RADIO TEST REPORT

Test Report No. : 12517639S-B-R1

Applicant	:	**Japan Radio Co., Ltd.**
Type of Equipment	:	**Wireless LAN Module**
Model No.	:	**CMN-851A**
FCC ID	:	**CKECMN851A**
Test regulation	:	**FCC Part 15 Subpart E: 2018** **For Permissive Change**
Test item	:	**Conducted Emission** **Spurious Emission Restricted Band Edges**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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6. This test report covers Radio technical requirements.
   It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Shonan EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. This report is a revised version of 12517639S-B. 12517639S-B is replaced with this report.

Date of test: October 14 to November 4, 2018

Representative test engineer:

Makoto Hosaka
Engineer
Consumer Technology Division

Approved by:

Hikaru Shirasawa
Engineer
Consumer Technology Division

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

RTL02610

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REVISION HISTORY

Original Test Report No.: 12517639S-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12517639S-B	December 6, 2018	-	-
1	12517639S-B-R1	December 25, 2018	1	Deletion of (Radiated Spurious Emission tests only)

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SECTION 1: Customer information

Company Name	:	Japan Radio Co., Ltd.
Address	:	21-11, mure 6, maitaka city, tokyo, Japan
Telephone Number	:	+81-49-257-6443
Facsimile Number	:	+81-49-257-6206
Contact Person	:	Shinsuke Miyazaki

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

2.1 Identification of E.U.T.

Type of Equipment	:	Wireless LAN Module
Model No.	:	CMN-851A
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V
Receipt Date of Sample	:	October 13, 2018
Country of Mass-production	:	Japan
Condition of EUT	:	Production model
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model: CMN-851A (referred to as the EUT in this report) is a Wireless LAN Module.

Radio Specification

Equipment type	:	Transceiver	
Frequency of operation	:	2.4 GHz:	2412 MHz - 2462 MHz (IEEE 802.11b, 11g, 11n-HT20)
			2422 MHz - 2452 MHz (IEEE 802.11n-HT40)
		U-NII-1:	5180 MHz - 5240 MHz (IEEE 802.11a, 11n-HT20)
			5190 MHz - 5230 MHz (IEEE 802.11n-HT40)
		U-NII-2A:	5260 MHz - 5320 MHz (IEEE 802.11a, 11n-HT20)
			5270 MHz - 5310 MHz (IEEE 802.11n-HT40)
		U-NII-2C:	5500 MHz - 5700 MHz (IEEE 802.11a, 11n-HT20)
			5510 MHz - 5670 MHz (IEEE 802.11n-HT40)
		U-NII-3:	5745 MHz - 5825 MHz (IEEE 802.11a, 11n-HT20)
			5755 MHz - 5795 MHz (IEEE 802.11n-HT40)
Bandwidth	:	20 MHz (IEEE 802.11a/b/g/n), 40 MHz (IEEE 802.11n)	
Channel spacing	:	5 MHz (2.4 GHz),	
		20 MHz (11a, 11n (HT20, 5 GHz)), 40 MHz (11n (HT40, 5 GHz))	
Type of modulation	:	DSSS, OFDM	
Antenna type	:	Dual (Pattern)	
Antenna gain	:	2.4 GHz band: 3.9145 dBi	
		5 GHz band: 0.24 dBi	
Antenna connector type	:	Module side: U.FL	
		Antenna side: RP-SMA	
ITU code	:	D1D, G1D	
Clock frequency (Maximum)	:	40 MHz	

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

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart E FCC Part 15 final revised on March 12, 2018 and effective April 11, 2018
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
Conducted Emission	**FCC:** ANSI C63.10-2013	**FCC:** 15.407 (b) (6) / 15.207	10.6 dB 16.38677 MHz, N, 16.38767 MHz, L1, AV	Complied	-
	IC: RSS-Gen 8.8	**IC:** RSS-Gen 8.8			
Spurious Emission Restricted Band Edge	**FCC:** ANSI C63.10-2013 KDB Publication Number 789033	**FCC:** 15.407 (b), 15.205 and 15.209	1.2 dB 33.059 MHz, QP, Vert. Tx 11a 5320 MHz	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.
* For DFS tests, please see the test report number 10009516S-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). For below 30 MHz the EUT was confirmed to comply with the requirement by conducted test (original test report: 10009516S-B).

Symbols:
Complied — The data of this test item has enough margin, more than the measurement uncertainty.
Complied# — The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

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

FCC Part 15.31 (e)
The host device provides stable voltage constantly to the EUT regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
The EUT has a unique coupling/antenna connector. Therefore the equipment complies with the requirement.

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.
Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)				
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR	No. 4 SAC / SR	No. 5,6,8 SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.9 dB	2.8 dB	2.9 dB	2.9 dB	2.9 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.0 dB	3.0 dB	3.1 dB	-	-
	30 MHz-200 MHz	4.6 dB	4.6 dB	4.7 dB	-	-
	200 MHz-1 GHz	6.0 dB	6.0 dB	6.1 dB	-	-
	1 GHz-6 GHz	4.8 dB	4.8 dB	4.8 dB	-	-
	6 GHz-18 GHz	5.4 dB	5.4 dB	5.4 dB	-	-
	18 GHz-40 GHz	5.6 dB	5.6 dB	5.6 dB	-	-
Radiated emission (Measurement distance: 1 m)	1 GHz-18 GHz	5.7 dB	5.7 dB	5.7 dB	-	-
	18 GHz-40 GHz	5.9 dB	5.9 dB	5.9 dB	-	-

SAC=Semi-Anechoic Chamber
SR= Shielded Room is applied besides radiated emission

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
Telephone: +81 463 50 6400, Facsimile: +81 463 50 6401
JAB Accreditation No. RTL02610
FCC Test Firm Registration Number: 839876

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
No.1 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 shielded room	-	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	-	2.55 x 4.1 x 2.5	-	-

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)

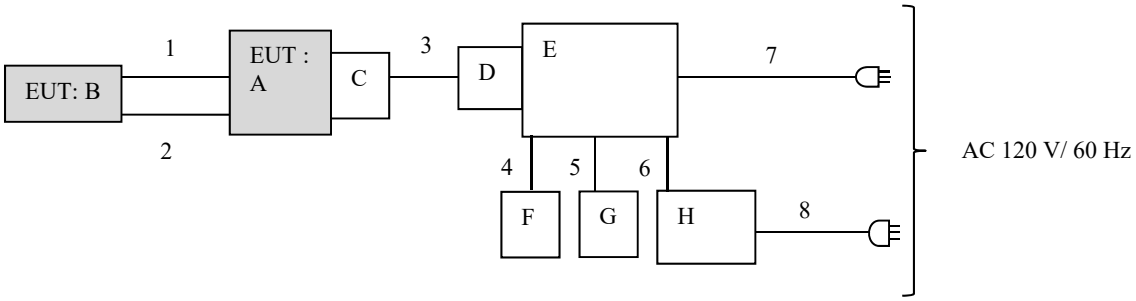
Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals -" of TCB Council Workshop October 2009.

Mode	U-NII Band	Worst Data mode*	Power setting
Transmitting (Tx), IEEE 802.11a (11a)	U-NII-1 / 2A	PN9, 48 Mbps	15
	U-NII-2C	PN9, 48 Mbps	13
	U-NII-3	PN9, 48 Mbps	13
Transmitting (Tx), IEEE 802.11n MIMO 20 MHz BW (11n-20)	U-NII-1 / 2A	PN9, MCS 8 (2 Streams)	12
	U-NII-2C	PN9, MCS 8 (2 Streams)	10
	U-NII-3	PN9, MCS 13 (2 Streams)	10.5
Transmitting (Tx), IEEE 802.11n MIMO 40 MHz BW (11n-40)	U-NII-1 / 2A	PN9, MCS 10 (2 Streams)	12
	U-NII-2C	PN9, MCS 10 (2 Streams)	10
	U-NII-3	PN9, MCS 13 (2 Streams)	10
The EUT has the power settings by the software: ART v0.9 b34 *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 Operation mode(s)

Test Item	Operating Mode *1)	Tested Antenna *2)	Tested Frequency
Conducted emission, Radiated Spurious Emission (Below 1 GHz)	Tx, 11a	2	5320 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx, 11a	2	5180 MHz, 5240 MHz, 5320 MHz, 5500 MHz, 5580 MHz, 5700 MHz, 5745 MHz, 5785 MHz, 5825 MHz
	Tx, 11n-20 MIMO	1+2	
	Tx, 11n-40 MIMO	1+2	5190 MHz, 5230 MHz, 5310 MHz, 5510 MHz, 5550 MHz, 5670 MHz, 5755 MHz, 5795 MHz
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test. *2) The test was performed with the antenna that had higher power as a representative.			

4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless LAN Module	CMN-851A	815306000007	Japan Radio Co., Ltd.	EUT
B	AP-Double WiFi Antenna	AP-PAN-WW-x-S22-RP-xx-18 (Panasonic:ARB-APWWxS22-RP-xx) *1)	1	Airgain, Inc.	EUT
C	Jig	PEM2PEM-100	-	-	-
D	PC Card	-	-	-	-
E	PC	HP Compaq dc8000p	JPA03801BS	HP	-
F	mouse	M-UAE96	265986-011	HP	-
G	Keyboard	KB-0316	BC3480AGA U3M4A	HP	-
H	monitor	RDTI77LM (BK)	76205729AJ	MITSUBISHI	-

*1) x : Mount Style (Q : Bolt or M : Magnetic)
xx : Color (WH : White or BL : Black)

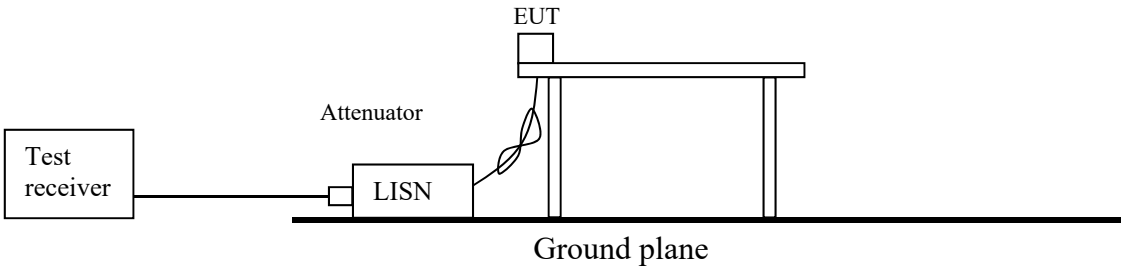
List of cables used

No.	Cable Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Coaxial	5.6	Shielded	Shielded	-
2	Coaxial	5.6	Shielded	Shielded	-
3	HDMI	0.9	Shielded	Shielded	-
4	USB	2.0	Shielded	Shielded	-
5	PS/2	1.9	Shielded	Shielded	-
6	RGB	2.0	Shielded	Shielded	-
7	AC	1.4	Unshielded	Unshielded	-
8	AC	2.0	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.



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

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

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

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

SECTION 6: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1 GHz >
EUT was placed on a platform of nominal size, 1.0 m by 1.5 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 1 GHz >
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).

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:

$$E = \frac{1000000\sqrt{30P}}{3} \text{ (uV/m)}$$

:P is the e.i.r.p. (Watts)

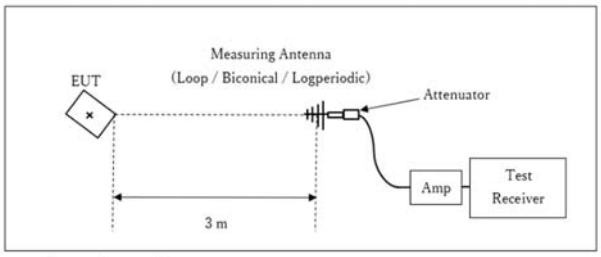
Test Antennas are used as below;

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 VB *1) RBW: 1 MHz VBW: 1/T (T: burst length, refer to 10009516S-B) Detector: Peak Trace: ≥ 100 traces

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".

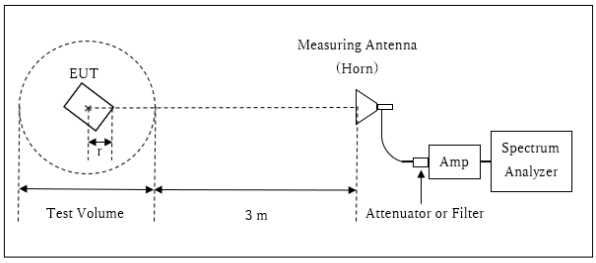
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz

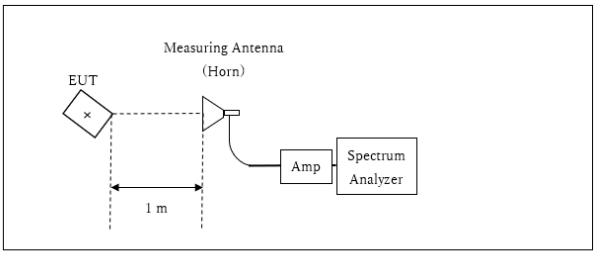


r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.9 m*/3.0 m) = 2.28 dB
* Test Distance: (3 + Test Volume /2) - r = 3.9 m

Test Volume: 2 m
(Test Volume has been calibrated based on CISPR 16-1-4.)
r = 0.1 m

13 GHz - 26.5 GHz



× : Center of turn table

Distance Factor: 20 x log (1.0 m* / 3.0 m) = -9.54 dB
*Test Distance: 1 m

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.
The test results and limit are rounded off to one decimal place, so some differences might be observed.

Worst position:
EUT

	Carrier	Below 1 GHz	1 GHz - 13 GHz	13 GHz – 26.5 GHz	26.5 GHz – 40 GHz
Horizontal	X	X	X	X	X
Vertical	X	X	X	X	X

Antenna_axis(SISO)

	Carrier	Below 1 GHz	1 GHz - 13 GHz	13 GHz – 26.5 GHz	26.5 GHz – 40 GHz
Horizontal	Y	Z	Z	Y	X
Vertical	X	Z	Y	Y	X

Antenna_axis(MIMO)

	Carrier	Below 1 GHz	1 GHz - 13 GHz	13 GHz – 26.5 GHz	26.5 GHz – 40 GHz
Horizontal	Y	Z	Z	Y	X
Vertical	X	Z	Y	Y	X

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

APPENDIX 1: Test data

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2018/11/02

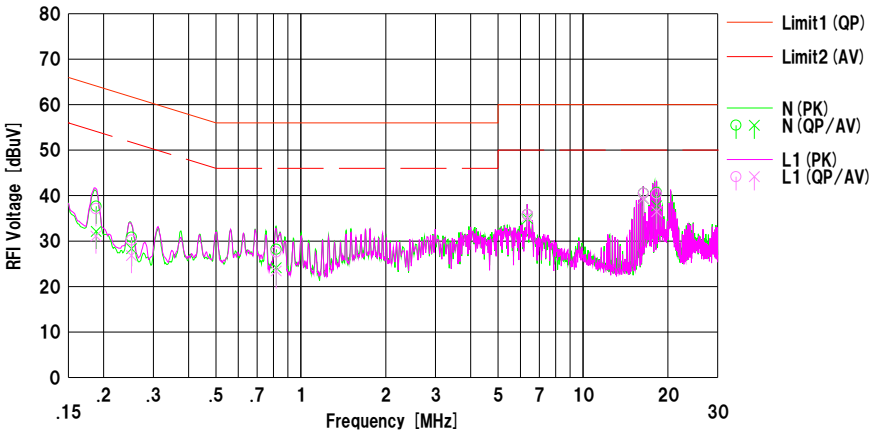
Mode : WLAN SISO 11a 5320 MHz

Power : AC 120 V / 60 Hz
Temp./Humi. :

Remarks : -

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

Engineer : Kazuya Noda



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.18830	25.26	19.76	12.39	37.65	32.15	64.11	54.11	26.4	21.9	N	
2	0.25130	18.44	15.92	12.40	30.84	28.32	61.71	51.71	30.8	23.3	N	
3	0.81870	15.73	11.69	12.47	28.20	24.16	56.00	46.00	27.8	21.8	N	
4	6.36018	23.09	22.19	12.75	35.84	34.94	60.00	50.00	24.1	15.0	N	
5	16.38677	27.36	26.21	13.15	40.51	39.36	60.00	50.00	19.4	10.6	N	
6	18.24769	27.45	24.55	13.23	40.68	37.78	60.00	50.00	19.3	12.2	N	
7	0.18785	24.75	18.71	12.39	37.14	31.10	64.13	54.13	26.9	23.0	L1	
8	0.25090	17.82	14.41	12.40	30.22	26.81	61.73	51.73	31.5	24.9	L1	
9	0.81810	15.10	10.94	12.47	27.57	23.41	56.00	46.00	28.4	22.5	L1	
10	6.35948	23.11	22.65	12.75	35.86	35.40	60.00	50.00	24.1	14.6	L1	
11	16.38767	27.35	26.19	13.15	40.50	39.34	60.00	50.00	19.5	10.6	L1	
12	18.24289	27.21	23.23	13.23	40.44	36.46	60.00	50.00	19.5	13.5	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN (AMN) +Cable+ATT) [dB]
LISN (AMN) =SLS-02

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)

Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5180 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.425	PK	63.33	27.63	14.26	43.72	2.28	63.78	73.97	10.1	236	158	
Hori.	2498.906	PK	63.95	27.58	14.27	43.72	2.28	64.36	73.97	9.6	236	158	
Hori.	5150.000	PK	46.42	32.10	16.72	39.58	2.28	57.94	73.90	16.0	127	310	
Hori.	6906.635	PK	49.40	35.17	8.43	39.32	2.28	55.96	73.90	17.9	122	10	
Hori.	10360.000	PK	45.81	39.34	10.22	39.62	2.28	58.03	73.90	15.8	150	0	
Hori.	13813.330	PK	46.58	40.53	11.03	38.81	-9.54	49.79	73.90	24.1	137	13	
Hori.	2488.425	AV	46.61	27.63	14.26	43.72	2.28	47.06	53.97	6.9	236	158	VBW: 10 Hz
Hori.	2498.906	AV	47.30	27.58	14.27	43.72	2.28	47.71	53.97	6.2	236	158	VBW: 10 Hz
Hori.	5150.000	AV	35.87	32.10	16.72	39.58	2.28	47.39	53.90	6.5	127	310	VBW: 2.7 kHz
Hori.	6906.635	AV	41.95	35.17	8.43	39.32	2.28	48.51	53.90	**5.3**	122	10	VBW: 2.7 kHz
Hori.	10360.000	AV	35.16	39.34	10.22	39.62	2.28	47.38	53.90	6.5	150	0	VBW: 2.7 kHz
Hori.	13813.330	AV	35.36	40.53	11.03	38.81	-9.54	38.57	53.90	15.3	137	13	VBW:10 Hz
Vert.	2488.694	PK	62.46	27.63	14.26	43.72	2.28	62.91	73.97	11.0	329	119	
Vert.	2498.414	PK	62.64	27.59	14.27	43.72	2.28	63.06	73.97	10.9	329	119	
Vert.	5150.000	PK	46.37	32.10	16.72	39.58	2.28	57.89	73.90	16.0	275	2	
Vert.	6906.635	PK	48.39	35.17	8.43	39.32	2.28	54.95	73.90	18.9	150	34	
Vert.	10360.000	PK	45.37	39.34	10.22	39.62	2.28	57.59	73.90	16.3	150	0	
Vert.	13813.330	PK	47.16	40.53	11.03	38.81	-9.54	50.37	73.90	23.5	118	188	
Vert.	2488.694	AV	46.88	27.63	14.26	43.72	2.28	47.33	53.97	6.6	329	119	VBW: 10 Hz
Vert.	2498.414	AV	47.58	27.59	14.27	43.72	2.28	48.00	53.97	5.9	329	119	VBW: 10 Hz
Vert.	5150.000	AV	35.75	32.10	16.72	39.58	2.28	47.27	53.90	6.6	275	2	VBW: 2.7 kHz
Vert.	6906.635	AV	41.26	35.17	8.43	39.32	2.28	47.82	53.90	6.0	150	34	VBW: 2.7 kHz
Vert.	10360.000	AV	35.08	39.34	10.22	39.62	2.28	47.30	53.90	6.6	150	0	VBW: 2.7 kHz
Vert.	13813.330	AV	38.99	40.53	11.03	38.81	-9.54	42.20	53.90	11.7	118	188	VBW:10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

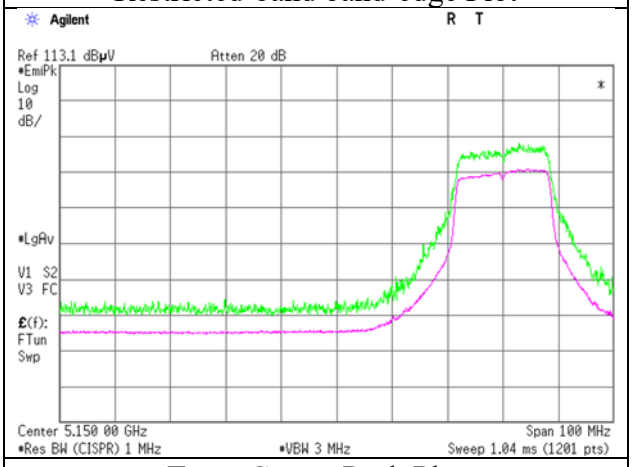
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi (Band edge)
Mode	Tx 11a 5180 MHz

Horizontal

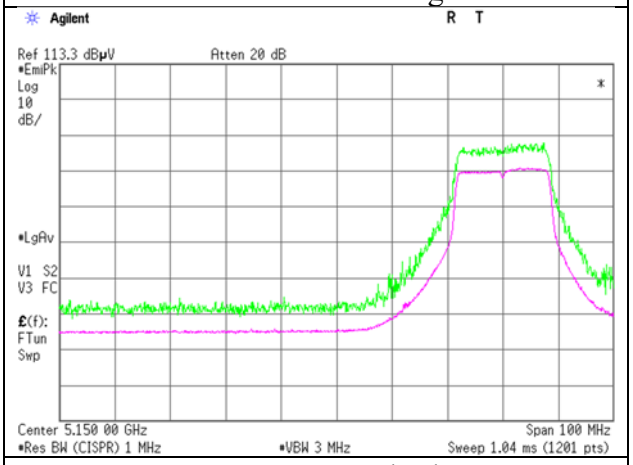
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 24, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5240 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.391	PK	63.85	27.63	14.26	43.72	2.28	64.30	73.97	9.6	236	156	
Hori.	2498.933	PK	63.96	27.58	14.27	43.72	2.28	64.37	73.97	9.6	236	156	
Hori.	6986.632	PK	48.56	35.93	8.43	39.20	2.28	56.00	73.90	17.9	147	197	
Hori.	10480.000	PK	46.70	39.63	10.30	39.75	2.28	59.16	73.90	14.7	150	0	
Hori.	13973.260	PK	47.92	41.27	11.04	38.75	-9.54	51.94	73.90	21.9	137	11	
Hori.	2488.391	AV	46.86	27.63	14.26	43.72	2.28	47.31	53.97	6.6	236	156	VBW: 10 Hz
Hori.	2498.933	AV	47.38	27.58	14.27	43.72	2.28	47.79	53.97	6.1	236	156	VBW: 10 Hz
Hori.	6986.632	AV	40.62	35.93	8.43	39.20	2.28	48.06	53.90	5.8	147	197	VBW: 2.7 kHz
Hori.	10480.000	AV	36.00	39.63	10.30	39.75	2.28	48.46	53.90	5.4	150	0	VBW: 2.7 kHz
Hori.	13973.260	AV	36.41	41.27	11.04	38.75	-9.54	40.43	53.90	13.4	137	11	VBW: 10 Hz
Vert.	2488.431	PK	62.09	27.63	14.26	43.72	2.28	62.54	73.97	11.4	335	121	
Vert.	2498.900	PK	62.56	27.58	14.27	43.72	2.28	62.97	73.97	11.0	335	121	
Vert.	6986.632	PK	49.19	35.93	8.43	39.20	2.28	56.63	73.90	17.2	147	290	
Vert.	10480.000	PK	46.15	39.63	10.30	39.75	2.28	58.61	73.90	15.2	150	0	
Vert.	13973.260	PK	48.61	41.27	11.04	38.75	-9.54	52.63	73.90	21.2	101	183	
Vert.	2488.431	AV	45.11	27.63	14.26	43.72	2.28	45.56	53.97	8.4	335	121	VBW: 10 Hz
Vert.	2498.900	AV	46.08	27.58	14.27	43.72	2.28	46.49	53.97	7.4	335	121	VBW: 10 Hz
Vert.	6986.632	AV	42.08	35.93	8.43	39.20	2.28	49.52	53.90	**4.3**	147	290	VBW: 2.7 kHz
Vert.	10480.000	AV	35.78	39.63	10.30	39.75	2.28	48.24	53.90	5.6	150	0	VBW: 2.7 kHz
Vert.	13973.260	AV	40.37	41.27	11.04	38.75	-9.54	44.39	53.90	9.5	101	183	VBW: 10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	3	1
Date	November 4, 2018	October 24, 2018	October 30, 2018
Temperature / Humidity	22 deg. C / 44 % RH	24 deg. C / 44 % RH	25 deg. C / 36 % RH
Engineer	Kazutaka Takeyama (30 MHz - 1 GHz)	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)
Semi Anechoic Chamber	1	3	1
Date	October 31, 2018	October 26, 2018	October 31, 2018
Temperature / Humidity	23 deg. C / 35 % RH	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Shiro Kobayashi (6.4 GHz – 13 GHz)	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5320 MHz		

(below 1GHz and above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	78.675	QP	54.50	6.33	8.24	31.81	0.00	37.26	40.00	2.7	251	251	
Hori.	99.946	QP	52.00	10.24	8.22	31.81	0.00	38.65	43.50	4.8	300	225	
Hori.	299.860	QP	50.50	14.25	6.91	31.77	0.00	39.89	46.00	6.1	100	111	
Hori.	2488.479	PK	63.87	27.63	14.26	43.72	2.28	64.32	73.97	9.6	235	155	
Hori.	2498.872	PK	63.94	27.58	14.27	43.72	2.28	64.35	73.97	9.6	235	155	
Hori.	5350.000	PK	47.63	31.54	16.80	39.68	2.28	58.57	73.90	15.3	142	296	
Hori.	7093.298	PK	47.93	36.35	8.54	39.23	2.28	55.87	73.90	18.0	152	244	
Hori.	10640.000	PK	45.67	39.56	10.37	39.69	2.28	58.19	73.90	15.7	150	0	
Hori.	14186.580	PK	46.23	42.01	11.14	38.61	-9.54	51.23	73.90	22.6	131	10	
Hori.	2488.479	AV	46.00	27.63	14.26	43.72	2.28	46.45	53.97	7.5	235	155	VBW: 10 Hz
Hori.	2498.872	AV	47.35	27.58	14.27	43.72	2.28	47.76	53.97	6.2	235	155	VBW: 10 Hz
Hori.	5350.000	AV	36.52	31.54	16.80	39.68	2.28	47.46	53.90	6.4	142	296	VBW: 2.7 kHz
Hori.	7093.298	AV	41.27	36.35	8.54	39.23	2.28	49.21	53.90	4.6	152	244	VBW: 2.7 kHz
Hori.	10640.000	AV	35.18	39.56	10.37	39.69	2.28	47.70	53.90	6.2	150	0	VBW: 2.7 kHz
Hori.	14186.580	AV	35.71	42.01	11.14	38.61	-9.54	40.71	53.90	13.1	131	10	VBW: 10 Hz
Vert.	33.059	QP	46.00	17.50	7.08	31.84	0.00	38.74	40.00	**1.2**	100	292	
Vert.	36.013	QP	44.70	16.33	7.16	31.83	0.00	36.36	40.00	3.6	100	4	
Vert.	49.882	QP	51.00	11.21	7.45	31.82	0.00	37.84	40.00	2.1	100	124	
Vert.	64.243	QP	54.50	7.37	7.20	31.82	0.00	37.25	40.00	2.7	100	126	
Vert.	80.596	QP	54.50	6.53	8.35	31.81	0.00	37.57	40.00	2.4	100	44	
Vert.	99.950	QP	55.50	10.24	8.22	31.81	0.00	42.15	43.50	1.3	100	279	
Vert.	299.853	QP	48.30	14.25	6.91	31.77	0.00	37.69	46.00	8.3	100	160	
Vert.	891.284	QP	34.50	21.95	9.64	31.40	0.00	34.69	46.00	11.3	100	328	
Vert.	2488.899	PK	61.90	27.63	14.26	43.72	2.28	62.35	73.97	11.6	332	118	
Vert.	2498.869	PK	62.30	27.58	14.27	43.72	2.28	62.71	73.97	11.2	332	118	
Vert.	5350.000	PK	47.28	31.54	16.80	39.68	2.28	58.22	73.90	15.7	283	174	
Vert.	7093.298	PK	48.63	36.35	8.54	39.23	2.28	56.57	73.90	17.3	148	283	
Vert.	10640.000	PK	45.85	39.56	10.37	39.69	2.28	58.37	73.90	15.5	150	0	
Vert.	14186.580	PK	47.06	42.01	11.14	38.61	-9.54	52.06	73.90	21.8	109	189	
Vert.	2488.899	AV	45.06	27.63	14.26	43.72	2.28	45.51	53.97	8.4	332	118	VBW: 10 Hz
Vert.	2498.869	AV	45.99	27.58	14.27	43.72	2.28	46.40	53.97	7.5	332	118	VBW: 10 Hz
Vert.	5350.000	AV	36.09	31.54	16.80	39.68	2.28	47.03	53.90	6.9	283	174	VBW: 2.7 kHz
Vert.	7093.298	AV	42.30	36.35	8.54	39.23	2.28	50.24	53.90	3.6	148	283	VBW: 2.7 kHz
Vert.	10640.000	AV	35.28	39.56	10.37	39.69	2.28	47.80	53.90	6.1	150	0	VBW: 2.7 kHz
Vert.	14186.580	AV	38.13	42.01	11.14	38.61	-9.54	43.13	53.90	10.7	109	189	VBW: 10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

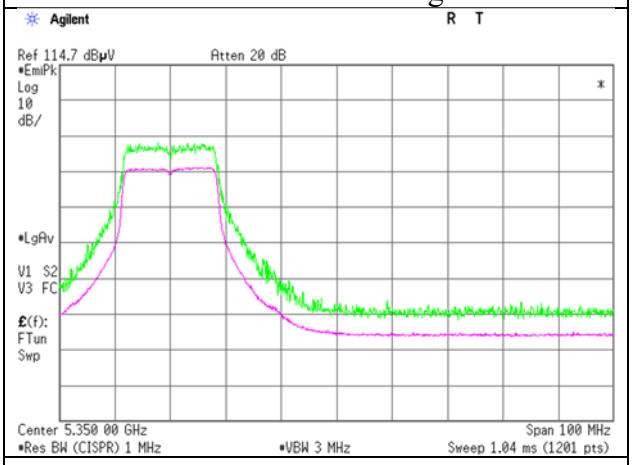
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11a 5320 MHz

Horizontal

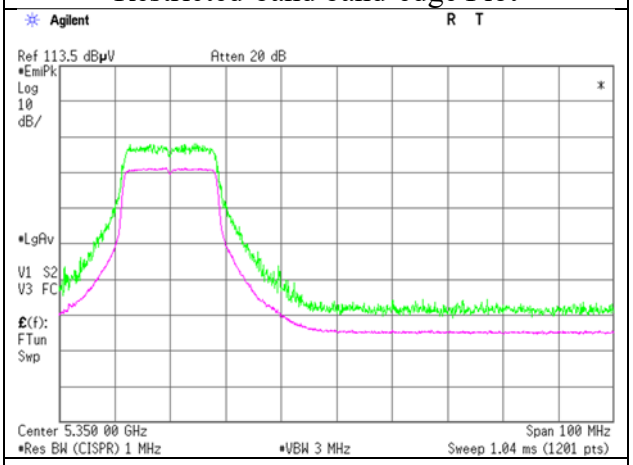
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 24, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5500 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.437	PK	63.87	27.63	14.26	43.72	2.28	64.32	73.97	9.6	234	156	
Hori.	2498.876	PK	63.91	27.58	14.27	43.72	2.28	64.32	73.97	9.6	234	156	
Hori.	5460.000	PK	46.44	31.90	16.85	39.73	2.28	57.74	73.90	16.2	143	284	
Hori.	7333.297	PK	45.50	36.72	8.83	39.36	2.28	53.97	73.90	19.9	223	239	
Hori.	11000.000	PK	46.63	40.11	10.55	39.49	2.28	60.08	73.90	13.8	150	0	
Hori.	2488.437	AV	46.87	27.63	14.26	43.72	2.28	47.32	53.97	6.6	234	156	VBW: 10 Hz
Hori.	2498.876	AV	47.39	27.58	14.27	43.72	2.28	47.80	53.97	6.1	234	156	VBW: 10 Hz
Hori.	5460.000	AV	35.65	31.90	16.85	39.73	2.28	46.95	53.90	6.9	143	284	VBW: 2.7 kHz
Hori.	7333.297	AV	36.56	36.72	8.83	39.36	2.28	45.03	53.90	8.8	223	239	VBW: 2.7 kHz
Hori.	11000.000	AV	35.32	40.11	10.55	39.49	2.28	48.77	53.90	5.1	150	0	VBW: 2.7 kHz
Vert.	2488.181	PK	61.85	27.63	14.26	43.72	2.28	62.30	73.97	11.6	334	119	
Vert.	2498.899	PK	62.23	27.58	14.27	43.72	2.28	62.64	73.97	11.3	334	119	
Vert.	5460.000	PK	46.39	31.90	16.85	39.73	2.28	57.69	73.90	16.2	273	183	
Vert.	7333.297	PK	46.58	36.72	8.83	39.36	2.28	55.05	73.90	18.8	139	295	
Vert.	11000.000	PK	46.02	40.11	10.55	39.49	2.28	59.47	73.90	14.4	150	0	
Vert.	2488.181	AV	45.06	27.63	14.26	43.72	2.28	45.51	53.97	8.4	334	119	VBW: 10 Hz
Vert.	2498.899	AV	46.05	27.58	14.27	43.72	2.28	46.46	53.97	7.5	334	119	VBW: 10 Hz
Vert.	5460.000	AV	35.66	31.90	16.85	39.73	2.28	46.96	53.90	6.9	273	183	VBW: 2.7 kHz
Vert.	7333.297	AV	38.80	36.72	8.83	39.36	2.28	47.27	53.90	6.6	139	295	VBW: 2.7 kHz
Vert.	11000.000	AV	35.40	40.11	10.55	39.49	2.28	48.85	53.90	**5.0**	150	0	VBW: 2.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	47.80	31.89	16.86	39.74	2.28	59.09	-36.14	-27.00	**9.1**	143	284	
Vert.	5470.000	PK	47.52	31.89	16.86	39.74	2.28	58.81	-36.42	-27.00	9.4	273	183	

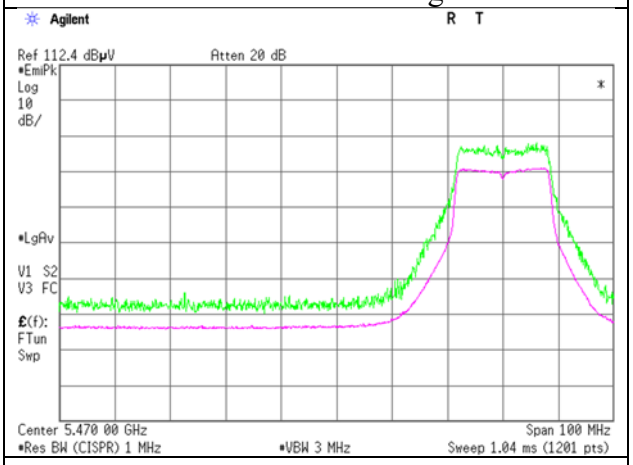
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 5500 MHz

