



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number : E01DR-013

Applicant : SAMSUNG SDS CO., LTD.
Address : 15th Fl, World Tower, 7-25, Shinchun-Dong, Songpa-Gu, Seoul, Korea

Manufacturer : EXPAN Electronics Co., Ltd.
Address : 730-3, Bonoh-Dong, Ansan-City, Kyungki-Do, 425-808, Korea

Type of Equipment : USB SMART CARD READER

FCC ID : P4YSIR-601R

Model / Type No. : SIR-601R

Serial number : N/A

Total page of Report : 12 pages (including this page)

Date of Incoming : November 24, 2001

Date of Issuing : December 13, 2001

SUMMARY

The equipment complies with the regulation; *FCC CFR 47 PART 15 SUBPART B, Class B.*

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.

Reviewed by: Youn Koon Nam
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EMC Dept.
ONETECH Corp.

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1. VERIFICATION OF COMPLIANCE

APPLICANT : SAMSUNG SDS CO., LTD.
 ADDRESS : 15th FI, World Tower, 7-25, Shinchun-Dong, Songpa-Gu, Seoul, Korea
 CONTACT PERSON : Hwa-Sun, Chang / Advisory Engineer
 TELEPHONE NO : +82-2-3434-2003
 FCC ID : P4YSIR-601R
 MODEL NO/NAME : SIR-601R
 SERIAL NUMBER : N/A
 DATE : December 13, 2001

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	USB SMART CARD READER
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 (Class B)
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.

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2. GENERAL INFORMATION

2.1 Product Description

The SAMSUNG SDS CO., LTD., Model SIR-601R (referred to as the EUT in this report) is a USB SMART CARD READER. 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)	12.00 MHz on the main board
POWER REQUIREMENT	DC 5V supplied from a PC
NUMBER OF LAYERS	2 Layers
EXTERNAL CONNECTOR	USB Port

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 that were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
SIR-601R	SAMSUNG SDS CO., LTD.	P4YSIR-601R	USB SMART CARD READER (EUT)	PC
DCR	DELL COMPUTER	DoC	PERSONAL COMPUTER	-
G220	SONY	DoC	MONITOR	PC
SKR-1082	SEJIN ELEC	DoC	KEYBOARD	PC
020-0470	CARDINAL	GDE0196	EXTERNAL MODEM	PC
2225C	HP	DSI6XU2225	PRINTER	PC
M-S48a	LOGITECH	JNZ201213	MOUSE	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.

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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 Board	SAMSUNG SDS CO., LTD.	SIR-601R	N/A

3.2 EUT exercise Software

The EUT was connected to USB port of the Personal Computer using USB interface cable, and then the data was transferred continuously between a Personal Computer and the EUT.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
USB SMART CARD READER (EUT)	N/A	Y	1.2(D)
PERSONAL COMPUTER	N	-	1.5(P)
MONITOR	N	Y	1.5(P), 1.2(D)
KEYBOARD	N/A	Y	1.8(D)
EXTERNAL MODEM	N	Y	1.5(P), 1.2(D)
PRINTER	N	Y	1.5(P), 1.5(D)
MOUSE	N/A	Y	1.8(D)

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



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3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
USB SMART CARD READER (EUT)	N	N/A	Y	PC END
PERSONAL COMPUTER	N	N/A	-	-
MONITOR	N	N/A	Y	PC END
KEYBOARD	N	N/A	Y	PC END
EXTERNAL MODEM	N	N/A	Y	BOTH END
PRINTER	N	N/A	Y	BOTH END
MOUSE	N	N/A	Y	PC END

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

“There was no Modified items during EMI test”

3.6 Configuration of Test System

Line Conducted Test: The EUT was connected to USB port of 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.



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4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Continuously transferring of data between PC and the EUT	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)
Continuously transferring of data between PC and the EUT	X



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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 : 40 % Temperature : 20 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107
 Type of Test : CLASS B
 Result : PASSED BY -6.35 dB at 28.12 MHz

EUT : USB SMART CARD READER Date: December 13, 2001
 Operating Condition : Continuously transferring of data between PC and the EUT
 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	36.51	NEUTRAL	48.00	-11.49
0.64	36.41	NEUTRAL	48.00	-11.59
1.47	37.27	NEUTRAL	48.00	-10.73
1.61	38.25	NEUTRAL	48.00	-9.75
1.82	39.44	NEUTRAL	48.00	-8.56
18.46	37.29	NEUTRAL	48.00	-10.71
20.09	37.78	HOT	48.00	-10.22
28.12	41.65	NEUTRAL	48.00	-6.35

