



EMI TEST REPORT

JQA APPLICATION No. : 493-90042
Project No. : 99218
Model/Type No. : DM-R1
Type of Equipment : MEMORY CARD READER
Regulation Applied : CFR 47 FCC Part 15 Sub.B
FCC ID : N/A(Declaration of Conformity)
Applicant : HIROSE Electronic System Co., Ltd.
Address : 21-17, Ebisu 1-chome, Shibuya-ku
Tokyo 150-0021, Japan
Manufacturer : HIROSE Electronic System Co., Ltd.
Address : 21-17, Ebisu 1-chome, Shibuya-ku
Tokyo 150-0021, Japan
Final Judgment : Passed

TEST RESULT IN THIS REPORT are obtained in used of equipment that is traceable to Electromechanical Lab. of MITI Japan and Communications Research Lab. of PTT Japan.

THE TEST RESULTS only responds to the test sample.
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1. Documentation**1.1 General Information****1.1.1 Test Facility:**

- 1) Test Facility located at JQA SAFTY TESTING CENTER EMC ENGINEERING DEPT. TSURU EMC BRANCH: Open Site No.1, No.2, An Anechoic Chamber (3 m and 10 m, on common plane) and a Shielded Room
Date of Listing: March 30, 1999

- 2) JQA SAFTY TESTING CENTER EMC ENGINEERING DEPT. TSURU EMC BRANCH is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance established in Title 15, Part 285 Code of Federal Regulations.
NVLAP Lab Code: 200192-0(Effective through: June 30, 2000)

1.1.2 Description of the Equipment Under Test (EUT):

- | | |
|--|-----------------------------|
| 1) Type of Equipment | : MEMORY CARD READER |
| 2) Product Type | : Pre-production |
| 3) Category | : Class B Digital Device |
| 4) EUT Authorization | : Declaration of Conformity |
| 5) FCC ID | : N/A |
| 6) Trade Name | : - |
| 7) Model/Type No. | : DM-R1 |
| 8) Serial No. | : - |
| 9) Fundamental Frequency /
Operated Frequency | : 24.576 MHz |
| 10) Highest Frequency Used in the EUT | : 24.576 MHz |
| 11) Date of manufacturer | : - |
| 12) Power Rating | : *120VAC 60Hz |
| 13) EUT Grounding | : None |
- *The EUT was operated with an AC-DC adaptor. (Model: AC-5VN, Input: 100-240 VAC 50/60Hz, Output: 5VDC)

1.1.3 Definitions for symbols used in this test report:

- - Black box indicates that the listed condition, Regulation or equipment is applicable for this report.
- - Blank box indicates that the listed condition, Regulation or equipment is not applicable for this report.

1.2 Test Regulation

FCC Rules and Regulations Part 15 Subpart A and B (June 23, 1989)
Class B Digital Device.

Test Procedure:

AC Powerline Conducted Emission and Radiated Emission were performed according to the procedures in ANSI C63.4-1992.

1.3 Test Conditions

1.3.1 The measurement of the AC Powerline Conducted Emission

- ☒ - was performed in the following test site.
- ☐ - was not applicable.

Test Location:

JQA SAFTY TESTING CENTER EMC ENGINEERING DEPT. TSURU EMC BRANCH
 2096 Ohhata, Tanbozawa, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

- ☒ - Shielded Room No.1
- ☐ - Shielded Room No.2
- ☐ - Anechoic Chamber
- ☐ - Open Site No.1
- ☐ - Open Site No.2

Used Test Instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
☒	Field Strength Meter	ESH-3	Rohde & Schwarz	872992/047	1999/5	1 Year
☐	Field Strength Meter	ESH-3	Rohde & Schwarz	881460/016	1999/5	1 Year
☒	LISN	KNW-407	Kyoritsu Electrical	8-833-5	1999/5	1 Year
☐	LISN	KNW-407	Kyoritsu Electrical	8-680-14	1999/5	1 Year
☐	LISN	KNW-243C	Kyoritsu Electrical	8-831-1	1999/5	1 Year
☐	LISN	KNW-243C	Kyoritsu Electrical	8-831-2	1999/5	1 Year
☐	LISN	KNW-243C	Kyoritsu Electrical	8-831-3	1999/5	1 Year
☐	LISN	KNW-243C	Kyoritsu Electrical	8-831-4	1999/5	1 Year
☐	LISN	ESH 2-Z5	Rohde & Schwarz	879341/007	1999/5	1 Year
☒	RF Cable	3D-2W	Fujikura	No.1	1999/5	1 Year
☐	RF Cable	3D-2W	Fujikura	No.2	1999/5	1 Year
☐	RF Cable	3D-2W	Fujikura	No.3	1999/5	1 Year

1.3.2 The measurement of the Radiated Emission (30MHz - 1000MHz)

- - was performed in the following test site.
 ○ - was not applicable.