Horizontal

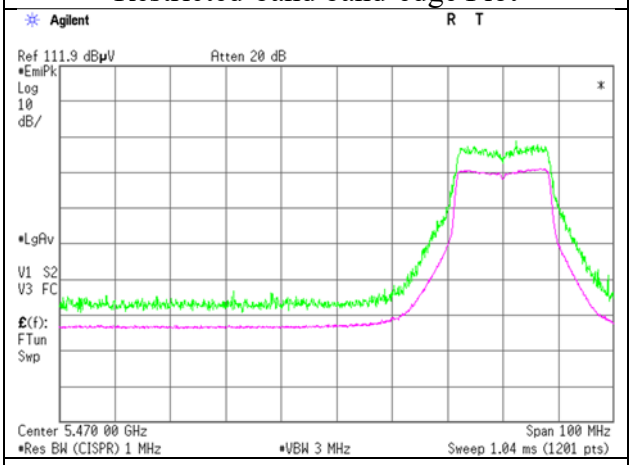
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 24, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5580 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.388	PK	64.07	27.63	14.26	43.72	2.28	64.52	73.97	9.4	234	156	
Hori.	2498.867	PK	63.96	27.58	14.27	43.72	2.28	64.37	73.97	9.6	234	156	
Hori.	7439.963	PK	45.05	36.84	8.97	39.42	2.28	53.72	73.90	20.1	147	141	
Hori.	11160.000	PK	45.43	39.83	10.75	39.42	2.28	58.87	73.90	15.0	150	0	
Hori.	2488.388	AV	46.92	27.63	14.26	43.72	2.28	47.37	53.97	6.6	234	156	VBW: 10 Hz
Hori.	2498.867	AV	47.37	27.58	14.27	43.72	2.28	47.78	53.97	6.1	234	156	VBW: 10 Hz
Hori.	7439.963	AV	35.72	36.84	8.97	39.42	2.28	44.39	53.90	9.5	147	141	VBW: 2.7 kHz
Hori.	11160.000	AV	35.70	39.83	10.75	39.42	2.28	49.14	53.90	**4.7**	150	0	VBW: 2.7 kHz
Vert.	2488.406	PK	61.87	27.63	14.26	43.72	2.28	62.32	73.97	11.6	335	118	
Vert.	2498.804	PK	62.23	27.59	14.27	43.72	2.28	62.65	73.97	11.3	335	118	
Vert.	7439.963	PK	45.68	36.84	8.97	39.42	2.28	54.35	73.90	19.5	152	291	
Vert.	11160.000	PK	45.75	39.83	10.75	39.42	2.28	59.19	73.90	14.7	150	0	
Vert.	2488.406	AV	45.14	27.63	14.26	43.72	2.28	45.59	53.97	8.3	335	118	VBW: 10 Hz
Vert.	2498.804	AV	45.81	27.59	14.27	43.72	2.28	46.23	53.97	7.7	335	118	VBW: 10 Hz
Vert.	7439.963	AV	36.89	36.84	8.97	39.42	2.28	45.56	53.90	8.3	152	291	VBW: 2.7 kHz
Vert.	11160.000	AV	35.66	39.83	10.75	39.42	2.28	49.10	53.90	4.8	150	0	VBW: 2.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)

Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5700 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.491	PK	63.97	27.63	14.26	43.72	2.28	64.42	73.97	9.5	233	157	
Hori.	2498.791	PK	64.02	27.59	14.27	43.72	2.28	64.44	73.97	9.5	233	157	
Hori.	7599.962	PK	47.15	36.71	9.09	39.28	2.28	55.95	73.90	17.9	154	140	
Hori.	11400.000	PK	45.95	39.93	11.04	39.31	2.28	59.89	73.90	14.0	150	0	
Hori.	2488.491	AV	46.92	27.63	14.26	43.72	2.28	47.37	53.97	6.6	233	157	VBW: 10 Hz
Hori.	2498.791	AV	47.38	27.59	14.27	43.72	2.28	47.80	53.97	6.1	233	157	VBW: 10 Hz
Hori.	7599.962	AV	36.68	36.71	9.09	39.28	2.28	45.48	53.90	8.4	154	140	VBW: 2.7 kHz
Hori.	11400.000	AV	34.96	39.93	11.04	39.31	2.28	48.90	53.90	5.0	150	0	VBW: 2.7 kHz
Vert.	2488.110	PK	61.58	27.63	14.26	43.72	2.28	62.03	73.97	11.9	333	118	
Vert.	2498.892	PK	62.09	27.58	14.27	43.72	2.28	62.50	73.97	11.4	333	118	
Vert.	7599.962	PK	47.37	36.71	9.09	39.28	2.28	56.17	73.90	17.7	150	287	
Vert.	11400.000	PK	46.19	39.93	11.04	39.31	2.28	60.13	73.90	13.7	150	0	
Vert.	2488.110	AV	45.05	27.63	14.26	43.72	2.28	45.50	53.97	8.4	333	118	VBW: 10 Hz
Vert.	2498.892	AV	45.86	27.58	14.27	43.72	2.28	46.27	53.97	7.7	333	118	VBW: 10 Hz
Vert.	7599.962	AV	37.88	36.71	9.09	39.28	2.28	46.68	53.90	7.2	150	287	VBW: 2.7 kHz
Vert.	11400.000	AV	35.20	39.93	11.04	39.31	2.28	49.14	53.90	**4.7**	150	0	VBW: 2.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	46.76	32.20	17.09	39.88	2.28	58.45	-36.78	-27.00	**9.8**	146	293	
Vert.	5725.000	PK	46.38	32.20	17.09	39.88	2.28	58.07	-37.16	-27.00	10.2	274	183	

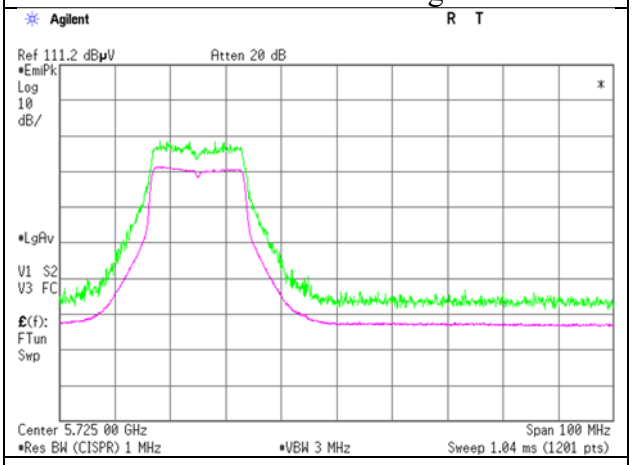
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11a 5700 MHz

Horizontal

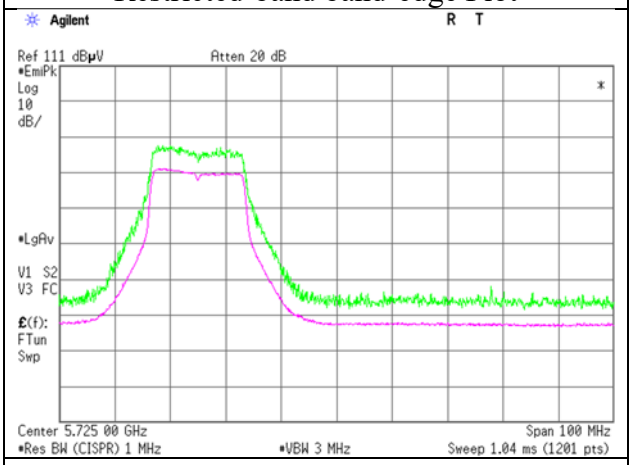
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	3	1	
Date	October 26, 2018	October 31, 2018	
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH	
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11a 5745 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.152	PK	63.91	27.63	14.26	43.72	2.28	64.36	73.97	9.6	233	158	
Hori.	2498.878	PK	64.07	27.58	14.27	43.72	2.28	64.48	73.97	9.4	233	158	
Hori.	3829.993	PK	51.75	29.61	15.28	43.66	2.28	55.26	73.97	18.7	125	298	
Hori.	7659.962	PK	46.56	36.67	9.13	39.18	2.28	55.46	73.90	18.4	151	141	
Hori.	11490.000	PK	44.96	40.01	11.16	39.27	2.28	59.14	73.90	14.7	150	0	
Hori.	2488.152	AV	46.87	27.63	14.26	43.72	2.28	47.32	53.97	6.6	233	158	VBW: 10 Hz
Hori.	2498.878	AV	47.40	27.58	14.27	43.72	2.28	47.81	53.97	6.1	233	158	VBW: 10 Hz
Hori.	3829.993	AV	43.82	29.61	15.28	43.66	2.28	47.33	53.97	6.6	125	298	VBW: 2.7 kHz
Hori.	7659.962	AV	36.46	36.67	9.13	39.18	2.28	45.36	53.90	8.5	151	141	VBW: 2.7 kHz
Hori.	11490.000	AV	34.59	40.01	11.16	39.27	2.28	48.77	53.90	5.1	150	0	VBW: 2.7 kHz
Vert.	2488.443	PK	61.74	27.63	14.26	43.72	2.28	62.19	73.97	11.7	336	121	
Vert.	2498.876	PK	62.28	27.58	14.27	43.72	2.28	62.69	73.97	11.2	336	121	
Vert.	7659.962	PK	47.27	36.67	9.13	39.18	2.28	56.17	73.90	17.7	113	287	
Vert.	11490.000	PK	45.55	40.01	11.16	39.27	2.28	59.73	73.90	14.1	150	0	
Vert.	2488.443	AV	45.09	27.63	14.26	43.72	2.28	45.54	53.97	8.4	336	121	VBW: 10 Hz
Vert.	2498.876	AV	45.94	27.58	14.27	43.72	2.28	46.35	53.97	7.6	336	121	VBW: 10 Hz
Vert.	7659.962	AV	38.30	36.67	9.13	39.18	2.28	47.20	53.90	6.7	113	287	VBW: 2.7 kHz
Vert.	11490.000	AV	34.73	40.01	11.16	39.27	2.28	48.91	53.90	**4.9**	150	0	VBW: 2.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	46.40	32.04	17.02	39.83	2.28	57.91	-37.32	-27.00	**10.3**	142	296	
Hori.	5700.000	PK	46.58	32.11	17.07	39.86	2.28	58.18	-37.05	10.00	47.1	142	296	
Hori.	5720.000	PK	47.10	32.18	17.09	39.87	2.28	58.78	-36.45	15.60	52.1	142	296	
Hori.	5725.000	PK	52.76	32.20	17.09	39.88	2.28	64.45	-30.78	27.00	57.8	142	296	
Vert.	5650.000	PK	46.26	32.04	17.02	39.83	2.28	57.77	-37.46	-27.00	10.5	281	182	
Vert.	5700.000	PK	46.42	32.11	17.07	39.86	2.28	58.02	-37.21	10.00	47.2	281	182	
Vert.	5720.000	PK	47.30	32.18	17.09	39.87	2.28	58.98	-36.25	15.60	51.9	281	182	
Vert.	5725.000	PK	50.57	32.20	17.09	39.88	2.28	62.26	-32.97	27.00	60.0	281	182	

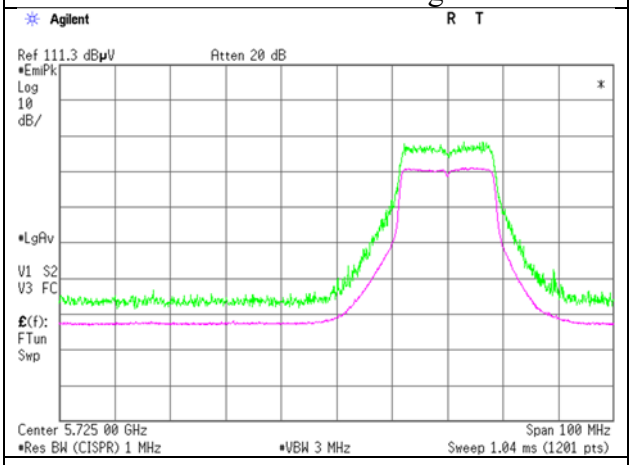
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11a 5745 MHz

Horizontal

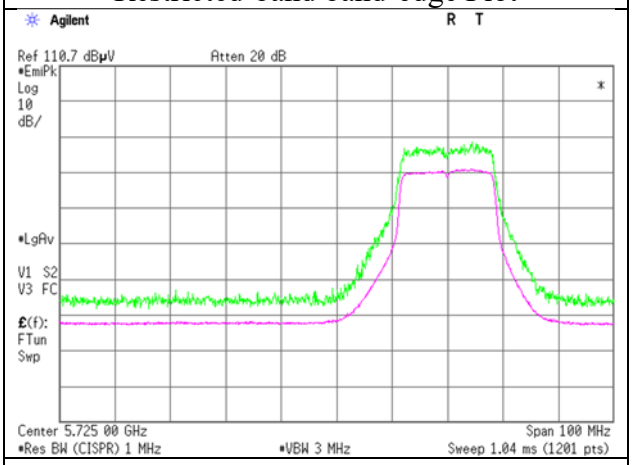
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 24, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5785 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.424	PK	63.90	27.63	14.26	43.72	2.28	64.35	73.97	9.6	235	156	
Hori.	2498.856	PK	64.08	27.59	14.27	43.72	2.28	64.50	73.97	9.4	235	156	
Hori.	3856.616	PK	51.40	29.69	15.31	43.66	2.28	55.02	73.97	18.9	159	44	
Hori.	7713.295	PK	46.96	36.61	9.17	39.09	2.28	55.93	73.90	17.9	149	140	
Hori.	11570.000	PK	44.56	39.98	11.18	39.21	2.28	58.79	73.90	15.1	150	0	
Hori.	2488.424	AV	46.87	27.63	14.26	43.72	2.28	47.32	53.97	6.6	235	156	VBW: 10 Hz
Hori.	2498.856	AV	47.42	27.59	14.27	43.72	2.28	47.84	53.97	6.1	235	156	VBW: 10 Hz
Hori.	3856.616	AV	44.07	29.69	15.31	43.66	2.28	47.69	53.97	6.2	159	44	VBW: 2.7 kHz
Hori.	7713.295	AV	36.90	36.61	9.17	39.09	2.28	45.87	53.90	8.0	149	140	VBW: 2.7 kHz
Hori.	11570.000	AV	34.07	39.98	11.18	39.21	2.28	48.30	53.90	5.6	150	0	VBW: 2.7 kHz
Vert.	2488.171	PK	61.71	27.63	14.26	43.72	2.28	62.16	73.97	11.8	340	122	
Vert.	2498.841	PK	61.91	27.59	14.27	43.72	2.28	62.33	73.97	11.6	340	122	
Vert.	7713.295	PK	46.93	36.61	9.17	39.09	2.28	55.90	73.90	18.0	131	292	
Vert.	11570.000	PK	44.42	39.98	11.18	39.21	2.28	58.65	73.90	15.2	150	0	
Vert.	2488.171	AV	44.95	27.63	14.26	43.72	2.28	45.40	53.97	8.5	340	122	VBW: 10 Hz
Vert.	2498.841	AV	45.57	27.59	14.27	43.72	2.28	45.99	53.97	7.9	340	122	VBW: 10 Hz
Vert.	7713.295	AV	37.40	36.61	9.17	39.09	2.28	46.37	53.90	7.5	131	292	VBW: 2.7 kHz
Vert.	11570.000	AV	34.19	39.98	11.18	39.21	2.28	48.42	53.90	**5.4**	150	0	VBW: 2.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)

Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11a 5825 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.507	PK	62.89	27.63	14.26	43.72	2.28	63.34	73.97	10.6	211	171	
Hori.	2498.604	PK	62.83	27.59	14.27	43.72	2.28	63.25	73.97	10.7	211	171	
Hori.	3883.349	PK	51.96	29.68	15.35	43.65	2.28	55.62	73.97	18.3	166	55	
Hori.	7766.628	PK	46.65	36.65	9.19	39.00	2.28	55.77	73.90	18.1	212	137	
Hori.	11650.000	PK	45.79	39.69	11.20	39.14	2.28	59.82	73.90	14.0	150	0	
Hori.	2488.507	AV	46.10	27.63	14.26	43.72	2.28	46.55	53.97	7.4	211	171	VBW: 10 Hz
Hori.	2498.604	AV	46.30	27.59	14.27	43.72	2.28	46.72	53.97	7.2	211	171	VBW: 10 Hz
Hori.	3883.349	AV	45.22	29.68	15.35	43.65	2.28	48.88	53.97	**5.0**	166	55	VBW: 2.7 kHz
Hori.	7766.628	AV	36.37	36.65	9.19	39.00	2.28	45.49	53.90	8.4	212	137	VBW: 2.7 kHz
Hori.	11650.000	AV	34.47	39.69	11.20	39.14	2.28	48.50	53.90	5.4	150	0	VBW: 2.7 kHz
Vert.	2488.408	PK	61.76	27.63	14.26	43.72	2.28	62.21	73.97	11.7	332	119	
Vert.	2498.956	PK	62.25	27.58	14.27	43.72	2.28	62.66	73.97	11.3	332	119	
Vert.	7766.628	PK	47.66	36.65	9.19	39.00	2.28	56.78	73.90	17.1	119	290	
Vert.	11650.000	PK	45.78	39.69	11.20	39.14	2.28	59.81	73.90	14.0	150	0	
Vert.	2488.408	AV	44.90	27.63	14.26	43.72	2.28	45.35	53.97	8.6	332	119	VBW: 10 Hz
Vert.	2498.956	AV	46.08	27.58	14.27	43.72	2.28	46.49	53.97	7.4	332	119	VBW: 10 Hz
Vert.	7766.628	AV	37.24	36.65	9.19	39.00	2.28	46.36	53.90	7.5	119	290	VBW: 2.7 kHz
Vert.	11650.000	AV	34.42	39.69	11.20	39.14	2.28	48.45	53.90	5.4	150	0	VBW: 2.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	46.73	32.64	17.22	39.95	2.28	58.92	-36.31	27.00	63.3	147	295	
Hori.	5855.000	PK	46.28	32.64	17.23	39.95	2.28	58.48	-36.75	15.60	52.4	147	295	
Hori.	5875.000	PK	46.08	32.66	17.25	39.96	2.28	58.31	-36.92	10.00	46.9	147	295	
Hori.	5925.000	PK	46.02	32.66	17.29	39.99	2.28	58.26	-36.97	-27.00	**10.0**	147	295	
Vert.	5850.000	PK	46.01	32.64	17.22	39.95	2.28	58.20	-37.03	27.00	64.0	270	180	
Vert.	5855.000	PK	46.19	32.64	17.23	39.95	2.28	58.39	-36.84	15.60	52.4	270	180	
Vert.	5875.000	PK	45.84	32.66	17.25	39.96	2.28	58.07	-37.16	10.00	47.2	270	180	
Vert.	5925.000	PK	45.49	32.66	17.29	39.99	2.28	57.73	-37.50	-27.00	10.5	270	180	

