RADIO TEST REPORT

Test Report No.: 4786002569S-A

Applicant	**:**	**KONICA MINOLTA, INC.**
Type of Equipment	**:**	**AeroDR SYSTEM**
Model No.	**:**	**AeroDR P-31**
FCC ID	**:**	**YR7AERODRP3**
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.

Date of test: February 21 – March 7, 2013

Representative test engineer:

Tatsuya Arai
Engineer of WiSE Japan,
UL Verification Service

Approved by:

Toyokazu Imamura
Leader of WiSE Japan,
UL Verification Service

RTL02610

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

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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

REVISION HISTORY

Original Test Report No.: 4786002569S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	4786002569S-A	April 5, 2013	-	-

Table of Contents Page

1 Applicant information **4**

2 Equipment under test (E.U.T.) **4**

3 Test specification, procedures and results **5**

4 System test configuration **8**

5 Antenna terminal conducted tests **9**

6 Radiated emissions **10**

Contents of Appendixes **12**

APPENDIX 1: Test data **13**

APPENDIX 2: Test instruments **45**

APPENDIX 3: Photographs of test setup **46**

1 Applicant information

Company Name	:	KONICA MINOLTA, INC.
Address	:	1 Sakura-Machi, Hino-Shi, Tokyo, 191-8511 Japan
Telephone Number	:	+81-42-589-8429
Facsimile Number	:	+81-42-589-8053
Contact Person	:	Masayoshi Inoue

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

2.1 Identification of E.U.T.

Type of Equipment	:	AeroDR SYSTEM
Model No.	:	AeroDR P-31
Serial No.	:	See Section 4.
Rating	:	DC15V
Country of Mass-production	:	Japan
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.
Receipt Date of Sample	:	February 5, 2013

2.2 Product description

Model: AeroDR P-31 (referred to as the EUT in this report) is a AeroDR SYSTEM.

Equipment type	:	Transceiver
Frequency of operation	:	5180-5320MHz 5500-5700MHz 5745-5825MHz *1
Clock frequency	:	32.768kHz, 26MHz
Bandwidth & channel spacing	:	Bandwidth : 18MHz Channel spacing : 20MHz
Type of modulation	:	11a : OFDM
Antenna type	:	Planar Inverted F Antenna
Antenna gain with cable loss	:	Main antenna: 3.78dBi , Sub antenna:3.78dBi
Antenna connector type	:	U.FL
ITU code	:	D1D, G1D
Operation temperature range	:	+10 to +30 deg.C.

*1) Refer to 4786002569S-B, FCC part 15C (FCC15.247) report..

FCC Part15.31 (e)
This EUT provides stable voltage (DC3.3V) constantly to RF part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part15.203 Antenna requirement
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3 Test specification, procedures and results

3.1 Test specification

Test specification : FCC Part 15 Subpart E: 2011, 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 15.407 General technical requirements

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted Emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	15.407 (b)(6) and 15.207	-	N/A *1)	N/A	N/A
26dB Emission Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.407(a)(1)(2)	Conducted	N/A	See data	Complied
Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)	Conducted	N/A		Complied
Peak Power Spectral Density	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.407 (a)(1)(2)	Conducted	N/A		Complied
Peak Excursion Ratio	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.407 (a)(6)	Conducted	N/A		Complied
Out of Band Emission & Restricted Band Edges	ANSI C63.4:2003 13. Measurement of intentional radiators	15.407 (b)(1)(2)(4)(6)(7), 15.205 and 15.209	Conducted	N/A		Complied
Out of Band Emission & Restricted Band Edges	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.109, 15.407 (b)(1)(2)(5)(6)(7), 15.205 and 15.209	Radiated	N/A	2.4dB (10640.00MHz, Vertical, AV, 11a Tx 5320MHz)	Complied
Dynamic Frequency Selection	FCC 06-96 APPENDIX	FCC 15.407 (h)(2)	Conducted	*2)	N/A	N/A

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

*1) This equipment cannot operate WLAN card when it is connected to the control box at the interface cable. In that case, it can only use wire communication mode. This mode is tested by customer based on IEC 60601-1-2 for the compliance of Part 15 subpart B.
*2) Refer to 4786002569S-C, FCC part 15E (FCC15.407) DFS report.

3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied bandwidth (99%)	ANSI C63.4:2003 13. Measurement of intentional radiators RSS-Gen 4.6.1	RSS-Gen 4.6.1	Conducted	-	Complied

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

3.4 Uncertainty

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

Item	Frequency range	No.1 SAC*1/SR*2 (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 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
*3: Value of Antenna Terminal Voltage measurement is also applies to the No.5 and No.6 Shielded Room.

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
Conducted emissions, Power Density Measurement (below 1GHz) uncertainty for this test was: (±) 1.7dB
Conducted emissions, Power Density Measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB
Conducted emissions, Power Density Measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB
Conducted emissions Measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dB
Conducted emissions Measurement (26.5G-50GHz) uncertainty for this test was: (±) 2.8dB
Bandwidth Measurement uncertainty for this test was: (±) 5.4%

3.5 Test location

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

No.1/ No.2/ No.3 anechoic chamber has been fully described in a report submitted to FCC office, and accepted on April 17, 2009 (Registration No.: 697847).
IC Registration No. : 2973D-1 (No1 anechoic chamber)
2973D-2 (No2 anechoic chamber)
2973D-3 (No3 anechoic chamber)

Test room	Width x Depth x Height (m)	Test room	Width x Depth x Height (m)
No.1 Semi-anechoic chamber	20.6 x 11.3 x 7.65 Maximum measurement distance: 10m	No.1 Shielded room	6.8 x 4.1 x 2.7
No.2 Semi-anechoic chamber	20.6 x 11.3 x 7.65 Maximum measurement distance: 10m	No.2 Shielded room	6.8 x 4.1 x 2.7
No.3 Semi-anechoic chamber	12.7 x 7.7 x 5.35 Maximum measurement distance: 5m	No.3 Shielded room	6.3 x 4.7 x 2.7
No.4 Semi-anechoic chamber	8.1 x 5.1 x 3.55	No.4 Shielded room	4.4 x 4.7 x 2.7
		No.5 Shielded room	7.8 x 6.4 x 2.7
		No.6 Shielded room	7.8 x 6.4 x 2.7

3.6 Test setup, Data of EMI & Test instruments

Refer to Appendix 1 to 3.

4 System test configuration

4.1 Justification

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

Test item	Mode	Tested frequency	Worst data mode *1)
Radiated emission (below 1GHz) *2)	Transmitting IEEE 802.11a	5260MHz, 5500MHz	PN9, 6Mbps
Radiated emission (above 1GHz)	Transmitting IEEE 802.11a	5180MHz, 5260MHz, 5320MHz	PN9, 6Mbps
		5500MHz, 5580MHz, 5700MHz	PN9, 6Mbps
Other items	Transmitting IEEE 802.11a	5180MHz, 5220MHz, 5240MHz	PN9, 6Mbps
		5260MHz, 5300MHz, 5320MHz	PN9, 6Mbps
		5500MHz, 5580MHz, 5700MHz	PN9, 6Mbps
*1) The worst condition was determined based on the test result of Maximum Conducted Output Power. *2) Test operating mode was determined as follows according to “Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - ”of TCB Council Workshop October 2009.			

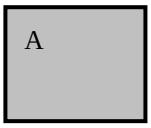
*) The test was carried out in 5580MHz, since there was not a difference in 5580MHz and 5600MHz.

Antenna port used:

	Single output (11a)
Maximum conducted output power	- Main - AUX
Other tests	- Main (worst)

*EUT has the power settings by the software as follows;
Power settings: 14
Software: Console application Version 1.1.2.0

4.2 Configuration and peripherals



Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID (Remark)
A	AeroDR SYSTEM	AeroDR P-31	*1)	KONICA MINOLTA, INC.	YR7AERODRP3 (EUT)

*1) Antenna terminal conducted tests: C1-35, Radiated emission tests: C1-24

5 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	Smple	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-2
Peak excursion ratio	Enough width to display 26dB Bandwidth	1MHz	3MHz	Auto	Peak Sample Power Averaging (100 times)	Max Hold Clear Write	Spectrum Analyzer method SA-2

*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

6 Radiated emissions

6.1 Operating environment

The test was carried out in No.3 Semi-anechoic chamber.

6.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 1.5m, raised 80cm above the conducting ground plane. Photographs of the set up are shown in Appendix 1.

6.3 Test conditions

Frequency range : 30MHz - 40GHz

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 x LOG (({ 10 ^ (E [dBuV/m] / 20) * 10 ^ (-6) * (Distance = 3[m])) ^ 2 } / 30) x 10^3) (uV/m):
P is the e.i.r.p. (Watts)

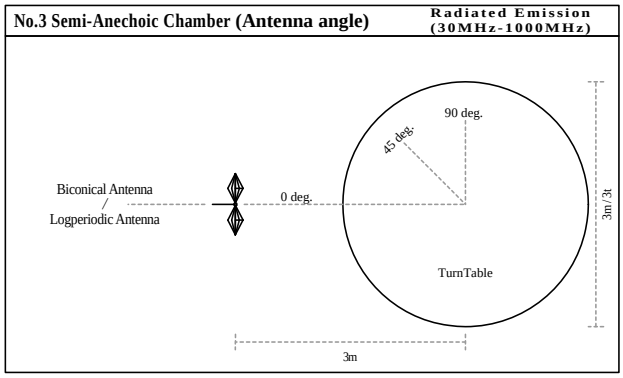
* Distance Factor for the measurement at 1m: 20 x log (3.0m/1.0m) = 9.5dB

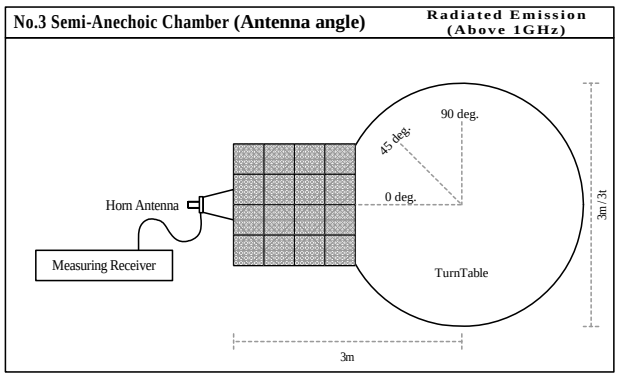
The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

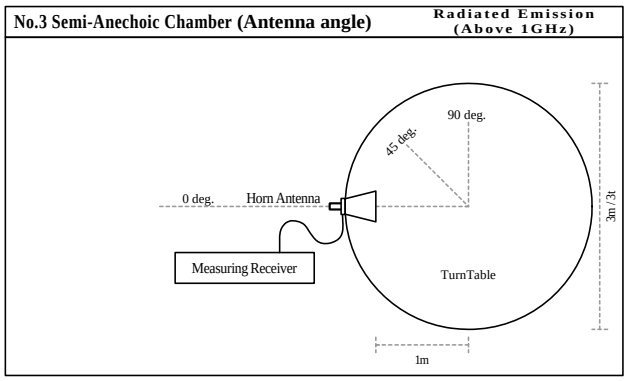
Combinations of the worst case

Band	Worst position	
	Below 1GHz	Above 1GHz
W52, W53	Horizontal: X, Vertical: Z	Carrier: Horizontal: X, Vertical: Z Spurious: Horizontal: X, Vertical: Z
W56	Horizontal: X, Vertical: Z	Carrier: Horizontal: X, Vertical: Z Spurious: Horizontal: X, Vertical: Z

Figure 1. Antenna angle







6.5 Band edge

Band edge level at 5470MHz 5725 are below -27dBm/MHz (EIRP). Band edge level at 5150MHz, 5350MHz and 5460MHz are below the limits of FCC 15.209. Refer to the data of Radiated emission.

