T E S T R E P O R T

REPORT NUMBER	:	ANKK–102012
APPLICANT	:	MITSUMI ELECTRIC CO., LTD.
MODEL NUMBER	:	Wavit 11 Wireless LAN (DWL-A001)
FCC ID	:	EW4DWLA001
REGULATION	:	FCC Part15B Class B Canada ICES–003 Class B

Conducted Emission Test
Radiated Emission Test

NVLAP accreditation is valid for FCC Part15 (Digital Devices), CISPR22 and AS/NZS 3548.
NVLAP accreditation does not cover ICES–003.

Akzo Nobel K. K.
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Kashima Site

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ABBREVIATIONS

LISN = Line Impedance Stabilization Network

AMN = Artificial Mains Network

ISN = Impedance Stabilization Network

CDN = Coupling Decoupling Network

ANT = Antenna

BBA = Broadband Antenna

DIP = Dipole Antenna

AMP = Amplifier

ATT = Attenuator

EUT = Equipment Under Test

AE = Associated Equipment

Q–P = Quasi–peak

AVG = Average

SECTION 1. TEST CERTIFICATION

APPLICANT INFORMATION

Company	:	MITSUMI ELECTRIC CO., LTD.
Address	:	1601, Sakai Atsugi-shi, Kanagawa-ken, 243-8533 Japan
Telephone number	:	+81 46 230 3420
Fax number	:	+81 46 230 3500

DESCRIPTION OF TEST ITEM

Kind of equipment	:	Wireless LAN
Condition of equipment	:	Prototype
Type	:	Combination type of Table-top and Wall-hanging
Trademark	:	MITSUMI
FCC ID	:	EW4DWLA001
Model number	:	Wavit 11 Wireless LAN (DWL-A001)
Serial number	:	001

TEST PERFORMED

Location	:	Kashima No. 3 Test Site (FCC File No. : 31040/SIT)
EUT received	:	January 17, 2002
Test started	:	January 17, 2002
Test completed	:	January 22, 2002
Purpose of test	:	FCC Docket 87–389 and Canadian Interference Causing Equipment Regulations
Regulation	:	FCC Part15B Class B and Canada ICES–003 Class B Unintentional Radiators
Test setup	:	ANSI C63.4–1992

Report issue date : May 31, 2002

Test engineer : Koji Setoguchi

Report approved by : Junichi Okada

Note

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

b. 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.

c. This test report shall not be reproduced except in full, without issuer's permission.

SECTION 2. CONCLUSION

This test report clearly shows that the EUT is in compliance with the FCC Part 15B Class B and Canada ICES–003 Class B specification.

Traceability to national standards of test result is achieved by means of calibration traceability to national standards.

The minimum margins to the limits are as follows:

Conducted Voltages on Mains Port			
Rx mode (Pole Ant., 1ch. 11Mbps)	16.6 dB	at	3.1492 MHz
Radiated Electric Field			
Rx mode (Pole Ant., 1ch. 11Mbps)	5.3 dB	at	901.82 MHz

Note : See Section 9 for details.

SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following equipment.
Indication in the following left side column corresponds to Section 6.

Symbol	Item	Model No.	Serial	FCC ID / DoC	Manufacturer	Remarks
A)	Wireless LAN	Wavit 11 Wireless LAN (DWL-A001)	001	EW4DWLA001	MITSUMI ELECTRIC CO., LTD.	
B)	AC Adaptor	R2087	None	N.A.	MITSUMI ELECTRIC CO., LTD.	

Power ratings of EUT : [Wireless LAN] DC 5V, 0.6 A
[AC Adaptor] Input : AC 100-120V, 50-60 Hz, 0.28 A
Output : DC 5V, 1.6 A

DoC : Device for Declaration of Conformity

3.1 Port(s)/Connector(s) :

Port name	Connector type	Connector pin	Remarks
10 BASE-T	RJ-45	8 pin	

3.2 Oscillator(s)/Crystal(s) :

Oscillator	Operating frequency	Board name	Remarks
44 MHz	2132 - 2192 MHz	RF Board	Highest Frequency
	560 MHz	RF Board	
	44 MHz	Main Board	
	22 MHz	Main Board	
20 MHz	20 MHz	Main Board	

SECTION 4. SUPPORT EQUIPMENT USED

The EUT was supported by the following equipment during the test.
Indication in the following left side column corresponds to Section 6.

Symbol Item	Model No.	Serial No.	FCC ID / DoC	Manufacturer	Remarks
C) Computer	DCM	SNT4Z	97028	DELL	
D) CRT Display	D1726T-HS	2000176	AK8GDM17SE2T	DELL	
E) Keyboard	SK-1000REW	M97082741	GYUR36SK	DELL	
F) Mouse	90741	02193504	C3KKMP3	Microsoft	
G) Printer	P12PB	0E11397879	BKM9A8P12PB	EPSON	
H) Modem	C202A	010058	BKM552C202A	EPSON	
I) AC Adaptor	HOOCAA	019516	N.A.	EPSON	

DoC : Device was tested and authorized under a Declaration of Conformity to the applicable FCC rules.

