

RADIO TEST REPORT

Test Report No. : 12952598S-C-R1

Applicant : Panasonic Corporation
Type of Equipment : AV Control Unit for In-Vehicle Infotainment
Model No. : AM1904
FCC ID : ACJ932AM1904
Test regulation : FCC Part 15 Subpart E: 2019
Test Result : Complied (Refer to SECTION 3.2)

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3. This sample tested is in compliance with the limits of the above regulation.
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7. The all test items in this test report are conducted by UL Japan, Inc. Kashima 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 12952598S-C. 12952598S-C is replaced with this report.

Date of test: September 24 to October 3, 2019

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.: 12952598S-C

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12952598S-C	January 24, 2020	-	-
1	12952598S-C-R1	January 28, 2020	P.9	Addition of Software information: (Date: 2019.9.24, Storage location: EUT memory)

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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	:	Panasonic Corporation
Address	:	4261 Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa 224-8520 Japan
Telephone Number	:	+81-50-3689-7389
Facsimile Number	:	+81-45-931-0806
Contact Person	:	Yoshinori Nagatani

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	:	AV Control Unit for In-Vehicle Infotainment
Model No.	:	AM1904
Serial No.	:	Refer to SECTION 4.2
Rating	:	DC 13.2 V
Receipt Date of Sample (Information from test lab.)	:	September 6, 2019
Country of Mass-production	:	Thailand, Mexico
Condition of EUT	:	Engineering 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: AM1904 (referred to as the EUT in this report) is a AV Control Unit for In-Vehicle Infotainment.

Radio Specification

Bluetooth (BDR / EDR function)

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	FHSS
Antenna type	:	Pattern antenna
Antenna Gain	:	2 dBi
Clock frequency (Maxmum)	:	48 MHz

WLAN (IEEE802.11a/b/g/ac-20/ac-40/ac-80/n-20/n-40)

Radio Type	:	Transceiver
Frequency of Operation	:	2412 MHz - 2462 MHz, 5180 MHz - 5240 MHz, 5745 MHz - 5825 MHz
Modulation	:	DSSS, OFDM
Antenna type	:	Pattern antenna
Antenna Gain	:	2 dBi (2.4 GHz), 6 dBi (5 GHz)

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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

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 ISED: RSS-Gen 8.8	FCC: 15.407 (b) (6) / 15.207 ISED: RSS-Gen 8.8	N/A	N/A	N/A *1)
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	See data	N/A a)	Conducted
Maximum Conducted Output Power	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1		Complied b)	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		N/A c)	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	3.8 dB 5150.000 MHz, AV, Vert. Mode: Tx 11ac-80 5210 MHz	Complied# d) / e)	Conducted (< 30 MHz) / Radiated (> 30 MHz) *2)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2.4.1	See data	Complied f)	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) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b). a) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth) b) Refer to APPENDIX 1 (data of Maximum Conducted Output Power) c) Refer to APPENDIX 1 (data of Maximum Power Spectral Density) d) Refer to APPENDIX 1 (data of Radiated Spurious Emission) e) Refer to APPENDIX 1 (data of Conducted Spurious Emission) f) 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)

The equipment provides the wireless transmitter with stable power supply.

Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

The equipment and its antenna comply with the requirement since the antenna is built in the equipment and it cannot be replaced by end users. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99 % Occupied Band Width	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	No. 4,5,6,8 SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.6 dB	2.6 dB	2.5 dB	2.6 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	Remarks*
IEEE 802.11a (11a)	24 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)	MCS 6 (800 ns GI), PN9
IEEE 802.11ac 20 MHz BW (11ac-20)	MCS 7 (800 ns GI), PN9
IEEE 802.11n 40 MHz BW (11n-40)	MCS 5 (800 ns GI), PN9
IEEE 802.11ac 40 MHz BW (11ac-40)	MCS 5 (800 ns GI), PN9
IEEE 802.11ac 80 MHz BW (11ac-80)	MCS 8 (800 ns GI), PN9
*The worst condition was determined based on the test result of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; Power settings: 11a: 9 dBm, 11n-20: 8dBm, 11ac-20: 8 dBm(MCS 0-7), 7 dBm(MCS 8), 11n-40: 8 dBm, 11ac-40: 8 dBm(MCS 0-7), 5 dBm(MCS 8-9), 11ac-80: 5 dBm Software: 03218 (Date: 2019.9.24, Storage location: EUT memory) *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

*The details of Operation mode(s)

Test Item	Operating Mode	Tested Frequency			
		Lower Band	Middle Band	Additional Band	Upper Band
99 % Occupied Bandwidth, Maximum Conducted Output Power, Maximum Power Spectral Density	11a	5180 MHz	-	-	5745 MHz
	11n-20	5220 MHz	-	-	5785 MHz
	11ac-20	5240 MHz	-	-	5825 MHz
	11n-40	5190 MHz	-	-	5755 MHz
	11ac-40	5230 MHz	-	-	5795 MHz
6 dB Bandwidth	11ac-80	5210 MHz	-	-	5775 MHz
	11a	-	-	-	5745 MHz
	11n-20	-	-	-	5785 MHz
	11ac-20	-	-	-	5825 MHz
	11n-40	-	-	-	5755 MHz
Radiated Spurious Emission (Below 1 GHz)	11ac-40	-	-	-	5795 MHz
	11ac-80	-	-	-	5775 MHz
	11a *1)	-	-	-	5825 MHz
	11a	5180 MHz	-	-	5745 MHz
	11n-20	5220 MHz	-	-	5785 MHz
Radiated Spurious Emission (Above 1 GHz)	11ac-20	5240 MHz	-	-	5825 MHz
	11n-40	5190 MHz	-	-	5755 MHz
	11ac-40	5230 MHz	-	-	5795 MHz
	11ac-80	5210 MHz	-	-	5775 MHz
	11ac-20	5180 MHz	-	-	5745 MHz
Radiated Spurious Emission (Above 1 GHz, only Band edge)	11ac-40	5240 MHz	-	-	5825 MHz
	11ac-20	5190 MHz	-	-	5755 MHz
	11ac-40	5230 MHz	-	-	5795 MHz
Conducted Spurious Emission	11a *1)	-	-	-	5825 MHz
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test. The test was conducted in Upper Band as a representative, since there was no difference between the bands.					

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4.2 Configuration and peripherals

This page has been submitted for separate exhibit (refer to APPENDIX 4).

SECTION 5: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >

EUT was placed on a urethane platform of nominal size, 2.0 m by 1.0 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

< Above 1GHz >

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

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

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

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

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

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

< Below 1GHz >

The result also satisfied with the general limits specified in section 15.209 (a).

< Above 1GHz >

Inside of restricted bands (Section 15.205):

Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:

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

For W58 Bandedge

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

Restricted band edge:

Apply to limit in the Section 15.209 (a).

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

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

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

Test Antennas are used as below;

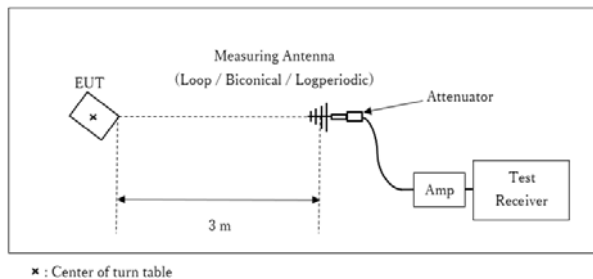
Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

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 MHz (T : burst length, refer to APPENDIX) Detector: Peak Trace mode : 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".

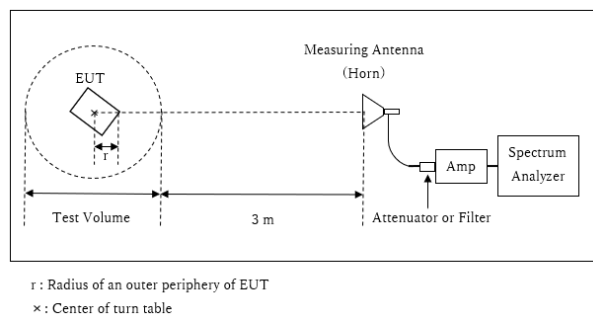
Figure 1: Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz - 13 GHz



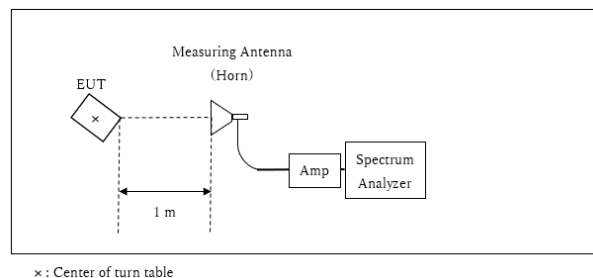
Distance Factor: $20 \times \log (3.94 \text{ m} / 3.0 \text{ m}) = 2.36 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.94 \text{ m}$

Test Volume : 2.0 m

(Test Volume has been calibrated based on CISPR 16-1-4.)
 $r = 0.06 \text{ m}$

13 GHz - 40 GHz



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 each position of 0 deg. and 28 deg. of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Worst case:

Antenna polarization	Carrier (Band edge)	Spurious				
		Below 1 GHz	Above 1 GHz			
			1 GHz - 6.5 GHz	6.5 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 40 GHz
Horizontal	28 deg.	0 deg.	28 deg.	28 deg.	28 deg.	0 deg.
Vertical	28 deg.	0 deg.	28 deg.	28 deg.	28 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

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: 80 MHz BW) (Method PM)
Maximum Power Spectral Density	Encompass the entire EBW	1 MHz or 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. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx

11a

Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
5180	16840.1
5220	16843.8
5240	16831.1
5745	16847.4
5785	16829.6
5825	16851.5

11n-20

Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
5180	17999.2
5220	18022.8
5240	18014.6
5745	18001.1
5785	17995.7
5825	18030.3

11ac-20

Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
5180	18061.3
5220	18049.5
5240	17969.6
5745	18042.0
5785	18027.6
5825	18018.2

99 % Occupied Bandwidth

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx

11n-40

Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
5190	36854.1
5230	36785.8
5755	36849.3
5795	36855.2

11ac-40

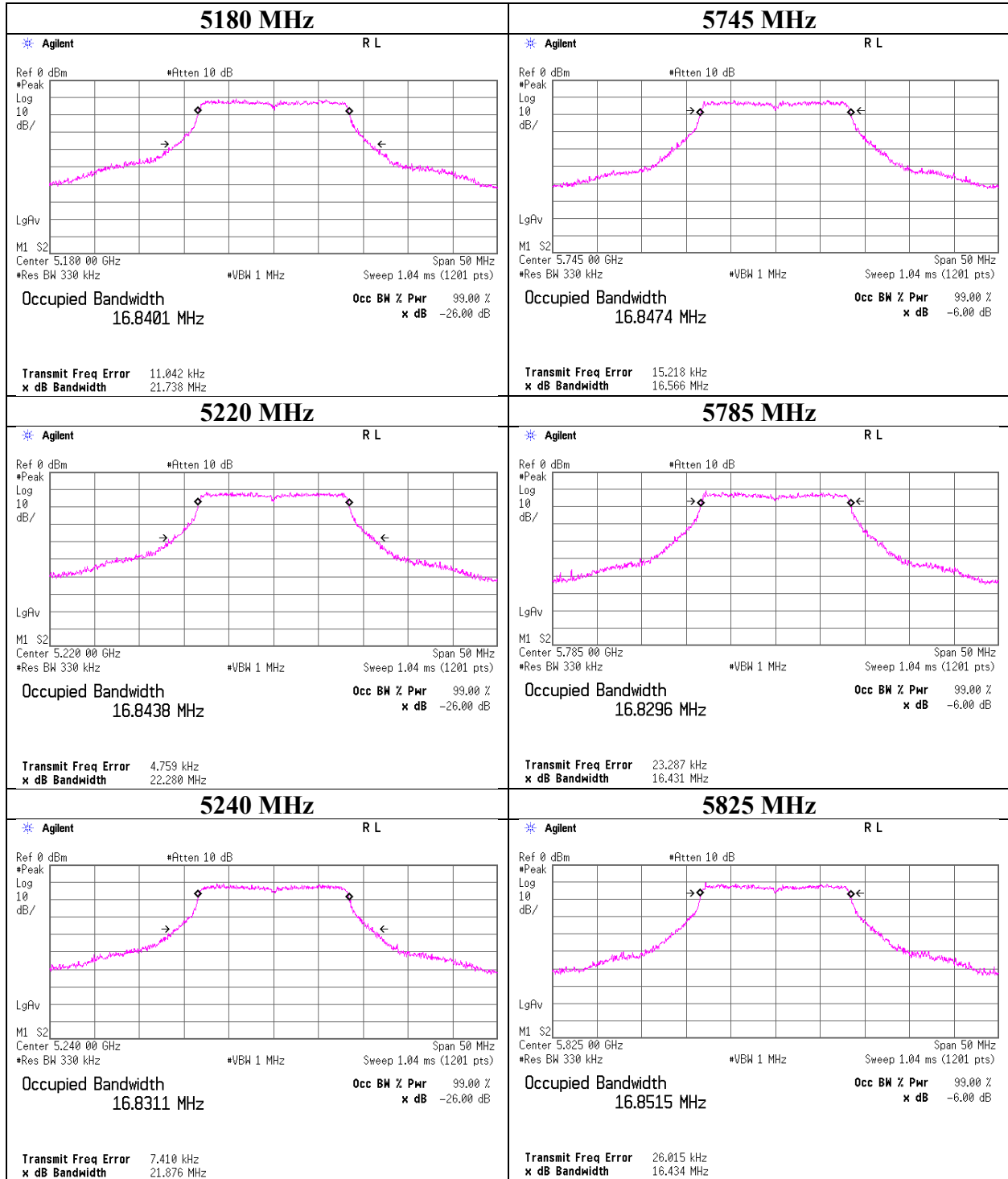
Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
5190	36843.5
5230	36819.9
5755	36915.9
5795	36874.0

11ac-80

Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
5210	76549.3
5775	76460.8

99 % Occupied Bandwidth

11a



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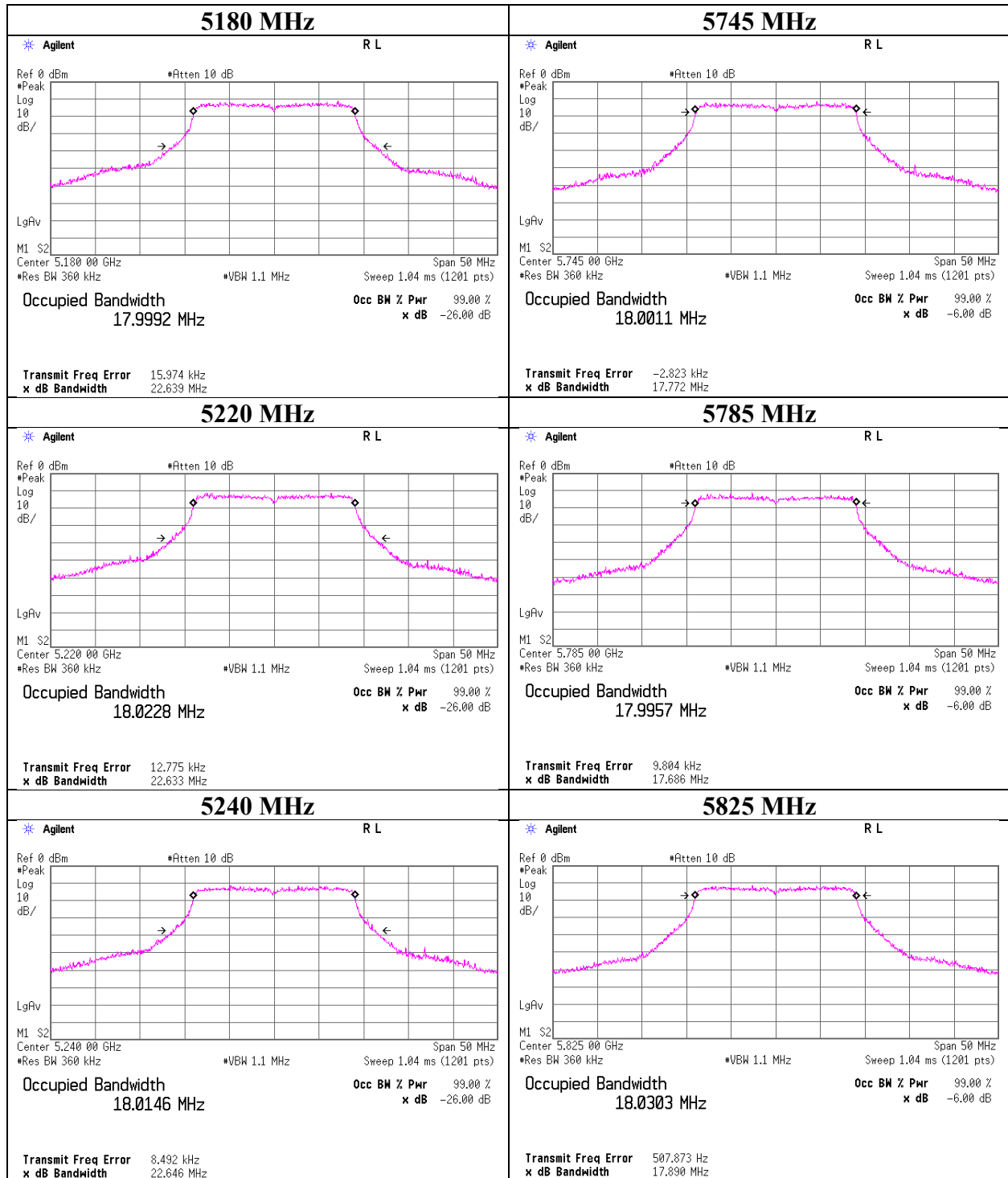
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99 % Occupied Bandwidth

11n-20



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Shonan EMC Lab.

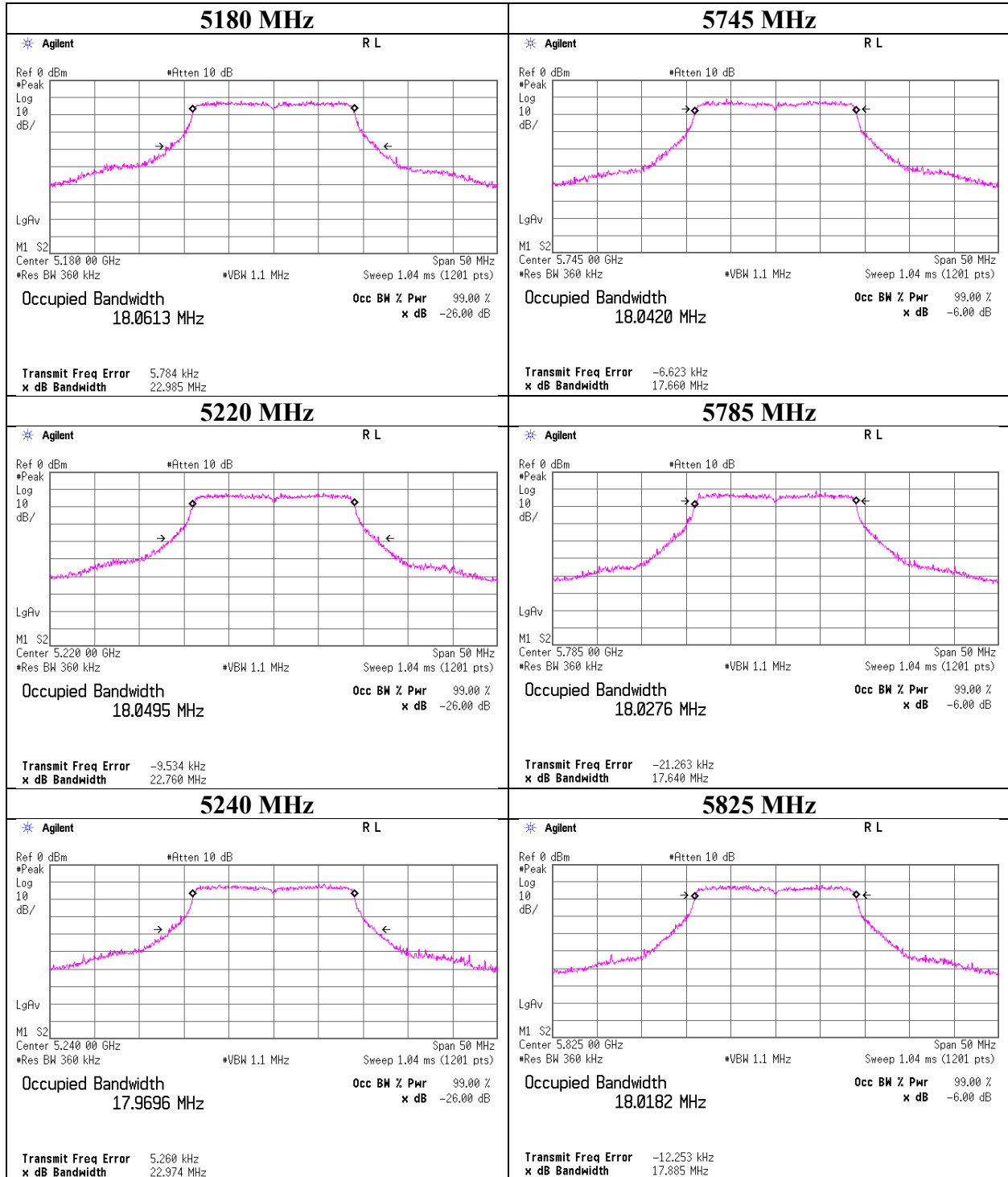
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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99 % Occupied Bandwidth

11ac-20



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Shonan EMC Lab.

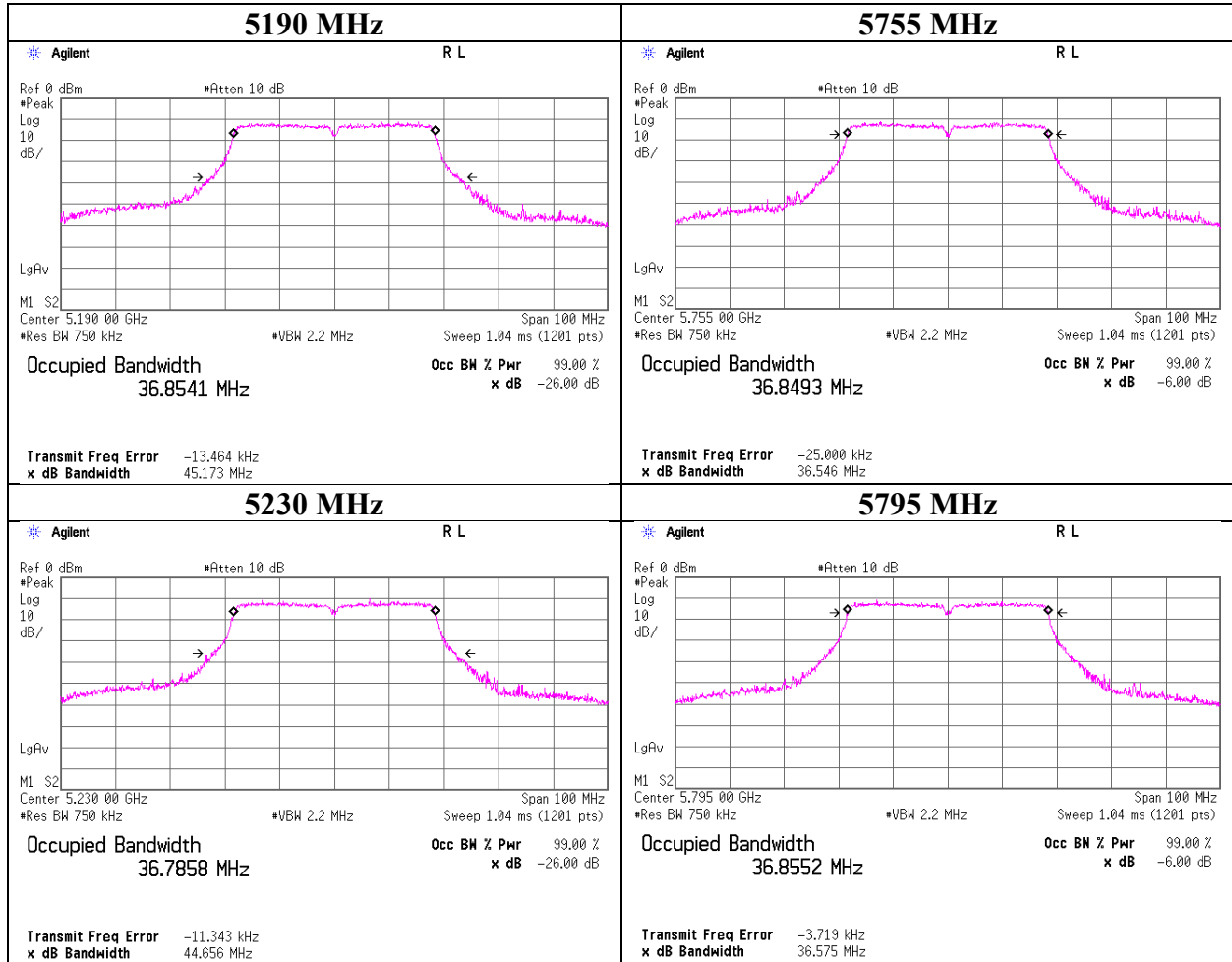
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11n-40



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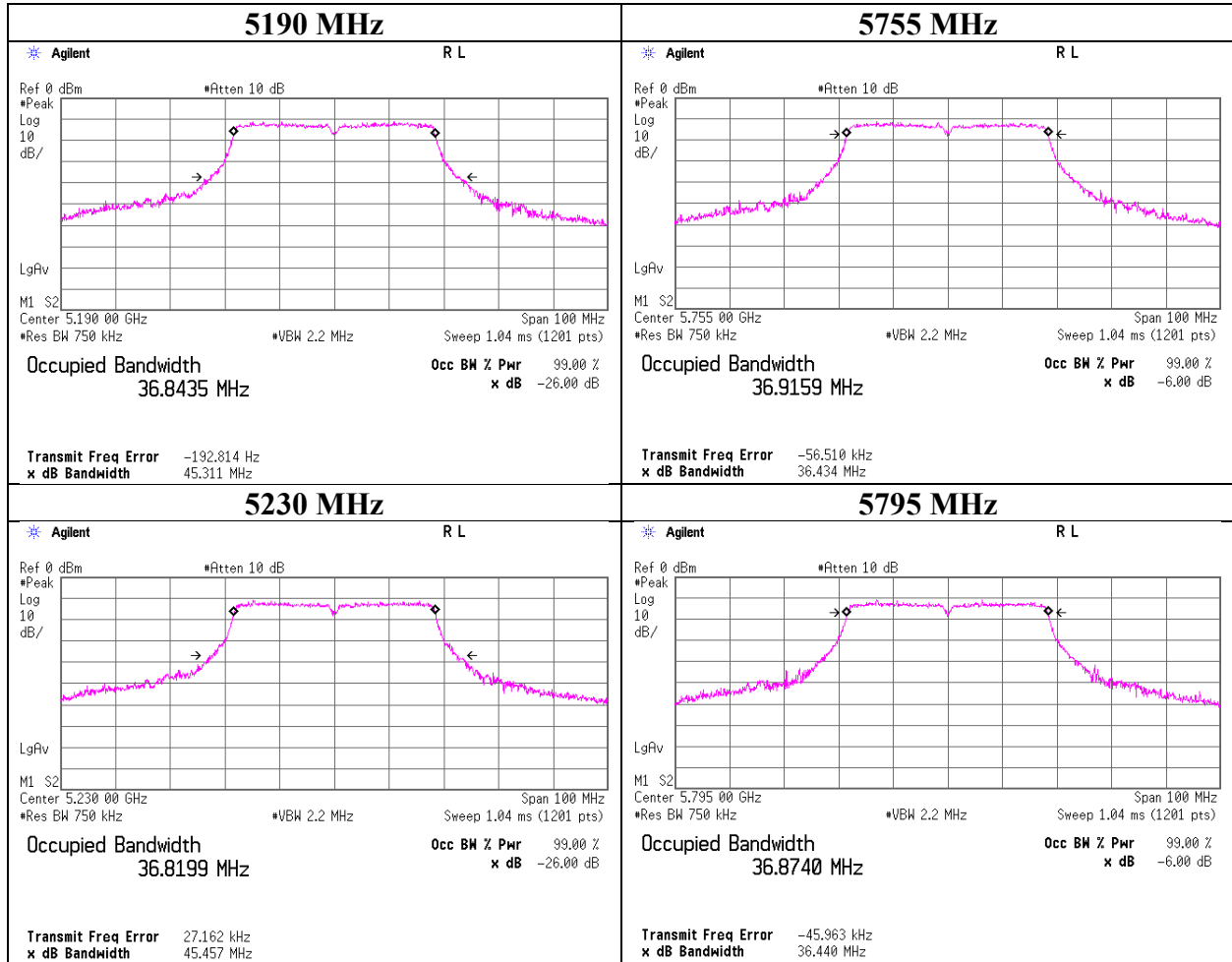
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11ac-40



UL Japan, Inc.

