

Test report No. : 23JE0006-YK-1 : 1 of 42 Page **Issued** date : June 16, 2003 FCC ID : M4B6180010

EMI TEST REPORT

Test Report No.: 23JE0006-YK-1

Applicant	:	Toyota Industries Corporation
Type of Equipment	:	Wireless LAN Card
Model No.	:	GIGAWAVE 6180010
FCC ID	:	M4B6180010
Test standard	:	FCC Part15 Subpart C, Section 15.247
Test Result	:	Complied

1. This test report shall not be reproduced except in full or partial, without the written approval of UL Apex Co., Ltd.

2. The results in this report apply only to the sample tested.

Date of test:

May 19-23, 2003

Tested by:

namm Toyokazu Imamura

Approved by:

Osamu Watatani Site Manager of Yamakita EMC Lab.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

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1 GENERAL INFORMATION

Company Name	: Toyota Industries Corporation
Brand Name	:-
Address	: Hamamatsucho-Centralbuil-6F, 1-29-6, Hamamatsu-cho, Minato-ku, Tokyo, 105-0013 JAPAN
Telephone Number	: +81 3 5733 5317
Facsimile Number	: +81 3 5401 0575
Contact Person	: Hideki Fujii
Type of Equipment	: Wireless LAN Card
Model No.	: GIGAWAVE 6180010
Serial No.	: 000016
Rating	: DC3.3V
Country of Manufacture	: Japan
Receipt Date of Sample	: May 19, 2003
Condition of E.U.T.	: Production prototype
Regulation(s)	: FCC Part15 Subpart C, Section 15.247
Test Site	: UL Apex Yamakita EMC Lab. No.1 Open Test Site and No.4 Shielded Room

1.1 Tested Methodology

The measurements were performed according to the procedures in ANSI C63.4 (2001). These tests were also referred to FCC 97-114 "Guidance on Measurement for Direct Sequence Spread Spectrum Systems".

1.2 Test Facility

This site has been fully described in a report submitted to FCC office, and accepted on September 20, 2002. (No.1 Open Test Site Registration No.: 95486) NVLAP Lab. code : 200441-0

2 PRODUCT DESCRIPTION

Model: GIGAWAVE 6180010, (referred to as the EUT in this report), is a Wireless LAN Card.

Clock frequency used in EUT : 44MHz

Frequency Characteristics	: 2412 - 2462MHz
Channel Characteristics	: 11 channel selectable by 16MHz and 5MHz spacing
Modulation	: DSSS [DBPSK (1M), DQPSK (2M), CCK (5.5M-11M)]
Antenna Type	: Chip dielectric antenna
Antenna Gain	: MAX 2dBi
ITU Emission Code(s)	: G1D
Power Supply	: DC 3.3V
Operation Temperature range	e : -20 - 60 deg. C.
Antenna Connector Type	: none

*FccPart15.31(e)

The host device PC7NW5-URQ4C9110 provides the Wireless LAN Card with stable power supply (DC3.3V), and the power is not changed when voltage of the personal computer is varied. Therefore, the Wireless LAN Card complies power supply regulation.

*FccPart15.203

The Wireless LAN Card and its antenna comply with this requirement since this antenna is built in Wireless LAN Card when they are put up for sale and they are used with a particular antenna connector.

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3 SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured in typical fashion (as a customer would normally use it) for testing.

Test mode:

- 1. Transmitting 2412MHz (Low)
- 2. Transmitting 2437MHz (Middle)
- 3. Transmitting 2462MHz (High)

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3.2 **Configuration of Tested System**

Front View



*Cabling was taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remarks
Α	Wireless	GIGAWAVE	000016	Toyota Industries	M4B6180010	EUT
	LAN Card	6180010		Corporation		
В	Personal	PC7NW5	9143RZ101614901	Hitachi	-	-
	Computer	-URQ4C9110	4CQK			
С	AC Adaptor	ADP-65DB	SWD0141025044	Hitachi	-	-

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	AC Power Cable	1.7	Unshielded	Polyvinyl chloride
2	DC Cable	1.8	Unshielded	Polyvinyl chloride

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4 MEASUREMENT UNCERTAINTY

Conducted emission test

The measurement uncertainty (with a 95% confidence level) for this test was ± 1.3 dB.

The data listed in this test report has enough margin, more than site margin.

Radiated emission test

The measurement uncertainty (with 95% confidence level) for this test using Biconical antenna is ± 4.8 dB. The measurement uncertainty (with 95% confidence level) for this test using Logperiodic antenna is ± 5.2 dB. The measurement uncertainty (with 95% confidence level) for this test using Horn antenna is ± 6.6 dB.

The result is within Yamakita EMC lab's uncertainty.

5 SUMMARY OF TESTS

5.1 §15.207 Conducted Emissions (Limits by CISPR Pub.22 Class B)

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT's host device and AC adapter were aligned and flushed with rear of tabletop.

All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN and excess AC cable was bundled in center.

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a shielded room. The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a CISPR quasi-peak detector (IF BW 9kHz).

Measurement range : 150kHz to 30MHz

Test data	: APPENDIX Page 14 to 18
Photographs of test	setup: Page 11
Test result	: Pass
	Worst margin: 11.7dB (0.1997MHz, L1)
	* This is the margin comparing QP value with Average limit.
Test instruments	: KCC-14/15/16/18/KPL-01, KLS-01, KSA-01, KTR-02

5.2 §15.247(a)(2) 6dB Bandwidth (Antenna Port Conducted)

Test Procedure

The minimum 6dB bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX Page 19
Test result	: Pass
Test instruments	: KTR-01, KCC-D7

5.3 § 15.247(b)(3) Maximum Peak Out Put Power (Antenna Port Conducted)

Test Procedure

The Maximum Peak Output power was measured with a power meter connected to the antenna port. * Antenna Gain dose not exceed 6dBi.

Test data	: APPENDIX Page 20
Test result	: Pass
Test instruments	: KPM-05, KPSS-01

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5.4 § 15.247(c) Out of Band Emissions (Radiated)

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.

