Test Report

Product Name: Rugged Wireless Keyboard

Model No.: RKB

FCC ID. : MAU1011

Applicant : MITAC THCHNOLOGY CORP.

Address : No. 1, R&D Road 2, Hsinchu Science-Based Industrial Park, Taiwan, R.O.C.

Date of Receipt : Apr. 14, 2003

Date of Test : May 6, 2003

Report No. : 034H046F

Test Report Certification

Test Date : May 6, 2003
Report No. : 034H046F

Accredited by NIST (NVLAP)
NVLAP Lab Code: 200347-0

Product Name	:	Rugged Wireless Keyboard
Applicant	:	MITAC THCHNOLOGY CORP.
Address	:	No. 1, R&D Road 2, Hsinchu Science-Based Industrial Park, Taiwan, R.O.C.
Manufacturer	:	MITAC THCHNOLOGY CORP.
Model No.	:	RKB
FCC ID.	:	MAU1011
Rated Voltage	:	AC 120V/60Hz
Trade Name	:	MITAC
Measurement Standard	:	FCC Part 15 Subpart B: 2002, CISPR 22: 1997
Measurement Procedure	:	ANSI C63.4: 1992
Classification	:	Class B
Test Result	:	Complied

NVLAP Lab Code : 200347-0

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : (Ellie Cheng)

Tested By : (James Wu)

Approved By : (Kevin Wang)

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Description Page

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	:	Rugged Wireless Keyboard
Trade Name	:	MITAC
Model No.	:	RKB
Power Adapter	:	FAIRWAY, VE20-120 Cable Out: Non-Shielded, 1.8m Power cord: Non-Shielded, 1.8m

Note:

1. This EUT is a Rugged Wireless Keyboard.
2. QuieTek has verified both construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

   EMI Mode: Mode 1: Normal Operation

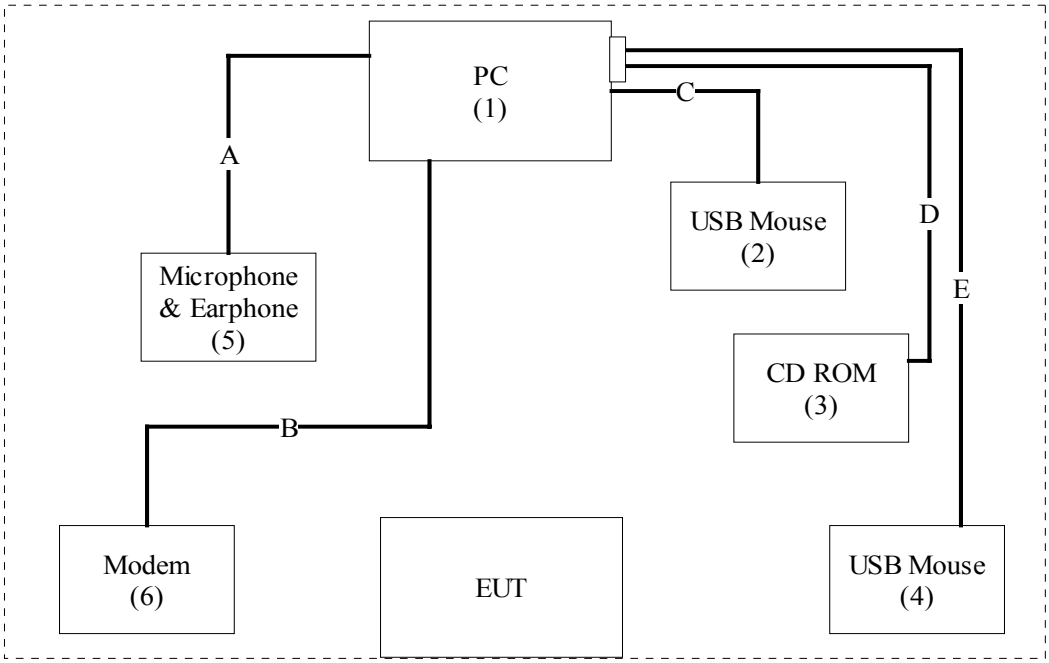
1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
(1)	PC	MITAC	CA25	N/A	Non-shielded, 1.8m, a ferrite core bonded
(2)	USB Mouse	Logitech	M-BE58	LZE11405011	--
(3)	CD-ROM	MITAC	N/A	N/A	--
(4)	USB Mouse	Logitech	M-BE58	LZE11403949	--
(5)	Microphone & Earphone	TOKTO	SX-MI	N/A	--
(6)	Modem	ACEEX	DM-1414	960011397	Non-shielded, 1.6m

