



RADIO TEST REPORT

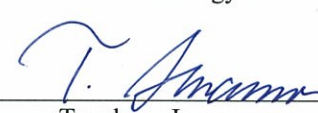
Test Report No.: 10243431S-C

Applicant : Honda Engineering Co., Ltd.
Type of Equipment : WLAN CARD
Model No. : E3000-02-01
FCC ID : N43E30000201
Test regulation : FCC Part15 Subpart E: 2014
Test result : Complied

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

Date of test: March 10 to 16, 2014

Tested by: 
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".

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 10243431S-C

[illegible]

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SECTION 1: Customer information

Applicant:

Company Name : Honda Engineering Co., Ltd.
Address : 6-1, Hagadai, Haga-Machi, Haga-Gun, Tochigi, 321-3395 Japan
Telephone Number : +81-28-677-6946
Facsimile Number : +81-28-677-6980
Contact Person : Tomokazu Takasaka

Manufacturer:

Company Name : NEC Engineering, Ltd.
Address : 1753 Shimonumabe, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8666 Japan
Telephone Number : +81-44-455-8765
Facsimile Number : +81-44-455-8927
Contact Person : Atsushi Suzuki

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

2.1 Identification of E.U.T.

Type of Equipment : WLAN CARD
Model Number : E3000-02-01
Serial Number : Refer to 4.2 in this report.
Rating : DC5V
Country of Mass-production : Japan
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample : March 7, 2014
Modification of EUT : No modification by the test lab.

2.2 Product description

Model: E3000-02-01 (referred to as the EUT in this report) is a WLAN CARD.

Clock frequency(ies) in the system : 32.768kHz, 26MHz

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Radio specification:

Equipment type : Transceiver
Frequency of operation *1) : 2.4GHz: 2412-2462MHz (IEEE 802.11b, 11g, 11n-20HT)
W52: 5180-5240MHz (IEEE 802.11a, 11n-20HT)
W53: 5260-5320MHz (IEEE 802.11a, 11n-20HT)
W56: 5500-5700MHz (IEEE 802.11a, 11n-20HT)
W58: 5745-5825MHz (IEEE 802.11a, 11n-20HT)
Bandwidth : 20MHz
Channel spacing : 5MHz (2.4GHz), 20MHz (IEEE 802.11a, 11n-20HT, 5GHz)
Type of modulation : DSSS, OFDM
Antenna type : 2.4GHz band: $\lambda/4$ monopole, 5GHz band: $\lambda/4$ dipole
Antenna gain with cable loss : 2.4GHz band: 1.6dBi, 5GHz band: 4.1dBi
Antenna connector type : SMD
ITU code : D1D, G1D
Operation temperature range : 0 to +60 deg.C

*1) Refer to the test reports: 10243431S-A for FCC 15.247.

* The EUT does not perform simultaneous transmission of 2.4GHz and 5GHz Wireless LAN.

FCC 15.31 (e)

The RF Module has its own regulator. The RF Module is constantly provided voltage (DC1.8V and DC3.3V) through the regulator regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC 15.203

The antenna is not removable from the EUT. Therefore the equipment complies with the requirement.

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SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart E: 2014, final revised on May 1, 2014 and effective June 2, 2014
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 May 1, 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 C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.407 (b)(6) & 15.207	-	N/A	12.6dB Freq.: 27.00420MHz Detector: Average Phase: L1 Mode: Tx 5700MHz, 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
Peak power spectral density	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)(3)	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	1.3dB Freq.: 374.999MHz Detector: Quasi-Peak Polarization: Horizontal Mode: Tx 5700MHz, IEEE 802.11a	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 10243431S-E. 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
Peak excursion ratio	ANSI C63.4:2009	-	Conducted	-	-
Occupied bandwidth (99%)	ANSI C63.4:2009, RSS-Gen 4.6.1	-	Conducted	-	-

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

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

3.4 Uncertainty

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

Item	Frequency range	No.1 SAC ^{*1} /SR ^{*2} (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Conducted emission (AC Mains) LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 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
Radiated emission (Measurement distance: 1m)	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 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%

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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
☐ No.1 semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☐ No.2 semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 semi-anechoic chamber	697847	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.

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SECTION 4: Operation of E.U.T. during testing**4.1 Operating mode**

Test item	Mode	Tested frequency	Worst data mode *1)	Power setting *2)
Conducted emission	Transmitting IEEE 802.11a (W56)	5700MHz	PN9, 54Mbps	12dBm
Radiated emission (below 1GHz) *3)	Transmitting IEEE 802.11a (W52/53)	5180MHz, 5240MHz, 5320MHz	PN9, 54Mbps	12dBm
	Transmitting IEEE 802.11a (W56)	5500MHz, 5580MHz, 5700MHz	PN9, 54Mbps	12dBm
	Transmitting IEEE 802.11n-20HT (W52/53)	5180MHz, 5240MHz, 5320MHz	PN9, MCS7 (Long GI)	12dBm
	Transmitting IEEE 802.11n-20HT (W56)	5500MHz, 5580MHz, 5700MHz	PN9, MCS7 (Long GI)	12dBm
Other items	Transmitting IEEE 802.11a (W52)	5180MHz, 5220MHz, 5240MHz	PN9, 54Mbps	12dBm
	Transmitting IEEE 802.11a (W53)	5260MHz, 5300MHz, 5320MHz	PN9, 54Mbps	12dBm
	Transmitting IEEE 802.11a (W56)	5500MHz, 5580MHz, 5700MHz	PN9, 54Mbps	12dBm
	Transmitting IEEE 802.11n-20HT (W52)	5180MHz, 5220MHz, 5240MHz	PN9, MCS7 (Long GI)	12dBm
	Transmitting IEEE 802.11n-20HT (W53)	5260MHz, 5300MHz, 5320MHz	PN9, MCS7 (Long GI)	12dBm
	Transmitting IEEE 802.11n-20HT (W56)	5500MHz, 5580MHz, 5700MHz	PN9, MCS7 (Long GI)	12dBm
*1) The worst condition was determined based on the test result of Maximum Peak Output Power. *2) Software for the power setting: WlanCalib ver.1.0.0.0 *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.

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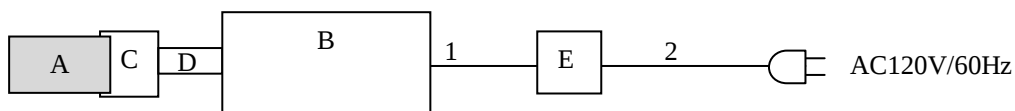
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4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	WLAN CARD	E3000-02-01	*1)	NEC Engineering	EUT
B	3.0G LET	E3000-01-PP2	4200119	Honda Engineering	-
C	3.0G LET SUB TEST BOARD	E21-089163-420	-	NEC	-
D	WIRE LESS BOARD FPC	E21-089163-507-2	-	OKI CABLE	-
E	AC Adapter	UIA336-12	705-0926329	UNIFIVE Technology	-

*1) Antenna terminal conducted tests: 2BE030014K, Conducted/Radiated emission tests: 2BE030022J

List of cables used

No.	Cable Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC	1.8	Unshielded	Unshielded	-
2	AC	2.0	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 2.0m, 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 peripheral 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. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.

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 within a Shielded room.

The AC adapter was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements had been performed with a quasi-peak detector and if required, a CISPR average detector.

The conducted emission measurements were made with the following detection of the test receiver.

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

5.5 Results

Summary of the test results : Pass

Refer to APPENDIX 1

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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 polystyrene foam 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 - 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: *2

*1) The test method was referred to Section H) 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"

*2) When duty cycle > 98 percent, VBW was set at 10Hz.

When duty cycle < 98 percent, VBW (Average) calculation sheet in APPENDIX 1.

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

W52

Antenna polarization	Carrier	Spurious (1-6.4GHz)	Spurious (6.4-15GHz)	Spurious (15-18GHz)	Spurious (18-26.5GHz)	Spurious (26.5-40GHz)
Horizontal	X	Y	Y	Y	Y	Y
Vertical	X	X	X	X	X	X

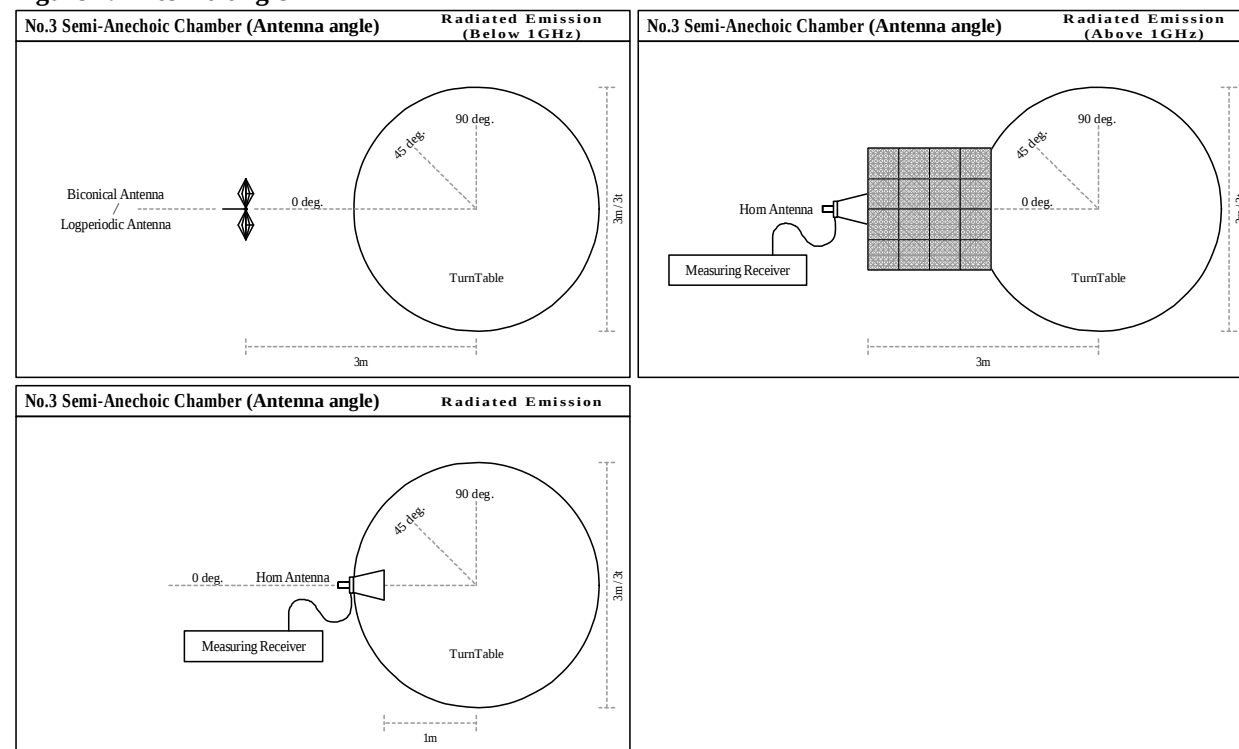
W53

Antenna polarization	Carrier	Spurious (1-6.4GHz)	Spurious (6.4-15GHz)	Spurious (15-18GHz)	Spurious (18-26.5GHz)	Spurious (26.5-40GHz)
Horizontal	X	Y	Y	Y	Y	Y
Vertical	X	X	X	X	X	X

W56

Antenna polarization	Carrier	Spurious (Below 1GHz)	Spurious (1-6.4GHz)	Spurious (6.4-15GHz)	Spurious (15-18GHz)	Spurious (18-26.5GHz)	Spurious (26.5-40GHz)
Horizontal	Z	Y	Y	Y	Y	Y	Y
Vertical	X	Y	X	X	X	Z	X

Figure 1. Antenna angle



6.5 Band edge

Band edge level at 5150MHz and 5350MHz are below the limits of FCC 15.209.

6.6 Results

Summary of the test results : Pass

* No noise was detected other than listed points.

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	Close to 1% of EBW	Greater than RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99% occupied bandwidth	Enough width to display	Close to 1% of Span	Three times of RBW	Auto	Sample	Max Hold	Spectrum Analyzer
20dB bandwidth	Enough width to display	Close 1% to 5% of OBW	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	1MHz	3MHz	Auto	RMS-Average Power Averaging (100 times)	Clear Write	Spectrum Analyzer method SA-2
Peak excursion ratio	Enough width to display	1MHz	3MHz	Auto	Peak	Max Hold	Spectrum Analyzer method SA-2
					RMS-Average 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-2 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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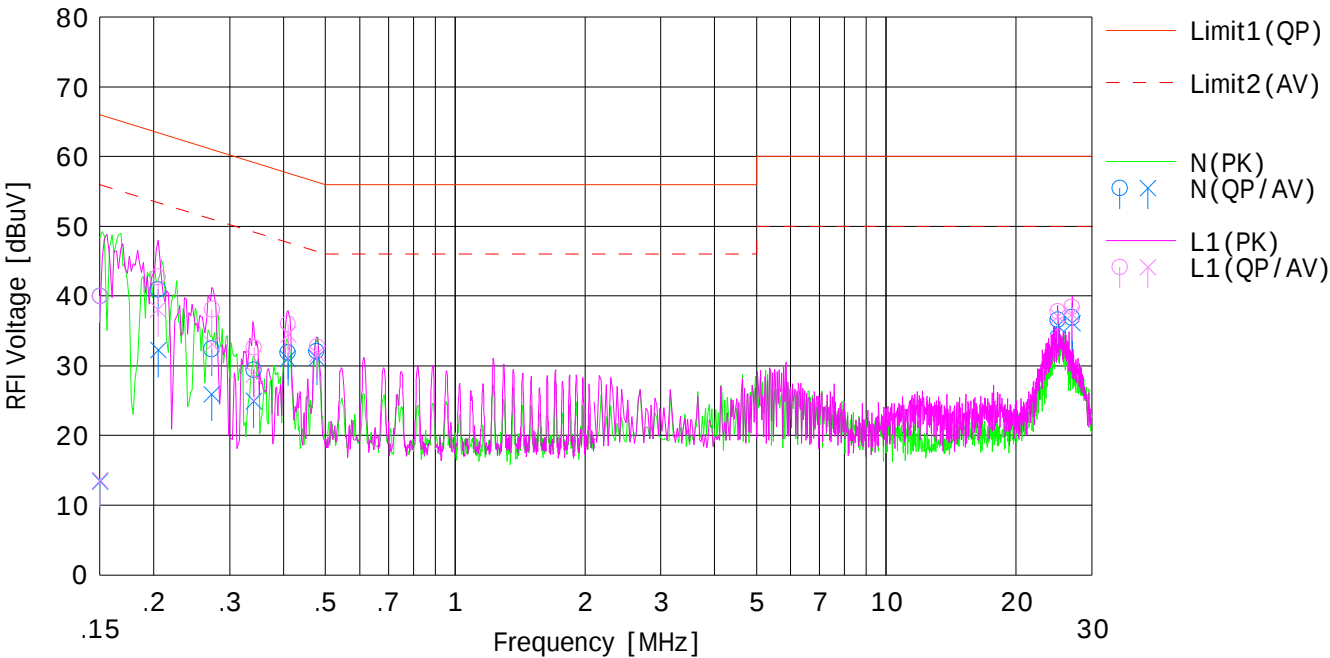
DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2014/03/16

Mode : W56, 11a, 5700MHz
Order No. : 10243431S
Power : AC 120V / 60Hz
Temp./Humi. : 24deg.C. / 34%RH

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

Engineer : Yasumasa Owaki

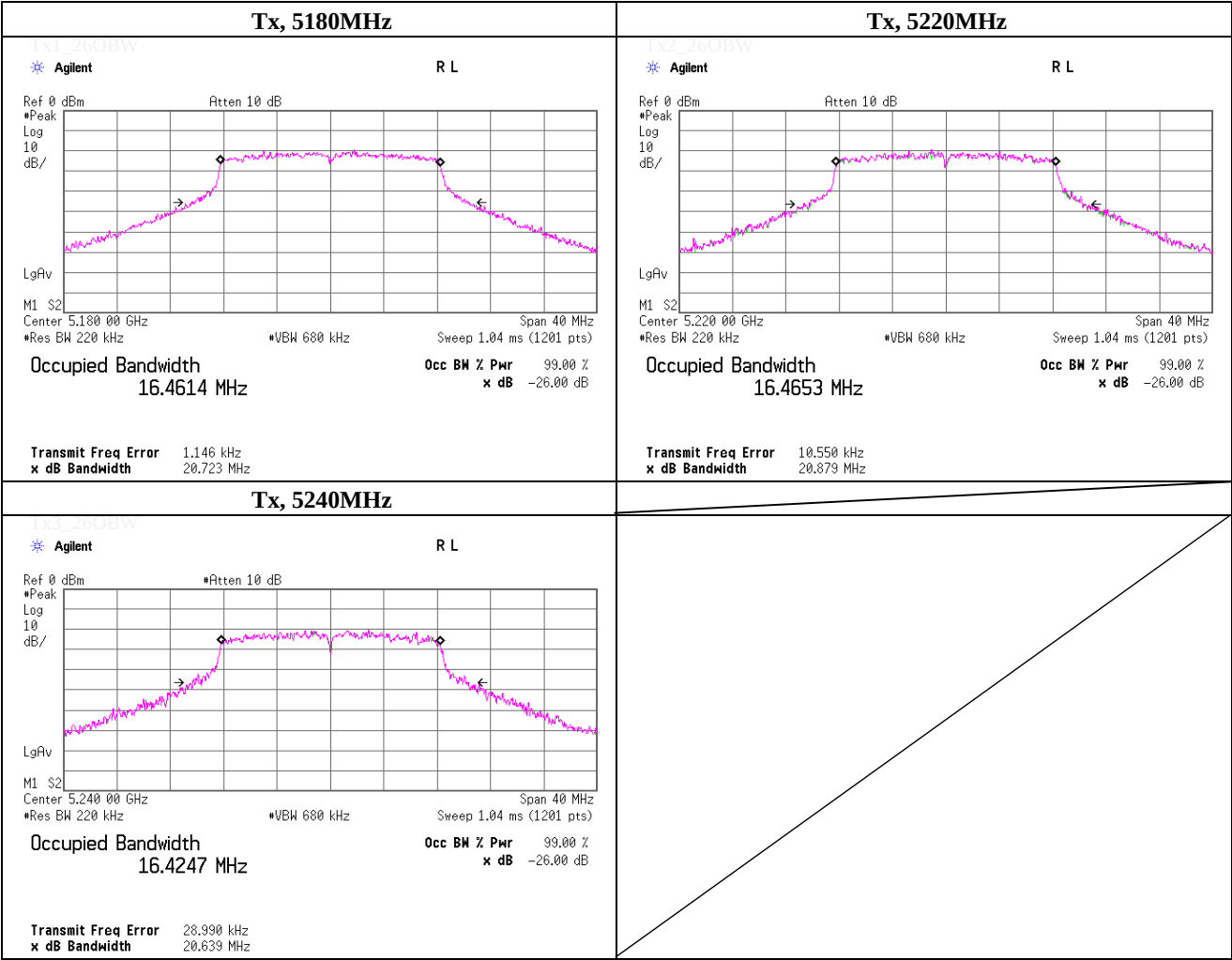


No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	27.3	0.7	12.7	40.0	13.4	66.0	56.0	26.0	42.6	N	
2	0.20472	28.2	19.5	12.7	40.9	32.2	63.4	53.4	22.5	21.2	N	
3	0.27279	19.7	13.2	12.7	32.4	25.9	61.0	51.0	28.6	25.1	N	
4	0.34098	16.7	12.2	12.7	29.4	24.9	59.1	49.1	29.7	24.2	N	
5	0.40954	19.2	18.3	12.7	31.9	31.0	57.6	47.6	25.7	16.6	N	
6	0.47748	19.4	18.4	12.7	32.1	31.1	56.3	46.3	24.2	15.2	N	
7	25.00010	22.9	22.0	13.7	36.6	35.7	60.0	50.0	23.4	14.3	N	
8	27.01757	23.1	22.3	13.8	36.9	36.1	60.0	50.0	23.1	13.9	N	
9	0.15000	27.3	0.9	12.7	40.0	13.6	66.0	56.0	26.0	42.4	L1	
10	0.20466	30.0	25.3	12.7	42.7	38.0	63.4	53.4	20.7	15.4	L1	
11	0.27287	25.4	20.4	12.7	38.1	33.1	61.0	51.0	22.9	17.9	L1	
12	0.34136	19.9	16.0	12.7	32.6	28.7	59.1	49.1	26.5	20.4	L1	
13	0.40978	23.3	21.8	12.7	36.0	34.5	57.6	47.6	21.6	13.1	L1	
14	0.47846	20.0	19.0	12.7	32.7	31.7	56.3	46.3	23.6	14.6	L1	
15	25.00024	24.1	23.3	13.7	37.8	37.0	60.0	50.0	22.2	13.0	L1	
16	27.00420	24.6	23.6	13.8	38.4	37.4	60.0	50.0	21.6	12.6	L1	

-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

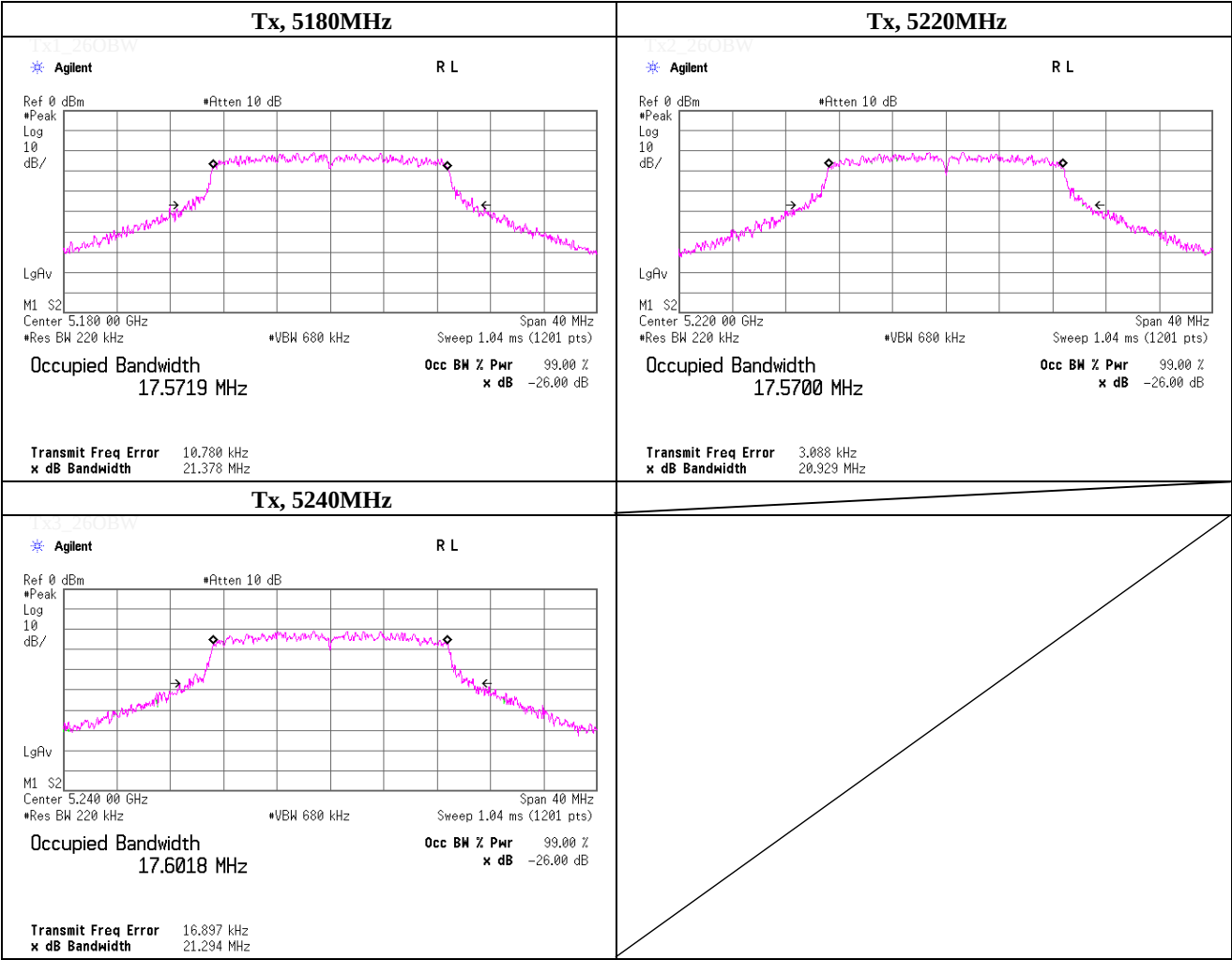
Freq. [MHz]	-26dB Bandwidth [MHz]
5180.0000	20.723
5220.0000	20.879
5240.0000	20.639



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

Freq. [MHz]	-26dB Bandwidth [MHz]
5180.0000	21.378
5220.0000	20.929
5240.0000	21.294



-26dB Bandwidth

Test place

UL Japan, Inc. Shonan EMC Lab.

