



UL Apex Co., Ltd.

Test report No. : 25DE0080-HO-1
Page : 1 of 34
Issued date : February 28, 2005
FCC ID : PA4050449

EMI TEST REPORT

Test Report No. : 25DE0080-HO-1

Applicant : KODAK DIGITAL PRODUCT CENTER,
JAPAN LTD

Type of Equipment : Kodak Wi-Fi card

Model No. : 3F8508

Test standard : FCC Part 15 Subpart C
Section 15.207, Section 15.247 : 2004

FCC ID : PA4050449

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 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:

December 17, 2004 and February 17, 2005

Tested by:

Hiroka Umeyama
EMC Service

Approved by :

Naoki Sakamoto
Group Leader of
EMC Service

UL Apex Co., Ltd.

Head Office EMC Lab.

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SECTION 1: Client information

Company Name : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD
Brand Name : KODAK
Address : Yokohama Dia Building Kohhokukan, 1-1, Sakuranamiki,
 Tsuzuki-ku, Yokohama-shi, Kanagawa 221-0046 JAPAN
Telephone Number : +81-45-943-7560
Facsimile Number : +81-45-943-7604
Contact Person : Koji Matsumoto

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

2.1 Identification of E.U.T.

Type of Equipment : Kodak Wi-Fi card
Model Number : 3F8508
Serial Number : 1C
Rating : DC3.3V, 0.39A
Country of Manufacture : Japan
Receipt Date of Sample : January 29, 2005
Condition of EUT : Production prototype
(Not for sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

Model: 3F8508 (referred to as the EUT in this report) is a Kodak Wi-Fi card for Camera/Printer.
This equipment transmits and receives in the 2.4GHz ISM band.

The clock frequency used in EUT: 40MHz

Equipment type : Transceiver
Frequency of operation : 2412 - 2462 MHz
Channel spacing : 5 MHz
Channel number : 11 channels
Type of modulation : Direct sequence spread spectrum (IEEE802.11b)
Antenna type : Integrated
Antenna connector type : None
Antenna gain : 2.1dBi (MAX)
Mode of operation : Half-Duplex
Emission Designation : G1D
Operation temperature range : -20 to 70 deg. C.
Operation voltage (inner) : DC3.3V

FCC 15.31 (e)

*This EUT provides stable voltage(DC3.3V) from Host, and it is constantly converted into and provided with DC1.8V and 2.5V for the Operational Voltage within RF Module regardless of input voltage. Therefore, this EUT complies with the requirement. ☐

FCC Part 15.203 Antenna requirement

The EUT and its antenna comply with this requirement since this antenna is built in the equipment and it cannot be replaced by end users. 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 : 2004
 Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
 Section 15.207 Conducted limits : 2004
 Section 15.247 Operation within the bands 902-928MHz,
 2400-2483.5MHz, and 5725-5850MHz : 2004

Remarks : This equipment adopted section 15.101(b) procedure. However, receivers indicated as being subject to Declaration of Conformity that are contained within a transceiver, the transmitter portion of which is subject to certification, shall be authorized under the verification procedure.

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207 RSS-210 6.6	-	N/A	17.6dB 0.1621MHz N, L	Complied
2	6dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(a)(2) RSS-210 5.9.1	Conducted	N/A	*See data.	Complied
3	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247(b)(3) RSS-210 6.2.2(o)(b)	Conducted	N/A		Complied
4	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (d) RSS-210 6.2.2(o)(e) and 6.3	Conducted/ Radiated	N/A	0.8dB 4824MHz Vertical, AV	Complied
5	Restricted Band Edges	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (d) RSS-210 6.2.2(o)(e) and 6.3	Conducted	N/A	N/A	Complied
6	Power Density	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.247 (e) RSS-210 6.2.2(o)(b)	Conducted	N/A	*See data.	Complied

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

Uncertainty:

*In case of the margin below the EMC Head Office's uncertainty.

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

Conducted Emission

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

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 $\pm 6.6\text{dB}$.

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 "Guidance on Measurement for Digital Transmission Systems Section15.247".

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

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3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4: 2004	RSS-210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4: 2004	Conducted	N/A	N/A	N/A

3.4 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
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	Listed date (for FCC)	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	February 01, 2002	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	June 05, 2002	846015	IC4247-2	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.

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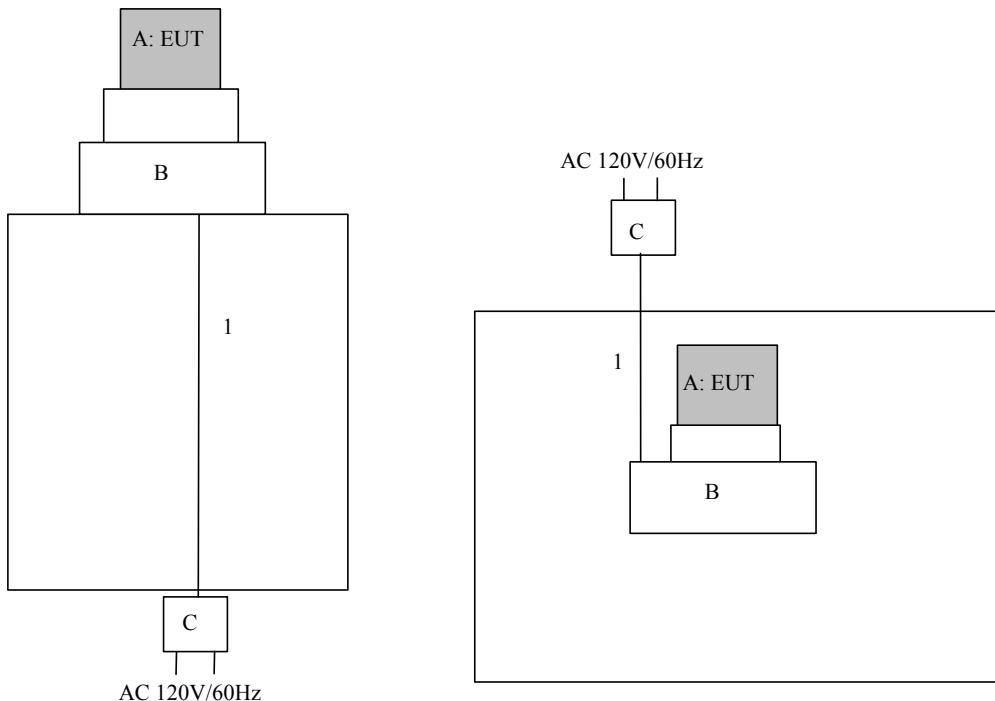
SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

The mode is used : Transmitting mode IEEE802.11b (CCK 11Mbps)

Low Channel	:2412MHz(Ch1)
Mid Channel	:2437MHz(Ch6)
High channel	:2462MHz(Ch11)

4.2 Configuration and peripherals



* 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
A	Kodak Wi-Fi card	3F8508	1C	KODAK DIGITAL PRODUCT CENTER, JAPAN LTD	PA4050449
B	PDF (Zaurus)	SL-C860	43002661	SHARP	-
C	AC Adapter	ADP-10SB	5836401YLQD7VM	DELTA ELECTRONICS, INC.	-

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	DC Cable	1.6	N	Polyvinyl chloride

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SECTION 5: Conducted Emission

Test Procedure and conditions

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, 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.

1) 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.

2) For the tests on EUT itself (as a stand alone equipment)

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN / (AMN) to the input power source. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

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 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, 0.5m 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 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 IF Bandwidth	QP: BW 120kHz(T/R) 20dBc : RBW: 100kHz VBW: 300kHz (S/A)	PK: RBW:1MHz/VBW: 1MHz AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

- 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.

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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

SECTION 8: Maximum Peak Output Power

Test Procedure

The test was made with the spectrum analyzer that has a function of channel-power measurements.
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: Peak Power Density

[Conducted]

Test Procedure

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

Test data : APPENDIX 3
Test result : Pass

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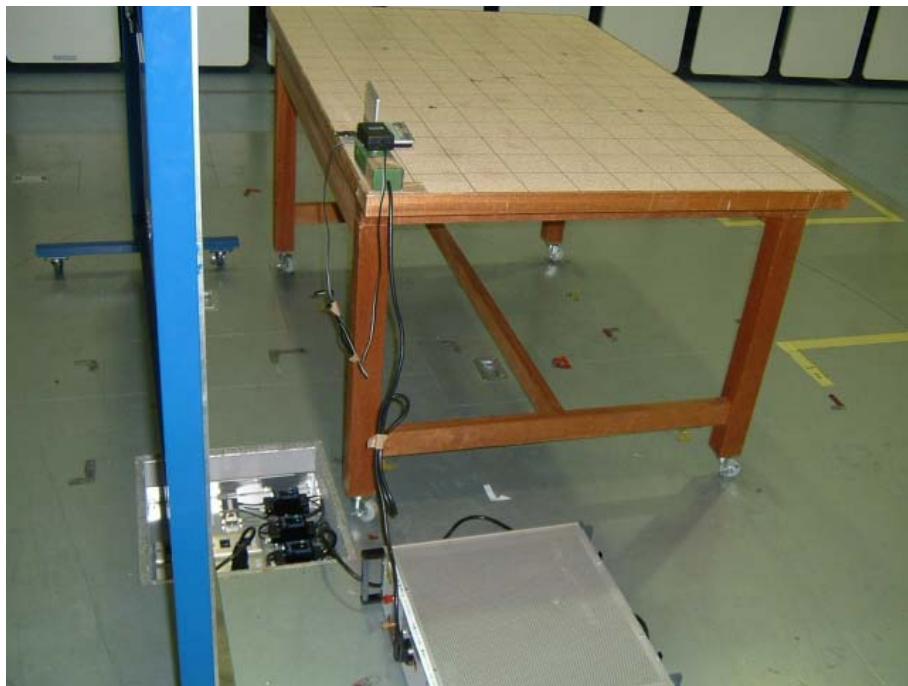
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APPENDIX 1: Photographs of test setup

