



ELECTROMAGNETIC RESEARCH INSTITUTE



# EMI TEST REPORT

## Emission of electromagnetic disturbance

**Test Report No.** : ERI-FCC03-0037

**Equipment** : CROSS&T(M) BHD SMARTCARD READER

**Name of basic model** : CST-10U

**Family model** : N/A

**Manufacturer** : Cross S & T. Inc.

**Applicant** : Cross S & T. Inc.

**Tested date** : 2003. 5. 6

**Issued date** : 2003. 5. 13

**Test results** : PASS

**Test Standards** : FCC Part 15 Subpart B (Class B) / Verification

### Test Procedure and Items :

- AC Power line Conducted emissions measurement : ANSI C63.4-1992
- Radiated emissions measurement : ANSI C63.4-1992

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**Tested by: YOUNG-SIK, KIM**

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**Approved by: UK-CHO, RIM**

The results in this report apply only to the sample tested.  
This test report shall not be reproduced except in full, without the written approval of **ERI Laboratory**.

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## **APPENDIX**

(N/A)

## 1. CLIENT INFORMATION

The EUT has been tested by request of :

Company : CROSS S & T. Inc.  
Address : Hyundai Office bldg #715, 9-4, Sunaedong Pundangu,  
Sunnam, Kyunggido, Korea  
Telephone : + 82-31-713-9143  
Facsimile : + 82-31-713-9144

## 2. LABORATORY INFORMATION

The 10m semi-anechoic chamber and/or EMC facilities are used for these testing.  
These facilities were accredited by KOLAS, EK, MIC of Korea and FCC.

### **Address**

ELECTROMAGNETIC RESEARCH INSTITUTE.

66-6, JEIL-RI, YANGJI-MYUN, YOUNGIN-CITY, KYUNGGI-DO, KOREA

Telephone No. : +82-31-336-1186~7

Facsimile No. : +82-31-336-1184

### **Registered No.**

KOLAS : 111

EK : J

MIC : KR0030

FCC Filing No. : 302567

## 3. EQUIPMENT UNDER TEST INFORMATION(EUT)

### **3.1 Identification of the EUT**

Type of equipment : CROSS&T(M) BHD SMARTCARD READER  
Model name : CST-10U  
Brand name : N/A  
Manufacturer : CROSS S & T. Inc.  
Address : Hyundai Office bldg #715, 9-4, Sunaedong Pundangu,  
Sunnam, Kyunggido, Korea  
Telephone : + 82-31-713-9143  
Facsimile : + 82-31-713-9144  
Country of origin : KOREA  
Rating : DC 5V

**3.2 Additional information about the EUT**

Class B, Family Models List: (N/A)

**3.3 Peripheral equipment**

Defined as equipment needed for correct operation of the EUT.

Description	Model No.	Serial No.	Manufacture
Monitor	S/75E	P181H80R907989	Cheng hwa electronics Co., Ltd.
Printer	Deskjet 930C	CN13V1B1RY	HP
Keyboard	SDM4510UH	4m030902	-
Mouse	M-U48a	LZC10152001	Logitech
AC/DC adaptor	ADP-60DB	MJD0124008510	Delta electronnics Co., Ltd.
Note PC	CM2080	5Y17JNZ9R622	LG

#### **4. RADIATED DISTURBANCE : 30MHz – 1000MHz**

##### **4.1 Operating environment**

Temperature : 21.0 °C  
Relative Humidity : 60.0 %

##### **4.2 Test set-up**

The frequency range investigated was 30 MHz to 1000 MHz.

All readings are quasi-peak unless stated otherwise.

