



FCC TEST REPORT

REPORT NO.: RF970325A13

MODEL NO.: 1359

RECEIVED: March 25, 2008

TESTED: April 8, 2008

ISSUED: April 29, 2008

APPLICANT: MICROSOFT CORPORATION

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WA 98052-6399, U.S.A

ISSUED BY: Advance Data Technology Corporation

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1 CERTIFICATION

PRODUCT: Microsoft® Wireless Mobile Mouse 3000
BRAND NAME: Microsoft®
MODEL NO.: 1359
APPLICANT: MICROSOFT CORPORATION
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: April 8, 2008
STANDARDS: FCC Part 15, Subpart C (Section 15.227),
ANSI C63.4 -2003

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 : Jessica Cheng , **DATE:** April 29, 2008
(Jessica Cheng / Specialist)

TECHNICAL
ACCEPTANCE : Jamison Chan , **DATE:** April 29, 2008
Responsible for RF (Jamison Chan / Senior Engineer)

APPROVED BY : Ken Liu , **DATE:** April 29, 2008
(Ken Liu / Deputy Manager)

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 1.5Vdc from battery
15.227 15.209	Radiated Emission Test	PASS	Minimum passing margin is -7.89dB at 271.042MHz

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Frequency	Uncertainty
Radiated emissions	30MHz ~ 1GHz	3.72 dB
	1GHz ~ 40GHz	2.89 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Microsoft® Wireless Mobile Mouse 3000
MODEL NO.	1359
FCC ID	C3K1359
POWER SUPPLY	1.5Vdc from battery
MODULATION TYPE	FSK
CARRIER FREQUENCY OF EACH CHANNEL	27.045MHz, 27.145MHz
NUMBER OF CHANNEL	2
ANTENNA TYPE	Loop antenna
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is a wireless mouse which is a transmitter
2. The EUT has 3 samples, which are defined as their serial no. as follows:

Model No.	Serial no.
1359	17
	19
	26

3. 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.

3.1 DESCRIPTION OF TEST MODES

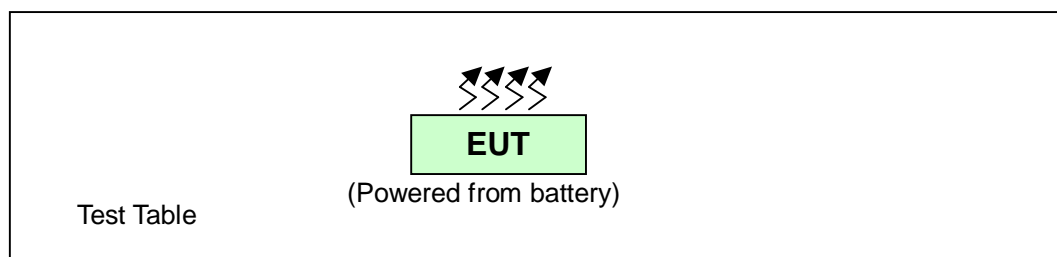
Two channels were provided to this EUT

Channel	Frequency (MHz)
1	27.045MHz
2	27.145MHz

Three sets of identical samples are tested and presented in the report.

Serial Number
17
19
26

3.2 CONFIGURATION OF SYSTEM UNDER TEST



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT configure mode	Applicable to		Description
	PLC	RE<1G	
1	Note	√	serial number: 17 for 27.045MHz
2	Note	√	serial number: 17 for 27.145MHz
3	Note	√	serial number: 19 for 27.045MHz
4	Note	√	serial number: 19 for 27.145MHz
5	Note	√	serial number: 26 for 27.045MHz
6	Note	√	serial number: 26 for 27.145MHz

Where PLC: Power Line Conducted Emission RE<1G RE: Radiated Emission below 1GHz

Note: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (BELOW 1 GHz):

Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING STATE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1	Operating	1 to 2	1	FSK
2	Operating	1 to 2	2	FSK
3	Operating	1 to 2	1	FSK
4	Operating	1 to 2	2	FSK
5	Operating	1 to 2	1	FSK
6	Operating	1 to 2	2	FSK

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. 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 -2003

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

NOTE: The receiver part of this product (receiver USB dongle) has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

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)	
	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:

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 Preamplifier	8447D	2432A03504	May 09, 2008
HP Preamplifier	8449B	3008A01201	Oct. 01, 2008
HP Preamplifier	8449B	3008A01292	Aug. 05, 2008
ROHDE & SCHWARZ TEST RECEIVER	ESI7	836697/012	Dec. 05, 2008
Schwarzbeck Antenna	VULB 9168	137	Sep. 13, 2008
Schwarzbeck Antenna	VHBA 9123	480	Apr. 22, 2009
ADT. Turn Table	TT100	0306	NA
ADT. Tower	AT100	0306	NA
Software	ADT_Radiated_V 7.6.15	NA	NA
SUHNER RF cable	SF104-26.5	CABLE-CH6-17m-01	Nov. 04, 2008
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100035	Mar. 25, 2009
Loop Antenna R & S	HFH2-Z2	100070	Jan. 13, 2009

- 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. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in ADT Chamber No. 6.
 4. The Industry Canada Reference No. IC 3789-6.

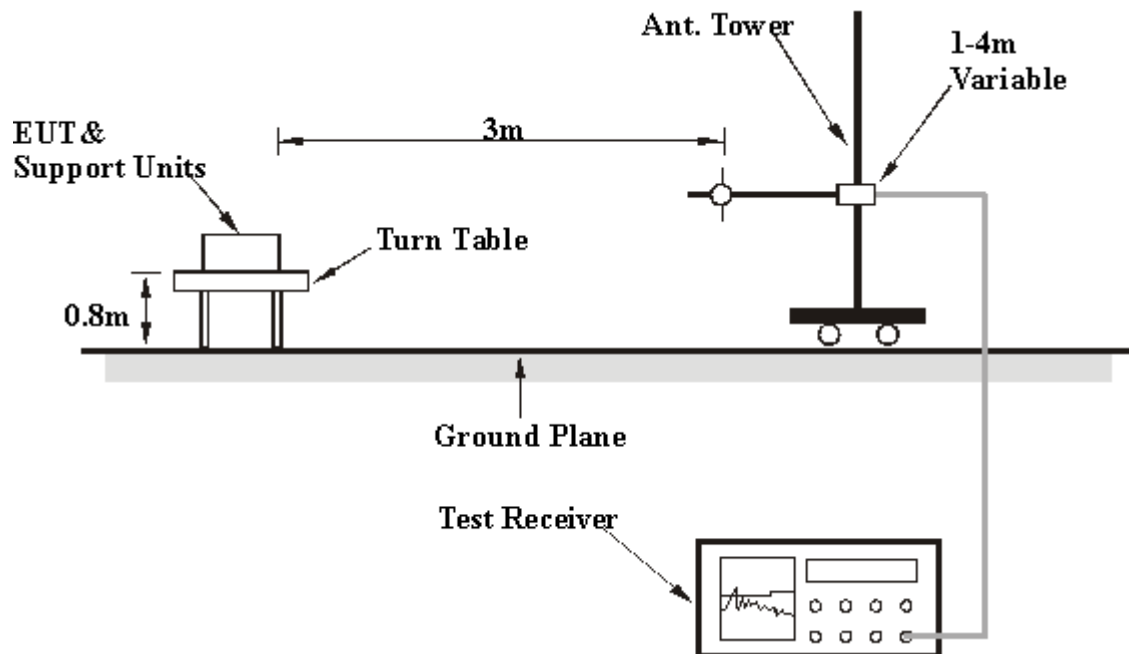
4.2.3 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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's 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak method or average method as specified and then reported in data sheet.

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the interference-receiving antenna.

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 CONDITION

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

4.2.6 TEST RESULT

TEST MODE	1	SERIAL NO.	17
MODULATION TYPE	FSK	CHANNEL	1
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Peak / Average
TESTED BY	Jun Wu	OPERATING STATE	Operating

TEST DISTANCE: 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	*27.045	45.19 PK	100.00	-54.81	1.95	105	24.97	20.22
2	*27.045	42.58 AV	80.00	-37.42	1.95	105	22.36	20.22

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 "*" = Fundamental frequency.
- 6 Loop antenna was used for all radiated emission below 30MHz.

