



**Neutron Engineering Inc.**

# Radio Test Report

## FCC ID: H8GGD300

This report concerns (check one) : ☒ Original Grant ☐ Class I Change

**Issued Date** : Sep. 21, 2011  
**Project No.** : R1108002  
**Equipment** : 2.4G RF Keyboard  
**Model Name** : GD-300; 8100F

**Applicant** : A-FOUR TECH CO., LTD.  
**Address** : 6F, No.108, Min-Chuan Rd., Hsin-Tien,  
Taipei, Taiwan, R.O.C.

**Tested by:** Neutron Engineering Inc. EMC Laboratory

**Date of Receipt:** Aug. 12, 2011

**Date of Test:** Aug. 12, 2011 ~ Aug. 14, 2011

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### **Declaration**

**Neutron** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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## **1. CERTIFICATION**

Equipment : 2.4G RF Keyboard  
Brand Name : A4TECH  
Model Name : GD-300; 8100F  
Applicant : A-FOUR TECH CO., LTD.  
Date of Test : Aug. 12, 2011 ~ Aug. 14, 2011  
Standards : FCC Part15, Subpart C(15.247) / ANCI C63.4 : 2003

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-R1108002) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).



## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15, Subpart C                |                                     |          |        |
|--------------------------------------|-------------------------------------|----------|--------|
| Standard Section                     | Test Item                           | Judgment | Remark |
| 15.207                               | Conducted Emission                  | N/A      |        |
| 15.247<br>(c)                        | Antenna conducted Spurious Emission | PASS     |        |
| 15.247<br>(a)(2)                     | 6dB Bandwidth                       | PASS     |        |
| 15.247<br>(b)                        | Peak Output Power                   | PASS     |        |
| 15.247<br>(c)                        | Radiated Spurious Emission          | PASS     |        |
| 15.247<br>(d)                        | Power Spectral Density              | PASS     |        |
| 15.203                               | Antenna Requirement                 | PASS     |        |
| 1.1307<br>1.1310<br>2.1091<br>2.1093 | RF Exposure Compliance              | PASS     |        |

NOTE:

(1) "N/A" denotes test is not applicalbe in this Test Report



## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

**CB08:** (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054;  
IC Assigned Code: 4428C-1)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

## 2.2 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%.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

| Test Site | Method | Measurement Frequency Range | Ant. H / V | U , (dB) | NOTE |
|-----------|--------|-----------------------------|------------|----------|------|
| CB08      | ANSI   | 30MHz ~ 200MHz              | V          | 3.22     |      |
|           |        | 30MHz ~ 200MHz              | H          | 3.35     |      |
|           |        | 200MHz ~ 1,000MHz           | V          | 3.24     |      |
|           |        | 200MHz ~ 1,000MHz           | H          | 3.11     |      |
|           |        | 1000MHz ~ 18000MHz          | V          | 4.05     |      |
|           |        | 1000MHz ~ 18000MHz          | H          | 3.97     |      |
|           |        | 18000MHz ~ 40000MHz         | V          | 4.04     |      |
|           |        | 18000MHz ~ 40000MHz         | H          | 4.01     |      |

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our  $U_{lab}$  values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called  $U_{CISPR}$ , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our  $U_{lab}$  values are smaller than  $U_{CISPR}$ .



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                                                                                                                                                                                                                    |                                                                                                                                          |                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Equipment                                                                                                                                                                                                          | 2.4G RF Keyboard                                                                                                                         |                                                                        |
| Brand Name                                                                                                                                                                                                         | A4TECH                                                                                                                                   |                                                                        |
| Model Name                                                                                                                                                                                                         | GD-300; 8100F                                                                                                                            |                                                                        |
| OEM Brand/Model Name                                                                                                                                                                                               | N/A                                                                                                                                      |                                                                        |
| Model Difference                                                                                                                                                                                                   | Model 8100F is identical to model GD-300 except the model designation.<br>Both models have two optional sets of Boost IC+Schottky Diode: |                                                                        |
|                                                                                                                                                                                                                    | No.                                                                                                                                      | Boost IC+Schottky Diode                                                |
|                                                                                                                                                                                                                    | 1                                                                                                                                        | Schottky Diode is in the Boost IC (U3) and nothing on PCB location D3. |
|                                                                                                                                                                                                                    | 2                                                                                                                                        | Schottky Diode is not in the Boost IC (U3) but on PCB location D3.     |
| The Differences do not affect the Radio Frequency function.<br>Model GD-300 (No. 2) was used for final testing and collecting test data included in this report.                                                   |                                                                                                                                          |                                                                        |
| Product Description                                                                                                                                                                                                | The EUT is a 2.4G RF Keyboard.                                                                                                           |                                                                        |
|                                                                                                                                                                                                                    | Operation Frequency:                                                                                                                     | 2407~2473MHz                                                           |
|                                                                                                                                                                                                                    | Modulation Type:                                                                                                                         | GFSK                                                                   |
|                                                                                                                                                                                                                    | Number Of Channel                                                                                                                        | 14CH (Note 2)                                                          |
|                                                                                                                                                                                                                    | Antenna Designation:                                                                                                                     | Please refer to the Note 3.                                            |
|                                                                                                                                                                                                                    | Antenna Gain(Peak)                                                                                                                       | Please refer to the Note 3.                                            |
|                                                                                                                                                                                                                    | Output Power:                                                                                                                            | -9.66 dBm (Max.)                                                       |
| Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual. |                                                                                                                                          |                                                                        |
| Power Source                                                                                                                                                                                                       | Battery supplied                                                                                                                         |                                                                        |
| Power Rating                                                                                                                                                                                                       | DC 1.5V                                                                                                                                  |                                                                        |
| Connecting I/O Port(s)                                                                                                                                                                                             | Please refer to the User's Manual                                                                                                        |                                                                        |
| Products Covered                                                                                                                                                                                                   | NA                                                                                                                                       |                                                                        |

**Note:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2. Channel List:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|
| 01      | 2407            | 06      | 2430            | 11      | 2456            |
| 02      | 2411            | 07      | 2434            | 12      | 2460            |
| 03      | 2415            | 08      | 2437            | 13      | 2468            |
| 04      | 2422            | 09      | 2445            | 14      | 2473            |
| 05      | 2426            | 10      | 2451            |         |                 |

3. Table of Filed Antenna:

| Antenna | Brand | Model Name | Type        | Connector Type | Gain (dBi) |
|---------|-------|------------|-------------|----------------|------------|
| 1       | N/A   | N/A        | Ant. On PCB | N/A            | 3.05       |



### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

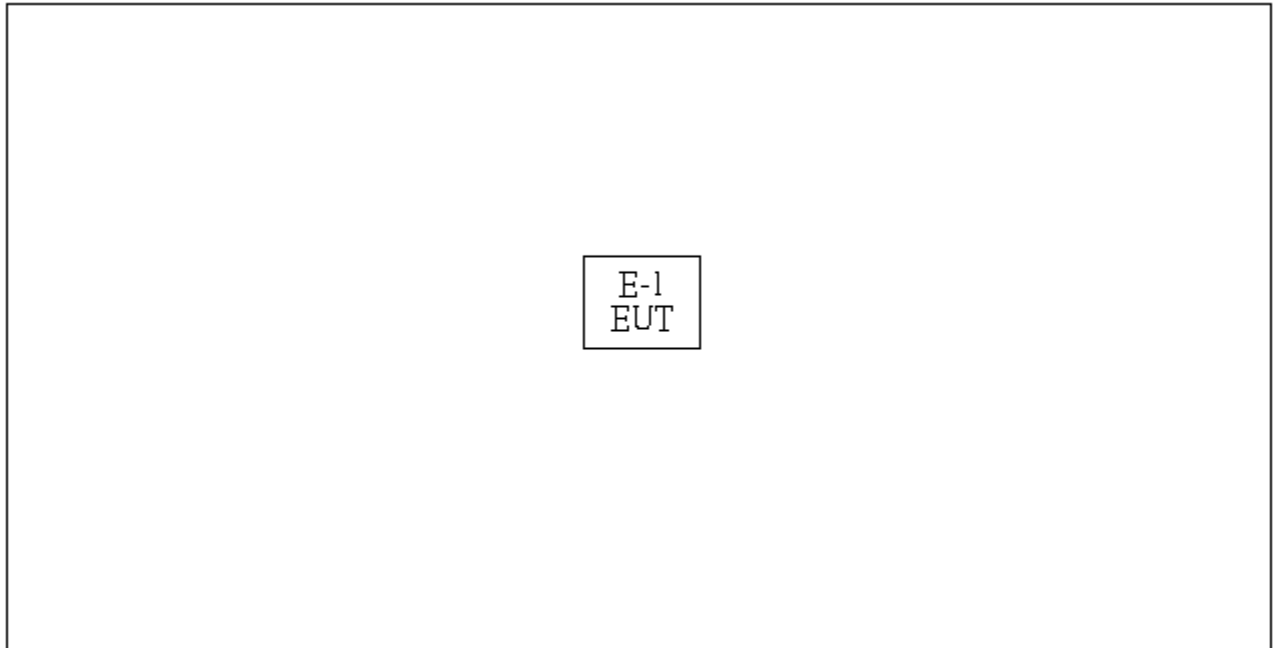
| Pretest Test Mode | Description |
|-------------------|-------------|
| Mode 1            | 2407MHz     |
| Mode 2            | 2437MHz     |
| Mode 3            | 2473MHz     |

| For Radiated Test (30 -1000MHz) |             |
|---------------------------------|-------------|
| Final Test Mode                 | Description |
| Mode 2                          | 2437MHz     |

| For Radiated Test (Above 1000MHz) |             |
|-----------------------------------|-------------|
| Final Test Mode                   | Description |
| Mode 1                            | 2407MHz     |
| Mode 2                            | 2437MHz     |
| Mode 3                            | 2473MHz     |



### **3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**





### 3.4 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.

| Item | Equipment        | Mfr/Brand | Model/Type No. | FCC ID   | Series No. | Note |
|------|------------------|-----------|----------------|----------|------------|------|
| E-1  | 2.4G RF Keyboard | A4TECH    | GD-300         | H8GGD300 | N/A        | EUT  |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| N/A  | -             | -            | -      |      |

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



#### 4. EMC EMISSION TEST

##### 4.1 RADIATED EMISSION MEASUREMENT

###### 4.1.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies<br>(MHz) | Field Strength<br>(micorvolts/meter) | Measurement Distance<br>(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                                |

###### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Class B (dBuV/m) (at 3m) |         |
|-----------------|--------------------------|---------|
|                 | PEAK                     | AVERAGE |
| Above 1000      | 74                       | 54      |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).



#### 4.1.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment       | Manufacturer | Type No.     | Serial No. | Calibrated until |
|------|-------------------------|--------------|--------------|------------|------------------|
| 1    | Spectrum Analyzer       | R&S          | FSP-40       | 100129     | Aug. 30, 2012    |
| 2    | Horn Antenna            | Schwarzbeck  | BBHA 9120    | D-325      | Dec. 08, 2011    |
| 3    | Microwave Pre_amplifier | Agilent      | 8449B        | 3008A01714 | Apr. 18, 2012    |
| 4    | Microflex Cable         | N/A          | N/A          | 1m         | May. 18, 2012    |
| 5    | Microflex Cable         | AISI         | S104-SMAP-1  | 10m        | Aug. 21, 2012    |
| 6    | Microflex Cable         | N/A          | N/A          | 3m         | Aug. 21, 2012    |
| 7    | Test Cable              | N/A          | LMR-400      | 966_12m    | Jun. 16, 2012    |
| 8    | Test Cable              | N/A          | LMR-400      | 966_3m     | Jun. 16, 2012    |
| 9    | Pre-Amplifier           | EMC          | EMC-330      | 980001     | Jun. 02, 2012    |
| 10   | Log-Bicon Antenna       | Schwarzbeck  | VULB9168-352 | 9168-352   | Jun. 16, 2012    |

Remark: " N/A" denotes No Model Name / Serial No. and No Calibration specified.

#### 4.1.3 TEST PROCEDURE

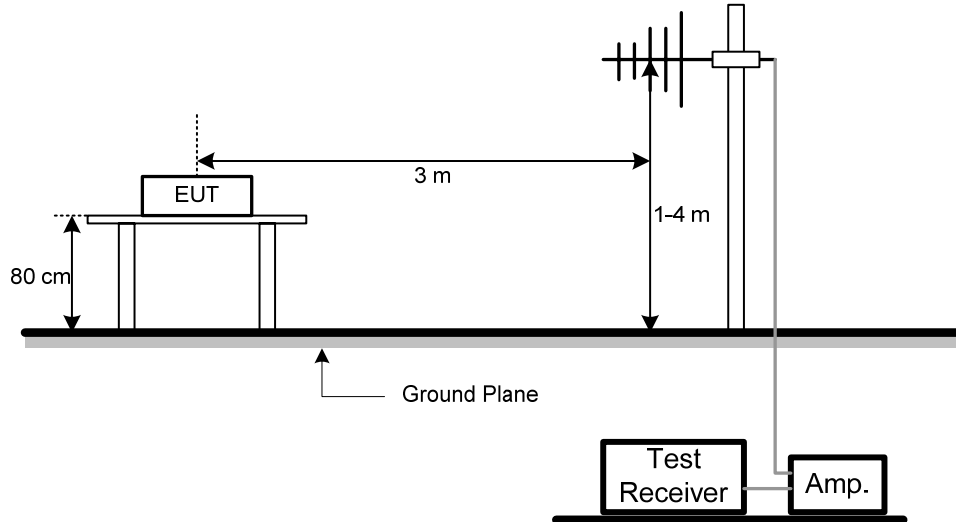
- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.1.4 DEVIATION FROM TEST STANDARD

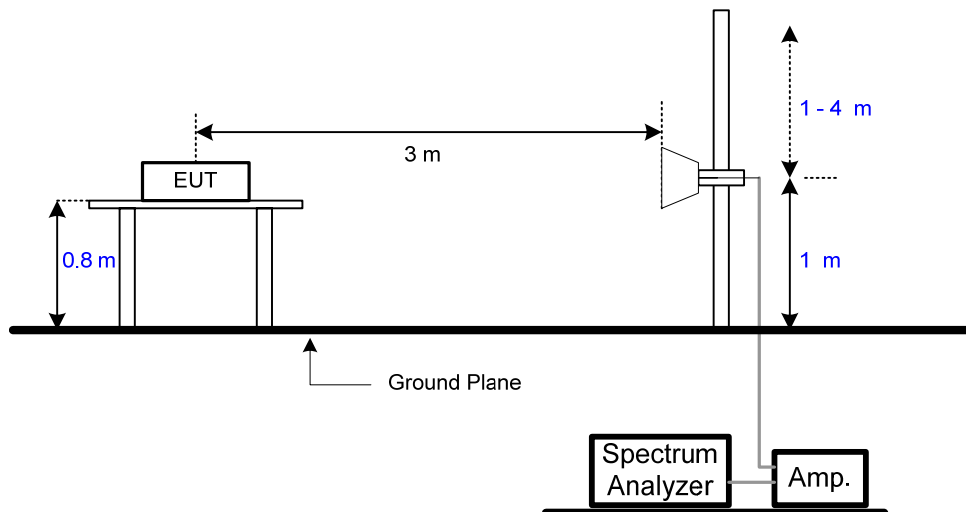
No deviation

#### 4.1.5 TEST SETUP

##### Radiated Emission Test Set-Up Frequency 30 - 1000MHz



##### Radiated Emission Test Set-Up Frequency Above 1 GHz



#### 4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operation condition was tested and used to collect the included data.