SECTION 5. CABLE (S) USED

The following cable(s) was used for the test.
Indication number in the following left side column corresponds to Section 6.

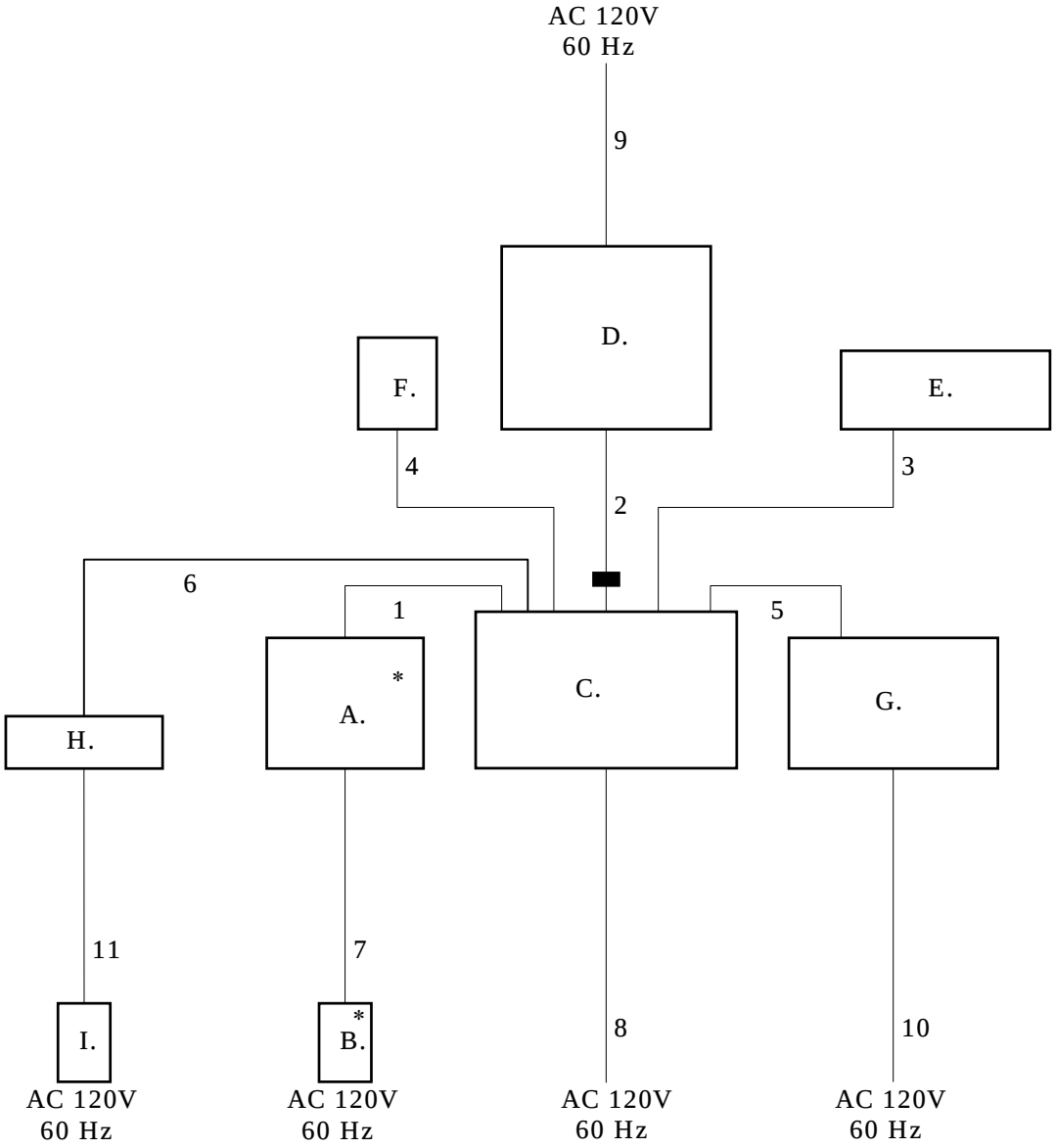
Number	Name	Length	Shield	Connector	Core
1)	LAN cable	1.00 m	None	Plastic	
2)	Video cable	1.70 m	Yes	Metal	Fixed × 1
3)	Keyboard cable	1.90 m	Yes	Metal	
4)	Mouse cable	1.90 m	Yes	Metal	
5)	Centronics cable	2.40 m	Yes	Metal	
6)	RS-232C cable	3.00 m	Yes	Metal	
7)	Power cable for Wireless LAN	1.90 m	None		
8)	Power cable for Computer	1.90 m	None		
9)	Power cable for CRT Display	1.90 m	None		
10)	Power cable for Printer	1.90 m	None		
11)	Power cable for Modem	2.10 m	None		

SECTION 6. CONSTRUCTION OF EQUIPMENT

The construction of EUT during the test was as follows.

