RADIO TEST REPORT

Test Report No.: 10315698S-E

Applicant	:	**FUJIFILM Corporation**
Type of Equipment	:	**Flat Panel Sensor**
Model No.	:	**DR-ID1201SE**
FCC ID	:	**W2Z-01000006**
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.
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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: May 7 to September 12, 2014

Representative test engineer:

Tatsuya Arai
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".

JAB Testing RTL02610

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REVISION HISTORY

Original Test Report No.: 10315698S-E

Revision	Test report No.	Date	Page revised	Contents
-(Original)	10315698S-E	October 28, 2014	-	-
1	10315698S-E	December 1, 2014	6	Correction of *2)
			10, 11	Correction of referred section of KDB
2	10315698S-E	December 12, 2014	4	Correction of Rating

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Contents

SECTION 1: Customer information

Company Name	:	FUJIFILM Corporation
Address	:	2-26-30 Nishiazabu Minatoku Tokyo 106-8620, Japan
Telephone Number	:	81-3-6271-1975
Facsimile Number	:	81-3-6271-1189
Contact Person	:	Mitsuyuki Komiya

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

2.1 Identification of E.U.T.

Type of equipment	:	Flat Panel Sensor
Model No.	:	DR-ID1201SE
Serial No.	:	Refer to Clause 4.2
Rating	:	DC 8V (Battery)
Country of Mass-production	:	Japan
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.
Receipt Date of Sample	:	April 30 and August 4, 2014

2.2 Product description

Model: DR-ID1201SE (referred to as the EUT in this report) is Flat Panel Sensor.

General specification:
Clock frequency(ies) in the system : 40MHz

Radio specification:

Radio Type	:	Transceiver
Method of Frequency Generation	:	Synthesizer
Power Supply (inner)	:	DC3.3V

	IEEE802.11b	**IEEE802.11g**	**IEEE802.11a**	**IEEE802.11n (20M band)**	**IEEE802.11n (40M band)**
Frequency of operation *1)	2412-2462MHz	2412-2462MHz	5180-5320MHz 5500-5700MHz 5745-5825MHz	2412-2462MHz 5180-5320MHz 5500-5700MHz 5745-5825MHz	2422-2452MHz 5190-5310MHz 5510-5670MHz 5755-5795MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		
Channel spacing	5MHz		20MHz	2.4GHz band 5MHz 5GHz band 20MHz	2.4GHz band 5MHz 5GHz band 40MHz

Antenna	**Antenna #1 (Bottom)**	**Antenna #0 (Side)**
Antenna quantity	2 pcs. (*. Separation distance between the antenna 1 and the antenna: 417mm) 11b,g,a: One selected Tx antenna operation. 11n(20HT),n(40HT): One selected Tx antenna operation (MCS0~7) / Two Tx antenna operation (MCS8~13)	
Antenna model	113Y120035A (cable length: 300mm)	113Y1200036A (cable length: 575mm)
Antenna type / connector type	Monopole antenna / Connector; PCB side: U.FL, Antenna side: soldered	
Antenna gain (max.peak) (excluding cable loss)	-5.1 dBi (2.4GHz), -1.3 dBi (5GHz)	-6.9 dBi (2.4GHz) -1.8 dBi (5GHz)

*1) Refer to the test reports: 10315698S-F for FCC 15.407.
* The EUT does not perform simultaneous transmission of 2.4GHz and 5GHz Wireless LAN.

FCC 15.31 (e)
The EUT is a battery-operated device and test was performed with the full-charged battery.
Therefore, the EUT complies with the requirement.

FCC 15.203
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore the EUT complies with the requirement.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2014, final revised on August 15, 2014 and effective October 14, 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

* The revision on August 15, 2014 does not affect the test specification applied to the EUT.

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 *2)	-	-
6dB bandwidth	ANSI C63.10:2009	FCC 15.247 (a)(2)	Conducted	N/A	* See data	Complied
Maximum peak 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	3.6dB Freq.: 225.006MHz Polarization: Horizontal Detection: Quasi-Peak Mode: Tx 2417MHz, IEEE 802.11n (HT20), MIMO	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".
*2) The test is not applicable since the radio function does not operate during charging.

3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied Bandwidth (99%)	ANSI C63.10:2009, 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 (±)
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

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

Antenna port conducted test
Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB
Spurious emission (Conducted) measurement (below 1GHz) uncertainty for this test was: (±) 1.7dB
Spurious emission (Conducted) measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB
Spurious emission (Conducted) measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB
Spurious emission (Conducted) measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dB
Bandwidth measurement uncertainty for this test was: (±) 5.4%

3.5 Test location

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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, Test data & 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	Worst data rate *1)	Antenna *1)
Radiated emission (below 1GHz), Out of band emissions (Conducted) *2)	Transmitting IEEE 802.11n (HT20), MIMO	2417MHz	MCS8, PN9	Side & Bottom
6dB bandwidth, Occupied Bandwidth (99%)	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	1Mbps, PN9	Side
	Transmitting IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	6Mbps, PN9	Side
	Transmitting IEEE 802.11n (HT20), SISO	2412MHz, 2437MHz, 2462MHz	MCS0, PN9	Side
	Transmitting IEEE 802.11n (HT20), MIMO	2412MHz, 2437MHz, 2462MHz	MCS8, PN9	Side
	Transmitting IEEE 802.11n (HT40), SISO	2422MHz, 2437MHz, 2452MHz	MCS0, PN9	Side
	Transmitting IEEE 802.11n (HT40), MIMO	2422MHz, 2437MHz, 2452MHz	MCS8, PN9	Side
Maximum output power, Power density	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	1Mbps, PN9	Side
	Transmitting IEEE 802.11g	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	6Mbps, PN9	Side
	Transmitting IEEE 802.11n (HT20), SISO	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	MCS0, PN9	Side
	Transmitting IEEE 802.11n (HT20), MIMO	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	MCS8, PN9	Side & Bottom
	Transmitting IEEE 802.11n (HT40), SISO	2422MHz, 2427MHz*3), 2437MHz, 2452MHz	MCS0, PN9	Side
	Transmitting IEEE 802.11n (HT40), MIMO	2422MHz, 2427MHz*3), 2437MHz, 2452MHz	MCS8, PN9	Side & Bottom
Radiated emission (above 1GHz) *4)	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	1Mbps, PN9	Side
	Transmitting IEEE 802.11n (HT20), MIMO	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	MCS8, PN9	Side & Bottom
	Transmitting IEEE 802.11n (HT40), MIMO	2422MHz, 2427MHz*3), 2437MHz, 2452MHz	MCS8, PN9	Side & Bottom

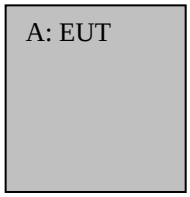
*1) The worst condition was determined based on the test result of Maximum Peak Output Power.
*2) Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - "of TCB Council Workshop October 2009.
*3) Measurement was performed additionally since the channel has the highest power setting.
*4) Since 11g and 11n-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest peak output power.

EUT has the power settings by the software as follows;

Power settings	IEEE 802.11b (1Mbps) : 13.5dBm, IEEE 802.11g (6Mbps) : 13.5dBm (2412MHz), 17.0dBm (2417MHz), 16.0dBm (2437MHz), 15.0dBm (2462MHz) IEEE 802.11n (HT20, MCS0): 10.5dBm (2412MHz), 14.5dBm (2417MHz), 12.5dBm (2437MHz), 10.5dBm (2462MHz) IEEE 802.11n (HT40, MCS0): 6.0dBm (2422MHz), 13.5dBm (2427MHz), 10.5dBm (2437MHz), 7.0dBm (2452MHz)
Software	Atheros Radio Test (ART) - Revision 0.9 BUILD #27 ART_11n - Customer Version (ANWI BUILD)

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 worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Flat Panel Sensor	DR-ID1201SE	*1)	FUJIFILM	EUT

*1) Antenna port conducted tests: 120001, Radiated emission tests: 120002

SECTION 5: 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 8.2 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 6: Maximum peak 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 9.1.2 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 7: Out of band emissions (Antenna port conducted)

Test procedure
The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.
The radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.
In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=10kHz)

Summary of the test results: Pass
Refer to APPENDIX 1

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 polystyrene platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. Photographs of the set up are shown in APPENDIX 3.

9.3 Test conditions

Frequency range : 30MHz 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.

Frequency	30-1000MHz	1-25GHz		20dBc
Detection type	Quasi-Peak	Peak	Average *1)	Peak
IF Bandwidth	120kHz	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 3MHz Detector: Linear Voltage Averaging	RBW: 100kHz VBW: 300kHz

*1) Average Power Measurement was measured based on 13.3.2 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.
SISO:

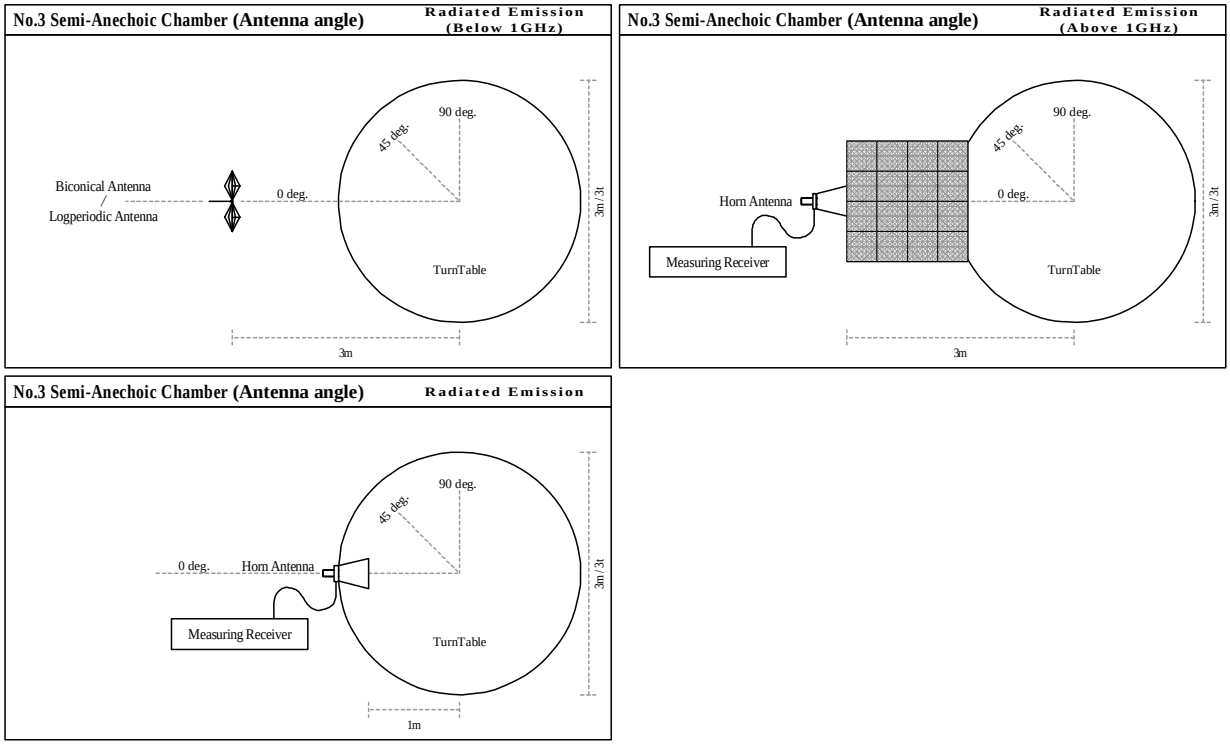
Antenna polarization	Carrier (Band edge)	Spurious (Below 1GHz)	Spurious (1-15GHz)	Spurious (15-18GHz)	Spurious (18-25GHz)
Horizontal	Z	-	Z	Z	Z
Vertical	Y	-	Y	Y	Y

MIMO:

Antenna polarization	Carrier (Band edge)	Spurious (Below 1GHz)	Spurious (1-15GHz)	Spurious (15-18GHz)	Spurious (18-25GHz)
Horizontal	Y	Z	Y	Y	Y
Vertical	Y	Y	Y	Y	Y

* The definition of each position is shown in a 'Pre-check of the worst position' in APPENDIX 3.

Figure 1. Antenna angle



9.5 Band edge

Band edge level at 2390MHz and 2483.5MHzis 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

APPENDIX 1: Data of Radio tests

6dB bandwidth
Maximum peak output power
Radiated emission
Spurious emission (Antenna port conducted)
Peak power density
Occupied bandwidth

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Radiated emission
Pre-check of the worst position

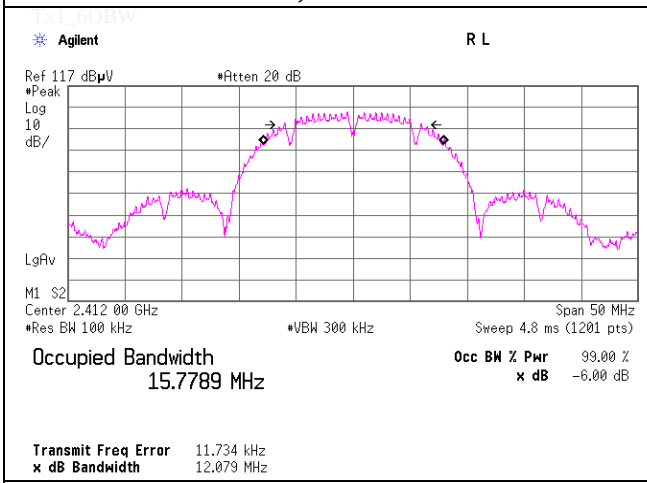
APPENDIX 1: Data of Radio tests

-6dB Bandwidth

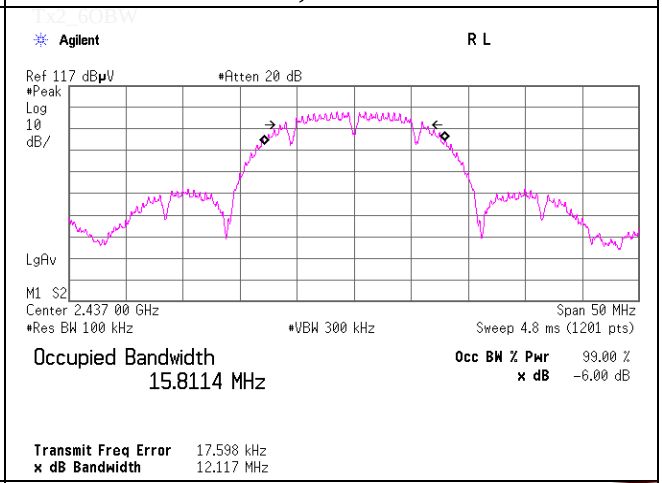
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11b, PN9, worst antenna port 0, worst data mode 1Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	12.079	> 0.500
2437.0000	12.117	> 0.500
2462.0000	12.600	> 0.500

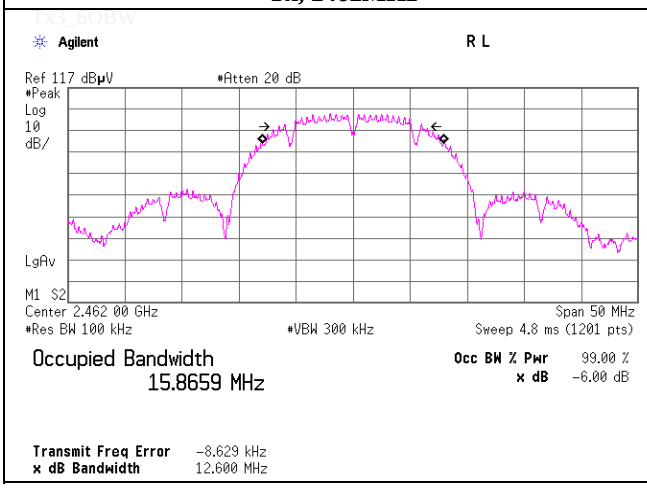
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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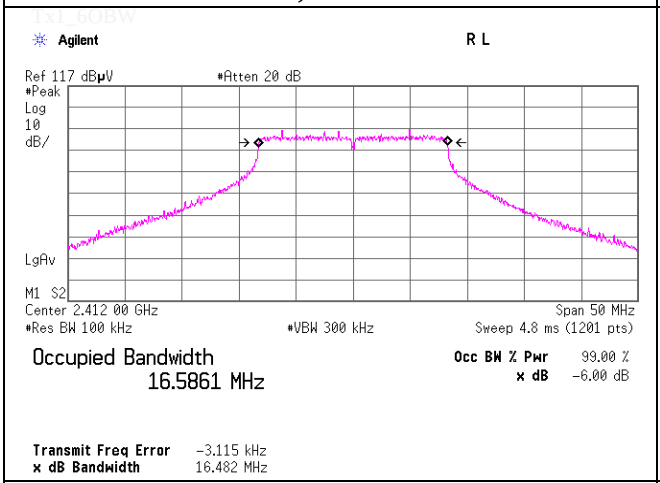
-6dB Bandwidth

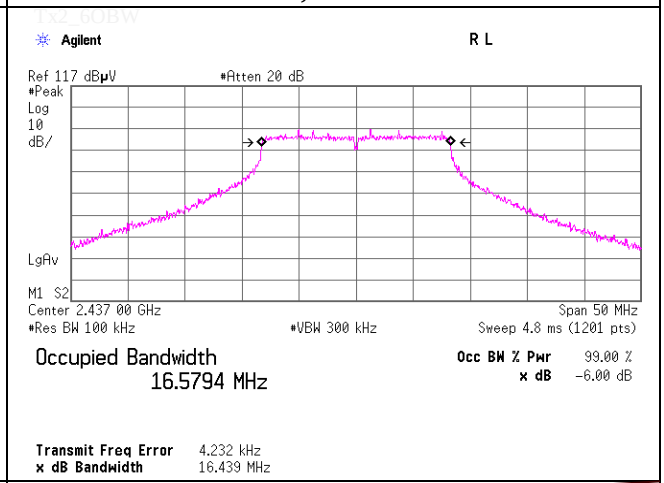
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11g, PN9, worst antenna port 0, worst data mode 6Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.482	> 0.500
2437.0000	16.439	> 0.500
2462.0000	16.429	> 0.500

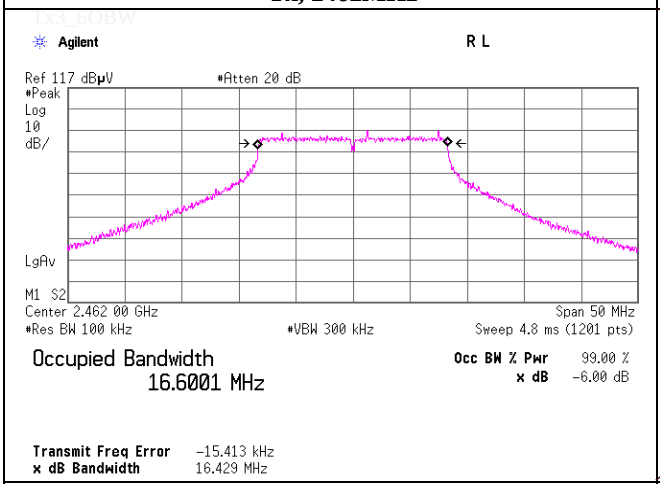
Tx, 2412MHz

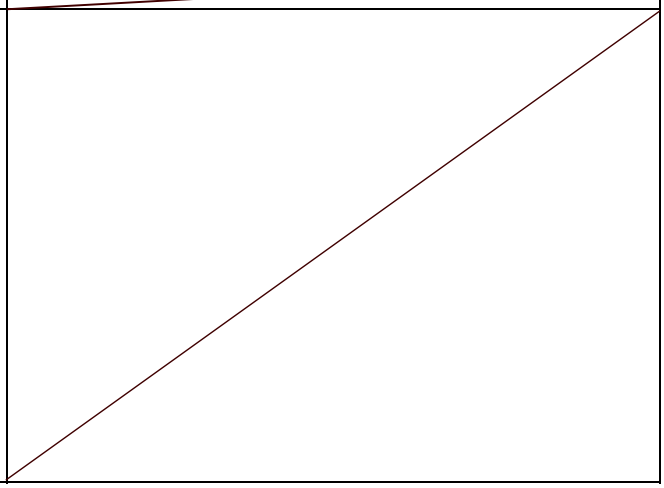


Tx, 2437MHz



Tx, 2462MHz





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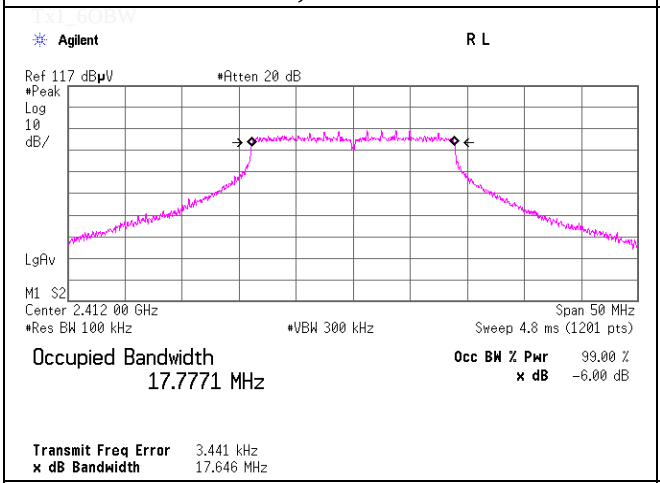
-6dB Bandwidth

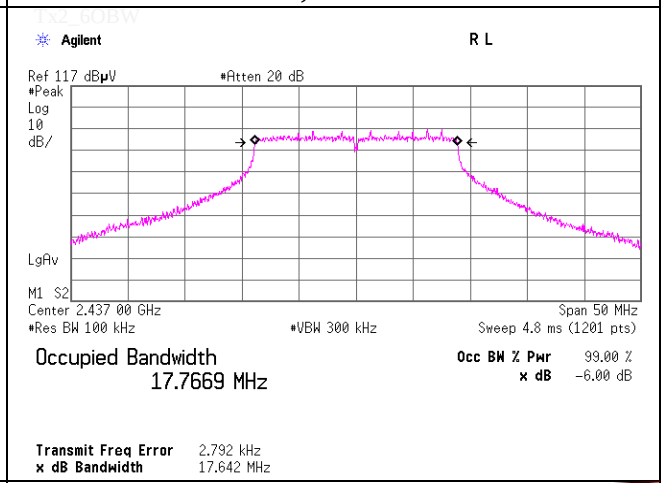
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE 802.11n (HT20), SISO, PN9, worst antenna port 0, worst data mode 0(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.646	> 0.500
2437.0000	17.642	> 0.500
2462.0000	17.640	> 0.500

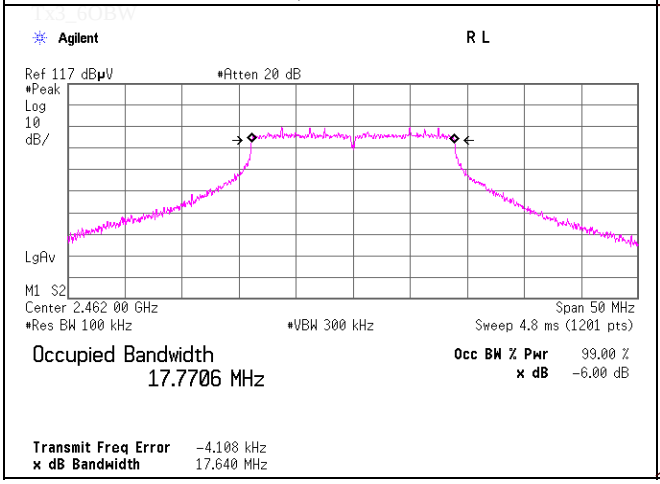
Tx, 2412MHz

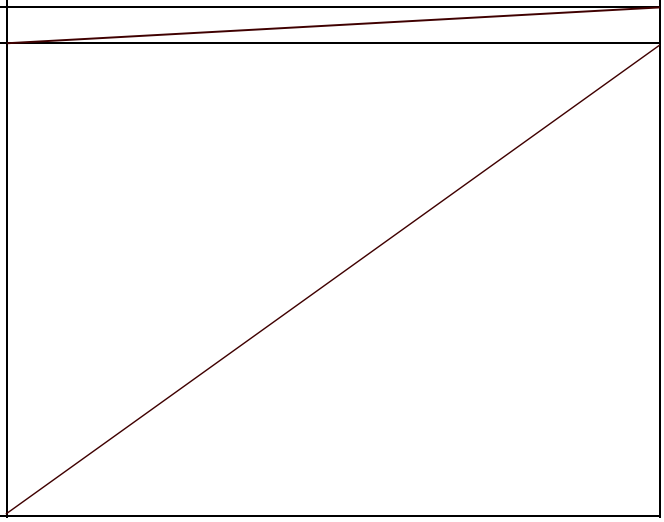


Tx, 2437MHz



Tx, 2462MHz





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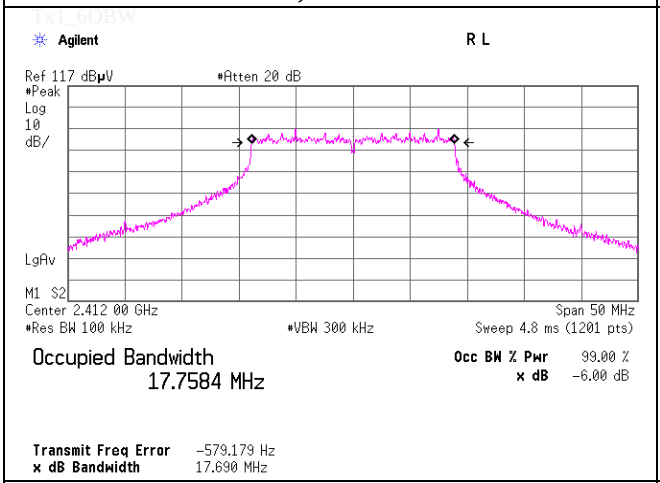
-6dB Bandwidth

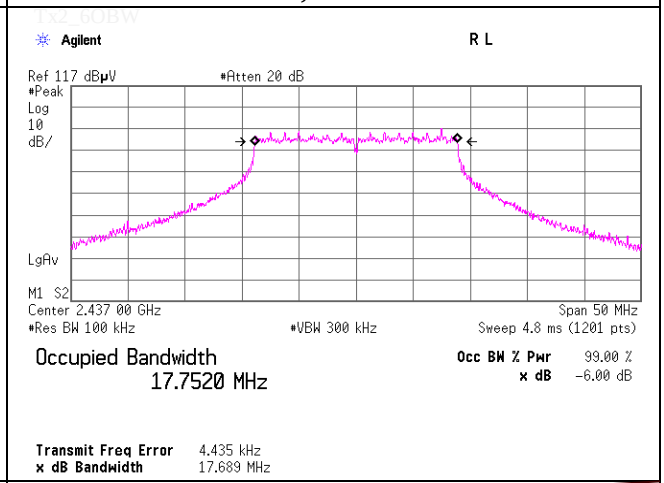
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11n (HT20), MIMO, PN9, antenna port 0 (Side), worst data mode 8(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.690	> 0.500
2437.0000	17.689	> 0.500
2462.0000	17.699	> 0.500

