



FCC ID: XN6-AE715

AUDIX Technology (Shenzhen) Co., Ltd.

FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Zylux Acoustic Corporation

DELL Wireless 360 Speaker System

AE715

FCC ID: XN6-AE715

Prepared for : Zylux Acoustic Corporation
3F, 22 Lane 35, Jihu Road Taipei Neihsu Technology Park,
11492 Taipei Taiwan

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Kefeng Road, Science & Technology Park,
Nanshan District , Shenzhen, Guangdong, China

Tel: (0755) 26639496

Report Number : ACS-F16211
Date of Test : Oct.31~Nov.12, 2016
Date of Report : Nov.17, 2016

TABLE OF CONTENTS

| Description | Page |
|---|------------|
| 1. SUMMARY OF STANDARDS AND RESULTS..... | 1-1 |
| 1.1. Description of Standards and Results | 1-1 |
| 2. GENERAL INFORMATION | 2-1 |
| 2.1. Description of Device (EUT)..... | 2-1 |
| 2.2. Tested Supporting System Details | 2-2 |
| 2.3. Block Diagram of connection between EUT and simulators | 2-2 |
| 2.4. Test information..... | 2-2 |
| 2.5. Test Facility | 2-3 |
| 2.6. Measurement Uncertainty (95% confidence levels, k=2) | 2-3 |
| 3. POWER LINE CONDUCTED EMISSION TEST | 3-1 |
| 3.1. Test Equipments..... | 3-1 |
| 3.2. Block Diagram of Test Setup | 3-1 |
| 3.3. Power Line Conducted Emission Test Limits..... | 3-1 |
| 3.4. Configuration of EUT on Test | 3-2 |
| 3.5. Operating Condition of EUT | 3-2 |
| 3.6. Test Procedure | 3-2 |
| 3.7. Power Line Conducted Emission Test Results | 3-2 |
| 4. RADIATED EMISSION MEASUREMENT..... | 4-1 |
| 4.1. Test Equipment | 4-1 |
| 4.2. Block Diagram of Test Setup | 4-1 |
| 4.3. Radiated Emission Limit Standard: | 4-2 |
| 4.4. EUT Configuration on Test | 4-2 |
| 4.5. Operating Condition of EUT | 4-2 |
| 4.6. Test Procedure | 4-2 |
| 4.7. Radiated Emission Test Results | 4-3 |
| 5. CONDUCTED SPURIOUS EMISSIONS..... | 5-1 |
| 5.1. Test Equipment | 5-1 |
| 5.2. Limit..... | 5-1 |
| 5.3. Test Procedure | 5-1 |
| 5.4. Test result..... | 5-1 |
| 6. 20 DB BANDWIDTH TEST | 6-1 |
| 6.1. Test Equipment | 6-1 |
| 6.2. Limit..... | 6-1 |
| 6.3. Test Procedure | 6-1 |
| 6.4. Test Results | 6-1 |
| 7. CARRIER FREQUENCY SEPARATION TEST | 7-1 |
| 7.1. Test Equipment | 7-1 |
| 7.2. Limit..... | 7-1 |
| 7.3. Test Procedure | 7-1 |
| 7.4. Test Results..... | 7-2 |
| 8. NUMBER OF HOPPING FREQUENCY TEST | 8-1 |
| 8.1. Test Equipment | 8-1 |
| 8.2. Limit..... | 8-1 |
| 8.3. Test Procedure | 8-1 |
| 8.4. Test Results | 8-1 |

| | | |
|------------|---|-------------|
| 9. | DWELL TIME | 9-1 |
| 9.1. | Test Equipment | 9-1 |
| 9.2. | Limit..... | 9-1 |
| 9.3. | Test Procedures | 9-1 |
| 9.4. | Test Results | 9-1 |
| 10. | MAXIMUM PEAK OUTPUT POWER TEST | 10-1 |
| 10.1. | Test Equipment | 10-1 |
| 10.2. | Limit..... | 10-1 |
| 10.3. | Test Procedure | 10-1 |
| 10.4. | Test Results | 10-1 |
| 11. | BAND EDGE COMPLIANCE TEST | 11-1 |
| 11.1. | Test Equipment | 11-1 |
| 11.2. | Limit..... | 11-1 |
| 11.3. | Test Produce..... | 11-1 |
| 11.4. | Test Results | 11-1 |
| 12. | ANTENNA REQUIREMENT | 12-1 |
| 12.1. | Standard Applicable..... | 12-1 |
| 12.2. | Antenna Connected Construction | 12-1 |
| 13. | DEVIATION TO TEST SPECIFICATIONS..... | 13-1 |
| 14. | PHOTOGRAPH OF TEST | 14-1 |
| 14.1. | Photos of Power Line Conducted Emission Test..... | 14-1 |
| 14.2. | Photos of Radiated Emission Test | 14-2 |
| 15. | PHOTOGRAPHS OF EUT | 15-1 |

TEST REPORT CERTIFICATION

Applicant : Zylux Acoustic Corporation
Manufacturer : Zylux Acoustic Corporation
Product : DELL Wireless 360 Speaker System
FCC ID : XN6-AE715
(A) Model No. : AE715
(B) Power Supply : DC 12V
(C) Test Voltage : DC 12V From Adapter Input 120V/60Hz

Tested for comply with:
FCC CFR47 Part 15 Subpart C: 2016

Test procedure used:
ANSI C63.10: 2013

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC and IC requirements. This report contains data that are not covered by the NVLAP accreditation.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Oct.31~Nov.12, 2016 Report of date: Nov.17, 2016

Prepared by : Kayli He for Reviewed by : Sunny Lu
Cindy Zhu / Assistant Sunny Lu / Deputy Manager



Approved & Authorized Signer : David Jin
David Jin / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

| EMISSION | | |
|------------------------------------|---|---------|
| Description of Test Item | Standard | Results |
| Power Line Conducted Emission Test | FCC Part 15: 15.207 ANSI C63.10 2013 | PASS |
| Radiated Emission Test | FCC Part 15 15.209 FCC Part 15 15.247(d) ANSI C63.10 2013 | PASS |
| Conducted Spurious Emissions | FCC Part 15: 15.247(a)(1) ANSI C63.10 2013 | PASS |
| Carrier Frequency Separation Test | FCC Part 15: 15.247(a)(1) ANSI C63.10 2013 | PASS |
| 20dB Bandwidth Test | FCC Part 15: 15.215 ANSI C63.10 2013 | PASS |
| Number Of Hopping Frequency Test | FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 2013 | PASS |
| Dwell Time Test | FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 2013 | PASS |
| Maximum Peak Output Power Test | FCC Part 15 15.247(b)(1)\ ANSI C63.10 2013 | PASS |
| Band Edge Compliance Test | FCC Part 15 15.247(d) ANSI C63.10 2013 | PASS |

2. GENERAL INFORMATION

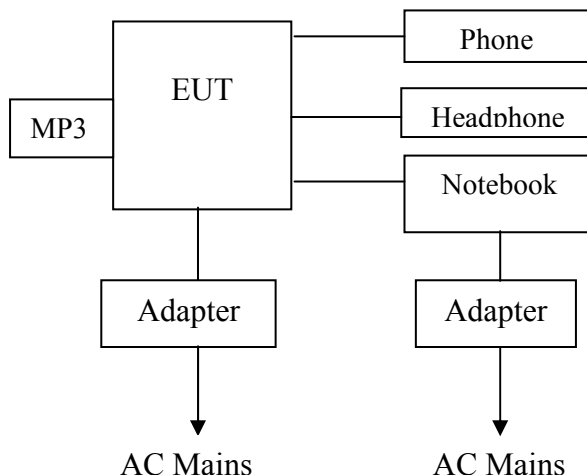
2.1. Description of Device (EUT)

| | |
|-----------------------|--|
| Product | : DELL Wireless 360 Speaker System |
| Model No. | : AE715 |
| FCC ID | : XN6-AE715 |
| Radio | : Bluetooth V3.0+EDR; Bluetooth V4.0 |
| Operation Frequency | : 2402-2480MHz |
| Modulation Technology | : Bluetooth V3.0+EDR: GFSK, $\pi/4$ DQPSK, 8-DPSK Bluetooth V4.0: GFSK |
| Antenna Assembly Gain | : Antenna: PCB Print; 0dBi |
| Applicant | : Zylux Acoustic Corporation 3F, 22 Lane 35, Jihu Road Taipei Neihu Technology Park, 11492 Taipei Taiwan |
| Manufacturer | : Zylux Acoustic Corporation 3F, 22 Lane 35, Jihu Road Taipei Neihu Technology Park, 11492 Taipei Taiwan |
| Factory | : Zhao Yang Electronic (ShenZhen) Co., Ltd. Building 2, De Yong Jia Industrial Park, Guang Qiao Road, Yu Lv Community, Gong Ming Street, Guang Ming New District, ShenZhen, 518132, P.R.China |
| Power Adapter | : Manufacturer: Chousen International Co., Ltd M/N: CS36M120300FUF DC Cable: Shielded, Detachable, 1.8m |
| Audio Cable | : Unshielded, Detectable, 0.6m |
| Date of Test | : Oct.31~Nov.12, 2016 |
| Date of Receipt | : Oct.29, 2016 |

2.2. Tested Supporting System Details

| No. | Description | ACS No. | Manufacturer | Model | Serial Number |
|-----|-------------|--|--------------|------------|---------------|
| 1. | Notebook | --- | SONY | SVF143A1QT | --- |
| | | Power Adapter: Manufacturer: SONY, Model: VGP-AC19V77 Input: 100-240V~, 1.5A, 50/60Hz Output: 19.5V---3.3A Power Cord: Unshielded, Detachable, 1.8m | | | |
| 2. | Phone | --- | Apple | A1429 | --- |
| 3. | Headphone | --- | SONY | --- | --- |
| | | Cable: Shielded, Undetectable, 1.0m | | | |
| 4. | MP3 | --- | SONY | NWZ-B172F | --- |

2.3. Block Diagram of connection between EUT and simulators



(EUT: DELL Wireless 360 Speaker System)

2.4. Test information

A special software was used to control EUT work in continuous TX mode (GFSK, $\pi/4$ DQPSK, 8-DPSK Modulation)

| Tested mode, channel, and data rate information | | | |
|---|------------------|--------------|-----------------|
| Mode | data rate (Mbps) | Channel | Frequency (MHz) |
| Tx Mode GFSK modulation | 1 | Low :CH 0 | 2402 |
| | 1 | Middle: CH39 | 2441 |
| | 1 | High: CH78 | 2480 |
| Tx Mode 8-DPSK modulation | 3 | Low :CH 0 | 2402 |
| | 3 | Middle: CH39 | 2441 |
| | 3 | High: CH78 | 2480 |

Note: $\pi/4$ DQPSK modulation is same type modulation with 8-DPSK, and according exploratory test, 8-DPSK will have worse emissions, so the final test were only performed with GFSK and 8-DPSK modulation.

2.5. Test Facility

Site Description

| | | |
|---------------------------|---|--|
| Name of Firm | : | Audix Technology (Shenzhen) Co., Ltd. No. 6, Kefeng Road, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China |
| 3m Anechoic Chamber | : | Certificated by FCC, USA Registration Number: 90454 Valid Date: Jul.12, 2017 |
| 3m & 10m Anechoic Chamber | : | Certificated by FCC, USA Registration Number: 794232 Valid Date: Jul.12, 2017 |
| EMC Lab. | : | Certificated by Industry Canada Registration Number: IC 5183A-1 Valid Date: May.14, 2017 |
| | : | Certificated by DAkkS, Germany Registration No: D-PL-12151-01-00 Valid Date: Dec.15, 2016 |
| | : | Accredited by NVLAP, USA NVLAP Code: 200372-0 Valid Date: Mar.31, 2017 |

2.6. Measurement Uncertainty (95% confidence levels, k=2)

| Test Item | Uncertainty |
|---|-----------------------------------|
| Uncertainty for Conduction emission test in No. 1 Conduction | 3.2dB(150KHz to 30MHz) |
| Uncertainty for Radiation Emission test in 3m chamber | 2.8dB(30~200MHz, Polarization: H) |
| | 2.8dB(30~200MHz, Polarization: V) |
| | 3.0dB(200M~1GHz, Polarization: H) |
| | 3.0dB(200M~1GHz, Polarization: V) |
| Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz) | 5.8dB (1~6GHz, Distance: 3m) |
| | 5.8dB (6~18GHz, Distance: 3m) |
| Uncertainty for Radiated Spurious Emission test in RF chamber | 3.6dB |
| Uncertainty for Conduction Spurious emission test | 2.0dB |
| Uncertainty for Output power test | 0.8dB |
| Uncertainty for Bandwidth test | 83kHz |
| Uncertainty for DC power test | 0.1% |
| Uncertainty for test site temperature and humidity | 0.6℃ |
| | 3% |

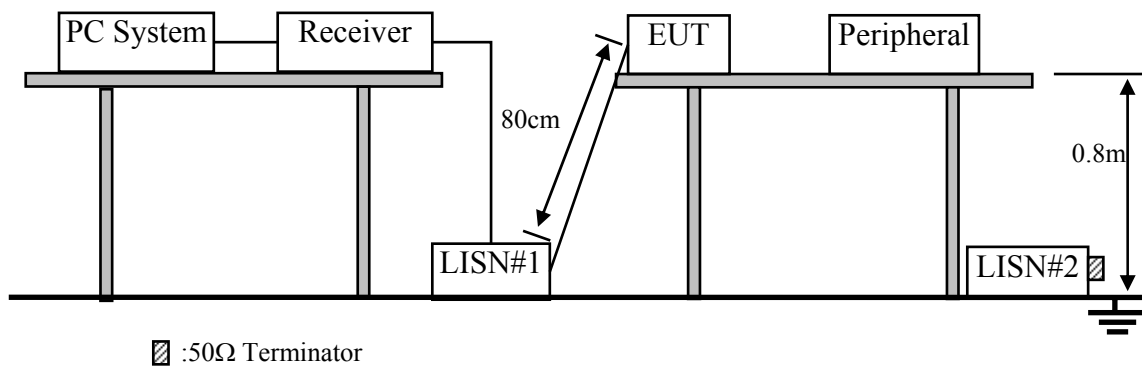
3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-------------------|-----------------|-----------|------------|-----------|---------------|
| 1. | 1# Shielding Room | AUDIX | N/A | N/A | Apr.17,16 | 1 Year |
| 2. | Test Receiver | Rohde & Schwarz | ESCI | 100842 | Apr.24,16 | 1 Year |
| 3. | L.I.S.N.#1 | Rohde & Schwarz | ESH2-Z5 | 100429 | Oct.15,16 | 1 Year |
| 4. | L.I.S.N.#2 | Kyoritsu | K NW-403D | 8-1750-2 | Apr.24,16 | 1 Year |
| 5. | Terminator | Hubersuhner | 50Ω | No.1 | May.05,16 | 1 Year |
| 6. | Terminator | Hubersuhner | 50Ω | No.2 | May.05,16 | 1 Year |
| 7. | RF Cable | MIYAZAKI | 3D-2W | No.1 | Apr.24,16 | 1 Year |
| 8. | Coaxial Switch | Anritsu | MP59B | 6200766906 | Apr.23,16 | 1 Year |
| 9. | Test Software | AUDIX | e3 | 6.100913a | N/A | N/A |

Note: N/A means Not applicable.

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

| Frequency | Maximum RF Line Voltage | |
|-----------------|----------------------------|-------------------------|
| | Quasi-Peak Level dB(μV) | Average Level dB(μV) |
| 150kHz ~ 500kHz | 66 ~ 56* | 56 ~ 46* |
| 500kHz ~ 5MHz | 56 | 46 |
| 5MHz ~ 30MHz | 60 | 50 |

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. DELL Wireless 360 Speaker System (EUT)

Model Number : AE715

Serial Number : N/A

3.4.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipments.

3.5.3. PC run test software to control EUT work in BT 3.0 Tx mode.

3.6. Test Procedure

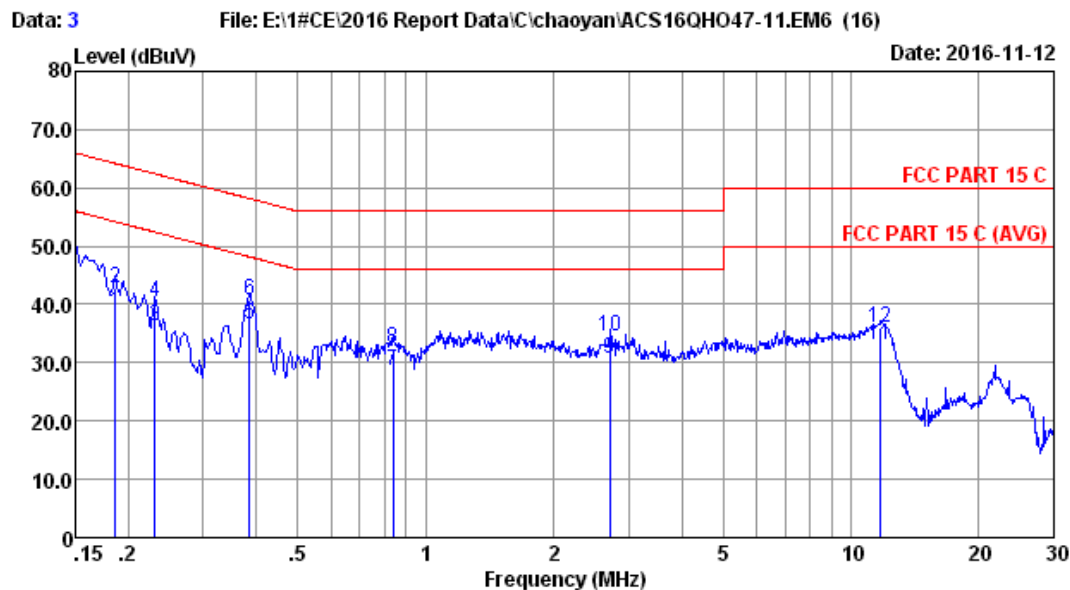
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via PC connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.7. Power Line Conducted Emission Test Results

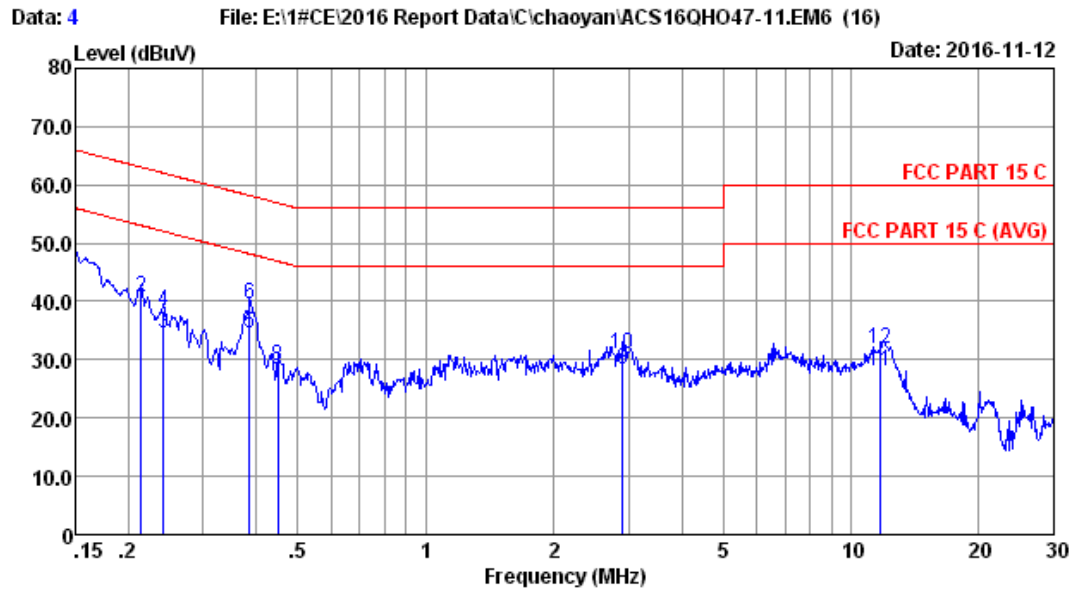
PASS. (All emissions not reported below are too low against the prescribed limits.)



Site no :1# Conduction Data No :3
Dis./Lisn :2016 ESH2-25 LINE LISN phase:
Limit :FCC PART 15 C
Env./Ins. :22.3°C/50% Engineer :Garry
EUT :DELL Wireless 360 Speaker System
Power Rating :DC 12V From Adapter Input AC 120V/60Hz
Test Mode :BT3.0 Play
M/N:AE715

| No | Freq (MHz) | ISN Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV) | Limits (dBuV) | Margin (dB) | Remark |
|----|---------------|-----------------------|-----------------------|-------------------|-----------------------------|------------------|----------------|---------|
| 1 | 0.186 | 0.13 | 0.02 | 38.49 | 38.64 | 54.20 | 15.56 | Average |
| 2 | 0.186 | 0.13 | 0.02 | 42.75 | 42.90 | 64.20 | 21.30 | QP |
| 3 | 0.230 | 0.13 | 0.02 | 36.28 | 36.43 | 52.44 | 16.01 | Average |
| 4 | 0.230 | 0.13 | 0.02 | 40.23 | 40.38 | 62.44 | 22.06 | QP |
| 5 | 0.385 | 0.13 | 0.03 | 36.49 | 36.65 | 48.17 | 11.52 | Average |
| 6 | 0.385 | 0.13 | 0.03 | 40.67 | 40.83 | 58.17 | 17.34 | QP |
| 7 | 0.839 | 0.16 | 0.06 | 28.48 | 28.70 | 46.00 | 17.30 | Average |
| 8 | 0.839 | 0.16 | 0.06 | 32.40 | 32.62 | 56.00 | 23.38 | QP |
| 9 | 2.707 | 0.21 | 0.08 | 30.32 | 30.61 | 46.00 | 15.39 | Average |
| 10 | 2.707 | 0.21 | 0.08 | 34.32 | 34.61 | 56.00 | 21.39 | QP |
| 11 | 11.745 | 0.42 | 0.15 | 32.56 | 33.13 | 50.00 | 16.87 | Average |
| 12 | 11.745 | 0.42 | 0.15 | 35.52 | 36.09 | 60.00 | 23.91 | QP |

Remarks: 1.Emission Level=ISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Site no :1# Conduction Data No :4
Dis./Lisn :2016 ESH2-Z5 NEUTRAL LISN phase:
Limit :FCC PART 15 C
Env./Ins. :22.3°C/50% Engineer :Garry
EUT :DELL Wireless 360 Speaker System
Power Rating :DC 12V From Adapter Input AC 120V/60Hz
Test Mode :BT3.0 Play
M/N:AE715

| No | Freq (MHz) | ISN Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV) | Limits (dBuV) | Margin (dB) | Remark |
|----|---------------|-----------------------|-----------------------|-------------------|-----------------------------|------------------|----------------|---------|
| 1 | 0.214 | 0.13 | 0.02 | 38.95 | 39.10 | 53.05 | 13.95 | Average |
| 2 | 0.214 | 0.13 | 0.02 | 40.71 | 40.86 | 63.05 | 22.19 | QP |
| 3 | 0.242 | 0.13 | 0.02 | 34.37 | 34.52 | 52.04 | 17.52 | Average |
| 4 | 0.242 | 0.13 | 0.02 | 38.35 | 38.50 | 62.04 | 23.54 | QP |
| 5 | 0.385 | 0.15 | 0.03 | 34.40 | 34.58 | 48.17 | 13.59 | Average |
| 6 | 0.385 | 0.15 | 0.03 | 39.40 | 39.58 | 58.17 | 18.59 | QP |
| 7 | 0.449 | 0.15 | 0.03 | 25.76 | 25.94 | 46.89 | 20.95 | Average |
| 8 | 0.449 | 0.15 | 0.03 | 28.90 | 29.08 | 56.89 | 27.81 | QP |
| 9 | 2.900 | 0.21 | 0.08 | 27.91 | 28.20 | 46.00 | 17.80 | Average |
| 10 | 2.900 | 0.21 | 0.08 | 30.63 | 30.92 | 56.00 | 25.08 | QP |
| 11 | 11.745 | 0.42 | 0.15 | 27.42 | 27.99 | 50.00 | 22.01 | Average |
| 12 | 11.745 | 0.42 | 0.15 | 31.42 | 31.99 | 60.00 | 28.01 | QP |

Remarks: 1.Emission Level=ISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipment

Frequency range: 30~1000MHz

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---------------------------|-----------------|-------------|-----------------|-----------|---------------|
| 1. | 3#Chamber | AUDIX | N/A | N/A | Mar.28,16 | 1 Year |
| 2. | EMI Spectrum | Agilent | E4407B | MY41440292 | Apr.24,16 | 1 Year |
| 3. | Test Receiver | Rohde & Schwarz | ESVS10 | 834468/011 | Apr.24,16 | 1 Year |
| 4. | Amplifier | HP | 8447D | 2648A04738 | Apr.24,16 | 1 Year |
| 5. | Tri-log-Broadband Antenna | SCHWARZBECK | VULB 9168 | 9168-710 | Jul.20,16 | 1 Year |
| 6. | RF Cable | MIYAZAKI | CFD400NL-LW | No.3 | Sep.26.16 | 1 Year |
| 7. | Coaxial Switch | Anritsu | MP59B | 6201397222 | Apr.23,16 | 1 Year |
| 8. | Attenuator | EMCI | EMCI-N-6-06 | AT-N0639 | Sep.26.16 | 1 Year |
| 9. | Test Software | AUDIX | e3 | 6.2009-5-21a(n) | N/A | N/A |

Note: N/A means Not applicable.