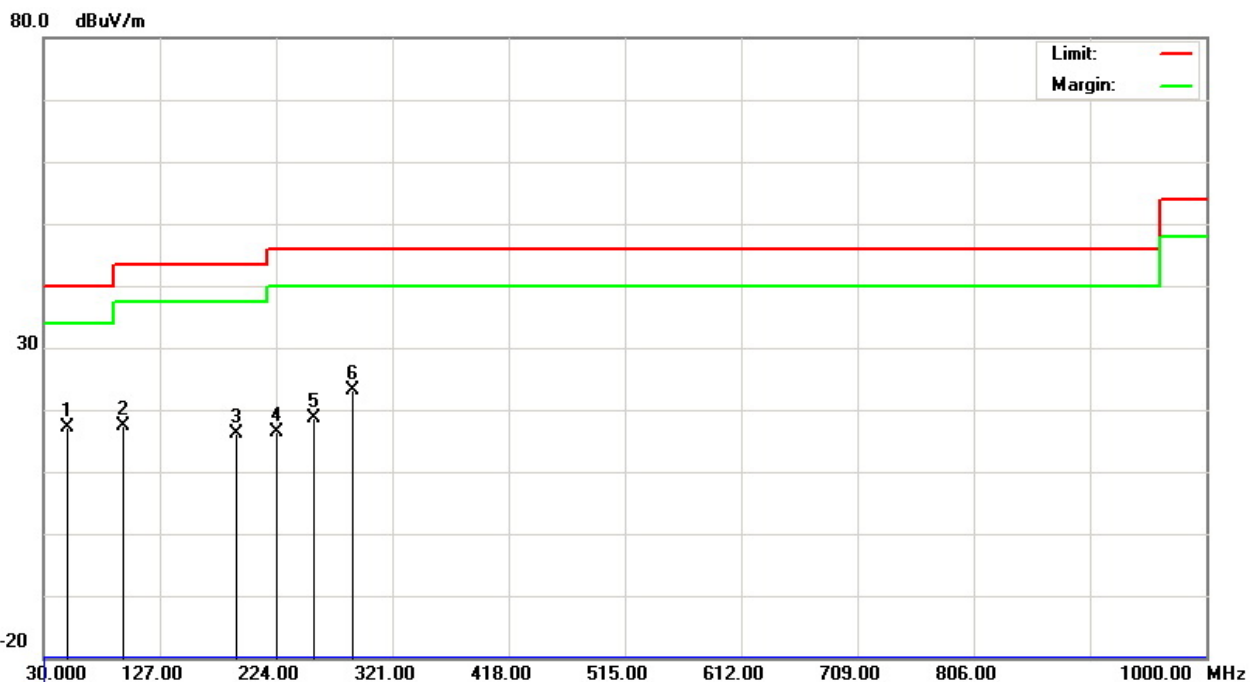
#### 4.1.7 TEST RESULTS-BETWEEN 30MHz – 1000MHz

|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 °C            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2437MHz          |                     |        |

| Freq.<br>(MHz) | Polarization<br>H/V | Reading Level<br>(dBuV) | Correct<br>Factor(dB) | Measurement<br>(dBuV/m) | Limit(Quasi-Peak)<br>(dBuV/m) | Margin<br>(dB) | Note |
|----------------|---------------------|-------------------------|-----------------------|-------------------------|-------------------------------|----------------|------|
| 49.4000        | V                   | 29.33                   | -12.26                | 17.07                   | 40.00                         | - 22.93        |      |
| 95.9600        | V                   | 35.63                   | -18.37                | 17.26                   | 43.50                         | - 26.24        |      |
| 191.0200       | V                   | 32.29                   | -16.13                | 16.16                   | 43.50                         | - 27.34        |      |
| 224.0000       | V                   | 31.64                   | -15.26                | 16.38                   | 46.00                         | - 29.62        |      |
| 255.0400       | V                   | 32.75                   | -14.02                | 18.73                   | 46.00                         | - 27.27        |      |
| 288.0200       | V                   | 35.96                   | -12.76                | 23.20                   | 46.00                         | - 22.80        |      |

#### Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz ◦
- (4) If the peak scan value is under the limit for more than 20dB, the signal will not show in table ◦



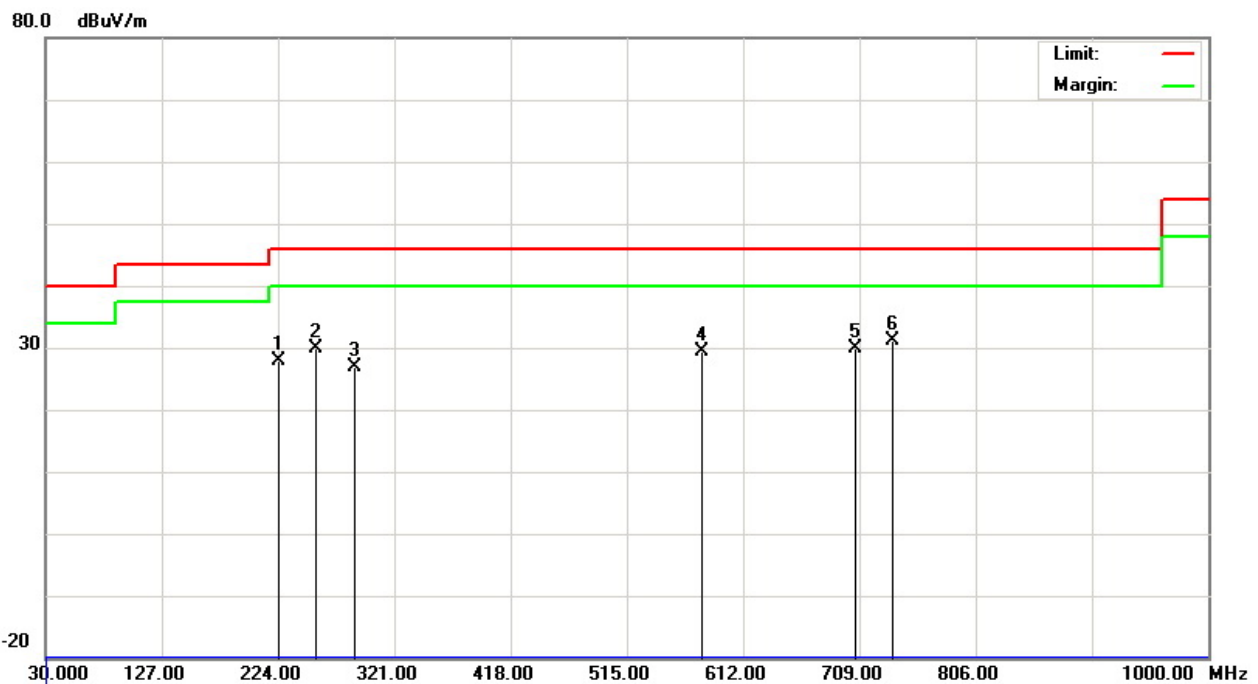


|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 °C            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2437MHz          |                     |        |

| Freq.<br>(MHz) | Polarization<br>H/V | Reading Level<br>(dBuV) | Correct<br>Factor(dB) | Measurement<br>(dBuV/m) | Limit(Quasi-Peak)<br>(dBuV/m) | Margin<br>(dB) | Note |
|----------------|---------------------|-------------------------|-----------------------|-------------------------|-------------------------------|----------------|------|
| 224.0000       | H                   | 43.05                   | -15.26                | 27.79                   | 46.00                         | - 18.21        |      |
| 255.0400       | H                   | 43.82                   | -14.02                | 29.80                   | 46.00                         | - 16.20        |      |
| 288.0200       | H                   | 39.67                   | -12.76                | 26.91                   | 46.00                         | - 19.09        |      |
| 577.0800       | H                   | 35.97                   | -6.61                 | 29.36                   | 46.00                         | - 16.64        |      |
| 705.1200       | H                   | 34.36                   | -4.44                 | 29.92                   | 46.00                         | - 16.08        |      |
| 736.1600       | H                   | 34.81                   | -3.75                 | 31.06                   | 46.00                         | - 14.94        |      |

**Remark :**

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz ◦
- (4) If the peak scan value is under the limit for more than 20dB, the signal will not show in table ◦





#### 4.1.8 TEST RESULTS-ABOVE 1000MHz

|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 °C            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2407MHz          |                     |        |

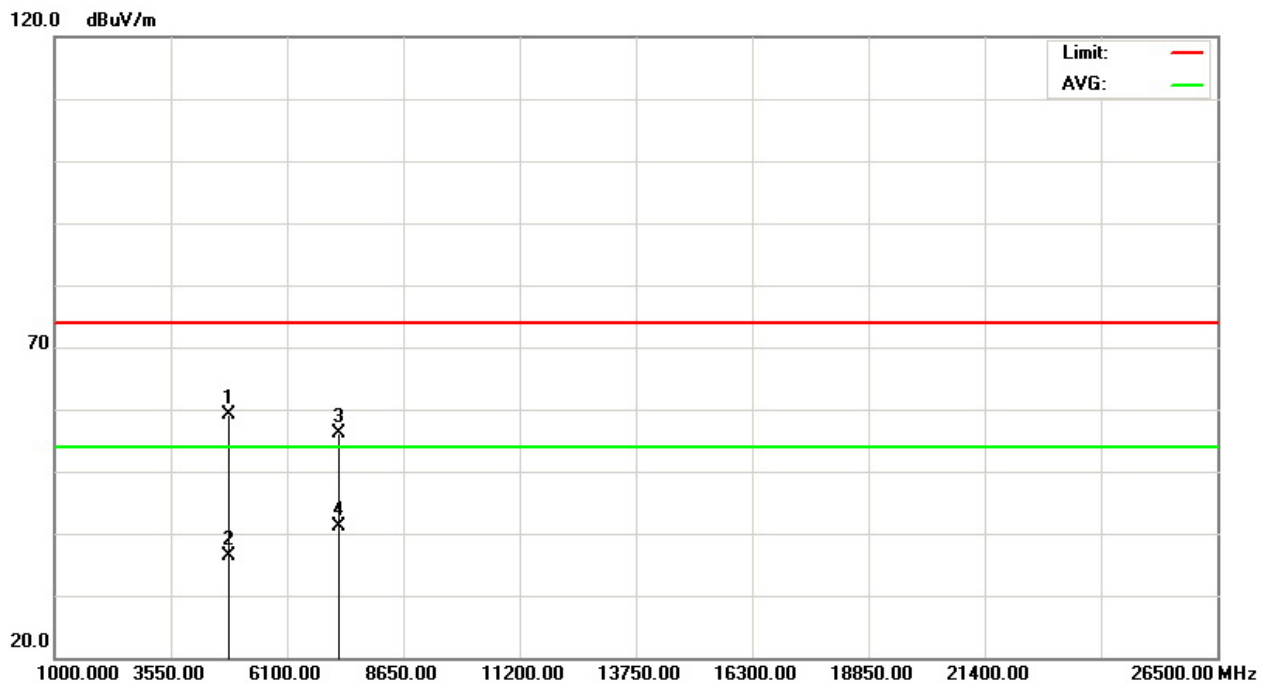
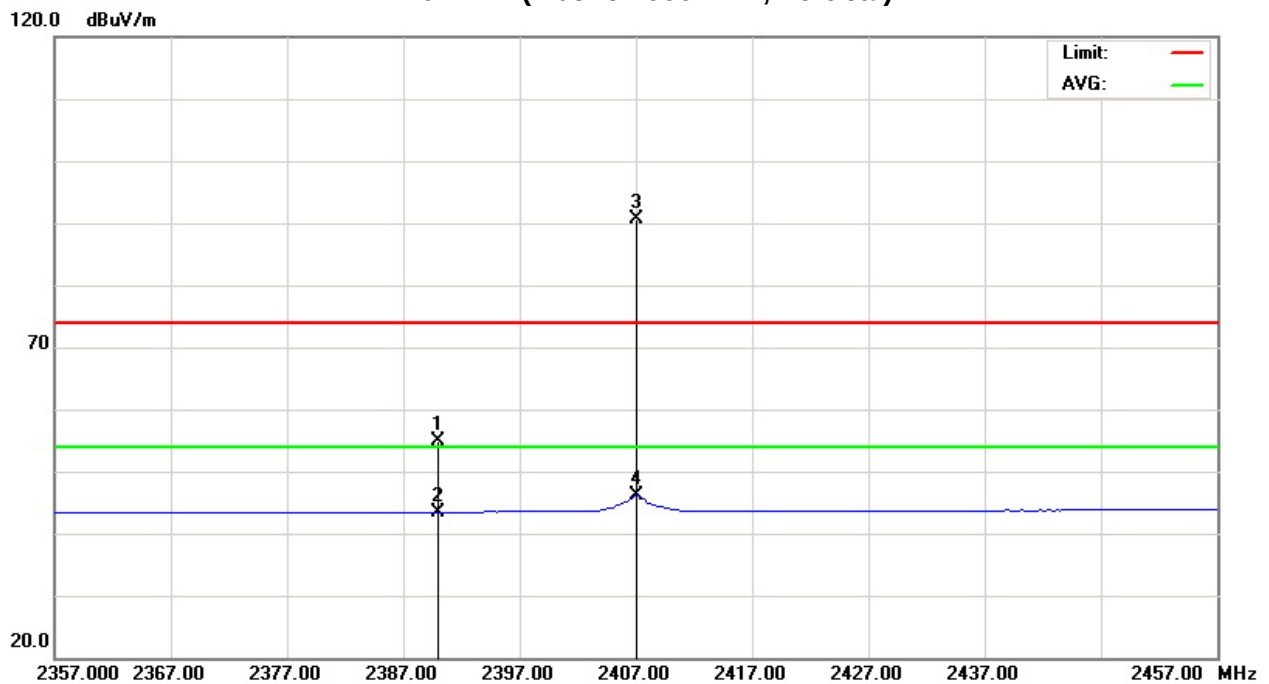
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note   |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|--------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |        |
| 2390.000       | X             | V                   | 22.66               | 11.29 | 32.15                 | 54.81               | 43.44 | 74.00         | 54.00 | - 10.56        | AV/E   |
| 2407.000       | X             | V                   | 58.38               | 13.88 | 32.23                 | 90.61               | 46.11 | -             | -     | -              | F      |
| 4814.050       | X             | V                   | 56.22               | 33.54 | 2.92                  | 59.14               | 36.46 | 74.00         | 54.00 | - 14.86        | Peak/H |
| 7220.240       | X             | V                   | 46.15               | 31.31 | 9.87                  | 56.02               | 41.18 | 74.00         | 54.00 | - 12.82        | AV/H   |

