RADIO TEST REPORT

Test Report No. : 10517044H-C-R1

Applicant	:	**silex technology, Inc.**
Type of Equipment	:	**Low power IoT wireless LAN module**
Model No.	:	**SX-ULPAN**
FCC ID	:	**N6C-SXULPAN**
Test regulation	:	**FCC Part 15 Subpart E: 2015**
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 above regulation.
4. The test results in this report are traceable to the national or international standards.
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6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 10517044H-C. 10517044H-C is replaced with this report.

Date of test: November 25, 2014 to January 6, 2015

Representative test engineer:
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Leader
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NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address, http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

REVISION HISTORY

Original Test Report No.: 10517044H-C

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10517044H-C	February 2, 2015	-	-
1	10517044H-C-R1	February 5, 2014	P.6	Correction of FCC Part 15.203/212 Antenna requirement sentence in section 3.2

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SECTION 1: Customer information

Company Name	:	silex technology, Inc.
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Telephone Number	:	+81-774-98-3878
Facsimile Number	:	+81-774-98-3758
Contact Person	:	Toshiro Kometani

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

2.1 Identification of E.U.T.

Type of Equipment	:	Low power loT wireless LAN module
Model No.	:	SX-ULPAN
Serial No.	:	Refer to Clause 5.2
Rating	:	DC3.3V
Receipt Date of Sample	:	September 22, 2014
Country of Mass-production	:	Japan
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model No: SX-ULPAN (referred to as the EUT in this report) is the Low power loT wireless LAN module.

General Specification

Clock frequency(ies) in the system	:	40MHz

Radio Specification

Radio Type	:	Transceiver
Method of Frequency Generation	:	Synthesizer
Power Supply (inner)	:	DC1.2V

Radio Specification

	IEEE802.11b	**IEEE802.11g**	**IEEE802.11a**	**IEEE802.11n (20 M band)**
Frequency of operation	2412-2462MHz	2412-2462MHz	5180-5240MHz *1) 5260-5320MHz *1) 5500-5700MHz *1) 5745-5825MHz *1)	2412-2462MHz 5180-5240MHz *1) 5260-5320MHz *1) 5500-5700MHz *1) 5745-5825MHz *1)
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)	
Channel spacing	5MHz		20MHz	2.4GHz band 5MHz 5GHz band 20MHz
Antenna type	External printed PCB antenna / On board printed PCB antenna			
Antenna Gain: G_{ANT}	External printed PCB antenna 1.8dBi@2.4GHz band, 3.9dBi@5GHz band On board printed PCB antenna 2.1dBi@2.4GHz band, 2.2dBi@5GHz band			
Antenna Connector type	U.FL Alternative connector			

*1) 5180-5240MHz, 5260-5320MHz, 5500-5700MHz and 5745-5825MHz are applied for this test report.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart E: 2015, final revised on January 21, 2015
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements

* The revision on January 21, 2015 does not affect the test specification applied to the EUT.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC :**ANSI C63.4:2009	**FCC:** 15.407(b)(6) / 15.207	**QP** 20.9dB, 0.39070MHz, L **AV** 23.1dB, 0.38635MHz, N	Complied	-
	IC: RSS-Gen 8.8	**IC:** RSS-Gen 8.8			
26dB Emission Bandwidth	**FCC :**ANSI C63.4:2009, FCC KDB Publication Number 789033	**FCC :** 15.407(a)(1)(2)(3)	See data	N/A	Conducted
	IC: -	**IC:** -			
Maximum Conducted Output Power	**FCC :**ANSI C63.4:2009, FCC KDB Publication Number 789033	**FCC :** 15.407(a)(1)(2)(3)		Complied	Conducted
	IC: -	**IC:** RSS-210 A9.2(1)(2)(3)			
Maximum Power Spectral Density	**FCC :**ANSI C63.4:2009, FCC KDB Publication Number 789033	**FCC :** 15.407(a)(1)(2)(3)		Complied	Conducted
	IC: -	**IC:** RSS-210 A9.2(1)(2)(3)			
Spurious Emission Restricted Band Edge	**FCC:** ANSI C63.4:2009	**FCC :** 15.407(b), 15.205 and 15.209	1.7dB 11570.000MHz, AV, Vert.	Complied	Conducted / Radiated
	IC: -	**IC:** RSS-210 A.9.2(1)(2)(3)			
20dB Emission Bandwidth	**FCC :**ANSI C63.4:2009	**FCC :** 15.215(c)	See data	Complied	Conducted
6dB Emission Bandwidth	**FCC :**ANSI C63.4:2009	**FCC :** 15.407(e)	See data	Complied	Conducted

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
* For DFS tests, please see the test report number 10517044H-E-R1 issued by UL Japan, Inc.

FCC 15.31 (e)
The RF Module has own regulator.
The RF Module is constantly provided voltage through own regulator regardless of input voltage (DC3.3V).
Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement
The EUT has a unique antenna connector (U.FL on the Module).
Therefore the equipment complies with the requirement of 15.203/212.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Band Width	RSS-Gen 6.6	RSS-210 A9.2 (1)(2)(3)	N/A	N/A	Conducted

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

3.4 Uncertainty

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

Test room (semi-anechoic chamber)	Conducted emission (±dB)
	150kHz-30MHz
No.1	3.5dB
No.2	3.5dB
No.3	3.6dB
No.4	3.5dB

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(±dB)				(1m*)(±dB)		(0.5m*)(±dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.0dB	5.1dB	5.0dB	5.1dB	6.0dB	4.9dB	4.3dB
No.2	3.9dB	5.2dB	5.0dB	4.9dB	5.9dB	4.7dB	4.2dB
No.3	4.3dB	5.1dB	5.2dB	5.2dB	6.0dB	4.8dB	4.2dB
No.4	4.6dB	5.2dB	5.0dB	5.2dB	6.0dB	5.7dB	4.2dB

*3m/1m/0.5m = Measurement distance

Antenna terminal conducted emission and Power density (±dB)			Antenna terminal conducted emission (±dB)		Channel power (±dB)
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.5dB	1.7dB	2.8dB	2.8dB	2.9dB	2.6dB

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

Radiated emission test(3m)
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

UL Japan, Inc. Ise EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
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	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	4.0 x 4.5 x 2.7m	4.0 x 4.5 m	-
No.6 measurement room	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	8.8 x 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	6.2 x 4.7 x 3.0m	4.8 x 4.6m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Modes

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.

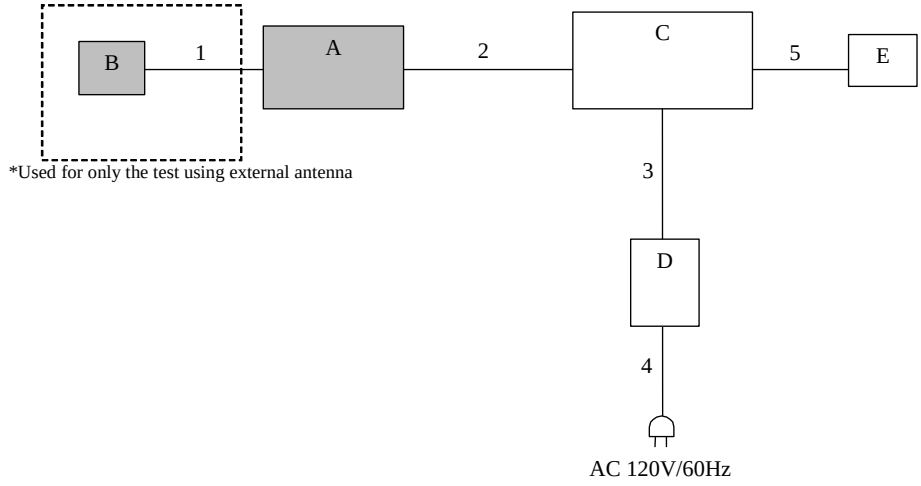
Mode	Remarks*
IEEE 802.11a (11a)	6Mbps, PN9
IEEE 802.11n 20MHz BW (11n-20)	MCS 2, PN9
*The worst condition was determined based on the test result of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; - Power Setting: 11a: 5180-5240MHz 11.0, 5260-5320MHz 10.5, 5500-5700MHz 7.5, 5745-5825MHz 5.0 11n-20: 5180-5240MHz 11.0, 5260-5320MHz 10.5, 5500-5700MHz 7.5, 5745-5825MHz 5.0 - Software: ART2 Ver.3.1 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

*The details of Operating mode(s)

Test Item	Operating Mode	Tested Frequency			
		Lower Band	Middle Band	Additional Band	Upper Band
Conducted emission	11a Tx *1)	5180MHz *1)	-	-	-
26dB Emission Bandwidth	11a Tx 11n-20 Tx	-	5260MHz 5300MHz 5320MHz	5500MHz 5580MHz 5700MHz	-
99% Occupied Bandwidth, Maximum Conducted Output Power, Maximum Power Spectral Density	11a Tx 11n-20 Tx	5180MHz 5220MHz 5240MHz	5260MHz 5300MHz 5320MHz	5500MHz 5580MHz 5700MHz	5745MHz 5785MHz 5825MHz
20dB Bandwidth	11a Tx 11n-20 Tx	5180MHz 5240MHz	5260MHz 5320MHz	5500MHz 5700MHz	5745MHz 5825MHz
Radiated Spurious Emission (Below 1GHz)	11a Tx	5180MHz	-	-	5825MHz
Radiated Spurious Emission (Above 1GHz)	11a Tx	5180MHz 5240MHz	5320MHz	5500MHz 5580MHz 5700MHz	5745MHz 5785MHz 5825MHz
	11n-20 Tx	5180MHz	5320MHz	5500MHz 5700MHz	5745MHz 5825MHz
Conducted Spurious Emission	11a Tx 11n-20 Tx	5180MHz *1)	-	-	-
6dB Bandwidth	11a Tx 11n-20 Tx	-	-	-	5745MHz 5785MHz 5825MHz

*1) The operating mode and tested frequency were tested as a representative, because it had the highest power at antenna terminal test.

4.2 Configuration and peripherals



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Low power loT wireless LAN module	SX-ULPAN	ES2-15	silex technology, Inc.	EUT
B	Antenna	Unictron	AA258	silex technology, Inc.	EUT
C	Laptop PC	E6510	SX00804	DELL	-
D	AC Adapter	LA90PE0-01	CN-03T6XF-71615-1AK0927-A001	DELL	-
E	Mouse	M056UC	F19010K9	DELL	*1)

*1) Used for Conducted emission test only

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna Cable	0.15	Shielded	Shielded	-
2	USB Cable	1.5	Shielded	Shielded	-
3	DC Cable	1.8	Shielded	Shielded	-
4	AC Cable	0.9	Unshielded	Unshielded	-
5	Mouse Cable	1.8	Shielded	Shielded	*1)

*1) Used for Conducted emission test only

SECTION 5: Conducted Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane.
The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and 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 a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)
I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.
The EUT was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

Detector	**: QP and CISPR AV**
Measurement range	**: 0.15-30MHz**
Test data	**: APPENDIX**
Test result	**: Pass**

SECTION 6: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 0.8m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.
The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Below 1GHz
The result also satisfied with the general limits specified in section 15.209(a).

Above 1GHz

Inside of restricted bands(Section 15.205):	Apply to limit in the Section 15.209(a).
Outside of the restricted bands:	Apply to limit 68.2dBuV/m(–27dBm e.i.r.p.*) in the Section 15.407(b)(1)(2)(3). Apply to limit 68.2dBuV/m(–27dBm e.i.r.p.*) or 78.2dBuV/m(-17dBm e.i.r.p.*) in the Section 15.407(b).
Restricted bandedge:	Apply to limit in the Section 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

$$E = \frac{1000000\sqrt{30P}}{3} \text{ (uV/m)} \qquad \text{:P is the e.i.r.p. (Watts)}$$

Test Antennas are used as below;

Frequency	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Biconical	Logperiodic	Horn

Frequency	Below 1GHz	Above 1GHz	
Instrument used	Test Receiver	Spectrum Analyzer	
Detector	QP	PK	AV
IF Bandwidth	BW 120kHz(T/R)	RBW: 1MHz VBW: 3MHz	Method AD *1) RBW: 1MHz VBW: 3MHz Detector: Power Averaging (RMS)
Test Distance	3m	3m (below 10GHz), 1m*2) (above 10GHz), 0.5m*3) (above 26.5GHz)	

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E (Issued on June 6, 2014)".
*2) Distance Factor: 20 x log (3.0m/1.0m) = 9.5dB
*3) Distance Factor: 20 x log (3.0m/0.5m) = 15.6dB

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

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

Measurement range : 30M-40GHz
Test data : APPENDIX
Test result : Pass

SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port with Spectrum Analyzer.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used and Test method
26dB Bandwidth	40MHz	Close to 1% of EBW	Greater than RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	1.5 times to 5.0 times the OBW	1% to 5% of the OBW	≥ 3 RBW	Auto	Peak	Max Hold *1)	Spectrum Analyzer
20dB Bandwidth	40MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
6dB Bandwidth	40MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Conducted Output Power	-	-	-	Auto	Averaging	-	Power Meter (Sensor: 80MHz BW) (Method PM-G)
Maximum Power Spectral Density	40MHz	1MHz or 500kHz *2)	3MHz or 1.5MHz	Auto	Sample Power Averaging (200 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3)	9kHz-150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz-30MHz	9.1kHz	27kHz				

*The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E (Issued on June 6, 2014)".

*1) The measurement was performed with Max Hold since the duty cycle was not 100%.
*2) FCC standard says that RBW is set to be 500kHz for 5.725-5850GHz, but it is not possible with spectrum analyzer, so 10log(500kHz/470kHz) was added to the test result.
*3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents. Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=9.1kHz)

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Data of EMI test

Conducted Emission

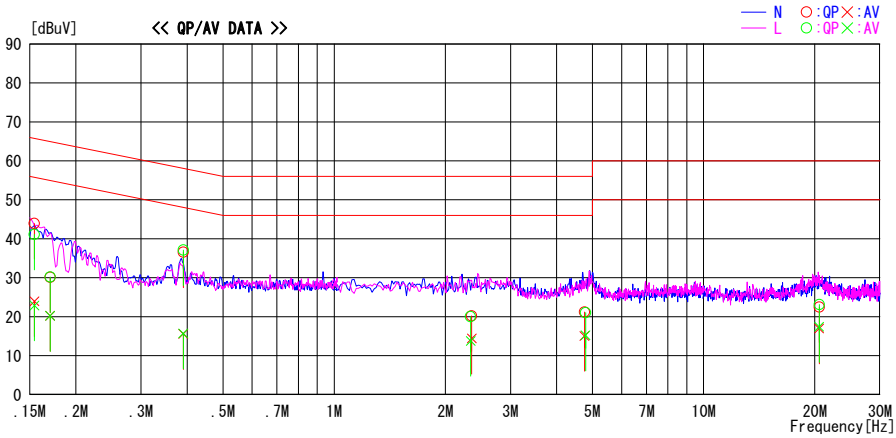
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2014/12/25

Report No. : 10517044H
Power : AC 120V / 60Hz
Temp./Humi. : 23deg. C / 29% RH
Engineer : Tsubasa Takayama

Mode / Remarks : Tx 11a 5180MHz External antenna

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase
	QP	AV	Factor	QP	AV	QP	AV	QP	AV	
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
0.15435	30.7	10.8	13.2	43.9	24.0	65.8	55.8	21.9	31.8	N
0.17030	16.9	7.0	13.2	30.1	20.2	64.9	54.9	34.8	34.7	N
0.39070	23.4	2.4	13.2	36.6	15.6	58.0	48.0	21.4	32.4	N
2.35562	6.7	0.9	13.5	20.2	14.4	56.0	46.0	35.8	31.6	N
4.75917	7.4	1.3	13.8	21.2	15.1	56.0	46.0	34.8	30.9	N
20.54311	7.6	2.1	14.9	22.5	17.0	60.0	50.0	37.5	33.0	N
0.15435	27.9	9.7	13.2	41.1	22.9	65.8	55.8	24.7	32.9	L
0.17030	17.0	7.0	13.2	30.2	20.2	64.9	54.9	34.7	34.7	L
0.39070	23.9	2.5	13.2	37.1	15.7	58.0	48.0	20.9	32.3	L
2.34050	6.5	0.3	13.5	20.0	13.8	56.0	46.0	36.0	32.2	L
4.78941	7.2	1.4	13.8	21.0	15.2	56.0	46.0	35.0	30.8	L
20.54311	8.2	2.5	14.9	23.1	17.4	60.0	50.0	36.9	32.6	L

CHART : WITH FACTOR, Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN + CABLE)
Except for the above table : adequate margin data below the limits.

Conducted Emission

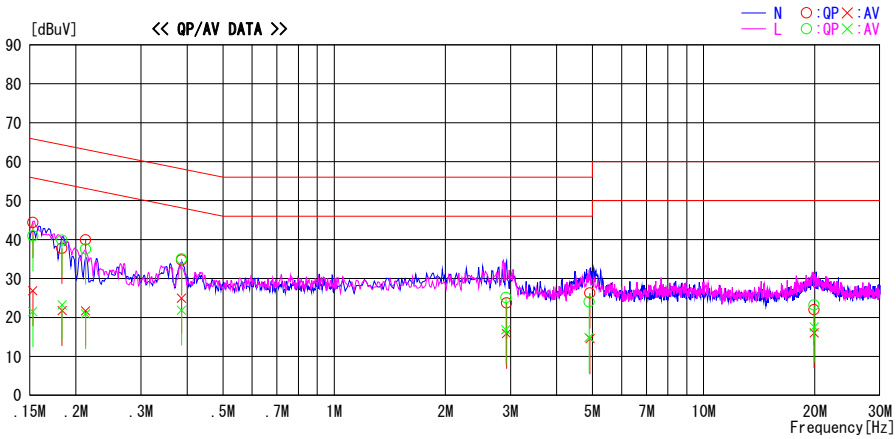
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2014/12/25

Report No. : 10517044H
Power : AC 120V / 60Hz
Temp./Humi. : 23deg. C / 29% RH
Engineer : Tsubasa Takayama

Mode / Remarks : Tx 11a 5180MHz Internal antenna

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase
	QP	AV	Factor	QP	AV	QP	AV	QP	AV	
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
0.15290	31.2	13.7	13.2	44.4	26.9	65.8	55.8	21.4	28.9	N
0.18335	24.5	8.6	13.2	37.7	21.8	64.3	54.3	26.6	32.5	N
0.21235	26.7	8.5	13.2	39.9	21.7	63.1	53.1	23.2	31.4	N
0.38635	21.5	11.8	13.2	34.7	25.0	58.1	48.1	23.4	23.1	N
2.93005	10.2	2.4	13.5	23.7	15.9	56.0	46.0	32.3	30.1	N
4.92546	12.5	0.8	13.8	26.3	14.6	56.0	46.0	29.7	31.4	N
19.90819	7.2	1.3	14.8	22.0	16.1	60.0	50.0	38.0	33.9	N
0.15290	27.7	8.3	13.2	40.9	21.5	65.8	55.8	24.9	34.3	L
0.18335	26.6	10.0	13.2	39.8	23.2	64.3	54.3	24.5	31.1	L
0.21235	24.4	7.8	13.2	37.6	21.0	63.1	53.1	25.5	32.1	L
0.38635	21.8	8.7	13.2	35.0	21.9	58.1	48.1	23.1	26.2	L
2.91494	11.6	3.4	13.5	25.1	16.9	56.0	46.0	30.9	29.1	L
4.89522	10.2	1.1	13.8	24.0	14.9	56.0	46.0	32.0	31.1	L
19.90819	8.4	2.8	14.8	23.2	17.6	60.0	50.0	36.8	32.4	L

CHART : WITH FACTOR, Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN + CABLE)
Except for the above table : adequate margin data below the limits.

