



RADIO TEST REPORT

Test Report No. : 13218142S-A-R1

Applicant : PIONEER CORPORATION
Type of EUT : MULTIMEDIA NAVIGATION RECEIVER
Model Number of EUT : AVIC-W8600NEX
FCC ID : AJDK113
Test regulation : FCC Part 15 Subpart E: 2019
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 limits of the above regulation.
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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. The information provided from the customer for this report is identified in SECTION 1.
10. This report is a revised version of 13218142S-A. 13218142S-A is replaced with this report.

Date of test: January 15 to February 23, 2020

Representative test engineer:

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CERTIFICATE 1266.03

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

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REVISION HISTORY

Original Test Report No.: 13218142S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13218142S-A	March 5, 2020	-	-
1	13218142S-A-R1	March 11, 2020	P.5	Modification of Clock frequency(ies) in the system from: LPO clock for Bluetooth Wi-Fi module: 32.768 kHz to: LPO CLOCK GENERATOR for Bluetooth Wi-Fi module: 32.768 kHz
			P.7	Modification of Worst margin of Spurious Emission Restricted Band Edge from: 4.7 dB, 409.994 MHz, QP, Horizontal. Mode: Tx 11n-20(SISO) 5825 MHz with Tx 3DH5, Hopping to: 5.2 dB, 11550.000 MHz, AV, Vertical. Mode: Tx 11ac-80 MIMO 5775 MHz
			P.63	Update of remarks: from: “¥Date” to: “Date”

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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	:	PIONEER CORPORATION
Address	:	25-1, Yamada, Kawagoe-shi, Saitama, 350-8555, JAPAN
Telephone Number	:	+81-49-228-7681
Facsimile Number	:	+81-49-228-6172
Contact Person	:	Shigeru Yoshida

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 (E.U.T.)
 - SECTION 4: Operation of E.U.T. 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 (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	:	MULTIMEDIA NAVIGATION RECEIVER
Model No.	:	AVIC-W8600NEX
Serial No.	:	Refer to SECTION 4.2
Rating	:	DC 14.4 V (DC 10.8 V to 15.1 V)
Receipt Date of Sample (Information from test lab.)	:	December 27, 2019
Country of Mass-production	:	Thailand
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: AVIC-W8600NEX (referred to as the EUT in this report) is a MULTIMEDIA NAVIGATION RECEIVER.

General Specification

Clock frequency(ies) in the system	:	LPO CLOCK GENERATOR for Bluetooth Wi-Fi module: 32.768 kHz DC-DC CONVERTER: 1000 kHz/ 700.5 kHz/ 2.29 MHz/ 2.17 MHz/ 767.25 kHz/ 699.05 kHz/ 767.25 kHz/ 699.05 kHz/ 436.907 kHz/ 383.625 kHz/ 436.907 kHz/ 383.625 kHz FM/AM TUNER: 9.216 MHz (VCO: 5.9904 GHz/ 6.2208 GHz) TMC TUNER: 9.216 MHz (VCO: 5.9904 GHz/ 6.2208 GHz) MAIN PROCESSOR: 24 MHz/ 32.768 kHz/ 11.2896 MHz SYSTEM MICRO COMPUTER: 3.93216 MHz DVD DRIVER: 27 MHz/ 121.5 MHz/ 36.864 MHz/ 33.8688 MHz LCD BACK LIGHT: 436.907 kHz/ 383.625 kHz ELECTRONIC VOLUME: 18.432 MHz FPGA: 14.7456 MHz ECHO CANCELLER: 12.288 MHz HDMI RECEIVER: 27 MHz DISPLAY CONTROLLER: 32 MHz VIDEO DECODER: 32 MHz MICRO COMPUTER: 10 MHz WWR UNIT: 24 MHz GPS: 26 MHz
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Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2.4 GHz: 2402 MHz - 2480 MHz (Bluetooth BR/EDR) 2412 MHz - 2462 MHz (IEEE 802.11b/g/n) U-NII-3: 5745 MHz - 5825 MHz (IEEE 802.11a/n-20) 5755 MHz - 5795 MHz (IEEE 802.11n/ac-40) 5775 MHz (IEEE 802.11ac-80)
Modulation	:	DSSS (IEEE 802.11b), OFDM (IEEE 802.11g/n/a/ac) FHSS (Bluetooth BR/EDR)
Power Supply (inner)	:	DC 3.3 V/1.8 V
Antenna type	:	Monopole Antenna
Antenna Gain	:	2.4 GHz: -8.0 dBi (Bluetooth BR/EDR) -4.7 dBi (IEEE 802.11b/g/n) 5 GHz: -3.0 dBi
Operating Temperature	:	-10 deg. C to +60 deg. C
Information of the Factory		
Factory Name	:	PIONEER MANUFACTURING (THAILAND) CO., LTD.
Address	:	Rojana Industrial Park, 1/31 Moo 5 Tambol Kanham Amphur U-Thai Pranakornsriyutthaya 13210, Thailand

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

*The customer has declared that the EUT has complies with FCC Part 15 Subpart B as SDoC.

3.2 Procedures and results

Item *4)	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	N/A	N/A	*1)
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	N/A	N/A	*2)
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	See data	Complied a)	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 b)	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	5.2 dB 11550.000 MHz, AV, Vertical. Mode: Tx 11ac-80 MIMO 5775 MHz	Complied# c) / d)	Conducted (< 30 MHz) / Radiated (> 30 MHz) *3)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2.4.1	See data	Complied e)	Conducted
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. *1) The test is not applicable since the EUT does not have AC power ports. *2) The test is not applicable since the EUT does not operate in the 5.25 GHz -5.35 GHz and 5.47 GHz -5.725 GHz bands. *3) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b). *4) The DFS test is not applicable since the EUT does not operate in the 5.25 GHz -5.35 GHz and 5.47 GHz -5.725 GHz bands. a) Refer to APPENDIX 1 (data of Maximum Conducted Output Power) b) Refer to APPENDIX 1 (data of Maximum Power Spectral Density) c) Refer to APPENDIX 1 (data of Radiated Spurious Emission) d) Refer to APPENDIX 1 (data of Conducted Spurious Emission) e) Refer to APPENDIX 1 (data of 6 dB 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.					

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

FCC Part 15.31 (e)

This EUT provides stable voltage constantly to the wireless transmitter regardless of input voltage. Instead of a new battery, DC power supply was used for the test. That does not affect the test result, 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.

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3.3 Addition to standard

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

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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Item	Frequency range	Uncertainty (+/-)		
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.6 dB	2.6 dB	2.5 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.0 dB	3.0 dB	3.0 dB
	30 MHz-200 MHz	4.6 dB	4.6 dB	4.6 dB
	200 MHz-1 GHz	6.0 dB	6.0 dB	6.0 dB
	1 GHz-6 GHz	4.9 dB	4.9 dB	4.9 dB
	6 GHz-18 GHz	5.5 dB	5.5 dB	5.5 dB
	18 GHz-40 GHz	5.4 dB	5.4 dB	5.4 dB
Radiated emission (Measurement distance: 1 m)	1 GHz-18 GHz	5.8 dB	5.8 dB	5.8 dB
	18 GHz-40 GHz	5.7 dB	5.7 dB	5.7 dB

SAC=Semi-Anechoic Chamber

SR= Shielded Room is applied besides radiated emission

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	0.98 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	1.75 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.89 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.12 dB
Power Measurement above 1 GHz (Average Detector)_SPM-13	1.06 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-13	1.24 dB
Spurious emission (Conducted) below 1GHz	0.9 dB
Spurious emission (Conducted) 1 GHz-3 GHz	0.9 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.9 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.6 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.0 dB
Bandwidth Measurement	0.07 %
Duty cycle and Time Measurement	0.262 %
Temperature	0.95 deg.C.
Voltage	0.83 %

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3.5 Test Location

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A2LA Certificate Number: 1266.03 (FCC Test Firm Registration Number: 626366, ISED Lab Company Number: 2973D)

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	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 and also was judged the necessity of 802.11ac mode by the pre-test.

Mode	Worst Data mode*
Transmitting (Tx), IEEE 802.11a (11a)	6 Mbps (ANT-0), PN9
Transmitting (Tx), IEEE 802.11n SISO 20 MHz BW (11n-20)	MCS 0 (ANT-0/SGI OFF), PN9
Transmitting (Tx), IEEE 802.11n MIMO 20 MHz BW (11n-20)	MCS 0 (SGI OFF), PN9
Transmitting (Tx), IEEE 802.11n SISO 40 MHz BW (11n-40)	MCS 3 (ANT-0/SGI OFF), PN9
Transmitting (Tx), IEEE 802.11ac SISO 40 MHz BW (11ac-40)	MCS 0 (ANT-0/SGI OFF), PN9
Transmitting (Tx), IEEE 802.11n MIMO 40 MHz BW (11n-40)	MCS 3 (SGI OFF), PN9
Transmitting (Tx), IEEE 802.11ac MIMO 40 MHz BW (11ac-40)	MCS 0 (SGI OFF), PN9
Transmitting (Tx), IEEE 802.11ac SISO 80 MHz BW (11ac-80)	MCS 0 (ANT-0/SGI OFF), PN9
Transmitting (Tx), IEEE 802.11ac MIMO 80 MHz BW (11ac-80)	MCS 0 (SGI OFF), PN9
*The worst antenna (Ant: 0) and 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: 11a/11n-20 : 11 dBm, 11n-40 : 10 dBm, 11ac-40 : 9 dBm, 11ac-80 : 8 dBm Software: SoC: Ver 1.000300 SYS: Ver 8.01 (Date: 2020.1.15 Storage location: EUT memory) Windows 7 Tera Term Version 4.98 (Date: 2020.1.15 Storage location: Driven by connected PC)	
*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 Antenna *2)	Tested Frequency
99 % Occupied Bandwidth, 6 dB Bandwidth,	Tx 11a	ANT-0	5745 MHz
	Tx 11n-20 (SISO)		5785 MHz
	Tx 11n-20 (MIMO)	ANT-0	5825 MHz
	Tx 11n-40 (SISO)	ANT-0	5755 MHz
	Tx 11ac-40 (SISO)		5795 MHz
	Tx 11n-40 (MIMO)	ANT-0	
	Tx 11ac-40 (MIMO)		
	Tx 11ac-80 (SISO)	ANT-0	5775 MHz
Maximum Conducted Output Power Maximum Power Spectral Density	Tx 11a	ANT-0	5745 MHz
	Tx 11n-20 (SISO)		5785 MHz
	Tx 11n-20 (MIMO)	ANT-0+ ANT-1	5825 MHz
	Tx 11n-40 (SISO)	ANT-0	5755 MHz
	Tx 11ac-40 (SISO)		5795 MHz
	Tx 11n-40 (MIMO)	ANT-0+ ANT-1	
	Tx 11ac-40 (MIMO)		
	Tx 11ac-80 (SISO)	ANT-0	5775 MHz
	Tx 11ac-80 (MIMO)	ANT-0+ ANT-1	
Radiated Spurious Emission (Above 1 GHz)	Tx 11a	ANT-0	5745 MHz
	Tx 11n-20 (SISO)		5785 MHz
	Tx 11n-20 (MIMO)	ANT-0+ ANT-1	5825 MHz
	Tx 11n-40 (SISO)	ANT-0	5755 MHz
	Tx 11ac-40 (SISO)		5795 MHz
	Tx 11n-40 (MIMO)	ANT-0+ ANT-1	
	Tx 11ac-40 (MIMO)		
	Tx 11ac-80 (SISO)	ANT-0	5775 MHz
	Tx 11ac-80 (MIMO)	ANT-0+ ANT-1	
	Tx 11a with 3DH5(Hopping)	ANT-0+ ANT-1	5745 MHz
	Tx 11n-20 (SISO) with 3DH5(Hopping)		5825 MHz
	Tx 11n-40 (SISO) with 3DH5(Hopping)	ANT-0+ ANT-1	5755 MHz
	Tx 11ac-40 (SISO) with 3DH5(Hopping)		5795 MHz
	Tx 11ac-80 (SISO) with 3DH5(Hopping)	ANT-0+ ANT-1	5775 MHz
Radiated Spurious Emission (Below 1 GHz) *1)	Tx 11n-20(SISO)	ANT-0	5825 MHz
	Tx 11n-20 (MIMO)	ANT-0+ ANT-1	5785 MHz
	Tx 11n-20(SISO) with 3DH5(Hopping)	ANT-0+ ANT-1	5825 MHz
Conducted Spurious Emission *1)	Tx 11n-20 (MIMO)	ANT-0	5785 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.

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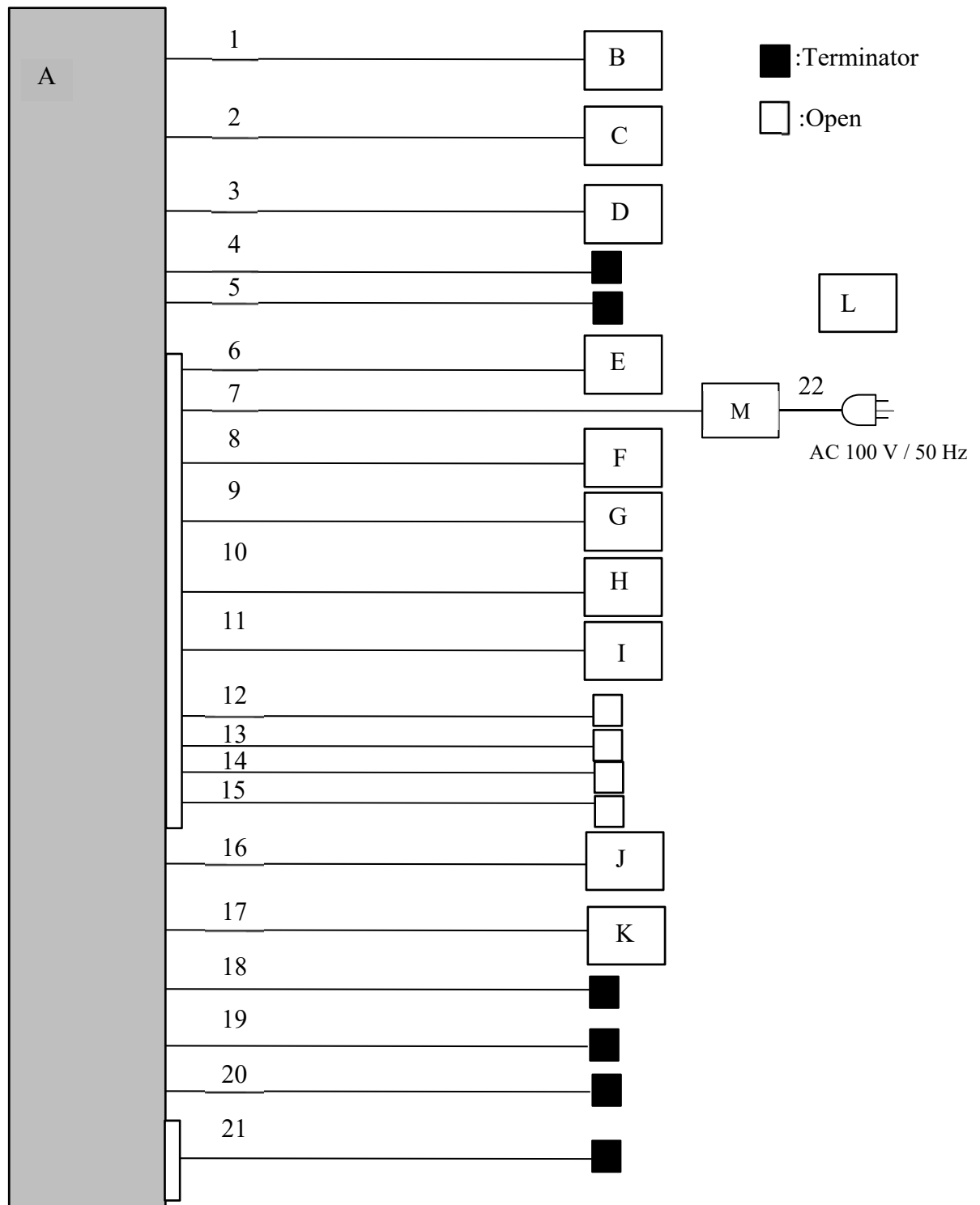
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4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	MULTIMEDIA NAVIGATION RECEIVER	AVIC-W8600NEX	RFTM005855UC*1) RFTM004939UC*2)	Pioneer	EUT
B	GPS Antenna	-	-	-	-
C	USB Memory	SDK-USMGL(B)	-	SONY	-
D	USB Memory	SDK-USMGL(B)	-	SONY	-
E	Mic	-	-	-	-
F	Speaker	LV-002	-	L&V	-
G	Speaker	LV-002	-	L&V	-
H	Speaker	LV-002	-	L&V	-
I	Speaker	LV-002	-	L&V	-
J	Smartphone	SO-01C	-	Sony Ericsson	-
K	Vehicle Tuner	SXV200	-	SiriusXM	-
L	Remote control unit	CD-R33	-	Pioneer	-
M	Power Supply	PAN35-10A	ML002085	KIKUSUI	-

*1) Used for Antenna Terminal conducted test

*2) Used for Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	GPS Antenna	3.5	Shielded	Shielded	-
2	USB	1.5	Shielded	Shielded	-
3	USB	1.5	Shielded	Shielded	-
4	W/R	1.7	Shielded	Shielded	-
5	R. Audio Out	2.0	Shielded	Shielded	-
6	Mic	2.8	Unshielded	Unshielded	-
7	DC	0.4 + 2.3	Unshielded	Unshielded	-
8	Speaker	0.2 + 3.6	Unshielded	Unshielded	-
9	Speaker	0.2 + 3.6	Unshielded	Unshielded	-
10	Speaker	0.2 + 3.6	Unshielded	Unshielded	-
11	Speaker	0.2 + 3.6	Unshielded	Unshielded	-
12	Parking	2.0	Unshielded	Unshielded	-
13	REVERSE GEAR SIGNAL INPUT	0.2 + 1.0	Unshielded	Unshielded	-
14	SYSTEM REMOTE CONTROL	0.2 + 1.0	Unshielded	Unshielded	-
15	CAR SPEED SIGNAL INPUT	0.2 + 1.0	Unshielded	Unshielded	-
16	HDMI	2.0	Shielded	Shielded	-
17	Vehicle Tuner	0.65	Shielded	Shielded	-
18	FM Antenna	2.0	Shielded	Shielded	-
19	RGB Cable	2.0	Shielded	Shielded	Terminated
20	iDATA	1.0	Unshielded	Unshielded	-
21	AV input	1.6	Unshielded	Unshielded	24 pin
22	AC	1.0	Unshielded	Unshielded	-

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SECTION 5: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >

EUT was placed on a urethane platform of nominal size, 1.5 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).

For U-NII-3 Bandedge

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

Restricted band edge:

Apply to limit in the Section 15.209 (a).

Since this limit is severer than the limit of the inside of restricted bands.

*Electric field strength to e.i.r.p. conversion:

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

Test Antennas are used as below;

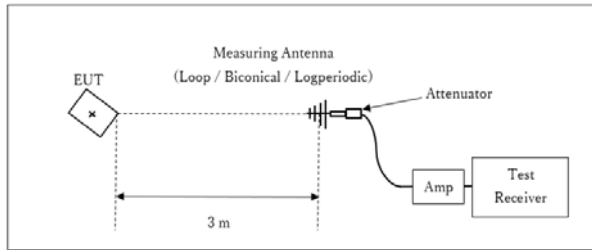
Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

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 VB *1) RBW: 1 MHz VBW: 1/T (T: burst length, refer to Burst rate confirmation sheet) Detector: Peak Trace: Max Hold

*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

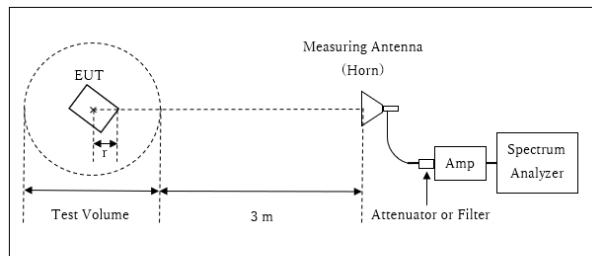
Below 1 GHz



x : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz



r : Radius of an outer periphery of EUT

x : Center of turn table

Distance Factor: $20 \times \log (3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

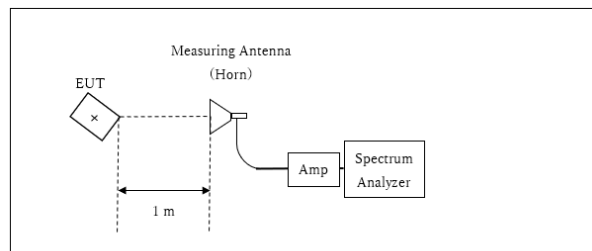
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.88 \text{ m}$

Test Volume : 2.0 m

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

$r = 0.12 \text{ m}$

13 GHz - 40 GHz



x : Center of turn table

Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

*Test Distance: 1 m

- The carrier level and noise levels were confirmed at angle of 0 to 30 deg. Based on the product specification to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Frequency	30 MHz - 1000 MHz	1 GHz - 6.4 GHz	6.4 GHz - 40 GHz
Horizontal	30 deg.	0 deg.	0 deg.
Vertical	30 deg.	0 deg.	0 deg.

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 6: 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
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: 160 MHz BW) (Method PM)
Maximum Power Spectral Density	Encompass the entire EBW	100 kHz *2)	≥ 3 RBW	Auto	RMS Power Averaging (100 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3)	9 kHz – 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz – 30 MHz	10 kHz	30 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) KDB 789033 D02 says that RBW is set to be 500 kHz for 5.725 GHz-5.850 GHz, but it is not possible with spectrum analyzer, so RBW Correction Factor ($10 \log(500 \text{ kHz} / 100 \text{ kHz})$) was added to the test result.

*3) 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 = 10 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

99 % Occupied Bandwidth

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 8, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx

11a

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5745	17656.1
	5785	17668.4
	5825	17686.3

11n-20 SISO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5745	18345.2
	5785	18302.4
	5825	18280.5

11n-20 MIMO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5745	18790.3
	5785	18807.0
	5825	18837.2

99 % Occupied Bandwidth

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 8, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx

11n-40 SISO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5755	36736.5
	5795	36725.6

11n-40 MIMO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5755	36735.1
	5795	36672.0

11ac-40 SISO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5755	36898.6
	5795	36871.3

11ac-40 MIMO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5755	36947.0
	5795	36929.3

11ac-80 SISO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5775	75966.8

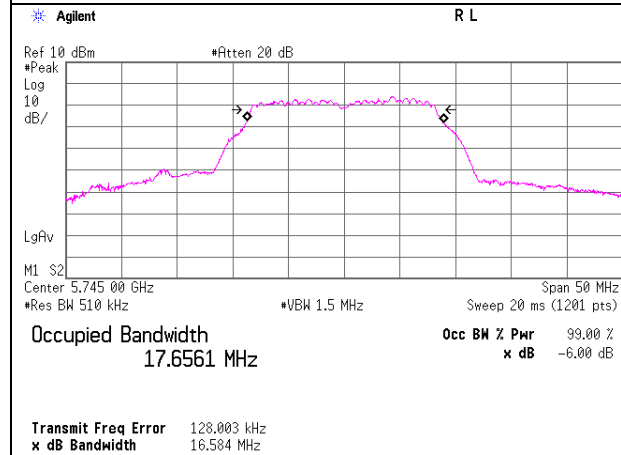
11ac-80 MIMO

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5775	76046.4

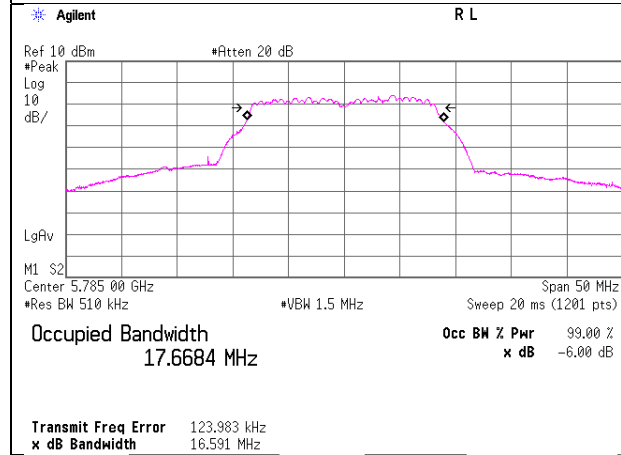
99 % Occupied Bandwidth

11a, Antenna 0

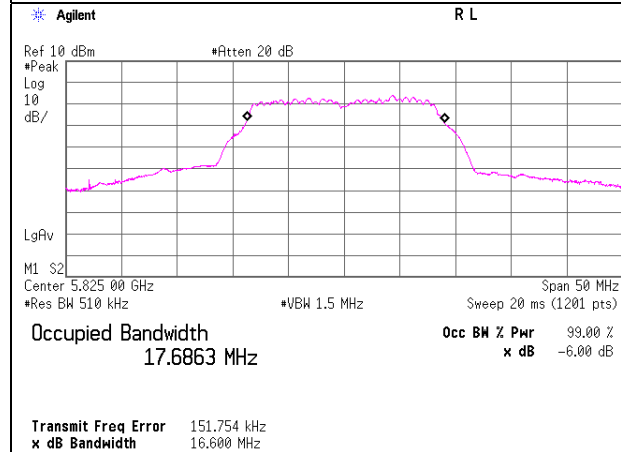
5745 MHz



5785 MHz



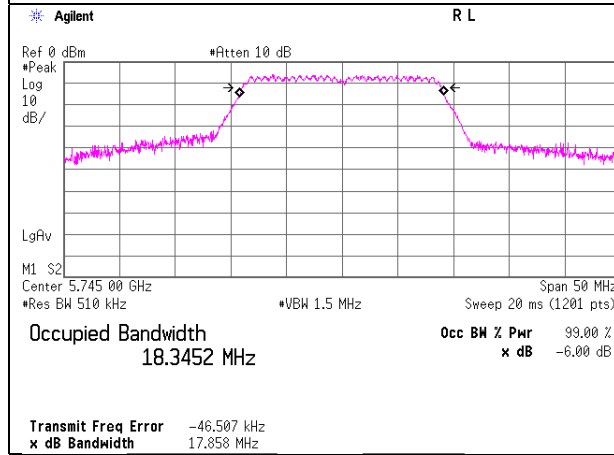
5825 MHz



99 % Occupied Bandwidth

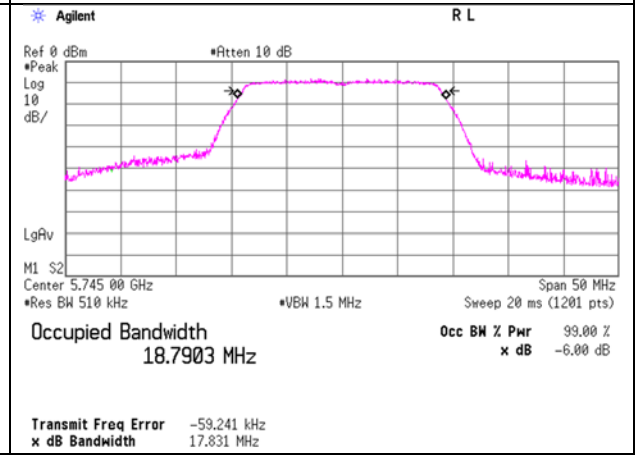
11n-20 SISO, Antenna 0

5745 MHz

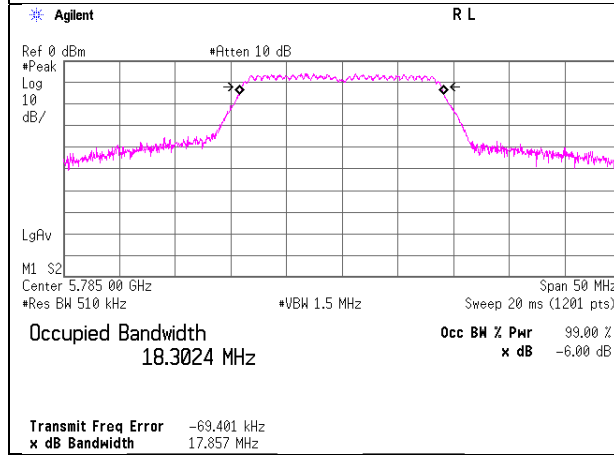


11n-20 MIMO, Antenna 0

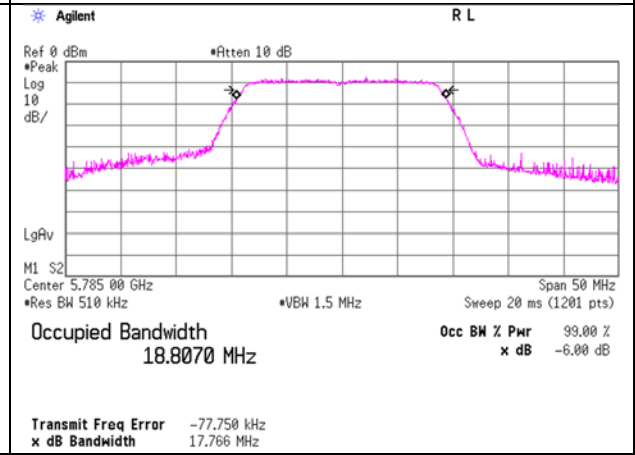
5745 MHz



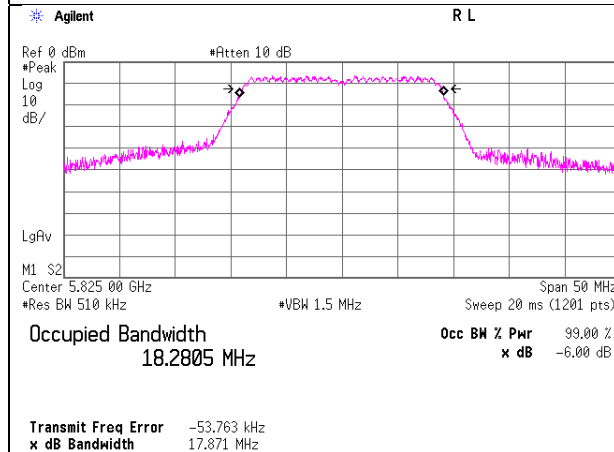
5785 MHz



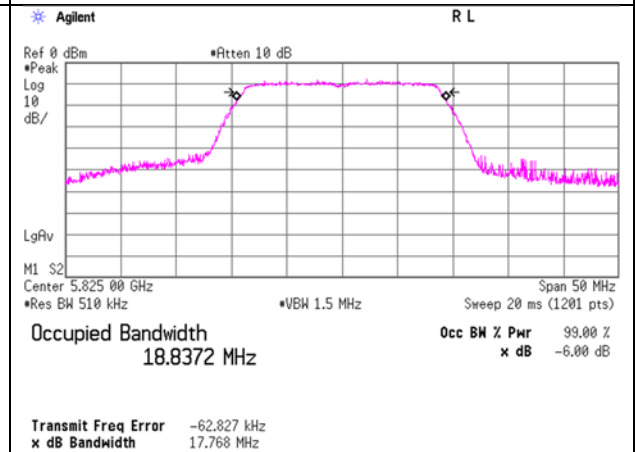
5785 MHz



5825 MHz



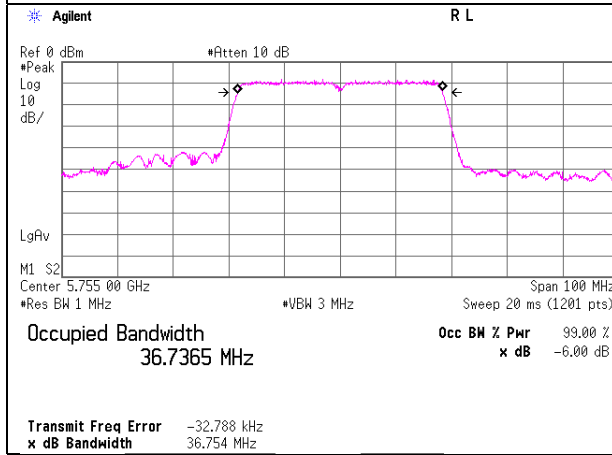
5825 MHz



99 % Occupied Bandwidth

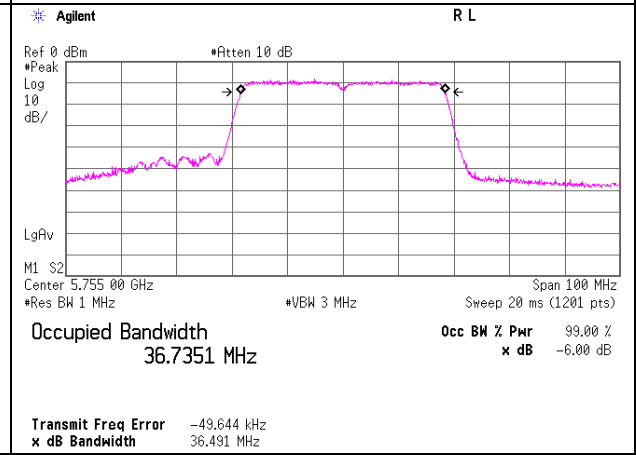
11n-40 SISO, Antenna 0

5755 MHz

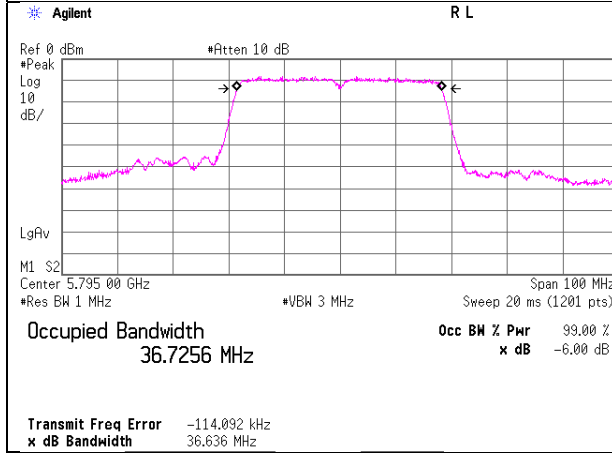


11n-40 MIMO, Antenna 0

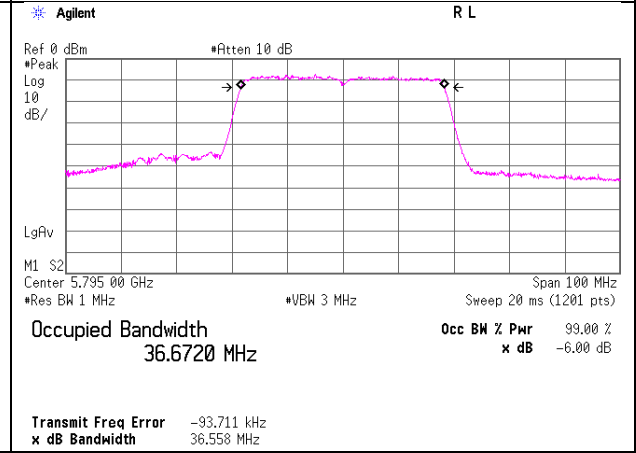
5755 MHz



5795 MHz



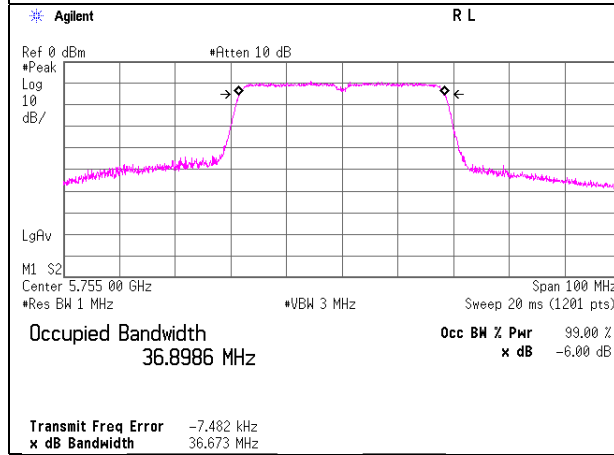
5795 MHz



99 % Occupied Bandwidth

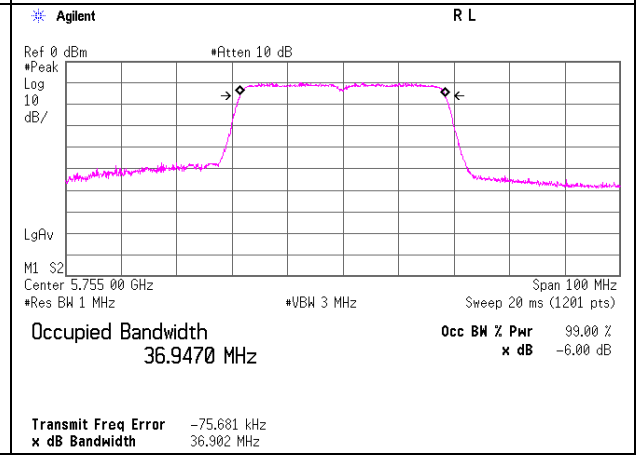
11ac-40 SISO, Antenna 0

5755 MHz

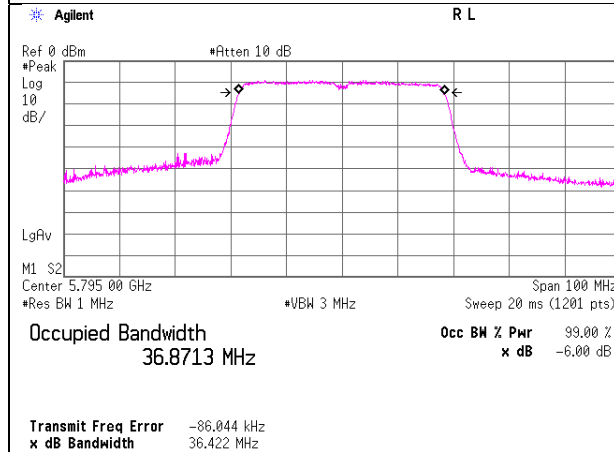


11ac-40 MIMO, Antenna 0

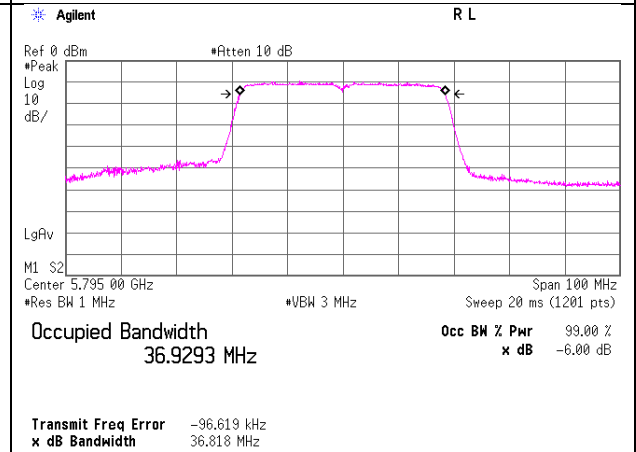
5755 MHz



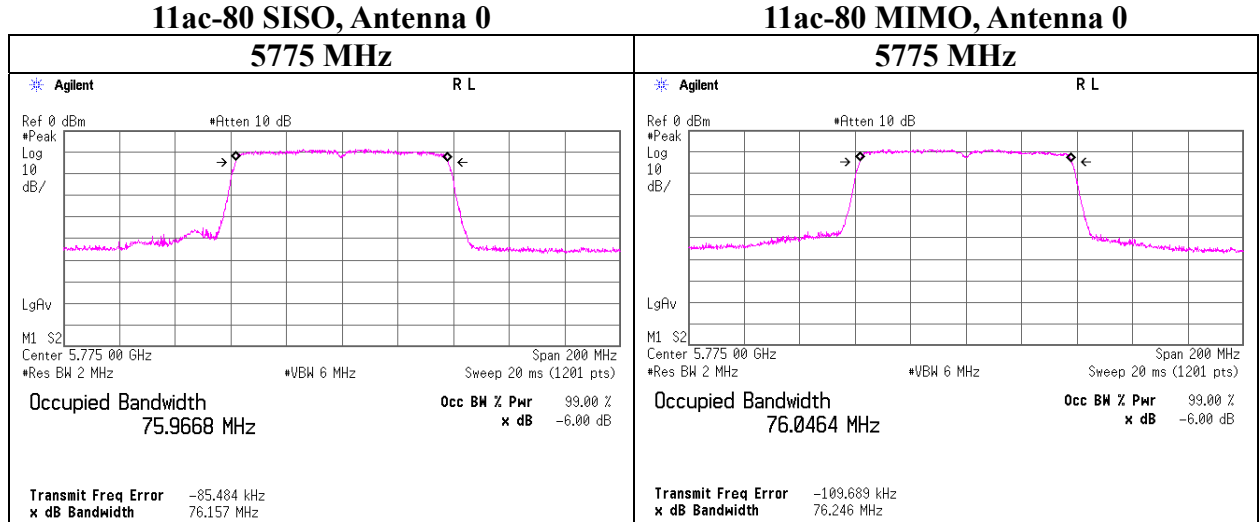
5795 MHz



5795 MHz



99 % Occupied Bandwidth



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6 dB Bandwidth

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020 February 10, 2020
Temperature / Humidity 25 deg. C / 48 % RH 23 deg. C / 50 % RH
Engineer Hiromasa Sato Takahiro Kawakami
Mode Tx

