



# FCC TEST REPORT

**REPORT NO.:** RF930211H01

**MODEL NO.:** G-X3B12

**RECEIVED:** Feb. 11, 2004

**TESTED:** Feb. 12 to 23, 2004

**APPLICANT:** LOGITECH INC.

**ADDRESS:** 6505 Kaiser Drive Fremont, CA 94555-3615

**ISSUED BY:** Advance Data Technology Corporation

**LAB LOCATION:** No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung  
Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien,  
Taiwan, R.O.C.

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## 1 CERTIFICATION

**PRODUCT :** Logitech ® Cordless Precision™ Controller for  
XBOX ™

**BRAND NAME :** Logitech

**MODEL NO :** G-X3B12

**TEST ITEM:** Engineering Sample

**APPLICANT :** LOGITECH INC.

**STANDARDS :** 47 CFR Part 15, Subpart C (15.249)  
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Feb. 12 to 23, 2004. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's characteristics under the conditions herein specified.

**PREPARED BY:** Carol Liao, **DATE:** Feb. 26, 2004  
( Carol Liao )

**APPROVED BY:** Eric Lin, **DATE:** Feb. 26, 2004  
( Eric Lin, Manager )

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: 47 CFR Part 15, Subpart C |                         |        |                                                 |
|---------------------------------------------|-------------------------|--------|-------------------------------------------------|
| Standard Paragraph                          | Test Type               | Result | Remark                                          |
| 15.207                                      | Conducted Emission Test | N/A    | Power supply is 3VDC from batteries             |
| 15.249                                      | Radiated Emission Test  | PASS   | Minimum passing margin is -3.10dB at 2483.50MHz |
| 15.249                                      | Band Edge Measurement   | PASS   | Meet the requirement of limit                   |

**NOTE:** The information of measurement uncertainty is available upon the customer's request.

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                                          |                                                                     |
|------------------------------------------|---------------------------------------------------------------------|
| <b>PRODUCT</b>                           | Logitech ® Cordless Precision™ Controller for XBOX ™                |
| <b>MODEL NO.</b>                         | G-X3B12                                                             |
| <b>POWER SUPPLY</b>                      | 3.0VDC from batteries                                               |
| <b>MODULATION TYPE</b>                   | GFSK                                                                |
| <b>MODULATION TECHNOLOGY</b>             | FHSS                                                                |
| <b>CARRIER FREQUENCY OF EACH CHANNEL</b> | 2402MHz ~ 2480MHz                                                   |
| <b>BANDWIDTH OF EACH CHANNEL</b>         | 1MHz                                                                |
| <b>NUMBER OF CHANNEL</b>                 | 79                                                                  |
| <b>ANTENNA TYPE</b>                      | Remote: PCB strip antenna.<br>Host: Sheet metal inverted-F antenna. |
| <b>DATA CABLE</b>                        | NA                                                                  |
| <b>I/O PORTS</b>                         | NA                                                                  |
| <b>ASSOCIATED DEVICES</b>                | NA                                                                  |

**NOTE:**

1. For more detailed feature description of the EUT, please refer to user's manual.

### 3.2 DESCRIPTION OF TEST MODES

Seventy-eight channels are provided to this EUT.

| Channel | Freq. (MHz) | Channel | Freq. (MHz) | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|---------|-------------|---------|-------------|---------|-------------|---------|-------------|
| 0       | 2402        | 20      | 2422        | 40      | 2442        | 60      | 2462        |
| 1       | 2403        | 21      | 2423        | 41      | 2443        | 61      | 2463        |
| 2       | 2404        | 22      | 2424        | 42      | 2444        | 62      | 2464        |
| 3       | 2405        | 23      | 2425        | 43      | 2445        | 63      | 2465        |
| 4       | 2406        | 24      | 2426        | 44      | 2446        | 64      | 2466        |
| 5       | 2407        | 25      | 2427        | 45      | 2447        | 65      | 2467        |
| 6       | 2408        | 26      | 2428        | 46      | 2448        | 66      | 2468        |
| 7       | 2409        | 27      | 2429        | 47      | 2449        | 67      | 2469        |
| 8       | 2410        | 28      | 2430        | 48      | 2450        | 68      | 2470        |
| 9       | 2411        | 29      | 2431        | 49      | 2451        | 69      | 2471        |
| 10      | 2412        | 30      | 2431        | 50      | 2452        | 70      | 2472        |
| 11      | 2413        | 31      | 2433        | 51      | 2453        | 71      | 2473        |
| 12      | 2414        | 32      | 2434        | 52      | 2454        | 72      | 2474        |
| 13      | 2415        | 33      | 2435        | 53      | 2455        | 73      | 2475        |
| 14      | 2416        | 34      | 2436        | 54      | 2456        | 74      | 2476        |
| 15      | 2417        | 35      | 2437        | 55      | 2457        | 75      | 2477        |
| 16      | 2418        | 36      | 2438        | 56      | 2458        | 76      | 2478        |
| 17      | 2419        | 37      | 2439        | 57      | 2459        | 77      | 2479        |
| 18      | 2420        | 38      | 2440        | 58      | 2460        | 78      | 2480        |
| 19      | 2421        | 39      | 2441        | 59      | 2461        |         |             |

**NOTE:**

1. Below 1 GHz, the channel 0, 39, and 78 were pre-tested in chamber. The channel 78, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 0, 39, and 78 were tested individually.
3. The EUT was a wireless gamepad for handheld. The tests were performed under the following test modes for three different axes placements, and its data were recorded in this report:

| Test Mode | Description |
|-----------|-------------|
| Mode 1    | level       |
| Mode 2    | upright     |
| Mode 3    | flank       |



### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a Logitech ® Cordless Precision™ Controller for XBOX™. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 15, Subpart C. (15.249)**  
**ANSI C63.4 :1992**

All test items have been performed and recorded as per the above standards.

### **3.4 DESCRIPTION OF SUPPORT UNITS**

NA

## 4 TEST PROCEDURES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

NA

### 4.2 RADIATED EMISSION MEASUREMENT

#### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

| Fundamental Frequency (MHz) | Field Strength of Fundamental (dBuV/m) |         |
|-----------------------------|----------------------------------------|---------|
|                             | Peak                                   | Average |
| 2400 ~ 2483.5               | 114                                    | 94      |

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

| Frequencies (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009-0.490       | $2400/F(\text{kHz})$              | 300                           |
| 0.490-1.705       | $24000/F(\text{kHz})$             | 30                            |
| 1.705-30.0        | 30                                | 30                            |
| 30-88             | 100                               | 3                             |
| 88-216            | 150                               | 3                             |
| 216-960           | 200                               | 3                             |
| Above 960         | 500                               | 3                             |

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

#### 4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER         | MODEL NO.   | SERIAL NO.   | CALIBRATED UNTIL |
|------------------------------------|-------------|--------------|------------------|
| HP Spectrum Analyzer               | 8590L       | 3467U00646   | Jun. 29, 2004    |
| *ADVANTEST Spectrum Analyzer       | R3271A      | 85060311     | Jun. 16, 2004    |
| CHASE RF Pre_Amplifier             | CPA9232     | 1010         | Feb. 22, 2005    |
| *HP Pre_Amplifier                  | 8449B       | 3008A01922   | Oct. 13, 2004    |
| *ROHDE & SCHWARZ Test Receiver     | ESVS 30     | 841977/002   | Sep. 17, 2004    |
| *CHASE Broadband Antenna           | CBL6112B    | 2798         | Apr. 16, 2004    |
| *Schwarzbeck Horn_Antenna          | BBHA9120-D1 | D123         | Sep. 24, 2004    |
| Schwarzbeck Horn_Antenna           | BBHA 9170   | BBHA9170192  | Feb. 16, 2005    |
| SCHWARZBECK Tunable Dipole Antenna | UHAP        | 897          | Mar. 07, 2005    |
| SCHWARZBECK Tunable Dipole Antenna | VHAP        | 880          | Mar. 07, 2005    |
| *RF Switches                       | MP59B       | 1-5161-28698 | Jul. 31, 2004    |
| *RF Cable(CHASE)                   | CH A9525    | Cable_OB_01  | Jul. 31, 2004    |
| *Software                          | AS60P8      | NA           | NA               |
| *CHANCE MOST Antenna Tower         | AT-100      | CM-A007      | NA               |
| *CHANCE MOST Turn Table            | TC-008      | CM-T007      | NA               |
| *CORCOM AC Filter                  | MRI2030     | 024/019      | NA               |

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Tunable Dipole Antenna) and the calibrations are traceable to NML/ROC and NIST/USA.

