
FCC Test Report

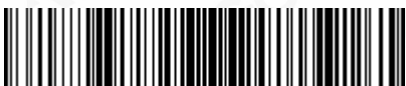
Report No.: AGC07102190903FE02

FCC ID : 2AAVD-G3180E
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : WIRELESS MOUSE
BRAND NAME : loshine
MODEL NAME : G3180E
APPLICANT : Shenzhen Loyal Electronics Co., Ltd.
DATE OF ISSUE : Sep. 29, 2019
STANDARD(S) : FCC Part 15.247
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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REPORT REVISE RECORD

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0 | / | Sep. 29, 2019 | Valid | Initial Release |



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1. VERIFICATION OF COMPLIANCE

| | |
|---------------------------------|--|
| Applicant | Shenzhen Loyal Electronics Co., Ltd. |
| Address | No.5, 1ST INDUSTRIAL AREA OF SHANMEN, SONGGANG, BAOAN, SHENZHEN, CHINA |
| Manufacturer | Shenzhen Loyal Electronics Co., Ltd. |
| Address | No.5, 1ST INDUSTRIAL AREA OF SHANMEN, SONGGANG, BAOAN, SHENZHEN, CHINA |
| Factory | Shenzhen Loyal Electronics Co., Ltd. |
| Address | No.5, 1ST INDUSTRIAL AREA OF SHANMEN, SONGGANG, BAOAN, SHENZHEN, CHINA |
| Product Designation | WIRELESS MOUSE |
| Brand Name | loshine |
| Test Model | G3180E |
| Date of test | Sep. 24, 2019 to Sep. 27, 2019 |
| Deviation | None |
| Condition of Test Sample | Normal |
| Test Result | Pass |
| Report Template | AGCRT-US-BLE/RF |

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) 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 C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.247.

Tested By Erik Yang
 Erik Yang
 (Project Engineer) Sep. 27, 2019

Reviewed By Max Zhang
 Max Zhang
 (Reviewer) Sep. 29, 2019

Approved By Forrest Lei
 Forrest Lei
 (Authorized Officer) Sep. 29, 2019



2.GENERAL INFORMATION

2.1PRODUCT DESCRIPTION

The EUT is designed as a “WIRELESS MOUSE”. It is designed by way of utilizing the FSK technology to achieve the system operation.

A major technical description of EUT is described as following

| | |
|----------------------------|--|
| Operation Frequency | 2.408 GHz to 2.474GHz |
| RF Output Power | -13.868dBm(Max) |
| Modulation | FSK |
| Number of channels | 34 Channels |
| Antenna Designation | PCB Antenna(Comply with requirements of the FCC part 15.203) |
| Antenna Gain | -0.61dBi |
| Hardware Version | V1.0 |
| Software Version | V02 |
| Power Supply | DC 1.5V by Battery |



2.2. TABLE OF CARRIER FREQUENCIES

| Channel Number | Frequency | Channel Number | Frequency |
|----------------|-----------|----------------|-----------|
| 1 | 2408MHz | 18 | 2442MHz |
| 2 | 2410MHz | 19 | 2444MHz |
| 3 | 2412MHz | 20 | 2446MHz |
| 4 | 2414MHz | 21 | 2448MHz |
| 5 | 2416MHz | 22 | 2450MHz |
| 6 | 2418MHz | 23 | 2452MHz |
| 7 | 2420MHz | 24 | 2454MHz |
| 8 | 2422MHz | 25 | 2456MHz |
| 9 | 2424MHz | 26 | 2458MHz |
| 10 | 2426MHz | 27 | 2460MHz |
| 11 | 2428MHz | 28 | 2462MHz |
| 12 | 2430MHz | 29 | 2464MHz |
| 13 | 2432MHz | 30 | 2466MHz |
| 14 | 2434MHz | 31 | 2468MHz |
| 15 | 2436MHz | 32 | 2470MHz |
| 16 | 2438MHz | 33 | 2472MHz |
| 17 | 2440MHz | 34 | 2474MHz |



2.3 RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for **FCC ID: 2AAVD-G3180E** filing to comply with the FCC Part 15.247 requirements.

2.4 TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

2.5 SPECIAL ACCESSORIES

Refer to section 2.2.

2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.



3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in measurement" (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission, $U_c = \pm 3.2$ dB
- Uncertainty of Radiated Emission below 1GHz, $U_c = \pm 3.9$ dB
- Uncertainty of Radiated Emission above 1GHz, $U_c = \pm 4.8$ dB



4. DESCRIPTION OF TEST MODES

| NO. | TEST MODE DESCRIPTION |
|-----|-----------------------|
| 1 | Low channel TX |
| 2 | Middle channel TX |
| 3 | High channel TX |

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.



5. SYSTEM TEST CONFIGURATION

5.1 CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure :



5.2 EQUIPMENT USED IN TESTED SYSTEM

| Item | Equipment | Model No. | ID or Specification | Remark |
|------|----------------|-----------|---------------------|--------|
| 1 | WIRELESS MOUSE | G3180E | 2AAVD-G3180E | EUT |

5.3. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|---------------|--|-----------|
| 15.247 (b)(3) | Peak Output Power | Compliant |
| 15.247 (a)(2) | 6 dB Bandwidth | Compliant |
| 15.247 (d) | Conducted Spurious Emission | Compliant |
| 15.247 (e) | Maximum Conducted Output Power Density | Compliant |
| 15.209 | Radiated Emission | Compliant |
| 15.207 | Conducted Emission | N/A |

Note: N/A stands for not applicable.



6. TEST FACILITY

| | |
|--|--|
| Test Site | Attestation of Global Compliance (Shenzhen) Co., Ltd |
| Location | 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China |
| Designation Number | CN1259 |
| FCC Test Firm Registration Number | 975832 |
| A2LA Cert. No. | 5054.02 |
| Description | Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA |

TEST EQUIPMENT OF RADIATED EMISSION TEST

| Equipment | Manufacturer | Model | S/N | Cal. Date | Cal. Due |
|--------------------------------|----------------|-----------|------------|---------------|---------------|
| TEST RECEIVER | R&S | ESCI | 10096 | Jun. 12, 2019 | Jun. 11, 2020 |
| EXA Signal Analyzer | Aglient | N9010A | MY53470504 | Dec. 20, 2018 | Dec. 19, 2019 |
| 2.4GHz Fliter | EM Electronics | 2400-2500 | N/A | Feb. 27, 2019 | Feb. 26, 2020 |
| Attenuator | Warriors | W13 | 11324 | Sep. 09, 2019 | Sep. 08, 2020 |
| Horn antenna | ETS-LINDGREN | 3117 | 00154520 | Oct. 21, 2018 | Oct. 20, 2020 |
| Active loop antenna (9K-30MHz) | ZHINAN | ZN30900C | 18051 | Jun. 12, 2019 | Jun. 11, 2021 |
| Double-Ridged Waveguide Horn | ETS LINDGREN | 3117 | 00034609 | May. 17, 2019 | May. 16, 2021 |
| Broadband Preamplifier | ETS LINDGREN | 3117PA | 00225134 | Oct. 25, 2018 | Oct. 24, 2019 |
| ANTENNA | SCHWARZBECK | VULB9168 | 494 | Jan. 09, 2019 | Jan. 08, 2021 |



7. PEAK OUTPUT POWER

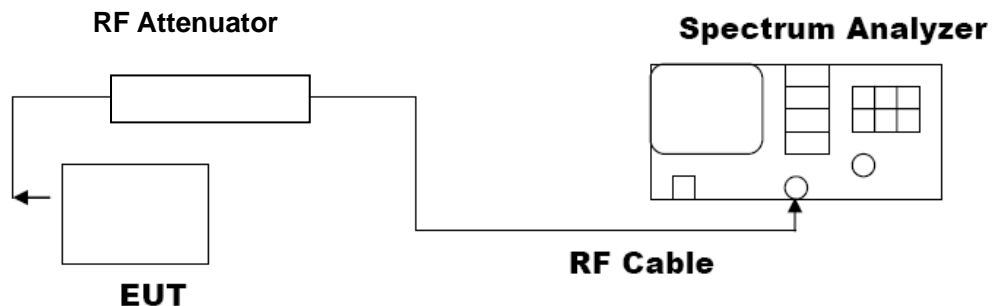
7.1. MEASUREMENT PROCEDURE

For peak power test:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. $RBW \geq DTS$ bandwidth
3. $VBW \geq 3 * RBW$.
4. $SPAN \geq VBW$.
5. Sweep: Auto.
6. Detector function: Peak.
7. Trace: Max hold.

