

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT  
CERTIFICATION TO FCC PART 15 REQUIREMENTS**

*for*

**INTENTIONAL RADIATOR**

**27 MHZ WIRELESS MOUSE**

**MODEL : MR-325**

**PRODUCT FAMILY: MQ-323; MQ-353; MR-355; MU-325;  
MU-355; MV-325; MV-355; MX-325; MX-355;  
MY-325; MY-355; MZ-325; MZ-355**

**FCC ID NO: KMEMR325**

**REPORT NO: 01R9831**

**ISSUE DATE: January 11, 2002**

*Prepared for*

**KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.  
6F-9, No. 3, Wu-Chuan 1<sup>st</sup> Rd., Hsin Chuang City,  
Taipei, Taiwan, R. O. C.**

*Prepared by*

**COMPLIANCE ENGINEERING SERVICES, INC.  
NO. 199, CHUNG SHENG ROAD, HSIN TIEN CITY, TAIPEI,  
TAIWAN, R. O. C.**

*d.b.a.*

**COMPLIANCE CERTIFICATION SERVICES**



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**1. VERIFICATION OF COMPLIANCE**

COMPANY NAME: KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.  
6F-9, No. 3, Wu-Chuan 1<sup>st</sup> Rd., Hsin Chuang City,  
Taipei, Taiwan, R. O. C.

CONTACT PERSON: Nell Wu / R&D Assistant

TELEPHONE NO.: 02-2298-2929

EUT DESCRIPTION: 27 MHZ WIRELESS MOUSE

MODEL NAME/NUMBER: MR-325

PRODUCT FAMILY: MQ-323; MQ-353; MR-355; MU-325; MU-355; MV-325;  
MV-355; MX-325; MX-355; MY-325; MY-355; MZ-325;  
MZ-355

FCC ID: KMEMR325

DATE TESTED: December 10, 2001

REPORT NUMBER: 01R9831

|                       |                       |
|-----------------------|-----------------------|
| TYPE OF EQUIPMENT     | REMOTE CONTROL        |
| EQUIPMENT TYPE        | 27 MHz WIRELESS MOUSE |
| MEASUREMENT PROCEDURE | ANSI C63.4 / 1992     |
| LIMIT TYPE            | CERTIFICATION         |
| FCC RULE              | CFR 47, PART 15       |

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in the FCC CFR 47, PART 15. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. **Warning** : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Engineering Services, Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Engineering Services, Inc. will constitute fraud and shall nullify the document.



RICK YEO / EMC MANAGER  
COMPLIANCE ENGINEERING SERVICES, INC.

## 2. PRODUCT DESCRIPTION

|                       |                       |
|-----------------------|-----------------------|
| CHASSIS TYPE          | Plastic               |
| Fundamental Frequency | 27.045MHz ; 27.195MHz |
| Power source          | 3.0V Battery          |
| Transmitting Time     | Continuous            |
| Local Oscillators     | N/A                   |

## 3. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at No. 199, Chung Sheng Road, Hsin Tien City, Taipei, Taiwan R.O.C. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 4. MEASUREMENT STANDARDS

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/1992.

## 5. TEST METHODOLOGY

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

## 6. MEASUREMENT EQUIPMENT USED

| Manufacturer | Model Number             | Description                    | Cal Due Date |
|--------------|--------------------------|--------------------------------|--------------|
| R & S        | DSAI-D<br>804.8932.52    | EMI Test Display (20Hz – 5GHz) | 10/2002      |
| R & S        | ESBI-<br>RF/1005.4300.52 | EMI Test RF Unit (20Hz – 5GHz) | 10/2002      |
| EMCO         | 6502                     | Antenna (9KHz – 30MHz)         | 04/2002      |
| SCHWARZBECK  | VULB 9160                | Antenna (30 - 2000 MHz)        | 05/2002      |
| H.P.         | 8447D                    | Pre-Amplifier                  | 05/2002      |
| R&S          | FSEB30                   | Spectrum Analyzer              | 11/2002      |
| Agilent      | E3640A                   | DC Power Supply                | 12/2002      |
| HP           | 7475A                    | Plotter                        | N/A          |

**7. POWERLINE RFI LIMIT**

|                                                                       |                                                                                         |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| CONNECTED TO AC POWER LINE                                            | SECTION 15.207                                                                          |
| CARRIER CURRENT SYSTEM IN THE<br>FREQUENCY RANGE OF 450 kHz TO 30 MHz | SECTION 15.205 AND SECTION 15.209, 15.221,<br>15.223, 15.225 OR 15.227, AS APPROPRIATE. |
| BATTERY POWER                                                         | NOT REQUIRED.                                                                           |

**8. RADIATED EMISSION LIMITS**

|                                               |                |
|-----------------------------------------------|----------------|
| GENERAL REQUIREMENTS                          | SECTION 15.209 |
| RESTRICTED BANDS OF OPERATION                 | SECTION 15.205 |
| OPERATION WITHIN THE BAND<br>26.69 – 27.20MHz | SECTION 15.227 |

## 9. SYSTEM TEST CONFIGURATION

The EUT was configured for testing in a typical fashion ( as a customer would normally use it).



