RADIO TEST REPORT

Test Report No.: 10442839S-A

Applicant	:	**Canon Inc.**
Type of Equipment	:	**Wireless LAN Module**
Model No.	:	**FM1M944**
FCC ID	:	**AZDFM1M944**
Test regulation	:	**FCC Part15 Subpart C: 2014**
Test result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

Date of test: August 25 to September 5, 2014

Tested by:

Kenichi Adachi
Engineer
Consumer Technology Division

Approved by :

Toyokazu Imamura
Leader
Consumer Technology Division

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
☒ There is no testing item of "Non-accreditation".

RTL02610

UL Japan, Inc.
Shonan EMC Lab.
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REVISION HISTORY

Original Test Report No.: 10442839S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10442839S-A	September 26, 2014	-	-
1	10442839S-A	September 30, 2014	4	Correction of explanation for FCC 15.31 (e)

Contents

SECTION 1: Customer information

Company Name	:	Canon Inc.
Address	:	5-1, Hakusan 7-chome, Toride-shi, Ibaraki 146-8501 Japan
Telephone Number	:	+81-297-74-2111
Facsimile Number	:	+81-297-73-5422
Contact Person	:	Hayato Taniguchi

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

2.1 Identification of E.U.T.

Type of Equipment	:	Wireless LAN Module
Model No.	:	FM1M944
Serial No.	:	Refer to 4.2
Rating	:	DC5V
Receipt Date of Sample	:	August 25, 2014
Country of Mass-production	:	Japan, China
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.

2.2 Product description

Model: FM1M944 (referred to as the EUT in this report) is a Wireless LAN Module.

Clock frequency(ies) in the system : 40MHz

Radio specification

Equipment type	:	Transceiver
Frequency of operation	:	2412-2462MHz
Bandwidth	:	20MHz, 40MHz
Channel spacing	:	5MHz
Type of modulation	:	DSSS (IEEE 802.11b), OFDM (IEEE 802.11g/n)
Antenna type	:	Pattern antenna inverse F
Antenna connector type	:	None
Antenna gain	:	3.21dBi
ITU code	:	D1D, G1D
Operation temperature range	:	0 to +70 deg.C

FCC 15.31 (e) / 212
The stable voltage (DC3.3V) is provided constantly to RF part via regulator. Therefore, the EUT complies with the requirement.

FCC 15.203 / 212
The antenna is not removable from the EUT. Therefore, the equipment complies with the requirement.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart 2014, final revised on May 1, 2014 and effective June 2, 2014
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures & Results

Item	Test Procedure *1)	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.10:2009	FCC 15.207	-	N/A	21.6dB Freq.: 0.50001MHz Detector: QP Phase: N Mode: Tx, 11g, 2412MHz	Complied
6dB bandwidth	ANSI C63.10:2009	FCC 15.247 (a)(2)	Conducted	N/A	* See data	Complied
Maximum peak conducted output power	ANSI C63.10:2009	FCC 15.247 (b)(3)	Conducted	N/A		Complied
Out of band emission & Restricted band edges	ANSI C63.10:2009	FCC 15.109, 15.247 (d) & 15.209	Conducted / Radiated	N/A	5.0dB Freq.: 4824.000MHz Polarization: Vertical Detection: Average Mode: Tx, 11b, 2412MHz	Complied
Power density	ANSI C63.10:2009	FCC 15.247 (e)	Conducted	N/A	* See data	Complied
Note: UL Japan's EMI Work Procedures No.13-EM-W0420 and 13-EM-W0422. *1) These tests were also referred to KDB 558074 v03 r02 (FCC), "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".						

3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied bandwidth (99%)	ANSI C63.4:2009 RSS-Gen 4.6.1	-	Conducted	-	-
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422					

* Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Item	Frequency range	No.1 SAC[*1]/SR[*2] (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Conducted emission (AC Mains) LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.8 dB	5.0 dB	4.8 dB
	300MHz-1GHz	5.0 dB	5.0 dB	4.8 dB
	1GHz-15GHz	4.9 dB	4.9 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.7 dB	5.6 dB	5.6 dB
	18GHz-40GHz	5.2 dB	4.3 dB	4.3 dB

*1: SAC=Semi-Anechoic Chamber
*2: SR= Shielded Room is applied besides radiated emission

Conducted emission test

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

Radiated emission test

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

Antenna port conducted test

Power Measurement uncertainty above 1GHz for this test was: (±) 1.5dB
Conducted emissions Measurement (below 1GHz) uncertainty for this test was: (±) 1.6dB
Conducted emissions, Power Density Measurement (1G-3GHz) uncertainty for this test was: (±) 1.4dB
Conducted emissions Measurement (3G-18GHz) uncertainty for this test was: (±) 2.8dB
Conducted emissions Measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.5dB
Bandwidth Measurement uncertainty for this test was: (±) 5.4%
Duty cycle and Time Measurement uncertainty for this test was: (±) 0.012%

3.5 Test location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
Telephone number : +81 463 50 6400
Facsimile number : +81 463 50 6401
JAB Accreditation No. : RTL02610

	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☐ No.1 semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☐ No.2 semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
☐ No.4 semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☐ No.1 shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.2 shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☒ No.3 shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☐ No.5 shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ No.6 shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☒ No.1 Measurement room	-	2.55 x 4.1 x 2.5	-	-

3.6 Test setup, Data of test & Test instruments

Refer to APPENDIX 1 to 3.

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

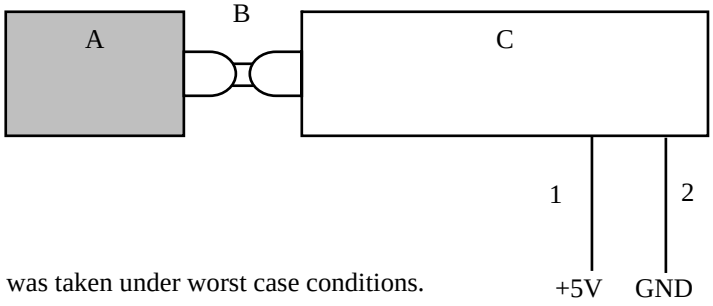
4.1 Operating mode

Test item	Mode	Tested frequency	Power setting *1)	Worst data rate *2)
Conducted emission *3)	Transmitting (Tx) IEEE 802.11g	2412MHz	10 dBm	24Mbps
Radiated emission (below 1GHz) *3) *4)	Transmitting (Tx) IEEE 802.11b	2412MHz	13 dBm	1Mbps
	Transmitting (Tx) IEEE 802.11g	2412MHz	10dBm	24Mbps
	Transmitting (Tx) IEEE 802.11n (HT20)	2462MHz	10 dBm	MCS0
	Transmitting (Tx) IEEE 802.11n (HT40)	2422MHz	8 dBm	MCS0
Other items	Transmitting (Tx) IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	13 dBm	1Mbps
	Transmitting (Tx) IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	10dBm	24Mbps
	Transmitting (Tx) IEEE 802.11n (HT20)	2412MHz, 2437MHz, 2462MHz	10 dBm	MCS0
	Transmitting (Tx) IEEE 802.11n (HT40)	2422MHz, 2437MHz, 2452MHz	8 dBm	MCS0

*1) The actual output power differs from the setting value. Software used for the test: DutApiBridgeETH8782.exe
*2) The worst condition was determined based on the test result of Maximum Peak Conducted Output Power.
*3) Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - "of TCB Council Workshop October 2009.
*4) The spurious emission level within the range of 1GHz or less was measured in all mode, because the tendency was different in each mode of 11b, 11g, 11n (HT20), and 11n (HT40).
However, maximum channel of Maximum Peak Output Power was measured as a representative, because the difference of each channel had not been seen.

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

4.2 Configuration and peripherals



* Test data was taken under worst case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Wireless LAN Module	FM1M944	28	Canon	EUT
B	USB converted connecter	AD-3DUSB14	-	Sanwa Supply	-
C	Jig	Power Supply Tool for USB I/F WLAN Module	1	Canon	-

List of cable used

No.	Cable name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC	1.45	Unshielded	Unshielded	-
2	DC	1.45	Unshielded	Unshielded	-

SECTION 5: Conducted emission

5.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

5.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 0.8m above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals was aligned and was 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.
Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source.
Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

Frequency range : 0.15 - 30MHz
EUT position : Table top

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT via DC power supply within a Shielded room. The EUT via DC power supply was connected to a Line Impedance Stabilization Network (LISN) via host device. An overview sweep with peak detection has been performed.
The measurements had been performed with a quasi-peak detector and if required, a CISPR average detector.
The conducted emission measurements were made with the following detection of the test receiver.

Detection Type : Quasi-Peak/ CISPR Average
IF Bandwidth : 9kHz

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1.

SECTION 6: 6dB bandwidth & Occupied bandwidth (99%)

Test procedure
The bandwidth was measured with a spectrum analyzer connected to the antenna port.
The test was measured based on Method 8.1 Option 1 and 8.2 Option 2 of KDB 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Summary of the test results: Pass
Refer to APPENDIX 1.

SECTION 7: Maximum peak conducted output power

Test procedure
The Maximum Peak Output Power was measured with a power meter connected to the antenna port.
The test was measured based on Method 9.1.3 PKPM1 of KDB 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Detection type: Peak / Average *1)

Summary of the test results: Pass
Refer to APPENDIX 1

*1) Average detector was used only for Reference data of SAR testing.

SECTION 8: Peak power density

Test procedure
The peak power density was measured with a spectrum analyzer connected to the antenna port.
Instrument used : Spectrum Analyzer
RBW / VBW : 3kHz / 9.1kHz

The test was measured based on Method 10.2 PKPSD of KDB 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Summary of the test results: Pass
Refer to APPENDIX 1.

SECTION 9: Radiated emission

9.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

9.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.25m by 0.25m, raised 0.8m above the conducting ground plane. Photographs of the set up are shown in APPENDIX 3.

9.3 Test conditions

Frequency range : 9kHz to 25GHz
EUT position : Table top

9.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz) (Refer to Figure 1).

Measurements were performed with quasi-peak, peak and average detector. 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.
The radiated emission measurements were made with the following detection.

	9kHz to 90kHz & 110kHz to 150kHz	90kHz to 110kHz	150kHz to 490kHz	490kHz to 30MHz	30MHz to 1GHz
Detector Type	PK/AV	QP	PK/AV	QP	QP
IF Bandwidth	200Hz	200Hz	10kHz	9kHz	120kHz
Measuring antenna	Loop antenna				Biconical (30-299.99MHz) Logperiodic (300MHz-1GHz)

Frequency	1-25GHz		20dBc
Detection type	Peak	Average *1)	Peak
IF Bandwidth	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 3MHz Detector: Linear Voltage Averaging	RBW: 100kHz VBW: 300kHz
Measuring antenna	Horn antenna		

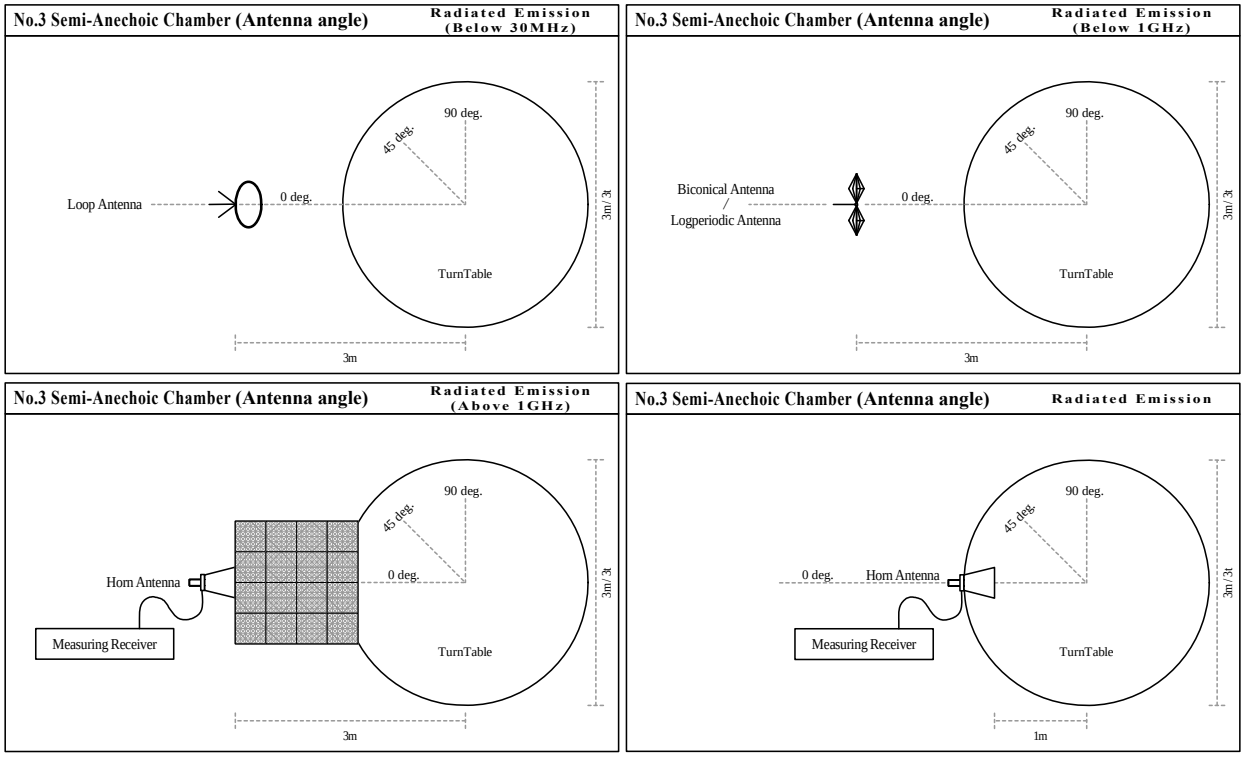
*1) Average Power Measurement was measured based on 12.2.5 of KDB 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

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.

Worst case:

Antenna polarization	Carrier (Band edge)	Spurious				
		Below 1GHz		Above 1GHz		
		9k-30MHz	30M-1GHz	1-15GHz	15-18GHz	15-25GHz
Horizontal	Y	Z	Y	Y	Y	Y
Vertical	Z	Z	Z	Z	Z	Z

Figure 1. Antenna angle



9.5 Band edge

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and band edge level at 2400MHz is below the 20dBc. Refer to the data.

9.6 Results

Summary of the test results : Pass
* No noise was detected above the 5th order harmonics.

Refer to APPENDIX 1.

Contents of APPENDIXES

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Conducted emission
6dB bandwidth
Maximum peak output power
Radiated emission (Spurious emissions)
Peak power density
Occupied bandwidth

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Conducted emission
Radiated emission
Pre-check of the worst position

APPENDIX 1: Data of Radio tests

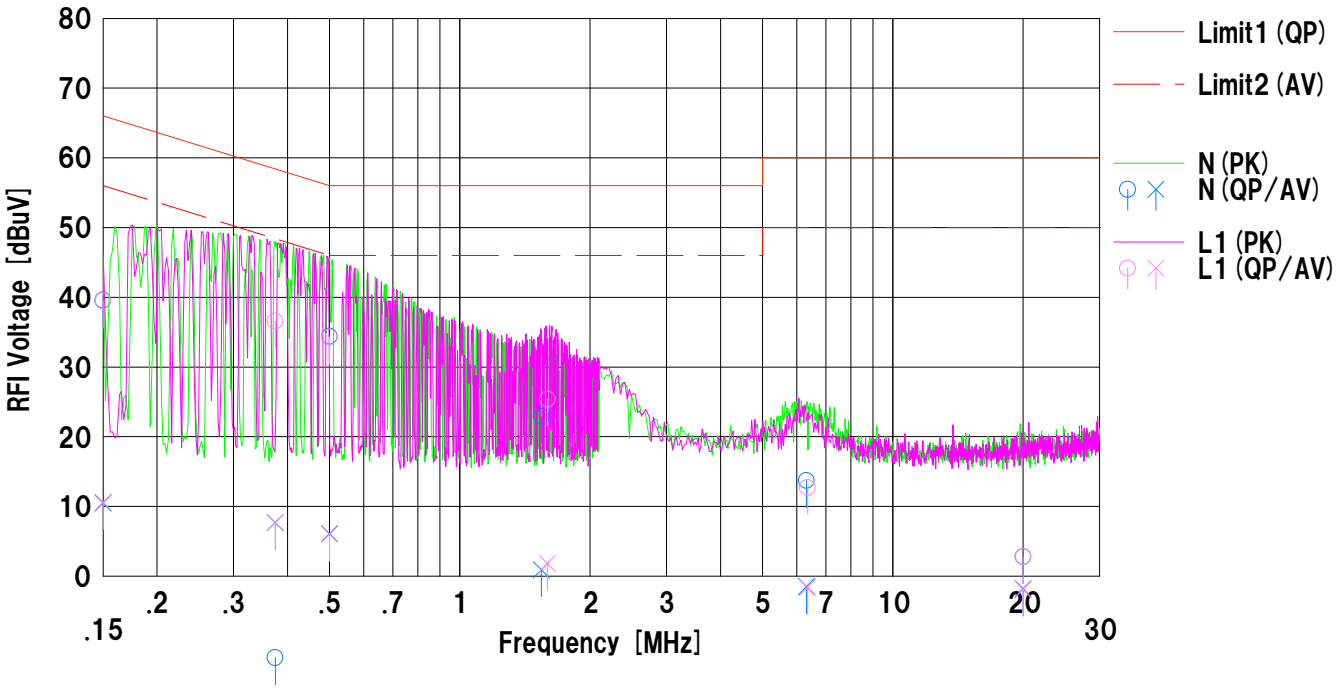
DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2014/09/05

Company	: Canon Inc.	Mode	: Tx 11g 2412MHz
Kind of EUT	: Wireless LAN Module	Order No.	: 10442839S
Model No.	: FM1M944	Power	: AC 120V/60Hz (DC supply)
Serial No.	: 28	Temp./Humi.	: 24deg.C / 63%RH
Remarks	: (EUT input voltage: DC 5V from DC power supply (PAN35-10A))		

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Kenichi Adachi



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	27.1	-2.0	12.5	39.6	10.5	66.0	56.0	26.4	45.5	N	
2	0.37500	-24.1	-4.7	12.4	-11.7	7.7	58.3	48.3	70.0	40.6	N	
3	0.50001	22.0	-6.3	12.4	34.4	6.1	56.0	46.0	21.6	39.9	N	
4	1.54244	10.3	-11.7	12.6	22.9	0.9	56.0	46.0	33.1	45.1	N	
5	6.31268	1.0	-14.2	12.7	13.7	-1.5	60.0	50.0	46.3	51.5	N	
6	20.00000	-10.7	-15.3	13.5	2.8	-1.8	60.0	50.0	57.2	51.8	N	
7	0.15000	27.0	-1.9	12.5	39.5	10.6	66.0	56.0	26.5	45.4	L1	
8	0.37500	24.2	-4.7	12.4	36.6	7.7	58.3	48.3	21.7	40.6	L1	
9	0.50001	21.9	-6.4	12.4	34.3	6.0	56.0	46.0	21.7	40.0	L1	
10	1.59483	12.8	-10.8	12.6	25.4	1.8	56.0	46.0	30.6	44.2	L1	
11	6.35379	0.0	-14.3	12.7	12.7	-1.6	60.0	50.0	47.3	51.6	L1	
12	20.00000	-10.7	-15.4	13.5	2.8	-1.9	60.0	50.0	57.2	51.9	L1	

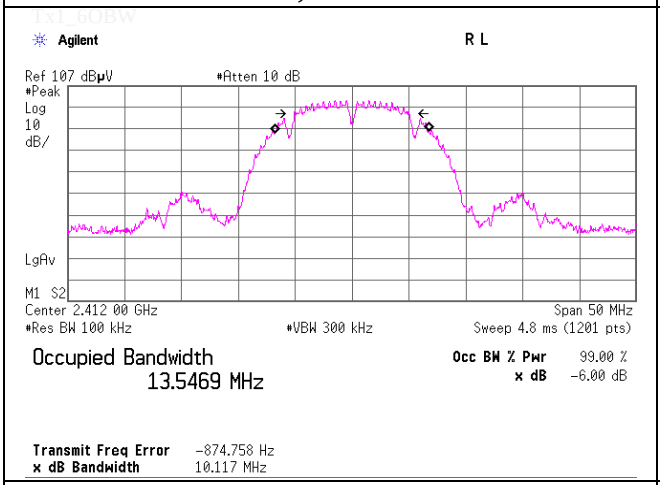
Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

