



RADIO TEST REPORT

Test Report No. : 13274888H-D

Applicant : SOURCENEXT CORPORATION
Type of EUT : POCKETALK S
Model Number of EUT : PTS
FCC ID : 2AOJA-PTS
Test regulation : FCC Part 15 Subpart E: 2019
*Except for DFS tests
Test Result : Complied (Refer to SECTION 3.2)

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
6. The all test items in this test report are conducted by UL Japan, Inc. Ise EMC Lab.
7. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.
8. The information provided from the customer for this report is identified in SECTION 1.

Date of test: November 21 to December 11, 2019

Representative test engineer:

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- ☐ This report contains data that are not covered by the NVLAP accreditation.
☒ There is no testing item of "Non-accreditation".

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REVISION HISTORY

Original Test Report No.: 13274888H-D

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13274888H-D	April 2, 2020	-	-

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Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	MCS	Modulation and Coding Scheme
AC	Alternating Current	MRA	Mutual Recognition Arrangement
AFH	Adaptive Frequency Hopping	N/A	Not Applicable
AM	Amplitude Modulation	NIST	National Institute of Standards and Technology
Amp, AMP	Amplifier	NS	No signal detect.
ANSI	American National Standards Institute	NSA	Normalized Site Attenuation
Ant, ANT	Antenna	NVLAP	National Voluntary Laboratory Accreditation Program
AP	Access Point	OBW	Occupied Band Width
ASK	Amplitude Shift Keying	OFDM	Orthogonal Frequency Division Multiplexing
Atten., ATT	Attenuator	P/M	Power meter
AV	Average	PCB	Printed Circuit Board
BPSK	Binary Phase-Shift Keying	PER	Packet Error Rate
BR	Bluetooth Basic Rate	PHY	Physical Layer
BT	Bluetooth	PK	Peak
BT LE	Bluetooth Low Energy	PN	Pseudo random Noise
BW	BandWidth	PRBS	Pseudo-Random Bit Sequence
Cal Int	Calibration Interval	PSD	Power Spectral Density
CCK	Complementary Code Keying	QAM	Quadrature Amplitude Modulation
Ch., CH	Channel	QP	Quasi-Peak
CISPR	Comite International Special des Perturbations Radioelectriques	QPSK	Quadri-Phase Shift Keying
CW	Continuous Wave	RBW	Resolution Band Width
DBPSK	Differential BPSK	RDS	Radio Data System
DC	Direct Current	RE	Radio Equipment
D-factor	Distance factor	RF	Radio Frequency
DFS	Dynamic Frequency Selection	RMS	Root Mean Square
DQPSK	Differential QPSK	RSS	Radio Standards Specifications
DSSS	Direct Sequence Spread Spectrum	Rx	Receiving
EDR	Enhanced Data Rate	SA, S/A	Spectrum Analyzer
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	SG	Signal Generator
EMC	ElectroMagnetic Compatibility	SVSWR	Site-Voltage Standing Wave Ratio
EMI	ElectroMagnetic Interference	TR	Test Receiver
EN	European Norm	Tx	Transmitting
ERP, e.r.p.	Effective Radiated Power	VBW	Video BandWidth
EU	European Union	Vert.	Vertical
EUT	Equipment Under Test	WLAN	Wireless LAN
Fac.	Factor		
FCC	Federal Communications Commission		
FHSS	Frequency Hopping Spread Spectrum		
FM	Frequency Modulation		
Freq.	Frequency		
FSK	Frequency Shift Keying		
GFSK	Gaussian Frequency-Shift Keying		
GNSS	Global Navigation Satellite System		
GPS	Global Positioning System		
Hori.	Horizontal		
ICES	Interference-Causing Equipment Standard		
IEC	International Electrotechnical Commission		
IEEE	Institute of Electrical and Electronics Engineers		
IF	Intermediate Frequency		
ILAC	International Laboratory Accreditation Conference		
ISED	Innovation, Science and Economic Development Canada		
ISO	International Organization for Standardization		
JAB	Japan Accreditation Board		
LAN	Local Area Network		
LIMS	Laboratory Information Management System		

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SECTION 1: Customer information

Company Name	:	SOURCENEXT CORPORATION
Address	:	Shiodome City Center 33F, 1-5-2 Higashi Shimbashi Minato-ku, Tokyo 105-7133, Japan
Telephone Number	:	+81-50-5533-9606
Facsimile Number	:	+81-3-6430-6405
Contact Person	:	Yukio Aotani

The information provided from the customer is as follows;

- Applicant, Type of Equipment, Model No., FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (EUT) other than the Receipt Date
- SECTION 4: Operation of EUT during testing
- * The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Type of Equipment	:	POCKETALK S
Model No.	:	PTS
Serial No.	:	Refer to SECTION 4.2
Rating	:	DC 3.8 V (Lithium-ion battery) AC 100 V to AC 240 V (AC Adapter)
Receipt Date of Sample	:	November 14, 2019
Country of Mass-production	:	China
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab.

2.2 Product Description

Model: PTS (referred to as the EUT in this report) is a POCKETALK S.

There are 2 versions. One has eSIM and SIM slot. Another has only SIM slot. Also there are some color variations.

General Specification

Operating Temperature	:	0 deg. C to +40 deg. C
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Radio Specification (1/2)

WLAN (IEEE802.11b/g/a/n-20/n-40)

Type of radio	IEEE802.11b	IEEE802.11g/n-20	IEEE802.11n-40	IEEE802.11a/n-20	IEEE802.11n-40
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	2422 MHz - 2452 MHz	5180 MHz - 5240 MHz 5260 MHz - 5320 MHz 5500 MHz - 5700 MHz	5190 MHz - 5230 MHz 5270 MHz - 5310 MHz 5510 MHz - 5670 MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)		OFDM (64QAM, 16QAM, QPSK, BPSK)	
Channel spacing	5 MHz			20 MHz	40 MHz
Antenna type	Planar Inverted-F Antenna				
Antenna Gain	2.4 GHz: 1.25 dBi 5 GHz: 0.36 dBi				
Clock frequency	26 MHz				

Bluetooth (BR/EDR, Low Energy)

	BR/EDR	Low Energy
Frequency of operation	2402 MHz - 2480 MHz	
Type of modulation	FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK)	GFSK
Channel spacing	1 MHz	2 MHz
Antenna type	Planar Inverted-F Antenna	
Antenna Gain	1.25 dBi	
Clock frequency	26 MHz	

GNSS

Radio Type	Receiver
Frequency of Operation	See table below.
Antenna type	Planar Inverted-F Antenna
Antenna Gain	-0.45 dBi
Clock frequency	26 MHz

Supported GNSS and GNSS signals

GNSS	RNSS Frequency Band / Frequency [MHz]		
	1559 to 1610	1215 to 1300	1164 to 1215
BDS	☐ B1I 1561.098	-	-
Galileo	☐ E1 1575.42	☐ E6 1278.75	☐ E5a 1176.45 ☐ E5b 1207.14
GLONASS	☒ G1 1598.0625 - 1605.375	☐ G2 1242.9375 - 1248.625	-
GPS	☒ L1 1575.42	☐ L2 1227.6	☐ L5 1176.45
SBAS	☐ L1 1575.42	-	☐ L5 1176.45

- ☒ Supported GNSS signal
☐ Not supported GNSS signal

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Radio Specification (2/2)

GSM

Equipment Type	Transceiver	
Frequency of Operation	[Up Link] PCS1900: 1850 MHz to 1910 MHz GSM850: 824 MHz to 849 MHz	[Down Link] PCS1900: 1930 MHz to 1990 MHz GSM850: 869 MHz to 894 MHz
Type of Modulation	GMSK, 8-PSK	
Multi-Slot Class	GPRS:12(4 Down/4 Up/5 Sum) EGPRS:12(4 Down/4 Up/5 Sum)	
Voice & Data communication	Data only	
Antenna Type	Planar Inverted-F Antenna	
Antenna Gain	PCS1900: 1850 MHz to 1910 MHz: -4.61 dBi GSM850 824 MHz to 849 MHz: -4.81 dBi	

WCDMA

Equipment Type	Transceiver	
Frequency of Operation	[Up Link] Band 2: 1850 MHz to 1910 MHz Band 5: 824 MHz to 849 MHz	[Down Link] Band 2: 1930 MHz to 1990 MHz Band 5: 869 MHz to 894 MHz
Type of Modulation	QPSK	
Voice & Data communication	Data only	
Antenna Type	Planar Inverted-F Antenna	
Antenna Gain	Band 2: 1850 MHz to 1910 MHz: -4.61 dBi Band 5 824 MHz to 849 MHz: -4.81 dBi	

LTE

Equipment Type	Transceiver	
Frequency of Operation	[Up Link] Band 2: 1850 MHz to 1910 MHz Band 5: 824 MHz to 849 MHz Band 7: 2500 MHz to 2570 MHz Band 26: 814 MHz to 849 MHz	[Down Link] Band 2: 1930 MHz to 1990 MHz Band 5: 869 MHz to 894 MHz Band 7: 2620 MHz to 2690 MHz Band 26: 859 MHz to 894 MHz
Type of Modulation	QPSK, 16QAM, 64QAM	
Voice & Data communication	Data only	
Antenna Gain	Band 2: 1850 MHz to 1910 MHz: -4.61 dBi Band 5: 824 MHz to 849 MHz: -4.81 dBi Band 7: 2500 MHz to 2570 MHz: -2.15 dBi Band 26: 814 MHz to 849 MHz: -4.81 dBi	

*This test report applies to WLAN (5 GHz band) parts.

* WLAN and Bluetooth do not transmit simultaneously.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart E
FCC Part 15 final revised on July 19, 2019 and effective August 19, 2019 except 15.258

Title : FCC 47 CFR Part 15 Radio Frequency Device Subpart E
Unlicensed National Information Infrastructure Devices
Section 15.407 General technical requirements

* Also the EUT complies with FCC Part 15 Subpart B.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 ISED: RSS-Gen 8.8	FCC: 15.407 (b) (6) / 15.207 ISED: RSS-Gen 8.8	29.78 dB, 0.40500 MHz, QP/AV, Phase: L	Complied a)	-
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	See data	Complied b)	Conducted
Maximum Conducted Output Power	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1		Complied c)	Conducted
Maximum Power Spectral Density	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1		Complied d)	Conducted
Spurious Emission Restricted Band Edge	FCC: ANSI C63.10-2013 KDB Publication Number 789033 ISED: -	FCC: 15.407 (b), 15.205 and 15.209 ISED: RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2	0.5 dB 8303.992 MHz, AV, Horizontal	Complied# e) / f)	Conducted (< 30 MHz) / Radiated (> 30 MHz) *1)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2.4.1	-	N/A	Conducted *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 13274888H-E 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).

*2) This test was not applicable since the EUT does not support U-NII-3 band.

a) Refer to APPENDIX 1 (data of Conducted Emission)

b) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth)

c) Refer to APPENDIX 1 (data of Maximum Conducted Output Power)

d) Refer to APPENDIX 1 (data of Maximum Power Spectral Density)

e) Refer to APPENDIX 1 (data of Radiated Spurious Emission)

f) Refer to APPENDIX 1 (data of Conducted Spurious Emission)

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.

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FCC Part 15.31 (e)

The EUT is a battery-operated device and test was performed with the full-charged battery.
This EUT provides stable voltage constantly to RF Module regardless of input voltage.
Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99 % Occupied Bandwidth	RSS-Gen 6.7	ISED: -	N/A	- a)	Conducted
a) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth)					
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.				

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

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the following results are derived depending on whether or not laboratory uncertainty is applied.

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

using Item	Frequency range	Uncertainty (+/-)
AMN (LISN)	0.009 MHz to 0.15 MHz	3.4 dB
	0.15 MHz to 30 MHz	2.9 dB

Radiated emission

Measurement distance	Frequency range	Uncertainty (+/-)
3 m	9 kHz to 30 MHz	3.3 dB
10 m		3.2 dB
3 m	30 MHz to 200 MHz (Horizontal)	4.8 dB
		5.0 dB
	200 MHz to 1000 MHz (Horizontal)	5.2 dB
		6.3 dB
10 m	30 MHz to 200 MHz (Horizontal)	4.8 dB
		4.8 dB
	200 MHz to 1000 MHz (Horizontal)	5.0 dB
		5.0 dB
3 m	1 GHz to 6 GHz	4.9 dB
	6 GHz to 18 GHz	5.2 dB
1 m	10 GHz to 26.5 GHz	5.5 dB
	26.5 GHz to 40 GHz	5.5 dB
10 m	1 GHz to 18 GHz	5.2 dB

Antenna Terminal test

Test Item	Uncertainty (+/-)
26 dB Emission Bandwidth / 6 dB Emission Bandwidth /	0.96 %
Maximum Conducted Output Power / Average Output Power	1.4 dB
Burst Rate	0.10 %
Maximum Power Spectral Density	2.6 dB
Spurious Emission (Conducted)	2.6 dB

3.5 Test Location

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*NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967 / ISED Lab Company Number: 2973C

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Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

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

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

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

Mode	Remarks*
IEEE 802.11a (11a)	6 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)	MCS 0, PN9
IEEE 802.11n 40 MHz BW (11n-40)	MCS 0, PN9
*Transmitting duty was 100 % on all tests.	
*The worst condition was determined based on the test result of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; Power settings: 10 Software: 1.1.5 *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	Tested Frequency			
		Lower Band	Middle Band	Additional Band	Upper Band
Conducted emission, Radiated Spurious Emission (Below 1 GHz), Conducted Spurious Emission	11n-20 Tx *1)	-	-	5700 MHz	-
26 dB Emission Bandwidth	11a Tx 11n-20 Tx	-	5260 MHz 5300 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz	-
	11n-40 Tx	-	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz	-
99 % Occupied Bandwidth, Maximum Conducted Output Power, Maximum Power Spectral Density	11a Tx 11n-20 Tx	5180 MHz 5220 MHz 5240 MHz	5260 MHz 5300 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz	-
	11n-40 Tx	5190 MHz 5230 MHz	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz	-
Radiated Spurious Emission (Above 1 GHz)	11n-20 Tx *2)	5180 MHz	5260 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz	-
	11n-40 Tx	5190 MHz	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz	-
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test.					
*2) Since 11a and 11n-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest peak output power					

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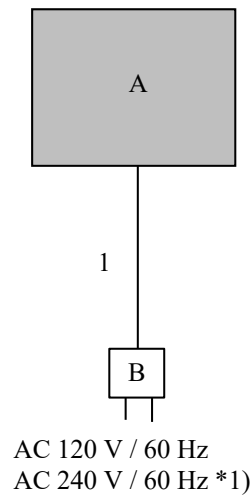
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4.2 Configuration and peripherals



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

*1) Conducted emission test only

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	POCKETALK S	PTS	868792030071602*AT 868792030072428*RE	SOURCENEXT CORPORATION	EUT
B	AC Adaptor	UB-305-0510	K10-1126479	UNIFIVE	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	1.0	Shielded	Shielded	-

*AT: Antenna Terminal Conducted Tests, RE: Radiated Spurious Emission test

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane 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.

1) 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 Semi Anechoic Chamber.

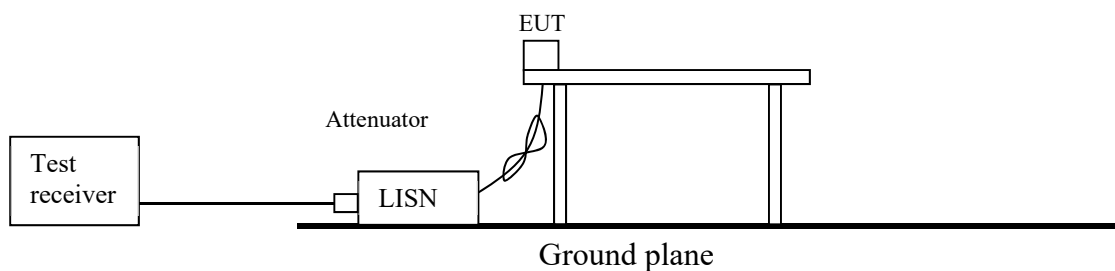
The EUT was connected to a LISN (AMN).

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

Figure 1: Test Setup



SECTION 6: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >

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

< Above 1GHz >

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

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

Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

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:

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

Test Antennas are used as below;

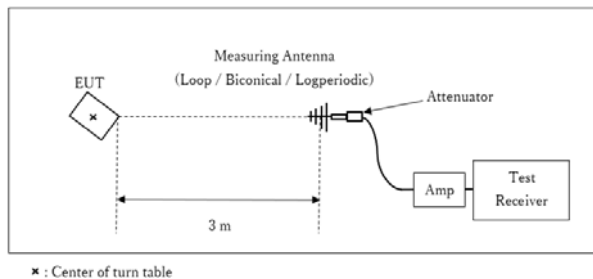
Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

Frequency	Below 1 GHz	Above 1 GHz	
Instrument used	Test Receiver	Spectrum Analyzer	
Detector	QP	Peak	Average
IF Bandwidth	BW: 120 kHz	RBW: 1 MHz VBW: 3 MHz	Method AD *1) RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: ≥ 100 traces If duty cycle was less than 98%, a duty factor was added to the results.

*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".

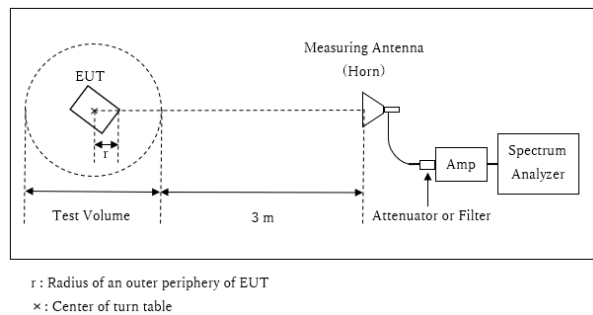
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz - 10 GHz



Distance Factor: $20 \times \log (4.0 \text{ m} / 3.0 \text{ m}) = 2.5 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 4.0 \text{ m}$

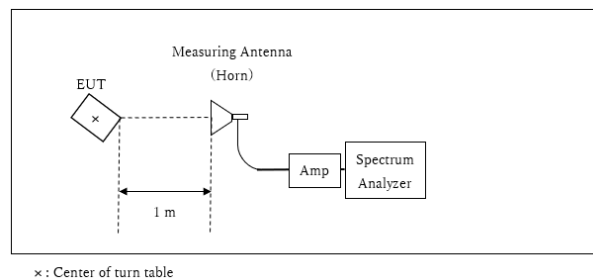
Test Volume : 2.0 m

(Test Volume has been calibrated based on CISPR 16-1-4.)

r = 0.0 m

* The test was performed with r = 0.0 m since EUT is small and it was the rather conservative condition.