26dB Emission Bandwidth and 99% Occupied Bandwidth

Test place	Ise EMC Lab. No.6 Measurement Room	
Report No.	10512074H	
Date	11/25/2014	11/27/2014
Temperature/ Humidity	21deg. C / 52% RH	24deg. C / 46% RH
Engineer	Satofumi Matsuyama	Satofumi Matsuyama
Mode	11a Tx / 11n-20 Tx	

11a

Frequency [MHz]	26dB Emission Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Limit [MHz]
5180	-	16.7404	-
5220	-	16.7446	-
5240	-	16.7092	-
5260	20.633	16.7308	-
5300	20.411	16.7079	-
5320	20.071	16.8203	-
5500	19.818	16.6590	-
5580	19.518	16.6570	-
5700	19.839	16.7175	-
5745	-	16.6243	-
5785	-	16.6853	-
5825	-	16.6608	-

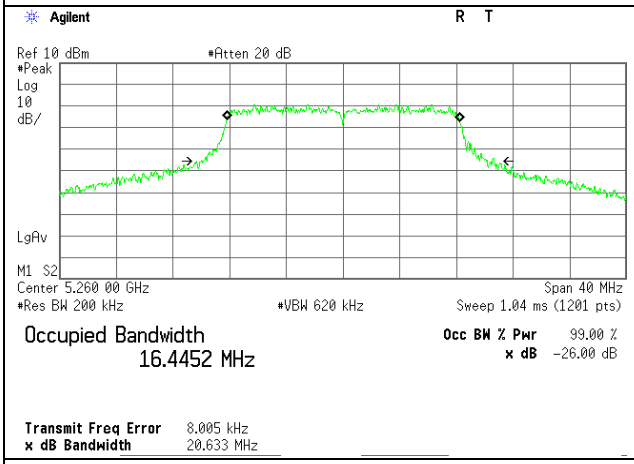
11n-20

Frequency [MHz]	26dB Emission Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Limit [MHz]
5180	-	17.7510	-
5220	-	17.7573	-
5240	-	17.8047	-
5260	20.475	17.7663	-
5300	20.552	17.7991	-
5320	20.490	17.7877	-
5500	20.595	17.7777	-
5580	20.520	17.7566	-
5700	20.185	17.7413	-
5745	-	17.7259	-
5785	-	17.7719	-
5825	-	17.7469	-

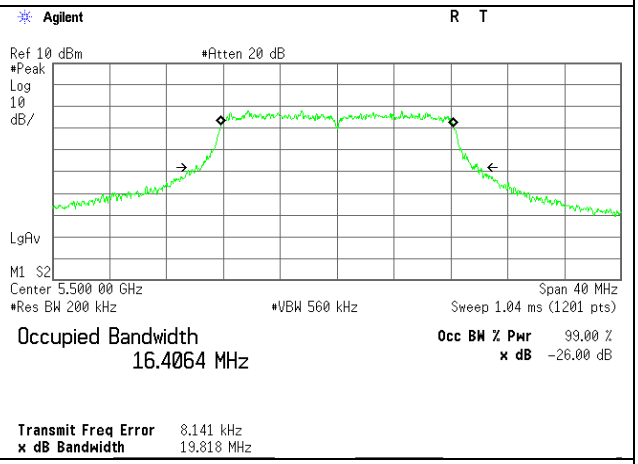
26dB Emission Bandwidth

11a

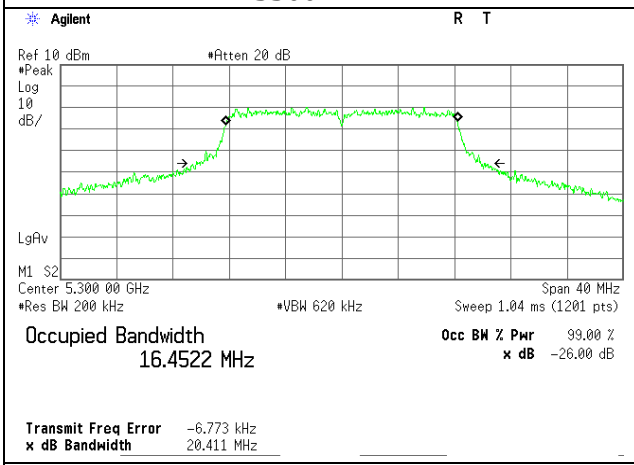
5260MHz



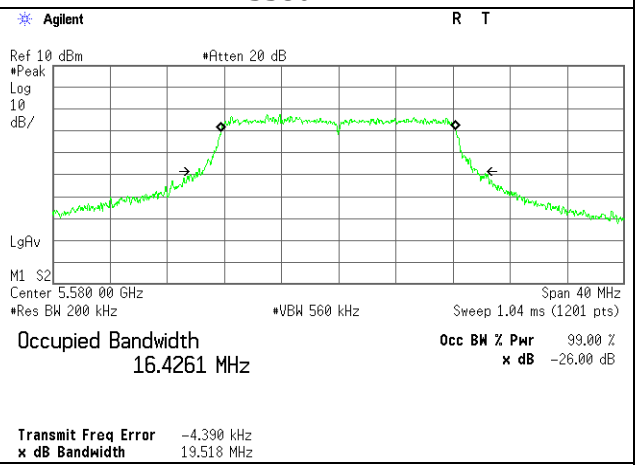
5500MHz



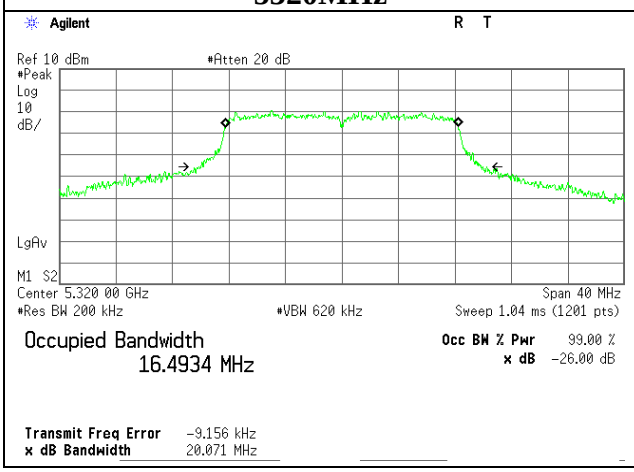
5300MHz



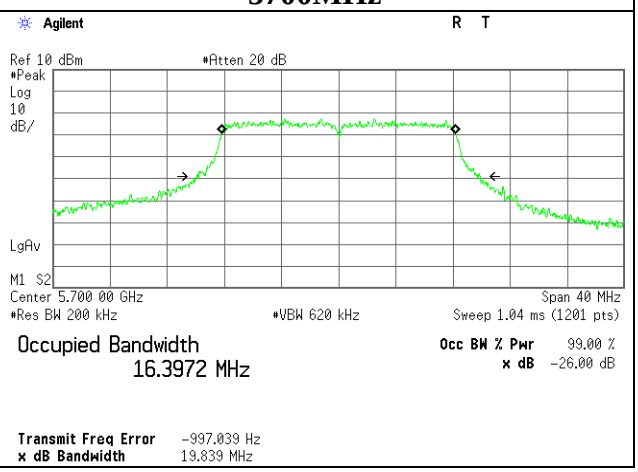
5580MHz



5320MHz



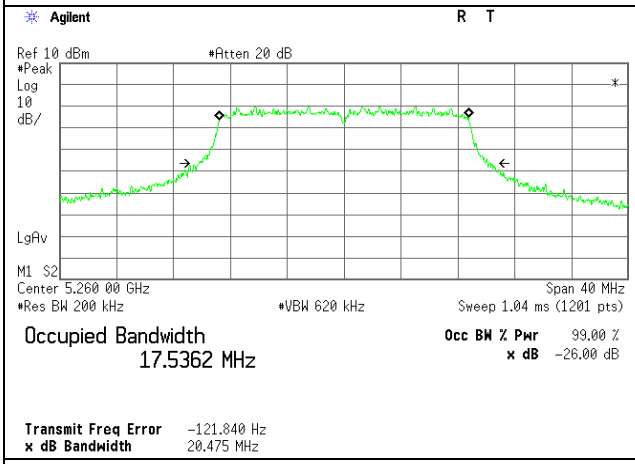
5700MHz



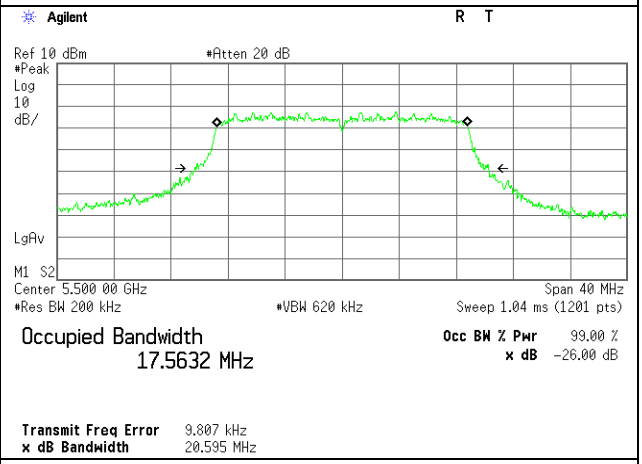
26dB Emission Bandwidth

11n-20

5260MHz



5500MHz



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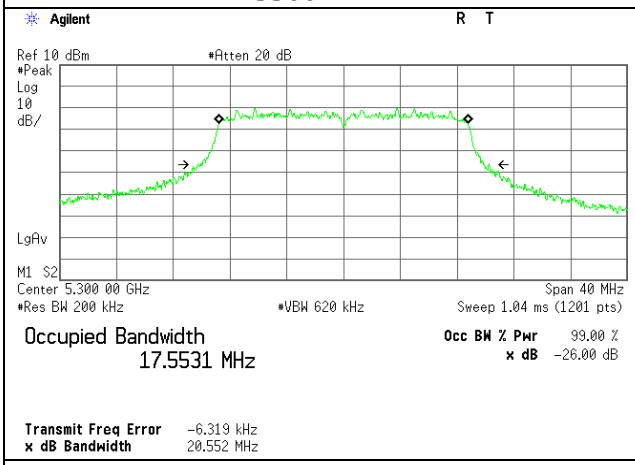
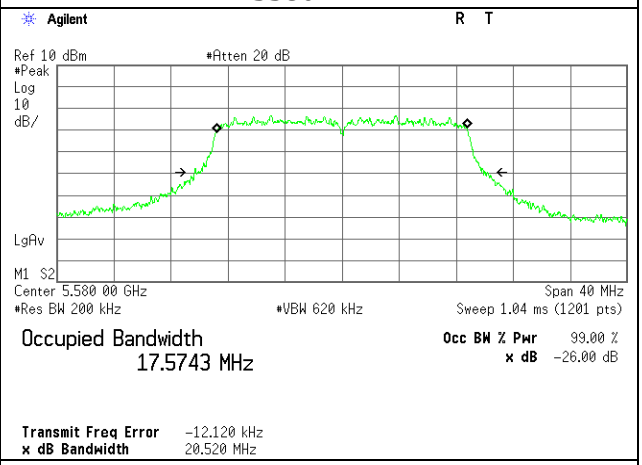
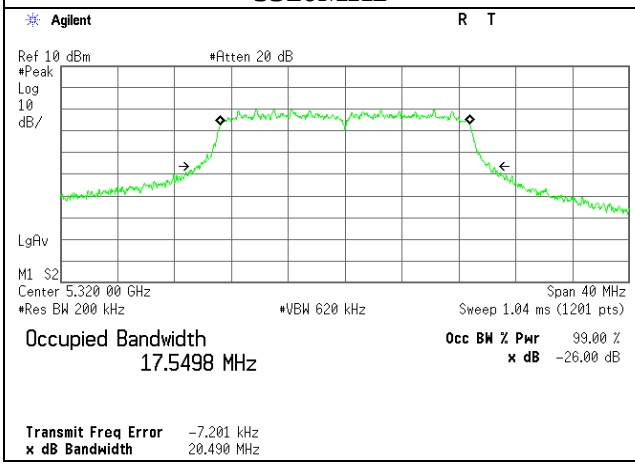


