**FCC CFR47 PART 15 SUBPART C**
**INDUSTRY CANADA RSS-210 ISSUE 8**

# CERTIFICATION TEST REPORT

**FOR**

**WIRELESS SECURITY REMOTE KEYFOB**

**MODEL NUMBER: WST-100**

**FCC ID: XQC-WST100**
**IC: 9863B-WST100**

**REPORT NUMBER: 11U13988**

**ISSUE DATE: 2011-08-23 (Revised: 2011-09-23)**

*Prepared for*
**ECOLINK**
**2055 CARTE DEL NOGAL**
**CARLSBAD**
**CA, 92011, USA**

*Prepared by*
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NVLAP LAB CODE 100255-0

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 8/23/11 | Initial Issue | M. Antola |
| 1 | 9/23/11 | Updated report with IC ID number | M. Antola |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** ECOLINK
2055 CORTE DEL NOGAL
CARLSBAD, CA, 92011, USA

**EUT DESCRIPTION:** Wireless Security Remote Key Fob

**MODEL:** WST-100

**SERIAL NUMBER:** Non-serialized prototype

**DATE TESTED:** 2011-08-17 to 2011-08-18

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| FCC PART 15 SUBPART C | Pass |
| INDUSTRY CANADA RSS-210 Issue 8, Annex 1 | Pass |
| INDUSTRY CANADA RSS-GEN Issue 3 | Pass |

Underwriters Laboratories Inc. tested the RF Exposure of the above equipment in accordance with the requirements set forth in the above standards, using test results reported in the test report documents referenced below and/or documentation furnished by the applicant. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Inc. based on interpretations of these calculations. The results show that the equipment 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 by the referenced documents. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL By:

Bob DeLisi
Senior Staff Engineer
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Tested By:

Mike Antola
Senior Project Engineer
UL

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 1285 Walt Whitman Rd. Melville, NY 11747, USA.

UL Melville is accredited by NVLAP, Laboratory Code 100255-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/1002550.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

## 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 | ± 3.3 dB |
| Radiated Disturbance, 30 to 1000 MHz | ± 4.00 dB |

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

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The WSR-100 remote is a short range wireless remote which can be used to arm and disarm a residential security system. Commands are sent by pressing any of the four buttons on the front of the device. The LED at the top of the WSR-100 remote will illuminate to indicate that the button has been pressed and the command is being transmitted.

## 5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a permanently attached, internal loop antenna, with a maximum gain of -15 dBi.

## 5.3. SOFTWARE AND FIRMWARE

None

## 5.4. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The EUT was examined in all three orthogonal axes. Final testing was conducted in the worse-case orientation, which was found to be the X-Axis.

## 5.5. MODIFICATIONS

No modifications were made during testing.

## 5.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

None

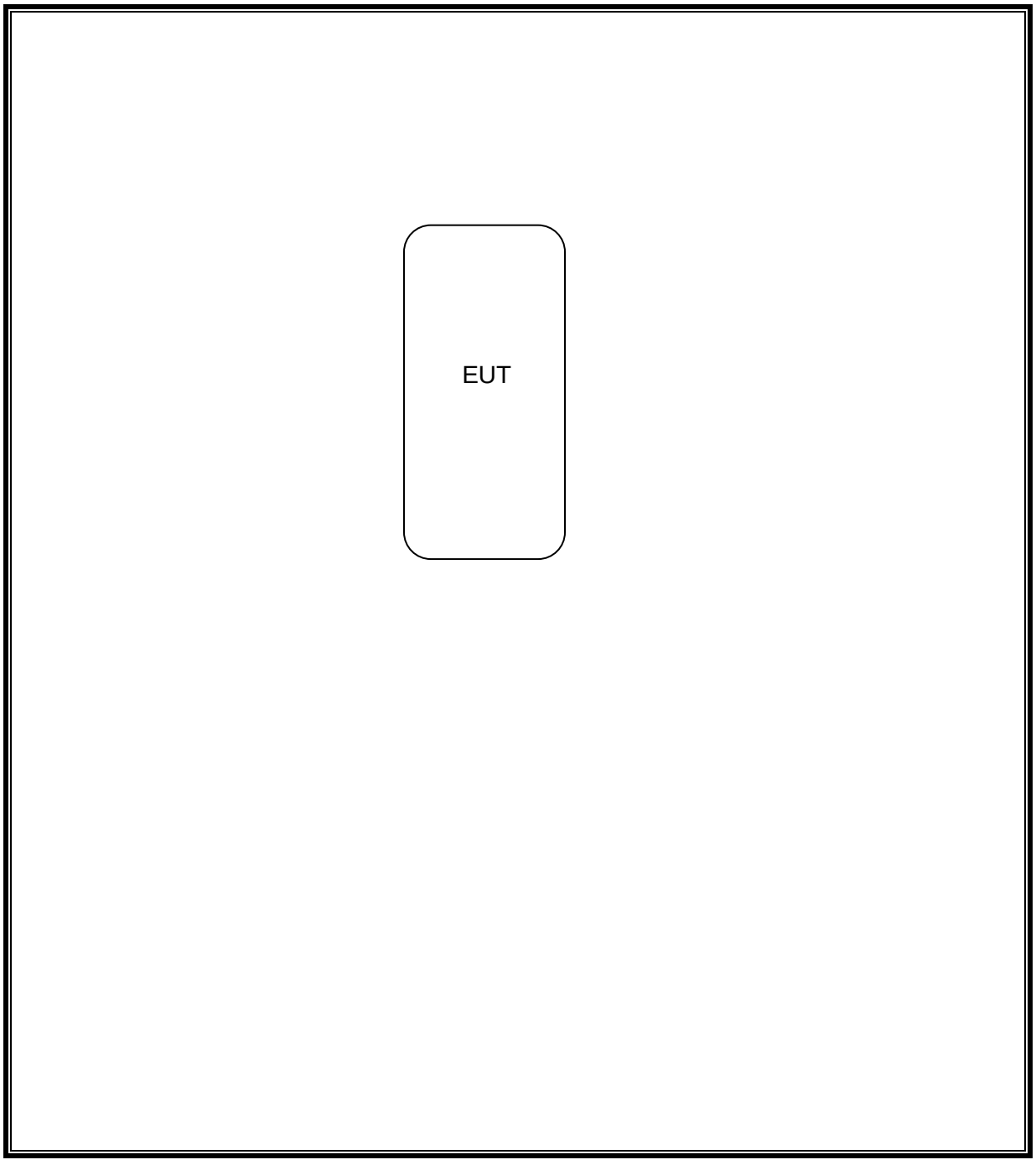
**I/O CABLES**

None

**TEST SETUP**

The EUT is a standalone device. Operation is achieved by pressing the buttons.