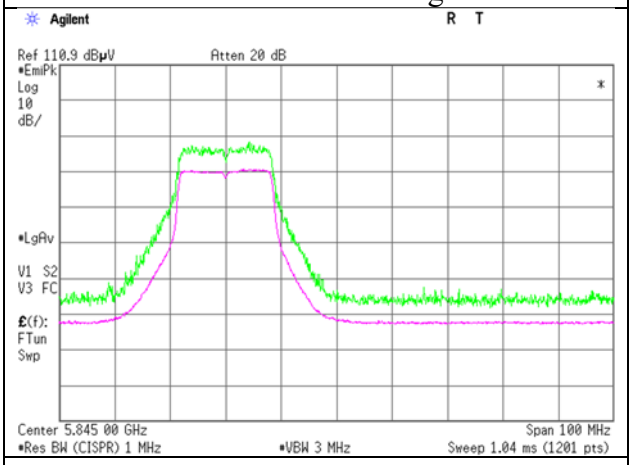
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11a 5825 MHz

Horizontal

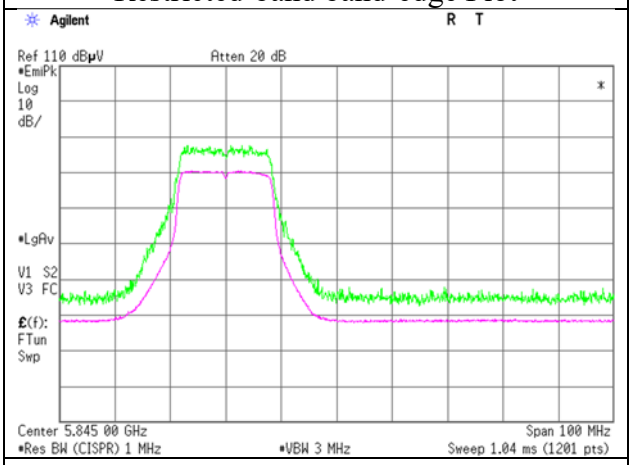
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)

Semi Anechoic Chamber	3	1
Date	October 26, 2018	October 31, 2018
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Makoto Hosaka (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11n-20 5180 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.975	PK	62.89	27.63	14.26	43.72	2.28	63.34	73.97	10.6	232	163	
Hori.	2499.117	PK	63.04	27.58	14.27	43.72	2.28	63.45	73.97	10.5	232	163	
Hori.	5150.000	PK	46.28	32.10	16.72	39.58	2.28	57.80	73.90	16.1	135	292	
Hori.	6906.632	PK	49.27	35.17	8.43	39.32	2.28	55.83	73.90	18.0	142	14	
Hori.	10360.000	PK	46.86	39.34	10.22	39.62	2.28	59.08	73.90	14.8	150	0	
Hori.	13813.330	PK	46.79	40.53	11.03	38.81	-9.54	50.00	73.90	23.9	128	282	
Hori.	2488.975	AV	46.10	27.63	14.26	43.72	2.28	46.55	53.97	7.4	232	163	VBW: 10 Hz
Hori.	2499.117	AV	46.87	27.58	14.27	43.72	2.28	47.28	53.97	**6.6**	232	163	VBW: 10 Hz
Hori.	5150.000	AV	34.73	32.10	16.72	39.58	2.28	46.25	53.90	7.7	135	292	VBW: 680 Hz
Hori.	6906.632	AV	40.17	35.17	8.43	39.32	2.28	46.73	53.90	7.1	142	14	VBW: 680 Hz
Hori.	10360.000	AV	34.39	39.34	10.22	39.62	2.28	46.61	53.90	7.3	150	0	VBW: 680 Hz
Hori.	13813.330	AV	36.52	40.53	11.03	38.81	-9.54	39.73	53.90	14.1	128	282	VBW: 10 Hz
Vert.	2488.275	PK	60.88	27.63	14.26	43.72	2.28	61.33	73.97	12.6	288	133	
Vert.	2499.117	PK	60.49	27.58	14.27	43.72	2.28	60.90	73.97	13.0	288	133	
Vert.	5150.000	PK	45.61	32.10	16.72	39.58	2.28	57.13	73.90	16.8	301	1	
Vert.	6906.632	PK	47.90	35.17	8.43	39.32	2.28	54.46	73.90	19.4	150	36	
Vert.	10360.000	PK	46.56	39.34	10.22	39.62	2.28	58.78	73.90	15.1	150	0	
Vert.	13813.330	PK	50.06	40.53	11.03	38.81	-9.54	53.27	73.90	20.6	103	186	
Vert.	2488.275	AV	44.56	27.63	14.26	43.72	2.28	45.01	53.97	8.9	288	133	VBW: 10 Hz
Vert.	2499.117	AV	44.67	27.58	14.27	43.72	2.28	45.08	53.97	8.8	288	133	VBW: 10 Hz
Vert.	5150.000	AV	34.26	32.10	16.72	39.58	2.28	45.78	53.90	8.1	301	1	VBW: 680 Hz
Vert.	6906.632	AV	39.09	35.17	8.43	39.32	2.28	45.65	53.90	8.2	150	36	VBW: 680 Hz
Vert.	10360.000	AV	34.36	39.34	10.22	39.62	2.28	46.58	53.90	7.3	150	0	VBW: 680 Hz
Vert.	13813.330	AV	42.66	40.53	11.03	38.81	-9.54	45.87	53.90	8.0	103	186	VBW: 10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

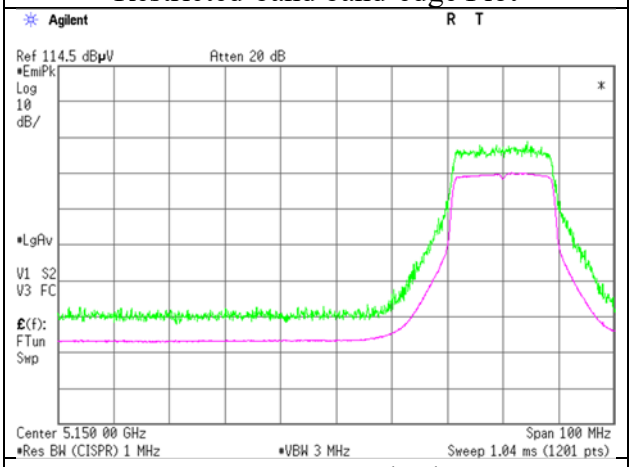
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-20 5180 MHz

Horizontal

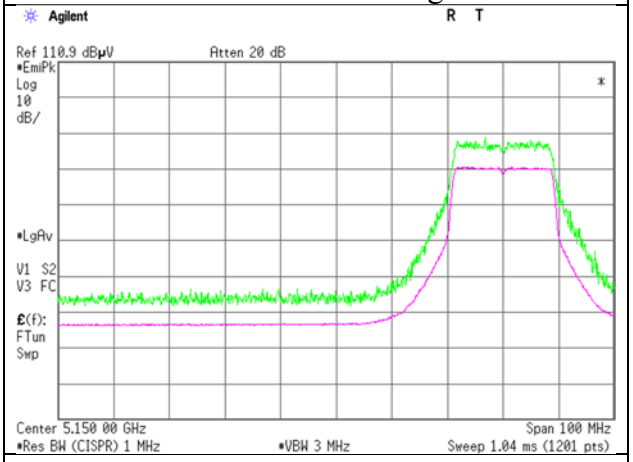
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 24, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1
Date	November 1, 2018	October 31, 2018
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11n-20 5240 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.391	PK	63.85	27.63	14.26	43.72	2.28	64.30	73.97	9.6	236	156	
Hori.	2498.933	PK	63.96	27.58	14.27	43.72	2.28	64.37	73.97	9.6	236	156	
Hori.	6986.632	PK	48.56	35.93	8.43	39.20	2.28	56.00	73.90	17.9	147	197	
Hori.	10480.000	PK	46.70	39.63	10.30	39.75	2.28	59.16	73.90	14.7	150	0	
Hori.	13973.260	PK	47.92	41.27	11.04	38.75	-9.54	51.94	73.90	21.9	137	11	
Hori.	2488.391	AV	46.86	27.63	14.26	43.72	2.28	47.31	53.97	6.6	236	156	VBW: 10 Hz
Hori.	2498.933	AV	47.38	27.58	14.27	43.72	2.28	47.79	53.97	6.1	236	156	VBW: 10 Hz
Hori.	6986.632	AV	40.62	35.93	8.43	39.20	2.28	48.06	53.90	5.8	147	197	VBW: 2.7 kHz
Hori.	10480.000	AV	36.00	39.63	10.30	39.75	2.28	48.46	53.90	5.4	150	0	VBW: 2.7 kHz
Hori.	13973.260	AV	36.41	41.27	11.04	38.75	-9.54	40.43	53.90	13.4	137	11	VBW:10 Hz
Vert.	2488.431	PK	62.09	27.63	14.26	43.72	2.28	62.54	73.97	11.4	335	121	
Vert.	2498.900	PK	62.56	27.58	14.27	43.72	2.28	62.97	73.97	11.0	335	121	
Vert.	6986.632	PK	49.19	35.93	8.43	39.20	2.28	56.63	73.90	17.2	147	290	
Vert.	10480.000	PK	46.15	39.63	10.30	39.75	2.28	58.61	73.90	15.2	150	0	
Vert.	13973.260	PK	48.61	41.27	11.04	38.75	-9.54	52.63	73.90	21.2	101	183	
Vert.	2488.431	AV	45.11	27.63	14.26	43.72	2.28	45.56	53.97	8.4	335	121	VBW: 10 Hz
Vert.	2498.900	AV	46.08	27.58	14.27	43.72	2.28	46.49	53.97	7.4	335	121	VBW: 10 Hz
Vert.	6986.632	AV	42.08	35.93	8.43	39.20	2.28	49.52	53.90	**4.3**	147	290	VBW: 2.7 kHz
Vert.	10480.000	AV	35.78	39.63	10.30	39.75	2.28	48.24	53.90	5.6	150	0	VBW: 2.7 kHz
Vert.	13973.260	AV	40.37	41.27	11.04	38.75	-9.54	44.39	53.90	9.5	101	183	VBW:10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-20 5320 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.479	PK	63.87	27.63	14.26	43.72	2.28	64.32	73.97	9.6	235	155	
Hori.	2498.872	PK	63.94	27.58	14.27	43.72	2.28	64.35	73.97	9.6	235	155	
Hori.	5350.000	PK	47.35	31.54	16.80	39.68	2.28	58.29	73.90	15.6	143	291	
Hori.	7093.300	PK	48.11	36.35	8.54	39.23	2.28	56.05	73.90	17.8	145	250	
Hori.	10640.000	PK	45.66	39.56	10.37	39.69	2.28	58.18	73.90	15.7	150	0	
Hori.	14186.600	PK	48.57	41.27	12.03	38.61	-9.54	53.72	73.90	20.1	130	304	
Hori.	2488.479	AV	46.00	27.63	14.26	43.72	2.28	46.45	53.97	7.5	235	155	VBW: 10 Hz
Hori.	2498.872	AV	47.35	27.58	14.27	43.72	2.28	47.76	53.97	**6.2**	235	155	VBW: 10 Hz
Hori.	5350.000	AV	35.41	31.54	16.80	39.68	2.28	46.35	53.90	7.6	143	291	VBW: 680 Hz
Hori.	7093.300	AV	37.65	36.35	8.54	39.23	2.28	45.59	53.90	8.3	145	250	VBW: 680 Hz
Hori.	10640.000	AV	34.13	39.56	10.37	39.69	2.28	46.65	53.90	7.2	150	0	VBW: 680 Hz
Hori.	14186.600	AV	39.96	41.27	12.03	38.61	-9.54	45.11	53.90	8.7	130	304	VBW: 10 Hz
Vert.	2488.899	PK	61.90	27.63	14.26	43.72	2.28	62.35	73.97	11.6	332	118	
Vert.	2498.869	PK	62.30	27.58	14.27	43.72	2.28	62.71	73.97	11.2	332	118	
Vert.	5350.000	PK	47.11	31.54	16.80	39.68	2.28	58.05	73.90	15.9	310	8	
Vert.	7093.300	PK	48.29	36.35	8.54	39.23	2.28	56.23	73.90	17.6	150	284	
Vert.	10640.000	PK	45.59	39.56	10.37	39.69	2.28	58.11	73.90	15.7	150	0	
Vert.	14186.600	PK	49.98	41.27	12.03	38.61	-9.54	55.13	73.90	18.7	157	167	
Vert.	2488.899	AV	45.06	27.63	14.26	43.72	2.28	45.51	53.97	8.4	332	118	VBW: 10 Hz
Vert.	2498.869	AV	45.99	27.58	14.27	43.72	2.28	46.40	53.97	7.5	332	118	VBW: 10 Hz
Vert.	5350.000	AV	34.84	31.54	16.80	39.68	2.28	45.78	53.90	8.1	310	8	VBW: 680 Hz
Vert.	7093.300	AV	39.08	36.35	8.54	39.23	2.28	47.02	53.90	6.8	150	284	VBW: 680 Hz
Vert.	10640.000	AV	34.40	39.56	10.37	39.69	2.28	46.92	53.90	6.9	150	0	VBW: 680 Hz
Vert.	14186.600	AV	42.46	41.27	12.03	38.61	-9.54	47.61	53.90	**6.2**	157	167	VBW: 10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

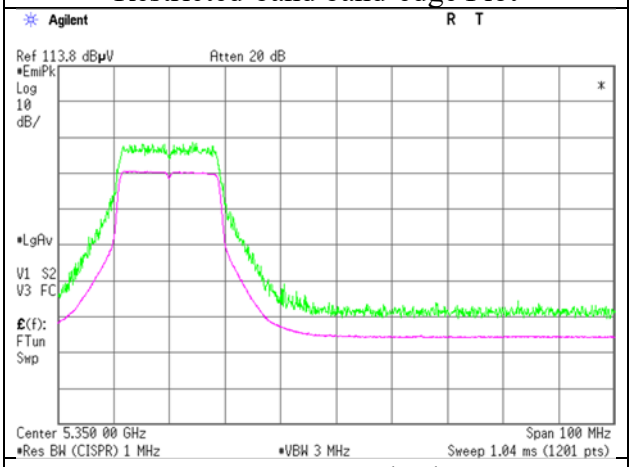
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-20 5320 MHz

Horizontal

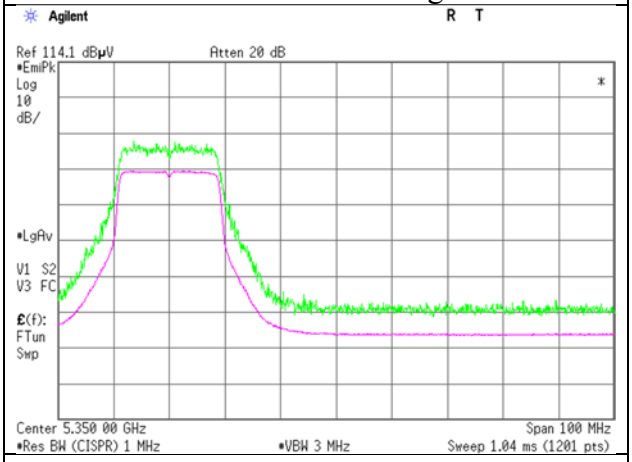
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-20 5500 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.345	PK	63.18	27.63	14.26	43.72	2.28	63.63	73.97	10.3	263	177	
Hori.	2499.146	PK	62.79	27.58	14.27	43.72	2.28	63.20	73.97	10.7	263	177	
Hori.	5460.000	PK	46.50	31.90	16.85	39.73	2.28	57.80	73.90	16.1	151	288	
Hori.	7333.299	PK	45.86	36.72	8.83	39.36	2.28	54.33	73.90	19.5	152	249	
Hori.	11000.000	PK	45.87	40.11	10.55	39.49	2.28	59.32	73.90	14.5	150	0	
Hori.	2488.345	AV	46.44	27.63	14.26	43.72	2.28	46.89	53.97	7.0	263	177	VBW: 10 Hz
Hori.	2499.146	AV	46.36	27.58	14.27	43.72	2.28	46.77	53.97	7.2	263	177	VBW: 10 Hz
Hori.	5460.000	AV	34.74	31.90	16.85	39.73	2.28	46.04	53.90	7.9	151	288	VBW: 680 Hz
Hori.	7333.299	AV	34.71	36.72	8.83	39.36	2.28	43.18	53.90	10.7	152	249	VBW: 680 Hz
Hori.	11000.000	AV	34.36	40.11	10.55	39.49	2.28	47.81	53.90	**6.0**	150	0	VBW: 680 Hz
Vert.	2488.345	PK	58.47	27.63	14.26	43.72	2.28	58.92	73.97	15.0	256	114	
Vert.	2499.102	PK	60.39	27.58	14.27	43.72	2.28	60.80	73.97	13.1	256	114	
Vert.	5460.000	PK	45.81	31.90	16.85	39.73	2.28	57.11	73.90	16.8	294	357	
Vert.	7333.299	PK	46.05	36.72	8.83	39.36	2.28	54.52	73.90	19.3	117	295	
Vert.	11000.000	PK	45.89	40.11	10.55	39.49	2.28	59.34	73.90	14.5	150	0	
Vert.	2488.345	AV	43.33	27.63	14.26	43.72	2.28	43.78	53.97	10.1	256	114	VBW: 10 Hz
Vert.	2499.102	AV	44.42	27.58	14.27	43.72	2.28	44.83	53.97	9.1	256	114	VBW: 10 Hz
Vert.	5460.000	AV	34.53	31.90	16.85	39.73	2.28	45.83	53.90	8.1	294	357	VBW: 680 Hz
Vert.	7333.299	AV	35.30	36.72	8.83	39.36	2.28	43.77	53.90	10.1	117	295	VBW: 680 Hz
Vert.	11000.000	AV	34.32	40.11	10.55	39.49	2.28	47.77	53.90	6.1	150	0	VBW: 680 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	47.10	31.89	16.86	39.74	2.28	58.39	-36.84	-27.00	**9.8**	151	288	
Vert.	5470.000	PK	46.96	31.89	16.86	39.74	2.28	58.25	-36.98	-27.00	10.0	294	357	

