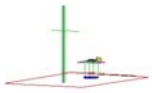
PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctestlab.com



# MEASUREMENT REPORT
## FCC PART 15.247 900MHz ISM

**Applicant Name:**
Device Solutions
3211 Moorefields Road
Hillsborough, NC 27278
United States

**Date of Testing:**
12/22/2014 - 01/23/2015
**Test Site/Location:**
PCTEST Lab. Columbia, MD, USA
**Test Report Serial No.:**
0Y1412312387.OXW

| | |
|---|---|
| **FCC ID:** | **OXW-DS0028** |
| **APPLICANT:** | **Device Solutions** |

| | |
|---|---|
| **Application Type:** | Certification |
| **Model(s):** | DS0028 |
| **EUT Type:** | WiFi Gateway |
| **Frequency Range:** | 904.8 – 924.8MHz |
| **FCC Classification:** | FCC Part 15 Spread Spectrum Transmitter (DSS) |
| **FCC Rule Part(s):** | Part 15 Subpart C (15.247) |
| **Test Procedure(s):** | DA 00-705 |

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in DA 00-705. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez
President

ACCREDITED
TESTING CERT#2041.01

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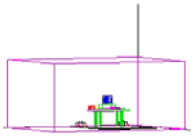
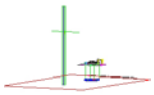


# MEASUREMENT REPORT
## FCC Part 15.247



## § 2.1033 General Information

| | |
|---|---|
| **APPLICANT:** | Device Solutions |
| **APPLICANT ADDRESS:** | 3211 Moorefields Road<br>Hillsborough, NC 27278, United States |
| **TEST SITE:** | PCTEST ENGINEERING LABORATORY, INC. |
| **TEST SITE ADDRESS:** | 7185 Oakland Mills Road, Columbia, MD 21046 USA |
| **FCC RULE PART(S):** | Part 15 Subpart C (15.247) |
| **BASE MODEL:** | DS0028 |
| **FCC ID:** | OXW-DS0028 |
| **FCC CLASSIFICATION:** | FCC Part 15 Spread Spectrum Transmitter (DSS) |
| **Test Device Serial No.:** | FCC1, FCC2 ☐ Production ☒ Pre-Production ☐ Engineering |
| **Method/System:** | Frequency Hopping Spread Spectrum (FHSS) |
| **DATE(S) OF TEST:** | 12/22/2014 - 01/23/2015 |
| **TEST REPORT S/N:** | 0Y1412312387.OXW |

## Test Facility / Accreditations

**Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.**

- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.


- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451B-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

# 1.0 INTRODUCTION

## 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

## 1.2 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Internt'l (BWI) airport, the city of Baltimore and the Washington, DC area. (*See Figure 1-1*).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on February 15, 2012.