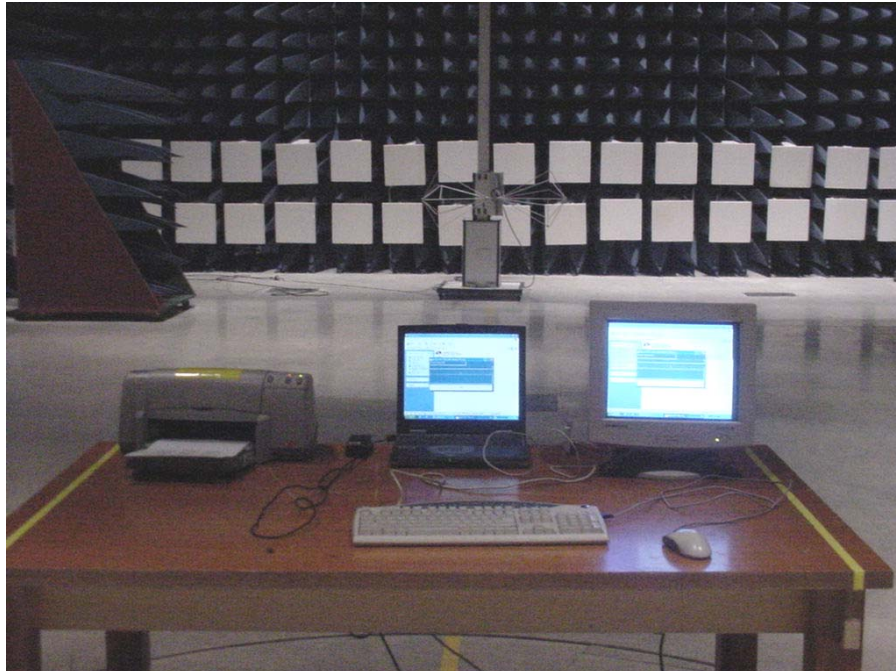
The half-wave dipole antenna was tuned to the frequency found during Preliminary radiated measurements. The EUT, support equipment and Interconnecting cables were re-configured to the set-up to the producing the Maximum emission for the frequency and were placed on top of a 0.8 meter High non-metallic 1 X 1.5 meter table. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME emission.

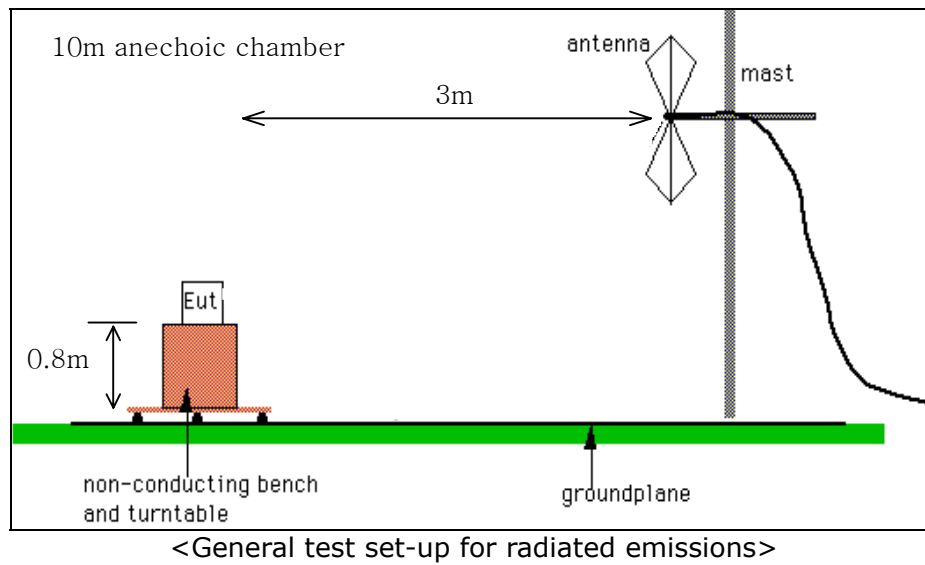
The turntable containing the system was rotated the antenna height was varied 1 to 4 meters

and stopped at the azimuth or height producing the maximum emission.

And this device(EUT) was tested in 3 orthogonal planes.

The antenna measured both horizontal and vertical polarization.





### 4.3 Operation Conditions

Normal operating mode

### 4.4 Test instrument

Instrument	Model No.	Serial No.	Makers	Next cal.date	Used
Test receiver	ESCS30	100021	R&S	2004. 1. 24	x
L.I.S.N.	ESH3-Z5	827246/008	R&S	2004. 3. 19	x
	ESH3-Z5	831887/018	R&S	2004. 3. 19	x
Shield room	8 × 6 × 3.3m/H	-	-	-	x

#### 4.5 Test results

Date of test: May 6, 2003.

Freq (MHz)	Reading (dBuV)	Ant	AF (dB)	CL (dB)	Result (dBuV/m)	Limit (dB)	Margin (dB)
58.15	14.63	H	9.67	1.50	25.80	40.0	14.2
100.20	24.46	V	10.31	2.00	36.77	43.5	6.73
120.50	20.02	H	12.44	2.10	34.56	43.5	8.94
192.00	18.41	H	16.40	2.70	37.51	43.5	5.99
221.00	20.62	V	16.70	2.90	40.22	46.0	5.78
262.20	16.59	V	17.70	3.30	37.59	46.0	8.41
433.00	20.67	H	15.87	4.20	40.74	46.0	5.26
720.00	13.37	V	20.06	5.50	38.94	46.0	7.06

\* Receiving Antenna Mode : **Horizontal, Vertical**

\* <5 : mean less than 5dB

Note : Reading = Test Receiver meter, P= Polarization → POL H = Horizontal POL V = Vertical A = Angle, AF = Antenna Factor CL = Cable Loss Result = Field Strength( AF + CL+ Reading)

#### Result: Pass

The measured emissions level of the EUT have found the below of the specified limit.