**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 Used – Radiated Emissions | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal Date | Cal Due Date |
| 30-1000MHz | | | | | |
| EMI Receiver | Rohde & Schwarz | ESIB40 | 34968 | 2011-03-01 | 2012-03-01 |
| Bicon Antenna | Schaffner | VBA6106A | 54 | 2011-04-05 | 2012-04-05 |
| Log-P Antenna | Schaffner | UPA6109 | 44067 | 2011-04-29 | 2012-04-29 |
| Switch Driver | HP | 11713A | ME7A-627 | NA | NA |
| System Controller | Sunol Sciences | SC99V | 44396 | NA | NA |
| Camera Controller | Panasonic | WV-CU254 | 44395 | NA | NA |
| RF Switch Box | UL | 1 | 44398 | NA | NA |
| Measurement Software | UL | Version 9.5 | 44740 | NA | NA |
| Temp/Humidity/Pressure Meter | Cole Parmer | 99760-00 | 4268 | 2010-12-07 | 2012-12-07 |
| Above 1GHz (Band Optimized System) | | | | | |
| Spectrum Analyzer | Agilent | E4446A | 72823 | 2011-07-26 | 2012-07-26 |
| Horn Antenna (1-2 GHz) | ETS | 3161-01 | 51442 | 2008-03-28 | See * below |
| Horn Antenna (2-4 GHz) | ETS | 3161-02 | 48107 | 2007-09-27 | See * below |
| Horn Antenna (4-8 GHz) | ETS | 3161-03 | 48106 | 2007-09-27 | See * below |
| Signal Path Controller | HP | 11713A | 50250 | NA | NA |
| Gain Controller | HP | 11713A | 50251 | NA | NA |
| RF Switch / Preamp Fixture | UL | BOMS1 | 50249 | NA | NA |
| System Controller | UL | BOMS2 | 50252 | NA | NA |
| Measurement Software | UL | Version 9.5 | 44740 | NA | NA |
| Temp/Humidity/Pressure Meter | Cole Parmer | 99760-00 | 4268 | 2010-12-07 | 2012-12-07 |
| * - Note: As allowed by the calibration standard ANSI C63.4 Section 4.4.2, standard gain horns need only a one-time calibration. Only if physical damage occurs will the horn antenna require re-calibration.<br>* Gain standard horn antennas (sometimes called standard gain horn antennas) need not be calibrated beyond that which is provided by the manufacturer unless they are damaged or deterioration is suspected, or they are used at a distance closer than $2D^2/\lambda$. Gain standard horn antennas have gains that are fixed by their dimensions and dimensional tolerances. | | | | | |

| Test Equipment Used – Occupied Bandwidth/Cease Operation/Duty Cycle | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal Date | Cal Due Date |
| Spectrum Analyzer | Agilent | E4446A | 72822 | 2011-07-12 | 2012-07-12 |
| Dipole Antenna | EMCO | 3121C | 3359 | 2010-12-08 | 2011-12-08 |
| Temp/Humidity/Pressure Meter | Cole Parmer | 99760-00 | 4268 | 2010-12-07 | 2012-12-07 |

# 7. ANTENNA PORT TEST RESULTS

## 7.1. 20 dB AND 99% BW

**LIMITS**

FCC §15.231 (c)
The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

IC A1.1.3
For the purpose of Section A1.1, the 99% Bandwidth shall be no wider than 0.25% of the center frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

**TEST PROCEDURE**

ANSI C63.4

The transmitter output is connected to the spectrum analyzer.

20dB Bandwidth: The RBW is set to 10 KHz. The VBW is set to 300 KHz. The sweep time is coupled. Bandwidth is determined at the points 20 dB down from the modulated carrier.

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

**RESULTS**

No non-compliance noted:

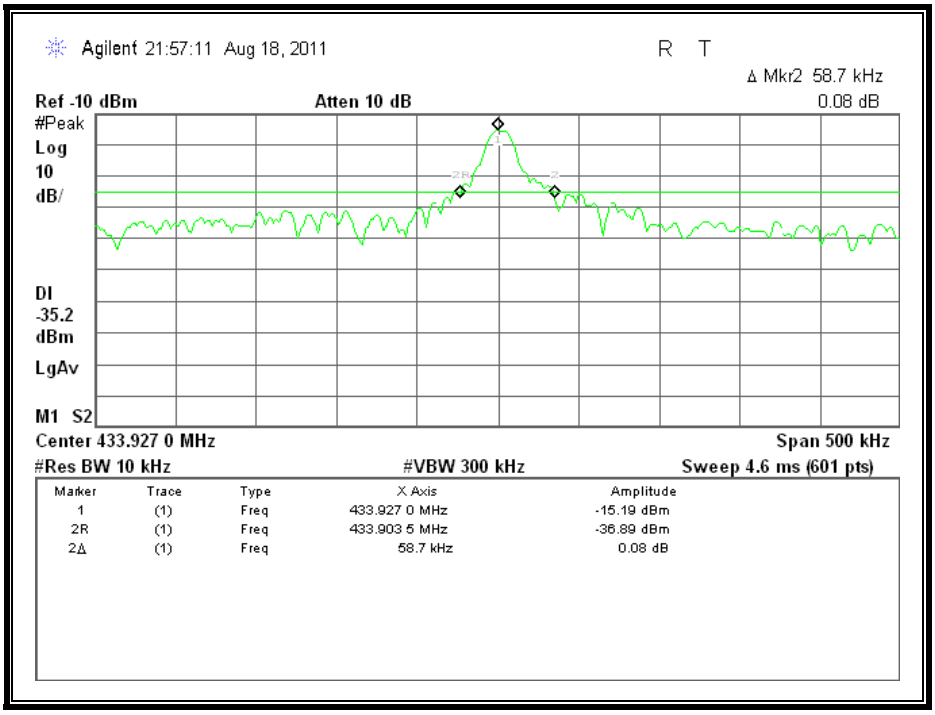
20dB Bandwidth

| Frequency (MHz) | 20dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) |
|---|---|---|---|
| 433.92 | 58.7 | 1084.8 | -1026.1 |

