

FCC TEST REPORT

REPORT NO.: F930513A07

MODEL NO.: 5109

RECEIVED: May 13, 2004

TESTED: May 13 ~ 14, 2004

APPLICANT: BEHAVIOR TECH COMPUTER CORP.

ADDRESS: 2F, 51, Tung Hsing Rd., Taipei, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

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0528
ILAC MRA



Lab Code: 200102-0



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1 CERTIFICATION

PRODUCT: KEYBOARD

BRAND NAME: BTC, EMPREX

MODEL NO: 5109

APPLICANT: BEHAVIOR TECH COMPUTER CORP.

TESTED: May 13 ~ 14, 2004

TEST ITEM: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart B, Class B

CISPR 22: 1997+A1: 2003+A2: 2002, Class B

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: Jessica Cheng , **DATE:** May 19, 2004
(Jessica Cheng)

APPROVED BY: Mike Su , **DATE:** May 19, 2004
(Mike Su, Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Remarks
FCC Part 15, Subpart B, Class B CISPR 22: 1997+A1: 2003+A2: 2002, Class B ANSI C63.4-2001	Conducted Test	PASS	Meets Class B Limit Minimum passing margin is -21.14 dB at 0.180 MHz
	Radiated Test	PASS	Meets Class B Limit Minimum passing margin is -4.09 dB at 73.96 MHz

Note: The information of measurement uncertainty is available upon the customer's request.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	KEYBOARD
MODEL NO.	5109
POWER SUPPLY	DC 5V (from PC)
DATA CABLE SUPPLIED	PS/2 Shielded cable (1.8m). PS/2 Non-Shielded cable (1.8m).

NOTE:

1. The EUT is a PS/2 KEYBOARD.
2. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2 DESCRIPTION OF TEST MODES

Two unit of EUT with different configuration were provided for the test as following two test modes and both sets of data were recorded separately in this report:

Test Mode	Description	Cable
Mode 1	With ground plane	Shielded cable
Mode 2	W/O ground plane	Non-Shielded cable



3.3 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	LEO	Persica 8620G	1A36I98A000214	FCC DoC Approved
2	MONITOR	ADI	CM100	020058T10200182	FCC DoC Approved
3	PRINTER	EPSON	LQ-300+	DCGY046768	FCC DoC Approved
4	MODEM	ACEEX	1414	980020501	IFAXDM1414
5	PS/2 MOUSE	BTC	M851	M4-010348	E5XMSM860
6	SPEAKER	JAZZ HIPSTER CORP.	J008	S501001	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
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 Non shielded wire, terminated with PS/2 connector via drain wire, w/o core.
6	1.1 m wrapped shielded wire, terminated via drain wire, with 3.5 mm phone plug, w/o core.

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

4 EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

- NOTES:** (1) The lower limit shall apply at the transition frequencies.
 (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	June 24, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	839135/006	June 17, 2004
FCC ISN	FCC-TLISN-T2-02	20117	Oct. 13, 2004
FCC ISN	FCC-TLISN-T4-02	20116	Oct. 13, 2004
FCC ISN	FCC-TLISN-T8-02	20096	Oct. 13, 2004
EMCO-L.I.S.N. (for peripheral)	3825/2	9204-1964	June 17, 2004
Software	ADT_Cond_V7.3.1	NA	NA
Software	ADT_ISN_V7.3.1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C02.01	May 9, 2005
HP Terminator (For EMCO LISN)	11593A	E1-01-298	Feb. 1, 2005
HP Terminator (For EMCO LISN)	11593A	E1-01-299	Feb. 1, 2005

- 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 conducted telecom port test only (if tested).



