

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART B & C REQUIREMENT**

OF

Wireless Optical Mouse

MODEL No.: CCMFIANW

BRAND NAME: N/A

FCC ID: WUACCMFIANW

REPORT NO: ED09120176-1

ISSUE DATE: January 14, 2010

Prepared for
PAWAS Trading GmbH
Nordstrasse 223, CH-8037 Zurich, Switzerland

Prepared by
DONGGUAN EMTEK CO., LTD
No.281, Guantai Road, Nancheng District,
Dongguan, Guangdong, China
TEL: 86-769-22807078
FAX: 86-769-22807079

VERIFICATION OF COMPLIANCE

| | |
|----------------------|--------------------------------------------------------------------|
| Applicant: | PAWAS Trading Gmbh Nordstrasse 223, CH-8037 Zurich, Switzerland |
| Product Description: | Wireless Optical Mouse |
| Brand Name: | N/A |
| Model Number: | CCMFIANW |
| File Number: | ED09120176-1 |
| Date of Test: | December 21, 2009 to January 14, 2010 |

We hereby certify that:

The above equipment was tested by DONGGUAN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.249.

The test results of this report relate only to the tested sample identified in this report.

Approved By



Nicol Lee / Q.A. Manager
DONGGUAN EMTEK CO., LTD.

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1. General Information

1.1 Product Description

The PAWAS Trading Gmbh Model: CCMFIANW (referred to as the EUT in this report) The EUT is an short range, lower power, Wireless Optical Mouse designed as an " Input Device. It is designed by way of utilizing the GFSK modulation achieves the system operating.

A major technical descriptions of EUT is described as following:

- A) Operation Frequency: 2405-2476MHz
- B) Modulation: GFSK
- C) Number of Channel: 32 channels hopping with 2 group form 2.405GHz~2.476GHz
- D) Antenna Designation: Integral
- E) Power Supply: DC 2.4V

Channel frequency:

| Frequency Group1 | | Frequency Group2 | | Unit |
|------------------|------|------------------|------|-------|
| 2407 | 2442 | 2405 | 2443 | [MHz] |
| 2408 | 2447 | 2406 | 2444 | |
| 2412 | 2451 | 2409 | 2446 | |
| 2414 | 2452 | 2410 | 2448 | |
| 2417 | 2457 | 2411 | 2449 | |
| 2420 | 2458 | 2413 | 2453 | |
| 2421 | 2459 | 2415 | 2455 | |
| 2422 | 2460 | 2416 | 2456 | |
| 2427 | 2461 | 2418 | 2462 | |
| 2428 | 2465 | 2419 | 2463 | |
| 2431 | 2468 | 2423 | 2464 | |
| 2435 | 2469 | 2425 | 2466 | |
| 2436 | 2472 | 2429 | 2467 | |
| 2437 | 2473 | 2430 | 2470 | |
| 2438 | 2475 | 2432 | 2471 | |
| 2439 | 2476 | 2434 | 2474 | |

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: WUACCMFIANW filing to comply with Section 15.249 of the FCC Part 15, Subpart B and Subpart C Rules, The composite system (receiver) is compliance with Subpart B is authorized under a DoC procedure.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab.

: Accredited by CNAS, 2005.11.02
The certificate is valid until 2010.11
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2006(identical to ISO/IEC17025:2005)
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Shenzhen, 2009,9
The certificate is valid until 2011,3
The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, Nov. 05, 2008
The Certificate Registration Number is 247565.