Shonan EMC Lab.

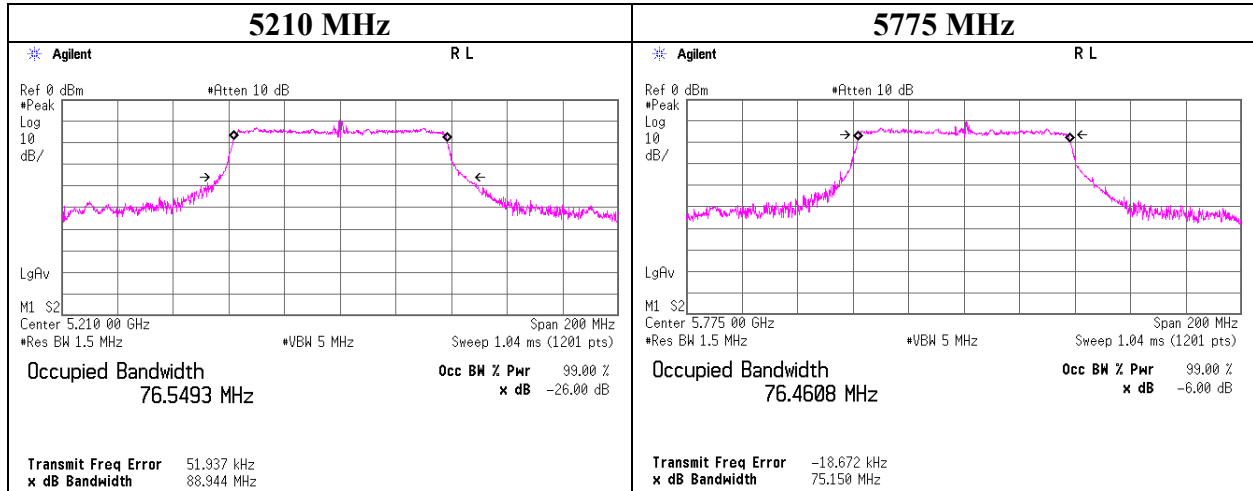
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11ac-80



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Telephone : +81 463 50 6400

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6 dB Bandwidth

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx

11a

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
5745	16.490	> 0.500
5785	16.514	> 0.500
5825	16.489	> 0.500

11n-20

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
5745	17.776	> 0.500
5785	17.744	> 0.500
5825	17.765	> 0.500

11ac-20

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
5745	17.704	> 0.500
5785	17.765	> 0.500
5825	17.732	> 0.500

11n-40

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
5755	36.556	> 0.500
5795	36.542	> 0.500

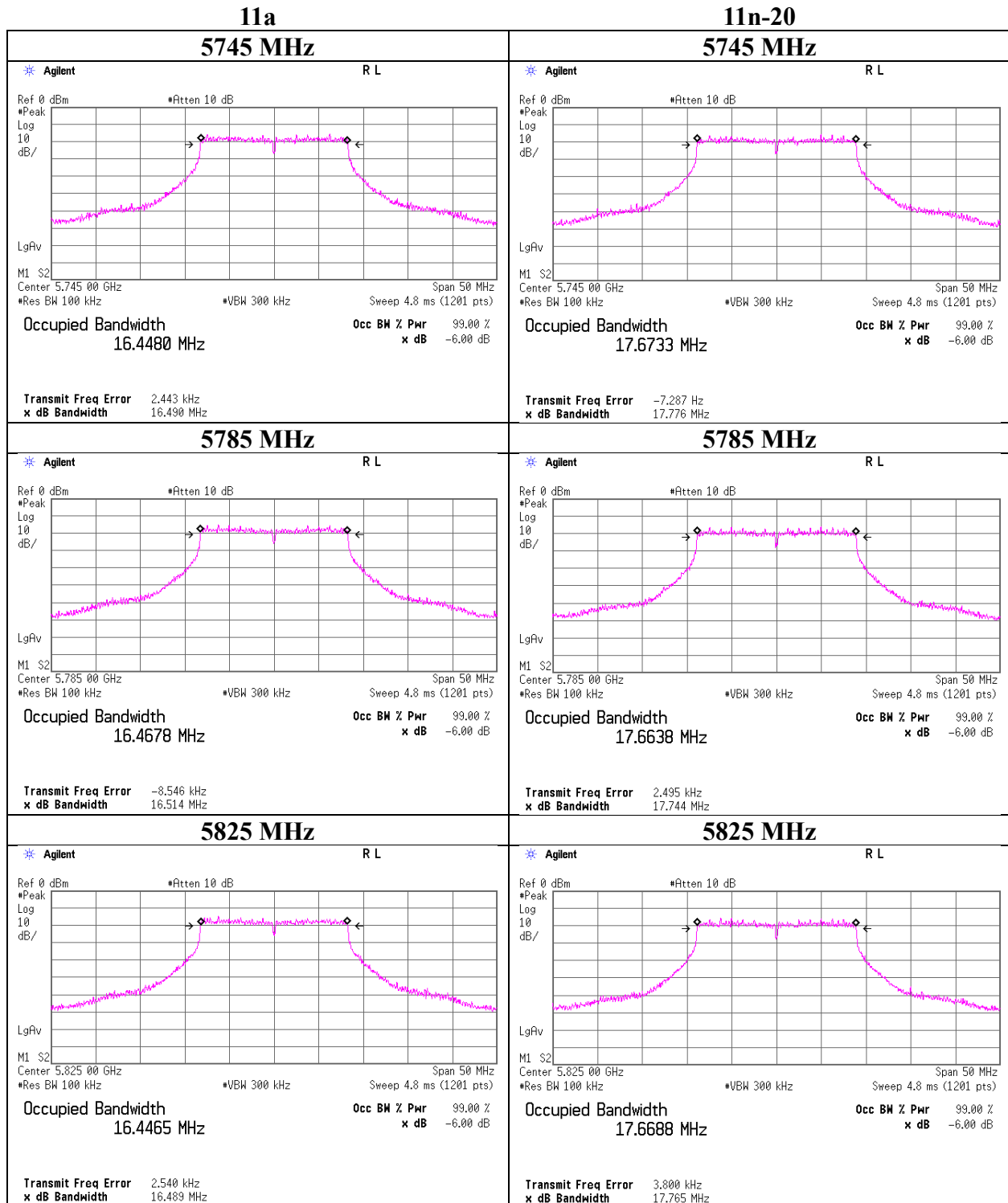
11ac-40

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
5755	36.569	> 0.500
5795	36.564	> 0.500

11ac-80

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
5775	76.530	> 0.500

6 dB Bandwidth



UL Japan, Inc.

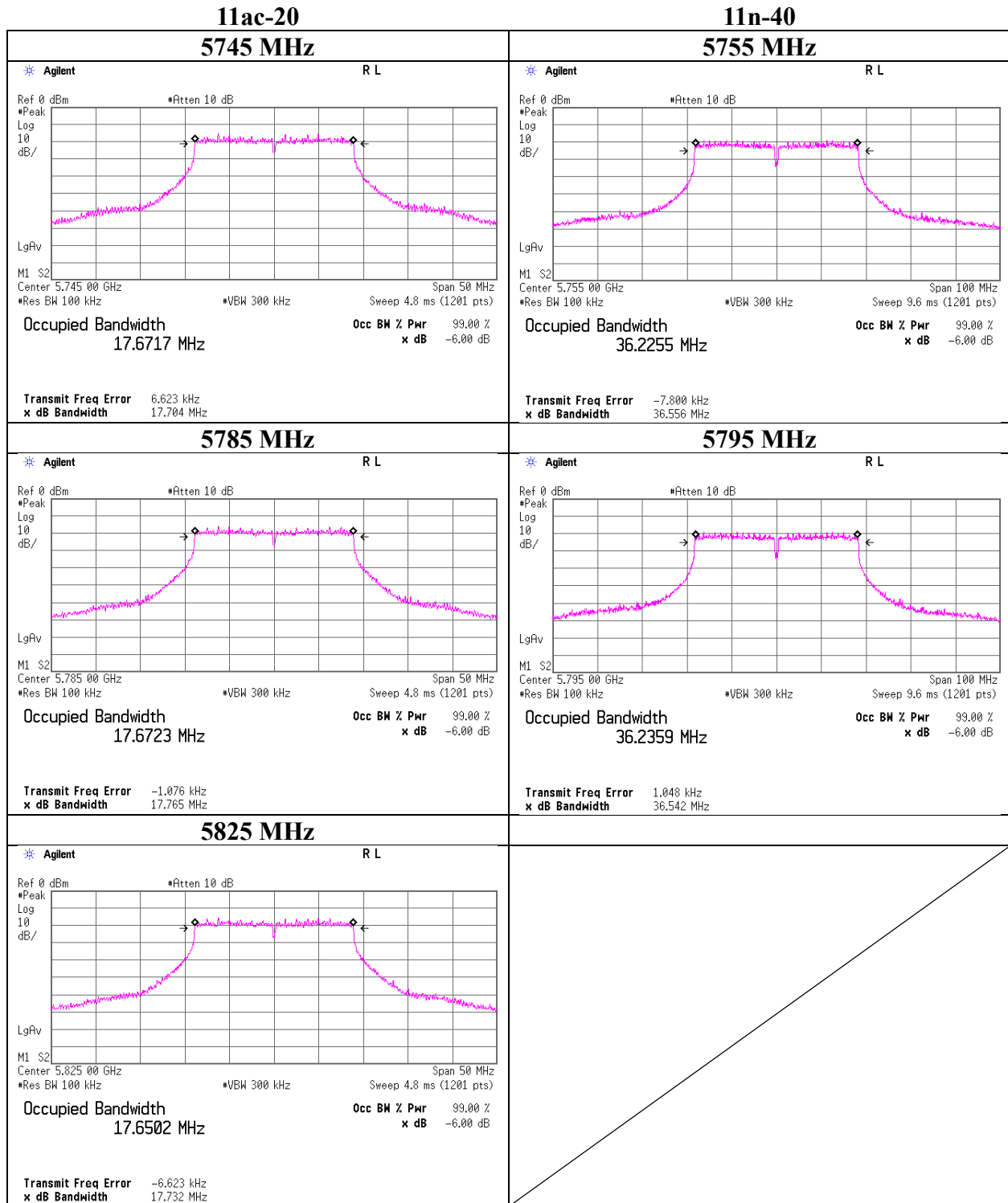
Shonan EMC Lab.

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Facsimile : +81 463 50 6401

6 dB Bandwidth



UL Japan, Inc.

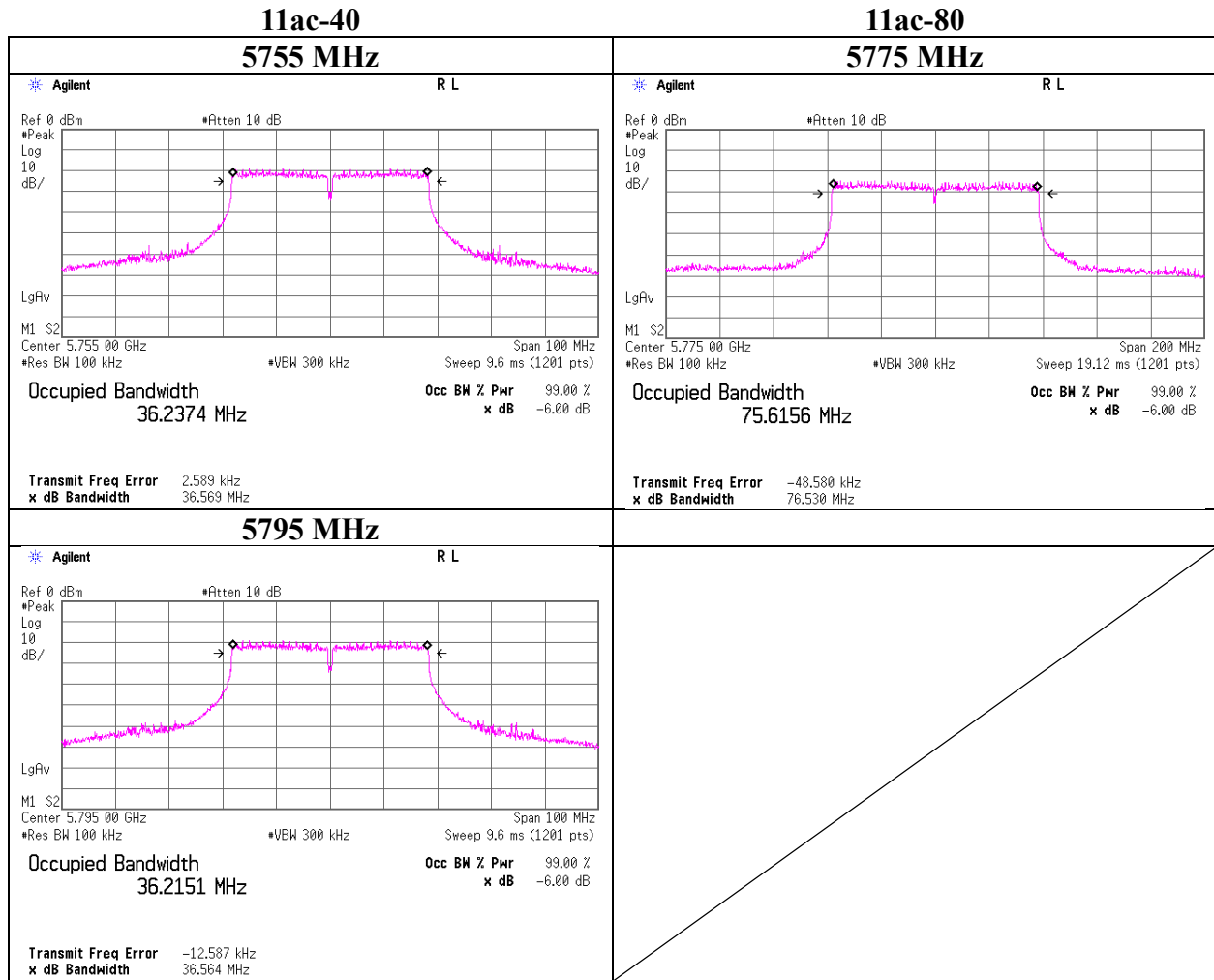
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6 dB Bandwidth



UL Japan, Inc.

Shonan EMC Lab.

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Maximum Conducted Output Power

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx

11a

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-3.95	2.78	9.83	0.07	6.0	-	16.840	8.73	7.46	23.97	15.24	14.73	29.72	29.97	15.24
5220	-3.95	2.78	9.83	0.07	6.0	-	16.844	8.73	7.46	23.97	15.24	14.73	29.72	29.97	15.24
5240	-4.04	2.78	9.83	0.07	6.0	-	16.831	8.64	7.31	23.97	15.33	14.64	29.11	29.97	15.33
5745	-4.58	2.83	9.75	0.07	6.0	-	16.847	8.07	6.41	30.00	21.93	14.07	25.53	36.00	21.93
5785	-4.55	2.84	9.74	0.07	6.0	-	16.830	8.10	6.46	30.00	21.90	14.10	25.70	36.00	21.90
5825	-4.32	2.84	9.73	0.07	6.0	-	16.851	8.32	6.79	30.00	21.68	14.32	27.04	36.00	21.68

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

*[U-NII-1 band for FCC]

Although the EUT operates on Master mode, more stringent limit for Client device was applied.

Also, the maximum e.i.r.p. Result is less than 125 mW (21 dBm).

11n-20

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-5.09	2.78	9.83	0.17	6.0	-	17.999	7.69	5.87	23.97	16.28	13.69	23.39	29.97	16.28
5220	-5.15	2.78	9.83	0.17	6.0	-	18.023	7.63	5.79	23.97	16.34	13.63	23.07	29.97	16.34
5240	-5.02	2.78	9.83	0.17	6.0	-	18.015	7.76	5.97	23.97	16.21	13.76	23.77	29.97	16.21
5745	-5.54	2.83	9.75	0.17	6.0	-	18.001	7.21	5.26	30.00	22.79	13.21	20.94	36.00	22.79
5785	-5.58	2.84	9.74	0.17	6.0	-	17.996	7.17	5.21	30.00	22.83	13.17	20.75	36.00	22.83
5825	-5.45	2.84	9.73	0.17	6.0	-	18.030	7.29	5.36	30.00	22.71	13.29	21.33	36.00	22.71

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

*[U-NII-1 band for FCC]

Although the EUT operates on Master mode, more stringent limit for Client device was applied.

Also, the maximum e.i.r.p. Result is less than 125 mW (21 dBm).

11ac-20

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-5.12	2.78	9.83	0.19	6.0	-	18.061	7.68	5.86	23.97	16.29	13.68	23.33	29.97	16.29
5220	-5.17	2.78	9.83	0.19	6.0	-	18.050	7.63	5.79	23.97	16.34	13.63	23.07	29.97	16.34
5240	-5.07	2.78	9.83	0.19	6.0	-	17.970	7.73	5.93	23.97	16.24	13.73	23.60	29.97	16.24
5745	-5.59	2.83	9.75	0.19	6.0	-	18.042	7.18	5.22	30.00	22.82	13.18	20.80	36.00	22.82
5785	-5.73	2.84	9.74	0.19	6.0	-	18.028	7.04	5.06	30.00	22.96	13.04	20.14	36.00	22.96
5825	-5.44	2.84	9.73	0.19	6.0	-	18.018	7.32	5.40	30.00	22.68	13.32	21.48	36.00	22.68

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

*[U-NII-1 band for FCC]

Although the EUT operates on Master mode, more stringent limit for Client device was applied.

Also, the maximum e.i.r.p. Result is less than 125 mW (21 dBm).

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

Maximum Conducted Output Power

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx

11n-40

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[mW]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5190	-5.14	2.78	9.83	0.30	6.0	-	36.854	7.77	5.98	23.97	16.20	13.77	23.82	29.97	16.20
5230	-5.19	2.78	9.83	0.30	6.0	-	36.786	7.72	5.92	23.97	16.25	13.72	23.55	29.97	16.25
5755	-5.63	2.83	9.74	0.30	6.0	-	36.849	7.24	5.30	30.00	22.76	13.24	21.09	36.00	22.76
5795	-5.77	2.84	9.74	0.30	6.0	-	36.855	7.11	5.14	30.00	22.89	13.11	20.46	36.00	22.89

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

*[U-NII-1 band for FCC]

Although the EUT operates on Master mode, more stringent limit for Client device was applied.

Also, the maximum e.i.r.p. Result is less than 125 mW (21 dBm).

11ac-40

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
								[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5190	-5.15	2.78	9.83	0.30	6.0	-	36.844	7.76	5.97	23.97	16.21	13.76	23.77	29.97	16.21
5230	-5.19	2.78	9.83	0.30	6.0	-	36.820	7.72	5.92	23.97	16.25	13.72	23.55	29.97	16.25
5755	-5.65	2.83	9.74	0.30	6.0	-	36.916	7.22	5.27	30.00	22.78	13.22	20.99	36.00	22.78
5795	-5.74	2.84	9.74	0.30	6.0	-	36.874	7.14	5.18	30.00	22.86	13.12	20.61	36.00	22.86

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

*[U-NII-1 band for FCC]

Although the EUT operates on Master mode, more stringent limit for Client device was applied.

Also, the maximum e.i.r.p. Result is less than 125 mW (21 dBm).

11ac-80

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5210	-8.59	2.78	9.83	0.86	6.0	-	76.549	4.88	3.08	23.97	19.09	10.88	12.25	29.97	19.09
5775	-9.23	2.84	9.74	0.86	6.0	-	76.461	4.21	2.64	30.00	25.79	10.21	10.50	36.00	25.79

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

*[U-NII-1 band for FCC]

Although the EUT operates on Master mode, more stringent limit for Client device was applied.

Also, the maximum e.i.r.p. Result is less than 125 mW (21 dBm).

Maximum Conducted Output Power

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2019
Temperature / Humidity	25 deg. C / 54 % RH
Engineer	Hosaka Makoto
Mode	Tx

11a 5180 MHz

Mode	Rate Mbps	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11a	6	-4.29	0.02	-4.27	
	9	-4.33	0.02	-4.31	
	12	-4.33	0.03	-4.30	
	18	-4.36	0.05	-4.31	
	24	-3.95	0.07	-3.88	*
	36	-4.02	0.11	-3.91	
	48	-4.06	0.14	-3.92	
	54	-4.10	0.15	-3.95	

* 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.

11n-20 5180 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11n-20 (800 ns GI)	0	-5.56	0.02	-5.54	
	1	-5.58	0.04	-5.54	
	2	-5.58	0.06	-5.52	
	3	-5.04	0.08	-4.96	
	4	-5.06	0.11	-4.95	
	5	-5.10	0.15	-4.95	
	6	-5.09	0.17	-4.92	*
	7	-5.13	0.19	-4.94	
11n-20 (400 ns GI)	0	-5.57	0.02	-5.55	
	1	-5.57	0.03	-5.54	
	2	-5.59	0.06	-5.53	
	3	-5.04	0.08	-4.96	
	4	-5.05	0.11	-4.94	
	5	-5.10	0.15	-4.95	
	6	-5.11	0.17	-4.94	
	7	-5.12	0.19	-4.93	

* 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.

Maximum Conducted Output Power

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2019
Temperature / Humidity	25 deg. C / 54 % RH
Engineer	Hosaka Makoto
Mode	Tx

11ac-20 5180 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11ac-20 (800 ns GI)	0	-5.55	0.02	-5.53	
	1	-5.58	0.04	-5.54	
	2	-5.62	0.06	-5.56	
	3	-5.02	0.08	-4.94	
	4	-5.09	0.11	-4.98	
	5	-5.09	0.15	-4.94	
	6	-5.13	0.17	-4.96	
	7	-5.12	0.19	-4.93	*
	8	-6.14	0.22	-5.92	
11ac-20 (400 ns GI)	0	-5.55	0.02	-5.53	
	1	-5.58	0.04	-5.54	
	2	-5.62	0.06	-5.56	
	3	-5.04	0.08	-4.96	
	4	-5.10	0.11	-4.99	
	5	-5.11	0.15	-4.96	
	6	-5.11	0.17	-4.94	
	7	-5.15	0.19	-4.96	
	8	-6.18	0.22	-5.96	

* 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.

Maximum Conducted Output Power

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2019
Temperature / Humidity	25 deg. C / 54 % RH
Engineer	Hosaka Makoto
Mode	Tx

11n-40 5190 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11n-40 (800 ns GI)	0	-4.99	0.04	-4.95	
	1	-5.03	0.08	-4.95	
	2	-5.08	0.12	-4.96	
	3	-4.99	0.14	-4.85	
	4	-5.10	0.23	-4.87	
	5	-5.14	0.30	-4.84	*
	6	-5.18	0.32	-4.86	
	7	-5.22	0.37	-4.85	
11n-40 (400 ns GI)	0	-5.00	0.04	-4.96	
	1	-5.04	0.08	-4.96	
	2	-5.08	0.12	-4.96	
	3	-5.01	0.16	-4.85	
	4	-5.11	0.23	-4.88	
	5	-5.15	0.27	-4.88	
	6	-5.20	0.32	-4.88	
	7	-5.23	0.37	-4.86	

* 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.

Maximum Conducted Output Power

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2019
Temperature / Humidity	25 deg. C / 54 % RH
Engineer	Hosaka Makoto
Mode	Tx

11ac-40 5190 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11ac-40 (800 ns GI)	0	-4.98	0.04	-4.94	
	1	-5.02	0.08	-4.94	
	2	-5.06	0.12	-4.94	
	3	-5.05	0.16	-4.89	
	4	-5.09	0.23	-4.86	
	5	-5.15	0.30	-4.85	*
	6	-5.20	0.34	-4.86	
	7	-5.22	0.35	-4.87	
	8	-8.12	0.44	-7.68	
	9	-8.19	0.43	-7.76	
11ac-40 (400 ns GI)	0	-5.00	0.04	-4.96	
	1	-5.03	0.08	-4.95	
	2	-5.07	0.12	-4.95	
	3	-5.05	0.16	-4.89	
	4	-5.09	0.23	-4.86	
	5	-5.18	0.30	-4.88	
	6	-5.19	0.33	-4.86	
	7	-5.24	0.37	-4.87	
	8	-8.09	0.39	-7.70	
	9	-8.19	0.48	-7.71	

* 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.

