

TEST REPORT

FCC ID: TUVDS-2523

Product: 2.4G Wireless mouse

Model No.: DS-2523

Additional Model: DS-2512, DS-2553, DS-2558

Trade Mark: N/A

Report No.: TCT150515E004

Issued Date: May 25, 2015

Issued for:

**Eastern Times Technology Co., Ltd
Building D, Nan An Industry Area, Youganpu Village, Fenggang Town,
Dongguan City, Guangdong, China**

Issued By:

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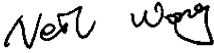
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1. Test Certification


| | |
|------------------------------|---|
| Product: | 2.4G Wireless mouse |
| Model No.: | DS-2523 |
| Additional Model: | DS-2512, DS-2553, DS-2558 |
| Applicant: | Eastern Times Technology Co., Ltd |
| Address: | Building D, Nan An Industry Area, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China |
| Manufacturer: | Eastern Times Technology Co., Ltd |
| Address: | Building D, Nan An Industry Area, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China. |
| Date of Test: | May 15- May 22, 2015 |
| Applicable Standards: | FCC CFR Title 47 Part 15 Subpart C Section 15.249 |

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: 


Neil Wong

Date: May 25, 2015

Reviewed By: 

Davis Zhou

Date: May 27, 2015

Approved By: 

Tomsin

Date: May 27, 2015

2. Test Result Summary

| Requirement | CFR 47 Section | Result |
|----------------------------------|--------------------------|--------|
| Antenna Requirement | §15.203 | N/A |
| AC Power Line Conducted Emission | §15.207 | PASS |
| Field Strength of Fundamental | §15.249 (a) | PASS |
| Spurious Emissions | §15.249 (a) (d)/ §15.209 | PASS |
| Band Edge | §15.249 (d)/ §15.205 | PASS |
| 20dB Occupied Bandwidth | §15.215 (c) | PASS |

Note:

1. Pass: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

3. EUT Description

| | |
|-------------------------------|--|
| Product Name: | 2.4G Wireless mouse |
| Model : | DS-2523 |
| Additional Model: | DS-2512, DS-2553, DS-2558 |
| Trade Mark: | N/A |
| Operation Frequency: | 2408-2474MHz |
| Channel Separation: | 2MHz |
| Number of Channel: | 34 |
| Modulation Technology: | FSK |
| Antenna Type: | Internal Antenna |
| Antenna Gain: | -2dBi |
| Power Supply: | Rechargeable Li-ion Battery DC1.5V |
| Remark: | All models above are identical in interior structure, electrical circuits and components, and just differ in look and model for the marketing requirement. |

Operation Frequency Each of Channel

| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
| 0 | 2408MHz | 10 | 2428 MHz | 20 | 2448 MHz | 30 | 2468 MHz |
| 1 | 2410 MHz | 11 | 2430 MHz | 21 | 2450 MHz | 31 | 2470 MHz |
| 2 | 2412 MHz | 12 | 2432 MHz | 22 | 2452 MHz | 32 | 2472 MHz |
| 3 | 2414 MHz | 13 | 2434 MHz | 23 | 2454 MHz | 33 | 2474 MHz |
| 4 | 2416 MHz | 14 | 2436 MHz | 24 | 2456 MHz | | |
| 5 | 2418 MHz | 15 | 2438 MHz | 25 | 2458 MHz | | |
| 6 | 2420 MHz | 16 | 2440 MHz | 26 | 2460 MHz | | |
| 7 | 2422 MHz | 17 | 2442 MHz | 27 | 2462 MHz | | |
| 8 | 2424 MHz | 18 | 2444 MHz | 28 | 2464 MHz | | |
| 9 | 2426 MHz | 19 | 2446 MHz | 29 | 2466 MHz | | |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Channel | Frequency |
|---------------------|-----------|
| The lowest channel | 2408MHz |
| The middle channel | 2440MHz |
| The Highest channel | 2474MHz |

4. Genera Information

4.1. Test Environment and Mode

| Operating Environment: | |
|--|---|
| Temperature: | 25.0 °C |
| Humidity: | 54 % RH |
| Atmospheric Pressure: | 1010 mbar |
| Test Mode: | |
| Engineering mode: | Keep the EUT in continuous transmitting by select channel and modulations |
| <p>The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.</p> | |

4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Equipment | Model No. | Serial No. | FCC ID | Trade Name |
|-----------|-----------|------------|--------|------------|
| / | / | / | / | / |

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 572331

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- CNAS - Registration No.: CNAS L6165

Shenzhen TCT Testing Technology Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6165.