11a

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5745	16.391	> 0.500
	5785	16.390	> 0.500
	5825	16.397	> 0.500

11n-20 SISO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5745	17.638	> 0.500
	5785	17.645	> 0.500
	5825	17.628	> 0.500

11n-20 MIMO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5745	17.626	> 0.500
	5785	17.626	> 0.500
	5825	17.624	> 0.500

6 dB Bandwidth

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020 February 10, 2020
Temperature / Humidity 25 deg. C / 48 % RH 23 deg. C / 50 % RH
Engineer Hiromasa Sato Takahiro Kawakami
Mode Tx

11n-40 SISO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5755	36.441	> 0.500
	5795	36.452	> 0.500

11n-40 MIMO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5755	36.505	> 0.500
	5795	36.502	> 0.500

11ac-40 SISO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5755	36.464	> 0.500
	5795	36.472	> 0.500

11ac-40 MIMO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5755	36.370	> 0.500
	5795	36.354	> 0.500

11ac-80 SISO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5775	75.783	> 0.500

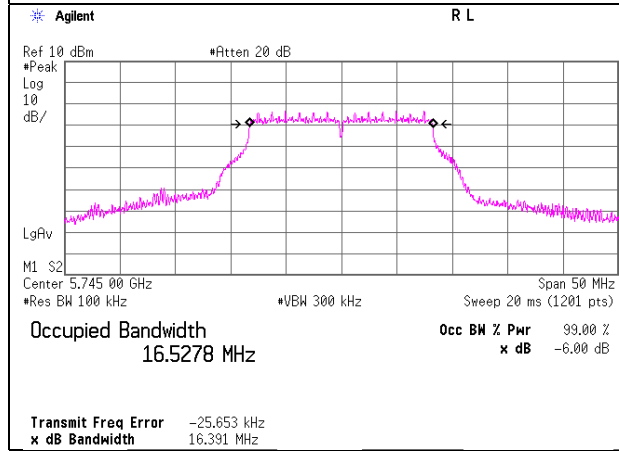
11ac-80 MIMO

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5775	75.924	> 0.500

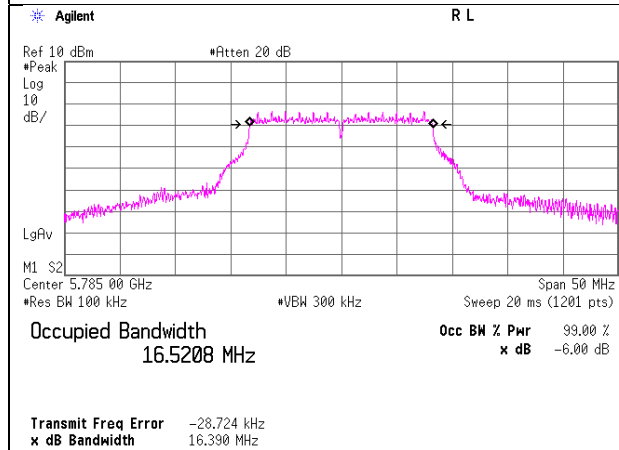
6 dB Bandwidth

11a, Antenna 0

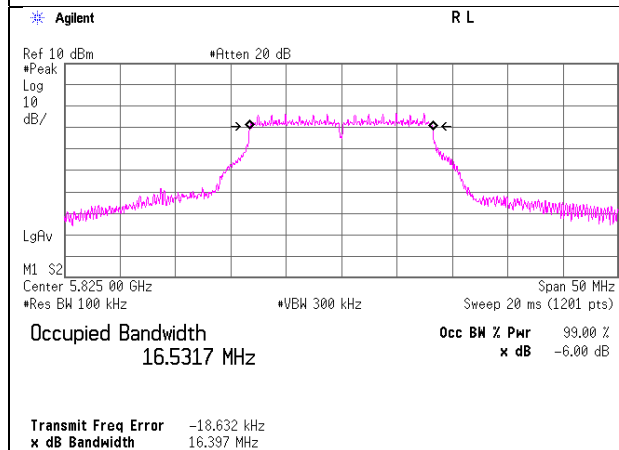
5745 MHz



5785 MHz



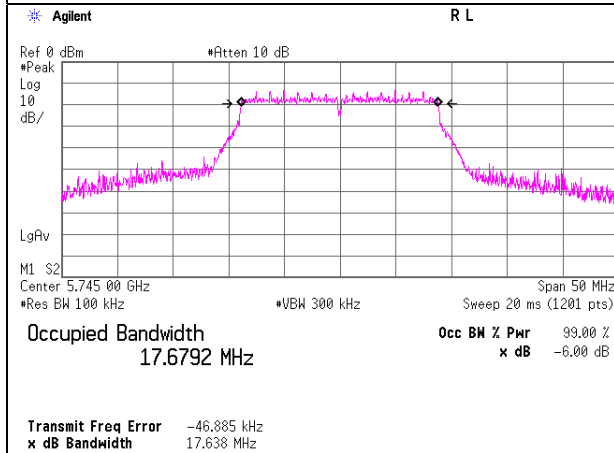
5825 MHz



6 dB Bandwidth

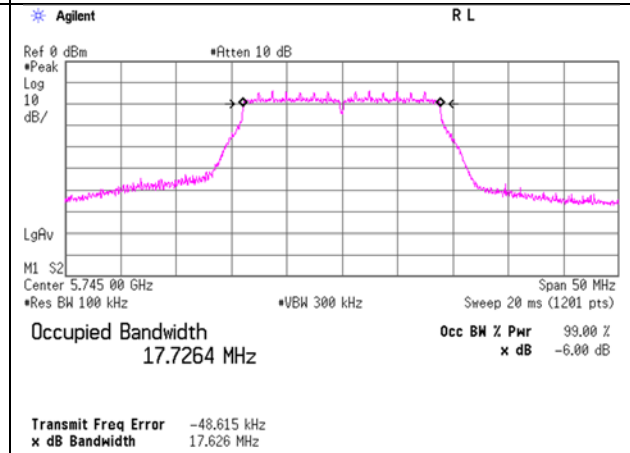
11n-20 SISO, Antenna 0

5745 MHz

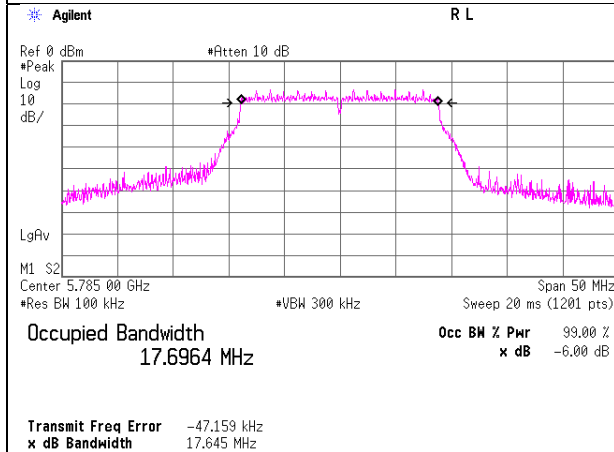


11n-20 MIMO, Antenna 0

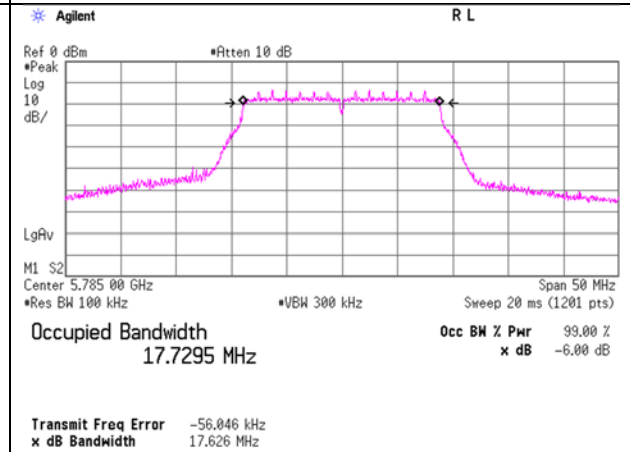
5745 MHz



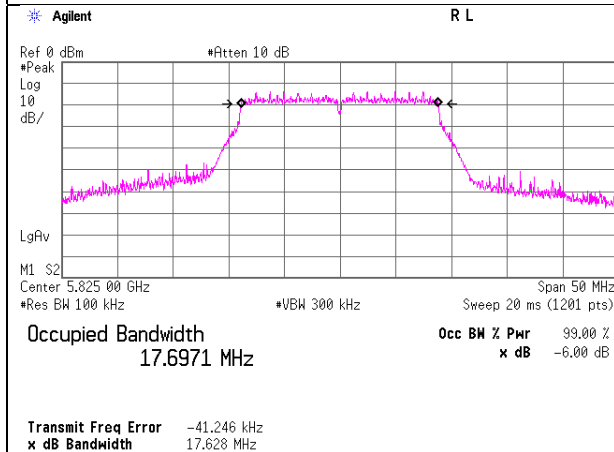
5785 MHz



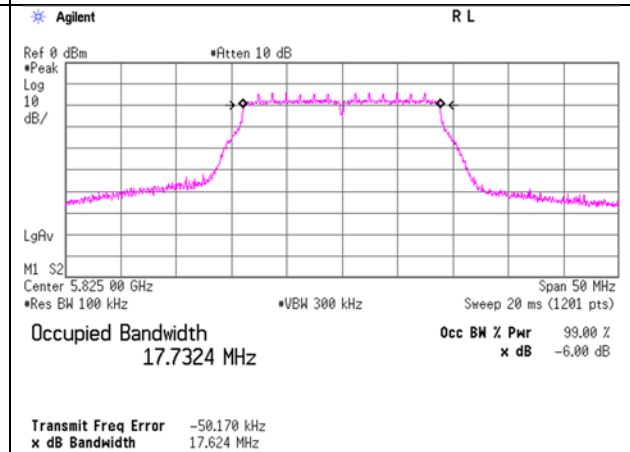
5785 MHz



5825 MHz



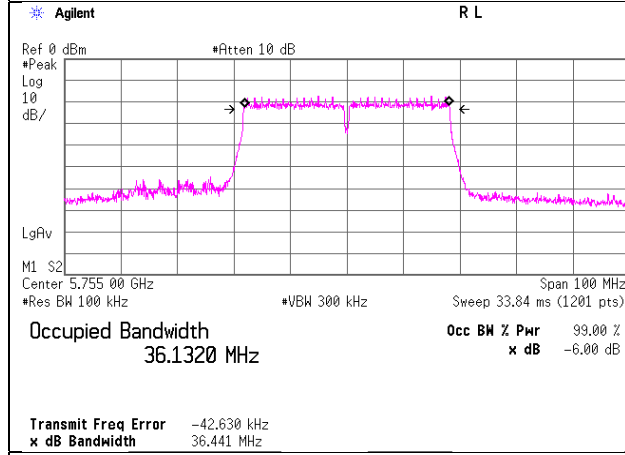
5825 MHz



6 dB Bandwidth

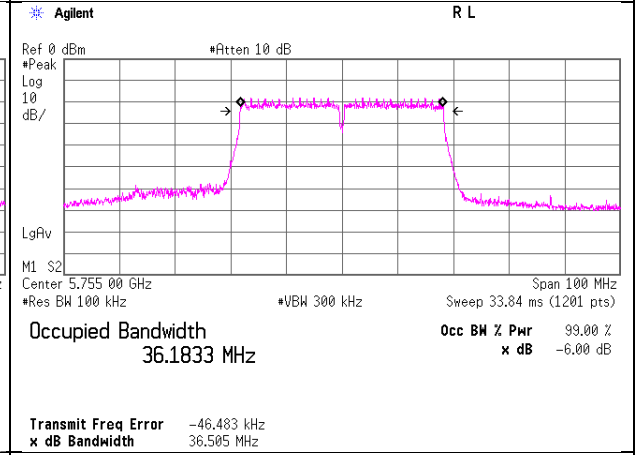
11n-40 SISO, Antenna 0

5755 MHz

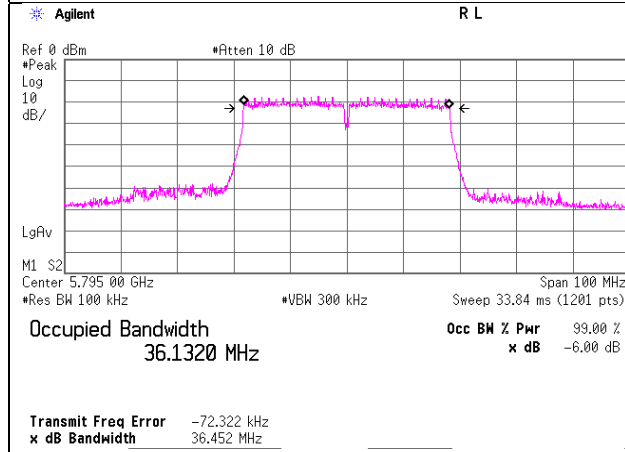


11n-40 MIMO, Antenna 0

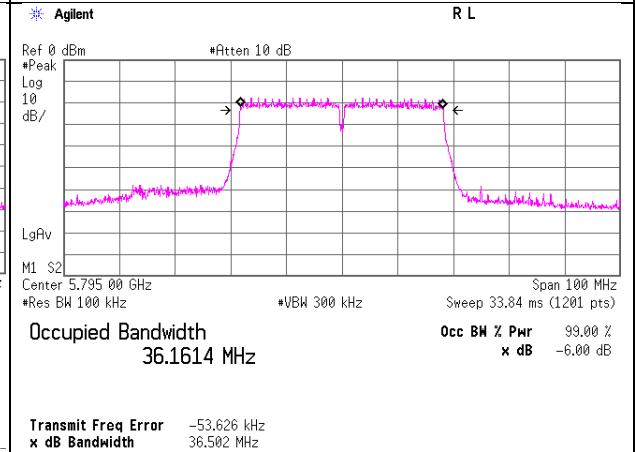
5755 MHz



5795 MHz



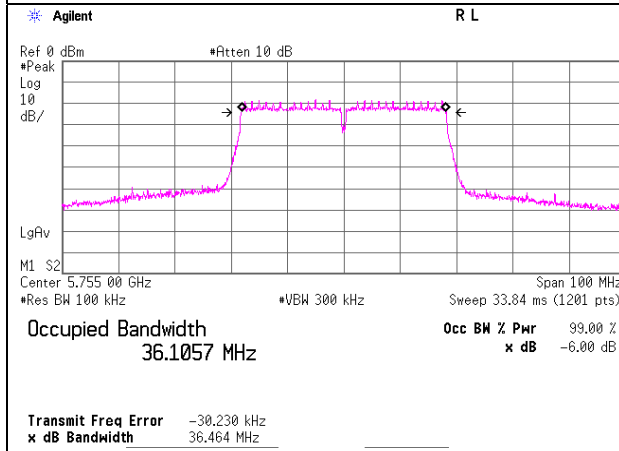
5795 MHz



6 dB Bandwidth

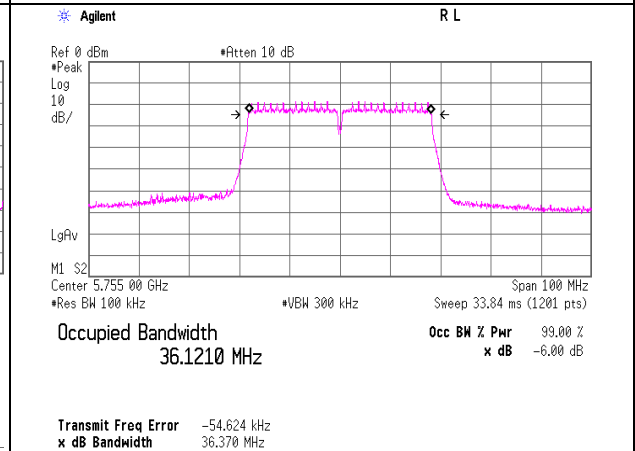
11ac-40 SISO, Antenna 0

5755 MHz

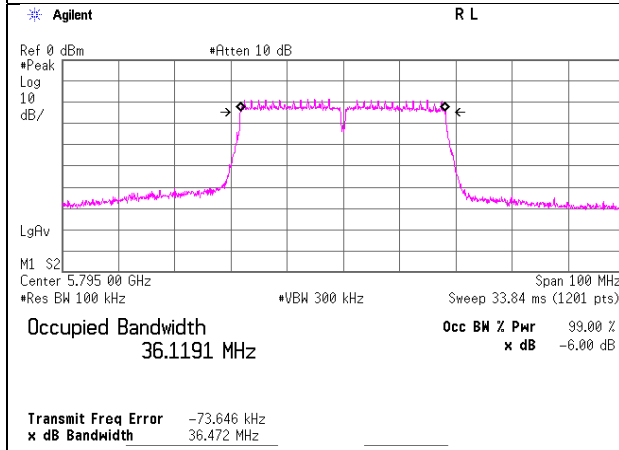


11ac-40 MIMO, Antenna 0

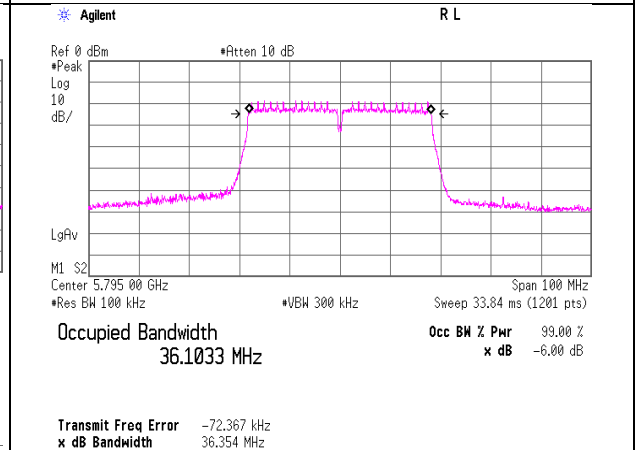
5755 MHz



5795 MHz



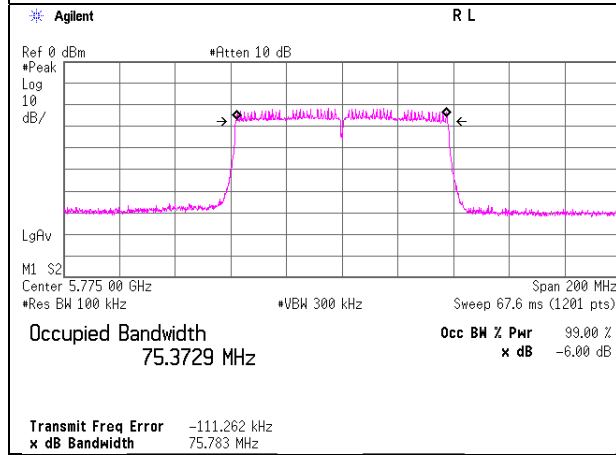
5795 MHz



6 dB Bandwidth

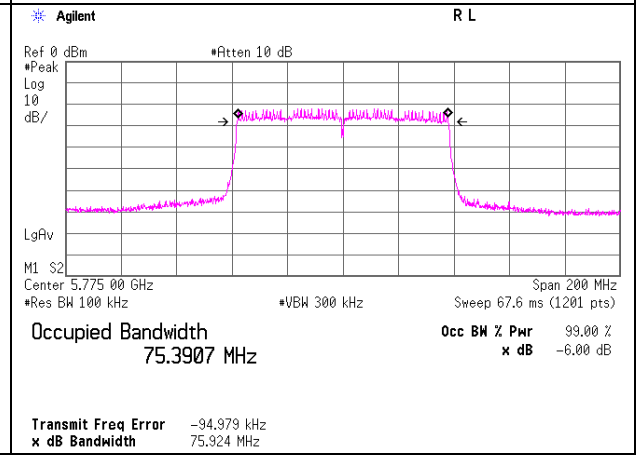
11ac-80 SISO, Antenna 0

5775 MHz



11ac-80 MIMO, Antenna 0

5775 MHz



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Shonan EMC Lab.

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Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date January 16, 2020
Temperature / Humidity 26 deg. C / 43 % RH
Engineer Hiromasa Sato
Mode Tx SISO

Antenna 0

Applied limit: 15.407, mobile and portable client device

Mode	Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	99% OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
11a	5745	-1.36	2.65	9.73	0.26	-3.0	17.656	11.28	13.43	30.00	18.72	8.28	6.73	36.00	27.72
	5785	-1.35	2.65	9.73	0.26	-3.0	17.668	11.29	13.46	30.00	18.71	8.29	6.75	36.00	27.71
	5825	-1.25	2.66	9.73	0.26	-3.0	17.686	11.40	13.80	30.00	18.60	8.40	6.92	36.00	27.60
11n-20 (SISO)	5745	-1.42	2.65	9.73	0.31	-3.0	18.345	11.27	13.40	30.00	18.73	8.27	6.72	36.00	27.73
	5785	-1.40	2.65	9.73	0.31	-3.0	18.302	11.29	13.47	30.00	18.71	8.29	6.75	36.00	27.71
	5825	-1.27	2.66	9.73	0.31	-3.0	18.281	11.43	13.91	30.00	18.57	8.43	6.97	36.00	27.57
11n-40 (SISO)	5755	-4.10	2.65	9.73	1.76	-3.0	36.737	10.04	10.09	30.00	19.96	7.04	5.06	36.00	28.96
	5795	-4.24	2.65	9.73	1.76	-3.0	36.726	9.90	9.77	30.00	20.10	6.90	4.90	36.00	29.10
11ac-40 (SISO)	5755	-4.00	2.65	9.73	0.66	-3.0	36.899	9.04	8.02	30.00	20.96	6.04	4.02	36.00	29.96
	5795	-4.02	2.65	9.73	0.66	-3.0	36.871	9.02	7.98	30.00	20.98	6.02	4.00	36.00	29.98
11ac-80 (SISO)	5775	-5.50	2.65	9.73	1.21	-3.0	75.967	8.09	6.45	30.00	21.91	5.09	3.23	36.00	30.91

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 (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date January 21, 2020
Temperature / Humidity 21 deg. C / 49 % RH
Engineer Toshinori Yamada
Mode Tx MIMO

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Mode	Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
				Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
				1 [mW]	2 [mW]	Sum [mW]				1 [mW]	2 [mW]	Sum [mW]			
11n-20 (MIMO)	5745	-	18.790	13.04	12.25	25.29	14.03	30.00	15.97	6.54	6.14	12.68	11.03	36.00	24.97
	5785	-	18.807	13.16	12.31	25.47	14.06	30.00	15.94	6.60	6.17	12.77	11.06	36.00	24.94
	5825	-	18.837	13.10	11.86	24.96	13.97	30.00	16.03	6.57	5.95	12.51	10.97	36.00	25.03
11n-40 (MIMO)	5755	-	36.735	9.55	9.25	18.80	12.74	30.00	17.26	4.79	4.63	9.42	9.74	36.00	26.26
	5795	-	36.672	9.57	9.20	18.78	12.74	30.00	17.26	4.80	4.61	9.41	9.74	36.00	26.26
11ac-40 (MIMO)	5755	-	36.947	7.71	7.40	15.11	11.79	30.00	18.21	3.86	3.71	7.57	8.79	36.00	27.21
	5795	-	36.929	7.74	7.01	14.76	11.69	30.00	18.31	3.88	3.52	7.40	8.69	36.00	27.31
11ac-80 (MIMO)	5775	-	76.046	6.37	6.22	12.59	11.00	30.00	19.00	3.19	3.12	6.31	8.00	36.00	28.00

Mode	Tested Frequency [MHz]	Duty Factor [dB]	Antenna 0						Antenna 1					
			Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result	
							Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
11n-20 (MIMO)	5745	0.31	-1.54	2.65	9.73	-3.00	11.15	8.15	-2.23	2.85	9.95	-3.00	10.88	7.88
	5785	0.31	-1.50	2.65	9.73	-3.00	11.19	8.19	-2.21	2.85	9.95	-3.00	10.90	7.90
	5825	0.31	-1.53	2.66	9.73	-3.00	11.17	8.17	-2.37	2.86	9.94	-3.00	10.74	7.74
11n-40 (MIMO)	5755	1.76	-4.34	2.65	9.73	-3.00	9.80	6.80	-4.90	2.85	9.95	-3.00	9.66	6.66
	5795	1.76	-4.33	2.65	9.73	-3.00	9.81	6.81	-4.92	2.86	9.94	-3.00	9.64	6.64
11ac-40 (MIMO)	5755	1.04	-4.55	2.65	9.73	-3.00	8.87	5.87	-5.15	2.85	9.95	-3.00	8.69	5.69
	5795	1.04	-4.53	2.65	9.73	-3.00	8.89	5.89	-5.38	2.86	9.94	-3.00	8.46	5.46
11ac-80 (MIMO)	5775	1.77	-6.11	2.65	9.73	-3.00	8.04	5.04	-6.63	2.85	9.95	-3.00	7.94	4.94

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

Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date January 16, 2020
Temperature / Humidity 26 deg. C / 43 % RH
Engineer Hiromasa Sato
Mode Tx 11a

5745 MHz

Mode	Rate Mbps	Reading (timed average) [dBm]	Cable Loss [dBm]	Atten Loss [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	6	-1.36	2.65	9.73	0.26	11.28	*
	9	-1.67	2.65	9.73	0.43	11.14	
	12	-1.78	2.65	9.73	0.56	11.16	
	18	-2.01	2.65	9.73	0.72	11.09	
	24	-2.41	2.65	9.73	0.92	10.89	
	36	-2.54	2.65	9.73	1.41	11.25	
	48	-3.17	2.65	9.73	1.70	10.91	
Antenna 1	54	-3.18	2.65	9.73	1.80	11.00	
	6	-2.23	2.85	9.95	0.26	10.83	
	9	-2.44	2.85	9.95	0.43	10.79	
	12	-2.67	2.85	9.95	0.56	10.69	
	18	-2.83	2.85	9.95	0.72	10.69	
	24	-3.21	2.85	9.95	0.92	10.51	
	36	-3.54	2.85	9.95	1.41	10.67	
	48	-3.91	2.85	9.95	1.70	10.59	
	54	-4.08	2.85	9.95	1.80	10.52	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Cable Loss} + \text{Atten Loss} + \text{Duty factor}$$

Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date January 16, 2020
Temperature / Humidity 26 deg. C / 43 % RH
Engineer Hiromasa Sato
Mode Tx 11n-20 (SISO)

5745 MHz (SGI OFF)

Mode	Rate MCS	Reading (timed average) [dBm]	Cable Loss [dBm]	Atten Loss [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-1.42	2.65	9.73	0.31	11.27	*
	1	-1.92	2.65	9.73	0.59	11.05	
	2	-2.11	2.65	9.73	0.75	11.02	
	3	-2.37	2.65	9.73	1.04	11.05	
	4	-2.84	2.65	9.73	1.41	10.95	
	5	-3.08	2.65	9.73	1.76	11.06	
	6	-3.03	2.65	9.73	1.81	11.16	
Antenna 1	7	-3.25	2.65	9.73	1.95	11.08	
	0	-2.17	2.85	9.95	0.31	10.94	
	1	-2.67	2.85	9.95	0.59	10.72	
	2	-2.90	2.85	9.95	0.75	10.65	
	3	-3.28	2.85	9.95	1.04	10.56	
	4	-3.63	2.85	9.95	1.41	10.58	
	5	-4.02	2.85	9.95	1.76	10.54	
	6	-4.10	2.85	9.95	1.81	10.51	
	7	-4.21	2.85	9.95	1.95	10.54	

5745 MHz (SGI ON)

Mode	Rate MCS	Reading (timed average) [dBm]	Cable Loss [dBm]	Atten Loss [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-1.46	2.65	9.73	0.34	11.26	
	1	-1.80	2.65	9.73	0.64	11.22	
	2	-2.03	2.65	9.73	0.91	11.26	
	3	-2.52	2.65	9.73	1.02	10.88	
	4	-2.83	2.65	9.73	1.51	11.06	
	5	-3.09	2.65	9.73	1.84	11.13	
	6	-3.22	2.65	9.73	1.99	11.15	
Antenna 1	7	-3.60	2.65	9.73	2.11	10.89	
	0	-2.31	2.85	9.95	0.34	10.83	
	1	-2.70	2.85	9.95	0.64	10.74	
	2	-3.08	2.85	9.95	0.91	10.63	
	3	-3.37	2.85	9.95	1.02	10.45	
	4	-3.66	2.85	9.95	1.51	10.65	
	5	-3.99	2.85	9.95	1.84	10.65	
	6	-4.11	2.85	9.95	1.99	10.68	
	7	-4.33	2.85	9.95	2.11	10.58	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Cable Loss} + \text{Atten Loss} + \text{Duty factor}$$

Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date January 16, 2020
Temperature / Humidity 26 deg. C / 43 % RH
Engineer Hiromasa Sato
Mode Tx 11n-40 (SISO)

5755 MHz (SGI OFF)

Mode	Rate MCS	Reading (timed average) [dBm]	Cable Loss [dBm]	Atten Loss [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-3.29	2.65	9.73	0.55	9.64	
	1	-3.69	2.65	9.73	0.97	9.66	
	2	-4.19	2.65	9.73	1.46	9.65	
	3	-4.10	2.65	9.73	1.76	10.04	*
	4	-5.07	2.65	9.73	2.04	9.35	
	5	-5.56	2.65	9.73	2.63	9.45	
	6	-5.65	2.65	9.73	2.72	9.45	
Antenna 1	7	-5.66	2.65	9.73	2.88	9.60	
	0	-3.78	2.85	9.95	0.55	9.57	
	1	-4.46	2.85	9.95	0.97	9.31	
	2	-4.53	2.85	9.95	1.46	9.73	
	3	-4.82	2.85	9.95	1.76	9.74	
	4	-5.47	2.85	9.95	2.04	9.37	
	5	-6.07	2.85	9.95	2.63	9.36	
	6	-6.05	2.85	9.95	2.72	9.47	
	7	-6.24	2.85	9.95	2.88	9.44	

5755 MHz (SGI ON)

Mode	Rate MCS	Reading (timed average) [dBm]	Cable Loss [dBm]	Atten Loss [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-3.16	2.65	9.73	0.60	9.82	
	1	-4.19	2.65	9.73	1.28	9.47	
	2	-4.29	2.65	9.73	1.57	9.66	
	3	-4.36	2.65	9.73	1.92	9.94	
	4	-5.21	2.65	9.73	2.34	9.51	
	5	-5.66	2.65	9.73	2.81	9.53	
	6	-5.66	2.65	9.73	2.90	9.62	
Antenna 1	7	-5.84	2.65	9.73	3.06	9.60	
	0	-3.79	2.85	9.95	0.60	9.61	
	1	-4.62	2.85	9.95	1.28	9.46	
	2	-4.94	2.85	9.95	1.57	9.43	
	3	-5.05	2.85	9.95	1.92	9.67	
	4	-5.83	2.85	9.95	2.34	9.31	
	5	-6.13	2.85	9.95	2.81	9.48	
	6	-6.21	2.85	9.95	2.90	9.49	
	7	-6.46	2.85	9.95	3.06	9.40	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Cable Loss} + \text{Atten Loss} + \text{Duty factor}$$

