | .3 | 45.25 | 54 | -8.75 | - | - | 42 | 349 | V |
| 4 | * 2.484 | 32.88 | RMS | 31.8 | -19.4 | .3 | 45.58 | 54 | -8.42 | - | - | 42 | 349 | V |

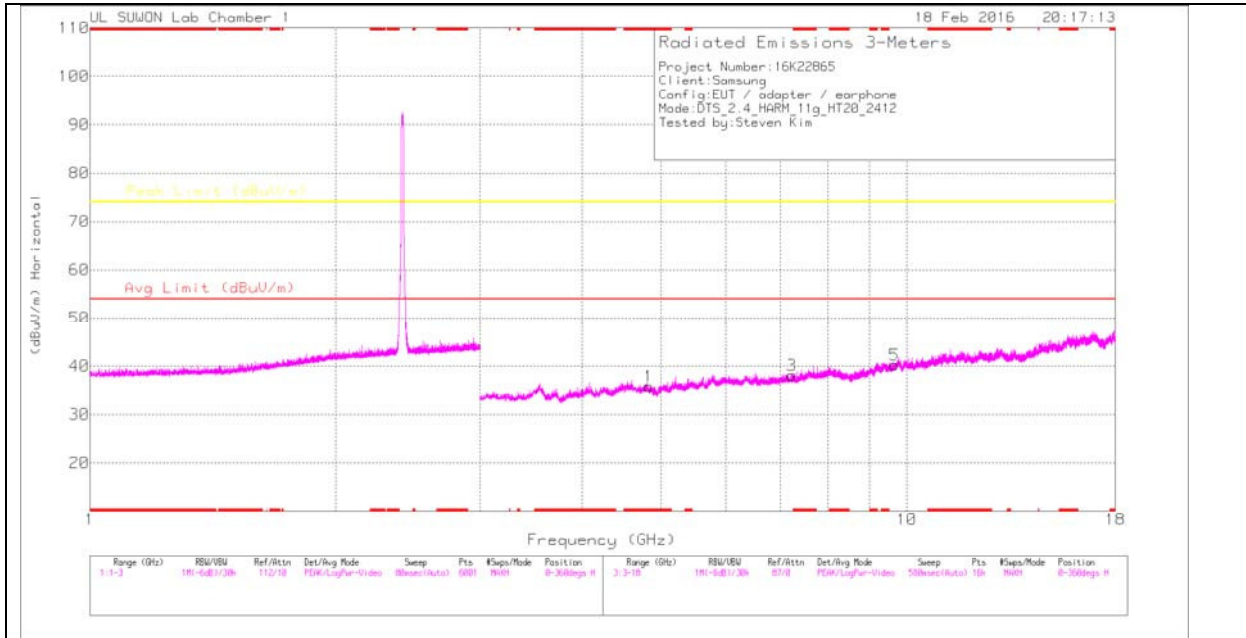
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

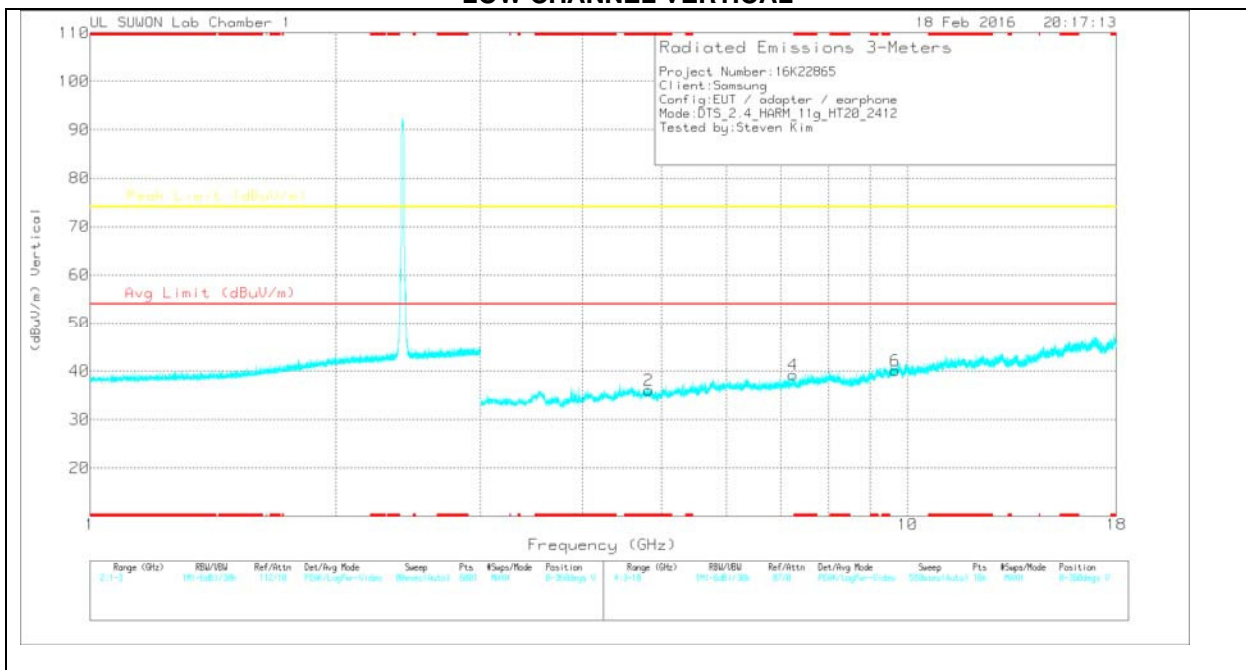
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

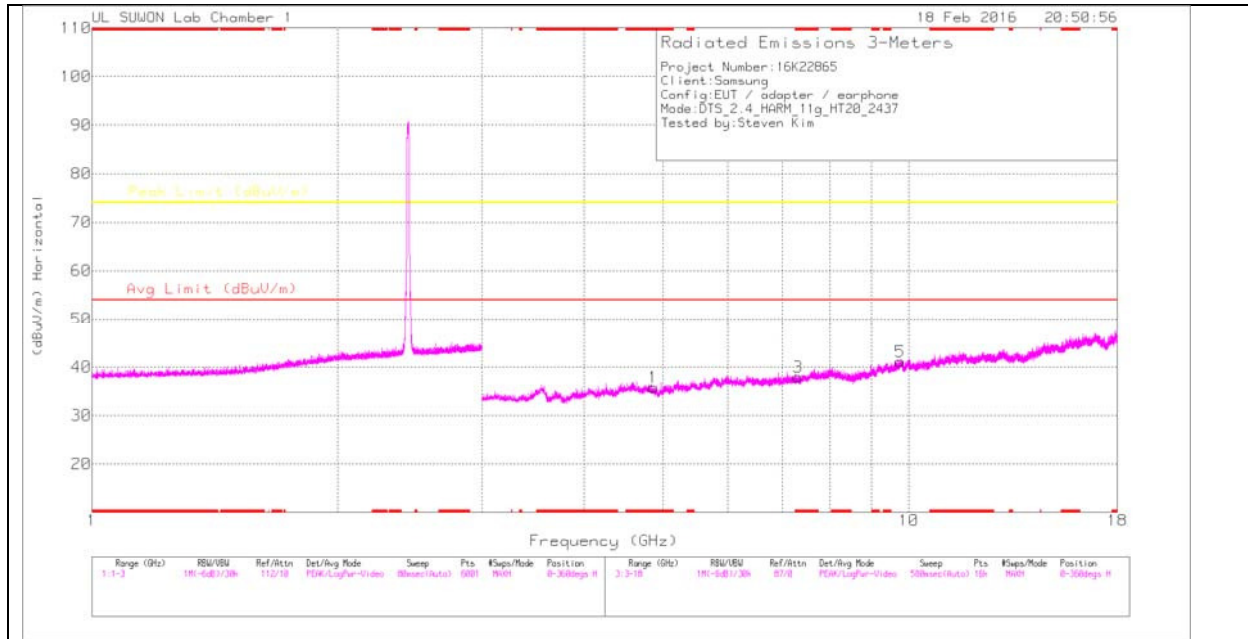
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 17)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.827 | 35.61 | PK | 34 | -33.8 | 0 | 35.81 | - | - | 74 | -38.19 | 0-360 | 100 | H |
| 3 | 7.231 | 33.43 | PK | 35.7 | -31 | 0 | 38.13 | - | - | 74 | -35.87 | 0-360 | 200 | H |
| 5 | 9.652 | 30.57 | PK | 37.1 | -27.4 | 0 | 40.27 | - | - | 74 | -33.73 | 0-360 | 200 | H |
| 2 | * 4.825 | 35.83 | PK | 34 | -33.8 | 0 | 36.03 | - | - | 74 | -37.97 | 0-360 | 200 | V |
| 4 | 7.235 | 34.37 | PK | 35.7 | -30.9 | 0 | 39.17 | - | - | 74 | -34.83 | 0-360 | 100 | V |
| 6 | 9.652 | 30.4 | PK | 37.1 | -27.4 | 0 | 40.1 | - | - | 74 | -33.9 | 0-360 | 200 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