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

Tel: 86-755-36638142

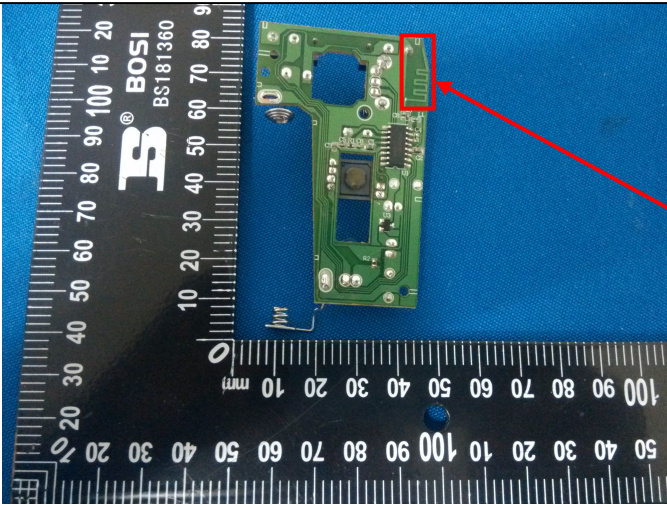
5.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

| No. | Item | MU |
|-----|-------------------------------|-------------------------|
| 1 | Conducted Emission | $\pm 2.56\text{dB}$ |
| 2 | RF power, conducted | $\pm 0.12\text{dB}$ |
| 3 | Spurious emissions, conducted | $\pm 0.11\text{dB}$ |
| 4 | All emissions, radiated(<1G) | $\pm 3.92\text{dB}$ |
| 5 | All emissions, radiated(>1G) | $\pm 4.28\text{dB}$ |
| 6 | Temperature | $\pm 0.1^\circ\text{C}$ |
| 7 | Humidity | $\pm 1.0\%$ |

6. Test Results and Measurement Data

6.1. Antenna Requirement

| | |
|--|-------------------------------------|
| Standard requirement: | FCC Part15 C Section 15.203 /247(c) |
| <p>15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</p> | |
| E.U.T Antenna: | |
| <p>The Bluetooth antenna is an internal PCB antenna which permanently attached, and the best case gain of the antenna is -2dBi.</p> | |
|  | |

6.2. Conducted Emission

6.2.1. Test Specification

| | | | |
|--------------------------|--|--------------|-----------|
| Test Requirement: | FCC Part15 C Section 15.207 | | |
| Test Method: | ANSI C63.4:2009 | | |
| Frequency Range: | 150 kHz to 30 MHz | | |
| Receiver setup: | RBW=9 kHz, VBW=30 kHz, Sweep time=auto | | |
| Limits: | Frequency range (MHz) | Limit (dBuV) | |
| | | Quasi-peak | Average |
| | 0.15-0.5 | 66 to 56* | 56 to 46* |
| | 0.5-5 | 56 | 46 |
| | 5-30 | 60 | 50 |
| Test Setup: | <p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p> | | |
| Test Mode: | Transmitting mode with modulation | | |
| Test Procedure: | <ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement. | | |
| Test Result: | The EUT is supplied by 1.5V from AA battery, so Conducted Emission is not applicable. | | |