Maximum Conducted Output Power

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 16, 2020
Temperature / Humidity	26 deg. C / 43 % RH
Engineer	Hiromasa Sato
Mode	Tx 11ac-40 (SISO)

5755 MHz (SGIOFF)

Mode	Rate MCS	Reading (timed average) [dBm]	Cable Loss [dBm]	Atten Loss [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-4.00	2.65	9.73	0.66	9.04	*
	1	-4.92	2.65	9.73	1.15	8.61	
	2	-5.18	2.65	9.73	1.38	8.58	
	3	-5.56	2.65	9.73	1.68	8.50	
	4	-6.01	2.65	9.73	2.34	8.71	
	5	-6.45	2.65	9.73	2.43	8.36	
	6	-6.62	2.65	9.73	2.83	8.59	
	7	-6.80	2.65	9.73	2.94	8.52	
	8	-6.95	2.65	9.73	2.79	8.22	
	9	-7.19	2.65	9.73	3.25	8.44	
Antenna 1	0	-4.88	2.85	9.95	0.66	8.58	
	1	-5.67	2.85	9.95	1.15	8.28	
	2	-5.94	2.85	9.95	1.38	8.24	
	3	-6.14	2.85	9.95	1.68	8.34	
	4	-6.61	2.85	9.95	2.34	8.53	
	5	-7.02	2.85	9.95	2.43	8.21	
	6	-7.51	2.85	9.95	2.83	8.12	
	7	-7.39	2.85	9.95	2.94	8.35	
	8	-7.56	2.85	9.95	2.79	8.03	
	9	-7.70	2.85	9.95	3.25	8.35	

5755 MHz (SGION)

Mode	Rate MCS	Reading (timed average) [dBm]	Cable Loss [dBm]	Atten Loss [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-4.22	2.65	9.73	0.66	8.82	
	1	-4.75	2.65	9.73	1.15	8.78	
	2	-5.40	2.65	9.73	1.38	8.36	
	3	-5.60	2.65	9.73	1.68	8.46	
	4	-5.98	2.65	9.73	2.34	8.74	
	5	-6.47	2.65	9.73	2.43	8.34	
	6	-6.64	2.65	9.73	2.84	8.58	
	7	-6.70	2.65	9.73	2.94	8.62	
	8	-6.82	2.65	9.73	3.25	8.81	
	9	-6.97	2.65	9.73	3.25	8.66	
Antenna 1	0	-5.00	2.85	9.95	0.66	8.46	
	1	-5.50	2.85	9.95	1.15	8.45	
	2	-5.97	2.85	9.95	1.38	8.21	
	3	-6.21	2.85	9.95	1.68	8.27	
	4	-6.73	2.85	9.95	2.34	8.41	
	5	-6.99	2.85	9.95	2.43	8.24	
	6	-7.40	2.85	9.95	2.84	8.24	
	7	-7.48	2.85	9.95	2.94	8.26	
	8	-7.72	2.85	9.95	3.25	8.33	
	9	-7.73	2.85	9.95	3.25	8.32	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Cable Loss} + \text{Atten Loss} + \text{Duty factor}$$

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Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date January 16, 2020
Temperature / Humidity 26 deg. C / 43 % RH
Engineer Hiromasa Sato
Mode Tx 11ac-80 (SISO)

5775 MHz (SGIOFF)

Mode	Rate	Reading (timed average)	Cable Loss	Atten Loss	Duty factor	Burst power	Remarks
	MCS	[dBm]	[dBm]	[dBm]	[dB]	[dBm]	
Antenna 0	0	-5.50	2.65	9.73	1.21	8.09	*
	1	-6.35	2.65	9.73	1.92	7.95	
	2	-6.86	2.65	9.73	2.48	8.00	
	3	-7.42	2.65	9.73	2.81	7.77	
	4	-7.80	2.65	9.73	3.25	7.83	
	5	-8.01	2.65	9.73	3.52	7.89	
	6	-8.25	2.65	9.73	3.62	7.75	
	7	-8.38	2.65	9.73	3.76	7.76	
	8	-8.46	2.65	9.73	3.85	7.77	
	9	-8.50	2.65	9.73	3.59	7.47	
Antenna 1	0	-6.25	2.85	9.95	1.21	7.76	
	1	-7.05	2.85	9.95	1.92	7.67	
	2	-7.57	2.85	9.95	2.48	7.71	
	3	-8.10	2.85	9.95	2.81	7.51	
	4	-8.44	2.85	9.95	3.25	7.61	
	5	-8.64	2.85	9.95	3.52	7.68	
	6	-9.09	2.85	9.95	3.62	7.33	
	7	-9.20	2.85	9.95	3.76	7.36	
	8	-9.29	2.85	9.95	3.85	7.36	
	9	-9.40	2.85	9.95	3.59	6.99	

5775 MHz (SGION)

Mode	Rate	Reading (timed average)	Cable Loss	Atten Loss	Duty factor	Burst power	Remarks
	MCS	[dBm]	[dBm]	[dBm]	[dB]	[dBm]	
Antenna 0	0	-5.57	2.65	9.73	1.21	8.02	
	1	-6.30	2.65	9.73	1.92	8.00	
	2	-6.89	2.65	9.73	2.48	7.97	
	3	-7.38	2.65	9.73	2.81	7.81	
	4	-7.79	2.65	9.73	3.25	7.84	
	5	-7.96	2.65	9.73	3.52	7.94	
	6	-8.31	2.65	9.73	3.64	7.71	
	7	-8.36	2.65	9.73	3.76	7.78	
	8	-8.45	2.65	9.73	3.85	7.78	
	9	-8.57	2.65	9.73	3.85	7.66	
Antenna 1	0	-6.36	2.85	9.95	1.21	7.65	
	1	-7.12	2.85	9.95	1.92	7.60	
	2	-7.71	2.85	9.95	2.48	7.57	
	3	-8.04	2.85	9.95	2.81	7.57	
	4	-8.46	2.85	9.95	3.25	7.59	
	5	-8.78	2.85	9.95	3.52	7.54	
	6	-8.97	2.85	9.95	3.64	7.47	
	7	-9.21	2.85	9.95	3.76	7.35	
	8	-9.33	2.85	9.95	3.85	7.32	
	9	-9.39	2.85	9.95	3.85	7.26	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Cable Loss} + \text{Atten Loss} + \text{Duty factor}$$

UL Japan, Inc.

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Maximum Conducted Output Power

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	January 21, 2020
Temperature / Humidity	21 deg. C / 49 % RH
Engineer	Toshinori Yamada
Mode	Tx 11n-20 (MIMO)

5745 MHz (SGI OFF)

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-1.54	-2.23	0.70	0.60	1.30	1.14	0.31	-	-	1.45	*
1	-1.91	-2.60	0.64	0.55	1.19	0.77	0.59	-	-	1.36	
2	-2.30	-2.88	0.59	0.52	1.10	0.43	0.75	-	-	1.18	
3	-2.51	-3.20	0.56	0.48	1.04	0.17	1.04	-	-	1.21	
4	-2.82	-3.48	0.52	0.45	0.97	-0.13	1.41	-	-	1.29	
5	-3.11	-3.90	0.49	0.41	0.90	-0.48	1.76	-	-	1.28	
6	-3.19	-3.96	0.48	0.40	0.88	-0.55	1.81	-	-	1.26	
7	-3.30	-4.01	0.47	0.40	0.86	-0.63	2.01	-	-	1.38	

5745 MHz (SGI ON)

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-1.64	-2.33	0.69	0.58	1.27	1.04	0.34	-	-	1.38	
1	-1.98	-2.65	0.63	0.54	1.18	0.71	0.64	-	-	1.35	
2	-2.33	-3.08	0.58	0.49	1.08	0.32	0.91	-	-	1.23	
3	-2.46	-3.20	0.57	0.48	1.05	0.20	1.15	-	-	1.35	
4	-3.02	-3.55	0.50	0.44	0.94	-0.27	1.51	-	-	1.24	
5	-3.28	-3.94	0.47	0.40	0.87	-0.59	1.84	-	-	1.25	
6	-3.66	-4.03	0.43	0.40	0.83	-0.83	2.03	-	-	1.20	
7	-3.68	-4.22	0.43	0.38	0.81	-0.93	2.11	-	-	1.18	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date January 21, 2020
Temperature / Humidity 21 deg. C / 49 % RH
Engineer Toshinori Yamada
Mode Tx 11n-40 (MIMO)

5755 MHz (SGI OFF)

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-3.29	-3.62	0.47	0.43	0.90	-0.44	0.55	-	-	0.11	
1	-3.90	-4.09	0.41	0.39	0.80	-0.98	0.97	-	-	-0.01	
2	-4.11	-4.55	0.39	0.35	0.74	-1.31	1.46	-	-	0.15	
3	-4.34	-4.90	0.37	0.32	0.69	-1.60	1.76	-	-	0.16	*
4	-5.08	-5.41	0.31	0.29	0.60	-2.23	2.04	-	-	-0.19	
5	-5.55	-5.93	0.28	0.26	0.53	-2.73	2.63	-	-	-0.10	
6	-5.63	-6.00	0.27	0.25	0.52	-2.80	2.81	-	-	0.01	
7	-5.77	-6.29	0.26	0.23	0.50	-3.01	3.01	-	-	0.00	

5755 MHz (SGI ON)

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-3.50	-3.70	0.45	0.43	0.87	-0.59	0.73	-	-	0.14	
1	-3.98	-4.34	0.40	0.37	0.77	-1.15	1.18	-	-	0.03	
2	-4.59	-4.67	0.35	0.34	0.69	-1.62	1.57	-	-	-0.05	
3	-4.82	-5.10	0.33	0.31	0.64	-1.95	1.92	-	-	-0.03	
4	-5.32	-5.67	0.29	0.27	0.56	-2.48	2.34	-	-	-0.14	
5	-5.55	-5.88	0.28	0.26	0.54	-2.70	2.81	-	-	0.11	
6	-5.65	-6.04	0.27	0.25	0.52	-2.83	2.95	-	-	0.12	
7	-5.91	-6.35	0.26	0.23	0.49	-3.11	3.01	-	-	-0.10	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

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Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date January 21, 2020
Temperature / Humidity 21 deg. C / 49 % RH
Engineer Toshinori Yamada
Mode Tx 11ac-40 (MIMO)

5755 MHz (SGI OFF)

MCS Number	Reading (timed average) Antenna						Duty factor	Burst power Antenna			Remarks
	0	1	0	1	0+1	0+1		0	1	0+1	
	[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]		[dBm]	[dBm]	[dBm]	
0	-4.55	-5.15	0.35	0.31	0.66	-1.83	1.04	-	-	-0.79	*
1	-5.40	-6.15	0.29	0.24	0.53	-2.75	1.68	-	-	-1.07	
2	-5.89	-6.52	0.26	0.22	0.48	-3.18	2.13	-	-	-1.05	
3	-6.14	-6.73	0.24	0.21	0.46	-3.41	2.48	-	-	-0.93	
4	-6.51	-7.35	0.22	0.18	0.41	-3.90	2.90	-	-	-1.00	
5	-6.93	-7.62	0.20	0.17	0.38	-4.25	3.28	-	-	-0.97	
6	-7.12	-7.80	0.19	0.17	0.36	-4.44	3.39	-	-	-1.05	
7	-7.41	-8.00	0.18	0.16	0.34	-4.68	3.50	-	-	-1.18	
8	-7.29	-7.87	0.19	0.16	0.35	-4.56	3.63	-	-	-0.93	
9	-7.63	-8.37	0.17	0.15	0.32	-4.97	3.77	-	-	-1.20	

5755 MHz (SGI ON)

MCS Number	Reading (timed average) Antenna						Duty factor	Burst power Antenna			Remarks
	0	1	0	1	0+1	0+1		0	1	0+1	
	[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]		[dBm]	[dBm]	[dBm]	
0	-4.64	-5.30	0.34	0.30	0.64	-1.95	1.15	-	-	-0.80	
1	-5.62	-6.21	0.27	0.24	0.51	-2.89	1.80	-	-	-1.09	
2	-6.04	-6.70	0.25	0.21	0.46	-3.35	2.28	-	-	-1.07	
3	-6.37	-7.06	0.23	0.20	0.43	-3.69	2.61	-	-	-1.08	
4	-6.68	-7.42	0.21	0.18	0.40	-4.02	3.03	-	-	-0.99	
5	-6.99	-7.82	0.20	0.17	0.37	-4.37	3.39	-	-	-0.98	
6	-7.22	-8.15	0.19	0.15	0.34	-4.65	3.55	-	-	-1.10	
7	-7.39	-8.09	0.18	0.16	0.34	-4.72	3.67	-	-	-1.05	
8	-7.55	-8.29	0.18	0.15	0.32	-4.89	3.81	-	-	-1.08	
9	-7.85	-8.38	0.16	0.15	0.31	-5.10	3.89	-	-	-1.21	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

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Maximum Conducted Output Power

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date January 21, 2020
Temperature / Humidity 21 deg. C / 49 % RH
Engineer Toshinori Yamada
Mode Tx 11ac-80 (MIMO)

5775 MHz (SGI OFF)

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-6.11	-6.63	0.24	0.22	0.46	-3.35	1.77	-	-	-1.58	*
1	-6.98	-7.58	0.20	0.17	0.38	-4.26	2.51	-	-	-1.75	
2	-7.42	-8.21	0.18	0.15	0.33	-4.79	2.99	-	-	-1.80	
3	-7.61	-8.48	0.17	0.14	0.32	-5.01	3.28	-	-	-1.73	
4	-8.06	-8.72	0.16	0.13	0.29	-5.37	3.63	-	-	-1.74	
5	-8.27	-9.17	0.15	0.12	0.27	-5.69	3.91	-	-	-1.78	
6	-8.54	-9.14	0.14	0.12	0.26	-5.82	3.91	-	-	-1.91	
7	-8.63	-9.36	0.14	0.12	0.25	-5.97	4.07	-	-	-1.90	
8	-8.43	-9.24	0.14	0.12	0.26	-5.81	4.07	-	-	-1.74	
9	-8.87	-9.56	0.13	0.11	0.24	-6.19	4.25	-	-	-1.94	

5775 MHz (SGI ON)

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-6.17	-6.88	0.24	0.21	0.45	-3.50	1.91	-	-	-1.59	
1	-7.08	-7.75	0.20	0.17	0.36	-4.39	2.72	-	-	-1.67	
2	-7.45	-8.37	0.18	0.15	0.33	-4.88	3.12	-	-	-1.76	
3	-7.74	-8.62	0.17	0.14	0.31	-5.15	3.39	-	-	-1.76	
4	-8.16	-8.91	0.15	0.13	0.28	-5.51	3.81	-	-	-1.70	
5	-8.37	-9.16	0.15	0.12	0.27	-5.74	4.05	-	-	-1.69	
6	-8.57	-9.21	0.14	0.12	0.26	-5.87	4.05	-	-	-1.82	
7	-8.73	-9.40	0.13	0.11	0.25	-6.04	4.14	-	-	-1.90	
8	-8.70	-9.32	0.13	0.12	0.25	-5.99	4.07	-	-	-1.92	
9	-8.87	-9.51	0.13	0.11	0.24	-6.17	4.25	-	-	-1.92	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Average Output Power (Reference data for RF Exposure)

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date January 20, 2020 January 24, 2020
Temperature / Humidity 22 deg. C / 47 % RH 23 deg. C / 52 % RH
Engineer Toshinori Yamada Toshinori Yamada
Mode Tx

Antenna 0

Mode	Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average)		Duty factor [dB]	Result (Burst power average)	
					[dBm]	[mW]		[dBm]	[mW]
11a	5745	-1.36	2.65	9.73	11.02	12.65	0.26	11.28	13.43
	5785	-1.35	2.65	9.73	11.03	12.68	0.26	11.29	13.46
	5825	-1.25	2.66	9.73	11.14	13.00	0.26	11.40	13.80
11n-20 (SISO)	5745	-1.42	2.65	9.73	10.96	12.47	0.31	11.27	13.40
	5785	-1.40	2.65	9.73	10.98	12.53	0.31	11.29	13.47
	5825	-1.27	2.66	9.73	11.12	12.94	0.31	11.43	13.91
11n-40 (SISO)	5755	-4.10	2.65	9.73	8.28	6.73	1.76	10.04	10.09
	5795	-4.24	2.65	9.73	8.14	6.52	1.76	9.90	9.77
11ac-40 (SISO)	5755	-4.00	2.65	9.73	8.38	6.89	0.66	9.04	8.02
	5795	-4.02	2.65	9.73	8.36	6.85	0.66	9.02	7.98
11ac-80 (SISO)	5775	-5.50	2.65	9.73	6.88	4.88	1.21	8.09	6.45

Sample Calculation:

Result (Timed average) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

Result (Burst power average) = Time average + Duty factor

		Antenna 0				Antenna 1				Antenna 0+1						
Mode	Tested Frequency	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Result (Timed average)				Duty factor [dB]	Result(Burst power average)	
										Antenna		Sum			Sum 1+2	
	[MHz]									1 [mW]	2 [mW]	1+2 [mW]	[dBm]		[mW]	[dBm]
11n-20 (MIMO)	5745	-1.54	2.65	9.73	10.84	-2.23	2.85	9.95	10.57	12.13	11.40	23.54	13.72	0.31	25.29	14.03
	5785	-1.50	2.65	9.73	10.88	-2.21	2.85	9.95	10.59	12.25	11.46	23.70	13.75	0.31	25.47	14.06
	5825	-1.53	2.66	9.73	10.86	-2.37	2.86	9.94	10.43	12.19	11.04	23.23	13.66	0.31	24.96	13.97
11n-40 (MIMO)	5755	-4.34	2.65	9.73	8.04	-4.90	2.85	9.95	7.90	6.37	6.17	12.53	10.98	1.76	18.80	12.74
	5795	-4.33	2.65	9.73	8.05	-4.92	2.86	9.94	7.88	6.38	6.14	12.52	10.98	1.76	18.78	12.74
11ac-40 (MIMO)	5755	-4.55	2.65	9.73	7.83	-5.15	2.85	9.95	7.65	6.07	5.82	11.89	10.75	1.04	15.11	11.79
	5795	-4.53	2.65	9.73	7.85	-5.38	2.86	9.94	7.42	6.10	5.52	11.62	10.65	1.04	14.76	11.69
11ac-80 (MIMO)	5775	-6.11	2.65	9.73	6.27	-6.63	2.85	9.95	6.17	4.24	4.14	8.38	9.23	1.77	12.59	11.00

Sample Calculation:

Result (Timed average) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

Result (Burst power average) = Time average + Duty factor

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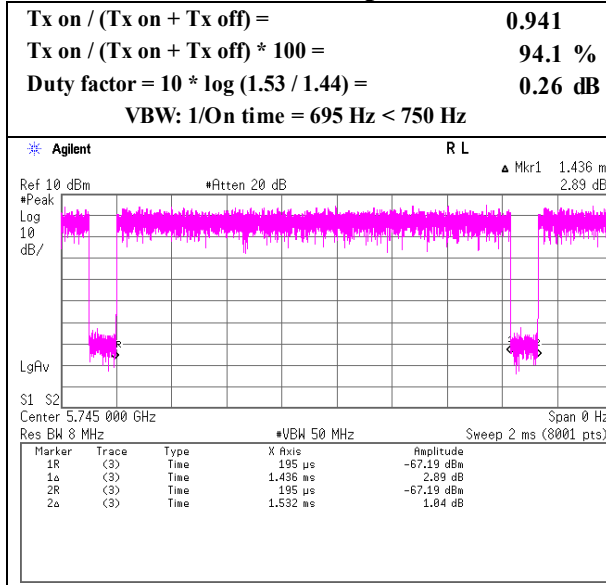
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Facsimile : +81 463 50 6401

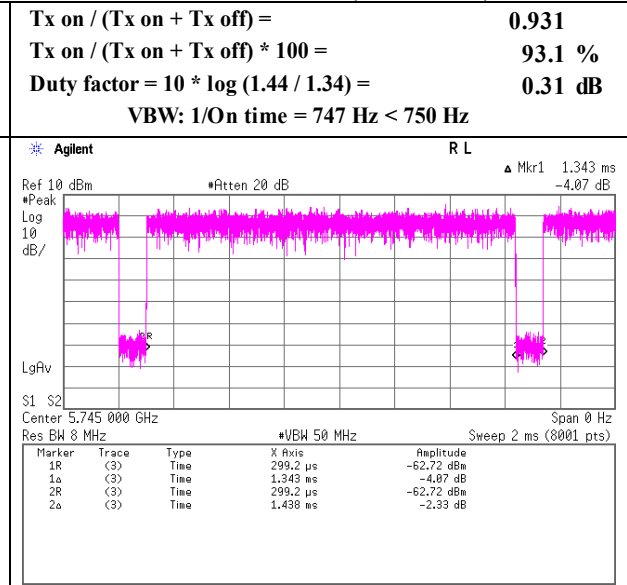
Burst rate confirmation

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 15, 2020
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Takahiro Kawakami
Mode	Tx SISO

11a 6 Mbps



11n-20 MCS 0 (SGI OFF)



UL Japan, Inc.

Shonan EMC Lab.

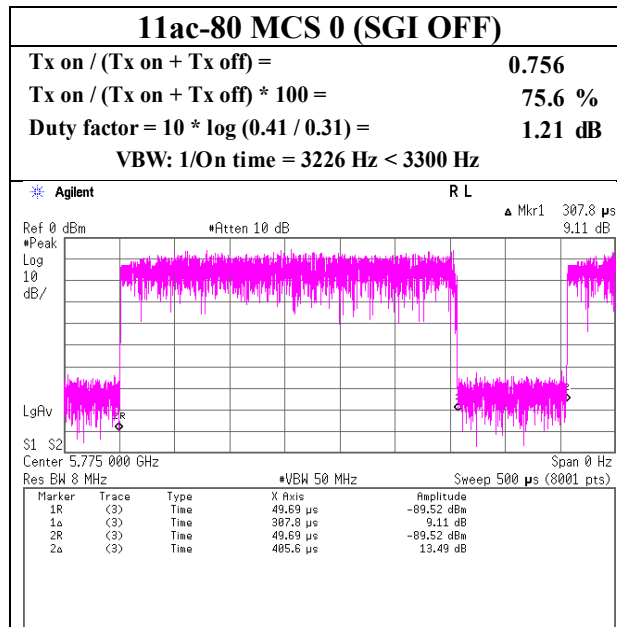
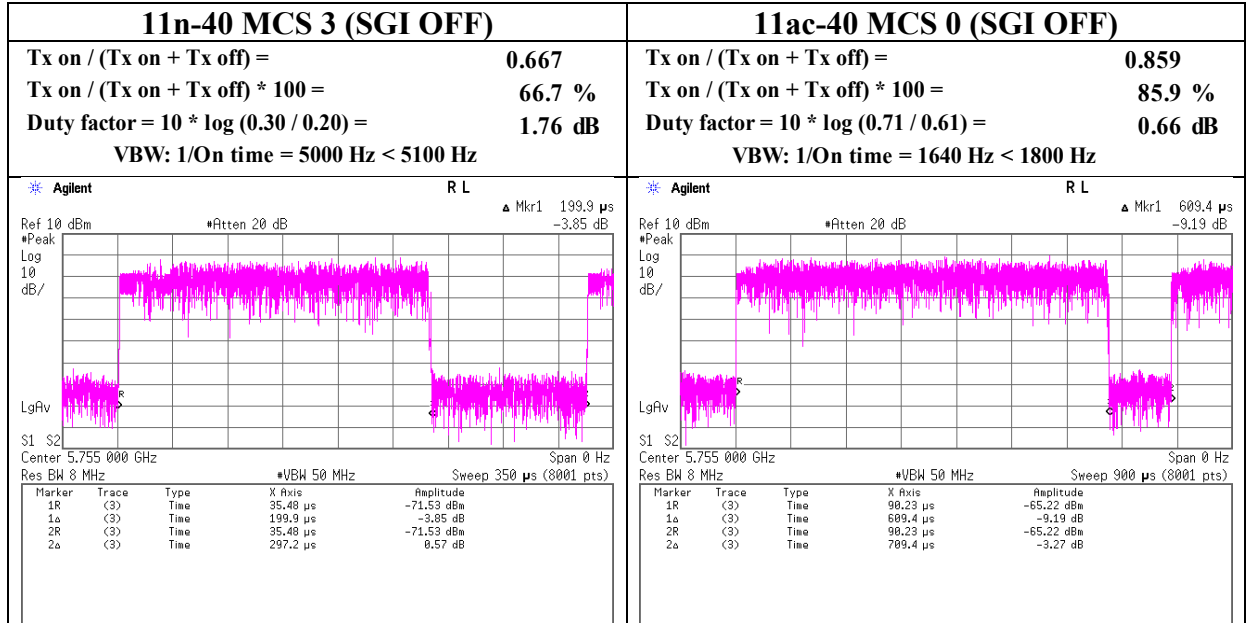
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Burst rate confirmation

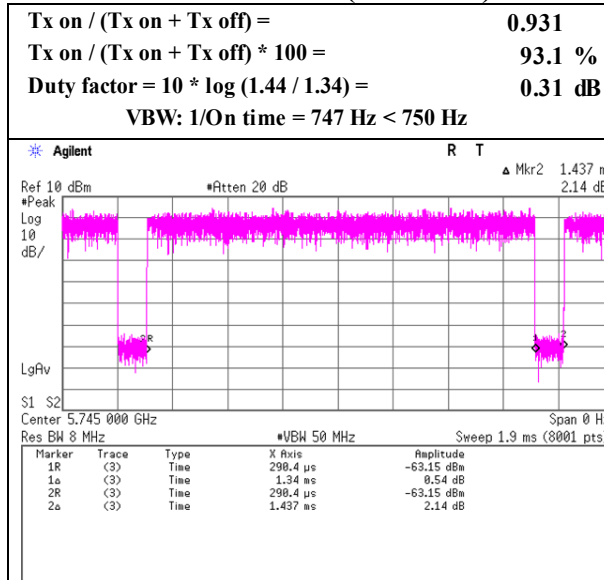
Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date January 15, 2020
Temperature / Humidity 24 deg. C / 49 % RH
Engineer Takahiro Kawakami
Mode Tx SISO



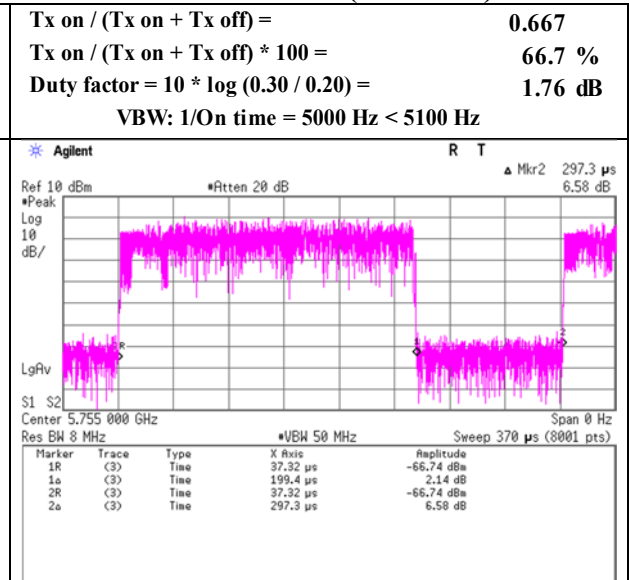
Burst rate confirmation

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date January 15, 2020
Temperature / Humidity 24 deg. C / 49 % RH
Engineer Takahiro Kawakami
Mode Tx MIMO

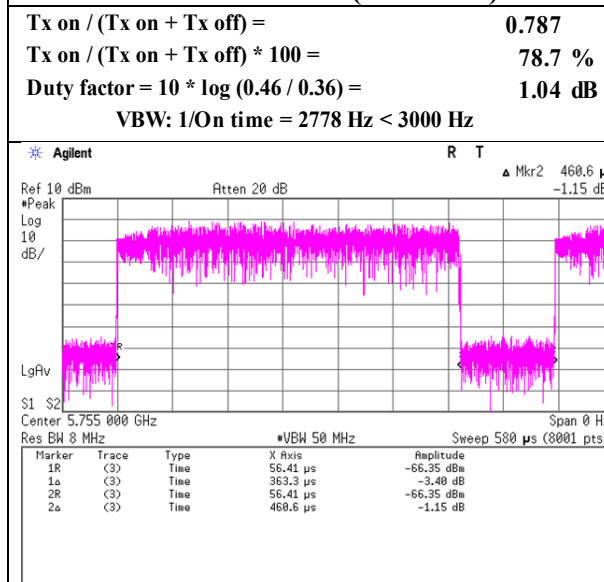
11n-20 MCS 0 (SGI OFF)



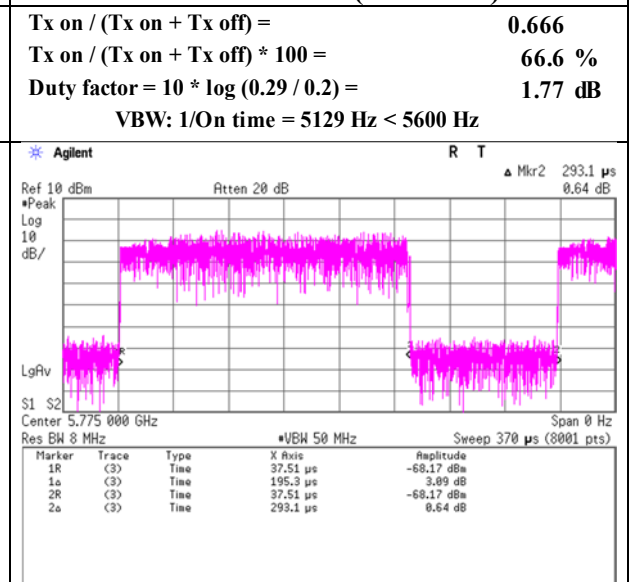
11n-40 MCS 3 (SGI OFF)



11ac-40 MCS 0 (SGI OFF)



11ac-80 MCS 0 (SGI OFF)



Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11a

Antenna 0

Applied limit: 15.407, access point

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]
5745	-21.90	2.65	9.95	0.26	-3.0	6.99	-2.05	30.00	32.05	-5.05	36.00	41.05
5785	-21.94	2.65	9.95	0.26	-3.0	6.99	-2.09	30.00	32.09	-5.09	36.00	41.09
5825	-22.40	2.66	9.94	0.26	-3.0	6.99	-2.55	30.00	32.55	-5.55	36.00	41.55

Sample Calculation:

PSD: Power Spectral Density

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

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

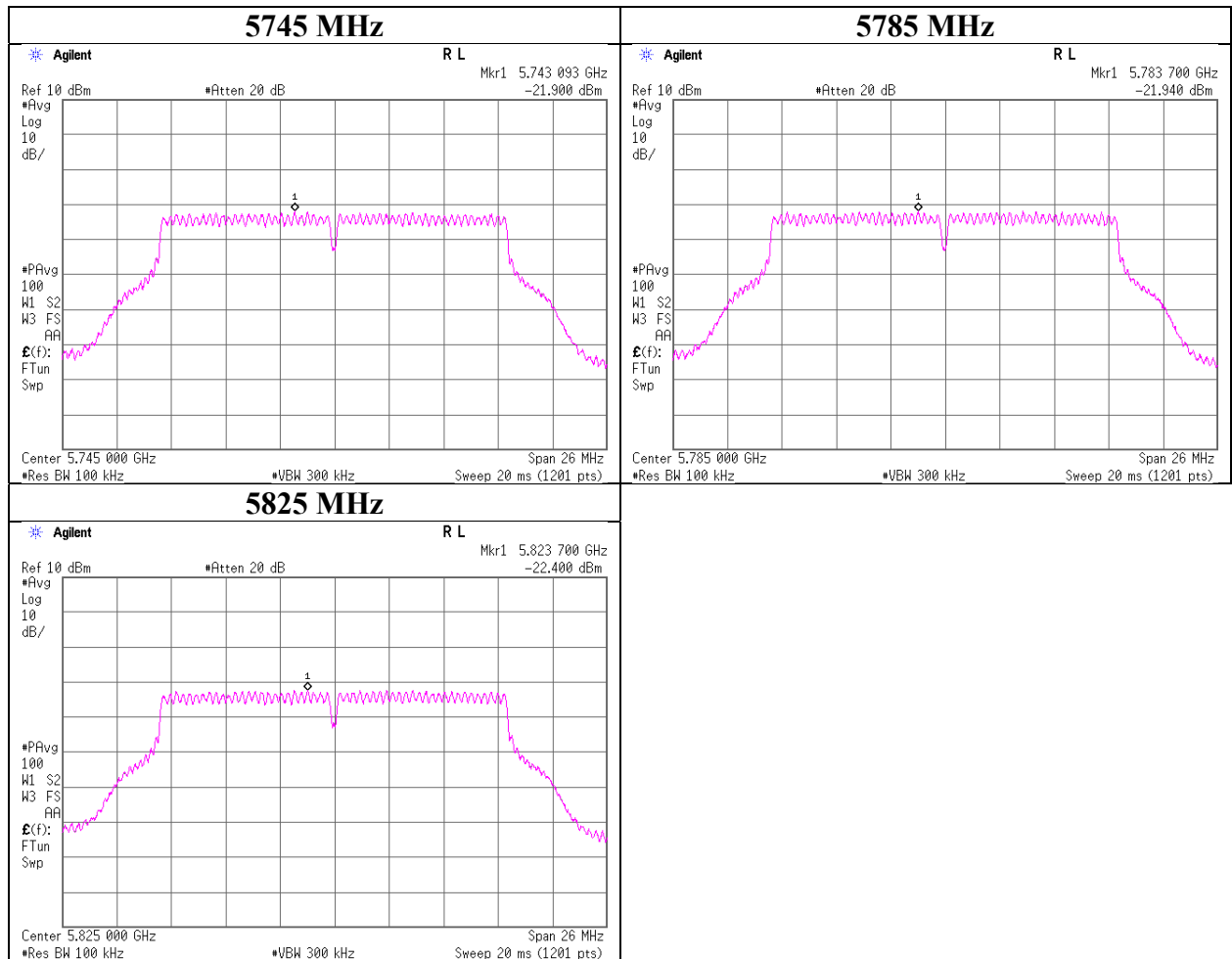
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11a

11a



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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-20 SISO

Antenna 0

Applied limit: 15.407, access point

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]
5745	-22.50	2.65	9.95	0.31	-3.0	6.99	-2.60	30.00	32.60	-5.60	36.00	41.60
5785	-22.57	2.65	9.95	0.31	-3.0	6.99	-2.67	30.00	32.67	-5.67	36.00	41.67
5825	-22.73	2.66	9.94	0.31	-3.0	6.99	-2.83	30.00	32.83	-5.83	36.00	41.83

Sample Calculation:

PSD: Power Spectral Density

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

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

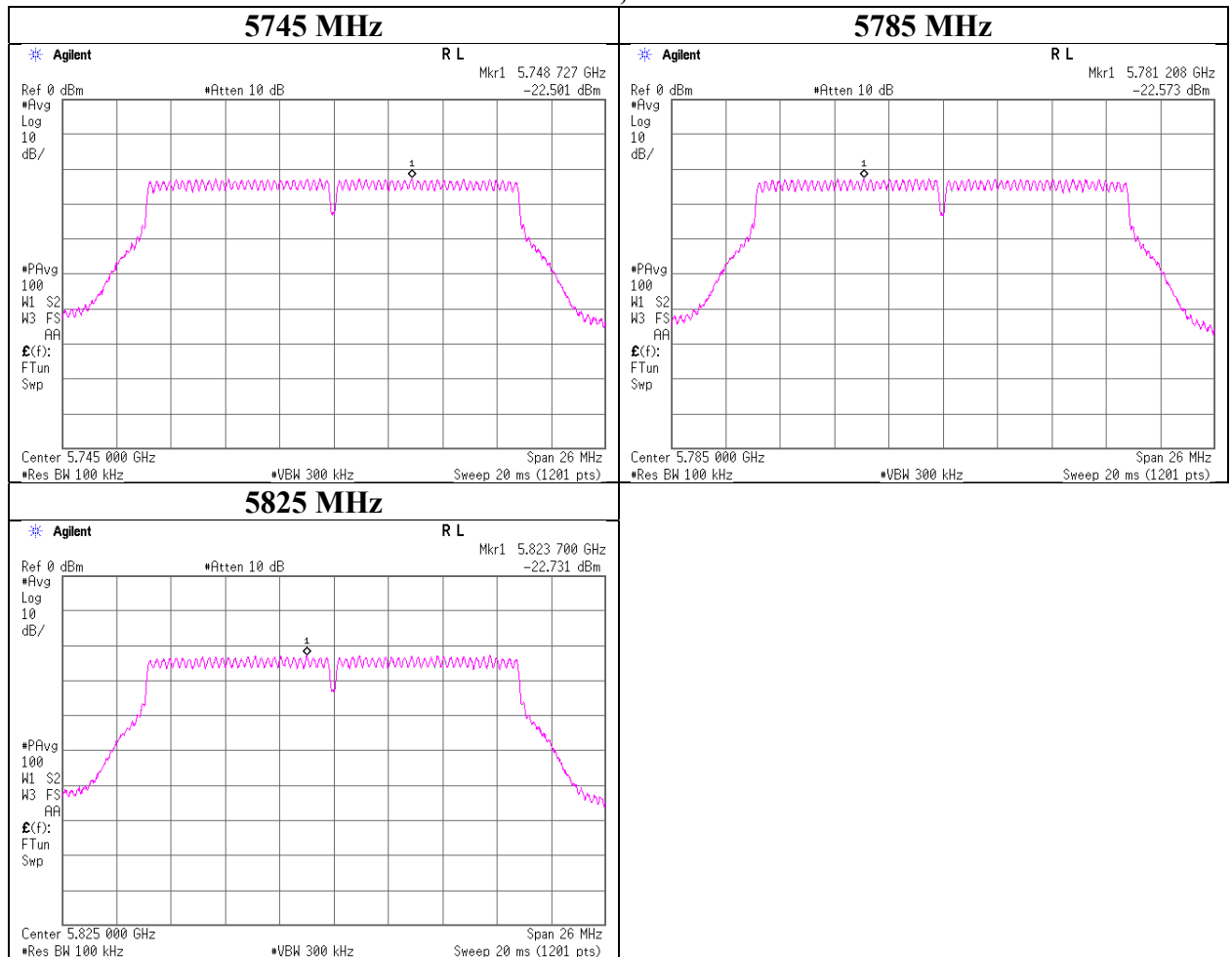
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-20 SISO

11n-20, SISO



UL Japan, Inc.