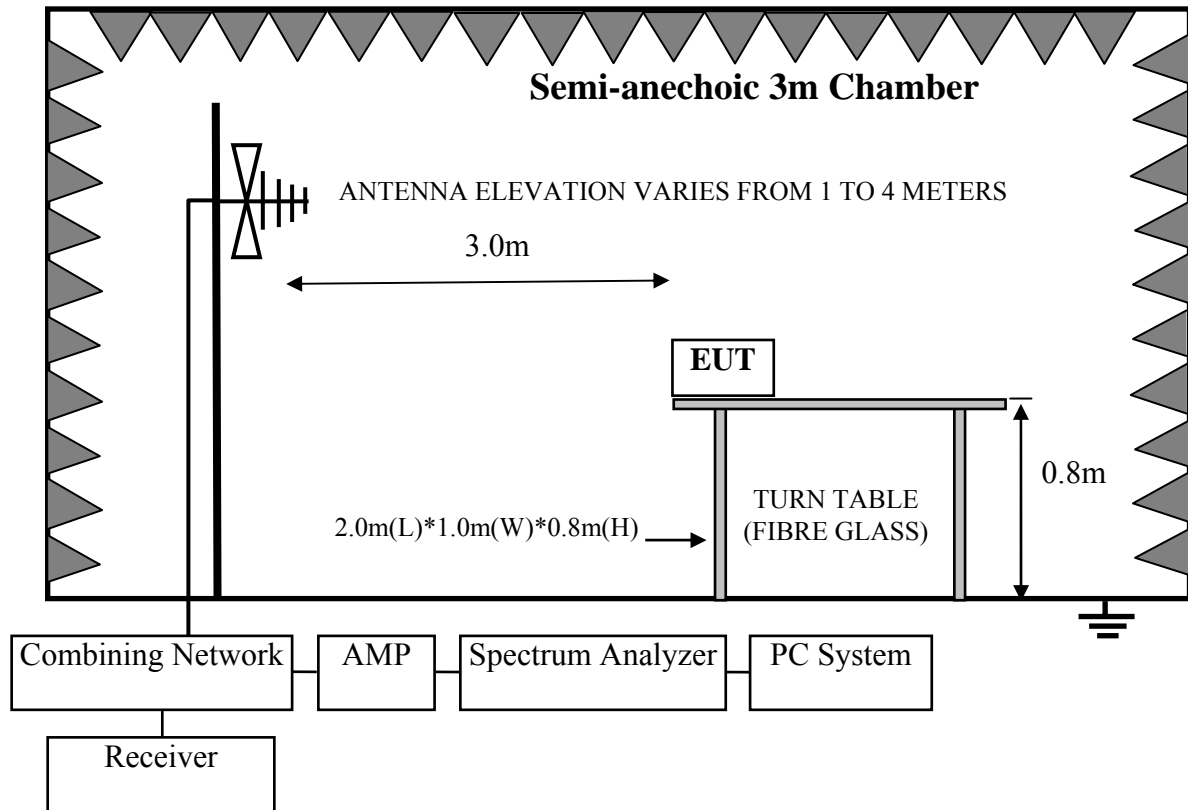
Frequency range: above 1000MHz

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-------------------|--------------|-------------|-----------------|-----------|---------------|
| 1. | 3#Chamber | AUDIX | N/A | N/A | May.21,16 | 1 Year |
| 2. | Spectrum Analyzer | Agilent | E4407B | MY41440292 | Apr.24,16 | 1 Year |
| 3. | Horn Antenna | ETC | MCTD 1209 | DRH15F03007 | Apr.11,16 | 1 Year |
| 4. | Horn Antenna | ETS | 3116 | 00060088 | Nov.18.15 | 1 Year |
| 5. | Amplifier | Agilent | 83017A | MY53270084 | May.17,16 | 1 Year |
| 6. | RF Cable | Hubersuhner | SUCOFLEX106 | 505238/6 | Apr.24,16 | 1 Year |
| 7. | Test Software | AUDIX | e3 | 6.2009-5-21a(n) | N/A | N/A |

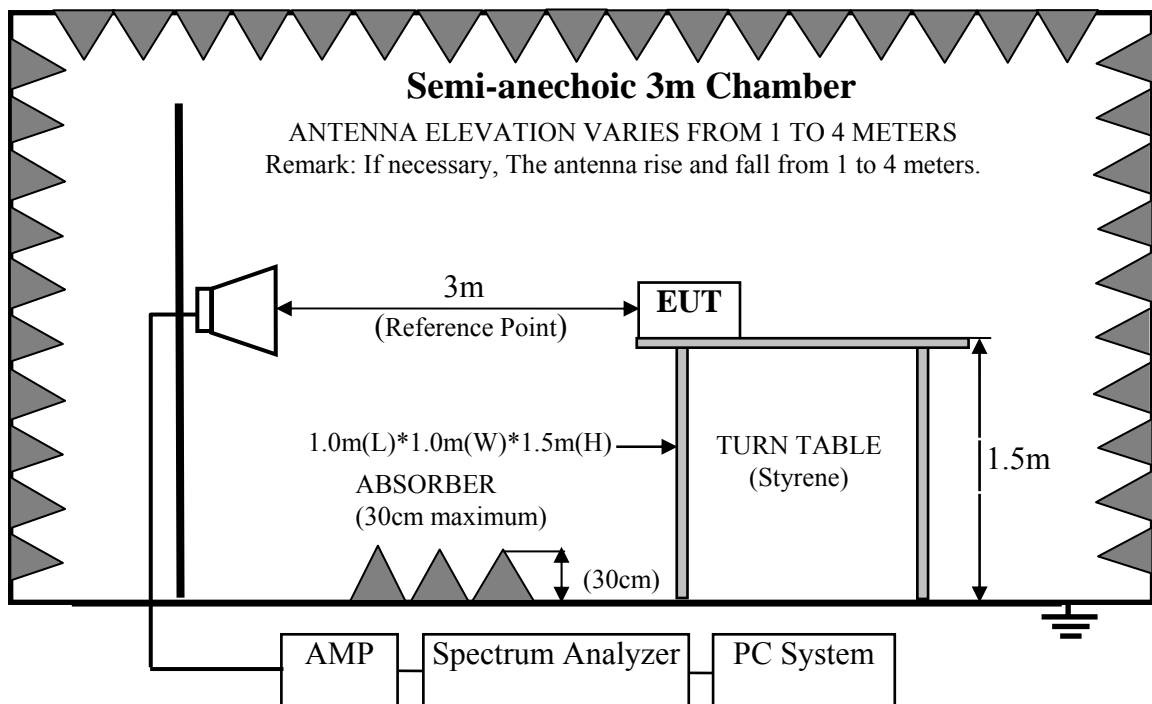
Note: N/A means Not applicable.

4.2. Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range 1GHz-25GHz



4.3. Radiated Emission Limit Standard:

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMIT | |
|------------------|--------------------|---|-----------------------------------|
| | | $\mu\text{V/m}$ | $\text{dB}(\mu\text{V})/\text{m}$ |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| 960 ~ 1000 | 3 | 500 | 54.0 |
| Above 1000MHz | 3 | 74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) | |

- Remark :
- (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
 - (4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4.1. DELL Wireless 360 Speaker System (EUT)

Model Number : AE715
Serial Number : N/A

4.5. Operating Condition of EUT

4.5.1. Setup the EUT and simulator as shown as Section 4.2.

4.5.2. Turn on the power of all equipments.

4.5.3. Let EUT work in BT 3.0 Tx mode.

4.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground for frequency 30MHz~1000MHz, 1.5 meter high above ground for frequency above 1GHz and put the absorbing with 2.4m(L)*2.4m(W)*0.3m(H) on the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna for frequency 30MHz~1000MHz, and the Horn antenna is used as receiving antenna for frequency above 1GHz. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2013 on radiated emission Test.

This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as the test photo indicated.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz

This device is pulse Modulated, a duty cycle factor was used to calculate average level based measured peak level.

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

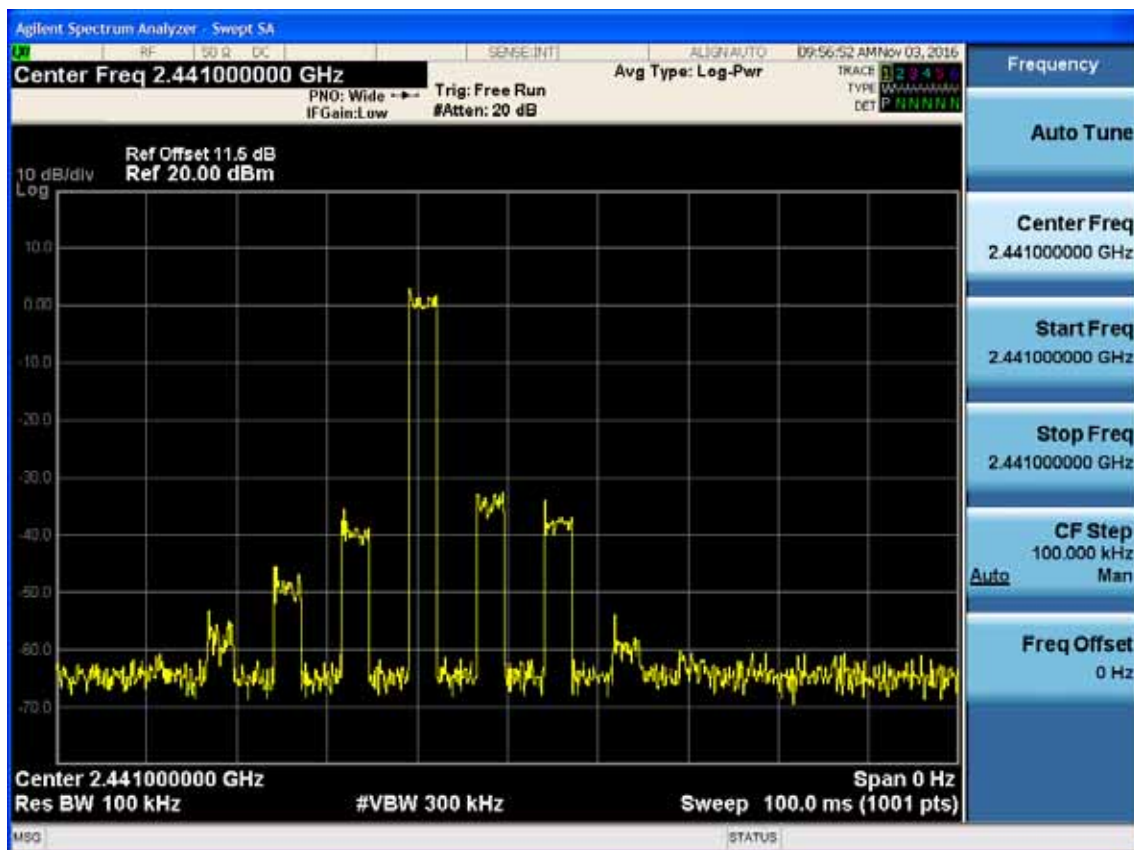
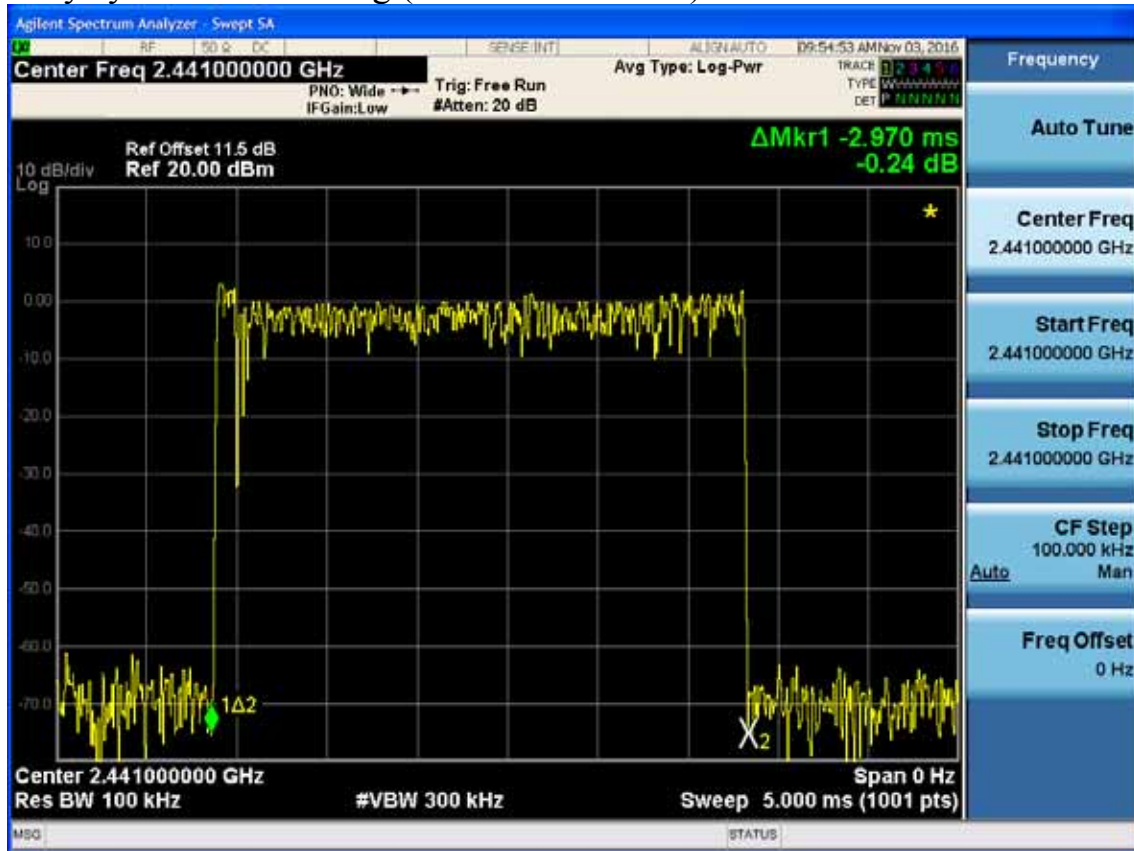
4.7. Radiated Emission Test Results

PASS.

All the emissions from 30MHz to 25GHz were comply with the 15.209 Limit.

Note: The duty cycle factor for calculate average level is -30.545dB, and average limit is 20dB below peak limit, so if peak measured level comply with average limit, the average level was deemed to comply with average limit.

Duty cycle factor = $20\log(\text{Dwell time}/100\text{ms}) = -30.545\text{dB}$

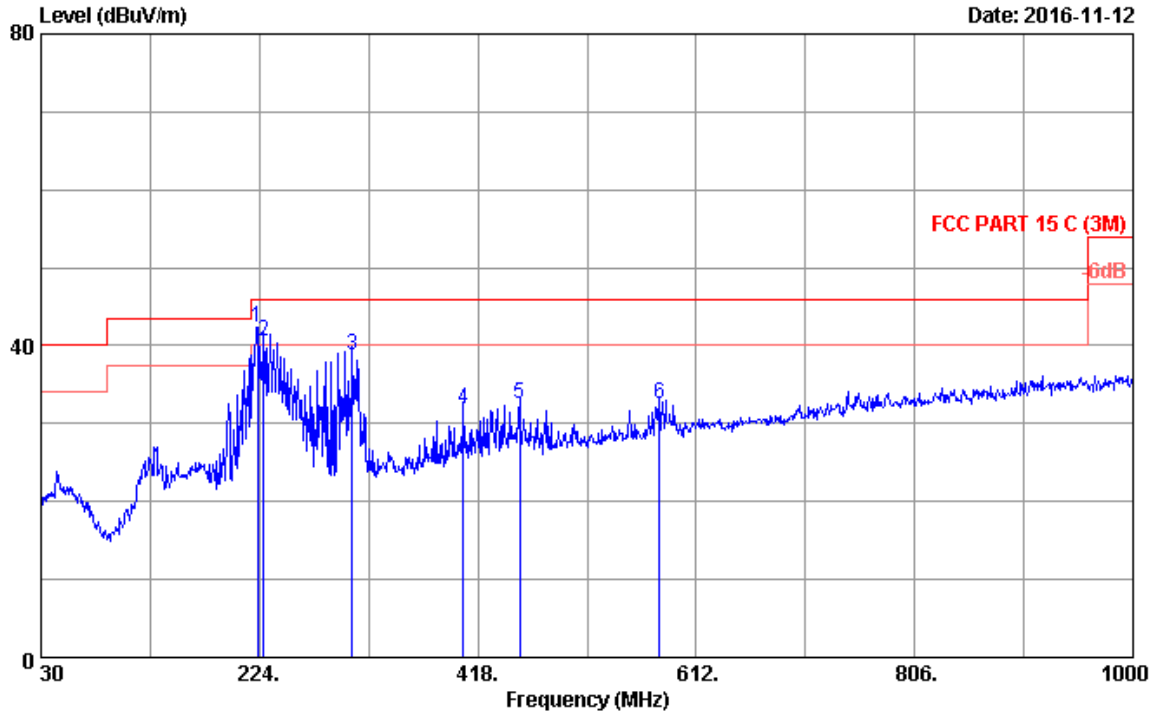


Frequency: 30MHz~1GHz

Data: 1

File: E:\2016 Report Data\C\朝阳\ACS16QH047-1.EM6 (16)

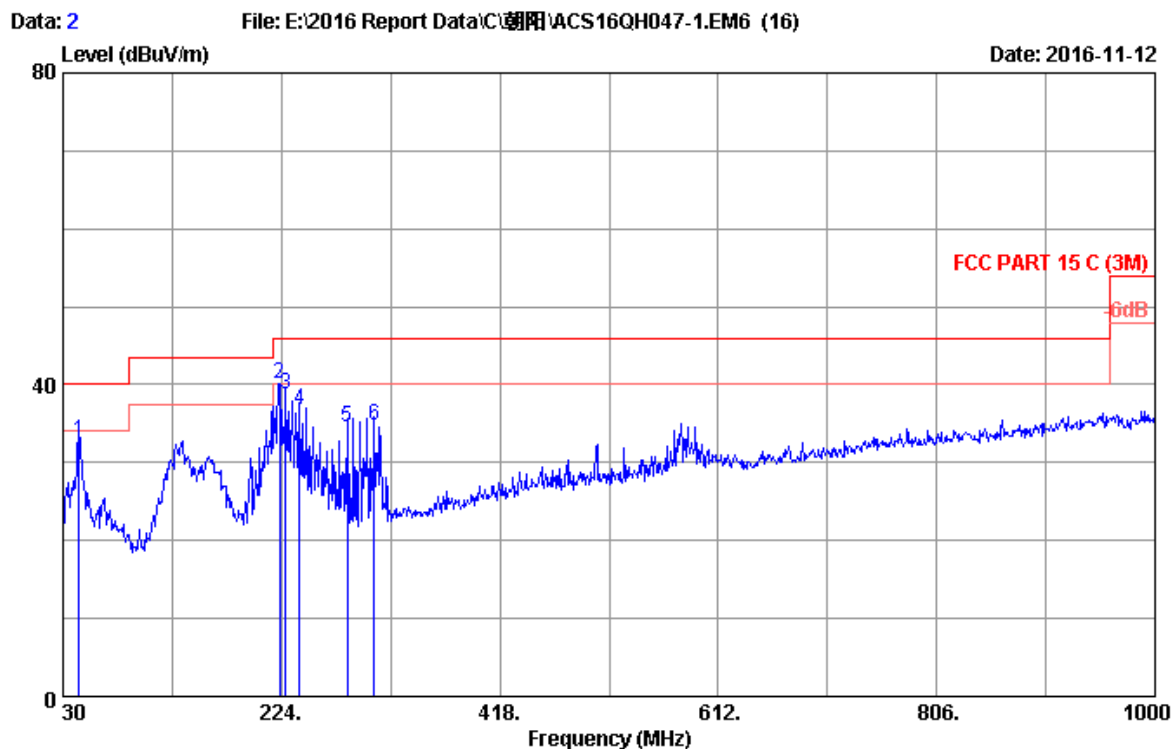
Date: 2016-11-12



Site no. : 3m Chamber Data no. : 1
Dis. / Ant. : 3m ANT 2016 9168 710 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 22.6°C/49.3% Engineer : Leo-Li
EUT : DELL Wireless 360 Speaker System
Power rating : DC 12V From Adapter Input AC 120V/60Hz
Test Mode : Tx Mode
AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 222.060 | 17.13 | 1.22 | 24.00 | 42.35 | 46.00 | 3.65 | QP |
| 2 | 227.680 | 17.28 | 1.28 | 22.00 | 40.56 | 46.00 | 5.44 | QP |
| 3 | 306.450 | 19.95 | 2.02 | 16.89 | 38.86 | 46.00 | 7.14 | QP |
| 4 | 405.390 | 22.18 | 2.46 | 7.22 | 31.86 | 46.00 | 14.14 | QP |
| 5 | 454.860 | 23.42 | 2.61 | 6.40 | 32.43 | 46.00 | 13.57 | QP |
| 6 | 579.020 | 25.41 | 3.04 | 4.03 | 32.48 | 46.00 | 13.52 | QP |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

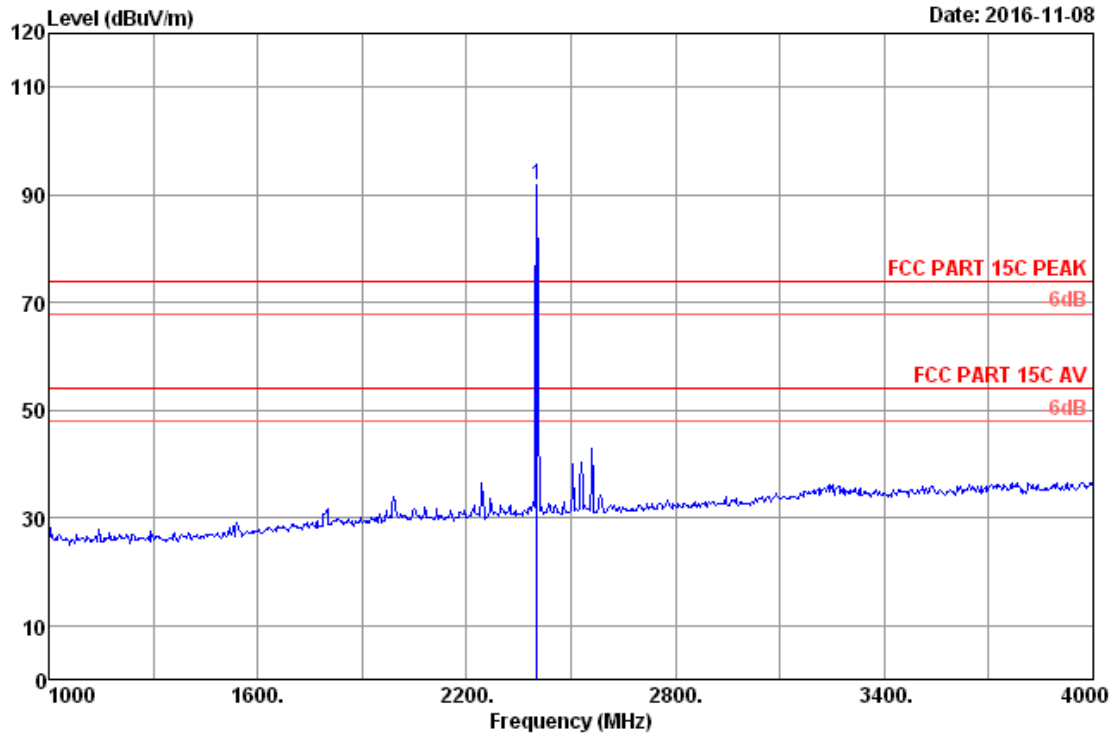


Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m ANT 2016 9168 710 Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 22.6°C/49.3% Engineer : Leo-Li
EUT : DELL Wireless 360 Speaker System
Power rating : DC 12V From Adapter Input AC 120V/60Hz
Test Mode : Tx Mode
AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 44.550 | 20.42 | 0.75 | 11.58 | 32.75 | 40.00 | 7.25 | QP |
| 2 | 222.060 | 17.13 | 1.22 | 21.83 | 40.18 | 46.00 | 5.82 | QP |
| 3 | 227.880 | 17.28 | 1.28 | 20.12 | 38.68 | 46.00 | 7.32 | QP |
| 4 | 240.490 | 18.01 | 1.40 | 17.33 | 36.74 | 46.00 | 9.26 | QP |
| 5 | 282.200 | 19.45 | 1.82 | 13.30 | 34.57 | 46.00 | 11.43 | QP |
| 6 | 306.450 | 19.95 | 2.02 | 12.90 | 34.87 | 46.00 | 11.13 | QP |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

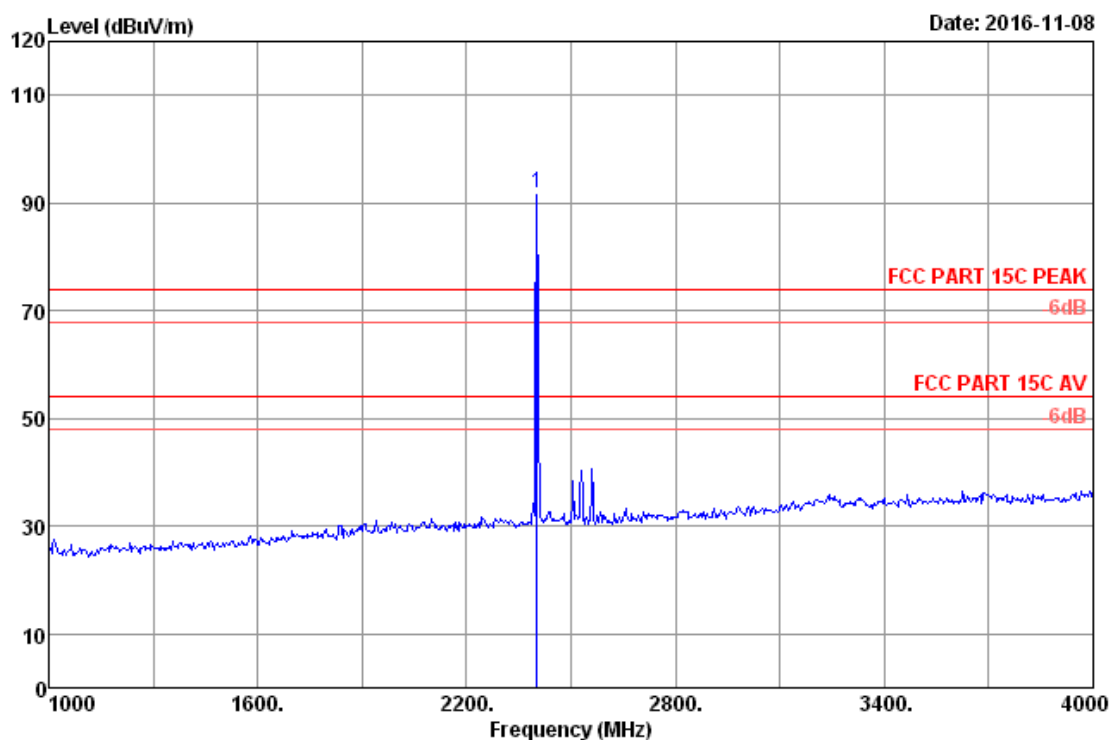
Frequency: 1GHz~18GHz



Site no. : 3m Chamber Data no. : 1
Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK Pre : 104.2kPa
Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
EUT : DELL Wireless 360 Speaker System
Power rating : DC 12V From Adapter Input AC 120V/60Hz
Test Mode : GFSK 2402MHz Tx Mode
AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00 | 28.14 | 8.34 | 91.72 | 36.39 | 91.81 | 74.00 | -17.81 | Peak |

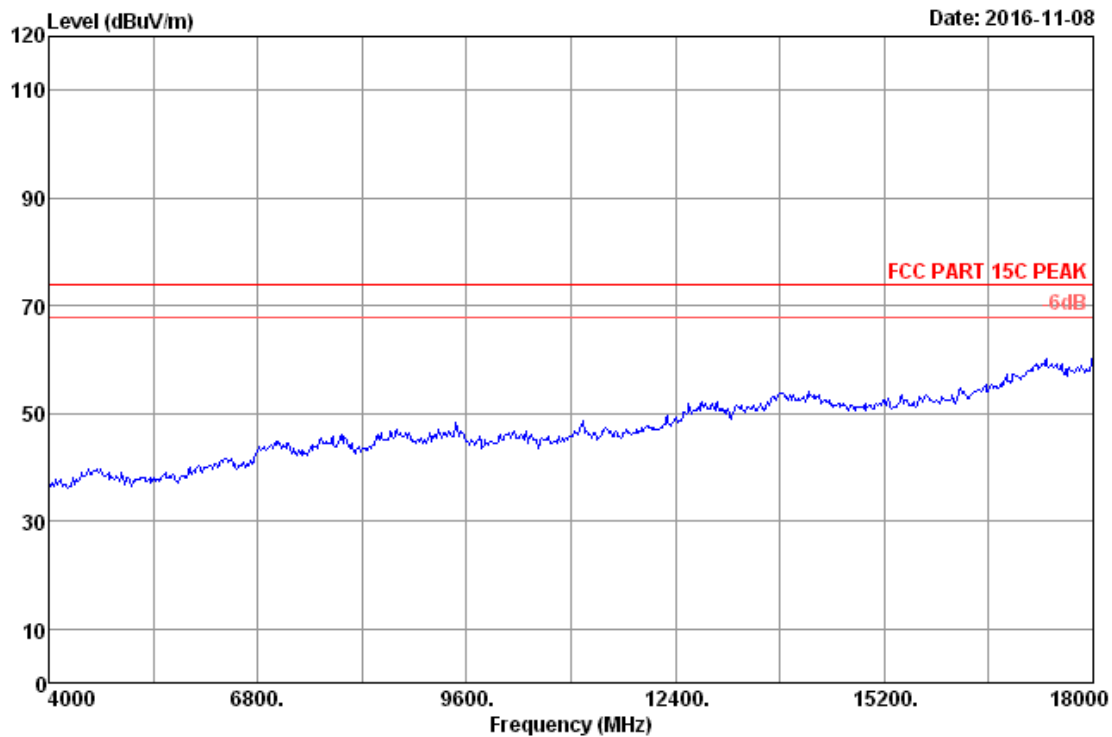
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp Factor
2. The emission levels that are 20dB below the official
limit are not reported.



