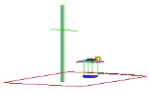
PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctestlab.com



# MEASUREMENT REPORT
## FCC PART 15.249 Nordic Tx

**Applicant Name:**
Kyocera Corporation
9520 Towne Centre Drive, Suite 200
San Diego, CA 92121
United States

**Date of Testing:**
9/14-11/4/2015
**Test Site/Location:**
PCTEST Lab. Columbia, MD, USA
**Test Report Serial No.:**
0Y1509141773-R3.V65

| | |
|---|---|
| **FCC ID:** | **V65CD8100** |
| **APPLICANT:** | **Kyocera Corporation** |

| | |
|---|---|
| **Application Type:** | Certification |
| **Model(s):** | CD8100 |
| **EUT Type:** | Portable Handset |
| **Frequency Range:** | 2402 – 2480MHz |
| **FCC Classification:** | Low Power Communications Device Transmitter (DXX) |
| **FCC Rule Part(s):** | Part 15 Subpart C (15.249) |
| **Test Procedure(s):** | ANSI C63.10-2009 |

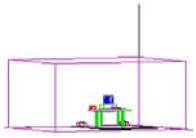
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2009. Test results reported herein relate only to the item(s) tested. This

This This revised Test Report (S/N: 0Y1509141773-R3.V65) supersedes and replaces the previously issued test report (S/N: 0Y1509141773-R2.V65) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

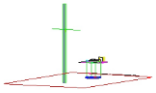
I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking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

Randy Ortanez
President

# TABLE OF CONTENTS



# MEASUREMENT REPORT
## FCC Part 15.249



## § 2.1033 General Information

| | |
|---|---|
| **APPLICANT:** | Kyocera Corporation |
| **APPLICANT ADDRESS:** | 9520 Towne Centre Drive, Suite 200 |
| | San Diego, CA 92121, 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 (15.249) |
| **MODEL:** | CD8100 |
| **FCC ID:** | V65CD8100 |
| **Test Device Serial No.:** | 990000515216283 ☐ Production ☒ Pre-Production ☐ Engineering |
| **FCC CLASSIFICATION:** | Low Power Communications Device Transmitter (DXX) |
| **DATE(S) OF TEST:** | 9/14-11/4/2015 |
| **TEST REPORT S/N:** | 0Y1509141773-R3.V65 |

## 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 C63.4-2014 on January 22, 2015.

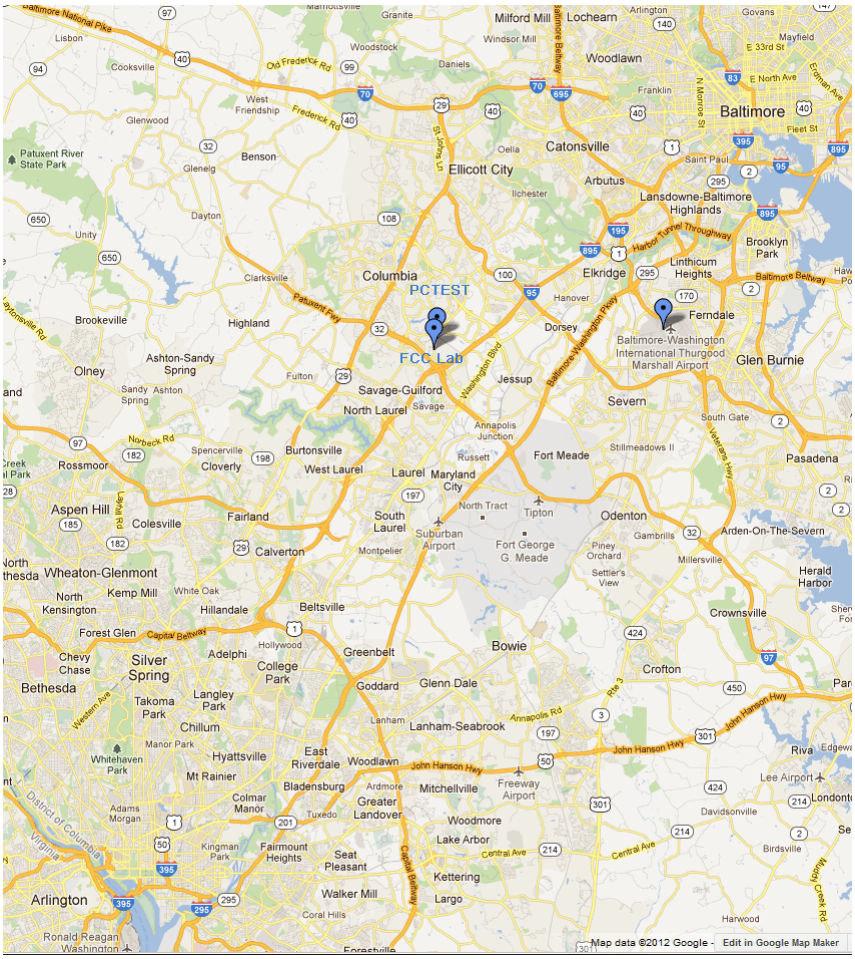



**Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area**

# 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Kyocera Portable Handset FCC ID: V65CD8100**. The test data contained in this report pertains only to the emissions due to the EUT's 2.4GHz Nordic transmitter.