10 GHz - 40 GHz



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

*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.

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

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SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

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

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used and Test method
26 dB Bandwidth	Enough to capture the emission	Close to 1 % of EBW	> RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 % to 5 % of OBW	≥ 3 RBW	Auto	Peak	Max Hold	Spectrum Analyzer
6 dB Bandwidth	Enough to capture the emission	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Conducted Output Power	-	-	-	Auto	Average	-	Power Meter (Sensor: 80 MHz BW) (Method PM)
Maximum Power Spectral Density	Encompass the entire EBW	1 MHz	≥ 3 RBW	Auto	RMS Power Averaging (200 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*2)	9 kHz - 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz - 30 MHz	9.1 kHz	27 kHz				

* 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".

*1) Peak hold was applied as Worst-case measurement.

*2) In the frequency range below 30 MHz, RBW was narrowed to separate the noise contents.

Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart. (9 kHz-150 kHz: RBW = 200 Hz, 150 kHz-30 MHz: RBW = 9.1 kHz)

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

The equipment and cables were not used for factor 0 dB of the data sheets.

Test data : APPENDIX

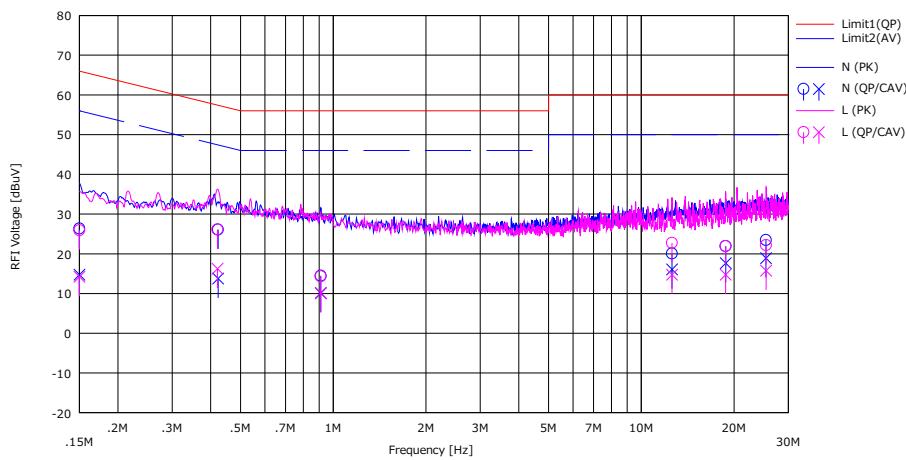
Test result : Pass

APPENDIX 1: Test data

Conducted Emission (AC 120 V)

Report No. 13274888H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.4
Date December 11, 2019
Temperature / Humidity 23 deg. C / 30 % RH
Engineer Yuta Moriya
Mode Tx 11n-20 5700 MHz

Limit : FCC_Part 15 Subpart C(15.207)



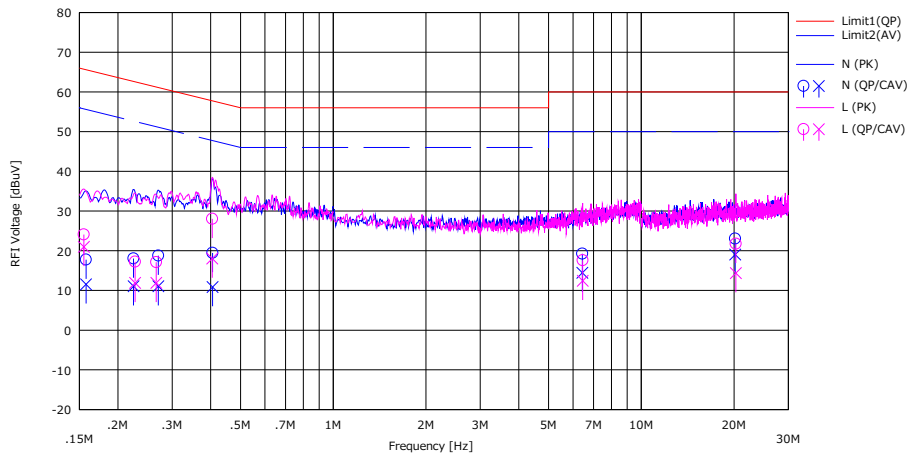
No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<CAV> [dBuV]			<QP> [dBuV]	<CAV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	12.80	1.20	0.15	13.38	26.33	14.73	66.00	56.00	39.67	41.27	N	
2	0.42285	12.50	0.20	0.15	13.41	26.06	13.76	57.40	47.40	31.34	33.64	N	
3	0.91160	0.80	-3.60	0.19	13.45	14.44	10.04	56.00	46.00	41.56	35.96	N	
4	12.58000	4.50	0.50	1.62	13.92	20.04	16.04	60.00	50.00	39.96	33.96	N	
5	18.80000	5.00	0.70	2.86	14.07	21.93	17.63	60.00	50.00	38.07	32.37	N	
6	25.40000	5.00	0.50	4.21	14.20	23.41	18.91	60.00	50.00	36.59	31.09	N	
7	0.15000	12.30	0.64	0.20	13.38	25.88	14.22	66.00	56.00	40.12	41.78	L	
8	0.42115	12.47	2.60	0.21	13.41	26.09	16.22	57.40	47.40	31.31	31.18	L	
9	0.91075	0.60	-3.50	0.25	13.45	14.30	10.20	56.00	46.00	41.70	35.80	L	
10	12.58000	7.10	-0.90	1.71	13.92	22.73	14.73	60.00	50.00	37.27	35.27	L	
11	18.78000	4.90	-2.30	2.94	14.07	21.91	14.71	60.00	50.00	38.09	35.29	L	
12	25.42000	3.70	-2.70	4.26	14.20	22.16	15.76	60.00	50.00	37.84	34.24	L	

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

Conducted Emission (AC 240 V)

Report No. 13274888H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.4
Date December 11, 2019
Temperature / Humidity 23 deg. C / 30 % RH
Engineer Yuta Moriya
Mode Tx 11n-20 5700 MHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		[dBuV]	[dBuV]			[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15765	4.20	-2.00	0.15	13.38	17.73	11.53	65.60	55.60	47.87	44.07	N	
2	0.22480	4.50	-2.50	0.15	13.39	18.04	11.04	62.60	52.60	44.56	41.56	N	
3	0.27070	5.20	-2.50	0.15	13.40	18.75	11.05	61.10	51.10	42.35	40.05	N	
4	0.40685	5.90	-2.70	0.15	13.41	19.46	10.86	57.70	47.70	38.24	36.84	N	
5	6.43600	4.80	0.00	0.70	13.74	19.24	14.44	60.00	50.00	40.76	35.56	N	
6	20.18000	5.80	1.80	3.14	14.10	23.04	19.04	60.00	50.00	36.96	30.96	N	
7	0.15610	10.50	7.40	0.20	13.38	24.08	20.98	65.70	55.70	41.62	34.72	L	
8	0.22735	3.60	-1.70	0.21	13.39	17.20	11.90	62.50	52.50	45.30	40.60	L	
9	0.26645	3.50	-1.70	0.22	13.40	17.12	11.92	61.20	51.20	44.08	39.28	L	
10	0.40600	14.40	4.40	0.21	13.41	28.02	18.02	57.80	47.80	29.78	29.78	L	
11	6.45400	3.08	-2.10	0.78	13.74	17.60	12.42	60.00	50.00	42.40	37.58	L	
12	20.28000	4.40	-3.00	3.24	14.11	21.75	14.35	60.00	50.00	38.25	35.65	L	

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

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx

11a

Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5180	-	17101.6
5220	-	17206.4
5240	-	16966.9
5260	19.634	17026.1
5300	19.656	17029.9
5320	19.687	17095.2
5500	19.624	16993.5
5580	19.724	17103.5
5700	19.656	17109.5

11n-20

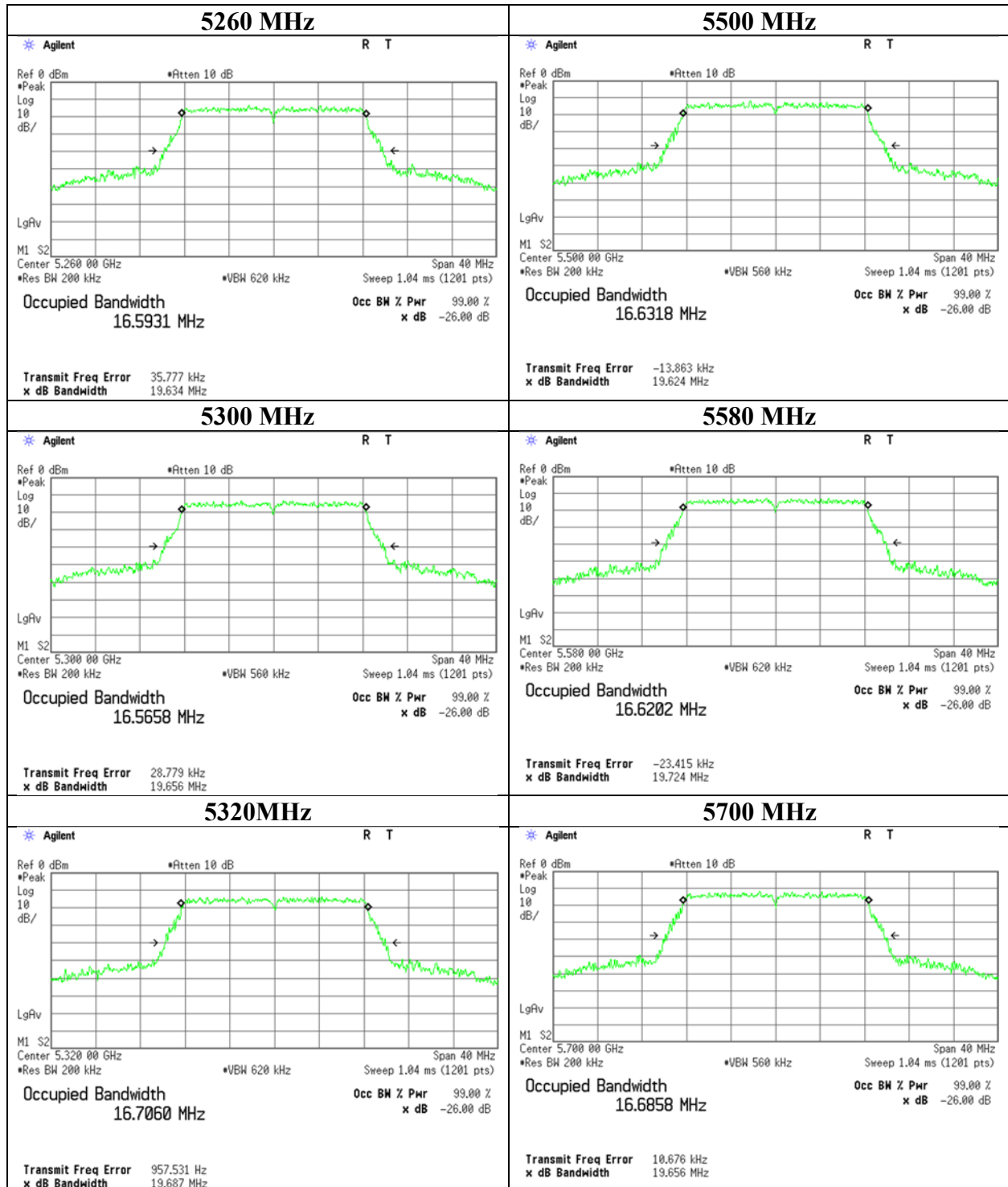
Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5180	-	17905.2
5220	-	17901.2
5240	-	17908.9
5260	19.819	17915.7
5300	19.759	17887.5
5320	19.829	17887.8
5500	19.805	17894.1
5580	19.821	17914.0
5700	19.763	17903.0

11n-40

Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5190	-	36306.4
5230	-	36361.6
5270	39.676	36305.6
5310	39.855	36301.6
5510	39.525	36359.8
5550	39.982	36305.3
5670	40.072	36325.6

26 dB Emission Bandwidth

11a



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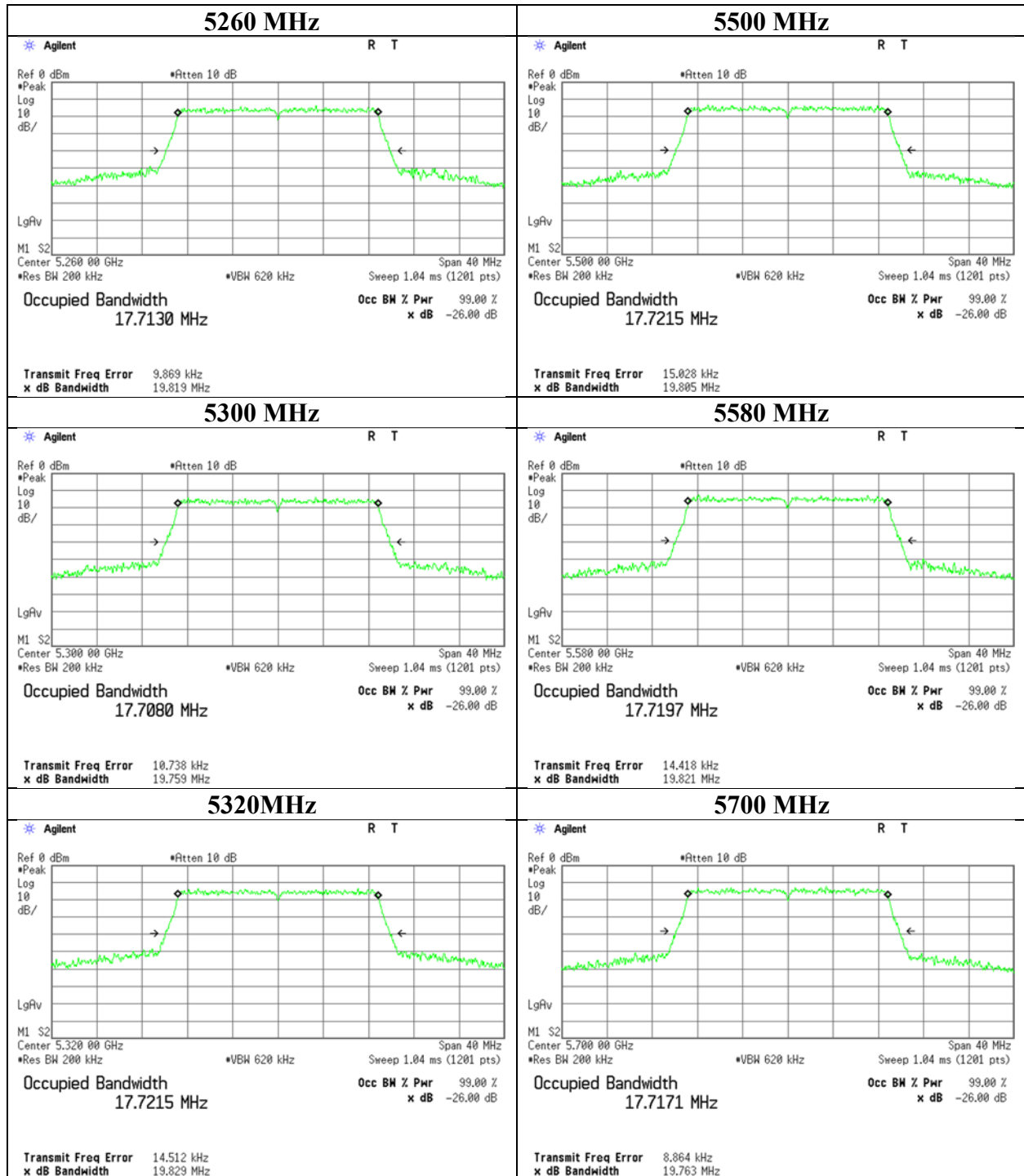
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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26 dB Emission Bandwidth

11n-20



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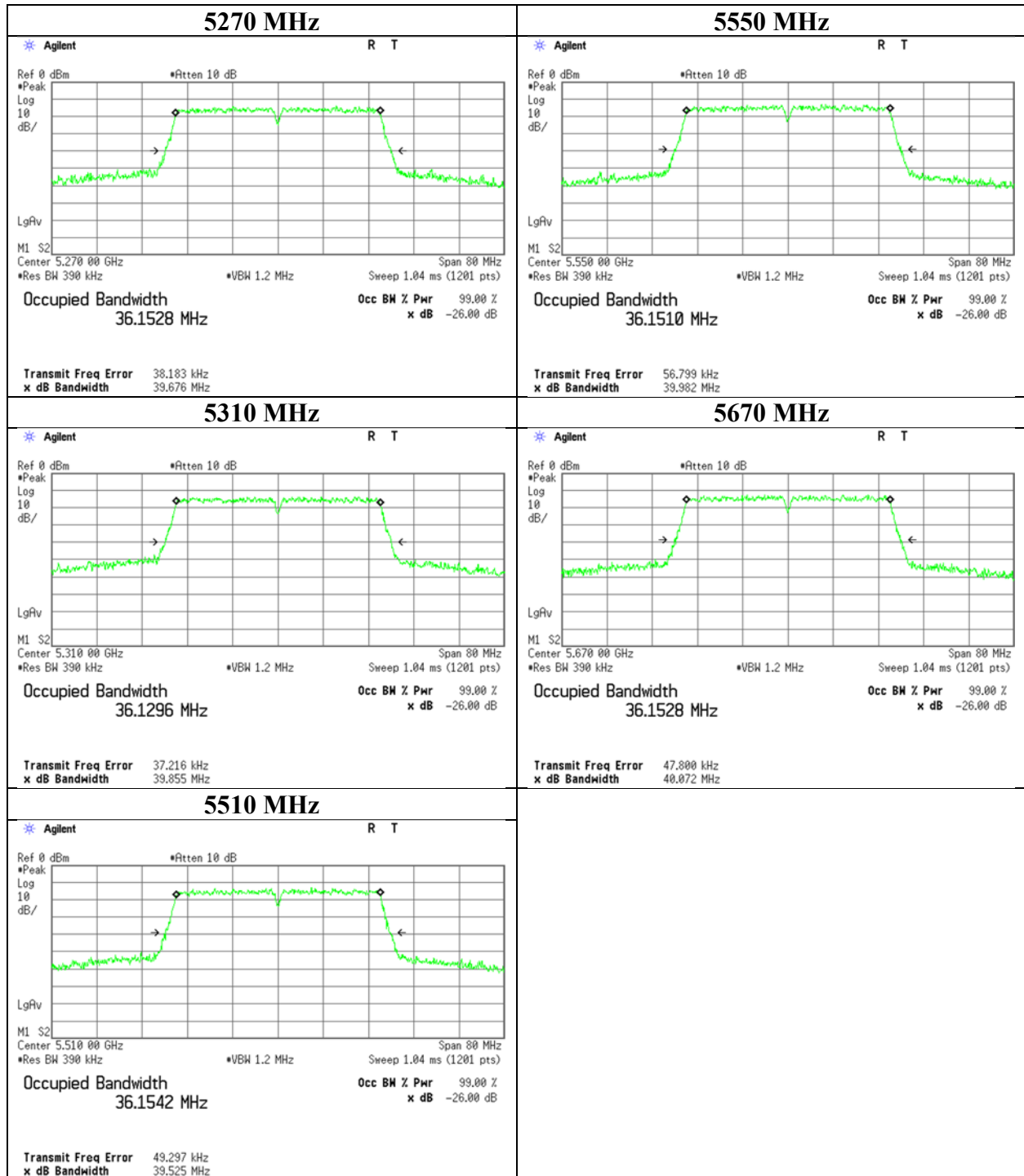
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Facsimile : +81 596 24 8124