6.6 Results

Summary of the test results : Pass

Refer to APPENDIX 1

Contents of APPENDIXES

APPENDIX 1: Data of Radio test

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

Radiated emission

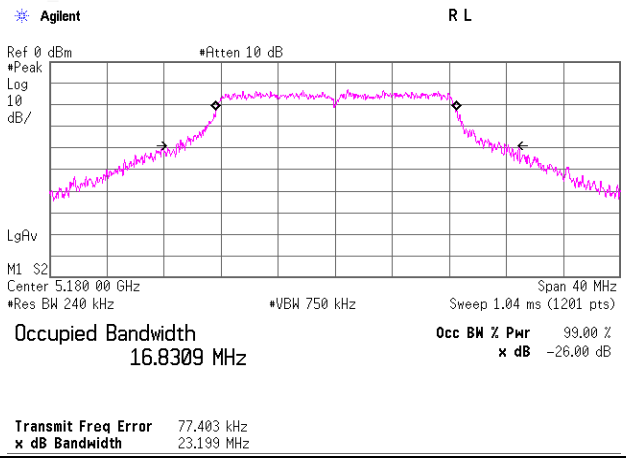
APPENDIX 1: Data of Radio tests

-26dB Bandwidth

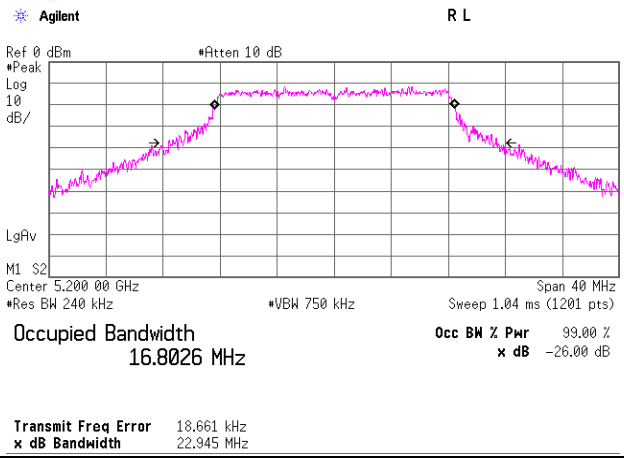
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	-26dB Bandwidth [MHz]
5180.0000	23.199
5200.0000	22.945
5240.0000	23.737

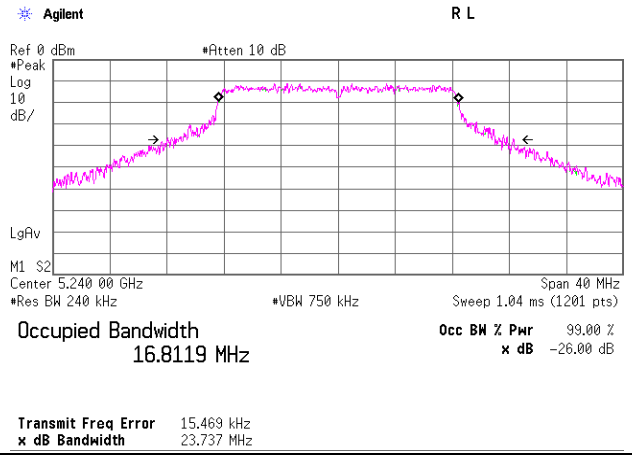
Tx, 5180MHz



Tx, 5200MHz



Tx, 5240MHz

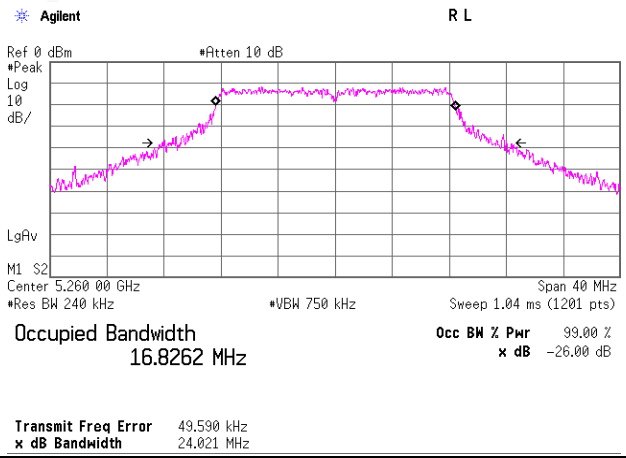


-26dB Bandwidth

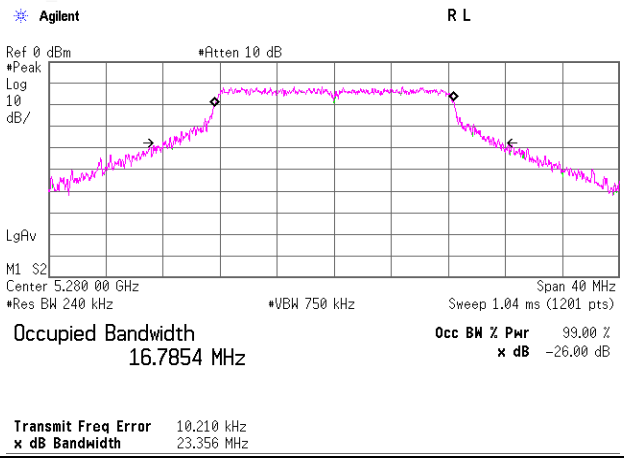
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	-26dB Bandwidth [MHz]
5260.0000	24.021
5280.0000	23.356
5320.0000	24.260

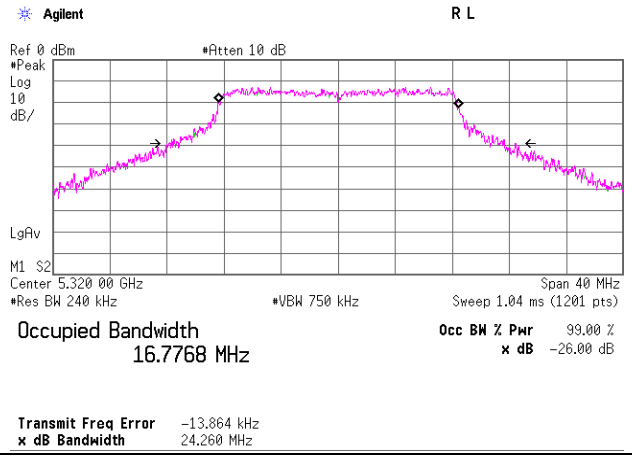
Tx, 5260MHz



Tx, 5280MHz



Tx, 5320MHz

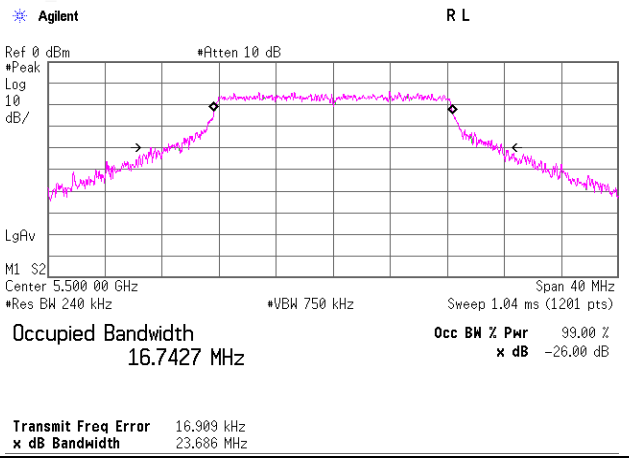


-26dB Bandwidth

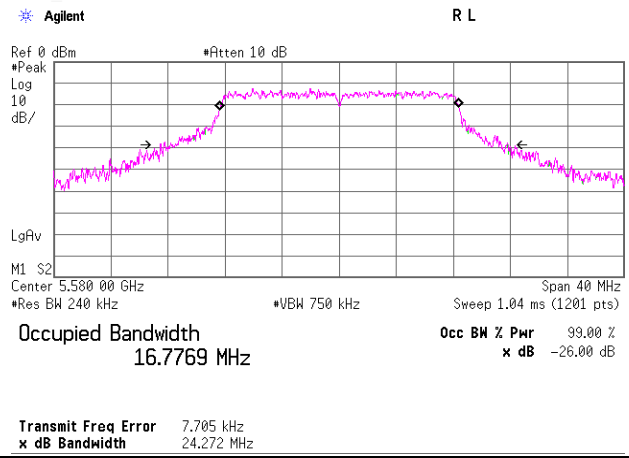
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	-26dB Bandwidth [MHz]
5500.0000	23.686
5580.0000	24.272
5700.0000	23.443

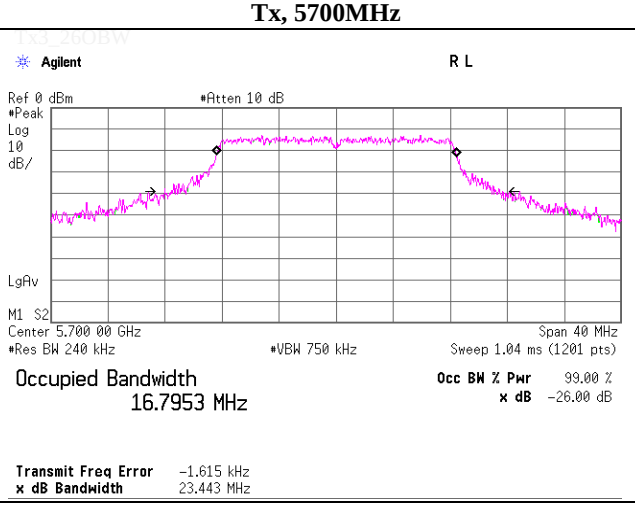
Tx, 5500MHz



Tx, 5580MHz



Tx, 5700MHz



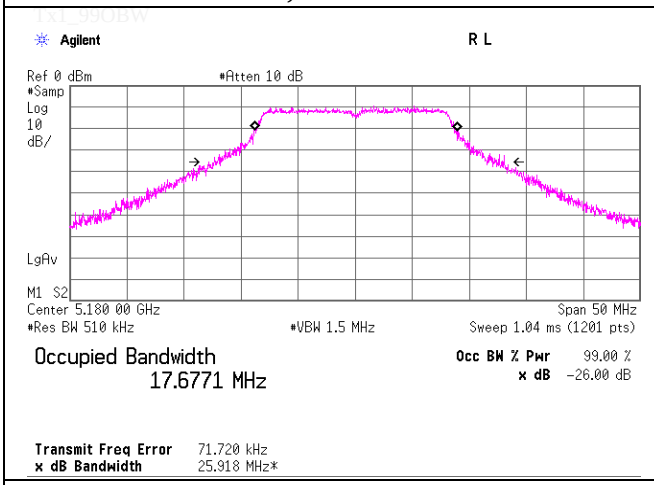
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

99% Occupied Bandwidth

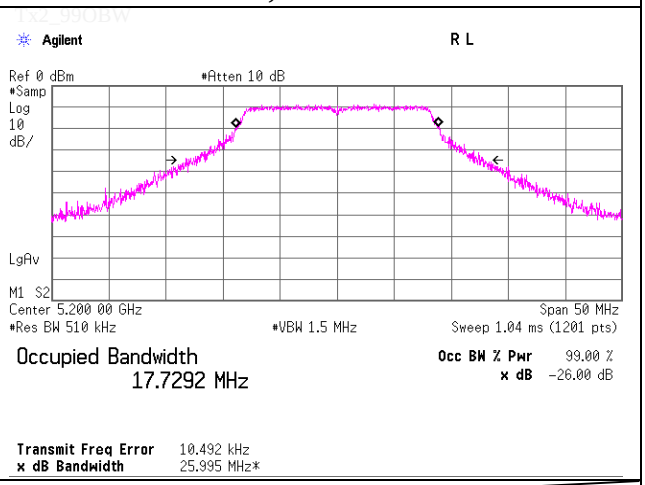
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5180.0000	17.677
5200.0000	17.729
5240.0000	17.691

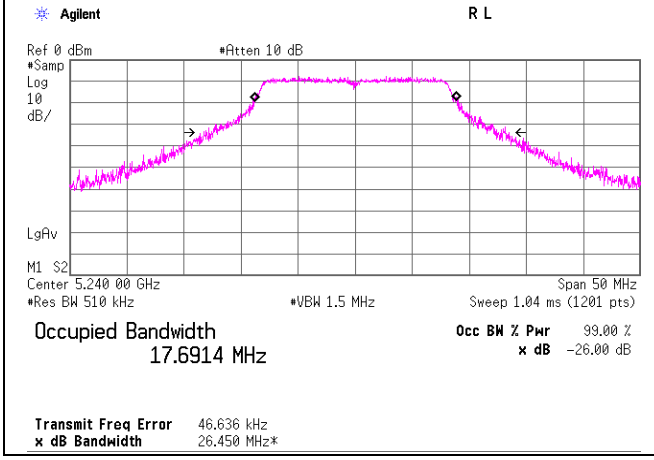
Tx, 5180MHz



Tx, 5200MHz



Tx, 5240MHz



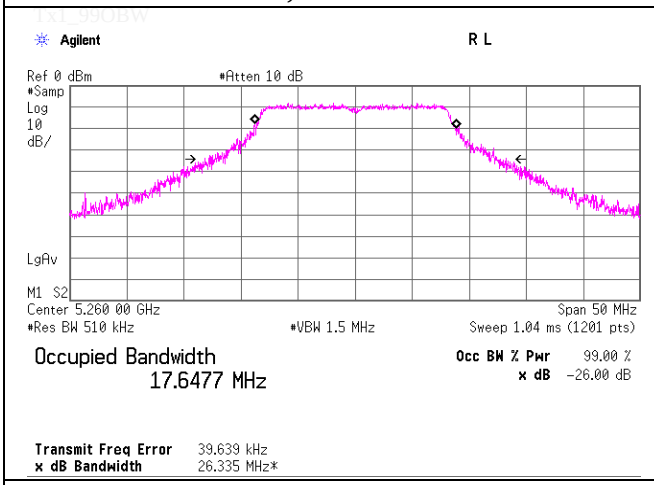
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

99% Occupied Bandwidth

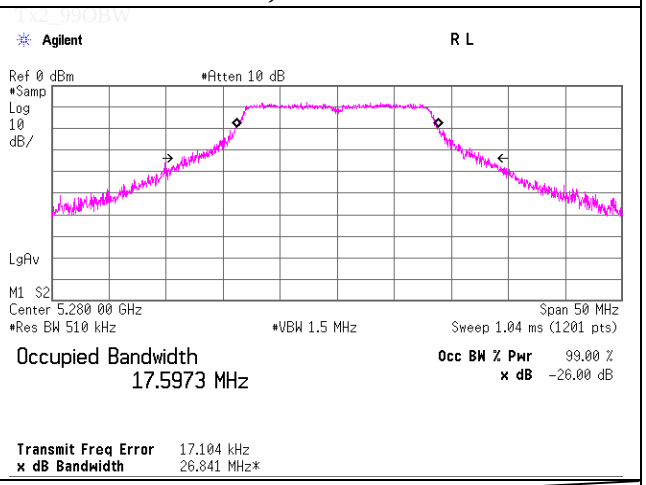
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5260.0000	17.648
5280.0000	17.597
5320.0000	17.688