## 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA/EvDO 1x/Rev0/RevA (BC0, BC1), Multi-band LTE, 802.11b/g/n WLAN, Bluetooth (EDR, LE), Nordic Tx

**Note:** This device is not capable of operating in hopping mode.

## 2.3 Test Configuration

The Kyocera Portable Handset FCC ID: V65CD8100 was tested per the guidance of ANSI C63.10-2009. ANSI C63.10-2009 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. AC line conducted emissions testing was performed with the EUT attached to an AC adapter (Model: SCP-46ADT). 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 TESTS

## 3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009) was used in the measurement of the **Kyocera Portable Handset FCC ID: V65CD8100.**

**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 6.6. The EMI Receiver mode of the Agilent MXE was used to perform AC line conducted 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 Figure 5.7 of Clause 5 in ANSI C63.4-2014. A 72cm high PVC support structure is placed on top of the turntable. A 3" (~7.6cm) sheet of high density polystyrene 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 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.

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.

## 3.4 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

# 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 Kyocera Portable Handset are **permanently attached.**
- There are no provisions for connection to an external antenna.

**Conclusion:**

The **Kyocera Portable Handset FCC ID: V65CD8100** unit complies with the requirement of §15.203.

| Ch. | Frequency (MHz) |
|---|---|
| 00 | 2402 |
| 01 | 2404 |
| : | : |
| 19 | 2440 |
| : | : |
| 39 | 2480 |

**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) | 4/28/2015 | Annual | 4/28/2016 | N/A |
| - | RE3 | Radiated Emissions Cable Set | 4/29/2015 | Annual | 4/29/2016 | N/A |
| Agilent | 8447D | Broadband Amplifier | 6/12/2015 | Annual | 6/12/2016 | 2443A01900 |
| Agilent | E4448A | PSA (3Hz-50GHz) Spectrum Analyzer | 3/19/2015 | Annual | 3/19/2016 | US42510244 |
| Agilent | N9030A | PXA Signal Analyzer (44GHz) | 3/24/2015 | Annual | 3/24/2016 | MY52350166 |
| Agilent | N9038A | MXE EMI Receiver | 3/24/2015 | Annual | 3/24/2016 | MY51210133 |
| Anritsu | MA2411B | Pulse Sensor | 4/8/2014 | Biennial | 4/8/2016 | 1027293 |
| Anritsu | ML2495A | Power Meter | 10/31/2013 | Biennial | 10/31/2015 | 1039008 |
| Com-Power | AL-130 | 9kHz - 30MHz Loop Antenna | 7/30/2015 | Biennial | 7/30/2017 | 121034 |
| Com-Power | PAM-118A | Pre-Amplifier | 4/10/2015 | Annual | 4/10/2016 | 551042 |
| Emco | 3115 | Horn Antenna (1-18GHz) | 1/30/2014 | Biennial | 1/30/2016 | 9704-5182 |
| Espec | ESX-2CA | Environmental Chamber | 3/17/2015 | Annual | 3/17/2016 | 17620 |
| ETS Lindgren | 3160-09 | 18-26.5 GHz Standard Gain Horn | 6/17/2014 | Biennial | 6/17/2016 | 135427 |
| ETS Lindgren | 3160-10 | 26.5-40 GHz Standard Gain Horn | 6/17/2014 | Biennial | 6/17/2016 | 130993 |
| ETS Lindgren | 3164-08 | Quad Ridge Horn Antenna | 3/12/2014 | Biennial | 3/12/2016 | 128337 |
| ETS-Lindgren | 3816/2NM | Line Impedance Stabilization Network | 11/11/2014 | Biennial | 11/11/2016 | 114451 |
| K & L | 11SH10-3075/U18000 | High Pass Filter | 12/1/2014 | Annual | 12/1/2015 | 2 |
| Mini-Circuits | PWR-SENS-4RMS | USB Power Sensor | 3/11/2015 | Annual | 3/11/2016 | 11210140001 |
| Pasternack | NMLC-1 | Line Conducted Emissions Cable (NM) | 4/28/2015 | Annual | 4/28/2016 | N/A |
| Rhode & Schwarz | TS-PR18 | Pre-Amplifier | 3/5/2015 | Annual | 3/5/2016 | 101622 |
| Rohde & Schwarz | ESU40 | EMI Test Receiver (40GHz) | 7/17/2015 | Annual | 7/17/2016 | 100348 |
| Rohde & Schwarz | TS-PR18 | 1-18 GHz Pre-Amplifier | 3/5/2015 | Annual | 3/5/2016 | 100071 |
| Rohde & Schwarz | TS-PR26 | 18-26.5 GHz Pre-Amplifier | 3/3/2015 | Annual | 3/3/2016 | 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 | 7/30/2015 | Biennial | 7/30/2017 | 310233 |
| Sunol | DRH-118 | Horn Antenna (1 - 18GHz) | 7/30/2015 | Biennial | 7/30/2017 | A050307 |
| Sunol | JB5 | Bi-Log Antenna (30M - 5GHz) | 1/28/2014 | Biennial | 1/28/2016 | A051107 |
| Sunol Sciences | DRH-118 | Horn Antenna | 7/1/2015 | Biennial | 7/1/2017 | A060215 |
| 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: Kyocera Corporation

FCC ID: V65CD8100

Number of Channels: 40

| FCC Part Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---|---|---|---|---|---|
| **TRANSMITTER MODE (Tx)** | | | | | |
| 15.35(c) | Duty Cycle Calculation | N/A | RADIATED | N/A | Section 6.2 |
| 15.249(a)(e) | Fundamental Field Strength Level | < 50 mV/m | | PASS | Section 6.3 |
| 15.249(a)(e) | Harmonic Field Strength Level | < 500 μV/m | | PASS | Section 6.4 |
| 15.205, 15.209, 15.249(d)(e) | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | < 15.209 limits or 50dB below the level of the fundamental | | PASS | Sections 6.4, 6.5 |
| 15.207 | AC Conducted Emissions 150kHz – 30MHz | < FCC 15.207 limits | LINE CONDUCTED | PASS | Section 6.6 |