System configuration

* : EUT
■ : Ferrite core



Symbols or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 3 to 5.

SECTION 7. OPERATING CONDITIONS

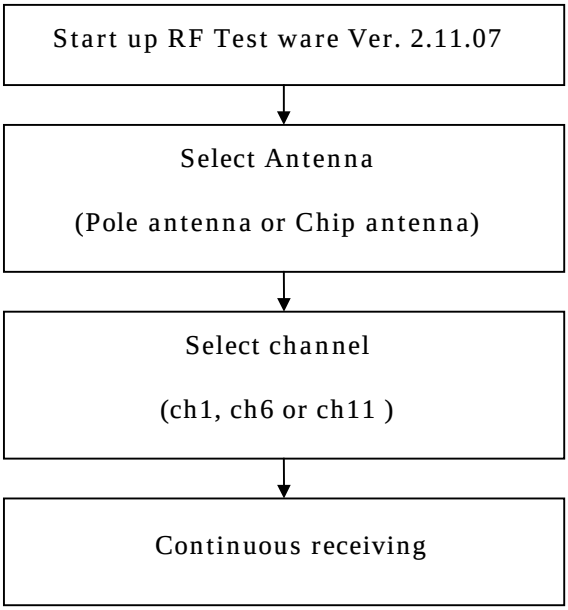
The EUT was operated under the following conditions during the test.

7.1 Operating condition

The test was carried out under Rx mode.
EUT was examined in the operating conditions that had maximum disturbances.

7.2 Operating flow [Rx mode]

Following operations were performed continuously.

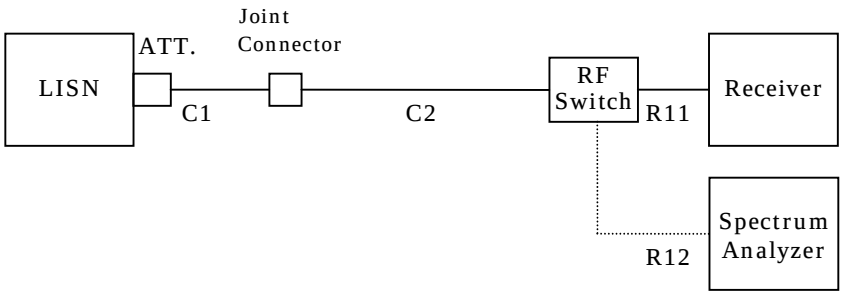


SECTION 8. TEST PROCEDURE(S)

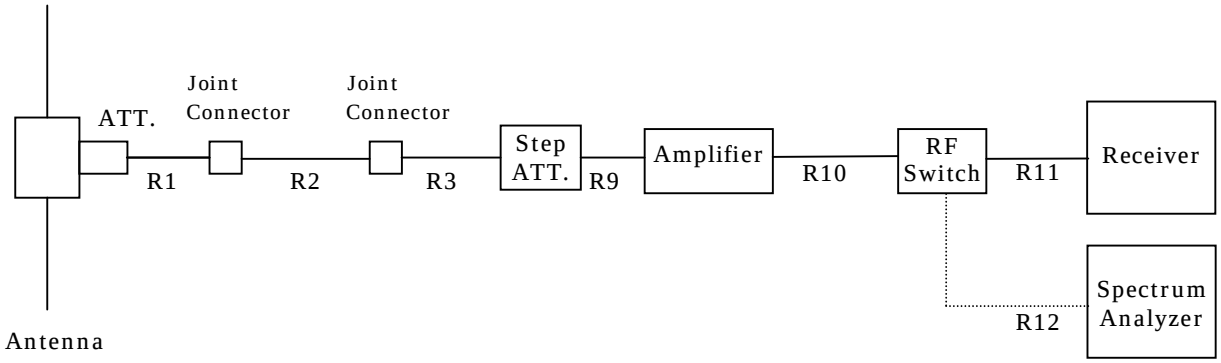
Test was carried out under the following conditions.
Test was carried out with no deviations from standards and test methods.