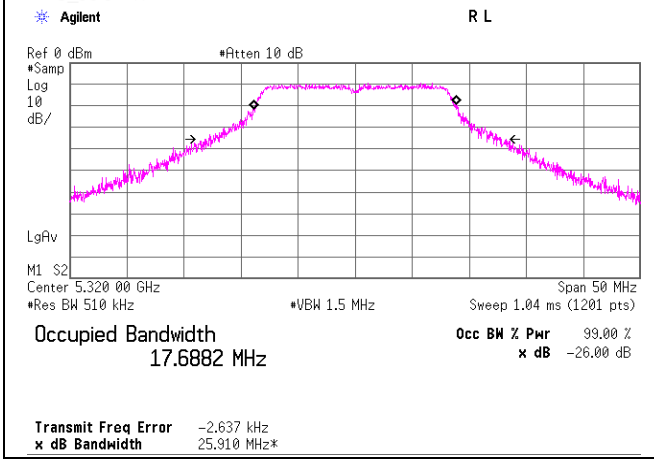
Tx, 5260MHz



Tx, 5280MHz



Tx, 5320MHz



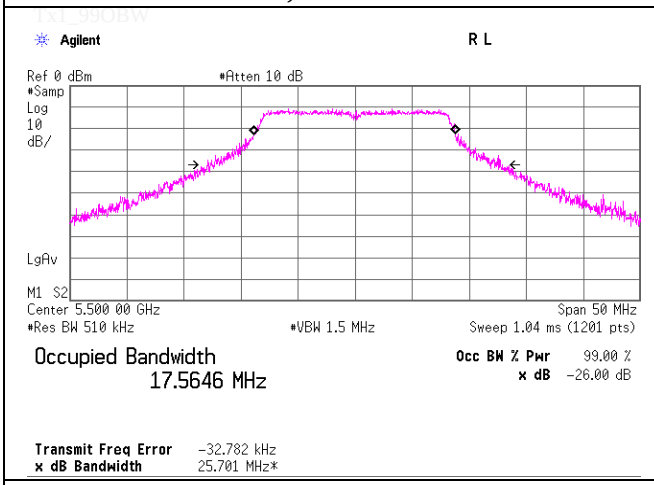
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

99% Occupied Bandwidth

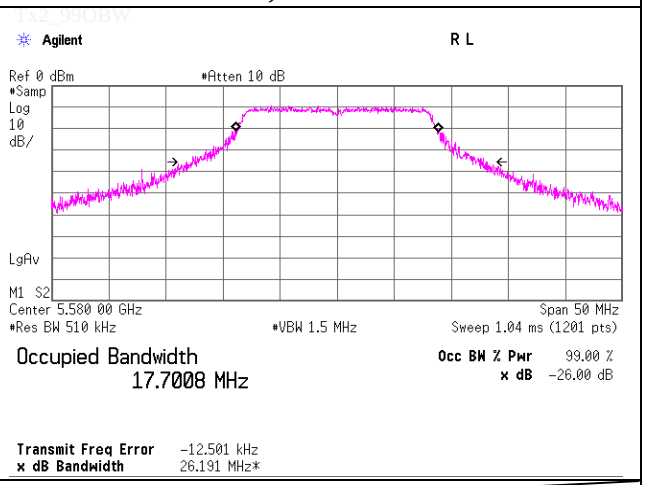
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	99% Occupied Bandwidth [MHz]
5500.0000	17.565
5580.0000	17.701
5700.0000	17.807

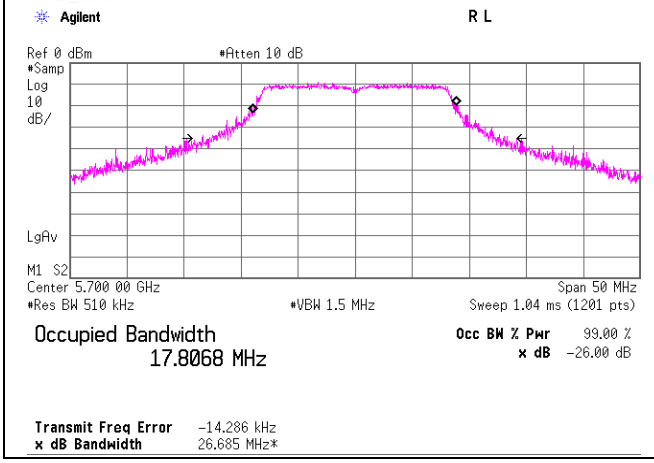
Tx, 5500MHz



Tx, 5580MHz



Tx, 5700MHz



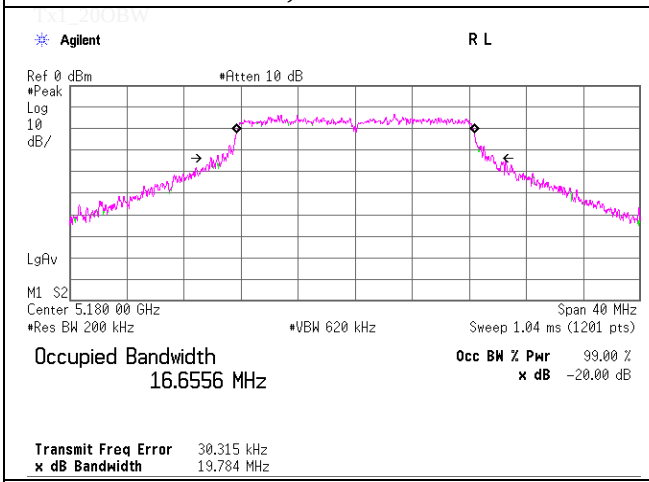
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

-20dB Bandwidth

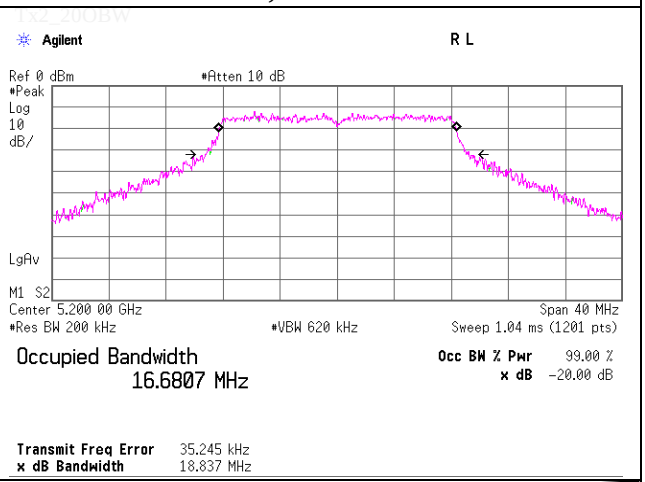
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	-20dB Bandwidth [MHz]
5180.0000	19.784
5200.0000	18.837
5240.0000	18.779

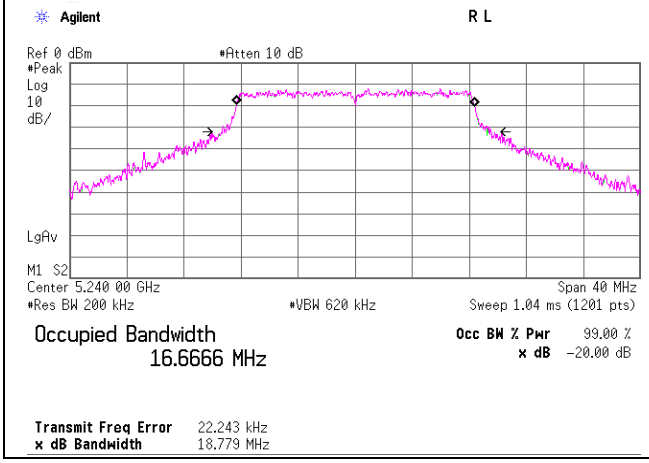
Tx, 5180MHz



Tx, 5200MHz



Tx, 5240MHz



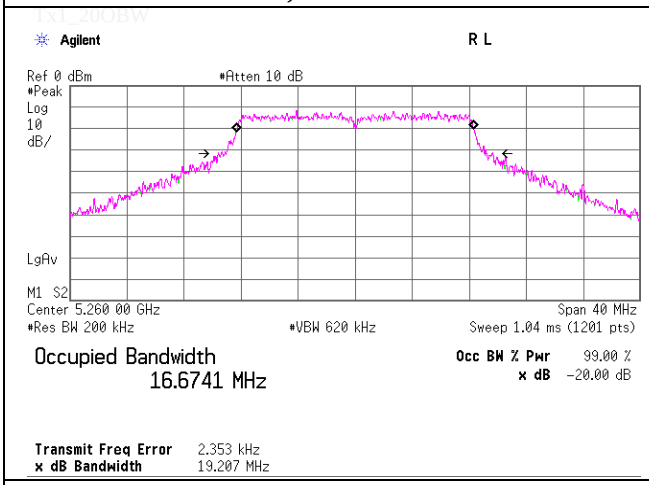
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

-20dB Bandwidth

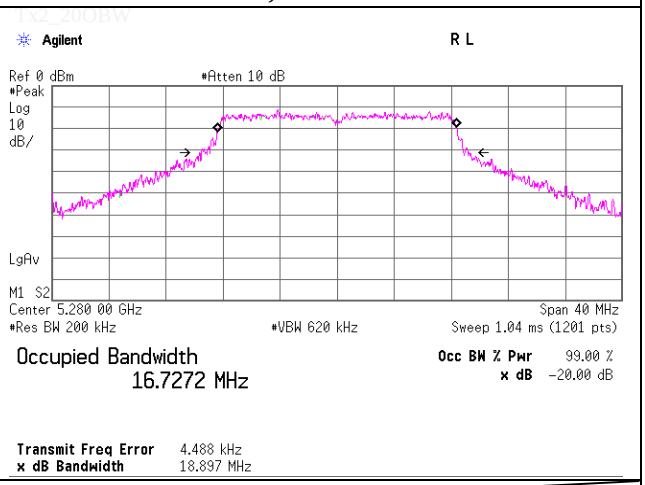
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	-20dB Bandwidth [MHz]
5260.0000	19.207
5280.0000	18.897
5320.0000	19.528

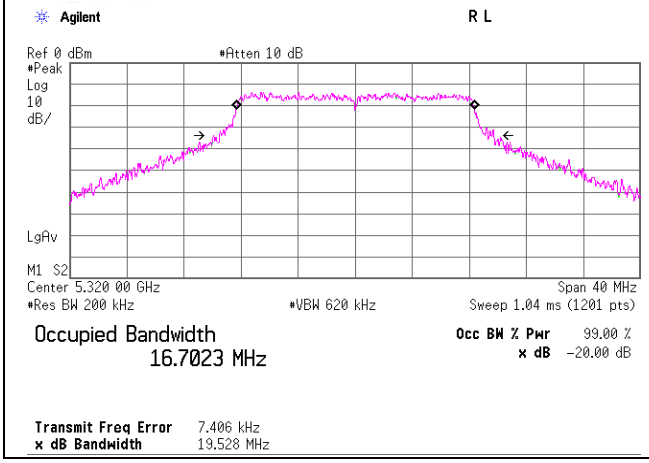
Tx, 5260MHz



Tx, 5280MHz



Tx, 5320MHz



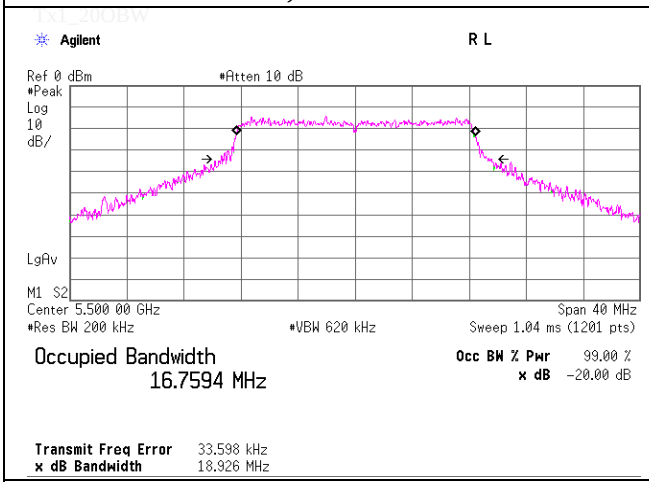
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

-20dB Bandwidth

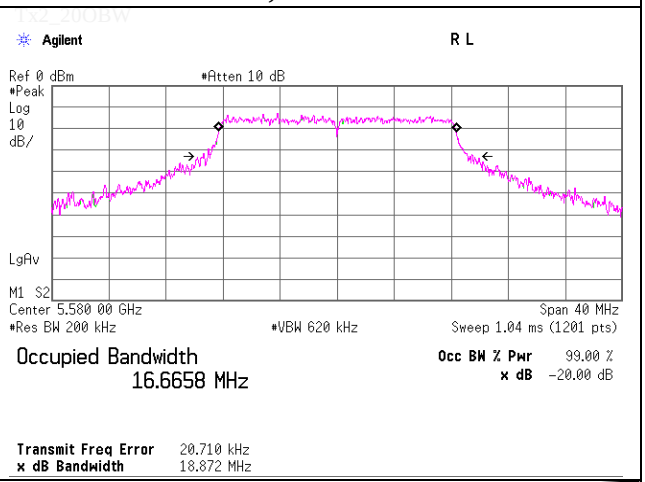
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