-6dB Bandwidth

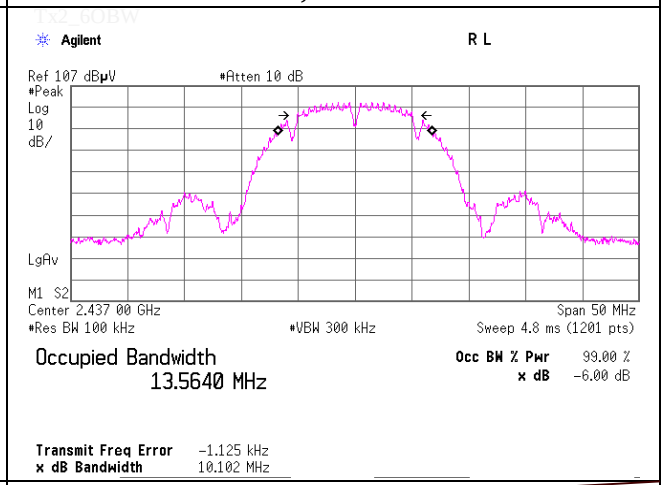
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	10.117	> 0.500
2437.0000	10.102	> 0.500
2462.0000	10.128	> 0.500

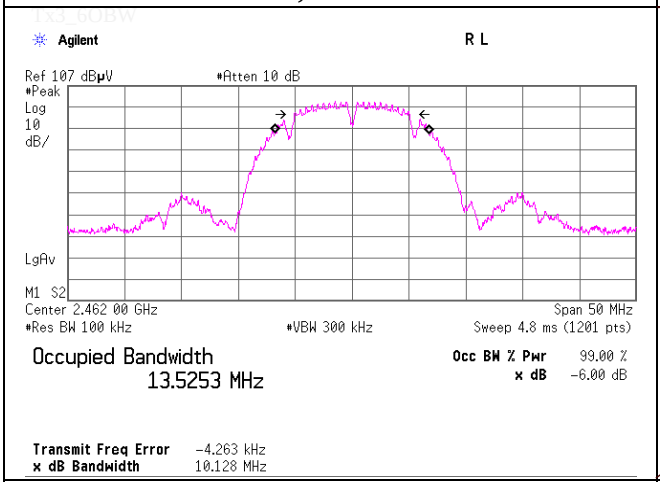
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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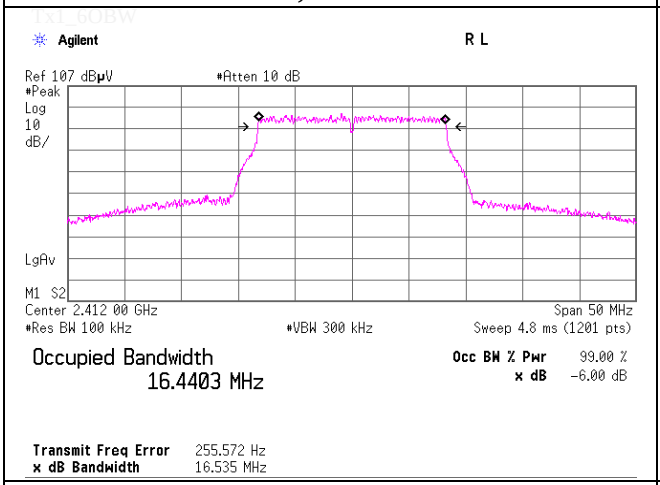
-6dB Bandwidth

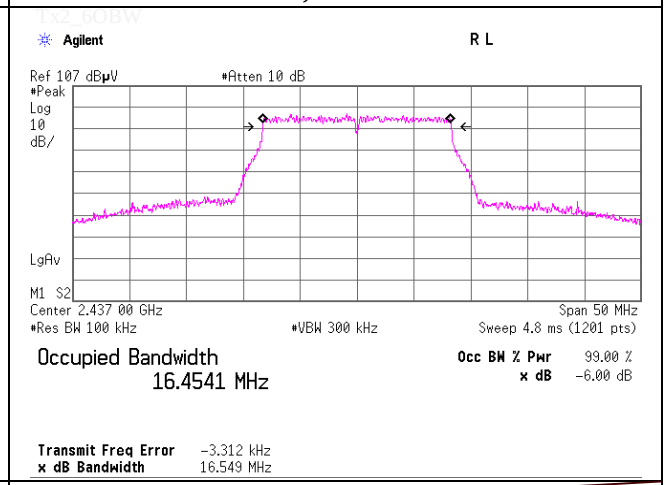
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.535	> 0.500
2437.0000	16.549	> 0.500
2462.0000	16.542	> 0.500

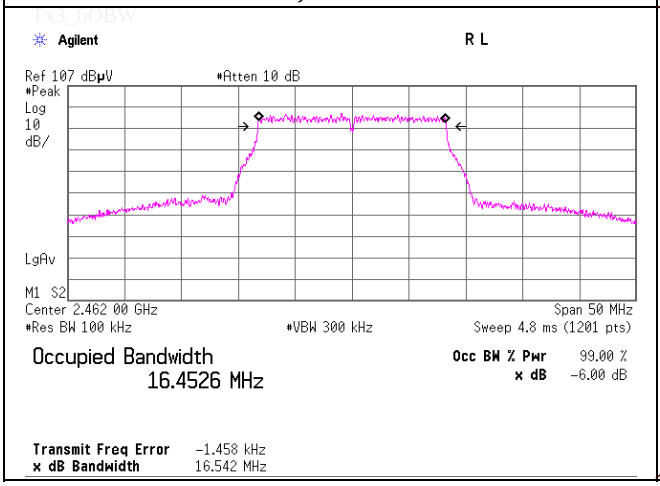
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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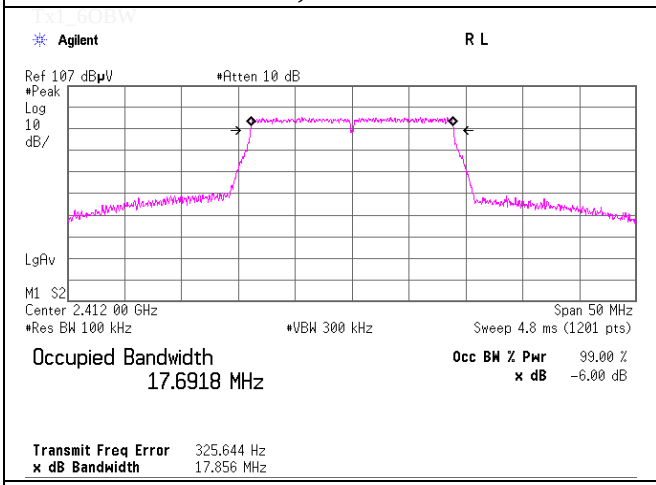
-6dB Bandwidth

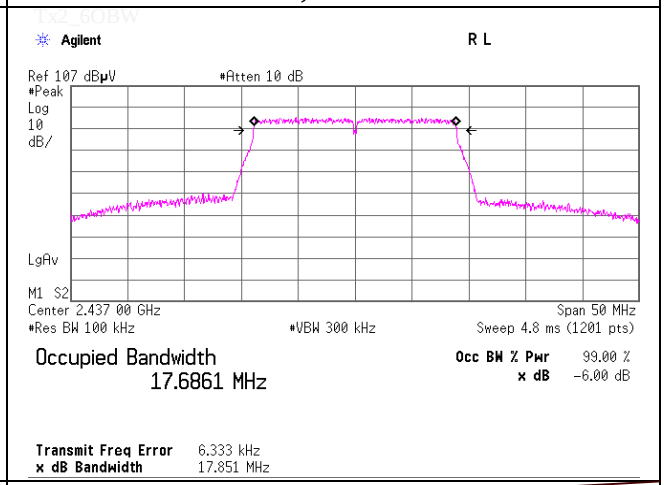
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.856	> 0.500
2437.0000	17.851	> 0.500
2462.0000	17.841	> 0.500

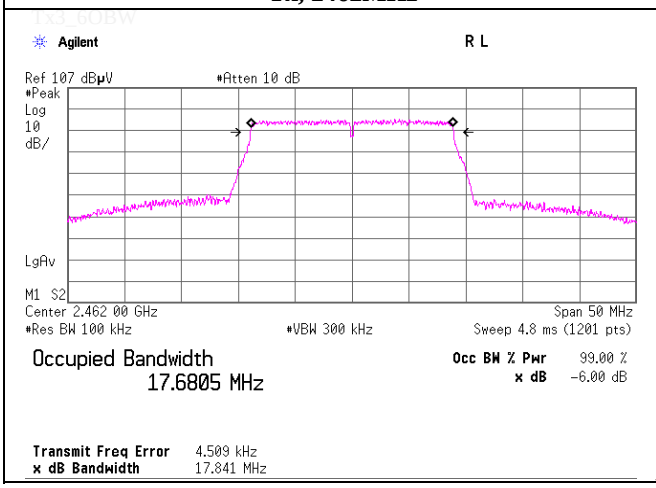
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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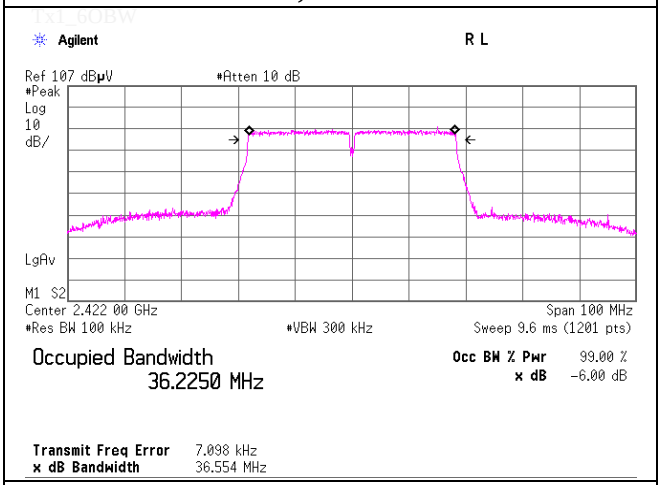
-6dB Bandwidth

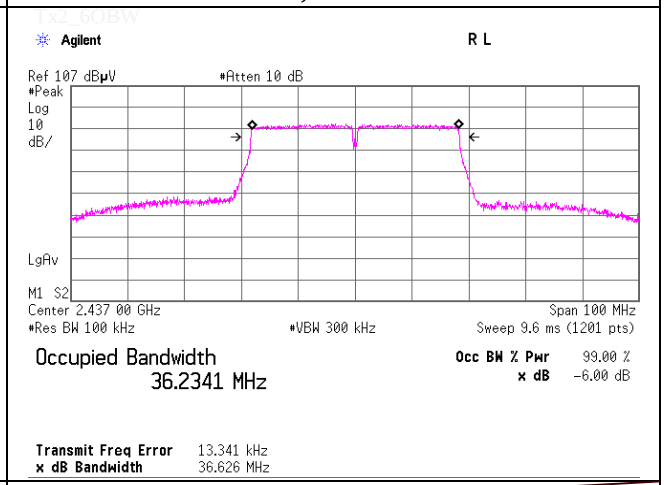
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n(HT40), PN9, worst data mode 0(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.554	> 0.500
2437.0000	36.626	> 0.500
2452.0000	36.446	> 0.500

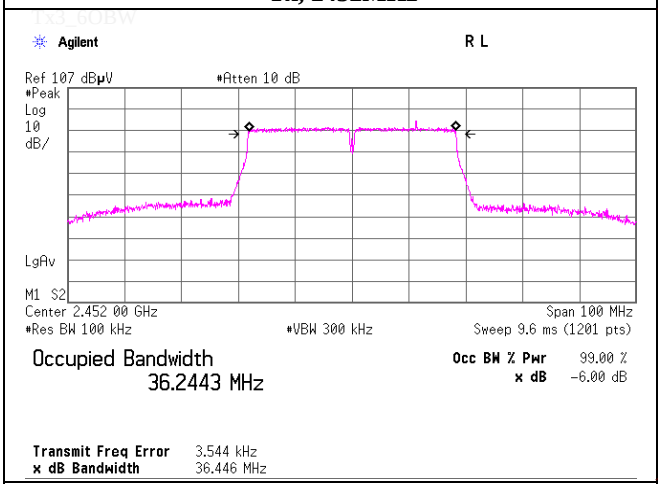
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11b, PN9,	worst data mode :	1 Mbps

(* P/M: Power Meter with power sensor)

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	5.15	2.03	9.65	16.83	48.19	30.00	1000	13.17
Mid	2437.0	4.93	2.04	9.66	16.63	46.03	30.00	1000	13.37
High	2462.0	4.72	2.05	9.66	16.43	43.95	30.00	1000	13.57

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

[Pre check]

	Data rate	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	1	2437.0	4.93	2.04	9.66	**16.63**	46.03	30.00	1000	**13.37**	**Worst**
	2	2437.0	4.46	2.04	9.66	16.16	41.30	30.00	1000	13.84	
	5.5	2437.0	4.43	2.04	9.66	16.13	41.02	30.00	1000	13.87	
	11	2437.0	4.39	2.04	9.66	16.09	40.64	30.00	1000	13.91	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

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Maximum Conducted Output Power (Reference data)

(AVGPM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11b, PN9,	worst data mode :	1 Mbps

(* P/M: Power Meter with power sensor, AV: Average)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	2.48	2.03	9.65	0.00	14.16	26.06	30.00	1000	15.84
Mid	2437.0	2.25	2.04	9.66	0.00	13.95	24.83	30.00	1000	16.05
High	2462.0	2.18	2.05	9.66	0.00	13.89	24.49	30.00	1000	16.11

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
E.I.R.P = Result + Antenna Gain

[Pre check]

	Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin	
	[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	1	2437.0	2.25	2.04	9.66	0.00	**13.95**	24.83	30.00	1000	**16.05**	**Worst**
	2	2437.0	1.85	2.04	9.66	0.00	13.55	22.65	30.00	1000	16.45	
	5.5	2437.0	1.91	2.04	9.66	0.00	13.61	22.96	30.00	1000	16.39	
	11	2437.0	1.84	2.04	9.66	0.00	13.54	22.59	30.00	1000	16.46	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

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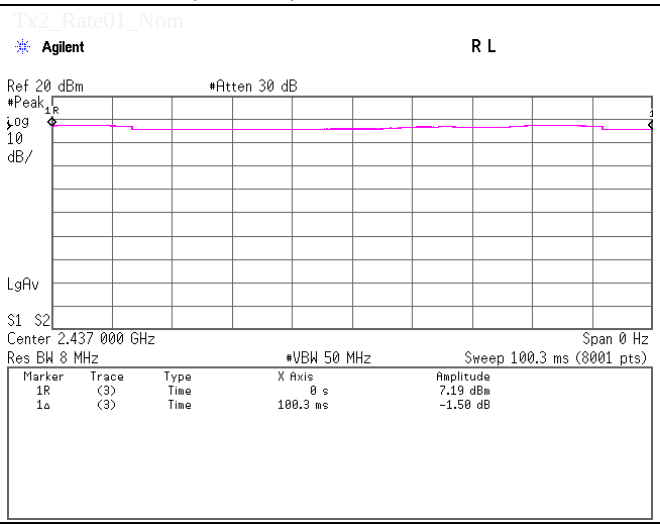
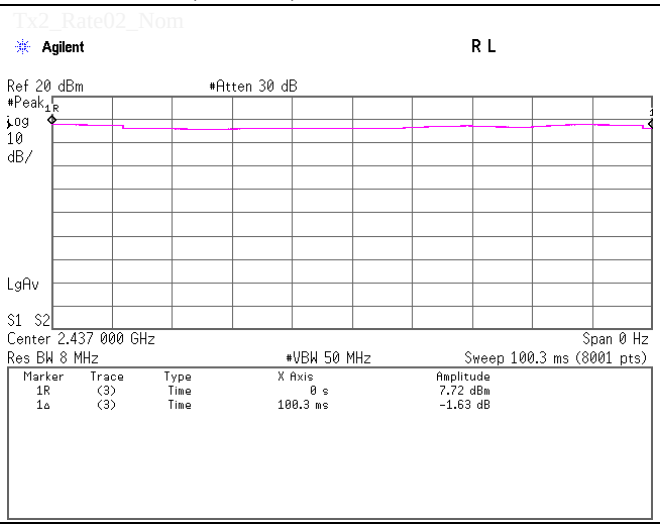
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Duty Factor Caliculation chart for Maximum Conducted Output Power

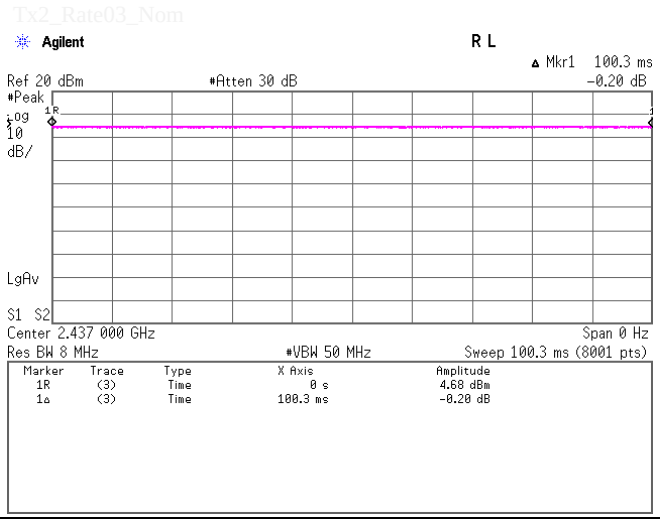
1[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



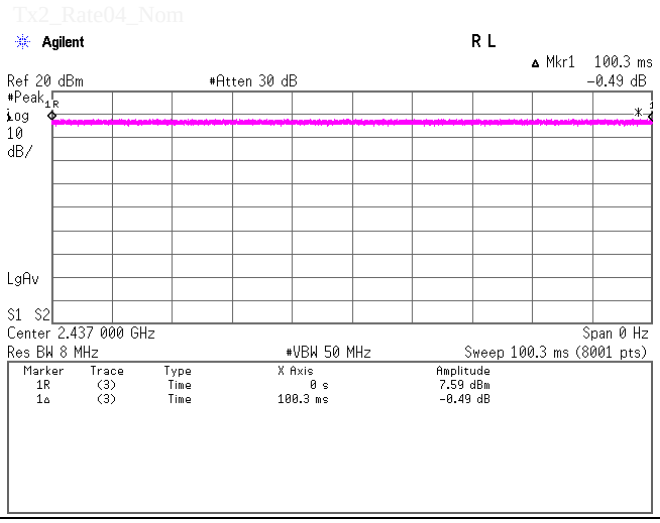
2[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



5.5[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



11[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11g, PN9,	worst data mode :	24 Mbps

(* P/M: Power Meter with power sensor)

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	9.74	2.03	9.65	21.42	138.68	30.00	1000	8.58
Mid	2437.0	9.51	2.04	9.66	21.21	132.13	30.00	1000	8.79
High	2462.0	9.72	2.05	9.66	21.43	139.00	30.00	1000	8.57

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

[Pre check]

	Data rate	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	6	2437.0	8.16	2.04	9.66	19.86	96.83	30.00	1000	10.14	
	9	2437.0	8.13	2.04	9.66	19.83	96.16	30.00	1000	10.17	
	12	2437.0	8.67	2.04	9.66	20.37	108.89	30.00	1000	9.63	
	18	2437.0	8.74	2.04	9.66	20.44	110.66	30.00	1000	9.56	
	24	2437.0	9.51	2.04	9.66	**21.21**	132.13	30.00	1000	**8.79**	**Worst**
	36	2437.0	8.96	2.04	9.66	20.66	116.41	30.00	1000	9.34	
	48	2437.0	9.05	2.04	9.66	20.75	118.85	30.00	1000	9.25	
	54	2437.0	9.18	2.04	9.66	20.88	122.46	30.00	1000	9.12	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

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Maximum Conducted Output Power (Reference data)

(AVGPM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11g, PN9,	worst data mode :	24 Mbps

(* P/M: Power Meter with power sensor, AV: Average)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-0.84	2.03	9.65	0.00	10.84	12.13	30.00	1000	19.16
Mid	2437.0	-1.03	2.04	9.66	0.00	10.67	11.67	30.00	1000	19.33
High	2462.0	-1.01	2.05	9.66	0.00	10.70	11.75	30.00	1000	19.30

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
E.I.R.P = Result + Antenna Gain

[Pre check]

	Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin	
	[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	6	2437.0	-1.10	2.04	9.66	0.00	10.60	11.48	30.00	1000	19.40	
	9	2437.0	-1.13	2.04	9.66	0.00	10.57	11.40	30.00	1000	19.43	
	12	2437.0	-1.20	2.04	9.66	0.00	10.50	11.22	30.00	1000	19.50	
	18	2437.0	-1.19	2.04	9.66	0.00	10.51	11.25	30.00	1000	19.49	
	24	2437.0	-1.03	2.04	9.66	0.00	**10.67**	11.67	30.00	1000	**19.33**	**Worst**
	36	2437.0	-1.11	2.04	9.66	0.00	10.59	11.46	30.00	1000	19.41	
	48	2437.0	-1.10	2.04	9.66	0.00	10.60	11.48	30.00	1000	19.40	
	54	2437.0	-1.05	2.04	9.66	0.00	10.65	11.61	30.00	1000	19.35	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