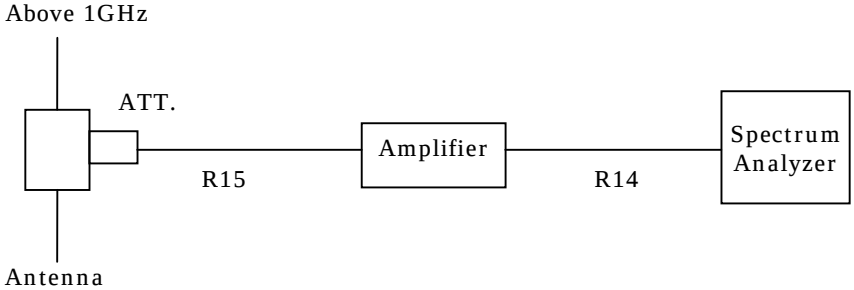
Subject	Test procedure	Scanned frequency
Conducted Voltages on Mains Port	Akzo Nobel Document number : 03–10–004	0.45 – 30 MHz
Radiated Electric Field	Akzo Nobel Document number : 03–10–003	30 – 12500 MHz

Schema for the conducted voltages on mains port measurement



Schema for the radiated electric field measurement





Summary ;

8.1 Conducted Voltages on Mains Port

8.1.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Section 10.

8.1.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 0.8meter above the metal ground plane.

8.1.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

8.1.1.3 AC Power Cable

AC power cable for EUT is connected to one LISN which is placed on the ground plane. The LISN is placed in 80 cm from the nearest part of EUT chassis.
The excess power cable is bundled in the center, or shortened to appropriate length.
AC cables except from the EUT are connected second LISN.

8.1.2 Measuring Instruments

Measuring instruments list and their calibration schedule are shown on Section 11.
The brief description are as follows;

8.1.2.1 Spectrum Analyzer

The Spectrum analyzer is used for preliminary measurement.

8.1.2.2 EMI Test Receiver

The Quasi–peak detector (IF bandwidth : 10 kHz) and average detector (IF bandwidth : 10 kHz) built in test receiver is used for final measurement.
The test receiver is complied with the specification of the CISPR publication 16.

8.1.2.3 LISN

Two 50μH//50Ω LISN are used. The chassis of the LISN is bonded to the ground plane by the copper blade.
One LISN is connected to the EUT. Other LISN (2nd LISN) is connected to the support equipment. The signal output of the 2nd LISN is terminated with a 50Ω termination.

8.1.3 Test Procedure

8.1.3.1 Preliminary Measurement

EUT is tested on all operating conditions.
The spectrum analyzer is controlled by the computer program to sweep the frequency range to be measured, then spectrum chart are plotted out to find the worst emission conditions in operating mode and/or configuration decision for the final test.
All leads other than safety ground are tested.

8.1.3.2 Final Measurement

The EUT is operated in the worst emission condition found by the preliminary test. The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.
At least six highest spectrum are measured in quasi–peak using the test receiver. When the value in the quasi–peak mode is higher than the limit in the standard, the measurement in the average mode is done to compare to the value in the quasi–peak mode. If the value in the quasi–peak mode exceeds the value in the average mode by more than 6 dB, the value reducing 13 dB from the value in the quasi–peak mode is used to compare to the limit.

8.2 Radiated Electric Field

8.2.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Section 10.

8.2.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 0.8meter above the metal ground plane (turntable).

8.2.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

8.2.2 Measuring Instruments

Measuring instruments list and calibration schedule are shown on Section 11.
The brief description are as follows;

8.2.2.1 Antennas

The broadband Tri–Log antenna is used for measurement on the frequency range 30 – 1000 MHz.
The Double ridged guide antenna is used for frequency higher than 1000 MHz.
If uncertain result was obtained, the broadband antenna is replaced by the half wave length dipole, then measurement is carried out over again.

8.2.2.2 Pre–amplifier

The broadband pre–amplifier is used for Radiated Electric Field measurement.
The signal to noise ratio is improved by using pre–amplifier.

8.2.2.3 Spectrum Analyzer

The spectrum analyzer is used for preliminary measurement of frequency range 30 – 1000 MHz, and also used for final measurement of higher than 1000 MHz (Resolution bandwidth : 1 MHz).

8.2.2.4 EMI Test Receiver

The Quasi–peak detector (IF bandwidth : 120 kHz) built in test receiver is used for final measurement of the frequency 30 – 1000 MHz.
The test receiver is complied with the specification of the CISPR publication 16.

8.2.2.5 Turntable

The turntable is capable for EUT weight and rotatable 0 to 360 degree horizontally by remote control in the test room.

8.2.2.6 Antenna Mast

The antenna mast is attachable to all antennas described on clause 8.2.2.1 and antenna height is adjustable 1 to 4 meters continuously by remote control at the test room, and antenna polarization is also changed by the remote control.

8.2.3 Test Procedure

8.2.3.1 Preliminary Measurement

EUT is tested on all operating conditions.
The spectrum analyzer is set max–hold mode and swept during turntable was rotated 0 to 360 degree. Then spectrum chart are plotted out to find the worst emission conditions in configuration, operating mode, or ambient noise notation.