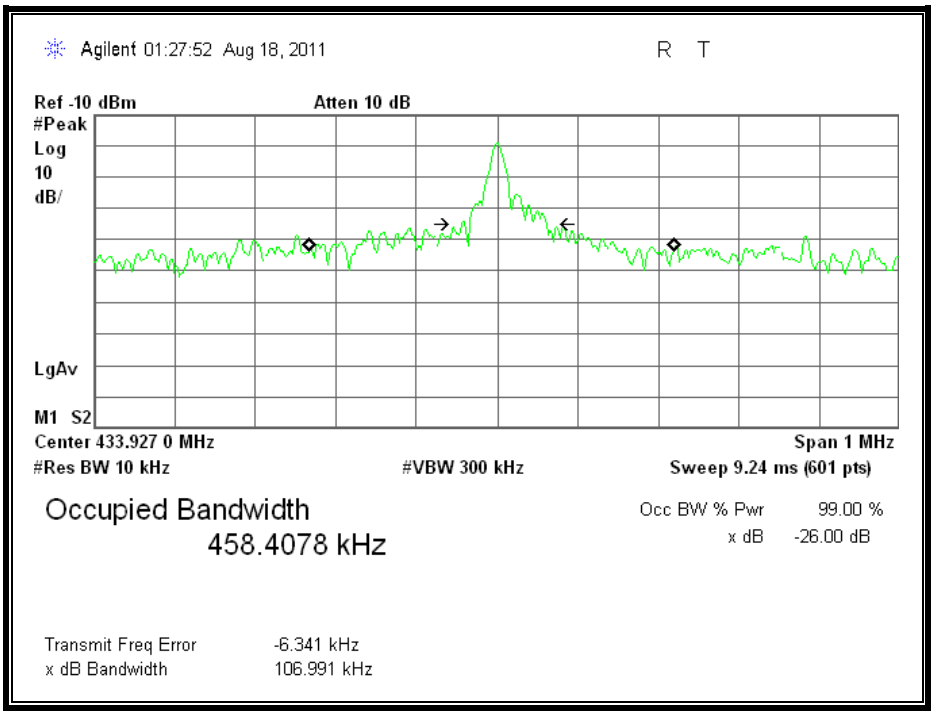
99% Bandwidth

| Frequency (MHz) | 99% Bandwidth (kHz) | Limit (kHz) | Margin (kHz) |
|---|---|---|---|
| 433.92 | 458.4 | 1084.8 | -626.4 |

20dB BANDWIDTH



99% BANDWIDTH



## 7.2. DUTY CYCLE

**LIMITS**

FCC §15.35 (c)
The measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1 MHz and the VBW is set to 1 MHz. The sweep time is coupled and the span is set to 0 Hz. The number of pulses is measured and calculated in a 100 ms scan.

**CALCULATION**

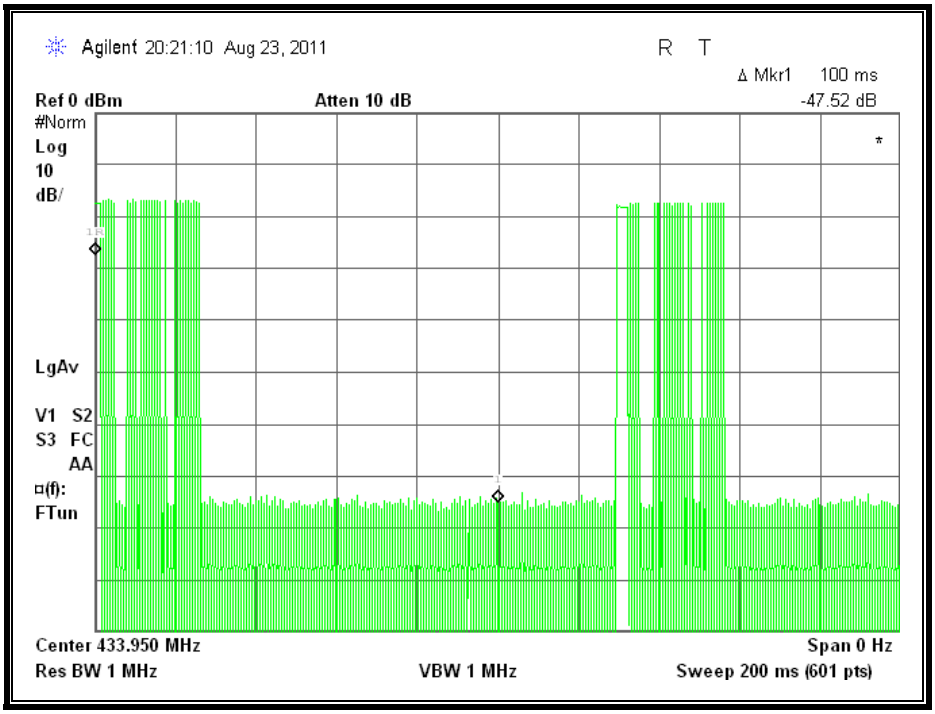
Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is
(# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

**RESULTS**

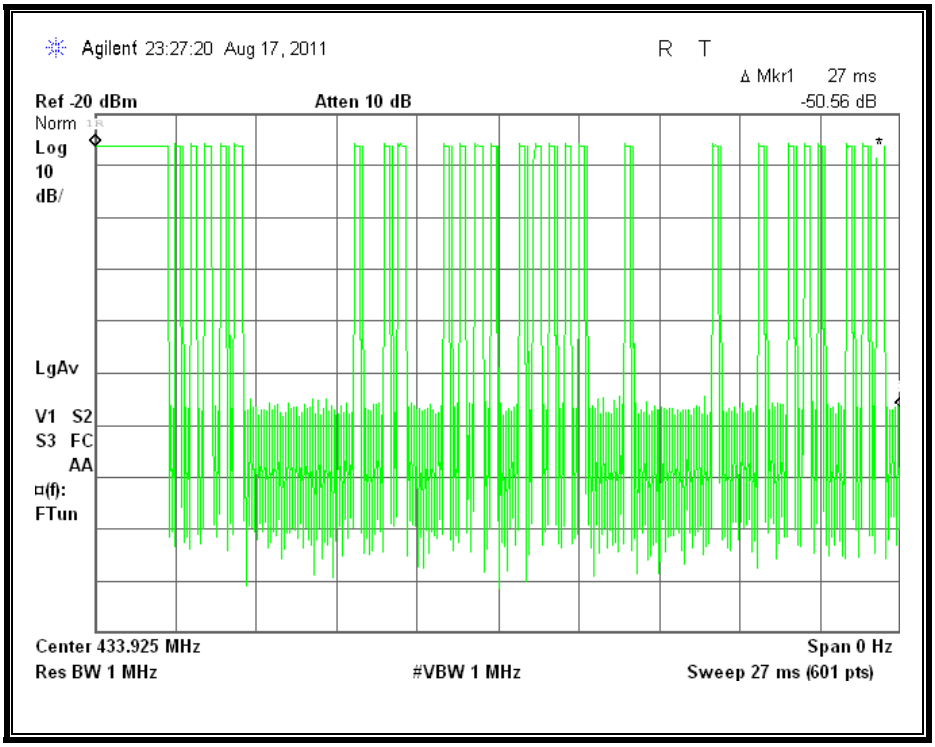
No non-compliance noted:

| One Period (ms) | Long Pulse Width (ms) | # of Long Pulses | Short Width (ms) | # of Short Pulses | Duty Cycle | 20*Log Duty Cycle (dB) |
|---|---|---|---|---|---|---|
| 100 | 2.5 | 1 | 0.23 | 26 | 0.086 | -21.34 |