26 dB Emission Bandwidth

11n-40



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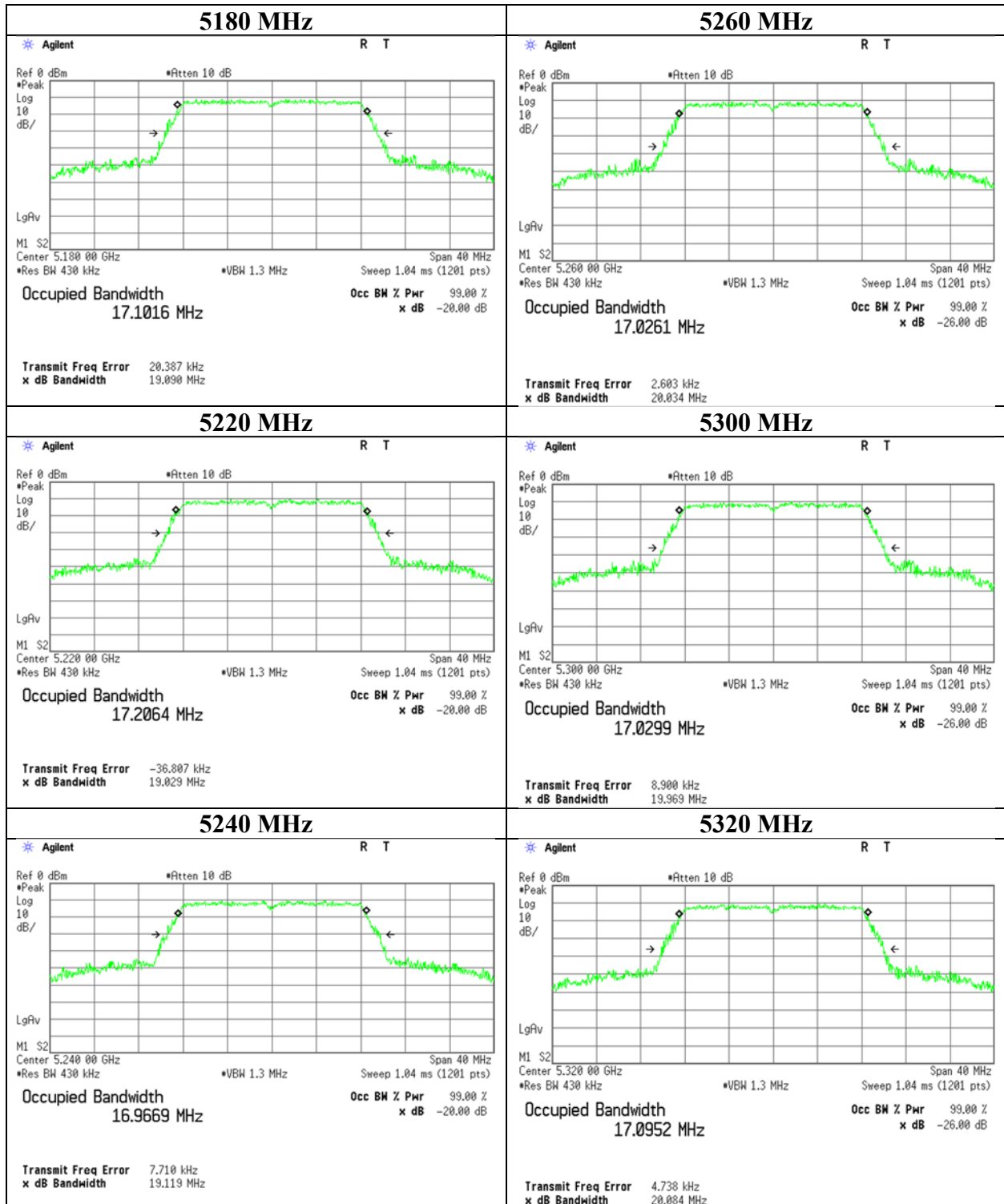
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99 % Occupied Bandwidth

11a



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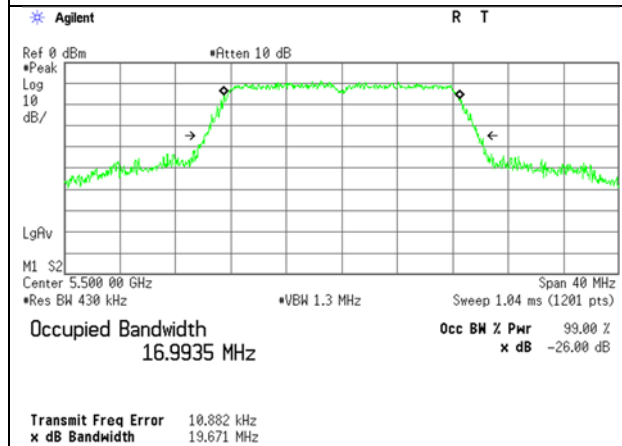
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

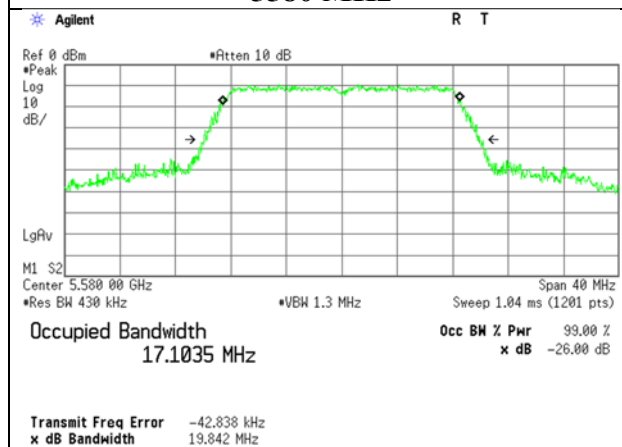
99 % Occupied Bandwidth

11a

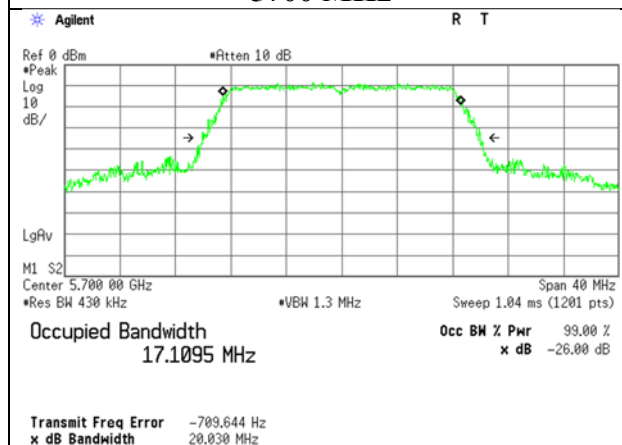
5500 MHz



5580 MHz



5700 MHz



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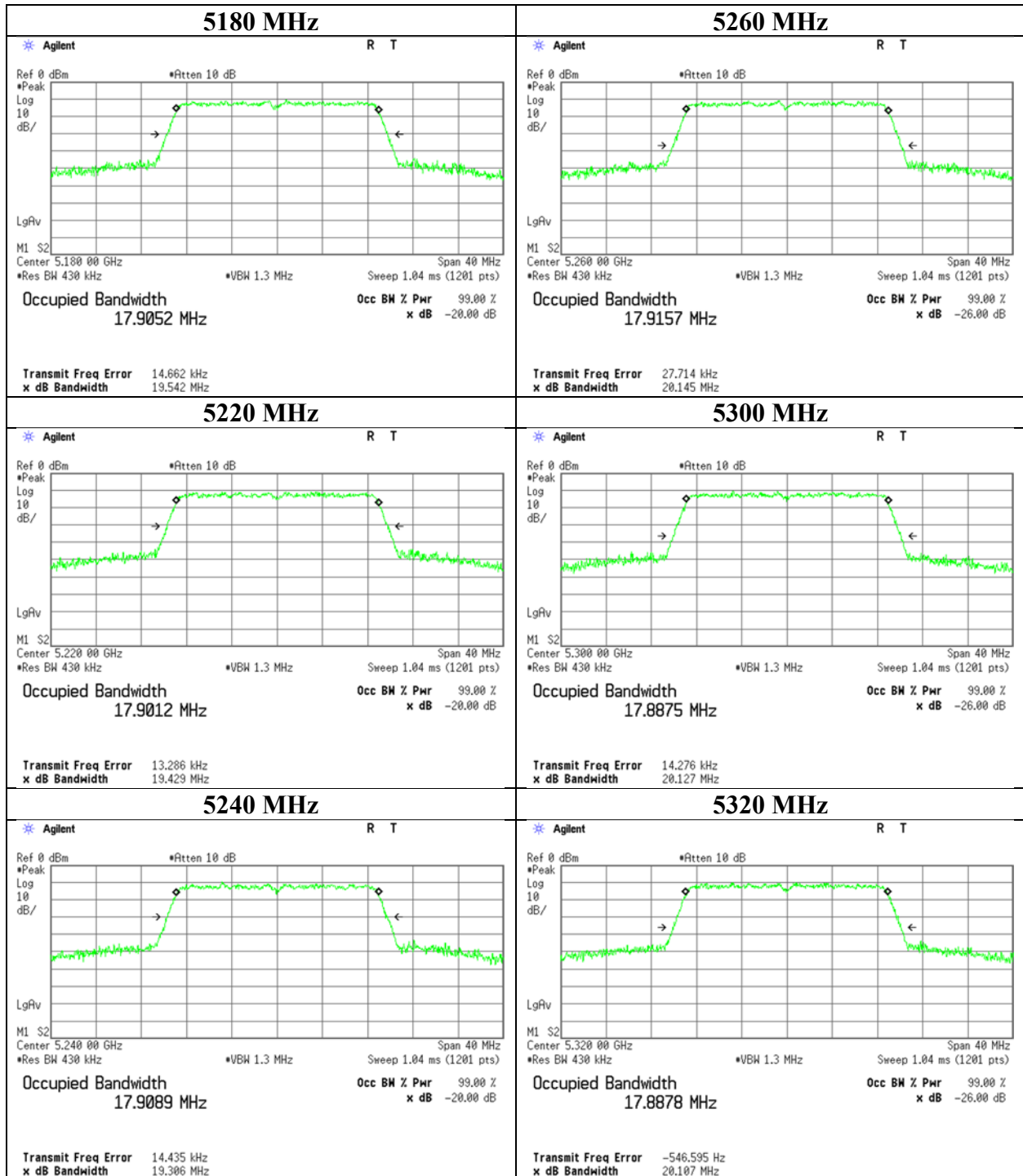
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99 % Occupied Bandwidth

11n-20



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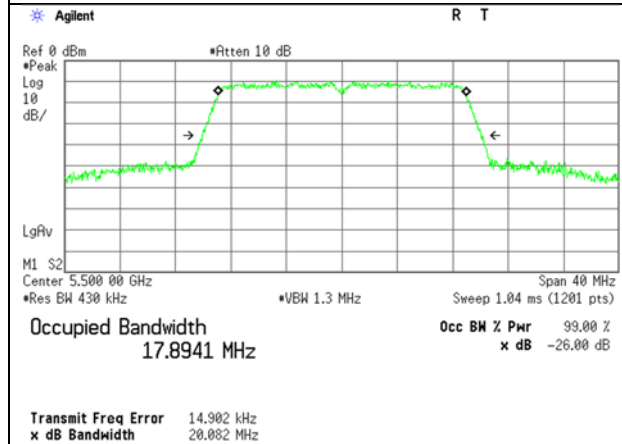
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

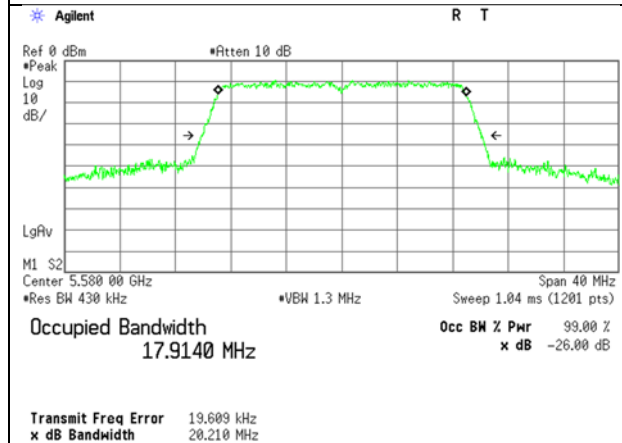
99 % Occupied Bandwidth

11n-20

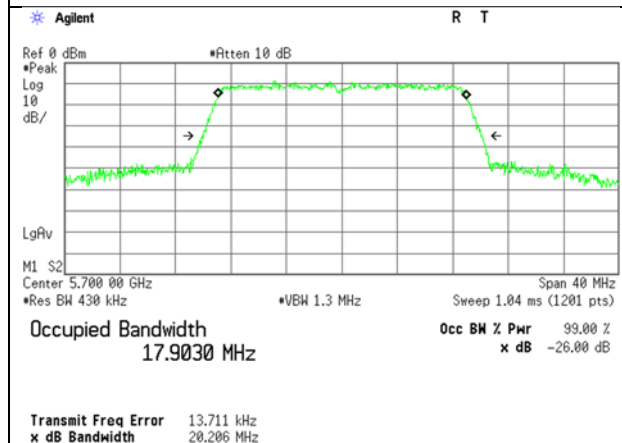
5500 MHz



5580 MHz



5700 MHz



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Ise EMC Lab.

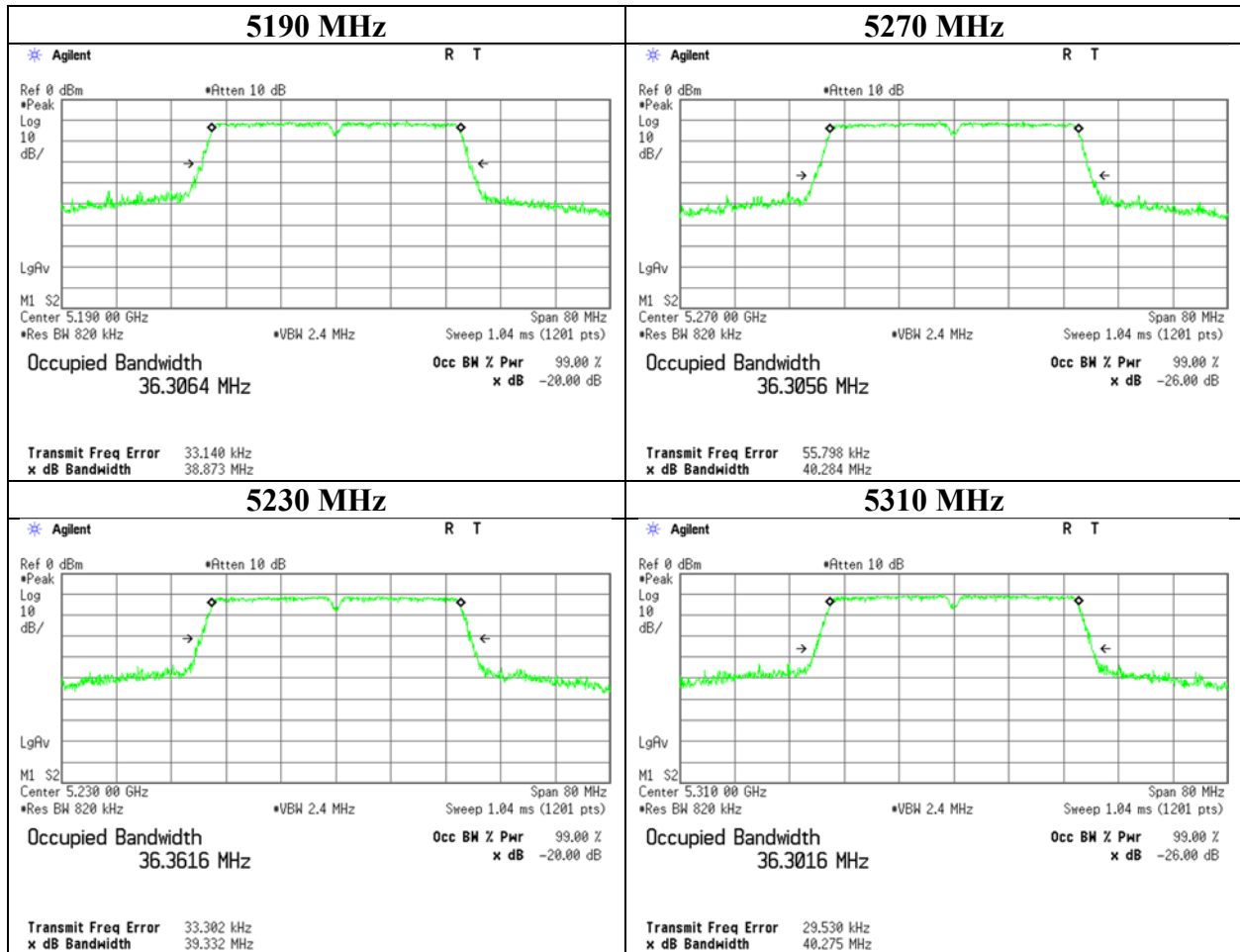
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99 % Occupied Bandwidth

