# FCC 47 CFR PART 15 SUBPART C
# INDUSTRY CANADA RSS-247 ISSUE 1

## CERTIFICATION TEST REPORT

**FOR**

**TRANSCEIVER**

**MODEL NUMBER: TR-201**

**FCC ID: 2AB8I-TR-20-214**

**IC ID: 20949-TR20214**

**REPORT NUMBER: 15U21185-E1V3**

**ISSUE DATE: FEBRUARY 11, 2016**

*Prepared for*
**NEXT CENTURY SUBMETERING SYSTEMS, LLC**
**P.O. BOX 360**
**TYBEE ISLAND, GA 31328 U.S.A.**

*Prepared by*
**UL VERIFICATION SERVICES INC.**
**47173 BENICIA STREET**
**FREMONT, CA 94538, U.S.A.**
**TEL: (510) 771-1000**
**FAX: (510) 661-0888**

NVLAP LAB CODE 200065-0

## Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V1 | 01/11/16 | Initial Issue | H. Mustapha |
| V2 | 02/05/16 | Updated FCC ID<br>Updated IC reference to RSS-247 Issue 1<br>Updated reference to ANSI C63.10-2013 in section 2<br>Updated section 5.2 to indicate low frequency at 910.2 MHz<br>Updated average power measurements in section 8.7<br>Updated section 9.1 with test procedure | H. Mustapha |
| V3 | 02/11/16 | Updated calibration date for Micro-Tronics HPM50114 filter<br>Updated output power value for low channel on page 27<br>Updated section 9 by removing reference to KDB 558074 from results table for average measurements | H. Mustapha |



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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** NEXT CENTURY SUBMETERING SYSTEMS, LLC
P.O. BOX 360
TYBEE ISLAND, GA 31328, U.S.A.

**EUT DESCRIPTION:** TRANSCEIVER

**MODEL:** TR-201

**SERIAL NUMBER:** BA000FD0 (Radiated sample)
BA000FCF (Conducted sample)

**DATE TESTED:** NOVEMBER 06 to17, 2015
FEBRUARY 5, 2016

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart C | Pass |
| INDUSTRY CANADA RSS-247 Issue 1 | Pass |
| INDUSTRY CANADA RSS-GEN Issue 4 | 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.


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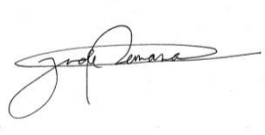
Approved & Released For
UL Verification Services Inc. By:

*Huda Mustapha*

HUDA MUSTAPHA
PROJECT LEAD
UL Verification Services Inc.

Tested By:



JUDE SEMANA
Lab EMC ENGINEER
UL Verification Services Inc.

FRANK IBRAHIM
PROGRAM MANAGER
UL Verification Services Inc.



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# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, DA 00-75, ANSI C63.10-2013, RSS-GEN Issue 4, and RSS-247 Issue 1.

# 3. FACILITIES AND ACCREDITATION

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

| 47173 Benicia Street | 47266 Benicia Street |
|---|---|
| ☐ Chamber A | ☐ Chamber D |
| ☐ Chamber B | ☐ Chamber E |
| ☒ Chamber C | ☐ Chamber F |
| | ☐ Chamber G |
| | ☐ Chamber H |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

# 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m


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## 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 1000 MHz | ± 4.94 dB |
| Radiated Disturbance, 1 to 6 GHz | ± 3.86 dB |
| Radiated Disturbance, 6 to 18 GHz | ± 4.23 dB |
| Radiated Disturbance, 18 to 26 GHz | ± 5.30 dB |
| Radiated Disturbance, 26 to 40 GHz | ± 5.23 dB |

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



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# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is a Transceiver, submetering RF device designed to collect data from customer's devices and send them to their cloud servers.

The transceiver is a frequency hopping system operating in the 902-928 MHz band and operated by CRC123 3v battery.

## 5.2. MAXIMUM OUTPUT POWER

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

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| 910.2-920 | 2GFSK | 19.48 | 88.72 |

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PCB antenna, with a maximum gain of 1.25 dBi.

## 5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was PuTTY, rev. 0.63.0.0.

## 5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1 GHz 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. All final measurements were taken in X orientation.

The EUT was operated by CRC123 3v battery; therefore AC Mains Line Conducted was not applicable.


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## 5.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| Laptop (Remote) | Lenovo | T420 | 4236B92 | N/A |
| AC Adapter (Remote) | Lenovo | 45N0121 | 11S45N0121Z1ZHXU242DMN | N/A |
| Remote Controller (Remote) | Next Century | TR-201 | BA000F35 | |

**I/O CABLES**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No** | **Port** | **# of identical ports** | **Connector Type** | **Cable Type** | **Cable Length (m)** | **Remarks** |
| 1 | AC | 1 | US115V | Unshielded | 1 | |
| 2 | DC | 1 | VDC | Unshielded | 1.5 | |
| 3 | USB | 1 | USB | Unshielded | 1 | |

**TEST SETUP**

The EUT was connected to a host laptop computer through USB Remote Controller wirelessly during the tests (See setup diagram).

The USB Remote Controller was used to remotely set testing into different test modes. It was used to change the testing devices: Frequency (Channel), Tx Power Levels, Active antenna, FEMs, Modulation.

The PuTTY Test software exercised the radio card.


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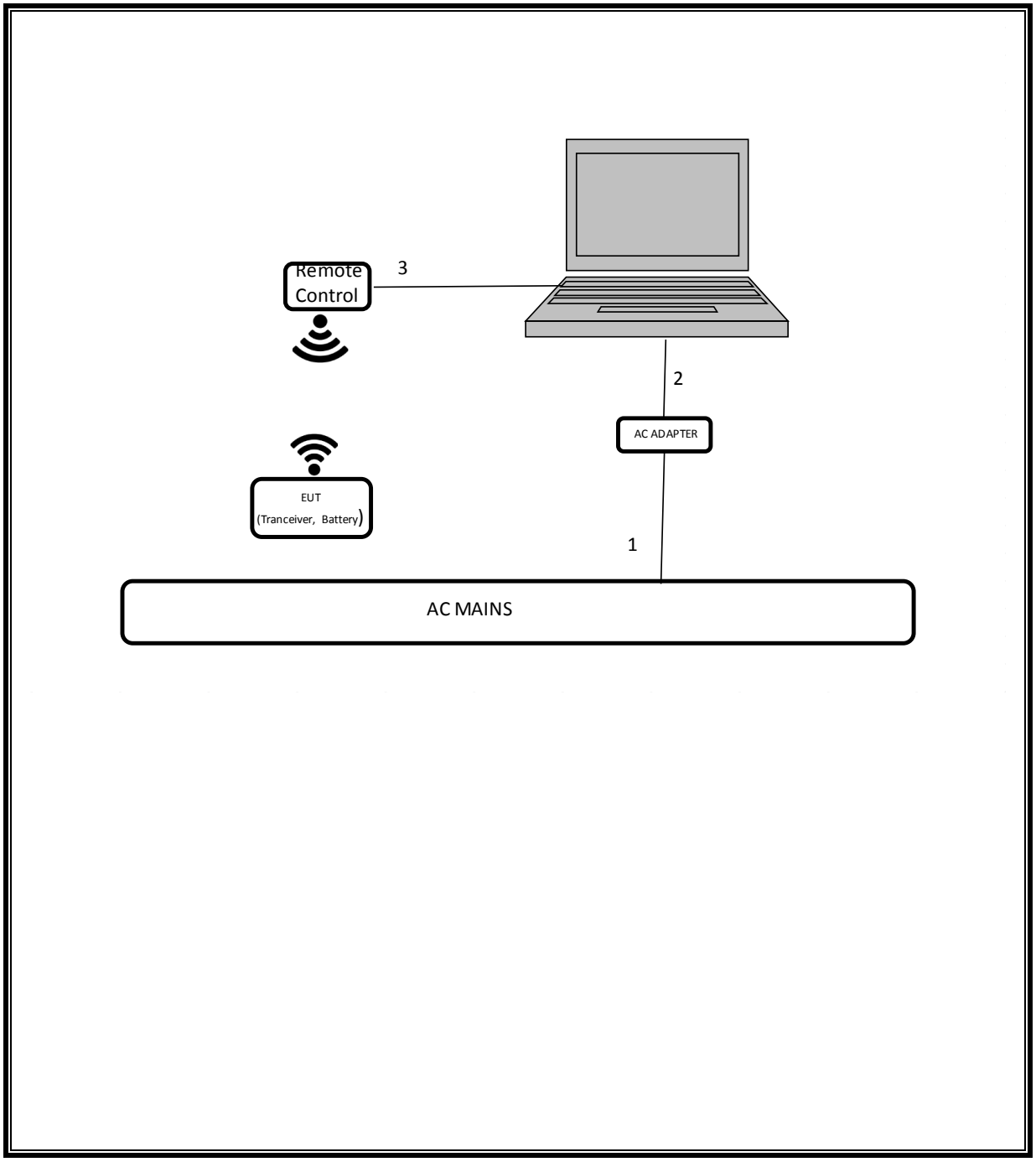
**SETUP DIAGRAM FOR TESTS**





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# 6. TEST AND MEASUREMENT EQUIPMENT

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

| Description | Manufacturer | Model | Asset | Cal Due |
|---|---|---|---|---|
| Antenna, Biconolog, 30MHz-1 GHz | Sunol Sciences | JB1 | C01171 | 02/13/16 |
| Antenna, Horn, 18GHz | ETS-Lindgren | 3117 | C01006 | 01/15/16 |
| RF Preamplifier, 100KHz -> 1300MHz | HP | 8447D | T10 | 01/06/16 |
| RF Preamplifier, 1GHz - 18GHz | Miteq | NSP4000-SP2 | 924343 | 03/23/16 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C01069 | 12/20/15 |
| Spectrum Analyzer 3kHz - 44GHz | Agilent | N9030A | 907 | 01/16/16 |
| EMI Test Receiver | Rohde & Schwarz | ECSI 7 | 212 | 08/07/16 |
| Peak Power Meter | Agilent / HP | E4416A | C00963 | 12/13/15 |
| LISN, 30 MHz | FCC | 50/250-25-2 | C00626 | 01/14/16 |
| Power Meter | Agilent | N1911A | 1268 | 06/06/16 |
| Power Sensor | Agilent | N1921A | 1223 | 06/16/16 |
| Filter, Highpass 1.5GHz | Micro-Tronics | HPM50114 | T0 | 11/17/15 |
| Radiated Software | UL | UL EMC | Ver 9.5, July 24, 2015 | |
| Conducted Software | UL | UL EMC | Ver 9.5, June 26, 2015 | |
| Antenna Port Software | UL | UL RF | Ver 3.6, October 26, 2015 | |



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# 7. MEASUREMENT METHODS

Radiated emissions: ANSI C63.10-2013, Sections 6.5 and 6.6.

Conducted spurious emissions: ANSI C63.10-2013, Sections 7.8.8.

Occupied bandwidth (20 dB): ANSI C63.10-2013, Sections 6.9.2.

Occupied bandwidth (99% dB): ANSI C63.10-2013, Sections 6.9.3.

Band-edge measurements for RF conducted emissions: ANSI C63.10-2013, Sections 7.8.6.

Carrier frequency separation: ANSI C63.10-2013, Sections 7.8.2.

Number of hopping frequencies: ANSI C63.10-2013, Sections 7.8.3.

Average time of occupancy (dwell time): ANSI C63.10-2013, Sections 7.8.4.

Peak output power: ANSI C63.10-2013, Sections 7.8.5.

On time and duty cycle: ANSI C63.10-2013, Section 11.6.