2. \* = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. B.
5. The VCCI Site Registration No. is R-847.
6. The FCC Site Registration No. is 92753.
7. The CANADA Site Registration No. is IC 3789-B.

#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

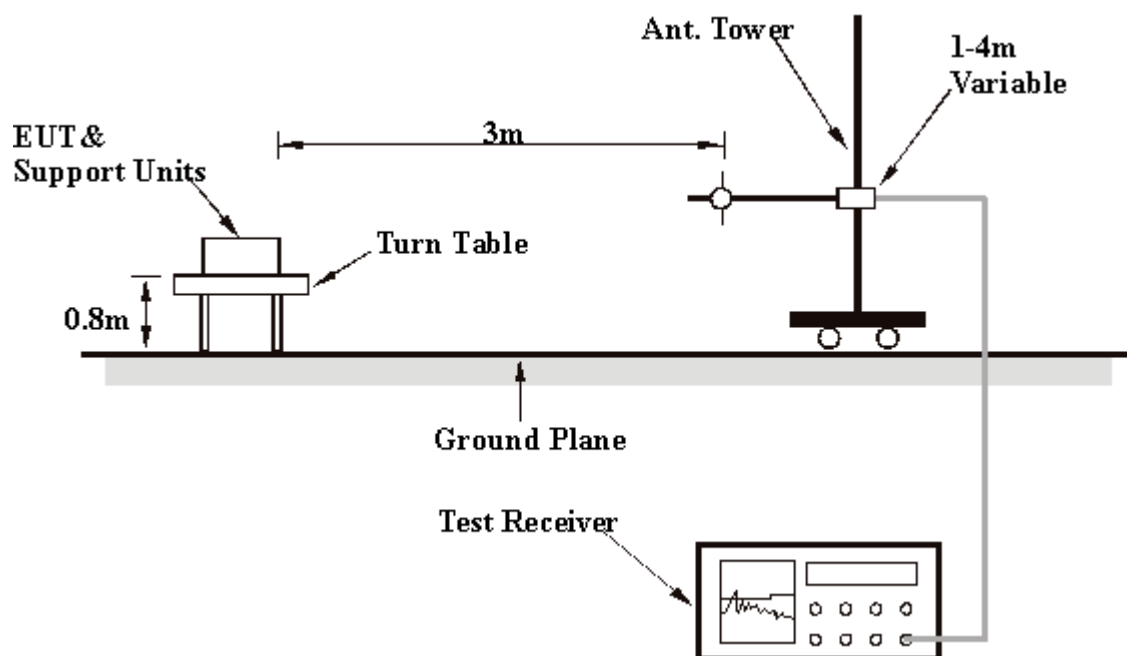
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 4.2.6 TEST RESULTS

|                                 |                                                    |                          |              |
|---------------------------------|----------------------------------------------------|--------------------------|--------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12      |
| <b>MODE</b>                     | Channel 78                                         | <b>FREQUENCY RANGE</b>   | 30 ~1000 MHz |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Quasi-Peak   |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 67%RH, 974 hPa                          | <b>TESTED BY</b>         | Tony Chen    |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 36.47       | 31.00 QP                | 40.00          | -9.00       | 1.69 H             | 199                  | 14.70            | 16.30                    |
| 2   | 168.00      | 20.10 QP                | 43.50          | -23.40      | 2.00 H             | 255                  | 9.30             | 10.90                    |
| 3   | 201.83      | 21.60 QP                | 43.50          | -21.90      | 2.69 H             | 109                  | 11.60            | 10.00                    |
| 4   | 216.00      | 20.50 QP                | 43.50          | -23.00      | 1.57 H             | 222                  | 10.30            | 10.20                    |
| 5   | 595.51      | 30.10 QP                | 46.00          | -15.90      | 1.33 H             | 9                    | 7.10             | 22.90                    |
| 6   | 757.27      | 38.60 QP                | 46.00          | -7.40       | 1.62 H             | 66                   | 12.60            | 26.10                    |
| 7   | 994.56      | 31.20 QP                | 54.00          | -22.80      | 1.27 H             | 28                   | 2.20             | 29.10                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 42.46       | 33.40 QP                | 40.00          | -6.60       | 1.62 V             | 11                   | 20.40            | 13.00                    |
| 2   | 202.50      | 24.20 QP                | 43.50          | -19.30      | 1.00 V             | 175                  | 14.30            | 10.00                    |
| 3   | 216.00      | 14.50 QP                | 43.50          | -29.00      | 1.00 V             | 206                  | 4.30             | 10.20                    |
| 4   | 229.09      | 21.70 QP                | 46.00          | -24.30      | 1.14 V             | 172                  | 10.20            | 11.60                    |
| 5   | 594.66      | 28.00 QP                | 46.00          | -18.00      | 1.06 V             | 211                  | 5.00             | 23.00                    |
| 6   | 757.48      | 41.80 QP                | 46.00          | -4.20       | 1.00 V             | 115                  | 15.70            | 26.10                    |
| 7   | 996.38      | 32.30 QP                | 54.00          | -21.70      | 1.17 V             | 18                   | 3.20             | 29.10                    |

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.

## 4.2.7 TEST RESULTS (Mode 1)

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 0                                          | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 66.80 PK                | 74.00          | -7.20       | 1.32 H             | 4                    | 37.20            | 29.60                    |
| 1   | 2327.00     | 40.10 AV                | 54.00          | -13.90      | 1.32 H             | 4                    | 10.50            | 29.60                    |
| 2   | 2381.00     | 67.00 PK                | 74.00          | -7.00       | 1.33 H             | 10                   | 37.30            | 29.70                    |
| 2   | 2381.00     | 40.30 AV                | 54.00          | -13.70      | 1.33 H             | 10                   | 10.60            | 29.70                    |
| 3   | *2402.00    | 98.20 PK                |                |             | 1.23 H             | 186                  | 68.30            | 29.90                    |
| 3   | *2402.00    | 71.50 AV                |                |             | 1.23 H             | 186                  | 41.60            | 29.90                    |
| 4   | 4804.00     | 60.40 PK                | 74.00          | -13.60      | 1.15 H             | 11                   | 24.20            | 36.10                    |
| 4   | 4804.00     | 33.70 AV                | 54.00          | -20.30      | 1.15 H             | 11                   | -2.50            | 36.10                    |
| 5   | 7206.00     | 64.00 PK                | 74.00          | -10.00      | 1.48 H             | 337                  | 22.40            | 41.60                    |
| 5   | 7206.00     | 37.30 AV                | 54.00          | -16.70      | 1.48 H             | 337                  | -4.30            | 41.60                    |
| 6   | 9608.00     | 59.70 PK                | 74.00          | -14.30      | 1.35 H             | 179                  | 14.70            | 45.00                    |
| 6   | 9608.00     | 33.00 AV                | 54.00          | -21.00      | 1.35 H             | 179                  | -12.00           | 45.00                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 63.80 PK                | 74.00          | -10.20      | 1.11 V             | 32                   | 34.20            | 29.60                    |
| 1   | 2327.00     | 37.10 AV                | 54.00          | -16.90      | 1.11 V             | 32                   | 7.50             | 29.60                    |
| 2   | 2381.00     | 63.00 PK                | 74.00          | -11.00      | 1.11 V             | 181                  | 33.30            | 29.70                    |
| 2   | 2381.00     | 36.30 AV                | 54.00          | -17.70      | 1.11 V             | 181                  | 6.60             | 29.70                    |
| 3   | *2402.00    | 87.40 PK                |                |             | 1.86 V             | 294                  | 57.50            | 29.90                    |
| 3   | *2402.00    | 60.70 AV                |                |             | 1.86 V             | 294                  | 30.80            | 29.90                    |
| 4   | 4804.00     | 61.00 PK                | 74.00          | -13.00      | 1.23 V             | 2                    | 24.90            | 36.10                    |
| 4   | 4804.00     | 34.30 AV                | 54.00          | -19.70      | 1.23 V             | 2                    | -1.80            | 36.10                    |
| 5   | 7206.00     | 64.10 PK                | 74.00          | -9.90       | 1.53 V             | 15                   | 22.40            | 41.60                    |
| 5   | 7206.00     | 37.40 AV                | 54.00          | -16.60      | 1.53 V             | 15                   | -4.30            | 41.60                    |
| 6   | 9608.00     | 62.10 PK                | 74.00          | -11.90      | 1.14 V             | 286                  | 17.10            | 45.00                    |
| 6   | 9608.00     | 35.40 AV                | 54.00          | -18.60      | 1.14 V             | 286                  | -9.60            | 45.00                    |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. “\*” : Fundamental frequency
5. The other emission levels were very low against the limit.

