



EMI TEST REPORT

Test Report No. : 25HE0235-HO-1b

Applicant : TOSEI ENGINEERING CORP.
Type of Equipment : Wireless Module
Model No. : AE51041
Test standard : FCC Part 15 Subpart C
Section 15.207, Section 15.247 : 2005
FCC ID : TNY0999058
Test Result : Complied

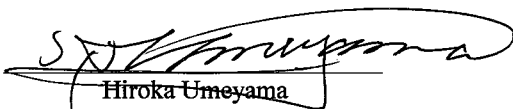
1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with the above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.

Date of test:

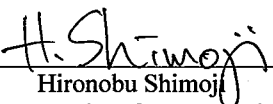
June 27 to September 18, 2005

Tested by:


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Approved by :


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SECTION 1: Client information

Company Name : TOSEI ENGINEERING CORP.
Address : 4-6,Higashi-Nakanuki,Tsuchiura-City, Ibaraki, 300-0006 Japan
Telephone Number : +81-29-832-4082
Facsimile Number : +81-29-830-1891
Contact Person : Takashi Kikuchi

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Wireless Module
Model No. : AE51041
Serial No. : 00-0A-D2-3A-02-AF
Rating : DC3.3V, 0.15A
Country of Manufacture : Japan
Receipt Date of Sample : June 17, 2005
Condition of E.U.T. : Production model

2.2 Product Description

<General Information>

Type of Equipment	Transceiver
Frequency Band	Lower Limit: 2402MHz Upper Limit: 2480MHz
Type of Modulation	FHSS
Antenna Type	Chip Antenna
Antenna Gain	-3.35dBi
Antenna Connector type	Printed Circuit Pattern
Mode of Operation	Duplex
Method of Frequency Generation	Synthesizer
Power Supply	DC3.3V
Operation Temperature Range	0-40 degree C

FCC 15.31 (e)

This EUT will be equipped and used only for host device such as measuring equipment which can supply regulate power of 3.3V stably. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2005

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits : 2005
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz : 2005

3.2 Procedures and results [FHSS]

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin*0)	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	3.5dB 0.20681MHz, N/L, AV	Complied
2	Carrier Frequency Separation	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A	*See data.	Complied
3	20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A		Complied
4	Number of Hopping Frequency	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A		Complied
5	Dwell time	ANSI C63.4:2003 13.Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A		Complied
6	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(b)(1)	Conducted	N/A		Complied
7	Band Edge Compliance	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted	N/A		Complied
8	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted/ Radiated	N/A	1.3dB 7206MHz, AV, Horizontal	Complied

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Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15.

*0) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

Uncertainty:

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 1.3\text{dB}$.

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

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is $\pm 4.5\text{dB}(3\text{m})/\pm 4.7\text{dB}(10\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is $\pm 5.2\text{dB}(3\text{m})/\pm 3.8\text{dB}(10\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is $\pm 6.6\text{dB}$.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 3.0\text{dB}$.

*These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-210(issue 6): 2005	RSS-210(issue 6): 2005	Conducted	N/A	N/A	N/A
2	Co-location & Co-operation (Confirmation testing for Radiated Spurious Emission at simultaneous transmission)	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Radiated	N/A *1)	N/A	N/A

*1) The test is not applicable since EUT does not have co-operating mode.

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3.4 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	846015	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.3 shielded room.

3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

SECTION 4: Operation of E.U.T. during testing

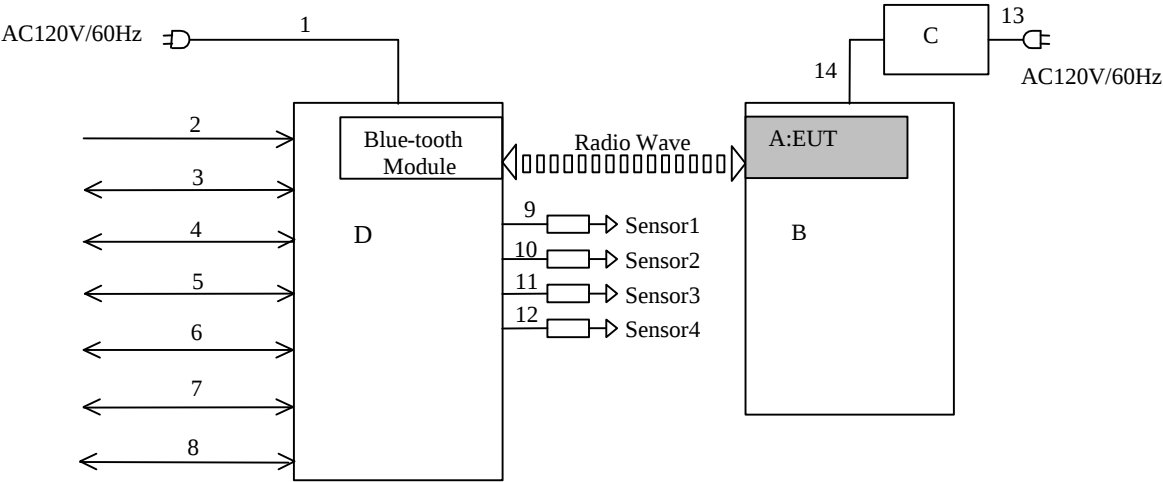
4.1 Operating Modes

The mode is used :

- [for conducted emission test]Wireless connective mode
- [for other test]Transmitting mode(Packet size DH5)
Low Channel :2402MHz
Mid Channel :2441MHz
High channel :2480MHz
Inquiry

4.2 Configuration and peripherals

[for conducted emission test]



*The test was made in the representative host device in which the Wireless Module is installed.
* Cabling was taken into consideration and test data was taken under worse case conditions.

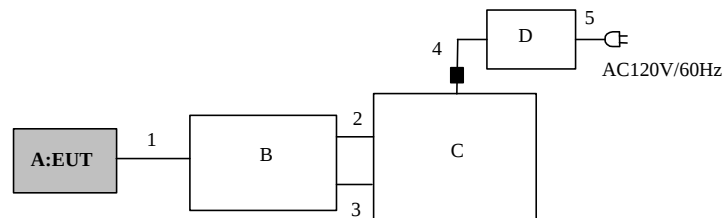
Description of EUT and Support Equipment

	Description	Model Name	S/N	Manufacture	FCC ID	Remarks
A	Wireless Module	AE51041	00-0A-D2-3A-02-AF	TOSEI ENGINEERING CORP.	TNY0999058	EUT
B	Wireless Hand Gauge	999210	A90001FZ	TOSEI ENGINEERING CORP.	-	-
C	AC Adapter	UIA312-06	501-0360700	Unifive	-	-
D	Column Type Electric Micrometer (ELCOM8)	999009	A90001FZ	TOSEI ENGINEERING CORP.	-	-

Used Cables

No.	Name	Length (m)	Shield
1	AC Power Cable	3.0	N
2	AC Link Power Cable	0.35	N
3	ELCOM8 Link Cable	0.15	Y
4	ELCOM8 Link Cable	0.15	Y
5	BCD Output Cable	6.0	Y
6	I/O Cable	6.0	Y
7	External SW Cable	6.0	Y
8	RS-232C Cable	6.0	Y
9	Sensor Head Cable	3.0	Y
10	Sensor Head Cable	3.0	Y
11	Sensor Head Cable	3.0	Y
12	Sensor Head Cable	3.0	Y
13	AC Power Cable	1.8	N
14	DC Power Cable	1.9	N

[for other test]



■ : Ferrite Core (Standard attachment of AC Adapter)

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

Description of EUT and Support Equipment

	Description	Model Name	S/N	Manufacture	FCC ID	Remarks
A	Wireless Module	AE51041	00-0A-D2-3A-02-AF	TOSEI ENGINEERING CORP.	TNY0999058	EUT
B	Jig	-	-	TOSEI ENGINEERING CORP.	-	*1)
C	Personal Computer	CF-L1EA	0DKSB09673	Panasonic	-	-
D	AC Adapter	CF-AA1639	000451726A	Panasonic	-	-

*1) DC 5.0V is supplied from C: Personal Computer to B: Jig (via Cable 2). B: Jig provides DC3.3V to A: Wireless Module (via Cable 1).

Used Cables

No.	Name	Length (m)	Shield
1	Attach Cable	0.1	N
2	USB Cable	2.0	Y
3	RS232C Cable	2.0	Y
4	DC Power Cable	1.8	N
5	AC Power Cable	1.8	N

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a platform of nominal size, 1.0m 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, including peripherals 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 a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)

I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Detector	: CISPR quasi-peak and average detector (IF BW 9 kHz)
Measurement range	: 0.15-30MHz
Test data	: APPENDIX 3
Test result	: Pass

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SECTION 6: Spurious Emission

[Conducted]

Test Procedure

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

Test data : APPENDIX 3

Test result : Pass

[Radiated]

Test Procedure

EUT was placed on a platform of nominal size, 1.0m by 0.5m, raised 80cm above the conducting ground plane.

The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

The height of the measuring 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 with the Test Receiver, or the Spectrum Analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

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.

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW: 100kHz VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

Test data : APPENDIX 3

Test result : Pass

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

SECTION 7: Bandwidth

Test Procedure

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

Test data : APPENDIX 3

Test result : Pass

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SECTION 8: Maximum Peak Output Power

Test Procedure

The Maximum Peak Output Power was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX 3
Test result	: Pass

SECTION 9: Carrier Frequency Separation

Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX 3
Test result	: Pass

SECTION 10: Number of Hopping Frequency

Test Procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX 3
Test result	: Pass

SECTION 11: Dwell time

Test Procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX 3
Test result	: Pass

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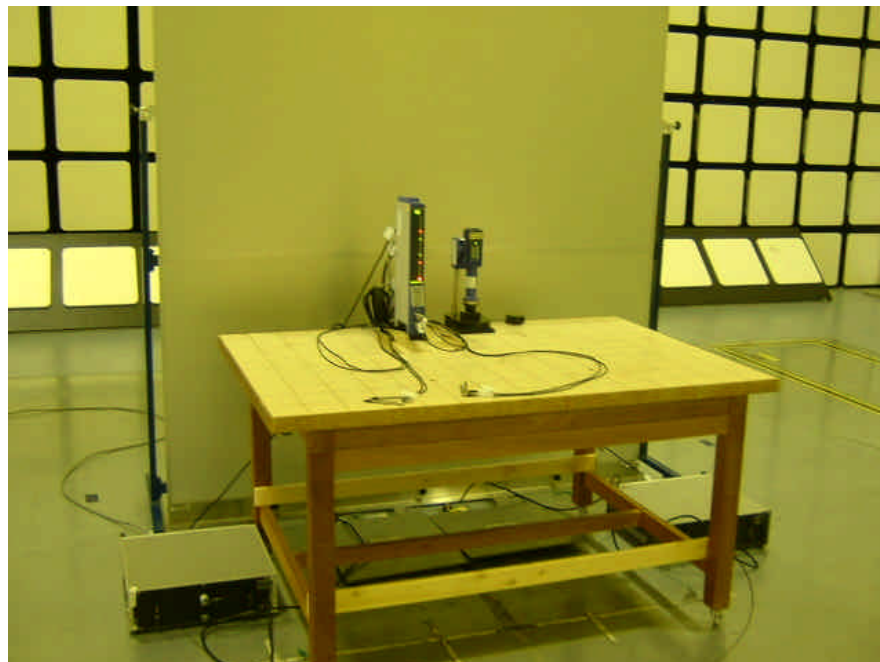
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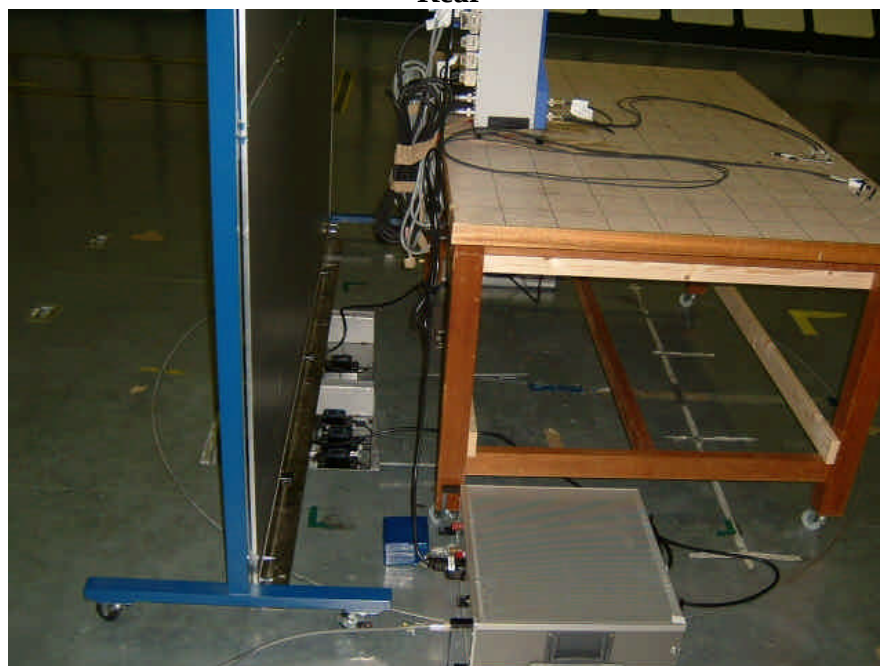
APPENDIX 1: Photographs of test setup