6.3. Radiated Emission Measurement

6.3.1. Test Specification

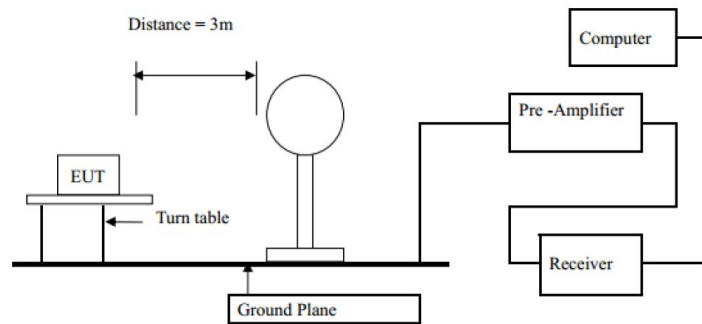
| | | | | | |
|---|---|--------------------|--------|------------------|------------------|
| Test Requirement: | FCC Part15 C Section 15.209 | | | | |
| Test Method: | ANSI C63.4: 2009 and ANSI C63.10:2009 | | | | |
| Frequency Range: | 9 kHz to 25 GHz | | | | |
| Measurement Distance: | 3 m | | | | |
| Antenna Polarization: | Horizontal & Vertical | | | | |
| Receiver Setup: | Frequency | Detector | RBW | VBW | Remark |
| | 9kHz- 150kHz | Quasi-peak | 200Hz | 1kHz | Quasi-peak Value |
| | 150kHz-30MHz | Quasi-peak | 9kHz | 30kHz | Quasi-peak Value |
| | 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak Value |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak Value |
| Peak | | 1MHz | 10Hz | Average Value | |
| Limit(Field strength of the fundamental signal): | Frequency | Limit (dBuV/m @3m) | | Remark | |
| | 2400MHz-2483.5MHz | 94.00 | | Average Value | |
| | | 114.00 | | Peak Value | |
| Limit(Spurious Emissions): | Frequency | Limit (dBuV/m @3m) | | Remark | |
| | 0.009-0.490 | 2400/F(KHz) | | Quasi-peak Value | |
| | 0.490-1.705 | 24000/F(KHz) | | Quasi-peak Value | |
| | 1.705-30 | 30 | | Quasi-peak Value | |
| | 30MHz-88MHz | 40.0 | | Quasi-peak Value | |
| | 88MHz-216MHz | 43.5 | | Quasi-peak Value | |
| | 216MHz-960MHz | 46.0 | | Quasi-peak Value | |
| | 960MHz-1GHz | 54.0 | | Quasi-peak Value | |
| | Above 1GHz | 54.0 | | Average Value | |
| 74.0 | | Peak Value | | | |
| Limit (band edge) : | 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. | | | | |
| Test Procedure: | <ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber in below 1GHz, 80cm above the ground in above 1GHz. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make | | | | |



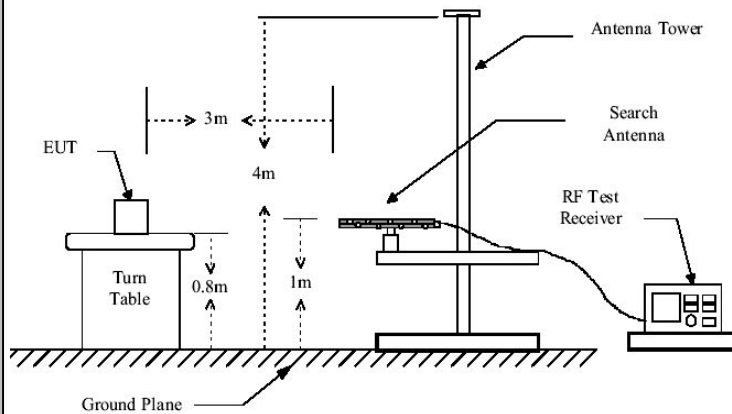
- the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test setup:

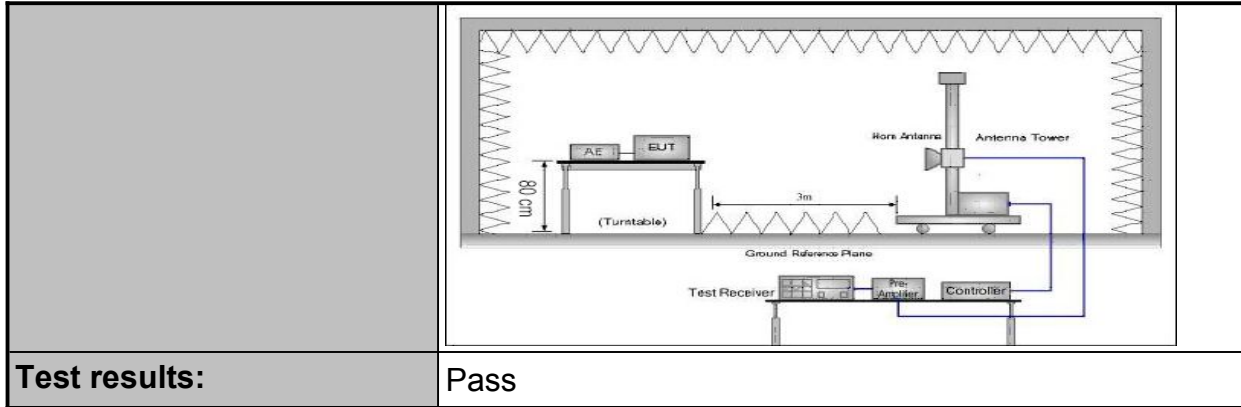
For radiated emissions below 30MHz



30MHz to 1GHz



Above 1GHz



Test results: Pass

6.3.2. Test Instruments

| | | | | |
|--------------------|------------------------------------|------------|------------|---------------|
| ESPI Test Receiver | ROHDE&SCHWARZ | ESVD | 100008 | Sep.16 , 2015 |
| Spectrum Analyzer | ROHDE&SCHWARZ | FSEM | 848597/001 | Sep.16 , 2015 |
| Spectrum Analyzer | Agilent | N9020A | MY49100060 | Oct. 21, 2015 |
| Pre-amplifier | EM Electronics Corporation CO.,LTD | EM30265 | 07032613 | Sep.16 , 2015 |
| Pre-amplifier | HP | 8447D | 2727A05017 | Sep.16 , 2015 |
| Loop antenna | ZHINAN | ZN30900A | 12024 | Dec.14 , 2015 |
| Broadband Antenna | Schwarzbeck | VULB9163 | 340 | Sep.16 , 2015 |
| Horn Antenna | Schwarzbeck | BBHA 9120D | 631 | Sep.16 , 2015 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | 373 | Sep.16 , 2015 |
| Coax cable | TCT | RE-low-01 | N/A | Sep.15 , 2015 |
| Coax cable | TCT | RE-high-02 | N/A | Sep.15 , 2015 |
| Coax cable | TCT | RE-low-03 | N/A | Sep.15 , 2015 |
| Coax cable | TCT | RE-high-04 | N/A | Sep.15 , 2015 |
| Antenna Mast | CCS | CC-A-4M | N/A | N/A |
| EMI Test Software | Shurple Technology | EZ-EMC | N/A | N/A |

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.3.3. Test Data

Field Strength of Fundamental

| Frequency (MHz) | Emission PK/AV (dBuV/m) | Horizontal /Vertical | Limits PK/AV (dBuV/m) | Margin (dB) |
|-----------------|-------------------------|----------------------|-----------------------|-------------|
| 2408 | 68.52(PK) | H | 114/94 | 45.48 |
| 2440 | 67.46(PK) | V | 114/94 | 46.54 |
| 2474 | 70.21(PK) | V | 114/94 | 43.79 |
| | | | | |
| | | | | |
| | | | | |

Spurious Emissions

Frequency Range (9 kHz-30MHz)