Accredited by Industry Canada, May 24, 2008
The Certificate Registration Number is 46405-4480

Name of Firm

: DONGGUAN EMTEK CO., LTD

Site Location

: No.281, Guantai Road, Nancheng District,
Dongguan, Guangdong, China

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the **frequency range between 0.15 MHz and 30MHz** using **CISPR Quasi-Peak and average detector mode**.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 Limitation

(1) Conducted Emission

| Frequency(MHz) | Quasi-peak | Average |
|----------------|------------|---------|
| 0.15-0.5 | 66-56 | 56-46 |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

(2) Radiated Emissions FCC Rule: 15.249(a)

FCC Part 15, Subpart C Section 15.249. The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Frequency(MHz) | Filed Strength of Fundamental(at 3m) | | Filed Strength of Harmonics(at 3m) | |
|----------------|--------------------------------------|---------|------------------------------------|---------|
| | PEAK | AVERAGE | PEAK | AVERAGE |
| 902-928 | 114 | 94 | 74.0 | 54.0 |
| 2400-2483.5 | 114 | 94 | 74.0 | 54.0 |
| 5725-5875 | 114 | 94 | 74.0 | 54.0 |
| 24000-24250 | 128 | 108 | 88.0 | 68.0 |

Radiated Emissions**FCC Rule: 15.249(d)(e)**

FCC Part 15, Subpart C Section 15.209 limit of radiated emission for frequency below 1000GHz. The emissions from an intentional radiator shall not exceed the field strength level specified in the following table:

| Frequency (MHz) | Field strength $\mu\text{V/m}$ | Distance(m) | Field strength at 3m dB $\mu\text{V/m}$ |
|-----------------|--------------------------------|-------------|-----------------------------------------|
| 30-88 | 100 | 3 | 40 |
| 88-216 | 150 | 3 | 43.5 |
| 216-960 | 200 | 3 | 46 |
| Above 960 | 500 | 3 | 54 |

Remark: 1. Emission level in dB $\mu\text{V/m}$ =20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

FCC Part 15, Section 15.35(b) limit of radiated emission for frequency above 1000MHz

| Frequency(MHz) | Class A(dB $\mu\text{V/m}$)(at 3m) | | Class B(dB $\mu\text{V/m}$)(at 3m) | |
|----------------|-------------------------------------|---------|-------------------------------------|---------|
| | PEAK | AVERAGE | PEAK | AVERAGE |
| Above 1000 | 80.0 | 60.0 | 74.0 | 54.0 |

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Table 2-1 Equipment Used in Tested System

| Item | Equipment | Mfr/Brand | Model/Type No. | FCC ID | Series No. | Note |
|------|------------------------|-----------|----------------|-----------------|------------|-------------------|
| 1. | Wireless Optical Mouse | N/A | CCMFIANW | WUACCMFIA NW | N/A | <i>EUT</i> |

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment.

3. Summary Of Test Results

| FCC Rules | Description Of Test | Result |
|-------------------------------------|---------------------|-----------|
| §15.207 | Conducted Emission | N/A |
| §15.249 (a),(b),(d),(e),§ 15.209 | Radiated Emission | Compliant |
| §15.249 | Band Edge | Compliant |
| §15.203 | Antenna Requirement | Compliant |

4. Description of test modes

The basic operation modes are:

1. Low Channel: TX 2405MHz
2. Middle Channel: TX 2442MHz
3. High Channel: TX 2476MHz

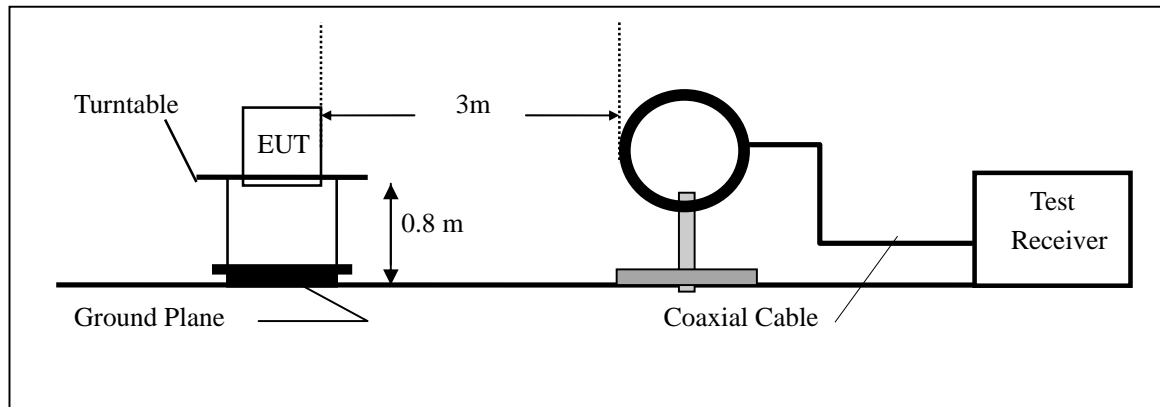
5. Radiated Emission Test

5.1 Measurement Procedure

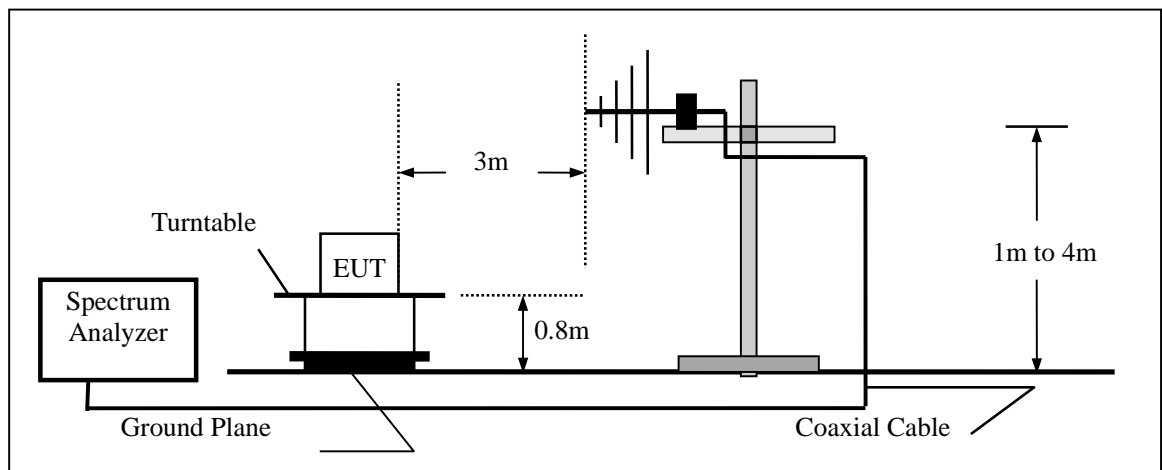
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

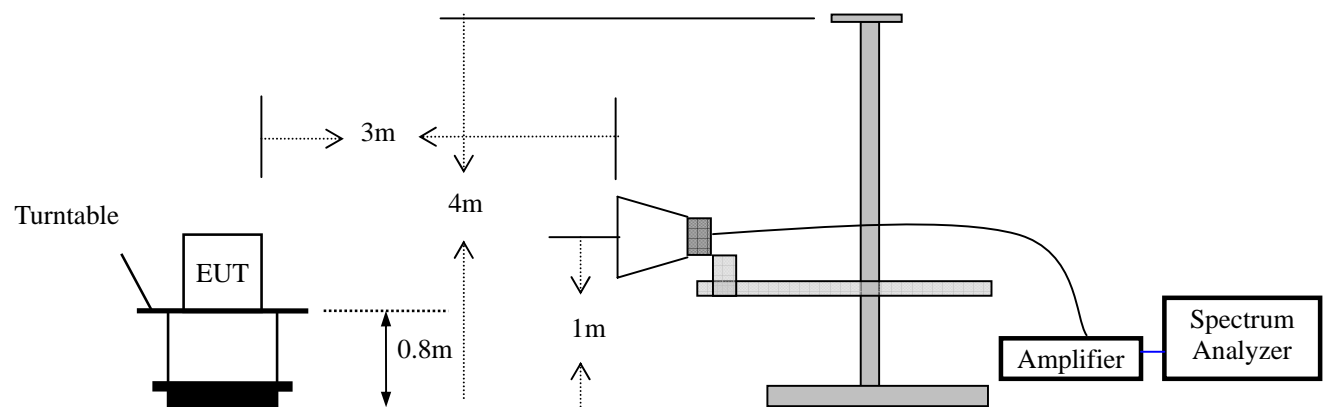
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