Test Location :

JQA SAFTY TESTING CENTER EMC ENGINEERING DEPT. TSURU EMC BRANCH
 2096 Ohhata, Tanbozawa, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

- | | |
|----------------------|---------------|
| ● - Anechoic Chamber | ● - 3 meters |
| ○ - Open Site No.1 | ○ - 10 meters |
| ○ - Open Site No.2 | ○ - 30 meters |

Validation of Site Attenuation :

- 1) Last Confirmed Date : 1999/5
 2) Interval : 1 Year

Used Test Instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
○ -	Field Strength Meter	ESV	Rohde & Schwarz	863796/015	1999/5	1 Year
○ -	Field Strength Meter	ESVS10	Rohde & Schwarz	843744/018	1999/5	1 Year
● -	Field Strength Meter	ESVS10	Rohde & Schwarz	84231/004	1999/5	1 Year
○ -	Biconical Antenna	BBA9106	Schwarzbeck	11905065-2	1999/5	1 Year
○ -	Biconical Antenna	BBA9106	Schwarzbeck	11905065-3	1999/5	1 Year
● -	Biconical Antenna	BBA9106	Schwarzbeck	G4397001	1999/5	1 Year
○ -	Log-Periodic Antenna	UHALP9107	Schwarzbeck	91071212	1999/5	1 Year
○ -	Log-Periodic Antenna	UHALP9107	Schwarzbeck	9107915	1999/5	1 Year
● -	Log-Periodic Antenna	UHALP9107	Schwarzbeck	G43597003	1999/5	1 Year
○ -	Dipole Antenna	KBA-511A	Kyoritsu Electrical	0-195-5	1999/5	1 Year
○ -	Dipole Antenna	KBA-611	Kyoritsu Electrical	0-230-6	1999/5	1 Year
○ -	Dipole Antenna	KBA-511A	Kyoritsu Electrical	0-196-8	1999/5	1 Year
○ -	Dipole Antenna	KBA-611	Kyoritsu Electrical	0-228-13	1999/5	1 Year
○ -	RF Cable	20D/5D-2W	Fujikura	No.1	1999/5	1 Year
○ -	RF Cable	20D/5D-2W	Fujikura	No.2	1999/5	1 Year
● -	RF Cable	20D/5D-2W	Fujikura	No.3	1999/5	1 Year

1.3.3 The measurement of the Radiated Emission (Above 1000 MHz)

- ☐ - was performed in the following test site.
☒ - was not applicable.

Test Location :

JQA SAFTY TESTING CENTER EMC ENGINEERING DEPT. TSURU EMC BRANCH
2096 Ohhata, Tanbozawa, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

- | | |
|--|-----------------------------------|
| ☐ - Anechoic Chamber | ☐ - 3 meters |
| ☐ - Open Site No.1 | ☐ - 10 meters |
| ☐ - Open Site No.2 | ☐ - 30 meters |

Validation of Site Attenuation :

- 1) Last Confirmed Date : 1999/5
2) Interval : 1 Year

Used Test Instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
☐ -	Spectrum Analyzer	8563E	Hewlett Packard	3438A00756	1999/5	1 Year
☐ -	Spectrum Analyzer	R4131C	Advantest	717201249	1999/5	1 Year
☐ -	Log-Periodic Antenna	94612-1	NAC CO.	97062301	1999/5	1 Year
☐ -	Pre-Amplifier	WJ-6611-513	Watkins Johnson	0288	1999/5	1 Year
☐ -	Pre-Amplifier	WJ-6682-834	Watkins Johnson	0052	1999/5	1 Year
☐ -	Pre-Amplifier	WJ-6870-506	Watkins Johnson	0018	1999/5	1 Year

1.4 EUT Modification

- ☒ - No modifications were conducted by JQA to achieve compliance to Class B Limits.
- ☐ - To achieve compliance to Limits, the following change(s) were made by JQA during the compliance test.

The modification will be implemented in all production models of this equipment.