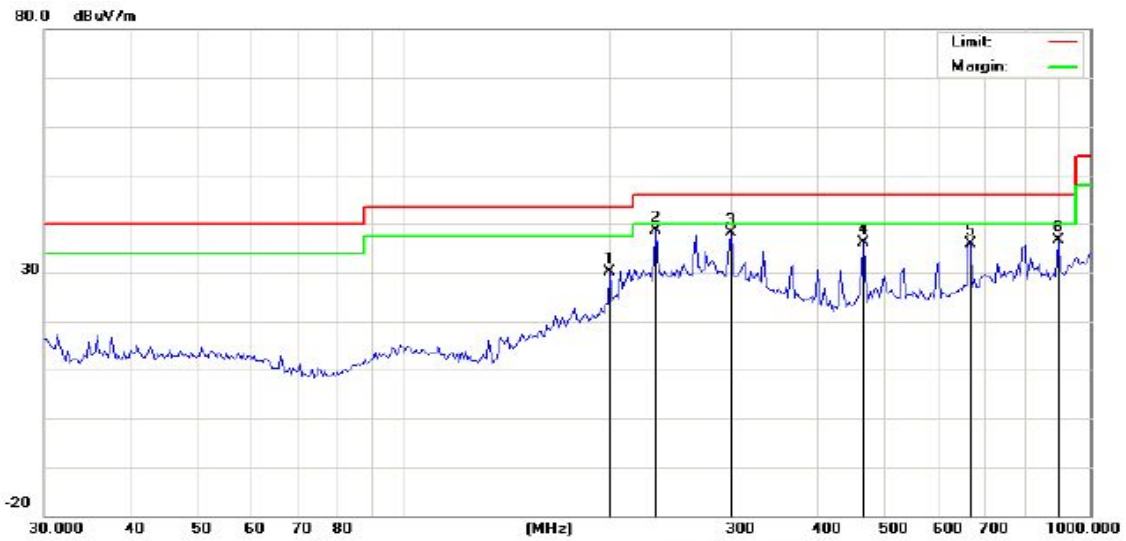
| Frequency (MHz) | Level@3m (dBμV/m) | Limit@3m (dBμV/m) |
|-----------------|-------------------|-------------------|
| -- | -- | -- |
| -- | -- | -- |
| -- | -- | -- |
| -- | -- | -- |

Note: 1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

Frequency Range (30MHz-1GHz)

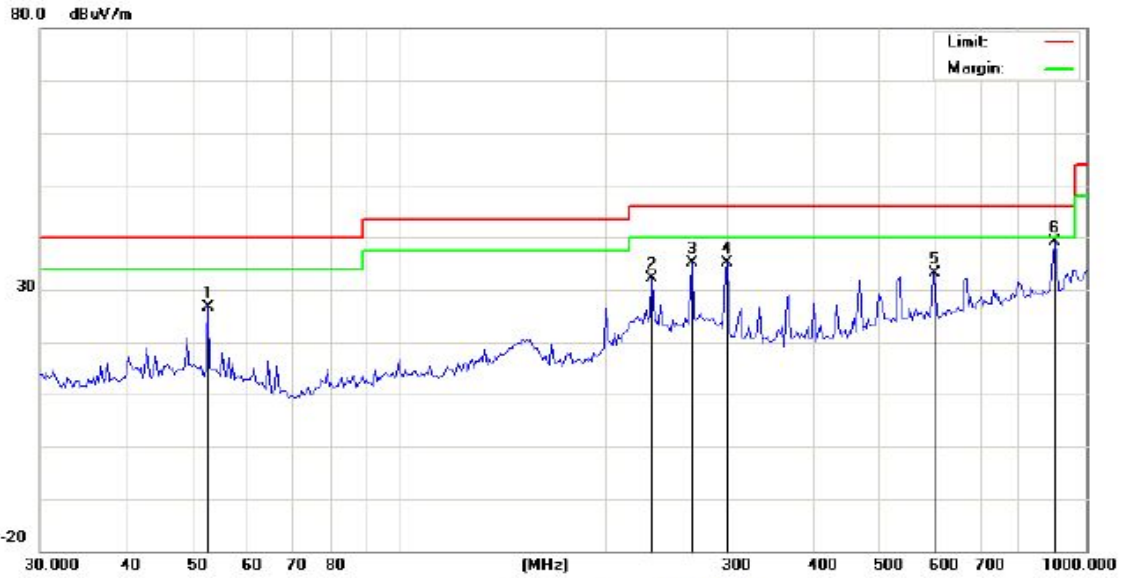
Horizontal:



Site: Polarization: *Horizontal* Temperature: 23
Limit: FCC Part 15B Class B RE_3 m Power: DC 5V Humidity: 54 %

| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measurement dBuV/m | Limit dBuV/m | Over dB | Detector | Antenna Height cm | Table Degree | Comment |
|---------|-----------|--------------------|-------------------|--------------------|--------------|---------|----------|-------------------|--------------|---------|
| 1 | 200.0432 | 41.87 | -11.67 | 30.20 | 43.50 | -13.30 | peak | | 0 | |
| 2 * | 233.4881 | 49.25 | -10.53 | 38.72 | 46.00 | -7.28 | peak | | 0 | |
| 3 | 300.6988 | 46.40 | -8.25 | 38.15 | 46.00 | -7.85 | peak | | 0 | |
| 4 | 468.1650 | 40.14 | -3.99 | 36.15 | 46.00 | -9.85 | peak | | 0 | |
| 5 | 669.9523 | 36.26 | -0.49 | 35.77 | 46.00 | -10.23 | peak | | 0 | |
| 6 | 899.9577 | 34.07 | 2.67 | 36.74 | 46.00 | -9.26 | peak | | 0 | |

Vertical:



Site: Polarization: *Vertical* Temperature: 23
 Limit: FCC Part 15B Class B RE_3 m Power: DC 5V Humidity: 54 %

| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measurement dBuV/m | Limit dBuV/m | Over dB | Detector | Antenna Height cm | Table Degree | Comment |
|---------|-----------|--------------------|-------------------|--------------------|--------------|---------|----------|-------------------|--------------|---------|
| 1 | 52.6345 | 38.96 | -12.25 | 26.71 | 40.00 | -13.29 | peak | | 0 | |
| 2 | 233.4881 | 42.60 | -10.53 | 32.07 | 46.00 | -13.93 | peak | | 0 | |
| 3 | 266.8395 | 44.63 | -9.38 | 35.25 | 46.00 | -10.75 | peak | | 0 | |
| 4 | 300.6988 | 43.31 | -8.25 | 35.06 | 46.00 | -10.94 | peak | | 0 | |
| 5 | 602.9287 | 34.93 | -1.87 | 33.06 | 46.00 | -12.94 | peak | | 0 | |
| 6 * | 899.9577 | 36.39 | 2.67 | 39.06 | 46.00 | -6.94 | peak | | 0 | |

Note: Measurements were conducted in all channels (high, middle, low), and the worst case (low channel) was submitted only.

Above 1GHz

| Low channel: 2408 MHz | | | | | | | | | |
|-----------------------|---------------|---------------------------|-------------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dB μ V) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 2387.50 | H | 70.05 | --- | -4.20 | 65.85 | --- | 74.00 | 54.00 | -8.15 |
| 2387.50 | H | --- | 49.91 | -4.20 | --- | 45.71 | 74.00 | 54.00 | -8.29 |
| 4816.00 | H | 48.29 | --- | -3.94 | 44.35 | --- | 74.00 | 54.00 | -29.65 |
| 7224.00 | H | 44.96 | --- | 0.52 | 45.48 | --- | 74.00 | 54.00 | -28.52 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2387.50 | V | 66.95 | --- | -4.20 | 62.75 | --- | 74.00 | 54.00 | -11.25 |
| 2387.50 | V | --- | 51.70 | -4.20 | --- | 47.50 | 74.00 | 54.00 | -6.50 |
| 4816.00 | V | 48.19 | --- | -3.94 | 44.25 | --- | 74.00 | 54.00 | -29.75 |
| 7224.00 | V | 43.96 | --- | 0.52 | 44.48 | --- | 74.00 | 54.00 | -29.52 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