Maximum Conducted Output Power

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2019
Temperature / Humidity	25 deg. C / 54 % RH
Engineer	Hosaka Makoto
Mode	Tx

11ac-80 5210 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11ac-80 (800 ns GI)	0	-8.08	0.09	-7.99	
	1	-8.12	0.17	-7.95	
	2	-8.22	0.25	-7.97	
	3	-8.10	0.32	-7.78	
	4	-8.22	0.42	-7.80	
	5	-8.36	0.61	-7.75	
	6	-8.41	0.65	-7.76	
	7	-8.48	0.69	-7.79	
	8	-8.59	0.86	-7.73	*
	9	-8.60	0.83	-7.77	
11ac-80 (400 ns GI)	0	-8.06	0.09	-7.97	
	1	-8.14	0.17	-7.97	
	2	-8.23	0.22	-8.01	
	3	-8.09	0.29	-7.80	
	4	-8.24	0.42	-7.82	
	5	-8.38	0.61	-7.77	
	6	-8.43	0.64	-7.79	
	7	-8.48	0.69	-7.79	
	8	-8.62	0.86	-7.76	
	9	-8.57	0.83	-7.74	

* Worst rate

Sample Calculation:

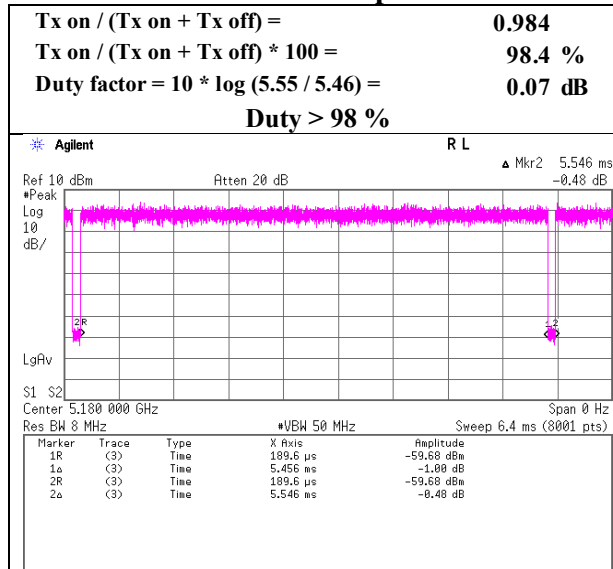
$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

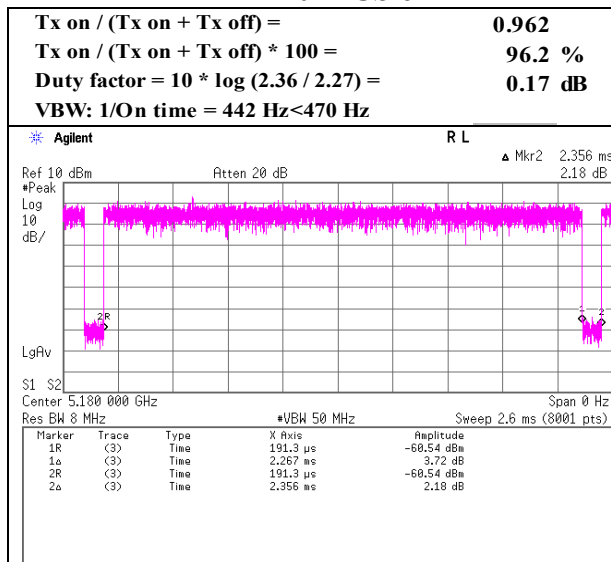
Burst rate confirmation

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 24, 2019
Temperature / Humidity 25 deg. C / 54 % RH
Engineer Hosaka Makoto
Mode Tx

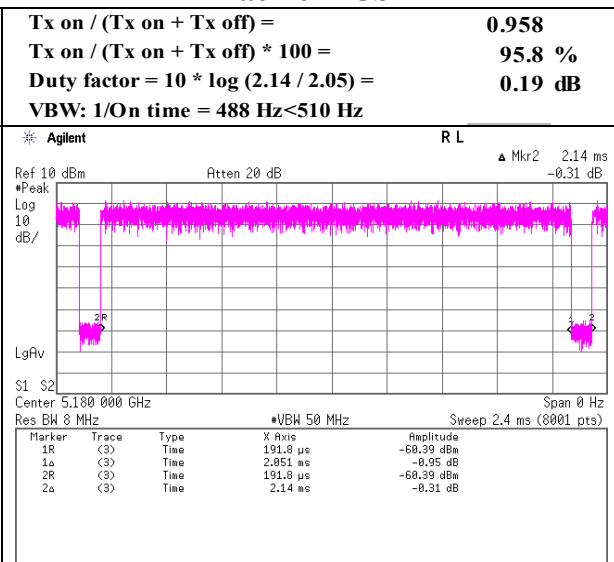
11a 24 Mbps



11n-20 MCS 6



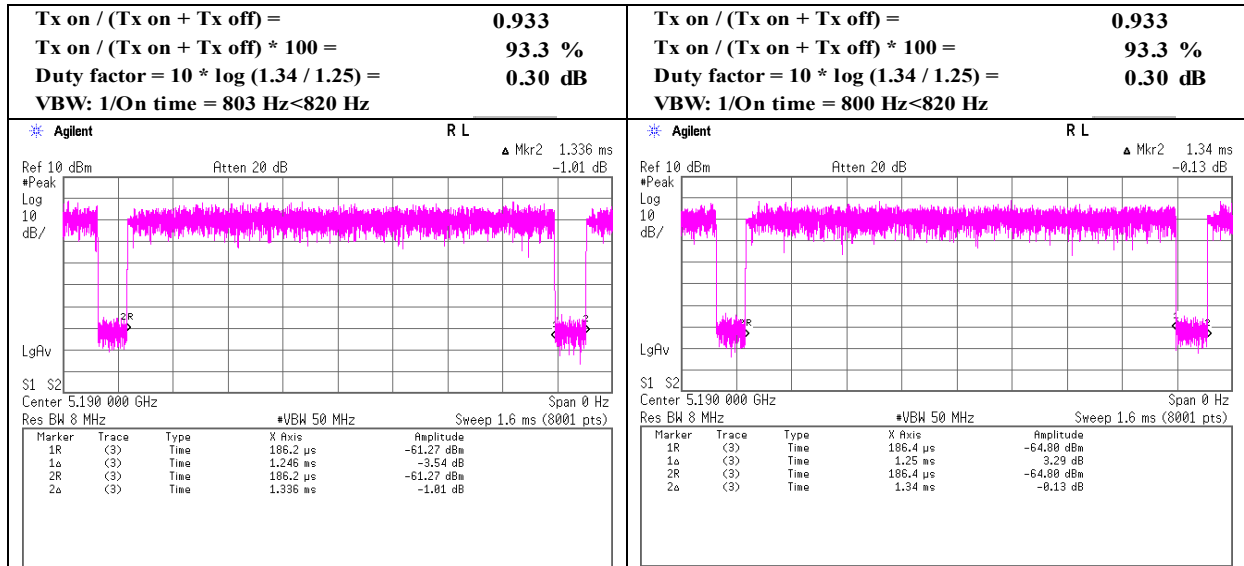
11ac-20 MCS 7



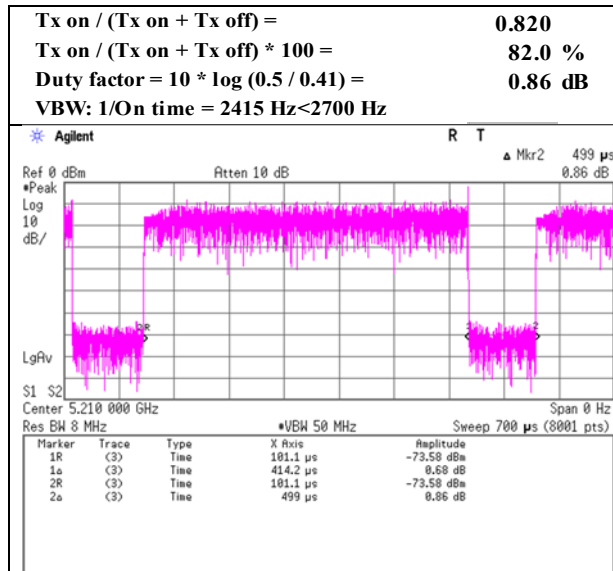
Burst rate confirmation

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 24, 2019
Temperature / Humidity 25 deg. C / 54 % RH
Engineer Hosaka Makoto
Mode Tx

11n-40 MCS 5



11ac-80 MCS 8



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Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11a

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-14.37	2.78	9.83	0.07	6.0	0.00	-1.69	11.00	12.69	4.31	17.00	12.69
5220	-14.38	2.78	9.83	0.07	6.0	0.00	-1.70	11.00	12.70	4.30	17.00	12.70
5240	-14.41	2.78	9.83	0.07	6.0	0.00	-1.73	11.00	12.73	4.27	17.00	12.73
5745	-23.88	2.00	9.75	0.07	6.0	6.99	-5.07	30.00	35.07	0.93	36.00	35.07
5785	-23.64	1.87	9.74	0.07	6.0	6.99	-4.96	30.00	34.96	1.04	36.00	34.96
5825	-23.47	1.74	9.73	0.07	6.0	6.99	-4.94	30.00	34.94	1.06	36.00	34.94

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

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Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11n-20

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-15.79	2.78	9.83	0.17	6.0	0.00	-3.01	11.00	14.01	2.99	17.00	14.01
5220	-15.97	2.78	9.83	0.17	6.0	0.00	-3.19	11.00	14.19	2.81	17.00	14.19
5240	-15.97	2.78	9.83	0.17	6.0	0.00	-3.19	11.00	14.19	2.81	17.00	14.19
5745	-25.33	2.83	9.75	0.17	6.0	6.99	-5.59	30.00	35.59	0.41	36.00	35.59
5785	-24.80	2.84	9.74	0.17	6.0	6.99	-5.06	30.00	35.06	0.94	36.00	35.06
5825	-24.52	2.84	9.73	0.17	6.0	6.99	-4.79	30.00	34.79	1.21	36.00	34.79

Sample Calculation:

PSD: Power Spectral Density

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

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

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

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

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Maximum Power Spectral Density

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 26, 2019
Temperature / Humidity	26 deg. C / 45 % RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-20

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-15.57	2.78	9.83	0.19	6.0	0.00	-2.77	11.00	13.77	3.23	17.00	13.77
5220	-15.88	2.78	9.83	0.19	6.0	0.00	-3.08	11.00	14.08	2.92	17.00	14.08
5240	-15.52	2.78	9.83	0.19	6.0	0.00	-2.72	11.00	13.72	3.29	17.00	13.72
5745	-25.19	2.83	9.75	0.19	6.0	6.99	-5.43	30.00	35.43	0.57	36.00	35.43
5785	-25.16	2.84	9.74	0.19	6.0	6.99	-5.40	30.00	35.40	0.60	36.00	35.40
5825	-24.85	2.84	9.73	0.19	6.0	6.99	-5.10	30.00	35.10	0.90	36.00	35.10

Sample Calculation:

PSD: Power Spectral Density

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

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

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

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

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Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11n-40

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-18.97	2.78	9.83	0.30	6.0	0.00	-6.06	11.00	17.06	-0.05	17.00	17.06
5230	-18.86	2.78	9.83	0.30	6.0	0.00	-5.95	11.00	16.95	0.05	17.00	16.95
5745	-28.53	2.83	9.74	0.30	6.0	6.99	-8.67	30.00	38.67	-2.67	36.00	38.67
5825	-28.42	2.84	9.74	0.30	6.0	6.99	-8.55	30.00	38.55	-2.55	36.00	38.55

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

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Maximum Power Spectral Density

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 26, 2019
Temperature / Humidity	26 deg. C / 45 % RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-40

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-18.65	2.78	9.83	0.30	6.0	0.00	-5.74	11.00	16.74	0.26	17.00	16.74
5230	-19.03	2.78	9.83	0.30	6.0	0.00	-6.12	11.00	17.12	-0.12	17.00	17.12
5755	-28.48	2.83	9.74	0.30	6.0	6.99	-8.62	30.00	38.62	-2.62	36.00	38.62
5795	-28.57	2.84	9.74	0.30	6.0	6.99	-8.70	30.00	38.70	-2.70	36.00	38.70

Sample Calculation:

PSD: Power Spectral Density

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

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

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

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

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Maximum Power Spectral Density

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 26, 2019
Temperature / Humidity	26 deg. C / 45 % RH
Engineer	Toshinori Yamada
Mode	Tx 11ac-80

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5210	-25.17	2.78	9.83	0.86	6.0	0.00	-11.70	11.00	22.70	-5.70	17.00	22.70
5775	-34.76	2.84	9.74	0.86	6.0	6.99	-14.33	30.00	44.33	-8.33	36.00	44.33

Sample Calculation:

PSD: Power Spectral Density

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

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

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

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

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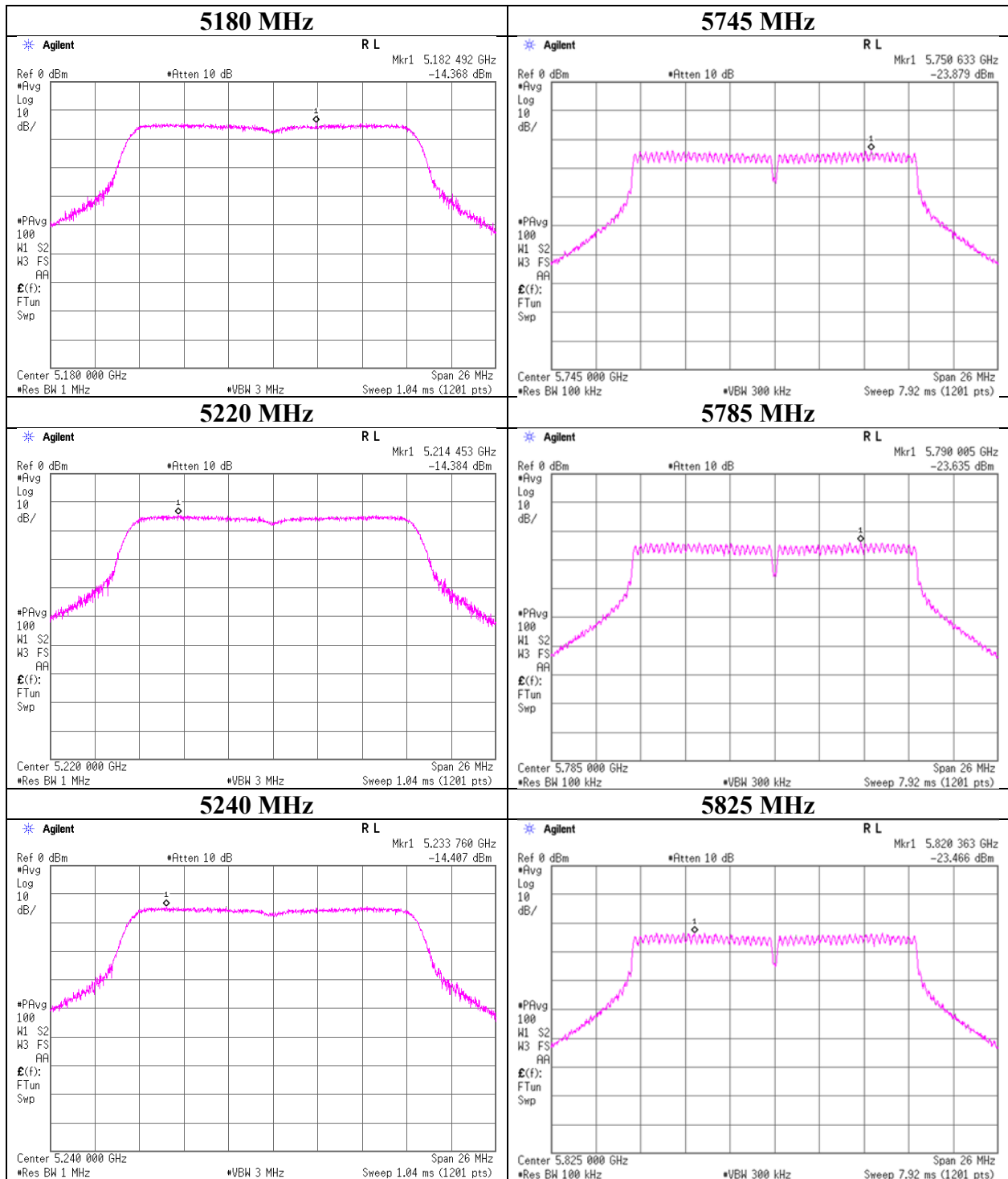
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Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11a

