



Test report No. : 11166423H
Page : 1 of 38
Issued date : March 17, 2016
FCC ID : N6C-SDMAN

This test report shows the test data of original RF module that has the same specification as this application. In this application, the module will be controlled not to use the Bluetooth and 802.11n-HT40 mode by software of host device.

RADIO TEST REPORT

Test Report No. : 11166423H

Applicant : **silex technology, Inc.**

Type of Equipment : **SDIO Wireless Module**

Model No. : **SX-SDMAN**

FCC ID : **N6C-SDMAN**

Test regulation : **FCC Part 15 Subpart E: 2015**
(Permissive Change Class II Application)
*** Spurious Emission Restricted Band Edge test only**

Test Result : **Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
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)

Date of test: February 26 to March 5, 2016

Representative test engineer:

K. Kawamura

Keisuke Kawamura
Engineer
Consumer Technology Division

Approved by:

T. Hatahara

Takahiro Hatahara
Leader
Consumer Technology Division



NVLAP LAB CODE: 200572-0

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 11166423H

[illegible]

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SECTION 1: Customer information

Company Name	:	silex technology, Inc.
Address	:	2-3-1 Hikaridai, Seika-cho, Kyoto 619-0237, Japan
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	:	SDIO Wireless Module
Model No.	:	SX-SDMAN
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V
Receipt Date of Sample	:	February 15, 2016
Country of Mass-production	:	Japan
Condition of EUT	:	Production model
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model No: SX-SDMAN (referred to as the EUT in this report) is the SDIO Wireless Module.

General Specification

Clock frequency(ies) in the system	:	26MHz
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Radio Specification

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

Specification of Wireless LAN (IEEE802.11b/g/a/n-20/n-40)

Type of radio	IEEE802.11b	IEEE802.11g	IEEE802.11a	IEEE802.11n (20 M band)	IEEE802.11n (40 M band)
Frequency of operation	2412-2462MHz	2412-2462MHz	5180-5320MHz 5500-5700MHz 5745-5825MHz	2412-2462MHz 5180-5320MHz 5500-5700MHz 5745-5825MHz	5190-5310MHz 5510-5670MHz 5755-5795MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		
Channel spacing	5MHz		20MHz	<u>2.4GHz band</u> 5MHz <u>5GHz band</u> 20MHz	40MHz
Antenna type *1)	Mini-Nanoblade antenna: Laird Technologies Stand Alone antenna: Molex				
Antenna Gain	Mini-Nanoblade antenna: 2.5dBi (2.4GHz), 4.8dBi (5GHz) Stand Alone antenna: 3.0dBi (2.4GHz), 4.6dBi (5GHz)				
Antenna Connector type	U.FL Alternative connector				

*1) This antenna does not use W56 band.

Specification of Bluetooth (Ver.4.0 + EDR)

Type of radio	Bluetooth
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS
Channel spacing	1MHz
Antenna type	Mini-Nanoblade antenna: Laird Technologies Stand Alone antenna: Molex
Antenna Gain	Mini-Nanoblade antenna: 2.5dBi (2.4GHz), 4.8dBi (5GHz) Stand Alone antenna: 3.0dBi (2.4GHz), 4.6dBi (5GHz)
Antenna Connector Type	U.FL Alternative connector

Specification of Low Energy (Ver.4.0 + EDR/LE Dual mode)

Type of radio	Low Energy
Frequency of Operation	2402-2480MHz
Type of Modulation	DSSS
Channel spacing	2MHz
Antenna type	Mini-Nanoblade antenna: Laird Technologies Stand Alone antenna: Molex
Antenna Gain	Mini-Nanoblade antenna: 2.5dBi (2.4GHz), 4.8dBi (5GHz) Stand Alone antenna: 3.0dBi (2.4GHz), 4.6dBi (5GHz)
Antenna Connector Type	U.FL Alternative connector

*This test report applies for Wireless LAN (IEEE802.11a/n-20/n-40) W58 band only.
Wireless LAN and Bluetooth do not transmit simultaneously.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart E: 2015, final revised on November 23, 2015
 *Some parts are effective on and after December 17, 2015 or December 23, 2015. The revision does not affect the test specification applied to the EUT.

Title : FCC 47CFR Part15 Radio Frequency Device Subpart E
 Unlicensed National Information Infrastructure Devices
 Section 15.407 General technical requirements

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Spurious Emission Restricted Band Edge	FCC: ANSI C63.10-2013 KDB Publication Number 789033	FCC: 15.407 (b), 15.205 and 15.209	0.6 dB 11650.00 MHz, AV, Vert. 11510.000 MHz, AV, Vert.	Complied	Radiated (> 30 MHz) *1)
	IC: -	IC: RSS-247 6.2.1 (2) 6.2.2 (2) 6.2.3 (2) 6.2.4 (2)			

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

*1) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b).

* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

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).

Therefore the equipment complies with the requirement of 15.203/212.

3.3 Addition to standard

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 $k=2$.
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Test distance	Radiated emission ($\pm$ dB) 9 kHz - 30 MHz
3m	3.8 dB
10m	3.7 dB

Polarity	Radiated emission (Below 1GHz)			
	(3 m*)($\pm$ dB)		(10 m*)($\pm$ dB)	
	30 – 300 MHz	300 – 1000MHz	30 – 300 MHz	300 – 1000MHz
Horizontal	4.8 dB	5.2 dB	4.8 dB	5.0 dB
Vertical	4.5 dB	5.9 dB	4.8 dB	5.1 dB

Radiated emission				
(3 m*)($\pm$ dB)		(1 m*)($\pm$ dB)	(0.5 m*)($\pm$ dB)	(10 m*)($\pm$ dB)
1 – 6GHz	6 – 18GHz	10 – 26.5 GHz	26.5 – 40GHz	1 -18 GHz
5.1 dB	5.3 dB	5.1 dB	5.1 dB	5.3 dB

*Measurement distance

Radiated emission test

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
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Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.6 shielded room	-	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	-	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	-	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	-	3.1 x 5.0 x 2.7	N/A	-	-
No.9 measurement room	-	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	-	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

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

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Mode(s)

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 3, PN9
IEEE 802.11n 40MHz BW (11n-40)	MCS 3, PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power. *Transmitting duty was 100 % on Spurious Emission (Radiated) test. *EUT has the power settings by the software as follows; Power settings: 13dBm Software: Atheros Radio Test (ART) - Revision 0.2 BUILD #33 ART_11n - Customer Version (ANWI BUILD) *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)

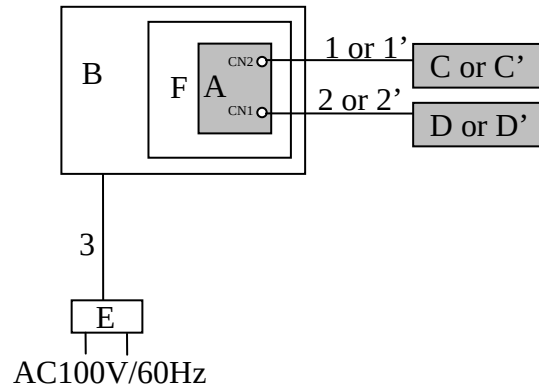
Test Item	Operating Mode	Tested Antenna port	Tested Frequency
			Upper Band
Spurious Emission (Radiated)	11n-20 Tx *1)	2 *2)	5745 MHz 5785 MHz 5825 MHz
	11n-40 Tx	2 *2)	5755 MHz 5795 MHz

*1) Since 11a and 11n-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest conducted output power (Test Report Number of original model is 10517042H-R1).

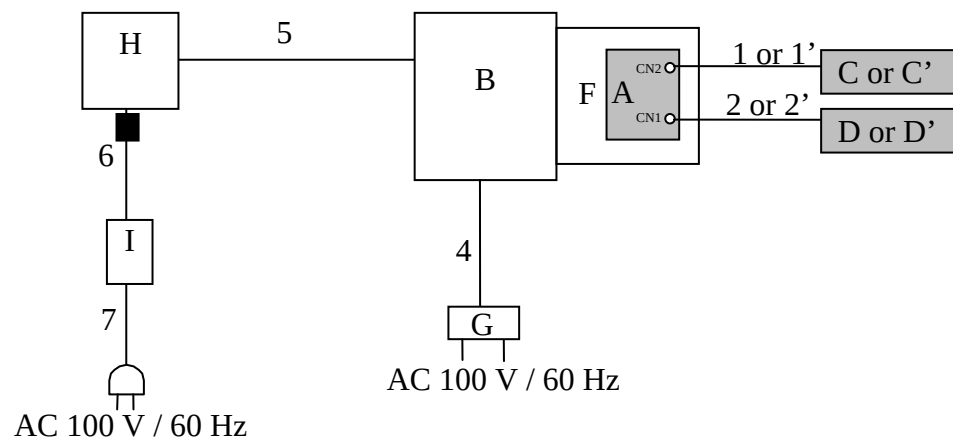
*2) After the comparison between Antenna port 1 and Antenna port 2, test was performed with the antenna that had higher power as a representative (Test Report Number of original model is 10517042H-R1).

