SECTION 9. EVALUATION OF TEST RESULTS

9.1 Conducted Emission Test

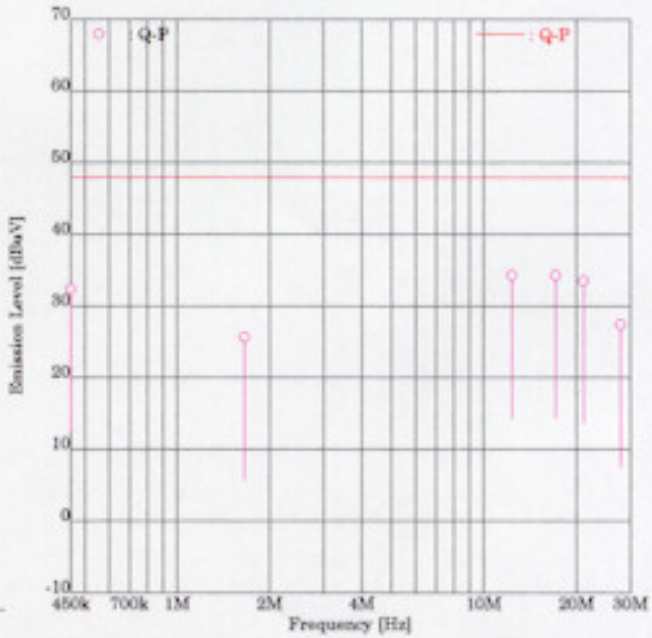
Read / Write mode

Akzo Kashima Limited

Kakegawa No.1 Test Site (Shield Room)

INTERFERENCE CONDUCTION TEST

APPLICANT	: FUJI PHOTO FILM CO.,LTD.
EUT NAME	: SmartMedia Reader/Writer
MODEL NO.	: SM-R2
SERIAL NO.	: 99090001
TEST MODE	: Read/Write mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Oct 13 1999
FILE NO.	: AKL-299090
REGULATION	: FCC Part15B CLASS B
TEST METHOD	: ANSI 63.4:1992



ENGINEER : Sachiya Horiuchi

No	FREQUENCY [MHz]	READING [dBuV] Line1	READING [dBuV] Line2	FACTOR [dB] Line1	FACTOR [dB] Line2	EMISSION [dBuV] Line1	EMISSION [dBuV] Line2	LIMIT [dBuV]	MARGIN [dB] Line1	MARGIN [dB] Line2
1	0.4500	25.2	25.5	6.9	6.9	32.1	32.4	48.0	15.9	15.6
2	1.6586	18.9	18.8	6.8	6.8	25.7	25.6	48.0	22.3	22.4
3	12.3700	26.9	26.7	7.4	7.4	34.3	34.1	48.0	13.7	13.9
4	17.1780	26.2	26.6	7.7	7.7	33.9	34.3	48.0	14.1	13.7
5	21.1802	25.5	25.6	8.0	8.0	33.5	33.6	48.0	14.5	14.4
6	27.9750	19.1	19.2	8.3	8.3	27.4	27.5	48.0	20.6	20.5

Higher six points are underlined.
Other frequencies : Below the FCC Part15B CLASS B limit
Emisson Level = Read + Factor(LISN,Pad,Cable)

9.2 Radiated Emission Test

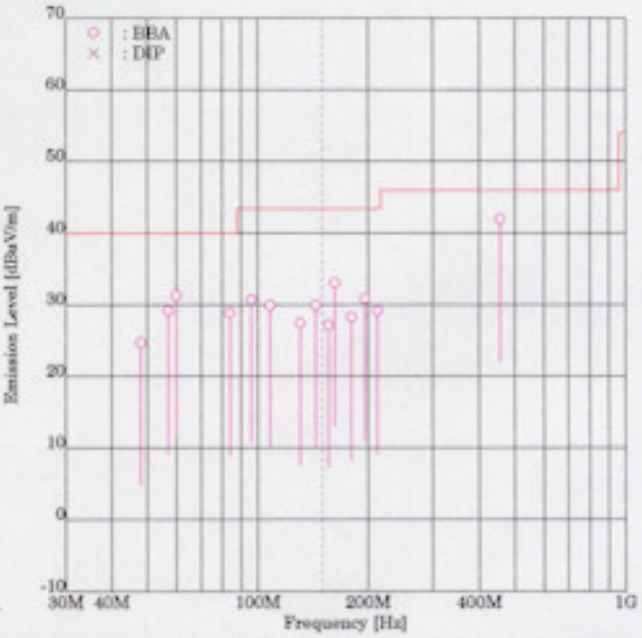
Read / Write mode

Akzo Kashima Limited

Kakegawa No.1 Test Site (Open Site)