Freq. [MHz]	-20dB Bandwidth [MHz]
5500.0000	18.926
5580.0000	18.872
5700.0000	19.445

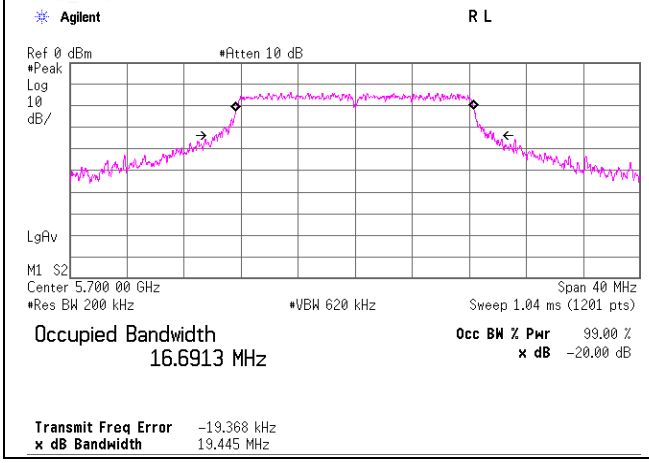
Tx, 5500MHz



Tx, 5580MHz



Tx, 5700MHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Shielded Room		
Date	February 21, 2013			
Temperature / Humidity	22 deg.C , 47 %RH			
Engineer	Tatsuya Arai			
Mode	Tx, IEEE802.11a, PN9,	worst antenna : Main	worst data mode :	6 Mbps

Antena terminal power (* P/M: Power Meter with power senser, AV: Average)

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]		Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
Low	5180.0	-0.72	2.54	10.05	0.00		11.87	15.38	16.99	50.00	5.12
Mid	5200.0	-0.77	2.58	10.05	0.00		11.86	15.35	16.99	50.00	5.13
High	5240.0	-0.12	2.59	10.04	0.00		12.51	17.82	16.99	50.00	4.48

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

EIRP (* P/M: Power Meter with power senser, 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 (e.i.r.p.) [dBm]	Result (e.i.r.p.) [mW]	Limit (e.i.r.p.) [dBm]	Limit (e.i.r.p.) [mW]	Margin [dB]
Low	5180.0	-0.72	2.54	10.05	0.00	3.78	15.65	36.73	-	-	-
Mid	5200.0	-0.77	2.58	10.05	0.00	3.78	15.64	36.64	-	-	-
High	5240.0	-0.12	2.59	10.04	0.00	3.78	16.29	42.56	-	-	-

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

Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Shielded Room	
Date	February 21, 2013		
Temperature / Humidity	22 deg.C , 47 %RH		
Engineer	Tatsuya Arai		
Mode	Tx, IEEE802.11a, PN9,	worst antenna : Main	worst data mode : 6 Mbps

Antena terminal power (* P/M: Power Meter with power senser, AV: Average)

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]		Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
Low	5260.0	-0.11	2.58	10.04	0.00		12.51	17.82	23.98	250.00	11.47
Mid	5280.0	0.06	2.55	10.04	0.00		12.65	18.41	23.98	250.00	11.33
High	5320.0	-0.24	2.50	10.03	0.00		12.29	16.94	23.98	250.00	11.69

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

EIRP (* P/M: Power Meter with power senser, 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 (e.i.r.p.) [dBm]	Result (e.i.r.p.) [mW]	Limit (e.i.r.p.) [dBm]	Limit (e.i.r.p.) [mW]	Margin [dB]
Low	5260.0	-0.11	2.58	10.04	0.00	3.78	16.29	42.56	-	-	-
Mid	5280.0	0.06	2.55	10.04	0.00	3.78	16.43	43.95	-	-	-
High	5320.0	-0.24	2.50	10.03	0.00	3.78	16.07	40.46	-	-	-

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

[Pre check, W52/W53 band]

Antenna Main

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	
Main	6	5260.0	-0.11	2.58	10.04	0.00	12.51	**Worst**
Main	9	5260.0	-0.17	2.58	10.04	0.00	12.45	
Main	12	5260.0	-0.16	2.58	10.04	0.00	12.46	
Main	18	5260.0	-0.14	2.58	10.04	0.00	12.48	
Main	24	5260.0	-0.15	2.58	10.04	0.00	12.47	
Main	36	5260.0	-0.16	2.58	10.04	0.00	12.46	
Main	48	5260.0	-0.13	2.58	10.04	0.00	12.49	
Main	54	5260.0	-0.16	2.58	10.04	0.00	12.46	

Antenna Sub

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Sub	6	5260.0	-1.02	2.58	10.04	0.00	11.60
Sub	9	5260.0	-0.97	2.58	10.04	0.00	11.65
Sub	12	5260.0	-1.03	2.58	10.04	0.00	11.59
Sub	18	5260.0	-1.02	2.58	10.04	0.00	11.60
Sub	24	5260.0	-1.12	2.58	10.04	0.00	11.50
Sub	36	5260.0	-1.07	2.58	10.04	0.00	11.55
Sub	48	5260.0	-1.05	2.58	10.04	0.00	11.57
Sub	54	5260.0	-1.03	2.58	10.04	0.00	11.59

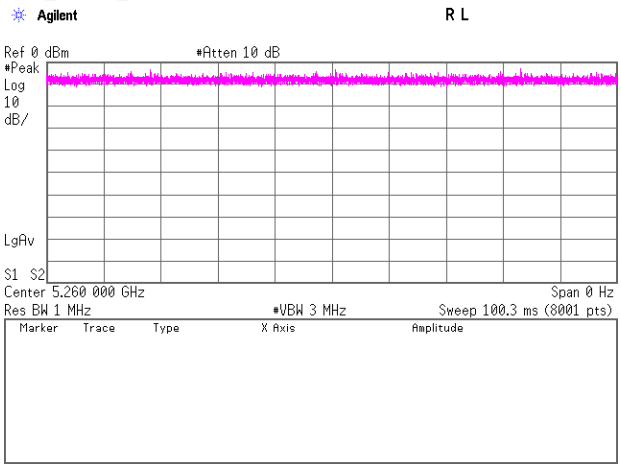
Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11a, antenna port Main, (W52/W53 band, Tx 5260MHz)

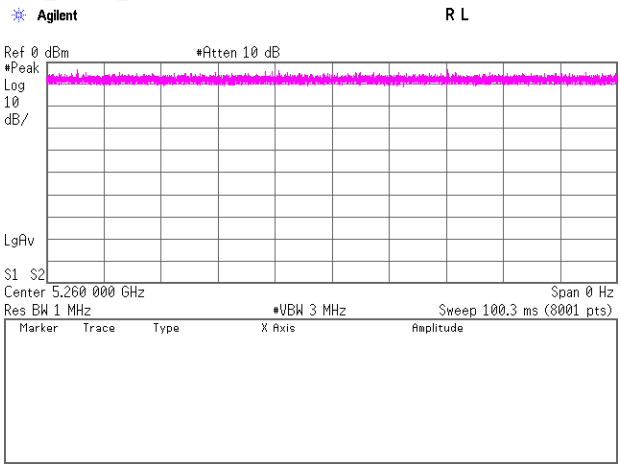
6Mbps

duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]



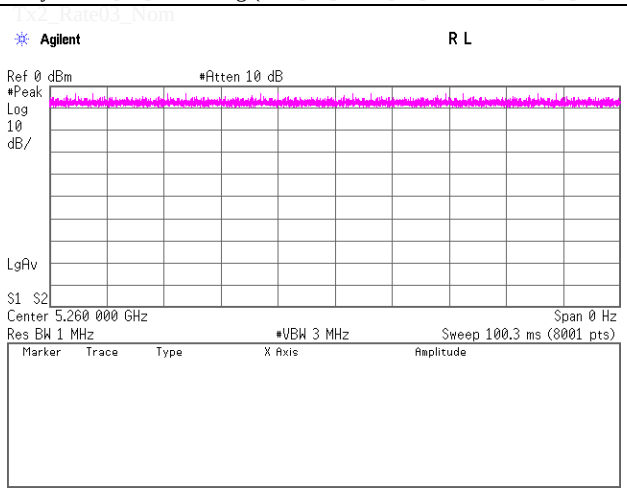
9Mbps

duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]



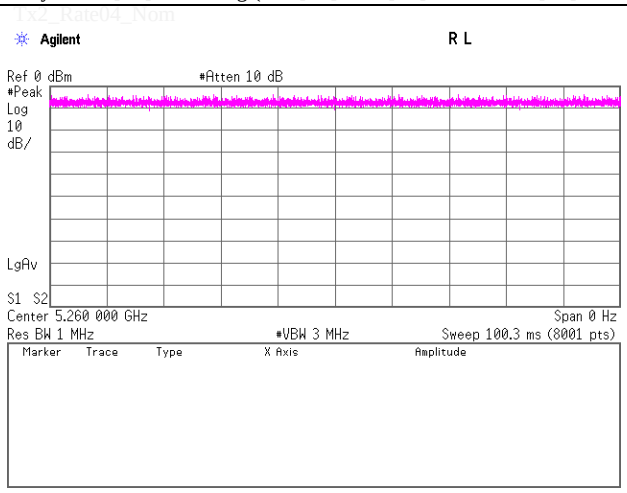
12Mbps

duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]



18Mbps

duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]

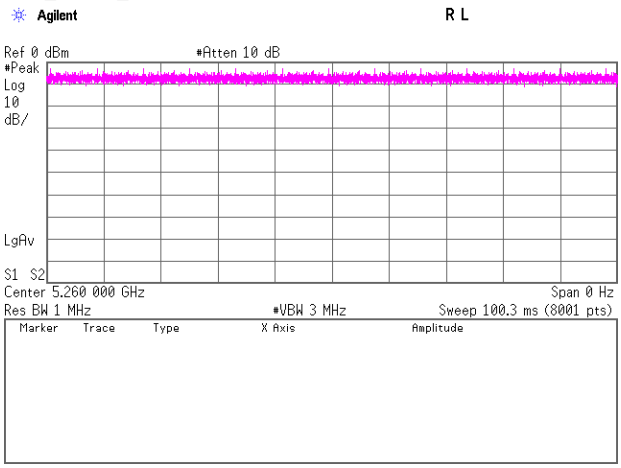
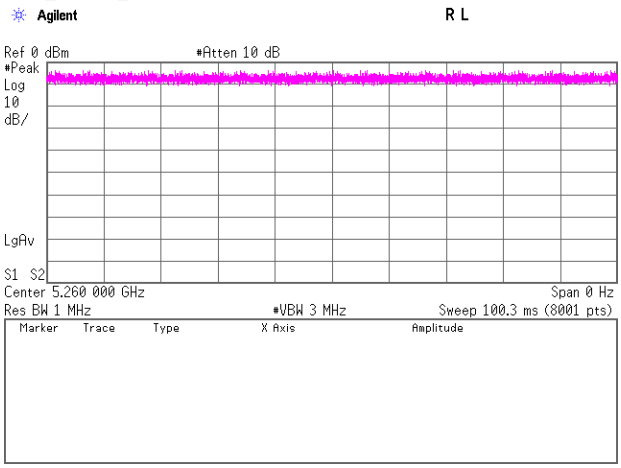
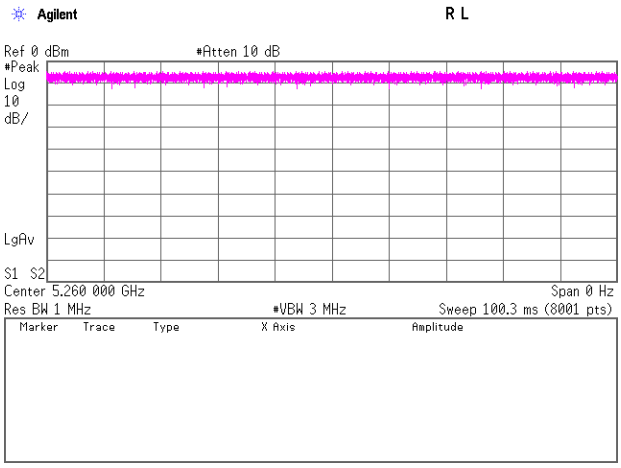
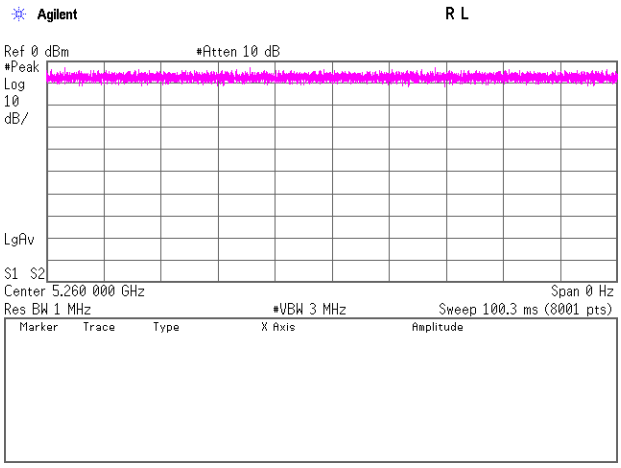


UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11a, antenna port Main, (W52/W53 band, Tx 5260MHz)

24Mbps	36Mbps
duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]	duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]
	
48Mbps	**54Mbps**
duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]	duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]
	

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Conducted)

(Method: PM)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Shielded Room	
Date	February 21, 2013		
Temperature / Humidity	22 deg.C , 47 %RH		
Engineer	Tatsuya Arai		
Mode	Tx, IEEE802.11a, PN9,	worst antenna : Main	worst data mode : 6 Mbps