#### Remark :

- (1) Spectrum Setting :  
Peak: 1GHz- 25GHz: RBW= 1MHz, VBW= 1MHz, Sweep time = Auto  
AV: 1GHz- 25GHz: RBW= 1MHz, VBW= 10Hz, Sweep time = Auto
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axes : X  
2407MHz (Above 1000 MHz, Vertical)





|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 °C            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2407MHz          |                     |        |

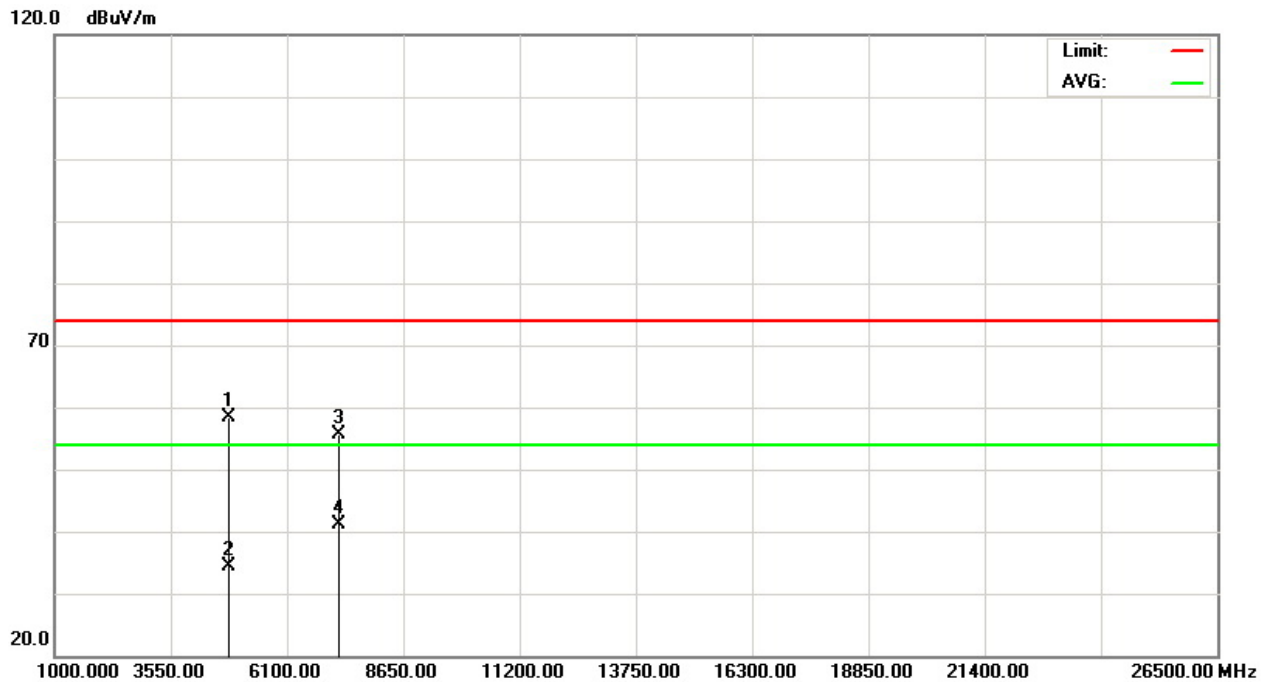
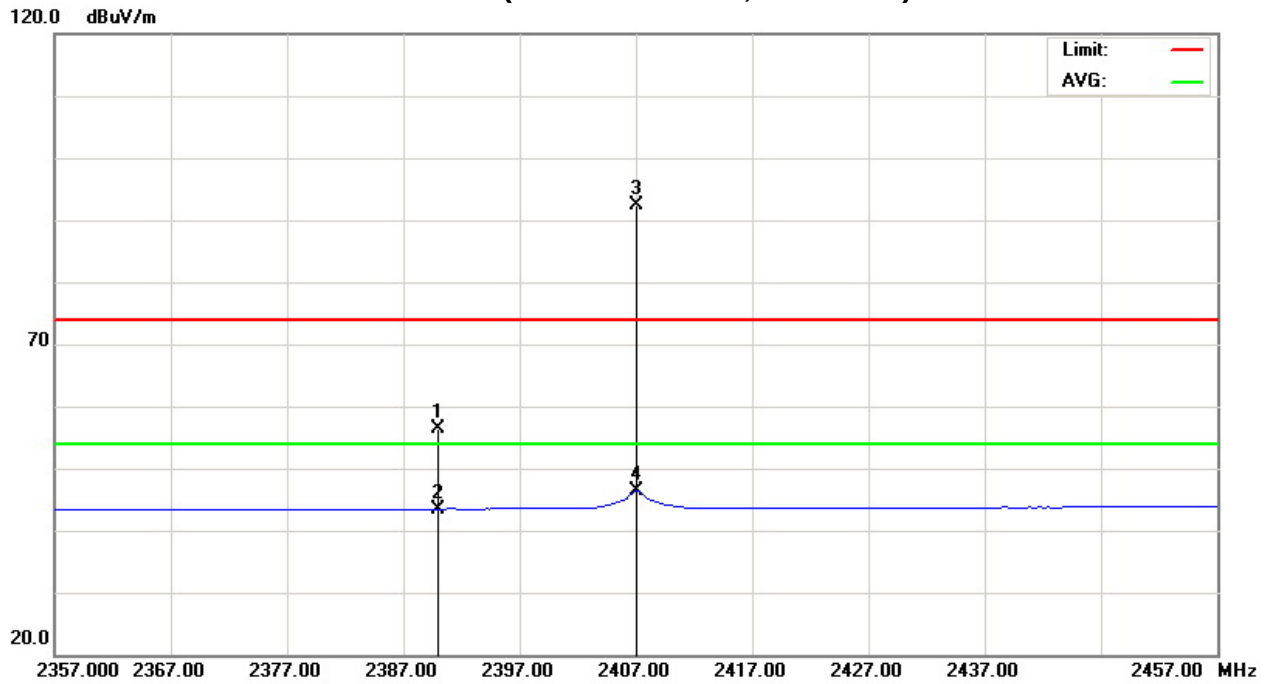
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note   |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|--------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |        |
| 2390.000       | X             | H                   | 24.25               | 11.29 | 32.15                 | 56.40               | 43.44 | 74.00         | 54.00 | - 10.56        | AV/E   |
| 2407.000       | X             | H                   | 60.11               | 14.15 | 32.23                 | 92.34               | 46.38 | -             | -     | -              | F      |
| 4814.010       | X             | H                   | 55.36               | 31.48 | 2.92                  | 58.28               | 34.40 | 74.00         | 54.00 | - 15.72        | Peak/H |
| 7220.330       | X             | H                   | 45.79               | 31.15 | 9.87                  | 55.66               | 41.02 | 74.00         | 54.00 | - 12.98        | AV/H   |

**Remark :**

- (1) Spectrum Setting :  
 Peak: 1GHz- 25GHz: RBW= 1MHz, VBW= 1MHz, Sweep time = Auto  
 AV: 1GHz- 25GHz: RBW= 1MHz, VBW= 10Hz, Sweep time = Auto
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axes : X  
2407MHz (Above 1000 MHz, Horizontal)





|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 ° C           | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2437MHz          |                     |        |

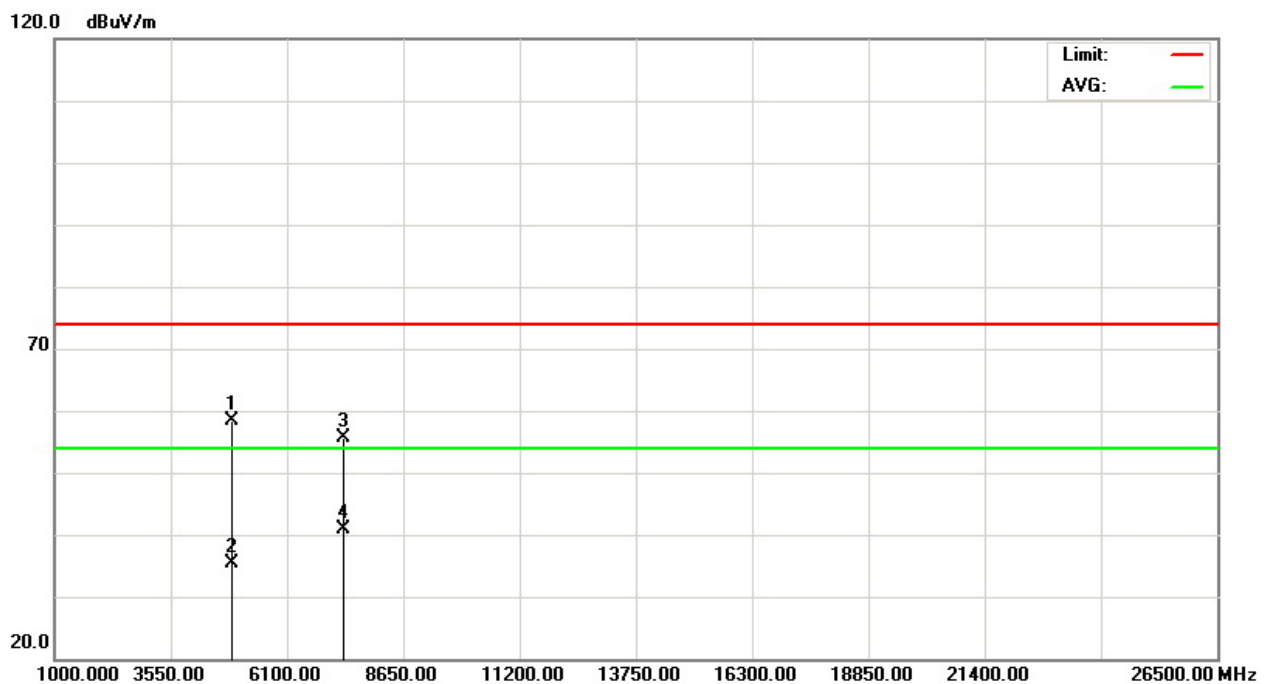
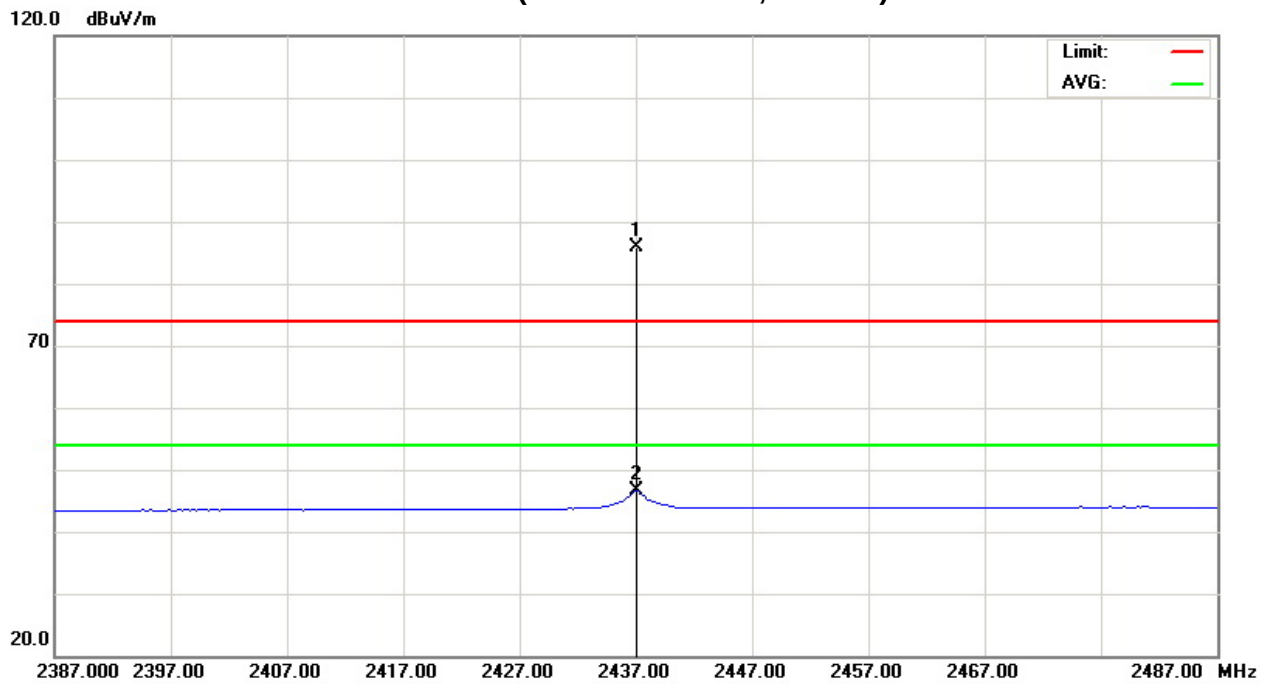
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note   |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|--------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |        |
| 2437.000       | X             | V                   | 53.41               | 14.27 | 32.37                 | 85.78               | 46.64 | -             | -     | -              | F      |
| 4873.990       | X             | V                   | 55.25               | 32.29 | 3.06                  | 58.31               | 35.35 | 74.00         | 54.00 | - 15.69        | Peak/H |
| 7312.920       | X             | V                   | 45.68               | 30.85 | 10.00                 | 55.68               | 40.85 | 74.00         | 54.00 | - 13.15        | AV/H   |