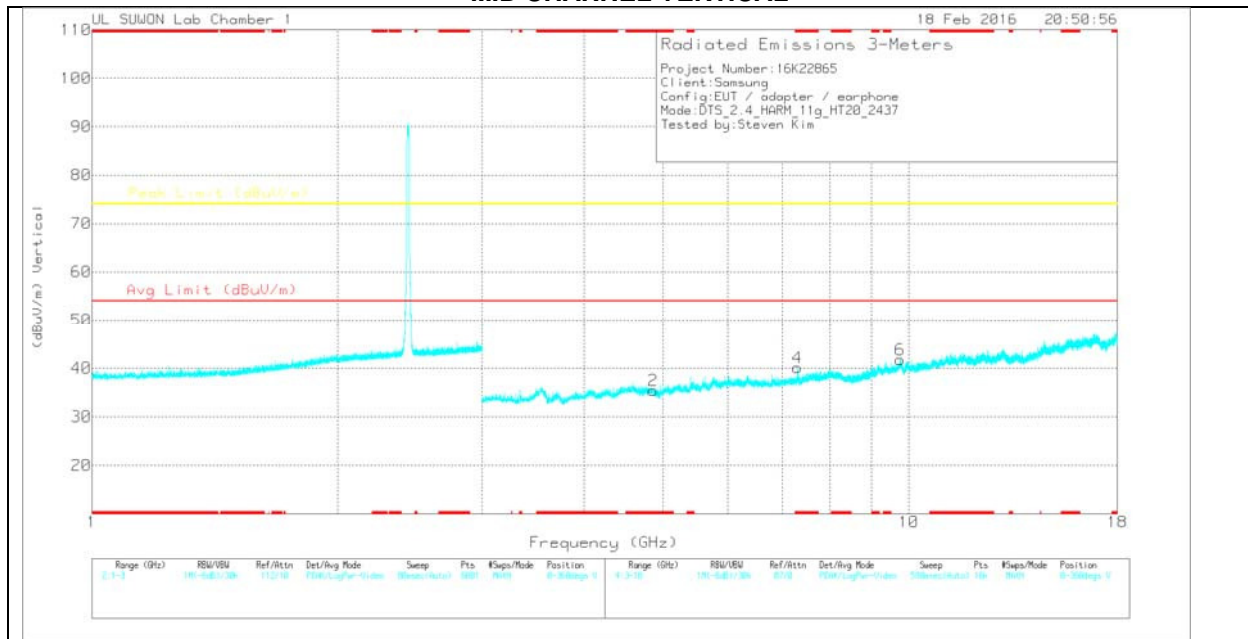
PK – Peak detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.864 | 35.86 | PK | 34 | -34 | 0 | 35.86 | - | - | 74 | -38.14 | 0-360 | 100 | H |
| 3 | * 7.314 | 33.06 | PK | 35.8 | -30.9 | 0 | 37.96 | - | - | 74 | -36.04 | 0-360 | 100 | H |
| 5 | 9.758 | 30.62 | PK | 37.2 | -26.7 | 0 | 41.12 | - | - | 74 | -32.88 | 0-360 | 200 | H |
| 2 | * 4.867 | 35.41 | PK | 34 | -34 | 0 | 35.41 | - | - | 74 | -38.59 | 0-360 | 200 | V |
| 4 | * 7.308 | 35.32 | PK | 35.7 | -30.9 | 0 | 40.12 | - | - | 74 | -33.88 | 0-360 | 100 | V |
| 6 | 9.751 | 31.31 | PK | 37.2 | -26.8 | 0 | 41.71 | - | - | 74 | -32.29 | 0-360 | 200 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

Radiated Emissions

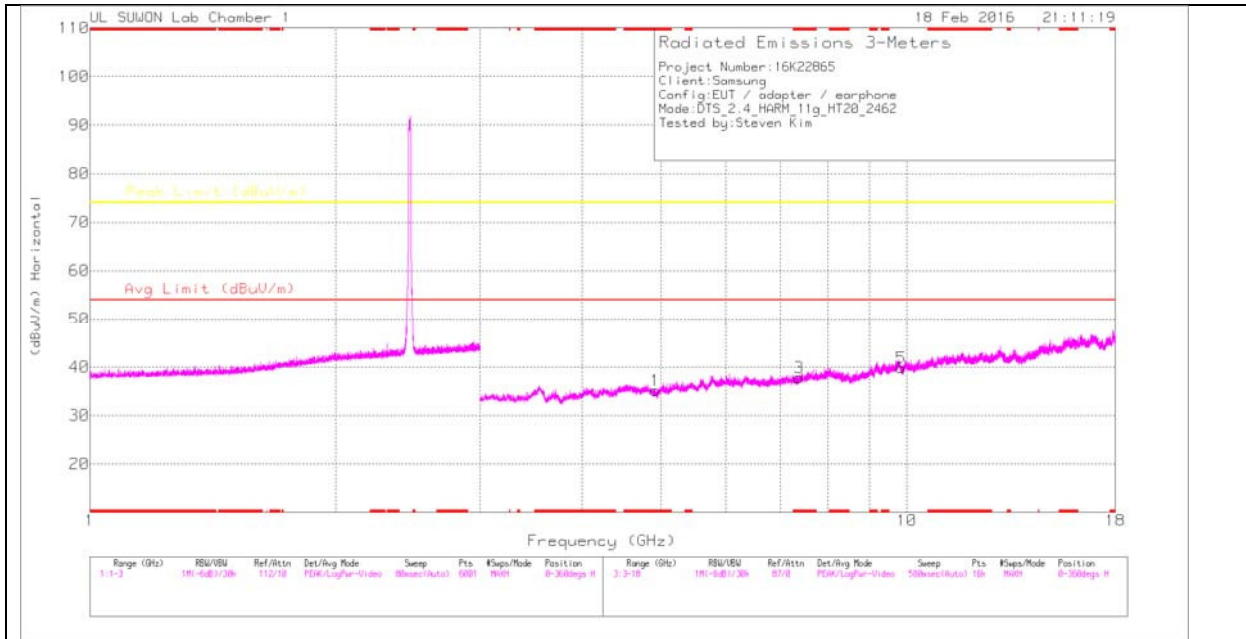
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| * 7.313 | 46.57 | PK2 | 35.8 | -30.9 | 0 | 51.47 | - | - | 74 | -22.53 | 15 | 103 | V |
| * 7.311 | 33.35 | MAv1 | 35.7 | -30.9 | .3 | 38.45 | 54 | -15.55 | - | - | 15 | 103 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