Conducted Emission
Front



Rear

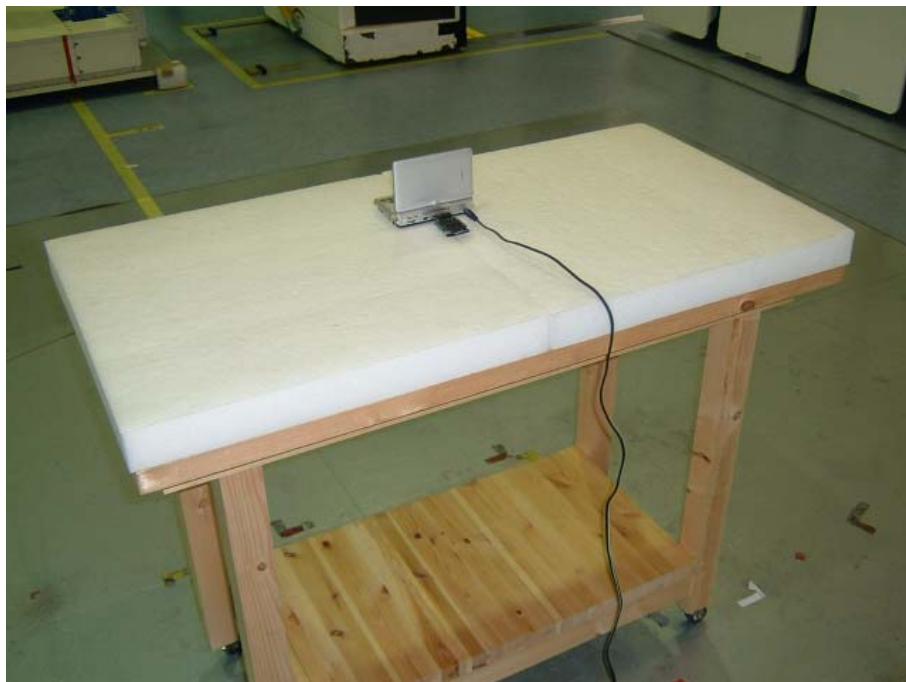


Spurious Emission (Radiated)

Front



Rear



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

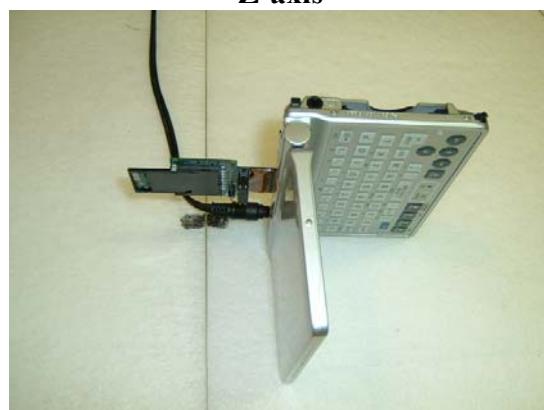
X-axis



Y-axis



Z-axis



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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/CE	2004/04/12 * 12
MRENT-09	Spectrum Analyzer	Advantest	R3273	RE/CE	2004/02/18 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE/CE	2004/01/10 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2004/01/10 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2004/02/06 * 12
MCC-04	Microwave Cable 1-40G	Storm	421-011	RE	2004/01/06 * 12
MCC-29	Microwave Cable	Suhner	SUCOFLEX101	RE	2004/08/26 * 12
MHF-02	High Pass Filter	Tokimec	TF323DCA	RE	2004/11/01 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2004/10/14 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2004/10/14 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2004/12/16 * 12
MPA-06	Pre Amplifier	Hewlett Packard	8447D	RE	2004/08/29 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2004/02/24 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2004/02/24 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2004/02/17 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	AT	2004/06/12 * 12
MAT-20	Attenuator(10dB)(above1GH z)	HIROSE ELECTRIC CO.,LTD.	AT-110	AT	2005/01/11 * 12

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

Test Item:

CE: AC Main Conducted Emission

RE: Radiated Spurious Emission

AT: Other tests

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APPENDIX 3: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

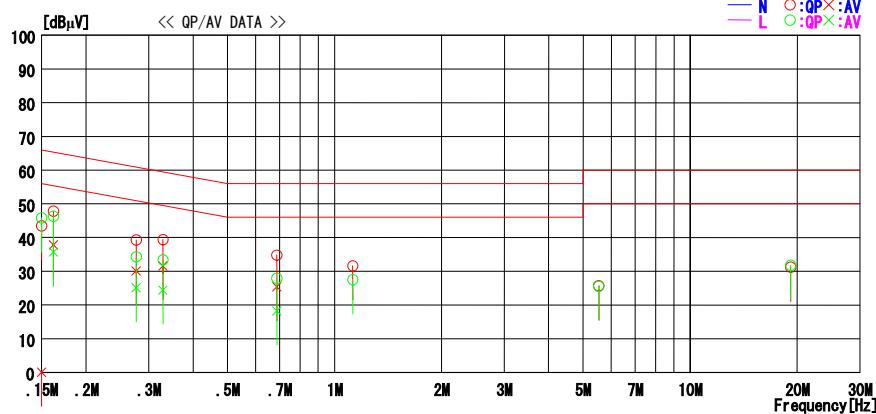
UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
 Date : 2004/12/19 17:23:56

Applicant : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.
 Kind of EUT : Kodak Wi-Fi card
 Model No. : 3F8508
 Serial No. : 1C

Report No. : 25DE0080-HO
 Power : DC3.3V (AC120V/60Hz)
 Temp°C/Humi% : 24 deg. C / 38 %
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 1CH(2412MHz)

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



NO	FREQ [MHz]	READING		C. F [dB]	RESULT		LIMIT OP [dBμV]	LIMIT AV [dBμV]	MARGIN OP [dB]
		QP [dBμV]	AV [dBμV]		QP [dBμV]	AV [dBμV]			
1	0.1500	43.5	0.0	0.0	43.5	0.0	66.0	56.0	22.5
2	0.1621	47.8	37.8	0.0	47.8	37.8	65.4	55.4	17.6
3	0.2769	39.2	30.0	0.1	39.3	30.1	60.9	50.9	20.8
4	0.3291	39.3	31.5	0.1	39.4	31.6	59.5	49.5	20.1
5	0.6878	34.6	25.2	0.2	34.8	25.4	56.0	46.0	21.2
6	1.1245	31.4	—	0.2	31.6	—	56.0	—	24.4
7	5.5345	25.1	—	0.6	25.7	—	60.0	—	34.3
8	19.1670	29.5	—	1.7	31.2	—	60.0	—	28.8
9	0.1500	45.8	—	0.0	45.8	—	66.0	—	20.2
10	0.1621	46.4	35.7	0.0	46.4	35.7	65.4	55.4	19.0
11	0.2769	34.2	25.0	0.1	34.3	25.1	60.9	50.9	26.6
12	0.3291	33.3	24.3	0.1	33.4	24.4	59.5	49.5	26.1
13	0.6878	27.7	18.0	0.2	27.9	18.2	56.0	46.0	28.1
14	1.1245	27.3	—	0.2	27.5	—	56.0	—	27.8
15	5.5345	24.9	—	0.6	25.5	—	60.0	—	34.5
16	19.1670	30.1	—	1.7	31.8	—	60.0	—	28.2

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

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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

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

Date : 2004/12/19 17:23:56

Applicant : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.	Report No. : 25DE0080-HO
Kind of EUT : Kodak Wi-Fi card	Power : DC3.3V(AC120V/60Hz)
Model No. : 3F8508	Temp°C/Humi% : 24 deg. C / 38 %
Serial No. : 1C	Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 1CH(2412MHz)

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

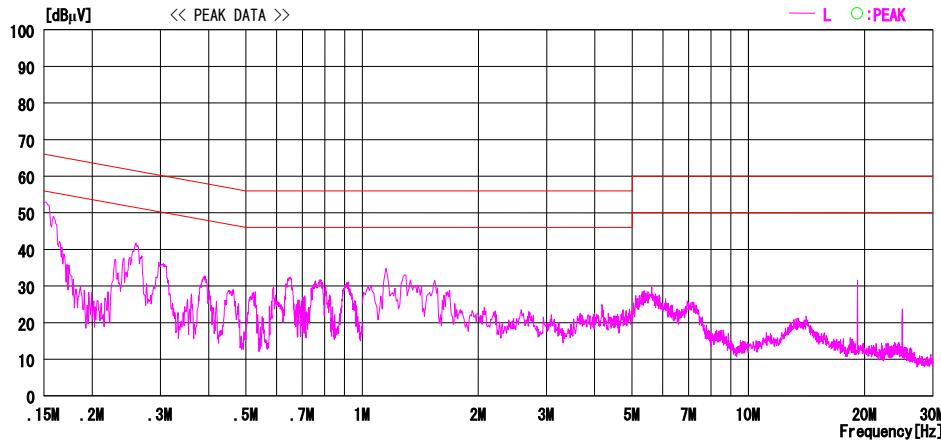
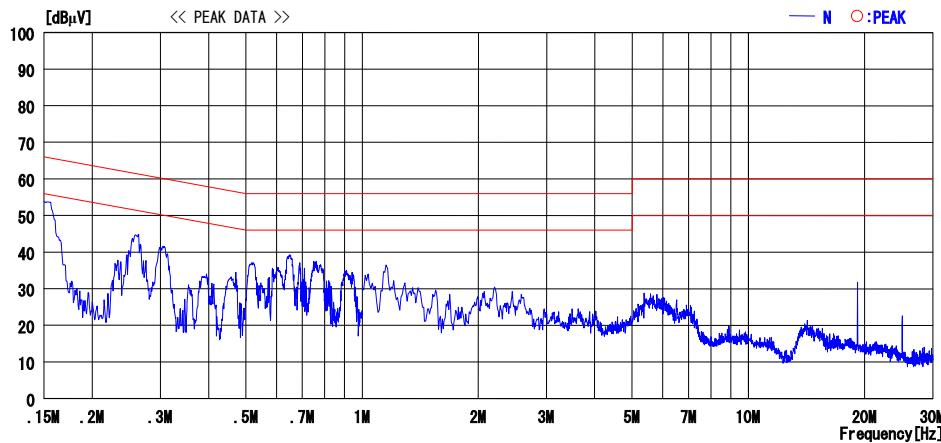