No.1 Measurement room

Date

March 13, 2014

Temperature / Humidity

23deg.C , 48%RH

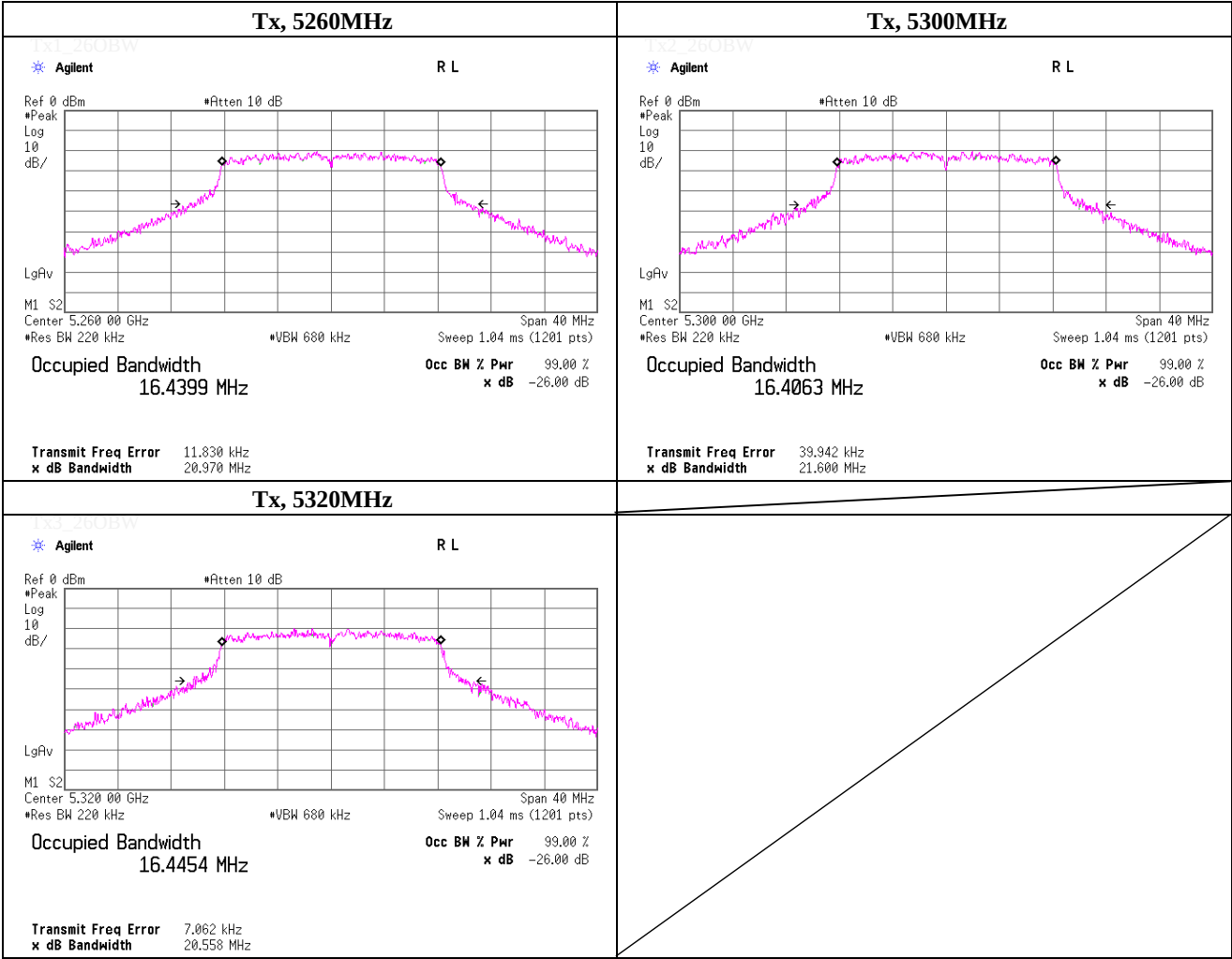
Engineer

Kenichi Adachi

Mode

Tx, IEEE802.11a, PN9, worst data mode 54Mbps

Freq. [MHz]	-26dB Bandwidth [MHz]
5260.0000	20.970
5300.0000	21.600
5320.0000	20.558



-26dB Bandwidth

Test place

UL Japan, Inc. Shonan EMC Lab.

No.1 Measurement room

Date

March 13, 2014

Temperature / Humidity

23deg.C , 48%RH

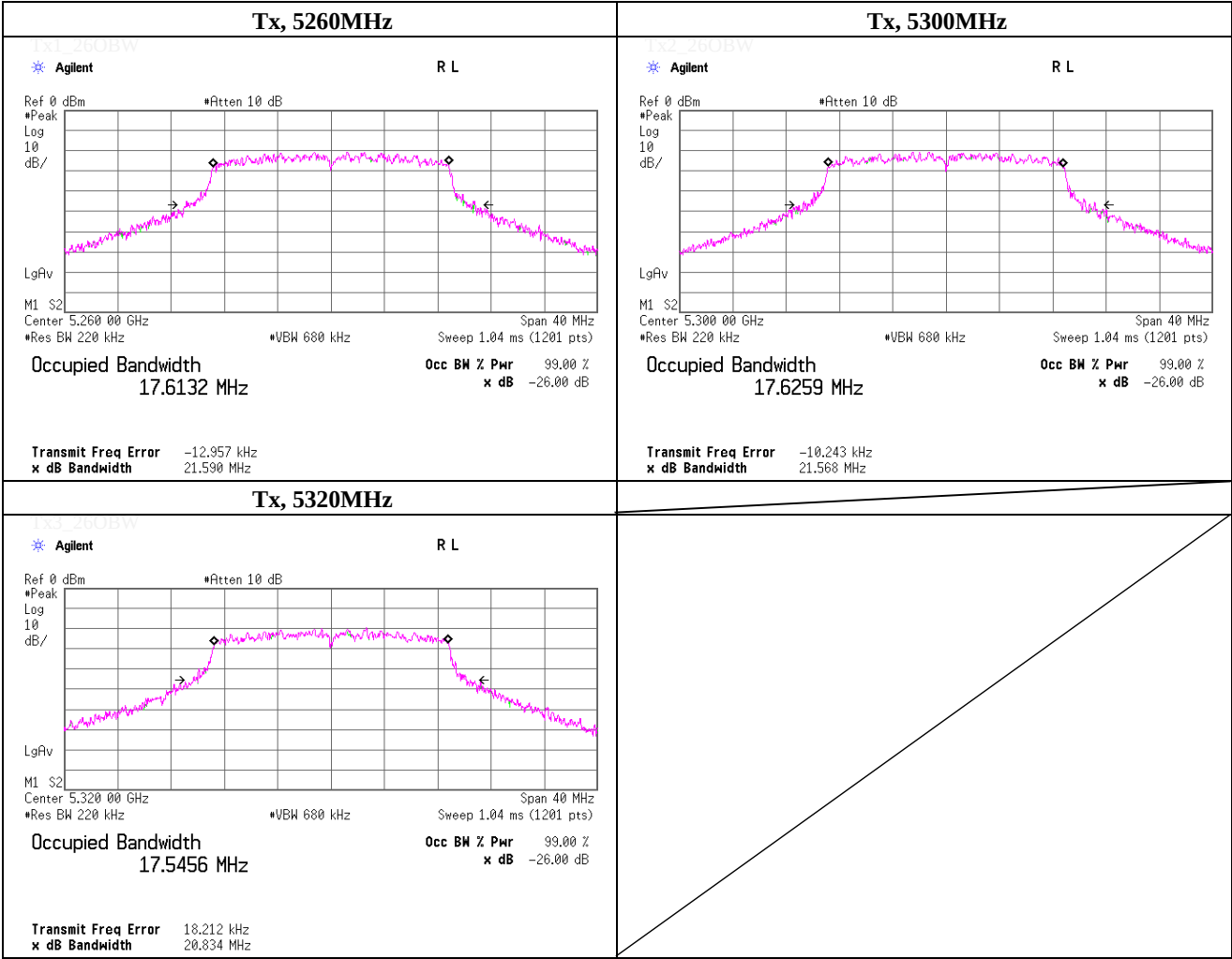
Engineer

Kenichi Adachi

Mode

Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)

Freq. [MHz]	-26dB Bandwidth [MHz]
5260.0000	21.590
5300.0000	21.568
5320.0000	20.834



-26dB Bandwidth

Test place

UL Japan, Inc. Shonan EMC Lab.

No.1 Measurement room

Date

March 13, 2014

Temperature / Humidity

23deg.C , 48%RH

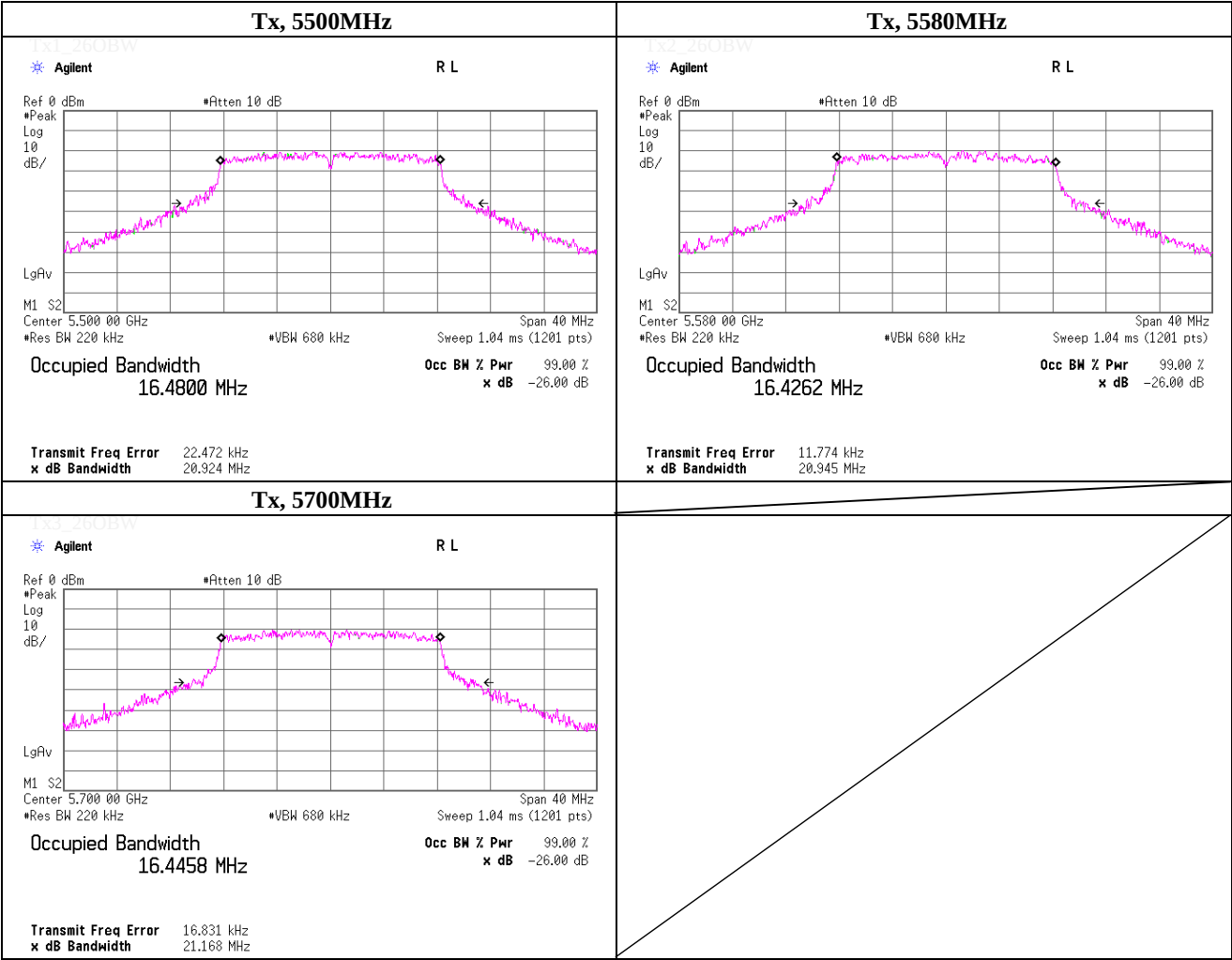
Engineer

Kenichi Adachi

Mode

Tx, IEEE802.11a, PN9, worst data mode 54Mbps

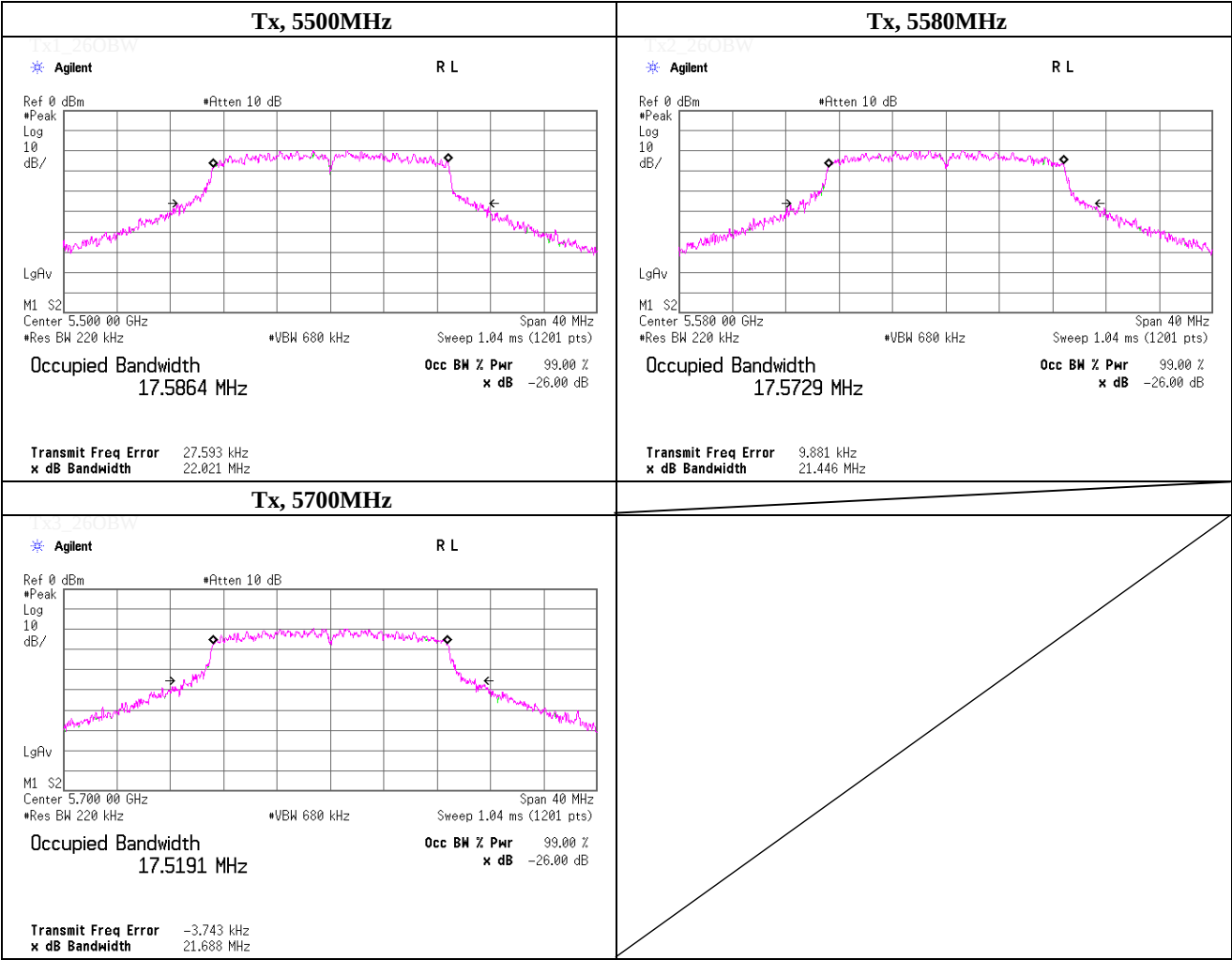
Freq. [MHz]	-26dB Bandwidth [MHz]
5500.0000	20.924
5580.0000	20.945
5700.0000	21.168



-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

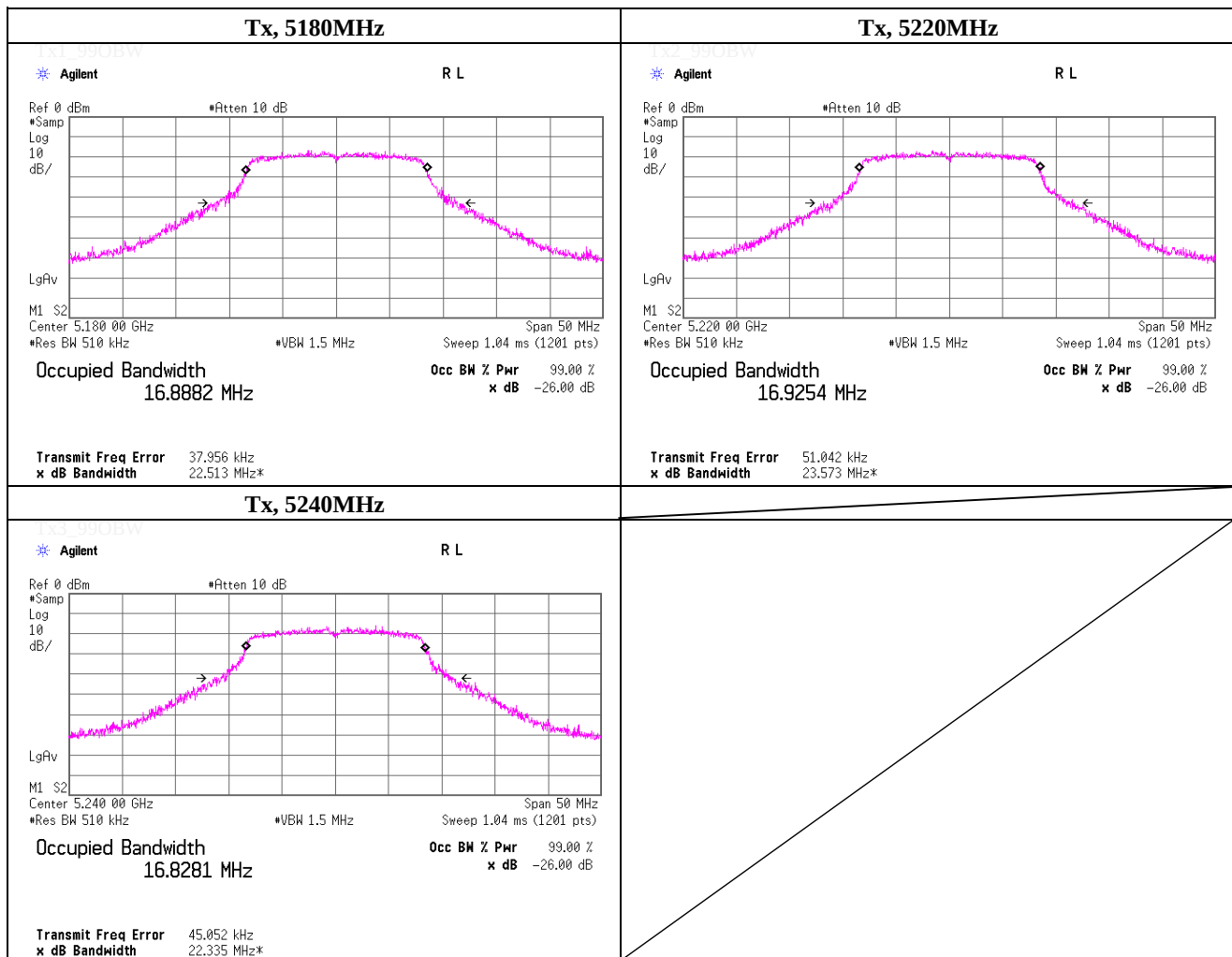
Freq. [MHz]	-26dB Bandwidth [MHz]
5500.0000	22.021
5580.0000	21.446
5700.0000	21.688



99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5180.0000	16.888
5220.0000	16.925
5240.0000	16.828



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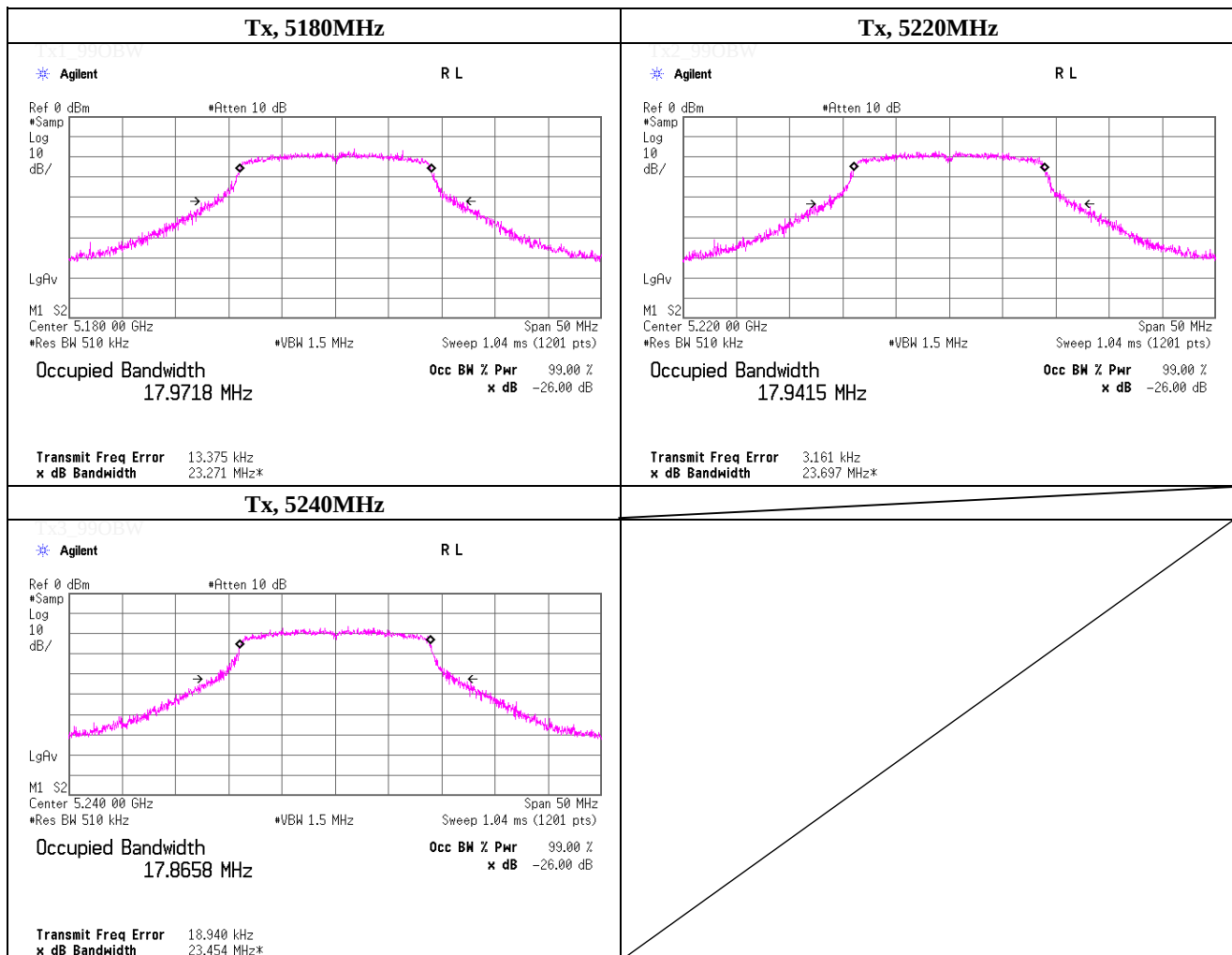
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Facsimile : +81 463 50 6401

