FCC TEST REPORT

REPORT NO.: RF910817R03
MODEL NO.: 64321
RECEIVED: August 17, 2002
TESTED: August 19 ~ August 29, 2002

APPLICANT: ACCO Brands Inc.

ADDRESS: 2855 Campus Drive, San Mateo, CA 94403

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chia Pau Tsuen, Linkou Hsiang, Taipei, Taiwan, R.O.C.

0528
ILAC MRA

Lab Code: 200102-0

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1 CERTIFICATION

PRODUCT :	StudioMouse™ Wireless
BRAND NAME :	KENSINGTON
MODEL NO :	64321
APPLICANT :	ACCO Brands Inc.
STANDARDS :	47 CFR Part 15, Subpart C(15.227) ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from August 19, 2002 to August 29, 2002. 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.

CHECKED BY : Emily Lu , DATE : Sep. 4, 2002

Emily Lu

APPROVED BY : DATE : Sep. 4, 2002

Dr. Alan Lane, Manager

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**
15.207	Conducted Emission Test	N/A	Power supply is 3VDC from batteries
15.227	Radiated Emission Test	PASS	Minimum passing margin is –6.50dBuV at 54.00MHz

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.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	StudioMouse™ Wireless
MODEL NO.	64321
POWER SUPPLY	3VDC from battery
MODULATION TYPE	FSK
CARRIER FREQUENCY OF EACH CHANNEL	26.995 MHz & 27.195MHz
IF & L.O. FREQUENCY	455kHz / 26.54MHz, 26.74MHz
NUMBER OF CHANNEL	2
ANTENNA TYPE	Enamel wire
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is the transmitter part of StudioMouse™ Wireless.
2. For more detailed features description of the EUT, please refer to the manufacturer's specifications or the User's Manual.

3.2 DESCRIPTION OF TEST MODES

Two channels were provided to this EUT.

Channel	Frequency
1	26.995MHz
2	27.195MHz

NOTE: Channel 1, the worst case, was chosen for final test.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC CFR 47 Part 15, Subpart C (15.227)

ANSI C63.4-1992

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

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	PRINTER	EPSON	LQ-300+	DCGY017096	FCC DoC APPROVED
2	COLOR MONITOR	ADI	CM100	026058T10200611 A	FCC DoC APPROVED
3	PERSONAL COMPUTER	HP	Brio BA410	SG12902766	FCC DoC APPROVED
4	MODEM	ACEEX	1414	980020503	IFAXDM1414
5	PS/2 KEYBOARD	BTC	5121W	A00801156	E5XKB5121WTH0110
6	RECEIVER	KENSINGTON	64321	NA	FCC DoC APPROVED

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core
3	NA
4	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
5	1.6 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.
6	1.5m shielded

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

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

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 INSTRUMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	May 13, 2003
* HP Preamplifier	8447D	2944A08485	Oct. 30, 2002
HP Preamplifier	8449B	3008A01201	Dec. 06, 2002
HP Preamplifier	8449B	3008A01292	Aug. 7, 2003
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Jan. 27, 2003
* SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2002
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 2, 2003
* ANTENNA (Large Biconical)	VHBA9123	449	Dec. 10, 2002
SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jul. 3, 2003
EMCO Horn Antenna	3115	9312-4192	Apr. 9, 2003
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	AS61D4	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jan. 25, 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 12, 2003
Open Field Test Site	Site 5	ADT-R05	Jul. 19, 2003
VCCI Site Registration No.	Site 5	R-1039	NA

NOTE: 1. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
3. "*" = These equipment are used for the final measurement.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The test was performed in ADT Open Site No. 5.

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.

