

|                                                                                                                                                                                                                          |                      |                                                                                                             |
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|  <b>Spectrum Research &amp; Testing Lab., Inc.</b><br>No. 101-10, Ling 8,<br>Shan-Tong Li, Chung-Li<br>City, Taoyuan, Taiwan,<br>R.O.C. | <h1>TEST REPORT</h1> | Reference No.:A05082401<br>Report No.:FCCA05082401<br>FCC ID:FSUGMZHB<br>Page:1 of 21<br>Date:Sep. 31, 2005 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------|

Product Name: Wireless Mouse and Receiver  
 Model No.: Receiver:GK-05006/R,Mouse:GK-05005U/T  
 Applicant: KYE SYSTEMS CORP.  
 No. 492, Sec. 5, Chung Hsin Rd., San Chung,  
 Taipei Hsien, 241, Taiwan, R.O.C.  
 Date of Receipt: Aug. 24, 2005  
 Finished date of Test: Sep. 26, 2005  
 Applicable Standards: 47 CFR Part 15, Subpart C  
 ANSI C63.4:2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Checked By : Julian Chiang , Date: 8/26/2005  
 ( Julian, Chiang )

Approved By : Johnson Ho , Date: 08/26/2005  
 ( Johnson Ho, Director )

NVLAQ®



## Table of Contents

|     |                                          |    |
|-----|------------------------------------------|----|
| 1.  | DOCUMENT POLICY AND TEST STATEMENT ..... | 3  |
| 1.1 | DOCUMENT POLICY .....                    | 3  |
| 1.2 | TEST STATEMENT .....                     | 3  |
| 1.3 | EUT MODIFICATION .....                   | 3  |
| 2.  | DESCRIPTION OF EUT AND TEST MODE .....   | 4  |
| 2.1 | GENERAL DESCRIPTION OF EUT .....         | 4  |
| 2.2 | DESCRIPTION OF EUT INTERNAL DEVICE ..... | 4  |
| 2.3 | DESCRIPTION OF TEST MODE .....           | 4  |
| 2.4 | DESCRIPTION OF SUPPORT UNIT .....        | 5  |
| 3.  | DESCRIPTION OF APPLIED STANDARDS .....   | 5  |
| 4.  | CONDUCTED EMISSION TEST .....            | 6  |
| 4.1 | CONDUCTED EMISSION LIMIT .....           | 6  |
| 4.2 | TEST EQUIPMENT .....                     | 6  |
| 4.3 | TEST SETUP .....                         | 7  |
| 4.4 | TEST PROCEDURE .....                     | 7  |
| 4.5 | EUT OPERATING CONDITION .....            | 7  |
| 4.6 | TEST RESULT .....                        | 8  |
| 5.  | RADIATED EMISSION TEST .....             | 10 |
| 5.1 | RADIATED EMISSION LIMIT .....            | 10 |
| 5.2 | TEST EQUIPMENT .....                     | 11 |
| 5.3 | TEST SET-UP .....                        | 12 |
| 5.4 | TEST PROCEDURE .....                     | 13 |
| 5.5 | EUT OPERATING CONDITION .....            | 13 |
| 5.6 | RADIATED EMISSION TEST RESULT .....      | 14 |
| 6.  | BANDWIDTH TEST .....                     | 17 |
| 6.1 | TEST EQUIPMENT .....                     | 17 |
| 6.2 | TEST SET-UP .....                        | 17 |
| 6.3 | TEST PROCEDURE .....                     | 17 |
| 6.4 | EUT OPERATING CONDITION .....            | 17 |
| 6.5 | TEST RESULT .....                        | 18 |
| 7.  | PHOTOS OF TESTING .....                  | 19 |
| 8.  | TERMS OF ABRIVATION .....                | 21 |

|                                                                                                                                                                                                                          |                      |                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|
|  <b>Spectrum Research &amp; Testing Lab., Inc.</b><br>No. 101-10, Ling 8,<br>Shan-Tong Li, Chung-Li<br>City, Taoyuan, Taiwan,<br>R.O.C. | <h1>TEST REPORT</h1> | Reference No.:A05082401<br>Report No.:FCCA05082401<br>FCC ID:FSUGMZHB<br>Page:3 of 21<br>Date: Sep. 31, 2005 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|

## 1. DOCUMENT POLICY AND TEST STATEMENT

### 1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- The report must not be used by the applicant to claim that the product is endorsed by NVLAP, TÜV, NEMKO and SRT.
- The NVLAP logo applies only to the applicable standards specified in this report.