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCULATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

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

Date : 2004/12/19 18:36:57

Applicant : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.
 Kind of EUT : Kodak Wi-Fi card
 Model No. : 3F8508
 Serial No. : 1C

Report No. : 25DE0080-HO
 Power : DC3.3V (AC120V/60Hz)
 Temp°C/Humi% : 24 deg.C / 38 %
 Operator : Hiroka Umayama

Mode / Remarks : Transmitting 6CH(2437MHz)

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

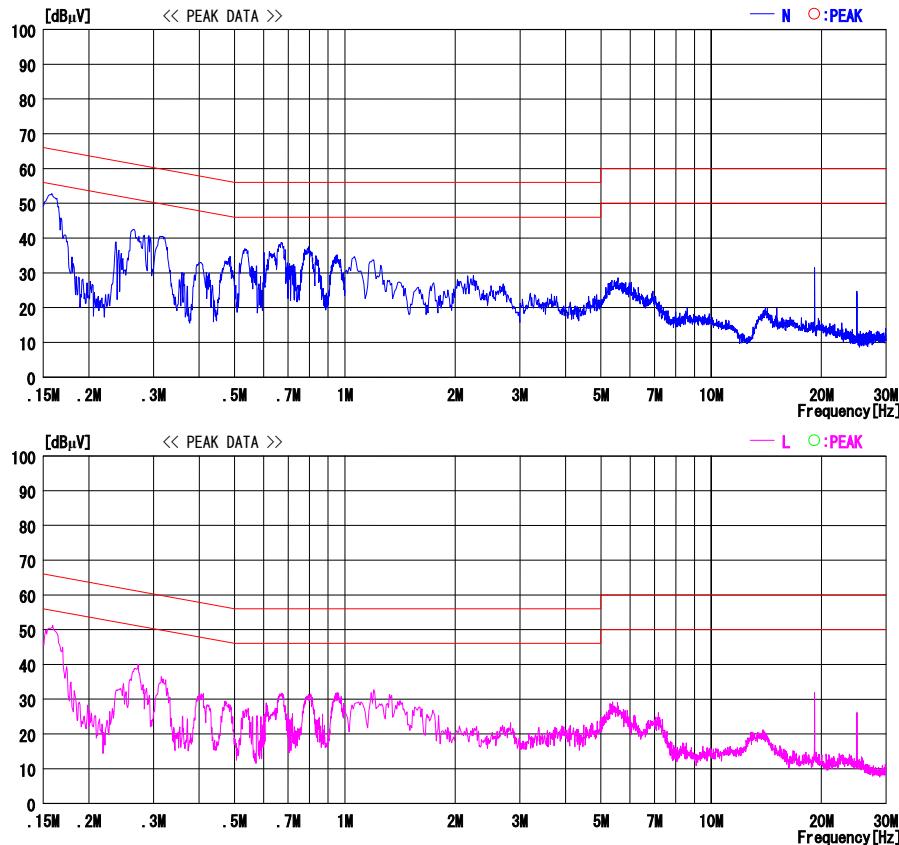


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C. F(LISN LOSS+CABLE)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

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

Date : 2004/12/19 19:00:33

Applicant : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.
Kind of EUT : Kodak Wi-Fi card
Model No. : 3F8508
Serial No. : 1C

Report No. : 25DE0080-HO
Power : DC3.3V (AC120V/60Hz)
Temp°C/Humi% : 24 deg. C / 38 %
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 11CH(2462MHz)

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

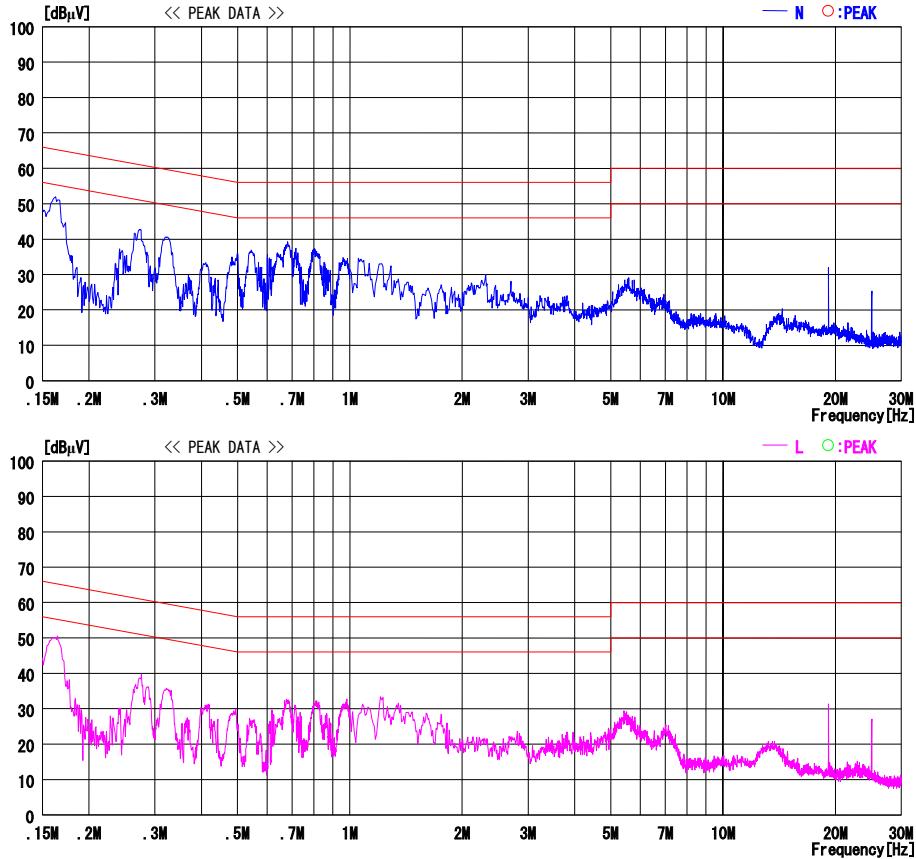


CHART:WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION:RESULT=READING+C. F (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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MF060b(10.04.03)

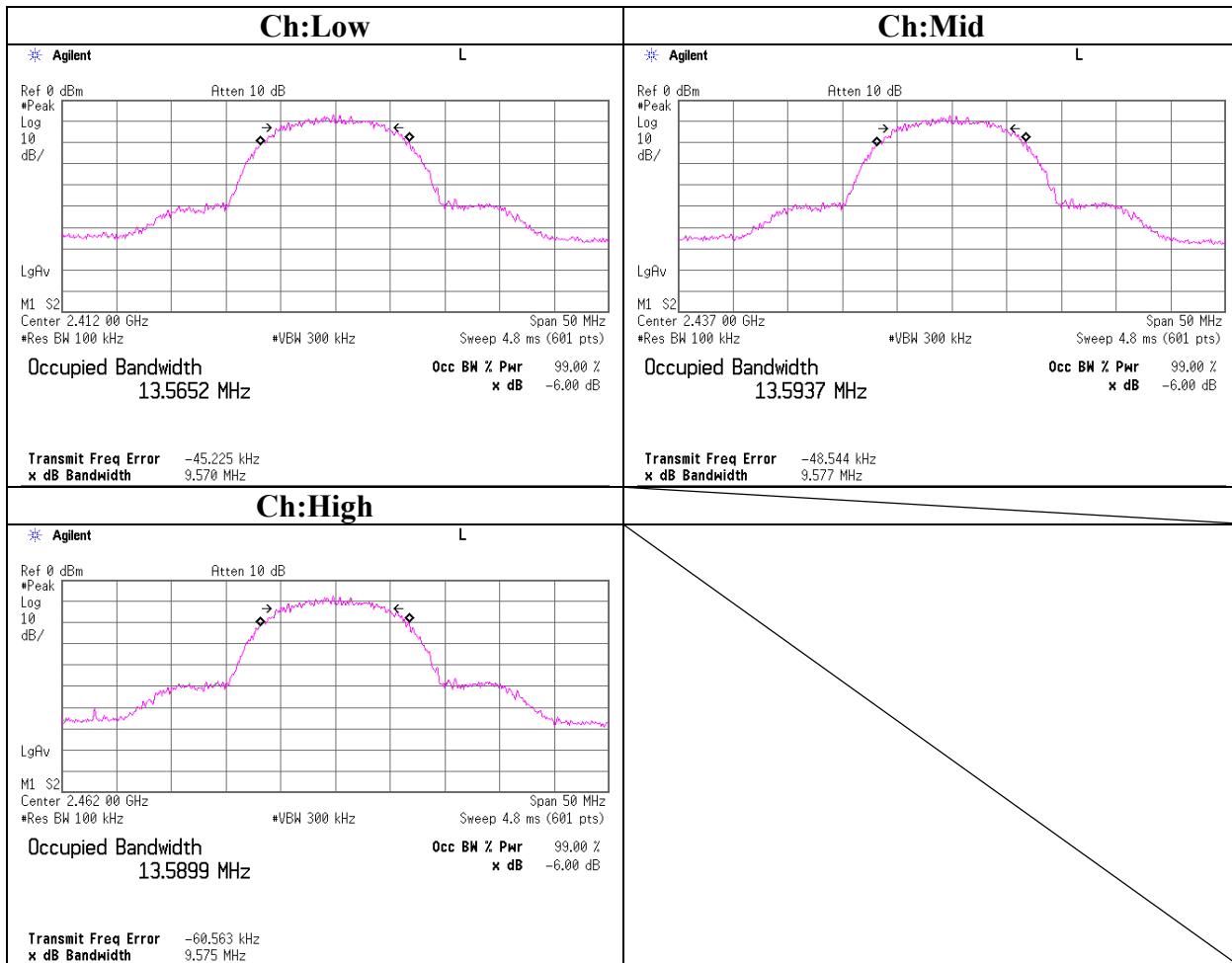
6dB Bandwidth(DSSS and other forms of modulation)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Shielded Room