Conducted Emission

Front



Rear



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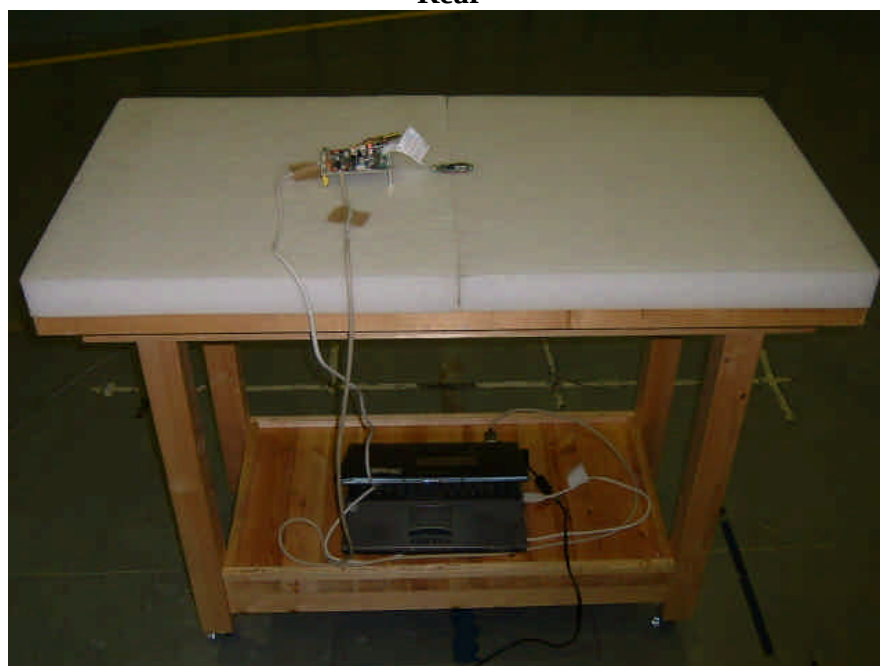
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Spurious Emission (Radiated)

Front



Rear



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Worst Case Position (Z-axis:Horizontal / Y-axis:Vertical)

X-axis



Y-axis



Z-axis



APPENDIX 2:Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2005/04/11 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	RE, Conducted	2005/09/16 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2005/01/10 * 12
MCC-04	Microwave Cable 1G-50GHz	Storm	421-011 (90-1394-079)	RE	2005/01/05 * 12
MCC-19	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	RE	2005/02/03 * 12
MAT-25	Attenuator	Agilent	8493C	RE	2005/06/03 * 12
MHF-02	High Pass Filter	Tokimec	TF323DCA	RE	2004/09/18 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE	2005/05/19 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2005/02/05 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE/	2005/02/02 * 12
MPA-05	Pre Amplifier	TSJ	TSJ 1-26.5GHz PreAmp	RE	2005/07/08 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2005/01/10 * 12
MAT-18	Attenuator(3dB) (above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-103	Conducted	2005/01/11 * 12
MCC-16	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	Conducted	2005/02/03 * 12
MPA-06	Pre Amplifier	Hewlett Packard	8447D	RE	2005/08/31 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2005/02/24 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2004/12/16 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2004/10/14 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2004/10/14 * 12
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	CE	2004/11/13 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	CE	2004/11/12 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2004/11/10 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	CE	2004/11/10 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/ Agilent/TSJ	-	CE	2004/12/24 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

CE: Conducted emission

RE: Radiated emission

Conducted : Antenna terminal tests

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APPENDIX 3: Data of EMI test

Conducted Emission

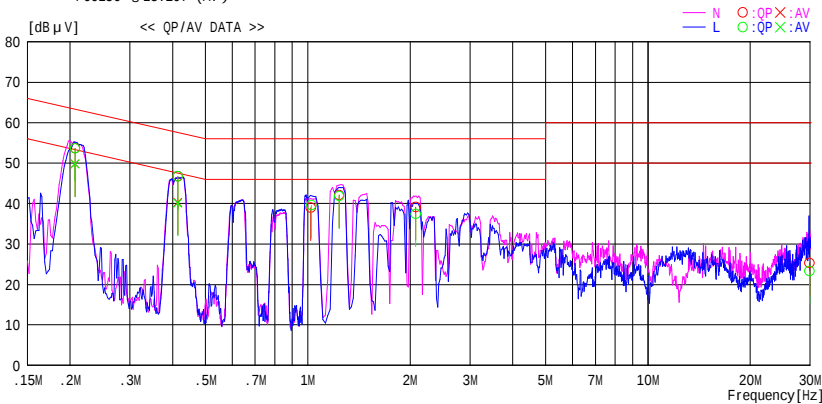
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/06/27 17:03:15

Applicant : TOSEI ENGINEERING CORP. Report No. : 25HE0235-HO
Kind of EUT : Wireless Module Power : AC120V / 60Hz (host device)
Model No. : AE51041 Temp /Humi% : 25deg.C / 43%
Serial No. : 00-0A-D2-3A-02-AF Operator : Hiroka Umeyama

Mode / Remarks : Wireless Connective Mode

LIMIT : FCC15C §15.207 (QP)
FCC15C §15.207 (AV)



Frequency	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP	AV		QP	AV	QP	AV	QP	AV	
[MHz]	[dBμV]	[dBμV]	[dB]	[dBμV]	[dBμV]	[dBμV]	[dBμV]	[dB]	[dB]	
0.20681	53.1	49.2	0.6	53.7	49.8	63.3	53.3	9.6	3.5	N
0.20681	53.1	49.2	0.6	53.7	49.8	63.3	53.3	9.6	3.5	L
0.41465	46.4	40.0	0.3	46.7	40.3	57.6	47.6	10.9	7.3	N
0.41465	46.4	39.8	0.3	46.7	40.1	57.6	47.6	10.9	7.5	L
1.02049	38.5	---	0.5	39.0	---	56.0	---	17.0	---	N
1.02429	39.1	---	0.5	39.6	---	56.0	---	16.4	---	L
1.23622	41.7	---	0.5	42.2	---	56.0	---	13.9	---	N
1.23622	41.4	---	0.5	41.9	---	56.0	---	14.1	---	L
2.07890	38.4	---	0.7	39.1	---	56.0	---	16.9	---	N
2.07890	36.7	---	0.7	37.4	---	56.0	---	18.6	---	L
29.86200	22.5	---	2.8	25.3	---	60.0	---	34.7	---	N
29.86200	20.5	---	2.8	23.3	---	60.0	---	36.7	---	L

CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Carrier Frequency Separation

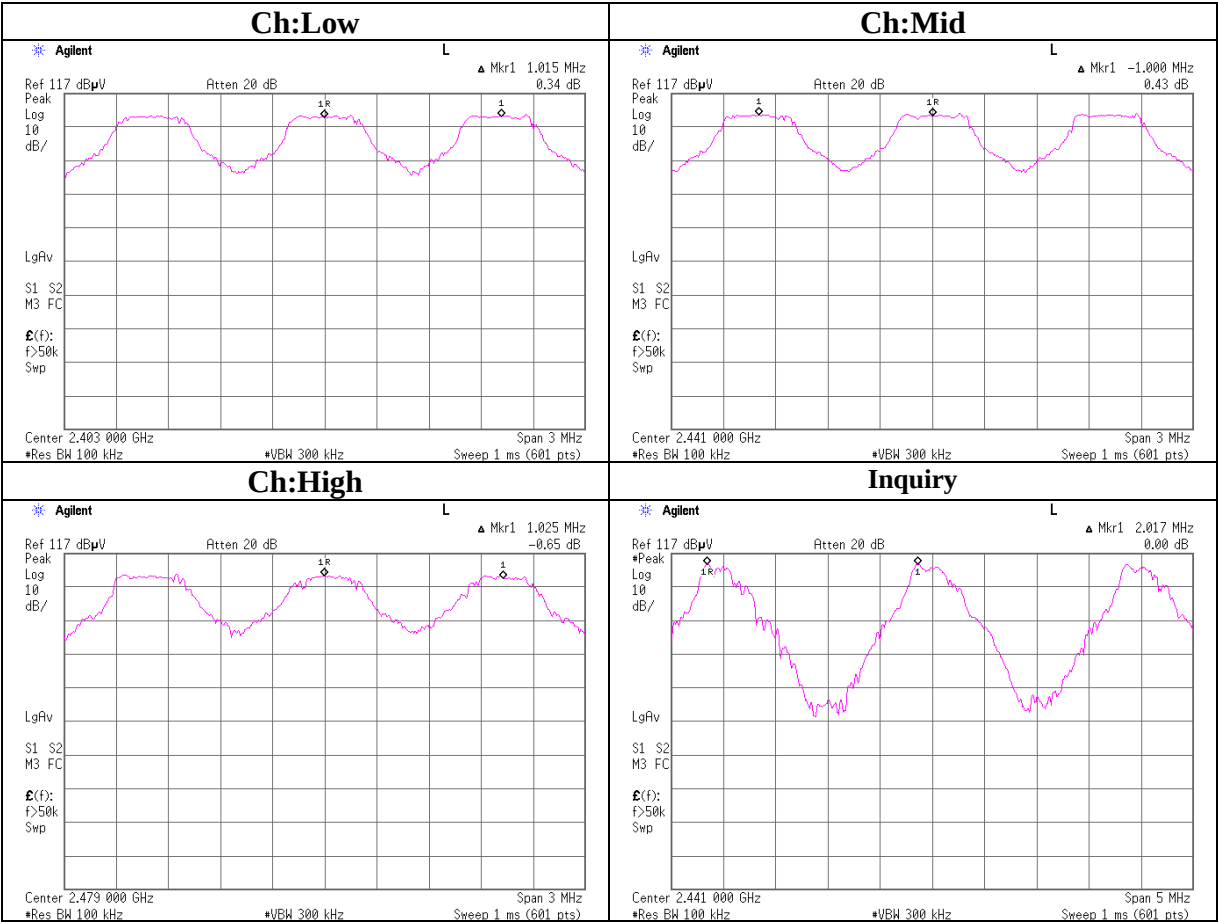
UL Apex Co., Ltd.
Head Office EMC Lab. No.4 measurement room

COMPANY : TOSEI ENGINEERING CORP.
EQUIPMEN : Wireless Module
MODEL : AE51041
S/ N : 00-0A-D2-3A-02-AF
POWER : DC 5.0 V
MODE : Tx(Hopping on)/Inquiry

REGULATION : Fcc Part15 Subpart C 15.247(a)(1)
TEST DISTANCE : -
DATE : 09/12/2005
TEMPERATURE : 26deg.C
HUMIDITY : 60%
ENGINEER : Yutaka Yoshida

Ch	Freq. [MHz]	Channel separation [MHz]	Limit
Low	2402.0	1.015	>20dB Bandwidth and 25[kHz]
Mid	2441.0	1.000	>20dB Bandwidth and 25[kHz]
High	2480.0	1.025	>20dB Bandwidth and 25[kHz]
Inquiry	2441.0	2.017	>20dB Bandwidth and 25[kHz]