### 1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- AC power source, 120 Vac/60 Hz, was used during the test.

### 1.3 EUT MODIFICATION

- No modification in SRT Lab.

|                                                                                                                                                                                                                          |                      |                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|

## 2. DESCRIPTION OF EUT AND TEST MODE

### 2.1 GENERAL DESCRIPTION OF EUT

|                              |                                       |
|------------------------------|---------------------------------------|
| <b>PRODUCT</b>               | Wireless Mouse and Receiver           |
| <b>MODEL NO.</b>             | Receiver:GK-05006/R,Mouse:GK-05005U/T |
| <b>POWER REQUIREMENTS</b>    | +3V DC                                |
| <b>FREQUENCY BAND</b>        | 27MHz                                 |
| <b>CARRIER FREQUENCY</b>     | 27.045 MHz                            |
| <b>NUMBER OF CHANNEL</b>     | 1                                     |
| <b>RATED RF OUTPUT POWER</b> | 63dB $\mu$ V                          |
| <b>MODULATION TYPE</b>       | FSK                                   |
| <b>MODE OF OPERATION</b>     | Simplex                               |
| <b>ANTENNA TYPE</b>          | Loop                                  |
| <b>CHANNEL BANDWIDTH</b>     | 10KHz                                 |

#### NOTE :

The EUT has two model numbers as below on market. They are identical in all aspects except for the customer.

For more detailed features, please refer to the manufacturer's specification or User's Manual.

### 2.2 DESCRIPTION OF EUT INTERNAL DEVICE

| DEVICE | BRAND / MAKER | MODEL # | FCC ID/DOC | REMARK |
|--------|---------------|---------|------------|--------|
| N/A    |               |         |            |        |
|        |               |         |            |        |
|        |               |         |            |        |

### 2.3 DESCRIPTION OF TEST MODE

N/A (It is only applicable to more than one test mode.)

|                                                                                                                                                                                                                          |                      |                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|

## 2.4 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.4:2003 and CISRP22:2003. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

| NO | DEVICE            | BRAND | MODEL #      | FCC ID/DOC | CABLE                                                  |
|----|-------------------|-------|--------------|------------|--------------------------------------------------------|
| 1  | NOTEBOOK          | DELL  | C510/C610    | DOC        | 1.5m unshielded power cord<br>1.2m shielded data cable |
| 2  | MODEM             | ACEEX | DM-1414      | DOC        | 1.5m unshielded power cord<br>1.5m shielded data cable |
| 3  | PRINTER           | EPSON | STYLUS C20SX | DOC        | 1.8m unshielded power cord<br>1.5m shielded data cable |
| 4  | MOUSE             | KYE   | GM-04010A/T  | FSUGMZH1   | N/A                                                    |
| 5  | WIRELESS RECEIVER | KYE   | GK-05002/R   | DOC        | N/A                                                    |

**NOTE :** For the actual test configuration, please refer to the photos of testing.

## 3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of wireless product and to be connected with a PC system for normal use. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C  
 ANSI C63.4:2003

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

|                                                                                                                                                                                                                          |                      |                                                                                                              |
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|

## 4. CONDUCTED EMISSION TEST

### 4.1 CONDUCTED EMISSION LIMIT

| FREQUENCY (MHz) | Class A (dB $\mu$ V) |         | Class B (dB $\mu$ V) |         |
|-----------------|----------------------|---------|----------------------|---------|
|                 | Quasi-peak           | Average | Quasi-peak           | Average |
| 0.15 - 0.5      | 79                   | 66      | 66 - 56              | 56 - 46 |
| 0.5 - 5.0       | 73                   | 60      | 56                   | 46      |
| 5.0 - 30.0      | 73                   | 60      | 60                   | 50      |

#### NOTE:

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

### 4.2 TEST EQUIPMENT

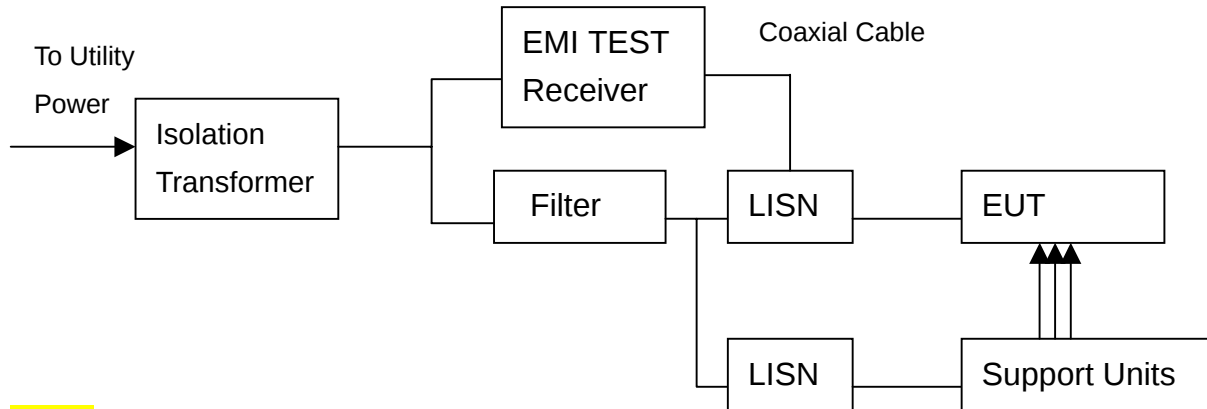
The following test equipment was used for the test:

| EQUIPMENT/<br>FACILITIES | SPECIFICATIONS         | MANUFACTURER       | MODEL#/<br>SERIAL#          | DUE DATE OF CAL.<br>& CAL. CENTER |
|--------------------------|------------------------|--------------------|-----------------------------|-----------------------------------|
| EMI TEST<br>RECEIVER     | 9 kHz TO<br>2.75 GHz   | ROHDE &<br>SCHWARZ | ESHS30/<br>826003/008       | AUG. 2006<br>ETC                  |
| LISN (for EUT)           | 50 $\mu$ H, 50 ohm     | FCC                | FCC-LISN-50-25-2<br>/ 01017 | NOV. 2005<br>ETC                  |
| LISN<br>(for Peripheral) | 50 $\mu$ H, 50 ohm     | FCC                | FCC-LISN-50-25-2<br>/ 01018 | NOV. 2005<br>ETC                  |
| 50 ohm<br>TERMINATOR     | 50 ohm                 | HP                 | 11593A/<br>2                | MAR. 2006<br>ETC                  |
| COAXIAL<br>CABLE         | 3m                     | SUNCITY            | J400/<br>3M                 | JUL. 2006<br>SRT                  |
| ISOLATION<br>TRANSFORMER | N/A                    | APC                | AFC-11015/<br>F102040016    | N/A                               |
| FILTER                   | 2 LINE, 30A            | FIL.COIL           | FC-943/<br>771              | N/A                               |
| GROUND PLANE             | 2.3M (H) x<br>2.4M (W) | SRT                | N/A                         | N/A                               |
| GROUND PLANE             | 2.4M (H) x<br>2.4M (W) | SRT                | N/A                         | N/A                               |

**NOTE:** The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

|                                                                                                                                                                                                                          |                      |                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|

### 4.3 TEST SETUP



#### NOTE:

1. The EUT was put on a wooden table with 0.8m heights above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.
3. The serial no. of the LISN connected to EUT is 01017.
4. The serial no. of the LISN connected to support units is 01018.

### 4.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISRP22:2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50μH as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

### 4.5 EUT OPERATING CONDITION

1. Set the EUT under transmission condition continuously at specific channel frequency.
2. Under Windows XP run "EMI TEST" program and PC sent "H" pattern or accessed the following peripherals directly or via EUT:
  - Color Monitor
  - RS232
  - Keyboard(EUT)
  - Printer
  - FDD
  - HDD

|                                                                                                                                                                                                                          |                      |                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|

## 4.6 TEST RESULT

|                    |               |              |               |
|--------------------|---------------|--------------|---------------|
| Temperature:       | 27°C          | Humidity:    | 57 %RH        |
| Ferquency Range:   | 0.15 – 30 MHz | Tested Mode: | LINK          |
| Receiver Detector: | Q.P. and AV.  | Tested By:   | NICK          |
|                    |               | Tested Date: | Sep. 26, 2005 |

Power Line Measured : Line

| Freq.<br>(MHz) | Correct.<br>Factor<br>(dB) | Reading Value<br>(dBμV) |       | Emission Level<br>(dBμV) |       | Limit<br>(dBμV) |       | Margin<br>(dB) |        |
|----------------|----------------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|----------------|--------|
|                |                            | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.           | AV.    |
| 0.216          | 0.29                       | 52.26                   | 41.87 | 52.55                    | 42.16 | 62.95           | 52.95 | -10.41         | -10.80 |
| 0.504          | 0.24                       | 43.18                   | 36.87 | 43.42                    | 37.11 | 56.00           | 46.00 | -12.58         | -8.89  |
| 1.210          | 0.14                       | 38.46                   | 31.16 | 38.60                    | 31.30 | 56.00           | 46.00 | -17.40         | -14.70 |
| 9.263          | 0.10                       | 27.38                   | 21.89 | 27.48                    | 21.99 | 60.00           | 50.00 | -32.52         | -28.01 |
| 14.257         | 0.10                       | 26.68                   | 21.28 | 26.78                    | 21.38 | 60.00           | 50.00 | -33.22         | -28.62 |
| 21.499         | 0.10                       | 26.26                   | 25.47 | 26.36                    | 25.57 | 60.00           | 50.00 | -33.64         | -24.43 |

Power Line Measured : Neutral

| Freq.<br>(MHz) | Correct.<br>Factor<br>(dB) | Reading Value<br>(dBμV) |       | Emission Level<br>(dBμV) |       | Limit<br>(dBμV) |       | Margin<br>(dB) |        |
|----------------|----------------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|----------------|--------|
|                |                            | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.           | AV.    |
| 0.210          | 0.29                       | 53.76                   | 40.22 | 54.05                    | 40.51 | 63.19           | 53.19 | -9.14          | -12.68 |
| 0.509          | 0.24                       | 40.04                   | 31.07 | 40.28                    | 31.31 | 56.00           | 46.00 | -15.72         | -14.69 |
| 1.220          | 0.14                       | 35.88                   | 31.43 | 36.02                    | 31.57 | 56.00           | 46.00 | -19.98         | -14.43 |
| 8.532          | 0.10                       | 29.42                   | 24.11 | 29.52                    | 24.21 | 60.00           | 50.00 | -30.48         | -25.79 |
| 9.050          | 0.10                       | 28.38                   | 23.09 | 28.48                    | 23.19 | 60.00           | 50.00 | -31.52         | -26.81 |
| 18.424         | 0.10                       | 25.14                   | 18.89 | 25.24                    | 18.99 | 60.00           | 50.00 | -34.76         | -31.01 |