4.2 Configuration and peripherals

[Radiated spurious emission (below 1 GHz)]



[Radiated spurious emission (above 1 GHz)]



■ : Standard Ferrite Core

- * Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.
- * Radiated emission was tested with the EUT on a single jig board in original application. For this testing, the antenna radiation was focused, and different jig boards were used.
- * EUT has Molex antenna and Laird antenna. The test was performed with below worst configurations.
 - CN1 and CN2 were connected to Molex antenna.
 - CN1 and CN2 were connected to Laird antenna.

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	SDIO Wireless Module	SX-SDMAN	00809250998E	silex technology, Inc.	EUT
B	Jig Board	-	-	silex technology, Inc.	-
C	Stand Alone antenna	47950-0001	001	Molex	EUT
C'	Mini-Nanoblade antenna	Mini-Nanoblade	001	Laird Technologies	EUT
D	Stand Alone antenna	47950-0001	002	Molex	EUT
D'	Mini-Nanoblade antenna	Mini-Nanoblade	002	Laird Technologies	EUT
E	AC Adaptor	US115-05	C08-0259307	UNIFIVE	-
F	Jig	-	-	silex technology, Inc.	-
G	AC Adaptor	XA012AM0500200	-	SCEPTRE POWER	-
H	Personal Computer	CF-N8HWCDPS	OBKSA08729	Panasonic	-
I	AC Adaptor	CF-AA63720 M6	6372BM610909023E	Panasonic	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna Cable (Molex)	0.08	Shielded	Shielded	-
1'	Antenna Cable (Laird)	0.08	Shielded	Shielded	-
2	Antenna Cable (Molex)	0.08	Shielded	Shielded	-
2'	Antenna Cable (Laird)	0.08	Shielded	Shielded	-
3	DC Cable	1.80	Unshielded	Unshielded	-
4	DC Cable	1.80	Unshielded	Unshielded	-
5	Serial Cable	2.10	Shielded	Shielded	-
6	DC Cable	1.00	Unshielded	Unshielded	-
7	AC Cable	0.80	Unshielded	Unshielded	-

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SECTION 5: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

< Above 1GHz >

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

The height of the measuring antenna varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).

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 68.2 dBuV/m, 3 m (-27 dBm e.i.r.p. ^{*}) in the Section 15.407 (b) (1) (2) (3).

Apply to limit 68.2 dBuV/m, 3 m (-27 dBm e.i.r.p. ^{*}) or

78.2 dBuV/m, 3 m (-17 dBm e.i.r.p. ^{*}) in the Section 15.407 (b).

Restricted band edge:

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:

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

Test Antennas are used as below;

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

Frequency	Below 1 GHz	Above 1 GHz	
Instrument used	Test Receiver	Spectrum Analyzer	
Detector	QP	Peak	Average
IF Bandwidth	BW: 120 kHz	RBW: 1 MHz VBW: 3 MHz	Method VB*1) RBW: 1MHz VBW was set at 10Hz.
Test Distance	3 m	3 m (below 1 GHz), 4.45 m*2) (1 GHz – 10GHz), 1 m*3) (10 GHz – 26.5 GHz), 0.5 m*4) (26.5 GHz – 40 GHz)	

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E (Issued on January 8, 2016)".

*2) Distance Factor: $20 \times \log (4.45 \text{ m}/3.0 \text{ m}) = 3.42 \text{ dB}$

*3) Distance Factor: $20 \times \log (1.0 \text{ m}/3.0 \text{ m}) = -9.5 \text{ dB}$

*4) Distance Factor: $20 \times \log (0.5 \text{ m}/3.0 \text{ m}) = -15.6 \text{ dB}$

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT (Module and antenna) 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 : 30 MHz-40 GHz
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Radiated Spurious Emission [Molex antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11166423H
Date	February 26, 2016 March 5, 2016
Temperature / Humidity	24deg. C / 35 % RH 22deg. C / 35 % RH
Engineer	Keisuke Kawamura Keisuke Kawamura
	(1 GHz-10 GHz) (10 GHz-40 GHz)
Mode	Tx 11n-20 5745 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5715.000	PK	49.6	32.6	7.5	31.2	58.5	68.2	9.7	
Hori	5725.000	PK	62.9	32.6	7.6	31.2	71.9	78.2	6.3	
Hori	11490.000	PK	50.6	41.0	-1.6	32.7	57.3	73.9	16.6	
Hori	17235.000	PK	44.8	42.4	0.0	31.9	55.3	68.2	12.9	Floor Noise
Hori	22980.000	PK	45.7	38.4	-0.8	31.4	51.9	73.9	22.0	Floor Noise
Hori	11490.000	AV	42.6	41.0	-1.6	32.7	49.3	53.9	4.6	
Hori	22980.000	AV	36.8	38.4	-0.8	31.4	43.0	53.9	10.9	Floor Noise
Vert	5715.000	PK	53.4	32.6	7.5	31.2	62.3	68.2	5.9	
Vert	5725.000	PK	66.0	32.6	7.6	31.2	75.0	78.2	3.2	
Vert	11490.000	PK	56.9	41.0	-1.6	32.7	63.6	73.9	10.3	
Vert	17235.000	PK	44.7	42.4	0.0	31.9	55.2	68.2	13.0	Floor Noise
Vert	22980.000	PK	45.6	38.4	-0.8	31.4	51.8	73.9	22.1	Floor Noise
Vert	11490.000	AV	45.7	41.0	-1.6	32.7	52.4	53.9	1.5	
Vert	22980.000	AV	36.5	38.4	-0.8	31.4	42.7	53.9	11.2	Floor Noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

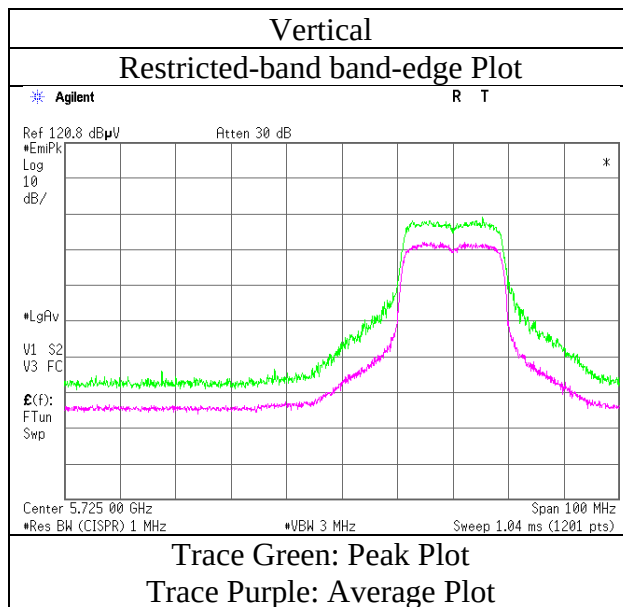
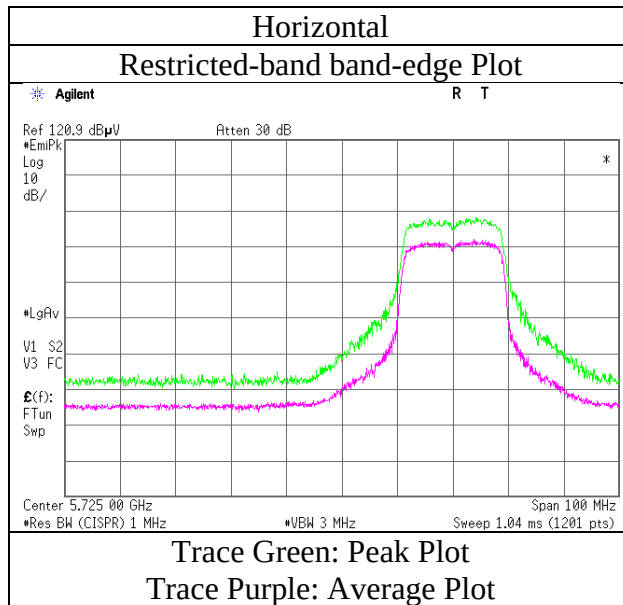
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 1GHz-10GHz 20log(4.45m/3.0m)= 3.42dB
 10GHz-26.5GHz 20log(1.0m/3.0m)= -9.5dB
 26.5GHz-40GHz 20log(0.5m/3.0m)= -15.6dB

*Duty cycle was 100% on this test.