Company	: KODAK DIGITAL PRODUCT CENTER, JAPAN LTD	REPORT NO	: 25DE0080-HO
Equipment	: Kodak Wi-Fi card	REGULATION	: Fcc Part15 Subpart C 15.247(a)(2)
Model	: 3F8508	TEST DISTANCE	: -
Sample No.	: 1C	DATE	: 02/17/2005
Power	: DC3.3V	TEMPERATURE	: 22°C
Mode	: Tx(ch1,6,11)	HUMIDITY	: 45%
		ENGINEER	: Hiroka Umeyama

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	9.570	500.0
Mid	2437.0	9.577	500.0
High	2462.0	9.575	500.0

6dB Bandwidth(DSSS and other forms of modulation)



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MF060b(10.04.03)

Maximum Peak OutPut Power (DSSS and other forms of modulation)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Shielded Room

Company	: KODAK DIGITAL PRODUCT CENTER, JAPAN LTD	REPORT NO	: 25DE0080-HO
Equipment	: Kodak Wi-Fi card	REGULATION	: Fcc Part15 Subpart C 15.247(b)(3)
Model	: 3F8508	TEST DISTANCE	: -
Sample No.	: 1C	DATE	: 02/17/2005
Power	: DC3.3V	TEMPERATURE	: 22°C
Mode	: Tx(ch1,6,11)	HUMIDITY	: 45%
		ENGINEER	: Hiroka Umeyama

[IEEE802.11b]

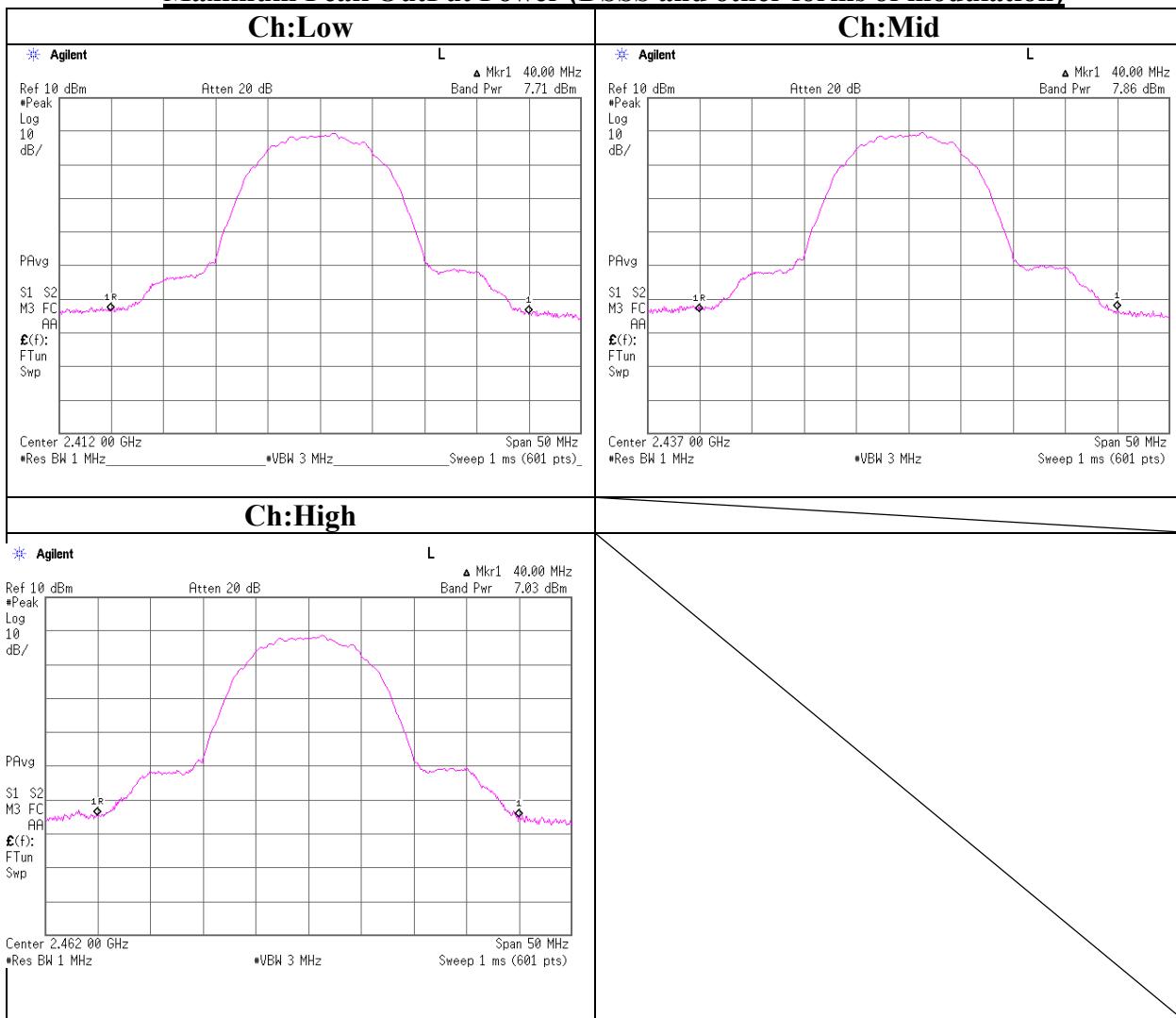
Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2412.0	7.71	0.85	10.00	18.56	30.00	11.44
Mid	2437.0	7.86	0.85	10.00	18.71	30.00	11.29
High	2462.0	7.03	0.85	10.00	17.88	30.00	12.12

Sample Calculation:

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

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

Maximum Peak OutPut Power (DSSS and other forms of modulation)



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MF060b(10.04.03)

Radiated Spurious Emission(DSSS and other forms of modulation)

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

DATA OF RADIATED EMISSION TEST

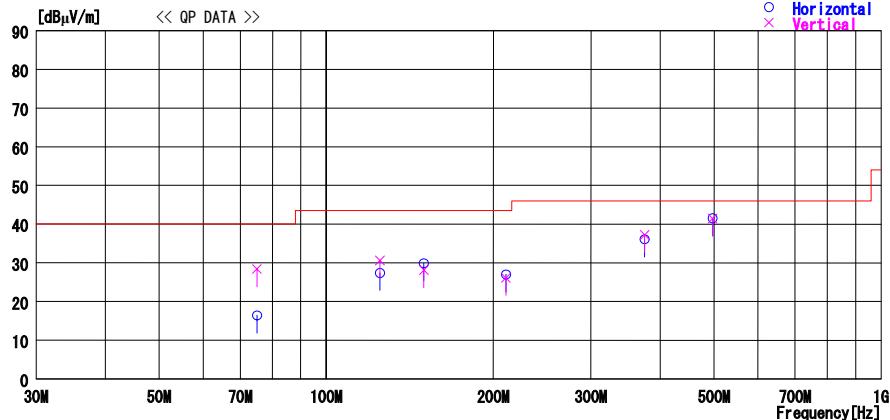
UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
 Date : 2004/12/19 16:43:21

Applicant : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD. Report No. : 25DE0080-HO
 Kind of EUT : Kodak Wi-Fi card Power : DC3.3V (AC120V/60Hz)
 Model No. : 3F8508 Temp. / Humi. : 20 deg. C. / 52 %
 Serial No. : 1C Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 1CH(2412MHz) MAX-Axis:X(HOR), Y(VER)

LIMIT : FCC 15C §15.209 3m
 Except for the data below : adequate margin data below the limits.

— Horizontal
 — Vertical
 ○ Horizontal
 ✕ Vertical



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dB]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
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— Horizontal —

1	74.990	30.4	6.8	6.9	27.7	16.4	40.0	23.6	300	94
2	124.980	34.0	13.5	7.4	27.5	27.4	43.5	16.1	300	67
3	149.970	33.9	15.7	7.6	27.3	29.9	43.5	13.6	300	261
4	210.850	29.1	17.1	7.9	27.1	27.0	43.5	16.5	300	81
5	374.950	37.1	17.6	8.7	27.3	36.1	46.0	9.9	100	302
6	497.403	41.5	18.9	9.3	28.2	41.5	46.0	4.5	100	359

— Vertical —

7	74.990	42.4	6.8	6.9	27.7	28.4	40.0	11.6	100	159
8	124.980	37.2	13.5	7.4	27.5	30.6	43.5	12.9	100	165
9	149.970	32.1	15.7	7.6	27.3	28.1	43.5	15.4	100	297
10	210.850	28.2	17.1	7.9	27.1	26.1	43.5	17.4	100	4
11	374.950	38.2	17.6	8.7	27.3	37.2	46.0	8.8	100	13
12	497.403	41.4	18.9	9.3	28.2	41.4	46.0	4.6	100	100

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
 CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

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MF060b(10.04.03)

Radiated Spurious Emission(DSSS and other forms of modulation)

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

DATA OF RADIATED EMISSION TEST

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

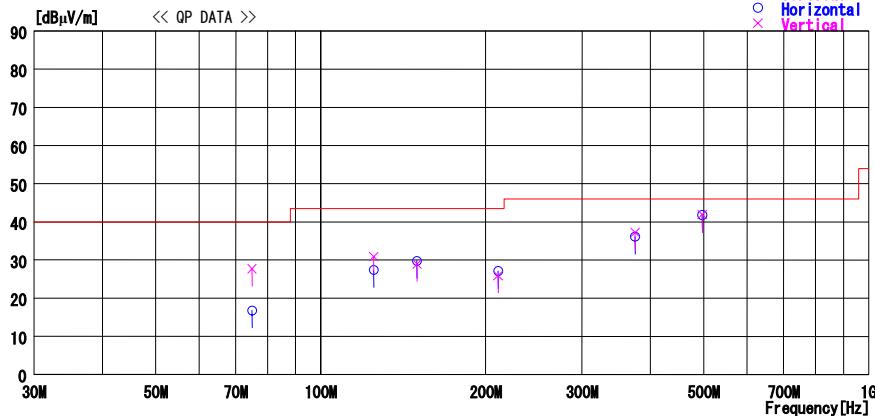
Date : 2004/12/19 16:19:39

Applicant : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.
 Kind of EUT : Kodak Wi-Fi card
 Model No. : 3F8508
 Serial No. : 1C