### NOTE :

1. Measurement uncertainty is +/-1.32dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

|                                                                                                                                                                                                                          |                      |                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------|

|                    |               |              |               |
|--------------------|---------------|--------------|---------------|
| Temperature:       | 27°C          | Humidity:    | 57 %RH        |
| Ferquency Range:   | 0.15 – 30 MHz | Tested Mode: | Charge        |
| Receiver Detector: | Q.P. and AV.  | Tested By:   | NICK          |
|                    |               | Tested Date: | Sep. 26, 2005 |

Power Line Measured : Line

| Freq.<br>(MHz) | Correct.<br>Factor<br>(dB) | Reading Value<br>(dBμV) |       | Emission Level<br>(dBμV) |       | Limit<br>(dBμV) |       | Margin<br>(dB) |        |
|----------------|----------------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|----------------|--------|
|                |                            | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.           | AV.    |
| 0.210          | 0.29                       | 53.88                   | 44.37 | 54.17                    | 44.66 | 63.19           | 53.19 | -9.02          | -8.53  |
| 0.524          | 0.24                       | 41.12                   | 32.90 | 41.36                    | 33.14 | 56.00           | 46.00 | -14.64         | -12.86 |
| 1.250          | 0.14                       | 37.40                   | 27.21 | 37.54                    | 27.35 | 56.00           | 46.00 | -18.46         | -18.65 |
| 13.617         | 0.10                       | 27.24                   | 21.54 | 27.34                    | 21.64 | 60.00           | 50.00 | -32.66         | -28.36 |
| 14.450         | 0.10                       | 27.34                   | 21.69 | 27.44                    | 21.79 | 60.00           | 50.00 | -32.56         | -28.21 |
| 15.021         | 0.10                       | 27.32                   | 21.75 | 27.42                    | 21.85 | 60.00           | 50.00 | -32.58         | -28.15 |

Power Line Measured : Neutral

| Freq.<br>(MHz) | Correct.<br>Factor<br>(dB) | Reading Value<br>(dBμV) |       | Emission Level<br>(dBμV) |       | Limit<br>(dBμV) |       | Margin<br>(dB) |        |
|----------------|----------------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|----------------|--------|
|                |                            | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.           | AV.    |
| 0.210          | 0.29                       | 54.52                   | 42.82 | 54.81                    | 43.11 | 63.19           | 53.19 | -8.38          | -10.08 |
| 0.620          | 0.23                       | 39.64                   | 26.03 | 39.87                    | 26.26 | 56.00           | 46.00 | -16.14         | -19.75 |
| 1.269          | 0.14                       | 35.58                   | 25.11 | 35.72                    | 25.25 | 56.00           | 46.00 | -20.28         | -20.75 |
| 8.065          | 0.10                       | 28.88                   | 23.40 | 28.98                    | 23.50 | 60.00           | 50.00 | -31.02         | -26.50 |
| 8.136          | 0.10                       | 28.66                   | 23.34 | 28.76                    | 23.44 | 60.00           | 50.00 | -31.24         | -26.56 |
| 19.346         | 0.10                       | 26.50                   | 20.53 | 26.60                    | 20.63 | 60.00           | 50.00 | -33.40         | -29.37 |

**NOTE :**

1. Measurement uncertainty is +/-1.32dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

|                                                                                                                                                                                                                          |                      |                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|

## 5. RADIATED EMISSION TEST

### 5.1 RADIATED EMISSION LIMIT

FCC Part 15, Subpart C Section 15.227.

| FREQUENCY (MHz) | DISTANCE (m) | FIELD STRENGTH (dB $\mu$ V/m) |         |
|-----------------|--------------|-------------------------------|---------|
|                 |              | PEAK                          | AVERAGE |
| 26.96 - 27.28   | 3            | 100.0                         | 80.0    |

FCC Part 15, Subpart B Section 15.209.

| FREQUENCY (MHz) | DISTANCE (m) | FIELD STRENGTH (dB $\mu$ V/m) |
|-----------------|--------------|-------------------------------|
| 30 - 88         | 3            | 40.0                          |
| 88 - 216        | 3            | 43.5                          |
| 216 - 960       | 3            | 46.0                          |
| Above 960       | 3            | 54.0                          |

#### NOTE :

1. In the emission tables above , the tighter limit applies at the band edges.
2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

CISPR 22:2003 limits of radiated emission measurement for frequency below 1000 MHz

| FREQUENCY (MHz) | Class A (at 10m) | Class B (at 10m) |
|-----------------|------------------|------------------|
|                 | dB $\mu$ V/m     | dB $\mu$ V/m     |
| 30 – 230        | 40               | 30               |
| 230 - 1000      | 47               | 37               |

#### NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/m).

|                                                                                                                                                                                                                          |                      |                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|
|  <b>Spectrum Research &amp; Testing Lab., Inc.</b><br>No. 101-10, Ling 8,<br>Shan-Tong Li, Chung-Li<br>City, Taoyuan, Taiwan,<br>R.O.C. | <h1>TEST REPORT</h1> | Reference No.:A05082401<br>Report No.:FCCA05082401<br>FCC ID:FSUGMZHB<br>Page:11 of 21<br>Date: Sep. 31, 2005 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|

## 5.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test:

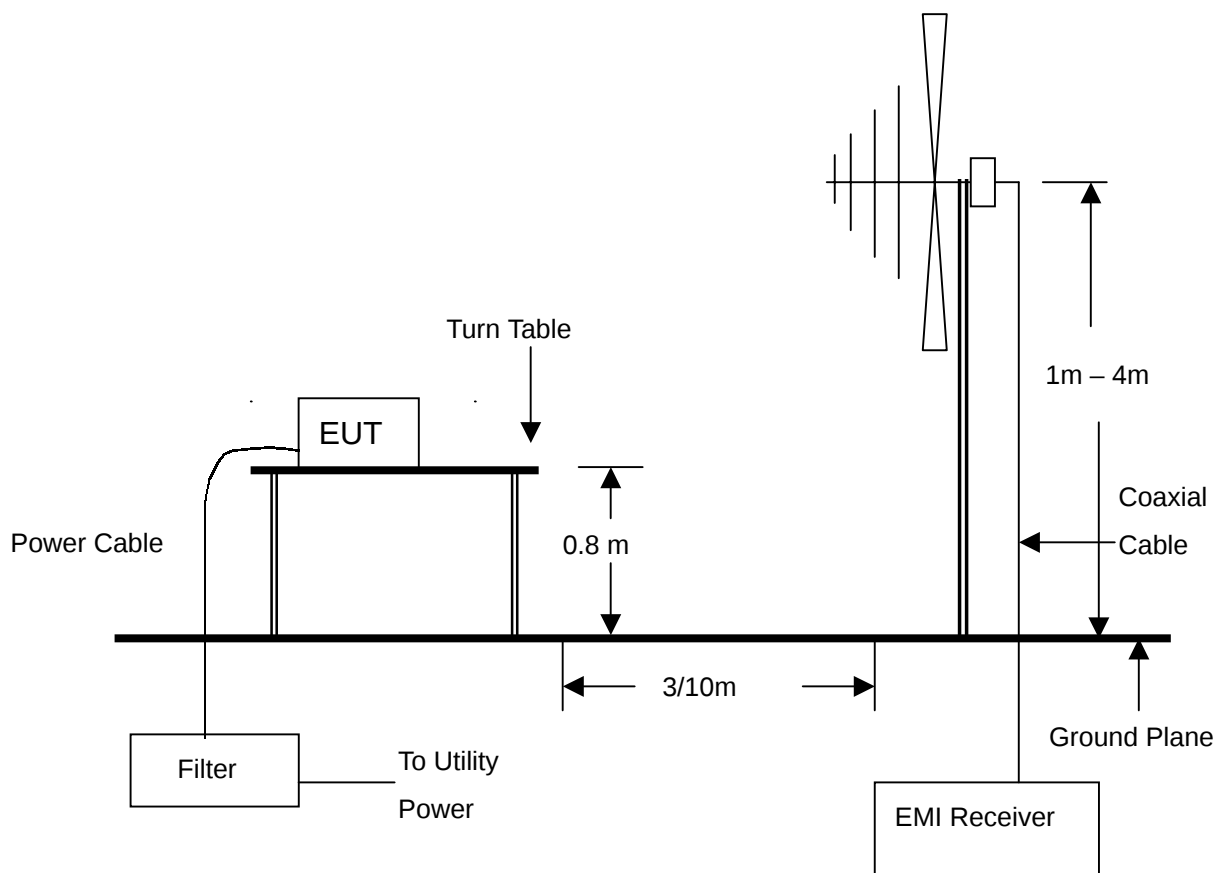
| EQUIPMENT/<br>FACILITIES | SPECIFICATIONS       | MANUFACTURER    | MODEL#/<br>SERIAL#  | DUE DATE OF CAL. &<br>CAL. CENTER |
|--------------------------|----------------------|-----------------|---------------------|-----------------------------------|
| EMI TEST RECEIVER        | 9 kHz TO 1 GHz       | ROHDE & SCHWARZ | ESCS30/830245/012   | OCT. 2005 ETC                     |
| BI-LOG ANTENNA           | 25 MHz TO 2 GHz      | EMCO            | 3143/9509-1141      | SEP. 2006 SRT                     |
| SPECTRUM ANALYZER        | 9 KHz TO 26.5 GHz    | HP              | 8593E/3710A03220    | MAY 2006 ETC                      |
| PRE-AMPLIFIER            | 1 GHz TO 26.5 GHz    | HP              | 8449B/3008A01019    | NOV. 2005 ETC                     |
| HORN ANTENNA             | 1 GHz TO 18 GHz      | EMCO            | 3115/9602-4681      | DEC. 2005 ETC                     |
| OATS                     | 3 – 10 M MEASUREMENT | SRT             | SRT-1               | DEC. 2005 SRT                     |
| COAXIAL CABLE            | 25M                  | SUNCITY         | J400/25M            | AUG. 2006 SRT                     |
| FILTER                   | 2 LINE, 30A          | FIL.COIL        | FC-943/869          | N/A                               |
| FREQUENCY CONVERTER      | N/A                  | APC             | AFC-2KBB/F100030031 | AUG. 2006 SRT                     |

### NOTE:

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.
2. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-1081.
3. The Open Area Test Site (SRT-2) is registered by FCC with No. 98458 and VCCI with No. R-1168.



