

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test report file number : E014R-003

Applicant : KTEC CO., LTD.

Address : 186-3, Wonjong-Dong, Ojung-Gu, Buchon-Si, Kyunggi-Do, 421-200, Korea

Manufacturer : KTEC CO., LTD.

Address : 186-3, Wonjong-Dong, Ojung-Gu, Buchon-Si, Kyunggi-Do, 421-200, Korea

Type of Equipment : Digital Cordless Wheel Mouse

FCC ID : PKVKT-2001R

Model / Type No. : KTM-2001R

Serial number : N/A

Total page of Report : 13 pages (including this page)

Date of Incoming : March 15, 2001


Date of issuing : April 04, 2001

SUMMARY

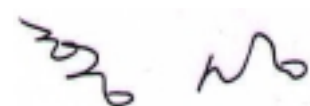
The equipment complies with the regulation; FCC PART 15 CFR 47 SUBPART B Section 15.101.

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

Prepared by:


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1. VERIFICATION OF COMPLIANCE

APPLICANT : KTEC CO., LTD.
ADDRESS : 186-3, Wonjong-Dong, Ojung-Gu, Buchon-Si, Kyunggi-Do, 421-200, Korea
CONTACT PERSON : Mr. Yong-Seb, Lim / Engineer
TELEPHONE NO : +82-32-675-0861
FCC ID : PKVKTM-2001R
MODEL NO/NAME : KTM-2001R
SERIAL NUMBER : N/A
DATE : April 04, 2001

DEVICE TYPE	Peripheral Device for Class B Computing Device -Unintentional Radiator
E.U.T. DESCRIPTION	Digital Cordless Wheel Mouse - Receiver
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The KTEC CO., LTD., Model KTM-2001R (refer to the EUT in this report) is a Receiver of the Digital Cordless Wheel Mouse that receives the RF signal from **the transmitter, M/N: KTM-2001T, FCC ID: PKVKTM-2001T** which was manufactured by KTEC Co., Ltd. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic – Non coated
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	4.906MHz
NUMBER OF LAYERS	2Layers
EXTERNAL CONNECTOR	PS/2 Port
POWER INPUT VOLTAGE & CONSUMPTION	DC 5V from a PC

Model Differences:

-. None

2.2 Related Submittal(s) / Grant(s)

Original submittal only.

2.3 Test System Details

The model numbers for all the equipments which were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
KTM-2001R	KTEC CO., LTD.	PKVKTM-2001R	RECEIVER (EUT)	PC
DCM	DELL COMPUTER	DoC	PC	-
AV-5T	KDS	EVOKD-1510T	MONITOR	PC
KTM-2001T	KTEC CO., LTD.	PKVKTM-2001T	TRANSMITTER	-
2225C	HP	DSI6XU2225	PRINTER	PC
020-0470	CARDINAL	GDE0196	MODEM	PC
SKR-1032	SEJIN	GJJSKR-1032B	KEYBOARD	PC

2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 12, 1999. (Registration Number: 92819)

3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN B/D	KTEC CO., LTD.	KTM-2001R	N/A

3.2 EUT exercise Software

- 1) The EUT receives the signal from the transmitter continuously.
- 2) The windows program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. This program was included into HOST. Once loaded, this program sequentially exercises each system component in turn. The sequence used is:(1) series of H characters are printed on the monitor until the screen is completely full, (2) copy series of H characters to mass storage device(if one is used), (3) print series of H characters to printer. The complete cycle takes about 20 seconds and is repeated continuously.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
Digital Cordless Wheel Mouse (EUT)	N/A	N	1.2(D)
PC	N	-	1.5(P)
MONITOR	N	Y	1.5(P), 1.5(D)
TRANSMITTER	-	-	-
PRINTER	N	Y	1.5(P), 1.5(D)
MODEM	N	Y	1.5(P), 1.5(D)
KEYBOARD	N/A	N	1.2(D)

* The marked "(P)" means the Power Cable and "(D)" means the Data Cable.