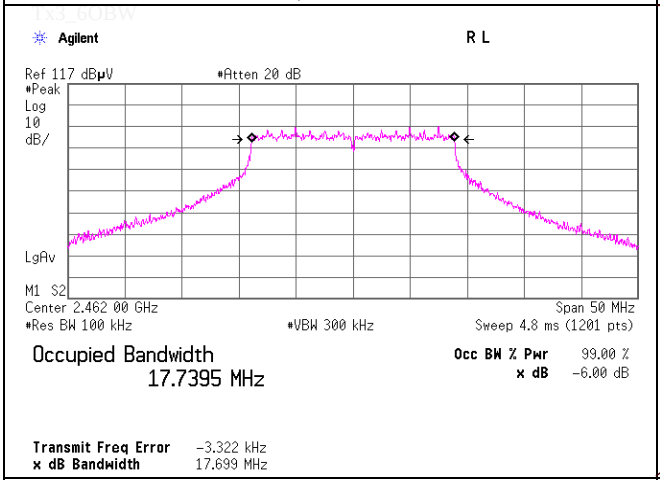
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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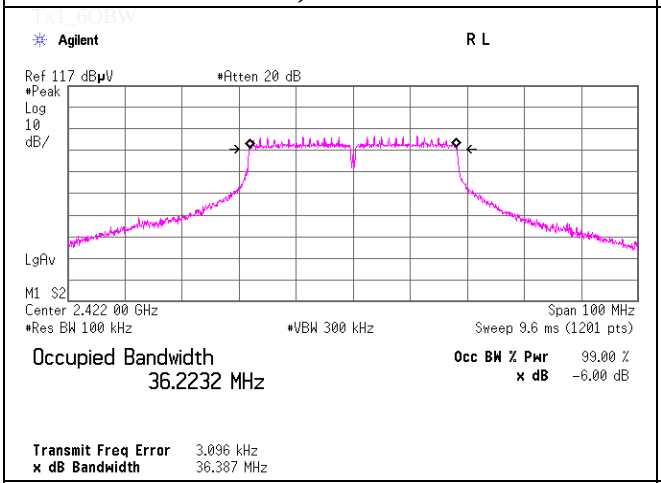
-6dB Bandwidth

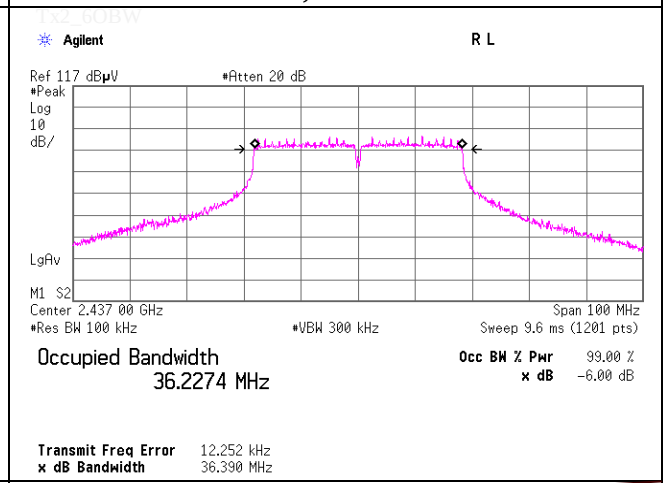
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE 802.11n (HT40), SISO, PN9, worst antenna port 0, worst data mode 0(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.387	> 0.500
2437.0000	36.390	> 0.500
2452.0000	36.378	> 0.500

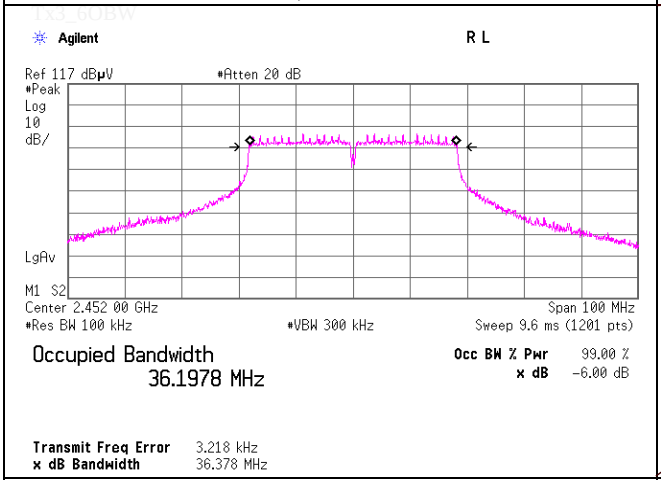
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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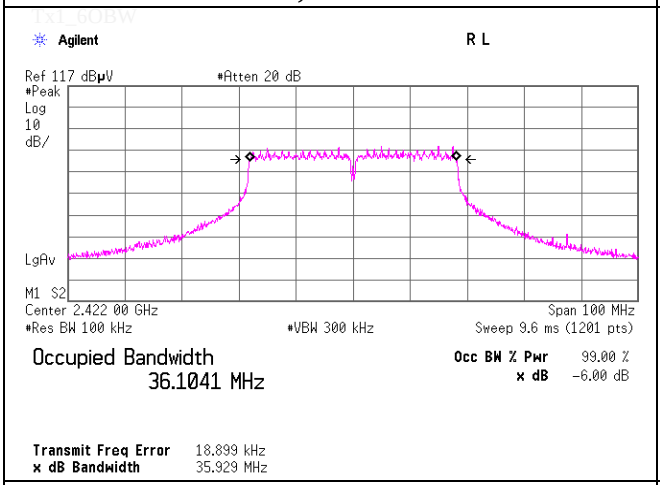
-6dB Bandwidth

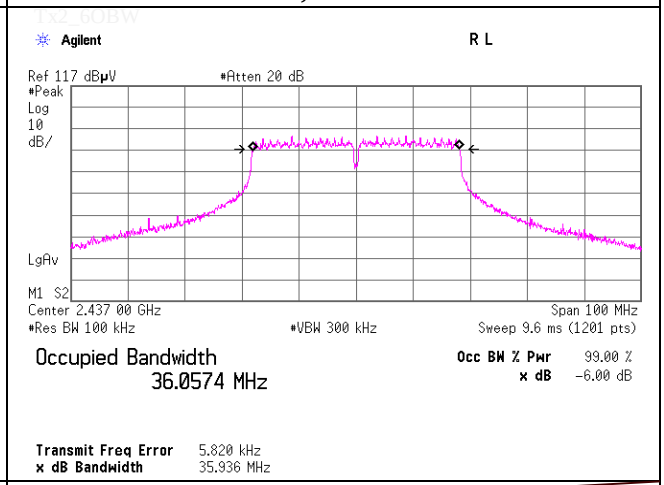
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11n (HT40), MIMO, PN9, antenna port 0 (Side), worst data mode 8(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	35.929	> 0.500
2437.0000	35.936	> 0.500
2452.0000	35.839	> 0.500

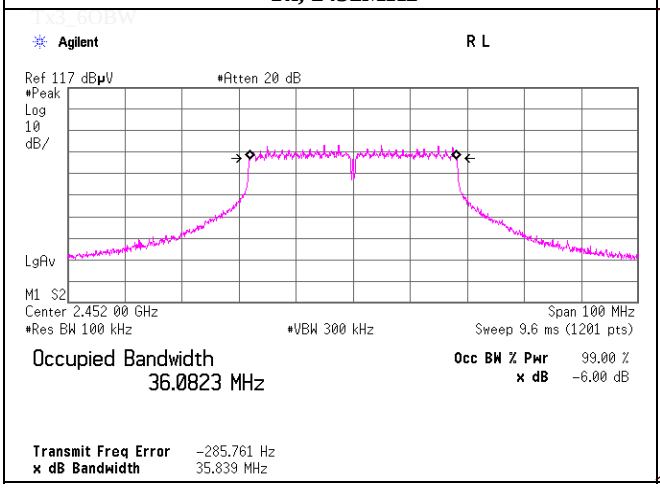
Tx, 2422MHz



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	September 2, 2014				
Temperature / Humidity	26deg.C , 56%RH				
Engineer	Shinichi Takano				
Mode	Tx, IEEE802.11b, PN9,	worst antenna :	0	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	4.53	2.12	9.90	16.55	45.19	30.00	1000	13.45
Mid	2437.0	4.19	2.10	9.90	16.19	41.59	30.00	1000	13.81
High	2462.0	4.07	2.10	9.90	16.07	40.46	30.00	1000	13.93

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

[Pre check]
Antenna 0 (Side)

	Data rate	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
0	1	2412.0	4.53	2.12	9.90	**16.55**	45.19	30.00	1000	**13.45**	**Worst**
0	2	2412.0	4.42	2.12	9.90	16.44	44.06	30.00	1000	13.56	
0	5.5	2412.0	4.36	2.12	9.90	16.38	43.45	30.00	1000	13.62	
0	11	2412.0	4.31	2.12	9.90	16.33	42.95	30.00	1000	13.67	

Antenna 1 (Bottom)

	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	1	2412.0	4.39	2.12	9.90	16.41	43.75	30.00	1000	13.59
1	2	2412.0	4.36	2.12	9.90	16.38	43.45	30.00	1000	13.62
1	5.5	2412.0	4.29	2.12	9.90	16.31	42.76	30.00	1000	13.69
1	11	2412.0	4.33	2.12	9.90	16.35	43.15	30.00	1000	13.65

Sample Calculation:
Result = Reading + Cable Loss + 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	May 7, 2014	May 8, 2014	May 9, 2014
Temperature / Humidity	26deg.C , 39%RH	26deg.C , 37%RH	27deg.C , 40%RH
Engineer	Tatsuya Arai	Hikaru Shirasawa	Shinichi Takano
Mode	Tx, IEEE802.11b, PN9,		

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

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
Low	2412.0	1.88	2.14	9.90	0.00	13.92	24.66
Mid	2437.0	1.52	2.13	9.90	0.00	13.55	22.65
High	2462.0	1.38	2.13	9.89	0.00	13.40	21.88

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

[Pre check]
Antenna 0 (Side)

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
0	1	2412.0	1.86	2.15	9.90	0.00	13.91	24.60
0	2	2412.0	1.73	2.15	9.90	0.01	13.79	23.93
0	5.5	2412.0	1.83	2.15	9.90	0.02	13.90	24.55
0	11	2412.0	1.78	2.15	9.90	0.03	13.86	24.32

Antenna 1 (Bottom)

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]	
1	1	2412.0	1.88	2.14	9.90	0.00	**13.92**	24.66	**Worst**
1	2	2412.0	1.78	2.14	9.90	0.01	13.83	24.15	
1	5.5	2412.0	1.83	2.14	9.90	0.02	13.89	24.49	
1	11	2412.0	1.80	2.14	9.90	0.03	13.87	24.38	

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

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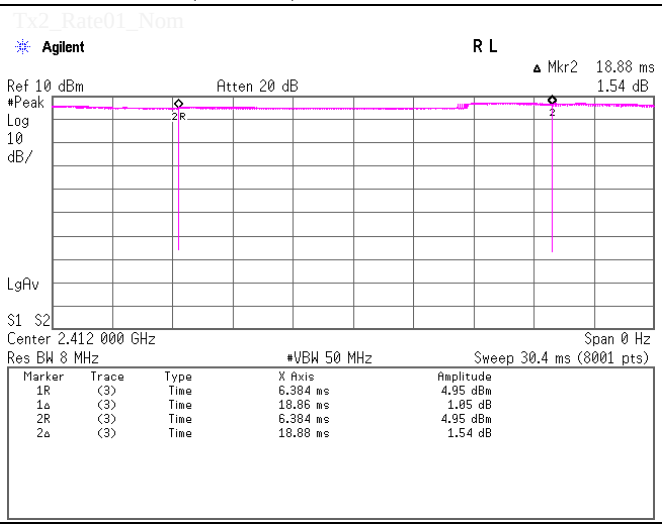
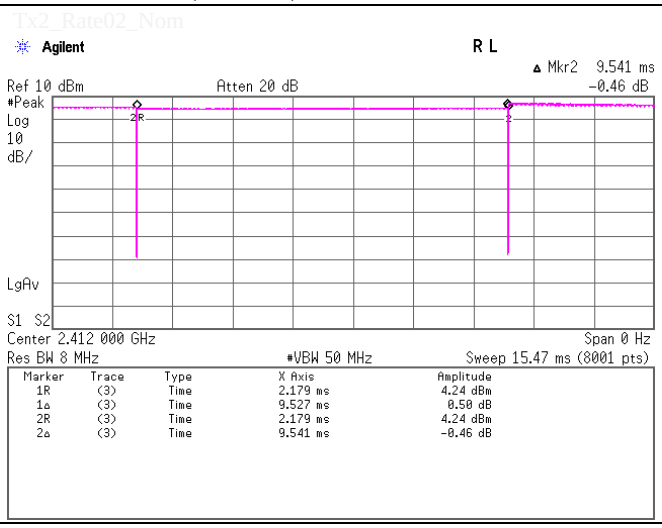
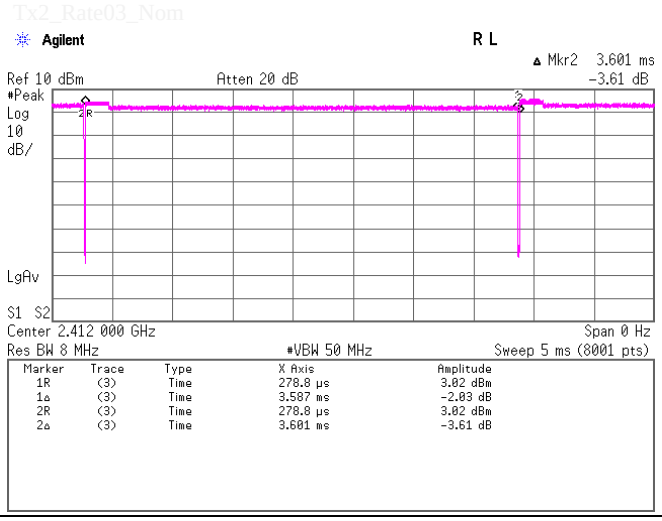
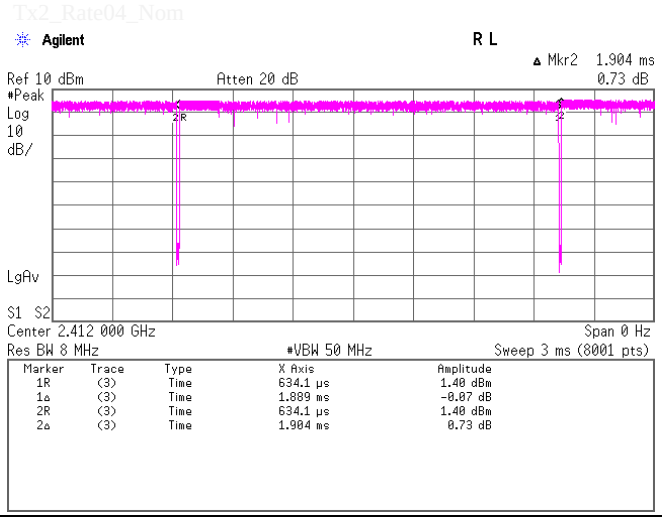
Duty Factor Caliculation chart for Maximum Conducted Output Power

1[Mbps]: Duty Factor =10*log(1/x)= 0.00 dB **x:Ton/(Ton+Toff)= 18.86 / 18.88**	**2[Mbps]: Duty Factor =10*log(1/x)= 0.01 dB** **x:Ton/(Ton+Toff)= 9.53 / 9.54**
	
5.5[Mbps]: Duty Factor =10*log(1/x)= 0.02 dB **x:Ton/(Ton+Toff)= 3.59 / 3.60**	**11[Mbps]: Duty Factor =10*log(1/x)= 0.03 dB** **x:Ton/(Ton+Toff)= 1.89 / 1.90**
	

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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room			
Date	September 2, 2014				
Temperature / Humidity	26deg.C , 56%RH				
Engineer	Shinichi Takano				
Mode	Tx, IEEE802.11g, PN9,	worst antenna :	0	worst data mode :	6 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	12.59	2.12	9.90	24.61	289.07	30.00	1000	5.39
Low *1	2417.0	13.86	2.12	9.90	25.88	387.26	30.00	1000	4.12
Mid	2437.0	13.25	2.10	9.90	25.25	334.97	30.00	1000	4.75
High	2462.0	12.89	2.10	9.90	24.89	308.32	30.00	1000	5.11

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

*1: Measurement was performed additionally since the channel has the highest power setting.

[Pre check]

Antenna 0 (Side)

	Data rate	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
0	6	2417.0	13.86	2.12	9.90	**25.88**	387.26	30.00	1000	**4.12**	**Worst**
0	9	2417.0	13.79	2.12	9.90	25.81	381.07	30.00	1000	4.19	
0	12	2417.0	13.61	2.12	9.90	25.63	365.59	30.00	1000	4.37	
0	18	2417.0	13.66	2.12	9.90	25.68	369.83	30.00	1000	4.32	
0	24	2417.0	13.64	2.12	9.90	25.66	368.13	30.00	1000	4.34	
0	36	2417.0	13.61	2.12	9.90	25.63	365.59	30.00	1000	4.37	
0	48	2417.0	12.97	2.12	9.90	24.99	315.50	30.00	1000	5.01	
0	54	2417.0	12.71	2.12	9.90	24.73	297.17	30.00	1000	5.27	

Antenna 1 (Bottom)

	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	6	2417.0	13.69	2.12	9.90	25.71	372.39	30.00	1000	4.29
1	9	2417.0	13.65	2.12	9.90	25.67	368.98	30.00	1000	4.33
1	12	2417.0	13.57	2.12	9.90	25.59	362.24	30.00	1000	4.41
1	18	2417.0	13.64	2.12	9.90	25.66	368.13	30.00	1000	4.34
1	24	2417.0	13.58	2.12	9.90	25.60	363.08	30.00	1000	4.40
1	36	2417.0	13.53	2.12	9.90	25.55	358.92	30.00	1000	4.45
1	48	2417.0	13.13	2.12	9.90	25.15	327.34	30.00	1000	4.85
1	54	2417.0	12.95	2.12	9.90	24.97	314.05	30.00	1000	5.03

Sample Calculation:

Result = Reading + Cable Loss + 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	May 7, 2014	May 8, 2014	May 9, 2014
Temperature / Humidity	26deg.C , 39%RH	26deg.C , 37%RH	27deg.C , 40%RH
Engineer	Tatsuya Arai	Hikaru Shirasawa	Shinichi Takano
Mode	Tx, IEEE802.11g, PN9,		

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

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
Low	2412.0	2.50	2.14	9.90	0.03	14.57	28.64
Mid	2437.0	4.92	2.13	9.90	0.03	16.98	49.89
High	2462.0	4.01	2.13	9.89	0.03	16.06	40.36

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

[Pre check]
Antenna 0 (Side)

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
0	6	2417.0	5.69	2.15	9.90	0.03	17.77	59.84
0	9	2417.0	5.61	2.15	9.90	0.04	17.70	58.88
0	12	2417.0	5.56	2.15	9.90	0.06	17.67	58.48
0	18	2417.0	5.56	2.15	9.90	0.09	17.70	58.88
0	24	2417.0	5.53	2.15	9.90	0.11	17.69	58.75
0	36	2417.0	5.47	2.15	9.90	0.16	17.68	58.61
0	48	2417.0	3.93	2.15	9.90	0.21	16.19	41.59
0	54	2417.0	2.71	2.15	9.90	0.24	15.00	31.62

Antenna 1 (Bottom)

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]	
1	6	2417.0	6.01	2.14	9.90	0.03	**18.08**	64.27	**Worst**
1	9	2417.0	5.90	2.14	9.90	0.04	17.98	62.81	
1	12	2417.0	5.84	2.14	9.90	0.06	17.94	62.23	
1	18	2417.0	5.82	2.14	9.90	0.09	17.95	62.37	
1	24	2417.0	5.79	2.14	9.90	0.11	17.94	62.23	
1	36	2417.0	5.74	2.14	9.90	0.16	17.94	62.23	
1	48	2417.0	4.85	2.14	9.90	0.21	17.10	51.29	
1	54	2417.0	3.82	2.14	9.90	0.24	16.10	40.74	

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

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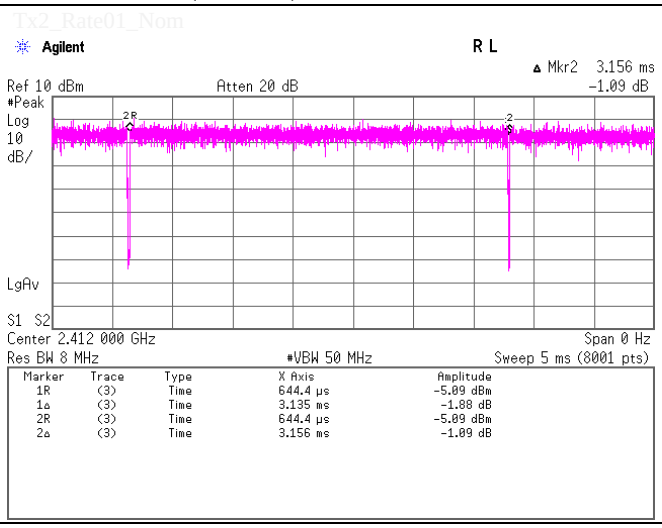
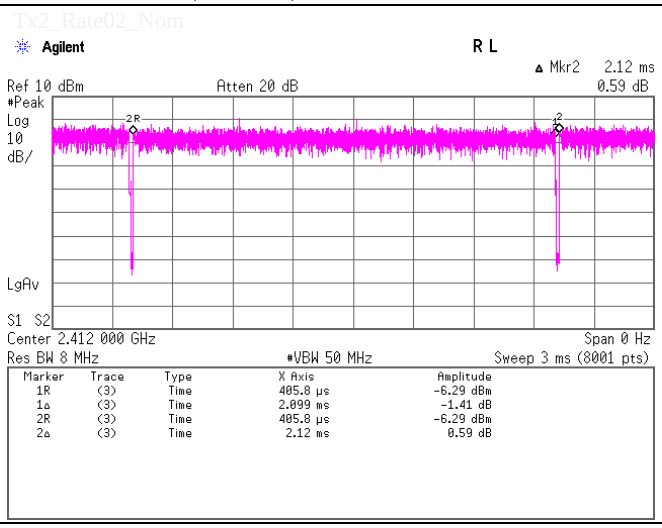
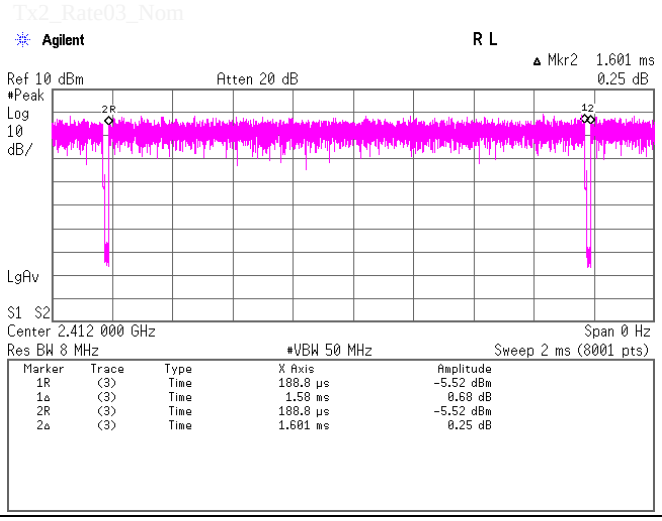
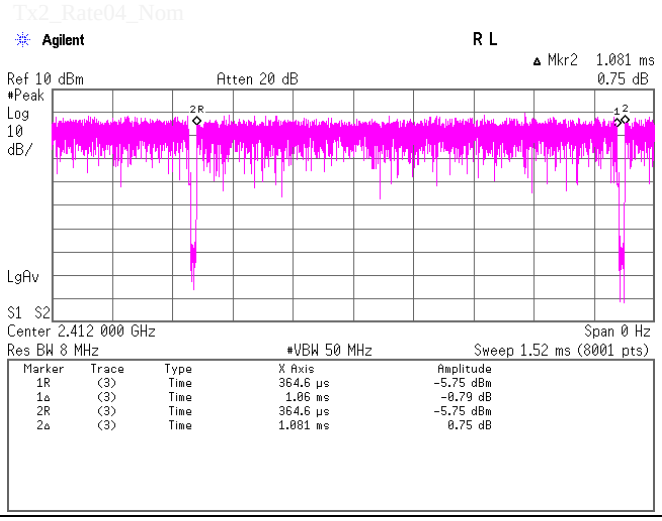
Duty Factor Caliculation chart for Maximum Conducted Output Power

6[Mbps]: Duty Factor =10*log(1/x)= 0.03 dB **x:Ton/(Ton+Toff)= 3.14 / 3.16**	**9[Mbps]: Duty Factor =10*log(1/x)= 0.04 dB** **x:Ton/(Ton+Toff)= 2.10 / 2.12**
	
12[Mbps]: Duty Factor =10*log(1/x)= 0.06 dB **x:Ton/(Ton+Toff)= 1.58 / 1.60**	**18[Mbps]: Duty Factor =10*log(1/x)= 0.09 dB** **x:Ton/(Ton+Toff)= 1.06 / 1.08**
	