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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11n-20 MIMO

Antenna 0+1 MIMO Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	Antenna 0	Antenna 1	Sum				Antenna 0	Antenna 1	Sum			
[mW/MHz]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
5745	0.50	0.53	1.03	0.12	30.00	29.88	0.25	0.26	0.52	-2.88	36.00	38.88
5785	0.54	0.55	1.08	0.34	30.00	29.66	0.27	0.27	0.54	-2.66	36.00	38.66
5825	0.47	0.45	0.92	-0.34	30.00	30.34	0.24	0.23	0.46	-3.34	36.00	39.34

			Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
							Cond.	e.i.r.p.					Cond.	e.i.r.p.
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5745	0.31	6.99	-22.67	2.65	9.73	-3.00	-2.98	-5.98	-22.69	2.65	9.95	-3.00	-2.79	-5.79
5785	0.31	6.99	-22.40	2.65	9.73	-3.00	-2.72	-5.72	-22.52	2.65	9.95	-3.00	-2.62	-5.62
5825	0.31	6.99	-22.95	2.66	9.73	-3.00	-3.26	-6.26	-23.35	2.66	9.94	-3.00	-3.45	-6.45

Sample Calculation:

PSD: Power Spectral Density

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

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

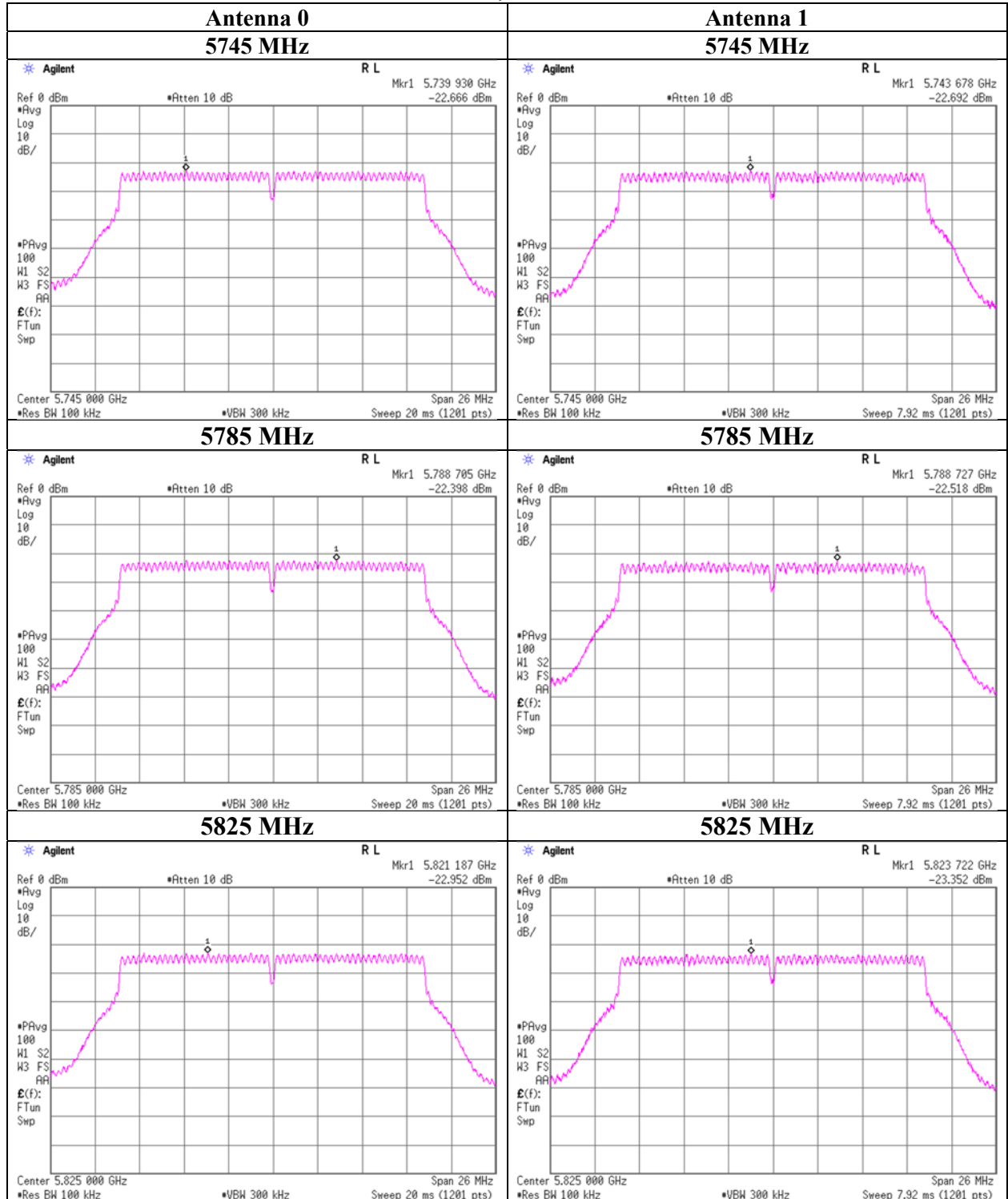
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11n-20 MIMO

11n-20, MIMO



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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-40 SISO

Antenna 0

Applied limit: 15.407, access point

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]
5755	-26.68	2.65	9.95	1.76	-3.0	6.99	-5.33	30.00	35.33	-8.33	36.00	44.33
5795	-27.29	2.65	9.95	1.76	-3.0	6.99	-5.94	30.00	35.94	-8.94	36.00	44.94

Sample Calculation:

PSD: Power Spectral Density

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

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

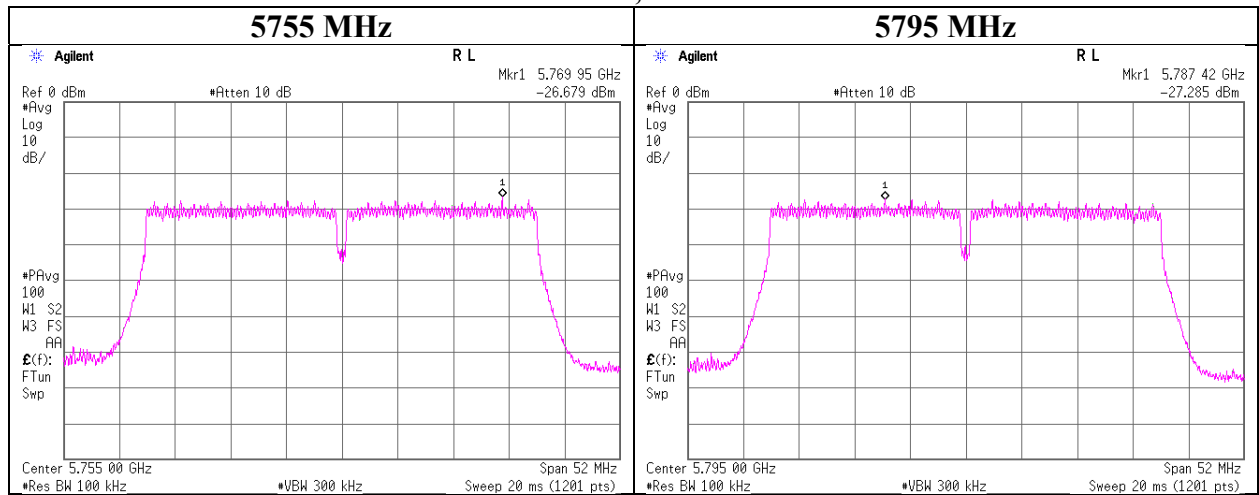
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-40 SISO

11n-40, SISO



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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11n-40 MIMO

Antenna 0+1		MIMO					Applied limit: 15.407, mobile and portable client device							
Tested Frequency	PSD (Conducted)						PSD (e.i.r.p.)							
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin		
	Antenna 0	Antenna 1	Sum				Antenna 0	Antenna 1	Sum					
	[mW/MHz]	[mW/MHz]	[mW/MHz]				[dBm/MHz]	[dBm/MHz]	[dB]				[mW/MHz]	[mW/MHz]
[MHz]														
5755	0.22	0.26	0.49	-3.14	30.00	33.14	0.11	0.13	0.24	-6.14	36.00	42.14		
5795	0.26	0.26	0.52	-2.82	30.00	32.82	0.13	0.13	0.26	-5.82	36.00	41.82		

Antenna 0														Antenna 1					
Tested Frequency [MHz]	Duty Factor [dB]	RBW Correction Factor [dB]	PSD		Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain
			Reading	Cond.				Cond.	e.i.r.p.					Cond.	e.i.r.p.				
			[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]
5755	1.76	6.99	-27.68	-6.55	2.65	9.73	-3.00	-6.55	-9.55	-27.13	2.65	9.95	-3.00	-5.78	-8.78	-27.13	2.65	9.95	-3.00
5795	1.76	6.99	-26.96	-5.83	2.65	9.73	-3.00	-5.83	-8.83	-27.18	2.65	9.95	-3.00	-5.83	-8.83	-27.18	2.65	9.95	-3.00

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 (Specified bandwidth / Measured bandwidth)

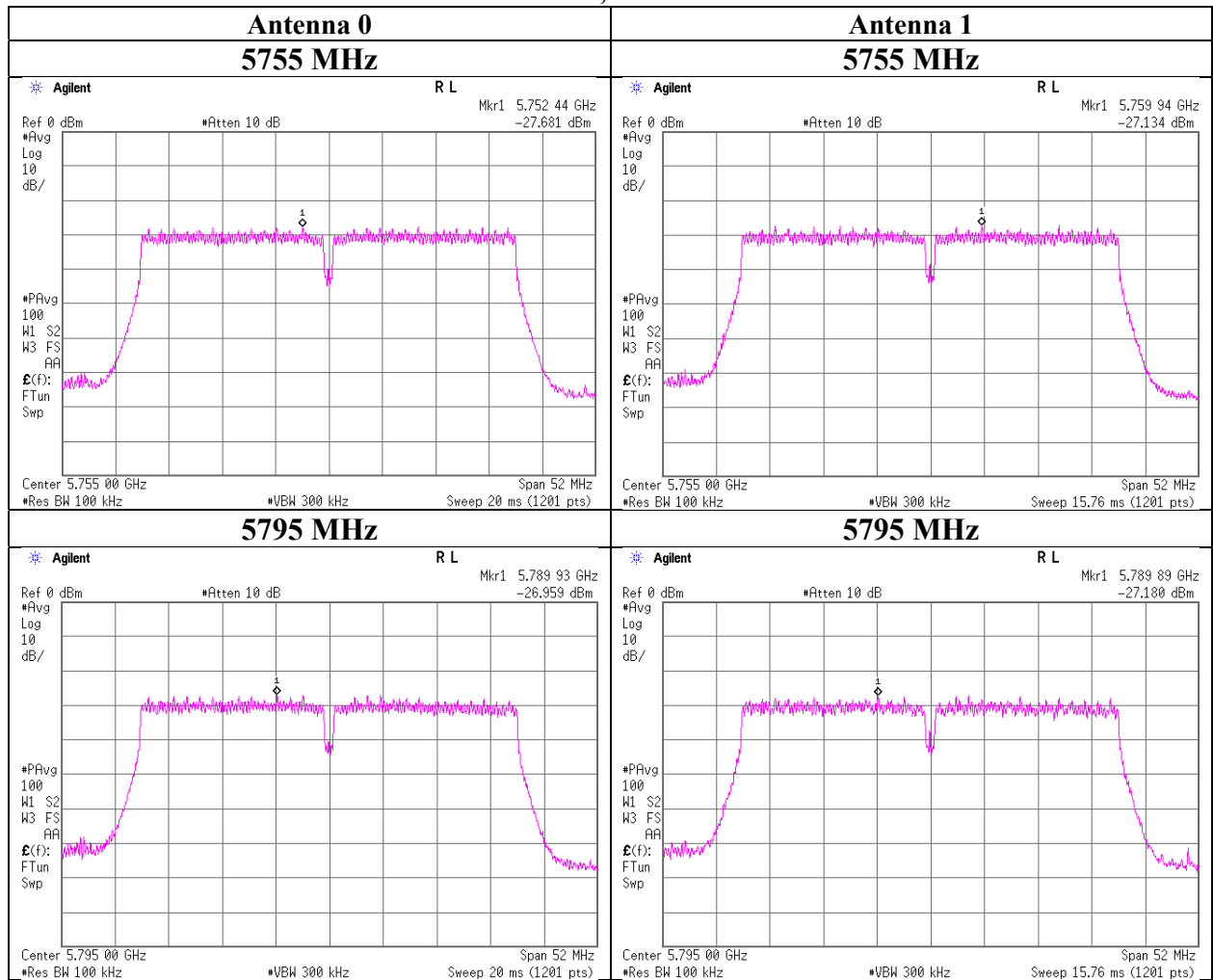
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11n-40 MIMO

11n-40, MIMO



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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-40 SISO

Antenna 0

Applied limit: 15.407, access point

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]
5755	-28.10	2.65	9.95	0.66	-3.0	6.99	-7.85	30.00	37.85	-10.85	36.00	46.85
5795	-28.20	2.65	9.95	0.66	-3.0	6.99	-7.95	30.00	37.95	-10.95	36.00	46.95

Sample Calculation:

PSD: Power Spectral Density

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

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

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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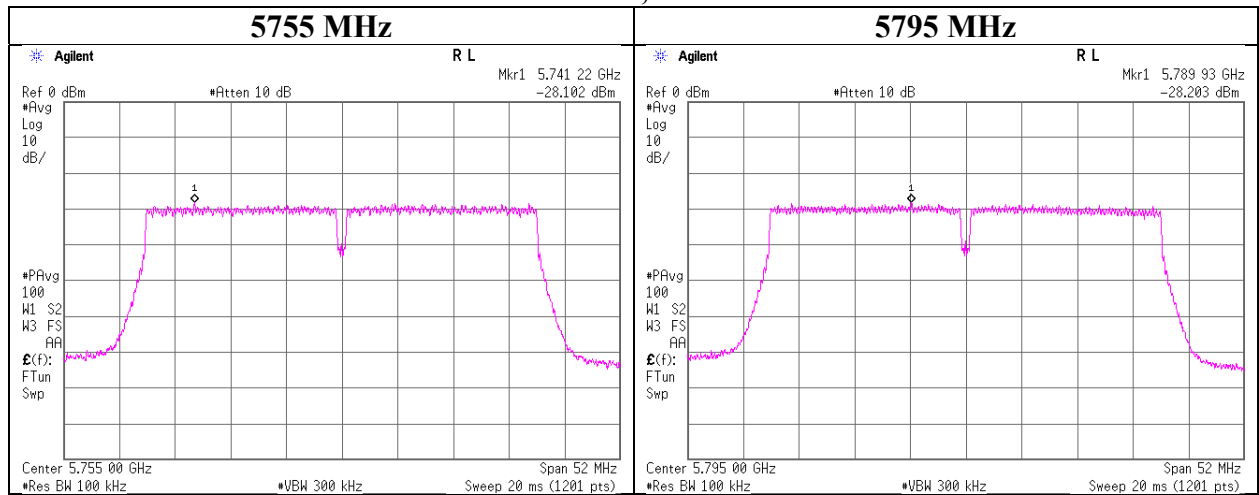
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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-40 SISO

11ac-40, SISO



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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11ac-40 MIMO

Antenna 0+1		MIMO		Applied limit: 15.407, mobile and portable client device											
Tested Frequency	PSD (Conducted)						PSD (e.i.r.p.)								
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin			
	Antenna 0	Antenna 1	Sum				Antenna 0	Antenna 1	Sum						
	[mW/MHz]	[mW/MHz]	[mW/MHz]				[dBm/MHz]	[dBm/MHz]	[dB]				[mW/MHz]	[mW/MHz]	[mW/MHz]
[MHz]															
5755	0.20	0.17	0.37	-4.33	30.00	34.33	0.10	0.09	0.19	-7.33	36.00	43.33			
5795	0.19	0.17	0.36	-4.40	30.00	34.40	0.10	0.09	0.18	-7.40	36.00	43.40			

			Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
							Cond.	e.i.r.p.					Cond.	e.i.r.p.
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5755	1.04	6.99	-27.43	2.65	9.73	-3.00	-7.02	-10.02	-28.31	2.65	9.95	-3.00	-7.68	-10.68
5795	1.04	6.99	-27.62	2.65	9.73	-3.00	-7.21	-10.21	-28.26	2.65	9.95	-3.00	-7.63	-10.63

Sample Calculation:

PSD: Power Spectral Density

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

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

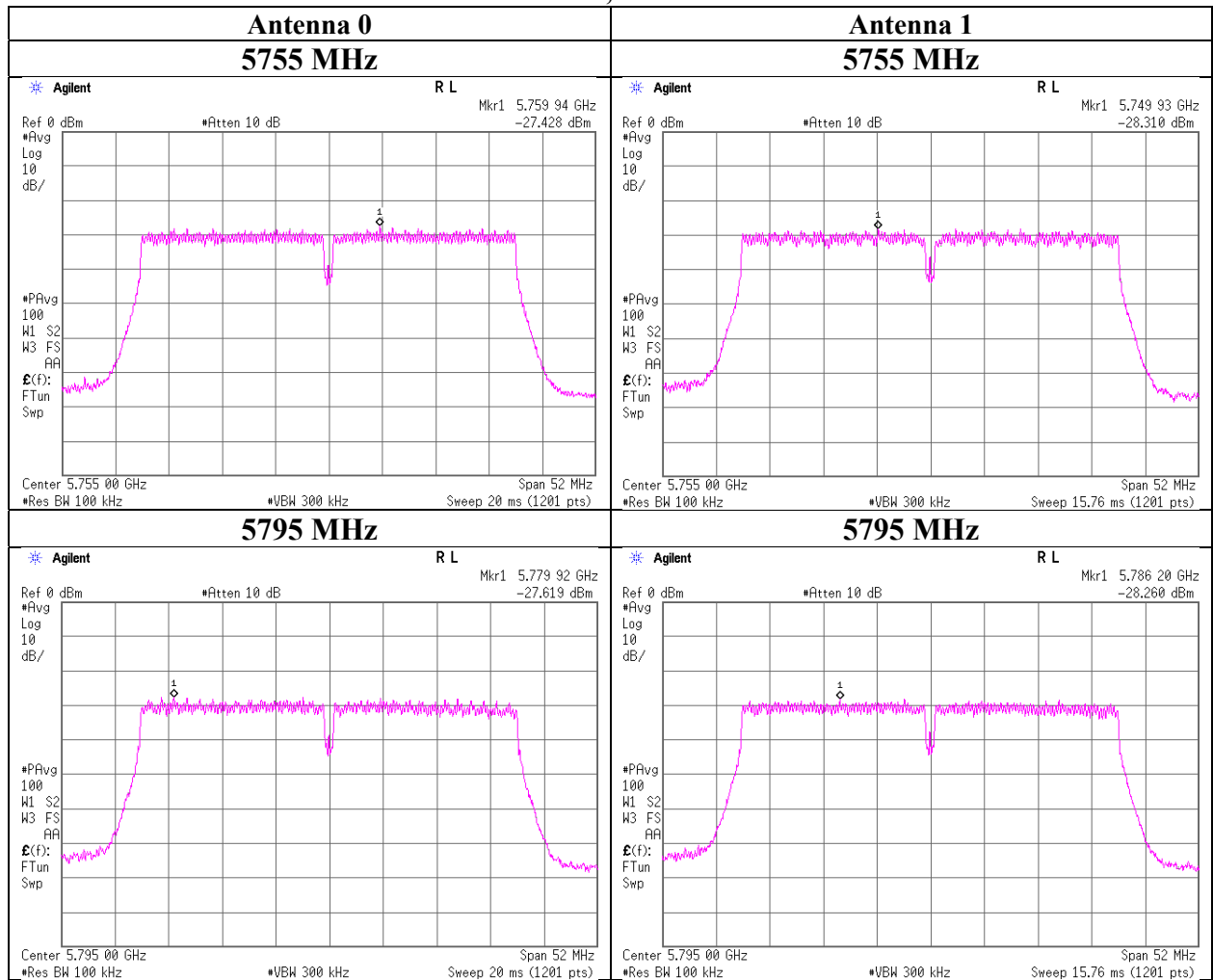
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11ac-40 MIMO

11ac-40, MIMO



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Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-80 SISO

Antenna 0

Applied limit: 15.407, access point

Tested Frequency	PSD Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	RBW Correction Factor	PSD (Conducted)			PSD (e.i.r.p.)		
[MHz]	[dBm /MHz]	[dB]	[dB]	[dB]	[dBi]	[dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5775	-31.75	2.65	9.95	1.21	-3.0	6.99	-10.95	30.00	40.95	-13.95	36.00	49.95

Sample Calculation:

PSD: Power Spectral Density

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

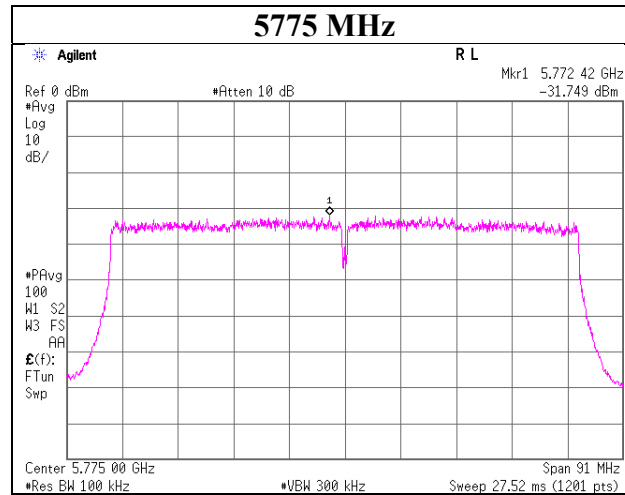
RBW Correction Factor = $10 * \log (\text{Specified bandwidth} / \text{Measured bandwidth})$

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

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 10, 2020
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-80 SISO



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Maximum Power Spectral Density

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 7, 2020
Temperature / Humidity	25 deg. C / 48 % RH
Engineer	Hiromasa Sato
Mode	Tx 11ac-80 MIMO

Antenna 0+1 MIMO Applied limit: 15.407, mobile and portable client device

Tested Frequency	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna		Sum	Result	Limit	Margin	Antenna		Sum	Result	Limit	Margin
	Antenna 0	Antenna 1					Antenna 0	Antenna 1				
[MHz]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
5775	0.10	0.08	0.18	-7.57	30.00	37.57	0.05	0.04	0.09	-10.57	36.00	46.57

Antenna 0														Antenna 1			
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	e.i.r.p.	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	e.i.r.p.	PSD Reading	Cable Loss	Atten. Loss
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]
5775	1.77	6.99	-31.34	2.65	9.73	-3.00	-10.20	-13.20	-32.35	2.65	9.95	-3.00	-10.99	-13.99	-31.34	2.65	9.73

Sample Calculation:

PSD: Power Spectral Density

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

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

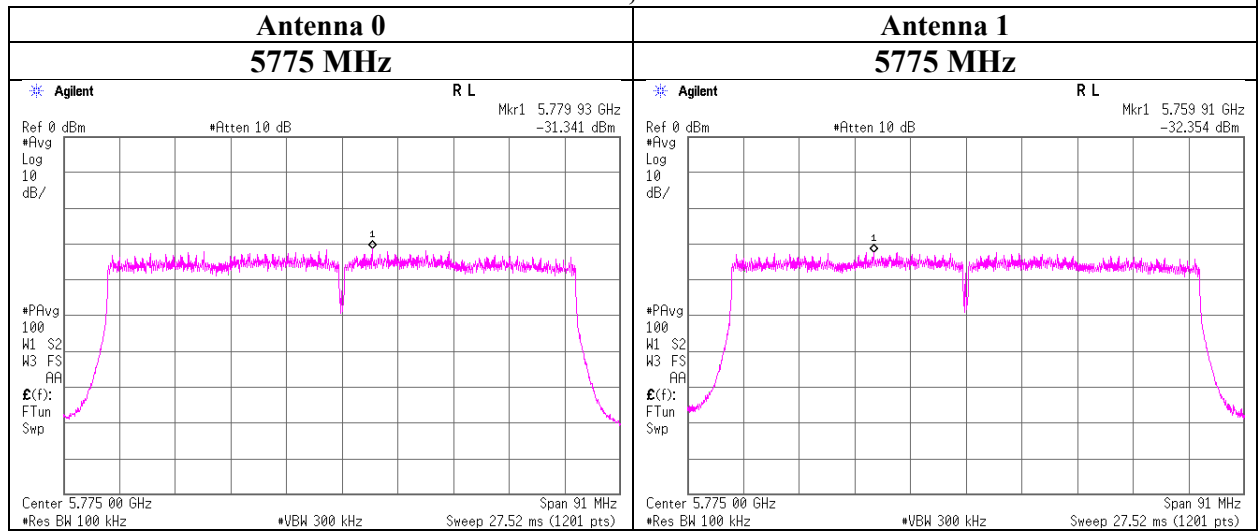
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

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

Maximum Power Spectral Density

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11ac-80 MIMO

11ac-80, MIMO



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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11a SISO 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.	11490.000	PK	46.50	40.08	9.78	42.60	2.24	56.00	73.9	17.9	150	0	
Hori.	11490.000	AV	36.10	40.08	9.78	42.60	2.24	45.60	53.9	8.3	150	0	VBW: 750 Hz
Vert.	11490.000	PK	47.17	40.08	9.78	42.60	2.24	56.67	73.9	17.2	150	0	
Vert.	11490.000	AV	36.24	40.08	9.78	42.60	2.24	45.74	53.9	8.1	150	0	VBW: 750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2111.925	PK	49.61	27.55	13.81	41.50	2.24	51.71	-43.51	-27.0	16.5	153	205	
Hori.	5650.000	PK	49.27	32.46	16.44	43.33	2.24	57.08	-38.14	-27.0	11.1	115	272	
Hori.	5700.000	PK	49.58	32.61	16.48	43.33	2.24	57.58	-37.64	10.0	47.6	115	272	
Hori.	5720.000	PK	49.25	32.66	16.49	43.33	2.24	57.31	-37.91	15.6	53.5	115	272	
Hori.	5725.000	PK	51.37	32.68	16.49	43.33	2.24	59.45	-35.77	27.0	62.7	115	272	
Hori.	17235.000	PK	46.02	41.54	12.13	40.29	-9.54	49.86	-45.36	-27.0	18.3	150	0	
Vert.	2111.926	PK	50.32	27.55	13.81	41.50	2.24	52.42	-42.80	-27.0	15.8	141	157	
Vert.	5650.000	PK	49.18	32.46	16.44	43.33	2.24	56.99	-38.23	-27.0	11.2	155	162	
Vert.	5700.000	PK	49.54	32.61	16.48	43.33	2.24	57.54	-37.68	10.0	47.6	155	162	
Vert.	5720.000	PK	51.27	32.66	16.49	43.33	2.24	59.33	-35.89	15.6	51.4	155	162	
Vert.	5725.000	PK	54.69	32.68	16.49	43.33	2.24	62.77	-32.45	27.0	59.4	155	162	
Vert.	17235.000	PK	45.95	41.54	12.13	40.29	-9.54	49.79	-45.43	-27.0	18.4	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

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Shonan EMC Lab.

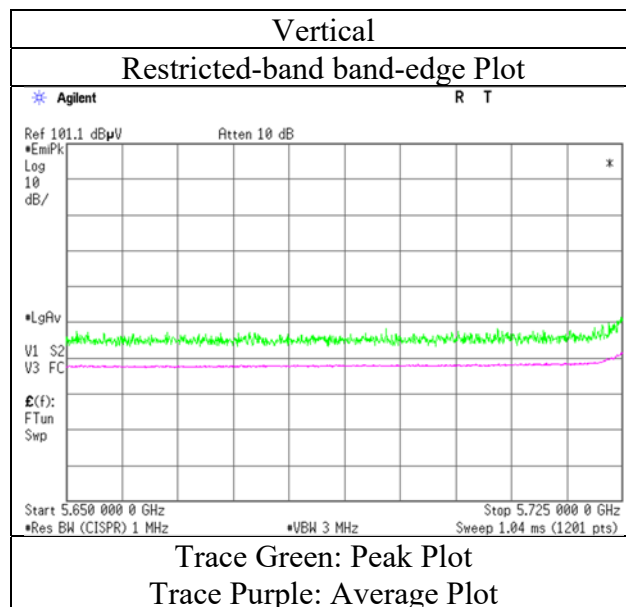
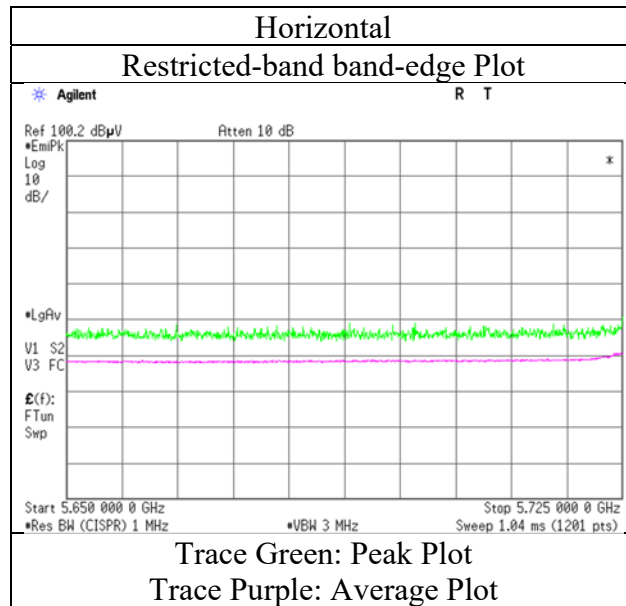
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 18, 2020
Temperature / Humidity	20 deg. C / 31 % RH
Engineer	Yusuke Tanikawara
	(1 GHz - 6.4 GHz)
Mode	Tx 11a SISO 5745 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.	13218142S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 18, 2020	January 17, 2020	January 17, 2020
Temperature / Humidity	20 deg. C / 31 % RH	22 deg. C / 35 % RH	20 deg. C / 24 % RH
Engineer	Yusuke Tanikawara	Yasumasa Owaki	Hiromasa Sato
	(1 GHz - 6.4 GHz)	(6.4 GHz - 18 GHz)	(18 GHz - 40 GHz)
Mode	Tx 11a SISO 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.	11570.000	PK	47.06	39.96	9.81	42.56	2.24	56.51	73.9	17.3	150	0	
Hori.	11570.000	AV	35.83	39.96	9.81	42.56	2.24	45.28	53.9	8.6	150	0	VBW: 750 Hz
Vert.	11570.000	PK	46.37	39.96	9.81	42.56	2.24	55.82	73.9	18.0	150	0	
Vert.	11570.000	AV	35.80	39.96	9.81	42.56	2.24	45.25	53.9	8.6	150	0	VBW: 750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(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.	2111.999	PK	49.45	27.55	13.81	41.50	2.24	51.55	-43.67	-27.0	16.6	156	206	
Hori.	17355.000	PK	46.24	42.34	12.19	40.26	-9.54	50.97	-44.25	-27.0	17.2	150	0	
Vert.	2111.974	PK	50.43	27.55	13.81	41.50	2.24	52.53	-42.69	-27.0	15.6	143	158	
Vert.	17355.000	PK	46.17	42.34	12.19	40.26	-9.54	50.90	-44.32	-27.0	17.3	150	0	

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

Result(EIRP[dBm]) = $10 \times \log \left(\left(\left\{ 10^{\frac{1}{2}} \times \left(\frac{\text{Electric Field Strength [dBuV/m]}{20} \right) \times 10^{-6} \right\} \times \text{Distance:3[m]} \right)^2 / 30 \right) \times 10^3$

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

UL Japan, Inc.

Shonan EMC Lab.