**Remark :**

- (1) Spectrum Setting :  
Peak: 1GHz- 25GHz: RBW= 1MHz, VBW= 1MHz, Sweep time = Auto  
AV: 1GHz- 25GHz: RBW= 1MHz, VBW= 10Hz, Sweep time = Auto
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axes : X  
2437MHz(Above 1000 MHz, Vertical)





|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 °C            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2437MHz          |                     |        |

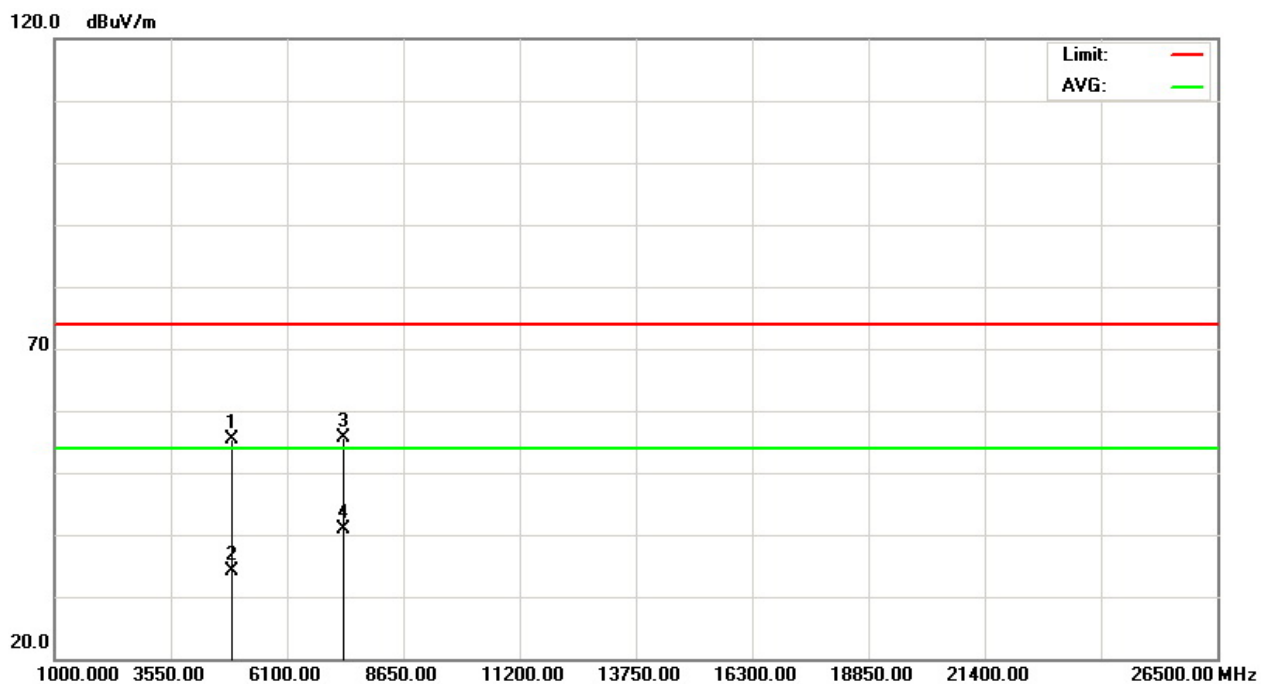
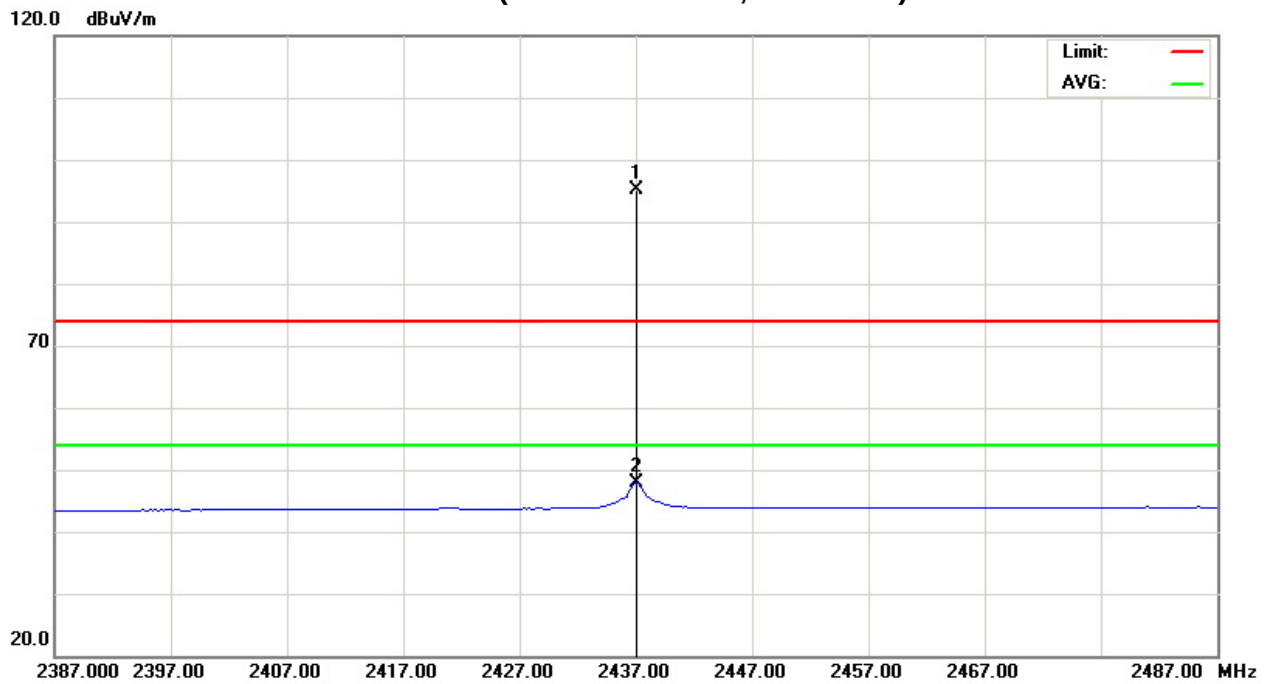
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note   |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|--------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |        |
| 2437.000       | X             | H                   | 62.78               | 15.56 | 32.37                 | 95.15               | 47.93 | -             | -     | -              | F      |
| 4874.090       | X             | H                   | 52.35               | 31.14 | 3.06                  | 55.41               | 34.20 | 74.00         | 54.00 | - 18.59        | Peak/H |
| 7311.350       | X             | H                   | 45.55               | 30.85 | 9.99                  | 55.54               | 40.84 | 74.00         | 54.00 | - 13.16        | AV/H   |

Remark :

- (1) Spectrum Setting :  
 Peak: 1GHz- 25GHz: RBW= 1MHz, VBW= 1MHz, Sweep time = Auto  
 AV: 1GHz- 25GHz: RBW= 1MHz, VBW= 10Hz, Sweep time = Auto
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axes : X  
2437MHz(Above 1000 MHz, Horizontal)





|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 °C            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2473MHz          |                     |        |

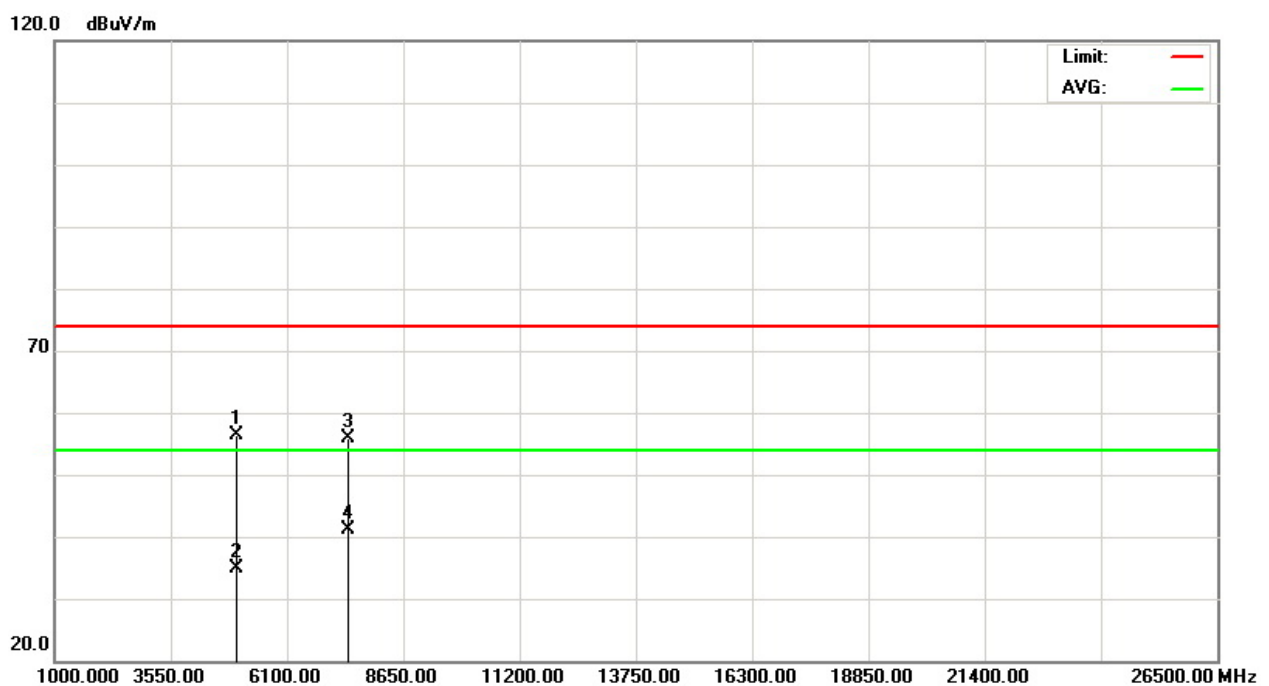
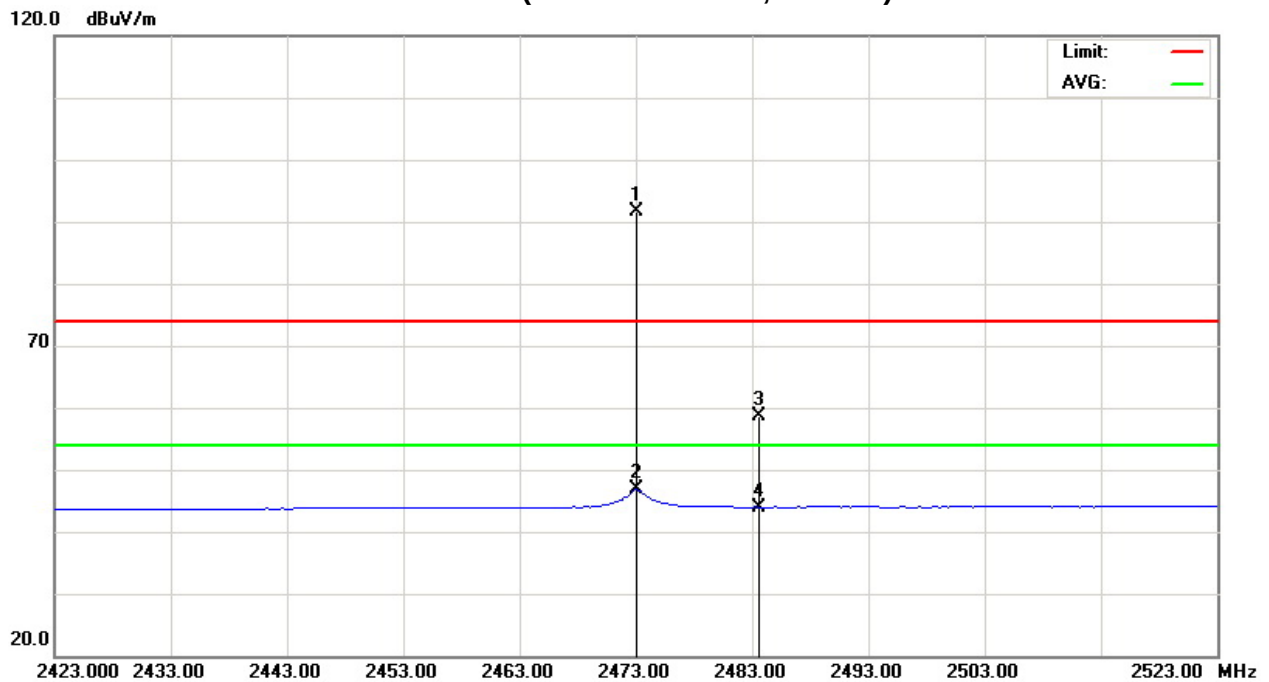
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note   |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|--------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |        |
| 2473.000       | X             | V                   | 59.10               | 14.29 | 32.54                 | 91.64               | 46.83 | -             | -     | -              | F      |
| 2483.500       | X             | V                   | 26.07               | 11.38 | 32.59                 | 58.66               | 43.97 | 74.00         | 54.00 | - 10.03        | AV/E   |
| 4946.070       | X             | V                   | 53.09               | 31.62 | 3.23                  | 56.32               | 34.85 | 74.00         | 54.00 | - 17.68        | Peak/H |
| 7418.990       | X             | V                   | 45.63               | 31.05 | 10.14                 | 55.77               | 41.19 | 74.00         | 54.00 | - 12.81        | AV/H   |