Carrier Frequency Separation



20dB Bandwidth

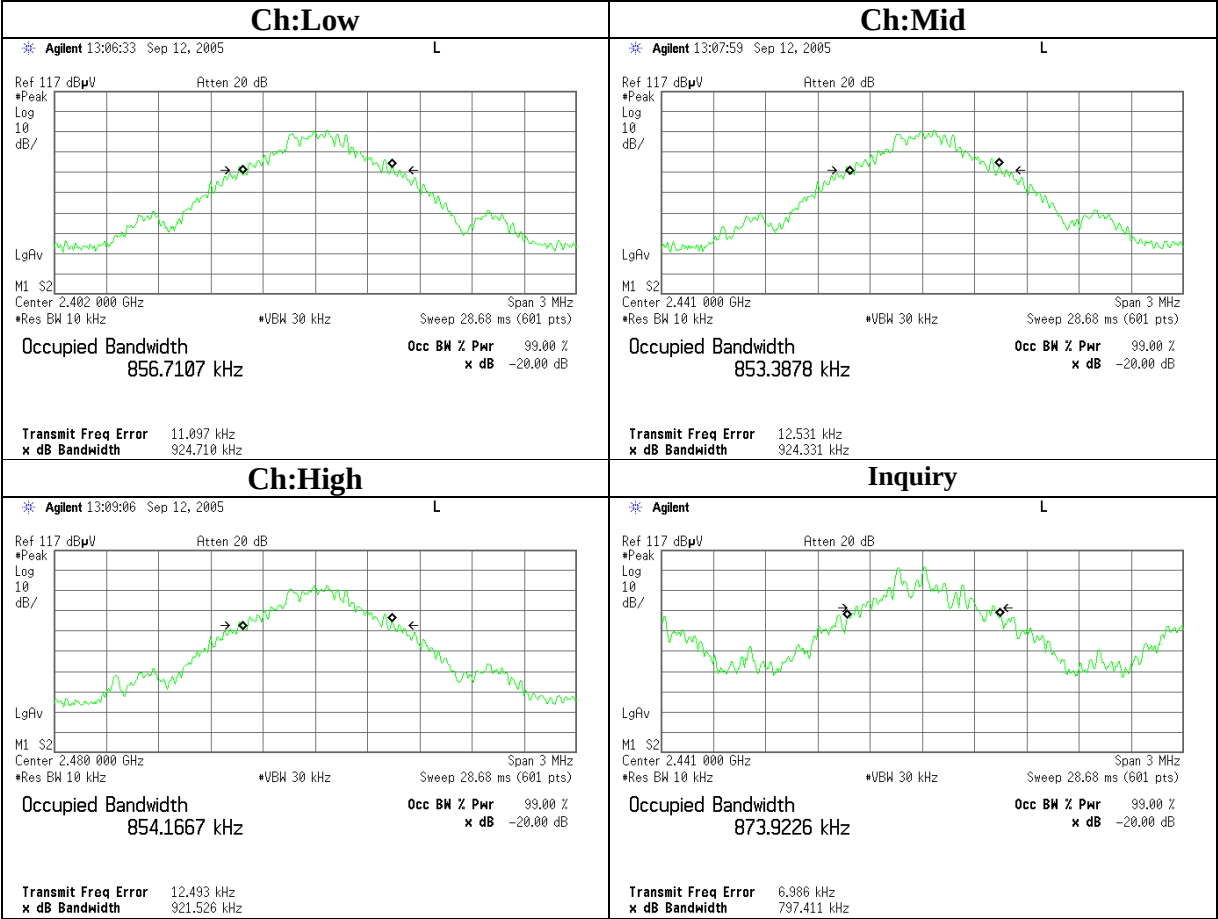
UL Apex Co., Ltd.
Head Office EMC Lab. No.4 measurement room

COMPANY : TOSEI ENGINEERING CORP.
EQUIPMENT : Wireless Module
MODEL : AE51041
S/ N : 00-0A-D2-3A-02-AF
POWER : DC 5.0 V
MODE : Tx (Hopping off) /Inquiry

REGULATION : Fcc Part15 Subpart C 15.247(a)(1)
TEST DISTANCE : -
DATE : 09/12/2005
TEMPERATURE : 26deg.C
HUMIDITY : 60%
ENGINEER : Yutaka Yoshida

Ch	Freq.	20dB Bandwidth	Limit
	[MHz]	[MHz]	[MHz]
Low	2402.0	0.925	-
Mid	2441.0	0.924	-
High	2480.0	0.922	-
Inquiry	2441.0	0.797	-

20dB Bandwidth



Number of Hopping Frequency

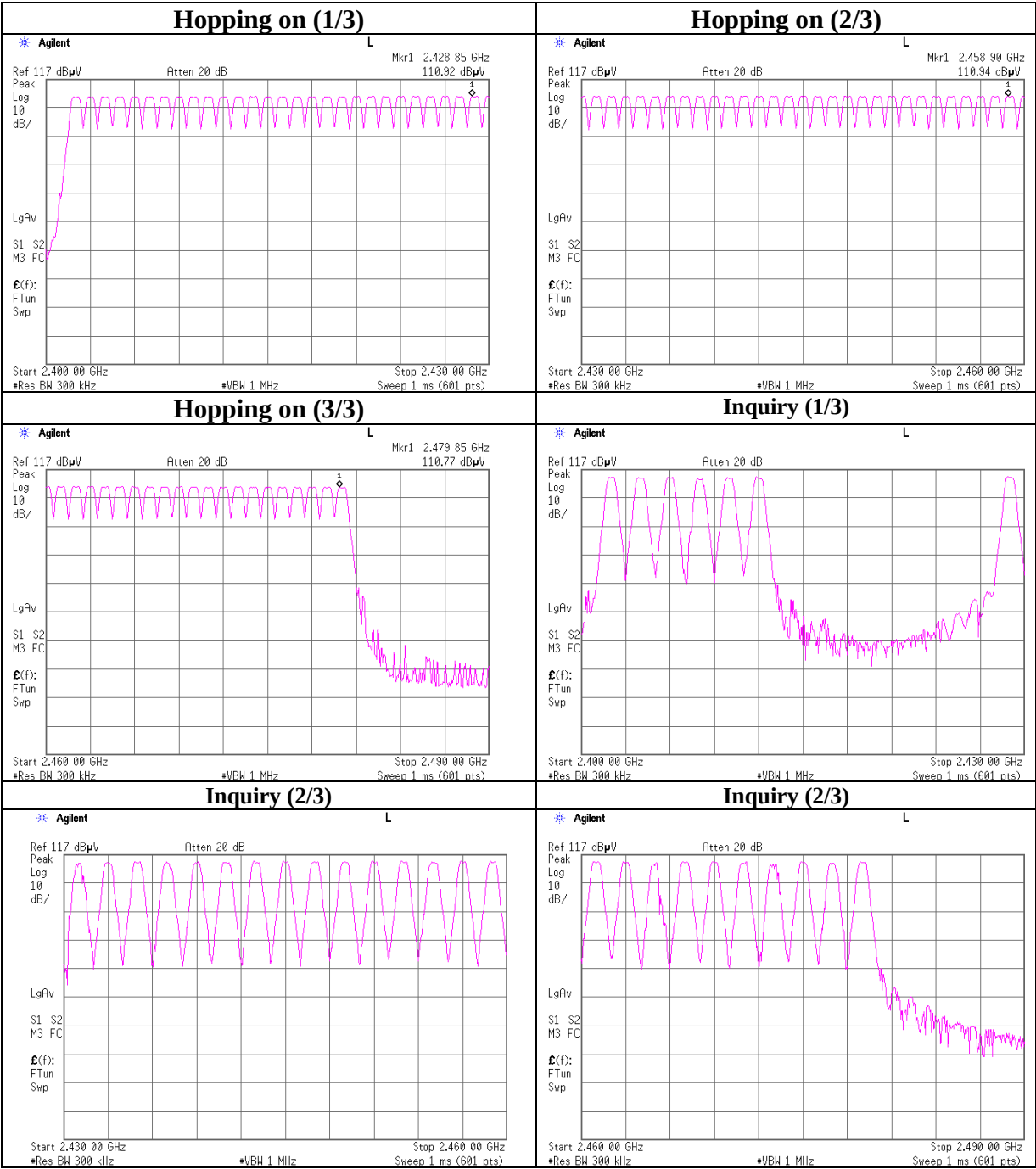
UL Apex Co., Ltd.
Head Office EMC Lab. No.4 measurement room

COMPANY	: TOSEI ENGINEERING CORP.	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)(iii)
EQUIPMENT	: Wireless Module	TEST DISTANCE	: -
MODEL	: AE51041	DATE	: 09/12/2005
S/ N	: 00-0A-D2-3A-02-AF	TEMPERATURE	: 26deg.C
POWER	: DC 5.0 V	HUMIDITY	: 60%
MODE	: Tx (Hopping on) /Inquiry	ENGINEER	: Yutaka Yoshida