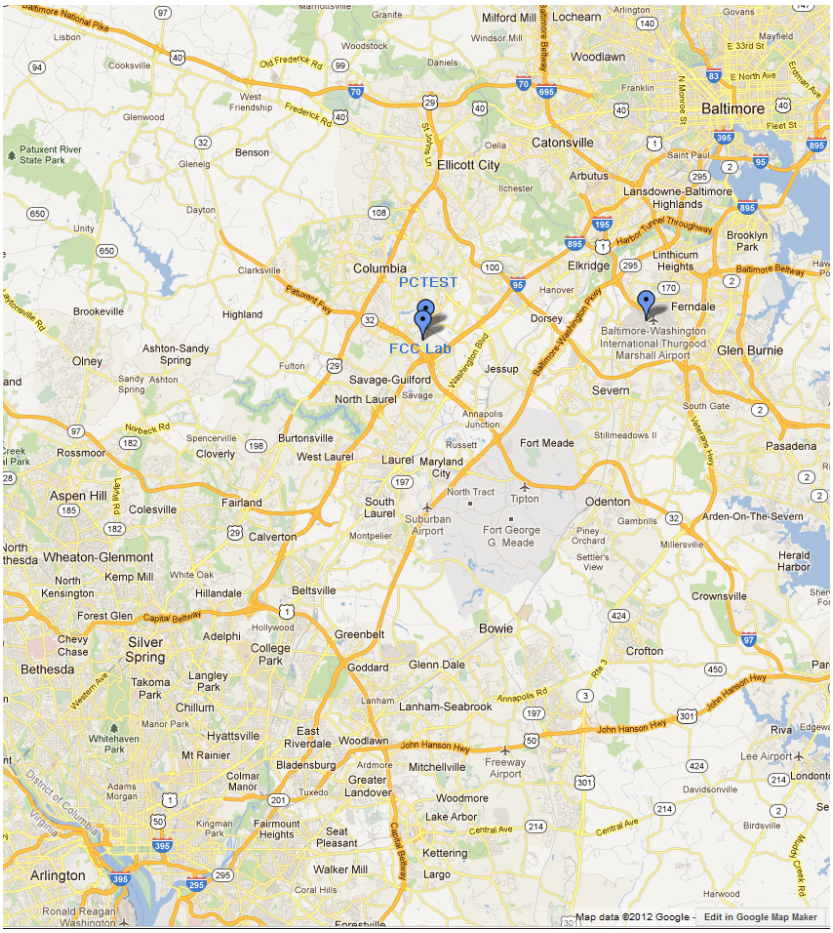



**Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area**

# 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Device Solutions WiFi Gateway FCC ID: OXW-DS0028**. The test data contained in this report pertains only to the emissions due to the EUT's 900MHz transmitter. This device contains a previously certified module (FCC ID: OXW-PA0002) whose conducted data is applied to this filing.

- This module has been previously approved and we confirm the following:
  - A) The hopping sequence is pseudorandom
  - B) All channels are used equally on average
  - C) The receiver input bandwidth equals the transmit bandwidth
  - D) The receiver hops in sequence with the transmit signal
- 15.247(g): The system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

- 15.247(h): The system does not coordinate it channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

## 2.2 Device Capabilities

This device contains the following capabilities:

802.11b/g/n WLAN, 900MHz ISM

## 2.3 Test Configuration

The EUT (Model: DS0028) is a WiFi Gateway containing two previously certified modules: a Sensor Board Module (FCC ID: OXW-PA0002) and an 802.11 WiFi Module (FCC ID: O7P-362). The Device Solutions WiFi Gateway was tested per the guidance of ANSI C63.10-2009 and DA 00-705. ANSI C63.10-2009 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups and 3.3 for radiated emissions test setups.

## 2.4 EMI Suppression Device(s)/Modifications

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

# 3.0 DESCRIPTION OF TEST

## 3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009) and the "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems" (DA 00-705) were used in the measurement of the **Device Solutions WiFi Gateway FCC ID: OXW-DS0028.**

**Deviation from measurement procedure…….....None**

## 3.2 AC Line Conducted Emissions

The line-conducted facility is located inside a 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by ETS Lindgren RF Enclosures. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50μH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. The external power line filter is an ETS Lindgren Model LPRX-4X30 (100dB Attenuation, 14kHz-18GHz) and the two EMI/RFI filters are ETS Lindgren Model LRW-2030-S1 (100dB Minimum Insertion Loss, 14kHz – 10GHz). These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

Line conducted emissions test results are shown in Section 6.3. Automated test software was used to perform the AC line conducted emissions testing. The EMI Receiver mode of the Agilent MXE was used to perform ACLC emissions testing.

## 3.3 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Clause 5, Figure 5.7 of ANSI C63.4-2009. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 78cm high PVC support structure is placed on top of the turntable. A ¾" (~1.9cm) sheet of high density polyethylene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 0.8 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

# 4.0 ANTENNA REQUIREMENTS

**Excerpt from §15.203 of the FCC Rules/Regulations:**
"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the Device Solutions WiFi Gateway are **permanently attached.**
- There are no provisions for connection to an external antenna.