**Remark :**

- (1) Spectrum Setting :  
 Peak: 1GHz- 25GHz: RBW= 1MHz, VBW= 1MHz, Sweep time = Auto  
 AV: 1GHz- 25GHz: RBW= 1MHz, VBW= 10Hz, Sweep time = Auto
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axes : X  
2473MHz (Above 1000 MHz, Vertical)





|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 26 °C            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2473MHz          |                     |        |

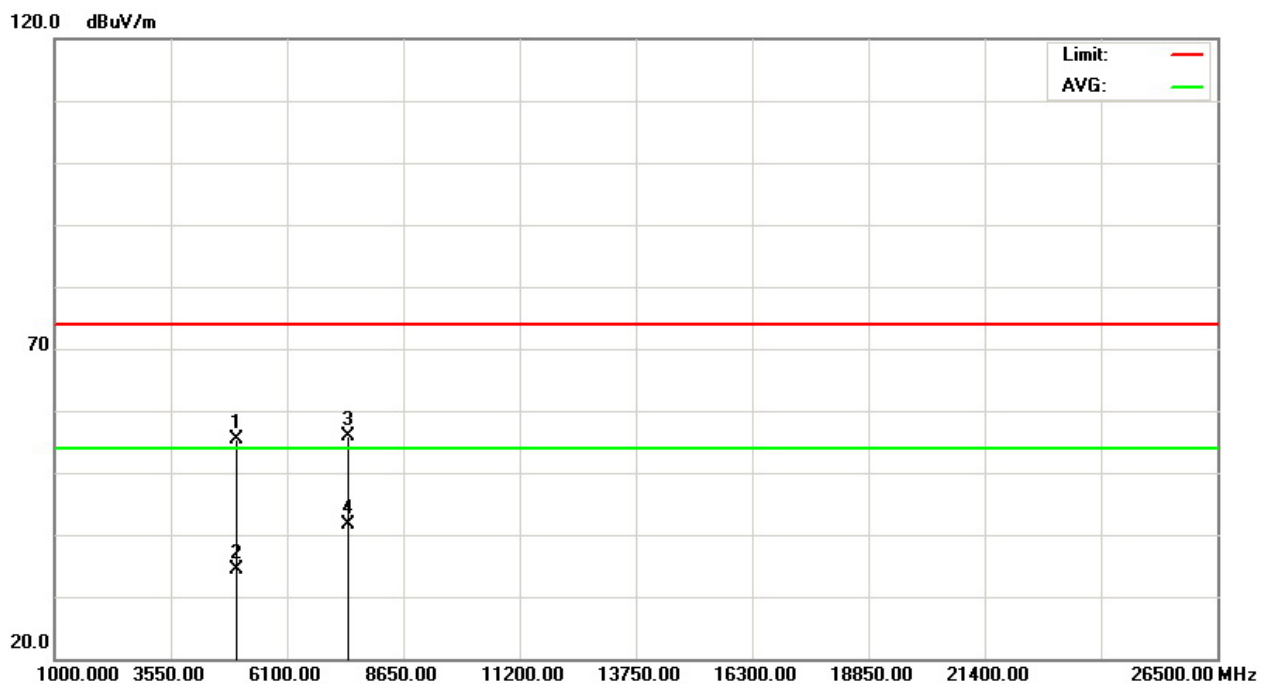
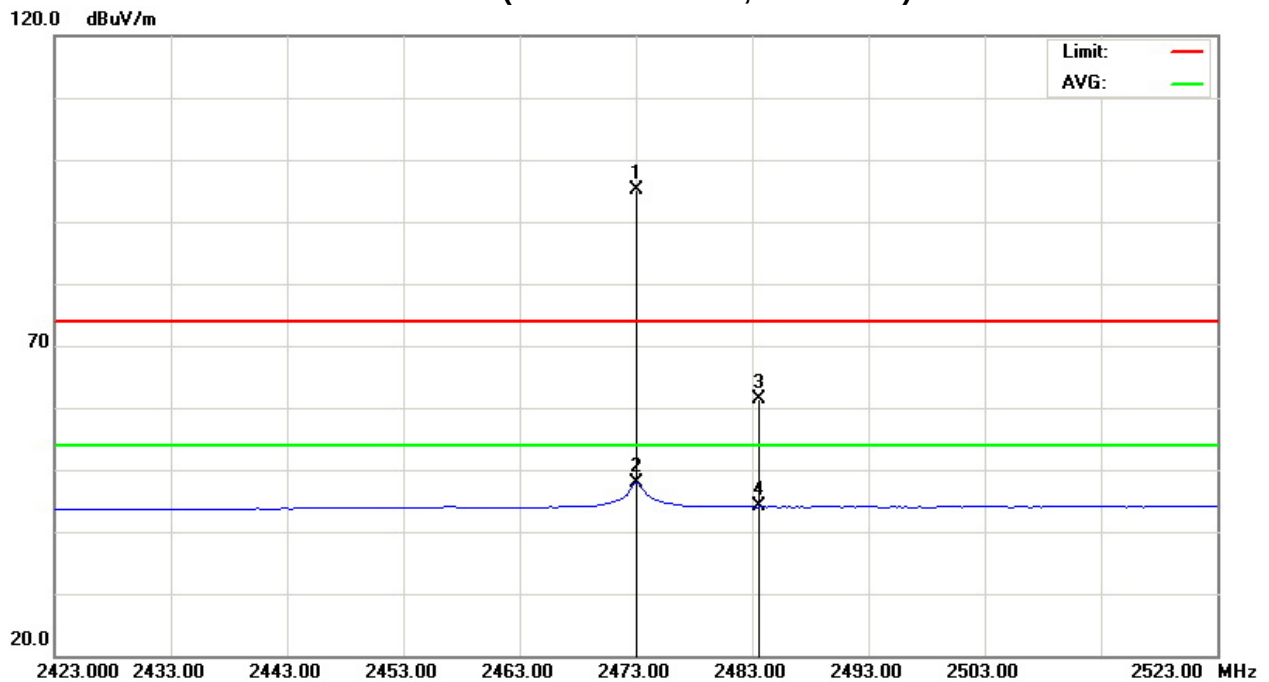
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note   |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|--------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |        |
| 2473.000       | X             | H                   | 62.51               | 15.38 | 32.54                 | 95.05               | 47.92 | -             | -     | -              | F      |
| 2483.500       | X             | H                   | 28.71               | 11.44 | 32.59                 | 61.30               | 44.03 | 74.00         | 54.00 | - 9.97         | AV/E   |
| 4946.030       | X             | H                   | 52.20               | 31.20 | 3.23                  | 55.43               | 34.43 | 74.00         | 54.00 | - 18.57        | Peak/H |
| 7419.500       | X             | H                   | 45.76               | 31.40 | 10.14                 | 55.90               | 41.54 | 74.00         | 54.00 | - 12.46        | AV/H   |

**Remark :**

- (1) Spectrum Setting :  
 Peak: 1GHz- 25GHz: RBW= 1MHz, VBW= 1MHz, Sweep time = Auto  
 AV: 1GHz- 25GHz: RBW= 1MHz, VBW= 10Hz, Sweep time = Auto
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axes : X  
2473MHz (Above 1000 MHz, Horizontal)





#### 4.1.9 TEST RESULTS-RESTRICTED BANDS REQUIREMENTS

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |        |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Model Name :        | GD-300 |
| Temperature :  | 26 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                     |        |
| Test Mode :    | TX CH 2407MHz/2473MHz(Vertical)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |        |
| Note :         | <p>The emission of the carrier radiated field strength is measured for (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (2407MHz). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (2473MHz). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol> |                     |        |

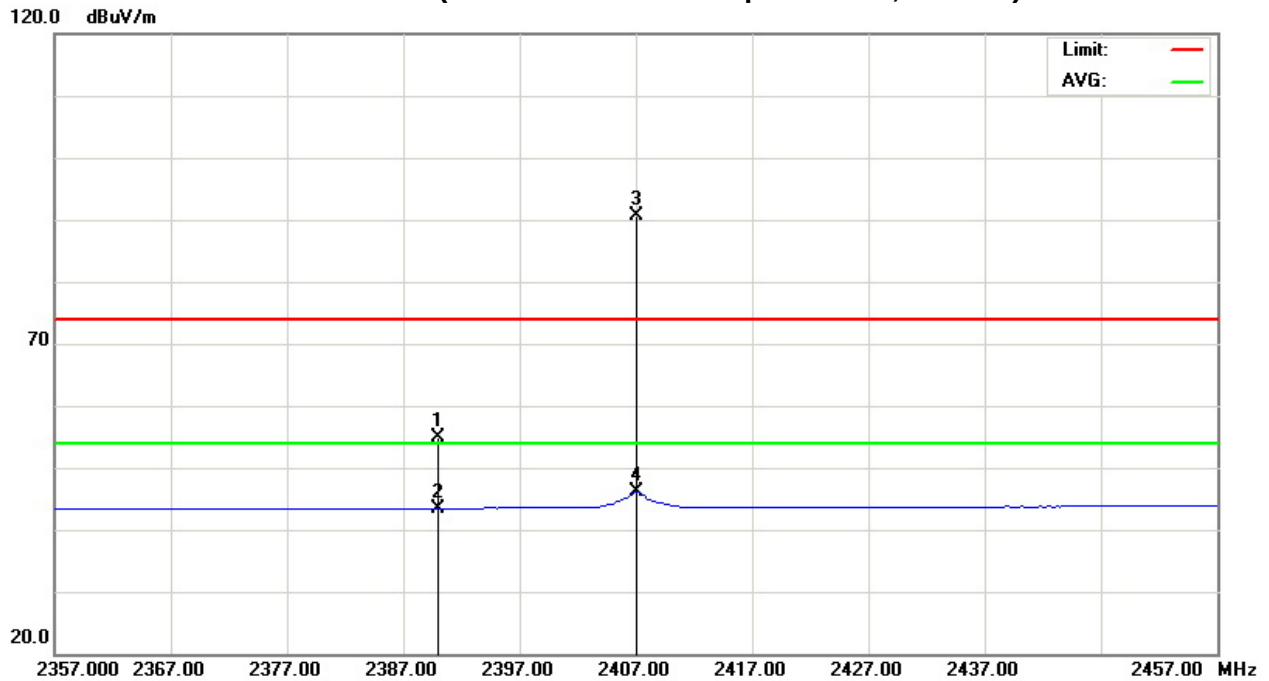
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |      |
| 2390.000       | X             | V                   | 22.66               | 11.29 | 32.15                 | 54.81               | 43.44 | 74.00         | 54.00 | - 10.56        | AV   |
| 2483.500       | X             | V                   | 26.07               | 11.38 | 32.59                 | 58.66               | 43.97 | 74.00         | 54.00 | - 10.03        | AV   |

Remark :

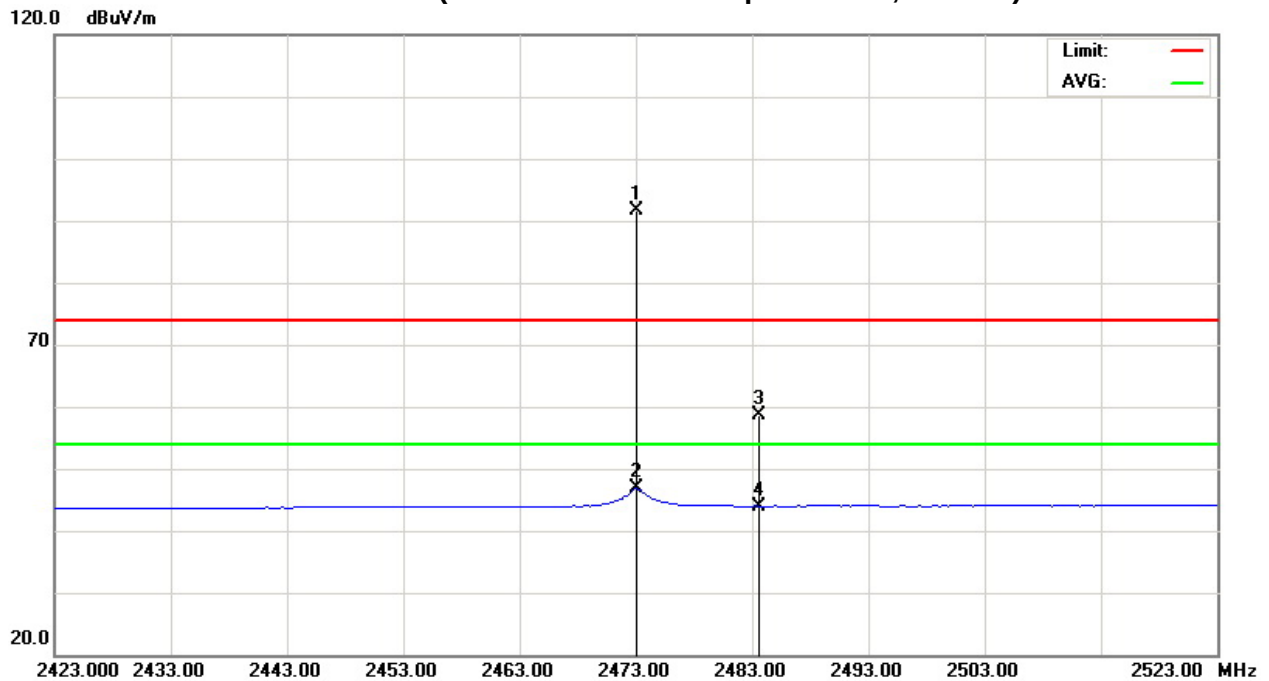
- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission °
- (2) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



### TX 2407MHz (Restricted Bands Requirements, Vertical)



### TX 2473MHz (Restricted Bands Requirements, Vertical)





|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |        |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Model Name :        | GD-300 |
| Temperature :  | 26 ° C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Relative Humidity : | 60%    |
| Test Voltage : | DC 1.5V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                     |        |
| Test Mode :    | TX CH 2407MHz/2473MHz (Horizontal)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                     |        |
| Note :         | <p>The emission of the carrier radiated field strength is measured for (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (2407MHz). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (2473MHz). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol> |                     |        |

