



# RADIO TEST REPORT

**Test Report No.: 4786001102S-B-R1**

**Applicant** : **Canon Inc.**  
**Type of Equipment** : **Wireless Module**  
**Model No.** : **RF400**  
**FCC ID** : **AZD400**  
**Test regulation** : **FCC Part15 Subpart E: 2012**  
**Test result** : **Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
7. This report is a revised version of 4786001102S-B. 4786001102S-B is replaced with this report.

**Date of test:** January 15 to April 2, 2013

**Tested by:** *S. Takano*  
Shinichi Takano  
Engineer of WiSE Japan,  
UL Verification Service

**Approved by :** *T. Imamura*  
Toyokazu Imamura  
Leader of WiSE Japan,  
UL Verification Service



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

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13-EM-F0429



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FCC 15.31 (e) / 212

The module is constantly provided the stable voltage from the host device regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC 15.203 / 212

It is impossible for end users to replace the antenna, because it is soldered on the circuit board. Therefore the equipment complies with the requirement of 15.203/212.

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## **SECTION 3: Test specification, procedures & results**

### **3.1 Test specification**

Test specification : FCC Part 15 Subpart E: 2012, final revised on December 27, 2012 and effective January 28, 2013  
 Title : FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices  
 Section 15.207 Conducted limits  
 Section 15.209 Radiated emission limits, general requirements  
 Section 15.407 General technical requirements

\* The revision on December 27, 2012 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 C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.407 (b)(6) & 15.207	-	N/A	16.3dB Freq.: 0.15000MHz Detector: QP Phase: L1 Mode: Tx 5280MHz, IEEE 802.11a	Complied
26dB & 20dB emission bandwidth	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3) FCC 15.215 (c)	Conducted	N/A	See data	-
Maximum conducted output power	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	Conducted	N/A		Complied *3)
Peak power spectral density	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	Conducted	N/A		Complied *3)
Peak excursion ratio	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(6)	Conducted	N/A		Complied
Spurious emission & Restricted band edges	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.109, 15.407 (b), 15.205 & 15.209	Radiated	N/A	0.2dB Freq.: 5350.000 MHz Detector: Average Polarization: Horizontal Mode: Tx 5310MHz, IEEE 802.11n (40HT)	Complied
Dynamic frequency selection	FCC 06-96 APPENDIX	FCC 15.407 (h)	Conducted	*2)	N/A	N/A

\*1) These tests were also referred to KDB 789033 (FCC), "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E".  
 \*2) Refer to the test report 4786001102S-C.  
 \*3) The EUT has complied with the limit of 5150-5250MHz.

Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422

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### 3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied bandwidth (99%)	ANSI C63.4:2009 13. Measurement of intentional radiators, 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 <sup>*1</sup> /SR <sup>*2</sup> (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
<b>Conducted emission (AC Mains) LISN</b>	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
<b>Radiated emission (Measurement distance: 3m)</b>	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 dB	5.1 dB	4.9 dB
	300MHz-1GHz	5.0 dB	5.2 dB	4.9 dB
	1GHz-15GHz	4.8 dB	4.8 dB	4.9 dB
<b>Radiated emission (Measurement distance: 1m)</b>	15GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.6 dB	4.3 dB	4.4 dB

\*1: SAC=Semi-Anechoic Chamber

\*2: SR= Shielded Room is applied besides radiated emission

#### Conducted emission test

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

#### Radiated emission test

The data listed in this test report 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) 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%

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### 3.5 Test location

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JAB Accreditation No. : RTL02610

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
<input type="checkbox"/> No.1 semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input type="checkbox"/> No.2 semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input checked="" type="checkbox"/> No.3 semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
<input type="checkbox"/> No.4 semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
<input type="checkbox"/> No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input type="checkbox"/> No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input checked="" type="checkbox"/> No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
<input type="checkbox"/> No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
<input checked="" type="checkbox"/> No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
<input type="checkbox"/> No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-

### 3.6 Test setup, Test data & Test instruments

Refer to APPENDIX 1 to 3.

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

### 4.1 Operating mode

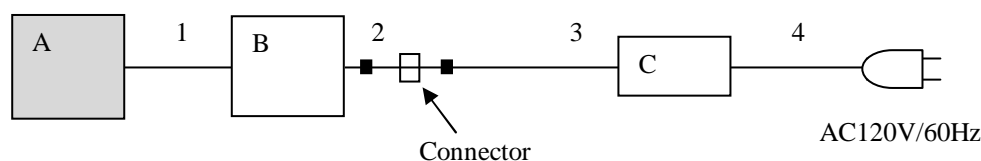
Test item	Mode	Tested frequency	Power setting *1)	Worst data rate *2)
Conducted emission Radiated emission (below 1GHz) *2)	Transmitting (Tx) IEEE 802.11 a	5280MHz	12dBm	6Mbps, PN9
Other items	Transmitting (Tx) IEEE 802.11 a	5280MHz, 5300MHz, 5320MHz	12dBm	6Mbps, PN9
	Transmitting (Tx) IEEE 802.11 n (20HT)	5280MHz, 5300MHz, 5320MHz	12dBm	MCS0, PN9
	Transmitting (Tx) IEEE 802.11 n (40HT)	5310MHz	12dBm	MCS4, PN9

\*1) Software used for the test: RFTTEST ver. 14.0.11.p51  
 \*2) The worst condition was determined based on the test result of Maximum Conducted Output Power.  
 \*3) Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - "of TCB Council Workshop October 2009.

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

### 4.2 Configuration and peripherals

■: Ferrite core (Standard attachment)



\* Test data was taken under worse case conditions.

#### Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless Module	RF400	#8	Canon	EUT
B	Digital Camera	PC1739	PR-MT000100	Canon	-
C	Compact Power Adapter	CA-DC10 N	1152	Canon	-

#### List of cables used

No.	Cable Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Jig	0.05	Unshielded	Unshielded	-
2	DC	0.15	Unshielded	Unshielded	-
3	DC	1.9	Unshielded	Unshielded	-
4	AC	1.9	Unshielded	Unshielded	-

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## **SECTION 5: Conducted emission**

### **5.1 Operating environment**

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

### **5.2 Test configuration**

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 0.8m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals was aligned and was flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. Photographs of the set up are shown in APPENDIX 3.

### **5.3 Test conditions**

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

### **5.4 Test procedure**

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

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

### **5.5 Results**

Summary of the test results : Pass  
Refer to APPENDIX 1

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## **SECTION 6: Radiated emission**

### **6.1 Operating environment**

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

### **6.2 Test configuration**

EUT was placed on a urethane 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.

### **6.3 Test conditions**

Frequency range : 30MHz to 40GHz  
EUT position : Table top

### **6.4 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). 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. Drawing of the antenna direction is shown in Figure 1.

The radiated emission measurements were made with the following detection.

Frequency	30-1000MHz	1-40GHz	
Detection type	Quasi-Peak	Peak	Average *1)
IF Bandwidth	120kHz	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz

\*1) The test method was referred to Section G)6)d) Method VB (Averaging using reduced video bandwidth) of FCC KDB 789033 D01 "Guidelines for Compliance Testing of unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E"

Detector and averaging type set for linear voltage averaging.

Below 1GHz

The result also satisfied with the general limits specified in FCC 15.209 (a).

Above 1GHz

Inside of restricted bands (FCC 15.205): Limit in FCC 15.209 (a)

Outside of the restricted bands: Limit 68.2dBuV/m (-27dBm e.i.r.p.\*) in FCC 15.407(b)(1)(2)(3)

Restricted band edge: Limit in FCC 15.209(a)

Since this limit is severer than the limit of the inside of restricted bands.

\*Electric Field Strength to e.i.r.p. conversion

$P [dBm] = E [dBuV/m] - 95.2 [dB]$

$P [dBm] = 10 \times \text{LOG} ( ( \{ 10 ^ ( E [dBuV/m] / 20 ) * 10 ^ (-6) * ( \text{Distance} = 3[m] ) ^ 2 \} / 30 ) \times 10 ^ 3 ) (uV/m):$

P is the e.i.r.p. (Watts)

\* Distance Factor for the measurement at 1m:  $20 \times \log (3.0m/1.0m) = 9.5dB$

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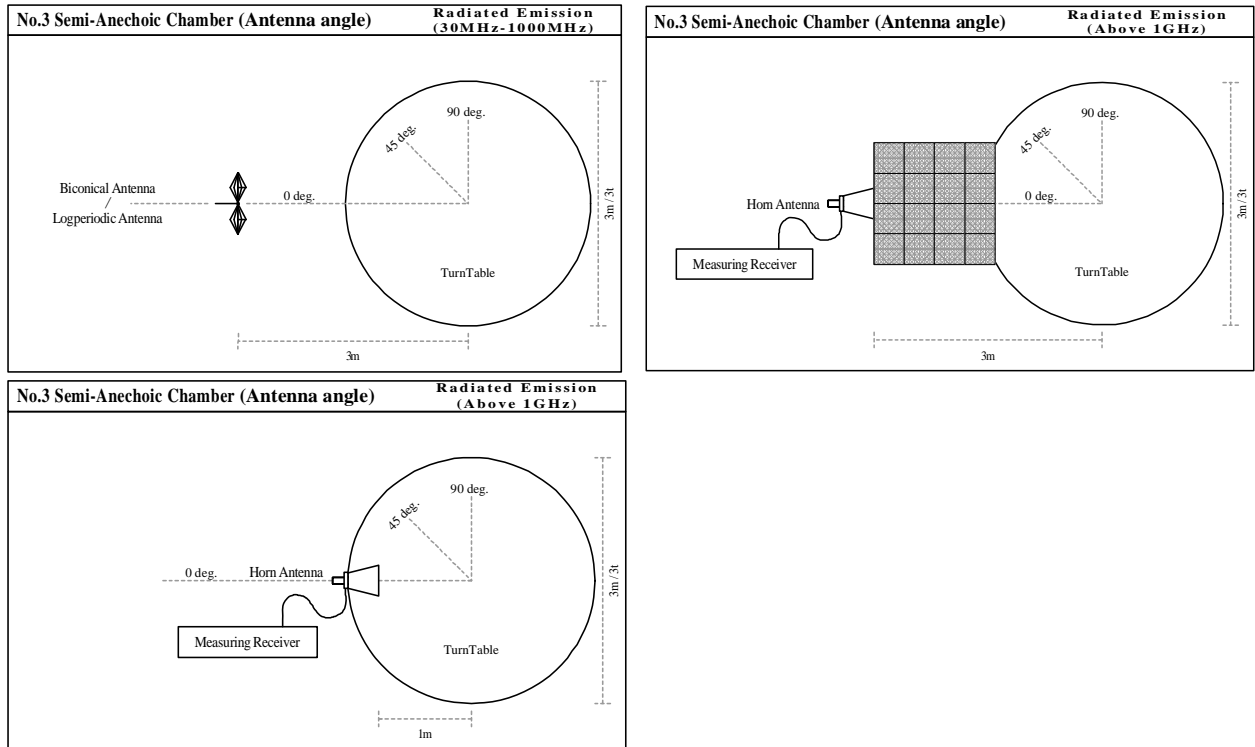
Facsimile : +81 463 50 6401

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

**Worst case:**

Antenna polarization	Carrier (Band edge)	Spurious	
		Below 1GHz	Above 1GHz
Horizontal	X	X	X
Vertical	Z	X	Z

**Figure 1. Antenna angle**



**6.5 Band edge**

Band edge level at 5350MHz is below the limits of FCC 15.209 and band edge level at 5250MHz is below the limit of -27dBm e.i.r.p.

**6.6 Results**

Summary of the test results : Pass

Refer to APPENDIX 1

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**SECTION 7: Antenna terminal conducted tests****Test Procedure**

The tests were made with below setting connected to the antenna port with the test instrument.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used and Test method
26dB bandwidth	Enough width to display 26dB Bandwidth	Close to 1% of EBW	Greater than RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99% occupied bandwidth	Enough width to display 26dB Bandwidth	Close to 1% of Span	Three times of RBW	Auto	Sample	Max Hold	Spectrum Analyzer
20dB bandwidth	Enough width to display 26dB Bandwidth	Close to 1% of Span	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum conducted output power *1)	-	-	50MHz	-	-	-	Power Meter method PM
Peak power spectral density *2)	Enough width to display 26dB Bandwidth	1MHz	3MHz	Auto	Sample Power Averaging (100 times)	Clear Write	Spectrum Analyzer method SA-1
Peak excursion ratio	Enough width to display 26dB Bandwidth	1MHz	3MHz	Auto	Peak	Max Hold	Spectrum Analyzer method SA-1
					Sample Power Averaging (100 times)	Clear Write	

\*EBW: Emission Bandwidth

\*1) Maximum Conducted Output Power was measured based on Method PM of "Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E".

\*2) PSD was measured based on Method SA-1 of "Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E".

The test results and limit are rounded off to two decimals place, so some differences might be observed.

Summary of the test results : Pass

Refer to APPENDIX 1

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## **Contents of APPENDIXES**

### **APPENDIX 1: Data of Radio tests**

Conducted emission  
26dB bandwidth  
99% Occupied bandwidth  
20dB bandwidth  
Maximum conducted output power  
Radiated emission  
Peak power density  
Peak excursion ratio

### **APPENDIX 2: Test instruments**

Test instruments

### **APPENDIX 3: Photographs of test setup**

Conducted emission  
Radiated emission  
Pre-check of worst position

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# APPENDIX 1: Data of Radio tests

## DATA OF CONDUCTED EMISSION TEST

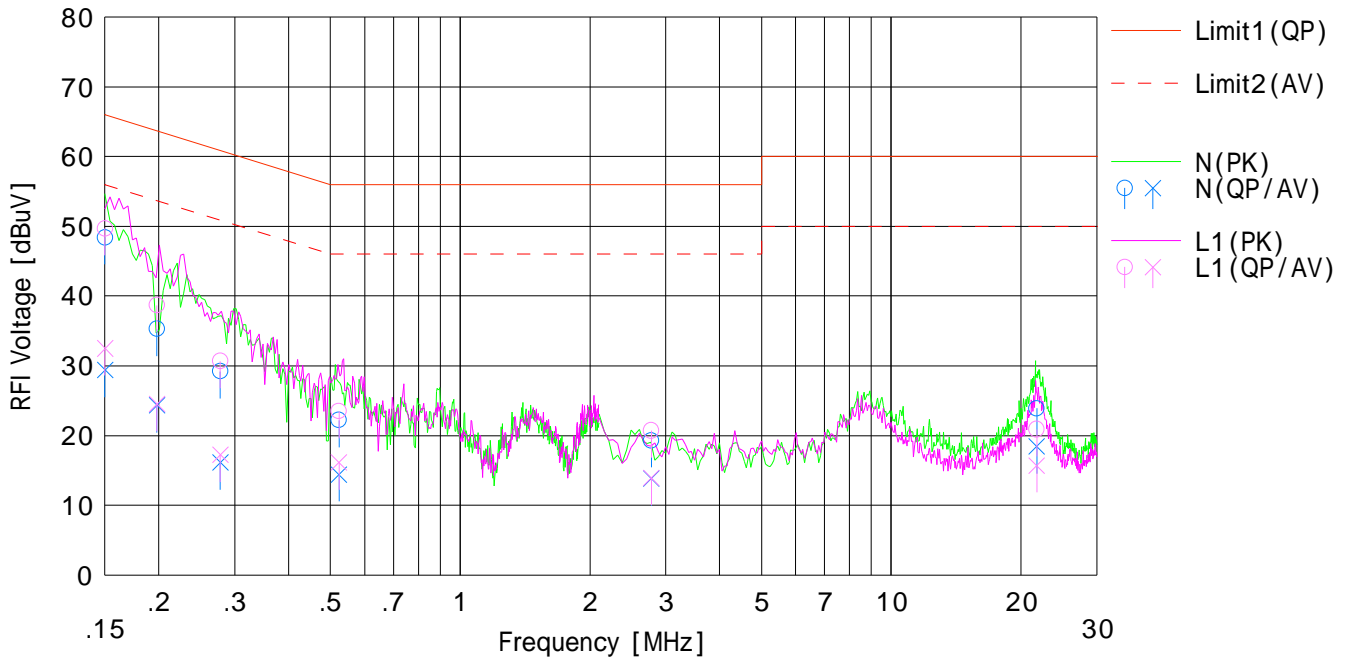
UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2013/04/01

Company : Canon Inc.  
Kind of EUT : Wireless Module  
Model No. : RF400  
Serial No. : #8  
Remarks : -

Mode : Tx 11a 5280MHz  
Report No. : 4786001102S-B-R1  
Power : AC 120V / 60Hz  
Temp./Humi. : 22deg.C. / 30%RH

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

Engineer : Wataru Kojima

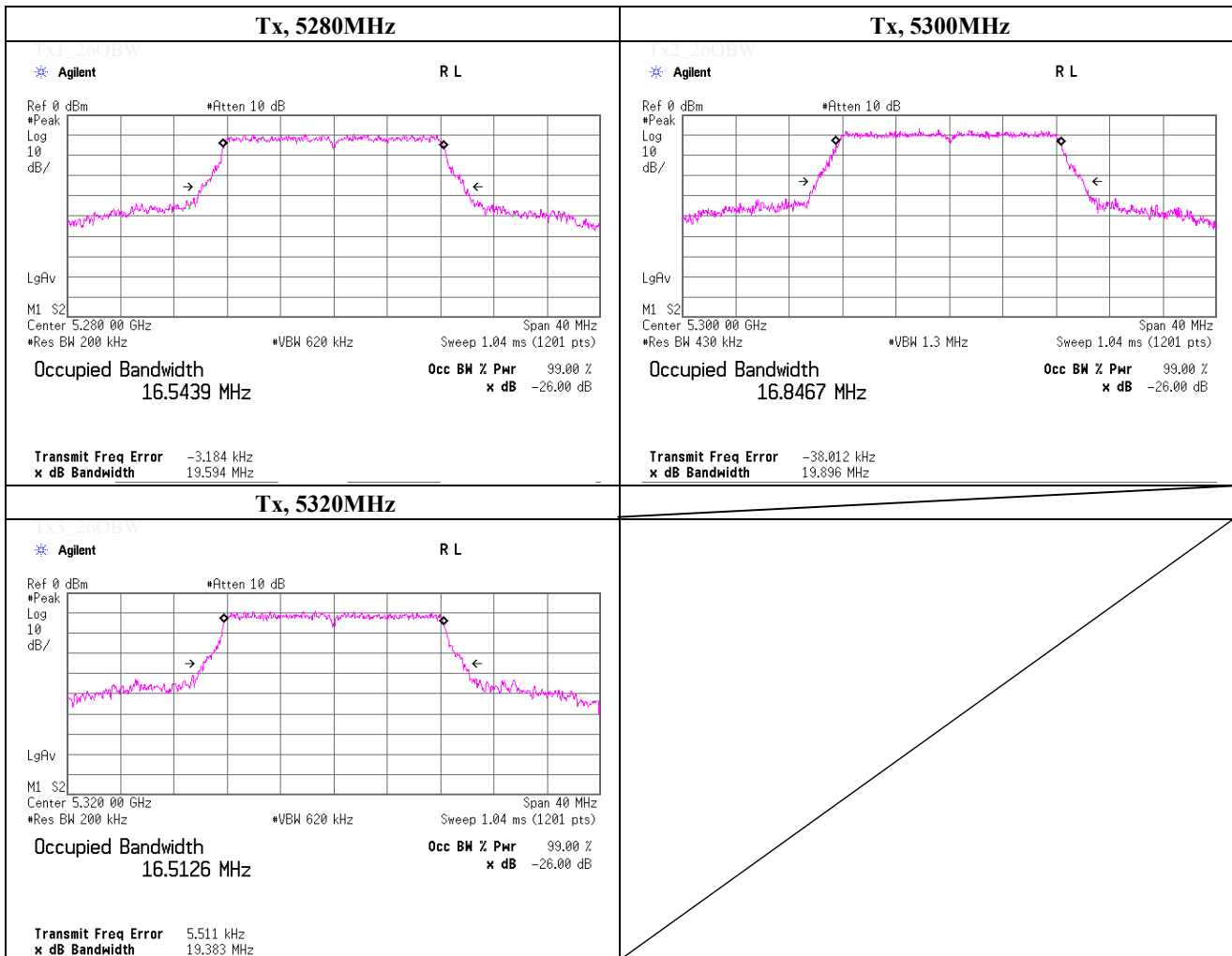


No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	35.7	16.7	12.7	48.4	29.4	66.0	56.0	17.6	26.6	N	
2	0.19802	22.6	11.6	12.7	35.3	24.3	63.6	53.6	28.3	29.3	N	
3	0.27762	16.5	3.4	12.7	29.2	16.1	60.8	50.8	31.6	34.7	N	
4	0.52378	9.5	1.7	12.7	22.2	14.4	56.0	46.0	33.8	31.6	N	
5	2.77580	6.5	1.0	12.8	19.3	13.8	56.0	46.0	36.7	32.2	N	
6	21.75531	10.3	4.8	13.6	23.9	18.4	60.0	50.0	36.1	31.6	N	
7	0.15000	37.0	19.8	12.7	49.7	32.5	66.0	56.0	16.3	23.5	L1	
8	0.19802	26.0	11.8	12.7	38.7	24.5	63.6	53.6	24.9	29.1	L1	
9	0.27762	18.0	4.5	12.7	30.7	17.2	60.8	50.8	30.1	33.6	L1	
10	0.52378	10.8	3.4	12.7	23.5	16.1	56.0	46.0	32.5	29.9	L1	
11	2.77580	7.9	1.1	12.8	20.7	13.9	56.0	46.0	35.3	32.1	L1	
12	21.75531	7.3	2.1	13.6	20.9	15.7	60.0	50.0	39.1	34.3	L1	