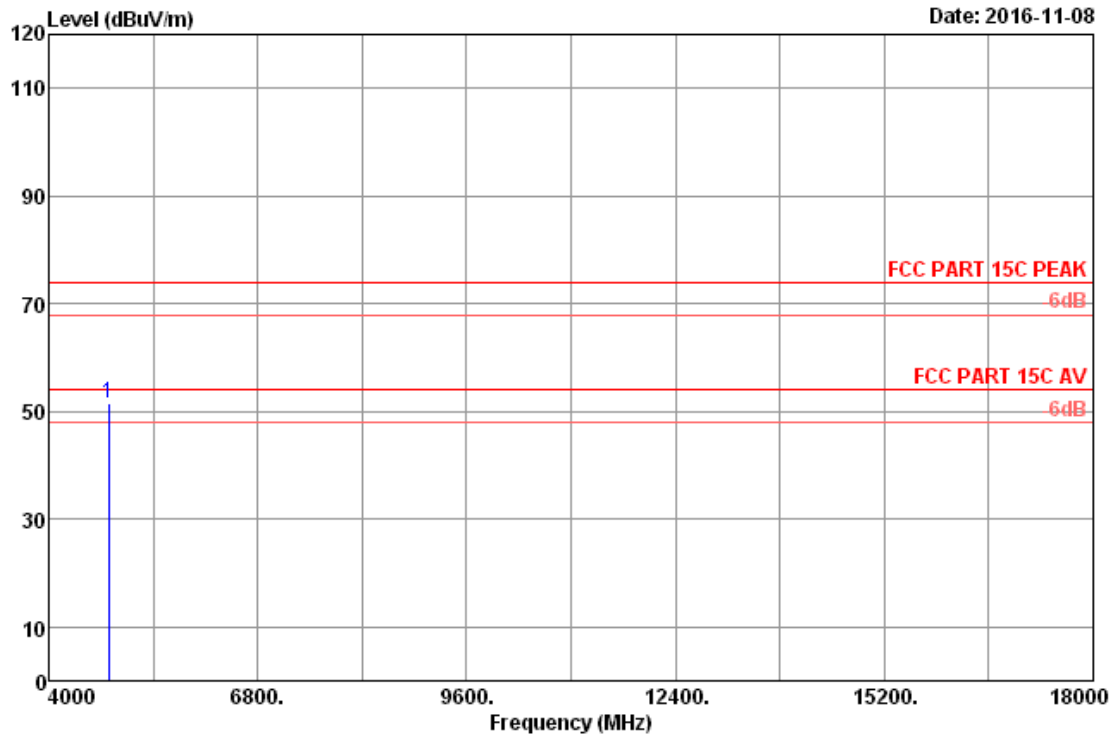
Site no. : 3m Chamber Data no. : 2
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00 | 28.14 | 8.34 | 91.70 | 36.39 | 91.79 | 74.00 | -17.79 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



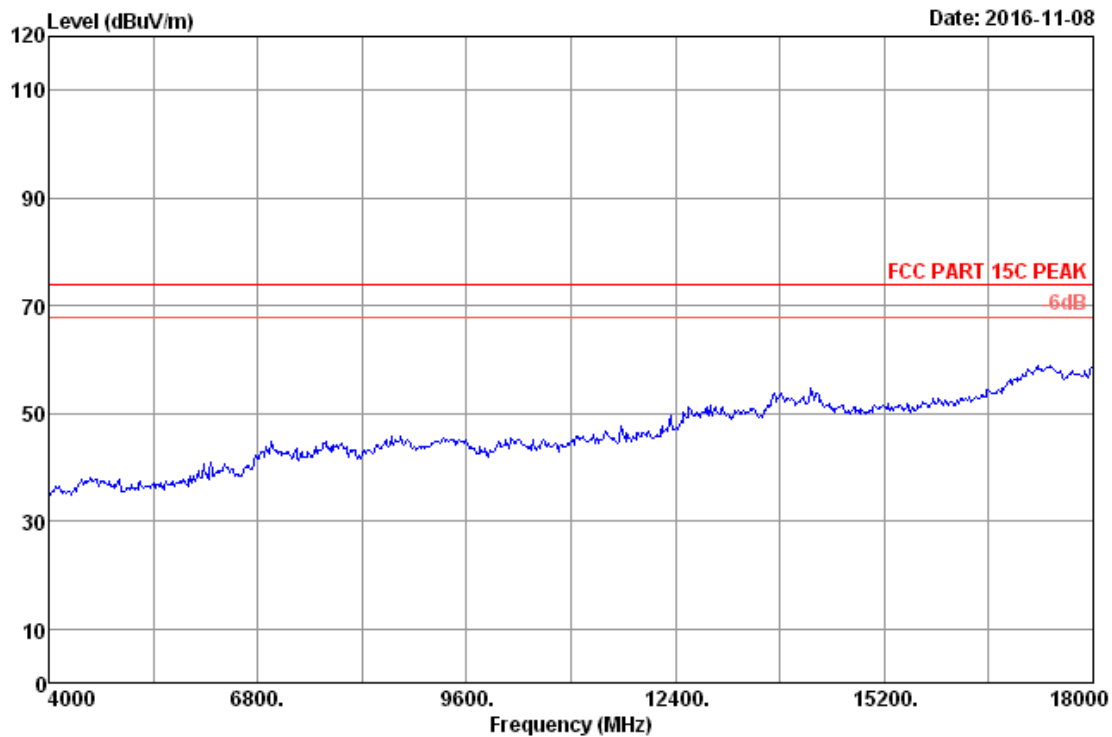
Site no. : 3m Chamber Data no. : 3
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2402MHz Tx Mode
 AE715



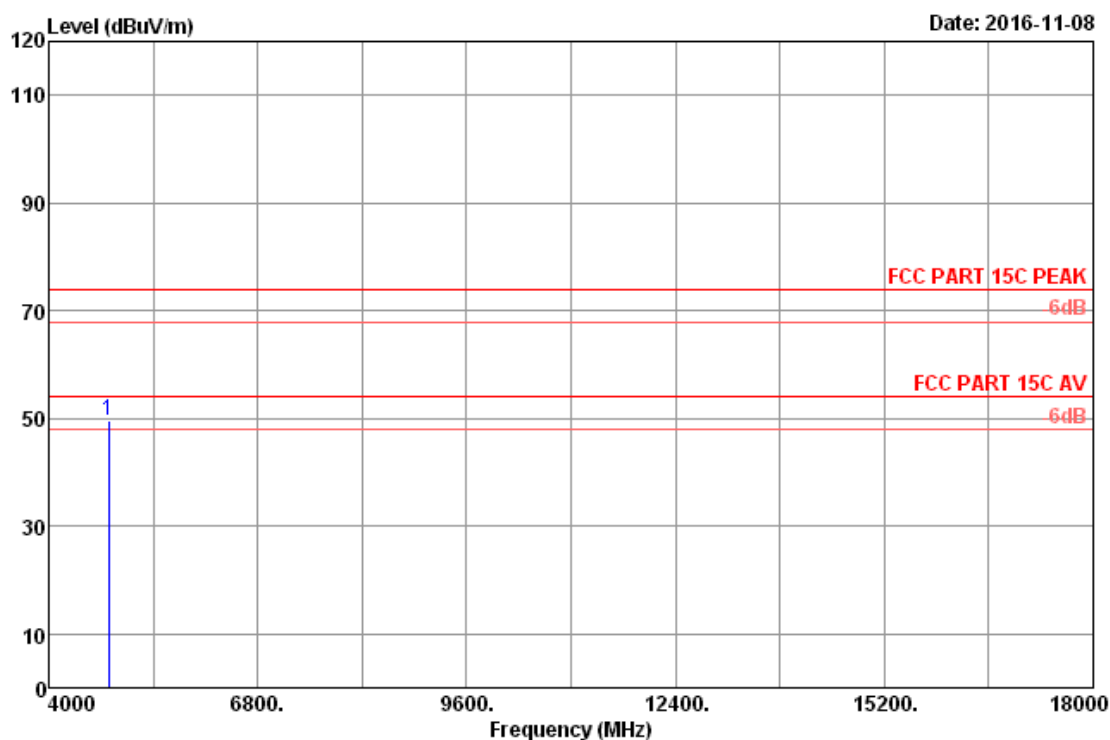
Site no. : 3m Chamber Data no. : 4
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4804.00 | 32.79 | 11.75 | 42.77 | 35.67 | 51.64 | 74.00 | 22.36 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



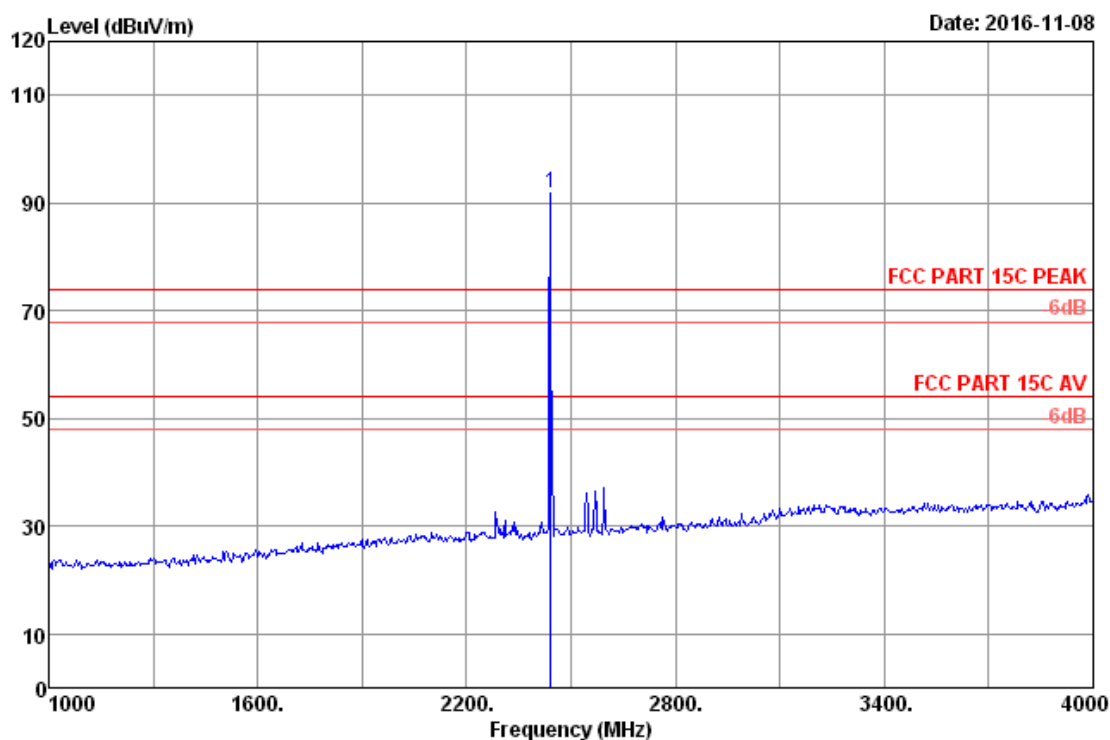
Site no. : 3m Chamber Data no. : 5
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2402MHz Tx Mode
 AE715



Site no. : 3m Chamber Data no. : 6
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4804.00 | 32.79 | 11.75 | 40.82 | 35.67 | 49.69 | 74.00 | 24.31 | Peak |

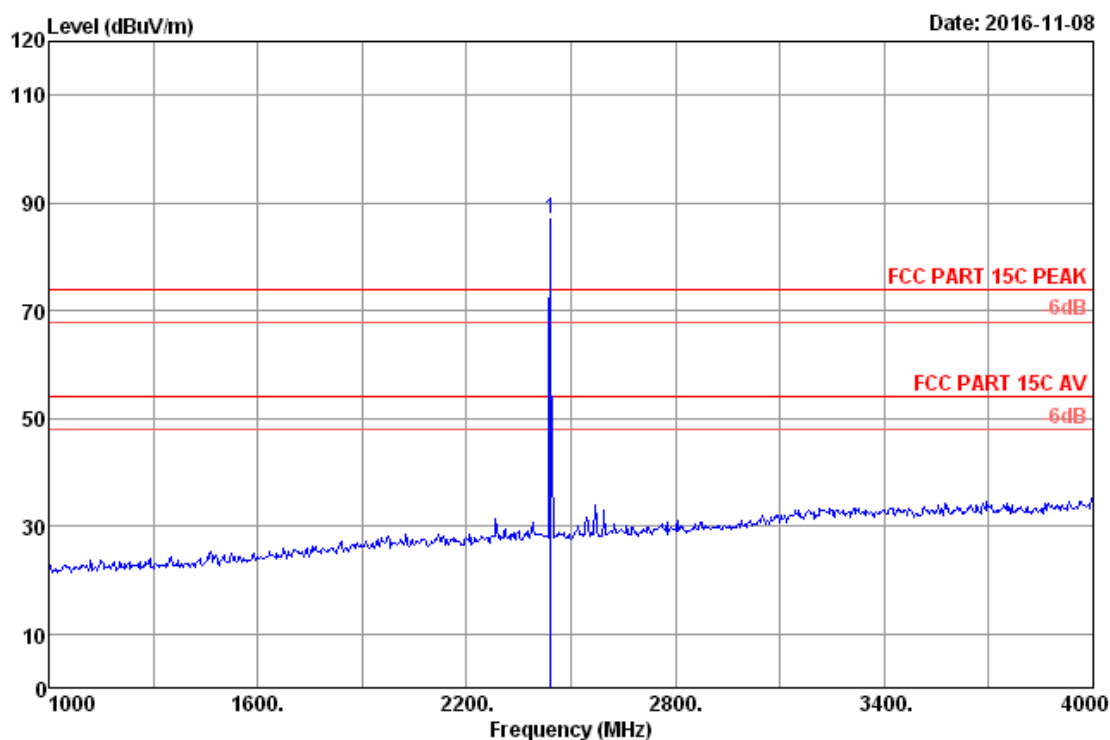
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 9
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00 | 28.21 | 8.38 | 91.52 | 36.38 | 91.73 | 74.00 | -17.73 | Peak |

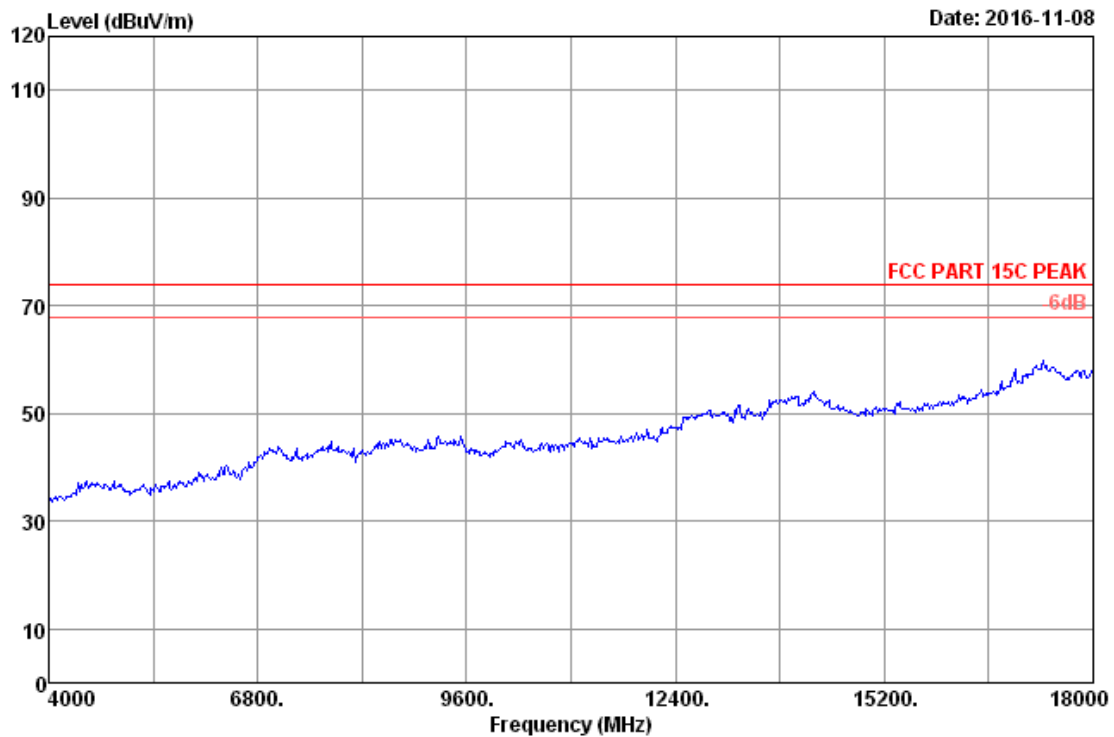
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



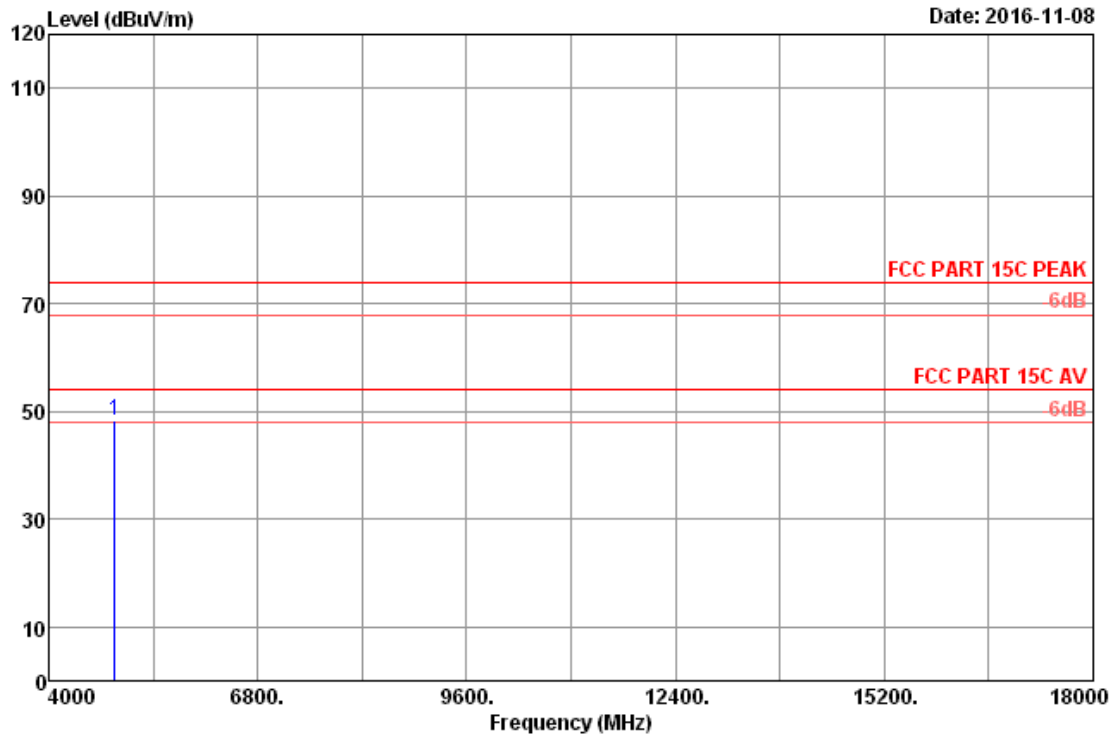
Site no. : 3m Chamber Data no. : 10
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00 | 28.21 | 8.38 | 86.88 | 36.38 | 87.09 | 74.00 | -13.09 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



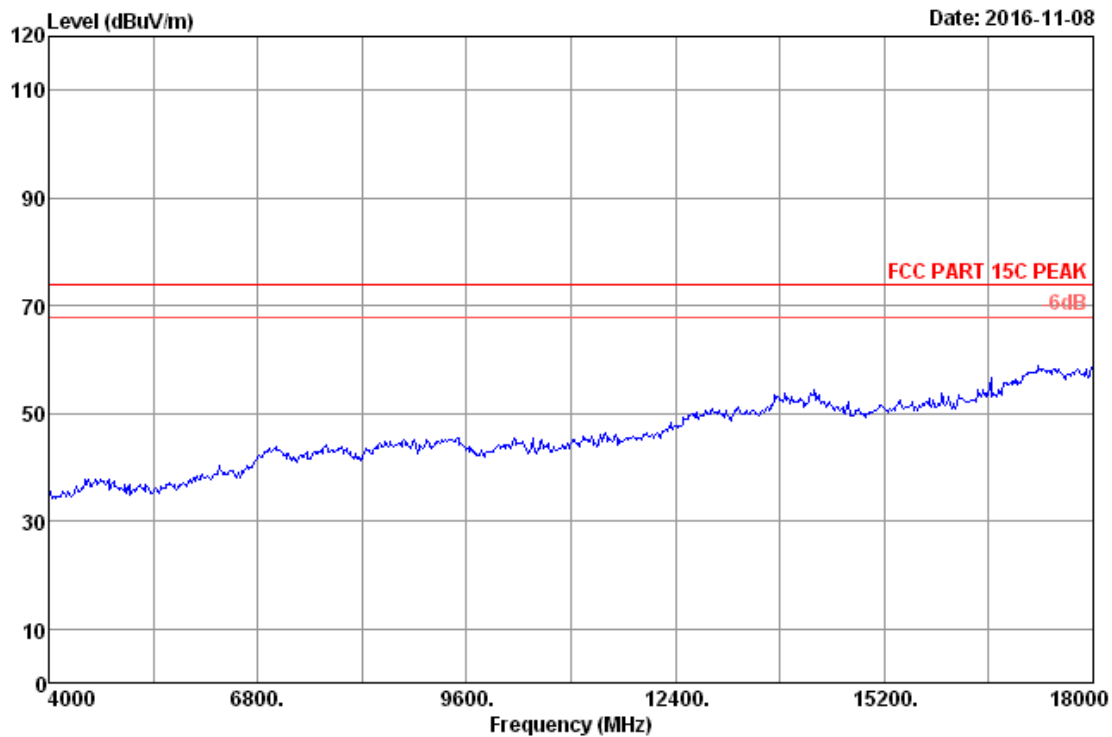
Site no. : 3m Chamber Data no. : 11
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2441MHz Tx Mode
 AE715



