



# FCC TEST REPORT

**REPORT NO.:** RF90050401

**MODEL NO.:** MW1083

**RECEIVED:** May 4, 2001

**TESTED:** May 24, 2001

**APPLICANT:** DEXIN Corporation

**ADDRESS:** 8F-8, No.502, Yuan Shan Rd., Chung Ho city,  
Taipei Hsien, 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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0528



Lab Code: 200102-0



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## 1 CERTIFICATION

**PRODUCT :** Wireless Mouse (Transmitter part)  
**BRAND NAME :** DEXIN  
**MODEL NO :** MW1083  
**APPLICANT :** DEXIN CORP.  
**STANDARDS :** 47 CFR Part 15, Subpart C,  
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility on May 24, 2001. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

**TESTED BY:** Gary Chang, **DATE:** May 26, 2001  
( Gary Chang )

**CHECKED BY:** Demi Chen, **DATE:** May 26, 2001  
( Demi Chen )

**APPROVED BY:** Harris W. Lai, **DATE:** May 26, 2001  
( Harris W. Lai )

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
STANDARD PARAGRAPH	TEST TYPE	RESULT	REMARK
15.107	Conducted Emission Test	N/A	Power supply is 3Vdc from batteries.
15.227	Radiated Emission Test	PASS	Minimum passing margin is -11.6dBuV at 425.73MHz

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

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Wireless Mouse (Transmitter part)
<b>MODEL NO.</b>	MW1083
<b>POWER SUPPLY</b>	3VDC (1.5V x 2 batteries)
<b>MODULATION TYPE</b>	FSK
<b>FREQUENCY RANGE</b>	NA
<b>CARRIER FREQUENCY OF EACH CHANNEL</b>	27.045MHz, 27.145MHz
<b>BANDWIDTH OF EACH CHANNEL</b>	50 kHz
<b>NUMBER OF CHANNEL</b>	2
<b>ANTENNA TYPE</b>	Loop Antenna
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	NA
<b>ASSOCIATED DEVICES</b>	NA

**NOTE:** The EUT is the transmitter part of a wireless mouse.

#### 3.2 DESCRIPTION OF TEST MODES

Two channels are provided in this EUT.

Channel	Frequency	Channel	Frequency
1	27.045 MHz	7	
2	27.145 MHz	8	
3		9	
4		10	
5		11	
6			

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

#### FCC CFR 47 Part 15, Subpart C

#### ANSI C63.4-1992

All tests have been performed and recorded as per the above standards. The conducted test is not necessary, as the power input of EUT is DC 3V from batteries.

### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Personal Computer	IBM	2187-12W	1S218714ABNA000V	FCC DoC APPROVED
2	21"COLOR MONITOR	HP	D2846	JP92233133	FCC DoC APPROVED
3	PRINTER	HP	2225C+	3123S97230	DSI6XU2225
4	MODEM	ACEEX	1414	980020510	IFAXDM1414
5	PS/2 KEYBOARD	FORWARD	FDA-104GA	FDKB8110111	F4ZDA-104G

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core.
3	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.
4	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
5	1.5 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.

**NOTE:** All power cords of the above support units are non shielded (1.8m).

## 4 TEST PROCEDURES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

NA

### 4.2 RADIATED EMISSION MEASUREMENT

#### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.227 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)	
	Peak	Average
26.96-27.28	100	80

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Other Frequencies (MHz)	Field Strength of Fundamental	
	uV/meter	dBuV/meter
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

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

## 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8590L	3544A01176	April 18, 2001
HP Preamplifier	8447D	2944A08485	April 26, 2001
HP Preamplifier	8449B	3008A01201	Dec. 13, 2001
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Jan. 25, 2002
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2001
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 4, 2001
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	AS61D	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Aug. 4, 2001
* TIMES RF cable	LMR-600	CABLE-ST5-01	Aug. 4, 2001
Open Field Test Site	Site 5	ADT-R05	July 28, 2001
Site Registration No.	FCC: 90422 VCCI : R-1039 Canada IC: IC 3789-5		

**NOTE:**

1. "\*" = These equipments are used for the final measurement.
2. The preamplifiers will not be used while the R&S test receiver is doing the measurement.
3. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per the NAMAS document NIS81.
4. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