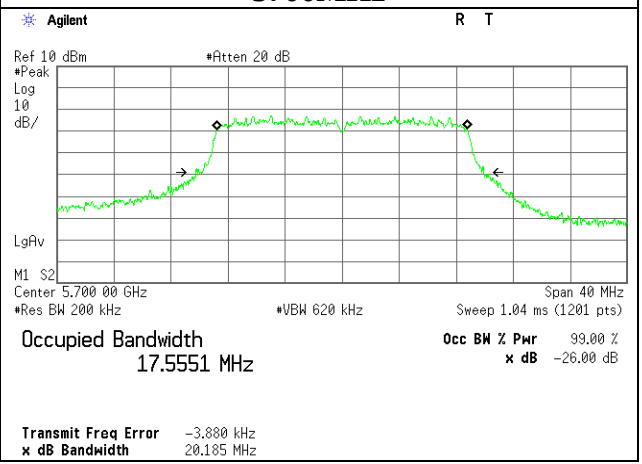
5580MHz



5320MHz



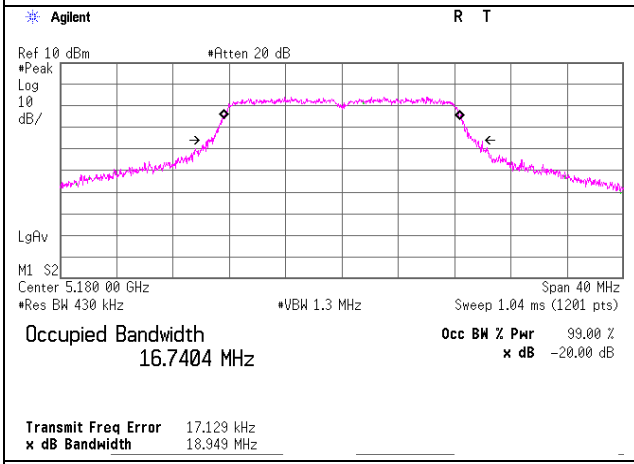
5700MHz



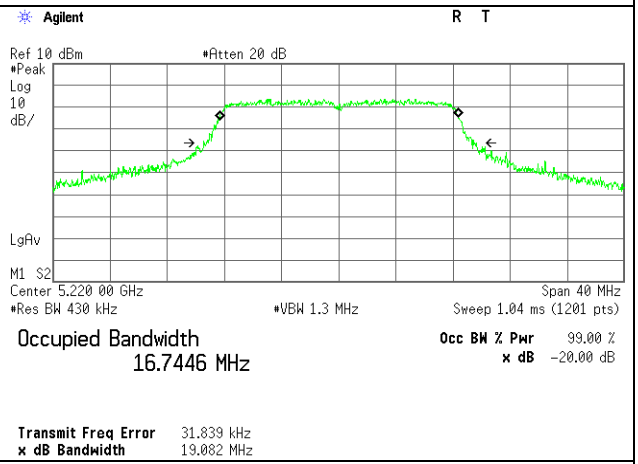
99% Occupied Bandwidth

11a

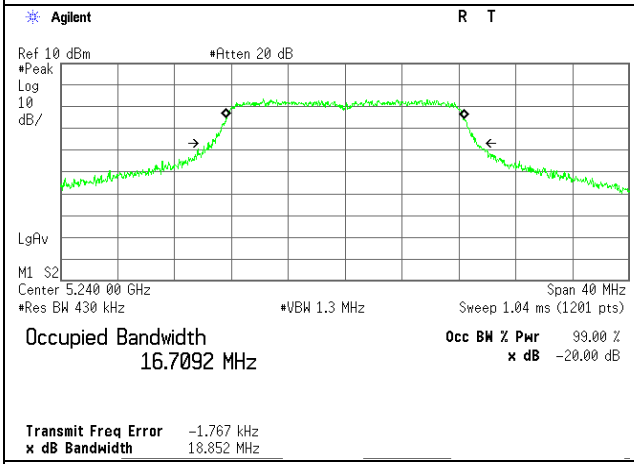
5180MHz



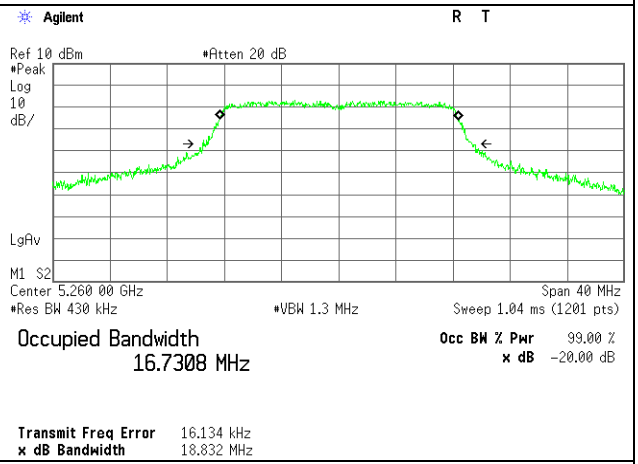
5220MHz



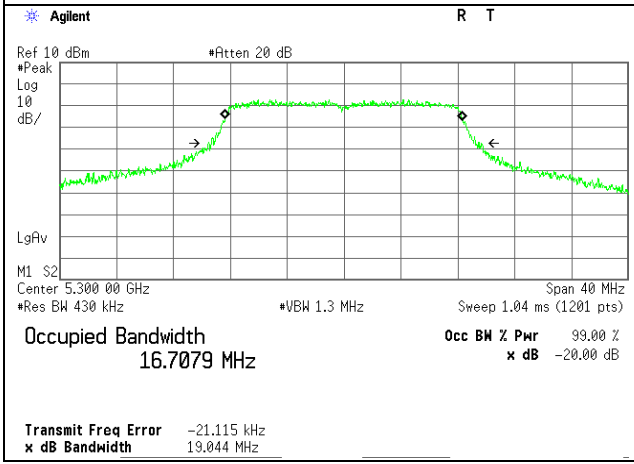
5240MHz



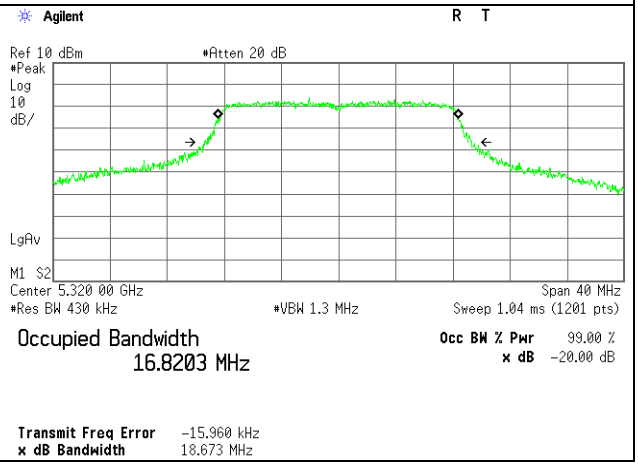
5260MHz



5300MHz



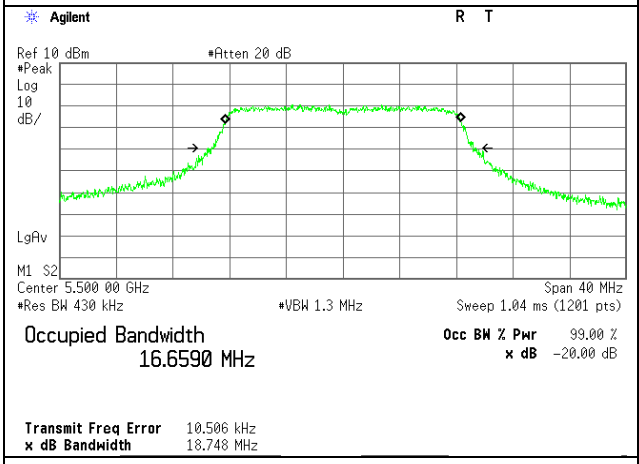
5320MHz



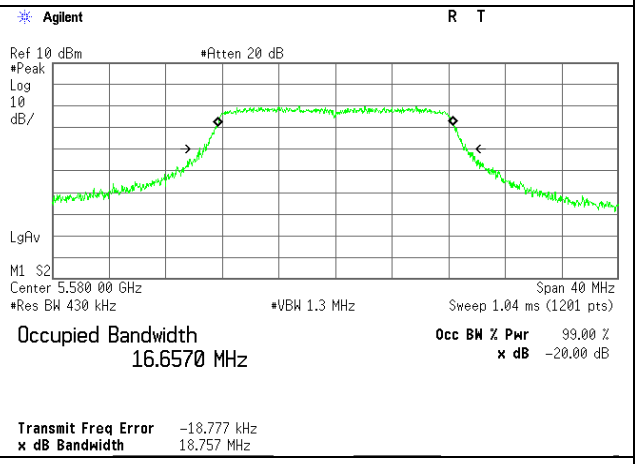
99% Occupied Bandwidth

11a

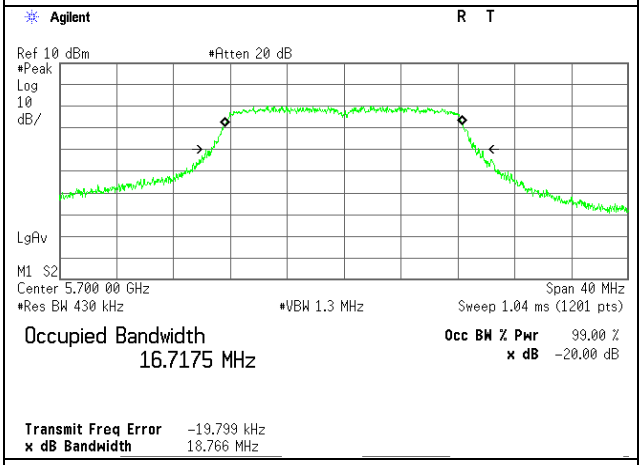
5500MHz



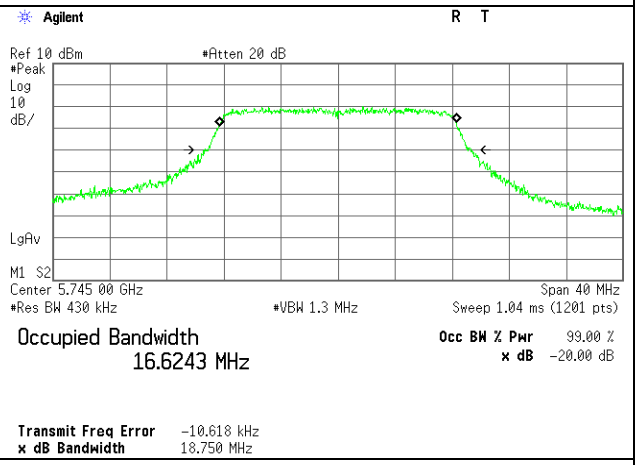
5580MHz



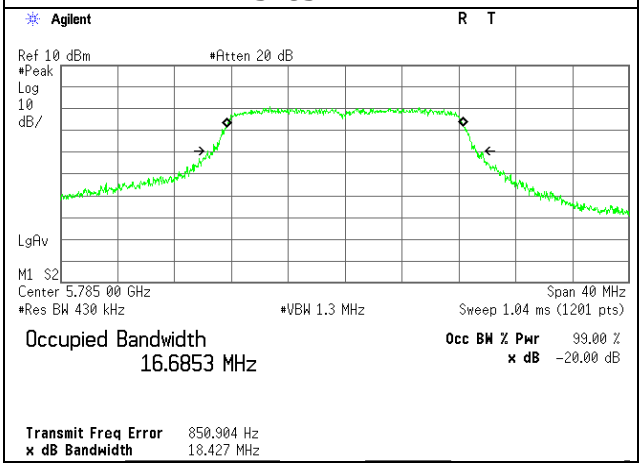
5700MHz



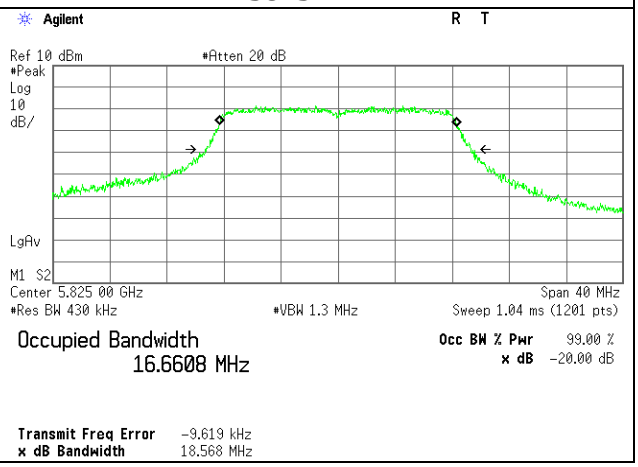
5745MHz



5785MHz



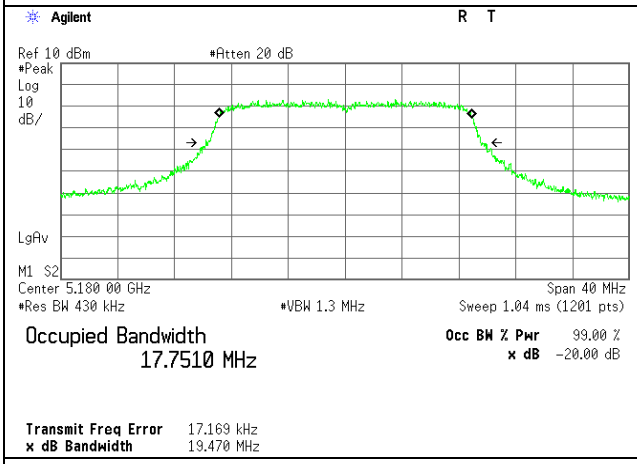
5825MHz



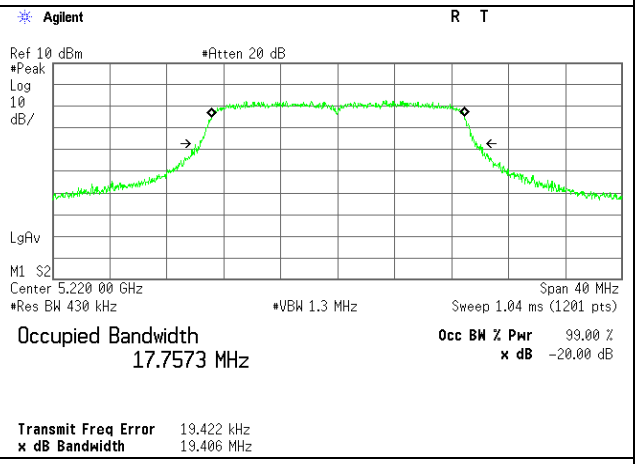
99% Occupied Bandwidth

11n-20

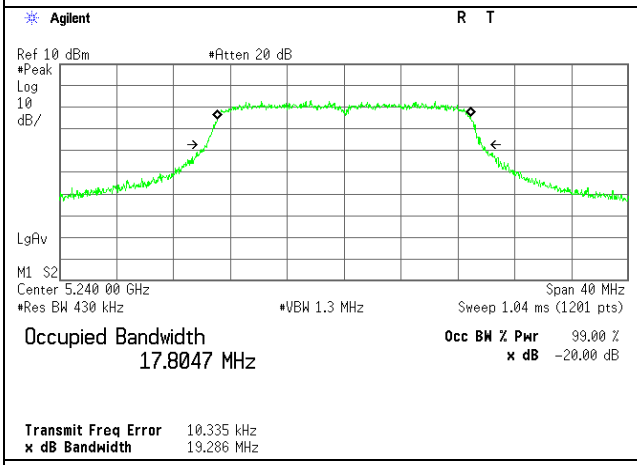
5180MHz



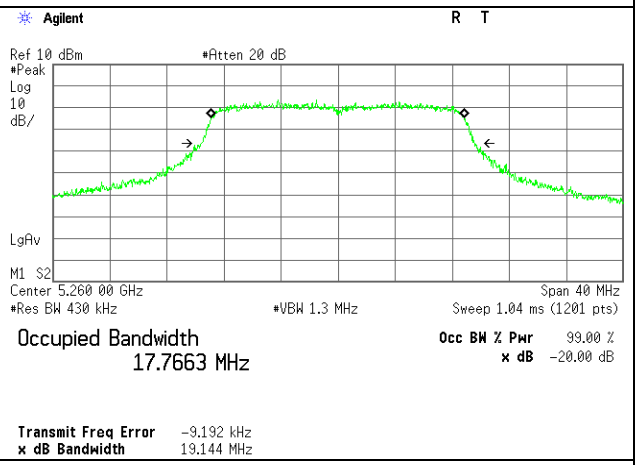
5220MHz



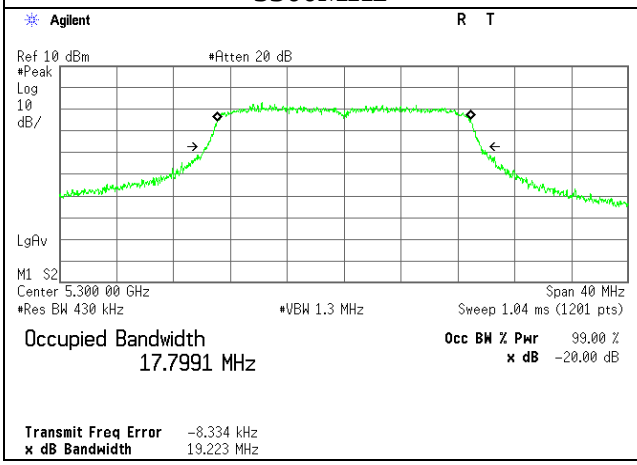
5240MHz



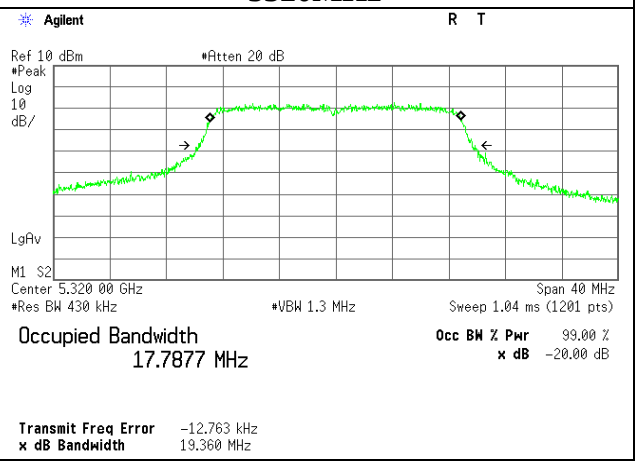
5260MHz



5300MHz



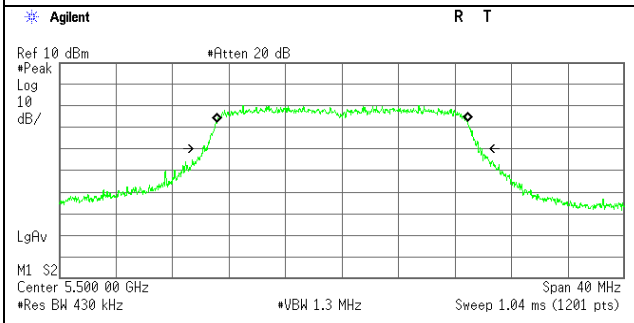
5320MHz



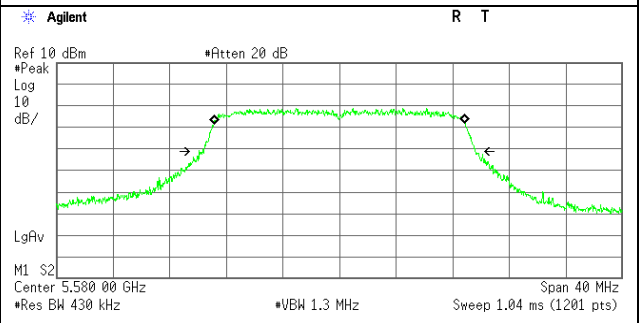
99% Occupied Bandwidth

11n-20

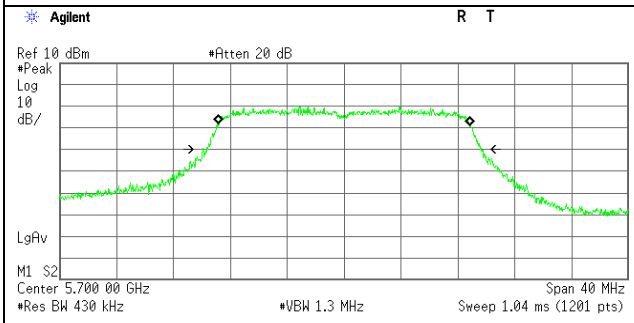
5500MHz



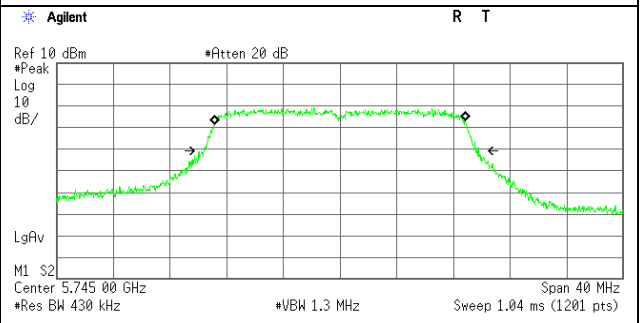
5580MHz



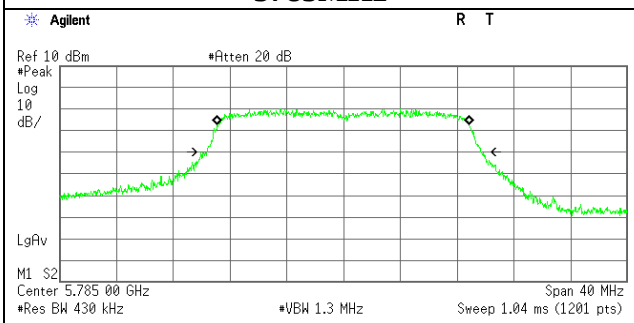
5700MHz



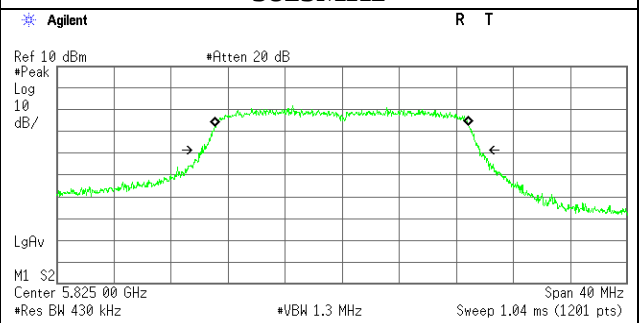
5745MHz



5785MHz



5825MHz



20dB Bandwidth

Test place	Ise EMC Lab. No.6 Measurement Room	
Report No.	10512074H	
Date	11/25/2014	11/27/2014
Temperature/ Humidity	21deg. C / 52% RH	24deg. C / 46% RH
Engineer	Satofumi Matsuyama	Satofumi Matsuyama
Mode	11a Tx / 11n-20 Tx	

11a

Frequency [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
5180	17.250	-
5240	17.533	-
5260	17.277	-
5320	17.353	-
5500	17.151	-
5700	17.346	-
5745	17.252	-
5825	17.368	-

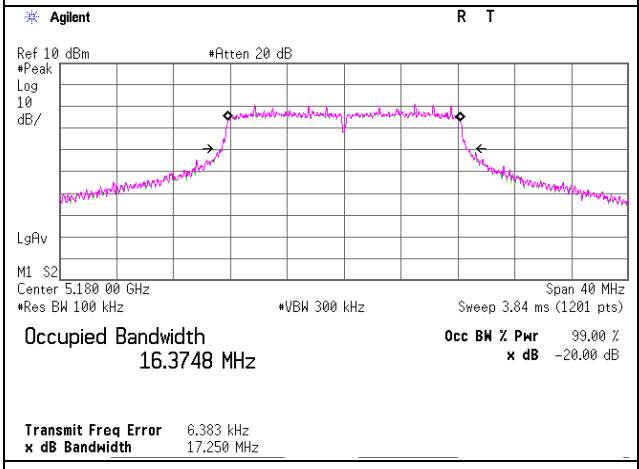
11n-20

Frequency [MHz]	20dB Bandwidth [MHz]	Limit [MHz]
5180	18.437	-
5240	18.258	-
5260	18.369	-
5320	18.391	-
5500	18.347	-
5700	18.381	-
5745	18.371	-
5825	18.381	-