11n-40



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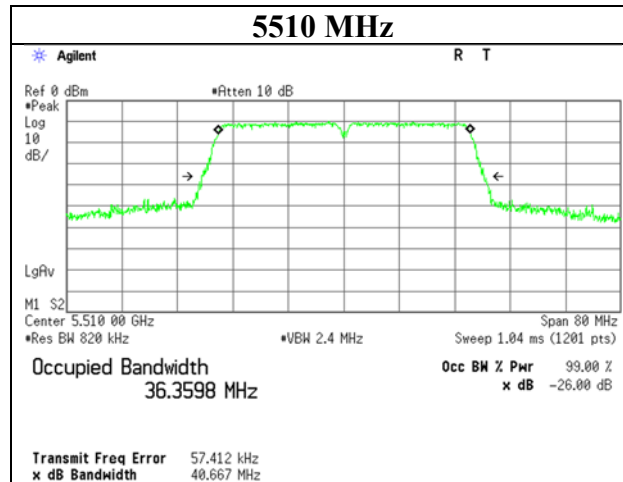
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

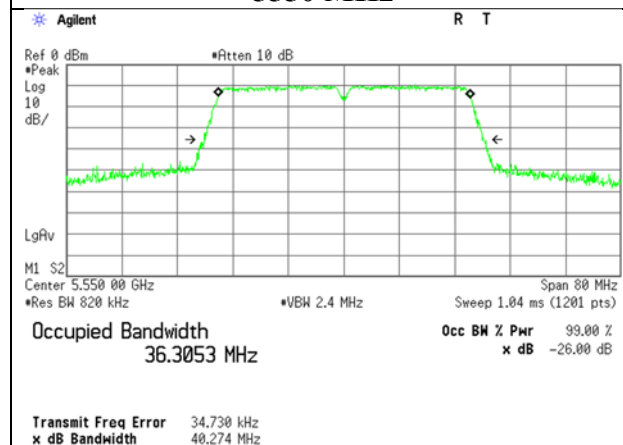
99 % Occupied Bandwidth

11n-40

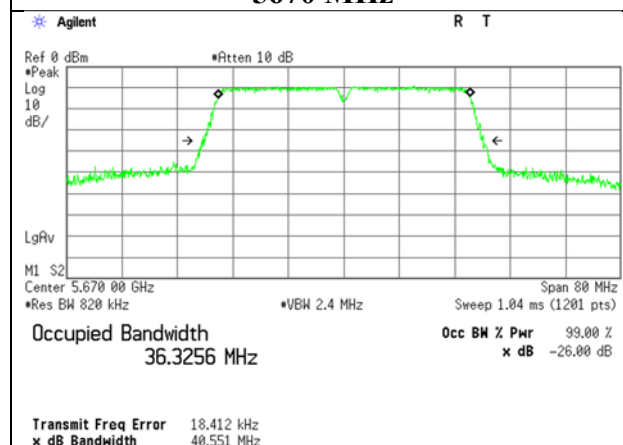
5510 MHz



5550 MHz



5670 MHz



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Telephone : +81 596 24 8999

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Maximum Conducted Output Power

Report No.	13274888H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	November 21, 2019
Temperature / Humidity	23 deg. C / 36 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a

11a

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted Power				e.i.r.p.			
								Result	Limit	Margin		Result	Limit	Margin	
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-3.38	1.00	10.10	0.00	0.36	-	17.102	7.72	5.92	23.97	16.25	8.08	6.43	29.97	21.89
5220	-3.26	1.00	10.10	0.00	0.36	-	17.206	7.84	6.08	23.97	16.13	8.20	6.61	29.97	21.77
5240	-3.36	1.00	10.10	0.00	0.36	-	16.967	7.74	5.94	23.97	16.23	8.10	6.46	29.97	21.87
5260	-3.24	1.00	10.10	0.00	0.36	19.634	17.026	7.86	6.11	23.93	16.07	8.22	6.64	29.97	21.75
5300	-2.88	1.00	10.10	0.00	0.36	19.656	17.030	8.22	6.64	23.93	15.71	8.58	7.21	29.97	21.39
5320	-2.97	1.00	10.11	0.00	0.36	19.687	17.095	8.14	6.52	23.94	15.80	8.50	7.08	29.97	21.47
5500	-2.79	1.00	10.11	0.00	0.36	19.624	16.994	8.32	6.79	23.92	15.60	8.68	7.38	29.97	21.29
5580	-2.11	1.00	10.11	0.00	0.36	19.724	17.104	9.00	7.94	23.94	14.94	9.36	8.63	29.97	20.61
5700	-1.62	1.00	10.12	0.00	0.36	19.656	17.110	9.50	8.91	23.93	14.43	9.86	9.68	29.97	20.11

Sample Calculation:

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

e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Maximum Conducted Output Power

Report No.	13274888H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	November 21, 2019
Temperature / Humidity	23 deg. C / 36 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-20

11n-20

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted Power				e.i.r.p.			
								Result	Limit	Margin		Result	Limit	Margin	
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-3.38	1.00	10.10	0.00	0.36	-	17.905	7.72	5.92	23.97	16.25	8.08	6.43	29.97	21.89
5220	-3.26	1.00	10.10	0.00	0.36	-	17.901	7.84	6.08	23.97	16.13	8.20	6.61	29.97	21.77
5240	-3.33	1.00	10.10	0.00	0.36	-	17.909	7.77	5.98	23.97	16.20	8.13	6.50	29.97	21.84
5260	-3.23	1.00	10.10	0.00	0.36	19.819	17.916	7.87	6.12	23.97	16.10	8.23	6.65	29.97	21.74
5300	-2.87	1.00	10.10	0.00	0.36	19.759	17.888	8.23	6.65	23.95	15.72	8.59	7.23	29.97	21.38
5320	-2.97	1.00	10.11	0.00	0.36	19.829	17.888	8.14	6.52	23.97	15.83	8.50	7.08	29.97	21.47
5500	-2.78	1.00	10.11	0.00	0.36	19.805	17.894	8.33	6.81	23.96	15.63	8.69	7.40	29.97	21.28
5580	-2.10	1.00	10.11	0.00	0.36	19.821	17.914	9.01	7.96	23.97	14.96	9.37	8.65	29.97	20.60
5700	-1.61	1.00	10.12	0.00	0.36	19.763	17.903	9.51	8.93	23.95	14.44	9.87	9.71	29.97	20.10

Sample Calculation:

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

e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

UL Japan, Inc.

Ise EMC Lab.

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Maximum Conducted Output Power

Report No.	13274888H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	November 21, 2019
Temperature / Humidity	23 deg. C / 36 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-40

11n-40

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted Power				e.i.r.p.			
								Result	Limit	Margin		Result	Limit	Margin	
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5190	-3.24	1.00	10.10	0.00	0.36	-	36.306	7.86	6.11	23.97	16.11	8.22	6.64	29.97	21.75
5230	-3.09	1.00	10.10	0.00	0.36	-	16.600	8.01	6.32	23.97	15.96	8.37	6.87	29.97	21.60
5270	-3.02	1.00	10.10	0.00	0.36	39.676	36.306	8.08	6.43	23.97	15.89	8.44	6.98	29.97	21.53
5310	-2.94	1.00	10.11	0.00	0.36	39.855	36.302	8.17	6.56	23.97	15.80	8.53	7.13	29.97	21.44
5510	-2.54	1.00	10.11	0.00	0.36	39.525	36.360	8.57	7.19	23.97	15.40	8.93	7.82	29.97	21.04
5550	-2.19	1.00	10.11	0.00	0.36	39.982	36.305	8.92	7.80	23.97	15.05	9.28	8.47	29.97	20.69
5670	-1.72	1.00	10.12	0.00	0.36	40.072	36.326	9.40	8.71	23.97	14.57	9.76	9.46	29.97	20.21

Sample Calculation:

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

e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

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Maximum Conducted Output Power

Report No.	13274888H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	November 20, 2019
Temperature / Humidity	24 deg. C / 30 % RH
Engineer	Takafumi Noguchi
Mode	Tx

5500 MHz

Mode	Rate	Reading	Remarks
	Mbps	[dBm]	
11a	6	-3.02	*
	9	-3.16	
	12	-4.13	
	18	-3.95	
	24	-3.19	
	36	-3.24	
	48	-4.28	
	54	-4.32	

5500 MHz

Mode	MCS Number	Reading	Remarks
		[dBm]	
11n-20	0	-3.00	*
	1	-3.02	
	2	-3.04	
	3	-3.14	
	4	-3.14	
	5	-4.31	
	6	-4.50	
	7	-4.41	

5510 MHz

Mode	MCS Number	Reading	Remarks
		[dBm]	
11n-40	0	-2.85	*
	1	-2.90	
	2	-2.94	
	3	-3.00	
	4	-3.01	
	5	-4.07	
	6	-3.98	
	7	-4.08	

* Worst rate

*1)The test was conducted by the use of Gate function.

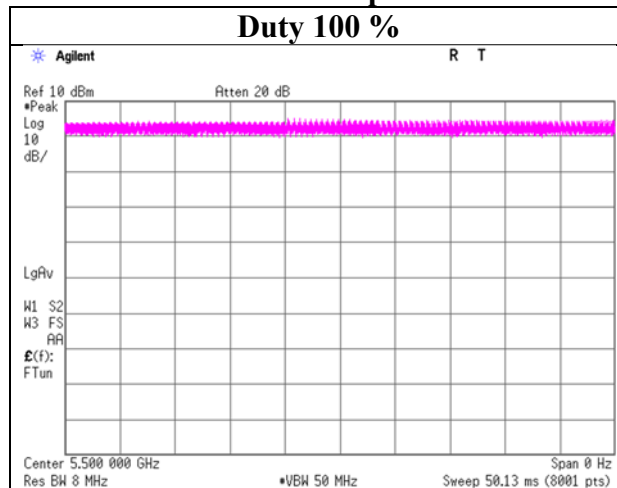
All comparison were carried out on same frequency and measurement factors.

Burst rate confirmation

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx

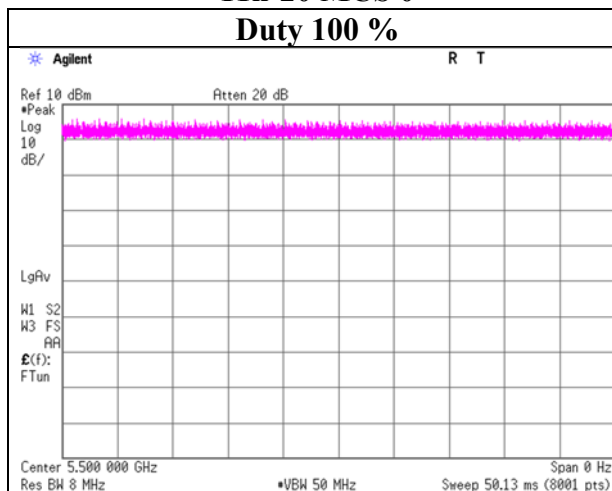
11a 6 Mbps

Duty 100 %



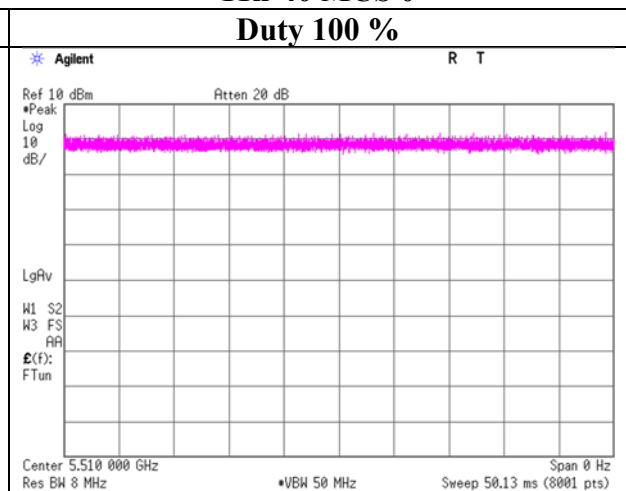
11n-20 MCS 0

Duty 100 %



11n-40 MCS 0

Duty 100 %



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Maximum Power Spectral Density

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11a

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-14.15	1.00	10.10	0.00	0.36	0.00	-3.05	11.00	14.05	-2.69	17.00	19.69
5220	-13.44	1.00	10.10	0.00	0.36	0.00	-2.34	11.00	13.34	-1.98	17.00	18.98
5240	-13.65	1.00	10.10	0.00	0.36	0.00	-2.55	11.00	13.55	-2.19	17.00	19.19
5260	-13.88	1.00	10.10	0.00	0.36	0.00	-2.78	11.00	13.78	-2.42	17.00	19.42
5300	-13.34	1.00	10.10	0.00	0.36	0.00	-2.24	11.00	13.24	-1.88	17.00	18.88
5320	-13.82	1.00	10.11	0.00	0.36	0.00	-2.71	11.00	13.71	-2.35	17.00	19.35
5500	-12.80	1.00	10.11	0.00	0.36	0.00	-1.69	11.00	12.69	-1.33	17.00	18.33
5580	-12.88	1.00	10.11	0.00	0.36	0.00	-1.77	11.00	12.77	-1.41	17.00	18.41
5700	-12.25	1.00	10.12	0.00	0.36	0.00	-1.13	11.00	12.13	-0.77	17.00	17.77

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

RBW Correction Factor = $10 * \log(\text{Specified bandwidth} / \text{Measured bandwidth})$

PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

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Maximum Power Spectral Density

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11n-20

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-14.00	1.00	10.10	0.00	0.36	0.00	-2.90	11.00	13.90	-2.54	17.00	19.54
5220	-14.10	1.00	10.10	0.00	0.36	0.00	-3.00	11.00	14.00	-2.64	17.00	19.64
5240	-13.88	1.00	10.10	0.00	0.36	0.00	-2.78	11.00	13.78	-2.42	17.00	19.42
5260	-13.94	1.00	10.10	0.00	0.36	0.00	-2.84	11.00	13.84	-2.48	17.00	19.48
5300	-13.81	1.00	10.10	0.00	0.36	0.00	-2.71	11.00	13.71	-2.35	17.00	19.35
5320	-13.39	1.00	10.11	0.00	0.36	0.00	-2.28	11.00	13.28	-1.92	17.00	18.92
5500	-13.37	1.00	10.11	0.00	0.36	0.00	-2.26	11.00	13.26	-1.90	17.00	18.90
5580	-12.68	1.00	10.11	0.00	0.36	0.00	-1.57	11.00	12.57	-1.21	17.00	18.21
5700	-12.88	1.00	10.12	0.00	0.36	0.00	-1.76	11.00	12.76	-1.40	17.00	18.40

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

RBW Correction Factor = $10 * \log(\text{Specified bandwidth} / \text{Measured bandwidth})$

PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

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Maximum Power Spectral Density

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11n-40

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-16.63	1.00	10.10	0.00	0.36	0.00	-5.53	11.00	16.53	-5.17	17.00	22.17
5230	-16.92	1.00	10.10	0.00	0.36	0.00	-5.82	11.00	16.82	-5.46	17.00	22.46
5270	-17.22	1.00	10.10	0.00	0.36	0.00	-6.12	11.00	17.12	-5.76	17.00	22.76
5310	-16.29	1.00	10.11	0.00	0.36	0.00	-5.18	11.00	16.18	-4.82	17.00	21.82
5510	-16.27	1.00	10.11	0.00	0.36	0.00	-5.16	11.00	16.16	-4.80	17.00	21.80
5550	-16.00	1.00	10.11	0.00	0.36	0.00	-4.89	11.00	15.89	-4.53	17.00	21.53
5670	-15.24	1.00	10.12	0.00	0.36	0.00	-4.12	11.00	15.12	-3.76	17.00	20.76

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

RBW Correction Factor = $10 * \log(\text{Specified bandwidth} / \text{Measured bandwidth})$

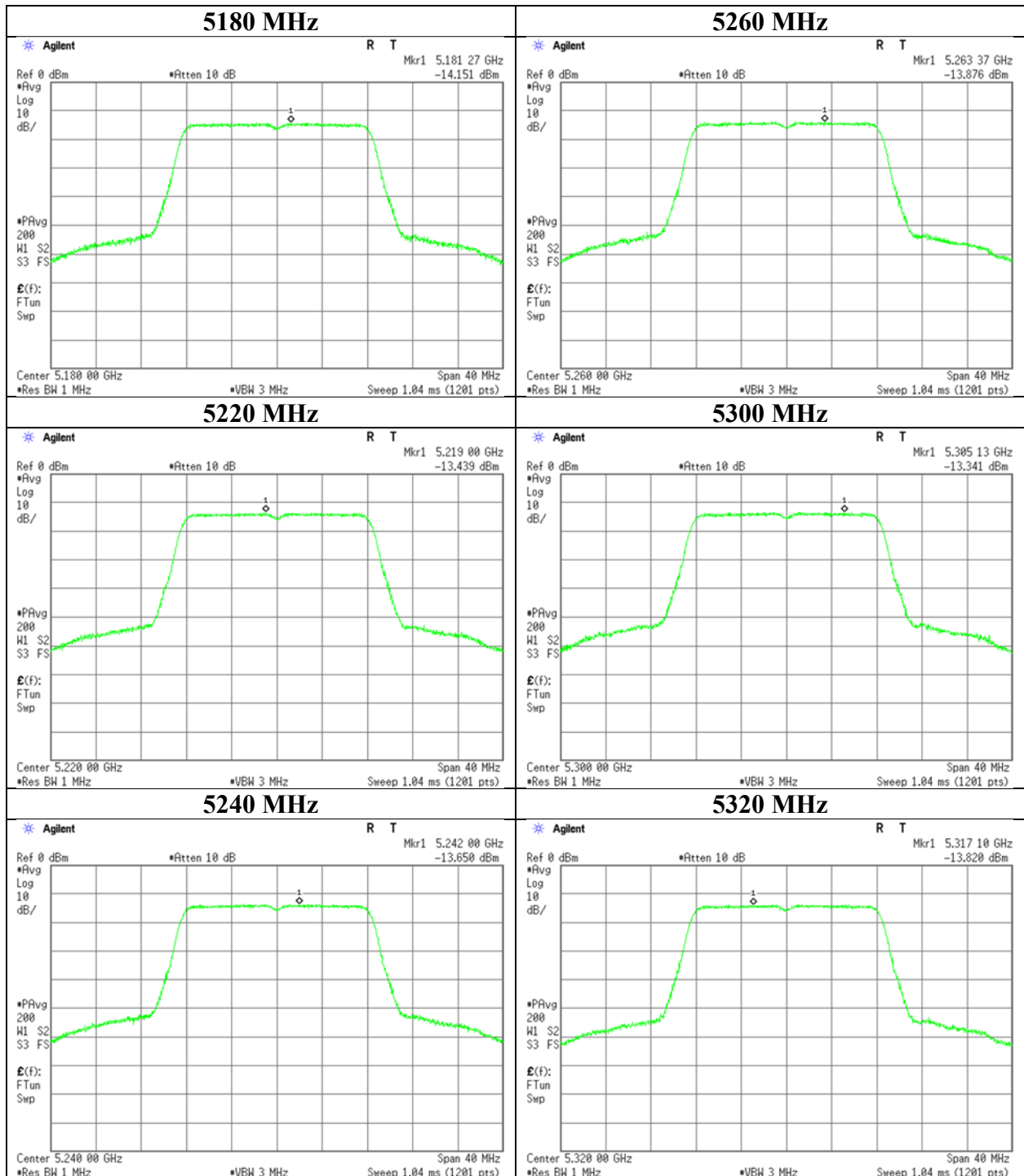
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