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Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11a SISO 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.	11650.000	PK	46.01	39.69	9.86	42.51	2.24	55.29	73.9	18.6	150	0	
Hori.	11650.000	AV	35.34	39.69	9.86	42.51	2.24	44.62	53.9	9.2	150	0	VBW: 750 Hz
Vert.	11650.000	PK	46.57	39.69	9.86	42.51	2.24	55.85	73.9	18.0	150	0	
Vert.	11650.000	AV	35.32	39.69	9.86	42.51	2.24	44.60	53.9	9.3	150	0	VBW: 750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(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.	2111.954	PK	50.55	27.55	13.81	41.50	2.24	52.65	-42.57	-27.0	15.5	159	203	
Hori.	5850.000	PK	50.03	33.02	16.59	43.34	2.24	58.54	-36.68	27.0	63.6	112	270	
Hori.	5855.000	PK	49.04	33.03	16.59	43.34	2.24	57.56	-37.66	15.6	53.2	112	270	
Hori.	5875.000	PK	48.87	33.08	16.60	43.34	2.24	57.45	-37.77	10.0	47.7	112	270	
Hori.	5925.000	PK	48.89	33.18	16.63	43.34	2.24	57.60	-37.62	-27.0	10.6	112	270	
Hori.	17475.000	PK	46.34	43.01	12.27	40.23	-9.54	51.85	-43.37	-27.0	16.3	150	0	
Vert.	2111.951	PK	50.89	27.55	13.81	41.50	2.24	52.99	-42.23	-27.0	15.2	140	166	
Vert.	5850.000	PK	49.64	33.02	16.59	43.34	2.24	58.15	-37.07	27.0	64.0	173	282	
Vert.	5855.000	PK	49.53	33.03	16.59	43.34	2.24	58.05	-37.17	15.6	52.7	173	282	
Vert.	5875.000	PK	49.42	33.08	16.60	43.34	2.24	58.00	-37.22	10.0	47.2	173	282	
Vert.	5925.000	PK	48.92	33.18	16.63	43.34	2.24	57.63	-37.59	-27.0	10.5	173	282	
Vert.	17475.000	PK	46.97	43.01	12.27	40.23	-9.54	52.48	-42.74	-27.0	15.7	150	0	

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

Result(EIRP[dBm]) = $10 \cdot \log \left(\left(\left(10^{\frac{\text{Electric Field Strength [dBuV/m]}{20}} \right) \cdot 10^{(-6)} \cdot \text{Distance:3[m]} \right)^2 / 30 \right) \cdot 10^{(3)}$

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

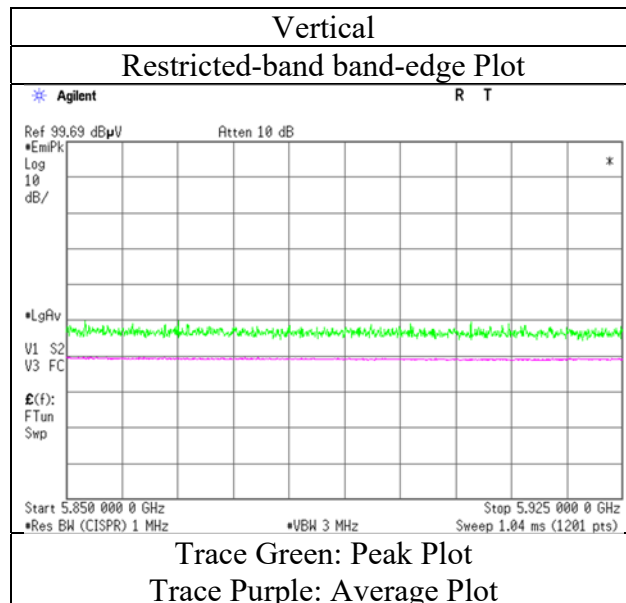
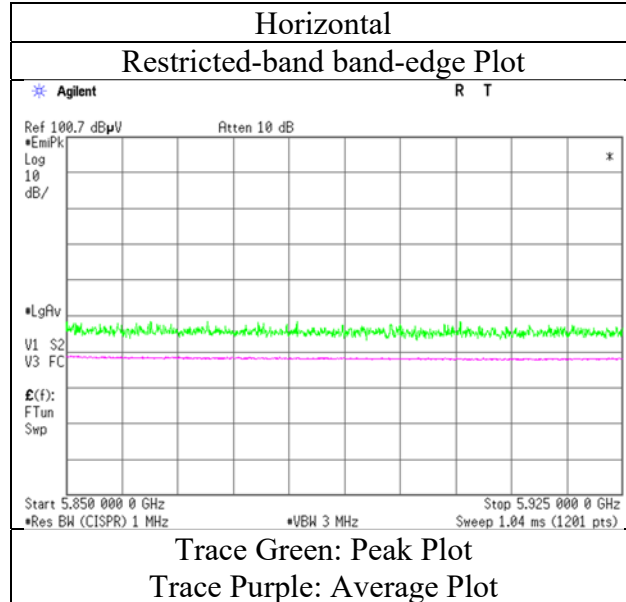
*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date January 18, 2020
Temperature / Humidity 20 deg. C / 31 % RH
Engineer Yusuke Tanikawara
Mode Tx 11n-20 SISO 5825 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.

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-20 SISO 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.	11490.000	PK	47.01	40.08	9.78	42.60	2.24	56.51	73.9	17.3	150	0	
Hori.	11490.000	AV	36.14	40.08	9.78	42.60	2.24	45.64	53.9	8.2	150	0	VBW: 750 Hz
Vert.	11490.000	PK	48.00	40.08	9.78	42.60	2.24	57.50	73.9	16.4	150	0	
Vert.	11490.000	AV	36.05	40.08	9.78	42.60	2.24	45.55	53.9	8.3	150	0	VBW: 750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

(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.	2111.977	PK	49.10	27.55	13.81	41.50	2.24	51.20	-44.02	-27.0	17.0	165	205	
Hori.	5650.000	PK	48.43	32.46	16.44	43.33	2.24	56.24	-38.98	-27.0	11.9	108	274	
Hori.	5700.000	PK	49.20	32.61	16.48	43.33	2.24	57.20	-38.02	10.0	48.0	108	274	
Hori.	5720.000	PK	51.02	32.66	16.49	43.33	2.24	59.08	-36.14	15.6	51.7	108	274	
Hori.	5725.000	PK	55.52	32.68	16.49	43.33	2.24	63.60	-31.62	27.0	58.6	108	274	
Hori.	17235.000	PK	45.70	41.54	12.13	40.29	-9.54	49.54	-45.68	-27.0	18.6	150	0	
Vert.	2111.951	PK	50.24	27.55	13.81	41.50	2.24	52.34	-42.88	-27.0	15.8	140	161	
Vert.	5650.000	PK	48.84	32.46	16.44	43.33	2.24	56.65	-38.57	-27.0	11.5	153	163	
Vert.	5700.000	PK	49.48	32.61	16.48	43.33	2.24	57.48	-37.74	10.0	47.7	153	163	
Vert.	5720.000	PK	54.34	32.66	16.49	43.33	2.24	62.40	-32.82	15.6	48.4	153	163	
Vert.	5725.000	PK	57.18	32.68	16.49	43.33	2.24	65.26	-29.96	27.0	56.9	153	163	
Vert.	17235.000	PK	45.31	41.54	12.13	40.29	-9.54	49.15	-46.07	-27.0	19.0	150	0	

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

Result(EIRP[dBm]) = $10 \cdot \log \left(\left(\left(10^{\frac{\text{Electric Field Strength [dBuV/m]}{20}} \right) \cdot 10^{(-6)} \cdot \text{Distance[m]} \right)^2 / 30 \right) \cdot 10^{(3)}$

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

UL Japan, Inc.

Shonan EMC Lab.

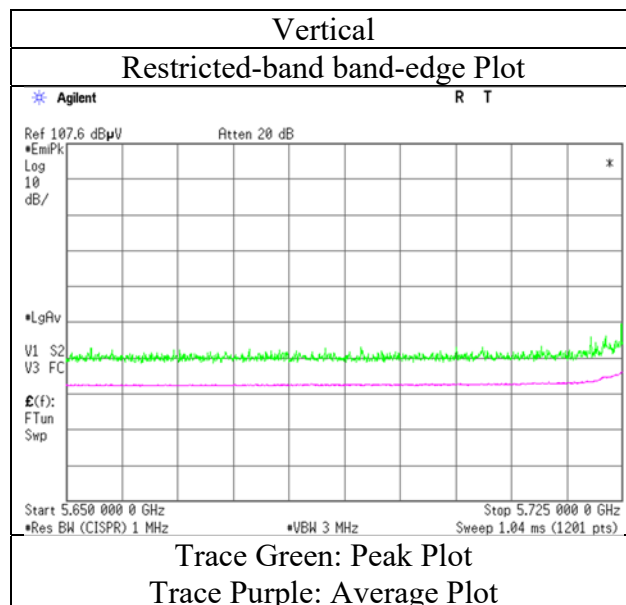
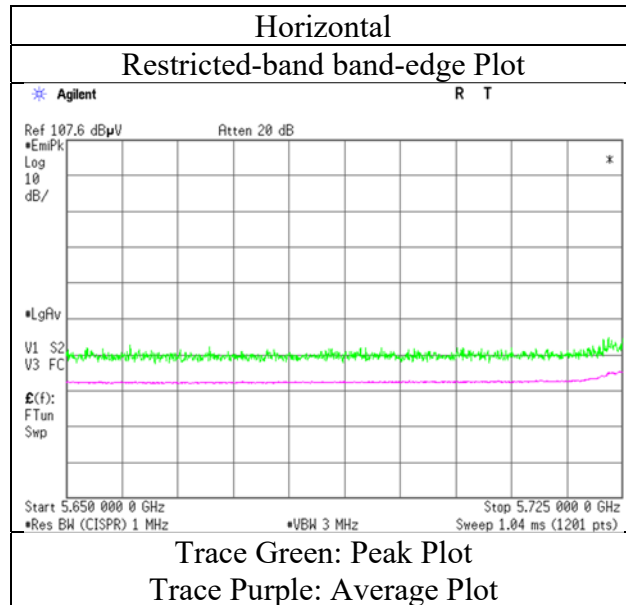
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date January 18, 2020
Temperature / Humidity 20 deg. C / 31 % RH
Engineer Yusuke Tanikawara
Mode Tx 11n-20 SISO 5745 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. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-20 SISO 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.	11570.000	PK	46.35	39.96	9.81	42.56	2.24	55.80	73.9	18.1	150	0	
Hori.	11570.000	AV	35.55	39.96	9.81	42.56	2.24	45.00	53.9	8.9	150	0	VBW: 750 Hz
Vert.	11570.000	PK	46.75	39.96	9.81	42.56	2.24	56.20	73.9	17.7	150	0	
Vert.	11570.000	AV	35.58	39.96	9.81	42.56	2.24	45.03	53.9	8.8	150	0	VBW: 750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(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.	2111.974	PK	49.31	27.55	13.81	41.50	2.24	51.41	-43.81	-27.0	16.8	156	203	
Hori.	17355.000	PK	46.11	42.34	12.19	40.26	-9.54	50.84	-44.38	-27.0	17.3	150	0	
Vert.	2111.938	PK	51.01	27.55	13.81	41.50	2.24	53.11	-42.11	-27.0	15.1	138	157	
Vert.	17355.000	PK	45.71	42.34	12.19	40.26	-9.54	50.44	-44.78	-27.0	17.7	150	0	

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

Result(EIRP[dBm])= $10\log((\{10^{\wedge}(\text{Electric Field Strength [dBuV/m]} / 20) * 10^{\wedge}(-6) * \text{Distance:3[m]}^2\} / 30) * 10^{\wedge}3)$

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission

Report No.	13218142S-A-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	January 19, 2020	January 18, 2020	January 17, 2020	January 17, 2020
Temperature / Humidity	20 deg. C / 33 % RH	20 deg. C / 31 % RH	22 deg. C / 35 % RH	20 deg. C / 24 % RH
Engineer	Makoto Hosaka	Yusuke Tanikawara	Yasumasa Owaki	Hiromasa Sato
	(30 MHz - 1 GHz)	(1 GHz - 6.4 GHz)	(6.4 GHz - 18 GHz)	(18 GHz - 40 GHz)
Mode	Tx 11n-20 SISO 5825 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.	87.464	QP	46.39	7.60	7.60	32.16	0.00	29.43	40.0	10.5	218	248	
Hori.	95.144	QP	46.41	9.11	7.49	32.15	0.00	30.86	43.5	12.6	216	108	
Hori.	145.005	QP	42.93	14.50	7.74	32.12	0.00	33.05	43.5	10.4	228	85	
Hori.	404.999	QP	43.16	15.56	9.28	31.97	0.00	36.03	46.0	9.9	100	348	
Hori.	566.986	QP	38.42	17.93	9.88	31.97	0.00	34.26	46.0	11.7	100	3	
Hori.	809.983	QP	35.42	20.40	10.74	31.57	0.00	34.99	46.0	11.0	106	163	
Hori.	960.264	QP	40.16	21.68	11.20	30.56	0.00	42.48	53.9	11.4	116	269	
Hori.	11650.000	PK	46.16	39.69	9.86	42.51	2.24	55.44	73.9	18.4	150	0	
Hori.	11650.000	AV	35.29	39.69	9.86	42.51	2.24	44.57	53.9	9.3	150	0	VBW: 750 Hz
Vert.	147.453	QP	42.16	14.56	7.78	32.12	0.00	32.38	43.5	11.1	100	253	
Vert.	485.988	QP	40.38	17.16	9.58	31.95	0.00	35.17	46.0	10.8	115	179	
Vert.	960.264	QP	32.53	21.68	11.20	30.56	0.00	34.85	53.9	19.0	121	168	
Vert.	11650.000	PK	46.73	39.69	9.86	42.51	2.24	56.01	73.9	17.8	150	0	
Vert.	11650.000	AV	35.28	39.69	9.86	42.51	2.24	44.56	53.9	9.3	150	0	VBW: 750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2111.950	PK	49.51	27.55	13.81	41.50	2.24	51.61	-43.61	-27.0	16.6	166	205	
Hori.	5850.000	PK	53.22	33.02	16.59	43.34	2.24	61.73	-33.49	27.0	60.4	110	272	
Hori.	5855.000	PK	49.66	33.03	16.59	43.34	2.24	58.18	-37.04	15.6	52.6	110	272	
Hori.	5875.000	PK	48.88	33.08	16.60	43.34	2.24	57.46	-37.76	10.0	47.7	110	272	
Hori.	5925.000	PK	48.68	33.18	16.63	43.34	2.24	57.39	-37.83	-27.0	10.8	110	272	
Hori.	17475.000	PK	46.03	43.01	12.27	40.23	-9.54	51.54	-43.68	-27.0	16.6	150	0	
Vert.	2111.938	PK	51.71	27.55	13.81	41.50	2.24	53.81	-41.41	-27.0	14.4	144	154	
Vert.	5850.000	PK	51.47	33.02	16.59	43.34	2.24	59.98	-35.24	27.0	62.2	178	286	
Vert.	5855.000	PK	49.02	33.03	16.59	43.34	2.24	57.54	-37.68	15.6	53.2	178	286	
Vert.	5875.000	PK	48.97	33.08	16.60	43.34	2.24	57.55	-37.67	10.0	47.6	178	286	
Vert.	5925.000	PK	48.52	33.18	16.63	43.34	2.24	57.23	-37.99	-27.0	10.9	178	286	
Vert.	17475.000	PK	46.84	43.01	12.27	40.23	-9.54	52.35	-42.87	-27.0	15.8	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

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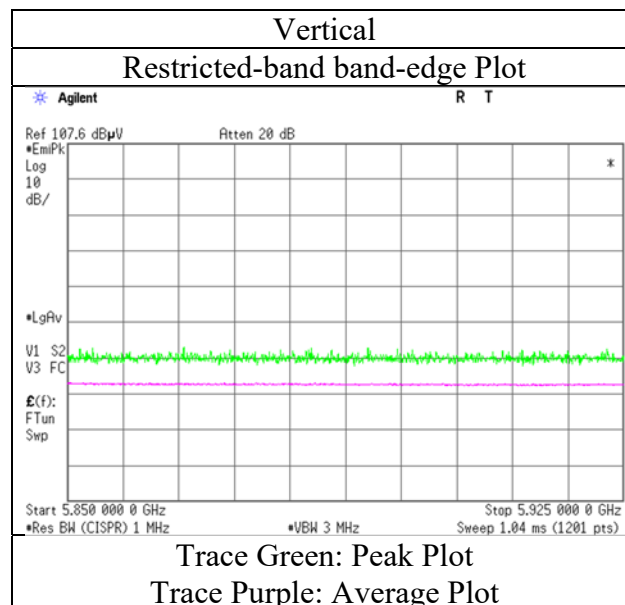
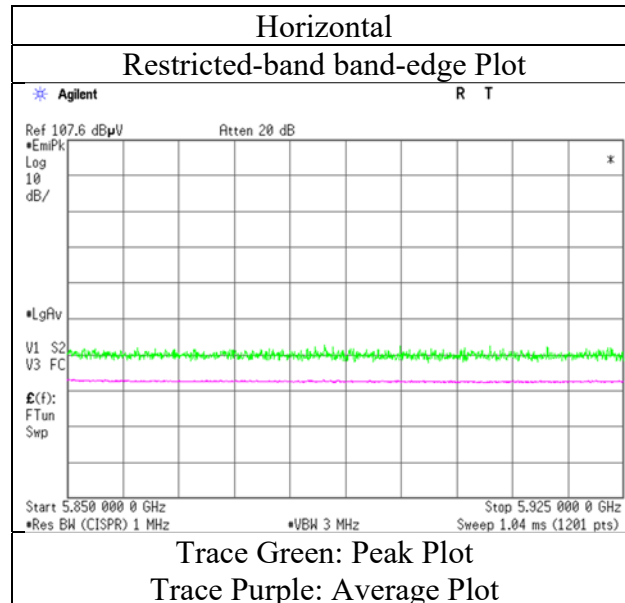
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 18, 2020
Temperature / Humidity	20 deg. C / 31 % RH
Engineer	Yusuke Tanikawara
Mode	Tx 11n-20 SISO 5825 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-40 SISO 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.	11510.000	PK	46.54	40.07	9.78	42.59	2.24	56.04	73.9	17.8	150	0	
Hori.	11510.000	AV	37.53	40.07	9.78	42.59	2.24	47.03	53.9	6.8	150	0	VBW: 5.1 kHz
Vert.	11510.000	PK	46.62	40.07	9.78	42.59	2.24	56.12	73.9	17.7	150	0	
Vert.	11510.000	AV	37.12	40.07	9.78	42.59	2.24	46.62	53.9	7.2	150	0	VBW: 5.1 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

(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.	2111.984	PK	50.79	27.55	13.81	41.50	2.24	52.89	-42.33	-27.0	15.3	159	205	
Hori.	5650.000	PK	48.68	32.46	16.44	43.33	2.24	56.49	-38.73	-27.0	11.7	114	259	
Hori.	5700.000	PK	48.94	32.61	16.48	43.33	2.24	56.94	-38.28	10.0	48.2	114	259	
Hori.	5720.000	PK	50.07	32.66	16.49	43.33	2.24	58.13	-37.09	15.6	52.6	114	259	
Hori.	5725.000	PK	51.43	32.68	16.49	43.33	2.24	59.51	-35.71	27.0	62.7	114	259	
Hori.	17265.000	PK	46.33	41.68	12.14	40.28	-9.54	50.33	-44.89	-27.0	17.8	150	0	
Vert.	2111.962	PK	51.13	27.55	13.81	41.50	2.24	53.23	-41.99	-27.0	14.9	145	156	
Vert.	5650.000	PK	48.65	32.46	16.44	43.33	2.24	56.46	-38.76	-27.0	11.7	155	163	
Vert.	5700.000	PK	48.85	32.61	16.48	43.33	2.24	56.85	-38.37	10.0	48.3	155	163	
Vert.	5720.000	PK	51.32	32.66	16.49	43.33	2.24	59.38	-35.84	15.6	51.4	155	163	
Vert.	5725.000	PK	53.22	32.68	16.49	43.33	2.24	61.30	-33.92	27.0	60.9	155	163	
Vert.	17265.000	PK	46.23	41.68	12.14	40.28	-9.54	50.23	-44.99	-27.0	17.9	150	0	

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

Result(EIRP[dBm]) = $10 \cdot \log \left(\left(\left(10^{\frac{\text{Electric Field Strength [dBuV/m]}{20}} \right) \cdot 10^{-6}} \cdot \text{Distance}^3 [\text{m}] \right)^2 \right) / 30 \cdot 10^3$

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

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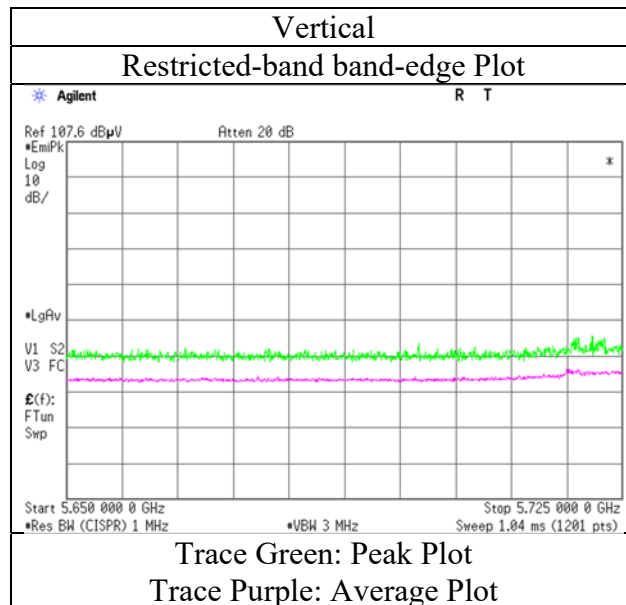
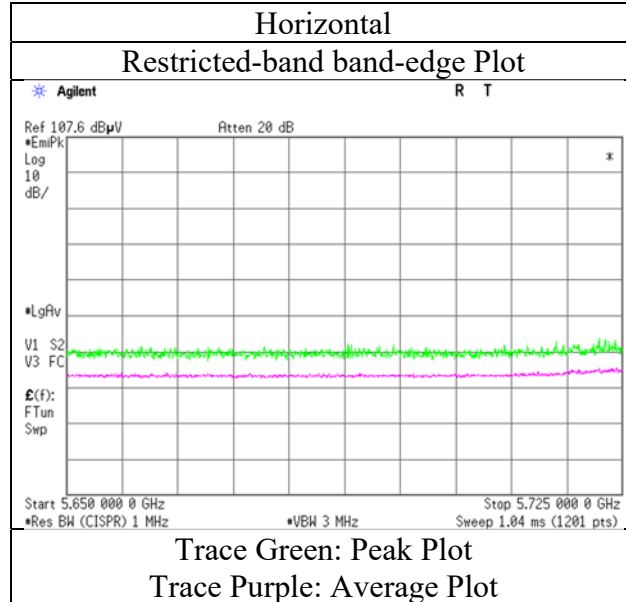
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 18, 2020
Temperature / Humidity	20 deg. C / 31 % RH
Engineer	Yusuke Tanikawara
Mode	Tx 11n-40 SISO 5755 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-40 SISO 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.	11590.000	PK	46.94	39.90	9.83	42.55	2.24	56.36	73.9	17.5	150	0	
Hori.	11590.000	AV	36.78	39.90	9.83	42.55	2.24	46.20	53.9	7.7	150	0	VBW: 5.1 kHz
Vert.	11590.000	PK	46.69	39.90	9.83	42.55	2.24	56.11	73.9	17.7	150	0	
Vert.	11590.000	AV	36.94	39.90	9.83	42.55	2.24	46.36	53.9	7.5	150	0	VBW: 5.1 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

(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.	2111.972	PK	50.56	27.55	13.81	41.50	2.24	52.66	-42.56	-27.0	15.5	171	207	
Hori.	5850.000	PK	48.31	33.02	16.59	43.34	2.24	56.82	-38.40	27.0	65.4	107	275	
Hori.	5855.000	PK	48.17	33.03	16.59	43.34	2.24	56.69	-38.53	15.6	54.1	107	275	
Hori.	5875.000	PK	48.85	33.08	16.60	43.34	2.24	57.43	-37.79	10.0	47.7	107	275	
Hori.	5925.000	PK	48.48	33.18	16.63	43.34	2.24	57.19	-38.03	-27.0	11.0	107	275	
Hori.	17385.000	PK	46.38	42.51	12.20	40.25	-9.54	51.30	-43.92	-27.0	16.9	150	0	
Vert.	2111.905	PK	50.14	27.55	13.81	41.50	2.24	52.24	-42.98	-27.0	15.9	138	150	
Vert.	5850.000	PK	48.58	33.02	16.59	43.34	2.24	57.09	-38.13	27.0	65.1	145	166	
Vert.	5855.000	PK	48.45	33.03	16.59	43.34	2.24	56.97	-38.25	15.6	53.8	145	166	
Vert.	5875.000	PK	48.48	33.08	16.60	43.34	2.24	57.06	-38.16	10.0	48.1	145	166	
Vert.	5925.000	PK	48.70	33.18	16.63	43.34	2.24	57.41	-37.81	-27.0	10.8	145	166	
Vert.	17385.000	PK	45.54	42.51	12.20	40.25	-9.54	50.46	-44.76	-27.0	17.7	150	0	

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

Result(EIRP[dBm]) = $10 \cdot \log \left(\left(\left(10^{\frac{\text{Electric Field Strength [dBuV/m]}{20}} \right)^2 \cdot \text{Distance}^2 \right) / 30 \right) \cdot 10^3$

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

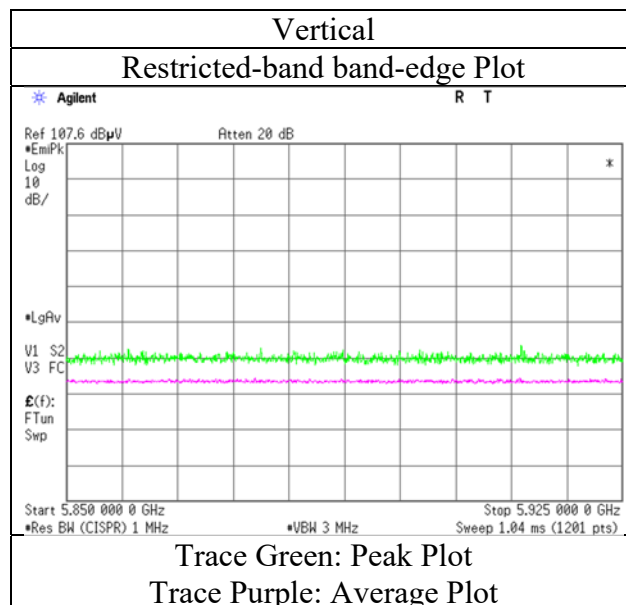
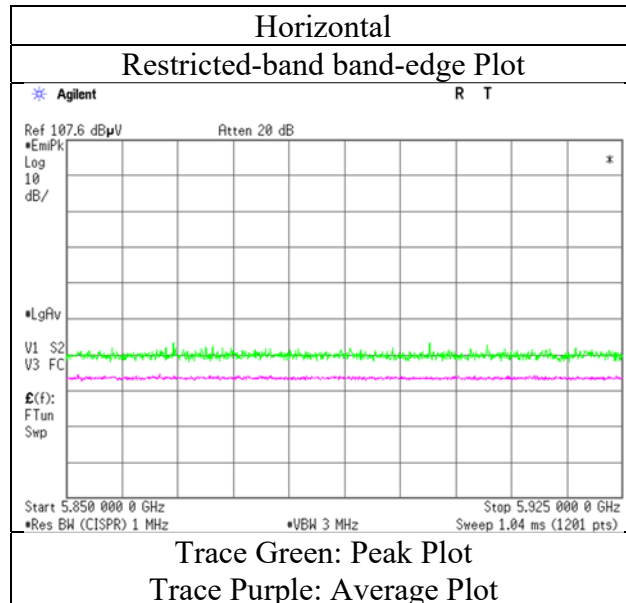
*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 18, 2020
Temperature / Humidity	20 deg. C / 31 % RH
Engineer	Yusuke Tanikawara
Mode	Tx 11n-40 SISO 5795 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11ac-40 SISO 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.	11510.000	PK	47.34	40.07	9.78	42.59	2.24	56.84	73.9	17.0	150	0	
Hori.	11510.000	AV	36.43	40.07	9.78	42.59	2.24	45.93	53.9	7.9	150	0	VBW: 1.8 kHz
Vert.	11510.000	PK	47.27	40.07	9.78	42.59	2.24	56.77	73.9	17.1	150	0	
Vert.	11510.000	AV	36.52	40.07	9.78	42.59	2.24	46.02	53.9	7.8	150	0	VBW: 1.8 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

(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.	2111.967	PK	50.05	27.55	13.81	41.50	2.24	52.15	-43.07	-27.0	16.0	176	204	
Hori.	5650.000	PK	48.85	32.46	16.44	43.33	2.24	56.66	-38.56	-27.0	11.5	106	275	
Hori.	5700.000	PK	48.46	32.61	16.48	43.33	2.24	56.46	-38.76	10.0	48.7	106	275	
Hori.	5720.000	PK	50.76	32.66	16.49	43.33	2.24	58.82	-36.40	15.6	52.0	106	275	
Hori.	5725.000	PK	51.80	32.68	16.49	43.33	2.24	59.88	-35.34	27.0	62.3	106	275	
Hori.	17265.000	PK	45.40	41.68	12.14	40.28	-9.54	49.40	-45.82	-27.0	18.8	150	0	
Vert.	2111.963	PK	50.85	27.55	13.81	41.50	2.24	52.95	-42.27	-27.0	15.2	142	159	
Vert.	5650.000	PK	48.35	32.46	16.44	43.33	2.24	56.16	-39.06	-27.0	12.0	156	164	
Vert.	5700.000	PK	48.90	32.61	16.48	43.33	2.24	56.90	-38.32	10.0	48.3	156	164	
Vert.	5720.000	PK	51.98	32.66	16.49	43.33	2.24	60.04	-35.18	15.6	50.7	156	164	
Vert.	5725.000	PK	53.12	32.68	16.49	43.33	2.24	61.20	-34.02	27.0	61.0	156	164	
Vert.	17265.000	PK	45.74	41.68	12.14	40.28	-9.54	49.74	-45.48	-27.0	18.4	150	0	

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

Result(EIRP[dBm])= $10\log((\{10^{\wedge}(\text{Electric Field Strength [dBuV/m]} / 20)\} * 10^{\wedge}(-6) * \text{Distance:3[m]}^{\wedge}2) / 30) * 10^{\wedge}3)$

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

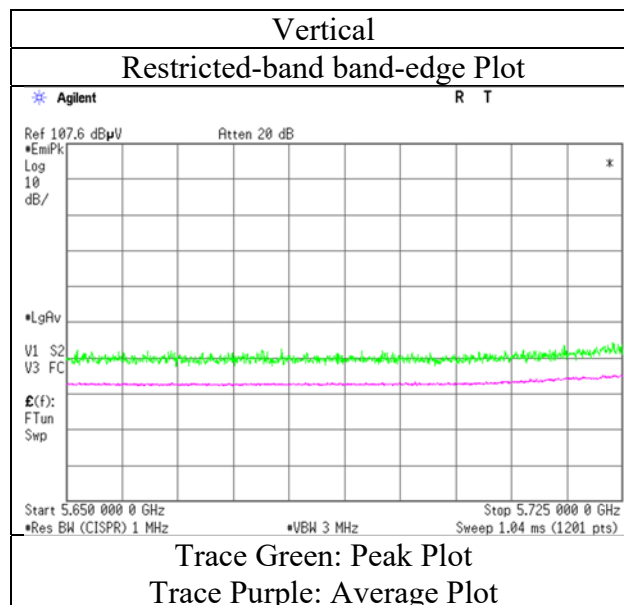
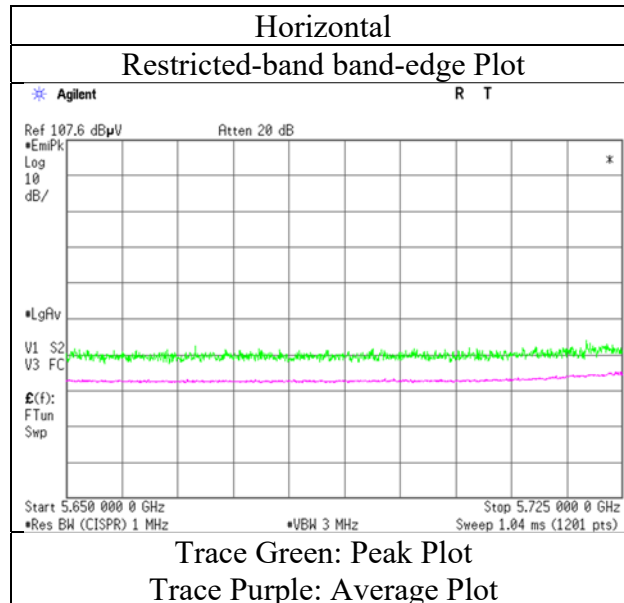
*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 18, 2020
Temperature / Humidity	20 deg. C / 31 % RH
Engineer	Yusuke Tanikawara
Mode	Tx 11n-40 SISO 5755 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. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11ac-40 SISO 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.	11590.000	PK	46.20	39.90	9.83	42.55	2.24	55.62	73.9	18.2	150	0	
Hori.	11590.000	AV	36.09	39.90	9.83	42.55	2.24	45.51	53.9	8.3	150	0	VBW: 1.8 kHz
Vert.	11590.000	PK	46.57	39.90	9.83	42.55	2.24	55.99	73.9	17.9	150	0	
Vert.	11590.000	AV	36.16	39.90	9.83	42.55	2.24	45.58	53.9	8.3	150	0	VBW: 1.8 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

(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.	2111.994	PK	50.90	27.55	13.81	41.50	2.24	53.00	-42.22	-27.0	15.2	161	209	
Hori.	5850.000	PK	49.03	33.02	16.59	43.34	2.24	57.54	-37.68	27.0	64.6	106	276	
Hori.	5855.000	PK	48.71	33.03	16.59	43.34	2.24	57.23	-37.99	15.6	53.5	106	276	
Hori.	5875.000	PK	48.82	33.08	16.60	43.34	2.24	57.40	-37.82	10.0	47.8	106	276	
Hori.	5925.000	PK	48.61	33.18	16.63	43.34	2.24	57.32	-37.90	-27.0	10.9	106	276	
Hori.	17385.000	PK	46.50	42.51	12.20	40.25	-9.54	51.42	-43.80	-27.0	16.8	150	0	
Vert.	2111.940	PK	51.30	27.55	13.81	41.50	2.24	53.40	-41.82	-27.0	14.8	145	156	
Vert.	5850.000	PK	48.44	33.02	16.59	43.34	2.24	56.95	-38.27	27.0	65.2	154	164	
Vert.	5855.000	PK	48.52	33.03	16.59	43.34	2.24	57.04	-38.18	15.6	53.7	154	164	
Vert.	5875.000	PK	48.27	33.08	16.60	43.34	2.24	56.85	-38.37	10.0	48.3	154	164	
Vert.	5925.000	PK	48.74	33.18	16.63	43.34	2.24	57.45	-37.77	-27.0	10.7	154	164	
Vert.	17385.000	PK	45.58	42.51	12.20	40.25	-9.54	50.50	-44.72	-27.0	17.7	150	0	

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

Result(EIRP[dBm]) = $10 \cdot \log \left(\left(\left(10^{\frac{\text{Electric Field Strength [dBuV/m]}{20}} \right)^2 \cdot \text{Distance}^2 \right) / 30 \right) \cdot 10^{-3}$

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

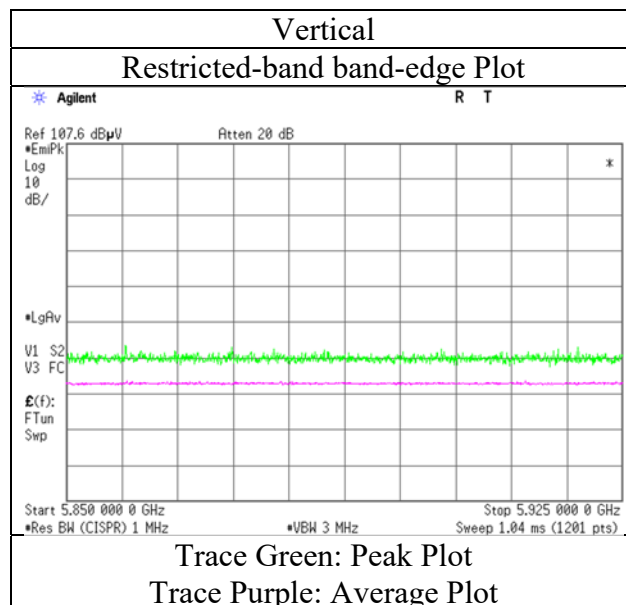
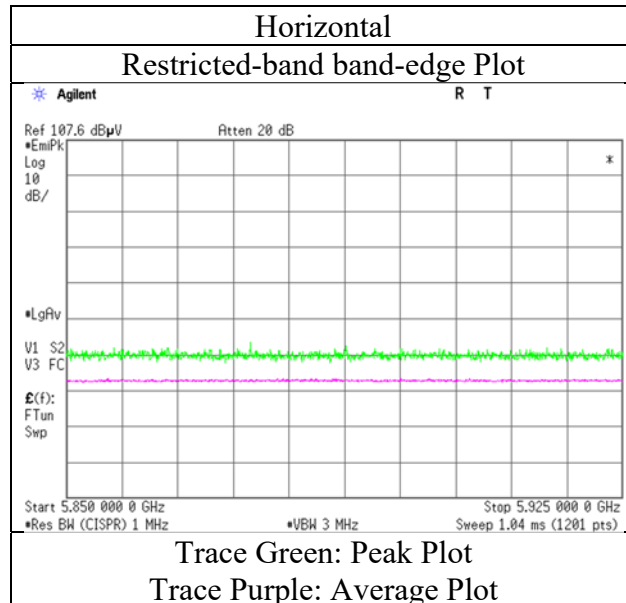
*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 18, 2020
Temperature / Humidity	20 deg. C / 31 % RH
Engineer	Yusuke Tanikawara
Mode	Tx 11n-40 SISO 5795 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.