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# 8. ANTENNA PORT TEST RESULTS

## 8.1. ON TIME AND DUTY CYCLE

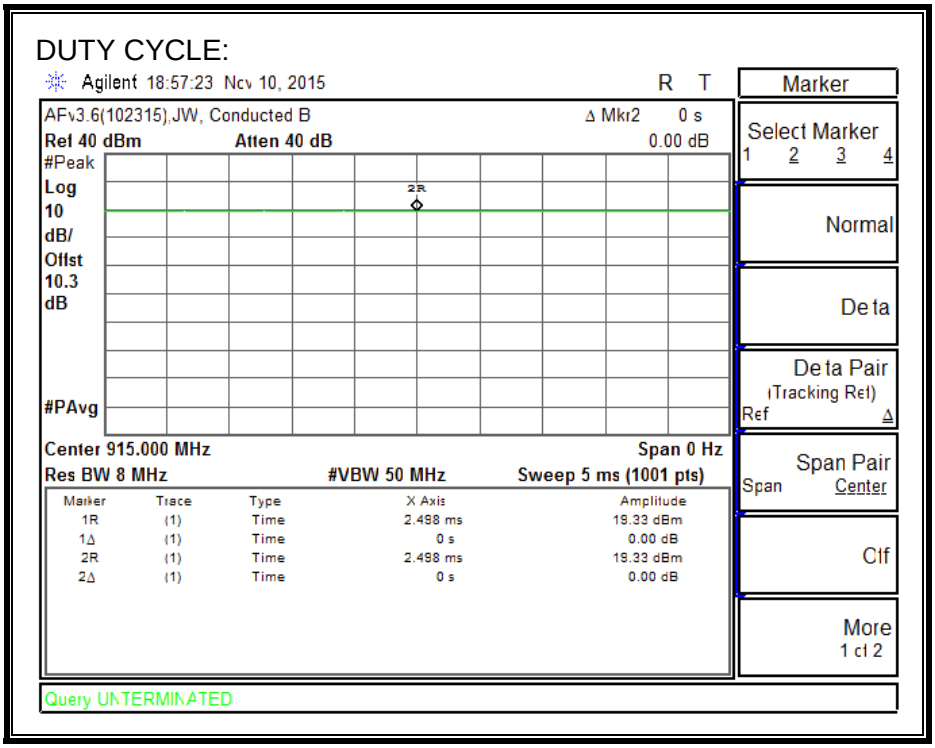
**LIMITS**

None; for reporting purposes only.

### 8.1.1. ON TIME AND DUTY CYCLE RESULTS

| Mode | ON Time B (msec) | Period (msec) | Duty Cycle x (linear) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) |
|---|---|---|---|---|---|
| 902-928 MHz Band/2GFSK | 100.000 | 100 | 1.000 | 100.00% | 0.00 |

### 8.1.2. DUTY CYCLE PLOTS



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## 8.2. 20 dB and 99% BANDWIDTH

### 8.2.1. 20 dB BANDWIDTH

**LIMIT**

The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

**RESULTS**

| Channel | Frequency (MHz) | 20 dB Bandwidth (kHz) |
|---|---|---|
| Low | 910.20 | 38.899 |
| Middle | 915.00 | 38.805 |
| High | 920.00 | 38.903 |


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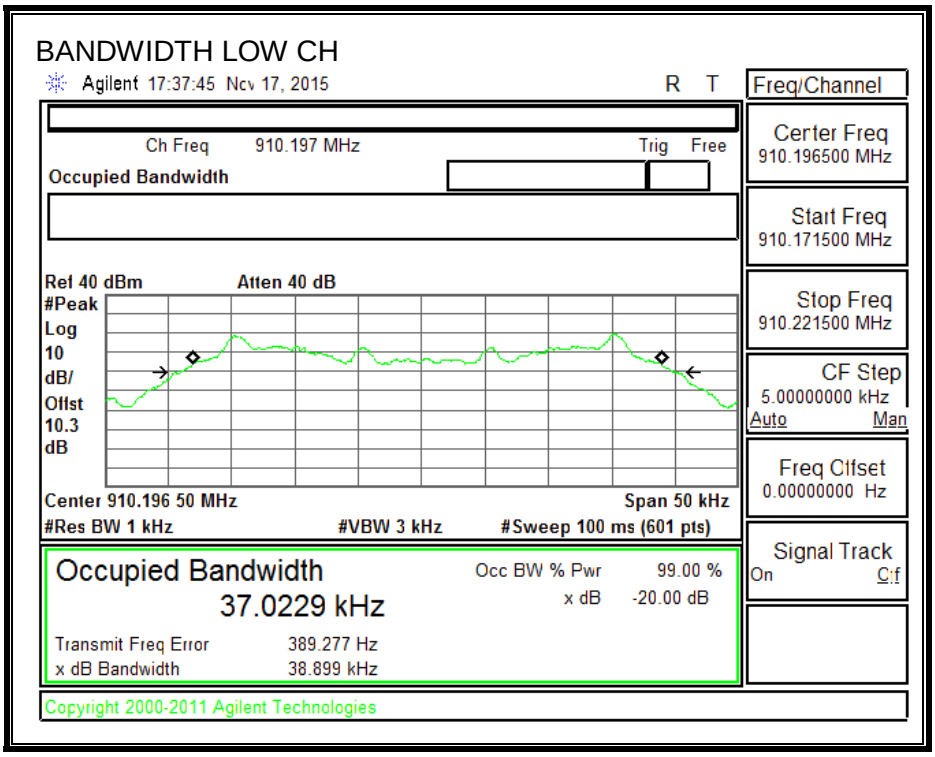


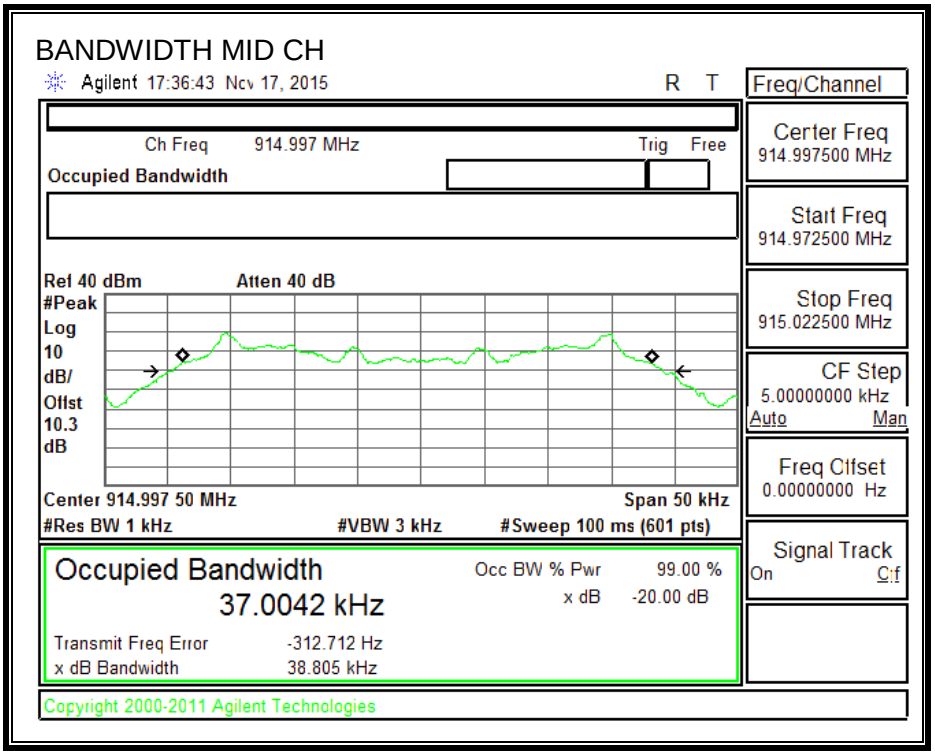




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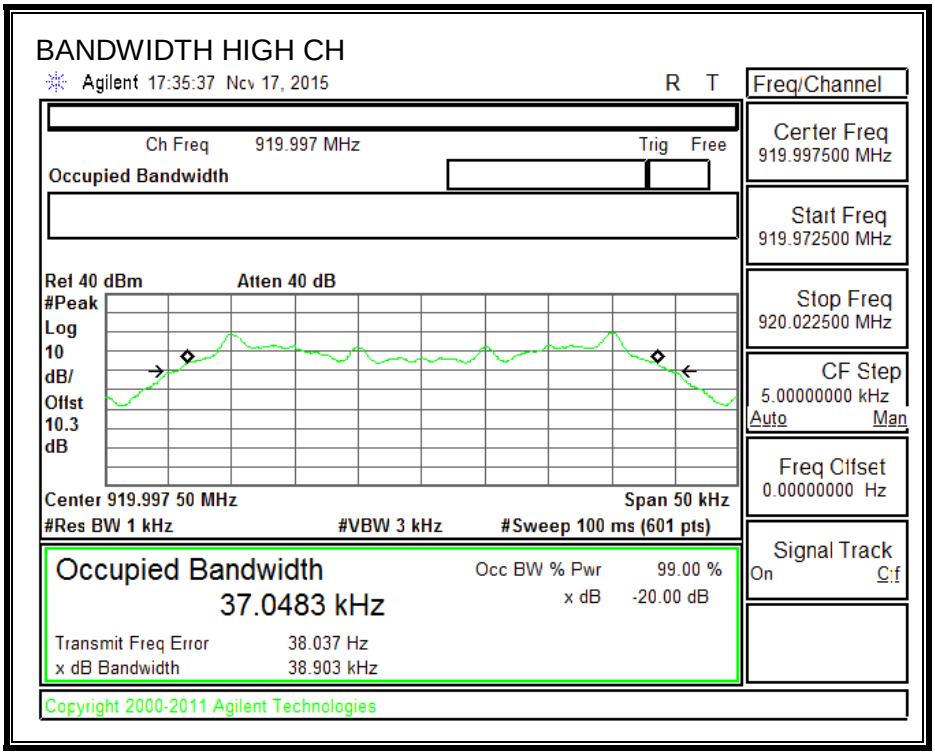




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### 8.2.2. 99% BANDWIDTH

**LIMIT**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (kHz) |
|---|---|---|
| Low | 910.20 | 37.4209 |
| Middle | 915.00 | 37.7801 |
| High | 920.00 | 37.4872 |


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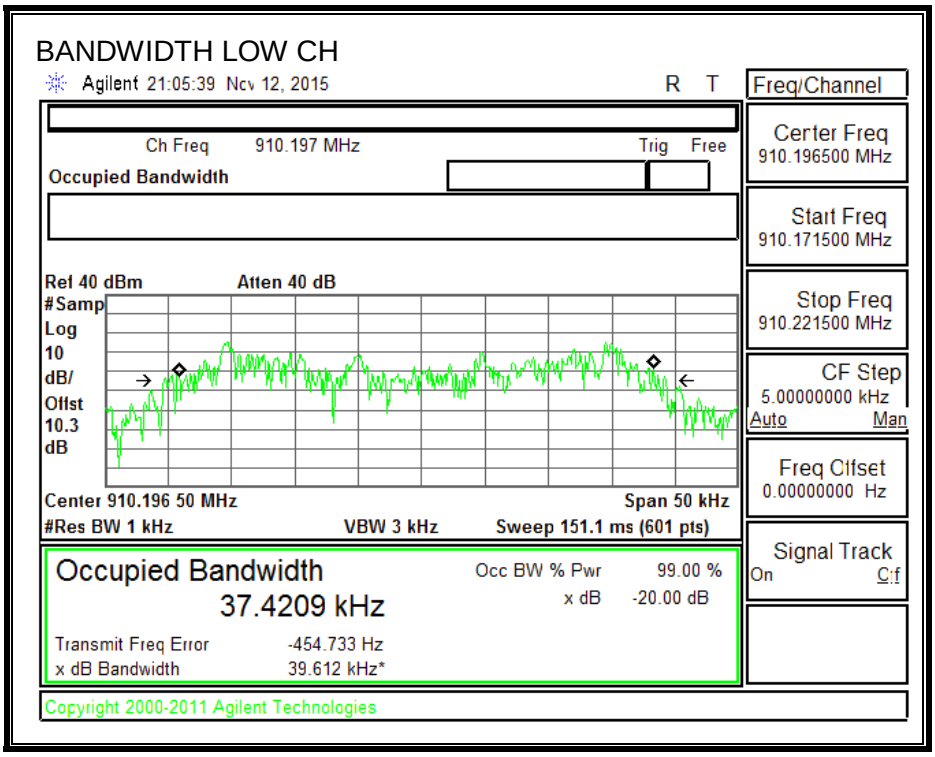
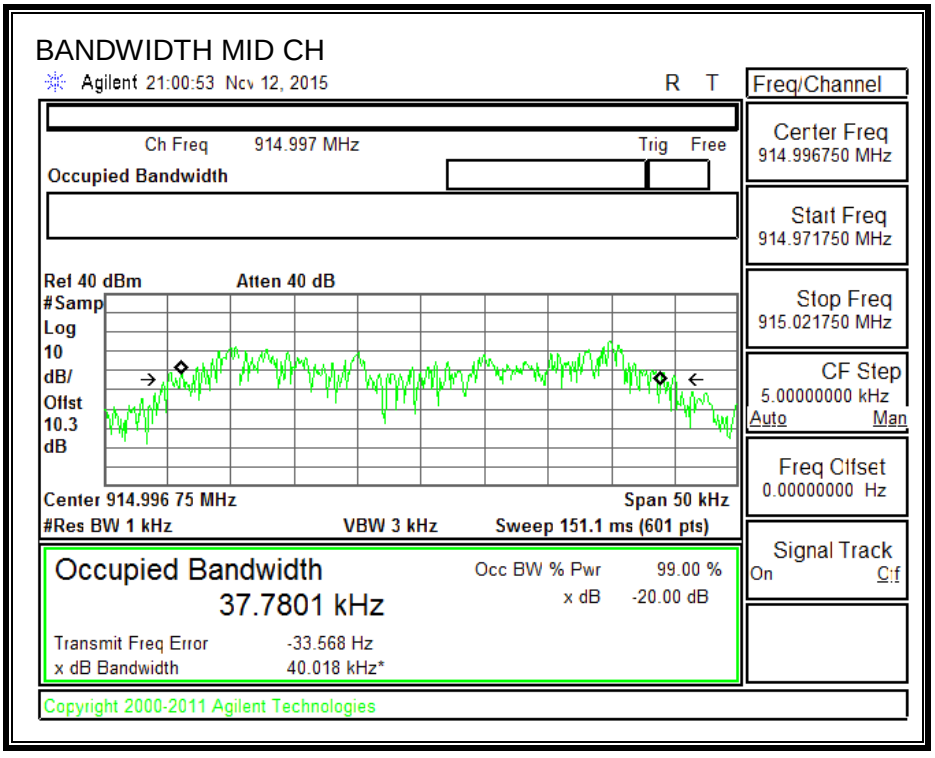
BANDWIDTH LOW CH