## 5.3 TEST SET-UP



### NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

|                                                                                                                                                                                                                          |                      |                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|

## 5.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2003. The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

## 5.5 EUT OPERATING CONDITION

Same as section 4.5 of this report.

|                                                                                                                                                                                                                          |                      |                                                                                                               |
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|

## 5.6 RADIATED EMISSION TEST RESULT

|                    |               |                    |           |
|--------------------|---------------|--------------------|-----------|
| Temperature:       | 27°C          | Humidity:          | 57 %RH    |
| Frequency Range:   | 30 - 1000 MHz | Measured Distance: | 3m        |
| Receiver Detector: | PK & AV.      | Tested Mode:       | (Wireless |
| Tested Date:       | Sep. 26, 2005 |                    | Mouse)    |
| Tested By:         | Nick          |                    |           |

Fundamental frequency of transmitter

| Frequency (MHz) | Antenna Polarization | Cable Loss (dB) | Antenna Factor (dB/m) | Reading Data (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|----------------------|-----------------|-----------------------|---------------------|-------------------------|----------------|-------------|
| 27.045(F)       | H                    | 7.00            | 7.00                  | 39.1(PK)            | 53.1(PK)                | 100(PK)        | -46.9       |
| 27.045(F)       | H                    | 7.00            | 7.00                  | 31.9(AV)            | 45.9(AV)                | 80(AV)         | -34.1       |
| 27.045(F)       | V                    | 7.00            | 7.00                  | 33.3(PK)            | 47.3(PK)                | 100(PK)        | -42.7       |
| 27.045(F)       | V                    | 7.00            | 7.00                  | 25.5(AV)            | 39.5(AV)                | 80(AV)         | -40.5       |

Receiver Detector: Q.P. Tested Mode: (Wireless Mouse)

| Frequency (MHz) | Antenna Polarization | Cable Loss (dB) | Antenna Factor (dB/m) | Reading Data (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|----------------------|-----------------|-----------------------|---------------------|-------------------------|----------------|-------------|
| 40.6800         | H                    | 0.68            | 12.50                 | 14.8                | 28.0                    | 40.0           | -12.0       |
| 52.6700         | H                    | 0.77            | 8.20                  | 16.7                | 25.7                    | 40.0           | -14.3       |
| 79.5200         | H                    | 1.04            | 6.17                  | 12.3                | 19.5                    | 43.5           | -20.5       |
| 89.9100         | H                    | 1.01            | 6.56                  | 13.2                | 20.8                    | 43.5           | -22.7       |
| 188.6200        | H                    | 1.48            | 10.36                 | 14.1                | 25.9                    | 43.5           | -17.6       |
| 215.9700        | H                    | 1.60            | 10.25                 | 14.6                | 26.4                    | 43.5           | -17.1       |
| 53.5300         | V                    | 0.78            | 8.00                  | 16.4                | 25.2                    | 40.0           | -14.8       |
| 64.2700         | V                    | 0.87            | 6.32                  | 15.3                | 22.5                    | 40.0           | -17.5       |
| 79.3400         | V                    | 1.04            | 6.17                  | 16.8                | 24.0                    | 43.5           | -16.0       |
| 89.4200         | V                    | 1.01            | 6.56                  | 14.2                | 21.8                    | 43.5           | -21.7       |
| 188.9400        | V                    | 1.48            | 10.36                 | 15.7                | 27.5                    | 43.5           | -16.0       |
| 215.6700        | V                    | 1.60            | 10.25                 | 12.6                | 24.4                    | 43.5           | -19.1       |

### NOTE :

1. Measurement uncertainty is less than +/- 2dB
2. "\*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss
4. The field strength of other emission frequencies were very low against the limit.
5. (F) : Fundamental frequency of transmitter.

|                                                                                                                                                                                                                          |                      |                                                                                                               |
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|

|                    |               |                    |        |
|--------------------|---------------|--------------------|--------|
| Temperature:       | 27°C          | Humidity:          | 57 %RH |
| Ferquency Range:   | 30 – 1000 MHz | Measured Distance: | 3m     |
| Receiver Detector: | Q.P.          | Tested Mode:       | charge |
| Tested Date:       | Sep. 26, 2005 | Tested By:         | Nick   |

