

**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 1st 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



**FCC, VCCI, CISPR, CE
UL, CSA, TÜV, VDE**

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TABLE OF CONTENTS	PAGE
1. VERIFICATION OF COMPLIANCE	1
2. PRODUCT DESCRIPTION.....	2
3. TEST FACILITY	2
4. MEASUREMENT STANDARDS	2
5. TEST METHODOLOGY.....	2
6. MEASUREMENT EQUIPMENT USED.....	2
7. POWERLINE RFI LIMIT	2
8. RADIATED EMISSION LIMITS	3
9. SYSTEM TEST CONFIGURATION	4
10. SYSTEM TEST CONFIGURATION	5
11. TEST PROCEDURE AND RESULT	5
11. 1 RADIATED EMISSION TEST PROCEDURE And RESULT.....	5
● TEST DATA	
● EXTERNAL & INTERNAL PHOTOS	
● SCHEMATICS	
● BLOCK DIAGRAM	
● USER MANUAL	

1. VERIFICATION OF COMPLIANCE

COMPANY NAME: KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.
6F-9, No. 3, Wu-Chuan 1st 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

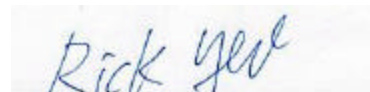
FCC ID: KMEMR325

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 804.8932.52	EMI Test Display (20Hz – 5GHz)	10/2002
R & S	ESBI- 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 FREQUENCY RANGE OF 450 kHz TO 30 MHz	SECTION 15.205 AND SECTION 15.209, 15.221, 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 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. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (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. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (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. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (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.
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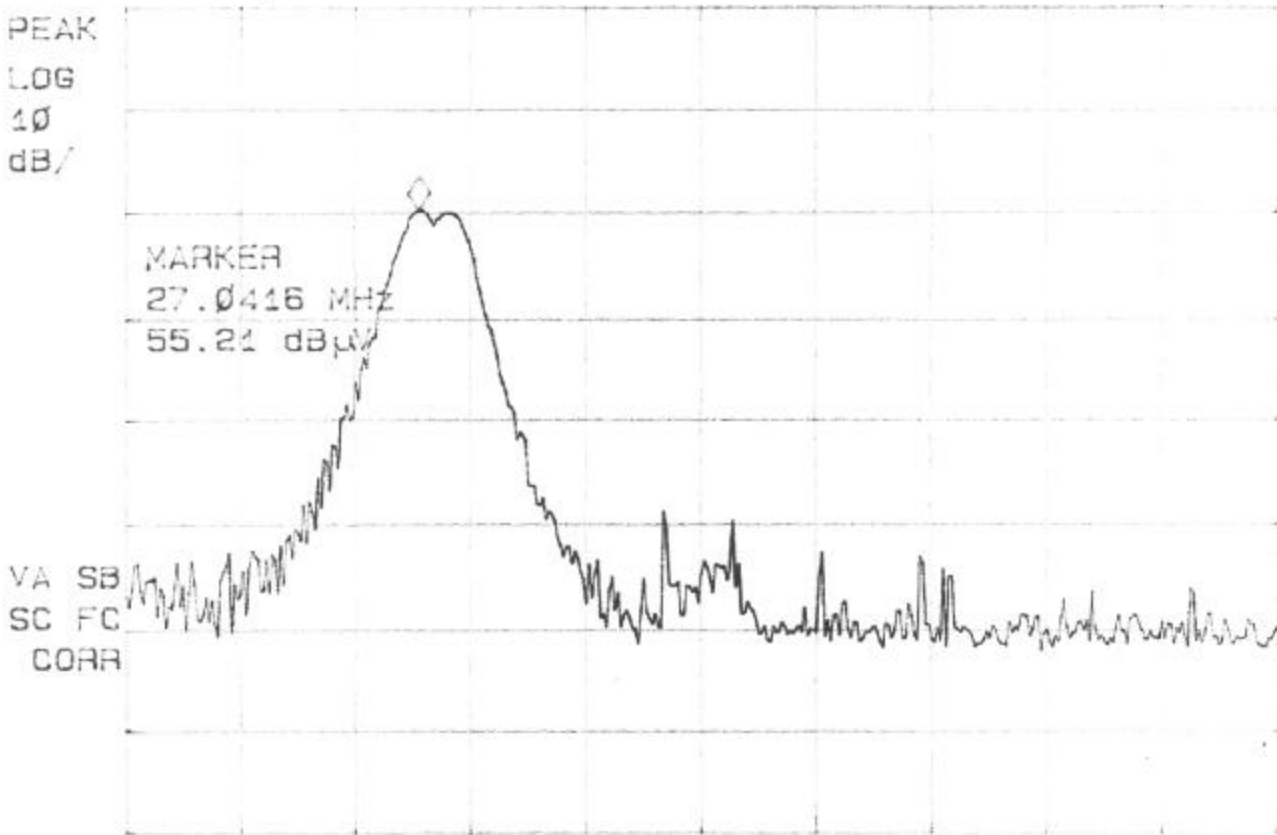
Company: KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.
EUT Description: MR-325 (Mouse TX / 27MHz)
Test Configuration : EUT ONLY
Type of Test: FCC 15.227/FCC 15.209
Mode of Operation: TX CH2 27.195MHz



Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (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

REF 75.0 dBμV AT 10 dB MKR 27.0416 MHz 55.21 dBμV



MARKER
-> HIGH

MARKER
-> CF

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 3

START 26.9600 MHz RES BW 10 KHz #VBW 30 KHz SWP 30.0 msec STOP 27.2800 MHz

hp

REF 75.0 dBμV

AT 10 dB

MKR 27.2016 MHz

48.41 dBμV

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