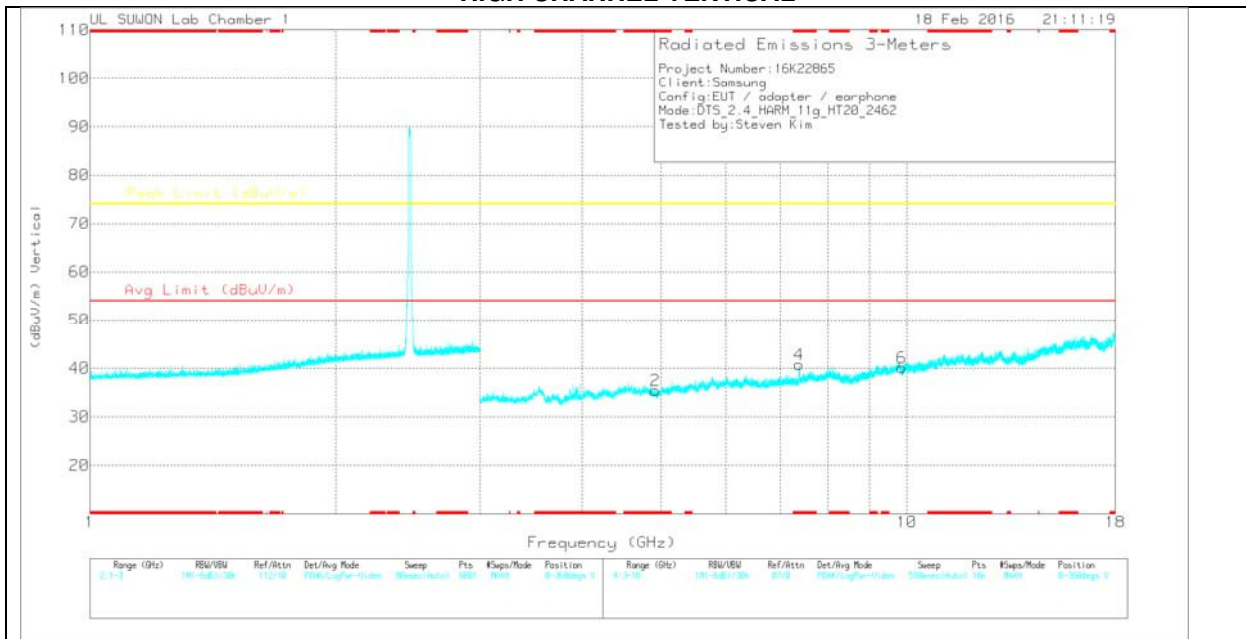
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.926 | 35.16 | PK | 34 | -34 | 0 | 35.16 | - | - | 74 | -38.84 | 0-360 | 200 | H |
| 3 | * 7.383 | 32.83 | PK | 35.8 | -30.8 | 0 | 37.83 | - | - | 74 | -36.17 | 0-360 | 200 | H |
| 5 | 9.846 | 30.18 | PK | 37.3 | -27.6 | 0 | 39.88 | - | - | 74 | -34.12 | 0-360 | 100 | H |
| 2 | * 4.926 | 35.4 | PK | 34 | -34 | 0 | 35.4 | - | - | 74 | -38.6 | 0-360 | 100 | V |
| 4 | * 7.385 | 35.69 | PK | 35.8 | -30.7 | 0 | 40.79 | - | - | 74 | -33.21 | 0-360 | 100 | V |
| 6 | 9.851 | 30.56 | PK | 37.3 | -27.7 | 0 | 40.16 | - | - | 74 | -33.84 | 0-360 | 200 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|-----------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| * 7.385 | 46.84 | PK2 | 35.8 | -30.7 | 0 | 51.94 | - | - | 74 | -22.06 | 23 | 103 | V |
| * 7.386 | 31.01 | MAv1 | 35.8 | -30.7 | .3 | 36.41 | 54 | -17.59 | - | - | 23 | 103 | V |

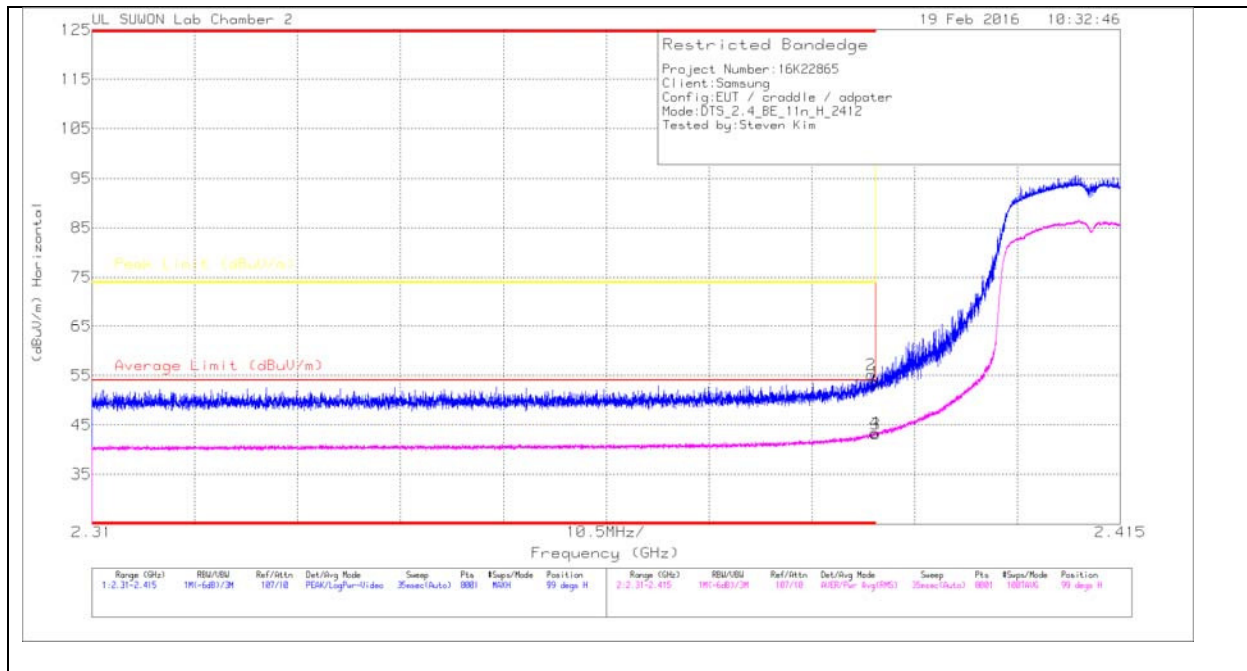
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

11.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

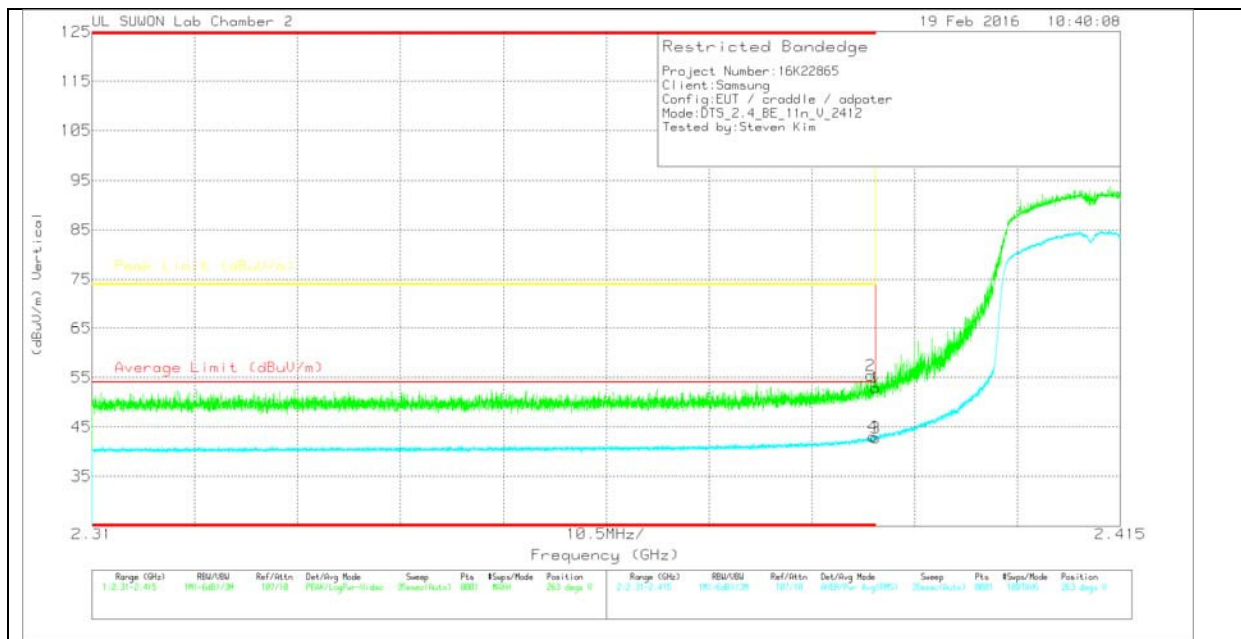
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.39 | 41.49 | Pk | | | 0 | 53.69 | - | - | 74 | -20.31 | 99 | 298 | H |
| 2 | * 2.39 | 42.92 | Pk | | | 0 | 55.12 | - | - | 74 | -18.88 | 99 | 298 | H |
| 3 | * 2.39 | 30.62 | RMS | | | .32 | 43.14 | 54 | -10.86 | - | - | 99 | 298 | H |
| 4 | * 2.39 | 30.91 | RMS | | | .32 | 43.43 | 54 | -10.57 | - | - | 99 | 298 | H |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.39 | 40.68 | Pk | 31.7 | -19.5 | 0 | 52.88 | - | - | 74 | -21.12 | 263 | 158 | V |
| 2 | * 2.39 | 43.25 | Pk | 31.7 | -19.5 | 0 | 55.45 | - | - | 74 | -18.55 | 263 | 158 | V |
| 3 | * 2.39 | 30.24 | RMS | 31.7 | -19.5 | .32 | 42.76 | 54 | -11.24 | - | - | 263 | 158 | V |
| 4 | * 2.39 | 30.51 | RMS | 31.7 | -19.5 | .32 | 43.03 | 54 | -10.97 | - | - | 263 | 158 | V |