Applicant : N/A

Date :

Type Name :

Position :

Responsible Party

Responsible Party of Test Item(Product)

Responsible Party :

Address :

Telephone :

Contact Person :

()

Signatory

1.5 Test Results / Uncertainty

AC Powerline Conducted Emission

● - Applicable ○ - NOT Applicable
● - PASSED ○ - NOT PASSED

The requirements

Minimum limit margin 10.2 dB at 0.45 MHz

Maximum limit excess dB at MHz

Uncertainty of measurement results ± 2.3 dB(2σ)

Remarks: _____

Radiated Emission(Electric field)

● - Applicable ○ - NOT Applicable
● - PASSED ○ - NOT PASSED

The requirements

Minimum limit margin 3.1 dB at 98.3 MHz

Maximum limit excess dB at MHz

Uncertainty of measurement results ± 3.5 dB(2σ)

Remarks: _____

1.6 Summary

General Remarks :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart B (June 23, 1989) under the test configuration as shown in Page 10 to 18.

The conclusion for the test items of which are required by the applied regulation is indicated under the final judgement.

Final Judgement :

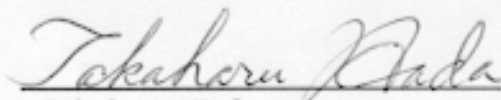
The "as received" sample;

- - fulfill the test requirements of the regulation mentioned on clause 1.2.
- - fulfill the test requirements of the regulation mentioned on clause 1.2., but with certain qualifications.
- - doesn't fulfill the test regulation mentioned on clause 1.2.

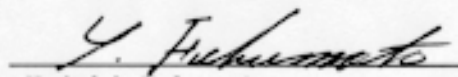
Begin of testing : April 12, 2000

End of testing : April 12, 2000

- JAPAN QUALITY ASSURANCE ORGANIZATION - Approved Signatories :



Takaharu Hada
Director
Tsuru EMC Branch
JQA EMC ENGINEERING DEPT.



Yuichi Fukumoto
Manager
Tsuru EMC Branch
JQA EMC ENGINEERING DEPT.

2. TEST DATA

2.1. AC Powerline Conducted Emission Measurement (0.45 MHz - 30 MHz)

Date : April 12, 2000
 Temp. : 18°C Humi.: 33%

Frequency (MHz)	LISN Factor (dB)	Meter Reading (dBUV)				Limits (dBUV)	Emission Level (dBUV)		Margin (dB)	Comment
		V-A		V-B			(dBUV)			
		Q.P	AVE	Q.P	AVE	Q.P	Q.P	AVE	Q.P	
0.45	0.1	36.5	-	37.7	-	48.0	37.8	-	10.2	
0.60	0.1	31.0	-	30.4	-	48.0	31.1	-	16.9	
0.80	0.1	24.5	-	24.9	-	48.0	25.0	-	23.0	
1.00	0.1	17.8	-	17.3	-	48.0	17.9	-	30.1	
1.20	0.1	12.3	-	12.4	-	48.0	12.5	-	35.5	
1.50	0.1	< 10.0	-	< 10.0	-	48.0	< 10.1	-	> 37.9	
1.92	0.1	< 10.0	-	< 10.0	-	48.0	< 10.1	-	> 37.9	
2.16	0.1	< 10.0	-	12.6	-	48.0	12.7	-	35.3	
3.00	0.1	15.0	-	20.6	-	48.0	20.7	-	27.3	
4.02	0.1	22.3	-	29.4	-	48.0	29.5	-	18.5	
5.04	0.1	29.9	-	35.2	-	48.0	35.3	-	12.7	
7.62	0.1	36.8	-	37.6	-	48.0	37.7	-	10.3	
9.12	0.1	25.1	-	28.6	-	48.0	28.7	-	19.3	
10.91	0.2	25.4	-	29.3	-	48.0	29.5	-	18.5	
12.12	0.2	27.3	-	31.8	-	48.0	32.0	-	16.0	
14.15	0.3	< 10.0	-	11.1	-	48.0	11.4	-	36.6	
17.00	0.3	< 10.0	-	< 10.0	-	48.0	< 10.3	-	> 37.7	
20.00	0.4	< 10.0	-	< 10.0	-	48.0	< 10.4	-	> 37.6	
23.00	0.5	< 10.0	-	< 10.0	-	48.0	< 10.5	-	> 37.5	
26.00	0.5	< 10.0	-	< 10.0	-	48.0	< 10.5	-	> 37.5	