Report No. : 25DE0080-HO
 Power : DC3.3V(AC120V/60Hz)
 Temp. / Humi. : 20 deg.C. / 52 %
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 6CH(2437MHz) MAX-Axis:X(HOR), Y(VER)

LIMIT : FCC 15C §15.209 3m
 Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dB _V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB _{μV/m}]	LIMIT [dB _{μV/m}]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
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— Horizontal —

1	74.990	30.8	6.8	6.9	27.7	16.8	40.0	23.2	300	149
2	124.980	34.0	13.5	7.4	27.5	27.4	43.5	16.1	300	96
3	149.970	33.8	15.7	7.6	27.3	29.8	43.5	13.7	300	105
4	210.850	29.2	17.1	7.9	27.1	27.1	43.5	16.4	300	218
5	374.950	37.1	17.6	8.7	27.3	36.1	46.0	9.9	100	266
6	497.403	41.8	18.9	9.3	28.2	41.8	46.0	4.2	100	207

— Vertical —

7	74.990	41.7	6.8	6.9	27.7	27.7	40.0	12.3	100	192
8	124.980	37.5	13.5	7.4	27.5	30.9	43.5	12.6	100	214
9	149.970	32.9	15.7	7.6	27.3	28.9	43.5	14.6	100	317
10	210.850	28.0	17.1	7.9	27.1	25.9	43.5	17.6	100	355
11	374.950	38.2	17.6	8.7	27.3	37.2	46.0	8.8	100	50
12	497.403	41.9	18.9	9.3	28.2	41.9	46.0	4.1	100	277

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
 CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

UL Apex Co., Ltd.

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MF060b(10.04.03)

Radiated Spurious Emission(DSSS and other forms of modulation)

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

2004/12/19 16:10:39

DATA OF RADIATED EMISSION TEST

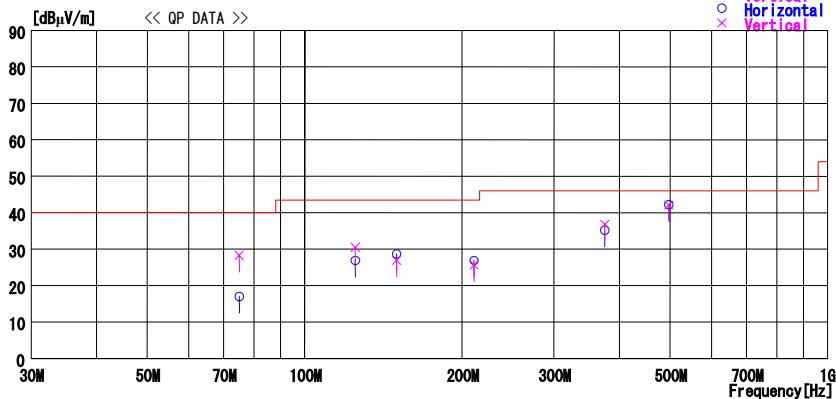
UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
 Date : 2004/12/19 15:46:40

Applicant : KODAK DIGITAL PRODUCT CENTER, JAPAN LTD. Report No. : 25DE0080-HO
 Kind of EUT : Kodak Wi-Fi card Power : DC3.3V(AC120V/60Hz)
 Model No. : 3F8508 Temp. / Humi. : 20 deg. C. / 52 %
 Serial No. : 1C Operator : Hiroka Umeyama

Mode / Remarks: Transmitting 11CH(2462MHz) MAX-Axis:X(HOR), Y(VER)

LIMIT : FCC 15C §15.209 3m
 Except for the data below : adequate margin data below the limits.

— Horizontal
 — Vertical
 ○ Horizontal
 ✕ Vertical



No.	FREQ [MHz]	READING OP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	ANTENNA [DEG]
<u>Horizontal</u>										
1	74.990	31.0	6.8	6.9	27.7	17.0	40.0	23.0	300	143
2	124.980	33.5	13.5	7.4	27.5	26.9	43.5	16.6	300	82
3	149.970	32.7	15.7	7.6	27.3	28.7	43.5	14.8	300	73
4	210.850	29.0	17.1	7.9	27.1	26.9	43.5	16.6	300	57
5	374.950	36.2	17.6	8.7	27.3	35.2	46.0	10.8	100	285
6	497.403	42.2	18.9	9.3	28.2	42.2	46.0	3.8	100	238
<u>Vertical</u>										
7	74.990	42.3	6.8	6.9	27.7	28.3	40.0	11.7	100	191
8	124.980	37.1	13.5	7.4	27.5	30.5	43.5	13.0	100	134
9	149.970	30.9	15.7	7.6	27.3	26.9	43.5	16.6	100	259
10	210.850	27.8	17.1	7.9	27.1	25.7	43.5	17.8	100	6
11	374.950	37.8	17.6	8.7	27.3	36.8	46.0	9.2	100	0
12	497.403	42.1	18.9	9.3	28.2	42.1	46.0	3.9	100	130

CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

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MF060b(10.04.03)

Radiated Spurious Emission(DSSS and other forms of modulation)

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

COMPANY	KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.			UL Apex Co., Ltd.
QUIPMENT	Kodak Wi-Fi card			Head Office EMC Lab. No.2 Semi Anechoic Chamber
MODEL	3F8508			REGULATION : FCC Part15 Subpart C 15.247(d)
SAMPLE NO.	1C			TEST DISTANCE : 3m / 1m
POWER	DC3.3V(AC120V/60Hz)			DATE : 12/19/2004
MODE	Transmitting (CH1:2412MHz)			TEMPERATURE : 17°C
PK DETECT				HUMIDITY : 52%
				ENGINEER : Hiroka Umeyama

No.	Freq. [MHz]	Reading HOR [dBuV]	Reading VER [dBuV]	Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result HOR [dBuV/m]	Result VER [dBuV/m]	Limit PK [dBuV/m]	Margin HOR [dB]	Margin VER [dB]
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Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)

1	2390.0	47.5	47.5	30.7	36.3	7.6	0.0	49.5	49.5	74.0	24.5	24.5
2	4824.0	52.0	50.9	35.2	36.1	10.1	1.0	62.2	61.1	74.0	11.8	12.9
3	7236.0	42.1	45.5	37.7	35.6	12.2	0.4	56.8	60.2	74.0	17.2	13.8
4	9648.0	43.2	43.1	37.1	36.3	13.9	0.2	58.1	58.0	74.0	15.9	16.0

Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac

5	12060.0	43.4	41.4	40.8	35.7	15.2	0.0	54.2	52.2	74.0	19.8	21.8
6	14472.0	41.1	41.1	42.3	34.6	15.7	0.0	55.0	55.0	74.0	19.0	19.0
7	16884.0	43.4	44.3	46.4	35.5	17.1	0.0	61.9	62.8	74.0	12.1	11.2
8	19296.0	43.5	44.4	39.6	34.9	18.5	0.0	57.2	58.1	74.0	16.8	15.9
9	21708.0	43.2	43.0	40.7	35.3	20.0	0.0	59.1	58.9	74.0	14.9	15.1
10	24120.0	44.0	44.2	40.0	36.0	19.3	0.0	57.8	58.0	74.0	16.2	16.0

AV DETECT

No.	Freq. [MHz]	Reading HOR [dBuV]	Reading VER [dBuV]	Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result HOR [dBuV/m]	Result VER [dBuV/m]	Limit AV [dBuV/m]	Margin HOR [dB]	Margin VER [dB]
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Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)

1	2390.0	38.5	37.2	30.7	36.3	7.6	0.0	40.5	39.2	54.0	13.5	14.8
2	4824.0	40.5	43.0	35.2	36.1	10.1	1.0	50.7	53.2	54.0	3.3	0.8
3	7236.0	30.1	30.1	37.7	35.6	12.2	0.4	44.8	44.8	54.0	9.2	9.2
4	9648.0	30.7	30.7	37.1	36.3	13.9	0.2	45.6	45.6	54.0	8.4	8.4

Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac

5	12060.0	30.7	30.4	40.8	35.7	15.2	0.0	41.5	41.2	54.0	12.5	12.8
6	14472.0	29.4	29.0	42.3	34.6	15.7	0.0	43.3	42.9	54.0	10.7	11.1
7	16884.0	31.1	31.1	46.4	35.5	17.1	0.0	49.6	49.6	54.0	4.4	4.4
8	19296.0	30.9	31.6	39.6	34.9	18.5	0.0	44.6	45.3	54.0	9.4	8.7
9	21708.0	31.5	31.5	40.7	35.3	20.0	0.0	47.4	47.4	54.0	6.6	6.6
10	24120.0	31.7	31.5	40.0	36.0	19.3	0.0	45.5	45.3	54.0	8.5	8.7

20dBc(Fundamental 2412MHz)

(RBW: 100kHz , VBW:300kHz)

No.	FREQ [MHz]	S/A READING HOR [dBuV/m]	S/A READING VER [dBuV/m]	ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Atten. or Filter [dB]	RESULT HOR [dBuV/m]	RESULT VER [dBuV/m]	Limit 20dBc [dBuV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
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Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass

1	2412.0	95.9	93.2	30.7	36.3	7.6	0.0	97.9	95.2	-	-	-
2	2400.0	52.1	51.0	30.7	36.3	7.6	0.0	54.1	53.0	Funda-20dB	23.8	22.2

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1.0) = 9.5 \text{ dB}$

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

* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

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

In the frequency over the fifth harmonic, the noise from the EUT was not seen. Its base noise implies the system noise floor.