Mode	Number of channel	Limit
	[time]	[time]
Tx(Hoppng on)	79	15

Mode	Number of channel	Limit
	[time]	[time]
Inquiry	32	15

Number of Hopping Frequency



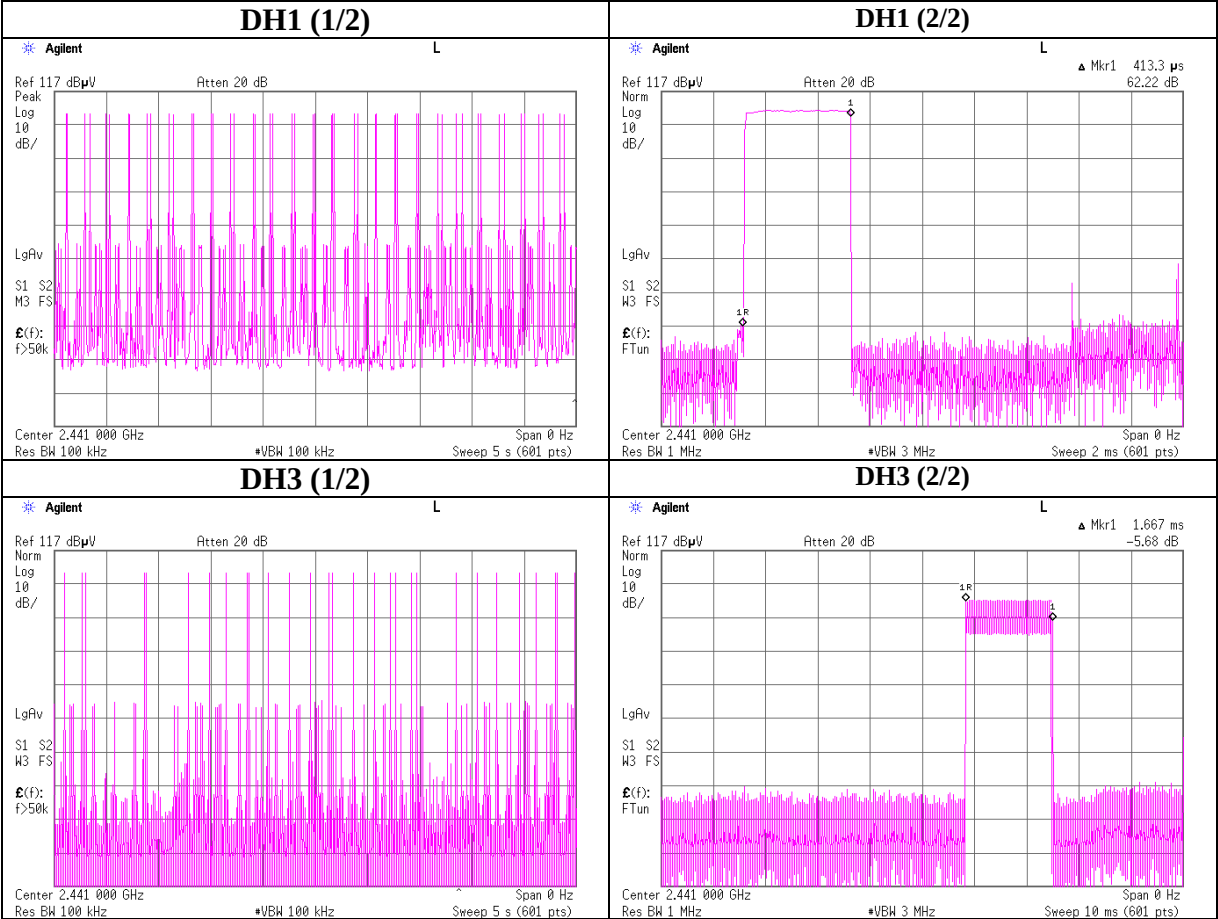
Dwell time

UL Apex Co., Ltd.
Head Office EMC Lab. No.4 measurement room

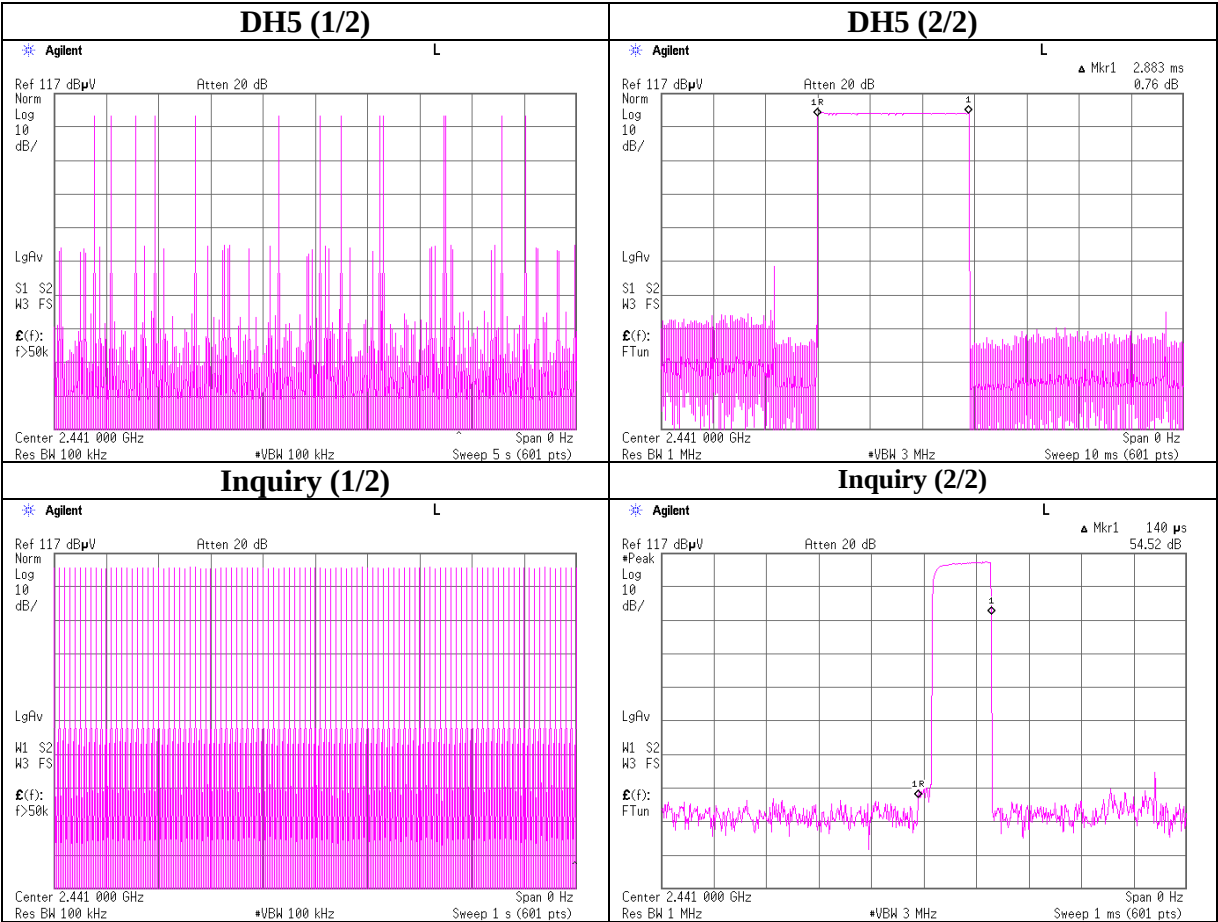
COMPANY	: TOSEI ENGINEERING CORP.	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)(iii)
EQUIPMENT	: Wireless Module	TEST DISTANCE	: -
MODEL	: AE51041	DATE	: 09/12/2005
S/ N	: 00-0A-D2-3A-02-AF	TEMPERATURE	: 26deg.C
POWER	: DC 5.0 V	HUMIDITY	: 60%
MODE	: Tx (Hopping on) /Inquiry	ENGINEER	: Yutaka Yoshida

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	45 times /5sec. x 31.6 = 285 times	0.413	118	400
DH3	29 times / 5sec. x 31.6 = 184 times	1.667	307	400
DH5	14 times / 5 sec. x 31.6 = 89 times	2.883	257	400
Inquiry	101 times / 1sec. x 12.8 = 1293 times	0.140	181	400

Dwell time



Dwell time



Maximum Peak Output Power

UL Apex Co., Ltd.
Head Office EMC Lab. No.4 measurement room

COMPANY	: TOSEI ENGINEERING CORP.	REGULATION	: Fcc Part15 Subpart C 15.247(b)(1)
EQUIPMENT	: Wireless Module	TEST DISTANCE	: -
MODEL	: AE51041	DATE	: 09/12/2005
S/ N	: 00-0A-D2-3A-02-AF	TEMPERATURE	: 26deg.C
POWER	: DC 5.0 V	HUMIDITY	: 60%
MODE	: Tx(Hopping off)/Inquiry	ENGINEER	: Yutaka Yoshida

Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2401.9	4.09	0.46	3.00	7.55	30.00	22.45
Mid	2441.2	4.27	0.42	3.00	7.69	30.00	22.31
High	2479.9	4.06	0.47	3.00	7.53	30.00	22.47
Inquiry	2441.0	7.48	0.42	3.00	10.90	30.00	19.10

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer)+ Attenuator

*The test result applied to the most strictest limit of 0.125W.

UL Apex Co., Ltd.

Head Office EMC Lab.

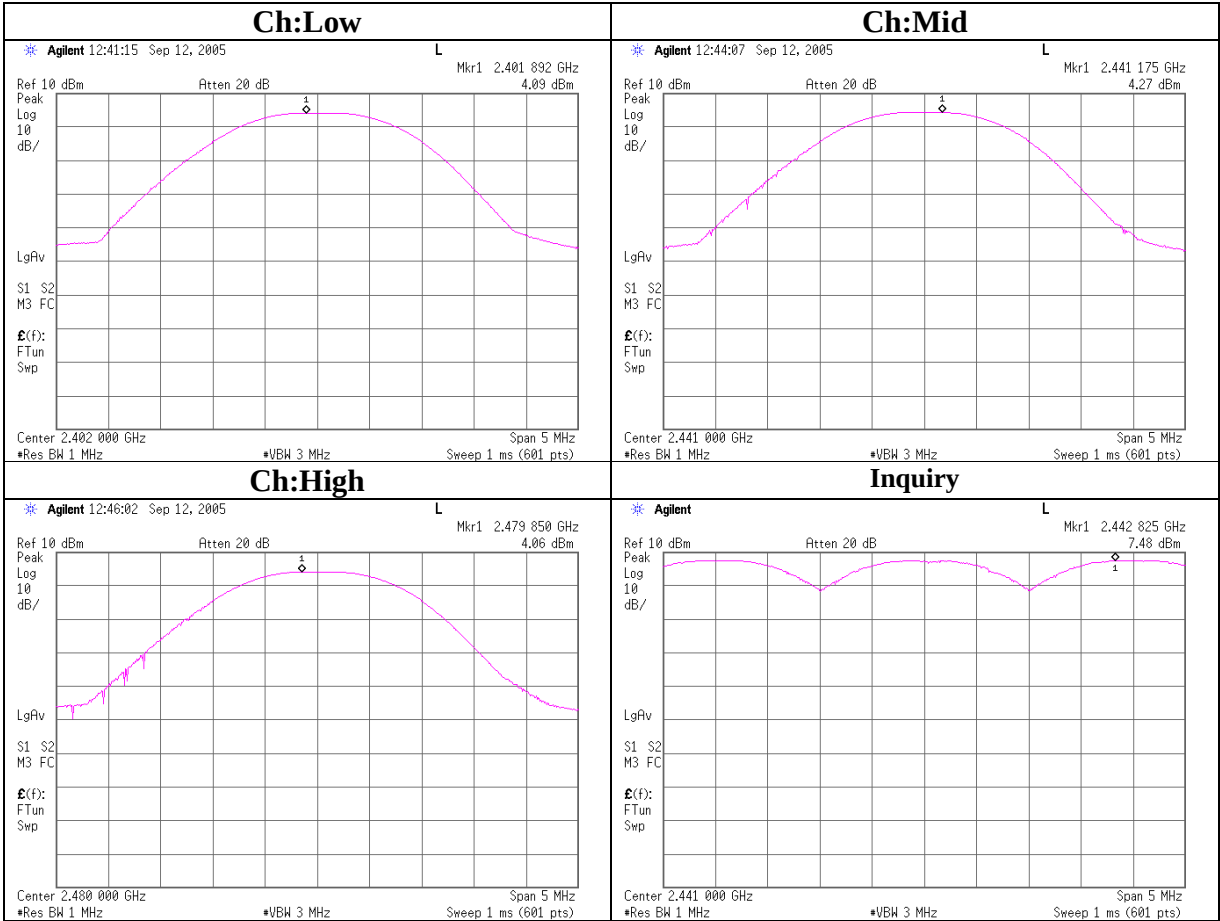
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

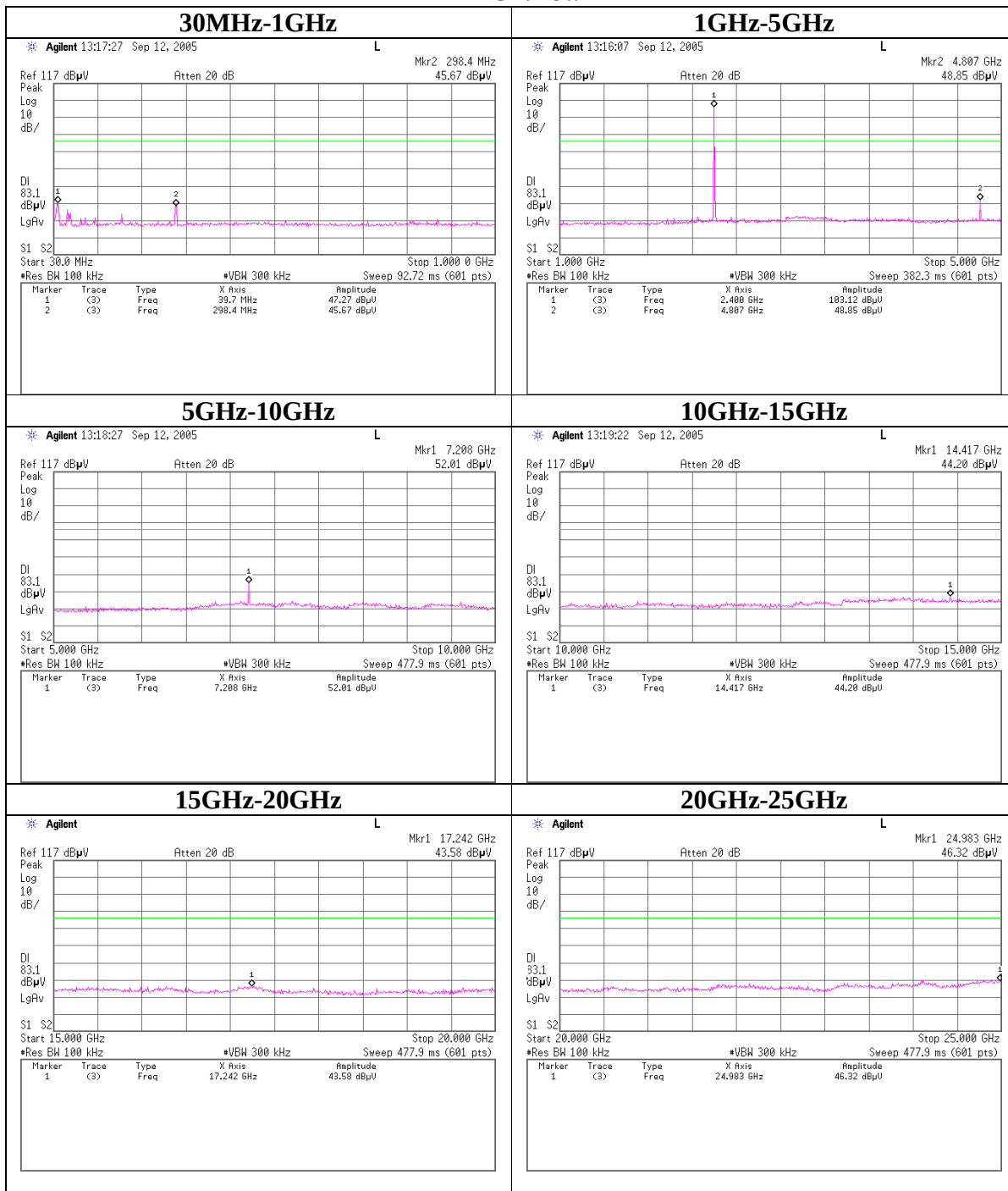
Facsimile : +81 596 24 8124

MF060b(01.06.05)