INTERFERENCE RADIATION TEST

APPLICANT	: FUJI PHOTO FILM CO.,LTD.
EUT NAME	: SmartMedia Reader/Writer
MODEL NO.	: SM-R2
SERIAL NO.	: 99090001
TEST MODE	: Read/Write mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Oct 13 1999
FILE NO.	: AKL-299090
REGULATION	: FCC Part15B CLASS B
TEST METHOD	: ANSI 63.4:1992
DISTANCE	: 3.0 [m]
TEMPERATURE	: 24.0 [degC]
HUMIDITY	: 37.0 [%]



ENGINEER : Sachiya Horiuchi

No	FREQUENCY [MHz]	ANT.	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB] Hori	FACTOR [dB] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	48.00	BBA	-	30.3	-5.5	-5.5	-	24.8	40.0	-	15.2
2	57.03	BBA	-	37.2	-8.0	-8.0	-	29.2	40.0	-	10.8
3	60.00	BBA	-	40.3	-9.0	-9.0	-	31.3	40.0	-	8.7
4	84.00	BBA	-	40.7	-11.8	-11.8	-	28.9	40.0	-	11.1
5	96.01	BBA	-	40.2	-9.5	-9.5	-	30.7	43.5	-	12.8
6	108.01	BBA	-	38.0	-8.1	-8.1	-	29.9	43.5	-	13.6
7	130.44	BBA	-	36.3	-8.8	-8.8	-	27.5	43.5	-	16.0
8	144.01	BBA	-	39.9	-9.9	-9.9	-	30.0	43.5	-	13.5
9	156.01	BBA	-	37.4	-10.2	-10.2	-	27.2	43.5	-	16.3
10	162.05	BBA	-	42.1	-9.0	-9.0	-	33.1	43.5	-	10.4
11	180.01	BBA	-	36.9	-8.6	-8.6	-	28.3	43.5	-	15.2
12	195.66	BBA	38.4	39.1	-8.2	-8.2	30.2	30.9	43.5	13.3	12.6
13	211.82	BBA	36.4	36.3	-7.2	-7.2	29.2	29.1	43.5	14.3	14.4
14	456.55	BBA	37.0	42.4	-0.4	-0.4	36.6	42.0	46.0	9.4	4.0

Higher six points are underlined.
Other frequencies : Below the FCC Part15B CLASS B limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

9.3 Sample Calculations

9.3.1 Conducted Emission

Example @ 12.3700 MHz

Emission Level	=	Meter Reading	26.9 dBuV
		+ Factor	+ 7.4 dB
			= 34.3 dBuV
Margin	=	Limit	48.0 dBuV
		- Emission Level	- 34.3 dBuV
			= 13.7 dB

Factor = LISN Factor + Cable Loss + Pad Loss

9.3.2 Radiated Emission

Example @ 456.55 MHz

Emission Level	=	Meter Reading	42.4 dBuV
		+ Factor	+ -0.4 dB
			= 42.0 dBuV/m
Margin	=	Limit	46.0 dBuV/m
		- Emission Level	- 42.0 dBuV/m
			= 4.0 dB

Factor = Antenna Factor + Cable Loss - Amplifier Gain + Pad Loss
– Distance Conversion Factor

SECTION 10. PHOTOGRAPHS OF MAXIMUM EMISSION SET-UP

10.1 Conducted Emission Test

Read/Write mode

Test setup in accordance with ANSI C63.4-1992

Front view

Rear view

10.2 Radiated Emission Test

Read/Write mode

Test setup in accordance with ANSI C63.4-1992

Front view

Rear view

Note : Maintaining 10cm spacing between all the equipment cabinets.