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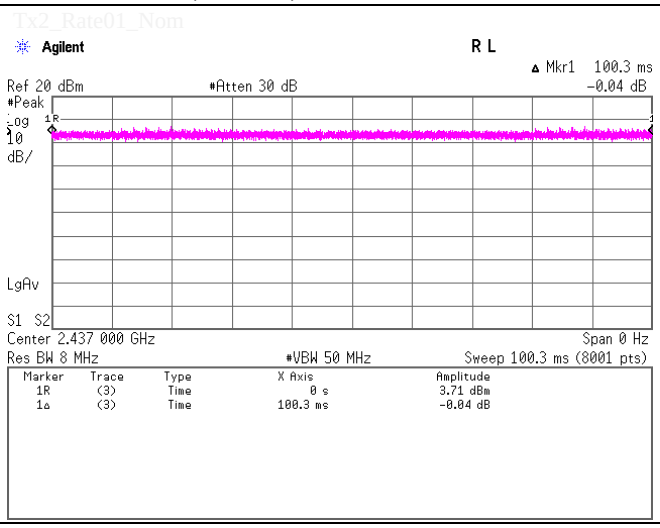
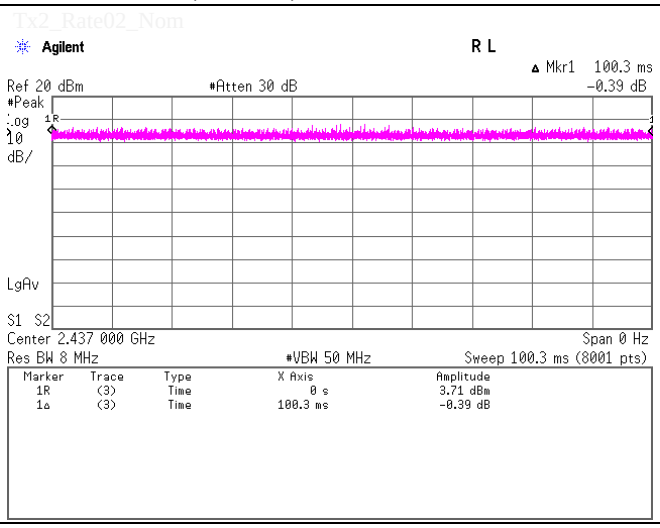
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Duty Factor Caliculation chart for Maximum Conducted Output Power

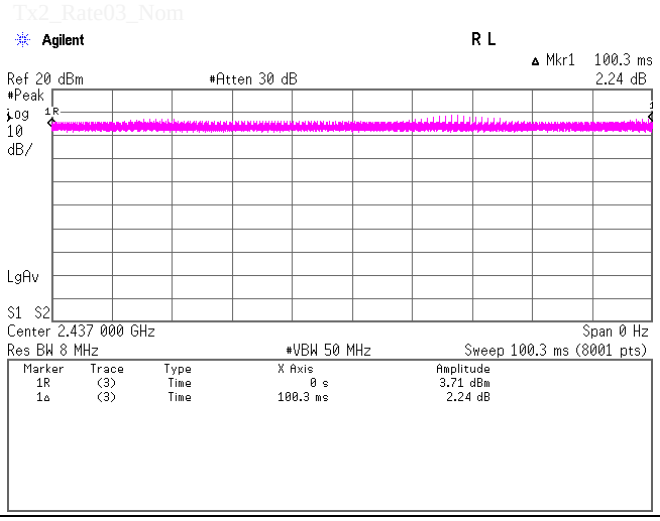
6[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



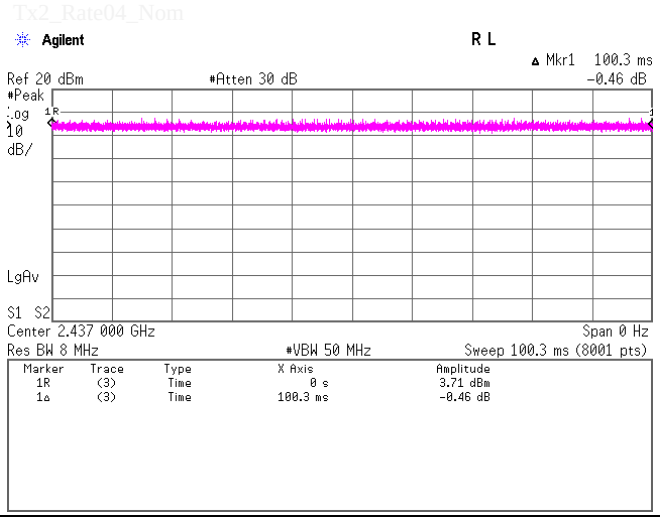
9[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



12[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



18[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



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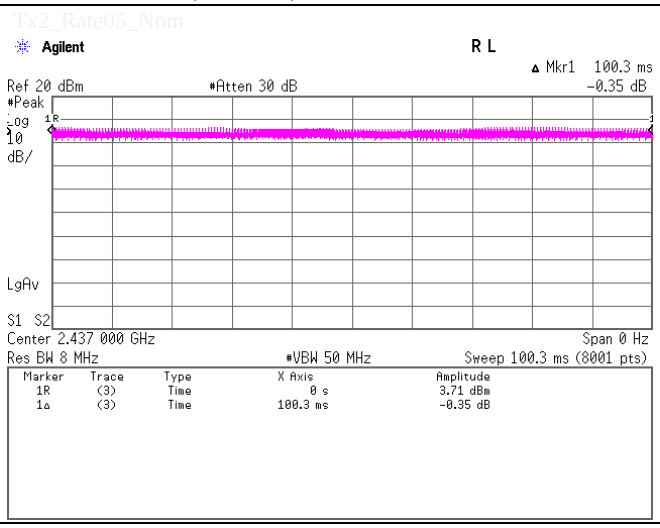
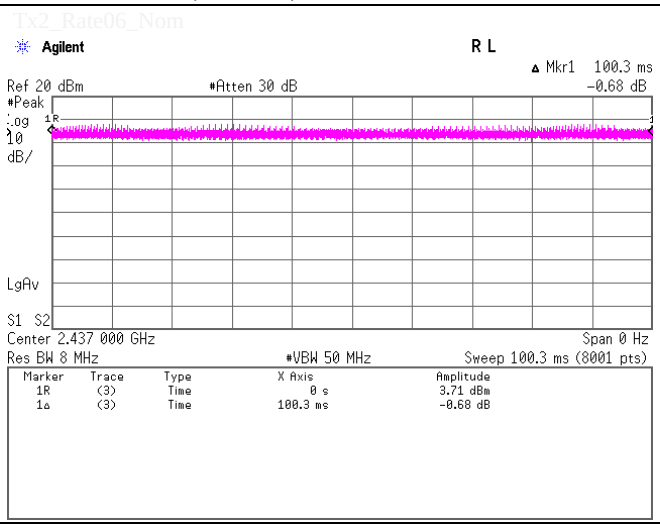
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Duty Factor Caliculation chart for Maximum Conducted Output Power

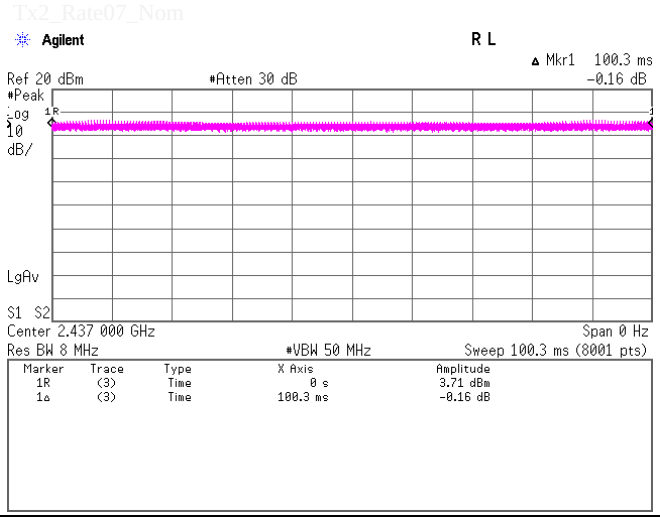
24[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



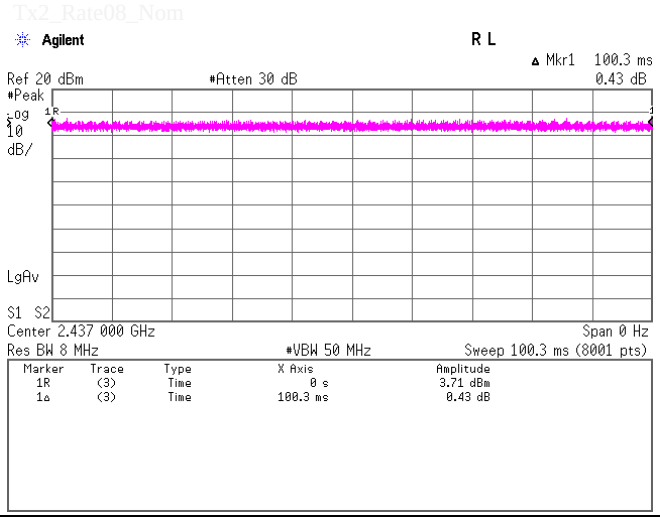
36[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



48[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



54[Mbps]: Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11n(HT20), PN9,	worst data mode :	0 (MCS)

(* P/M: Power Meter with power sensor)

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	8.92	2.03	9.65	20.60	114.82	30.00	1000	9.40
Mid	2437.0	8.74	2.04	9.66	20.44	110.66	30.00	1000	9.56
High	2462.0	9.01	2.05	9.66	20.72	118.03	30.00	1000	9.28

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

[Pre check]

	Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	0	2437.0	8.74	2.04	9.66	**20.44**	110.66	30.00	1000	**9.56**	**Worst**
	1	2437.0	8.68	2.04	9.66	20.38	109.14	30.00	1000	9.62	
	2	2437.0	8.64	2.04	9.66	20.34	108.14	30.00	1000	9.66	
	3	2437.0	8.65	2.04	9.66	20.35	108.39	30.00	1000	9.65	
	4	2437.0	8.66	2.04	9.66	20.36	108.64	30.00	1000	9.64	
	5	2437.0	8.64	2.04	9.66	20.34	108.14	30.00	1000	9.66	
	6	2437.0	8.56	2.04	9.66	20.26	106.17	30.00	1000	9.74	
	7	2437.0	8.61	2.04	9.66	20.31	107.40	30.00	1000	9.69	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

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Maximum Conducted Output Power (Reference data)

(AVGPM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11n(HT20), PN9,	worst data mode :	0 (MCS)

(* P/M: Power Meter with power sensor, AV: Average)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-0.76	2.03	9.65	0.00	10.92	12.36	30.00	1000	19.08
Mid	2437.0	-1.01	2.04	9.66	0.00	10.69	11.72	30.00	1000	19.31
High	2462.0	-0.96	2.05	9.66	0.00	10.75	11.89	30.00	1000	19.25

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
E.I.R.P = Result + Antenna Gain

[Pre check]

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	0	2437.0	-1.01	2.04	9.66	0.00	**10.69**	11.72	30.00	1000	**19.31**	**Worst**
	1	2437.0	-1.03	2.04	9.66	0.00	10.67	11.67	30.00	1000	19.33	
	2	2437.0	-1.04	2.04	9.66	0.00	10.66	11.64	30.00	1000	19.34	
	3	2437.0	-1.07	2.04	9.66	0.00	10.63	11.56	30.00	1000	19.37	
	4	2437.0	-1.08	2.04	9.66	0.00	10.62	11.53	30.00	1000	19.38	
	5	2437.0	-1.03	2.04	9.66	0.00	10.67	11.67	30.00	1000	19.33	
	6	2437.0	-1.06	2.04	9.66	0.00	10.64	11.59	30.00	1000	19.36	
	7	2437.0	-1.03	2.04	9.66	0.00	10.67	11.67	30.00	1000	19.33	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

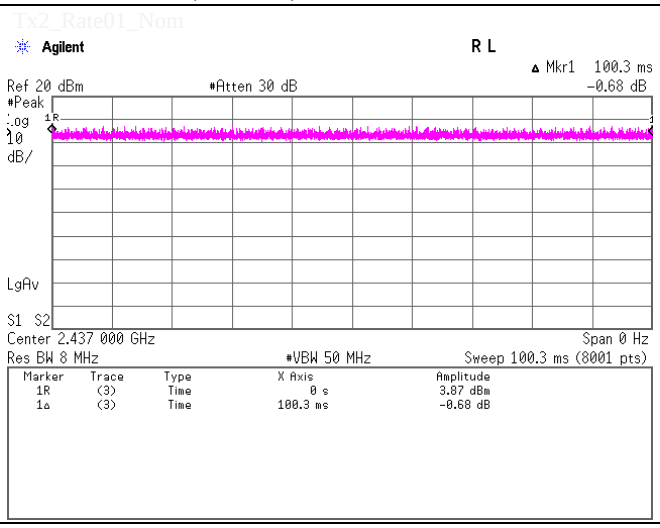
UL Japan, Inc.
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

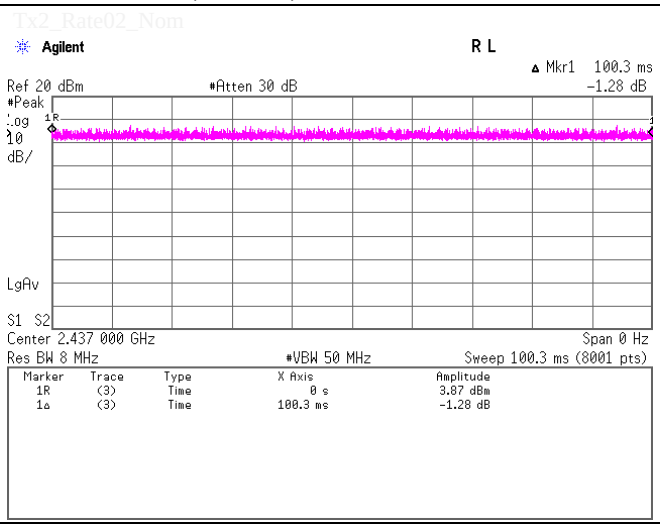
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Duty Factor Caliculation chart for Maximum Conducted Output Power

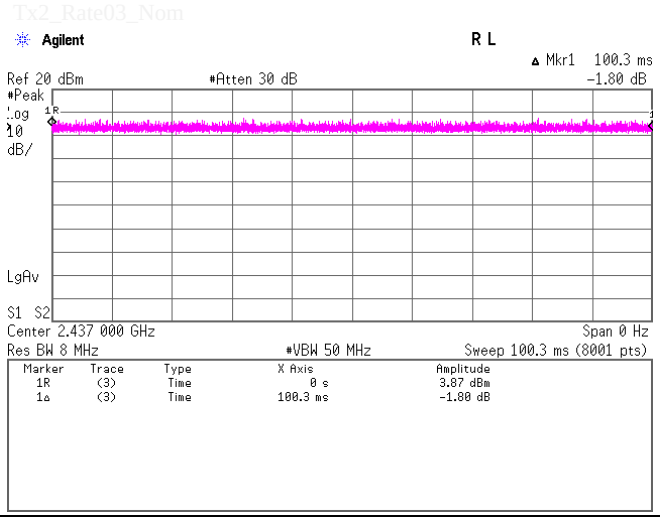
0(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



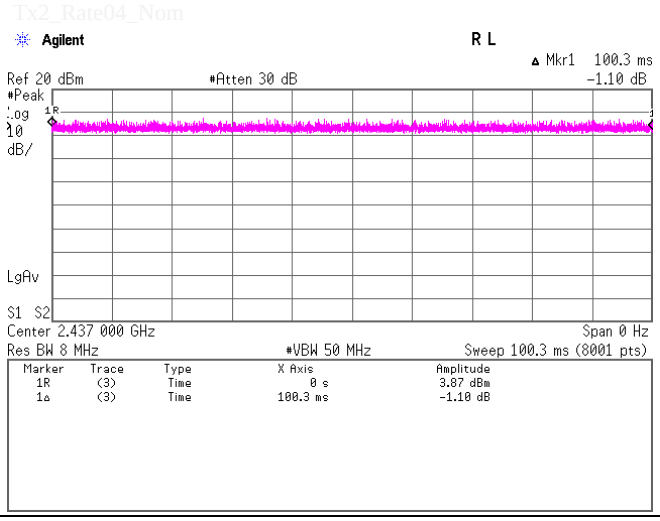
1(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



2(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



3(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



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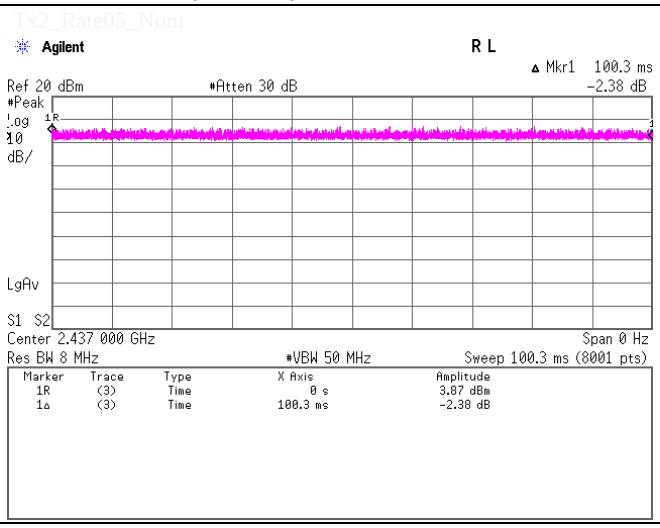
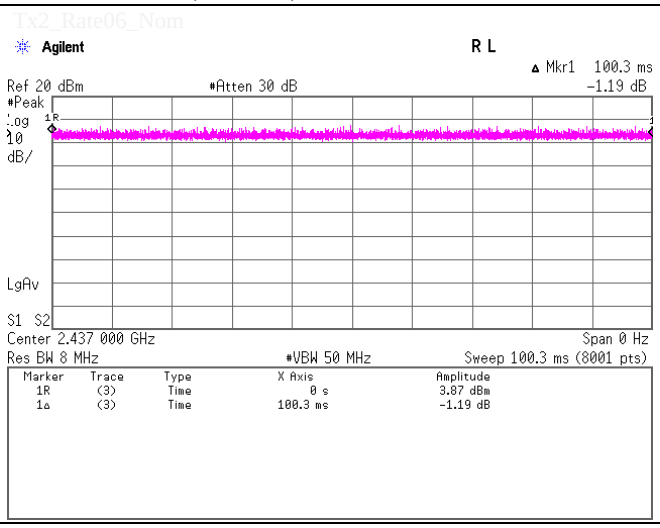
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Duty Factor Caliculation chart for Maximum Conducted Output Power

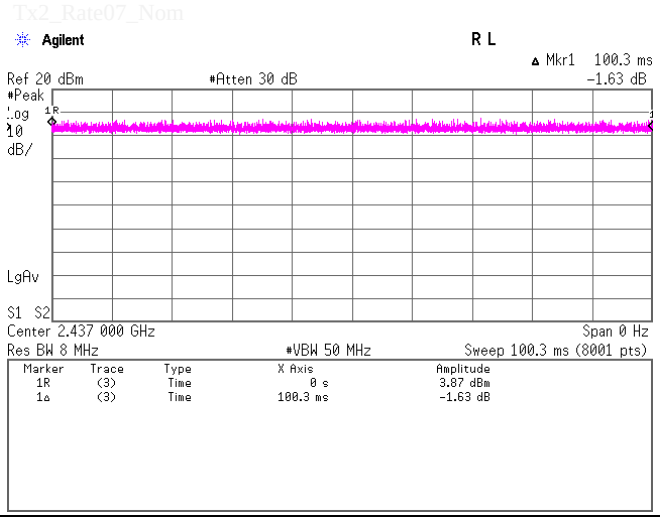
4(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



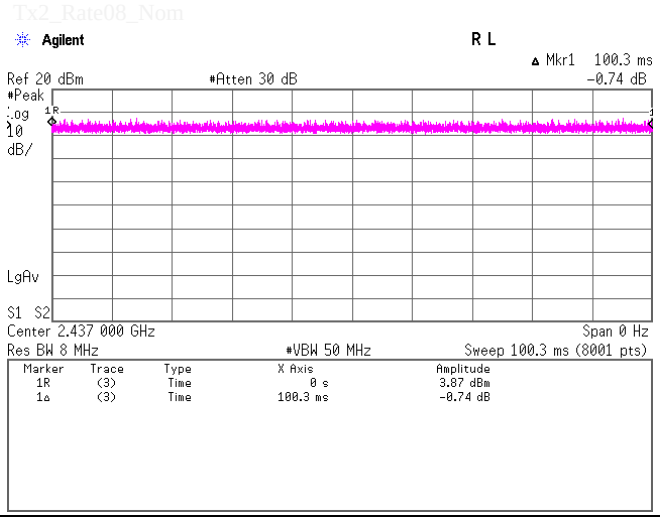
5(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



6(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



7(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11n(HT40), PN9,	worst data mode :	0 (MCS)

(* P/M: Power Meter with power sensor)

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2422.0	7.11	2.04	9.66	18.81	76.03	30.00	1000	11.19
Mid	2437.0	6.44	2.04	9.66	18.14	65.16	30.00	1000	11.86
High	2452.0	6.19	2.04	9.66	17.89	61.52	30.00	1000	12.11