## 5. PRODUCT PHOTOGRAPHS

### 5.1 Front Photograph of EUT

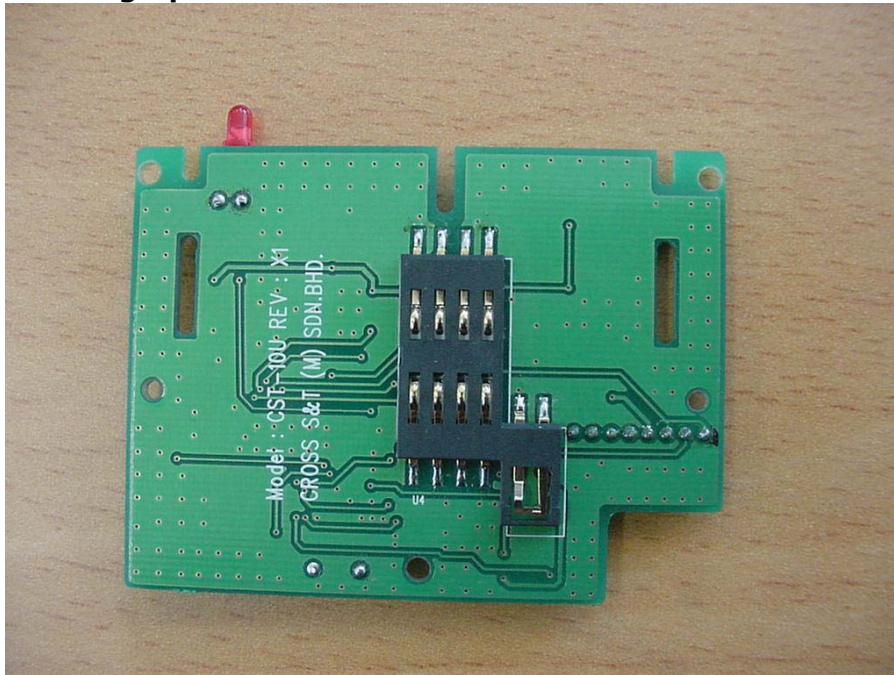


### 5.2 Rear Photograph of EUT

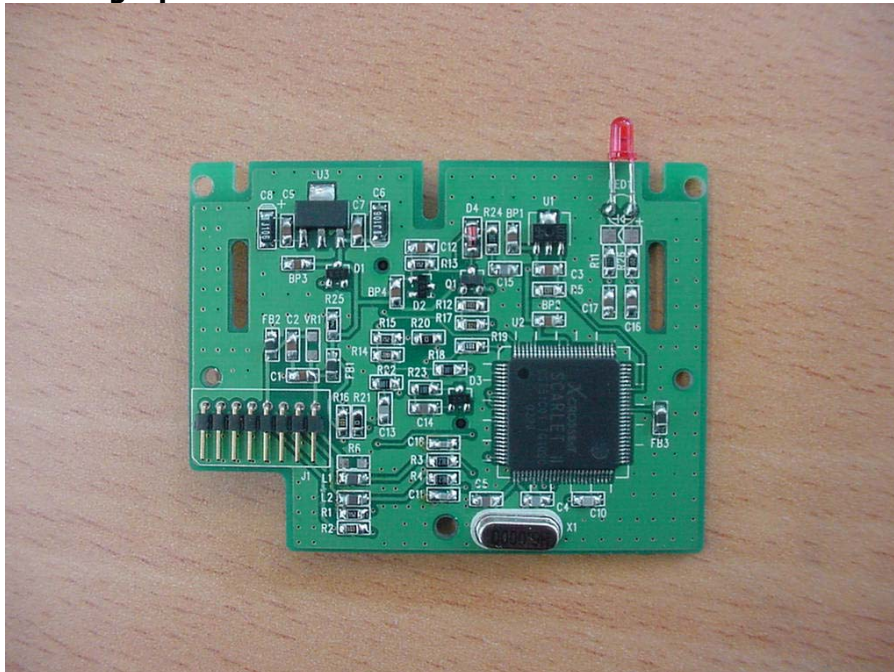




### 5.3 Front Photograph of EUT mainboard



### 5.4 Rear Photograph of EUT mainboard



### 5.5 Inner Photograph of EUT