The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

The Radiated Electric Field Strength intensity has been measured on an open test site with a ground plane and at a distance of 3m.

The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization. EUT emission levels were compared when the EUT antenna position was vertical polarization and horizontal polarization. The equipment was also previously checked at each position of three axes X, Y and Z. In below 1GHz, Y axis was worst under the vertical antenna polarization and X axis was worst under the horizontal antenna polarization. In above 1GHz, X axis was worst under the vertical antenna polarization and Z axis was worst under the horizontal antenna polarization. The position in which the maximum noise occurred was chosen to put into measurement. See the photographs in page 13.

Radiated spurious emissions

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement. The result was also satisfied the general limits specified in Sec.15.209 (a).

Measurement range : 30MHz to 1000MHz CISPR QP Detector, IF BW 120kHz

: 1GHz to 26GHz PK and AV Detector

Test data	: APPENDIX 2 Page 21 to 23 (30 - 1000MHz)
	: APPENDIX 2 Page 24 to 29 (1 - 26GHz)
	: APPENDIX 2 Page 30 to 33
	(Band Edges: 2390MHz/ 2483.5MHz, Restricted band Charts)
Photographs of t	est setup: Page 12
Test result : Pa	SS SS
Test instruments	: KAF-01, KAF-02, KAT10-S1, KAT6-01, KBA-01, KTR-01, KTR-02, KFL-01
	KCC-10/11/12/13/18, KCC-D3/D7, KHA-01, KLA-01, KOTS-01, KSA-01

5.5 § 15.247(c) Out of Band Emissions (Antenna Port Conducted)

Test Procedure

The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX Page 34 to 39
Test result	: Pass
Test instruments	: KTR-01, KCC-D7

5.6 § 15.247(d) Power Density (Antenna Port Conducted)

Test Procedure

The Power Density was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX Page 40 to 41
Test result	: Pass
Test instruments	: KTR-01, KCC-D7

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APPENDIX 1: Photographs of test setup

1.Page 11	:	Conducted emission
2.Page 12	:	Radiated emission
3.Page 13	:	Pre-check of worst-case position

APPENDIX 2: Test Data

1.Page 14 – 18	:	Conducted emission
2.Page 19	:	6dB Bandwidth (Antenna Port Conducted)
3.Page 20	:	Maximum Peak Power (Antenna Port Conducted)
4.Page 21 – 33	:	Out Band of Emissions (Radiated)
5.Page 34 – 39	:	Out Band of Emissions (Antenna Port Conducted)
6.Page 40 – 41	:	Power Density (Antenna Port Conducted)

APPENDIX 3: Test instruments

Page 42 : Test instruments

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Conducted emission





UL Apex Co., Ltd. YAMAKITA EMC LAB. 907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011 Facsimile: +81 465 77 2112

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Radiated emission





UL Apex Co., Ltd. YAMAKITA EMC LAB. 907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011 Facsimile: +81 465 77 2112

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Pre check of worse-case position



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907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

+81 465 77 1011 +81 465 77 2112 Telephone: Facsimile:

DATA OF CONDUCTION TEST

UL Apex Co., Ltd. Yamakita No.1 Shielded Room Report No. : 23JE0006-YK-1

Appli Kind Model Seria Power Mode Remar Date Phase Tempe Humid Regul	cant of Equip No. No. ks rature ity ation	ment	: T : W : C : A : 5 : 5 : 5 : 5 : 5 : 5 : 5 : 5 : 5 : 5	OYOTA /ireless 31GAWAVE 000016 (C120V/6 ransmit 5/22/200 30 gle P 20 % 50 % 50 Part	NDUS LAN 618 OHz ting 3 hase	TRIES C Card 0010 (2412MH § 15, 20	ORPORA z) 7. (CISI	TION Eng PR Pub	ineer . 22)	<u>).</u> : 1	Ama Toyokaz	<u>mma</u> u imam	<u>ه</u> ura	
No.	FREQ. [MHz]	READIN QP [dBu	G (N) AV V]	READIN QP [dBu	G (L1) AV V]) LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN [dB]	. RESU QP [dBu)	ULT AV V]	LIM QP [dBu	ITS AV V]	MARG QP [dB	IN AV
1. 2. 3. 4. 5. 6.	0. 1500 0. 1997 0. 2645 0. 3312 0. 6194 5. 3620	$\begin{array}{c} 41.\ 0\\ 41.\ 6\\ 33.\ 1\\ 30.\ 0\\ 22.\ 4\\ 26.\ 5\end{array}$		40. 5 41. 8 34. 9 31. 7 22. 3 25. 5		$\begin{array}{c} 0.\ 0\\ 0.\ 0\\ 0.\ 0\\ 0.\ 0\\ 0.\ 0\\ 0.\ 2 \end{array}$	0. 1 0. 1 0. 1 0. 1 0. 2 0. 6	0.0 0.0 0.0 0.0 0.0 0.0 0.0	$\begin{array}{c} 41.\ 1\\ 41.\ 9\\ 35.\ 0\\ 31.\ 8\\ 22.\ 6\\ 27.\ 3\end{array}$		$\begin{array}{c} 66.\ 0\\ 63.\ 6\\ 61.\ 3\\ 59.\ 4\\ 56.\ 0\\ 60.\ 0\end{array}$	56. 053. 651. 349. 446. 050. 0	24. 9 21. 7 26. 3 27. 6 33. 4 32. 7	

CALCULATION: READING[dB μ V] + LISN FACTOR[dB] + CABLE LOSS[dB] + ATTEN[dB].