BANDWIDTH MID CH



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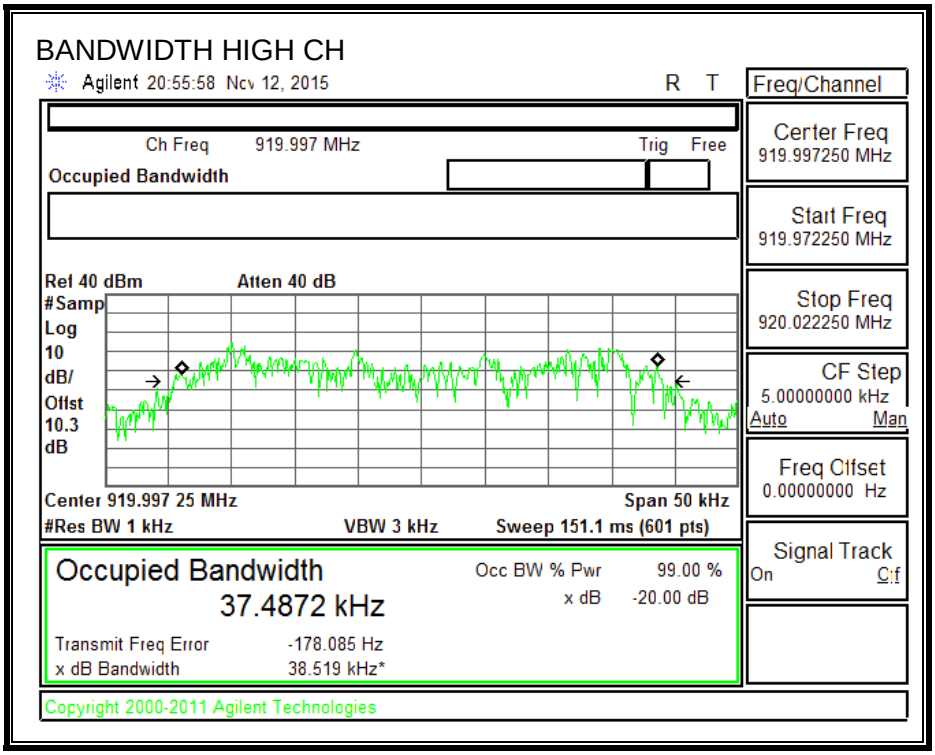




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## 8.3. CARRIER FREQUENCY SEPARATION

**LIMIT**

FCC §15.247 (a) (1)

IC RSS-247 Clause 5.1 (2)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.


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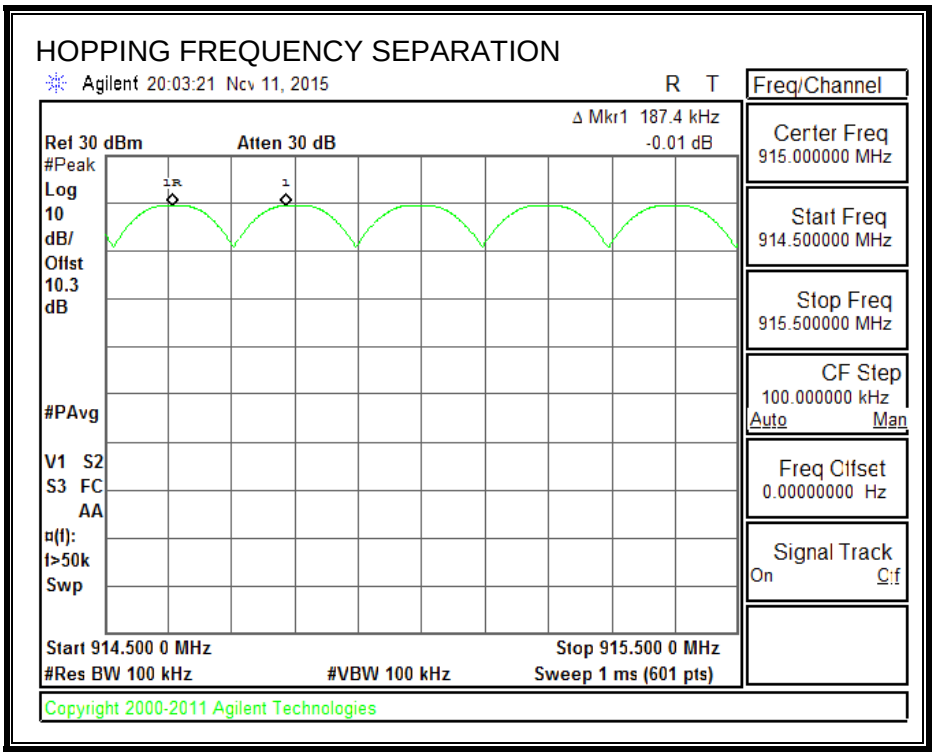
## RESULTS

## HOPPING FREQUENCY SEPARATION



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## 8.4. NUMBER OF HOPPING FREQUENCIES

**LIMIT**

FCC §15.247 (a) (1) (i)

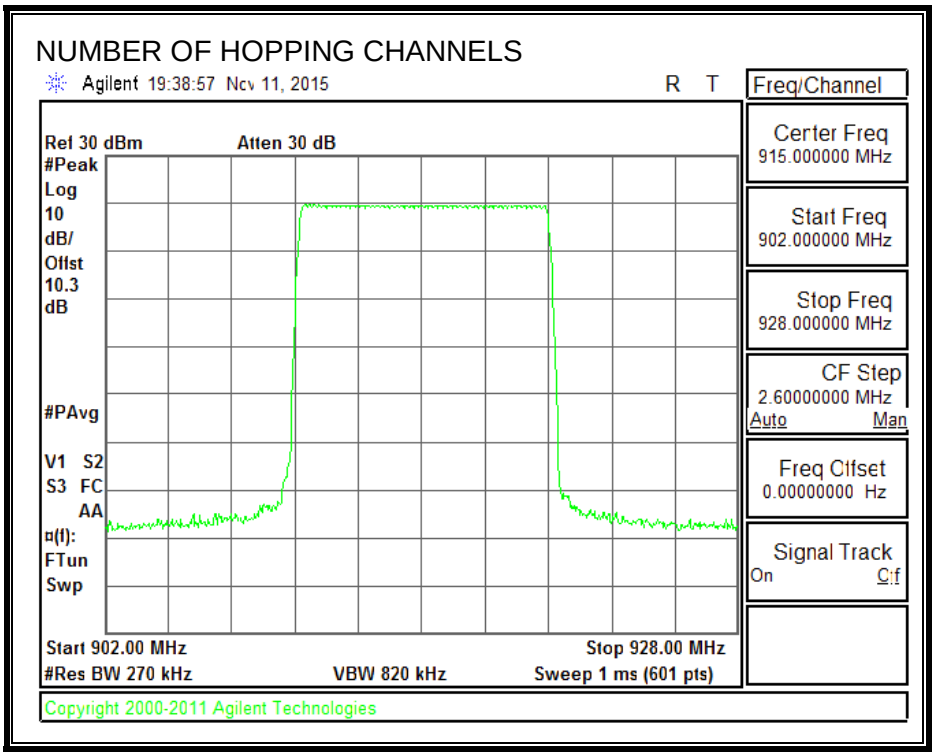
IC RSS-247 Clause 5.1(4)

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies.

If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies

**RESULTS**

Normal Mode: 50 Channels observed.



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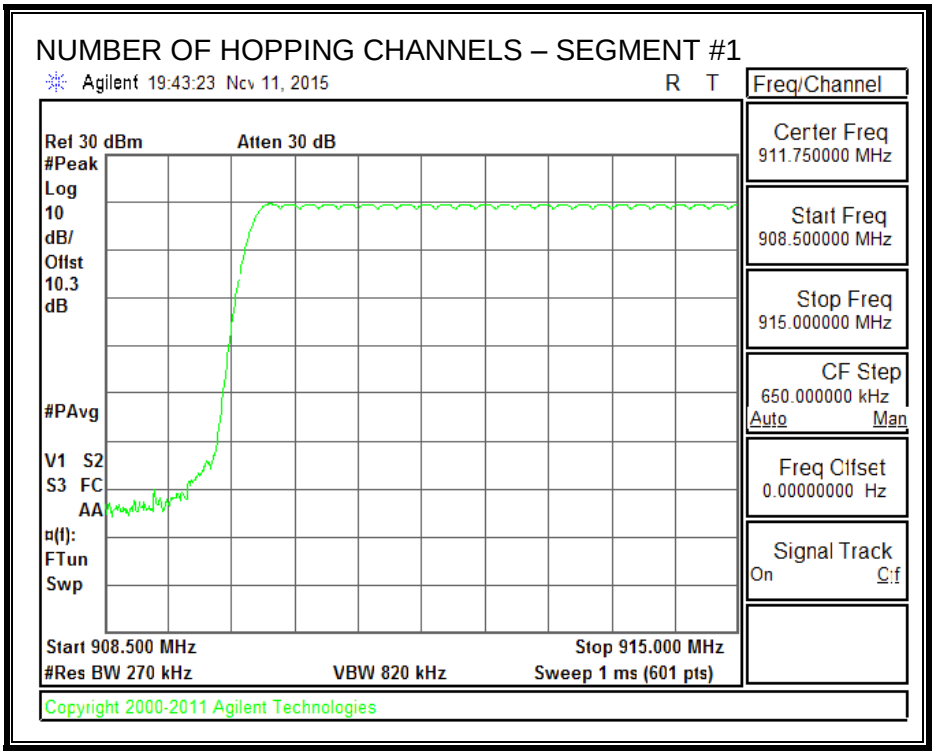
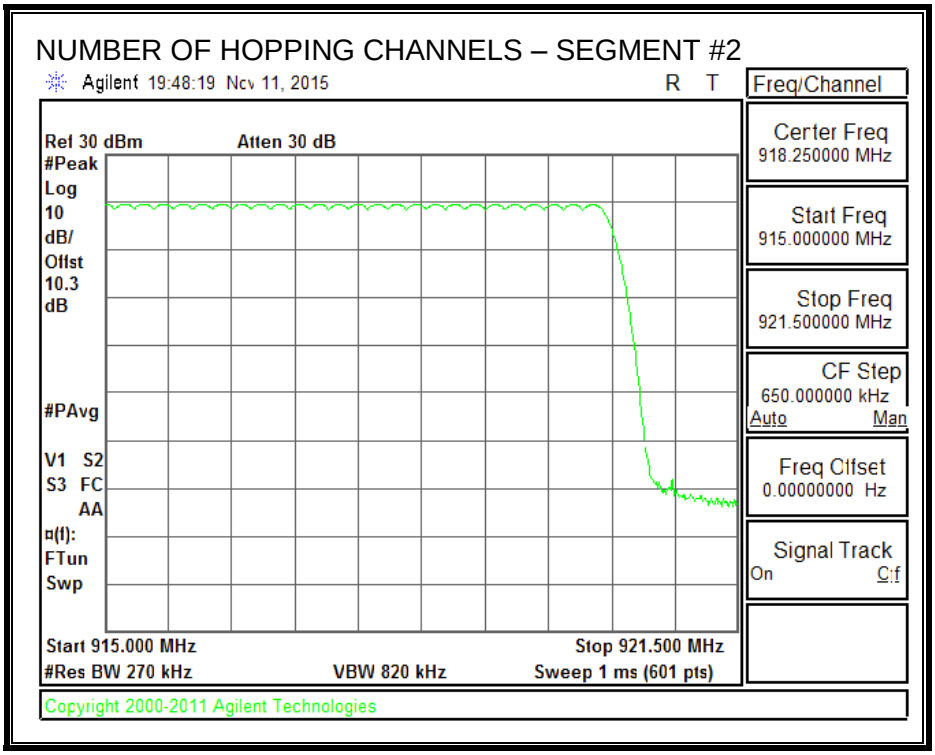
NUMBER OF HOPPING CHANNELS – SEGMENT #1