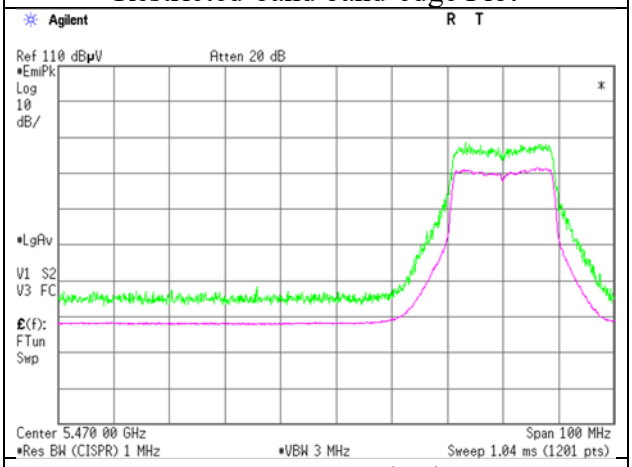
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-20 5500 MHz

Horizontal

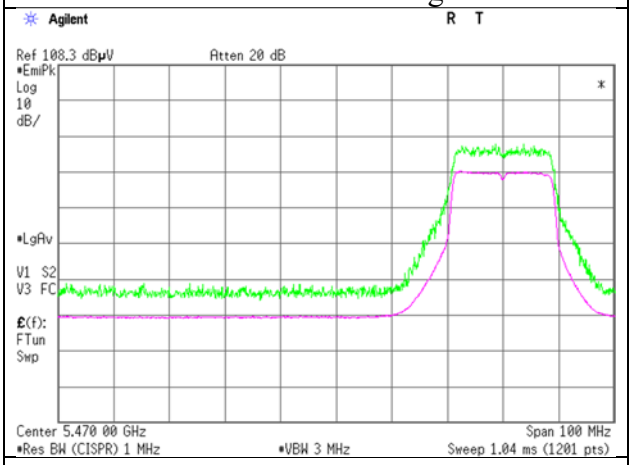
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 24, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1
Date	November 1, 2018	October 31, 2018
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11n-20 5580 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.323	PK	63.13	27.63	14.26	43.72	2.28	63.58	73.97	10.3	339	173	
Hori.	2499.017	PK	63.09	27.58	14.27	43.72	2.28	63.50	73.97	10.4	339	173	
Hori.	7439.965	PK	45.31	36.84	8.97	39.42	2.28	53.98	73.90	19.9	153	146	
Hori.	11160.000	PK	45.37	39.83	10.75	39.42	2.28	58.81	73.90	15.0	150	0	
Hori.	2488.323	AV	46.64	27.63	14.26	43.72	2.28	47.09	53.97	6.8	339	173	VBW: 10 Hz
Hori.	2499.017	AV	46.72	27.58	14.27	43.72	2.28	47.13	53.97	6.8	339	173	VBW: 10 Hz
Hori.	7439.965	AV	33.75	36.84	8.97	39.42	2.28	42.42	53.90	11.4	153	146	VBW: 680 Hz
Hori.	11160.000	AV	34.48	39.83	10.75	39.42	2.28	47.92	53.90	**5.9**	150	0	VBW: 680 Hz
Vert.	2488.162	PK	59.91	27.63	14.26	43.72	2.28	60.36	73.97	13.6	266	117	
Vert.	2499.214	PK	60.74	27.58	14.27	43.72	2.28	61.15	73.97	12.8	266	117	
Vert.	7439.965	PK	45.06	36.84	8.97	39.42	2.28	53.73	73.90	20.1	133	294	
Vert.	11160.000	PK	45.90	39.83	10.75	39.42	2.28	59.34	73.90	14.5	150	0	
Vert.	2488.162	AV	43.85	27.63	14.26	43.72	2.28	44.30	53.97	9.6	266	117	VBW: 10 Hz
Vert.	2499.214	AV	44.58	27.58	14.27	43.72	2.28	44.99	53.97	8.9	266	117	VBW: 10 Hz
Vert.	7439.965	AV	33.74	36.84	8.97	39.42	2.28	42.41	53.90	11.4	133	294	VBW: 680 Hz
Vert.	11160.000	AV	34.49	39.83	10.75	39.42	2.28	47.93	53.90	**5.9**	150	0	VBW: 680 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-20 5700 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.387	PK	63.09	27.63	14.26	43.72	2.28	63.54	73.97	10.4	331	168	
Hori.	2498.918	PK	63.24	27.58	14.27	43.72	2.28	63.65	73.97	10.3	331	168	
Hori.	7599.964	PK	45.82	36.71	9.09	39.28	2.28	54.62	73.90	19.2	130	51	
Hori.	11400.000	PK	45.64	39.93	11.04	39.31	2.28	59.58	73.90	14.3	150	0	
Hori.	2488.387	AV	47.26	27.63	14.26	43.72	2.28	47.71	53.97	6.2	331	168	VBW: 10 Hz
Hori.	2498.918	AV	46.40	27.58	14.27	43.72	2.28	46.81	53.97	7.1	331	168	VBW: 10 Hz
Hori.	7599.964	AV	34.75	36.71	9.09	39.28	2.28	43.55	53.90	10.3	130	51	VBW: 680 Hz
Hori.	11400.000	AV	34.03	39.93	11.04	39.31	2.28	47.97	53.90	5.9	150	0	VBW: 680 Hz
Vert.	2488.311	PK	60.47	27.63	14.26	43.72	2.28	60.92	73.97	13.0	254	111	
Vert.	2498.927	PK	60.02	27.58	14.27	43.72	2.28	60.43	73.97	13.5	319	126	
Vert.	7599.964	PK	45.85	36.71	9.09	39.28	2.28	54.65	73.90	19.2	112	289	
Vert.	11400.000	PK	46.03	39.93	11.04	39.31	2.28	59.97	73.90	13.9	150	0	
Vert.	2488.311	AV	44.59	27.63	14.26	43.72	2.28	45.04	53.97	8.9	254	111	VBW: 10 Hz
Vert.	2498.927	AV	44.91	27.58	14.27	43.72	2.28	45.32	53.97	8.6	319	126	VBW: 10 Hz
Vert.	7599.964	AV	35.10	36.71	9.09	39.28	2.28	43.90	53.90	10.0	112	289	VBW: 680 Hz
Vert.	11400.000	AV	34.17	39.93	11.04	39.31	2.28	48.11	53.90	**5.7**	150	0	VBW: 680 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	46.76	32.20	17.09	39.88	2.28	58.45	-36.78	-27.00	**9.8**	154	291	
Vert.	5725.000	PK	46.30	32.20	17.09	39.88	2.28	57.99	-37.24	-27.00	10.2	276	181	

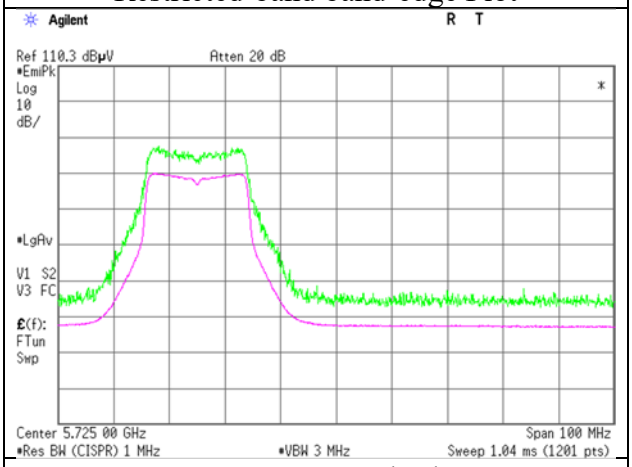
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-20 5700 MHz

Horizontal

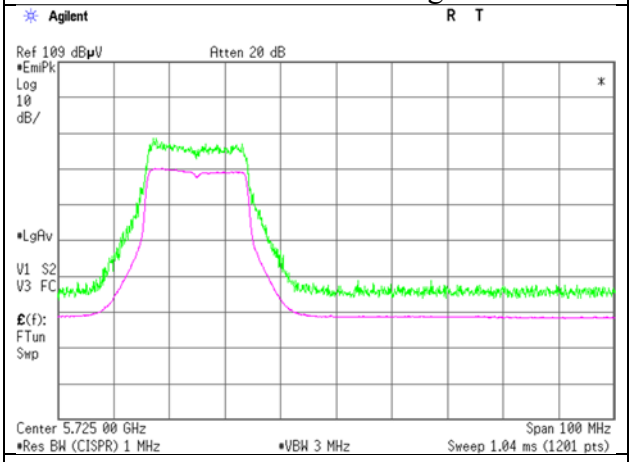
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-20 5745 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.387	PK	62.94	27.63	14.26	43.72	2.28	63.39	73.97	10.5	192	183	
Hori.	2499.056	PK	62.81	27.58	14.27	43.72	2.28	63.22	73.97	10.7	192	183	
Hori.	3829.700	PK	51.89	29.61	15.28	43.66	2.28	55.40	73.97	18.5	185	136	
Hori.	7659.963	PK	45.73	36.67	9.13	39.18	2.28	54.63	73.90	19.2	141	221	
Hori.	11490.000	PK	45.24	40.01	11.16	39.27	2.28	59.42	73.90	14.4	150	0	
Hori.	2488.387	AV	46.30	27.63	14.26	43.72	2.28	46.75	53.97	7.2	192	183	VBW: 10 Hz
Hori.	2499.056	AV	46.56	27.58	14.27	43.72	2.28	46.97	53.97	7.0	192	183	VBW: 10 Hz
Hori.	3829.700	AV	44.27	29.61	15.28	43.66	2.28	47.78	53.97	6.1	185	136	VBW: 4.7 kHz
Hori.	7659.963	AV	36.24	36.67	9.13	39.18	2.28	45.14	53.90	8.7	141	221	VBW: 4.7 kHz
Hori.	11490.000	AV	35.56	40.01	11.16	39.27	2.28	49.74	53.90	**4.1**	150	0	VBW: 4.7 kHz
Vert.	2488.387	PK	60.62	27.63	14.26	43.72	2.28	61.07	73.97	12.9	269	118	
Vert.	2499.398	PK	61.16	27.58	14.27	43.72	2.28	61.57	73.97	12.4	269	118	
Vert.	3829.700	PK	52.24	29.61	15.28	43.66	2.28	55.75	73.97	18.2	255	2	
Vert.	7659.963	PK	46.28	36.67	9.13	39.18	2.28	55.18	73.90	18.7	152	197	
Vert.	11490.000	PK	45.70	40.01	11.16	39.27	2.28	59.88	73.90	14.0	150	0	
Vert.	2488.387	AV	44.34	27.63	14.26	43.72	2.28	44.79	53.97	9.1	269	118	VBW: 10 Hz
Vert.	2499.398	AV	45.22	27.58	14.27	43.72	2.28	45.63	53.97	8.3	269	118	VBW: 10 Hz
Vert.	3829.700	AV	45.31	29.61	15.28	43.66	2.28	48.82	53.97	5.1	255	2	VBW: 4.7 kHz
Vert.	7659.963	AV	36.48	36.67	9.13	39.18	2.28	45.38	53.90	8.5	152	197	VBW: 4.7 kHz
Vert.	11490.000	AV	35.39	40.01	11.16	39.27	2.28	49.57	53.90	4.3	150	0	VBW: 4.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	46.77	32.04	17.02	39.83	2.28	58.28	-36.95	-27.00	**10.0**	151	294	
Hori.	5700.000	PK	45.93	32.11	17.07	39.86	2.28	57.53	-37.70	10.00	47.7	151	294	
Hori.	5720.000	PK	46.38	32.18	17.09	39.87	2.28	58.06	-37.17	15.60	52.8	151	294	
Hori.	5725.000	PK	48.96	32.20	17.09	39.88	2.28	60.65	-34.58	27.00	61.6	151	294	
Vert.	5650.000	PK	46.52	32.04	17.02	39.83	2.28	58.03	-37.20	-27.00	10.2	270	179	
Vert.	5700.000	PK	45.61	32.11	17.07	39.86	2.28	57.21	-38.02	10.00	48.0	270	179	
Vert.	5720.000	PK	46.23	32.18	17.09	39.87	2.28	57.91	-37.32	15.60	52.9	270	179	
Vert.	5725.000	PK	48.48	32.20	17.09	39.88	2.28	60.17	-35.06	27.00	62.1	270	179	

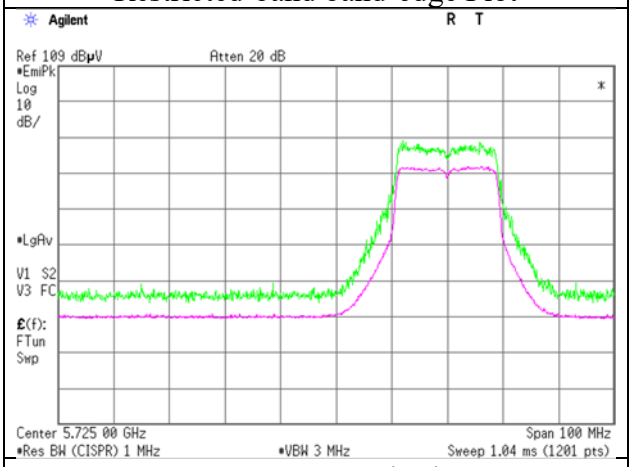
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-20 5745 MHz