| Middle channel: 2440MHz | | | | | | | | | |
|-------------------------|---------------|---------------------------|-------------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dB μ V) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 4880.00 | H | 47.33 | --- | -3.98 | 43.35 | --- | 74.00 | 54.00 | -30.65 |
| 7320.00 | H | 44.81 | --- | 0.57 | 45.38 | --- | 74.00 | 54.00 | -28.62 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4880.00 | V | 48.69 | --- | -3.98 | 44.71 | --- | 74.00 | 54.00 | -29.29 |
| 7320.00 | V | 48.16 | --- | 0.57 | 48.73 | --- | 74.00 | 54.00 | -25.27 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

| High channel: 2474 MHz | | | | | | | | | |
|------------------------|---------------|---------------------------|-------------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dB μ V) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 2486.58 | H | 66.42 | --- | -2.38 | 64.04 | --- | 74.00 | 54.00 | -9.96 |
| 2486.58 | H | --- | 48.78 | -2.38 | --- | 46.40 | 74.00 | 54.00 | -7.60 |
| 4948.00 | H | 49.78 | --- | -3.98 | 45.80 | --- | 74.00 | 54.00 | -28.20 |
| 7422.00 | H | 46.90 | --- | 0.57 | 47.47 | --- | 74.00 | 54.00 | -26.53 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2483.51 | V | 68.20 | --- | -2.38 | 65.82 | --- | 74.00 | 54.00 | -8.18 |
| 2483.51 | V | --- | 49.49 | -2.38 | --- | 47.11 | 74.00 | 54.00 | -6.89 |
| 4948.00 | V | 50.68 | --- | -3.98 | 46.70 | --- | 74.00 | 54.00 | -27.30 |
| 7422.00 | V | 45.11 | --- | 0.57 | 45.68 | --- | 74.00 | 54.00 | -28.32 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dB μ V/m)-Average limit (dB μ V/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
5. Data of measurement shown “---“in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

Band Edge Requirement

| Low channel: 2408 MHz | | | | | | | | | |
|-----------------------|---------------|---------------------------|-------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dBuV) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 2400 | H | 69.23 | --- | -4.2 | 65.03 | --- | 74 | --- | -8.97 |
| 2400 | H | --- | 49.25 | -4.2 | --- | 45.05 | --- | 54 | -8.95 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2400 | V | 66.72 | --- | -4.2 | 62.52 | --- | 74--- | --- | -11.48 |
| 2400 | V | --- | 50.20 | -4.2 | --- | 46.00 | --- | 54 | -8.00 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

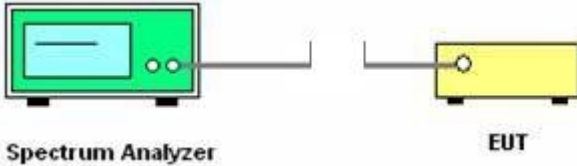
| Low channel: 2474MHz | | | | | | | | | |
|----------------------|---------------|---------------------------|-------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dBuV) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 2483.5 | H | 69.64 | --- | -4.2 | 65.44 | --- | 74 | --- | -8.56 |
| 2483.5 | H | --- | 49.66 | -4.2 | --- | 45.46 | --- | 54 | -8.54 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2483.5 | V | 68.63 | --- | -4.2 | 64.43 | --- | 74 | --- | -9.57 |
| 2483.5 | V | --- | 52.11 | -4.2 | --- | 47.91 | --- | 54 | -6.09 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dB μ V/m)-Average limit (dB μ V/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
5. Data of measurement shown “---“in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