Antenna Polarization:Horizontal

| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Reading Data (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | AZ(°) | EL(m) |
|-----------------|-----------------|-----------------------|---------------------|-------------------------|----------------|-------------|-------|-------|
| 196.9400        | 1.50            | 10.04                 | 18.3                | 29.8                    | 43.5           | -13.7       | 350   | 3.1   |
| 230.5200        | 1.68            | 10.50                 | 15.8                | 28.0                    | 46.0           | -18.0       | 60    | 2.9   |
| 566.8200        | 2.86            | 19.75                 | 12.9                | 35.5                    | 46.0           | -10.5       | 283   | 2.1   |
| 664.9100        | 3.11            | 21.24                 | 16.7                | 41.0                    | 46.0           | -5.0        | 168   | 1.9   |
| 732.9200        | 3.19            | 22.18                 | 12.3                | 37.7                    | 46.0           | -8.3        | 150   | 1     |
| 861.5200        | 3.63            | 23.53                 | 9.3                 | 36.5                    | 46.0           | -9.5        | 75    | 1     |

Antenna Polarization:Vertical

| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Reading Data (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | AZ(°) | EL(m) |
|-----------------|-----------------|-----------------------|---------------------|-------------------------|----------------|-------------|-------|-------|
| 133.6400        | 1.21            | 7.37                  | 17.6                | 26.2                    | 43.5           | -17.3       | 280   | 1     |
| 215.6700        | 1.60            | 10.25                 | 20.7                | 32.5                    | 43.5           | -11.0       | 30    | 1     |
| 464.2600        | 2.55            | 17.99                 | 13.9                | 34.4                    | 46.0           | -11.6       | 140   | 1     |
| 664.9200        | 3.11            | 21.24                 | 12.3                | 36.6                    | 46.0           | -9.4        | 60    | 1.2   |
| 832.9400        | 3.52            | 23.22                 | 10.8                | 37.5                    | 46.0           | -8.5        | 240   | 1.1   |
| 866.8100        | 3.64            | 23.59                 | 11.3                | 38.5                    | 46.0           | -7.5        | 180   | 1     |

**NOTE :**

1. Measurement uncertainty is +/-2dB.
2. "※": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

|                                                                                                                                                                                                                          |                      |                         |
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|                                                                                                                                                                                                                          |                      | Report No.:FCCA05082401 |
|                                                                                                                                                                                                                          |                      | FCC ID:FSUGMZHB         |
|                                                                                                                                                                                                                          |                      | Page:16 of 21           |
|                                                                                                                                                                                                                          |                      | Date: Sep. 31, 2005     |

|                    |               |                    |        |
|--------------------|---------------|--------------------|--------|
| Temperature:       | 27°C          | Humidity:          | 57 %RH |
| Ferquency Range:   | 30 – 1000 MHz | Measured Distance: | 3m     |
| Receiver Detector: | Q.P.          | Tested Mode:       | Link   |
| Tested Date:       | Sep. 26, 2005 | Tested By:         | Nick   |

Antenna Polarization:Horizontal

| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Reading Data (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | AZ(°) | EL(m) |
|-----------------|-----------------|-----------------------|---------------------|-------------------------|----------------|-------------|-------|-------|
| 196.6200        | 1.50            | 10.04                 | 15.6                | 27.1                    | 43.5           | -16.4       | 174   | 3.2   |
| 596.2100        | 2.88            | 20.59                 | 13.7                | 37.2                    | 46.0           | -8.8        | 110   | 2.1   |
| 632.3400        | 3.03            | 20.96                 | 10.2                | 34.2                    | 46.0           | -11.8       | 325   | 1.87  |
| 663.9200        | 3.11            | 21.23                 | 11.8                | 36.1                    | 46.0           | -9.9        | 50    | 1.8   |
| 800.9200        | 3.39            | 22.90                 | 10.6                | 36.9                    | 46.0           | -9.1        | 122   | 1.2   |
| 866.3800        | 3.64            | 23.59                 | 9.8                 | 37.0                    | 46.0           | -9.0        | 241   | 1     |

Antenna Polarization:Vertical

| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Reading Data (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | AZ(°) | EL(m) |
|-----------------|-----------------|-----------------------|---------------------|-------------------------|----------------|-------------|-------|-------|
| 196.8300        | 1.50            | 10.04                 | 16.8                | 28.3                    | 43.5           | -15.2       | 67    | 1     |
| 230.0400        | 1.68            | 10.50                 | 15.5                | 27.7                    | 46.0           | -18.3       | 168   | 1     |
| 298.3400        | 1.93            | 14.10                 | 12.7                | 28.7                    | 46.0           | -17.3       | 134   | 1.2   |
| 462.3700        | 2.55            | 17.80                 | 14.4                | 34.8                    | 46.0           | -11.2       | 80    | 1     |
| 665.9700        | 3.11            | 21.25                 | 12.6                | 37.0                    | 46.0           | -9.0        | 340   | 1.1   |
| 863.6400        | 3.64            | 23.56                 | 10.1                | 37.3                    | 46.0           | -8.7        | 90    | 1     |

**NOTE :**

1. Measurement uncertainty is +/-2dB.
2. "\*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

|                                                                                                                                                                                                                          |                      |                                                                                                               |
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|

## 6. BANDWIDTH TEST

### 6.1 TEST EQUIPMENT

The following test equipment was used during the radiated emission test :

| EQUIPMENT/<br>FACILITIES | SPECIFICATIONS | MANUFACTURER       | MODEL#/<br>SERIAL#  | DUE DATE OF CAL. &<br>CAL. CENTER |
|--------------------------|----------------|--------------------|---------------------|-----------------------------------|
| SPECTRUM                 | 9kHz-7GHz      | ROHDE &<br>SCHWARZ | FSP7/<br>839511/010 | APR. 2006<br>R&S                  |

**NOTE:** The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

### 6.2 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

### 6.3 TEST PROCEDURE

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 6.4 EUT OPERATING CONDITION



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R.O.C.