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 39                                         | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| No. | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | 2327.00        | 66.70 PK                      | 74.00             | -7.30          | 1.33 H                   | 59                         | 37.10                  | 29.60                          |
| 1   | 2327.00        | 40.00 AV                      | 54.00             | -14.00         | 1.33 H                   | 59                         | 10.40                  | 29.60                          |
| 2   | 2381.00        | 66.90 PK                      | 74.00             | -7.10          | 1.30 H                   | 335                        | 37.20                  | 29.70                          |
| 2   | 2381.00        | 40.20 AV                      | 54.00             | -13.80         | 1.30 H                   | 335                        | 10.50                  | 29.70                          |
| 3   | *2441.00       | 95.90 PK                      |                   |                | 1.54 H                   | 187                        | 65.90                  | 30.00                          |
| 3   | *2441.00       | 69.20 AV                      |                   |                | 1.54 H                   | 187                        | 39.20                  | 30.00                          |
| 4   | 2560.00        | 56.40 PK                      | 74.00             | -17.60         | 1.56 H                   | 119                        | 26.10                  | 30.40                          |
| 4   | 2560.00        | 29.70 AV                      | 54.00             | -24.30         | 1.56 H                   | 119                        | -0.60                  | 30.40                          |
| 5   | 4882.00        | 60.30 PK                      | 74.00             | -13.70         | 1.62 H                   | 3                          | 23.80                  | 36.50                          |
| 5   | 4882.00        | 33.60 AV                      | 54.00             | -20.40         | 1.62 H                   | 3                          | -2.90                  | 36.50                          |
| 6   | 7323.00        | 61.70 PK                      | 74.00             | -12.30         | 1.49 H                   | 207                        | 20.00                  | 41.80                          |
| 6   | 7323.00        | 35.00 AV                      | 54.00             | -19.00         | 1.49 H                   | 207                        | -6.70                  | 41.80                          |
| 7   | 9763.00        | 58.80 PK                      | 74.00             | -15.20         | 1.41 H                   | 170                        | 14.20                  | 44.60                          |
| 7   | 9763.00        | 32.10 AV                      | 54.00             | -21.90         | 1.41 H                   | 170                        | -12.50                 | 44.60                          |

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| No. | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | 2327.00        | 65.30 PK                      | 74.00             | -8.70          | 1.45 V                   | 0                          | 35.70                  | 29.60                          |
| 1   | 2327.00        | 38.60 AV                      | 54.00             | -15.40         | 1.45 V                   | 0                          | 9.00                   | 29.60                          |
| 2   | 2381.00        | 59.80 PK                      | 74.00             | -14.20         | 1.16 V                   | 297                        | 30.10                  | 29.70                          |
| 2   | 2381.00        | 33.10 AV                      | 54.00             | -20.90         | 1.16 V                   | 297                        | 3.40                   | 29.70                          |
| 3   | *2441.00       | 89.70 PK                      |                   |                | 1.60 V                   | 218                        | 59.70                  | 30.00                          |
| 3   | *2441.00       | 63.00 AV                      |                   |                | 1.60 V                   | 218                        | 33.00                  | 30.00                          |
| 4   | 2560.00        | 57.60 PK                      | 74.00             | -16.40         | 1.02 V                   | 303                        | 27.30                  | 30.40                          |
| 4   | 2560.00        | 30.90 AV                      | 54.00             | -23.10         | 1.02 V                   | 303                        | 0.60                   | 30.40                          |
| 5   | 4882.00        | 58.90 PK                      | 74.00             | -15.10         | 1.00 V                   | 24                         | 22.40                  | 36.50                          |
| 5   | 4882.00        | 32.20 AV                      | 54.00             | -21.80         | 1.00 V                   | 24                         | -4.30                  | 36.50                          |
| 6   | 7323.00        | 63.40 PK                      | 74.00             | -10.60         | 1.38 V                   | 2                          | 21.70                  | 41.80                          |
| 6   | 7323.00        | 36.70 AV                      | 54.00             | -17.30         | 1.38 V                   | 2                          | -5.00                  | 41.80                          |
| 7   | 9763.00        | 59.30 PK                      | 74.00             | -14.70         | 1.52 V                   | 97                         | 14.80                  | 44.60                          |
| 7   | 9763.00        | 32.60 AV                      | 54.00             | -21.40         | 1.52 V                   | 97                         | -11.90                 | 44.60                          |

#### REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. “ \* ” : Fundamental frequency
5. The other emission levels were very low against the limit.

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 78                                         | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2480.00    | 94.50 PK                |                |             | 1.81 H             | 188                  | 64.40            | 30.10                    |
| 1   | *2480.00    | 67.80 AV                |                |             | 1.81 H             | 188                  | 37.70            | 30.10                    |
| 2   | 2483.50     | 68.50 PK                | 74.00          | -5.50       | 1.20 H             | 0                    | 38.30            | 30.10                    |
| 2   | 2483.50     | 41.80 AV                | 54.00          | -12.20      | 1.20 H             | 0                    | 11.60            | 30.10                    |
| 3   | 2495.00     | 61.90 PK                | 74.00          | -12.10      | 1.19 H             | 2                    | 31.70            | 30.20                    |
| 3   | 2495.00     | 35.20 AV                | 54.00          | -18.80      | 1.19 H             | 2                    | 5.00             | 30.20                    |
| 4   | 2560.00     | 59.60 PK                | 74.00          | -14.40      | 1.16 H             | 359                  | 29.20            | 30.40                    |
| 4   | 2560.00     | 32.90 AV                | 54.00          | -21.10      | 1.16 H             | 359                  | 2.50             | 30.40                    |
| 5   | 4960.00     | 59.80 PK                | 74.00          | -14.20      | 1.26 H             | 350                  | 23.00            | 36.80                    |
| 5   | 4960.00     | 33.10 AV                | 54.00          | -20.90      | 1.26 H             | 350                  | -3.70            | 36.80                    |
| 6   | 7440.00     | 59.90 PK                | 74.00          | -14.10      | 1.28 H             | 233                  | 18.00            | 41.90                    |
| 6   | 7440.00     | 33.20 AV                | 54.00          | -20.80      | 1.28 H             | 233                  | -8.80            | 41.90                    |
| 7   | 9920.00     | 59.00 PK                | 74.00          | -15.00      | 1.28 H             | 233                  | 14.90            | 44.20                    |
| 7   | 9920.00     | 32.30 AV                | 54.00          | -21.70      | 1.28 H             | 233                  | -11.80           | 44.20                    |

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2480.00    | 90.70 PK                |                |             | 1.27 V             | 213                  | 60.50            | 30.10                    |
| 1   | *2480.00    | 64.00 AV                |                |             | 1.27 V             | 213                  | 33.80            | 30.10                    |
| 2   | 2483.50     | 63.40 PK                | 74.00          | -10.60      | 1.29 V             | 159                  | 33.30            | 30.10                    |
| 2   | 2483.50     | 36.70 AV                | 54.00          | -17.30      | 1.29 V             | 159                  | 6.60             | 30.10                    |
| 3   | 2495.00     | 58.10 PK                | 74.00          | -15.90      | 1.03 V             | 95                   | 27.90            | 30.20                    |
| 3   | 2495.00     | 31.40 AV                | 54.00          | -22.60      | 1.03 V             | 95                   | 1.20             | 30.20                    |
| 4   | 2560.00     | 58.40 PK                | 74.00          | -15.60      | 1.04 V             | 305                  | 28.10            | 30.40                    |
| 4   | 2560.00     | 31.70 AV                | 54.00          | -22.30      | 1.04 V             | 305                  | 1.40             | 30.40                    |
| 5   | 4960.00     | 63.30 PK                | 74.00          | -10.70      | 1.32 V             | 195                  | 26.40            | 36.80                    |
| 5   | 4960.00     | 36.60 AV                | 54.00          | -17.40      | 1.32 V             | 195                  | -0.30            | 36.80                    |
| 6   | 7440.00     | 62.80 PK                | 74.00          | -11.20      | 1.42 V             | 180                  | 20.90            | 41.90                    |
| 6   | 7440.00     | 36.10 AV                | 54.00          | -17.90      | 1.42 V             | 180                  | -5.80            | 41.90                    |
| 7   | 9920.00     | 60.30 PK                | 74.00          | -13.70      | 1.31 V             | 153                  | 16.10            | 44.20                    |
| 7   | 9920.00     | 33.60 AV                | 54.00          | -20.40      | 1.31 V             | 153                  | -10.60           | 44.20                    |

#### REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. " \* " : Fundamental frequency
5. The other emission levels were very low against the limit.