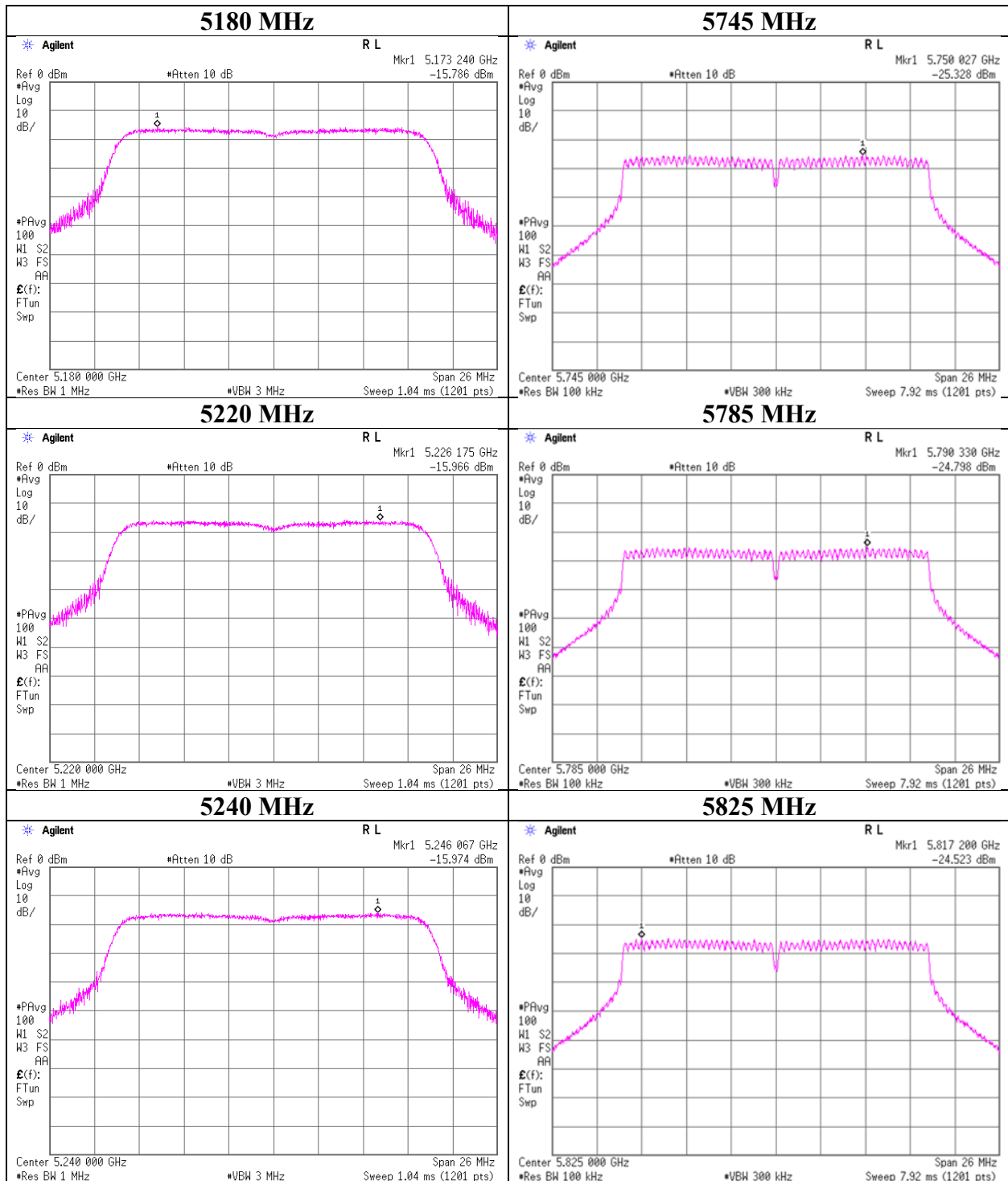
11a



Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11n-20

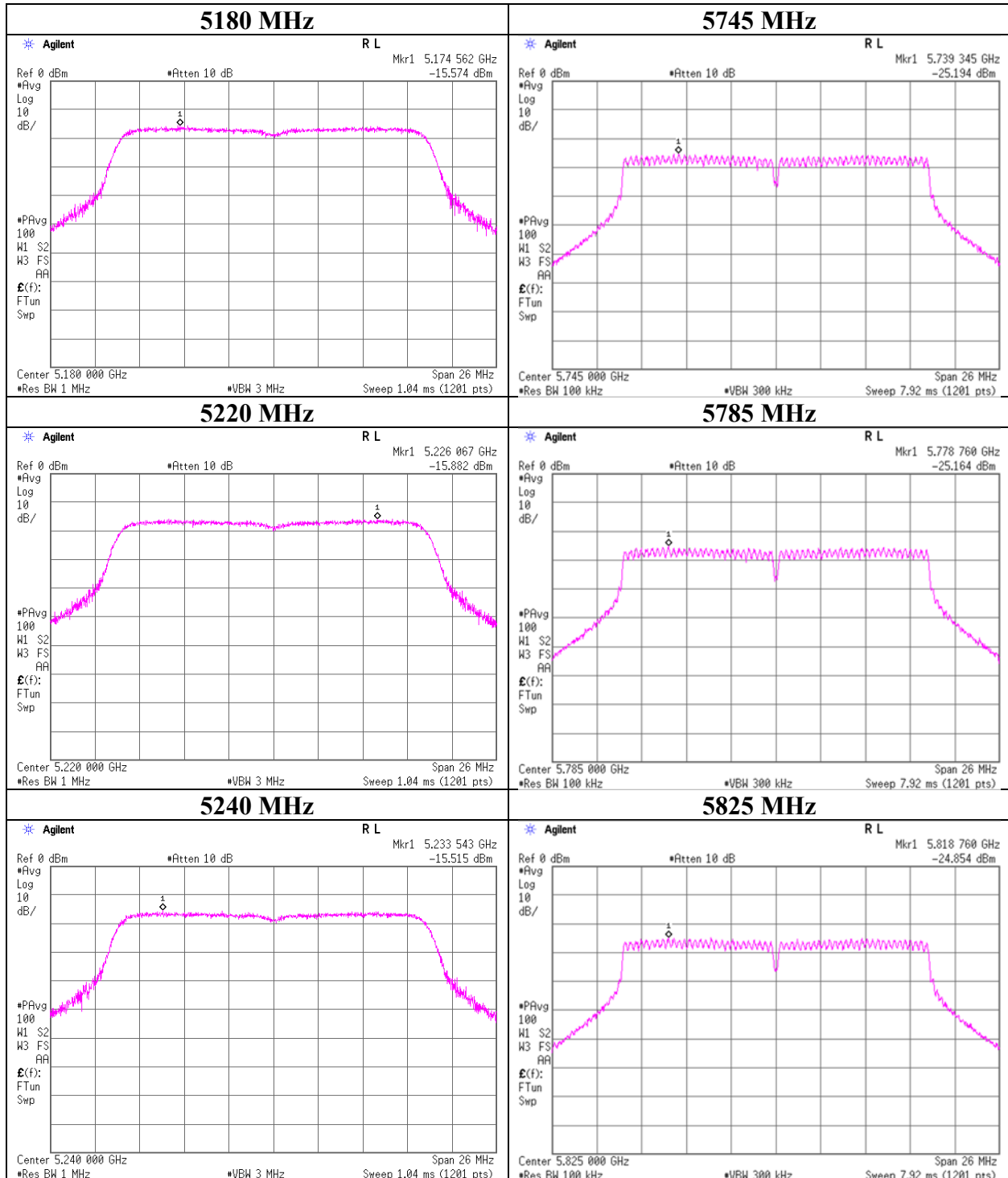
11n-20



Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11ac-20

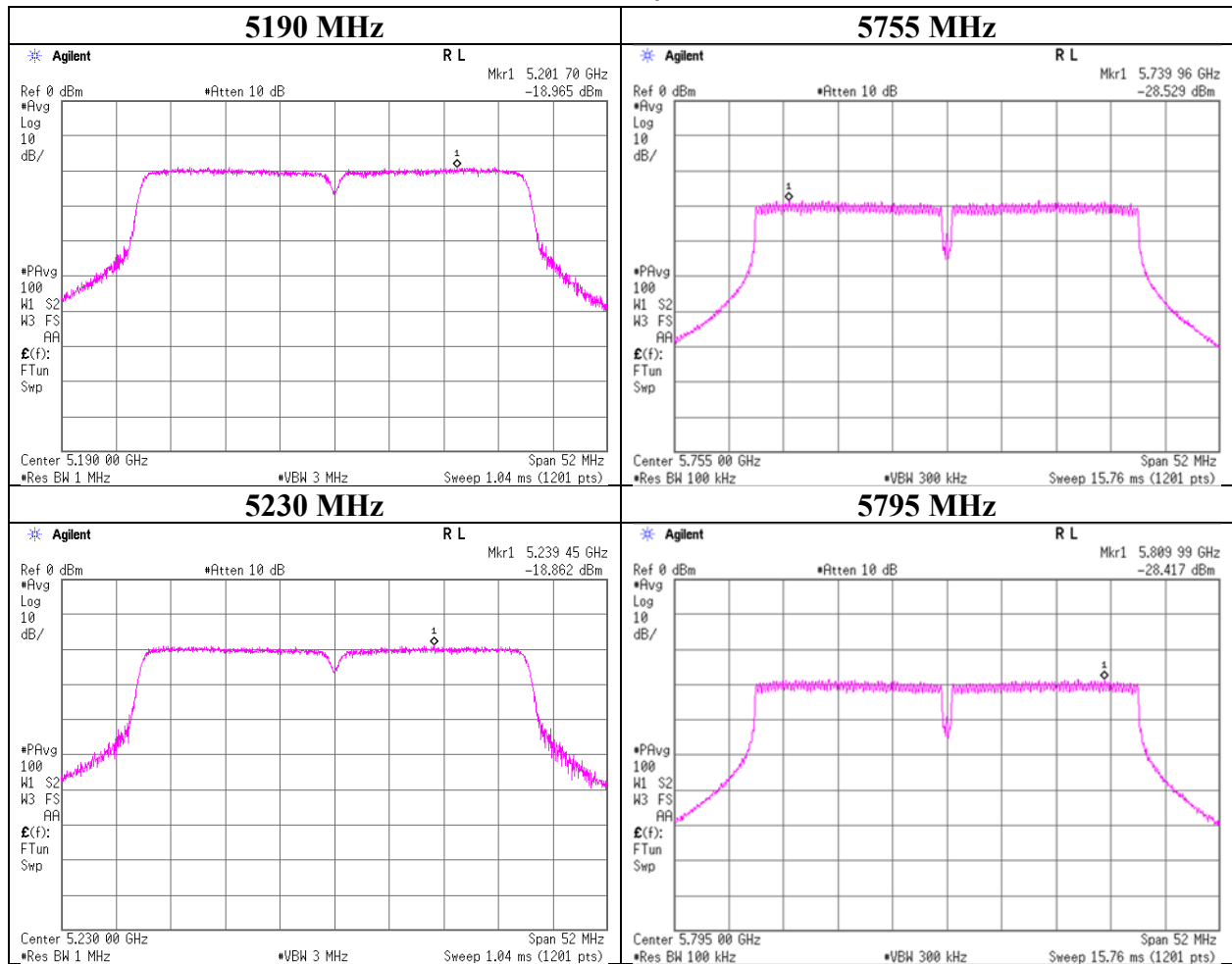
11ac-20



Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11n-40

11n-40



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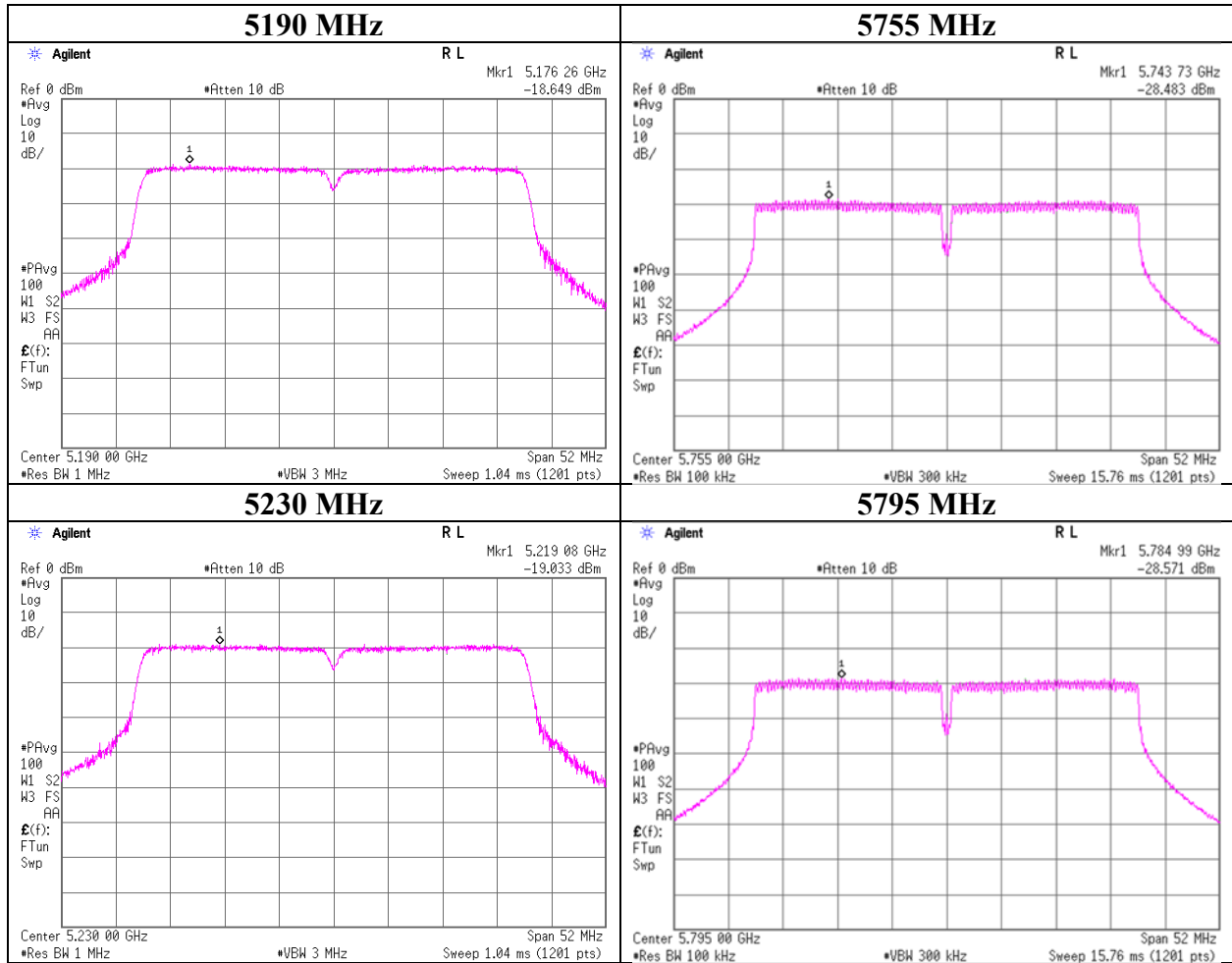
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Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11ac-40

11ac-40



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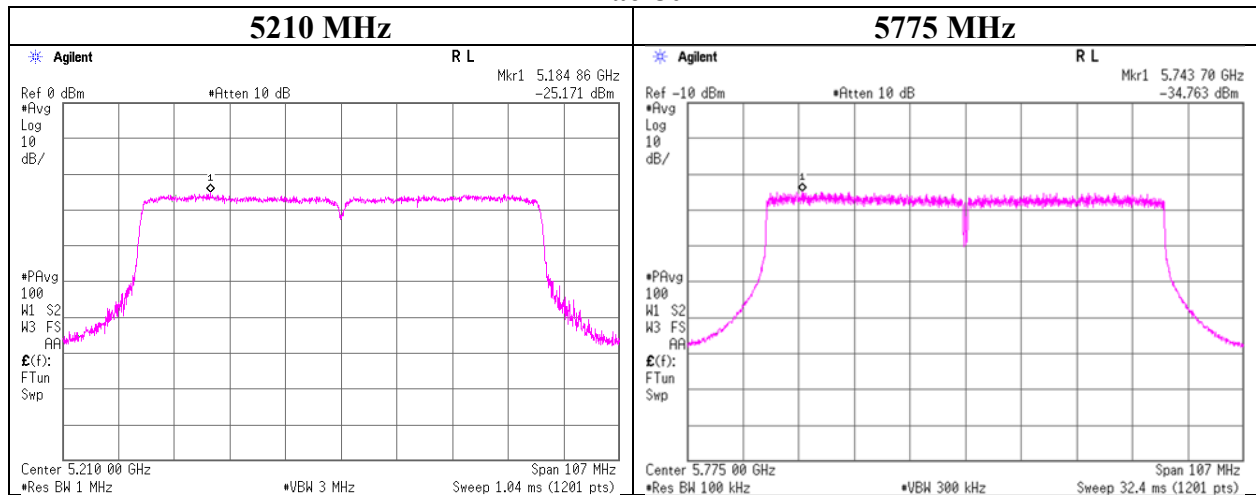
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Maximum Power Spectral Density

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11ac-80

11ac-80



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Radiated Spurious Emission

Report No.	12952598S-C-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	3
Date	September 26, 2016	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato (1 GHz – 6.4 GHz)	Kazuya Noda (6.4 GHz – 13 GHz)	Kazuya Noda (13 GHz – 18 GHz)	Hiromasa Sato (18 GHz – 40 GHz)
Mode	Tx 11a 5180 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5150.000	PK	46.01	32.30	16.89	39.73	2.36	57.83	73.9	16.0	194	309	
Hori.	15540.000	PK	45.72	38.72	12.67	39.18	-9.54	48.39	73.9	25.5	134	29	
Hori.	20720.000	PK	47.05	40.30	14.18	47.34	-9.54	44.65	73.9	29.2	151	138	
Hori.	5150.000	AV	34.19	32.30	16.89	39.73	2.36	46.01	53.9	7.8	194	309	VBW:10 Hz
Hori.	15540.000	AV	34.33	38.72	12.67	39.18	-9.54	37.00	53.9	16.9	134	29	VBW:10 Hz
Hori.	20720.000	AV	42.43	40.30	14.18	47.34	-9.54	40.03	53.9	13.8	151	138	VBW:10 Hz
Vert.	5150.000	PK	46.74	64.00	16.89	39.73	2.36	58.56	73.9	15.3	286	323	
Vert.	15540.000	PK	45.75	38.72	12.67	39.18	-9.54	48.42	73.9	25.4	116	359	
Vert.	20720.000	PK	48.38	40.30	14.18	47.34	-9.54	45.98	73.9	27.9	149	346	
Vert.	5150.000	AV	34.27	32.30	16.89	39.73	2.36	46.09	53.9	7.8	286	323	VBW:10 Hz
Vert.	15540.000	AV	34.41	38.72	12.67	39.18	-9.54	37.08	53.9	16.8	116	359	VBW:10 Hz
Vert.	20720.000	AV	44.46	40.30	14.18	47.34	-9.54	42.06	53.9	11.8	149	346	VBW:10 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6906.667	PK	58.39	35.92	7.72	42.69	2.36	61.70	-33.52	-27.00	6.5	219	294	
Hori.	10360.000	PK	44.49	39.13	9.92	39.93	2.36	55.97	-39.25	-27.00	12.2	131	228	
Vert.	6906.667	PK	56.05	35.92	7.72	42.69	2.36	59.36	-35.86	-27.00	8.8	397	265	
Vert.	10360.000	PK	44.85	39.13	9.92	39.93	2.36	56.33	-38.89	-27.00	11.8	183	14	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.

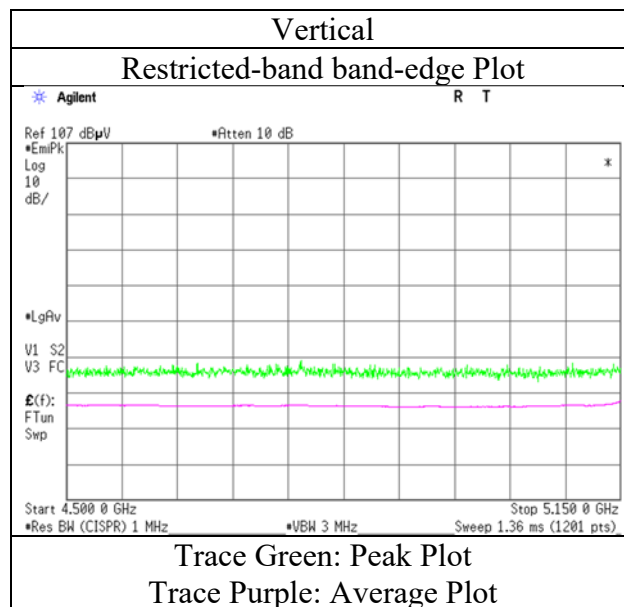
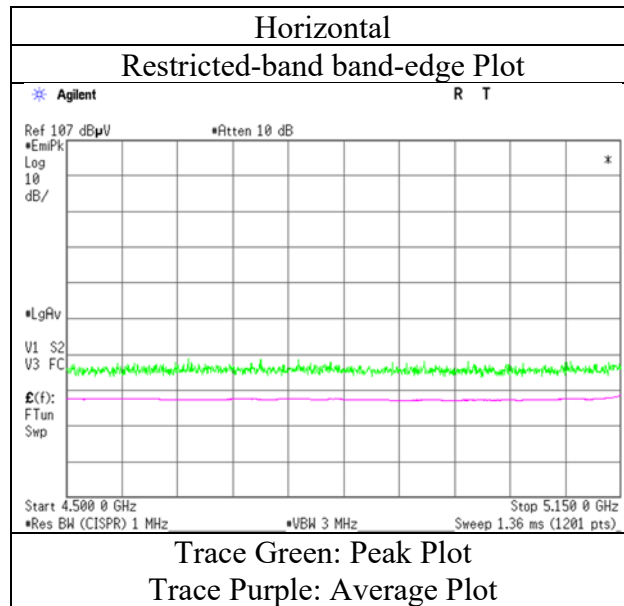
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 26, 2016
Temperature / Humidity 25 deg. C / 46 % RH
Engineer Hiromasa Sato
(1 GHz – 6.4 GHz)
Mode Tx 11a 5180 MHz



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

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Radiated Spurious Emission

Report No.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Kazuya Noda	Hiromasa Sato
	(1 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11a 5220 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.	15660.000	PK	45.94	38.41	12.73	39.34	-9.54	48.20	73.9	25.7	131	22	
Hori.	20880.000	PK	46.18	40.30	14.20	47.25	-9.54	43.89	73.9	30.0	156	47	
Hori.	15660.000	AV	34.02	38.41	12.73	39.34	-9.54	36.28	53.9	17.6	131	22	VBW:10 Hz
Hori.	20880.000	AV	40.84	40.30	14.20	47.25	-9.54	38.55	53.9	15.3	156	47	VBW:10 Hz
Vert.	15660.000	PK	46.24	38.41	12.73	39.34	-9.54	48.50	73.9	25.4	119	356	
Vert.	20880.000	PK	46.89	40.30	14.20	47.25	-9.54	44.60	73.9	29.3	194	16	
Vert.	15660.000	AV	34.15	38.41	12.73	39.34	-9.54	36.41	53.9	17.4	119	356	VBW:10 Hz
Vert.	20880.000	AV	42.15	40.30	14.20	47.25	-9.54	39.86	53.9	14.0	194	16	VBW:10 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6960.000	PK	56.18	36.28	7.71	42.59	2.36	59.94	-35.28	-27.0	8.2	148	297	
Hori.	10440.000	PK	45.66	39.40	9.93	40.10	2.36	57.25	-37.97	-27.0	10.9	263	258	
Vert.	6960.000	PK	53.01	36.28	7.71	42.59	2.36	56.77	-38.45	-27.0	11.4	281	272	
Vert.	10440.000	PK	45.37	39.40	9.93	40.10	2.36	56.96	-38.26	-27.0	11.2	168	302	

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

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

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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Radiated Spurious Emission

Report No.	12952598S-C-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	3
Date	September 27, 2016	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11a 5240 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	44.54	31.99	16.95	39.76	2.36	56.08	73.9	17.8	190	311	
Hori.	15720.000	PK	45.69	38.28	12.74	39.42	-9.54	47.75	73.9	26.1	129	23	
Hori.	20960.000	PK	45.55	40.30	14.21	47.20	-9.54	43.32	73.9	30.5	155	52	
Hori.	5350.000	AV	33.15	31.99	16.95	39.76	2.36	44.69	53.9	9.2	190	311	VBW:10 Hz
Hori.	15720.000	AV	34.35	38.28	12.74	39.42	-9.54	36.41	53.9	17.4	129	23	VBW:10 Hz
Hori.	20960.000	AV	40.04	40.30	14.21	47.20	-9.54	37.81	53.9	16.0	155	52	VBW:10 Hz
Vert.	5350.000	PK	45.43	31.99	16.95	39.76	2.36	56.97	73.9	16.9	272	320	
Vert.	15720.000	PK	46.14	38.28	12.74	39.42	-9.54	48.20	73.9	25.7	118	358	
Vert.	20960.000	PK	46.15	40.30	14.21	47.20	-9.54	43.92	73.9	29.9	194	15	
Vert.	5350.000	AV	33.10	31.99	16.95	39.76	2.36	44.64	53.9	9.2	272	320	VBW:10 Hz
Vert.	15720.000	AV	34.45	38.28	12.74	39.42	-9.54	36.51	53.9	17.3	118	358	VBW:10 Hz
Vert.	20960.000	AV	42.09	40.30	14.21	47.20	-9.54	39.86	53.9	14.0	194	15	VBW:10 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6986.667	PK	55.40	36.44	7.71	42.54	2.36	59.37	-35.85	-27.0	8.8	212	291	
Hori.	10480.000	PK	44.98	39.47	9.94	40.18	2.36	56.57	-38.65	-27.0	11.6	157	227	
Vert.	6986.667	PK	53.76	36.44	7.71	42.54	2.36	57.73	-37.49	-27.0	10.4	397	265	
Vert.	10480.000	PK	45.52	39.47	9.94	40.18	2.36	57.11	-38.11	-27.0	11.1	173	53	

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)

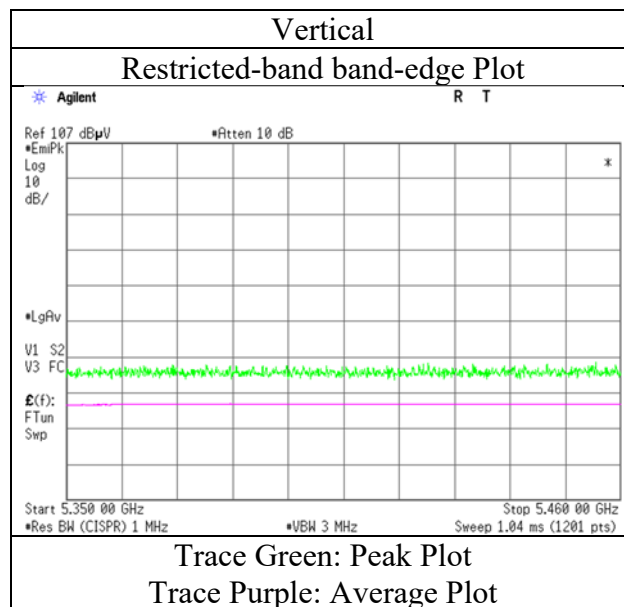
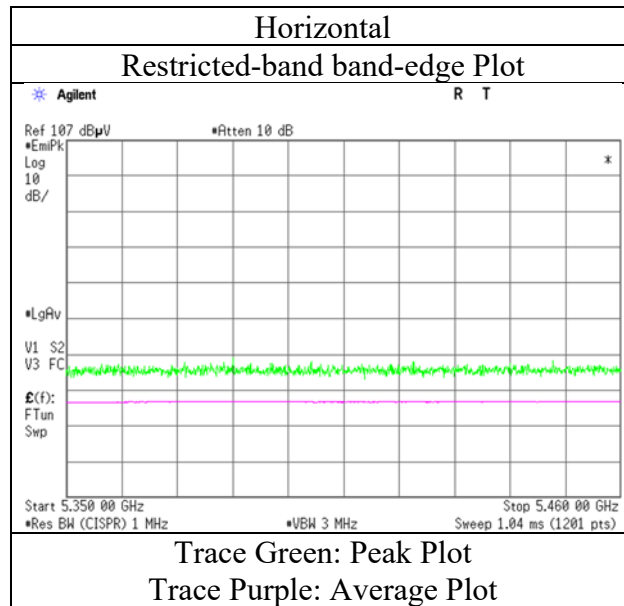
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11a 5240 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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Shonan EMC Lab.

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Radiated Spurious Emission

Report No.	12952598S-C-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	3
Date	September 26, 2016	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	25 deg. C / 46 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Hiromasa Sato	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11a 5745 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7660.000	PK	50.57	37.34	8.11	43.33	2.36	55.05	73.9	18.8	250	0	
Hori.	11490.000	PK	44.36	40.15	10.55	39.44	2.36	57.98	73.9	15.9	262	261	
Hori.	22980.000	PK	44.24	40.46	15.01	47.59	-9.54	42.58	73.9	31.3	147	24	
Hori.	7660.000	AV	38.66	37.34	8.11	43.33	2.36	43.14	53.9	10.7	250	0	VBW:10 Hz
Hori.	11490.000	AV	33.63	40.15	10.55	39.44	2.36	47.25	53.9	6.6	262	261	VBW:10 Hz
Hori.	22980.000	AV	35.26	40.46	15.01	47.59	-9.54	33.60	53.9	20.3	147	24	VBW:10 Hz
Vert.	7660.000	PK	50.50	37.34	8.11	43.33	2.36	54.98	73.90	18.9	397	306	
Vert.	11490.000	PK	45.17	40.15	10.55	39.44	2.36	58.79	73.90	15.1	168	201	
Vert.	22980.000	PK	45.26	40.46	15.01	47.59	-9.54	43.60	73.90	30.3	146	344	
Vert.	7660.000	AV	37.60	37.34	8.11	43.33	2.36	42.08	53.90	11.8	397	306	VBW:10 Hz
Vert.	11490.000	AV	33.98	40.15	10.55	39.44	2.36	47.60	53.90	6.3	168	201	VBW:10 Hz
Vert.	22980.000	AV	36.39	40.46	15.01	47.59	-9.54	34.73	53.90	19.1	146	344	VBW:10 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).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	44.51	32.43	17.06	39.90	2.36	56.46	-38.76	-27.0	11.7	331	226	
Hori.	5700.000	PK	45.72	32.57	17.08	39.94	2.36	57.79	-37.43	10.0	47.4	331	226	
Hori.	5720.000	PK	46.61	32.63	17.08	39.95	2.36	58.73	-36.49	15.6	52.0	331	226	
Hori.	5725.000	PK	55.28	32.65	17.09	39.96	2.36	67.42	-27.80	27.0	54.8	331	226	
Hori.	17235.000	PK	45.73	41.83	13.33	38.97	-9.54	52.38	-42.84	-27.0	15.8	133	21	
Vert.	5650.000	PK	45.13	32.43	17.06	39.90	2.36	57.08	-38.14	-27.0	11.1	327	321	
Vert.	5700.000	PK	45.23	32.57	17.08	39.94	2.36	57.30	-37.92	10.0	47.9	327	321	
Vert.	5720.000	PK	45.32	32.63	17.08	39.95	2.36	57.44	-37.78	15.6	53.3	327	321	
Vert.	5725.000	PK	47.78	32.65	17.09	39.96	2.36	59.92	-35.30	27.0	62.3	327	321	
Vert.	17235.000	PK	45.71	41.83	13.33	38.97	-9.54	52.36	-42.86	-27.0	15.8	120	357	

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).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

UL Japan, Inc.

Shonan EMC Lab.

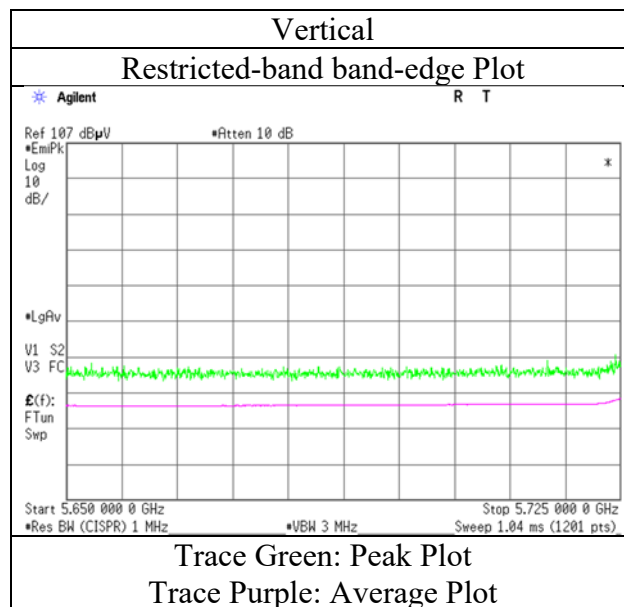
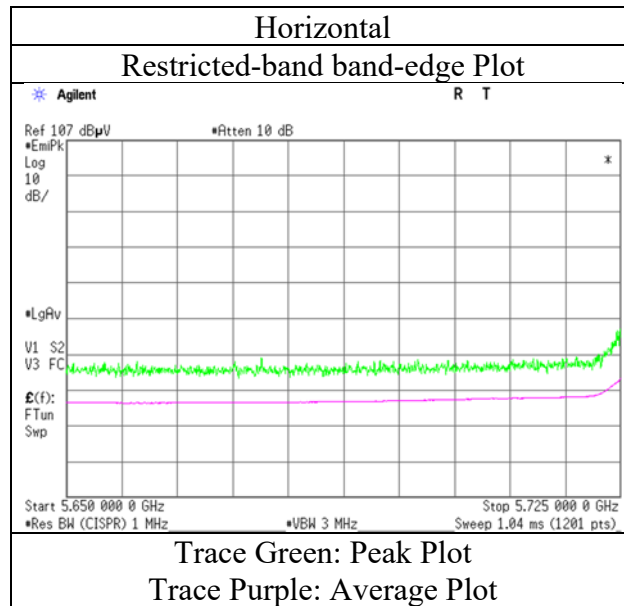
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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11a 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.