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

[Pre check]

	Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	0	2437.0	6.44	2.04	9.66	**18.14**	65.16	30.00	1000	**11.86**	**Worst**
	1	2437.0	6.34	2.04	9.66	18.04	63.68	30.00	1000	11.96	
	2	2437.0	6.37	2.04	9.66	18.07	64.12	30.00	1000	11.93	
	3	2437.0	6.34	2.04	9.66	18.04	63.68	30.00	1000	11.96	
	4	2437.0	6.38	2.04	9.66	18.08	64.27	30.00	1000	11.92	
	5	2437.0	3.97	2.04	9.66	15.67	36.90	30.00	1000	14.33	
	6	2437.0	4.05	2.04	9.66	15.75	37.58	30.00	1000	14.25	
	7	2437.0	4.04	2.04	9.66	15.74	37.50	30.00	1000	14.26	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

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Maximum Conducted Output Power (Reference data)

(AVGPM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	August 25, 2014		
Temperature / Humidity	26deg.C , 51%RH		
Engineer	Kenichi Adachi		
Mode	Tx, IEEE802.11n(HT40), PN9,	worst data mode :	0 (MCS)

(* P/M: Power Meter with power sensor, AV: Average)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2422.0	-3.48	2.04	9.66	0.00	8.22	6.64	30.00	1000	21.78
Mid	2437.0	-3.54	2.04	9.66	0.00	8.16	6.55	30.00	1000	21.84
High	2452.0	-4.02	2.04	9.66	0.00	7.68	5.86	30.00	1000	22.32

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
E.I.R.P = Result + Antenna Gain

[Pre check]

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Limit		Margin	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
	0	2437.0	-3.54	2.04	9.66	0.00	**8.16**	6.55	30.00	1000	**21.84**	**Worst**
	1	2437.0	-3.56	2.04	9.66	0.00	8.14	6.52	30.00	1000	21.86	
	2	2437.0	-3.58	2.04	9.66	0.00	8.12	6.49	30.00	1000	21.88	
	3	2437.0	-3.57	2.04	9.66	0.00	8.13	6.50	30.00	1000	21.87	
	4	2437.0	-3.68	2.04	9.66	0.00	8.02	6.34	30.00	1000	21.98	
	5	2437.0	-3.69	2.04	9.66	0.00	8.01	6.32	30.00	1000	21.99	
	6	2437.0	-3.64	2.04	9.66	0.00	8.06	6.40	30.00	1000	21.94	
	7	2437.0	-3.66	2.04	9.66	0.00	8.04	6.37	30.00	1000	21.96	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

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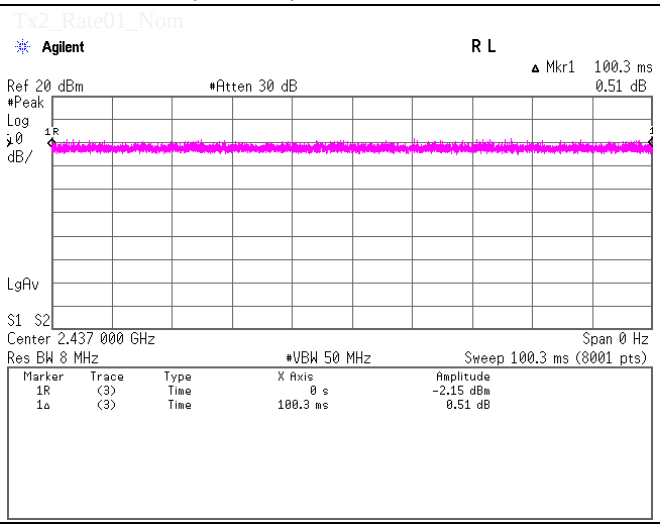
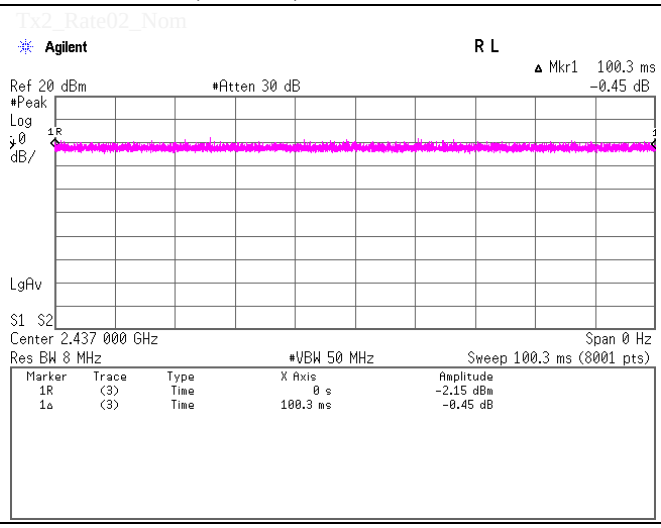
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Duty Factor Caliculation chart for Maximum Conducted Output Power

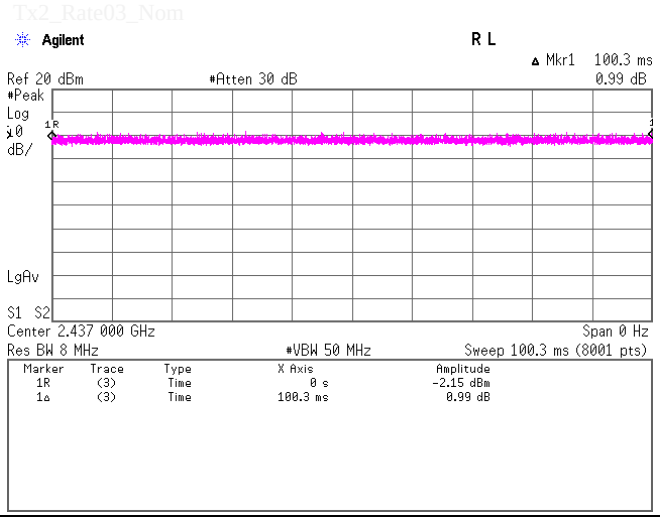
0(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



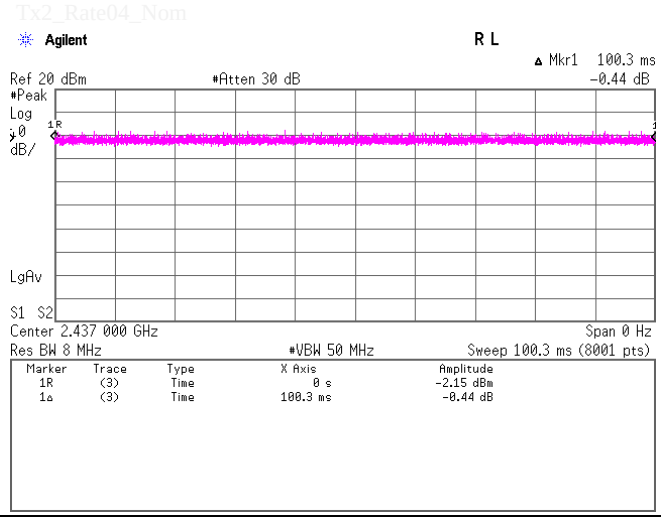
1(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



2(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



3(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



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Telephone : +81 463 50 6400
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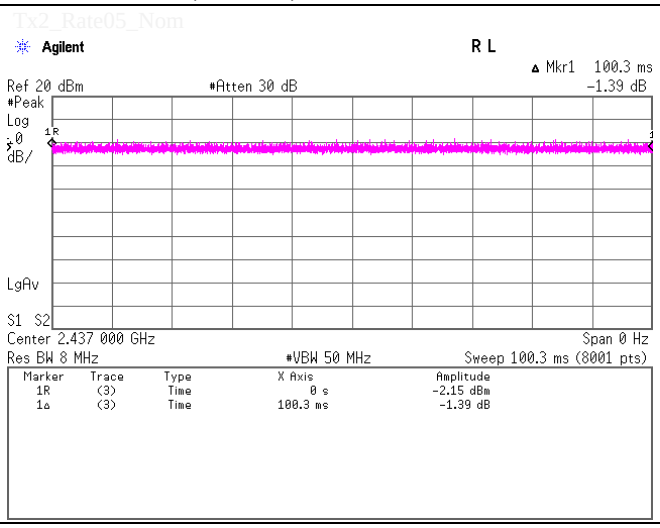
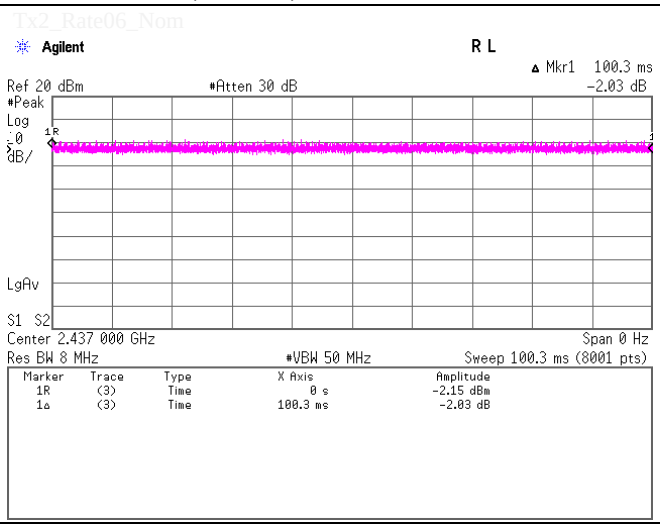
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Duty Factor Caliculation chart for Maximum Conducted Output Power

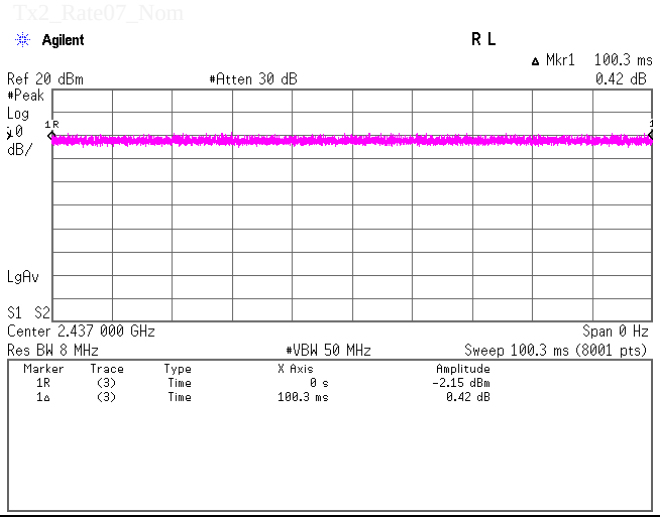
4(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



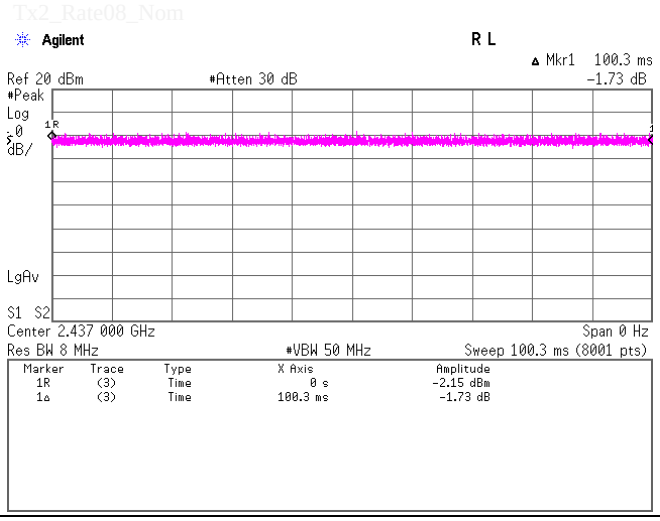
5(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



6(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



7(MCS): Duty Factor =10*log(1/x)= 0 dB
x:Ton/(Ton+Toff)= 100.00 / 100.00



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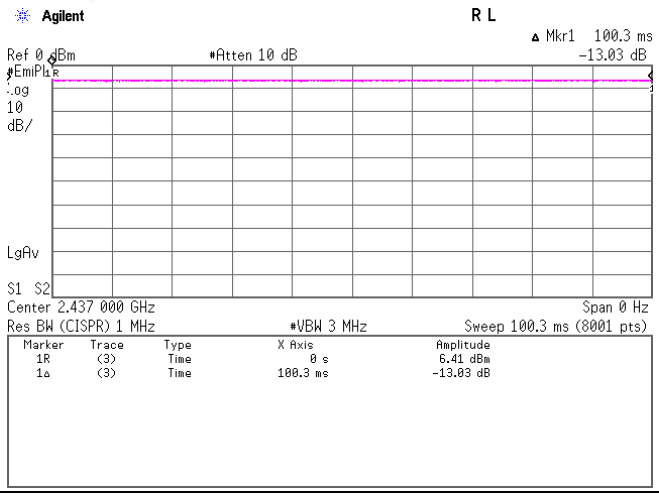
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Burst rate confirmation

Tx, IEEE802.11b, PN9, worst data mode 1Mbps

1x2_duty1	1x2_duty2
	

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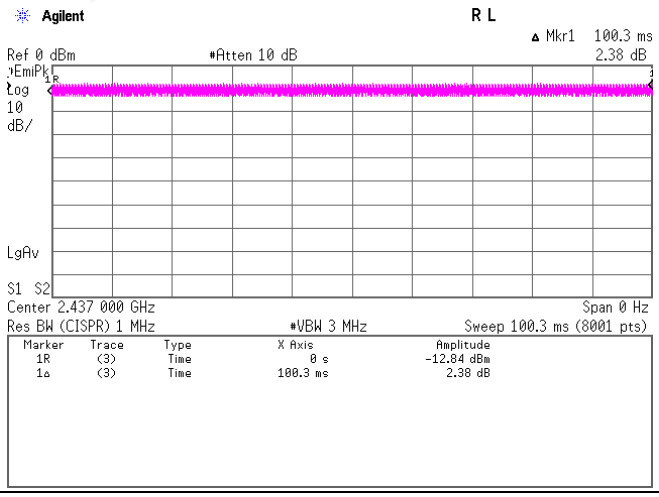
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Burst rate confirmation

Tx, IEEE802.11g, PN9, worst data mode 24Mbps

1x2_duty1	1x2_duty2



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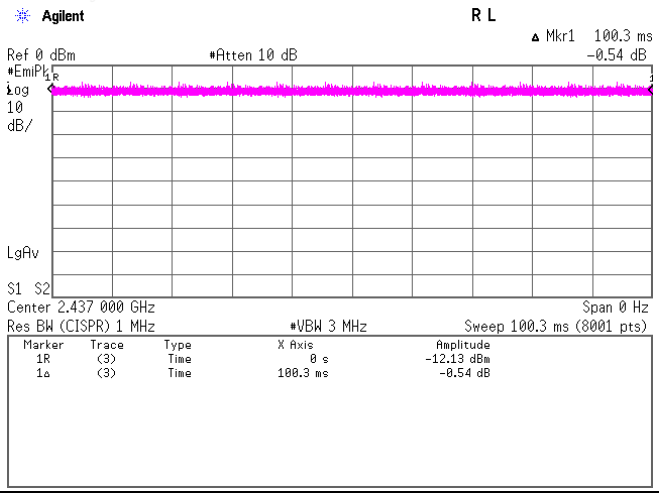
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Burst rate confirmation

Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)

1x2_duty1	1x2_duty2



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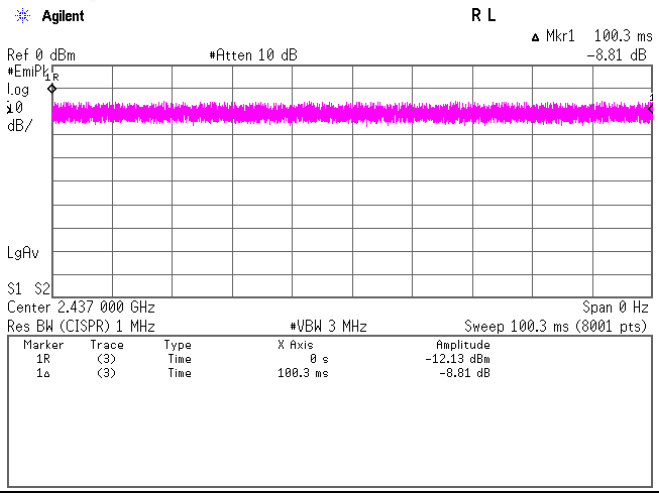
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

Burst rate confirmation

Tx, IEEE802.11n(HT40), PN9, worst data mode 0(MCS)

1x2_duty1	1x2_duty2



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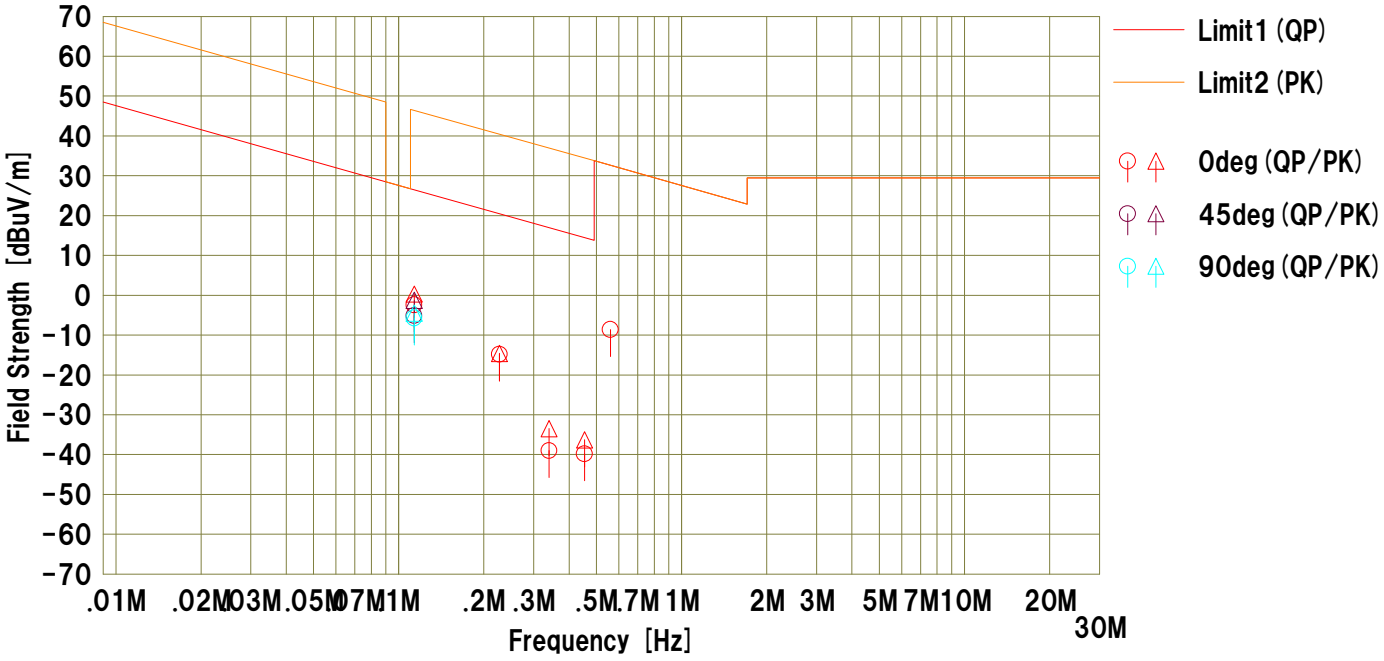
DATA OF RADIATED EMISSION (below 30MHz) TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/04

Company	: Canon Inc.	Mode	: Tx 11b 2412MHz
Kind of EUT	: Wireless LAN Module	Order No.	: 10442839S
Model No.	: FM1M944	Power	: DC 5V
Serial No.	: 28	Temp./Humi.	: 24deg.C / 63%RH
Remarks	: EUT worst axis: Z		

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK

Engineer : Kenichi Adachi



No.	Freq.	Reading		Ant.Fac	Loss	Gain	S.Fac	Result		Limit		Margin		Antenna	Table	Comment
		<QP>	<PK>					<QP>	<PK>	<QP>	<PK>	<QP>	<PK>			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.11336	83.9	86.6	19.6	5.9	31.8	-80.0	-2.4	0.3	26.4	46.4	28.8	46.1	0deg	204	CAV,PK
2	0.22667	72.0	72.2	19.5	5.9	32.2	-80.0	-14.8	-14.6	20.4	40.4	35.2	55.0	0deg	188	CAV,PK
3	0.34004	47.8	53.3	19.5	5.9	32.2	-80.0	-39.0	-33.5	16.9	36.9	55.9	70.4	0deg	184	CAV,PK
4	0.45348	47.0	50.5	19.5	5.9	32.2	-80.0	-39.8	-36.3	14.4	34.4	54.2	70.7	0deg	185	CAV,PK
5	0.55967	38.3	---	19.4	5.9	32.2	-40.0	-8.6	---	32.6	32.6	41.2	---	0deg	189	
6	0.11336	81.2	85.0	19.6	5.9	31.8	-80.0	-5.1	-1.3	26.4	46.4	31.5	47.7	45deg	175	CAV,PK
7	0.11336	80.6	81.8	19.6	5.9	31.8	-80.0	-5.7	-4.5	26.4	46.4	32.1	50.9	90deg	127	CAV,PK

Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

DATA OF RADIATED EMISSION (below 30MHz) TEST

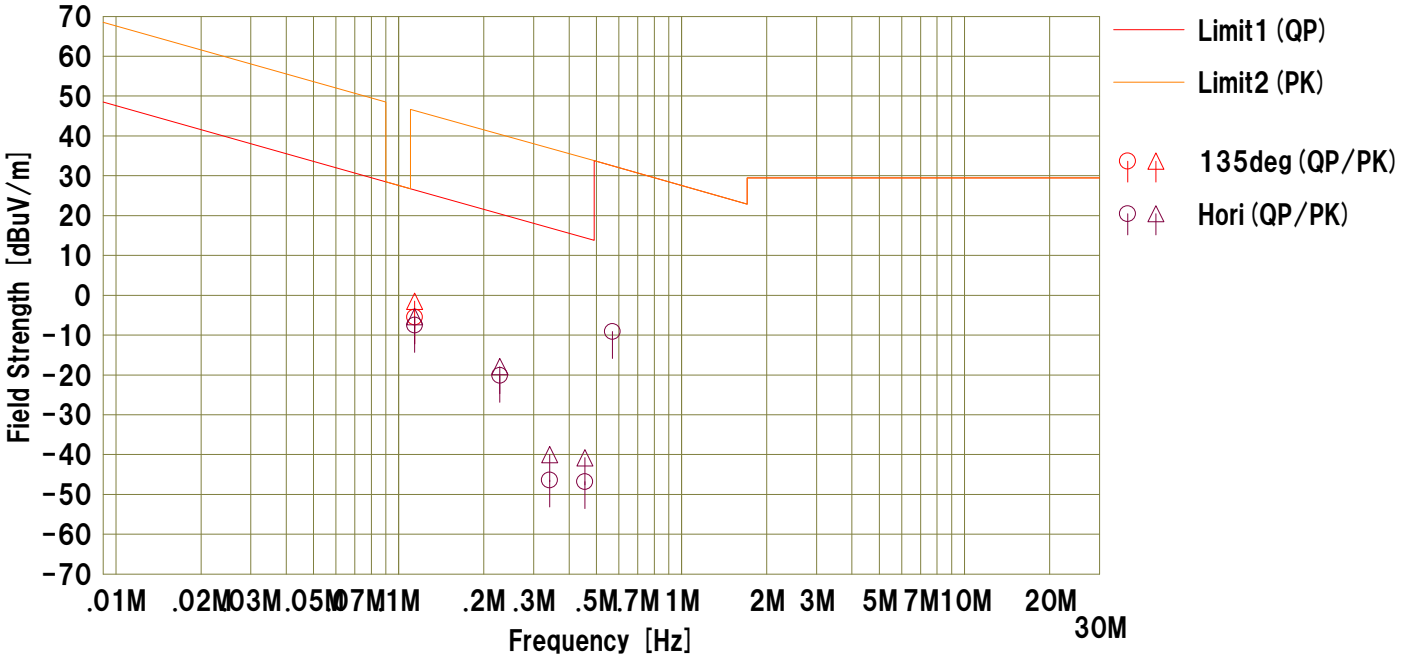
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/04

Company : Canon Inc.
Kind of EUT : Wireless LAN Module
Model No. : FM1M944
Serial No. : 28
Remarks : EUT worst axis: Z

Mode : Tx 11b 2412MHz
Order No. : 10442839S
Power : DC 5V
Temp./Humi. : 24deg.C / 63%RH

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK

Engineer : Kenichi Adachi



No.	Freq.	Reading <QP>	Reading <PK>	Ant.Fac	Loss	Gain	S.Fac	Result <QP>	Result <PK>	Limit <QP>	Limit <PK>	Margin <QP>	Margin <PK>	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.11382	80.8	84.8	19.6	5.9	31.8	-80.0	-5.5	-1.5	26.4	46.4	31.9	47.9	135deg	210	CAV,PK
2	0.11382	78.8	80.9	19.6	5.9	31.8	-80.0	-7.5	-5.4	26.4	46.4	33.9	51.8	Hori	167	CAV,PK
3	0.22768	66.7	68.9	19.5	5.9	32.2	-80.0	-20.1	-17.9	20.4	40.4	40.5	58.3	Hori	173	CAV,PK
4	0.34147	40.4	46.8	19.5	5.9	32.2	-80.0	-46.4	-40.0	16.9	36.9	63.3	76.9	Hori	176	CAV,PK
5	0.45521	40.0	46.0	19.5	5.9	32.2	-80.0	-46.8	-40.8	14.4	34.4	61.2	75.2	Hori	174	CAV,PK
6	0.56890	37.8	---	19.4	5.9	32.2	-40.0	-9.1	---	32.4	32.4	41.5	---	Hori	169	

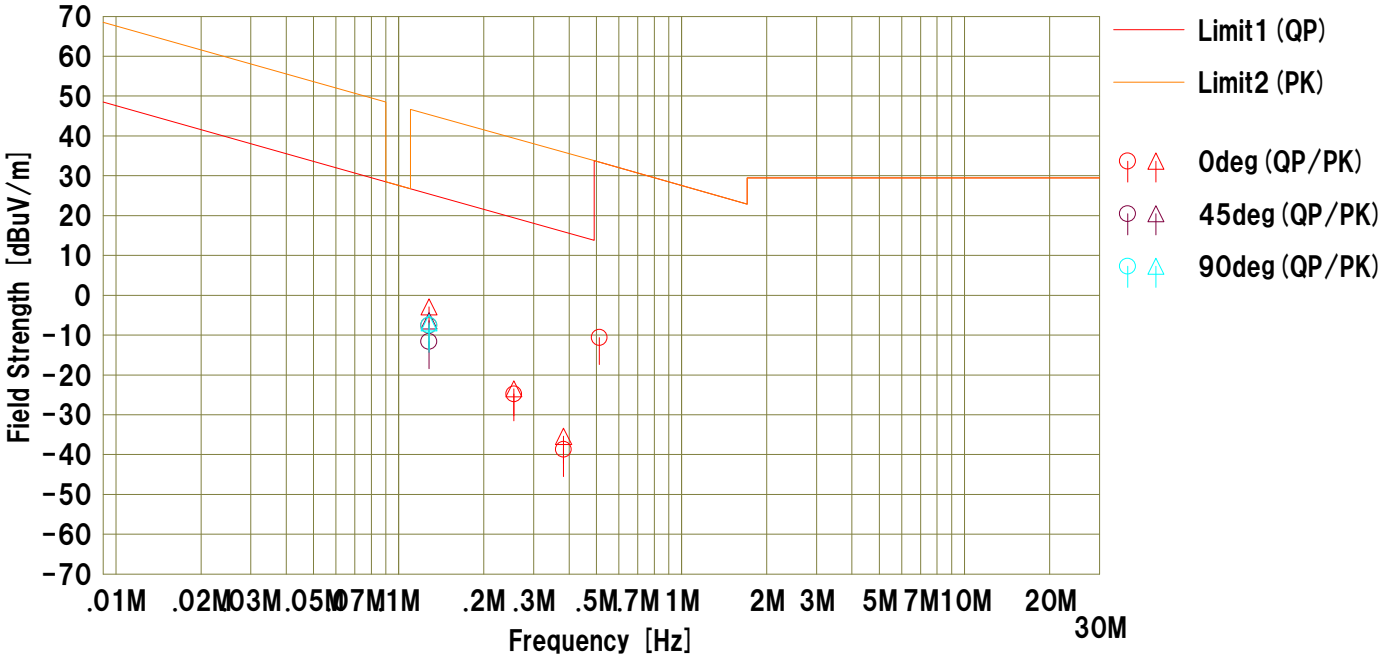
Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

DATA OF RADIATED EMISSION (below 30MHz) TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/04

Company	: Canon Inc.	Mode	: Tx 11g 2412MHz
Kind of EUT	: Wireless LAN Module	Order No.	: 10442839S
Model No.	: FM1M944	Power	: DC 5V
Serial No.	: 28	Temp./Humi.	: 24deg.C / 63%RH
Remarks	: EUT worst axis: Z		

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK
Engineer : Kenichi Adachi



No.	Freq.	Reading <QP>	Reading <PK>	Ant.Fac	Loss	Gain	S.Fac	Result <QP>	Result <PK>	Limit <QP>	Limit <PK>	Margin <QP>	Margin <PK>	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.12785	78.8	83.5	19.6	5.9	31.9	-80.0	-7.6	-2.9	25.4	45.4	33.0	48.3	0deg	202	CAV,PK
2	0.25533	62.0	63.3	19.5	5.9	32.2	-80.0	-24.8	-23.5	19.4	39.4	44.2	62.9	0deg	191	CAV,PK
3	0.38254	48.1	51.4	19.5	5.9	32.2	-80.0	-38.7	-35.4	15.9	35.9	54.6	71.3	0deg	193	CAV,PK
4	0.51193	36.2	---	19.5	5.9	32.2	-80.0	-10.6	---	33.4	33.4	44.0	---	0deg	193	
5	0.12785	74.8	80.0	19.6	5.9	31.9	-80.0	-11.6	-6.4	25.4	45.4	37.0	51.8	45deg	151	CAV,PK
6	0.12785	78.9	79.5	19.6	5.9	31.9	-80.0	-7.5	-6.9	25.4	45.4	32.9	52.3	90deg	115	CAV,PK

Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

DATA OF RADIATED EMISSION (below 30MHz) TEST

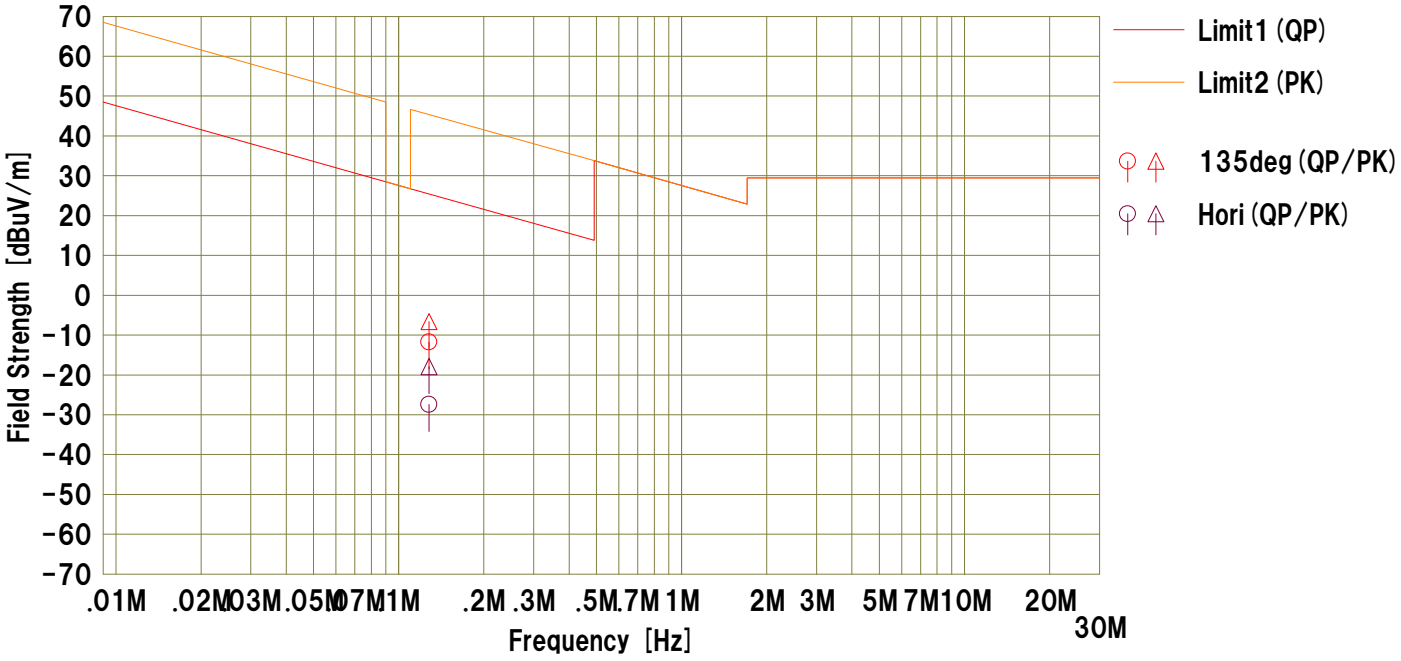
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/04

Company : Canon Inc.
Kind of EUT : Wireless LAN Module
Model No. : FM1M944
Serial No. : 28
Remarks : EUT worst axis: Z

Mode : Tx 11g 2412MHz
Order No. : 10442839S
Power : DC 5V
Temp./Humi. : 24deg.C / 63%RH

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK

Engineer : Kenichi Adachi



No.	Freq.	Reading		Ant.Fac	Loss	Gain	S.Fac	Result		Limit		Margin		Antenna	Table	Comment
		<QP>	<PK>					<QP>	<PK>	<QP>	<PK>	<QP>	<PK>			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.12785	74.7	79.8	19.6	5.9	31.9	-80.0	-11.7	-6.6	25.4	45.4	37.1	52.0	135deg	207	CAV.PK
2	0.12785	59.0	68.5	19.6	5.9	31.9	-80.0	-27.4	-17.9	25.4	45.4	52.8	63.3	Hori	190	CAV.PK

Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

DATA OF RADIATED EMISSION (below 30MHz) TEST

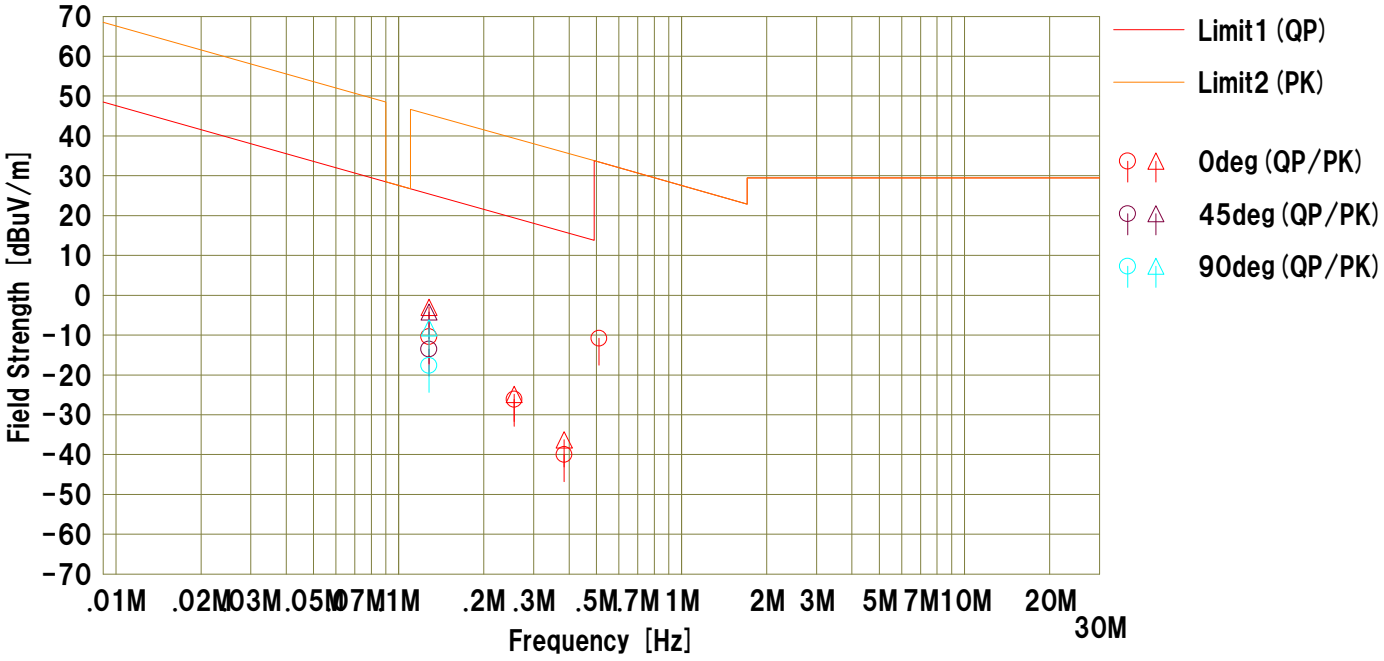
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/05

Company : Canon Inc.
Kind of EUT : Wireless LAN Module
Model No. : FM1M944
Serial No. : 28
Remarks : EUT worst axis: Z

Mode : Tx 11n (HT20) 2462MHz
Order No. : 10442839S
Power : DC 5V
Temp./Humi. : 24deg.C / 63%RH

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK

Engineer : Kenichi Adachi



No.	Freq.	Reading		Ant.Fac	Loss	Gain	S.Fac	Result		Limit		Margin		Antenna	Table	Comment
		<QP>	<PK>					<QP>	<PK>	<QP>	<PK>	<QP>	<PK>			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.12779	76.0	83.4	19.6	5.9	31.9	-80.0	-10.4	-3.0	25.4	45.4	35.8	48.4	0deg	196	CAV,PK
2	0.25564	60.7	61.9	19.5	5.9	32.2	-80.0	-26.1	-24.9	19.4	39.4	45.5	64.3	0deg	191	CAV,PK
3	0.38478	46.8	50.5	19.5	5.9	32.2	-80.0	-40.0	-36.3	15.8	35.8	55.8	72.1	0deg	182	CAV,PK
4	0.51117	36.0	---	19.5	5.9	32.2	-80.0	-10.8	---	33.4	33.4	44.2	---	0deg	178	
5	0.12779	72.9	82.2	19.6	5.9	31.9	-80.0	-13.5	-4.2	25.4	45.4	38.9	49.6	45deg	176	CAV,PK
6	0.12779	68.8	78.2	19.6	5.9	31.9	-80.0	-17.6	-8.2	25.4	45.4	43.0	53.6	90deg	116	CAV,PK

Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

DATA OF RADIATED EMISSION (below 30MHz) TEST

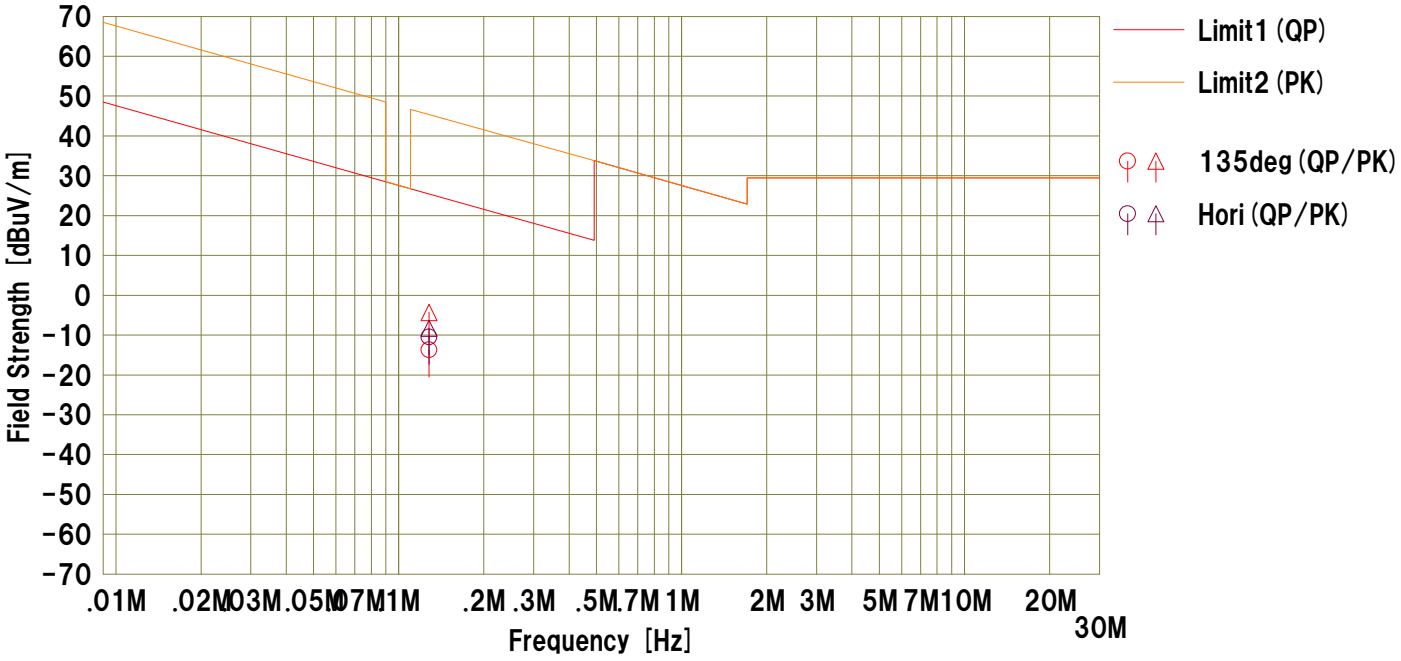
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/05

Company : Canon Inc.
Kind of EUT : Wireless LAN Module
Model No. : FM1M944
Serial No. : 28
Remarks : EUT worst axis: Z

Mode : Tx 11n (HT20) 2462MHz
Order No. : 10442839S
Power : DC 5V
Temp./Humi. : 24deg.C / 63%RH

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK

Engineer : Kenichi Adachi



No.	Freq.	Reading		Ant.Fac	Loss	Gain	S.Fac	Result		Limit		Margin		Antenna	Table	Comment
		<QP>	<PK>					<QP>	<PK>	<QP>	<PK>	<QP>	<PK>			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.12796	72.7	82.1	19.6	5.9	31.9	-80.0	-13.7	-4.3	25.3	45.3	39.0	49.6	135deg	192	CAV.PK
2	0.12796	75.9	78.1	19.6	5.9	31.9	-80.0	-10.5	-8.3	25.3	45.3	35.8	53.6	Hori	182	CAV.PK

Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

DATA OF RADIATED EMISSION (below 30MHz) TEST

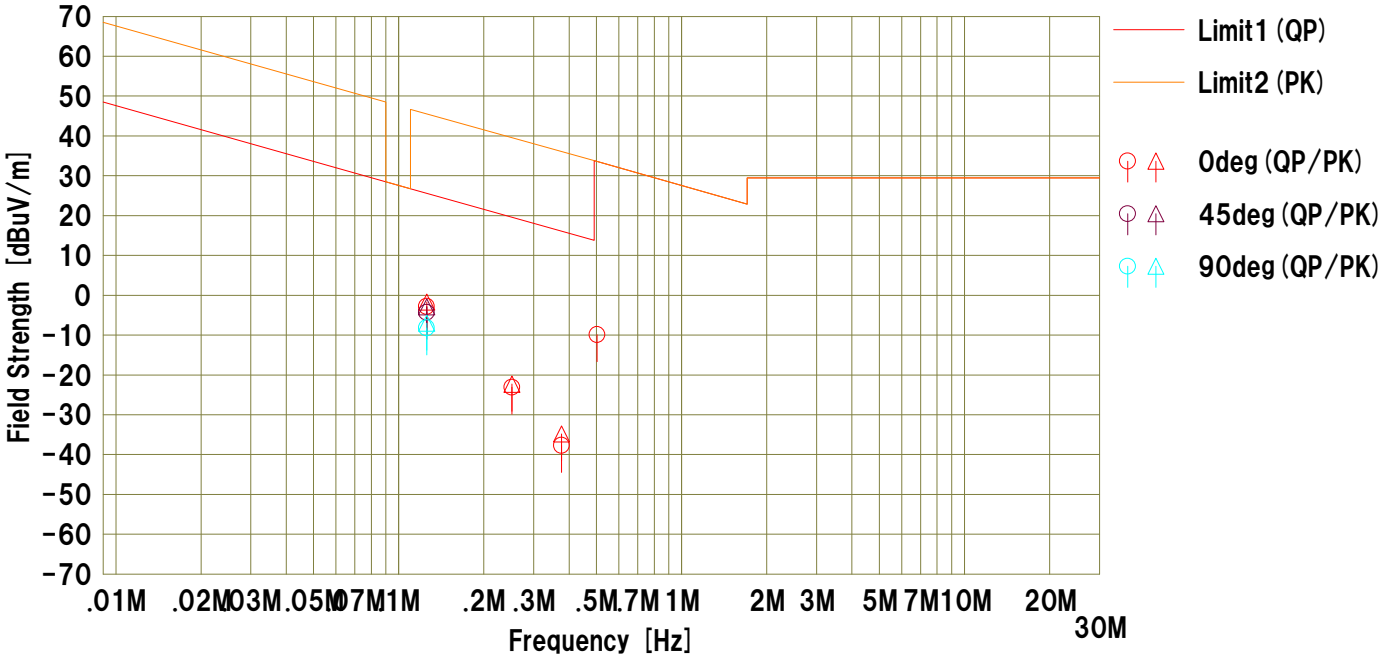
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/05

Company : Canon Inc.
Kind of EUT : Wireless LAN Module
Model No. : FM1M944
Serial No. : 28
Remarks : EUT worst axis: Z

Mode : Tx 11n (HT40) 2422MHz
Order No. : 10442839S
Power : DC 5V
Temp./Humi. : 24deg.C / 63%RH

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK

Engineer : Kenichi Adachi



No.	Freq.	Reading <QP>	Reading <PK>	Ant.Fac	Loss	Gain	S.Fac	Result <QP>	Result <PK>	Limit <QP>	Limit <PK>	Margin <QP>	Margin <PK>	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.12547	83.6	84.7	19.6	5.9	31.9	-80.0	-2.8	-1.7	25.5	45.5	28.3	47.2	0deg	200	CAV,PK
2	0.25094	63.7	64.5	19.5	5.9	32.2	-80.0	-23.1	-22.3	19.5	39.5	42.6	61.8	0deg	190	CAV,PK
3	0.37597	49.1	52.0	19.5	5.9	32.2	-80.0	-37.7	-34.8	16.0	36.0	53.7	70.8	0deg	189	CAV,PK
4	0.50187	36.9	---	19.5	5.9	32.2	-80.0	-9.9	---	33.5	33.5	43.4	---	0deg	189	
5	0.12547	82.1	83.5	19.6	5.9	31.9	-80.0	-4.3	-2.9	25.5	45.5	29.8	48.4	45deg	151	CAV,PK
6	0.12547	78.2	79.4	19.6	5.9	31.9	-80.0	-8.2	-7.0	25.5	45.5	33.7	52.5	90deg	124	CAV,PK

Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

DATA OF RADIATED EMISSION (below 30MHz) TEST

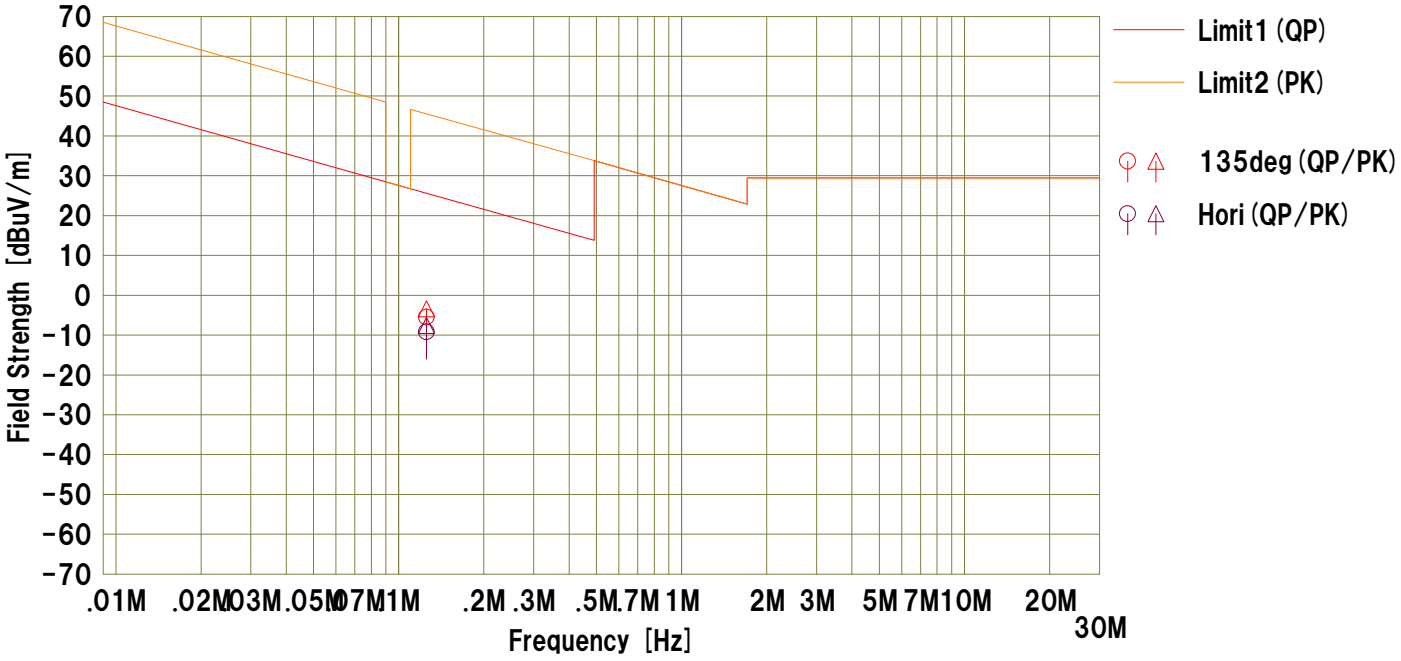
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2014/09/05

Company : Canon Inc.
Kind of EUT : Wireless LAN Module
Model No. : FM1M944
Serial No. : 28
Remarks : EUT worst axis: Z

Mode : Tx 11n (HT40) 2422MHz
Order No. : 10442839S
Power : DC 5V
Temp./Humi. : 24deg.C / 63%RH

Limit1 : FCC15.209 (a), 9-90kHz:AV, 110-490kHz:AV, other:QP
Limit2 : FCC15.209 (a), 9-90kHz:PK, 110-490kHz:PK

Engineer : Kenichi Adachi



No.	Freq.	Reading		Ant.Fac	Loss	Gain	S.Fac	Result		Limit		Margin		Antenna	Table	Comment
		<QP>	<PK>					<QP>	<PK>	<QP>	<PK>	<QP>	<PK>			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	0.12517	80.9	83.0	19.6	5.9	31.9	-80.0	-5.5	-3.4	25.5	45.5	31.0	48.9	135deg	201	CAV.PK
2	0.12517	77.2	78.8	19.6	5.9	31.9	-80.0	-9.2	-7.6	25.5	45.5	34.7	53.1	Hori	170	CAV.PK

Calculation:Result [dBuA] =Reading [dBuV] +Ant.Fac [dB] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB] +S.Fac [dB]
Ant.Type=LOOP:Loop Antenna *S.Fac = Distance factor = 40 x log (3/300)

Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11b, 1Mbps, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Hori.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Hori.	804.000	QP	21.1	20.6	10.4	31.6	20.5	46.0	25.5	100	0	
Hori.	2390.000	PK	50.5	26.4	13.6	41.1	49.4	73.9	24.5	100	187	
Hori.	4020.000	PK	45.4	29.1	5.6	40.5	39.6	73.9	34.3	100	0	
Hori.	4824.000	PK	53.4	30.7	6.0	39.8	50.3	73.9	23.6	108	0	
Hori.	7236.000	PK	45.6	36.7	7.1	40.2	49.2	73.9	24.7	100	0	
Hori.	9648.000	PK	46.0	38.5	8.3	40.1	52.7	73.9	21.2	170	0	
Hori.	2390.000	AV	39.7	26.4	13.6	41.1	38.6	53.9	15.3	100	187	
Hori.	4020.000	AV	37.6	29.1	5.6	40.5	31.8	53.9	22.1	100	0	
Hori.	4824.000	AV	50.4	30.7	6.0	39.8	47.3	53.9	6.6	108	0	
Hori.	7236.000	AV	37.3	36.7	7.1	40.2	40.9	53.9	13.0	100	0	
Hori.	9648.000	AV	36.8	38.5	8.3	40.1	43.5	53.9	10.4	170	0	
Vert.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Vert.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Vert.	804.000	QP	21.1	20.6	10.4	31.6	20.5	46.0	25.5	100	0	
Vert.	2390.000	PK	50.4	26.4	13.6	41.1	49.3	73.9	24.6	129	23	
Vert.	4020.000	PK	45.3	29.1	5.6	40.5	39.5	73.9	34.4	100	0	
Vert.	4824.000	PK	54.6	30.7	6.0	39.8	51.5	73.9	22.4	100	176	
Vert.	7236.000	PK	45.7	36.7	7.1	40.2	49.3	73.9	24.6	100	0	
Vert.	9648.000	PK	45.9	38.5	8.3	40.1	52.6	73.9	21.3	110	153	
Vert.	2390.000	AV	39.5	26.4	13.6	41.1	38.4	53.9	15.5	129	23	
Vert.	4020.000	AV	37.5	29.1	5.6	40.5	31.7	53.9	22.2	100	0	
Vert.	4824.000	AV	52.0	30.7	6.0	39.8	48.9	53.9	**5.0**	100	176	
Vert.	7236.000	AV	37.4	36.7	7.1	40.2	41.0	53.9	12.9	100	0	
Vert.	9648.000	AV	36.7	38.5	8.3	40.1	43.4	53.9	10.5	110	153	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet **(RBW 100kHz, VBW 300kHz)**

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	96.0	26.4	13.6	41.1	94.9	-	-	carrier
Hori.	2397.029	PK	53.4	26.4	13.6	41.1	52.3	74.9	22.6	
Hori.	2400.000	PK	44.8	26.4	13.6	41.1	43.7	74.9	31.2	
Vert.	2412.000	PK	97.8	26.4	13.6	41.1	96.7	-	-	Carrier
Vert.	2397.010	PK	53.8	26.4	13.6	41.1	52.7	76.7	24.0	
Vert.	2400.000	PK	44.1	26.4	13.6	41.1	43.0	76.7	33.7	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11b, 1Mbps, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4063.000	PK	45.5	29.1	5.6	40.5	39.7	73.9	34.2	100	0	
Hori.	4874.000	PK	52.1	30.9	6.0	39.7	49.3	73.9	24.6	104	0	
Hori.	7311.000	PK	45.6	36.8	7.1	40.3	49.2	73.9	24.7	100	0	
Hori.	9748.000	PK	44.6	38.6	8.1	40.0	51.3	73.9	22.6	167	0	
Hori.	4063.000	AV	37.5	29.1	5.6	40.5	31.7	53.9	22.2	100	0	
Hori.	4874.000	AV	47.4	30.9	6.0	39.7	44.6	53.9	9.3	104	0	
Hori.	7311.000	AV	37.9	36.8	7.1	40.3	41.5	53.9	12.4	100	0	
Hori.	9748.000	AV	36.7	38.6	8.1	40.0	43.4	53.9	10.5	167	0	
Vert.	4063.000	PK	45.6	29.1	5.6	40.5	39.8	73.9	34.1	100	0	
Vert.	4874.000	PK	52.9	30.9	6.0	39.7	50.1	73.9	23.8	100	175	
Vert.	7311.000	PK	45.5	36.8	7.1	40.3	49.1	73.9	24.8	100	0	
Vert.	9748.000	PK	44.7	38.6	8.1	40.0	51.4	73.9	22.5	108	156	
Vert.	4063.000	AV	37.6	29.1	5.6	40.5	31.8	53.9	22.1	100	0	
Vert.	4874.000	AV	48.9	30.9	6.0	39.7	46.1	53.9	**7.8**	100	175	
Vert.	7311.000	AV	37.8	36.8	7.1	40.3	41.4	53.9	12.5	100	0	
Vert.	9748.000	AV	36.8	38.6	8.1	40.0	43.5	53.9	10.4	108	156	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11b, 1Mbps, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	50.3	26.6	13.6	41.1	49.4	73.9	24.5	100	212	
Hori.	4103.000	PK	46.2	29.1	5.6	40.5	40.4	73.9	33.5	100	0	
Hori.	4924.000	PK	52.3	31.1	5.9	39.6	49.7	73.9	24.2	105	0	
Hori.	7386.000	PK	45.9	36.9	7.2	40.4	49.6	73.9	24.3	100	0	
Hori.	9848.000	PK	44.6	38.6	8.1	39.9	51.4	73.9	22.5	165	0	
Hori.	2483.500	AV	39.4	26.6	13.6	41.1	38.5	53.9	15.4	100	212	
Hori.	4103.000	AV	37.7	29.1	5.6	40.5	31.9	53.9	22.0	100	0	
Hori.	4924.000	AV	48.6	31.1	5.9	39.6	46.0	53.9	7.9	105	0	
Hori.	7386.000	AV	37.8	36.9	7.2	40.4	41.5	53.9	12.4	100	0	
Hori.	9848.000	AV	36.5	38.6	8.1	39.9	43.3	53.9	10.6	165	0	
Vert.	2483.500	PK	50.4	26.6	13.6	41.1	49.5	73.9	24.4	125	13	
Vert.	4103.000	PK	46.3	29.1	5.6	40.5	40.5	73.9	33.4	100	0	
Vert.	4924.000	PK	53.1	31.1	5.9	39.6	50.5	73.9	23.4	100	173	
Vert.	7386.000	PK	45.8	36.9	7.2	40.4	49.5	73.9	24.4	100	0	
Vert.	9848.000	PK	44.7	38.6	8.1	39.9	51.5	73.9	22.4	105	155	
Vert.	2483.500	AV	39.5	26.6	13.6	41.1	38.6	53.9	15.3	125	13	
Vert.	4103.000	AV	37.8	29.1	5.6	40.5	32.0	53.9	21.9	100	0	
Vert.	4924.000	AV	49.7	31.1	5.9	39.6	47.1	53.9	**6.8**	100	173	
Vert.	7386.000	AV	37.7	36.9	7.2	40.4	41.4	53.9	12.5	100	0	
Vert.	9848.000	AV	36.6	38.6	8.1	39.9	43.4	53.9	10.5	105	155	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet **(RBW 100kHz, VBW 300kHz)**

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2462.000	PK	96.7	26.5	13.6	41.1	95.7	-	-	Carrier
Hori.	2476.816	PK	54.4	26.5	13.6	41.1	53.4	75.7	22.3	
Vert.	2462.000	PK	96.6	26.5	13.6	41.1	95.6	-	-	Carrier
Vert.	2476.816	PK	52.4	26.5	13.6	41.1	51.4	75.6	24.2	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11g, 24Mbps, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Hori.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Hori.	804.000	QP	21.1	20.6	10.4	31.6	20.5	46.0	25.5	100	0	
Hori.	2390.000	PK	52.2	26.4	13.6	41.1	51.1	73.9	22.8	100	193	
Hori.	4824.000	PK	47.4	30.7	6.0	39.8	44.3	73.9	29.6	108	0	
Hori.	7236.000	PK	45.7	36.7	7.1	40.2	49.3	73.9	24.6	100	0	
Hori.	9648.000	PK	45.8	38.5	8.3	40.1	52.5	73.9	21.4	100	0	
Hori.	2390.000	AV	40.4	26.4	13.6	41.1	39.3	53.9	14.6	100	193	
Hori.	4824.000	AV	39.4	30.7	6.0	39.8	36.3	53.9	17.6	108	0	
Hori.	7236.000	AV	37.4	36.7	7.1	40.2	41.0	53.9	12.9	100	0	
Hori.	9648.000	AV	36.7	38.5	8.3	40.1	43.4	53.9	**10.5**	100	0	
Vert.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Vert.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Vert.	804.000	QP	21.1	20.6	10.4	31.6	20.5	46.0	25.5	100	0	
Vert.	2390.000	PK	51.3	26.4	13.6	41.1	50.2	73.9	23.7	131	27	
Vert.	4824.000	PK	49.4	30.7	6.0	39.8	46.3	73.9	27.6	100	171	
Vert.	7236.000	PK	45.6	36.7	7.1	40.2	49.2	73.9	24.7	100	0	
Vert.	9648.000	PK	45.7	38.5	8.3	40.1	52.4	73.9	21.5	100	0	
Vert.	2390.000	AV	38.9	26.4	13.6	41.1	37.8	53.9	16.1	131	27	
Vert.	4824.000	AV	40.9	30.7	6.0	39.8	37.8	53.9	16.1	100	171	
Vert.	7236.000	AV	37.3	36.7	7.1	40.2	40.9	53.9	13.0	100	0	
Vert.	9648.000	AV	36.6	38.5	8.3	40.1	43.3	53.9	10.6	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet **(RBW 100kHz, VBW 300kHz)**