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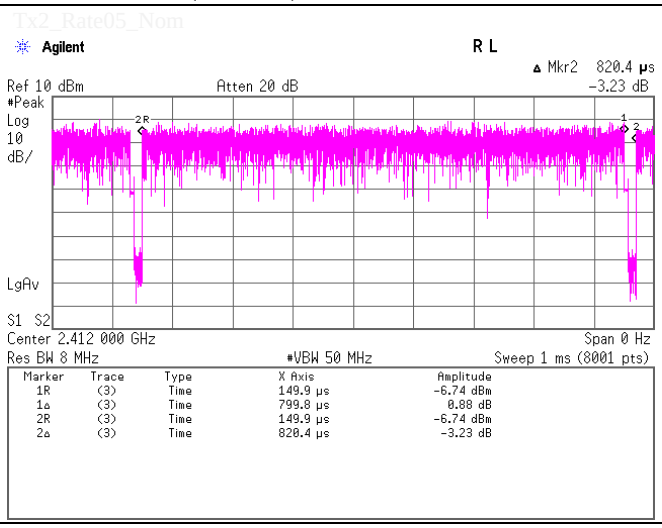
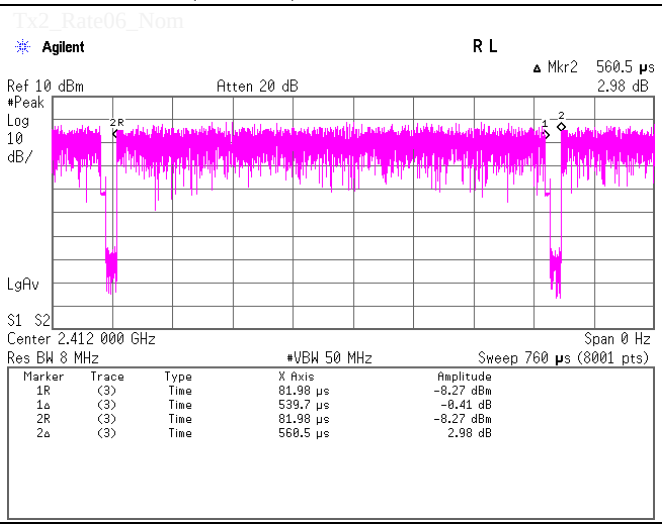
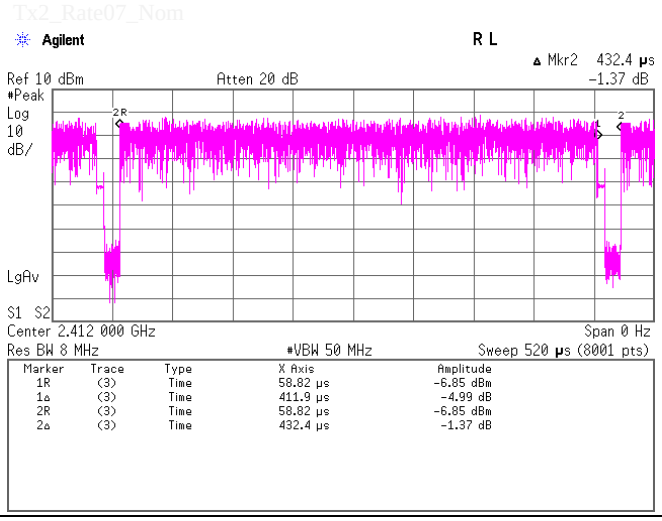
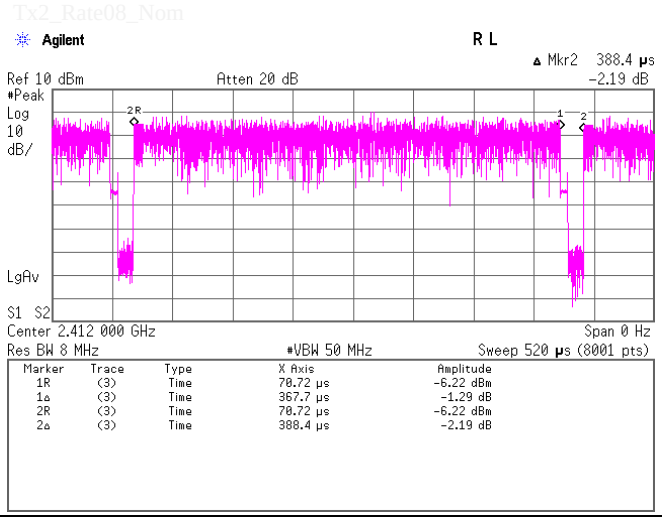
Duty Factor Caliculation chart for Maximum Conducted Output Power

24[Mbps]: Duty Factor =10*log(1/x)= 0.11 dB **x:Ton/(Ton+Toff)= 0.80 / 0.82**	**36[Mbps]: Duty Factor =10*log(1/x)= 0.16 dB** **x:Ton/(Ton+Toff)= 0.54 / 0.56**
	
48[Mbps]: Duty Factor =10*log(1/x)= 0.21 dB **x:Ton/(Ton+Toff)= 0.41 / 0.43**	**54[Mbps]: Duty Factor =10*log(1/x)= 0.24 dB** **x:Ton/(Ton+Toff)= 0.37 / 0.39**
	

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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room			
Date	September 2, 2014				
Temperature / Humidity	26deg.C , 56%RH				
Engineer	Shinichi Takano				
Mode	Tx, IEEE 802.11n (HT20), SISO, PN9,	worst antenna :	0	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	10.47	2.12	9.90	22.49	177.42	30.00	1000	7.51
Low *1	2417.0	12.83	2.12	9.90	24.85	305.49	30.00	1000	5.15
Mid	2437.0	11.45	2.10	9.90	23.45	221.31	30.00	1000	6.55
High	2462.0	10.15	2.10	9.90	22.15	164.06	30.00	1000	7.85

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss
*1: Measurement was performed additionally since the channel has the highest power setting.

[Pre check]

Antenna 0 (Side)

	Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
0	0	2417.0	12.83	2.12	9.90	**24.85**	305.49	30.00	1000	**5.15**	**Worst**
0	1	2417.0	12.43	2.12	9.90	24.45	278.61	30.00	1000	5.55	
0	2	2417.0	12.39	2.12	9.90	24.41	276.06	30.00	1000	5.59	
0	3	2417.0	12.48	2.12	9.90	24.50	281.84	30.00	1000	5.50	
0	4	2417.0	12.64	2.12	9.90	24.66	292.42	30.00	1000	5.34	
0	5	2417.0	12.37	2.12	9.90	24.39	274.79	30.00	1000	5.61	
0	6	2417.0	12.04	2.12	9.90	24.06	254.68	30.00	1000	5.94	
0	7	2417.0	11.58	2.12	9.90	23.60	229.09	30.00	1000	6.40	

Antenna 1 (Bottom)

	Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
1	0	2417.0	12.76	2.12	9.90	24.78	300.61	30.00	1000	5.22
1	1	2417.0	12.57	2.12	9.90	24.59	287.74	30.00	1000	5.41
1	2	2417.0	12.54	2.12	9.90	24.56	285.76	30.00	1000	5.44
1	3	2417.0	12.73	2.12	9.90	24.75	298.54	30.00	1000	5.25
1	4	2417.0	12.67	2.12	9.90	24.69	294.44	30.00	1000	5.31
1	5	2417.0	12.14	2.12	9.90	24.16	260.62	30.00	1000	5.84
1	6	2417.0	11.67	2.12	9.90	23.69	233.88	30.00	1000	6.31
1	7	2417.0	11.58	2.12	9.90	23.60	229.09	30.00	1000	6.40

Sample Calculation:
Result = Reading + Cable Loss + 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	May 7, 2014	May 8, 2014	May 9, 2014
Temperature / Humidity	26deg.C , 39%RH	26deg.C , 37%RH	27deg.C , 40%RH
Engineer	Tatsuya Arai	Hikaru Shirasawa	Shinichi Takano
Mode	Tx, IEEE 802.11n (HT20), SISO, PN9,		

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

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
Low	2412.0	-0.31	2.14	9.90	0.03	11.76	15.00
Mid	2437.0	1.53	2.13	9.90	0.03	13.59	22.86
High	2462.0	-0.79	2.13	9.89	0.03	11.26	13.37

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

[Pre check]
Antenna 0 (Side)

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
0	0	2417.0	2.92	2.15	9.90	0.03	15.00	31.62
0	1	2417.0	2.79	2.15	9.90	0.06	14.90	30.90
0	2	2417.0	2.76	2.15	9.90	0.09	14.90	30.90
0	3	2417.0	2.71	2.15	9.90	0.12	14.88	30.76
0	4	2417.0	2.61	2.15	9.90	0.17	14.83	30.41
0	5	2417.0	2.15	2.15	9.90	0.22	14.42	27.67
0	6	2417.0	1.79	2.15	9.90	0.24	14.08	25.59
0	7	2417.0	1.30	2.15	9.90	0.27	13.62	23.01

Antenna 1 (Bottom)

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]	
1	0	2417.0	3.69	2.14	9.90	0.03	**15.76**	37.67	**Worst**
1	1	2417.0	3.52	2.14	9.90	0.06	15.62	36.48	
1	2	2417.0	3.43	2.14	9.90	0.09	15.56	35.97	
1	3	2417.0	3.41	2.14	9.90	0.12	15.57	36.06	
1	4	2417.0	3.36	2.14	9.90	0.17	15.57	36.06	
1	5	2417.0	2.54	2.14	9.90	0.22	14.80	30.20	
1	6	2417.0	1.93	2.14	9.90	0.24	14.21	26.36	
1	7	2417.0	1.52	2.14	9.90	0.27	13.83	24.15	

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

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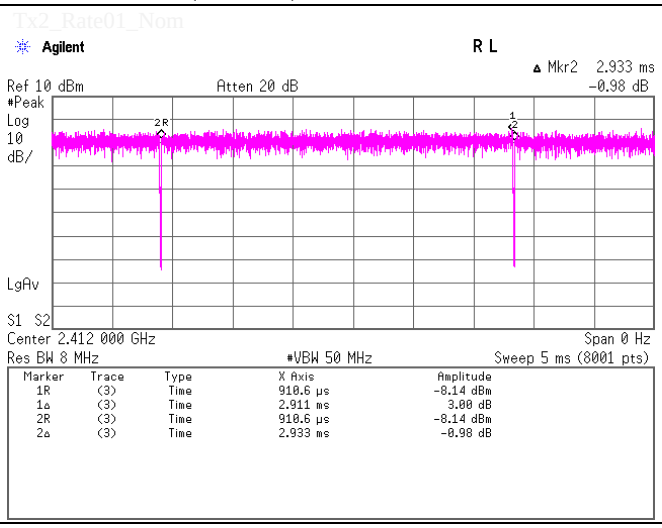
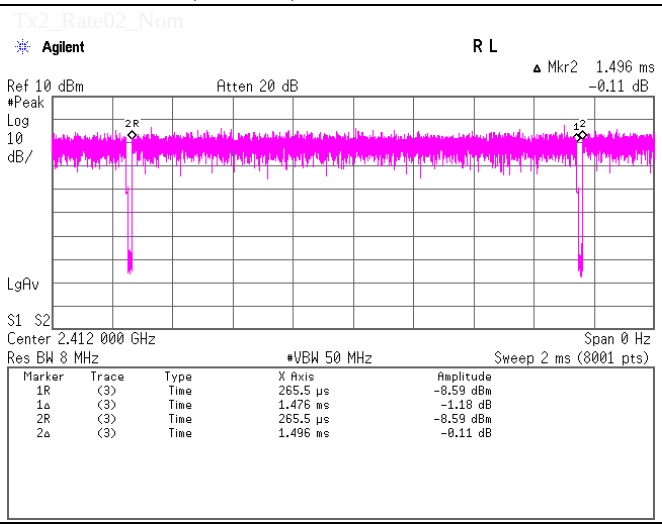
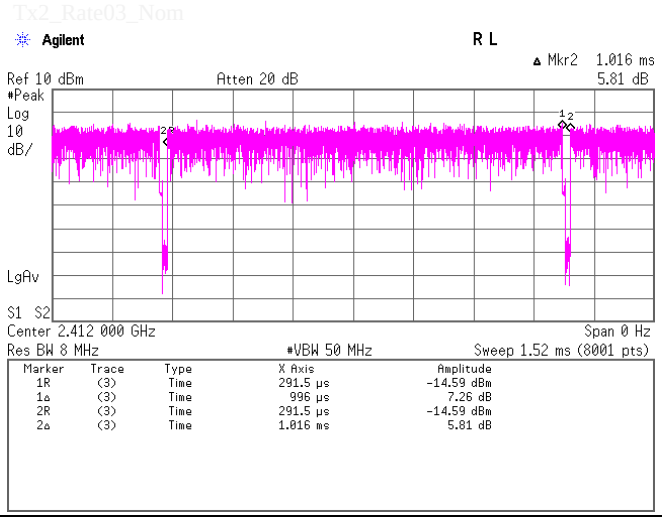
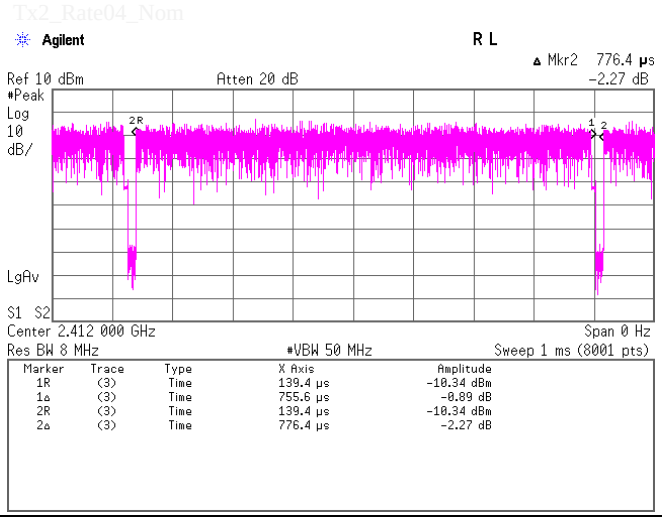
Duty Factor Caliculation chart for Maximum Conducted Output Power

0(MCS): Duty Factor =10*log(1/x)= 0.03 dB **x:Ton/(Ton+Toff)= 2.91 / 2.93**	**1(MCS): Duty Factor =10*log(1/x)= 0.06 dB** **x:Ton/(Ton+Toff)= 1.48 / 1.50**
	
2(MCS): Duty Factor =10*log(1/x)= 0.09 dB **x:Ton/(Ton+Toff)= 1.00 / 1.02**	**3(MCS): Duty Factor =10*log(1/x)= 0.12 dB** **x:Ton/(Ton+Toff)= 0.76 / 0.78**
	

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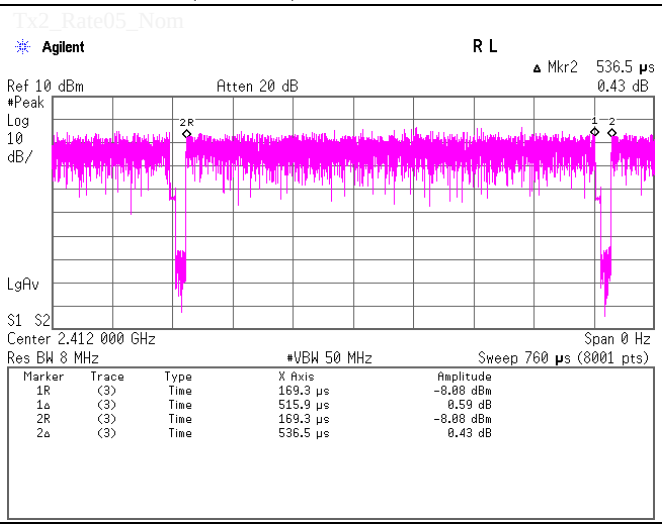
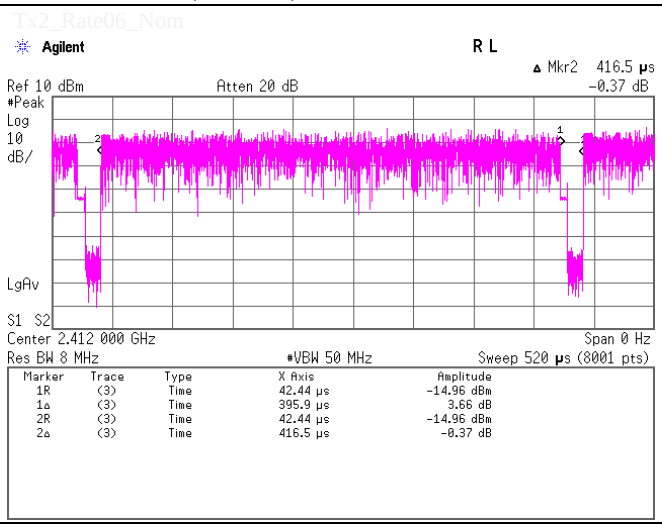
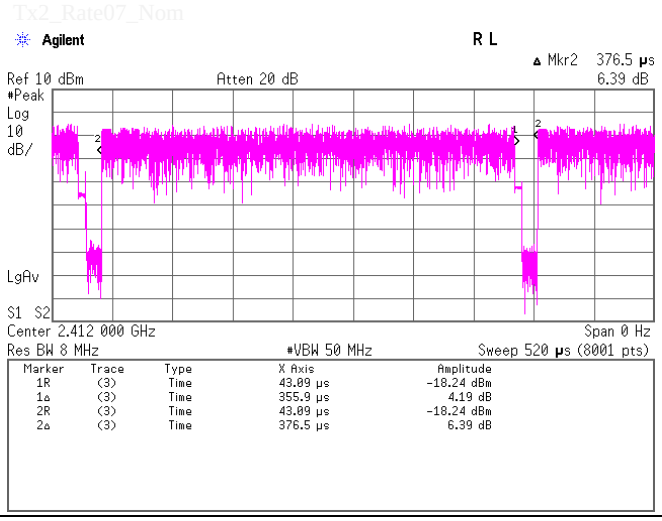
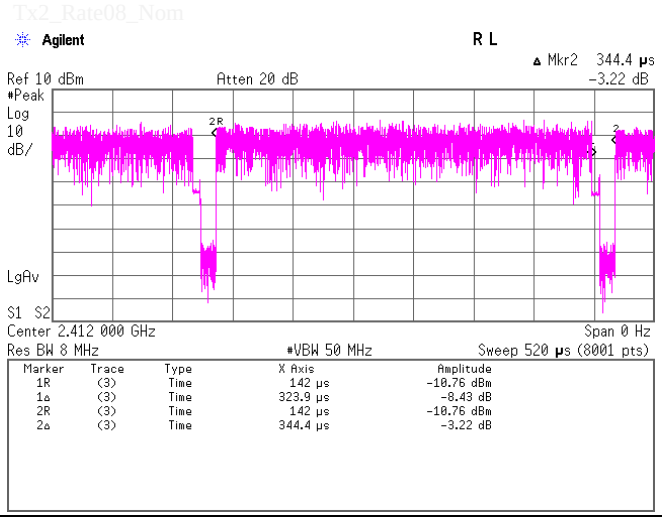
Duty Factor Caliculation chart for Maximum Conducted Output Power

4(MCS): Duty Factor =10*log(1/x)= 0.17 dB **x:Ton/(Ton+Toff)= 0.52 / 0.54**	**5(MCS): Duty Factor =10*log(1/x)= 0.22 dB** **x:Ton/(Ton+Toff)= 0.40 / 0.42**
	
6(MCS): Duty Factor =10*log(1/x)= 0.24 dB **x:Ton/(Ton+Toff)= 0.36 / 0.38**	**7(MCS): Duty Factor =10*log(1/x)= 0.27 dB** **x:Ton/(Ton+Toff)= 0.32 / 0.34**
	

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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	September 2, 2014		
Temperature / Humidity	26deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n (HT20), MIMO, PN9,	worst data mode :	8 (MCS)

Antenna 0 (Side) + Antenna 1 (Bottom)

Ch	Freq.	Result Ant 0 (Side)	Result Ant 1 (Bottom)		Result Ant 0 (Side) + Ant 1 (Bottom)		Limit		Margin
	[MHz]	[mW]	[mW]		[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	182.81	165.20		25.42	348.01	30.00	1000	4.58
Low *1	2417.0	279.90	276.06		27.45	555.96	30.00	1000	2.55
Mid	2437.0	226.46	222.84		26.53	449.30	30.00	1000	3.47
High	2462.0	166.34	164.44		25.20	330.78	30.00	1000	4.80

Antenna 0 (Side) (* 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	10.60	2.12	9.90	22.62	182.81	30.00	1000	7.38
Low *1	2417.0	12.45	2.12	9.90	24.47	279.90	30.00	1000	5.53
Mid	2437.0	11.55	2.10	9.90	23.55	226.46	30.00	1000	6.45
High	2462.0	10.21	2.10	9.90	22.21	166.34	30.00	1000	7.79

Antenna 1 (Bottom) (* 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	10.16	2.12	9.90	22.18	165.20	30.00	1000	7.82
Low *1	2417.0	12.39	2.12	9.90	24.41	276.06	30.00	1000	5.59
Mid	2437.0	11.48	2.10	9.90	23.48	222.84	30.00	1000	6.52
High	2462.0	10.16	2.10	9.90	22.16	164.44	30.00	1000	7.84

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

*1: Measurement was performed additionally since the channel has the highest power setting.

[Pre check]

Mode	Freq.	Reading Antenna 0 (Side)		Reading Antenna 1 (Bottom)		Reading Antenna 0 (Side) + 1 (Bottom)		
(MCS)	[MHz]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
8	2417.0	12.45	17.58	12.39	17.34	15.43	34.92	**Worst**
9	2417.0	12.14	16.37	12.14	16.37	15.15	32.74	
10	2417.0	12.30	16.98	12.27	16.87	15.30	33.85	
11	2417.0	12.18	16.52	12.16	16.44	15.18	32.96	
12	2417.0	12.36	17.22	12.22	16.67	15.30	33.89	
13	2417.0	12.27	16.87	12.18	16.52	15.24	33.39	
14	2417.0	12.16	16.44	11.60	14.45	14.90	30.89	
15	2417.0	11.56	14.32	11.42	13.87	14.50	28.19	

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Maximum Conducted Output Power (Reference data)

(AVGPM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	May 7, 2014	May 8, 2014	May 9, 2014
Temperature / Humidity	26deg.C , 39%RH	26deg.C , 37%RH	27deg.C , 40%RH
Engineer	Tatsuya Arai	Hikaru Shirasawa	Shinichi Takano
Mode	Tx, IEEE802.11n (HT20), MIMO, PN9,		

Antenna 0 (Side) + Antenna 1 (Bottom)

Ch	Freq.	Ant 0 (Side) Result	Ant 1 (Bottom) Result			Result	
	[MHz]	[mW]	[mW]			[dBm]	[mW]
Low	2412.0	16.00	16.22			15.08	32.21
Mid	2437.0	21.88	24.10			16.63	45.98
High	2462.0	13.06	13.96			14.32	27.03

Antenna 0 (Side)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
Low	2412.0	-0.07	2.15	9.90	0.06	12.04	16.00
Mid	2437.0	1.31	2.13	9.90	0.06	13.40	21.88
High	2462.0	-0.92	2.13	9.89	0.06	11.16	13.06

Antenna 1 (Bottom)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
Low	2412.0	-0.01	2.15	9.90	0.06	12.10	16.22
Mid	2437.0	1.73	2.13	9.90	0.06	13.82	24.10
High	2462.0	-0.63	2.13	9.89	0.06	11.45	13.96

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

[Pre check]

Antenna 0 (Side)

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Result (Ant 1 +Ant 0)		
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
0	8	2417.0	2.90	2.15	9.90	0.06	15.01	31.70	18.38	68.94	**Worst**
0	9	2417.0	2.81	2.15	9.90	0.12	14.98	31.48	18.28	67.37	
0	10	2417.0	2.76	2.15	9.90	0.17	14.98	31.48	18.21	66.23	
0	11	2417.0	2.67	2.15	9.90	0.22	14.94	31.19	18.18	65.78	
0	12	2417.0	2.54	2.15	9.90	0.31	14.90	30.90	18.26	66.96	
0	13	2417.0	2.18	2.15	9.90	0.39	14.62	28.97	17.87	61.25	
0	14	2417.0	1.88	2.15	9.90	0.43	14.36	27.29	17.40	54.90	
0	15	2417.0	1.26	2.15	9.90	0.46	13.77	23.82	16.98	49.88	

Antenna 1 (Bottom)

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
1	8	2417.0	3.61	2.14	9.90	0.06	15.71	37.24
1	9	2417.0	3.39	2.14	9.90	0.12	15.55	35.89
1	10	2417.0	3.20	2.14	9.90	0.17	15.41	34.75
1	11	2417.0	3.13	2.14	9.90	0.22	15.39	34.59
1	12	2417.0	3.22	2.14	9.90	0.31	15.57	36.06
1	13	2417.0	2.66	2.14	9.90	0.39	15.09	32.28
1	14	2417.0	1.94	2.14	9.90	0.43	14.41	27.61
1	15	2417.0	1.66	2.14	9.90	0.46	14.16	26.06

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

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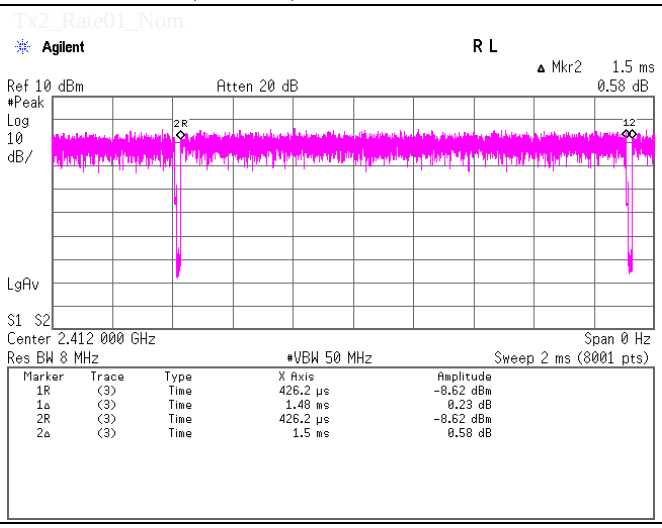
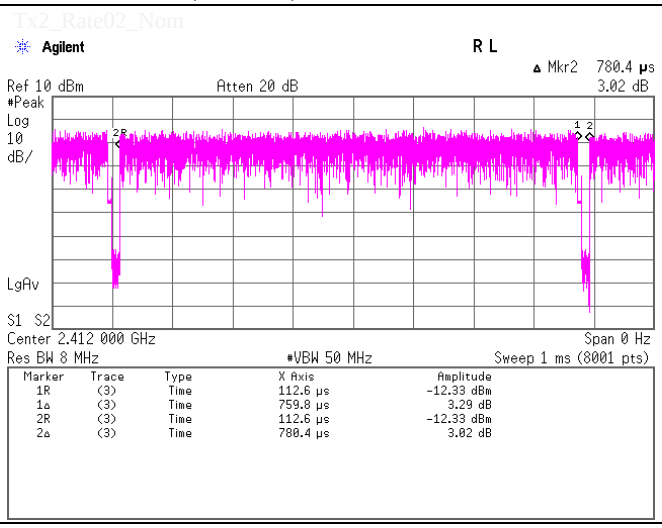
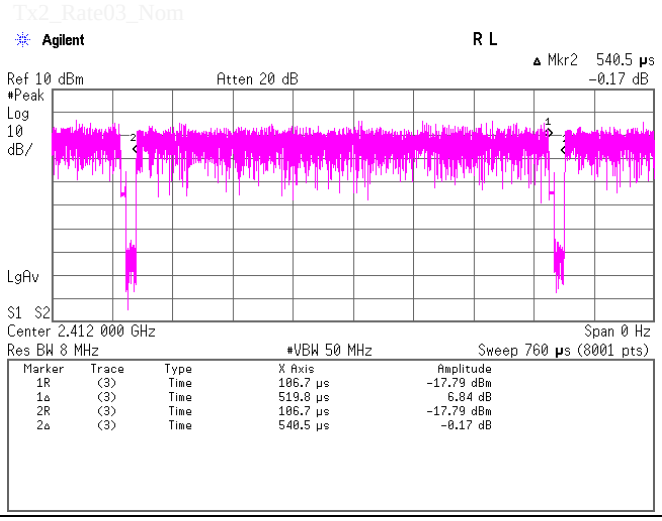
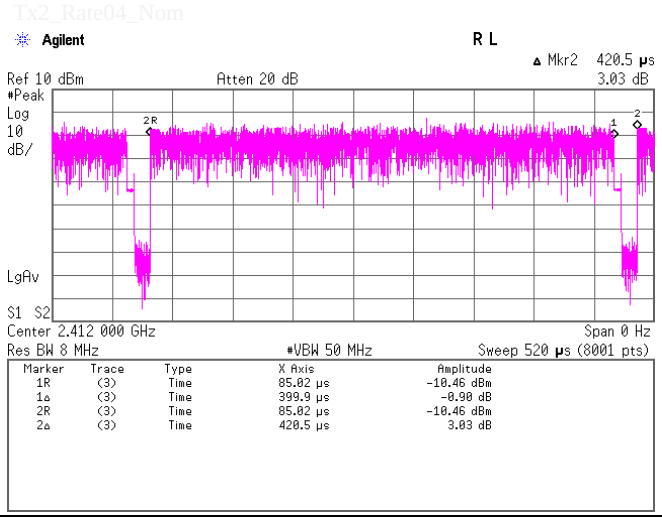
Duty Factor Caliculation chart for Maximum Conducted Output Power