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MF060b(10.04.03)

Radiated Spurious Emission(DSSS and other forms of modulation)

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

COMPANY	: KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.			UL Apex Co., Ltd.					
QUIPMENT	: Kodak Wi-Fi card			Head Office EMC Lab. No.2 Semi Anechoic Chamber					
MODEL	: 3F8508			REGULATION : FCC Part15 Subpart C 15.247(d)					
SAMPLE NO.	: 1C			TEST DISTANCE : 3m / 1m					
POWER	: DC3.3V(AC120V/60Hz)			DATE : 12/19/2004					
MODE	: Transmitting (CH6:2437MHz)			TEMPERATURE : 17°C					
PK DETECT									
No.	Freq. [MHz]	Reading HOR VER [dBuV]	Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result HOR VER [dBuV/m]	Limit PK [dBuV/m]	Margin HOR VER [dB]

Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)										
1	4874.0	50.8	51.7	35.4	36.1	10.2	1.0	61.3	62.2	74.0
2	7311.0	42.1	42.1	37.9	35.7	12.5	0.4	57.2	57.2	74.0
3	9748.0	42.6	42.3	37.1	36.3	14.0	0.2	57.6	57.3	74.0
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac										
4	12185.0	43.4	41.6	41.4	35.6	15.2	0.0	54.9	53.1	74.0
5	14622.0	39.7	41.1	42.6	34.8	15.9	0.0	53.9	55.3	74.0
6	17059.0	43.3	43.1	46.6	35.4	17.2	0.0	62.2	62.0	74.0
7	19496.0	43.6	42.1	39.2	34.9	18.7	0.0	57.1	55.6	74.0
8	21933.0	43.7	44.3	40.5	35.0	20.1	0.0	59.8	60.4	74.0
9	24370.0	43.8	44.1	40.1	36.6	19.7	0.0	57.5	57.8	74.0

AV DETECT										
No.	Freq. [MHz]	Reading HOR VER [dBuV]	Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result HOR VER [dBuV/m]	Limit AV [dBuV/m]	Margin HOR VER [dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)										
1	4874.0	39.2	39.8	35.4	36.1	10.2	1.0	49.7	50.3	54.0
2	7311.0	30.7	29.9	37.9	35.7	12.5	0.4	45.8	45.0	54.0
3	9748.0	30.7	30.7	37.1	36.3	14.0	0.2	45.7	45.7	54.0
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac										
4	12185.0	31.4	30.3	41.4	35.6	15.2	0.0	42.9	41.8	54.0
5	14622.0	28.8	28.8	42.6	34.8	15.9	0.0	43.0	43.0	54.0
6	17059.0	31.2	30.9	46.6	35.4	17.2	0.0	50.1	49.8	54.0
7	19496.0	31.0	31.0	39.2	34.9	18.7	0.0	44.5	44.5	54.0
8	21933.0	31.6	31.5	40.5	35.0	20.1	0.0	47.7	47.6	54.0
9	24370.0	32.1	32.0	40.1	36.6	19.7	0.0	45.8	45.7	54.0

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1.0) =$

9.5 dB

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

* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

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

In the frequency over the fifth harmonic, the noise from the EUT was not seen. Its base noise implies the system noise floor.

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MF060b(10.04.03)

Radiated Spurious Emission(DSSS and other forms of modulation)

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

COMPANY	KODAK DIGITAL PRODUCT CENTER, JAPAN LTD.			UL Apex Co., Ltd.	Head Office EMC Lab. No.2 Semi Anechoic Chamber
QUIPMENT	Kodak Wi-Fi card			REGULATION	FCC Part15 Subpart C 15.247(d)
MODEL	3F8508			TEST DISTANCE	3m / 1m
SAMPLE NO.	1C			DATE	12/19/2004
POWER	DC3.3V(AC120V/60Hz)			TEMPERATURE	17°C
MODE	Transmitting (CH11:2462MHz)			HUMIDITY	52%
PK DETECT				ENGINEER	Hiroka Umeyama

No.	Freq. [MHz]	Reading HOR [dBuV]	Reading VER [dBuV]	Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result HOR [dBuV/m]	Result VER [dBuV/m]	Limit PK [dBuV/m]	Margin HOR [dB]	Margin VER [dB]
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Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)

1	2483.5	46.7	47.7	30.8	36.2	7.5	0.0	48.8	49.8	74.0	25.2	24.2
2	4924.0	48.5	46.2	35.7	36.1	10.2	1.0	59.3	57.0	74.0	14.7	17.0
3	7386.0	43.0	42.5	38.1	35.7	12.6	0.4	58.4	57.9	74.0	15.6	16.1
4	9848.0	42.5	43.1	37.0	36.3	14.1	0.2	57.5	58.1	74.0	16.5	15.9

Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac

5	12310.0	42.5	42.2	41.9	35.6	15.3	0.0	54.6	54.3	74.0	19.4	19.7
6	14772.0	41.7	41.8	42.8	34.9	15.9	0.0	56.0	56.1	74.0	18.0	17.9
7	17234.0	43.1	43.6	45.9	35.3	17.2	0.0	61.4	61.9	74.0	12.6	12.1
8	19696.0	43.2	42.9	39.6	35.2	18.8	0.0	56.9	56.6	74.0	17.1	17.4
9	22158.0	43.7	43.5	40.6	35.0	20.1	0.0	59.9	59.7	74.0	14.1	14.3
10	24620.0	45.3	44.5	40.2	36.8	20.0	0.0	59.2	58.4	74.0	14.8	15.6

AV DETECT

No.	Freq. [MHz]	Reading HOR [dBuV]	Reading VER [dBuV]	Ant. Factor [dB/m]	Amp. Gain [dB]	Cable Loss [dB]	Atten. or Filter [dB]	Result HOR [dBuV/m]	Result VER [dBuV/m]	Limit AV [dBuV/m]	Margin HOR [dB]	Margin VER [dB]
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Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter)

1	2483.5	38.0	37.1	30.8	36.2	7.5	0.0	40.1	39.2	54.0	13.9	14.8
2	4924.0	37.0	33.3	35.7	36.1	10.2	1.0	47.8	44.1	54.0	6.2	9.9
3	7386.0	30.2	30.0	38.1	35.7	12.6	0.4	45.6	45.4	54.0	8.4	8.6
4	9848.0	30.9	30.9	37.0	36.3	14.1	0.2	45.9	45.9	54.0	8.1	8.1

Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Attenuator (or Filter) - Dfac

5	12310.0	30.3	31.0	41.9	35.6	15.3	0.0	42.4	43.1	54.0	11.6	10.9
6	14772.0	29.4	29.5	42.8	34.9	15.9	0.0	43.7	43.8	54.0	10.3	10.2
7	17234.0	31.1	31.5	45.9	35.3	17.2	0.0	49.4	49.8	54.0	4.6	4.2
8	19696.0	30.9	31.3	39.6	35.2	18.8	0.0	44.6	45.0	54.0	9.4	9.0
9	22158.0	31.5	31.4	40.6	35.0	20.1	0.0	47.7	47.6	54.0	6.3	6.4
10	24620.0	32.5	32.4	40.2	36.8	20.0	0.0	46.4	46.3	54.0	7.6	7.7

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1.0) = 9.5 \text{ dB}$

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

* Atten. : 1 to 3.5GHz, Filter : 3.5 to 26GHz

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

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

In the frequency over the fifth harmonic, the noise from the EUT was not seen. Its base noise implies the system noise floor.

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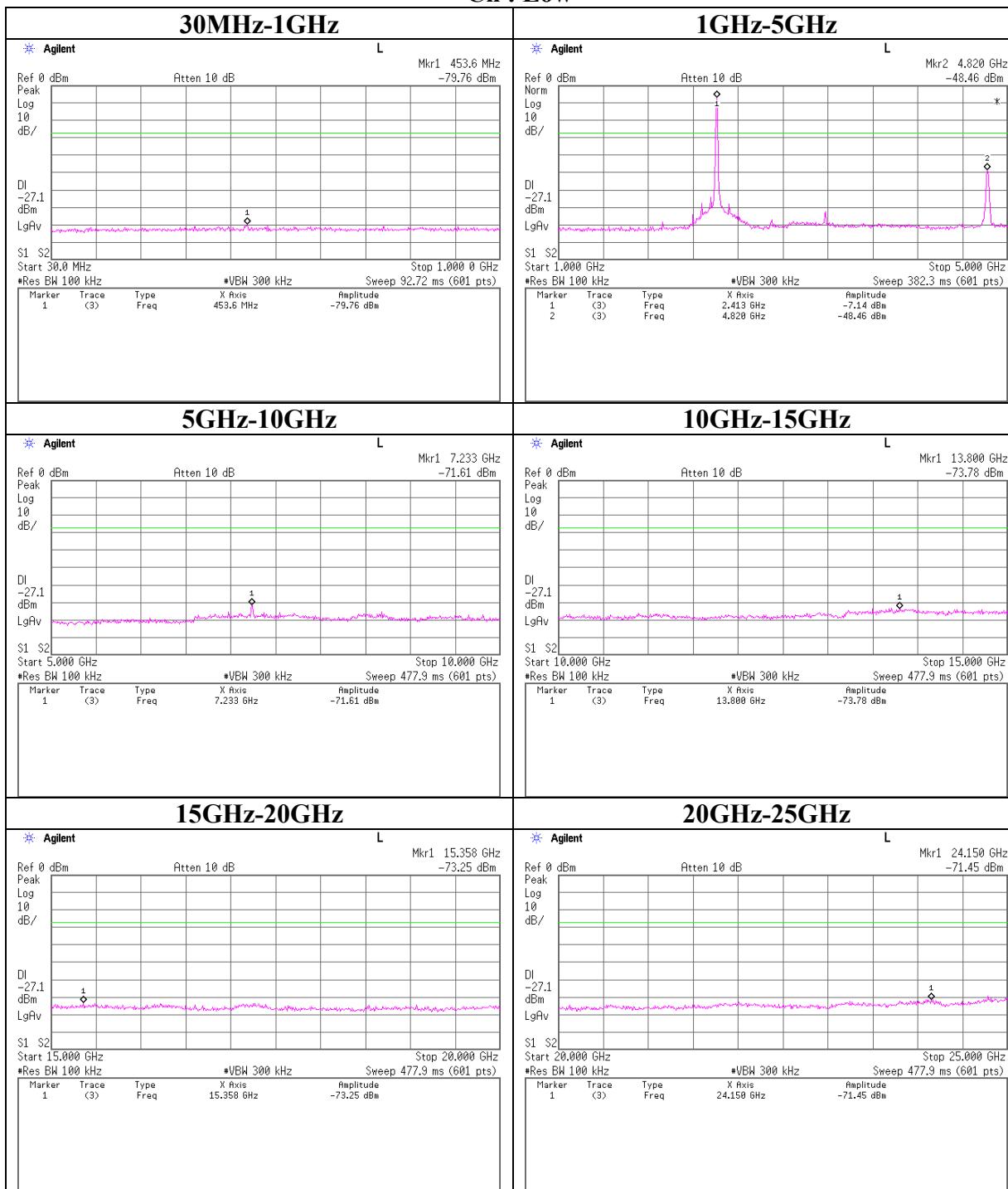
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MF060b(10.04.03)