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

**Notes:**

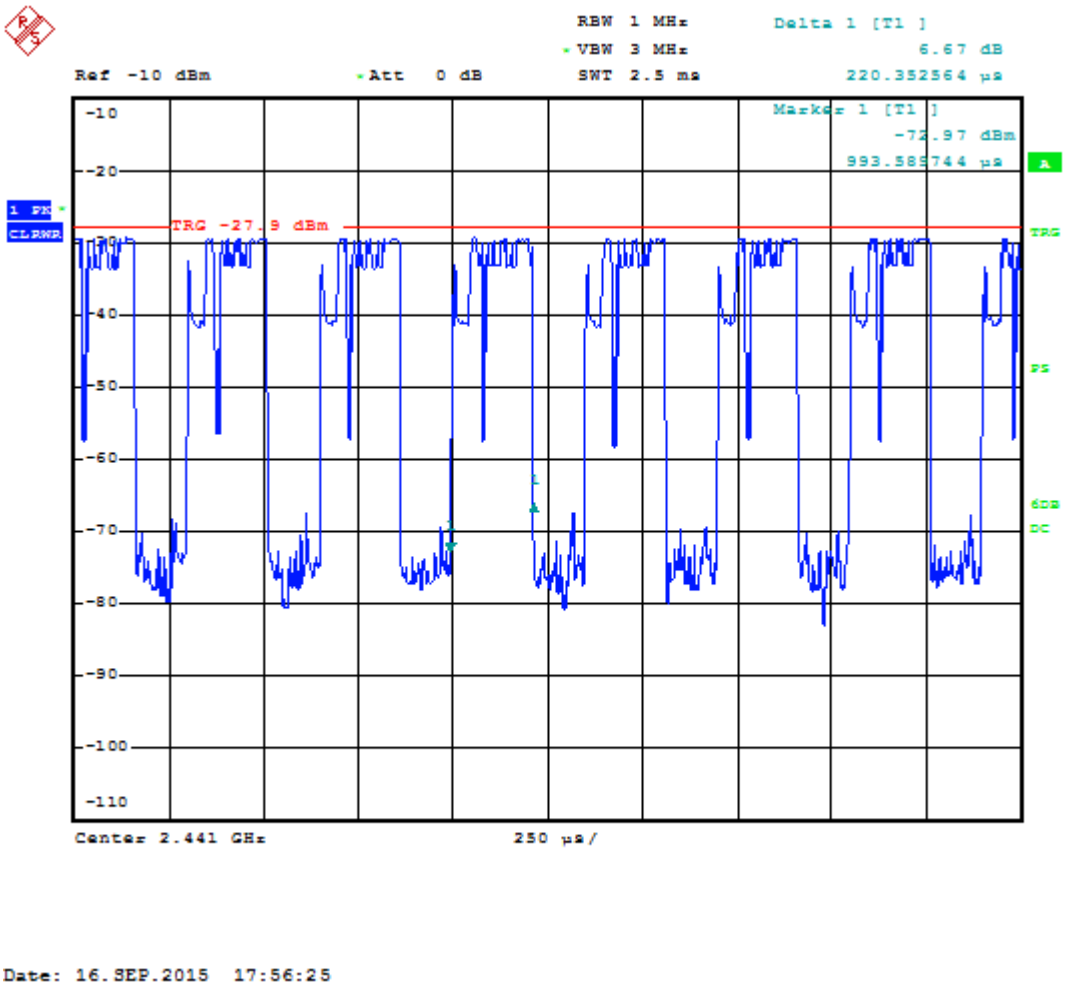
1) All modes of operation were investigated. The test results shown in the following sections represent the worst case emissions.
2) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.

## 6.2 Duty Cycle Calculation

**§15.35(c)**

Per FCC Part 15.35(c), an average radiated field strength can be determined by applying a duty cycle correction factor to a measured peak radiated field strength level. The duty cycle correction factor is determined based on the worst case operation over a 100ms time period on any given channel. Two plots are included below to determine the appropriate duty cycle correction factor.

In Plot 6-1 below, it is shown that the pulse width for one transmission burst of the Nordic transmitter while operating in non-hopping mode is 220.0µs.