8.2.3.2 Final Measurement

The EUT operated in the worst emission condition found by the preliminary test. The turntable azimuth (EUT direction) and antenna height are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured. The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.
When the uncertain result was obtained, the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

SECTION 9. EVALUATION OF TEST RESULTS

9.1 Conducted Voltages on Mains Port

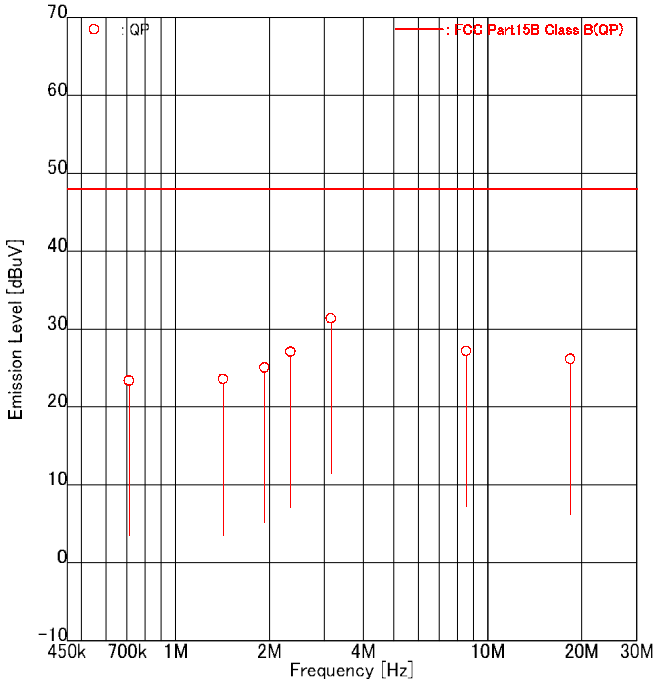
9.1.1 Rx mode (Pole Ant. ch1 11Mbps)

Akzo Kashima Limited

Kashima No.3 Test Site

Conducted Voltages on Mains Port

APPLICANT : MITSUMI ELECTRIC CO., LTD.
EUT NAME : Wireless LAN
MODEL NO. : Wavit 11 (DWL-A001)
SERIAL NO. : 001
TEST MODE : 1ch. 11Mbps. Rx. Pole Ant.
POWER SOURCE : AC120V/60Hz
DATE TESTED : Jan 17 2002
FILE NO. : ANKK-102012
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-1992
TEMPERATURE : 17.0 [degC]
HUMIDITY : 38.0 [%]



ENGINEER : Koji Setoguchi

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	0.7110	14.8	16.8	6.7	6.6	21.5	23.4	48.0	26.5	24.6
2	1.4224	14.7	16.8	6.7	6.8	21.4	23.6	48.0	26.6	24.4
3	1.9293	16.1	18.3	6.7	6.8	22.8	25.1	48.0	25.2	22.9
4	2.3360	17.0	20.2	6.9	6.9	23.9	27.1	48.0	24.1	20.9
5	3.1492	23.3	24.5	6.9	6.9	30.2	31.4	48.0	17.8	**16.6**
6	8.5315	20.2	19.2	7.0	7.0	27.2	26.2	48.0	20.8	21.8
7	18.3862	17.9	18.8	7.2	7.4	25.1	26.2	48.0	22.9	21.8

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

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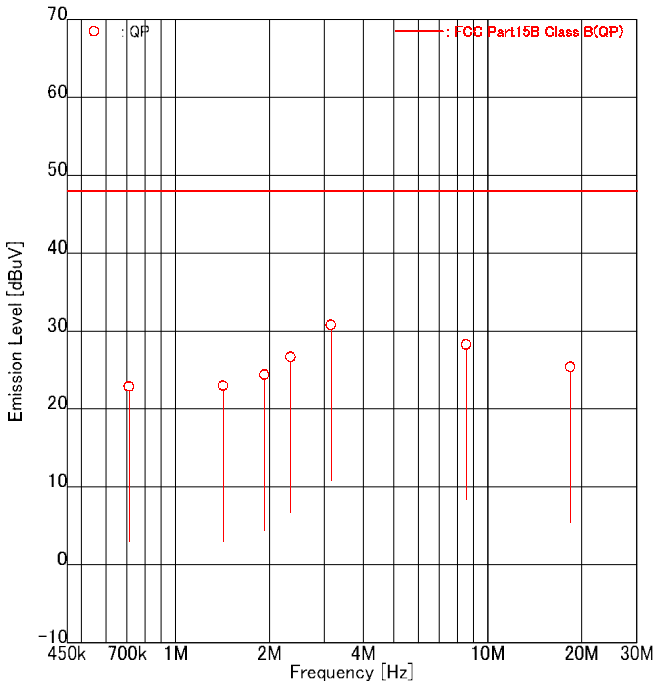
9.1.2 Rx mode (Chip Ant. ch1 11Mbps)