3. The test was performed in ADT Shielded Room No. 2.
4. The VCCI Site Registration No. C-240.

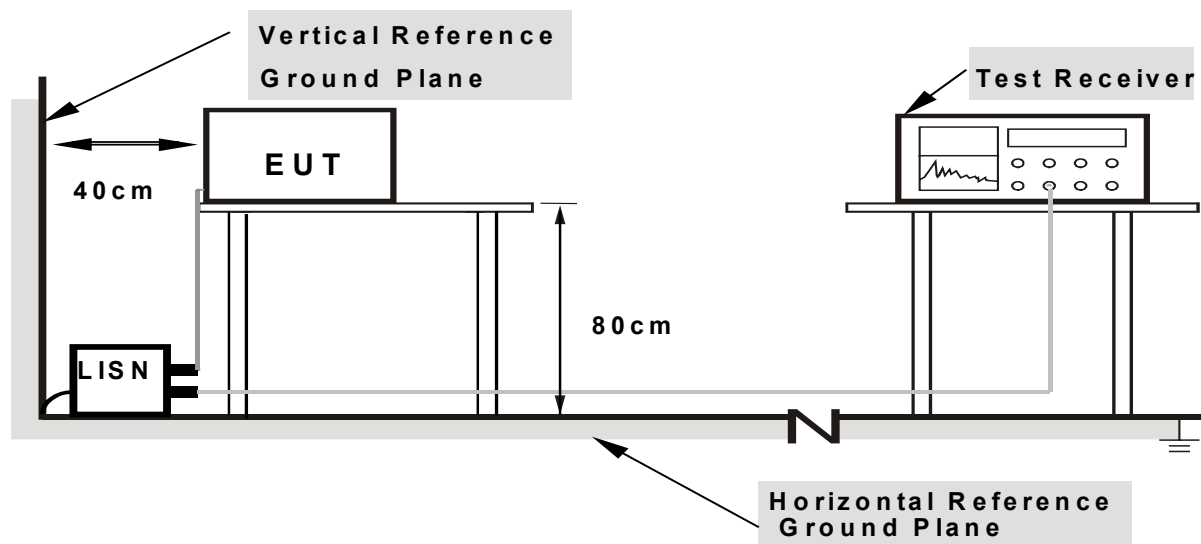
4.1.3 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



4.1.6 EUT OPERATING CONDITIONS

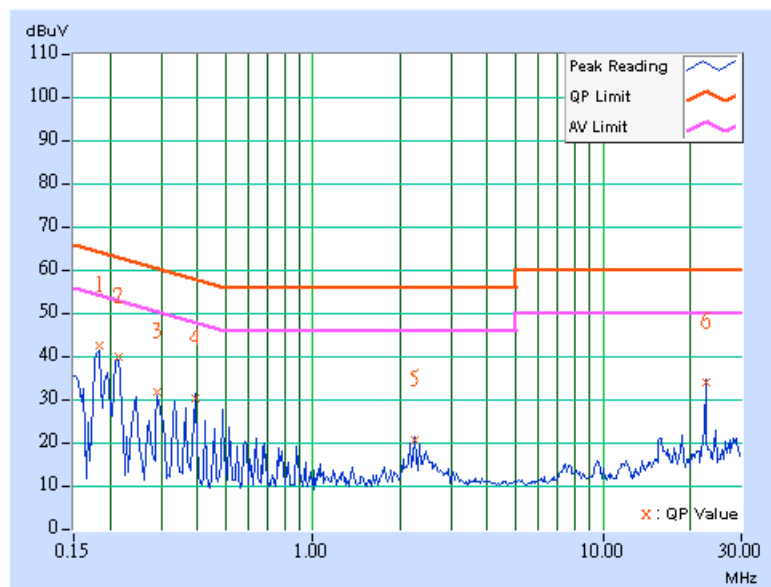
- a. Turned on the power of all equipment.
- b. PC ran a test program to enable all functions.
- c. PC read and wrote messages from FDD and HDD.
- d. EUT sent "H" character to PC.
- e. PC sent "H" messages to monitor and monitor displayed "H" patterns on screen.
- f. PC sent "H" messages to modem.
- g. PC sent "H" messages to printer and the printer printed them out.
- h. PC sent audio messages to speaker.
- i. Repeated steps c-i.