### -26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11a, PN9, worst data mode 6Mbps	

Freq. [MHz]	-26dB Bandwidth [MHz]
5280.0000	19.594
5300.0000	19.896
5320.0000	19.383



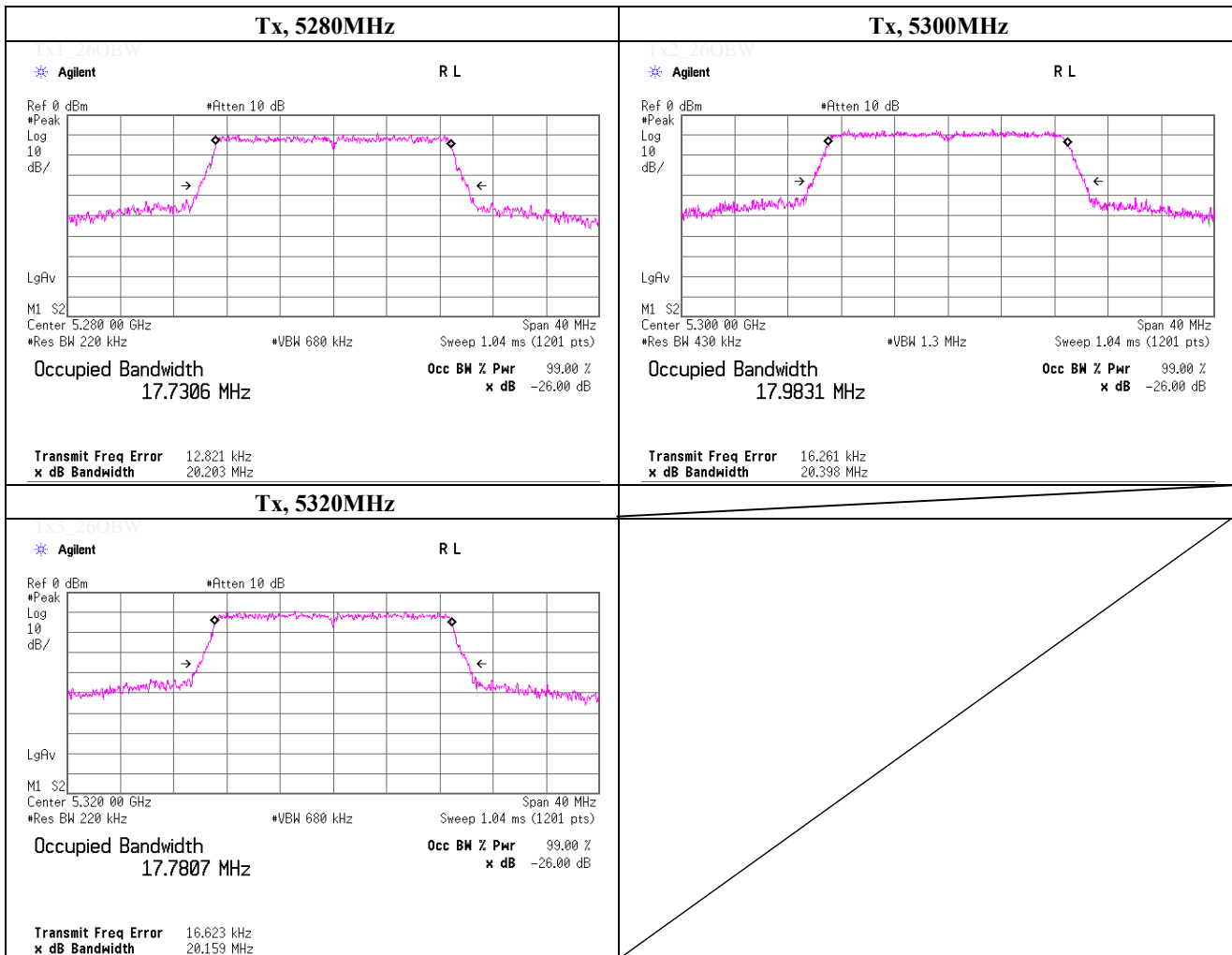
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### -26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5280.0000	20.203
5300.0000	20.398
5320.0000	20.159

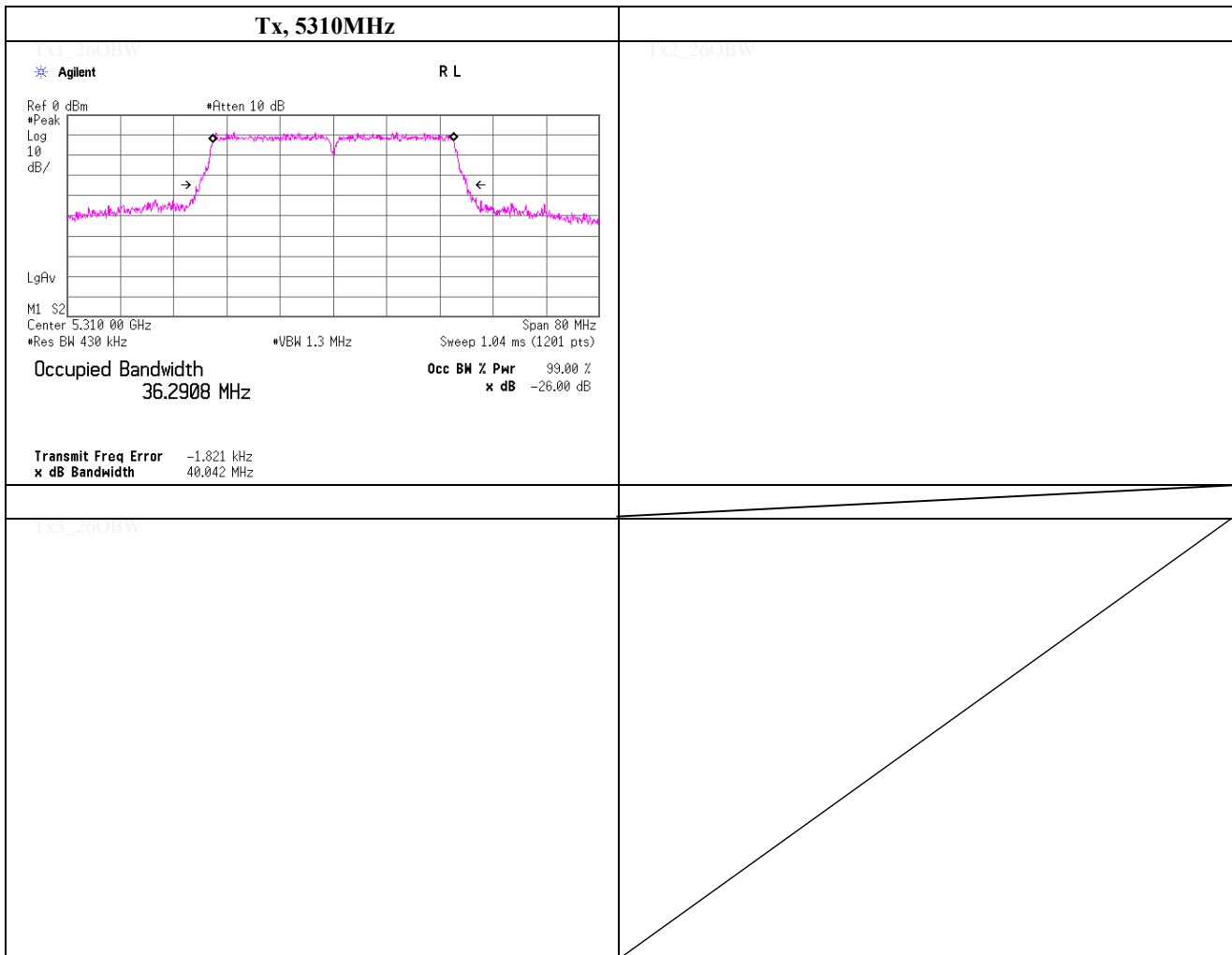


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### -26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	
Temperature / Humidity	23deg.C , 37%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5310.0000	40.042

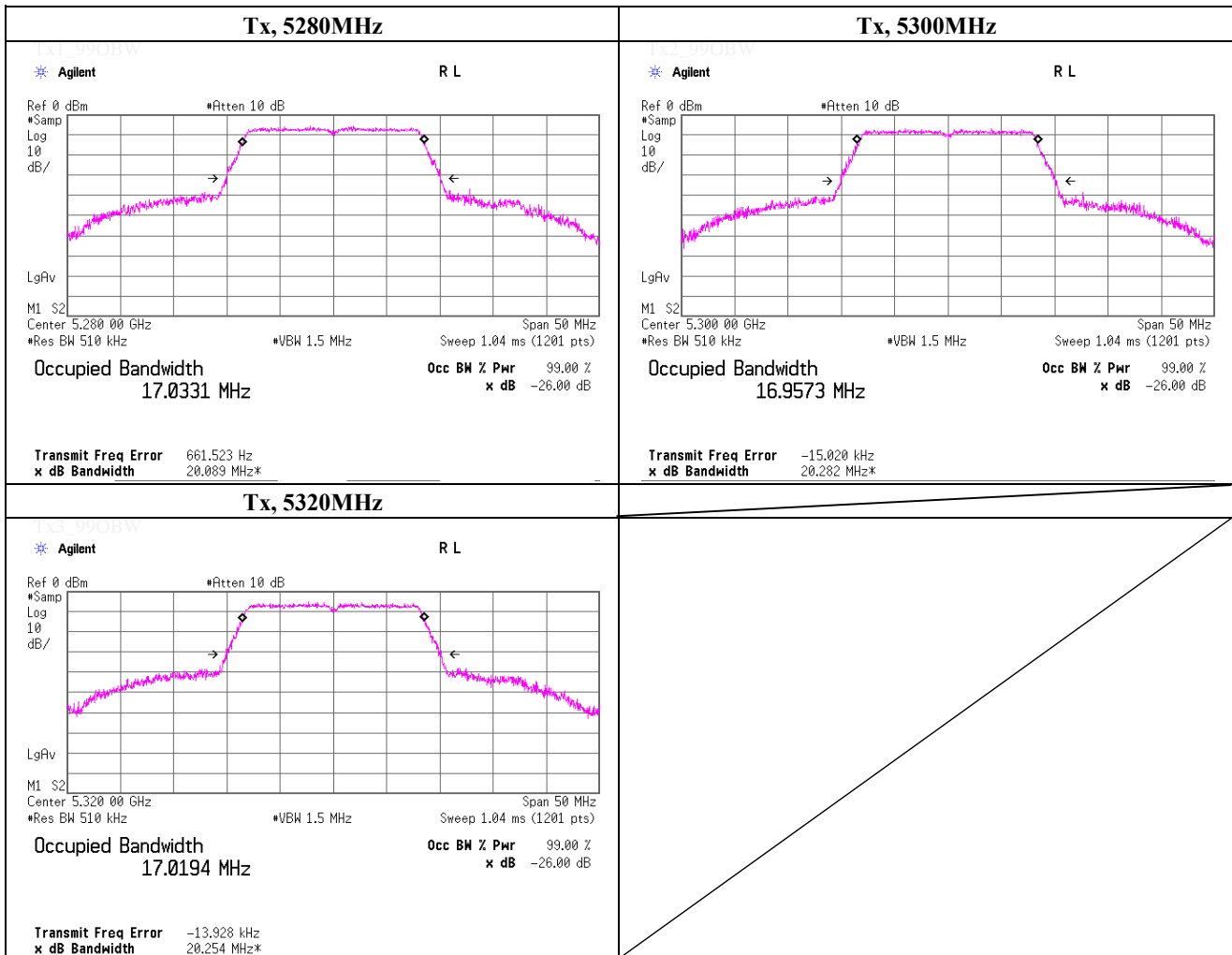


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 Telephone : +81 463 50 6400  
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### 99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11a, PN9, worst data mode 6Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5280.0000	17.033
5300.0000	16.957
5320.0000	17.019

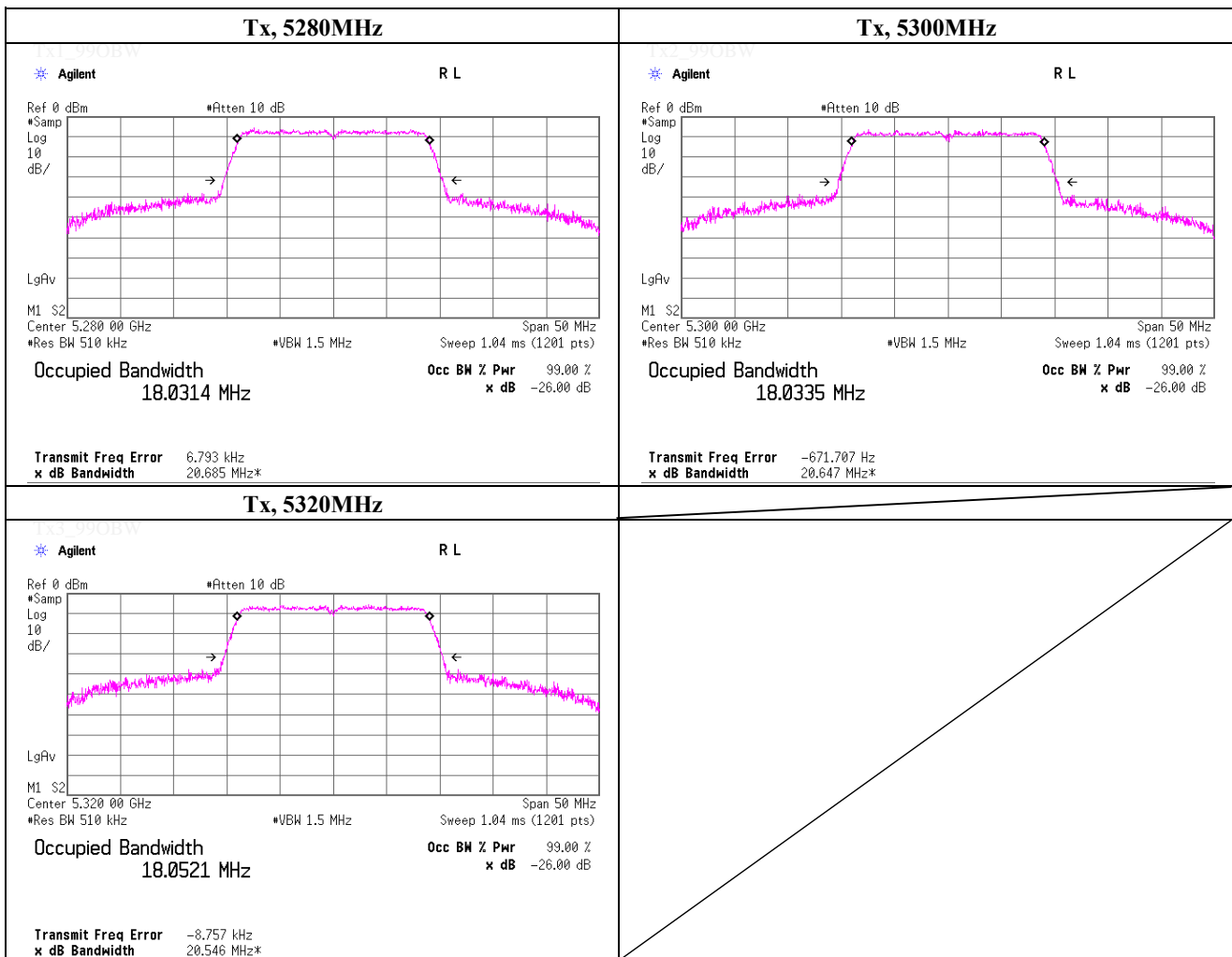


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### 99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5280.0000	18.031
5300.0000	18.033
5320.0000	18.052

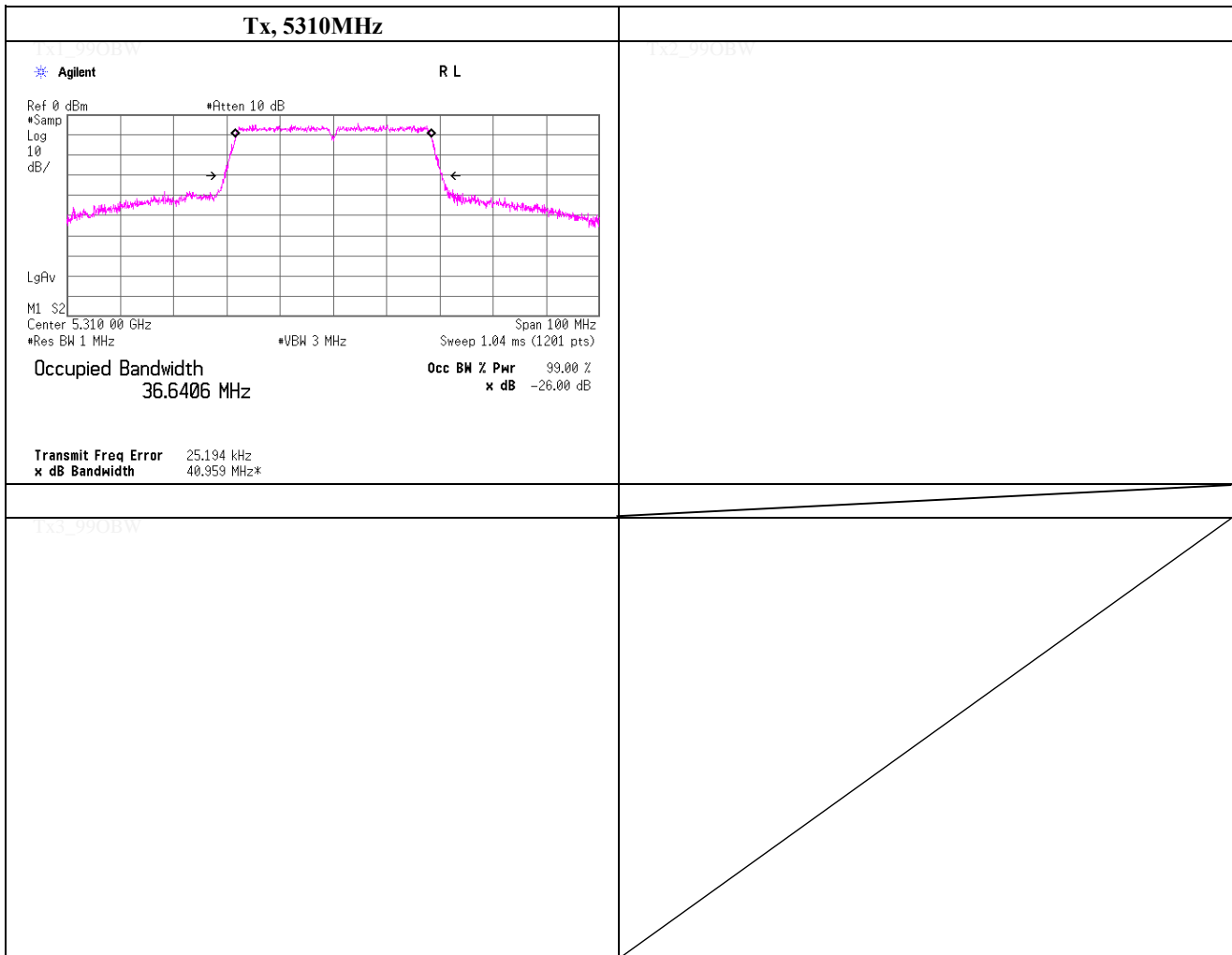


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### 99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	
Temperature / Humidity	23deg.C , 37%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)	