Antena terminal power (* P/M: Power Meter with power senser, AV: Average)

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]		Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
Low	5500.0	-1.02	2.65	10.01	0.00		11.64	14.59	23.98	250.00	12.34
Mid	5580.0	-1.10	2.55	10.01	0.00		11.46	14.00	23.98	250.00	12.52
High	5700.0	-1.51	2.62	10.02	0.00		11.13	12.97	23.98	250.00	12.85

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

EIRP (* P/M: Power Meter with power senser, 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 (e.i.r.p.) [dBm]	Result (e.i.r.p.) [mW]	Limit (e.i.r.p.) [dBm]	Limit (e.i.r.p.) [mW]	Margin [dB]
Low	5500.0	-1.02	2.65	10.01	0.00	3.78	15.42	34.83	-	-	-
Mid	5580.0	-1.10	2.55	10.01	0.00	3.78	15.24	33.42	-	-	-
High	5700.0	-1.51	2.62	10.02	0.00	3.78	14.91	30.97	-	-	-

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

[Pre check, W56 band]

Antenna Main

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	
Main	6	5580.0	-1.10	2.55	10.01	0.00	11.46	**Worst**
Main	9	5580.0	-1.12	2.55	10.01	0.00	11.44	
Main	12	5580.0	-1.21	2.55	10.01	0.00	11.35	
Main	18	5580.0	-1.17	2.55	10.01	0.00	11.39	
Main	24	5580.0	-1.12	2.55	10.01	0.00	11.44	
Main	36	5580.0	-1.23	2.55	10.01	0.00	11.33	
Main	48	5580.0	-1.32	2.55	10.01	0.00	11.24	
Main	54	5580.0	-1.13	2.55	10.01	0.00	11.43	

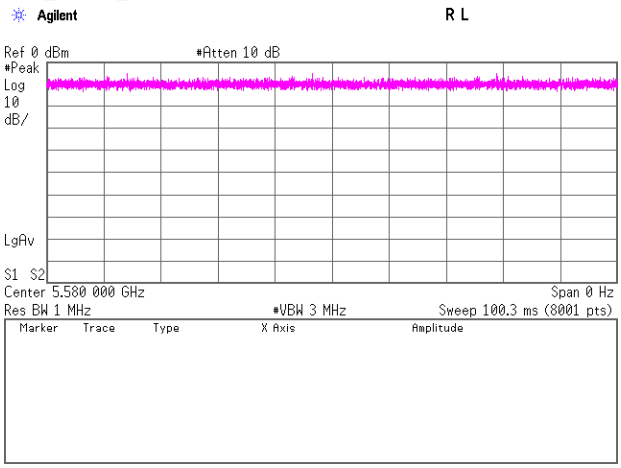
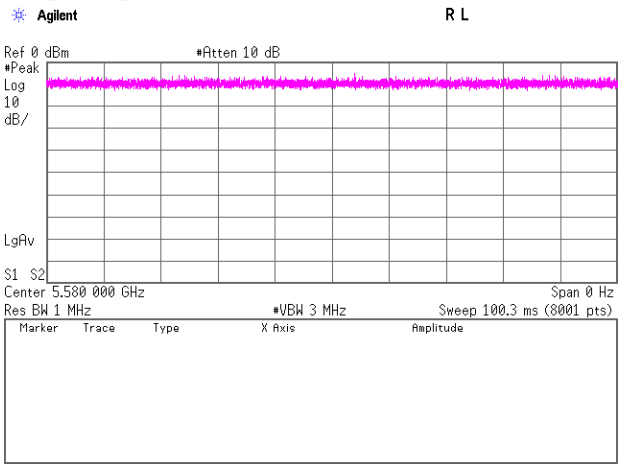
Antenna Sub

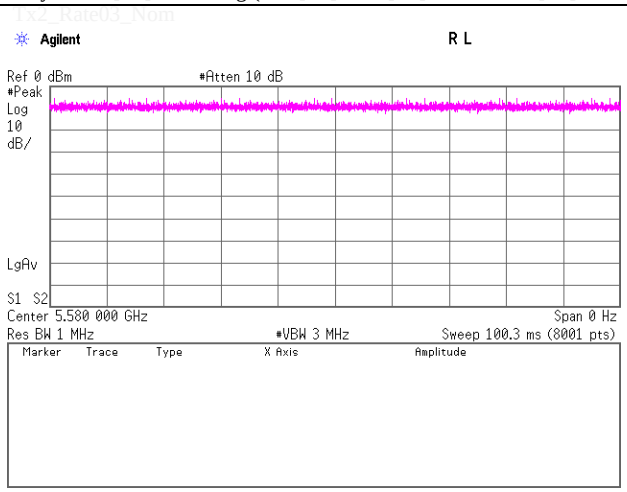
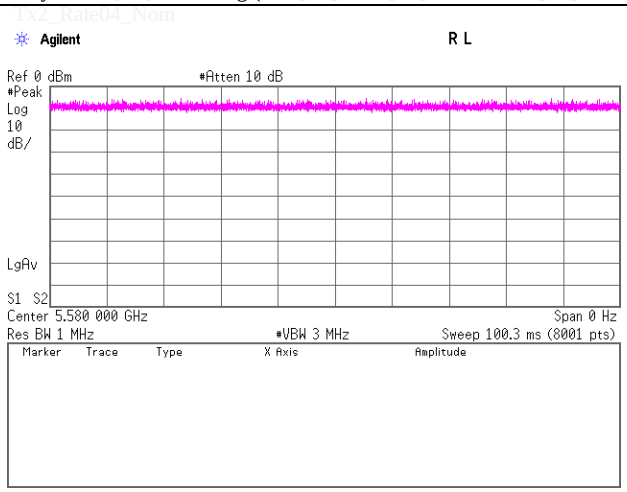
	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]
Sub	6	5580.0	-2.18	2.55	10.01	0.00	10.38
Sub	9	5580.0	-2.20	2.55	10.01	0.00	10.36
Sub	12	5580.0	-2.24	2.55	10.01	0.00	10.32
Sub	18	5580.0	-2.19	2.55	10.01	0.00	10.37
Sub	24	5580.0	-2.23	2.55	10.01	0.00	10.33
Sub	36	5580.0	-2.19	2.55	10.01	0.00	10.37
Sub	48	5580.0	-2.24	2.55	10.01	0.00	10.32
Sub	54	5580.0	-2.25	2.55	10.01	0.00	10.31

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11a, antenna port Main, (W56 band, Tx 5580MHz)

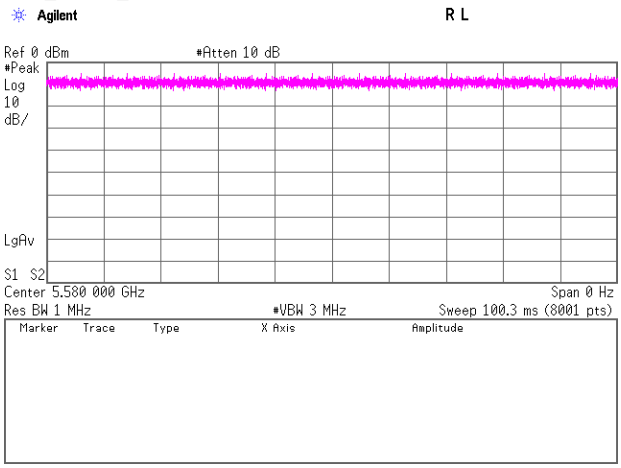
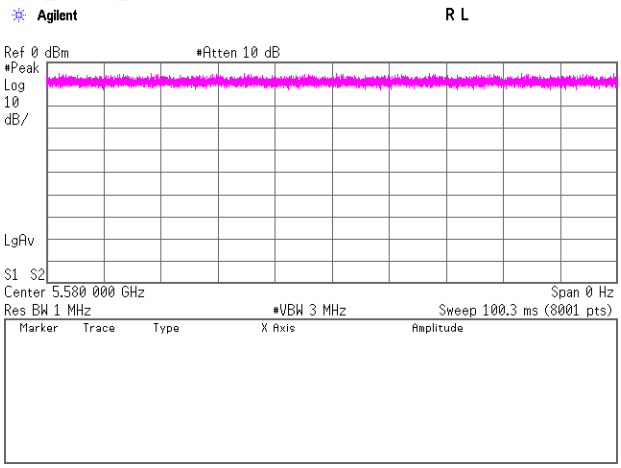
6Mbps	9Mbps
duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]	duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]
	

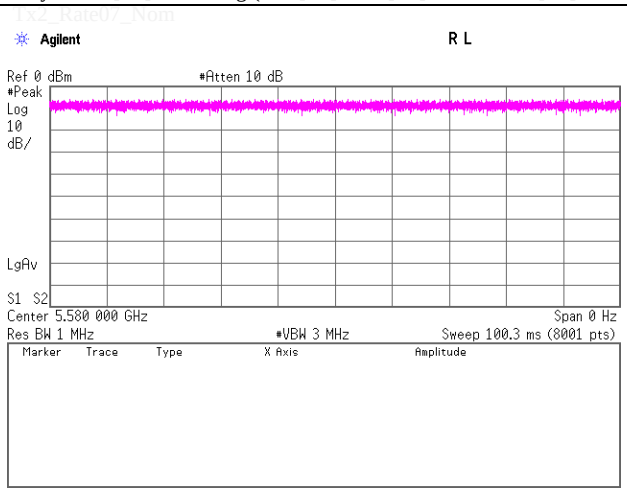
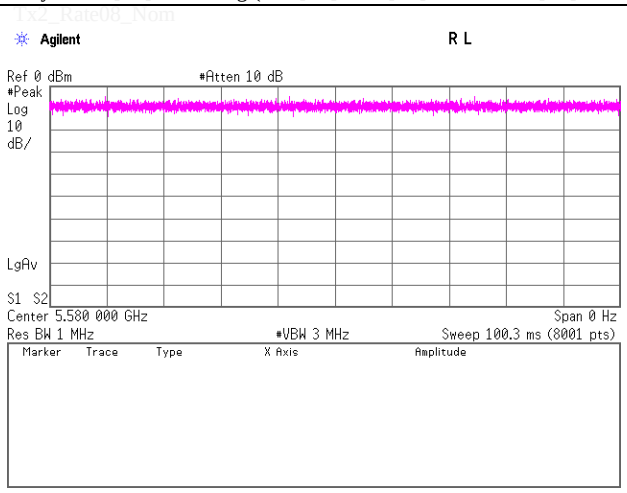
12Mbps	18Mbps
duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]	duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]
	

Maximum Conducted Output Power (Conducted)

(Reference) (duty chart)

Tx, IEEE802.11a, antenna port Main, (W56 band, Tx 5580MHz)

24Mbps	36Mbps
duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]	duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]
	

48Mbps	54Mbps
duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]	duty factor [dB] = 10 x log (100[ms] / 100[ms] 0.00 [dB]
	

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	March 6, 2013	March 6, 2013	March 7, 2013
Temperature / Humidity	23 deg.C, 26 %RH	24 deg.C, 29 %RH	22 deg.C, 33 %RH
Engineer	Shinichi Takano		
Mode	Tx, 5180 MHz		
	Tx, IEEE802.11a, PN9, worst antenna port Main, 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.	5150.000	PK	46.5	31.8	16.4	40.6	54.1	73.9	19.8	100	158	
Hori.	15540.000	PK	43.8	40	2	39.2	46.6	73.9	27.3	100	0	
Hori.	5150.000	AV	33.6	31.8	16.4	40.6	41.2	53.9	12.7	100	158	
Hori.	15540.000	AV	33.3	40	2	39.2	36.1	53.9	17.8	100	0	
Vert.	5150.000	PK	46.1	31.8	16.4	40.6	53.7	73.9	20.2	100	86	
Vert.	15540.000	PK	44	40	2	39.2	46.8	73.9	27.1	100	0	
Vert.	5150.000	AV	34.4	31.8	16.4	40.6	42	53.9	11.9	100	86	
Vert.	15540.000	AV	33.5	40	2	39.2	36.3	53.9	17.6	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

*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

(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.	6906.657	PK	49.3	36.3	7.8	41.2	52.2	-43.03	-27.00	16.0	100	7	
Hori.	10360.000	PK	52.5	38.9	9.5	38.7	62.2	-33.03	-27.00	6.0	147	354	
Vert.	6906.630	PK	48.9	36.3	7.8	41.2	51.8	-43.43	-27.00	16.4	100	108	
Vert.	10360.000	PK	55.2	38.9	9.5	38.7	64.9	-30.33	-27.00	3.3	138	105	

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

Resrult(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	March 5, 2013	March 6, 2013	March 6, 2013	March 7, 2013
Temperature / Humidity	24 deg.C, 33 %RH	23 deg.C, 26 %RH	24 deg.C, 29 %RH	22 deg.C, 33 %RH
Engineer	Shinichi Takano			
Mode	Tx, 5260 MHz			
	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps			

(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.	717.820	QP	23.7	20.4	10.2	31.8	22.5	46	23.5	100	275	
Hori.	727.152	QP	24.1	20.5	10.2	31.8	23	46	23.0	150	93	
Hori.	925.033	QP	22.8	22.5	10.8	30.9	25.2	46	20.8	150	171	
Hori.	15780.000	PK	44.9	39.5	1.8	39.2	47	73.9	26.9	100	0	
Hori.	15780.000	AV	33.5	39.5	1.8	39.2	35.6	53.9	18.3	100	0	
Vert.	30.481	QP	24.1	17.8	6.5	32.2	16.2	40	23.8	100	124	
Vert.	78.519	QP	28.4	6.4	7.4	32.2	10	40	30.0	100	225	
Vert.	89.536	QP	28.3	8.1	7.4	32.2	11.6	43.5	31.9	100	6	
Vert.	15780.000	PK	45.2	39.5	1.8	39.2	47.3	73.9	26.6	100	0	
Vert.	15780.000	AV	33.7	39.5	1.8	39.2	35.8	53.9	18.1	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