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) PEAK POWER TEST SETUP



7.3. LIMITS AND MEASUREMENT RESULT

| PEAK OUTPUT POWER MEASUREMENT RESULT FOR FSK MODULATION | | | |
|---|------------------|-------------------------|--------------|
| Frequency (GHz) | Peak Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
| 2.408 | -14.229 | 30 | Pass |
| 2.440 | -14.849 | 30 | Pass |
| 2.474 | -13.868 | 30 | Pass |

CH1



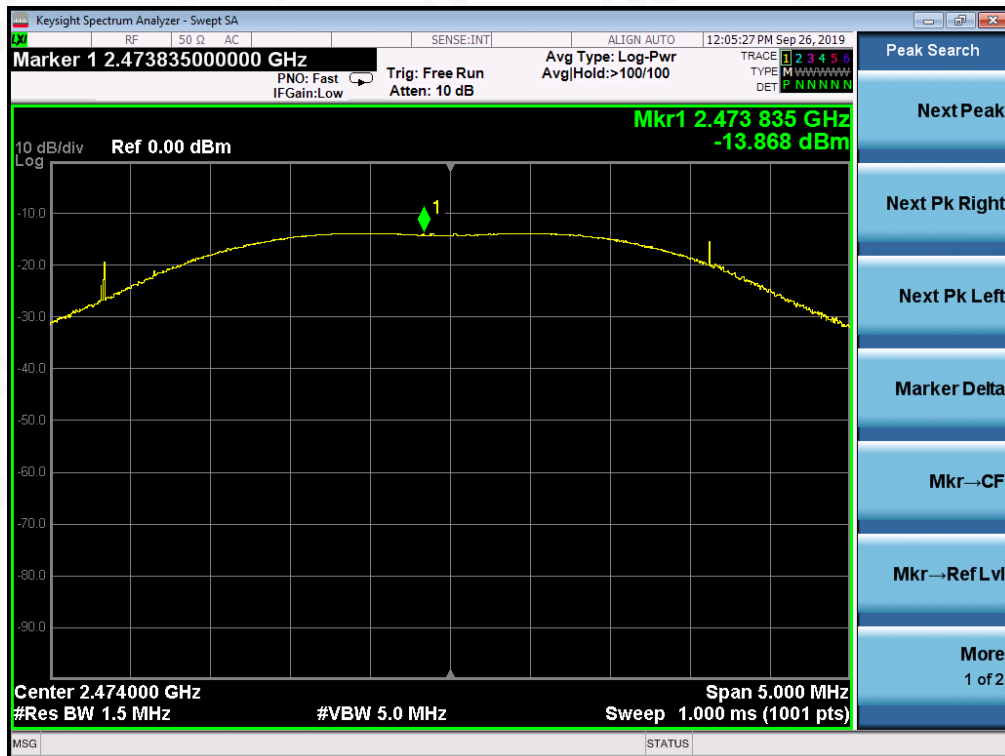
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CH17



CH34



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8. 6 DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW \geq 3 \times RBW.
4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

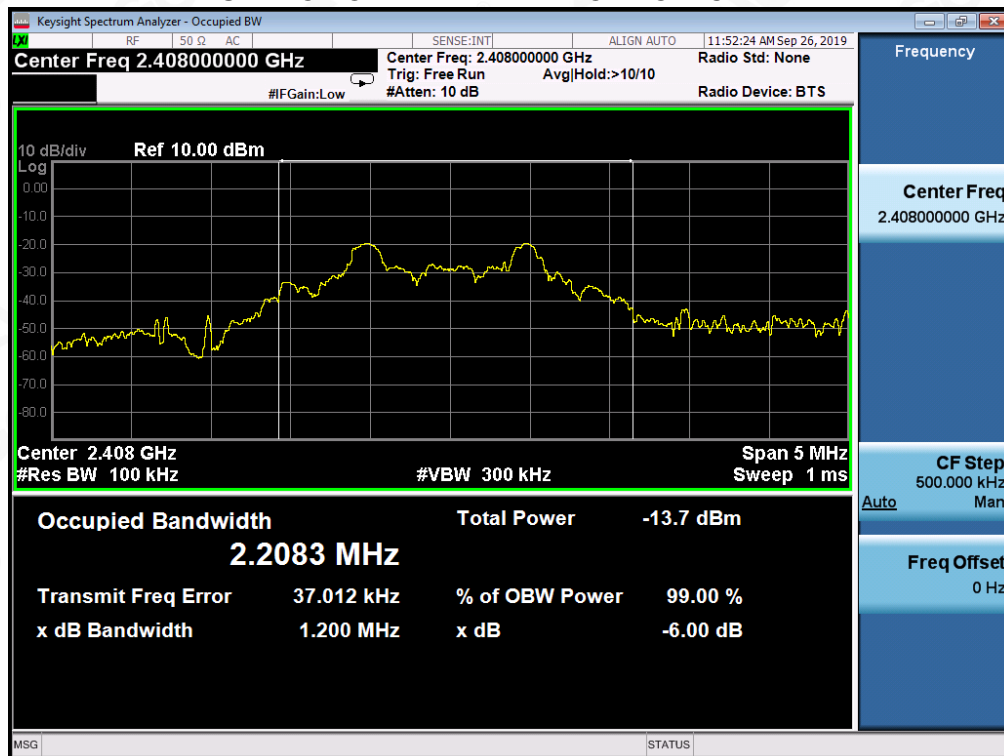
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

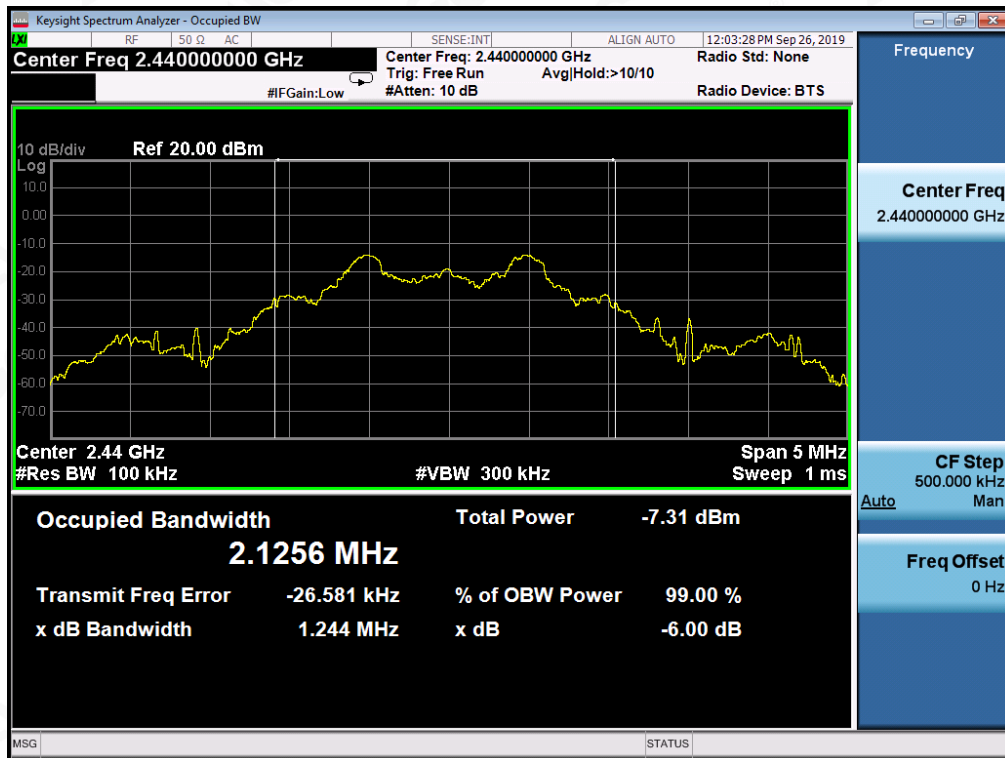
8.3. LIMITS AND MEASUREMENT RESULTS

| LIMITS AND MEASUREMENT RESULT | | | |
|-------------------------------|-------------------|------|----------|
| Applicable Limits | Applicable Limits | | |
| | Test Data (KHz) | | Criteria |
| >500KHZ | Low Channel | 1200 | PASS |
| | Middle Channel | 1244 | PASS |
| | High Channel | 1222 | PASS |

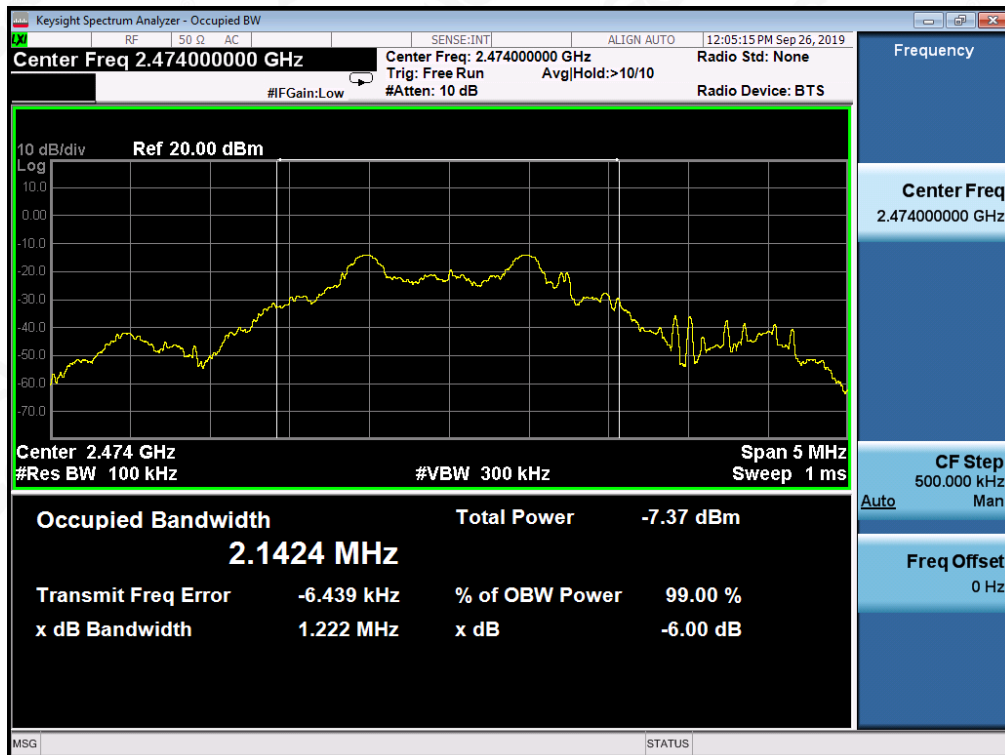
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

