ELECTROMAGNETIC EMISSONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT

OF

FCC ID: NHMCK005RF

RF KEYBOARD

MODEL NO: CK005

REPORT NO: 010181

April 11, 2001

Prepared for

CRE Technology Co., Ltd.
7F NO.22, Wu-Chuan 7th Road, Wu-Ku Industrial Park,
Taipei, Taiwan R.O.C.

Prepared by

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1. VERIFICATION OF COMPLIANCE

COMPANY NAME : CRE Technology Co., Ltd.
7F NO.22, Wu-Chuan 7th Road, Wu-Ku Industrial Park,
Taipei, Taiwan R.O.C.
CONTACT PERSON : Chung, Sheng-Te
TELPHONE NO : 02-22993279 ext 377
EUT DESCRIPTION : RF KEYBOARD
MODEM NAME : CK005
DATE OF MEASUREMENT: March 11 ~ 19, 2001

LIMITES APPLY TO: FCC PART 15 SECTION 15.227	
TECHNICAL LIMITS	**MEASUREMENT RESULT**
Radiated Emission/ 15.205 & 15.209	PASS
AC Line Conducted Emission/15.207	N.R
Emission in operating band/15.227	PASS

The above equipment was tested by C&C Laboratory Co. Ltd. for compliance with the requirements set forth in CFR 47 PART 15, SUBPART C. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requires.

Charles Wang

Charles Wang/ Technical Director
C&C Laboratory Co. Ltd.

2. DESCRIPTION OF EQUIPMENT UNDER MEASUREMENT (EUT)

CK005 is a wireless keyboard product which allow its users to connect it to the PS2 port of PC through its receiver unit and wireless controlled by host keyboard unit (Transmitter) to form a typical application as a traditional keyboard

Transmitter Technical Data	
Actual Operating Frequency	26.995 MHz to 27.245 MHz
Transmit Power	-10dBm
Modulation scheme	FSK
Power consumption	Maximum ----------32.5mA Standby ----------0.1mA Sleep ----------0.02mA (wake-up by clicking mouse key only)
Channel	2 channel
Antenna type	inside housing
Operation range	1.5m (minimum)
DC voltage	3V(2*AAA)

Receiver Technical Data	
PC interface type	PS/2
DC voltage	From PC
Antenna type	inside housing
Receiver power consumption	60 mA
Receiver dynamic range	0 dBm ~ 90 dBm

3. ANTENNA CONNECTION

The RF KEYBOARD equipped with an integrated antenna fixed permanently in transmitting unit, user can't changeable.

4. CHANNEL USAGE

The operating frequency used is 26.998 MHz, it is subject to the requirement of FCC CFR 47 ¡ 15.227.

5. THEORY OF OPERATION

The unit is working at 26.998 MHz as a carrier to send communication signal to PC through a receiver which is sold together with the transmitter (Mouse host unit).

6. EUT SETUP FOR MEASUREMENT PURPOSE

The EUT (transmitter) was setup as a minimum test configuration as like testing to regular ITE product as per requirement described in ANSI C63.4-1992. The function of EUT was checked and stay in working status under the tests.

7. MEASUREMENT LOCATION

All emissions tests were performed at:

C&C Laboratory Co. Ltd.

No.15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang, Taoyuan, Taiwan R.O.C.

C&C has site descriptions on file with the FCC for 10 and 3 meter site configurations. C&C is a A2LA accredited facility.

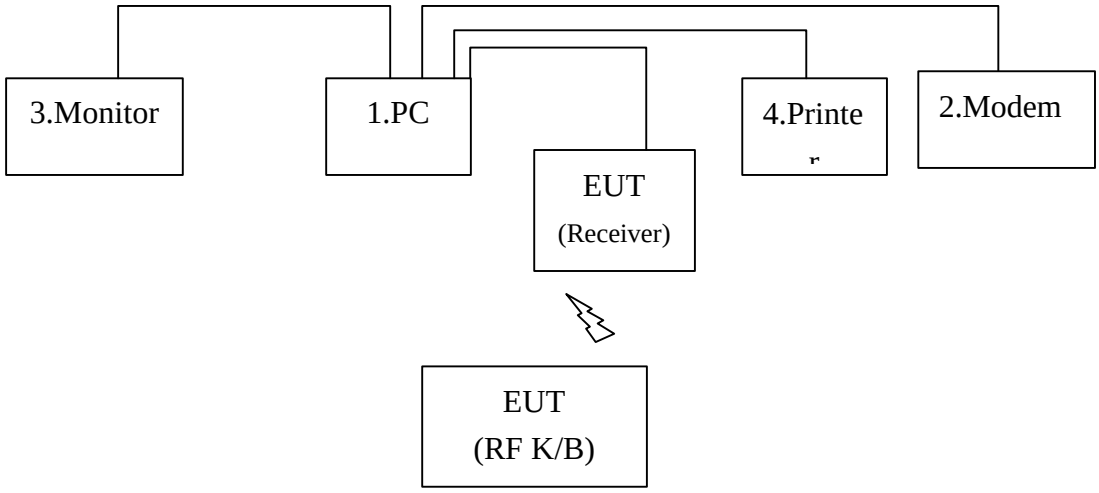
Radiated emissions from the EUT were performed at site 4, one of our 3/10 meters sites.