- Notes:
- 1) Test Location : Shielded Room
 - 2) Test spectrum was checked from 0.45 MHz to 30 MHz
 - 3) LISN(Line Impedances Stabilization Network) factor include the cable loss for 5 meter.
 - 4) The symbol of "<" means "or less".
 - 5) The symbol of ">" means "more than".
 - 6) The symbol of "-" means "Not applicable".
 - 7) V-A : One end & Ground V-B : The other end & Ground
 - 8) Q.P : Quasi-Peak Detector AVE : Average Detector
 - 9) A sample calculation was made at 0.45 MHz

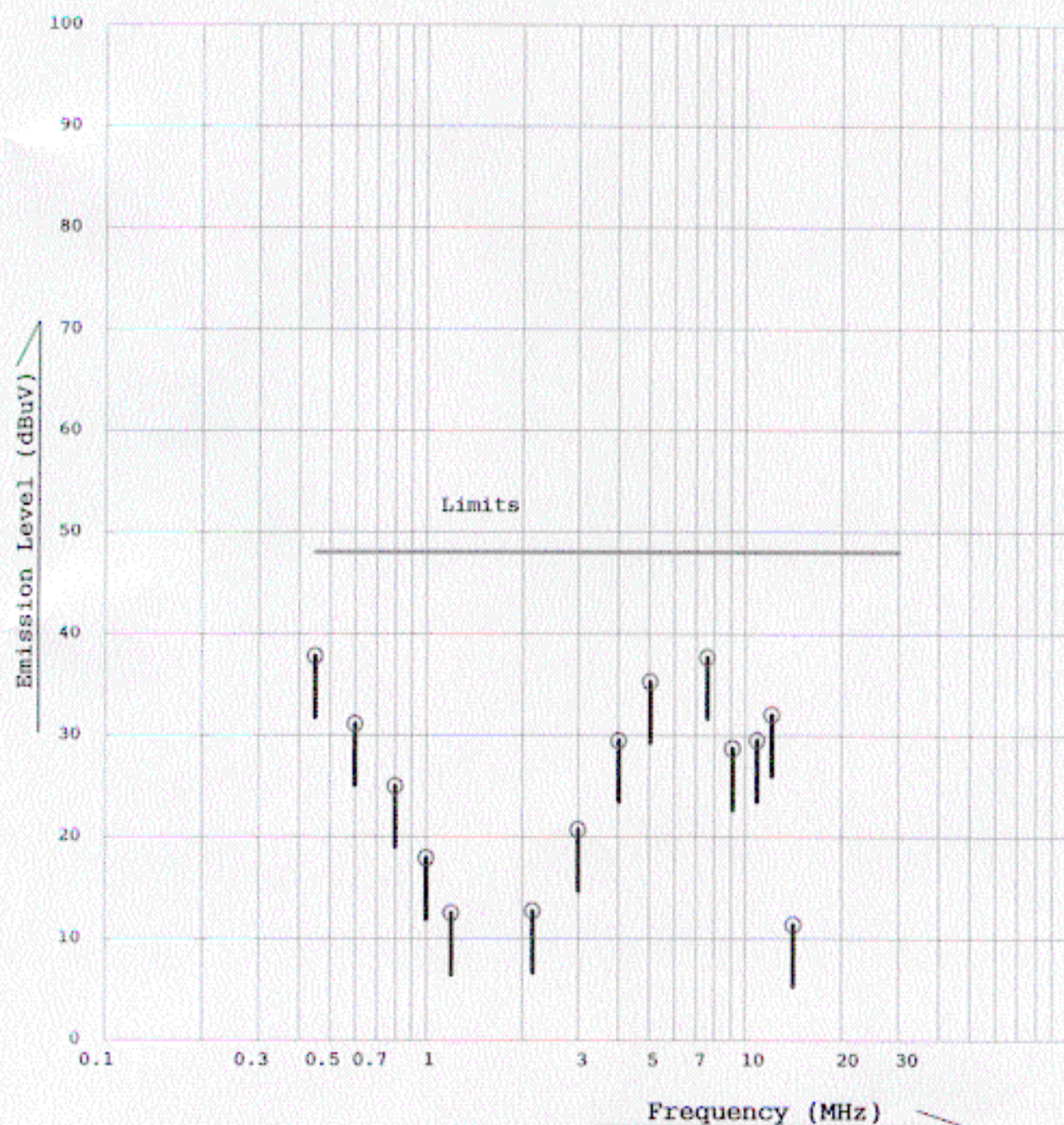
$$Amn + Mr = 0.1 + 37.7 = 37.8 \text{ dBuV}$$
 Amn : AMN Factor Mr : Meter Reading
 - 10) Setting of measuring instrument :
 Detector Function : CIS PR Quasi-Peak / Average
 IF Bandwidth : 9 kHz / 10 kHz (0.15 MHz - 30 MHz)
 - 11) The following disturbance voltage was defined in accordance with ANSI C63.4-1992 clause 11.5.2