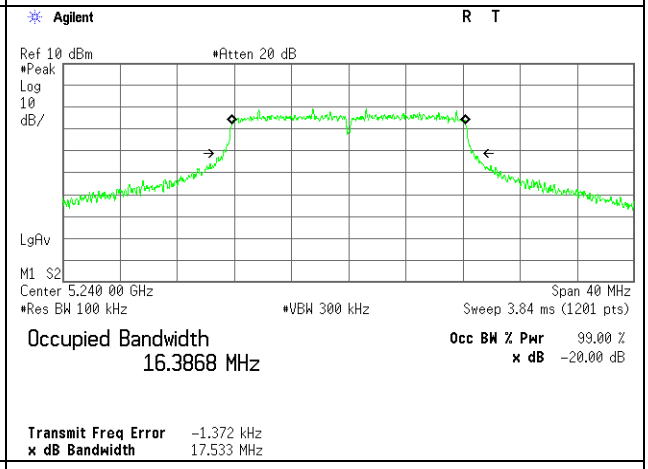
20dB Bandwidth

11a

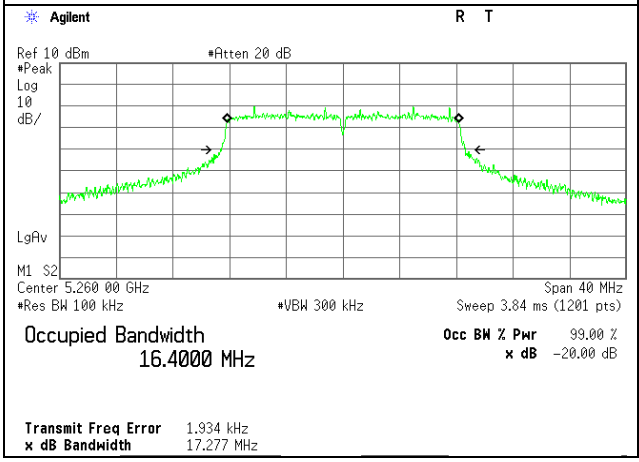
5180MHz



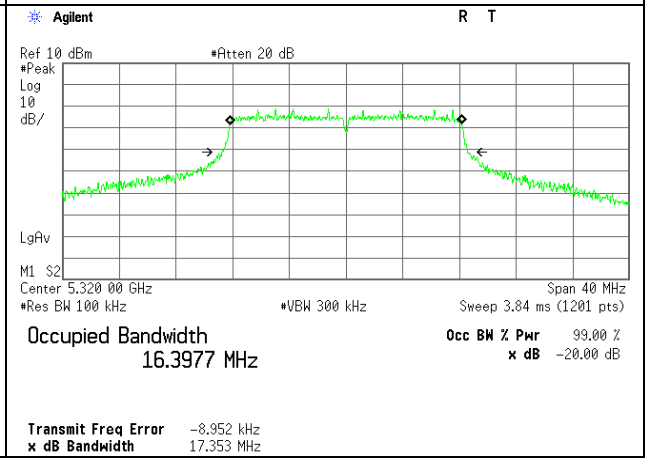
5240MHz



5260MHz



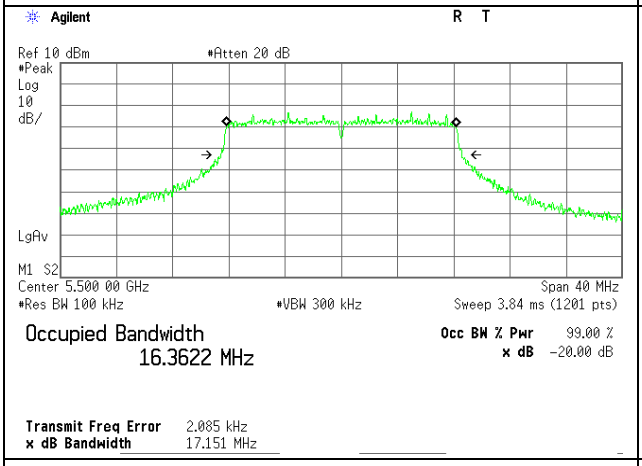
5320MHz



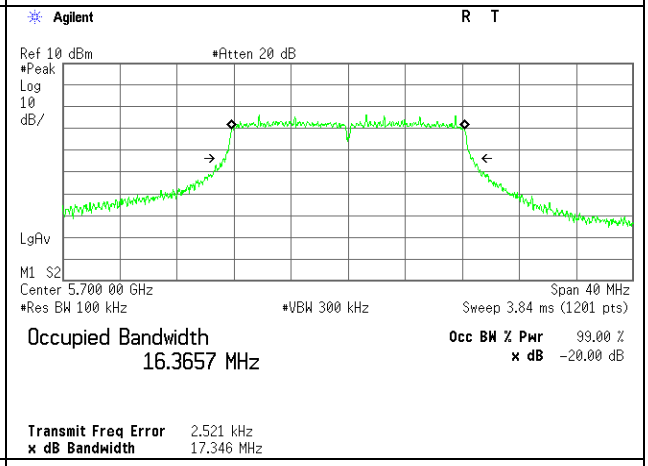
20dB Bandwidth

11a

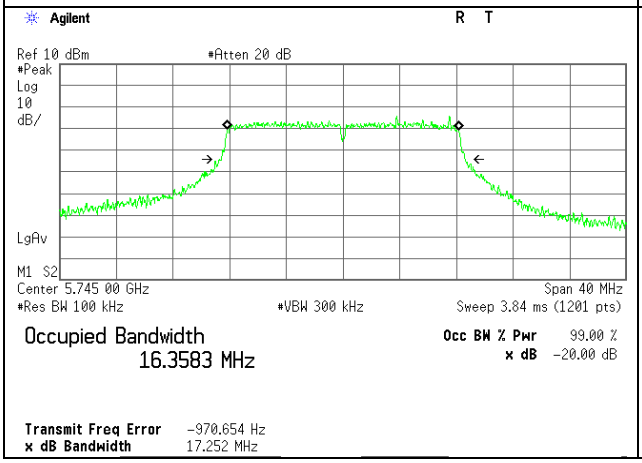
5500MHz



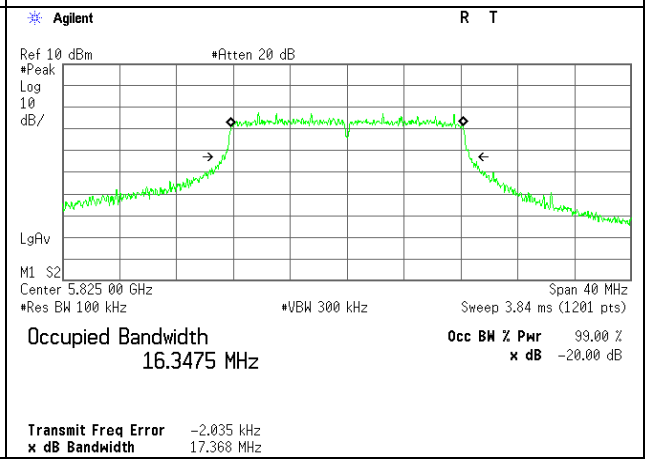
5700MHz



5745MHz



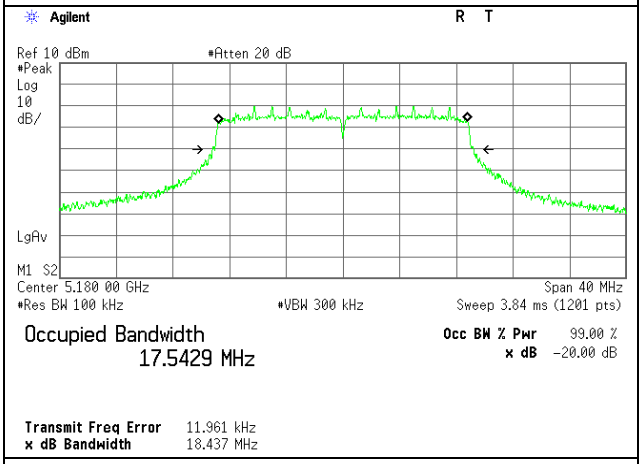
5825MHz



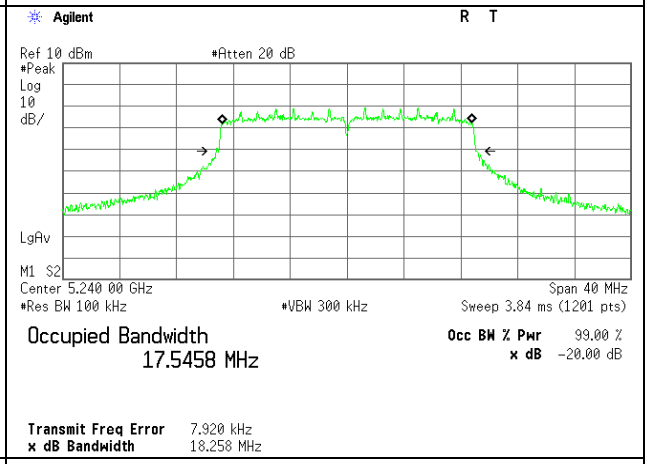
20dB Bandwidth

11n-20

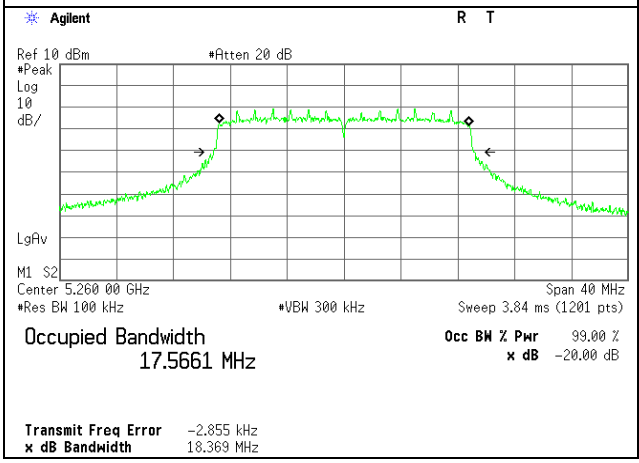
5180MHz



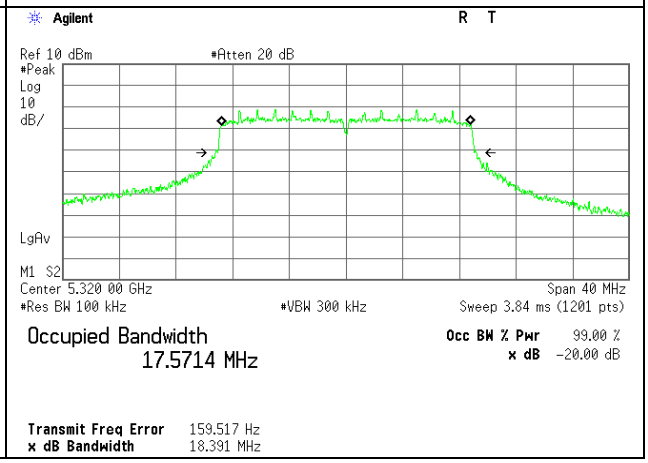
5240MHz



5260MHz



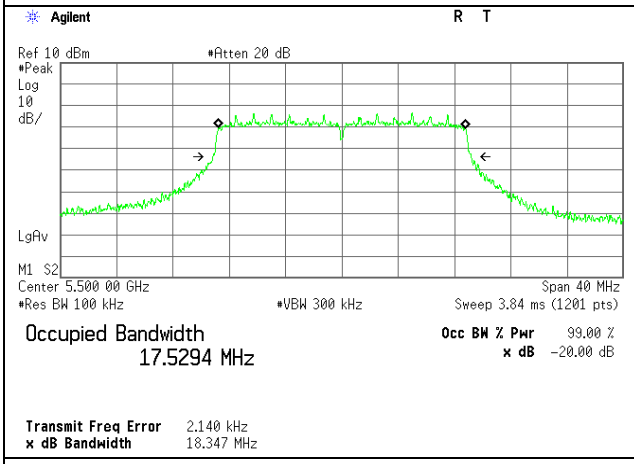
5320MHz



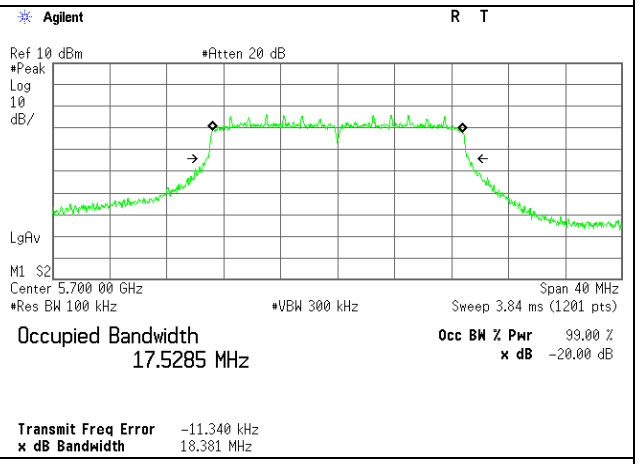
20dB Bandwidth

11n-20

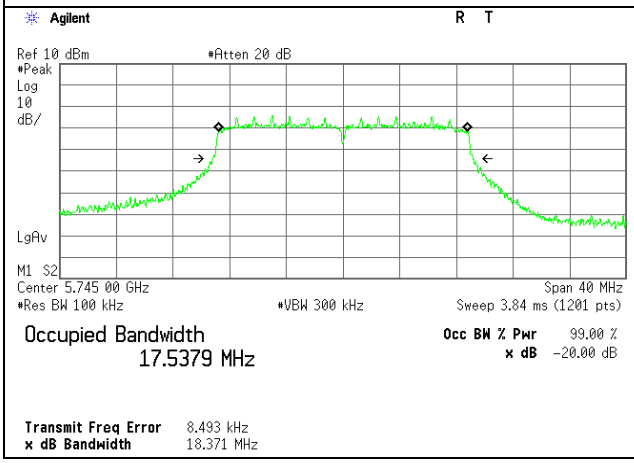
5500MHz



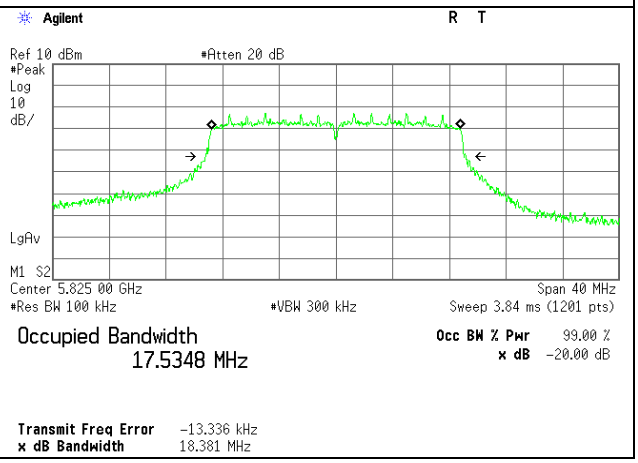
5700MHz



5745MHz



5825MHz



6dB Bandwidth

Test place	Ise EMC Lab. No.6 Measurement Room	
Report No.	10512074H	
Date	11/25/2014	11/27/2014
Temperature/ Humidity	21deg. C / 52%	24deg. C / 46% RH
Engineer	Satofumi Matsuyama	Satofumi Matsuyama
Mode	11a Tx / 11n-20 Tx	

11a

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5745	16.083	> 500
5785	16.310	> 500
5825	16.096	> 500

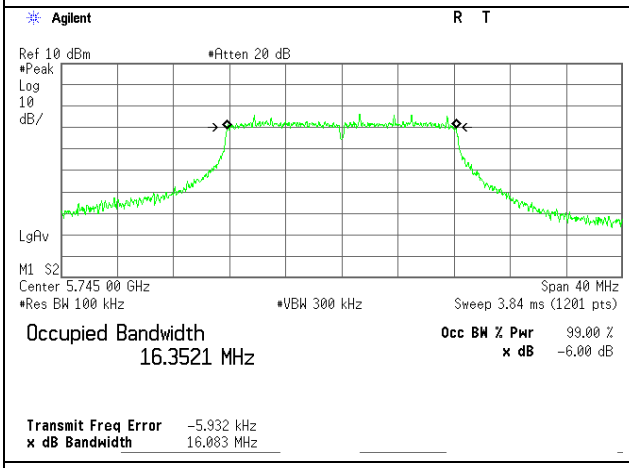
11n-20

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5745	16.588	> 500
5785	16.954	> 500
5825	16.810	> 500

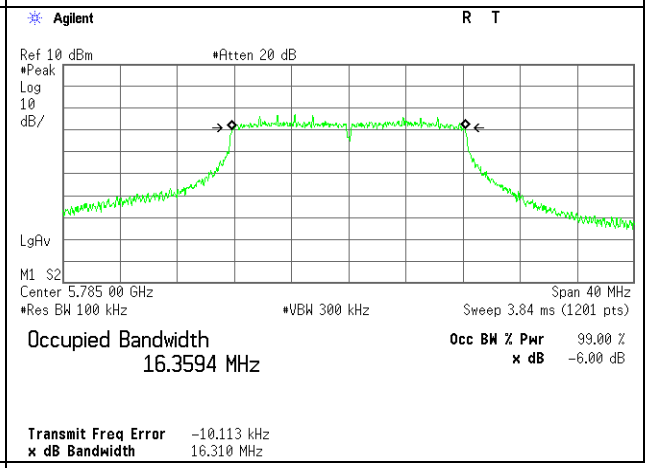
6dB Bandwidth

11a

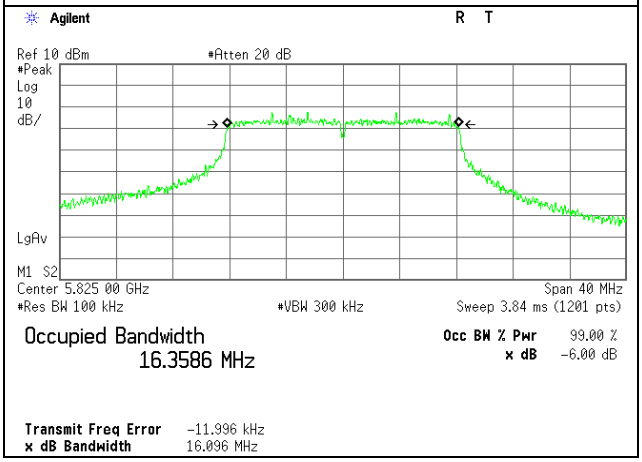
5745MHz



5785MHz



5825MHZ



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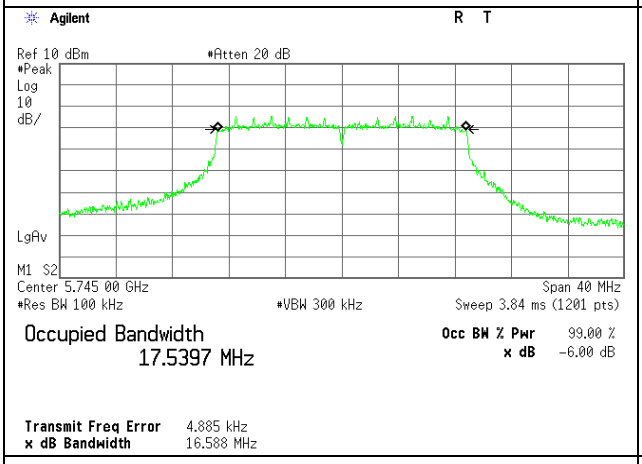
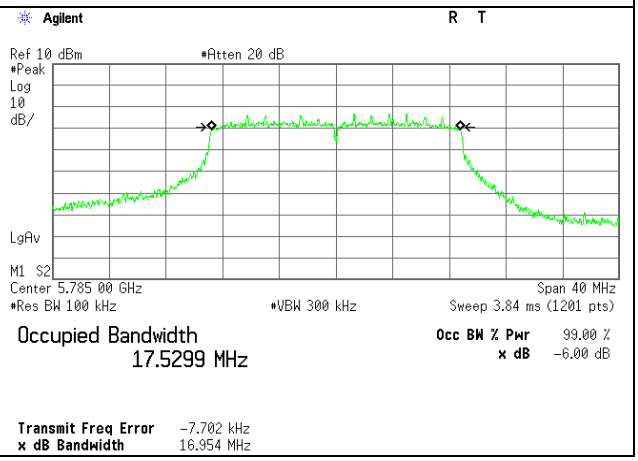
6dB Bandwidth

11n-20

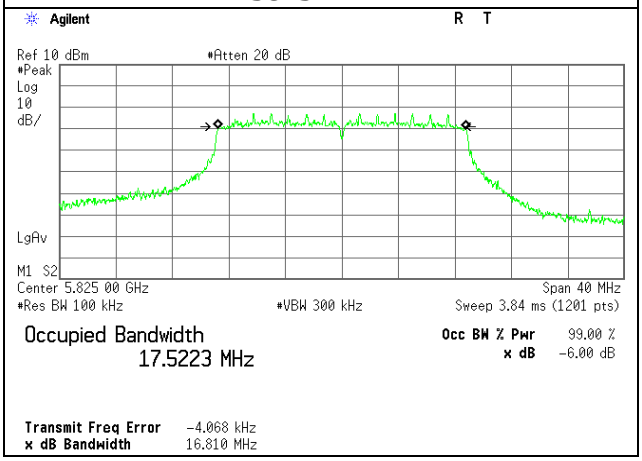
5745MHz



5785MHz



5825MHZ



Maximum Conducted Output Power

Test place	Ise EMC Lab. No.6 Measurement Room	
Report No.	10512074H	
Date	11/25/2014	01/06/2015
Temperature/ Humidity	21deg. C / 52% RH	20deg. C / 50% RH
Engineer	Satofumi Matsuyama	Kenshi Shimomura
Mode	11a Tx / 11n-20 Tx	

11a

Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	Result (Cond.) [dBm]	Result (e.i.r.p.) [dBm]	Limit (Cond.) [dBm]	Limit (e.i.r.p.) [dBm]	Margin (Cond.) [dB]	Margin (e.i.r.p.) [dB]
5180.0	0.33	1.23	10.07	0.06	3.90	11.69	15.59	23.97	-	12.28	-
5220.0	0.05	1.24	10.07	0.06	3.90	11.42	15.32	23.97	-	12.55	-
5240.0	-0.45	1.24	10.07	0.06	3.90	10.92	14.82	23.97	-	13.05	-
5260.0	-0.37	1.24	10.07	0.06	3.90	11.00	14.90	23.97	-	12.97	-
5300.0	-0.84	1.25	10.07	0.06	3.90	10.54	14.44	23.97	-	13.43	-
5320.0	-0.94	1.26	10.07	0.06	3.90	10.45	14.35	23.97	-	13.52	-
5500.0	-2.97	1.29	10.07	0.06	3.90	8.45	12.35	23.97	-	15.52	-
5580.0	-3.63	1.30	10.07	0.06	3.90	7.80	11.70	23.90	-	16.10	-
5700.0	-3.29	1.31	10.07	0.06	3.90	8.15	12.05	23.97	-	15.82	-
5745.0	-7.31	1.32	10.08	0.06	3.90	4.15	8.05	30.00	-	25.85	-
5785.0	-6.81	1.33	10.08	0.06	3.90	4.66	8.56	30.00	-	25.34	-
5825.0	-6.59	1.34	10.08	0.06	3.90	4.89	8.79	30.00	-	25.11	-

Result(Cond.) = Reading + Cable Loss + Atten.Loss + Duty Factor
Result(e.i.r.p.) = Reading + Cable Loss + Atten.Loss + Antenna Gain + Duty Factor

11n-20

Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	Result (Cond.) [dBm]	Result (e.i.r.p.) [dBm]	Limit (Cond.) [dBm]	Limit (e.i.r.p.) [dBm]	Margin (Cond.) [dB]	Margin (e.i.r.p.) [dB]
5180.0	0.06	1.23	10.07	0.22	3.90	11.58	15.48	23.97	-	12.39	-
5220.0	-0.14	1.24	10.07	0.22	3.90	11.39	15.29	23.97	-	12.58	-
5240.0	-0.63	1.24	10.07	0.22	3.90	10.90	14.80	23.97	-	13.07	-
5260.0	-0.53	1.24	10.07	0.22	3.90	11.00	14.90	23.97	-	12.97	-
5300.0	-1.16	1.25	10.07	0.22	3.90	10.38	14.28	23.97	-	13.59	-
5320.0	-1.17	1.26	10.07	0.22	3.90	10.38	14.28	23.97	-	13.59	-
5500.0	-3.29	1.29	10.07	0.22	3.90	8.29	12.19	23.97	-	15.68	-
5580.0	-3.81	1.30	10.07	0.22	3.90	7.78	11.68	23.97	-	16.19	-
5700.0	-3.62	1.31	10.07	0.22	3.90	7.98	11.88	23.97	-	15.99	-
5745.0	-7.65	1.32	10.08	0.22	3.90	3.97	7.87	30.00	-	26.03	-
5785.0	-7.22	1.33	10.08	0.22	3.90	4.41	8.31	30.00	-	25.59	-
5825.0	-6.94	1.34	10.08	0.22	3.90	4.70	8.60	30.00	-	25.30	-

Result(Cond.) = Reading + Cable Loss + Atten.Loss + Duty Factor
Result(e.i.r.p.) = Reading + Cable Loss + Atten.Loss + Antenna Gain + Duty Factor

Maximum Conducted Output Power & Maximum Power Spectral Density
(Reference data)

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10512074H
Date	11/25/2014
Temperature/ Humidity	21deg. C / 52% RH
Engineer	Satofumi Matsuyama
Mode	11a Tx

5180MHz

Data Rate [Mbps]	Reading [dBm]	Duty Factor [dB]	Result [dBm]	Remark
6	0.33	0.06	0.39	*
9	0.27	0.09	0.36	
12	0.24	0.12	0.36	
18	0.19	0.18	0.37	
24	-0.11	0.25	0.14	
36	-2.18	0.36	-1.82	
48	-4.33	0.48	-3.85	
54	-4.31	0.53	-3.78	

* Worst Rate
All comparison were carried out on same frequency and measurement factors.

Maximum Conducted Output Power & Maximum Power Spectral Density
(Reference data)

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10512074H
Date	11/25/2014
Temperature/ Humidity	21deg. C / 52% RH
Engineer	Satofumi Matsuyama
Mode	11n-20 Tx

Long GI

MCS Number	Reading [dBm]	Duty Factor [dB]	Result [dBm]	Remark
0	-0.11	0.07	-0.04	
1	-0.17	0.13	-0.04	
2	-0.04	0.20	0.16	*
3	-0.22	0.26	0.04	
4	-2.29	0.37	-1.92	
5	-4.43	0.49	-3.94	
6	-4.49	0.53	-3.96	
7	-4.97	0.57	-4.40	

* Worst MCS
All comparison were carried out on same frequency and measurement factors.