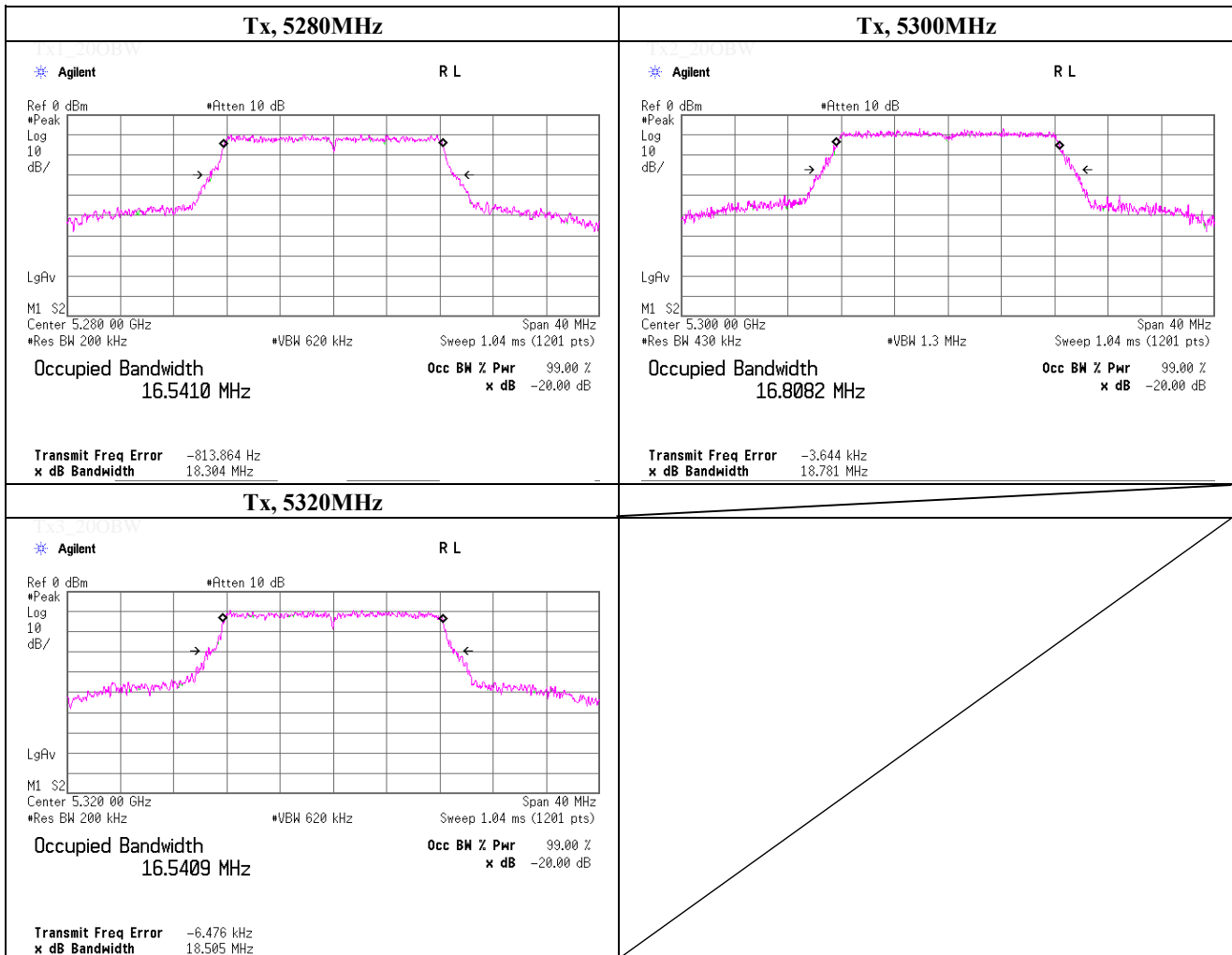
Freq. [MHz]	99% Occupied Bandwidth [MHz]
5310.0000	36.641



### -20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11a, PN9, worst data mode 6Mbps	

Freq. [MHz]	-20dB Bandwidth [MHz]
5280.0000	18.304
5300.0000	18.781
5320.0000	18.505

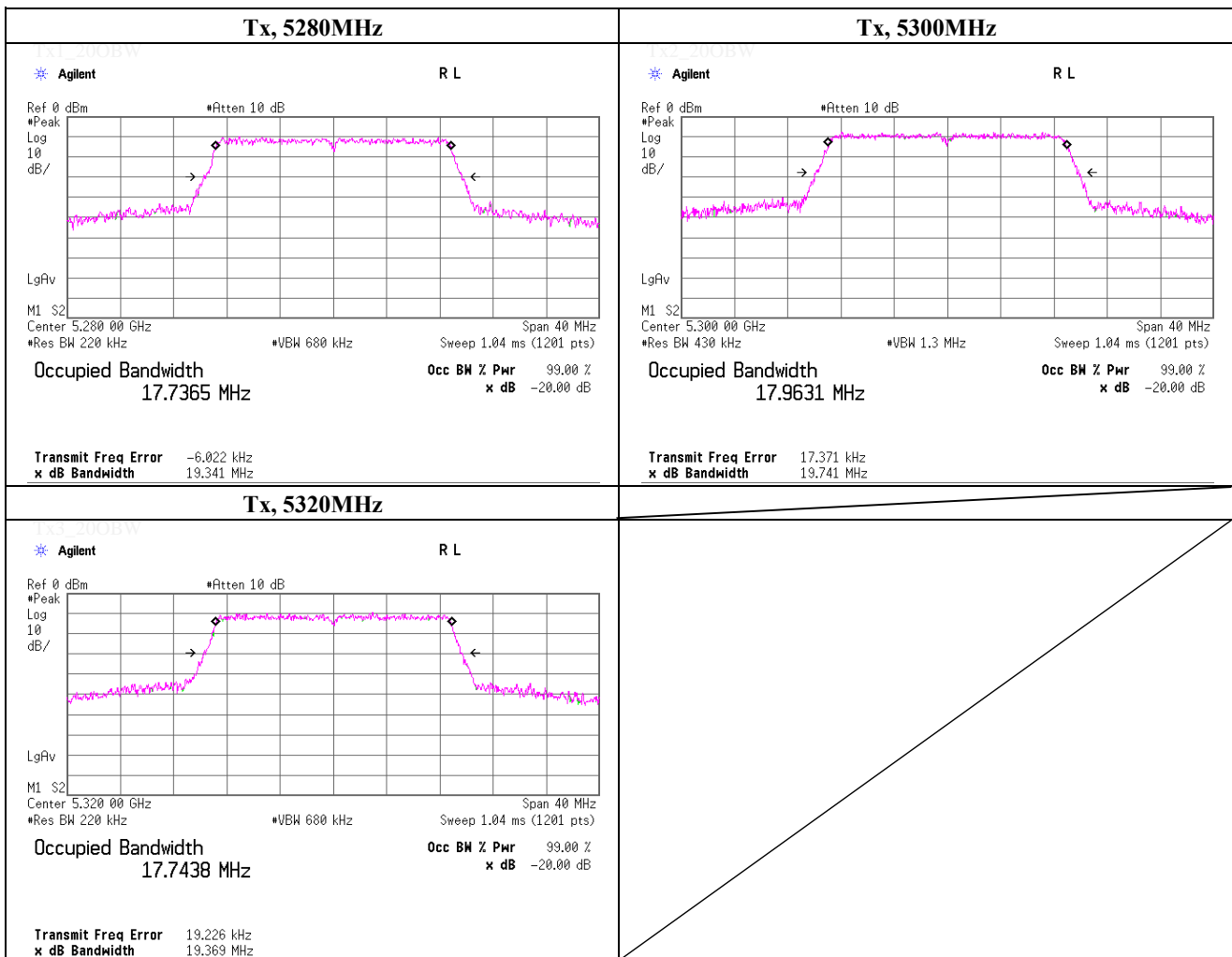


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### -20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)	

Freq. [MHz]	-20dB Bandwidth [MHz]
5280.0000	19.341
5300.0000	19.741
5320.0000	19.369

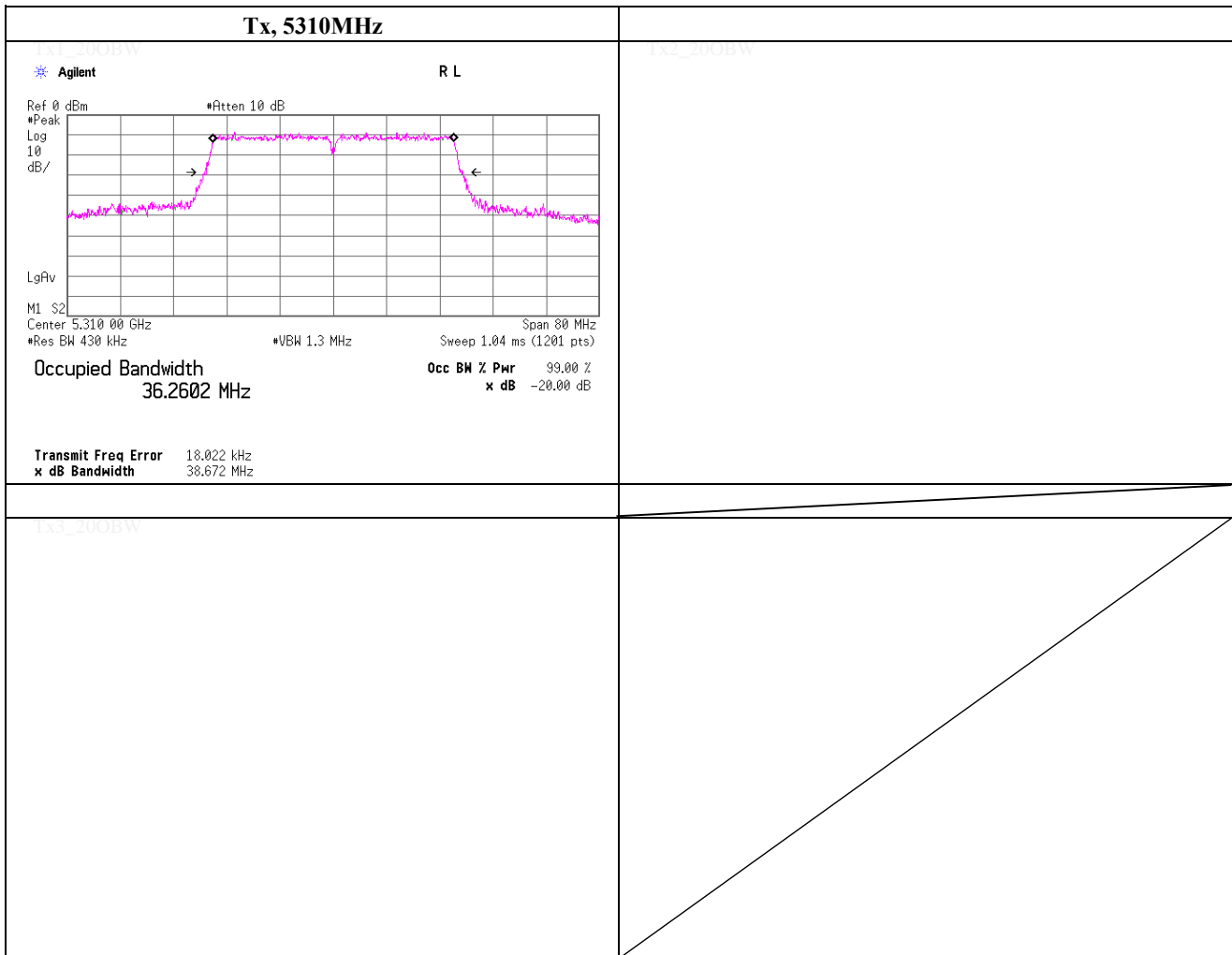


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**-20dB Bandwidth**

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	
Temperature / Humidity	23deg.C , 37%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)	

Freq. [MHz]	-20dB Bandwidth [MHz]
5310.0000	38.672



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## Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 15, 2013	April 2, 2013
Temperature / Humidity	22deg.C , 40%RH	22deg.C , 41%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, IEEE802.11a, PN9,	worst data mode : 6 Mbps

**Antenna terminal power** (\* 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		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5280.0	1.80	0.76	10.00	0.00	12.56	18.03	23.87	244.01	11.31
Mid	5300.0	1.55	0.76	10.00	0.00	12.31	17.02	23.87	244.01	11.56
High	5320.0	1.61	0.76	9.99	0.00	12.36	17.22	23.87	244.01	11.51

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

**EIRP** (\* P/M: Power Meter with power sensor, AV: Average) **Reference Data**

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5280.0	1.80	0.76	10.00	0.00	2.40	14.96	31.33	-	-	-
Mid	5300.0	1.55	0.76	10.00	0.00	2.40	14.71	29.58	-	-	-
High	5320.0	1.61	0.76	9.99	0.00	2.40	14.76	29.92	-	-	-

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

**[Pre check]**

**Antenna**

Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
6	5260.0	1.79	0.76	10.00	0.00	12.55
9	5260.0	1.71	0.76	10.00	0.00	12.47
12	5260.0	1.65	0.76	10.00	0.00	12.41
18	5260.0	1.70	0.76	10.00	0.00	12.46
24	5260.0	1.76	0.76	10.00	0.00	12.52
36	5260.0	1.66	0.76	10.00	0.00	12.42
48	5260.0	1.77	0.76	10.00	0.00	12.53
54	5260.0	1.65	0.76	10.00	0.00	12.41

Worst

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## Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 15, 2013	April 2, 2013
Temperature / Humidity	22deg.C , 40%RH	22deg.C , 41%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, IEEE802.11n(20HT), PN9,	worst data mode : 0 (MCS)

**Antena terminal power** (\* 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		Limit		Margin [dB]
						[dBm]	[mW]	[dBm]	[mW]	
Low	5280.0	1.79	0.76	10.00	0.00	12.55	17.99	23.98	250.00	11.43
Mid	5300.0	1.52	0.76	10.00	0.00	12.28	16.90	23.98	250.00	11.70
High	5320.0	1.62	0.76	9.99	0.00	12.37	17.26	23.98	250.00	11.61

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

**EIRP** (\* P/M: Power Meter with power sensor, AV: Average) **Reference Data**

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
							(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	(e.i.r.p.) [dBm]	(e.i.r.p.) [mW]	
Low	5280.0	1.79	0.76	10.00	0.00	2.40	14.95	31.26	-	-	-
Mid	5300.0	1.52	0.76	10.00	0.00	2.40	14.68	29.38	-	-	-
High	5320.0	1.62	0.76	9.99	0.00	2.40	14.77	29.99	-	-	-

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

**[Pre check]**

**Antenna**

Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
0	5260.0	1.76	0.76	10.00	0.00	12.52
1	5260.0	1.66	0.76	10.00	0.00	12.42
2	5260.0	1.66	0.76	10.00	0.00	12.42
3	5260.0	1.70	0.76	10.00	0.00	12.46
4	5260.0	1.75	0.76	10.00	0.00	12.51
5	5260.0	1.75	0.76	10.00	0.00	12.51
6	5260.0	1.70	0.76	10.00	0.00	12.46
7	5260.0	1.69	0.76	10.00	0.00	12.45

**Worst**

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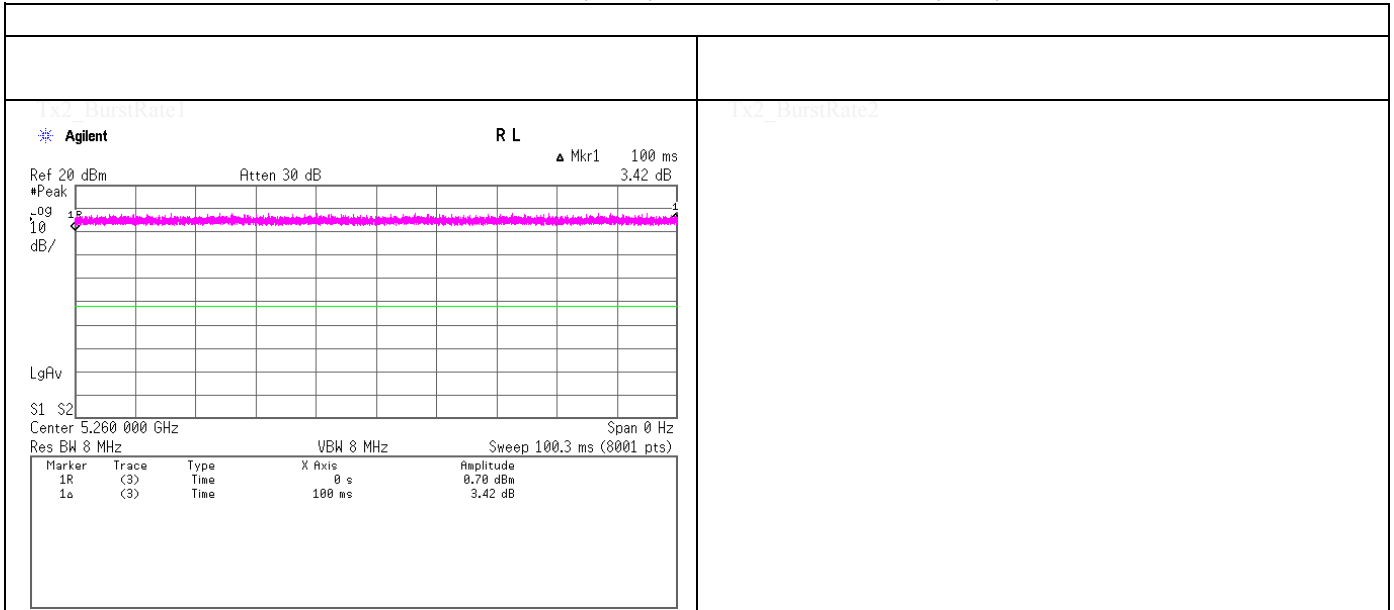
Facsimile : +81 463 50 6401





**Burst rate confirmation**

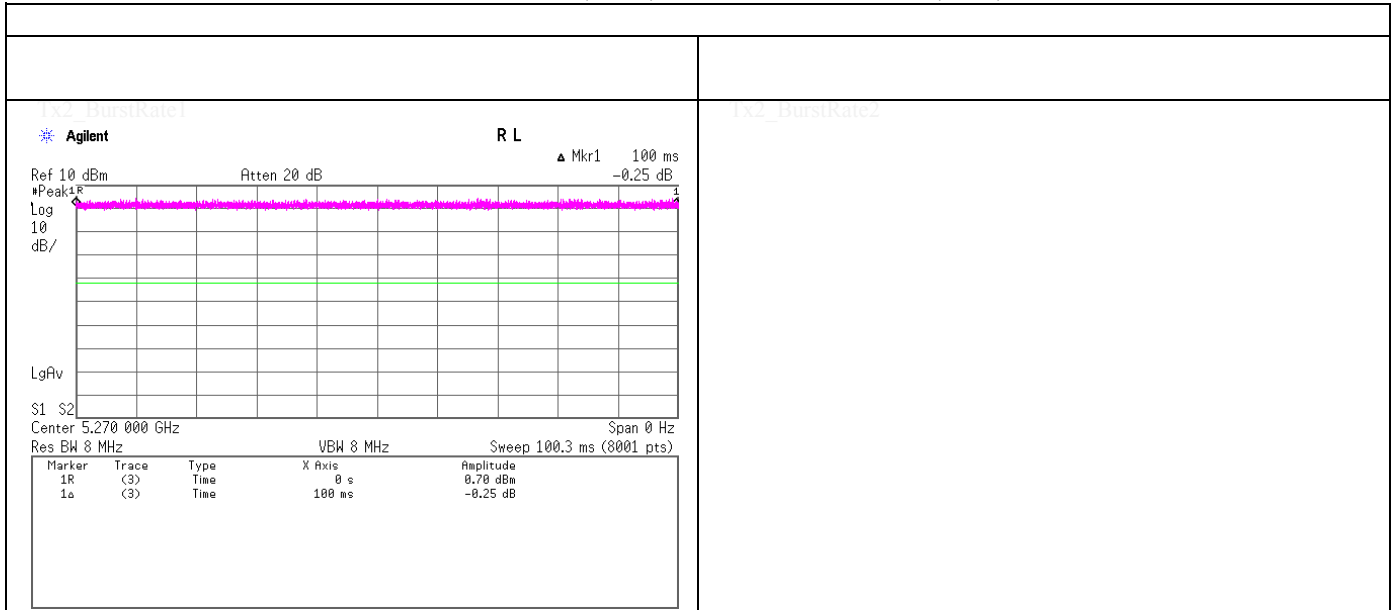
**Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)**