99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5180.0000	17.972
5220.0000	17.941
5240.0000	17.866



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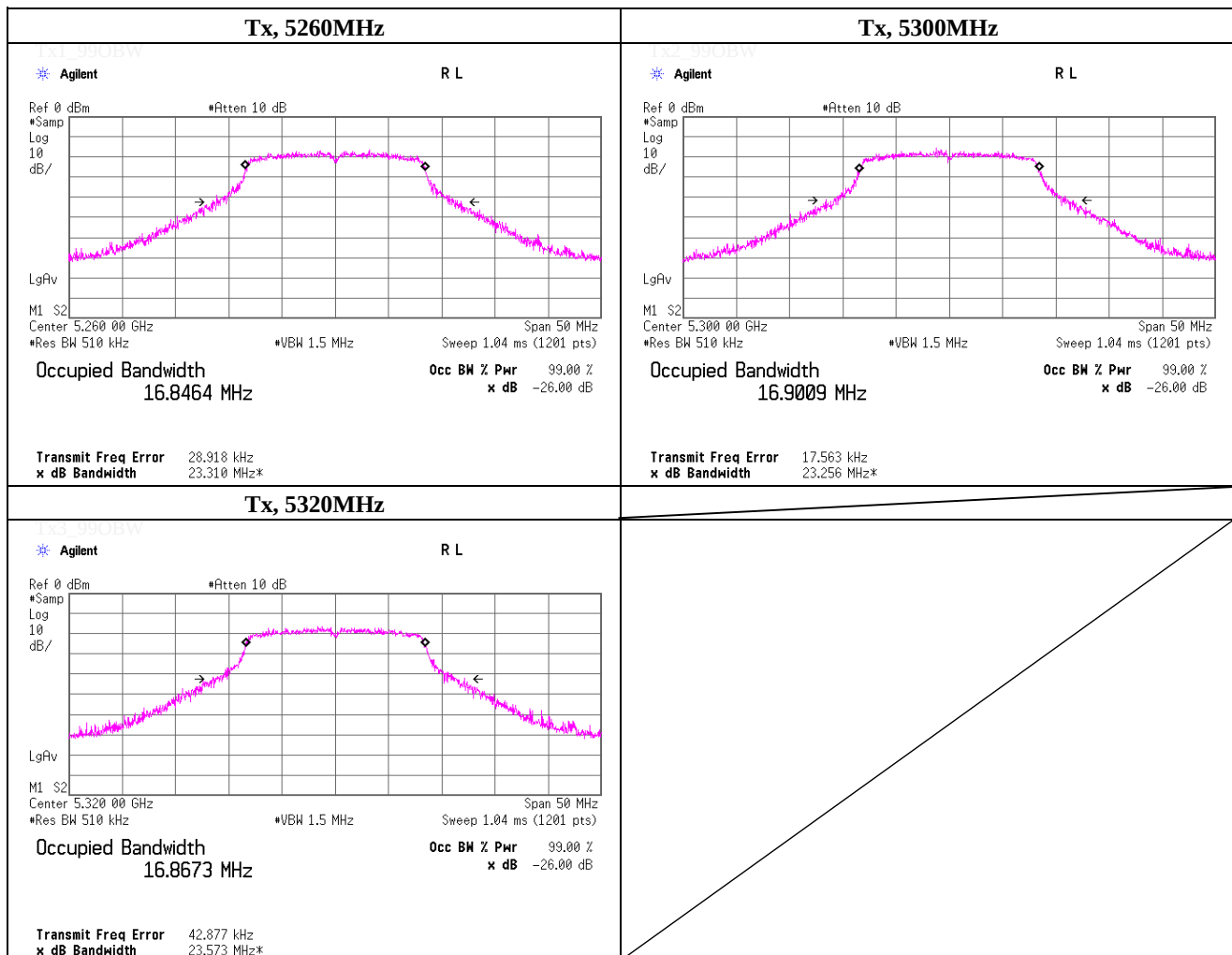
Telephone : +81 463 50 6400

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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5260.0000	16.846
5300.0000	16.901
5320.0000	16.867



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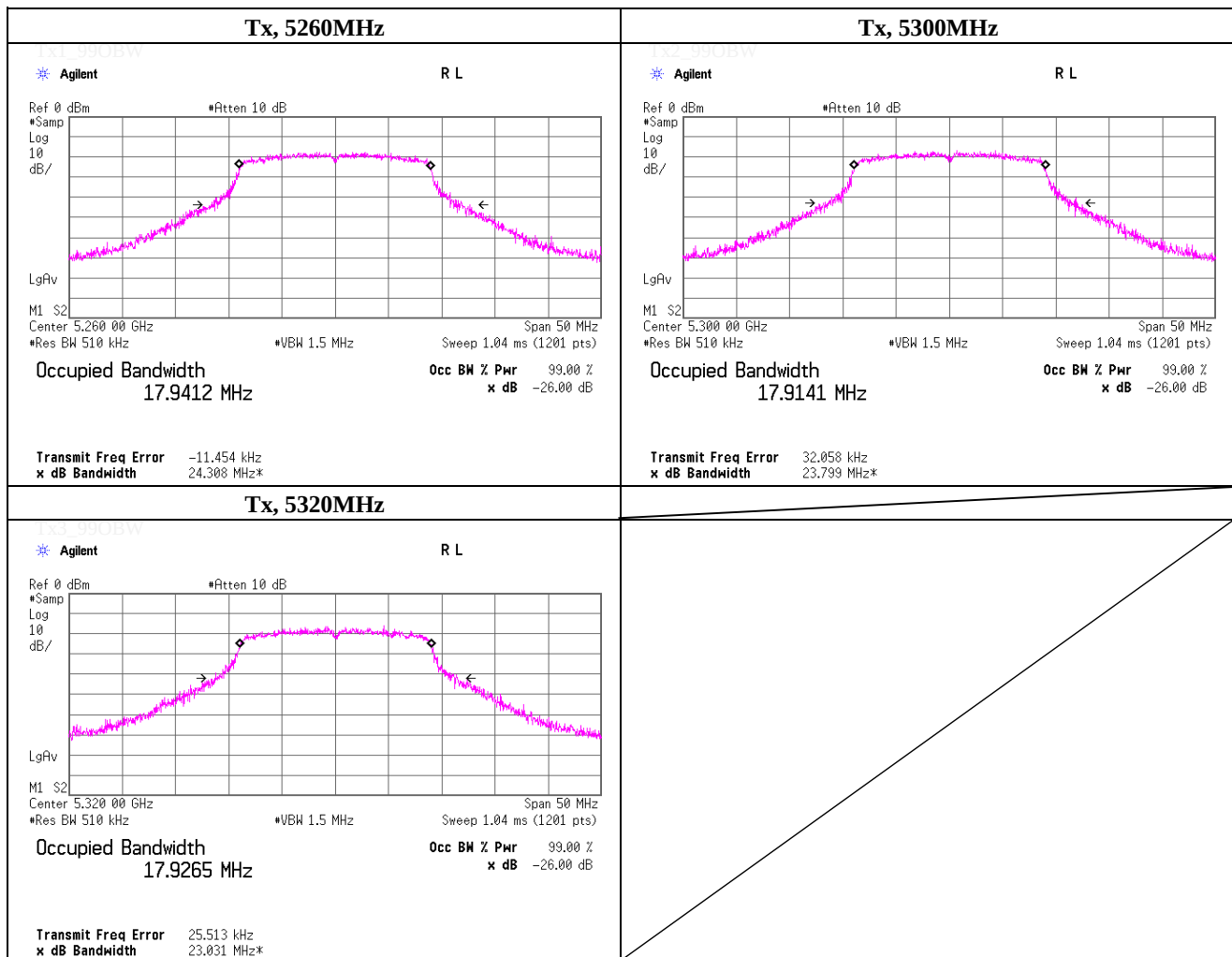
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5260.0000	17.941
5300.0000	17.914
5320.0000	17.927



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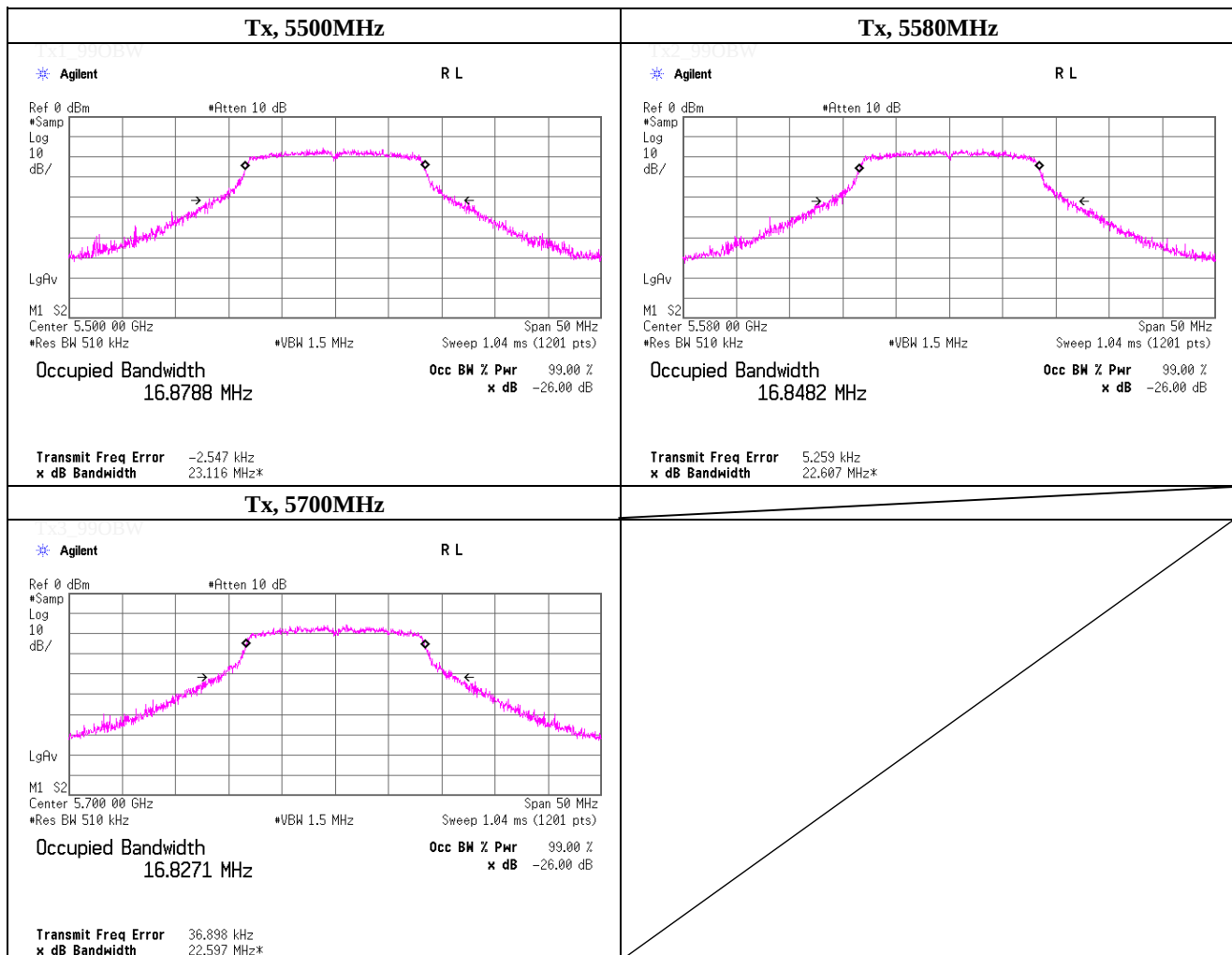
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Facsimile : +81 463 50 6401

99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5500.0000	16.879
5580.0000	16.848
5700.0000	16.827



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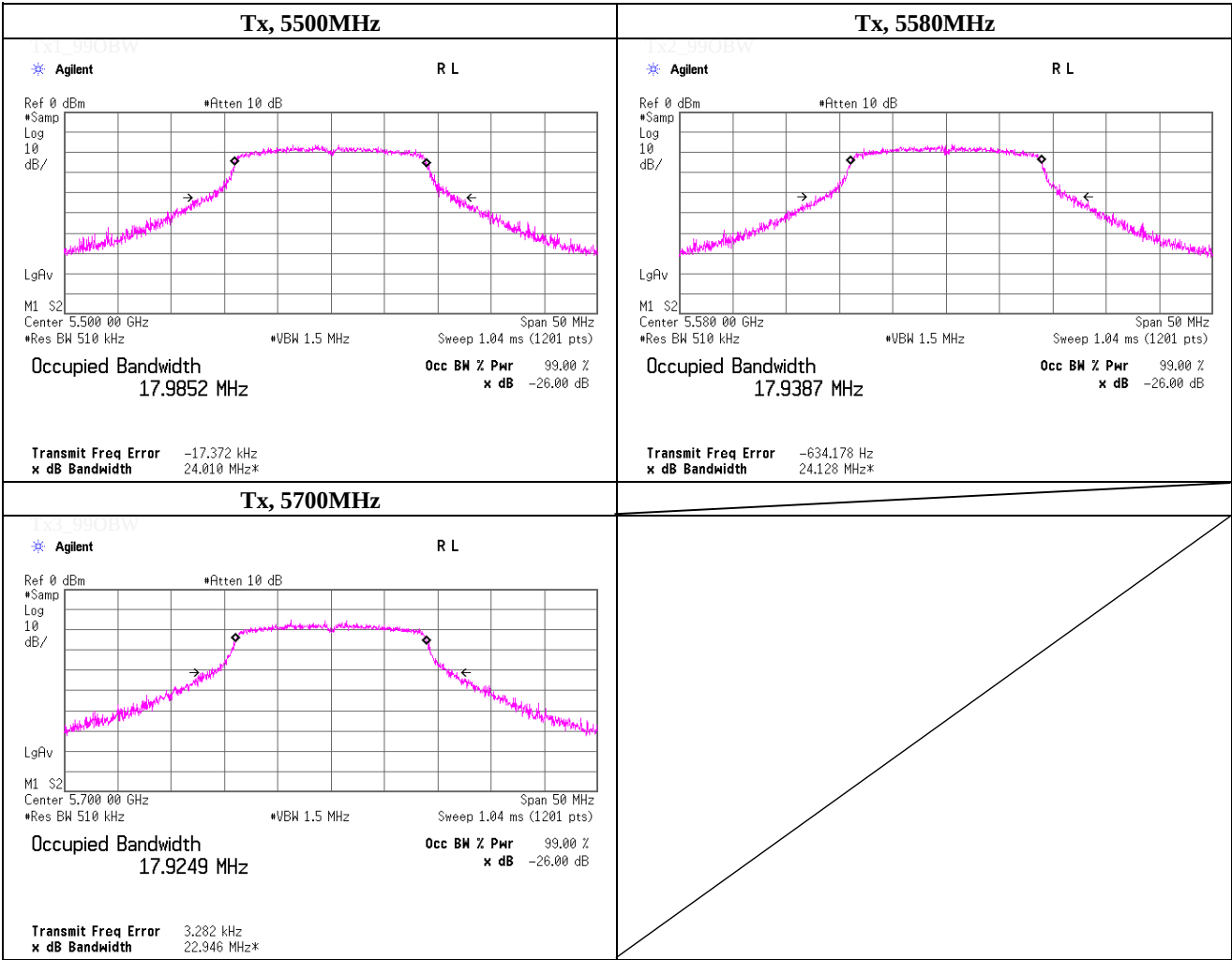
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99% Occupied Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

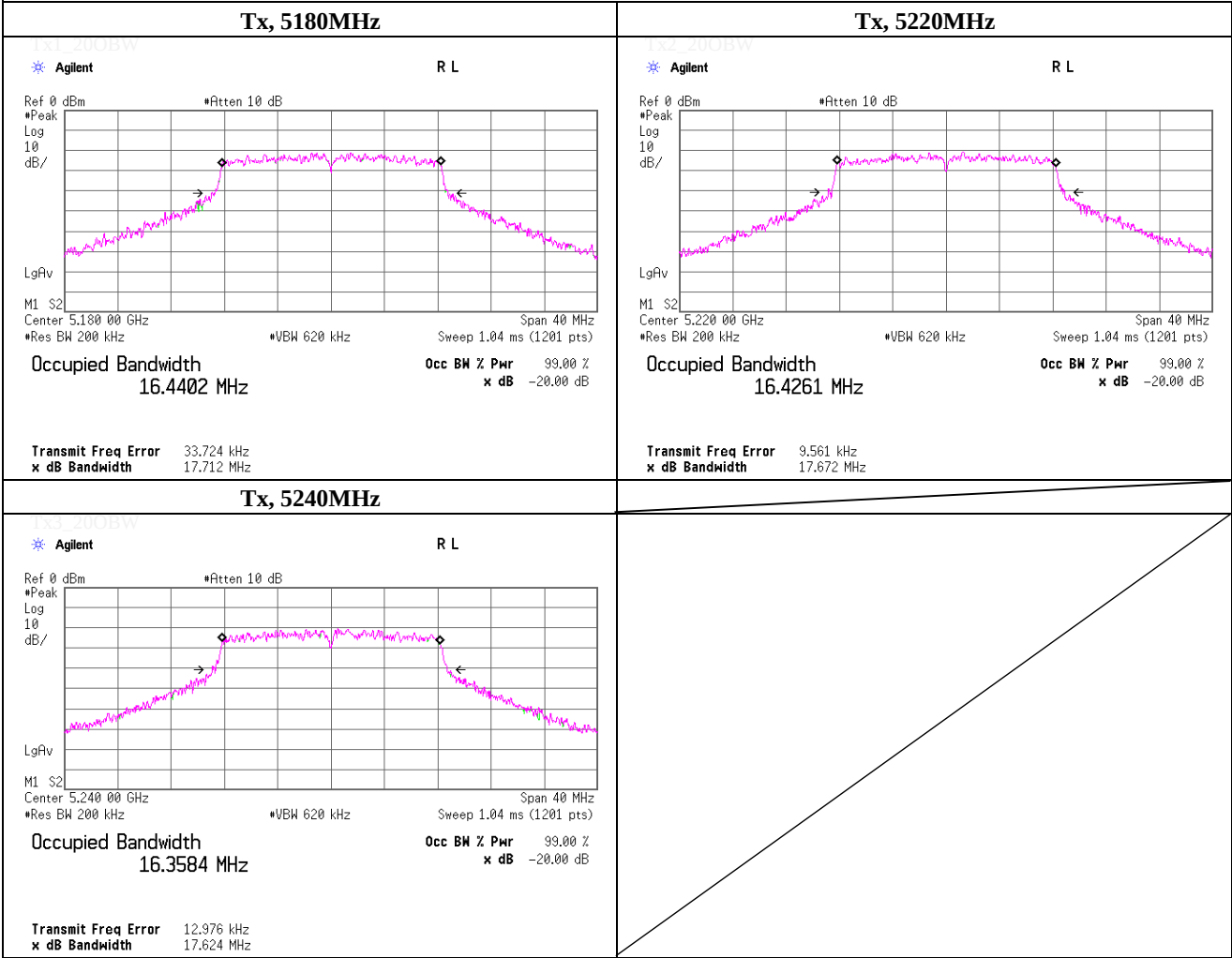
Freq. [MHz]	99% Occupied Bandwidth [MHz]
5500.0000	17.985
5580.0000	17.939
5700.0000	17.925



-20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

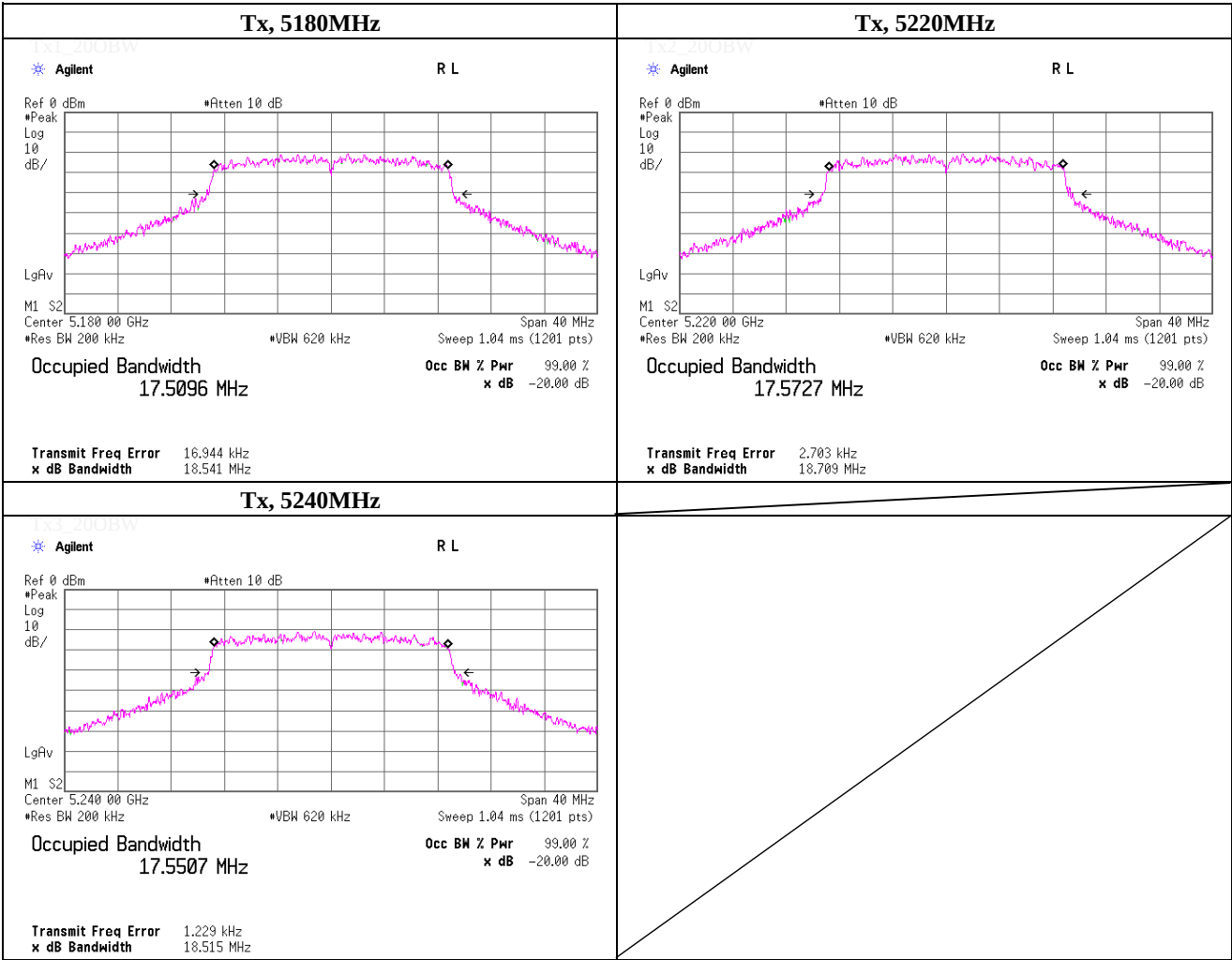
Freq. [MHz]	-20dB Bandwidth [MHz]
5180.0000	17.712
5220.0000	17.672
5240.0000	17.624