5180MHz, Long GI or Short GI

MCS Number	Reading [dBm]	Duty Factor [dB]	Result [dBm]	GI	Remark
2	-0.04	0.20	0.16	Long	
2	0.06	0.22	0.28	Short	*

* Worst Condition

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Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6 Measurement Room		
Report No.	10512074H		
Date	11/25/2014	11/27/2014	01/06/2015
Temperature/ Humidity	21deg. C / 52% RH	24deg. C / 46% RH	20deg. C / 50% RH
Engineer	Satofumi Matsuyama	Satofumi Matsuyama	Kenshi Shimomura
Mode	11a Tx / 11n-20 Tx		

11a

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Correction factor [dB]	Antenna Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
5180.0	-9.69	1.23	10.07	0.06	0.00	3.90	1.68	11.00	9.33
5220.0	-9.65	1.24	10.07	0.06	0.00	3.90	1.72	11.00	9.28
5240.0	-10.26	1.24	10.07	0.06	0.00	3.90	1.11	11.00	9.89
5260.0	-10.67	1.24	10.07	0.06	0.00	3.90	0.70	11.00	10.30
5300.0	-11.14	1.25	10.07	0.06	0.00	3.90	0.24	11.00	10.76
5320.0	-10.84	1.26	10.07	0.06	0.00	3.90	0.55	11.00	10.45
5500.0	-13.26	1.29	10.07	0.06	0.00	3.90	-1.84	11.00	12.84
5580.0	-13.79	1.30	10.07	0.06	0.00	3.90	-2.36	11.00	13.36
5700.0	-13.65	1.31	10.07	0.06	0.00	3.90	-2.21	11.00	13.21
5745.0	-21.42	1.32	10.08	0.06	0.27	3.90	-9.69	30.00	39.69
5785.0	-20.88	1.33	10.08	0.06	0.27	3.90	-9.14	30.00	39.14
5825.0	-20.79	1.34	10.08	0.06	0.27	3.90	-9.04	30.00	39.04

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

11n-20

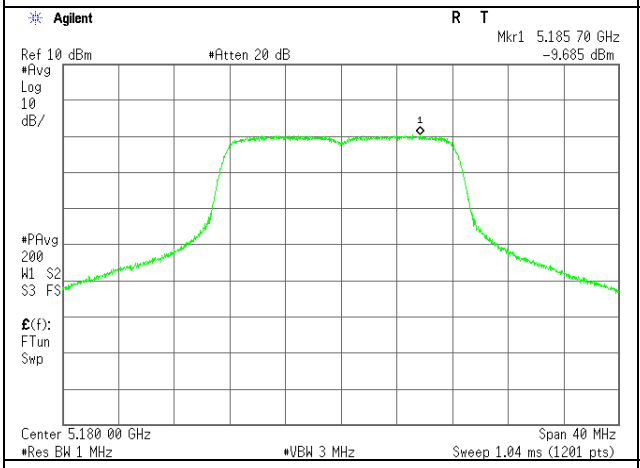
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Correction factor [dB]	Antenna Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
5180.0	-11.41	1.23	10.07	0.22	0.00	3.90	0.11	11.00	10.89
5220.0	-11.51	1.24	10.07	0.22	0.00	3.90	0.02	11.00	10.98
5240.0	-11.46	1.24	10.07	0.22	0.00	3.90	0.07	11.00	10.93
5260.0	-11.55	1.24	10.07	0.22	0.00	3.90	-0.01	11.00	11.02
5300.0	-12.40	1.25	10.07	0.22	0.00	3.90	-0.86	11.00	11.86
5320.0	-11.44	1.26	10.07	0.22	0.00	3.90	0.11	11.00	10.89
5500.0	-14.46	1.29	10.07	0.22	0.00	3.90	-2.88	11.00	13.88
5580.0	-15.23	1.30	10.07	0.22	0.00	3.90	-3.64	11.00	14.64
5700.0	-14.64	1.31	10.07	0.22	0.00	3.90	-3.04	11.00	14.04
5745.0	-21.80	1.32	10.08	0.22	0.27	3.90	-9.91	30.00	39.91
5785.0	-21.19	1.33	10.08	0.22	0.27	3.90	-9.29	30.00	39.29
5825.0	-20.98	1.34	10.08	0.22	0.27	3.90	-9.07	30.00	39.07