TEST MODE	1	SERIAL NO.	17
MODULATION TYPE	FSK	CHANNEL	1
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Jun Wu	OPERATING STATE	Operating

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	41.663	32.07 QP	40.00	-7.93	1.39 H	31	17.81	14.26
2	243.828	36.12 QP	46.00	-9.88	1.35 H	265	21.68	14.44
3	269.098	37.16 QP	46.00	-8.84	1.28 H	262	21.91	15.25
4	296.313	31.48 QP	46.00	-14.52	1.24 H	253	15.56	15.92
5	694.810	27.58 QP	46.00	-18.42	1.21 H	232	1.72	25.86
6	836.713	27.09 QP	46.00	-18.91	1.17 H	115	-1.56	28.65
7	908.637	27.15 QP	46.00	-18.85	1.10 H	100	-2.12	29.27
8	949.459	28.07 QP	46.00	-17.93	1.03 H	115	-1.50	29.57

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	37.776	28.56 QP	40.00	-11.44	1.00 V	28	13.86	14.70
2	243.828	27.65 QP	46.00	-18.35	1.00 V	349	13.21	14.44
3	269.098	30.68 QP	46.00	-15.32	1.00 V	352	15.43	15.25
4	805.611	26.16 QP	46.00	-19.84	1.05 V	25	-2.13	28.29
5	817.275	26.11 QP	46.00	-19.89	1.10 V	85	-2.32	28.43
6	865.872	26.39 QP	46.00	-19.61	1.16 V	247	-2.54	28.93
7	893.086	27.31 QP	46.00	-18.69	1.20 V	88	-1.84	29.15
8	935.852	26.71 QP	46.00	-19.29	1.27 V	265	-2.76	29.47

- 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.



TEST MODE	2	SERIAL NO.	17
MODULATION TYPE	FSK	CHANNEL	2
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Peak / Average
TESTED BY	Jun Wu	OPERATING STATE	Operating

TEST DISTANCE: 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	*27.145	44.84 PK	100.00	-55.16	1.99	107	24.62	20.22
2	*27.145	42.01 AV	80.00	-37.99	1.99	107	21.79	20.22

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 "*"= Fundamental frequency.
- 6 Loop antenna was used for all radiated emission below 30MHz.

TEST MODE	2	SERIAL NO.	17
MODULATION TYPE	FSK	CHANNEL	2
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Jun Wu	OPERATING STATE	Operating

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	39.719	25.47 QP	40.00	-14.53	1.36 H	274	10.80	14.67
2	189.399	24.51 QP	43.50	-18.99	1.32 H	247	11.73	12.78
3	243.828	36.11 QP	46.00	-9.89	1.27 H	244	21.67	14.44
4	271.042	38.11 QP	46.00	-7.89	1.24 H	250	22.81	15.30
5	298.257	31.77 QP	46.00	-14.23	1.20 H	253	15.80	15.97
6	850.321	27.48 QP	46.00	-18.52	1.14 H	175	-1.33	28.81
7	881.423	27.48 QP	46.00	-18.52	1.12 H	115	-1.58	29.06
8	935.852	27.95 QP	46.00	-18.05	1.05 H	82	-1.52	29.47

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	41.663	26.25 QP	40.00	-13.75	1.00 V	166	11.99	14.26
2	243.828	27.94 QP	46.00	-18.06	1.00 V	349	13.50	14.44
3	271.042	31.26 QP	46.00	-14.74	1.00 V	340	15.96	15.30
4	461.543	27.46 QP	46.00	-18.54	1.00 V	4	6.39	21.07
5	556.794	28.31 QP	46.00	-17.69	1.04 V	70	4.72	23.59
6	838.657	27.02 QP	46.00	-18.98	1.12 V	169	-1.65	28.67
7	895.030	27.06 QP	46.00	-18.94	1.26 V	10	-2.11	29.17

- 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.

TEST MODE	3	SERIAL NO.	19
MODULATION TYPE	FSK	CHANNEL	1
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Peak / Average
TESTED BY	Jun Wu	OPERATING STATE	Operating

TEST DISTANCE: 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	*27.045	44.88 PK	100.00	-55.12	1.90	160	24.66	20.22
2	*27.045	42.09 AV	80.00	-37.91	1.90	160	21.87	20.22

REMARKS:

- 7 Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 8 Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 9 The other emission levels were very low against the limit.
- 10 Margin value = Emission level – Limit value.
- 11 "*" = Fundamental frequency.
- 12 Loop antenna was used for all radiated emission below 30MHz.