SECTION 11. INSTRUMENTS USED FOR FINAL TEST

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Amplifier	8447D	2727A05056	HEWLETT PACKARD	Oct.01, 99	1 Year
Step Attenuator	8494B	2726A13827	HEWLETT PACKARD	Oct.01, 99	1 Year
Test receiver	ESS	842886/010	ROHDE & SCHWARZ	May.10, 99	1 Year
Broad Band antenna	LPB-2513/A	1038	A.R.A.	Jul.13, 99	1 Year
LISN	ESH2-Z5	879675/046	ROHDE & SCHWARZ	Mar.19, 99	1 Year
6dB Attenuator	090-0106A	001	Lynics	Aug.05, 99	1 Year
6dB Attenuator	MP721B	M57021	ANRITSU	Feb.23, 99	1 Year
RF Switch	MP59B	M40050	ANRITSU	Apr.22, 99	1 Year
RF Switch	MP59B	M39650	ANRITSU	Oct.01, 99	1 Year
RF Switch	ACX-150-1	None	AKZO	Oct.01, 99	1 Year
Fuse	MP612A	None	ANRITSU	Oct.01, 99	1 Year
Coaxial cable	RG-5A/U (8.0m)	C1	AKZO	Oct.01, 99	1 Year
Coaxial cable	RG-5A/U (10.0 m)	C2	AKZO	Oct.01, 99	1 Year
Coaxial cable	RG-5A/U (1.0 m)	C3	AKZO	Oct.01, 99	1 Year
Coaxial cable	RG-5A/U (1.6 m)	C4	AKZO	Oct.01, 99	1 Year
Coaxial cable	RG-5A/U (15.0 m)	R1	AKZO	Apr.22, 99	1 Year
Coaxial cable	RG-177/U (8.0 m)	R2	AKZO	Apr.22, 99	1 Year
Coaxial cable	RG-5A/U (1.0 m)	R3	AKZO	Apr.22, 99	1 Year
Coaxial cable	RG-5A/U (0.8 m)	R4	AKZO	Apr.22, 99	1 Year
Coaxial cable	RG-5A/U (0.2 m)	R5	AKZO	Oct.01, 99	1 Year
Coaxial cable	RG-5A/U (1.4 m)	R6	AKZO	Apr.22, 99	1 Year
Coaxial cable	RG-5A/U (1.6 m)	R7	AKZO	Apr.22, 99	1 Year
Site Attenuation				May.21, 99	1 Year

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of EMC division.

SECTION 12. UNCERTAINTY OF MEASUREMENT

Uncertainty of measurement

The uncertainty of the measurements performed for this report lies:

Radiated emission at 3m
30 MHz – 1000 MHz ..... +/– 3.6 dB
Conducted emission
9 kHz – 30 MHz ..... +/– 1.8 dB

These figures indicate the uncertainty of the measurements when the same staff performs the test with the same testing equipment and facility.
The uncertainty of the measurements when a different staff with different equipment and facility are under study.

Please note that these uncertainty are not reflected to the compliance judgement of the test results in this report.

SECTION 13. VALIDITY OF TEST REPORT

13.1 The test result of this report is effective for equipment under test itself and under the test configuration described on the report.

13.2 This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.

13.3 Copying of this report without permission is prohibited.

SECTION 14. DESCRIPTION OF TEST LABORATORY

14.1 Outline of Akzo Kashima Limited, EMC Division

Akzo Kashima Ltd. was established in 1975 for manufacturing specialty chemicals. The shares are owned by Akzo Nobel KK (70%), the country organization in Japan for Akzo Novel nv., and TOSOH Corporation (30%), one of the leading petrochemical manufacturers in Japan. Akzo Nobel, headquartered in the Netherlands, is one of the world's leading companies in selected areas of chemicals, coatings, healthcare products and fibers with work force of approximately 70,000 people in over 50 countries.

In 1984, in order to respond to the growing testing demand, in particular, for FCC filing, Akzo Kashima started EMI testing business, installing the first open air test site in Kashima, Ibaraki prefecture. Further the business has been expanded by installing additional testing facilities not only in Kashima but also in other areas such as Shizuoka, Nagano, Kanagawa and Tochigi. As results, Akzo Kashima has now 16 open air test sites and 4 anechoic chambers for EMI/EMC testing. As the largest EMC testing laboratory in number of testing facilities and staffs, EMC Division has been organized separately in the company and independently operated in conformity with the requirements of ISO Guide 25 (EN 45000) for its competency as a testing laboratory.

Akzo Kashima EMC Division is the first foreign private laboratory accredited by NVLAP, National Voluntary Laboratory Accreditation Program-NIST, USA. The division has been certified, authorized and/or filed as a competent testing laboratory by various testing organizations/authorities as described below.

14.2 Filing, certification, authorization and accreditation list

EMI/EMC testing	
FCC	(USA)
NVLAP	(USA)
NEMKO	(Norway)
VCCI	(Japan)
NMi	(The Netherlands)
TÜV PRODUCT SERVICE	(Germany)

Telecommunications terminal testing	
FCC	(USA)
NVLAP	(USA)
NATA	(Australia)
IC	(Canada)

Note : NVLAP accreditation does not constitute any product endorsement by NVLAP or any agent of the U.S. Government.