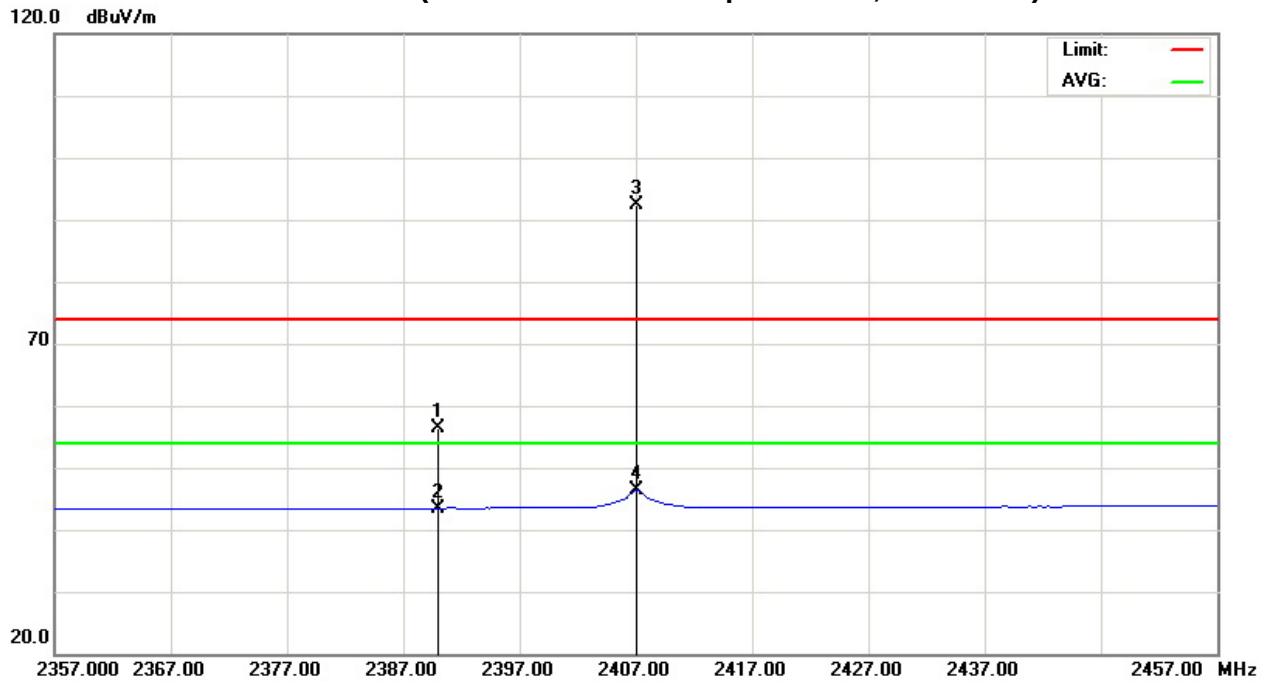
| Freq.<br>(MHz) | Axis<br>X/Y/Z | Polarization<br>H/V | Reading Level(dBuV) |       | Correct<br>Factor(dB) | Measurement(dBuV/m) |       | Limit(dBuV/m) |       | Margin<br>(dB) | Note |
|----------------|---------------|---------------------|---------------------|-------|-----------------------|---------------------|-------|---------------|-------|----------------|------|
|                |               |                     | Peak                | AV    |                       | Peak                | AV    | Peak          | AV    |                |      |
| 2390.000       | X             | H                   | 24.25               | 11.29 | 32.15                 | 56.40               | 43.44 | 74.00         | 54.00 | - 10.56        | AV   |
| 2483.500       | X             | H                   | 28.71               | 11.44 | 32.59                 | 61.30               | 44.03 | 74.00         | 54.00 | - 9.97         | AV   |

**Remark :**

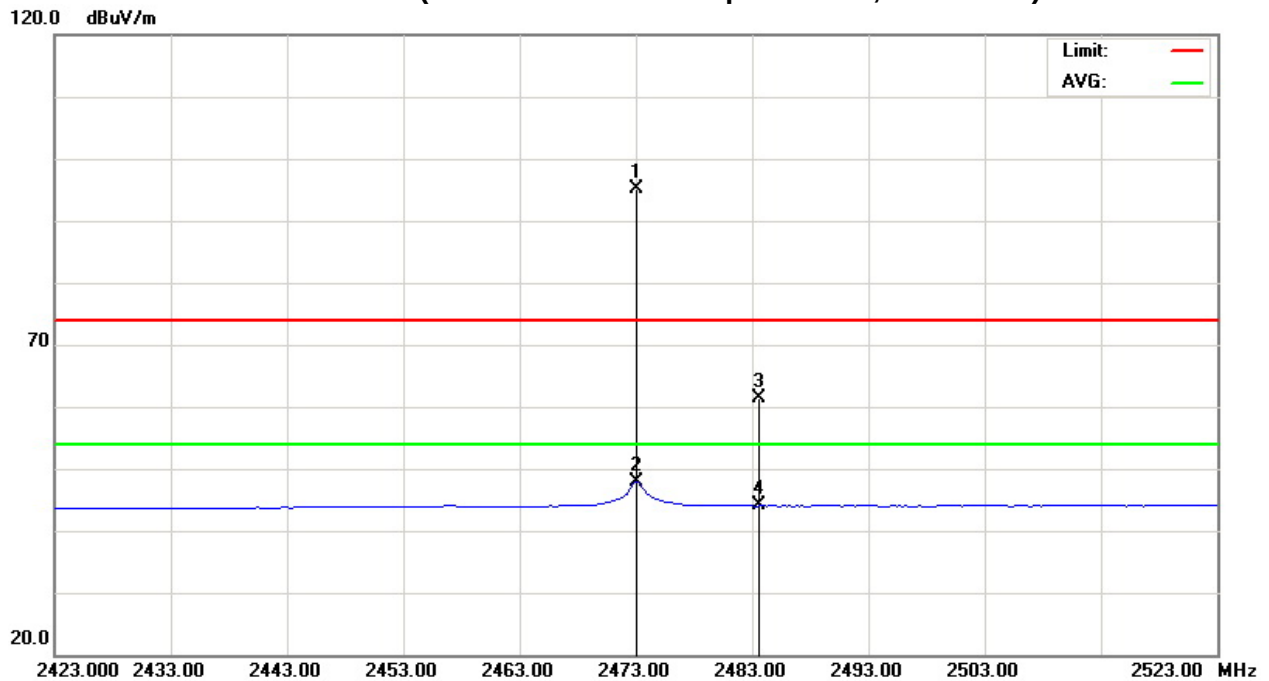
- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (2) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



### TX 2407MHz (Restricted Bands Requirements, Horizontal)



### TX 2473MHz (Restricted Bands Requirements, Horizontal)





## 5. BANDWIDTH TEST

### 5.1 APPLIED PROCEDURES / LIMIT

| FCC Part15, Subpart C |                                         |                       |        |
|-----------------------|-----------------------------------------|-----------------------|--------|
| Test Item             | Limit                                   | Frequency Range (MHz) | Result |
| Bandwidth             | $\geq 500\text{KHz}$<br>(6dB bandwidth) | 2400-2483.5           | PASS   |

#### 5.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Aug. 30, 2012    |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### 5.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

#### 5.1.3 DEVIATION FROM STANDARD

No deviation.

#### 5.1.4 TEST SETUP



#### 5.1.5 EUT OPERATION CONDITIONS

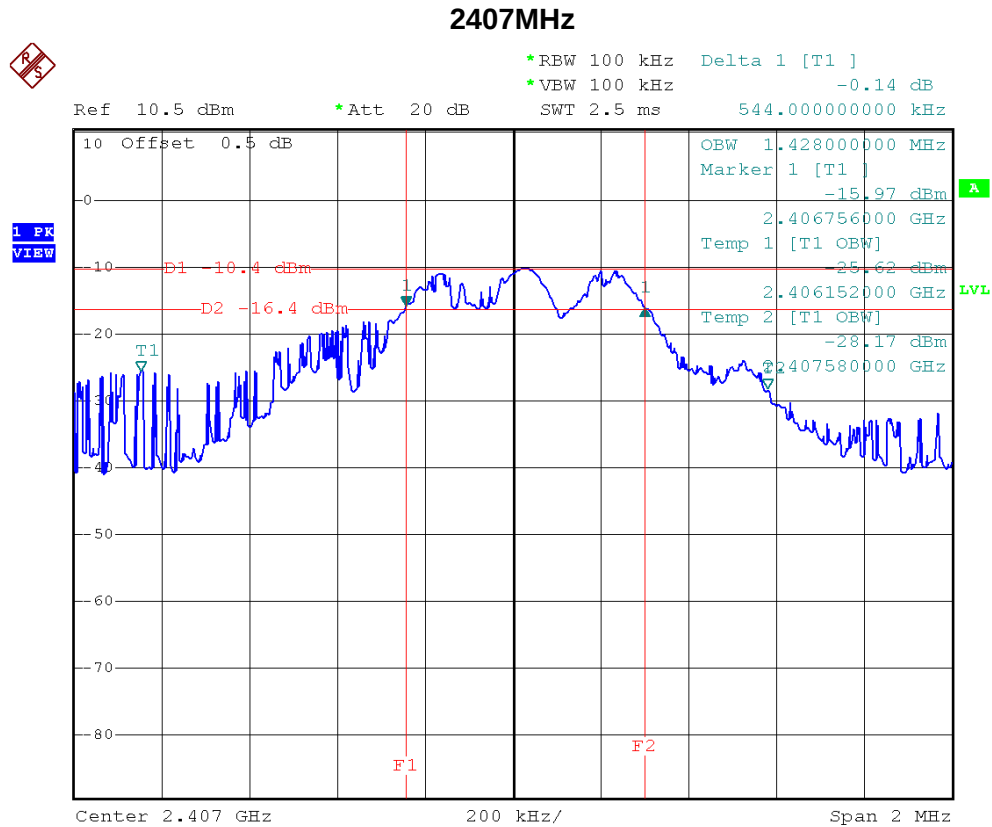
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



### 5.1.6 TEST RESULTS

|                |                         |                     |        |
|----------------|-------------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard        | Model Name :        | GD-300 |
| Temperature :  | 24° C                   | Relative Humidity : | 54%    |
| Test Voltage : | DC 1.5V                 |                     |        |
| Test Mode :    | 2407MHz/2437MHz/2473MHz |                     |        |

| Test Channel | Frequency (MHz) | Bandwidth (MHz) | 99% Occupied BW (MHz) | LIMIT (MHz) |
|--------------|-----------------|-----------------|-----------------------|-------------|
| 01           | 2407            | 0.54            | 1.43                  | >=500KHz    |
| 08           | 2437            | 0.56            | 1.27                  | >=500KHz    |
| 14           | 2473            | 0.56            | 1.46                  | >=500KHz    |





### 2437MHz

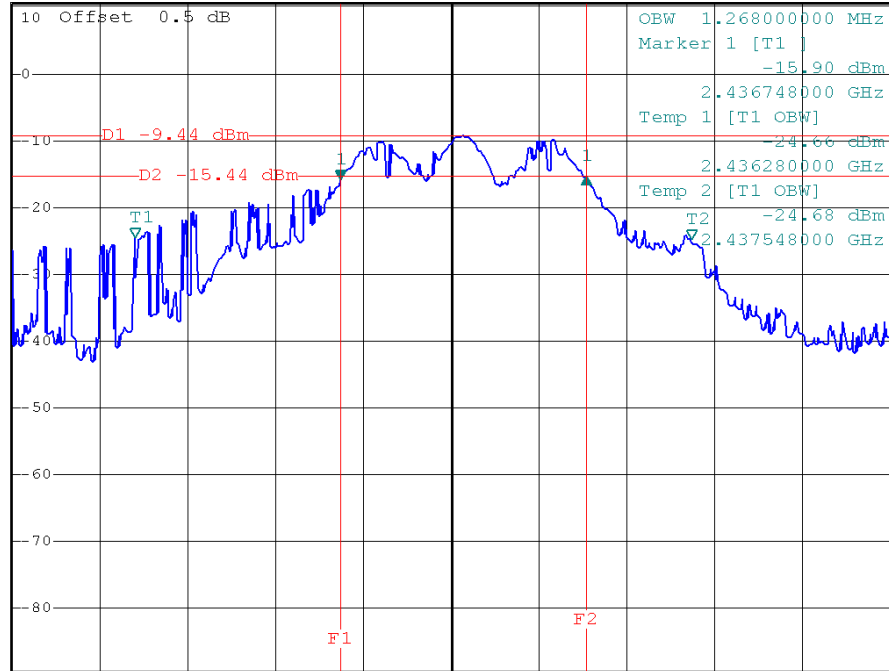


\*RBW 100 kHz Delta 1 [T1 ]  
\*VBW 100 kHz 0.47 dB  
SWT 2.5 ms 560.000000000 kHz

Ref 10.5 dBm

\*Att 20 dB

1 PK  
VIEW



Center 2.437 GHz

200 kHz/

Span 2 MHz

### 2473MHz

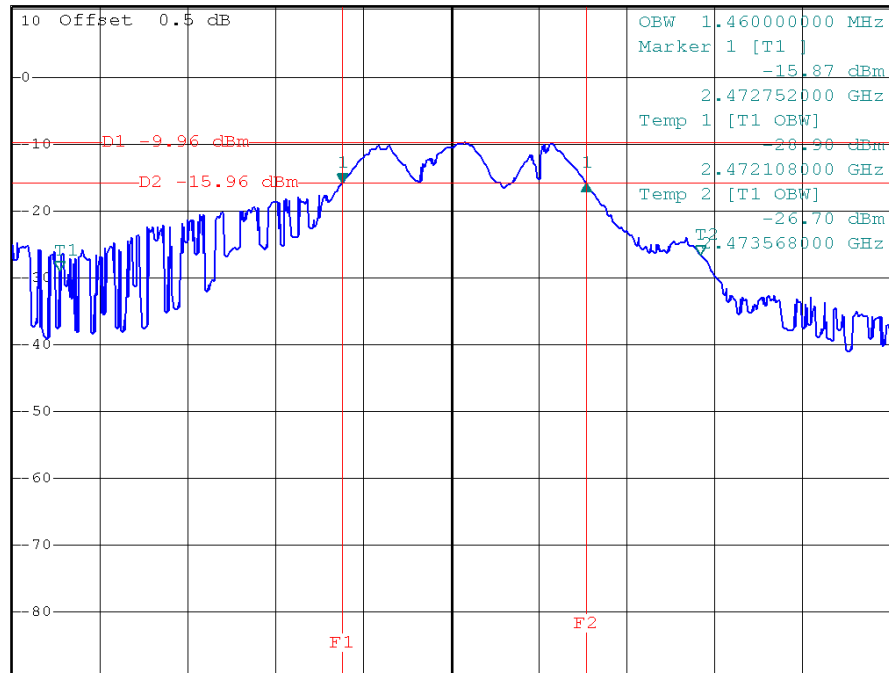


\*RBW 100 kHz Delta 1 [T1 ]  
\*VBW 100 kHz 0.04 dB  
SWT 2.5 ms 556.000000000 kHz

Ref 10.5 dBm

\*Att 20 dB

1 PK  
VIEW



Center 2.473 GHz

200 kHz/

Span 2 MHz



## 6. PEAK OUTPUT POWER TEST

### 6.1 APPLIED PROCEDURES / LIMIT

| FCC Part15, Subpart C |                 |                       |        |
|-----------------------|-----------------|-----------------------|--------|
| Test Item             | Limit           | Frequency Range (MHz) | Result |
| Peak Output Power     | 1 watt or 30dBm | 2400-2483.5           | PASS   |

#### 6.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Aug. 30, 2012    |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### 6.1.2 TEST PROCEDURE

The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,

#### 6.1.3 DEVIATION FROM STANDARD

No deviation.