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**Burst rate confirmation**

**Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)**



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## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.    No.3 Semi Anechoic Chamber  
 Date                         January 19, 2013    January 21, 2013    January 23, 2013    January 24, 2013                    April 1, 2013  
 Temperature / Humidity    24 deg.C , 30 %RH   24 deg.C , 56 %RH   23 deg.C , 60 %RH   22 deg.C , 33 %RH                 23deg.C, 31%RH  
 Engineer                    Kenichi Adachi    Kenichi Adachi    Kenichi Adachi    Kenichi Adachi                     Wataru Kojima  
 Mode                        Tx,                   5280 MHz  
                                   Tx, IEEE802.11a, PN9, worst data mode 6Mbps

### (above 1GHz Inside of the restricted band)

(\* 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.	143.995	QP	41.5	14.7	7.7	32.1	31.8	43.5	11.7	255	294	
Hori.	335.998	QP	50.8	14.7	8.7	32.0	42.2	46.0	3.8	100	293	
Hori.	431.994	QP	48.0	16.6	9.2	32.0	41.8	46.0	4.2	227	302	
Hori.	527.992	QP	48.5	17.9	9.5	32.0	43.9	46.0	2.1	172	265	
Hori.	623.993	QP	41.5	19.2	9.9	32.0	38.6	46.0	7.4	142	88	
Hori.	5150.000	PK	45.1	31.8	16.4	40.6	52.7	73.9	21.2	100	114	
Hori.	15840.000	PK	44.7	39.3	1.8	39.2	46.6	73.9	27.3	100	0	
Hori.	5150.000	AV	33.7	31.8	16.4	40.6	41.3	53.9	12.6	100	114	
Hori.	15840.000	AV	32.8	39.3	1.8	39.2	34.7	53.9	19.2	100	0	
Vert.	527.992	QP	45.9	17.9	9.5	32.0	41.3	46.0	4.7	102	198	
Vert.	623.993	QP	39.7	19.2	9.9	32.0	36.8	46.0	9.2	100	214	
Vert.	5150.000	PK	45.4	31.8	16.4	40.6	53.0	73.9	20.9	100	359	
Vert.	15840.000	PK	44.6	39.3	1.8	39.2	46.5	73.9	27.4	100	0	
Vert.	5150.000	AV	33.5	31.8	16.4	40.6	41.1	53.9	12.8	100	359	
Vert.	15840.000	AV	32.6	39.3	1.8	39.2	34.5	53.9	19.4	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz-40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### (Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5250.000	PK	59.3	31.9	16.5	40.4	67.3	-27.93	-27.00	0.9	100	105	
Hori.	7040.109	PK	55.6	36.6	7.9	41.3	58.8	-36.43	-27.00	9.4	155	138	
Hori.	10560.000	PK	45.3	39.0	9.6	38.7	55.2	-40.03	-27.00	13.0	100	0	
Vert.	5250.000	PK	56.7	31.9	16.5	40.4	64.7	-30.53	-27.00	3.5	100	359	
Vert.	7040.109	PK	52.5	36.6	7.9	41.3	55.7	-39.53	-27.00	12.5	167	345	
Vert.	10560.000	PK	45.1	39.0	9.6	38.7	55.0	-40.23	-27.00	13.2	100	0	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10\*LOG (({ 10 ^ ( Electric Field Strength [dBuV/m] / 20 ) \* 10 ^ (-6) \* Distance:3[m] ) ^ 2 } / 30) \*10^3)

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor:            15GHz-40GHz            20log(3.0m/1.0m)= 9.5dB

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.    No.3 Semi Anechoic Chamber  
 Date                         April 1, 2013  
 Temperature / Humidity    23deg.C , 31%RH  
 Engineer                  Wataru Kojima  
 Mode                        Tx,                 5300 MHz  
                               Tx, IEEE802.11a, PN9, worst data mode 6Mbps

### (above 1GHz Inside of the restricted band)

(\* 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.	10600.000	PK	44.1	39.1	9.7	38.8	54.1	73.9	19.8	100	0	
Hori.	15900.000	PK	44.5	39.2	1.8	39.3	46.2	73.9	27.7	100	0	
Hori.	10600.000	AV	33.4	39.1	9.7	38.8	43.4	53.9	10.5	100	0	
Hori.	15900.000	AV	33.3	39.2	1.8	39.3	35	53.9	18.9	100	0	
Vert.	10600.000	PK	46.1	39.1	9.7	38.8	56.1	73.9	17.8	100	0	
Vert.	15900.000	PK	45	39.2	1.8	39.3	46.7	73.9	27.2	100	0	
Vert.	10600.000	AV	33.4	39.1	9.7	38.8	43.4	53.9	10.5	100	0	
Vert.	15900.000	AV	33.2	39.2	1.8	39.3	34.9	53.9	19.0	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz :  $20\log(3.0m/1.0m) = 9.5dB$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### (Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7066.696	PK	53.4	36.6	7.9	41.3	56.6	-38.63	-27.00	11.6	154	129	
Vert.	7066.696	PK	51.2	36.6	7.9	41.3	54.4	-40.83	-27.00	13.8	100	213	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])= $10*\LOG ((\{ 10 ^ ( Electric Field Strength [dBuV/m] / 20 ) * 10 ^ (-6) * Distance:3[m] ) ^ 2 \} / 30) *10^3$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor:           15GHz-40GHz            $20\log(3.0m/1.0m) = 9.5dB$



## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.    No.3 Semi Anechoic Chamber  
 Date                         January 19, 2013    January 21, 2013    January 23, 2013    January 24, 2013  
 Temperature / Humidity   24 deg.C , 30 %RH   24 deg.C , 56 %RH   23 deg.C , 60 %RH   22 deg.C , 33 %RH  
 Engineer                 Kenichi Adachi    Kenichi Adachi    Kenichi Adachi    Kenichi Adachi  
 Mode                      Tx,                   5320 MHz  
                               Tx, IEEE802.11a, PN9, worst data mode 6Mbps

### (above 1GHz Inside of the restricted band)

(\* 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.	5350.000	PK	47.2	31.9	16.6	40.3	55.4	73.9	18.5	100	116	
Hori.	10640.000	PK	44.5	39.2	9.6	38.8	54.5	73.9	19.4	100	0	
Hori.	15960.000	PK	44.9	39	1.7	39.3	46.3	73.9	27.6	100	0	
Hori.	5350.000	AV	35.4	31.9	16.6	40.3	43.6	53.9	10.3	100	116	
Hori.	10640.000	AV	33.6	39.2	9.6	38.8	43.6	53.9	10.3	100	0	
Hori.	15960.000	AV	32.9	39	1.7	39.3	34.3	53.9	19.6	100	0	
Vert.	5350.000	PK	47.1	31.9	16.6	40.3	55.3	73.9	18.6	100	0	
Vert.	10640.000	PK	44.6	39.2	9.6	38.8	54.6	73.9	19.3	100	0	
Vert.	15960.000	PK	44.8	39	1.7	39.3	46.2	73.9	27.7	100	0	
Vert.	5350.000	AV	35.3	31.9	16.6	40.3	43.5	53.9	10.4	100	0	
Vert.	10640.000	AV	33.7	39.2	9.6	38.8	43.7	53.9	10.2	100	0	
Vert.	15960.000	AV	32.8	39	1.7	39.3	34.2	53.9	19.7	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz-40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### (Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7093.551	PK	53.3	36.6	7.9	41.3	56.5	-38.73	-27.00	11.7	143	138	
Vert.	7093.551	PK	51.8	36.6	7.9	41.3	55	-40.23	-27.00	13.2	100	91	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10\*LOG (({ 10 ^ ( Electric Field Strength [dBuV/m] / 20 ) \* 10 ^ (-6) \* Distance:3[m] ) ^ 2 } / 30) \*10^3)

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor:           15GHz-40GHz           20log(3.0m/1.0m)= 9.5dB

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.    No.3 Semi Anechoic Chamber  
 Date                         January 19, 2013    January 21, 2013    January 23, 2013    January 24, 2013                    April 1, 2013  
 Temperature / Humidity    24 deg.C , 30 %RH   24 deg.C , 56 %RH   23 deg.C , 60 %RH   22 deg.C , 33 %RH                 23deg.C , 31%RH  
 Engineer                    Kenichi Adachi    Kenichi Adachi    Kenichi Adachi    Kenichi Adachi                     Wataru Kojima  
 Mode                         Tx,                   5280 MHz  
                                   Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)

### (above 1GHz Inside of the restricted band)

(\* 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.	5150.000	PK	45.1	31.8	16.4	40.6	52.7	73.9	21.2	100	118	
Hori.	15840.000	PK	44.6	39.3	1.8	39.2	46.5	73.9	27.4	100	0	
Hori.	5150.000	AV	34.1	31.8	16.4	40.6	41.7	53.9	12.2	100	118	
Hori.	15840.000	AV	32.5	39.3	1.8	39.2	34.4	53.9	19.5	100	0	
Vert.	5150.000	PK	45.3	31.8	16.4	40.6	52.9	73.9	21.0	100	342	
Vert.	15840.000	PK	44.7	39.3	1.8	39.2	46.6	73.9	27.3	100	0	
Vert.	5150.000	AV	34.0	31.8	16.4	40.6	41.6	53.9	12.3	100	342	
Vert.	15840.000	AV	32.4	39.3	1.8	39.2	34.3	53.9	19.6	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz-40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### (Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5250.000	PK	48.6	31.9	16.5	40.4	56.6	-38.63	-27.00	11.6	100	104	
Hori.	7040.177	PK	55.3	36.6	7.9	41.3	58.5	-36.73	-27.00	9.7	152	127	
Hori.	10560.000	PK	45.0	39.0	9.6	38.7	54.9	-40.33	-27.00	13.3	100	0	
Vert.	5250.000	PK	47.3	31.9	16.5	40.4	55.3	-39.93	-27.00	12.9	100	359	
Vert.	7040.177	PK	54.5	36.6	7.9	41.3	57.7	-37.53	-27.00	10.5	141	213	
Vert.	10560.000	PK	45.3	39.0	9.6	38.7	55.2	-40.03	-27.00	13.0	100	0	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10\*LOG (({ 10 ^ ( Electric Field Strength [dBuV/m] / 20 ) \* 10 ^ (-6) \* Distance:3[m] ) ^ 2 } / 30) \*10^3)

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor:            15GHz-40GHz            20log(3.0m/1.0m)= 9.5dB

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.    No.3 Semi Anechoic Chamber  
 Date                         April 1, 2013  
 Temperature / Humidity    23deg.C , 31%RH  
 Engineer                    Wataru Kojima  
 Mode                        Tx,                    5300 MHz  
                               Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)

### (above 1GHz Inside of the restricted band)

(\* 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.	10600.000	PK	44.7	39.1	9.7	38.8	54.7	73.9	19.2	100	0	
Hori.	15900.000	PK	45.1	39.2	1.8	39.3	46.8	73.9	27.1	100	0	
Hori.	10600.000	AV	32.4	39.1	9.7	38.8	42.4	53.9	11.5	100	0	
Hori.	15900.000	AV	33.2	39.2	1.8	39.3	34.9	53.9	19.0	100	0	
Vert.	10600.000	PK	43.8	39.1	9.7	38.8	53.8	73.9	20.1	100	0	
Vert.	15900.000	PK	44.7	39.2	1.8	39.3	46.4	73.9	27.5	100	0	
Vert.	10600.000	AV	32.3	39.1	9.7	38.8	42.3	53.9	11.6	100	0	
Vert.	15900.000	AV	33.3	39.2	1.8	39.3	35.0	53.9	18.9	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz-40GHz :  $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### (Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7066.915	PK	54.5	36.6	7.9	41.3	57.7	-37.53	-27.00	10.5	146	145	
Vert.	7066.915	PK	52.1	36.6	7.9	41.3	55.3	-39.93	-27.00	12.9	100	253	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])= $10\cdot\text{LOG} \left( \left( 10^{\wedge} (\text{Electric Field Strength [dBuV/m]} / 20) * 10^{\wedge} (-6) * \text{Distance:3[m]}^{\wedge} 2 \right) / 30 \right) * 10^{\wedge} 3$

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor:            15GHz-40GHz             $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.    No.3 Semi Anechoic Chamber  
 Date                         January 19, 2013    January 21, 2013    January 23, 2013    January 24, 2013  
 Temperature / Humidity   24 deg.C , 30 %RH   24 deg.C , 56 %RH   23 deg.C , 60 %RH   22 deg.C , 33 %RH  
 Engineer                  Kenichi Adachi    Kenichi Adachi    Kenichi Adachi    Kenichi Adachi  
 Mode                        Tx,                   5320 MHz  
                                   Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)

### (above 1GHz Inside of the restricted band)

(\* 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.	5350.000	PK	47.2	31.9	16.6	40.3	55.4	73.9	18.5	100	119	
Hori.	10640.000	PK	44.7	39.2	9.6	38.8	54.7	73.9	19.2	100	0	
Hori.	15960.000	PK	45.1	39	1.7	39.3	46.5	73.9	27.4	100	0	
Hori.	5350.000	AV	35.4	31.9	16.6	40.3	43.6	53.9	10.3	100	119	
Hori.	10640.000	AV	33.7	39.2	9.6	38.8	43.7	53.9	10.2	100	0	
Hori.	15960.000	AV	32.7	39	1.7	39.3	34.1	53.9	19.8	100	0	
Vert.	5350.000	PK	47.1	31.9	16.6	40.3	55.3	73.9	18.6	100	359	
Vert.	10640.000	PK	44.5	39.2	9.6	38.8	54.5	73.9	19.4	100	0	
Vert.	15960.000	PK	44.9	39	1.7	39.3	46.3	73.9	27.6	100	0	
Vert.	5350.000	AV	35.2	31.9	16.6	40.3	43.4	53.9	10.5	100	359	
Vert.	10640.000	AV	33.6	39.2	9.6	38.8	43.6	53.9	10.3	100	0	
Vert.	15960.000	AV	32.6	39	1.7	39.3	34	53.9	19.9	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz-40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### (Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7093.554	PK	53.5	36.6	7.9	41.3	56.7	-38.53	-27.00	11.5	144	137	
Vert.	7093.554	PK	51.2	36.6	7.9	41.3	54.4	-40.83	-27.00	13.8	100	94	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10\*LOG (({ 10 ^ ( Electric Field Strength [dBuV/m] / 20 ) \* 10 ^ (-6) \* Distance:3[m] ) ^ 2 } / 30) \*10^3)

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor:           15GHz-40GHz           20log(3.0m/1.0m)= 9.5dB

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.    No.3 Semi Anechoic Chamber  
 Date                        January 19, 2013    January 21, 2013    January 23, 2013    January 24, 2013                    April 1, 2013  
 Temperature / Humidity    24 deg.C , 30 %RH   24 deg.C , 56 %RH   23 deg.C , 60 %RH   22 deg.C , 33 %RH                   23deg.C , 31%RH  
 Engineer                   Kenichi Adachi    Kenichi Adachi    Kenichi Adachi    Kenichi Adachi                        Wataru Kojima  
 Mode                        Tx,                   5310 MHz  
                                   Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)

### (below 1GHz and above 1GHz Inside of the restricted band)

(\* 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.	5150.000	PK	44.0	31.8	16.4	40.6	51.6	73.9	22.3	100	104	
Hori.	5350.000	PK	58.5	31.9	16.6	40.3	66.7	73.9	7.2	100	104	
Hori.	10620.000	PK	45.5	39.1	9.6	38.8	55.4	73.9	18.5	100	0	
Hori.	15930.000	PK	45.0	39.1	1.8	39.3	46.6	73.9	27.3	100	0	
Hori.	5150.000	AV	33.9	31.8	16.4	40.6	41.5	53.9	12.4	100	104	
Hori.	5350.000	AV	45.5	31.9	16.6	40.3	53.7	53.9	0.2	100	104	
Hori.	10620.000	AV	33.4	39.1	9.6	38.8	43.3	53.9	10.6	100	0	
Hori.	15930.000	AV	32.3	39.1	1.8	39.3	33.9	53.9	20.0	100	0	
Vert.	5150.000	PK	44.4	31.8	16.4	40.6	52.0	73.9	21.9	100	359	
Vert.	5350.000	PK	57.0	31.9	16.6	40.3	65.2	73.9	8.7	100	359	
Vert.	10620.000	PK	45.3	39.1	9.6	38.8	55.2	73.9	18.7	100	0	
Vert.	15930.000	PK	44.8	39.1	1.8	39.3	46.4	73.9	27.5	100	0	
Vert.	5150.000	AV	33.8	31.8	16.4	40.6	41.4	53.9	12.5	100	359	
Vert.	5350.000	AV	44.6	31.9	16.6	40.3	52.8	53.9	1.1	100	359	
Vert.	10620.000	AV	33.5	39.1	9.6	38.8	43.4	53.9	10.5	100	0	
Vert.	15930.000	AV	32.6	39.1	1.8	39.3	34.2	53.9	19.7	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

### (Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5250.000	PK	56.8	31.9	16.5	40.4	64.8	-30.43	-27.00	3.4	163	131	
Hori.	7081.312	PK	52.8	36.6	7.9	41.3	56.0	-39.23	-27.00	12.2	100	0	
Vert.	5250.000	PK	50.1	31.9	16.5	40.4	58.1	-37.13	-27.00	10.1	163	340	
Vert.	7081.312	PK	51.5	36.6	7.9	41.3	54.7	-40.53	-27.00	13.5	100	0	

Result[dBuV/m] = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

Result(EIRP[dBm])=10\*LOG (({ 10 ^ ( Electric Field Strength [dBuV/m] / 20 ) \* 10 ^ (-6) \* Distance:3[m] ) ^ 2 } / 30) \*10^3)

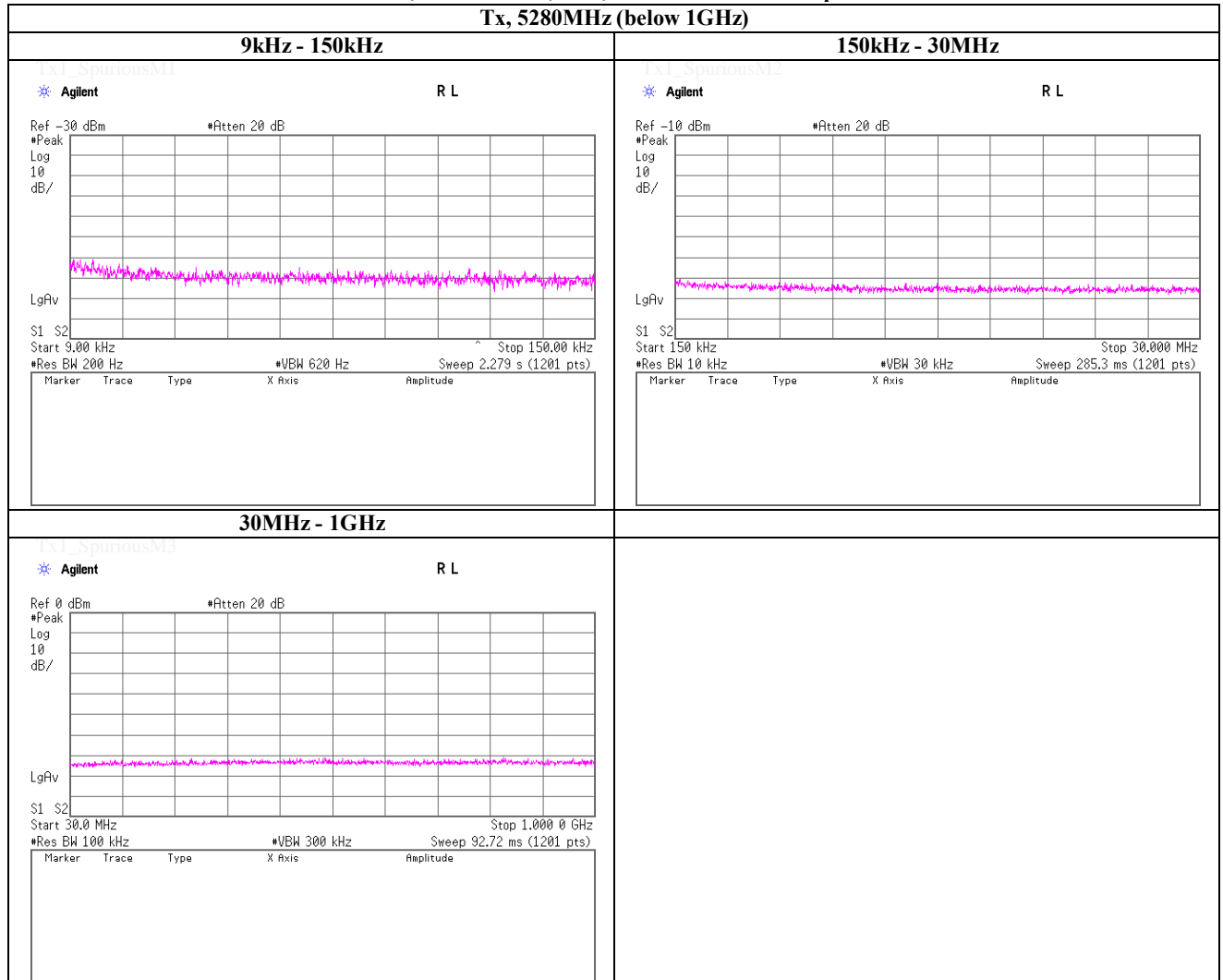
\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor:                   15GHz-40GHz                   20log(3.0m/1.0m)= 9.5dB