Maximum Power Spectral Density

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11a

11a



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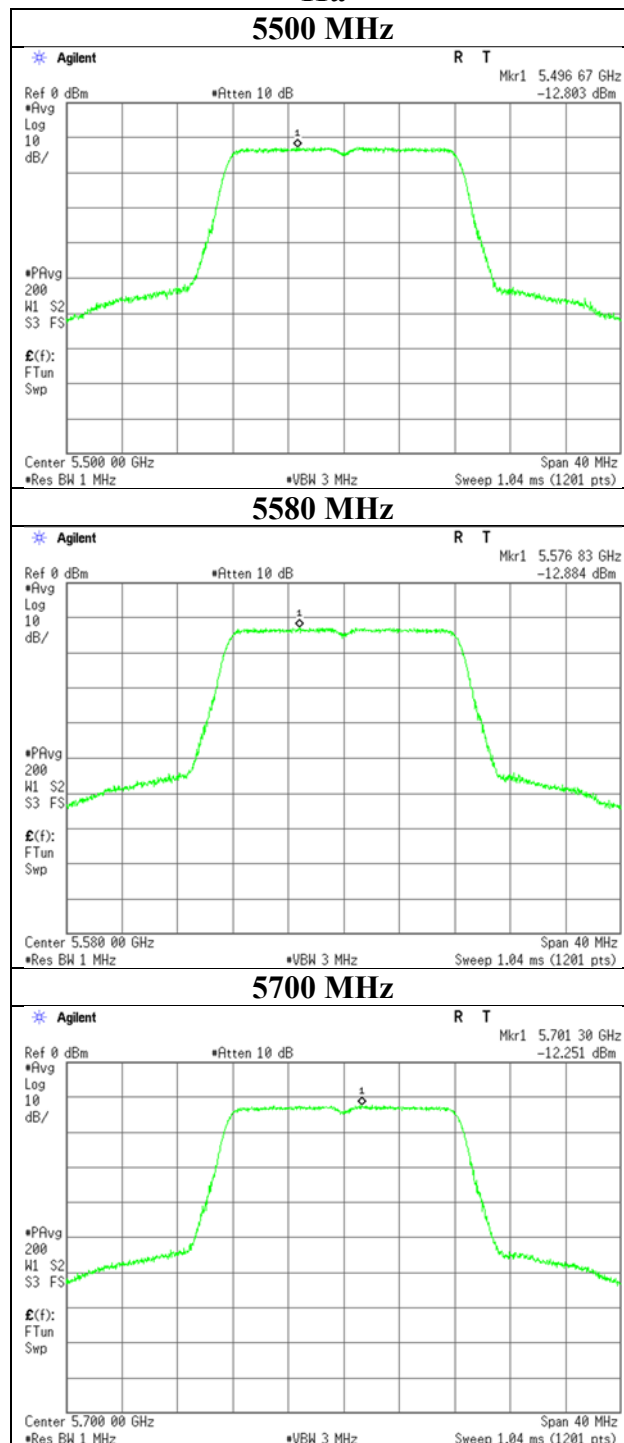
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Facsimile : +81 596 24 8124

Maximum Power Spectral Density

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11a

11a



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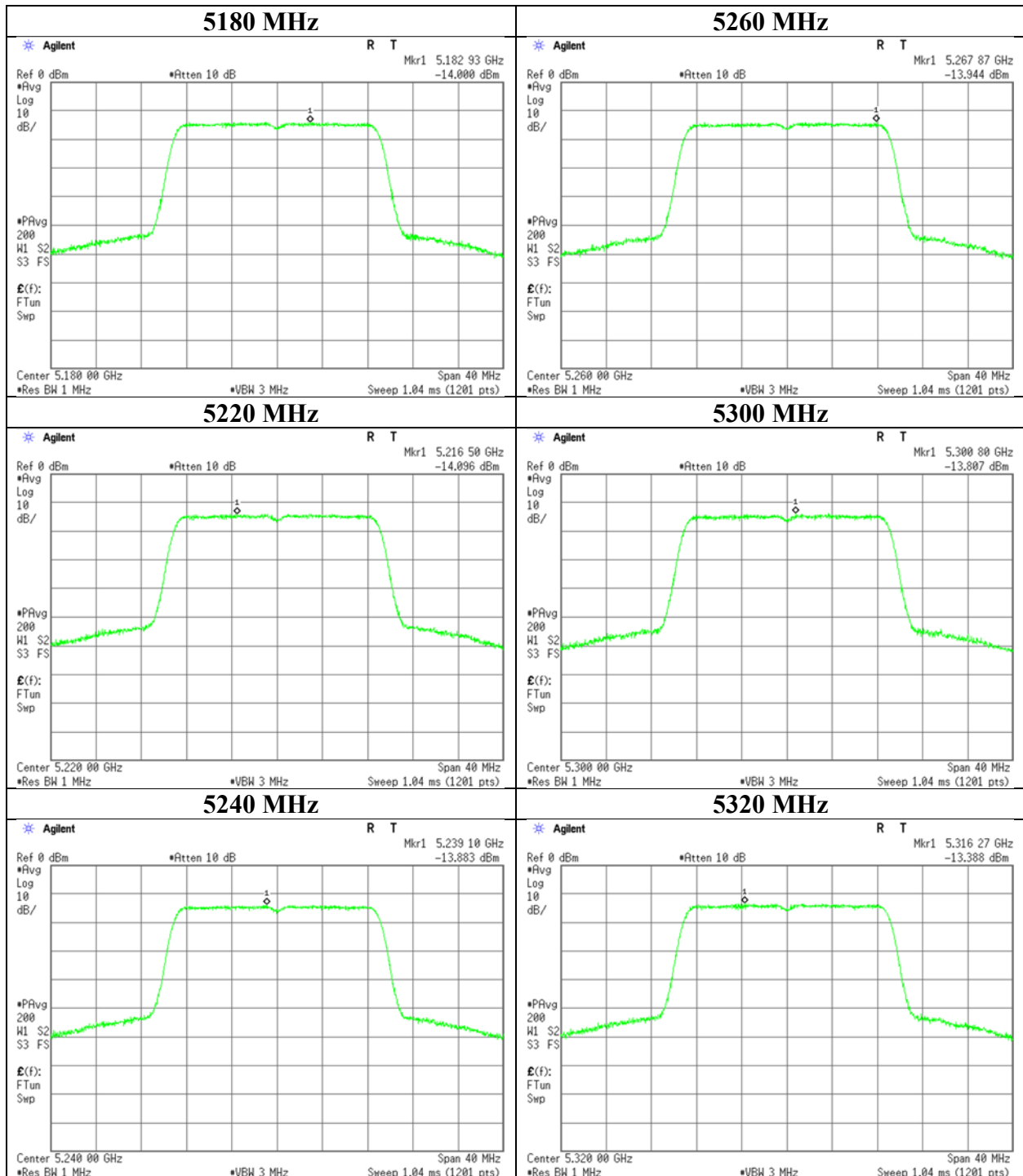
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Maximum Power Spectral Density

Report No.	13274888H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	November 21, 2019
Temperature / Humidity	23 deg. C / 36 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-20

11n-20



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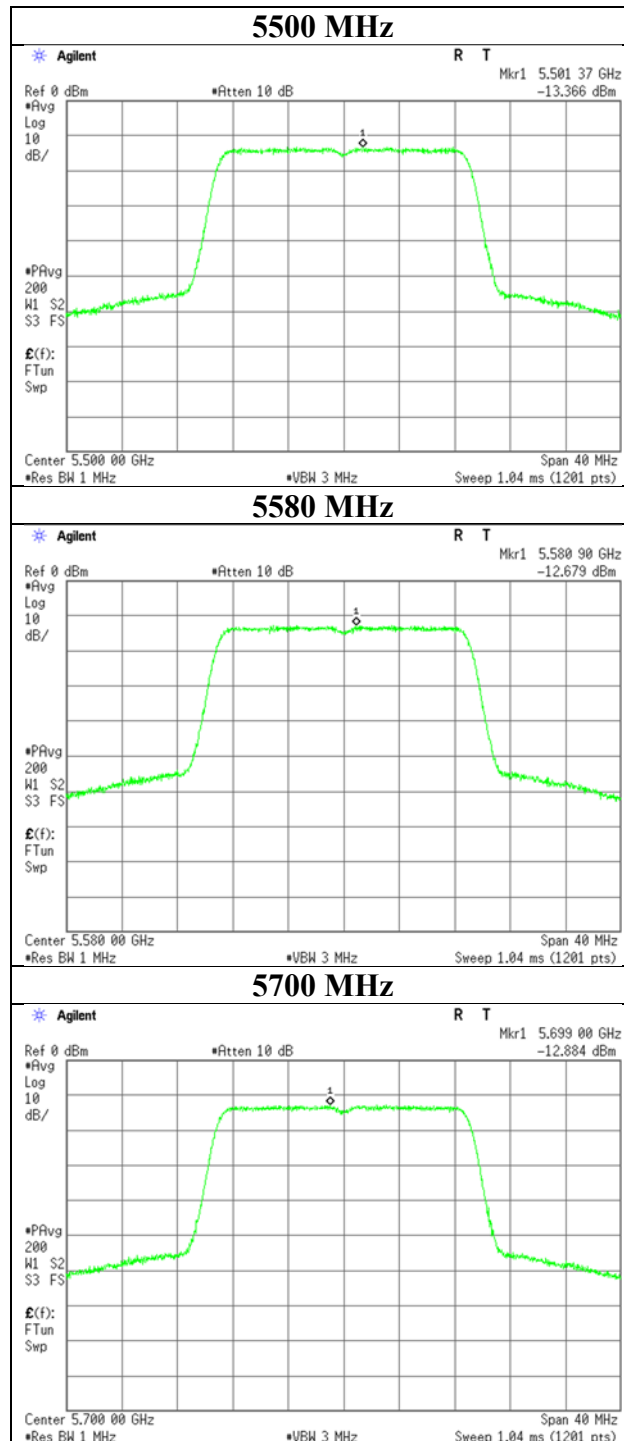
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Maximum Power Spectral Density

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11n-20

11n-20



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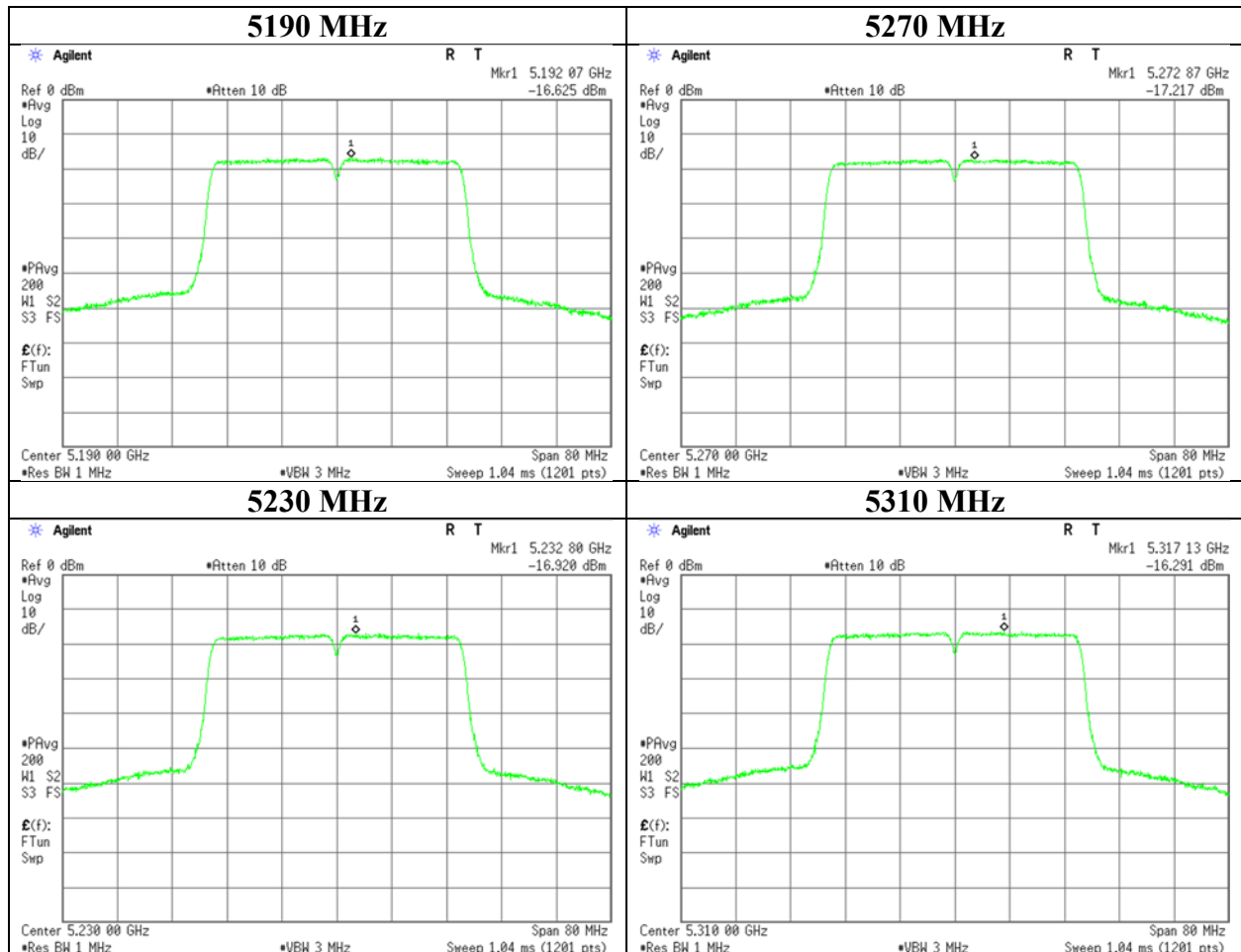
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Maximum Power Spectral Density

Report No.	13274888H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	November 21, 2019
Temperature / Humidity	23 deg. C / 36 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-40

11n-40



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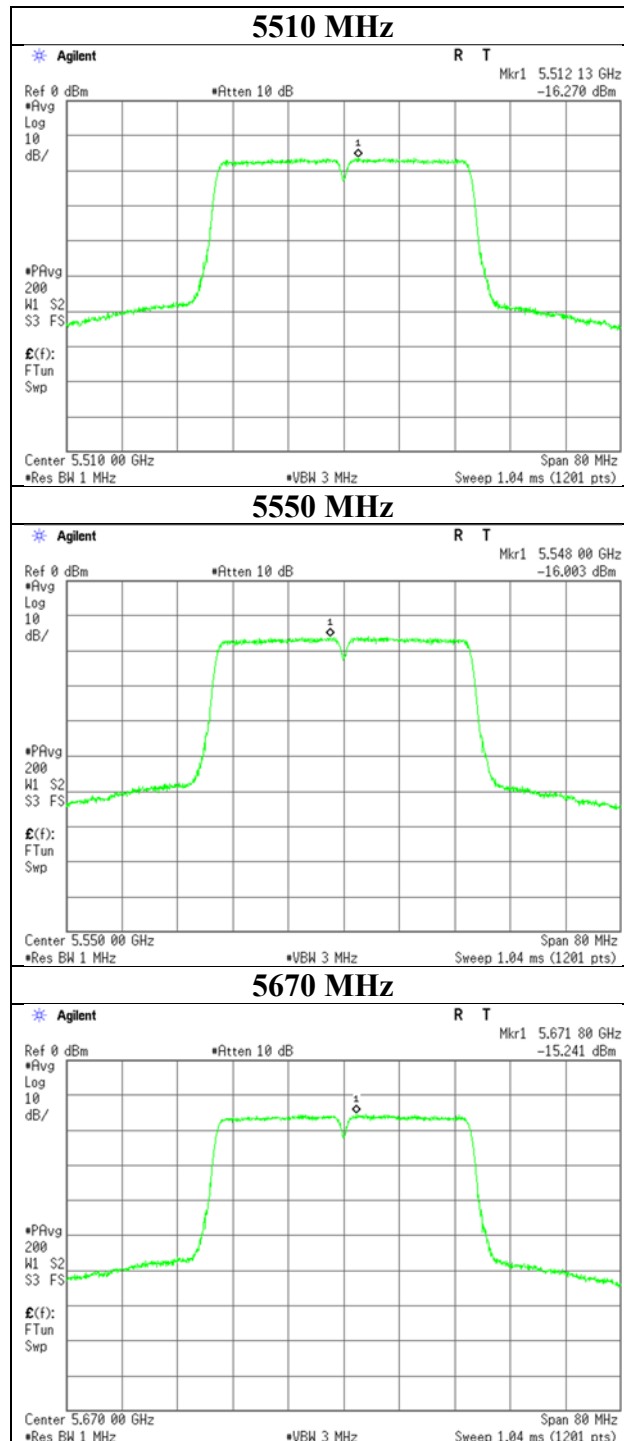
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Maximum Power Spectral Density

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11n-40

11n-40



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Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 23, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	21 deg. C / 51 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Yuichiro Yamazaki (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz ~26.5 GHz)	Ryota Yamanaka (26.5 GHz - 40 GHz)
Mode	Tx 11n-20 5180 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5150.000	PK	43.3	32.1	6.4	31.3	-	50.5	73.9	23.4	
Hori.	8288.008	PK	45.9	36.4	7.6	32.8	-	57.1	73.9	16.8	
Hori.	10360.000	PK	46.5	40.1	-2.5	33.5	-	50.6	68.2	17.6	Floor noise
Hori.	15540.000	PK	45.7	37.7	-1.0	32.7	-	49.6	73.9	24.3	Floor noise
Hori.	20720.000	PK	43.2	38.0	-1.8	32.9	-	46.6	73.9	27.4	Floor noise
Hori.	25900.000	PK	44.3	39.5	-0.8	30.7	-	52.2	68.2	16.0	Floor noise
Hori.	5150.000	AV	32.8	32.1	6.4	31.3	-	40.0	53.9	13.9	
Hori.	8288.008	AV	39.9	36.4	7.6	32.8	-	51.1	53.9	2.8	
Hori.	15540.000	AV	34.7	37.7	-1.0	32.7	-	38.6	53.9	15.3	Floor noise
Hori.	20720.000	AV	34.5	38.0	-1.8	32.9	-	37.9	53.9	16.1	Floor noise
Vert.	5150.000	PK	43.7	32.1	6.4	31.3	-	50.9	73.9	23.0	
Vert.	8288.008	PK	45.3	36.4	7.6	32.8	-	56.5	73.9	17.4	
Vert.	10360.000	PK	46.5	40.1	-2.5	33.5	-	50.6	68.2	17.6	Floor noise
Vert.	15540.000	PK	45.4	37.7	-1.0	32.7	-	49.3	73.9	24.6	Floor noise
Vert.	20720.000	PK	43.7	38.0	-1.8	32.9	-	47.1	73.9	26.9	Floor noise
Vert.	25900.000	PK	44.5	39.5	-0.8	30.7	-	52.4	68.2	15.8	Floor noise
Vert.	5150.000	AV	33.3	32.1	6.4	31.3	-	40.5	53.9	13.4	
Vert.	8288.008	AV	40.2	36.4	7.6	32.8	-	51.5	53.9	2.4	
Vert.	15540.000	AV	34.6	37.7	-1.0	32.7	-	38.5	53.9	15.4	Floor noise
Vert.	20720.000	AV	33.8	38.0	-1.8	32.9	-	37.2	53.9	16.8	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log (4.0 m / 3.0 m) = 2.5 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

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Ise EMC Lab.