3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
Digital Cordless Wheel Mouse (EUT)	N	N/A	Y	PC END
PC	-	-	-	-
MONITOR	Y	BOTH END	Y	BOTH END
TRANSMITTER	-	-	-	-
PRINTER	N	N/A	Y	BOTH END
MODEM	N	N/A	Y	BOTH END
KEYBOARD	Y	PC END	Y	PC END

3.5 Equipment Modifications

-. None

3.6 Configuration of Test System

Line Conducted Test: The EUT was connected to PC, and the power line of PC was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emission test was conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

4. PRELIMINARY TEST

4.1 Conducted Emission Test

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
STANDBY MODE	
RX MODE	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
STANDBY MODE	
RX MODE	X

5. FINAL RESULT OF MEASUREMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level.

5.1 Conducted Emission Test

Humidity Level : 42 %

Temperature : 20 °

Limits apply to : FCC CFR 47, PART 15, SUBPART B

Type of Test : CLASS B

Result : PASSED BY -6.43 dB at 1.12 MHz

EUT : Digital Cordless Wheel Mouse

Date: March 30, 2001

Operating Condition : RX MODE

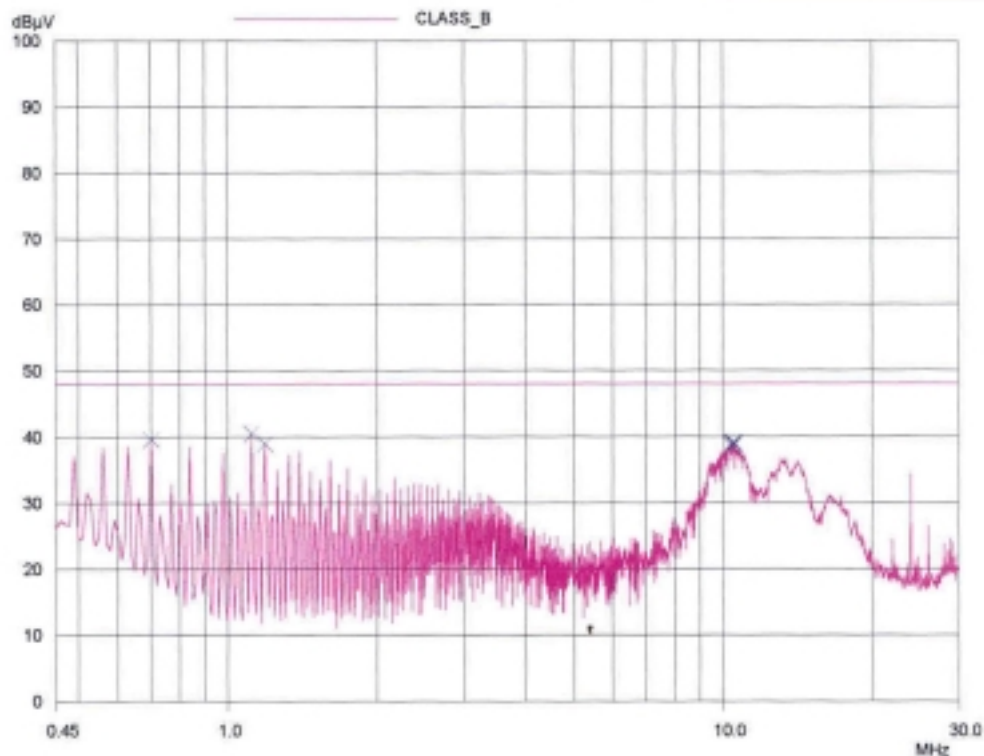
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
0.56	38.68	NEUTRAL	48.00	-9.32
0.63	38.99	NEUTRAL	48.00	-9.01
0.70	39.59	HOT	48.00	-8.41
1.12	41.57	NEUTRAL	48.00	-6.43
1.19	39.52	NEUTRAL	48.00	-8.48
10.49	39.07	HOT	48.00	-8.93