Akzo Kashima Limited

Kashima No.3 Test Site

Conducted Voltages on Mains Port

APPLICANT : MITSUMI ELECTRIC CO., LTD.
EUT NAME : Wireless LAN
MODEL NO. : Wavit 11 (DWL-A001)
SERIAL NO. : 001
TEST MODE : 1ch. 11Mbps. Rx. Chip Ant.
POWER SOURCE : AC120V/60Hz
DATE TESTED : Jan 17 2002
FILE NO. : ANKK-102012
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-1992
TEMPERATURE : 17.0 [degC]
HUMIDITY : 38.0 [%]



ENGINEER : Koji Setoguchi

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	0.7110	14.7	16.3	6.7	6.6	21.4	22.9	48.0	26.6	25.1
2	1.4224	14.4	16.2	6.7	6.8	21.1	23.0	48.0	26.9	25.0
3	1.9293	16.3	17.6	6.7	6.8	23.0	24.4	48.0	25.0	23.6
4	2.3360	17.6	19.8	6.9	6.9	24.5	26.7	48.0	23.5	21.3
5	3.1492	23.0	23.9	6.9	6.9	29.9	30.8	48.0	18.1	**17.2**
6	8.5315	21.3	19.1	7.0	7.0	28.3	26.1	48.0	19.7	21.9
7	18.3862	18.0	18.0	7.2	7.4	25.2	25.4	48.0	22.8	22.6

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

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9.2 Radiated Electric Field

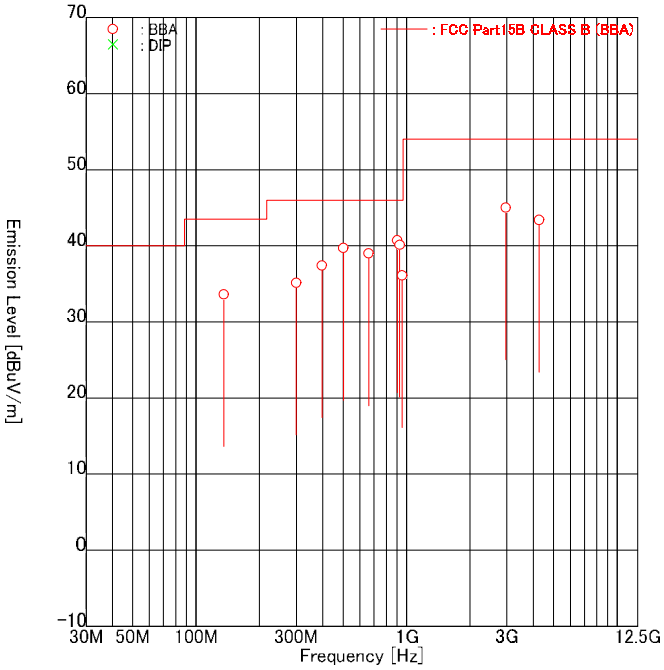
9.2.1 Rx mode (Pole Ant. ch1 11Mbps)

Akzo Nobel K. K.

Kashima

Radiated Electric Field

APPLICANT : MITSUMI ELECTRIC CO., LTD.
EUT NAME : Wireless LAN
MODEL NO. : Wavit 11 Wireless LAN (DWL-A001)
SERIAL NO. : 001
TEST MODE : 1ch. 11Mbps. Rx. Pole Ant.
POWER SOURCE : AC120V/60Hz
DATE TESTED : Jan 22 2002
FILE NO. : ANKK-102012
REGULATION : FCC Part15B CLASS B
TEST METHOD : ANSI C63.4:1992
DISTANCE : 3.0 [m]
TEMPERATURE : 18.0 [degC]
HUMIDITY : 40.0 [%]



ENGINEER : Koji Setoguchi

No	FREQUENCY [MHz]	ANT.	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	135.48	BBA	-	41.0	-7.4	-7.4	-	33.6	43.5	-	9.9
2	299.32	BBA	40.0	-	-4.9	-4.9	35.1	-	46.0	10.9	-
3	396.00	BBA	39.7	-	-2.3	-2.3	37.4	-	46.0	8.6	-
4	500.93	BBA	-	39.3	0.4	0.4	-	39.7	46.0	-	6.3
5	660.00	BBA	34.6	32.2	4.4	4.4	39.0	36.6	46.0	7.0	9.4
6	901.82	BBA	-	32.0	8.7	8.7	-	40.7	46.0	-	5.3
7	926.72	BBA	-	31.0	9.1	9.1	-	40.1	46.0	-	5.9
8	951.93	BBA	-	26.4	9.7	9.7	-	36.1	46.0	-	9.9
9	2958.47	BBA	-	36.6	8.4	8.4	-	45.0	54.0	-	9.0
10	4263.90	BBA	-	30.9	12.5	12.5	-	43.4	54.0	-	10.6