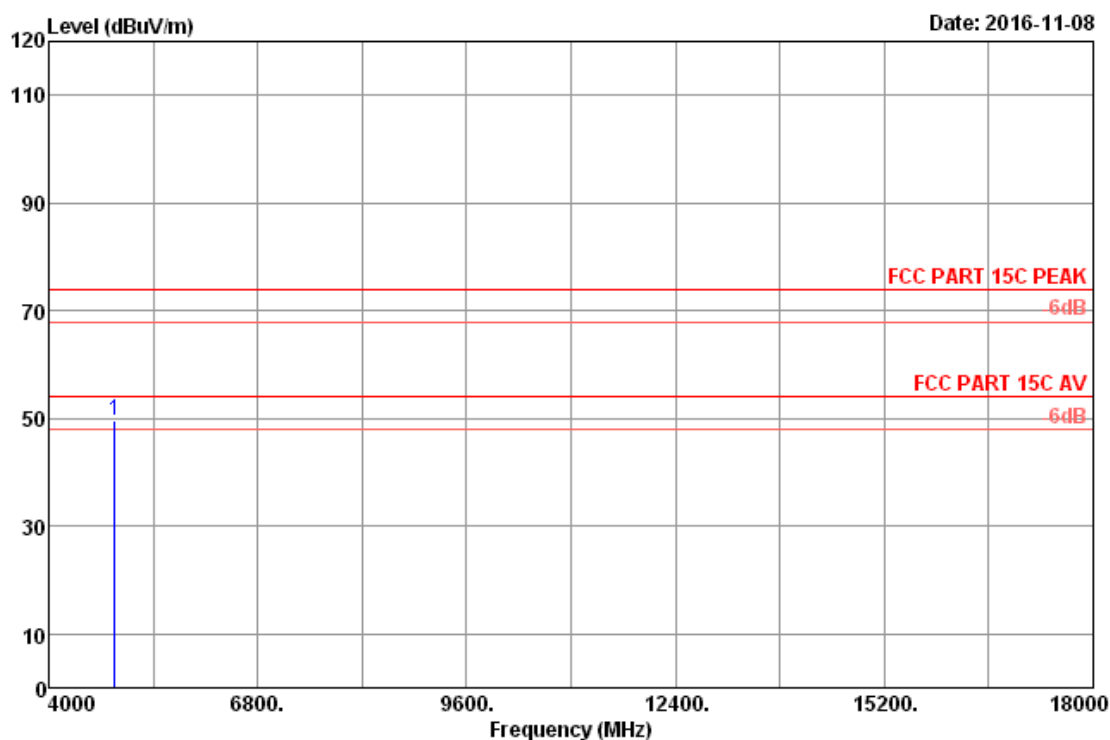
Site no. : 3m Chamber Data no. : 12
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4882.00 | 32.64 | 11.80 | 39.41 | 35.69 | 48.16 | 74.00 | 25.84 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



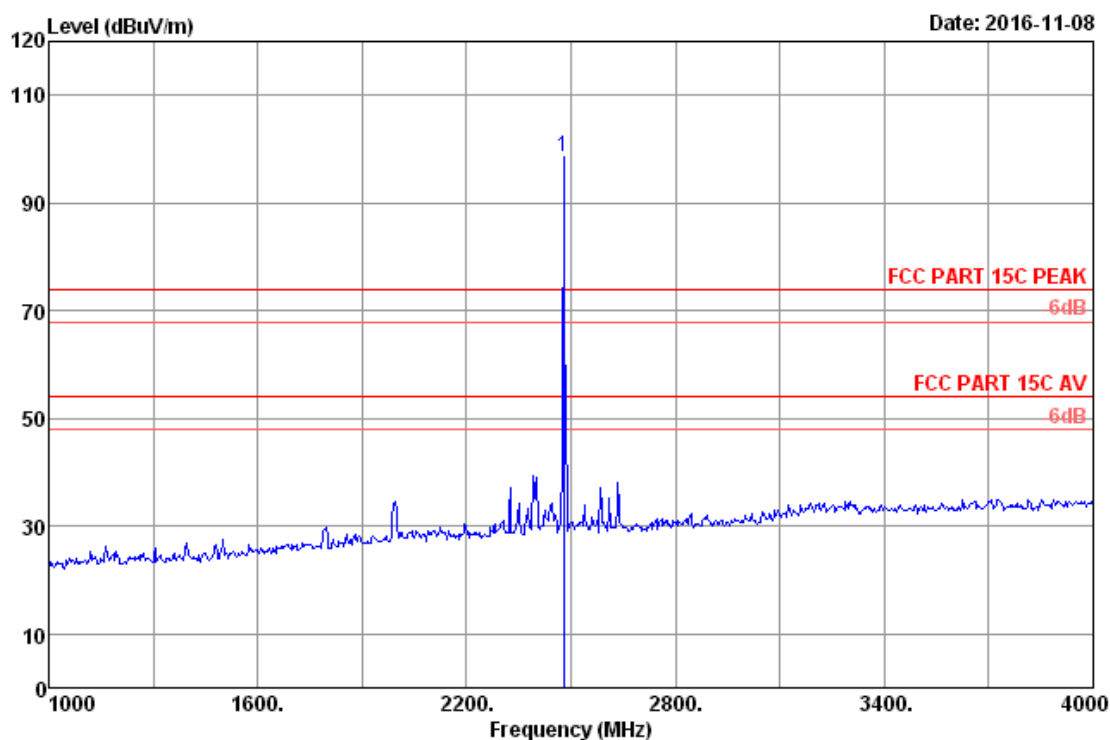
Site no. : 3m Chamber Data no. : 13
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2441MHz Tx Mode
 AE715



Site no. : 3m Chamber Data no. : 14
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4882.00 | 32.64 | 11.80 | 40.73 | 35.69 | 49.48 | 74.00 | 24.52 | Peak |

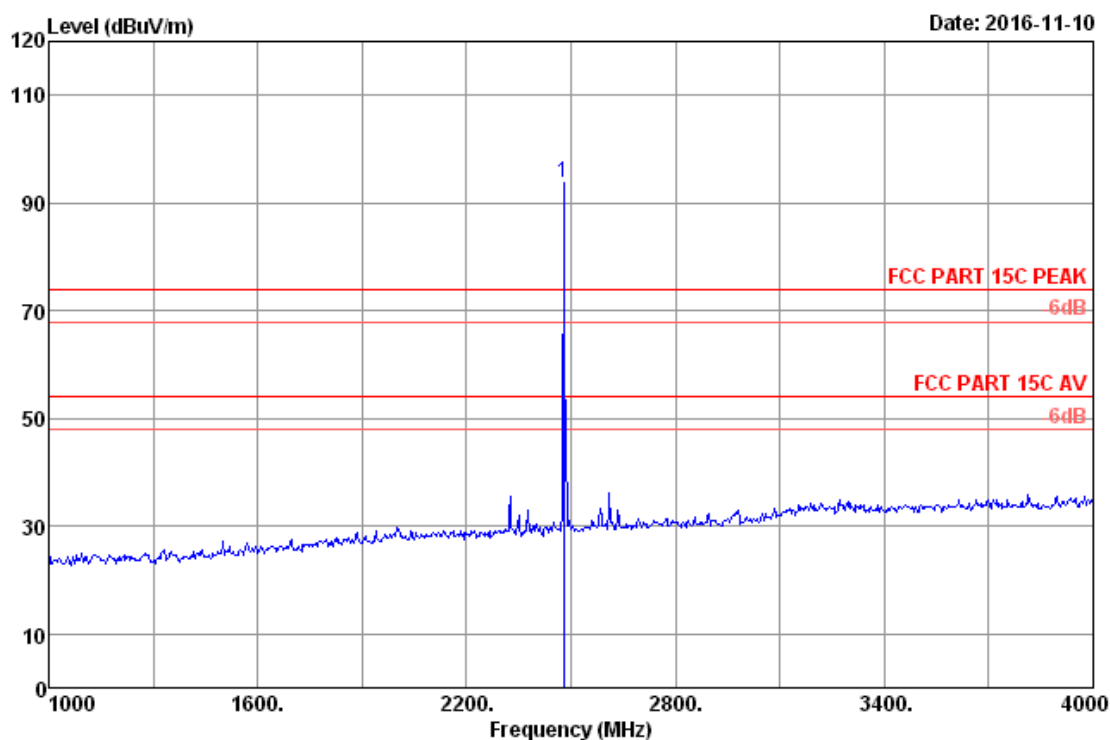
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 15
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00 | 28.27 | 8.42 | 98.22 | 36.38 | 98.53 | 74.00 | -24.53 | Peak |

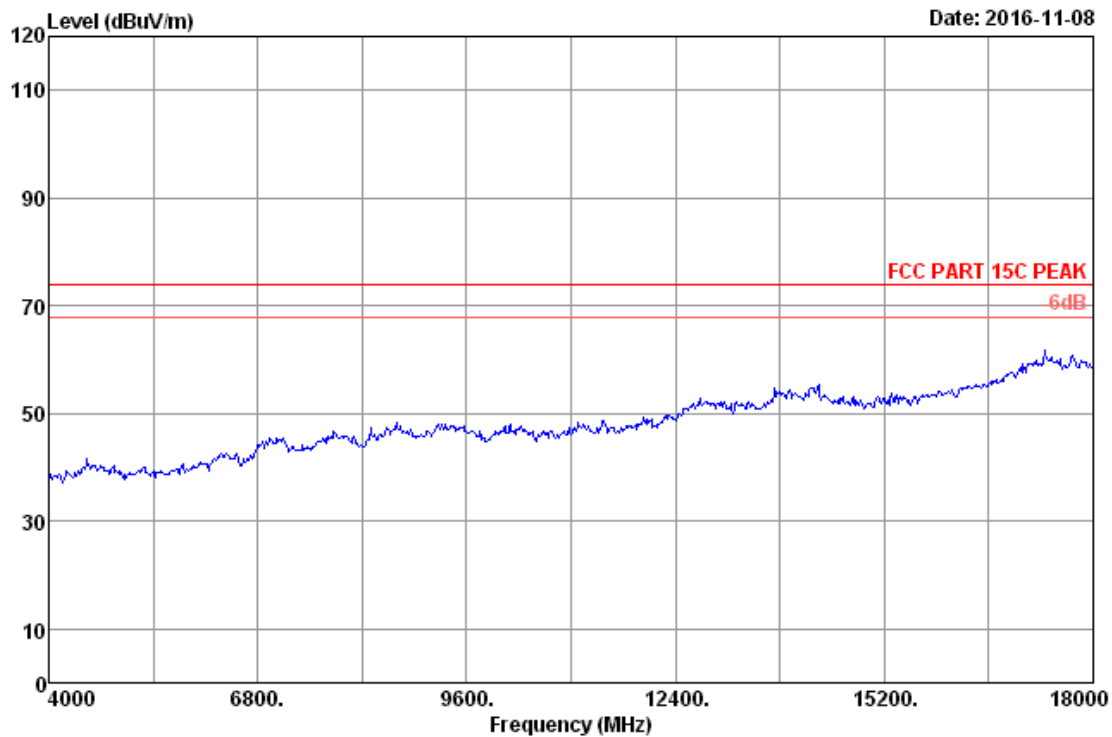
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



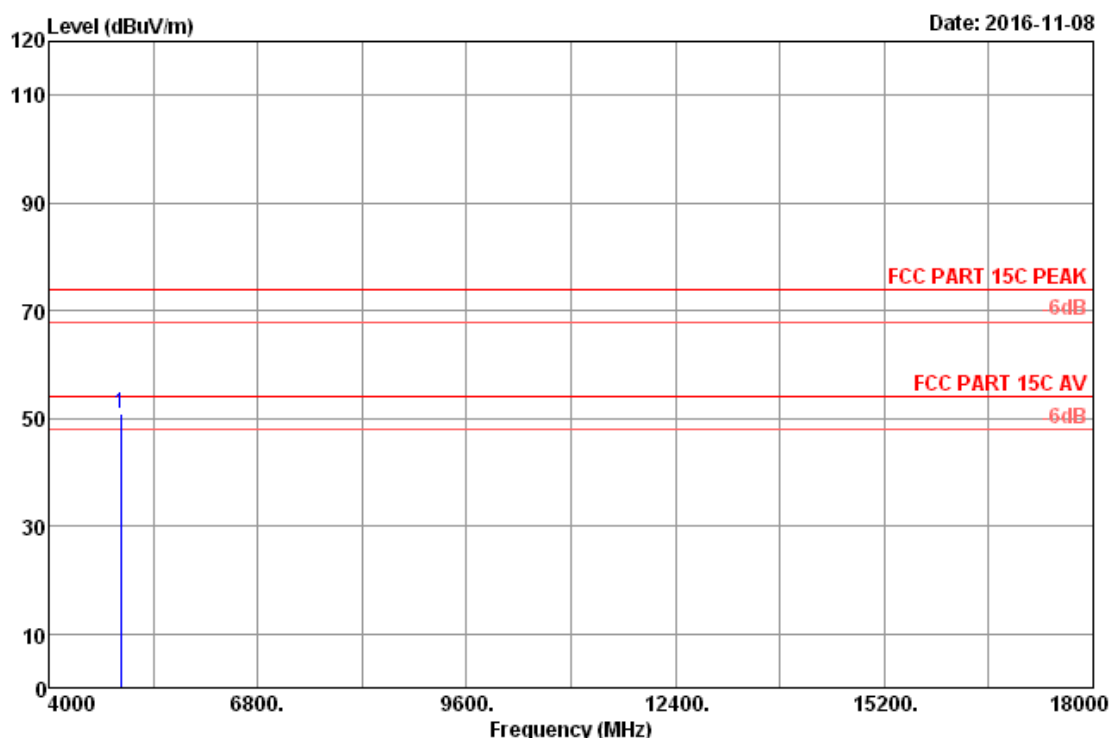
Site no. : 3m Chamber Data no. : 16
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00 | 28.27 | 8.42 | 93.29 | 36.38 | 93.60 | 74.00 | -19.60 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



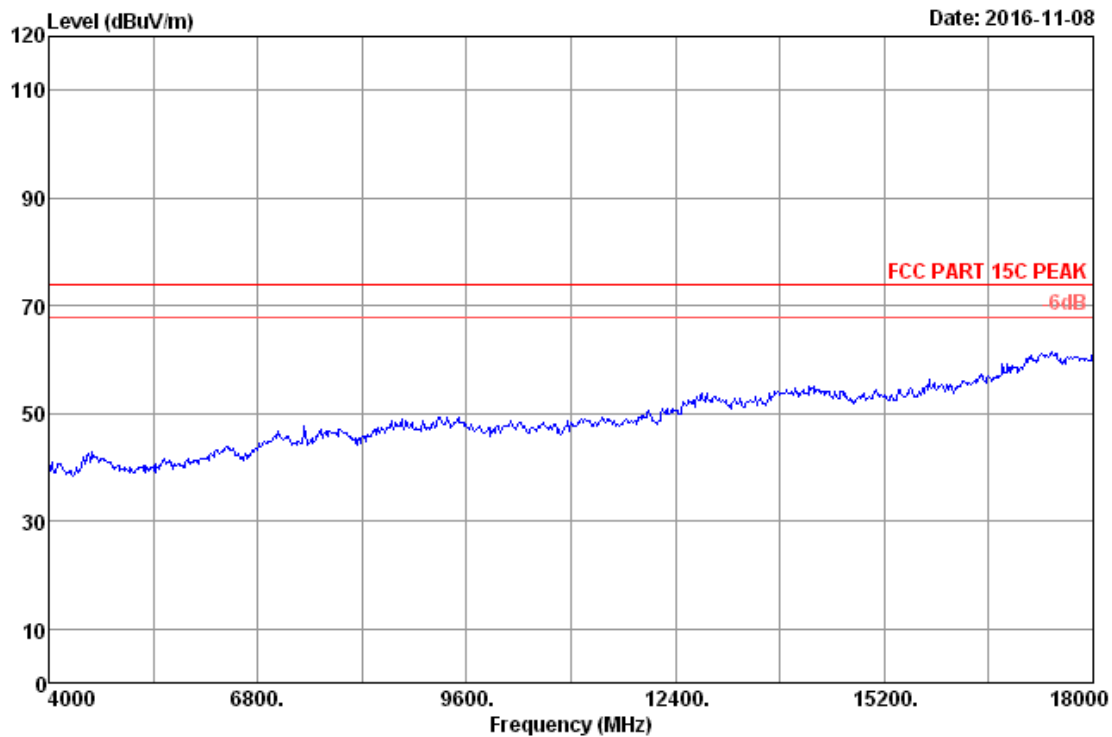
Site no. : 3m Chamber Data no. : 17
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715



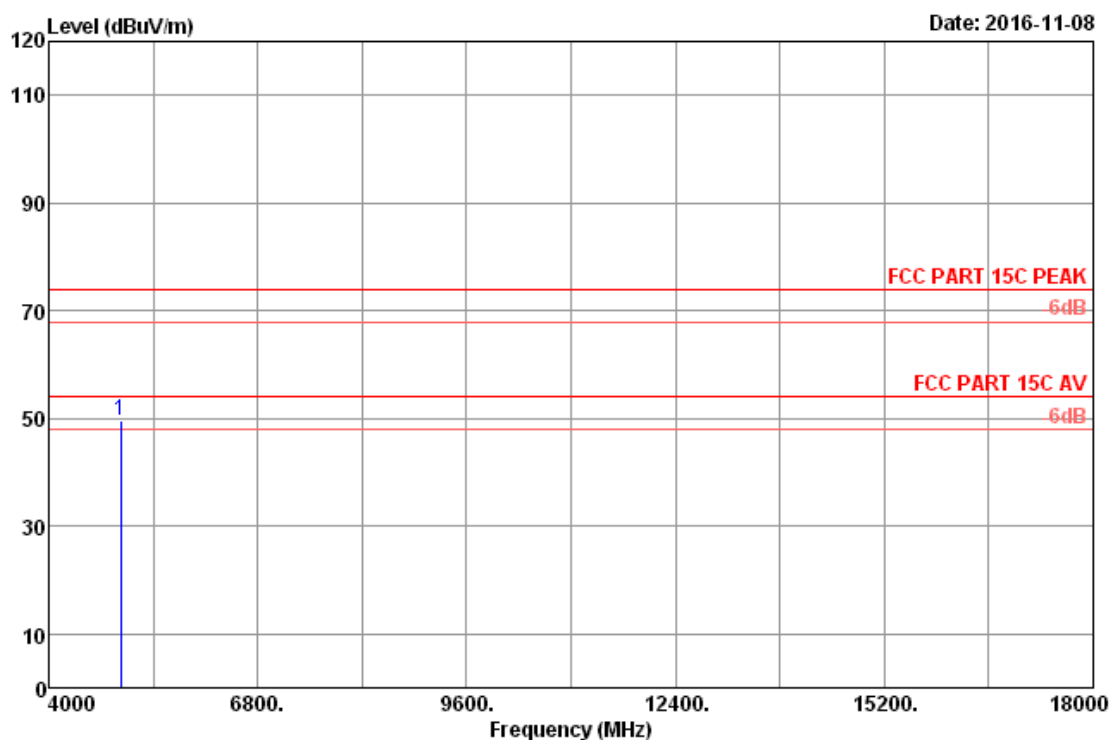
Site no. : 3m Chamber Data no. : 18
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4960.00 | 32.48 | 11.85 | 42.37 | 35.71 | 50.99 | 74.00 | 23.01 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



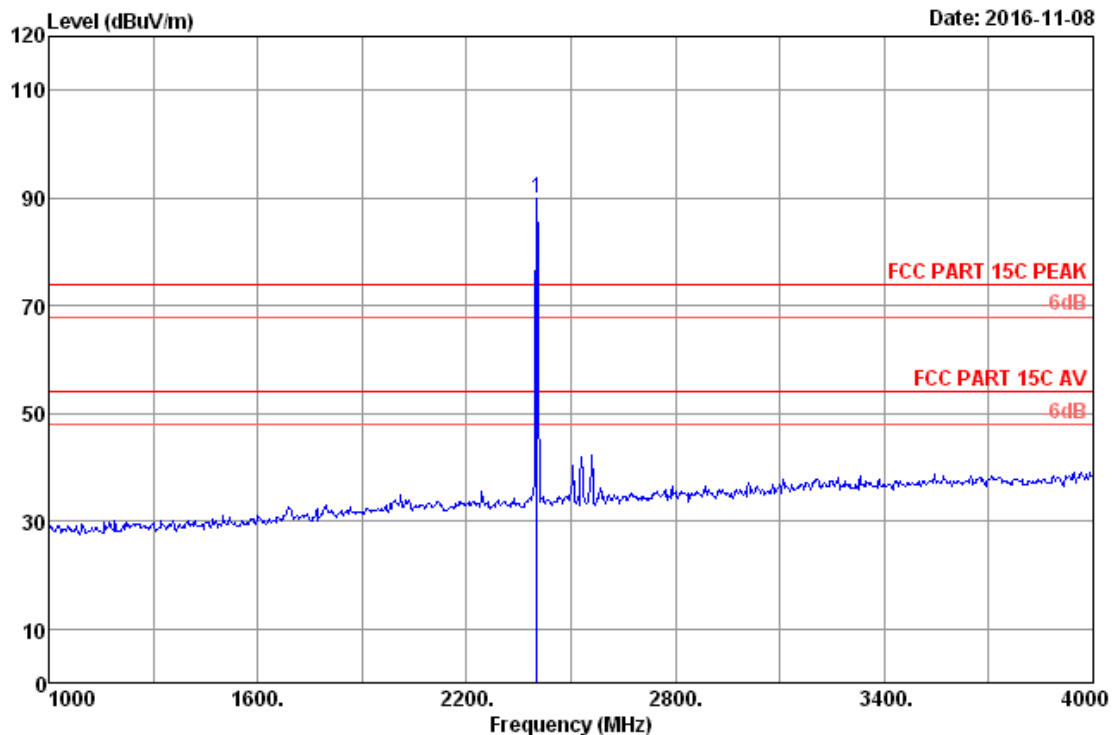
Site no. : 3m Chamber Data no. : 19
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715



Site no. : 3m Chamber Data no. : 20
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4960.00 | 32.48 | 11.85 | 41.11 | 35.71 | 49.73 | 74.00 | 24.27 | Peak |

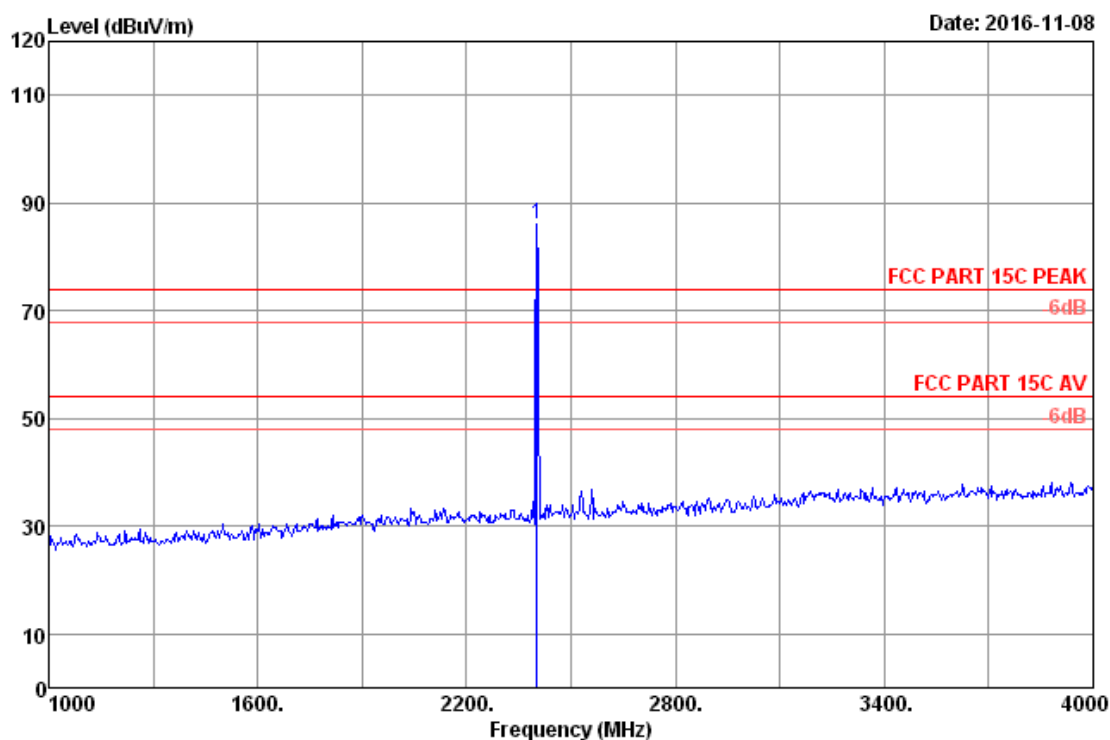
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 23
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00 | 28.14 | 8.34 | 89.80 | 36.39 | 89.89 | 74.00 | -15.89 | Peak |