#### 6.1.4 TEST SETUP



#### 6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



#### 6.1.6 TEST RESULTS

|                |                         |                     |        |
|----------------|-------------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard        | Model Name :        | GD-300 |
| Temperature :  | 24 °C                   | Relative Humidity : | 54%    |
| Test Voltage : | DC 1.5V                 |                     |        |
| Test Mode :    | 2407MHz/2437MHz/2473MHz |                     |        |

| Test Channel | Frequency<br>(MHz) | Peak Output Power<br>(dBm) | LIMIT<br>(dBm) | LIMIT<br>(W) |
|--------------|--------------------|----------------------------|----------------|--------------|
| 01           | 2407               | -9.66                      | 30             | 1            |
| 08           | 2437               | -10.54                     | 30             | 1            |
| 14           | 2473               | -9.98                      | 30             | 1            |



## 7. ANTENNA CONDUCTED SPURIOUS EMISSION

### 7.1 APPLIED PROCEDURES / LIMIT

| FCC Part15, Subpart C               |                                                        |                       |        |
|-------------------------------------|--------------------------------------------------------|-----------------------|--------|
| Test Item                           | Limit                                                  | Frequency Range (MHz) | Result |
| Antenna conducted Spurious Emission | 20dB less than the peak value of fundamental frequency | 30-25000              | PASS   |

#### 7.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Aug. 30, 2012    |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### 7.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

#### 7.1.3 DEVIATION FROM STANDARD

No deviation.

#### 7.1.4 TEST SETUP



#### 7.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



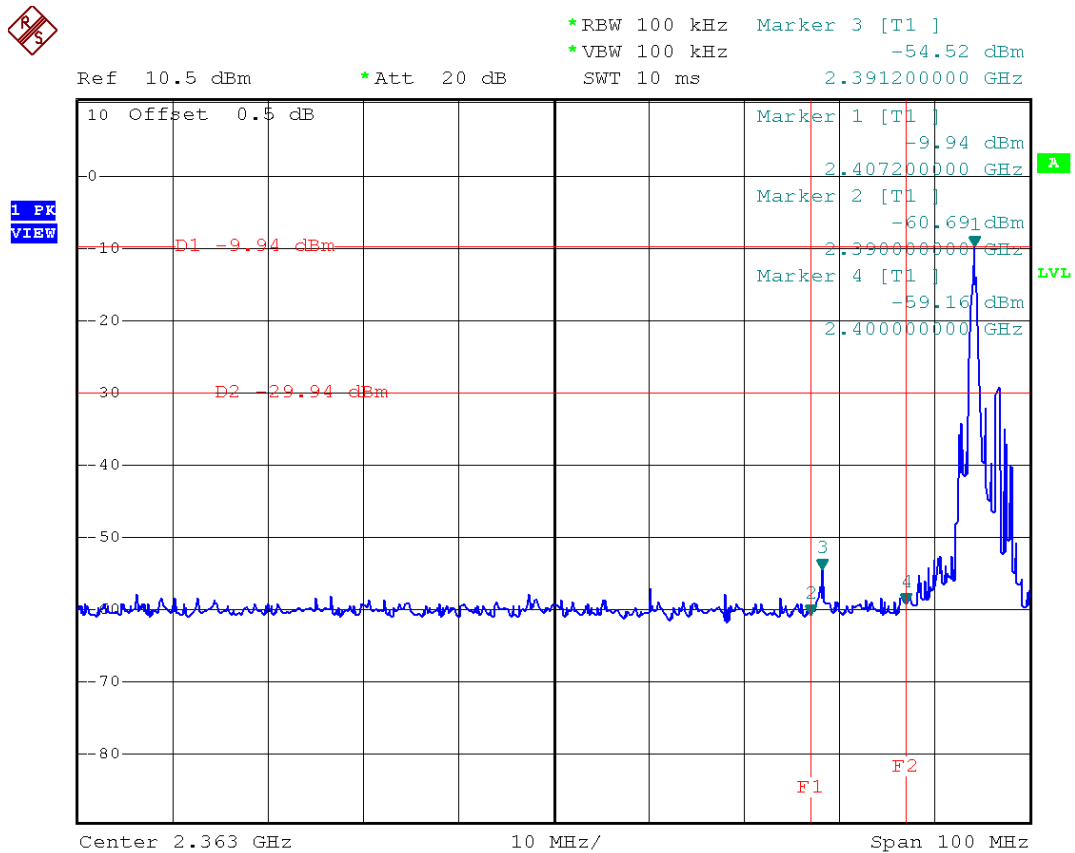
**7.1.6 TEST RESULTS**

|                |                  |                     |        |
|----------------|------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard | Model Name :        | GD-300 |
| Temperature :  | 24 °C            | Relative Humidity : | 54%    |
| Test Voltage : | DC 1.5V          |                     |        |
| Test Mode :    | 2407MHz/2473MHz  |                     |        |

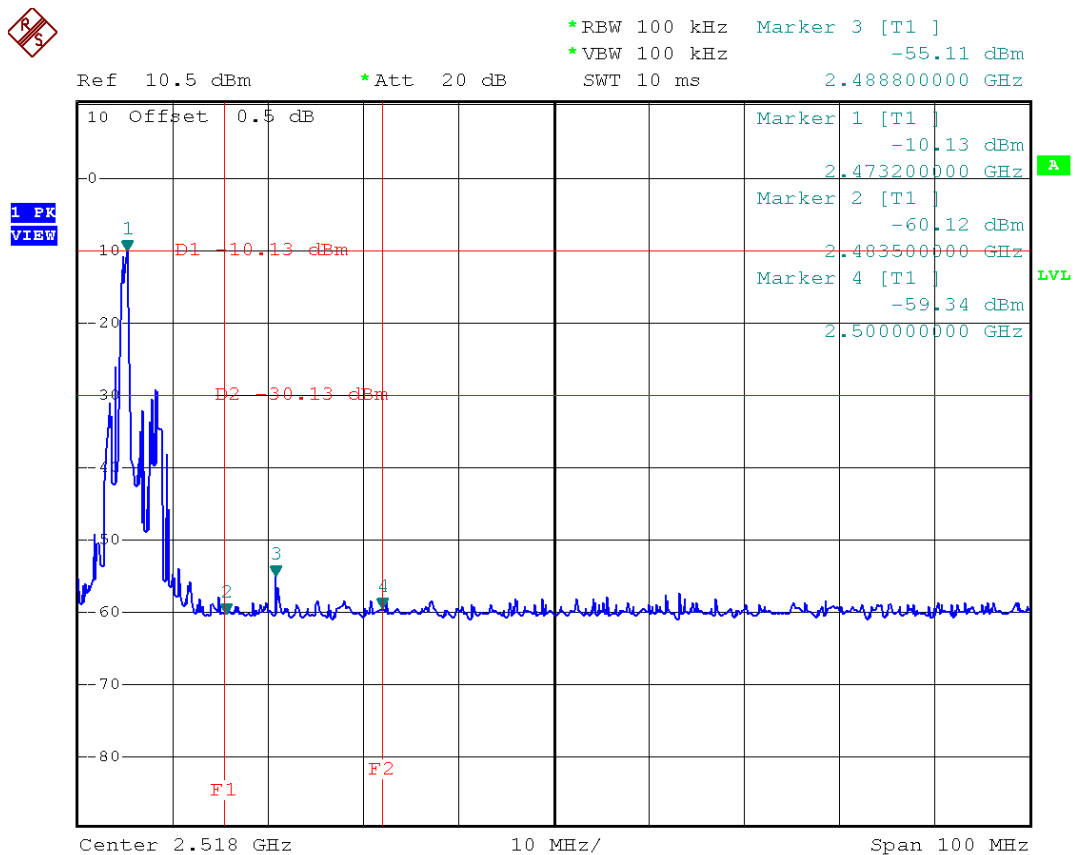
| Channel of Worst Data: 2407MHz,2473MHz                                                                                                                                                                  |            |                                                                                    |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------|------------|
| The max. radio frequency power in any 100kHz bandwidth outside the frequency band                                                                                                                       |            | The max. radio frequency power in any 100 kHz bandwidth within the frequency band. |            |
| FREQUENCY(MHz)                                                                                                                                                                                          | POWER(dBm) | FREQUENCY(MHz)                                                                     | POWER(dBm) |
| 2381.20                                                                                                                                                                                                 | -54.52     | 2488.80                                                                            | -55.11     |
| Result                                                                                                                                                                                                  |            |                                                                                    |            |
| In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |            |                                                                                    |            |



### 2407MHz



### 2473MHz

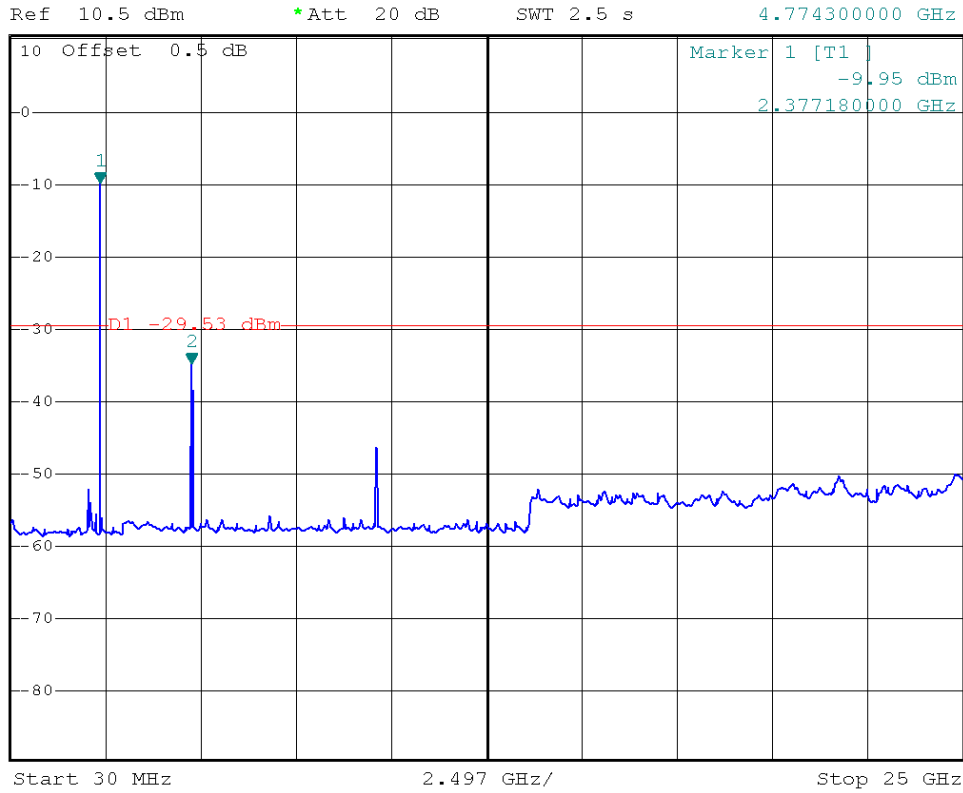




### 2407MHz



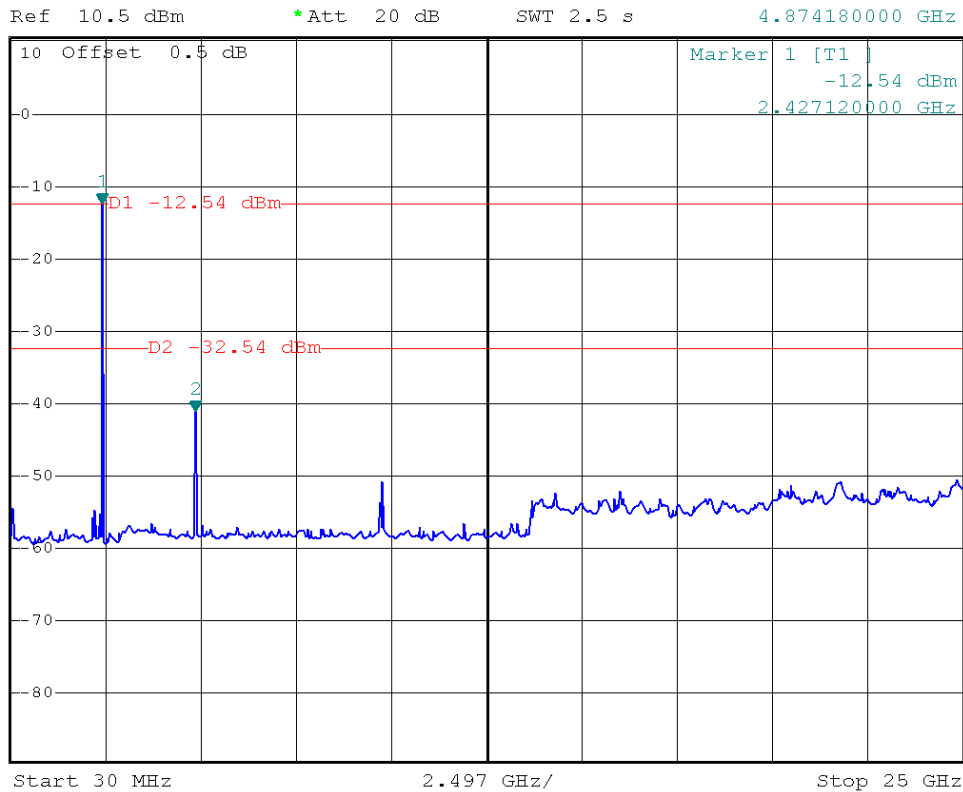
\*RBW 100 kHz Marker 2 [T1 ]  
\*VBW 100 kHz -34.76 dBm  
SWT 2.5 s 4.774300000 GHz