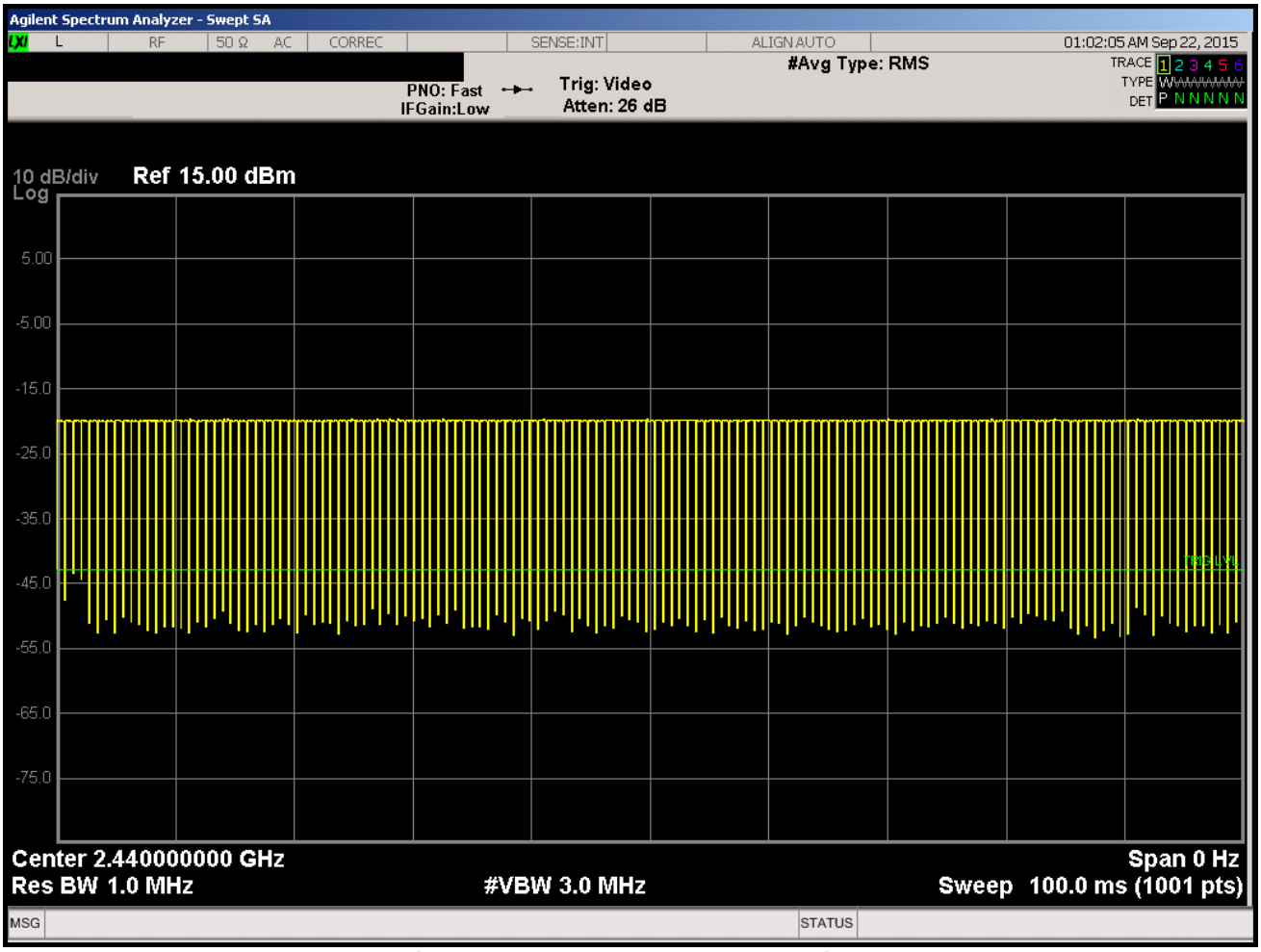



**Plot 6-1. Pulse Width Measurement**

## Duty Cycle Calculation

**§15.35(c)**

In Plot 6-2 below, a video trigger is used to determine the maximum number of times the transmitter operates at maximum power over a 100ms period.




**Plot 6-2. Worst Case 100ms Operation**

Since it is determined that the transmitter burst appears a maximum of 143 times over a 100ms window with a pulse width of 220.0μs, then the appropriate duty cycle correction factor is determined from the following formula, based on 15.35(c):

DCCF = $20\log_{10}$ (number of hits x (worst case 100ms operation / 100ms))
= $20\log_{10}$ (143 x (0.2200ms/100ms)) = -10.04dB

**DCCF = -10.04dB**

## 6.3 Fundamental Field Strength Level Measurement

**§15.249(a)(e)**

Measurement is made while the EUT is operating in non-hopping transmission mode. The field strengths shown below were measured using a spectrum analyzer. Peak field strength measurements are performed in the analyzers' swept spectrum mode using a peak detector with RBW = 3MHz and VBW ≥ RBW. Average field strength data is determined by applying the duty cycle correction factor (DCCF) found in Section 6.2 to the measured peak field strength values.

***The maximum permissible average field strength level is 50mV/m (93.98dBμV/m). The maximum permissible peak field strength level is 500mV/m (113.98 dBμV/m).***

| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [m] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB] | Field Strength [dBμV/m] | Duty Cycle Correction [dB] | Corrected Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2402.00 | Peak | H | 1.02 | 254 | -54.70 | 35.30 | 87.60 | -10.04 | 77.56 | 93.98 | -16.42 |
| 2402.00 | Peak | H | 1.02 | 254 | -54.70 | 35.30 | 87.60 | 0.00 | 87.60 | 113.98 | -26.38 |
| 2441.00 | Peak | H | 1.02 | 261 | -53.96 | 35.52 | 88.56 | -10.04 | 78.52 | 93.98 | -15.46 |
| 2441.00 | Peak | H | 1.02 | 261 | -53.96 | 35.52 | 88.56 | 0.00 | 88.56 | 113.98 | -25.42 |
| 2480.00 | Peak | H | 1.00 | 258 | -51.87 | 35.74 | 90.87 | -10.04 | 80.83 | 93.98 | -13.15 |
| 2480.00 | Peak | H | 1.00 | 258 | -51.87 | 35.74 | 90.87 | 0.00 | 90.87 | 113.98 | -23.11 |

**Table 6-2. Field Strength Measurements**

## 6.4 Radiated Spurious Emission Measurements

**§15.205 §15.209 §15.249 (d)(e)**

| 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 6-3. Radiated Limits**

**Sample Calculation**

- Avg. Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$ + Duty Cycle Correction $_{[dB]}$
- Pk. Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

**Test Notes**

1. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported. There were no non-harmonic emissions detected whose levels were within 20dB of the applicable limits so only harmonic emissions data is shown in this section.
2. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-3. Per 15.249(d), the radiated emissions limits from 15.209 were used since they were less than the limit of 50dB of attenuation from the measured fundamental field strength level.
3. Peak measurements > 1GHz using RBW = 1MHz and VBW = 3MHz.
4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
5. This unit was tested with its standard battery.