**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11a, PN9, worst data mode 6Mbps**

**Tx, 5280MHz (below 1GHz)**



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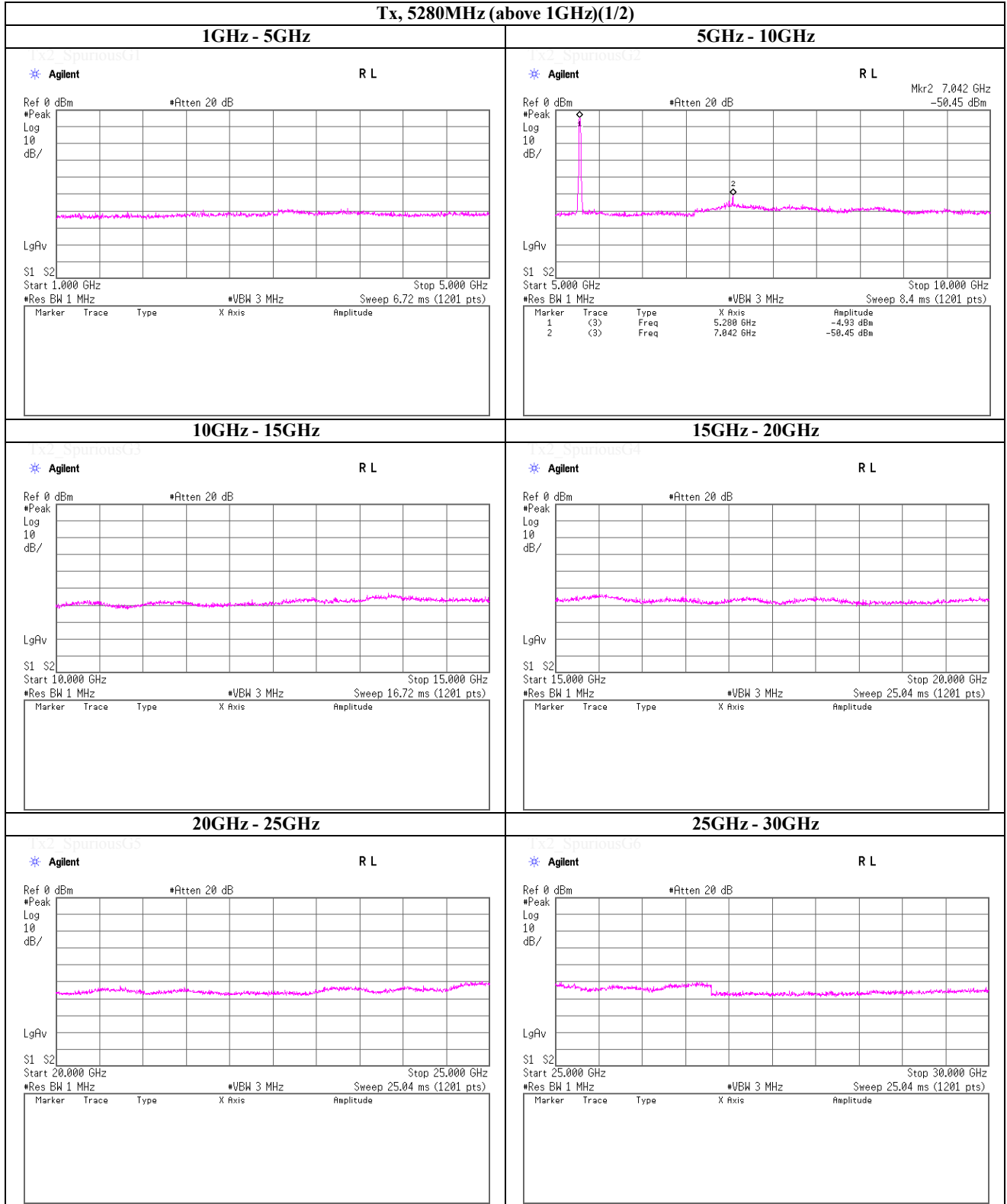
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11a, PN9, worst data mode 6Mbps**

**Tx, 5280MHz (above 1GHz)(1/2)**



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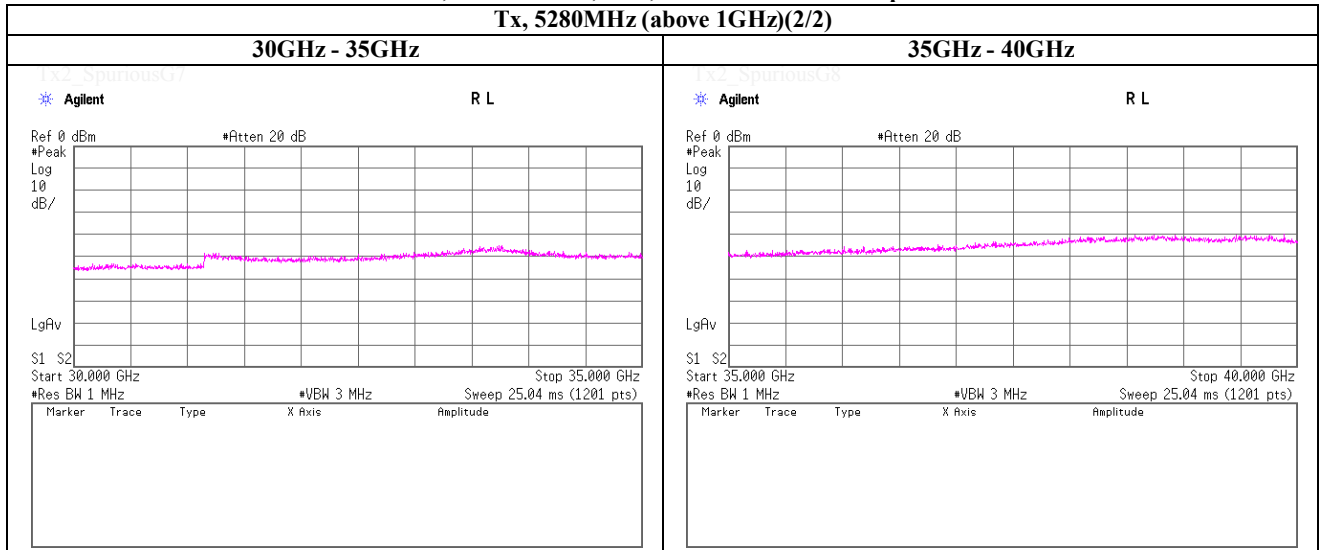
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11a, PN9, worst data mode 6Mbps**

**Tx, 5280MHz (above 1GHz)(2/2)**



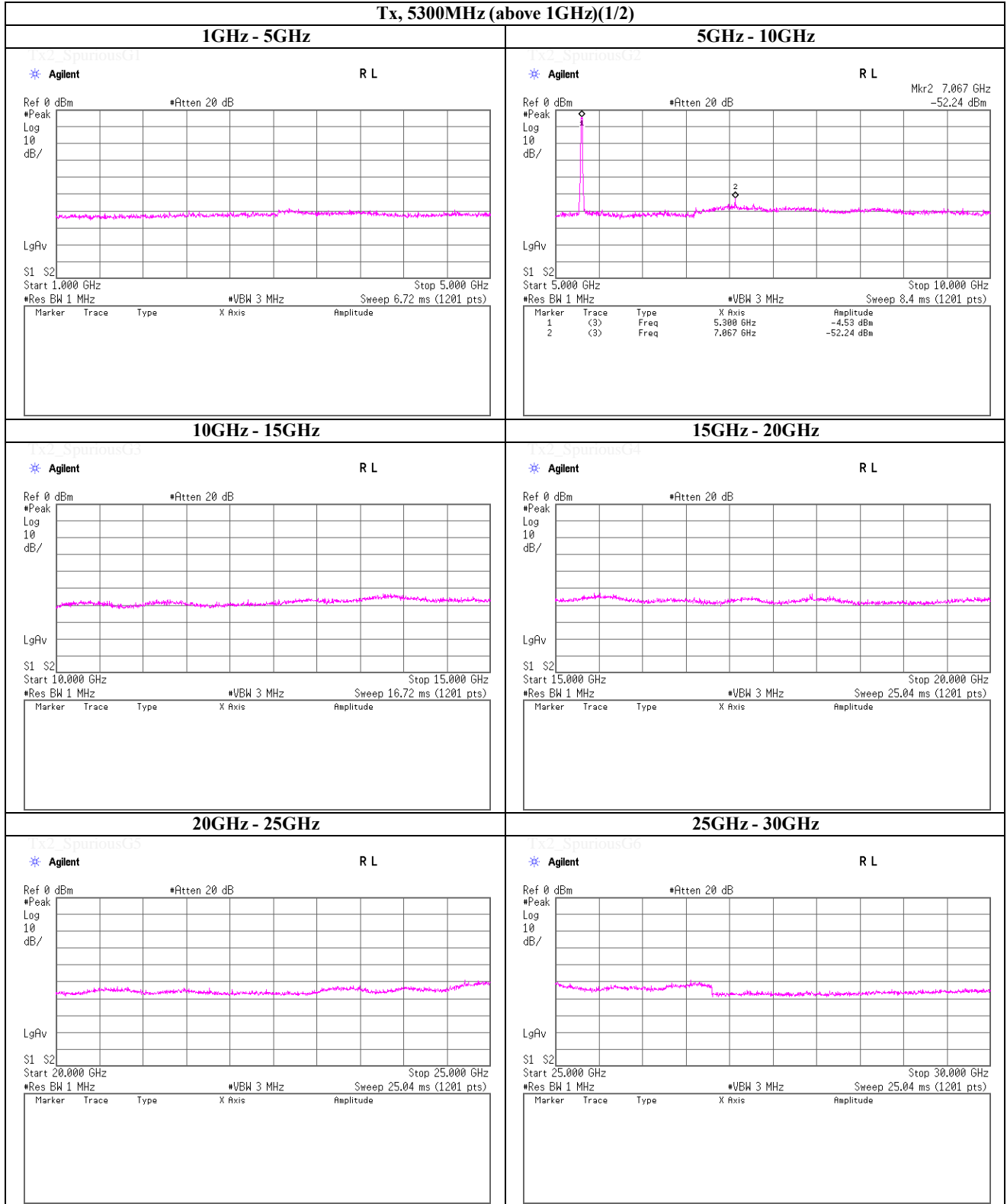
- \*1) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.
- \*2) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points.  
However, the noise has been confirmed to be the floor noise with Radiated emission measurement.



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11a, PN9, worst data mode 6Mbps**

**Tx, 5300MHz (above 1GHz)(1/2)**



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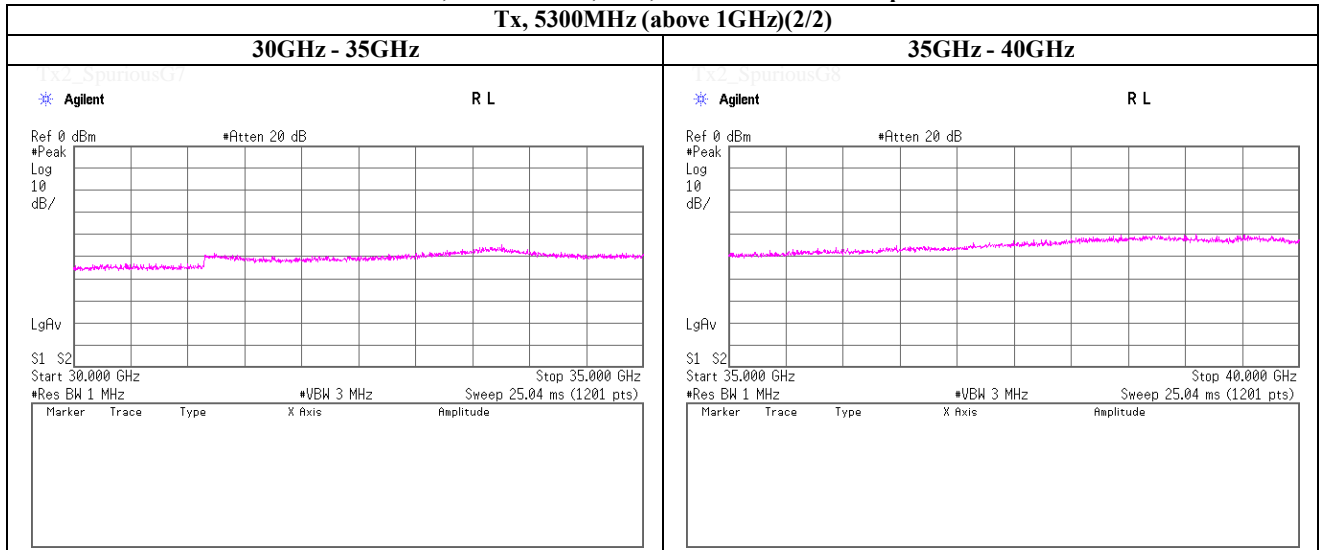
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11a, PN9, worst data mode 6Mbps**

**Tx, 5300MHz (above 1GHz)(2/2)**



- \*1) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.
- \*2) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points.  
However, the noise has been confirmed to be the floor noise with Radiated emission measurement.

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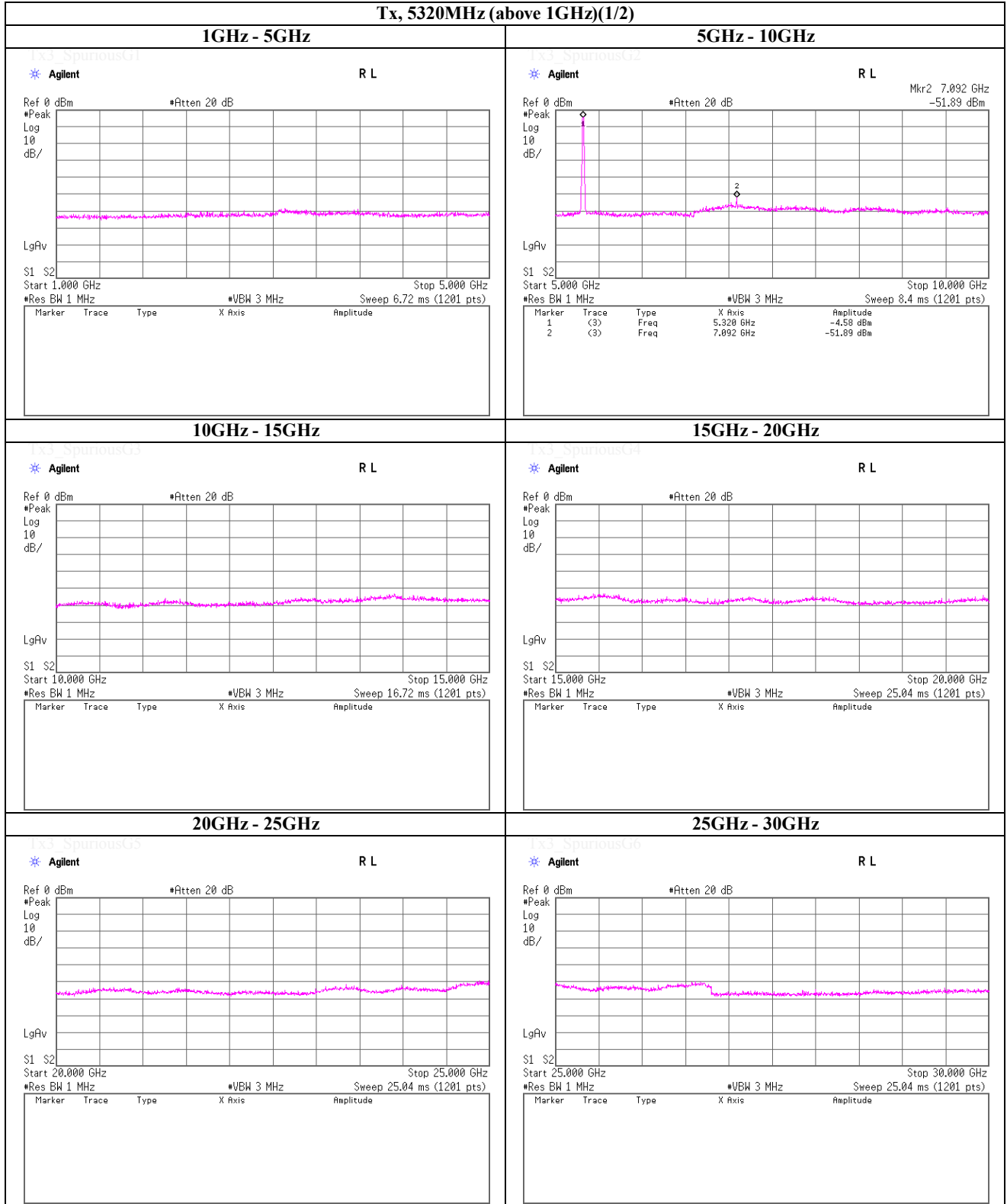
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11a, PN9, worst data mode 6Mbps**

**Tx, 5320MHz (above 1GHz)(1/2)**



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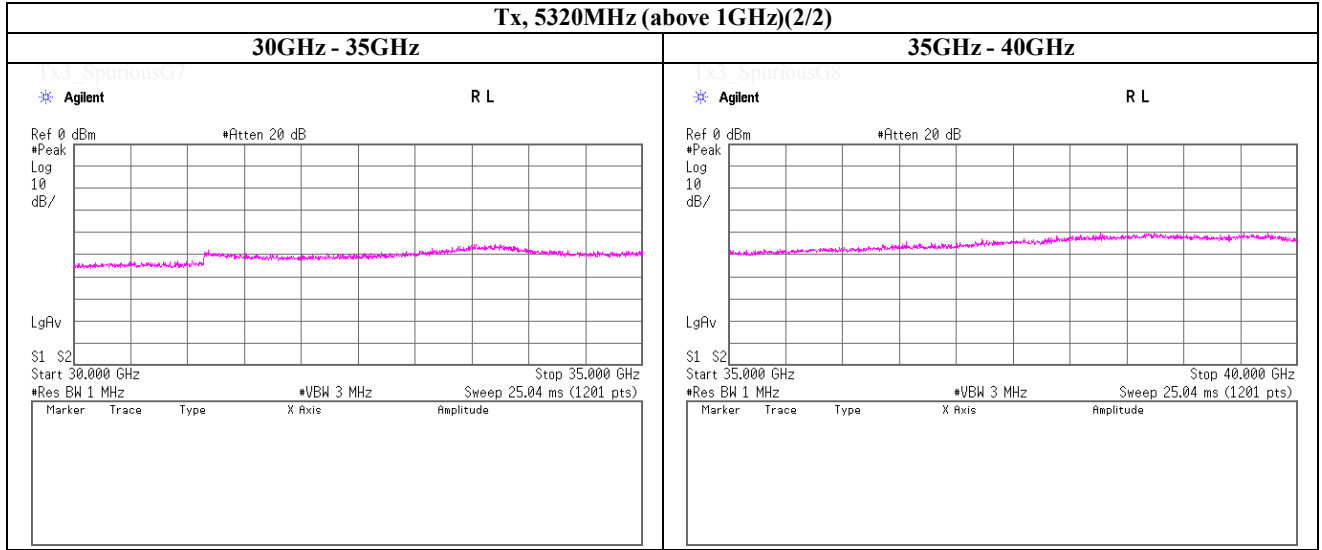
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11a, PN9, worst data mode 6Mbps**

**Tx, 5320MHz (above 1GHz)(2/2)**



- \*1) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.
- \*2) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points.  
However, the noise has been confirmed to be the floor noise with Radiated emission measurement.

