FCC ID: EMJM24702

FCC TEST REPORT

REPORT NO.: RF930728A08
MODEL NO.: MORF47BOA
RECEIVED: July 28, 2004
TESTED: July 29, 2004

APPLICANT: PRIMAX ELECTRONICS LTD.

ADDRESS: No. 669, Ruey Kuang Road, Neihu, Taipei, Taiwan. R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.

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1 CERTIFICATION

PRODUCT	:	Mouse
BRAND NAME	:	HP, PRIMAX
MODEL NO	:	MORF47BOA
APPLICANT	:	PRIMAX ELECTRONICS LTD.
TESTED:		July 29, 2004
TEST ITEM:		Engineering sample
STANDARDS :		FCC Part 15, Subpart C (Section 15.227) ANSI C63.4-2001

The above equipment has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Annie Chang (Annie Chang) , **DATE:** Aug. 11, 2004

TECHNICAL ACCEPTANCE : Henry Lai (Henry Lai) , **DATE:** Aug. 11, 2004
Responsible for EMI

APPROVED BY : Mike Su. (Mike Su, Manager) , **DATE:** Aug. 11, 2004

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD PARAGRAPH	**TEST TYPE**	**RESULT**	**REMARK**
15.207	Conducted Emission Test	N/A	Power supply is 3Vdc from batteries
15.227 15.209	Radiated Emission Test	PASS	Minimum passing margin is –5.27dB at 437.00MHz

NOTE: The receiver part to communicate with the EUT has been verified to comply with FCC Part 15, Subpart B, Class B (DoC). The test report can be provided upon request.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

MEASUREMENT	UNCERTAINTY
Conducted emissions	N/A
Radiated emissions	3.74 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mouse
MODEL NO.	MORF47BOA
POWER SUPPLY	3Vdc from battery
MODULATION TYPE	FSK
CARRIER FREQUENCY OF EACH CHANNEL	27.045MHz
NUMBER OF CHANNEL	1
ANTENNA TYPE	Loop antenna
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is the transmitter part of Mouse.
2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual

3.2 DESCRIPTION OF TEST MODES

One channel was provided to this EUT.

Channel	Frequency
1	27.045MHz

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is the transmitter part of a Mouse. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.227)

ANSI C63.4-2001

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

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT was tested standalone.

4 TEST PROCEDURE AND RESULT

4.1 CONDUCTED EMISSION MEASUREMENT

NA

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.227 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)	
26.96-27.28	Peak	Average
	100	80

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(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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 INSTRUMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8590L	3544A01176	May. 31, 2005
HP Preamplifier	8447D	2944A08485	Apr. 26, 2005
* HP Preamplifier	8449B	3008A01924	Oct. 12, 2004
* HP Preamplifier	8449B	3008A01638	Oct. 17, 2004
SCHAFFNER TEST RECEIVER	SCR 3501	408	Jan. 8, 2005
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 12, 2005
SCHWARZBECK Tunable Dipole Antenna	VHA 9103	NA	Nov. 15, 2004
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* CHASE BILOG Antenna	CBL6112A	2221	July 16, 2005
* EMCO Horn Antenna	3115	6714	Nov. 26, 2004
* EMCO Horn Antenna	3115	9312-4192	Feb. 28, 2005
* EMCO Turn Table	1060	1115	NA
* CHANCE Tower	CM-AT40	CM-A010	NA
* Software	ADT_Radiated_V5.14	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Dec. 11, 2004
* TIMES RF cable	LMR-600	CABLE-ST5-01	Dec. 11, 2004

NOTE: 1. The calibration interval of the above test instruments is 12 months. 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. 5.
5. The VCCI Site Registration No. R-1039.

4.2.3 TEST PROCEDURE

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 the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

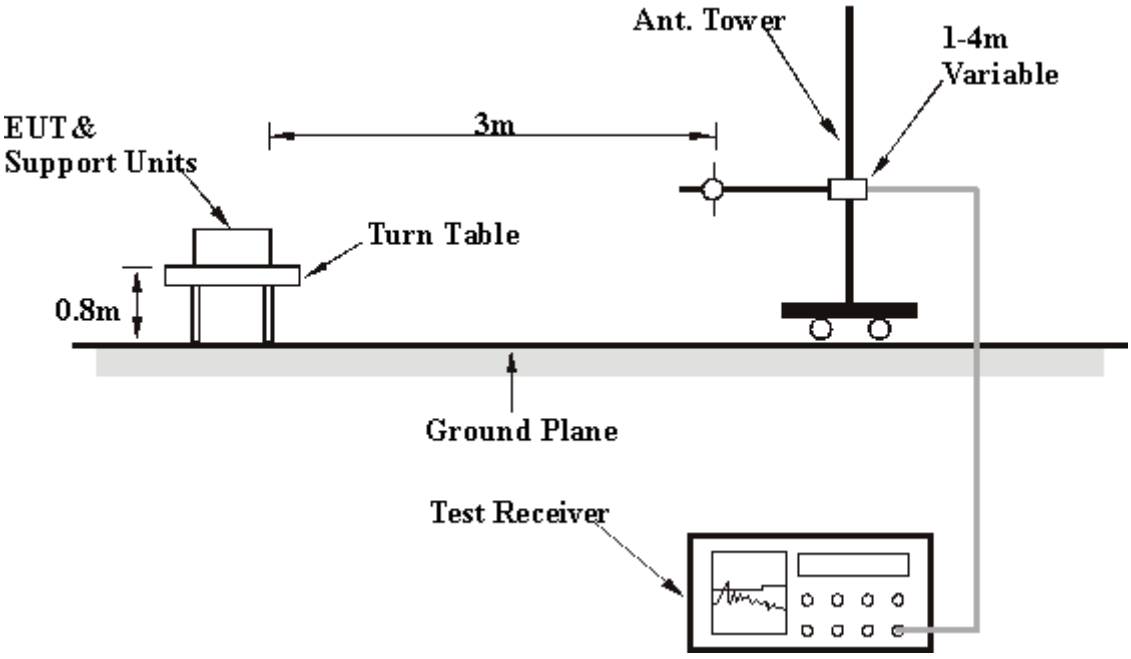
NOTE:

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 300 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 in this test report - Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITION

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

4.2.7 TEST RESULT

EUT	Mouse	**MODEL**	MORF47BOA
MODE	Channel 1	**INPUT POWER**	3Vdc
FREQUENCY RANGE	30-1000 MHz	**DETECTOR FUNCTION**	Peak / Quasi-Peak / Average
ENVIRONMENTAL CONDITIONS	33 deg. C, 54 % RH, 1050 hPa	**TESTED BY**: Vincent Lin	

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	*27.05	51.34 PK	100.00	-48.66	1.79 H	32	43.85	7.49
2	*27.05	46.65 AV	80.00	-33.35	1.79 H	32	39.16	7.49
3	54.08	27.51 QP	40.00	-12.49	1.84 H	20	19.82	7.69
4	81.14	30.23 QP	40.00	-9.77	2.27 H	294	22.38	7.85
5	189.30	28.09 QP	43.50	-15.41	1.59 H	125	19.81	8.28
6	216.32	37.05 QP	46.00	-8.95	1.52 H	120	28.67	8.38
7	243.36	33.90 QP	46.00	-12.10	1.02 H	222	25.45	8.45
8	270.49	28.53 QP	46.00	-17.47	1.22 H	227	19.99	8.54
9	297.44	23.94 QP	46.00	-22.06	1.56 H	2	15.35	8.59
10	312.00	29.76 QP	46.00	-16.24	1.69 H	95	21.13	8.63
11	324.50	22.60 QP	46.00	-23.40	1.10 H	35	13.93	8.67
12	339.00	25.02 QP	46.00	-20.98	1.48 H	186	16.30	8.72
13	438.00	31.88 QP	46.00	-14.12	1.69 H	255	22.84	9.04
14	468.00	25.48 QP	46.00	-20.52	1.44 H	301	16.37	9.11
15	482.00	29.93 QP	46.00	-16.07	1.55 H	349	20.76	9.17
16	637.00	22.81 QP	46.00	-23.19	1.22 H	4	13.21	9.60

REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
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.

EUT	Mouse	**MODEL**	MORF47BOA
MODE	Channel 1	**INPUT POWER**	3Vdc
FREQUENCY RANGE	30-1000 MHz	**DETECTOR FUNCTION**	Peak / Quasi-Peak / Average
ENVIRONMENTAL CONDITIONS	33 deg. C, 54 % RH, 1050 hPa	**TESTED BY**: Vincent Lin	

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	*27.05	41.13 PK	100.00	-58.87	1.00 V	3	33.64	7.49
2	*27.05	35.21 AV	80.00	-44.79	1.00 V	3	27.72	7.49
3	81.08	21.88 QP	40.00	-18.12	1.00 V	243	14.03	7.85
4	216.33	28.36 QP	46.00	-17.64	2.29 V	277	19.98	8.38
5	243.38	24.10 QP	46.00	-21.90	2.00 V	45	15.65	8.45
6	312.00	31.74 QP	46.00	-14.26	2.06 V	119	23.11	8.63
7	323.00	35.14 QP	46.00	-10.86	1.63 V	24	26.47	8.67
8	329.00	32.06 QP	46.00	-13.94	1.63 V	91	23.37	8.69
9	371.00	32.22 QP	46.00	-13.78	1.63 V	122	23.36	8.86
10	430.00	32.40 QP	46.00	-13.60	2.06 V	3	23.37	9.03
11	**437.00**	**40.73 QP**	**46.00**	**-5.27**	**1.63 V**	**225**	**31.69**	**9.04**
12	489.00	32.89 QP	46.00	-13.11	1.00 V	356	23.70	9.19
13	581.00	27.01 QP	46.00	-18.99	2.06 V	315	17.51	9.50

REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
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.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

RADIATED EMISSION TEST

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:

USA	FCC, NVLAP, UL
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	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.
If you have any comments, please feel free to contact us at the following:

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

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