Radiated Spurious Emission **[Molex antenna]**

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016
Temperature / Humidity : 24deg. C / 35 % RH
Engineer : Keisuke Kawamura
Mode : Tx 11n-20 5745 MHz



* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission [Molex antenna]

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016 March 5, 2016
Temperature / Humidity : 24deg. C / 35 % RH 22deg. C / 35 % RH
Engineer : Keisuke Kawamura Keisuke Kawamura
(1 GHz-10 GHz) (10 GHz-40 GHz)
Mode : Tx 11n-20 5785 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11570.000	PK	51.8	40.9	-1.6	32.6	58.5	73.9	15.4	
Hori	17355.000	PK	44.8	42.9	0.0	31.9	55.8	68.2	12.4	Floor Noise
Hori	23140.000	PK	45.6	38.5	-0.7	31.2	52.2	68.2	16.0	Floor Noise
Hori	11570.000	AV	43.8	40.9	-1.6	32.6	50.5	53.9	3.4	
Vert	11570.000	PK	55.8	40.9	-1.6	32.6	62.5	73.9	11.4	
Vert	17355.000	PK	44.2	42.9	0.0	31.9	55.2	68.2	13.0	Floor Noise
Vert	23140.000	PK	45.8	38.5	-0.7	31.2	52.4	68.2	15.8	Floor Noise
Vert	11570.000	AV	44.4	40.9	-1.6	32.6	51.1	53.9	2.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1GHz-10GHz $20\log(4.45\text{m}/3.0\text{m}) = 3.42\text{dB}$
 10GHz-26.5GHz $20\log(1.0\text{m}/3.0\text{m}) = -9.5\text{dB}$
 26.5GHz-40GHz $20\log(0.5\text{m}/3.0\text{m}) = -15.6\text{dB}$

*Duty cycle was 100% on this test.

Radiated Spurious Emission [Molex antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11166423H	
Date	February 26, 2016	March 5, 2016
Temperature / Humidity	24deg. C / 35 % RH	22deg. C / 35 % RH
Engineer	Keisuke Kawamura (1 GHz-10 GHz)	Keisuke Kawamura (10 GHz-40 GHz)
Mode	Tx 11n-20 5825 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	55.5	32.8	7.6	31.2	64.7	78.2	13.5	
Hori	5860.000	PK	47.7	32.8	7.6	31.2	56.9	68.2	11.3	
Hori	11650.000	PK	50.7	40.8	-1.4	32.6	57.5	73.9	16.4	
Hori	17475.000	PK	44.2	43.4	0.2	31.8	56.0	68.2	12.2	Floor Noise
Hori	23300.000	PK	45.8	38.6	-0.7	31.1	52.6	68.2	15.6	Floor Noise
Hori	11650.000	AV	42.7	40.8	-1.4	32.6	49.5	53.9	4.4	
Vert	5850.000	PK	55.8	32.8	7.6	31.2	65.0	78.2	13.2	
Vert	5860.000	PK	48.6	32.8	7.6	31.2	57.8	68.2	10.4	
Vert	11650.000	PK	54.3	40.8	-1.4	32.6	61.1	73.9	12.8	
Vert	17475.000	PK	44.1	43.4	0.2	31.8	55.9	68.2	12.3	Floor Noise
Vert	23300.000	PK	45.7	38.6	-0.7	31.1	52.5	68.2	15.7	Floor Noise
Vert	11650.000	AV	46.5	40.8	-1.4	32.6	53.3	53.9	0.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

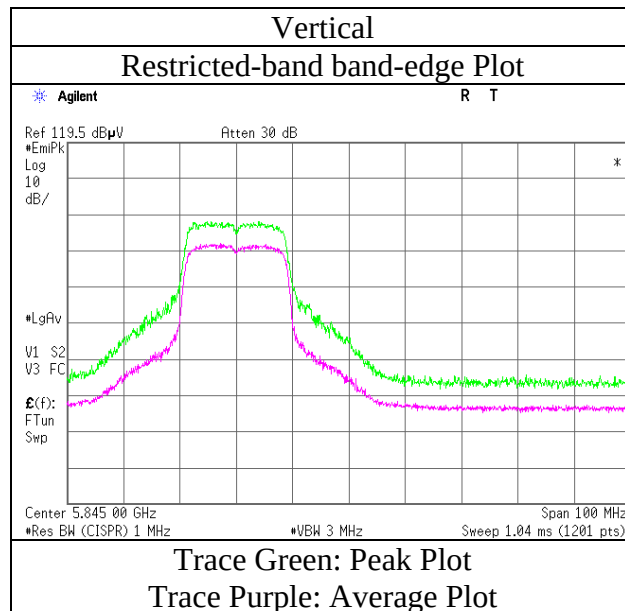
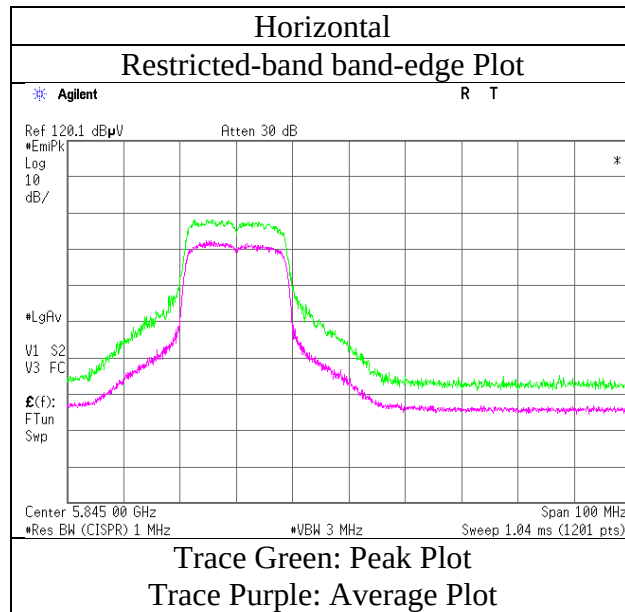
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor:	1GHz-10GHz	$20\log(4.45\text{m}/3.0\text{m}) = 3.42\text{dB}$
	10GHz-26.5GHz	$20\log(1.0\text{m}/3.0\text{m}) = -9.5\text{dB}$
	26.5GHz-40GHz	$20\log(0.5\text{m}/3.0\text{m}) = -15.6\text{dB}$

*Duty cycle was 100% on this test.

Radiated Spurious Emission [Molex antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11166423H
Date	February 26, 2016
Temperature / Humidity	24deg. C / 35 % RH
Engineer	Keisuke Kawamura
Mode	Tx 11n-20 5825 MHz



* Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

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Radiated Spurious Emission [Molex antenna]