Horizontal

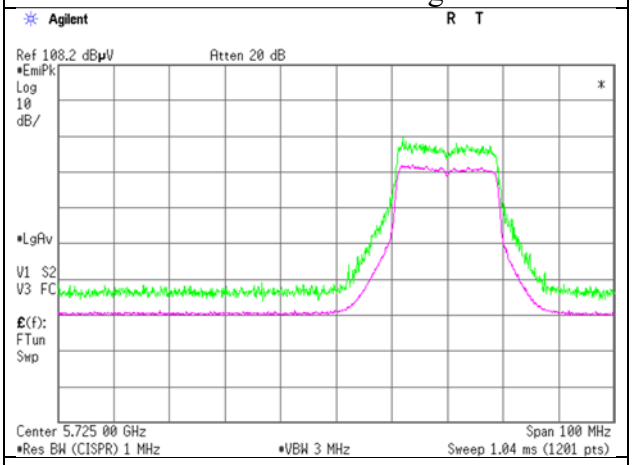
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 24, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1
Date	November 1, 2018	October 31, 2018
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11n-20 5785 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.456	PK	62.82	27.63	14.26	43.72	2.28	63.27	73.97	10.7	100	0	
Hori.	2499.149	PK	62.70	27.58	14.27	43.72	2.28	63.11	73.97	10.8	229	157	
Hori.	3856.687	PK	50.91	29.69	15.31	43.66	2.28	54.53	73.97	19.4	184	131	
Hori.	7713.295	PK	46.57	36.61	9.17	39.09	2.28	55.54	73.90	18.3	127	49	
Hori.	11570.000	PK	44.94	39.98	11.18	39.21	2.28	59.17	73.90	14.7	150	0	
Hori.	2488.456	AV	46.25	27.63	14.26	43.72	2.28	46.70	53.97	7.2	100	0	VBW: 10 Hz
Hori.	2499.149	AV	46.39	27.58	14.27	43.72	2.28	46.80	53.97	7.1	229	157	VBW: 10 Hz
Hori.	3856.687	AV	44.45	29.69	15.31	43.66	2.28	48.07	53.97	5.9	184	131	VBW: 4.7 kHz
Hori.	7713.295	AV	35.84	36.61	9.17	39.09	2.28	44.81	53.90	9.0	127	49	VBW: 4.7 kHz
Hori.	11570.000	AV	34.48	39.98	11.18	39.21	2.28	48.71	53.90	5.1	150	0	VBW: 4.7 kHz
Vert.	2488.272	PK	60.98	27.63	14.26	43.72	2.28	61.43	73.97	12.5	267	114	
Vert.	2499.137	PK	60.90	27.58	14.27	43.72	2.28	61.31	73.97	12.6	267	114	
Vert.	3856.653	PK	51.49	29.69	15.31	43.66	2.28	55.11	73.97	18.8	251	4	
Vert.	7713.295	PK	47.16	36.61	9.17	39.09	2.28	56.13	73.90	17.7	124	199	
Vert.	11570.000	PK	45.02	39.98	11.18	39.21	2.28	59.25	73.90	14.6	150	0	
Vert.	2488.272	AV	44.70	27.63	14.26	43.72	2.28	45.15	53.97	8.8	267	114	VBW: 10 Hz
Vert.	2499.137	AV	44.99	27.58	14.27	43.72	2.28	45.40	53.97	8.5	267	114	VBW: 10 Hz
Vert.	3856.653	AV	45.53	29.69	15.31	43.66	2.28	49.15	53.97	**4.8**	251	4	VBW: 4.7 kHz
Vert.	7713.295	AV	36.60	36.61	9.17	39.09	2.28	45.57	53.90	8.3	124	199	VBW: 4.7 kHz
Vert.	11570.000	AV	34.62	39.98	11.18	39.21	2.28	48.85	53.90	5.0	150	0	VBW: 4.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 24, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	24 deg. C / 44 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Makoto Hosaka (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-20 5825 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.131	PK	63.98	27.63	14.26	43.72	2.28	64.43	73.97	9.5	262	179	
Hori.	2499.085	PK	63.39	27.58	14.27	43.72	2.28	63.80	73.97	10.1	262	179	
Hori.	3883.317	PK	53.35	29.68	15.35	43.65	2.28	57.01	73.97	16.9	178	52	
Hori.	7766.628	PK	45.96	36.65	9.19	39.00	2.28	55.08	73.90	18.8	153	140	
Hori.	11650.000	PK	45.40	39.69	11.20	39.14	2.28	59.43	73.90	14.4	150	0	
Hori.	2488.131	AV	47.18	27.63	14.26	43.72	2.28	47.63	53.97	6.3	262	179	VBW: 10 Hz
Hori.	2499.085	AV	46.99	27.58	14.27	43.72	2.28	47.40	53.97	6.5	262	179	VBW: 10 Hz
Hori.	3883.317	AV	44.71	29.68	15.35	43.65	2.28	48.37	53.97	5.6	178	52	VBW: 4.7 kHz
Hori.	7766.628	AV	36.28	36.65	9.19	39.00	2.28	45.40	53.90	8.5	153	140	VBW: 4.7 kHz
Hori.	11650.000	AV	35.16	39.69	11.20	39.14	2.28	49.19	53.90	4.7	150	0	VBW: 4.7 kHz
Vert.	2488.342	PK	60.56	27.63	14.26	43.72	2.28	61.01	73.97	12.9	266	132	
Vert.	2498.783	PK	60.80	27.59	14.27	43.72	2.28	61.22	73.97	12.7	266	132	
Vert.	3883.356	PK	52.42	29.68	15.35	43.65	2.28	56.08	73.97	17.8	282	5	
Vert.	7766.628	PK	46.23	36.65	9.19	39.00	2.28	55.35	73.90	18.5	145	197	
Vert.	11650.000	PK	45.61	39.69	11.20	39.14	2.28	59.64	73.90	14.2	150	0	
Vert.	2488.342	AV	44.53	27.63	14.26	43.72	2.28	44.98	53.97	8.9	266	132	VBW: 10 Hz
Vert.	2498.783	AV	44.87	27.59	14.27	43.72	2.28	45.29	53.97	8.6	266	132	VBW: 10 Hz
Vert.	3883.356	AV	46.43	29.68	15.35	43.65	2.28	50.09	53.97	**3.8**	282	5	VBW: 4.7 kHz
Vert.	7766.628	AV	36.39	36.65	9.19	39.00	2.28	45.51	53.90	8.3	145	197	VBW: 4.7 kHz
Vert.	11650.000	AV	35.39	39.69	11.20	39.14	2.28	49.42	53.90	4.4	150	0	VBW: 4.7 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	46.77	32.64	17.22	39.95	2.28	58.96	-36.27	27.00	63.3	148	294	
Hori.	5855.000	PK	46.46	32.64	17.23	39.95	2.28	58.66	-36.57	15.60	52.2	148	294	
Hori.	5875.000	PK	46.43	32.66	17.25	39.96	2.28	58.66	-36.57	10.00	46.6	148	294	
Hori.	5925.000	PK	46.58	32.66	17.29	39.99	2.28	58.82	-36.41	-27.00	**9.4**	148	294	
Vert.	5850.000	PK	46.66	32.64	17.22	39.95	2.28	58.85	-36.38	27.00	63.4	289	179	
Vert.	5855.000	PK	46.18	32.64	17.23	39.95	2.28	58.38	-36.85	15.60	52.5	289	179	
Vert.	5875.000	PK	46.35	32.66	17.25	39.96	2.28	58.58	-36.65	10.00	46.7	289	179	
Vert.	5925.000	PK	46.17	32.66	17.29	39.99	2.28	58.41	-36.82	-27.00	9.8	289	179	

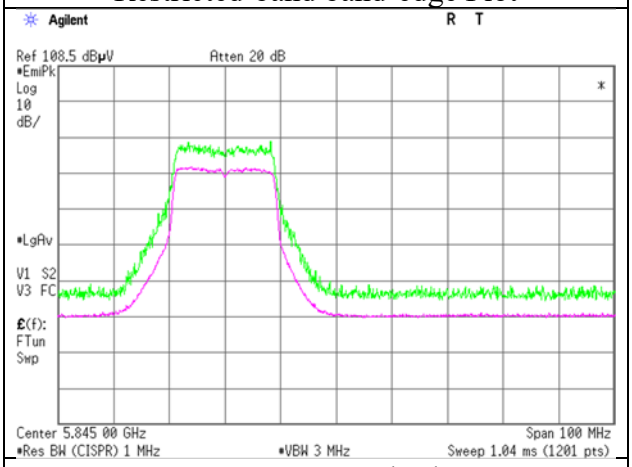
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-20 5825 MHz

Horizontal

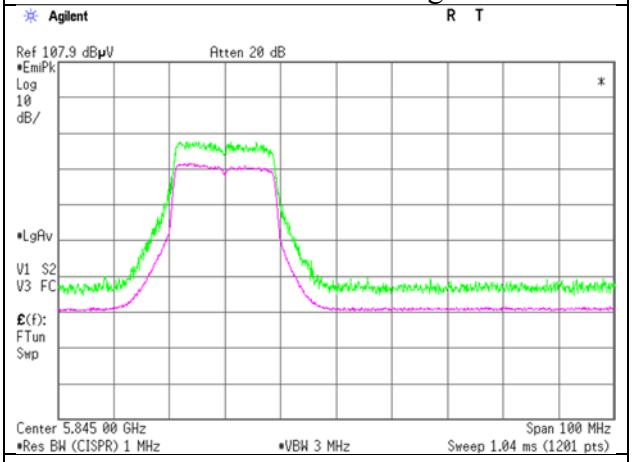
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 29, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	23 deg. C / 40 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-40 5190 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.376	PK	56.21	27.63	14.26	36.52	2.28	63.86	73.97	10.1	215	159	
Hori.	2498.905	PK	56.02	27.58	14.27	36.51	2.28	63.64	73.97	10.3	215	159	
Hori.	5150.000	PK	50.29	32.10	16.72	39.58	2.28	61.81	73.90	12.1	166	288	
Hori.	6919.965	PK	49.42	35.28	8.44	39.30	2.28	56.12	73.90	17.7	141	19	
Hori.	10380.000	PK	45.91	39.43	10.24	39.64	2.28	58.22	73.90	15.6	150	0	
Hori.	13839.890	PK	47.77	40.28	12.00	38.80	-9.54	51.71	73.90	22.1	152	41	
Hori.	2488.376	AV	40.13	27.63	14.26	36.52	2.28	47.78	53.97	6.1	215	159	VBW: 10 Hz
Hori.	2498.905	AV	40.45	27.58	14.27	36.51	2.28	48.07	53.97	5.9	215	159	VBW: 10 Hz
Hori.	5150.000	AV	37.65	32.10	16.72	39.58	2.28	49.17	53.90	**4.7**	166	288	VBW: 3.9 kHz
Hori.	6919.965	AV	41.13	35.28	8.44	39.30	2.28	47.83	53.90	6.0	141	19	VBW: 3.9 kHz
Hori.	10380.000	AV	35.65	39.43	10.24	39.64	2.28	47.96	53.90	5.9	150	0	VBW: 3.9 kHz
Hori.	13839.890	AV	36.51	40.28	12.00	38.80	-9.54	40.45	53.90	13.4	152	41	VBW: 10 Hz
Vert.	2488.388	PK	53.15	27.63	14.26	36.52	2.28	60.80	73.97	13.1	302	91	
Vert.	2499.084	PK	52.41	27.58	14.27	36.51	2.28	60.03	73.97	13.9	302	91	
Vert.	5150.000	PK	49.93	32.10	16.72	39.58	2.28	61.45	73.90	12.5	283	5	
Vert.	6919.965	PK	49.20	35.28	8.44	39.30	2.28	55.90	73.90	18.0	150	32	
Vert.	10380.000	PK	46.08	39.43	10.24	39.64	2.28	58.39	73.90	15.5	150	0	
Vert.	13839.950	PK	49.85	40.28	12.00	38.80	-9.54	53.79	73.90	20.1	104	187	
Vert.	2488.388	AV	37.32	27.63	14.26	36.52	2.28	44.97	53.97	9.0	302	91	VBW: 10 Hz
Vert.	2499.084	AV	37.19	27.58	14.27	36.51	2.28	44.81	53.97	9.1	302	91	VBW: 10 Hz
Vert.	5150.000	AV	37.14	32.10	16.72	39.58	2.28	48.66	53.90	5.2	283	5	VBW: 3.9 kHz
Vert.	6919.965	AV	41.05	35.28	8.44	39.30	2.28	47.75	53.90	6.1	150	32	VBW: 3.9 kHz
Vert.	10380.000	AV	35.88	39.43	10.24	39.64	2.28	48.19	53.90	5.7	150	0	VBW: 3.9 kHz
Vert.	13839.950	AV	41.46	40.28	12.00	38.80	-9.54	45.40	53.90	8.5	104	187	VBW: 10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

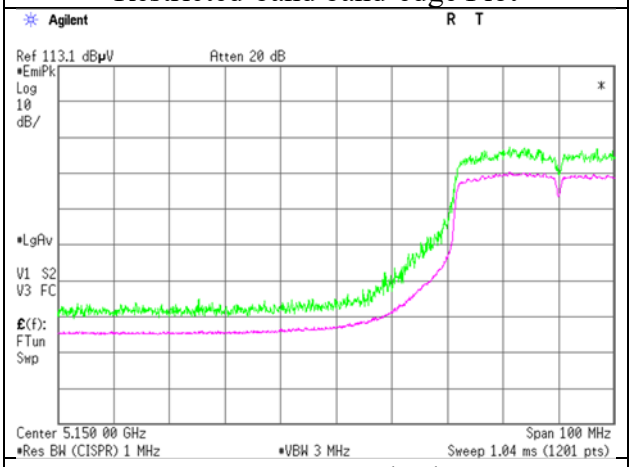
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-40 5190 MHz

Horizontal

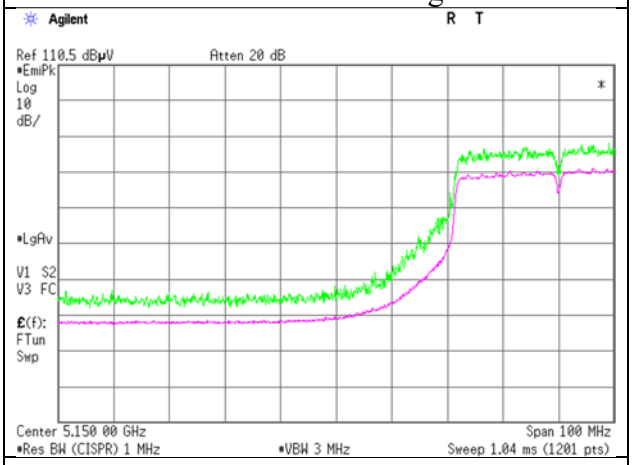
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	1
Date	October 29, 2018	October 31, 2018
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1
Date	November 1, 2018	October 31, 2018
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11n-40 5230 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.270	PK	55.32	27.63	14.26	36.52	2.28	62.97	73.97	11.0	216	161	
Hori.	2498.914	PK	55.92	27.58	14.27	36.51	2.28	63.54	73.97	10.4	216	161	
Hori.	6973.299	PK	48.41	35.78	8.43	39.22	2.28	55.68	73.90	18.2	152	23	
Hori.	10460.000	PK	46.62	39.62	10.28	39.73	2.28	59.07	73.90	14.8	150	0	
Hori.	13946.620	PK	48.42	40.69	12.00	38.76	-9.54	52.81	73.90	21.0	191	41	
Hori.	2488.270	AV	39.79	27.63	14.26	36.52	2.28	47.44	53.97	6.5	216	161	VBW: 10 Hz
Hori.	2498.914	AV	40.11	27.58	14.27	36.51	2.28	47.73	53.97	6.2	216	161	VBW: 10 Hz
Hori.	6973.299	AV	40.06	35.78	8.43	39.22	2.28	47.33	53.90	6.5	152	23	VBW: 3.9 kHz
Hori.	10460.000	AV	36.18	39.62	10.28	39.73	2.28	48.63	53.90	**5.2**	150	0	VBW: 3.9 kHz
Hori.	13946.620	AV	37.78	40.69	12.00	38.76	-9.54	42.17	53.90	11.7	191	41	VBW: 10 Hz
Vert.	2488.338	PK	52.82	27.63	14.26	36.52	2.28	60.47	73.97	13.5	312	85	
Vert.	2498.861	PK	52.62	27.59	14.27	36.51	2.28	60.25	73.97	13.7	312	85	
Vert.	6973.299	PK	48.70	35.78	8.43	39.22	2.28	55.97	73.90	17.9	120	287	
Vert.	10460.000	PK	46.65	39.62	10.28	39.73	2.28	59.10	73.90	14.8	150	0	
Vert.	13946.620	PK	50.93	40.69	12.00	38.76	-9.54	55.32	73.90	18.5	116	184	
Vert.	2488.338	AV	37.38	27.63	14.26	36.52	2.28	45.03	53.97	8.9	312	85	VBW: 10 Hz
Vert.	2498.861	AV	37.50	27.59	14.27	36.51	2.28	45.13	53.97	8.8	312	85	VBW: 10 Hz
Vert.	6973.299	AV	40.96	35.78	8.43	39.22	2.28	48.23	53.90	5.6	120	287	VBW: 3.9 kHz
Vert.	10460.000	AV	36.12	39.62	10.28	39.73	2.28	48.57	53.90	5.3	150	0	VBW: 3.9 kHz
Vert.	13946.620	AV	41.50	40.69	12.00	38.76	-9.54	45.89	53.90	8.0	116	184	VBW: 10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	1
Date	October 29, 2018	October 30, 2018	October 31, 2018
Temperature / Humidity	23 deg. C / 40 % RH	25 deg. C / 36 % RH	23 deg. C / 35 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Shiro Kobayashi (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-40 5310 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.099	PK	55.99	27.63	14.26	36.52	2.28	63.64	73.97	10.3	213	158	
Hori.	2498.855	PK	55.96	27.59	14.27	36.51	2.28	63.59	73.97	10.3	213	158	
Hori.	5350.000	PK	50.65	31.54	16.80	39.68	2.28	61.59	73.90	12.3	162	286	
Hori.	7079.966	PK	48.37	36.24	8.52	39.22	2.28	56.19	73.90	17.7	147	31	
Hori.	10620.000	PK	45.98	39.65	10.37	39.70	2.28	58.58	73.90	15.3	150	0	
Hori.	14159.930	PK	48.53	41.23	12.02	38.63	-9.54	53.61	73.90	20.2	135	303	
Hori.	2488.099	AV	40.12	27.63	14.26	36.52	2.28	47.77	53.97	6.2	213	158	VBW: 10 Hz
Hori.	2498.855	AV	40.53	27.59	14.27	36.51	2.28	48.16	53.97	5.8	213	158	VBW: 10 Hz
Hori.	5350.000	AV	38.33	31.54	16.80	39.68	2.28	49.27	53.90	**4.6**	162	286	VBW: 3.9 kHz
Hori.	7079.966	AV	39.23	36.24	8.52	39.22	2.28	47.05	53.90	6.8	147	31	VBW: 3.9 kHz
Hori.	10620.000	AV	35.52	39.65	10.37	39.70	2.28	48.12	53.90	5.7	150	0	VBW: 3.9 kHz
Hori.	14159.930	AV	40.55	41.23	12.02	38.63	-9.54	45.63	53.90	8.2	135	303	VBW: 10 Hz
Vert.	2488.349	PK	52.03	27.63	14.26	36.52	2.28	59.68	73.97	14.2	319	82	
Vert.	2498.916	PK	51.60	27.58	14.27	36.51	2.28	59.22	73.97	14.7	319	82	
Vert.	5350.000	PK	50.32	31.54	16.80	39.68	2.28	61.26	73.90	12.6	251	186	
Vert.	7079.966	PK	48.62	36.24	8.52	39.22	2.28	56.44	73.90	17.4	103	282	
Vert.	10620.000	PK	45.92	39.65	10.37	39.70	2.28	58.52	73.90	15.3	150	0	
Vert.	14159.950	PK	49.88	41.23	12.02	38.63	-9.54	54.96	73.90	18.9	160	170	
Vert.	2488.349	AV	36.74	27.63	14.26	36.52	2.28	44.39	53.97	9.5	319	82	VBW: 10 Hz
Vert.	2498.916	AV	36.85	27.58	14.27	36.51	2.28	44.47	53.97	9.5	319	82	VBW: 10 Hz
Vert.	5350.000	AV	37.94	31.54	16.80	39.68	2.28	48.88	53.90	5.0	251	186	VBW: 3.9 kHz
Vert.	7079.966	AV	40.63	36.24	8.52	39.22	2.28	48.45	53.90	5.4	103	282	VBW: 3.9 kHz
Vert.	10620.000	AV	35.49	39.65	10.37	39.70	2.28	48.09	53.90	5.8	150	0	VBW: 3.9 kHz
Vert.	14159.950	AV	42.50	41.23	12.02	38.63	-9.54	47.58	53.90	6.3	160	170	VBW: 10 Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