## 4.2.8 TEST RESULTS (Mode 2)

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 0                                          | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 70.00 PK                | 74.00          | -4.00       | 1.05 H             | 20                   | 40.40            | 29.60                    |
| 1   | 2327.00     | 43.30 AV                | 54.00          | -10.70      | 1.05 H             | 20                   | 13.70            | 29.60                    |
| 2   | 2381.00     | 68.80 PK                | 74.00          | -5.20       | 1.00 H             | 360                  | 39.10            | 29.70                    |
| 2   | 2381.00     | 42.10 AV                | 54.00          | -11.90      | 1.00 H             | 360                  | 12.40            | 29.70                    |
| 3   | *2402.00    | 99.80 PK                |                |             | 1.51 H             | 10                   | 69.90            | 29.90                    |
| 3   | *2402.00    | 73.10 AV                |                |             | 1.51 H             | 10                   | 43.20            | 29.90                    |
| 4   | 4804.00     | 62.90 PK                | 74.00          | -11.10      | 1.21 H             | 223                  | 26.80            | 36.10                    |
| 4   | 4804.00     | 36.20 AV                | 54.00          | -17.80      | 1.21 H             | 223                  | 0.10             | 36.10                    |
| 5   | 7206.00     | 62.20 PK                | 74.00          | -11.80      | 1.05 H             | 170                  | 20.60            | 41.60                    |
| 5   | 7206.00     | 35.50 AV                | 54.00          | -18.50      | 1.05 H             | 170                  | -6.10            | 41.60                    |
| 6   | 9608.00     | 57.30 PK                | 74.00          | -16.70      | 1.27 H             | 135                  | 12.20            | 45.00                    |
| 6   | 9608.00     | 30.60 AV                | 54.00          | -23.40      | 1.27 H             | 135                  | -14.50           | 45.00                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 62.90 PK                | 74.00          | -11.10      | 1.64 V             | 127                  | 33.30            | 29.60                    |
| 1   | 2327.00     | 36.20 AV                | 54.00          | -17.80      | 1.64 V             | 127                  | 6.60             | 29.60                    |
| 2   | 2381.00     | 63.50 PK                | 74.00          | -10.50      | 1.49 V             | 87                   | 33.70            | 29.70                    |
| 2   | 2381.00     | 36.80 AV                | 54.00          | -17.20      | 1.49 V             | 87                   | 7.00             | 29.70                    |
| 3   | *2402.00    | 92.60 PK                |                |             | 1.00 V             | 61                   | 62.80            | 29.90                    |
| 3   | *2402.00    | 65.90 AV                |                |             | 1.00 V             | 61                   | 36.10            | 29.90                    |
| 4   | 4804.00     | 60.40 PK                | 74.00          | -13.60      | 1.26 V             | 1                    | 24.30            | 36.10                    |
| 4   | 4804.00     | 32.70 AV                | 54.00          | -21.30      | 1.26 V             | 1                    | -3.40            | 36.10                    |
| 5   | 7206.00     | 64.70 PK                | 74.00          | -9.30       | 1.29 V             | 197                  | 23.10            | 41.60                    |
| 5   | 7206.00     | 38.00 AV                | 54.00          | -16.00      | 1.29 V             | 197                  | -3.60            | 41.60                    |
| 6   | 9608.00     | 57.10 PK                | 74.00          | -16.90      | 1.57 V             | 184                  | 12.10            | 45.00                    |
| 6   | 9608.00     | 30.40 AV                | 54.00          | -23.60      | 1.57 V             | 184                  | -14.60           | 45.00                    |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. “ \* ” : Fundamental frequency
5. The other emission levels were very low against the limit.

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 39                                         | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 69.40 PK                | 74.00          | -4.60       | 1.01 H             | 21                   | 39.80            | 29.60                    |
| 1   | 2327.00     | 42.70 AV                | 54.00          | -11.30      | 1.01 H             | 21                   | 13.10            | 29.60                    |
| 2   | 2381.00     | 69.00 PK                | 74.00          | -5.00       | 1.00 H             | 19                   | 39.30            | 29.70                    |
| 2   | 2381.00     | 42.30 AV                | 54.00          | -11.70      | 1.00 H             | 19                   | 12.50            | 29.70                    |
| 3   | *2441.00    | 99.20 PK                |                |             | 1.48 H             | 15                   | 69.20            | 30.00                    |
| 3   | *2441.00    | 72.50 AV                |                |             | 1.48 H             | 15                   | 42.60            | 30.00                    |
| 4   | 2560.00     | 62.10 PK                | 74.00          | -11.90      | 1.17 H             | 25                   | 31.80            | 30.40                    |
| 4   | 2560.00     | 35.40 AV                | 54.00          | -18.60      | 1.17 H             | 25                   | 5.10             | 30.40                    |
| 5   | 4882.00     | 62.90 PK                | 74.00          | -11.10      | 1.44 H             | 219                  | 26.40            | 36.50                    |
| 5   | 4882.00     | 36.20 AV                | 54.00          | -17.80      | 1.44 H             | 219                  | -0.30            | 36.50                    |
| 6   | 7323.00     | 64.10 PK                | 74.00          | -9.90       | 1.22 H             | 151                  | 22.40            | 41.80                    |
| 6   | 7323.00     | 37.40 AV                | 54.00          | -16.60      | 1.22 H             | 151                  | -4.30            | 41.80                    |
| 7   | 9763.00     | 55.60 PK                | 74.00          | -18.40      | 1.28 H             | 213                  | 11.00            | 44.60                    |
| 7   | 9763.00     | 28.90 AV                | 54.00          | -25.10      | 1.28 H             | 213                  | -15.70           | 44.60                    |

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 64.60 PK                | 74.00          | -9.40       | 1.20 V             | 29                   | 35.00            | 29.60                    |
| 1   | 2327.00     | 37.90 AV                | 54.00          | -16.10      | 1.20 V             | 29                   | 8.30             | 29.60                    |
| 2   | 2381.00     | 64.00 PK                | 74.00          | -10.00      | 1.11 V             | 55                   | 34.20            | 29.70                    |
| 2   | 2381.00     | 37.30 AV                | 54.00          | -16.70      | 1.11 V             | 55                   | 7.50             | 29.70                    |
| 3   | *2441.00    | 93.10 PK                |                |             | 1.47 V             | 74                   | 63.10            | 30.00                    |
| 3   | *2441.00    | 66.40 AV                |                |             | 1.47 V             | 74                   | 36.40            | 30.00                    |
| 4   | 2560.00     | 57.90 PK                | 74.00          | -16.10      | 1.00 V             | 235                  | 27.60            | 30.40                    |
| 4   | 2560.00     | 31.20 AV                | 54.00          | -22.80      | 1.00 V             | 235                  | 0.90             | 30.40                    |
| 5   | 4882.00     | 59.50 PK                | 74.00          | -14.50      | 1.40 V             | 9                    | 23.00            | 36.50                    |
| 5   | 4882.00     | 32.80 AV                | 54.00          | -21.20      | 1.40 V             | 9                    | -3.70            | 36.50                    |
| 6   | 7323.00     | 61.00 PK                | 74.00          | -13.00      | 1.00 V             | 15                   | 19.30            | 41.80                    |
| 6   | 7323.00     | 34.30 AV                | 54.00          | -19.70      | 1.00 V             | 15                   | -7.40            | 41.80                    |
| 7   | 9763.00     | 56.70 PK                | 74.00          | -17.30      | 1.03 V             | 175                  | 12.10            | 44.60                    |
| 7   | 9763.00     | 30.00 AV                | 54.00          | -24.00      | 1.03 V             | 175                  | -14.60           | 44.60                    |

#### REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. “ \* ” : Fundamental frequency
5. The other emission levels were very low against the limit.