Radiated Spurious Emission

Report No.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Kazuya Noda	Hiromasa Sato
	(1 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11a 5785 MHz		

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7713.334	PK	52.03	37.37	8.12	43.27	2.36	56.61	73.9	17.2	244	0	
Hori.	11570.000	PK	45.19	40.07	10.58	39.38	2.36	58.82	73.9	15.0	255	318	
Hori.	7713.334	AV	39.32	37.37	8.12	43.27	2.36	43.90	53.9	10.0	244	0	VBW:10 Hz
Hori.	11570.000	AV	33.93	40.07	10.58	39.38	2.36	47.56	53.9	6.3	255	318	VBW:10 Hz
Vert.	7713.334	PK	51.97	37.37	8.12	43.27	2.36	56.55	73.9	17.3	241	52	
Vert.	11570.000	PK	44.23	40.07	10.58	39.38	2.36	57.86	73.9	16.0	186	208	
Vert.	7713.334	AV	38.46	37.37	8.12	43.27	2.36	43.04	53.9	10.8	241	52	VBW:10 Hz
Vert.	11570.000	AV	34.02	40.07	10.58	39.38	2.36	47.65	53.9	6.2	186	208	VBW:10 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	17355.000	PK	44.70	42.90	13.32	38.60	-9.54	52.78	-42.44	-27.0	15.4	134	26	
Hori.	23140.000	PK	44.44	40.44	15.10	47.39	-9.54	43.05	-52.17	-27.0	25.1	146	29	
Vert.	17355.000	PK	44.85	42.90	13.32	38.60	-9.54	52.93	-42.29	-27.0	15.2	119	357	
Vert.	23140.000	PK	45.35	40.44	15.10	47.39	-9.54	43.96	-51.26	-27.0	24.2	190	14	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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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Radiated Spurious Emission

Report No.	12952598S-C-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	2	1	1	1	3
Date	October 3, 2019	September 26, 2016	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	21 deg. C / 61 % RH	25 deg. C / 46 % RH	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Kazuya Noda	Hiromasa Sato	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(30 MHz - 1000 MHz)	(1 GHz - 6.4 GHz)	(6.4 GHz - 13 GHz)	(13 GHz - 18 GHz)	(18 GHz - 40 GHz)
Mode	Tx 11a 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.	114.048	QP	41.00	12.39	8.01	31.87	0.00	29.53	43.5	13.9	273	227	
Hori.	116.165	QP	43.90	12.70	8.03	31.87	0.00	32.76	43.5	10.7	277	224	
Hori.	118.280	QP	42.10	12.87	8.04	31.87	0.00	31.14	43.5	12.3	270	250	
Hori.	122.488	QP	40.90	13.25	8.10	31.86	0.00	30.39	43.5	13.1	268	239	
Hori.	124.611	QP	44.30	13.56	8.15	31.86	0.00	34.15	43.5	9.3	252	241	
Hori.	135.175	QP	42.50	14.18	8.38	31.85	0.00	33.21	43.5	10.2	263	242	
Hori.	552.964	QP	35.10	17.90	8.32	31.66	0.00	29.66	46.0	16.3	100	277	
Hori.	11650.000	PK	44.63	39.84	10.59	39.33	2.36	58.09	73.9	15.8	244	256	
Hori.	11650.000	AV	33.62	39.84	10.59	39.33	2.36	47.08	53.9	6.8	244	256	VBW:10 Hz
Vert.	32.746	QP	32.90	17.61	6.90	31.93	0.00	25.48	40.0	14.5	100	7	
Vert.	135.176	QP	38.90	14.18	8.38	31.85	0.00	29.61	43.5	13.8	100	136	
Vert.	541.975	QP	38.10	17.72	8.27	31.65	0.00	32.44	46.0	13.5	123	250	
Vert.	11650.000	PK	45.10	39.84	10.59	39.33	2.36	58.56	73.9	15.3	170	257	
Vert.	11650.000	AV	33.32	39.84	10.59	39.33	2.36	46.78	53.9	7.1	170	257	VBW:10 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	5850.000	PK	47.40	33.01	17.13	40.05	2.36	59.85	-35.37	27.0	62.3	243	333	
Hori.	5855.000	PK	47.15	33.02	17.13	40.06	2.36	59.60	-35.62	15.6	51.2	243	333	
Hori.	5875.000	PK	46.03	33.06	17.14	40.07	2.36	58.52	-36.70	10.0	46.7	243	333	
Hori.	5925.000	PK	45.73	33.16	17.16	40.11	2.36	58.30	-36.92	-27.0	9.9	243	333	
Hori.	7766.667	PK	51.85	37.45	8.13	43.22	2.36	56.57	-38.65	-27.0	11.6	189	0	
Hori.	17475.000	PK	43.92	43.72	13.31	38.24	-9.54	53.17	-42.05	-27.0	15.0	133	19	
Hori.	23300.000	PK	45.74	40.46	15.22	47.21	-9.54	44.67	-50.55	-27.0	23.5	297	33	
Vert.	5850.000	PK	45.37	33.01	17.13	40.05	2.36	57.82	-37.40	27.0	64.4	350	320	
Vert.	5855.000	PK	45.25	33.02	17.13	40.06	2.36	57.70	-37.52	15.6	53.1	350	320	
Vert.	5875.000	PK	45.31	33.06	17.14	40.07	2.36	57.80	-37.42	10.0	47.4	350	320	
Vert.	5925.000	PK	45.91	33.16	17.16	40.11	2.36	58.48	-36.74	-27.0	9.7	350	320	
Vert.	7766.667	PK	51.49	37.45	8.13	43.22	2.36	56.21	-39.01	-27.0	12.0	157	49	
Vert.	17475.000	PK	44.41	43.72	13.31	38.24	-9.54	53.66	-41.56	-27.0	14.5	122	358	
Vert.	23300.000	PK	47.30	40.46	15.22	47.21	-9.54	46.23	-48.99	-27.0	21.9	243	13	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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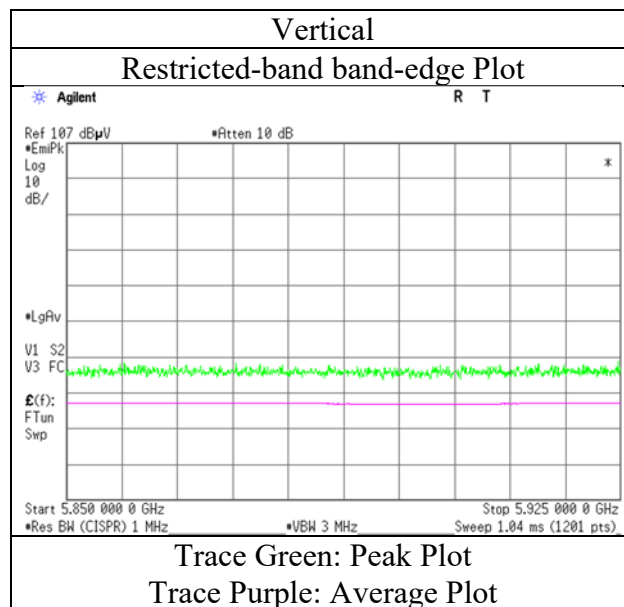
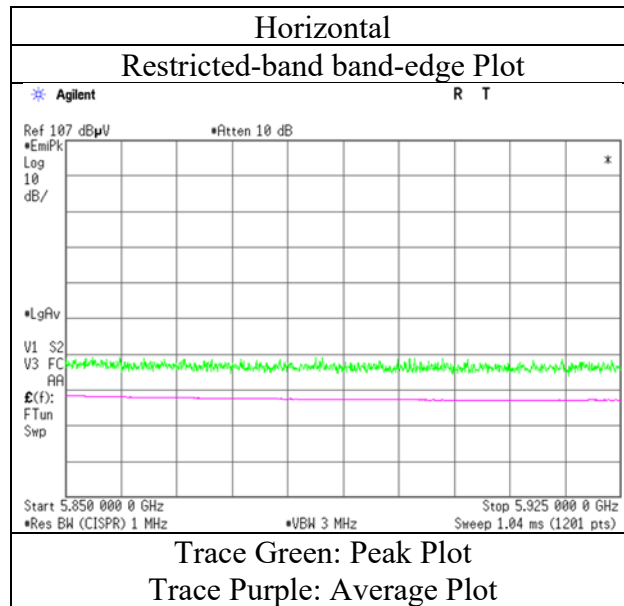
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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11a 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.	12952598S-C-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	3
Date	September 26, 2016	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11n-20 5180 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5150.000	PK	46.02	32.30	16.89	39.73	2.36	57.84	73.9	16.0	229	329	
Hori.	15540.000	PK	45.95	38.72	12.67	39.18	-9.54	48.62	73.9	25.2	133	25	
Hori.	20720.000	PK	47.82	40.30	14.18	47.34	-9.54	45.42	73.9	28.4	160	114	
Hori.	5150.000	AV	34.93	32.30	16.89	39.73	2.36	46.75	53.9	7.1	229	329	VBW:470 Hz
Hori.	15540.000	AV	34.03	38.72	12.67	39.18	-9.54	36.70	53.9	17.2	133	25	VBW:470 Hz
Hori.	20720.000	AV	42.03	40.30	14.18	47.34	-9.54	39.63	53.9	14.2	160	114	VBW:470 Hz
Vert.	5150.000	PK	46.41	32.30	16.89	39.73	2.36	58.23	73.9	15.6	286	323	
Vert.	15540.000	PK	45.84	38.72	12.67	39.18	-9.54	48.51	73.9	25.3	122	359	
Vert.	20720.000	PK	48.64	40.30	14.18	47.34	-9.54	46.24	73.9	27.6	155	345	
Vert.	5150.000	AV	34.68	32.30	16.89	39.73	2.36	46.50	53.9	7.4	286	323	VBW:470 Hz
Vert.	15540.000	AV	33.95	38.72	12.67	39.18	-9.54	36.62	53.9	17.2	122	359	VBW:470 Hz
Vert.	20720.000	AV	44.78	40.30	14.18	47.34	-9.54	42.38	53.9	11.5	155	345	VBW:470 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6906.667	PK	56.99	35.92	7.72	42.69	2.36	60.30	-34.92	-27.0	7.9	221	291	
Hori.	10360.000	PK	44.06	39.13	9.92	39.93	2.36	55.54	-39.68	-27.0	12.6	231	267	
Vert.	6906.667	PK	54.70	35.92	7.72	42.69	2.36	58.01	-37.21	-27.0	10.2	396	263	
Vert.	10360.000	PK	45.46	39.13	9.92	39.93	2.36	56.94	-38.28	-27.0	11.2	194	318	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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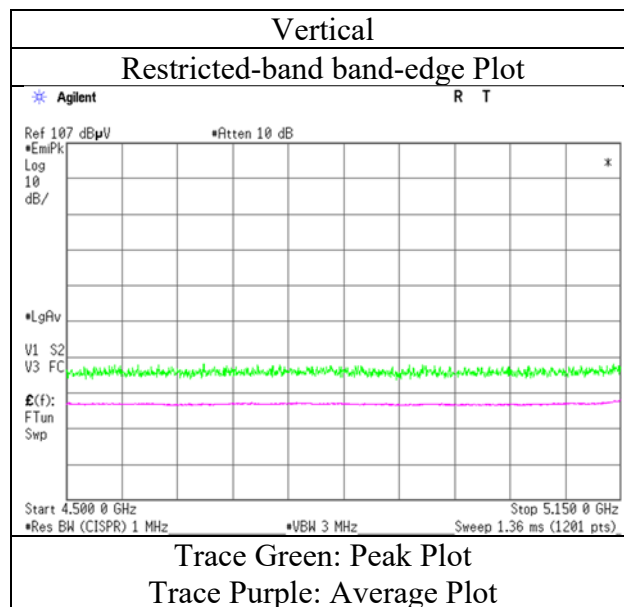
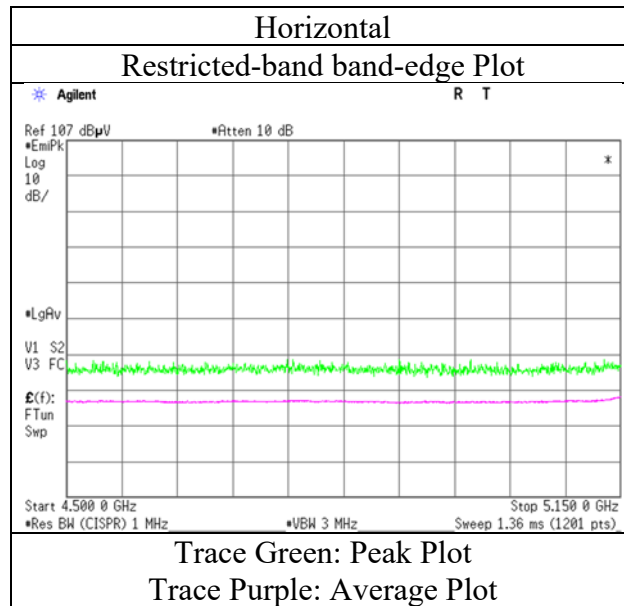
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20 5180 MHz



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

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Radiated Spurious Emission

Report No.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Kazuya Noda	Hiromasa Sato
	(1 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11n-20 5220 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.	15660.000	PK	45.85	38.41	12.73	39.34	-9.54	48.11	73.9	25.7	166	41	
Hori.	20880.000	PK	46.85	40.30	14.20	47.25	-9.54	44.56	73.9	29.3	161	48	
Hori.	15660.000	AV	34.14	38.41	12.73	39.34	-9.54	36.40	53.9	17.5	166	41	VBW:470 Hz
Hori.	20880.000	AV	42.16	40.30	14.20	47.25	-9.54	39.87	53.9	14.0	161	48	VBW:470 Hz
Vert.	15660.000	PK	45.64	38.41	12.73	39.34	-9.54	47.90	73.9	26.0	119	2	
Vert.	20880.000	PK	47.55	40.30	14.20	47.25	-9.54	45.26	73.9	28.6	195	15	
Vert.	15660.000	AV	34.09	38.41	12.73	39.34	-9.54	36.35	53.9	17.5	119	2	VBW:470 Hz
Vert.	20880.000	AV	42.33	40.30	14.20	47.25	-9.54	40.04	53.9	13.8	195	15	VBW:470 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6960.000	PK	56.13	36.28	7.71	42.59	2.36	59.89	-35.33	-27.0	8.3	220	290	
Hori.	10440.000	PK	45.12	39.40	9.93	40.10	2.36	56.71	-38.51	-27.0	11.5	262	250	
Vert.	6960.000	PK	54.43	36.28	7.71	42.59	2.36	58.19	-37.03	-27.0	10.0	343	264	
Vert.	10440.000	PK	44.24	39.40	9.93	40.10	2.36	55.83	-39.39	-27.0	12.3	247	288	

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

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

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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Radiated Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1 1 1 3
Date September 27, 2016 September 27, 2016 September 28, 2019 October 1, 2019
Temperature / Humidity 25 deg. C / 46 % RH 22 deg. C / 50 % RH 24 deg. C / 47 % RH 24 deg. C / 53 % RH
Engineer Hiromasa Sato Kazuya Noda Kazuya Noda Hiromasa Sato
(1 GHz – 6.4 GHz) (6.4 GHz – 13 GHz) (13 GHz – 18 GHz) (18 GHz – 40 GHz)
Mode Tx 11n-20 5240 MHz

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	45.09	31.99	16.95	39.76	2.36	56.63	73.9	17.2	242	296	
Hori.	15720.000	PK	45.83	38.28	12.74	39.42	-9.54	47.89	73.9	26.0	193	51	
Hori.	20960.000	PK	46.03	40.30	14.21	47.20	-9.54	43.80	73.9	30.1	158	51	
Hori.	5350.000	AV	33.73	31.99	16.95	39.76	2.36	45.27	53.9	8.6	242	296	VBW:470 Hz
Hori.	15720.000	AV	34.53	38.28	12.74	39.42	-9.54	36.59	53.9	17.3	193	51	VBW:470 Hz
Hori.	20960.000	AV	40.83	40.30	14.21	47.20	-9.54	38.60	53.9	15.3	158	51	VBW:470 Hz
Vert.	5350.000	PK	44.91	31.99	16.95	39.76	2.36	56.45	73.9	17.4	219	327	
Vert.	15720.000	PK	45.91	38.28	12.74	39.42	-9.54	47.97	73.9	25.9	123	351	
Vert.	20960.000	PK	46.33	40.30	14.21	47.20	-9.54	44.10	73.9	29.8	195	16	
Vert.	5350.000	AV	33.28	31.99	16.95	39.76	2.36	44.82	53.9	9.0	219	327	VBW:470 Hz
Vert.	15720.000	AV	34.47	38.28	12.74	39.42	-9.54	36.53	53.9	17.3	123	351	VBW:470 Hz
Vert.	20960.000	AV	42.32	40.30	14.21	47.20	-9.54	40.09	53.9	13.8	195	16	VBW:470 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6986.667	PK	55.17	36.44	7.71	42.54	2.36	59.14	-36.08	-27.0	9.0	233	281	
Hori.	10480.000	PK	44.65	39.47	9.94	40.18	2.36	56.24	-38.98	-27.0	11.9	258	241	
Vert.	6986.667	PK	53.48	36.44	7.71	42.54	2.36	57.45	-37.77	-27.0	10.7	340	255	
Vert.	10480.000	PK	45.23	39.47	9.94	40.18	2.36	56.82	-38.40	-27.0	11.4	171	330	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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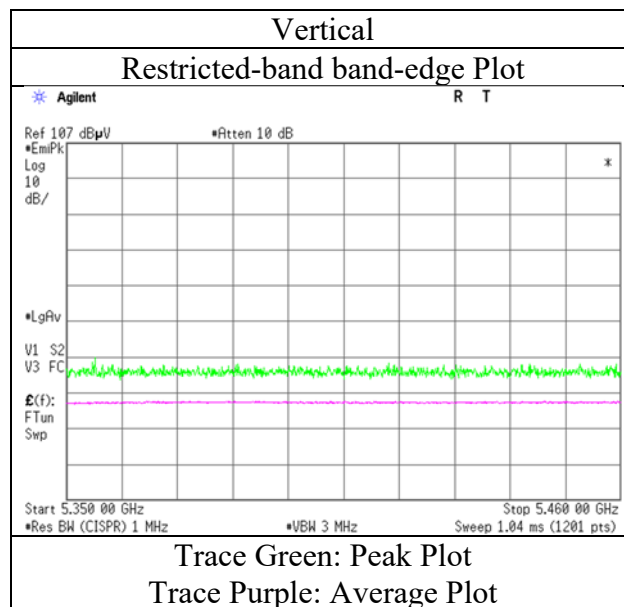
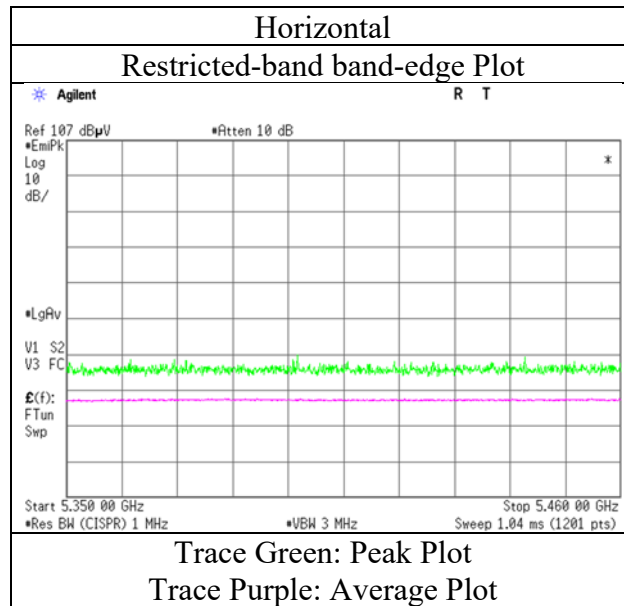
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20 5240 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.	12952598S-C-R1			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	3
Date	September 26, 2016	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	25 deg. C / 46 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Hiromasa Sato	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11n-20 5745 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7660.000	PK	50.91	37.34	8.11	43.33	2.36	55.39	73.9	18.5	368	307	
Hori.	11490.000	PK	44.27	40.15	10.55	39.44	2.36	57.89	73.9	16.0	241	263	
Hori.	22980.000	PK	44.97	40.46	15.01	47.59	-9.54	43.31	73.9	30.5	146	25	
Hori.	7660.000	AV	38.13	37.34	8.11	43.33	2.36	42.61	53.9	11.2	368	307	VBW:470 Hz
Hori.	11490.000	AV	34.18	40.15	10.55	39.44	2.36	47.80	53.9	6.1	241	263	VBW:470 Hz
Hori.	22980.000	AV	36.45	40.46	15.01	47.59	-9.54	34.79	53.9	19.1	146	25	VBW:470 Hz
Vert.	7660.000	PK	50.90	37.34	8.11	43.33	2.36	55.38	73.9	18.5	250	0	
Vert.	11490.000	PK	45.39	40.15	10.55	39.44	2.36	59.01	73.9	14.8	173	302	
Vert.	22980.000	PK	46.41	40.46	15.01	47.59	-9.54	44.75	73.9	29.1	148	350	
Vert.	7660.000	AV	39.47	37.34	8.11	43.33	2.36	43.95	53.9	9.9	250	0	VBW:470 Hz
Vert.	11490.000	AV	34.03	40.15	10.55	39.44	2.36	47.65	53.9	6.2	173	302	VBW:470 Hz
Vert.	22980.000	AV	37.86	40.46	15.01	47.59	-9.54	36.20	53.9	17.7	148	350	VBW:470 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	5650.000	PK	44.79	32.43	17.06	39.90	2.36	56.74	-38.48	-27.0	11.4	254	323	
Hori.	5700.000	PK	45.18	32.57	17.08	39.94	2.36	57.25	-37.97	10.0	47.9	254	323	
Hori.	5720.000	PK	45.89	32.63	17.08	39.95	2.36	58.01	-37.21	15.6	52.8	254	323	
Hori.	5725.000	PK	51.85	32.65	17.09	39.96	2.36	63.99	-31.23	27.0	58.2	254	323	
Hori.	17235.000	PK	44.96	41.83	13.33	38.97	-9.54	51.61	-43.61	-27.0	16.6	171	8	
Vert.	5650.000	PK	44.84	32.43	17.06	39.90	2.36	56.79	-38.43	-27.0	11.4	218	320	
Vert.	5700.000	PK	44.62	32.57	17.08	39.94	2.36	56.69	-38.53	10.0	48.5	218	320	
Vert.	5720.000	PK	45.22	32.63	17.08	39.95	2.36	57.34	-37.88	15.6	53.4	218	320	
Vert.	5725.000	PK	47.71	32.65	17.09	39.96	2.36	59.85	-35.37	27.0	62.3	218	320	
Vert.	17235.000	PK	44.93	41.83	13.33	38.97	-9.54	51.58	-43.64	-27.0	16.6	171	8	

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

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

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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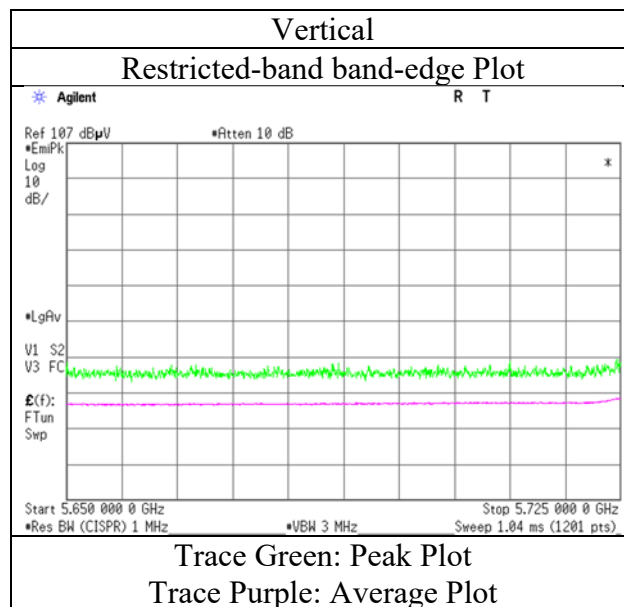
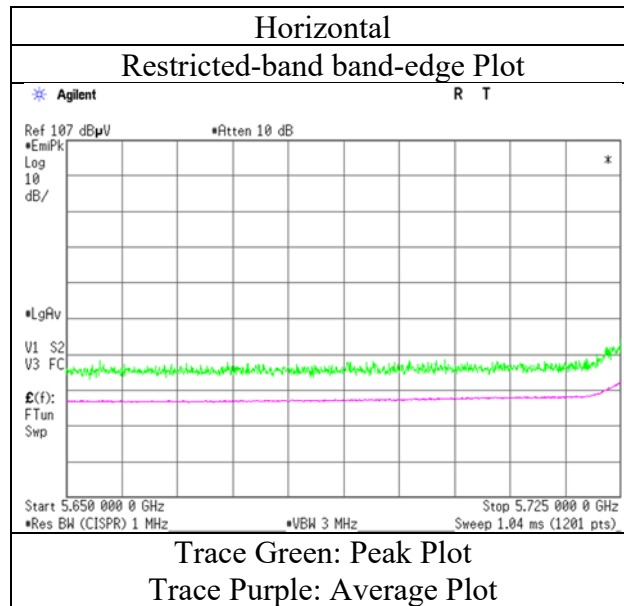
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20 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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1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	25 deg. C / 46 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Hiromasa Sato	Kazuya Noda	Hiromasa Sato
	(1 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11n-20 5785 MHz		

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7713.334	PK	51.42	37.37	8.12	43.27	2.36	56.00	73.9	17.9	309	358	
Hori.	11570.000	PK	44.60	40.07	10.58	39.38	2.36	58.23	73.9	15.6	281	246	
Hori.	7713.334	AV	39.94	37.37	8.12	43.27	2.36	44.52	53.9	9.3	309	358	VBW:470 Hz
Hori.	11570.000	AV	34.11	40.07	10.58	39.38	2.36	47.74	53.9	6.1	281	246	VBW:470 Hz
Vert.	7713.334	PK	50.95	37.37	8.12	43.27	2.36	55.53	73.9	18.3	176	100	
Vert.	11570.000	PK	44.50	40.07	10.58	39.38	2.36	58.13	73.9	15.7	166	283	
Vert.	7713.334	AV	38.99	37.37	8.12	43.27	2.36	43.57	53.9	10.3	176	100	VBW:470 Hz
Vert.	11570.000	AV	34.03	40.07	10.58	39.38	2.36	47.66	53.9	6.2	166	283	VBW:470 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	17355.000	PK	45.77	42.90	13.32	38.60	-9.54	53.85	-41.37	-27.0	14.3	176	35	
Hori.	23140.000	PK	45.14	40.44	15.10	47.39	-9.54	43.75	-51.47	-27.0	24.4	143	25	
Vert.	17355.000	PK	45.82	42.90	13.32	38.60	-9.54	53.90	-41.32	-27.0	14.3	111	357	
Vert.	23140.000	PK	45.40	40.44	15.10	47.39	-9.54	44.01	-51.21	-27.0	24.2	145	32	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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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Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1 1 1 3
Date September 26, 2016 September 27, 2016 September 28, 2019 October 1, 2019
Temperature / Humidity 25 deg. C / 46 % RH 25 deg. C / 46 % RH 24 deg. C / 47 % RH 24 deg. C / 53 % RH
Engineer Hiromasa Sato Hiromasa Sato Kazuya Noda Hiromasa Sato
(1 GHz – 6.4 GHz) (6.4 GHz – 13 GHz) (13 GHz – 18 GHz) (18 GHz – 40 GHz)
Mode Tx 11n-20 5825 MHz