*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

(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.	7013.351	PK	48	36.6	7.8	41.3	51.1	-44.13	-27.00	17.1	139	8	
Hori.	10520.000	PK	50.4	38.9	9.6	38.7	60.2	-35.03	-27.00	8.0	129	356	
Vert.	7013.326	PK	47.6	36.6	7.8	41.3	50.7	-44.53	-27.00	17.5	100	101	
Vert.	10520.000	PK	55.7	38.9	9.6	38.7	65.5	-29.73	-27.00	2.7	100	103	

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

Resrult(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	March 6, 2013	March 6, 2013	March 7, 2013
Temperature / Humidity	23 deg.C, 26 %RH	24 deg.C, 29 %RH	22 deg.C, 33 %RH
Engineer	Shinichi Takano		
Mode	Tx, 5320 MHz		
	Tx, IEEE802.11a, PN9, worst antenna port Main, 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	49.2	31.9	16.6	40.3	57.4	73.9	16.5	100	341	
Hori.	10640.000	PK	55.2	39.2	9.6	38.8	65.2	73.9	8.7	100	354	
Hori.	15960.000	PK	44.3	39	1.7	39.3	45.7	73.9	28.2	100	0	
Hori.	5350.000	AV	35.5	31.9	16.6	40.3	43.7	53.9	10.2	100	341	
Hori.	10640.000	AV	40.9	39.2	9.6	38.8	50.9	53.9	3.0	100	354	
Hori.	15960.000	AV	33.2	39	1.7	39.3	34.6	53.9	19.3	100	0	
Vert.	5350.000	PK	47.9	31.9	16.6	40.3	56.1	73.9	17.8	112	89	
Vert.	10640.000	PK	54.7	39.2	9.6	38.8	64.7	73.9	9.2	135	123	
Vert.	15960.000	PK	44.2	39	1.7	39.3	45.6	73.9	28.3	100	0	
Vert.	5350.000	AV	34.8	31.9	16.6	40.3	43	53.9	10.9	112	89	
Vert.	10640.000	AV	41.5	39.2	9.6	38.8	51.5	53.9	2.4	135	123	
Vert.	15960.000	AV	33.1	39	1.7	39.3	34.5	53.9	19.4	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

*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

(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.	7093.333	PK	47.5	36.6	7.9	41.3	50.7	-44.53	-27.00	17.5	100	9	
Vert.	7093.346	PK	47.2	36.6	7.9	41.3	50.4	-44.83	-27.00	17.8	146	97	

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

Resrult(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	March 5, 2013	March 6, 2013	March 6, 2013	March 7, 2013
Temperature / Humidity	24 deg.C, 33 %RH	23 deg.C, 26 %RH	24 deg.C, 29 %RH	22 deg.C, 33 %RH
Engineer	Shinichi Takano			
Mode	Tx, 5500 MHz			
	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps			

(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.	762.718	QP	23.5	20.7	10.3	31.8	22.7	46	23.3	100	79	
Hori.	789.301	QP	23.8	20.8	10.4	31.7	23.3	46	22.7	150	315	
Hori.	864.179	QP	23.1	21.8	10.6	31.3	24.2	46	21.8	150	273	
Hori.	5460.000	PK	45.4	32	16.7	40.1	54	73.9	19.9	100	354	
Hori.	7333.355	PK	47.6	36.6	8.3	41.4	51.1	73.9	22.8	117	10	
Hori.	11000.000	PK	47.3	40	9.6	39.2	57.7	73.9	16.2	146	355	
Hori.	5460.000	AV	32.9	32	16.7	40.1	41.5	53.9	12.4	100	354	
Hori.	7333.355	AV	38.6	36.6	8.3	41.4	42.1	53.9	11.8	117	10	
Hori.	11000.000	AV	33.5	40	9.6	39.2	43.9	53.9	10.0	146	355	
Vert.	30.759	QP	24	17.7	6.5	32.2	16	40	24.0	100	358	
Vert.	78.610	QP	27.4	6.4	7.4	32.2	9	40	31.0	100	326	
Vert.	89.594	QP	28	8.1	7.4	32.2	11.3	43.5	32.2	100	257	
Vert.	5460.000	PK	45.9	32	16.7	40.1	54.5	73.9	19.4	100	83	
Vert.	7333.349	PK	47.5	36.6	8.3	41.4	51	73.9	22.9	156	95	
Vert.	11000.000	PK	46.2	40	9.6	39.2	56.6	73.9	17.3	140	102	
Vert.	5460.000	AV	33.3	32	16.7	40.1	41.9	53.9	12.0	100	83	
Vert.	7333.349	AV	38.8	36.6	8.3	41.4	42.3	53.9	11.6	156	95	
Vert.	11000.000	AV	34.1	40	9.6	39.2	44.5	53.9	9.4	140	102	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

*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

(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	51.5	32	16.7	40.1	60.1	-35.13	-27.00	8.1	100	354	
Hori.	16500.000	PK	44.2	40	2.2	39.6	46.8	-48.43	-27.00	21.4	100	0	
Vert.	5470.000	PK	50.2	32	16.7	40.1	58.8	-36.43	-27.00	9.4	100	83	
Vert.	16500.000	PK	44.5	40	2.2	39.6	47.1	-48.13	-27.00	21.1	100	0	

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

Resrult(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

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	March 6, 2013	March 6, 2013	March 7, 2013
Temperature / Humidity	23 deg.C, 26 %RH	24 deg.C, 29 %RH	22 deg.C, 33 %RH
Engineer	Shinichi Takano		
Mode	Tx, 5580 MHz		
	Tx, IEEE802.11a, PN9, worst antenna port Main, 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.	3719.994	PK	48.4	29.5	15.1	41.8	51.2	73.9	22.7	100	3	
Hori.	7440.012	PK	47.5	36.7	8.3	41.5	51	73.9	22.9	100	12	
Hori.	11160.000	PK	43.9	40.1	9.7	39.3	54.4	73.9	19.5	149	359	
Hori.	3719.994	AV	39.9	29.5	15.1	41.8	42.7	53.9	11.2	100	3	
Hori.	7440.012	AV	38.4	36.7	8.3	41.5	41.9	53.9	12.0	100	12	
Hori.	11160.000	AV	32.8	40.1	9.7	39.3	43.3	53.9	10.6	149	359	
Vert.	3720.008	PK	47.8	29.5	15.1	41.8	50.6	73.9	23.3	106	88	
Vert.	7440.003	PK	48.4	36.7	8.3	41.5	51.9	73.9	22.0	156	88	
Vert.	11160.000	PK	43.9	40.1	9.7	39.3	54.4	73.9	19.5	100	0	
Vert.	3720.008	AV	39.8	29.5	15.1	41.8	42.6	53.9	11.3	106	88	
Vert.	7440.003	AV	38.8	36.7	8.3	41.5	42.3	53.9	11.6	156	88	
Vert.	11160.000	AV	32.9	40.1	9.7	39.3	43.4	53.9	10.5	100	0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

*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

(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.	16740.000	PK	43.9	40.6	2.4	39.5	47.4	-47.83	-27.00	20.8	100	0	
Vert.	16740.000	PK	44.3	40.6	2.4	39.5	47.8	-47.43	-27.00	20.4	100	0	

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

Resrult(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	March 6, 2013	March 6, 2013	March 7, 2013
Temperature / Humidity	23 deg.C, 26 %RH	24 deg.C, 29 %RH	22 deg.C, 33 %RH
Engineer	Shinichi Takano		
Mode	Tx, 5700 MHz		
	Tx, IEEE802.11a, PN9, worst antenna port Main, 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.	3800.011	PK	49.3	29.5	15.2	41.8	52.2	73.9	21.7	100	5	
Hori.	7600.025	PK	48.8	36.8	8.6	41.4	52.8	73.9	21.1	143	4	
Hori.	11400.000	PK	44.7	40.1	9.8	39.5	55.1	73.9	18.8	100	346	
Hori.	3800.011	AV	42.9	29.5	15.2	41.8	45.8	53.9	8.1	100	5	
Hori.	7600.025	AV	39.3	36.8	8.6	41.4	43.3	53.9	10.6	143	4	
Hori.	11400.000	AV	33.4	40.1	9.8	39.5	43.8	53.9	10.1	100	346	
Vert.	3799.023	PK	49	29.5	15.2	41.8	51.9	73.9	22.0	100	94	
Vert.	7600.004	PK	48.5	36.8	8.6	41.4	52.5	73.9	21.4	121	90	
Vert.	11400.000	PK	45.2	40.1	9.8	39.5	55.6	73.9	18.3	151	122	
Vert.	3799.023	AV	42.8	29.5	15.2	41.8	45.7	53.9	8.2	100	94	
Vert.	7600.004	AV	39.1	36.8	8.6	41.4	43.1	53.9	10.8	121	90	
Vert.	11400.000	AV	33.7	40.1	9.8	39.5	44.1	53.9	9.8	151	122	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

*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

(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	56.6	32.6	16.7	40.2	65.7	-29.53	-27.00	2.5	100	347	
Hori.	17100.000	PK	45.5	41.7	2.7	39.5	50.4	-44.83	-27.00	17.8	100	0	
Vert.	5725.000	PK	56.1	32.6	16.7	40.2	65.2	-30.03	-27.00	3.0	100	102	
Vert.	17100.000	PK	45.6	41.7	2.7	39.5	50.5	-44.73	-27.00	17.7	100	0	

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

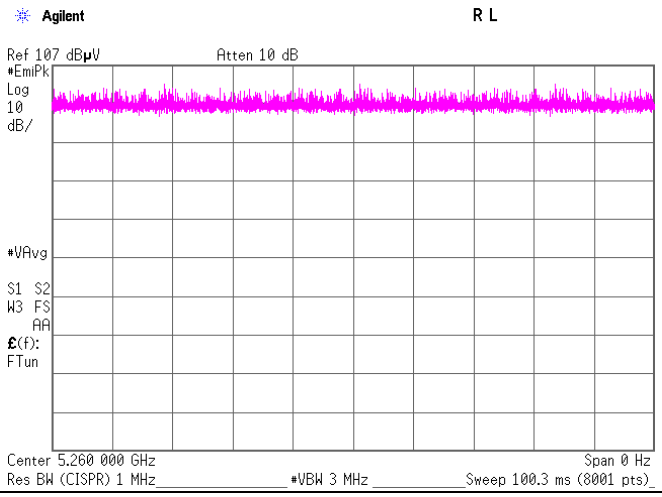
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

*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

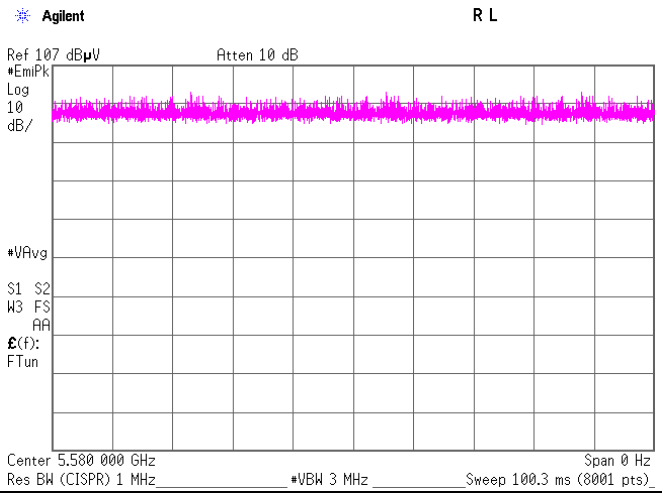
Burst rate confirmation

Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps

W52/W53 band	
Tx2_BurstRate1  	Tx2_BurstRate2

Burst rate confirmation

Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps

W56 band	
Tx2_BurstRate1  	Tx2_BurstRate2

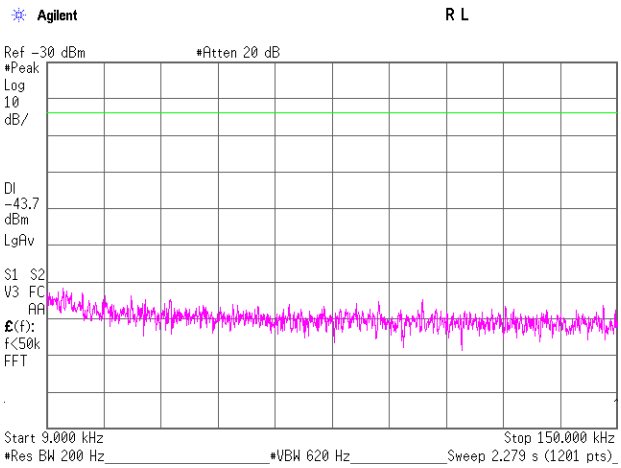
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Spurious emission (Conducted)