Maximum Peak Output Power

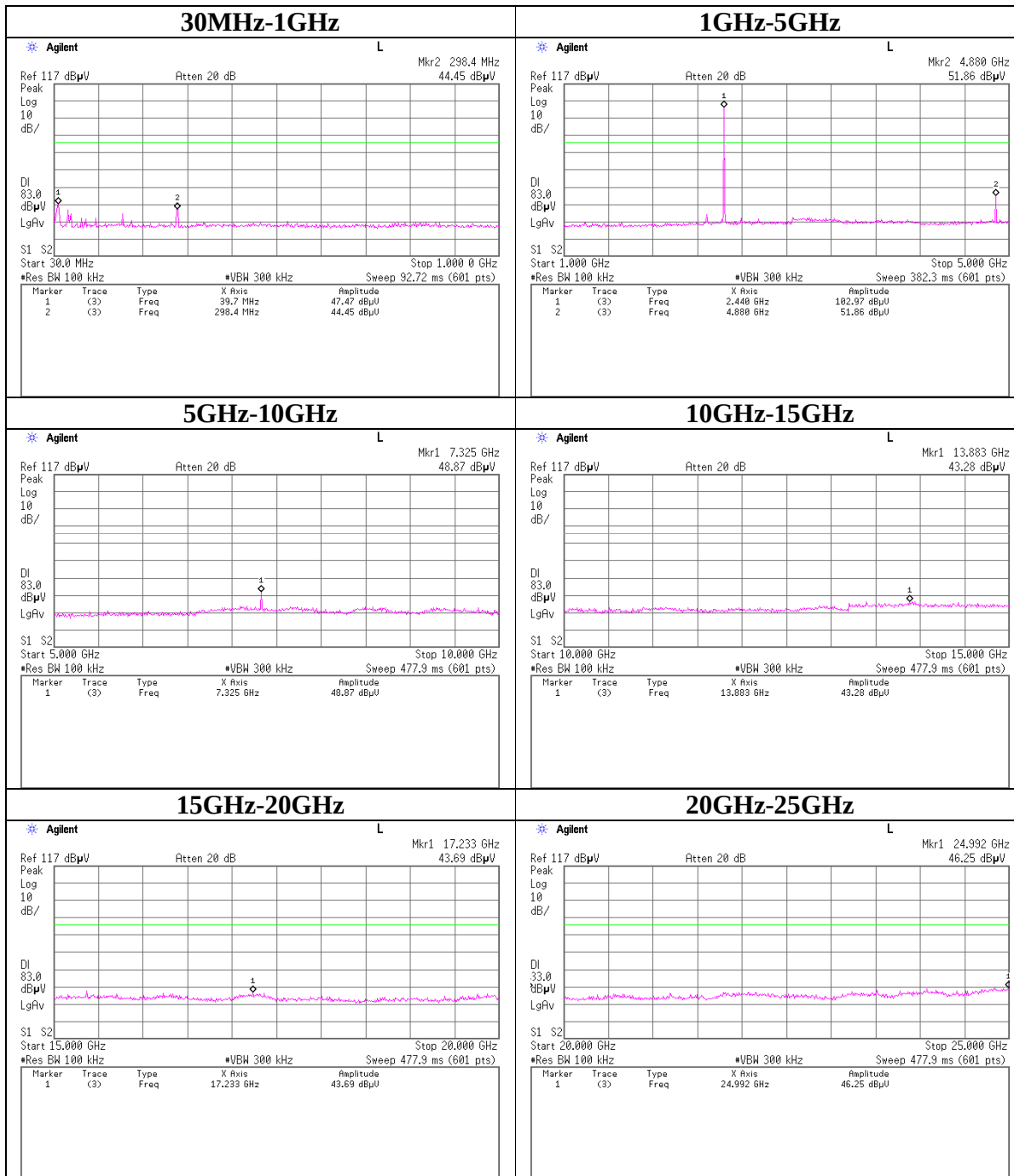


Conducted Spurious Emission
Ch:Low



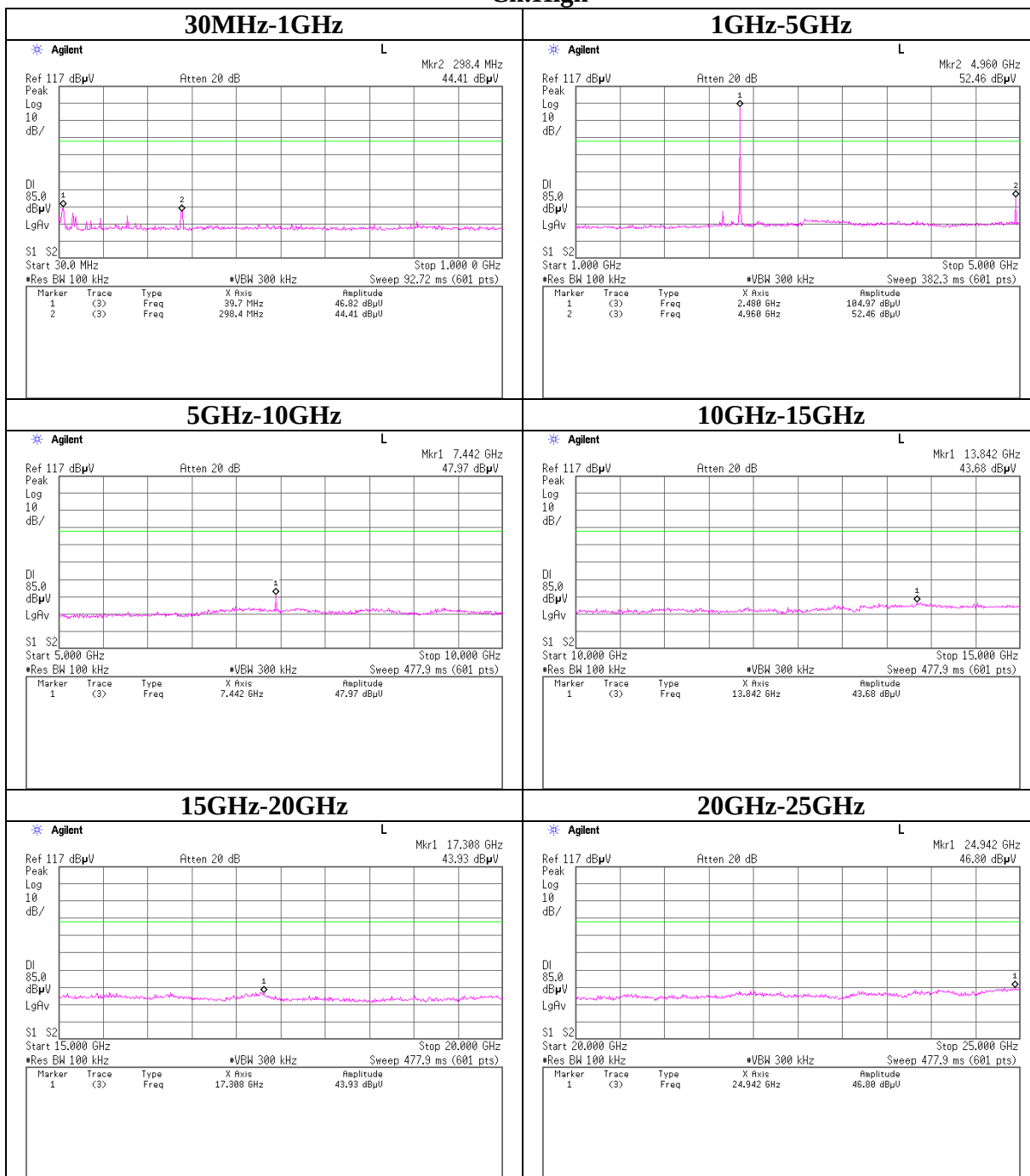
Conducted Spurious Emission

Ch:Mid

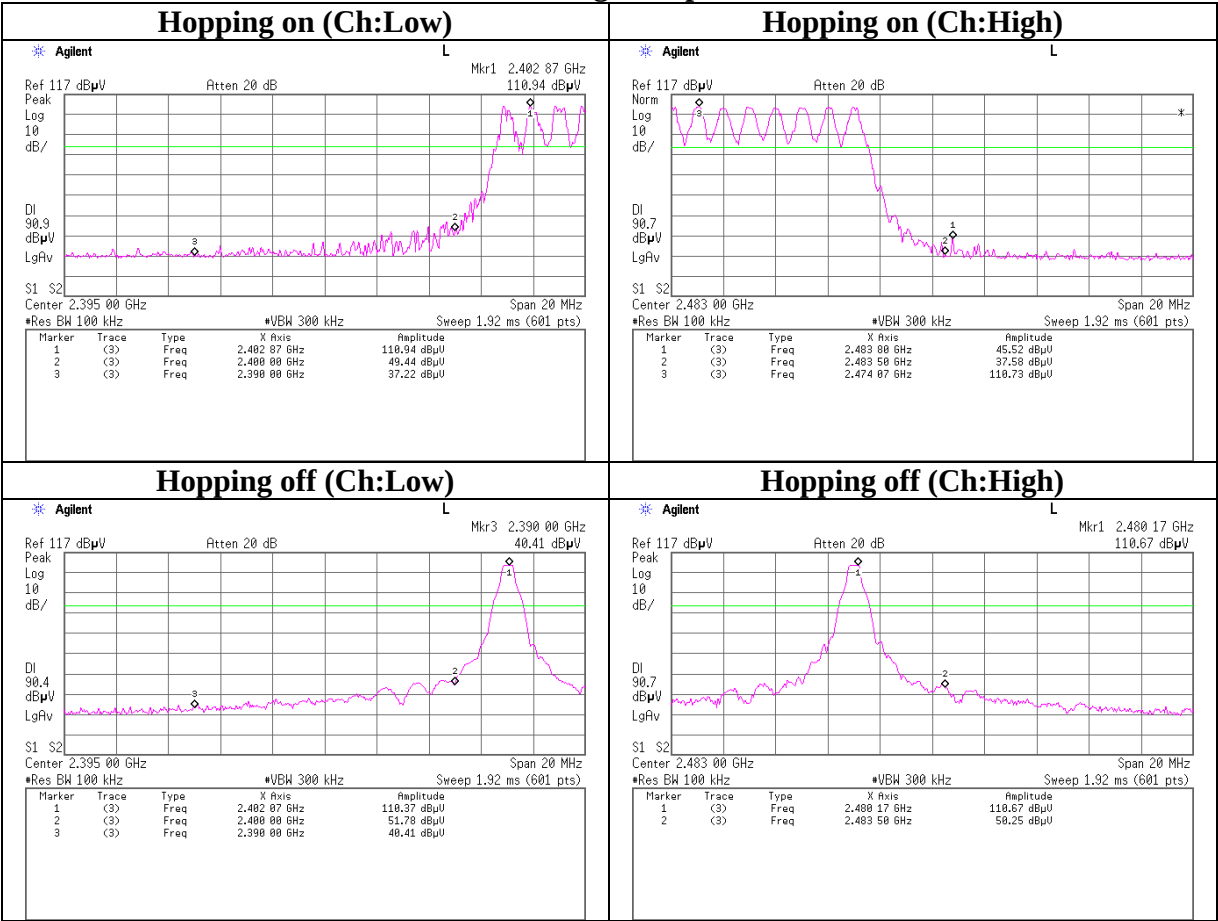


Conducted Spurious Emission

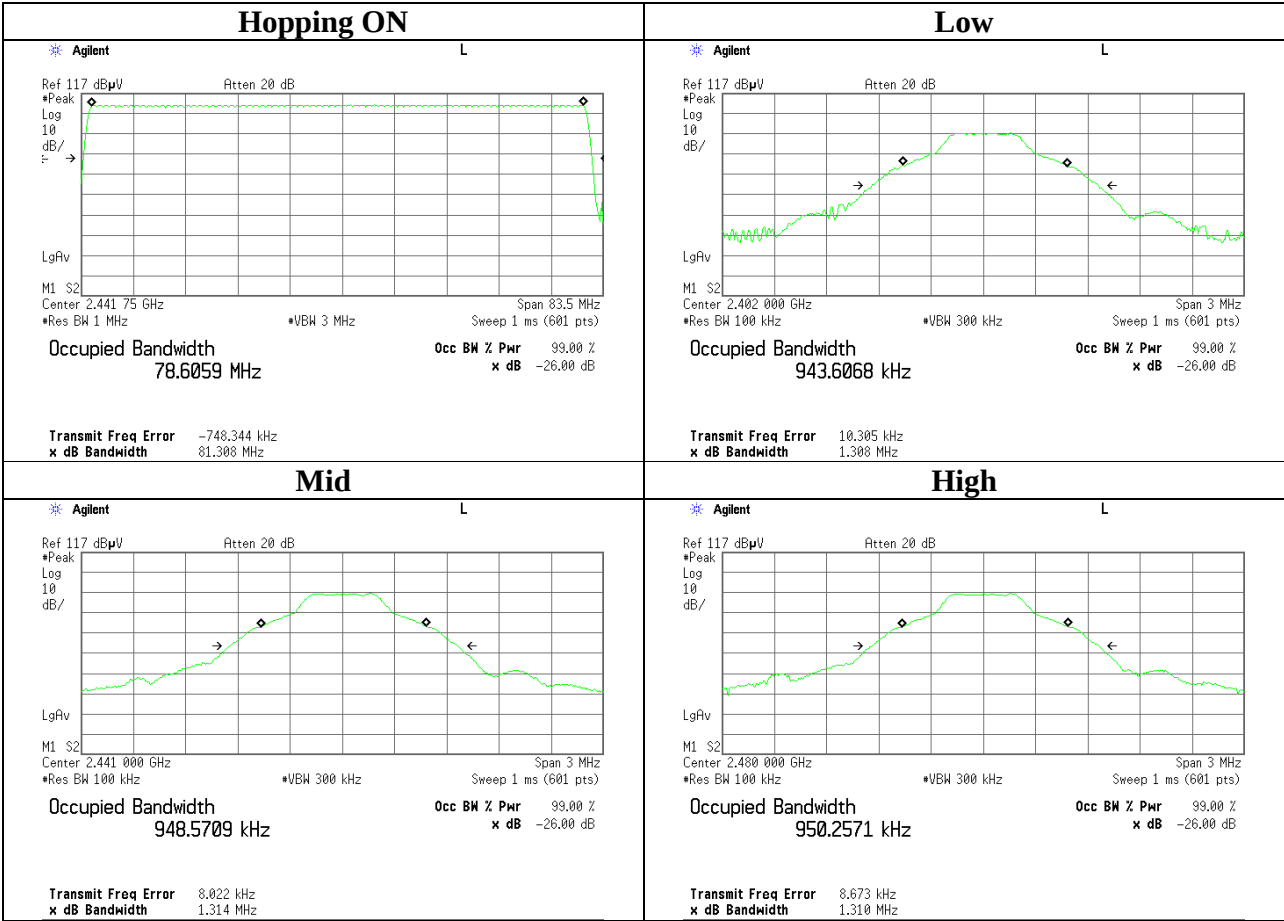
Ch:High



Conducted Spurious Emission
Band Edge compliance



99% Occupied Bandwidth



Radiated Spurious Emission

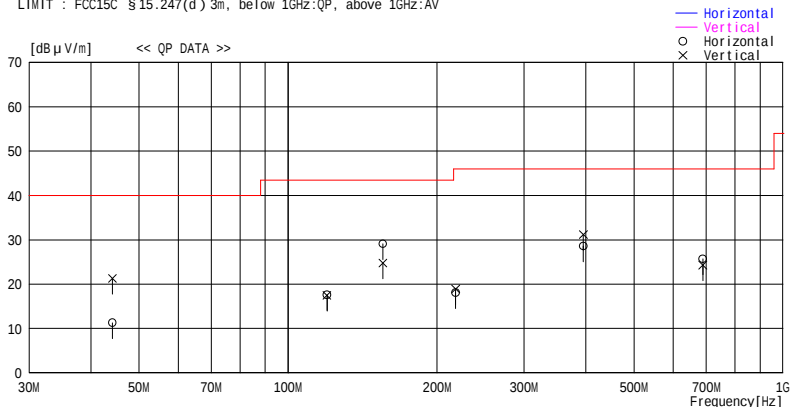
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/17 11:04:16

Applicant : TOSEI ENGINEERING CORP. Report No. : 25HE0235-HO
Kind of EUT : Wireless Module Power : DC5.0V
Model No. : AE51041 Temp./Humi. : 27deg.C / 49%
Serial No. : 00-0A-D2-3A-02-AF Operator : Hiroka Uneyama

Mode / Remarks : Transmitting 2402MHz MAX-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna Factor	Loss & Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dB μ V]		[dB/m]	[dB]	[dB μ V/m]	[Deg]	[cm]		[dB μ V/m]	[dB]
44.188	21.2	QP	12.0	-21.9	11.3	238	100	Hor.	40.0	28.7
44.188	31.2	QP	12.0	-21.9	21.3	89	100	Vert.	40.0	18.7
119.930	25.6	QP	13.1	-21.1	17.6	226	194	Hor.	43.5	25.9
119.930	25.5	QP	13.1	-21.1	17.5	19	100	Vert.	43.5	26.0
155.529	33.3	QP	16.3	-20.5	29.1	188	281	Hor.	43.5	14.4
155.529	29.0	QP	16.3	-20.5	24.8	151	100	Vert.	43.5	18.7
218.191	21.6	QP	17.1	-19.8	18.9	0	100	Vert.	46.0	27.1
218.191	20.8	QP	17.1	-19.8	18.1	51	100	Hor.	46.0	27.9
689.052	22.8	QP	20.4	-18.9	24.3	203	100	Vert.	46.0	21.7
689.052	24.2	QP	20.4	-18.9	25.7	128	122	Hor.	46.0	20.3