4.1.7 TEST RESULTS (1)

EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60% RH, 1005hPa	TESTED BY: Jacko Liu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.183	0.18	41.74	-	41.92	-	64.35	54.35	-22.43	-
2	0.213	0.19	39.14	-	39.33	-	63.09	53.09	-23.75	-
3	0.291	0.15	30.69	-	30.84	-	60.50	50.50	-29.65	-
4	0.393	0.10	29.36	-	29.46	-	58.00	48.00	-28.54	-
5	2.250	0.21	19.72	-	19.93	-	56.00	46.00	-36.07	-
6	22.568	1.00	33.22	-	34.22	-	60.00	50.00	-25.78	-

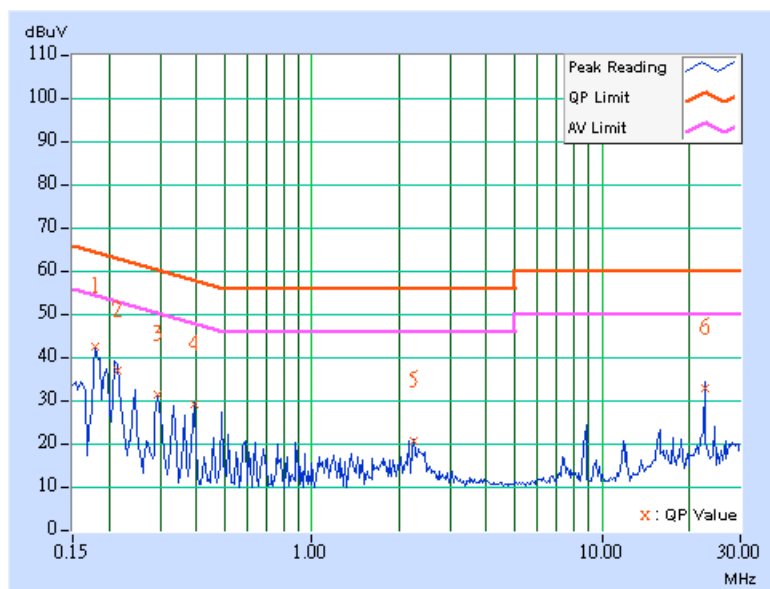
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60% RH, 1005hPa	TESTED BY: Jacko Liu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.180	0.18	41.74	-	41.92	-	64.49	54.49	-22.57	-
2	0.213	0.19	36.21	-	36.40	-	63.09	53.09	-26.68	-
3	0.294	0.15	30.54	-	30.69	-	60.41	50.41	-29.72	-
4	0.393	0.10	28.32	-	28.42	-	58.00	48.00	-29.58	-
5	2.250	0.21	19.74	-	19.95	-	56.00	46.00	-36.05	-
6	22.569	0.90	32.22	-	33.12	-	60.00	50.00	-26.88	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

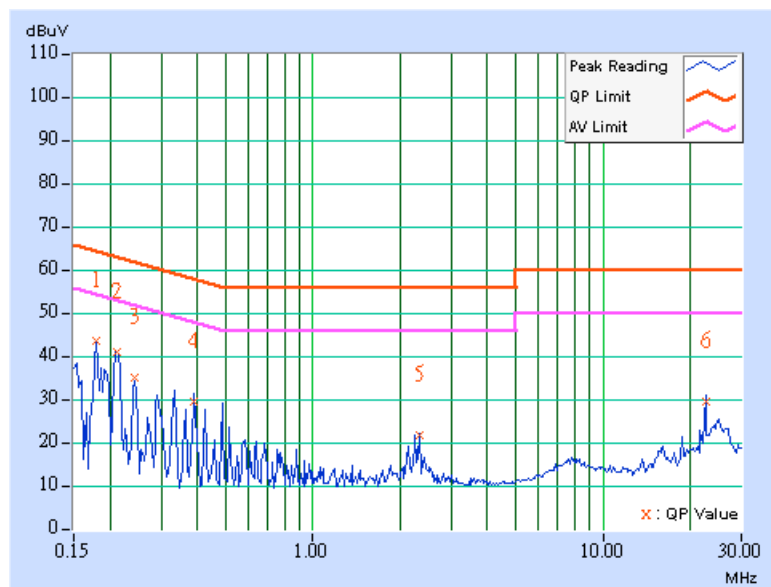


4.1.8 TEST RESULTS (2)

EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 2	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60% RH, 1005hPa	TESTED BY: Jacko Liu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.180	0.18	42.52	-	42.70	-	64.49	54.49	-21.79	-
2	0.211	0.19	40.12	-	40.31	-	63.16	53.16	-22.84	-
3	0.243	0.18	34.24	-	34.42	-	61.99	51.99	-27.57	-
4	0.390	0.11	28.55	-	28.66	-	58.06	48.06	-29.41	-
5	2.342	0.22	20.71	-	20.93	-	56.00	46.00	-35.07	-
6	22.571	1.00	28.67	-	29.67	-	60.00	50.00	-30.33	-