■LISN :KLS-01 (NSLK8126) ■COAXIAL CABLE:KCC-14/15/16/18 ■PULSE LIMITTER:KPL-01 (PL01) ■EMI RECEIVER:KTR-02 (ESCS30)

DATA OF CONDUCTION TEST

UL Apex Co., Ltd. Yamakita No.1 Shielded Room Report No.: 23JE0006-YK-1





DATA OF CONDUCTION TEST CHART

UL Apex Co., Ltd. Yamakita No.1 Shielded Room Report No. : 23JE0006-YK-1



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DATA OF CONDUCTION TEST CHART

UL Apex Co., Ltd. Yamakita No.1 Shielded Room Report No. : 23JE0006-YK-1



Frequency [MHz]

Page: 17

DATA OF CONDUCTION TEST CHART

UL Apex Co., Ltd. Yamakita No.1 Shielded Room Report No.: 23JE0006-YK-1

Applicant (ind of Equipment Model No. Serial No. Power Mode	: TOYOTA INDUSTRIES CORPORATION : Wireless LAN Card : GIGAWAVE 6180010 : 000016 : AC120V/60Hz : Transmitting(2462MHz)
Remarks	
Jate Phase	Single Phase
lemperature	: 26 °C Engineer : Toyokazu Imamura
lumidity	: 59 %
Regulation 1	: FCC Part15C § 15.207. (CISPR Pub.22)
Regulation 2	: None
Emission Level [dB	μ V] PHASE: N
80 08	
	Note. Peak hold data. Data is uncorrected.
70	——
70	





1. Ch Low:2412MHz



2. Ch Mid:2437MHz



3. Ch High:2462MHz



FCC ID: M4B6180010 Job No: 23JE0006-YK-1

N. Amamina

<u>Peak Out Put Power (Conducted)</u>

UL Apex Co., Ltd YAMAKITA NO. 1 OPEN SITE

COMPANY	:	TOYOTA INDUSTRIES	CORPORATION
EQUIPMENT	:	Wireless LAN Card	
MODEL	:	GIGAWAVE 6180010	
FCC ID	:	M4B6180010	
POWER	:	AC120V/60Hz	
Mode	:	Transmitting	

REPORT NO REGULATION DATE Temp./Humi. : 23JE0006-YK-1 : Fcc Part15SubpartC 247 (b) : 2003/ 05/23

: 24°C/58%

manna ENGINEER : Toyokazu Imamura

СН	FREQ	PM Reading	Cable Loss	Results	Limit (1W)	MARGIN
	[GHz]	[dBm]	[dB]	[dBm]	[dBm]	[dB]
Low	2412.00	14.90	0.10	15.00	30.0	15.00
Mid	2437.00	14.70	0.10	14.80	30.0	15.20
High	2462.00	14. 10	0.10	14. 20	30.0	15.80

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No.: 23JE0006-YK-1

Appl Kind Mode Seri Powe Mode Rema Date Test Temp Humi Regu	icant of Equ l No. al No. r rks Distan erature dity lation	ipmen ce	t	: TOY : Wir : GIG : OOO : AC1 : Tra : - : 5/1 : 3 m : 19 : 61 : FCC	ORATION	i ng i nee	<u></u> r :	<i>J.m.</i> Toyoka	2011-10 zu Ima	<u>mura</u>			
No.	FREQ.	ANT TYPE	REAL HOR)ING VER	ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN.	RESI HOR	JLT I VER	LIMITS	MAI HOR	RGIN VER
	[MHz]		[dB	и V]	[dB/m]	[dB]	[dB]	[dB]	[dB	//m] [dl	BμV/m]	[0	1B]
1.	66.43	BB	47.1	44.3	7.2	28.6	2.0	6.0	33.7	30.9	40.0	6.3	9.1
2.	132.93	BB	44.7	40.5	14.2	28.4	2.9	6.1	39.5	35.3	43.5	4.0	8.2
3.	208.90	BB	33.2	35.0	16.7	28.1	3.8	6.1	31.7	33.5	43.5	11.8	10. 0
4.	326.62	BB	42.8	29.5	15.3	27.9	4, 9	6.1	41.2	27.9	46.0	4.8	18.1
5.	391.96	BB	43.7	39.0	17.2	28, 5	5.4	6.1	43.9	39.2	46.0	2.1	6.8
6.	497.69	BB	33.2	35.6	18.1	29.1	6.2	6.1	34.5	36.9	46.0	11.5	9.1
7.	528.08	BB	29.1	34.4	18.5	29.5	6.4	6.1	30.6	35.9	46.0	15.4	10.1
8.	896.71	BB	28.6	28 <i>.</i> 6	21.7	28.7	8, 9	6.1	36.6	36.6	46.0	9.4	9.4

CALCULATION: READING [dB μ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ ANTENNA: KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz ■ CABLE: KCC-10/11/12/13/18 ■ PREAMP: KAF-01 (8447D) ■ ENI RECEIVER: KTR-02 (ESCS30)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No.: 23JE0006-YK-1

Kind of EquipmentWireless LAN CardModel No.GIGAWAVE 6180010Serial No.000016PowerAC120V/60HzModeTransmitting(2437MHz)Remarks-Date5/20/2003Test Distance3 mTemperature27 °CHumidity74 %RegulationFCC Part15C § 15. 209	Engineer : Toyokazu Imamura					
No. FREQ. ANT READING ANT AMP CABLE ATTEN. RESU TYPE HOR VER FACTOR GAIN LOSS HOR	JLT LIMITS MARGIN VER HOR VER					
$[MHz] [dB \mu V] [dB/m] [dB] [dB] [dB] [dB \mu V]$	//m] [dB µ V/m] [dB]					
1. 66.44 BB 47.2 44.1 7.2 28.6 2.0 6.0 33.8	30.7 40.0 6.2 9.3					
2. 132.93 BB 46.3 37.0 14.2 28.4 2.9 6.1 41.1	31.8 43.5 2.4 11.7					
3. 208.90 BB 33.1 33.0 16.7 28.1 3.8 6.1 31.6	31.5 43.5 11.9 12.0					
4. 320.03 BB 33.4 30.6 15.3 27.9 4.9 6.1 31.8	29.0 46.0 14.2 17.0					
5. 391.96 BB 37.6 33.1 17.2 28.5 5.4 6.1 37.8	33.3 46.0 8.2 12.7					
b. 498.42 BB 35.2 35.3 18.1 29.1 6.2 6.1 36.5	36.6 46.0 9.5 9.4					
7. 528.07 BB 34.3 36.6 18.5 29.5 6.4 6.1 35.8	38.1 46.0 10.2 7.9					
8. 896.27 BB 32.7 28.0 21.7 28.7 8.9 6.1 40.7	36.0 46.0 5.3 10.0					