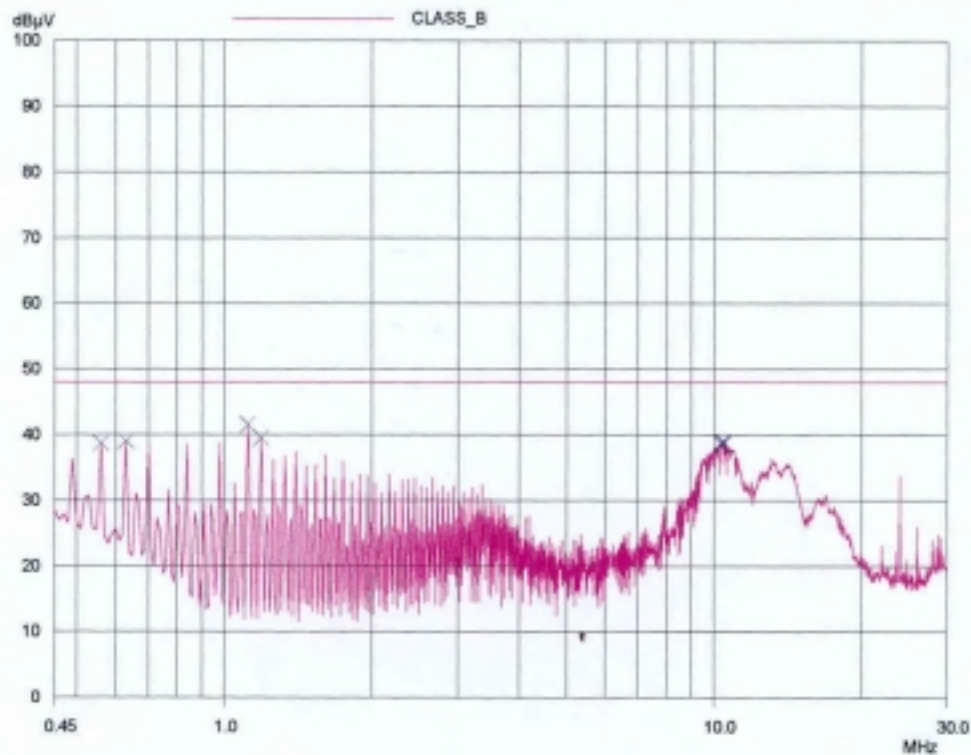
Line Conducted Emission Tabulated Data



Measuring by: Seung Hyun, Nam / Test Engineer



HOT LINE



NEUTRAL LINE

5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 38 %

Temperature : 17.0

Limits apply to : FCC CFR 47, PART 15, SUBPART B

Type of Test : CLASS B

Result : PASS

EUT : Digital Cordless Wheel Mouse

Date: March 30, 2001

Operating Condition : RX MODE

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
48.46	6.52	V	11.21	0.91	18.64	40.00	-21.36
66.83	8.32	V	8.11	1.00	17.43	40.00	-22.57
110.56	9.25	V	12.64	1.20	23.09	43.50	-20.41
186.23	5.23	V	16.27	1.48	22.98	43.50	-20.52
256.47	10.25	V	12.83	1.85	24.93	46.00	-21.07
356.25	7.56	H	15.27	2.31	25.14	46.00	-20.86

Radiated Emission Tabulated Data



Measuring by: Seung Hyun, Nam / Test Engineer

6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dBuV)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/meter)

= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)

7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	SEP/00	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	APRIL/00	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3026A0226	SEP/00	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	SEP/00	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/00	12MONTH	■
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/00	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/01	12MONTH	■
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	MAR/01	12MONTH	■
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/00	12MONTH	■
10.	RF Amplifier	HP	8447F	3113A04554	JUN/00	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APRIL/00	12MONTH	
12.	Computer System	HP	98581C	98543A	N/A	N/A	■
	Hard disk drive		9153C	CMC762Z9153	N/A	N/A	■
13.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
14.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
15.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
16.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■