-20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

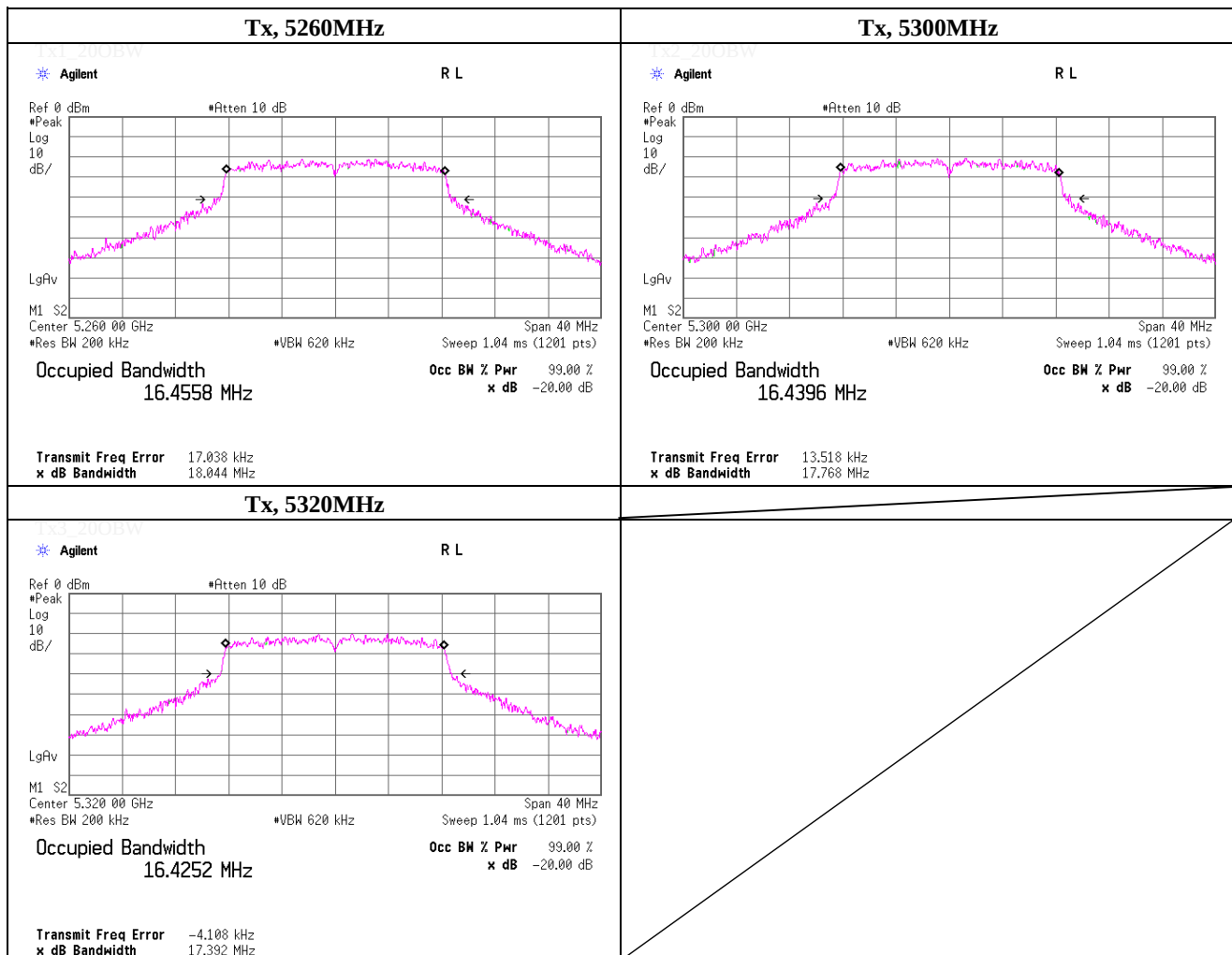
Freq. [MHz]	-20dB Bandwidth [MHz]
5180.0000	18.541
5220.0000	18.709
5240.0000	18.515



-20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

Freq. [MHz]	-20dB Bandwidth [MHz]
5260.0000	18.044
5300.0000	17.768
5320.0000	17.392



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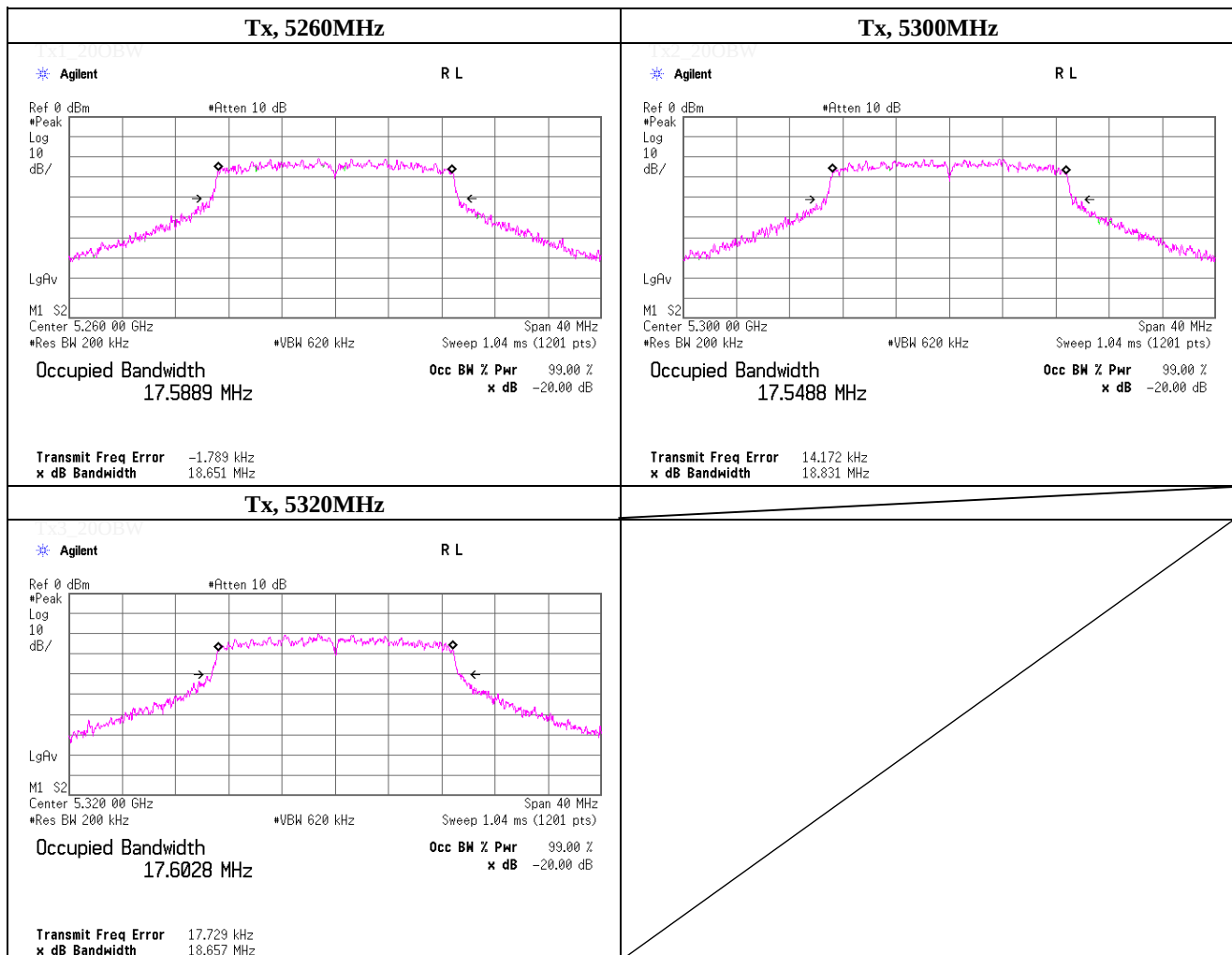
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

-20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

Freq. [MHz]	-20dB Bandwidth [MHz]
5260.0000	18.651
5300.0000	18.831
5320.0000	18.657

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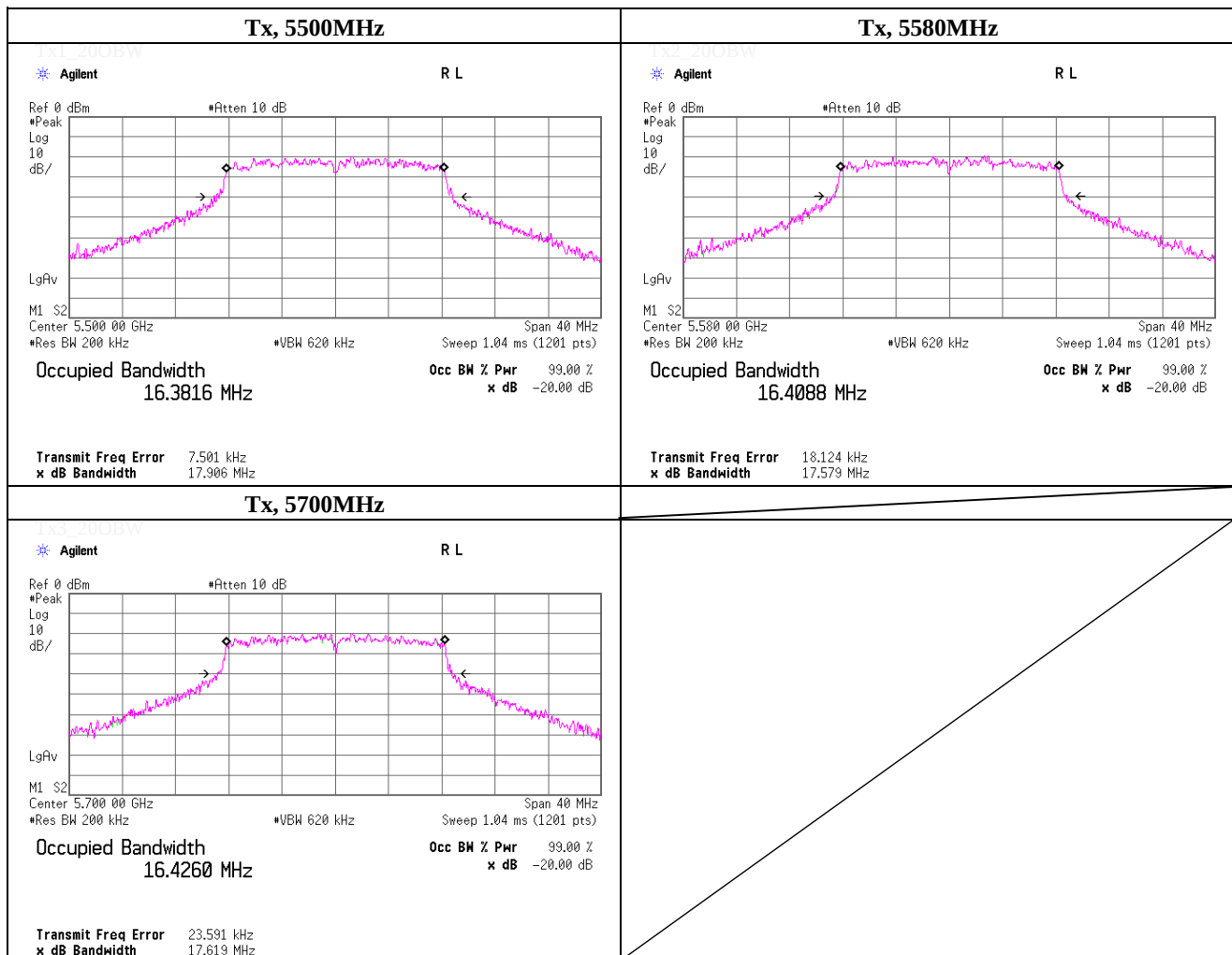
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Facsimile : +81 463 50 6401

-20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

Freq. [MHz]	-20dB Bandwidth [MHz]
5500.0000	17.906
5580.0000	17.579
5700.0000	17.619



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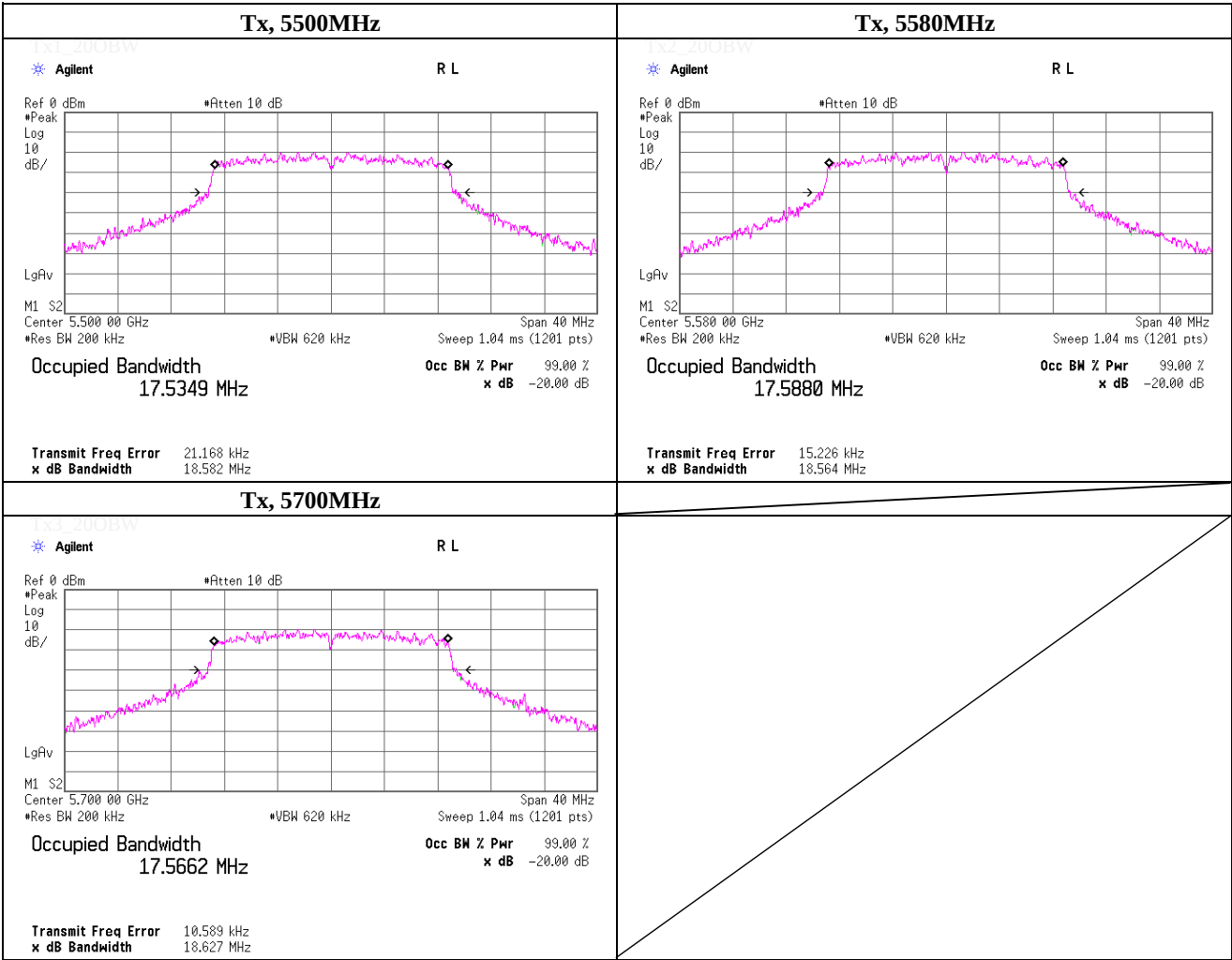
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

-20dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(MCS)	

Freq. [MHz]	-20dB Bandwidth [MHz]
5500.0000	18.582
5580.0000	18.564
5700.0000	18.627



Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date March 11, 2013
 Temperature / Humidity 24deg.C , 39%RH
 Engineer Tatsuya Arai
 Mode Tx, IEEE802.11a, PN9, worst data mode : 54 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	5180.0	-12.23	3.20	20.35	1.08	12.40	17.38	16.99	50.00	4.59
Mid	5220.0	-12.18	3.21	20.34	1.08	12.45	17.58	16.99	50.00	4.54
High	5240.0	-12.19	3.22	20.33	1.08	12.44	17.54	16.99	50.00	4.55

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

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	5180.0	-12.23	3.20	20.35	1.08	4.10	16.50	44.67	-	-	-
Mid	5220.0	-12.18	3.21	20.34	1.08	4.10	16.55	45.19	-	-	-
High	5240.0	-12.19	3.22	20.33	1.08	4.10	16.54	45.08	-	-	-

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

[Pre check]

Antenna

	Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty factor	Result
	[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]
	6	5180.0	-11.35	3.20	20.35	0.15	12.35
	9	5180.0	-11.47	3.20	20.35	0.22	12.30
	12	5180.0	-11.50	3.20	20.35	0.30	12.35
	18	5180.0	-11.65	3.20	20.35	0.43	12.33
	24	5180.0	-11.77	3.20	20.35	0.56	12.34
	36	5180.0	-12.00	3.20	20.35	0.79	12.34
	48	5180.0	-12.16	3.20	20.35	1.00	12.39
	54	5180.0	-12.23	3.20	20.35	1.08	12.40

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 March 11, 2013
Temperature / Humidity 24deg.C , 39%RH
Engineer Tatsuya Arai
Mode Tx, IEEE802.11a, PN9, worst data mode : 54 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	5260.0	-12.03	3.22	20.33	1.08		12.60	18.20	16.99	50.00	4.39
Mid	5300.0	-12.01	3.23	20.32	1.08		12.62	18.28	16.99	50.00	4.37
High	5320.0	-11.98	3.24	20.31	1.08		12.65	18.41	16.99	50.00	4.34

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

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	5260.0	-12.03	3.22	20.33	1.08	4.10	16.70	46.77	-	-	-
Mid	5300.0	-12.01	3.23	20.32	1.08	4.10	16.72	46.99	-	-	-
High	5320.0	-11.98	3.24	20.31	1.08	4.10	16.75	47.32	-	-	-

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

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Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date March 11, 2013
 Temperature / Humidity 24deg.C , 39%RH
 Engineer Tatsuya Arai
 Mode Tx, IEEE802.11a, PN9, worst data mode : 54 Mbps

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	5500.0	-11.46	3.48	20.26	1.08		13.36	21.68	23.98	250.00	10.62
Mid	5580.0	-11.43	3.48	20.26	1.08		13.39	21.83	23.98	250.00	10.59
High	5700.0	-11.29	3.48	20.25	1.08		13.52	22.49	23.98	250.00	10.46

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

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	5500.0	-11.46	3.48	20.26	1.08	4.10	17.46	55.72	-	-	-
Mid	5580.0	-11.43	3.48	20.26	1.08	4.10	17.49	56.10	-	-	-
High	5700.0	-11.29	3.48	20.25	1.08	4.10	17.62	57.81	-	-	-

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

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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



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Shonan EMC Lab.

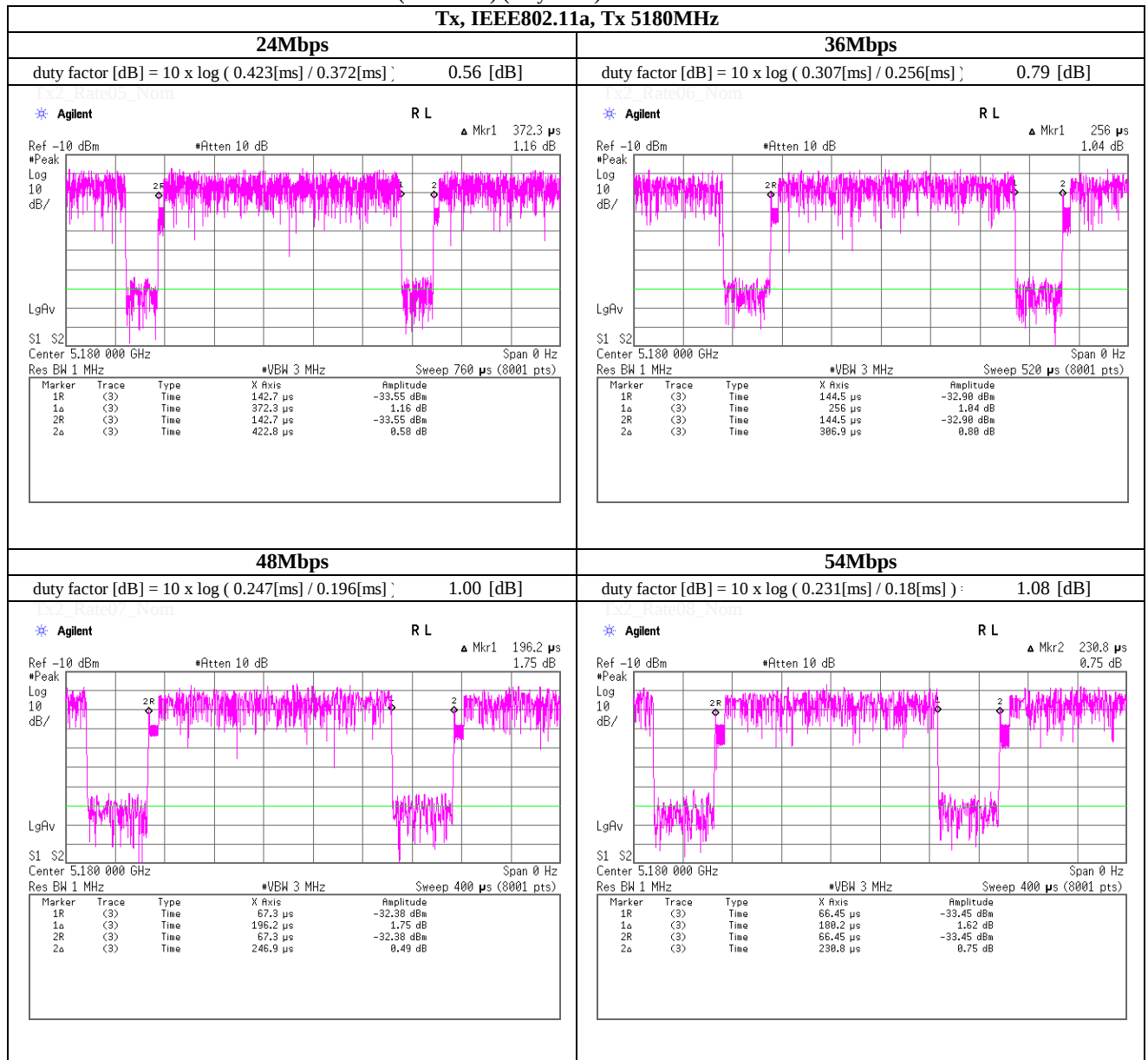
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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date March 11, 2013
 Temperature / Humidity 24deg.C , 39%RH
 Engineer Tatsuya Arai
 Mode Tx, IEEE802.11n-20HT, PN9, worst data mode : 7 (MCS)

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	5180.0	-12.30	3.20	20.35	1.15		12.40	17.38	16.99	50.00	4.59
Mid	5220.0	-12.25	3.21	20.34	1.15		12.45	17.58	16.99	50.00	4.54
High	5240.0	-12.28	3.22	20.33	1.15		12.42	17.46	16.99	50.00	4.57

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

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	5180.0	-12.30	3.20	20.35	1.15	4.10	16.50	44.67	-	-	-
Mid	5220.0	-12.25	3.21	20.34	1.15	4.10	16.55	45.19	-	-	-
High	5240.0	-12.28	3.22	20.33	1.15	4.10	16.52	44.87	-	-	-

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

[Pre check]**Long Guard Interval**

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
	0	5180.0	-11.45	3.20	20.35	0.16	12.26
	1	5180.0	-11.60	3.20	20.35	0.31	12.26
	2	5180.0	-11.73	3.20	20.35	0.45	12.27
	3	5180.0	-11.84	3.20	20.35	0.57	12.28
	4	5180.0	-12.04	3.20	20.35	0.79	12.30
	5	5180.0	-12.28	3.20	20.35	0.99	12.26
	6	5180.0	-12.36	3.20	20.35	1.06	12.25
	7	5180.0	-12.30	3.20	20.35	1.15	12.40

Worst**Short Guard Interval**

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
-	0	5180.0	-11.48	3.20	20.35	0.18	12.25
-	1	5180.0	-11.64	3.20	20.35	0.34	12.25
-	2	5180.0	-11.78	3.20	20.35	0.49	12.26
-	3	5180.0	-11.90	3.20	20.35	0.62	12.27
-	4	5180.0	-12.11	3.20	20.35	0.86	12.30
-	5	5180.0	-12.33	3.20	20.35	1.04	12.26
-	6	5180.0	-12.41	3.20	20.35	1.15	12.29
-	7	5180.0	-12.40	3.20	20.35	1.24	12.39

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Shonan EMC Lab.