NUMBER OF HOPPING CHANNELS – SEGMENT #2



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## 8.5. AVERAGE TIME OF OCCUPANCY

**LIMIT**

FCC §15.247 (a) (1) (i)

IC RSS-247 Clause 5.1(4)

For frequency hopping systems in the band 902-928 MHz: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20 second period.

**RESULTS**

| Mode of Operation | Pulse Width (msec) | Number of Pulses in 20 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|---|---|---|---|---|---|
| 2GFSK | 371.6 | 1 | 0.372 | 0.4 | -0.028 |


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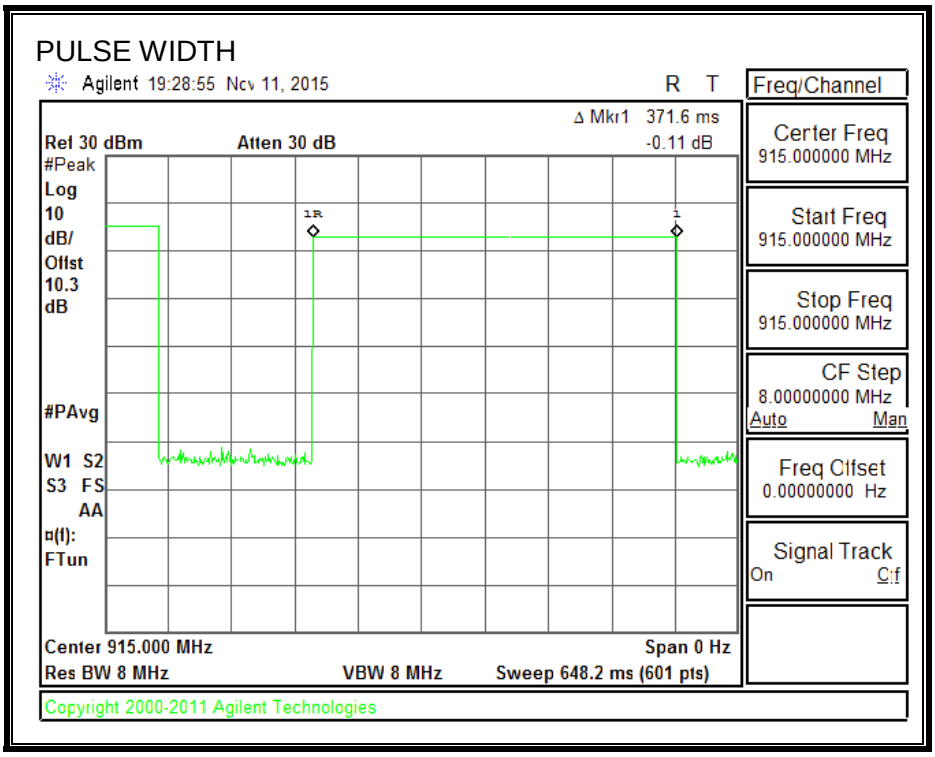
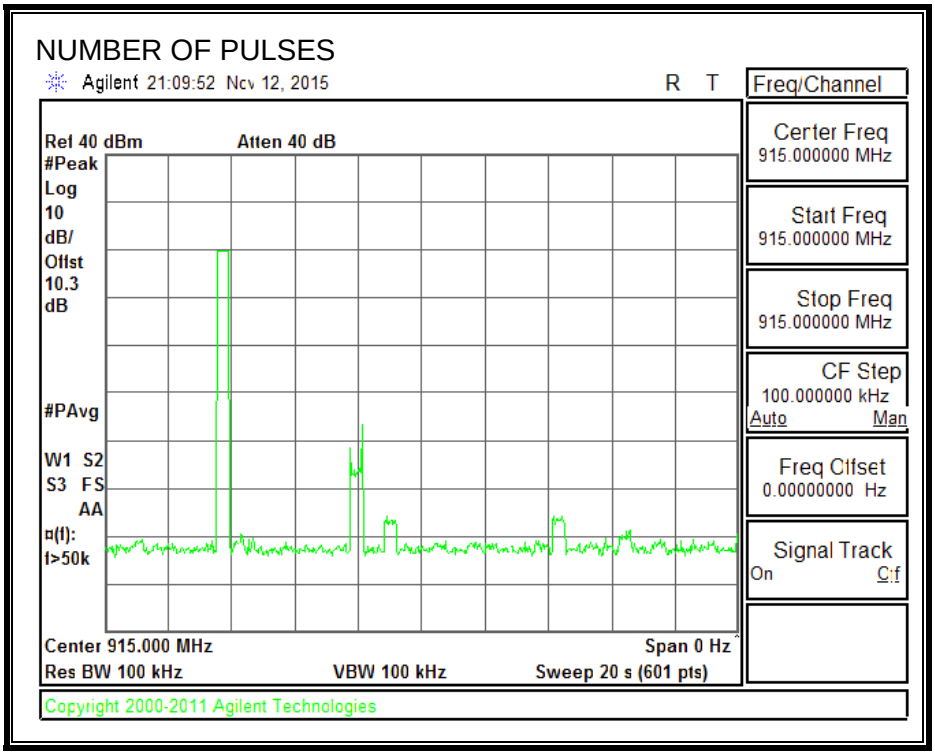
**PULSE WIDTH**




**NUMBER OF PULSES IN 20 SECOND OBSERVATION PERIOD**



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## 8.6. PEAK OUTPUT POWER

**LIMIT**

§15.247 (b) (2)

For frequency hopping systems operating in the 902–928 MHz band: 1watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, 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.

RSS-247 Clause 5.4 (1)

For frequency hopping systems operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W if the hopset uses 50 or more hopping channels; the maximum peak conducted output power shall not exceed 0.25 W, and the e.i.r.p. shall not exceed 1 W if the hopset uses less than 50 hopping channels.

**DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

| Channel | Frequency (MHz) | Output Power (dBm) | Directional Gain (dBi) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Low | 910.2 | 19.48 | 1.25 | 30 | -10.52 |
| Middle | 915.0 | 19.30 | 1.25 | 30 | -10.71 |
| High | 920.0 | 19.19 | 1.25 | 30 | -10.81 |



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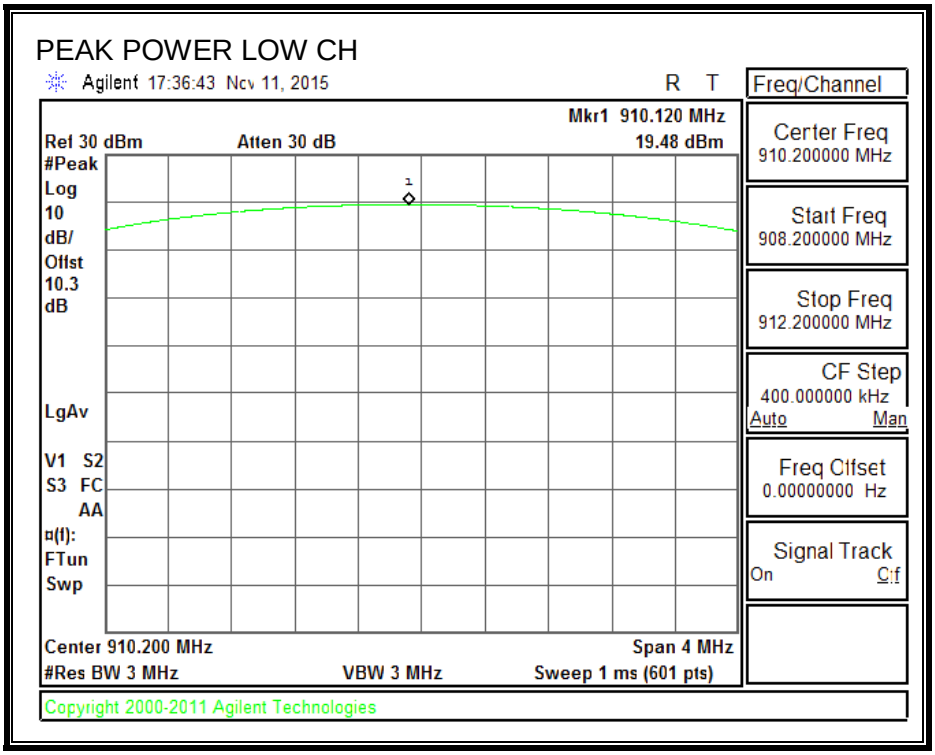
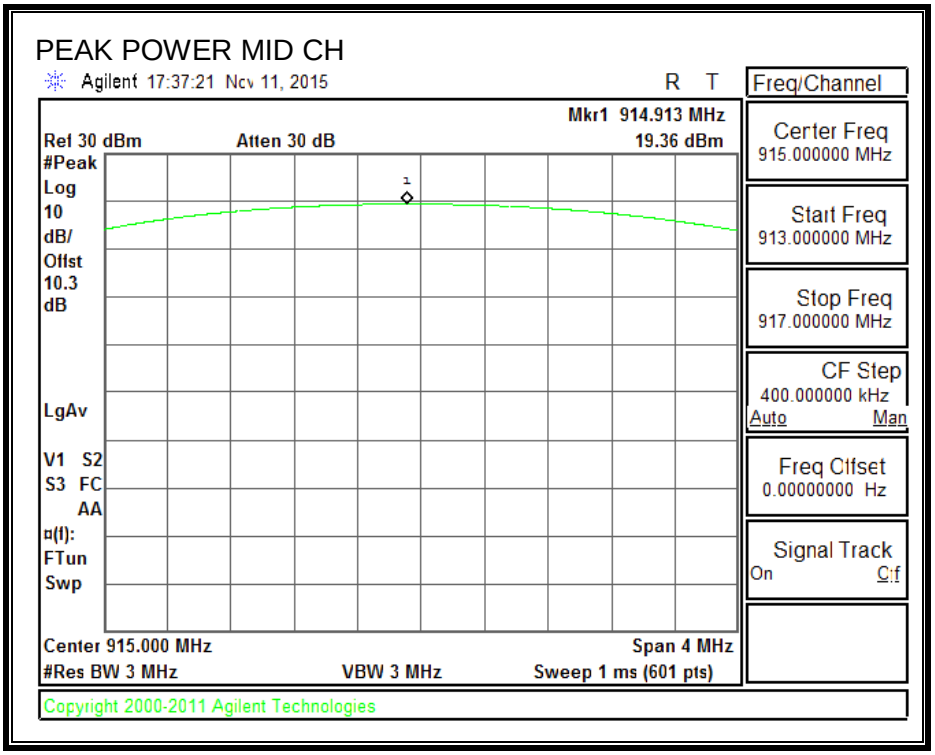
PEAK POWER LOW CH