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016 March 4, 2016 March 5, 2016
Temperature / Humidity : 24deg. C / 35 % RH 23deg. C / 31 % RH 22deg. C / 35 % RH
Engineer : Keisuke Kawamura Shinichi Miyazono Keisuke Kawamura
Mode : (1 GHz-10 GHz) (Below 1GHz) (10 GHz-40 GHz)
Tx 11n-40 5755 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	47.957	QP	27.4	11.4	6.9	28.5	17.2	40.0	22.8	
Hori	400.000	QP	27.9	17.1	9.4	28.2	26.2	46.0	19.8	
Hori	500.000	QP	36.2	17.9	9.7	28.6	35.2	46.0	10.8	
Hori	550.000	QP	32.2	18.6	9.9	28.5	32.2	46.0	13.8	
Hori	637.534	QP	35.4	19.7	10.2	28.3	37.0	46.0	9.0	
Hori	772.362	QP	22.5	21.5	10.7	27.9	26.8	46.0	19.2	
Hori	5715.000	PK	52.9	32.6	7.5	31.2	61.8	68.2	6.4	
Hori	5725.000	PK	57.0	32.6	7.6	31.2	66.0	78.2	12.2	
Hori	11510.000	PK	50.5	41.0	-1.6	32.7	57.2	73.9	16.7	
Hori	17265.000	PK	44.4	42.5	0.0	31.9	55.0	68.2	13.2	Floor Noise
Hori	23020.000	PK	45.4	38.5	-0.8	31.3	51.8	73.9	22.1	Floor Noise
Hori	11510.000	AV	42.5	41.0	-1.6	32.7	49.2	53.9	4.7	
Hori	23020.000	AV	36.7	38.5	-0.8	31.3	43.1	53.9	10.8	Floor Noise
Vert	48.010	QP	45.0	11.4	6.9	28.5	34.8	40.0	5.2	
Vert	400.000	QP	23.3	17.1	9.4	28.2	21.6	46.0	24.4	
Vert	500.000	QP	29.9	17.9	9.7	28.6	28.9	46.0	17.1	
Vert	637.743	QP	27.2	19.7	10.2	28.3	28.8	46.0	17.2	
Vert	865.373	QP	20.3	22.2	11.0	27.5	26.0	46.0	20.0	
Vert	945.837	QP	19.9	22.9	11.3	27.2	26.9	46.0	19.1	
Vert	5715.000	PK	55.1	32.6	7.5	31.2	64.0	68.2	4.2	
Vert	5725.000	PK	58.3	32.6	7.6	31.2	67.3	78.2	10.9	
Vert	11510.000	PK	55.5	41.0	-1.6	32.7	62.2	73.9	11.7	
Vert	17265.000	PK	44.5	42.5	0.0	31.9	55.1	68.2	13.1	Floor Noise
Vert	23020.000	PK	45.8	38.5	-0.8	31.3	52.2	73.9	21.7	Floor Noise
Vert	11510.000	AV	46.6	41.0	-1.6	32.7	53.3	53.9	0.6	
Vert	23020.000	AV	36.9	38.5	-0.8	31.3	43.3	53.9	10.6	Floor Noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

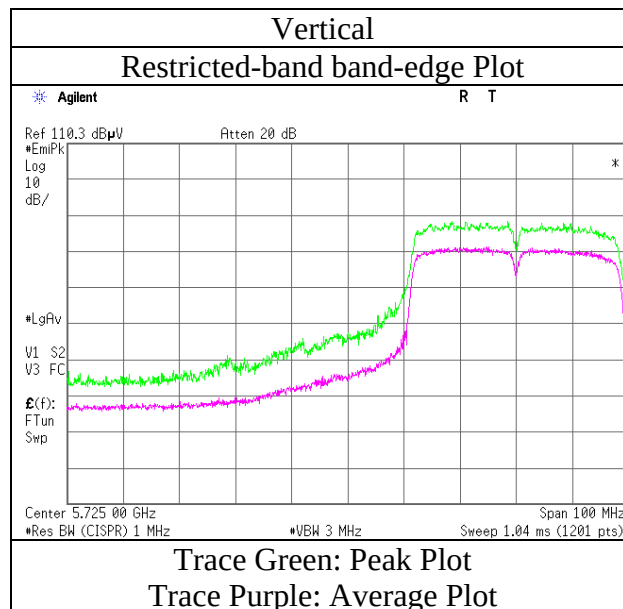
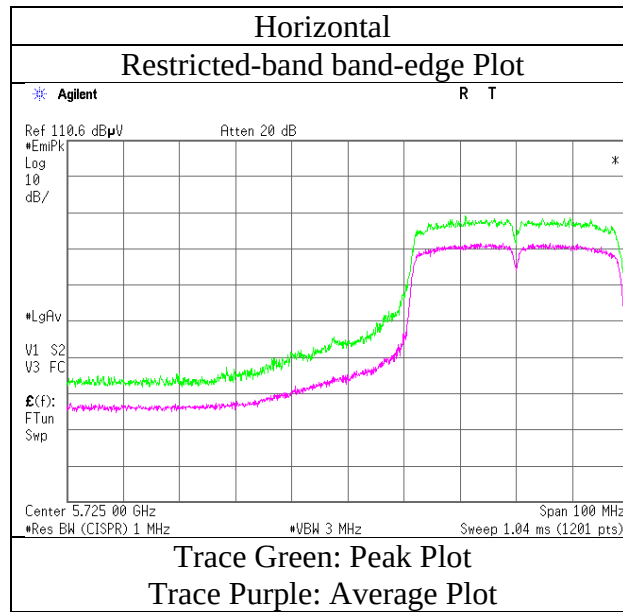
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 1GHz-10GHz 20log(4.45m/3.0m)= 3.42dB
 10GHz-26.5GHz 20log(1.0m/3.0m)= -9.5dB
 26.5GHz-40GHz 20log(0.5m/3.0m)= -15.6dB

*Duty cycle was 100% on this test.

Radiated Spurious Emission [Molex antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11166423H
Date	February 26, 2016
Temperature / Humidity	24deg. C / 35 % RH
Engineer	Keisuke Kawamura
Mode	Tx 11n-40 5755 MHz



* Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

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Radiated Spurious Emission [Molex antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11166423H	
Date	February 26, 2016	March 5, 2016
Temperature / Humidity	24deg. C / 35 % RH	22deg. C / 35 % RH
Engineer	Keisuke Kawamura (1 GHz-10 GHz)	Keisuke Kawamura (10 GHz-40 GHz)
Mode	Tx 11n-40 5795 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	44.7	32.8	7.6	31.2	53.9	78.2	24.3	
Hori	5860.000	PK	41.0	32.8	7.6	31.2	50.2	68.2	18.0	
Hori	11590.000	PK	50.9	40.9	-1.5	32.6	57.7	73.9	16.2	
Hori	17385.000	PK	44.2	43.0	0.1	31.8	55.5	68.2	12.7	Floor Noise
Hori	23180.000	PK	45.8	38.6	-0.7	31.2	52.5	68.2	15.7	Floor Noise
Hori	11590.000	AV	42.0	40.9	-1.5	32.6	48.8	53.9	5.1	
Vert	5850.000	PK	43.7	32.8	7.6	31.2	52.9	78.2	25.3	
Vert	5860.000	PK	42.8	32.8	7.6	31.2	52.0	68.2	16.2	
Vert	11590.000	PK	53.3	40.9	-1.5	32.6	60.1	73.9	13.8	
Vert	17385.000	PK	44.4	43.0	0.1	31.8	55.7	68.2	12.5	Floor Noise
Vert	23180.000	PK	45.7	38.6	-0.7	31.2	52.4	68.2	15.8	Floor Noise
Vert	11590.000	AV	44.3	40.9	-1.5	32.6	51.1	53.9	2.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

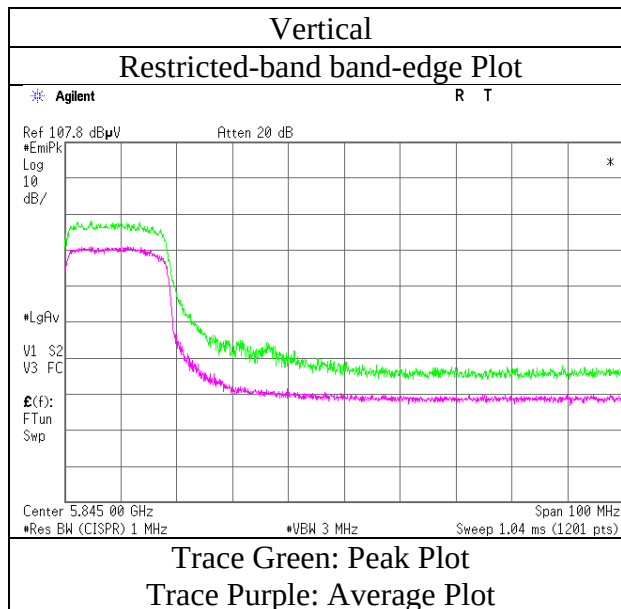
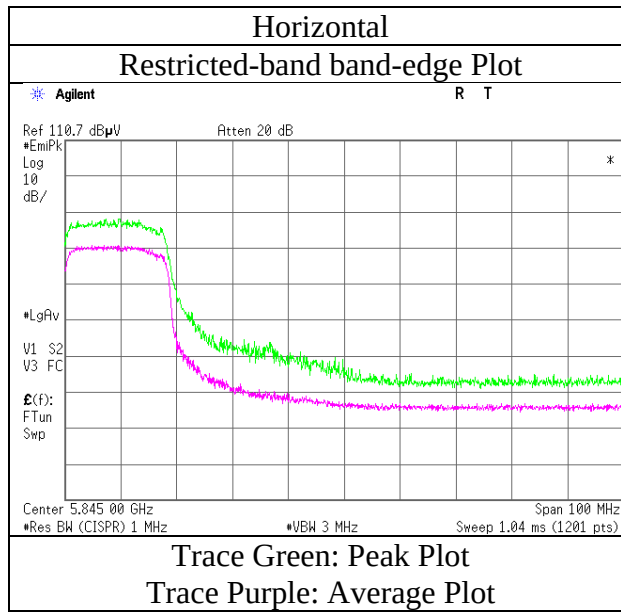
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor:	1GHz-10GHz	$20\log(4.45\text{m}/3.0\text{m}) = 3.42\text{dB}$
	10GHz-26.5GHz	$20\log(1.0\text{m}/3.0\text{m}) = -9.5\text{dB}$
	26.5GHz-40GHz	$20\log(0.5\text{m}/3.0\text{m}) = -15.6\text{dB}$

*Duty cycle was 100% on this test.