**Conclusion:**

The **Device Solutions WiFi Gateway FCC ID: OXW-DS0028** unit complies with the requirement of §15.203.

| Ch. | Frequency (MHz) |
|---|---|
| 302 | 904.8 |
| : | : |
| 350 | 914.8 |
| : | : |
| 400 | 924.8 |

**Table 4-1. Frequency/ Channel Operations**

# 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|---|---|---|---|---|---|---|
| - | RE1 | Radiated Emissions Cable Set (UHF/EHF) | 10/24/2014 | Annual | 10/24/2015 | N/A |
| Agilent | 8447D | Broadband Amplifier | 5/30/2014 | Annual | 5/30/2015 | 2443A01900 |
| Agilent | N9020A | MXA Signal Analyzer | 10/27/2014 | Annual | 10/27/2015 | US46470561 |
| Agilent | N9038A | MXE EMI Receiver | 3/3/2014 | Annual | 3/3/2015 | MY51210133 |
| Com-Power | AL-130 | 9kHz - 30MHz Loop Antenna | 6/26/2013 | Biennial | 6/26/2015 | 121034 |
| Emco | 3115 | Horn Antenna (1-18GHz) | 1/30/2014 | Biennial | 1/30/2016 | 9704-5182 |
| ETS Lindgren | 3117 | 1-18 GHz DRG Horn (Medium) | 4/8/2014 | Biennial | 4/8/2016 | 125518 |
| ETS Lindgren | 3160-09 | 18-26.5 GHz Standard Gain Horn | 6/17/2014 | Biennial | 6/17/2016 | 135427 |
| K & L | 11SH10-3075/U18000 | High Pass Filter | 12/1/2014 | Annual | 12/1/2015 | 2 |
| Pasternack | NMLC-1 | Line Conducted Emissions Cable (NM) | 10/17/2014 | Annual | 10/17/2015 | N/A |
| Rhode & Schwarz | TS-PR18 | Pre-Amplifier | 6/12/2014 | Annual | 6/12/2015 | 101622 |
| Rohde & Schwarz | ESU26 | EMI Test Receiver (26.5GHz) | 1/27/2014 | Annual | 1/27/2015 | 100342 |
| Rohde & Schwarz | TS-PR18 | 1-18 GHz Pre-Amplifier | 3/5/2014 | Annual | 3/5/2015 | 100071 |
| Rohde & Schwarz | TS-PR26 | 18-26.5 GHz Pre-Amplifier | 3/12/2014 | Annual | 3/12/2015 | 100040 |
| Seekonk | NC-100 | Torque Wrench 5/16", 8" lbs | 3/18/2014 | Biennial | 3/18/2016 | N/A |
| Solar Electronics | 8012-50-R-24-BNC | Line Impedance Stabilization Network | 6/20/2013 | Biennial | 6/20/2015 | 310233 |
| Sunol | JB5 | Bi-Log Antenna (30M - 5GHz) | 1/28/2014 | Biennial | 1/28/2016 | A051107 |
| VWR | 62344-734 | Thermometer with Clock | 2/20/2014 | Biennial | 2/20/2016 | 140140336 |

**Table 5-1. Annual Test Equipment Calibration Schedule**

# 6.0 TEST RESULTS

## 6.1 Summary

Company Name: Device Solutions

FCC ID: OXW-DS0028

Method/System: Frequency Hopping Spread Spectrum (FHSS)

Number of Channels: 50 channels (25 per network)

| FCC Part Section(s) | RSS Section | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---|---|---|---|---|---|---|
| **TRANSMITTER MODE (Tx)** | | | | | | |
| 15.205,15.209, 15.247(d) | RSS-210 [A8.5] | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-210 table 3 limits) | RADIATED | PASS | Section 6.2 |
| 15.207 | RSS-Gen [7.2.2 ] | AC Conducted Emissions 150kHz – 30MHz | < FCC 15.207 limits or < RSS-Gen table 2 limits | LINE CONDUCTED | PASS | Section 6.3 |

**Table 6-1. Summary of Test Results**

**Notes:**

1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.