Conducted Spurious Emission(DSSS and other forms of modulation)

Ch : Low



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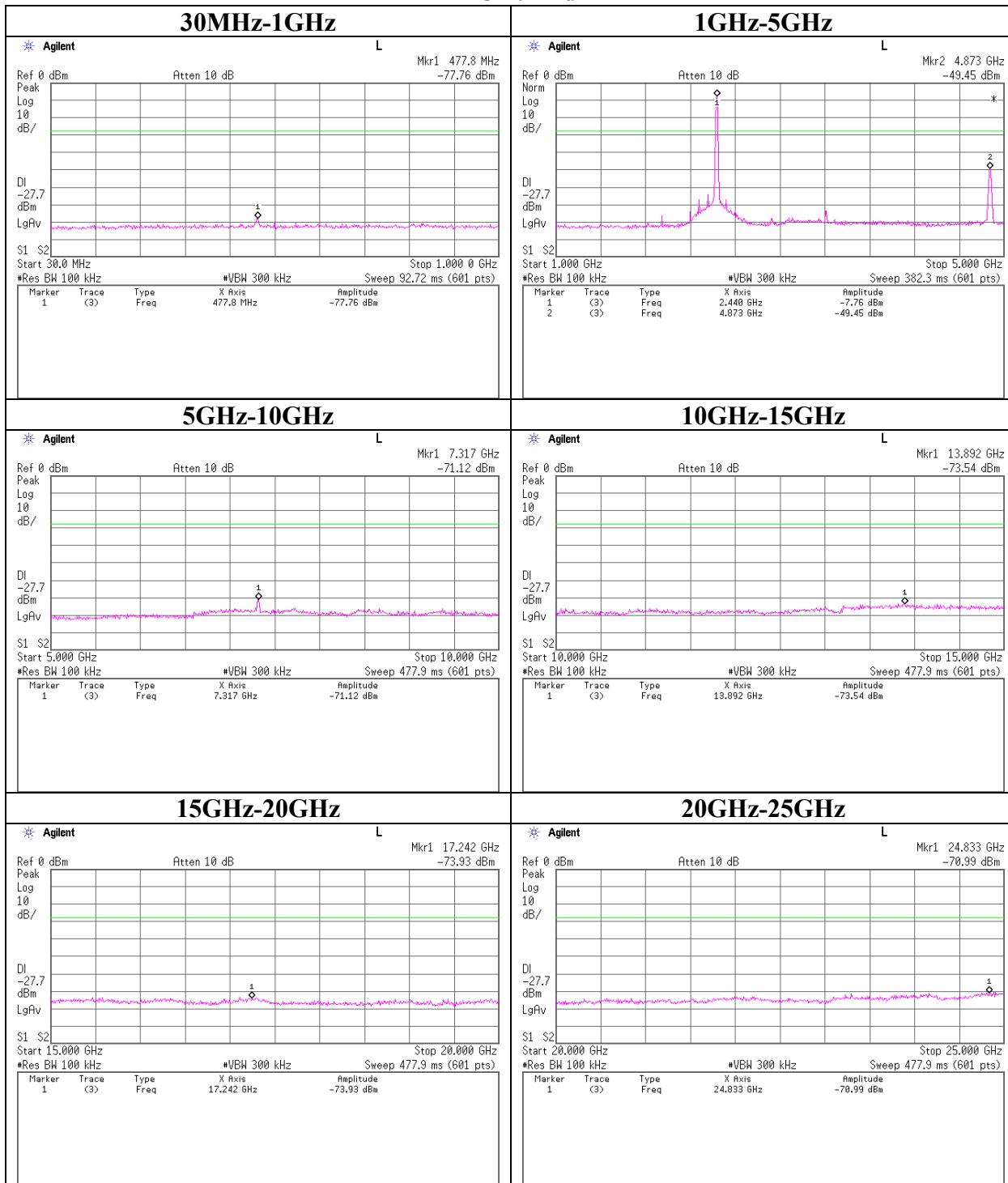
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Conducted Spurious Emission(DSSS and other forms of modulation)

Ch : Mid



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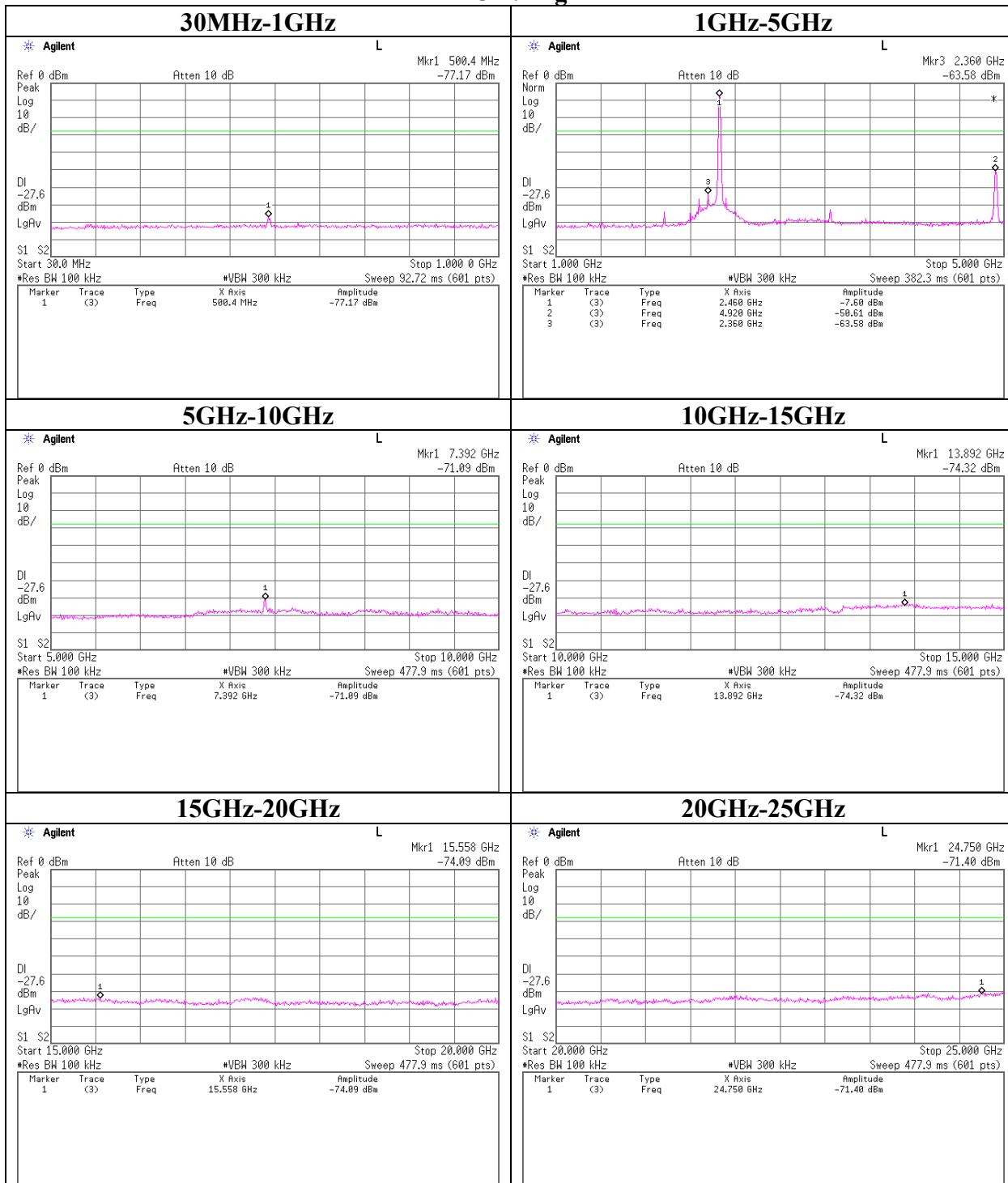
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Conducted Spurious Emission(DSSS and other forms of modulation)