Radiated Open Site Test Set-up

## 10. SYSTEM TEST CONFIGURATION

To achieve compliance to FCC Section 15.227 technical limits, the following change(s) were made during compliance testing:

There is no modification on this EUT.

## 11. TEST PROCEDURE AND RESULT

| Powerline RFI Limits                                       | Eut | Radiated Emission Limits | Eut |
|------------------------------------------------------------|-----|--------------------------|-----|
| SECTION 15.207                                             |     | SECTION 15.209           | X   |
| SECTION 15.205, 15.209, 15.221, 15.223, x 15.225 OR 15.227 |     | SECTION 15.205           | X   |
| BATTEY POWER                                               | X   | SECTION 15.227           | X   |

### 11. 1 Radiated Emission Test Procedure and Result

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3 meter from the EUT. The EUT antenna was mounted vertically was per normal installation.
2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205.
3. Once maximum direction was determined,, the search antenna was raised and lowered in both vertical and horizontal polarizations. The readings so obtained are recorded in data listed appendix.



**Project #:** 01R9831  
**Report #:** 9831D1  
**Date& Time:** 2001/12/10  
**Test Engr:** JAMES LIAO

NO. 199, CHUNG SHENG ROAD, HSIN TIEN CITY, TAIPEI, TAIWAN, R. O. C.

TEL: (02) 2217-0894 FAX: (02) 2217-1254

**Company:** KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.  
**EUT Description:** MR-325 (Mouse TX / 27MHz)  
**Test Configuration :** EUT ONLY  
**Type of Test:** FCC 15.227/FCC 15.209  
**Mode of Operation:** TX CH1 27.045MHz

| Freq.<br>(MHz) | Reading<br>(dBuV) | AF<br>(dB) | Closs<br>(dB) | Pre-amp<br>(dB) | Level<br>(dBuV/m) | Limit<br>FCC_B | Margin<br>(dB) | Pol<br>(H/V) | Az<br>(Deg) | Height<br>(Meter) | Mark<br>(P/Q/A) |
|----------------|-------------------|------------|---------------|-----------------|-------------------|----------------|----------------|--------------|-------------|-------------------|-----------------|
| 27.032         | 38.08             | 9.10       | 1.00          | 0.00            | 48.18             | 80.00          | -31.82         | 3mV          | 270         | 1.3               | P               |
| 53.445         | 42.00             | 12.44      | 1.05          | 22.42           | 33.07             | 40.00          | -6.93          | 3mV          | 270         | 1.2               | P               |
| 80.485         | 38.00             | 8.75       | 1.22          | 22.30           | 25.67             | 40.00          | -14.33         | 3mV          | 270         | 1.5               | P               |
| 107.450        | 44.60             | 10.82      | 1.43          | 22.11           | 34.74             | 43.50          | -8.76          | 3mV          | 270         | 1.0               | P               |
| 134.605        | 32.80             | 13.00      | 1.50          | 21.96           | 25.34             | 43.50          | -18.16         | 3mV          | 270         | 1.0               | P               |
| 161.645        | 35.00             | 13.77      | 1.64          | 21.87           | 28.54             | 43.50          | -14.96         | 3mV          | 270         | 1.0               | P               |
| 188.685        | 31.40             | 11.32      | 1.75          | 21.73           | 22.75             | 43.50          | -20.75         | 3mV          | 270         | 1.0               | P               |
| 215.805        | 43.80             | 10.67      | 1.87          | 21.25           | 35.09             | 43.50          | -8.41          | 3mV          | 270         | 1.0               | P               |
| 242.845        | 30.70             | 11.77      | 1.99          | 20.51           | 23.96             | 46.00          | -22.04         | 3mV          | 270         | 1.0               | P               |
| 269.900        | 31.50             | 12.47      | 2.11          | 20.28           | 25.80             | 46.00          | -20.20         | 3mV          | 270         | 1.0               | P               |

Total data #: 10



**Project #:** 01R9831  
**Report #:** 9831D2  
**Date& Time:** 2001/12/10  
**Test Engr:** JAMES LIAO

NO. 199, CHUNG SHENG ROAD, HSIN TIEN CITY, TAIPEI, TAIWAN, R. O. C.