8(MCS): Duty Factor =10*log(1/x)= 0.06 dB **x:Ton/(Ton+Toff)= 1.48 / 1.50**	**9(MCS): Duty Factor =10*log(1/x)= 0.12 dB** **x:Ton/(Ton+Toff)= 0.76 / 0.78**
	
10(MCS): Duty Factor =10*log(1/x)= 0.17 dB **x:Ton/(Ton+Toff)= 0.52 / 0.54**	**11(MCS): Duty Factor =10*log(1/x)= 0.22 dB** **x:Ton/(Ton+Toff)= 0.40 / 0.42**
	

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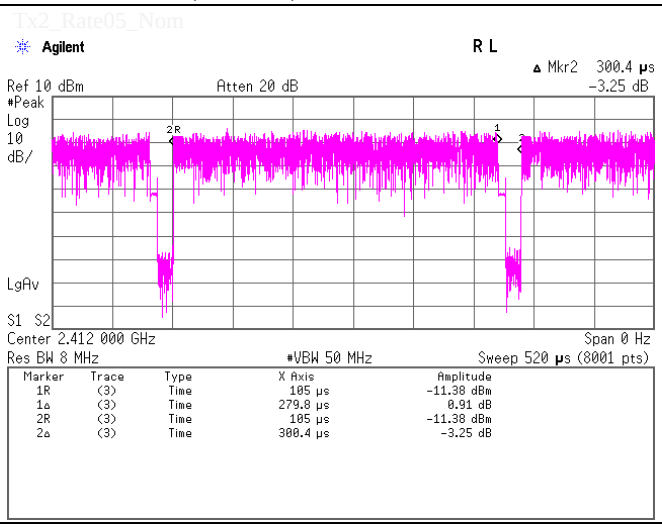
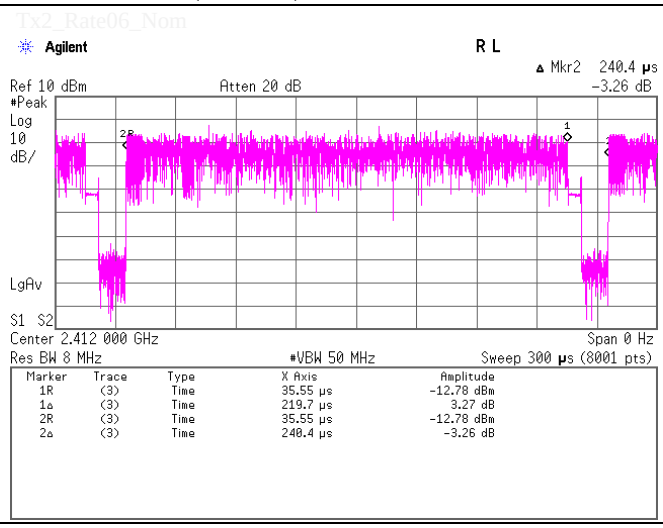
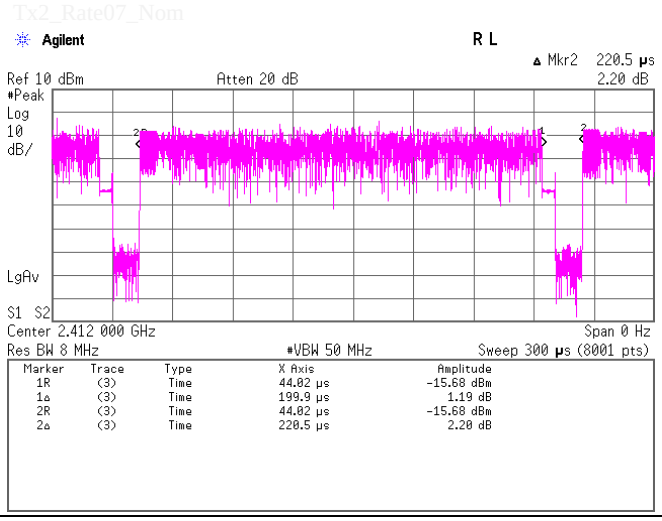
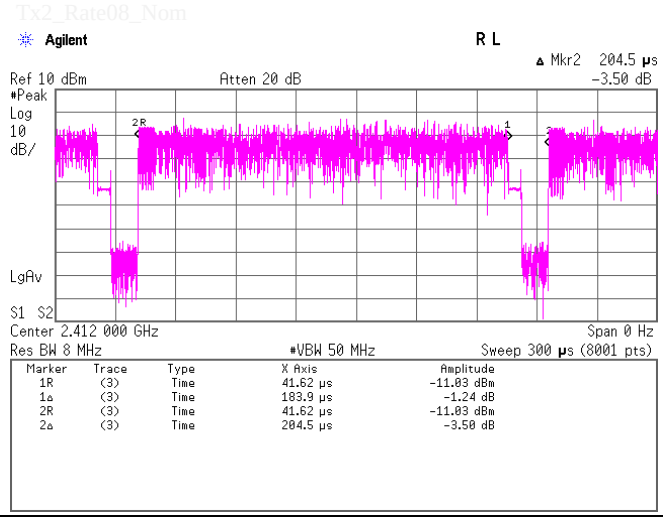
Duty Factor Caliculation chart for Maximum Conducted Output Power

12(MCS): Duty Factor =10*log(1/x)= 0.31 dB **x:Ton/(Ton+Toff)= 0.28 / 0.30**	**13(MCS): Duty Factor =10*log(1/x)= 0.39 dB** **x:Ton/(Ton+Toff)= 0.22 / 0.24**
	
14(MCS): Duty Factor =10*log(1/x)= 0.43 dB **x:Ton/(Ton+Toff)= 0.20 / 0.22**	**15(MCS): Duty Factor =10*log(1/x)= 0.46 dB** **x:Ton/(Ton+Toff)= 0.18 / 0.20**
	

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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room			
Date	September 2, 2014				
Temperature / Humidity	26deg.C , 56%RH				
Engineer	Shinichi Takano				
Mode	Tx, IEEE 802.11n (HT40), SISO, PN9,	worst antenna :	0	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	6.35	2.12	9.90	18.37	68.71	30.00	1000	11.63
Low *1	2427.0	12.98	2.12	9.90	25.00	316.23	30.00	1000	5.00
Mid	2437.0	11.41	2.10	9.90	23.41	219.28	30.00	1000	6.59
High	2452.0	8.31	2.10	9.90	20.31	107.40	30.00	1000	9.69

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

*1: Measurement was performed additionally since the channel has the highest power setting.

[Pre check]

Antenna 0 (Side)

	Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
0	0	2427.0	12.98	2.12	9.90	**25.00**	316.23	30.00	1000	**5.00**	**Worst**
0	1	2427.0	11.86	2.12	9.90	23.88	244.34	30.00	1000	6.12	
0	2	2427.0	12.18	2.12	9.90	24.20	263.03	30.00	1000	5.80	
0	3	2427.0	12.30	2.12	9.90	24.32	270.40	30.00	1000	5.68	
0	4	2427.0	12.04	2.12	9.90	24.06	254.68	30.00	1000	5.94	
0	5	2427.0	12.17	2.12	9.90	24.19	262.42	30.00	1000	5.81	
0	6	2427.0	11.67	2.12	9.90	23.69	233.88	30.00	1000	6.31	
0	7	2427.0	11.13	2.12	9.90	23.15	206.54	30.00	1000	6.85	

Antenna 1 (Bottom)

	Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
1	0	2427.0	12.87	2.12	9.90	24.89	308.32	30.00	1000	5.11
1	1	2427.0	12.06	2.12	9.90	24.08	255.86	30.00	1000	5.92
1	2	2427.0	12.30	2.12	9.90	24.32	270.40	30.00	1000	5.68
1	3	2427.0	12.03	2.12	9.90	24.05	254.10	30.00	1000	5.95
1	4	2427.0	12.09	2.12	9.90	24.11	257.63	30.00	1000	5.89
1	5	2427.0	12.01	2.12	9.90	24.03	252.93	30.00	1000	5.97
1	6	2427.0	11.64	2.12	9.90	23.66	232.27	30.00	1000	6.34
1	7	2427.0	11.31	2.12	9.90	23.33	215.28	30.00	1000	6.67

Sample Calculation:

Result = Reading + Cable Loss + 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	May 7, 2014	May 8, 2014	May 9, 2014
Temperature / Humidity	26deg.C , 39%RH	26deg.C , 37%RH	27deg.C , 40%RH
Engineer	Tatsuya Arai	Hikaru Shirasawa	Shinichi Takano
Mode	Tx, IEEE 802.11n (HT40), SISO, PN9,		

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

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
Low	2422.0	-4.07	2.14	9.90	0.06	8.03	6.35
Mid	2437.0	-0.02	2.13	9.90	0.06	12.07	16.11
High	2452.0	-3.68	2.13	9.89	0.06	8.40	6.92

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

[Pre check]
Antenna 0 (Side)

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]
0	0	2427.0	2.08	2.15	9.90	0.06	14.19	26.24
0	1	2427.0	2.00	2.15	9.90	0.12	14.17	26.12
0	2	2427.0	1.91	2.15	9.90	0.17	14.13	25.88
0	3	2427.0	1.72	2.15	9.90	0.22	13.99	25.06
0	4	2427.0	1.65	2.15	9.90	0.31	14.01	25.18
0	5	2427.0	1.26	2.15	9.90	0.39	13.70	23.44
0	6	2427.0	0.64	2.15	9.90	0.43	13.12	20.51
0	7	2427.0	0.41	2.15	9.90	0.47	12.93	19.63

Antenna 1 (Bottom)

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Result [dBm]	Result [mW]	
1	0	2427.0	2.66	2.14	9.90	0.06	**14.76**	29.92	**Worst**
1	1	2427.0	2.50	2.14	9.90	0.12	14.66	29.24	
1	2	2427.0	2.45	2.14	9.90	0.17	14.66	29.24	
1	3	2427.0	2.31	2.14	9.90	0.22	14.57	28.64	
1	4	2427.0	2.34	2.14	9.90	0.31	14.69	29.44	
1	5	2427.0	1.46	2.14	9.90	0.39	13.89	24.49	
1	6	2427.0	1.00	2.14	9.90	0.43	13.47	22.23	
1	7	2427.0	0.57	2.14	9.90	0.47	13.08	20.32	

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

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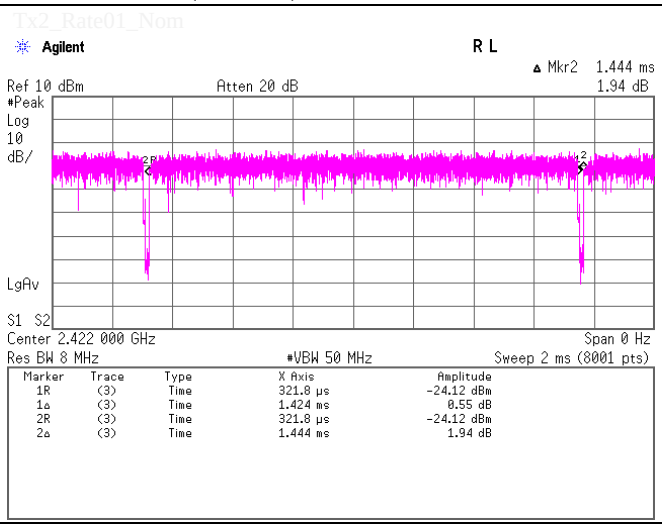
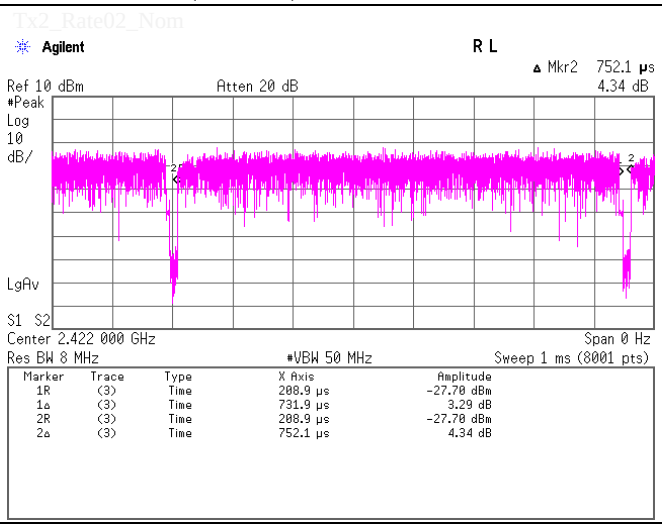
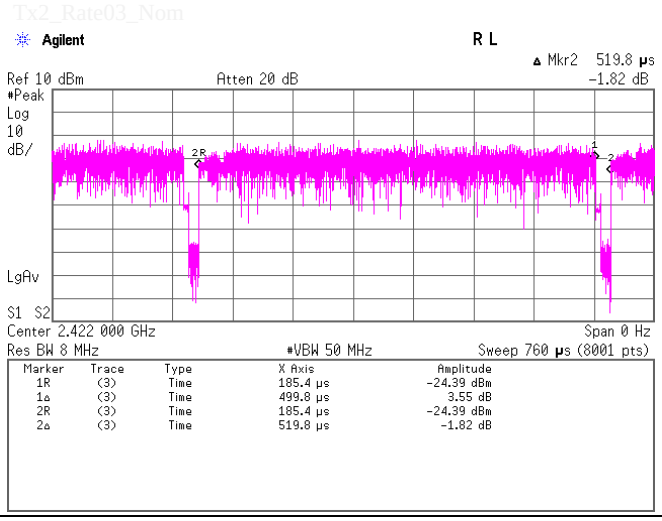
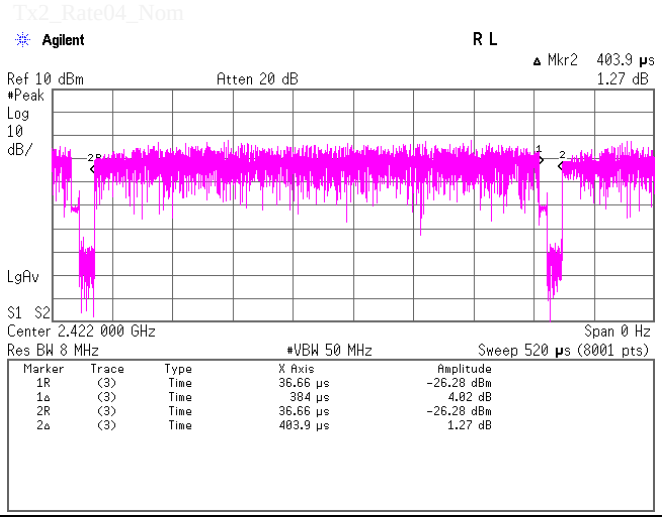
Duty Factor Caliculation chart for Maximum Conducted Output Power

0(MCS): Duty Factor =10*log(1/x)= 0.06 dB **x:Ton/(Ton+Toff)= 1.42 / 1.44**	**1(MCS): Duty Factor =10*log(1/x)= 0.12 dB** **x:Ton/(Ton+Toff)= 0.73 / 0.75**
	
2(MCS): Duty Factor =10*log(1/x)= 0.17 dB **x:Ton/(Ton+Toff)= 0.50 / 0.52**	**3(MCS): Duty Factor =10*log(1/x)= 0.22 dB** **x:Ton/(Ton+Toff)= 0.38 / 0.40**
	

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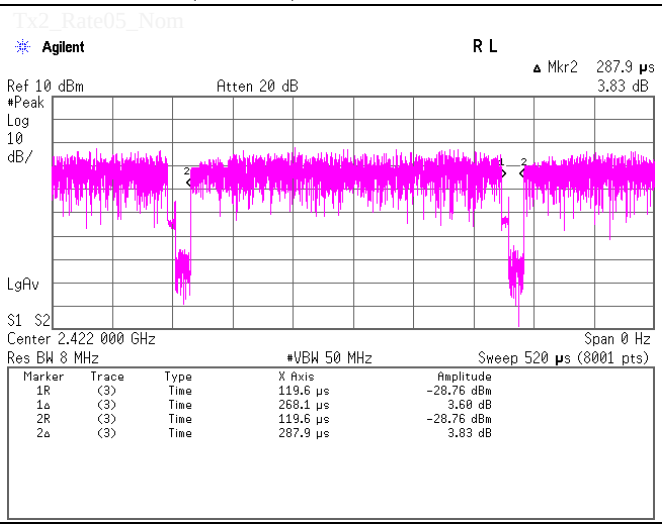
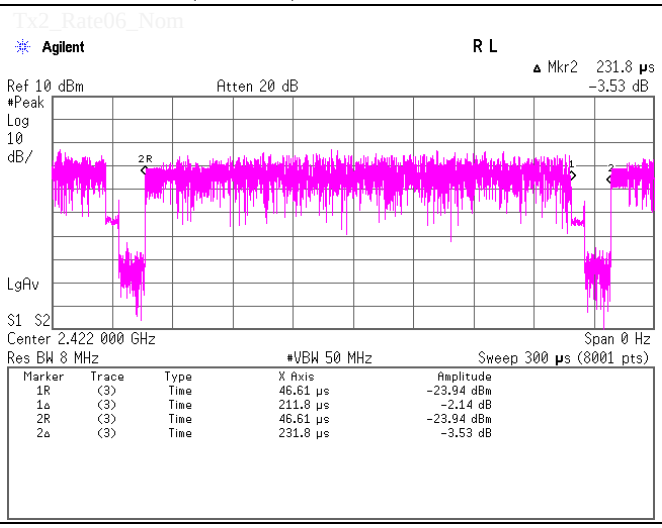
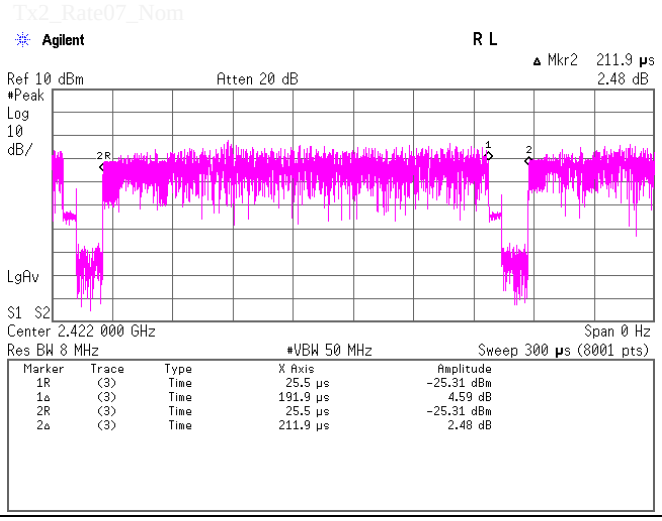
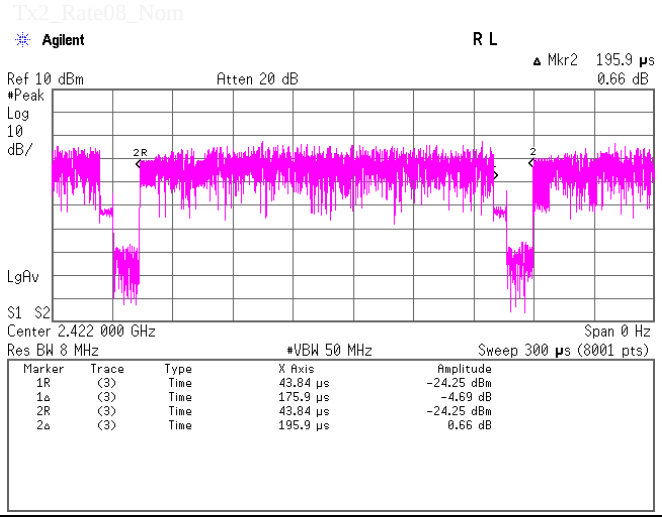
Duty Factor Caliculation chart for Maximum Conducted Output Power

4(MCS): Duty Factor =10*log(1/x)= 0.31 dB **x:Ton/(Ton+Toff)= 0.27 / 0.29**	**5(MCS): Duty Factor =10*log(1/x)= 0.39 dB** **x:Ton/(Ton+Toff)= 0.21 / 0.23**
	
6(MCS): Duty Factor =10*log(1/x)= 0.43 dB **x:Ton/(Ton+Toff)= 0.19 / 0.21**	**7(MCS): Duty Factor =10*log(1/x)= 0.47 dB** **x:Ton/(Ton+Toff)= 0.18 / 0.20**
	

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Maximum Peak Conducted Output Power

(PKPM1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	September 2, 2014		
Temperature / Humidity	26deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n (HT40), MIMO, PN9,	worst data mode :	8 (MCS)

Antenna 0 (Side) + Antenna 1 (Bottom)

Ch	Freq.	Result Ant 0 (Side)	Result Ant 1 (Bottom)		Result Ant 0 (Side) + Ant 1 (Bottom)		Limit		Margin
	[MHz]	[mW]	[mW]		[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2422.0	64.71	63.53		21.08	128.25	30.00	1000	8.92
Low *1	2427.0	264.24	258.23		27.18	522.47	30.00	1000	2.82
Mid	2437.0	178.65	176.20		25.50	354.85	30.00	1000	4.50
High	2452.0	80.72	73.79		21.89	154.51	30.00	1000	8.11

Antenna 0 (Side) (* 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	6.09	2.12	9.90	18.11	64.71	30.00	1000	11.89
Low *1	2427.0	12.19	2.13	9.90	24.22	264.24	30.00	1000	5.78
Mid	2437.0	10.52	2.10	9.90	22.52	178.65	30.00	1000	7.48
High	2452.0	7.07	2.10	9.90	19.07	80.72	30.00	1000	10.93

Antenna 1 (Bottom) (* 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	6.01	2.12	9.90	18.03	63.53	30.00	1000	11.97
Low *1	2427.0	12.09	2.13	9.90	24.12	258.23	30.00	1000	5.88
Mid	2437.0	10.46	2.10	9.90	22.46	176.20	30.00	1000	7.54
High	2452.0	6.68	2.10	9.90	18.68	73.79	30.00	1000	11.32

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

*1: Measurement was performed additionally since the channel has the highest power setting.

[Pre check]

Mode	Freq.	Reading Antenna 0 (Side)		Reading Antenna 1 (Bottom)		Reading Antenna 0 (Side) + 1 (Bottom)		
(MCS)	[MHz]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
8	2427.0	12.19	16.56	12.09	16.18	15.15	32.74	**Worst**
9	2427.0	11.98	15.78	11.92	15.56	14.96	31.34	
10	2427.0	11.83	15.24	11.73	14.89	14.79	30.13	
11	2427.0	12.01	15.89	11.84	15.28	14.94	31.16	
12	2427.0	12.12	16.29	12.04	16.00	15.09	32.29	
13	2427.0	11.51	14.16	11.50	14.13	14.52	28.28	
14	2427.0	11.24	13.30	11.13	12.97	14.20	26.28	
15	2427.0	11.02	12.65	10.87	12.22	13.96	24.87	

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Maximum Conducted Output Power (Reference data)

(AVGPM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room	
Date	May 7, 2014	May 8, 2014	May 9, 2014
Temperature / Humidity	26deg.C , 39%RH	26deg.C , 37%RH	27deg.C , 40%RH
Engineer	Tatsuya Arai	Hikaru Shirasawa	Shinichi Takano
Mode	Tx, IEEE802.11n (HT40), MIMO, PN9,		

Antenna 0 (Side) + Antenna 1 (Bottom)

Ch	Freq.	Ant 0 (Side) Result	Ant 1 (Bottom) Result			Result	
	[MHz]	[mW]	[mW]			[dBm]	[mW]
Low	2422.0	5.11	6.17			10.52	11.28
Mid	2437.0	15.24	16.71			15.04	31.95
High	2452.0	6.56	6.92			11.30	13.48

Antenna 0 (Side)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
Low	2422.0	-5.09	2.15	9.90	0.12	7.08	5.11
Mid	2437.0	-0.34	2.15	9.90	0.12	11.83	15.24
High	2452.0	-3.97	2.13	9.89	0.12	8.17	6.56

Antenna 1 (Bottom)

Ch	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
Low	2422.0	-4.26	2.14	9.90	0.12	7.90	6.17
Mid	2437.0	0.07	2.14	9.90	0.12	12.23	16.71
High	2452.0	-3.74	2.13	9.89	0.12	8.40	6.92

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

[Pre check]

Antenna 0 (Side)

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result		Result		
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
0	8	2427.0	1.98	2.15	9.90	0.12	14.15	26.00	17.58	57.33	**Worst**
0	9	2427.0	1.85	2.15	9.90	0.22	14.12	25.82	17.55	56.94	
0	10	2427.0	1.77	2.15	9.90	0.31	14.13	25.88	17.55	56.93	
0	11	2427.0	1.60	2.15	9.90	0.38	14.03	25.29	17.41	55.08	
0	12	2427.0	1.44	2.15	9.90	0.52	14.01	25.18	17.53	56.66	
0	13	2427.0	1.09	2.15	9.90	0.64	13.78	23.88	17.03	50.43	
0	14	2427.0	0.76	2.15	9.90	0.67	13.48	22.28	16.59	45.61	
0	15	2427.0	0.35	2.15	9.90	0.71	13.11	20.46	16.28	42.44	

Antenna 1 (Bottom)

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
1	8	2417.0	2.80	2.14	9.90	0.12	14.96	31.33
1	9	2427.0	2.67	2.14	9.90	0.22	14.93	31.12
1	10	2427.0	2.57	2.14	9.90	0.31	14.92	31.05
1	11	2427.0	2.32	2.14	9.90	0.38	14.74	29.79
1	12	2427.0	2.42	2.14	9.90	0.52	14.98	31.48
1	13	2427.0	1.56	2.14	9.90	0.64	14.24	26.55
1	14	2427.0	0.97	2.14	9.90	0.67	13.68	23.33
1	15	2427.0	0.67	2.14	9.90	0.71	13.42	21.98