## 6.2 Radiated Spurious Emission Measurements

**§15.205 §15.209 §15.247 (d)**

| Frequency | Field Strength [μV/m] | Measured Distance [Meters] |
|---|---|---|
| 0.009 – 0.490 MHz | 2400/F (kHz) | 300 |
| 0.490 – 1.705 MHz | 24000/F (kHz) | 30 |
| 1.705 – 30.00 MHz | 30 | 30 |
| 30.00 – 88.00 MHz | 100 | 3 |
| 88.00 – 216.0 MHz | 150 | 3 |
| 216.0 – 960.0 MHz | 200 | 3 |
| Above 960.0 MHz | 500 | 3 |

**Table 6-2. Radiated Limits**

**Sample Calculation**

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$ + Duty Cycle Correction $_{[dB]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$
- Duty Cycle Correction Factor Calculation:
  - Pulse Repetition Interval = 30ms (PRI)
  - Pulse Width = 6.59ms
  - In the worst case 100ms window, there will be 4 pulse widths, based on a PRI of 30ms
  - Worst Case Dwell Time = 6.59ms x 4 = 26.36ms
  - Duty Cycle Correction = 20log(Worst Case Dwell Time/100ms) $_{[dB]}$ = -11.581dB

**Test Notes**

1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-2.
2. Average measurements > 1GHz using RBW = 1MHz and VBW = 1kHz ≥ 1/τ Hz, where τ = pulse width in seconds. Peak measurements > 1GHz using RBW = 1MHz and VBW = 3MHz. Both average and peak measurements were made using a peak detector.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested while powered by an AC power source.
5. The spectrum is measured from 9kHz to the 10$^{th}$ harmonic and the worst-case emissions are reported.

## Radiated Spurious Emission Measurements

**§15.205 §15.209 §15.247 (d)**

| | |
|---|---|
| Worst Case Mode: | Continuous Tx |
| Measurement Distance: | 3 Meters |
| Operating Frequency: | 904.8MHz |
| Channel: | 302 |

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | AFCL [dB] | Duty Cycle Correction [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 2714.40 | -92.49 | Avg | H | 36.71 | -11.58 | 39.64 | 53.98 | -14.34 |
| 2714.40 | -90.85 | Peak | H | 36.71 | 0.00 | 52.87 | 73.98 | -21.11 |
| 3619.20 | -90.40 | Avg | H | 38.17 | -11.58 | 43.19 | 53.98 | -10.79 |
| 3619.20 | -89.51 | Peak | H | 38.17 | 0.00 | 55.66 | 73.98 | -18.32 |
| 4524.00 | -106.42 | Avg | H | 41.06 | -11.58 | 30.06 | 53.98 | -23.92 |
| 4524.00 | -99.28 | Peak | H | 41.06 | 0.00 | 48.78 | 73.98 | -25.20 |
| 5428.80 | -111.52 | Avg | H | 40.69 | -11.58 | 24.59 | 53.98 | -29.39 |
| 5428.80 | -101.57 | Peak | H | 40.69 | 0.00 | 46.12 | 73.98 | -27.86 |

**Table 6-3. Radiated Measurements**

## Radiated Spurious Emission Measurements

**§15.205 §15.209 §15.247 (d)**

| | |
|---|---|
| Worst Case Mode: | Continuous Tx |
| Measurement Distance: | 3 Meters |
| Operating Frequency: | 914.8MHz |
| Channel: | 350 |