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)

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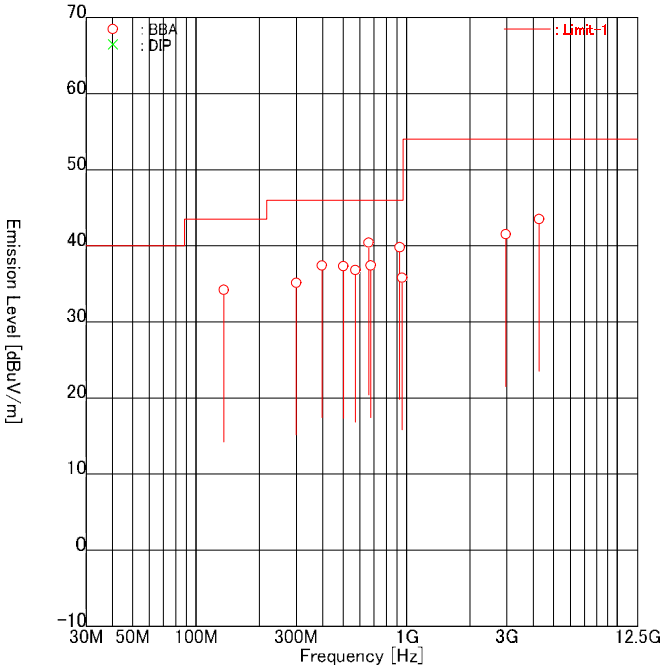
9.2.2 Rx mode (Chip Ant. ch1 11Mbps)

Akzo Nobel K. K.

Kashima

Radiated Electric Field

APPLICANT : MITSUMI ELECTRIC CO., LTD.
EUT NAME : Wireless LAN
MODEL NO. : Wavit 11 Wireless LAN (DWL-A001)
SERIAL NO. : 001
TEST MODE : 1ch. 11Mbps. Rx. Chip Ant.
POWER SOURCE : AC120V/60Hz
DATE TESTED : Jan 22 2002
FILE NO. : ANKK-102012
REGULATION : FCC Part15B CLASS B
TEST METHOD : ANSI C63.4:1992
DISTANCE : 3.0 [m]
TEMPERATURE : 18.0 [degC]
HUMIDITY : 40.0 [%]



ENGINEER : Koji Setoguchi

No	FREQUENCY [MHz]	ANT.	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	135.48	BBA	-	41.6	-7.4	-7.4	-	34.2	43.5	-	9.3
2	299.32	BBA	40.0	-	-4.9	-4.9	35.1	-	46.0	10.9	-
3	396.00	BBA	39.7	-	-2.3	-2.3	37.4	-	46.0	8.6	-
4	500.98	BBA	-	36.9	0.4	0.4	-	37.3	46.0	-	8.7
5	572.00	BBA	34.1	32.6	2.7	2.7	36.8	35.3	46.0	9.2	10.7
6	660.00	BBA	36.0	34.6	4.4	4.4	40.4	39.0	46.0	5.6	7.0
7	676.33	BBA	29.2	32.9	4.5	4.5	33.7	37.4	46.0	12.3	8.6
8	926.80	BBA	26.3	30.7	9.1	9.1	35.4	39.8	46.0	10.6	6.2
9	951.85	BBA	25.0	26.1	9.7	9.7	34.7	35.8	46.0	11.3	10.2
10	2958.55	BBA	-	33.1	8.4	8.4	-	41.5	54.0	-	12.5
11	4263.91	BBA	-	31.0	12.5	12.5	-	43.5	54.0	-	10.5

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)

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9.3 Sample Calculations

9.3.1 Conducted Voltages on Mains Port

Example @ 3.1492 MHz

Emission Level	=	Meter Reading		24.5	dBuV
	+	Factor	+	6.9	dB
			=	31.4	dBuV
Margin	=	Limit		48.0	dBuV
	–	Emission Level	–	31.4	dBuV
			=	16.6	dB

Factor = LISN Factor + Cable Loss + Pad Loss

9.3.2 Radiated Electric Field

Example @ 901.82 MHz

Emission Level	=	Meter Reading		32.0	dBuV
	+	Factor	–	8.7	dB/m
			=	40.7	dBuV/m
Margin	=	Limit		46.0	dBuV/m
	–	Emission Level	–	40.7	dBuV/m
			=	5.3	dB