### 2437MHz



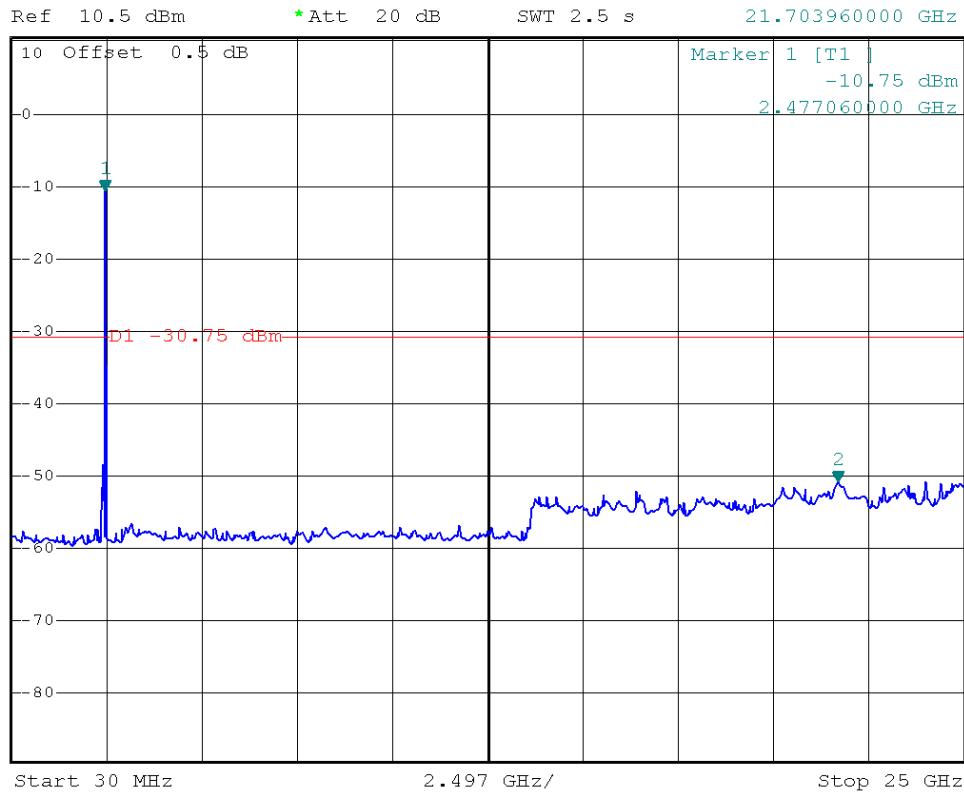
\*RBW 100 kHz Marker 2 [T1 ]  
\*VBW 100 kHz -41.16 dBm  
SWT 2.5 s 4.874180000 GHz





2473MHz

\*RBW 100 kHz Marker 2 [T1 ]  
\*VBW 100 kHz -50.69 dBm  
SWT 2.5 s 21.703960000 GHz





## 8. POWER SPECTRAL DENSITY TEST

### 8.1 APPLIED PROCEDURES / LIMIT

| FCC Part15, Subpart C  |                        |                       |        |
|------------------------|------------------------|-----------------------|--------|
| Test Item              | Limit                  | Frequency Range (MHz) | Result |
| Power Spectral Density | 8 dBm<br>(in any 3KHz) | 2400-2483.5           | PASS   |

#### 8.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Aug. 30, 2012    |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

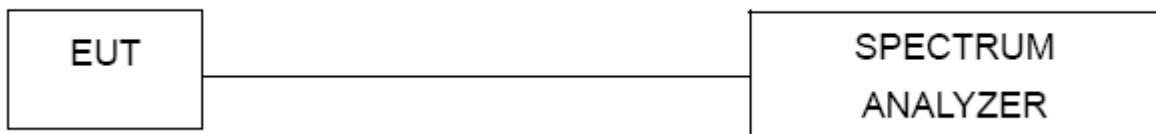
#### 8.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW=3KHz, VBW=30KHz, Sweep time = 500s.

#### 8.1.3 DEVIATION FROM STANDARD

No deviation.

#### 8.1.4 TEST SETUP



#### 8.1.5 EUT OPERATION CONDITIONS

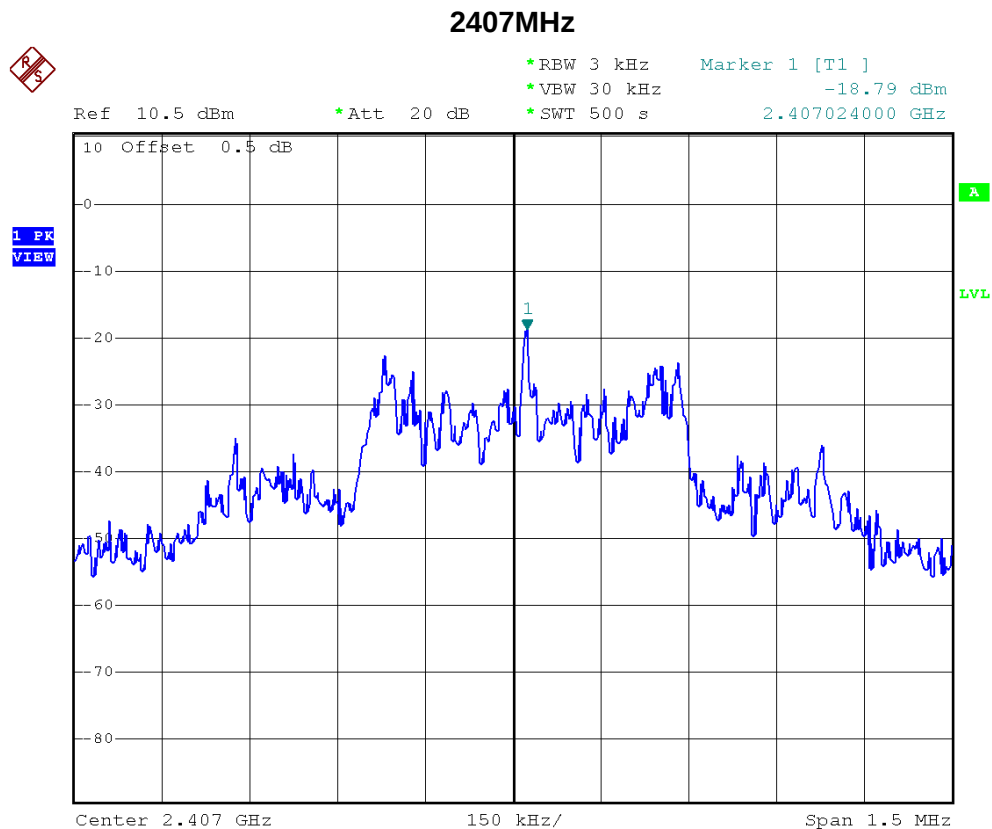
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



### 8.1.6 TEST RESULTS

|                |                         |                     |        |
|----------------|-------------------------|---------------------|--------|
| EUT :          | 2.4G RF Keyboard        | Model Name :        | GD-300 |
| Temperature :  | 24 °C                   | Relative Humidity : | 54%    |
| Test Voltage : | DC 1.5V                 |                     |        |
| Test Mode :    | 2407MHz/2437MHz/2473MHz |                     |        |

| Test Channel | Frequency (MHz) | Power Density (dBm) | LIMIT (dBm) |
|--------------|-----------------|---------------------|-------------|
| 01           | 2407            | -18.79              | 8           |
| 08           | 2437            | -18.03              | 8           |
| 14           | 2473            | -18.74              | 8           |





### 2437MHz

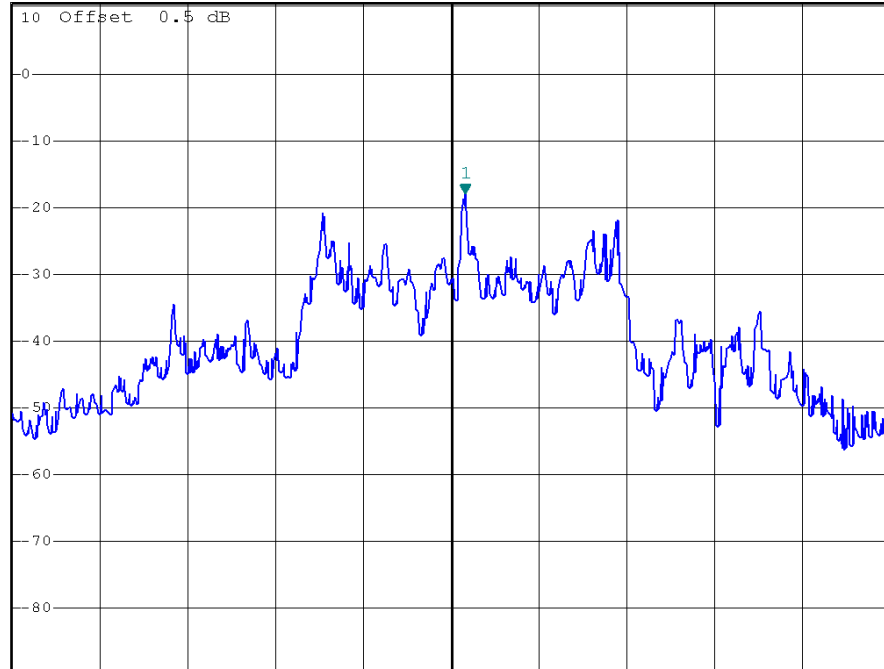


\*RBW 3 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -18.03 dBm  
\*SWT 500 s      2.437024000 GHz

Ref 10.5 dBm

\*Att 20 dB

1 PK  
VIEW



### 2473MHz

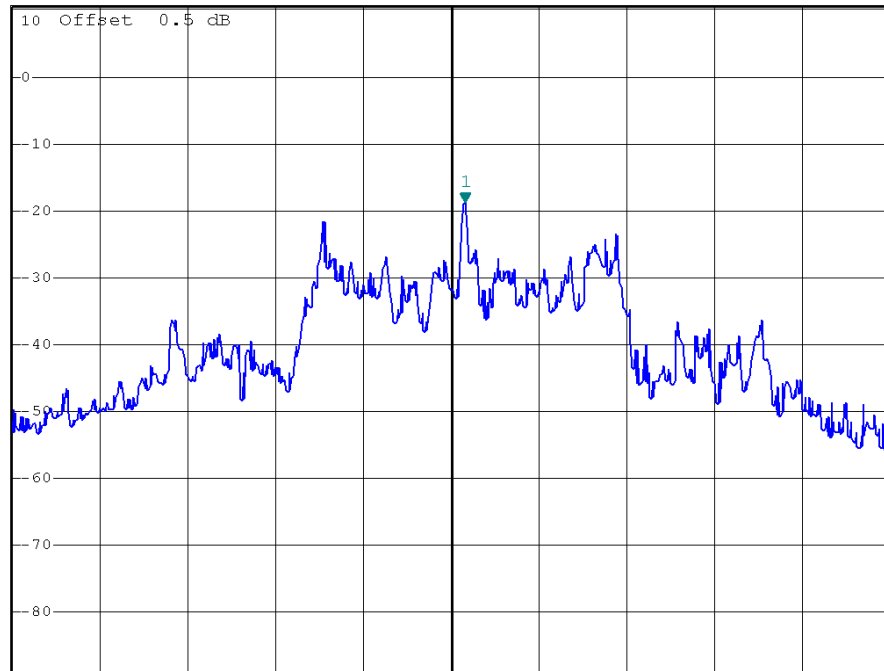


\*RBW 3 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -18.74 dBm  
\*SWT 500 s      2.473024000 GHz

Ref 10.5 dBm

\*Att 20 dB

1 PK  
VIEW





## 9. RF EXPOSURE TEST

### 9.1 APPLIED PROCEDURES / LIMIT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure.

#### (A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|-------------------------------------------------------------------|
| 0.3-3.0               | 614                               | 1.63                              | (100)*                                   | 6                                                                 |
| 3.0-30                | 1842 / f                          | 4.89 / f                          | (900 / f)*                               | 6                                                                 |
| 30-300                | 61.4                              | 0.163                             | 1.0                                      | 6                                                                 |
| 300-1500              |                                   |                                   | F/300                                    | 6                                                                 |
| 1500-100,000          |                                   |                                   | 5                                        | 6                                                                 |

#### (B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|-------------------------------------------------------------------|
| 0.3-1.34              | 614                               | 1.63                              | (100)*                                   | 30                                                                |
| 1.34-30               | 824/f                             | 2.19/f                            | (180/f)*                                 | 30                                                                |
| 30-300                | 27.5                              | 0.073                             | 0.2                                      | 30                                                                |
| 300-1500              |                                   |                                   | F/1500                                   | 30                                                                |
| 1500-100,000          |                                   |                                   | 1.0                                      | 30                                                                |

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

### 9.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment  | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|--------------------|--------------|----------|------------|------------------|
| 1    | Power Meter        | Anritsu      | ML2487A  | 6K00004714 | Feb. 17, 2012    |
| 2    | Power Meter Sensor | Anritsu      | MA2491A  | 34138      | Feb. 17, 2012    |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

### 9.1.2 MPE CALCULATION METHOD & TEST RESULTS

The power is too low, so no RF calculations are needed.