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 78                                         | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2480.00    | 97.10 PK                |                |             | 1.47 H             | 12                   | 67.00            | 30.10                    |
| 1   | *2480.00    | 70.40 AV                |                |             | 1.47 H             | 12                   | 40.30            | 30.10                    |
| 2   | 2483.50     | 70.90 PK                | 74.00          | -3.10       | 1.10 H             | 9                    | 40.80            | 30.10                    |
| 2   | 2483.50     | 44.20 AV                | 54.00          | -9.80       | 1.10 H             | 9                    | 14.10            | 30.10                    |
| 3   | 2495.00     | 65.10 PK                | 74.00          | -8.90       | 1.00 H             | 3                    | 34.90            | 30.20                    |
| 3   | 2495.00     | 38.40 AV                | 54.00          | -15.60      | 1.00 H             | 3                    | 8.20             | 30.20                    |
| 4   | 2560.00     | 63.30 PK                | 74.00          | -10.70      | 1.15 H             | 0                    | 32.90            | 30.40                    |
| 4   | 2560.00     | 36.60 AV                | 54.00          | -17.40      | 1.15 H             | 0                    | 6.20             | 30.40                    |
| 5   | 4960.00     | 62.00 PK                | 74.00          | -12.00      | 1.57 H             | 159                  | 25.10            | 36.80                    |
| 5   | 4960.00     | 35.30 AV                | 54.00          | -18.70      | 1.57 H             | 159                  | -1.60            | 36.80                    |
| 6   | 7440.00     | 63.20 PK                | 74.00          | -10.80      | 1.13 H             | 193                  | 21.20            | 41.90                    |
| 6   | 7440.00     | 36.50 AV                | 54.00          | -17.50      | 1.13 H             | 193                  | -5.40            | 41.90                    |
| 7   | 9920.00     | 55.90 PK                | 74.00          | -18.10      | 1.64 H             | 275                  | 11.80            | 44.20                    |
| 7   | 9920.00     | 29.20 AV                | 54.00          | -24.80      | 1.64 H             | 275                  | -14.90           | 44.20                    |

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2480.00    | 90.40 PK                |                |             | 1.66 V             | 277                  | 60.30            | 30.10                    |
| 1   | *2480.00    | 63.70 AV                |                |             | 1.66 V             | 277                  | 33.60            | 30.10                    |
| 2   | 2483.50     | 65.80 PK                | 74.00          | -8.20       | 1.11 V             | 59                   | 35.70            | 30.10                    |
| 2   | 2483.50     | 39.10 AV                | 54.00          | -14.90      | 1.11 V             | 59                   | 9.00             | 30.10                    |
| 3   | 2495.00     | 59.20 PK                | 74.00          | -14.80      | 1.55 V             | 21                   | 29.00            | 30.20                    |
| 3   | 2495.00     | 32.50 AV                | 54.00          | -21.50      | 1.55 V             | 21                   | 2.30             | 30.20                    |
| 4   | 2560.00     | 59.10 PK                | 74.00          | -14.90      | 1.03 V             | 29                   | 28.70            | 30.40                    |
| 4   | 2560.00     | 32.40 AV                | 54.00          | -21.60      | 1.03 V             | 29                   | 2.00             | 30.40                    |
| 5   | 4960.00     | 62.30 PK                | 74.00          | -11.70      | 1.00 V             | 0                    | 25.50            | 36.80                    |
| 5   | 4960.00     | 35.60 AV                | 54.00          | -18.40      | 1.00 V             | 0                    | -1.20            | 36.80                    |
| 6   | 7440.00     | 62.30 PK                | 74.00          | -11.70      | 1.31 V             | 359                  | 20.40            | 41.90                    |
| 6   | 7440.00     | 35.60 AV                | 54.00          | -18.40      | 1.31 V             | 359                  | -6.30            | 41.90                    |
| 7   | 9920.00     | 54.50 PK                | 74.00          | -19.50      | 1.40 V             | 153                  | 10.40            | 44.20                    |
| 7   | 9920.00     | 27.00 AV                | 54.00          | -27.00      | 1.40 V             | 153                  | -17.10           | 44.20                    |

#### REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. " \* " : Fundamental frequency
5. The other emission levels were very low against the limit.

## 4.2.9 TEST RESULTS (Mode 3)

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 0                                          | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 63.30 PK                | 74.00          | -10.70      | 1.33 H             | 5                    | 33.70            | 29.60                    |
| 1   | 2327.00     | 36.60 AV                | 54.00          | -17.40      | 1.33 H             | 5                    | 7.00             | 29.60                    |
| 2   | 2381.00     | 62.10 PK                | 74.00          | -11.90      | 1.31 H             | 34                   | 32.40            | 29.70                    |
| 2   | 2381.00     | 35.60 AV                | 54.00          | -18.40      | 1.31 H             | 34                   | 5.90             | 29.70                    |
| 3   | *2402.00    | 90.20 PK                |                |             | 1.21 H             | 215                  | 60.40            | 29.90                    |
| 3   | *2402.00    | 63.50 AV                |                |             | 1.21 H             | 215                  | 33.70            | 29.90                    |
| 4   | 4804.00     | 65.80 PK                | 74.00          | -8.20       | 1.26 H             | 170                  | 29.60            | 36.10                    |
| 4   | 4804.00     | 39.10 AV                | 54.00          | -14.90      | 1.26 H             | 170                  | 2.90             | 36.10                    |
| 5   | 7206.00     | 64.70 PK                | 74.00          | -9.30       | 1.61 H             | 95                   | 23.10            | 41.60                    |
| 5   | 7206.00     | 38.00 AV                | 54.00          | -16.00      | 1.61 H             | 95                   | -3.60            | 41.60                    |
| 6   | 9608.00     | 63.40 PK                | 74.00          | -10.60      | 1.44 H             | 235                  | 18.40            | 45.00                    |
| 6   | 9608.00     | 36.70 AV                | 54.00          | -17.30      | 1.44 H             | 235                  | -8.30            | 45.00                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 66.80 PK                | 74.00          | -7.20       | 1.45 V             | 6                    | 37.20            | 29.60                    |
| 1   | 2327.00     | 40.10 AV                | 54.00          | -13.90      | 1.45 V             | 6                    | 10.50            | 29.60                    |
| 2   | 2381.00     | 69.10 PK                | 74.00          | -4.90       | 1.16 V             | 49                   | 39.30            | 29.70                    |
| 2   | 2381.00     | 42.40 AV                | 54.00          | -11.60      | 1.16 V             | 49                   | 12.60            | 29.70                    |
| 3   | *2402.00    | 98.90 PK                |                |             | 1.10 V             | 220                  | 69.10            | 29.90                    |
| 3   | *2402.00    | 72.20 AV                |                |             | 1.10 V             | 220                  | 42.40            | 29.90                    |
| 4   | 4804.00     | 60.80 PK                | 74.00          | -13.20      | 1.29 V             | 52                   | 24.60            | 36.10                    |
| 4   | 4804.00     | 34.10 AV                | 54.00          | -19.90      | 1.29 V             | 52                   | -2.10            | 36.10                    |
| 5   | 7206.00     | 63.60 PK                | 74.00          | -10.40      | 1.65 V             | 2                    | 21.90            | 41.60                    |
| 5   | 7206.00     | 36.90 AV                | 54.00          | -17.10      | 1.65 V             | 2                    | -4.80            | 41.60                    |
| 6   | 9608.00     | 60.80 PK                | 74.00          | -13.20      | 1.53 V             | 34                   | 15.80            | 45.00                    |
| 6   | 9608.00     | 34.10 AV                | 54.00          | -19.90      | 1.53 V             | 34                   | -10.90           | 45.00                    |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. “ \* ” : Fundamental frequency
5. The other emission levels were very low against the limit.