Signal Cable Type		Signal cable Description
A.	Microphone & Earphone Cable	Non-Shielded, 1.2m
B	Modem Cable	Shielded, 1.5m
C	USB Mouse Cable	Shielded, 1.0m
D	CD-ROM Cable	Shielded, 0.2m, a ferrite core bonded
E	USB Mouse Cable	Shielded, 1.0m

1.3. Configuration of tested System



1.4. EUT Exercise Software

1.4.1 Setup the EUT and simulators as shown on 1.3.

1.4.2 Turn on the power of all equipment.

1.4.3 Boot the PC from Hard Disk.

1.4.4 The PC will check data through PC to EUT.

1.4.5 The personal computer's monitor will show the transmitting and receiving characteristics when the communication is success.

1.4.6 Repeat the above procedure 1.4.4 to 1.4.5

1.5. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: November 3, 1998 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2

August 30, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200347-0

NVLAP Lab Code : 200347-0

Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL: 886-3-592-8858 / FAX: 886-3-592-8859
E-Mail: service@quietek.com

2. Conducted Emission

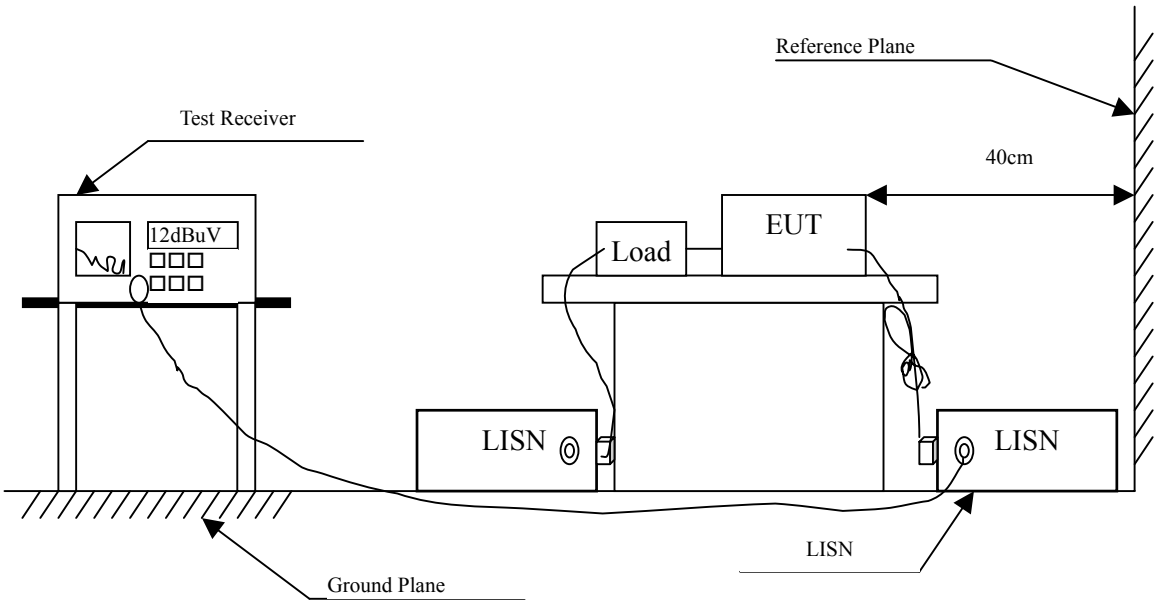
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal..	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2002	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2002	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2002	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	No.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart B Limits (dBuV)				
Frequency MHz	Class A		Class B	
	QP	AV	QP	AV
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and the entire interface cables must be changed according to ANSI C63.4: 1992 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 5. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