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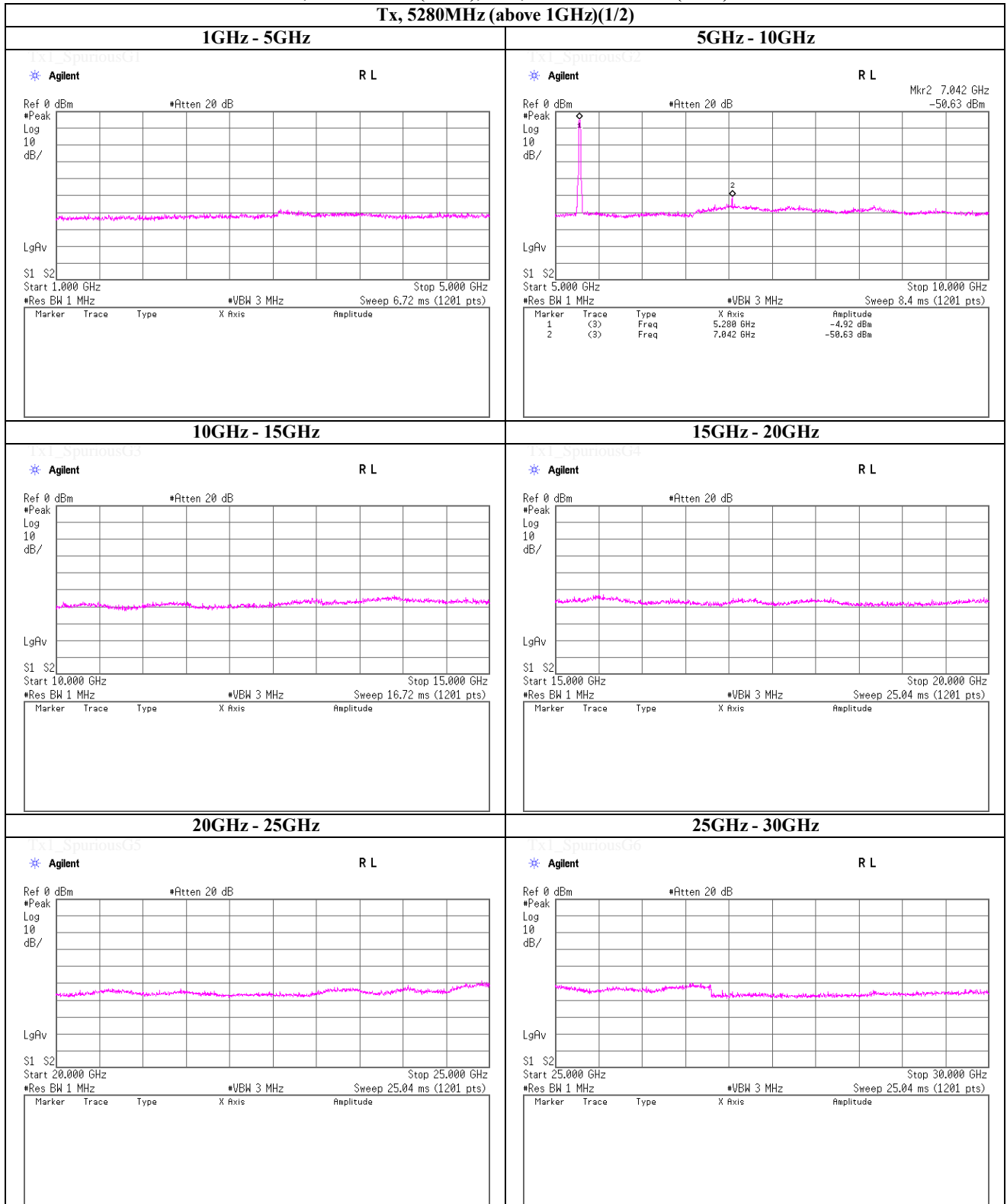
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)**

**Tx, 5280MHz (above 1GHz)(1/2)**



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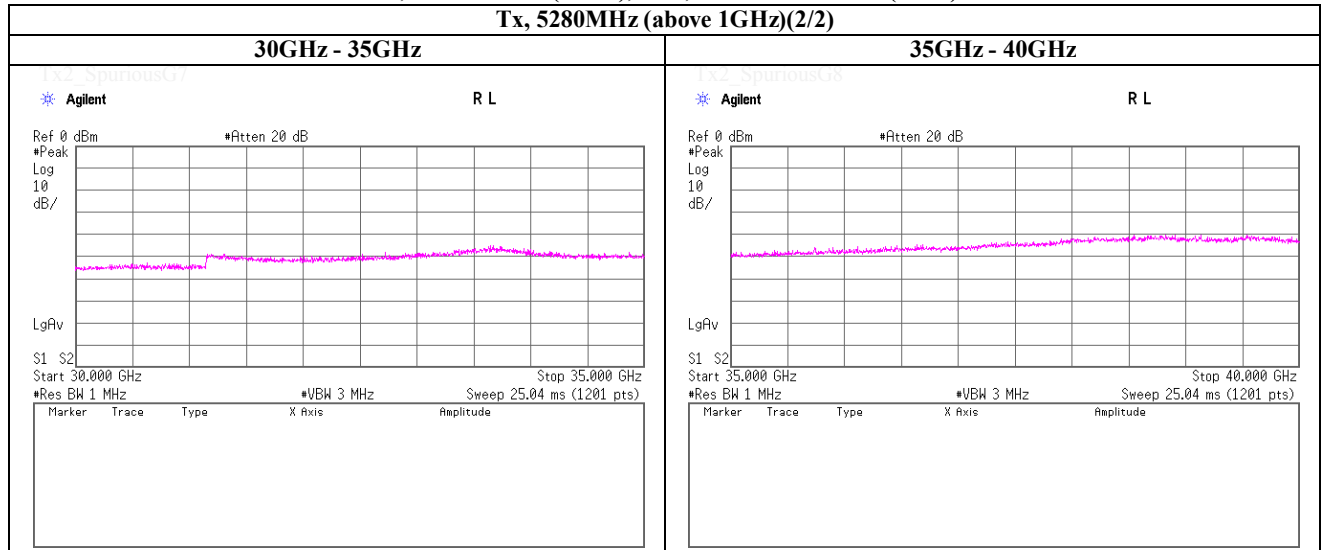
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)**

**Tx, 5280MHz (above 1GHz)(2/2)**

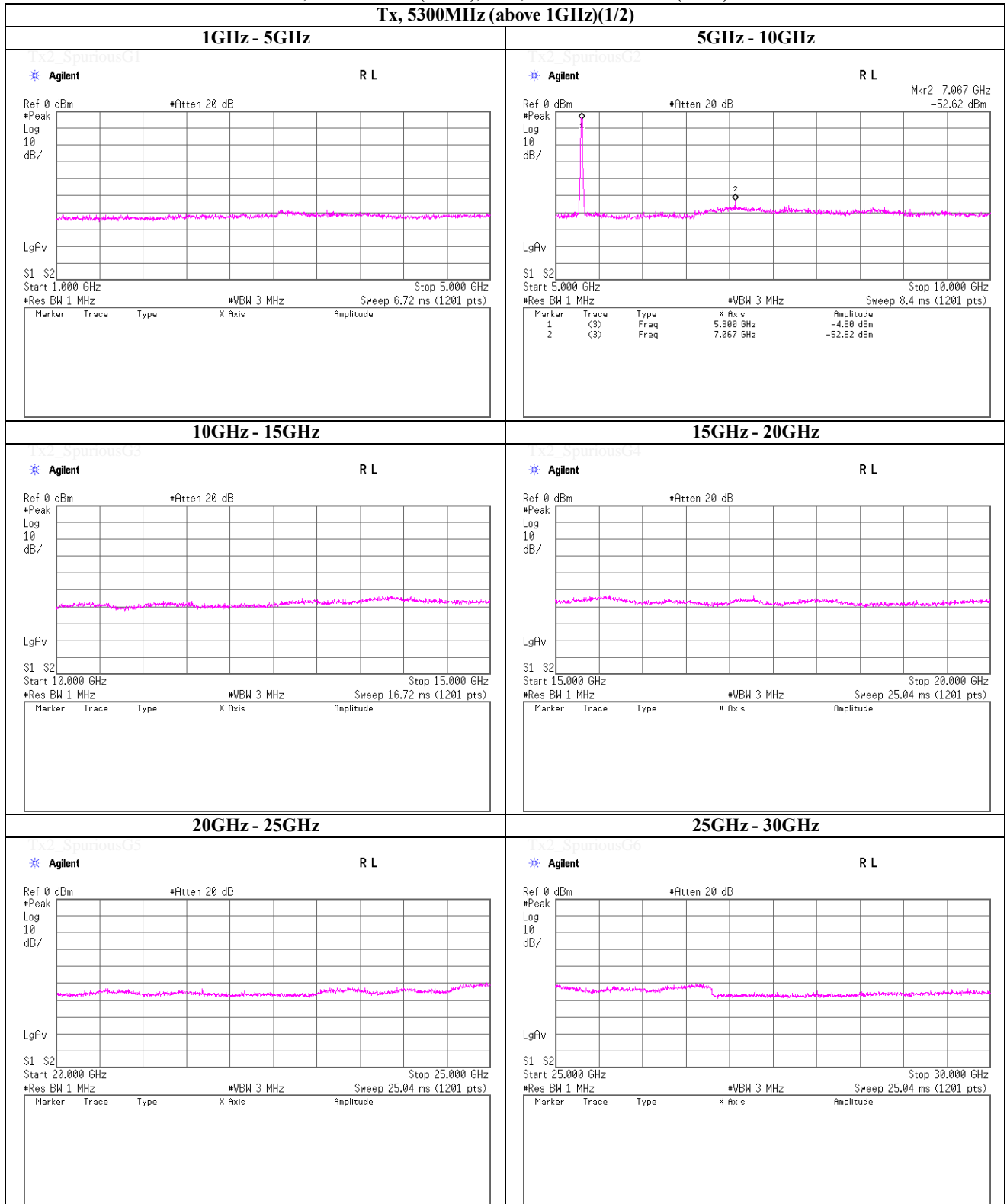


- \*1) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.
- \*2) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points.  
However, the noise has been confirmed to be the floor noise with Radiated emission measurement.

**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)**

**Tx, 5300MHz (above 1GHz)(1/2)**



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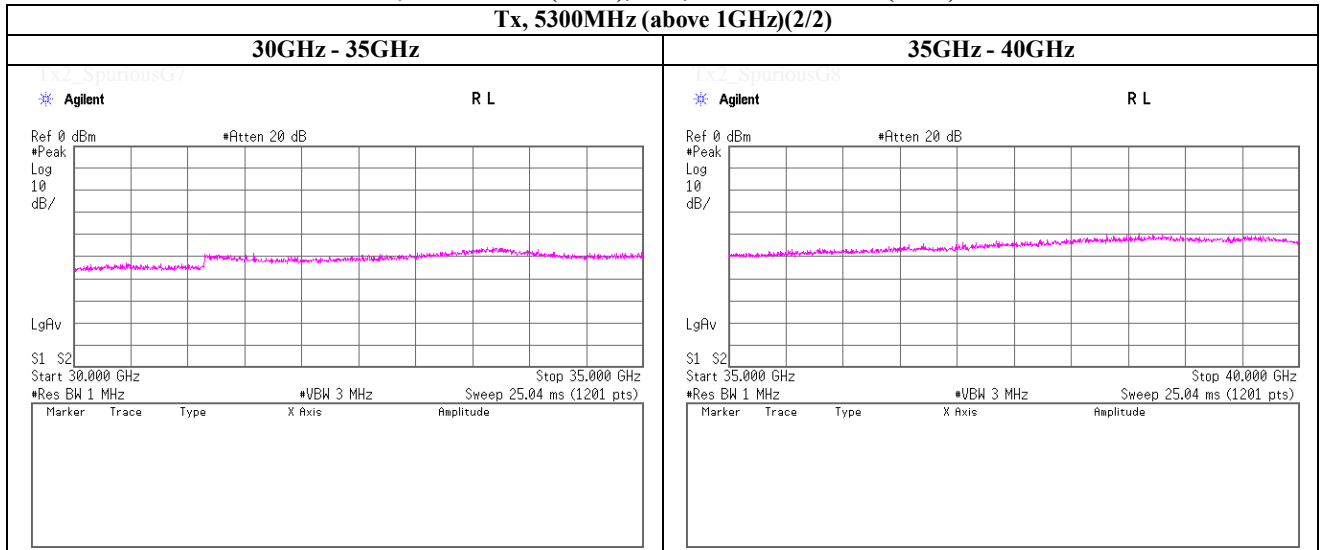
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**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)**

**Tx, 5300MHz (above 1GHz)(2/2)**



\*1) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.

\*2) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points.

However, the noise has been confirmed to be the floor noise with Radiated emission measurement.

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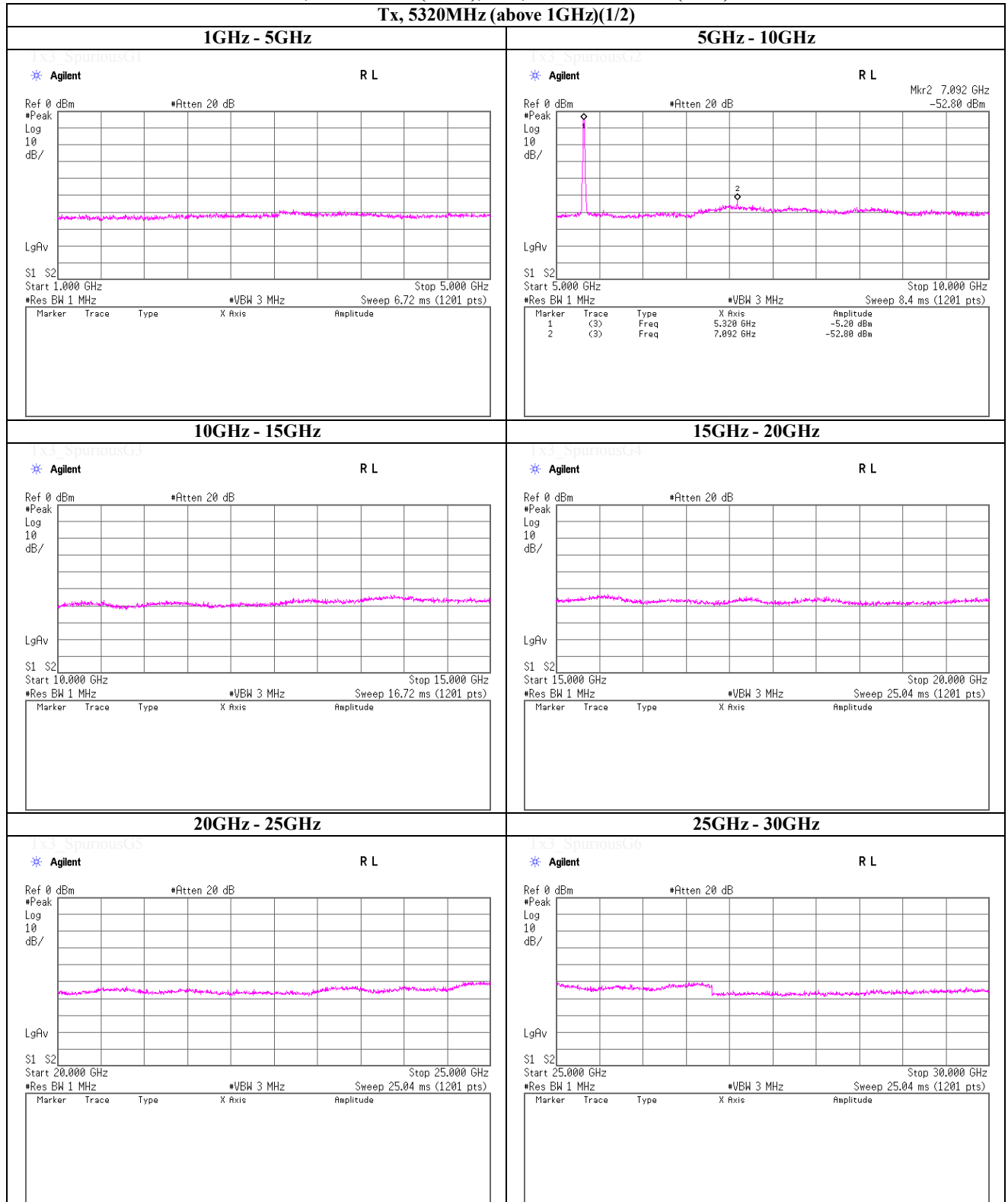
Facsimile : +81 463 50 6401



**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)**

**Tx, 5320MHz (above 1GHz)(1/2)**



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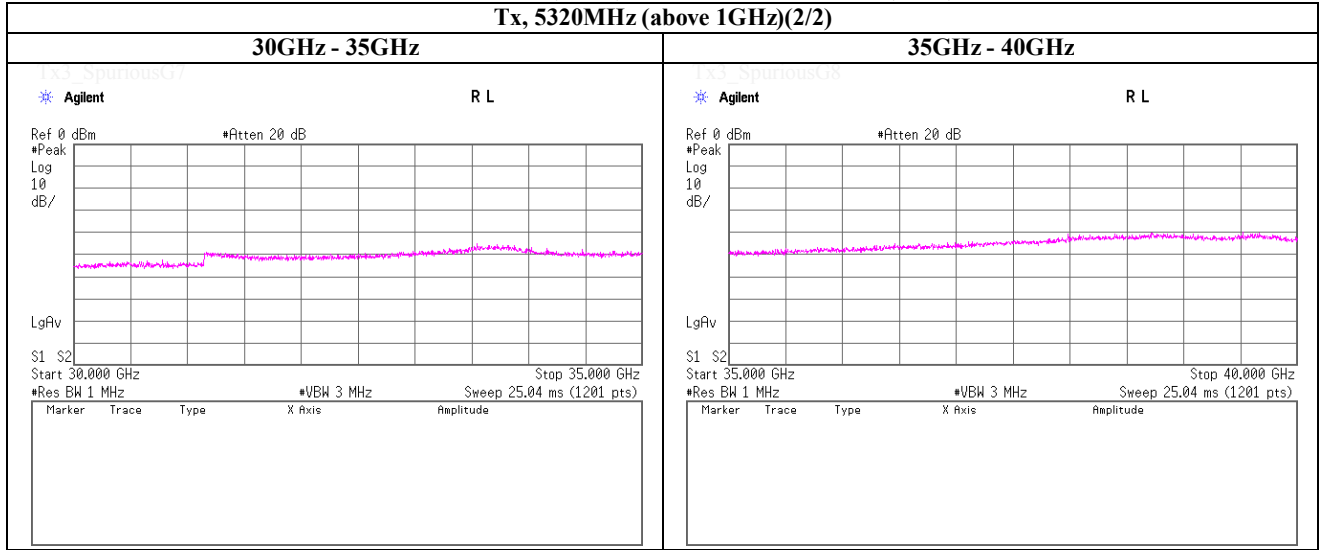
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)**

**Tx, 5320MHz (above 1GHz)(2/2)**



\*1) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.

\*2) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points.

However, the noise has been confirmed to be the floor noise with Radiated emission measurement.