CALCULATION: READING [dB μ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ANTENNA:KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz ■CABLE:KCC-10/11/12/13/18■PREAMP:KAF-01 (8447D) ■ENI RECEIVER:KTR-02 (ESCS30)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No.: 23JE0006-YK-1

No.FREQ. ANT TYPEREADING HORANT VER FACTORAMP GAIN IdBCABLE LOSSATTEN. HOR IdBRESULT HOR VER IdBLIMITS HOR VER IdBMARGI HOR VER IdB1.66.42BB 45.147.942.87.228.62.06.034.529.440.05.5162.132.93BB 45.145.138.514.228.42.96.139.933.343.53.6163.208.90BB 45.235.929.816.728.13.86.134.428.343.59.1144.326.62BB 32.730.715.327.94.96.131.129.146.014.916	Appli Kind Model Seria Power Mode Remar Date Test Tempe Humic Regul	icant of Equ No. al No. rks Distan erature dity lation	ipmen ce	t	: TOY : Wir : GIG : AC1 : Tra : 5/2 : 3 m : 27 : 74 : FCC	OTA IND eless L AWAVE 6 016 20V/60H nsmitti 0/2003 % Part15	USTRII AN Car 18001(Iz ng (240	ES CORP rd 52MHz) 5. 209	ORATION	nginee	<u></u> r :	<i>Ama</i> Toyoka	<i>anang</i> zu Ima	1 mura
1. 66. 42 BB 47. 9 42. 8 7. 2 28. 6 2.0 6. 0 34. 5 29. 4 40. 0 5. 5 16 2. 132. 93 BB 45. 1 38. 5 14. 2 28. 4 2.9 6. 1 39. 9 33. 3 43. 5 3. 6 16 3. 208. 90 BB 35. 9 29. 8 16. 7 28. 1 3. 8 6. 1 34. 4 28. 3 43. 5 9. 1 16 4. 326. 62 BB 32. 7 30. 7 15. 3 27. 9 4. 9 6. 1 31. 1 29. 1 46. 0 14. 9 16 5. 001	No.	FREQ. [MHz]	ANT TYPE	READ HOR [dB /	ING VER	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [db]	RESI HOR	JLT VER V/ml[d]	LIMITS B <i>u</i> V/m]	MAI HOR	RGIN VER HB]
1. 66. 42 BB 47. 9 42. 8 7. 2 28. 6 2.0 6.0 34. 5 29. 4 40. 0 5. 5 14 2. 132. 93 BB 45. 1 38. 5 14. 2 28. 4 2.9 6. 1 39. 9 33. 3 43. 5 3. 6 16 3. 208. 90 BB 35. 9 29. 8 16. 7 28. 1 3. 8 6. 1 34. 4 28. 3 43. 5 9. 1 15 4. 326. 62 BB 32. 7 30. 7 15. 3 27. 9 4. 9 6. 1 31. 1 29. 1 46. 0 14. 9 16 5. 01. 00 02. 00 03. 7 15. 3 27. 9 5. 4 6. 1 31. 1 29. 1 46. 0 14. 9 16														
2. 132. 93 BB 45. 1 36. 5 14. 2 26. 4 2. 9 6. 1 39. 9 33. 3 43. 5 3. 6 16 3. 208. 90 BB 35. 9 29. 8 16. 7 28. 1 3. 8 6. 1 34. 4 28. 3 43. 5 9. 1 14 4. 326. 62 BB 32. 7 30. 7 15. 3 27. 9 4. 9 6. 1 31. 1 29. 1 46. 0 14. 9 16 5. 001 00 01 00 05 14. 0 14. 9 16	1.	122 02	DD BR	47.9	42.8	7.2	28.6	2.0	6.0	34.5	29.4	40.0	5.5	10.6
3. 208.90 BB 35.9 29.8 10.7 28.1 3.8 6.1 34.4 28.3 43.5 9.1 16 4. 326.62 BB 32.7 30.7 15.3 27.9 4.9 6.1 31.1 29.1 46.0 14.9 16 5. 201.00 BB 32.7 30.7 15.3 27.9 4.9 6.1 31.1 29.1 46.0 14.9 16	2.	200 00	DD DD	40.1	- 30. D - 20. Q	14.4	20.4	2.9	0.1 6 1	39.9 24 4	კე . კ იი ე	43.0 49 E	3.0	10.2
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	э. Л	200.90	BB	30.9	29.0	15.2	20.1	0.0 10	6 1	34.4 911	20.0 20.1	40.0 16 0	9.1 14 Q	10.4
	ч. 5	201 06	RR	21 G	25 6	17.9		4. J 5. A	61	21.2	25.1	40.0	14.9	10.9
6 498 61 RR 36 0 36 0 18 1 99 1 6 2 6 1 37 3 37 3 46 0 8 7 9	6. 6	498 61	RR	36.0	36.0	18 1	20.0	6.2	6 1	37 3	37 3	40.0	87	87
7 528.08 BR 32.9 35.2 18 5 29 5 6 4 6 1 34 4 36 7 46 0 11 6	7	528 08	BB	32.9	35.2	18.5	29.1	64	6 1	34 4	36.7	46.0	11 6	9.1
8. 896.70 BB 31.8 33.2 21.7 28.7 8.9 6.1 39.8 41.2 46.0 6.2	8.	896.70	BB	31.8	33.2	21.7	23.0	8.9	6.1	39.8	41.2	46.0	6.2	4.8

CALCULATION: READING [dB μ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ ANTENNA: KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz ■ CABLE: KCC-10/11/12/13/18 ■ PREAMP: KAF-01 (8447D) ■ ENI RECEIVER: KTR-02 (ESCS30)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No.: 23JE0006-YK-1