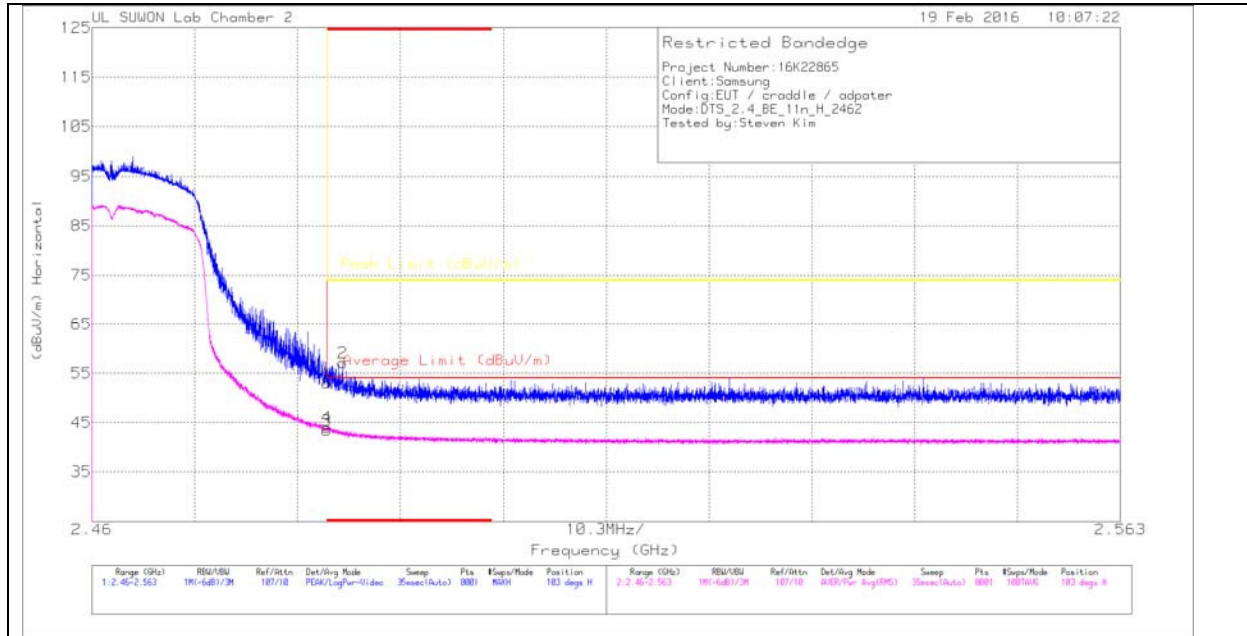
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

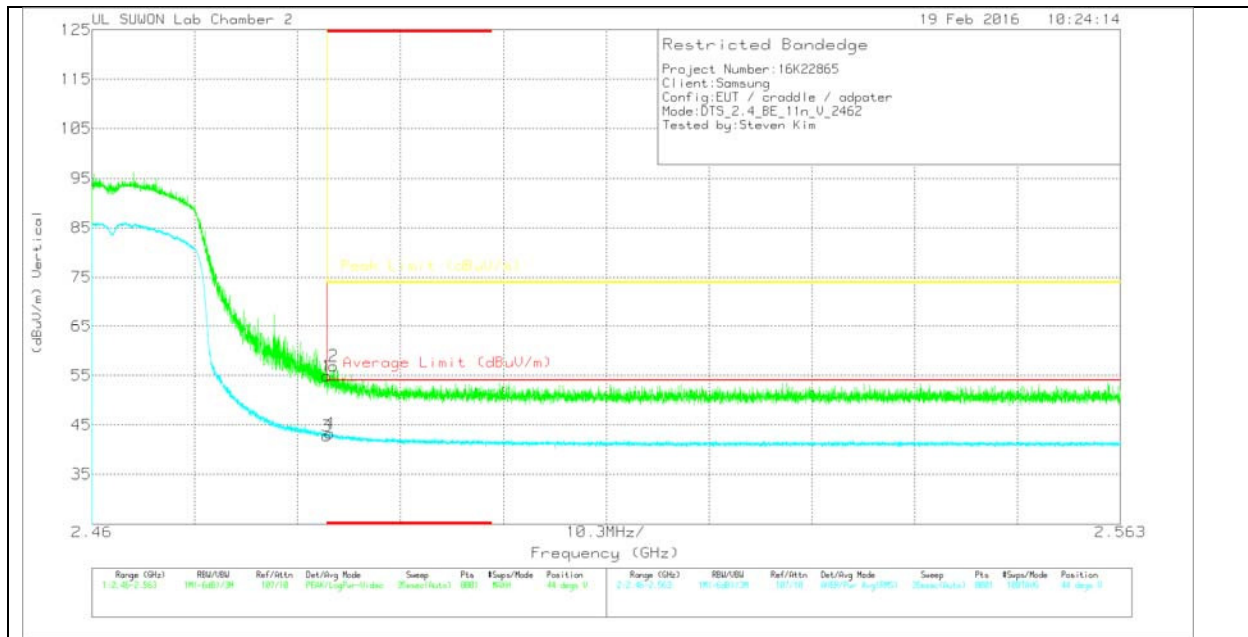
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.484 | 40.68 | Pk | 31.8 | -19.4 | 0 | 53.08 | - | - | 74 | -20.92 | 103 | 290 | H |
| 2 | * 2.485 | 44.72 | Pk | 31.8 | -19.4 | 0 | 57.12 | - | - | 74 | -16.88 | 103 | 290 | H |
| 3 | * 2.484 | 30.72 | RMS | 31.8 | -19.4 | .32 | 43.44 | 54 | -10.56 | - | - | 103 | 290 | H |
| 4 | * 2.484 | 31.27 | RMS | 31.8 | -19.4 | .32 | 43.99 | 54 | -10.01 | - | - | 103 | 290 | H |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 24)_150619 | Path_2_10dB | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|-------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1 | * 2.484 | 42.46 | Pk | 31.8 | -19.4 | 0 | 54.86 | - | - | 74 | -19.14 | 44 | 345 | V |
| 2 | * 2.484 | 44.54 | Pk | 31.8 | -19.4 | 0 | 56.94 | - | - | 74 | -17.06 | 44 | 345 | V |
| 3 | * 2.484 | 30.1 | RMS | 31.8 | -19.4 | .32 | 42.82 | 54 | -11.18 | - | - | 44 | 345 | V |
| 4 | * 2.484 | 30.61 | RMS | 31.8 | -19.4 | .32 | 43.33 | 54 | -10.67 | - | - | 44 | 345 | V |