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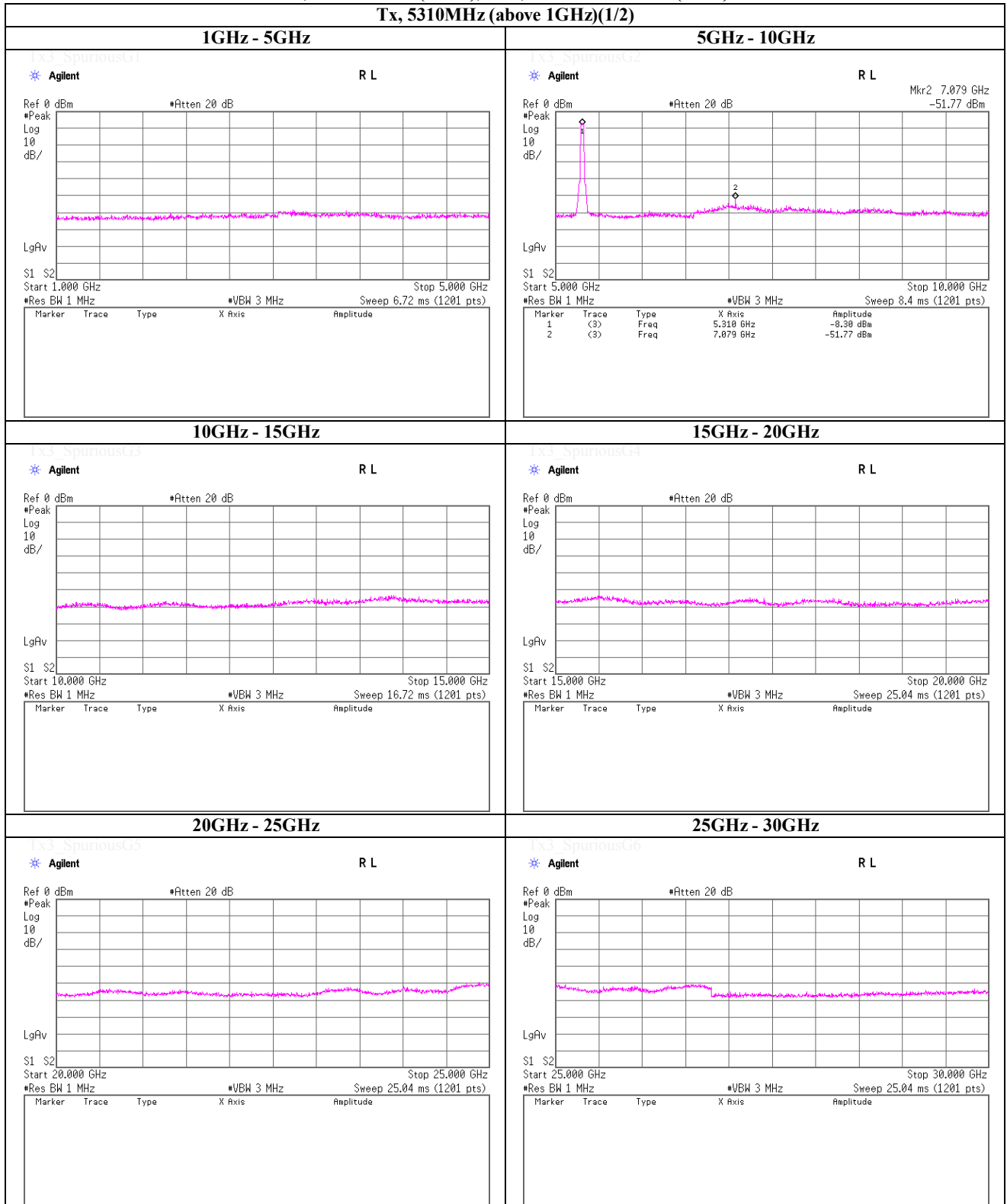
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)**

**Tx, 5310MHz (above 1GHz)(1/2)**



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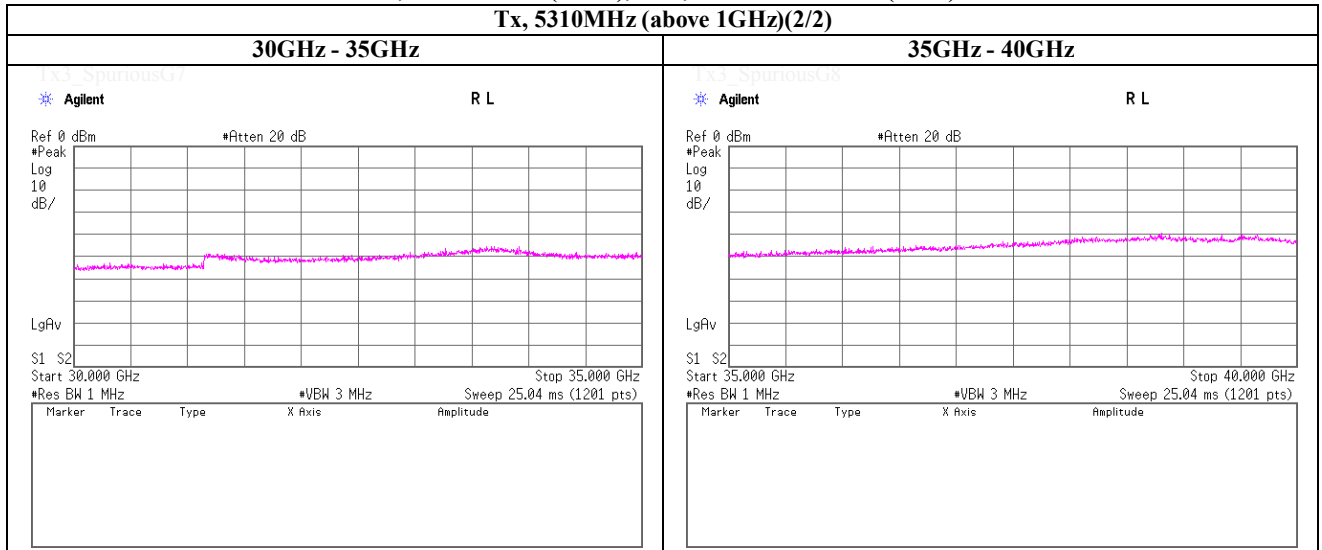
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

**(Reference chart) Spurious emission (Conducted)**

**Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)**

**Tx, 5310MHz (above 1GHz)(2/2)**



- \*1) The conducted measurement is reference data and the radiated emission measurement is the data for the compliance.
- \*2) There is no limit line in data of conducted measurement, since the floor noise exceeds the limit in some points.  
However, the noise has been confirmed to be the floor noise with Radiated emission measurement.

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**Shonan EMC Lab.**

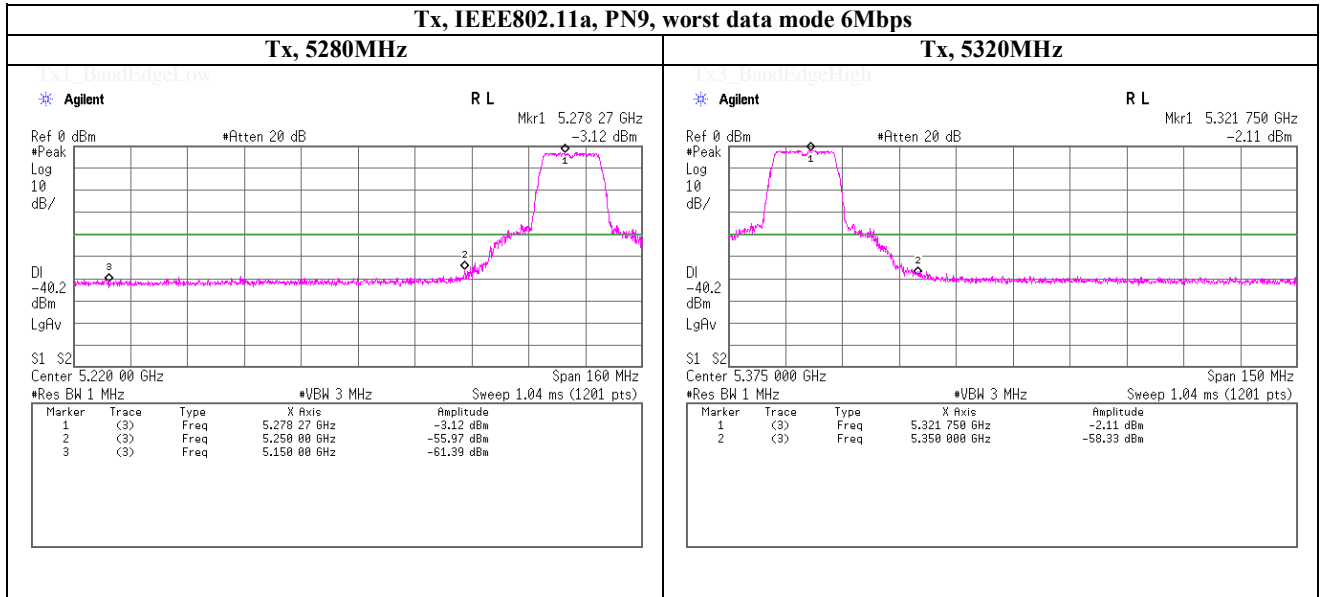
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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## Spurious emission (Conducted)

### Band Edge compliance



Specified value in the Regulation - Cable Loss (including the cable(s) customer supplied) - Atten. Loss - Antenna Gain = Limit line

FREQ	Regulation	Cable Loss	Atten. Loss	Antenna Gain	Limit line
[MHz]	[dBm]	[dB]	[dB]	[dBi]	[dBm]
5250.00	-27.00	0.76	10.00	2.40	-40.16
5350.00	-27.00	0.76	9.99	2.40	-40.15

**UL Japan, Inc.**

**Shonan EMC Lab.**

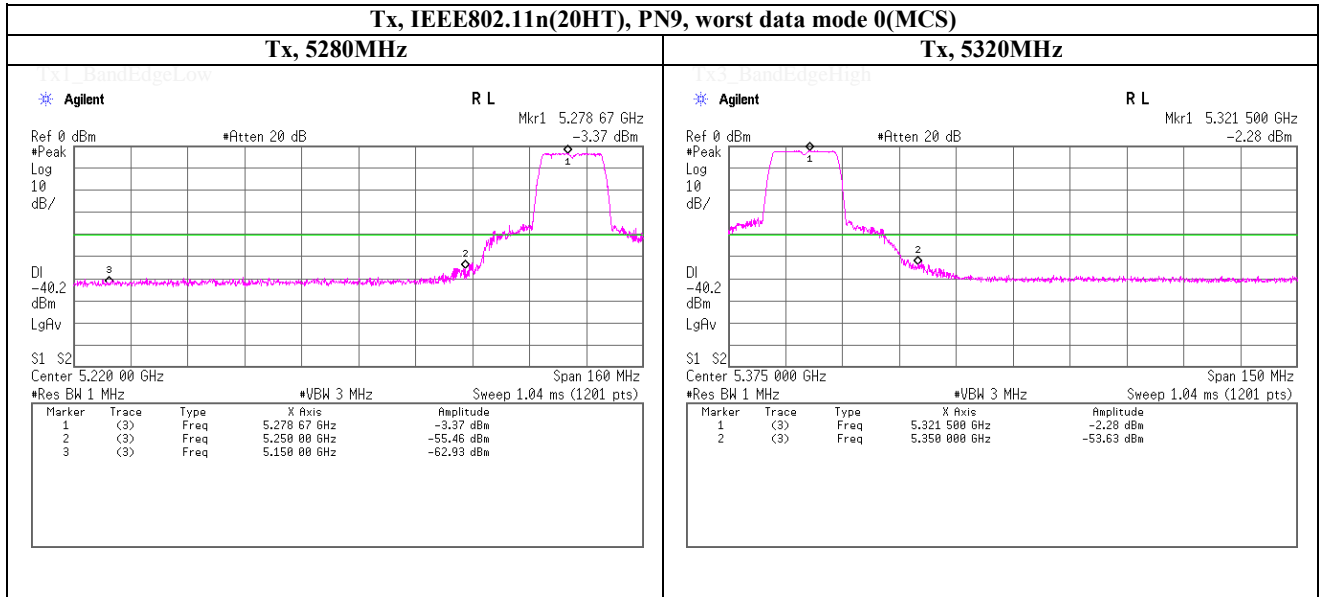
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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## Spurious emission (Conducted)

### Band Edge compliance



Specified value in the Regulation - Cable Loss (including the cable(s) customer supplied) - Atten. Loss - Antenna Gain = Limit line

FREQ [MHz]	Regulation [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Limit line [dBm]
5250.00	-27.00	0.76	10.00	2.40	-40.16
5350.00	-27.00	0.76	9.99	2.40	-40.15

**UL Japan, Inc.**

**Shonan EMC Lab.**

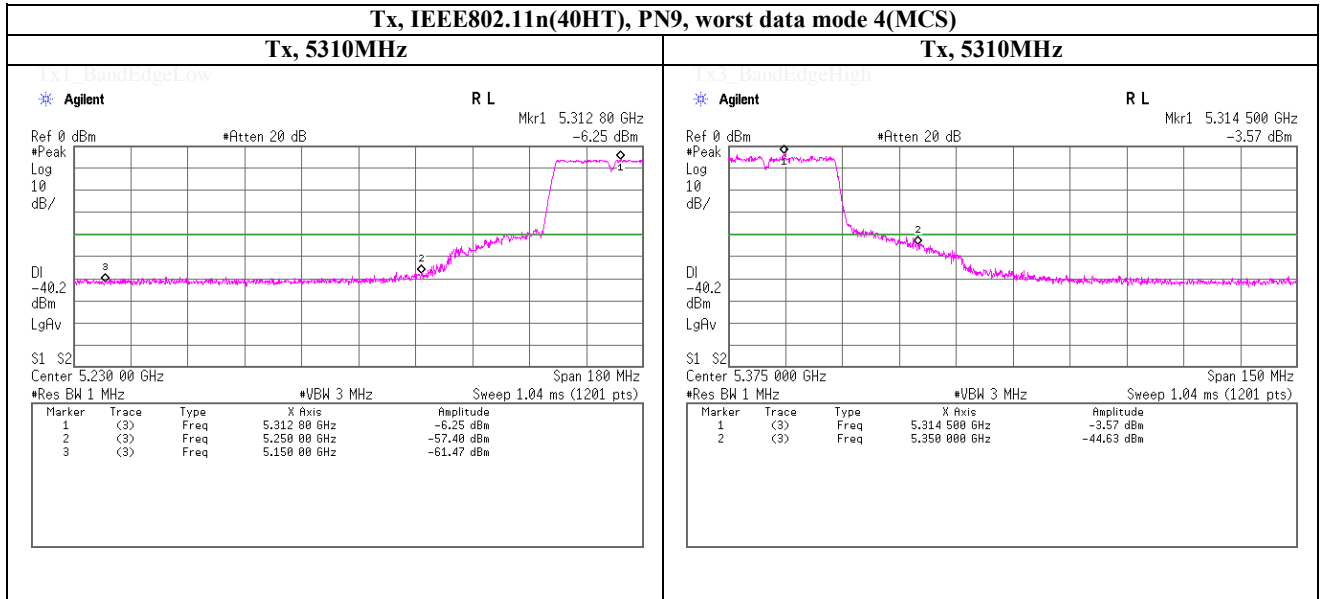
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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## Spurious emission (Conducted)

### Band Edge compliance



Specified value in the Regulation - Cable Loss (including the cable(s) customer supplied) - Atten. Loss - Antenna Gain = Limit line

FREQ	Regulation	Cable Loss	Atten. Loss	Antenna Gain	Limit line
[MHz]	[dBm]	[dB]	[dB]	[dBi]	[dBm]
5250.00	-27.00	0.76	10.00	2.40	-40.16
5350.00	-27.00	0.76	10.04	2.40	-40.20

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### Peak Power Spectral Density

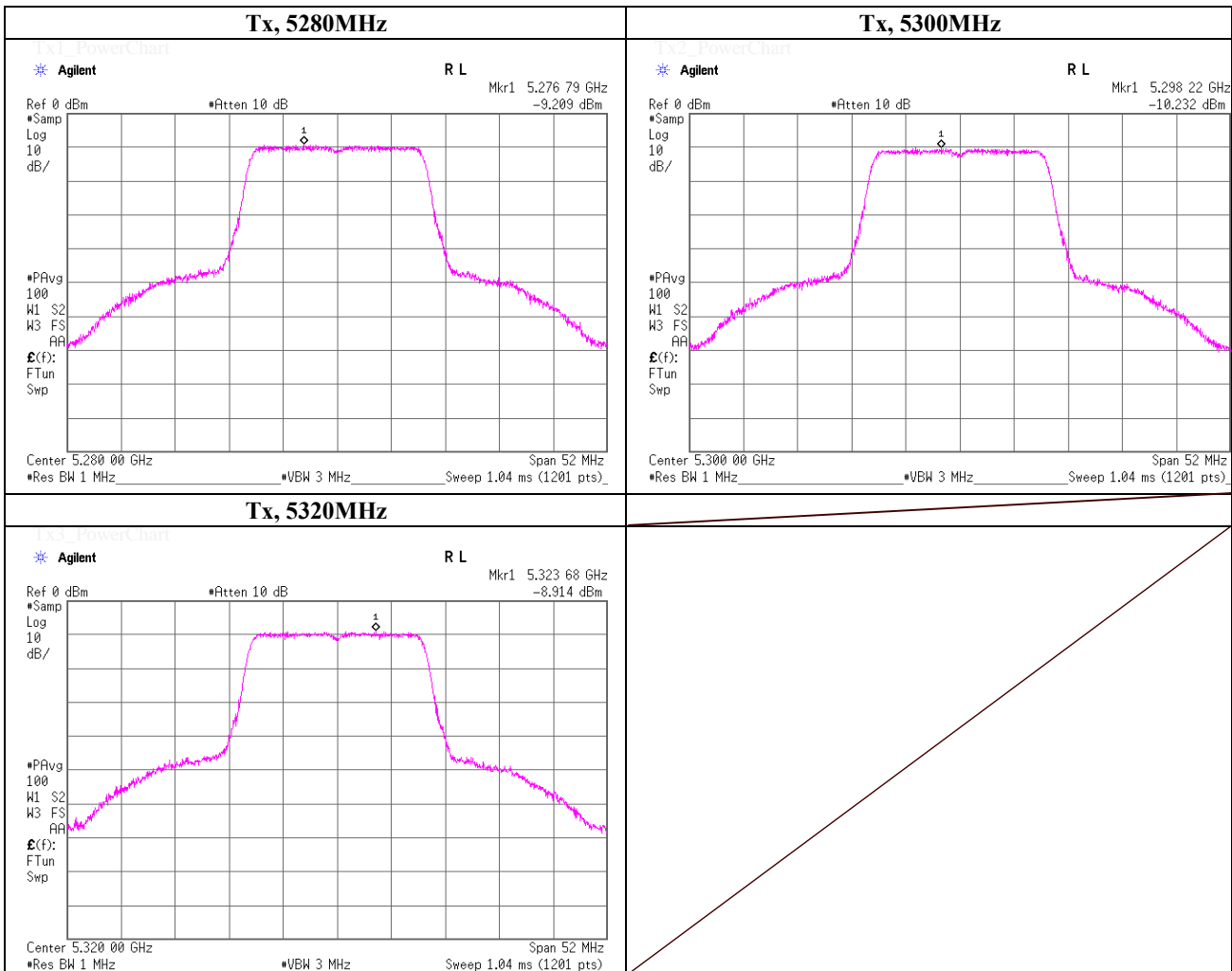
(Method: SA-1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11a, PN9, worst data mode 6Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]		Result [dBm/MHz]	Limit [dBm]	Margin [dB]
5280.0000	5276.79	-9.21	0.76	10.00	0.00		1.55	11.00	9.45
5300.0000	5298.22	-10.23	0.76	10.00	0.00		0.53	11.00	10.47
5320.0000	5323.68	-8.91	0.76	9.99	0.00		1.84	11.00	9.16

Sample Calculation:

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



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### Peak Power Spectral Density

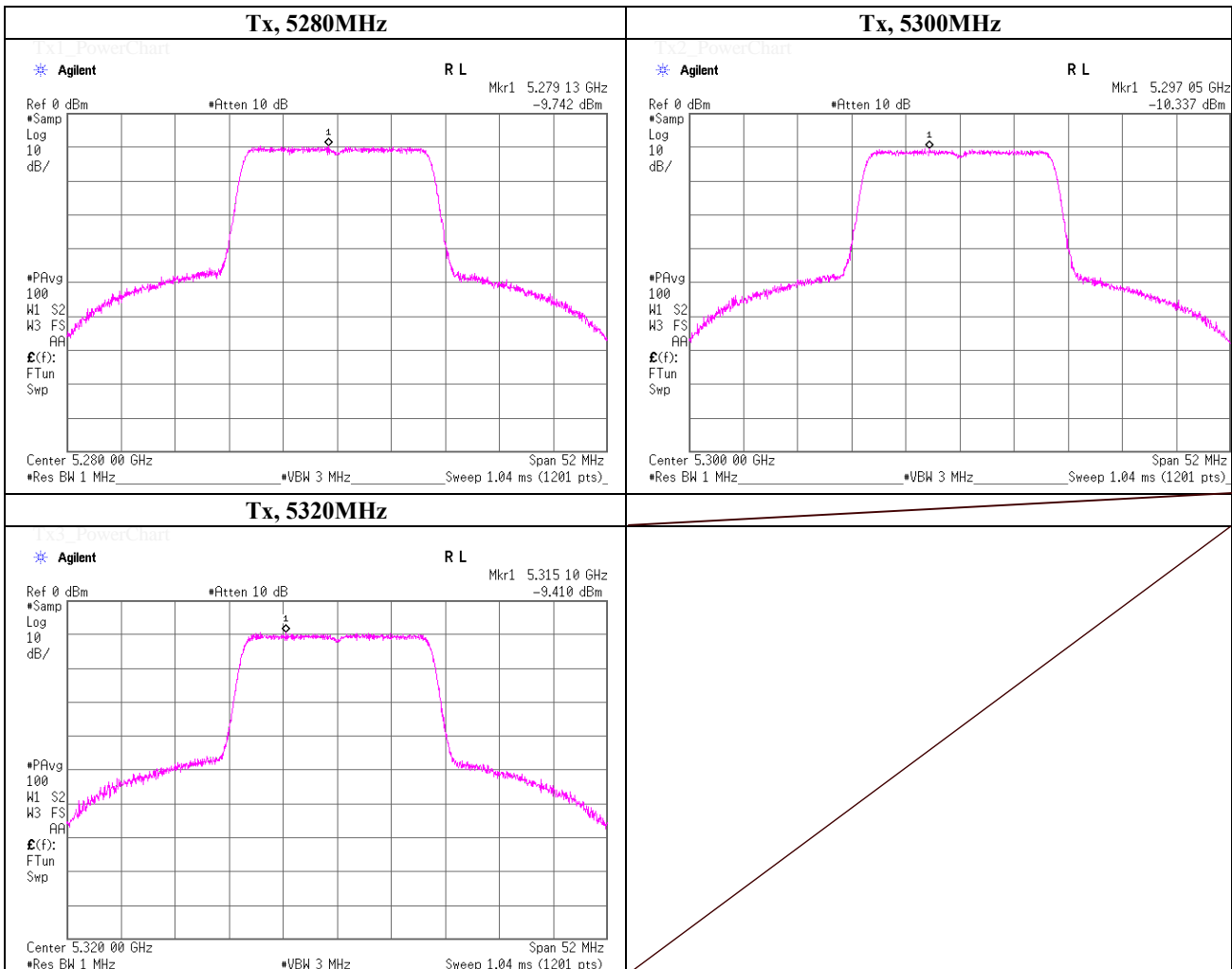
(Method: SA-1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]		Result [dBm/MHz]	Limit [dBm]	Margin [dB]
5280.0000	5279.13	-9.74	0.76	10.00	0.00		1.02	11.00	9.98
5300.0000	5297.05	-10.34	0.76	10.00	0.00		0.42	11.00	10.58
5320.0000	5315.10	-9.41	0.76	9.99	0.00		1.34	11.00	9.66