9.3. MEASUREMENT EQUIPMENT USED

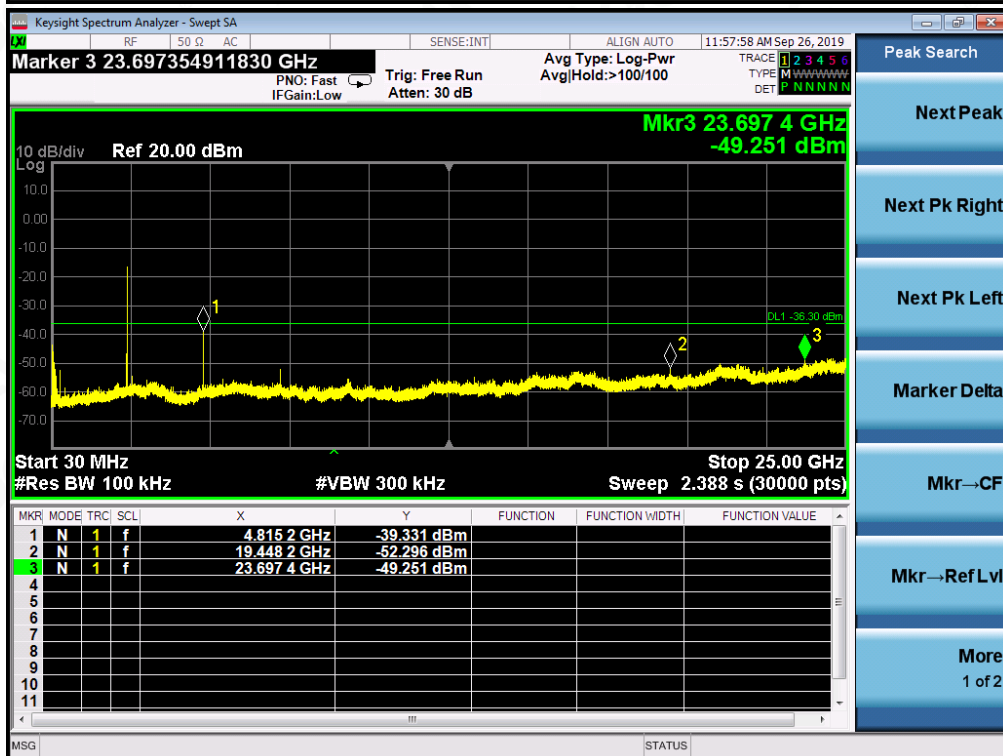
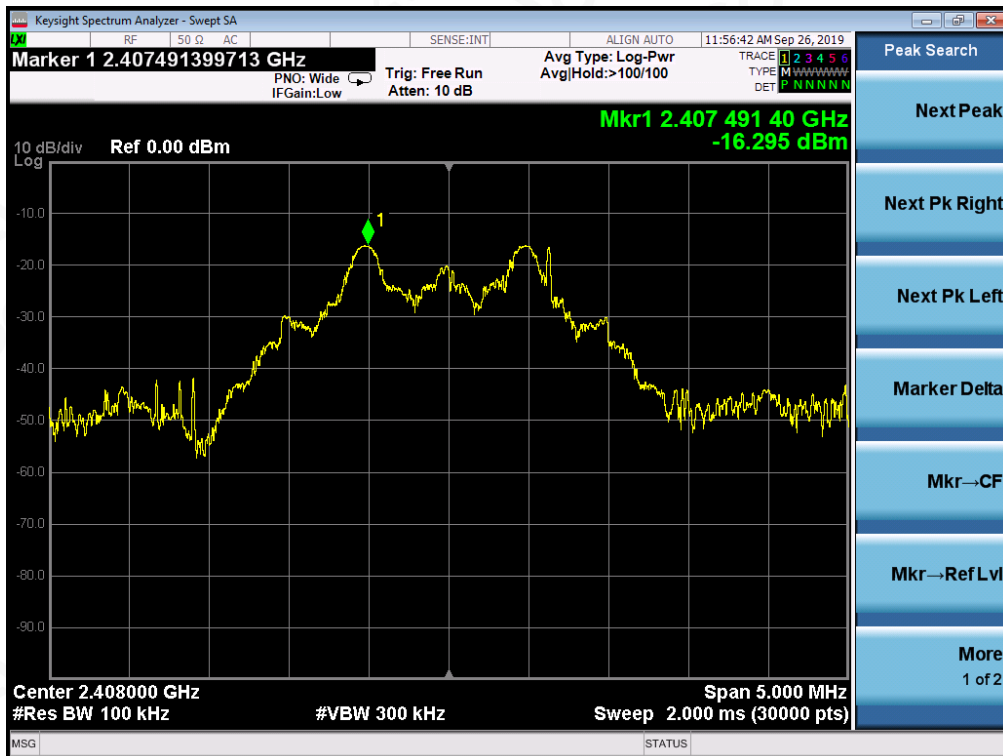
The same as described in section 6.

9.4. LIMITS AND MEASUREMENT RESULT

| LIMITS AND MEASUREMENT RESULT | | |
|--|--|--------------|
| Applicable Limits | Measurement Result | |
| | Test Data | Criteria |
| In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. | At least -20dBc than the reference level | PASS PASS |



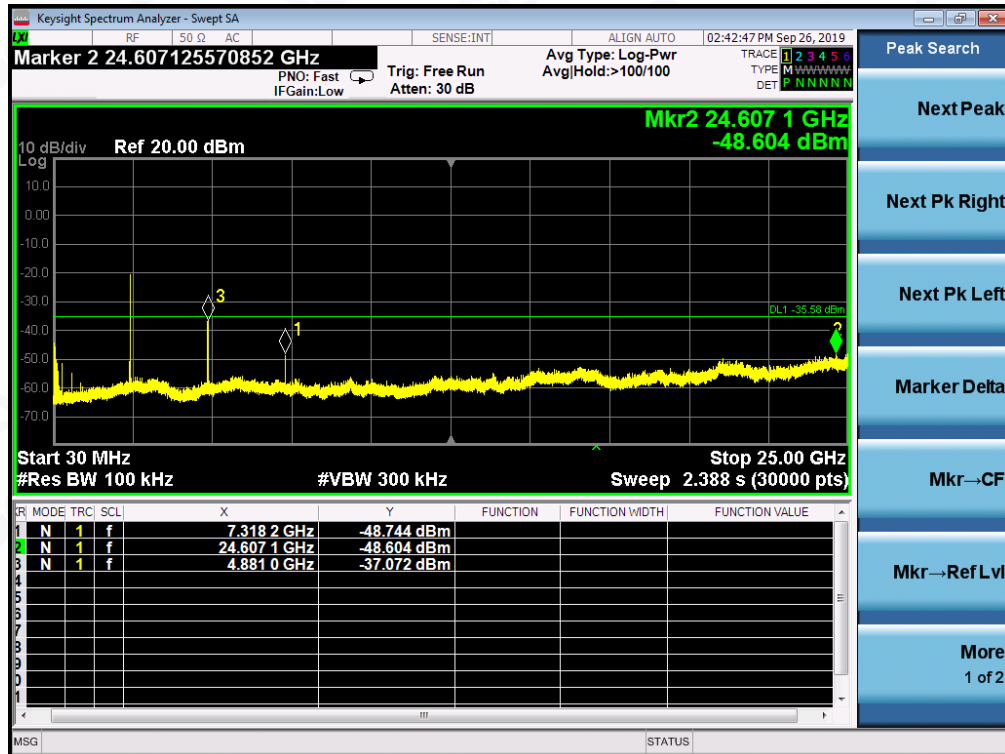
**TEST RESULT FOR ENTIRE FREQUENCY RANGE
FSK MODULATION IN LOW CHANNEL**



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FSK MODULATION IN MIDDLE CHANNEL



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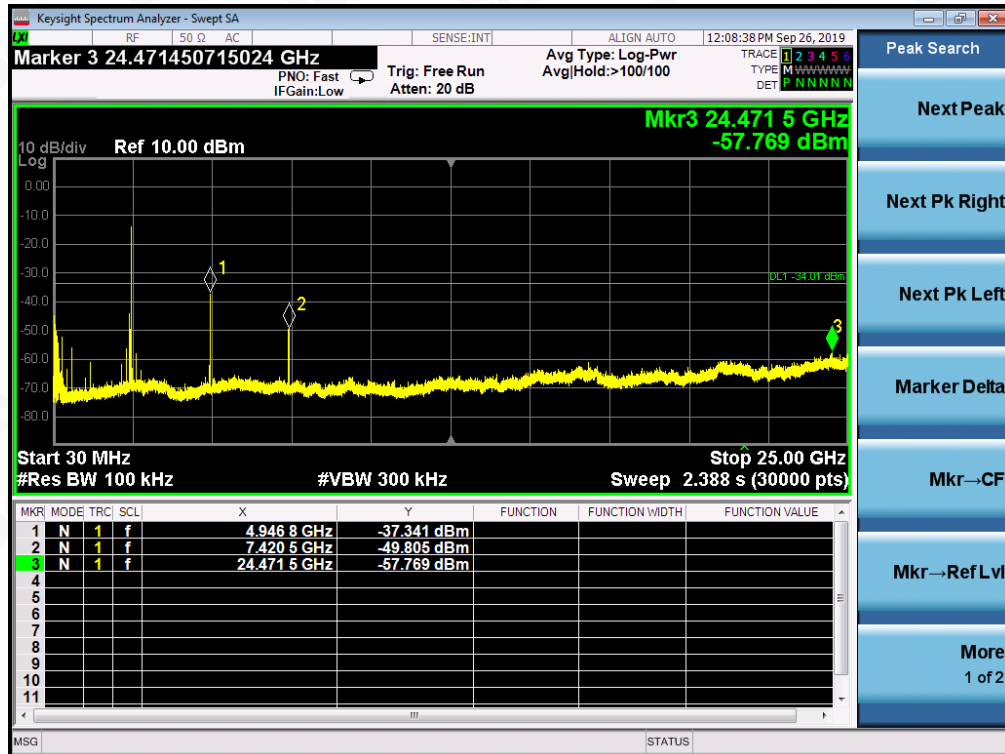
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FSK MODULATION IN HIGH CHANNEL



Note: The peak emissions without marker on the above plots are fundamental wave and need not to compare with the limit.