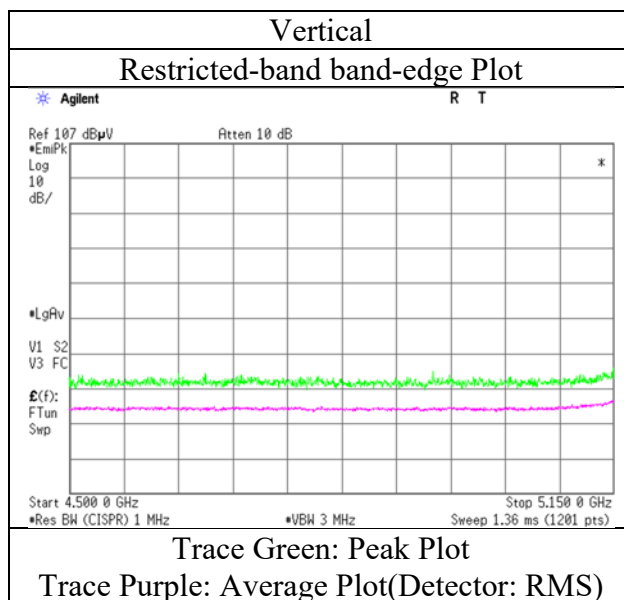
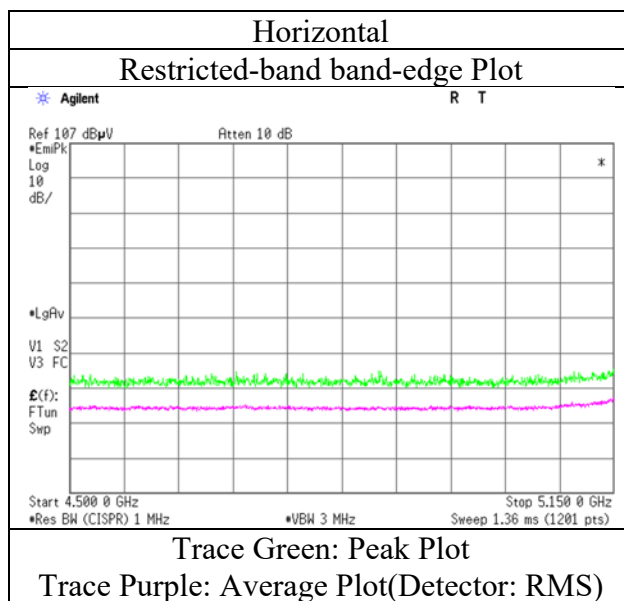
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Radiated Spurious Emission

Report No.	13274888H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	November 23, 2019
Temperature / Humidity	21 deg. C / 51 % RH
Engineer	Yuichiro Yamazaki
	(1 GHz - 10 GHz)
Mode	Tx 11n-20 5180 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 23, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	21 deg. C / 51 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Yuichiro Yamazaki	Takafumi Noguchi	Ryota Yamanaka
	(1 GHz - 10 GHz)	(10 GHz - 26.5 GHz)	(26.5 GHz - 40 GHz)
Mode	Tx 11n-20 5260 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	8416.050	PK	45.6	36.5	7.7	32.7	-	57.1	73.9	16.9	
Hori.	10520.000	PK	45.6	40.0	-2.4	33.6	-	49.7	68.2	18.5	Floor noise
Hori.	15780.000	PK	45.5	37.3	-1.0	32.8	-	49.0	73.9	24.9	Floor noise
Hori.	21040.000	PK	43.5	38.1	-1.7	32.9	-	47.0	73.9	26.9	Floor noise
Hori.	26300.000	PK	44.2	39.5	-0.7	30.6	-	52.4	68.2	15.8	Floor noise
Hori.	8416.050	AV	38.7	36.5	7.7	32.7	-	50.1	53.9	3.8	
Hori.	15780.000	AV	33.6	37.3	-1.0	32.8	-	37.1	53.9	16.8	Floor noise
Hori.	21040.000	AV	34.0	38.1	-1.7	32.9	-	37.5	53.9	16.4	Floor noise
Vert.	8416.050	PK	45.5	36.5	7.7	32.7	-	57.0	73.9	16.9	
Vert.	10520.000	PK	45.8	40.0	-2.4	33.6	-	49.9	68.2	18.3	Floor noise
Vert.	15780.000	PK	45.8	37.3	-1.0	32.8	-	49.3	73.9	24.6	Floor noise
Vert.	21040.000	PK	44.1	38.1	-1.7	32.9	-	47.6	73.9	26.3	Floor noise
Vert.	26300.000	PK	44.4	39.5	-0.7	30.6	-	52.6	68.2	15.6	Floor noise
Vert.	8416.050	AV	38.3	36.5	7.7	32.7	-	49.8	53.9	4.1	
Vert.	15780.000	AV	33.8	37.3	-1.0	32.8	-	37.3	53.9	16.6	Floor noise
Vert.	21040.000	AV	33.7	38.1	-1.7	32.9	-	37.2	53.9	16.7	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log (4.0 m / 3.0 m) = 2.5 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 23, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	21 deg. C / 51 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Yuichiro Yamazaki	Takafumi Noguchi	Ryota Yamanaka
	(1 GHz - 10 GHz)	(10 GHz - 26.5 GHz)	(26.5 GHz - 40 GHz)
Mode	Tx 11n-20 5320 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5350.000	PK	46.3	31.7	6.5	31.3	-	53.2	73.9	20.7	
Hori.	8512.013	PK	44.5	36.9	7.7	32.7	-	56.4	68.2	11.8	
Hori.	10640.000	PK	44.6	39.9	-2.3	33.6	-	48.6	73.9	25.4	Floor noise
Hori.	15960.000	PK	43.6	37.9	-1.0	32.8	-	47.6	73.9	26.3	Floor noise
Hori.	21280.000	PK	44.3	38.2	-1.7	32.8	-	48.0	73.9	25.9	Floor noise
Hori.	5350.000	AV	35.6	31.7	6.5	31.3	-	42.5	53.9	11.4	
Hori.	10640.000	AV	33.5	39.9	-2.3	33.6	-	37.5	53.9	16.5	Floor noise
Hori.	15960.000	AV	33.2	37.9	-1.0	32.8	-	37.2	53.9	16.7	Floor noise
Hori.	21280.000	AV	34.2	38.2	-1.7	32.8	-	37.9	53.9	16.0	Floor noise
Vert.	5350.000	PK	45.1	31.7	6.5	31.3	-	52.0	73.9	21.9	
Vert.	8512.013	PK	44.4	36.9	7.7	32.7	-	56.3	68.2	11.9	
Vert.	10640.000	PK	44.8	39.9	-2.3	33.6	-	48.8	73.9	25.2	Floor noise
Vert.	15960.000	PK	43.2	37.9	-1.0	32.8	-	47.2	73.9	26.7	Floor noise
Vert.	21280.000	PK	44.0	38.2	-1.7	32.8	-	47.7	73.9	26.2	Floor noise
Vert.	5350.000	AV	35.5	31.7	6.5	31.3	-	42.4	53.9	11.5	
Vert.	10640.000	AV	33.4	39.9	-2.3	33.6	-	37.4	53.9	16.6	Floor noise
Vert.	15960.000	AV	33.0	37.9	-1.0	32.8	-	37.0	53.9	16.9	Floor noise
Vert.	21280.000	AV	34.1	38.2	-1.7	32.8	-	37.8	53.9	16.1	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(4.0\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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Ise EMC Lab.

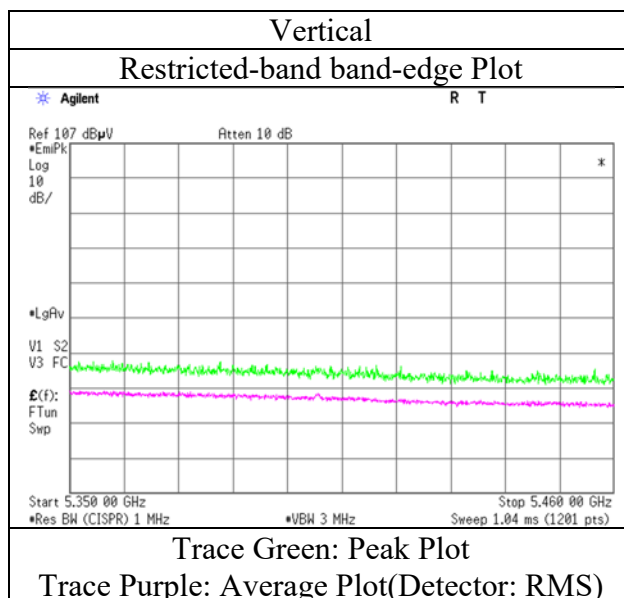
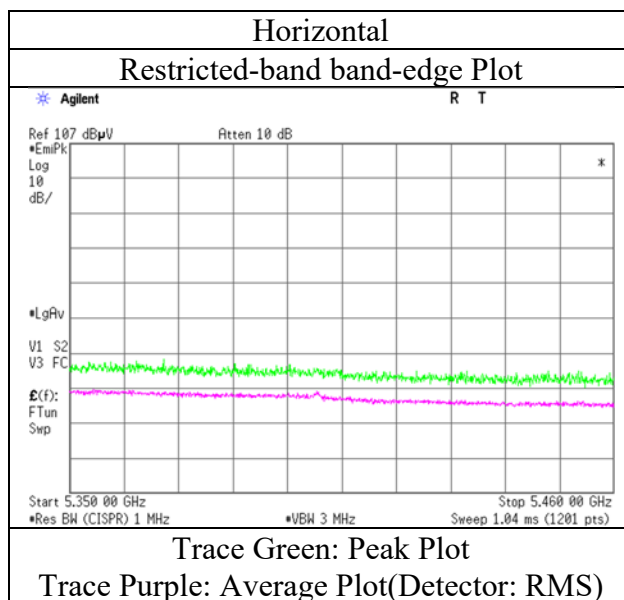
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Radiated Spurious Emission

Report No.	13274888H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	November 23, 2019
Temperature / Humidity	21 deg. C / 51 % RH
Engineer	Yuichiro Yamazaki (1 GHz - 10 GHz)
Mode	Tx 11n-20 5320 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 24, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	22 deg. C / 43 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 26.5 GHz)	Ryota Yamanaka (26.5 GHz - 40 GHz)
Mode	Tx 11n-20 5500 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5460.000	PK	43.9	32.0	6.6	31.3	-	51.2	73.9	22.7	
Hori.	5470.000	PK	44.7	32.0	6.6	31.3	-	51.9	68.2	16.3	
Hori.	11000.000	PK	43.4	40.2	-2.1	33.6	-	47.9	73.9	26.0	Floor noise
Hori.	16500.000	PK	43.6	39.6	-0.9	32.7	-	49.7	68.2	18.6	Floor noise
Hori.	22000.000	PK	43.7	38.3	-1.6	32.6	-	47.8	68.2	20.4	Floor noise
Hori.	5460.000	AV	36.3	32.0	6.6	31.3	-	43.6	53.9	10.4	
Hori.	11000.000	AV	34.3	40.2	-2.1	33.6	-	38.8	53.9	15.1	Floor noise
Vert.	5460.000	PK	44.3	32.0	6.6	31.3	-	51.5	73.9	22.4	
Vert.	5470.000	PK	44.8	32.0	6.6	31.3	-	52.1	68.2	16.1	
Vert.	11000.000	PK	44.6	40.2	-2.1	33.6	-	49.1	73.9	24.8	Floor noise
Vert.	16500.000	PK	43.5	39.6	-0.9	32.7	-	49.6	68.2	18.7	Floor noise
Vert.	22000.000	PK	43.8	38.3	-1.6	32.6	-	47.9	68.2	20.3	Floor noise
Vert.	5460.000	AV	35.1	32.0	6.6	31.3	-	42.4	53.9	11.5	
Vert.	11000.000	AV	34.5	40.2	-2.1	33.6	-	39.0	53.9	14.9	Floor noise

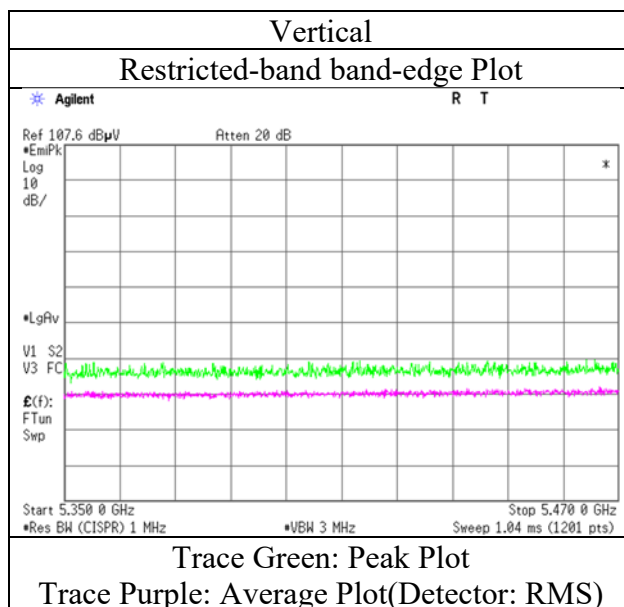
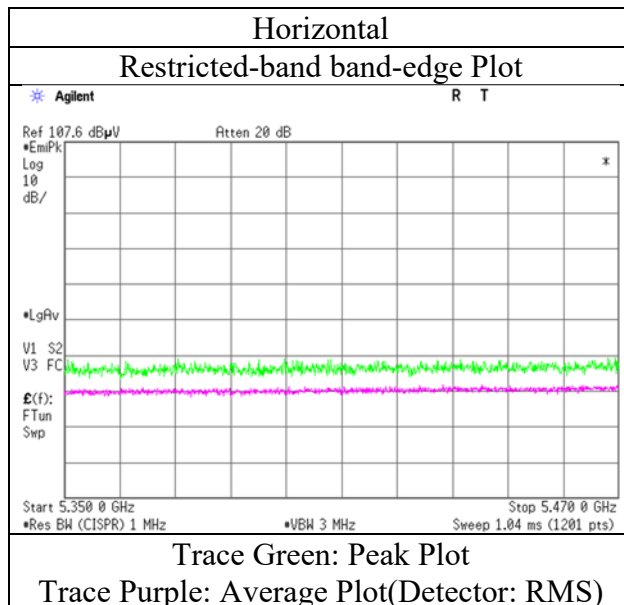
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz $20\log(4.0\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