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

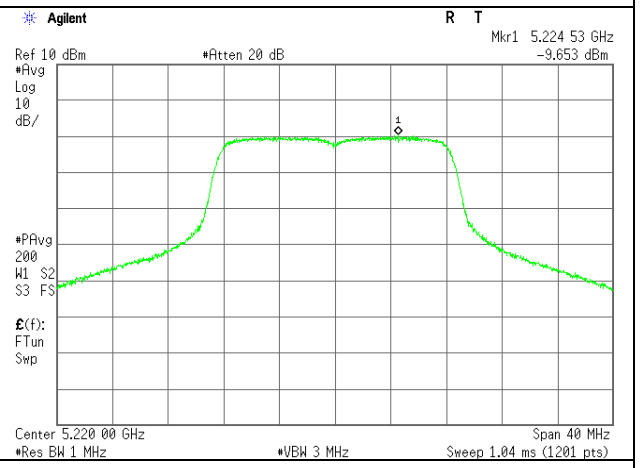
Maximum Power Spectral Density

11a

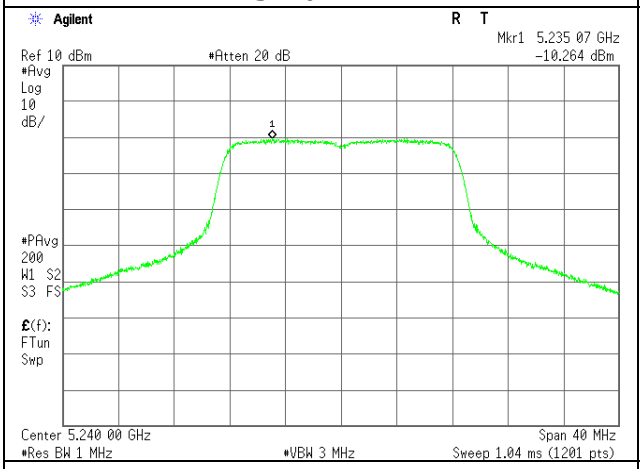
5180MHz



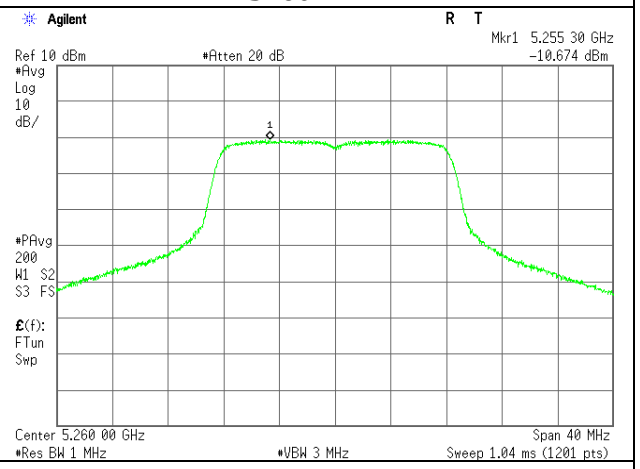
5220MHz



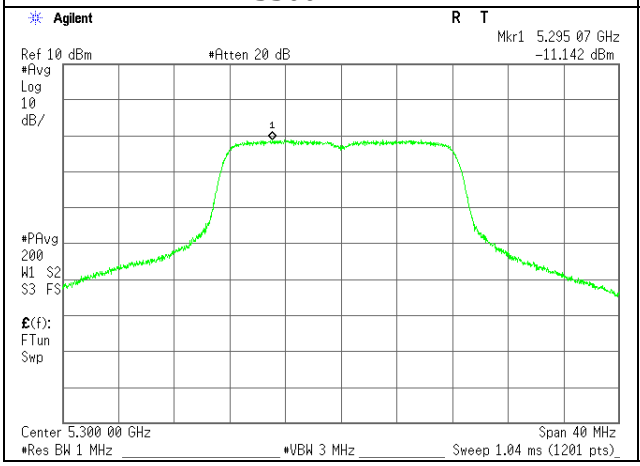
5240MHz



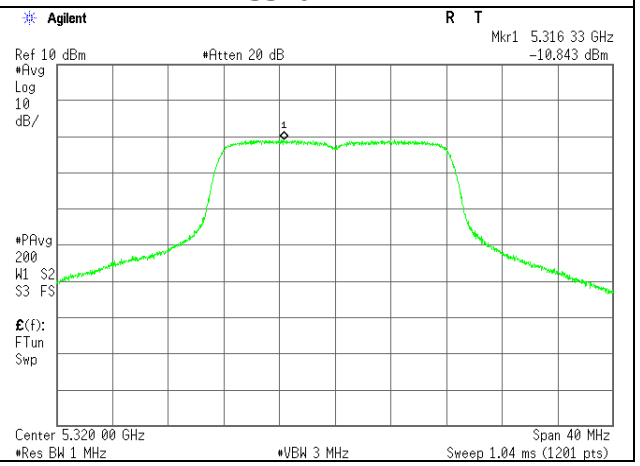
5260MHz



5300MHz



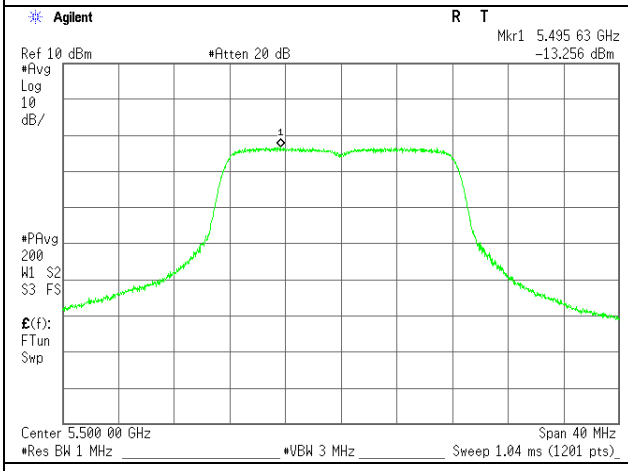
5320MHz



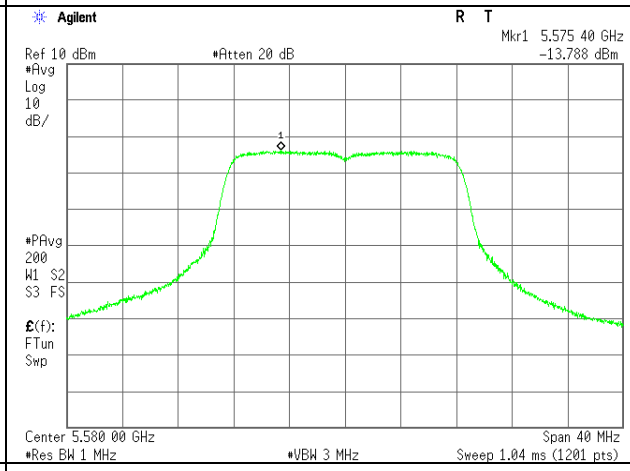
Maximum Power Spectral Density

11a

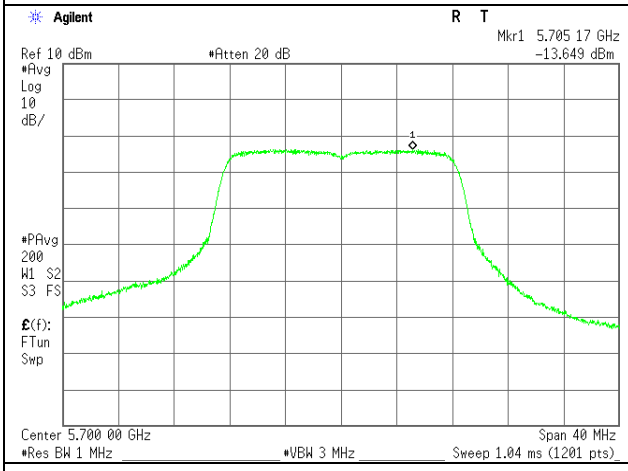
5500MHz



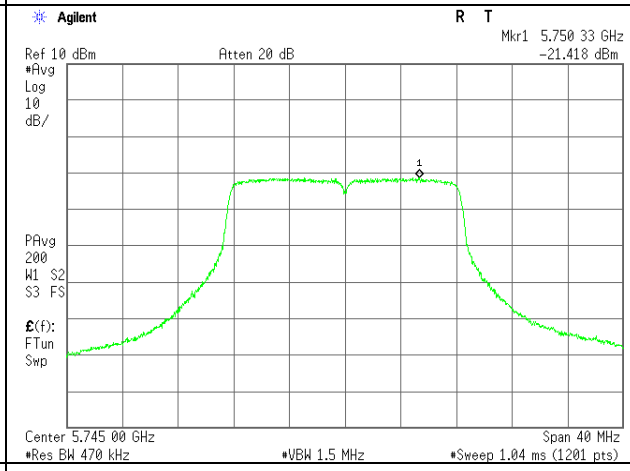
5580MHz



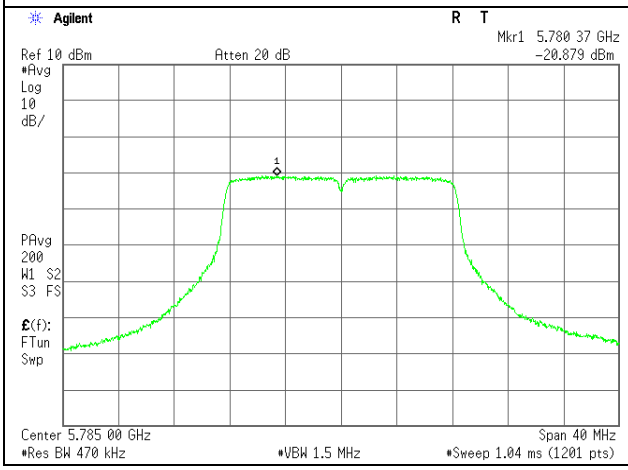
5700MHz



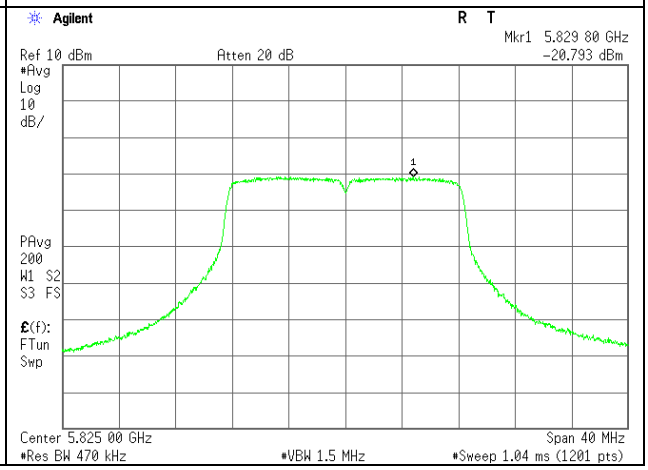
5745MHz



5785MHz



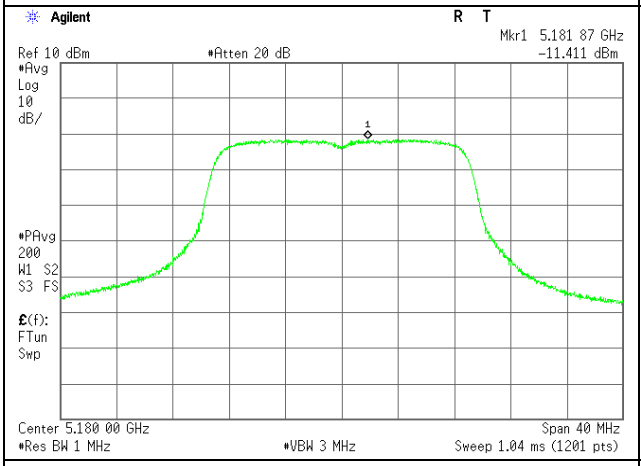
5825MHz



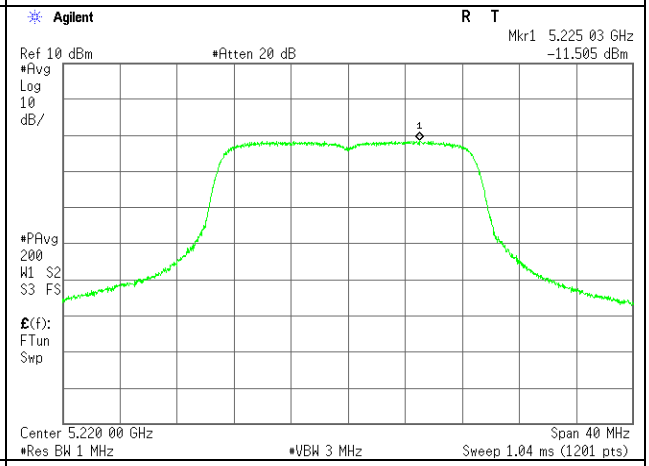
Maximum Power Spectral Density

11n-20

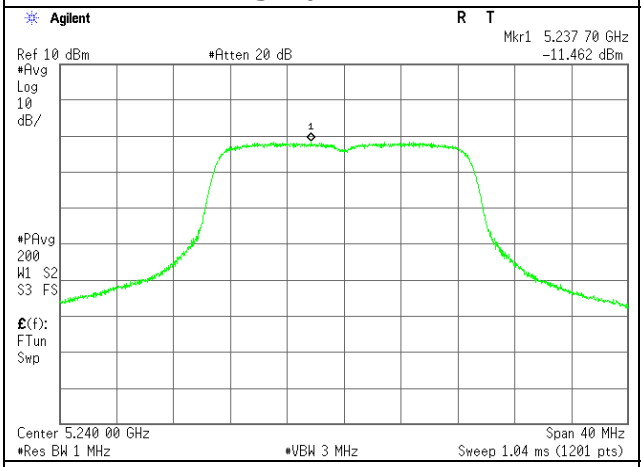
5180MHz



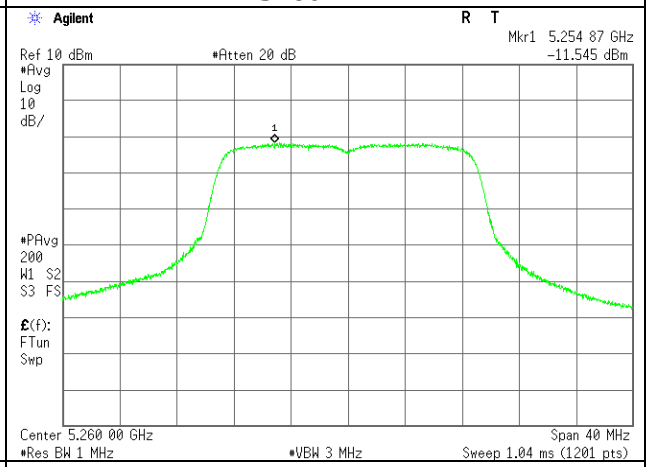
5220MHz



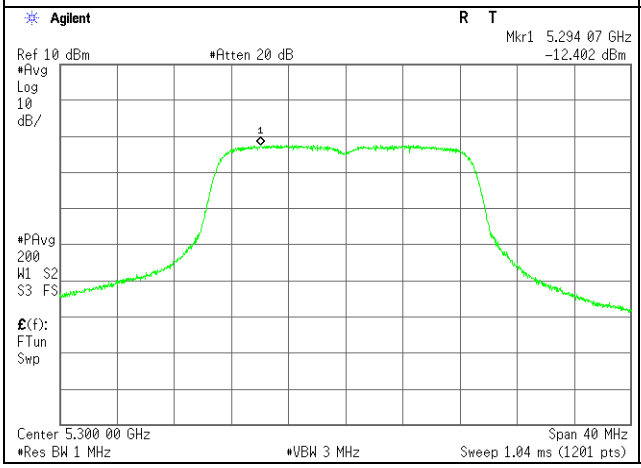
5240MHz



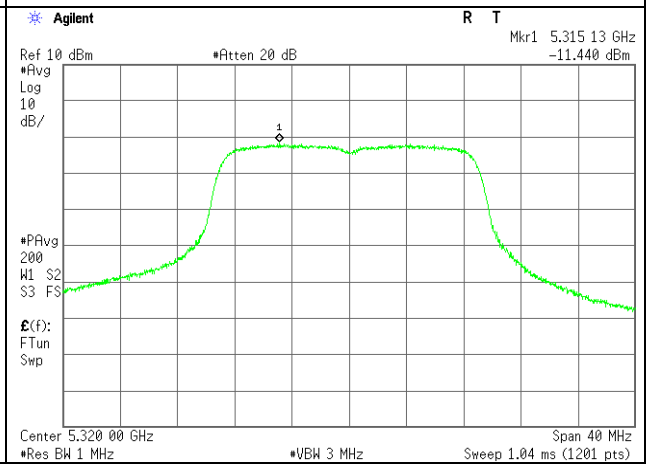
5260MHz



5300MHz



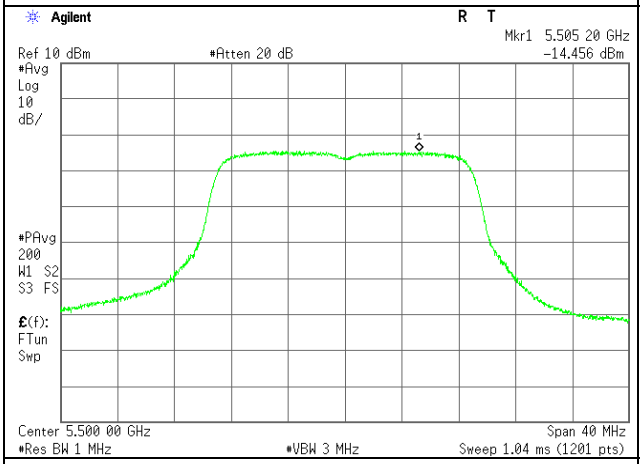
5320MHz



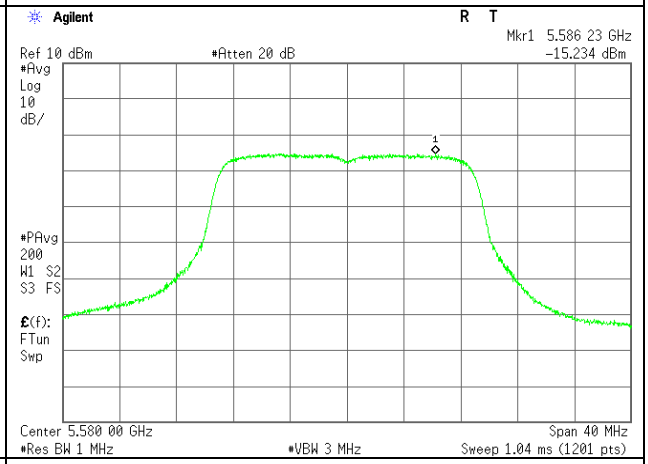
Maximum Power Spectral Density

11n-20

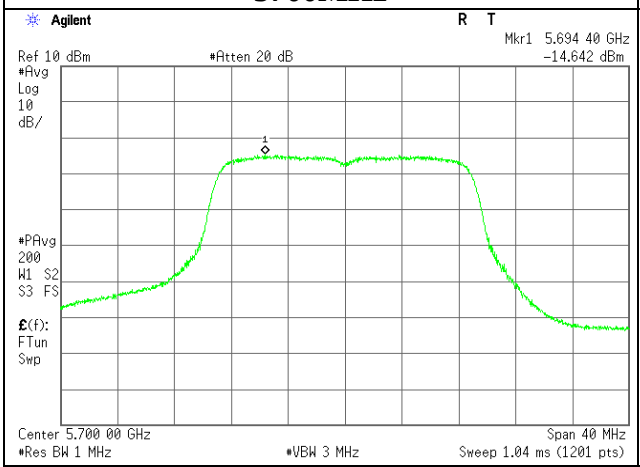
5500MHz



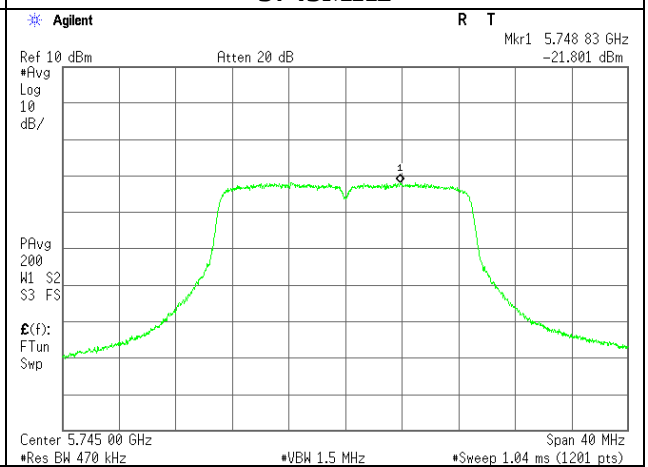
5580MHz



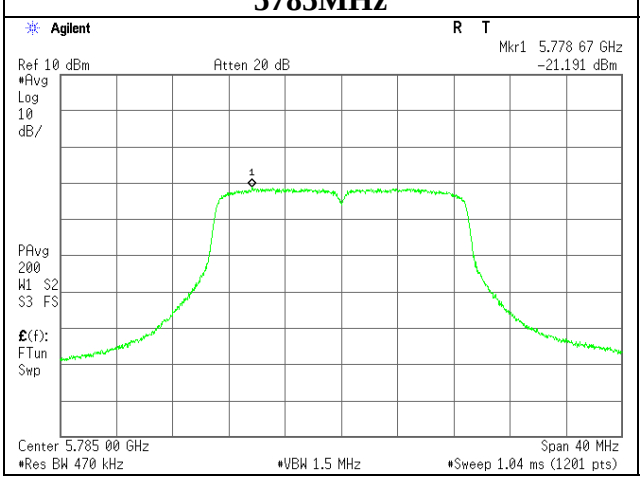
5700MHz



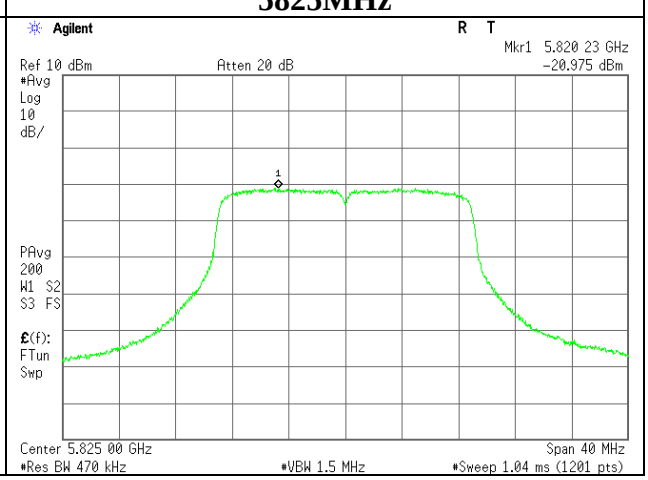
5745MHz



5785MHz



5825MHz



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Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber			
Report No.	10517044H			
Date	12/20/2014	12/21/2014	12/23/2014 Day	12/23/2014 Night
Temperature/ Humidity	22deg. C / 29% RH	23deg. C / 38% RH	22deg. C / 37% RH	24deg. C / 31% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above 26.5GHz)	Tomohisa Nakagawa (Below 1GHz)
Mode	11a Tx 5180MHz External Antenna			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	79.532	QP	30.4	6.3	7.8	32.1	12.4	40.0	27.6	Outside	
Hori	99.750	QP	31.4	10.0	8.0	32.2	17.2	43.5	26.3	Outside	
Hori	133.000	QP	31.9	13.9	8.4	32.1	22.1	43.5	21.4	Inside	
Hori	660.000	QP	31.1	20.1	12.1	32.0	31.3	46.0	14.7	Outside	
Hori	690.004	QP	35.0	20.4	12.3	32.1	35.6	46.0	10.4	Outside	
Hori	750.008	QP	28.5	21.4	12.6	31.7	30.8	46.0	15.2	Outside	
Hori	3453.164	PK	45.1	27.8	3.0	32.2	43.7	68.2	24.5	Outside	
Hori	5150.000	PK	48.2	31.3	3.7	31.7	51.5	68.2	16.7	Bandedge	
Hori	10360.000	PK	52.6	38.8	-2.4	33.6	55.4	68.2	12.8	Outside	
Hori	15540.000	PK	51.9	37.9	-1.1	32.1	56.6	73.9	17.3	Inside	
Hori	20720.000	PK	46.1	37.6	-1.8	32.2	49.7	73.9	24.2	Inside	
Hori	5150.000	AV	39.7	31.3	3.7	31.7	43.0	53.9	10.9	Bandedge	
Hori	15540.000	AV	41.5	37.9	-1.1	32.1	46.2	53.9	7.7	Inside	
Hori	20720.000	AV	36.2	37.6	-1.8	32.2	39.8	53.9	14.1	Inside	
Vert	79.528	QP	43.4	6.3	7.8	32.1	25.4	40.0	14.6	Outside	
Vert	99.744	QP	38.5	10.0	8.0	32.2	24.3	43.5	19.2	Outside	
Vert	133.002	QP	35.1	13.9	8.4	32.1	25.3	43.5	18.2	Inside	
Vert	690.004	QP	32.9	20.4	12.3	32.1	33.5	46.0	12.5	Outside	
Vert	750.008	QP	31.5	21.4	12.6	31.7	33.8	46.0	12.2	Outside	
Vert	780.006	QP	31.9	21.9	12.7	31.6	34.9	46.0	11.1	Outside	
Vert	3455.910	PK	49.4	27.8	3.0	32.2	48.0	68.2	20.2	Outside	
Vert	5150.000	PK	49.0	31.3	3.7	31.7	52.3	68.2	15.9	Bandedge	
Vert	10360.000	PK	56.5	38.8	-2.4	33.6	59.3	68.2	8.9	Outside	
Vert	15540.000	PK	51.1	37.9	-1.1	32.1	55.8	73.9	18.1	Inside	
Vert	20720.000	PK	44.9	37.6	-1.8	32.2	48.5	73.9	25.4	Inside	
Vert	5150.000	AV	40.5	31.3	3.7	31.7	43.8	53.9	10.1	Bandedge	
Vert	15540.000	AV	42.5	37.9	-1.1	32.1	47.2	53.9	6.7	Inside	
Vert	20720.000	AV	36.2	37.6	-1.8	32.2	39.8	53.9	14.1	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/20/2014	12/21/2014	12/23/2014
Temperature/ Humidity	22deg. C / 29% RH	23deg. C / 38% RH	22deg. C / 37% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above26.5GHz)
Mode	11a Tx 5240MHz External Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	3456.000	PK	45.4	27.8	3.0	32.2	44.0	68.2	24.2	Outside	
Hori	10480.000	PK	53.9	38.8	-2.4	33.6	56.7	68.2	11.5	Outside	
Hori	15720.000	PK	52.5	37.7	-1.1	32.2	56.9	73.9	17.0	Inside	
Hori	20960.000	PK	44.9	37.6	-1.8	32.3	48.4	73.9	25.5	Inside	
Hori	15720.000	AV	41.0	37.7	-1.1	32.2	45.4	53.9	8.5	Inside	
Hori	20960.000	AV	36.5	37.6	-1.8	32.3	40.0	53.9	13.9	Inside	
Vert	3456.000	PK	50.1	27.8	3.0	32.2	48.7	68.2	19.5	Outside	
Vert	10480.000	PK	56.5	38.8	-2.4	33.6	59.3	68.2	8.9	Outside	
Vert	15720.000	PK	50.1	37.7	-1.1	32.2	54.5	73.9	19.4	Inside	
Vert	20960.000	PK	45.3	37.6	-1.8	32.3	48.8	73.9	25.1	Inside	
Vert	15720.000	AV	39.7	37.7	-1.1	32.2	44.1	53.9	9.8	Inside	
Vert	20960.000	AV	36.5	37.6	-1.8	32.3	40.0	53.9	13.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/20/2014	12/21/2014	12/23/2014
Temperature/ Humidity	22deg. C / 29% RH	23deg. C / 38% RH	22deg. C / 37% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above26.5GHz)
Mode	11a Tx 5320MHz External Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	3456.000	PK	44.2	27.8	3.0	32.2	42.8	68.2	25.4	Outside	
Hori	5350.000	PK	50.3	31.6	3.8	31.7	54.0	68.2	14.2	Bandedge	
Hori	10640.000	PK	55.2	38.7	-2.3	33.7	57.9	73.9	16.0	Inside	
Hori	15960.000	PK	52.5	37.6	-1.0	32.3	56.8	73.9	17.1	Inside	
Hori	21280.000	PK	45.1	37.6	-1.7	32.3	48.7	73.9	25.2	Inside	
Hori	5350.000	AV	39.8	31.6	3.8	31.7	43.5	53.9	10.4	Bandedge	
Hori	10640.000	AV	45.2	38.7	-2.3	33.7	47.9	53.9	6.0	Inside	
Hori	15960.000	AV	40.8	37.6	-1.0	32.3	45.1	53.9	8.8	Inside	
Hori	21280.000	AV	36.1	37.6	-1.7	32.3	39.7	53.9	14.2	Inside	
Vert	3456.000	PK	49.9	27.8	3.0	32.2	48.5	68.2	19.7	Outside	
Vert	5350.000	PK	52.8	31.6	3.8	31.7	56.5	68.2	11.7	Bandedge	
Vert	10640.000	PK	55.1	38.7	-2.3	33.7	57.8	73.9	16.1	Inside	
Vert	15960.000	PK	49.5	37.6	-1.0	32.3	53.8	73.9	20.1	Inside	
Vert	21280.000	PK	45.0	37.6	-1.7	32.3	48.6	73.9	25.3	Inside	
Vert	5350.000	AV	43.2	31.6	3.8	31.7	46.9	53.9	7.0	Bandedge	
Vert	10640.000	AV	46.3	38.7	-2.3	33.7	49.0	53.9	4.9	Inside	
Vert	15960.000	AV	40.1	37.6	-1.0	32.3	44.4	53.9	9.5	Inside	
Vert	21280.000	AV	36.1	37.6	-1.7	32.3	39.7	53.9	14.2	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/20/2014
Temperature/ Humidity	22deg. C / 29% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11n-20 Tx 5180MHz External Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5150.000	PK	48.6	31.3	3.7	31.7	0.2	52.1	68.2	16.1	Bandedge	
Hori	5150.000	AV	39.7	31.3	3.7	31.7	0.2	43.2	53.9	10.7	Bandedge	
Vert	5150.000	PK	48.8	31.3	3.7	31.7	0.2	52.3	68.2	15.9	Bandedge	
Vert	5150.000	AV	40.5	31.3	3.7	31.7	0.2	44.0	53.9	9.9	Bandedge	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/20/2014
Temperature/ Humidity	22deg. C / 29% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11n-20 Tx 5320MHz External Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Vert	5350.000	PK	52.8	31.6	3.8	31.7	0.2	56.7	68.2	11.5	Bandedge	
Hori	5350.000	PK	49.3	31.6	3.8	31.7	0.2	53.2	68.2	15.0	Bandedge	
Hori	5350.000	AV	39.6	31.6	3.8	31.7	0.2	43.5	53.9	10.4	Bandedge	
Vert	5350.000	AV	43.3	31.6	3.8	31.7	0.2	47.2	53.9	6.7	Bandedge	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/20/2014	12/21/2014	12/23/2014
Temperature/ Humidity	22deg. C / 29% RH	23deg. C / 38% RH	22deg. C / 37% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above26.5GHz)
Mode	11a Tx 5500MHz External Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1836.267	PK	56.6	25.9	2.2	33.3	51.4	68.2	16.8	Outside	
Hori	3455.840	PK	43.7	27.8	3.0	32.2	42.3	68.2	25.9	Outside	
Hori	5470.000	PK	46.5	31.8	3.8	31.8	50.3	68.2	17.9	Outside	
Hori	11000.000	PK	50.2	38.8	-2.2	33.7	53.1	73.9	20.8	Inside	
Hori	16500.000	PK	43.0	37.5	-0.6	32.2	47.7	68.2	20.5	Outside	
Hori	22000.000	PK	45.0	37.6	-1.4	32.1	49.1	68.2	19.1	Outside	
Hori	11000.000	AV	39.7	38.8	-2.2	33.7	42.6	53.9	11.3	Inside	
Vert	1835.600	PK	52.2	25.9	2.2	33.3	47.0	68.2	21.2	Outside	
Vert	3456.030	PK	49.3	27.8	3.0	32.2	47.9	68.2	20.3	Outside	
Vert	5470.000	PK	47.9	31.8	3.8	31.8	51.7	68.2	16.5	Outside	
Vert	11000.000	PK	52.9	38.8	-2.2	33.7	55.8	73.9	18.1	Inside	
Vert	16500.000	PK	43.7	37.5	-0.6	32.2	48.4	68.2	19.8	Outside	
Vert	22000.000	PK	44.9	37.6	-1.4	32.1	49.0	68.2	19.2	Outside	
Vert	11000.000	AV	42.8	38.8	-2.2	33.7	45.7	53.9	8.2	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/20/2014	12/21/2014	12/23/2014
Temperature/ Humidity	22deg. C / 29% RH	23deg. C / 38% RH	22deg. C / 37% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above26.5GHz)
Mode	11a Tx 5580MHz External Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1856.005	PK	59.4	25.9	2.2	33.2	54.3	68.2	13.9	Outside	
Hori	3454.345	PK	45.2	27.8	3.0	32.2	43.8	68.2	24.4	Outside	
Hori	11160.000	PK	50.6	39.0	-2.1	33.7	53.8	73.9	20.1	Inside	
Hori	16740.000	PK	44.4	37.5	-0.6	32.2	49.1	68.2	19.1	Outside	
Hori	22320.000	PK	44.8	37.7	-0.6	31.9	50.0	73.9	23.9	Inside	
Hori	11160.000	AV	41.5	39.0	-2.1	33.7	44.7	53.9	9.2	Inside	
Hori	22320.000	AV	35.8	37.7	-0.6	31.9	41.0	53.9	12.9	Inside	
Vert	1863.867	PK	54.8	26.0	2.2	33.2	49.8	68.2	18.4	Outside	
Vert	3456.028	PK	49.3	27.8	3.0	32.2	47.9	68.2	20.3	Outside	
Vert	11160.000	PK	49.4	39.0	-2.1	33.7	52.6	73.9	21.3	Inside	
Vert	16740.000	PK	43.8	37.5	-0.6	32.2	48.5	68.2	19.7	Outside	
Vert	22320.000	PK	44.6	37.7	-0.6	31.9	49.8	73.9	24.1	Inside	
Vert	11160.000	AV	40.9	39.0	-2.1	33.7	44.1	53.9	9.8	Inside	
Vert	22320.000	AV	35.8	37.7	-0.6	31.9	41.0	53.9	12.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/20/2014	12/21/2014	12/23/2014
Temperature/ Humidity	22deg. C / 29% RH	23deg. C / 38% RH	22deg. C / 37% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above26.5GHz)
Mode	11a Tx 5700MHz External Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1900.333	PK	63.0	26.0	2.2	33.1	58.1	68.2	10.1	Outside	
Hori	3456.000	PK	43.6	27.8	3.0	32.2	42.2	68.2	26.0	Outside	
Hori	3800.000	PK	54.5	28.5	3.1	32.1	54.0	73.9	19.9	Inside	
Hori	5725.000	PK	47.6	32.1	3.9	31.8	51.8	68.2	16.4	Outside	
Hori	11400.000	PK	57.5	39.4	-2.1	33.6	61.2	73.9	12.7	Inside	
Hori	17100.000	PK	42.2	37.4	-0.4	32.2	47.0	68.2	21.2	Outside	
Hori	22800.000	PK	46.1	37.8	-1.1	31.7	51.1	73.9	22.8	Inside	
Hori	3800.000	AV	47.9	28.5	3.1	32.1	47.4	53.9	6.5	Inside	
Hori	11400.000	AV	47.5	39.4	-2.1	33.6	51.2	53.9	2.7	Inside	
Hori	22800.000	AV	37.0	37.8	-1.1	31.7	42.0	53.9	11.9	Inside	
Vert	1900.000	PK	54.3	26.0	2.2	33.1	49.4	68.2	18.8	Outside	
Vert	3456.006	PK	50.4	27.8	3.0	32.2	49.0	68.2	19.2	Outside	
Vert	3800.000	PK	51.1	28.5	3.1	32.1	50.6	73.9	23.3	Inside	
Vert	5725.000	PK	49.7	32.1	3.9	31.8	53.9	68.2	14.3	Outside	
Vert	11400.000	PK	58.0	39.4	-2.1	33.6	61.7	73.9	12.2	Inside	
Vert	17100.000	PK	42.7	37.4	-0.4	32.2	47.5	68.2	20.7	Outside	
Vert	22800.000	PK	45.7	37.8	-1.1	31.7	50.7	73.9	23.2	Inside	
Vert	3800.000	AV	45.0	28.5	3.1	32.1	44.5	53.9	9.4	Inside	
Vert	11400.000	AV	47.6	39.4	-2.1	33.6	51.3	53.9	2.6	Inside	
Vert	22800.000	AV	37.0	37.8	-1.1	31.7	42.0	53.9	11.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/20/2014
Temperature/ Humidity	22deg. C / 29% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11n-20 Tx 5500MHz External Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5470.000	PK	46.6	31.8	3.8	31.8	0.2	50.6	68.2	17.6	Outside	
Vert	5470.000	PK	47.4	31.8	3.8	31.8	0.2	51.4	68.2	16.8	Outside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/20/2014
Temperature/ Humidity	22deg. C / 29% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11n-20 Tx 5700MHz External Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5725.000	PK	48.0	32.1	3.9	31.8	0.2	52.4	68.2	15.8	Outside	
Vert	5725.000	PK	50.5	32.1	3.9	31.8	0.2	54.9	68.2	13.3	Outside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber	
Report No.	10517044H	
Date	12/20/2014	12/23/2014
Temperature/ Humidity	22deg. C / 29% RH	22deg. C / 37% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (Above10GHz)
Mode	11a Tx 5745MHz External Antenna	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1918.567	PK	60.3	26.0	2.2	33.1	55.4	68.2	12.8	Outside	
Hori	3456.000	PK	44.4	27.8	3.0	32.2	43.0	68.2	25.2	Outside	
Hori	3830.000	PK	54.1	28.6	3.1	32.1	53.7	73.9	20.2	Inside	
Hori	5715.000	PK	44.7	32.1	3.9	31.8	48.9	68.2	19.3	Outside	
Hori	5725.000	PK	51.4	32.1	3.9	31.8	55.6	68.2	12.6	Outside	
Hori	11490.000	PK	55.5	39.6	-2.1	33.6	59.4	73.9	14.5	Inside	
Hori	17235.000	PK	43.2	37.2	-0.4	32.2	47.8	68.2	20.4	Outside	
Hori	22980.000	PK	45.7	37.9	-0.3	31.6	51.7	73.9	22.2	Inside	
Hori	11490.000	AV	45.3	39.6	-2.1	33.6	49.2	53.9	4.7	Inside	
Hori	22980.000	AV	37.3	37.9	-0.3	31.6	43.3	53.9	10.6	Inside	
Vert	1917.167	PK	42.6	26.0	2.2	33.1	37.7	68.2	30.5	Outside	
Vert	3456.000	PK	50.0	27.8	3.0	32.2	48.6	68.2	19.6	Outside	
Vert	3830.000	PK	51.1	28.6	3.1	32.1	50.7	73.9	23.2	Inside	
Vert	5715.000	PK	43.7	32.1	3.9	31.8	47.9	68.2	20.3	Outside	
Vert	5725.000	PK	53.3	32.1	3.9	31.8	57.5	68.2	10.7	Outside	
Vert	11490.000	PK	57.6	39.6	-2.1	33.6	61.5	73.9	12.4	Inside	
Vert	17235.000	PK	43.5	37.2	-0.4	32.2	48.1	68.2	20.1	Outside	
Vert	22980.000	PK	45.9	37.9	-0.3	31.6	51.9	73.9	22.0	Inside	
Vert	11490.000	AV	47.3	39.6	-2.1	33.6	51.2	53.9	2.7	Inside	
Vert	22980.000	AV	37.3	37.9	-0.3	31.6	43.3	53.9	10.6	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber	
Report No.	10517044H	
Date	12/20/2014	12/23/2014
Temperature/ Humidity	22deg. C / 29% RH	22deg. C / 37% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (Above10GHz)
Mode	11a Tx 5785MHz External Antenna	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1926.663	PK	55.2	26.0	2.2	33.1	50.3	68.2	17.9	Outside	
Hori	3456.000	PK	42.7	27.8	3.0	32.2	41.3	68.2	26.9	Outside	
Hori	3856.790	PK	54.5	28.6	3.2	32.1	54.2	73.9	19.7	Inside	
Hori	11570.000	PK	55.9	39.6	-2.0	33.6	59.9	73.9	14.0	Inside	
Hori	17355.000	PK	43.8	37.1	-0.4	32.2	48.3	68.2	19.9	Outside	
Hori	23140.000	PK	46.0	37.9	-1.0	31.5	51.4	68.2	16.8	Outside	
Hori	3856.790	AV	49.5	28.6	3.2	32.1	49.2	53.9	4.7	Inside	
Hori	11570.000	AV	46.1	39.6	-2.0	33.6	50.1	53.9	3.8	Inside	
Vert	1919.977	PK	47.8	26.0	2.2	33.1	42.9	68.2	25.3	Outside	
Vert	3456.000	PK	49.8	27.8	3.0	32.2	48.4	68.2	19.8	Outside	
Vert	3856.670	PK	53.5	28.6	3.2	32.1	53.2	73.9	20.7	Inside	
Vert	11570.000	PK	57.8	39.6	-2.0	33.6	61.8	73.9	12.1	Inside	
Vert	17355.000	PK	43.6	37.1	-0.4	32.2	48.1	68.2	20.1	Outside	
Vert	23140.000	PK	45.7	37.9	-1.0	31.5	51.1	68.2	17.1	Outside	
Vert	3856.670	AV	49.3	28.6	3.2	32.1	49.0	53.9	4.9	Inside	
Vert	11570.000	AV	48.2	39.6	-2.0	33.6	52.2	53.9	1.7	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/20/2014	12/23/2014 Day	12/23/2014 Night
Temperature/ Humidity	22deg. C / 29% RH	22deg. C / 37% RH	24deg. C / 31% RH
Engineer	Takumi Shimada (1-10GHz)	Satofumi Matsuyama (Above10GHz)	Tomohisa Nakagawa (Below 1GHz)
Mode	11a Tx 5825MHz External Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	79.552	QP	30.4	6.3	7.8	32.1	12.4	40.0	27.6	Outside	
Hori	99.760	QP	31.0	10.0	8.0	32.2	16.8	43.5	26.7	Outside	
Hori	133.000	QP	32.1	13.9	8.4	32.1	22.3	43.5	21.2	Inside	
Hori	660.004	QP	31.2	20.1	12.1	32.0	31.4	46.0	14.6	Outside	
Hori	690.004	QP	34.4	20.4	12.3	32.1	35.0	46.0	11.0	Outside	
Hori	750.006	QP	28.1	21.4	12.6	31.7	30.4	46.0	15.6	Outside	
Hori	1943.917	PK	55.3	26.1	2.2	33.1	50.5	68.2	17.7	Outside	
Hori	3456.000	PK	45.0	27.8	3.0	32.2	43.6	68.2	24.6	Outside	
Hori	3883.488	PK	54.7	28.7	3.2	32.1	54.5	73.9	19.4	Inside	
Hori	5850.000	PK	49.0	32.2	4.0	31.8	53.4	68.2	14.8	Outside	
Hori	5860.000	PK	43.7	32.2	4.0	31.8	48.1	68.2	20.1	Outside	
Hori	11650.000	PK	54.6	39.6	-2.0	33.5	58.7	73.9	15.2	Inside	
Hori	17475.000	PK	43.9	37.0	-0.5	32.2	48.2	68.2	20.0	Outside	
Hori	23300.000	PK	46.3	37.9	-1.0	31.4	51.8	68.2	16.4	Outside	
Hori	3883.488	AV	49.4	28.7	3.2	32.1	49.2	53.9	4.7	Inside	
Hori	11650.000	AV	45.6	39.6	-2.0	33.5	49.7	53.9	4.2	Inside	
Vert	79.540	QP	43.3	6.3	7.8	32.1	25.3	40.0	14.7	Outside	
Vert	99.746	QP	39.7	10.0	8.0	32.2	25.5	43.5	18.0	Outside	
Vert	133.002	QP	35.3	13.9	8.4	32.1	25.5	43.5	18.0	Inside	
Vert	690.004	QP	32.6	20.4	12.3	32.1	33.2	46.0	12.8	Outside	
Vert	750.006	QP	31.5	21.4	12.6	31.7	33.8	46.0	12.2	Outside	
Vert	780.006	QP	31.9	21.9	12.7	31.6	34.9	46.0	11.1	Outside	
Vert	1943.917	PK	46.9	26.1	2.2	33.1	42.1	68.2	26.1	Outside	
Vert	3456.000	PK	50.0	27.8	3.0	32.2	48.6	68.2	19.6	Outside	
Vert	3883.225	PK	55.2	28.7	3.2	32.1	55.0	73.9	18.9	Inside	
Vert	5850.000	PK	49.5	32.2	4.0	31.8	53.9	68.2	14.3	Outside	
Vert	5860.000	PK	44.1	32.2	4.0	31.8	48.5	68.2	19.7	Outside	
Vert	11650.000	PK	55.5	39.6	-2.0	33.5	59.6	73.9	14.3	Inside	
Vert	17475.000	PK	45.2	37.0	-0.5	32.2	49.5	68.2	18.7	Outside	
Vert	23300.000	PK	47.1	37.9	-1.0	31.4	52.6	68.2	15.6	Outside	
Vert	3883.225	AV	51.0	28.7	3.2	32.1	50.8	53.9	3.1	Inside	