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 18, 2020 January 17, 2020 January 17, 2020
Temperature / Humidity 20 deg. C / 31 % RH 22 deg. C / 35 % RH 20 deg. C / 24 % RH
Engineer Yusuke Tanikawara Yasumasa Owaki Hiromasa Sato
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11ac-80 SISO 5775 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.	11550.000	PK	46.38	40.01	9.81	42.57	2.24	55.87	73.9	18.0	150	0	
Hori.	11550.000	AV	36.28	40.01	9.81	42.57	2.24	45.77	53.9	8.1	150	0	VBW: 3.3 kHz
Vert.	11550.000	PK	46.69	40.01	9.81	42.57	2.24	56.18	73.9	17.7	150	0	
Vert.	11550.000	AV	36.43	40.01	9.81	42.57	2.24	45.92	53.9	7.9	150	0	VBW: 3.3 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2111.923	PK	51.00	27.55	13.81	41.50	2.24	53.10	-42.12	-27.0	15.1	160	209	
Hori.	5650.000	PK	48.42	32.46	16.44	43.33	2.24	56.23	-38.99	-27.0	11.9	106	277	
Hori.	5700.000	PK	49.70	32.61	16.48	43.33	2.24	57.70	-37.52	10.0	47.5	106	277	
Hori.	5720.000	PK	50.14	32.66	16.49	43.33	2.24	58.20	-37.02	15.6	52.6	106	277	
Hori.	5725.000	PK	50.02	32.68	16.49	43.33	2.24	58.10	-37.12	27.0	64.1	106	277	
Hori.	5850.000	PK	49.21	33.02	16.59	43.34	2.24	57.72	-37.50	27.0	64.5	106	277	
Hori.	5855.000	PK	48.45	33.03	16.59	43.34	2.24	56.97	-38.25	15.6	53.8	106	277	
Hori.	5875.000	PK	48.56	33.08	16.60	43.34	2.24	57.14	-38.08	10.0	48.0	106	277	
Hori.	5925.000	PK	48.46	33.18	16.63	43.34	2.24	57.17	-38.05	-27.0	11.0	106	277	
Hori.	17325.000	PK	45.76	42.20	12.18	40.27	-9.54	50.33	-44.89	-27.0	17.8	150	0	
Vert.	2111.971	PK	50.94	27.55	13.81	41.50	2.24	53.04	-42.18	-27.0	15.1	141	150	
Vert.	5650.000	PK	49.20	32.46	16.44	43.33	2.24	57.01	-38.21	-27.0	11.2	152	165	
Vert.	5700.000	PK	49.91	32.61	16.48	43.33	2.24	57.91	-37.31	10.0	47.3	152	165	
Vert.	5720.000	PK	51.37	32.66	16.49	43.33	2.24	59.43	-35.79	15.6	51.3	152	165	
Vert.	5725.000	PK	51.23	32.68	16.49	43.33	2.24	59.31	-35.91	27.0	62.9	152	165	
Vert.	5850.000	PK	49.41	33.02	16.59	43.34	2.24	57.92	-37.30	27.0	64.3	152	165	
Vert.	5855.000	PK	49.30	33.03	16.59	43.34	2.24	57.82	-37.40	15.6	53.0	152	165	
Vert.	5875.000	PK	48.68	33.08	16.60	43.34	2.24	57.26	-37.96	10.0	47.9	152	165	
Vert.	5925.000	PK	48.84	33.18	16.63	43.34	2.24	57.55	-37.67	-27.0	10.6	152	165	
Vert.	17325.000	PK	45.83	42.20	12.18	40.27	-9.54	50.40	-44.82	-27.0	17.8	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

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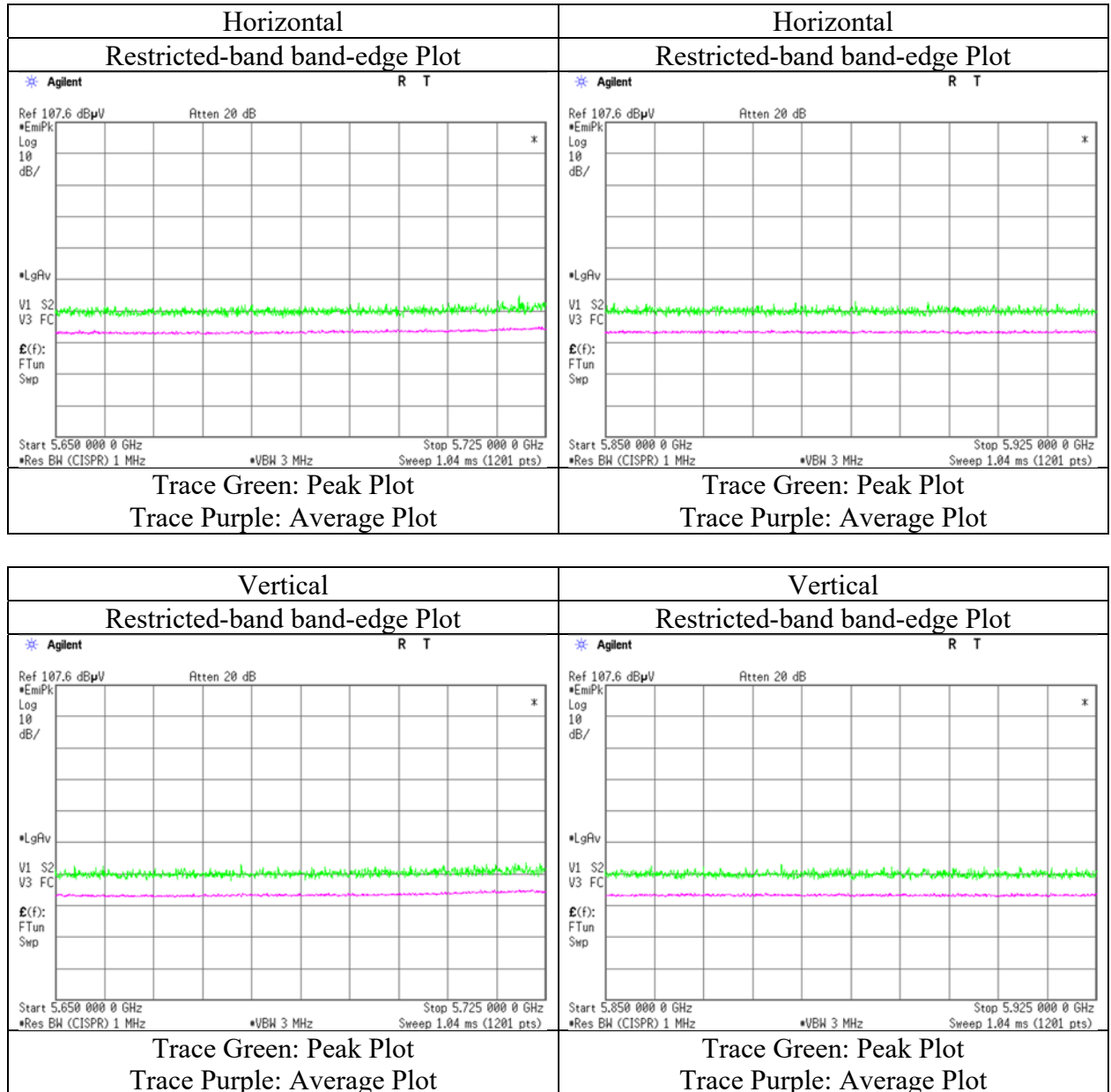
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27, 2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-80 SISO 5775 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.

Shonan EMC Lab.

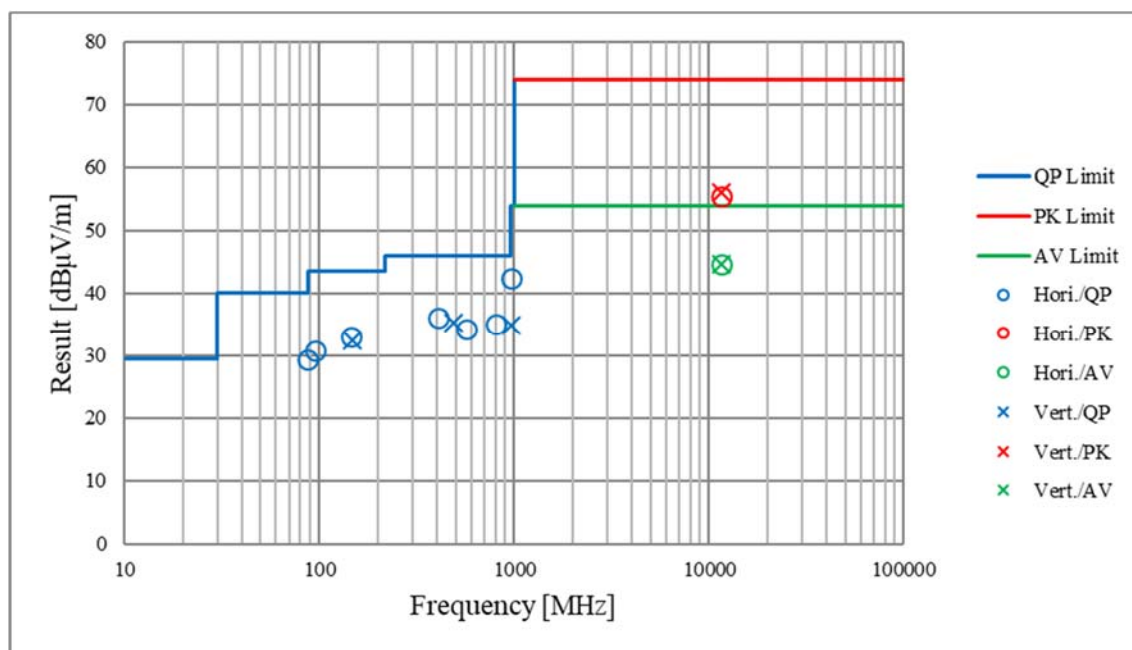
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission
(Plot data, Worst case)

Report No.	13218142S-A-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	January 19, 2020	January 18, 2020	January 17, 2020	January 17, 2020
Temperature / Humidity	20 deg. C / 33 % RH	20 deg. C / 31 % RH	22 deg. C / 35 % RH	20 deg. C / 24 % RH
Engineer	Makoto Hosaka (30 MHz - 1 GHz)	Yusuke Tanikawara (1 GHz - 6.4 GHz)	Yasumasa Owaki (6.4 GHz - 18 GHz)	Hiromasa Sato (18 GHz - 40 GHz)
Mode	Tx 11n-20 SISO 5825 MHz			



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

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 27,2020 January 28, 2020 January 28, 2020
Temperature / Humidity 20 deg. C / 26 % RH 20 deg. C / 40 % RH 20 deg. C / 36 % RH
Engineer Toshinori Yamada Yasumasa Owaki Yasumasa Owaki
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-20 MIMO 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.	11490.000	PK	47.77	40.34	9.80	39.93	2.24	60.22	73.9	13.6	150	0	VBW: 750 Hz
Hori.	11490.000	AV	35.28	40.34	9.80	39.93	2.24	47.73	53.9	6.1	150	0	
Vert.	11490.000	PK	46.30	40.34	9.80	39.93	2.24	58.75	73.9	15.1	150	0	
Vert.	11490.000	AV	35.19	40.34	9.80	39.93	2.24	47.64	53.9	6.2	150	0	

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2112.043	PK	48.86	27.53	13.76	38.86	2.24	53.53	-41.69	-27.00	14.6	158	189	
Hori.	5650.000	PK	44.88	32.42	16.38	38.90	2.24	57.02	-38.20	-27.00	11.2	153	223	
Hori.	5700.000	PK	45.67	32.58	16.41	38.93	2.24	57.97	-37.25	10.00	47.2	153	223	
Hori.	5720.000	PK	53.40	32.64	16.42	38.94	2.24	65.76	-29.46	15.60	45.0	153	223	
Hori.	5725.000	PK	55.65	32.66	16.42	38.95	2.24	68.02	-27.20	27.00	54.2	153	223	
Hori.	17235.000	PK	44.38	42.33	12.07	37.23	-9.54	52.01	-43.21	-27.00	16.2	150	0	
Vert.	2111.951	PK	46.42	27.53	13.76	38.86	2.24	51.09	-44.13	-27.00	17.1	310	112	
Vert.	5650.000	PK	44.11	32.42	16.38	38.90	2.24	56.25	-38.97	-27.00	11.9	123	215	
Vert.	5700.000	PK	46.07	32.58	16.41	38.93	2.24	58.37	-36.85	10.00	46.8	123	215	
Vert.	5720.000	PK	53.24	32.64	16.42	38.94	2.24	65.60	-29.62	15.60	45.2	123	215	
Vert.	5725.000	PK	55.84	32.66	16.42	38.95	2.24	68.21	-27.01	27.00	54.0	123	215	
Vert.	17235.000	PK	44.22	42.33	12.07	37.23	-9.54	51.85	-43.37	-27.00	16.3	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

UL Japan, Inc.

Shonan EMC Lab.

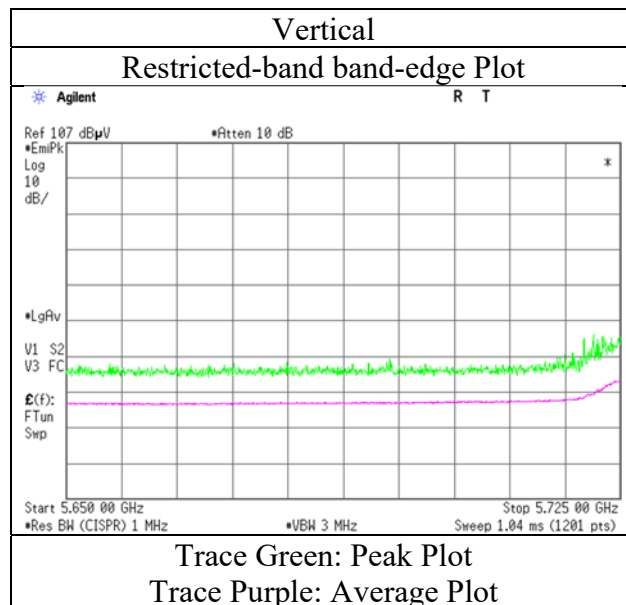
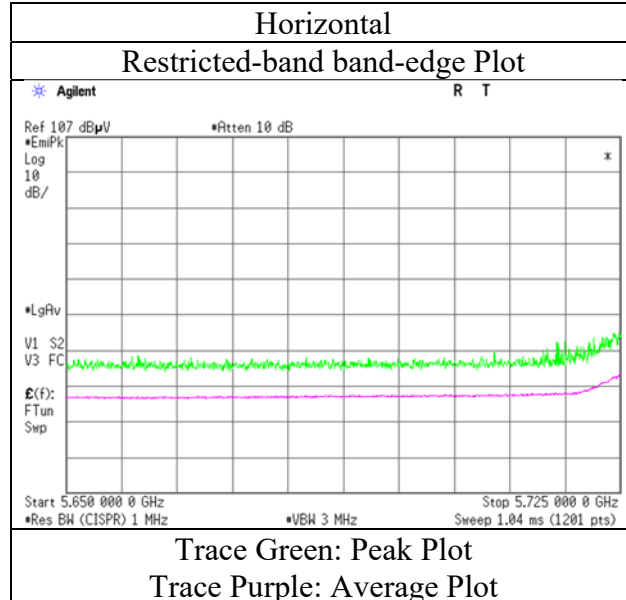
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27,2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11n-20 MIMO 5745 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	13218142S-A-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	No.2	No.2	No.2	No.2
Date	January 21, 2020	January 27, 2020	January 28, 2020	January 28, 2020
Temperature / Humidity	20 deg. C / 34 % RH	20 deg. C / 26 % RH	20 deg. C / 40 % RH	20 deg. C / 36 % RH
Engineer	Yasumasa Owaki	Toshinori Yamada	Yasumasa Owaki	Yasumasa Owaki
	(30 MHz - 1 GHz)	(1 GHz - 6.4 GHz)	(6.4 GHz - 18 GHz)	(18 GHz - 40 GHz)
Mode	Tx 11n-20 MIMO 5785 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.	84.396	QP	46.90	7.03	8.24	31.89	0.00	30.28	40.0	9.7	226	252	
Hori.	85.934	QP	48.50	7.43	8.24	31.89	0.00	32.28	40.0	7.7	198	69	
Hori.	162.656	QP	39.20	15.28	8.88	31.83	0.00	31.53	43.5	11.9	201	57	
Hori.	198.001	QP	40.70	16.63	9.03	31.80	0.00	34.56	43.5	8.9	160	46	
Hori.	231.773	QP	44.00	11.38	6.11	31.76	0.00	29.73	46.0	16.2	293	12	
Hori.	404.992	QP	44.80	15.84	7.58	31.67	0.00	36.55	46.0	9.4	100	97	
Hori.	485.990	QP	42.60	17.42	8.02	31.63	0.00	36.41	46.0	9.5	100	3	
Hori.	512.990	QP	41.30	17.72	8.13	31.63	0.00	35.52	46.0	10.4	100	29	
Hori.	791.984	QP	39.20	20.79	9.37	31.36	0.00	38.00	46.0	8.0	149	284	
Hori.	809.992	QP	37.10	20.85	9.44	31.30	0.00	36.09	46.0	9.9	103	219	
Hori.	823.500	QP	33.40	20.92	9.50	31.25	0.00	32.57	46.0	13.4	105	198	
Hori.	960.266	QP	41.10	22.07	10.11	30.45	0.00	42.83	53.9	11.0	106	107	
Hori.	11570.000	PK	45.55	40.22	9.85	40.01	2.24	57.85	73.9	16.0	150	0	
Hori.	11570.000	AV	34.61	40.22	9.85	40.01	2.24	46.91	53.9	6.9	150	0	VBW: 750 Hz
Vert.	11570.000	PK	45.72	40.22	9.85	40.01	2.24	58.02	73.9	15.8	150	0	
Vert.	11570.000	AV	34.68	40.22	9.85	40.01	2.24	46.98	53.9	6.9	150	0	VBW: 750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2111.965	PK	48.00	27.53	13.76	38.86	2.24	52.67	-42.55	-27.0	15.5	151	189	
Hori.	17355.000	PK	44.44	43.35	12.10	37.30	-9.54	53.05	-42.17	-27.0	15.1	150	0	
Vert.	2111.951	PK	46.79	27.53	13.76	38.86	2.24	51.46	-43.76	-27.0	16.7	157	106	
Vert.	17355.000	PK	44.54	43.35	12.10	37.30	-9.54	53.15	-42.07	-27.0	15.0	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 27,2020 January 28, 2020 January 28, 2020
Temperature / Humidity 20 deg. C / 26 % RH 20 deg. C / 40 % RH 20 deg. C / 36 % RH
Engineer Toshinori Yamada Yasumasa Owaki Yasumasa Owaki
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-20 MIMO 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.	11650.000	PK	45.52	39.96	9.92	40.10	2.24	57.54	73.90	16.3	150	0	VBW: 750 Hz
Hori.	11650.000	AV	34.23	39.96	9.92	40.10	2.24	46.25	53.90	7.6	150	0	
Vert.	11650.000	PK	45.58	39.96	9.92	40.10	2.24	57.60	73.90	16.3	150	0	
Vert.	11650.000	AV	34.12	39.96	9.92	40.10	2.24	46.14	53.90	7.7	150	0	

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(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.	2111.951	PK	46.09	27.53	13.76	38.86	2.24	50.76	-44.46	-27.00	17.4	141	36	
Hori.	5850.000	PK	49.02	33.03	16.52	39.02	2.24	61.79	-33.43	27.00	60.4	170	313	
Hori.	5855.000	PK	46.48	33.04	16.52	39.02	2.24	59.26	-35.96	15.60	51.5	170	313	
Hori.	5875.000	PK	46.15	33.08	16.53	39.03	2.24	58.97	-36.25	10.00	46.2	170	313	
Hori.	5925.000	PK	45.53	33.16	16.56	39.06	2.24	58.43	-36.79	-27.00	9.7	170	313	
Hori.	17475.000	PK	44.66	44.16	12.15	37.38	-9.54	54.05	-41.17	-27.00	14.1	150	0	
Vert.	2111.958	PK	48.22	27.53	13.76	38.86	2.24	52.89	-42.33	-27.00	15.3	143	157	
Vert.	5850.000	PK	50.98	33.03	16.52	39.02	2.24	63.75	-31.47	27.00	58.4	239	252	
Vert.	5855.000	PK	45.84	33.04	16.52	39.02	2.24	58.62	-36.60	15.60	52.2	239	252	
Vert.	5875.000	PK	46.03	33.08	16.53	39.03	2.24	58.85	-36.37	10.00	46.3	239	252	
Vert.	5925.000	PK	45.40	33.16	16.56	39.06	2.24	58.30	-36.92	-27.00	9.9	239	252	
Vert.	17475.000	PK	44.10	44.16	12.15	37.38	-9.54	53.49	-41.73	-27.00	14.7	150	0	

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

Result(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 20dB).

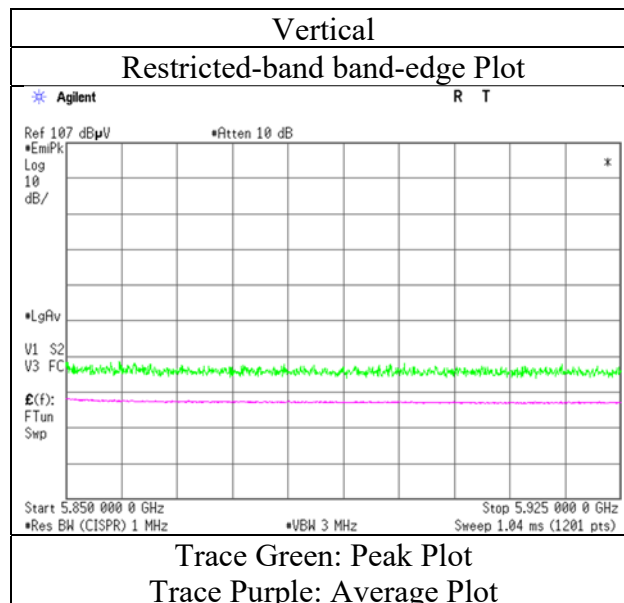
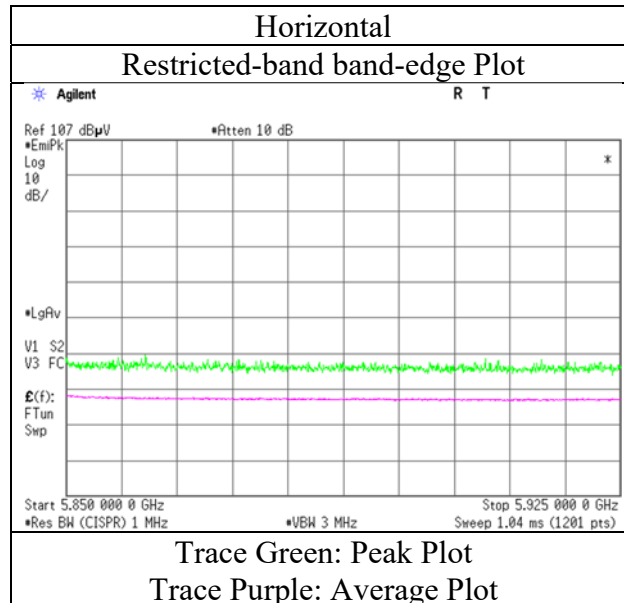
*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27, 2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11n-20 MIMO 5825 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.

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 27,2020 January 28, 2020 January 28, 2020
Temperature / Humidity 20 deg. C / 26 % RH 20 deg. C / 40 % RH 20 deg. C / 36 % RH
Engineer Toshinori Yamada Yasumasa Owaki Yasumasa Owaki
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-40 MIMO 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.	11510.000	PK	45.17	40.32	9.80	39.94	2.24	57.59	73.90	16.3	150	0	
Hori.	11510.000	AV	35.15	40.32	9.80	39.94	2.24	47.57	53.90	6.3	150	0	VBW: 5.1 kHz
Vert.	11510.000	PK	45.44	40.32	9.80	39.94	2.24	57.86	73.90	16.0	150	0	
Vert.	11510.000	AV	35.05	40.32	9.80	39.94	2.24	47.47	53.90	6.4	150	0	VBW: 5.1 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2111.989	PK	46.98	27.53	13.76	38.86	2.24	51.65	-43.57	-27.00	16.5	152	39	
Hori.	5650.000	PK	45.24	32.42	16.38	38.90	2.24	57.38	-37.84	-27.00	10.8	179	317	
Hori.	5700.000	PK	45.74	32.58	16.41	38.93	2.24	58.04	-37.18	10.00	47.1	179	317	
Hori.	5720.000	PK	47.43	32.64	16.42	38.94	2.24	59.79	-35.43	15.60	51.0	179	317	
Hori.	5725.000	PK	48.58	32.66	16.42	38.95	2.24	60.95	-34.27	27.00	61.2	179	317	
Hori.	17265.000	PK	43.99	42.53	12.07	37.25	-9.54	51.80	-43.42	-27.00	16.4	150	0	
Vert.	2111.602	PK	48.10	27.52	13.76	38.86	2.24	52.76	-42.46	-27.00	15.4	105	155	
Vert.	5650.000	PK	45.86	32.42	16.38	38.90	2.24	58.00	-37.22	-27.00	10.2	198	256	
Vert.	5700.000	PK	45.91	32.58	16.41	38.93	2.24	58.21	-37.01	10.00	47.0	198	256	
Vert.	5720.000	PK	50.32	32.64	16.42	38.94	2.24	62.68	-32.54	15.60	48.1	198	256	
Vert.	5725.000	PK	52.12	32.66	16.42	38.95	2.24	64.49	-30.73	27.00	57.7	198	256	
Vert.	17265.000	PK	44.48	42.53	12.07	37.25	-9.54	52.29	-42.93	-27.00	15.9	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

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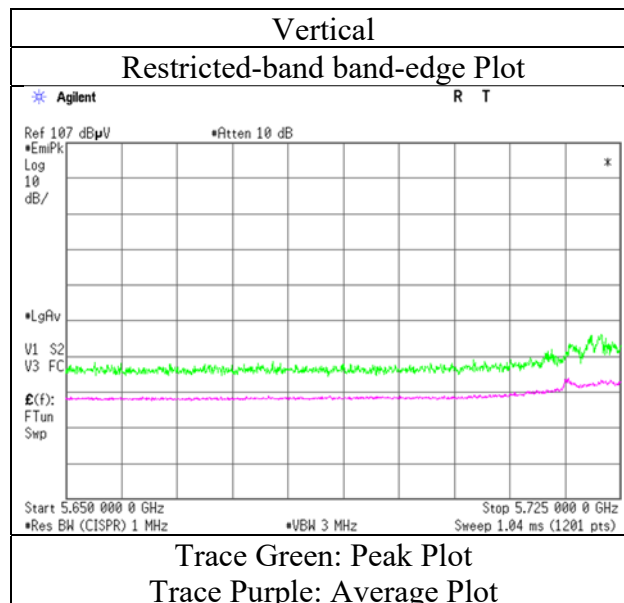
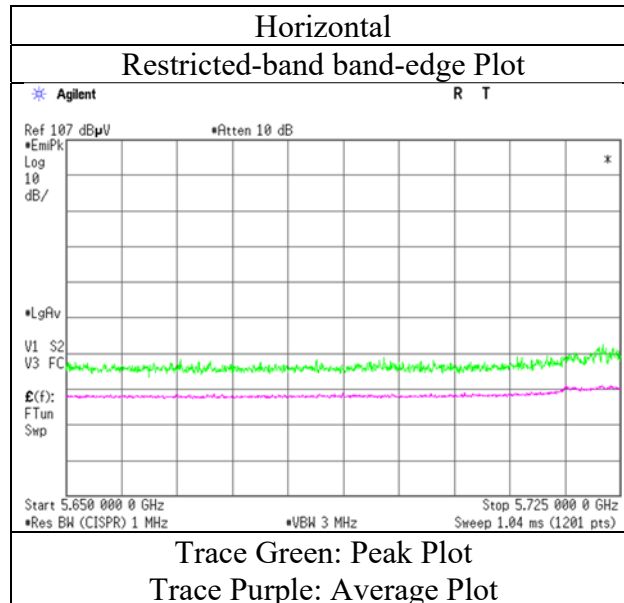
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27, 2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11n-40 MIMO 5755 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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1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 27,2020 January 28, 2020 January 28, 2020
Temperature / Humidity 20 deg. C / 26 % RH 20 deg. C / 40 % RH 20 deg. C / 36 % RH
Engineer Toshinori Yamada Yasumasa Owaki Yasumasa Owaki
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11n-40 MIMO 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.	11590.000	PK	44.56	40.16	9.87	40.03	2.24	56.80	73.9	17.1	150	0	
Hori.	11590.000	AV	34.36	40.16	9.87	40.03	2.24	46.60	53.9	7.3	150	0	VBW: 5.1 kHz
Vert.	11590.000	PK	44.39	40.16	9.87	40.03	2.24	56.63	73.9	17.2	150	0	
Vert.	11590.000	AV	34.29	40.16	9.87	40.03	2.24	46.53	53.9	7.3	150	0	VBW: 5.1 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2112.006	PK	46.72	27.53	13.76	38.86	2.24	51.39	-43.83	-27.0	16.8	147	36	
Hori.	5850.000	PK	45.43	33.03	16.52	39.02	2.24	58.20	-37.02	27.0	64.0	100	0	
Hori.	5855.000	PK	45.05	33.04	16.52	39.02	2.24	57.83	-37.39	15.6	52.9	100	0	
Hori.	5875.000	PK	45.21	33.08	16.53	39.03	2.24	58.03	-37.19	10.0	47.1	100	0	
Hori.	5925.000	PK	44.86	33.16	16.56	39.06	2.24	57.76	-37.46	-27.0	10.4	100	0	
Hori.	17385.000	PK	44.47	43.52	12.11	37.32	-9.54	53.24	-41.98	-27.0	14.9	150	0	
Vert.	2111.989	PK	46.79	27.53	13.76	38.86	2.24	51.46	-43.76	-27.0	16.7	145	174	
Vert.	5850.000	PK	45.42	33.03	16.52	39.02	2.24	58.19	-37.03	27.0	64.0	183	254	
Vert.	5855.000	PK	45.43	33.04	16.52	39.02	2.24	58.21	-37.01	15.6	52.6	183	254	
Vert.	5875.000	PK	45.62	33.08	16.53	39.03	2.24	58.44	-36.78	10.0	46.7	183	254	
Vert.	5925.000	PK	45.12	33.16	16.56	39.06	2.24	58.02	-37.20	-27.0	10.2	183	254	
Vert.	17385.000	PK	44.90	43.52	12.11	37.32	-9.54	53.67	-41.55	-27.0	14.5	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

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Shonan EMC Lab.

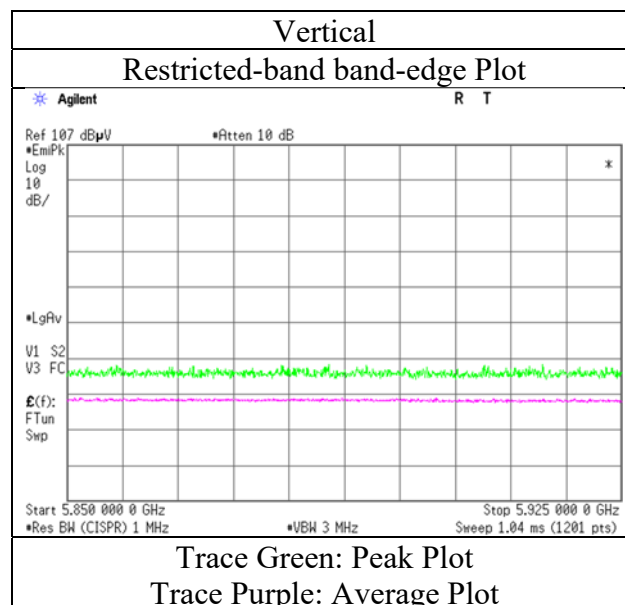
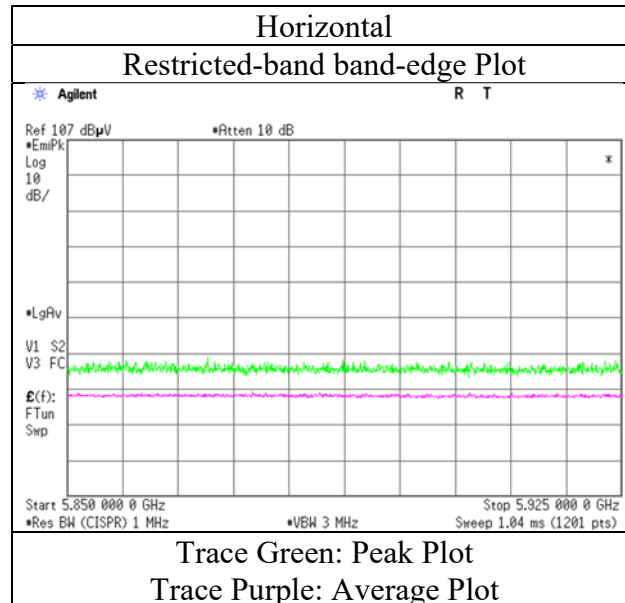
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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27, 2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11n-40 MIMO 5795 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. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 27,2020 January 28, 2020 January 28, 2020
Temperature / Humidity 20 deg. C / 26 % RH 20 deg. C / 40 % RH 20 deg. C / 36 % RH
Engineer Toshinori Yamada Yasumasa Owaki Yasumasa Owaki
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11ac-40 MIMO 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.	11510.000	PK	44.69	40.32	9.80	39.94	2.24	57.11	73.9	16.7	150	0	
Hori.	11510.000	AV	34.82	40.32	9.80	39.94	2.24	47.24	53.9	6.6	150	0	VBW: 3 kHz
Vert.	11510.000	PK	45.09	40.32	9.80	39.94	2.24	57.51	73.9	16.3	150	0	
Vert.	11510.000	AV	34.76	40.32	9.80	39.94	2.24	47.18	53.9	6.7	150	0	VBW: 3 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2112.021	PK	47.54	27.53	13.76	38.86	2.24	52.21	-43.01	-27.0	16.0	152	40	
Hori.	5650.000	PK	45.22	32.42	16.38	38.90	2.24	57.36	-37.86	-27.0	10.8	181	315	
Hori.	5700.000	PK	44.57	32.58	16.41	38.93	2.24	56.87	-38.35	10.0	48.3	181	315	
Hori.	5720.000	PK	46.97	32.64	16.42	38.94	2.24	59.33	-35.89	15.6	51.4	181	315	
Hori.	5725.000	PK	47.71	32.66	16.42	38.95	2.24	60.08	-35.14	27.0	62.1	181	315	
Hori.	17265.000	PK	44.21	42.53	12.07	37.25	-9.54	52.02	-43.20	-27.0	16.2	150	0	
Vert.	2111.025	PK	47.22	27.51	13.76	38.86	2.24	51.87	-43.35	-27.0	16.3	124	217	
Vert.	5650.000	PK	45.51	32.42	16.38	38.90	2.24	57.65	-37.57	-27.0	10.5	200	254	
Vert.	5700.000	PK	45.12	32.58	16.41	38.93	2.24	57.42	-37.80	10.0	47.8	200	254	
Vert.	5720.000	PK	49.27	32.64	16.42	38.94	2.24	61.63	-33.59	15.6	49.1	200	254	
Vert.	5725.000	PK	50.04	32.66	16.42	38.95	2.24	62.41	-32.81	27.0	59.8	200	254	
Vert.	17265.000	PK	44.13	42.53	12.07	37.25	-9.54	51.94	-43.28	-27.0	16.2	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

UL Japan, Inc.

Shonan EMC Lab.