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	94.2	26.4	13.6	41.1	93.1	-	-	Carrier
Hori.	2400.000	PK	44.0	26.4	13.6	41.1	42.9	73.1	30.2	
Vert.	2412.000	PK	89.8	26.4	13.6	41.1	88.7	-	-	Carrier
Vert.	2400.000	PK	43.0	26.4	13.6	41.1	41.9	68.7	26.8	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11g, 24Mbps, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	47.4	30.9	6.0	39.7	44.6	73.9	29.3	104	0	
Hori.	7311.000	PK	45.6	36.8	7.1	40.3	49.2	73.9	24.7	100	0	
Hori.	9748.000	PK	44.7	38.6	8.1	40.0	51.4	73.9	22.5	100	0	
Hori.	4874.000	AV	39.0	30.9	6.0	39.7	36.2	53.9	17.7	104	0	
Hori.	7311.000	AV	37.8	36.8	7.1	40.3	41.4	53.9	12.5	100	0	
Hori.	9748.000	AV	36.8	38.6	8.1	40.0	43.5	53.9	**10.4**	100	0	
Vert.	4874.000	PK	48.2	30.9	6.0	39.7	45.4	73.9	28.5	100	169	
Vert.	7311.000	PK	45.7	36.8	7.1	40.3	49.3	73.9	24.6	100	0	
Vert.	9748.000	PK	44.6	38.6	8.1	40.0	51.3	73.9	22.6	100	0	
Vert.	4874.000	AV	39.8	30.9	6.0	39.7	37.0	53.9	16.9	100	169	
Vert.	7311.000	AV	37.9	36.8	7.1	40.3	41.5	53.9	12.4	100	0	
Vert.	9748.000	AV	36.7	38.6	8.1	40.0	43.4	53.9	10.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11g, 24Mbps, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	55.8	26.6	13.6	41.1	54.9	73.9	19.0	100	218	
Hori.	4924.000	PK	48.2	31.1	5.9	39.6	45.6	73.9	28.3	106	0	
Hori.	7386.000	PK	45.9	36.9	7.2	40.4	49.6	73.9	24.3	100	0	
Hori.	9848.000	PK	44.7	38.6	8.1	39.9	51.5	73.9	22.4	100	0	
Hori.	2483.500	AV	43.1	26.6	13.6	41.1	42.2	53.9	11.7	100	218	
Hori.	4924.000	AV	38.9	31.1	5.9	39.6	36.3	53.9	17.6	106	0	
Hori.	7386.000	AV	37.7	36.9	7.2	40.4	41.4	53.9	12.5	100	0	
Hori.	9848.000	AV	36.6	38.6	8.1	39.9	43.4	53.9	**10.5**	100	0	
Vert.	2483.500	PK	55.7	26.6	13.6	41.1	54.8	73.9	19.1	126	43	
Vert.	4924.000	PK	49.5	31.1	5.9	39.6	46.9	73.9	27.0	100	172	
Vert.	7386.000	PK	46.0	36.9	7.2	40.4	49.7	73.9	24.2	100	0	
Vert.	9848.000	PK	44.6	38.6	8.1	39.9	51.4	73.9	22.5	100	0	
Vert.	2483.500	AV	43.0	26.6	13.6	41.1	42.1	53.9	11.8	126	43	
Vert.	4924.000	AV	40.5	31.1	5.9	39.6	37.9	53.9	16.0	100	172	
Vert.	7386.000	AV	37.8	36.9	7.2	40.4	41.5	53.9	12.4	100	0	
Vert.	9848.000	AV	36.5	38.6	8.1	39.9	43.3	53.9	10.6	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11n(HT20), MCS0, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	60.7	26.4	13.6	41.1	59.6	73.9	14.3	100	211	
Hori.	4824.000	PK	47.0	30.7	6.0	39.8	43.9	73.9	30.0	106	0	
Hori.	7236.000	PK	45.8	36.7	7.1	40.2	49.4	73.9	24.5	100	0	
Hori.	9648.000	PK	46.1	38.5	8.3	40.1	52.8	73.9	21.1	100	0	
Hori.	2390.000	AV	44.9	26.4	13.6	41.1	43.8	53.9	10.1	100	211	
Hori.	4824.000	AV	39.0	30.7	6.0	39.8	35.9	53.9	18.0	106	0	
Hori.	7236.000	AV	37.4	36.7	7.1	40.2	41.0	53.9	12.9	100	0	
Hori.	9648.000	AV	36.8	38.5	8.3	40.1	43.5	53.9	10.4	100	0	
Vert.	2390.000	PK	60.5	26.4	13.6	41.1	59.4	73.9	14.5	100	26	
Vert.	4824.000	PK	49.0	30.7	6.0	39.8	45.9	73.9	28.0	100	173	
Vert.	7236.000	PK	45.7	36.7	7.1	40.2	49.3	73.9	24.6	100	0	
Vert.	9648.000	PK	46.0	38.5	8.3	40.1	52.7	73.9	21.2	100	0	
Vert.	2390.000	AV	45.5	26.4	13.6	41.1	44.4	53.9	**9.5**	100	26	
Vert.	4824.000	AV	40.3	30.7	6.0	39.8	37.2	53.9	16.7	100	173	
Vert.	7236.000	AV	37.3	36.7	7.1	40.2	40.9	53.9	13.0	100	0	
Vert.	9648.000	AV	36.7	38.5	8.3	40.1	43.4	53.9	10.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet **(RBW 100kHz, VBW 300kHz)**

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	88.4	26.4	13.6	41.1	87.3	-	-	Carrier
Hori.	2400.000	PK	51.2	26.4	13.6	41.1	50.1	67.3	17.2	
Vert.	2412.000	PK	90.6	26.4	13.6	41.1	89.5	-	-	Carrier
Vert.	2400.000	PK	53.7	26.4	13.6	41.1	52.6	69.5	16.9	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n(HT20), MCS0, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	47.6	30.9	6.0	39.7	44.8	73.9	29.1	105	0	
Hori.	7311.000	PK	45.6	36.8	7.1	40.3	49.2	73.9	24.7	100	0	
Hori.	9748.000	PK	44.7	38.6	8.1	40.0	51.4	73.9	22.5	100	0	
Hori.	4874.000	AV	39.2	30.9	6.0	39.7	36.4	53.9	17.5	105	0	
Hori.	7311.000	AV	37.9	36.8	7.1	40.3	41.5	53.9	12.4	100	0	
Hori.	9748.000	AV	36.7	38.6	8.1	40.0	43.4	53.9	10.5	100	0	
Vert.	4874.000	PK	48.4	30.9	6.0	39.7	45.6	73.9	28.3	100	177	
Vert.	7311.000	PK	45.5	36.8	7.1	40.3	49.1	73.9	24.8	100	0	
Vert.	9748.000	PK	44.8	38.6	8.1	40.0	51.5	73.9	22.4	100	0	
Vert.	4874.000	AV	40.1	30.9	6.0	39.7	37.3	53.9	16.6	100	177	
Vert.	7311.000	AV	37.8	36.8	7.1	40.3	41.4	53.9	12.5	100	0	
Vert.	9748.000	AV	36.8	38.6	8.1	40.0	43.5	53.9	**10.4**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11n(HT20), MCS0, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Hori.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Hori.	820.667	QP	21.2	20.8	10.4	31.5	20.9	46.0	25.1	100	0	
Hori.	2483.500	PK	63.2	26.6	13.6	41.1	62.3	73.9	11.6	202	0	
Hori.	4924.000	PK	47.2	31.1	5.9	39.6	44.6	73.9	29.3	105	0	
Hori.	7386.000	PK	46.0	36.9	7.2	40.4	49.7	73.9	24.2	100	0	
Hori.	9848.000	PK	44.7	38.6	8.1	39.9	51.5	73.9	22.4	100	0	
Hori.	2483.500	AV	49.3	26.6	13.6	41.1	48.4	53.9	**5.5**	202	0	
Hori.	4924.000	AV	38.9	31.1	5.9	39.6	36.3	53.9	17.6	105	0	
Hori.	7386.000	AV	37.7	36.9	7.2	40.4	41.4	53.9	12.5	100	0	
Hori.	9848.000	AV	36.5	38.6	8.1	39.9	43.3	53.9	10.6	100	0	
Vert.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Vert.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Vert.	820.667	QP	21.2	20.8	10.4	31.5	20.9	46.0	25.1	100	0	
Vert.	2483.500	PK	63.2	26.6	13.6	41.1	62.3	73.9	11.6	127	59	
Vert.	4924.000	PK	47.7	31.1	5.9	39.6	45.1	73.9	28.8	100	178	
Vert.	7386.000	PK	46.1	36.9	7.2	40.4	49.8	73.9	24.1	100	0	
Vert.	9848.000	PK	44.8	38.6	8.1	39.9	51.6	73.9	22.3	100	0	
Vert.	2483.500	AV	48.8	26.6	13.6	41.1	47.9	53.9	6.0	127	59	
Vert.	4924.000	AV	39.5	31.1	5.9	39.6	36.9	53.9	17.0	100	178	
Vert.	7386.000	AV	37.8	36.9	7.2	40.4	41.5	53.9	12.4	100	0	
Vert.	9848.000	AV	36.6	38.6	8.1	39.9	43.4	53.9	10.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2422 MHz		
	Tx, IEEE802.11n(HT40), MCS0, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Hori.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Hori.	807.333	QP	21.2	20.7	10.4	31.6	20.7	46.0	25.3	100	0	
Hori.	2390.000	PK	58.4	26.4	13.6	41.1	57.3	73.9	16.6	100	212	
Hori.	4844.000	PK	45.2	30.8	6.0	39.7	42.3	73.9	31.6	104	0	
Hori.	7266.000	PK	45.8	36.7	7.1	40.3	49.3	73.9	24.6	100	0	
Hori.	9688.000	PK	45.3	38.6	8.2	40.0	52.1	73.9	21.8	100	0	
Hori.	2390.000	AV	44.2	26.4	13.6	41.1	43.1	53.9	10.8	100	212	
Hori.	4844.000	AV	36.8	30.8	6.0	39.7	33.9	53.9	20.0	104	0	
Hori.	7266.000	AV	37.4	36.7	7.1	40.3	40.9	53.9	13.0	100	0	
Hori.	9688.000	AV	36.7	38.6	8.2	40.0	43.5	53.9	10.4	100	0	
Vert.	40.000	QP	21.5	14.5	6.6	32.2	10.4	40.0	29.6	100	0	
Vert.	400.000	QP	21.8	16.3	8.8	32.0	14.9	46.0	31.1	100	0	
Vert.	807.333	QP	21.2	20.7	10.4	31.6	20.7	46.0	25.3	100	0	
Vert.	2390.000	PK	60.0	26.4	13.6	41.1	58.9	73.9	15.0	123	26	
Vert.	4844.000	PK	45.9	30.8	6.0	39.7	43.0	73.9	30.9	100	173	
Vert.	7266.000	PK	45.9	36.7	7.1	40.3	49.4	73.9	24.5	100	0	
Vert.	9688.000	PK	45.2	38.6	8.2	40.0	52.0	73.9	21.9	100	0	
Vert.	2390.000	AV	45.9	26.4	13.6	41.1	44.8	53.9	**9.1**	123	26	
Vert.	4844.000	AV	37.0	30.8	6.0	39.7	34.1	53.9	19.8	100	173	
Vert.	7266.000	AV	37.5	36.7	7.1	40.3	41.0	53.9	12.9	100	0	
Vert.	9688.000	AV	36.6	38.6	8.2	40.0	43.4	53.9	10.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

20dBc Data Sheet **(RBW 100kHz, VBW 300kHz)**

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	83.4	26.4	13.6	41.1	82.3	-	-	Carrier
Hori.	2400.000	PK	46.4	26.4	13.6	41.1	45.3	62.3	17.0	
Vert.	2422.000	PK	86.7	26.4	13.6	41.1	85.6	-	-	Carrier
Vert.	2400.000	PK	47.6	26.4	13.6	41.1	46.5	65.6	19.1	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n(HT40), MCS0, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	45.9	30.9	6.0	39.7	43.1	73.9	30.8	100	0	
Hori.	7311.000	PK	45.7	36.8	7.1	40.3	49.3	73.9	24.6	100	0	
Hori.	9748.000	PK	44.9	38.6	8.1	40.0	51.6	73.9	22.3	100	0	
Hori.	4874.000	AV	36.8	30.9	6.0	39.7	34.0	53.9	19.9	100	0	
Hori.	7311.000	AV	37.9	36.8	7.1	40.3	41.5	53.9	12.4	100	0	
Hori.	9748.000	AV	36.8	38.6	8.1	40.0	43.5	53.9	**10.4**	100	0	
Vert.	4874.000	PK	46.1	30.9	6.0	39.7	43.3	73.9	30.6	100	0	
Vert.	7311.000	PK	45.6	36.8	7.1	40.3	49.2	73.9	24.7	100	0	
Vert.	9748.000	PK	44.8	38.6	8.1	40.0	51.5	73.9	22.4	100	0	
Vert.	4874.000	AV	37.0	30.9	6.0	39.7	34.2	53.9	19.7	100	0	
Vert.	7311.000	AV	37.8	36.8	7.1	40.3	41.4	53.9	12.5	100	0	
Vert.	9748.000	AV	36.7	38.6	8.1	40.0	43.4	53.9	10.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber		
Date	August 30, 2014	August 31, 2014	September 1, 2014
Temperature / Humidity	26deg.C , 63%RH	25deg.C , 60%RH	26deg.C , 57%RH
Engineer	Wataru Kojima	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2452 MHz		
	Tx, IEEE802.11n(HT40), MCS0, PN9		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	57.9	26.6	13.6	41.1	57.0	73.9	16.9	100	202	
Hori.	4904.000	PK	45.3	31.0	5.9	39.7	42.5	73.9	31.4	107	0	
Hori.	7356.000	PK	46.3	36.9	7.2	40.3	50.1	73.9	23.8	100	0	
Hori.	9808.000	PK	44.9	38.6	8.1	40.0	51.6	73.9	22.3	100	0	
Hori.	2483.500	AV	44.9	26.6	13.6	41.1	44.0	53.9	9.9	100	202	
Hori.	4904.000	AV	36.8	31.0	5.9	39.7	34.0	53.9	19.9	107	0	
Hori.	7356.000	AV	37.8	36.9	7.2	40.3	41.6	53.9	12.3	100	0	
Hori.	9808.000	AV	36.7	38.6	8.1	40.0	43.4	53.9	10.5	100	0	
Vert.	2483.500	PK	58.0	26.6	13.6	41.1	57.1	73.9	16.8	129	22	
Vert.	4904.000	PK	46.0	31.0	5.9	39.7	43.2	73.9	30.7	100	171	
Vert.	7356.000	PK	46.2	36.9	7.2	40.3	50.0	73.9	23.9	100	0	
Vert.	9808.000	PK	44.8	38.6	8.1	40.0	51.5	73.9	22.4	100	0	
Vert.	2483.500	AV	45.3	26.6	13.6	41.1	44.4	53.9	**9.5**	129	22	
Vert.	4904.000	AV	36.9	31.0	5.9	39.7	34.1	53.9	19.8	100	171	
Vert.	7356.000	AV	37.7	36.9	7.2	40.3	41.5	53.9	12.4	100	0	
Vert.	9808.000	AV	36.6	38.6	8.1	40.0	43.3	53.9	10.6	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier)
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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Maximum Power Spectral Density

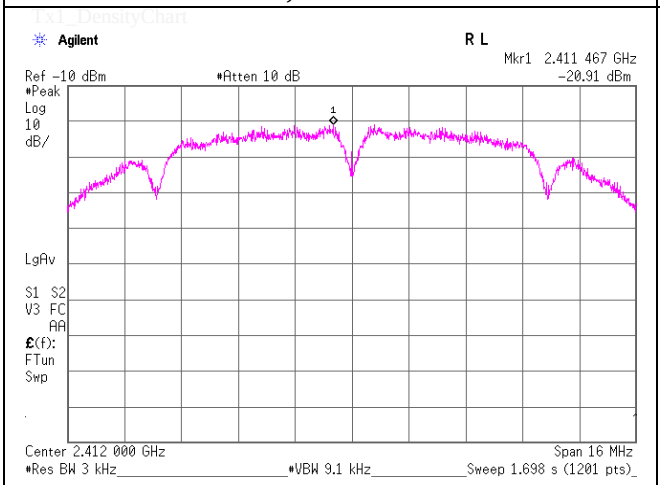
(PKPSD)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps	

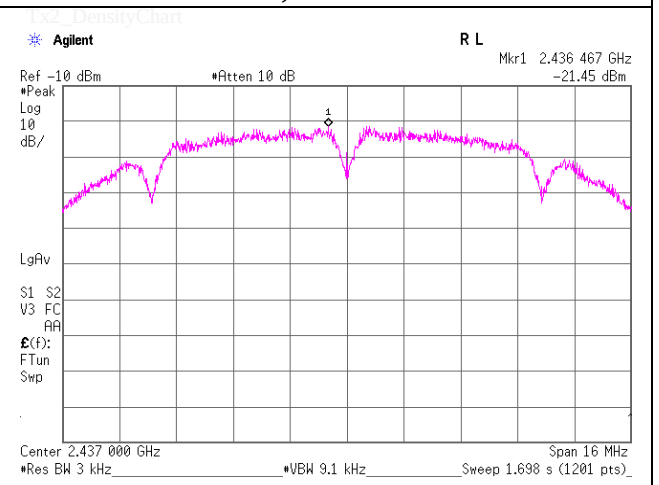
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2411.47	-20.91	2.03	9.65	-9.23	8.00	17.23
2437.0000	2436.47	-21.45	2.04	9.66	-9.75	8.00	17.75
2462.0000	2461.47	-21.41	2.05	9.66	-9.70	8.00	17.70

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

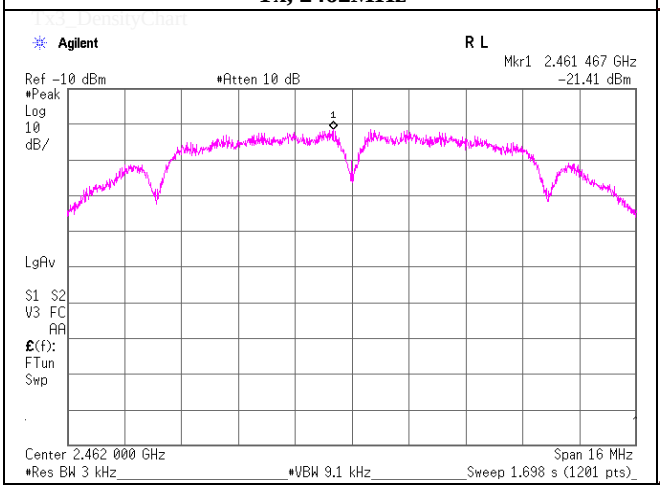
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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Maximum Power Spectral Density

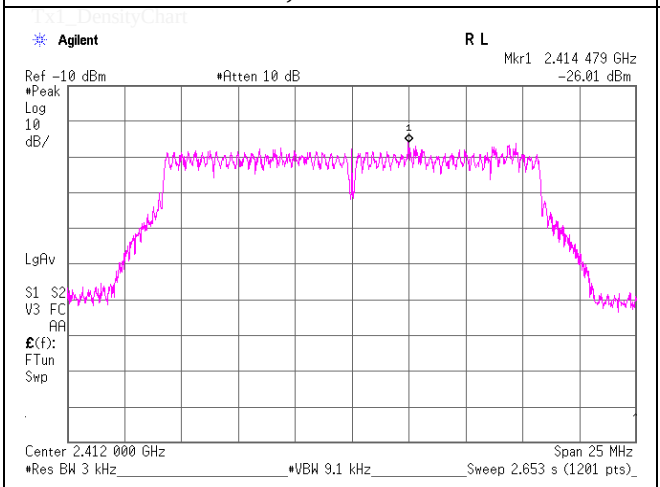
(PKPSD)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

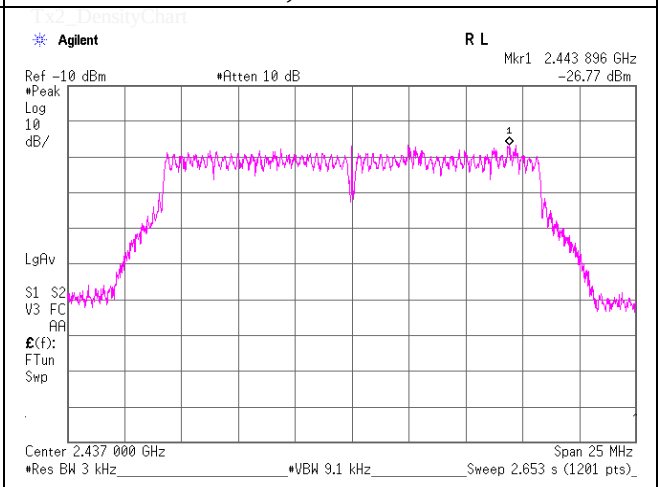
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2414.48	-26.01	2.03	9.65	-14.33	8.00	22.33
2437.0000	2443.90	-26.77	2.04	9.66	-15.07	8.00	23.07
2462.0000	2468.90	-26.38	2.05	9.66	-14.67	8.00	22.67

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

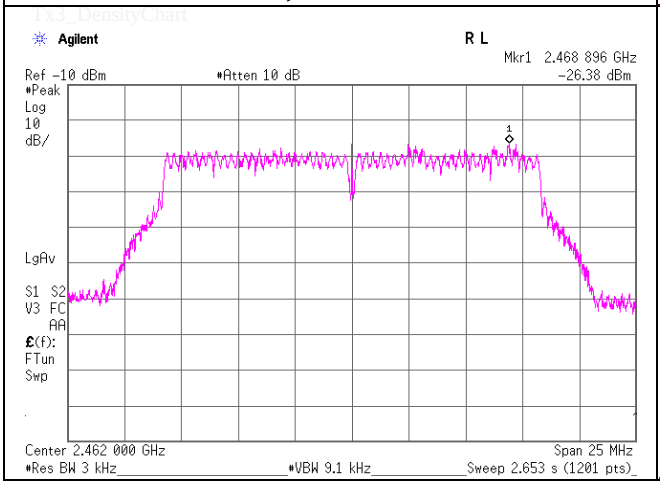
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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Maximum Power Spectral Density