Kind of Equipment Wireless LAN Card Model No. GIGAWAVE 6180010 Serial No. 000016 Power AC120V/60Hz Mode Transmitting (2412MHz) Remarks - Date 5/22/2003 Test Distance 3 m Temperature 26 °C Humidity 49 % Regulation FCC Part15C § 15. 209 (PK Detection)												<i>amma</i> zu Ima	<u>mura</u>
No. FREQ. ANT READING ANT AMP CAN TYPE HOR VER FACTOR GAIN LA							CABLE LOSS	ATTEN. RESULT LIMITS MARGIN HOR VER HOR VER					RGIN VER
	[MHz]		[dB	μV]	[dB/m]	[dB]	[dB]	[dB]	[dB µ \	//m] [d	BμV/m]	[0	⊞]
1.	1296, 20	BB	53.4	52.2	25.5	37.9	3.3	10.0	54.3	53.1	74.0	19.7	20.9
2.	2374,09	BB	52.5	51.6	30.6	36.9	4.1	10.0	60.3	59.4	74.0	13.7	14.6
3. 4	4894 00	DD DD	51. 5 50. 6	51.0	30.0	30.9	4,1	10.0	59.3	59.4	74.0	14.7	14.6
4. 5	7236 00	RR	45 1	45 2	34.7	30.4 36.8	0.0 6 5	0.0	52 A	57.3 52.1	74.0	11.1	10.7
6	9648.00	BR	48 4	47 5	39 0	36.9	79	0.5	58 2	57 2	74.0	41. U 15 8	40.9 16.7
Ž.	12060.00	BB	45.3	45.4	42.1	36.3	8 1	0.5	59.7	59.8	74.0	14.3	14.9
8.	14472.00	BB	45.8	45.8	41.2	35.2	7.3	0.2	59.3	59.3	74.0	14.0	14 7
9.	16884.00	BB	44.5	44.5	41.6	35.0	8.8	0.5	60.4	60.4	74.0	13.6	13.6
10.	19296.00	BB	44.7	44.7	39.1	34.7	9.4	0.0	58, 5	58.5	74.0	15.5	15.5
11.	21708.00	BB	45.3	45.3	39.2	34.3	9.9	0.0	60.1	60.1	74.0	13.9	13.9
12.	24120.00	BB	44.2	44.2	40.3	35.5	10.9	0.0	59, 9	59.9	74.0	14.1	14.1

CALCULATION: READING[dB μ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz ■CABLE: KCC-D3/D7■PREAMP: KAF-02 (8449B) ■EMI RECEIVER: KTR-01 (ESI40)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No. : 23JE0006-YK-1

App Kin Ser Pow Mod Rem Dat Tes Tem Reg	Kind of Equipment Wireless LAN Card Model No. GIGAWAVE 6180010 Serial No. 000016 Power AC120V/60Hz Mode Transmitting (2412MHz) Remarks - Date 5/22/2003 Test Distance 3 m Temperature 26 °C Humidity 49 % Regulation FCC Part15C § 15. 209 (AV Detection)												
No.	FREQ. [MHz]	ANT TYPE	REAI HOR [dB]	DING VER µV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESI HOR [dB µ V	JLT VER //m] [d]	LIMITS BµV/m]	MAI HOR [‹	RGIN VER HB]
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.	$\begin{array}{c} 1296.\ 20\\ 2374.\ 09\\ 2390.\ 00\\ 4824.\ 00\\ 7236.\ 00\\ 9648.\ 00\\ 12060.\ 00\\ 14472.\ 00\\ 16884.\ 00\\ 19296.\ 00\\ 21708.\ 00\\ 24120.\ 00 \end{array}$	BB BB BB BB BB BB BB BB BB BB BB BB BB	$\begin{array}{c} 37.3\\ 41.7\\ 38.6\\ 46.1\\ 32.4\\ 41.3\\ 32.3\\ 32.8\\ 31.9\\ 32.1\\ 32.9\\ 31.7\\ \end{array}$	$\begin{array}{c} 37.5\\ 40.6\\ 41.0\\ 46.6\\ 32.2\\ 38.8\\ 32.3\\ 32.8\\ 31.9\\ 32.1\\ 33.0\\ 32.0 \end{array}$	$\begin{array}{c} 25.5\\ 30.6\\ 30.6\\ 34.7\\ 37.7\\ 39.0\\ 42.1\\ 41.2\\ 41.6\\ 39.1\\ 39.2\\ 40.3 \end{array}$	37. 9 36. 9 35. 2 36. 8 36. 8 36. 3 35. 2 35. 0 34. 7 34. 3 35. 5	3.3 4.1 4.1 5.6 6.5 7.2 8.1 7.3 8.8 9.4 9.9 10.9	$\begin{array}{c} 10. \ 0\\ 10. \ 0\\ 0. \ 6\\ 0. \ 5\\ 0. \ 5\\ 0. \ 5\\ 0. \ 5\\ 0. \ 0\\ 0. \ 0\\ 0. \ 0\end{array}$	$\begin{array}{c} 38.2\\ 49.5\\ 46.4\\ 51.8\\ 40.3\\ 51.1\\ 46.7\\ 46.3\\ 47.8\\ 45.9\\ 47.7\\ 47.4 \end{array}$	$\begin{array}{c} 38.4\\ 48.4\\ 48.8\\ 52.3\\ 40.1\\ 48.6\\ 46.7\\ 46.3\\ 47.8\\ 45.9\\ 47.8\\ 47.7\end{array}$	$\begin{array}{c} 54.\ 0\\$	$15.8 \\ 4.5 \\ 7.6 \\ 2.2 \\ 13.7 \\ 2.9 \\ 7.3 \\ 7.7 \\ 6.2 \\ 8.1 \\ 6.3 \\ 6.6 \\$	$\begin{array}{c} 15.\ 6\\ 5.\ 2\\ 1.\ 7\\ 13.\ 9\\ 5.\ 4\\ 7.\ 3\\ 7.\ 7\\ 6.\ 2\\ 8.\ 1\\ 6.\ 2\\ 6.\ 3\end{array}$