PEAK POWER MID CH



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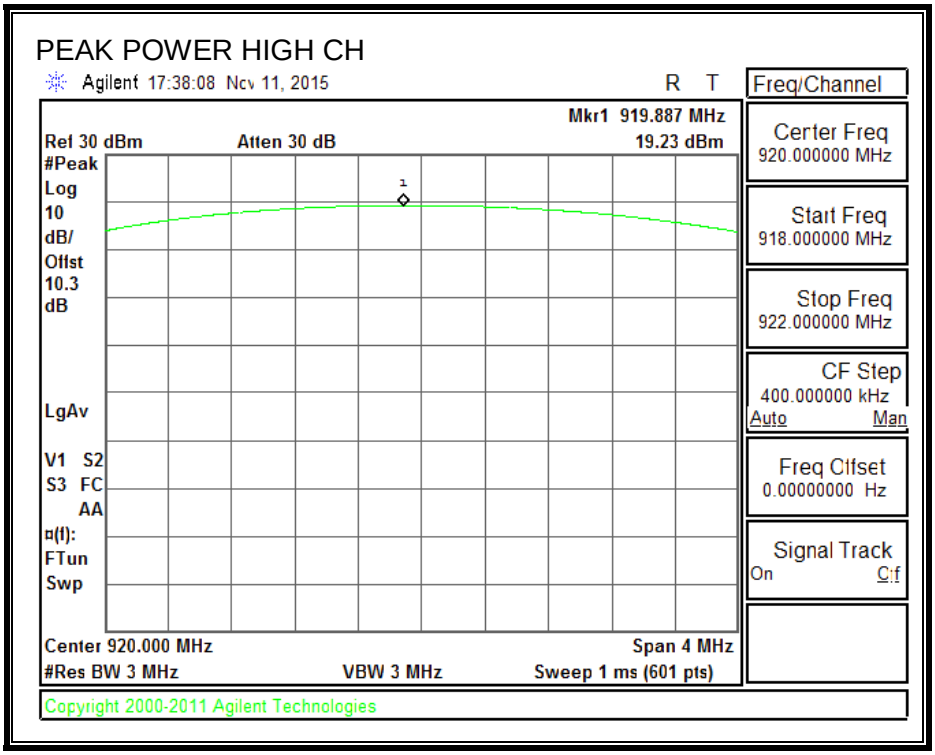




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## 8.7. AVERAGE POWER

**LIMIT**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

| Channel | Frequency (MHz) | Average Power (dBm) |
|---|---|---|
| Low | 910.2 | 19.3 |
| Middle | 915.0 | 19.2 |
| High | 920.0 | 19.0 |


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## 8.8. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-247 Clause 5.5

Limit = -20 dBc




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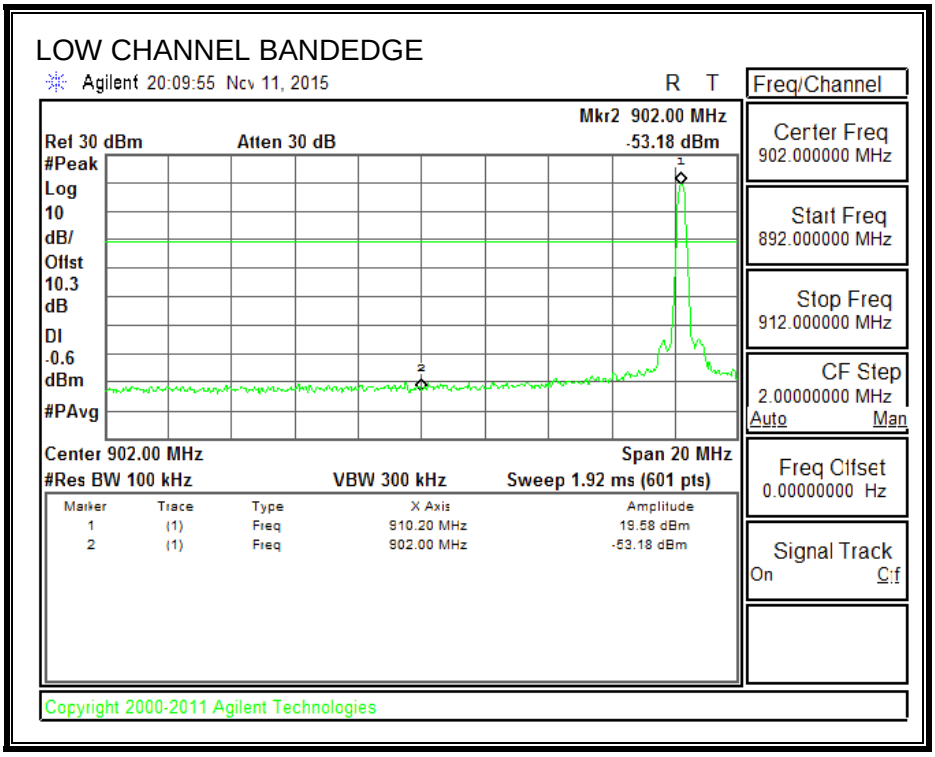
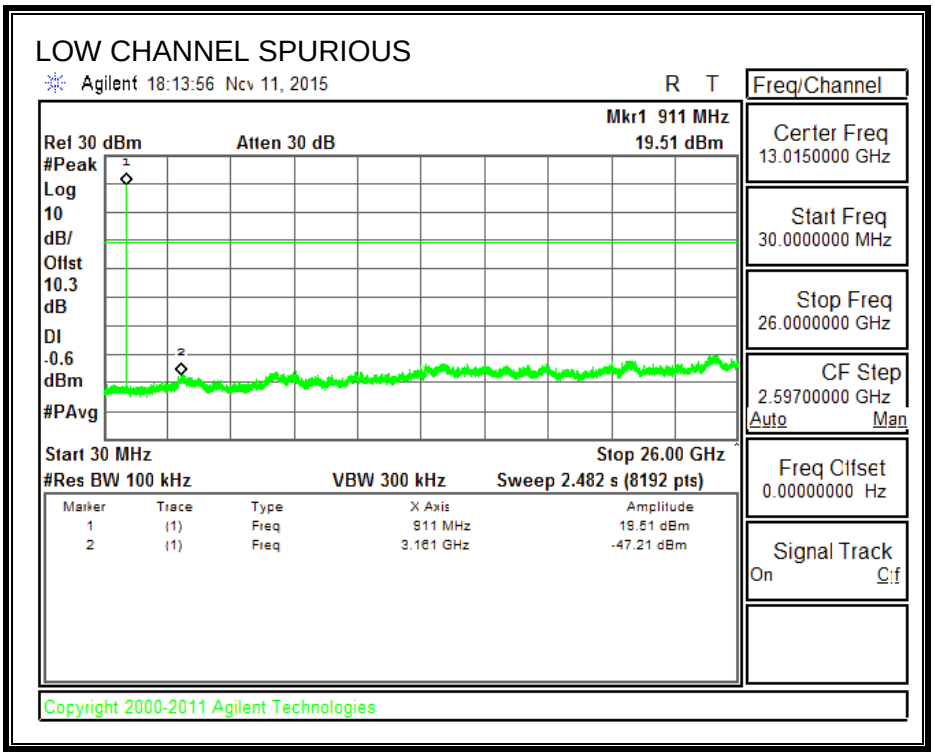
## RESULTS

## SPURIOUS EMISSIONS, LOW CHANNEL



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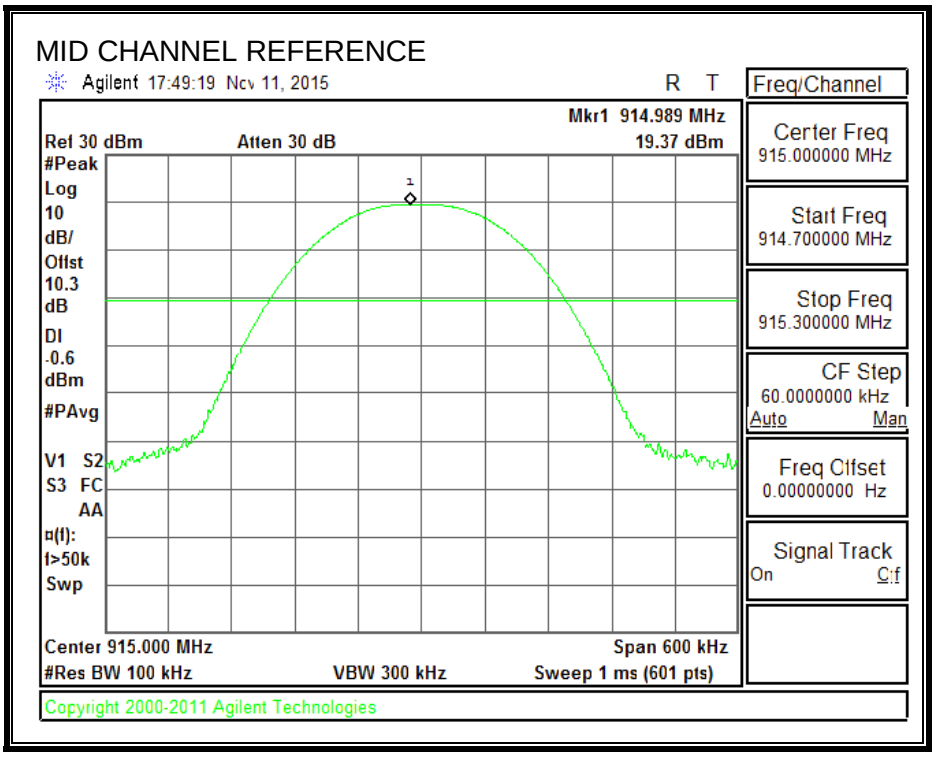
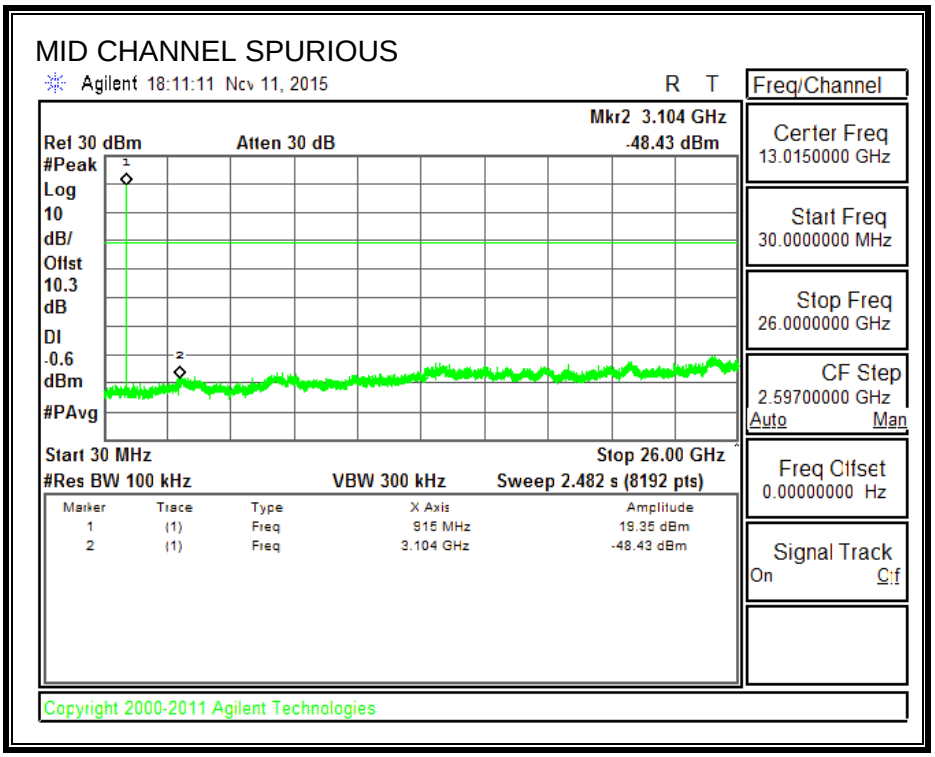
**SPURIOUS EMISSIONS, MID CHANNEL**