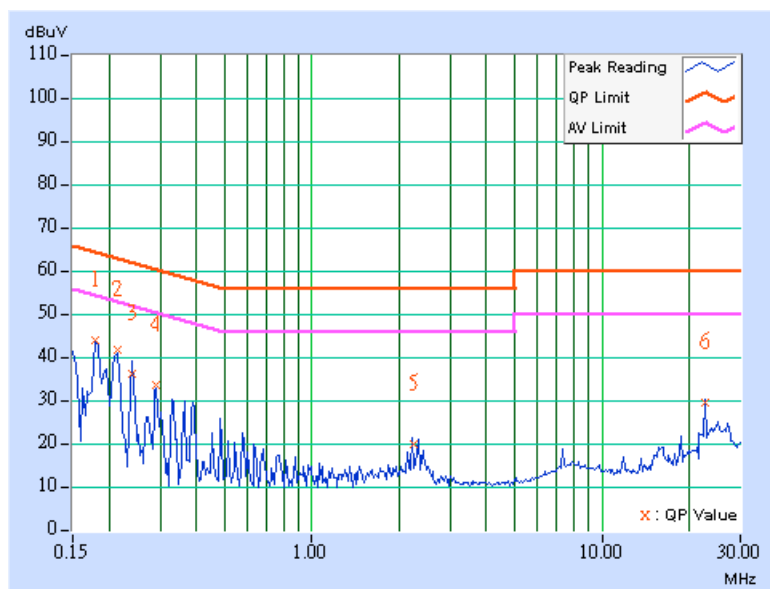
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 2	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60% RH, 1005hPa	TESTED BY: Jacko Liu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.180	0.18	43.17	-	43.35	-	64.49	54.49	-21.14	-
2	0.213	0.19	40.78	-	40.97	-	63.09	53.09	-22.11	-
3	0.240	0.18	35.52	-	35.70	-	62.10	52.10	-26.40	-
4	0.291	0.15	32.76	-	32.91	-	60.50	50.50	-27.58	-
5	2.238	0.21	19.23	-	19.44	-	56.00	46.00	-36.56	-
6	22.568	0.90	28.74	-	29.64	-	60.00	50.00	-30.36	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT FOR FREQUENCY BELOW 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 – 230	40	30
230 - 1000	47	37

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

Note: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8590L	3544A00941	Nov. 4, 2004
HP Preamplifier	8447D	2944A08312	Aug. 26, 2004
* HP Preamplifier	8449B	3008A01924	Oct. 12, 2004
* HP Preamplifier	8449B	3008A01638	Oct. 17, 2004
* R&S Receiver	ESCS 30	100290	Dec 10, 2004
SCHWARZBECK Tunable Dipole Antenna	VHA 9103	NA	Nov. 15, 2004
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 12, 2005
* CHASE BILOG Antenna	CBL6111A	1500	Aug. 16, 2004
* EMCO Horn Antenna	3115	6714	Nov. 26, 2004
* EMCO Horn Antenna	3115	9312-4192	Feb. 28, 2005
* EMCO Turn Table	1060-04	1196	NA
* EMCO Tower	1051	1264	NA
* Software	ADT_Radiated_V 5.14	NA	NA
* ANRITSU RF Switches	MP59B	M06089	Aug. 16, 2004
* TIMES RF cable	LMR-600	CABLE-ST1-01	Aug. 16, 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. 1.
 5. The VCCI Site Registration No. R-236.