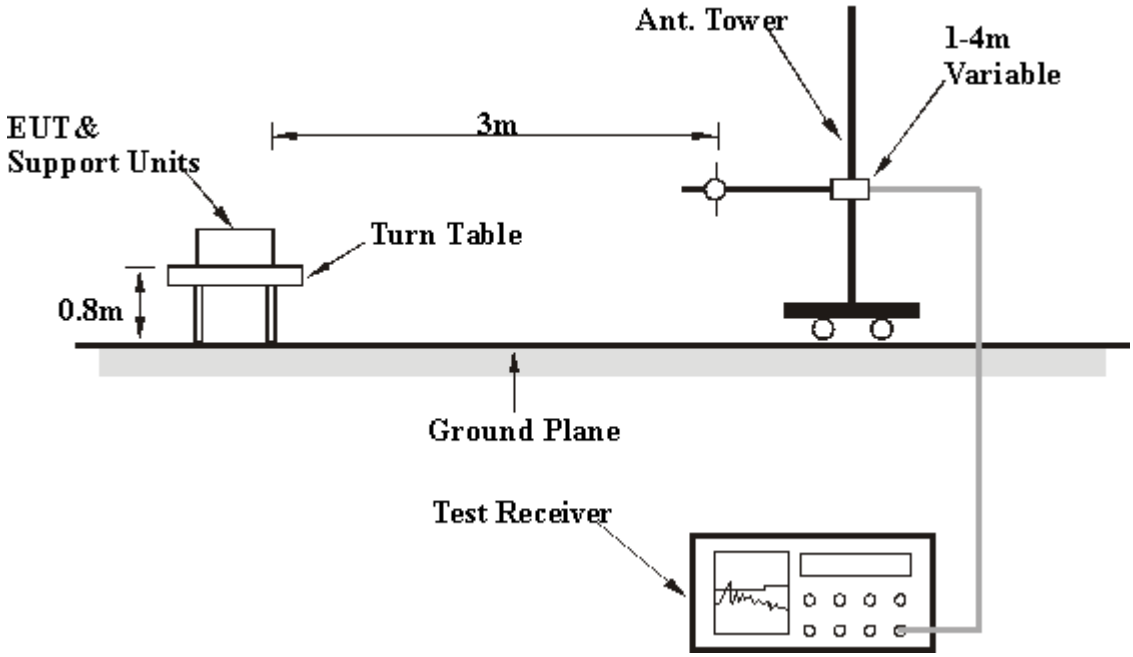
NOTE:

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	StudioMouse™ Wireless	**MODEL**	64321
MODE	Channel 1	**INPUT POWER**	3VDC
FREQUENCY RANGE	30-1000 MHz	**DETECTOR FUNCTION**	Peak / Quasi-Peak / Average
ENVIRONMENTAL CONDITIONS	35 deg. C, 50 % RH, 1050 hPa	**TESTED BY**: Bunny Yao	

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)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*27.00	42.3 AV	80.00	-37.70	2.07H	18	36.10	6.20	0.00	0.00	-6.20
2	*27.00	46.5 PK	100.00	-53.50	2.07H	18	69.01	6.20	0.00	28.71	22.51
3	54.00	33.5 QP	40.00	-6.50	1.37H	119	24.62	7.94	0.93	0.00	-8.88
4	81.00	28.8 QP	40.00	-11.20	1.30H	204	20.71	7.33	0.77	0.00	-8.09
5	135.00	15.2 QP	43.50	-28.30	1.23H	283	3.02	11.06	1.13	0.00	-12.18
6	188.90	20.3 QP	43.50	-23.20	1.27H	358	10.11	8.95	1.25	0.00	-10.19
7	270.00	14.9 QP	46.00	-31.10	1.33H	258	1.08	12.47	1.35	0.00	-13.82

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)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (Db)
1	*27.00	39.7 PK	100.00	-60.30	1.04V	69	62.21	6.20	0.00	28.71	22.51
2	*27.00	36.0 AV	80.00	-44.00	1.04V	69	29.80	6.20	0.00	0.00	-6.20
3	54.00	30.7 QP	40.00	-9.30	1.25V	115	21.82	7.94	0.93	0.00	-8.88
4	135.00	18.0 QP	43.50	-25.50	1.32V	57	5.82	11.06	1.13	0.00	-12.18
5	216.00	17.3 QP	43.50	-26.20	1.35V	155	5.96	9.97	1.36	0.00	-11.34
6	270.00	16.6 QP	46.00	-29.40	1.54V	291	2.78	12.47	1.35	0.00	-13.82

NOTE:

1. Emission level = Raw Value – Correction Factor
2. Correction Factor = Pre-Amplifier Factor - Antenna Factor - Cable Factor
   (Pre-Amplifier Factor = 0, when a Pre-Amplifier is not used for the test.)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*"= 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:

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	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.
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.