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | AFCL [dB] | Duty Cycle Correction [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 2744.40 | -88.09 | Avg | H | 36.81 | -11.58 | 44.15 | 53.98 | -9.83 |
| 2744.40 | -87.20 | Peak | H | 36.81 | 0.00 | 56.62 | 73.98 | -17.36 |
| 3659.20 | -86.58 | Avg | H | 38.40 | -11.58 | 47.24 | 53.98 | -6.74 |
| 3659.20 | -86.00 | Peak | H | 38.40 | 0.00 | 59.40 | 73.98 | -14.58 |
| 4574.00 | -104.17 | Avg | H | 40.94 | -11.58 | 32.19 | 53.98 | -21.79 |
| 4574.00 | -98.44 | Peak | H | 40.94 | 0.00 | 49.50 | 73.98 | -24.48 |
| 7318.40 | -113.57 | Avg | H | 42.75 | -11.58 | 24.60 | 53.98 | -29.38 |
| 7318.40 | -103.26 | Peak | H | 42.75 | 0.00 | 46.49 | 73.98 | -27.48 |

**Table 6-4. Radiated Measurements**

## Radiated Spurious Emission Measurements

**§15.205 §15.209 §15.247 (d)**

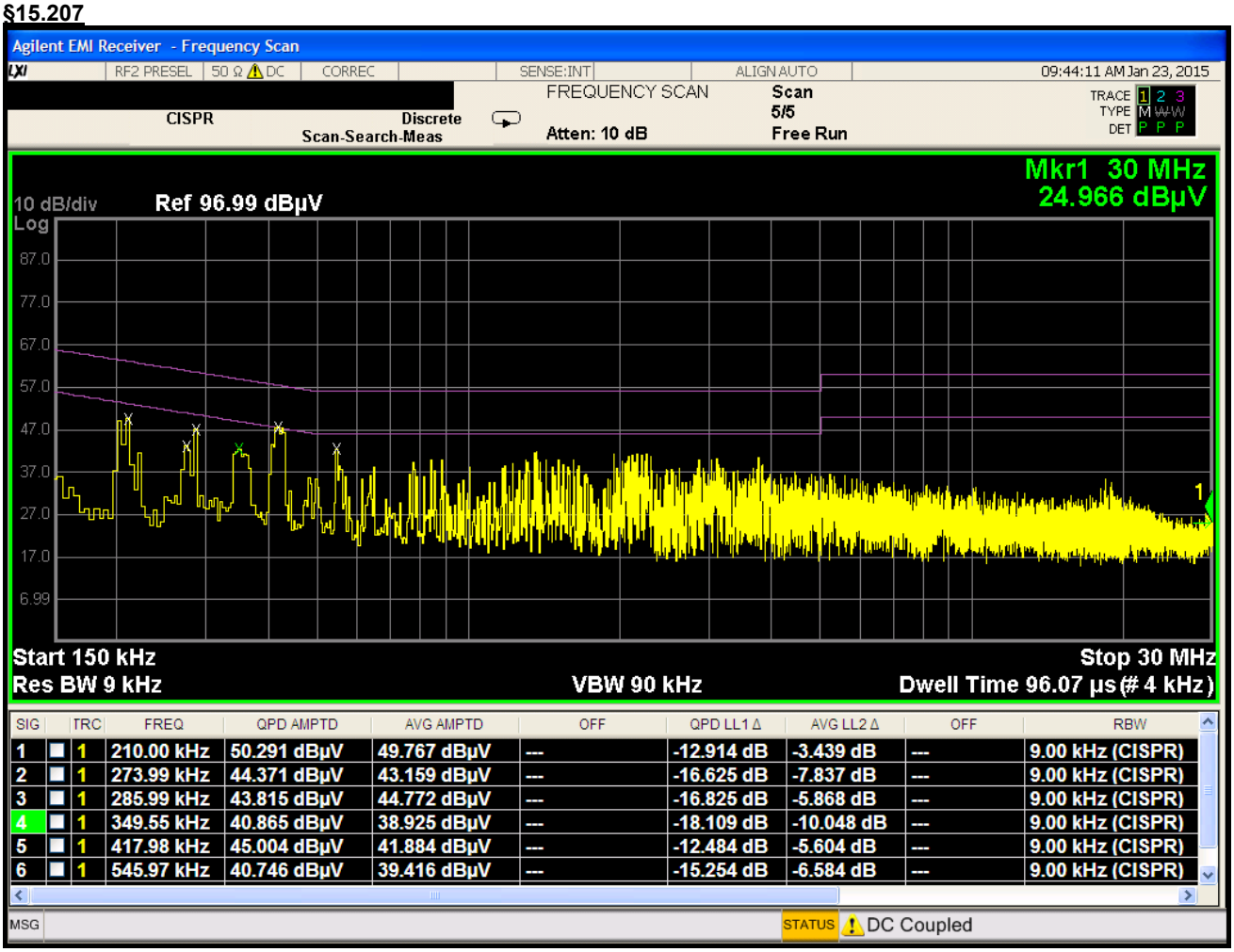
| | |
|---|---|
| Worst Case Mode: | Continuous Tx |
| Measurement Distance: | 3 Meters |
| Operating Frequency: | 924.8MHz |
| Channel: | 400 |