395.202	29.7	QP	18.4	-19.5	28.6	150	225	Hor.	46.0	17.4
395.202	32.3	QP	18.4	-19.5	31.2	129	208	Vert.	46.0	14.8

CHART:WITH FACTOR ANT TYPE: -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

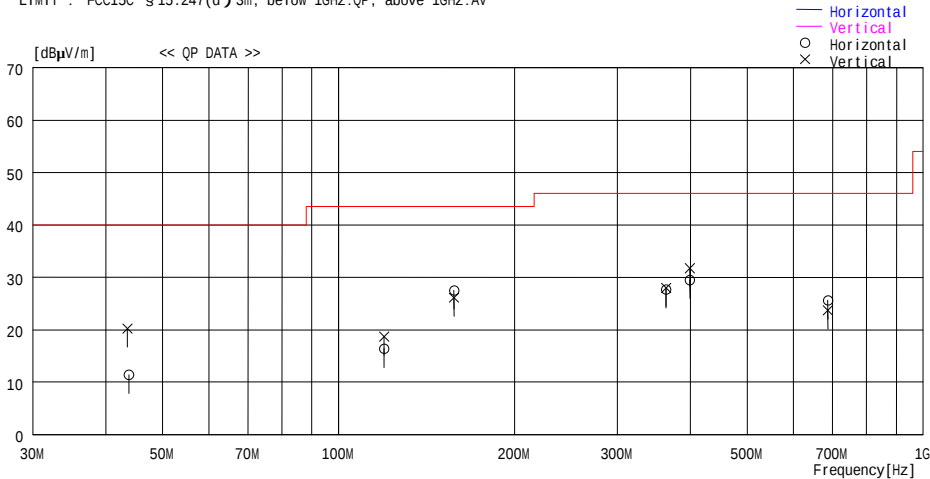
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/17 12:35:06

Applicant : TOSEI ENGINEERING CORP.
Kind of EUT : Wireless Module
Model No. : AE51041
Serial No. : 00-0A-D2-3A-02-AF
Report No. : 25HE0235-HO
Power : DC5.0V
Temp./Humi. : 27deg.C / 49%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2441MHz MAX-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBμV]		Factor	Gain	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
43.500	29.8	QP	12.3	-21.9	20.2	83	100	Vert.	40.0	19.8
43.770	21.1	QP	12.2	-21.9	11.4	359	300	Hori.	40.0	28.6
119.599	24.4	QP	13.1	-21.1	16.4	260	158	Hori.	43.5	27.1
119.599	26.7	QP	13.1	-21.1	18.7	7	100	Vert.	43.5	24.8
157.564	30.0	QP	16.5	-20.4	26.1	74	100	Vert.	43.5	17.4
157.564	31.4	QP	16.5	-20.4	27.5	182	246	Hori.	43.5	16.0
363.250	30.1	QP	17.3	-19.4	28.0	56	167	Vert.	46.0	18.0
363.250	29.8	QP	17.3	-19.4	27.7	354	168	Hori.	46.0	18.3
398.995	32.7	QP	18.6	-19.6	31.7	98	100	Vert.	46.0	14.3
398.995	30.5	QP	18.6	-19.6	29.5	150	211	Hori.	46.0	16.5
687.263	24.3	QP	20.4	-19.1	25.6	327	139	Hori.	46.0	20.4
687.263	22.4	QP	20.4	-19.1	23.7	348	152	Vert.	46.0	22.3

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

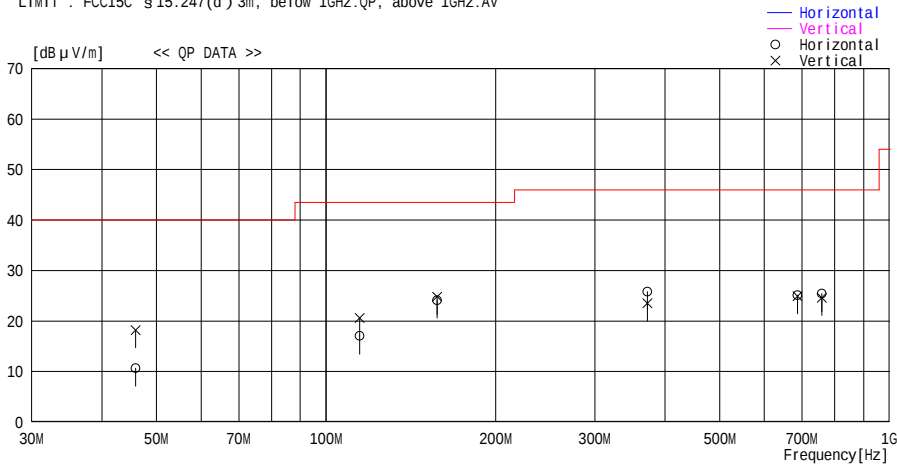
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/17 13:56:01