CALCULATION: READING [dB μ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

MANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz ■ CABLE: KCC-D3/D7 ■ PREAMP: KAF-02 (8449B) ■ ENI RECEIVER: KTR-01 (ESI40)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No.: 23JE0006-YK-1

ApplicantIOYOTA INDUSTRIEKind of EquipmentWireless LAN CarModel No.GIGAWAVE 6180010Serial No.000016PowerAC120V/60HzModeTransmitting (243)Remarks-Date5/22/2003Test Distance3 mTemperature26 °CHumidity49 %RegulationFCC Part15C § 15							ES CORP d 37MHz) 5. 209 (P	ORATION Ē K Detec	nginee tion)	<u>7</u>	J.m. Toyoka	≈ <i>nnu</i> zu lma	mura
No.	FREQ.	ANT TYPE	READ HOR	ING VER	ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN.	RESU HOR	JLT I VER	LIMITS	MA HOR	RGIN VER
	[MHz]		[dB]	u V]	[dB/m]	[dB]	[dB]	[dB]	[dB	//m] [dl	3μV/m]	[3B]
1.	1296. 20	BB	51.3	51.0	25.5	37.9	3.3	10.0	52.2	51.9	74.0	21.8	22.1
2.	4874.00	BB	51.8	49.2	35.0	35.2	5.6	0.6	57.8	55.2	74.0	16.2	18.8
3.	7311.00	BB	44.8	44.2	37.8	36.8	6.6	0.5	52.9 FC 9	52.3	74.0	21.1	21.7
4.	9748,00	DD DD	40.0	48.4	39.0	37.0	(.Z	0.0	50.3 50.4	58.Z	74.0	11.1	10.0
э. 6	14699 00		44.7	40,1	42.0	25.2	0, 1 7 7	0.4	50 A	59.0 50.4	74.0	14.0	14.2
7	17050 00	RR	44. 9 AA Q	44.9	41.7	34 0	87	0.5	60.8	60.8	74.0	13.9	12.9
8	19496 00	RR	44 1	44 2	39 0	34 7	9.5	0.0	57.9	58.0	74 0	16 1	16.0
9	21933.00	BR	46.3	46.2	39.3	33.6	10.2	0.0	62.2	62.1	74.0	11.8	11.9
10.	24370.00	BB	44.5	44.5	40.4	36.3	10.8	0.0	59.4	59.4	74.0	14.6	14.6

CALCULATION: READING $[dB \mu V]$ + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz ■ CABLE: KCC-D3/D7 ■ PREAMP: KAF-02 (8449B) ■ EMI RECEIVER: KTR-01 (ESI40)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No.: 23JE0006-YK-1

App Kin Mod Ser Pow Mod Rem Dat Tes Tem Hum Reg	olicant dof Equ lei No. ver le narks t Distan perature idity gulation	ipmen ce	ıt	Wireless LAN Card GIGAWAVE 6180010 000016 AC120V/60Hz Transmitting (2437MHz) - 5/22/2003 3 m 26 °C Engineer Toyokazu Imamura 49 % FCC Part15C § 15. 209 (AV Detection)									
No.	FREQ.	ANT	REAL	DING	ANT	AMP	CABLE	ATTEN.	RESU	JLT	LIMITS	MAI	RGIN
	[MHz]	TYPE	HOR [dB	VER µV]	FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR [dBµV	VER //m] [c	dBμV/m]	HOR [(VER 1B]
1.	1296.20	BB	35.7	36.5	25.5	37.9	3.3	10.0	36.6	37.4	54.0	17.4	16.6
2.	4874.00	BB	46.9	42.8	35.0	35.2	5.6	0.6	52, 9	48.8	54.0	1.1	5.2
3.	7311.00	BB	31.7	31.7	37.8	36.8	6.6	0.5	39.8	39.8	54.0	14.2	14.2
4.	9748.00	BB	36.3	40.6	39.0	37.0	7.2	0.6	46.1	50.4	54.0	7.9	3.6
ъ.	12185.00	BB	32.1	32.1	42.3	36.1	8.1	0.4	46.8	46.8	54.0	7.2	7.2
ю. 7	14622.00	BR	31.5	31.6	41.7	35.2	7.7	0.3	46.0	46.1	54.0	8.0	7.9
7.	17059.00	BB	32.0	32.2	41.7	34.9	8.7	0.5	48.0	48.2	54.0	6.0	5.8
8.	19496,00	BB	31.7	31.7	39.0	34.7	9.5	0.0	45.5	45.5	54.0	8.5	8.5
. 9.	21933.00	BR	33.8	33.4	39.3	33.6	10.2	0.0	49.7	49.3	54.0	4.3	4.7
10.	24370.00	BB	32, 3	32.3	40.4	36.3	10.8	0.0	47.2	47.2	54.0	6.8	6.8

CALCULATION: READING $[dB \mu V]$ + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz ■ CABLE: KCC-D3/D7 ■ PREAMP: KAF-02 (8449B) ■ EMI RECEIVER: KTR-01 (ESI40)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No. : 23JE0006-YK-1