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | AFCL [dB] | Duty Cycle Correction [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 2774.40 | -88.39 | Avg | H | 36.90 | -11.58 | 43.94 | 53.98 | -10.04 |
| 2774.40 | -87.37 | Peak | H | 36.90 | 0.00 | 56.54 | 73.98 | -17.44 |
| 3699.20 | -84.51 | Avg | H | 38.62 | -11.58 | 49.53 | 53.98 | -4.45 |
| 3699.20 | -84.10 | Peak | H | 38.62 | 0.00 | 61.52 | 73.98 | -12.46 |
| 4624.00 | -103.82 | Avg | H | 40.83 | -11.58 | 32.42 | 53.98 | -21.56 |
| 4624.00 | -98.76 | Peak | H | 40.83 | 0.00 | 49.06 | 73.98 | -24.92 |
| 7398.40 | -113.40 | Avg | H | 42.80 | -11.58 | 24.82 | 53.98 | -29.16 |
| 7398.40 | -103.48 | Peak | H | 42.80 | 0.00 | 46.32 | 73.98 | -27.66 |

**Table 6-5. Radiated Measurements**

## 6.3 Line Conducted Measurement Data

**§15.207**



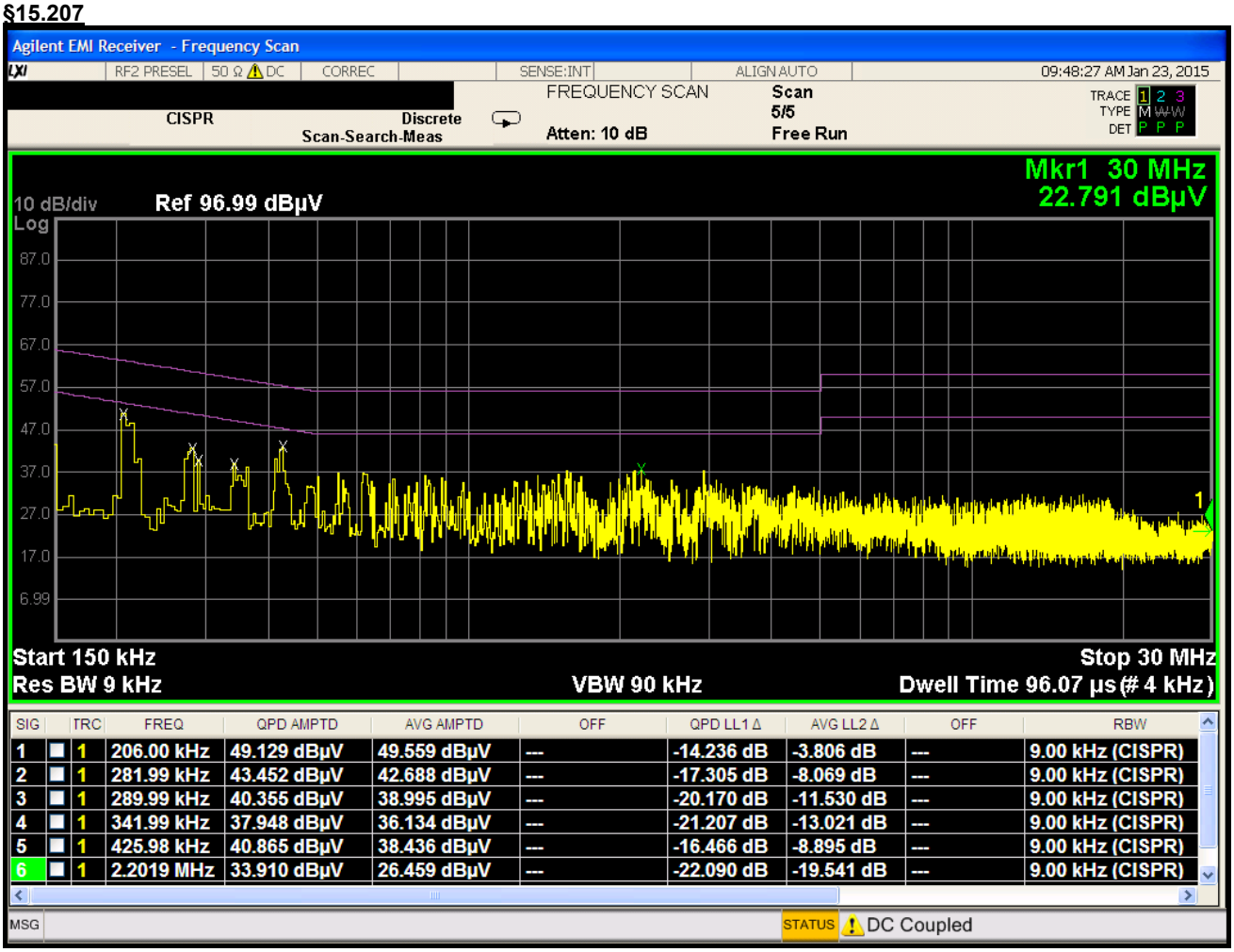

**Plot 6-1. Line-Conducted Test Plot (L1)**

**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 900MHz ISM Channel 350. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
4. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
5. Margin (dB) = QP/AV Limit (dBµV) - QP/AV Level (dBµV)
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