# TEST REPORT

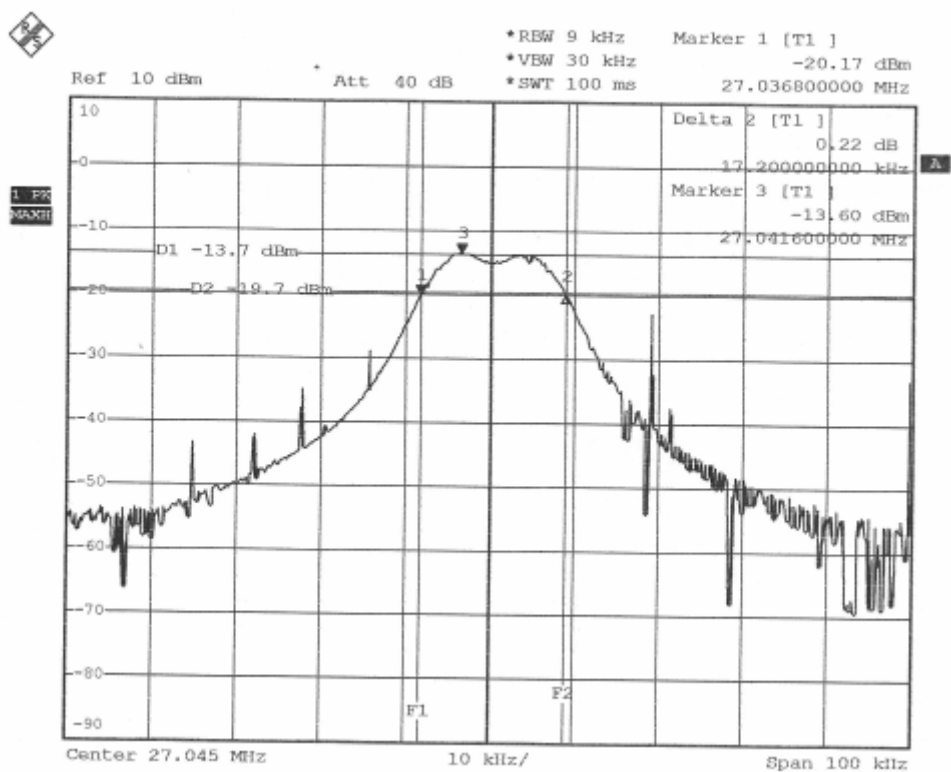
Reference No.:A05082401  
Report No.:FCCA05082401  
FCC ID:FSUGMZHB  
Page:18 of 21  
Date: Sep. 31, 2005

## 6.5 TEST RESULT

|                    |      |              |               |
|--------------------|------|--------------|---------------|
| Temperature:       | 26°C | Humidity:    | 55%RH         |
| Spectrum Detector: | PK   | Tested by:   | Julian Chiang |
| Test Result:       | PASS | Tested Date: | Sep. 26, 2005 |

| FREQUENCY<br>(MHz) | BANDWIDTH<br>(KHz) |
|--------------------|--------------------|
| 27.045             | 17.2               |

27.045 MHz:



FCC ID:FSUGMZHB



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## TEST REPORT

Reference No.:A05082401  
Report No.:FCCA05082401  
FCC ID:FSUGMZHB  
Page:19 of 21  
Date: Sep. 31, 2005

### 7. PHOTOS OF TESTING - Conducted test





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# TEST REPORT

Reference No.:A05082401  
Report No.:FCCA05082401  
FCC ID:FSUGMZHB  
Page:20 of 21  
Date: Sep. 31, 2005

- Radiated test (RX)



|                                                                                                                                                                                                                          |                      |                                                                                                               |
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------|

## 8. TERMS OF ABRIVATION

|          |                                              |
|----------|----------------------------------------------|
| AV.      | Average detection                            |
| AZ(°)    | Turn table azimuth                           |
| Correct. | Correction                                   |
| EL(m)    | Antenna height (meter)                       |
| EUT      | Equipment Under Test                         |
| Horiz.   | Horizontal direction                         |
| LISN     | Line Impedance Stabilization Network         |
| NSA      | Normalized Site Attenuation                  |
| Q.P.     | Quasi-peak detection                         |
| SRT Lab  | Spectrum Research & Testing Laboratory, Inc. |
| Vert.    | Vertical direction                           |