5.3 Measurement Equipment Used:

| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
|-------------------|-----------------|--------------|---------------|------------|------------|
| Spectrum Analyzer | Rohde & Schwarz | FSP7 | 839511/010 | 05/29/2009 | 05/29/2010 |
| Spectrum Analyzer | HP | E4407B | 839840481 | 05/29/2009 | 05/29/2010 |
| EMI Test Receiver | Rohde & Schwarz | ESCS30 | 828985/018 | 05/29/2009 | 05/29/2010 |
| Pre-Amplifier | HP | 8447D | 2944A07999 | 05/29/2009 | 05/29/2010 |
| Bilog Antenna | Schwarzbeck | VULB9163 | 142 | 05/29/2009 | 05/29/2010 |
| Loop Antenna | ARA | PLA-1030/B | 1029 | 05/29/2009 | 05/29/2010 |
| Horn Antenna | Electro-Metrics | EM-6961 | 103314 | 05/29/2009 | 05/29/2010 |
| Horn Antenna | Schwarzbeck | BBHA 9120 | D143 | 05/29/2009 | 05/29/2010 |

5.4 Out of Band Radiated Measurement Result

Operation Mode: TX Mode Test Date : December 27, 2009
 Frequency Range: 30~1000MHz Temperature : 23 °C
 Test Result: PASS Humidity : 59 %
 Measured Distance: 3m Test By: Andy

| Freq. (MHz) | Ant.Pol. H/V | Emission Level (dBuV) | Limit 3m (dBuV/m) | Margin (dB) | Note |
|-------------|--------------|-----------------------|-------------------|-------------|------|
| 54.560 | V | 26.01 | 40.00 | -13.99 | QP |
| 66.110 | V | 28.15 | 40.00 | -11.85 | QP |
| 524.51 | V | 35.21 | 46.00 | -10.79 | QP |
| 711.61 | V | 33.24 | 46.00 | -12.76 | QP |
| 49.580 | H | 26.04 | 40.00 | -13.96 | QP |
| 98.140 | H | 27.91 | 43.50 | -15.59 | QP |
| 634.98 | H | 33.24 | 46.00 | -12.76 | QP |
| 721.69 | H | 34.81 | 46.00 | -11.19 | QP |

Note: (1) All Readings are QP Value.

(2) Emission Level= Reading Level+Probe Factor +Cable Loss

(3) The average measurement was not performed when the peak measured data under the limit of average detection.

No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.209.

| | | | |
|--------------------|--------------|---------------|-------------------|
| Operation Mode: | TX (2405MHz) | Test Date : | December 27, 2009 |
| Frequency Range: | 1-25GHz | Temperature : | 28 °C |
| Test Result: | PASS | Humidity : | 65 % |
| Measured Distance: | 3m | Test By: | Andy |

| Freq. (GHz) | Ant.Pol. H/V | Emission Level(dBuV) | | Limit 3m(dBuV/m) | | Margin(dB) | |
|----------------|-----------------|----------------------|-------|------------------|----|------------|--------|
| | | PK | AV | PK | AV | PK | AV |
| 2.405(F) | V | 97.93 | 81.94 | 114 | 94 | -16.07 | -12.06 |
| 4.810 | V | 61.66 | 43.96 | 74 | 54 | -12.34 | -10.04 |
| 7.215 | V | 64.24 | 43.68 | 74 | 54 | -9.76 | -10.32 |
| 9.620 | V | 58.74 | 44.26 | 74 | 54 | -15.26 | -9.74 |
| 12.025 | V | 58.25 | 42.32 | 74 | 54 | -15.57 | -11.68 |
| 2.405(F) | H | 99.97 | 85.46 | 114 | 94 | -14.03 | -8.54 |
| 4.810 | H | 61.54 | 44.11 | 74 | 54 | -12.46 | -9.89 |
| 7.215 | H | 59.81 | 40.17 | 74 | 54 | -14.19 | -13.83 |
| 9.620 | H | 64.14 | 42.16 | 74 | 54 | -9.86 | -11.84 |
| 12.025 | H | 61.82 | 41.18 | 74 | 54 | -12.18 | -12.82 |

No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.249.