TEL: (02) 2217-0894 FAX: (02) 2217-1254

**Company:** KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.  
**EUT Description:** MR-325 (mOUSE TX / 27MHz)  
**Test Configuration :** EUT ONLY  
**Type of Test:** FCC 15.227/FCC 15.209  
**Mode of Operation:** TX CH1 27.045MHz



| Freq.<br>(MHz) | Reading<br>(dBuV) | AF<br>(dB) | Closs<br>(dB) | Pre-amp<br>(dB) | Level<br>(dBuV/m) | Limit<br>FCC_B | Margin<br>(dB) | Pol<br>(H/V) | Az<br>(Deg) | Height<br>(Meter) | Mark<br>(P/Q/A) |
|----------------|-------------------|------------|---------------|-----------------|-------------------|----------------|----------------|--------------|-------------|-------------------|-----------------|
| 27.012         | 41.67             | 9.10       | 1.00          | 0.00            | 51.77             | 80.00          | -28.23         | 3mH          | 270         | 1.3               | P               |
| 53.455         | 38.80             | 12.44      | 1.05          | 22.42           | 29.87             | 40.00          | -10.13         | 3mH          | 270         | 2.5               | P               |
| 80.480         | 41.10             | 8.75       | 1.22          | 22.30           | 28.77             | 40.00          | -11.23         | 3mH          | 270         | 2.0               | P               |
| 107.520        | 50.20             | 10.82      | 1.43          | 22.10           | 40.34             | 43.50          | -3.16          | 3mH          | 270         | 1.0               | P               |
| 134.560        | 32.70             | 13.00      | 1.50          | 21.96           | 25.24             | 43.50          | -18.26         | 3mH          | 270         | 1.0               | P               |
| 161.600        | 34.70             | 13.77      | 1.64          | 21.87           | 28.24             | 43.50          | -15.26         | 3mH          | 270         | 1.0               | P               |
| 188.640        | 38.20             | 11.32      | 1.75          | 21.73           | 29.55             | 43.50          | -13.95         | 3mH          | 270         | 1.0               | P               |
| 215.675        | 39.80             | 10.67      | 1.87          | 21.25           | 31.09             | 43.50          | -12.41         | 3mH          | 270         | 1.0               | P               |
| 242.715        | 30.70             | 11.77      | 1.99          | 20.51           | 23.96             | 46.00          | -22.04         | 3mH          | 270         | 1.0               | P               |
| 269.755        | 31.20             | 12.47      | 2.11          | 20.28           | 25.50             | 46.00          | -20.50         | 3mH          | 270         | 1.0               | P               |
| 296.795        | 30.50             | 13.15      | 2.23          | 20.25           | 25.63             | 46.00          | -20.37         | 3mH          | 270         | 1.0               | P               |

Total data #: 11



**Project #:** 01R9831  
**Report #:** 9831D1  
**Date& Time:** 2001/12/10  
**Test Engr:** JAMES LIAO

NO. 199, CHUNG SHENG ROAD, HSIN TIEN CITY, TAIPEI, TAIWAN, R. O. C.

TEL: (02) 2217-0894 FAX: (02) 2217-1254

**Company:** KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.  
**EUT Description:** MR-325 (Mouse TX / 27MHz)  
**Test Configuration :** EUT ONLY  
**Type of Test:** FCC 15.227/FCC 15.209  
**Mode of Operation:** TX CH2 27.195MHz