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 10 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

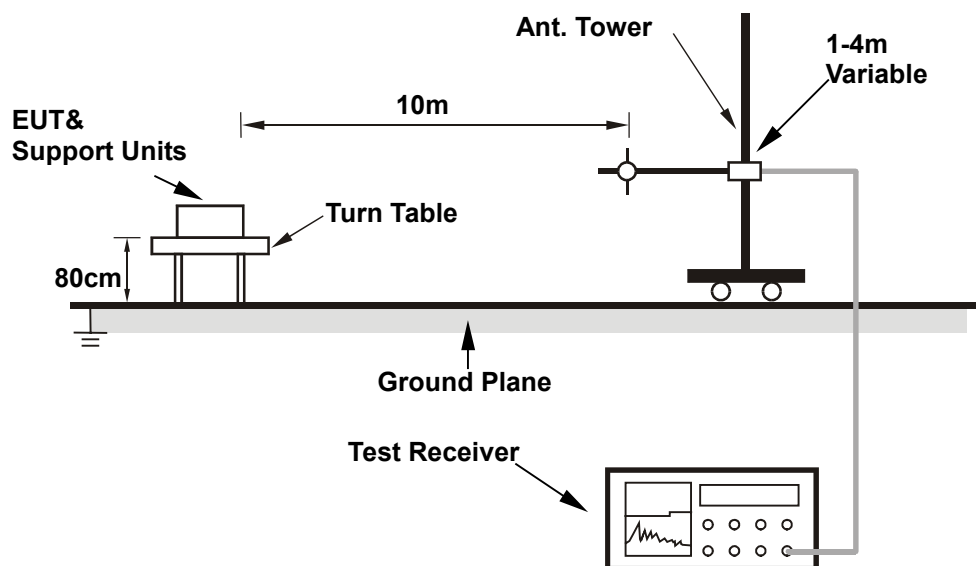
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for 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. 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.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the interference antenna.

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 – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6

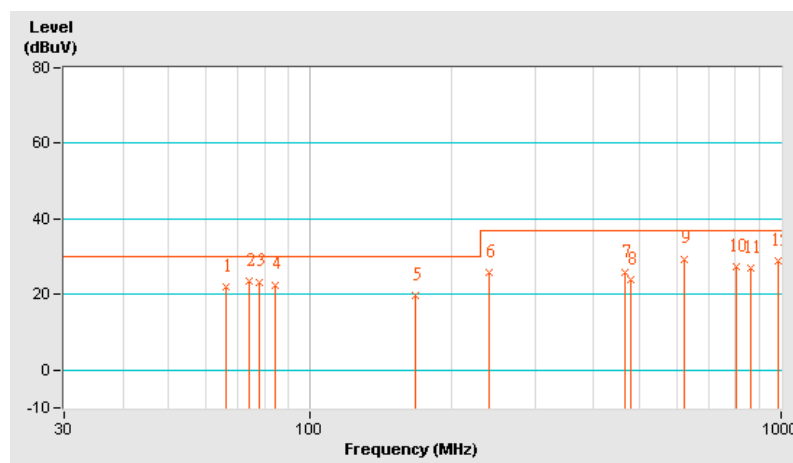
4.2.7 TEST RESULTS (1)

EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 1	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	27deg. C, 67% RH, 1005hPa	TESTED BY: Jacko Liu	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 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	66.41	22.11 QP	30.00	-7.89	4.00 H	247	15.43	6.68
2	74.21	23.54 QP	30.00	-6.46	4.00 H	128	16.15	7.39
3	77.84	23.36 QP	30.00	-6.64	4.00 H	342	15.34	8.02
4	84.02	22.57 QP	30.00	-7.43	4.00 H	95	13.51	9.06
5	167.31	19.56 QP	30.00	-10.44	4.00 H	251	8.70	10.86
6	240.34	25.77 QP	37.00	-11.23	4.00 H	14	12.11	13.66
7	465.86	25.96 QP	37.00	-11.04	1.53 H	224	5.20	20.76
8	480.31	23.79 QP	37.00	-13.21	1.38 H	288	2.51	21.28
9	624.28	29.46 QP	37.00	-7.54	1.42 H	112	5.62	23.84
10	801.52	27.33 QP	37.00	-9.67	1.16 H	294	2.23	25.10
11	864.27	26.94 QP	37.00	-10.06	1.00 H	197	1.12	25.82
12	984.52	28.74 QP	37.00	-8.26	1.00 H	54	1.78	26.96

- 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.