Note:

- (1) All Readings are Peak Value and AV.
- (2) Emission Level= Reading Level+Probe Factor +Cable Loss
- (3) The average measurement was not performed when the peak measured data under the limit of average detection.

| | | | |
|--------------------|-------------|---------------|-------------------|
| Operation Mode: | TX(2442MHz) | Test Date : | December 27, 2009 |
| Frequency Range: | 1-25GHz | Temperature : | 28 °C |
| Test Result: | PASS | Humidity : | 65 % |
| Measured Distance: | 3m | Test By: | Andy |

| Freq. (GHz) | Ant.Pol. H/V | Emission Level(dBuV) | | Limit 3m(dBuV/m) | | Margin(dB) | |
|----------------|-----------------|----------------------|-------|------------------|----|------------|--------|
| | | PK | AV | PK | AV | PK | AV |
| 2.442(F) | V | 95.95 | 84.25 | 114 | 94 | -18.05 | -9.75 |
| 4.884 | V | 63.84 | 44.14 | 74 | 54 | -10.16 | -9.86 |
| 7.326 | V | 63.86 | 41.04 | 74 | 54 | -10.14 | -12.96 |
| 9.768 | V | 58.94 | 39.87 | 74 | 54 | -15.06 | -14.13 |
| 12.210 | V | 59.21 | 43.14 | 74 | 54 | -14.79 | -10.86 |
| 2.442(F) | H | 98.27 | 83.26 | 114 | 94 | -15.73 | -10.74 |
| 4.884 | H | 65.25 | 45.95 | 74 | 54 | -8.75 | -8.05 |
| 7.326 | H | 63.44 | 42.86 | 74 | 54 | -10.56 | -11.14 |
| 9.768 | H | 59.97 | 41.06 | 74 | 54 | -14.03 | -12.94 |
| 12.210 | H | 61.14 | 39.84 | 74 | 54 | -12.86 | -14.16 |

No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.249.

Note: (1) All Readings are Peak Value and AV.
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss
 (3) The average measurement was not performed when the peak measured data under the limit of average detection.

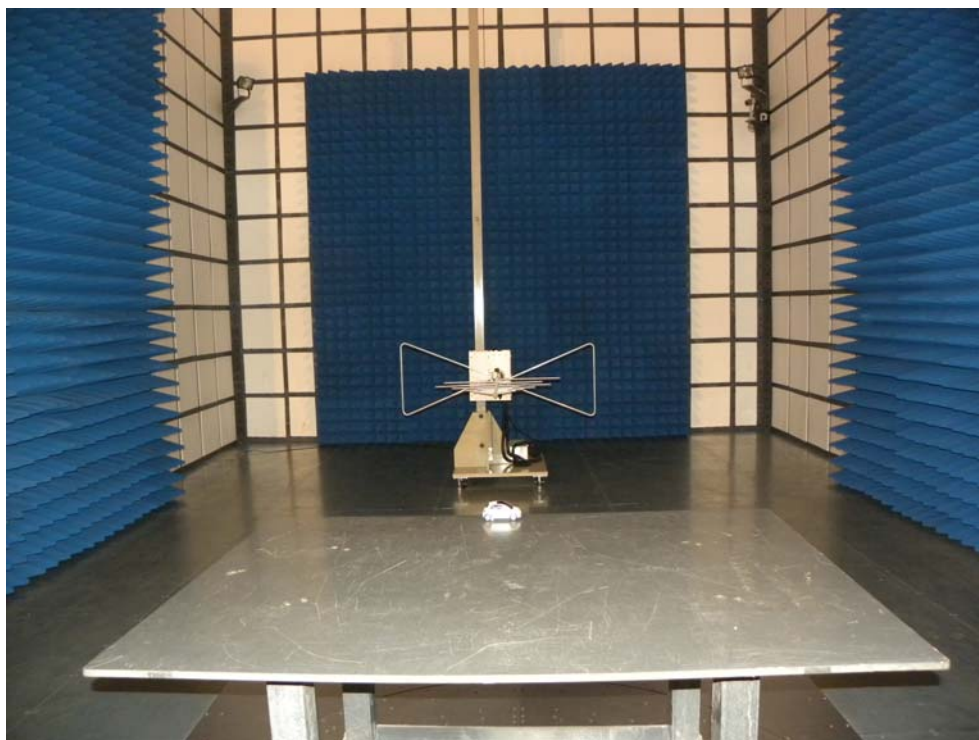
| | | | |
|--------------------|-------------|---------------|-------------------|
| Operation Mode: | TX(2476MHz) | Test Date : | December 27, 2009 |
| Frequency Range: | 1-25GHz | Temperature : | 28 °C |
| Test Result: | PASS | Humidity : | 65 % |
| Measured Distance: | 3m | Test By: | Andy |