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 39                                         | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 64.60 PK                | 74.00          | -9.40       | 1.36 H             | 338                  | 35.00            | 29.60                    |
| 1   | 2327.00     | 37.90 AV                | 54.00          | -16.10      | 1.36 H             | 338                  | 8.30             | 29.60                    |
| 2   | 2381.00     | 59.40 PK                | 74.00          | -14.60      | 1.52 H             | 110                  | 29.70            | 29.70                    |
| 2   | 2381.00     | 32.70 AV                | 54.00          | -21.30      | 1.52 H             | 110                  | 3.00             | 29.70                    |
| 3   | *2441.00    | 90.80 PK                |                |             | 1.19 H             | 207                  | 60.80            | 30.00                    |
| 3   | *2441.00    | 64.10 AV                |                |             | 1.19 H             | 207                  | 34.10            | 30.00                    |
| 4   | 2560.00     | 57.10 PK                | 74.00          | -16.90      | 1.39 H             | 220                  | 26.70            | 30.40                    |
| 4   | 2560.00     | 30.40 AV                | 54.00          | -23.60      | 1.39 H             | 220                  | 0.00             | 30.40                    |
| 5   | 4882.00     | 67.90 PK                | 74.00          | -6.10       | 1.45 H             | 45                   | 31.40            | 36.50                    |
| 5   | 4882.00     | 41.20 AV                | 54.00          | -12.80      | 1.45 H             | 45                   | 4.70             | 36.50                    |
| 6   | 7323.00     | 65.60 PK                | 74.00          | -8.40       | 1.39 H             | 347                  | 23.90            | 41.80                    |
| 6   | 7323.00     | 38.90 AV                | 54.00          | -15.10      | 1.39 H             | 347                  | -2.80            | 41.80                    |
| 7   | 9764.00     | 60.20 PK                | 74.00          | -13.80      | 1.31 H             | 280                  | 15.60            | 44.60                    |
| 7   | 9764.00     | 33.50 AV                | 54.00          | -20.50      | 1.31 H             | 280                  | -11.10           | 44.60                    |

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 2327.00     | 68.30 PK                | 74.00          | -5.70       | 1.50 V             | 10                   | 38.80            | 29.60                    |
| 1   | 2327.00     | 41.60 AV                | 54.00          | -12.40      | 1.50 V             | 10                   | 12.00            | 29.60                    |
| 2   | 2381.00     | 68.90 PK                | 74.00          | -5.10       | 1.11 V             | 135                  | 39.20            | 29.70                    |
| 2   | 2381.00     | 42.20 AV                | 54.00          | -11.80      | 1.11 V             | 135                  | 12.50            | 29.70                    |
| 3   | *2441.00    | 99.60 PK                |                |             | 1.10 V             | 202                  | 69.60            | 30.00                    |
| 3   | *2441.00    | 71.90 AV                |                |             | 1.10 V             | 202                  | 41.90            | 30.00                    |
| 4   | 2560.00     | 60.90 PK                | 74.00          | -13.10      | 1.07 V             | 330                  | 30.50            | 30.40                    |
| 4   | 2560.00     | 34.20 AV                | 54.00          | -19.80      | 1.07 V             | 330                  | 3.80             | 30.40                    |
| 5   | 4882.00     | 62.90 PK                | 74.00          | -11.10      | 1.10 V             | 45                   | 26.40            | 36.50                    |
| 5   | 4882.00     | 36.20 AV                | 54.00          | -17.80      | 1.10 V             | 45                   | -0.30            | 36.50                    |
| 6   | 7323.00     | 61.80 PK                | 74.00          | -12.20      | 1.25 V             | 20                   | 20.00            | 41.80                    |
| 6   | 7323.00     | 35.10 AV                | 54.00          | -18.90      | 1.25 V             | 20                   | -6.70            | 41.80                    |
| 7   | 9763.00     | 59.30 PK                | 74.00          | -14.70      | 1.45 V             | 49                   | 14.70            | 44.60                    |
| 7   | 9763.00     | 32.60 AV                | 54.00          | -21.40      | 1.45 V             | 49                   | -12.00           | 44.60                    |

#### REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. " \* " : Fundamental frequency
5. The other emission levels were very low against the limit.

|                                 |                                                    |                          |                          |
|---------------------------------|----------------------------------------------------|--------------------------|--------------------------|
| <b>EUT</b>                      | Logitech® Cordless Precision™ Controller for XBOX™ | <b>MODEL</b>             | G-X3B12                  |
| <b>MODE</b>                     | Channel 78                                         | <b>FREQUENCY RANGE</b>   | 1000~25000 MHz           |
| <b>INPUT POWER (SYSTEM)</b>     | 120Vac, 60 Hz                                      | <b>DETECTOR FUNCTION</b> | Peak(PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 69%RH,<br>974 hPa                       | <b>TESTED BY</b>         | Tony Chen                |

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2480.00    | 88.90 PK                |                |             | 1.13 H             | 205                  | 58.80            | 30.10                    |
| 1   | *2480.00    | 62.20 AV                |                |             | 1.13 H             | 205                  | 32.10            | 30.10                    |
| 2   | 2483.50     | 61.70 PK                | 74.00          | -12.30      | 1.53 H             | 95                   | 31.60            | 30.10                    |
| 2   | 2483.50     | 35.00 AV                | 54.00          | -19.00      | 1.53 H             | 95                   | 4.90             | 30.10                    |
| 3   | 2495.00     | 58.50 PK                | 74.00          | -15.50      | 1.45 H             | 213                  | 28.40            | 30.20                    |
| 3   | 2495.00     | 31.80 AV                | 54.00          | -22.20      | 1.45 H             | 213                  | 1.70             | 30.20                    |
| 4   | 2560.00     | 58.70 PK                | 74.00          | -15.30      | 1.14 H             | 61                   | 28.30            | 30.40                    |
| 4   | 2560.00     | 32.00 AV                | 54.00          | -22.00      | 1.14 H             | 61                   | 1.60             | 30.40                    |
| 5   | 4960.00     | 68.10 PK                | 74.00          | -5.90       | 1.37 H             | 210                  | 31.20            | 36.80                    |
| 5   | 4960.00     | 41.40 AV                | 54.00          | -12.60      | 1.37 H             | 210                  | 4.50             | 36.80                    |
| 6   | 7440.00     | 65.10 PK                | 74.00          | -8.90       | 1.10 H             | 49                   | 23.20            | 41.90                    |
| 6   | 7440.00     | 38.40 AV                | 54.00          | -15.60      | 1.10 H             | 49                   | -3.50            | 41.90                    |
| 7   | 9920.00     | 59.20 PK                | 74.00          | -14.80      | 1.02 H             | 360                  | 15.00            | 44.20                    |
| 7   | 9920.00     | 32.50 AV                | 54.00          | -21.50      | 1.02 H             | 360                  | -11.70           | 44.20                    |

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2480.00    | 96.60 PK                |                |             | 1.04 V             | 204                  | 66.50            | 30.10                    |
| 1   | *2480.00    | 69.90 AV                |                |             | 1.04 V             | 204                  | 39.80            | 30.10                    |
| 2   | 2483.50     | 66.10 PK                | 74.00          | -7.90       | 1.54 V             | 286                  | 36.00            | 30.10                    |
| 2   | 2483.50     | 39.40 AV                | 54.00          | -14.60      | 1.54 V             | 286                  | 9.30             | 30.10                    |
| 3   | 2495.00     | 64.40 PK                | 74.00          | -9.60       | 1.47 V             | 271                  | 34.20            | 30.20                    |
| 3   | 2495.00     | 37.70 AV                | 54.00          | -16.30      | 1.47 V             | 271                  | 7.50             | 30.20                    |
| 4   | 2560.00     | 59.10 PK                | 74.00          | -14.90      | 1.56 V             | 160                  | 28.80            | 30.40                    |
| 4   | 2560.00     | 32.40 AV                | 54.00          | -21.60      | 1.56 V             | 160                  | 2.10             | 30.40                    |
| 5   | 4960.00     | 63.80 PK                | 74.00          | -10.20      | 1.02 V             | 297                  | 26.90            | 36.80                    |
| 5   | 4960.00     | 37.10 AV                | 54.00          | -16.90      | 1.02 V             | 297                  | 0.20             | 36.80                    |
| 6   | 7440.00     | 62.60 PK                | 74.00          | -11.40      | 1.58 V             | 315                  | 20.70            | 41.90                    |
| 6   | 7440.00     | 35.90 AV                | 54.00          | -18.10      | 1.58 V             | 315                  | -6.00            | 41.90                    |
| 7   | 9920.00     | 58.60 PK                | 74.00          | -15.40      | 1.58 V             | 297                  | 14.50            | 44.20                    |
| 7   | 9920.00     | 31.90 AV                | 54.00          | -22.10      | 1.58 V             | 297                  | -12.20           | 44.20                    |

#### REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. " \* " : Fundamental frequency
5. The other emission levels were very low against the limit.