Conducted emissions – NA (Because the EUT was powered with Battery)

8. SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	PC	AM75-LN	N/A	FCC DoC	DFI	Shielded, 1.8m	Unshielded, 1.5m
2.	Modem	2400	94-364-176272	DK467GSM24	Computer Peripherals	Shielded, 1.8m	Unshielded, 1.8m
3.	Monitor	CM365	N/A	FCC DoC	Hitachi	Shielded, 1.8m	Unshielded, 1.8m
4.	Printer	2225C	3125S98198	DSI6XU2225	HP	Shielded, 1.8m	Unshielded, 1.8m

9. MEASUREMENT CONFIGURATION(SIGNAL PATH ONLY)



10. MEASUREMENT PROCEDURES AND MEASUREMENT RESULTS

- ***Radiated Emissions (General Requirements)***

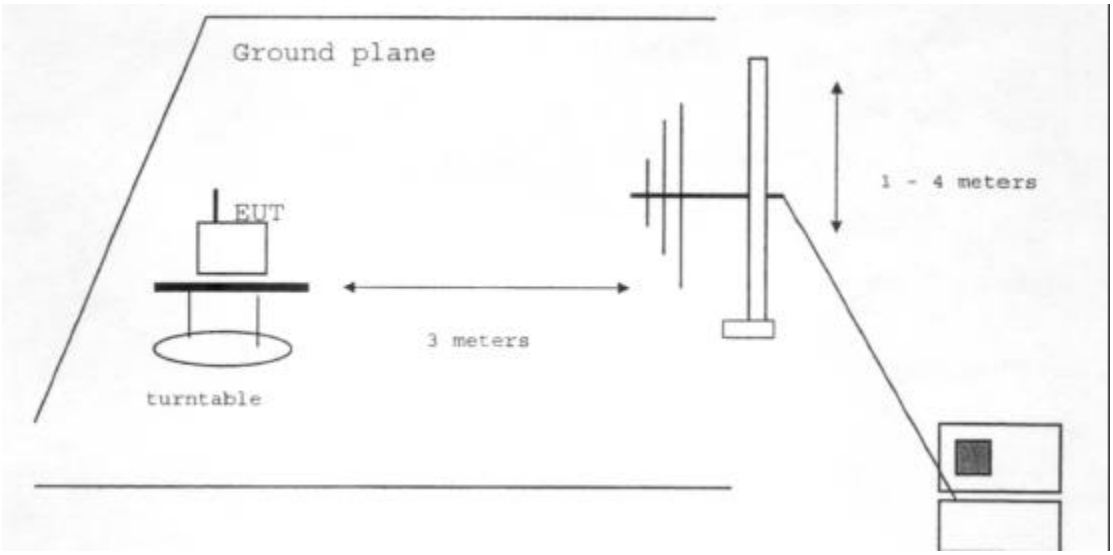
Measurement Requirement: 15.205, 15.209

Measurement facility used for Radiated Emissions

Open Area Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	ADVANTEST	R3132	91700456	02/21/2001	02/20/2002
EMI Test Receiver	R&S	ESCS30	847793/012	11/10/2000	11/09/2001
Precision Dipole	R&S	HZ-12	846932/0004	07/14/2000	07/13/2001
Precision Dipole	R&S	HZ-13	846556/0008	07/14/2000	07/13/2001
Bilog Antenna	CHASE	CBL 6112B	2462	01/16/2001	01/15/2002
Turn Table	Chance most	N/A	N/A	N.C.R	N.C.R
Antenna Tower	Chance most	N/A	N/A	N.C.R	N.C.R
Controller	Chance most	N/A	N/A	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M51067	N.C.R	N.C.R
Site NSA	C&C Lab.	N/A	N/A	11/24/2000	11/23/2001

Measurement Procedures

1. The 'H' button of EUT was pressed by using a small piece of paper, and let EUT send 'H' character to PC through its receiver and display message on the screen of monitor.
2. The EUT was placed on a metal free table on the outdoor ground plane. The search antenna was placed 3 meter from the EUT. Measurement distance is chosen so that the noise floor of the measurement system is at least 6dB below the specification limits.
3. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205.
4. Once maximum direction was determined, the searching antenna was raised and lowered in both vertical and horizontal polarization. The maximum readings so obtained are recorded in the data listed below.
5. General measurement set up drawing.