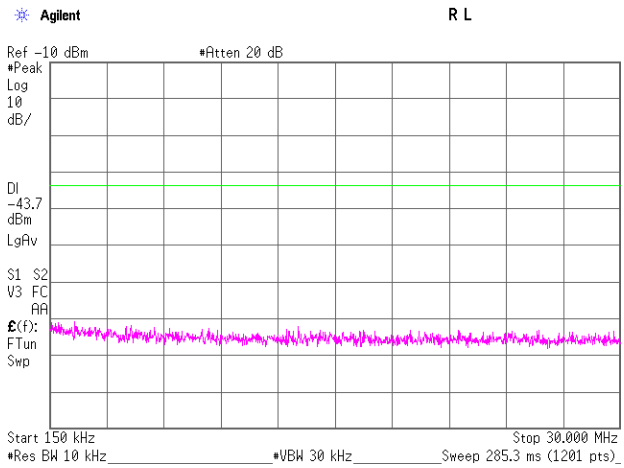
Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps

W52/W53 band, Tx 5260MHz (below 30MHz)

9kHz - 150kHz



150kHz - 30MHz



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]
5260.00	-27.00	2.95	10.00	3.76	-43.71

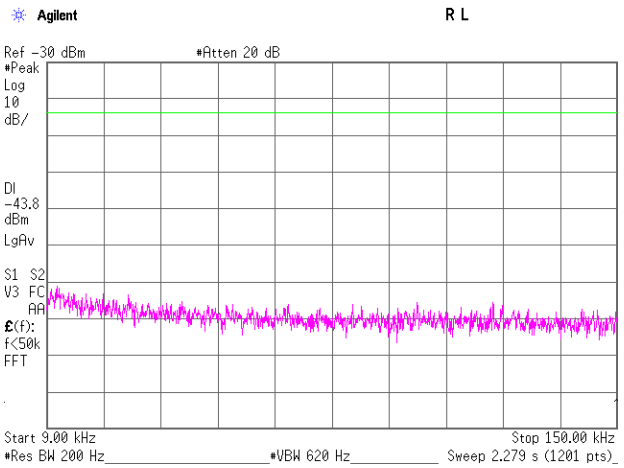
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Spurious emission (Conducted)

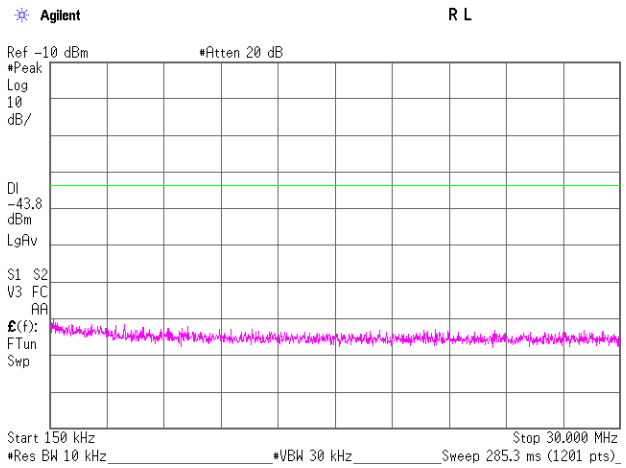
Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps

W56 band, Tx 5500MHz (below 30MHz)

9kHz - 150kHz



150kHz - 30MHz



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]
5500.00	-27.00	3.03	9.98	3.76	-43.77

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Peak Power Spectral Density

(Method: SA-2)

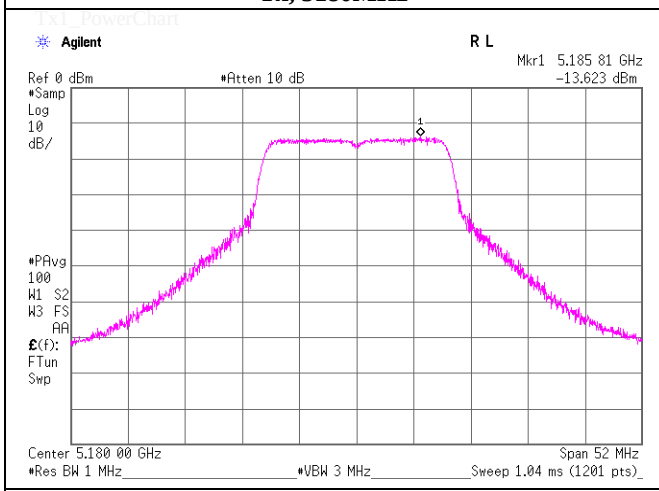
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

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]
5180.0000	5185.81	-13.62	2.90	10.01	0.00		-0.71	4.00	4.71
5200.0000	5203.51	-12.37	2.94	10.00	0.00		0.57	4.00	3.43
5240.0000	5237.96	-11.58	2.95	10.00	0.00		1.37	4.00	2.63

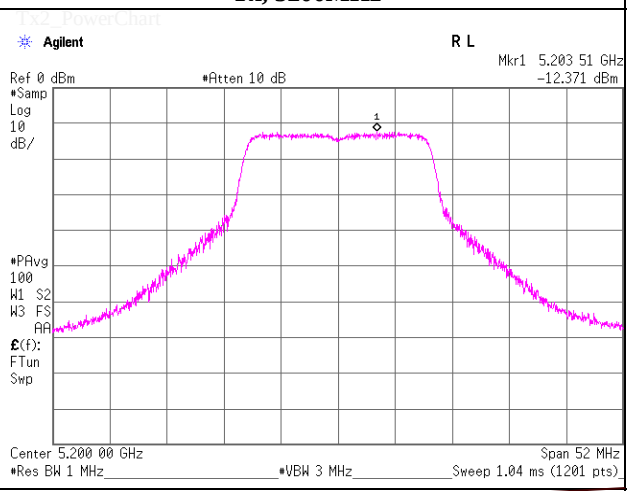
Sample Calculation:

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

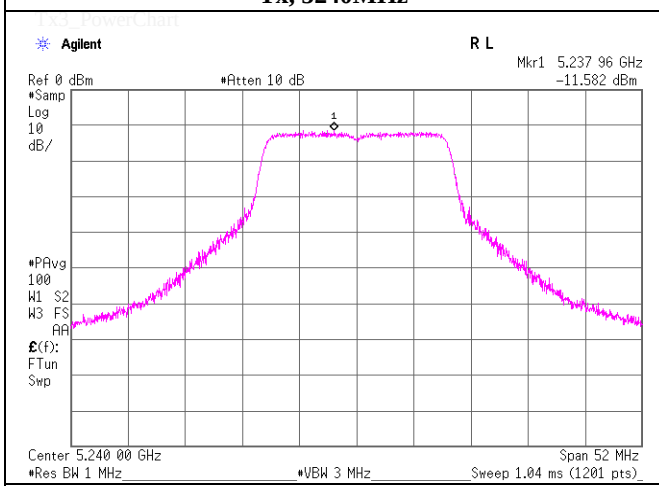
Tx, 5180MHz



Tx, 5200MHz



Tx, 5240MHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Peak Power Spectral Density

(Method: SA-2)

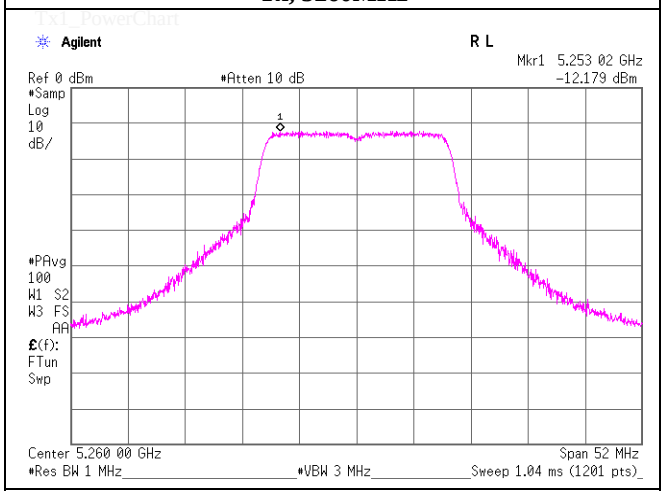
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

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]
5260.0000	5253.02	-12.18	2.95	10.00	0.00		0.77	11.00	10.23
5280.0000	5283.94	-11.73	2.92	10.00	0.00		1.19	11.00	9.81
5320.0000	5317.44	-13.35	2.87	9.99	0.00		-0.49	11.00	11.49

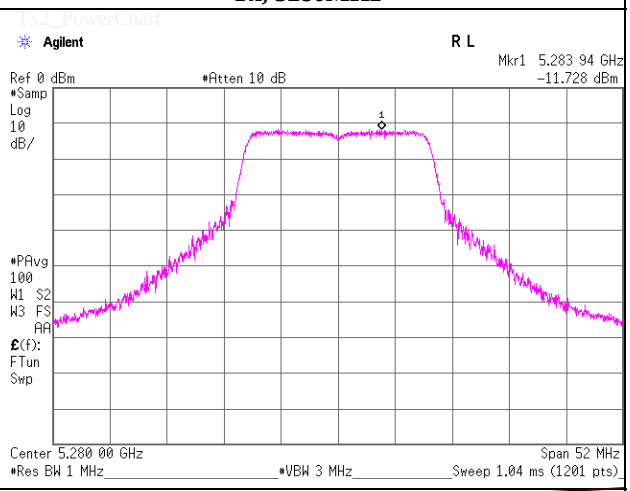
Sample Calculation:

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

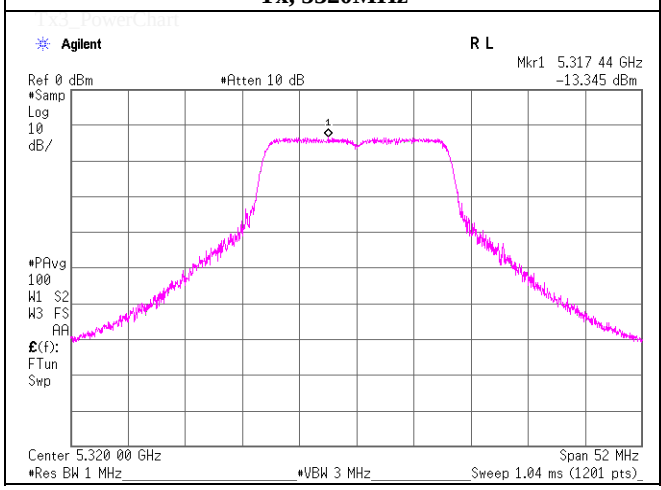
Tx, 5260MHz



Tx, 5280MHz



Tx, 5320MHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Peak Power Spectral Density

(Method: SA-2)

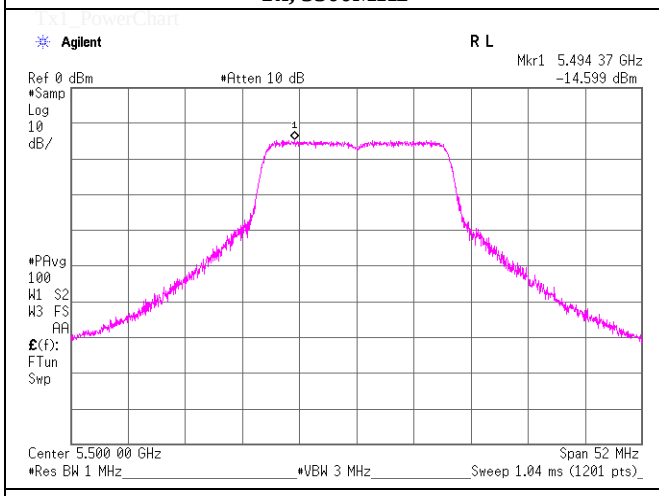
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

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]
5500.0000	5494.37	-14.60	3.03	9.98	0.00		-1.59	11.00	12.59
5580.0000	5585.50	-13.42	2.97	9.98	0.00		-0.47	11.00	11.47
5700.0000	5696.45	-13.28	3.10	9.98	0.00		-0.20	11.00	11.20

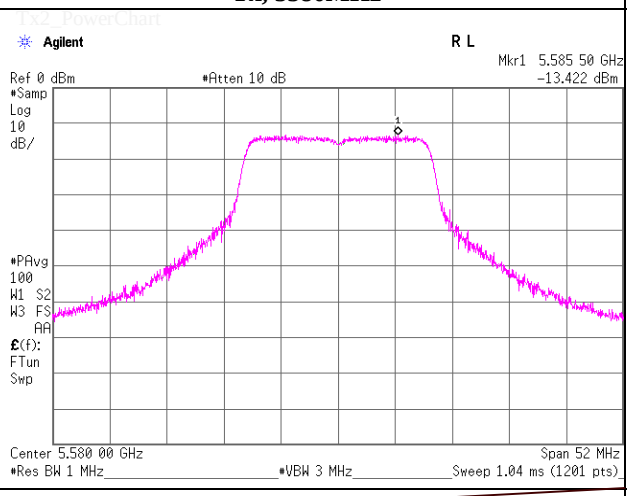
Sample Calculation:

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

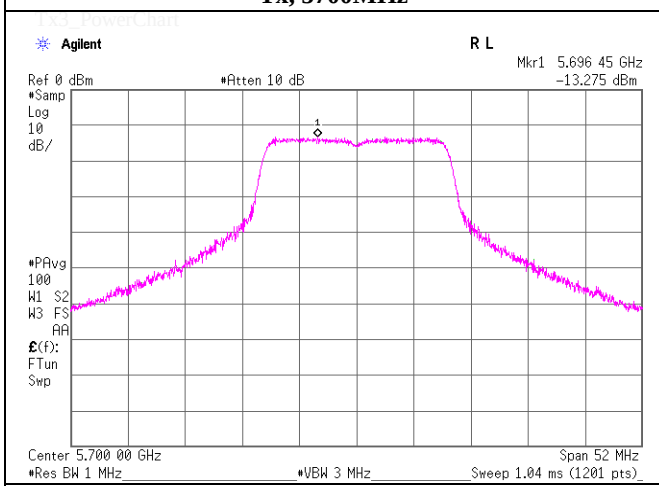
Tx, 5500MHz



Tx, 5580MHz



Tx, 5700MHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Peak Excursion Ratio