Line Conducted Emission Tabulated Data

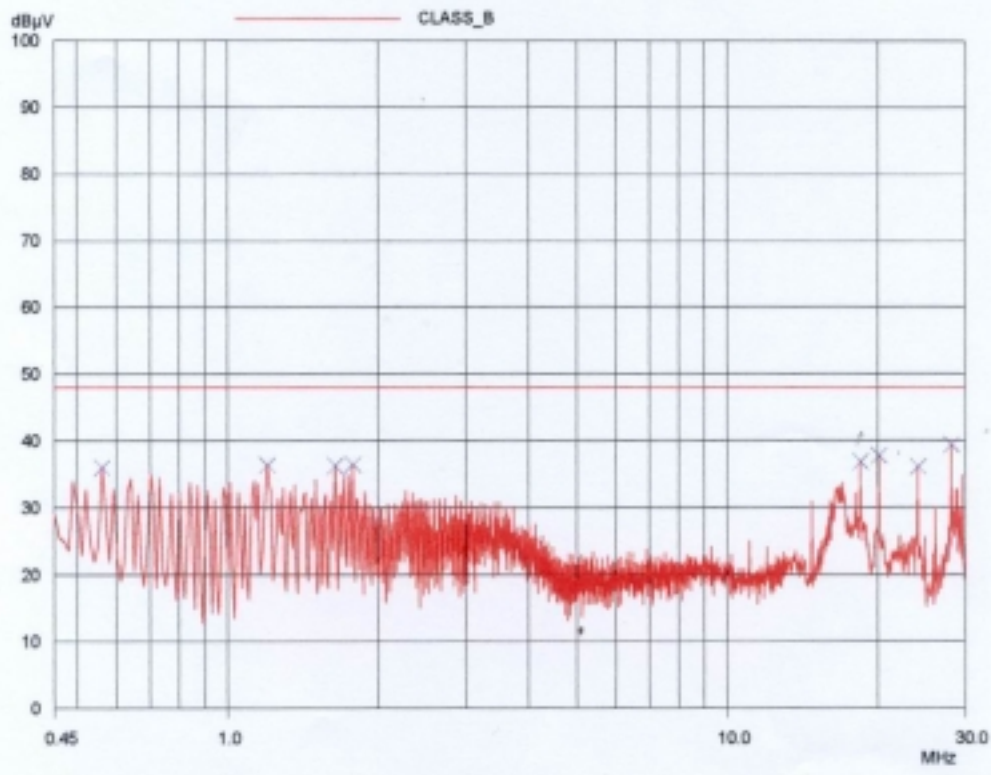


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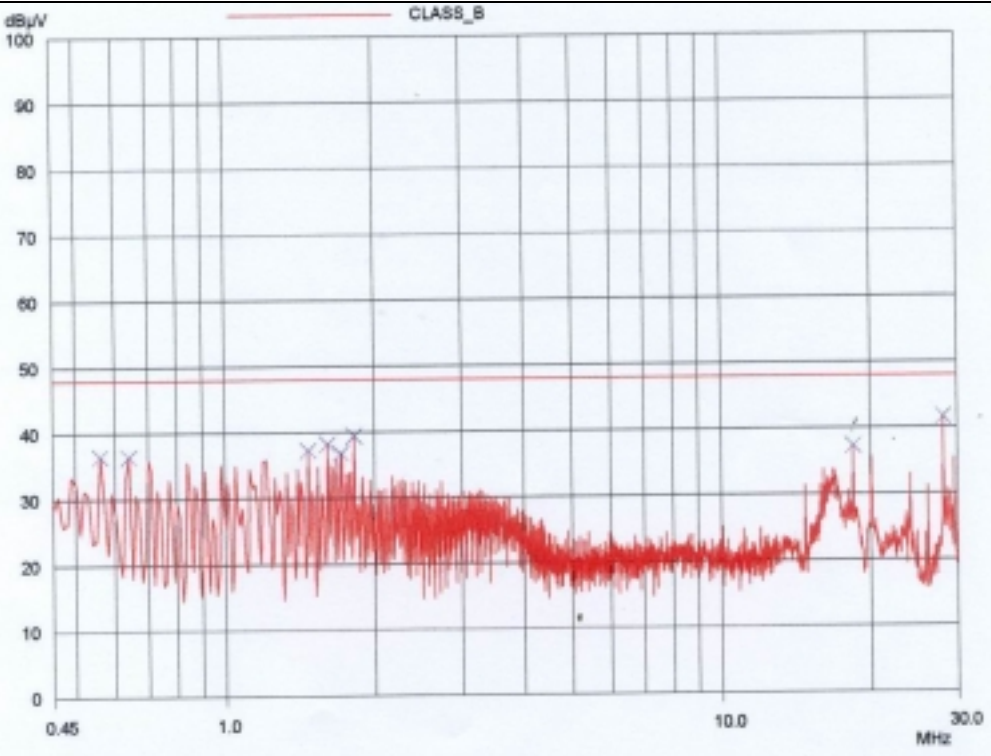
Tested by: Seung Hyun, Nam / Test Engineer



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HOT LINE



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NEUTRAL LINE



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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 : 18 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109
 Type of Test : CLASS B
 Result : PASSED BY -4.98 dB at 44.34 MHz

EUT : USB SMART CARD READER Date: December 13, 2001
 Operating Condition : Continuously transferring of data between PC and the EUT
 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)
44.34	23.80	V	10.35	0.87	35.02	40.00	-4.98
59.10	20.00	V	10.06	1.00	31.06	40.00	-8.94
188.30	18.44	H	16.66	1.49	36.59	43.50	-6.91
195.68	17.83	H	16.95	1.54	36.32	43.50	-7.18
203.03	21.04	H	11.22	1.59	33.85	43.50	-9.65
206.75	21.80	H	11.13	1.61	34.54	43.50	-8.96
210.44	22.89	H	11.04	1.62	35.55	43.50	-7.95
214.19	23.00	H	10.95	1.64	35.59	43.50	-7.91
312.60	23.00	H	14.41	2.08	39.49	46.00	-6.51
347.40	22.60	H	14.56	2.27	39.43	46.00	-6.57
372.40	19.48	H	14.78	2.38	36.64	46.00	-9.36
384.40	16.94	H	15.04	2.41	34.39	46.00	-11.61

Radiated Emissions Tabulated Data



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Tested by : Seung Hyun, Nam / Test Engineer



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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)



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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	OCT/01	12MONTH	
2.	Test receiver	R/S	ESHS10	834467/007	APR/01	12MONTH	
3.	Spectrum analyzer	HP	8568B	3026A0226	APR/01	12MONTH	
4.	RF preselector	HP	85685A	3107A01264	APR/01	12MONTH	
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/01	12MONTH	
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/01	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	JUN/01	12MONTH	
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/01	12MONTH	
10.	RF Amplifier	HP	8447F	3113A04554	JUN/01	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APR/01	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	