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + Duty Factor

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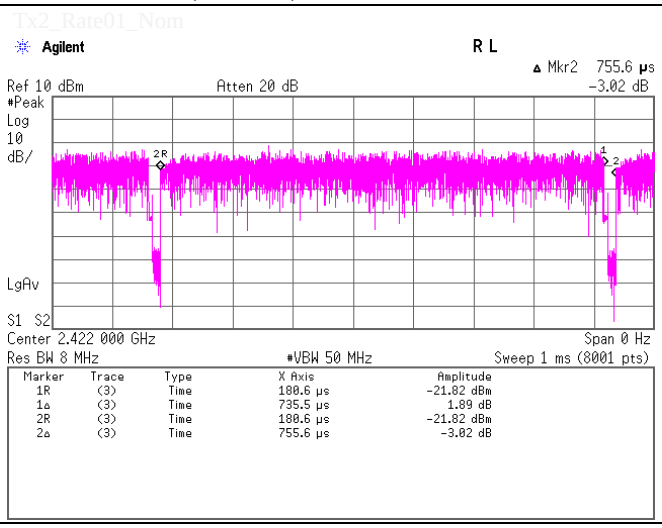
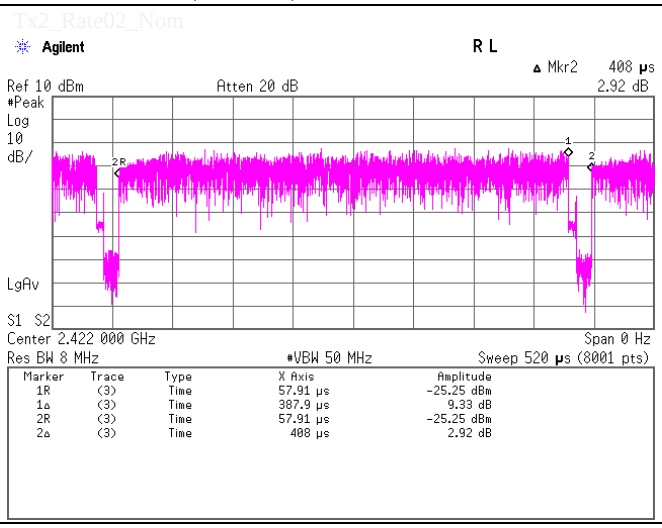
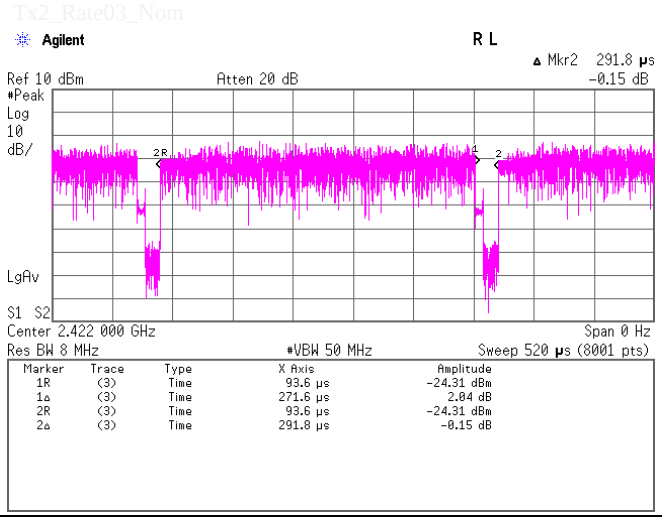
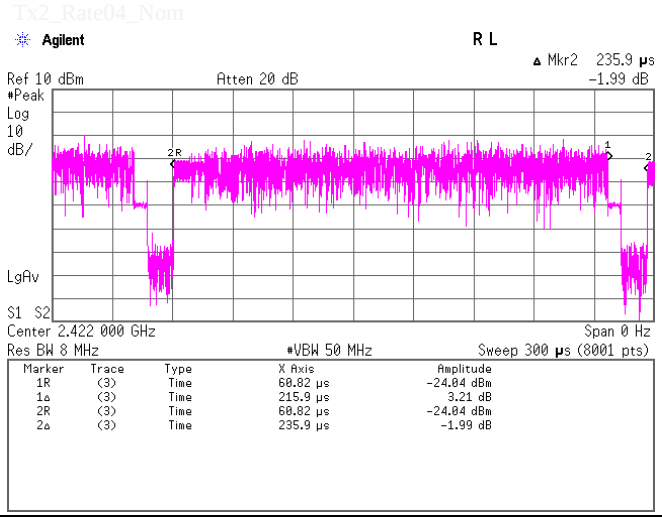
Duty Factor Caliculation chart for Maximum Conducted Output Power

8(MCS): Duty Factor =10*log(1/x)= 0.12 dB **x:Ton/(Ton+Toff)= 0.74 / 0.76**	**9(MCS): Duty Factor =10*log(1/x)= 0.22 dB** **x:Ton/(Ton+Toff)= 0.39 / 0.41**
	
10(MCS): Duty Factor =10*log(1/x)= 0.31 dB **x:Ton/(Ton+Toff)= 0.27 / 0.29**	**11(MCS): Duty Factor =10*log(1/x)= 0.38 dB** **x:Ton/(Ton+Toff)= 0.22 / 0.24**
	

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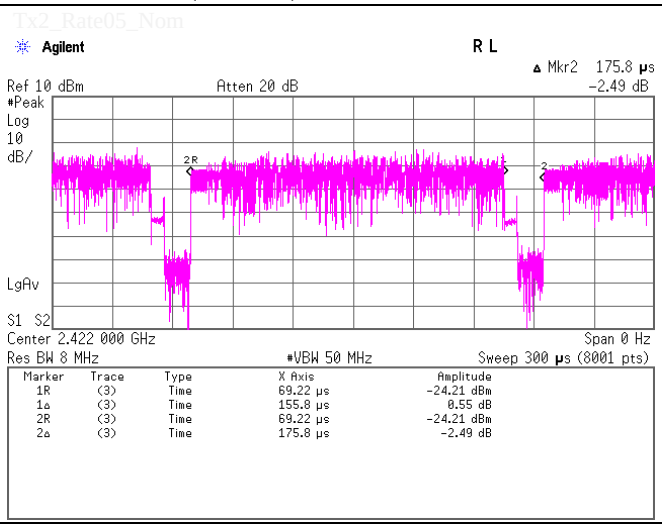
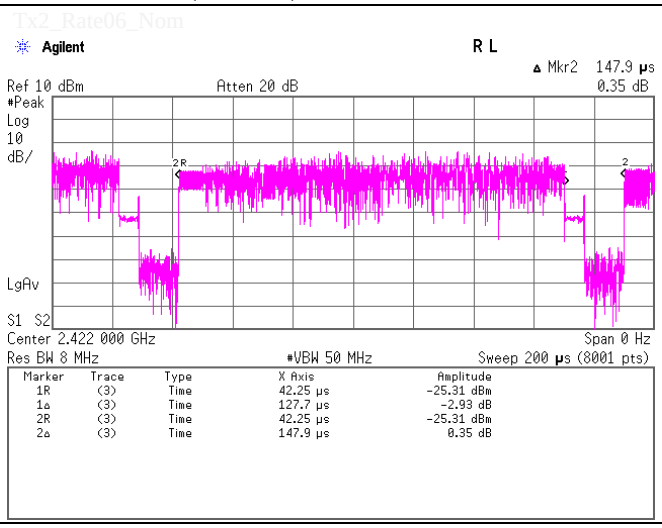
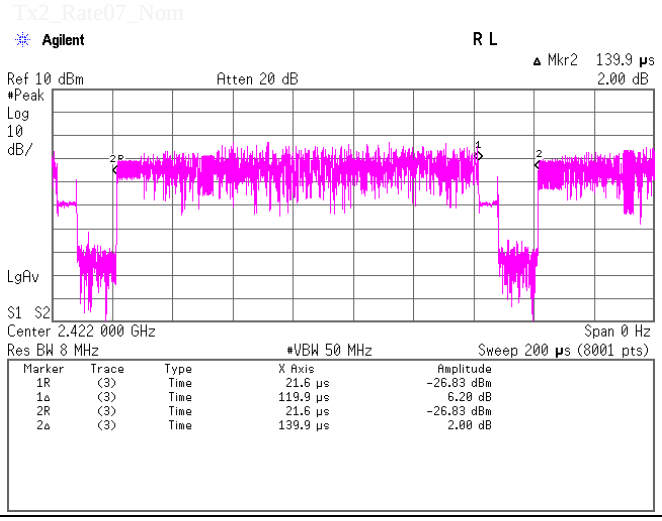
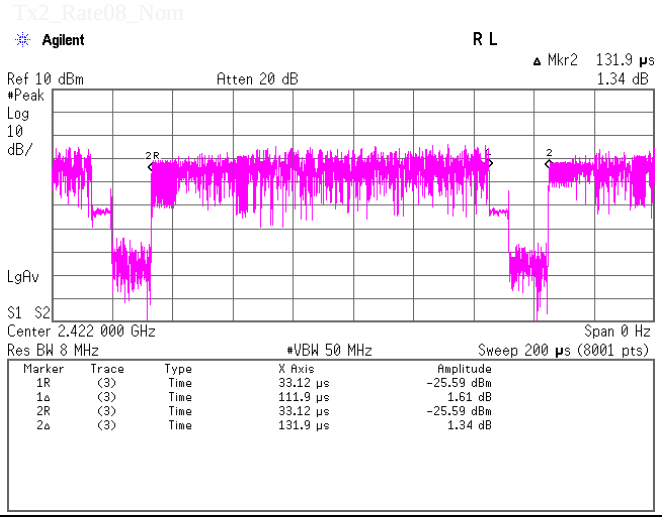
Duty Factor Caliculation chart for Maximum Conducted Output Power

12(MCS): Duty Factor =10*log(1/x)= 0.52 dB **x:Ton/(Ton+Toff)= 0.16 / 0.18**	**13(MCS): Duty Factor =10*log(1/x)= 0.64 dB** **x:Ton/(Ton+Toff)= 0.13 / 0.15**
	
14(MCS): Duty Factor =10*log(1/x)= 0.67 dB **x:Ton/(Ton+Toff)= 0.12 / 0.14**	**15(MCS): Duty Factor =10*log(1/x)= 0.71 dB** **x:Ton/(Ton+Toff)= 0.11 / 0.13**
	

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	25 deg.C, 56 %RH	25 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11b, PN9, antenna port 0, 1Mbps		

(* 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	46.6	26.4	13.6	41.1	45.5	73.9	28.4	100	149	
Hori.	2499.782	PK	46.5	26.6	13.6	41.1	45.6	73.9	28.3	100	210	
Hori.	4824.000	PK	44.3	30.7	6.0	39.8	41.2	73.9	32.7	100	0	
Hori.	7236.000	PK	45.4	36.7	7.1	40.2	49.0	73.9	24.9	100	0	
Hori.	9648.000	PK	44.5	38.5	8.3	40.1	51.2	73.9	22.7	100	0	
Hori.	12060.000	PK	45.1	39.5	9.3	39.6	54.3	73.9	19.6	100	0	
Hori.	2390.000	AV	37.2	26.4	13.6	41.1	36.1	53.9	17.8	100	149	
Hori.	2499.782	AV	37.5	26.6	13.6	41.1	36.6	53.9	17.3	100	210	
Hori.	4824.000	AV	34.4	30.7	6.0	39.8	31.3	53.9	22.6	100	0	
Hori.	7236.000	AV	35.5	36.7	7.1	40.2	39.1	53.9	14.8	100	0	
Hori.	9648.000	AV	35.0	38.5	8.3	40.1	41.7	53.9	12.2	100	0	
Hori.	12060.000	AV	35.8	39.5	9.3	39.6	45.0	53.9	8.9	100	0	
Vert.	2390.000	PK	46.3	26.4	13.6	41.1	45.2	73.9	28.7	126	180	
Vert.	2499.994	PK	47.0	26.6	13.6	41.1	46.1	73.9	27.8	126	180	
Vert.	4824.000	PK	45.3	30.7	6.0	39.8	42.2	73.9	31.7	100	0	
Vert.	7236.000	PK	45.4	36.7	7.1	40.2	49.0	73.9	24.9	100	0	
Vert.	9648.000	PK	44.2	38.5	8.3	40.1	50.9	73.9	23.0	100	0	
Vert.	12060.000	PK	45.0	39.5	9.3	39.6	54.2	73.9	19.7	100	0	
Vert.	2390.000	AV	37.3	26.4	13.6	41.1	36.2	53.9	17.7	126	180	
Vert.	2499.994	AV	37.3	26.6	13.6	41.1	36.4	53.9	17.5	126	180	
Vert.	4824.000	AV	35.7	30.7	6.0	39.8	32.6	53.9	21.3	100	0	
Vert.	7236.000	AV	36.2	36.7	7.1	40.2	39.8	53.9	14.1	100	0	
Vert.	9648.000	AV	35.4	38.5	8.3	40.1	42.1	53.9	11.8	100	0	
Vert.	12060.000	AV	35.9	39.5	9.3	39.6	45.1	53.9	**8.8**	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	86.8	26.4	13.6	41.1	85.7	-	-	carrier
Hori.	2396.768	PK	48.9	26.4	13.6	41.1	47.8	65.7	17.9	
Hori.	2400.000	PK	46.7	26.4	13.6	41.1	45.6	65.7	20.1	
Vert.	2412.000	PK	87.9	26.4	13.6	41.1	86.8	-	-	carrier
Vert.	2396.977	PK	49.8	26.4	13.6	41.1	48.7	66.8	18.1	
Vert.	2400.000	PK	48.1	26.4	13.6	41.1	47.0	66.8	19.8	

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	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	25 deg.C, 56 %RH	25 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11b, PN9, antenna port 0, 1Mbps		

(* 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.	2499.979	PK	45.7	26.6	13.6	41.1	44.8	73.9	29.1	100	112	
Hori.	4874.000	PK	43.5	30.9	6.0	39.7	40.7	73.9	33.2	100	359	
Hori.	7311.000	PK	45.3	36.8	7.1	40.3	48.9	73.9	25.0	100	0	
Hori.	9748.000	PK	44.3	38.6	8.1	40.0	51.0	73.9	22.9	100	359	
Hori.	12185.000	PK	43.7	39.4	9.4	39.8	52.7	73.9	21.2	100	0	
Hori.	2499.979	AV	36.6	26.6	13.6	41.1	35.7	53.9	18.2	100	112	
Hori.	4874.000	AV	35.5	30.9	6.0	39.7	32.7	53.9	21.2	100	359	
Hori.	7311.000	AV	36.9	36.8	7.1	40.3	40.5	53.9	13.4	100	0	
Hori.	9748.000	AV	34.6	38.6	8.1	40.0	41.3	53.9	12.6	100	359	
Hori.	12185.000	AV	36.0	39.4	9.4	39.8	45.0	53.9	**8.9**	100	0	
Vert.	2499.992	PK	46.1	26.6	13.6	41.1	45.2	73.9	28.7	100	83	
Vert.	4874.000	PK	41.3	30.9	6.0	39.7	38.5	73.9	35.4	100	359	
Vert.	7311.000	PK	46.1	36.8	7.1	40.3	49.7	73.9	24.2	100	0	
Vert.	9748.000	PK	44.2	38.6	8.1	40.0	50.9	73.9	23.0	100	359	
Vert.	12185.000	PK	44.5	39.4	9.4	39.8	53.5	73.9	20.4	100	0	
Vert.	2499.992	AV	37.6	26.6	13.6	41.1	36.7	53.9	17.2	100	83	
Vert.	4874.000	AV	35.4	30.9	6.0	39.7	32.6	53.9	21.3	100	359	
Vert.	7311.000	AV	36.7	36.8	7.1	40.3	40.3	53.9	13.6	100	0	
Vert.	9748.000	AV	35.4	38.6	8.1	40.0	42.1	53.9	11.8	100	359	
Vert.	12185.000	AV	35.5	39.4	9.4	39.8	44.5	53.9	9.4	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	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	25 deg.C, 56 %RH	25 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11b, PN9, antenna port 0, 1Mbps		

(* 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	45.2	26.6	13.6	41.1	44.3	73.9	29.6	140	167	
Hori.	2499.996	PK	46.6	26.6	13.6	41.1	45.7	73.9	28.2	157	290	
Hori.	4924.000	PK	45.9	31.1	5.9	39.6	43.3	73.9	30.6	100	359	
Hori.	7386.000	PK	46.4	36.9	7.2	40.4	50.1	73.9	23.8	100	0	
Hori.	9848.000	PK	44.8	38.6	8.1	39.9	51.6	73.9	22.3	100	359	
Hori.	12310.000	PK	44.9	39.3	9.4	39.9	53.7	73.9	20.2	100	0	
Hori.	2483.500	AV	36.2	26.6	13.6	41.1	35.3	53.9	18.6	140	167	
Hori.	2499.996	AV	37.0	26.6	13.6	41.1	36.1	53.9	17.8	157	290	
Hori.	4924.000	AV	34.3	31.1	5.9	39.6	31.7	53.9	22.2	100	359	
Hori.	7386.000	AV	36.5	36.9	7.2	40.4	40.2	53.9	13.7	100	0	
Hori.	9848.000	AV	35.7	38.6	8.1	39.9	42.5	53.9	11.4	100	359	
Hori.	12310.000	AV	0.0	39.3	9.4	39.9	8.8	53.9	45.1	100	0	
Vert.	2483.500	PK	46.0	26.6	13.6	41.1	45.1	73.9	28.8	146	191	
Vert.	2499.958	PK	46.9	26.6	13.6	41.1	46.0	73.9	27.9	146	191	
Vert.	4924.000	PK	45.6	31.1	5.9	39.6	43.0	73.9	30.9	146	33	
Vert.	7386.000	PK	47.2	36.9	7.2	40.4	50.9	73.9	23.0	100	359	
Vert.	9848.000	PK	44.6	38.6	8.1	39.9	51.4	73.9	22.5	100	0	
Vert.	12310.000	PK	44.8	39.3	9.4	39.9	53.6	73.9	20.3	100	359	
Vert.	2483.500	AV	37.0	26.6	13.6	41.1	36.1	53.9	17.8	146	191	
Vert.	2499.958	AV	36.7	26.6	13.6	41.1	35.8	53.9	18.1	146	191	
Vert.	4924.000	AV	36.9	31.1	5.9	39.6	34.3	53.9	19.6	146	33	
Vert.	7386.000	AV	36.4	36.9	7.2	40.4	40.1	53.9	13.8	100	359	
Vert.	9848.000	AV	35.4	38.6	8.1	39.9	42.2	53.9	11.7	100	0	
Vert.	12310.000	AV	35.4	39.3	9.4	39.9	44.2	53.9	**9.7**	100	359	

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	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	25 deg.C, 56 %RH	25 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11n HT20, PN9, antenna port 0+1, MCS8		

(* 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	49.6	26.4	13.6	41.1	48.5	73.9	25.4	151	244	
Hori.	2499.808	PK	49.5	26.6	13.6	41.1	48.6	73.9	25.3	125	159	
Hori.	4824.000	PK	43.7	30.7	6.0	39.8	40.6	73.9	33.3	100	0	
Hori.	7236.000	PK	44.7	36.7	7.1	40.2	48.3	73.9	25.6	100	359	
Hori.	9648.000	PK	44.6	38.5	8.3	40.1	51.3	73.9	22.6	100	0	
Hori.	12060.000	PK	45.1	39.5	9.3	39.6	54.3	73.9	19.6	100	359	
Hori.	2390.000	AV	39.5	26.4	13.6	41.1	38.4	53.9	15.5	151	244	
Hori.	2499.808	AV	42.7	26.6	13.6	41.1	41.8	53.9	12.1	125	159	
Hori.	4824.000	AV	33.9	30.7	6.0	39.8	30.8	53.9	23.1	100	0	
Hori.	7236.000	AV	35.1	36.7	7.1	40.2	38.7	53.9	15.2	100	359	
Hori.	9648.000	AV	34.8	38.5	8.3	40.1	41.5	53.9	12.4	100	0	
Hori.	12060.000	AV	33.4	39.5	9.3	39.6	42.6	53.9	11.3	100	359	
Vert.	2390.000	PK	47.6	26.4	13.6	41.1	46.5	73.9	27.4	143	191	
Vert.	2499.987	PK	46.7	26.6	13.6	41.1	45.8	73.9	28.1	143	354	
Vert.	4824.000	PK	45.3	30.7	6.0	39.8	42.2	73.9	31.7	100	0	
Vert.	7236.000	PK	44.7	36.7	7.1	40.2	48.3	73.9	25.6	100	359	
Vert.	9648.000	PK	44.3	38.5	8.3	40.1	51.0	73.9	22.9	100	0	
Vert.	12060.000	PK	44.5	39.5	9.3	39.6	53.7	73.9	20.2	100	359	
Vert.	2390.000	AV	37.9	26.4	13.6	41.1	36.8	53.9	17.1	143	191	
Vert.	2499.987	AV	35.9	26.6	13.6	41.1	35.0	53.9	18.9	143	354	
Vert.	4824.000	AV	34.9	30.7	6.0	39.8	31.8	53.9	22.1	100	0	
Vert.	7236.000	AV	35.2	36.7	7.1	40.2	38.8	53.9	15.1	100	359	
Vert.	9648.000	AV	35.2	38.5	8.3	40.1	41.9	53.9	12.0	100	0	
Vert.	12060.000	AV	34.8	39.5	9.3	39.6	44.0	53.9	**9.9**	100	359	

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	84.6	26.4	13.6	41.1	83.5	-	-	carrier
Hori.	2400.000	PK	55.6	26.4	13.6	41.1	54.5	63.5	9.0	
Vert.	2412.000	PK	83.3	26.4	13.6	41.1	82.2	-	-	carrier
Vert.	2400.000	PK	51.6	26.4	13.6	41.1	50.5	62.2	11.7	

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	September 9, 2014	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	22 deg.C, 54 %RH	25 deg.C, 56 %RH	22 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2417 MHz			
	Tx, IEEE802.11n HT20, PN9, antenna port 0+1, MCS8			

(* 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.	175.007	QP	47.9	15.7	7.7	32.1	39.2	43.5	4.3	180	7	
Hori.	225.006	QP	49.7	16.7	8.0	32.0	42.4	46.0	**3.6**	140	347	
Hori.	275.006	QP	45.1	17.9	8.3	32.0	39.3	46.0	6.7	121	3	
Hori.	325.006	QP	47.4	14.4	8.5	32.0	38.3	46.0	7.7	100	249	
Hori.	375.009	QP	41.9	15.7	8.7	32.0	34.3	46.0	11.7	100	314	
Hori.	2390.000	PK	56.6	26.4	13.6	41.1	55.5	73.9	18.4	116	187	
Hori.	2499.972	PK	49.8	26.6	13.6	41.1	48.9	73.9	25.0	100	0	
Hori.	4834.000	PK	44.7	30.7	6.0	39.7	41.7	73.9	32.2	100	359	
Hori.	7251.000	PK	45.3	36.7	7.1	40.3	48.8	73.9	25.1	100	0	
Hori.	9668.000	PK	45.1	38.6	8.3	40.0	52.0	73.9	21.9	100	359	
Hori.	12085.000	PK	45.3	39.5	9.3	39.7	54.4	73.9	19.5	100	0	
Hori.	2390.000	AV	41.3	26.4	13.6	41.1	40.2	53.9	13.7	116	187	
Hori.	2499.972	AV	43.1	26.6	13.6	41.1	42.2	53.9	11.7	100	0	
Hori.	4834.000	AV	35.4	30.7	6.0	39.7	32.4	53.9	21.5	100	359	
Hori.	7251.000	AV	36.3	36.7	7.1	40.3	39.8	53.9	14.1	100	0	
Hori.	9668.000	AV	35.6	38.6	8.3	40.0	42.5	53.9	11.4	100	359	
Hori.	12085.000	AV	36.2	39.5	9.3	39.7	45.3	53.9	8.6	100	0	
Vert.	125.003	QP	41.4	13.4	7.2	32.1	29.9	43.5	13.6	100	359	
Vert.	175.003	QP	44.2	15.7	7.7	32.1	35.5	43.5	8.0	100	4	
Vert.	225.004	QP	43.2	16.7	8.0	32.0	35.9	46.0	10.1	273	358	
Vert.	2390.000	PK	50.5	26.4	13.6	41.1	49.4	73.9	24.5	111	178	
Vert.	2499.991	PK	46.1	26.6	13.6	41.1	45.2	73.9	28.7	123	192	
Vert.	4834.000	PK	45.1	30.7	6.0	39.7	42.1	73.9	31.8	100	0	
Vert.	7251.000	PK	44.9	36.7	7.1	40.3	48.4	73.9	25.5	100	359	
Vert.	9668.000	PK	44.3	38.6	8.3	40.0	51.2	73.9	22.7	100	0	
Vert.	12085.000	PK	45.1	39.5	9.3	39.7	54.2	73.9	19.7	100	359	
Vert.	2390.000	AV	38.2	26.4	13.6	41.1	37.1	53.9	16.8	111	178	
Vert.	2499.991	AV	37.1	26.6	13.6	41.1	36.2	53.9	17.7	123	192	
Vert.	4834.000	AV	35.5	30.7	6.0	39.7	32.5	53.9	21.4	100	0	
Vert.	7251.000	AV	36.1	36.7	7.1	40.3	39.6	53.9	14.3	100	359	
Vert.	9668.000	AV	35.3	38.6	8.3	40.0	42.2	53.9	11.7	100	0	
Vert.	12085.000	AV	35.4	39.5	9.3	39.7	44.5	53.9	9.4	100	359	

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.	2417.000	PK	89.2	26.4	13.6	41.1	88.1	-	-	Carrier
Hori.	2400.000	PK	50.8	26.4	13.6	41.1	49.7	68.1	18.4	100k/300k
Vert.	2417.000	PK	88.9	26.4	13.6	41.1	87.8	-	-	Carrier
Vert.	2400.000	PK	49.0	26.4	13.6	41.1	47.9	67.8	19.9	100k/300k

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	September 9, 2014	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	22 deg.C, 54 %RH	25 deg.C, 56 %RH	22 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2437 MHz			
	Tx, IEEE802.11n HT20, PN9, antenna port 0+1, MCS8			

(* 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.	2499.993	PK	49.7	26.6	13.6	41.1	48.8	73.9	25.1	100	137	
Hori.	4874.000	PK	44.3	30.9	6.0	39.7	41.5	73.9	32.4	100	359	
Hori.	7311.000	PK	45.8	36.8	7.1	40.3	49.4	73.9	24.5	100	0	
Hori.	9748.000	PK	44.7	38.6	8.1	40.0	51.4	73.9	22.5	100	359	
Hori.	12185.000	PK	45.6	39.4	9.4	39.8	54.6	73.9	19.3	100	0	
Hori.	2499.993	AV	43.6	26.6	13.6	41.1	42.7	53.9	11.2	100	137	
Hori.	4874.000	AV	35.6	30.9	6.0	39.7	32.8	53.9	21.1	100	359	
Hori.	7311.000	AV	36.9	36.8	7.1	40.3	40.5	53.9	13.4	100	0	
Hori.	9748.000	AV	35.6	38.6	8.1	40.0	42.3	53.9	11.6	100	359	
Hori.	12185.000	AV	36.0	39.4	9.4	39.8	45.0	53.9	8.9	100	0	
Vert.	2499.913	PK	46.6	26.6	13.6	41.1	45.7	73.9	28.2	100	95	
Vert.	4874.000	PK	44.5	30.9	6.0	39.7	41.7	73.9	32.2	100	0	
Vert.	7311.000	PK	45.3	36.8	7.1	40.3	48.9	73.9	25.0	100	359	
Vert.	9748.000	PK	44.0	38.6	8.1	40.0	50.7	73.9	23.2	100	0	
Vert.	12185.000	PK	45.6	39.4	9.4	39.8	54.6	73.9	19.3	100	359	
Vert.	2499.913	AV	37.5	26.6	13.6	41.1	36.6	53.9	17.3	100	95	
Vert.	4874.000	AV	35.6	30.9	6.0	39.7	32.8	53.9	21.1	100	0	
Vert.	7311.000	AV	36.4	36.8	7.1	40.3	40.0	53.9	13.9	100	359	
Vert.	9748.000	AV	35.3	38.6	8.1	40.0	42.0	53.9	11.9	100	0	
Vert.	12185.000	AV	36.1	39.4	9.4	39.8	45.1	53.9	8.8	100	359	