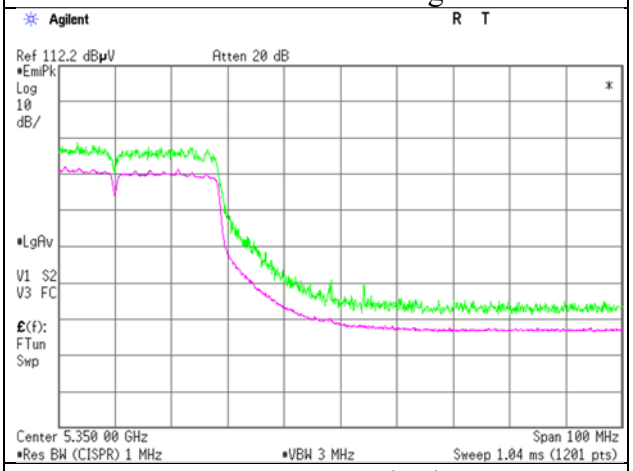
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-40 5310 MHz

Horizontal

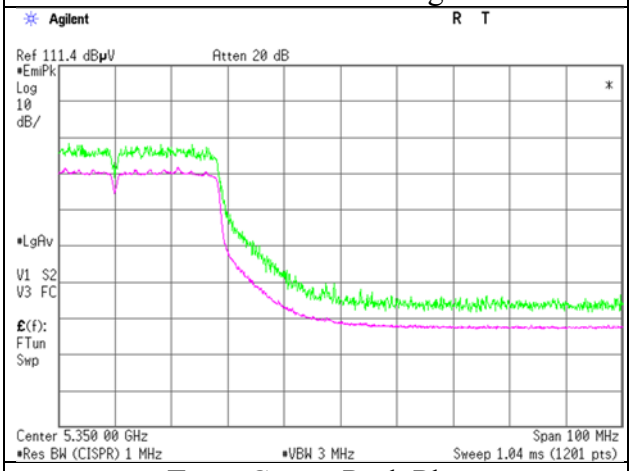
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	3
Date	October 29, 2018	October 30, 2018	November 9, 2018
Temperature / Humidity	23 deg. C / 40 % RH	25 deg. C / 36 % RH	24 deg. C / 34 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Makoto Hosaka (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-40 5510 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.260	PK	55.89	27.63	14.26	36.52	2.28	63.54	73.97	10.4	201	159	
Hori.	2498.864	PK	57.04	27.59	14.27	36.51	2.28	64.67	73.97	9.3	201	159	
Hori.	5460.000	PK	47.32	31.90	16.85	39.73	2.28	58.62	73.90	15.3	159	287	
Hori.	7346.652	PK	45.97	37.04	8.22	39.37	2.28	54.14	73.90	19.7	147	225	
Hori.	11020.000	PK	45.88	39.96	9.83	39.48	2.28	58.47	73.90	15.4	150	1	
Hori.	2488.260	AV	39.82	27.63	14.26	36.52	2.28	47.47	53.97	6.5	201	159	VBW:10Hz
Hori.	2498.864	AV	40.35	27.59	14.27	36.51	2.28	47.98	53.97	5.9	201	159	VBW:10Hz
Hori.	5460.000	AV	36.42	31.90	16.85	39.73	2.28	47.72	53.90	6.2	159	287	VBW: 3.9 kHz
Hori.	7346.652	AV	35.48	37.04	8.22	39.37	2.28	43.65	53.90	10.2	147	225	VBW: 3.9 kHz
Hori.	11020.000	AV	35.33	39.96	9.83	39.48	2.28	47.92	53.90	5.9	150	1	VBW: 3.9 kHz
Vert.	2488.671	PK	53.08	27.63	14.26	36.52	2.28	60.73	73.97	13.2	305	87	
Vert.	2498.745	PK	53.63	27.59	14.27	36.51	2.28	61.26	73.97	12.7	305	87	
Vert.	5460.000	PK	46.23	31.90	16.85	39.73	2.28	57.53	73.90	16.4	268	181	
Vert.	7346.603	PK	46.74	37.04	8.22	39.37	2.28	54.91	73.90	18.9	102	292	
Vert.	11020.000	PK	46.10	39.96	9.83	39.48	2.28	58.69	73.90	15.2	150	11	
Vert.	2488.671	AV	37.51	27.63	14.26	36.52	2.28	45.16	53.97	8.8	305	87	VBW:10Hz
Vert.	2498.745	AV	37.91	27.59	14.27	36.51	2.28	45.54	53.97	8.4	305	87	VBW:10Hz
Vert.	5460.000	AV	36.28	31.90	16.85	39.73	2.28	47.58	53.90	6.3	268	181	VBW: 3.9 kHz
Vert.	7346.603	AV	36.84	37.04	8.22	39.37	2.28	45.01	53.90	8.8	102	292	VBW: 3.9 kHz
Vert.	11020.000	AV	35.75	39.96	9.83	39.48	2.28	48.34	53.90	**5.5**	150	11	VBW: 3.9 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5470.000	PK	47.92	31.89	16.86	39.74	2.28	59.21	-36.02	-27.00	**9.0**	159	287	
Vert.	5470.000	PK	47.24	31.89	16.86	39.74	2.28	58.53	-36.70	-27.00	9.7	268	181	

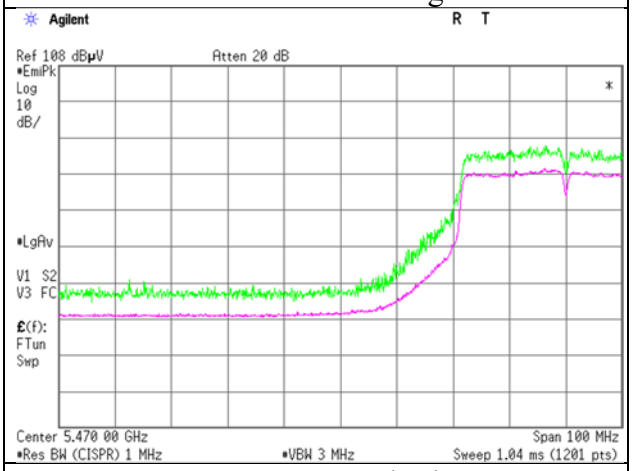
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-40 5510 MHz

Horizontal

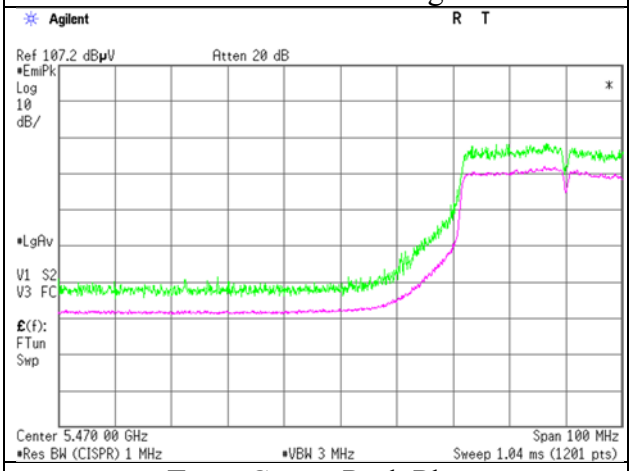
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	3
Date	October 29, 2018	November 9, 2018
Temperature / Humidity	23 deg. C / 40 % RH	24 deg. C / 34 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Makoto Hosaka (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1
Date	November 1, 2018	October 31, 2018
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)
Mode	Tx 11n-40 5550 MHz	

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.438	PK	56.49	27.63	14.26	36.52	2.28	64.14	73.97	9.8	221	159	
Hori.	2498.921	PK	56.34	27.58	14.27	36.51	2.28	63.96	73.97	10.0	221	159	
Hori.	7400.000	PK	46.56	36.99	8.25	39.40	2.28	54.68	73.90	19.2	136	221	
Hori.	11100.000	PK	45.89	39.79	9.90	39.45	2.28	58.41	73.90	15.4	150	13	
Hori.	2488.438	AV	40.49	27.63	14.26	36.52	2.28	48.14	53.97	5.8	221	159	VBW:10Hz
Hori.	2498.921	AV	40.59	27.58	14.27	36.51	2.28	48.21	53.97	5.7	221	159	VBW:10Hz
Hori.	7400.000	AV	35.28	36.99	8.25	39.40	2.28	43.40	53.90	10.5	136	221	VBW: 3.9 kHz
Hori.	11100.000	AV	35.77	39.79	9.90	39.45	2.28	48.29	53.90	**5.6**	150	13	VBW: 3.9 kHz
Vert.	2488.441	PK	53.14	27.63	14.26	36.52	2.28	60.79	73.97	13.1	311	84	
Vert.	2498.907	PK	53.71	27.58	14.27	36.51	2.28	61.33	73.97	12.6	311	84	
Vert.	7400.000	PK	46.12	36.99	8.25	39.40	2.28	54.24	73.90	19.6	106	291	
Vert.	11100.000	PK	45.95	39.79	9.90	39.45	2.28	58.47	73.90	15.4	150	13	
Vert.	2488.441	AV	37.72	27.63	14.26	36.52	2.28	45.37	53.97	8.6	311	84	VBW:10Hz
Vert.	2498.907	AV	38.21	27.58	14.27	36.51	2.28	45.83	53.97	8.1	311	84	VBW:10Hz
Vert.	7400.000	AV	35.61	36.99	8.25	39.40	2.28	43.73	53.90	10.1	106	291	VBW: 3.9 kHz
Vert.	11100.000	AV	35.50	39.79	9.90	39.45	2.28	48.02	53.90	5.8	150	13	VBW: 3.9 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

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

*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	3
Date	October 29, 2018	October 30, 2018	November 9, 2018
Temperature / Humidity	23 deg. C / 40 % RH	25 deg. C / 36 % RH	24 deg. C / 34 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Makoto Hosaka (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-40 5670 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.000	PK	55.88	27.63	14.26	36.52	2.28	63.53	73.97	10.4	213	151	
Hori.	2498.893	PK	56.34	27.58	14.27	36.51	2.28	63.96	73.97	10.0	213	151	
Hori.	7560.000	PK	46.63	36.99	8.32	39.35	2.28	54.87	73.90	19.0	135	185	
Hori.	11340.000	PK	45.80	39.56	10.04	39.34	2.28	58.34	73.90	15.5	150	11	
Hori.	2488.000	AV	40.44	27.63	14.26	36.52	2.28	48.09	53.97	5.8	213	151	VBW:10Hz
Hori.	2498.893	AV	40.53	27.58	14.27	36.51	2.28	48.15	53.97	5.8	213	151	VBW:10Hz
Hori.	7560.000	AV	36.25	36.99	8.32	39.35	2.28	44.49	53.90	9.4	135	185	VBW: 3.9 kHz
Hori.	11340.000	AV	35.48	39.56	10.04	39.34	2.28	48.02	53.90	5.8	150	11	VBW: 3.9 kHz
Vert.	2488.401	PK	53.22	27.63	14.26	36.52	2.28	60.87	73.97	13.1	311	84	
Vert.	2498.992	PK	53.28	27.58	14.27	36.51	2.28	60.90	73.97	13.0	311	84	
Vert.	7560.000	PK	45.76	36.99	8.32	39.35	2.28	54.00	73.90	19.9	106	286	
Vert.	11340.000	PK	46.82	39.56	10.04	39.34	2.28	59.36	73.90	14.5	150	12	
Vert.	2488.401	AV	37.73	27.63	14.26	36.52	2.28	45.38	53.97	8.5	311	84	VBW:10Hz
Vert.	2498.992	AV	38.22	27.58	14.27	36.51	2.28	45.84	53.97	8.1	311	84	VBW:10Hz
Vert.	7560.000	AV	36.26	36.99	8.32	39.35	2.28	44.50	53.90	9.4	106	286	VBW: 3.9 kHz
Vert.	11340.000	AV	35.76	39.56	10.04	39.34	2.28	48.30	53.90	**5.6**	150	12	VBW: 3.9 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5725.000	PK	46.54	32.20	17.09	39.88	0.00	55.95	-39.25	-27.00	**12.3**	166	282	
Vert.	5725.000	PK	46.26	32.20	17.09	39.88	0.00	55.67	-39.53	-27.00	12.5	244	184	

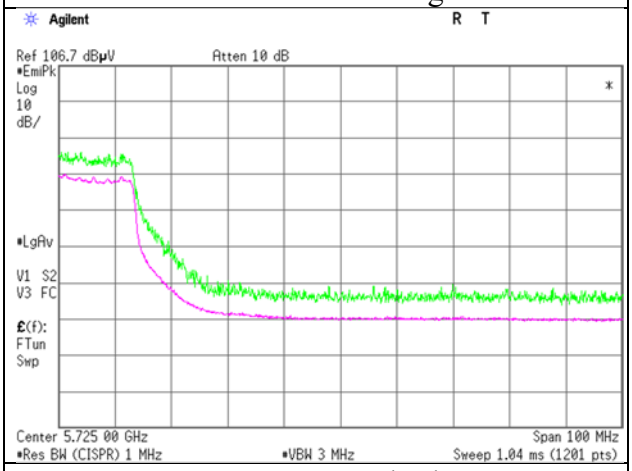
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-40 5670 MHz

Horizontal

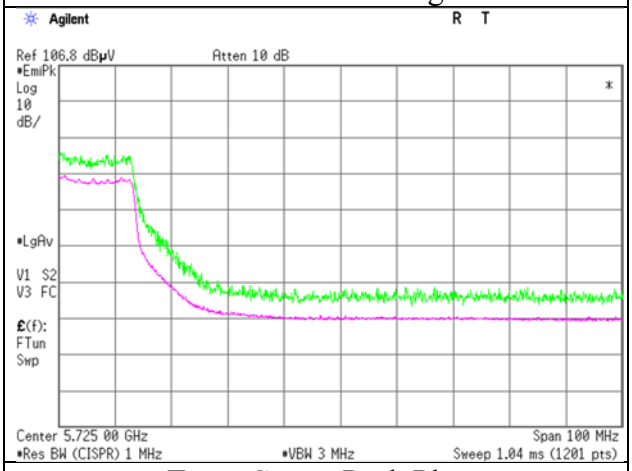
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	3
Date	October 29, 2018	October 30, 2018	November 2, 2018
Temperature / Humidity	23 deg. C / 40 % RH	25 deg. C / 36 % RH	24 deg. C / 34 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Kazuya Noda (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-40 5755 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.281	PK	55.01	27.63	14.26	36.52	2.28	62.66	73.97	11.3	211	151	
Hori.	2498.931	PK	55.45	27.58	14.27	36.51	2.28	63.07	73.97	10.9	211	151	
Hori.	3836.666	PK	44.73	29.64	15.29	36.54	2.28	55.40	73.97	18.5	160	295	
Hori.	7673.333	PK	45.64	36.94	8.31	39.16	2.28	54.01	73.90	19.8	110	158	
Hori.	11510.000	PK	45.93	39.86	10.15	39.26	2.28	58.96	73.90	14.9	150	1	
Hori.	2488.281	AV	39.78	27.63	14.26	36.52	2.28	47.43	53.97	6.5	211	151	VBW: 10 Hz
Hori.	2498.931	AV	40.24	27.58	14.27	36.51	2.28	47.86	53.97	6.1	211	151	VBW: 10 Hz
Hori.	3836.666	AV	36.74	29.64	15.29	36.54	2.28	47.41	53.97	6.5	160	295	VBW: 8.2 kHz
Hori.	7673.333	AV	36.46	36.94	8.31	39.16	2.28	44.83	53.90	9.0	110	158	VBW: 8.2 kHz
Hori.	11510.000	AV	36.30	39.86	10.15	39.26	2.28	49.33	53.90	**4.5**	150	1	VBW: 8.2 kHz
Vert.	2488.291	PK	52.79	27.63	14.26	36.52	2.28	60.44	73.97	13.5	311	88	
Vert.	2498.351	PK	52.91	27.59	14.27	36.51	2.28	60.54	73.97	13.4	311	88	
Vert.	3836.666	PK	44.46	29.64	15.29	36.54	2.28	55.13	73.97	18.8	123	327	
Vert.	7673.333	PK	45.97	36.94	8.31	39.16	2.28	54.34	73.90	19.5	151	285	
Vert.	11510.000	PK	45.35	39.86	10.15	39.26	2.28	58.38	73.90	15.5	150	1	
Vert.	2488.291	AV	37.29	27.63	14.26	36.52	2.28	44.94	53.97	9.0	311	88	VBW: 10 Hz
Vert.	2498.351	AV	37.52	27.59	14.27	36.51	2.28	45.15	53.97	8.8	311	88	VBW: 10 Hz
Vert.	3836.666	AV	35.71	29.64	15.29	36.54	2.28	46.38	53.97	7.5	123	327	VBW: 8.2 kHz
Vert.	7673.333	AV	37.15	36.94	8.31	39.16	2.28	45.52	53.90	8.3	151	285	VBW: 8.2 kHz
Vert.	11510.000	AV	36.02	39.86	10.15	39.26	2.28	49.05	53.90	4.8	150	1	VBW: 8.2 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	46.91	32.04	17.02	39.83	2.28	58.42	-36.81	-27.00	**9.8**	173	282	
Hori.	5700.000	PK	46.93	32.11	17.07	39.86	2.28	58.53	-36.70	10.00	46.7	173	282	
Hori.	5720.000	PK	47.82	32.18	17.09	39.87	2.28	59.50	-35.73	15.60	51.3	173	282	
Hori.	5725.000	PK	52.39	32.20	17.09	39.88	2.28	64.08	-31.15	27.00	58.2	173	282	
Vert.	5650.000	PK	46.51	32.04	17.02	39.83	2.28	58.02	-37.21	-27.00	10.2	265	184	
Vert.	5700.000	PK	46.83	32.11	17.07	39.86	2.28	58.43	-36.80	10.00	46.8	265	184	
Vert.	5720.000	PK	47.28	32.18	17.09	39.87	2.28	58.96	-36.27	15.60	51.9	265	184	
Vert.	5725.000	PK	51.93	32.20	17.09	39.88	2.28	63.62	-31.61	27.00	58.6	265	184	