Measurement Results (1/2):

Measured by: Gimmy Tsai Polar: Vertical – 3 m
Detector Function: Quasi-Peak Measurement Results: Passed
Temperature: 18 ℃ Humidity: 68 % RH
(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
43.52	16.2	14.6	30.8	40.0	-9.2
124.24	18.1	12.7	30.8	43.5	-12.7
133.65	15.9	12.2	28.1	43.5	-15.4
200.23	16.8	10.6	27.4	43.5	-16.1
732.65	10.6	22.6	33.2	46.0	-12.8
732.65	12.9	22.6	35.5	46.0	-10.5

Measurement Results (2/2):

Measured by: Gimmy Tsai Polar: Horizontal – 3 m
Detector Function: Quasi-Peak Measurement Results: Passed
Temperature: 18 ℃ Humidity: 68 % RH
(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
43.48	16.1	14.6	30.7	40.0	-9.3
133.64	16.8	12.2	29.0	43.5	-14.5
200.64	19.1	10.6	29.7	43.5	-13.8
221.58	21.9	11.3	33.2	46.0	-12.8
703.52	13.8	21.7	35.5	46.0	-10.5
730.65	11.5	22.6	34.1	46.0	-11.9

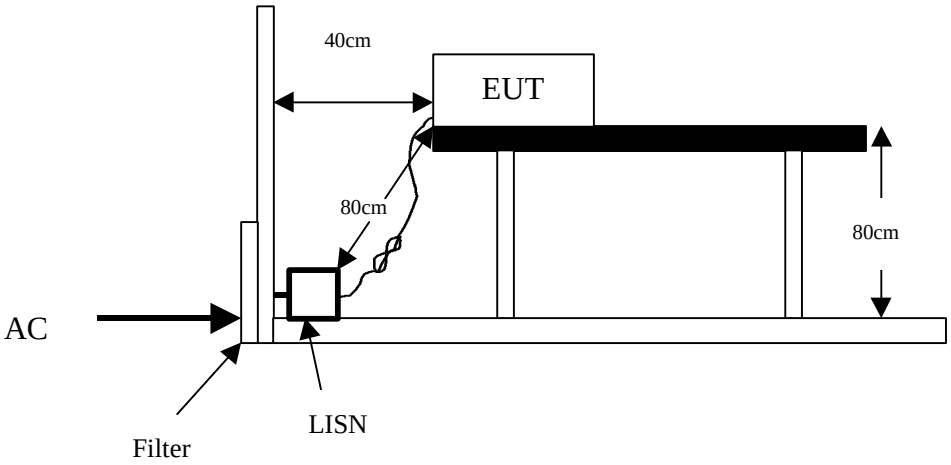
- ***AC Line Conducted Emissions***

Measurement facility used for Conducted Emissions

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	R&S	ESHS10	843743/015	12/15/2000	12/14/2001
LISN	R&S	ENV 4200	8303261016	11/18/2000	11/17/2001
LISN	EMCO	3825/2	9003/1382	02/08/2001	02/07/2002

Measurement Procedure

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor, The EUT was set to transmit in a normal hopping mode.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.
3. General measurement set up drawing.



Measurement Results: N/A (Since the EUT is Powered with battery Test to 15.207 is not required.)

THE EMISSION LEVEL IN OPERATING BAND

As per the requirement of FCC¡ 15.227, any emission within this band shall not exceed (100uV/m, 80dBuV/m) at 3 meters.

The measurement procedure and setup are same as radiated emission measurement. The test result as listed at next page.

Measurement facility used for the emission level in operating band

OATS #4					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	R&S	ESHS10	843743/015	12/15/2000	12/14/2001
Loop Antenna	EMCO	6502	2356	04/20/2000	04/19/2001

Measurement Results:

Measured by: Eric Lin Polar: Vertical – 3 m
Detector Function: Average/Peak Measurement Results: Passed
Temperature: 26 ℃ Humidity: 70 % RH
(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
26.998	35.2	10.1	45.3	80.0	-34.7 (Av)
26.998	36.9	10.1	47.0	100.0	-53.0 (Pk)

Measurement Results:

Measured by: Eric Lin Polar: Horizontal – 3 m
Detector Function: Average/Peak Measurement Results: Passed
Temperature: 26 ℃ Humidity: 70 % RH
(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
26.998	39.2	10.1	49.3	80.0	-30.7 (Av)
26.998	40.5	10.1	50.6	100.0	-49.4 (Pk)

- ***OPERATING RANGE VERIFICATION***

  The stipulated operating rage of FCC §15.227 is 26.96 to 27.28 MHz. The band edge requirement meets the requirement from the spectrum plot shown below.