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Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date March 11, 2013
Temperature / Humidity 24deg.C , 39%RH
Engineer Tatsuya Arai
Mode Tx, IEEE802.11n-20HT, PN9, worst data mode : 7 (MCS)

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	5260.0	-12.12	3.22	20.33	1.15		12.58	18.11	16.99	50.00	4.41
Mid	5300.0	-12.07	3.23	20.32	1.15		12.63	18.32	16.99	50.00	4.36
High	5320.0	-12.05	3.24	20.31	1.15		12.65	18.41	16.99	50.00	4.34

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

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	5180.0	-12.12	3.22	20.33	1.15	4.10	16.68	46.56	-	-	-
Mid	5300.0	-12.07	3.23	20.32	1.15	4.10	16.73	47.10	-	-	-
High	5320.0	-12.05	3.24	20.31	1.15	4.10	16.75	47.32	-	-	-

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

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Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date March 11, 2013
 Temperature / Humidity 24deg.C , 39%RH
 Engineer Tatsuya Arai
 Mode Tx, IEEE802.11n-20HT, PN9, worst data mode : 7 (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	5500.0	-11.57	3.48	20.26	1.15	13.32	21.48	23.98	250.00	10.66
Mid	5580.0	-11.52	3.48	20.26	1.15	13.37	21.73	23.98	250.00	10.61
High	5700.0	-11.42	3.48	20.25	1.15	13.46	22.18	23.98	250.00	10.52

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

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	5500.0	-11.57	3.48	20.26	1.15	4.10	17.42	55.21	-	-	-
Mid	5580.0	-11.52	3.48	20.26	1.15	4.10	17.47	55.85	-	-	-
High	5700.0	-11.42	3.48	20.25	1.15	4.10	17.56	57.02	-	-	-

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

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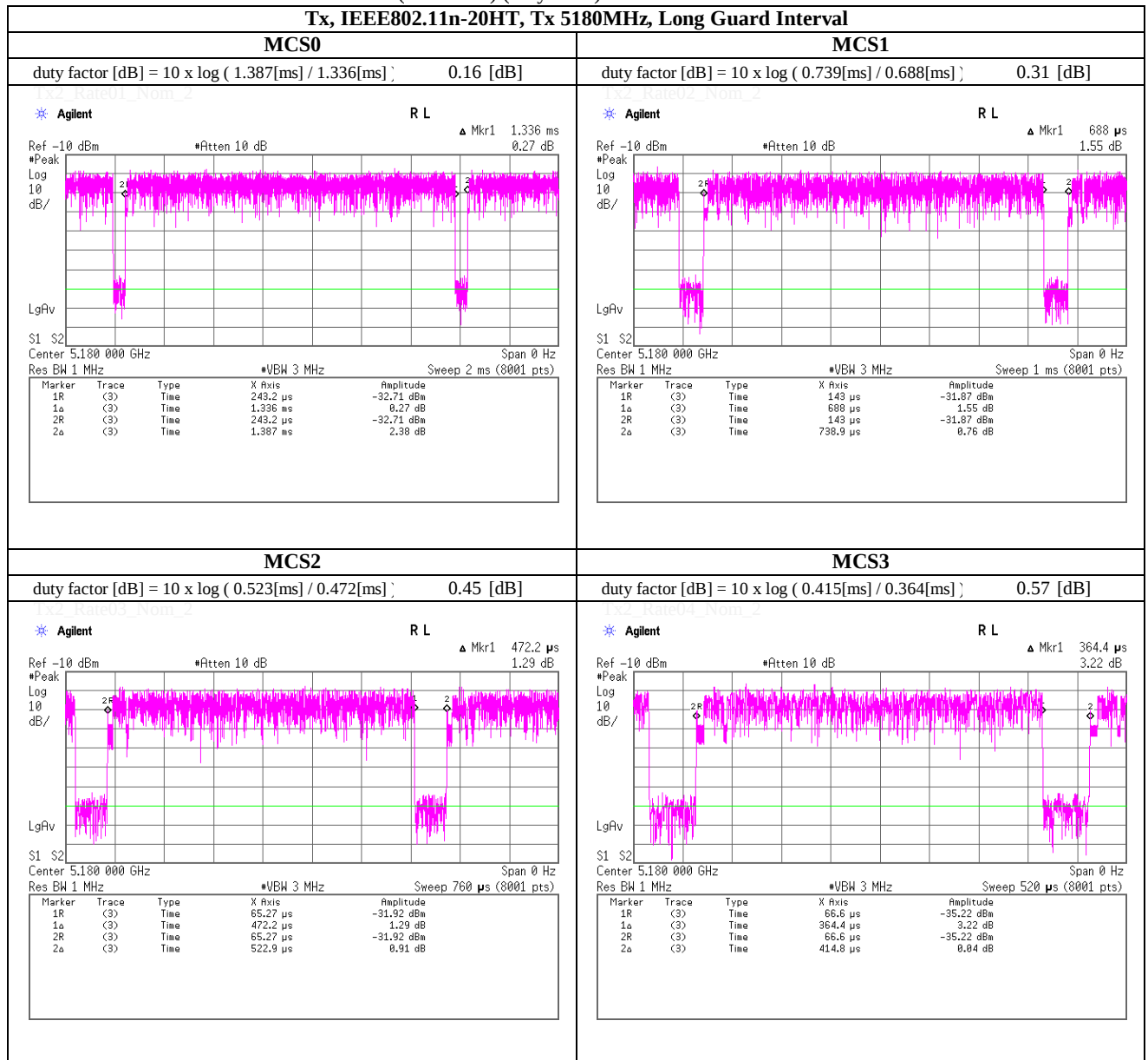
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



UL Japan, Inc.

Shonan EMC Lab.

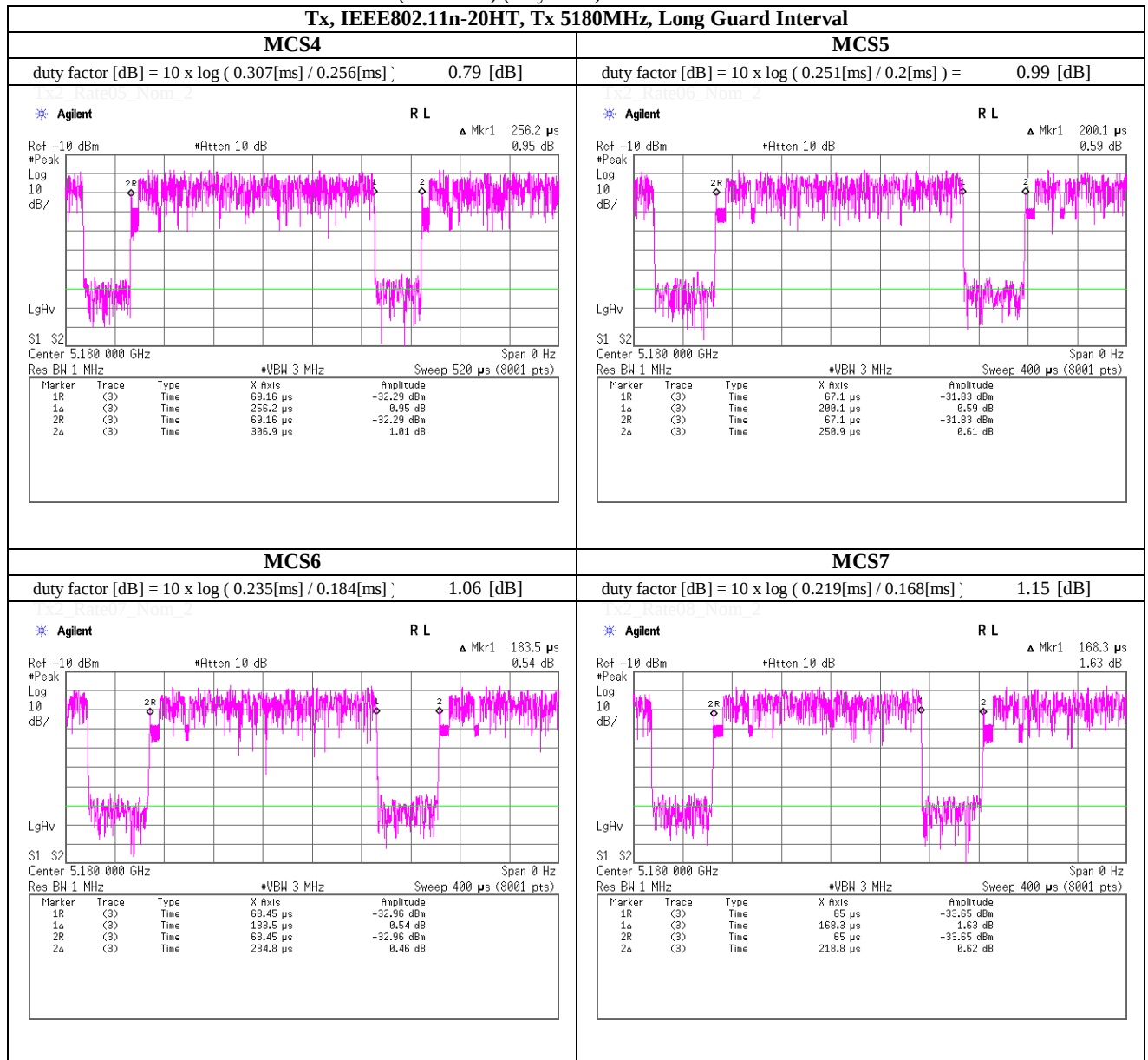
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)



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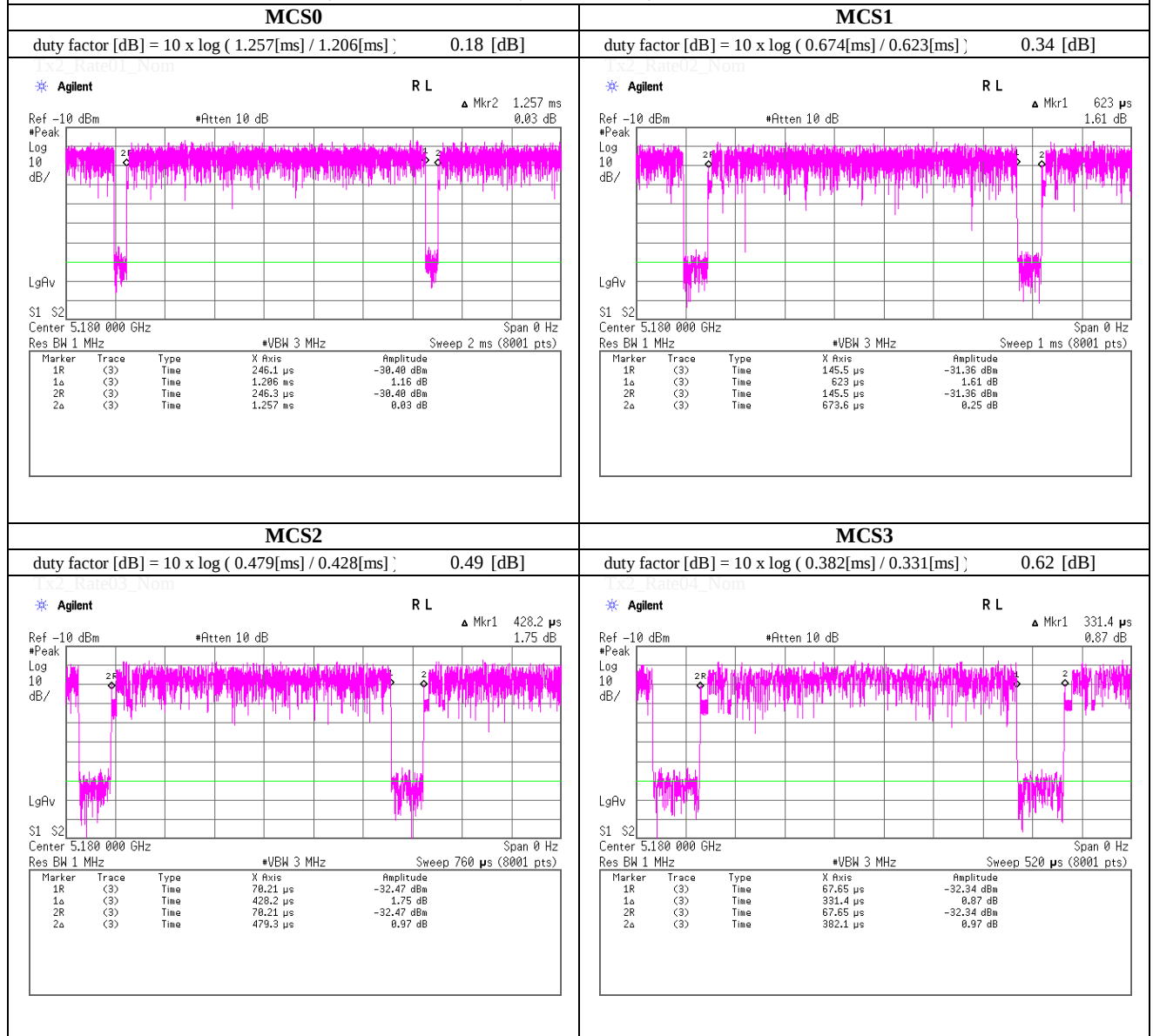
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n-20HT, Tx 5180MHz, Short Guard Interval



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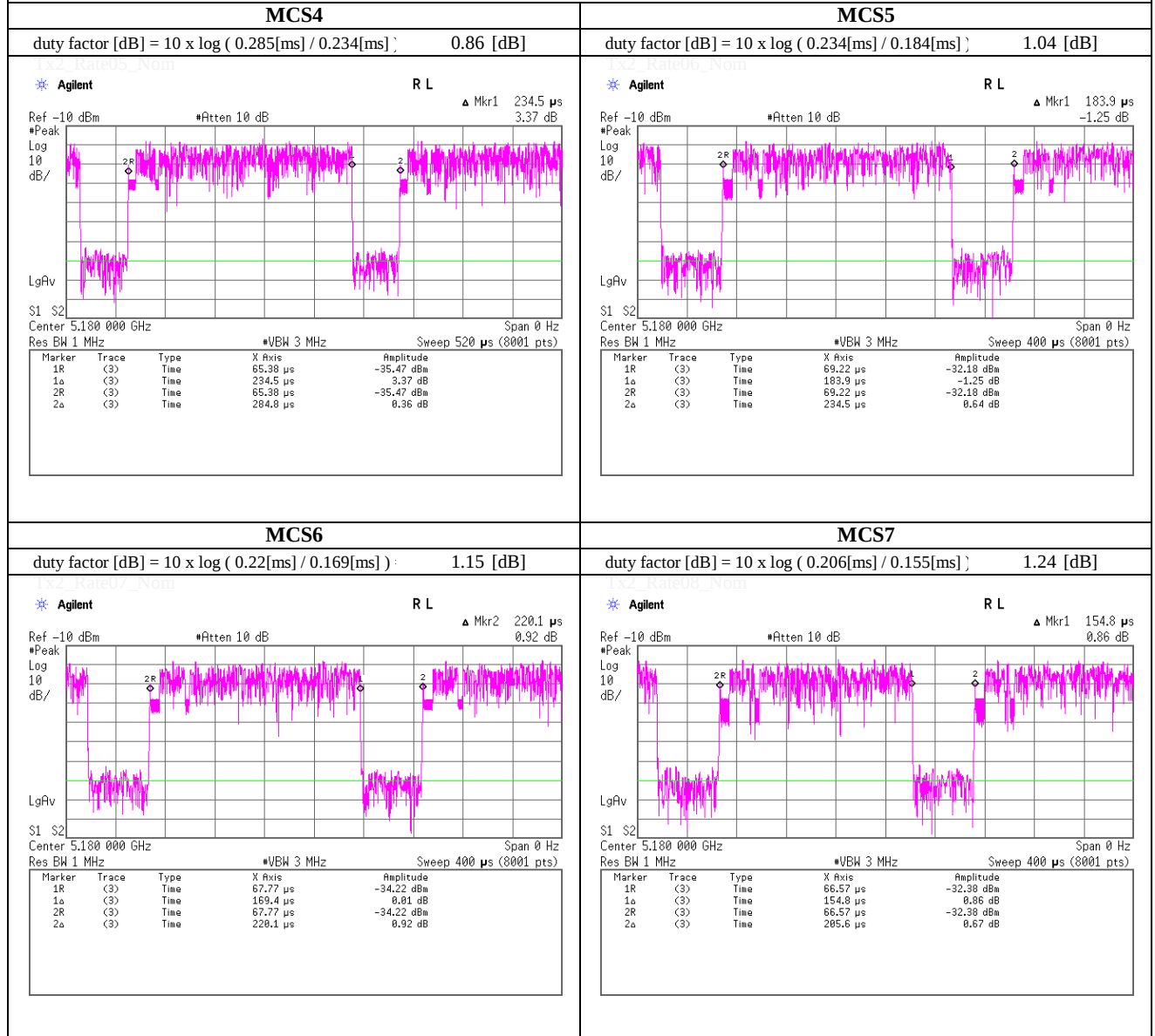
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Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11n-20HT, Tx 5180MHz, Short Guard Interval



UL Japan, Inc.

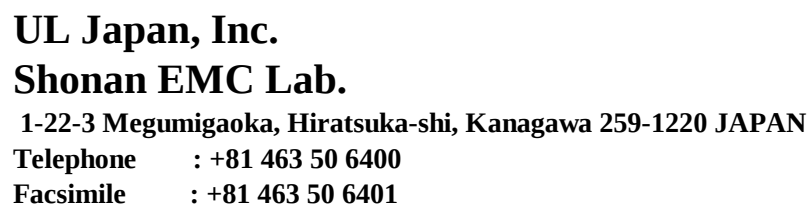
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Tx, IEEE802.11a, PN9, worst data mode 54Mbps



Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5180 MHz Tx, IEEE802.11a		

(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	44.8	32.1	17.1	37.0	57.0	73.9	16.9	100	128	
Hori.	15540.000	PK	49.8	37.7	2.2	38.6	51.1	73.9	22.8	100	0	
Hori.	20720.000	PK	56.3	41.3	2.4	48.0	52.0	73.9	21.9	100	333	
Hori.	5150.000	AV	34.5	32.1	17.1	37.0	46.7	53.9	7.2	100	128	VBW: 5.6kHz
Hori.	15540.000	AV	37.2	37.7	2.2	38.6	38.5	53.9	15.4	100	0	VBW: 5.6kHz
Hori.	20720.000	AV	54.2	41.3	2.4	48.0	49.9	53.9	4.0	100	333	VBW: 5.6kHz
Vert.	5150.000	PK	44.3	32.1	17.1	37.0	56.5	73.9	17.4	108	65	
Vert.	15540.000	PK	49.6	37.7	2.2	38.6	50.9	73.9	23.0	100	0	
Vert.	20720.000	PK	56.4	41.3	2.4	48.0	52.1	73.9	21.8	100	324	
Vert.	5150.000	AV	33.0	32.1	17.1	37.0	45.2	53.9	8.7	108	65	VBW: 5.6kHz
Vert.	15540.000	AV	37.4	37.7	2.2	38.6	38.7	53.9	15.2	100	0	VBW: 5.6kHz
Vert.	20720.000	AV	54.1	41.3	2.4	48.0	49.8	53.9	4.1	100	324	VBW: 5.6kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5611.717	PK	44.3	32.4	17.3	37.4	56.6	-38.6	-27.00	11.6	100	359	
Hori.	10360.000	PK	47.4	39.5	9.8	37.6	59.1	-36.1	-27.00	9.1	100	0	
Vert.	5611.717	PK	43.8	32.4	17.3	37.4	56.1	-39.1	-27.00	12.1	106	304	
Vert.	10360.000	PK	46.1	39.5	9.8	37.6	57.8	-37.4	-27.00	10.4	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5240 MHz Tx, IEEE802.11a		

(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.	15720.000	PK	50.0	37.0	2.3	38.5	50.8	73.9	23.1	100	0	
Hori.	20960.000	PK	56.3	41.4	2.5	48.0	52.2	73.9	21.7	100	332	
Hori.	15720.000	AV	37.4	37.0	2.3	38.5	38.2	53.9	15.7	100	0	VBW: 5.6kHz
Hori.	20960.000	AV	53.8	41.4	2.5	48.0	49.7	53.9	4.2	100	332	VBW: 5.6kHz
Vert.	15718.980	PK	49.9	37.0	2.3	38.5	50.7	73.9	23.2	100	0	
Vert.	20960.000	PK	56.6	41.4	2.5	48.0	52.5	73.9	21.4	100	117	
Vert.	15718.980	AV	37.5	37.0	2.3	38.5	38.3	53.9	15.6	100	0	VBW: 5.6kHz
Vert.	20960.000	AV	54.3	41.4	2.5	48.0	50.2	53.9	3.7	100	117	VBW: 5.6kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5676.667	PK	43.6	32.4	17.3	37.5	55.8	-39.4	-27.00	12.4	100	359	
Hori.	10480.000	PK	47.5	39.7	10.0	37.7	59.5	-35.7	-27.00	8.7	100	0	
Vert.	5676.667	PK	45.2	32.4	17.3	37.5	57.4	-37.8	-27.00	10.8	100	45	
Vert.	10480.000	PK	46.3	39.7	10.0	37.7	58.3	-36.9	-27.00	9.9	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5320 MHz Tx, IEEE802.11a		

(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	43.6	32.2	17.2	37.1	55.9	73.9	18.0	100	126	
Hori.	10640.000	PK	47.2	39.8	10.0	37.8	59.2	73.9	14.7	100	0	
Hori.	15960.000	PK	49.9	36.1	2.4	38.4	50.0	73.9	23.9	100	0	
Hori.	21280.000	PK	51.8	41.4	2.6	48.0	47.8	73.9	26.1	100	190	
Hori.	5350.000	AV	33.4	32.2	17.2	37.1	45.7	53.9	8.2	100	126	VBW: 5.6kHz
Hori.	10640.000	AV	34.7	39.8	10.0	37.8	46.7	53.9	7.2	100	0	VBW: 5.6kHz
Hori.	15960.000	AV	37.4	36.1	2.4	38.4	37.5	53.9	16.4	100	0	VBW: 5.6kHz
Hori.	21280.000	AV	49.2	41.4	2.6	48.0	45.2	53.9	8.7	100	190	VBW: 5.6kHz
Vert.	5350.000	PK	44.0	32.2	17.2	37.1	56.3	73.9	17.6	100	108	
Vert.	10640.000	PK	46.0	39.8	10.0	37.8	58.0	73.9	15.9	100	0	
Vert.	15960.000	PK	49.8	36.1	2.4	38.4	49.9	73.9	24.0	100	0	
Vert.	21280.000	PK	53.0	41.4	2.6	48.0	49.0	73.9	24.9	100	352	
Vert.	5350.000	AV	33.7	32.2	17.2	37.1	46.0	53.9	7.9	100	108	VBW: 5.6kHz
Vert.	10640.000	AV	34.3	39.8	10.0	37.8	46.3	53.9	7.6	100	0	VBW: 5.6kHz
Vert.	15960.000	AV	37.6	36.1	2.4	38.4	37.7	53.9	16.2	100	0	VBW: 5.6kHz
Vert.	21280.000	AV	51.9	41.4	2.6	48.0	47.9	53.9	6.0	100	352	VBW: 5.6kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5763.420	PK	43.9	32.4	17.4	37.6	56.1	-39.1	-27.00	12.1	124	5	
Vert.	5763.420	PK	44.5	32.4	17.4	37.6	56.7	-38.5	-27.00	11.5	100	269	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5500 MHz Tx, IEEE802.11a		