Vert	11650.000	AV	45.9	39.6	-2.0	33.5	50.0	53.9	3.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/20/2014
Temperature/ Humidity	22deg. C / 29% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11n-20 Tx 5745MHz External Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5715.000	PK	43.8	32.1	3.9	31.8	0.2	48.2	68.2	20.0	Outside	
Hori	5725.000	PK	51.3	32.1	3.9	31.8	0.2	55.7	68.2	12.5	Outside	
Vert	5715.000	PK	44.9	32.1	3.9	31.8	0.2	49.3	68.2	18.9	Outside	
Vert	5725.000	PK	52.3	32.1	3.9	31.8	0.2	56.7	68.2	11.5	Outside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/20/2014
Temperature/ Humidity	22deg. C / 29% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11n-20 Tx 5825MHz External Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Vert	5850.000	PK	49.3	32.2	4.0	31.8	0.2	53.9	68.2	14.3	Outside	
Hori	5850.000	PK	50.0	32.2	4.0	31.8	0.2	54.6	68.2	13.6	Outside	
Hori	5860.000	PK	44.1	32.2	4.0	31.8	0.2	48.7	68.2	19.5	Outside	
Vert	5860.000	PK	45.7	32.2	4.0	31.8	0.2	50.3	68.2	17.9	Outside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber			
Report No.	10517044H			
Date	12/19/2014	12/21/2014	12/23/2014 Day	12/23/2014 Night
Temperature/ Humidity	24deg. C / 26% RH	23deg. C / 38% RH	22deg. C / 37% RH	24deg. C / 31% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above 26.5GHz)	Tomohisa Nakagawa (Below 1GHz)
Mode	11a Tx 5180MHz Internal Antenna			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	79.582	QP	33.4	6.3	7.8	32.1	15.4	40.0	24.6	Outside	
Hori	99.752	QP	30.8	10.0	8.0	32.2	16.6	43.5	26.9	Outside	
Hori	133.002	QP	32.2	13.9	8.4	32.1	22.4	43.5	21.1	Inside	
Hori	660.006	QP	31.9	20.1	12.1	32.0	32.1	46.0	13.9	Outside	
Hori	690.005	QP	33.2	20.4	12.3	32.1	33.8	46.0	12.2	Outside	
Hori	750.006	QP	28.5	21.4	12.6	31.7	30.8	46.0	15.2	Outside	
Hori	5150.000	PK	48.8	31.3	3.7	31.7	52.1	68.2	16.1	Bandedge	
Hori	10360.000	PK	56.8	38.8	-2.4	33.6	59.6	68.2	8.6	Outside	
Hori	15540.000	PK	43.3	37.9	-1.1	32.1	48.0	73.9	25.9	Inside	
Hori	20720.000	PK	45.1	37.6	-0.9	32.2	49.6	73.9	24.3	Inside	
Hori	5150.000	AV	37.8	31.3	3.7	31.7	41.1	53.9	12.8	Bandedge	
Hori	15540.000	AV	33.8	37.9	-1.1	32.1	38.5	53.9	15.4	Inside	
Hori	20720.000	AV	36.4	37.6	-0.9	32.2	40.9	53.9	13.0	Inside	
Vert	79.560	QP	47.6	6.3	7.8	32.1	29.6	40.0	10.4	Outside	
Vert	99.752	QP	38.9	10.0	8.0	32.2	24.7	43.5	18.8	Outside	
Vert	133.012	QP	35.0	13.9	8.4	32.1	25.2	43.5	18.3	Inside	
Vert	690.003	QP	32.7	20.4	12.3	32.1	33.3	46.0	12.7	Outside	
Vert	750.002	QP	31.4	21.4	12.6	31.7	33.7	46.0	12.3	Outside	
Vert	780.000	QP	31.0	21.9	12.7	31.6	34.0	46.0	12.0	Outside	
Vert	3460.500	PK	49.0	27.8	3.0	32.2	47.6	68.2	20.6	Outside	
Vert	5150.000	PK	46.8	31.3	3.7	31.7	50.1	68.2	18.1	Bandedge	
Vert	10360.000	PK	55.3	38.8	-2.4	33.6	58.1	68.2	10.1	Outside	
Vert	15540.000	PK	42.3	37.9	-1.1	32.1	47.0	73.9	26.9	Inside	
Vert	20720.000	PK	44.8	37.6	-0.9	32.2	49.3	73.9	24.6	Inside	
Vert	5150.000	AV	36.7	31.3	3.7	31.7	40.0	53.9	13.9	Bandedge	
Vert	15540.000	AV	33.8	37.9	-1.1	32.1	38.5	53.9	15.4	Inside	
Vert	20720.000	AV	36.4	37.6	-0.9	32.2	40.9	53.9	13.0	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/19/2014	12/21/2014	12/23/2014
Temperature/ Humidity	24deg. C / 26% RH	23deg. C / 38% RH	22deg. C / 37% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above26.5GHz)
Mode	11a Tx 5240MHz Internal Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	10480.000	PK	56.5	38.8	-2.4	33.6	59.3	68.2	8.9	Outside	
Hori	15720.000	PK	42.8	37.7	-1.1	32.2	47.2	73.9	26.7	Inside	
Hori	20960.000	PK	45.2	37.6	-0.9	32.3	49.6	73.9	24.3	Inside	
Hori	15720.000	AV	33.9	37.7	-1.1	32.2	38.3	53.9	15.6	Inside	
Hori	20960.000	AV	36.7	37.6	-0.9	32.3	41.1	53.9	12.8	Inside	
Vert	1800.000	PK	51.2	25.9	2.2	33.3	46.0	68.2	22.2	Outside	
Vert	3456.000	PK	50.0	27.8	3.0	32.2	48.6	68.2	19.6	Outside	
Vert	10480.000	PK	57.1	38.8	-2.4	33.6	59.9	68.2	8.3	Outside	
Vert	15720.000	PK	42.4	37.7	-1.1	32.2	46.8	73.9	27.1	Inside	
Vert	20960.000	PK	45.1	37.6	-0.9	32.3	49.5	73.9	24.4	Inside	
Vert	15720.000	AV	33.9	37.7	-1.1	32.2	38.3	53.9	15.6	Inside	
Vert	20960.000	AV	36.7	37.6	-0.9	32.3	41.1	53.9	12.8	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/19/2014	12/21/2014	12/23/2014
Temperature/ Humidity	24deg. C / 26% RH	23deg. C / 38% RH	22deg. C / 37% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (10-26.5GHz)	Satofumi Matsuyama (Above26.5GHz)
Mode	11a Tx 5320MHz Internal Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5350.000	PK	52.7	31.6	3.8	31.7	56.4	68.2	11.8	Bandedge	
Hori	10640.000	PK	58.2	38.7	-2.3	33.7	60.9	73.9	13.0	Inside	
Hori	15960.000	PK	42.8	37.6	-1.0	32.3	47.1	73.9	26.8	Inside	
Hori	21280.000	PK	46.2	37.6	-0.8	32.3	50.7	73.9	23.2	Inside	
Hori	5350.000	AV	41.0	31.6	3.8	31.7	44.7	53.9	9.2	Bandedge	
Hori	10640.000	AV	48.1	38.7	-2.3	33.7	50.8	53.9	3.1	Inside	
Hori	15960.000	AV	34.4	37.6	-1.0	32.3	38.7	53.9	15.2	Inside	
Hori	21280.000	AV	36.4	37.6	-0.8	32.3	40.9	53.9	13.0	Inside	
Vert	1800.000	PK	53.1	25.9	2.2	33.3	47.9	68.2	20.3	Outside	
Vert	3456.010	PK	49.7	27.8	3.0	32.2	48.3	68.2	19.9	Outside	
Vert	5350.000	PK	48.3	31.6	3.8	31.7	52.0	68.2	16.2	Bandedge	
Vert	10640.000	PK	56.5	38.7	-2.3	33.7	59.2	73.9	14.7	Inside	
Vert	15960.000	PK	43.6	37.6	-1.0	32.3	47.9	73.9	26.0	Inside	
Vert	21280.000	PK	45.4	37.6	-0.8	32.3	49.9	73.9	24.0	Inside	
Vert	5350.000	AV	37.6	31.6	3.8	31.7	41.3	53.9	12.6	Bandedge	
Vert	10640.000	AV	46.6	38.7	-2.3	33.7	49.3	53.9	4.6	Inside	
Vert	15960.000	AV	34.4	37.6	-1.0	32.3	38.7	53.9	15.2	Inside	
Vert	21280.000	AV	36.4	37.6	-0.8	32.3	40.9	53.9	13.0	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/19/2014
Temperature/ Humidity	24deg. C / 26% RH
Engineer	Yuta Moriya
	(1-10GHz)
Mode	11n-20 Tx 5180MHz Internal Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Vert	5150.000	PK	46.3	31.3	3.7	31.7	0.2	49.8	68.2	18.4	Bandedge	
Vert	5150.000	AV	35.8	31.3	3.7	31.7	0.2	39.3	53.9	14.6	Bandedge	
Hori	5150.000	PK	48.7	31.3	3.7	31.7	0.2	52.2	68.2	16.0	Bandedge	
Hori	5150.000	AV	37.8	31.3	3.7	31.7	0.2	41.3	53.9	12.6	Bandedge	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/19/2014
Temperature/ Humidity	24deg. C / 26% RH
Engineer	Yuta Moriya
	(1-10GHz)
Mode	11n-20 Tx 5320MHz Internal Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5350.000	PK	50.6	31.6	3.8	31.7	0.2	54.5	68.2	13.7	Bandedge	
Hori	5350.000	AV	41.2	31.6	3.8	31.7	0.2	45.1	53.9	8.8	Bandedge	
Vert	5350.000	PK	47.8	31.6	3.8	31.7	0.2	51.7	68.2	16.5	Bandedge	
Vert	5350.000	AV	37.0	31.6	3.8	31.7	0.2	40.9	53.9	13.0	Bandedge	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber	
Report No.	10517044H	
Date	12/19/2014	12/23/2014
Temperature/ Humidity	24deg. C / 26% RH	22deg. C / 37% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (Above10GHz)
Mode	11a Tx 5500MHz Internal Antenna	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1841.750	PK	54.2	25.9	2.2	33.2	49.1	68.2	19.1	Outside	
Hori	5470.000	PK	48.3	31.8	3.8	31.8	52.1	68.2	16.1	Outside	
Hori	11000.000	PK	53.0	38.8	-2.2	33.7	55.9	73.9	18.0	Inside	
Hori	16500.000	PK	43.7	37.5	-0.5	32.2	48.5	68.2	19.7	Outside	
Hori	22000.000	PK	44.4	37.6	-0.4	32.1	49.5	68.2	18.7	Outside	
Hori	11000.000	AV	43.8	38.8	-2.2	33.7	46.7	53.9	7.2	Inside	
Vert	1597.500	PK	60.2	25.5	2.0	33.7	54.0	73.9	19.9	Inside	
Vert	1833.400	PK	53.0	25.9	2.2	33.3	47.8	68.2	20.4	Outside	
Vert	3455.955	PK	50.1	27.8	3.0	32.2	48.7	68.2	19.5	Outside	
Vert	5470.000	PK	45.0	31.8	3.8	31.8	48.8	68.2	19.4	Outside	
Vert	11000.000	PK	49.8	38.8	-2.2	33.7	52.7	73.9	21.2	Inside	
Vert	16500.000	PK	43.6	37.5	-0.5	32.2	48.4	68.2	19.8	Outside	
Vert	22000.000	PK	44.7	37.6	-0.4	32.1	49.8	68.2	18.4	Outside	
Vert	1597.500	AV	40.3	25.5	2.0	33.7	34.1	53.9	19.8	Inside	
Vert	11000.000	AV	40.7	38.8	-2.2	33.7	43.6	53.9	10.3	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber	
Report No.	10517044H	
Date	12/19/2014	12/23/2014
Temperature/ Humidity	24deg. C / 26% RH	22deg. C / 37% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (Above10GHz)
Mode	11a Tx 5580MHz Internal Antenna	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1860.000	PK	56.2	25.9	2.2	33.2	51.1	68.2	17.1	Outside	
Hori	11160.000	PK	56.5	39.0	-2.1	33.7	59.7	73.9	14.2	Inside	
Hori	16740.000	PK	44.0	37.5	-0.5	32.2	48.8	68.2	19.4	Outside	
Hori	22320.000	PK	44.9	37.7	-0.3	31.9	50.4	73.9	23.5	Inside	
Hori	11160.000	AV	46.1	39.0	-2.1	33.7	49.3	53.9	4.6	Inside	
Hori	22320.000	AV	35.8	37.7	-0.3	31.9	41.3	53.9	12.6	Inside	
Vert	1861.625	PK	58.6	25.9	2.2	33.2	53.5	68.2	14.7	Outside	
Vert	3456.175	PK	49.2	27.8	3.0	32.2	47.8	68.2	20.4	Outside	
Vert	11160.000	PK	50.0	39.0	-2.1	33.7	53.2	73.9	20.7	Inside	
Vert	16740.000	PK	43.9	37.5	-0.5	32.2	48.7	68.2	19.5	Outside	
Vert	22320.000	PK	44.0	37.7	-0.3	31.9	49.5	73.9	24.4	Inside	
Vert	11160.000	AV	40.8	39.0	-2.1	33.7	44.0	53.9	9.9	Inside	
Vert	22320.000	AV	35.8	37.7	-0.3	31.9	41.3	53.9	12.6	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber	
Report No.	10517044H	
Date	12/19/2014	12/23/2014
Temperature/ Humidity	24deg. C / 26% RH	22deg. C / 37% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (Above10GHz)
Mode	11a Tx 5700MHz Internal Antenna	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1900.000	PK	55.6	26.0	2.2	33.1	50.7	68.2	17.5	Outside	
Hori	3800.000	PK	49.7	28.5	3.1	32.1	49.2	73.9	24.7	Inside	
Hori	5725.000	PK	49.4	32.1	3.9	31.8	53.6	68.2	14.6	Outside	
Hori	11400.000	PK	56.8	39.4	-2.1	33.6	60.5	73.9	13.4	Inside	
Hori	17100.000	PK	42.1	37.4	-0.3	32.2	47.0	68.2	21.2	Outside	
Hori	22800.000	PK	45.5	37.8	-0.2	31.7	51.4	73.9	22.5	Inside	
Hori	3800.000	AV	43.3	28.5	3.1	32.1	42.8	53.9	11.1	Inside	
Hori	11400.000	AV	47.6	39.4	-2.1	33.6	51.3	53.9	2.6	Inside	
Hori	22800.000	AV	36.6	37.8	-0.2	31.7	42.5	53.9	11.4	Inside	
Vert	1902.125	PK	58.8	26.0	2.2	33.1	53.9	68.2	14.3	Outside	
Vert	3455.907	PK	49.3	27.8	3.0	32.2	47.9	68.2	20.3	Outside	
Vert	3800.062	PK	48.2	28.5	3.1	32.1	47.7	73.9	26.2	Inside	
Vert	5725.000	PK	46.7	32.1	3.9	31.8	50.9	68.2	17.3	Outside	
Vert	11400.000	PK	51.9	39.4	-2.1	33.6	55.6	73.9	18.3	Inside	
Vert	17100.000	PK	42.5	37.4	-0.3	32.2	47.4	68.2	20.8	Outside	
Vert	22800.000	PK	44.9	37.8	-0.2	31.7	50.8	73.9	23.1	Inside	
Vert	3800.062	AV	42.2	28.5	3.1	32.1	41.7	53.9	12.2	Inside	
Vert	11400.000	AV	42.1	39.4	-2.1	33.6	45.8	53.9	8.1	Inside	
Vert	22800.000	AV	36.6	37.8	-0.2	31.7	42.5	53.9	11.4	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/19/2014
Temperature/ Humidity	24deg. C / 26% RH
Engineer	Yuta Moriya
	(1-10GHz)
Mode	11n-20 Tx 5500MHz Internal Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Vert	5470.000	PK	44.1	31.8	3.8	31.8	0.2	48.1	68.2	20.1	Outside	
Hori	5470.000	PK	47.5	31.8	3.8	31.8	0.2	51.5	68.2	16.7	Outside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/19/2014
Temperature/ Humidity	24deg. C / 26% RH
Engineer	Yuta Moriya
	(1-10GHz)
Mode	11n-20 Tx 5700MHz Internal Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Vert	5725.000	PK	46.7	32.1	3.9	31.8	0.2	51.1	68.2	17.1	Outside	
Hori	5725.000	PK	49.4	32.1	3.9	31.8	0.2	53.8	68.2	14.4	Outside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber	
Report No.	10517044H	
Date	12/19/2014	12/23/2014
Temperature/ Humidity	24deg. C / 26% RH	22deg. C / 37% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (Above10GHz)
Mode	11a Tx 5745MHz Internal Antenna	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1915.000	PK	55.9	26.0	2.2	33.1	51.0	68.2	17.2	Outside	
Hori	3830.000	PK	50.5	28.6	3.1	32.1	50.1	73.9	23.8	Inside	
Hori	5715.000	PK	46.9	32.1	3.9	31.8	51.1	68.2	17.1	Outside	
Hori	5725.000	PK	53.6	32.1	3.9	31.8	57.8	68.2	10.4	Outside	
Hori	11490.000	PK	51.9	39.6	-2.1	33.6	55.8	73.9	18.1	Inside	
Hori	17235.000	PK	42.9	37.2	-0.3	32.2	47.6	68.2	20.6	Outside	
Hori	22980.000	PK	45.8	37.9	-0.1	31.6	52.0	73.9	21.9	Inside	
Hori	3830.000	AV	46.3	28.6	3.1	32.1	45.9	53.9	8.0	Inside	
Hori	11490.000	AV	43.0	39.6	-2.1	33.6	46.9	53.9	7.0	Inside	
Hori	22980.000	AV	36.8	37.9	-0.1	31.6	43.0	53.9	10.9	Inside	
Vert	1920.375	PK	56.3	26.0	2.2	33.1	51.4	68.2	16.8	Outside	
Vert	3455.865	PK	49.5	27.8	3.0	32.2	48.1	68.2	20.1	Outside	
Vert	5715.000	PK	44.5	32.1	3.9	31.8	48.7	68.2	19.5	Outside	
Vert	5725.000	PK	49.7	32.1	3.9	31.8	53.9	68.2	14.3	Outside	
Vert	11490.000	PK	49.4	39.6	-2.1	33.6	53.3	73.9	20.6	Inside	
Vert	17235.000	PK	42.7	37.2	-0.3	32.2	47.4	68.2	20.8	Outside	
Vert	22980.000	PK	45.9	37.9	-0.1	31.6	52.1	73.9	21.8	Inside	
Vert	11490.000	AV	39.6	39.6	-2.1	33.6	43.5	53.9	10.4	Inside	
Vert	22980.000	AV	36.8	37.9	-0.1	31.6	43.0	53.9	10.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber	
Report No.	10517044H	
Date	12/19/2014	12/23/2014
Temperature/ Humidity	24deg. C / 26% RH	22deg. C / 37% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (Above10GHz)
Mode	11a Tx 5785MHz Internal Antenna	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	1928.500	PK	53.7	26.0	2.2	33.1	48.8	68.2	19.4	Outside	
Hori	3856.600	PK	51.0	28.6	3.2	32.1	50.7	73.9	23.2	Inside	
Hori	11570.000	PK	50.5	39.6	-2.0	33.6	54.5	73.9	19.4	Inside	
Hori	17355.000	PK	42.7	37.1	-0.3	32.2	47.3	68.2	20.9	Outside	
Hori	23140.000	PK	46.1	37.9	-0.1	31.5	52.4	68.2	15.8	Outside	
Hori	3856.600	AV	46.9	28.6	3.2	32.1	46.6	53.9	7.3	Inside	
Hori	11570.000	AV	42.1	39.6	-2.0	33.6	46.1	53.9	7.8	Inside	
Vert	1923.250	PK	57.0	26.0	2.2	33.1	52.1	68.2	16.1	Outside	
Vert	3456.162	PK	48.0	27.8	3.0	32.2	46.6	68.2	21.6	Outside	
Vert	3856.600	PK	50.0	28.6	3.2	32.1	49.7	73.9	24.2	Inside	
Vert	11570.000	PK	50.2	39.6	-2.0	33.6	54.2	73.9	19.7	Inside	
Vert	17355.000	PK	42.4	37.1	-0.3	32.2	47.0	68.2	21.2	Outside	
Vert	23140.000	PK	46.2	37.9	-0.1	31.5	52.5	68.2	15.7	Outside	
Vert	3856.600	AV	46.1	28.6	3.2	32.1	45.8	53.9	8.1	Inside	
Vert	11570.000	AV	40.9	39.6	-2.0	33.6	44.9	53.9	9.0	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber		
Report No.	10517044H		
Date	12/19/2014	12/23/2014	12/23/2014 Night
Temperature/ Humidity	24deg. C / 26% RH	22deg. C / 37% RH	24deg. C / 31% RH
Engineer	Yuta Moriya (1-10GHz)	Satofumi Matsuyama (Above10GHz)	Tomohisa Nakagawa (Below 1GHz)
Mode	11a Tx 5825MHz Internal Antenna		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	79.556	QP	30.8	6.3	7.8	32.1	12.8	40.0	27.2	Outside	
Hori	99.758	QP	31.1	10.0	8.0	32.2	16.9	43.5	26.6	Outside	
Hori	133.014	QP	31.9	13.9	8.4	32.1	22.1	43.5	21.4	Inside	
Hori	660.002	QP	31.7	20.1	12.1	32.0	31.9	46.0	14.1	Outside	
Hori	690.004	QP	33.9	20.4	12.3	32.1	34.5	46.0	11.5	Outside	
Hori	750.001	QP	28.7	21.4	12.6	31.7	31.0	46.0	15.0	Outside	
Hori	1942.000	PK	53.1	26.1	2.2	33.1	48.3	68.2	19.9	Outside	
Hori	3883.400	PK	51.9	28.7	3.2	32.1	51.7	73.9	22.2	Inside	
Hori	5850.000	PK	50.1	32.2	4.0	31.8	54.5	68.2	13.7	Outside	
Hori	5860.000	PK	44.4	32.2	4.0	31.8	48.8	68.2	19.4	Outside	
Hori	11650.000	PK	50.0	39.6	-2.0	33.5	54.1	73.9	19.8	Inside	
Hori	17475.000	PK	43.2	37.0	-0.4	32.2	47.6	68.2	20.6	Outside	
Hori	23300.000	PK	45.3	37.9	-0.1	31.4	51.7	68.2	16.5	Outside	
Hori	3883.400	AV	48.4	28.7	3.2	32.1	48.2	53.9	5.7	Inside	
Hori	11650.000	AV	41.1	39.6	-2.0	33.5	45.2	53.9	8.7	Inside	
Vert	79.576	QP	45.6	6.3	7.8	32.1	27.6	40.0	12.4	Outside	
Vert	99.734	QP	38.8	10.0	8.0	32.2	24.6	43.5	18.9	Outside	
Vert	133.000	QP	34.9	13.9	8.4	32.1	25.1	43.5	18.4	Inside	
Vert	690.005	QP	32.9	20.4	12.3	32.1	33.5	46.0	12.5	Outside	
Vert	750.002	QP	31.7	21.4	12.6	31.7	34.0	46.0	12.0	Outside	
Vert	780.004	QP	31.4	21.9	12.7	31.6	34.4	46.0	11.6	Outside	
Vert	1937.125	PK	53.9	26.1	2.2	33.1	49.1	68.2	19.1	Outside	
Vert	3456.075	PK	49.4	27.8	3.0	32.2	48.0	68.2	20.2	Outside	
Vert	3883.265	PK	51.6	28.7	3.2	32.1	51.4	73.9	22.5	Inside	
Vert	5850.000	PK	44.9	32.2	4.0	31.8	49.3	68.2	18.9	Outside	
Vert	5860.000	PK	42.1	32.2	4.0	31.8	46.5	68.2	21.7	Outside	
Vert	11650.000	PK	50.3	39.6	-2.0	33.5	54.4	73.9	19.5	Inside	
Vert	17475.000	PK	43.1	37.0	-0.4	32.2	47.5	68.2	20.7	Outside	
Vert	23300.000	PK	45.6	37.9	-0.1	31.4	52.0	68.2	16.2	Outside	
Vert	3883.265	AV	48.0	28.7	3.2	32.1	47.8	53.9	6.1	Inside	
Vert	11650.000	AV	40.9	39.6	-2.0	33.5	45.0	53.9	8.9	Inside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/19/2014
Temperature/ Humidity	24deg. C / 26% RH
Engineer	Yuta Moriya
	(1-10GHz)
Mode	11n-20 Tx 5745MHz Internal Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5715.000	PK	45.1	32.1	3.9	31.8	0.2	49.5	68.2	18.7	Outside	
Vert	5715.000	PK	43.8	32.1	3.9	31.8	0.2	48.2	68.2	20.0	Outside	
Vert	5725.000	PK	49.4	32.1	3.9	31.8	0.2	53.8	68.2	14.4	Outside	
Hori	5725.000	PK	52.3	32.1	3.9	31.8	0.2	56.7	68.2	11.5	Outside	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Anechoic Chamber
Report No.	10517044H
Date	12/19/2014
Temperature/ Humidity	24deg. C / 26% RH
Engineer	Yuta Moriya
	(1-10GHz)
Mode	11n-20 Tx 5825MHz Internal Antenna