Ch : High



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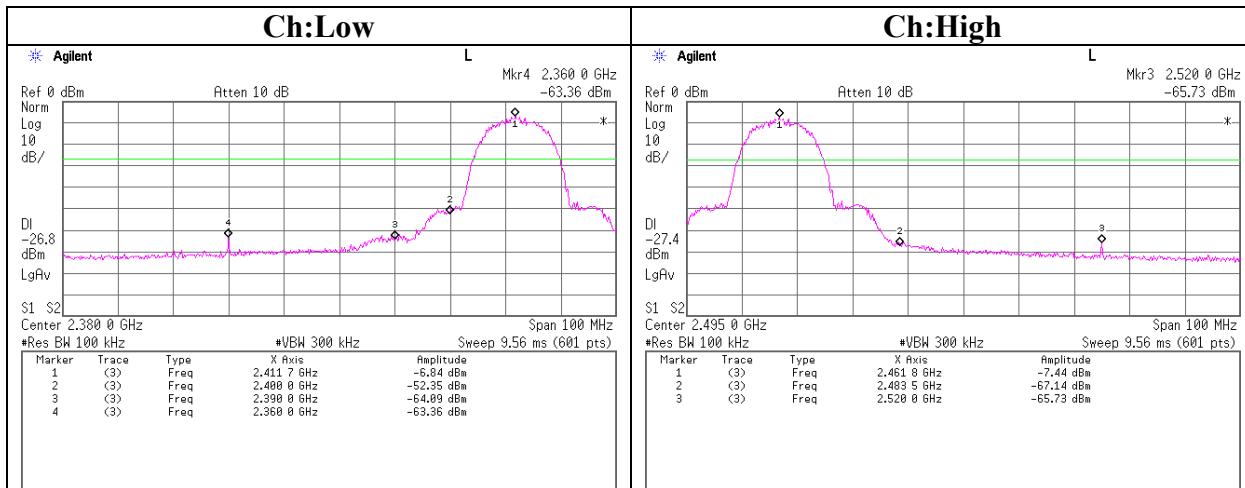
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Conducted emission Band Edge compliance (DSSS and other forms of modulation)



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Power Density (DSSS and other forms of modulation)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Shielded Room

Company	: KODAK DIGITAL PRODUCT CENTER, JAPAN LTD	REPORT NO	: 25DE0080-HO
Equipment	: Kodak Wi-Fi card	REGULATION	: Fcc Part15 Subpart C 15.247(e)
Model	: 3F8508	TEST DISTANCE	: -
Sample No.	: 1C	DATE	: 02/17/2005
Power	: DC3.3V	TEMPERATURE	: 22°C
Mode	: Tx(ch1,6,11)	HUMIDITY	: 45%
		ENGINEER	: Hiroka Umeyama

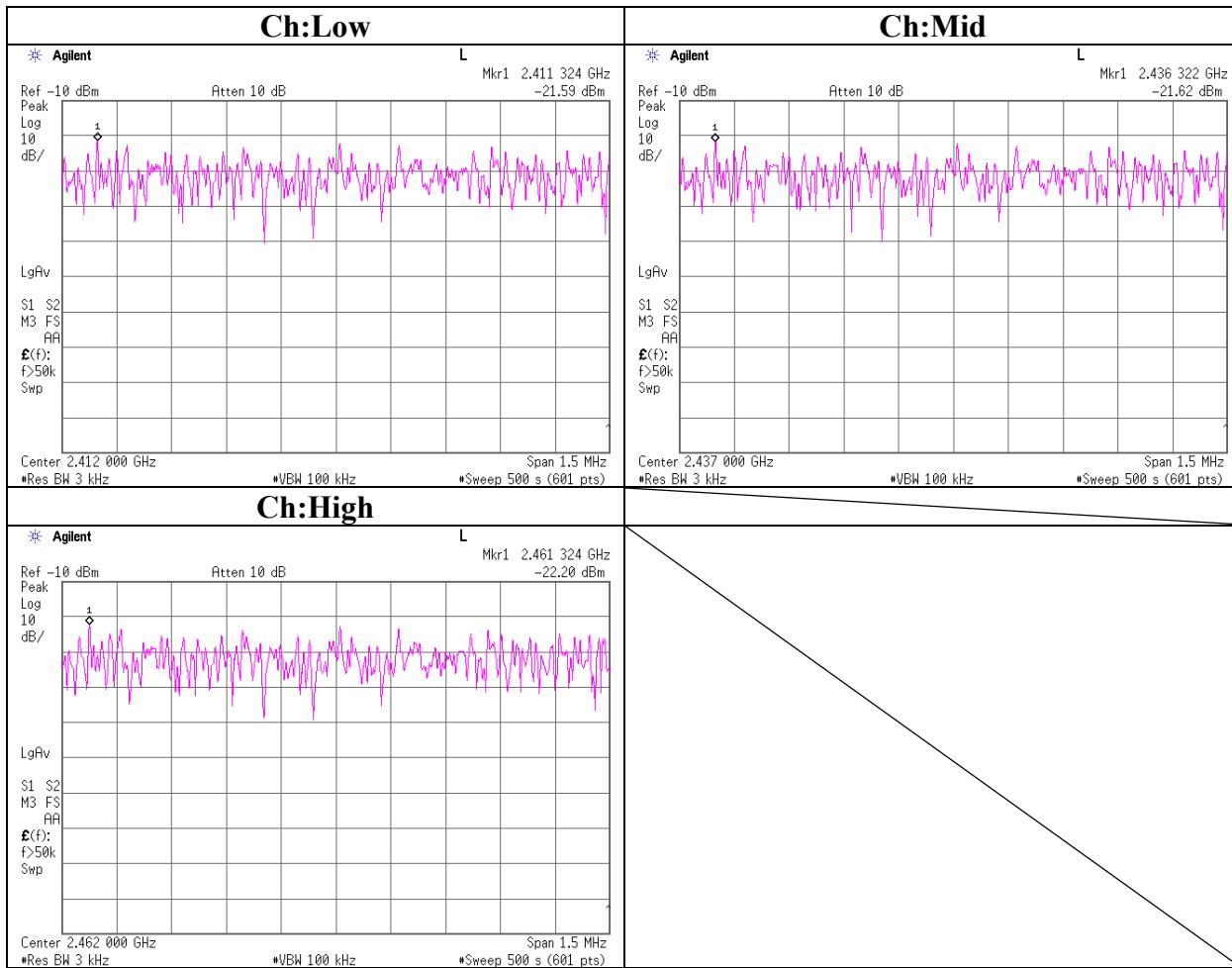
[IEEE802.11b]

Ch	Freq. [MHz]	Reading [dBm]	Cable [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2412.7	-21.59	0.85	10.00	-10.74	8.00	18.74
Mid	2437.7	-21.62	0.85	10.00	-10.77	8.00	18.77
High	2462.4	-22.20	0.85	10.00	-11.35	8.00	19.35

Sample Calculation:

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

Power Density(DSSS and other forms of modulation)



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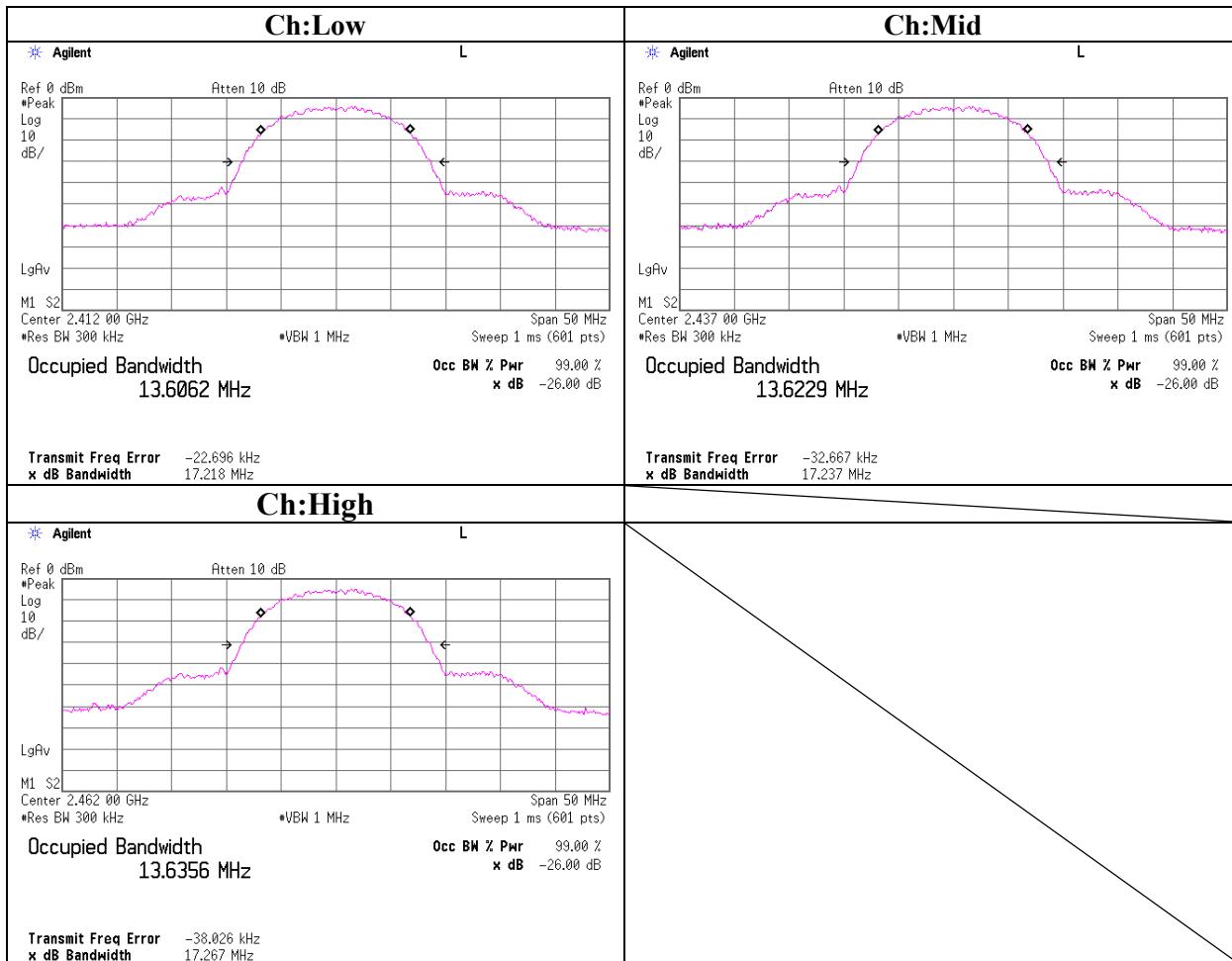
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99%Occupied Bandwidth(DSSS and other forms of modulation)



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