Applicant : TOSEI ENGINEERING CORP.
Kind of EUT : Wireless Module
Model No. : AE51041
Serial No. : 00-0A-D2-3A-02-AF
Report No. : 25HE0235-HO
Power : DC5.0V
Temp./Humi. : 27deg.C / 49%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2480MHz MAX-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
45.930	28.7	QP	11.4	-21.9	18.2	89	100	Vert.	40.0	21.8
45.930	21.1	QP	11.4	-21.9	10.6	356	169	Hori.	40.0	29.4
114.759	25.7	QP	12.4	-21.1	17.0	49	324	Hori.	43.5	26.5
114.759	29.3	QP	12.4	-21.1	20.6	154	100	Vert.	43.5	22.9
157.499	28.0	QP	16.5	-20.4	24.1	360	265	Hori.	43.5	19.4
157.499	28.7	QP	16.5	-20.4	24.8	102	100	Vert.	43.5	18.7
372.066	27.6	QP	17.6	-19.4	25.8	147	100	Hori.	46.0	20.2
372.066	25.3	QP	17.6	-19.4	23.5	195	114	Vert.	46.0	22.5
687.267	23.8	QP	20.4	-19.1	25.1	313	119	Hori.	46.0	20.9
687.267	23.6	QP	20.4	-19.1	24.9	175	100	Vert.	46.0	21.1
758.856	22.7	QP	21.4	-18.7	25.4	174	119	Hori.	46.0	20.6
758.856	21.9	QP	21.4	-18.7	24.6	223	100	Vert.	46.0	21.4

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/09 20:47:59

Applicant : TOSEI ENGINEERING CORP.
Kind of EUT : Wireless Module
Model No. : AE51041
Serial No. : 00-0A-D2-3A-02-AF
Report No. : 25HE0235-HO
Power : DC5.0V
Temp./Humi. : 27deg.C / 51%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2402MHz MAX-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:PK
FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:AV

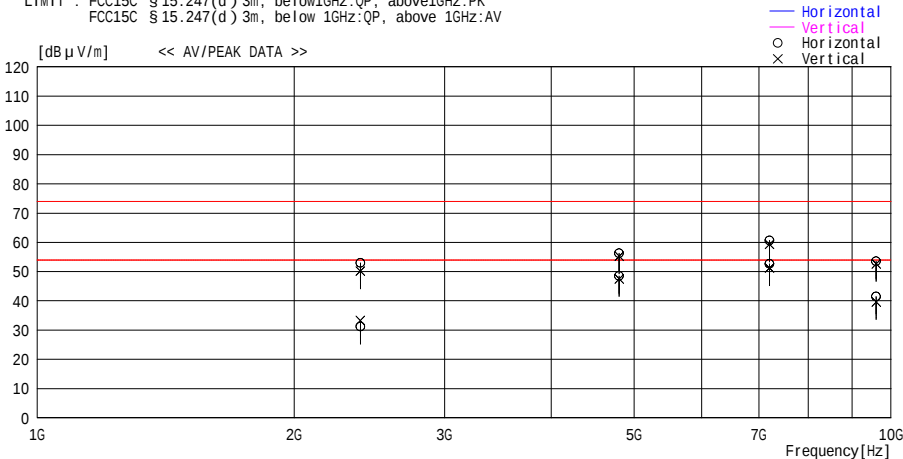


CHART:WITH FACTOR ANT TYPE: -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

DATA OF SPURIOUS EMISSIONS(1GHz to 10GHz) (20dBc)

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company :TOSEI ENGINEERING CORP.

Equipment : Wireless Module

Model :AE51041

Sample No. : 00-0A-D2-3A-02-AF

Power : DC5.0V

Mode : Transmitting 2402MHz Max-Axis

Remarks : EUT-max-axis (Hor.: Z , Ver.: Y)

REPORT NO : 25HE0235-HO

REGULATION : Fcc Part15 Subpart C 15.247(d)

TEST DISTANCE : 3m

DATE : 09/17/2005

TEMPERATURE : 27deg.C

HUMIDITY : 51%

ENGINEER : Hiroka Umeyama

20dBc(Fundamental 2402MHz)				(RBW: 100kHz, VBW: 300kHz)								
No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT or Filter Loss [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2401.9	109.4	108.7	30.5	36.4	3.7	0.0	107.2	106.5	-	-	-
2	2400.0	53.1	48.9	30.5	36.4	3.7	0.0	50.9	46.7	Funda-20dB	36.3	39.8

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

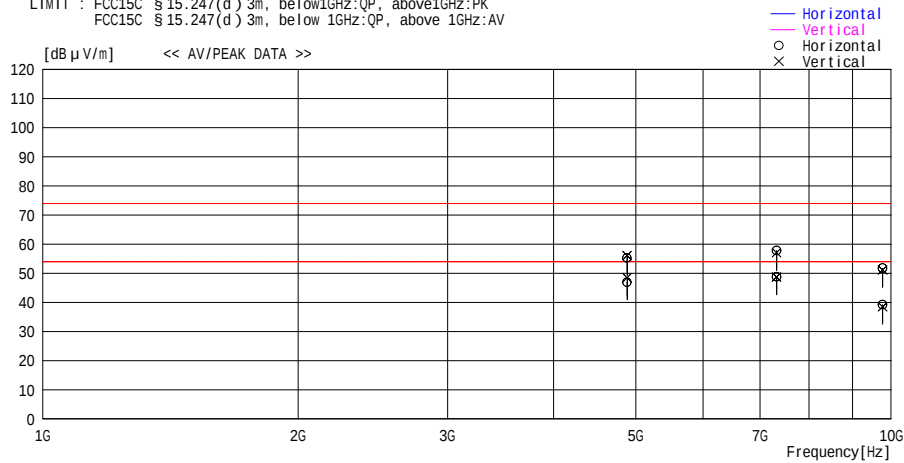
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/09 21:07:09

Applicant : TOSEI ENGINEERING CORP.
Kind of EUT : Wireless Module
Model No. : AE51041
Serial No. : 00-0A-D2-3A-02-AF
Report No. : 25HE0235-HO
Power : DC5.0V
Temp./Humi. : 27deg.C / 51%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2441MHz MAX-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:PK
FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna		Loss &		Level	Angle	Height	Polar.	Limit		Margin
			Factor	Gain									
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]				[dBuV/m]	[dB]	
4882.025	49.4	PK	35.6	-29.7	55.3	347	134	Hori.			74.0	18.7	
4882.025	50.2	PK	35.6	-29.7	56.1	354	126	Vert.			74.0	17.9	
4882.025	41.0	AV	35.6	-29.7	46.9	347	134	Hori.			54.0	7.1	
4882.025	42.5	AV	35.6	-29.7	48.4	354	126	Vert.			54.0	5.6	
7323.000	48.8	PK	37.9	-28.9	57.8	326	112	Hori.			74.0	16.2	
7323.000	48.1	PK	37.9	-28.9	57.1	17	114	Vert.			74.0	17.0	
7323.000	39.8	AV	37.9	-28.9	48.8	326	112	Hori.			54.0	5.2	
7323.000	39.7	AV	37.9	-28.9	48.7	17	114	Vert.			54.0	5.3	
9764.000	43.0	PK	36.8	-28.1	51.7	0	100	Hori.			74.0	22.3	
9764.000	42.5	PK	36.8	-28.1	51.2	0	100	Vert.			74.0	22.8	
9764.000	30.5	AV	36.8	-28.1	39.2	0	100	Hori.			54.0	14.8	
9764.000	29.8	AV	36.8	-28.1	38.5	0	100	Vert.			54.0	15.5	

CHART:WITH FACTOR ANT TYPE: -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab, No.2 Semi Anechoic Chamber
Date : 2005/09/09 21:27:10

Applicant

Kind of EUT

Model No.

Serial No.

: TOSEI ENGINEERING CORP.

: Wireless Module

: AE51041

: 00-0A-D2-3A-02-AF

Report No.

Power

Temp./Humi.

Operator

: 25HE0235-H0

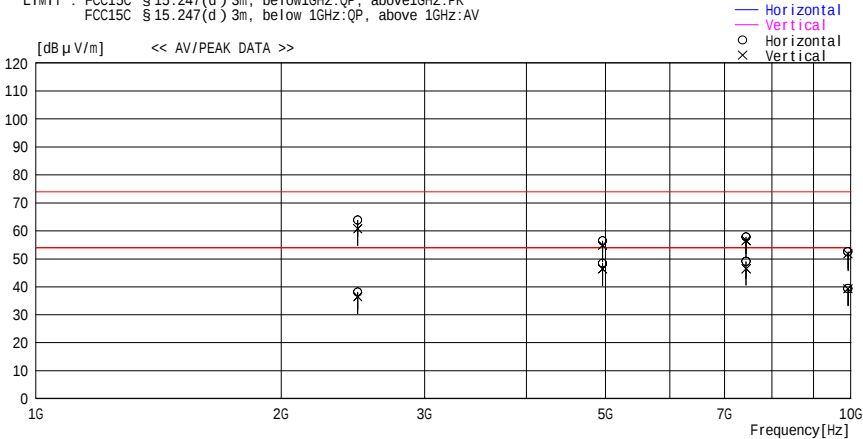
: DC5.0V

: 27deg.C / 51%

: Hiroka Umeyama

Mode / Remarks : Transmitting 2480MHz MAX-Axis:H0R(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK
FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
2483.500	66.0	PK	30.5	-32.7	63.8	19	132	Hori.	74.0	10.2
2483.500	62.9	PK	30.5	-32.7	60.7	336	156	Vert.	74.0	13.3
2483.500	40.3	AV	30.5	-32.7	38.1	19	132	Hori.	54.0	15.9
2483.500	38.7	AV	30.5	-32.7	36.5	336	156	Vert.	54.0	17.5
4960.000	49.7	PK	36.1	-29.4	56.4	0	127	Hori.	74.0	17.6
4960.000	48.2	PK	36.1	-29.4	54.9	45	112	Vert.	74.0	19.1
4960.000	41.7	AV	36.1	-29.4	48.4	0	127	Hori.	54.0	5.6
4960.000	39.7	AV	36.1	-29.4	46.4	45	112	Vert.	54.0	7.6
7440.000	48.1	PK	38.1	-28.4	57.8	58	114	Hori.	74.0	16.2
7440.000	46.8	PK	38.1	-28.4	56.5	48	165	Vert.	74.0	17.5
7440.000	39.3	AV	38.1	-28.4	49.0	58	114	Hori.	54.0	5.0
7440.000	36.7	AV	38.1	-28.4	46.4	48	165	Vert.	54.0	7.6
9920.000	43.9	PK	36.7	-28.1	52.5	0	100	Hori.	74.0	21.5
9920.000	43.2	PK	36.7	-28.1	51.8	0	100	Vert.	74.0	22.2
9920.000	30.8	AV	36.7	-28.1	39.4	0	100	Hori.	54.0	14.7
9920.000	30.7	AV	36.7	-28.1	39.3	0	100	Vert.	54.0	14.7

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

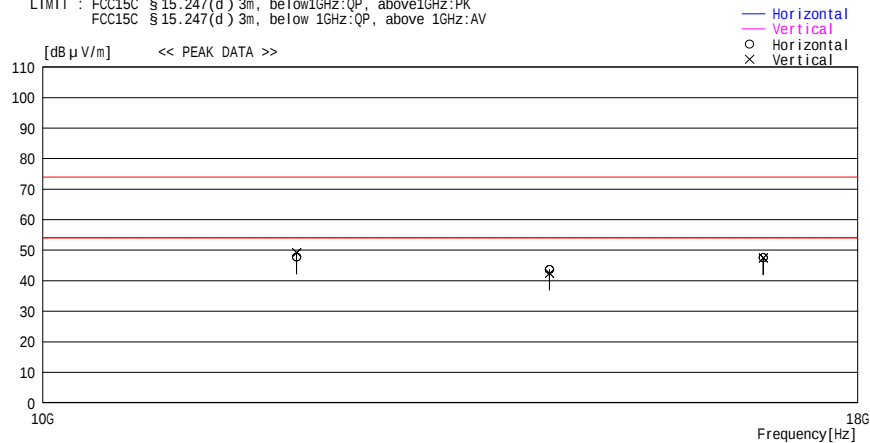
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/18 09:28:42

Applicant : TOSEI ENGINEERING CORP. Report No. : 25HE0235-HO
Kind of EUT : Wireless Module Power : DC5.0V
Model No. : AE51041 Temp./Humi. : 27deg.C / 51%
Serial No. : 00-0A-D2-3A-02-AF Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2402MHz Max-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK
FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
1200.9220	46.4	PK	41.6	-40.2	47.8	0	100	Hori.	74.0	26.2
1200.9220	47.8	PK	41.6	-40.2	49.2	0	120	Vert.	74.0	24.8
1441.2000	43.6	PK	41.7	-41.7	43.6	0	100	Hori.	74.0	30.4
1441.2000	42.4	PK	41.7	-41.7	42.4	0	120	Vert.	74.0	31.6
1681.4000	42.0	PK	45.1	-39.5	47.6	0	100	Hori.	74.0	26.4
1681.4000	41.9	PK	45.1	-39.5	47.5	0	120	Vert.	74.0	26.5

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

*The test data had enough margin (more than 20dB) so that the test with AV detector was excluded.