## Radiated Spurious Emission Measurements

**§15.205 §15.209 §15.249 (d)(e)**

Worst Case Mode: Nordic Tx (non-hopping)
Measurement Distance: 3 Meters
Operating Frequency: 2402MHz
Channel: 00

| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Analyzer Level [dBm] | AFCL [dB] | Field Strength [dBµV/m] | Corrected Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 4804.00 | Peak | H | -98.82 | 40.87 | 49.05 | 49.05 | 53.98 | -4.92 |
| 4804.00 | Peak | H | -98.82 | 40.87 | 49.05 | 49.05 | 73.98 | -24.92 |
| 12010.00 | Peak | H | -102.31 | 47.92 | 52.61 | 52.61 | 53.98 | -1.37 |
| 12010.00 | Peak | H | -102.31 | 47.92 | 52.61 | 52.61 | 73.98 | -21.37 |

**Table 6-4. Radiated Measurements**

Worst Case Mode: Nordic Tx (non-hopping)
Measurement Distance: 3 Meters
Operating Frequency: 2440MHz
Channel: 19

| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Analyzer Level [dBm] | AFCL [dB] | Field Strength [dBµV/m] | Corrected Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 4882.00 | Peak | H | -98.00 | 39.96 | 48.96 | 48.96 | 53.98 | -5.02 |
| 4882.00 | Peak | H | -98.00 | 39.96 | 48.96 | 48.96 | 73.98 | -25.02 |
| 7323.00 | Peak | H | -99.43 | 44.24 | 51.81 | 51.81 | 53.98 | -2.17 |
| 7323.00 | Peak | H | -99.43 | 44.24 | 51.81 | 51.81 | 73.98 | -22.17 |
| 12205.00 | Peak | H | -101.91 | 47.42 | 52.51 | 52.51 | 53.98 | -1.47 |
| 12205.00 | Peak | H | -101.91 | 47.42 | 52.51 | 52.51 | 73.98 | -21.47 |

**Table 6-5. Radiated Measurements**

## Radiated Spurious Emission Measurements

**§15.205 §15.209 §15.249 (d)(e)**

| | |
|---|---|
| Worst Case Mode: | Nordic Tx (non-hopping) |
| Measurement Distance: | 3 Meters |
| Operating Frequency: | 2480MHz |
| Channel: | 39 |

| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Analyzer Level [dBm] | AFCL [dB] | Field Strength [dBµV/m] | Corrected Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 4960.00 | Peak | H | -98.00 | 39.67 | 48.67 | 48.67 | 53.98 | -5.31 |
| 4960.00 | Peak | H | -98.00 | 39.67 | 48.67 | 48.67 | 73.98 | -25.31 |
| 7440.00 | Peak | H | -98.80 | 45.14 | 53.34 | 53.34 | 53.98 | -0.64 |
| 7440.00 | Peak | H | -98.80 | 45.14 | 53.34 | 53.34 | 73.98 | -20.64 |
| 12400.00 | Peak | H | -102.44 | 47.90 | 52.46 | 52.46 | 53.98 | -1.52 |
| 12400.00 | Peak | H | -102.44 | 47.90 | 52.46 | 52.46 | 73.98 | -21.52 |