App Kir Noc Ser Pow Noc Ren Dat Tes Ten Hun Reg	olicant dof Equ lel No. ial No. ver le marks t Distand perature idity gulation	ipmen ce	t	: TOY Wir GIG 000 AC1 Tra 5/2 3 m 26 : 49 : FCC	OTA INE eless L AWAVE 6 20V/60H nsmitti 2/2003 °C % Part15	DUSTR1E AN Car 5180010 Iz ng (246	ES CORF d 52MHz) 5. 209 (P	PORATION I K Detec	nginee stion)	r :	Toyoka	/ <u>N<i>M</i>22</u> zu Ima	<u>mura</u>
No.	FREQ.	ANT TVPF	REAI HOR	DING VER	ANT FACTOR	AMP GAIN	CABLE	ATTEN.	RESU	JLT VEP	LIMITS	MAI	RGIN
	[MHz]		[dB	μ V]	[dB/m]	[dB]	[dB]	[dB]	$[dB \mu]$	//m] [d	BμV/m]	[0	₩B]
1.	1296.20	BB	50.8	51.3	25.5	37.9	3.3	10.0	51.7	52.2	74.0	22.3	21.8
Z.	2483, 50	BB	52.7	52.9	30.6	36.9	4.1	10.0	60.5	60.7	74.0	13.5	13.3
3.	2488.00	BB	52.0	51.5	30.6	36.9	4.1	10.0	59.8	59.3	74.0	14.2	14.7
4.	2499.00	BB	49.3	48.0	30.6	36.9	4.1	10.0	57.1	56.4	74.0	16.9	17.6
о. с	4924,00		51. 0 44 0	00.0	30, 3 97 0	35. Z	5.6	0.5	57.8	56,8	74.0	16.2	17.2
0. 7	1360.00		44.0	44.0 49 A	31.9	30,9	0.0	0.0	52.9 E0 1	52.9 57.0	74.0	Z1. I	21.1
2 2	9040.00 12210 00		49.2	40.0	39.0 49.5	250	1.2	0.7	09.1 60 9	01.9 60.2	74.0	14.9	10.1
0. G	14779 00	DD	40.2	40.2	42.0	25 1	0.1	0.4	60.0 60.0	60.0	74.0	10.1	13.7
10	17934 00	RR	40.0	40.0	42.2	34 8	0.1 9 5	0.4	60.9	60.9 60.9	74.0	13.1	13.1
11	19696 00	BB	44 5	44 6	39.5	35.0	0.0	0.0	58 6	58 7	74.0	15.2	15.2
12	22158 00	BB	45 9	45.9	39.0	33.7	10.3	0.0	61 7	61 7	74.0	10.4	10.0
13.	24620.00	BB	45.6	45.6	40.4	36.0	10.9	0.0	60.9	60.9	74.0	13.1	13.1

CALCULATION: READING [dB μ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz ■ CABLE: KCC-D3/D7 ■ PREAMP: KAF-02 (8449B) ■ EN1 RECEIVER: KTR-01 (ES140)

UL Apex Co., Ltd. Yamakita No.1 Open Test Site Report No.: 23JE0006-YK-1

Apr Kir Moc Ser Pov Moc Ren Dat Tes Ten Hun Reg	olicant nd of Equ lel No. rial No. re narks st Distan perature nidity gulation	ipmer	ıt	: TOYI : Wird : GIG : 0000 : AC1 : Trai : - : 5/2 : 3 m : 26 : 49 : FCC	OTA INE eless L AWAVE 6 016 20V/60H nsmitti 2/2003 °C % Part15	DUSTRIE AN Car 180010 Iz Ing (246	ES CORF (d) 52MHz) 5. 209 (A	ORATION Ē V Detec	nginee Stion)	r :	<u>).</u> Toyoka	/ ///// zu Ima	<u>uur</u> a
No.	FREQ. [MHz]	ANT TYPE	REAL HOR [dB	DING VER µV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESI HOR [dB µ V	ULT VER V/m] [d	LIMITS BµV/m]	MAI HOR [d	RGIN VER HB]
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	$\begin{array}{c} 1296.\ 20\\ 2483.\ 50\\ 2483.\ 50\\ 2499.\ 00\\ 4924.\ 00\\ 7386.\ 00\\ 9848.\ 00\\ 12310.\ 00\\ 14772.\ 00\\ 17234.\ 00\\ 19696.\ 00\\ 22158.\ 00\\ 24620.\ 00\\ \end{array}$	BB BB BB BB BB BB BB BB BB BB BB BB BB	$\begin{array}{c} 36.\ 0\\ 41.\ 6\\ 39.\ 4\\ 37.\ 8\\ 46.\ 9\\ 32.\ 0\\ 41.\ 0\\ 31.\ 9\\ 32.\ 1\\ 31.\ 8\\ 31.\ 9\\ 33.\ 1\\ 32.\ 4 \end{array}$	$\begin{array}{c} 36.7\\ 40.9\\ 39.0\\ 36.9\\ 45.7\\ 32.2\\ 38.5\\ 31.7\\ 32.1\\ 31.8\\ 31.8\\ 33.1\\ 32.3\end{array}$	$\begin{array}{c} 25.5\\ 30.6\\ 30.6\\ 35.3\\ 37.9\\ 39.0\\ 42.5\\ 42.2\\ 42.3\\ 39.5\\ 39.2\\ 40.4 \end{array}$	$\begin{array}{c} 37.9\\ 36.9\\ 36.9\\ 36.9\\ 35.2\\ 36.9\\ 37.0\\ 35.9\\ 37.0\\ 35.9\\ 35.1\\ 34.8\\ 35.0\\ 33.7\\ 36.0 \end{array}$	3.3 4.1 4.1 5.6 6.6 7.2 8.1 8.1 8.5 9.6 10.3 10.9	$ \begin{array}{c} 10.0\\ 10.0\\ 10.0\\ 10.0\\ 0.5\\ 0.5\\ 0.7\\ 0.4\\ 0.6\\ 0.0\\ 0.0\\ 0.0\\ \end{array} $	36. 9 49. 4 47. 2 45. 6 53. 1 40. 1 50. 9 47. 0 47. 7 48. 4 46. 0 48. 9 47. 7	37. 6 48. 7 46. 8 44. 7 51. 9 40. 3 48. 4 46. 8 47. 7 48. 4 45. 9 48. 9 47. 6	54.0 54.0	$17.1 \\ 4.6 \\ 6.8 \\ 8.4 \\ 0.9 \\ 13.9 \\ 3.1 \\ 7.0 \\ 6.3 \\ 5.6 \\ 8.0 \\ 5.1 \\ 6.3 \\ $	16. 4 5. 3 7. 2 9. 3 2. 1 13. 7 5. 6 7. 2 6. 3 5. 6 8. 1 5. 1 6. 4 . 1 . 1 . 2 . 3 . 4 . 5 . 6 . 7 . 2 . 9 . 3 . 1 . 2 . 4 . 5 . 6 . 7 . 6 . 7 .