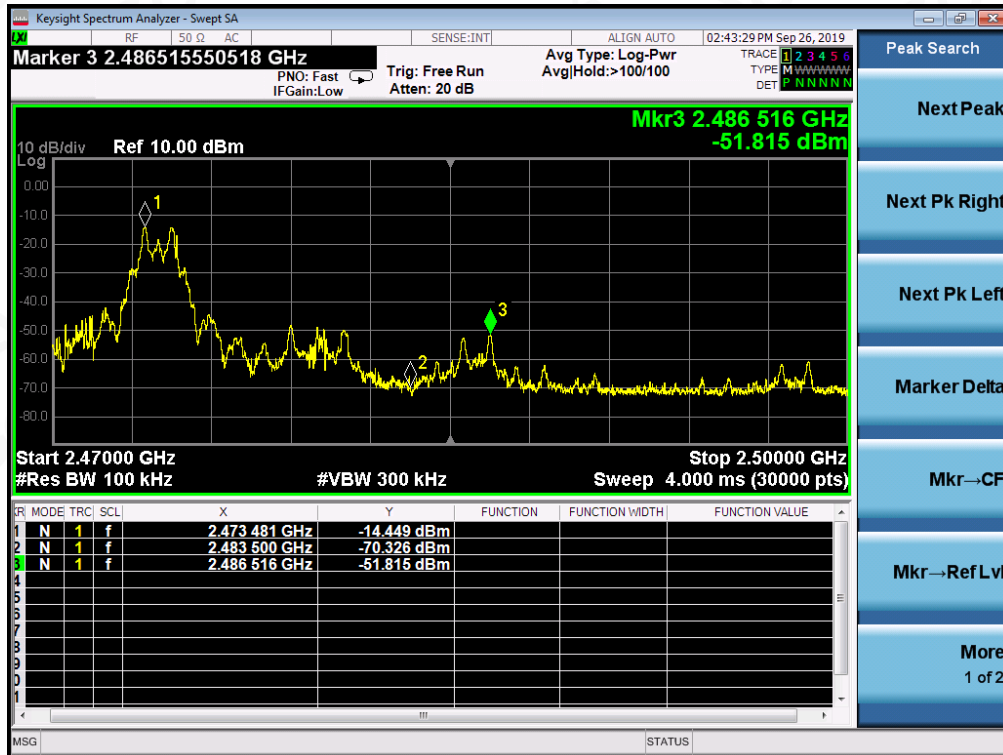
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TEST RESULT FOR BAND EDGE FSK MODULATION IN LOW CHANNEL



FSK MODULATION IN HIGH CHANNEL



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10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 10.2 was used in this testing.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 7.2.

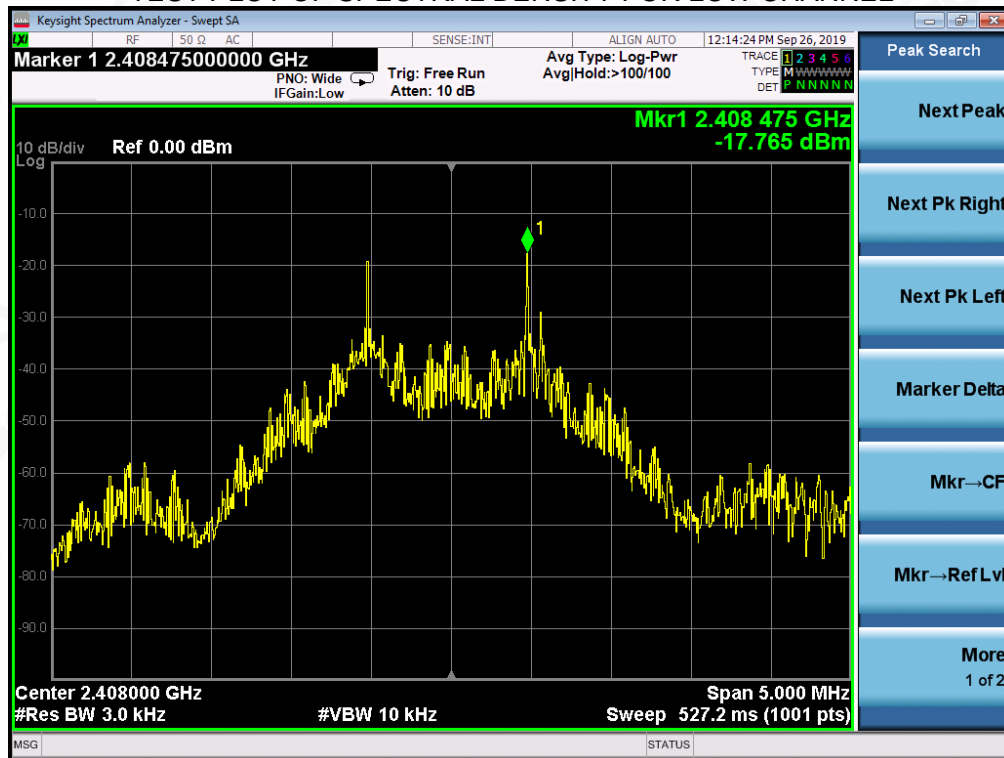
10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

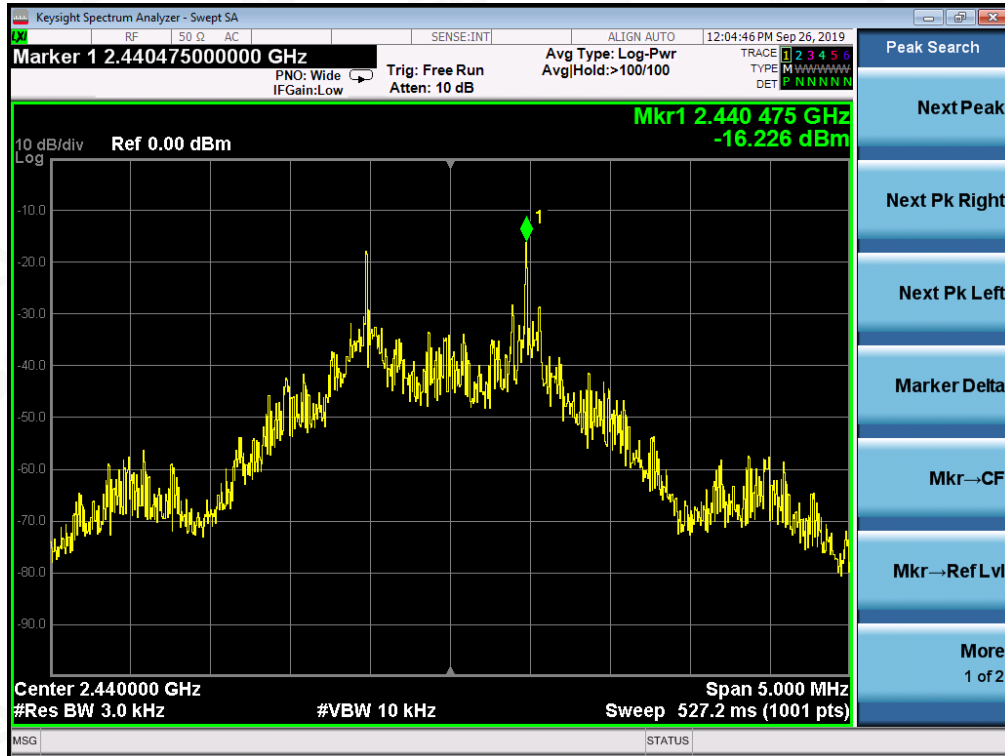
10.4 LIMITS AND MEASUREMENT RESULT

| Channel No. | PSD (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|----------------|----------------|------------------|--------|
| Low Channel | -17.765 | 8 | Pass |
| Middle Channel | -16.226 | 8 | Pass |
| High Channel | -15.190 | 8 | Pass |

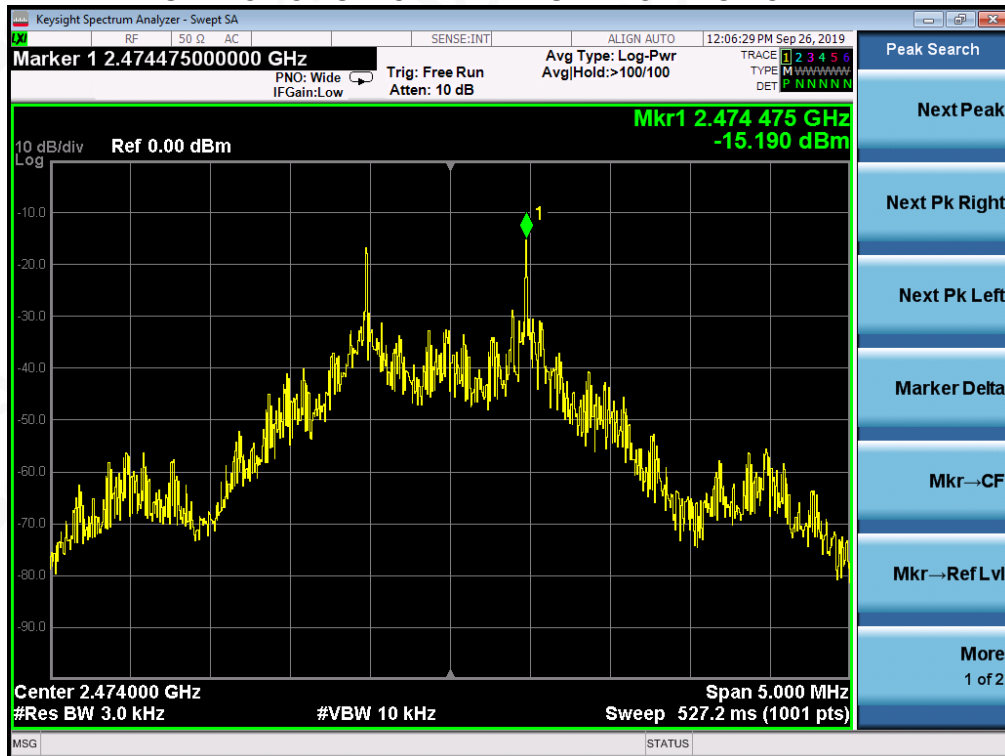
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