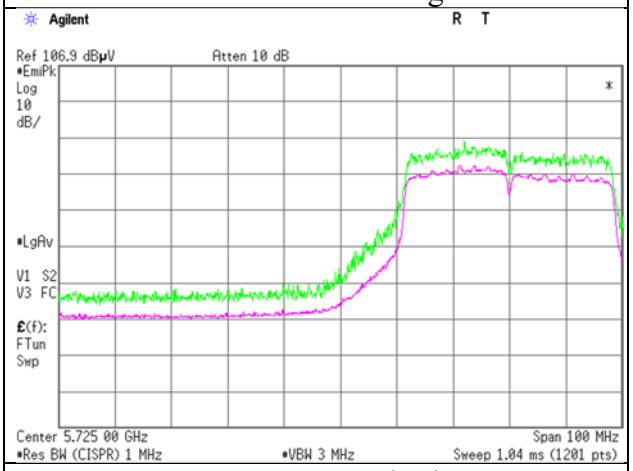
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-40 5755 MHz

Horizontal

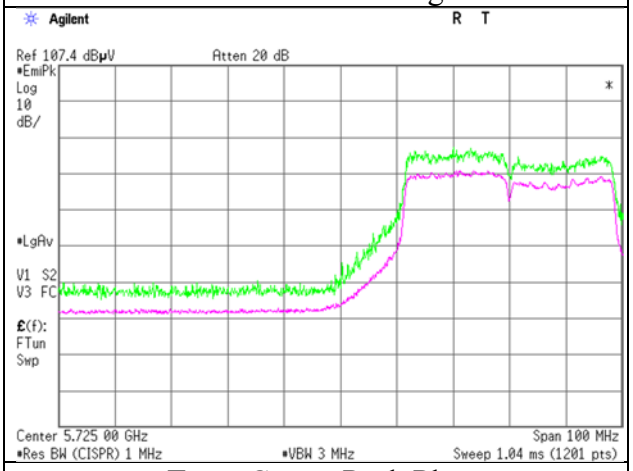
Restricted-band band-edge Plot



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

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	1	3
Date	October 29, 2018	October 30, 2018	November 2, 2018
Temperature / Humidity	23 deg. C / 40 % RH	25 deg. C / 36 % RH	24 deg. C / 34 % RH
Engineer	Kazuya Noda (1 GHz – 6.4 GHz)	Shiro Kobayashi (Band edge)	Kazuya Noda (6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	
Date	November 1, 2018	October 31, 2018	
Temperature / Humidity	20 deg. C / 35 % RH	21 deg. C / 35 % RH	
Engineer	Yosuke Ishikawa (13 GHz – 18 GHz)	Yosuke Ishikawa (18 GHz – 40 GHz)	
Mode	Tx 11n-40 5795 MHz		

(above 1GHz Inside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2488.278	PK	55.15	27.63	14.26	36.52	2.28	62.80	73.97	11.1	214	153	
Hori.	2499.204	PK	55.44	27.58	14.27	36.51	2.28	63.06	73.97	10.9	214	153	
Hori.	3863.333	PK	45.42	29.69	15.33	36.53	2.28	56.19	73.97	17.7	158	310	
Hori.	7726.667	PK	45.98	36.94	8.30	39.07	2.28	54.43	73.90	19.4	115	141	
Hori.	11590.000	PK	45.30	39.76	10.23	39.19	2.28	58.38	73.90	15.5	150	1	
Hori.	2488.278	AV	40.15	27.63	14.26	36.52	2.28	47.80	53.97	6.1	214	153	VBW: 10 Hz
Hori.	2499.204	AV	40.23	27.58	14.27	36.51	2.28	47.85	53.97	6.1	214	153	VBW: 10 Hz
Hori.	3863.333	AV	37.63	29.69	15.33	36.53	2.28	48.40	53.97	5.5	158	310	VBW: 8.2 kHz
Hori.	7726.667	AV	37.05	36.94	8.30	39.07	2.28	45.50	53.90	8.4	115	141	VBW: 8.2 kHz
Hori.	11590.000	AV	35.74	39.76	10.23	39.19	2.28	48.82	53.90	**5.0**	150	1	VBW: 8.2 kHz
Vert.	2488.191	PK	52.96	27.63	14.26	36.52	2.28	60.61	73.97	13.3	311	87	
Vert.	2498.354	PK	53.01	27.59	14.27	36.51	2.28	60.64	73.97	13.3	311	87	
Vert.	3863.333	PK	45.12	29.69	15.33	36.53	2.28	55.89	73.97	18.0	152	339	
Vert.	7726.667	PK	47.11	36.94	8.30	39.07	2.28	55.56	73.90	18.3	151	287	
Vert.	11590.000	PK	45.25	39.76	10.23	39.19	2.28	58.33	73.90	15.5	150	1	
Vert.	2488.191	AV	37.51	27.63	14.26	36.52	2.28	45.16	53.97	8.8	311	87	VBW: 10 Hz
Vert.	2498.354	AV	37.66	27.59	14.27	36.51	2.28	45.29	53.97	8.6	311	87	VBW: 10 Hz
Vert.	3863.333	AV	36.84	29.69	15.33	36.53	2.28	47.61	53.97	6.3	152	339	VBW: 8.2 kHz
Vert.	7726.667	AV	37.31	36.94	8.30	39.07	2.28	45.76	53.90	8.1	151	287	VBW: 8.2 kHz
Vert.	11590.000	AV	35.56	39.76	10.23	39.19	2.28	48.64	53.90	5.2	150	1	VBW: 8.2 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	46.49	32.64	17.22	39.95	2.28	58.68	-36.55	27.00	63.6	146	280	
Hori.	5855.000	PK	45.83	32.64	17.23	39.95	2.28	58.03	-37.20	15.60	52.8	146	280	
Hori.	5875.000	PK	46.04	32.66	17.25	39.96	2.28	58.27	-36.96	10.00	47.0	146	280	
Hori.	5925.000	PK	45.93	32.66	17.29	39.99	2.28	58.17	-37.06	-27.00	**10.1**	146	280	
Vert.	5850.000	PK	46.24	32.64	17.22	39.95	2.28	58.43	-36.80	27.00	63.8	260	171	
Vert.	5855.000	PK	45.49	32.64	17.23	39.95	2.28	57.69	-37.54	15.60	53.1	260	171	
Vert.	5875.000	PK	45.95	32.66	17.25	39.96	2.28	58.18	-37.05	10.00	47.1	260	171	
Vert.	5925.000	PK	45.55	32.66	17.29	39.99	2.28	57.79	-37.44	-27.00	10.4	260	171	

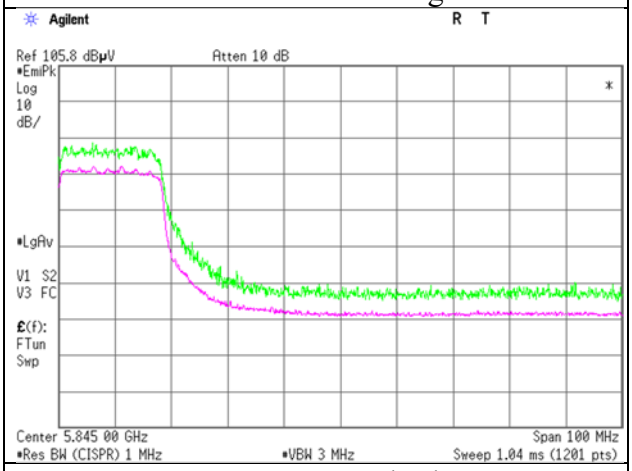
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
*The 3 rd and 4 th harmonics were not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12517639S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	October 30, 2018
Temperature / Humidity	25 deg. C / 36 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-40 5795 MHz

Horizontal

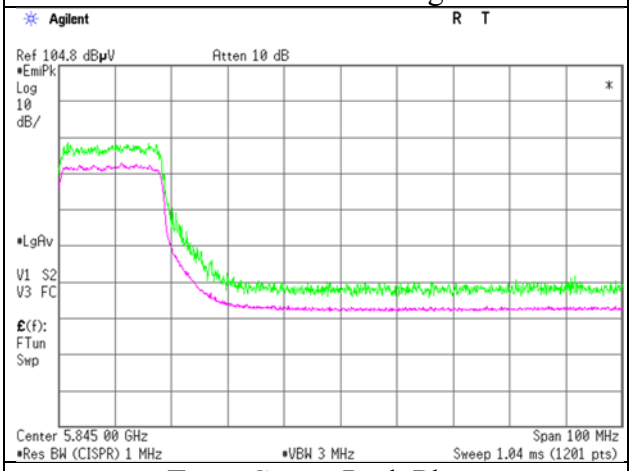
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot

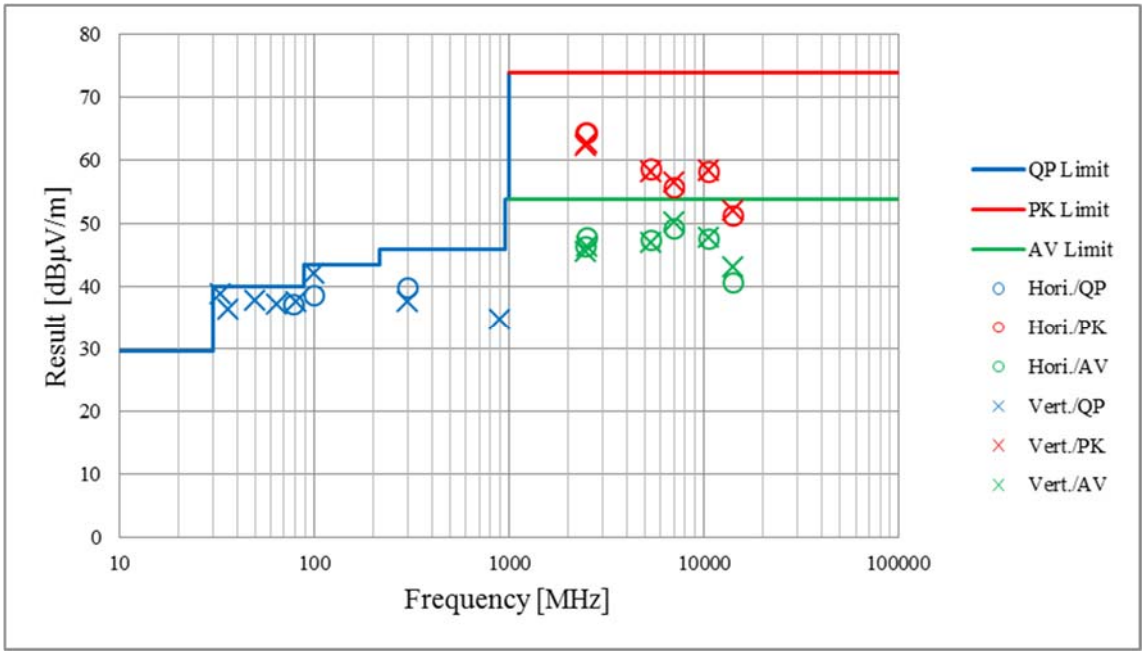


Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Report No.	12517639S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	3	1
Date	November 4, 2018	October 24, 2018	October 30, 2018
Temperature / Humidity	22 deg. C / 44 % RH	24 deg. C / 44 % RH	25 deg. C / 36 % RH
Engineer	Kazutaka Takeyama	Yosuke Ishikawa	Shiro Kobayashi
	(30 MHz - 1 GHz)	(1 GHz – 6.4 GHz)	(Band edge)
Semi Anechoic Chamber	1	3	1
Date	October 31, 2018	October 26, 2018	October 31, 2018
Temperature / Humidity	23 deg. C / 35 % RH	22 deg. C / 40 % RH	21 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Makoto Hosaka	Yosuke Ishikawa
	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11a 5320 MHz		



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

APPENDIX 2: Test instruments

Test Instruments (1/2)

Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
SAT3-10	CE	144960	Attenuator	JFW	50HF-003N	-	2018/8/23	2019/8/31	12
SCC-C9/C10/SRSE-03	CE	145036	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	2018/4/9	2019/4/30	12
SLS-02	CE	145539	LISN	Rohde & Schwarz	ENV216	100512	2018/2/26	2019/2/28	12
SLS-04	CE	145541	LISN	Rohde & Schwarz	ENV216	100514	2018/2/27	2019/2/28	12
STM-03	CE	146188	Terminator	TME	CT-01 BP	-	2017/12/14	2018/12/31	12
STR-08	CE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2017/11/24	2018/11/30	12
KJM-02	CE,RE	146432	Measure	TAJIMA	GL19-55	-	-	-	-
SOS-06	CE	146294	Humidity Indicator	A&D	AD-5681	4062118	2017/12/21	2018/12/31	12
STS-03	CE,RE	146210	Digital Hitester	HIOKI	3805-50	80997823	2018/10/16	2019/10/31	12
COTS-SEMI-1	RE	144865	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	-	-	-
KAT6-04	RE	144899	Attenuator	Inmet	18N-6dB	-	2017/12/14	2018/12/31	12
KJM-09	RE	145929	Measure	KOMELON	KMC-36	-	-	-	-
KSA-08	RE	145089	Spectrum Analyzer	AGILENT	E4446A	MY46180525	2018/10/7	2019/10/31	12
SAEC-01(NSA)	RE	145597	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	2018/5/29	2019/5/31	12
SAEC-01(SVSWR)	RE	145561	Semi-Anechoic Chamber	TDK	SAEC-01(SVSWR)	1	2018/7/19	2019/7/31	12
SAEC-03(SVSWR)	RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2018/7/17	2019/7/31	12
SAF-01	RE	145003	Pre Amplifier	SONOMA	310N	290211	2018/2/16	2019/2/28	12
SAF-04	RE	145127	Pre Amplifier	Toyo Corporation	TPA0118-36	2072554	2018/6/26	2019/6/30	12
SAF-06	RE	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	1440491	2018/9/14	2019/9/30	12
SAF-09	RE	145008	Pre Amplifier	Toyo Corporation	HAP18-26W	18	2018/9/21	2019/9/30	12
SAF-10	RE	145129	Pre Amplifier	Toyo Corporation	HAP26-40W	10	2018/3/27	2019/3/31	12
SAT10-05	RE	145136	Attenuator(above1GHz)	AGILENT	8493C-010	74864	2017/11/22	2018/11/30	12
SAT10-06	RE	145137	Attenuator	AGILENT	8493C-010	74865	2017/11/22	2018/11/30	12
SAT3-09	RE	144959	Attenuator	JFW	50HF-003N	-	2018/8/23	2019/8/31	12
SBA-01	RE	145161	Biconical Antenna	Schwarzbeck	BBA9106	91032664	2018/6/5	2019/6/30	12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	RE	144967	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-269(RF Selector)	2018/4/9	2019/4/30	12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	RE	144968	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-269(RF Selector)	2018/4/9	2019/4/30	12
SCC-C6/C7/C8/C10/SRSE-03	RE	145034	Coaxial Cable&RF Selector	Suhner/Fujikura/Suhner/Suhner/TOYO	141PE/12DSFA/141PE/141PE/NS4906	-/0901-271(RF Selector)	2018/4/9	2019/4/30	12

Test Instruments (2/2)

Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
SCC-G05	RE	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2018/1/29	2019/1/31	12
SCC-G06	RE	145173	Coaxial Cable	Junkosha	J12J102207-00	MAY-23-16-091	2018/6/1	2019/6/30	12
SCC-G22	RE	145180	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	2018/5/11	2019/5/31	12
SCC-G23	RE	145168	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	2018/5/11	2019/5/31	12
SCC-G33	RE	145184	Coaxial Cable	Junkosha	MWX241-01000KMSKMS	-	2018/4/20	2019/4/30	12
SCC-G40	RE	166491	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S005	2018/1/29	2019/1/31	12
SCC-G41	RE	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2018/1/29	2019/1/31	12
SCC-G45	RE	168301	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102 E	800137/2EA	2018/3/28	2019/3/31	12
SFL-03	RE	145377	Highpass Filter	MICRO-TRONICS	HPM50112	28	2017/11/16	2018/11/30	12
SHA-01	RE	145383	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	2018/7/23	2019/7/31	12
SHA-03	RE	145501	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	2018/7/23	2019/7/31	12
SHA-05	RE	145513	Horn Antenna	ETS LINDGREN	Sep-60	LM4210	2018/7/23	2019/7/31	12
SHA-06	RE	145514	Horn Antenna	ETS LINDGREN	Oct-60	LM3459	2018/7/23	2019/7/31	12
SLA-05	RE	145527	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	193	2018/6/5	2019/6/30	12
SOS-01	RE	146316	Humidity Indicator	A&D	AD-5681	4062555	2018/10/25	2019/10/31	12
SOS-05	RE	146293	Humidity Indicator	A&D	AD-5681	4062518	2018/10/25	2019/10/31	12
SOS-16	RE	167990	Humidity Indicator	CUSTOM	CTH-202	708Q08R	2018/3/27	2019/3/31	12
SSA-03	RE	145801	Spectrum Analyzer	AGILENT	E4448A	MY48250152	2018/8/30	2019/8/31	12
STR-01	RE	145790	Test Receiver	Rohde & Schwarz	ESU40	100093	2018/4/13	2019/4/30	12
STS-01	RE	145792	Digital Hitester	HIOKI	3805-50	80997812	2018/10/16	2019/10/31	12
STS-02	RE	145793	Digital Hitester	HIOKI	3805-50	80997819	2018/3/8	2019/3/31	12
STS-04	RE	146211	Digital Hitester	HIOKI	3805-50	80997827	2018/3/8	2019/3/31	12

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

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

Test item:

CE: Conducted Emission
RE: Radiated Emission