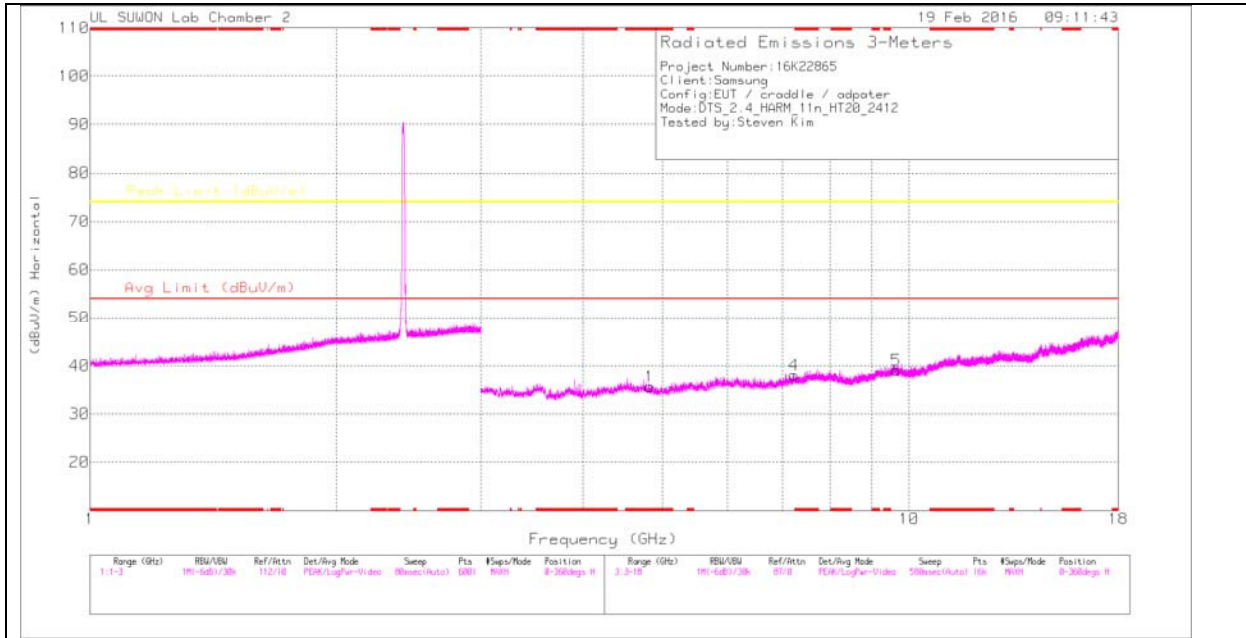
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

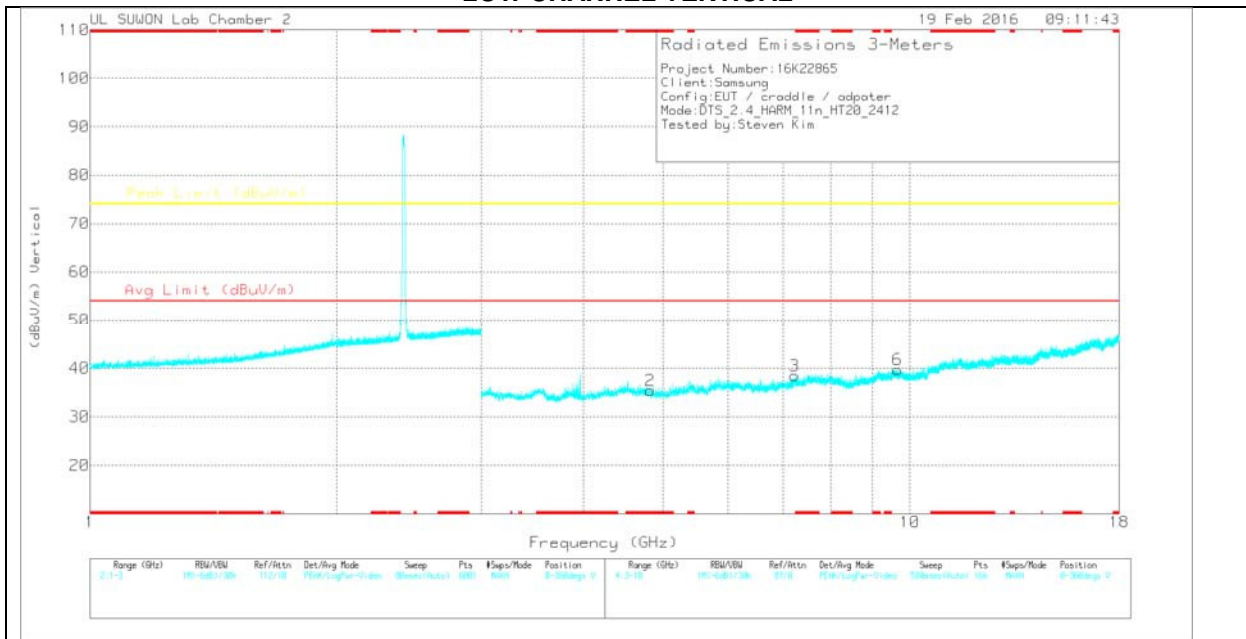
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

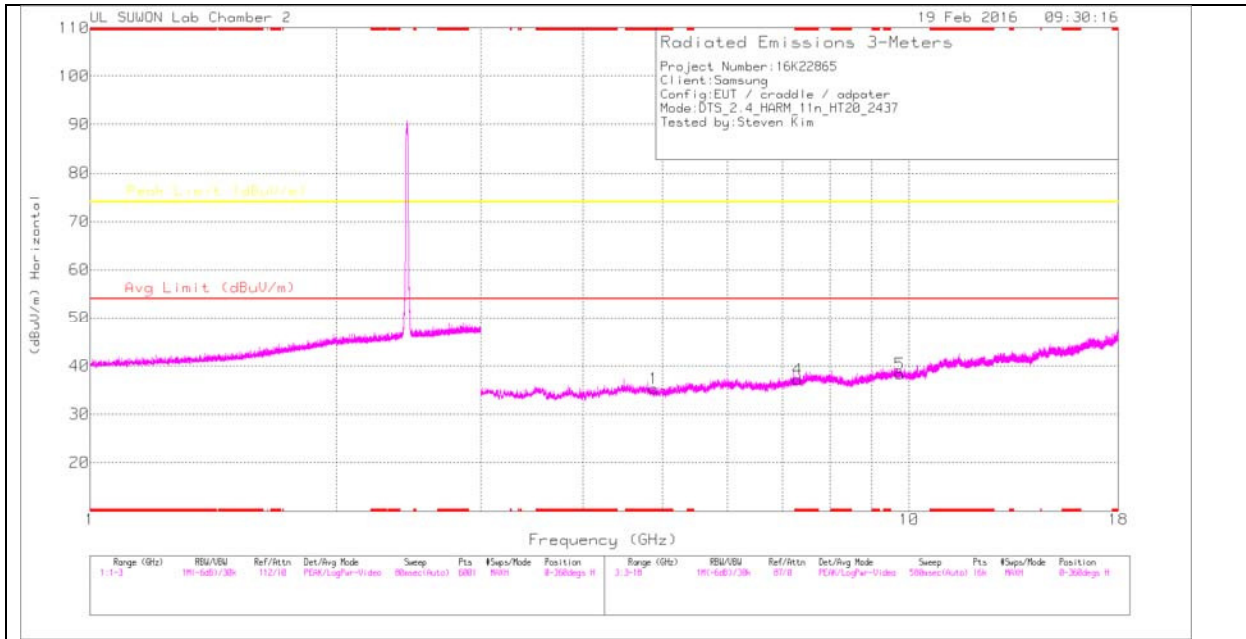
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016872 4)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.822 | 27.08 | PK | 33.9 | -25.3 | 0 | 35.68 | - | - | 74 | -38.32 | 0-360 | 100 | H |
| 4 | 7.229 | 25.3 | PK | 35.8 | -23 | 0 | 38.1 | - | - | 74 | -35.9 | 0-360 | 200 | H |
| 5 | 9.647 | 21.19 | PK | 36.9 | -19 | 0 | 39.09 | - | - | 74 | -34.91 | 0-360 | 200 | H |
| 2 | * 4.819 | 26.86 | PK | 33.9 | -25.3 | 0 | 35.46 | - | - | 74 | -38.54 | 0-360 | 200 | V |
| 3 | 7.234 | 25.72 | PK | 35.8 | -23 | 0 | 38.52 | - | - | 74 | -35.48 | 0-360 | 200 | V |
| 6 | 9.649 | 21.87 | PK | 36.9 | -19 | 0 | 39.77 | - | - | 74 | -34.23 | 0-360 | 200 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