TEST MODE	3	SERIAL NO.	19
MODULATION TYPE	FSK	CHANNEL	1
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Jun Wu	OPERATING STATE	Operating

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	39.719	24.92 QP	40.00	-15.08	1.42 H	70	10.25	14.67
2	241.884	36.41 QP	46.00	-9.59	1.35 H	244	22.09	14.32
3	269.098	37.48 QP	46.00	-8.52	1.30 H	253	22.23	15.25
4	296.313	32.19 QP	46.00	-13.81	1.27 H	268	16.27	15.92
5	694.810	27.35 QP	46.00	-18.65	1.20 H	232	1.49	25.86
6	900.862	27.31 QP	46.00	-18.69	1.19 H	148	-1.91	29.22
7	908.637	27.17 QP	46.00	-18.83	1.05 H	97	-2.10	29.27
8	955.291	28.35 QP	46.00	-17.65	1.01 H	127	-1.32	29.67

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	41.663	24.60 QP	40.00	-15.40	1.00 V	292	10.34	14.26
2	243.828	27.35 QP	46.00	-18.65	1.00 V	10	12.91	14.44
3	269.098	30.87 QP	46.00	-15.13	1.00 V	328	15.62	15.25
4	836.713	26.59 QP	46.00	-19.41	1.05 V	145	-2.06	28.65
5	848.377	26.59 QP	46.00	-19.41	1.12 V	280	-2.20	28.79
6	877.535	27.00 QP	46.00	-19.00	1.19 V	148	-2.03	29.03

- 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.



TEST MODE	4	SERIAL NO.	19
MODULATION TYPE	FSK	CHANNEL	2
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Peak / Average
TESTED BY	Jun Wu	OPERATING STATE	Operating

TEST DISTANCE: 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	*27.145	44.58 PK	100.00	-55.42	1.87	101	24.36	20.22
2	*27.145	41.92 AV	80.00	-38.08	1.87	101	21.71	20.22

REMARKS:

- 7 Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 8 Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 9 The other emission levels were very low against the limit.
- 10 Margin value = Emission level – Limit value.
- 11 "*" = Fundamental frequency.
- 12 Loop antenna was used for all radiated emission below 30MHz.

TEST MODE	4	SERIAL NO.	19
MODULATION TYPE	FSK	CHANNEL	2
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Jun Wu	OPERATING STATE	Operating

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	39.719	26.74 QP	40.00	-13.26	1.47 H	250	12.07	14.67
2	216.613	27.07 QP	46.00	-18.93	1.40 H	268	14.29	12.78
3	243.828	36.36 QP	46.00	-9.64	1.32 H	262	21.92	14.44
4	271.042	37.75 QP	46.00	-8.25	1.27 H	256	22.45	15.30
5	298.257	31.58 QP	46.00	-14.42	1.25 H	259	15.61	15.97
6	856.152	27.48 QP	46.00	-18.52	1.14 H	193	-1.37	28.85
7	895.030	27.77 QP	46.00	-18.23	1.10 H	133	-1.40	29.17
8	920.301	28.57 QP	46.00	-17.43	1.04 H	115	-0.79	29.36

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	41.663	25.45 QP	40.00	-14.55	1.00 V	271	11.19	14.26
2	243.828	27.41 QP	46.00	-18.59	1.00 V	19	12.97	14.44
3	271.042	31.50 QP	46.00	-14.50	1.00 V	340	16.20	15.30
4	828.938	26.97 QP	46.00	-19.03	1.05 V	289	-1.59	28.56
5	863.928	26.84 QP	46.00	-19.16	1.12 V	22	-2.08	28.92
6	906.693	26.68 QP	46.00	-19.32	1.18 V	208	-2.58	29.26
7	922.244	26.67 QP	46.00	-19.33	1.21 V	19	-2.70	29.37
8	949.459	28.17 QP	46.00	-17.83	1.26 V	238	-1.40	29.57

- 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.