(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.	5460.000	PK	42.7	32.3	17.2	37.1	55.1	73.9	18.8	143	283	
Hori.	11000.000	PK	46.7	40.0	10.1	38.1	58.7	73.9	15.2	100	0	
Hori.	5460.000	AV	34.1	32.3	17.2	37.1	46.5	53.9	7.4	143	283	VBW: 5.6kHz
Hori.	11000.000	AV	34.8	40.0	10.1	38.1	46.8	53.9	7.1	100	0	VBW: 5.6kHz
Vert.	5460.000	PK	42.5	32.3	17.2	37.1	54.9	73.9	19.0	100	272	
Vert.	11000.000	PK	47.4	40.0	10.1	38.1	59.4	73.9	14.5	100	0	
Vert.	5460.000	AV	33.2	32.3	17.2	37.1	45.6	53.9	8.3	100	272	VBW: 5.6kHz
Vert.	11000.000	AV	35.5	40.0	10.1	38.1	47.5	53.9	6.4	100	0	VBW: 5.6kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5470.000	PK	43.4	32.3	17.2	37.1	55.8	-39.4	-27.00	12.4	143	283	
Hori.	5843.761	PK	44.2	32.5	17.6	37.8	56.5	-38.7	-27.00	11.7	112	9	
Hori.	16500.000	PK	49.8	37.9	2.6	38.4	51.9	-43.3	-27.00	16.3	100	0	
Hori.	22000.000	PK	49.5	41.4	2.8	47.7	46.0	-49.2	-27.00	22.2	100	192	
Vert.	5470.000	PK	43.3	32.3	17.2	37.1	55.7	-39.5	-27.00	12.5	100	272	
Vert.	5843.761	PK	44.0	32.5	17.6	37.8	56.3	-38.9	-27.00	11.9	105	267	
Vert.	16500.000	PK	49.5	37.9	2.6	38.4	51.6	-43.6	-27.00	16.6	100	0	
Vert.	22000.000	PK	53.5	41.4	2.8	47.7	50.0	-45.2	-27.00	18.2	100	159	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5580 MHz Tx, IEEE802.11a		

(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.	11160.000	PK	47.7	39.8	10.2	38.2	59.5	73.9	14.4	100	0	
Hori.	22320.000	PK	50.9	41.1	2.9	48.1	46.8	73.9	27.1	100	326	
Hori.	11160.000	AV	35.4	39.8	10.2	38.2	47.2	53.9	6.7	100	0	VBW: 5.6kHz
Hori.	22320.000	AV	47.5	41.1	2.9	48.1	43.4	53.9	10.5	100	326	VBW: 5.6kHz
Vert.	11160.000	PK	46.6	39.8	10.2	38.2	58.4	73.9	15.5	100	0	
Vert.	22320.000	PK	52.6	41.1	2.9	48.1	48.5	73.9	25.4	100	206	
Vert.	11160.000	AV	35.3	39.8	10.2	38.2	47.1	53.9	6.8	100	0	VBW: 5.6kHz
Vert.	22320.000	AV	50.1	41.1	2.9	48.1	46.0	53.9	7.9	100	206	VBW: 5.6kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5928.762	PK	44.3	32.5	17.7	37.9	56.6	-38.6	-27.00	11.6	106	71	
Hori.	16740.000	PK	50.1	38.8	2.7	38.6	53.0	-42.2	-27.00	15.2	100	0	
Vert.	5928.762	PK	44.1	32.5	17.7	37.9	56.4	-38.8	-27.00	11.8	127	266	
Vert.	16740.000	PK	49.3	38.8	2.7	38.6	52.2	-43.0	-27.00	16.0	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014	March 16, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH	20 deg.C, 31 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai	Yasumasa Owaki
Mode	Tx, 5700 MHz Tx, IEEE802.11a			

(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.	175.000	QP	48.5	15.7	7.8	32.1	39.9	43.5	3.6	100	79	
Hori.	325.000	QP	52.9	14.4	8.7	32.0	44.0	46.0	2.0	100	283	
Hori.	374.999	QP	52.1	15.7	8.9	32.0	44.7	46.0	1.3	100	285	
Hori.	800.002	QP	43.3	20.6	10.6	31.6	42.9	46.0	3.1	112	49	
Hori.	11400.000	PK	46.5	39.6	10.2	38.4	57.9	73.9	16.0	100	0	
Hori.	22800.000	PK	52.0	40.6	3.0	47.9	47.7	73.9	26.2	100	37	
Hori.	11400.000	AV	34.0	39.6	10.2	38.4	45.4	53.9	8.5	100	0	VBW: 5.6kHz
Hori.	22800.000	AV	48.1	40.6	3.0	47.9	43.8	53.9	10.1	100	37	VBW: 5.6kHz
Vert.	174.999	QP	46.5	15.7	7.8	32.1	37.9	43.5	5.6	100	79	
Vert.	11400.000	PK	45.8	39.6	10.2	38.4	57.2	73.9	16.7	100	0	
Vert.	22800.000	PK	51.9	40.6	3.0	47.9	47.6	73.9	26.3	100	147	
Vert.	11400.000	AV	34.2	39.6	10.2	38.4	45.6	53.9	8.3	100	0	VBW: 5.6kHz
Vert.	22800.000	AV	47.8	40.6	3.0	47.9	43.5	53.9	10.4	100	147	VBW: 5.6kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5725.000	PK	43.9	32.4	17.4	37.6	56.1	-39.1	-27.00	12.1	145	276	
Hori.	17100.000	PK	49.6	40.6	2.9	38.8	54.3	-40.9	-27.00	13.9	100	0	
Vert.	5725.000	PK	44.4	32.4	17.4	37.6	56.6	-38.6	-27.00	11.6	100	271	
Vert.	17100.000	PK	49.8	40.6	2.9	38.8	54.5	-40.7	-27.00	13.7	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5180 MHz		
	Tx, IEEE802.11n-20HT		

(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	43.4	32.1	17.1	37.0	55.6	73.9	18.3	100	129	
Hori.	15540.000	PK	49.5	37.7	2.2	38.6	50.8	73.9	23.1	100	0	
Hori.	20720.000	PK	56.5	41.3	2.4	48.0	52.2	73.9	21.7	100	336	
Hori.	5150.000	AV	34.1	32.1	17.1	37.0	46.3	53.9	7.6	100	129	VBW: 6.2kHz
Hori.	15540.000	AV	37.6	37.7	2.2	38.6	38.9	53.9	15.0	100	0	VBW: 6.2kHz
Hori.	20720.000	AV	54.6	41.3	2.4	48.0	50.3	53.9	3.6	100	336	VBW: 6.2kHz
Vert.	5150.000	PK	44.2	32.1	17.1	37.0	56.4	73.9	17.5	100	106	
Vert.	15540.000	PK	48.9	37.7	2.2	38.6	50.2	73.9	23.7	100	0	
Vert.	20720.000	PK	56.7	41.3	2.4	48.0	52.4	73.9	21.5	100	323	
Vert.	5150.000	AV	34.2	32.1	17.1	37.0	46.4	53.9	7.5	100	106	VBW: 6.2kHz
Vert.	15540.000	AV	37.5	37.7	2.2	38.6	38.8	53.9	15.1	100	0	VBW: 6.2kHz
Vert.	20720.000	AV	54.5	41.3	2.4	48.0	50.2	53.9	3.7	100	323	VBW: 6.2kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5611.688	PK	42.9	32.4	17.3	37.4	55.2	-40.0	-27.00	13.0	100	357	
Hori.	10360.000	PK	46.4	39.5	9.8	37.6	58.1	-37.1	-27.00	10.1	100	0	
Vert.	5611.688	PK	43.6	32.4	17.3	37.4	55.9	-39.3	-27.00	12.3	100	269	
Vert.	10360.000	PK	46.7	39.5	9.8	37.6	58.4	-36.8	-27.00	9.8	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5240 MHz Tx, IEEE802.11n-20HT		

(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.	15720.000	PK	49.7	37.0	2.3	38.5	50.5	73.9	23.4	100	0	
Hori.	20960.000	PK	56.4	41.4	2.5	48.0	52.3	73.9	21.6	100	332	
Hori.	15720.000	AV	37.8	37.0	2.3	38.5	38.6	53.9	15.3	100	0	VBW: 6.2kHz
Hori.	20960.000	AV	54.0	41.4	2.5	48.0	49.9	53.9	4.0	100	332	VBW: 6.2kHz
Vert.	15720.000	PK	49.0	37.0	2.3	38.5	49.8	73.9	24.1	100	0	
Vert.	20960.000	PK	55.7	41.4	2.5	48.0	51.6	73.9	22.3	100	321	
Vert.	15720.000	AV	37.4	37.0	2.3	38.5	38.2	53.9	15.7	100	0	VBW: 6.2kHz
Vert.	20960.000	AV	53.7	41.4	2.5	48.0	49.6	53.9	4.3	100	321	VBW: 6.2kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5676.687	PK	43.9	32.4	17.3	37.5	56.1	-39.1	-27.00	12.1	100	101	
Hori.	10480.000	PK	46.9	39.7	10.0	37.7	58.9	-36.3	-27.00	9.3	100	0	
Vert.	5676.687	PK	44.6	32.4	17.3	37.5	56.8	-38.4	-27.00	11.4	100	269	
Vert.	10480.000	PK	46.5	39.7	10.0	37.7	58.5	-36.7	-27.00	9.7	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5320 MHz Tx, IEEE802.11n-20HT		

(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	43.5	32.2	17.2	37.1	55.8	73.9	18.1	100	130	
Hori.	10640.000	PK	46.8	39.8	10.0	37.8	58.8	73.9	15.1	100	0	
Hori.	15960.000	PK	50.0	36.1	2.4	38.4	50.1	73.9	23.8	100	0	
Hori.	21280.000	PK	53.4	41.4	2.6	48.0	49.4	73.9	24.5	100	215	
Hori.	5350.000	AV	33.9	32.2	17.2	37.1	46.2	53.9	7.7	100	130	VBW: 6.2kHz
Hori.	10640.000	AV	34.5	39.8	10.0	37.8	46.5	53.9	7.4	100	0	VBW: 6.2kHz
Hori.	15960.000	AV	37.5	36.1	2.4	38.4	37.6	53.9	16.3	100	0	VBW: 6.2kHz
Hori.	21280.000	AV	49.5	41.4	2.6	48.0	45.5	53.9	8.4	100	215	VBW: 6.2kHz
Vert.	5350.000	PK	42.8	32.2	17.2	37.1	55.1	73.9	18.8	100	349	
Vert.	10640.000	PK	46.7	39.8	10.0	37.8	58.7	73.9	15.2	100	0	
Vert.	15960.000	PK	49.4	36.1	2.4	38.4	49.5	73.9	24.4	100	0	
Vert.	21280.000	PK	54.2	41.4	2.6	48.0	50.2	73.9	23.7	100	346	
Vert.	5350.000	AV	33.9	32.2	17.2	37.1	46.2	53.9	7.7	100	349	VBW: 6.2kHz
Vert.	10640.000	AV	34.6	39.8	10.0	37.8	46.6	53.9	7.3	100	0	VBW: 6.2kHz
Vert.	15960.000	AV	37.5	36.1	2.4	38.4	37.6	53.9	16.3	100	0	VBW: 6.2kHz
Vert.	21280.000	AV	52.2	41.4	2.6	48.0	48.2	53.9	5.7	100	346	VBW: 6.2kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5763.350	PK	43.9	32.4	17.4	37.6	56.1	-39.1	-27.00	12.1	100	359	
Vert.	5763.350	PK	44.5	32.4	17.4	37.6	56.7	-38.5	-27.00	11.5	107	268	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5500 MHz Tx, IEEE802.11n-20HT		

(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.	5460.000	PK	43.8	32.3	17.2	37.1	56.2	73.9	17.7	111	295	
Hori.	11000.000	PK	47.0	40.0	10.1	38.1	59.0	73.9	14.9	100	0	
Hori.	5460.000	AV	33.2	32.3	17.2	37.1	45.6	53.9	8.3	111	295	VBW: 6.2kHz
Hori.	11000.000	AV	34.7	40.0	10.1	38.1	46.7	53.9	7.2	100	0	VBW: 6.2kHz
Vert.	5460.000	PK	43.3	32.3	17.2	37.1	55.7	73.9	18.2	100	271	
Vert.	11000.000	PK	46.5	40.0	10.1	38.1	58.5	73.9	15.4	100	0	
Vert.	5460.000	AV	33.3	32.3	17.2	37.1	45.7	53.9	8.2	100	271	VBW: 6.2kHz
Vert.	11000.000	AV	34.4	40.0	10.1	38.1	46.4	53.9	7.5	100	0	VBW: 6.2kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5470.000	PK	43.2	32.3	17.2	37.1	55.6	-39.6	-27.00	12.6	111	295	
Hori.	5843.766	PK	44.1	32.5	17.6	37.8	56.4	-38.8	-27.00	11.8	100	14	
Hori.	16500.000	PK	48.8	37.9	2.6	38.4	50.9	-44.3	-27.00	17.3	100	0	
Hori.	22000.000	PK	51.8	41.4	2.8	47.7	48.3	-46.9	-27.00	19.9	100	237	
Vert.	5470.000	PK	43.8	32.3	17.2	37.1	56.2	-39.0	-27.00	12.0	100	271	
Vert.	5843.766	PK	44.6	32.5	17.6	37.8	56.9	-38.3	-27.00	11.3	106	267	
Vert.	16500.000	PK	49.2	37.9	2.6	38.4	51.3	-43.9	-27.00	16.9	100	0	
Vert.	22000.000	PK	53.0	41.4	2.8	47.7	49.5	-45.7	-27.00	18.7	100	214	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5580 MHz Tx, IEEE802.11n-20HT		

(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.	11160.000	PK	46.7	39.8	10.2	38.2	58.5	73.9	15.4	100	0	
Hori.	22320.000	PK	50.8	41.1	2.9	48.1	46.7	73.9	27.2	100	319	
Hori.	11160.000	AV	34.6	39.8	10.2	38.2	46.4	53.9	7.5	100	0	VBW: 6.2kHz
Hori.	22320.000	AV	47.7	41.1	2.9	48.1	43.6	53.9	10.3	100	319	VBW: 6.2kHz
Vert.	11160.000	PK	46.6	39.8	10.2	38.2	58.4	73.9	15.5	100	0	
Vert.	22320.000	PK	53.4	41.1	2.9	48.1	49.3	73.9	24.6	100	208	
Vert.	11160.000	AV	34.5	39.8	10.2	38.2	46.3	53.9	7.6	100	0	VBW: 6.2kHz
Vert.	22320.000	AV	50.8	41.1	2.9	48.1	46.7	53.9	7.2	100	208	VBW: 6.2kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5928.746	PK	44.4	32.5	17.7	37.9	56.7	-38.5	-27.00	11.5	100	7	
Hori.	16740.000	PK	49.0	38.8	2.7	38.6	51.9	-43.3	-27.00	16.3	100	0	
Vert.	5928.746	PK	45.2	32.5	17.7	37.9	57.5	-37.7	-27.00	10.7	100	17	
Vert.	16740.000	PK	49.4	38.8	2.7	38.6	52.3	-42.9	-27.00	15.9	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

*The 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	March 13, 2014	March 14, 2014	March 15, 2014
Temperature / Humidity	23 deg.C, 36 %RH	22 deg.C, 38 %RH	23 deg.C, 36 %RH
Engineer	Akio Hayashi	Takahiro Suzuki	Tatsuya Arai
Mode	Tx, 5700 MHz Tx, IEEE802.11n-20HT		

(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.	11400.000	PK	46.9	39.6	10.2	38.4	58.3	73.9	15.6	100	0	
Hori.	22800.000	PK	51.9	40.6	3.0	47.9	47.6	73.9	26.3	100	300	
Hori.	11400.000	AV	34.8	39.6	10.2	38.4	46.2	53.9	7.7	100	0	VBW: 6.2kHz
Hori.	22800.000	AV	46.5	40.6	3.0	47.9	42.2	53.9	11.7	100	300	VBW: 6.2kHz
Vert.	11400.000	PK	46.8	39.6	10.2	38.4	58.2	73.9	15.7	100	0	
Vert.	22800.000	PK	51.7	40.6	3.0	47.9	47.4	73.9	26.5	100	208	
Vert.	11400.000	AV	34.7	39.6	10.2	38.4	46.1	53.9	7.8	100	0	VBW: 6.2kHz
Vert.	22800.000	AV	49.3	40.6	3.0	47.9	45.0	53.9	8.9	100	208	VBW: 6.2kHz

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

(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.	5725.000	PK	44.5	32.4	17.4	37.6	56.7	-38.5	-27.00	11.5	111	285	
Hori.	17100.000	PK	49.2	40.6	2.9	38.8	53.9	-41.3	-27.00	14.3	100	0	
Vert.	5725.000	PK	45.3	32.4	17.4	37.6	57.5	-37.7	-27.00	10.7	100	268	
Vert.	17100.000	PK	49.3	40.6	2.9	38.8	54.0	-41.2	-27.00	14.2	100	0	

Result[dBuV/m] = Reading + Ant.Fac. + 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)

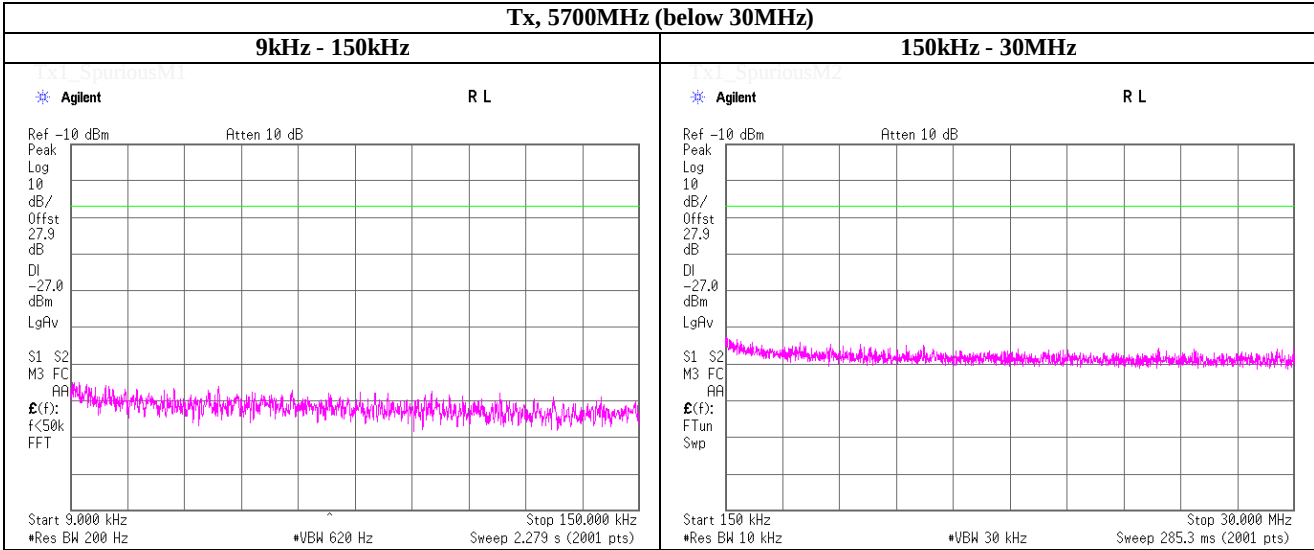
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB)

*The 10th harmonic was not seen so the result was its base noise level.

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

Spurious emission (Conducted)

Tx, IEEE802.11a, PN9, worst data mode 54Mbps



FREQ	Regulation	Cable	Atten.	Antenna	Offset
[MHz]	[dBm]	Loss	Loss	Gain	[dBm]
		[dB]	[dB]	[dBi]	
30.00	-27.00	3.48	20.26	4.10	27.84

Offset = Cable Loss + Atten.Loss + Antenna Gain

Peak Power Spectral Density

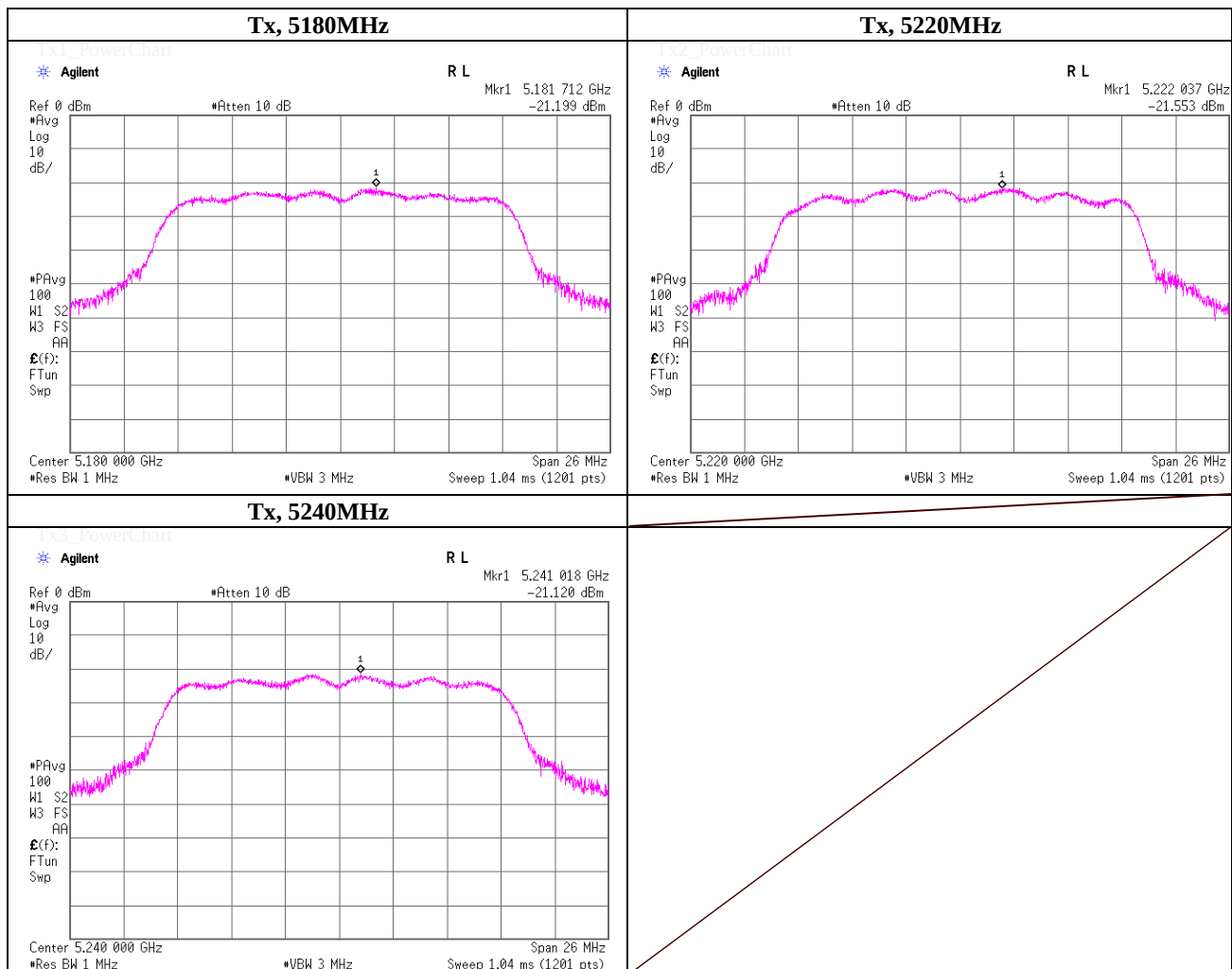
(Method: SA-2)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