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

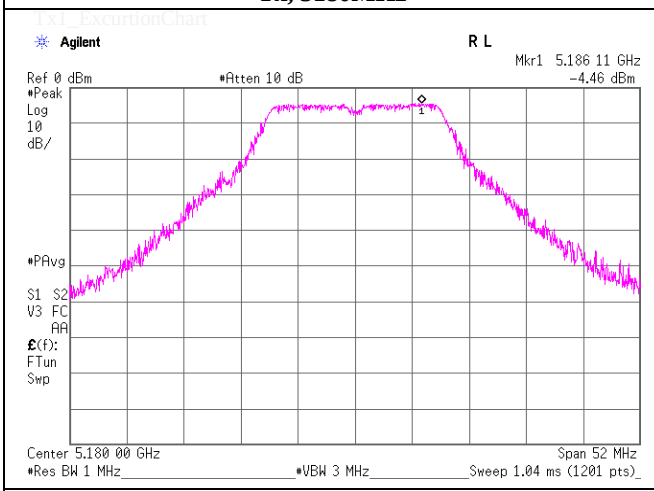
Ch. Freq. [MHz]	Peak Reading [dBm]	Peak Result [dBm]	PPSD Reading [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5180.0000	-4.46	8.45	-13.62	-0.71	9.16	=<13.0	3.84
5200.0000	-4.98	7.96	-12.37	0.57	7.40	=<13.0	5.61
5240.0000	-4.23	8.72	-11.58	1.37	7.36	=<13.0	5.65

*Peak Power Excursion = Peak Result - PPSD Result

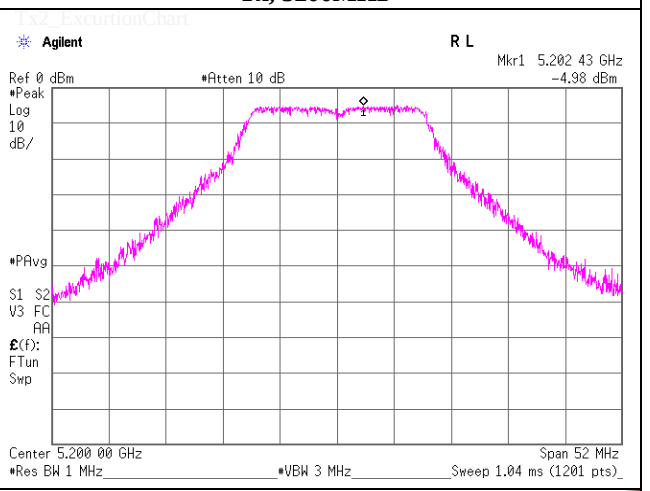
*Peak Result = Peak Reading + Cable Loss + Atten. Loss, PPSD Result = PPSD Reading + Cable Loss + Atten. Loss + Duty factor

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

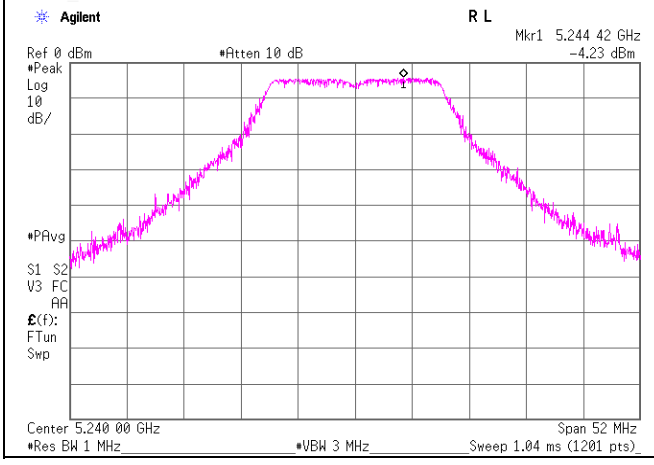
Tx, 5180MHz



Tx, 5200MHz



Tx, 5240MHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Peak Excursion Ratio

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

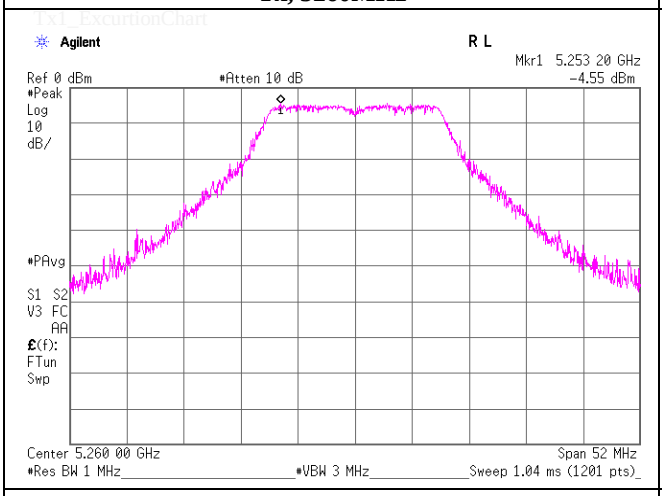
Ch. Freq. [MHz]	Peak Reading [dBm]	Peak Result [dBm]	PPSD Reading [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5260.0000	-4.55	8.40	-12.18	0.77	7.63	=<13.0	5.37
5280.0000	-4.28	8.64	-11.73	1.19	7.45	=<13.0	5.55
5320.0000	-5.76	7.10	-13.35	-0.49	7.59	=<13.0	5.41

*Peak Power Excursion = Peak Result - PPSD Result

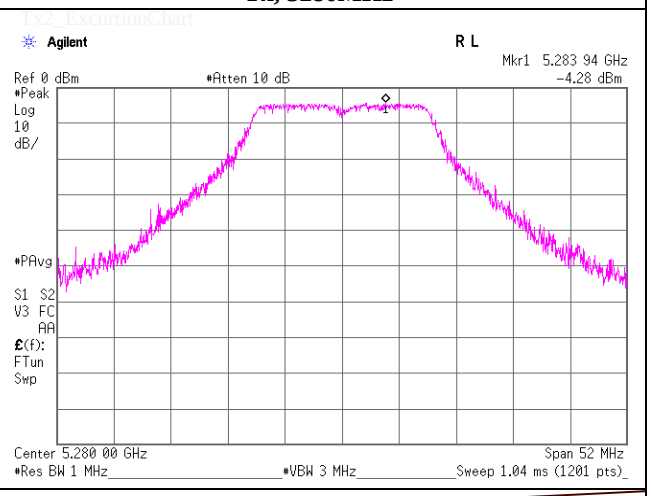
*Peak Result = Peak Reading + Cable Loss + Atten. Loss, PPSD Result = PPSD Reading + Cable Loss + Atten. Loss + Duty factor

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

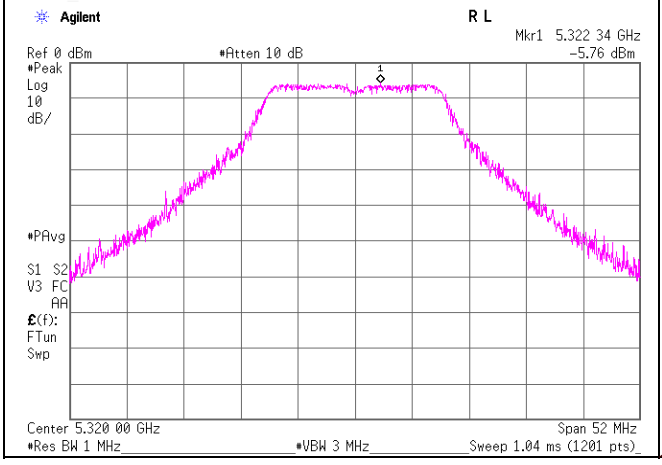
Tx, 5260MHz



Tx, 5280MHz



Tx, 5320MHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Peak Excursion Ratio

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 7, 2013	
Temperature / Humidity	24deg.C , 50%RH	
Engineer	Tatsuya Arai	
Mode	Tx, IEEE802.11a, PN9, worst antenna port Main, worst data mode 6Mbps	

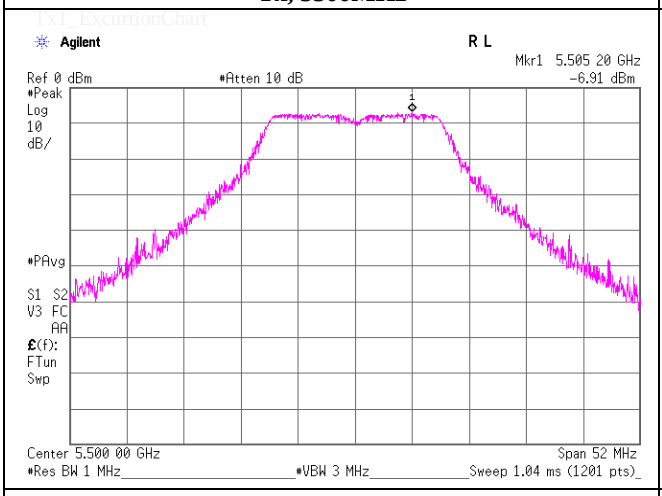
Ch. Freq. [MHz]	Peak Reading [dBm]	Peak Result [dBm]	PPSD Reading [dBm]	PPSD Result [dBm]	Peak Power Excursion [dB]	Limit [dB]	Margin [dB]
5500.0000	-6.91	6.10	-14.60	-1.59	7.69	=<13.0	5.31
5580.0000	-5.52	7.43	-13.42	-0.47	7.90	=<13.0	5.10
5700.0000	-5.59	7.49	-13.28	-0.20	7.68	=<13.0	5.32

*Peak Power Excursion = Peak Result - PPSD Result

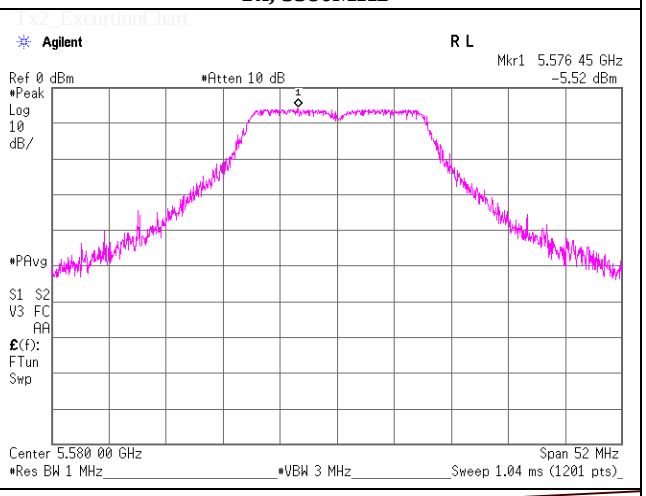
*Peak Result = Peak Reading + Cable Loss + Atten. Loss, PPSD Result = PPSD Reading + Cable Loss + Atten. Loss + Duty factor

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

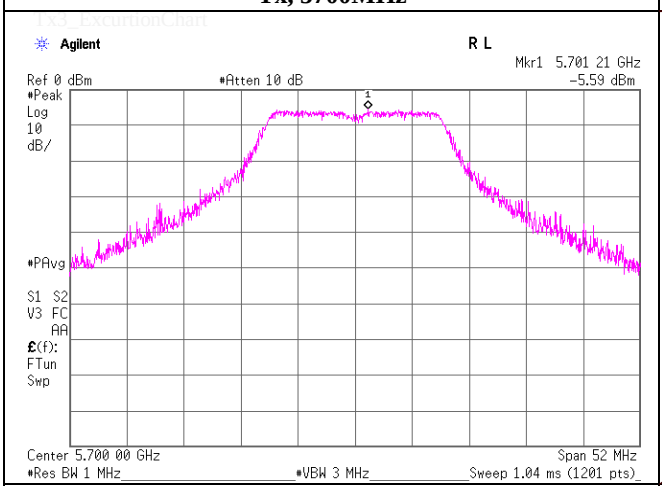
Tx, 5500MHz



Tx, 5580MHz



Tx, 5700MHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

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
SCC-G11	Coaxial Cable	Suhner	SUCOFLEX 102	31595/2	AT	2012/03/12 * 12
SAT10-11	Attenuator	Weinschel Corp.	54A-10	37588	AT	2012/04/06 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT	2013/03/04 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2012/04/06 * 12
SCC-G29	Coaxial Cable	Junkosha	MWX241-01000KM SKMS	SEP-20-12-003	AT	2012/09/26 * 12
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
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2013/02/27 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE	2013/03/27 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE	-
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2012/09/21 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
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
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE	2013/01/08 * 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
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2012/03/30 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2012/03/12 * 12
SHA-06	Horn Antenna	ETS LINDGREN	3160-10	LM3459	RE	2012/03/30 * 12
SAF-10	Pre Amplifier	TOYO Corporation	HAP26-40W	00000010	RE	2012/03/12 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
SCC-G19	Coaxial Cable	Suhner	SUCOFLEX 102A	1188/2A	RE	2012/03/12 * 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: Out of Band Emission (Radiated)
AT: Antenna terminal conducted test