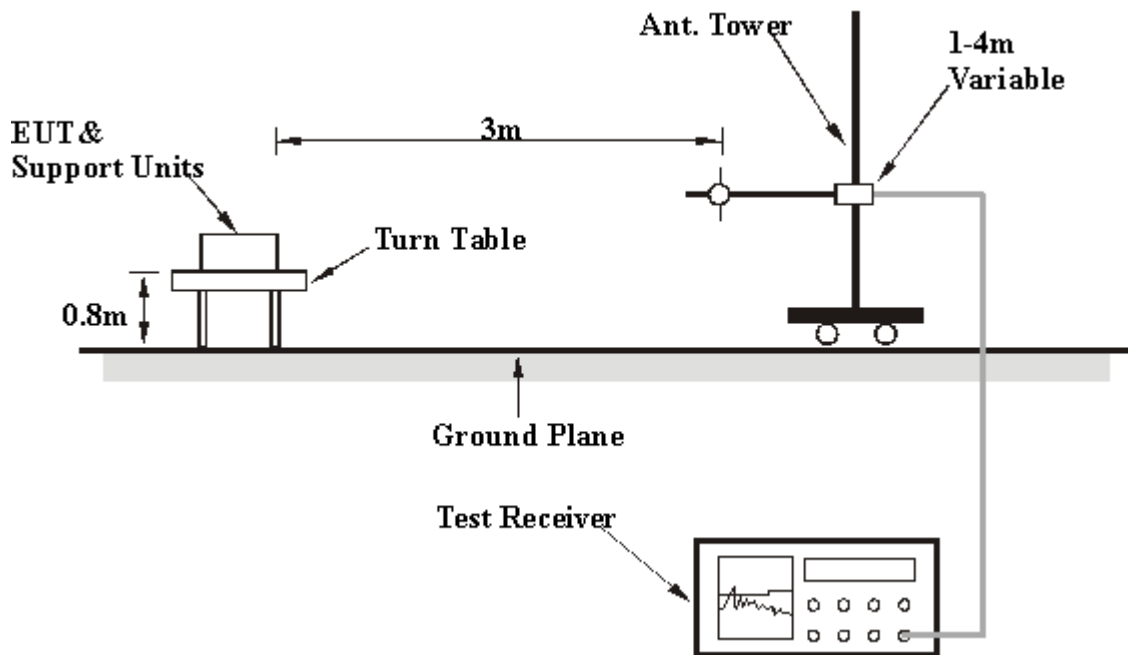
#### 4.2.3 TEST PROCEDURES

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



For the actual test configuration, please refer to the related item in this test report - Photographs of the Test Configuration.

#### 4.2.5 EUT OPERATING CONDITIONS

- Connected the EUT with a computer system on the testing table.
- The computer system run a test program to enable EUT under transmission condition continuously at specific channel frequency.
- The computer system sent "H" messages to Color Monitor and Monitor displayed "H" patterns on its screen.
- The computer system sent "H" messages to modem.
- The computer system sent "H" messages to printer, and the printer prints them on paper.

## 4.2.6 TEST RESULTS

<b>EUT</b>	Wireless Mouse (Transmitter Part)	<b>MODEL</b>	MW1083
<b>MODE</b>	Channel 1	<b>FREQUENCY RANGE</b>	30-1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION &amp; BANDWIDTH</b>	Peak / Quasi-Peak, 120kHz
<b>ENVIRONMENTAL CONDITIONS</b>	28 deg. C, 60 % RH, 1050 hPa	<b>TESTED BY:</b> Gary Chang	

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	*27.06	51.7QP	80.0	22.7	1.06H	91	43.60	6.08	2.03	0.00	-8.11
2	81.16	25.1QP	40.0	-14.9	1.67H	180	16.50	6.50	2.07	0.00	-8.57
3	162.00	24.3QP	43.5	-19.2	1.00H	6	12.60	9.10	2.61	0.00	-11.71
4	216.32	27.6QP	46.0	-18.4	1.00H	120	15.30	9.43	2.82	0.00	-12.25
5	243.52	24.1QP	46.0	-21.9	1.81H	357	10.20	11.07	2.87	0.00	-13.93
6	405.25	31.2QP	46.0	-14.8	1.51H	108	12.30	15.43	3.44	0.00	-18.87
7	541.77	32.2QP	46.0	-13.8	1.28H	19	11.50	17.07	3.67	0.00	-20.74