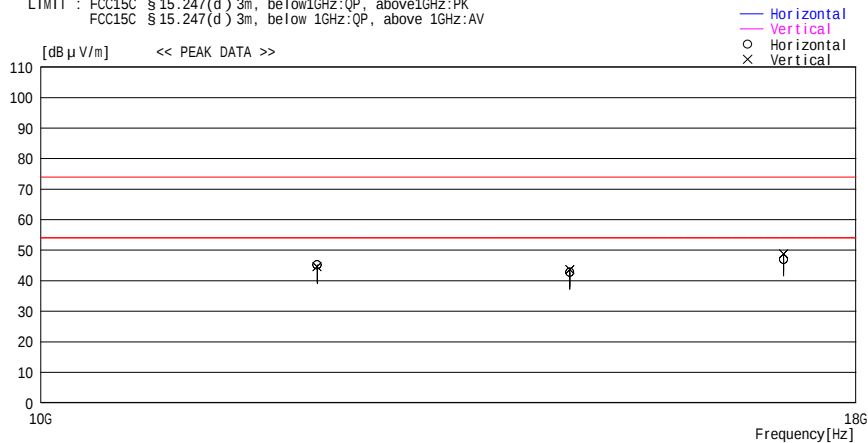
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2005/09/18 10:58:54

Applicant : TOSEI ENGINEERING CORP.
 Kind of EUT : Wireless Module
 Model No. : AE51041
 Serial No. : 00-0A-D2-3A-02-AF
 Report No. : 25HE0235-HO
 Power : DC5.0V
 Temp./Humi. : 27deg.C / 51%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2441MHz Max-Axis:H0R(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK
 FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
12205.000	43.9	PK	41.6	-40.3	45.2	0	100	Hori.	74.0	28.8
12205.000	43.3	PK	41.6	-40.3	44.6	0	120	Vert.	74.0	29.4
14646.000	41.8	PK	42.2	-41.2	42.8	0	100	Hori.	74.0	31.2
14646.000	42.7	PK	42.2	-41.2	43.7	0	100	Vert.	74.0	30.4
17087.000	41.1	PK	45.2	-39.3	47.0	0	100	Hori.	74.0	27.1
17087.000	42.9	PK	45.2	-39.3	48.8	0	100	Vert.	74.0	25.2

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
 Except for the data below : adequate margin data below the limits.
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

*The test data had enough margin (more than 20dB) so that the test with AV detector was excluded.

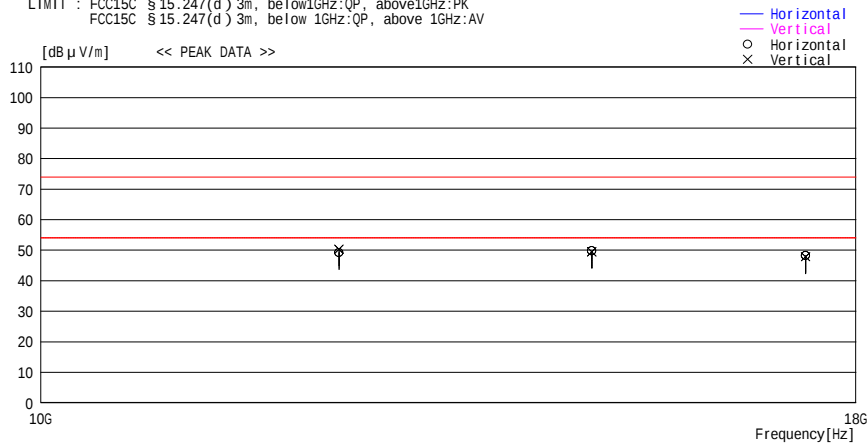
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/18 11:23:22

Applicant : TOSEI ENGINEERING CORP.
Kind of EUT : Wireless Module
Model No. : AE51041
Serial No. : 00-0A-D2-3A-02-AF
Report No. : 25HE0235-HO
Power : DC5.0V
Temp./Humi. : 27deg.C / 51%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2480MHz Max-Axis:H0R(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK
FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dB μ V]		[dB/m]	[dB]	[dB μ V/m]	[Deg]	[cm]		[dB μ V/m]	[dB]
12399.130	48.1	PK	41.7	-40.6	49.2	0	100	Hori.	74.0	24.8
12399.130	49.2	PK	41.7	-40.6	50.3	0	110	Vert.	74.0	23.7
14880.000	47.7	PK	42.7	-40.6	49.8	0	100	Hori.	74.0	24.2
14880.000	47.4	PK	42.7	-40.6	49.5	0	110	Vert.	74.0	24.5
17360.000	43.2	PK	44.7	-39.6	48.3	0	100	Hori.	74.0	25.7
17360.000	42.7	PK	44.7	-39.6	47.8	0	100	Vert.	74.0	26.2

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

*The test data had enough margin (more than 20dB) so that the test with AV detector was excluded.

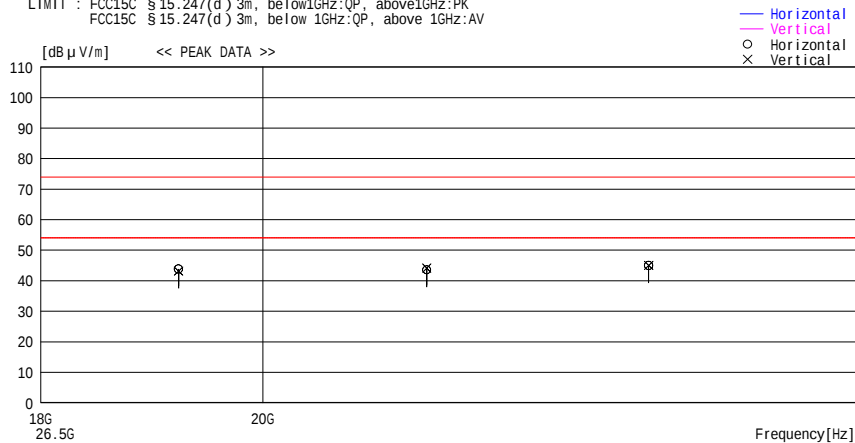
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2005/09/18 12:23:51

Applicant : TOSEI ENGINEERING CORP.
 Kind of EUT : Wireless Module
 Model No. : AE51041
 Serial No. : 00-0A-D2-3A-02-AF
 Report No. : 25HE0235-HO
 Power : DC5.0V
 Temp./Humi. : 27deg.C / 51%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2402MHz Max-Axis:H0R(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:PK
 FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
19216.000	39.4	PK	40.1	-35.7	43.8	0	100	Hori.	74.0	30.2
19216.000	38.7	PK	40.1	-35.7	43.1	0	100	Vert.	74.0	30.9
21618.000	39.1	PK	39.8	-35.3	43.6	0	100	Hori.	74.0	30.5
21618.000	39.6	PK	39.8	-35.3	44.1	0	100	Vert.	74.0	29.9
24020.000	39.1	PK	40.4	-34.6	44.9	0	100	Hori.	74.0	29.1
24020.000	39.2	PK	40.4	-34.6	45.0	0	100	Vert.	74.0	29.0

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
 Except for the data below : adequate margin data below the limits.
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

*The test data had enough margin (more than 20dB) so that the test with AV detector was excluded.

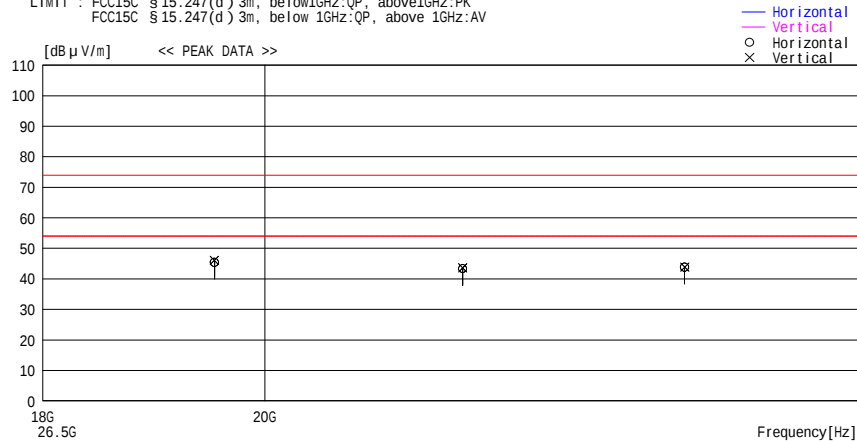
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2005/09/18 13:02:18

Applicant : TOSEI ENGINEERING CORP.
 Kind of EUT : Wireless Module
 Model No. : AE51041
 Serial No. : 00-0A-D2-3A-02-AF
 Report No. : 25HE0235-HO
 Power : DC5.0V
 Temp./Humi. : 27deg.C / 51%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2441MHz Max-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:PK
 FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
19528.000	40.4	PK	40.3	-35.3	45.4	0	100	Hori.	74.0	28.6
19528.000	41.1	PK	40.3	-35.3	46.1	0	100	Vert.	74.0	27.9
21969.000	40.1	PK	39.8	-36.6	43.3	0	100	Hori.	74.0	30.7
21969.000	40.4	PK	39.8	-36.6	43.6	0	100	Vert.	74.0	30.4
24410.000	38.0	PK	40.4	-34.6	43.8	0	100	Hori.	74.0	30.2
24410.000	38.1	PK	40.4	-34.6	43.9	0	100	Vert.	74.0	30.1

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
 Except for the data below : adequate margin data below the limits.
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

*The test data had enough margin (more than 20dB) so that the test with AV detector was excluded.

Test report No. : 25HE0235-HO-1b
Page : 46 of 46
Issued date : September 26, 2005
Revised date : October 19, 2005
FCC ID : TNY0999058

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2005/09/18 13:32:24

Applicant : TOSEI ENGINEERING CORP.
Kind of EUT : Wireless Module
Model No. : AE51041
Serial No. : 00-0A-D2-3A-02-AF
Report No. : 25HE0235-HO
Power : DC5.0V
Temp./Humi. : 27deg.C / 51%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 2480MHz Max-Axis:HOR(Z),VER(Y)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP, above1GHz:PK
FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV

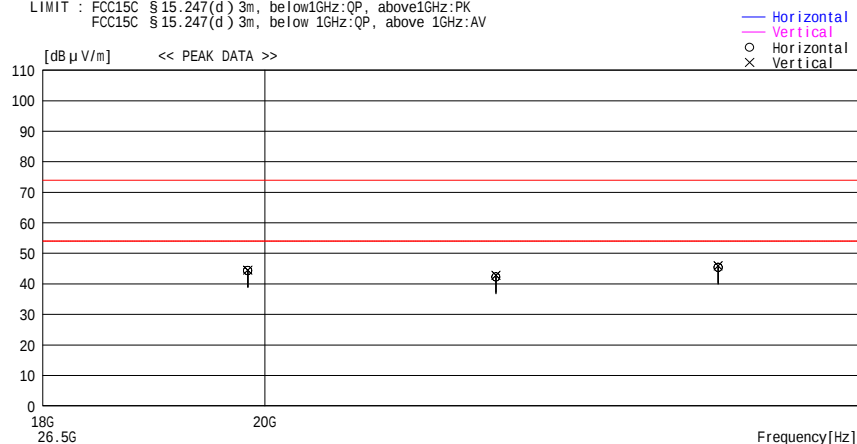


CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
Except for the data below : adequate margin data below the limits.
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN

*The test data had enough margin (more than 20dB) so that the test with AV detector was excluded.

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MF060b(01.06.05)