Factor = Antenna Factor + Cable Loss – Amplifier Gain + Pad Loss

SECTION 10. PHOTOGRAPHS OF MAXIMUM EMISSION SET–UP

10.1 Conducted Voltages on Mains Port

Test setup in accordance with ANSI C63.4–1992

Front view

Side view

10.2 Radiated Electric Field

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
LISN (EUT)	ESH2-Z5	882395/022	ROHDE & SCHWARZ	Jul. 6, 01	1 Year
6dB Attenuator	CFA-01	None	TME	Jan. 10, 02	1 Year
LISN (Peripheral)	KNW-407	8-532-11	KYORITSU	Mar. 1, 01	1 Year
50Ω Termination	CT-01	A030CON50	TME	Jun. 1, 01	1 Year
Coaxial cable	RG-5A/U(7.2 m)	C1	AKZO	Jan. 10, 02	1 Year
	RG-5A/U(4.0 m)	C2	AKZO	Jan. 10, 02	1 Year
	RG-5A/U(1.1 m)	R11	AKZO	Jan. 11, 02	1 Year
	RG-5A/U(1.0 m)	R12	AKZO	Jan. 11, 02	1 Year
Broad Band antenna	VULB9168	107	Schwarzbeck	Jul. 31, 01	1 Year
Double Ridged antenna	3115	5044	EMCO	Jul. 16, 01	1 Year
6dB Attenuator	MP721B	M56993	ANRITSU	Jan. 10, 02	1 Year
	6803.17.B	None	SUHNER	Mar. 18, 01	1 Year
Spectrum Analyzer	8564E	3643A00665	HEWLETT PACKARD	Jul. 19, 01	1 Year
	(Firmware Revision A.07.05)				
Step Attenuator	8494B	2406A09036	HEWLETT PACKARD	Jan. 11, 02	1 Year
Amplifier	8447D	2443A03849	HEWLETT PACKARD	Jan. 11, 02	1 Year
	83051A	3332A00329	HEWLETT PACKARD	Aug. 21, 01	1 Year
Coaxial cable	RG-5A/U(12.3 m)	R1	AKZO	Jan. 10, 02	1 Year
	23D 4AF(10.0 m)	R2	AKZO	Jan. 10, 02	1 Year
	RG-5A/U(1.8 m)	R3	AKZO	Jan. 10, 02	1 Year
	RG-5A/U(0.2 m)	R9	AKZO	Jan. 11, 02	1 Year
	RG-5A/U(0.4 m)	R10	AKZO	Jan. 11, 02	1 Year
	RG-5A/U(1.1 m)	R11	AKZO	Jan. 11, 02	1 Year
	RG-5A/U(1.0 m)	R12	AKZO	Jan. 11, 02	1 Year
	SCOFLEX 104(1.5 m)	R14 126777/4	SUHNER	Mar. 2, 01	1 Year
	SCOFLEX 104(6.0 m)	R15 126776/4	SUHNER	Mar. 2, 01	1 Year
Test receiver	ESS	842886/011	ROHDE & SCHWARZ	Mar. 9, 01	1 Year
	(Firmware Version 1.08)				
RF Switch	ACX-150	None	AKZO	Jan. 11, 02	1 Year
Site Attenuation				May 28, 01	1 Year

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

SECTION 12. MEASUREMENT UNCERTAINTY

The uncertainty of the measurements performed for this report lies:

Radiated Electric Field at 3m

30 MHz – 1000 MHz ..... +/– 3.6 dB

Above 1 GHz ..... +/– 3.9 dB

Conducted Voltages on Mains Port

9 kHz – 30 MHz ..... +/– 1.8 dB

Note on Radiated Electric Field measurement uncertainty

The following items are not included in the calculations in spite of their own uncertainty components because it is impracticable to find the value.
It is our problem awaiting solution in future.

(1)Repeatability of measurement
It is not possible to calculate repeatability since the measurement was carried out only one time.

(2)Antenna factor variation
The definition of measured (radiated electric field strength) is not completed on the referred standard(s).

(3)Loss of EUT radiation propagation
It is certainly one of the uncertainty components, however is not able to calculate.

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

SECTION 13. DESCRIPTION OF TEST LABORATORY

13.1 Outline of Akzo Nobel K. K. (formerly Akzo Kashima Limited), EMC Division

Akzo Nobel K. K., the country organization in Japan for Akzo Nobel NV, was established in 1968. The shares are owned by Akzo Nobel NV (100%). Akzo Nobel NV, 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 Nobel K. K. 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 Ibaraki but also in other areas such as Shizuoka, Nagano, Kanagawa and Tochigi. As results, Akzo Nobel K. K. 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/IEC17025 for its competency as a testing laboratory.

Akzo Nobel K. K. 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.

13.2 Filing, certification, authorization and accreditation list

EMI/EMC testing		Telecommunications terminal testing	
FCC	(USA)	FCC	(USA)
NVLAP	(USA)	NVLAP	(USA)
NEMKO	(Norway)	NATA	(Australia)
VCCI	(Japan)	IC	(Canada)
ETL SEMKO Japan	(Sweden)		
TÜV PRODUCT SERVICE	(Germany)		

Note 1 : NVLAP accreditation does not constitute any product endorsement by NVLAP or any agent of the U.S. Government.