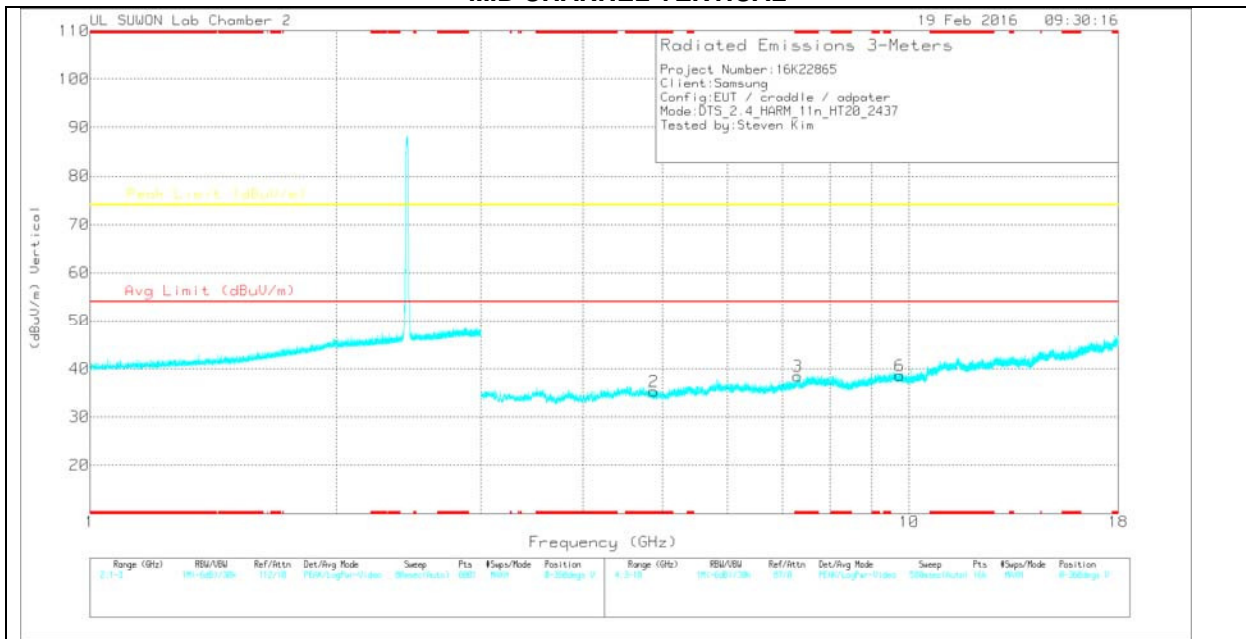
PK – Peak detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

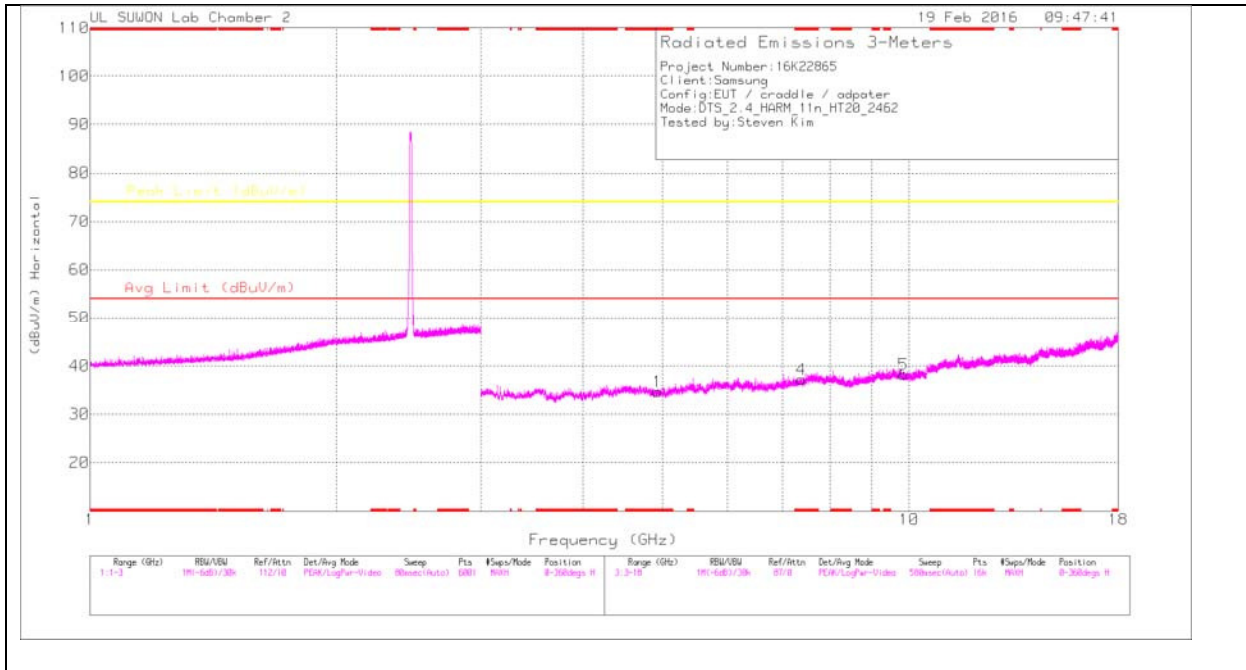
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016872 4)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.877 | 26.59 | PK | 33.9 | -25.2 | 0 | 35.29 | - | - | 74 | -38.71 | 0-360 | 100 | H |
| 4 | * 7.307 | 23.94 | PK | 35.9 | -22.6 | 0 | 37.24 | - | - | 74 | -36.76 | 0-360 | 100 | H |
| 5 | 9.748 | 20.67 | PK | 37 | -19.3 | 0 | 38.37 | - | - | 74 | -35.63 | 0-360 | 200 | H |
| 2 | * 4.881 | 26.6 | PK | 33.9 | -25.2 | 0 | 35.3 | - | - | 74 | -38.7 | 0-360 | 200 | V |
| 3 | * 7.31 | 25.14 | PK | 35.9 | -22.6 | 0 | 38.44 | - | - | 74 | -35.56 | 0-360 | 100 | V |
| 6 | 9.744 | 20.94 | PK | 37 | -19.3 | 0 | 38.64 | - | - | 74 | -35.36 | 0-360 | 100 | V |

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

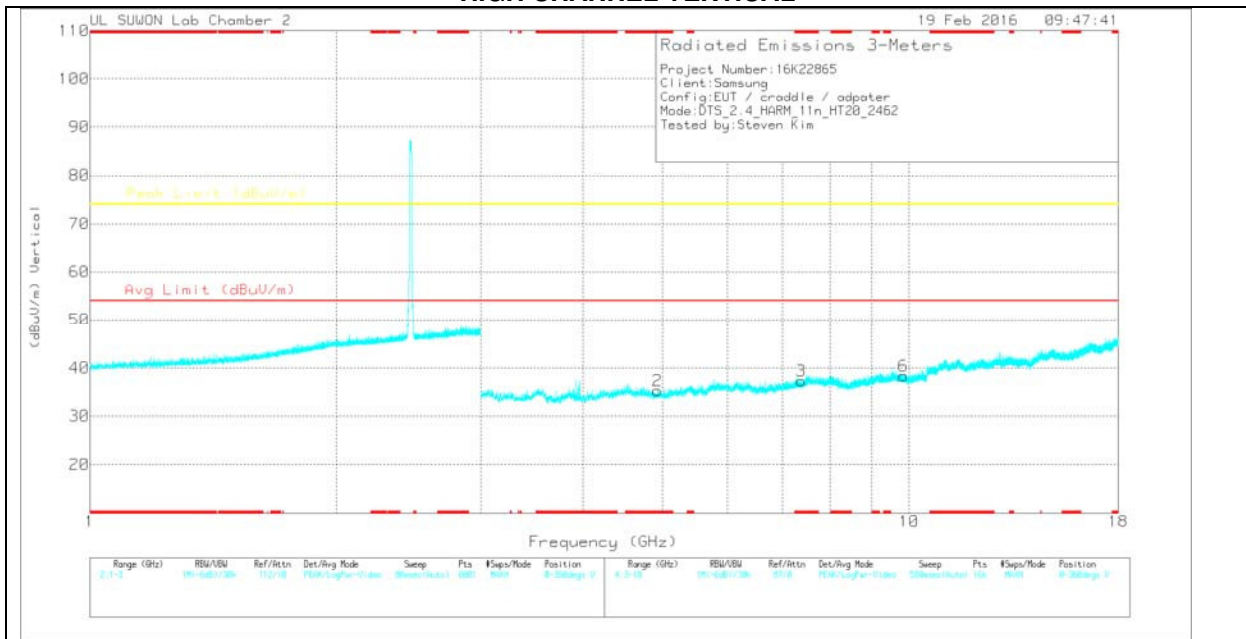
PK – Peak detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016872 4)_150619 | Path_3 | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|--------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1 | * 4.928 | 25.87 | PK | 33.9 | -25.1 | 0 | 34.67 | - | - | 74 | -39.33 | 0-360 | 100 | H |
| 4 | * 7.383 | 23.45 | PK | 35.9 | -22.2 | 0 | 37.15 | - | - | 74 | -36.85 | 0-360 | 100 | H |
| 5 | 9.845 | 20.27 | PK | 37.1 | -19.2 | 0 | 38.17 | - | - | 74 | -35.83 | 0-360 | 100 | H |
| 2 | * 4.928 | 26.49 | PK | 33.9 | -25.1 | 0 | 35.29 | - | - | 74 | -38.71 | 0-360 | 200 | V |
| 3 | * 7.385 | 23.6 | PK | 35.9 | -22.2 | 0 | 37.3 | - | - | 74 | -36.7 | 0-360 | 200 | V |
| 6 | 9.848 | 20.47 | PK | 37.1 | -19.2 | 0 | 38.37 | - | - | 74 | -35.63 | 0-360 | 200 | V |