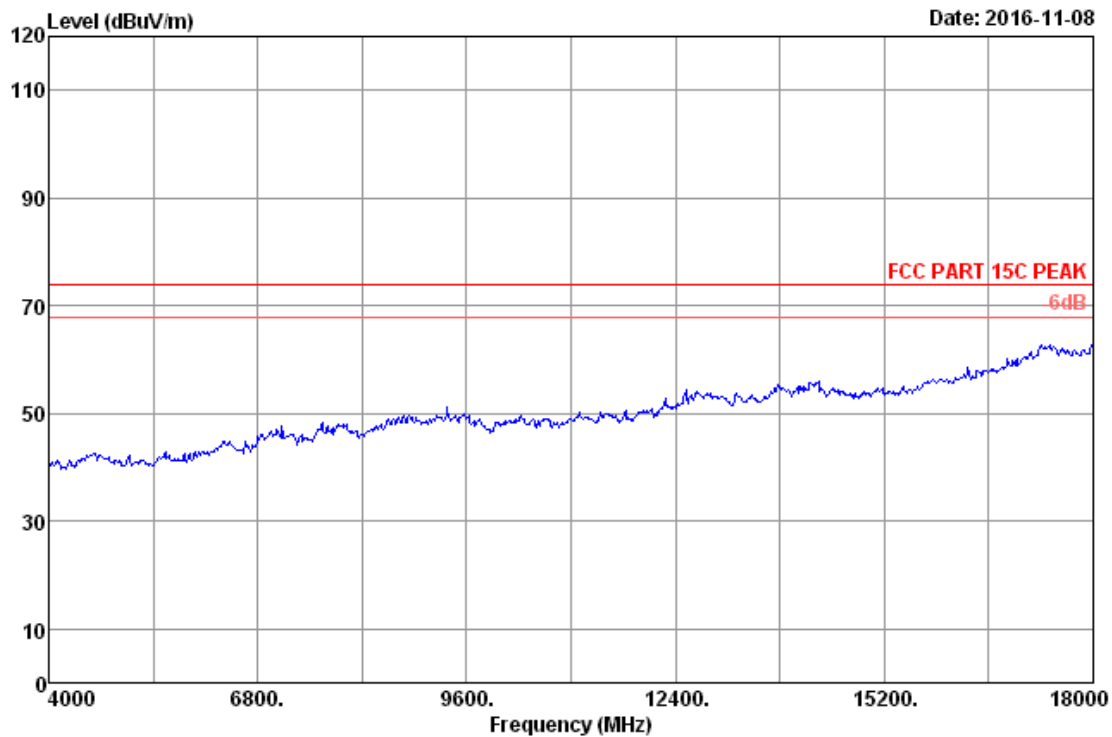
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



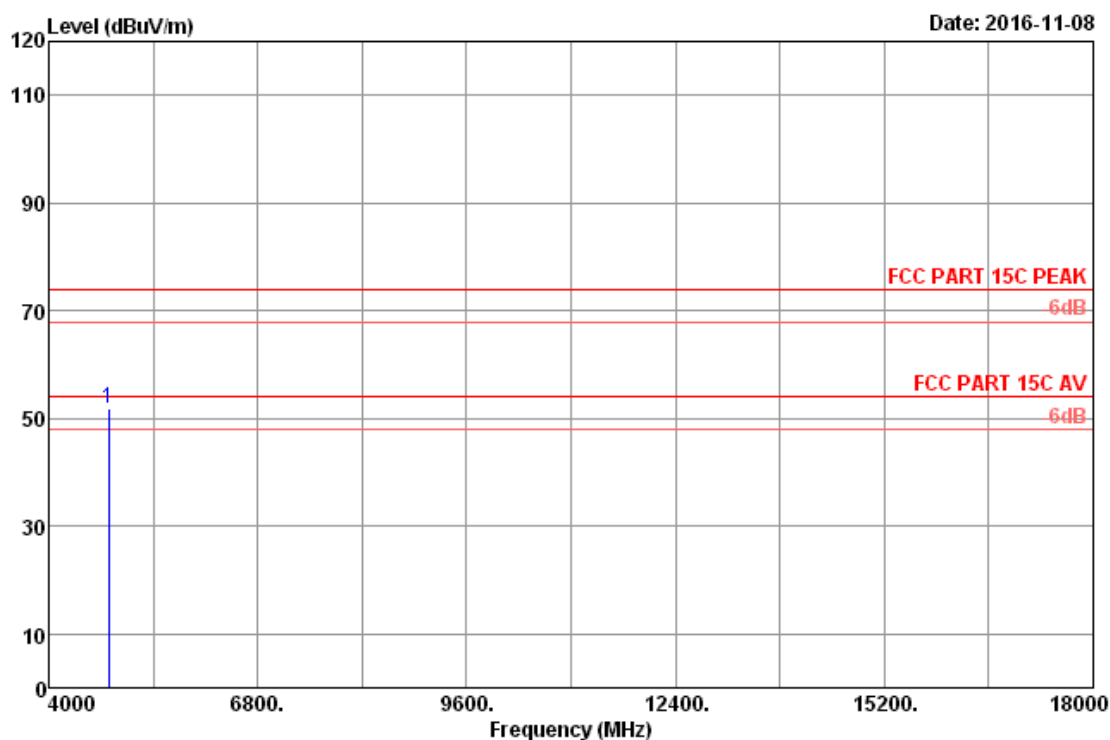
Site no. : 3m Chamber Data no. : 24
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2402.00 | 28.14 | 8.34 | 86.06 | 36.39 | 86.15 | 74.00 | -12.15 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



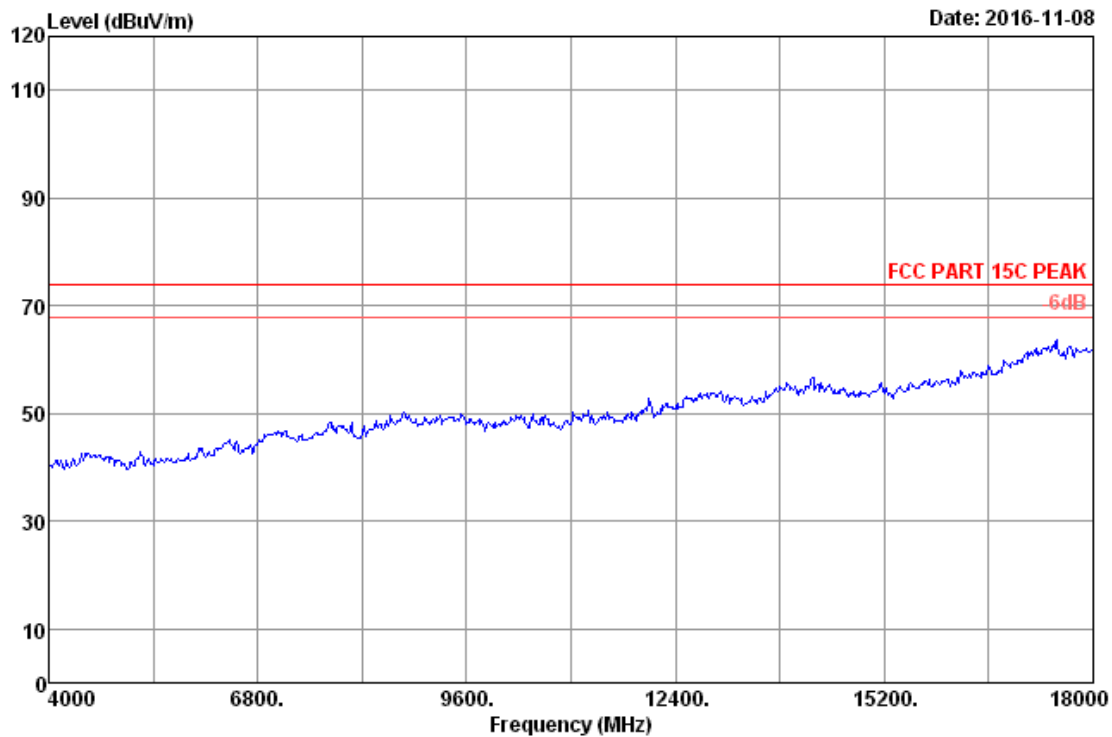
Site no. : 3m Chamber Data no. : 25
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715



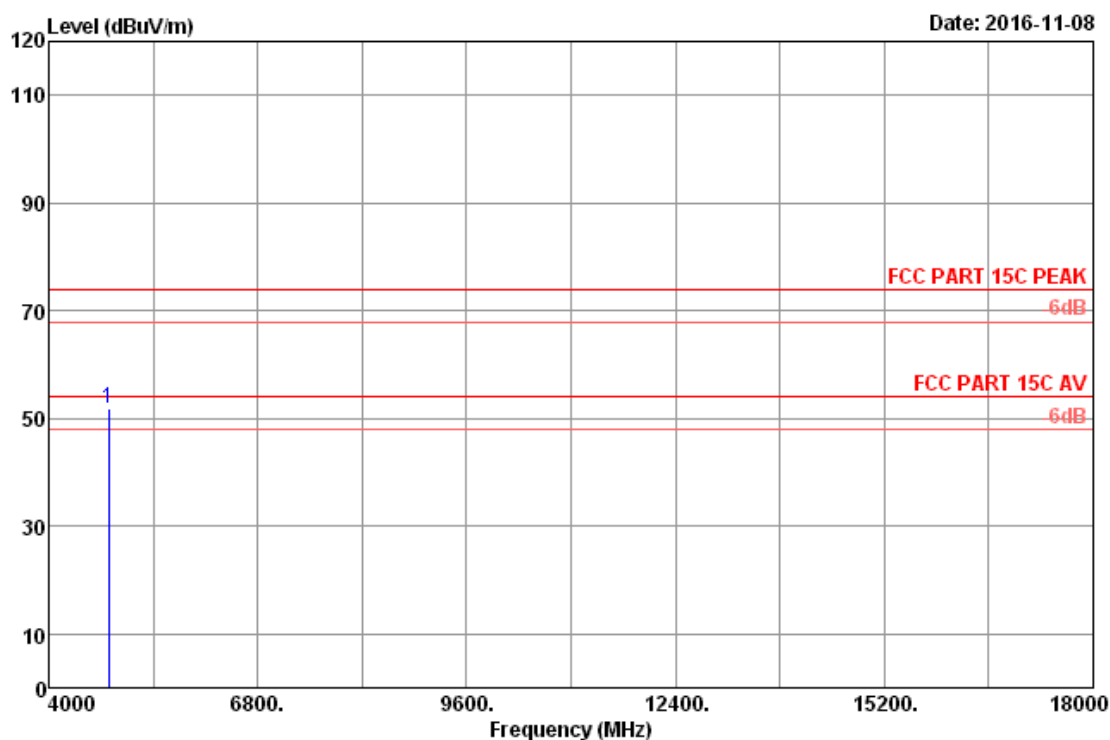
Site no. : 3m Chamber Data no. : 26
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4804.00 | 32.79 | 11.75 | 42.92 | 35.67 | 51.79 | 74.00 | 22.21 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



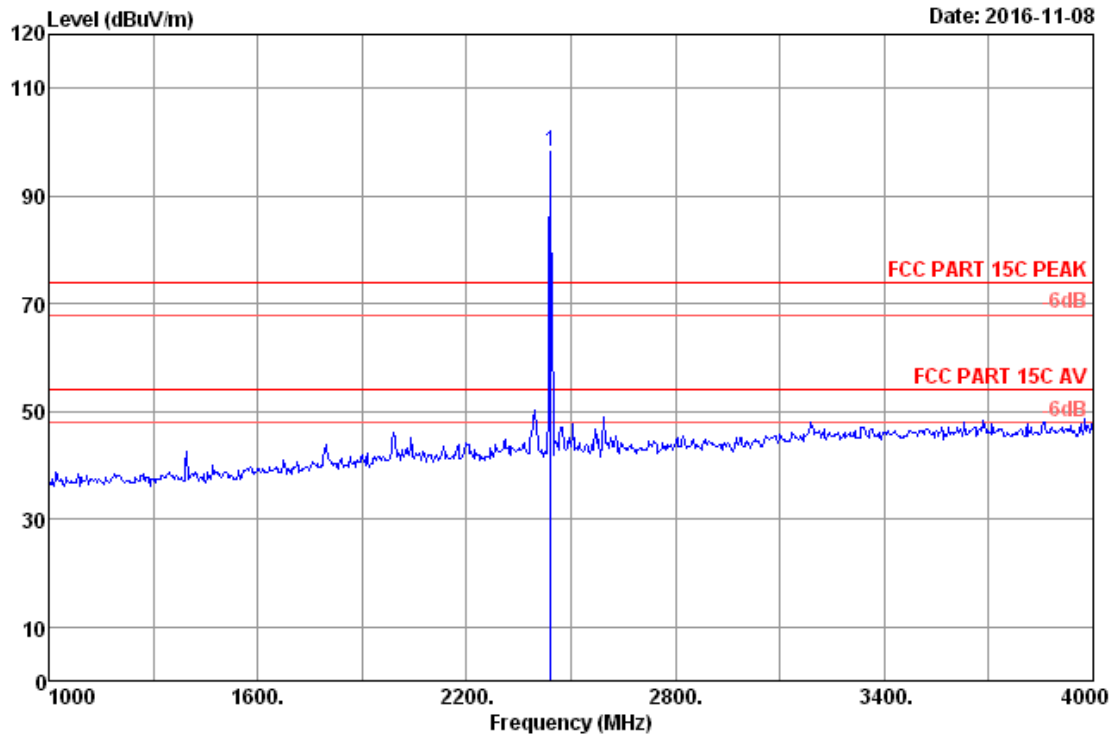
Site no. : 3m Chamber Data no. : 27
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715



Site no. : 3m Chamber Data no. : 28
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4804.00 | 32.79 | 11.75 | 42.93 | 35.67 | 51.80 | 74.00 | 22.20 | Peak |

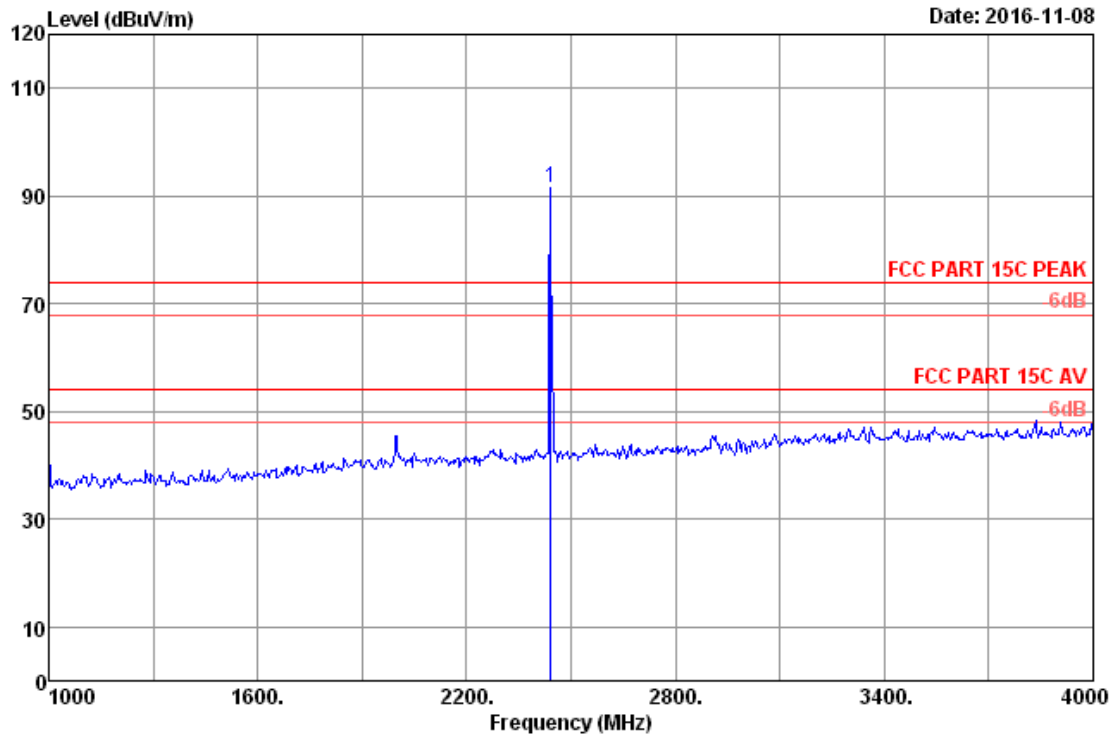
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 31
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00 | 28.21 | 8.38 | 97.93 | 36.38 | 98.14 | 74.00 | -24.14 | Peak |

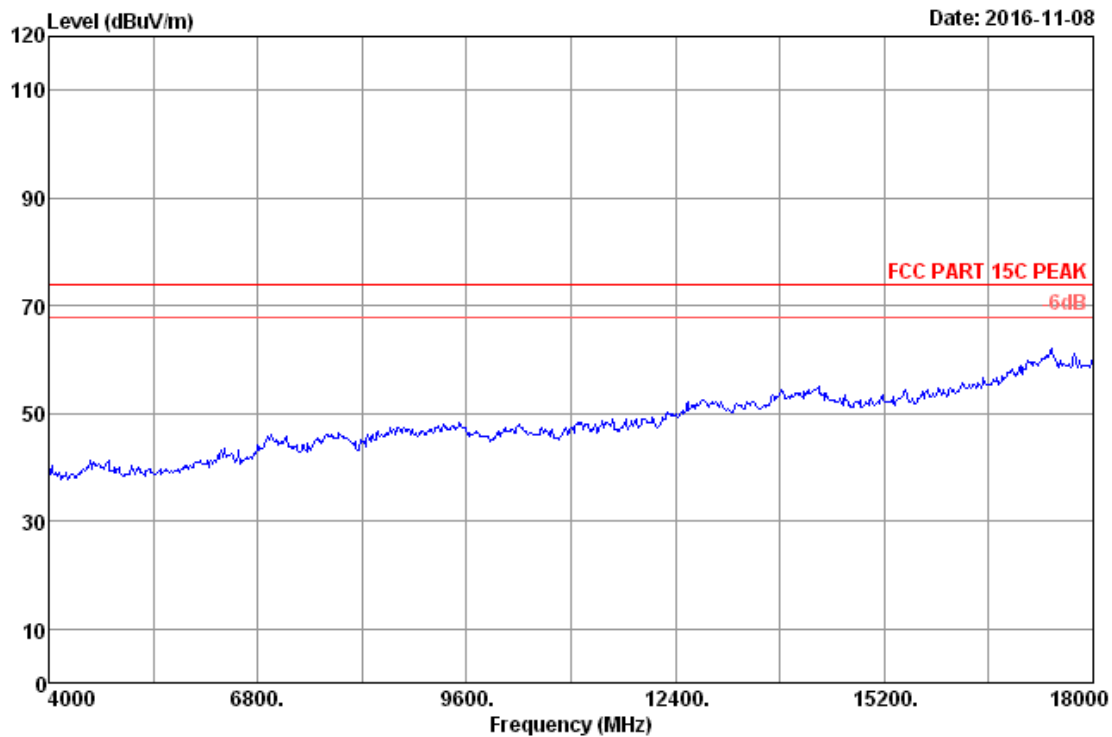
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



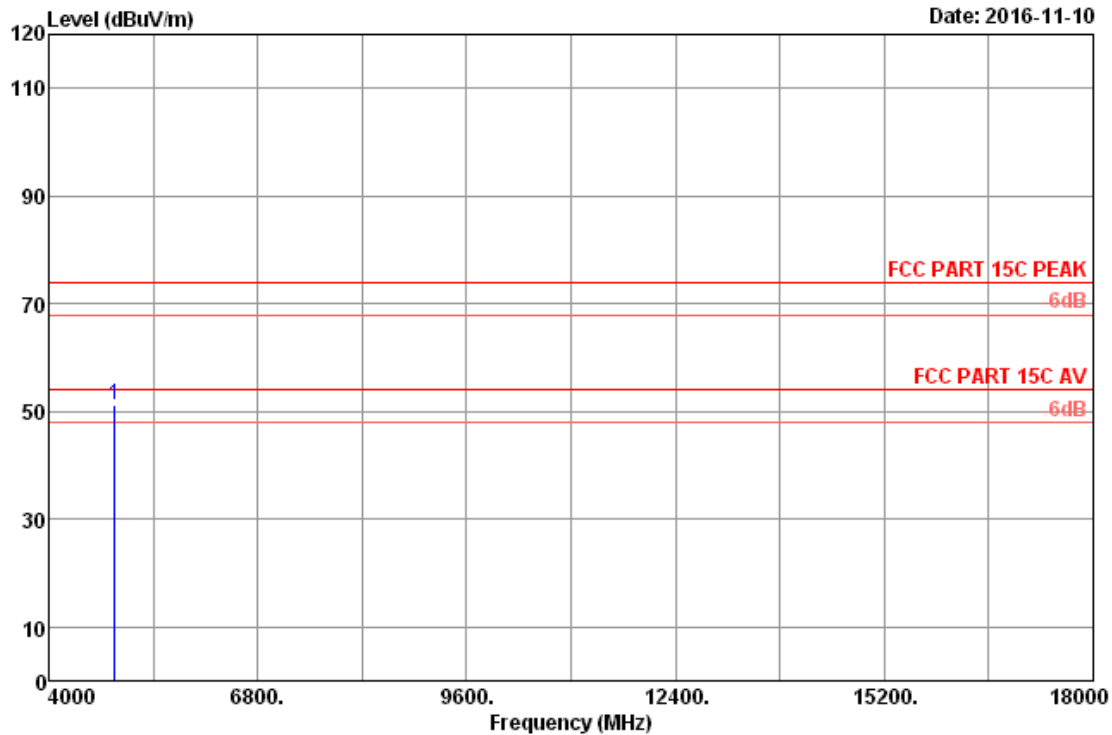
Site no. : 3m Chamber Data no. : 32
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2441.00 | 28.21 | 8.38 | 91.35 | 36.38 | 91.56 | 74.00 | -17.56 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



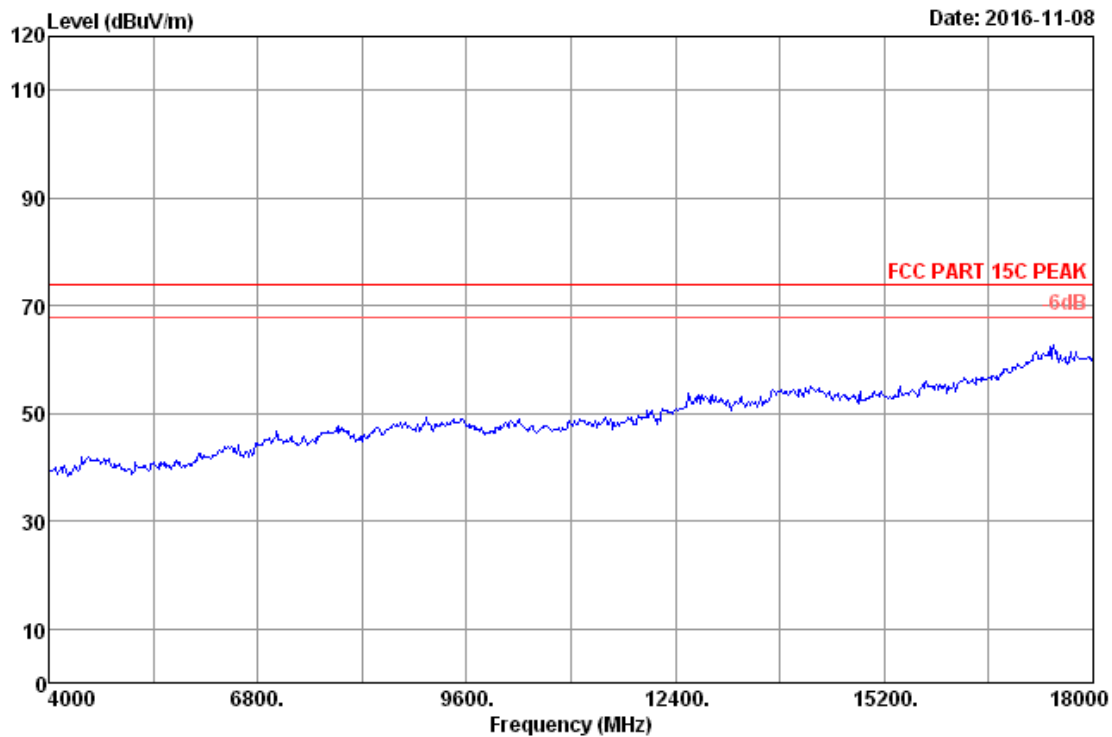
Site no. : 3m Chamber Data no. : 33
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2441MHz Tx Mode
 AE715



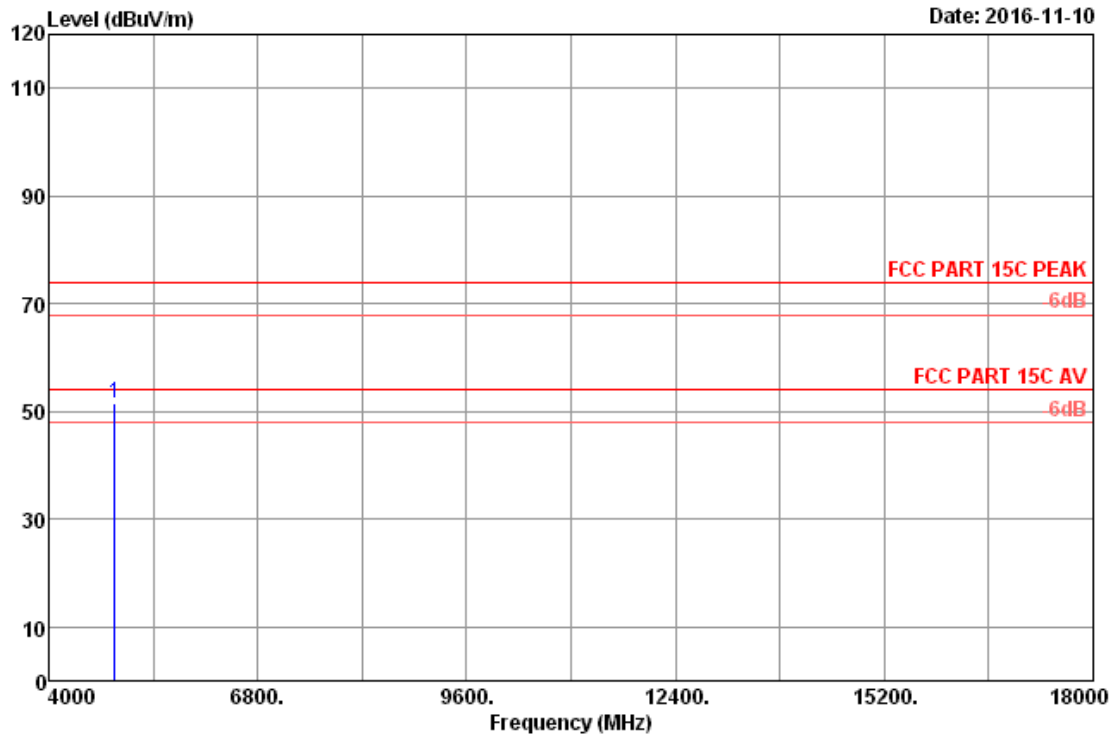
Site no. : 3m Chamber Data no. : 34
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4882.00 | 32.64 | 11.80 | 42.39 | 35.69 | 51.14 | 74.00 | 22.86 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