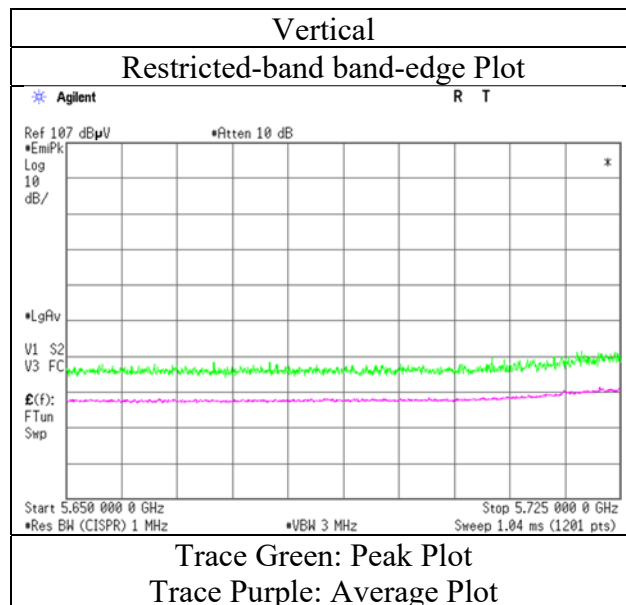
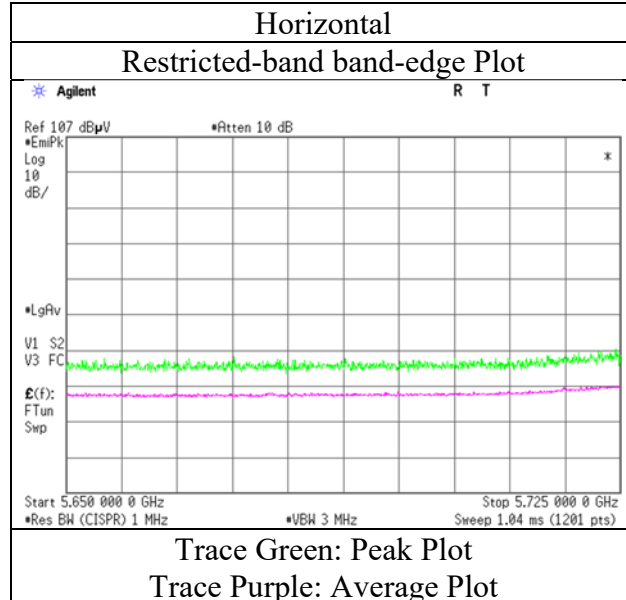
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27, 2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-40 MIMO 5755 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 27,2020 January 28, 2020 January 28, 2020
Temperature / Humidity 20 deg. C / 26 % RH 20 deg. C / 40 % RH 20 deg. C / 36 % RH
Engineer Toshinori Yamada Yasumasa Owaki Yasumasa Owaki
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11ac-40 MIMO 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.	11590.000	PK	44.98	40.16	9.87	40.03	2.24	57.22	73.9	16.6	150	0	VBW: 3 kHz
Hori.	11590.000	AV	34.65	40.16	9.87	40.03	2.24	46.89	53.9	7.0	150	0	
Vert.	11590.000	PK	45.55	40.16	9.87	40.03	2.24	57.79	73.9	16.1	150	0	
Vert.	11590.000	AV	34.75	40.16	9.87	40.03	2.24	46.99	53.9	6.9	150	0	

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

(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.	2111.962	PK	46.65	27.53	13.76	38.86	2.24	51.32	-43.90	-27.0	16.9	145	37	
Hori.	5850.000	PK	45.28	33.03	16.52	39.02	2.24	58.05	-37.17	27.0	64.1	181	313	
Hori.	5855.000	PK	45.24	33.04	16.52	39.02	2.24	58.02	-37.20	15.6	52.8	181	313	
Hori.	5875.000	PK	45.20	33.08	16.53	39.03	2.24	58.02	-37.20	10.0	47.2	181	313	
Hori.	5925.000	PK	45.21	33.16	16.56	39.06	2.24	58.11	-37.11	-27.0	10.1	181	313	
Hori.	17385.000	PK	44.88	43.52	12.11	37.32	-9.54	53.65	-41.57	-27.0	14.5	150	0	
Vert.	2112.254	PK	47.04	27.53	13.76	38.86	2.24	51.71	-43.51	-27.0	16.5	132	172	
Vert.	5850.000	PK	45.23	33.03	16.52	39.02	2.24	58.00	-37.22	27.0	64.2	192	255	
Vert.	5855.000	PK	45.15	33.04	16.52	39.02	2.24	57.93	-37.29	15.6	52.8	192	255	
Vert.	5875.000	PK	45.14	33.08	16.53	39.03	2.24	57.96	-37.26	10.0	47.2	192	255	
Vert.	5925.000	PK	44.92	33.16	16.56	39.06	2.24	57.82	-37.40	-27.0	10.4	192	255	
Vert.	17385.000	PK	43.99	43.52	12.11	37.32	-9.54	52.76	-42.46	-27.0	15.4	150	0	

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

Result(EIRP[dBm])= $10\log((\{10^{\wedge}(\text{Electric Field Strength [dBuV/m]} / 20) * 10^{\wedge}(-6) * \text{Distance:3[m]}^2\} / 30) * 10^{\wedge}3)$

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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Shonan EMC Lab.

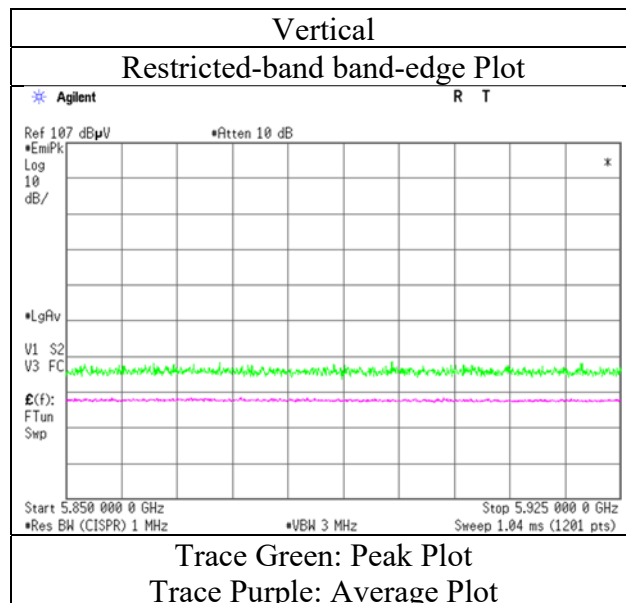
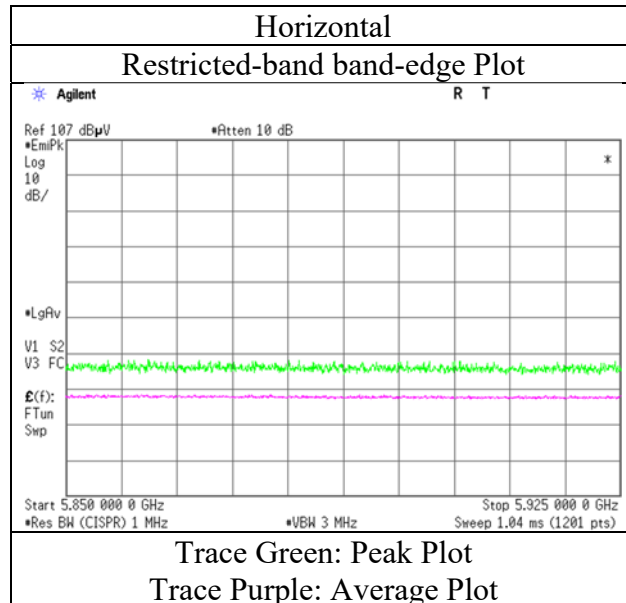
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27,2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-40 MIMO 5795 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 27,2020 January 28, 2020 January 28, 2020
Temperature / Humidity 20 deg. C / 26 % RH 20 deg. C / 40 % RH 20 deg. C / 36 % RH
Engineer Toshinori Yamada Yasumasa Owaki Yasumasa Owaki
(1 GHz - 6.4 GHz) (6.4 GHz - 18 GHz) (18 GHz - 40 GHz)
Mode Tx 11ac-80 MIMO 5775 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.	11550.000	PK	45.37	40.26	9.84	39.99	2.24	57.72	73.9	16.1	150	0	
Hori.	11550.000	AV	36.11	40.26	9.84	39.99	2.24	48.46	53.9	5.4	150	0	VBW: 5.6 KHz
Vert.	11550.000	PK	46.15	40.26	9.84	39.99	2.24	58.50	73.9	15.4	150	0	
Vert.	11550.000	AV	36.27	40.26	9.84	39.99	2.24	48.62	53.9	5.2	150	0	VBW: 5.6 KHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 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.	2111.991	PK	47.39	27.53	13.76	38.86	2.24	52.06	-43.16	-27.0	16.1	153	42	
Hori.	5650.000	PK	45.63	32.42	16.38	38.90	2.24	57.77	-37.45	-27.0	10.4	167	316	
Hori.	5700.000	PK	45.62	32.58	16.41	38.93	2.24	57.92	-37.30	10.0	47.3	167	316	
Hori.	5720.000	PK	46.11	32.64	16.42	38.94	2.24	58.47	-36.75	15.6	52.3	167	316	
Hori.	5725.000	PK	46.15	32.66	16.42	38.95	2.24	58.52	-36.70	27.0	63.7	167	316	
Hori.	5850.000	PK	46.18	33.03	16.52	39.02	2.24	58.95	-36.27	27.0	63.2	167	316	
Hori.	5855.000	PK	45.68	33.04	16.52	39.02	2.24	58.46	-36.76	15.6	52.3	167	316	
Hori.	5875.000	PK	45.69	33.08	16.53	39.03	2.24	58.51	-36.71	10.0	46.7	167	316	
Hori.	5925.000	PK	45.18	33.16	16.56	39.06	2.24	58.08	-37.14	-27.0	10.1	167	316	
Hori.	17325.000	PK	43.92	43.11	12.10	37.29	-9.54	52.30	-42.92	-27.0	15.9	150	0	
Vert.	5650.000	PK	45.48	32.42	16.38	38.90	2.24	57.62	-37.60	-27.0	10.6	201	254	
Vert.	5700.000	PK	45.95	32.58	16.41	38.93	2.24	58.25	-36.97	10.0	46.9	201	254	
Vert.	5720.000	PK	47.79	32.64	16.42	38.94	2.24	60.15	-35.07	15.6	50.6	201	254	
Vert.	5725.000	PK	48.11	32.66	16.42	38.95	2.24	60.48	-34.74	27.0	61.7	201	254	
Vert.	5850.000	PK	45.35	33.03	16.52	39.02	2.24	58.12	-37.10	27.0	64.1	201	254	
Vert.	5855.000	PK	46.42	33.04	16.52	39.02	2.24	59.20	-36.02	15.6	51.6	201	254	
Vert.	5875.000	PK	45.60	33.08	16.53	39.03	2.24	58.42	-36.80	10.0	46.8	201	254	
Vert.	5925.000	PK	45.85	33.16	16.56	39.06	2.24	58.75	-36.47	-27.0	9.4	201	254	
Vert.	17325.000	PK	44.53	43.11	12.10	37.29	-9.54	52.91	-42.31	-27.0	15.3	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

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Shonan EMC Lab.

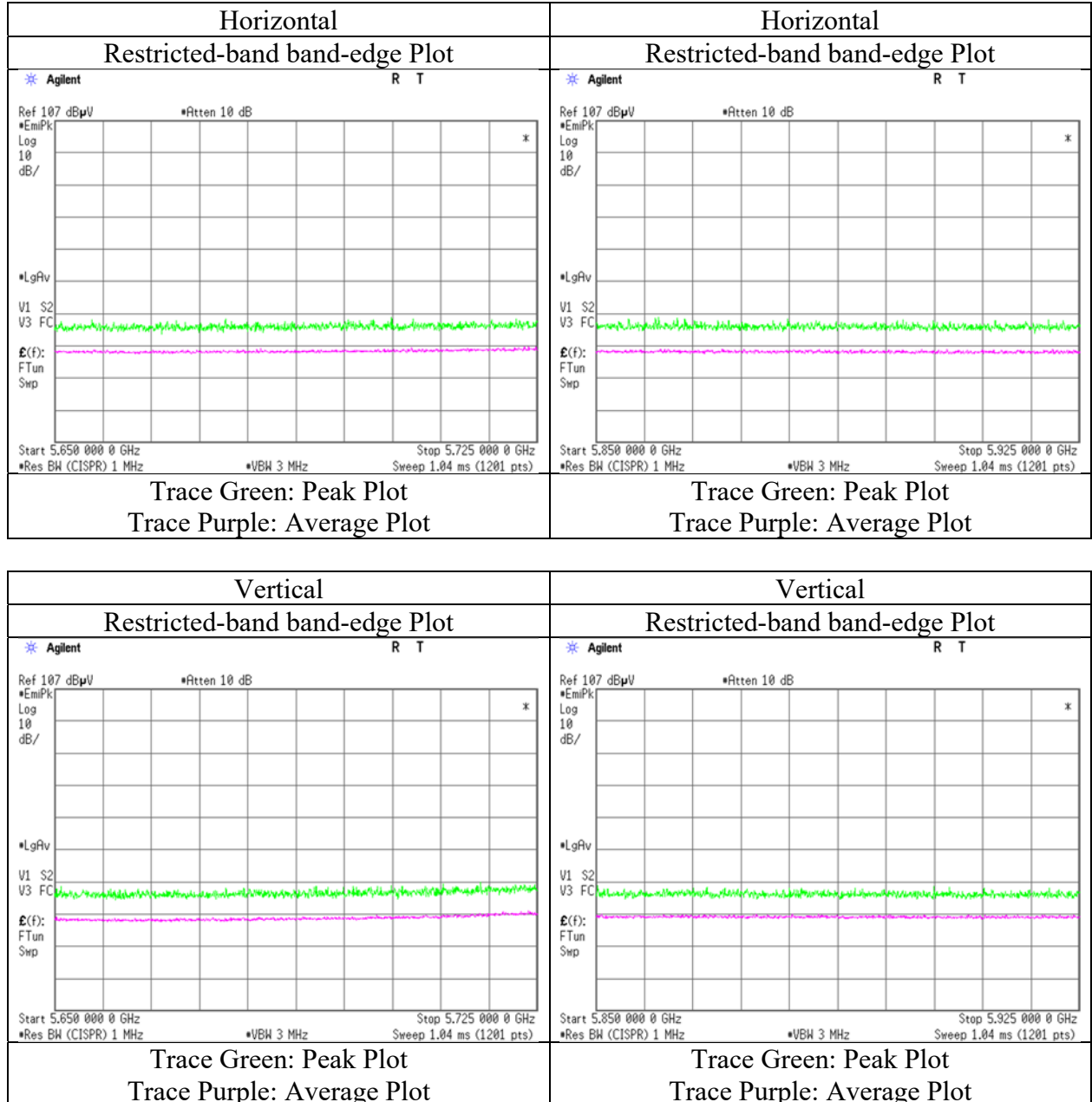
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 27,2020
Temperature / Humidity	20 deg. C / 26 % RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-80 MIMO 5775 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.

Shonan EMC Lab.

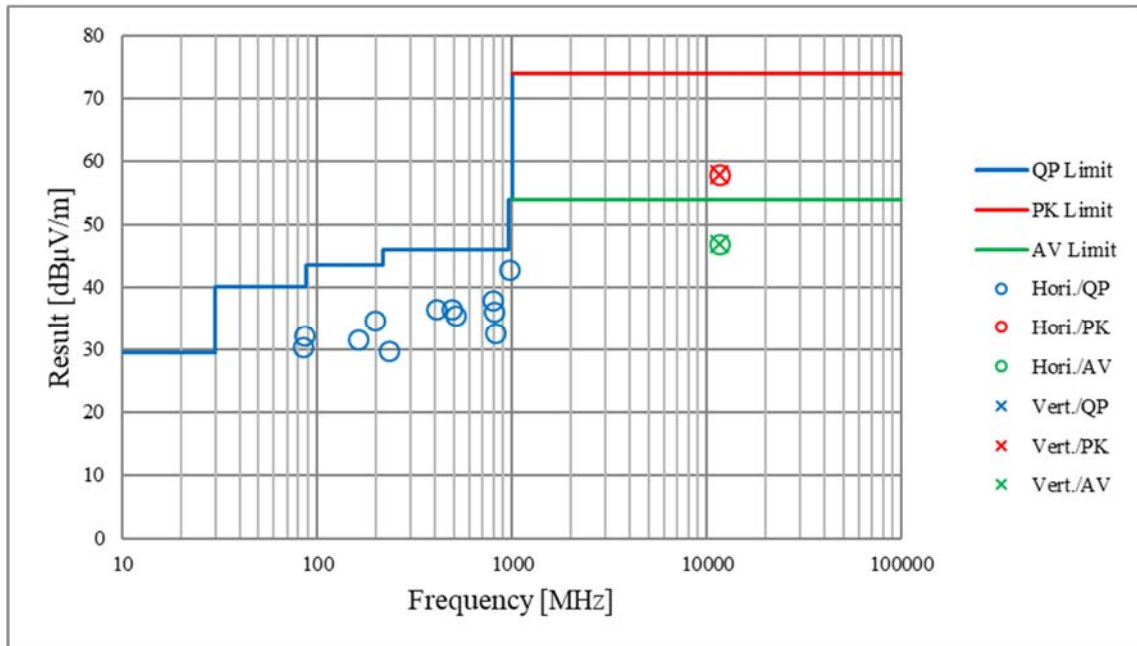
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission
(Plot data, Worst case)

Report No.	13218142S-A-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	No.2	No.2	No.2	No.2
Date	January 21, 2020	January 27, 2020	January 28, 2020	January 28, 2020
Temperature / Humidity	20 deg. C / 34 % RH	20 deg. C / 26 % RH	20 deg. C / 40 % RH	20 deg. C / 36 % RH
Engineer	Yasumasa Owaki	Toshinori Yamada	Yasumasa Owaki	Yasumasa Owaki
	(30 MHz - 1 GHz)	(1 GHz - 6.4 GHz)	(6.4 GHz - 18 GHz)	(18 GHz - 40 GHz)
Mode	Tx 11n-20 MIMO 5785 MHz			



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

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11a 5745 MHz with Tx 3DH5, Hopping

(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.	2111.911	PK	49.91	27.55	13.85	41.50	2.24	52.05	-43.18	-27.0	16.2	140	162	
Hori.	5650.000	PK	48.59	32.46	16.50	43.33	2.24	56.46	-38.77	-27.0	11.8	283	218	
Hori.	5700.000	PK	49.25	32.61	16.54	43.33	2.24	57.31	-37.92	10.0	47.9	283	218	
Hori.	5720.000	PK	54.57	32.66	16.55	43.33	2.24	62.69	-32.54	15.6	48.1	283	218	
Hori.	5725.000	PK	56.52	32.68	16.55	43.33	2.24	64.66	-30.57	27.0	57.6	283	218	
Vert.	2111.918	PK	49.73	27.55	13.85	41.50	2.24	51.87	-43.36	-27.0	16.4	160	1	
Vert.	5650.000	PK	49.34	32.46	16.50	43.33	2.24	57.21	-38.02	-27.0	11.0	156	159	
Vert.	5700.000	PK	48.71	32.61	16.54	43.33	2.24	56.77	-38.46	10.0	48.5	156	159	
Vert.	5720.000	PK	52.44	32.66	16.55	43.33	2.24	60.56	-34.67	15.6	50.3	156	159	
Vert.	5725.000	PK	55.69	32.68	16.55	43.33	2.24	63.83	-31.40	27.0	58.4	156	159	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

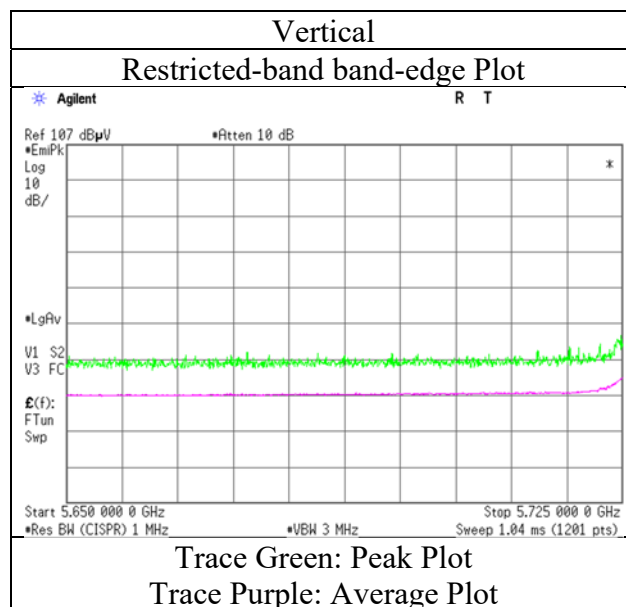
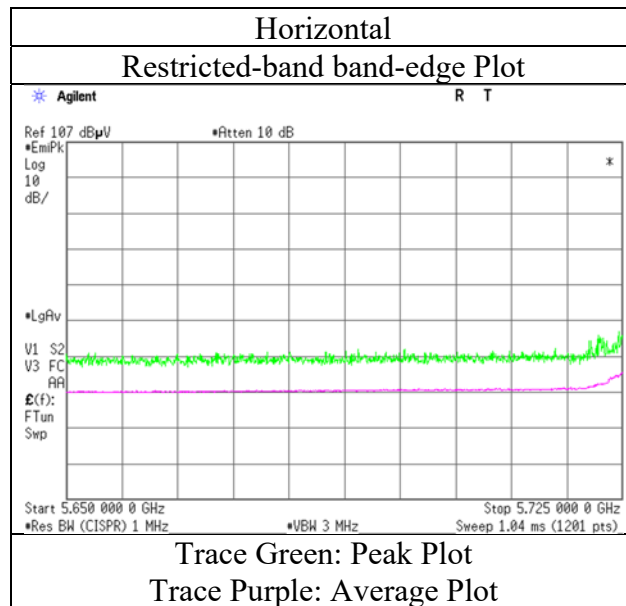
Distance factor : 1 GHz - 13 GHz : 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 22, 2020
Temperature / Humidity	22 deg. C / 33 % RH
Engineer	Takahiro Kawakami

Mode	Tx 11a 5745 MHz with Tx 3DH5, Hopping
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* 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11a 5825 MHz with Tx 3DH5, Hopping

(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.	2111.955	PK	51.45	27.55	13.85	41.50	2.24	53.59	-41.64	-27.0	14.6	135	156	
Hori.	5850.000	PK	80.71	33.02	16.65	43.34	2.24	89.28	-5.95	27.0	32.9	115	316	
Hori.	5855.000	PK	49.97	33.03	16.65	43.34	2.24	58.55	-36.68	15.6	52.3	115	316	
Hori.	5875.000	PK	49.75	33.08	16.66	43.34	2.24	58.39	-36.84	10.0	46.8	115	316	
Hori.	5925.000	PK	49.26	33.18	16.69	43.34	2.24	58.03	-37.20	-27.0	10.2	115	316	
Vert.	2111.955	PK	50.54	27.55	13.85	41.50	2.24	52.68	-42.55	-27.0	15.5	231	151	
Vert.	5850.000	PK	50.42	33.02	16.65	43.34	2.24	58.99	-36.24	27.0	63.2	197	287	
Vert.	5855.000	PK	49.71	33.03	16.65	43.34	2.24	58.29	-36.94	15.6	52.5	197	287	
Vert.	5875.000	PK	48.83	33.08	16.66	43.34	2.24	57.47	-37.76	10.0	47.8	197	287	
Vert.	5925.000	PK	49.20	33.18	16.69	43.34	2.24	57.97	-37.26	-27.0	10.3	197	287	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

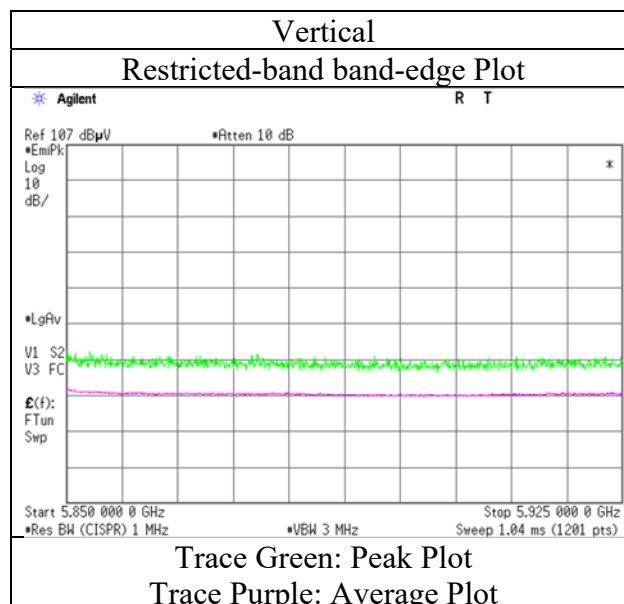
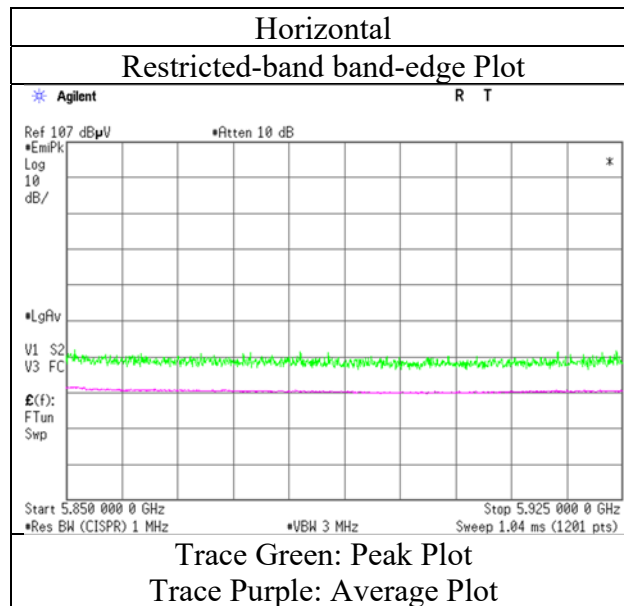
Distance factor : 1 GHz - 13 GHz : 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami

Mode Tx 11a 5825 MHz with Tx 3DH5, Hopping



* 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11n-20 (SISO) 5745 MHz with Tx 3DH5, Hopping

(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.	2111.856	PK	50.46	27.55	13.85	41.50	2.24	52.60	-42.63	-27.0	15.6	112	167	
Hori.	5650.000	PK	48.37	32.46	16.50	43.33	2.24	56.24	-38.99	-27.0	12.0	116	258	
Hori.	5700.000	PK	48.90	32.61	16.54	43.33	2.24	56.96	-38.27	10.0	48.3	116	258	
Hori.	5720.000	PK	50.02	32.66	16.55	43.33	2.24	58.14	-37.09	15.6	52.7	116	258	
Hori.	5725.000	PK	53.63	32.68	16.55	43.33	2.24	61.77	-33.46	27.0	60.5	116	258	
Vert.	2111.856	PK	50.48	27.55	13.85	41.50	2.24	52.62	-42.61	-27.0	15.6	112	167	
Vert.	5650.000	PK	48.47	32.46	16.50	43.33	2.24	56.34	-38.89	-27.0	11.9	116	258	
Vert.	5700.000	PK	49.03	32.61	16.54	43.33	2.24	57.09	-38.14	10.0	48.1	116	258	
Vert.	5720.000	PK	52.91	32.66	16.55	43.33	2.24	61.03	-34.20	15.6	49.8	116	258	
Vert.	5725.000	PK	55.96	32.68	16.55	43.33	2.24	64.10	-31.13	27.0	58.1	116	258	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

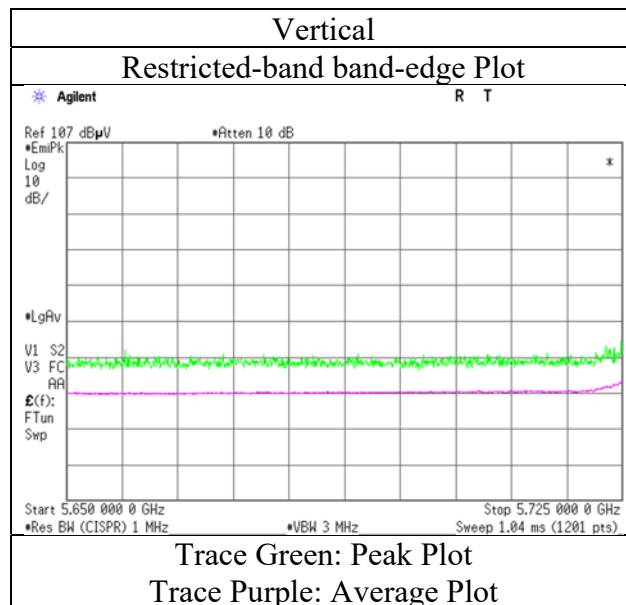
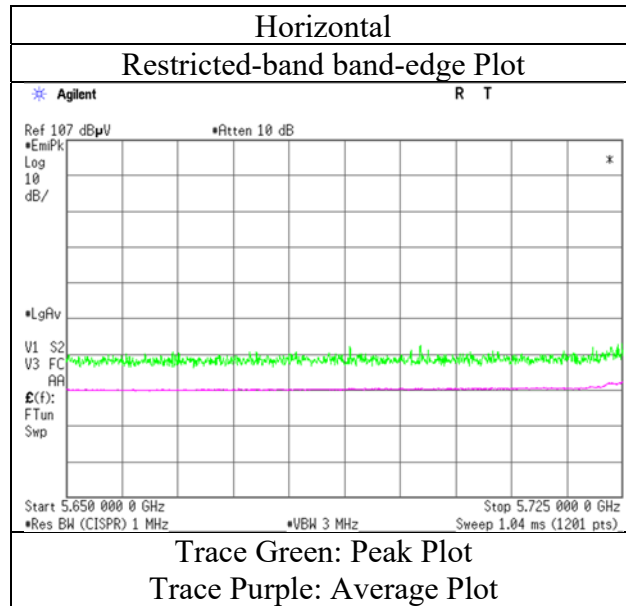
Distance factor : 1 GHz - 13 GHz: 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 22, 2020
Temperature / Humidity	22 deg. C / 33 % RH
Engineer	Takahiro Kawakami

Mode Tx 11n-20 (SISO) 5745 MHz with Tx 3DH5, Hopping



* 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3 No.3
Date February 22, 2020 February 23, 2020
Temperature / Humidity 22 deg. C / 33 % RH 22 deg. C / 34 % RH
Engineer Takahiro Kawakami Kenichi Adachi
(1 GHz -18 GHz) (30 MHz – 1 GHz, 18 GHz – 40 GHz)
Mode Tx 11n-20 (SISO) 5825 MHz with Tx 3DH5, Hopping

(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.	147.455	QP	41.46	14.56	7.78	32.12	0.00	31.68	43.5	11.8	192	21	
Hori.	168.791	QP	42.88	15.43	7.92	32.10	0.00	34.13	43.5	9.3	181	102	
Hori.	242.994	QP	50.12	11.40	8.37	32.02	0.00	37.87	46.0	8.1	120	216	
Hori.	332.634	QP	44.83	14.27	8.97	31.97	0.00	36.10	46.0	9.9	100	247	
Hori.	404.994	QP	48.35	15.56	9.28	31.97	0.00	41.22	46.0	4.7	100	353	
Hori.	593.986	QP	43.78	18.83	9.97	31.94	0.00	40.64	46.0	5.3	152	260	
Hori.	960.259	QP	40.04	21.68	11.20	30.56	0.00	42.36	53.9	11.5	100	89	
Hori.	11650.000	PK	46.99	39.69	10.02	42.51	2.24	56.43	73.9	17.4	150	0	
Hori.	11650.000	AV	35.11	39.69	10.02	42.51	2.24	44.55	53.9	9.3	150	0	VBW:750 Hz
Vert.	38.539	QP	43.44	15.22	6.63	32.19	0.00	33.10	40.0	6.9	100	176	
Vert.	168.792	QP	38.62	15.43	7.92	32.10	0.00	29.87	43.5	13.6	100	291	
Vert.	242.994	QP	41.34	11.40	8.37	32.02	0.00	29.09	46.0	16.9	100	272	
Vert.	332.634	QP	40.02	14.27	8.97	31.97	0.00	31.29	46.0	14.7	119	177	
Vert.	404.994	QP	43.78	15.56	9.28	31.97	0.00	36.65	46.0	9.3	118	160	
Vert.	593.986	QP	35.38	18.83	9.97	31.94	0.00	32.24	46.0	13.7	121	29	
Vert.	960.259	QP	35.04	21.68	11.20	30.56	0.00	37.36	53.9	16.5	100	221	
Vert.	11650.000	PK	47.28	39.69	10.02	42.51	2.24	56.72	73.9	17.1	150	0	
Vert.	11650.000	AV	35.13	39.69	10.02	42.51	2.24	44.57	53.9	9.3	150	0	VBW:750 Hz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log((4 - 0.12) \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

(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.	2111.953	PK	50.36	27.55	13.85	41.50	2.24	52.50	-42.73	-27.0	15.7	102	172	
Hori.	5850.000	PK	50.76	33.02	16.65	43.34	2.24	59.33	-35.90	27.0	62.9	111	316	
Hori.	5855.000	PK	49.65	33.03	16.65	43.34	2.24	58.23	-37.00	15.6	52.6	111	316	
Hori.	5875.000	PK	49.55	33.08	16.66	43.34	2.24	58.19	-37.04	10.0	47.0	111	316	
Hori.	5925.000	PK	48.91	33.18	16.69	43.34	2.24	57.68	-37.55	-27.0	10.5	111	316	
Hori.	17475.000	PK	45.26	43.01	12.31	40.23	-9.54	50.81	-44.42	-27.0	17.4	150	0	
Vert.	2111.950	PK	52.27	27.55	13.85	41.50	2.24	54.41	-40.82	-27.0	13.8	195	166	
Vert.	5850.000	PK	49.92	33.02	16.65	43.34	2.24	58.49	-36.74	27.0	63.7	186	281	
Vert.	5855.000	PK	49.42	33.03	16.65	43.34	2.24	58.00	-37.23	15.6	52.8	186	281	
Vert.	5875.000	PK	49.43	33.08	16.66	43.34	2.24	58.07	-37.16	10.0	47.2	186	281	
Vert.	5925.000	PK	49.27	33.18	16.69	43.34	2.24	58.04	-37.19	-27.0	10.2	186	281	
Vert.	17475.000	PK	45.50	43.01	12.31	40.23	-9.54	51.05	-44.18	-27.0	17.2	150	0	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : $20\log((4 - 0.12) \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

13 GHz - 40 GHz : $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

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Shonan EMC Lab.