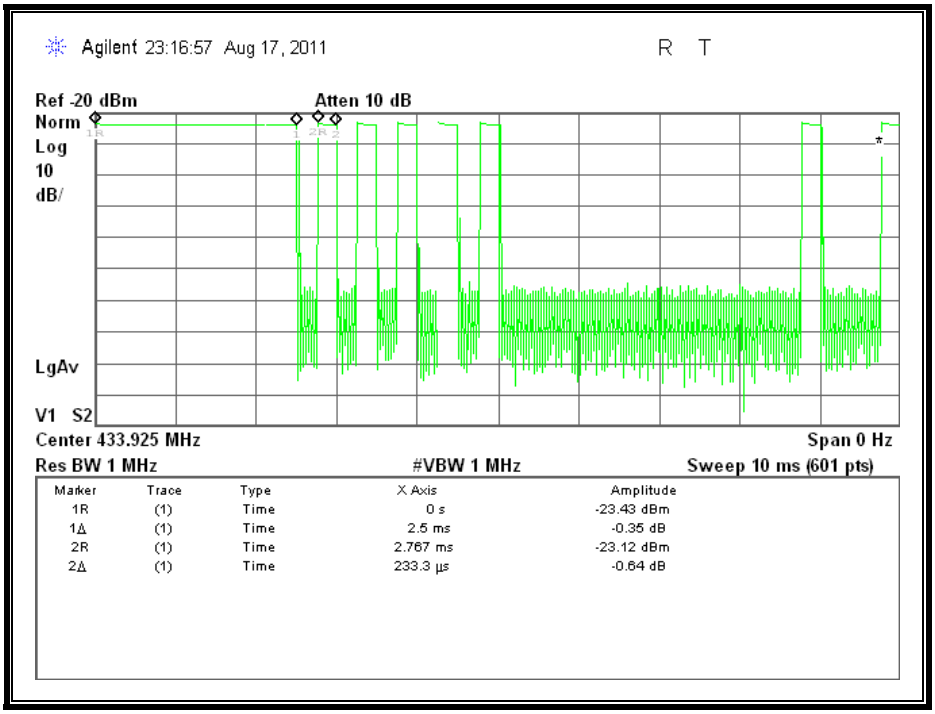
**TRANSMISSION IN 200ms PERIOD**



**ONE TRANSMISSION**



**LONG & SHORT PULSE WIDTHS**



## 7.3. TRANSMISSION TIME

**LIMITS**

FCC §15.231 (a) (2)

IC A1.1.1 (b)

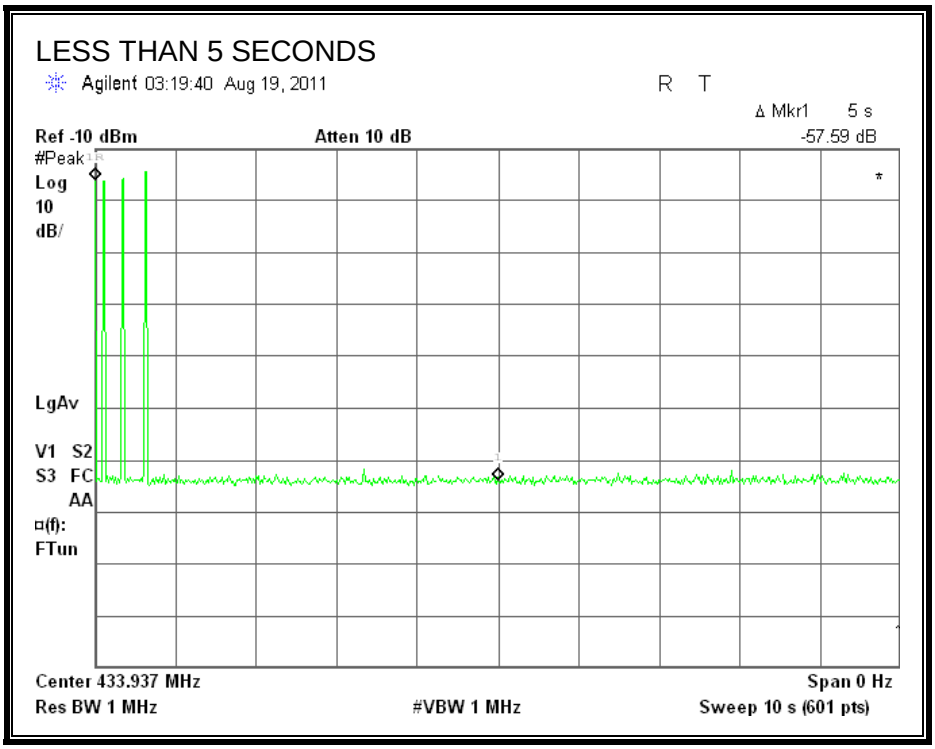
A transmitter activated automatically shall cease transmission within 5 seconds after activation.

**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1 MHz and the VBW is set to 1 MHz. The sweep time is set to 10 seconds and the span is set to 0 Hz.

**RESULTS**

No non-compliance noted:



# 8. RADIATED EMISSION TEST RESULTS

## 8.1. TX RADIATED SPURIOUS EMISSION

**LIMITS**

FCC §15.231 (b)
IC A1.1.2
In addition to the provisions of § 15.205, the field strength of emissions from Intentional radiators operated under this section shall not exceed the following:

| Fundamental Frequency (MHz) | Field Strength of Fundamental Frequency (microvolts/meter) | Field Strength of Spurious Emissions (microvolts/meter) |
|---|---|---|
| 40.66 - 40.70 | 2,250 | 225 |
| 70 - 130 | 1,250 | 125 |
| 130 - 174 | 1,250 to 3,7501 | 125 to 3751 |
| 174 - 260 | 3,750 | 375 |
| 260 - 470 | 3,750 to 12,5001 | 375 to 1,2501 |
| Above 470 | 12,500 | 1,250 |

1 Linear interpolation

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| [1]0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | ([2]) |
| 13.36 – 13.41 | | | |

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
2 Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 30 88 | 100 ** | 3 |
| 88 216 | 150 ** | 3 |
| 216 960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