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	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber		
Date	September 9, 2014	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	22 deg.C, 54 %RH	25 deg.C, 56 %RH	22 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11n HT20, PN9, antenna port 0+1, MCS8			

(* 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	48.1	26.6	13.6	41.1	47.2	73.9	26.7	100	202	
Hori.	2499.958	PK	49.6	26.6	13.6	41.1	48.7	73.9	25.2	100	118	
Hori.	4924.000	PK	44.7	31.1	5.9	39.6	42.1	73.9	31.8	100	359	
Hori.	7386.000	PK	45.3	36.9	7.2	40.4	49.0	73.9	24.9	100	0	
Hori.	9848.000	PK	42.8	38.6	8.1	39.9	49.6	73.9	24.3	100	359	
Hori.	12310.000	PK	44.5	39.3	9.4	39.9	53.3	73.9	20.6	100	0	
Hori.	2483.500	AV	38.9	26.6	13.6	41.1	38.0	53.9	15.9	100	202	
Hori.	2499.958	AV	43.2	26.6	13.6	41.1	42.3	53.9	11.6	100	118	
Hori.	4924.000	AV	35.7	31.1	5.9	39.6	33.1	53.9	20.8	100	359	
Hori.	7386.000	AV	36.8	36.9	7.2	40.4	40.5	53.9	13.4	100	0	
Hori.	9848.000	AV	35.6	38.6	8.1	39.9	42.4	53.9	11.5	100	359	
Hori.	12310.000	AV	35.8	39.3	9.4	39.9	44.6	53.9	**9.3**	100	0	
Vert.	2483.500	PK	46.1	26.6	13.6	41.1	45.2	73.9	28.7	100	175	
Vert.	2499.962	PK	46.5	26.6	13.6	41.1	45.6	73.9	28.3	100	0	
Vert.	4924.000	PK	44.7	31.1	5.9	39.6	42.1	73.9	31.8	100	359	
Vert.	7386.000	PK	46.0	36.9	7.2	40.4	49.7	73.9	24.2	100	0	
Vert.	9848.000	PK	44.9	38.6	8.1	39.9	51.7	73.9	22.2	100	359	
Vert.	12310.000	PK	43.6	39.3	9.4	39.9	52.4	73.9	21.5	100	0	
Vert.	2483.500	AV	37.3	26.6	13.6	41.1	36.4	53.9	17.5	100	175	
Vert.	2499.962	AV	36.6	26.6	13.6	41.1	35.7	53.9	18.2	100	0	
Vert.	4924.000	AV	35.7	31.1	5.9	39.6	33.1	53.9	20.8	100	359	
Vert.	7386.000	AV	36.9	36.9	7.2	40.4	40.6	53.9	13.3	100	0	
Vert.	9848.000	AV	35.9	38.6	8.1	39.9	42.7	53.9	11.2	100	359	
Vert.	12310.000	AV	35.7	39.3	9.4	39.9	44.5	53.9	9.4	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	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	25 deg.C, 56 %RH	22 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2422 MHz		
	Tx, IEEE802.11n HT40, PN9, antenna port 0+1, MCS8		

(* 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	51.3	26.4	13.6	41.1	50.2	73.9	23.7	100	205	
Hori.	2499.998	PK	49.2	26.6	13.6	41.1	48.3	73.9	25.6	100	115	
Hori.	4844.000	PK	43.6	30.8	6.0	39.7	40.7	73.9	33.2	100	0	
Hori.	7266.000	PK	44.6	36.7	7.1	40.3	48.1	73.9	25.8	100	359	
Hori.	9688.000	PK	44.5	38.6	8.2	40.0	51.3	73.9	22.6	100	0	
Hori.	12110.000	PK	45.0	39.4	9.4	39.7	54.1	73.9	19.8	100	359	
Hori.	2390.000	AV	39.5	26.4	13.6	41.1	38.4	53.9	15.5	100	205	*1
Hori.	2499.998	AV	43.3	26.6	13.6	41.1	42.4	53.9	11.5	100	115	*2
Vert.	2390.000	PK	48.7	26.4	13.6	41.1	47.6	73.9	26.3	116	168	
Vert.	2499.996	PK	45.9	26.6	13.6	41.1	45.0	73.9	28.9	100	136	
Vert.	4844.000	PK	43.1	30.8	6.0	39.7	40.2	73.9	33.7	100	0	
Vert.	7266.000	PK	44.0	36.7	7.1	40.3	47.5	73.9	26.4	100	359	
Vert.	9688.000	PK	44.1	38.6	8.2	40.0	50.9	73.9	23.0	100	0	
Vert.	12110.000	PK	45.0	39.4	9.4	39.7	54.1	73.9	19.8	100	359	
Vert.	2390.000	AV	38.2	26.4	13.6	41.1	37.1	53.9	16.8	116	168	*1
Vert.	2499.996	AV	36.9	26.6	13.6	41.1	36.0	53.9	17.9	100	136	*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
*1) Out of Band emission (Leakage Power)
*2) Continuous wave (no pulse emission)

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4844.000	AV	34.4	30.8	6.0	39.7	0.2	31.7	53.9	22.2	
Hori.	7266.000	AV	34.8	36.7	7.1	40.3	0.2	38.5	53.9	15.4	
Hori.	9688.000	AV	34.6	38.6	8.2	40.0	0.2	41.6	53.9	12.3	
Hori.	12110.000	AV	35.9	39.4	9.4	39.7	0.2	45.2	53.9	8.7	
Vert.	4844.000	AV	34.3	30.8	6.0	39.7	0.2	31.6	53.9	22.3	
Vert.	7266.000	AV	34.7	36.7	7.1	40.3	0.2	38.4	53.9	15.5	
Vert.	9688.000	AV	35.2	38.6	8.2	40.0	0.2	42.2	53.9	11.7	
Vert.	12110.000	AV	35.8	39.4	9.4	39.7	0.2	45.1	53.9	8.8	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier) + Duty factor
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	77.0	26.4	13.6	41.1	75.9	-	-	carrier
Hori.	2400.000	PK	48.7	26.4	13.6	41.1	47.6	55.9	**8.3**	
Vert.	2422.000	PK	75.5	26.4	13.6	41.1	74.4	-	-	carrier
Vert.	2400.000	PK	46.3	26.4	13.6	41.1	45.2	54.4	9.2	

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber			
Date	September 9, 2014	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	22 deg.C, 54 %RH	25 deg.C, 56 %RH	22 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2427 MHz			
	Tx, IEEE802.11n HT40, PN9, antenna port 0+1, MCS8			

(* 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	61.6	26.4	13.6	41.1	60.5	73.9	13.4	100	184	
Hori.	2499.762	PK	49.1	26.6	13.6	41.1	48.2	73.9	25.7	100	173	
Hori.	4854.000	PK	43.9	30.8	6.0	39.7	41.0	73.9	32.9	100	359	
Hori.	7281.000	PK	44.6	36.8	7.1	40.3	48.2	73.9	25.7	100	0	
Hori.	9708.000	PK	43.3	38.6	8.1	40.0	50.0	73.9	23.9	100	359	
Hori.	12135.000	PK	43.9	39.4	9.4	39.7	53.0	73.9	20.9	100	0	
Hori.	2390.000	AV	47.5	26.4	13.6	41.1	46.4	53.9	**7.5**	100	184	*1
Hori.	2499.762	AV	43.7	26.6	13.6	41.1	42.8	53.9	11.1	100	173	*2
Vert.	2390.000	PK	54.8	26.4	13.6	41.1	53.7	73.9	20.2	110	172	
Vert.	2499.608	PK	46.3	26.6	13.6	41.1	45.4	73.9	28.5	126	160	
Vert.	4854.000	PK	42.8	30.8	6.0	39.7	39.9	73.9	34.0	100	0	
Vert.	7281.000	PK	43.7	36.8	7.1	40.3	47.3	73.9	26.6	100	359	
Vert.	9708.000	PK	44.6	38.6	8.1	40.0	51.3	73.9	22.6	100	0	
Vert.	12135.000	PK	44.0	39.4	9.4	39.7	53.1	73.9	20.8	100	359	
Vert.	2390.000	AV	43.7	26.4	13.6	41.1	42.6	53.9	11.3	110	172	*1
Vert.	2499.608	AV	37.3	26.6	13.6	41.1	36.4	53.9	17.5	126	160	*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
*1) Out of Band emission (Leakage Power)
*2) Continuous wave (no pulse emission)

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4854.000	AV	34.4	30.8	6.0	39.7	0.2	31.7	53.9	22.2	
Hori.	7281.000	AV	35.1	36.8	7.1	40.3	0.2	38.9	53.9	15.0	
Hori.	9708.000	AV	35.9	38.6	8.1	40.0	0.2	42.8	53.9	11.1	
Hori.	12135.000	AV	35.8	39.4	9.4	39.7	0.2	45.1	53.9	**8.8**	
Vert.	4854.000	AV	34.2	30.8	6.0	39.7	0.2	31.5	53.9	22.4	
Vert.	7281.000	AV	35.1	36.8	7.1	40.3	0.2	38.9	53.9	15.0	
Vert.	9708.000	AV	35.3	38.6	8.1	40.0	0.2	42.2	53.9	11.7	
Vert.	12135.000	AV	35.6	39.4	9.4	39.7	0.2	44.9	53.9	9.0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18GHz)-Distance factor(above 15GHz)) - Gain(Amprifier) + Duty factor
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.	2427.000	PK	85.0	26.5	13.6	41.1	84.0	-	-	Carrier
Hori.	2400.000	PK	51.4	26.4	13.6	41.1	50.3	64.0	13.7	100k/300k
Vert.	2427.000	PK	84.8	26.5	13.6	41.1	83.8	-	-	Carrier
Vert.	2400.000	PK	50.5	26.4	13.6	41.1	49.4	63.8	14.4	100k/300k

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	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	25 deg.C, 56 %RH	22 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n HT40, PN9, antenna port 0+1, MCS8		

(* 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.	2499.968	PK	49.6	26.6	13.6	41.1	48.7	73.9	25.2	100	139	
Hori.	4874.000	PK	43.7	30.9	6.0	39.7	40.9	73.9	33.0	100	0	
Hori.	7311.000	PK	43.9	36.8	7.1	40.3	47.5	73.9	26.4	100	359	
Hori.	9748.000	PK	44.0	38.6	8.1	40.0	50.7	73.9	23.2	100	0	
Hori.	12185.000	PK	44.6	39.4	9.4	39.8	53.6	73.9	20.3	100	359	
Hori.	2499.968	AV	44.0	26.6	13.6	41.1	43.1	53.9	10.8	100	139	*1
Vert.	2499.991	PK	46.0	26.6	13.6	41.1	45.1	73.9	28.8	100	69	
Vert.	4874.000	PK	43.3	30.9	6.0	39.7	40.5	73.9	33.4	100	0	
Vert.	7311.000	PK	44.5	36.8	7.1	40.3	48.1	73.9	25.8	100	359	
Vert.	9748.000	PK	43.9	38.6	8.1	40.0	50.6	73.9	23.3	100	0	
Vert.	12185.000	PK	44.4	39.4	9.4	39.8	53.4	73.9	20.5	100	359	
Vert.	2499.991	AV	37.4	26.6	13.6	41.1	36.5	53.9	17.4	100	69	*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
*1) Continuous wave (no pulse emission)

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	AV	34.4	30.9	6.0	39.7	0.2	31.8	53.9	22.1	
Hori.	7311.000	AV	35.5	36.8	7.1	40.3	0.2	39.3	53.9	14.6	
Hori.	9748.000	AV	35.0	38.6	8.1	40.0	0.2	41.9	53.9	12.0	
Hori.	12185.000	AV	35.6	39.4	9.4	39.8	0.2	44.8	53.9	9.1	
Vert.	4874.000	AV	34.9	30.9	6.0	39.7	0.2	32.3	53.9	21.6	
Vert.	7311.000	AV	35.2	36.8	7.1	40.3	0.2	39.0	53.9	14.9	
Vert.	9748.000	AV	35.3	38.6	8.1	40.0	0.2	42.2	53.9	11.7	
Vert.	12185.000	AV	35.7	39.4	9.4	39.8	0.2	44.9	53.9	**9.0**	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	September 10, 2014	September 11, 2014	September 12, 2014
Temperature / Humidity	25 deg.C, 56 %RH	22 deg.C, 58 %RH	21 deg.C, 63 %RH
Engineer	Akira Sato	Akira Sato	Akira Sato
Mode	Tx, 2452 MHz		
	Tx, IEEE802.11n HT40, PN9, antenna port 0+1, MCS8		

(* 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	49.1	26.6	13.6	41.1	48.2	73.9	25.7	100	175	
Hori.	2499.967	PK	49.9	26.6	13.6	41.1	49.0	73.9	24.9	100	187	
Hori.	4904.000	PK	42.6	31.0	5.9	39.7	39.8	73.9	34.1	100	359	
Hori.	7356.000	PK	43.8	36.9	7.2	40.3	47.6	73.9	26.3	100	0	
Hori.	9808.000	PK	44.4	38.6	8.1	40.0	51.1	73.9	22.8	100	359	
Hori.	12260.000	PK	44.2	39.4	9.4	39.8	53.2	73.9	20.7	100	0	
Hori.	2483.500	AV	39.0	26.6	13.6	41.1	38.1	53.9	15.8	100	175	*1
Hori.	2499.967	AV	44.1	26.6	13.6	41.1	43.2	53.9	10.7	100	187	*2
Vert.	2483.500	PK	47.2	26.6	13.6	41.1	46.3	73.9	27.6	100	177	
Vert.	2499.834	PK	46.3	26.6	13.6	41.1	45.4	73.9	28.5	100	187	
Vert.	4904.000	PK	43.5	31.0	5.9	39.7	40.7	73.9	33.2	100	0	
Vert.	7356.000	PK	43.4	36.9	7.2	40.3	47.2	73.9	26.7	100	359	
Vert.	9808.000	PK	44.2	38.6	8.1	40.0	50.9	73.9	23.0	100	0	
Vert.	12260.000	PK	44.1	39.4	9.4	39.8	53.1	73.9	20.8	100	359	
Vert.	2483.500	AV	36.9	26.6	13.6	41.1	36.0	53.9	17.9	100	177	*1
Vert.	2499.834	AV	36.8	26.6	13.6	41.1	35.9	53.9	18.0	100	187	*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
*1) Out of Band emission (Leakage Power)
*2) Continuous wave (no pulse emission)

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4904.000	AV	34.5	31.0	5.9	39.7	0.2	31.9	53.9	22.0	
Hori.	7356.000	AV	35.1	36.9	7.2	40.3	0.2	39.1	53.9	14.8	
Hori.	9808.000	AV	35.2	38.6	8.1	40.0	0.2	42.1	53.9	11.8	
Hori.	12260.000	AV	35.7	39.4	9.4	39.8	0.2	44.9	53.9	**9.0**	
Vert.	4904.000	AV	34.5	31.0	5.9	39.7	0.2	31.9	53.9	22.0	
Vert.	7356.000	AV	35.0	36.9	7.2	40.3	0.2	39.0	53.9	14.9	
Vert.	9808.000	AV	35.1	38.6	8.1	40.0	0.2	42.0	53.9	11.9	
Vert.	12260.000	AV	35.7	39.4	9.4	39.8	0.2	44.9	53.9	**9.0**	

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

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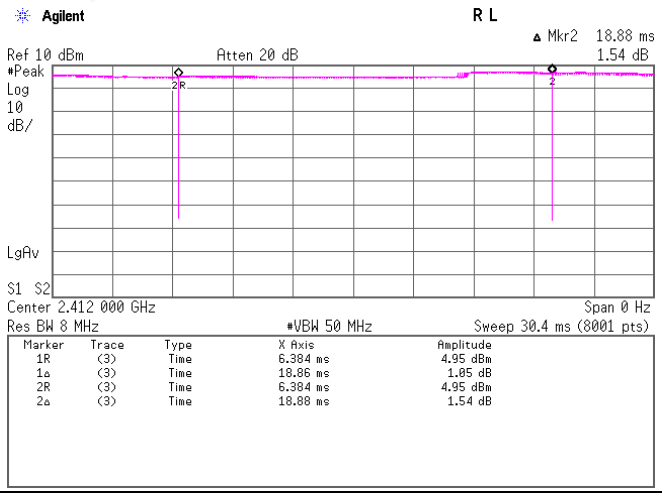
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	May 7, 2014	
Temperature / Humidity	26deg.C , 39%RH	
Engineer	Tatsuya Arai	

Burst rate confirmation

Tx, IEEE802.11b, PN9, worst antenna port 0, worst data mode 1Mbps

duty cycle = 18.86 / 18.88 = 0.999 (99.9%)	
Tx2_duty1	Tx2_duty2



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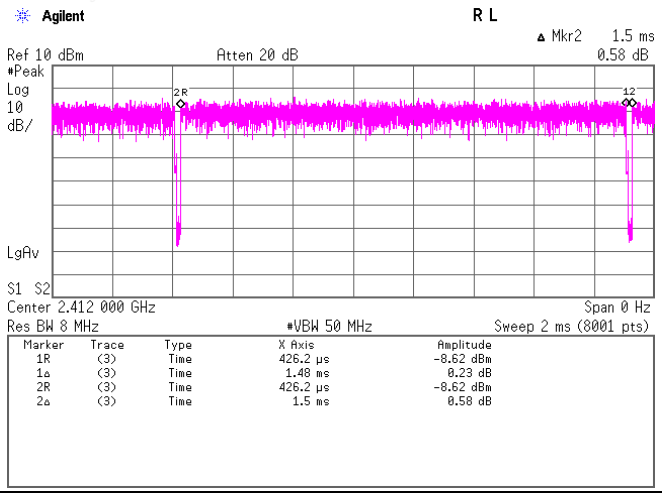
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	May 7, 2014	
Temperature / Humidity	26deg.C , 39%RH	
Engineer	Tatsuya Arai	

Burst rate confirmation

Tx, IEEE802.11n (HT20), MIMO, PN9, worst data mode 8(MCS)

duty cycle = 1.48 / 1.5 = 0.987 (98.7%)	
	

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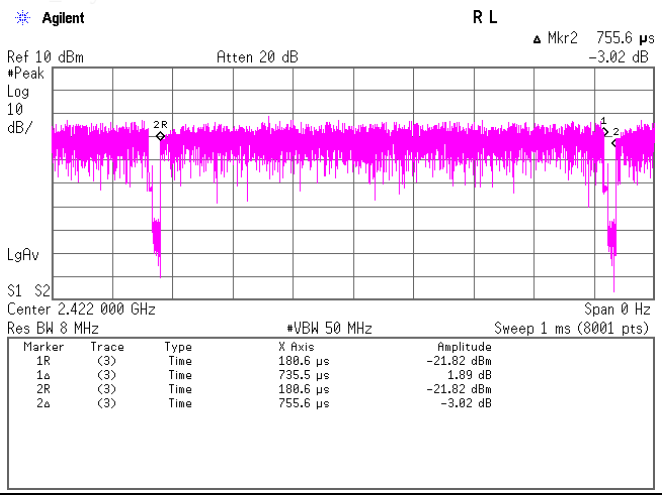
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	May 7, 2014	
Temperature / Humidity	26deg.C , 39%RH	
Engineer	Tatsuya Arai	

Duty Factor Calculation chart

Tx, IEEE802.11n (HT40), MIMO, PN9, worst data mode 8(MCS)

Duty Factor: 20log (1/duty cycle) = 0.2dB	
duty cycle = 0.7355 / 0.7556 = 0.973 (97.3%)	
Tx2_duty1	Tx2_duty2



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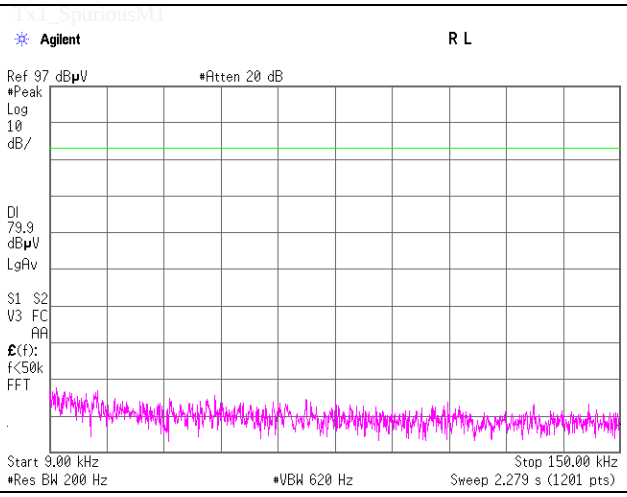
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	

Spurious emission (Conducted)

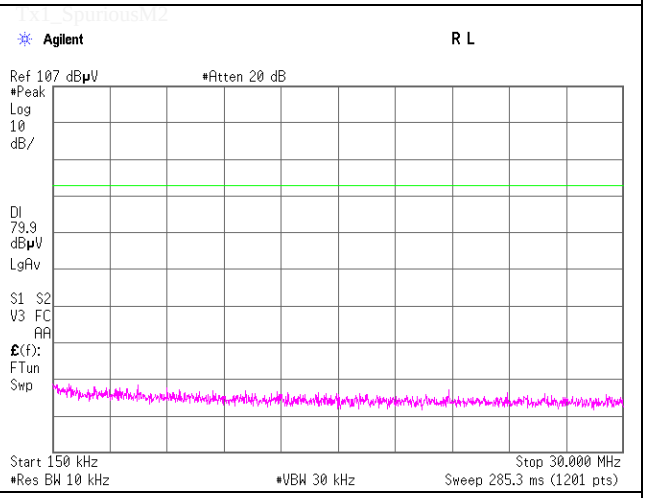
Tx, IEEE802.11n (HT20), MIMO(SDM), PN9, antenna port 0 (Side), worst data mode 8(MCS)

Tx, 2417MHz (below 30MHz)

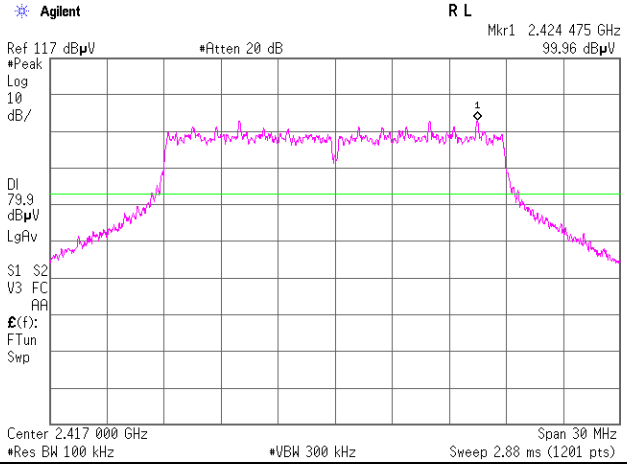
9kHz - 150kHz



150kHz - 30MHz



Carrier, 20dBc Limit



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Maximum Power Spectral Density

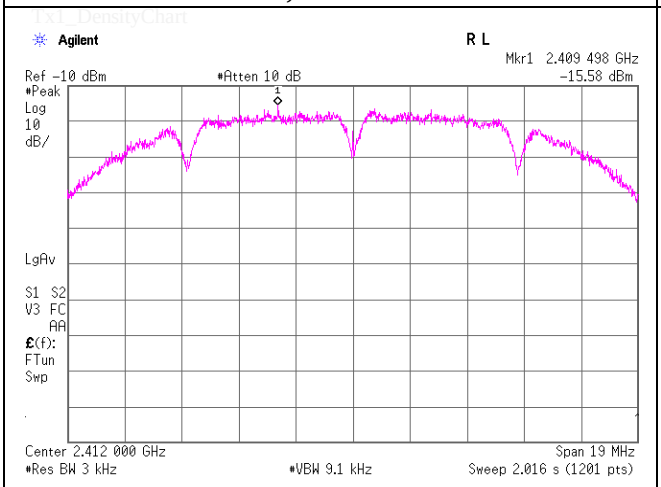
(PKPSD)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11b, PN9, worst antenna port 0, worst data mode 1Mbps	

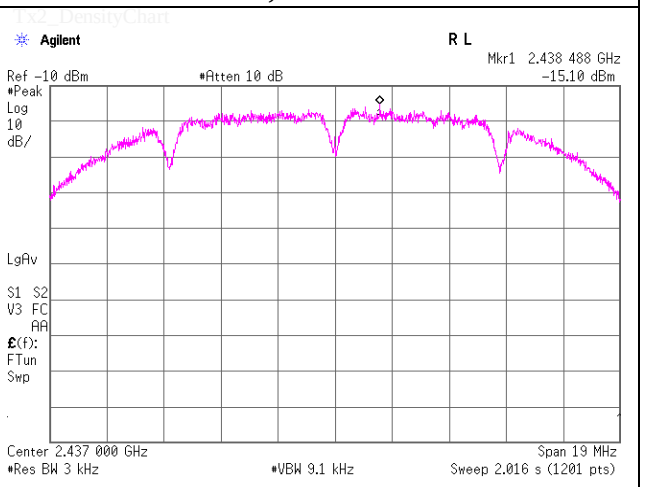
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2409.50	-15.58	2.12	9.90	-3.56	8.00	11.56
2437.0000	2438.49	-15.10	2.10	9.90	-3.10	8.00	11.10
2462.0000	2462.78	-15.15	2.10	9.90	-3.15	8.00	11.15

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

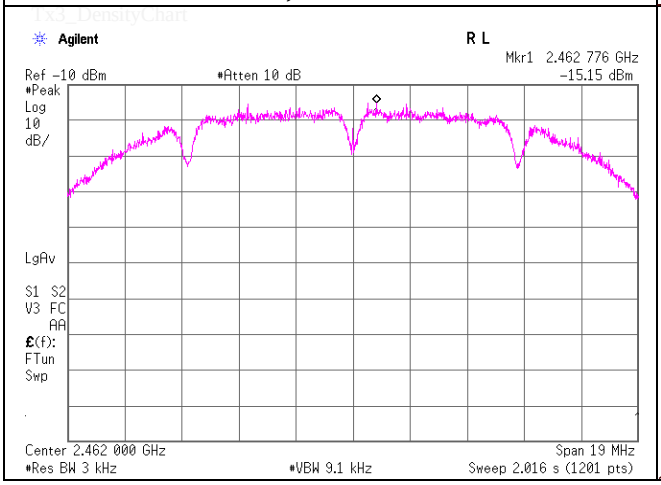
Tx, 2412MHz



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	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11g, PN9, worst antenna port 0, worst data mode 6Mbps	

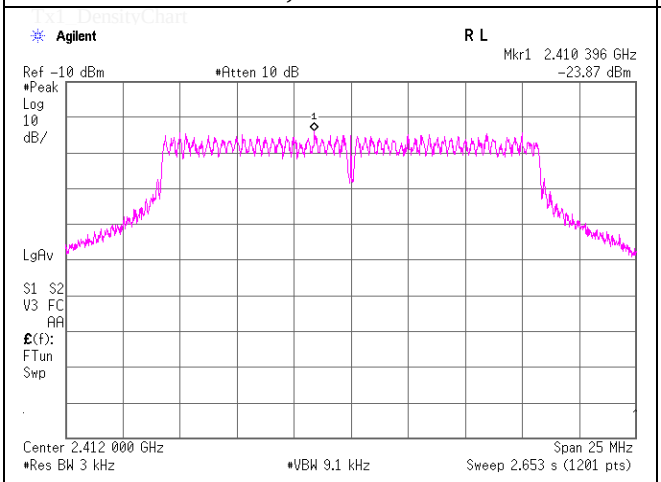
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2410.40	-23.87	2.12	9.90	-11.85	8.00	19.85
2417.0000 *1	2420.40	-18.43	2.12	9.90	-6.41	8.00	14.41
2437.0000	2444.25	-23.11	2.10	9.90	-11.11	8.00	19.11
2462.0000	2457.63	-23.33	2.10	9.90	-11.33	8.00	19.33

Sample Calculation:

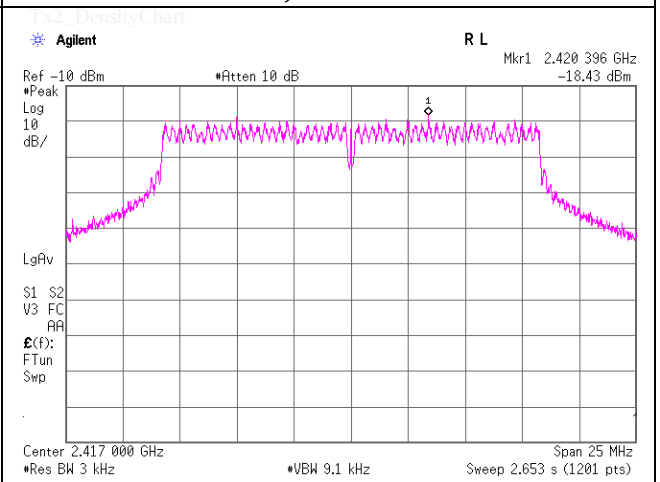
Result = Reading + Cable Loss + Atten. Loss

*1: Measurement was performed additionally since the channel has the highest power setting.