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7766.667	PK	51.89	37.45	8.13	43.22	2.36	56.61	73.9	17.2	193	346	
Hori.	11650.000	PK	44.24	39.84	10.59	39.33	2.36	57.70	73.9	16.2	265	277	
Hori.	7766.667	AV	39.66	37.45	8.13	43.22	2.36	44.38	53.9	9.5	193	346	VBW:470 Hz
Hori.	11650.000	AV	33.71	39.84	10.59	39.33	2.36	47.17	53.9	6.7	265	277	VBW:470 Hz
Vert.	7766.667	PK	50.29	37.45	8.13	43.22	2.36	55.01	73.9	18.8	268	53	
Vert.	11650.000	PK	44.91	39.84	10.59	39.33	2.36	58.37	73.9	15.5	173	308	
Vert.	7766.667	AV	39.30	37.45	8.13	43.22	2.36	44.02	53.9	9.8	268	53	VBW:470 Hz
Vert.	11650.000	AV	33.65	39.84	10.59	39.33	2.36	47.11	53.9	6.7	173	308	VBW:470 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	5850.000	PK	46.35	33.01	17.13	40.05	2.36	58.80	-36.42	27.0	63.4	244	325	
Hori.	5855.000	PK	46.83	33.02	17.13	40.06	2.36	59.28	-35.94	15.6	51.5	244	325	
Hori.	5875.000	PK	46.23	33.06	17.14	40.07	2.36	58.72	-36.50	10.0	46.5	244	325	
Hori.	5925.000	PK	45.44	33.16	17.16	40.11	2.36	58.01	-37.21	-27.0	10.2	244	325	
Hori.	17475.000	PK	44.12	43.72	13.31	38.24	-9.54	53.37	-41.85	-27.0	14.8	147	20	
Hori.	23300.000	PK	45.11	40.46	15.22	47.21	-9.54	44.04	-51.18	-27.0	24.1	301	34	
Vert.	5850.000	PK	44.97	33.01	17.13	40.05	2.36	57.42	-37.80	27.0	64.8	312	320	
Vert.	5855.000	PK	44.71	33.02	17.13	40.06	2.36	57.16	-38.06	15.6	53.6	312	320	
Vert.	5875.000	PK	45.50	33.06	17.14	40.07	2.36	57.99	-37.23	10.0	47.2	312	320	
Vert.	5925.000	PK	45.91	33.16	17.16	40.11	2.36	58.48	-36.74	-27.0	9.7	312	320	
Vert.	17475.000	PK	44.27	43.72	13.31	38.24	-9.54	53.52	-41.70	-27.0	14.7	120	356	
Vert.	23300.000	PK	47.33	40.46	15.22	47.21	-9.54	46.26	-48.96	-27.0	21.9	218	14	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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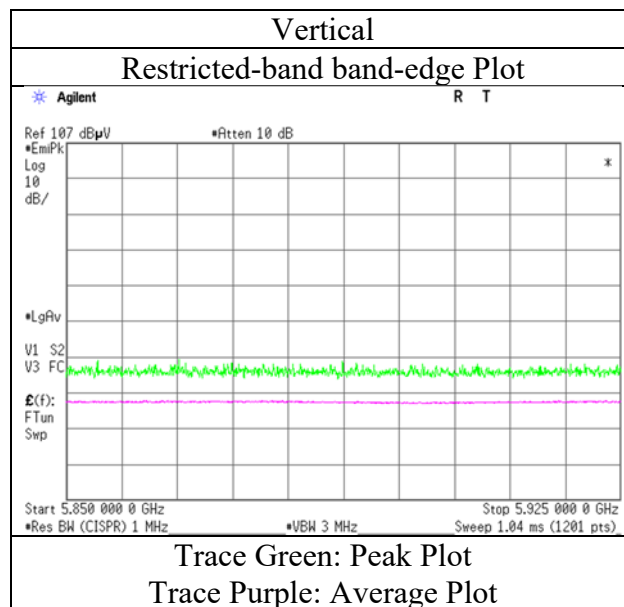
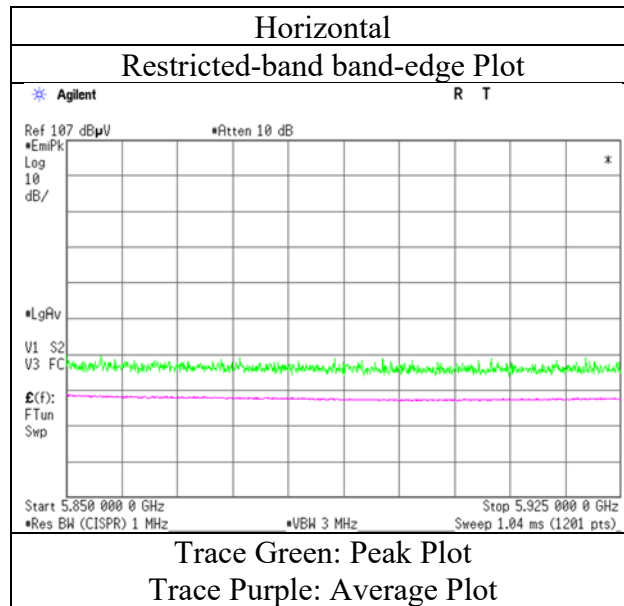
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20 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. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 26, 2016
Temperature / Humidity 25 deg. C / 46 % RH
Engineer Hiromasa Sato
(1 GHz – 6.4 GHz)
Mode Tx 11ac-20 5180 MHz

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5150.000	PK	46.86	32.30	16.89	39.73	2.36	58.68	73.9	15.2	241	327	VBW:510 Hz
Hori.	5150.000	AV	34.77	32.30	16.89	39.73	2.36	46.59	53.9	7.3	241	327	
Vert.	5150.000	PK	45.60	32.30	16.89	39.73	2.36	57.42	73.9	16.4	252	327	VBW:510 Hz
Vert.	5150.000	AV	34.57	32.30	16.89	39.73	2.36	46.39	53.9	7.5	252	327	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.

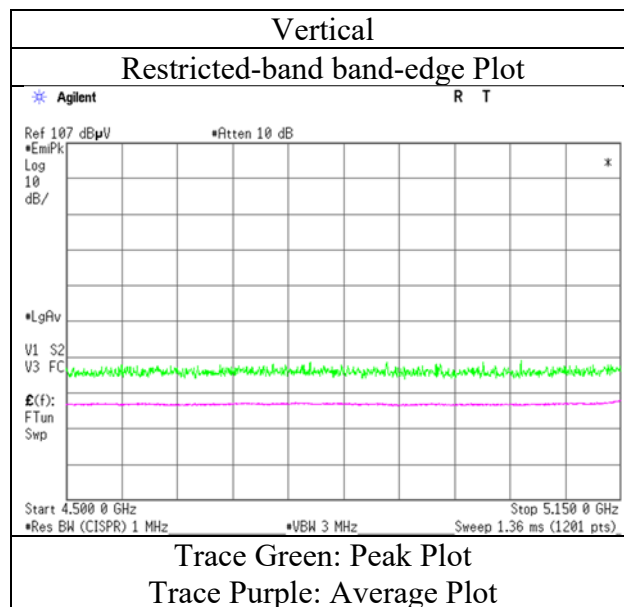
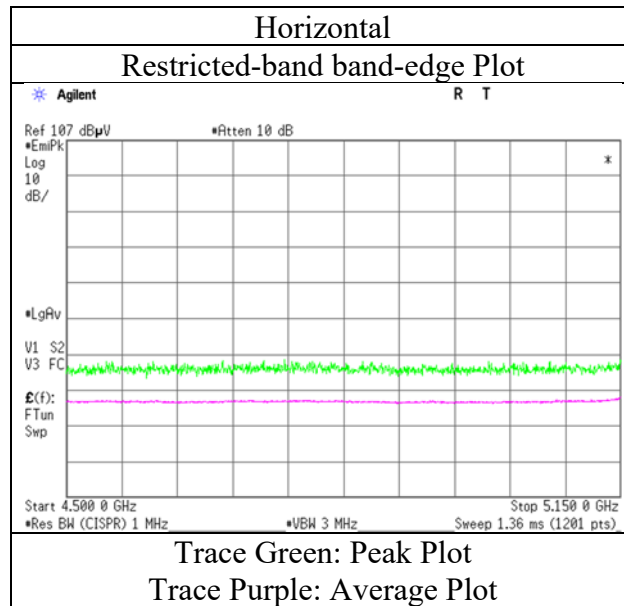
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-20 5180 MHz



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

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Radiated Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 27, 2016
Temperature / Humidity 25 deg. C / 46 % RH
Engineer Hiromasa Sato
(1 GHz – 6.4 GHz)
Mode Tx 11ac-20 5240 MHz

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	44.86	31.99	16.95	39.76	2.36	56.40	73.9	17.5	198	304	VBW:510 Hz
Hori.	5350.000	AV	33.84	31.99	16.95	39.76	2.36	45.38	53.9	8.5	198	304	
Vert.	5350.000	PK	44.16	31.99	16.95	39.76	2.36	55.70	73.9	18.2	248	325	VBW:510 Hz
Vert.	5350.000	AV	33.27	31.99	16.95	39.76	2.36	44.81	53.9	9.0	248	325	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.

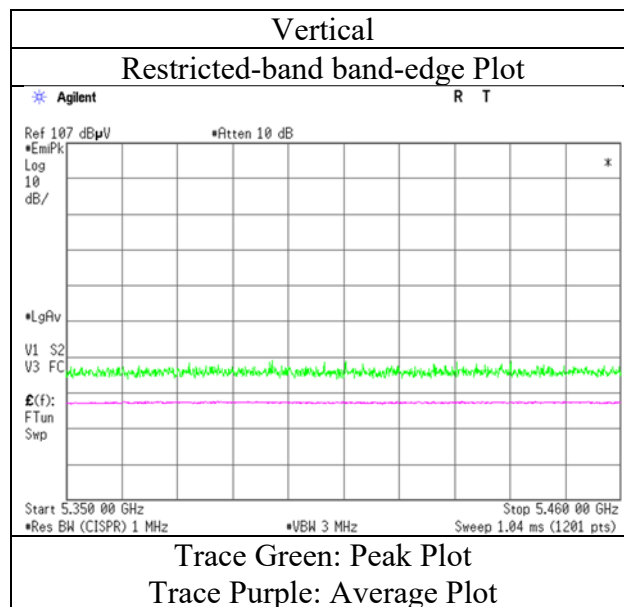
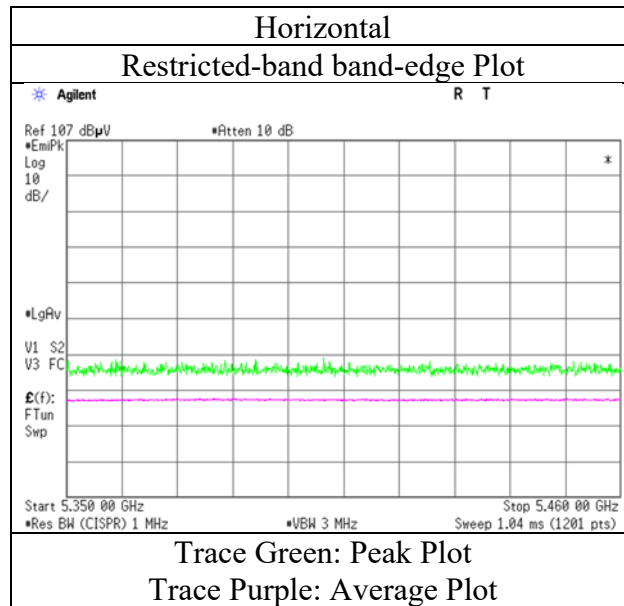
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-20 5240 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. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 26, 2016
Temperature / Humidity 25 deg. C / 46 % RH
Engineer Hiromasa Sato
(1 GHz – 6.4 GHz)
Mode Tx 11ac-20 5745 MHz

(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 (ERP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.18	32.43	17.06	39.90	2.36	57.13	-38.09	-27.0	11.0	252	326	
Hori.	5700.000	PK	45.80	32.57	17.08	39.94	2.36	57.87	-37.35	10.0	47.3	252	326	
Hori.	5720.000	PK	46.75	32.63	17.08	39.95	2.36	58.87	-36.35	15.6	51.9	252	326	
Hori.	5725.000	PK	53.50	32.65	17.09	39.96	2.36	65.64	-29.58	27.0	56.5	252	326	
Vert.	5650.000	PK	44.69	32.43	17.06	39.90	2.36	56.64	-38.58	-27.0	11.5	222	318	
Vert.	5700.000	PK	45.19	32.57	17.08	39.94	2.36	57.26	-37.96	10.0	47.9	222	318	
Vert.	5720.000	PK	44.44	32.63	17.08	39.95	2.36	56.56	-38.66	15.6	54.2	222	318	
Vert.	5725.000	PK	47.42	32.65	17.09	39.96	2.36	59.56	-35.66	27.0	62.6	222	318	

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

Result(ERP[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).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

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Shonan EMC Lab.

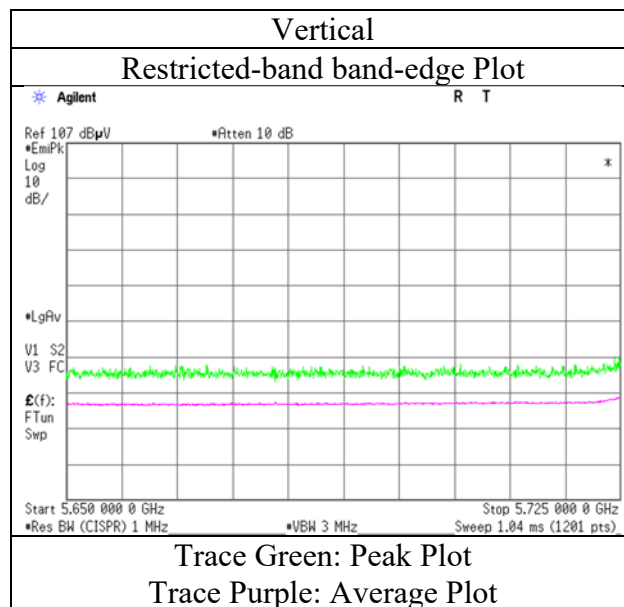
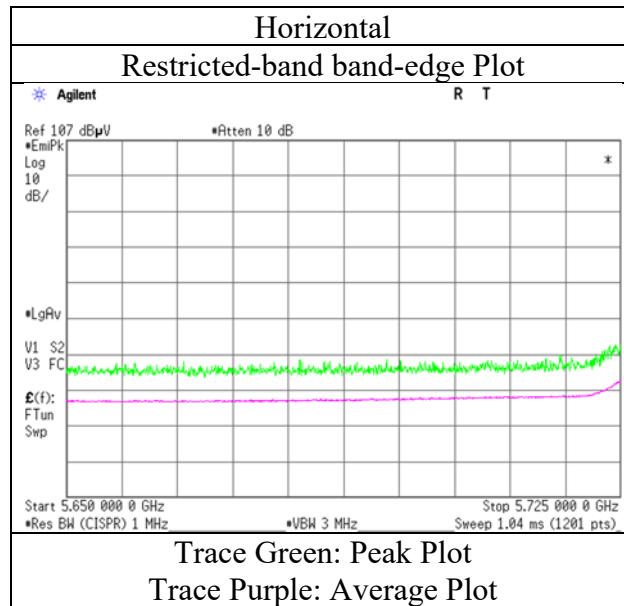
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-20 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.

Radiated Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 26, 2016
Temperature / Humidity 25 deg. C / 46 % RH
Engineer Hiromasa Sato
(1 GHz – 6.4 GHz)
Mode Tx 11ac-20 5825 MHz

(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 (ERP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	47.74	33.01	17.13	40.05	2.36	60.19	-35.03	27.0	62.0	256	329	
Hori.	5855.000	PK	46.02	33.02	17.13	40.06	2.36	58.47	-36.75	15.6	52.3	256	329	
Hori.	5875.000	PK	46.19	33.06	17.14	40.07	2.36	58.68	-36.54	10.0	46.5	256	329	
Hori.	5925.000	PK	45.26	33.16	17.16	40.11	2.36	57.83	-37.39	-27.0	10.3	256	329	
Vert.	5850.000	PK	44.53	33.01	17.13	40.05	2.36	56.98	-38.24	27.0	65.2	235	313	
Vert.	5855.000	PK	44.23	33.02	17.13	40.06	2.36	56.68	-38.54	15.6	54.1	235	313	
Vert.	5875.000	PK	44.33	33.06	17.14	40.07	2.36	56.82	-38.40	10.0	48.4	235	313	
Vert.	5925.000	PK	44.71	33.16	17.16	40.11	2.36	57.28	-37.94	-27.0	10.9	235	313	

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

Result(ERP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

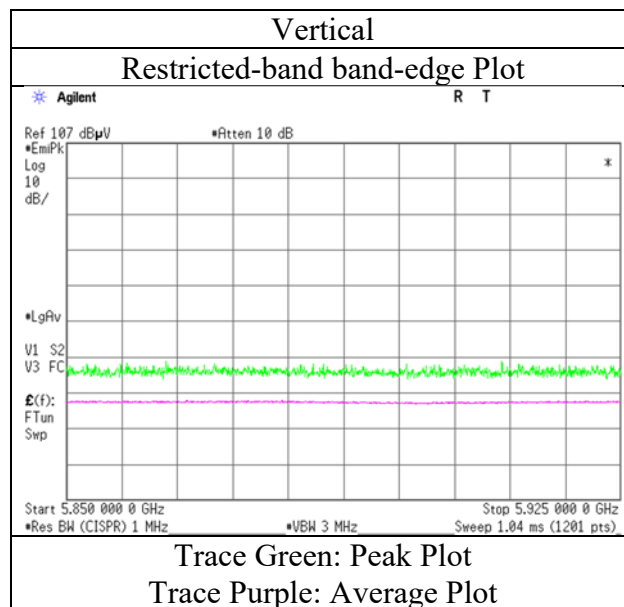
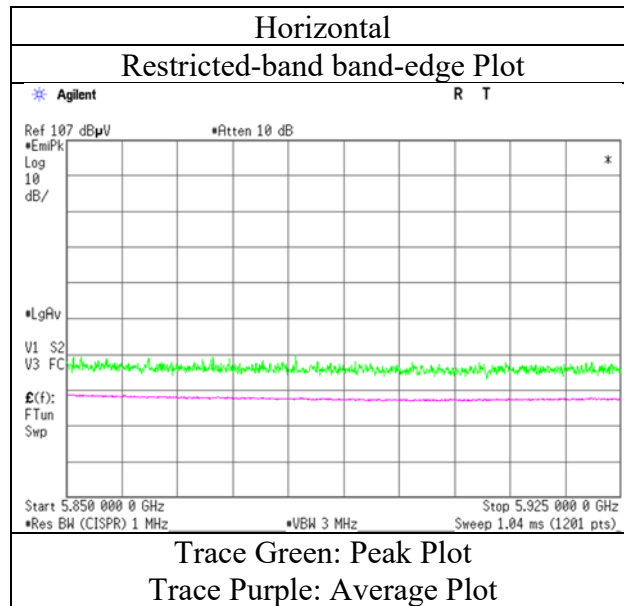
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 26, 2016
Temperature / Humidity	25 deg. C / 46 % RH
Engineer	Hiromasa Sato
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-20 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.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11n-40 5190 MHz		

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5150.000	PK	50.32	32.30	16.89	39.73	2.36	62.14	73.9	11.7	197	307	
Hori.	15570.000	PK	45.81	38.63	12.69	39.22	-9.54	48.37	73.9	25.5	137	26	
Hori.	20760.000	PK	46.82	40.31	14.18	47.31	-9.54	44.46	73.9	29.4	151	138	
Hori.	5150.000	AV	37.75	32.30	16.89	39.73	2.36	49.57	53.9	4.3	197	307	VBW:820 Hz
Hori.	15570.000	AV	35.04	38.63	12.69	39.22	-9.54	37.60	53.9	16.3	137	26	VBW:820 Hz
Hori.	20760.000	AV	41.70	40.31	14.18	47.31	-9.54	39.34	53.9	14.5	151	138	VBW:820 Hz
Vert.	5150.000	PK	50.29	32.30	16.89	39.73	2.36	62.11	73.9	11.7	229	324	
Vert.	15570.000	PK	45.67	38.63	12.69	39.22	-9.54	48.23	73.9	25.6	131	355	
Vert.	20760.000	PK	47.86	40.31	14.18	47.31	-9.54	45.50	73.9	28.4	151	344	
Vert.	5150.000	AV	37.47	32.30	16.89	39.73	2.36	49.29	53.9	4.6	229	324	VBW:820 Hz
Vert.	15570.000	AV	34.95	38.63	12.69	39.22	-9.54	37.51	53.9	16.3	131	355	VBW:820 Hz
Vert.	20760.000	AV	43.66	40.31	14.18	47.31	-9.54	41.30	53.9	12.6	151	344	VBW:820 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6920.000	PK	56.60	36.02	7.71	42.66	2.36	60.03	-35.19	-27.0	8.1	226	296	
Hori.	10380.000	PK	45.78	39.20	9.92	39.97	2.36	57.29	-37.93	-27.0	10.9	161	229	
Vert.	6920.000	PK	53.76	36.02	7.71	42.66	2.36	57.19	-38.03	-27.0	11.0	333	261	
Vert.	10380.000	PK	46.61	39.20	9.92	39.97	2.36	58.12	-37.10	-27.0	10.1	134	302	

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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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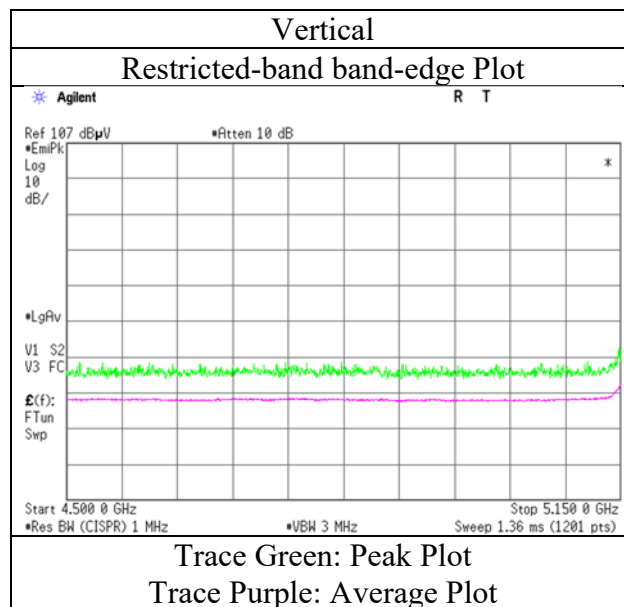
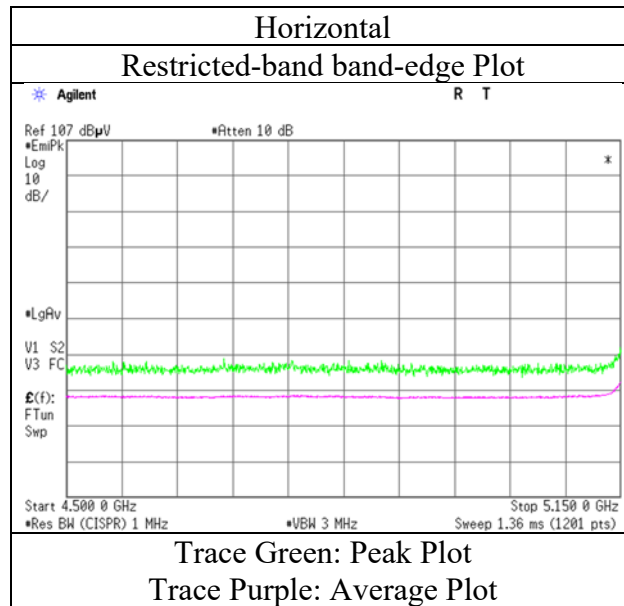
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40 5190 MHz



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

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.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11n-40 5230 MHz		

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	46.09	31.99	16.95	39.76	2.36	57.63	73.9	16.2	248	325	
Hori.	15690.000	PK	45.51	38.32	12.73	39.38	-9.54	47.64	73.9	26.2	133	29	
Hori.	20920.000	PK	46.28	40.29	14.21	47.22	-9.54	44.02	73.9	29.8	158	52	
Hori.	5350.000	AV	34.17	31.99	16.95	39.76	2.36	45.71	53.9	8.1	248	325	VBW:820 Hz
Hori.	15690.000	AV	34.40	38.32	12.73	39.38	-9.54	36.53	53.9	17.3	133	29	VBW:820 Hz
Hori.	20920.000	AV	41.53	40.29	14.21	47.22	-9.54	39.27	53.9	14.6	158	52	VBW:820 Hz
Vert.	5350.000	PK	45.78	31.99	16.95	39.76	2.36	57.32	73.9	16.5	236	323	
Vert.	15690.000	PK	46.02	38.32	12.73	39.38	-9.54	48.15	73.9	25.7	109	357	
Vert.	20920.000	PK	46.65	40.29	14.21	47.22	-9.54	44.39	73.9	29.5	196	15	
Vert.	5350.000	AV	34.10	31.99	16.95	39.76	2.36	45.64	53.9	8.2	236	323	VBW:820 Hz
Vert.	15690.000	AV	34.56	38.32	12.73	39.38	-9.54	36.69	53.9	17.2	109	357	VBW:820 Hz
Vert.	20920.000	AV	42.31	40.29	14.21	47.22	-9.54	40.05	53.9	13.8	196	15	VBW:820 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6973.333	PK	55.85	36.37	7.72	42.57	2.36	59.73	-35.49	-27.0	8.4	229	296	
Hori.	10460.000	PK	46.62	39.44	9.95	40.14	2.36	58.23	-36.99	-27.0	9.9	107	229	
Vert.	6973.333	PK	53.46	36.37	7.72	42.57	2.36	57.34	-37.88	-27.0	10.8	332	262	
Vert.	10460.000	PK	46.31	39.44	9.95	40.14	2.36	57.92	-37.30	-27.0	10.3	111	306	

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

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

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.