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

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

**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.

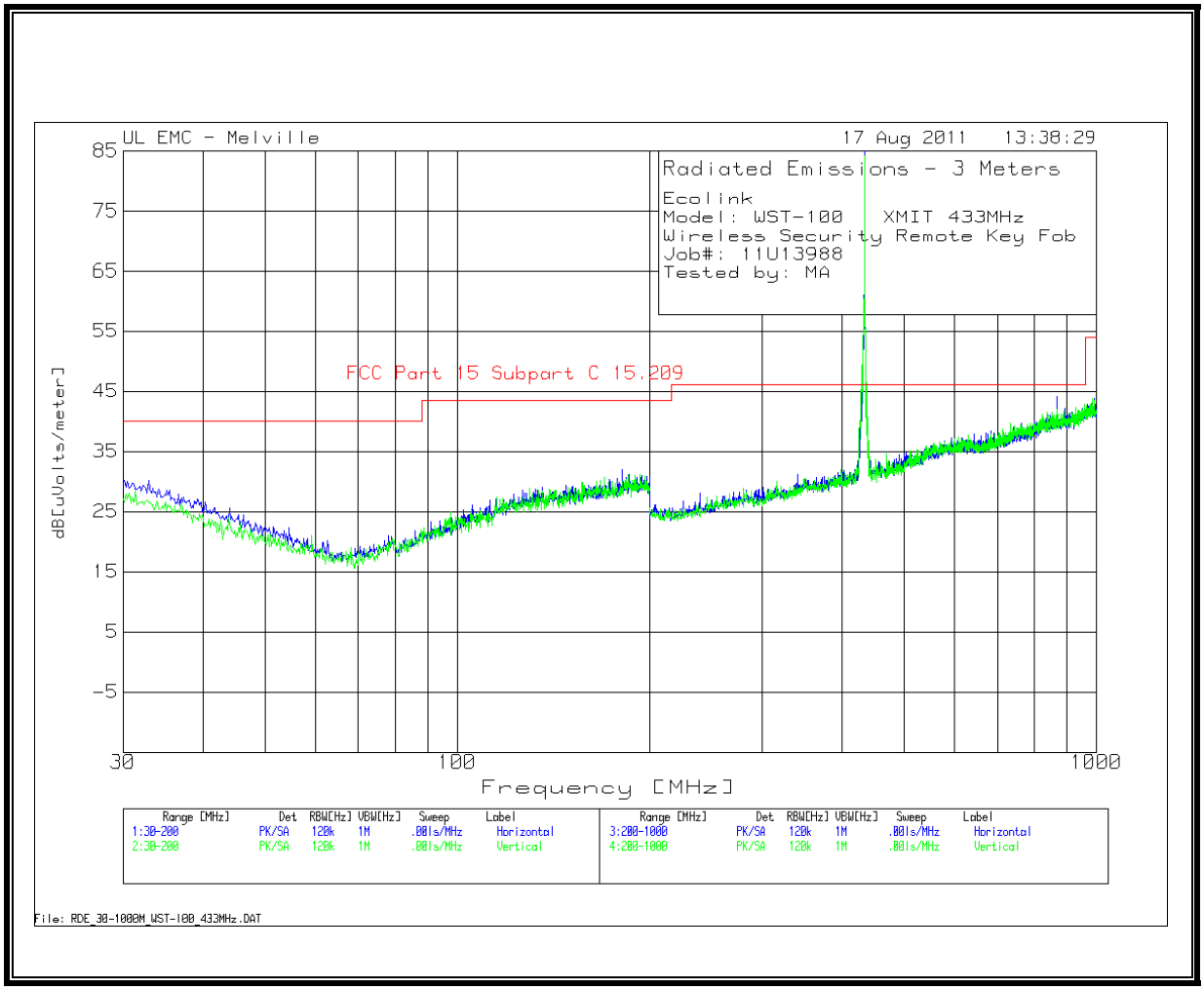
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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.

**RESULTS**

No non-compliance noted:

**FUNDAMENTAL, HARMONICS AND TX SPURIOUS EMISSION (30 – 1000 MHz)**



Ecolink
Model: WST-100 XMIT 433MHz
Wireless Security Remote Key Fob
Job#: 11U13988
Tested by: MA

Horizontal 200 - 1000MHz

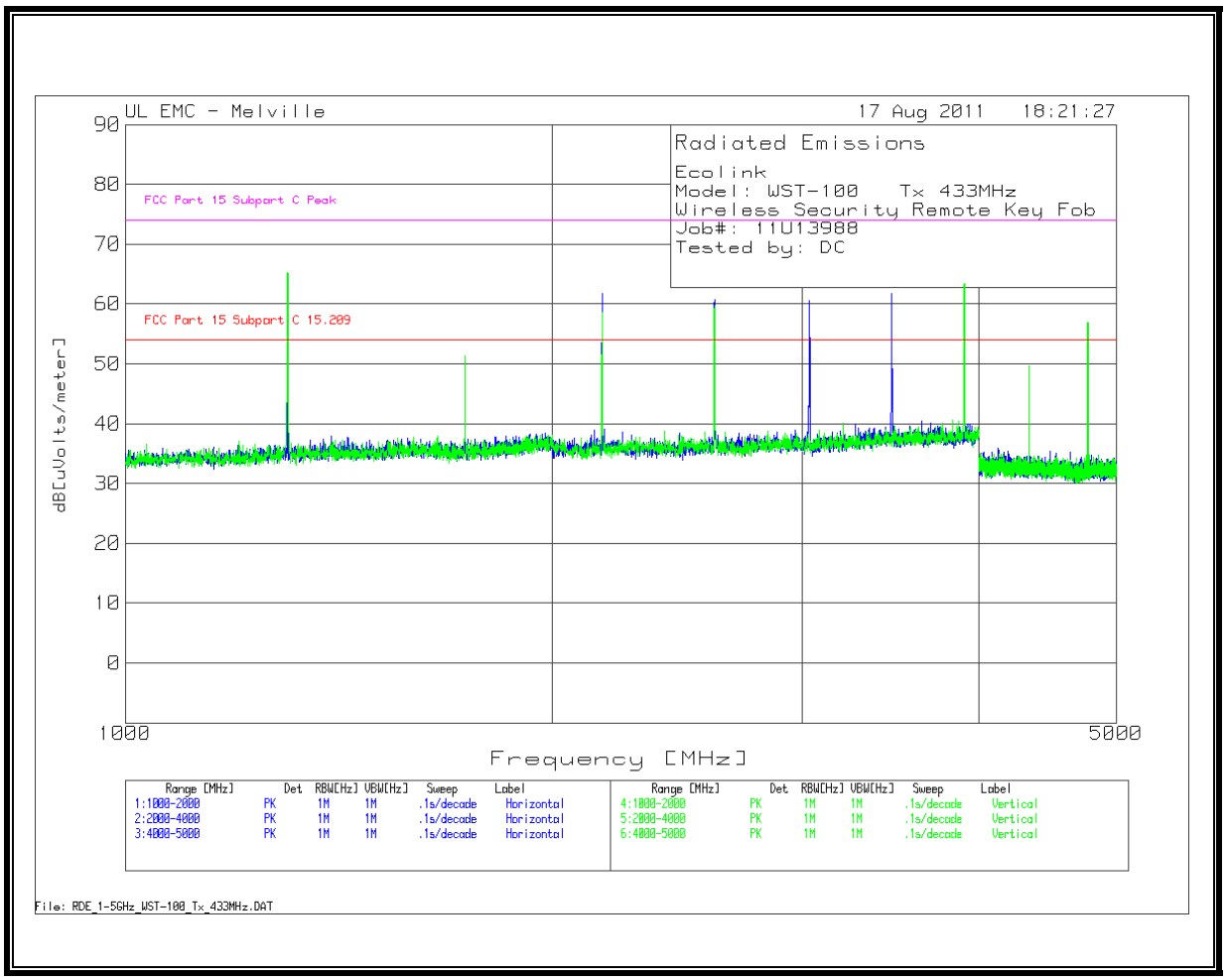
| Test Frequency | Meter Reading | Detector | LogP 3M Horz 44067 02May12 [dB] | 3MLoc 30-1000MHz 02Feb12 [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.231 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 433.9163 | 68.54 | PK | 17.1 | 2.3 | 87.94 | -21.34 | 66.6 | 80.8 | -14.2 | 360 | 360 | Horz |
| 867.8387 | 21.76 | PK | 23.1 | 3.4 | 48.26 | -21.34 | 26.92 | 60.8 | -33.88 | 0 | 150 | Horz |