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]
5180.0000	5181.71	-21.20	3.20	20.35	1.08		3.43	4.00	0.57
5220.0000	5222.04	-21.55	3.21	20.34	1.08		3.08	4.00	0.92
5240.0000	5241.02	-21.12	3.22	20.33	1.08		3.51	4.00	0.49

Sample Calculation:

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

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Peak Power Spectral Density

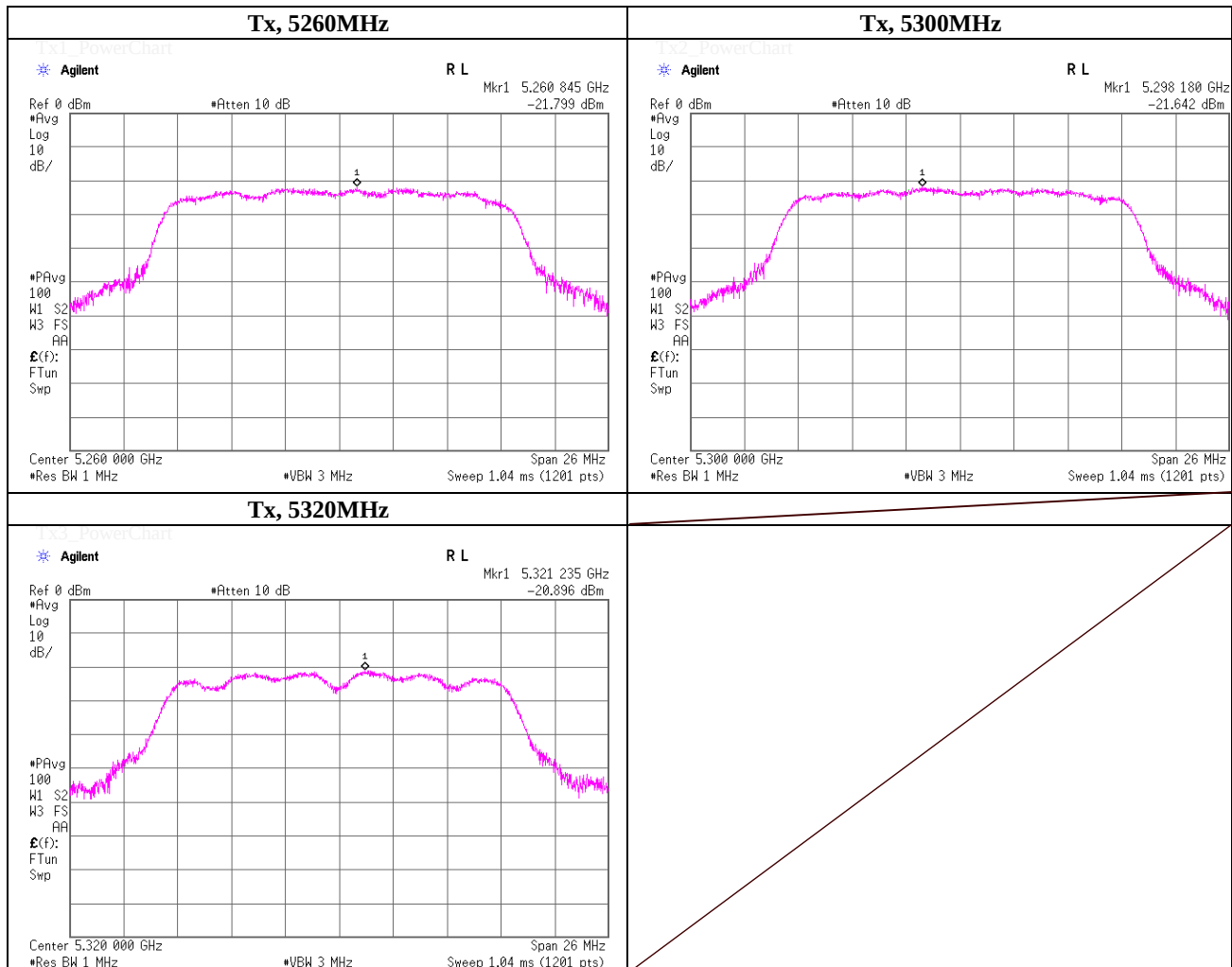
(Method: SA-2)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

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]
5260.0000	5260.85	-21.80	3.22	20.33	1.08		2.83	4.00	1.17
5300.0000	5298.18	-21.64	3.23	20.32	1.08		2.99	4.00	1.01
5320.0000	5321.24	-20.90	3.24	20.31	1.08		3.73	4.00	0.27

Sample Calculation:

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



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Peak Power Spectral Density

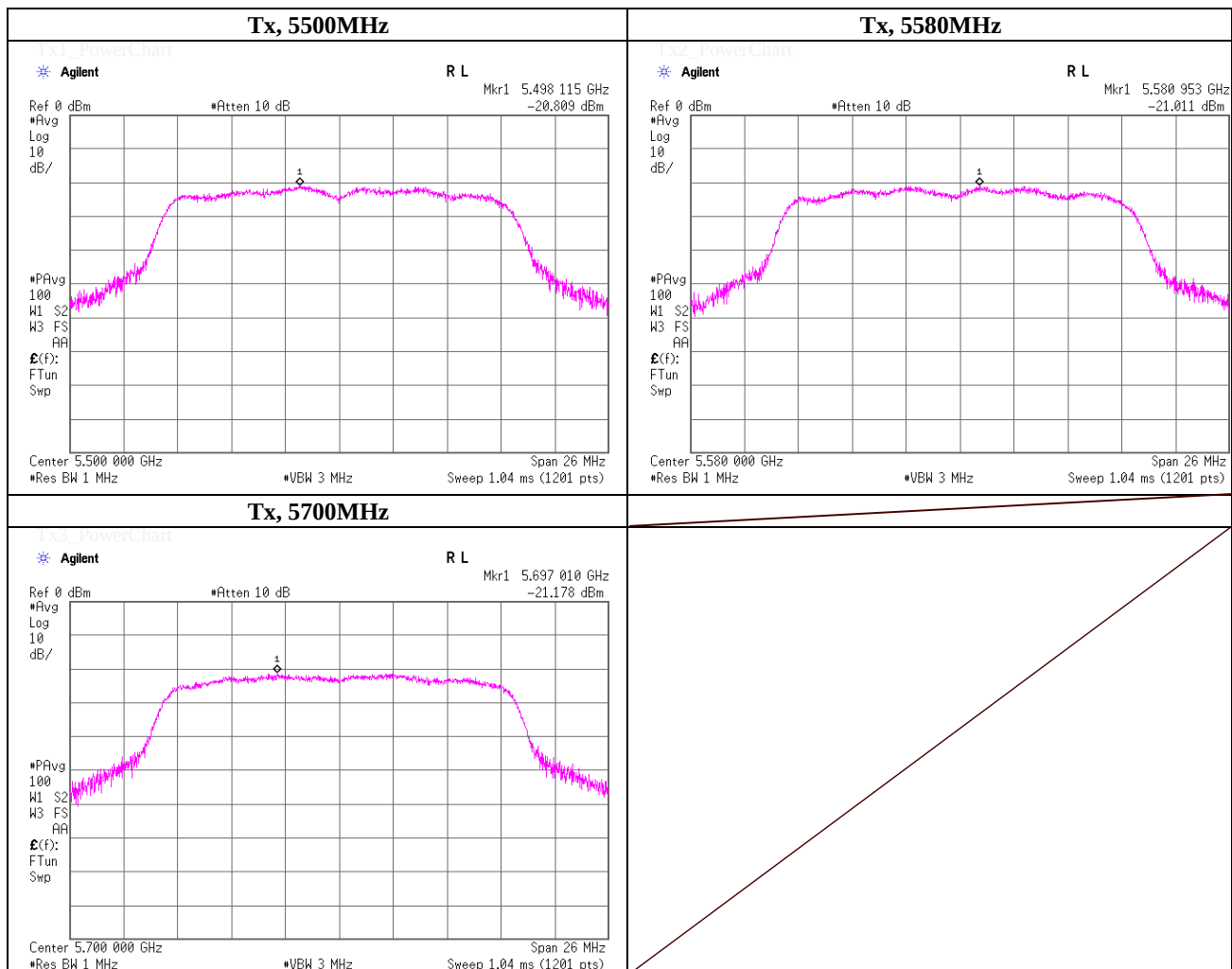
(Method: SA-2)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9, worst data mode 54Mbps	

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]
5500.0000	5498.12	-20.81	3.48	20.26	1.08		4.01	11.00	6.99
5580.0000	5580.95	-21.01	3.48	20.26	1.08		3.81	11.00	7.19
5700.0000	5697.01	-21.18	3.48	20.25	1.08		3.63	11.00	7.37

Sample Calculation:

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

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Peak Power Spectral Density

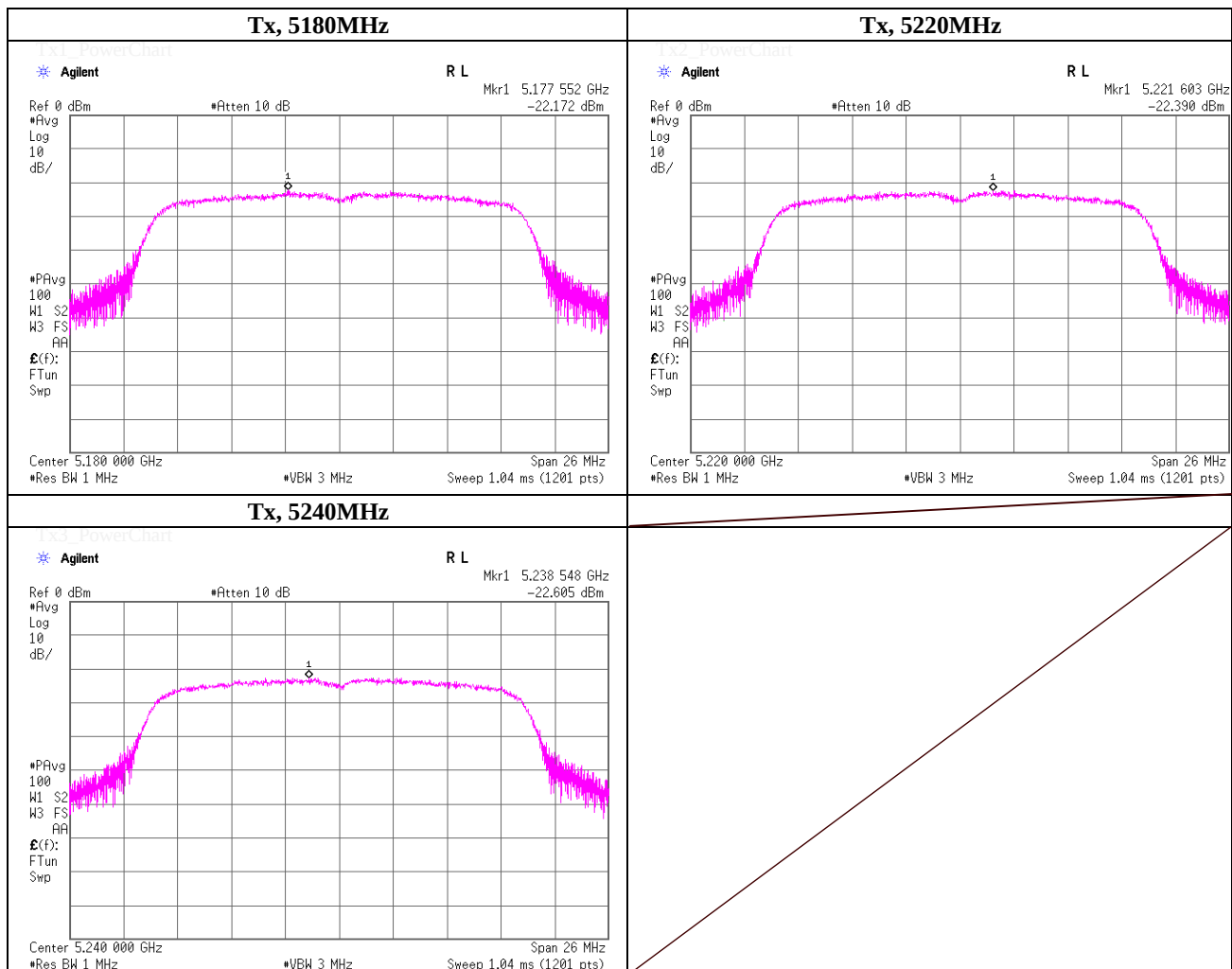
(Method: SA-2)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(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]
5180.0000	5177.55	-22.17	3.20	20.35	1.15		2.53	4.00	1.47
5220.0000	5221.60	-22.39	3.21	20.34	1.15		2.31	4.00	1.69
5240.0000	5238.55	-22.61	3.22	20.33	1.15		2.10	4.00	1.91

Sample Calculation:

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

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Peak Power Spectral Density

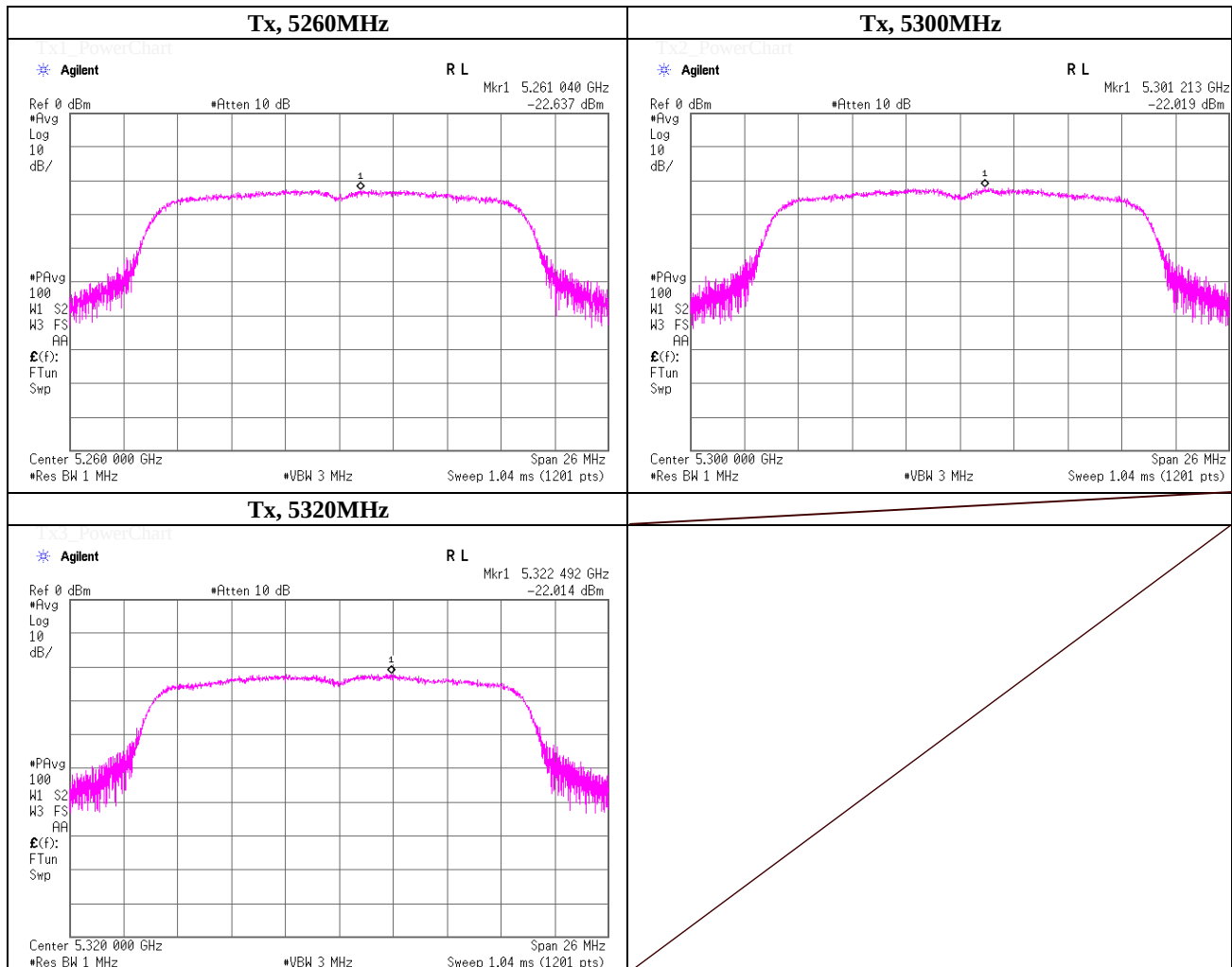
(Method: SA-2)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(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]
5260.0000	5261.04	-22.64	3.22	20.33	1.15		2.06	4.00	1.94
5300.0000	5301.21	-22.02	3.23	20.32	1.15		2.68	4.00	1.32
5320.0000	5322.49	-22.01	3.24	20.31	1.15		2.69	4.00	1.31

Sample Calculation:

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



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Peak Power Spectral Density

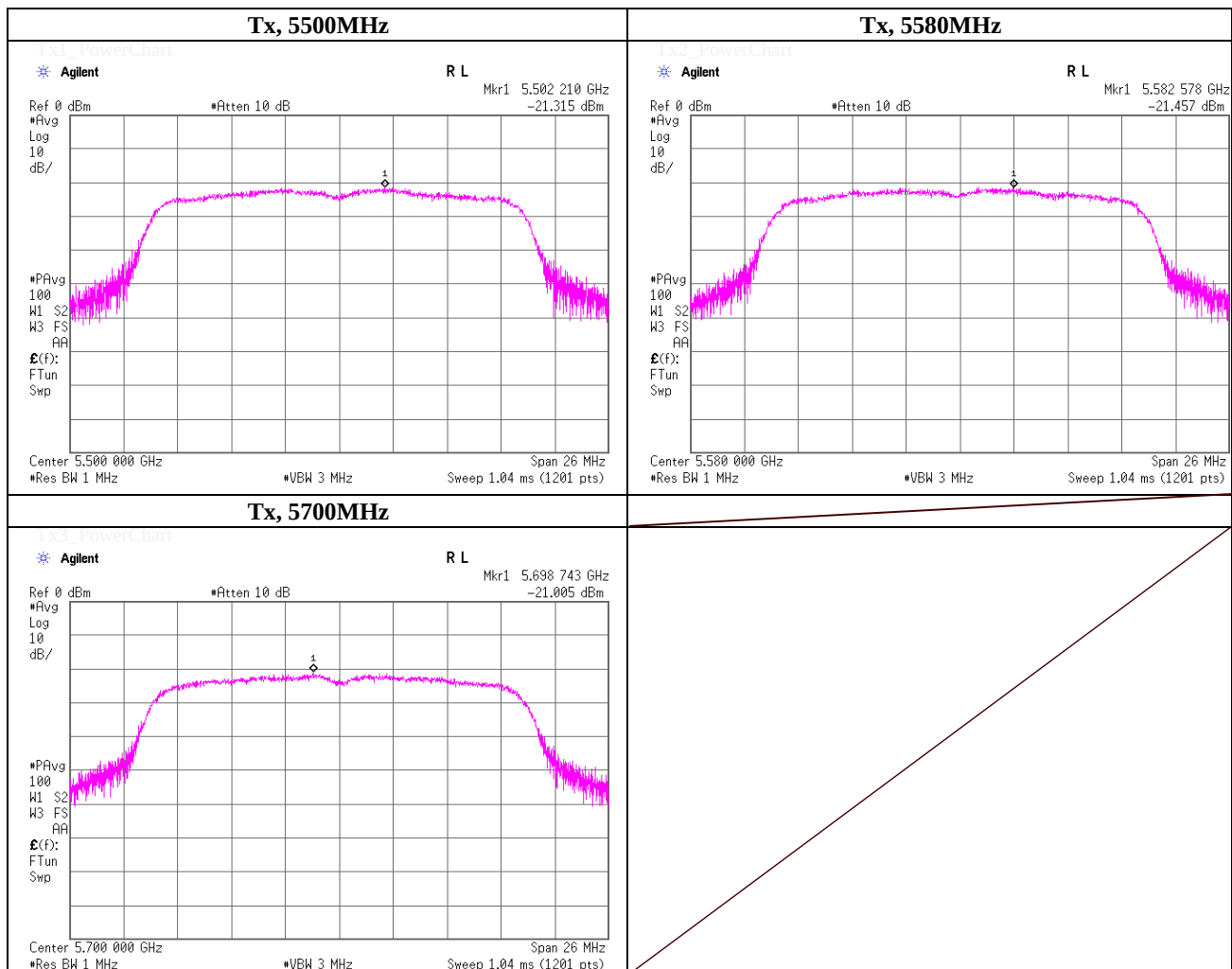
(Method: SA-2)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 7(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]
5500.0000	5502.21	-21.32	3.48	20.26	1.15		3.58	11.00	7.43
5580.0000	5582.58	-21.46	3.48	20.26	1.15		3.43	11.00	7.57
5700.0000	5698.74	-21.01	3.48	20.25	1.15		3.88	11.00	7.13

Sample Calculation:

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

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Peak Excursion Ratio

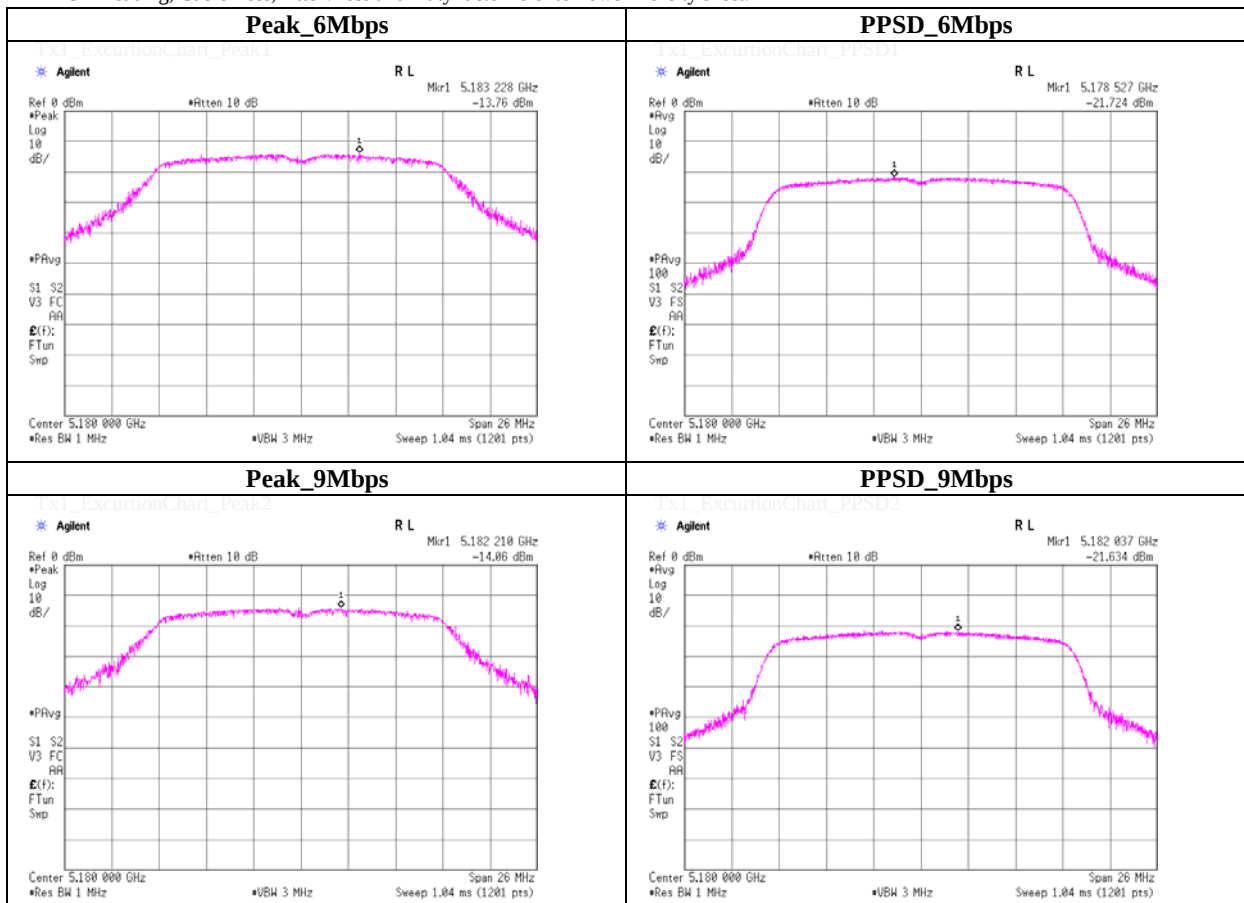
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11a, PN9	