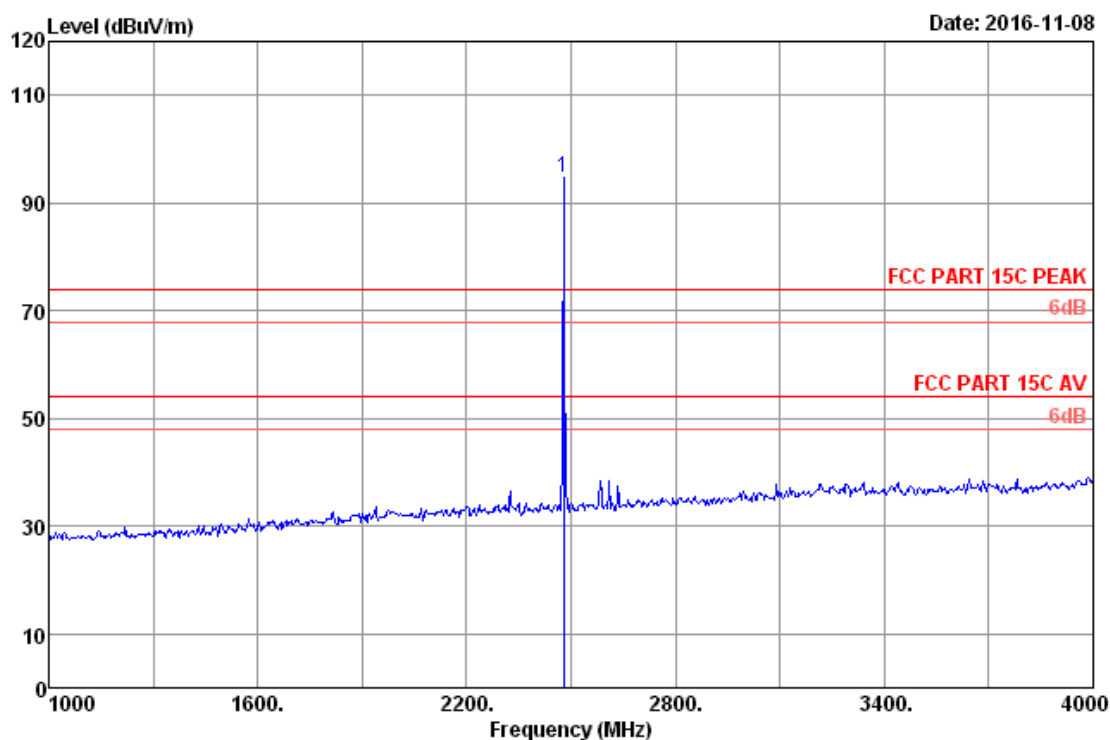
Site no. : 3m Chamber Data no. : 35
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2441MHz Tx Mode
 AE715



Site no. : 3m Chamber Data no. : 36
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2441MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4882.00 | 32.64 | 11.80 | 42.82 | 35.69 | 51.57 | 74.00 | 22.43 | Peak |

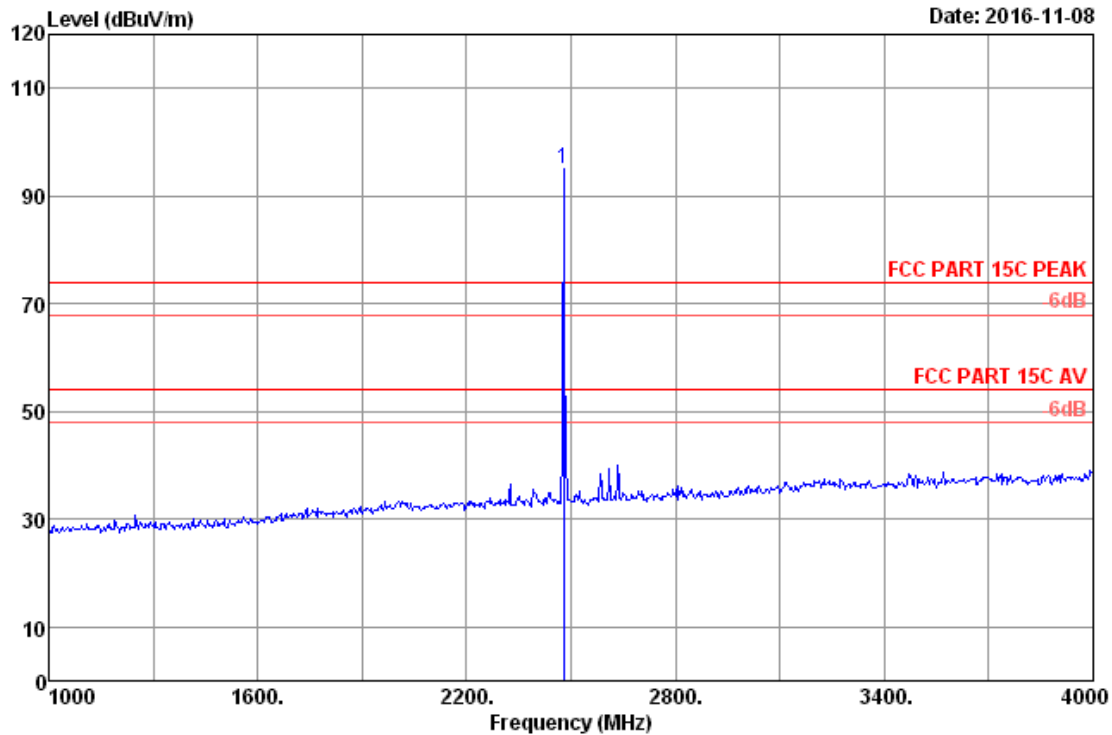
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 37
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00 | 28.27 | 8.42 | 94.48 | 36.38 | 94.79 | 74.00 | -20.79 | Peak |

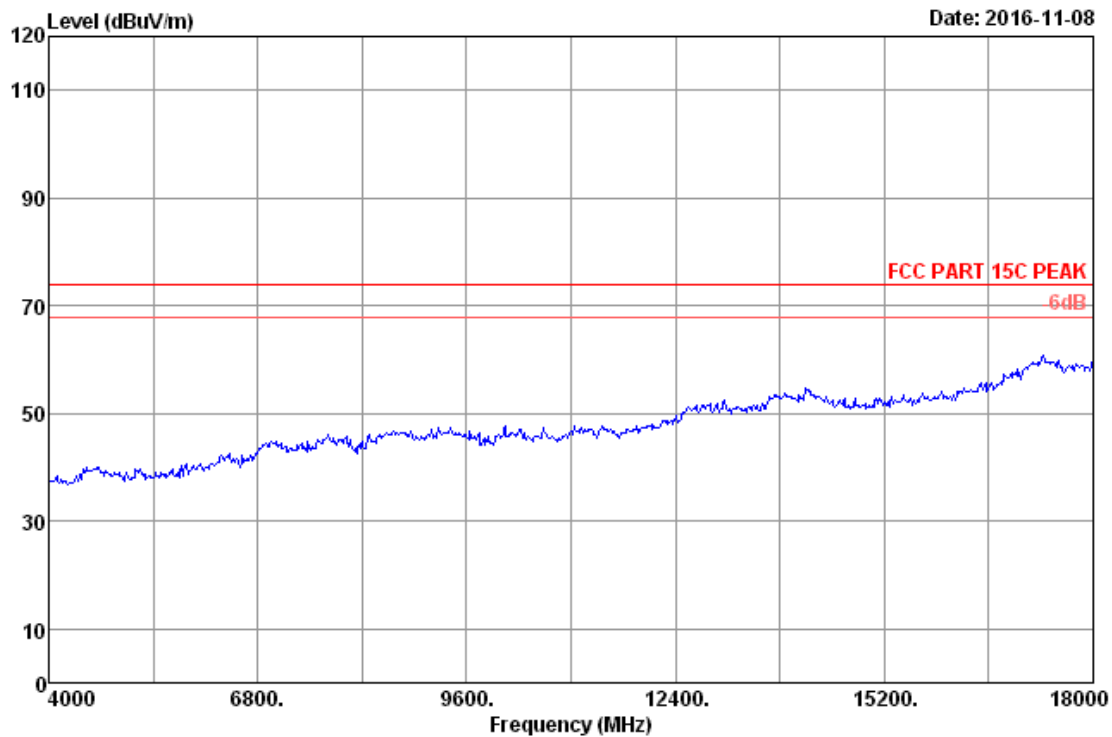
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



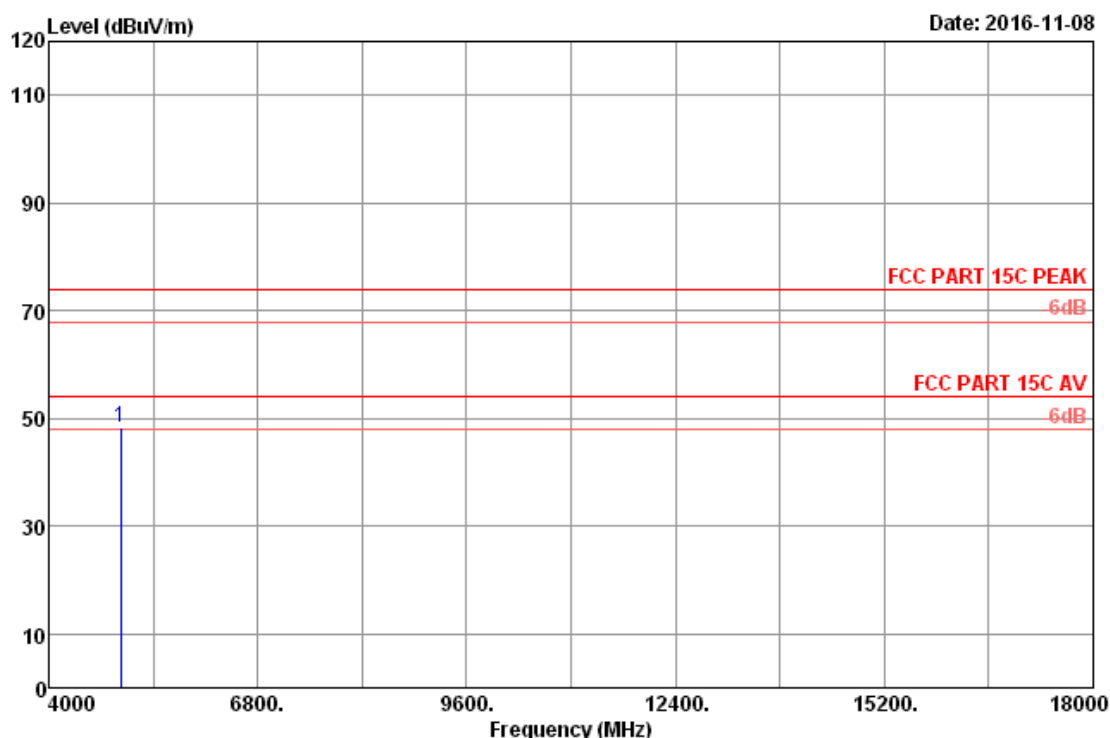
Site no. : 3m Chamber
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00 | 28.27 | 8.42 | 94.73 | 36.38 | 95.04 | 74.00 | -21.04 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



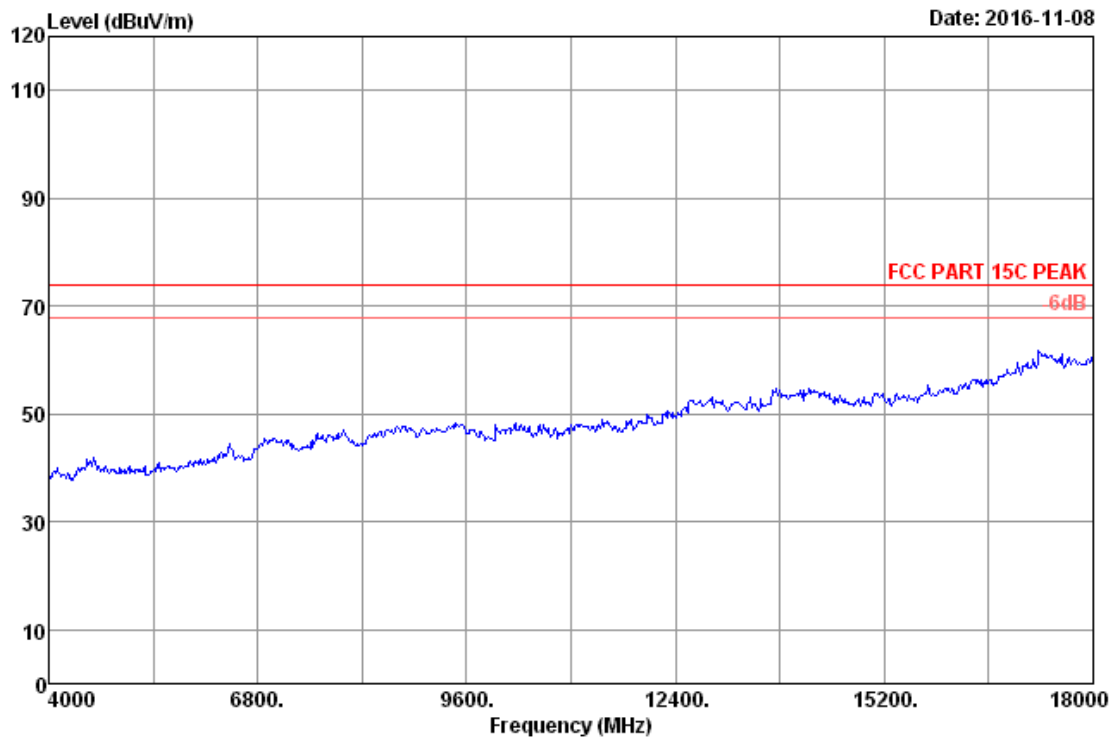
Site no. : 3m Chamber Data no. : 39
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715



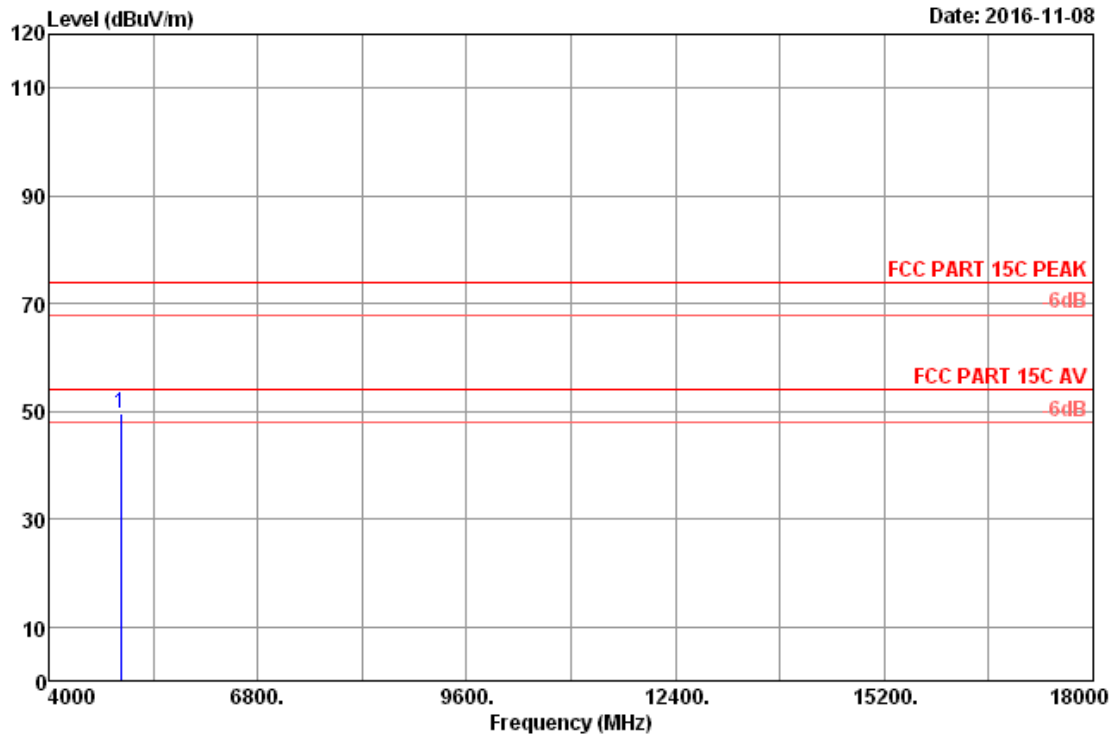
Site no. : 3m Chamber Data no. : 40
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4960.00 | 32.48 | 11.85 | 39.82 | 35.71 | 48.44 | 74.00 | 25.56 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 41
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715



Site no. : 3m Chamber Data no. : 42
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 4960.00 | 32.48 | 11.85 | 40.91 | 35.71 | 49.53 | 74.00 | 24.47 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

5. CONDUCTED SPURIOUS EMISSIONS

5.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-------------------|-------------------------|---------------|------------|-----------|---------------|
| 1. | Spectrum | Agilent | N9030A | MY51380221 | Oct.15,16 | 1 Year |
| 2. | Attenuator (20dB) | Agilent | 8491B | MY39262165 | Apr.23,16 | 1 Year |
| 3. | RF Cable | Marvelous Microwave Inc | SFL402105FLEX | No.1 | Oct.15,16 | 1 Year |

5.2. Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

5.3. Test Procedure

The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions With peak detector.

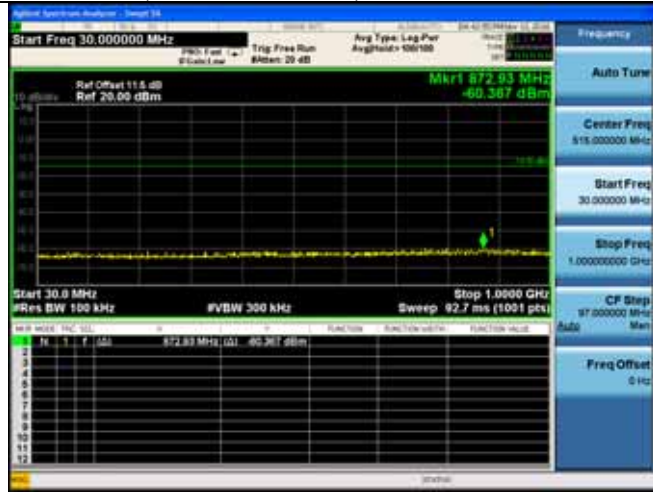
5.4. Test result

PASS (The testing data was attached in the next pages.)

Hopping off

GFSK

2402MHz(30MHz – 1GHz)



2402MHz(10GHz – 25GHz)



2402MHz(1GHz – 10GHz)



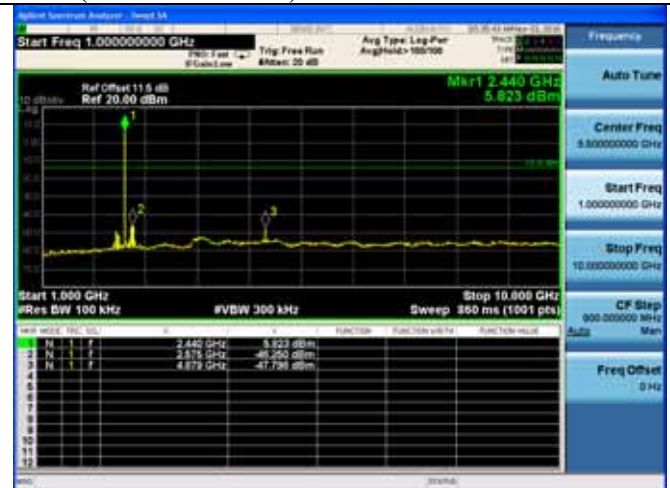
2441(30MHz – 1GHz)



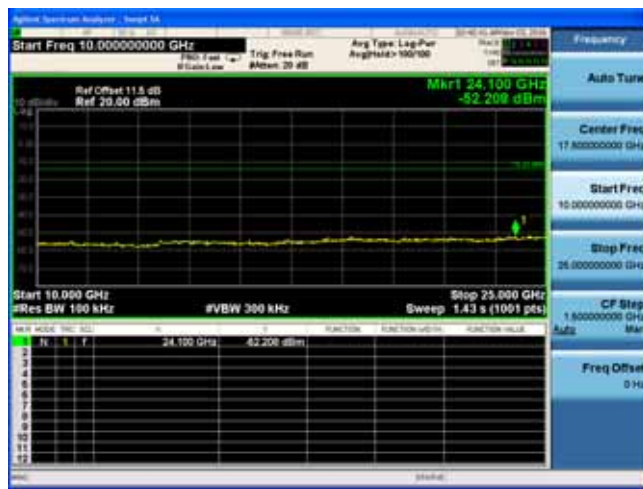
2402MHz(2.3GHz – 2.4GHz)



2441(1GHz – 10GHz)



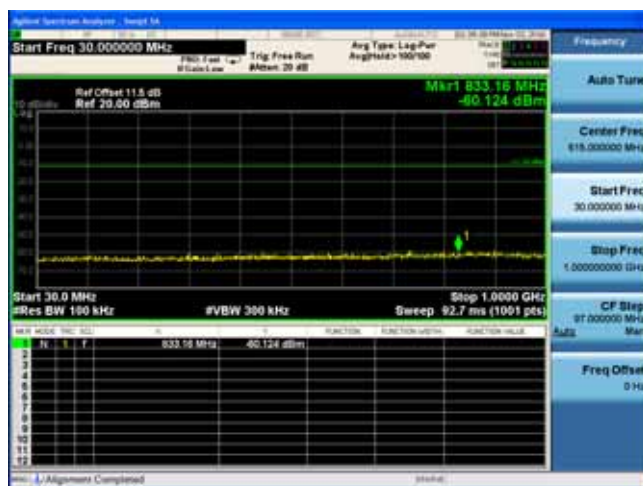
2441(10GHz – 25GHz)



2480MHz(2.4GHz – 2.5GHz)



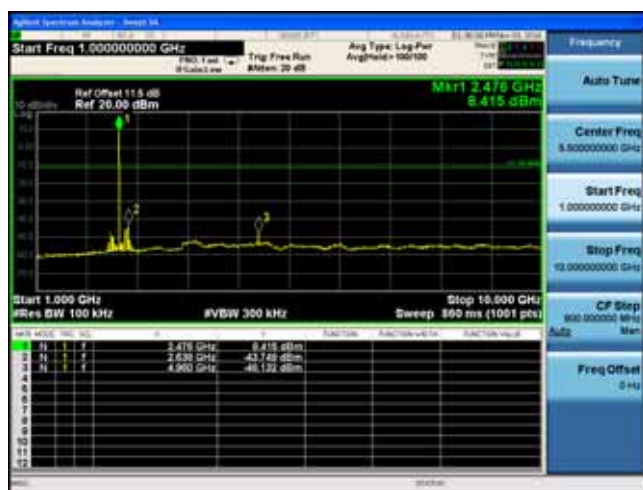
2480MHz(30MHz – 1GHz)



2480MHz(10GHz – 25GHz)

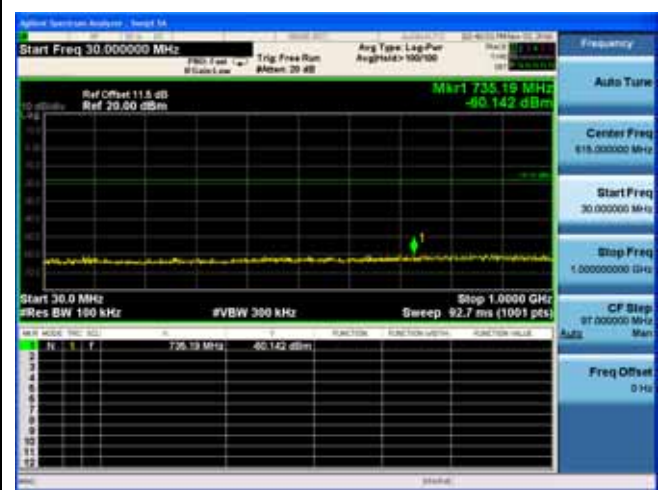


2480MHz(1GHz – 10GHz)



8-DPSK

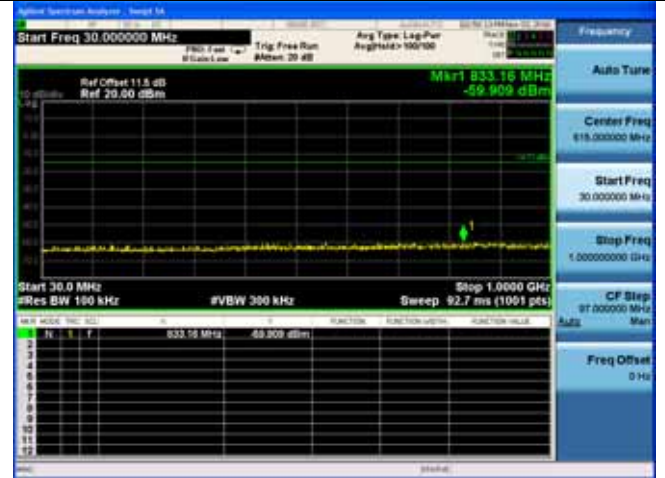
2402MHz(30MHz – 1GHz)



2402MHz(1GHz – 10GHz)