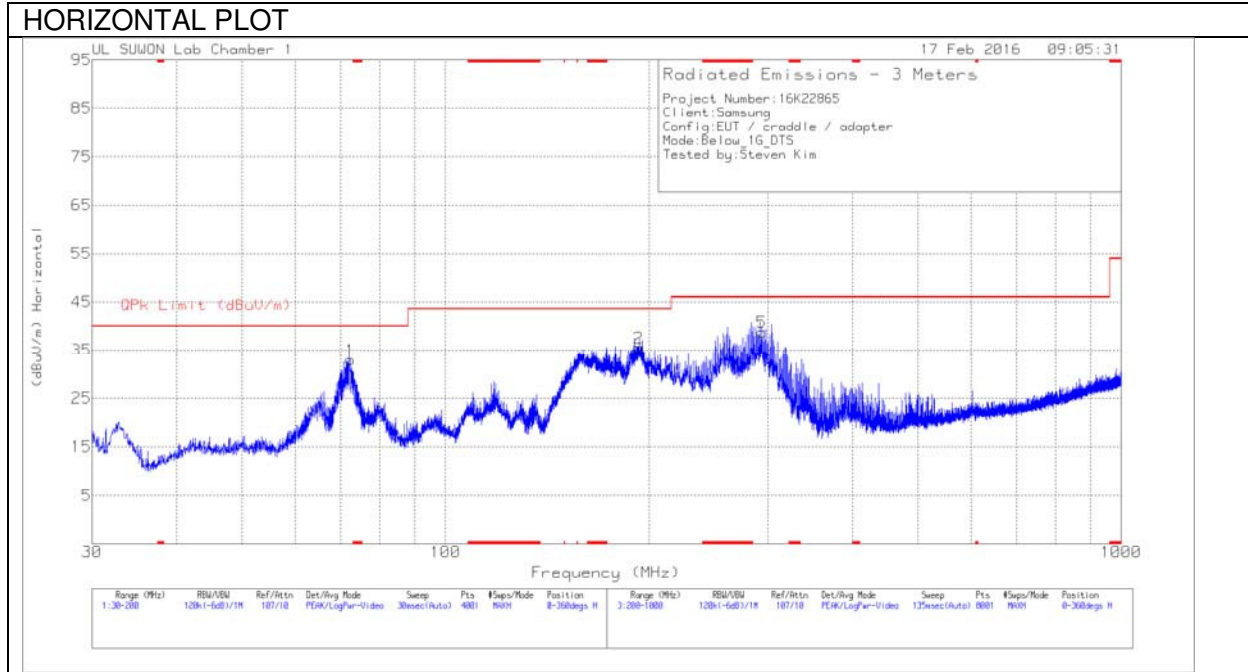
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

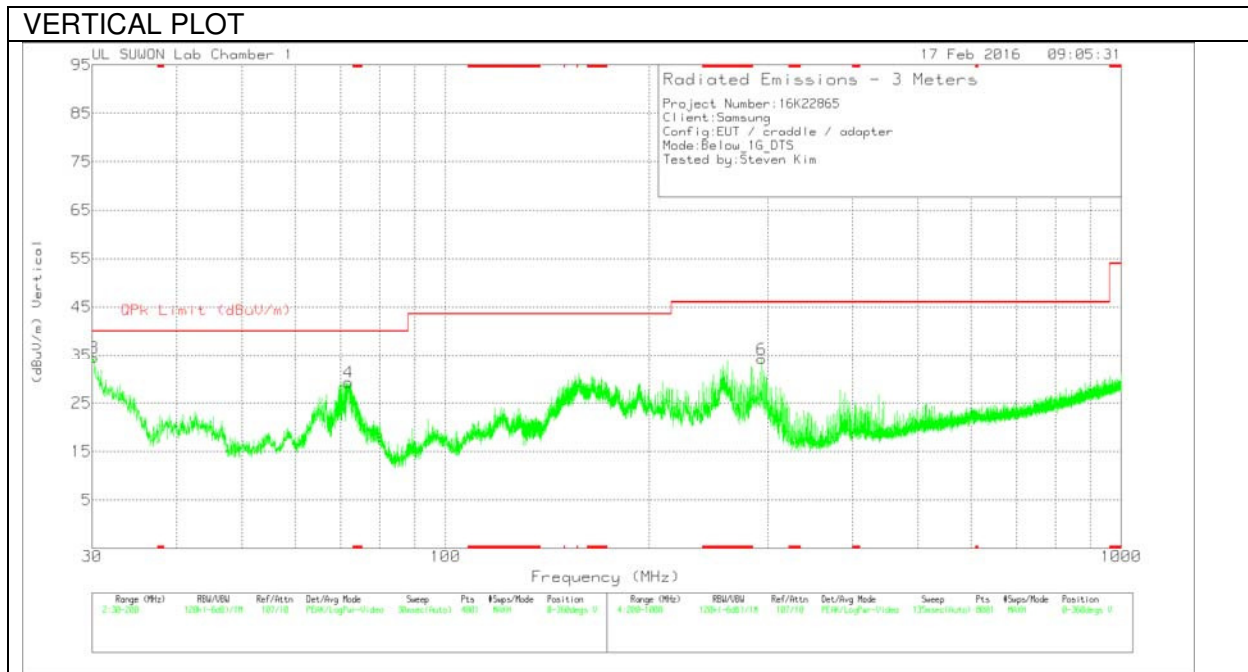
Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

11.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



Below 1G Data

Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | VULB9163-750 | Bi-Log | DC Corr (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|--------------|--------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 1 | 72.33 | 53.61 | Pk | 9 | -29.7 | 0 | 32.91 | 40 | -7.09 | 0-360 | 300 | H |
| 2 | 193.2 | 52.97 | Pk | 10.7 | -28.2 | 0 | 35.47 | 43.52 | -8.05 | 0-360 | 200 | H |
| 3 | 30.17 | 54.73 | Pk | 10.3 | -30.5 | 0 | 34.53 | 40 | -5.47 | 0-360 | 100 | V |
| 4 | 71.82 | 49.94 | Pk | 9.1 | -29.7 | 0 | 29.34 | 40 | -10.66 | 0-360 | 300 | V |
| 5 | 293.9 | 53.08 | Pk | 13.2 | -27.5 | 0 | 38.78 | 46.02 | -7.24 | 0-360 | 101 | H |
| 6 | 293.9 | 48.5 | Pk | 13.2 | -27.5 | 0 | 34.2 | 46.02 | -11.82 | 0-360 | 101 | V |

Pk - Peak detector

12. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

| 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

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10 2009.