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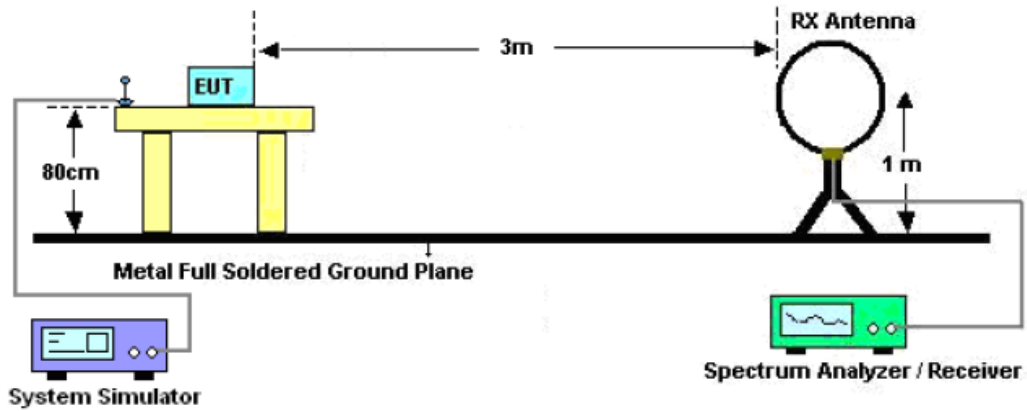
11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

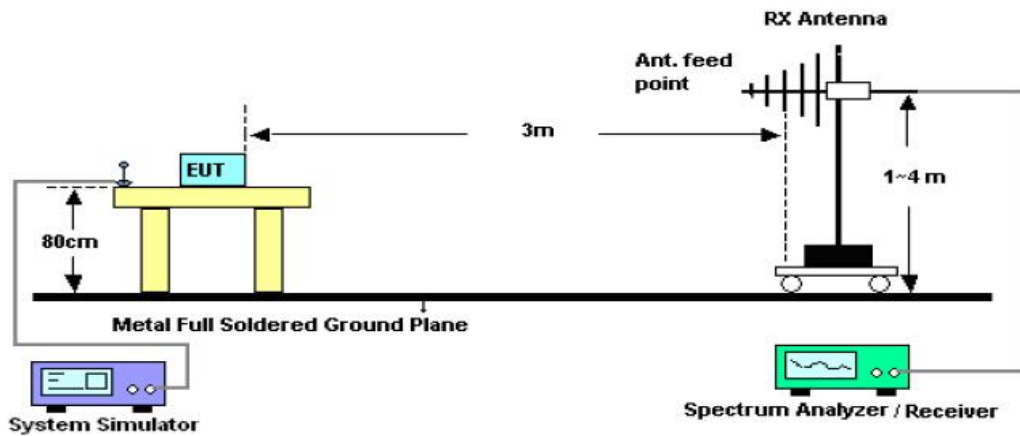
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

11.2. TEST SETUP

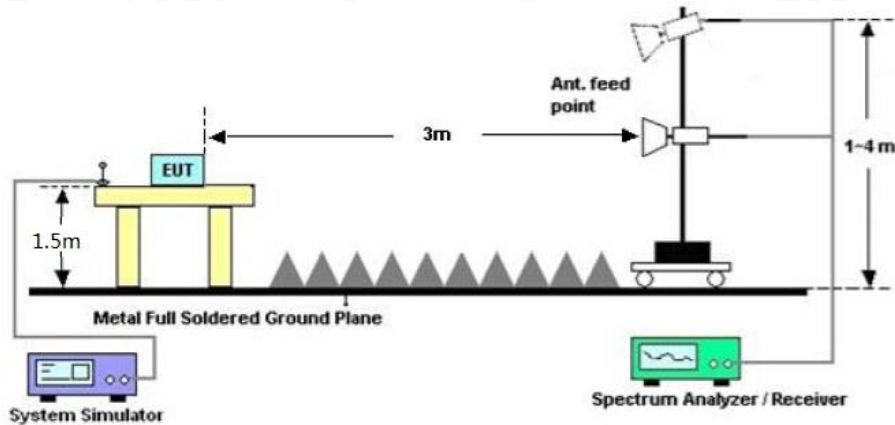
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



11.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

Note: All modes were tested For restricted band radiated emission, the test records reported below are the worst result compared to other modes.

11.4. TEST RESULT

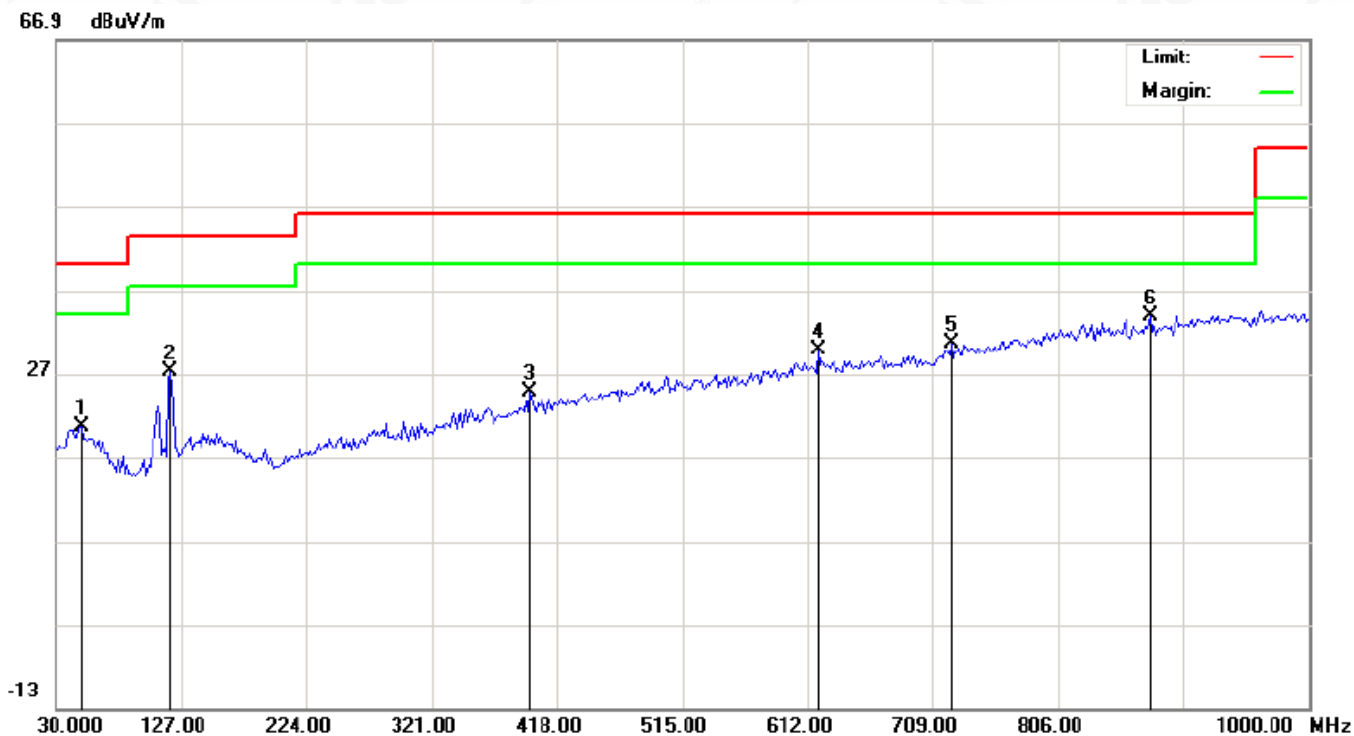
RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.



RADIATED EMISSION BELOW 1GHZ

| | | | |
|--------------------|----------------|--------------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 1 | Antenna | Horizontal |