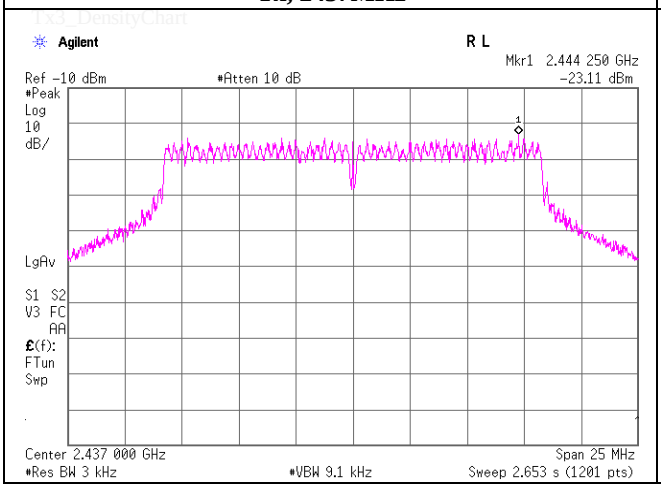
Tx, 2412MHz



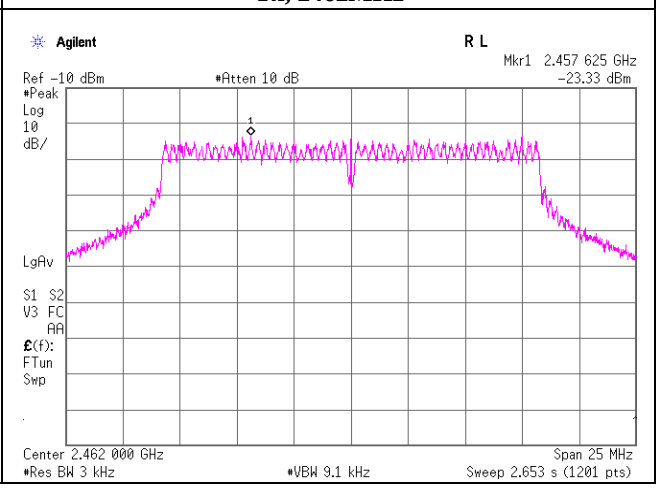
Tx, 2417MHz



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	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE 802.11n (HT20), SISO, PN9, worst antenna port 0, worst data mode 0(MCS)	

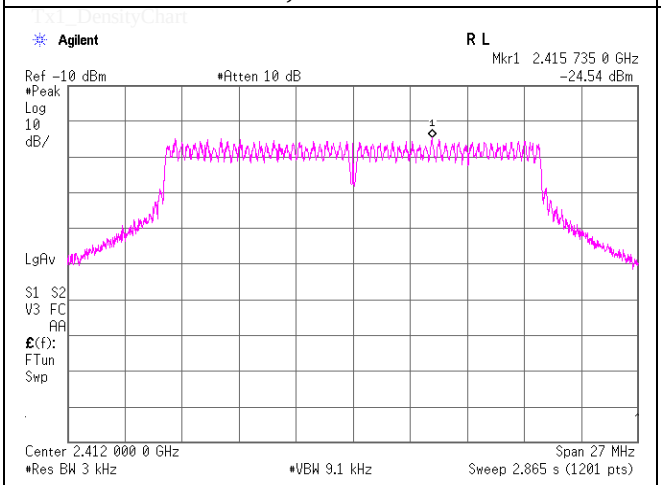
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2415.74	-24.54	2.12	9.90	-12.52	8.00	20.52
2417.0000 *1	2415.74	-22.45	2.12	9.90	-10.43	8.00	18.43
2437.0000	2444.20	-23.31	2.10	9.90	-11.31	8.00	19.31
2462.0000	2460.74	-23.84	2.10	9.90	-11.84	8.00	19.84

Sample Calculation:

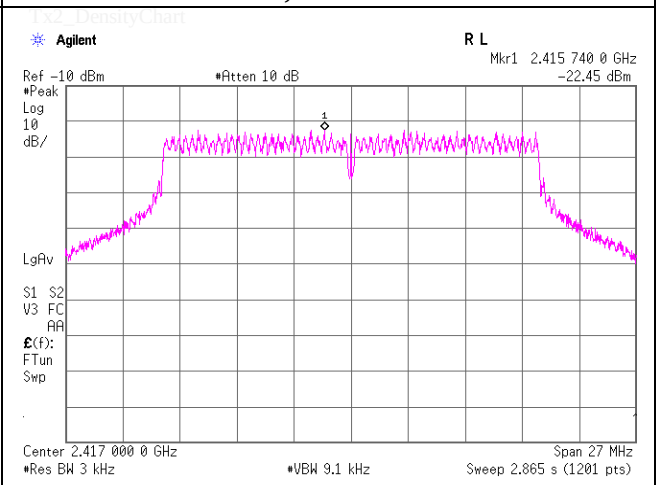
Result = Reading + Cable Loss + Atten. Loss

*1: Measurement was performed additionally since the channel has the highest power setting.

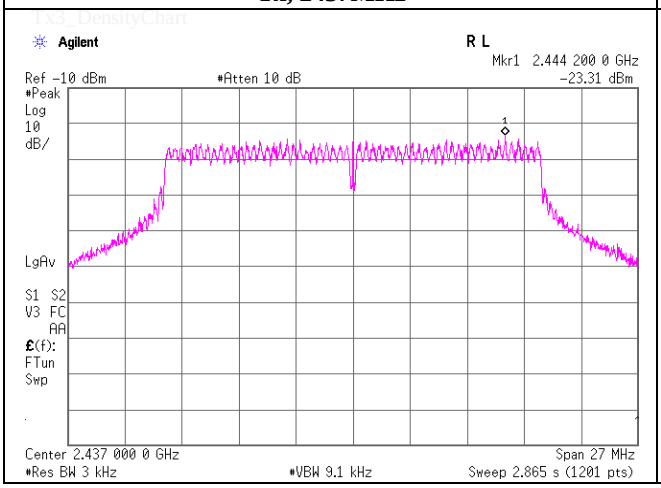
Tx, 2412MHz



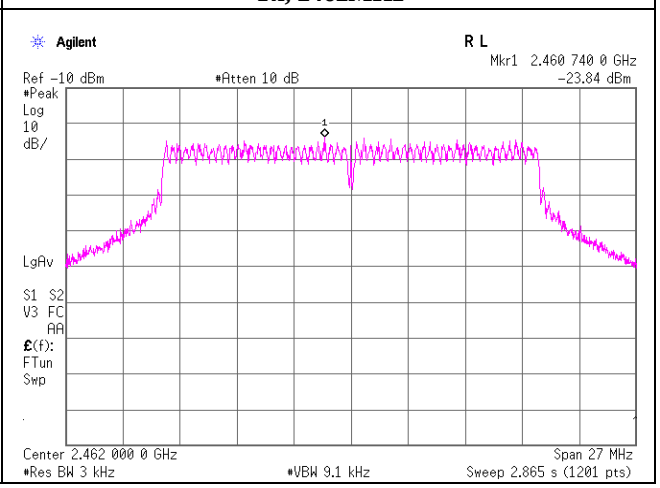
Tx, 2417MHz



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	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11n (HT20), MIMO, PN9, worst data mode 8(MCS)	

Antenna 0 (Side)

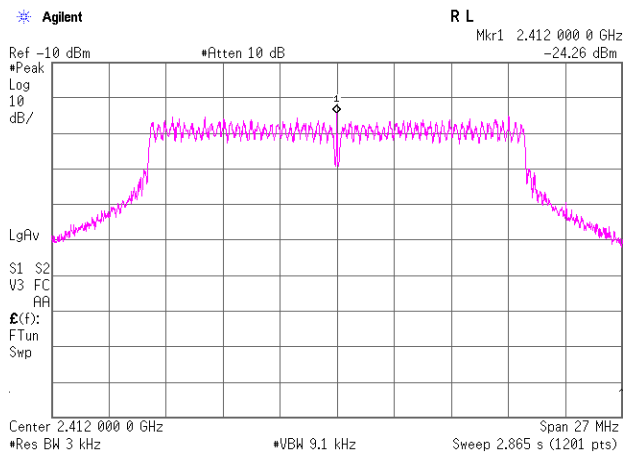
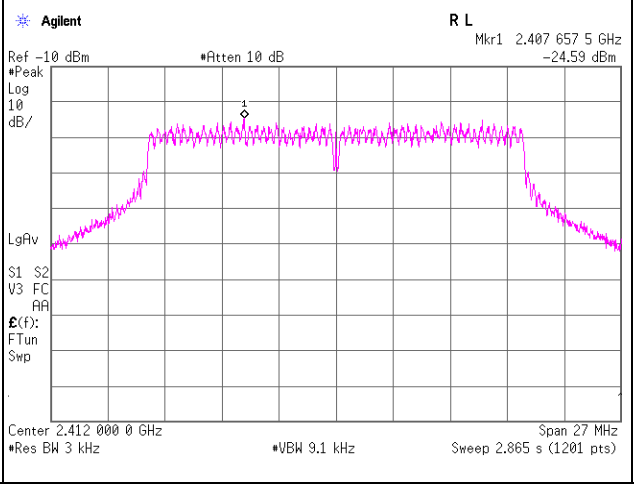
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	10log (N_{ANT})* [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2412.00	-24.26	2.12	9.90	3.01	-9.23	8.00	17.23
2417.0000 *1	2419.50	-19.95	2.12	9.90	3.01	-4.92	8.00	12.92
2437.0000	2437.00	-19.93	2.10	9.90	3.01	-4.92	8.00	12.92
2462.0000	2462.00	-23.05	2.10	9.90	3.01	-8.04	8.00	16.04

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + 10log(NANT)

Antenna 1 (Bottom)

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	10log (N_{ANT})* [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2407.66	-24.59	2.12	9.90	3.01	-9.56	8.00	17.56
2417.0000 *1	2421.73	-21.06	2.12	9.90	3.01	-6.03	8.00	14.03
2437.0000	2432.64	-23.15	2.10	9.90	3.01	-8.14	8.00	16.14
2462.0000	2457.64	-25.01	2.10	9.90	3.01	-10.00	8.00	18.00

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + 10log(NANT)
*1: Measurement was performed additionally since the channel has the highest power setting.
*) This test was measured based on Method In-Band Power Spectral Density (PSD) Measurements (2) of "Emissions Testing of Transmitters with Multiple Outputs in the Same Band (KDB662911 D1)"

Antenna 0 (Side)	Antenna 1 (Bottom)
Tx, 2412MHz	Tx, 2412MHz
	

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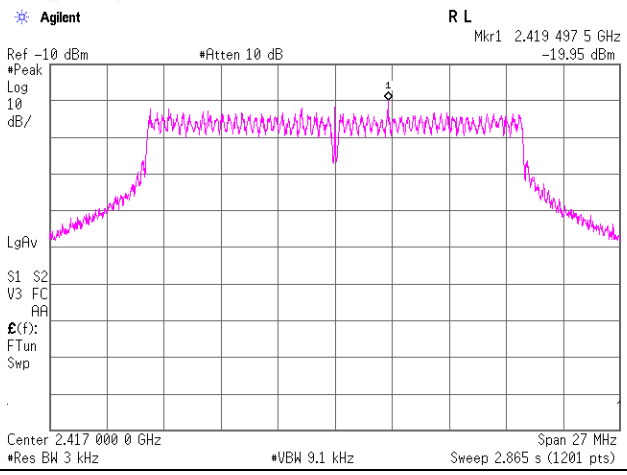
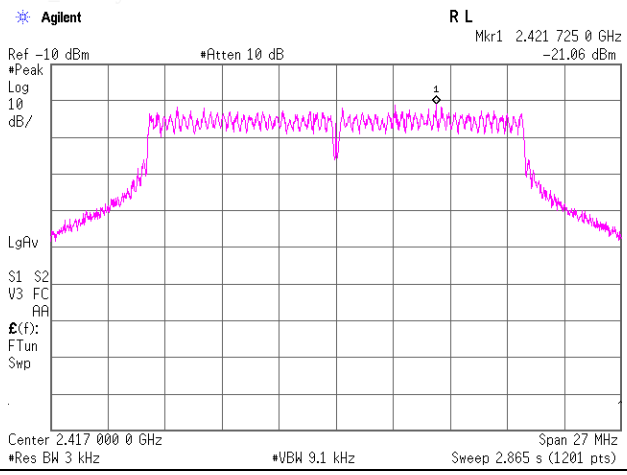
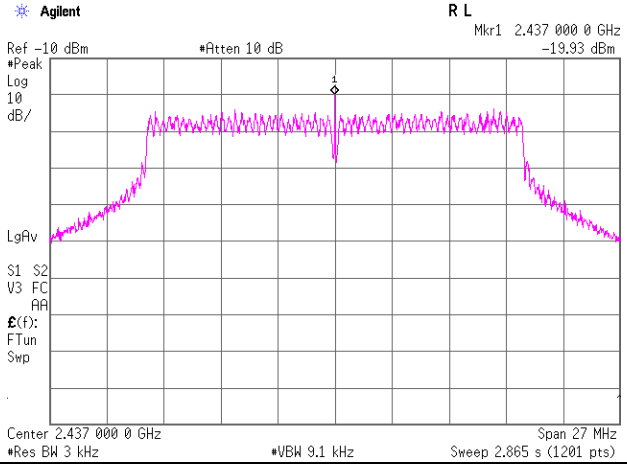
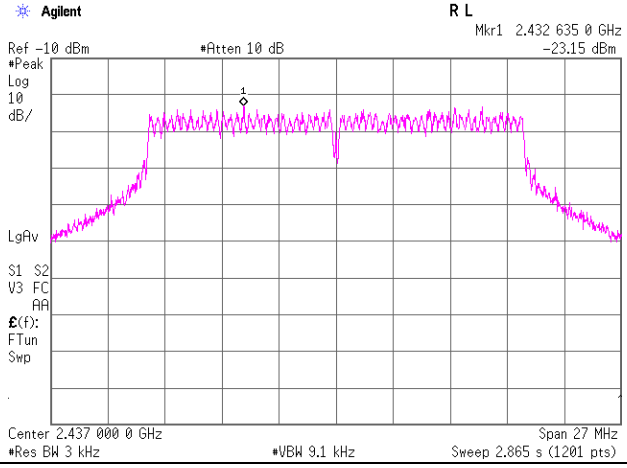
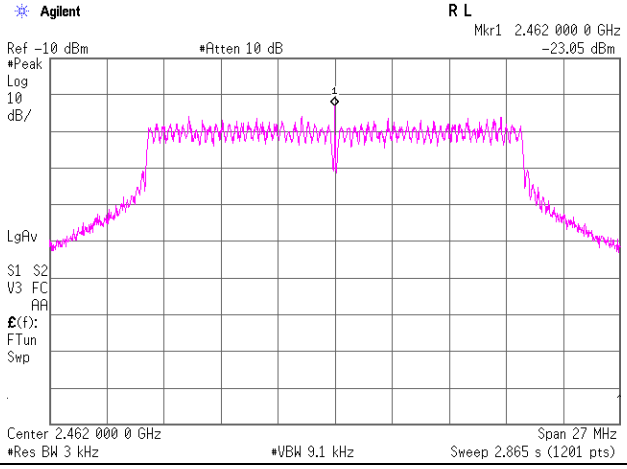
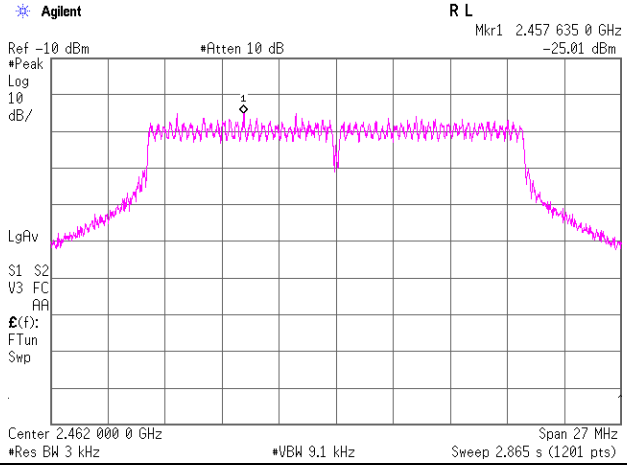
Power Density

Antenna 0 (Side)	Antenna 1 (Bottom)
Tx, 2417MHz	**Tx, 2417MHz**
	
Tx, 2437MHz	**Tx, 2437MHz**
	
Tx, 2462MHz	**Tx, 2462MHz**
	

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Maximum Power Spectral Density

(PKPSD)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE 802.11n (HT40), SISO, PN9, worst antenna port 0, worst data mode 0(MCS)	

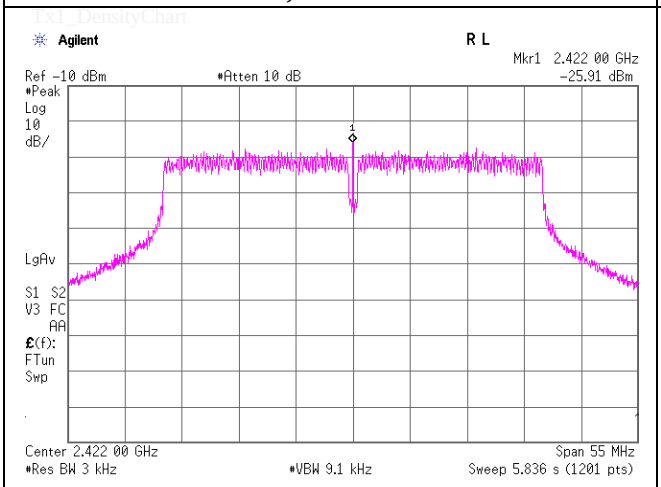
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2422.00	-25.91	2.12	9.90	-13.89	8.00	21.89
2427.0000 *1	2427.00	-22.24	2.13	9.90	-10.21	8.00	18.21
2437.0000	2437.00	-26.36	2.10	9.90	-14.36	8.00	22.36
2452.0000	2452.00	-26.77	2.10	9.90	-14.77	8.00	22.77

Sample Calculation:

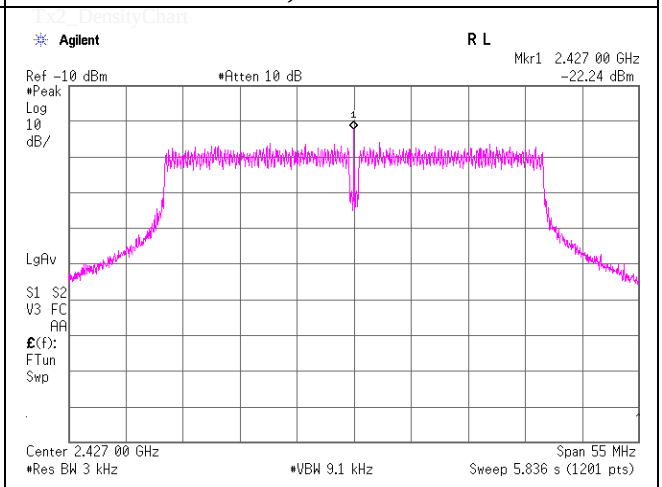
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

*1: Measurement was performed additionally since the channel has the highest power setting.

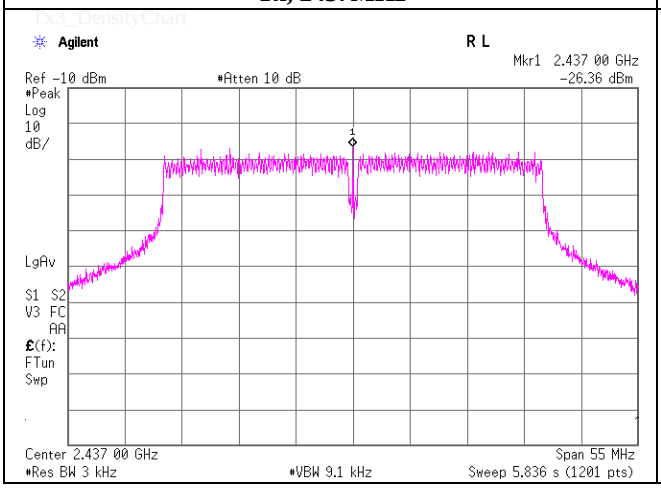
Tx, 2422MHz



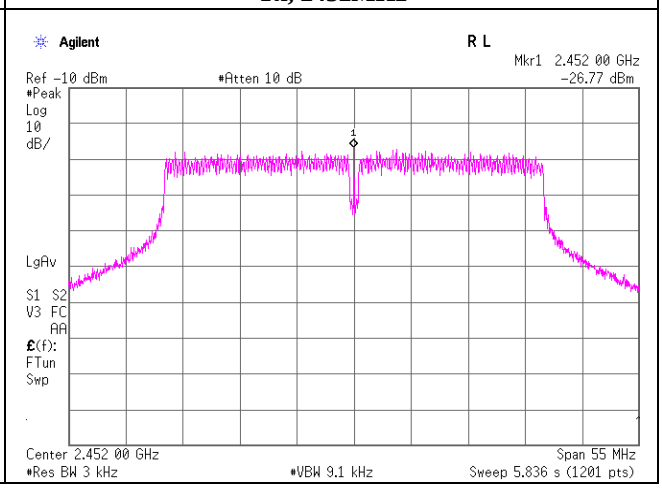
Tx, 2427MHz



Tx, 2437MHz



Tx, 2452MHz



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Maximum Power Spectral Density

(PKPSD)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11n (HT40), MIMO, PN9, worst data mode 8(MCS)	

Antenna 0 (Side)

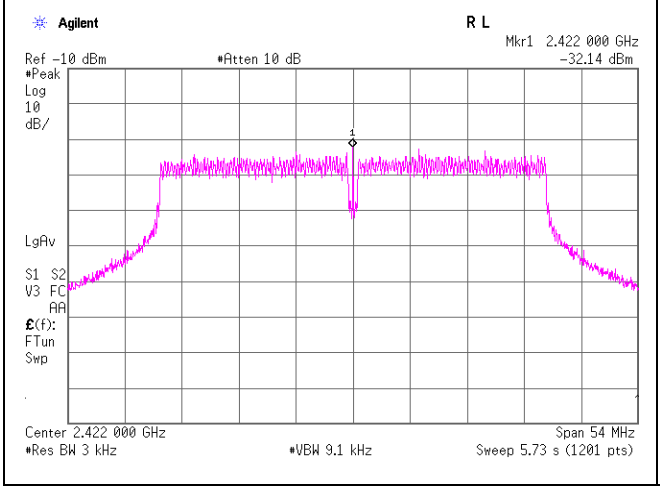
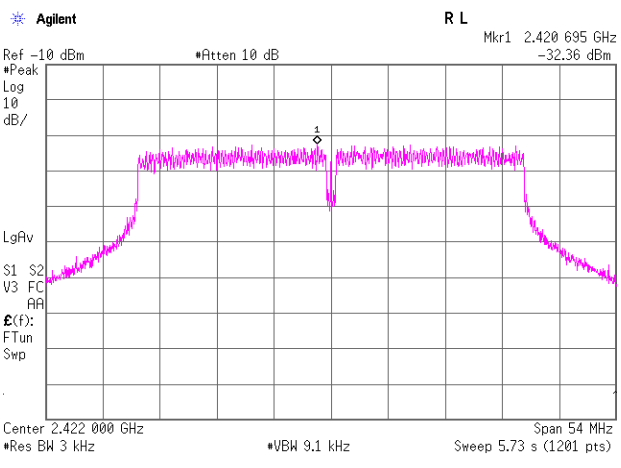
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	10log (N_{ANT})* [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2422.00	-32.14	2.12	9.90	3.01	-17.11	8.00	25.11
2427.0000 *1	2427.00	-24.81	2.13	9.90	3.01	-9.77	8.00	17.77
2437.0000	2437.00	-24.26	2.10	9.90	3.01	-9.25	8.00	17.25
2452.0000	2452.00	-27.16	2.10	9.90	3.01	-12.15	8.00	20.15

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + 10log(NANT)

Antenna 1 (Bottom)