**Table 6-6. Radiated Measurements**

## 6.5 Radiated Restricted Band Edge Measurements

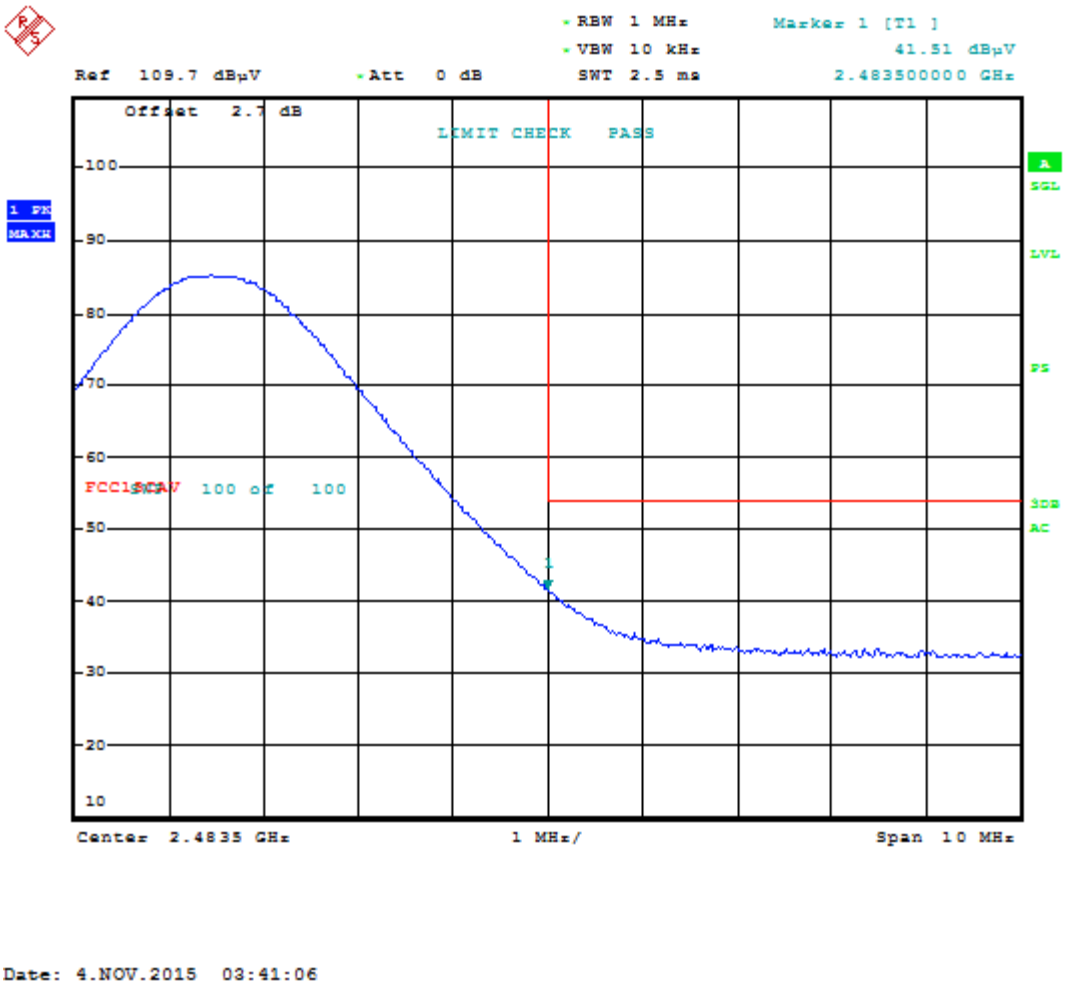
**§15.205 §15.209 §15.249 (d)**

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting. Two different amplitude offsets were used depending on whether peak or average measurements were measured. The average measurements use a duty cycle correction factor (DCCF).

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

Offset (dB) = (Antenna Factor + Cable Loss) – Preamplifier Gain + DCCF

| | |
|---|---|
| Worst Case Mode: | Nordic Tx (non-hopping) |
| Measurement Distance: | 3 Meters |
| Operating Frequency: | 2480MHz |
| Back Cover | Standard |
| Channel: | 39 |



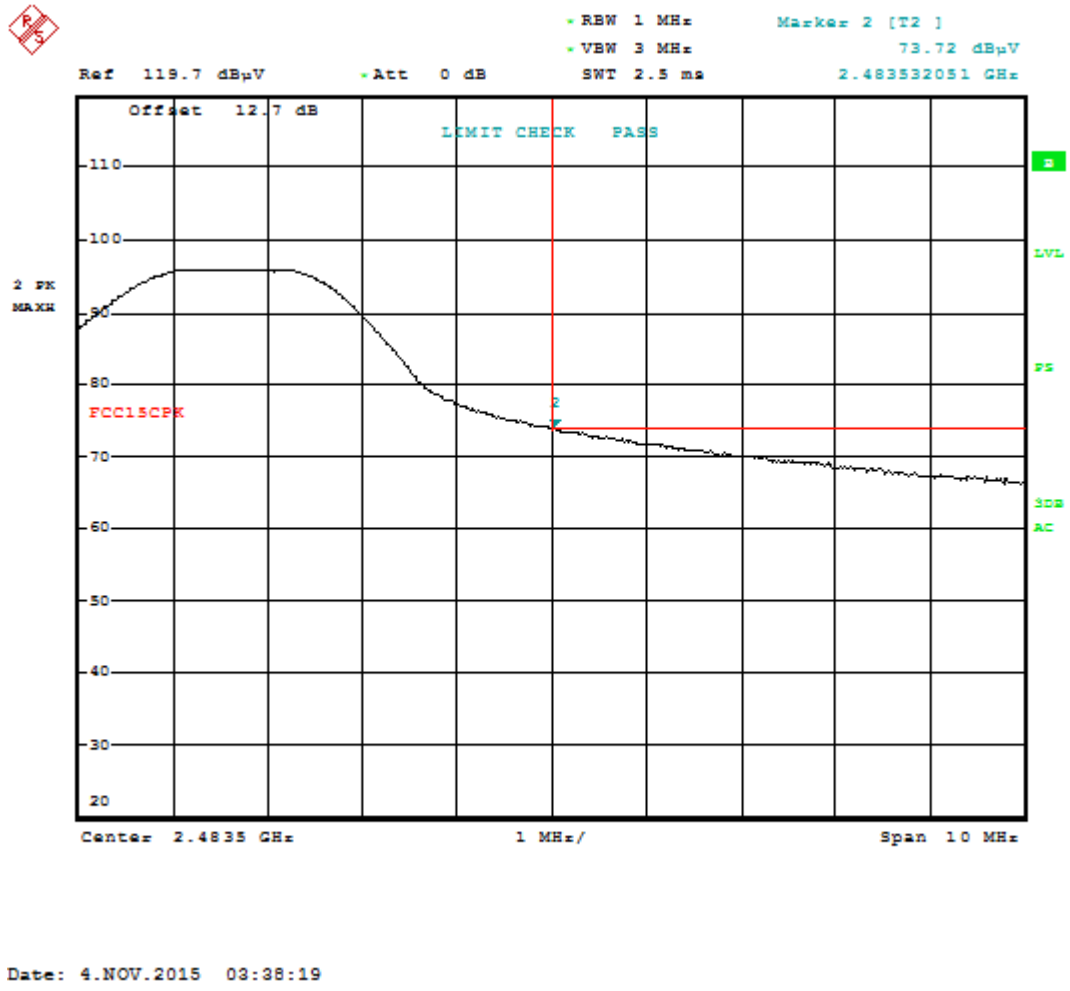

**Plot 6-3. Radiated Restricted Upper Band Edge Measurement (Average)**

## Radiated Restricted Band Edge Measurements

**§15.205 §15.209 §15.249 (d)**

The amplitude offset shown in the following plots for peak measurements was calculated using the formula:

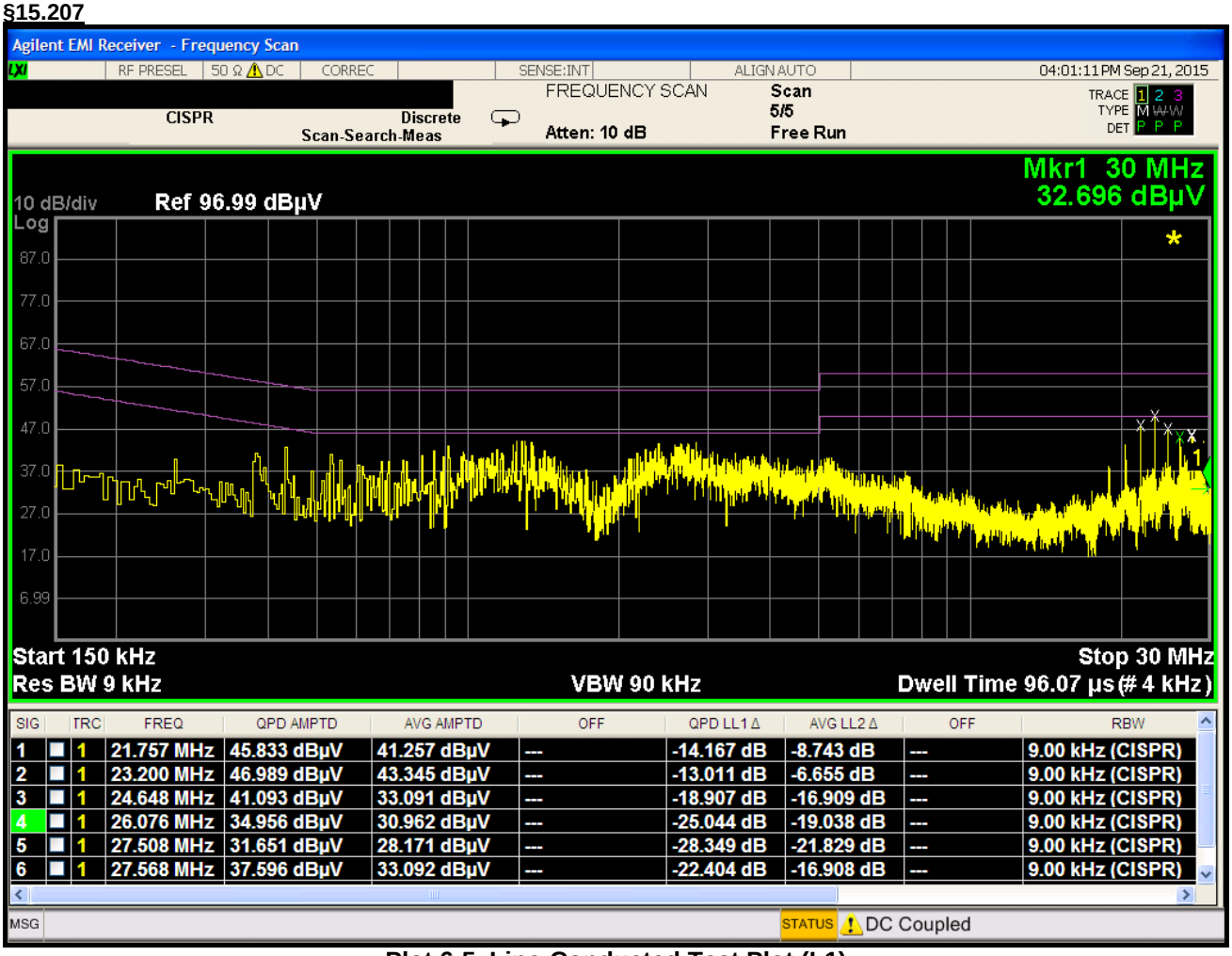
Offset (dB) = (Antenna Factor + Cable Loss) – Preamplifier Gain




**Plot 6-4. Radiated Restricted Upper Band Edge Measurement (Peak)**

## 6.6 Line Conducted Measurement Data

**§15.207**




| SIG | | TRC | FREQ | QPD AMPTD | AVG AMPTD | OFF | QPD LL1 Δ | AVG LL2 Δ | OFF | RBW |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 1 | 21.757 MHz | 45.833 dBµV | 41.257 dBµV | --- | -14.167 dB | -8.743 dB | --- | 9.00 kHz (CISPR) |
| 2 | | 1 | 23.200 MHz | 46.989 dBµV | 43.345 dBµV | --- | -13.011 dB | -6.655 dB | --- | 9.00 kHz (CISPR) |
| 3 | | 1 | 24.648 MHz | 41.093 dBµV | 33.091 dBµV | --- | -18.907 dB | -16.909 dB | --- | 9.00 kHz (CISPR) |
| 4 | | 1 | 26.076 MHz | 34.956 dBµV | 30.962 dBµV | --- | -25.044 dB | -19.038 dB | --- | 9.00 kHz (CISPR) |
| 5 | | 1 | 27.508 MHz | 31.651 dBµV | 28.171 dBµV | --- | -28.349 dB | -21.829 dB | --- | 9.00 kHz (CISPR) |
| 6 | | 1 | 27.568 MHz | 37.596 dBµV | 33.092 dBµV | --- | -22.404 dB | -16.908 dB | --- | 9.00 kHz (CISPR) |