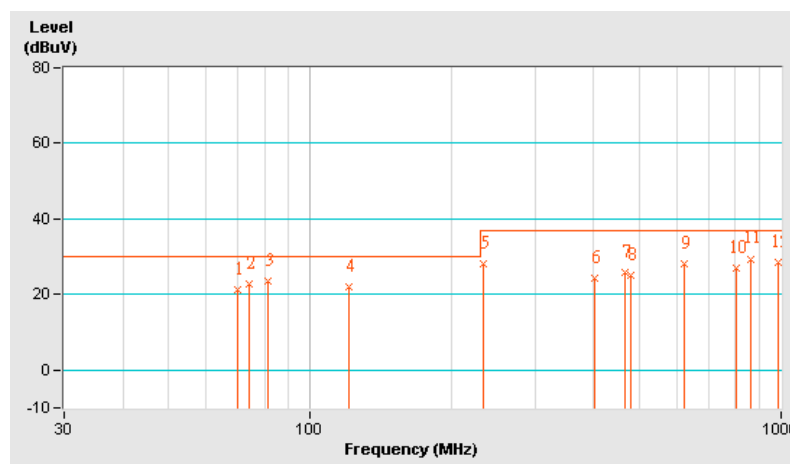


EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 1	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	27deg. C, 67% RH, 1005hPa	TESTED BY: Jacko Liu	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 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	69.89	21.14 QP	30.00	-8.86	1.14 V	147	14.47	6.67
2	74.12	22.88 QP	30.00	-7.12	1.24 V	324	15.50	7.38
3	81.34	23.41 QP	30.00	-6.59	1.42 V	275	14.80	8.61
4	120.47	22.17 QP	30.00	-7.83	1.00 V	196	8.68	13.49
5	233.49	28.25 QP	37.00	-8.75	1.00 V	83	15.03	13.22
6	400.88	24.42 QP	37.00	-12.58	4.00 V	126	5.08	19.34
7	466.27	25.79 QP	37.00	-11.21	3.86 V	50	5.02	20.77
8	480.09	25.09 QP	37.00	-11.91	3.69 V	302	3.81	21.28
9	624.14	28.24 QP	37.00	-8.76	2.31 V	18	4.40	23.84
10	801.23	26.84 QP	37.00	-10.16	1.47 V	53	1.74	25.10
11	864.30	29.46 QP	37.00	-7.54	1.45 V	167	3.64	25.82
12	983.60	28.34 QP	37.00	-8.66	1.84 V	14	1.39	26.95

- 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.



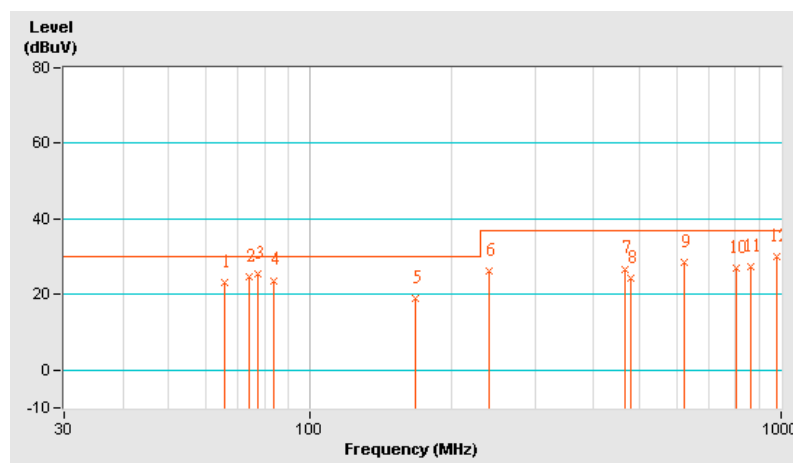
4.2.8 TEST RESULTS (2)

EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 2	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	27deg. C, 67% RH, 1005hPa	TESTED BY: Jacko Liu	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 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	65.87	23.18 QP	30.00	-6.82	4.00 H	75	16.49	6.69
2	73.96	24.80 QP	30.00	-5.20	4.00 H	126	17.45	7.35
3	77.40	25.31 QP	30.00	-4.69	4.00 H	358	17.37	7.94
4	83.76	23.71 QP	30.00	-6.29	4.00 H	274	14.70	9.01
5	166.70	18.91 QP	30.00	-11.09	4.00 H	70	8.04	10.87
6	240.00	26.10 QP	37.00	-10.90	4.00 H	190	12.47	13.63
7	466.27	26.79 QP	37.00	-10.21	1.46 H	233	6.02	20.77
8	480.08	24.27 QP	37.00	-12.73	1.35 H	108	3.00	21.27
9	624.13	28.63 QP	37.00	-8.37	1.40 H	290	4.79	23.84
10	802.30	27.02 QP	37.00	-9.98	1.09 H	41	1.91	25.11
11	863.50	27.49 QP	37.00	-9.51	1.00 H	65	1.67	25.82
12	981.30	29.92 QP	37.00	-7.08	1.00 H	234	3.00	26.92

- 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.

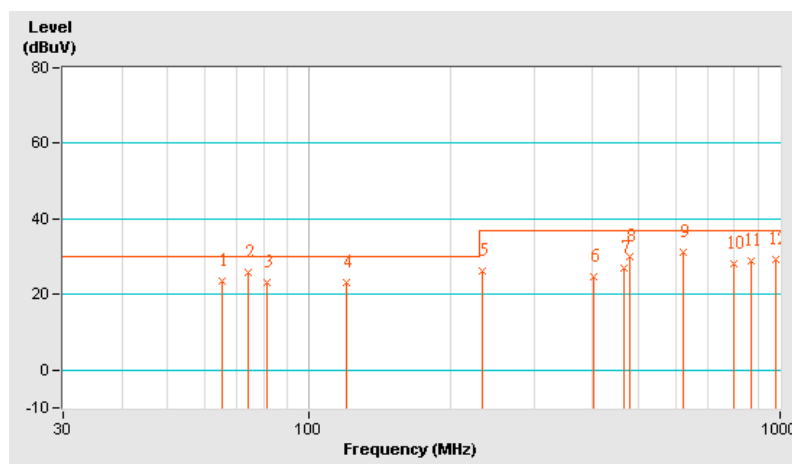


EUT	KEYBOARD	MODEL	5109
TEST MODE	Mode 2	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	27deg. C, 67% RH, 1005hPa	TESTED BY: Jacko Liu	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 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	65.34	23.60 QP	30.00	-6.40	1.12 V	64	16.91	6.69
2	73.96	25.91 QP	30.00	-4.09	1.43 V	174	18.56	7.35
3	81.24	23.25 QP	30.00	-6.75	1.64 V	42	14.65	8.60
4	120.01	23.30 QP	30.00	-6.70	1.00 V	184	9.79	13.51
5	233.51	26.30 QP	37.00	-10.70	1.00 V	294	13.08	13.22
6	402.00	24.57 QP	37.00	-12.43	4.00 V	278	5.22	19.35
7	466.73	26.85 QP	37.00	-10.15	2.99 V	358	6.06	20.79
8	480.10	29.86 QP	37.00	-7.14	3.18 V	27	8.58	21.28
9	624.10	31.07 QP	37.00	-5.93	2.28 V	157	7.23	23.84
10	798.40	27.95 QP	37.00	-9.05	1.59 V	283	2.87	25.08
11	865.80	29.01 QP	37.00	-7.99	1.64 V	297	3.18	25.83
12	982.10	29.14 QP	37.00	-7.86	1.39 V	16	2.21	26.93

- 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

CONDUCTED EMISSION TEST (Mode 1)



CONDUCTED EMISSION TEST (Mode 2)



RADIATED EMISSION TEST (Mode 1)



RADIATED EMISSION TEST (Mode 2)





6 APPENDIX - 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.
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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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