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	10log (N_{ANT})* [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2420.70	-32.36	2.12	9.90	3.01	-17.33	8.00	25.33
2427.0000 *1	2435.73	-25.11	2.13	9.90	3.01	-10.07	8.00	18.07
2437.0000	2425.75	-27.89	2.10	9.90	3.01	-12.88	8.00	20.88
2452.0000	2444.76	-31.72	2.10	9.90	3.01	-16.71	8.00	24.71

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss + 10log(NANT)
*1: Measurement was performed additionally since the channel has the highest power setting.
*) This test was measured based on Method In-Band Power Spectral Density (PSD) Measurements (2) of "Emissions Testing of Transmitters with Multiple Outputs in the Same Band (KDB662911 D1)"

Antenna 0 (Side)	Antenna 1 (Bottom)
Tx, 2422MHz	Tx, 2422MHz
	

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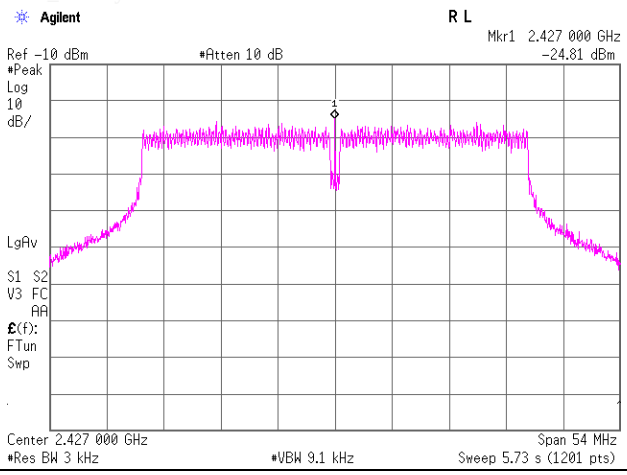
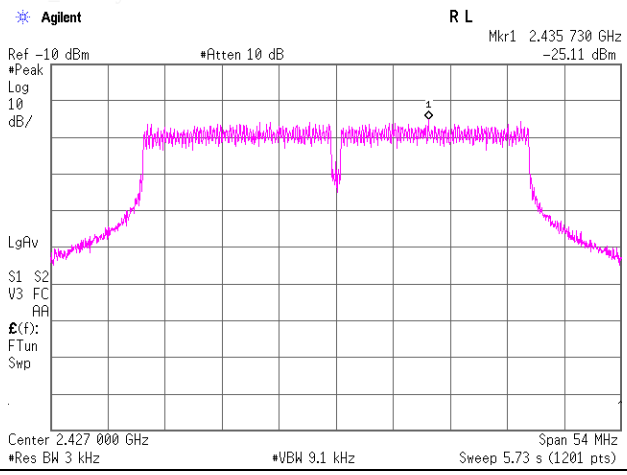
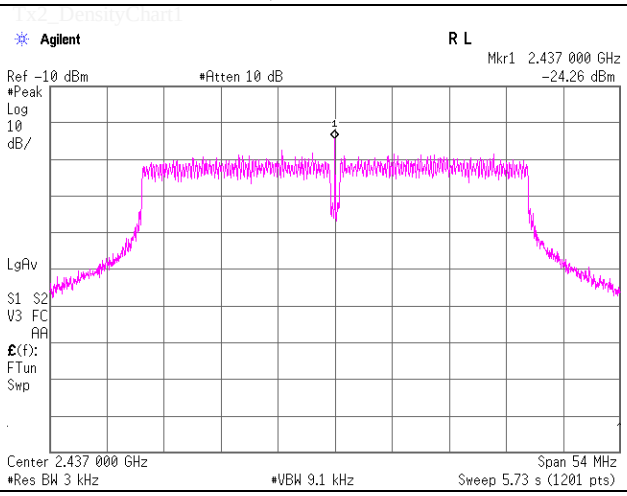
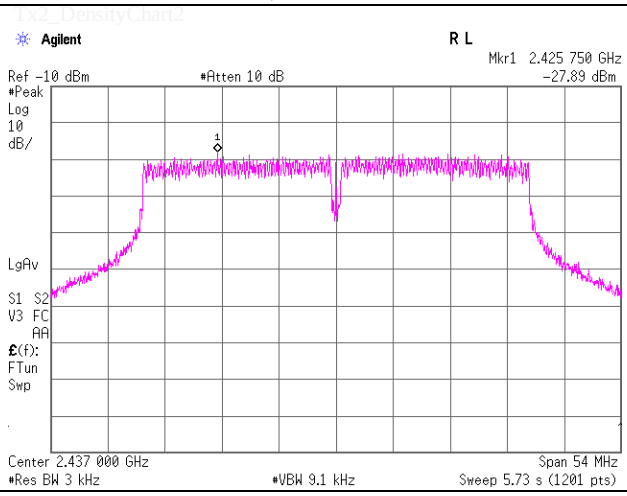
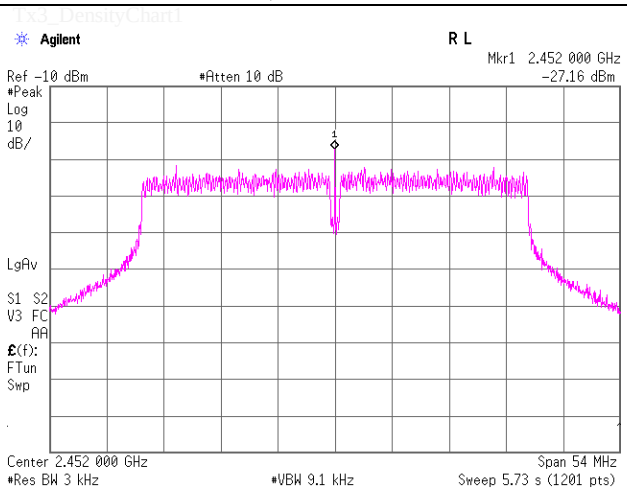
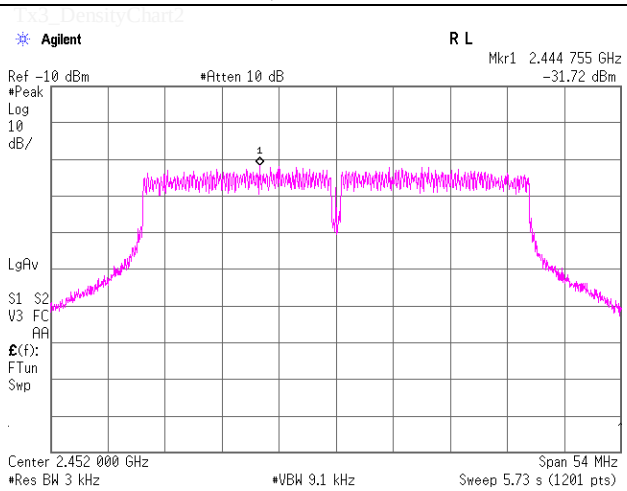
Power Density

Antenna 0 (Side)	Antenna 1 (Bottom)
Tx, 2427MHz	**Tx, 2427MHz**
	
Tx, 2437MHz	**Tx, 2437MHz**
	
Tx, 2452MHz	**Tx, 2452MHz**
	

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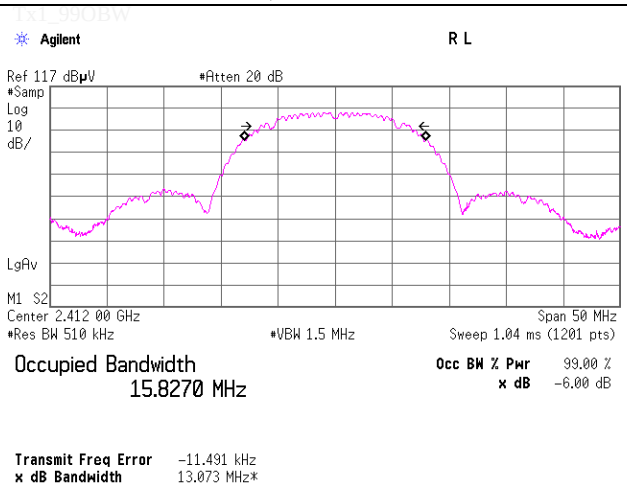
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	

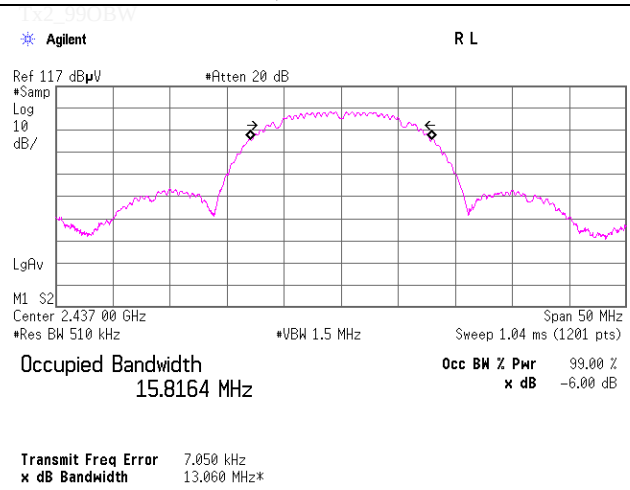
99% Occupied Bandwidth

Tx, IEEE802.11b, PN9, worst antenna port 0, worst data mode 1Mbps

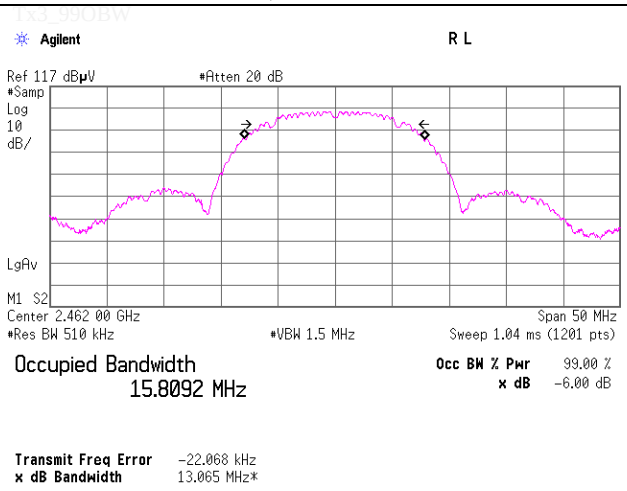
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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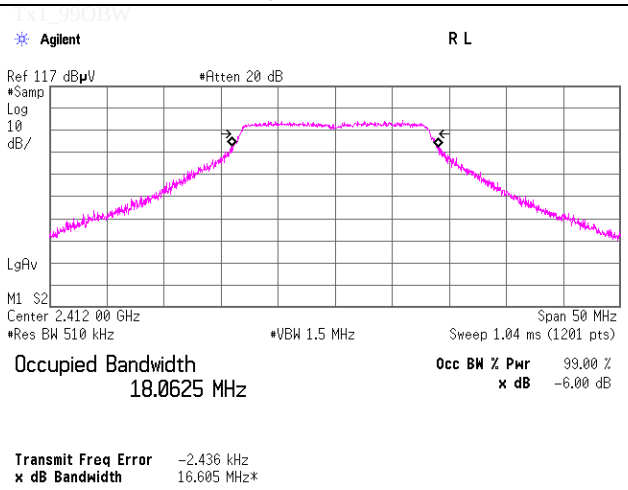
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	

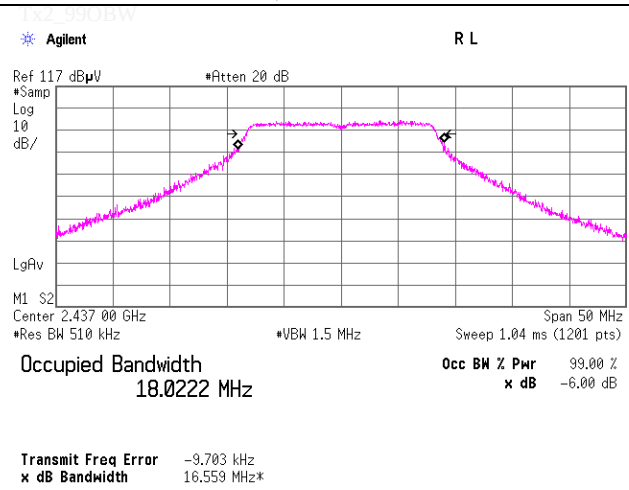
99% Occupied Bandwidth

Tx, IEEE802.11g, PN9, worst antenna port 0, worst data mode 6Mbps

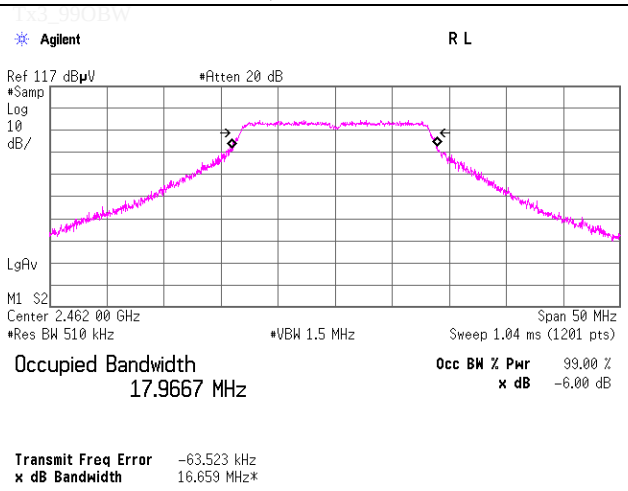
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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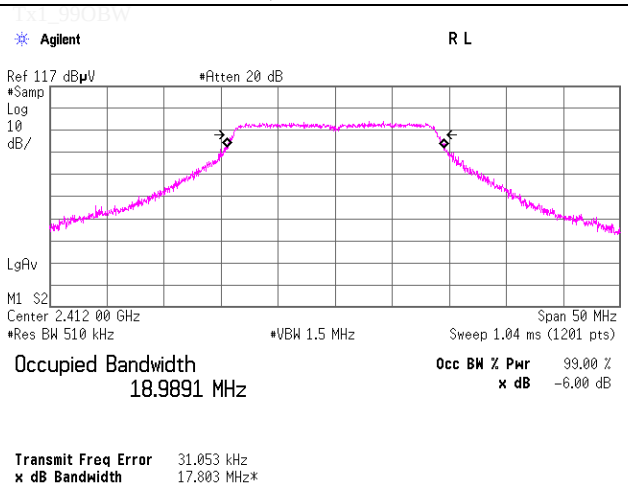
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	

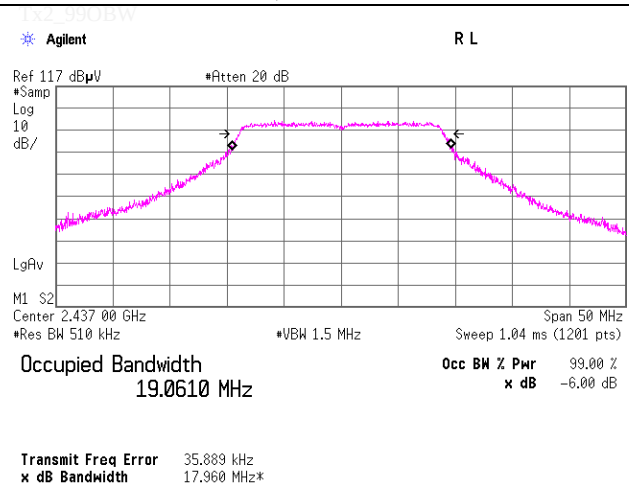
99% Occupied Bandwidth

Tx, IEEE 802.11n (HT20), SISO, PN9, worst antenna port 0, worst data mode 0(MCS)

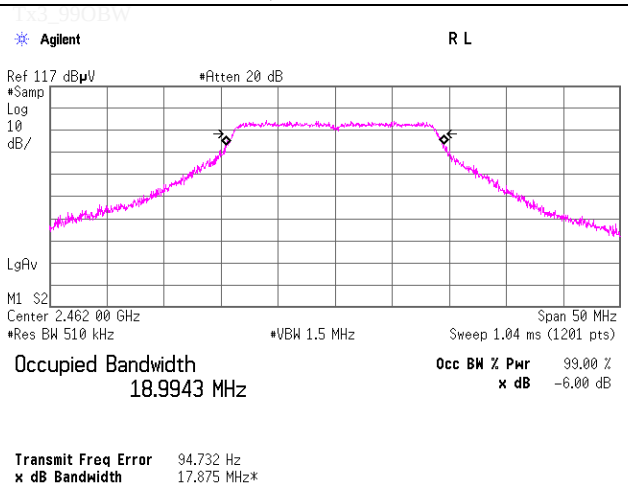
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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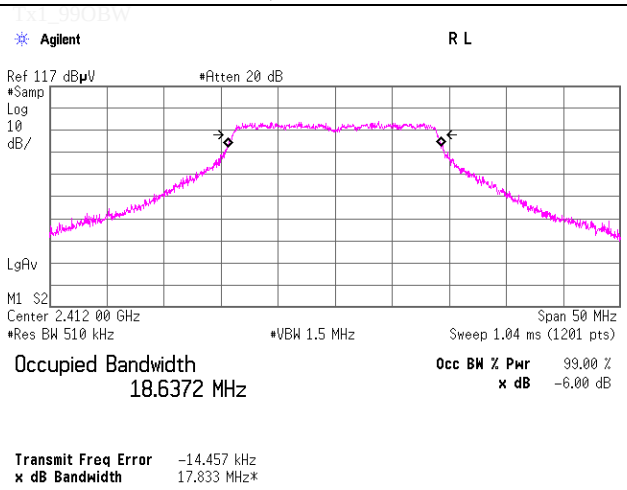
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	

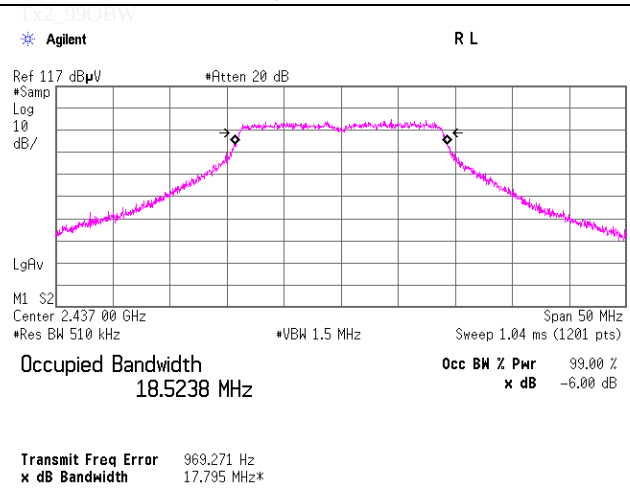
99% Occupied Bandwidth

Tx, IEEE802.11n (HT20), MIMO, PN9, antenna port 0 (Side), worst data mode 8(MCS)

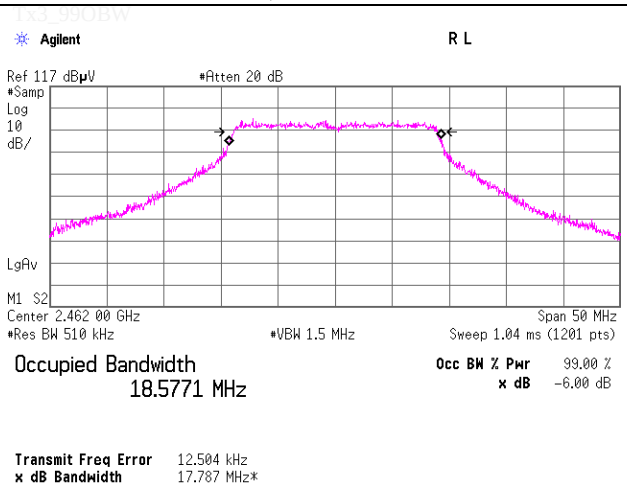
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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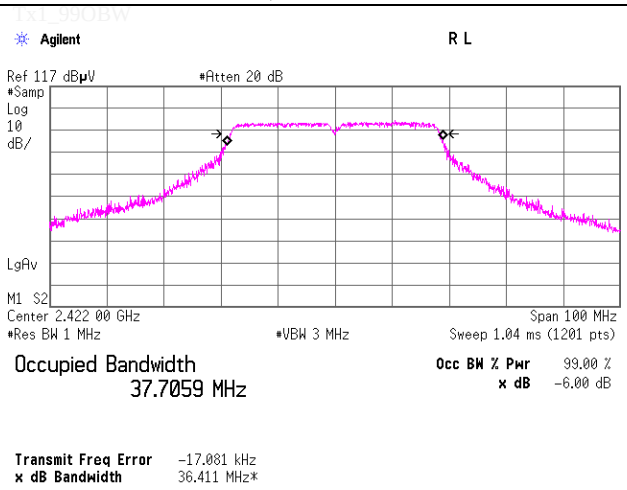
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	

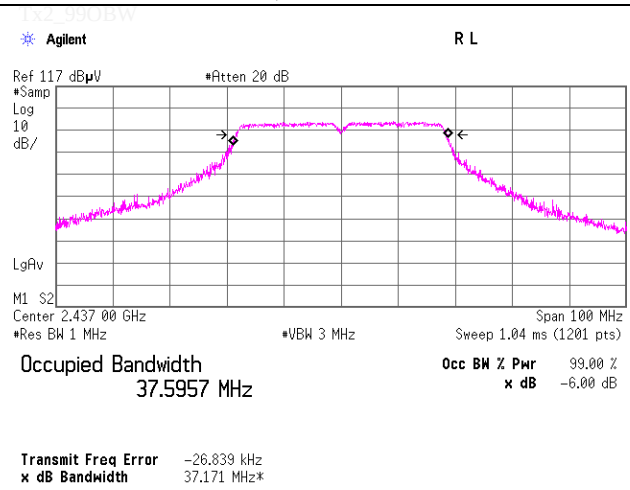
99% Occupied Bandwidth

Tx, IEEE 802.11n (HT40), SISO, PN9, worst antenna port 0, worst data mode 0(MCS)

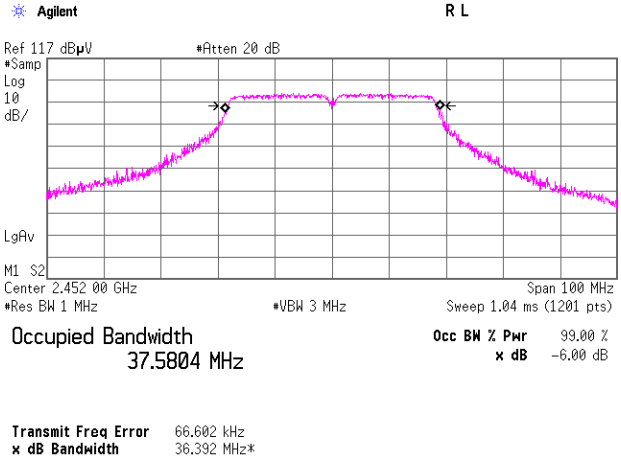
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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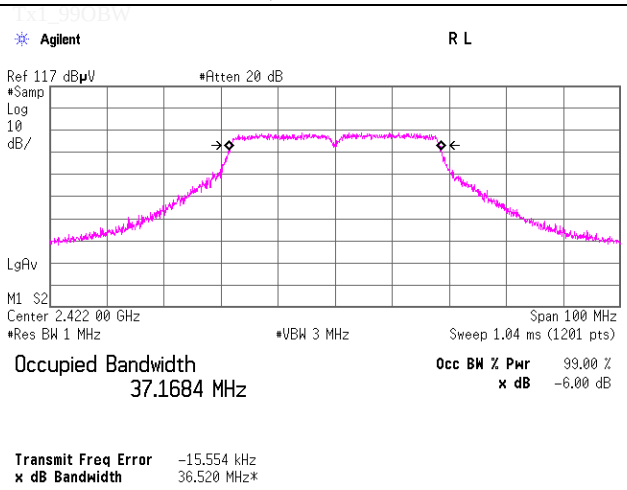
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement Room
Date	September 4, 2014	
Temperature / Humidity	25deg.C , 58%RH	
Engineer	Tatsuya Arai	

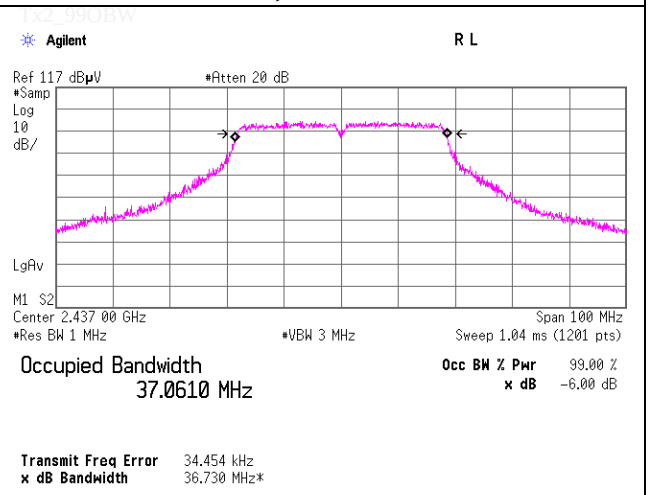
99% Occupied Bandwidth

Tx, IEEE802.11n (HT40), MIMO, PN9, antenna port 0 (Side), worst data mode 8(MCS)

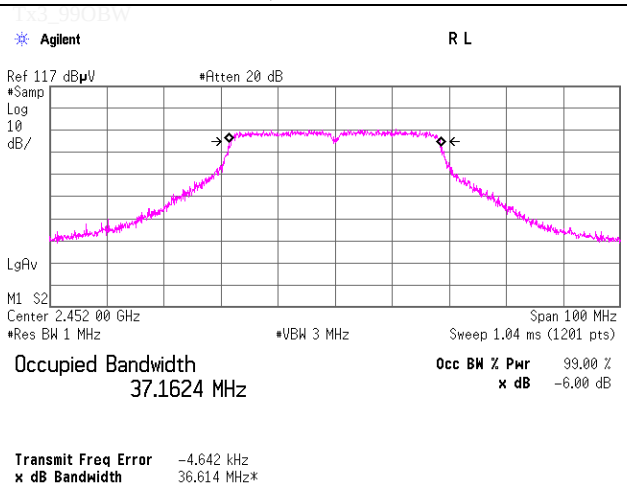
Tx, 2422MHz



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)
SOS-13	Humidity Indicator	Custom	CTH-202	Q.C.17	AT	2014/04/22 * 12
SCC-G14	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	AT	2014/03/13 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2014/04/22 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2014/04/08 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2014/04/08 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT	2014/03/17 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2014/02/14 * 12
SAT6-06	Attenuator	JFW	50HF-006N	-	RE	2014/02/17 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2013/10/26 * 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
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2013/10/26 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/02/21 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE	2014/03/04 * 12
SJM-15	Measure	ASKUL	-	-	RE	-
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2014/07/14 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
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
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2014/08/12 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2014/03/04 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE	2014/02/03 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2013/11/22 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2013/11/22 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2014/03/15 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2014/03/14 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2014/03/13 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2013/11/22 * 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 .

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