Vertical 200 - 1000MHz

| Test Frequency | Meter Reading | Detector | LogP 3M Vert 44067 02May12 [dB] | 3MLoc 30-1000MHz 02Feb12 [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 433.9163 | 73.03 | PK | 16.6 | 2.3 | 91.93 | -21.34 | 70.59 | 80.8 | -10.21 | 260 | 150 | Vert |
| 867.8292 | 23.93 | PK | 23.2 | 3.4 | 50.53 | -21.34 | 29.19 | 60.8 | -31.61 | 100 | 150 | Vert |

PK - Peak detector (Maximized)
QP - Quasi-Peak detector
LnAv - Linear Average detector
LgAv - Log Average detector
Av - Average detector
CAV - CISPR Average detector
RMS - RMS detection
CRMS - CISPR RMS detection

**HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz**



Ecolink
Model: WST-100 Tx 433MHz
Wireless Security Remote Key Fob
Job#: 11U13988
Tested by: DC

Horizontal 1000 - 2000MHz

| Test Frequency | Meter Reading | Detector | 51442 1-2GHz [dB] | BOMS Factor [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1301.8056 | 81.51 | PK | 20.5 | -44.35 | 57.66 | -21.34 | 36.32 | 54 | -17.68 | 74 | -16.34 | 32 | 324 | Horz |
| 1735.7216 | 68.98 | PK | 20.8 | -44.16 | 45.62 | -21.34 | 24.28 | 54 | -29.72 | 74 | -28.38 | 292 | 327 | Horz |

Horizontal 2000 - 4000MHz

| Test Frequency | Meter Reading | Detector | 3161-02_Horz_27Sept08 [dB] | BOMS Factor [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2169.776 | 84.39 | PK | 21.4 | -43.22 | 62.57 | -21.34 | 41.23 | 54 | -12.77 | 74 | -11.43 | 332 | 347 | Horz |
| 2603.6111 | 83.91 | PK | 21.3 | -42.56 | 62.65 | -21.34 | 41.31 | 54 | -12.69 | 74 | -11.35 | 352 | 213 | Horz |
| 3037.5636 | 83.34 | PK | 21.6 | -41.83 | 63.11 | -21.34 | 41.77 | 54 | -12.23 | 74 | -10.89 | 155 | 284 | Horz |
| 3471.713 | 82.41 | PK | 22.2 | -41.83 | 62.78 | -21.34 | 41.44 | 54 | -12.56 | 74 | -11.22 | 138 | 354 | Horz |

Horizontal 4000 - 5000MHz

| Test Frequency | Meter Reading | Detector | 3161-03_Horz_27Sept08 [dB] | BOMS Factor [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4339.5826 | 78.25 | PK | 27.7 | -51.64 | 54.31 | -21.34 | 32.97 | 54 | -21.03 | 74 | -19.69 | 17 | 357 | Horz |
| 4773.5895 | 81.74 | PK | 27.1 | -52.48 | 56.36 | -21.34 | 35.02 | 54 | -18.98 | 74 | -17.64 | 123 | 324 | Horz |

Vertical 1000 - 2000MHz

| Test Frequency | Meter Reading | Detector | 51442 1-2GHz [dB] | BOMS Factor [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1301.6778 | 90.65 | PK | 20.5 | -44.35 | 66.8 | -21.34 | 45.46 | 54 | -8.54 | 74 | -7.2 | 327 | 210 | Vert |
| 1735.6555 | 79.61 | PK | 20.8 | -44.16 | 56.25 | -21.34 | 34.91 | 54 | -19.09 | 74 | -17.75 | 354 | 153 | Vert |

Vertical 2000 - 4000MHz

| Test Frequency | Meter Reading | Detector | 3161-02_Vert_27Sept08 [dB] | BOMS Factor [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2169.6722 | 85.19 | PK | 21.1 | -43.22 | 63.07 | -21.34 | 41.73 | 54 | -12.27 | 74 | -10.93 | 239 | 348 | Vert |
| 2603.6084 | 83.71 | PK | 21.5 | -42.56 | 62.65 | -21.34 | 41.31 | 54 | -12.69 | 74 | -11.35 | 43 | 363 | Vert |
| 3905.2632 | 82.97 | PK | 22.6 | -41.68 | 63.89 | -21.34 | 42.55 | 54 | -11.45 | 74 | -10.11 | 325 | 299 | Vert |

Vertical 4000 - 5000MHz

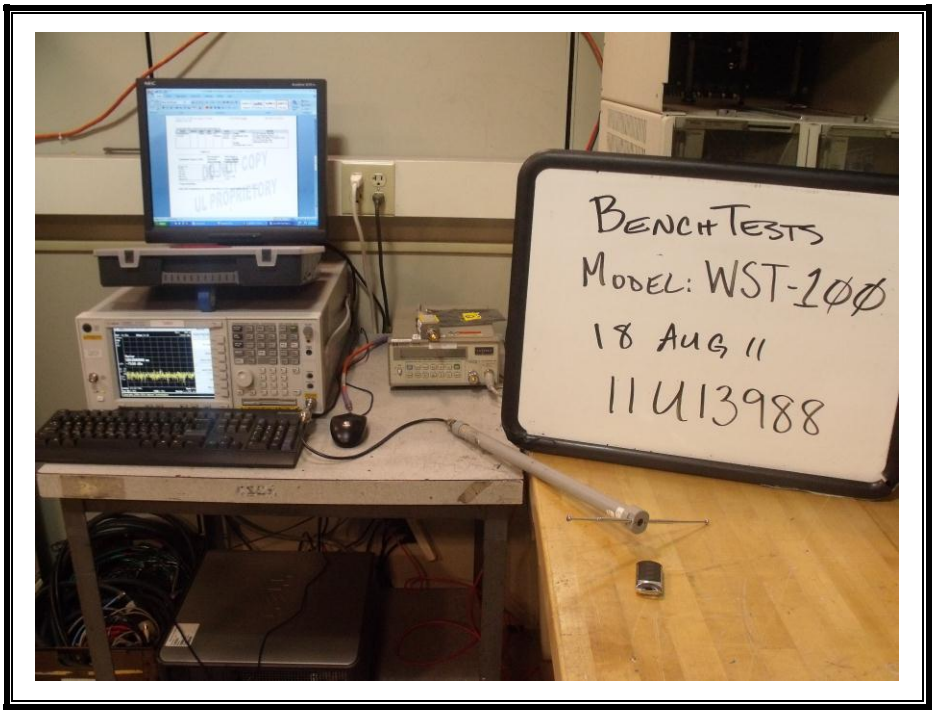
| Test Frequency | Meter Reading | Detector | 3161-03_Vert_27Sept08 [dB] | BOMS Factor [dB] | dB[uVolts/meter] | DCF [dB] | Corrected Level | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4339.333 | 80.88 | PK | 27.8 | -51.64 | 57.04 | -21.34 | 35.7 | 54 | -18.3 | 74 | -16.96 | 282 | 387 | Vert |
| 4773.0728 | 86.9 | PK | 27.2 | -52.47 | 61.63 | -21.34 | 40.29 | 54 | -13.71 | 74 | -12.37 | 236 | 304 | Vert |