Report No.	13274888H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	November 24, 2019
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Akihiko Maeda
Mode	Tx 11n-20 5500 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 24, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	22 deg. C / 43 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 26.5 GHz)	Ryota Yamanaka (26.5 GHz - 40 GHz)
Mode	Tx 11n-20 5580 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	11160.000	PK	43.8	39.8	-2.0	33.6	-	47.9	73.9	26.0	Floor noise
Hori.	16740.000	PK	43.6	41.1	-0.8	32.7	-	51.3	68.2	16.9	Floor noise
Hori.	22320.000	PK	43.8	38.3	-1.5	32.5	-	48.1	73.9	25.8	Floor noise
Hori.	11160.000	AV	33.0	39.8	-2.0	33.6	-	37.1	53.9	16.8	Floor noise
Hori.	22320.000	AV	34.6	38.3	-1.5	32.5	-	38.9	53.9	15.0	Floor noise
Vert.	11160.000	PK	43.9	39.8	-2.0	33.6	-	48.0	73.9	25.9	Floor noise
Vert.	16740.000	PK	43.7	41.1	-0.8	32.7	-	51.4	68.2	16.8	Floor noise
Vert.	22320.000	PK	43.8	38.3	-1.5	32.5	-	48.1	73.9	25.8	Floor noise
Vert.	11160.000	AV	33.7	39.8	-2.0	33.6	-	37.8	53.9	16.1	Floor noise
Vert.	22320.000	AV	34.5	38.3	-1.5	32.5	-	38.8	53.9	15.1	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log (4.0 m / 3.0 m) = 2.5 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Report No.	13274888H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.3	No.3	No.3
Date	November 24, 2019	December 7, 2019	December 8, 2019	December 9, 2019
Temperature / Humidity	22 deg. C / 43 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH	23 deg. C / 44 % RH
Engineer	Akihiko Maeda	Takafumi Noguchi	Ryota Yamanaka	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz - 26.5 GHz)	(26.5 GHz - 40 GHz)	(Below 1 GHz)
Mode	Tx 11n-20 5700 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	40.000	QP	22.6	14.8	7.2	32.2	-	12.4	40.0	27.6	
Hori.	110.000	QP	22.5	11.7	8.2	32.1	-	10.2	43.5	33.3	
Hori.	250.000	QP	21.9	11.8	9.6	32.0	-	11.2	46.0	34.8	
Hori.	400.000	QP	21.7	15.7	10.7	32.0	-	16.1	46.0	29.9	
Hori.	610.000	QP	21.8	19.3	12.0	32.0	-	21.0	46.0	25.0	
Hori.	800.000	QP	21.7	20.8	13.0	31.5	-	24.1	46.0	22.0	
Hori.	5725.000	PK	46.5	32.5	6.7	31.4	-	54.4	68.2	13.9	
Hori.	11400.000	PK	43.7	39.9	-1.9	33.6	-	48.1	73.9	25.8	Floor noise
Hori.	17100.000	PK	43.4	42.3	-0.7	32.6	-	52.4	68.2	15.8	Floor noise
Hori.	22800.000	PK	43.6	38.5	-1.4	32.4	-	48.3	73.9	25.6	Floor noise
Hori.	11400.000	AV	33.3	39.9	-1.9	33.6	-	37.7	53.9	16.2	Floor noise
Hori.	22800.000	AV	34.6	38.5	-1.4	32.4	-	39.3	53.9	14.6	Floor noise
Vert.	40.000	QP	22.6	14.8	7.2	32.2	-	12.4	40.0	27.6	
Vert.	110.000	QP	22.5	11.7	8.2	32.1	-	10.2	43.5	33.3	
Vert.	250.000	QP	21.9	11.8	9.6	32.0	-	11.3	46.0	34.7	
Vert.	400.000	QP	21.7	15.7	10.7	32.0	-	16.1	46.0	29.9	
Vert.	610.000	QP	21.8	19.3	12.0	32.0	-	21.0	46.0	25.0	
Vert.	800.000	QP	21.8	20.8	13.0	31.5	-	24.1	46.0	21.9	
Vert.	5725.000	PK	45.4	32.5	6.7	31.4	-	53.2	68.2	15.0	
Vert.	11400.000	PK	43.7	39.9	-1.9	33.6	-	48.1	73.9	25.8	Floor noise
Vert.	17100.000	PK	43.5	42.3	-0.7	32.6	-	52.5	68.2	15.7	Floor noise
Vert.	22800.000	PK	43.8	38.5	-1.4	32.4	-	48.5	73.9	25.4	Floor noise
Vert.	11400.000	AV	33.3	39.9	-1.9	33.6	-	37.7	53.9	16.2	Floor noise
Vert.	22800.000	AV	34.7	38.5	-1.4	32.4	-	39.4	53.9	14.5	Floor noise

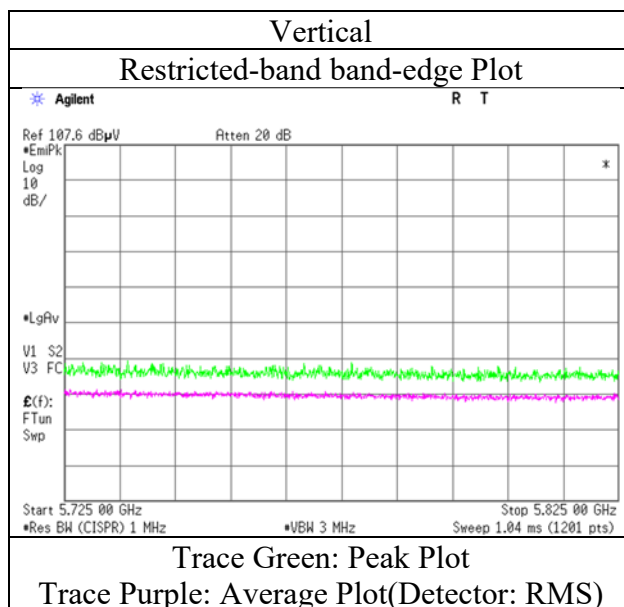
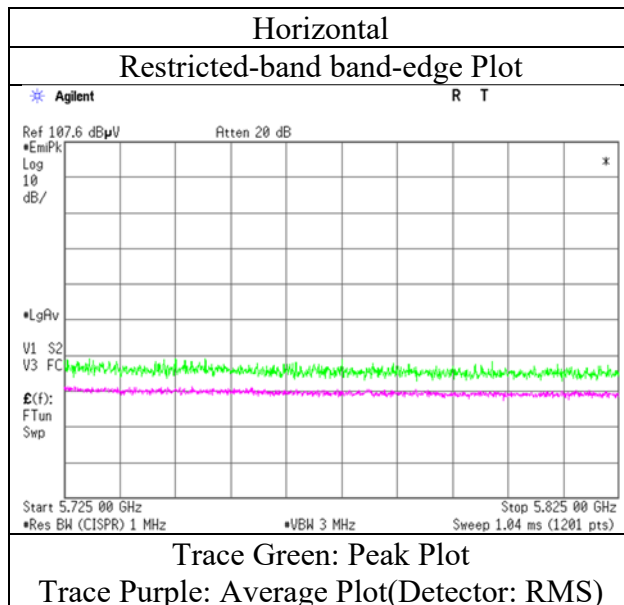
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (4.0 m / 3.0 m) = 2.5 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Report No.	13274888H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	November 24, 2019
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Akihiko Maeda
Mode	Tx 11n-20 5700 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

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Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 23, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	21 deg. C / 51 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Yuichiro Yamazaki (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 26.5 GHz)	Ryota Yamanaka (26.5 GHz - 40 GHz)
Mode	Tx 11n-40 5190 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5150.000	PK	50.2	32.1	6.4	31.3	-	57.4	73.9	16.5	
Hori.	8303.992	PK	47.3	36.4	7.6	32.8	-	58.6	73.9	15.4	
Hori.	10380.000	PK	43.3	40.1	-2.5	33.5	-	47.4	68.2	20.9	Floor noise
Hori.	15570.000	PK	44.7	37.5	-1.0	32.8	-	48.4	73.9	25.5	Floor noise
Hori.	20760.000	PK	45.8	38.0	-1.8	32.9	-	49.1	73.9	24.8	Floor noise
Hori.	25950.000	PK	45.5	39.5	-0.8	30.7	-	53.5	68.2	14.7	Floor noise
Hori.	5150.000	AV	38.3	32.1	6.4	31.3	-	45.5	53.9	8.4	
Hori.	8303.992	AV	42.2	36.4	7.6	32.8	-	53.4	53.9	0.5	
Hori.	15570.000	AV	33.8	37.5	-1.0	32.8	-	37.5	53.9	16.4	Floor noise
Hori.	20760.000	AV	35.4	38.0	-1.8	32.9	-	38.7	53.9	15.2	Floor noise
Vert.	5150.000	PK	48.5	32.1	6.4	31.3	-	55.7	73.9	18.2	
Vert.	8303.992	PK	45.9	36.4	7.6	32.8	-	57.1	73.9	16.8	
Vert.	10380.000	PK	43.1	40.1	-2.5	33.5	-	47.2	68.2	21.1	Floor noise
Vert.	15570.000	PK	44.6	37.5	-1.0	32.8	-	48.3	73.9	25.6	Floor noise
Vert.	20760.000	PK	45.6	38.0	-1.8	32.9	-	48.9	73.9	25.0	Floor noise
Vert.	25950.000	PK	45.3	39.5	-0.8	30.7	-	53.3	68.2	14.9	Floor noise
Vert.	5150.000	AV	37.0	32.1	6.4	31.3	-	44.2	53.9	9.7	
Vert.	8303.992	AV	41.3	36.4	7.6	32.8	-	52.6	53.9	1.3	
Vert.	15570.000	AV	33.6	37.5	-1.0	32.8	-	37.3	53.9	16.6	Floor noise
Vert.	20760.000	AV	35.2	38.0	-1.8	32.9	-	38.5	53.9	15.4	Floor noise

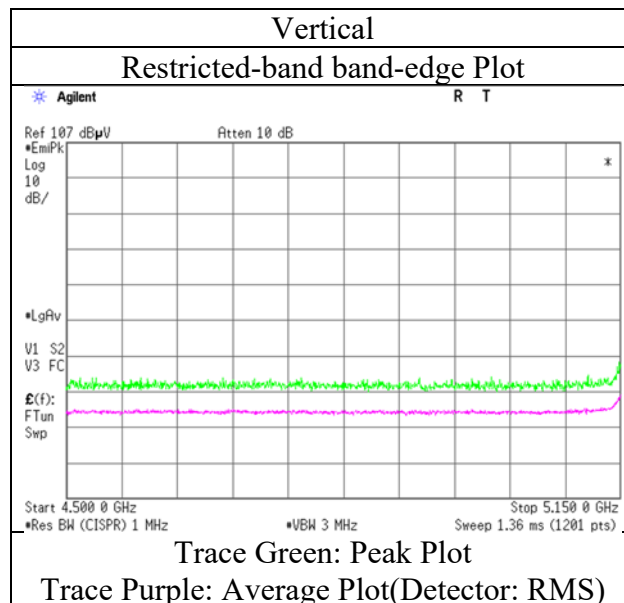
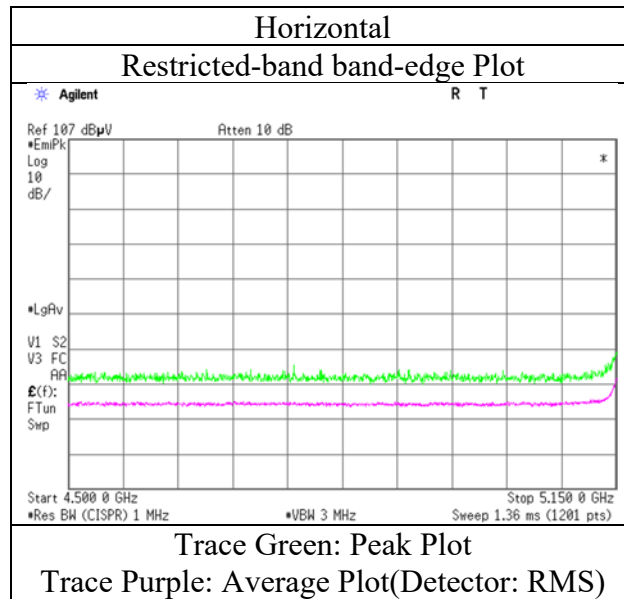
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz $20\log(4.0\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

Report No.	13274888H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	November 23, 2019
Temperature / Humidity	21 deg. C / 51 % RH
Engineer	Yuichiro Yamazaki
	(1 GHz - 10 GHz)
Mode	Tx 11n-40 5190 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 23, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	21 deg. C / 51 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Yuichiro Yamazaki	Takafumi Noguchi	Ryota Yamanaka
	(1 GHz - 10 GHz)	(10 GHz - 26.5 GHz)	(26.5 GHz - 40 GHz)
Mode	Tx 11n-40 5270 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	8431.992	PK	46.4	36.5	7.7	32.7	-	57.9	73.9	16.0	
Hori.	10540.000	PK	43.6	40.0	-2.4	33.6	-	47.7	68.2	20.5	Floor noise
Hori.	15810.000	PK	44.2	37.1	-1.0	32.8	-	47.4	73.9	26.5	Floor noise
Hori.	21080.000	PK	45.5	38.2	-1.7	32.9	-	49.0	73.9	24.9	Floor noise
Hori.	26350.000	PK	46.4	39.5	-0.7	30.6	-	54.6	68.2	13.6	Floor noise
Hori.	8431.992	AV	39.9	36.5	7.7	32.7	-	51.4	53.9	2.5	
Hori.	15810.000	AV	34.6	37.1	-1.0	32.8	-	37.8	53.9	16.1	Floor noise
Hori.	21080.000	AV	34.9	38.2	-1.7	32.9	-	38.4	53.9	15.5	Floor noise
Vert.	8431.992	PK	46.6	36.5	7.7	32.7	-	58.1	73.9	15.8	
Vert.	10540.000	PK	43.6	40.0	-2.4	33.6	-	47.7	68.2	20.5	Floor noise
Vert.	15810.000	PK	45.0	37.1	-1.0	32.8	-	48.2	73.9	25.7	Floor noise
Vert.	21080.000	PK	45.7	38.2	-1.7	32.9	-	49.2	73.9	24.7	Floor noise
Vert.	26350.000	PK	46.8	39.5	-0.7	30.6	-	55.0	68.2	13.2	Floor noise
Vert.	8431.992	AV	39.7	36.5	7.7	32.7	-	51.2	53.9	2.7	
Vert.	15810.000	AV	34.4	37.1	-1.0	32.8	-	37.6	53.9	16.3	Floor noise
Vert.	21080.000	AV	35.1	38.2	-1.7	32.9	-	38.6	53.9	15.3	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(4.0\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 23, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	21 deg. C / 51 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Yuichiro Yamazaki	Takafumi Noguchi	Ryota Yamanaka
	(1 GHz - 10 GHz)	(10 GHz - 26.5 GHz)	(26.5 GHz - 40 GHz)
Mode	Tx 11n-40 5310 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5350.000	PK	50.1	31.7	6.5	31.3	-	57.1	73.9	16.9	
Hori.	8496.008	PK	45.4	36.8	7.7	32.7	-	57.3	73.9	16.6	
Hori.	10620.000	PK	44.4	39.8	-2.3	33.6	-	48.3	73.9	25.6	Floor noise
Hori.	15930.000	PK	43.5	37.6	-1.1	32.8	-	47.2	73.9	26.7	Floor noise
Hori.	21240.000	PK	45.8	38.2	-1.7	32.9	-	49.4	73.9	24.5	Floor noise
Hori.	5350.000	AV	40.4	31.7	6.5	31.3	-	47.3	53.9	6.6	*1)
Hori.	8496.008	AV	38.2	36.8	7.7	32.7	-	50.1	53.9	3.8	
Hori.	10620.000	AV	33.9	39.8	-2.3	33.6	-	37.8	53.9	16.1	Floor noise
Hori.	15930.000	AV	33.7	37.6	-1.1	32.8	-	37.4	53.9	16.5	Floor noise
Hori.	21240.000	AV	34.5	38.2	-1.7	32.9	-	38.1	53.9	15.8	Floor noise
Vert.	5350.000	PK	48.8	31.7	6.5	31.3	-	55.7	73.9	18.2	
Vert.	8496.008	PK	44.9	36.8	7.7	32.7	-	56.8	73.9	17.1	
Vert.	10620.000	PK	44.6	39.8	-2.3	33.6	-	48.5	73.9	25.4	Floor noise
Vert.	15930.000	PK	43.4	37.6	-1.1	32.8	-	47.1	73.9	26.8	Floor noise
Vert.	21240.000	PK	45.5	38.2	-1.7	32.9	-	49.1	73.9	24.8	Floor noise
Vert.	5350.000	AV	39.1	31.7	6.5	31.3	-	46.0	53.9	7.9	*1)
Vert.	8496.008	AV	38.0	36.8	7.7	32.7	-	49.8	53.9	4.1	
Vert.	10620.000	AV	34.0	39.8	-2.3	33.6	-	37.9	53.9	16.0	Floor noise
Vert.	15930.000	AV	33.7	37.6	-1.1	32.8	-	37.4	53.9	16.5	Floor noise
Vert.	21240.000	AV	34.2	38.2	-1.7	32.9	-	37.8	53.9	16.1	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log (4.0 m / 3.0 m) = 2.5 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

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

Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 24, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	22 deg. C / 43 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 26.5 GHz)	Ryota Yamanaka (26.5 GHz - 40 GHz)
Mode	Tx 11n-40 5510 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5460.000	PK	44.3	32.0	6.6	31.3	-	51.6	73.9	22.3	
Hori.	5470.000	PK	47.8	32.0	6.6	31.3	-	55.0	68.2	13.2	
Hori.	11020.000	PK	43.8	40.1	-2.1	33.6	-	48.1	73.9	25.8	Floor noise
Hori.	16530.000	PK	44.6	39.8	-0.9	32.7	-	50.8	68.2	17.4	Floor noise
Hori.	22040.000	PK	45.3	38.3	-1.6	32.6	-	49.4	68.2	18.8	Floor noise
Hori.	5460.000	AV	36.5	32.0	6.6	31.3	-	43.7	53.9	10.2	
Hori.	11020.000	AV	34.0	40.1	-2.1	33.6	-	38.3	53.9	15.6	Floor noise
Vert.	5460.000	PK	44.8	32.0	6.6	31.3	-	52.0	73.9	21.9	
Vert.	5470.000	PK	47.8	32.0	6.6	31.3	-	55.1	68.2	13.2	
Vert.	11020.000	PK	43.7	40.1	-2.1	33.6	-	48.0	73.9	25.9	Floor noise
Vert.	16530.000	PK	44.3	39.8	-0.9	32.7	-	50.5	68.2	17.7	Floor noise
Vert.	22040.000	PK	45.4	38.3	-1.6	32.6	-	49.5	68.2	18.7	Floor noise
Vert.	5460.000	AV	36.1	32.0	6.6	31.3	-	43.3	53.9	10.6	
Vert.	11020.000	AV	34.6	40.1	-2.1	33.6	-	38.9	53.9	15.0	Floor noise