TEST MODE	5	SERIAL NO.	26
MODULATION TYPE	FSK	CHANNEL	1
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Peak / Average
TESTED BY	Jun Wu	OPERATING STATE	Operating

TEST DISTANCE: 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	*27.045	45.17 PK	100.00	-54.83	2.10	1.28	24.95	20.22
2	*27.045	42.98 AV	80.00	-37.02	2.10	1.28	22.76	20.22

REMARKS:

- 13 Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 14 Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 15 The other emission levels were very low against the limit.
- 16 Margin value = Emission level – Limit value.
- 17 "*" = Fundamental frequency.
- 18 Loop antenna was used for all radiated emission below 30MHz.

TEST MODE	5	SERIAL NO.	26
MODULATION TYPE	FSK	CHANNEL	1
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Jun Wu	OPERATING STATE	Operating

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	41.663	30.79 QP	40.00	-9.21	1.44 H	10	16.53	14.26
2	241.884	32.55 QP	46.00	-13.45	1.35 H	31	18.23	14.32
3	269.098	33.94 QP	46.00	-12.06	1.27 H	34	18.69	15.25
4	296.313	26.60 QP	46.00	-19.40	1.26 H	34	10.68	15.92
5	828.938	27.03 QP	46.00	-18.97	1.15 H	295	-1.53	28.56
6	863.928	26.72 QP	46.00	-19.28	1.08 H	283	-2.20	28.92
7	955.291	28.15 QP	46.00	-17.85	1.02 H	112	-1.52	29.67

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	41.663	26.29 QP	40.00	-13.71	1.00 V	352	12.03	14.26
2	795.892	26.25 QP	46.00	-19.75	1.05 V	10	-1.89	28.14
3	838.657	26.21 QP	46.00	-19.79	1.11 V	244	-2.46	28.67
4	858.096	26.74 QP	46.00	-19.26	1.16 V	124	-2.13	28.87
5	900.862	26.32 QP	46.00	-19.68	1.20 V	226	-2.90	29.22
6	922.244	26.93 QP	46.00	-19.07	1.24 V	19	-2.44	29.37
7	953.347	27.34 QP	46.00	-18.66	1.28 V	154	-2.29	29.63

- 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.



TEST MODE	6	SERIAL NO.	26
MODULATION TYPE	FSK	CHANNEL	2
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Peak / Average
TESTED BY	Jun Wu	OPERATING STATE	Operating

TEST DISTANCE: 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	*27.145	45.01 PK	100.00	-54.99	2.07	140	24.79	20.22
2	*27.145	42.77 AV	80.00	-37.23	2.07	140	22.55	20.22

REMARKS:

- 13 Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 14 Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 15 The other emission levels were very low against the limit.
- 16 Margin value = Emission level – Limit value.
- 17 "*" = Fundamental frequency.
- 18 Loop antenna was used for all radiated emission below 30MHz.

TEST MODE	6	SERIAL NO.	26
MODULATION TYPE	FSK	CHANNEL	2
INPUT POWER	1.5Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 80% RH, 997hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Jun Wu	OPERATING STATE	Operating

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	39.719	29.26 QP	40.00	-10.74	1.42 H	100	14.59	14.67
2	189.399	24.60 QP	43.50	-18.90	1.35 H	241	11.82	12.78
3	243.828	36.29 QP	46.00	-9.71	1.30 H	256	21.85	14.44
4	271.042	37.78 QP	46.00	-8.22	1.24 H	265	22.48	15.30
5	298.257	31.48 QP	46.00	-14.52	1.20 H	250	15.51	15.97
6	856.152	27.44 QP	46.00	-18.56	1.16 H	184	-1.41	28.85
7	908.637	27.86 QP	46.00	-18.14	1.12 H	10	-1.41	29.27

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	41.663	25.75 QP	40.00	-14.25	1.00 V	301	11.49	14.26
2	243.828	27.41 QP	46.00	-18.59	1.00 V	352	12.97	14.44
3	271.042	31.61 QP	46.00	-14.39	1.00 V	358	16.31	15.30
4	836.713	26.48 QP	46.00	-19.52	1.06 V	241	-2.17	28.65
5	869.760	27.80 QP	46.00	-18.20	1.08 V	205	-1.17	28.97
6	953.347	27.57 QP	46.00	-18.43	1.25 V	322	-2.06	29.63

- 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

Please refer to the attached file (Test Setup Photo).



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

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	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:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
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Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.