NOTE: Uncorrected data compared to the FCC Part 15 Peak limit

PK - Peak detector (Maximized)
QP - Quasi-Peak detector
LnAv - Linear Average detector
LgAv - Log Average detector
Av - Average detector
CAV - CISPR Average detector
RMS - RMS detection
CRMS - CISPR RMS detection

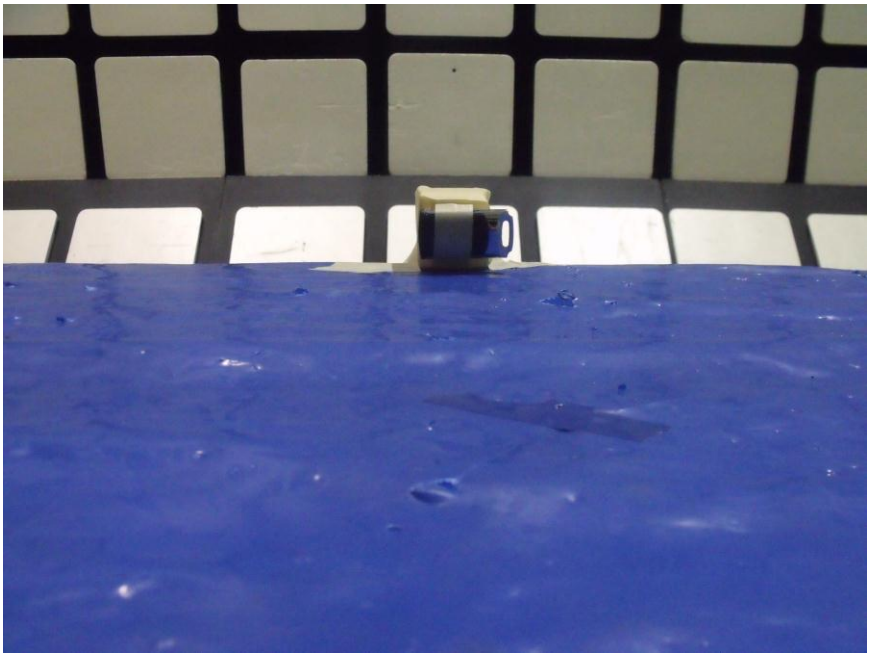
# 9. SETUP PHOTOS

**ANTENNA PORT**



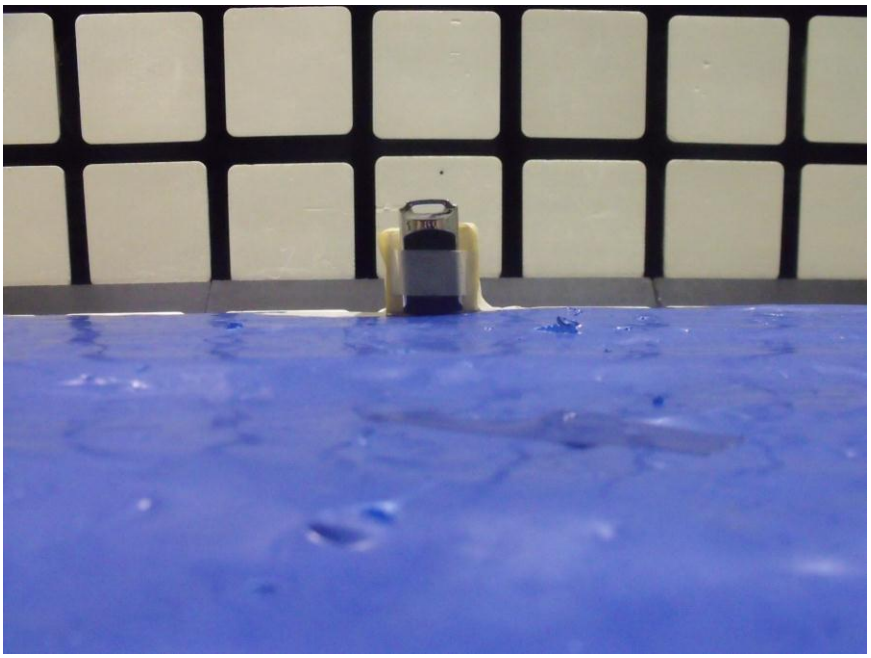
**RADIATED EMISSION FOR PORTABLE CONFIGURATION – X ORIENTATION**

RADIATED EMISSION FOR PORTABLE CONFIGURATION – X ORIENTATION



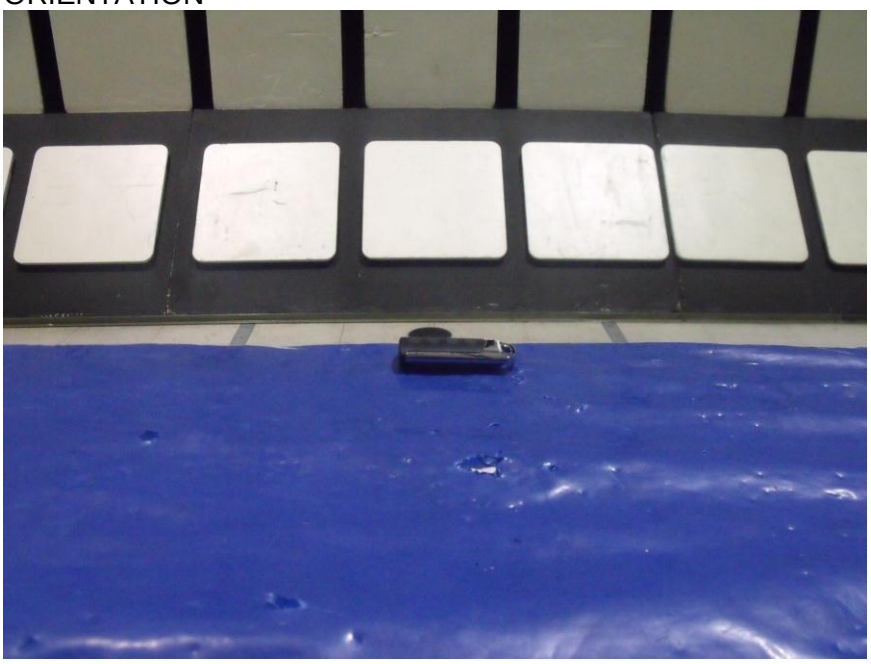