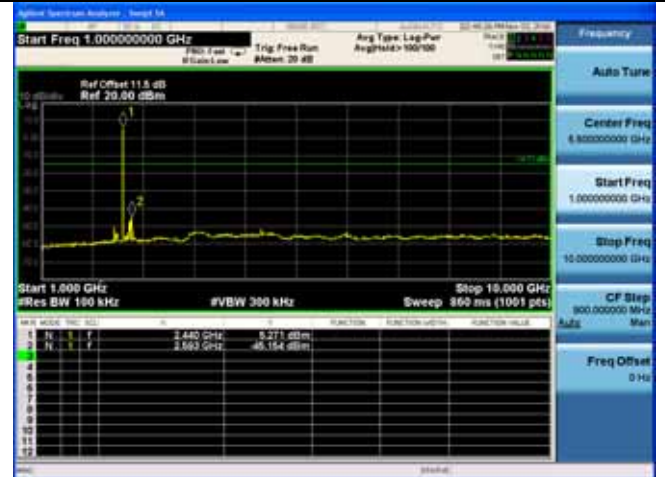
2441MHz (30MHz – 1GHz)



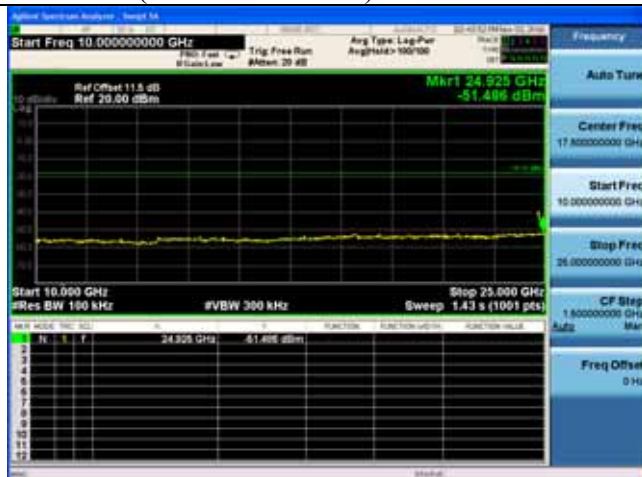
2402MHz(2.3GHz – 2.4GHz)



2441MHz(1GHz – 10GHz)



2402MHz(10GHz – 25GHz)



2441MHz(10GHz – 25GHz)



2480MHz(30MHz – 1GHz)



2480MHz(10GHz – 25GHz)



Hopping on

2480MHz(1GHz – 10GHz)



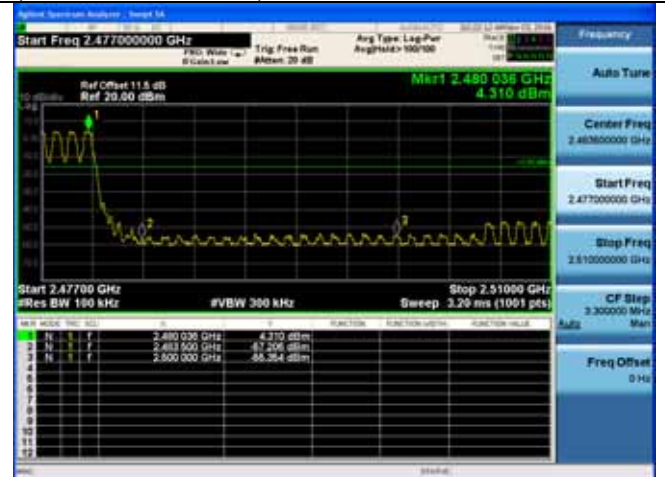
GFSK(2.3GHz – 2.4GHz)



2480MHz(2.4GHz – 2.5GHz)



(2.4GHz – 2.5GHz)



8-DPSK(2.3GHz – 2.4GHz)



(2.4GHz – 2.5GHz)



6. 20 DB BANDWIDTH TEST

6.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-------------------|-------------------------|---------------|------------|-----------|---------------|
| 1. | Spectrum | Agilent | N9030A | MY51380221 | Oct.15,16 | 1 Year |
| 2. | Attenuator (20dB) | Agilent | 8491B | MY39262165 | Apr.23,16 | 1 Year |
| 3. | RF Cable | Marvelous Microwave Inc | SFL402105FLEX | No.1 | Oct.15,16 | 1 Year |

6.2. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

6.3. Test Procedure

1. Connect the antenna port of the EUT to the spectrum analyzer.
2. Let the EUT transmit at Low/ Mid/ High channel with test software.
3. Setting of SA is following as: RBW: 30kHz / VBW: 100kHz
Sweep Mode: Continuous sweep
Detect mode: Positive peak
Trace mode: Max hold.
4. Use the occupied bandwidth function of the SA measure the 20dB bandwidth directly.

6.4. Test Results

| EUT: DELL Wireless 360 Speaker System | | | |
|---------------------------------------|-----------|-------------------------|--------------------------|
| M/N: AE715 | | | |
| Test date: 2016-10-31 | | Pressure: 102.3±1.0 kpa | Humidity: 52.9±3.0% |
| Tested by: Leo-Li | | Test site: RF site | Temperature: 23.7±0.6 °C |
| Test Mode | Frequency | 20dB bandwidth (KHz) | Limit (KHz) |
| GFSK | 2402 | 990.9 | N/A |
| | 2441 | 967.9 | N/A |
| | 2480 | 927.5 | N/A |
| 8-DPSK | 2402 | 1205 | N/A |
| | 2441 | 1191 | N/A |
| | 2480 | 1196 | N/A |
| Conclusion : PASS | | | |

GFSK

2402MHz


8-DPSK

2402MHz



2441MHz



2441MHz



2480MHz



2480MHz



7. CARRIER FREQUENCY SEPARATION TEST

7.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-----------|-------------------------|---------------|------------|-----------|---------------|
| 1. | Spectrum | Agilent | N9030A | MY51380221 | Oct.15,16 | 1 Year |
| 2. | RF Cable | Marvelous Microwave Inc | SFL402105FLEX | No.1 | Oct.15,16 | 1 Year |

7.2. Limit

Frequency hopping systems shall have hopping channel carrier frequency separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

7.3. Test Procedure

1. Connect the antenna port of the EUT to the Spectrum analyzer.
2. Let the EUT transmit at Low/ Mid/ High channel.
3. Setting of SA is following as: RBW: 100kHz / VBW: 300kHz.Span:5MHz
4. Use the mark Delta function of the SA measure out the channel separation

7.4. Test Results.

| | | |
|---------------------------------------|------------------------|--------------------------|
| EUT: DELL Wireless 360 Speaker System | | |
| M/N: AE715 | | |
| Test date: 2016-10-31 | Pressure: 102.5±1.0kpa | Humidity: 51.3±3.0% |
| Tested by: Leo-Li | Test site: RF site | Temperature: 22.1±0.6 °C |

| Test Mode | Channel separation | Limit(KHz) | Conclusion |
|-----------|--------------------|------------|------------|
| GFSK | 1.0MHz | 660.930 | PASS |
| 8-DPSK | 1.0MHz | 803.735 | PASS |



8. NUMBER OF HOPPING FREQUENCY TEST

8.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-----------|-------------------------|---------------|------------|-----------|---------------|
| 1. | Spectrum | Agilent | N9030A | MY51380221 | Oct.15,16 | 1Year |
| 2. | RF Cable | Marvelous Microwave Inc | SFL402105FLEX | No.1 | Oct.15,16 | 1 Year |

8.2. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

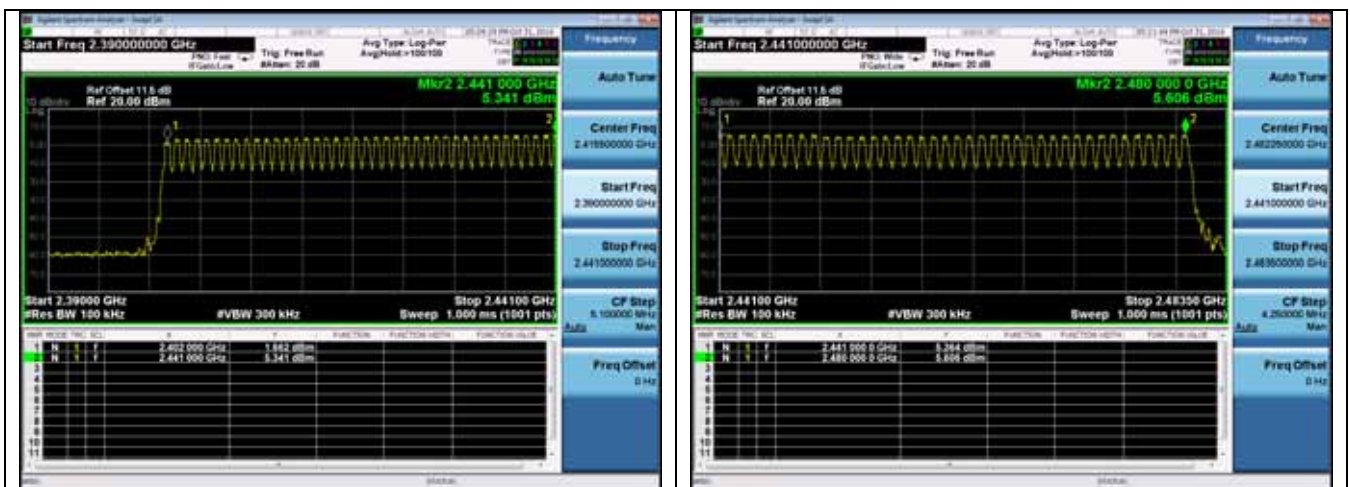
8.3. Test Procedure

1. Connect the antenna of the EUT to Spectrum analyzer and let the EUT working at hopping mode.
2. Setting of SA is following as: RBW: 100kHz / VBW: 300kHz ,
Start frequency: 2390MHz
Stop frequency: 2483.5MHz
And waiting for the hopping trace until stability, count out the number of the hopping

8.4. Test Results

| | | |
|---------------------------------------|------------------------|--------------------------|
| EUT: DELL Wireless 360 Speaker System | | |
| M/N: AE715 | | |
| Test date: 2016-10-31 | Pressure: 102.5±1.0kpa | Humidity: 51.3±3.0% |
| Tested by: Leo-Li | Test site: RF site | Temperature: 22.1±0.6 °C |

| Test Mode | Number of channel | Limit | Conclusion |
|-----------|-------------------|-------|------------|
| GFSK | 79 | ≥15 | PASS |
| 8-DPSK | 79 | ≥15 | PASS |



9. DWELL TIME

9.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-----------|-------------------------|---------------|------------|-----------|---------------|
| 1. | Spectrum | Agilent | N9030A | MY51380221 | Oct.15,16 | 1Year |
| 2. | RF Cable | Marvelous Microwave Inc | SFL402105FLEX | No.1 | Oct.15,16 | 1 Year |

9.2. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

9.3. Test Procedures

1. Connect the antenna of the EUT to Spectrum analyzer and let the EUT working at hopping mode.
2. Setting of SA is following as:
RBW: 100kHz / VBW: 100kHz
Sweep Mode: Single
Detect mode: Positive peak
Trace mode: Auto
Span: 0Hz
Sweep time: 5s and big enough to measure one hopping signal
3. Use below formula calculate the Dwell time
Dwell time=Hopping number per second*0.4*channel number*Pulse bandwidth per hopping

9.4. Test Results

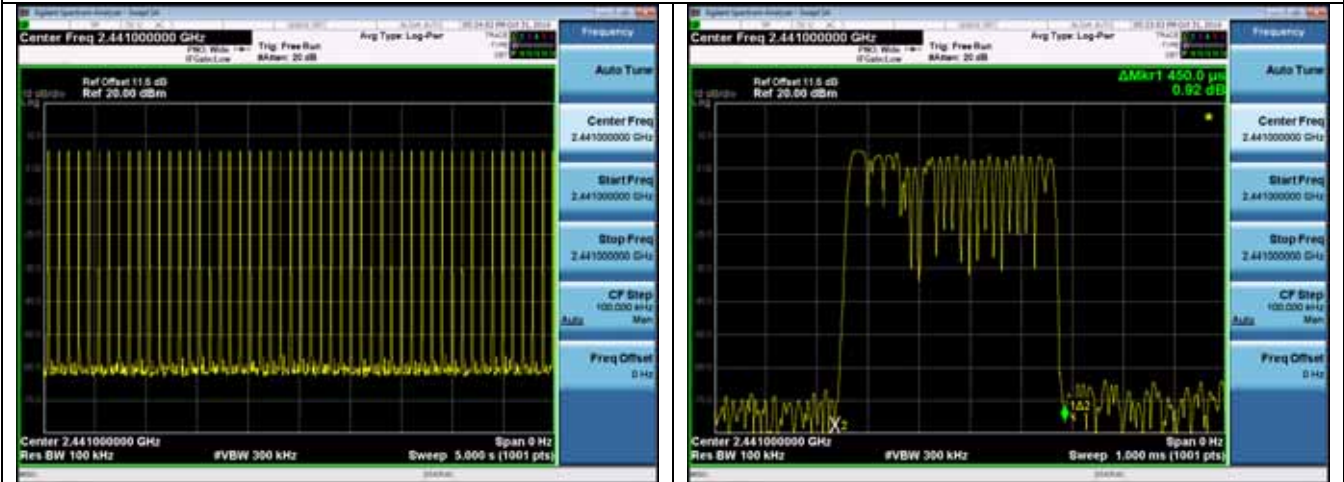
| | | |
|---------------------------------------|------------------------|--------------------------|
| EUT: DELL Wireless 360 Speaker System | | |
| M/N: AE715 | | |
| Test date: 2016-10-31 | Pressure: 102.5±1.0kpa | Humidity: 51.3±3.0% |
| Tested by: Leo-Li | Test site: RF site | Temperature: 22.1±0.6 °C |

| Mode | | dwell time | Limit | Conclusion |
|--------|-----|---|--------|------------|
| GFSK | DH1 | 50hops/5s*0.4*79channels*0.450ms =142.200ms | <400ms | PASS |
| | DH3 | 26hops/5s*0.4*79channels*1.710ms =280.987ms | <400ms | PASS |
| | DH5 | 17hops/5s*0.4*79channels*2.960ms =318.022ms | <400ms | PASS |
| 8-DPSK | DH1 | 50hops/5s*0.4*79channels*0.460ms =145.360ms | <400ms | PASS |
| | DH3 | 25hops/5s*0.4*79channels*1.713ms =270.654ms | <400ms | PASS |
| | DH5 | 17hops/5s*0.4*79channels*2.985ms =320.708ms | <400ms | PASS |

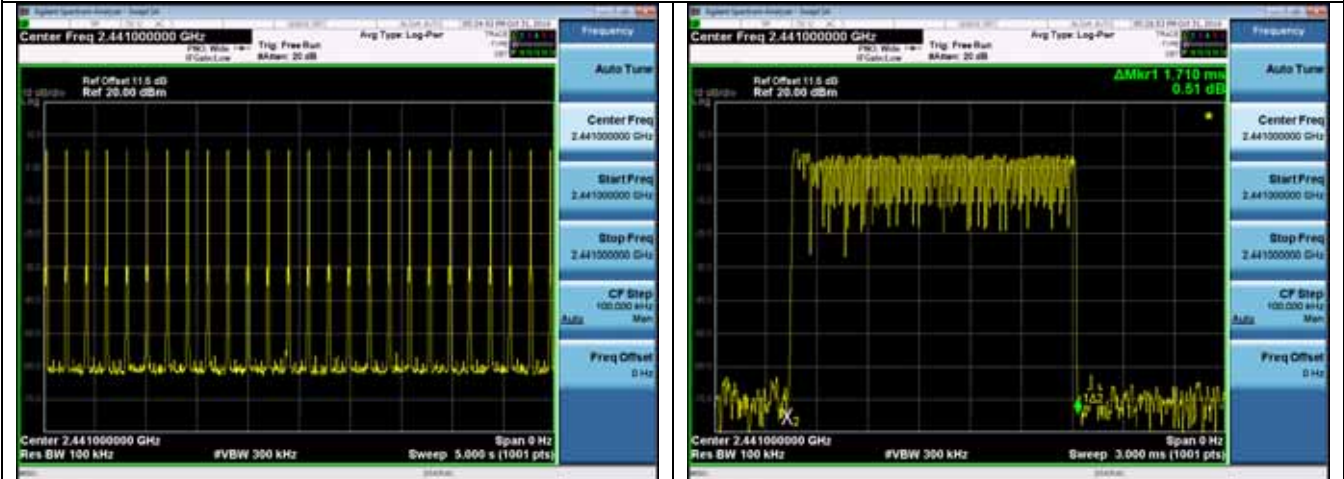
Note: All the lower levels were signaled from receiver and should not be considered in here.

GFSK

DH 1



DH 3

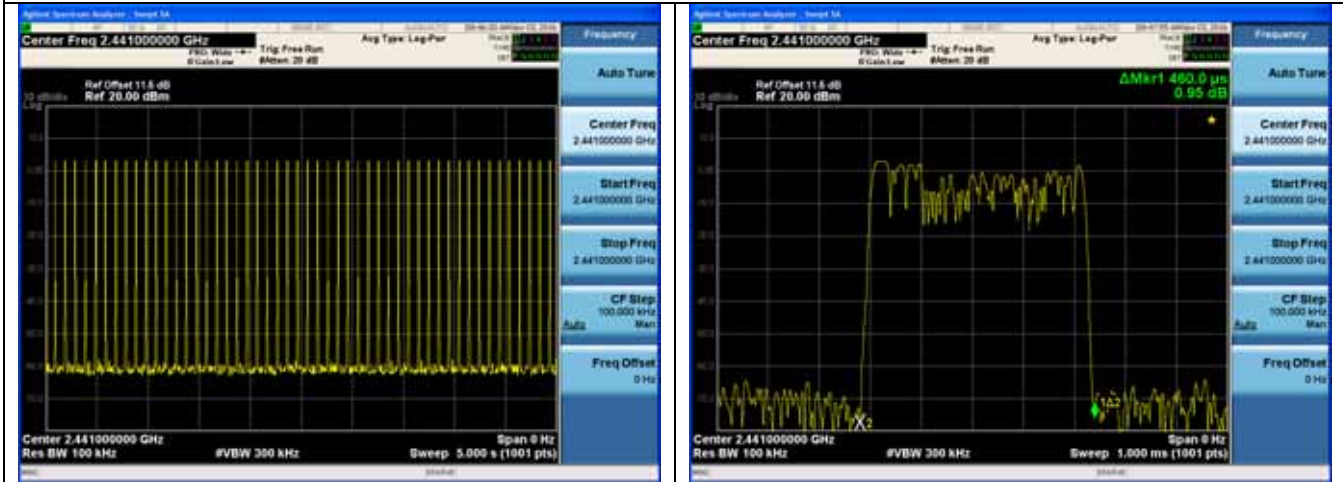


DH 5

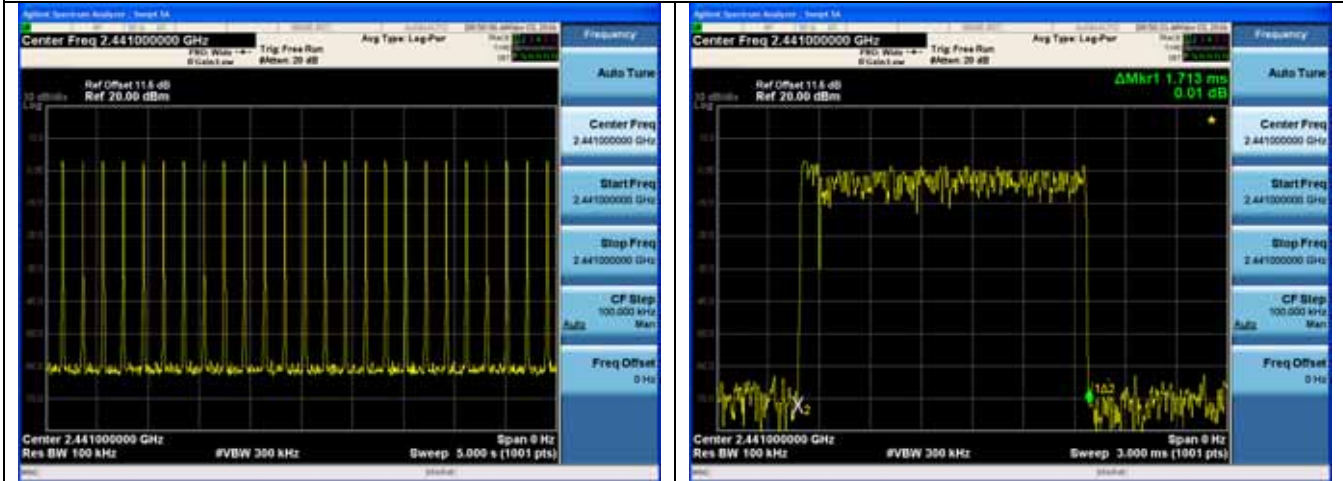


8-DPSK

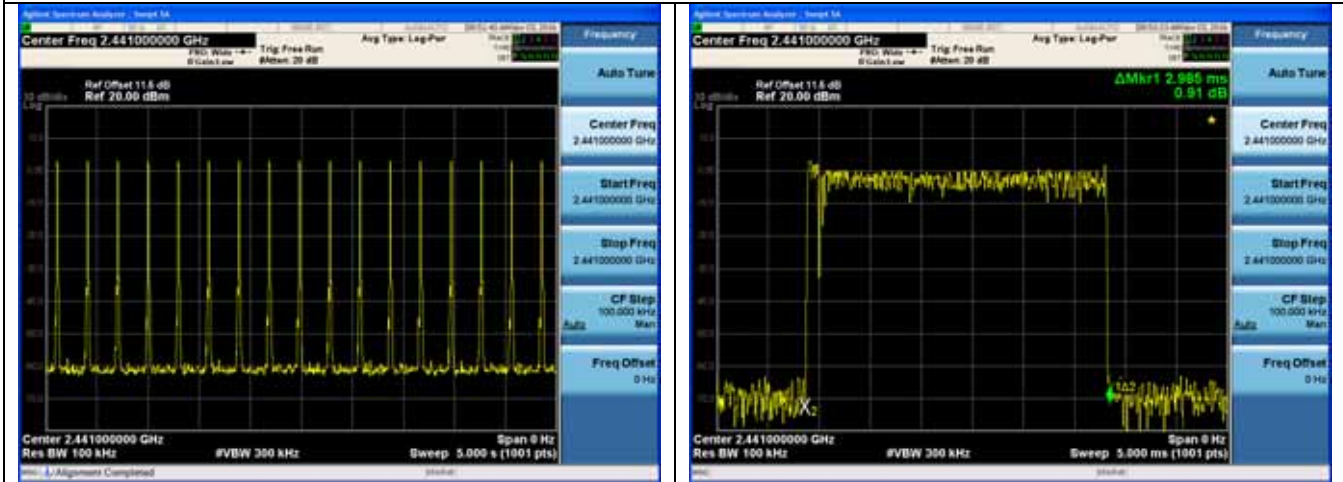
3DH 1



3DH 3



3DH 5



10. MAXIMUM PEAK OUTPUT POWER TEST

10.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-------------------|-------------------------|---------------|------------|-----------|---------------|
| 1. | Spectrum | Agilent | N9030A | MY51380221 | Oct.15,16 | 1 Year |
| 2. | Power meter | Anritsu | ML2487A | 6K00002472 | Apr.23,16 | 1 Year |
| 3. | Power sensor | Anritsu | MA2491A | 0033005 | Apr.23,16 | 1 Year |
| 4. | Attenuator (20dB) | Agilent | 8491B | MY39262165 | Apr.23,16 | 1 Year |
| 5. | RF Cable | Marvelous Microwave Inc | SFL402105FLEX | No.1 | Oct.15,16 | 1 Year |

10.2. Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt.

10.3. Test Procedure

Connected the EUT's antenna port to Power Sensor, and use power meter to test peak output power directly.

10.4. Test Results

| EUT: DELL Wireless 360 Speaker System | | | |
|---------------------------------------|-----------|-------------------------|--------------------------|
| M/N: AE715 | | | |
| Test date: 2016-10-31 | | Pressure: 103.2±1.0 kpa | Humidity: 52.1±3.0% |
| Tested by: Leo-Li | | Test site: RF site | Temperature: 23.2±0.6 °C |
| Test Mode | Frequency | Peak output Power (dBm) | Limit (dBm) |
| GFSK | 2402 | 5.424 | 30 |
| | 2441 | 8.229 | 30 |
| | 2480 | 8.635 | 30 |
| 8-DPSK | 2402 | 3.370 | 30 |
| | 2441 | 6.771 | 30 |
| | 2480 | 7.179 | 30 |
| Conclusion: PASS | | | |

11. BAND EDGE COMPLIANCE TEST

11.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|--------------|--------------|-------------|-------------|-----------|---------------|
| 1. | Spectrum | Agilent | E4446A | US44300459 | Apr.24,16 | 1 Year |
| 2. | Amp | HP | 8449B | 3008A02495 | Apr.24,16 | 1 Year |
| 3. | Horn Antenna | ETC | MCTD 1209 | DRH15F03007 | Apr.11,16 | 1 Year |
| 4. | HF Cable | Hubersuhner | Sucoflex104 | 274094/4 | Apr.24,16 | 1 Year |

11.2. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

11.3. Test Produce

For upper band emissions that are up to two bandwidths(2MHz) away (2483.5MHz to 2485.5MHz) from the band-edge use below produce:

1. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 100KHz and with a video bandwidth 300KHz. Record the peak levels of the fundamental emission and the relevant band-edge emission, Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.
2. Subtract the delta measured in step (1) from the maximum field strengths measured in clause 4 .The resultant field strengths are then used to determine band-edge compliance as required by Section 15.205

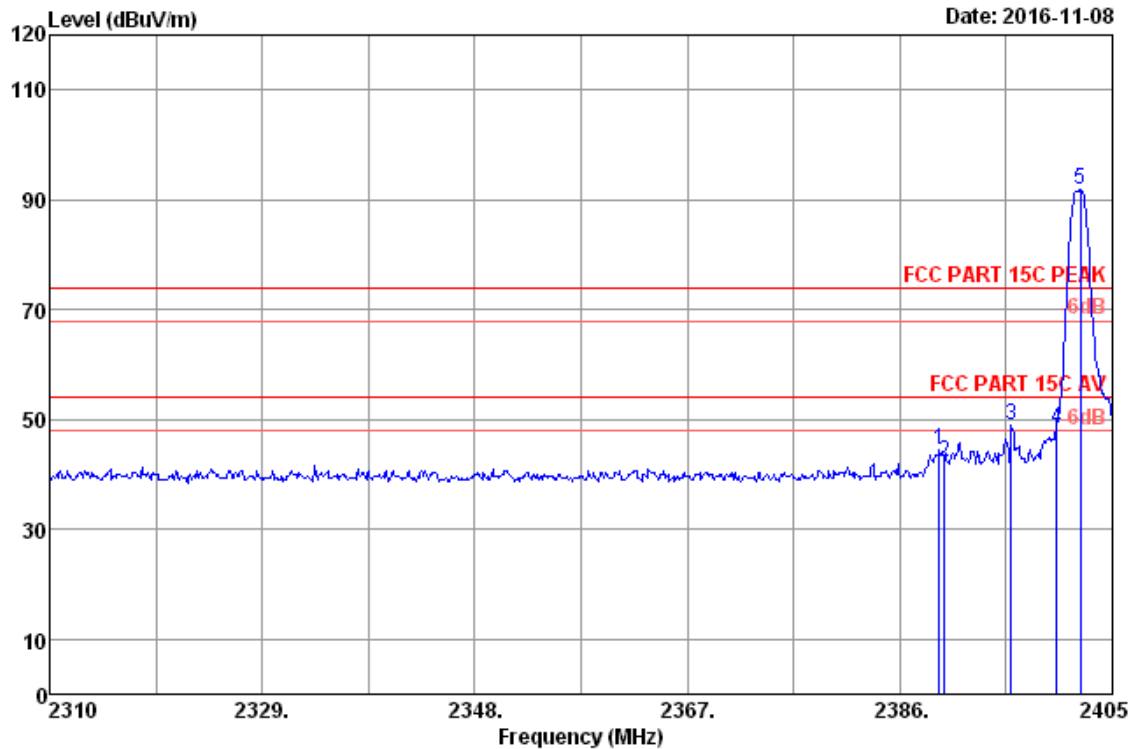
For emissions above two bandwidths away from the band-edge use below produce:

1. The EUT is placed on a insulating material (up to 12mm thick) worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:
 - (a) PEAK: RBW=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO
 - (b) This is pulse Modulation device a duty cycle factor was used to calculate average level based measured peak level.