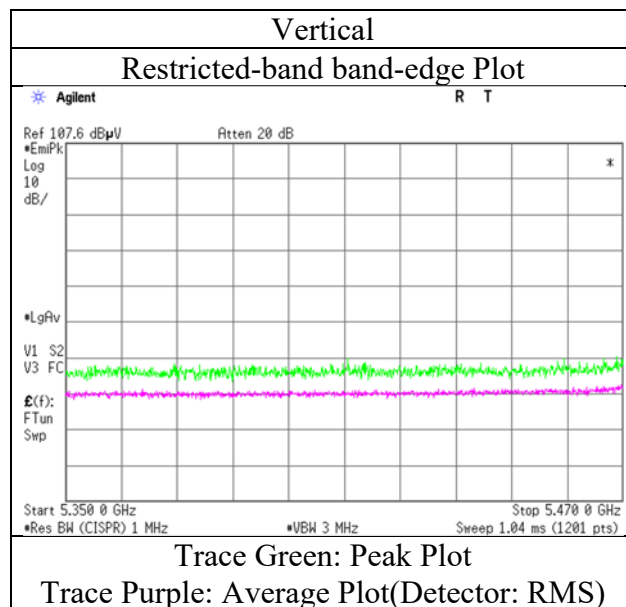
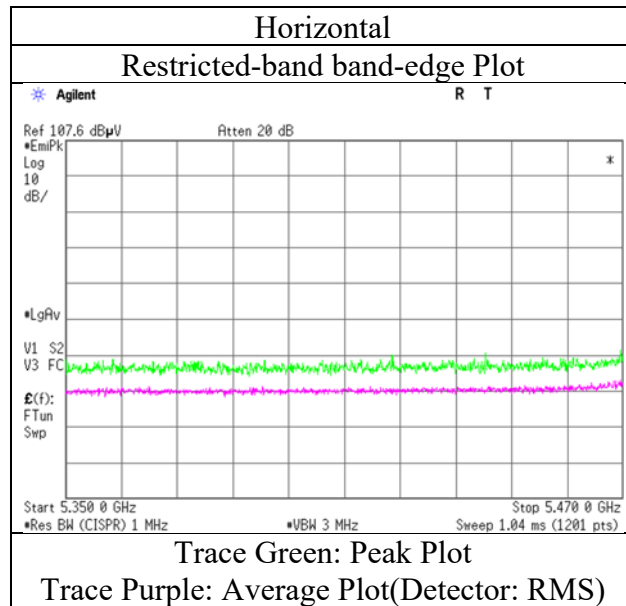
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz $20\log(4.0\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

Report No.	13274888H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	November 24, 2019
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Akihiko Maeda
	(1 GHz - 10 GHz)
Mode	Tx 11n-40 5510 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 24, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	22 deg. C / 43 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Akihiko Maeda	Takafumi Noguchi	Ryota Yamanaka
	(1 GHz - 10 GHz)	(10 GHz - 26.5 GHz)	(26.5 GHz - 40 GHz)
Mode	Tx 11n-40 5550 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	11100.000	PK	43.4	39.7	-2.1	33.6	-	47.5	73.9	26.4	Floor noise
Hori.	16650.000	PK	44.0	40.4	-0.8	32.7	-	50.9	68.2	17.3	Floor noise
Hori.	22200.000	PK	45.7	38.3	-1.5	32.6	-	49.9	68.2	18.3	Floor noise
Hori.	11100.000	AV	34.4	39.7	-2.1	33.6	-	38.5	53.9	15.4	Floor noise
Vert.	11100.000	PK	44.2	39.7	-2.1	33.6	-	48.3	73.9	25.6	Floor noise
Vert.	16650.000	PK	44.3	40.4	-0.8	32.7	-	51.2	68.2	17.0	Floor noise
Vert.	22200.000	PK	45.5	38.3	-1.5	32.6	-	49.7	68.2	18.5	Floor noise
Vert.	11100.000	AV	34.3	39.7	-2.1	33.6	-	38.4	53.9	15.5	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(4.0\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

Report No.	13274888H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.3	No.3
Date	November 24, 2019	December 7, 2019	December 8, 2019
Temperature / Humidity	22 deg. C / 43 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 26.5 GHz)	Ryota Yamanaka (26.5 GHz - 40 GHz)
Mode	Tx 11n-40 5670 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	5725.000	PK	42.9	32.5	6.7	31.4	-	50.7	68.2	17.5	
Hori.	11340.000	PK	43.8	39.9	-1.9	33.6	-	48.1	73.9	25.8	Floor noise
Hori.	17010.000	PK	44.4	42.0	-0.7	32.6	-	53.1	68.2	15.1	Floor noise
Hori.	22680.000	PK	45.8	38.5	-1.4	32.4	-	50.4	73.9	23.5	Floor noise
Hori.	11340.000	AV	33.8	39.9	-1.9	33.6	-	38.1	53.9	15.8	Floor noise
Hori.	22680.000	AV	35.4	38.5	-1.4	32.4	-	40.0	53.9	13.9	Floor noise
Vert.	5725.000	PK	43.2	32.5	6.7	31.4	-	51.0	68.2	17.2	
Vert.	11340.000	PK	43.5	39.9	-1.9	33.6	-	47.8	73.9	26.1	Floor noise
Vert.	17010.000	PK	44.7	42.0	-0.7	32.6	-	53.4	68.2	14.8	Floor noise
Vert.	22680.000	PK	45.9	38.5	-1.4	32.4	-	50.5	73.9	23.4	Floor noise
Vert.	11340.000	AV	33.6	39.9	-1.9	33.6	-	37.9	53.9	16.0	Floor noise
Vert.	22680.000	AV	35.6	38.5	-1.4	32.4	-	40.2	53.9	13.7	Floor noise

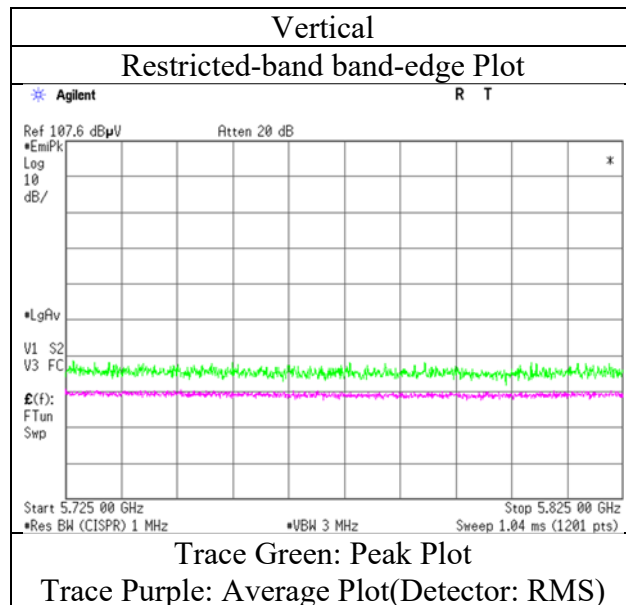
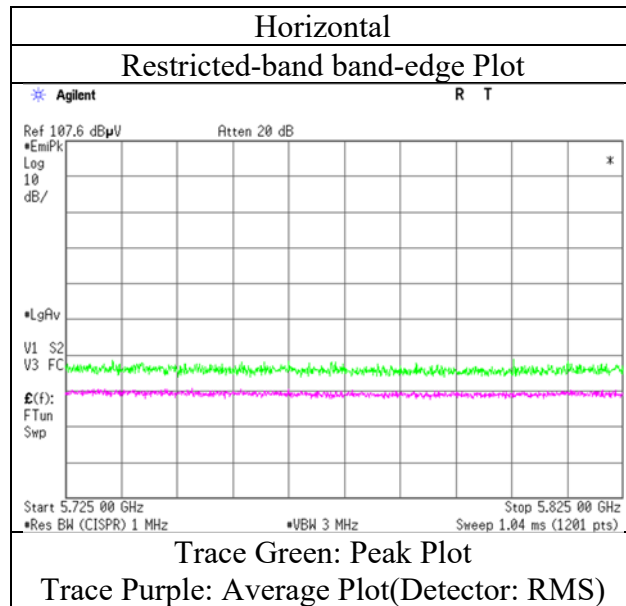
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (4.0 m / 3.0 m) = 2.5 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Report No.	13274888H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	November 24, 2019
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Akihiko Maeda
	(1 GHz - 10 GHz)
Mode	Tx 11n-40 5670 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

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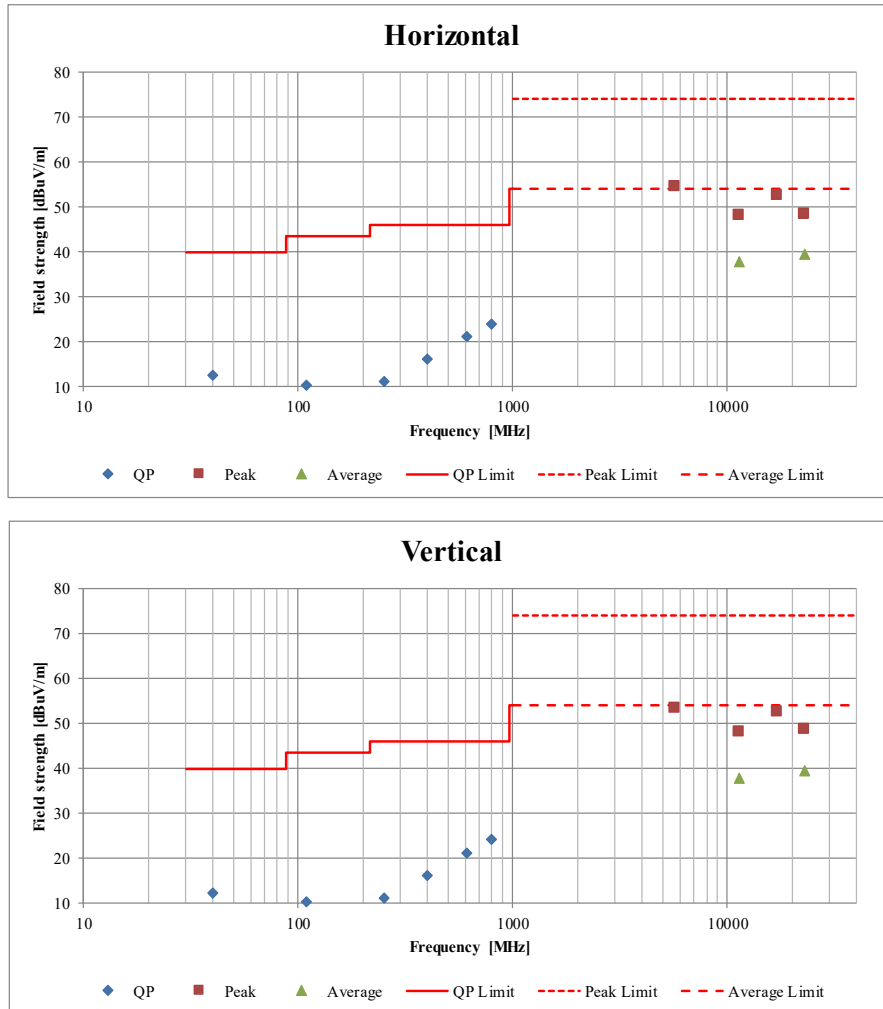
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Radiated Spurious Emission **(Plot data, Worst case)**

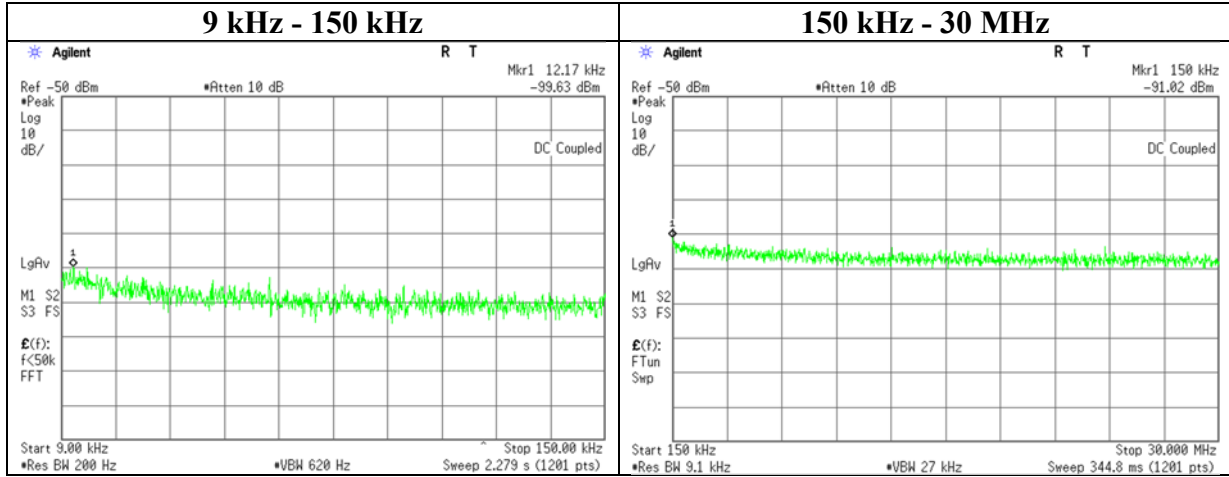
Report No.	13274888H	No.3	No.3	No.3
Test place	Ise EMC Lab.	No.3	No.3	No.3
Semi Anechoic Chamber	No.4	No.3	No.3	No.3
Date	November 24, 2019	December 7, 2019	December 8, 2019	December 9, 2019
Temperature / Humidity	22 deg. C / 43 % RH	20 deg. C / 35 % RH	23 deg. C / 44 % RH	23 deg. C / 44 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 26.5 GHz)	Ryota Yamanaka (26.5 GHz - 40 GHz)	Yuta Moriya (Below 1 GHz)
Mode	Tx 11n-20 5700 MHz			



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

Conducted Spurious Emission

Report No. 13274888H
Test place Ise EMC Lab. No.6 Measurement Room
Date November 21, 2019
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Takafumi Noguchi
Mode Tx 11n-20 5700 MHz



Frequency	Reading	Cable Loss	Attenuator	Antenna Gain*	N (Number of Output)	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin	Remark
[kHz]	[dBm]	[dB]	[dB]	[dBi]		[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
12.17	-99.6	1.0	9.9	2.0	1	-86.7	300	6.0	-25.5	45.8	71.3	
150.00	-91.0	1.0	9.9	2.0	1	-78.1	300	6.0	-16.9	24.0	40.9	

$E [dBuV/m] = EIRP [dBm] - 20 \log (Distance [m]) + Ground\ bounce [dB] + 104.8 [dBuV/m]$

$EIRP [dBm] = Reading [dBm] + Cable\ loss [dB] + Attenuator\ Loss [dB] + Antenna\ gain [dBi] + 10 * \log (N)$

N: Number of output

*2.0 dBi was applied to the test result based on KDB 789033 since antenna gain was less than 2.0 dBi.

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APPENDIX 2: Test instruments

Test Instruments (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
AT	141334	Attenuator(10dB)	Suhner	6810.19.A	-	12/09/2019	12/31/2020	12
AT	141156	Attenuator(10dB)	Weinschel Corp	2	BL1173	11/07/2019	11/30/2020	12
AT	141835	Power sensor	AGILENT	N1923A	MY54070004	08/02/2019	08/31/2020	12
AT	141812	Power Meter	AGILENT	8990B	MY51000271	08/02/2019	08/31/2020	12
AT	141561	Thermo-Hygrometer	CUSTOM	CTH-201	1401	01/11/2019	01/31/2020	12
AT	141194	Antenna Terminal Measurement Software	UL Japan	-	-	-	-	-
AT	141900	Spectrum Analyzer	AGILENT	E4440A	MY46185823	11/20/2019	11/30/2020	12
RE	141412	Microwave Cable	Junkosha	MWX221	1305S002R(1m) / 1405S146(5m)	06/17/2019	06/30/2020	12
RE	141885	Spectrum Analyzer	AGILENT	E4448A	US44300523	11/21/2019	11/30/2020	12
RE/CE	142227	Measure	KOMELON	KMC-36	-	-	-	-
RE/CE	141545	DIGITAL HiTESTER	HIOKI	3805	51201148	01/29/2019	01/31/2020	12
RE	141581	MicroWave System Amplifier	AGILENT	83017A	650	10/16/2019	10/31/2020	12
RE	141533	DIGITAL HiTESTER	HIOKI	3805	51201195	01/29/2019	01/31/2020	12
RE	142017	AC4_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/04/2019	04/30/2021	24
RE/CE	141562	Thermo-Hygrometer	CUSTOM	CTH-201	0010	01/11/2019	01/31/2020	12
RE/CE	142011	AC4_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	06/28/2018	06/30/2020	24
RE	178648	EMI measurement program	TSJ	TEPTO-DV	-	-	-	-
RE	141508	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	09/26/2019	09/30/2020	12
RE	141513	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	10/08/2019	10/31/2020	12
RE	141293	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCB	602	01/10/2019	01/31/2020	12
RE	141226	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S304	03/05/2019	03/31/2020	12
RE	141580	MicroWave System Amplifier	AGILENT	83017A	MY39500779	03/05/2019	03/31/2020	12
RE	177964	Microwave Cable	Junkosha INC.	MMX221	1901S329(1m) / 1902S579(5m)	03/05/2019	03/31/2020	12
RE	141532	DIGITAL HiTESTER	HIOKI	3805	51201197	01/29/2019	01/31/2020	12
RE	142183	Measure	KOMELON	KMC-36	-	-	-	-
RE	141554	Thermo-Hygrometer	CUSTOM	CTH-180	1301	01/11/2019	01/31/2020	12
RE	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	06/26/2018	06/30/2020	24
RE	141507	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	09/26/2019	09/30/2020	12
RE	141949	Test Receiver	Rohde & Schwarz	ESCI	100767	08/02/2019	08/31/2020	12
RE	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/08/2019	02/29/2020	12
RE	141323	Coaxial cable	UL Japan	-	-	07/02/2019	07/31/2020	12
RE/CE	141152	EMI measurement program	TSJ	TEPTO-DV	-	-	-	-
RE	141266	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	9111B-191	08/24/2019	08/31/2020	12
RE	160324	Coaxial Cable	Huber+Suhner	SUCOFLEX 102A	MY009/2A	11/22/2019	11/30/2020	12
RE	141517	Horn Antenna 26.5-40GHz	ETS LINDGREN	3160-10	152399	09/19/2019	09/30/2020	12
RE	142314	Attenuator	Pasternack	PE7390-6	D/C 1504	6/11/2019	6/30/2020	12
RE	141588	Pre Amplifier	MITEQ, Inc	AMF-6F-2600400-33-8P / AMF-4F-2600	1871355 / 1871328	09/27/2019	09/30/2020	12
RE	141424	Biconical Antenna	Schwarzbeck	VHA9103+BBA9106	1915	08/24/2019	08/31/2020	12

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Test Instruments (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
CE	141884	Spectrum Analyzer	AGILENT	E4448A	MY44020357	03/13/2019	03/31/2020	12
CE	141357	LISN(AMN)	Schwarzbeck	NSLK8127	8127-729	07/05/2019	07/31/2020	12
CE	141217	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W/SFM141/421-010/sucoform141-P	-/04178	06/18/2019	06/30/2020	12
CE	141248	Attenuator	JFW Industries, Inc.	50FP-013H2 N	-	12/02/2019	12/31/2020	12

*Hyphens for Last Calibration Date, Calibration Due Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

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 test
RE: Radiated Spurious Emission test
AT: Antenna Terminal Conducted test