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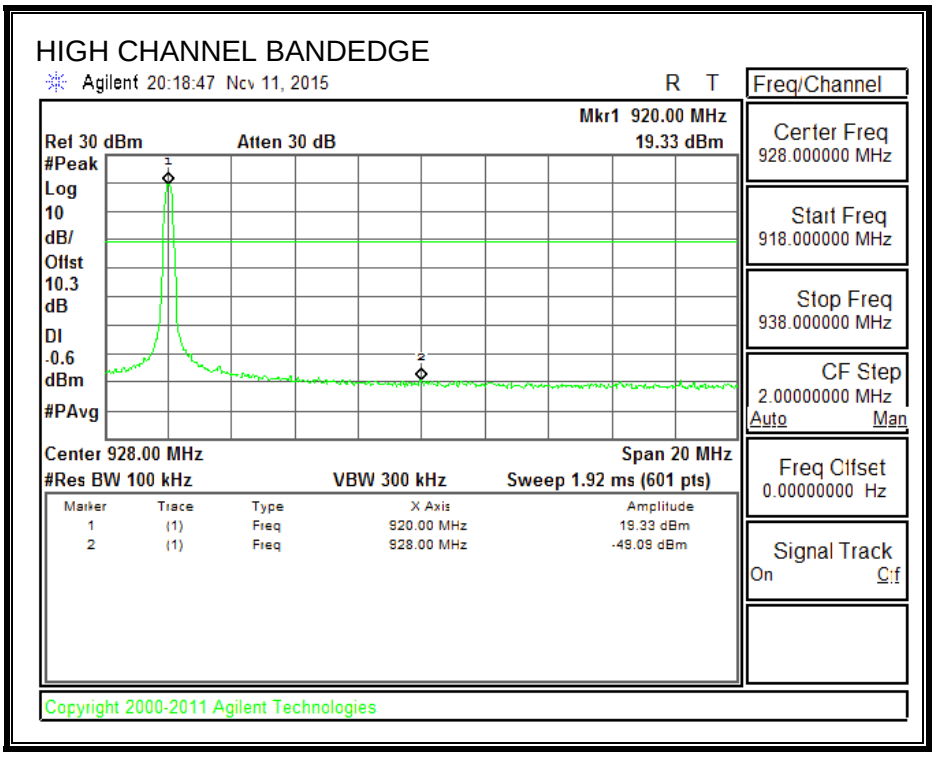
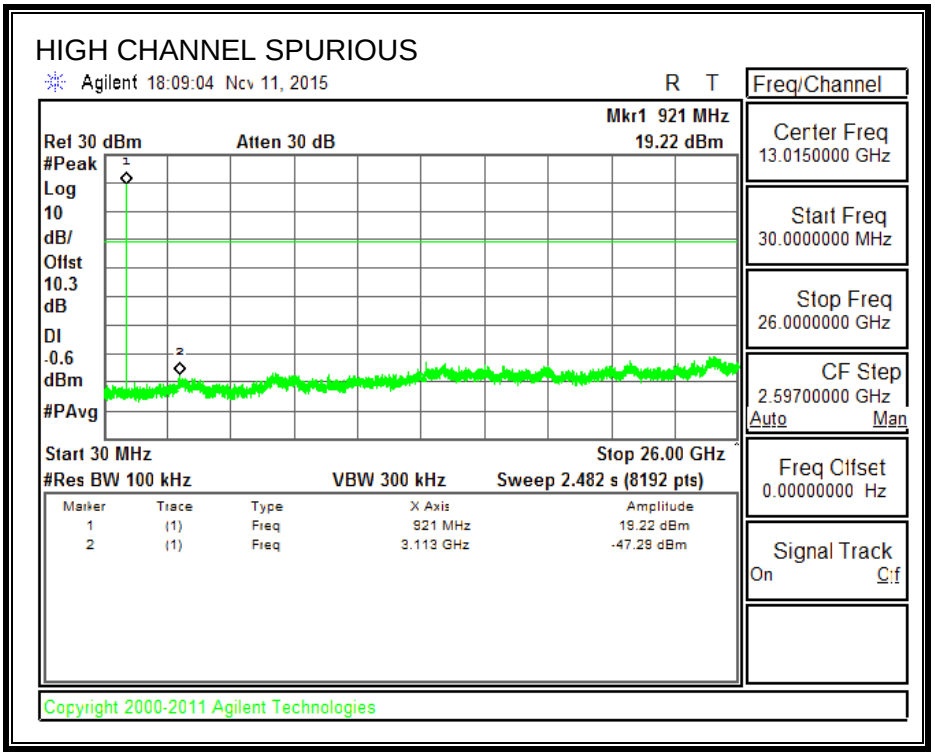
**SPURIOUS EMISSIONS, HIGH CHANNEL**



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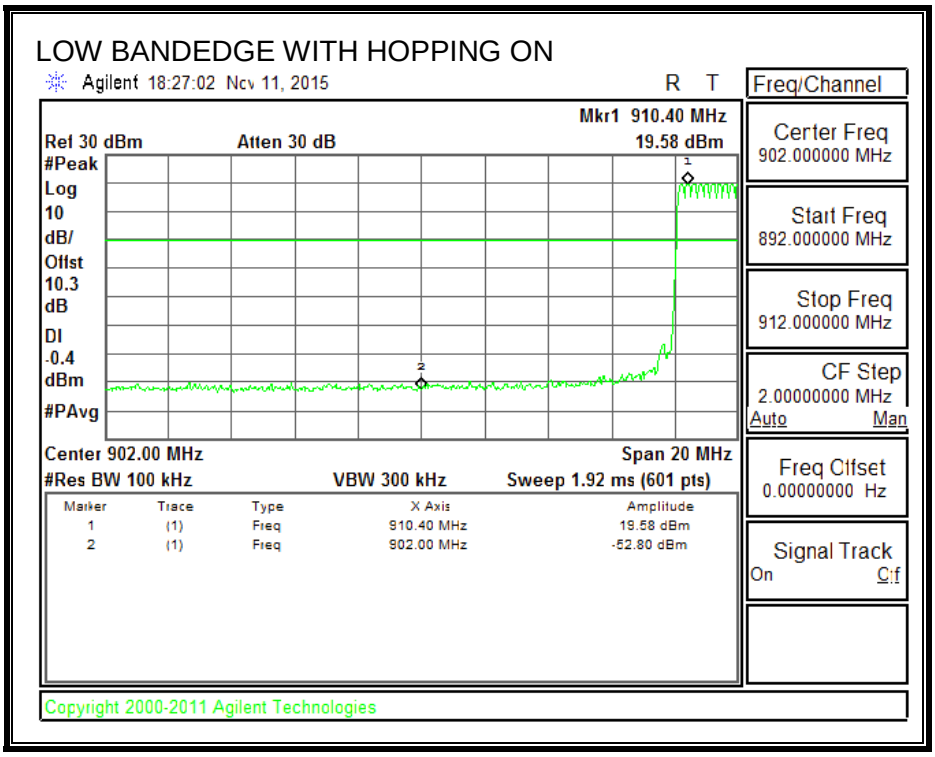
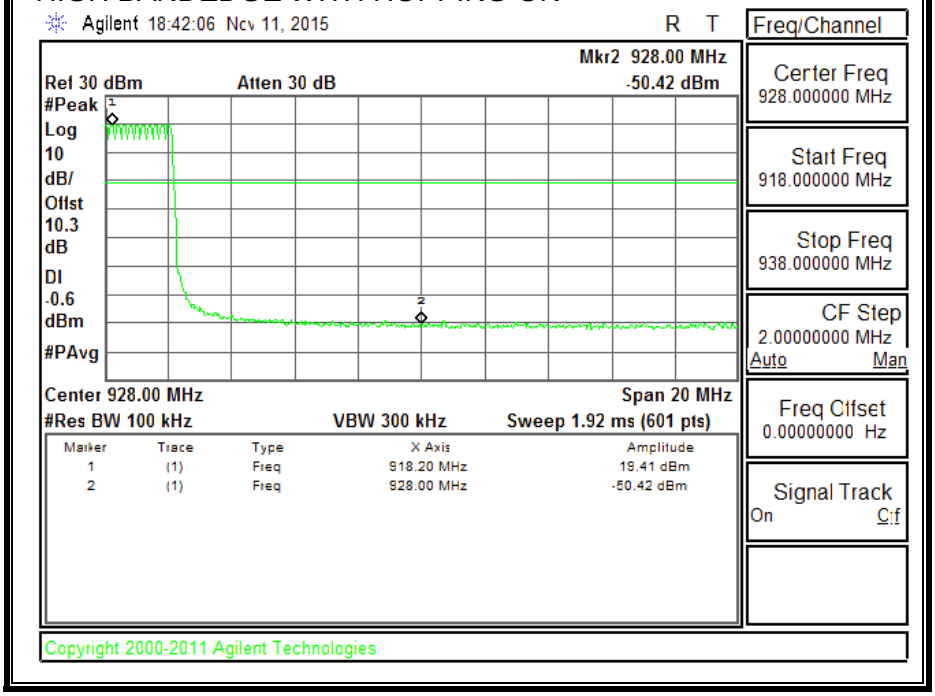
**SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

LOW BANDEDGE WITH HOPPING ON




HIGH BANDEDGE WITH HOPPING ON



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# 9. RADIATED TEST RESULTS

## 9.1. LIMITS AND PROCEDURE

**LIMITS**

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

| 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. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

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, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 3MHz video bandwidth with average detector for average measurements.

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.


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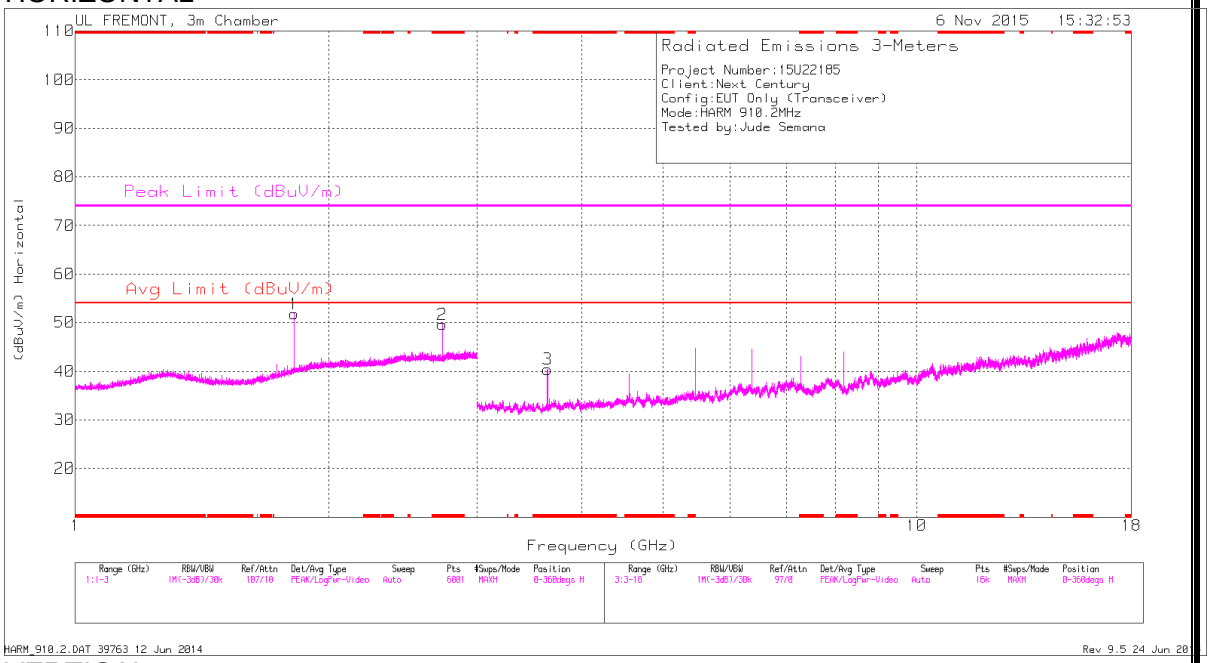
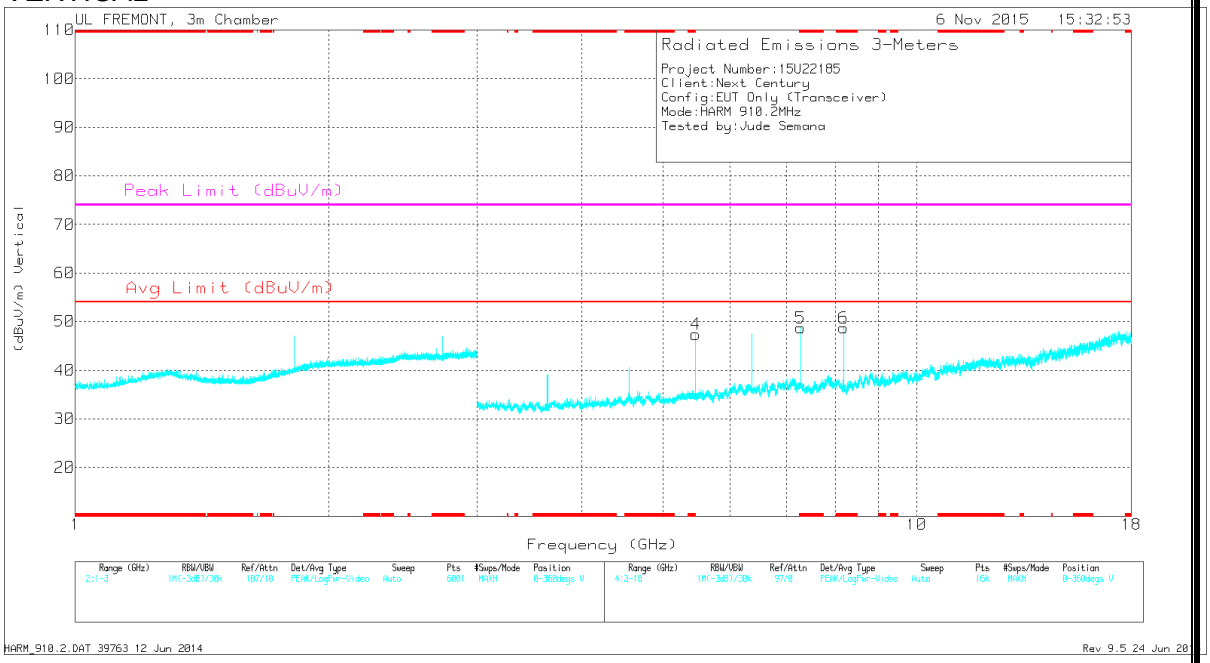
## 9.2. TRANSMITTER ABOVE 1 GHz