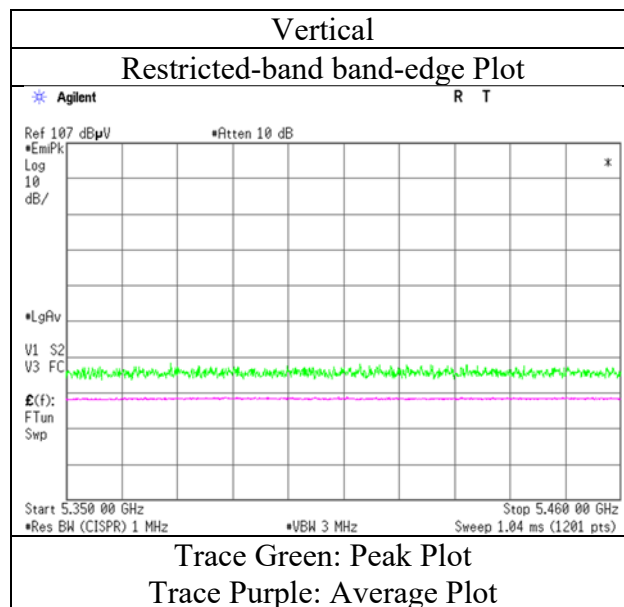
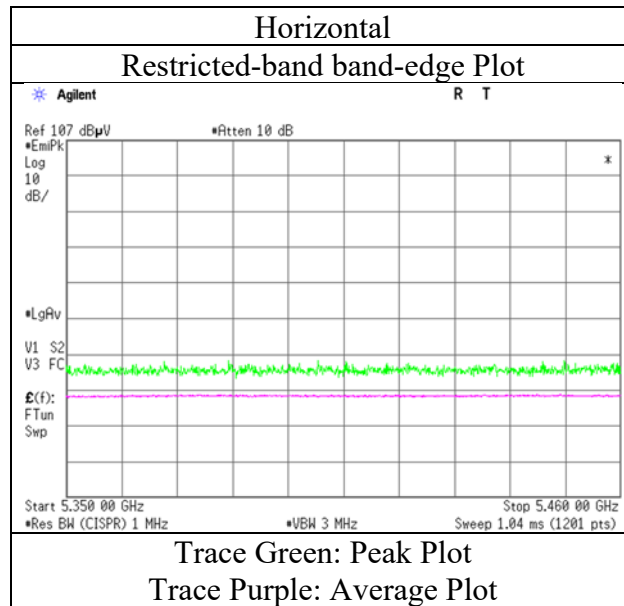
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40 5230 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.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11n-40 5755 MHz		

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7673.333	PK	50.73	37.35	8.12	43.32	2.36	55.24	73.9	18.6	201	2	
Hori.	11510.000	PK	45.33	40.16	10.56	39.42	2.36	58.99	73.9	14.9	159	224	
Hori.	23020.000	PK	45.77	40.46	15.02	47.54	-9.54	44.17	73.9	29.7	146	25	
Hori.	7673.333	AV	39.96	37.35	8.12	43.32	2.36	44.47	53.9	9.4	201	2	VBW:820 Hz
Hori.	11510.000	AV	33.74	40.16	10.56	39.42	2.36	47.40	53.9	6.5	159	224	VBW:820 Hz
Hori.	23020.000	AV	36.05	40.46	15.02	47.54	-9.54	34.45	53.9	19.4	146	25	VBW:820 Hz
Vert.	7673.333	PK	50.58	37.35	8.12	43.32	2.36	55.09	73.9	18.8	248	276	
Vert.	11510.000	PK	45.28	40.16	10.56	39.42	2.36	58.94	73.9	14.9	127	305	
Vert.	23020.000	PK	45.14	40.46	15.02	47.54	-9.54	43.54	73.9	30.3	178	348	
Vert.	7673.333	AV	38.94	37.35	8.12	43.32	2.36	43.45	53.9	10.4	248	276	VBW:820 Hz
Vert.	11510.000	AV	33.71	40.16	10.56	39.42	2.36	47.37	53.9	6.5	127	305	VBW:820 Hz
Vert.	23020.000	AV	37.64	40.46	15.02	47.54	-9.54	36.04	53.9	17.8	178	348	VBW:820 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).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.19	32.43	17.06	39.90	2.36	57.14	-38.08	-27.0	11.0	212	329	
Hori.	5700.000	PK	47.01	32.57	17.08	39.94	2.36	59.08	-36.14	10.0	46.1	212	329	
Hori.	5720.000	PK	52.74	32.63	17.08	39.95	2.36	64.86	-30.36	15.6	45.9	212	329	
Hori.	5725.000	PK	54.34	32.65	17.09	39.96	2.36	66.48	-28.74	27.0	55.7	212	329	
Hori.	17265.000	PK	45.61	42.12	13.34	38.88	-9.54	52.65	-42.57	-27.0	15.5	142	25	
Vert.	5650.000	PK	45.56	32.43	17.06	39.90	2.36	57.51	-37.71	-27.0	10.7	230	318	
Vert.	5700.000	PK	45.68	32.57	17.08	39.94	2.36	57.75	-37.47	10.0	47.4	230	318	
Vert.	5720.000	PK	46.15	32.63	17.08	39.95	2.36	58.27	-36.95	15.6	52.5	230	318	
Vert.	5725.000	PK	47.21	32.65	17.09	39.96	2.36	59.35	-35.87	27.0	62.8	230	318	
Vert.	17265.000	PK	45.51	42.12	13.34	38.88	-9.54	52.55	-42.67	-27.0	15.6	109	355	

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).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

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Shonan EMC Lab.

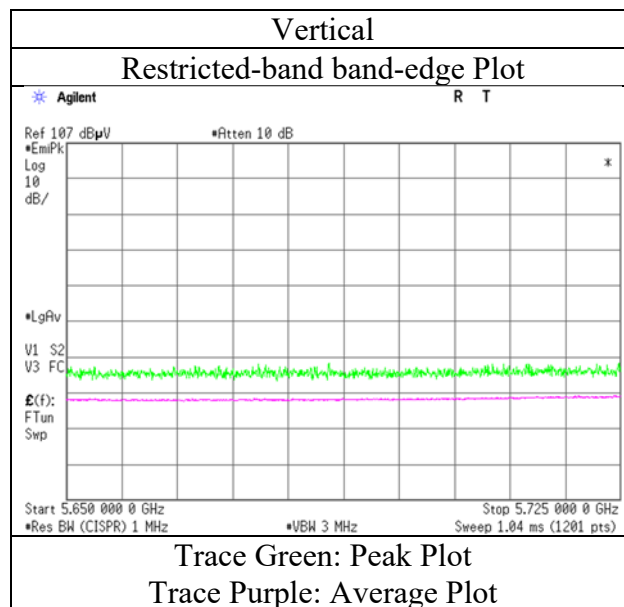
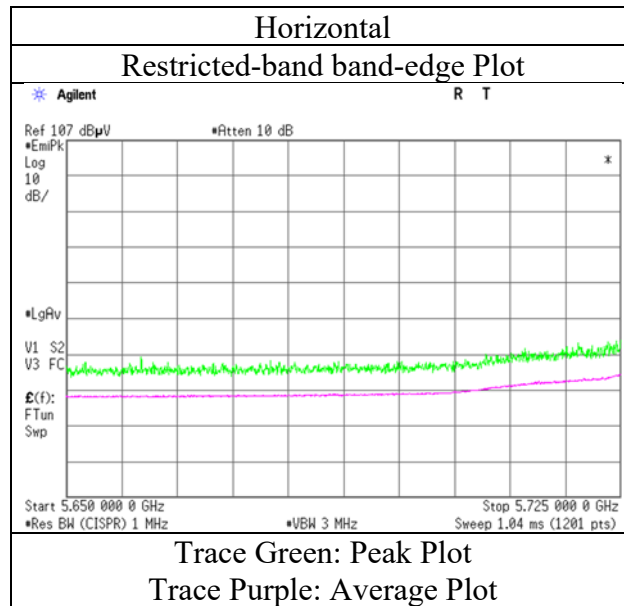
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40 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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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. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1 1 3
Date September 27, 2016 September 28, 2019 October 1, 2019
Temperature / Humidity 22 deg. C / 50 % RH 24 deg. C / 47 % RH 24 deg. C / 53 % RH
Engineer Kazuya Noda Kazuya Noda Hiromasa Sato
(1 GHz – 6.4 GHz) (6.4 GHz – 18 GHz) (18 GHz – 40 GHz)
Mode Tx 11n-40 5795 MHz

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	7726.667	PK	50.78	37.39	8.12	43.26	2.36	55.39	73.9	18.5	189	34	
Hori.	11590.000	PK	45.33	40.03	10.58	39.37	2.36	58.93	73.9	14.9	207	198	
Hori.	7726.667	AV	39.72	37.39	8.12	43.26	2.36	44.33	53.9	9.5	189	34	VBW:820 Hz
Hori.	11590.000	AV	33.61	40.03	10.58	39.37	2.36	47.21	53.9	6.6	207	198	VBW:820 Hz
Vert.	7726.667	PK	50.43	37.39	8.12	43.26	2.36	55.04	73.9	18.8	270	301	
Vert.	11590.000	PK	45.11	40.03	10.58	39.37	2.36	58.71	73.9	15.1	168	311	
Vert.	7726.667	AV	39.10	37.39	8.12	43.26	2.36	43.71	53.9	10.1	270	301	VBW:820 Hz
Vert.	11590.000	AV	33.56	40.03	10.58	39.37	2.36	47.16	53.9	6.7	168	311	VBW:820 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	5850.000	PK	46.14	33.01	17.13	40.05	2.36	58.59	-36.63	-27.0	9.6	211	328	
Hori.	5855.000	PK	45.50	33.02	17.13	40.06	2.36	57.95	-37.27	10.0	47.2	211	328	
Hori.	5875.000	PK	46.47	33.06	17.14	40.07	2.36	58.96	-36.26	15.6	51.8	211	328	
Hori.	5925.000	PK	45.73	33.16	17.16	40.11	2.36	58.30	-36.92	27.0	63.9	211	328	
Hori.	17385.000	PK	44.82	43.16	13.33	38.51	-9.54	53.26	-41.96	-27.0	14.9	152	16	
Hori.	23180.000	PK	45.66	40.45	15.14	47.35	-9.54	44.36	-50.86	-27.0	23.8	151	29	
Vert.	5850.000	PK	46.92	33.01	17.13	40.05	2.36	59.37	-35.85	-27.0	8.8	214	312	
Vert.	5855.000	PK	46.50	33.02	17.13	40.06	2.36	58.95	-36.27	10.0	46.2	214	312	
Vert.	5875.000	PK	46.38	33.06	17.14	40.07	2.36	58.87	-36.35	15.6	51.9	214	312	
Vert.	5925.000	PK	46.44	33.16	17.16	40.11	2.36	59.01	-36.21	27.0	63.2	214	312	
Vert.	17385.000	PK	44.93	43.16	13.33	38.51	-9.54	53.37	-41.85	-27.0	14.8	114	355	
Vert.	23180.000	PK	45.29	40.45	15.14	47.35	-9.54	43.99	-51.23	-27.0	24.2	187	14	

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

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

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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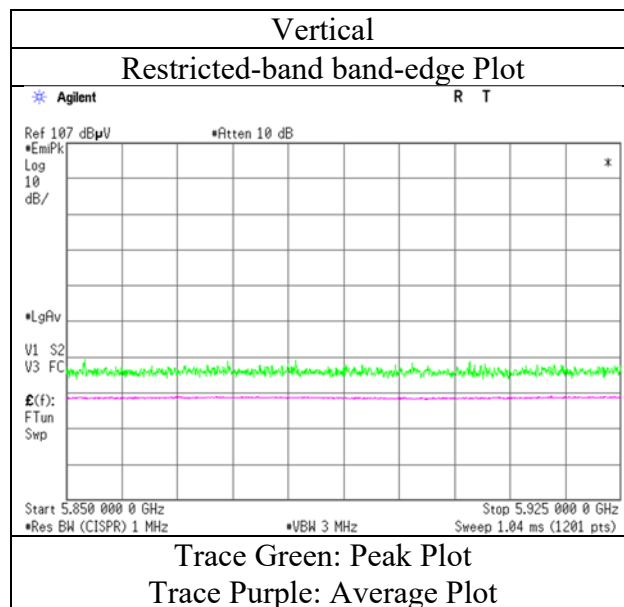
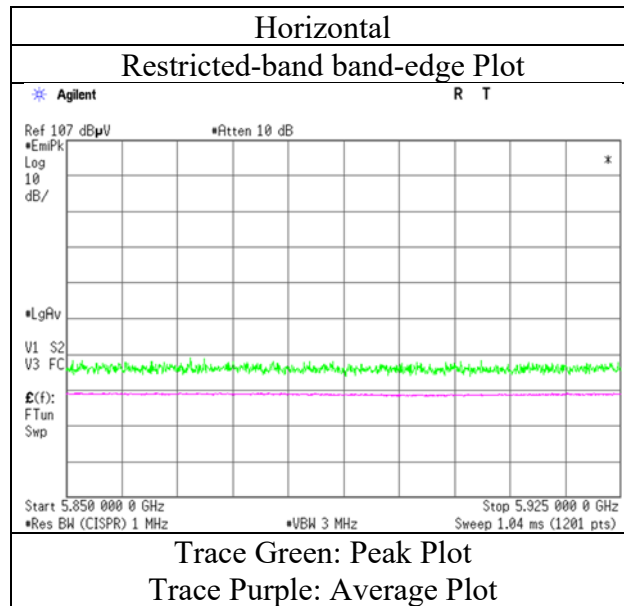
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40 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.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-40 5190 MHz

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5150.000	PK	50.29	32.30	16.89	39.73	2.36	62.11	73.9	11.7	193	306	
Hori.	5150.000	AV	37.61	32.30	16.89	39.73	2.36	49.43	53.9	4.4	193	306	VBW:820 Hz
Vert.	5150.000	PK	50.61	32.30	16.89	39.73	2.36	62.43	73.9	11.4	211	323	
Vert.	5150.000	AV	37.25	32.30	16.89	39.73	2.36	49.07	53.9	4.8	211	323	VBW:820 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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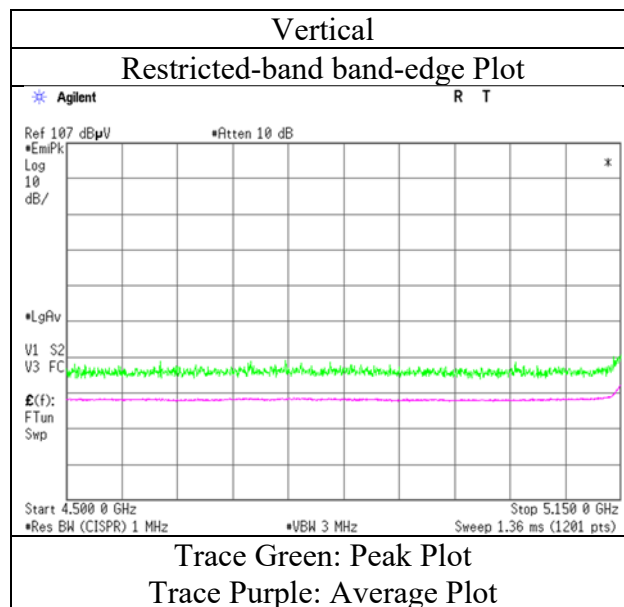
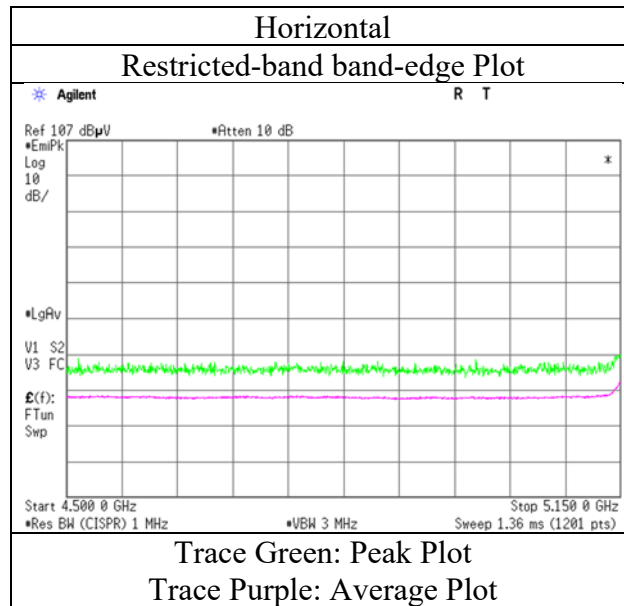
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 27, 2016
Temperature / Humidity 22 deg. C / 50 % RH
Engineer Kazuya Noda
(1 GHz – 6.4 GHz)
Mode Tx 11ac-40 5190 MHz



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

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.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-40 5230 MHz

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5350.000	PK	45.91	31.99	16.95	39.76	2.36	57.45	73.9	16.4	193	306	
Hori.	5350.000	AV	34.11	31.99	16.95	39.76	2.36	45.65	53.9	8.2	193	306	VBW:820 Hz
Vert.	5350.000	PK	45.49	31.99	16.95	39.76	2.36	57.03	73.9	16.8	211	323	
Vert.	5350.000	AV	34.16	31.99	16.95	39.76	2.36	45.70	53.9	8.2	211	323	VBW:820 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.

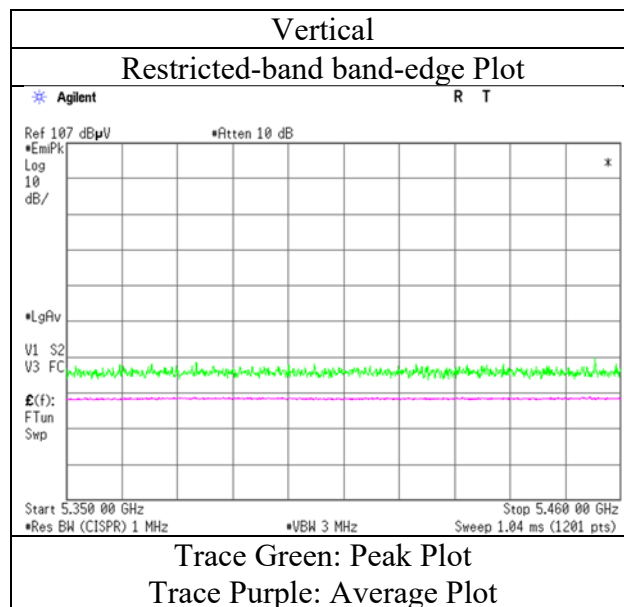
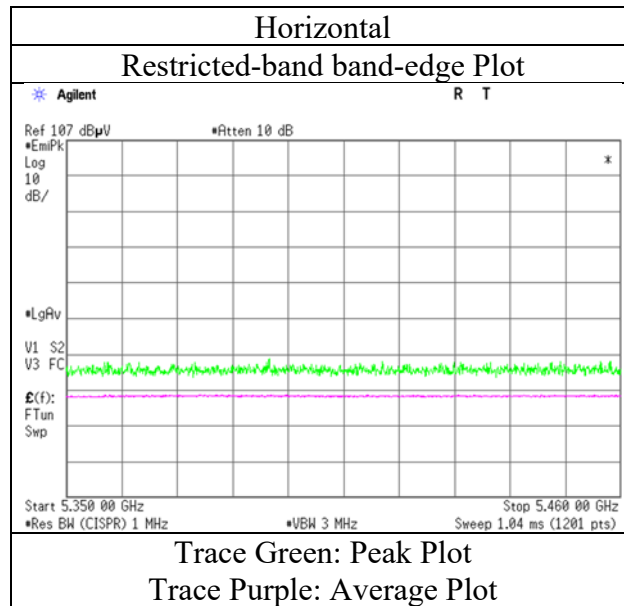
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-40 5230 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. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 27, 2016
Temperature / Humidity 22 deg. C / 50 % RH
Engineer Kazuya Noda
(1 GHz – 6.4 GHz)
Mode Tx 11ac-40 5755 MHz

(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 (ERP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.59	32.43	17.06	39.90	2.36	57.54	-37.68	-27.0	10.6	217	329	
Hori.	5700.000	PK	46.49	32.57	17.08	39.94	2.36	58.56	-36.66	10.0	46.6	217	329	
Hori.	5720.000	PK	53.89	32.63	17.08	39.95	2.36	66.01	-29.21	15.6	44.8	217	329	
Hori.	5725.000	PK	54.86	32.65	17.09	39.96	2.36	67.00	-28.22	27.0	55.2	217	329	
Vert.	5650.000	PK	45.37	32.43	17.06	39.90	2.36	57.32	-37.90	-27.0	10.9	211	316	
Vert.	5700.000	PK	46.01	32.57	17.08	39.94	2.36	58.08	-37.14	10.0	47.1	211	316	
Vert.	5720.000	PK	47.86	32.63	17.08	39.95	2.36	59.98	-35.24	15.6	50.8	211	316	
Vert.	5725.000	PK	48.34	32.65	17.09	39.96	2.36	60.48	-34.74	27.0	61.7	211	316	

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

Result(ERP[dBm])=10*LOG (({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)

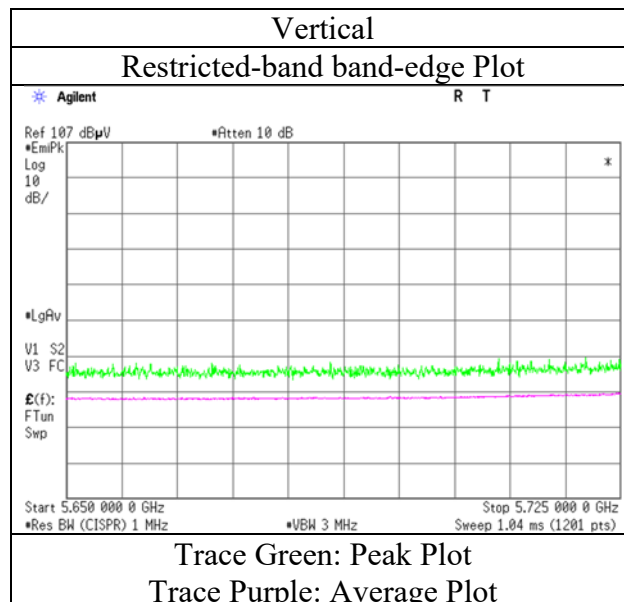
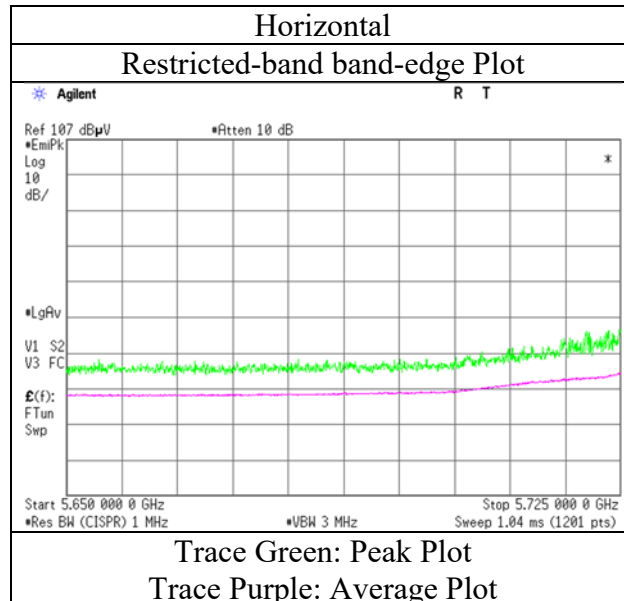
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-40 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.

Radiated Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber 1
Date September 27, 2016
Temperature / Humidity 22 deg. C / 50 % RH
Engineer Kazuya Noda
(1 GHz – 6.4 GHz)
Mode Tx 11ac-40 5795 MHz

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	47.61	33.01	17.13	40.05	2.36	60.06	-35.16	27.0	62.1	236	328	
Hori.	5855.000	PK	46.47	33.02	17.13	40.06	2.36	58.92	-36.30	15.6	51.9	236	328	
Hori.	5875.000	PK	45.90	33.06	17.14	40.07	2.36	58.39	-36.83	10.0	46.8	236	328	
Hori.	5925.000	PK	45.96	33.16	17.16	40.11	2.36	58.53	-36.69	-27.0	9.6	236	328	
Vert.	5850.000	PK	46.02	33.01	17.13	40.05	2.36	58.47	-36.75	27.0	63.7	212	315	
Vert.	5855.000	PK	45.75	33.02	17.13	40.06	2.36	58.20	-37.02	15.6	52.6	212	315	
Vert.	5875.000	PK	45.76	33.06	17.14	40.07	2.36	58.25	-36.97	10.0	46.9	212	315	
Vert.	5925.000	PK	45.89	33.16	17.16	40.11	2.36	58.46	-36.76	-27.0	9.7	212	315	

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).

Distance factor : 1 GHz - 13 GHz : 20log (3.94 m / 3.0 m) = 2.36 dB

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

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Shonan EMC Lab.