Radiated Spurious Emission [Molex antenna]

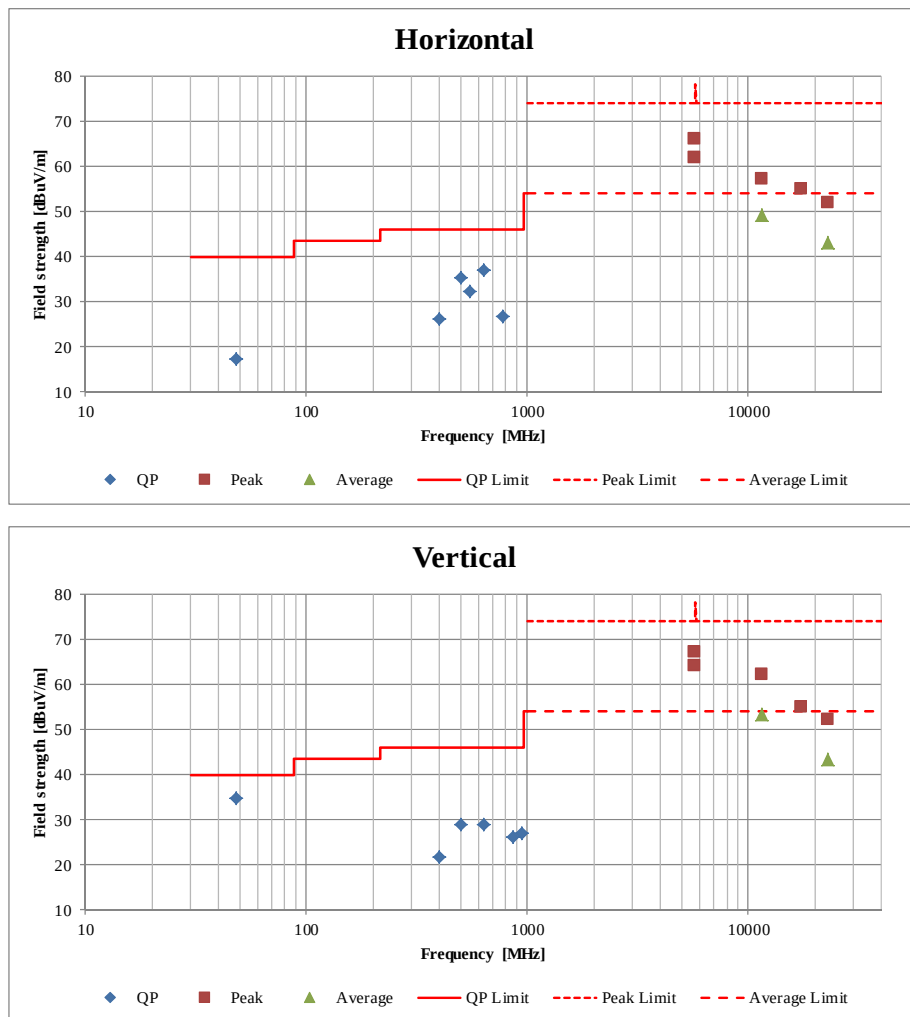
Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11166423H
Date	February 26, 2016
Temperature / Humidity	24deg. C / 35 % RH
Engineer	Keisuke Kawamura
Mode	Tx 11n-40 5795 MHz



* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case)
[Molex antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11166423H		
Date	February 26, 2016	March 4, 2016	March 5, 2016
Temperature / Humidity	24deg. C / 35 % RH	23deg. C / 31 % RH	22deg. C / 35 % RH
Engineer	Keisuke Kawamura (1 GHz-10 GHz)	Shinichi Miyazono (Below 1GHz)	Keisuke Kawamura (10 GHz-40 GHz)
Mode	Tx 11n-40 5755 MHz		



*These plots data contains sufficient number to show the trend of characteristic features for EUT.

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Radiated Spurious Emission [Laird antenna]

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016 March 5, 2016
Temperature / Humidity : 24deg. C / 35 % RH 22deg. C / 35 % RH
Engineer : Keisuke Kawamura Keisuke Kawamura
(1 GHz-10 GHz) (10 GHz-40 GHz)
Mode : Tx 11n-20 5745 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5715.000	PK	53.8	32.6	7.5	31.2	62.7	68.2	5.5	
Hori	5725.000	PK	67.8	32.6	7.6	31.2	76.8	78.2	1.4	
Hori	11490.000	PK	50.3	41.0	-1.6	32.7	57.0	73.9	16.9	
Hori	17235.000	PK	44.5	42.4	0.0	31.9	55.0	68.2	13.2	Floor Noise
Hori	22980.000	PK	45.8	38.4	-0.8	31.4	52.0	73.9	21.9	Floor Noise
Hori	11490.000	AV	43.8	41.0	-1.6	32.7	50.5	53.9	3.4	
Hori	22980.000	AV	36.9	38.4	-0.8	31.4	43.1	53.9	10.8	Floor Noise
Vert	5715.000	PK	50.6	32.6	7.5	31.2	59.5	68.2	8.7	
Vert	5725.000	PK	62.3	32.6	7.6	31.2	71.3	78.2	6.9	
Vert	11490.000	PK	55.7	41.0	-1.6	32.7	62.4	73.9	11.5	
Vert	17235.000	PK	44.3	42.4	0.0	31.9	54.8	68.2	13.4	Floor Noise
Vert	22980.000	PK	45.5	38.4	-0.8	31.4	51.7	73.9	22.2	Floor Noise
Vert	11490.000	AV	45.9	41.0	-1.6	32.7	52.6	53.9	1.3	
Vert	22980.000	AV	36.7	38.4	-0.8	31.4	42.9	53.9	11.0	Floor Noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

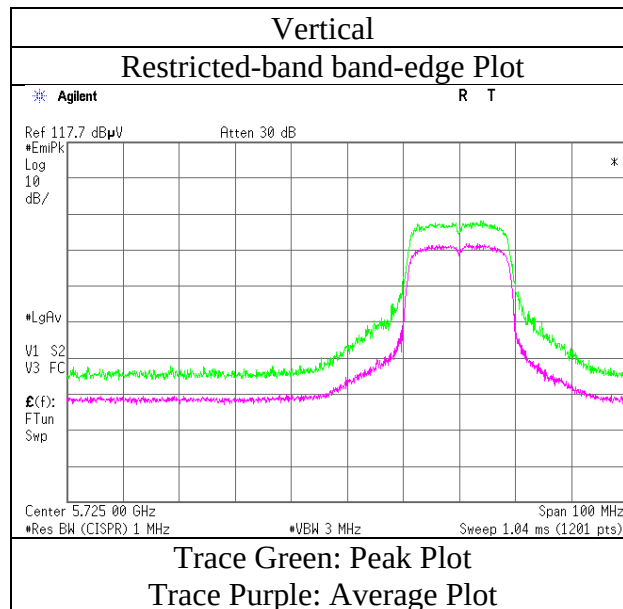
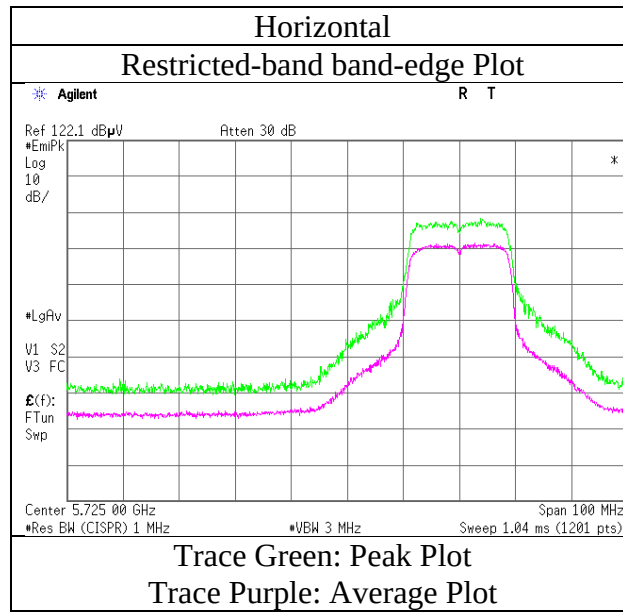
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 1GHz-10GHz $20\log(4.45\text{m}/3.0\text{m}) = 3.42\text{dB}$
 10GHz-26.5GHz $20\log(1.0\text{m}/3.0\text{m}) = -9.5\text{dB}$
 26.5GHz-40GHz $20\log(0.5\text{m}/3.0\text{m}) = -15.6\text{dB}$

*Duty cycle was 100% on this test.