### 4.3 BAND EDGES MEASUREMENT

#### 4.3.1 LIMITS OF BAND EDGES MEASUREMENT

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

#### 4.3.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|----------------------------|-----------|------------|------------------|
| R&S SPECTRUM ANALYZER      | FSP40     | 100037     | May. 06, 2004    |

**NOTE:**

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation



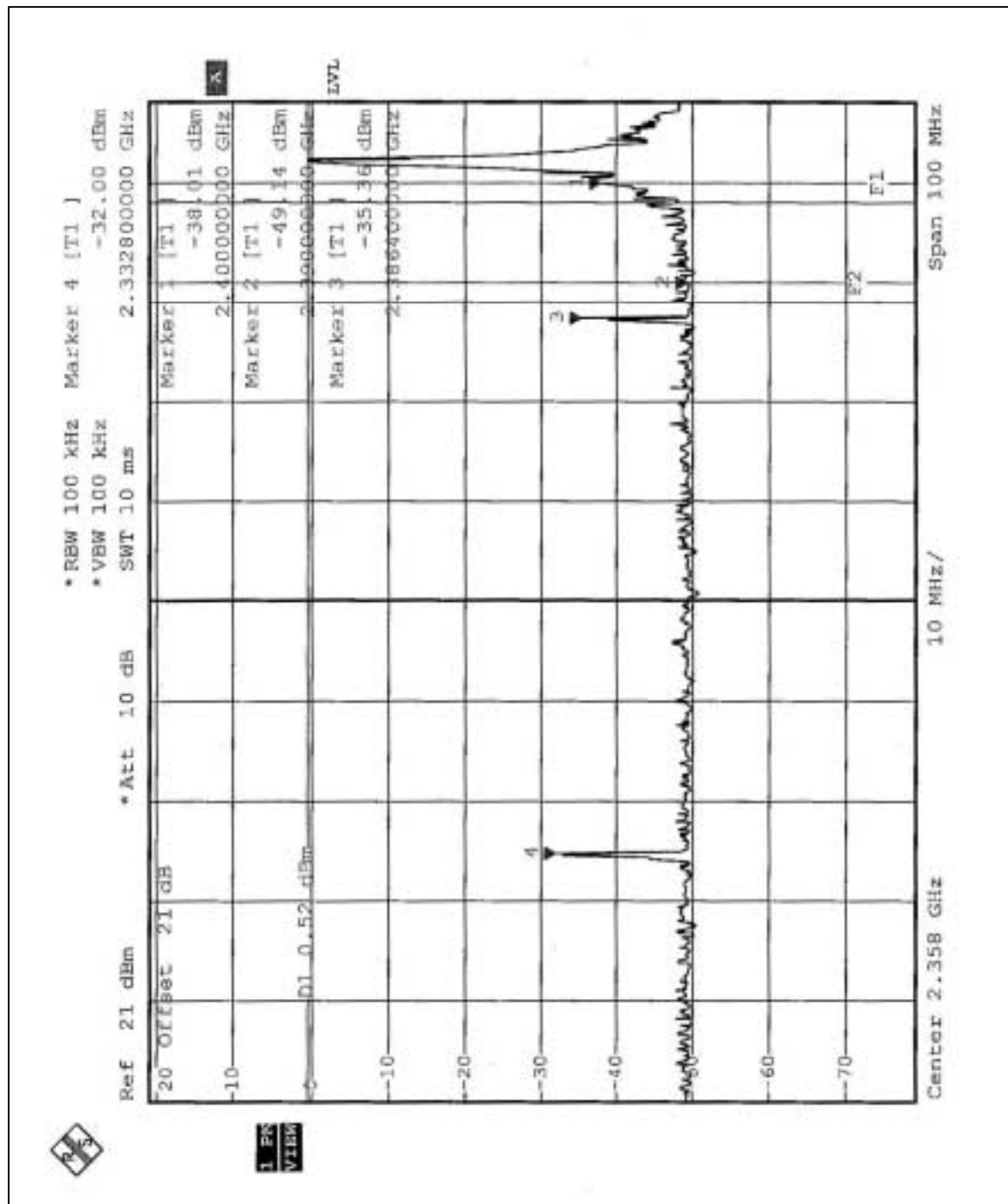
#### 4.3.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

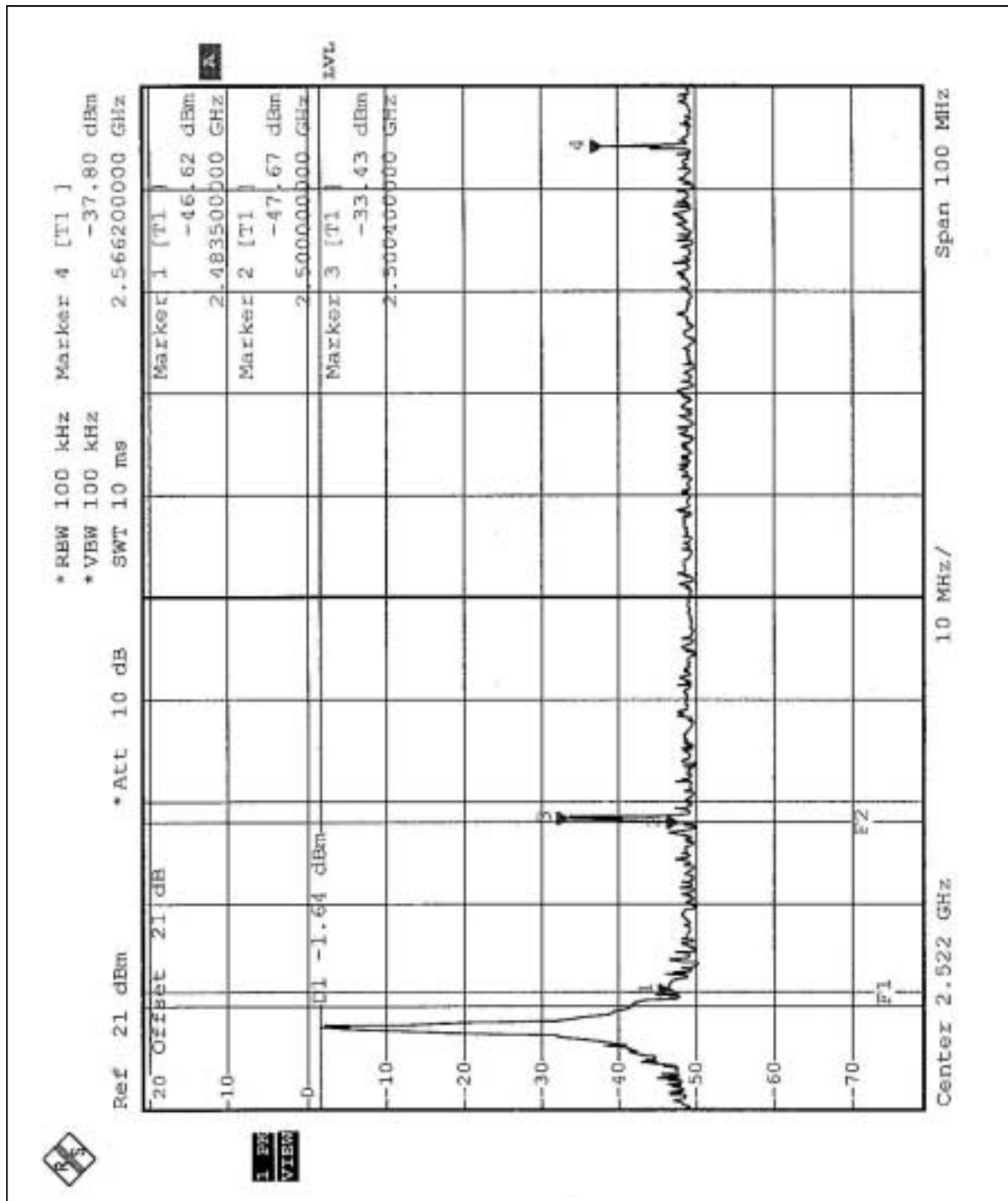
#### 4.3.6 TEST RESULTS

Emissions radiated outside of the specified frequency bands, please refer pages form 13 to 21 for met the requirement of the general radiated emission limits in § 15.209.