LOW CHANNEL

HORIZONTAL




VERTICAL



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## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.731 | 45.58 | PK2 | 32.4 | -22 | 55.98 | - | - | 74 | -18.02 | 304 | 141 | H |
| | | 38.48 | MAv1 | 32.4 | -22 | 48.88 | 54 | -5.12 | - | - | 304 | 141 | H |
| 3 | * 3.641 | 44.64 | PK2 | 32.9 | -30.2 | 47.34 | - | - | 74 | -26.66 | 326 | 336 | H |
| | | 38.04 | MAv1 | 32.9 | -30.2 | 40.74 | 54 | -13.26 | - | - | 326 | 336 | H |
| 5 | * 7.281 | 44.65 | PK2 | 35.6 | -27.3 | 52.95 | - | - | 74 | -21.05 | 120 | 328 | V |
| | | 39.84 | MAv1 | 35.6 | -27.4 | 48.04 | 54 | -5.96 | - | - | 120 | 328 | V |
| 6 | * 8.192 | 46.21 | PK2 | 35.8 | -26.6 | 55.41 | - | - | 74 | -18.59 | 252 | 364 | V |
| | | 42.41 | MAv1 | 35.8 | -26.6 | 51.61 | 54 | -2.39 | - | - | 252 | 364 | V |
| 1 | 1.821 | 44.02 | Avg | 30.4 | -22.6 | 51.82 | - | - | - | - | 0-360 | 200 | H |
| 4 | 5.461 | 42.4 | Avg | 34.6 | -29.6 | 47.4 | - | - | - | - | 0-360 | 200 | V |

* - indicates frequency in CFR15.205/IC8.10 Restricted Band
- Compliance for emissions in non-restricted bands is shown under conducted spurious emissions.

Avg - Video bandwidth < Resolution bandwidth
PK2 - Method: Maximum Peak
MAv1 - Maximum RMS Average



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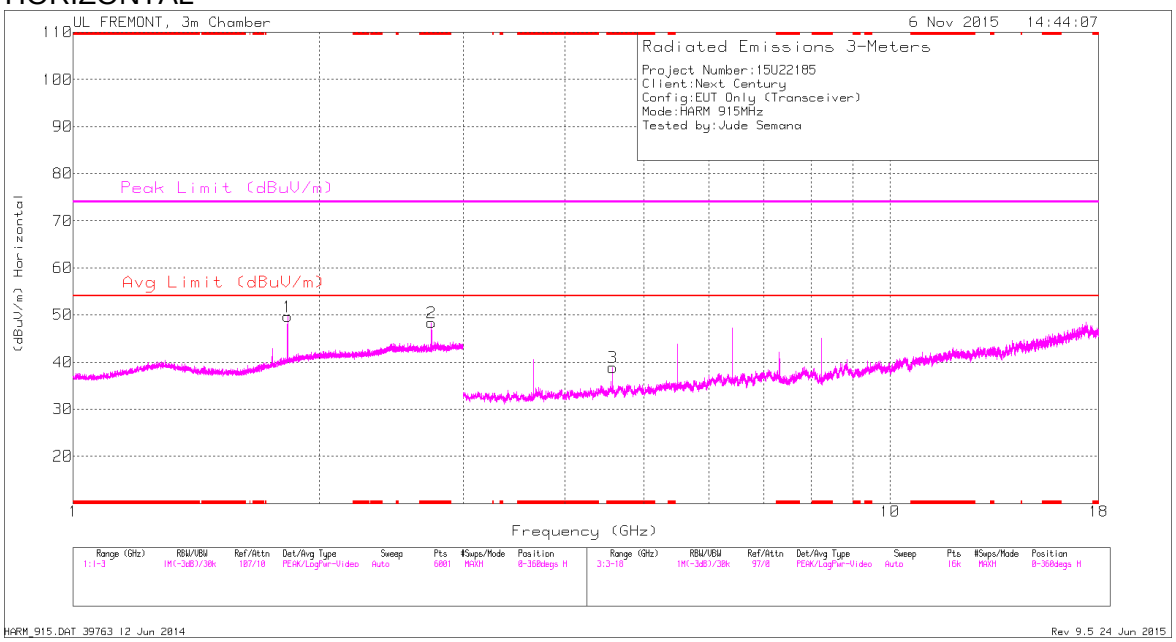
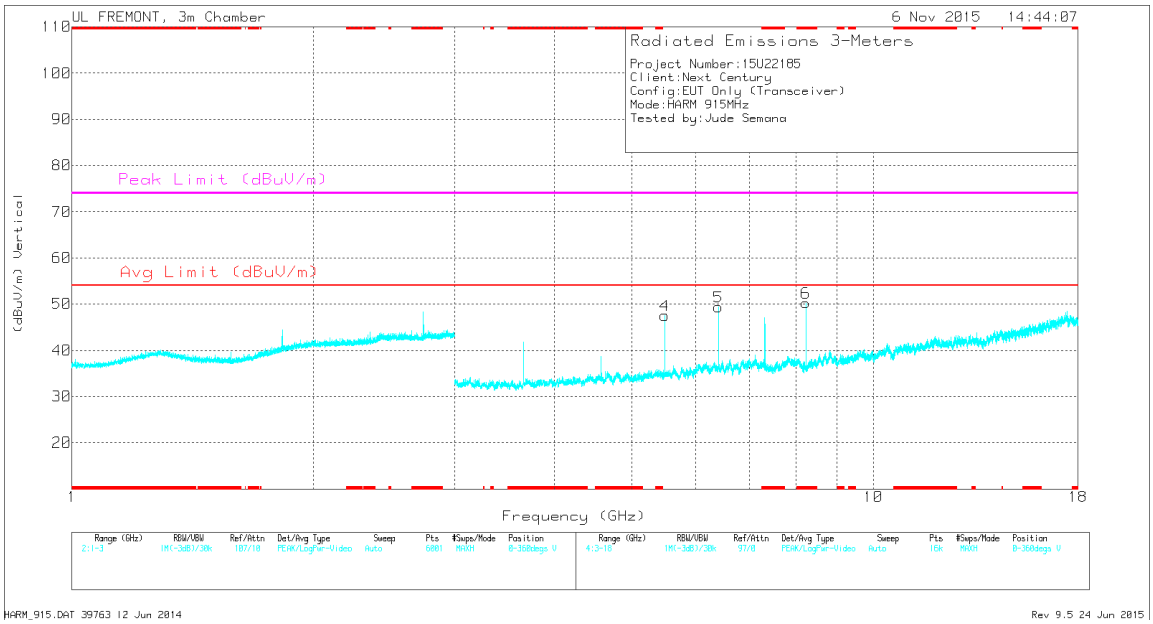
MID CHANNEL

HORIZONTAL




VERTICAL







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## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.745 | 46.4 | PK2 | 32.4 | -21.9 | 56.9 | - | - | 74 | -17.1 | 298 | 151 | H |
| | | 37.78 | MAv1 | 32.4 | -21.9 | 48.28 | 54 | -5.72 | - | - | 298 | 151 | H |
| 3 | * 4.575 | 43.25 | PK2 | 33.8 | -29.6 | 47.45 | - | - | 74 | -26.55 | 113 | 329 | H |
| | | 35.79 | MAv1 | 33.8 | -29.6 | 39.99 | 54 | -14.01 | - | - | 113 | 329 | H |
| 6 | * 8.235 | 44.98 | PK2 | 35.8 | -26.8 | 53.98 | - | - | 74 | -20.02 | 269 | 100 | V |
| | | 40.89 | MAv1 | 35.8 | -26.8 | 49.89 | 54 | -4.11 | - | - | 269 | 100 | V |
| 1 | 1.83 | 41.79 | Avg | 30.5 | -22.6 | 49.69 | - | - | - | - | 0-360 | 200 | H |
| 4 | 5.49 | 42.43 | Avg | 34.6 | -29.5 | 47.53 | - | - | - | - | 0-360 | 100 | V |
| 5 | 6.405 | 41.59 | Avg | 35.5 | -27.7 | 49.39 | - | - | - | - | 0-360 | 200 | V |

* - indicates frequency in CFR15.205/IC8.10 Restricted Band
- Compliance for emissions in non-restricted bands is shown under conducted spurious emissions.