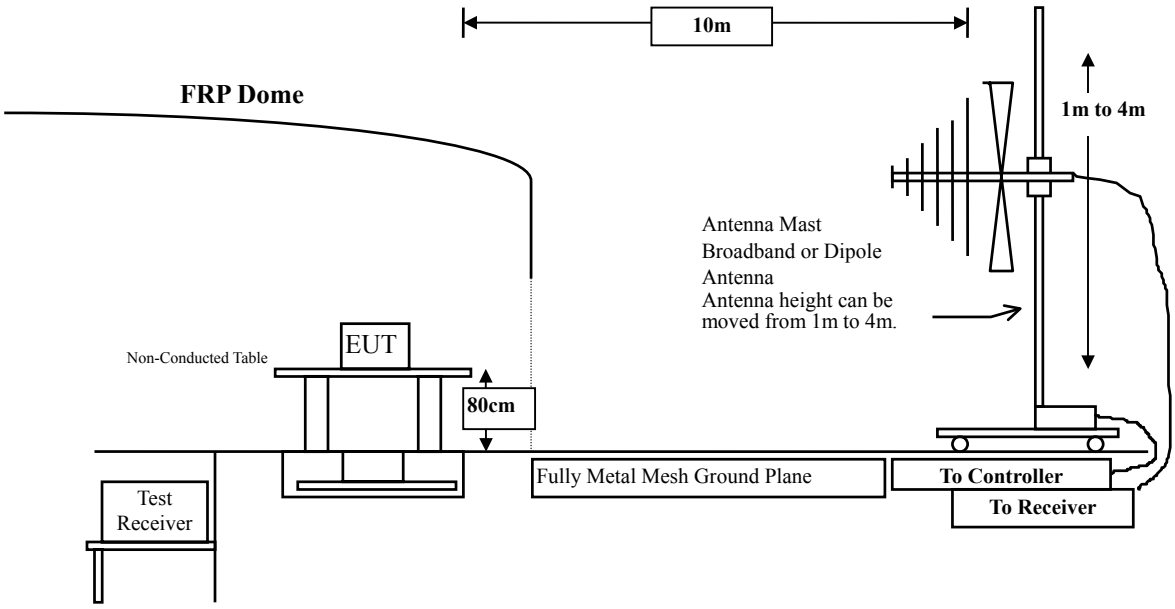
3.1. Test Equipment

The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1		Test Receiver	R & S	ESCS 30 / 825442/14	May, 2002
		Spectrum Analyzer	Advantest	R3261C / 71720140	May, 2002
		Pre-Amplifier	HP	8447D/3307A01812	May, 2002
		Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2002
		Horn Antenna	EM	EM6917 / 103325	May, 2002
Site # 2	X	Test Receiver	R & S	ESCS 30 / 825442/17	May, 2002
	X	Spectrum Analyzer	Advantest	R3261C / 71720609	May, 2002
	X	Pre-Amplifier	HP	8447D/3307A01814	May, 2002
	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2002
		Horn Antenna	EM	EM6917 / 103325	May, 2002

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

3.2. Test Setup



3.3. Limits

CISPR 22 Limits (dBuV/m)		
Frequency MHz	Class B	
	Distance (m)	dBuV/m
30 – 230	10	30
230 – 1000	10	37

Remark: 1. The tighter limit shall apply at the edge between two frequency bands.