| Freq.<br>(MHz) | Reading<br>(dBuV) | AF<br>(dB) | Closs<br>(dB) | Pre-amp<br>(dB) | Level<br>(dBuV/m) | Limit<br>FCC_B | Margin<br>(dB) | Pol<br>(H/V) | Az<br>(Deg) | Height<br>(Meter) | Mark<br>(P/Q/A) |
|----------------|-------------------|------------|---------------|-----------------|-------------------|----------------|----------------|--------------|-------------|-------------------|-----------------|
| 27.045         | 38.22             | 9.10       | 1.00          | 0.00            | 48.32             | 80.00          | -31.68         | 3mV          | 270         | 1.3               | P               |
| 54.391         | 42.11             | 12.40      | 1.05          | 22.42           | 33.14             | 40.00          | -6.86          | 3mV          | 270         | 1.2               | P               |
| 81.567         | 39.11             | 8.73       | 1.23          | 22.29           | 26.77             | 40.00          | -13.23         | 3mV          | 270         | 1.5               | P               |
| 108.799        | 45.00             | 10.99      | 1.43          | 22.10           | 35.32             | 43.50          | -8.18          | 3mV          | 270         | 1.0               | P               |
| 135.989        | 33.02             | 13.14      | 1.51          | 21.95           | 25.72             | 43.50          | -17.78         | 3mV          | 270         | 1.0               | P               |
| 163.174        | 34.77             | 13.66      | 1.65          | 21.86           | 28.22             | 43.50          | -15.28         | 3mV          | 270         | 1.0               | P               |
| 190.299        | 31.22             | 11.10      | 1.76          | 21.72           | 22.36             | 43.50          | -21.14         | 3mV          | 270         | 1.0               | P               |
| 217.566        | 44.02             | 10.70      | 1.88          | 21.20           | 35.41             | 46.00          | -10.59         | 3mV          | 270         | 1.0               | P               |
| 244.702        | 29.88             | 11.82      | 2.00          | 20.46           | 23.24             | 46.00          | -22.76         | 3mV          | 270         | 1.0               | P               |
| 271.955        | 30.99             | 12.54      | 2.12          | 20.28           | 25.37             | 46.00          | -20.63         | 3mV          | 270         | 1.0               | P               |
| 299.510        | 29.56             | 13.19      | 2.24          | 20.25           | 24.73             | 46.00          | -21.27         | 3mV          | 270         | 1.0               | P               |

Total data #: 11



**Project #:** 01R9831  
**Report #:** 9831D2  
**Date& Time:** 2001/12/10  
**Test Engr:** JAMES LIAO

NO. 199, CHUNG SHENG ROAD, HSIN TIEN CITY, TAIPEI, TAIWAN, R. O. C.

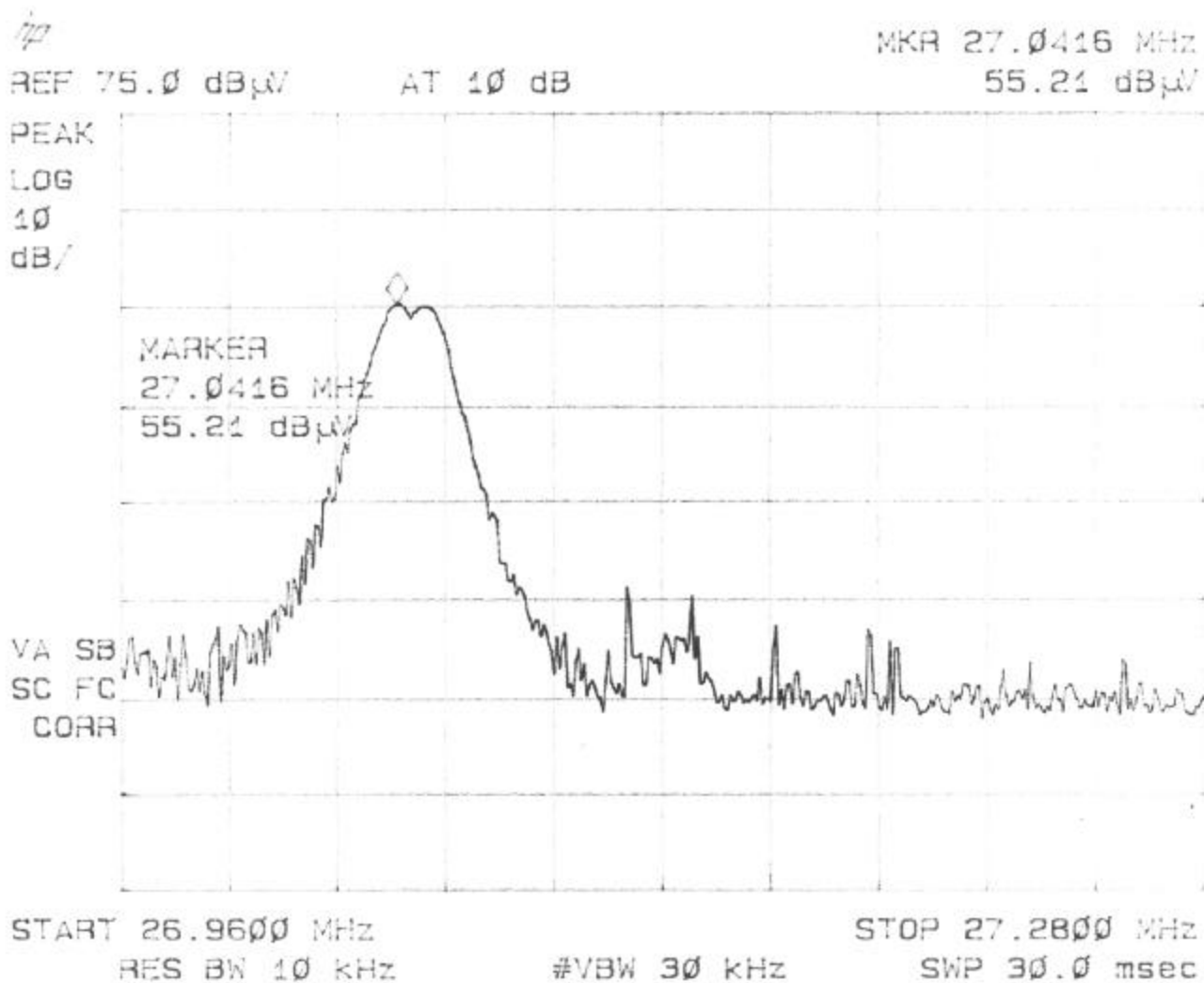
TEL: (02) 2217-0894 FAX: (02) 2217-1254

**Company:** KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.  
**EUT Description:** MR-325 (Mouse TX / 27MHz)  
**Test Configuration :** EUT ONLY  
**Type of Test:** FCC 15.227/FCC 15.209  
**Mode of Operation:** TX CH2 27.195MHz



| Freq.<br>(MHz) | Reading<br>(dBuV) | AF<br>(dB) | Closs<br>(dB) | Pre-amp<br>(dB) | Level<br>(dBuV/m) | Limit<br>FCC_B | Margin<br>(dB) | Pol<br>(H/V) | Az<br>(Deg) | Height<br>(Meter) | Mark<br>(P/Q/A) |
|----------------|-------------------|------------|---------------|-----------------|-------------------|----------------|----------------|--------------|-------------|-------------------|-----------------|
| 27.073         | 40.59             | 9.10       | 1.00          | 0.00            | 50.69             | 80.00          | -29.31         | 3mH          | 270         | 1.3               | P               |
| 54.392         | 40.22             | 12.40      | 1.05          | 22.42           | 31.25             | 40.00          | -8.75          | 3mH          | 270         | 2.5               | P               |
| 81.566         | 38.99             | 8.73       | 1.23          | 22.29           | 26.65             | 40.00          | -13.35         | 3mH          | 270         | 2.0               | P               |
| 108.821        | 43.55             | 10.99      | 1.43          | 22.10           | 33.87             | 43.50          | -9.63          | 3mH          | 270         | 1.0               | P               |
| 135.980        | 32.22             | 13.14      | 1.51          | 21.95           | 24.92             | 43.50          | -18.58         | 3mH          | 270         | 1.0               | P               |
| 163.165        | 33.58             | 13.66      | 1.65          | 21.86           | 27.03             | 43.50          | -16.47         | 3mH          | 270         | 1.0               | P               |
| 190.300        | 30.25             | 11.10      | 1.76          | 21.72           | 21.39             | 43.50          | -22.11         | 3mH          | 270         | 1.0               | P               |
| 217.601        | 42.33             | 10.70      | 1.88          | 21.20           | 33.72             | 46.00          | -12.28         | 3mH          | 270         | 1.0               | P               |
| 244.689        | 28.95             | 11.82      | 2.00          | 20.46           | 22.31             | 46.00          | -23.69         | 3mH          | 270         | 1.0               | P               |
| 271.946        | 31.02             | 12.54      | 2.12          | 20.28           | 25.40             | 46.00          | -20.60         | 3mH          | 270         | 1.0               | P               |
| 299.423        | 29.48             | 13.19      | 2.24          | 20.25           | 24.65             | 46.00          | -21.35         | 3mH          | 270         | 1.0               | P               |

Total data #: 11



MARKER  
→ HIGH

MARKER  
→ CF

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 3

hp

REF 75.0 dB $\mu$ W

AT 10 dB

MKR 27.2016 MHz

48.41 dB $\mu$ W

PEAK

LOG

10

dB/

COPY DEV

PRNT PLT

Plot  
Config

Print  
Config

Time  
Date

Change  
Prefix

More  
1 of 3

START  
26.9600 MHz

VA SB  
SC FC  
CORR

START 26.9600 MHz

RES BW 10 KHz

#VBW 30 KHz

STOP 27.2800 MHz

SWP 30.0 msec