| Freq. (GHz) | Ant.Pol. H/V | Emission Level(dBuV) | | Limit 3m(dBuV/m) | | Margin(dB) | |
|----------------|-----------------|----------------------|-------|------------------|----|------------|--------|
| | | PK | AV | PK | AV | PK | AV |
| 2.476(F) | V | 98.92 | 83.15 | 114 | 94 | -15.08 | -10.85 |
| 4.952 | V | 62.17 | 43.27 | 74 | 54 | -11.83 | -10.73 |
| 7.428 | V | 61.96 | 42.95 | 74 | 54 | -12.04 | -11.05 |
| 9.904 | V | 58.14 | 41.13 | 74 | 54 | -15.86 | -12.87 |
| 12.380 | V | 59.82 | 40.83 | 74 | 54 | -14.18 | -13.17 |
| 2.476(F) | H | 95.74 | 81.32 | 114 | 94 | -18.26 | -12.68 |
| 4.952 | H | 63.67 | 41.94 | 74 | 54 | -10.33 | -12.06 |
| 7.428 | H | 57.92 | 41.32 | 74 | 54 | -16.08 | -12.68 |
| 9.904 | H | 61.15 | 41.95 | 74 | 54 | -12.85 | -12.05 |
| 12.380 | H | 60.63 | 41.11 | 74 | 54 | -13.37 | -12.89 |

No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.249.

Note: (1) All Readings are Peak Value and AV.
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss
 (3) The average measurement was not performed when the peak measured data under the limit of average detection.

5.5 Radiated Measurement Photos:



6. Band Edge

6.1 Test limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

6.2 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Set SPA Center Frequency=Fundamental frequency, RBW=100KHz, VBW=100KHz.
4. Set SPA Max hold. Mark peak.

6.3 Test SET-UP(Block Diagram of Configuration)

Same as 5.2 Radiated Emission Measurement.

6.4 Measurement Equipment Used:

Same as 5.3 Radiated Emission Measurement.