6.4.20dB Occupied Bandwidth

6.4.1. Test Specification

| | |
|--------------------------|--|
| Test Requirement: | FCC Part15 C Section 15.215(c) |
| Test Method: | ANSI C63.4: 2009 |
| Limit: | N/A |
| | <ol style="list-style-type: none"> 1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW\geq1% of the 20 dB bandwidth; VBW\geqRBW; Sweep = auto; Detector function = peak; Trace = max hold. 4. Measure and record the results in the test report. |
| Test setup: |  <p>The diagram illustrates the test setup. On the left is a Spectrum Analyzer, represented by a green rectangular box with a screen and two knobs. On the right is the EUT (Equipment Under Test), represented by a yellow rectangular box. A horizontal line with a small circle in the middle connects the two boxes, representing a cable connection between the Spectrum Analyzer and the EUT.</p> |
| Test Mode: | Transmitting mode with modulation |
| Test results: | Pass |

6.4.2. Test Instruments

| RF Test Room | | | | |
|-------------------|--------------|-------|---------------|-----------------|
| Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | R&S | FSU | 200054 | Sep. 15, 2015 |

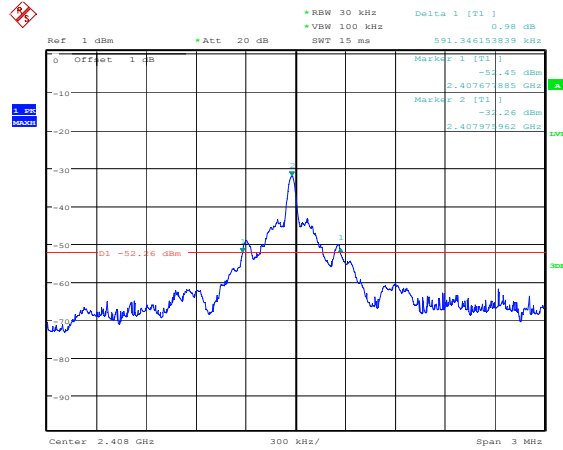
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.4.3. Test data

| Test Channel | 20dB Occupy Bandwidth (kHz) | Limit | Conclusion |
|--------------|-----------------------------|-------|------------|
| Lowest | 591.3 | --- | PASS |
| Middle | 601.0 | --- | PASS |
| Highest | 610.6 | --- | PASS |

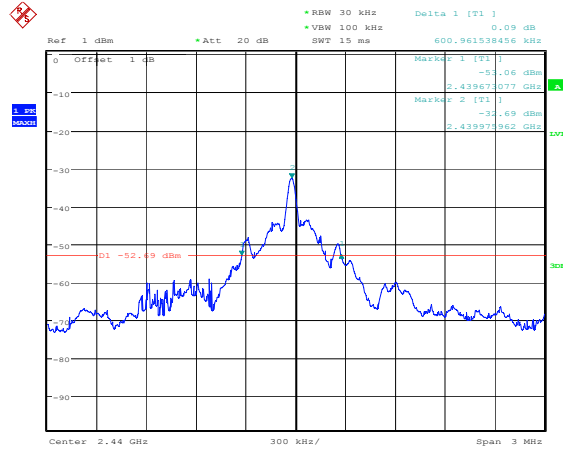
Test plots as follows:

Lowest channel



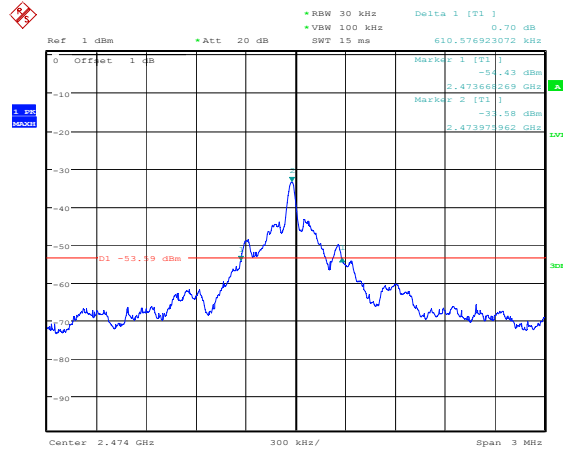
Date: 27.MAY.2015 18:27:25

Middle channel



Date: 27.MAY.2015 18:28:30

Highest channel



Date: 27.MAY.2015 18:29:28

*****END OF REPORT*****