11.4. Test Results

Pass (The testing data was attached in the next pages.)

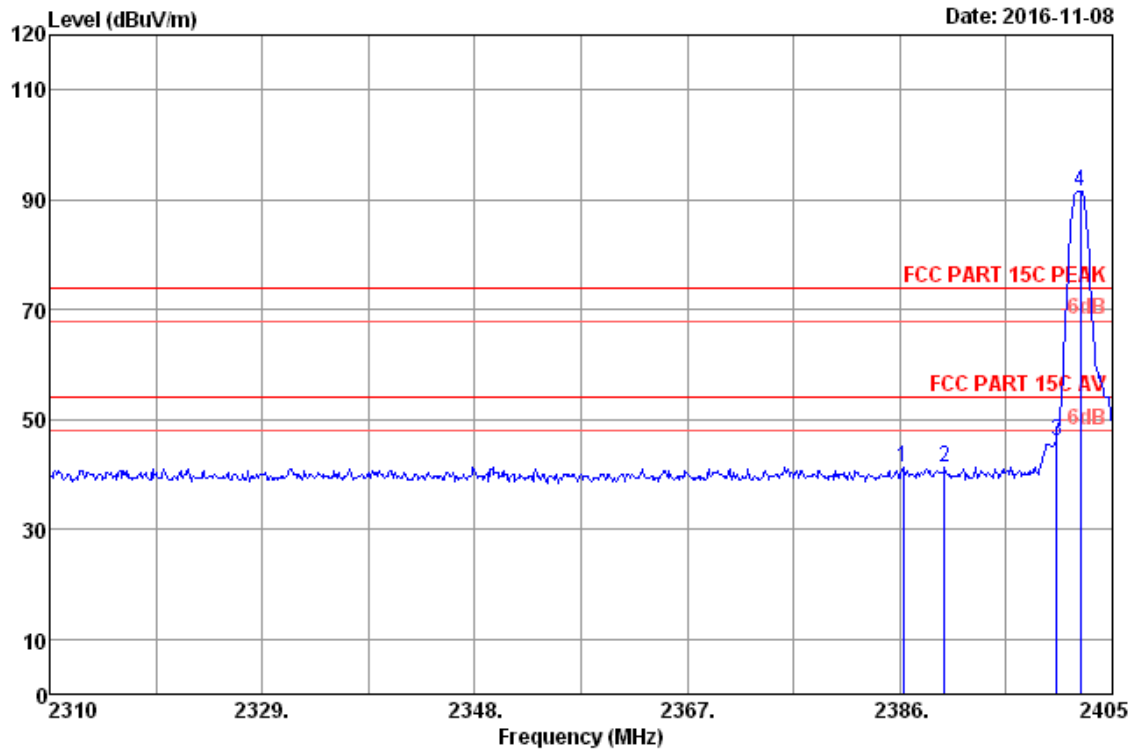
Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.



Site no. : 3m Chamber Data no. : 7
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2389.52 | 28.12 | 8.33 | 44.26 | 36.39 | 44.32 | 74.00 | 29.68 | Peak |
| 2 | 2390.00 | 28.12 | 8.33 | 42.23 | 36.39 | 42.29 | 74.00 | 31.71 | Peak |
| 3 | 2395.98 | 28.13 | 8.33 | 48.86 | 36.39 | 48.93 | 74.00 | 25.07 | Peak |
| 4 | 2400.00 | 28.14 | 8.34 | 48.11 | 36.39 | 48.20 | 74.00 | 25.80 | Peak |
| 5 | 2402.15 | 28.14 | 8.34 | 91.64 | 36.39 | 91.73 | 74.00 | -17.73 | Peak |

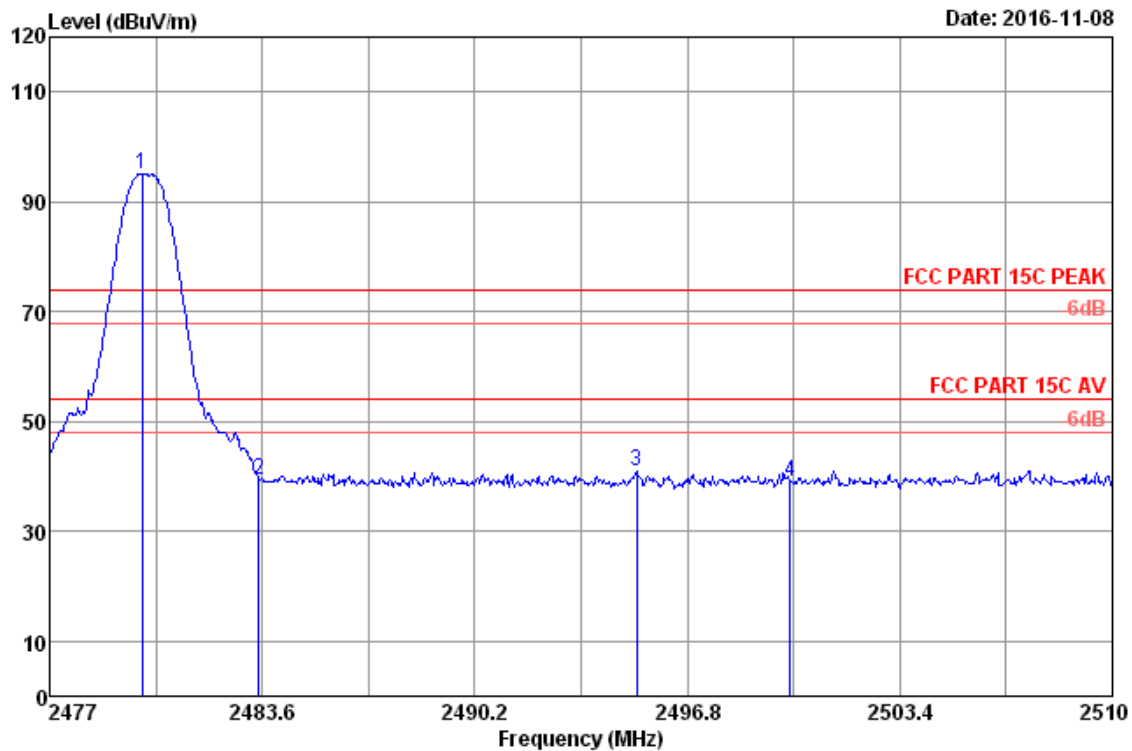
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 8
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2386.29 | 28.12 | 8.32 | 41.29 | 36.39 | 41.34 | 74.00 | 32.66 | Peak |
| 2 | 2390.00 | 28.12 | 8.33 | 41.20 | 36.39 | 41.26 | 74.00 | 32.74 | Peak |
| 3 | 2400.00 | 28.14 | 8.34 | 46.12 | 36.39 | 46.21 | 74.00 | 27.79 | Peak |
| 4 | 2402.15 | 28.14 | 8.34 | 91.53 | 36.39 | 91.62 | 74.00 | -17.62 | Peak |

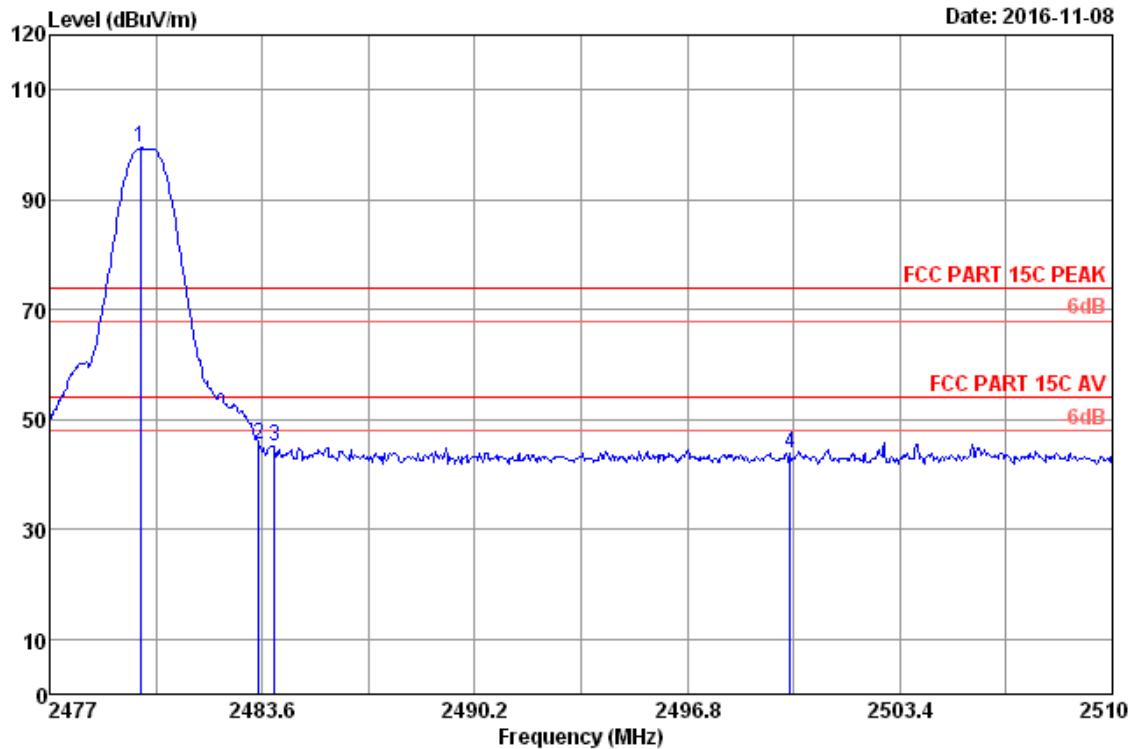
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 21
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.87 | 28.27 | 8.42 | 94.67 | 36.38 | 94.98 | 74.00 | -20.98 | Peak |
| 2 | 2483.50 | 28.27 | 8.42 | 38.90 | 36.38 | 39.21 | 74.00 | 34.79 | Peak |
| 3 | 2495.22 | 28.29 | 8.44 | 40.51 | 36.38 | 40.86 | 74.00 | 33.14 | Peak |
| 4 | 2500.00 | 28.30 | 8.44 | 38.59 | 36.38 | 38.95 | 74.00 | 35.05 | Peak |

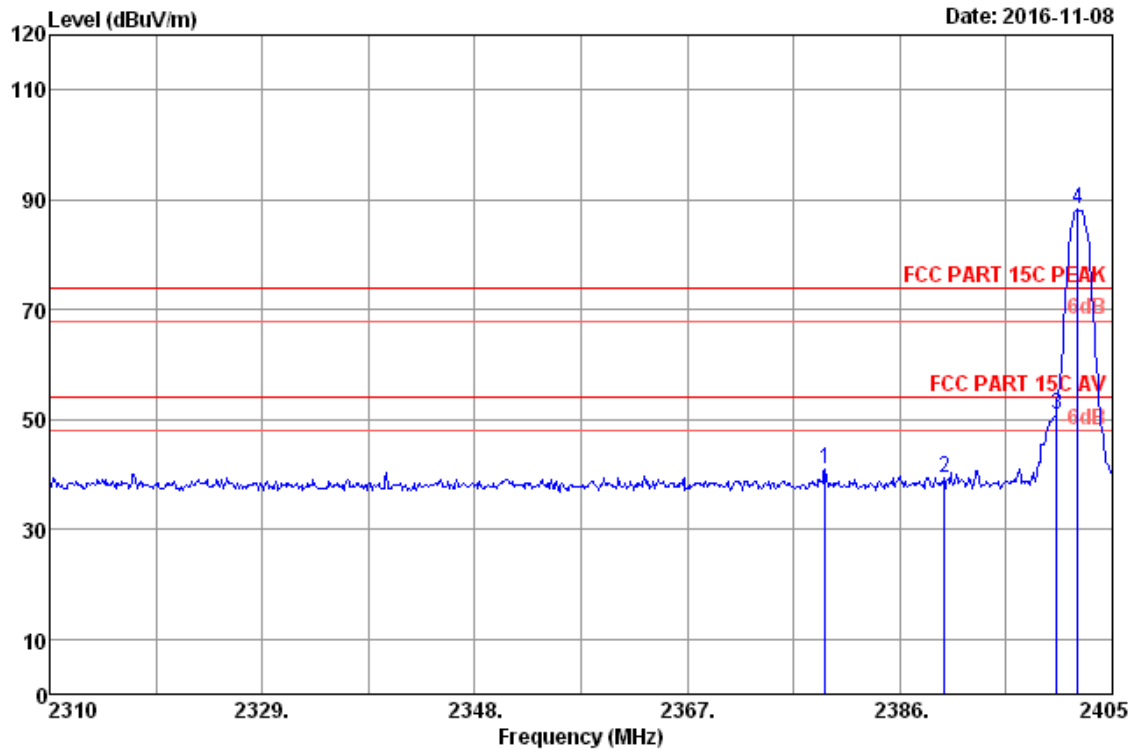
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 22
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : GFSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.81 | 28.27 | 8.42 | 99.07 | 36.38 | 99.38 | 74.00 | -25.38 | Peak |
| 2 | 2483.50 | 28.27 | 8.42 | 45.07 | 36.38 | 45.38 | 74.00 | 28.62 | Peak |
| 3 | 2484.00 | 28.27 | 8.42 | 44.92 | 36.38 | 45.23 | 74.00 | 28.77 | Peak |
| 4 | 2500.00 | 28.30 | 8.44 | 43.58 | 36.38 | 43.94 | 74.00 | 30.06 | Peak |

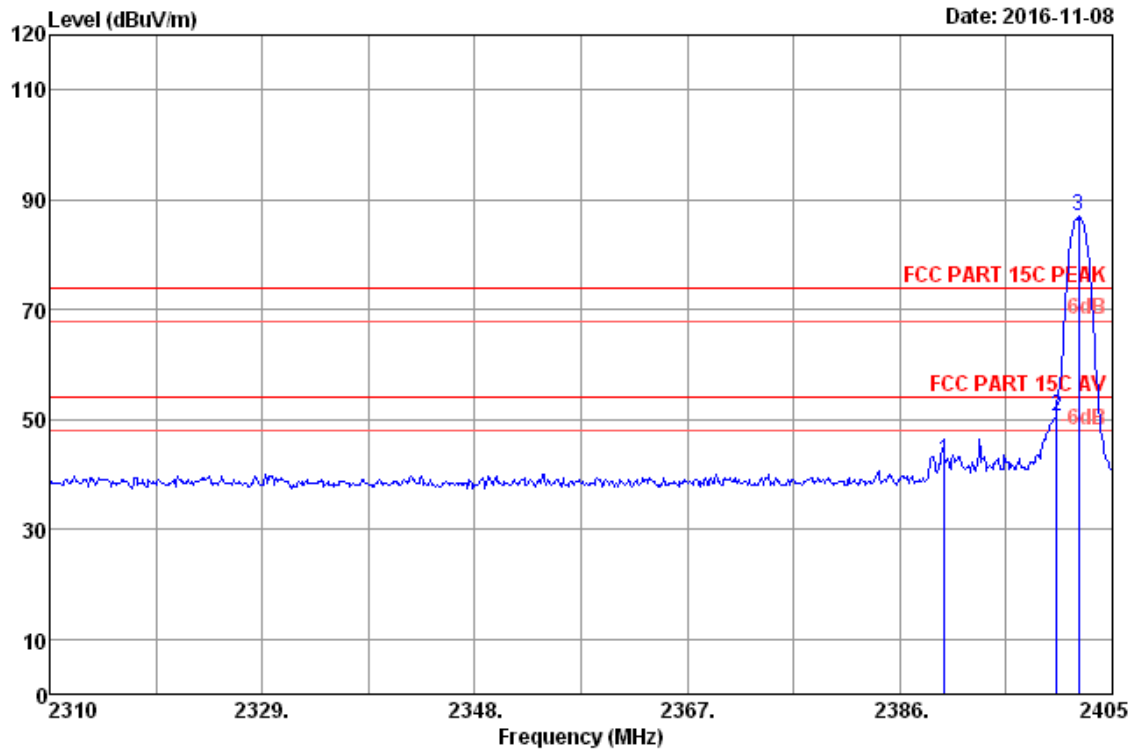
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 29
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2379.35 | 28.11 | 8.32 | 41.00 | 36.39 | 41.04 | 74.00 | 32.96 | Peak |
| 2 | 2390.00 | 28.12 | 8.33 | 39.37 | 36.39 | 39.43 | 74.00 | 34.57 | Peak |
| 3 | 2400.00 | 28.14 | 8.34 | 50.67 | 36.39 | 50.76 | 74.00 | 23.24 | Peak |
| 4 | 2401.87 | 28.14 | 8.34 | 88.08 | 36.39 | 88.17 | 74.00 | -14.17 | Peak |

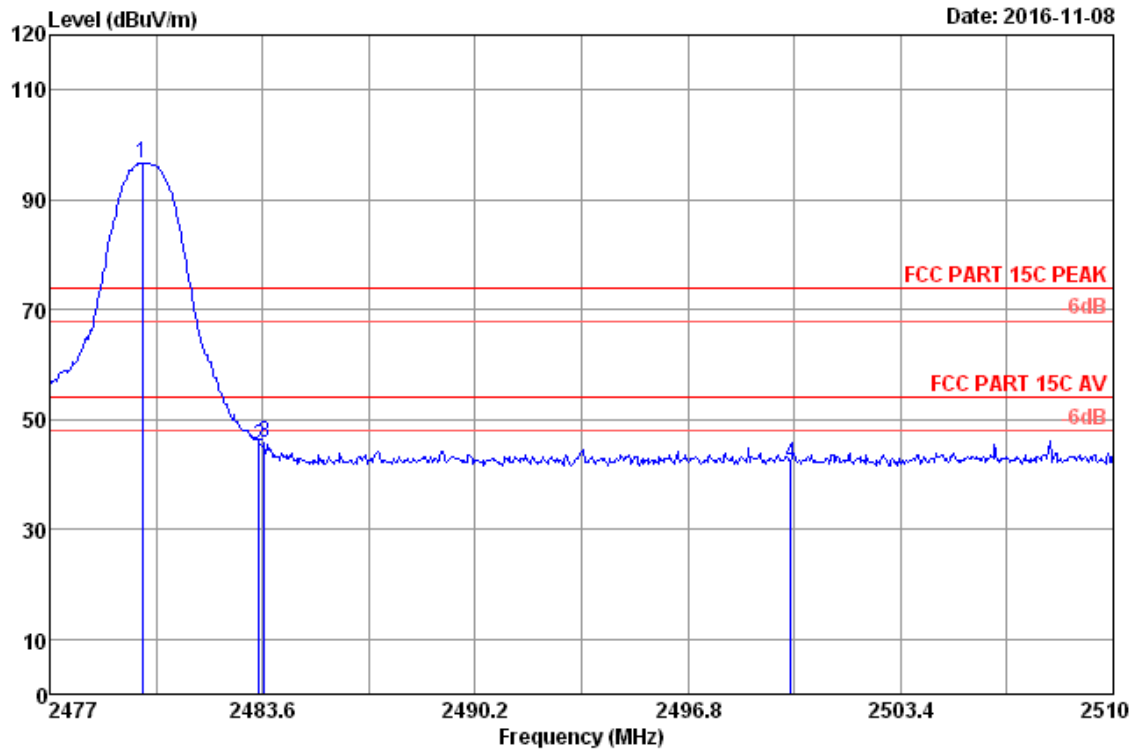
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 30
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2390.00 | 28.12 | 8.33 | 42.51 | 36.39 | 42.57 | 74.00 | 31.43 | Peak |
| 2 | 2400.00 | 28.14 | 8.34 | 50.39 | 36.39 | 50.48 | 74.00 | 23.52 | Peak |
| 3 | 2401.96 | 28.14 | 8.34 | 86.83 | 36.39 | 86.92 | 74.00 | -12.92 | Peak |

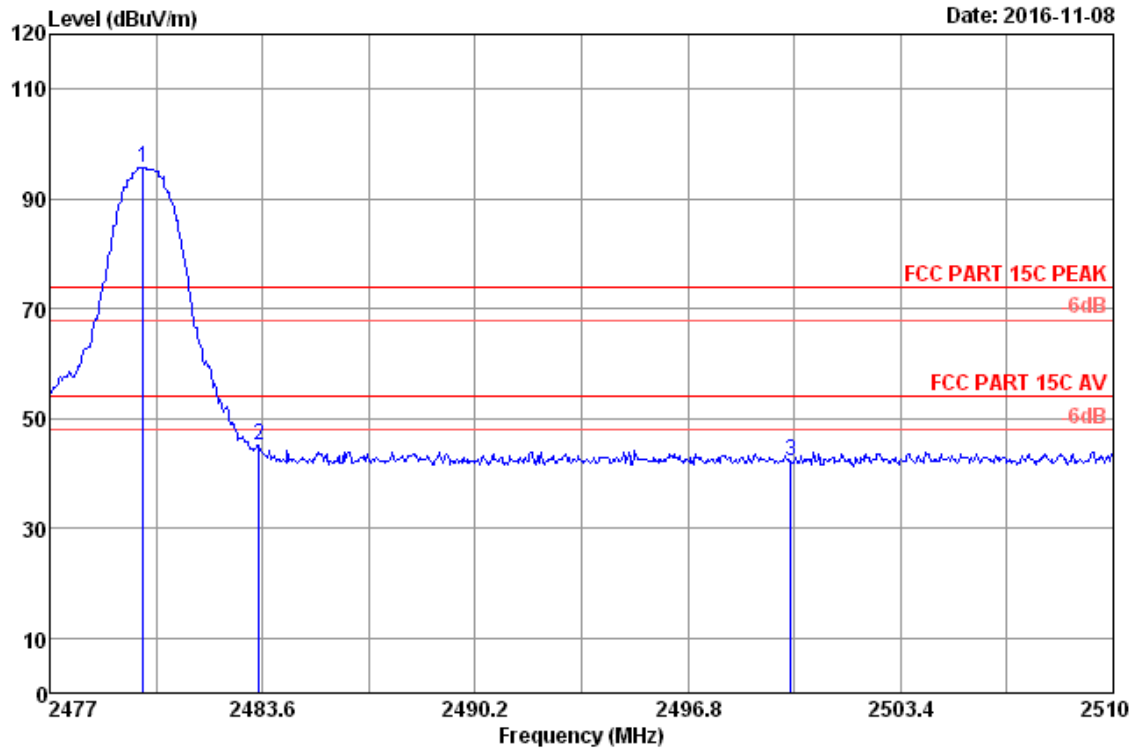
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 43
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.87 | 28.27 | 8.42 | 96.45 | 36.38 | 96.76 | 74.00 | -22.76 | Peak |
| 2 | 2483.50 | 28.27 | 8.42 | 44.76 | 36.38 | 45.07 | 74.00 | 28.93 | Peak |
| 3 | 2483.67 | 28.27 | 8.42 | 45.35 | 36.38 | 45.66 | 74.00 | 28.34 | Peak |
| 4 | 2500.00 | 28.30 | 8.44 | 41.67 | 36.38 | 42.03 | 74.00 | 31.97 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 - Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 44
 Dis. / Ant. : 3m 2016 MCTD1209 3007 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK Pre : 104.2kPa
 Env. / Ins. : 23.4°C/52.9% Engineer : zack_zhu
 EUT : DELL Wireless 360 Speaker System
 Power rating : DC 12V From Adapter Input AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz Tx Mode
 AE715

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | AMP factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-----------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2479.90 | 28.27 | 8.42 | 95.28 | 36.38 | 95.59 | 74.00 | -21.59 | Peak |
| 2 | 2483.50 | 28.27 | 8.42 | 44.83 | 36.38 | 45.14 | 74.00 | 28.86 | Peak |
| 3 | 2500.00 | 28.30 | 8.44 | 41.81 | 36.38 | 42.17 | 74.00 | 31.83 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

12. ANTENNA REQUIREMENT

12.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2. Antenna Connected Construction

The antennas used for this product are PCB antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 0dBi

13.DEVIATION TO TEST SPECIFICATIONS

[NONE]