Radiated Spurious Emission
[Laird antenna]

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016
Temperature / Humidity : 24deg. C / 35 % RH
Engineer : Keisuke Kawamura
Mode : Tx 11n-20 5745 MHz



* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission [Laird antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11166423H	
Date	February 26, 2016	March 5, 2016
Temperature / Humidity	24deg. C / 35 % RH	22deg. C / 35 % RH
Engineer	Keisuke Kawamura (1 GHz-10 GHz)	Keisuke Kawamura (10 GHz-40 GHz)
Mode	Tx 11n-20 5785 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11570.000	PK	48.6	40.9	-1.6	32.6	55.3	73.9	18.6	
Hori	17355.000	PK	44.6	42.9	0.0	31.9	55.6	68.2	12.6	Floor Noise
Hori	23140.000	PK	45.6	38.5	-0.7	31.2	52.2	68.2	16.0	Floor Noise
Hori	11570.000	AV	40.2	40.9	-1.6	32.6	46.9	53.9	7.0	
Vert	11570.000	PK	53.0	40.9	-1.6	32.6	59.7	73.9	14.2	
Vert	17355.000	PK	44.6	42.9	0.0	31.9	55.6	68.2	12.6	Floor Noise
Vert	23140.000	PK	45.9	38.5	-0.7	31.2	52.5	68.2	15.7	Floor Noise
Vert	11570.000	AV	44.5	40.9	-1.6	32.6	51.2	53.9	2.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1GHz-10GHz $20\log(4.45\text{m}/3.0\text{m}) = 3.42\text{dB}$
 10GHz-26.5GHz $20\log(1.0\text{m}/3.0\text{m}) = -9.5\text{dB}$
 26.5GHz-40GHz $20\log(0.5\text{m}/3.0\text{m}) = -15.6\text{dB}$

*Duty cycle was 100% on this test.

Radiated Spurious Emission

[Laird antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11166423H	
Date	February 26, 2016	March 5, 2016
Temperature / Humidity	24deg. C / 35 % RH	22deg. C / 35 % RH
Engineer	Keisuke Kawamura	Keisuke Kawamura
	(1 GHz-10 GHz)	(10 GHz-40 GHz)
Mode	Tx 11n-20 5825 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	57.6	32.8	7.6	31.2	66.8	78.2	11.4	
Hori	5860.000	PK	48.9	32.8	7.6	31.2	58.1	68.2	10.1	
Hori	11650.000	PK	46.9	40.8	-1.4	32.6	53.7	73.9	20.2	
Hori	17475.000	PK	43.9	43.4	0.2	31.8	55.7	68.2	12.5	Floor Noise
Hori	23300.000	PK	45.7	38.6	-0.7	31.1	52.5	68.2	15.7	Floor Noise
Hori	11650.000	AV	38.0	40.8	-1.4	32.6	44.8	53.9	9.1	
Vert	5850.000	PK	53.2	32.8	7.6	31.2	62.4	78.2	15.8	
Vert	5860.000	PK	46.0	32.8	7.6	31.2	55.2	68.2	13.0	
Vert	11650.000	PK	50.7	40.8	-1.4	32.6	57.5	73.9	16.4	
Vert	17475.000	PK	44.3	43.4	0.2	31.8	56.1	68.2	12.1	Floor Noise
Vert	23300.000	PK	45.8	38.6	-0.7	31.1	52.6	68.2	15.6	Floor Noise
Vert	11650.000	AV	42.1	40.8	-1.4	32.6	48.9	53.9	5.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

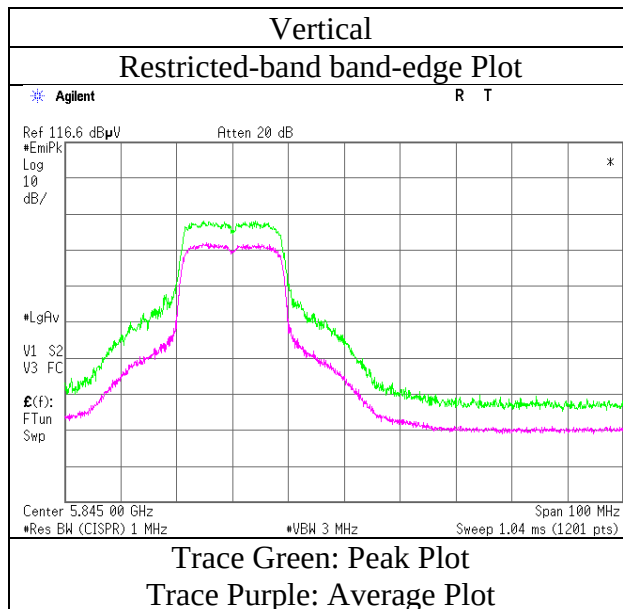
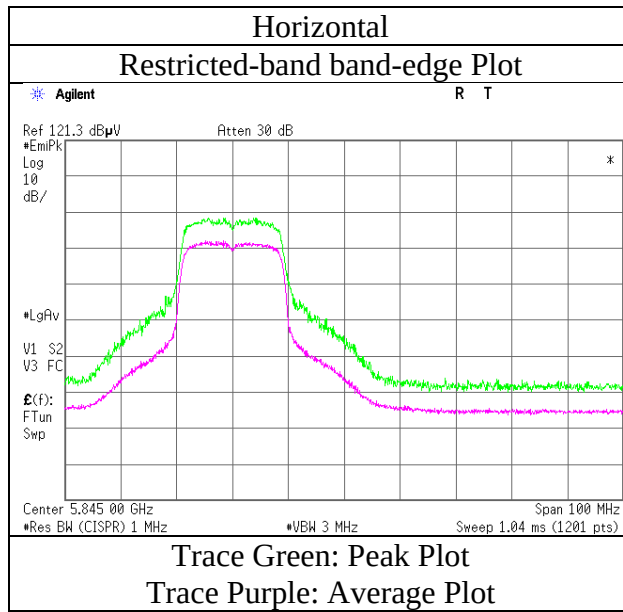
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 1GHz-10GHz $20\log(4.45\text{m}/3.0\text{m}) = 3.42\text{dB}$
 10GHz-26.5GHz $20\log(1.0\text{m}/3.0\text{m}) = -9.5\text{dB}$
 26.5GHz-40GHz $20\log(0.5\text{m}/3.0\text{m}) = -15.6\text{dB}$

*Duty cycle was 100% on this test.

Radiated Spurious Emission [Laird antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11166423H
Date	February 26, 2016
Temperature / Humidity	24deg. C / 35 % RH
Engineer	Keisuke Kawamura
Mode	Tx 11n-20 5825 MHz



* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission [Laird antenna]

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016 March 4, 2016 March 5, 2016
Temperature / Humidity : 24deg. C / 35 % RH 23deg. C / 31 % RH 22deg. C / 35 % RH
Engineer : Keisuke Kawamura Shinichi Miyazono Keisuke Kawamura
(1 GHz-10 GHz) (Below 1GHz) (10 GHz-40 GHz)
Mode : Tx 11n-40 5755 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	48.428	QP	27.7	11.2	7.0	28.5	17.4	40.0	22.6	
Hori	400.000	QP	28.4	17.1	9.4	28.2	26.7	46.0	19.3	
Hori	500.000	QP	38.6	17.9	9.7	28.6	37.6	46.0	8.4	
Hori	550.000	QP	31.9	18.6	9.9	28.5	31.9	46.0	14.1	
Hori	634.775	QP	34.9	19.7	10.2	28.3	36.5	46.0	9.5	
Hori	930.005	QP	20.1	22.7	11.2	27.2	26.8	46.0	19.2	
Hori	5715.000	PK	58.3	32.6	7.5	31.2	67.2	68.2	1.0	
Hori	5725.000	PK	64.1	32.6	7.6	31.2	73.1	78.2	5.1	
Hori	11510.000	PK	48.4	41.0	-1.6	32.7	55.1	73.9	18.8	
Hori	17265.000	PK	44.7	42.5	0.0	31.9	55.3	68.2	12.9	Floor Noise
Hori	23020.000	PK	45.6	38.5	-0.8	31.3	52.0	73.9	21.9	Floor Noise
Hori	11510.000	AV	38.6	41.0	-1.6	32.7	45.3	53.9	8.6	
Hori	23020.000	AV	37.1	38.5	-0.8	31.3	43.5	53.9	10.4	Floor Noise
Vert	48.063	QP	43.8	11.3	6.9	28.5	33.5	40.0	6.5	
Vert	400.000	QP	23.6	17.1	9.4	28.2	21.9	46.0	24.1	
Vert	500.000	QP	30.4	17.9	9.7	28.6	29.4	46.0	16.6	
Vert	639.500	QP	27.4	19.7	10.2	28.3	29.0	46.0	17.0	
Vert	862.338	QP	20.3	22.2	11.0	27.5	26.0	46.0	20.0	
Vert	946.006	QP	19.9	22.9	11.3	27.2	26.9	46.0	19.1	
Vert	5715.000	PK	60.0	32.6	7.5	31.2	68.9	73.9	5.0	
Vert	5725.000	PK	67.2	32.6	7.6	31.2	76.2	78.2	2.0	
Vert	11510.000	PK	53.8	41.0	-1.6	32.7	60.5	73.9	13.4	
Vert	17265.000	PK	45.1	42.5	0.0	31.9	55.7	68.2	12.5	Floor Noise
Vert	23020.000	PK	45.6	38.5	-0.8	31.3	52.0	73.9	21.9	Floor Noise
Vert	5715.000	AV	38.2	32.6	7.5	31.2	47.1	53.9	6.8	
Vert	11510.000	AV	45.5	41.0	-1.6	32.7	52.2	53.9	1.7	
Vert	23020.000	AV	37.0	38.5	-0.8	31.3	43.4	53.9	10.5	Floor Noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

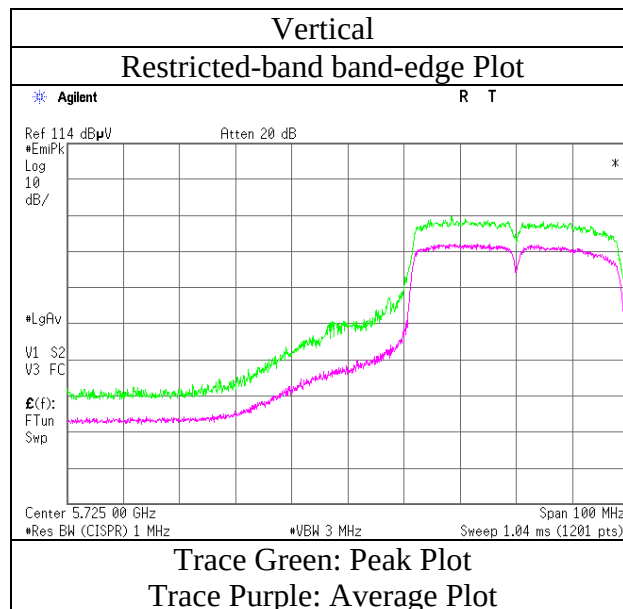
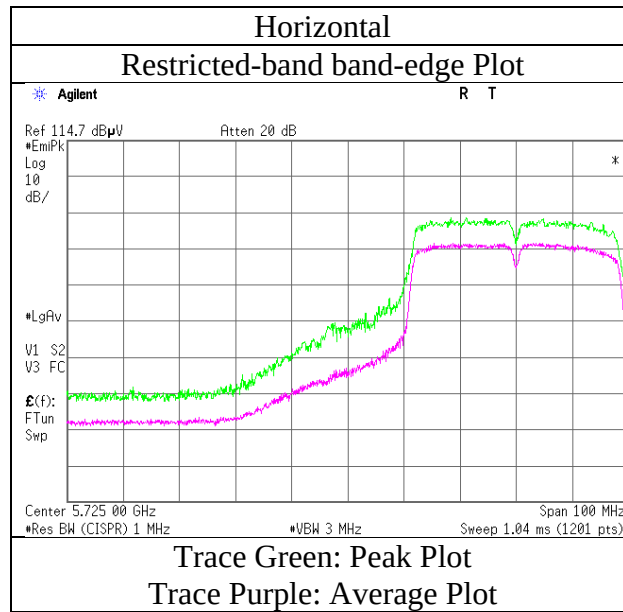
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 1GHz-10GHz 20log(4.45m/3.0m)= 3.42dB
 10GHz-26.5GHz 20log(1.0m/3.0m)= -9.5dB
 26.5GHz-40GHz 20log(0.5m/3.0m)= -15.6dB

*Duty cycle was 100% on this test.

Radiated Spurious Emission
[Laird antenna]

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016
Temperature / Humidity : 24deg. C / 35 % RH
Engineer : Keisuke Kawamura
Mode : Tx 11n-40 5755 MHz



* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission [Laird antenna]

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 11166423H
Date : February 26, 2016 March 5, 2016
Temperature / Humidity : 24deg. C / 35 % RH 22deg. C / 35 % RH
Engineer : Keisuke Kawamura Keisuke Kawamura
(1 GHz-10 GHz) (10 GHz-40 GHz)
Mode : Tx 11n-40 5795 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	50.9	32.8	7.6	31.2	60.1	78.2	18.1	
Hori	5860.000	PK	48.4	32.8	7.6	31.2	57.6	68.2	10.6	
Hori	11590.000	PK	47.7	40.9	-1.5	32.6	54.5	73.9	19.4	
Hori	17385.000	PK	44.4	43.0	0.1	31.8	55.7	68.2	12.5	Floor Noise
Hori	23180.000	PK	45.8	38.6	-0.7	31.2	52.5	68.2	15.7	Floor Noise
Hori	11590.000	AV	38.6	40.9	-1.5	32.6	45.4	53.9	8.5	
Vert	5850.000	PK	46.0	32.8	7.6	31.2	55.2	78.2	23.0	
Vert	5860.000	PK	44.3	32.8	7.6	31.2	53.5	68.2	14.7	
Vert	11590.000	PK	52.2	40.9	-1.5	32.6	59.0	73.9	14.9	
Vert	17385.000	PK	45.0	43.0	0.1	31.8	56.3	68.2	11.9	Floor Noise
Vert	23180.000	PK	45.8	38.6	-0.7	31.2	52.5	68.2	15.7	Floor Noise
Vert	11590.000	AV	43.0	40.9	-1.5	32.6	49.8	53.9	4.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

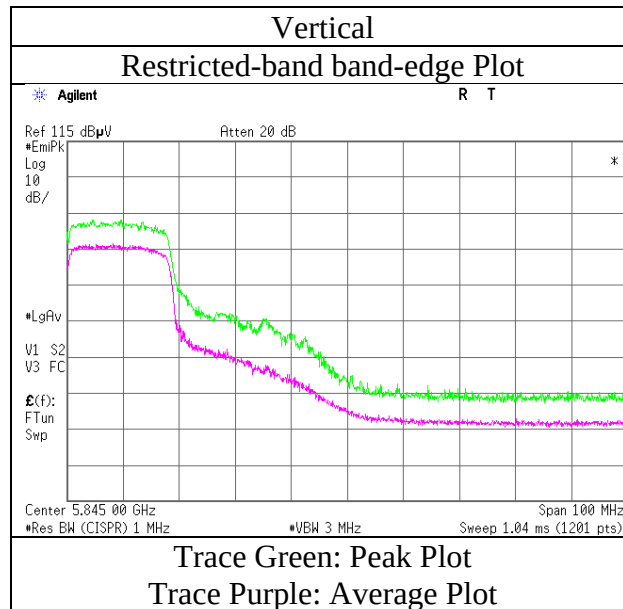
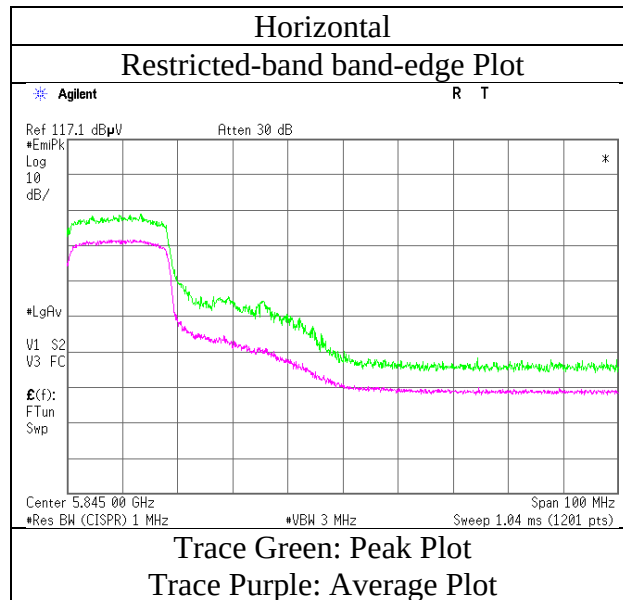
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 1GHz-10GHz $20\log(4.45\text{m}/3.0\text{m}) = 3.42\text{dB}$
 10GHz-26.5GHz $20\log(1.0\text{m}/3.0\text{m}) = -9.5\text{dB}$
 26.5GHz-40GHz $20\log(0.5\text{m}/3.0\text{m}) = -15.6\text{dB}$

*Duty cycle was 100% on this test.