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Vert	5850.000	PK	45.1	32.2	4.0	31.8	0.2	49.7	68.2	18.5	Outside	
Hori	5860.000	PK	44.4	32.2	4.0	31.8	0.2	49.0	68.2	19.2	Outside	
Vert	5860.000	PK	41.7	32.2	4.0	31.8	0.2	46.3	68.2	21.9	Outside	
Hori	5850.000	PK	49.8	32.2	4.0	31.8	0.2	54.4	68.2	13.8	Outside	

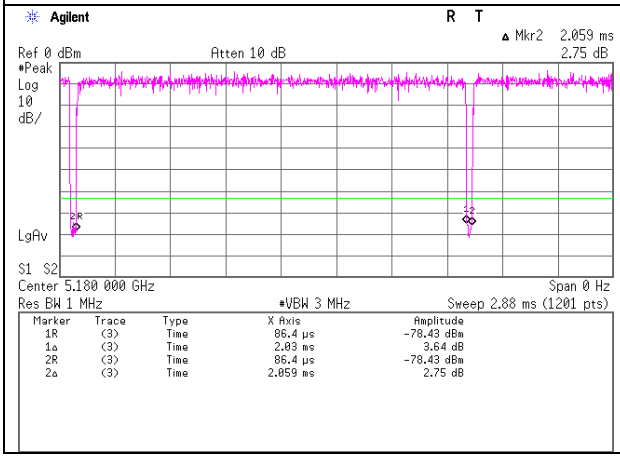
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier) + Duty Factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

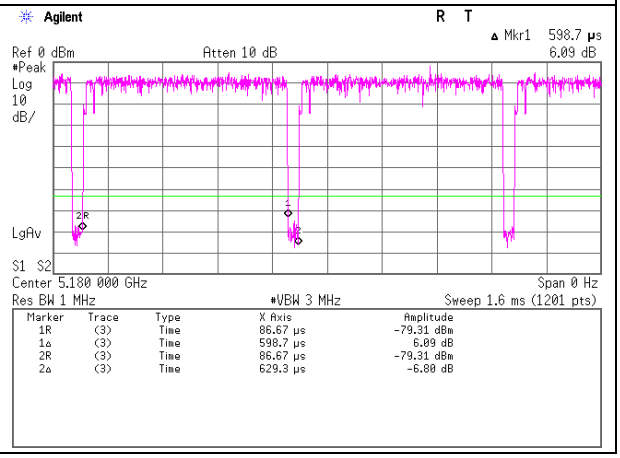
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

VBW (AV) Calculation

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10512074H
Date	11/25/2014
Temperature/ Humidity	21deg. C / 52% RH
Engineer	Satofumi Matsuyama
Mode	11a Tx / 11n-20 Tx

11a 6Mbps		11n-20 MCS2(Short GI)	
Tx on / (Tx on + Tx off) =	**0.986**	**Tx on / (Tx on + Tx off) =**	**0.951**
Tx on / (Tx on + Tx off) * 100 =	**98.6 %**	**Tx on / (Tx on + Tx off) * 100 =**	**95.1 %**
Duty factor = 10 * log (2.059 / 2.03) =	**0.06 dB**	**Duty factor = 10 * log (629.3 / 598.7) =**	**0.22 dB**





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Telephone : +81 596 24 8999
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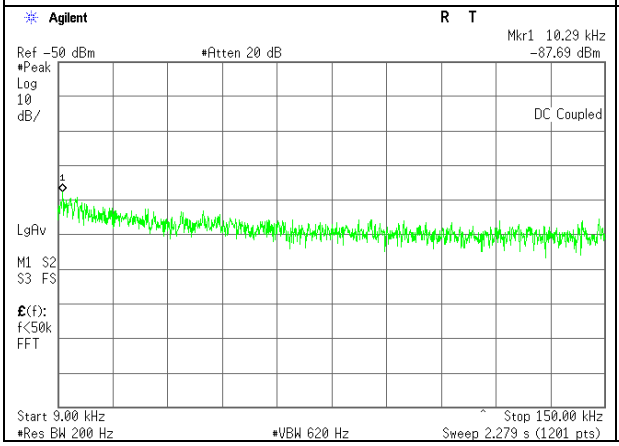
Conducted Spurious Emission

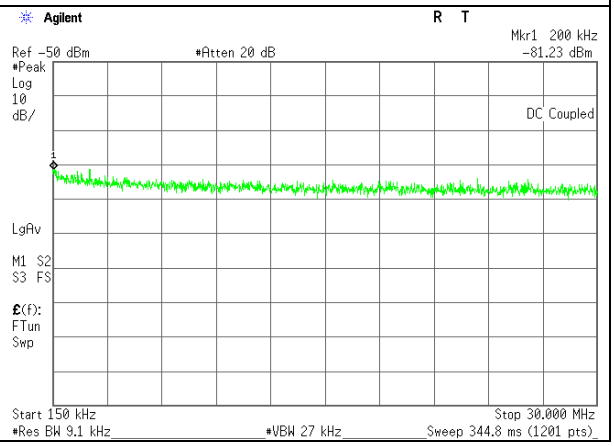
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10512074H
Date	11/25/2014
Temperature/ Humidity	21deg. C / 52% RH
Engineer	Satofumi Matsuyama
Mode	11a Tx

11a Tx 5180MHz

9kHz-150kHz



150kHz-30MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	N (Number of Output	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
10.29	-87.7	1.23	10.1	2.0	1	-74.4	300	6.0	-13.1	67.3	80.4	
200.00	-81.2	1.23	10.1	2.0	1	-67.9	300	6.0	-6.7	41.5	48.2	

E=EIRP-20log(D)+Ground bounce +104.8[dBuV/m]

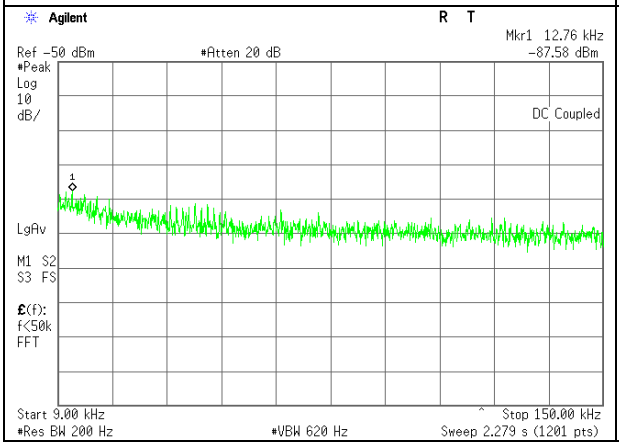
EIRP=Reading+Cable Loss+Attenator+Antenna Gain+10*log(N)

Conducted Spurious Emission

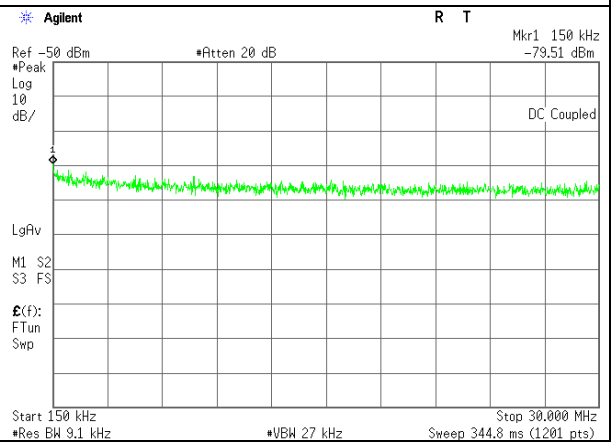
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10512074H
Date	11/27/2014
Temperature/ Humidity	24deg C / 46% RH
Engineer	Satofumi Matsuyama
Mode	11n-20 Tx

11n-20 Tx 5180MHz

9kHz-150kHz



150kHz-30MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	N (Number of Output	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
12.76	-87.6	1.23	10.1	2.0	1	-74.3	300	6.0	-13.0	65.4	78.4	
150.00	-79.5	1.23	10.1	2.0	1	-66.2	300	6.0	-5.0	44.0	49.0	

E=EIRP-20log(D)+Ground bounce +104.8[dBuV/m]

EIRP=Reading+Cable Loss+Attenator+Antenna Gain+10*log(N)

APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2014/10/06 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2014/10/06 * 12
MSA-16	Spectrum Analyzer	Agilent	E4440A	MY46186390	AT/RE	2014/02/28 * 12
MAT-25	Attenuator(10dB)(above1GHz)	Agilent	8493C	71642	AT	2014/06/12 * 12
MCC-36	Microwave Cable	Hirose Electric	U.FL-2LP-066-A-(200)	-	AT	2014/09/12 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2014/02/20 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2014/02/27 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2014/02/20 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2014/05/26 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2014/05/26 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2014/03/24 * 12
MHF-22	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCB	602	RE	2014/01/16 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2014/12/15 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2014/05/26 * 12
MCC-54	Microwave Cable	Suhner	SUCOFLEX101	2873(1m) / 2876(5m)	RE	2014/03/11 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	3950M00205	RE	2014/06/30 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	CE	2014/06/25 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	CE	2014/02/20 * 12
MJM-14	Measure	KOMELON	KMC-36	-	CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	CE/RE	
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	CE/RE	2014/11/12 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	CE	2014/06/03 * 12
MLS-24	LISN(AMN)	Schwarzbeck	NSLK8127	8127-730	CE(EUT)	2014/07/10 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2014/01/20 * 12
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	CE	2014/02/20 * 12
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2014/01/29 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2014/08/19 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2014/10/18 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2014/10/18 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2014/07/14 * 12
MAT-70	Attenuator(6dB)	Agilent	8491A-006	MY52460153	RE	2014/04/14 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2014/03/14 * 12

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item: CE: Conducted Emission
RE: Radiated Emission
AT: Antenna Terminal Conducted test