Ch. Freq. [MHz]	Data rate [Mbps]	Peak Reading [dBm]	PPSD Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Peak Result [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5180	6	-13.76	-21.72	3.21	20.34	0.15	9.79	1.98	7.81	=<13.0	5.19
	9	-14.06	-21.63	3.21	20.34	0.22	9.49	2.14	7.35	=<13.0	5.65
	12	-13.31	-21.77	3.21	20.34	0.30	10.24	2.08	8.16	=<13.0	4.84
	18	-13.72	-21.95	3.21	20.34	0.43	9.83	2.03	7.80	=<13.0	5.20
	24	-13.20	-21.91	3.21	20.34	0.56	10.35	2.20	8.15	=<13.0	4.85
	36	-13.57	-21.93	3.21	20.34	0.79	9.98	2.41	7.57	=<13.0	5.43
	48	-13.37	-21.82	3.21	20.34	1.00	10.18	2.73	7.45	=<13.0	5.55
	54	-12.34	-22.47	3.21	20.34	1.08	11.21	2.16	9.05	=<13.0	3.95

*Peak Power Excursion = Peak Result - PPSSD Result

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

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



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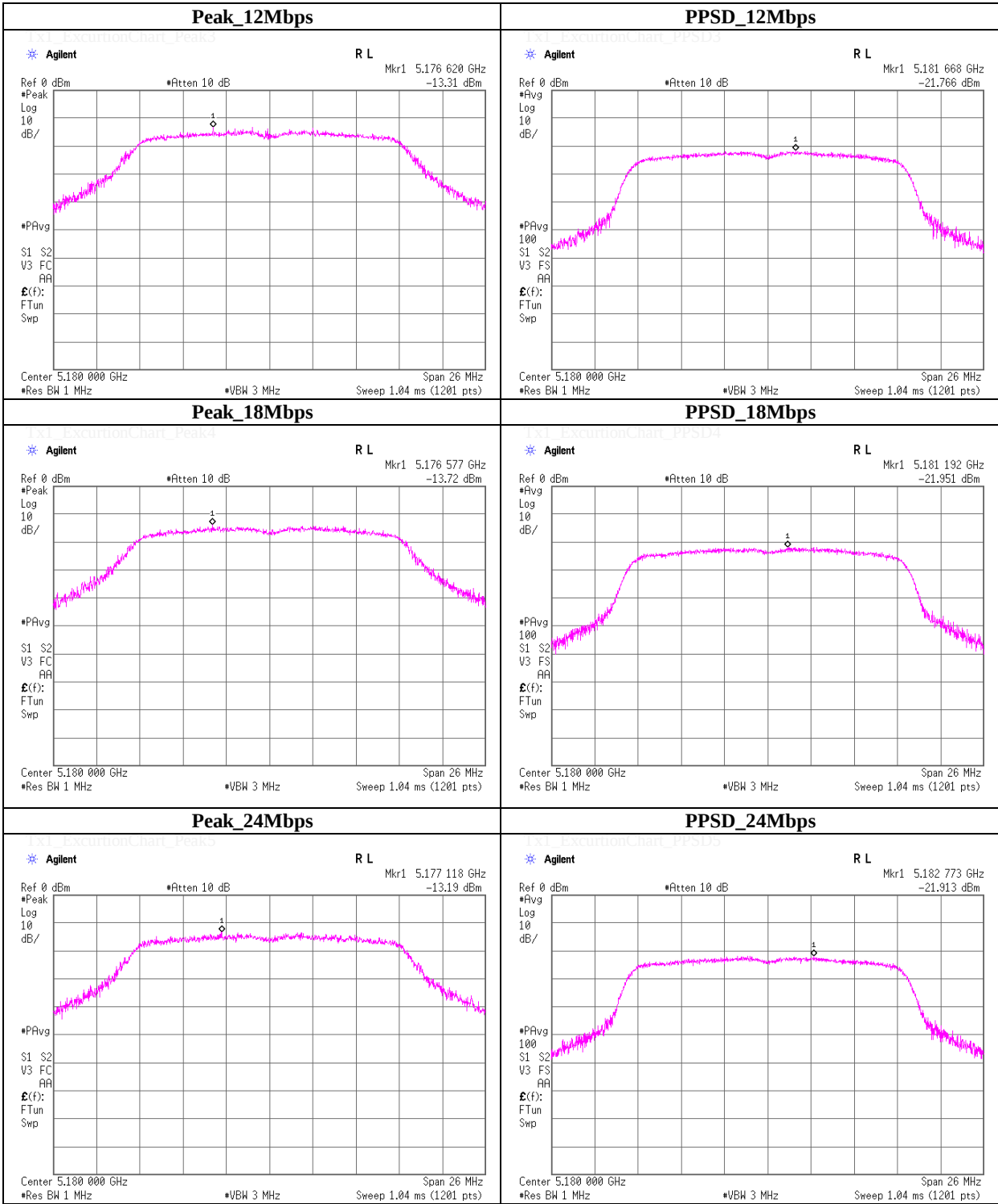
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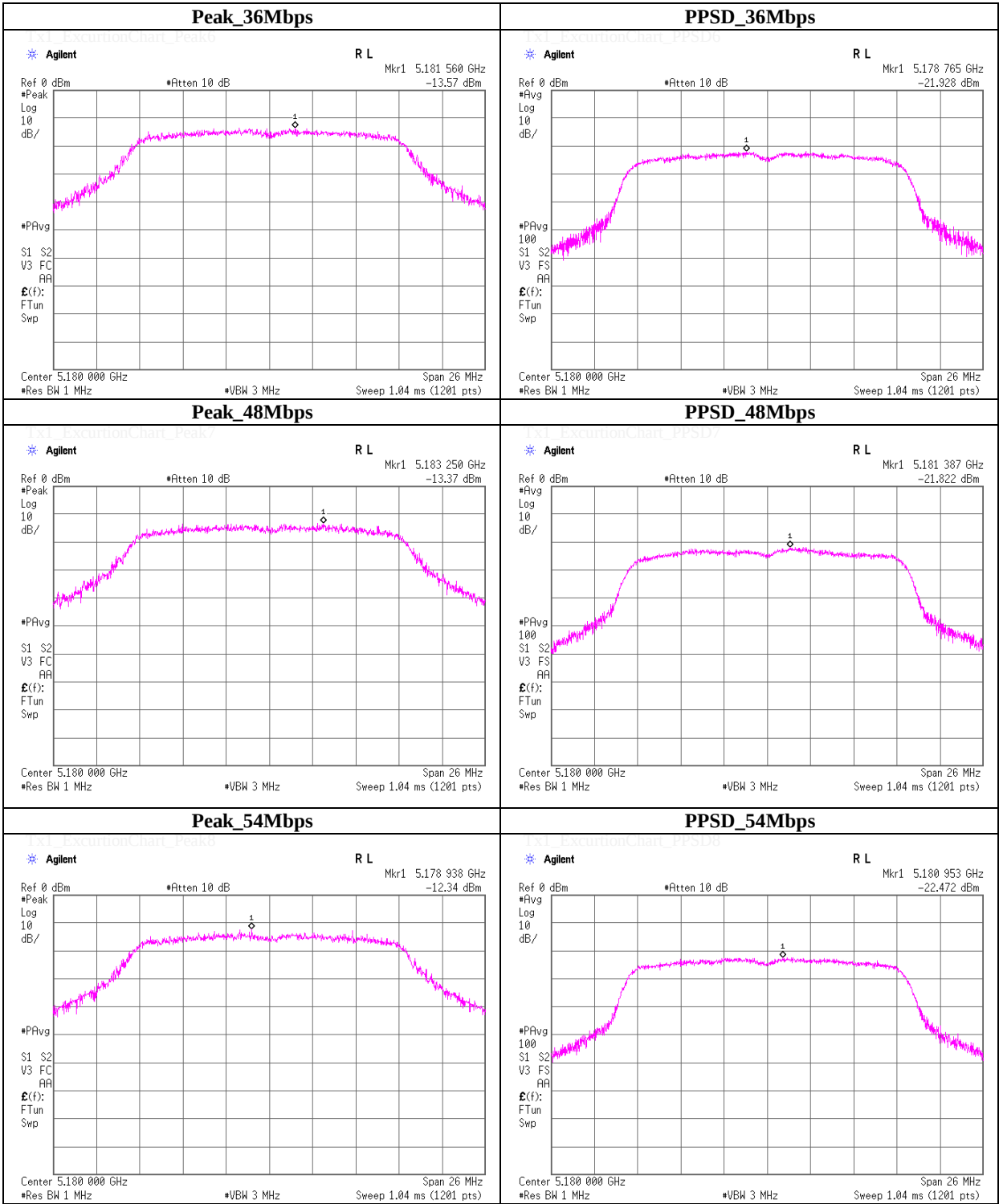
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Peak Excursion Ratio



Peak Excursion Ratio



Peak Excursion Ratio

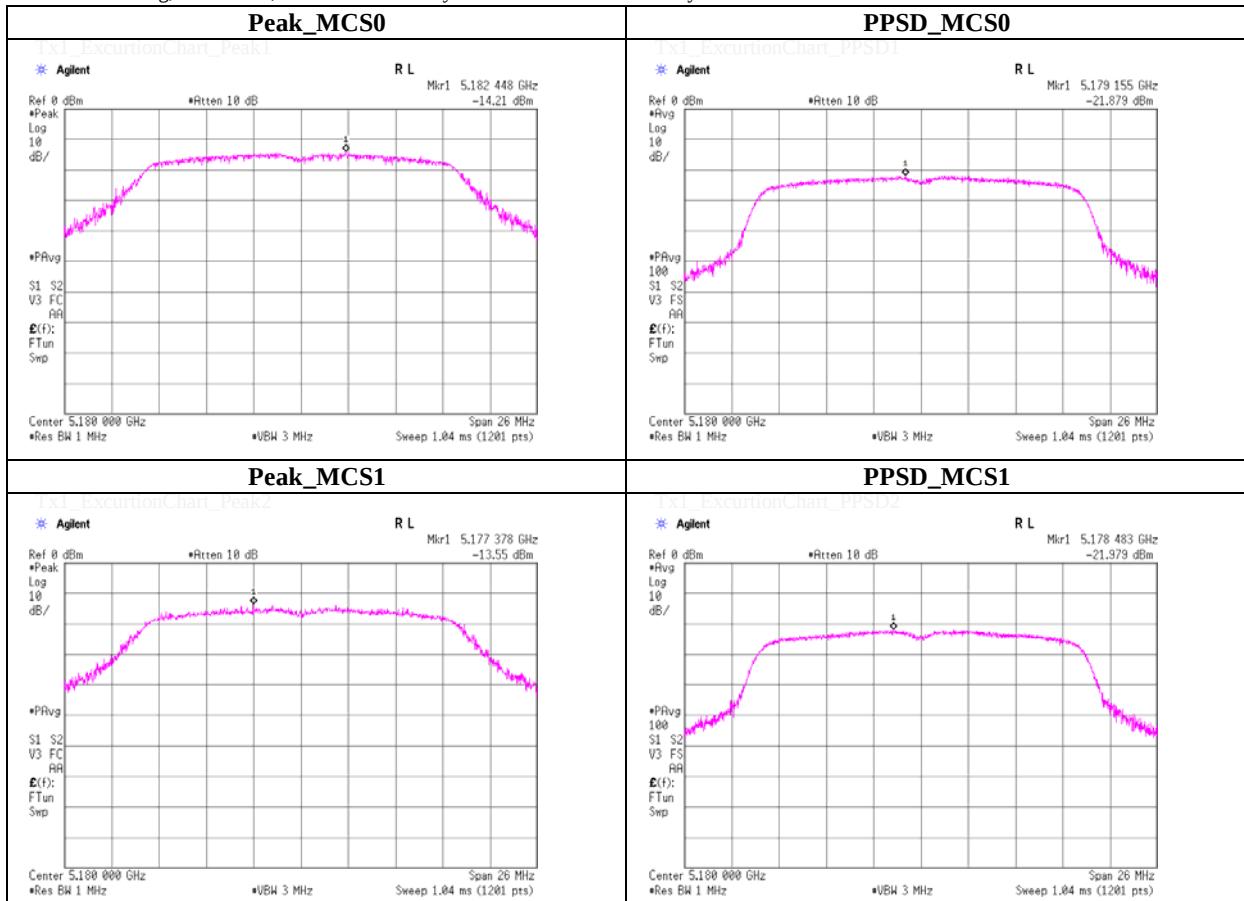
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	March 13, 2014	
Temperature / Humidity	23deg.C , 48%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11n-20HT, PN9	

Ch. Freq. [MHz]	Mode (MCS)	Peak Reading [dBm]	PPSD Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Peak Result [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5180	0	-14.21	-21.88	3.21	20.34	0.16	9.34	1.83	7.51	=<13.0	5.49
	1	-13.55	-21.98	3.21	20.34	0.31	10.00	1.88	8.12	=<13.0	4.88
	2	-13.98	-21.83	3.21	20.34	0.45	9.57	2.17	7.40	=<13.0	5.60
	3	-13.10	-22.04	3.21	20.34	0.57	10.45	2.08	8.37	=<13.0	4.63
	4	-13.13	-22.33	3.21	20.34	0.79	10.42	2.01	8.41	=<13.0	4.59
	5	-13.75	-22.65	3.21	20.34	0.99	9.80	1.89	7.91	=<13.0	5.09
	6	-13.23	-22.45	3.21	20.34	1.06	10.32	2.16	8.16	=<13.0	4.84
	7	-13.99	-22.72	3.21	20.34	1.15	9.56	1.98	7.58	=<13.0	5.42

*Peak Power Excursion = Peak Result - PPSP Result

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

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



UL Japan, Inc.

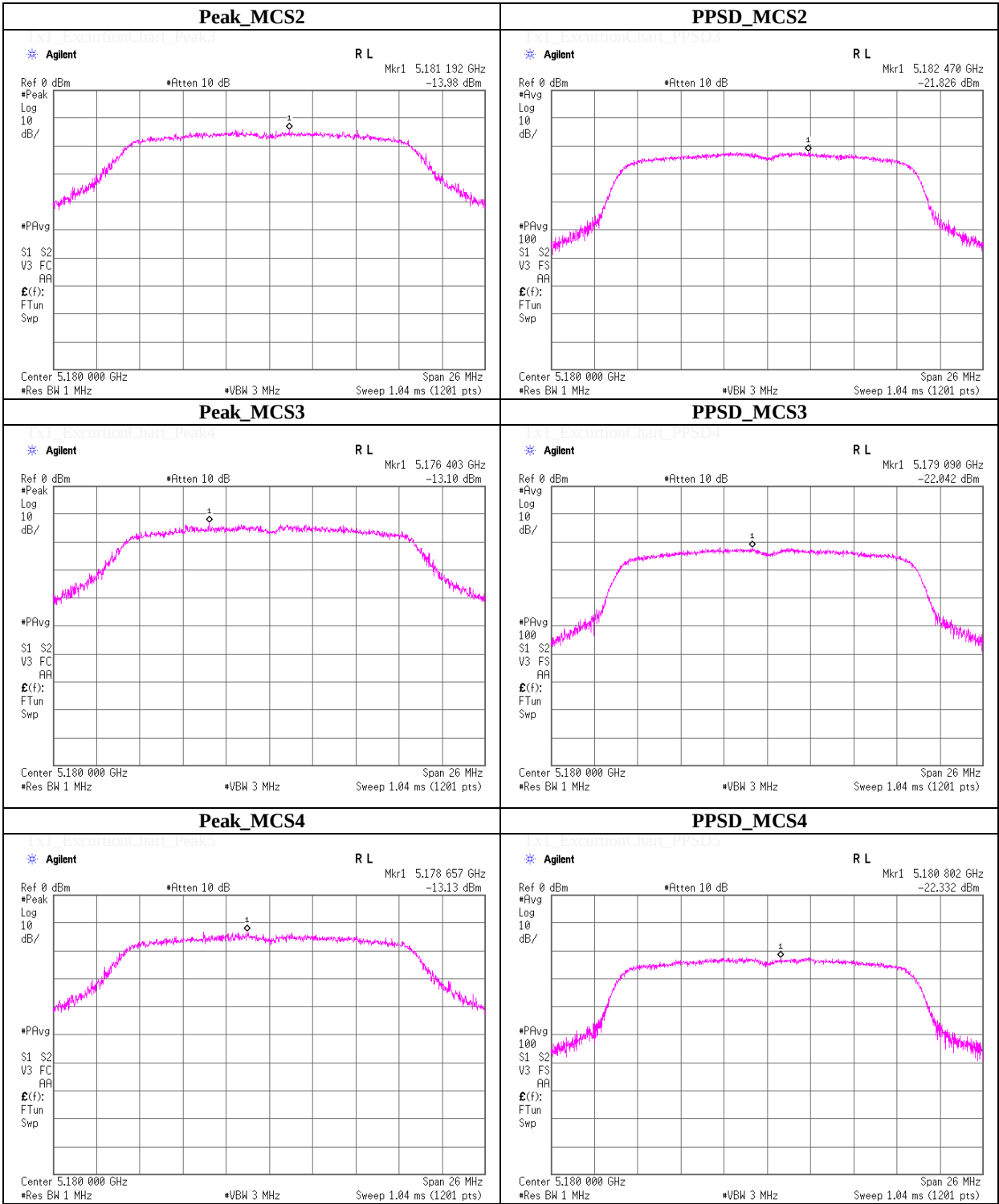
Shonan EMC Lab.

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

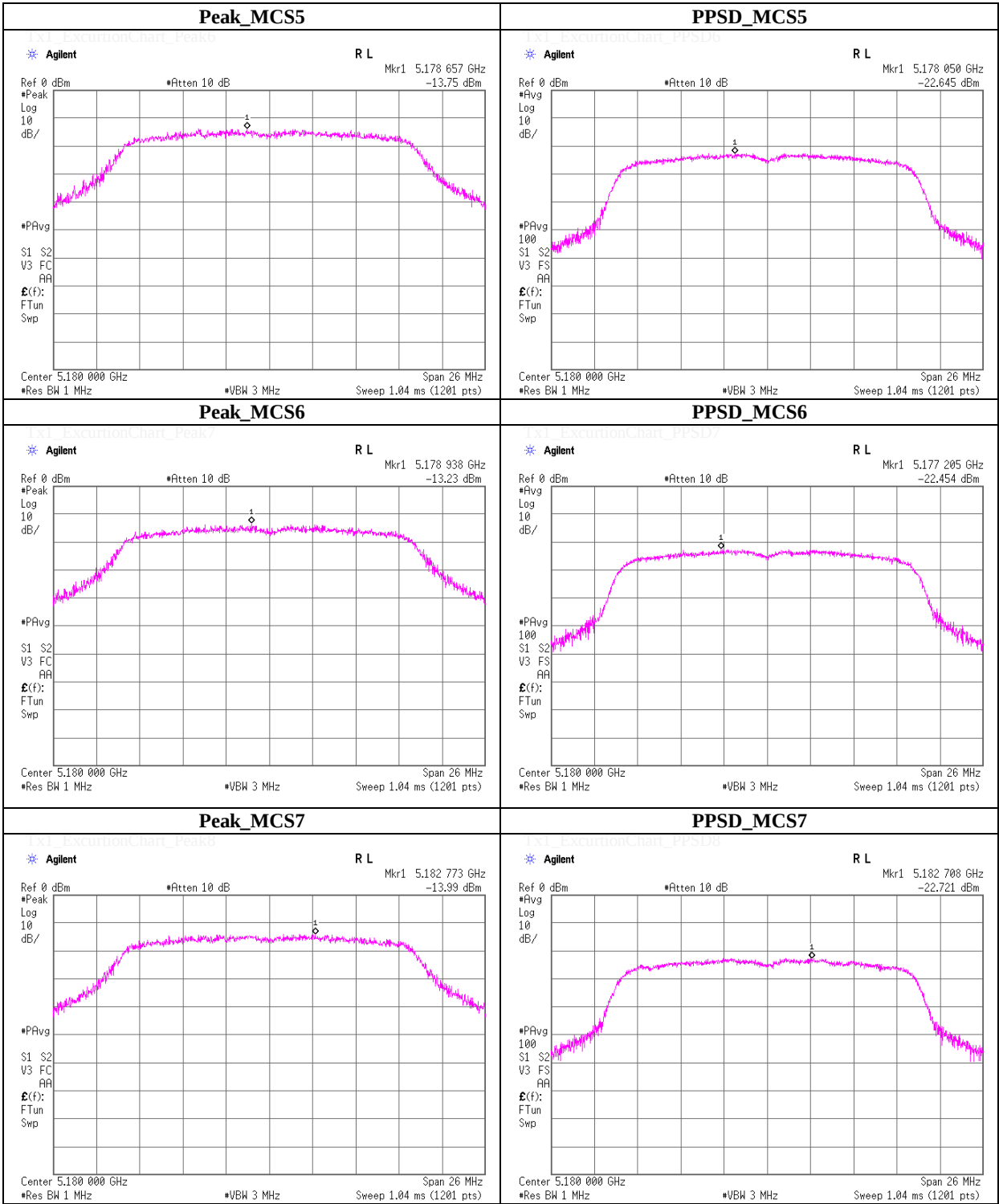
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Peak Excursion Ratio



Peak Excursion Ratio



APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2014/02/03 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2014/03/14 * 12
SAT20-05	Attenuator	Weinschel Corp.	54A-20	Y5649	AT	2013/11/27 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2014/03/07 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2013/04/09 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2013/04/09 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT	2013/03/28 * 12
SOS-13	Humidity Indicator	Custom	CTH-202	Q.C.17	AT	2013/04/25 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2013/07/09 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2013/07/22 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2013/04/11 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2013/05/22 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2013/11/22 * 12
SFL-03	Highpass Filter	MICRO-TRONICS	HPM50112	028	RE	2013/11/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2013/08/19 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/02/21 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2014/03/04 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE/CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFLMF)	-	RE/CE	-
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE	2014/02/03 * 12
SSA-01	Spectrum Analyzer	Agilent	N9010A-526	MY48031482	RE	2013/04/09 * 12
SCC-G19	Coaxial Cable	Suhner	SUCOFLEX 102A	1188/2A	RE	2014/03/14 * 12
SAF-10	Pre Amplifier	TOYO Corporation	HAP26-40W	00000010	RE	2014/03/14 * 12
SHA-06	Horn Antenna	ETS LINDGREN	3160-10	LM3459	RE	2013/03/14 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2014/03/13 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2014/03/14 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2013/03/14 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2013/04/03 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2014/02/26 * 12
SAT3-05	Attenuator	JFW	50HF-003N	-	CE	2014/02/17 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2014/03/07 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	CE/RE	2014/03/04 * 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/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2013/04/03 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2013/10/26 * 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 test