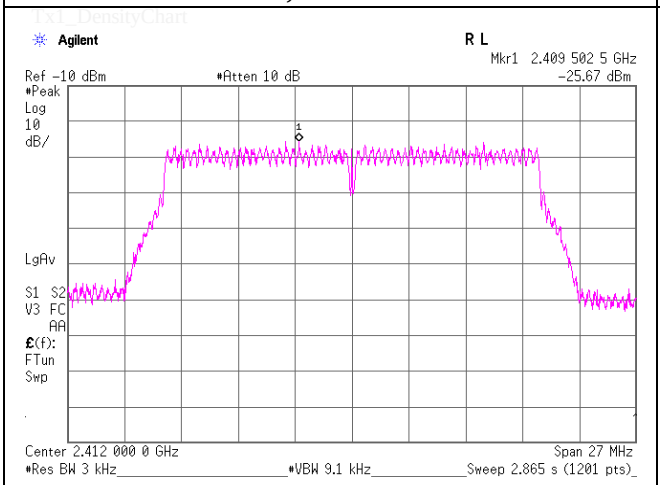
(PKPSD)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)	

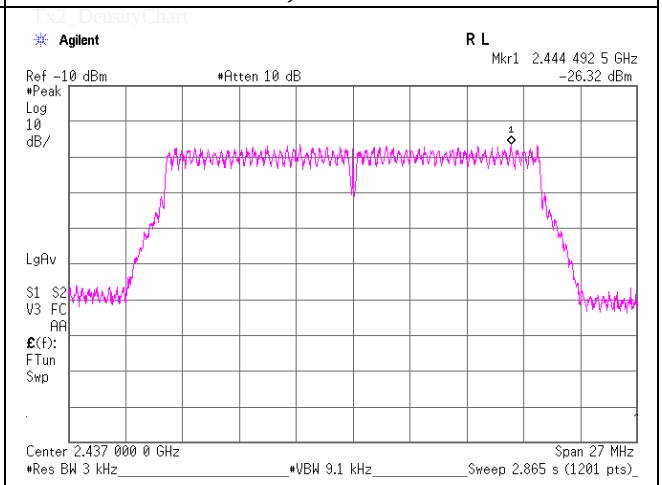
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2409.50	-25.67	2.03	9.65	-13.99	8.00	21.99
2437.0000	2444.49	-26.32	2.04	9.66	-14.62	8.00	22.62
2462.0000	2467.00	-25.46	2.05	9.66	-13.75	8.00	21.75

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

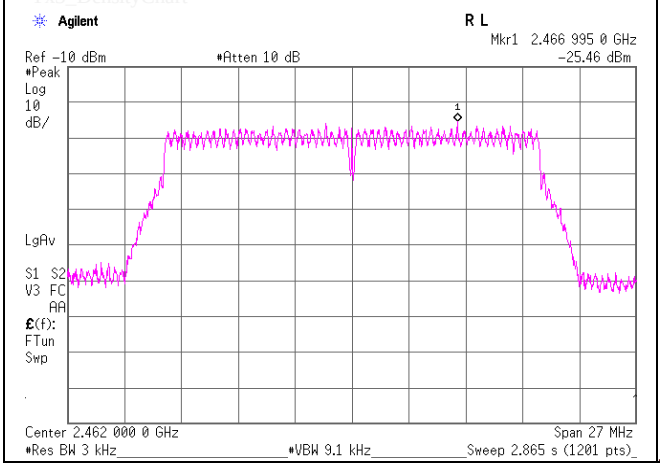
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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Maximum Power Spectral Density

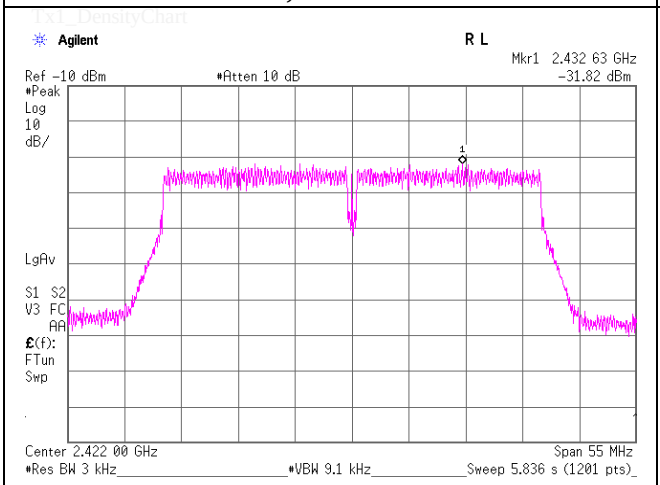
(PKPSD)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n(HT40), PN9, worst data mode 0(MCS)	

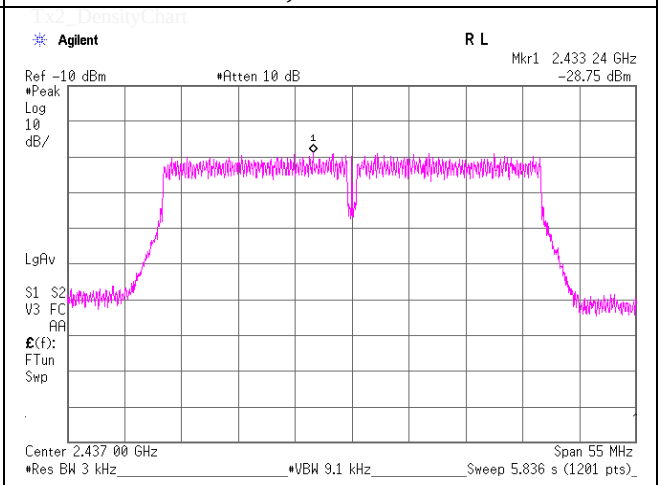
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2432.63	-31.82	2.04	9.66	-20.12	8.00	28.12
2437.0000	2433.24	-28.75	2.04	9.66	-17.05	8.00	25.05
2452.0000	2452.00	-26.89	2.04	9.66	-15.19	8.00	23.19

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

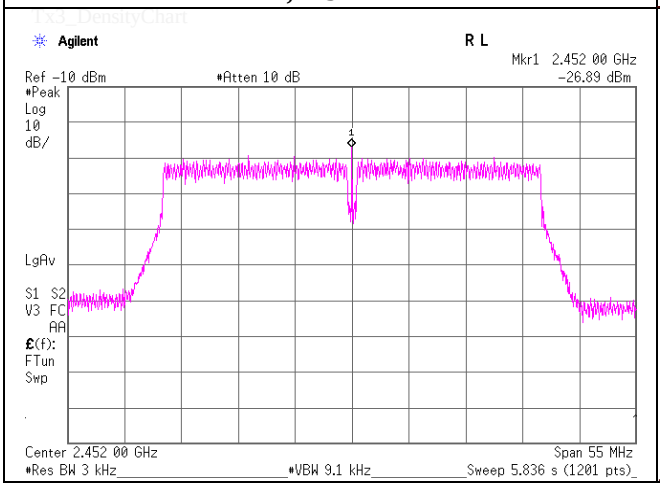
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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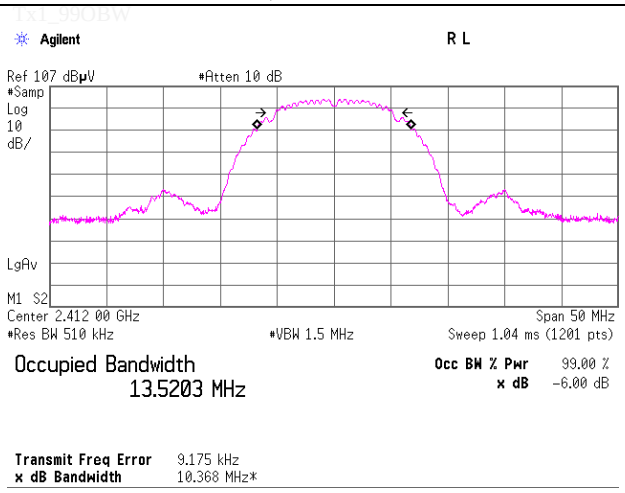
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 25, 2014	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Kenichi Adachi	

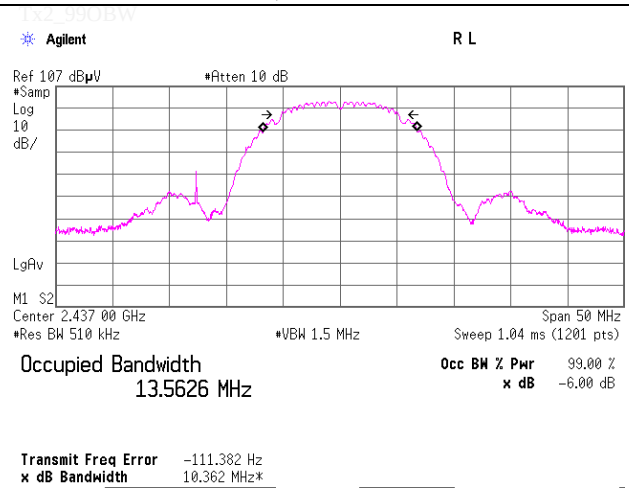
99% Occupied Bandwidth

Tx, IEEE802.11b, PN9, worst data mode 1Mbps

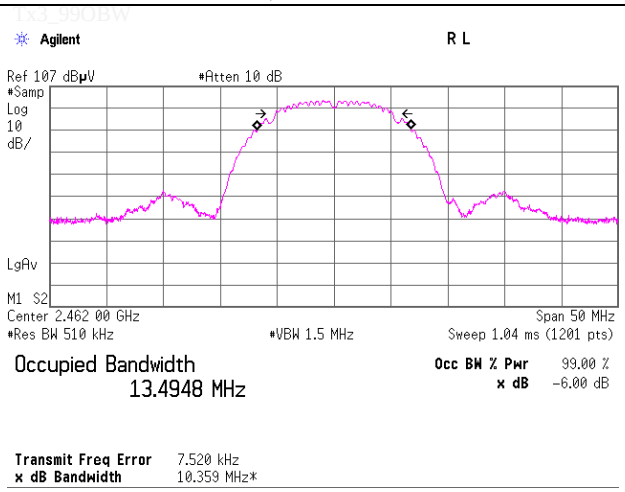
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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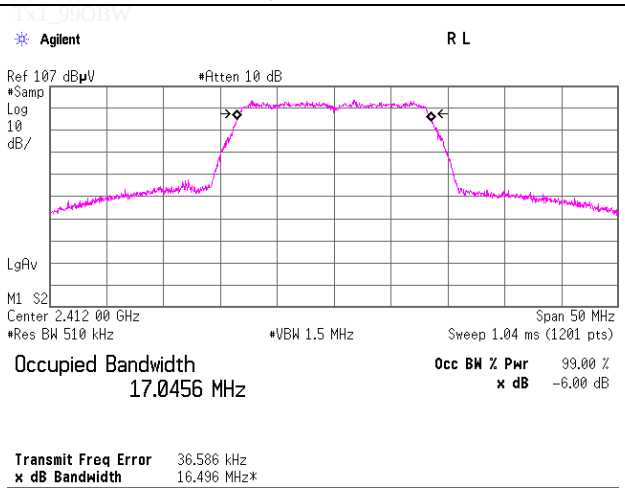
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	

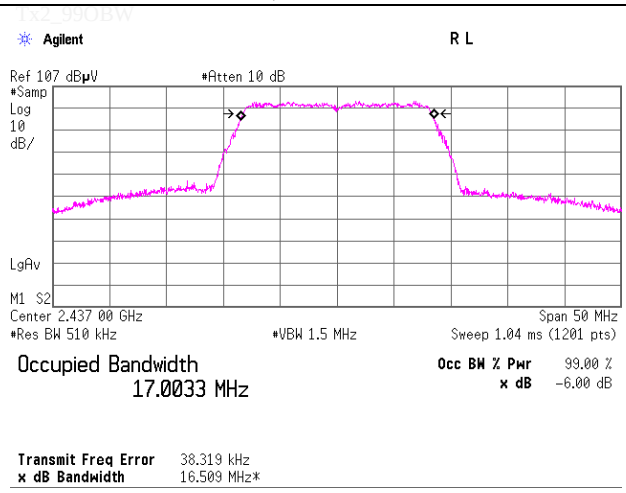
99% Occupied Bandwidth

Tx, IEEE802.11g, PN9, worst data mode 24Mbps

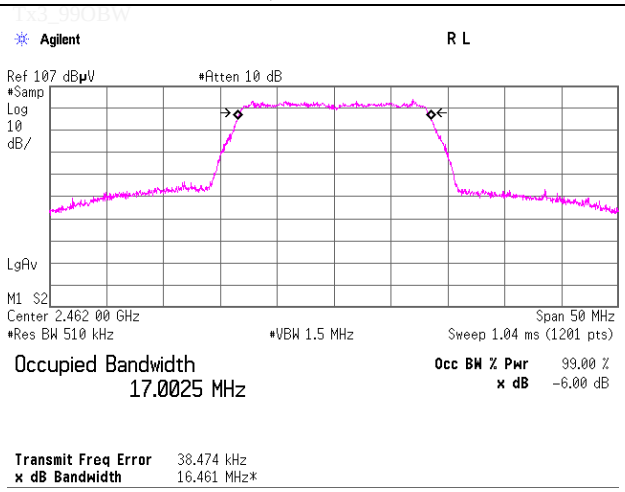
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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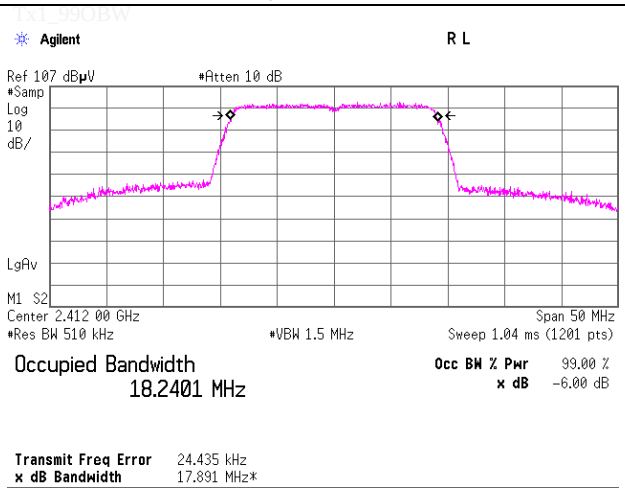
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	

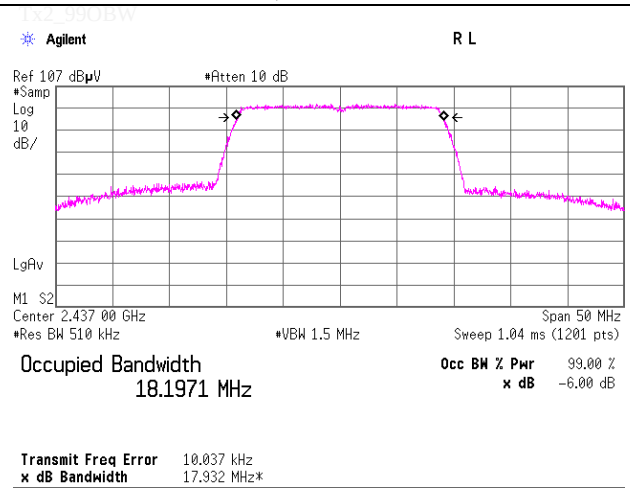
99% Occupied Bandwidth

Tx, IEEE802.11n(HT20), PN9, worst data mode 0(MCS)

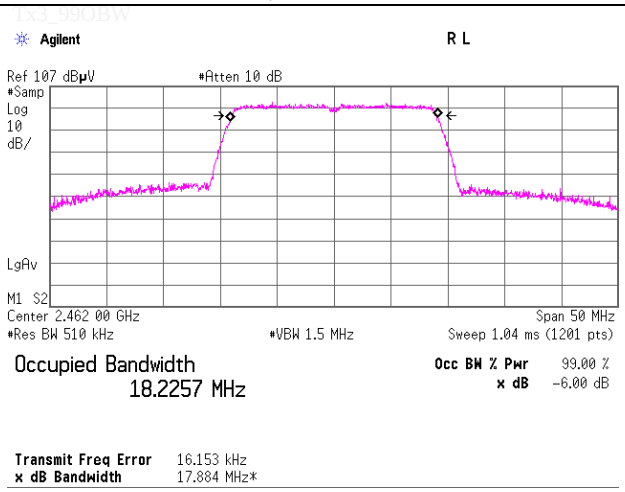
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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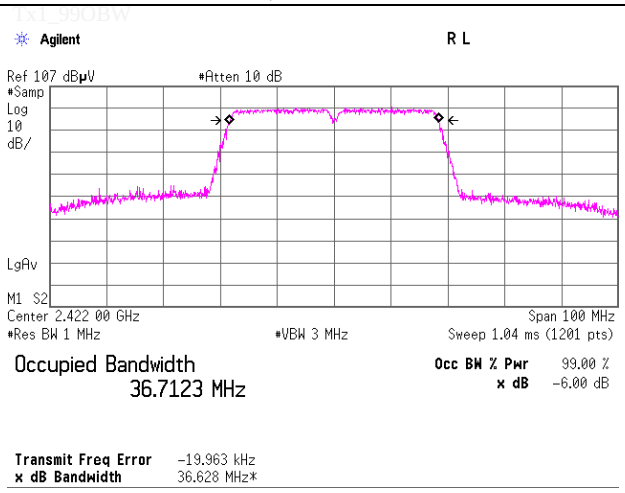
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	August 26, 2014	
Temperature / Humidity	26deg.C , 64%RH	
Engineer	Kenichi Adachi	

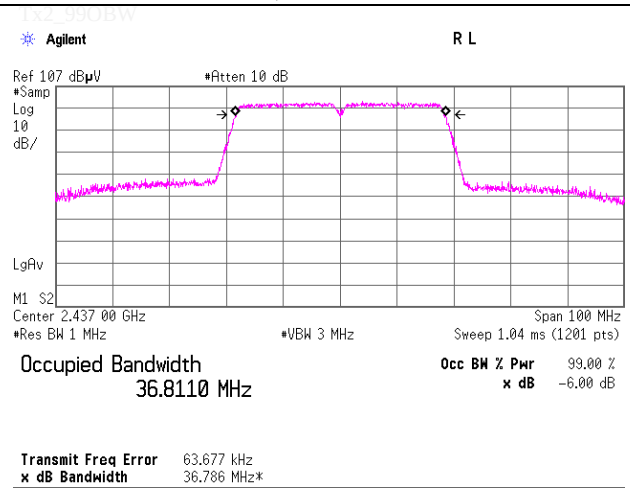
99% Occupied Bandwidth

Tx, IEEE802.11n(HT40), PN9, worst data mode 0(MCS)

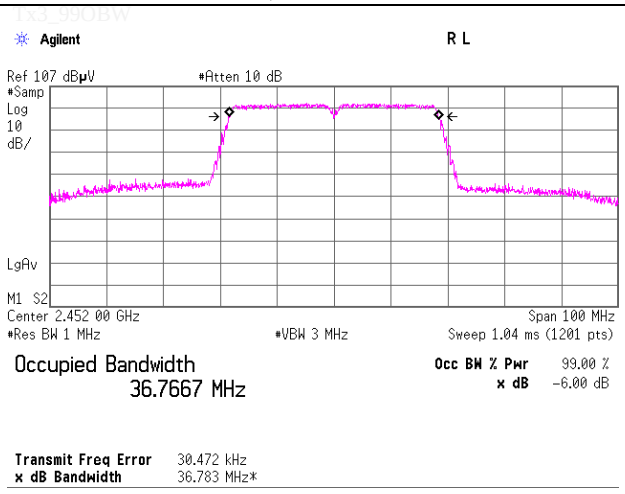
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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APPENDIX 2
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2014/04/08 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2014/04/08 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT, RE	2014/03/04 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	At	2013/11/27 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2014/03/14 * 12
SOS-13	Humidity Indicator	Custom	CTH-202	Q.C.17	AT	2014/04/22 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2014/07/14 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2014/05/23 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-018	RE	2014/06/24 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2014/05/15 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2013/11/22 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2013/11/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2014/08/12 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/02/21 * 12
SJM-15	Measure	ASKUL	-	-	RE, CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE, CE	-
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2014/03/15 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2014/05/15 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2014/03/14 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2013/10/26 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2013/10/26 * 12
SAT6-06	Attenuator	JFW	50HF-006N	-	RE	2014/02/17 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2014/04/25 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2014/02/14 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE, CE	2014/03/04 * 12
SLP-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	100218	RE	2013/11/08 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2014/04/25 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2014/02/26 * 12
SAT3-07	Attenuator	JFW	50HF-003N	-	CE	2014/09/02 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2014/03/07 * 12

The expiration date of the calibration is the end of the expired month .
As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

kAll equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .
Test Item :
CE: Conducted emission ,
RE: Radiated emission ,
AT: Antenna terminal conducted tests ,