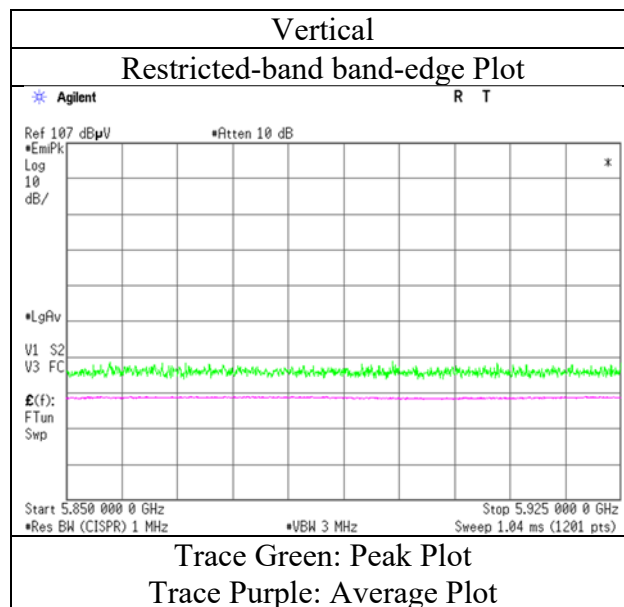
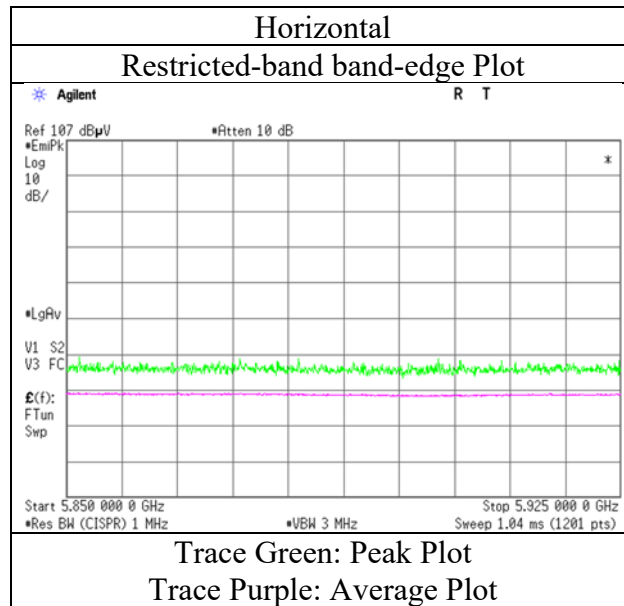
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-40 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.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11ac-80 5210 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.	5150.000	PK	52.57	32.26	16.34	43.04	2.36	60.49	73.9	13.4	175	304	
Hori.	5350.000	PK	49.23	31.98	16.41	43.21	2.36	56.77	73.9	17.1	175	304	
Hori.	15630.000	PK	45.44	38.51	12.71	39.30	-9.54	47.82	73.9	26.0	144	31	
Hori.	20840.000	PK	46.44	40.31	14.19	47.27	-9.54	44.13	73.9	29.7	157	47	
Hori.	5150.000	AV	41.71	32.26	16.34	43.04	2.36	49.63	53.9	4.2	175	304	VBW:2.7 kHz
Hori.	5350.000	AV	38.53	31.98	16.41	43.21	2.36	46.07	53.9	7.8	175	304	VBW:2.7 kHz
Hori.	15630.000	AV	35.21	38.51	12.71	39.30	-9.54	37.59	53.9	16.3	144	31	VBW:2.7 kHz
Hori.	20840.000	AV	41.90	40.31	14.19	47.27	-9.54	39.59	53.9	14.3	157	47	VBW:2.7 kHz
Vert.	5150.000	PK	53.50	32.26	16.34	43.04	2.36	61.42	73.9	12.4	254	320	
Vert.	5350.000	PK	49.93	31.98	16.41	43.21	2.36	57.47	73.9	16.4	254	320	
Vert.	15630.000	PK	45.51	38.51	12.71	39.30	-9.54	47.89	73.9	26.0	118	359	
Vert.	20840.000	PK	47.11	40.31	14.19	47.27	-9.54	44.80	73.9	29.1	151	342	
Vert.	5150.000	AV	42.14	32.26	16.34	43.04	2.36	50.06	53.9	3.8	254	320	VBW:2.7 kHz
Vert.	5350.000	AV	38.97	31.98	16.41	43.21	2.36	46.51	53.9	7.3	254	320	VBW:2.7 kHz
Vert.	15630.000	AV	35.24	38.51	12.71	39.30	-9.54	37.62	53.9	16.2	118	359	VBW:2.7 kHz
Vert.	20840.000	AV	42.64	40.31	14.19	47.27	-9.54	40.33	53.9	13.5	151	342	VBW:2.7 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	6946.667	PK	56.78	36.19	7.71	42.62	2.36	60.42	-34.80	-27.0	7.8	218	292	
Hori.	10420.000	PK	45.79	39.34	9.94	40.05	2.36	57.38	-37.84	-27.0	10.8	143	229	
Vert.	6946.667	PK	54.47	36.19	7.71	42.62	2.36	58.11	-37.11	-27.0	10.1	270	301	
Vert.	10420.000	PK	45.96	39.34	9.94	40.05	2.36	57.55	-37.67	-27.0	10.6	104	303	

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

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

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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

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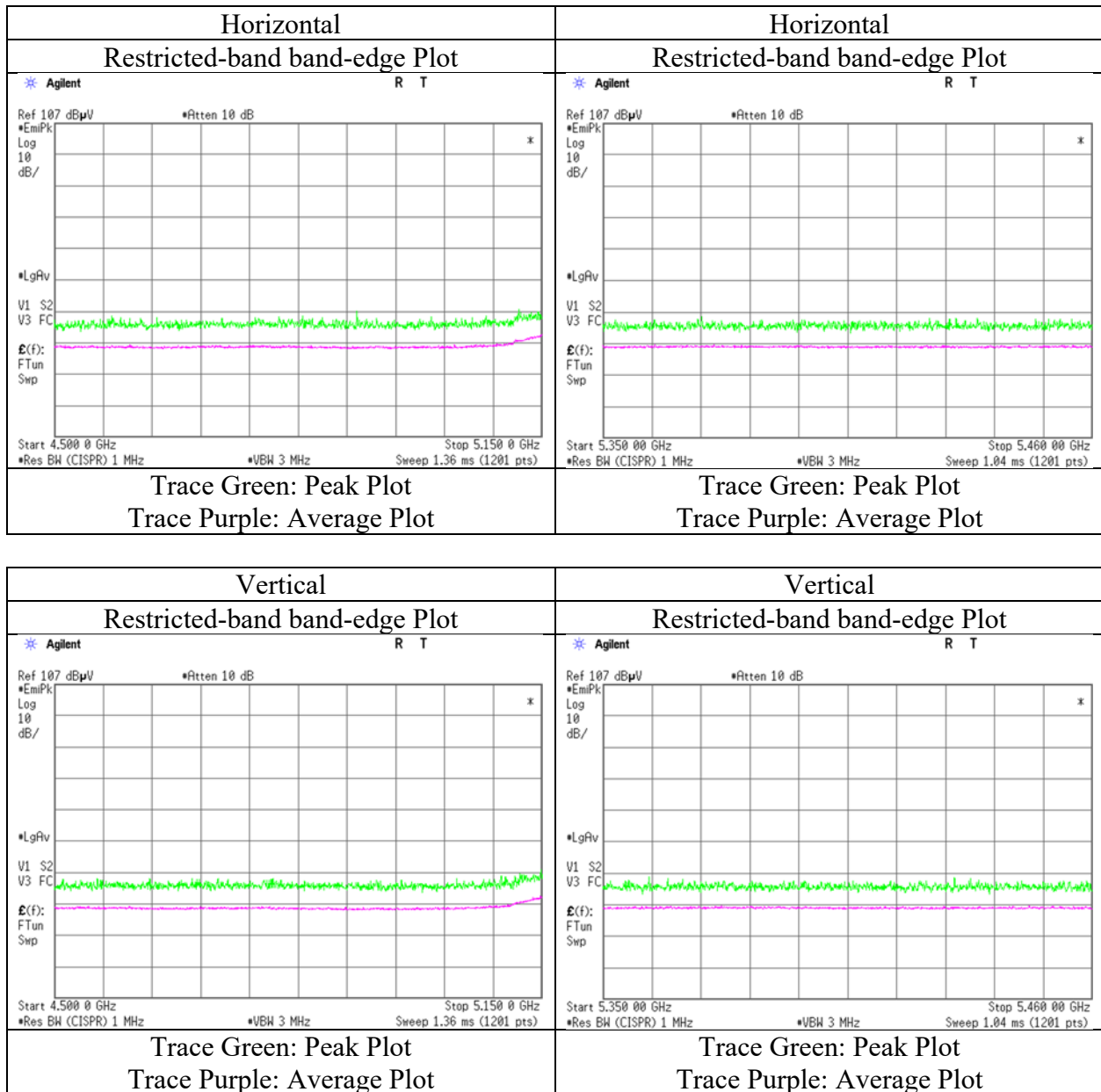
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission

Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-80 5210 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.	12952598S-C-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	3
Date	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Kazuya Noda	Kazuya Noda	Hiromasa Sato
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 40 GHz)
Mode	Tx 11ac-80 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.	7700.000	PK	51.29	37.35	8.11	43.29	2.36	55.82	73.9	18.0	218	292	
Hori.	11550.000	PK	44.17	40.11	10.56	39.40	2.36	57.80	73.9	16.1	154	254	
Hori.	17325.000	PK	44.98	42.63	13.32	38.70	-9.54	52.69	73.9	21.2	165	15	
Hori.	23100.000	PK	44.46	40.46	15.08	47.44	-9.54	43.02	73.9	30.8	149	29	
Hori.	7700.000	AV	41.76	37.35	8.11	43.29	2.36	46.29	53.9	7.6	218	292	VBW:2.7 kHz
Hori.	11550.000	AV	34.35	40.11	10.56	39.40	2.36	47.98	53.9	5.9	154	254	VBW:2.7 kHz
Hori.	17325.000	AV	34.90	42.63	13.32	38.70	-9.54	42.61	53.9	11.2	165	15	VBW:2.7 kHz
Hori.	23100.000	AV	35.46	40.46	15.08	47.44	-9.54	34.02	53.9	19.8	149	29	VBW:2.7 kHz
Vert.	7700.000	PK	50.97	37.35	8.11	43.29	2.36	55.50	73.9	18.4	210	359	
Vert.	11550.000	PK	44.49	40.11	10.56	39.40	2.36	58.12	73.9	15.7	100	0	
Vert.	17325.000	PK	45.02	42.63	13.32	38.70	-9.54	52.73	73.9	21.1	123	359	
Vert.	23100.000	PK	45.62	40.46	15.08	47.44	-9.54	44.18	73.9	29.7	148	348	
Vert.	7700.000	AV	39.98	37.35	8.11	43.29	2.36	44.51	53.9	9.3	210	359	VBW:2.7 kHz
Vert.	11550.000	AV	33.46	40.11	10.56	39.40	2.36	47.09	53.9	6.8	100	0	VBW:2.7 kHz
Vert.	17325.000	AV	34.93	42.63	13.32	38.70	-9.54	42.64	53.9	11.2	123	359	VBW:2.7 kHz
Vert.	23100.000	AV	37.64	40.46	15.08	47.44	-9.54	36.20	53.9	17.7	148	348	VBW:2.7 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).

Distance factor : 1 GHz - 13 GHz : $20\log(3.94\text{ m} / 3.0\text{ m}) = 2.36\text{ dB}$

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.	5650.000	PK	46.08	32.43	17.06	39.90	2.36	58.03	-37.19	-27.0	10.1	222	328	
Hori.	5700.000	PK	48.95	32.57	17.08	39.94	2.36	61.02	-34.20	10.0	44.2	222	328	
Hori.	5720.000	PK	52.01	32.63	17.08	39.95	2.36	64.13	-31.09	15.6	46.6	222	328	
Hori.	5725.000	PK	54.94	32.65	17.09	39.96	2.36	67.08	-28.14	27.0	55.1	222	328	
Hori.	5850.000	PK	47.01	33.01	17.13	40.05	2.36	59.46	-35.76	27.0	62.7	222	328	
Hori.	5855.000	PK	46.91	33.02	17.13	40.06	2.36	59.36	-35.86	15.6	51.4	222	328	
Hori.	5875.000	PK	45.52	33.06	17.14	40.07	2.36	58.01	-37.21	10.0	47.2	222	328	
Hori.	5925.000	PK	45.89	33.16	17.16	40.11	2.36	58.46	-36.76	-27.0	9.7	222	328	
Vert.	5650.000	PK	45.10	32.43	17.06	39.90	2.36	57.05	-38.17	-27.0	11.1	211	317	
Vert.	5700.000	PK	44.92	32.57	17.08	39.94	2.36	56.99	-38.23	10.0	48.2	211	317	
Vert.	5720.000	PK	45.58	32.63	17.08	39.95	2.36	57.70	-37.52	15.6	53.1	211	317	
Vert.	5725.000	PK	45.91	32.65	17.09	39.96	2.36	58.05	-37.17	27.0	64.1	211	317	
Vert.	5850.000	PK	45.42	33.01	17.13	40.05	2.36	57.87	-37.35	27.0	64.3	211	317	
Vert.	5855.000	PK	45.17	33.02	17.13	40.06	2.36	57.62	-37.60	15.6	53.2	211	317	
Vert.	5875.000	PK	45.28	33.06	17.14	40.07	2.36	57.77	-37.45	10.0	47.4	211	317	
Vert.	5925.000	PK	45.41	33.16	17.16	40.11	2.36	57.98	-37.24	-27.0	10.2	211	317	

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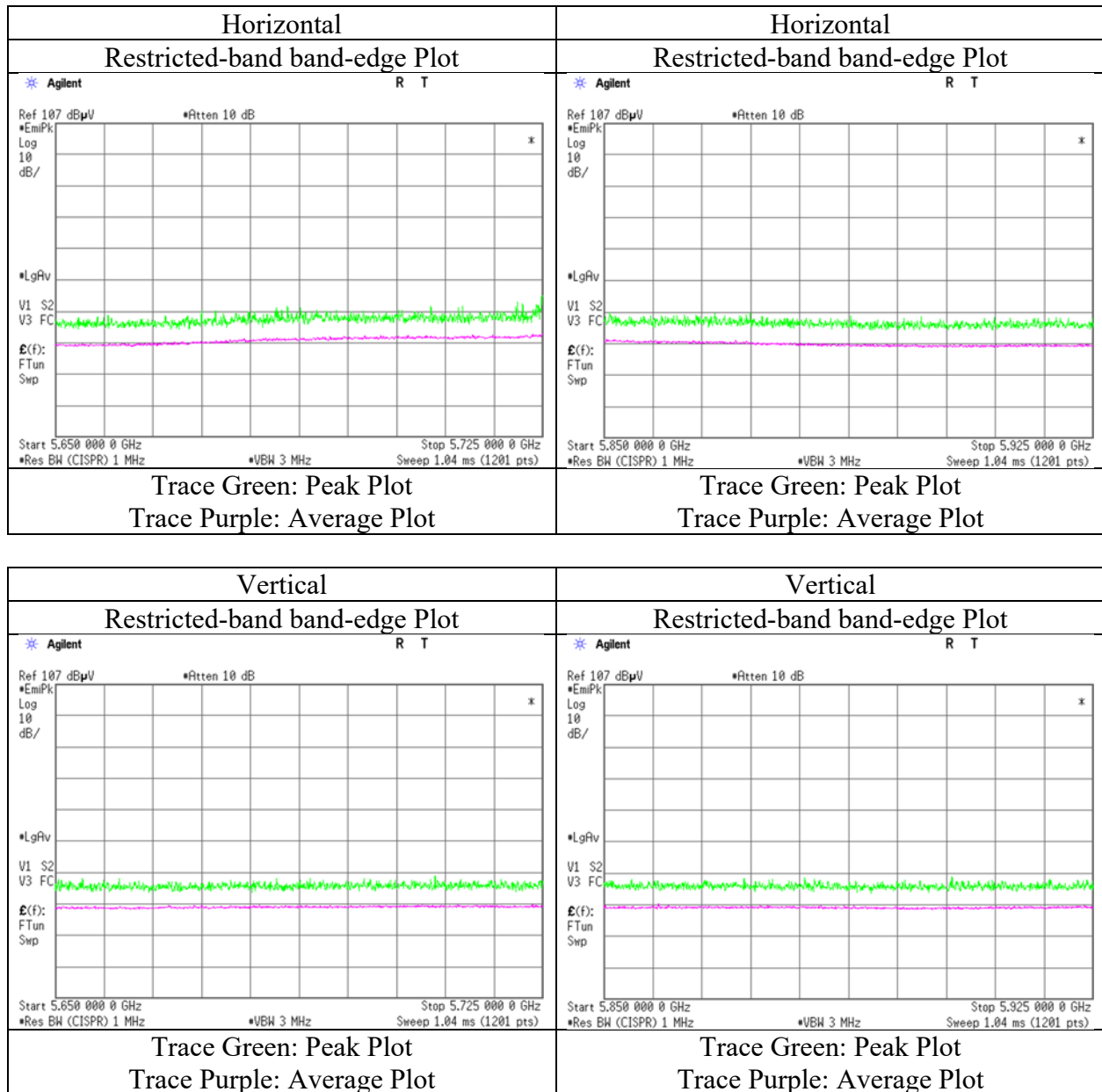
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Radiated Spurious Emission

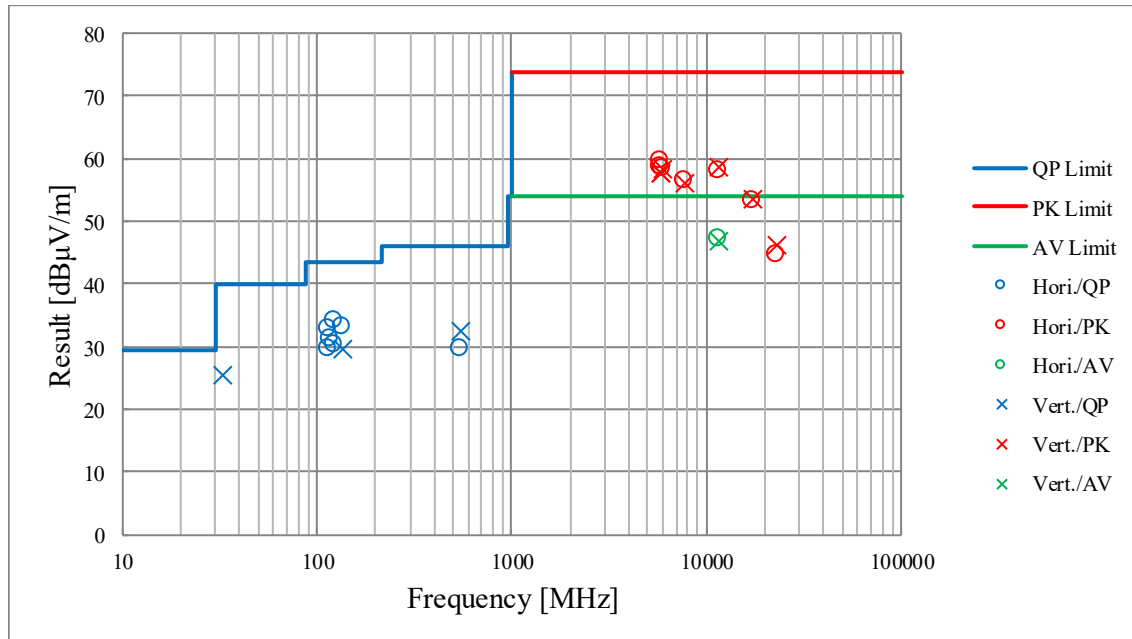
Report No.	12952598S-C-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	September 27, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Kazuya Noda
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-80 5775 MHz



* 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.

Radiated Spurious Emission (Plot data, Worst case)

Report No.	12952598S-C-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	2	1	1	1	3
Date	October 3, 2019	September 26, 2016	September 27, 2016	September 28, 2019	October 1, 2019
Temperature / Humidity	21 deg. C / 61 % RH	25 deg. C / 46 % RH	22 deg. C / 50 % RH	24 deg. C / 47 % RH	24 deg. C / 53 % RH
Engineer	Kazuya Noda (30 MHz - 1000 MHz)	Hiromasa Sato (1 GHz - 6.4 GHz)	Kazuya Noda (6.4 GHz - 13 GHz)	Kazuya Noda (13 GHz - 18 GHz)	Hiromasa Sato (18 GHz - 40 GHz)
Mode	Tx 11a 5825 MHz				



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

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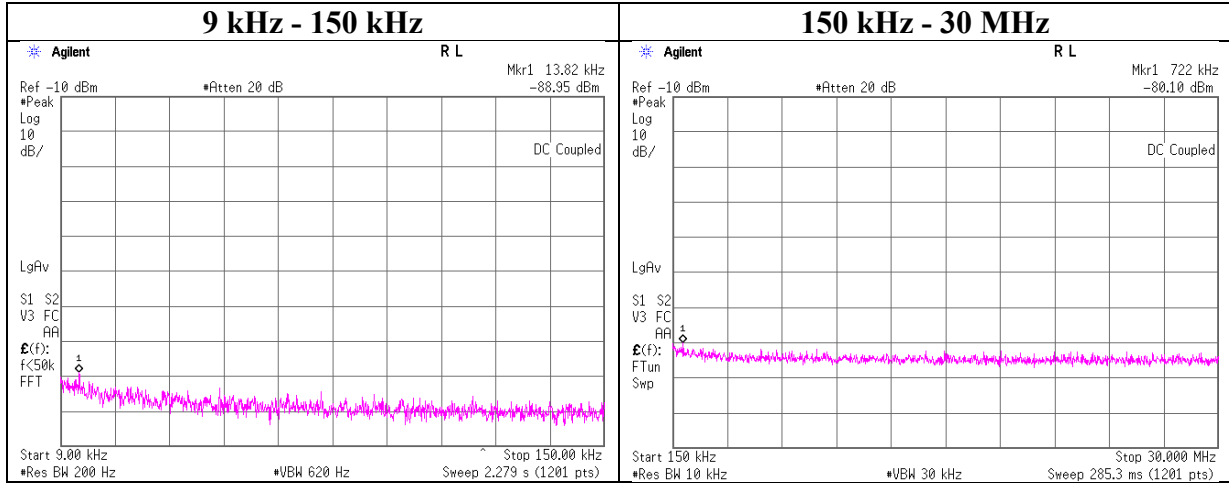
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Conducted Spurious Emission

Report No. 12952598S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2019
Temperature / Humidity 26 deg. C / 45 % RH
Engineer Toshinori Yamada
Mode Tx 11a 5825 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
13.82	-89.0	2.78	9.8	6.0	1	-70.3	300	6.0	-9.1	44.7	53.8	-
722.00	-80.1	2.78	9.8	6.0	1	-61.5	30	6.0	19.8	30.4	10.6	-

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

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

N: Number of output

APPENDIX 2: Test instruments

Test Instruments

Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
KSA-08	AT	145089	Spectrum Analyzer	AGILENT	E4446A	MY46180525	2018/10/7	2019/10/31	12
KTS-07	AT	145111	Digital Tester	SANWA	PC500	7019232	2019/10/1	2020/10/31	12
SAT10-09	AT	145132	Attenuator	Weinschel Corp.	54A-10	W5692	2018/11/25	2019/11/30	12
SCC-G31	AT	145042	Coaxial Cable	Junkosha	MWX241-01000KMSK MS	OCT-08-13-046	2019/4/16	2020/4/30	12
SOS-09	AT	146318	Humidity Indicator	A&D	AD-5681	4061484	2018/12/5	2019/12/31	12
SOS-19	AT	175823	Humidity Indicator	CUSTOM	CTH-201	-	2018/12/5	2019/12/31	12
SPM-07	AT	146247	Power Meter	AGILENT	8990B	MY5100272	2019/7/16	2020/7/31	12
SPSS-04	AT	146310	Power sensor	AGILENT	N1923A	MY5326009	2019/7/16	2020/7/31	12
SRENT-09	AT	150461	Spectrum Analyzer	AGILENT (KEYSIGHT)	E4440A	MY46186392	2019/1/3	2020/1/31	12
COTS-SEMI-5	RE	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,ME,PE)	-	-	-	-
KJM-02	RE	146432	Measure	TAJIMA	GL19-55	-	-	-	-
KJM-09	RE	145929	Measure	KOMELON	KMC-36	-	-	-	-
SAEC-01(SVSWR)	RE	145561	Semi-Anechoic Chamber	TDK	SAEC-01(SVSWR)	1	2019/5/6	2020/5/30	12
SAEC-02(NSA)	RE	145563	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	2019/4/4	2020/4/30	12
SAEC-03(SVSWR)	RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2019/5/3	2020/5/31	12
SAF-02	RE	145004	Pre Amplifier	SONOMA	310N	290212	2019/2/5	2020/2/29	12
SAF-04	RE	145127	Pre Amplifier	Toyo Corporation	TPA0118-36	2072554	2019/6/4	2020/6/30	12
SAF-08	RE	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2019/3/5	2020/3/31	12
SAF-10	RE	145129	Pre Amplifier	Toyo Corporation	HAP26-40W	10	2019/3/22	2020/3/31	12
SAT10-05	RE	145136	Attenuator(above 1GHz)	AGILENT	8493C-010	74864	2018/11/25	2019/11/30	12
SAT3-11	RE	150921	Attenuator	JFW	50HF-003N	-	2019/1/25	2020/1/31	12
SAT6-14	RE	167095	Attenuator	JFW	50HF-006N	-	2019/2/5	2020/2/29	12
SBA-02	RE	145022	Biconical Antenna	Schwarzbeck	BBA9106	91032665	2019/4/1	2020/4/30	12
SCC-B1/B3/B5/B7/B8/B13/SRSE-02	RE	144975	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/TOYO	8D2W/12DSF A/141PE/141PE/141PE/141P	-/0901-270(RF Selector)	2019/4/19	2020/4/30	12
SCC-B2/B4/B6/B7/B8/B13/SRSE-02	RE	144976	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/TOYO	8D2W/12DSF A/141PE/141PE/141PE/141P	-/0901-270(RF Selector)	2019/4/19	2020/4/30	12
SCC-G05	RE	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2019/1/25	2020/1/31	12
SCC-G15	RE	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2019/3/27	2020/3/31	12
SCC-G40	RE	166491	Coaxial Cable	Junkosha	MWX221-01000NFSN MS/B	1612S005	2019/1/25	2020/1/31	12
SCC-G56	RE	179539	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	803289/4	2019/5/16	2020/5/31	12

Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
SCC-G57	RE	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2019/5/16	2020/5/31	12
SFL-03	RE	145377	Highpass Filter	MICRO-TRONICS	HPM50112	28	2018/11/16	2019/11/30	12
SHA-01	RE	145383	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	2019/5/9	2020/5/31	12
SHA-04	RE	145512	Horn Antenna	ETS LINDGREN	3160-09	00094868	2019/6/26	2020/6/30	12
SHA-06	RE	145514	Horn Antenna	ETS LINDGREN	3160-10	00092383	2019/6/26	2020/6/30	12
SJM-09	RE	145336	Measure	PROMART	SEN1935	-	-	-	-
SLA-06	RE	145528	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	195	2019/4/1	2020/4/30	12
SOS-01	RE	146316	Humidity Indicator	A&D	AD-5681	4062555	2018/10/25	2019/10/31	12
SOS-03	RE	146317	Humidity Indicator	A&D	AD-5681	4063325	2018/10/25	2019/10/31	12
SOS-05	RE	146293	Humidity Indicator	A&D	AD-5681	4062518	2018/10/25	2019/10/31	12
SSA-03	RE	145801	Spectrum Analyzer	AGILENT	E4448A	MY48250152	2019/8/8	2020/8/31	12
STR-07	RE	146209	Test Receiver	Rohde & Schwarz	ESU26	100484	2019/9/13	2020/9/30	12
STR-08	RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2018/11/28	2019/11/30	12
STS-01	RE	145792	Digital Hitester	HIOKI	3805-50	80997812	2019/10/1	2020/10/31	12
STS-02	RE	145793	Digital Hitester	HIOKI	3805-50	80997819	2019/4/2	2020/4/30	12
STS-03	RE	146210	Digital Hitester	HIOKI	3805-50	80997823	2019/10/1	2020/10/31	12

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

The expiration date of the calibration is the end of the expired month.

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

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

Test item:

RE: Radiated Emission

AT: Antenna Terminal Conducted test

UL Japan, Inc.

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