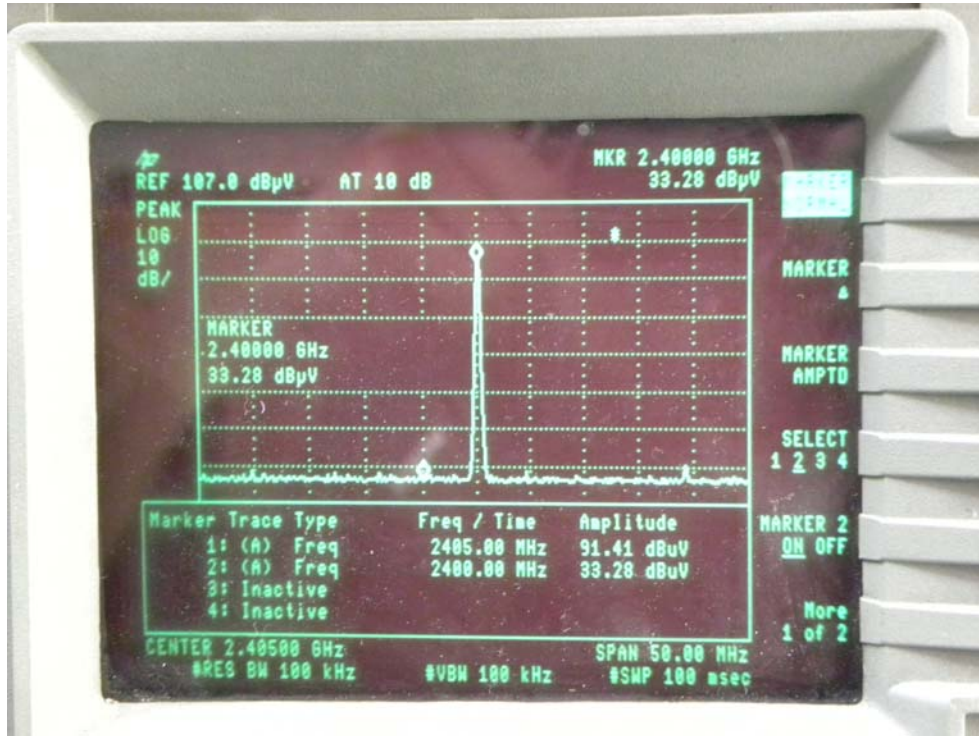
6.5 Measurement Results:

PASS.

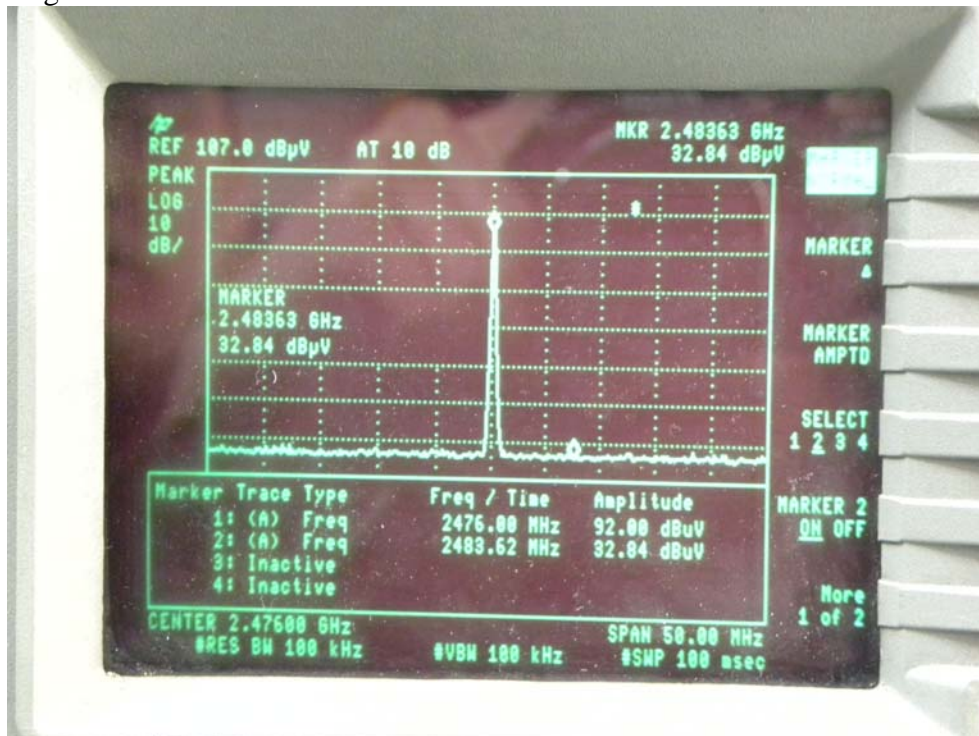
The test plots as following:

Test Data:

Low Channel



High Channel



7. Antenna Application

7.1 Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.240.

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by responsible party shall be used with the device.

The EUT's antenna used a chip antenna and integrated on PCB , this is permanently attached antenna and meets the requirements of this section.