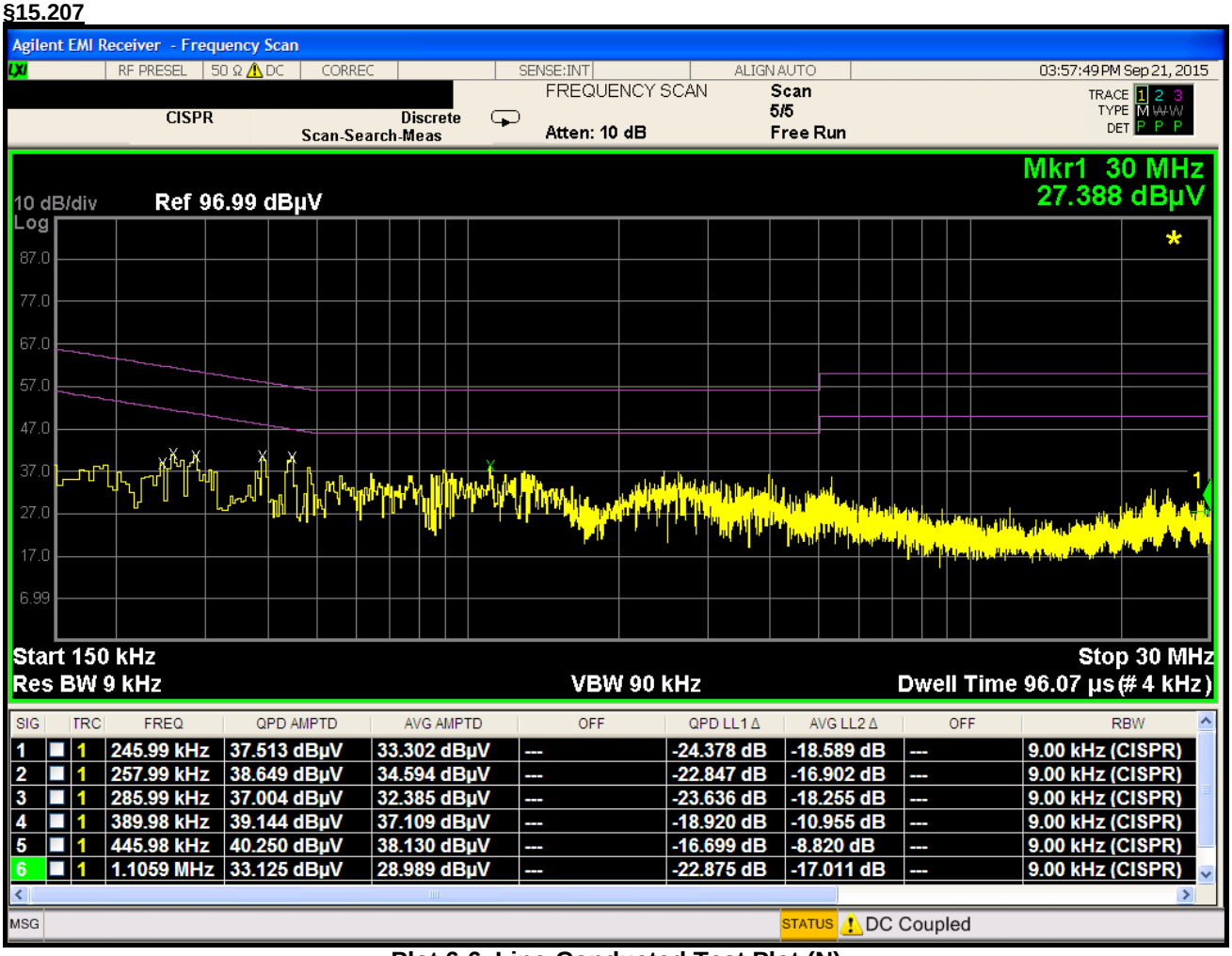
**Plot 6-5. Line-Conducted Test Plot (L1)**

**Notes:**

1. All Modes of operation were investigated and the worst-case emissions are reported using mid channel. 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 | 245.99 kHz | 37.513 dBµV | 33.302 dBµV | --- | -24.378 dB | -18.589 dB | --- | 9.00 kHz (CISPR) |
| 2 | | 1 | 257.99 kHz | 38.649 dBµV | 34.594 dBµV | --- | -22.847 dB | -16.902 dB | --- | 9.00 kHz (CISPR) |
| 3 | | 1 | 285.99 kHz | 37.004 dBµV | 32.385 dBµV | --- | -23.636 dB | -18.255 dB | --- | 9.00 kHz (CISPR) |
| 4 | | 1 | 389.98 kHz | 39.144 dBµV | 37.109 dBµV | --- | -18.920 dB | -10.955 dB | --- | 9.00 kHz (CISPR) |
| 5 | | 1 | 445.98 kHz | 40.250 dBµV | 38.130 dBµV | --- | -16.699 dB | -8.820 dB | --- | 9.00 kHz (CISPR) |
| 6 | | 1 | 1.1059 MHz | 33.125 dBµV | 28.989 dBµV | --- | -22.875 dB | -17.011 dB | --- | 9.00 kHz (CISPR) |

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

**Notes:**

1. All Modes of operation were investigated and the worst-case emissions are reported using mid channel. 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 **Kyocera Portable Handset FCC ID: V65CD8100** is in compliance with Part 15 Subpart C (15.249) of the FCC Rules.