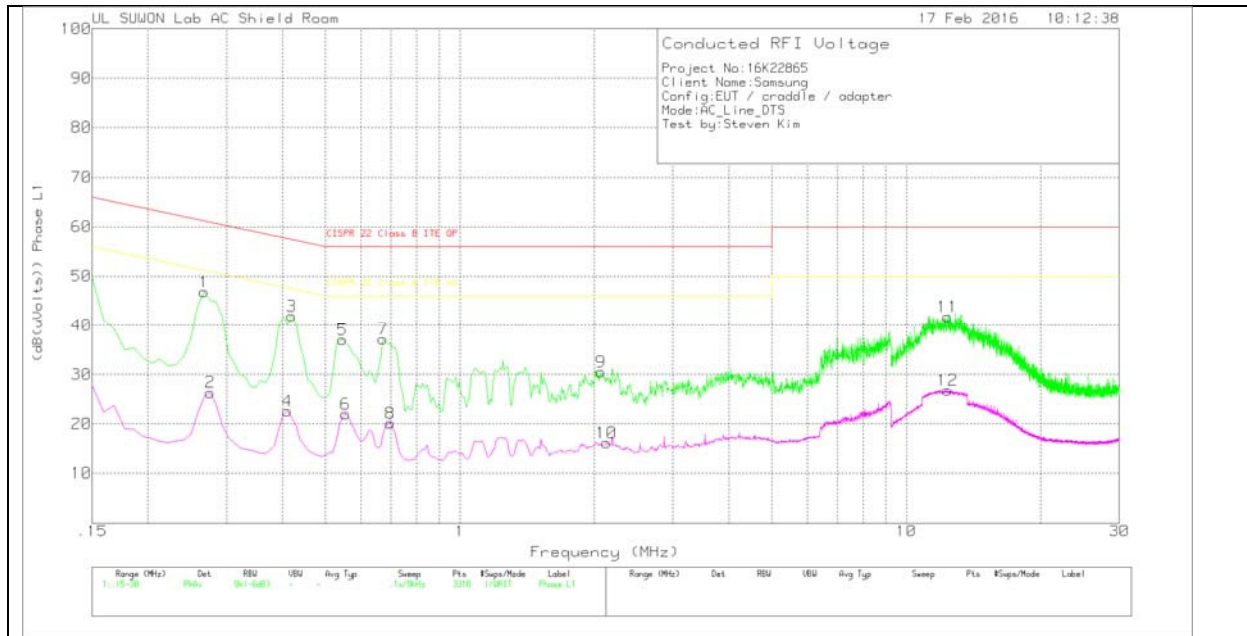
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

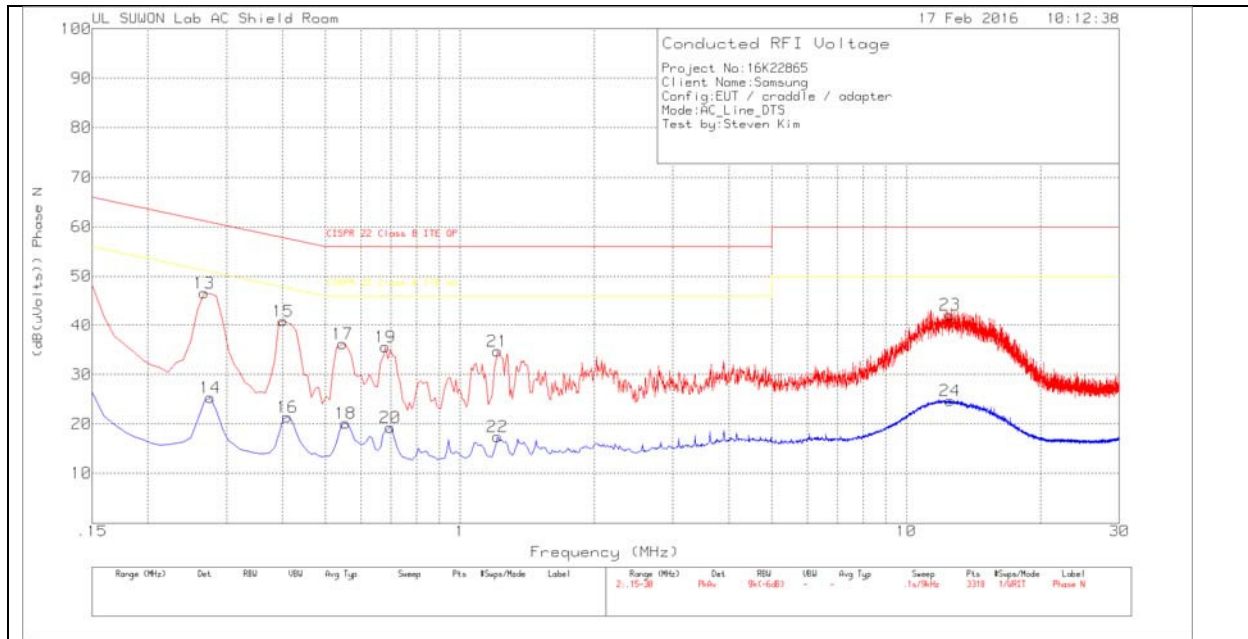
Phase L1 .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101837_w ith ex-cord_L1 | CE Shield Room | Corrected Reading (dB(uVolts)) | CISPR 22 Class B ITE QP | Margin (dB) | CISPR 22 Class B ITE AV | Margin (dB) |
|--------|-----------------|----------------------|-----|-------------------------|----------------|--------------------------------|-------------------------|-------------|-------------------------|-------------|
| 1 | .267 | 37.07 | Pk | 9.8 | 0 | 46.87 | 61.21 | -14.34 | - | - |
| 2 | .276 | 16.58 | Av | 9.8 | 0 | 26.38 | - | - | 50.94 | -24.56 |
| 3 | .42 | 31.83 | Pk | 10.1 | 0 | 41.93 | 57.45 | -15.52 | - | - |
| 4 | .411 | 12.48 | Av | 10.1 | 0 | 22.58 | - | - | 47.63 | -25.05 |
| 5 | .546 | 26.94 | Pk | 10.1 | 0 | 37.04 | 56 | -18.96 | - | - |
| 6 | .555 | 11.85 | Av | 10.1 | 0 | 21.95 | - | - | 46 | -24.05 |
| 7 | .672 | 27.06 | Pk | 10.1 | 0 | 37.16 | 56 | -18.84 | - | - |
| 8 | .699 | 10.02 | Av | 10.1 | 0 | 20.12 | - | - | 46 | -25.88 |
| 9 | 2.067 | 20.58 | Pk | 9.8 | .1 | 30.48 | 56 | -25.52 | - | - |
| 10 | 2.13 | 6.26 | Av | 9.8 | .1 | 16.16 | - | - | 46 | -29.84 |
| 11 | 12.372 | 31.43 | Pk | 10.1 | .2 | 41.73 | 60 | -18.27 | - | - |
| 12 | 12.381 | 16.55 | Av | 10.1 | .2 | 26.85 | - | - | 50 | -23.15 |

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Phase N .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101837_w ith ex-cord_N | CE Shield Room | Corrected Reading (dB(uVolts)) | CISPR 22 Class B ITE QP | Margin (dB) | CISPR 22 Class B ITE AV | Margin (dB) |
|--------|-----------------|----------------------|-----|------------------------|----------------|--------------------------------|-------------------------|-------------|-------------------------|-------------|
| 13 | .267 | 36.81 | Pk | 9.8 | 0 | 46.61 | 61.21 | -14.6 | - | - |
| 14 | .276 | 15.54 | Av | 9.8 | 0 | 25.34 | - | - | 50.94 | -25.6 |
| 15 | .402 | 30.84 | Pk | 10.1 | 0 | 40.94 | 57.81 | -16.87 | - | - |
| 16 | .411 | 11.3 | Av | 10.1 | 0 | 21.4 | - | - | 47.63 | -26.23 |
| 17 | .546 | 26.09 | Pk | 10.1 | 0 | 36.19 | 56 | -19.81 | - | - |
| 18 | .555 | 9.98 | Av | 10.1 | 0 | 20.08 | - | - | 46 | -25.92 |
| 19 | .681 | 25.6 | Pk | 10 | 0 | 35.6 | 56 | -20.4 | - | - |
| 20 | .699 | 9.23 | Av | 10 | 0 | 19.23 | - | - | 46 | -26.77 |
| 21 | 1.212 | 24.8 | Pk | 9.8 | .1 | 34.7 | 56 | -21.3 | - | - |
| 22 | 1.212 | 7.56 | Av | 9.8 | .1 | 17.46 | - | - | 46 | -28.54 |
| 23 | 12.543 | 31.81 | Pk | 10.2 | .2 | 42.21 | 60 | -17.79 | - | - |
| 24 | 12.516 | 14.35 | Av | 10.2 | .2 | 24.75 | - | - | 50 | -25.25 |

Pk - Peak detector

Av - Average detection