**NOTE:**

- Emission level (dBuV/m) = Raw value (dBuV) - Correction Factor (dB)
- Correction Factor (dB/m) = Pre-Amp. Factor (dB) - Ant. Factor (dB/m) - Cable loss (dB)  
(Pre-Amp. Factor = 0, when an external preamplifier is not used for test.)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- " \* " : Fundamental frequency



<b>EUT</b>	Wireless Mouse (Transmitter Part)	<b>MODEL</b>	MW1083
<b>MODE</b>	Channel 1	<b>FREQUENCY RANGE</b>	30-1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION &amp; BANDWIDTH</b>	Peak / Quasi-Peak, 120kHz
<b>ENVIRONMENTAL CONDITIONS</b>	28 deg. C, 60 % RH, 1050 hPa	<b>TESTED BY:</b> Gary Chang	

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

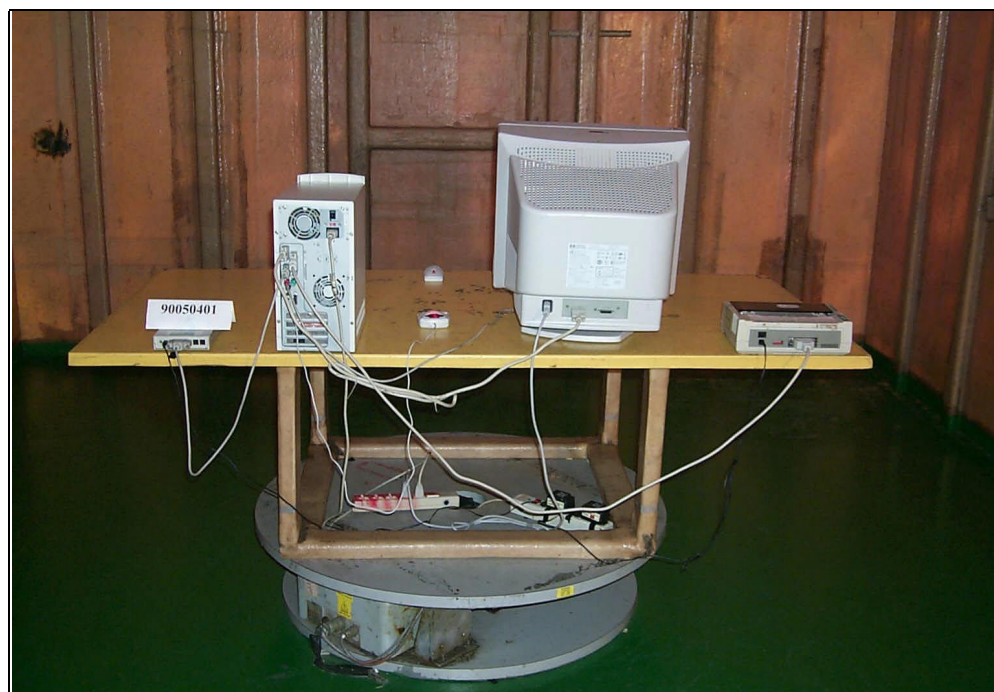
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	*27.06	57.7 QP	80.0	28.7	1.39V	91	49.60	6.08	2.03	0.00	-8.11
2	136.40	26.9QP	43.5	-16.6	1.00V	9	13.50	10.84	2.55	0.00	-13.39
3	162.30	25.2QP	43.5	-18.3	1.00V	82	13.50	9.04	2.62	0.00	-11.65
4	243.56	28.5QP	46.0	-17.5	1.00V	130	14.60	11.07	2.87	0.00	-13.93
5	324.56	32.7QP	46.0	-13.3	1.02V	107	16.36	13.14	3.23	0.00	-16.36
6	425.73	34.4QP	46.0	-11.6	1.24	107	15.36	15.71	3.34	0.00	-19.06
7	512.36	31.3QP	46.0	-14.7	1.39V	91	10.60	16.99	3.68	0.00	-20.67

**NOTE:**

- Emission level (dBuV/m) = Raw value (dBuV) - Correction Factor (dB)
- Correction Factor (dB/m) = Pre-Amp. Factor (dB) - Ant. Factor (dB/m) - Cable loss (dB)  
(Pre-Amp. Factor = 0, when an external preamplifier is not used for test.)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- " \* " : Fundamental frequency

## 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 and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

<b>USA</b>	FCC, NVLAP
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>New Zealand</b>	MoC
<b>Norway</b>	NEMKO
<b>R.O.C.</b>	BSMI, DGT, CNLA

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

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