**RADIATED EMISSION FOR PORTABLE CONFIGURATION – Y ORIENTATION**

RADIATED EMISSION FOR PORTABLE CONFIGURATION – Y ORIENTATION



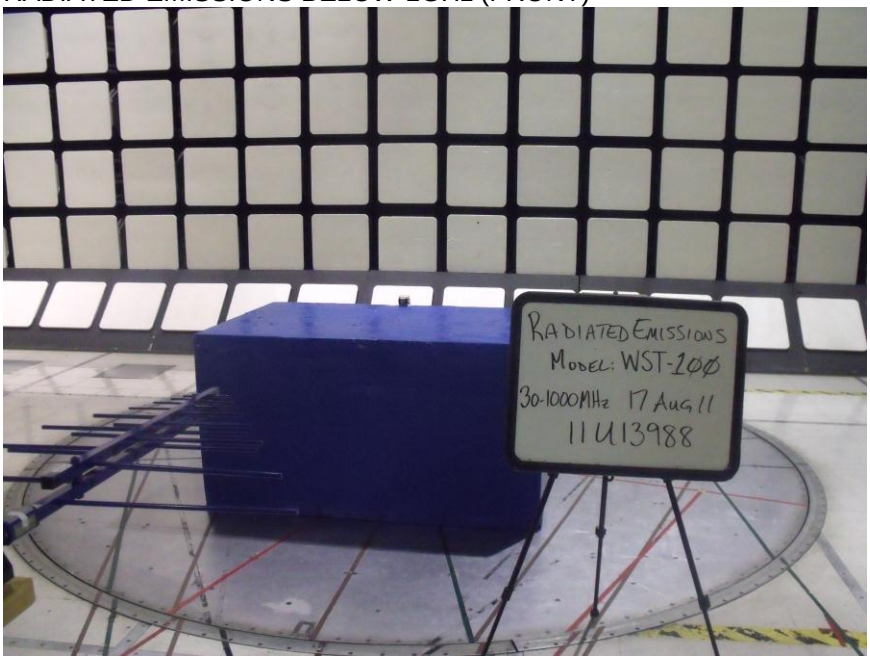
**RADIATED EMISSION FOR PORTABLE CONFIGURATION – Z ORIENTATION**

RADIATED EMISSION FOR PORTABLE CONFIGURATION – Z ORIENTATION



**RADIATED EMISSION BELOW 1 GHz**

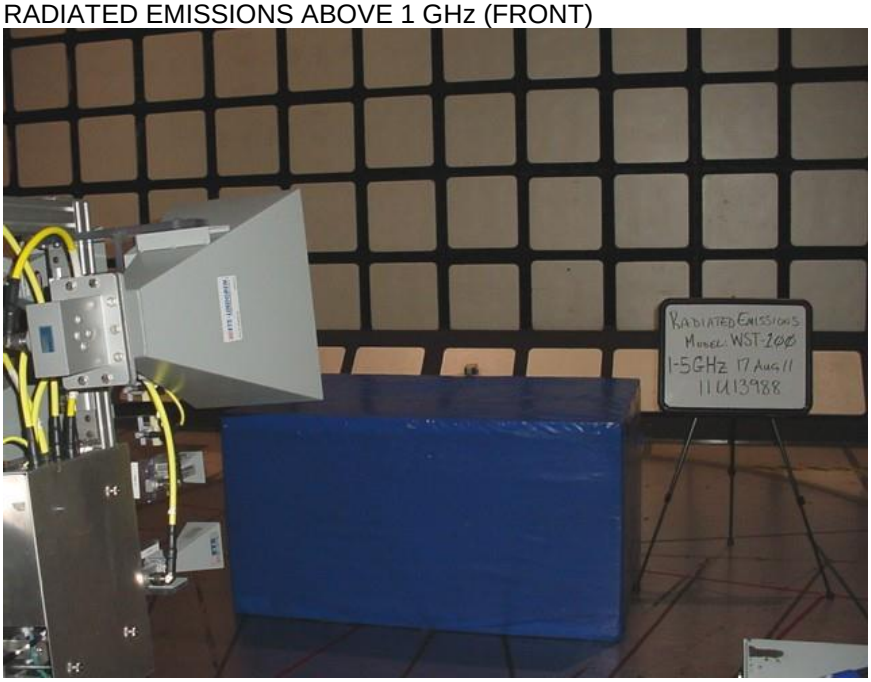
RADIATED EMISSIONS BELOW 1GHz (FRONT)



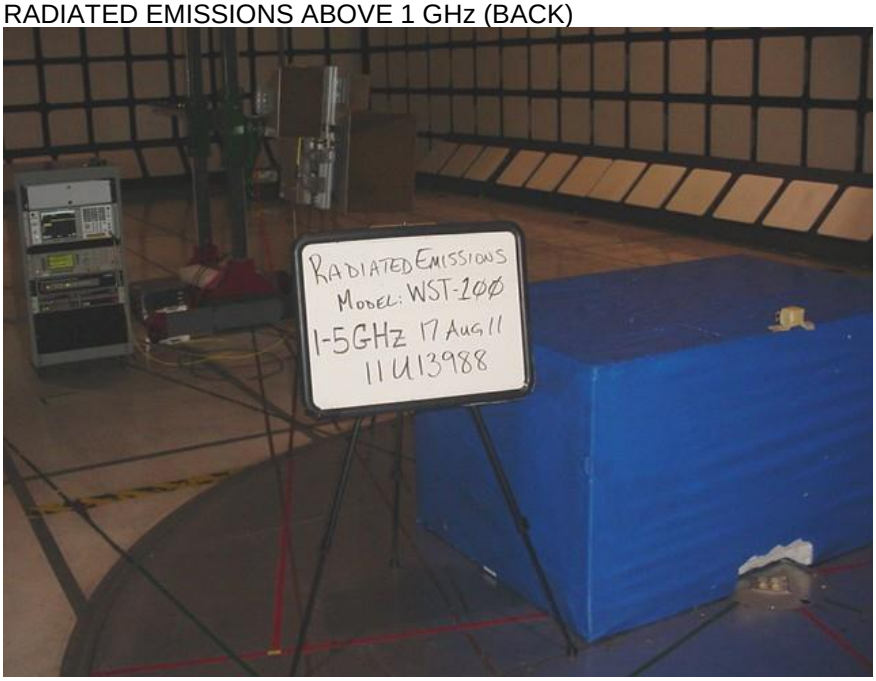
RADIATED EMISSIONS BELOW 1GHz (BACK)

**RADIATED EMISSION ABOVE 1 GHz**

RADIATED EMISSIONS ABOVE 1 GHz (FRONT)



RADIATED EMISSIONS ABOVE 1 GHz (BACK)




**END OF REPORT**