Avg - Video bandwidth < Resolution bandwidth
PK2 - Method: Maximum Peak
MAv1 - Maximum RMS Average



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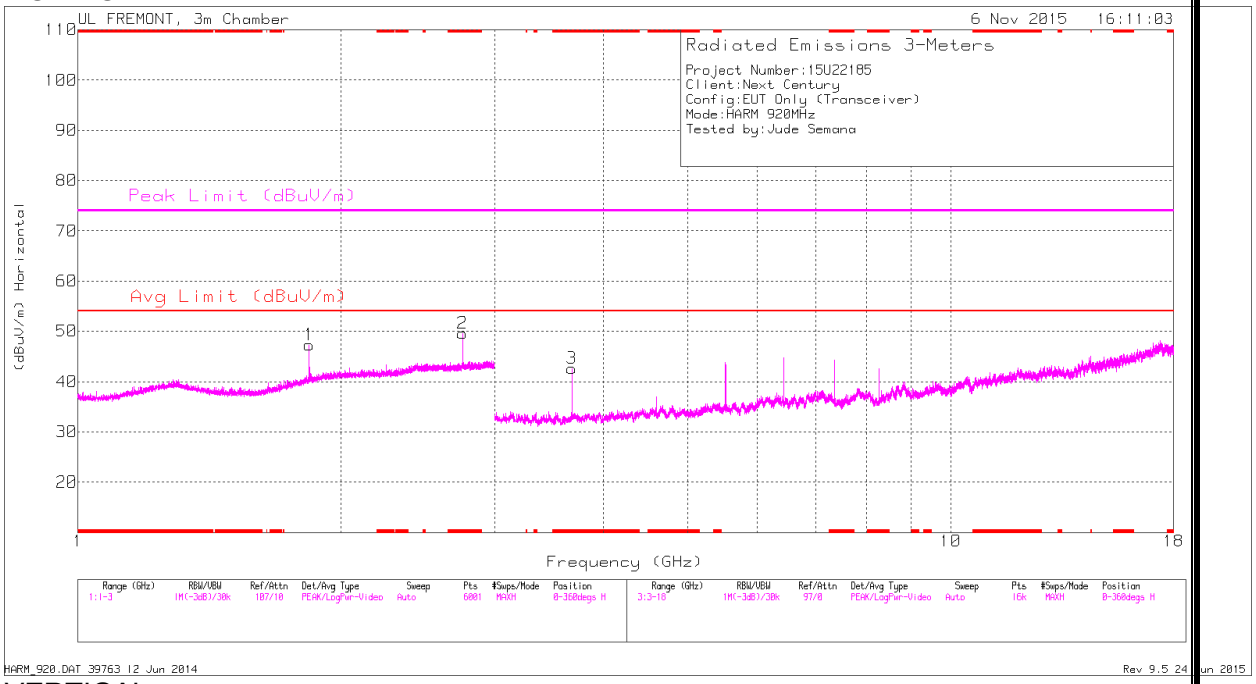
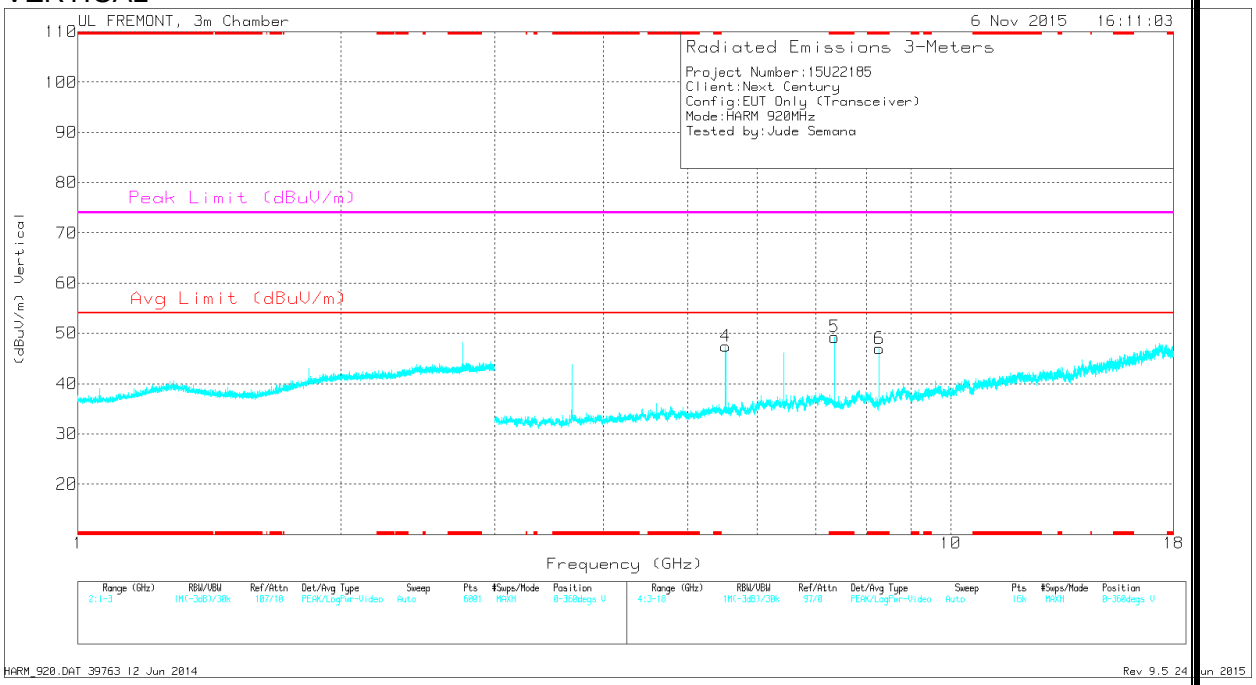
HIGH CHANNEL

HORIZONTAL




VERTICAL







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## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 2.76 | 46.32 | PK2 | 32.5 | -21.9 | 56.92 | - | - | 74 | -17.08 | 26 | 384 | H |
| | | 39.44 | MAv1 | 32.5 | -21.9 | 50.04 | 54 | -3.96 | - | - | 26 | 384 | H |
| 3 | * 3.68 | 46.62 | PK2 | 33 | -29.7 | 49.92 | - | - | 74 | -24.08 | 71 | 362 | H |
| | | 42.17 | MAv1 | 33 | -29.7 | 45.47 | 54 | -8.53 | - | - | 71 | 362 | H |
| 5 | * 7.36 | 44.69 | PK2 | 35.6 | -26.5 | 53.79 | - | - | 74 | -20.21 | 211 | 268 | V |
| | | 40.85 | MAv1 | 35.6 | -26.5 | 49.95 | 54 | -4.05 | - | - | 211 | 268 | V |
| 6 | * 8.28 | 45.22 | PK2 | 35.8 | -26.5 | 54.52 | - | - | 74 | -19.48 | 350 | 315 | V |
| | | 40.63 | MAv1 | 35.8 | -26.5 | 49.93 | 54 | -4.07 | - | - | 350 | 315 | V |
| 1 | 1.84 | 39.29 | Avg | 30.6 | -22.6 | 47.29 | - | - | - | - | 0-360 | 100 | H |
| 4 | 5.52 | 41.81 | Avg | 34.6 | -29 | 47.41 | - | - | - | - | 0-360 | 100 | V |

* - indicates frequency in CFR15.205/IC8.10 Restricted Band
- Compliance for emissions in non-restricted bands is shown under conducted spurious emissions.

Avg - Video bandwidth < Resolution bandwidth
PK2 - Method: Maximum Peak
MAv1 - Maximum RMS Average



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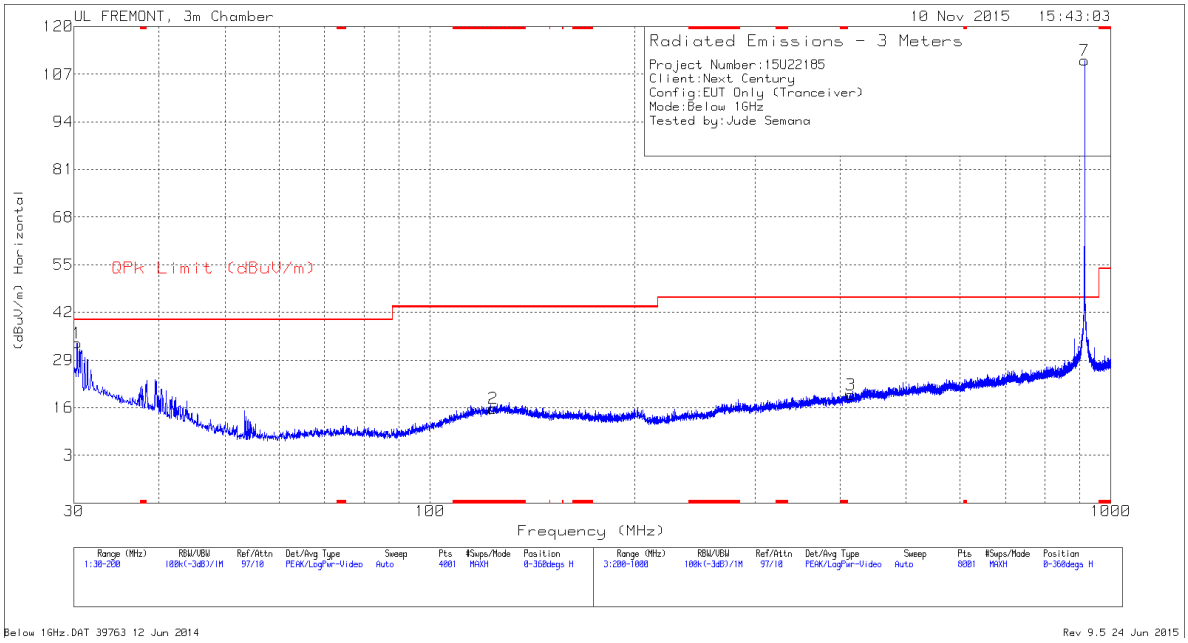
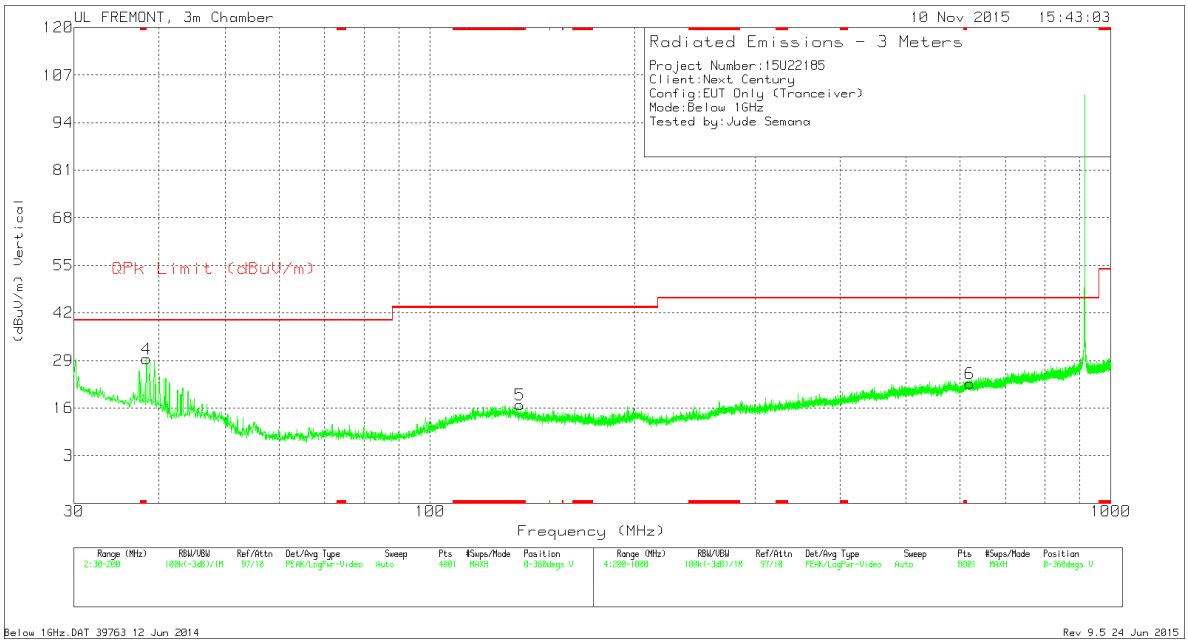
## 9.3. WORST-CASE BELOW 1 GHz

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION**

HORIZONTAL VERTICAL



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## Radiated Emissions

### Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T185 (dB/m) | Amp/Cbl (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 123.7338 | 27.78 | Pk | 14 | -26 | 15.78 | 43.52 | -27.74 | 0-360 | 100 | H |
| 5 | * 135.5275 | 29.36 | Pk | 13.4 | -25.9 | 16.86 | 43.52 | -26.66 | 0-360 | 100 | V |
| 1 | 30.2975 | 39.32 | Pk | 21.5 | -27.2 | 33.62 | 40 | -6.38 | 0-360 | 100 | H |
| 4 | 38.33 | 41.17 | Pk | 15.5 | -27.2 | 29.47 | 40 | -10.53 | 0-360 | 100 | V |
| 3 | 415.1 | 28.68 | Pk | 15.7 | -24.8 | 19.58 | 46.02 | -26.44 | 0-360 | 200 | H |
| 6 | 620.4 | 28.29 | Pk | 19 | -24.6 | 22.69 | 46.02 | -23.33 | 0-360 | 300 | V |
| 7 | **915 | 111.19 | Pk | 22.2 | -22.6 | 110.79 | - | - | 0-360 | 100 | H |

* - Indicates frequency in CFR15.205/IC8.10 Restricted Band
** Indicates fundamental frequency

Pk - Peak detector


UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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