## Line Conducted Measurement Data

**§15.207**




| SIG | | TRC | FREQ | QPD AMPTD | AVG AMPTD | OFF | QPD LL1 Δ | AVG LL2 Δ | OFF | RBW |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 1 | 206.00 kHz | 49.129 dBµV | 49.559 dBµV | --- | -14.236 dB | -3.806 dB | --- | 9.00 kHz (CISPR) |
| 2 | | 1 | 281.99 kHz | 43.452 dBµV | 42.688 dBµV | --- | -17.305 dB | -8.069 dB | --- | 9.00 kHz (CISPR) |
| 3 | | 1 | 289.99 kHz | 40.355 dBµV | 38.995 dBµV | --- | -20.170 dB | -11.530 dB | --- | 9.00 kHz (CISPR) |
| 4 | | 1 | 341.99 kHz | 37.948 dBµV | 36.134 dBµV | --- | -21.207 dB | -13.021 dB | --- | 9.00 kHz (CISPR) |
| 5 | | 1 | 425.98 kHz | 40.865 dBµV | 38.436 dBµV | --- | -16.466 dB | -8.895 dB | --- | 9.00 kHz (CISPR) |
| 6 | | 1 | 2.2019 MHz | 33.910 dBµV | 26.459 dBµV | --- | -22.090 dB | -19.541 dB | --- | 9.00 kHz (CISPR) |

**Plot 6-2. Line-Conducted Test Plot (N)**

**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 900MHz ISM Channel 350. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
4. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
5. Margin (dB) = QP/AV Limit (dBµV) - QP/AV Level (dBµV)
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

# 7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Device Solutions WiFi Gateway FCC ID: OXW-DS0028** is in compliance with Part 15 Subpart C (15.247) of the FCC Rules.