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:1992 on radiated measurement.
Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120kHz. Radiated was performed at an antenna to EUT distance of 10 meters.

3.5. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 5. The acceptance criterion was met and the EUT passed the test.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.

5. Summary of Test Datas

The test results in the emission was performed according to the requirements of measurement standard and process. Quietek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission is listed as below.

All the tests were carried out with the EUT in normal operation, which was defined as:

EMI Mode: Mode 1: Normal Operation

5.1. Test Data of conducted Emission

Product : Rugged Wireless Keyboard
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Normal Operation

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level dBuV	Emission Level dBuV	Limits dBuV
Quasi-Peak					
0.155	-0.01	0.10	44.45	44.54	65.71
0.312	0.00	0.17	45.19	45.36	59.91
*0.626	0.03	0.24	46.21	46.47	56.00
0.786	0.02	0.26	43.94	44.22	56.00
1.097	0.03	0.29	44.44	44.76	56.00
1.716	0.09	0.33	41.89	42.31	56.00
Average:					
0.155	-0.01	0.10	43.60	43.69	55.73
0.312	0.00	0.17	44.10	44.27	49.92
0.626	0.03	0.24	42.10	42.36	46.00
0.786	0.02	0.26	40.40	40.68	46.00
1.097	0.03	0.29	38.10	38.42	46.00
1.716	0.09	0.33	32.60	33.02	46.00

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable loss.

Product : Rugged Wireless Keyboard
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Normal Operation

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level dBuV	Emission Level dBuV	Limits dBuV
Quasi-Peak					
0.158	-0.01	0.10	45.45	45.54	65.58
0.314	0.00	0.17	45.25	45.42	59.86
*0.623	0.03	0.24	46.29	46.55	56.00
0.783	0.02	0.26	44.77	45.05	56.00
1.091	0.03	0.29	45.08	45.40	56.00
1.717	0.09	0.33	42.15	42.57	56.00
Average:					
0.158	-0.01	0.10	43.90	43.99	55.57
0.314	0.00	0.17	44.10	44.27	49.86
0.623	0.03	0.24	40.00	40.26	46.00
0.783	0.02	0.26	40.50	40.78	46.00
1.091	0.03	0.29	38.00	38.32	46.00
1.717	0.09	0.33	33.00	33.42	46.00

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable loss.

5.2 Test Data of Radiated Emission

Product : Rugged Wireless Keyboard
Test Item : Radiated Emission
Test Site : No.2 OATS
Test Mode : Mode 1: Normal Operation

Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Emission Level	Margin	Limit
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal							
*45.060	1.30	10.66	0.00	11.07	23.03	6.97	30.00
145.250	2.26	11.26	0.00	4.87	18.39	11.61	30.00
169.235	2.49	9.56	0.00	3.29	15.34	14.66	30.00
240.000	3.17	11.32	0.00	3.69	18.18	18.82	37.00
432.000	4.44	16.31	0.00	1.02	21.77	15.23	37.00
532.000	4.96	18.11	0.00	2.37	25.43	11.57	37.00
912.225	6.95	21.05	0.00	1.49	29.49	7.51	37.00
Vertical							
55.245	1.39	6.80	0.00	9.47	17.66	12.34	30.00
64.265	1.48	6.58	0.00	10.54	18.60	11.40	30.00
139.525	2.21	11.15	0.00	7.69	21.04	8.96	30.00
167.135	2.47	9.67	0.00	3.20	15.34	14.66	30.00
233.525	3.11	10.51	0.00	2.21	15.83	21.17	37.00
300.350	3.76	13.56	0.00	-0.27	17.04	19.96	37.00
535.000	4.98	18.11	0.00	2.27	25.36	11.64	37.00
627.650	5.46	18.50	0.00	0.76	24.72	12.28	37.00
*746.725	6.09	19.23	0.00	7.11	32.43	4.57	37.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable loss-PreAMP.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs