RADIO TEST REPORT

Test Report No. : 11832513H-B

Applicant	:	**silex technology, Inc.**
Type of Equipment	:	**PCI Express Half mini card WLAN module**
Model No.	:	**SX-PCEAN2**
FCC ID	:	**N6C-SXPCEAN2**
Test regulation	:	**FCC Part 15 Subpart E: 2017** **(Class II Permissive change)** *** Radiated Spurious Emission test only**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the 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: July 28 to August 2, 2017

Representative test engineer:
Tomohisa Nakagawa
Engineer
Consumer Technology Division

Approved by:
Tsubasa Takayama
Engineer
Consumer Technology Division

NVLAP TESTING
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.
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http://japan.ul.com/resources/emc_accredited/

REVISION HISTORY

Original Test Report No.: 11832513H-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11832513H-B	August 29, 2017	-	-

UL Japan, Inc.
Ise EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
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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	:	PCI Express Half mini card WLAN module
Model No.	:	SX-PCEAN2
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V
Receipt Date of Sample	:	July 26, 2017
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: SX-PCEAN2 (referred to as the EUT in this report) is a PCI Express Half mini card WLAN module.

General Specification

Clock frequency(ies) in the system	:	40 MHz

Radio Specification

Radio Type	:	Transceiver
Method of Frequency Generation	:	Synthesizer
Power Supply (inner)	:	DC 1.2 V

Radio Specification

	IEEE802.11b	**IEEE802.11g/n (20 M band)**	**IEEE802.11a/n (20 M band)**	**IEEE802.11n (40 M band)**
Frequency of operation	2412 MHz -2462 MHz	2412 MHz -2462 MHz	5180 MHz -5240 MHz *1) 5260 MHz -5320 MHz *1) 5500 MHz -5700 MHz *1) 5745 MHz -5825 MHz *1)	2422 MHz - 2452 MHz 5190 MHz -5230 MHz *1) 5270 MHz -5310 MHz *1) 5510 MHz -5670 MHz *1) 5755 MHz -5795 MHz *1)
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)	
Channel spacing	5 MHz		20 MHz	2.4 GHz: 5 MHz 5 GHz: 40 MHz
Antenna type	Dipole antenna : STAF corporation			
Antenna Gain	2.4 GHz: 0.4 dBi (Max), -2.00 dB (Min) 5 GHz: 0.76 dBi (Max), -3.07 dB (Min)			
Antenna Connector type	SMA-P (REVERSE)			

*1) This test report applies to Wireless LAN (5GHz Band).

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart E FCC Part 15 final revised on June 14, 2017 and effective July 14, 2017
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	0.3 dB 5150.000 MHz, AV, Hori.	Complied	Conducted (< 30 MHz) / Radiated (> 30 MHz) *1)

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 11832513H-C issued by UL Japan, Inc.
*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 (DC 3.3V).
Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement
The EUT has a unique antenna connector (SMA-P (REVERSE)).
Therefore the equipment complies with the requirement of 15.203.

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.

Ise EMC Lab.

Test distance	Radiated emission (+/-) 9 kHz - 30 MHz
3 m	3.8 dB
10 m	3.6 dB

Polarity	Radiated emission (Below 1 GHz)			
	(3 m*) (+/-)		(10 m*) (+/-)	
	30 MHz - 200 MHz	200 MHz - 1000 MHz	30 MHz - 200 MHz	200 MHz - 1000 MHz
Horizontal	5.0 dB	5.3 dB	5.0 dB	5.0 dB
Vertical	5.2 dB	6.3 dB	5.0 dB	5.0 dB

Radiated emission (Above 1 GHz)				
(3 m*) (+/-)		(1 m*) (+/-)		(10 m*) (+/-)
1 GHz - 6 GHz	6 GHz - 18 GHz	10 GHz - 26.5 GHz	26.5 GHz - 40 GHz	1 GHz - 18 GHz
5.2 dB	5.5 dB	5.5 dB	5.4 dB	5.5 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
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone: +81 596 24 8999, Facsimile: +81 596 24 8124

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.

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)	18Mbps, PN9
IEEE 802.11n MIMO 20 MHz BW (11n-20)	MCS 12 (Short GI), (Other than W58 band)/ MCS 8 (Short GI), (W58 band only), PN9
IEEE 802.11n MIMO 40 MHz BW (11n-40)	MCS 11 (Long GI) (Other than W58 band) / MCS 8 (Short GI) (W58 band only), PN9
*The worst antenna(Ant: 0) and condition was determined based on the test result of Maximum Conducted Output Power.	
*The power value of the EUT was set for testing as follows (setting value might be different from product specification value); Power settings: Refer to the following table Software: art2 ver4.4 *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.	

[Power setting]

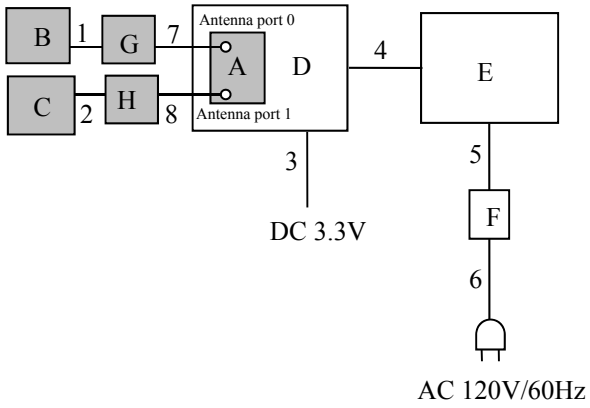
Operation	Frequency	Power Setting [dBm]
11a	5180 MHz	13.5
	5220 MHz	13.5
	5240 MHz	13.5
	5260 MHz	13.5
	5300 MHz	13.5
	5320 MHz	13.5
	5500 MHz	13.5
	5580 MHz	13.5
	5700 MHz	13.5
	5745 MHz	13.5
	5785 MHz	13.5
	5825 MHz	13.5
11n MIMO 20 MHz band	5180 MHz	14.5
	5220 MHz	14.5
	5240 MHz	14.5
	5260 MHz	14.5
	5300 MHz	14.5
	5320 MHz	14.5
	5500 MHz	14.0
	5580 MHz	14.0
	5700 MHz	14.0
	5745 MHz	14.0
	5785 MHz	14.0
	5825 MHz	14.0
11n MIMO 40 MHz band	5190 MHz	12.0
	5230 MHz	12.0
	5270 MHz	12.0
	5310 MHz	12.0
	5510 MHz	12.0
	5550 MHz	12.0
	5670 MHz	12.0
	5755 MHz	12.0
	5795 MHz	12.0

*The details of Operating mode(s)

Test Item	Operating Mode	Tested Antenna port	Tested Frequency			
			Lower Band	Middle Band	Additional Band	Upper Band
Radiated Spurious Emission (Below 1GHz)	11n-20 Tx *1)	0+1	-	5240 MHz *1)	-	-
Radiated Spurious Emission (Above 1GHz)	11n-20 Tx *2)	0+1	5180 MHz	5240 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz	5745 MHz 5785 MHz 5825 MHz
	11n-40 Tx	0+1	5190 MHz	5230 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz	5755 MHz 5795 MHz

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

4.2 Configuration and peripherals



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.
* The test was performed using a typical evaluation board (Jig board).

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	PCI Express Half Mini Card WLAN Module	SX-PCEAN2	M7011538	silex technology, Inc.	EUT
B	Antenna	1019-013A	-	STAF Corporation	EUT
C	Antenna	1019-013A	-	STAF Corporation	EUT
D	Jig board	-	-	-	-
E	Laptop PC	CF-n8HWCDP	OBKSA08702	Panasonic	-
F	AC Adapter	CF-AA6372B	6372BM409X21200B	Panasonic	-
G	Filter	HFCN-2000	-	Mini-Circuits	EUT
H	Filter	HFCN-2000	-	Mini-Circuits	EUT

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna Cable	0.15(Short Cable) 5.15 (Long Cable)	Shielded	Shielded	-
2	Antenna Cable	0.15(Short Cable) 5.15 (Long Cable)	Shielded	Shielded	-
3	DC Cable	3.00	Unshielded	Unshielded	-
4	LAN Cable	3.00	Unshielded	Unshielded	-
5	DC Cable	1.10	Unshielded	Unshielded	-
6	AC Cable	0.90	Unshielded	Unshielded	-
7	Antenna Cable	0.15	Shielded	Shielded	-
8	Antenna Cable	0.15	Shielded	Shielded	-

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).

For W58 Bandedge
-27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge in the section 15.407(b)(4)(i).

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:

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

Test Antennas are used as below;

Frequency	30 MHz to 200 MHz	200 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 AD *1) RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: ≥ 100 traces If duty cycle was less than 98%, a duty factor was added to the results.
Test Distance	3 m	3.7 m*2) / 4.45 m*3) (1 GHz – 10GHz), 1 m*4) (10 GHz – 40 GHz)	

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01r04 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".
*2) Distance Factor: 20 x log (3.7 m/3.0 m) = 1.83 dB (No.2 Semi Anechoic Chamber)
*3) Distance Factor: 20 x log (4.45 m/3.0 m) = 3.43 dB (No.3 Semi Anechoic Chamber)
*4) Distance Factor: 20 x log (1.0 m/3.0 m) = -9.5 dB

- The 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 : 30 MHz-40 GHz
Test data : APPENDIX
Test result : Pass

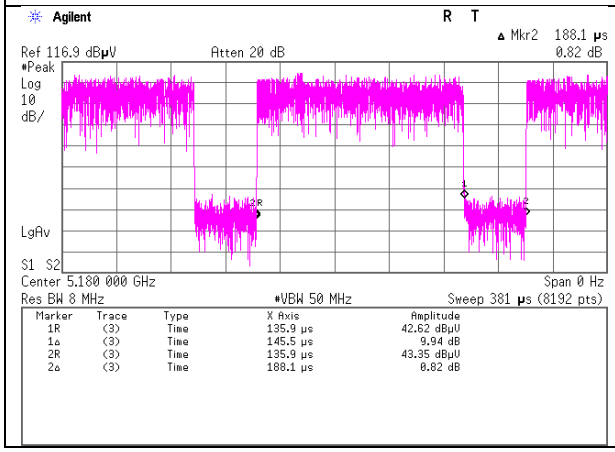
APPENDIX 1: Test data

Burst rate confirmation

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	23deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx

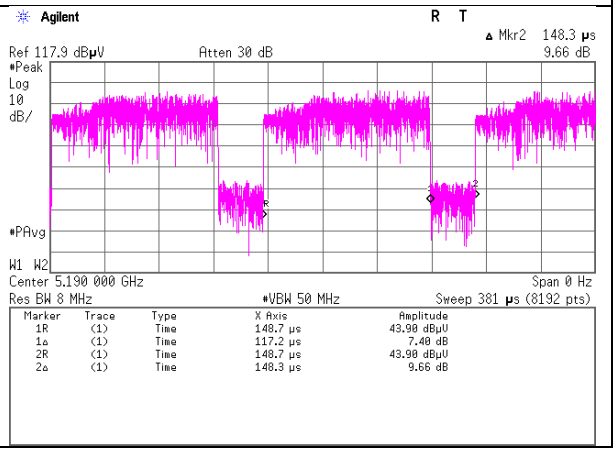
11n-20 MCS12

Tx on / (Tx on + Tx off) = 0.774
Tx on / (Tx on + Tx off) * 100 = 77.4 %
Duty factor = 10 * log (0.1881 / 0.1455) = 1.12 dB



11n-40 MCS11

Tx on / (Tx on + Tx off) = 0.790
Tx on / (Tx on + Tx off) * 100 = 79.0 %
Duty factor = 10 * log (0.1483 / 0.1172) = 1.02 dB

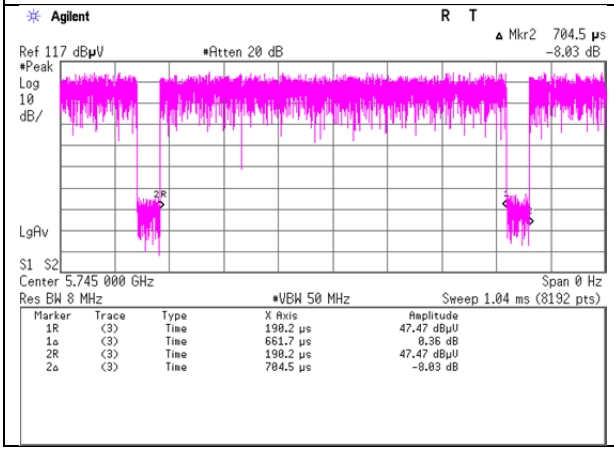


Burst rate confirmation

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx

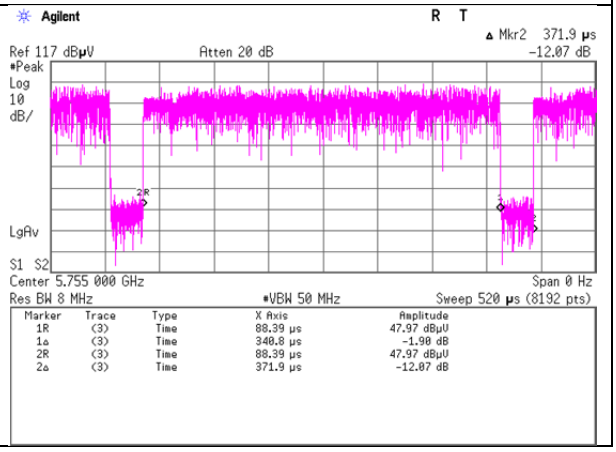
11n-20 MCS8

Tx on / (Tx on + Tx off) =	**0.939**
Tx on / (Tx on + Tx off) * 100 =	**93.9 %**
Duty factor = 10 * log (704.5 / 661.7) =	**0.27 dB**



11n-40 MCS8

Tx on / (Tx on + Tx off) =	**0.916**
Tx on / (Tx on + Tx off) * 100 =	**91.6 %**
Duty factor = 10 * log (371.9 / 340.8) =	**0.38 dB**



Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-20 5180 MHz		

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]	Remark
Hori	5150.000	PK	56.1	32.2	7.3	31.3	-	64.3	73.9	9.6	
Hori	10360.000	PK	51.1	39.5	-1.5	33.2	-	55.9	73.9	18.0	
Hori	15540.000	PK	48.9	39.0	0.1	32.6	-	55.4	73.9	18.5	
Hori	20720.000	PK	41.8	36.4	-1.2	32.6	-	44.4	73.9	29.5	Floor noise
Hori	25900.000	PK	43.9	38.1	0.0	30.6	-	51.4	73.9	22.5	Floor noise
Hori	5150.000	AV	44.3	32.2	7.3	31.3	1.1	53.6	53.9	0.3	*1)
Hori	10360.000	AV	43.2	39.5	-1.5	33.2	1.1	49.1	53.9	4.8	
Hori	15540.000	AV	37.4	39.0	0.1	32.6	1.1	45.0	53.9	8.9	
Hori	20720.000	AV	34.1	36.4	-1.2	32.6	-	36.7	53.9	17.2	Floor noise
Hori	25900.000	AV	36.4	38.1	0.0	30.6	-	43.9	53.9	10.0	Floor noise
Vert	5150.000	PK	55.5	32.2	7.3	31.3	-	63.7	73.9	10.2	
Vert	10360.000	PK	52.7	39.5	-1.5	33.2	-	57.5	73.9	16.4	
Vert	15540.000	PK	49.2	39.0	0.1	32.6	-	55.7	73.9	18.2	
Vert	20720.000	PK	42.3	36.4	-1.2	32.6	-	44.9	73.9	29.0	Floor noise
Vert	25900.000	PK	43.9	38.1	0.0	30.6	-	51.4	73.9	22.5	Floor noise
Vert	5150.000	AV	44.2	32.2	7.3	31.3	1.1	53.5	53.9	0.4	*1)
Vert	10360.000	AV	43.8	39.5	-1.5	33.2	1.1	49.7	53.9	4.2	
Vert	15540.000	AV	38.5	39.0	0.1	32.6	1.1	46.1	53.9	7.8	
Vert	20720.000	AV	34.3	36.4	-1.2	32.6	-	36.9	53.9	17.0	Floor noise
Vert	25900.000	AV	36.5	38.1	0.0	30.6	-	44.0	53.9	9.9	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

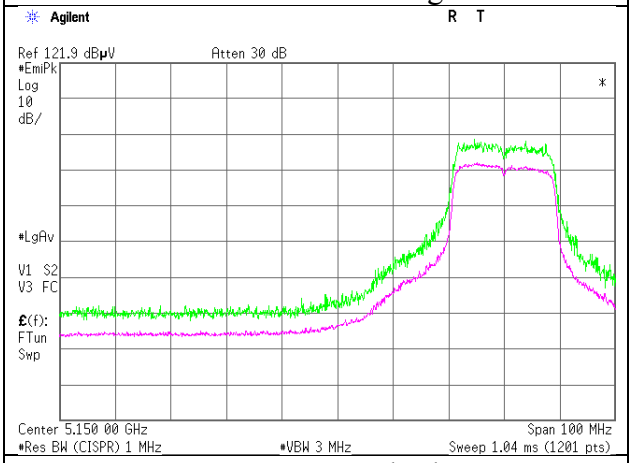
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
	(1 GHz-10 GHz)
Mode	Tx 11n-20 5180 MHz

Horizontal

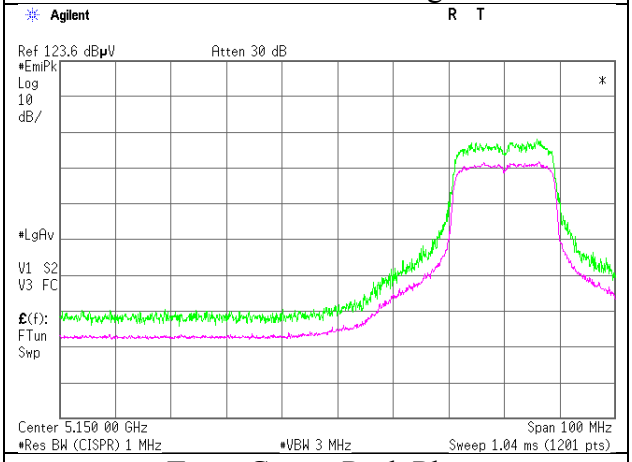
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (Below 1 GHz /26.5 GHz-40 GHz)
Mode	Tx 11n-20 5240 MHz		

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]	Remark
Hori	125.000	QP	39.1	13.4	7.6	27.8	-	32.3	43.5	11.2	
Hori	200.000	QP	31.5	16.7	8.1	27.4	-	28.9	43.5	14.6	
Hori	249.995	QP	44.1	11.7	8.5	27.1	-	37.2	46.0	8.8	
Hori	374.992	QP	42.9	15.2	9.3	27.6	-	39.8	46.0	6.2	
Hori	599.990	QP	42.8	19.1	10.1	28.0	-	44.0	46.0	2.0	
Hori	624.989	QP	39.0	19.3	10.2	27.9	-	40.6	46.0	5.4	
Hori	10480.000	PK	50.6	39.7	-1.5	33.2	-	55.6	73.9	18.3	
Hori	15720.000	PK	47.7	38.5	0.3	32.6	-	53.9	73.9	20.0	
Hori	20960.000	PK	42.2	36.6	-1.2	32.7	-	44.9	73.9	29.0	Floor noise
Hori	26200.000	PK	43.4	38.3	0.1	30.3	-	51.5	73.9	22.4	Floor noise
Hori	10480.000	AV	41.0	39.7	-1.5	33.2	1.1	47.1	53.9	6.8	
Hori	15720.000	AV	38.6	38.5	0.3	32.6	1.1	45.9	53.9	8.0	
Hori	20960.000	AV	34.3	36.6	-1.2	32.7	-	37.0	53.9	16.9	Floor noise
Hori	26200.000	AV	35.5	38.3	0.1	30.3	-	43.6	53.9	10.3	Floor noise
Vert	50.081	QP	47.5	10.8	7.0	28.1	-	37.2	40.0	2.8	
Vert	59.403	QP	49.6	8.1	7.1	28.1	-	36.7	40.0	3.3	
Vert	91.880	QP	42.8	8.4	7.4	28.0	-	30.6	43.5	12.9	
Vert	125.000	QP	40.9	13.4	7.6	27.8	-	34.1	43.5	9.4	
Vert	250.001	QP	44.4	11.7	8.5	27.1	-	37.5	46.0	8.5	
Vert	374.997	QP	39.4	15.2	9.3	27.6	-	36.3	46.0	9.7	
Vert	599.988	QP	41.6	19.1	10.1	28.0	-	42.8	46.0	3.2	
Vert	874.984	QP	30.1	21.8	11.1	26.9	-	36.1	46.0	9.9	
Vert	10480.000	PK	50.5	39.7	-1.5	33.2	-	55.5	73.9	18.4	
Vert	15720.000	PK	46.7	38.5	0.3	32.6	-	52.9	73.9	21.0	
Vert	20960.000	PK	42.3	36.6	-1.2	32.7	-	45.0	73.9	28.9	Floor noise
Vert	26200.000	PK	43.3	38.3	0.1	30.3	-	51.4	73.9	22.5	Floor noise
Vert	10480.000	AV	41.4	39.7	-1.5	33.2	1.1	47.5	53.9	6.4	
Vert	15720.000	AV	37.6	38.5	0.3	32.6	1.1	44.9	53.9	9.0	
Vert	20960.000	AV	34.2	36.6	-1.2	32.7	-	36.9	53.9	17.0	Floor noise
Vert	26200.000	AV	35.3	38.3	0.1	30.3	-	43.4	53.9	10.5	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-20 5320 MHz		

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]	Remark
Hori	5350.000	PK	55.0	32.1	7.4	31.3	-	63.2	73.9	10.7	
Hori	10640.000	PK	47.5	39.9	-1.5	33.2	-	52.7	73.9	21.2	
Hori	15960.000	PK	44.6	37.8	0.3	32.6	-	50.1	73.9	23.8	
Hori	21280.000	PK	42.9	36.8	-1.1	32.6	-	46.0	73.9	27.9	Floor noise
Hori	5350.000	AV	35.9	32.1	7.4	31.3	1.1	45.2	53.9	8.7	*1)
Hori	10640.000	AV	38.9	39.9	-1.5	33.2	1.1	45.2	53.9	8.7	
Hori	15960.000	AV	36.0	37.8	0.3	32.6	1.1	42.6	53.9	11.3	
Hori	21280.000	AV	34.9	36.8	-1.1	32.6	-	38.0	53.9	15.9	Floor noise
Vert	5350.000	PK	52.0	32.1	7.4	31.3	-	60.2	73.9	13.7	
Vert	10640.000	PK	51.8	39.9	-1.5	33.2	-	57.0	73.9	16.9	
Vert	15960.000	PK	45.9	37.8	0.3	32.6	-	51.4	73.9	22.5	
Vert	21280.000	PK	43.0	36.8	-1.1	32.6	-	46.1	73.9	27.8	Floor noise
Vert	5350.000	AV	35.9	32.1	7.4	31.3	1.1	45.2	53.9	8.7	*1)
Vert	10640.000	AV	41.3	39.9	-1.5	33.2	1.1	47.6	53.9	6.3	
Vert	15960.000	AV	36.8	37.8	0.3	32.6	1.1	43.4	53.9	10.5	
Vert	21280.000	AV	34.8	36.8	-1.1	32.6	-	37.9	53.9	16.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

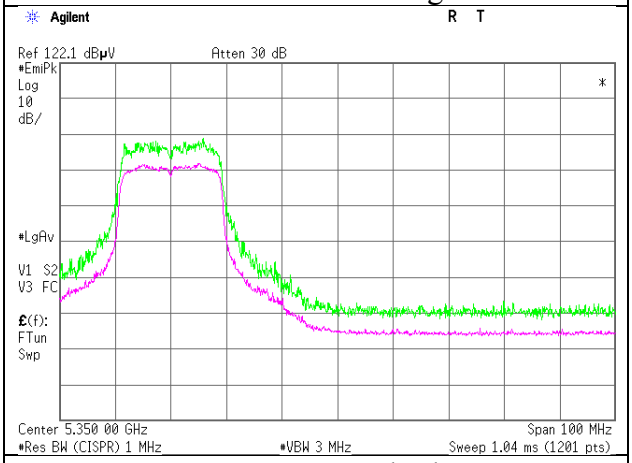
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
	(1 GHz-10 GHz)
Mode	Tx 11n-20 5320 MHz

Horizontal

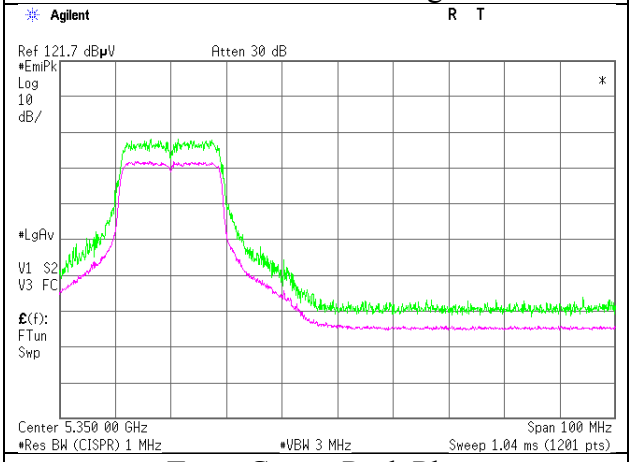
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-20 5500 MHz		

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]	Remark
Hori	5460.000	PK	48.9	32.0	7.5	31.3	-	57.1	73.9	16.8	
Hori	5470.000	PK	55.3	32.0	7.5	31.3	-	63.5	73.9	10.4	
Hori	11000.000	PK	47.5	40.5	-1.4	33.3	-	53.3	73.9	20.6	
Hori	16500.000	PK	49.3	39.3	0.3	32.6	-	56.3	73.9	17.6	
Hori	22000.000	PK	42.5	37.3	-0.9	32.5	-	46.4	73.9	27.5	Floor noise
Hori	5460.000	AV	32.9	32.0	7.5	31.3	1.1	42.2	53.9	11.7	*1)
Hori	5470.000	AV	37.5	32.0	7.5	31.3	1.1	46.8	53.9	7.1	*1)
Hori	11000.000	AV	37.4	40.5	-1.4	33.3	1.1	44.3	53.9	9.6	
Hori	16500.000	AV	37.2	39.3	0.3	32.6	1.1	45.3	53.9	8.6	
Hori	22000.000	AV	34.7	37.3	-0.9	32.5	-	38.6	53.9	15.3	Floor noise
Vert	5460.000	PK	47.2	32.0	7.5	31.3	-	55.4	73.9	18.5	
Vert	5470.000	PK	53.5	32.0	7.5	31.3	-	61.7	73.9	12.2	
Vert	11000.000	PK	48.6	40.5	-1.4	33.3	-	54.4	73.9	19.5	
Vert	16500.000	PK	48.6	39.3	0.3	32.6	-	55.6	73.9	18.3	
Vert	22000.000	PK	42.5	37.3	-0.9	32.5	-	46.4	73.9	27.5	Floor noise
Vert	5460.000	AV	32.4	32.0	7.5	31.3	1.1	41.7	53.9	12.2	*1)
Vert	5470.000	AV	36.3	32.0	7.5	31.3	1.1	45.6	53.9	8.3	*1)
Vert	11000.000	AV	40.6	40.5	-1.4	33.3	1.1	47.5	53.9	6.4	
Vert	16500.000	AV	37.5	39.3	0.3	32.6	1.1	45.6	53.9	8.3	
Vert	22000.000	AV	34.8	37.3	-0.9	32.5	-	38.7	53.9	15.2	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

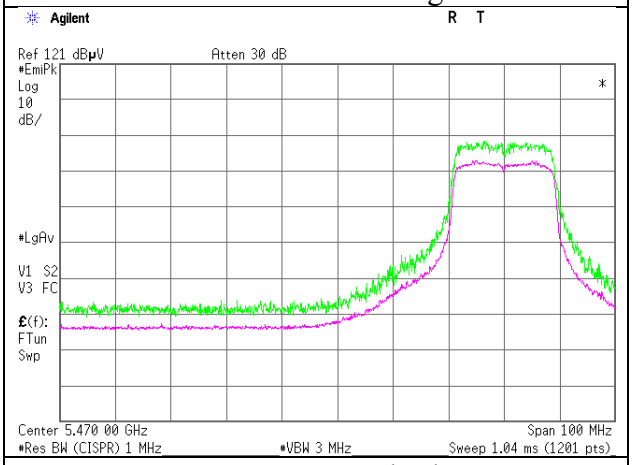
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11n-20 5500 MHz

Horizontal

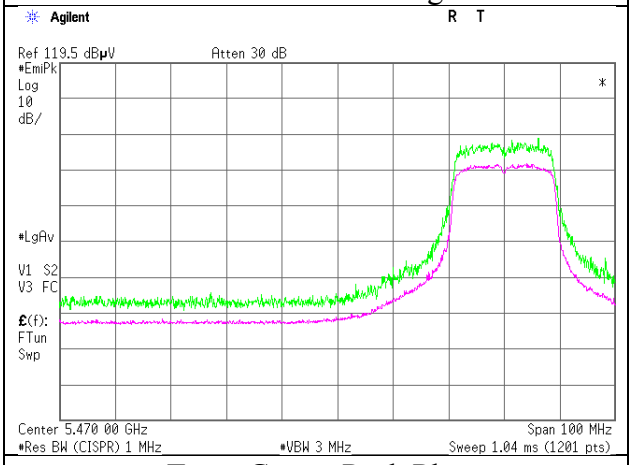
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-20 5580 MHz		

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]	Remark
Hori	11160.000	PK	50.9	40.4	-1.4	33.3	-	56.6	73.9	17.3	
Hori	16740.000	PK	44.8	40.0	0.3	32.6	-	52.5	73.9	21.4	
Hori	22320.000	PK	42.9	37.6	-0.8	32.3	-	47.4	73.9	26.5	Floor noise
Hori	11160.000	AV	41.5	40.4	-1.4	33.3	1.1	48.3	53.9	5.6	
Hori	16740.000	AV	35.7	40.0	0.3	32.6	1.1	44.5	53.9	9.4	
Hori	22320.000	AV	34.7	37.6	-0.8	32.3	-	39.2	53.9	14.7	Floor noise
Vert	11160.000	PK	51.0	40.4	-1.4	33.3	-	56.7	73.9	17.2	
Vert	16740.000	PK	44.3	40.0	0.3	32.6	-	52.0	73.9	21.9	
Vert	22320.000	PK	42.7	37.6	-0.8	32.3	-	47.2	73.9	26.7	Floor noise
Vert	11160.000	AV	41.1	40.4	-1.4	33.3	1.1	47.9	53.9	6.0	
Vert	16740.000	AV	35.8	40.0	0.3	32.6	1.1	44.6	53.9	9.3	
Vert	22320.000	AV	34.7	37.6	-0.8	32.3	-	39.2	53.9	14.7	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-20 5700 MHz		

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]	Remark
Hori	5725.000	PK	51.7	32.3	7.6	31.4	-	60.2	73.9	13.7	
Hori	11400.000	PK	51.1	40.1	-1.3	33.3	-	56.6	73.9	17.3	
Hori	17100.000	PK	45.8	41.4	0.3	32.5	-	55.0	73.9	18.9	
Hori	22800.000	PK	43.2	37.9	-0.7	32.1	-	48.3	73.9	25.6	Floor noise
Hori	5725.000	AV	34.9	32.3	7.6	31.4	1.1	44.5	53.9	9.4	*1)
Hori	11400.000	AV	41.7	40.1	-1.3	33.3	1.1	48.3	53.9	5.6	
Hori	17100.000	AV	36.4	41.4	0.3	32.5	1.1	46.7	53.9	7.2	
Hori	22800.000	AV	34.9	37.9	-0.7	32.1	-	40.0	53.9	13.9	Floor noise
Vert	5725.000	PK	53.5	32.3	7.6	31.4	-	62.0	73.9	11.9	
Vert	11400.000	PK	53.5	40.1	-1.3	33.3	-	59.0	73.9	14.9	
Vert	17100.000	PK	44.8	41.4	0.3	32.5	-	54.0	73.9	19.9	
Vert	22800.000	PK	43.3	37.9	-0.7	32.1	-	48.4	73.9	25.5	Floor noise
Vert	5725.000	AV	35.5	32.3	7.6	31.4	1.1	45.1	53.9	8.8	*1)
Vert	11400.000	AV	43.9	40.1	-1.3	33.3	1.1	50.5	53.9	3.4	
Vert	17100.000	AV	36.5	41.4	0.3	32.5	1.1	46.8	53.9	7.1	
Vert	22800.000	AV	34.9	37.9	-0.7	32.1	-	40.0	53.9	13.9	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

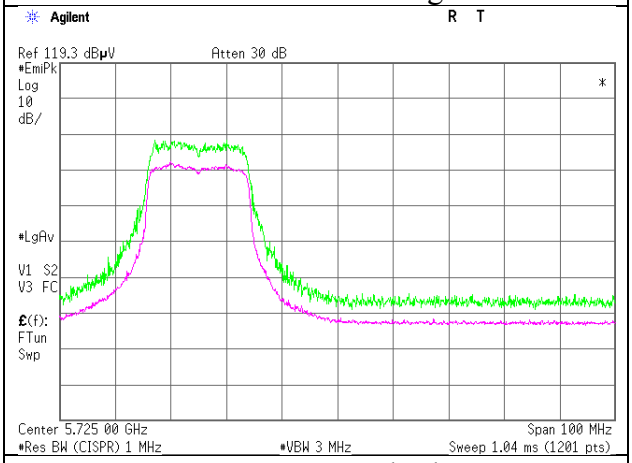
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
	(1 GHz-10 GHz)
Mode	Tx 11n-20 5700 MHz

Horizontal

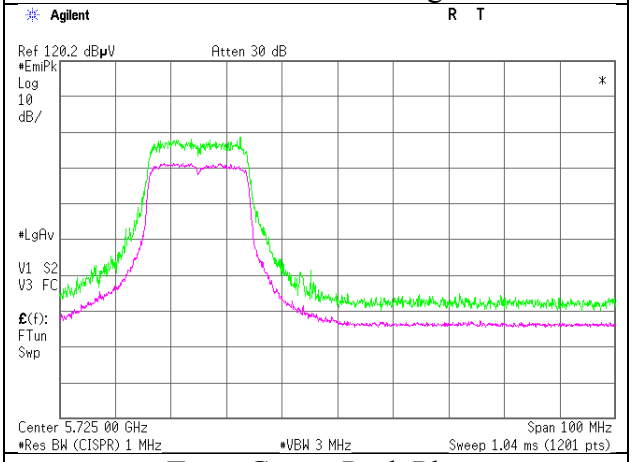
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 31, 2017	August 1, 2017	August 2, 2017
Temperature / Humidity	22 deg. C / 62 % RH	24 deg. C / 64 % RH	22 deg. C / 59 % RH
Engineer	Takafumi Noguchi	Tomoki Matsui	Yuta Moriya
	(1 GHz-10 GHz)	(10 GHz-26.5 GHz)	(26.5 GHz-40 GHz)
Mode	Tx 11n-20 5745 MHz		

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]	Remark
Hori	5650.000	PK	45.3	32.0	5.7	33.6	-	49.4	68.2	18.8	
Hori	5700.000	PK	47.4	32.0	5.7	33.7	-	51.4	105.2	53.8	
Hori	5715.000	PK	58.0	32.1	5.7	33.7	-	62.1	109.4	47.3	
Hori	5720.000	PK	61.9	32.1	5.7	33.7	-	66.0	110.8	44.8	
Hori	5725.000	PK	72.2	32.1	5.7	33.7	-	76.3	122.2	45.9	
Hori	11490.000	PK	50.0	39.9	-1.9	33.7	-	54.3	73.9	19.6	
Hori	17235.000	PK	43.6	42.8	-0.6	32.6	-	53.2	73.9	20.7	Floor noise
Hori	22980.000	PK	45.6	40.7	-1.2	31.3	-	53.8	73.9	20.1	Floor noise
Hori	11490.000	AV	41.2	39.9	-1.9	33.7	0.3	45.8	53.9	8.1	
Hori	17235.000	AV	34.8	42.8	-0.6	32.6	-	44.4	53.9	9.5	Floor noise
Hori	22980.000	AV	36.6	40.7	-1.2	31.3	-	44.8	53.9	9.1	Floor noise
Vert	5650.000	PK	48.5	32.0	5.7	33.6	-	52.6	68.2	15.6	
Vert	5700.000	PK	50.2	32.0	5.7	33.7	-	54.2	105.2	51.0	
Vert	5715.000	PK	59.2	32.1	5.7	33.7	-	63.3	109.4	46.1	
Vert	5720.000	PK	62.2	32.1	5.7	33.7	-	66.3	110.8	44.5	
Vert	5725.000	PK	73.0	32.1	5.7	33.7	-	77.1	122.2	45.1	
Vert	11490.000	PK	50.6	39.9	-1.9	33.7	-	54.9	73.9	19.0	
Vert	17235.000	PK	43.6	42.8	-0.6	32.6	-	53.2	73.9	20.7	Floor noise
Vert	22980.000	PK	45.6	40.7	-1.2	31.3	-	53.8	73.9	20.1	Floor noise
Vert	11490.000	AV	40.5	39.9	-1.9	33.7	0.3	45.1	53.9	8.8	
Vert	17235.000	AV	34.8	42.8	-0.6	32.6	-	44.4	53.9	9.5	Floor noise
Vert	22980.000	AV	36.6	40.7	-1.2	31.3	-	44.8	53.9	9.1	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

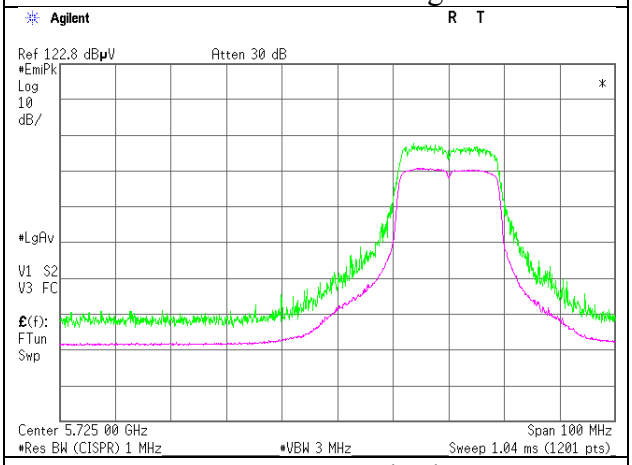
Distance factor: 1 GHz - 10 GHz 20log (3.7 m / 3.0 m) = 1.83 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11832513H
Date	July 31, 2017
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 5745 MHz

Horizontal

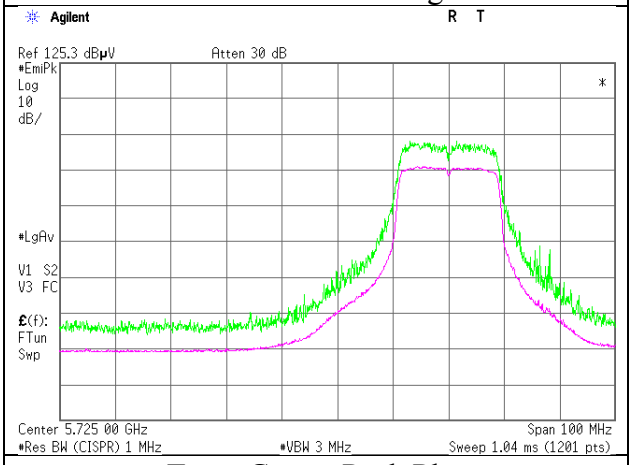
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 31, 2017	August 1, 2017	August 2, 2017
Temperature / Humidity	22 deg. C / 62 % RH	24 deg. C / 64 % RH	22 deg. C / 59 % RH
Engineer	Takafumi Noguchi	Tomoki Matsui	Yuta Moriya
	(1 GHz-10 GHz)	(10 GHz-26.5 GHz)	(26.5 GHz-40 GHz)
Mode	Tx 11n-20 5785 MHz		

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]	Remark
Hori	11570.000	PK	48.7	39.8	-1.9	33.7	-	52.9	73.9	21.0	
Hori	17355.000	PK	42.9	43.4	-0.6	32.6	-	53.1	73.9	20.8	Floor noise
Hori	23140.000	PK	44.4	40.6	-1.2	31.3	-	52.5	73.9	21.4	Floor noise
Hori	11570.000	AV	39.6	39.8	-1.9	33.7	0.3	44.1	53.9	9.8	
Hori	17355.000	AV	34.9	43.4	-0.6	32.6	-	45.1	53.9	8.8	Floor noise
Hori	23140.000	AV	36.1	40.6	-1.2	31.3	-	44.2	53.9	9.7	Floor noise
Vert	11570.000	PK	50.5	39.8	-1.9	33.7	-	54.7	73.9	19.2	
Vert	17355.000	PK	42.9	43.4	-0.6	32.6	-	53.1	73.9	20.8	Floor noise
Vert	23140.000	PK	44.4	40.6	-1.2	31.3	-	52.5	73.9	21.4	Floor noise
Vert	11570.000	AV	42.3	39.8	-1.9	33.7	0.3	46.8	53.9	7.1	
Vert	17355.000	AV	34.9	43.4	-0.6	32.6	-	45.1	53.9	8.8	Floor noise
Vert	23140.000	AV	36.1	40.6	-1.2	31.3	-	44.2	53.9	9.7	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (3.7 m / 3.0 m) = 1.83 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 31, 2017	August 1, 2017	August 2, 2017
Temperature / Humidity	22 deg. C / 62 % RH	24 deg. C / 64 % RH	22 deg. C / 59 % RH
Engineer	Takafumi Noguchi	Tomoki Matsui	Yuta Moriya
	(1 GHz-10 GHz)	(10 GHz-26.5 GHz)	(26.5 GHz-40 GHz)
Mode	Tx 11n-20 5825 MHz		

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]	Remark
Hori	5850.000	PK	59.8	32.3	5.8	33.7	-	64.2	122.2	58.0	
Hori	5855.000	PK	55.1	32.3	5.8	33.7	-	59.5	110.8	51.3	
Hori	5860.000	PK	50.9	32.3	5.8	33.7	-	55.3	109.4	54.1	
Hori	5875.000	PK	47.1	32.3	5.8	33.7	-	51.5	105.2	53.7	
Hori	5925.000	PK	44.5	32.4	5.8	33.7	-	49.0	68.2	19.2	
Hori	11650.000	PK	50.7	39.6	-1.7	33.7	-	54.9	73.9	19.0	
Hori	17475.000	PK	42.9	44.1	-0.4	32.5	-	54.1	73.9	19.8	Floor noise
Hori	23300.000	PK	44.5	40.5	-1.1	31.3	-	52.6	73.9	21.3	Floor noise
Hori	11650.000	AV	41.8	39.6	-1.7	33.7	0.3	46.3	53.9	7.6	
Hori	17475.000	AV	34.8	44.1	-0.4	32.5	-	46.0	53.9	7.9	Floor noise
Hori	23300.000	AV	36.2	40.5	-1.1	31.3	-	44.3	53.9	9.6	Floor noise
Vert	5850.000	PK	60.1	32.3	5.8	33.7	-	64.5	122.2	57.7	
Vert	5855.000	PK	56.4	32.3	5.8	33.7	-	60.8	110.8	50.0	
Vert	5860.000	PK	53.9	32.3	5.8	33.7	-	58.3	109.4	51.1	
Vert	5875.000	PK	48.2	32.3	5.8	33.7	-	52.6	105.2	52.6	
Vert	5925.000	PK	44.9	32.4	5.8	33.7	-	49.4	68.2	18.8	
Vert	11650.000	PK	51.2	39.6	-1.7	33.7	-	55.4	73.9	18.5	
Vert	17475.000	PK	42.9	44.1	-0.4	32.5	-	54.1	73.9	19.8	Floor noise
Vert	23300.000	PK	44.5	40.5	-1.1	31.3	-	52.6	73.9	21.3	Floor noise
Vert	11650.000	AV	42.9	39.6	-1.7	33.7	0.3	47.4	53.9	6.5	
Vert	17475.000	AV	34.8	44.1	-0.4	32.5	-	46.0	53.9	7.9	Floor noise
Vert	23300.000	AV	36.2	40.5	-1.1	31.3	-	44.3	53.9	9.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

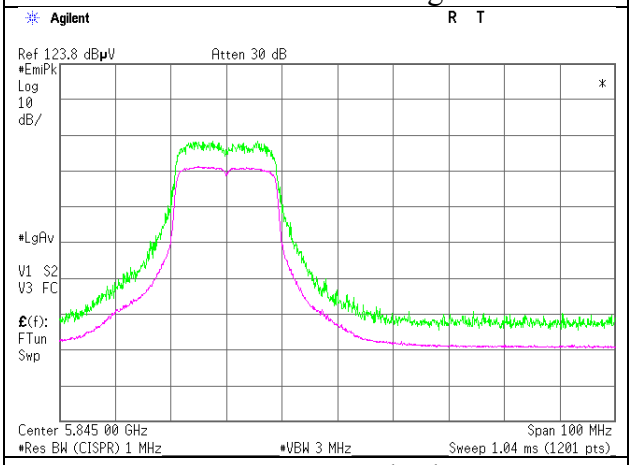
Distance factor: 1 GHz - 10 GHz 20log (3.7 m / 3.0 m) = 1.83 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11832513H
Date	July 31, 2017
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 5825 MHz

Horizontal

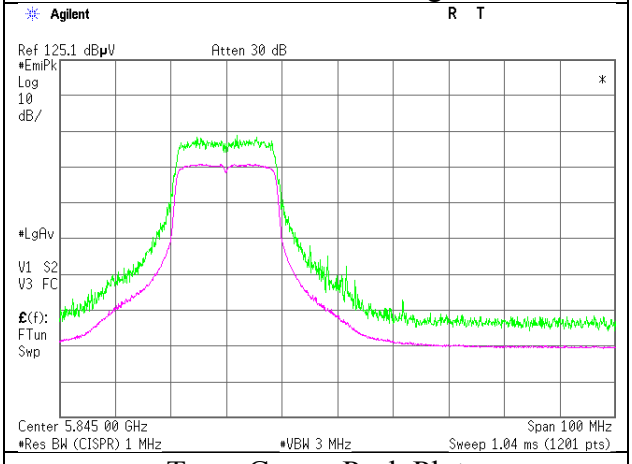
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-40 5190 MHz		

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]	Remark
Hori	5147.750	PK	56.2	32.2	7.3	31.3	-	64.4	73.9	9.5	
Hori	5150.000	PK	59.4	32.2	7.3	31.3	-	67.6	73.9	6.3	
Hori	10380.000	PK	47.1	39.5	-1.5	33.2	-	51.9	73.9	22.0	
Hori	15570.000	PK	44.4	38.9	0.1	32.6	-	50.8	73.9	23.1	Floor noise
Hori	20760.000	PK	42.3	36.4	-1.2	32.6	-	44.9	73.9	29.0	Floor noise
Hori	25950.000	PK	43.6	38.1	0.0	30.6	-	51.1	73.9	22.8	Floor noise
Hori	5147.750	AV	40.5	32.2	7.3	31.3	1.0	49.7	53.9	4.2	
Hori	5150.000	AV	39.8	32.2	7.3	31.3	1.0	49.0	53.9	4.9	*1)
Hori	10380.000	AV	37.9	39.5	-1.5	33.2	1.0	43.7	53.9	10.2	
Hori	15570.000	AV	35.4	38.9	0.1	32.6	-	41.8	53.9	12.1	Floor noise
Hori	20760.000	AV	34.3	36.4	-1.2	32.6	-	36.9	53.9	17.0	Floor noise
Hori	25950.000	AV	36.4	38.1	0.0	30.6	-	43.9	53.9	10.0	Floor noise
Vert	5147.750	PK	58.9	32.2	7.3	31.3	-	67.1	73.9	6.8	
Vert	5150.000	PK	57.6	32.2	7.3	31.3	-	65.8	73.9	8.1	
Vert	10380.000	PK	49.3	39.5	-1.5	33.2	-	54.1	73.9	19.8	
Vert	15570.000	PK	44.2	38.9	0.1	32.6	-	50.6	73.9	23.3	Floor noise
Vert	20760.000	PK	42.6	36.4	-1.2	32.6	-	45.2	73.9	28.7	Floor noise
Vert	25950.000	PK	43.8	38.1	0.0	30.6	-	51.3	73.9	22.6	Floor noise
Vert	5147.750	AV	40.8	32.2	7.3	31.3	1.0	50.0	53.9	3.9	
Vert	5150.000	AV	39.7	32.2	7.3	31.3	1.0	48.9	53.9	5.0	*1)
Vert	10380.000	AV	39.7	39.5	-1.5	33.2	1.0	45.5	53.9	8.4	
Vert	15570.000	AV	35.5	38.9	0.1	32.6	-	41.9	53.9	12.0	Floor noise
Vert	20760.000	AV	34.4	36.4	-1.2	32.6	-	37.0	53.9	16.9	Floor noise
Vert	25950.000	AV	36.4	38.1	0.0	30.6	-	43.9	53.9	10.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

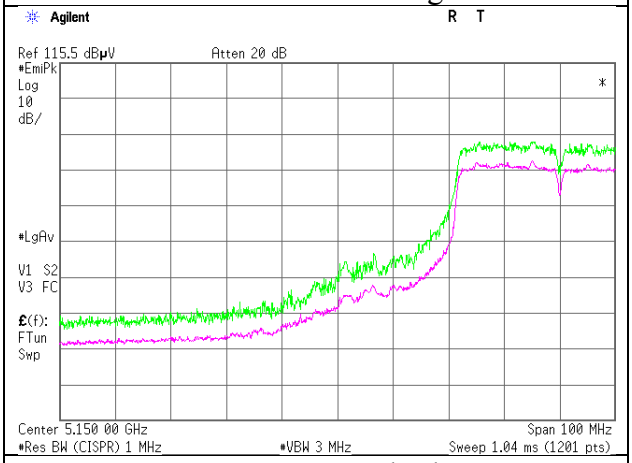
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
	(1 GHz-10 GHz)
Mode	Tx 11n-40 5190 MHz

Horizontal

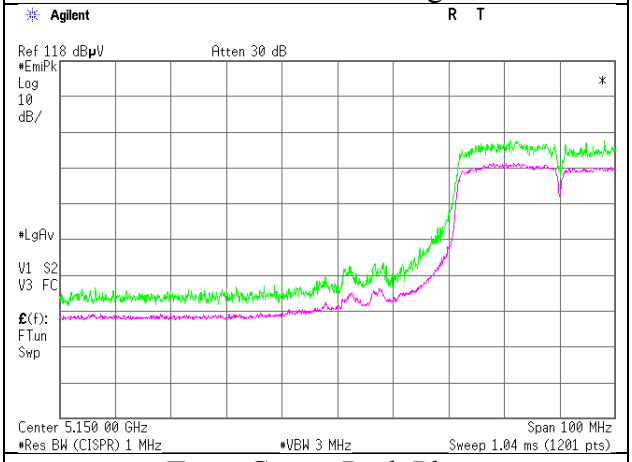
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa	Shuichi Ohyama	Yuta Moriya
	(1 GHz-10 GHz)	(10 GHz-26.5 GHz)	(26.5 GHz-40 GHz)
Mode	Tx 11n-40 5230 MHz		

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]	Remark
Hori	10460.000	PK	49.3	39.6	-1.5	33.2	-	54.2	73.9	19.7	
Hori	15690.000	PK	44.6	38.6	0.1	32.6	-	50.7	73.9	23.2	Floor noise
Hori	20920.000	PK	43.1	36.6	-1.2	32.7	-	45.8	73.9	28.1	Floor noise
Hori	26150.000	PK	43.4	38.2	0.1	30.4	-	51.3	73.9	22.6	Floor noise
Hori	10460.000	AV	38.4	39.6	-1.5	33.2	1.0	44.3	53.9	9.6	
Hori	15690.000	AV	35.5	38.6	0.1	32.6	-	41.6	53.9	12.3	Floor noise
Hori	20920.000	AV	34.6	36.6	-1.2	32.7	-	37.3	53.9	16.6	Floor noise
Hori	26150.000	AV	35.9	38.2	0.1	30.4	-	43.8	53.9	10.1	Floor noise
Vert	10460.000	PK	49.1	39.6	-1.5	33.2	-	54.0	73.9	19.9	
Vert	15690.000	PK	44.3	38.6	0.1	32.6	-	50.4	73.9	23.5	Floor noise
Vert	20920.000	PK	43.0	36.6	-1.2	32.7	-	45.7	73.9	28.2	Floor noise
Vert	26150.000	PK	43.7	38.2	0.1	30.4	-	51.6	73.9	22.3	Floor noise
Vert	10460.000	AV	38.3	39.6	-1.5	33.2	1.0	44.2	53.9	9.7	
Vert	15690.000	AV	35.5	38.6	0.1	32.6	-	41.6	53.9	12.3	Floor noise
Vert	20920.000	AV	34.6	36.6	-1.2	32.7	-	37.3	53.9	16.6	Floor noise
Vert	26150.000	AV	36.0	38.2	0.1	30.4	-	43.9	53.9	10.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-40 5310 MHz		

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]	Remark
Hori	5350.000	PK	54.8	32.1	7.4	31.3	-	63.0	73.9	10.9	
Hori	10620.000	PK	44.9	39.9	-1.5	33.2	-	50.1	73.9	23.8	
Hori	15930.000	PK	43.6	37.9	0.3	32.6	-	49.2	73.9	24.7	Floor noise
Hori	21240.000	PK	43.2	36.8	-1.1	32.6	-	46.3	73.9	27.6	Floor noise
Hori	5350.000	AV	41.4	32.1	7.4	31.3	1.0	50.6	53.9	3.3	*1)
Hori	10620.000	AV	36.3	39.9	-1.5	33.2	1.0	42.5	53.9	11.4	
Hori	15930.000	AV	35.6	37.9	0.3	32.6	-	41.2	53.9	12.7	Floor noise
Hori	21240.000	AV	34.9	36.8	-1.1	32.6	-	38.0	53.9	15.9	Floor noise
Vert	5350.000	PK	56.2	32.1	7.4	31.3	-	64.4	73.9	9.5	
Vert	10620.000	PK	46.0	39.9	-1.5	33.2	-	51.2	73.9	22.7	
Vert	15930.000	PK	44.1	37.9	0.3	32.6	-	49.7	73.9	24.2	Floor noise
Vert	21240.000	PK	43.3	36.8	-1.1	32.6	-	46.4	73.9	27.5	Floor noise
Vert	5350.000	AV	42.5	32.1	7.4	31.3	1.0	51.7	53.9	2.2	*1)
Vert	10620.000	AV	36.1	39.9	-1.5	33.2	1.0	42.3	53.9	11.6	
Vert	15930.000	AV	35.7	37.9	0.3	32.6	-	41.3	53.9	12.6	Floor noise
Vert	21240.000	AV	34.8	36.8	-1.1	32.6	-	37.9	53.9	16.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

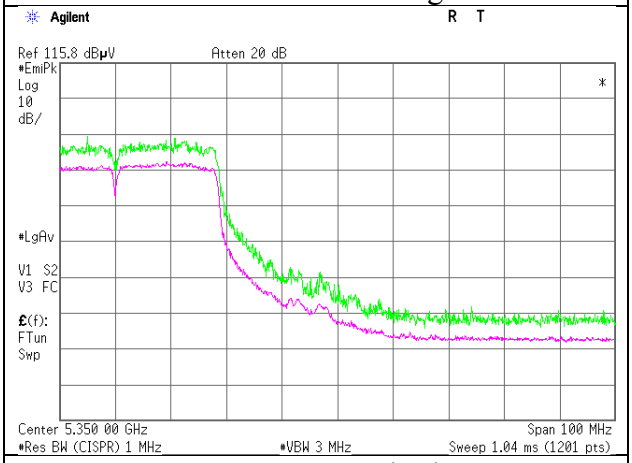
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
	(1 GHz-10 GHz)
Mode	Tx 11n-40 5310 MHz

Horizontal

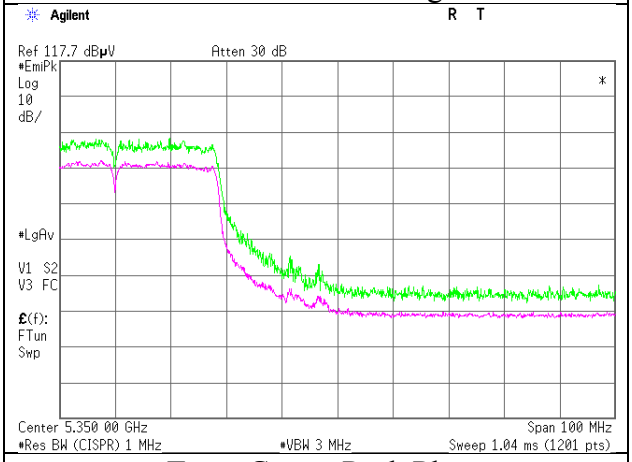
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa	Shuichi Ohyama	Yuta Moriya
	(1 GHz-10 GHz)	(10 GHz-26.5 GHz)	(26.5 GHz-40 GHz)
Mode	Tx 11n-40 5510 MHz		

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]	Remark
Hori	5460.000	PK	48.6	32.0	7.5	31.3	-	56.8	73.9	17.1	
Hori	5470.000	PK	55.5	32.0	7.5	31.3	-	63.7	73.9	10.2	
Hori	11020.000	PK	45.9	40.5	-1.5	33.3	-	51.6	73.9	22.3	
Hori	16530.000	PK	44.4	39.4	0.3	32.6	-	51.5	73.9	22.4	Floor noise
Hori	22040.000	PK	42.7	37.3	-0.9	32.5	-	46.6	73.9	27.3	Floor noise
Hori	5460.000	AV	39.8	32.0	7.5	31.3	1.0	49.0	53.9	4.9	*1)
Hori	5470.000	AV	43.5	32.0	7.5	31.3	1.0	52.7	53.9	1.2	*1)
Hori	11020.000	AV	37.2	40.5	-1.5	33.3	1.0	43.9	53.9	10.0	
Hori	16530.000	AV	35.5	39.4	0.3	32.6	-	42.6	53.9	11.3	Floor noise
Hori	22040.000	AV	34.4	37.3	-0.9	32.5	-	38.3	53.9	15.6	Floor noise
Vert	5460.000	PK	52.3	32.0	7.5	31.3	-	60.5	73.9	13.4	
Vert	5470.000	PK	58.6	32.0	7.5	31.3	-	66.8	73.9	7.1	
Vert	11020.000	PK	47.8	40.5	-1.5	33.3	-	53.5	73.9	20.4	
Vert	16530.000	PK	43.9	39.4	0.3	32.6	-	51.0	73.9	22.9	Floor noise
Vert	22040.000	PK	42.8	37.3	-0.9	32.5	-	46.7	73.9	27.2	Floor noise
Vert	5460.000	AV	36.6	32.0	7.5	31.3	1.0	45.8	53.9	8.1	*1)
Vert	5470.000	AV	40.6	32.0	7.5	31.3	1.0	49.8	53.9	4.1	*1)
Vert	11020.000	AV	38.1	40.5	-1.5	33.3	1.0	44.8	53.9	9.1	
Vert	16530.000	AV	35.6	39.4	0.3	32.6	-	42.7	53.9	11.2	Floor noise
Vert	22040.000	AV	34.4	37.3	-0.9	32.5	-	38.3	53.9	15.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

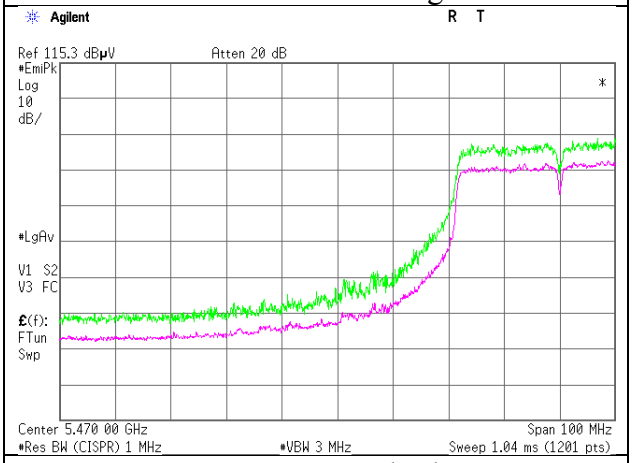
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
	(1 GHz-10 GHz)
Mode	Tx 11n-40 5510 MHz

Horizontal

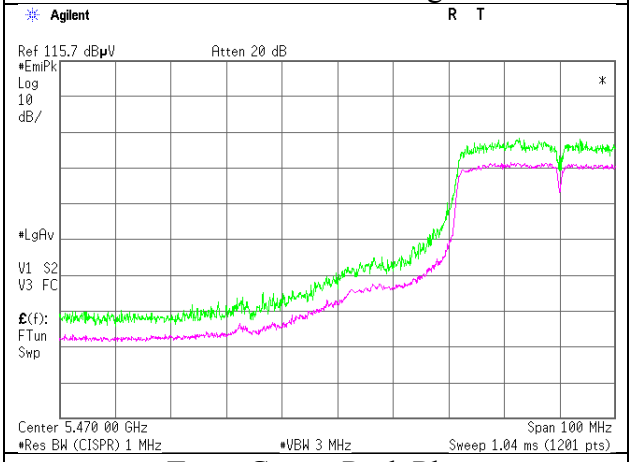
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-40 5550 MHz		

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]	Remark
Hori	11100.000	PK	47.3	40.4	-1.4	33.3	-	53.0	73.9	20.9	
Hori	16650.000	PK	44.0	39.8	0.3	32.6	-	51.5	73.9	22.4	Floor noise
Hori	22200.000	PK	42.3	37.5	-0.8	32.4	-	46.6	73.9	27.3	Floor noise
Hori	11100.000	AV	37.4	40.4	-1.4	33.3	1.0	44.1	53.9	9.8	
Hori	16650.000	AV	35.2	39.8	0.3	32.6	-	42.7	53.9	11.2	Floor noise
Hori	22200.000	AV	34.3	37.5	-0.8	32.4	-	38.6	53.9	15.3	Floor noise
Vert	11100.000	PK	47.7	40.4	-1.4	33.3	-	53.4	73.9	20.5	
Vert	16650.000	PK	43.9	39.8	0.3	32.6	-	51.4	73.9	22.5	Floor noise
Vert	22200.000	PK	42.6	37.5	-0.8	32.4	-	46.9	73.9	27.0	Floor noise
Vert	11100.000	AV	37.5	40.4	-1.4	33.3	1.0	44.2	53.9	9.7	
Vert	16650.000	AV	35.3	39.8	0.3	32.6	-	42.8	53.9	11.1	Floor noise
Vert	22200.000	AV	34.3	37.5	-0.8	32.4	-	38.6	53.9	15.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (26.5 GHz-40 GHz)
Mode	Tx 11n-40 5670 MHz		

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]	Remark
Hori	5725.000	PK	43.6	32.3	7.6	31.4	-	52.1	73.9	21.8	
Hori	11340.000	PK	48.8	40.2	-1.3	33.3	-	54.4	73.9	19.5	
Hori	17010.000	PK	44.3	40.9	0.3	32.6	-	52.9	73.9	21.0	Floor noise
Hori	22680.000	PK	42.2	37.8	-0.7	32.2	-	47.1	73.9	26.8	Floor noise
Hori	5725.000	AV	35.3	32.3	7.6	31.4	1.0	44.8	53.9	9.1	*1)
Hori	11340.000	AV	39.0	40.2	-1.3	33.3	1.0	45.6	53.9	8.3	
Hori	17010.000	AV	35.6	40.9	0.3	32.6	-	44.2	53.9	9.7	Floor noise
Hori	22680.000	AV	34.1	37.8	-0.7	32.2	-	39.0	53.9	14.9	Floor noise
Vert	5725.000	PK	43.9	32.3	7.6	31.4	-	52.4	73.9	21.5	
Vert	11340.000	PK	50.5	40.2	-1.3	33.3	-	56.1	73.9	17.8	
Vert	17010.000	PK	44.2	40.9	0.3	32.6	-	52.8	73.9	21.1	Floor noise
Vert	22680.000	PK	41.9	37.8	-0.7	32.2	-	46.8	73.9	27.1	Floor noise
Vert	5725.000	AV	34.4	32.3	7.6	31.4	1.0	43.9	53.9	10.0	*1)
Vert	11340.000	AV	41.2	40.2	-1.3	33.3	1.0	47.8	53.9	6.1	
Vert	17010.000	AV	35.5	40.9	0.3	32.6	-	44.1	53.9	9.8	Floor noise
Vert	22680.000	AV	34.0	37.8	-0.7	32.2	-	38.9	53.9	15.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

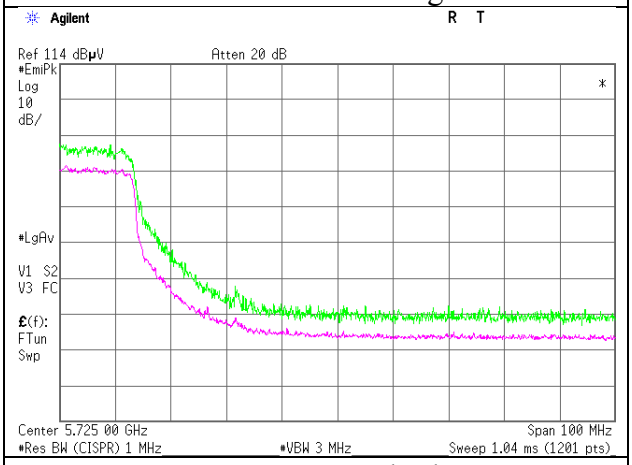
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11832513H
Date	July 28, 2017
Temperature / Humidity	24deg. C / 54 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11n-40 5670 MHz

Horizontal

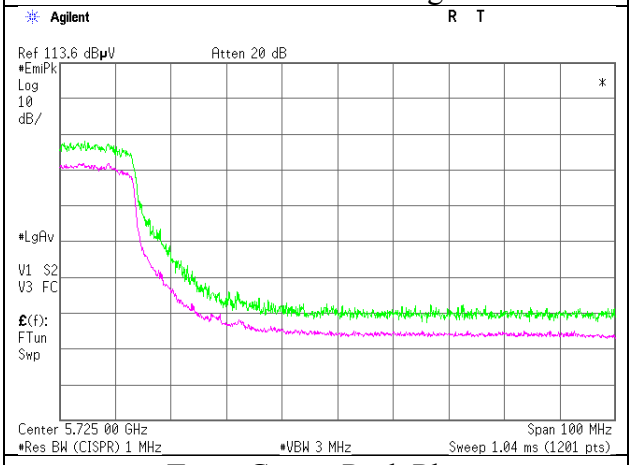
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 31, 2017	August 1, 2017	August 2, 2017
Temperature / Humidity	22 deg. C / 62 % RH	24 deg. C / 64 % RH	22 deg. C / 59 % RH
Engineer	Takafumi Noguchi	Tomoki Matsui	Yuta Moriya
	(1 GHz-10 GHz)	(10 GHz-26.5 GHz)	(26.5 GHz-40 GHz)
Mode	Tx 11n-40 5755 MHz		

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]	Remark
Hori	5650.000	PK	45.2	32.0	5.7	33.6	-	49.3	68.2	18.9	
Hori	5700.000	PK	52.3	32.0	5.7	33.7	-	56.3	105.2	48.9	
Hori	5715.000	PK	62.7	32.1	5.7	33.7	-	66.8	109.4	42.6	
Hori	5720.000	PK	62.8	32.1	5.7	33.7	-	66.9	110.8	43.9	
Hori	5725.000	PK	65.4	32.1	5.7	33.7	-	69.5	122.2	52.7	
Hori	11510.000	PK	44.9	39.9	-1.9	33.7	-	49.2	73.9	24.7	
Hori	17265.000	PK	43.6	43.0	-0.6	32.6	-	53.4	73.9	20.5	Floor noise
Hori	23020.000	PK	44.7	40.7	-1.2	31.3	-	52.9	73.9	21.0	Floor noise
Hori	11510.000	AV	37.3	39.9	-1.9	33.7	0.4	42.0	53.9	11.9	
Hori	17265.000	AV	34.5	43.0	-0.6	32.6	-	44.3	53.9	9.6	Floor noise
Hori	23020.000	AV	36.4	40.7	-1.2	31.3	-	44.6	53.9	9.3	Floor noise
Vert	5650.000	PK	48.3	32.0	5.7	33.6	-	52.4	68.2	15.8	
Vert	5700.000	PK	53.7	32.0	5.7	33.7	-	57.7	105.2	47.5	
Vert	5715.000	PK	63.3	32.1	5.7	33.7	-	67.4	109.4	42.0	
Vert	5720.000	PK	63.7	32.1	5.7	33.7	-	67.8	110.8	43.0	
Vert	5725.000	PK	66.6	32.1	5.7	33.7	-	70.7	122.2	51.5	
Vert	11510.000	PK	45.9	39.9	-1.9	33.7	-	50.2	73.9	23.7	
Vert	17265.000	PK	43.6	43.0	-0.6	32.6	-	53.4	73.9	20.5	Floor noise
Vert	23020.000	PK	44.7	40.7	-1.2	31.3	-	52.9	73.9	21.0	Floor noise
Vert	11510.000	AV	37.0	39.9	-1.9	33.7	0.4	41.7	53.9	12.2	
Vert	17265.000	AV	34.5	43.0	-0.6	32.6	-	44.3	53.9	9.6	Floor noise
Vert	23020.000	AV	36.4	40.7	-1.2	31.3	-	44.6	53.9	9.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

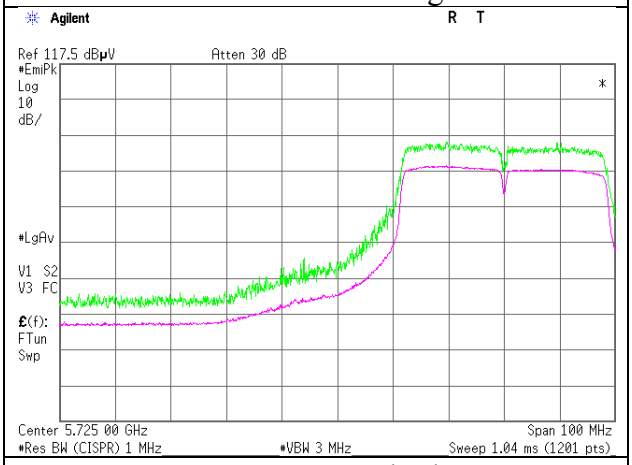
Distance factor: 1 GHz - 10 GHz 20log (3.7 m / 3.0 m) = 1.83 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11832513H
Date	July 31, 2017
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 5755 MHz

Horizontal

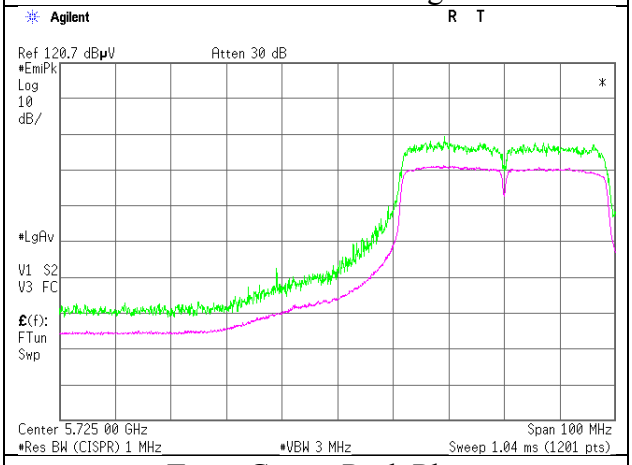
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Short ANT Cable)

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 31, 2017	August 1, 2017	August 2, 2017
Temperature / Humidity	22 deg. C / 62 % RH	24 deg. C / 64 % RH	22 deg. C / 59 % RH
Engineer	Takafumi Noguchi	Tomoki Matsui	Yuta Moriya
	(1 GHz-10 GHz)	(10 GHz-26.5 GHz)	(26.5 GHz-40 GHz)
Mode	Tx 11n-40 5795 MHz		

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]	Remark
Hori	5850.000	PK	47.5	32.3	5.8	33.7	-	51.9	122.2	70.3	
Hori	5855.000	PK	47.0	32.3	5.8	33.7	-	51.4	110.8	59.4	
Hori	5860.000	PK	46.6	32.3	5.8	33.7	-	51.0	109.4	58.4	
Hori	5875.000	PK	44.5	32.3	5.8	33.7	-	48.9	105.2	56.3	
Hori	5925.000	PK	44.5	32.4	5.8	33.7	-	49.0	68.2	19.2	
Hori	11590.000	PK	45.9	39.7	-1.9	33.7	-	50.0	73.9	23.9	
Hori	17385.000	PK	43.0	43.6	-0.4	32.5	-	53.7	73.9	20.2	Floor noise
Hori	23180.000	PK	44.3	40.6	-1.2	31.3	-	52.4	73.9	21.5	Floor noise
Hori	11590.000	AV	37.8	39.7	-1.9	33.7	0.4	42.3	53.9	11.6	
Hori	17385.000	AV	34.5	43.6	-0.4	32.5	-	45.2	53.9	8.7	Floor noise
Hori	23180.000	AV	35.9	40.6	-1.2	31.3	-	44.0	53.9	9.9	Floor noise
Vert	5850.000	PK	49.6	32.3	5.8	33.7	-	54.0	122.2	68.2	
Vert	5855.000	PK	49.4	32.3	5.8	33.7	-	53.8	110.8	57.0	
Vert	5860.000	PK	48.7	32.3	5.8	33.7	-	53.1	109.4	56.3	
Vert	5875.000	PK	46.0	32.3	5.8	33.7	-	50.4	105.2	54.8	
Vert	5925.000	PK	44.8	32.4	5.8	33.7	-	49.3	68.2	18.9	
Vert	11590.000	PK	45.0	39.7	-1.9	33.7	-	49.1	73.9	24.8	
Vert	17385.000	PK	43.0	43.6	-0.4	32.5	-	53.7	73.9	20.2	Floor noise
Vert	23180.000	PK	44.3	40.6	-1.2	31.3	-	52.4	73.9	21.5	Floor noise
Vert	11590.000	AV	36.3	39.7	-1.9	33.7	0.4	40.8	53.9	13.1	
Vert	17385.000	AV	34.5	43.6	-0.4	32.5	-	45.2	53.9	8.7	Floor noise
Vert	23180.000	AV	35.9	40.6	-1.2	31.3	-	44.0	53.9	9.9	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

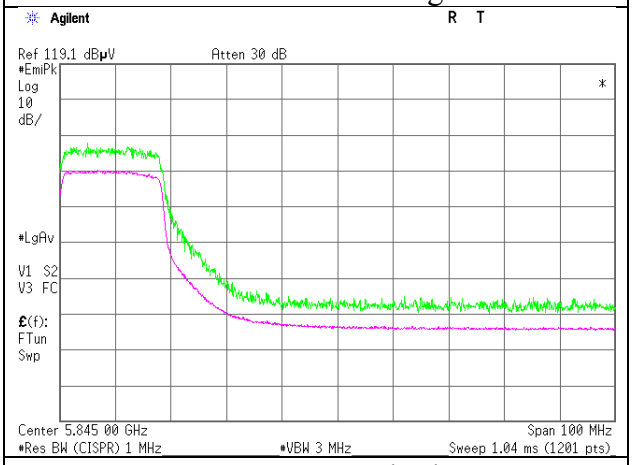
Distance factor: 1 GHz - 10 GHz 20log (3.7 m / 3.0 m) = 1.83 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11832513H
Date	July 31, 2017
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 5795 MHz

Horizontal

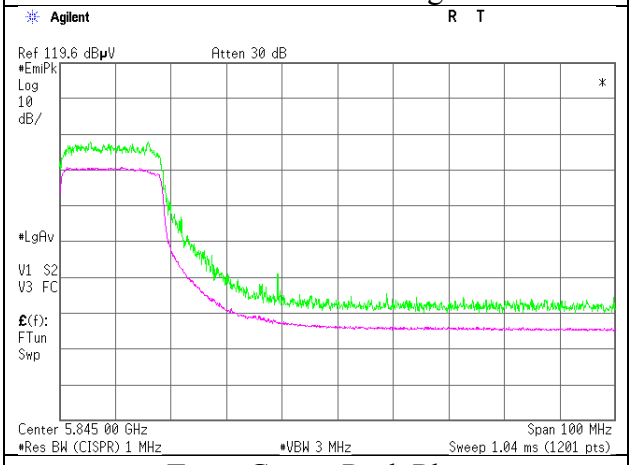
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

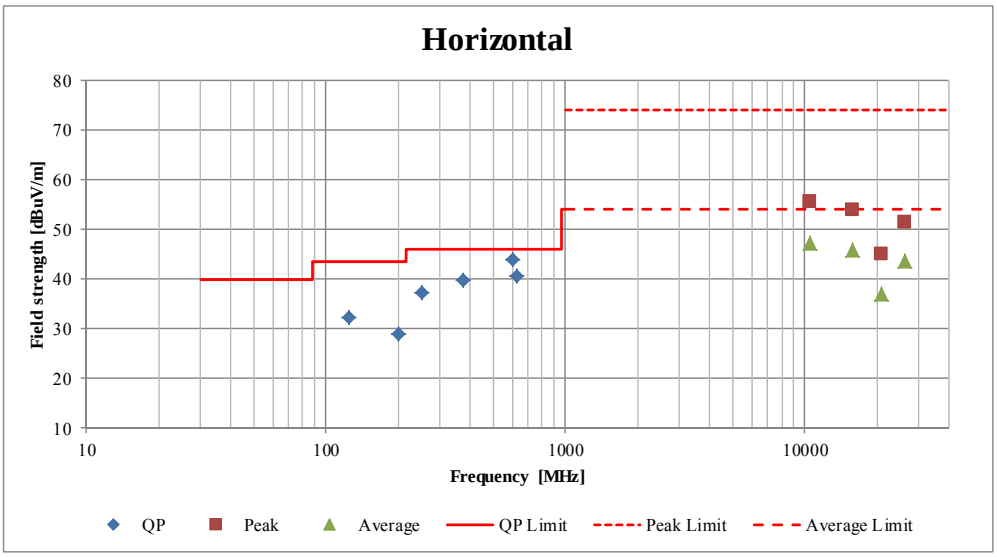
* Final result of restricted band edge was shown in tabular data.

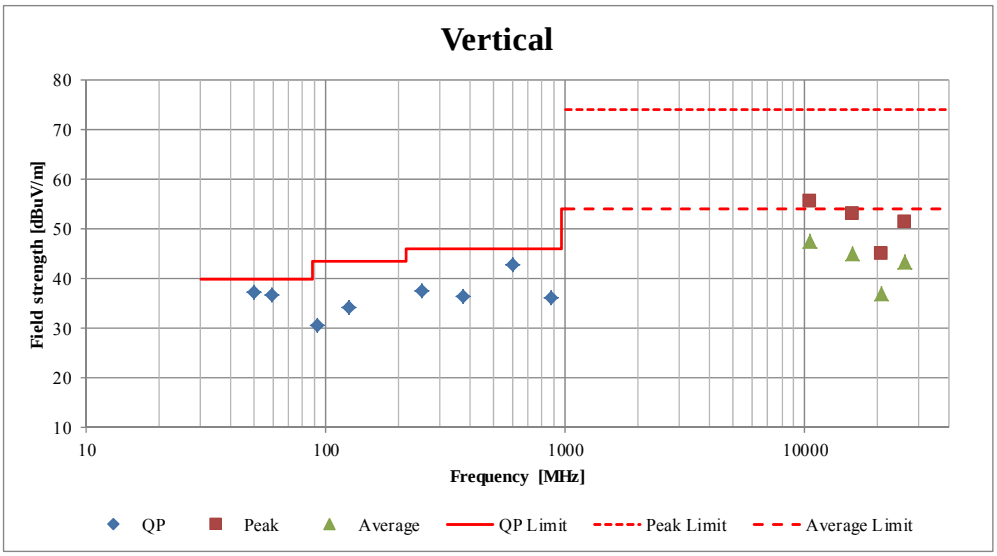
Radiated Spurious Emission

(Short ANT Cable)

(Plot data, Worst case)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11832513H		
Date	July 28, 2017	July 29, 2017	August 2, 2017
Temperature / Humidity	24deg. C / 54 % RH	24deg. C / 61 % RH	22 deg. C / 59 % RH
Engineer	Tomohisa Nakagawa (1 GHz-10 GHz)	Shuichi Ohyama (10 GHz-26.5 GHz)	Yuta Moriya (Below 1GHz / 26.5 GHz-40 GHz)
Mode	Tx 11n-20 5240 MHz		





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

Radiated Spurious Emission
(Long ANT Cable)

Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No. 11832513H
Date August 3, 2017
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Hiroyuki Furutaka

Mode Tx 11n-20 5240 MHz

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]	Remark
Hori	125.000	QP	44.0	13.2	7.6	27.8	-	37.0	43.5	6.5	
Hori	249.993	QP	47.9	11.7	8.5	27.1	-	41.0	46.0	5.0	
Hori	375.000	QP	42.9	15.2	9.3	27.6	-	39.8	46.0	6.2	
Hori	600.000	QP	41.0	19.1	10.1	28.0	-	42.2	46.0	3.8	
Hori	799.994	QP	36.0	20.8	10.9	27.2	-	40.5	46.0	5.5	
Hori	875.000	QP	36.5	21.8	11.1	26.9	-	42.5	46.0	3.5	
Hori	5000.000	PK	50.0	31.7	5.5	33.8	-	53.4	73.9	20.5	
Hori	10480.000	PK	50.2	39.9	-2.5	34.2	-	53.4	73.9	20.5	
Hori	15720.000	PK	46.6	39.7	-0.9	33.1	-	52.3	73.9	21.6	Floor noise
Hori	20960.000	PK	44.6	37.9	-1.7	32.7	-	48.1	73.9	25.8	Floor noise
Hori	26200.000	PK	47.9	38.6	-0.6	33.2	-	52.7	73.9	21.2	Floor noise
Hori	5000.000	AV	44.3	31.7	5.5	33.8	1.1	48.8	53.9	5.1	
Hori	10480.000	AV	42.0	39.9	-2.5	34.2	1.1	46.3	53.9	7.6	
Hori	15720.000	AV	37.2	39.7	-0.9	33.1	-	42.9	53.9	11.0	Floor noise
Hori	20960.000	AV	36.3	37.9	-1.7	32.7	-	39.8	53.9	14.1	Floor noise
Hori	26200.000	AV	39.9	38.6	-0.6	33.2	-	44.7	53.9	9.2	Floor noise
Vert	33.000	QP	36.7	16.5	6.8	28.2	-	31.8	40.0	8.2	
Vert	56.300	QP	47.8	8.7	7.0	28.1	-	35.4	40.0	4.6	
Vert	125.000	QP	47.0	13.2	7.6	27.8	-	40.0	43.5	3.5	
Vert	250.000	QP	44.5	11.7	8.5	27.1	-	37.6	46.0	8.4	
Vert	600.000	QP	40.0	19.1	10.1	28.0	-	41.2	46.0	4.8	
Vert	800.000	QP	35.5	20.8	10.9	27.2	-	40.0	46.0	6.0	
Vert	875.000	QP	35.6	21.8	11.1	26.9	-	41.6	46.0	4.4	
Vert	5000.000	PK	48.6	31.7	5.5	33.8	-	52.0	73.9	21.9	
Vert	10480.000	PK	51.1	39.9	-2.5	34.2	-	54.3	73.9	19.6	
Vert	15720.000	PK	47.0	39.7	-0.9	33.1	-	52.7	73.9	21.2	Floor noise
Vert	20960.000	PK	44.7	37.9	-1.7	32.7	-	48.2	73.9	25.7	Floor noise
Vert	26200.000	PK	48.0	38.6	-0.6	33.2	-	52.8	73.9	21.1	Floor noise
Vert	5000.000	AV	43.6	31.7	5.5	33.8	1.1	48.1	53.9	5.8	
Vert	10480.000	AV	41.3	39.9	-2.5	34.2	1.1	45.6	53.9	8.3	
Vert	15720.000	AV	37.6	39.7	-0.9	33.1	-	43.3	53.9	10.6	Floor noise
Vert	20960.000	AV	36.5	37.9	-1.7	32.7	-	40.0	53.9	13.9	Floor noise
Vert	26200.000	AV	39.8	38.6	-0.6	33.2	-	44.6	53.9	9.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (3.7 m / 3.0 m) = 1.83 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

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	2016/10/20 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2017/01/20 * 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	2017/05/29 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2017/05/22 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2017/05/29 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2017/03/21 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2017/05/14 * 12
MMM-08	DIGITAL HiTESTER	Hioki	3805	051201197	RE	2017/01/19 * 12
MHF-22	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCB	602	RE	2017/01/13 * 12
MCC-177	Microwave Cable	Junkosha	MMX221-00500D MSDMS	1502S304	RE	2017/03/13 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2016/08/02 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2016/12/13 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
MSA-14	Spectrum Analyzer	Agilent	E4440A	MY48250080	RE	2016/10/14 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE	2016/11/10 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2017/02/24 * 12
MCC-216	Microwave Cable	Junkosha	MWX221	1604S253(1 m) / 1608S087(5 m)	RE	2016/08/29 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2017/01/16 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2017/02/24 * 12
MMM-01	Digital Tester	Fluke	FLUKE 26-3	78030611	RE	2016/08/23 * 12
MHF-16	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCA	7001	RE	2016/09/19 * 12
MCC-216	Microwave Cable	Junkosha	MWX221	1604S253(1 m) / 1608S087(5 m)	RE	2016/08/29 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2016/10/21 * 12
MBA-08	Biconical Antenna	Schwarzbeck	VHA9103B	08031	RE	2016/09/29 * 12
MLA-21	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	911B-190	RE	2017/01/05 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2017/02/24 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2016/11/28 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2016/09/13 * 12
MHA-29	Horn Antenna 26.5-40GHz	ETS LINDGREN	3160-10	00152399	RE	2016/09/28 * 12
MCC-55	Microwave Cable	Suhner	SUCOFLEX101	2874(1m) / 2877(5m)	RE	2017/03/02 * 12
MPA-22	Pre Amplifier	MITEQ, Inc	AMF-6F-2600400-33-8P / AMF-4F-2600400-33-8P	1871355 /1871328	RE	2016/09/06 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2017/06/30 * 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