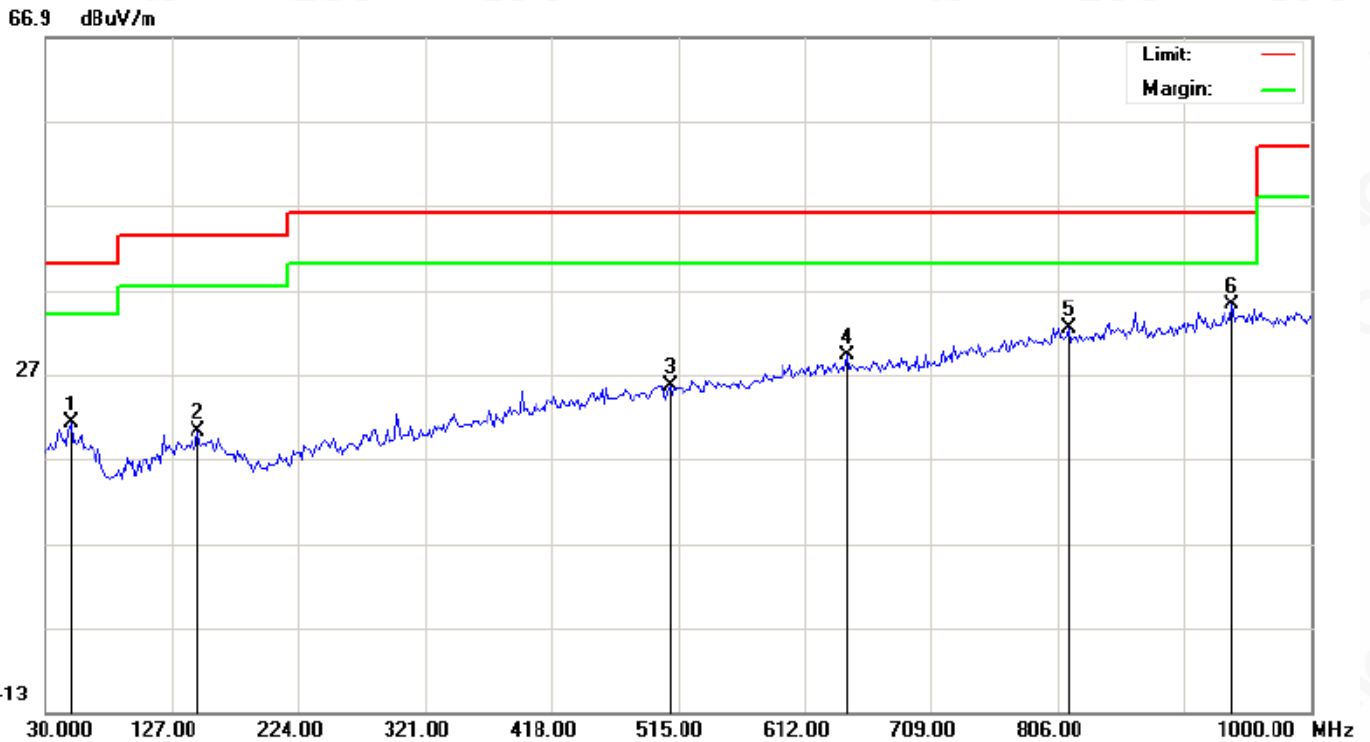
| No. | Mk | Freq. | Reading | Factor | Measurement | Limit | Over | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | cm | degree | |
| 1 | | 49.4000 | 0.83 | 19.75 | 20.58 | 40.00 | -19.42 | peak | | | |
| 2 | | 118.9167 | 9.29 | 17.86 | 27.15 | 43.50 | -16.35 | peak | | | |
| 3 | | 396.9833 | 2.01 | 22.87 | 24.88 | 46.00 | -21.12 | peak | | | |
| 4 | | 620.0833 | 2.58 | 27.19 | 29.77 | 46.00 | -16.23 | peak | | | |
| 5 | | 723.5500 | 1.88 | 28.68 | 30.56 | 46.00 | -15.44 | peak | | | |
| 6 | * | 877.1333 | 2.34 | 31.40 | 33.74 | 46.00 | -12.26 | peak | | | |

RESULT: PASS



Attestation of Global Compliance

| | | | |
|-------------|----------------|-------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 1 | Antenna | Vertical |



| No. | Mk | Freq. | Reading | Factor | Measurement | Limit | Over | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | cm | degree | |
| 1 | | 49.4000 | 1.43 | 19.75 | 21.18 | 40.00 | -18.82 | peak | | | |
| 2 | | 146.4000 | 0.95 | 19.22 | 20.17 | 43.50 | -23.33 | peak | | | |
| 3 | | 508.5333 | 0.53 | 25.16 | 25.69 | 46.00 | -20.31 | peak | | | |
| 4 | | 644.3333 | 1.63 | 27.48 | 29.11 | 46.00 | -16.89 | peak | | | |
| 5 | | 814.0833 | 1.81 | 30.59 | 32.40 | 46.00 | -13.60 | peak | | | |
| 6 | * | 940.1833 | 3.13 | 32.05 | 35.18 | 46.00 | -10.82 | peak | | | |

RESULT: PASS

Note:

1. Factor=Antenna Factor + Cable loss, Margin= Limit-Level.
2. All test modes had been tested. The mode 1 is the worst case and recorded in the report.



RADIATED EMISSION ABOVE 1GHZ

| | | | |
|--------------------|----------------|--------------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 1 | Antenna | Horizontal |

| Frequency (MHz) | Meter Reading (dBµV) | Factor (dB) | Emission Level (dBµV/m) | Limits (dBµV/m) | Margin (dB) | Value Type |
|--------------------|-------------------------|----------------|----------------------------|--------------------|----------------|------------|
| 4816.256 | 50.73 | 7.12 | 57.85 | 74 | -16.15 | peak |
| 4816.256 | 37.97 | 7.12 | 45.09 | 54 | -8.91 | AVG |
| 7224.429 | 49.3 | 9.84 | 59.14 | 74 | -14.86 | peak |
| 7224.429 | 37.49 | 9.84 | 47.33 | 54 | -6.67 | AVG |
| | | | | | | |
| | | | | | | |

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| | | | |
|--------------------|----------------|--------------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 1 | Antenna | Vertical |

| Frequency (MHz) | Meter Reading (dBµV) | Factor (dB) | Emission Level (dBµV/m) | Limits (dBµV/m) | Margin (dB) | Value Type |
|--------------------|-------------------------|----------------|----------------------------|--------------------|----------------|------------|
| 4816.256 | 49.12 | 7.12 | 56.24 | 74 | -17.76 | peak |
| 4816.256 | 36.41 | 7.12 | 43.53 | 54 | -10.47 | AVG |
| 7224.384 | 45.39 | 9.84 | 55.23 | 74 | -18.77 | peak |
| 7224.384 | 33.63 | 9.84 | 43.47 | 54 | -10.53 | AVG |
| | | | | | | |
| | | | | | | |

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



| | | | |
|--------------------|----------------|--------------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 2 | Antenna | Horizontal |

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|--------------------|-------------------------|----------------|----------------------------|--------------------|----------------|------------|
| 4880.206 | 50.25 | 7.12 | 57.37 | 74 | -16.63 | peak |
| 4880.206 | 36.53 | 7.12 | 43.65 | 54 | -10.35 | AVG |
| 7320.309 | 48.18 | 9.84 | 58.02 | 74 | -15.98 | peak |
| 7320.309 | 35.31 | 9.84 | 45.15 | 54 | -8.85 | AVG |
| | | | | | | |
| | | | | | | |

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| | | | |
|--------------------|----------------|--------------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 2 | Antenna | Vertical |

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|--------------------|-------------------------|----------------|----------------------------|--------------------|----------------|------------|
| 4880.206 | 48.8 | 7.12 | 55.92 | 74 | -18.08 | peak |
| 4880.206 | 35.16 | 7.12 | 42.28 | 54 | -11.72 | AVG |
| 7320.309 | 44.59 | 9.84 | 54.43 | 74 | -19.57 | peak |
| 7320.309 | 31.72 | 9.84 | 41.56 | 54 | -12.44 | AVG |
| | | | | | | |
| | | | | | | |

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.



| | | | |
|--------------------|----------------|--------------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 3 | Antenna | Horizontal |

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|--------------------|-------------------------|----------------|----------------------------|--------------------|----------------|------------|
| 4948.228 | 48.21 | 7.12 | 55.33 | 74 | -18.67 | peak |
| 4948.228 | 32.13 | 7.12 | 39.25 | 54 | -14.75 | AVG |
| 7422.842 | 46.29 | 9.84 | 56.13 | 74 | -17.87 | peak |
| 7422.842 | 30.54 | 9.84 | 40.38 | 54 | -13.62 | AVG |
| | | | | | | |
| | | | | | | |

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| | | | |
|--------------------|----------------|--------------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 3 | Antenna | Vertical |

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|--------------------|-------------------------|----------------|----------------------------|--------------------|----------------|------------|
| 4948.228 | 47.33 | 7.12 | 54.45 | 74 | -19.55 | peak |
| 4948.228 | 31.34 | 7.12 | 38.46 | 54 | -15.54 | AVG |
| 7422.842 | 43.45 | 9.84 | 53.29 | 74 | -20.71 | peak |
| 7422.842 | 27.84 | 9.84 | 37.68 | 54 | -16.32 | AVG |
| | | | | | | |
| | | | | | | |

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

RESULT: PASS

Note:

Other emissions from 1G to 25 GHz are considered as ambient noise. No recording in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The “Factor” value can be calculated automatically by software of measurement system.



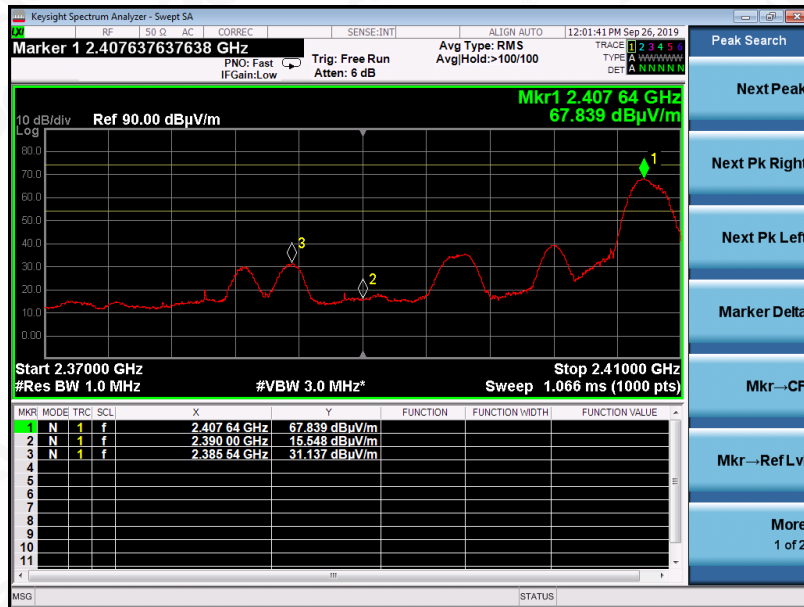
TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

| | | | |
|-------------|----------------|-------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 1 | Antenna | Horizontal |

PK



AV



RESULT: PASS



Attestation of Global Compliance

Attestation of Global Compliance(Shenzhen)Co.,Ltd.

Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,
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Tel: +86-755 2523 4088

E-mail: agc@agc-cert.com

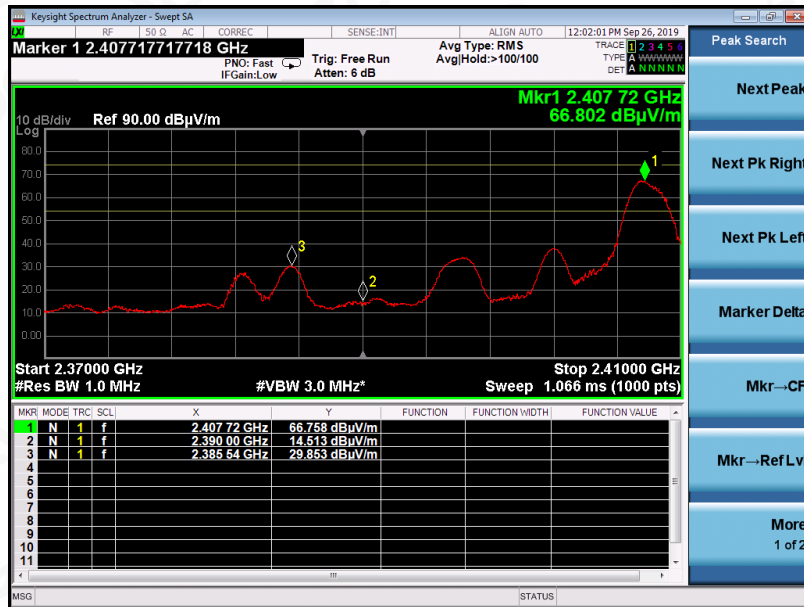
Service Hotline: 400 089 2118

| | | | |
|-------------|----------------|-------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 1 | Antenna | Vertical |

PK



AV



RESULT: PASS



Attestation of Global Compliance

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E-mail: agc@agc-cert.com

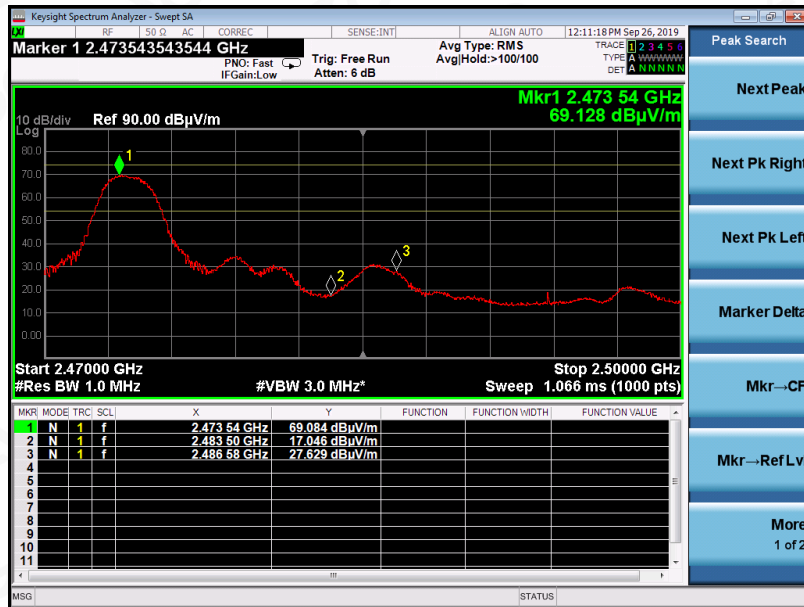
Service Hotline: 400 089 2118

| | | | |
|-------------|----------------|-------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 3 | Antenna | Horizontal |

PK



AV



RESULT: PASS



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| | | | |
|-------------|----------------|-------------------|----------------|
| EUT | WIRELESS MOUSE | Model Name | G3180E |
| Temperature | 25°C | Relative Humidity | 60% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 3 | Antenna | Vertical |

PK



AV



RESULT: PASS

Note: The factor had been edited in the “Input Correction” of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μV) to represent the Amplitude. Use the F dB(μV/m) to represent the Field Strength. So A=F.

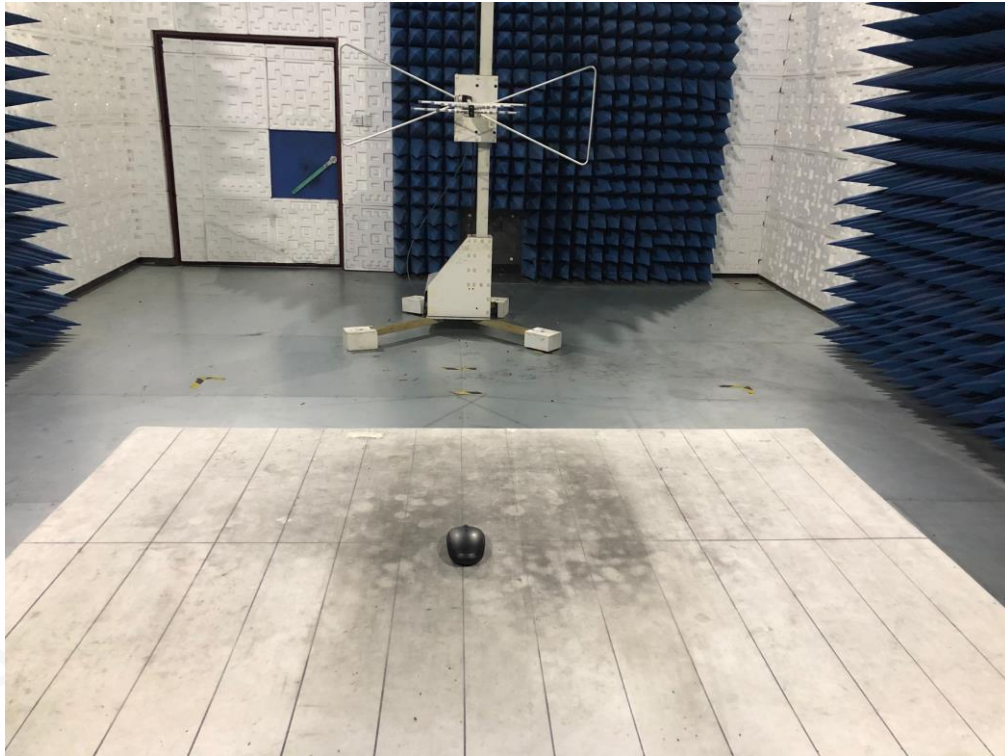


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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP BELOW 1GHZ