Radiated Spurious Emission
[Laird antenna]

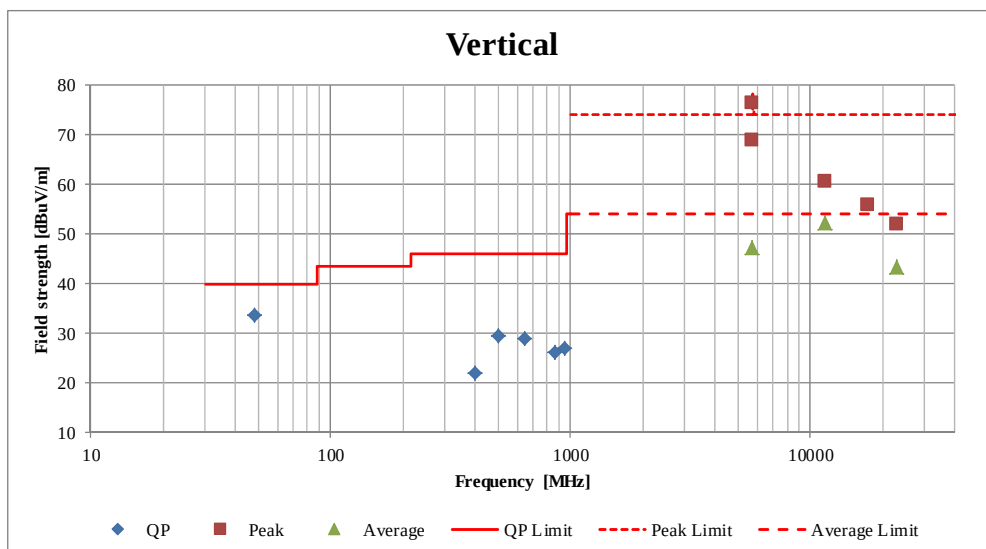
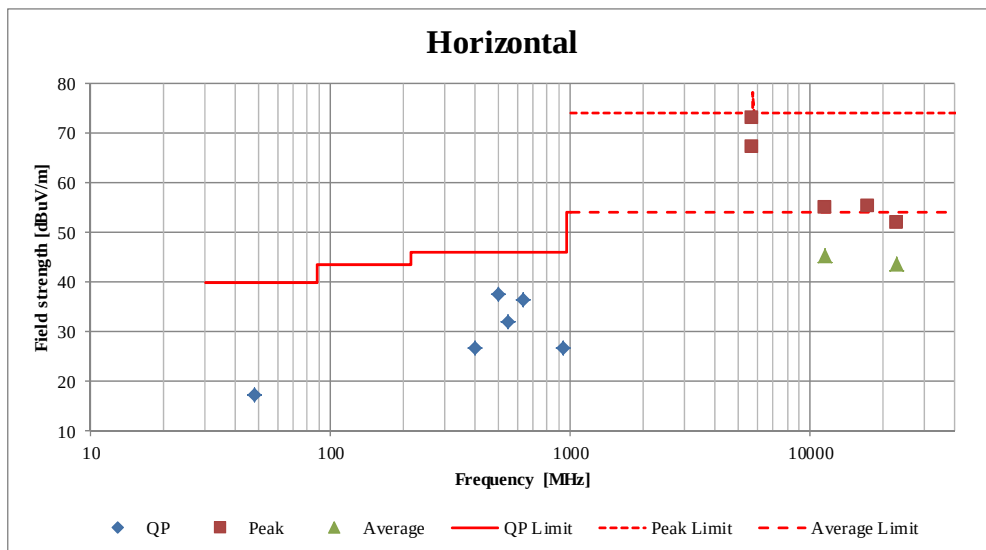
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 11166423H
Date February 26, 2016
Temperature / Humidity 24deg. C / 35 % RH
Engineer Keisuke Kawamura
Mode Tx 11n-40 5795 MHz



* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case)
[Laird antenna]

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11166423H		
Date	February 26, 2016	March 4, 2016	March 5, 2016
Temperature / Humidity	24deg. C / 35 % RH	23deg. C / 31 % RH	22deg. C / 35 % RH
Engineer	Keisuke Kawamura (1 GHz-10 GHz)	Shinichi Miyazono (Below 1GHz)	Keisuke Kawamura (10 GHz-40 GHz)
Mode	Tx 11n-40 5755 MHz		



*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Duty Cycle

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11166423H
Date	February 26, 2016
Temperature/ Humidity	24deg. C / 35 % RH
Engineer	Keisuke Kawamura
Mode	11a/11n-20/11n-40 Tx

11a 6Mbps	11n-20 MCS3
Tx on / (Tx on + Tx off) = 1.000 Tx on / (Tx on + Tx off) * 100 = 100.0 % Duty factor = 10 * log (100 / 100) = 0.00 dB	Tx on / (Tx on + Tx off) = 1.000 Tx on / (Tx on + Tx off) * 100 = 100.0 % Duty factor = 10 * log (100 / 100) = 0.00 dB
Agilent R T Ref 10 dBm Atten 20 dB Peak Log 10 dB/ LgAv S1 S2 W3 FS AA E(f): FTun Center 5.745 000 GHz Span 0 Hz Res BW 8 MHz VBW 50 MHz Sweep 100 ms (1201 pts)	Agilent R T Ref 10 dBm Atten 20 dB Peak Log 10 dB/ LgAv S1 S2 W3 FS AA E(f): FTun Center 5.745 000 GHz Span 0 Hz Res BW 8 MHz VBW 50 MHz Sweep 100 ms (1201 pts)
11n-40 MCS3	
Tx on / (Tx on + Tx off) = 1.000 Tx on / (Tx on + Tx off) * 100 = 100.0 % Duty factor = 10 * log (100 / 100) = 0.00 dB	
Agilent R T Ref 10 dBm Atten 20 dB Peak Log 10 dB/ LgAv S1 S2 W3 FS AA E(f): FTun Center 5.755 000 GHz Span 0 Hz Res BW 8 MHz VBW 50 MHz Sweep 100 ms (1201 pts)	

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APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2015/10/01 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2016/01/21 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2015/05/18 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2015/05/18 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2015/05/21 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2015/03/19 * 12
MMM-08	DIGITAL HiTESTER	Hioki	3805	051201197	RE	2016/01/13 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2015/07/01 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2016/01/21 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2016/02/24 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2015/10/11 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2015/11/02 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2015/10/11 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2016/02/08 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2015/11/10 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2015/09/04 * 12
MMM-01	Digital Tester	Fluke	FLUKE 26-3	78030611	RE	2015/08/19 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2015/06/06 * 12
MHF-22	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCB	602	RE	2016/01/19 * 12
MCC-177	Microwave Cable	Junkosha	MMX221-00500D MSDMS	1502S304	RE	2015/03/27 * 12
MHA-29	Horn Antenna 26.5-40GHz	ETS LINDGREN	3160-10	00152399	RE	2015/09/04 * 12
MPA-22	Pre Amplifier	MITEQ, Inc	AMF-6F-2600400-3 3-8P / AMF-4F-2600400-3 3-8P	1871355 /1871328	RE	2015/09/03 * 12
MCC-54	Microwave Cable	Suhner	SUCOFLEX101	2873(1m) / 2876(5m)	RE	2015/03/09 * 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: RE: Radiated Emission

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