Tested by :

Y. Fukumoto
 Yuichi Fukumoto

AC Powerline Conducted Emission Measurement (0.45 MHz - 30 MHz)

Classifications	: B	○ Q.P Mode
		× AVE Mode



2.2. Radiated Emissions Measurement (30 MHz - 1000 MHz)

Date: April 12, 2000
 Temp.: 19°C Humi.: 30%

Frequency (MHz)	Antenna Factor (dB/m)	Meter Reading (dBuV)		Limits (dBuV/m)	Emission Level (dBuV/m)		Margin (dB)		Comment
		Horiz.	Ver.		Horiz.	Ver.	Horiz.	Ver.	
33.0	17.5	8.0	13.1	40.0	25.5	30.6	14.5	9.4	
43.0	13.9	2.6	4.8	40.0	16.5	18.7	23.5	21.3	
49.2	11.9	11.6	19.6	40.0	23.5	31.5	16.5	8.5	
64.6	7.6	17.0	18.5	40.0	24.6	26.1	15.4	13.9	
73.7	6.3	19.2	25.2	40.0	25.5	31.5	14.5	8.5	
87.7	8.6	8.9	10.7	40.0	17.5	19.3	22.5	20.7	
98.3	10.3	28.3	30.1	43.5	38.6	40.4	4.9	3.1	
124.3	13.7	5.0	9.3	43.5	18.7	23.0	24.8	20.5	
147.5	15.9	20.8	20.1	43.5	36.7	36.0	6.8	7.5	
169.4	17.4	4.9	3.6	43.5	22.3	21.0	21.2	22.5	
191.9	18.7	4.0	3.0	43.5	22.7	21.7	20.8	21.8	
214.5	19.9	8.6	3.0	43.5	28.5	22.9	15.0	20.6	
245.8	19.9	12.8	13.7	46.0	32.7	33.6	13.3	12.4	
294.9	21.0	8.9	8.5	46.0	29.9	29.5	16.1	16.5	
319.4	17.9	8.4	6.0	46.0	26.3	23.9	19.7	22.1	
344.1	18.7	21.0	17.4	46.0	39.7	36.1	6.3	9.9	
393.2	19.7	11.5	11.0	46.0	31.2	30.7	14.8	15.3	
466.9	20.9	9.0	10.1	46.0	29.9	31.0	16.1	15.0	
540.7	21.9	5.8	7.4	46.0	27.7	29.3	18.3	16.7	
638.9	23.5	6.0	9.2	46.0	29.5	32.7	16.5	13.3	
737.3	25.0	4.6	9.5	46.0	29.6	34.5	16.4	11.5	
850.0	26.7	< -2.0	< -2.0	46.0	< 24.7	< 24.7	> 21.3	> 21.3	
1000.0	28.9	< -2.0	< -2.0	54.0	< 26.9	< 26.9	> 27.1	> 27.1	

- Notes:
- 1) Test Location: Anechoic Chamber
 - 2) Test Distance: 3 m
 - 3) Test spectrum was checked from 30 MHz to 1000 MHz.
 - 4) Antenna factor includes the cable loss for 33 meter.
 - 5) The symbol of "<" means "or less".
 - 6) The symbol of ">" means "more than".
 - 7) A sample calculation was made at 33.0 MHz
 $Af + Mr = 17.5 + 13.1 = 30.6 \text{ dBuV/m}$
 Af: Antenna Factor Mr: Meter Reading
 - 8) Setting of measuring instrument:
 Detector Function: CISPR Quasi-Peak
 IF Bandwidth: 120 kHz

Tested by:

Yuichi Fukumoto
 Yuichi Fukumoto

Radiated Emissions Measurement (30 MHz - 1000 MHz)

Measuring Distance : 3 m

○ Horizontal

Classifications : B

× Vertical