RADIATED EMISSION TEST SETUP ABOVE 1GHZ



APPENDIX B: PHOTOGRAPHS OF EUT

TOP VIEW OF EUT



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



LEFT VIEW OF EUT



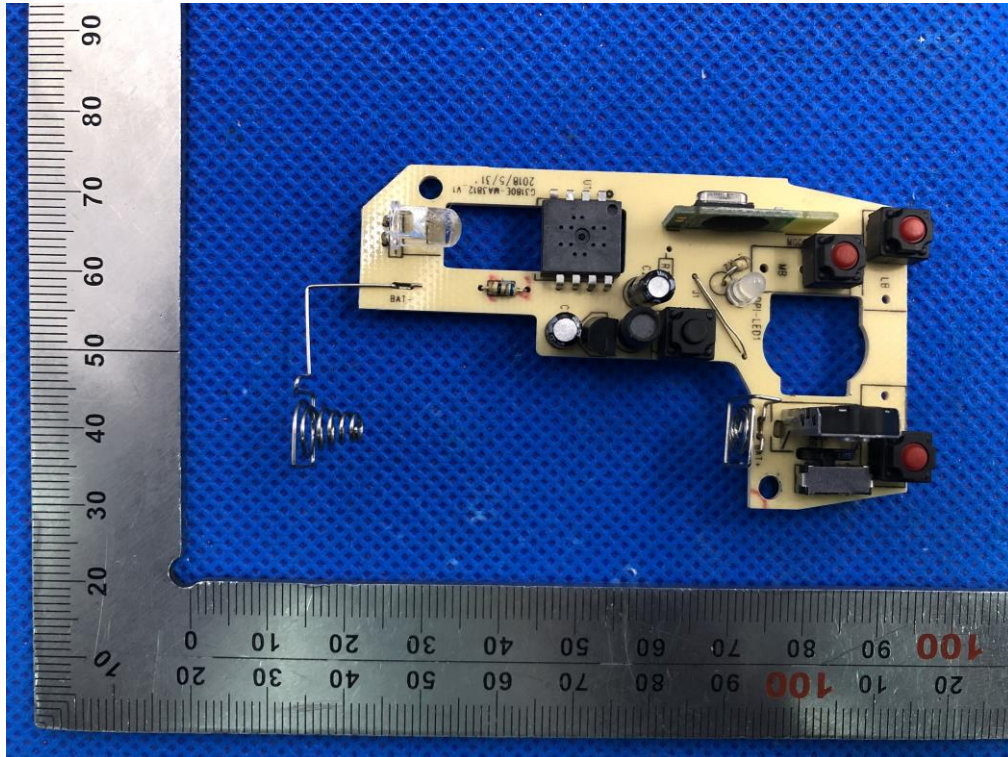
RIGHT VIEW OF EUT



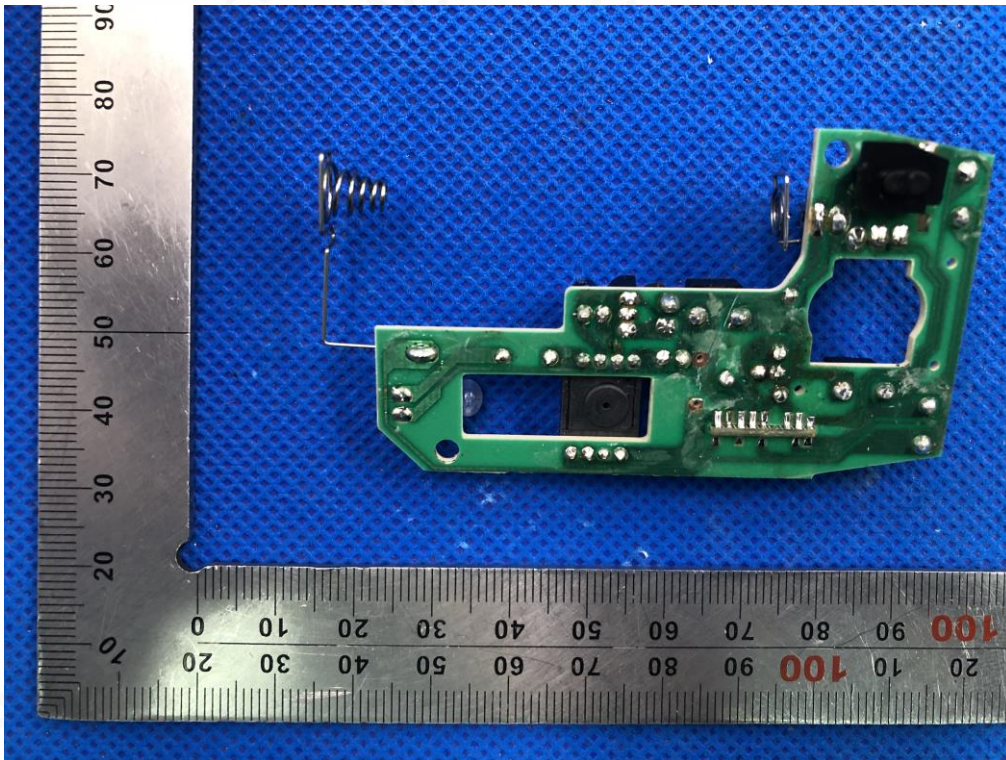
OPEN VIEW OF EUT



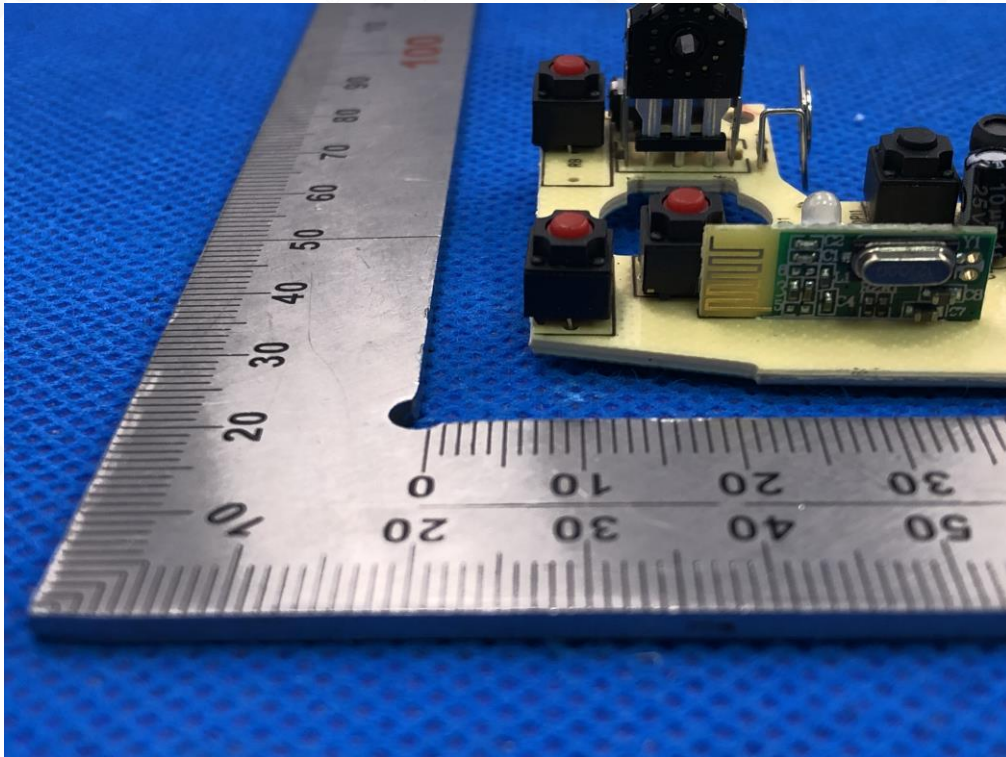
INTERNAL VIEW OF EUT-1



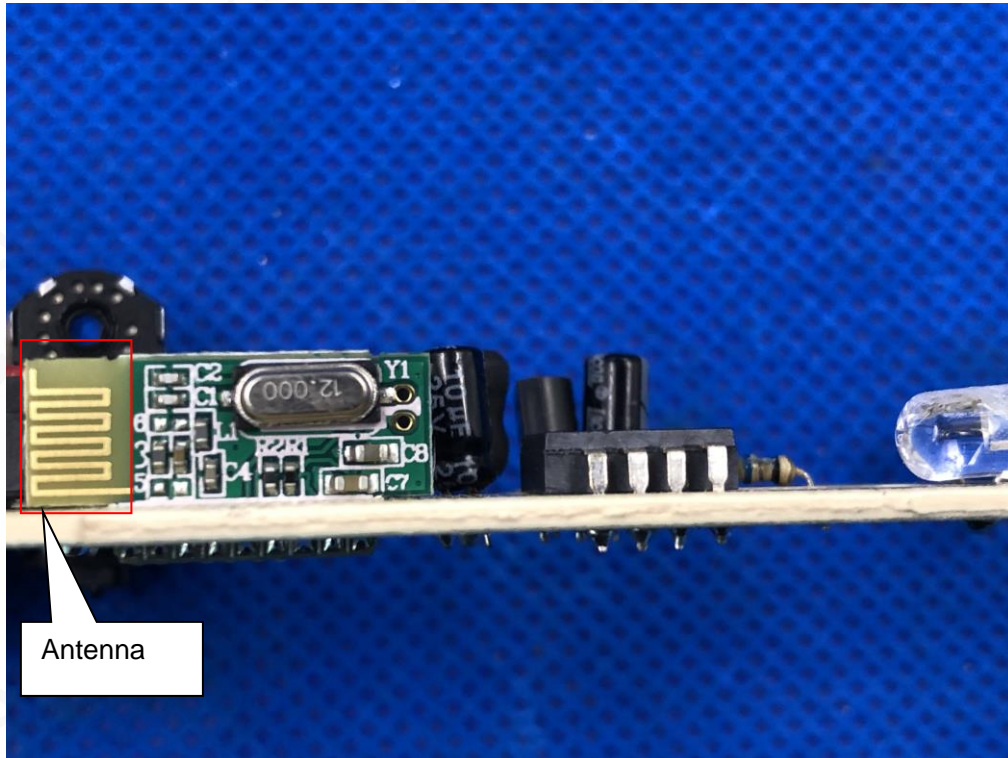
INTERNAL VIEW OF EUT-2



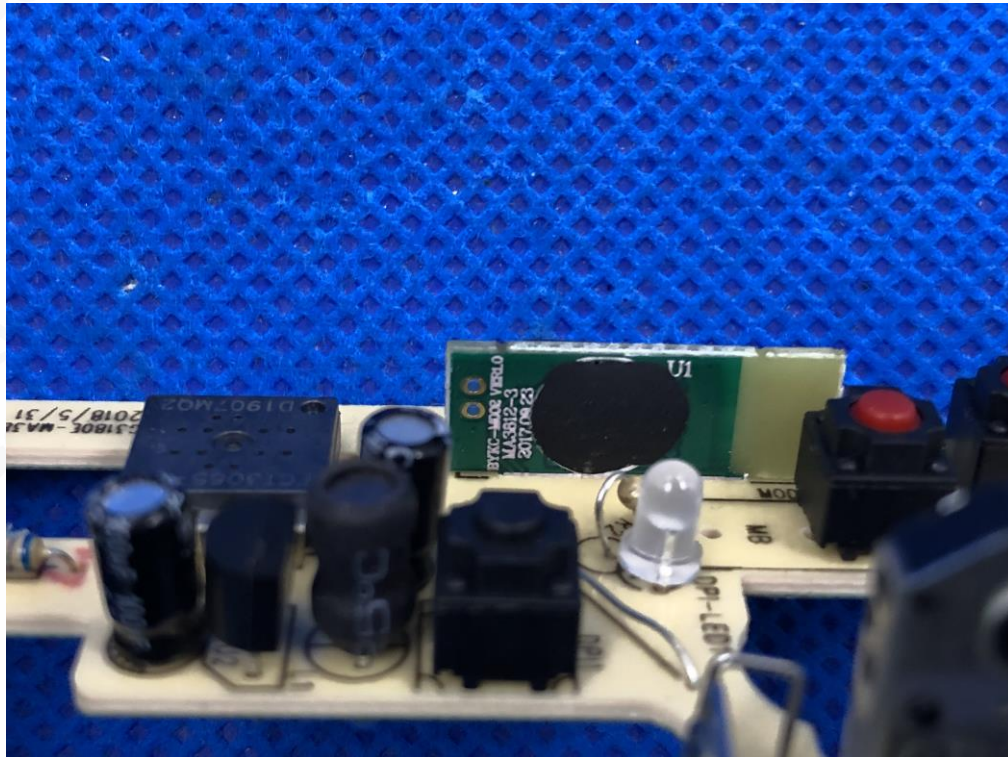
INTERNAL VIEW OF EUT-3



INTERNAL VIEW OF EUT-4



INTERNAL VIEW OF EUT-5



----END OF REPORT----