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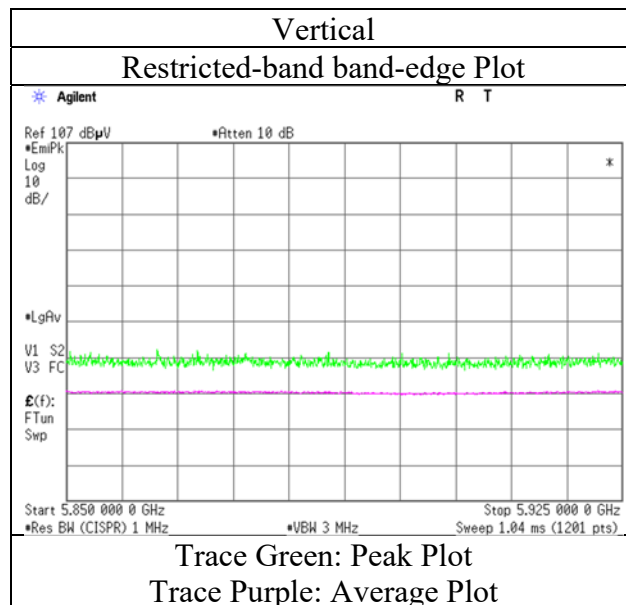
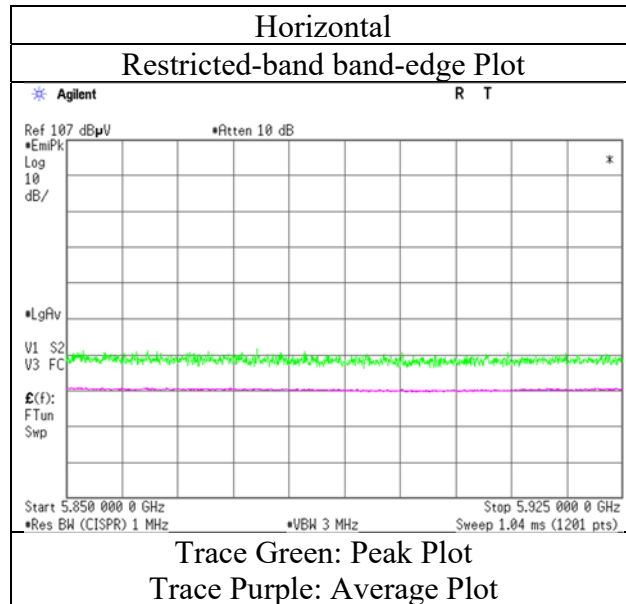
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 22, 2020
Temperature / Humidity	22 deg. C / 33 % RH
Engineer	Takahiro Kawakami

Mode Tx 11n-20 (SISO) 5825 MHz with Tx 3DH5, Hopping



* 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11n-40 (SISO) 5755 MHz with Tx 3DH5, Hopping

(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.	2111.916	PK	50.84	27.55	13.85	41.50	2.24	52.98	-42.25	-27.0	15.2	142	158	
Hori.	5650.000	PK	48.54	32.46	16.50	43.33	2.24	56.41	-38.82	-27.0	11.8	100	273	
Hori.	5700.000	PK	48.85	32.61	16.54	43.33	2.24	56.91	-38.32	10.0	48.3	100	273	
Hori.	5720.000	PK	50.64	32.66	16.55	43.33	2.24	58.76	-36.47	15.6	52.1	100	273	
Hori.	5725.000	PK	50.67	32.68	16.55	43.33	2.24	58.81	-36.42	27.0	63.4	100	273	
Vert.	2111.928	PK	51.34	27.55	13.85	41.50	2.24	53.48	-41.75	-27.0	14.7	159	146	
Vert.	5650.000	PK	49.10	32.46	16.50	43.33	2.24	56.97	-38.26	-27.0	11.3	150	159	
Vert.	5700.000	PK	49.19	32.61	16.54	43.33	2.24	57.25	-37.98	10.0	48.0	150	159	
Vert.	5720.000	PK	50.11	32.66	16.55	43.33	2.24	58.23	-37.00	15.6	52.6	150	159	
Vert.	5725.000	PK	51.53	32.68	16.55	43.33	2.24	59.67	-35.56	27.0	62.6	150	159	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

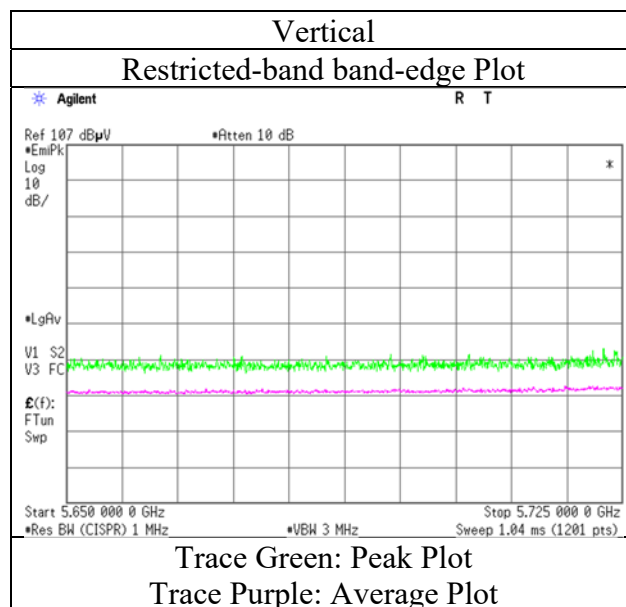
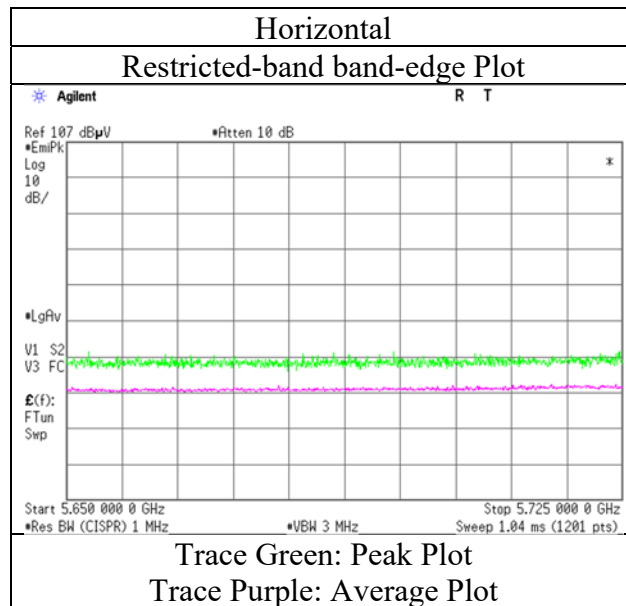
Distance factor : 1 GHz - 13 GHz : 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 22, 2020
Temperature / Humidity	22 deg. C / 33 % RH
Engineer	Takahiro Kawakami

Mode Tx 11n-40 (SISO) 5755 MHz with Tx 3DH5, Hopping



* 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11n-40 (SISO) 5795 MHz with Tx 3DH5, Hopping

(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.	2111.913	PK	50.85	27.55	13.85	41.50	2.24	52.99	-42.24	-27.0	15.2	130	155	
Hori.	5850.000	PK	49.42	33.02	16.65	43.34	2.24	57.99	-37.24	27.0	64.2	109	314	
Hori.	5855.000	PK	49.36	33.03	16.65	43.34	2.24	57.94	-37.29	15.6	52.9	109	314	
Hori.	5875.000	PK	49.45	33.08	16.66	43.34	2.24	58.09	-37.14	10.0	47.1	109	314	
Hori.	5925.000	PK	49.43	33.18	16.69	43.34	2.24	58.20	-37.03	-27.0	10.0	109	314	
Vert.	2111.911	PK	50.50	27.55	13.85	41.50	2.24	52.64	-42.59	-27.0	15.6	160	139	
Vert.	5850.000	PK	49.69	33.02	16.65	43.34	2.24	58.26	-36.97	27.0	64.0	137	163	
Vert.	5855.000	PK	49.48	33.03	16.65	43.34	2.24	58.06	-37.17	15.6	52.8	137	163	
Vert.	5875.000	PK	49.45	33.08	16.66	43.34	2.24	58.09	-37.14	10.0	47.1	137	163	
Vert.	5925.000	PK	49.14	33.18	16.69	43.34	2.24	57.91	-37.32	-27.0	10.3	137	163	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

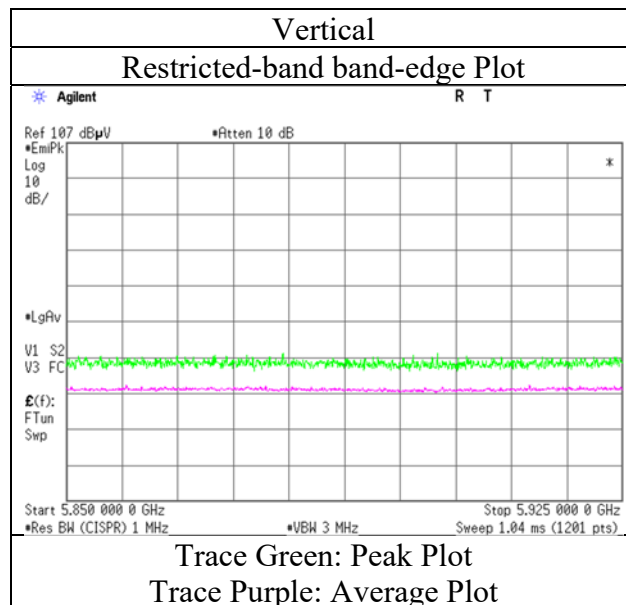
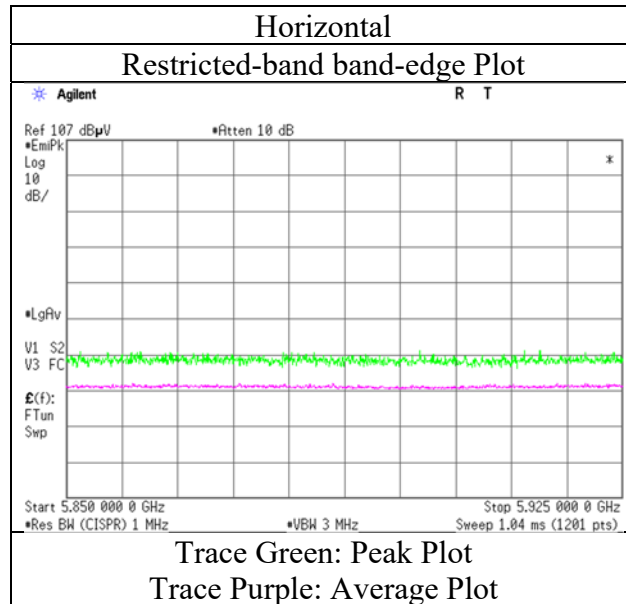
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Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami

Mode Tx 11n-40 (SISO) 5795 MHz with Tx 3DH5, Hopping



* 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11ac-40 (SISO) 5755 MHz with Tx 3DH5, Hopping

(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.	2111.986	PK	49.86	27.55	13.85	41.50	2.24	52.00	-43.23	-27.0	16.2	100	140	
Hori.	5650.000	PK	48.58	32.46	16.50	43.33	2.24	56.45	-38.78	-27.0	11.8	100	253	
Hori.	5700.000	PK	48.77	32.61	16.54	43.33	2.24	56.83	-38.40	10.0	48.4	100	253	
Hori.	5720.000	PK	49.39	32.66	16.55	43.33	2.24	57.51	-37.72	15.6	53.3	100	253	
Hori.	5725.000	PK	50.01	32.68	16.55	43.33	2.24	58.15	-37.08	27.0	64.1	100	253	
Vert.	2111.978	PK	52.54	27.55	13.85	41.50	2.24	54.68	-40.55	-27.0	13.5	158	144	
Vert.	5650.000	PK	49.15	32.46	16.50	43.33	2.24	57.02	-38.21	-27.0	11.2	135	163	
Vert.	5700.000	PK	49.56	32.61	16.54	43.33	2.24	57.62	-37.61	10.0	47.6	135	163	
Vert.	5720.000	PK	51.79	32.66	16.55	43.33	2.24	59.91	-35.32	15.6	50.9	135	163	
Vert.	5725.000	PK	52.20	32.68	16.55	43.33	2.24	60.34	-34.89	27.0	61.9	135	163	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

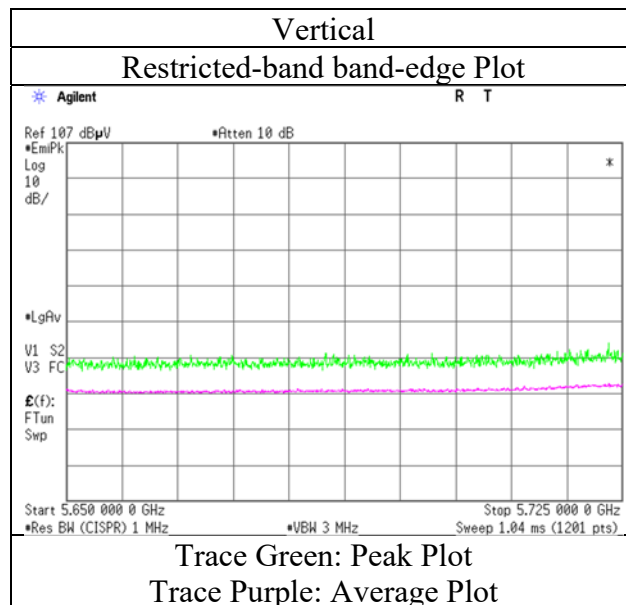
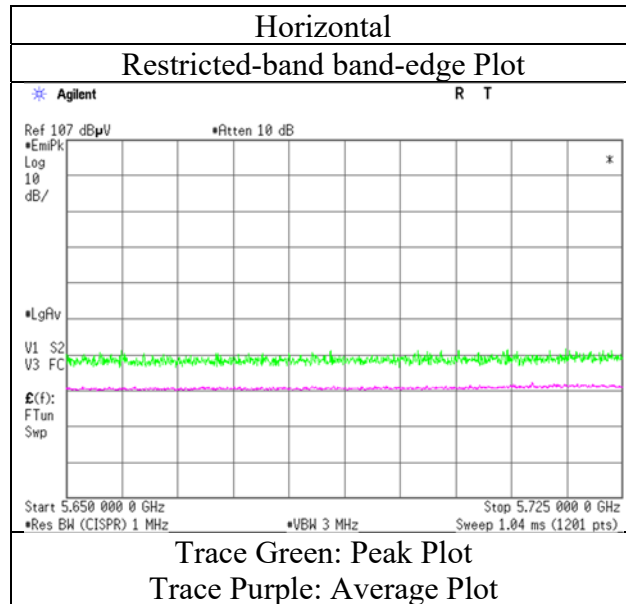
Distance factor : 1 GHz - 13 GHz : 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 22, 2020
Temperature / Humidity	22 deg. C / 33 % RH
Engineer	Takahiro Kawakami

Mode	Tx 11ac-40 (SISO) 5755 MHz with Tx 3DH5, Hopping
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* 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.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11ac-40 (SISO) 5795 MHz with Tx 3DH5, Hopping

(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.	2111.957	PK	49.87	27.55	13.85	41.50	2.24	52.01	-43.22	-27.0	16.2	100	139	
Hori.	5850.000	PK	49.00	33.02	16.65	43.34	2.24	57.57	-37.66	27.0	64.7	100	272	
Hori.	5855.000	PK	49.06	33.03	16.65	43.34	2.24	57.64	-37.59	15.6	53.2	100	272	
Hori.	5875.000	PK	49.09	33.08	16.66	43.34	2.24	57.73	-37.50	10.0	47.5	100	272	
Hori.	5925.000	PK	49.64	33.18	16.69	43.34	2.24	58.41	-36.82	-27.0	9.8	100	272	
Vert.	2111.947	PK	52.12	27.55	13.85	41.50	2.24	54.26	-40.97	-27.0	14.0	239	151	
Vert.	5850.000	PK	49.64	33.02	16.65	43.34	2.24	58.21	-37.02	27.0	64.0	169	161	
Vert.	5855.000	PK	49.53	33.03	16.65	43.34	2.24	58.11	-37.12	15.6	52.7	169	161	
Vert.	5875.000	PK	49.46	33.08	16.66	43.34	2.24	58.10	-37.13	10.0	47.1	169	161	
Vert.	5925.000	PK	49.19	33.18	16.69	43.34	2.24	57.96	-37.27	-27.0	10.3	169	161	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

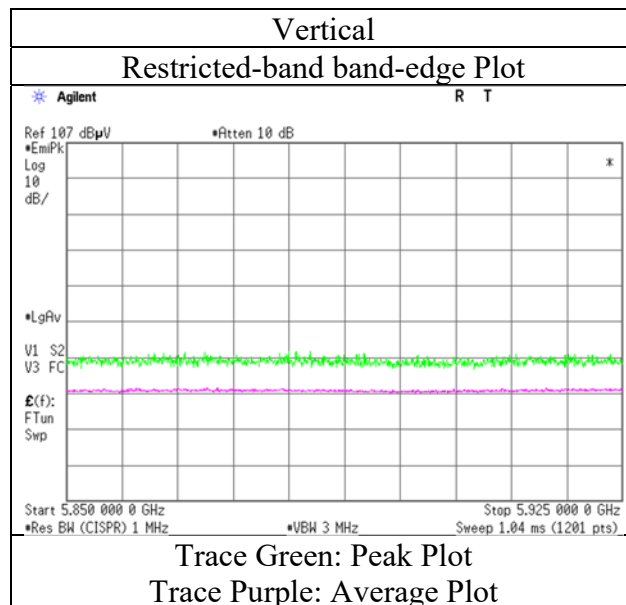
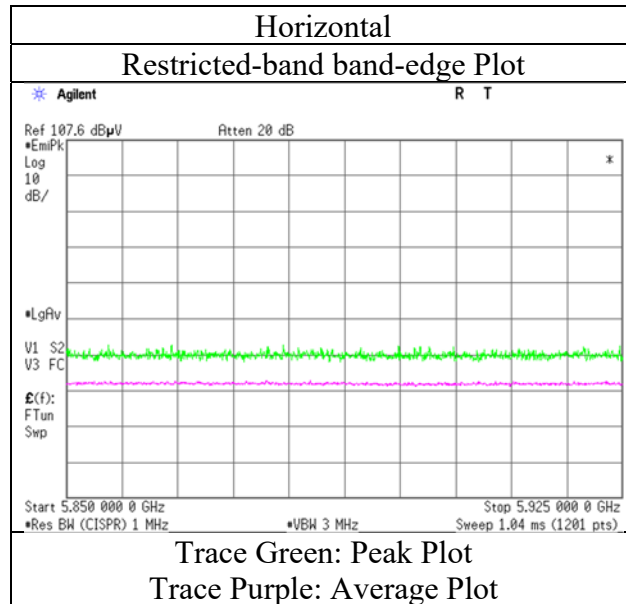
Distance factor : 1 GHz - 13 GHz: 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami

Mode Tx 11ac-40 (SISO) 5795 MHz with Tx 3DH5, Hopping



* 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.

Radiated Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.3
Date February 22, 2020
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Takahiro Kawakami
(1 GHz - 6.4 GHz)
Mode Tx 11ac-80 (SISO) 5775 MHz with Tx 3DH5, Hopping

(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.	2111.918	PK	49.65	27.55	13.85	41.50	2.24	51.79	-43.44	-27.0	16.4	100	166	
Hori.	5650.000	PK	49.71	32.46	16.50	43.33	2.24	57.58	-37.65	-27.0	10.6	112	273	
Hori.	5700.000	PK	49.63	32.61	16.54	43.33	2.24	57.69	-37.54	10.0	47.5	112	273	
Hori.	5720.000	PK	49.34	32.66	16.55	43.33	2.24	57.46	-37.77	15.6	53.4	112	273	
Hori.	5725.000	PK	49.65	32.68	16.55	43.33	2.24	57.79	-37.44	27.0	64.4	112	273	
Hori.	5850.000	PK	48.82	33.02	16.65	43.34	2.24	57.39	-37.84	27.0	64.8	112	273	
Hori.	5855.000	PK	49.56	33.03	16.65	43.34	2.24	58.14	-37.09	15.6	52.7	112	273	
Hori.	5875.000	PK	49.81	33.08	16.66	43.34	2.24	58.45	-36.78	10.0	46.8	112	273	
Hori.	5925.000	PK	50.04	33.18	16.69	43.34	2.24	58.81	-36.42	-27.0	9.4	112	273	
Vert.	2111.972	PK	50.60	27.55	13.85	41.50	2.24	52.74	-42.49	-27.0	15.5	147	143	
Vert.	5650.000	PK	48.49	32.46	16.50	43.33	2.24	56.36	-38.87	-27.0	11.9	135	164	
Vert.	5700.000	PK	49.25	32.61	16.54	43.33	2.24	57.31	-37.92	10.0	47.9	135	164	
Vert.	5720.000	PK	49.52	32.66	16.55	43.33	2.24	57.64	-37.59	15.6	53.2	135	164	
Vert.	5725.000	PK	49.42	32.68	16.55	43.33	2.24	57.56	-37.67	27.0	64.7	135	164	
Vert.	5850.000	PK	49.65	33.02	16.65	43.34	2.24	58.22	-37.01	27.0	64.0	135	164	
Vert.	5855.000	PK	49.43	33.03	16.65	43.34	2.24	58.01	-37.22	15.6	52.8	135	164	
Vert.	5875.000	PK	49.63	33.08	16.66	43.34	2.24	58.27	-36.96	10.0	47.0	135	164	
Vert.	5925.000	PK	49.91	33.18	16.69	43.34	2.24	58.68	-36.55	-27.0	9.5	135	164	

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

Result(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 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log ((4 - 0.12) m / 3.0 m) = 2.24 dB

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

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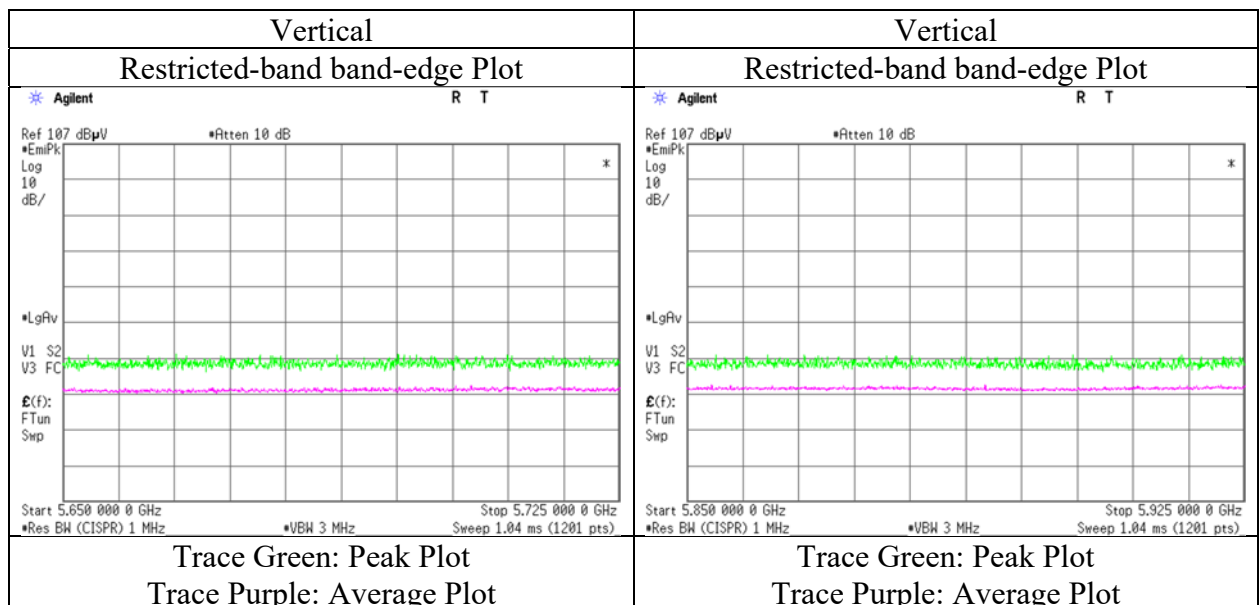
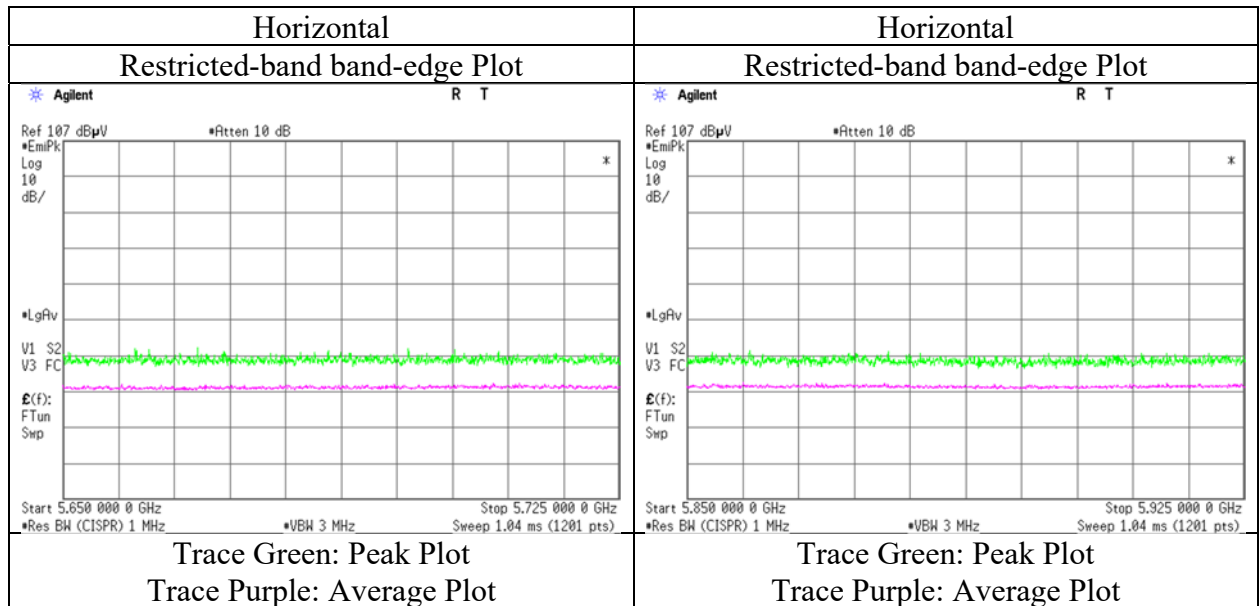
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Radiated Spurious Emission

Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 22, 2020
Temperature / Humidity	22 deg. C / 33 % RH
Engineer	Takahiro Kawakami

Mode Tx 11ac-80 (SISO) 5775 MHz with Tx 3DH5, Hopping



* 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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Shonan EMC Lab.

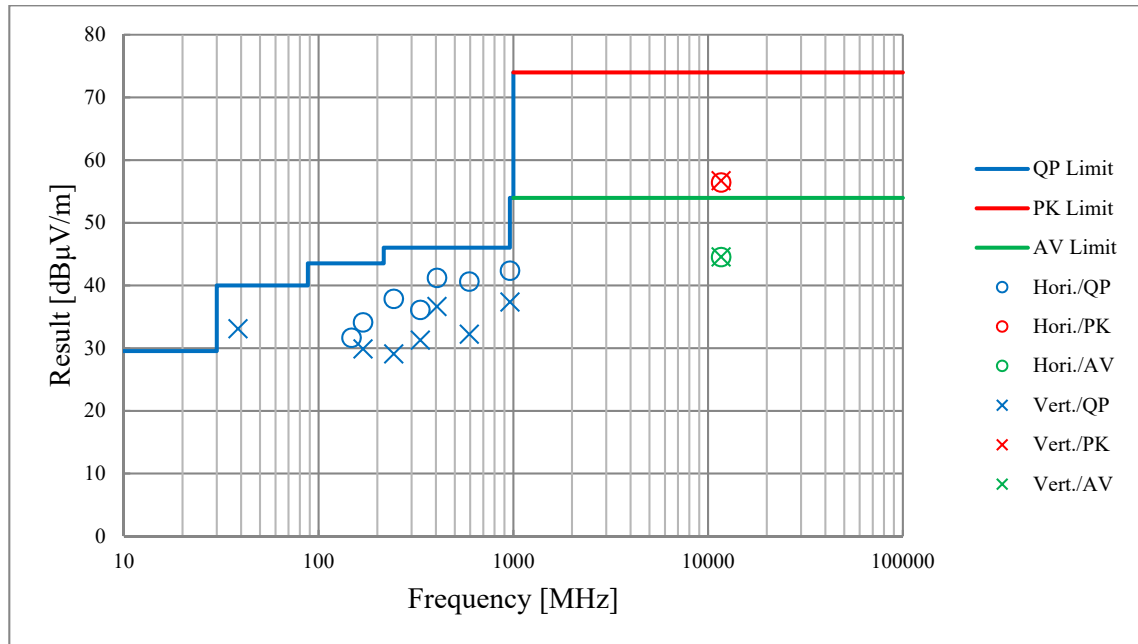
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Radiated Spurious Emission
(Plot data, Worst case)

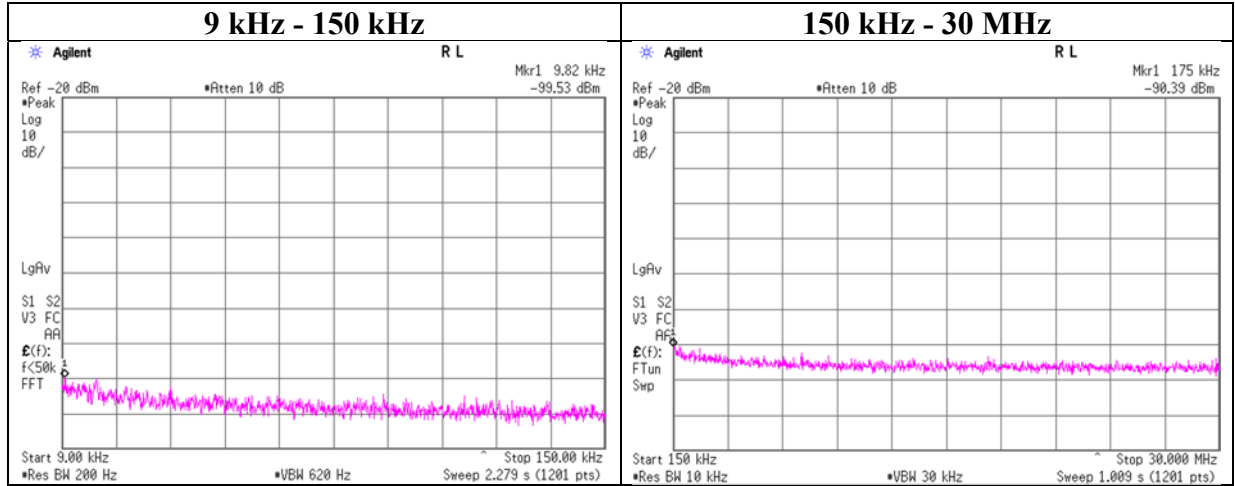
Report No.	13218142S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 22, 2020
Temperature / Humidity	22 deg. C / 33 % RH
Engineer	Takahiro Kawakami
Mode	Tx 11n-20 (SISO) 5825 MHz with Tx 3DH5, Hopping



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

Conducted Spurious Emission

Report No. 13218142S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 7, 2020
Temperature / Humidity 25 deg. C / 48 % RH
Engineer Hiromasa Sato
Mode Tx 11n-20 MIMO 5785 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.82	-99.5	2.10	9.5	2.0	2	-82.9	300	6.0	-21.6	47.7	69.3	-
175.00	-90.4	2.10	9.5	2.0	2	-73.7	300	6.0	-12.5	22.7	35.2	-

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

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

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.

APPENDIX 2: Test instruments

Test Instruments [1/2]

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	KSA-08	145089	Spectrum Analyzer	Keysight Technologies Inc	E4446A	MY46180525	2019/11/05	12
AT	KTS-07	145111	Digital Tester	SANWA	PC500	7019232	2019/10/01	12
AT	SAT10-09	145132	Attenuator	Weinschel Corp.	54A-10	W5692	2019/11/05	12
AT	SAT10-12	151609	Attenuator	Weinschel Corp.	54A-10	81601	2019/03/27	12
AT	SCC-G34	151611	Coaxial Cable	Junkosha	MWX241-01000KMSKMS/B	1612Q032	2019/12/23	12
AT	SCC-G35	151612	Coaxial Cable	Junkosha	MWX241-01000KMSKMS/B	1612Q033	2019/12/23	12
AT	SJM-17	145339	Measure	ASKUL	-	-	-	-
AT	SOS-09	146318	Humidity Indicator	A&D	AD-5681	4061484	-	-
AT	SOS-19	175823	Humidity Indicator	CUSTOM	CTH-201	-	2019/12/19	12
AT	SOS-24	191841	Humidity Indicator	CUSTOM	CTH-201	-	2019/12/12	12
AT	SOS-27	191845	Humidity Indicator	CUSTOM	CTH-201	-	2019/12/12	12
AT	SPM-07	146247	Power Meter	Keysight Technologies Inc	8990B	MY5100272	2019/07/16	12
AT	SPSS-04	146310	Power sensor	Keysight Technologies Inc	N1923A	MY5326009	2019/07/16	12
AT	SPSS-05	146311	Power sensor	Keysight Technologies Inc	N1923A	MY5349008	2019/07/16	12
AT	STM-G1	146062	Terminator	Hirose Electric	HRM-TMP-05(40)	-	-	-
AT	STM-G8	171615	Terminator	Weinschel - API Technologies Corp	M1459A	88997	2019/07/04	12
AT	STS-05	146212	Digital Hitester	HIOKI	3805-50	80997828	2019/10/01	12
AT,RE	SSA-03	145801	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250152	2019/08/08	12
AT,RE	STS-03	146210	Digital Hitester	HIOKI	3805-50	80997823	2019/10/01	12
RE	COTS-SEMI-5	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,ME,PE)	-	-	-
RE	KFL-15	144938	Highpass Filter	MICRO-TRONICS	HPM50112	7	2019/11/06	12
RE	KJM-02	146432	Measure	TAJIMA	GL19-55	-	-	-
RE	SAEC-02(NSA)	145563	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	2019/04/04	12
RE	SAEC-02(SVSWR)	145598	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	2019/05/09	12
RE	SAEC-03(NSA)	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2019/04/08	12
RE	SAEC-03(SVSWR)	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2019/05/03	12
RE	SAF-02	145004	Pre Amplifier	SONOMA	310N	290212	2020/02/19	12
RE	SAF-03	145126	Pre Amplifier	SONOMA	310N	290213	2020/02/20	12
RE	SAF-05	145128	Pre Amplifier	Toyo Corporation	TPA0118-36	1440490	2019/07/12	12
RE	SAF-06	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	1440491	2020/02/20	12
RE	SAF-08	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2019/03/05	12
RE	SAF-10	145129	Pre Amplifier	Toyo Corporation	HAP26-40W	10	2019/03/22	12
RE	SAT10-05	145136	Attenuator(above1GHz)	Keysight Technologies Inc	8493C-010	74864	2019/11/06	12
RE	SAT10-06	145137	Attenuator	Keysight Technologies Inc	8493C-010	74865	2019/11/06	12
RE	SAT3-11	150921	Attenuator	JFW	50HF-003N	-	2020/01/30	12
RE	SAT6-13	167094	Attenuator	JFW	50HF-006N	-	2020/02/21	12
RE	SAT6-14	167095	Attenuator	JFW	50HF-006N	-	2020/02/21	12

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Test Instruments [2/2]

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	SBA-02	145022	Biconical Antenna	Schwarzbeck	BBA9106	91032665	2019/04/01	12
RE	SBA-03	145023	Biconical Antenna	Schwarzbeck	BBA9106	91032666	2019/05/07	12
RE	SCC-B1/B3/B5/B7/B8/B13/SRSE-02	144975	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	2019/04/19	12
RE	SCC-B2/B4/B6/B7/B8/B13/SRSE-02	144976	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	2019/04/19	12
RE	SCC-C1/C2/C3/C4/C5/C10/SRSE-03	145171	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	2019/04/19	12
RE	SCC-G15	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2019/03/27	12
RE	SCC-G40	166491	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S005	2020/01/08	12
RE	SCC-G41	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2020/01/08	12
RE	SCC-G43	156380	Coaxial Cable	HUBER+SUNER	SUCOFLEX_104_E	SN MY 13406/4E	2019/07/03	12
RE	SCC-G45	168301	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102 E	800137/2EA	2019/03/26	12
RE	SCC-G50	178573	Coaxial Cable	HUBER+SUNER	SUCOFLEX_104_E	MY13407/4E	2019/03/26	12
RE	SCC-G51	178572	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104	800288 /4A	2019/03/26	12
RE	SCC-G57	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2019/05/16	12
RE	SCC-G58	183047	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104	800287/4A	2019/07/23	12
RE	SFL-03	145377	Highpass Filter	MICRO-TRONICS	HPM50112	28	2019/11/06	12
RE	SHA-02	145384	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	2019/06/26	12
RE	SHA-03	145501	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	2019/06/26	12
RE	SHA-04	145512	Horn Antenna	ETS LINDGREN	3160-09	00094868	2019/06/26	12
RE	SHA-06	145514	Horn Antenna	ETS LINDGREN	3160-10	00092383	2019/06/26	12
RE	SJM-09	145336	Measure	PROMART	SEN1935	-	-	-
RE	SLA-06	145528	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	195	2019/04/01	12
RE	SLA-07	145529	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	196	2019/05/07	12
RE	SOS-05	146293	Humidity Indicator	A&D	AD-5681	4062518	2019/10/08	12
RE	SOS-21	191838	Humidity Indicator	CUSTOM	CTH-201	-	2019/12/12	12
RE	SOS-23	191840	Humidity Indicator	CUSTOM	CTH-201	-	2019/12/12	12
RE	SSA-02	145800	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250106	2019/04/04	12
RE	STR-07	146209	Test Receiver	Rohde & Schwarz	ESU26	100484	2019/09/13	12
RE	STR-08	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2019/11/22	12
RE	STS-02	145793	Digital Hitester	HIOKI	3805-50	80997819	2019/04/02	12

*Hyphens for Last Calibration 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.

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

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test item:

RE: Radiated Emission

AT: Antenna Terminal Conducted test

UL Japan, Inc.

Shonan EMC Lab.

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