Sample Calculation:

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



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### Peak Power Spectral Density

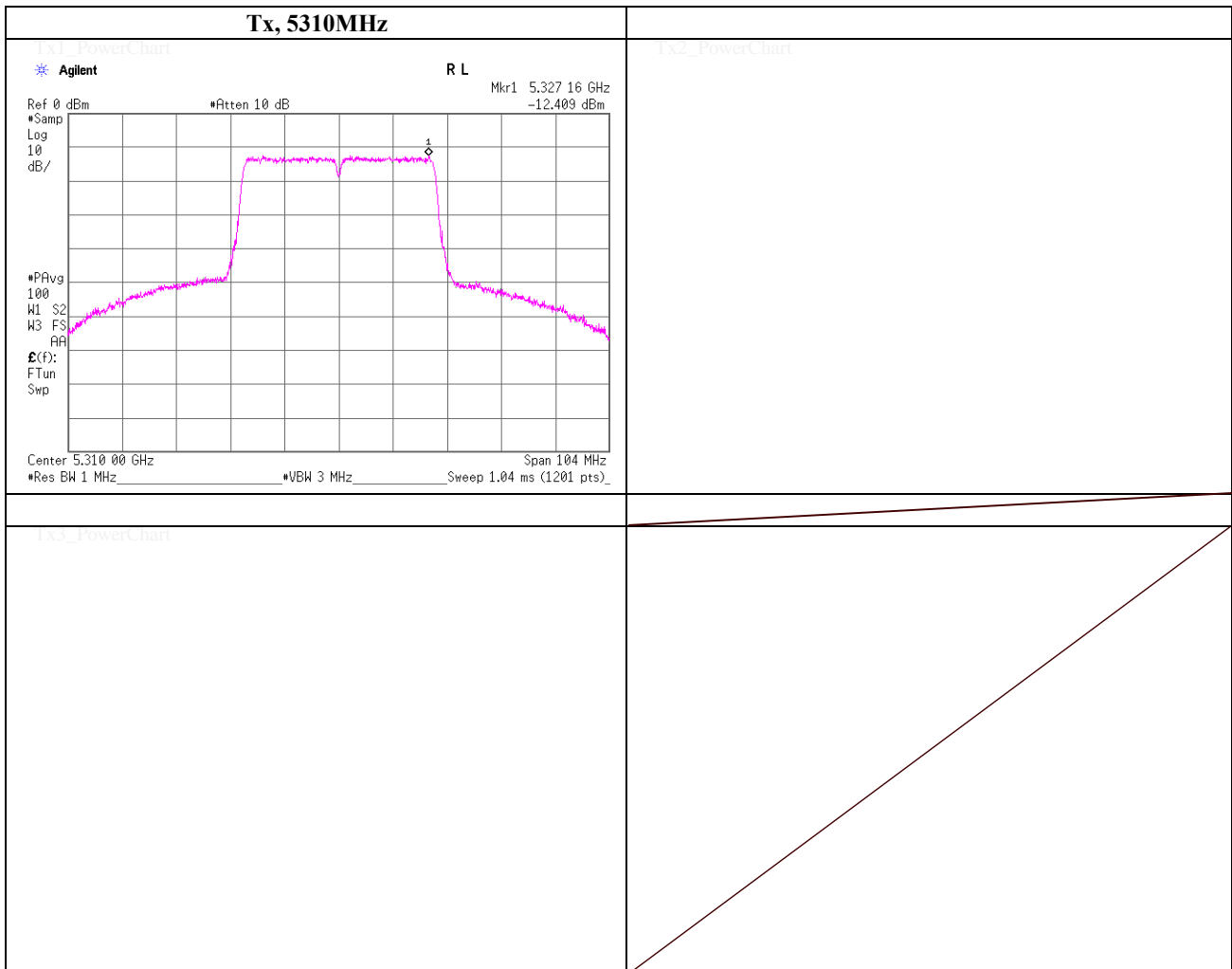
(Method: SA-1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	
Temperature / Humidity	23deg.C , 37%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]		Result [dBm/MHz]	Limit [dBm]	Margin [dB]
5310.0000	5327.16	-12.41	0.76	10.00	0.00		-1.65	11.00	12.65

Sample Calculation:

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



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### Peak Excursion Ratio

(Method: SA-1)

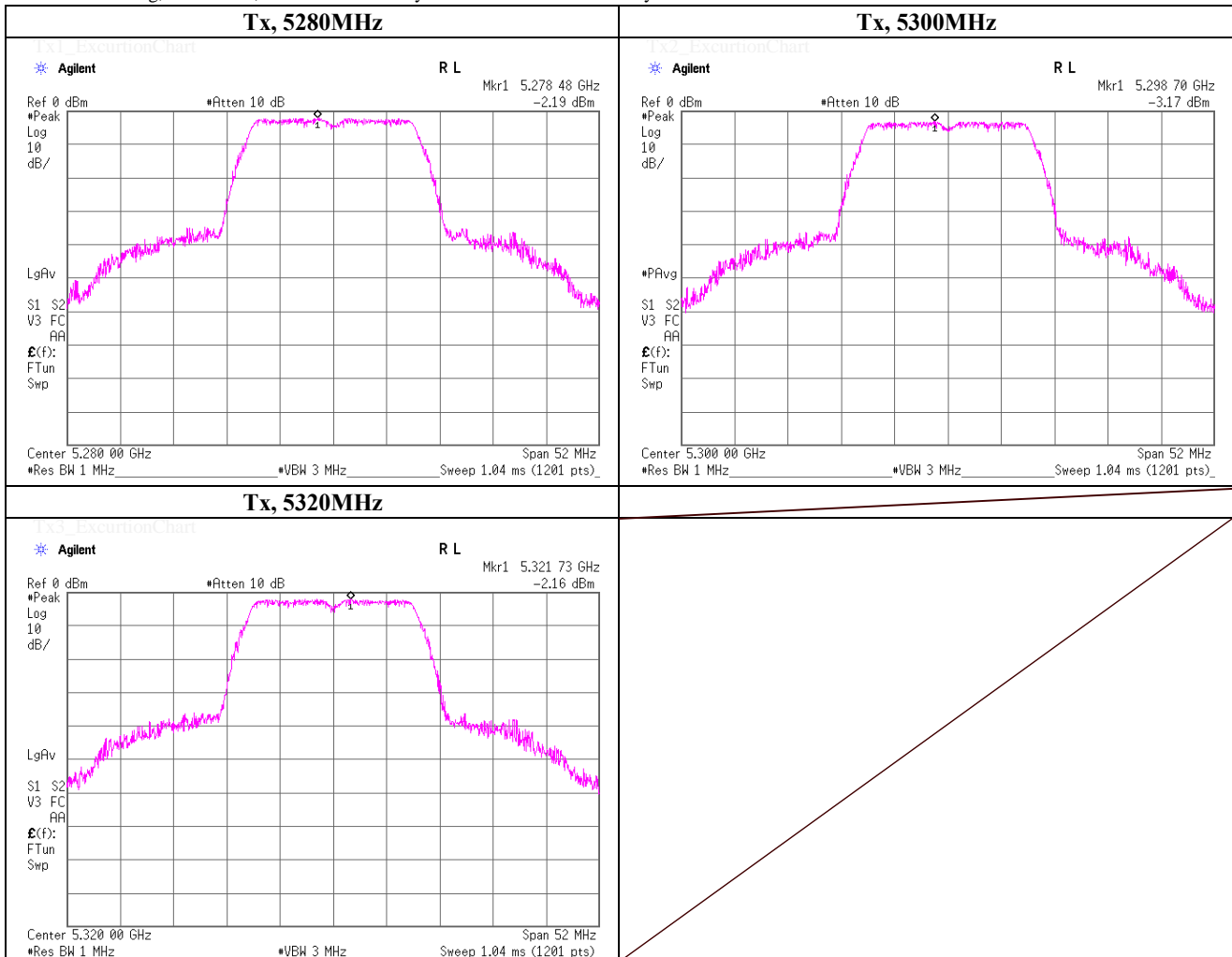
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11a, PN9, worst data mode 6Mbps	

Ch. Freq. [MHz]	Peak Reading [dBm]	Peak Result [dBm]	PPSD Reading [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5280.0000	-2.19	8.57	-9.21	1.55	7.02	=<13.0	5.99
5300.0000	-3.17	7.59	-10.23	0.53	7.07	=<13.0	5.94
5320.0000	-2.16	8.59	-8.91	1.84	6.75	=<13.0	6.25

\*Peak Power Excursion = Peak Result - PPSD Result

\*Peak Result = Peak Reading + Cable Loss + Atten. Loss, PPSD Result = PPSD Reading + Cable Loss + Atten. Loss + Duty factor

\*PPSD Reading, Cable Loss, Atten.Loss and Duty factor refer to Power Density sheet.



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### Peak Excursion Ratio

(Method: SA-1)

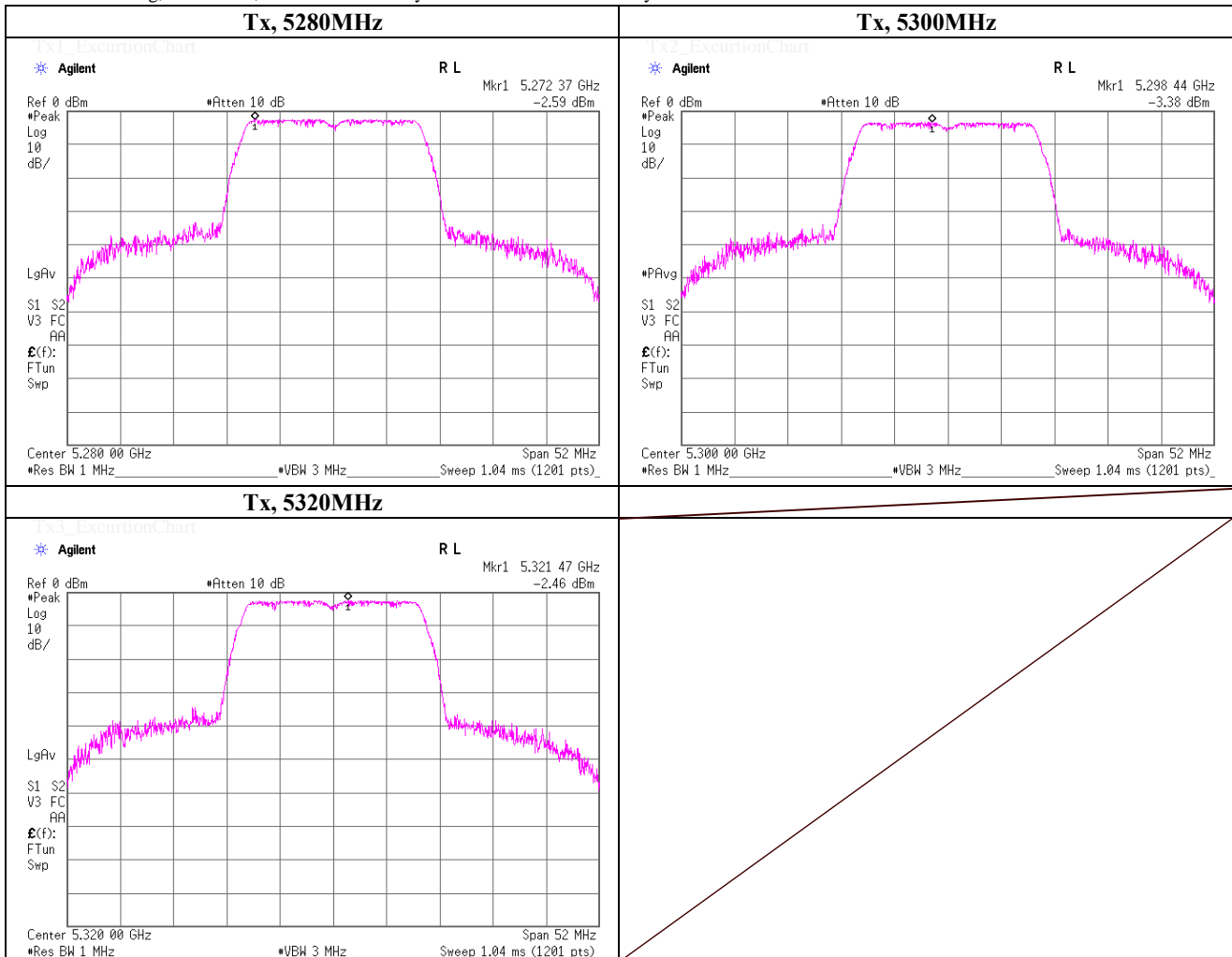
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	April 2, 2013
Temperature / Humidity	23deg.C , 37%RH	22deg.C , 41%RH
Engineer	Shinichi Takano	Shinichi Takano
Mode	Tx, IEEE802.11n(20HT), PN9, worst data mode 0(MCS)	

Ch. Freq. [MHz]	Peak Reading [dBm]	Peak Result [dBm]	PPSD Reading [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5280.0000	-2.59	8.17	-9.74	1.02	7.15	=<13.0	5.85
5300.0000	-3.38	7.38	-10.34	0.42	6.95	=<13.0	6.05
5320.0000	-2.46	8.29	-9.41	1.34	6.95	=<13.0	6.05

\*Peak Power Excursion = Peak Result - PPSD Result

\*Peak Result = Peak Reading + Cable Loss + Atten. Loss, PPSD Result = PPSD Reading + Cable Loss + Atten. Loss + Duty factor

\*PPSD Reading, Cable Loss, Atten.Loss and Duty factor refer to Power Density sheet.



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### Peak Excursion Ratio

(Method: SA-1)

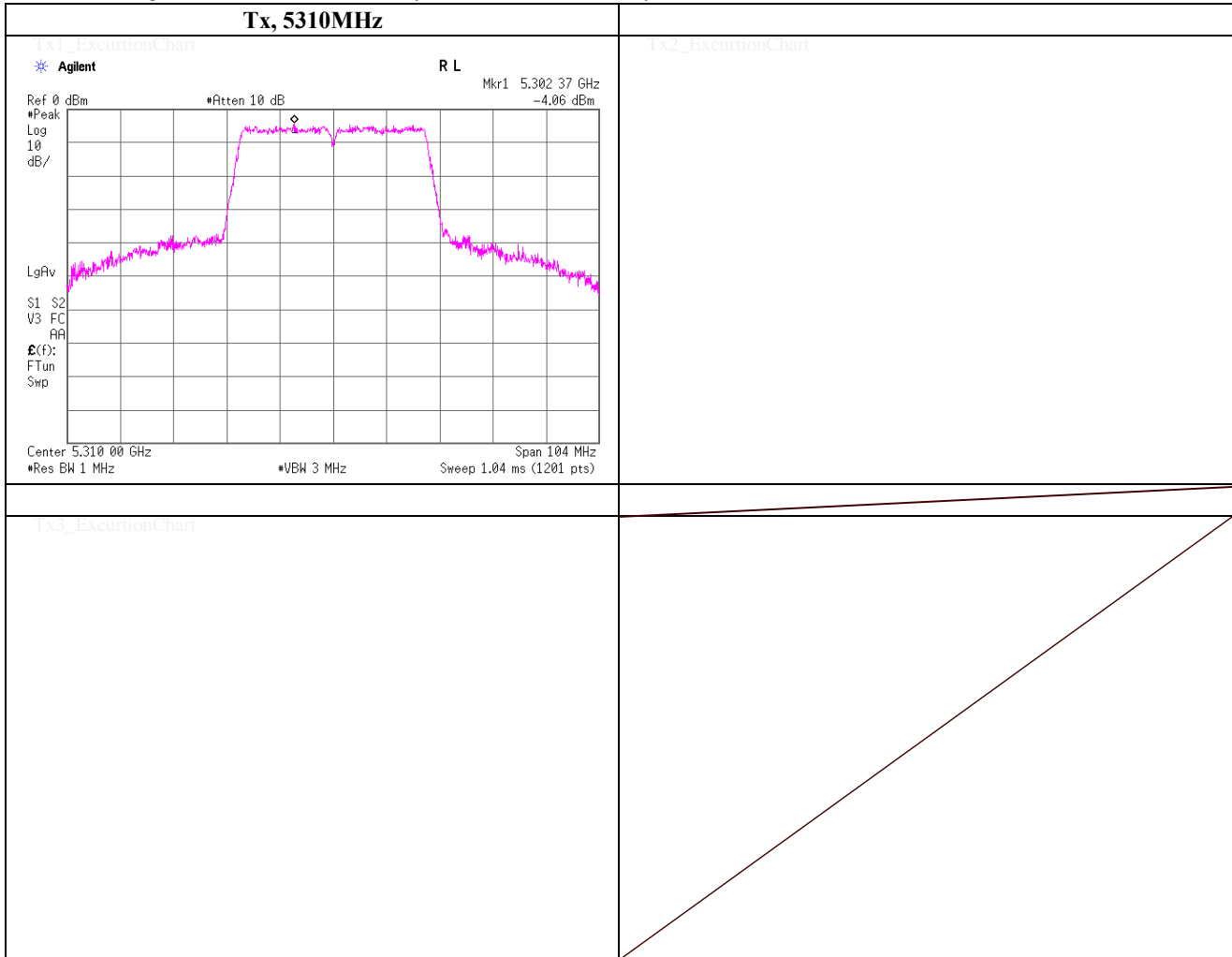
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 18, 2013	
Temperature / Humidity	23deg.C , 37%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n(40HT), PN9, worst data mode 4(MCS)	

Ch. Freq. [MHz]	Peak Reading [dBm]	Peak Result [dBm]	PPSD Reading [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5310.0000	-4.06	6.70	-12.41	-1.65	8.35	=<13.0	4.65
				-		=<13.0	-
				-		=<13.0	-

\*Peak Power Excursion = Peak Result - PPSD Result

\*Peak Result = Peak Reading + Cable Loss + Atten. Loss, PPSD Result = PPSD Reading + Cable Loss + Atten. Loss + Duty factor

\*PPSD Reading, Cable Loss, Atten.Loss and Duty factor refer to Power Density sheet.



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## APPENDIX 2

### Test Instruments

#### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2012/04/19 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2012/04/06 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2013/03/16 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT	2013/03/04 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2013/03/07 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2012/09/21 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2012/12/18 * 12
SFL-03	Highpass Filter	MICRO-TRONICS	HPM50112	028	RE	2012/12/18 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2012/04/10 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2012/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2012/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2013/02/27 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2013/03/28 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE,CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RF,LF)	-	RE,CE	-
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2013/03/14 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2013/03/19 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
SHA-06	Horn Antenna	ETS LINDGREN	3160-10	LM3459	RE	2013/03/14 * 12
SAF-10	Pre Amplifier	TOYO Corporation	HAP26-40W	00000010	RE	2013/03/19 * 12
SCC-G19	Coaxial Cable	Suhner	SUCOFLEX 102A	1188/2A	RE	2013/03/16 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/N S4906	-/0901-271 (RF Selector)	CE	2012/04/10 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2013/02/25 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2013/02/12 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2013/03/07 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	CE	2013/02/27 * 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 :

- CE: Conducted emission ,
- RE: Radiated emission ,
- AT: Antenna terminal conducted tests

**APPENDIX 2**  
**Test Instruments**

**EMI test equipment**

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2013/02/12 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2013/02/12 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2012/10/08 * 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	2012/04/10 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2012/10/08 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE	2013/02/27 * 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