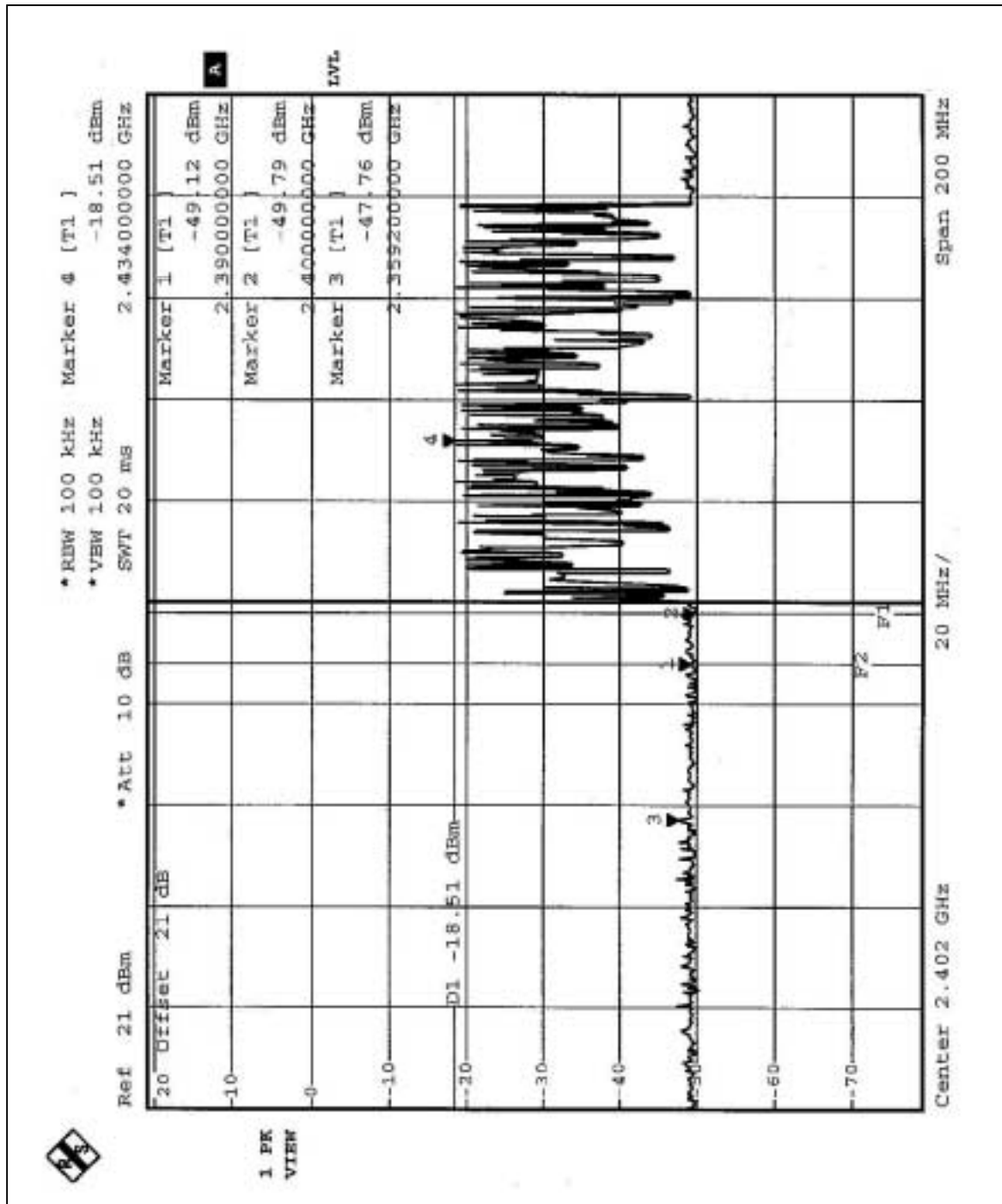
## Static-CH 0



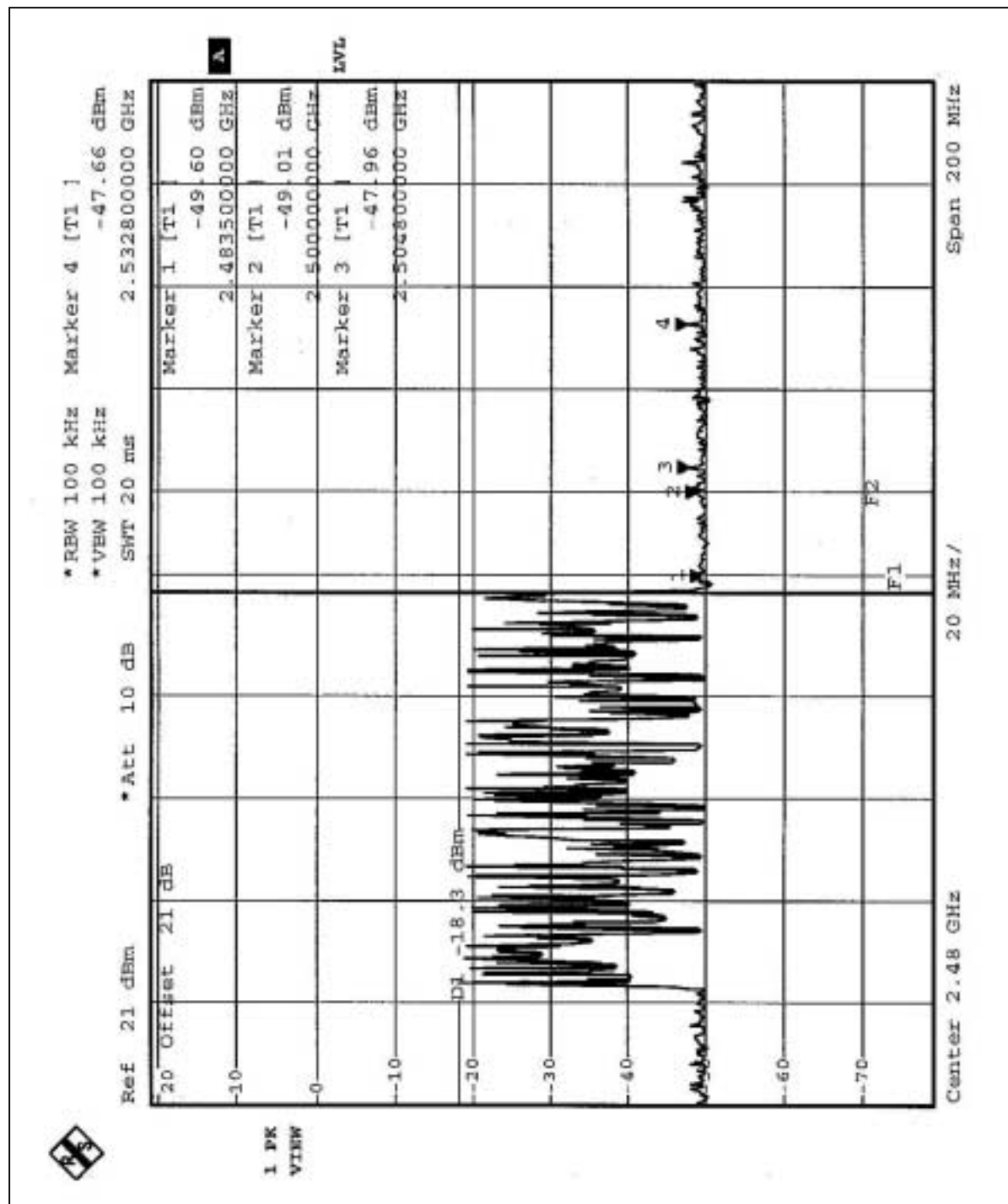
## Static-CH 78



## Dynamic-CH 0



Dynamic -CH 78



## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

### RADIATED EMISSION TEST (Mode 1)



RADIATED EMISSION TEST (Mode 2)



### RADIATED EMISSION TEST (Mode 3)





## 6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

|                    |                       |
|--------------------|-----------------------|
| <b>USA</b>         | FCC, NVLAP, UL        |
| <b>Germany</b>     | TUV Rheinland         |
| <b>Japan</b>       | VCCI                  |
| <b>Norway</b>      | NEMKO                 |
| <b>Canada</b>      | INDUSTRY CANADA , CSA |
| <b>R.O.C.</b>      | CNLA, BSMI, DGT       |
| <b>Netherlands</b> | Telefication          |
| <b>Singapore</b>   | PSB , GOST-ASIA(MOU)  |
| <b>Russia</b>      | CERTIS(MOU)           |

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: [www.adt.com.tw/index.5/phtml](http://www.adt.com.tw/index.5/phtml).  
If you have any comments, please feel free to contact us at the following:

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**Linko RF & Telecom Lab.**

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**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

The address and road map of all our labs can be found in our web site also.