CALCULATION: READING[dB μ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

MANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz CABLE: KCC-D3/D7 PREAMP: KAF-02 (8449B) ENI RECEIVER: KTR-01 (ESI40)

Restricted band edges: FCC 15.247(c)

2.39GHz (Ch 1:2412MHz) 1. Horizontal/ PK



Date: 22.MAT.2003 09:01:37

2. Vertical/PK

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Ref Lvl		51.	63 URAD	VBW	1 1	£EZ	14 1100	
70 dBJV		2.39000	000 GHz	SWT	5 r	n 5	Unit	dΒJ
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FCC ID: M4B6180010 Job No: 23JE0006-YK-1

7. Imamina

3. Horizontal/AV



Date: 22.MAY.2003 09:04:29

4. Vertical/AV

Doff for1	Marker 1 (Tl)	RBW	1 MHz	RF Att	10 dB
70 dBVV	2.3900	0000 GHz	SWT	l s	Unit	dbyV
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Center 2.39	GEZ	400 kH	z/	I	Sne	an 4 MHz

FCC ID: M4B6180010 Job No: 23JE0006-YK-1

T. Amamura

2.4835GHz (Ch 11:2462MHz)

1. Horizontal/PK



N. Amamina



2. Vertical/PK



3. Horizontal/AV



Date: 22.MAT.2003 10:49:50

4. Vertical/AV



FCC ID: M4B6180010 Job No: 23JE0006-YK-1

T. Amamura

Ch 1: 2412MHz

2.

3.







FCC ID: M4B6180010 Job No: 23JE0006-YK-1

T. Imamina

 $\mathbf{34}$

FCC ID: M4B6180010 Job No: 23JE0006-YK-1

N. Amomma



F.BW VBW SWT 100 KH2 300 KH2 4 B Ref Lvl 53 dBuV Unit dBuV 93 90 -D1 39.08 dB3V INI INA www. Start 10 GH2 1.6 GHz/ Stop 26 GHz 23.MAY.2003 10:53:22 Date:

5.

4.

<u>Ch 6: 2437MHz</u> 1.







FCC ID: M4B6180010 Job No: 23JE0006-YK-1

T. America

2.

3.

FCC ID: M4B6180010 Job No: 23JE0006-YK-1

T. Amamina





5.

4.

37

Ch 11: 2462MHz

1.







FCC ID: M4B6180010 Job No: 23JE0006-YK-1

T. Amonum

2.

3.

FCC ID: M4B6180010 Job No: 23JE0006-YK-1

7. Imamma





5.

4.

39

<u>Power Density (Conducted)</u>

UL Apex Co.,Ltd YAMAKITA NO. 1 OPEN SITE

COMPANY	:	TOYOTA INDUSTRIES	CORPORATION
EQUIPMENT	:	Wireless LAN Card	
MODEL	:	GIGAWAVE 6180010	
FCC ID	:	M4B6180010	
POWER	:	AC120V/60Hz	
Mode	:	Transmitting	

REPORT NO	: 23JE0006-YK-1
REGULATION	: Fee Part15SubpartC 247 (d)
DATE	: 2003/ 05/23
Temp./Humi.	: 24°C/58%

<u>Y. Imamuna</u> : Toyokazu Imamura

ENGINEER

CH	FREQ	S/A Reading	Cable Loss	Results	Limit	MARGIN
	[GHz]	[dBm]	[dB]	[dBm]	[dBm]	[dB]
Low	2.411146	-11.31	0.6	10.71	8.0	18.7
Mid	2.436145	-11.36	0.6	-10.76	8.0	18.8
High	2.462185	-12.53	0.6	-11.93	8.0	19.9

1. ch 1: 2412MHz



2. ch 6: 2437MHz



3. ch 11: 2462MHz



FCC ID: M4B6180010 Job No: 23JE0006-YK-1

T. Imamina

Test Report No : 23JE0006-YK-1

APPENDIX 3

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date *
KAF-01	Pre Amplifier	Hewlett Packard	94470	DC	Interval(month)
KAF-02	Pre Amplifier	Hewlett Packard	0447D		2002/08/03 * 12
KAT10-S1	Attenuator	Agilent	8449D 010		2003/05/08 * 12
KAT6-01	Attenuator		101-6-0	RE DE	2003/04/18 * 12
KBA-01	Biconical Antenna	Schwarzbeck	RRA0106	RE	2003/05/12 * 12
KCC-10/11/12/1	Coaxial Cable	Eujikura/Subper			2002/08/17 * 12
3/18		r ujikura/ Sumer	A/S04272B/S0	RE	2002/08/17 * 12
			4272B/S04272B		
KCC-14/15/16/1	Coaxial Cable/Pulse	Fujikura/Suhner/PMM	5D-2W/8D-2W/	CF	2002/08/17 * 12
8/KPL-01	Limitter	-	S04272B/S0427	~-	
			2B/PL01		
KCC-D3/D7	Coaxial Cable	Rosenberger/Advantest	2201/JUN-08-0	RE	2003/04/18 * 12
			1-061		
KFL-01	Highpass Filter	Hewlett Packard	84300 80038	RÉ	2003/04/18 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2002/07/14 * 12
KLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2003/02/19 * 12
KLS-01	LISN(AMN)	Schwarzbeck	NSLK8126	CE	2002/08/16 * 12
KOTS-01	Open Test Site	JSE	30m	RE	2002/08/18 * 12
KPM-05	Power meter	Agilent	E4417A	AT	2003/02/17 * 12
KPSS-01	Power sensor	Agilent	E9327A	АТ	2003/02/21 * 12
KSA-01	Spectrum Analyzer	Advantest	R3365	CE/RE	2003/06/09 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE/AT	2002/07/22 * 12
KTR-02	Test Receiver	Rohde & Schwarz	ESCS30	CE/RE	2002/11/25 * 12
KCC~D7	Coaxial Cable	Advantest	A01002	AT	2003/04/18 * 12
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All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

CE: Conducted emission test

RE: Radiated emission test

AT: Antenna terminal conducted test