



RADIO TEST REPORT

Test Report No. : 13170804H-A-R1

Applicant : Sony Interactive Entertainment Inc.
Type of EUT : Wireless communication module
Model Number of EUT : J20H100
FCC ID : AK8M19DFR1
Test regulation : FCC Part 15 Subpart C: 2020
*WLAN and Bluetooth Low Energy parts
Test Result : Complied (Refer to SECTION 3.2)

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8. The information provided from the customer for this report is identified in SECTION 1.
9. This report is a revised version of 13170804H-A. 13170804H-A is replaced with this report.

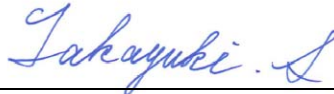
Date of test: December 16, 2019 to April 10, 2020

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REVISION HISTORY

Original Test Report No.: 13170804H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13170804H-A	June 3, 2020	-	-
1	13170804H-A-R1	June 10, 2020	P17	Corrected the Test setup; Test Distance of No.2 Semi Anechoic Chamber of frequency range 1 GHz - 10 GHz * Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.75 \text{ m}$ ↓ * Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.7 \text{ m}$
1	13170804H-A-R1	June 10, 2020	P60 - 64	Corrected the Result of table for “Antenna 1 + Antenna 2”
1	13170804H-A-R1	June 10, 2020	P227 - 228	Added Item H: DC Power supply and Cable No.7: AC Cable

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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	Sony Interactive Entertainment Inc.
Brand Name	SONY
Address	1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan
Telephone Number	+81-50-3807-5639
Facsimile Number	+81-50-3807-9594
Contact Person	Miho Nakamura

***Remarks:**

Sony Interactive Entertainment Inc. designates Foxconn Industrial Internet Co Ltd as manufacturer of the product (Wireless communication module).

The information provided from the customer is as follows;

- Applicant, Type of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (EUT) other than the Receipt Date
- SECTION 4: Operation of EUT during testing
- * The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Type	Wireless communication module
Model Number	J20H100
Serial Number	Refer to SECTION 4.2
Country of Manufacture	China
Receipt Date	December 16, 2019
Condition	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No modification by the test lab.

2.2 Product Description

Model: J20H100 (referred to as the EUT in this report) is a Wireless communication module.

Product Specification

Operating Temperature	-5 deg. C to 85 deg. C
Power Supply	DC 3.3 V, DC 1.8 V

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Radio Specification

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

Equipment Type	Transceiver	
Frequency of Operation	2412 MHz to 2462 MHz	
Type of Modulation	DSSS, OFDM	
	OFDMA (IEEE802.11ax only)	20 MHz: 26/52/106/242-tone RU
Bandwidth & Channel spacing	Less than 20 MHz & 5 MHz	
Method of frequency generation	Synthesizer	
Antenna Type *1)	PIFA	IFA
Antenna Gain: G _{ANT}	Antenna 1: 6.0 dBi Antenna 2: 6.0 dBi	Antenna 1: 4.0 dBi Antenna 2: 3.5 dBi
Directional Gain *2)	9.01 dBi	6.76 dBi
Maximum clock frequency	320 MHz	

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

Equipment Type	Transceiver	
Frequency of Operation	20 M Band: 5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5720 MHz 5745 MHz to 5825 MHz ----- 40 M Band: 5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5710 MHz 5755 MHz to 5795 MHz ----- 80 M Band: 5210 MHz 5290 MHz 5530 MHz to 5690 MHz 5775 MHz	
Type of Modulation	OFDM	
	OFDMA (IEEE802.11ax only)	20 MHz: 26/52/106/242-tone RU ----- 40 MHz: 26/52/106/242/484-tone RU ----- 80 MHz: 26/52/106/242/484/996-tone RU
Bandwidth & Channel spacing	Less than 20 MHz / 40 MHz / 80 MHz & 20 MHz / 40 MHz / 80 MHz	
Method of frequency generation	Synthesizer	
Antenna Type *1)	PIFA	IFA
Antenna Gain: G _{ANT}	Antenna 1: 5.0 dBi Antenna 3: 3.5 dBi	Antenna 1: 5.0 dBi Antenna 3: 2.0 dBi
Directional Gain *2)	7.29 dBi	6.64 dBi
Maximum clock frequency	512 MHz	

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BT1: Bluetooth (BR / EDR / Low Energy)

Equipment Type	Transceiver	
Frequency of Operation	2402 MHz to 2480 MHz	
Type of Modulation	BT: FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK) BT LE: GFSK	
Bandwidth / Channel spacing	BT: 79 MHz / 1 MHz BT LE: 1 MHz & 2 MHz / 2 MHz	
Method of frequency generation	Synthesizer	
Antenna Type *1)	PIFA	IFA
Antenna Gain	Antenna 3: 5.8 dBi	Antenna 3: 3.0 dBi
Maximum clock frequency	128 MHz	

BT2: Bluetooth (BR / EDR / Low Energy)

Equipment Type	Transceiver	
Frequency of Operation	2402 MHz to 2480 MHz	
Type of Modulation	BT: FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK) BT LE: GFSK	
Bandwidth / Channel spacing	BT: 79 MHz / 1 MHz BT LE: 1 MHz & 2 MHz / 2 MHz	
Method of frequency generation	Synthesizer	
Antenna Type *1)	PIFA	IFA
Antenna Gain	Antenna 4: 5.8 dBi	Antenna 4: 4.0 dBi
Maximum clock frequency	128 MHz	

*1) Details for the antenna combinations are as follows.

	WLAN	BT1	BT2
Combination 1	PIFA	PIFA	PIFA
Combination 2	IFA	IFA	IFA

*2) Directional antenna gain = $10 \log \left(\frac{G_{ANT1}}{(10^{-20} + 10^{-20})^2 / 2} \right)$

*This test report applies to WLAN (2.4 GHz band) and Bluetooth Low Energy parts.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on May 26, 2020 and effective July 27, 2020 except 15.258

Title : FCC 47 CFR Part 15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz,
and 5725-5850 MHz

* The revision does not affect the test result conducted before its effective date.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 6. Standard test methods ISED: RSS-Gen 8.8	FCC: Section 15.207 ISED: RSS-Gen 8.8	26.65 dB, 0.98694 MHz, Phase: N	Complied a)	-
6dB Bandwidth	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section 15.247(a)(2) ISED: RSS-247 5.2(a)	See data.	Complied b)	Conducted
Maximum Peak Output Power	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: RSS-Gen 6.12	FCC: Section 15.247(b)(3) ISED: RSS-247 5.4(d)		Complied c)	Conducted
Power Density	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section 15.247(e) ISED: RSS-247 5.2(b)		Complied d)	Conducted
Spurious Emission Restricted Band Edges	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: RSS-Gen 6.13	FCC: Section 15.247(d) ISED: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	3.8 dB 2483.500 MHz, Horizontal, AV (PIFA Antenna4 (BT2))	Complied# e), f)	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *1)

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

*1) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 8.5 and 8.6.

- a) Refer to APPENDIX 1 (data of Conducted Emission)
b) Refer to APPENDIX 1 (data of 6 dB Bandwidth and 99 % Occupied Bandwidth)
c) Refer to APPENDIX 1 (data of Maximum Peak Output Power)
d) Refer to APPENDIX 1 (data of Power Density)
e) Refer to APPENDIX 1 (data of Conducted Spurious Emission)
f) Refer to APPENDIX 1 (data of Radiated Spurious Emission)

Symbols:

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

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

FCC Part 15.31 (e)

The stable voltage will be supplied by the end product, which will be required to have a power supply regulator. Therefore, the EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

The EUT has a unique coupling/antenna connector (U.FL). Therefore the equipment complies with the requirement of 15.203.

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3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	RSS-Gen 6.7	ISED: -	N/A	- a)	Conducted
a) Refer to APPENDIX 1 (data of 6 dB 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 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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Antenna Terminal test

Test Item	Uncertainty (+/-)
20 dB Bandwidth / 99 % Occupied Bandwidth	0.96 %
Maximum Peak Output Power / Average Output Power	1.4 dB
Carrier Frequency Separation	0.42 %
Dwell time / Burst rate	0.10 %
Conducted Spurious Emission	2.6 dB

Conducted emission

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

Radiated emission

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

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.

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

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

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

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

*Details of Operating mode for WLAN

Test Item	Operating Mode	Tested Antenna		Tested frequency
		Antenna type	Antenna No.	
Conducted Emission *1) Radiated Spurious Emission (Below 1 GHz)	11ax-20 OFDM Tx *2)	PIFA	Antenna 1 + 2	2462 MHz
Radiated Spurious Emission (Above 1 GHz)	11b Tx 11ax-20 OFDMA Tx *3) 11ax-20 OFDM Tx *4)	PIFA IFA	Antenna 1 + 2	2412 MHz 2437 MHz 2462 MHz
Conducted Spurious Emission	11ax-20 OFDM Tx *2)	-	Antenna 1 + 2	2462 MHz
Maximum Peak Output Power Power Density	11b Tx 11g Tx 11n-20 Tx 11ax-20 OFDMA Tx 11ax-20 OFDM Tx	-	Antenna 1 Antenna 2 Antenna 1 + 2	2412 MHz 2437 MHz 2462 MHz
6dB Bandwidth 99% Occupied Bandwidth	11b Tx 11g Tx 11n-20 Tx 11ax-20 OFDMA Tx 11ax-20 OFDM Tx	-	Antenna 2 *5)	2412 MHz 2437 MHz 2462 MHz
*1) The test was conducted with PIFA Antenna which had higher antenna gain. *2) The mode was tested as a representative, because it had the highest power at antenna terminal test. *3) OFDMA configuration tests were conducted only at the band edge since they had lower power and density than OFDM. *4) Since 11g and 11n-20, 11ax-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest output power. *5) After the comparison between Antenna 1 and Antenna 2, the test was performed with the antenna that had higher power as a representative.				

[BT LE]

Mode	Remarks*
Bluetooth Low Energy (BT LE) 1M-PHY Uncoded PHY (1M-PHY)	Maximum Packet Size, PRBS9
Bluetooth Low Energy (BT LE) 2M-PHY Uncoded PHY (2M-PHY)	Maximum Packet Size, PRBS9
*Power of the EUT was set by the software as follows; Power settings: 2 dBm Software: Dut Labtool Version: 1.0.0.101 (Date: December 16, 2019, Storage location: Driven by connected PC) *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

*Details of Operating mode for BT LE

Test Item	Operating Mode	Tested Antenna		Tested frequency
		Antenna type	Antenna No.	
Conducted Emission *1)	BT LE, 1M-PHY BT LE, 2M-PHY	PIFA	Antenna 3 (BT1) Antenna 4 (BT2)	2402 MHz 2440 MHz 2480 MHz
Radiated Spurious Emission	BT LE, 1M-PHY BT LE, 2M-PHY	PIFA IFA	Antenna 3 (BT1) Antenna 4 (BT2)	2402 MHz 2440 MHz 2480 MHz
Maximum Peak Output Power Power Density	BT LE, 1M-PHY BT LE, 2M-PHY	-	Antenna 3 (BT1) Antenna 4 (BT2)	2402 MHz 2440 MHz 2480 MHz
6dB Bandwidth 99% Occupied Bandwidth Conducted Spurious Emission	BT LE, 1M-PHY BT LE, 2M-PHY	-	Antenna 3 (BT1) Antenna 4 (BT2)	2402 MHz 2440 MHz 2480 MHz
*1) The test was conducted with PIFA Antenna which had higher antenna gain.				

Simultaneous transmission (Only Antenna 3 simultaneously transmits BT1 and WLAN 5 GHz on a single antenna.)

Test Item	Mode *1)	Antenna type
Radiated Spurious Emission	Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz Tx BT LE 2M-PHY 2440 MHz + Tx 11ax-40 5755MHz Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz	PIFA IFA
*1) The test was performed on the mode as a representative, because it had the highest power of 5GHz band at antenna terminal test.		

4.2 Configuration and peripherals

This page has been submitted for a separate exhibit.

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)

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

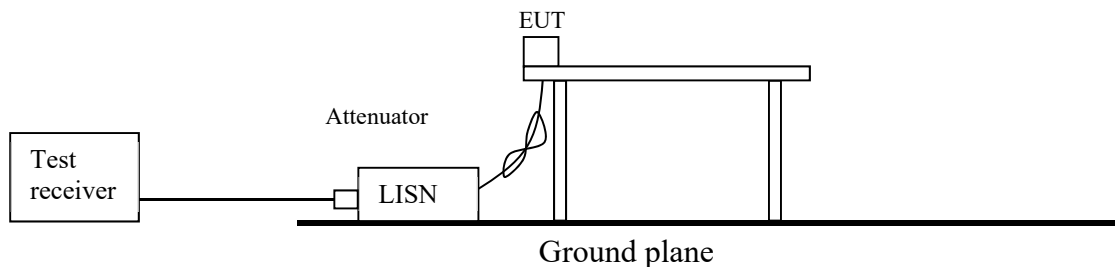
The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber. The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

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

Figure 1: Test Setup



SECTION 6: Radiated Spurious Emission

Test Procedure

It was measured based on "8.5 and 8.6 of KDB 558074 D01 15.247 Meas Guidance v05r02".

[For below 1 GHz]

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

[For above 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

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

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

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

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

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

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

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

In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9(ISED) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (ISED).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *1)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	11.12.2.5.1 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces 11.12.2.5.2 The duty cycle was less than 98% for detected noise, a duty factor was added to the 11.12.2.5.1 results.	RBW: 100 kHz VBW: 300 kHz

*1) Average Power Measurement was performed based on ANSI C63.10-2013.

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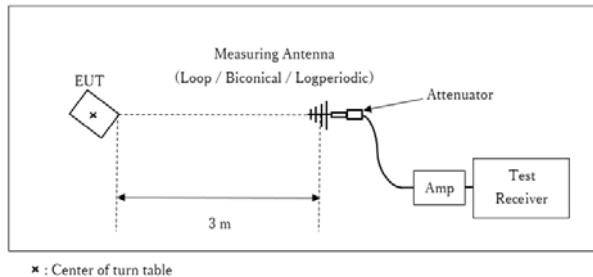
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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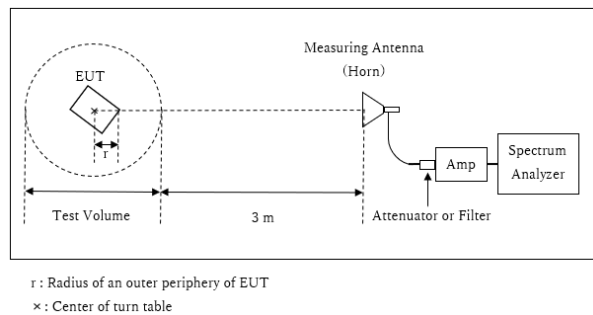
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz - 10 GHz



[Other than IFA Antenna (WLAN)]

(No.3 Semi Anechoic Chamber)

Distance Factor: $20 \times \log (3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.95 \text{ m}$

Test Volume : 2.0 m

(No.2 Semi Anechoic Chamber)

Distance Factor: $20 \times \log (3.7 \text{ m} / 3.0 \text{ m}) = 1.83 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.7 \text{ m}$

Test Volume : 1.5 m

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

$r = 0.05 \text{ m}$

[IFA Antenna (WLAN)]

(No.3 Semi Anechoic Chamber)

Distance Factor: $20 \times \log (3.9 \text{ m} / 3.0 \text{ m}) = 2.28 \text{ dB}$

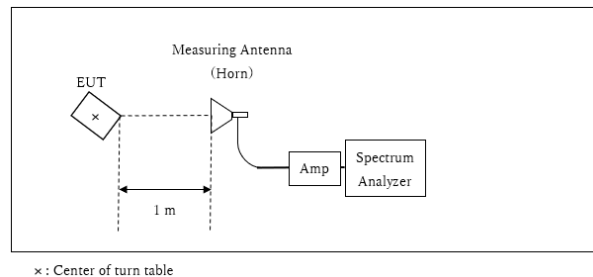
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.9 \text{ m}$

Test Volume : 2.0 m

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

$r = 0.1 \text{ m}$

10 GHz – 26.5 GHz



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

*Test Distance: 1 m

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT and antennas to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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

Measurement range	: 30 MHz - 26.5 GHz
Test data	: APPENDIX
Test result	: Pass

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SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

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

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
6 dB Bandwidth	3 MHz/5 MHz/6 MHz/12 MHz/20 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak/Average *2)	-	Power Meter (Sensor: 50 MHz BW)
Peak Power Density	1.5 times the 6 dB Bandwidth	3 kHz	10 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *3)
Conducted Spurious Emission *4) *5)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	9.1 kHz	27 kHz				

*1) Peak hold was applied as Worst-case measurement.
 *2) Reference data
 *3) Section 11.10.2 Method PKPSD (peak PSD) of "ANSI C63.10-2013".
 *4) In the frequency range below 30 MHz, RBW was narrowed to separate the noise contents.
 Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
 (9 kHz - 150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 9.1 kHz)
 *5) The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to $45.5 - 51.5 = -6.0$ dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

The test results and limit are rounded off to two decimals place, so some differences might be observed.
 The equipment and cables were not used for factor 0 dB of the data sheets.

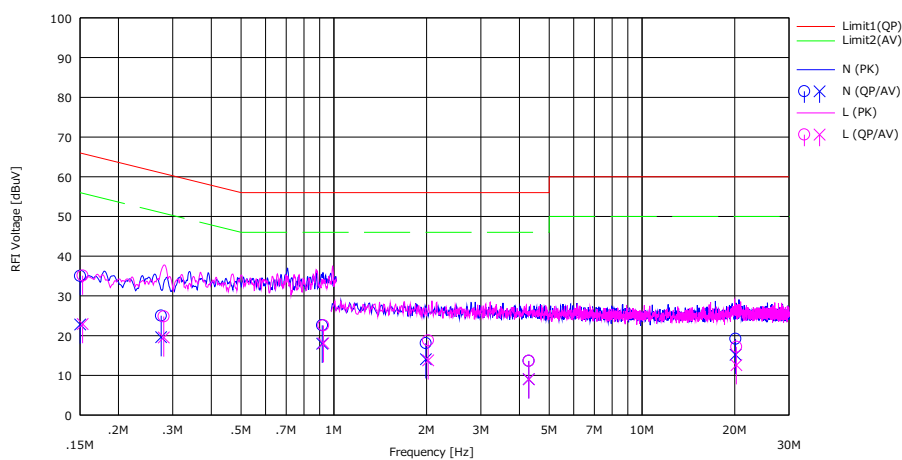
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Date	January 15, 2020
Temperature / Humidity	20 deg. C / 33 % RH
Engineer	Junki Nagatomi
Mode	Tx 11ax-20 (OFDM) 2462 MHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]			(QP) [dBuV]	(AV) [dBuV]	(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]		
1	0.15032	21.80	9.60	0.07	13.14	35.01	22.81	66.00	56.00	30.99	33.19	N	
2	0.27504	11.80	6.40	0.07	13.16	25.03	19.63	61.00	51.00	35.97	31.37	N	
3	0.91664	9.30	4.70	0.08	13.21	22.59	17.99	56.00	46.00	33.41	28.01	N	
4	1.98923	4.70	0.70	0.09	13.28	18.07	14.07	56.00	46.00	37.93	31.93	N	
5	4.28971	0.10	-4.50	0.13	13.40	13.63	9.03	56.00	46.00	42.37	36.97	N	
6	20.11613	5.00	1.00	0.37	13.83	19.20	15.20	60.00	50.00	40.80	34.80	N	
7	0.15310	21.90	9.70	0.07	13.14	35.11	22.91	65.80	55.80	30.69	32.89	L	
8	0.28068	11.60	6.30	0.06	13.16	24.82	19.52	60.80	50.80	35.98	31.28	L	
9	0.92510	9.30	4.80	0.06	13.21	22.57	18.07	56.00	46.00	33.43	27.93	L	
10	2.02520	5.40	0.40	0.10	13.28	18.78	13.78	56.00	46.00	37.22	32.22	L	
11	4.29532	0.10	-4.50	0.14	13.40	13.64	9.04	56.00	46.00	42.36	36.96	L	
12	20.23843	2.90	-1.70	0.46	13.83	17.19	12.59	60.00	50.00	42.81	37.41	L	

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

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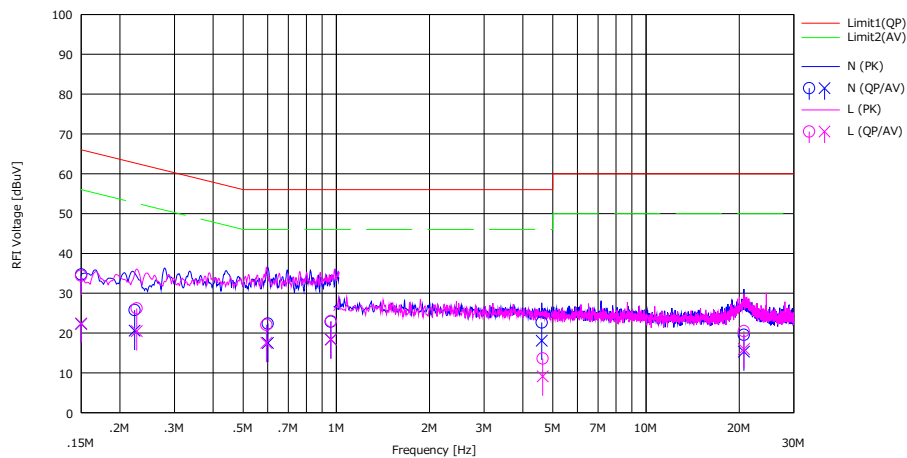
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Facsimile : +81 596 24 8124

Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 1M-PHY 2440MHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		LISN	LOSS	Results		Limit		Margin		Phase	Comment
		(QP)	(AV)			(QP)	(AV)	(QP)	(AV)	(QP)	(AV)		
		[dBuV]	[dBuV]			[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	21.50	9.11	0.07	13.14	34.71	22.32	66.00	56.00	31.29	33.68	N	
2	0.22308	12.56	7.38	0.07	13.14	25.77	20.59	62.70	52.70	36.93	32.11	N	
3	0.60066	9.09	4.26	0.08	13.18	22.35	17.52	56.00	46.00	33.65	28.48	N	
4	0.95910	9.55	5.10	0.08	13.22	22.85	18.40	56.00	46.00	33.15	27.60	N	
5	4.60800	9.09	4.52	0.14	13.41	22.64	18.07	56.00	46.00	33.36	27.93	N	
6	20.69680	5.32	1.11	0.39	13.84	19.55	15.34	60.00	50.00	40.45	34.66	N	
7	0.15000	21.20	9.21	0.07	13.14	34.41	22.42	66.00	56.00	31.59	33.58	L	
8	0.22656	12.95	7.26	0.07	13.15	26.17	20.48	62.60	52.60	36.43	32.12	L	
9	0.59457	8.83	4.32	0.05	13.18	22.06	17.55	56.00	46.00	33.94	28.45	L	
10	0.96084	9.74	5.10	0.06	13.22	23.02	18.38	56.00	46.00	32.98	27.62	L	
11	4.63521	0.05	-4.45	0.15	13.41	13.61	9.11	56.00	46.00	42.39	36.89	L	
12	20.69680	6.16	1.66	0.48	13.84	20.48	15.98	60.00	50.00	39.52	34.02	L	

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

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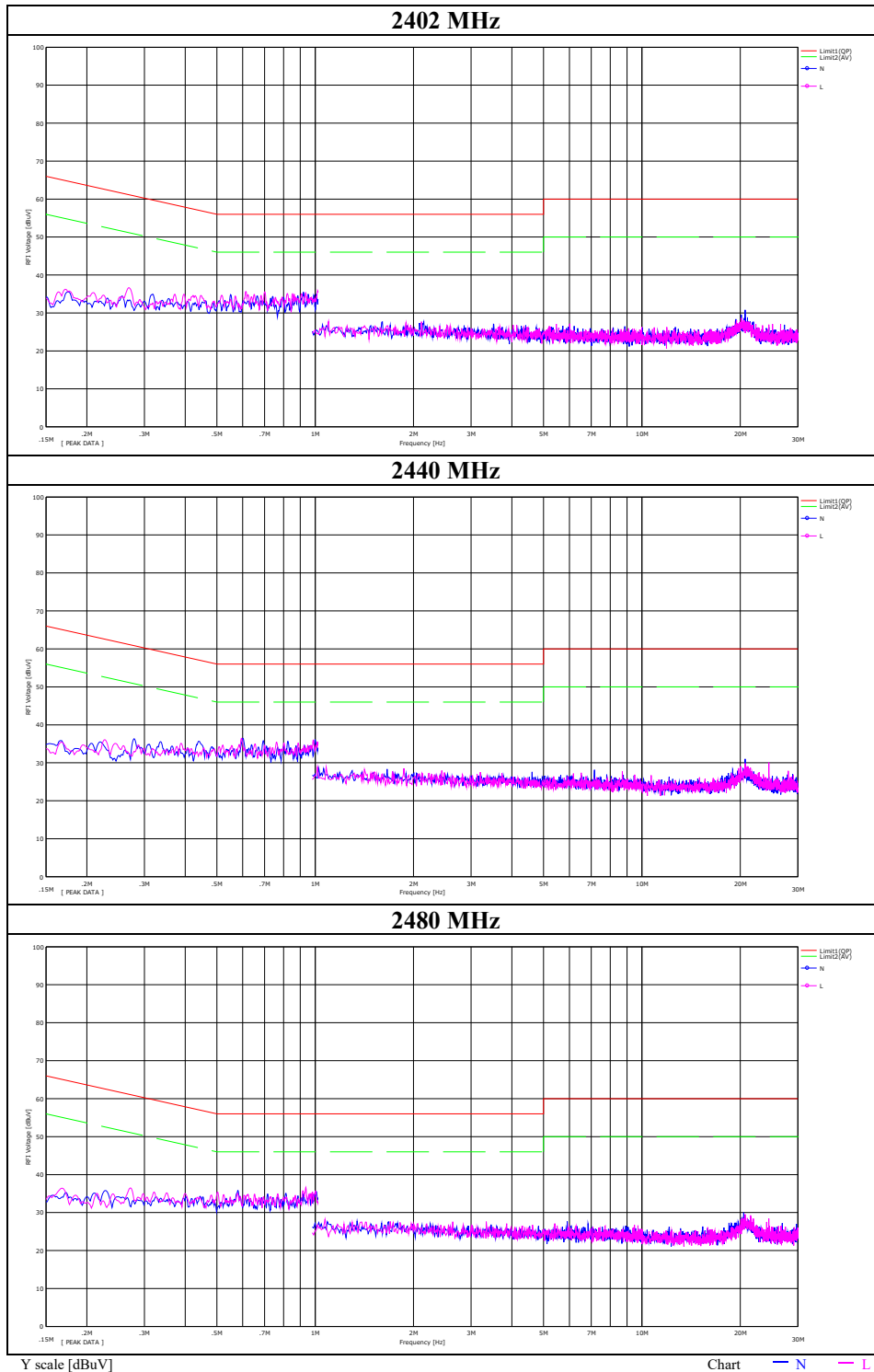
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Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 1M-PHY



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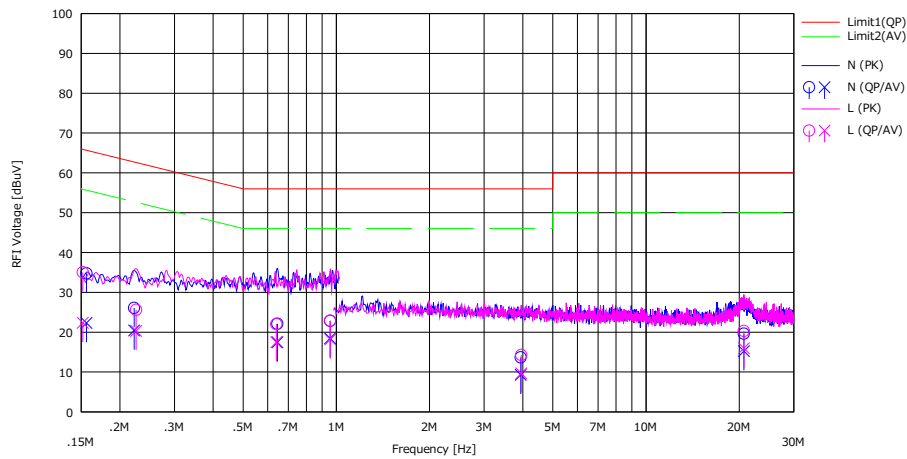
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Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 2M-PHY 2440MHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		USN	LOSS	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]			(QP) [dBuV]	(AV) [dBuV]	(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]		
1	0.15609	21.56	9.11	0.07	13.14	34.77	22.32	65.70	55.70	30.93	33.38	N	
2	0.22221	12.87	7.21	0.07	13.14	26.08	20.42	62.70	52.70	36.62	32.28	N	
3	0.64503	8.83	4.22	0.08	13.18	22.09	17.48	56.00	46.00	33.91	28.52	N	
4	0.95475	9.55	5.16	0.08	13.22	22.85	18.46	56.00	46.00	33.15	27.54	N	
5	3.93682	0.17	-4.21	0.12	13.38	13.67	9.29	56.00	46.00	42.33	36.71	N	
6	20.69680	5.40	1.01	0.39	13.84	19.63	15.24	60.00	50.00	40.37	34.76	N	
7	0.15174	21.81	9.14	0.07	13.14	35.02	22.35	65.90	55.90	30.88	33.55	L	
8	0.22569	12.38	7.10	0.07	13.15	25.60	20.32	62.60	52.60	37.00	32.28	L	
9	0.63981	8.80	4.24	0.05	13.18	22.03	17.47	56.00	46.00	33.97	28.53	L	
10	0.95562	9.62	4.89	0.06	13.22	22.90	18.17	56.00	46.00	33.10	27.83	L	
11	3.95496	0.74	-3.85	0.14	13.38	14.26	9.67	56.00	46.00	41.74	36.33	L	
12	20.69680	5.98	1.66	0.48	13.84	20.30	15.98	60.00	50.00	39.70	34.02	L	

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

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Ise EMC Lab.

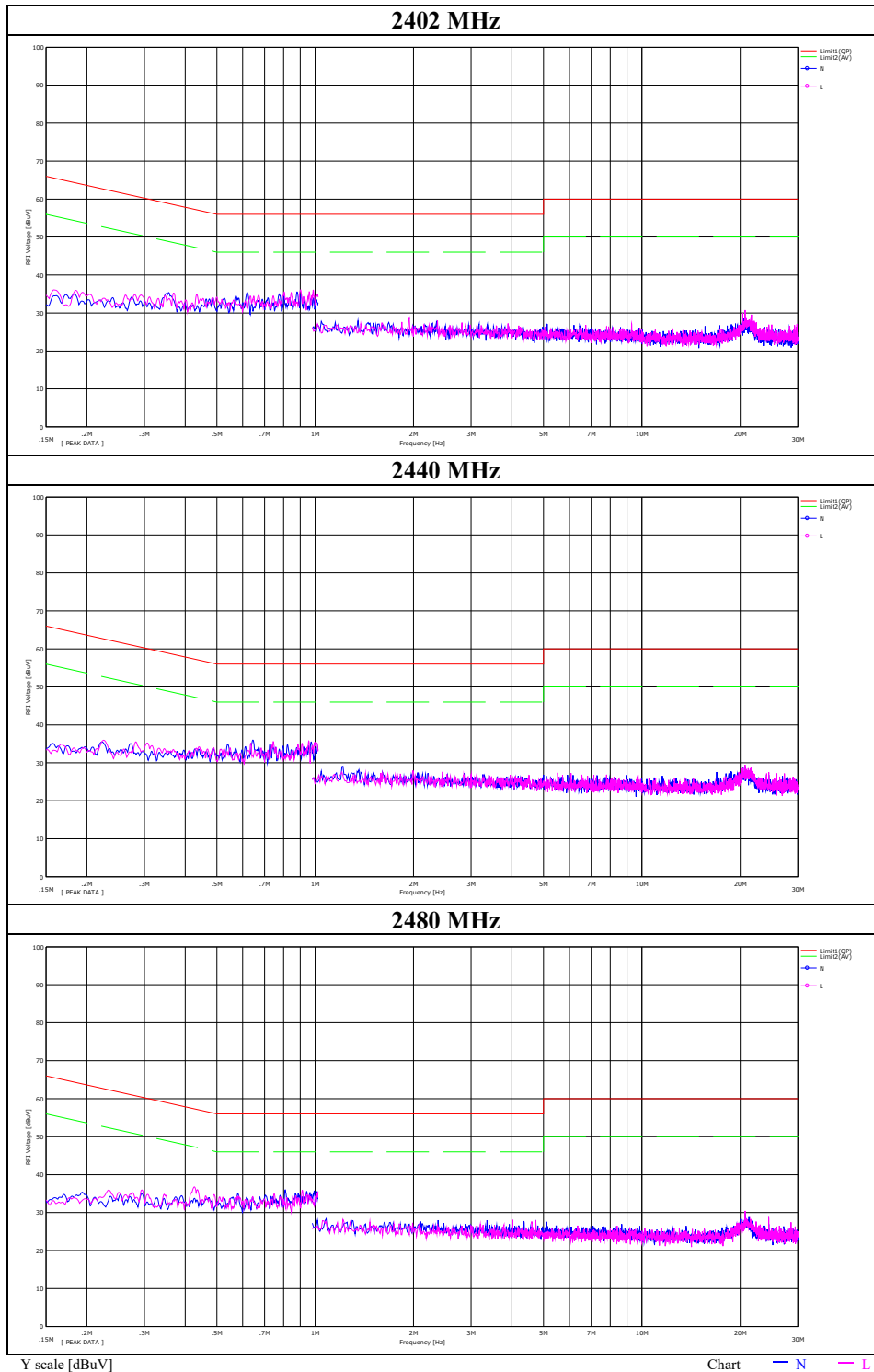
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Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 2M-PHY



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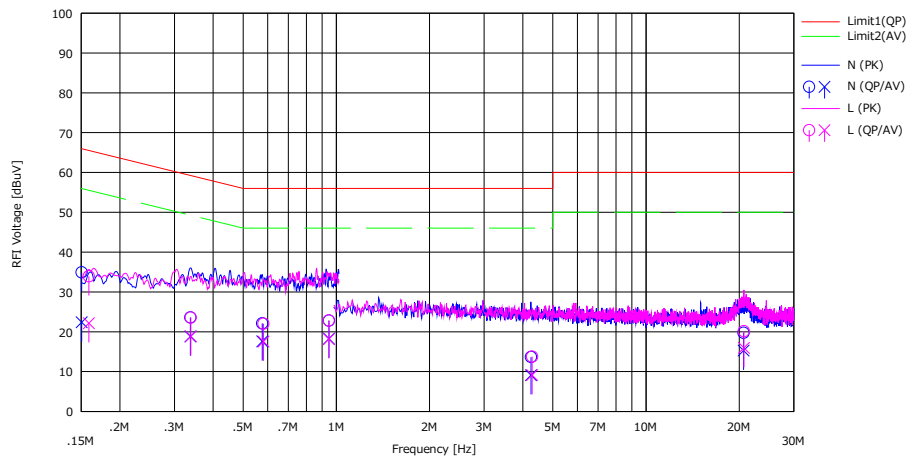
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 1M-PHY 2402 MHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		USN	LOSS	Results		Limit		Margin		Phase	Comment
		(QP)	(AV)			(QP)	(AV)	(QP)	(AV)	(QP)	(AV)		
		[dBuV]	[dBuV]			[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15044	21.70	9.17	0.07	13.14	34.91	22.38	66.00	56.00	31.09	33.62	N	
2	0.33792	10.36	5.60	0.07	13.16	23.59	18.83	59.30	49.30	35.71	30.47	N	
3	0.57630	8.83	4.33	0.08	13.18	22.09	17.59	56.00	46.00	33.91	28.41	N	
4	0.94692	9.50	4.99	0.08	13.21	22.79	18.28	56.00	46.00	33.21	27.72	N	
5	4.25427	0.12	-4.43	0.13	13.40	13.65	9.10	56.00	46.00	42.35	36.90	N	
6	20.65670	5.50	1.03	0.39	13.84	19.73	15.26	60.00	50.00	40.27	34.74	N	
7	0.15870	20.72	8.96	0.07	13.14	33.93	22.17	65.50	55.50	31.57	33.33	L	
8	0.33879	10.34	5.63	0.06	13.16	23.56	18.85	59.20	49.20	35.64	30.35	L	
9	0.58152	8.80	4.32	0.05	13.18	22.03	17.55	56.00	46.00	33.97	28.45	L	
10	0.94518	9.55	4.87	0.06	13.21	22.82	18.14	56.00	46.00	33.18	27.86	L	
11	4.29055	0.21	-4.41	0.14	13.40	13.75	9.13	56.00	46.00	42.25	36.87	L	
12	20.69680	5.84	1.64	0.48	13.84	20.16	15.96	60.00	50.00	39.84	34.04	L	

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

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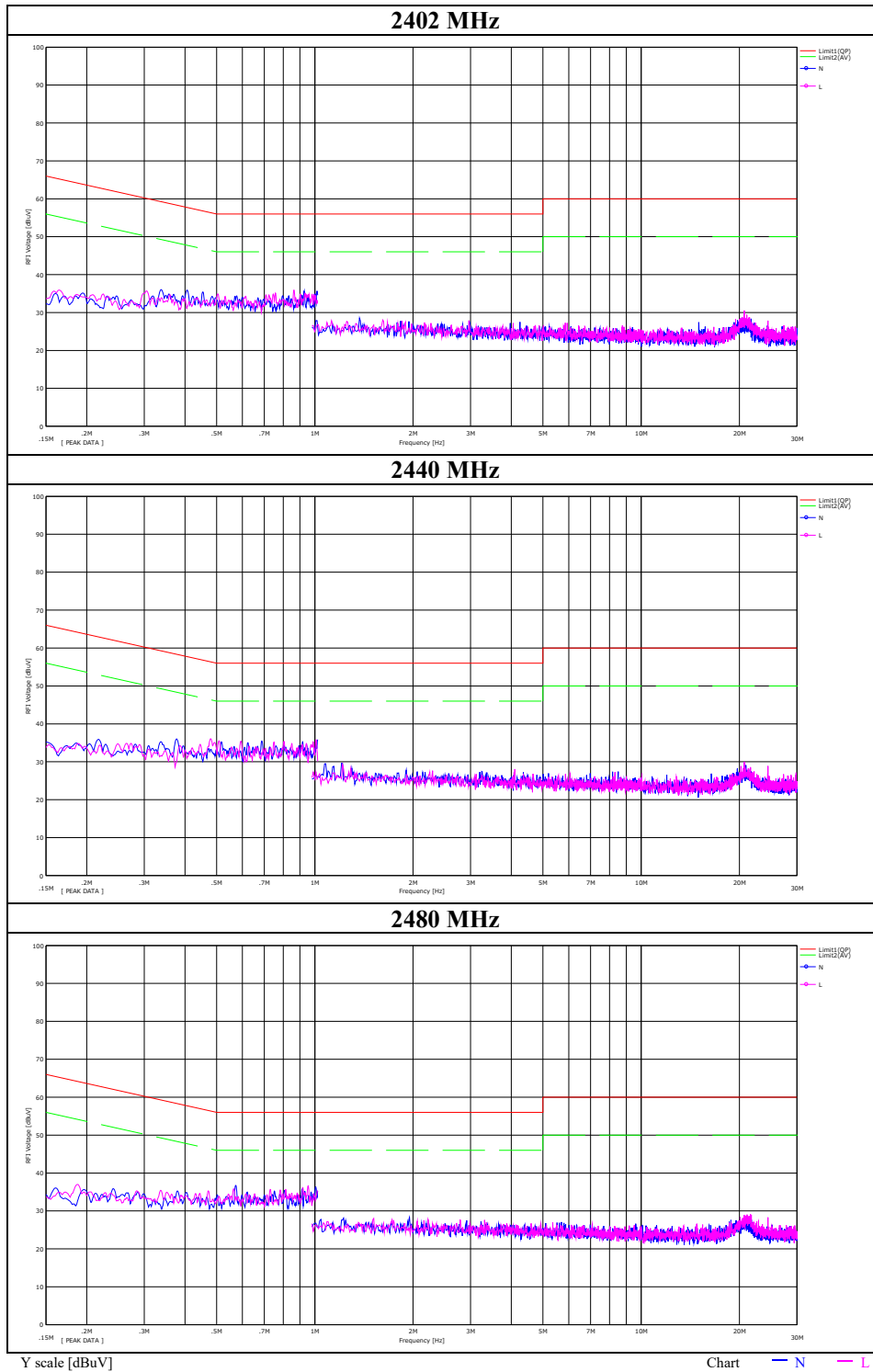
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Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 1M-PHY



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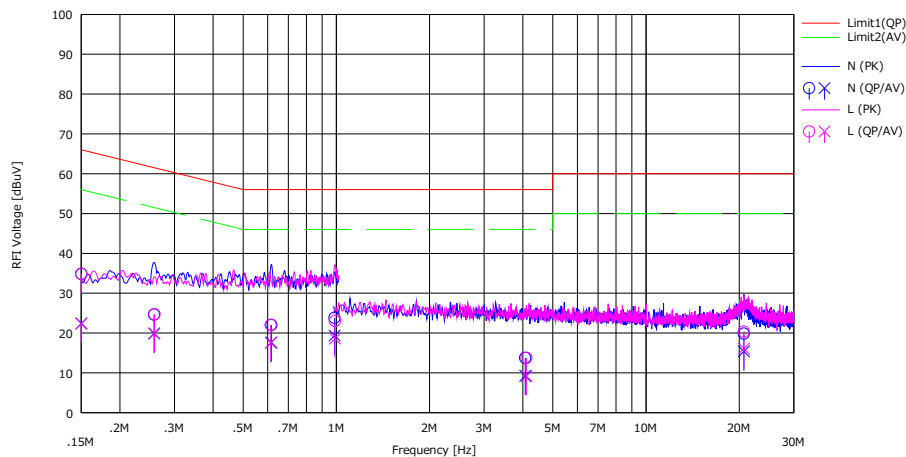
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Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 2M-PHY 2402 MHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		LISN	LOSS	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]			<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15032	21.60	9.20	0.07	13.14	34.81	22.41	66.00	56.00	31.19	33.59	N	
2	0.25788	11.41	6.64	0.07	13.15	24.63	19.86	61.50	51.50	36.87	31.64	N	
3	0.61719	8.75	4.35	0.08	13.18	22.01	17.61	56.00	46.00	33.99	28.39	N	
4	0.98694	10.52	6.05	0.08	13.22	23.82	19.35	56.00	46.00	32.18	26.65	N	
5	4.07287	0.23	-4.28	0.13	13.39	13.75	9.24	56.00	46.00	42.25	36.76	N	
6	20.69680	5.59	1.15	0.39	13.84	19.82	15.38	60.00	50.00	40.18	34.62	N	
7	0.15000	21.66	9.16	0.07	13.14	34.87	22.37	66.00	56.00	31.13	33.63	L	
8	0.25875	11.49	6.68	0.06	13.15	24.70	19.89	61.50	51.50	36.80	31.61	L	
9	0.61371	8.80	4.28	0.05	13.18	22.03	17.51	56.00	46.00	33.97	28.49	L	
10	0.98955	9.72	5.33	0.06	13.22	23.00	18.61	56.00	46.00	33.00	27.39	L	
11	4.10915	0.19	-4.33	0.14	13.39	13.72	9.20	56.00	46.00	42.28	36.80	L	
12	20.69680	6.06	1.75	0.48	13.84	20.38	16.07	60.00	50.00	39.62	33.93	L	

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

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Ise EMC Lab.

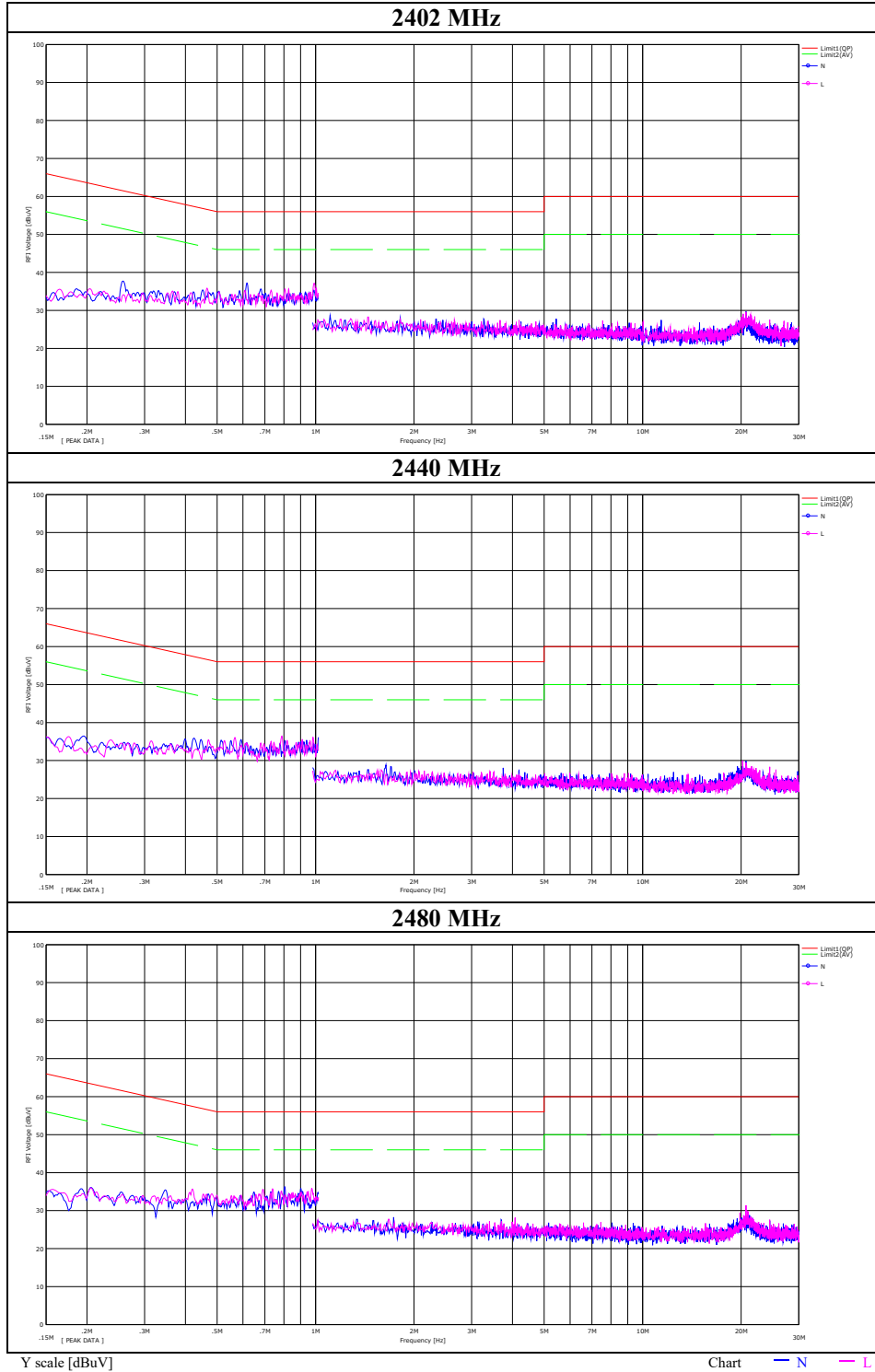
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Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 2M-PHY



UL Japan, Inc.

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6 dB Bandwidth and 99 % Occupied Bandwidth

Report No.	13170804H	
Test place	Ise EMC Lab. No.3 Measurement Room	
Date	December 17, 2019	February 17, 2020
Temperature / Humidity	23 deg. C / 39 % RH	24 deg. C / 41 % RH
Engineer	Takafumi Noguchi	Yuta Moriya
Mode	Tx	

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
11b	2412	13332.4	10.066	> 0.5000
	2437	13358.5	10.061	> 0.5000
	2462	13363.7	10.064	> 0.5000
11g	2412	16983.8	16.481	> 0.5000
	2437	16990.4	16.486	> 0.5000
	2462	17012.6	16.484	> 0.5000
11n-20	2412	17992.2	17.690	> 0.5000
	2437	18011.5	17.689	> 0.5000
	2462	18008.6	17.686	> 0.5000
11ax-20 (OFDM)	2412	18901.4	18.643	> 0.5000
	2437	18901.8	18.797	> 0.5000
	2462	18869.7	18.671	> 0.5000

6 dB Bandwidth and 99 % Occupied Bandwidth

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	February 17, 2020 March 28, 2020
Temperature / Humidity	24 deg. C / 41 % RH 24 deg. C / 51 % RH
Engineer	Yuta Moriya Takafumi Noguchi
Mode	Tx

Mode	Frequency [MHz]	RU Type	RU Index	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
11ax-20	2412	26-tone RU	0	18173.7	2.027	> 0.5000
			4	16918.6	2.647	> 0.5000
			8	18383.6	2.000	> 0.5000
	2437		0	18316.5	2.032	> 0.5000
			4	17035.3	2.662	> 0.5000
			8	18297.2	1.988	> 0.5000
	2462		0	17971.5	2.055	> 0.5000
			4	16909.5	2.650	> 0.5000
			8	18354.4	2.013	> 0.5000
	2412	52-tone RU	37	17957.1	4.020	> 0.5000
			38	16924.8	4.062	> 0.5000
			40	18216.1	4.101	> 0.5000
	2437		37	18180.9	3.973	> 0.5000
			38	16890.2	4.076	> 0.5000
			40	18232.0	4.042	> 0.5000
	2462		37	17848.7	4.028	> 0.5000
			38	16727.2	4.060	> 0.5000
			40	18261.0	4.001	> 0.5000
	2412	106-tone RU	53	18049.0	8.321	> 0.5000
			54	18223.7	8.302	> 0.5000
			2437	53	18179.1	8.175
	54			18071.7	8.157	> 0.5000
	2462		53	17963.6	8.244	> 0.5000
			54	18137.5	8.150	> 0.5000
	2412	242-tone RU	61	18881.9	18.445	> 0.5000
	2437			18896.8	18.774	> 0.5000
	2462			18863.4	18.643	> 0.5000

6 dB Bandwidth and 99 % Occupied Bandwidth

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019 December 26, 2019
Temperature / Humidity 24 deg. C / 32 % RH 23 deg. C / 38 % RH
Engineer Takafumi Noguchi Koji Yamamoto
Mode Tx BT LE

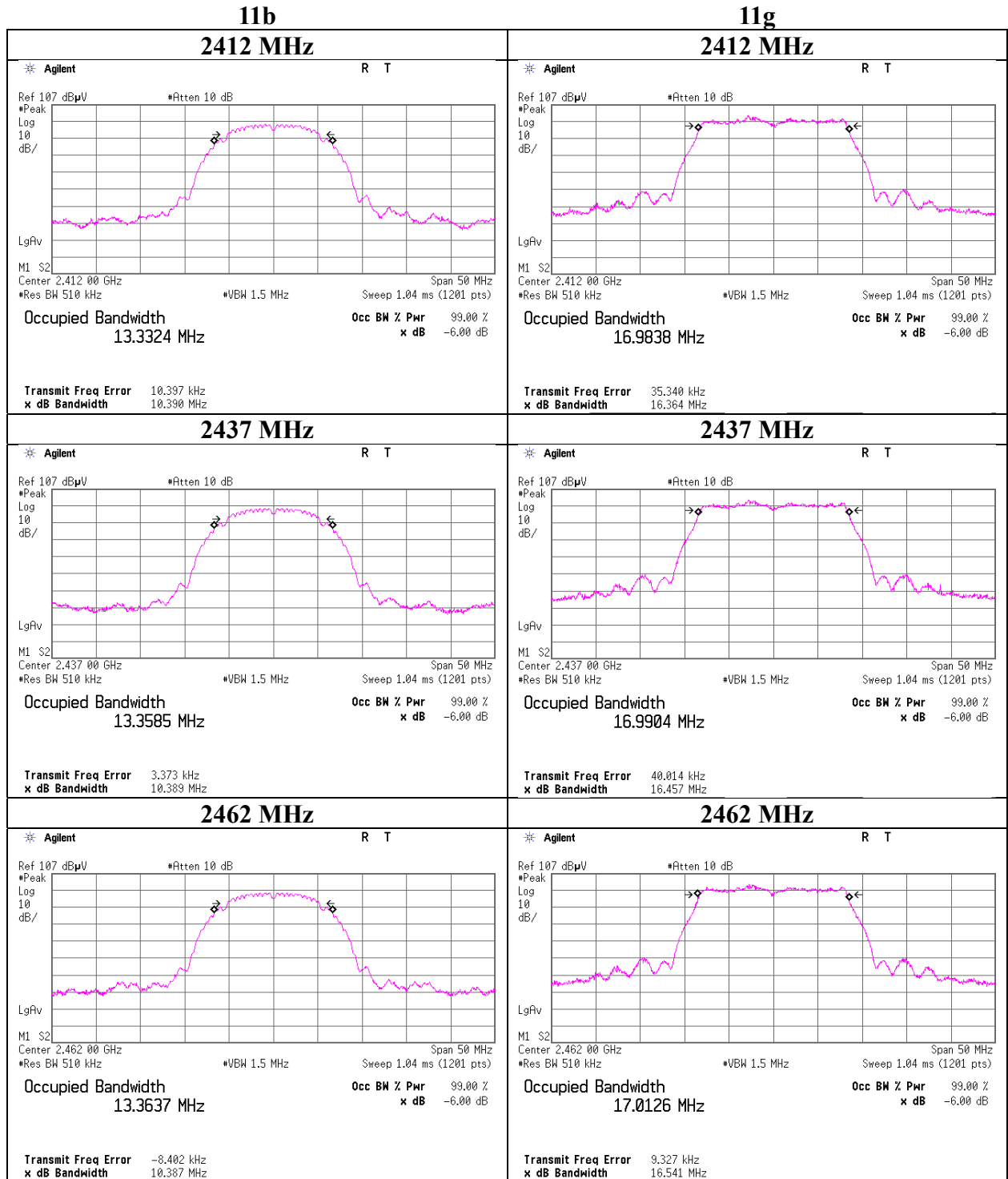
BT1

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
1M-PHY	2402	1045.5	0.714	> 0.5000
	2440	1046.2	0.715	> 0.5000
	2480	1044.6	0.724	> 0.5000
2M-PHY	2402	2058.6	1.170	> 0.5000
	2440	2061.1	1.172	> 0.5000
	2480	2059.8	1.172	> 0.5000

BT2

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
1M-PHY	2402	1039.0	0.687	> 0.5000
	2440	1039.3	0.693	> 0.5000
	2480	1038.6	0.688	> 0.5000
2M-PHY	2402	2058.3	1.161	> 0.5000
	2440	2057.6	1.166	> 0.5000
	2480	2060.1	1.171	> 0.5000

99%Occupied Bandwidth



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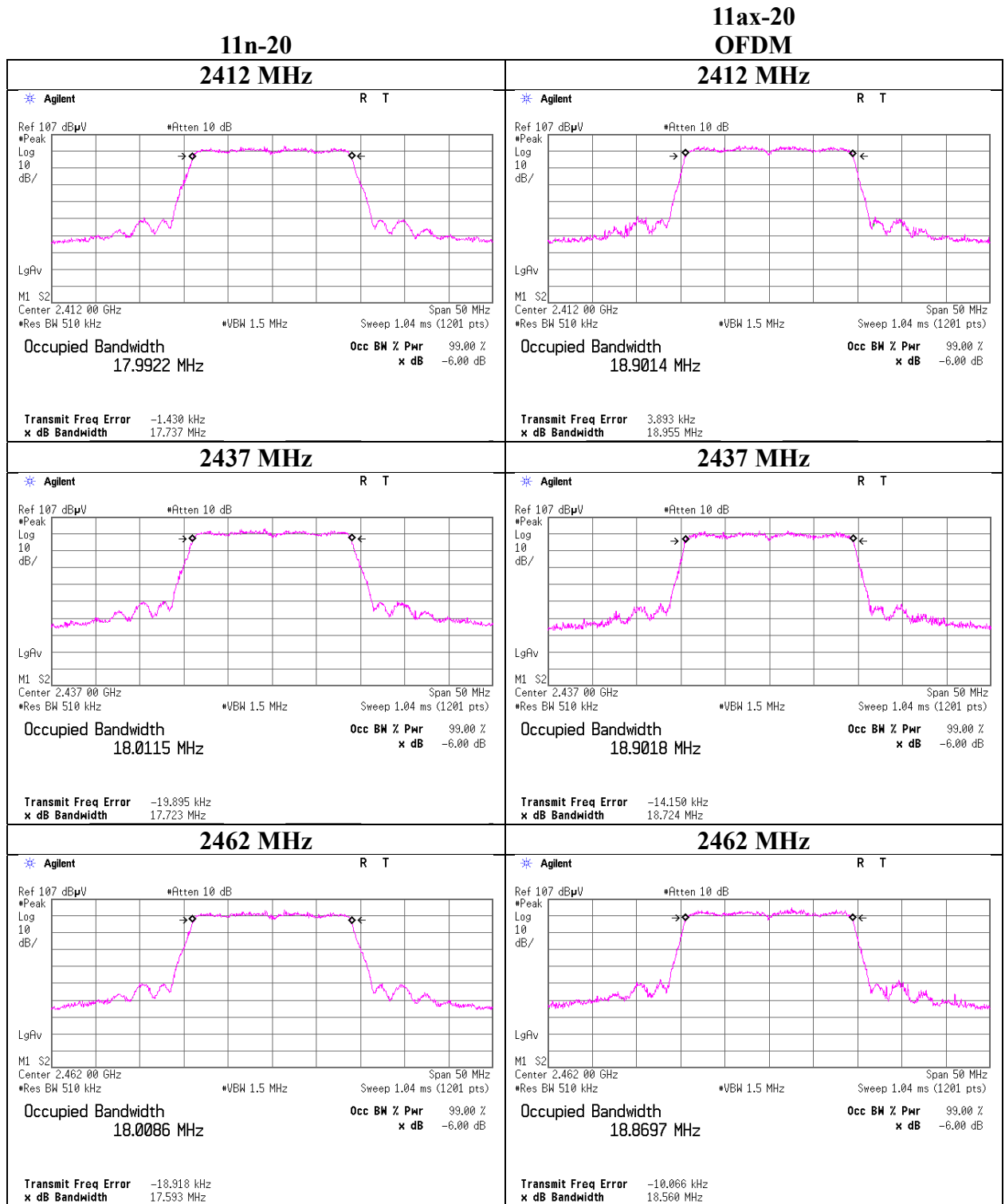
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Facsimile : +81 596 24 8124

99% Occupied Bandwidth



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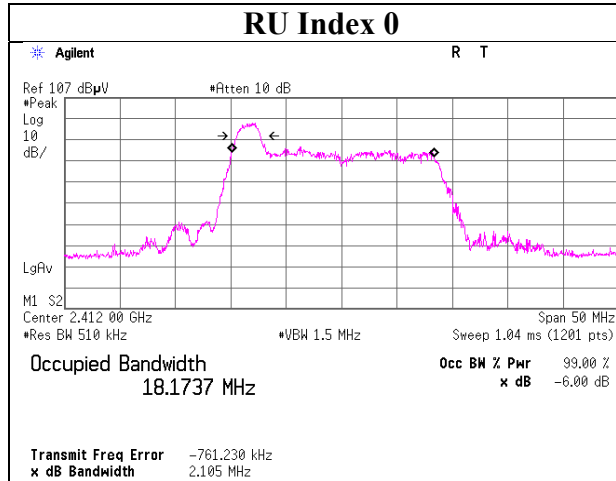
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

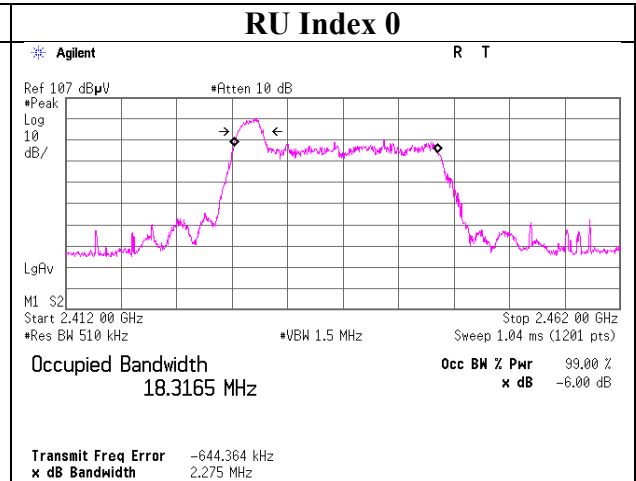
Facsimile : +81 596 24 8124

99% Occupied Bandwidth

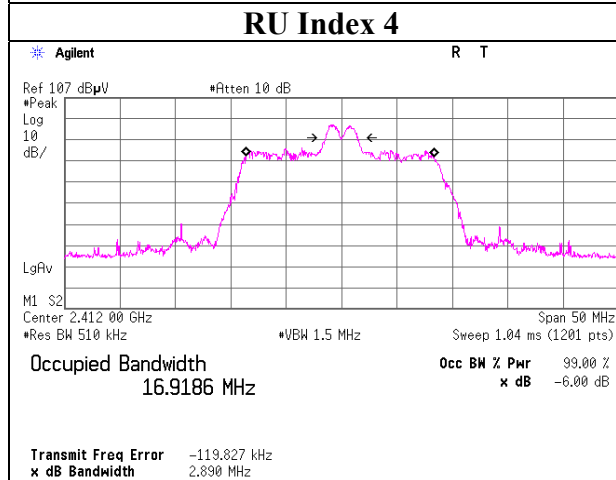
11ax-20 26-tone RU 2412 MHz RU Index 0



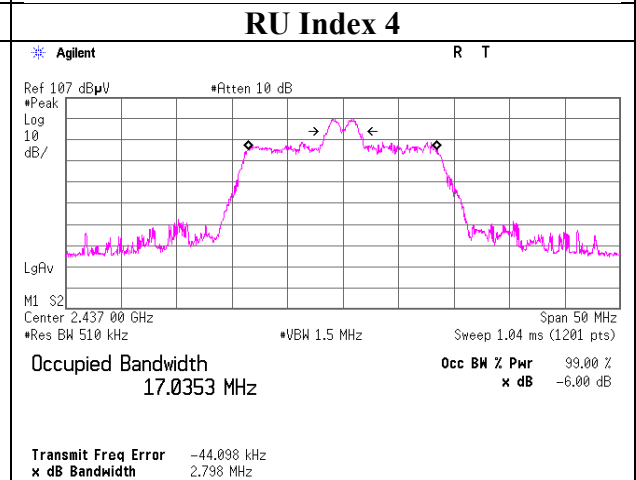
11ax-20 26-tone RU 2437 MHz RU Index 0



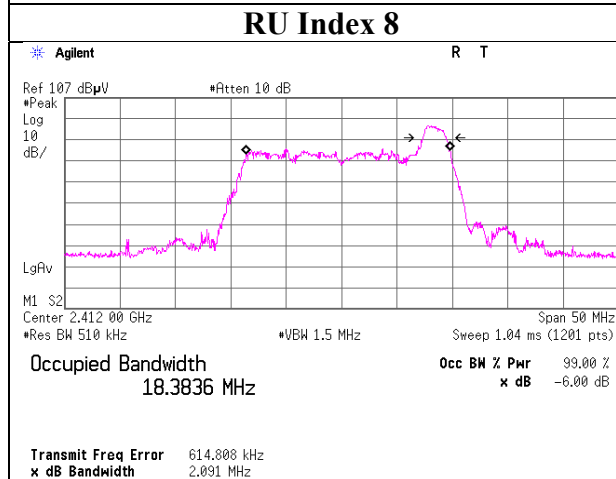
RU Index 4



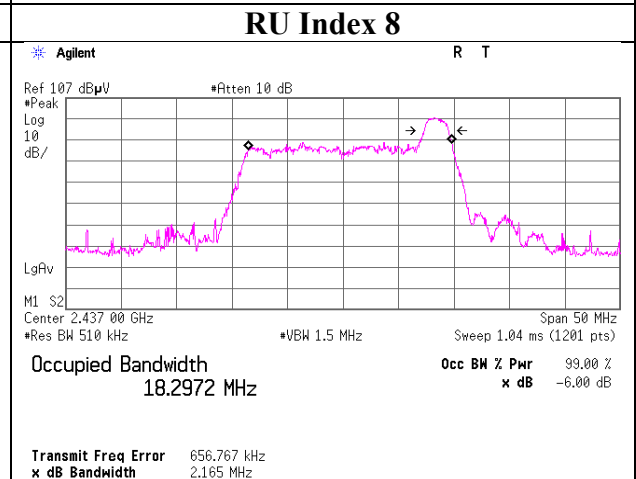
RU Index 4



RU Index 8



RU Index 8



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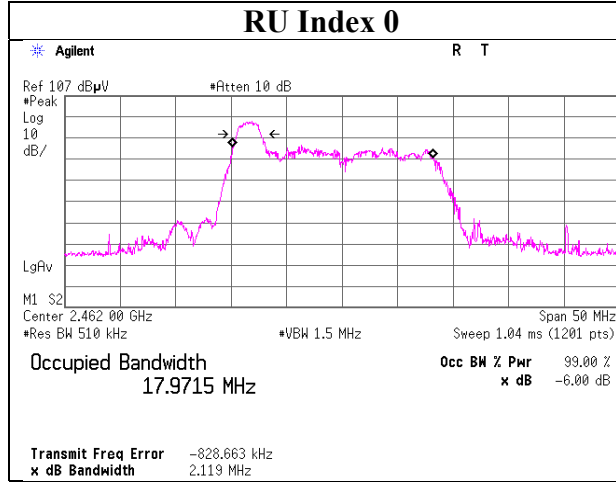
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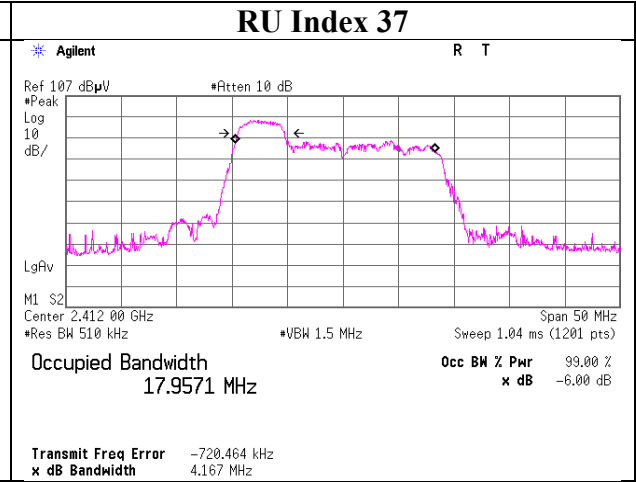
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99% Occupied Bandwidth

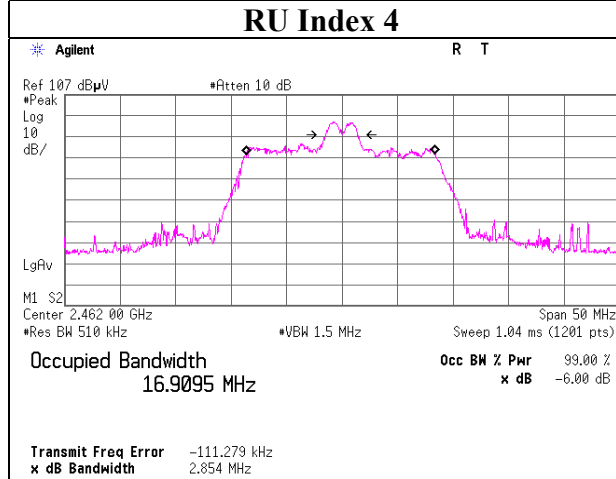
11ax-20 26-tone RU 2462 MHz RU Index 0



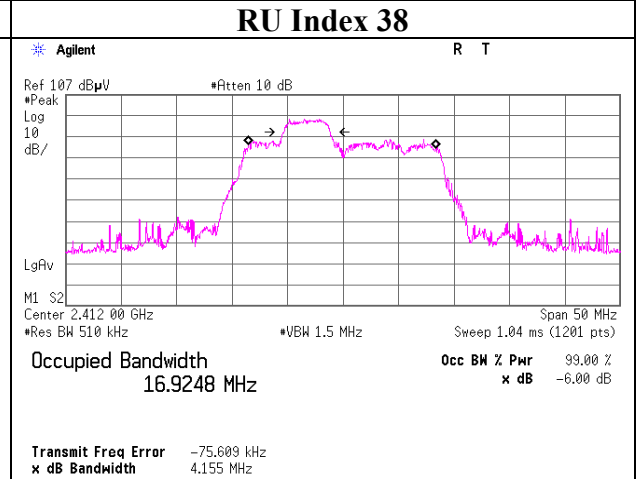
11ax-20 52-tone RU 2412 MHz RU Index 37



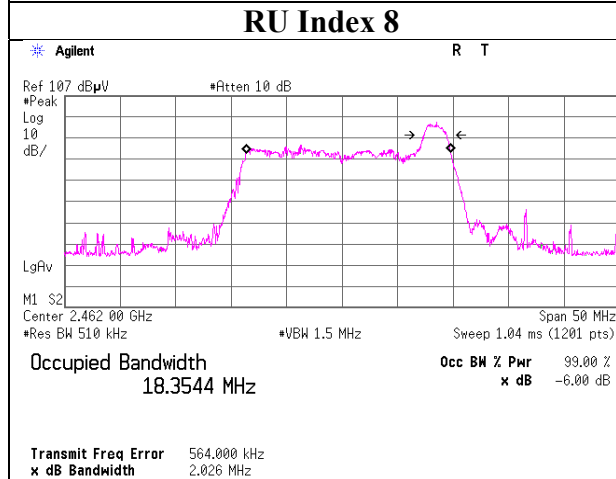
RU Index 4



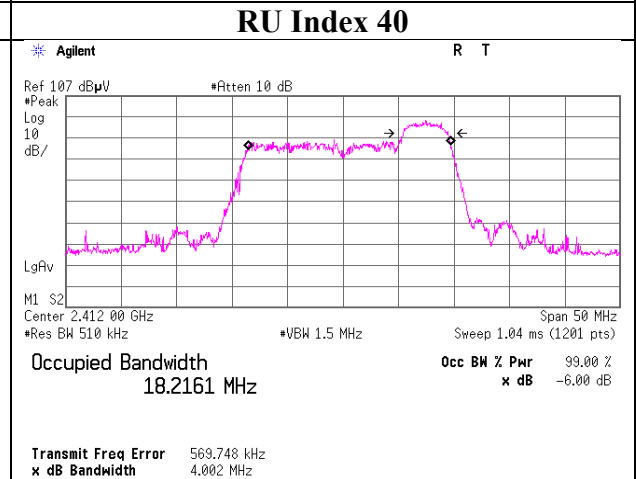
RU Index 38



RU Index 8



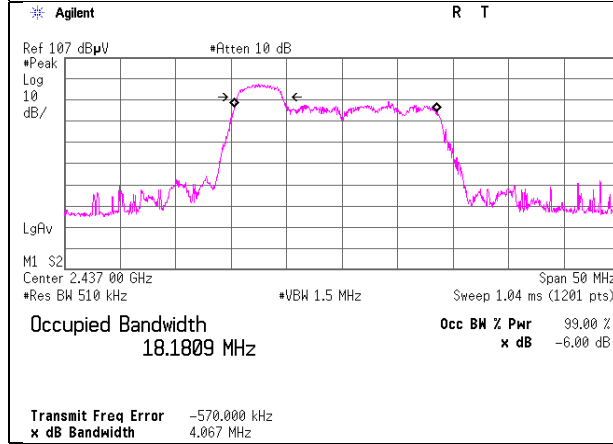
RU Index 40



99% Occupied Bandwidth

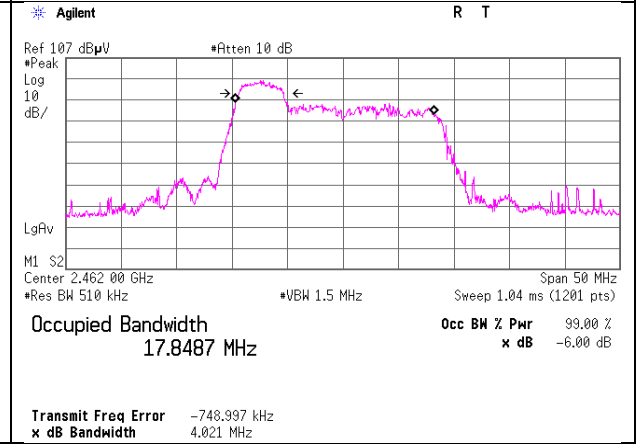
11ax-20
52-tone RU
2437 MHz

RU Index 37

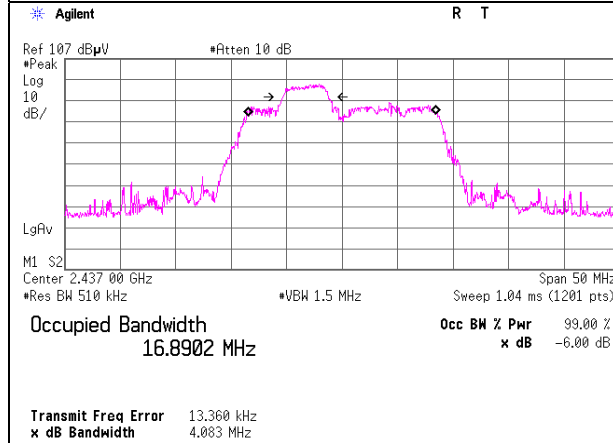


11ax-20
52-tone RU
2462 MHz

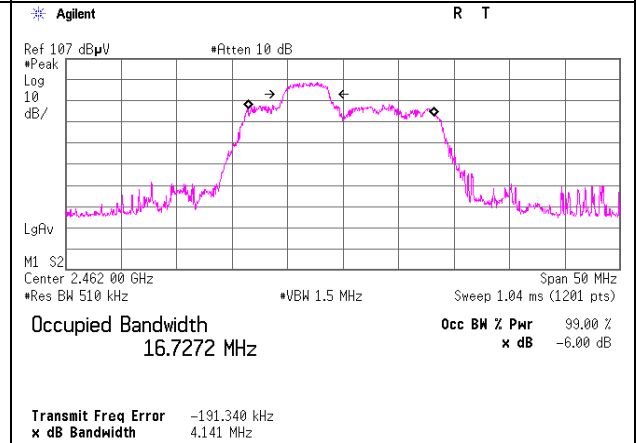
RU Index 37



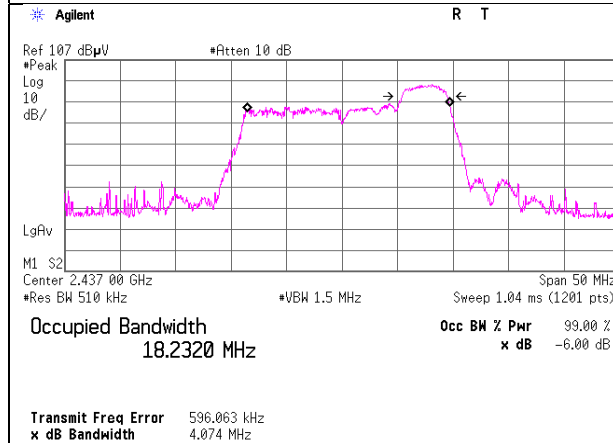
RU Index 38



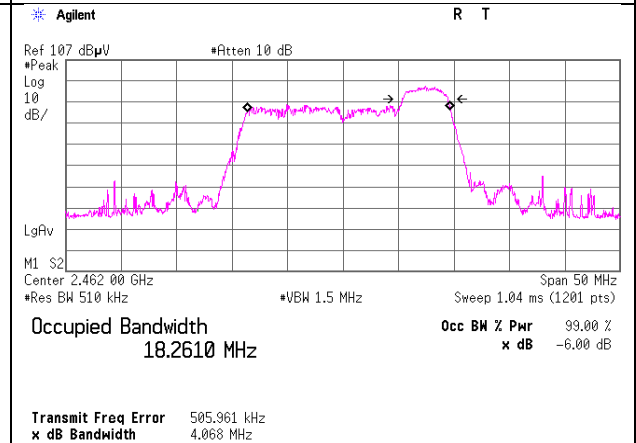
RU Index 38



RU Index 40



RU Index 40



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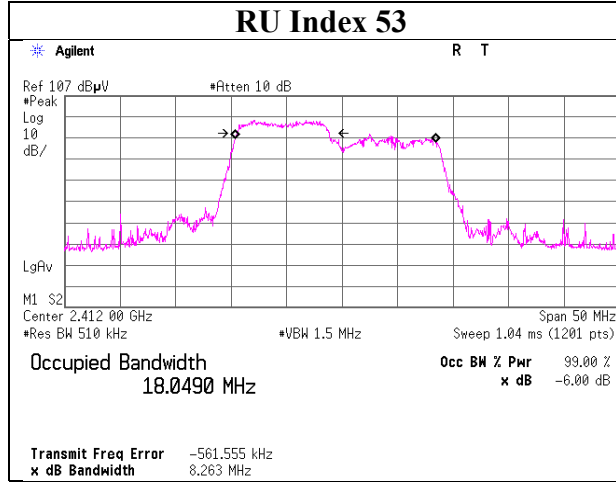
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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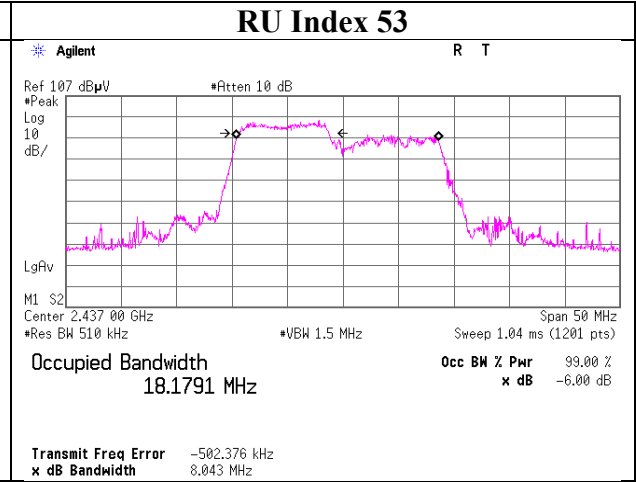
Facsimile : +81 596 24 8124

99% Occupied Bandwidth

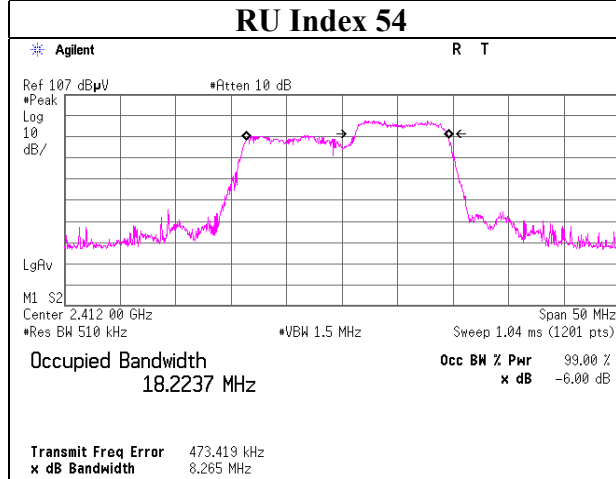
11ax-20
106-tone RU
2412 MHz
RU Index 53



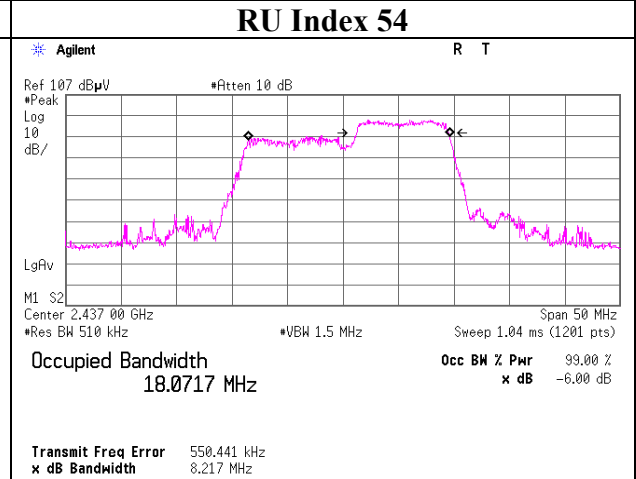
11ax-20
106-tone RU
2437 MHz
RU Index 53



RU Index 54



RU Index 54



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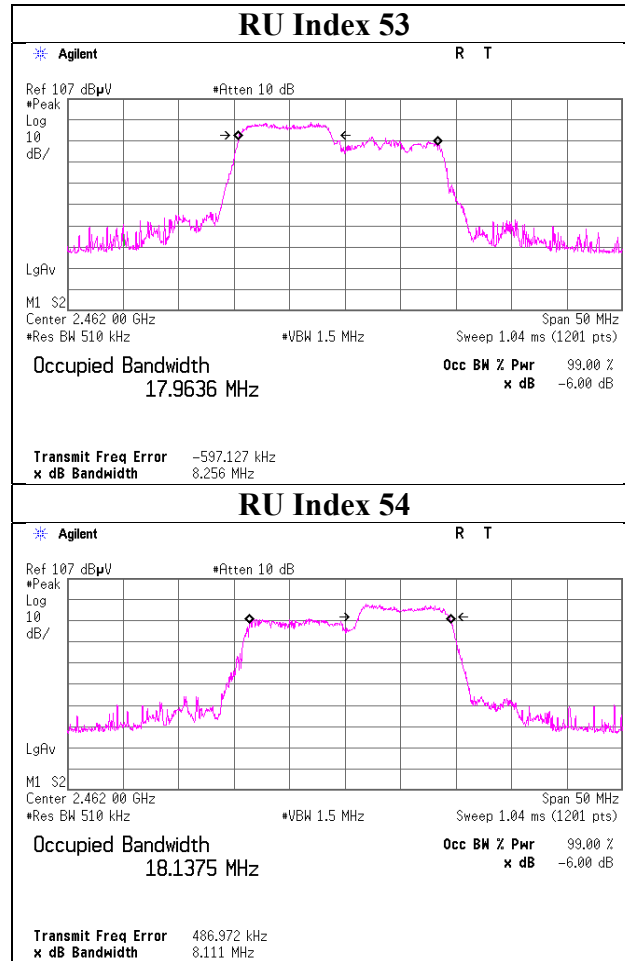
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99% Occupied Bandwidth

11ax-20
106-tone RU
2462 MHz



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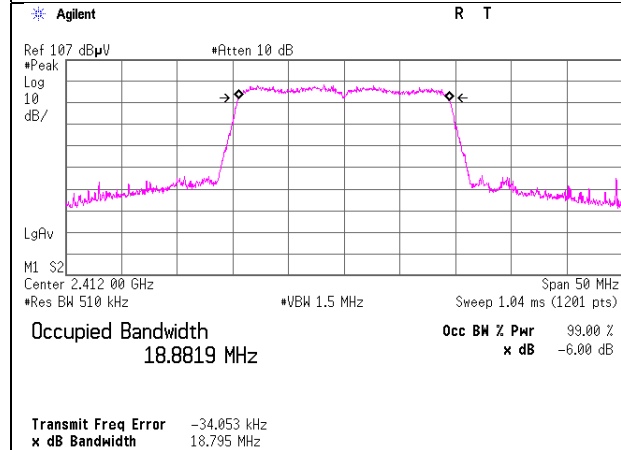
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

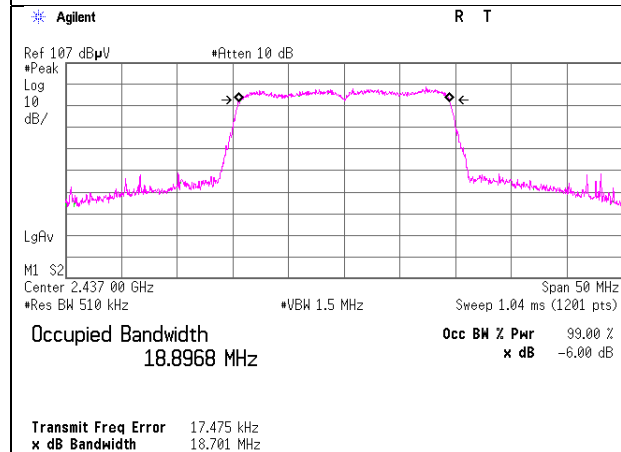
99% Occupied Bandwidth

11ax-20 242-tone RU

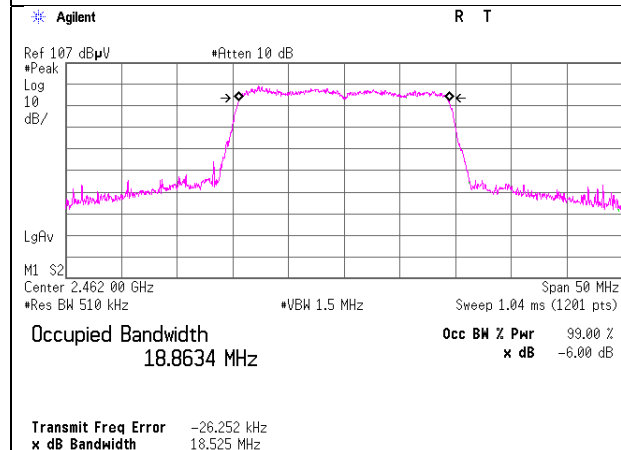
2412 MHz



2437 MHz

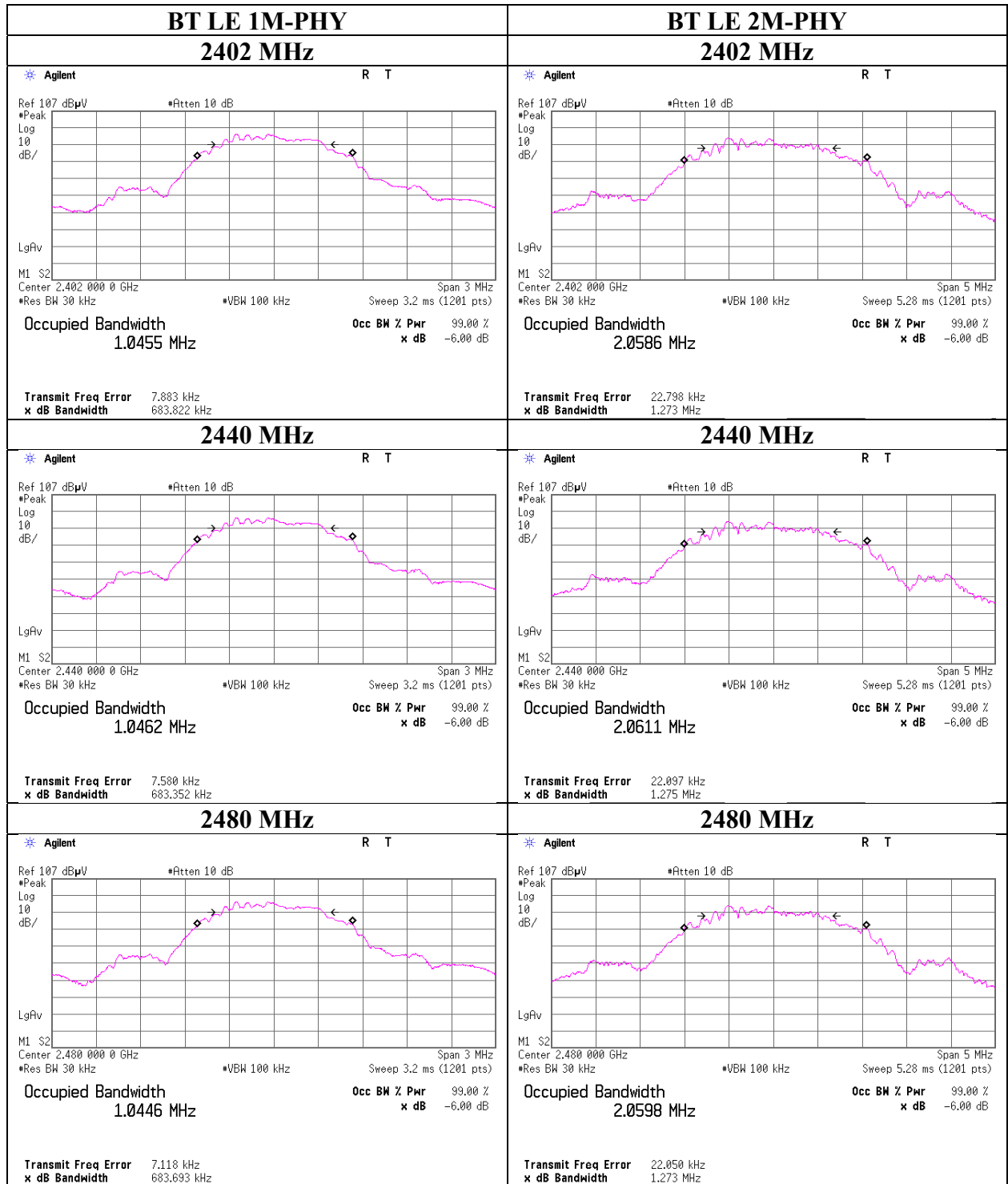


2462 MHz



99%Occupied Bandwidth

BT1



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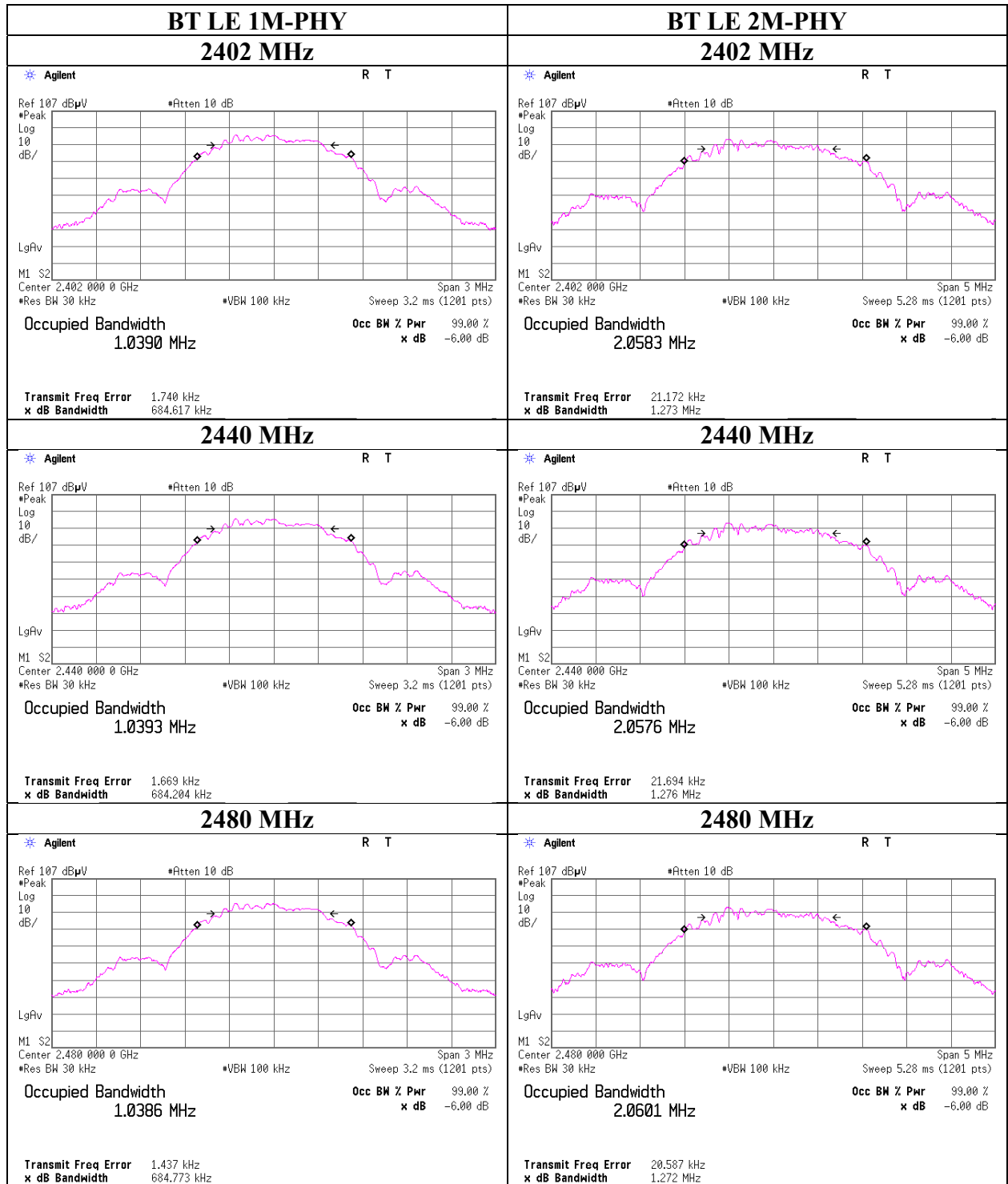
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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99%Occupied Bandwidth

BT2



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6dB Bandwidth



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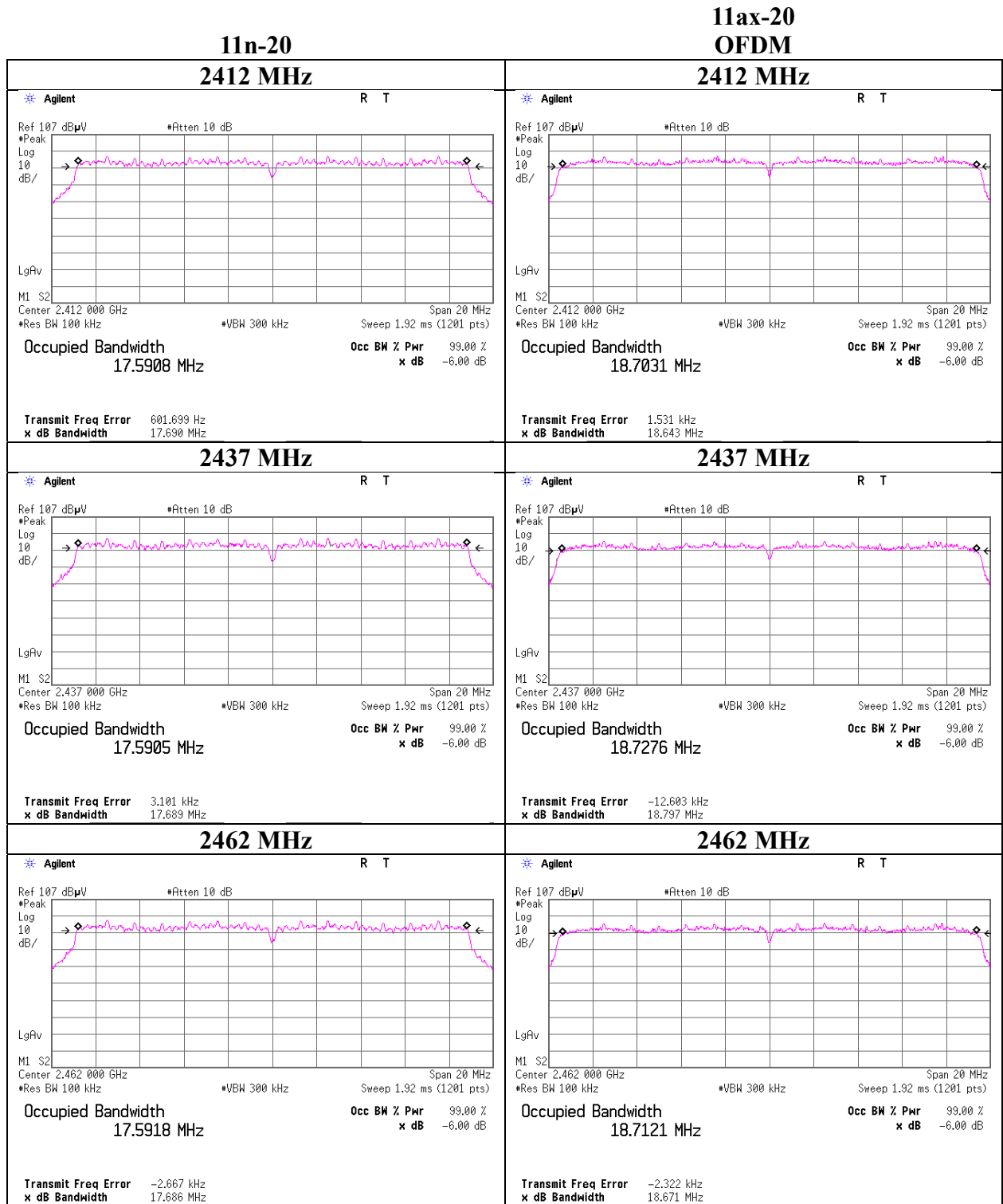
Ise EMC Lab.

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

6dB Bandwidth



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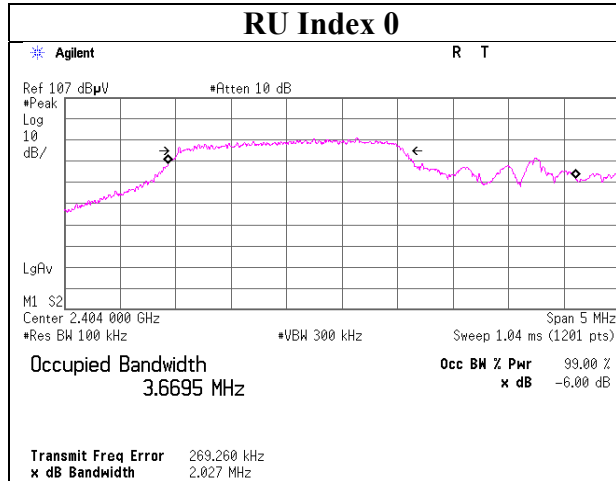
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

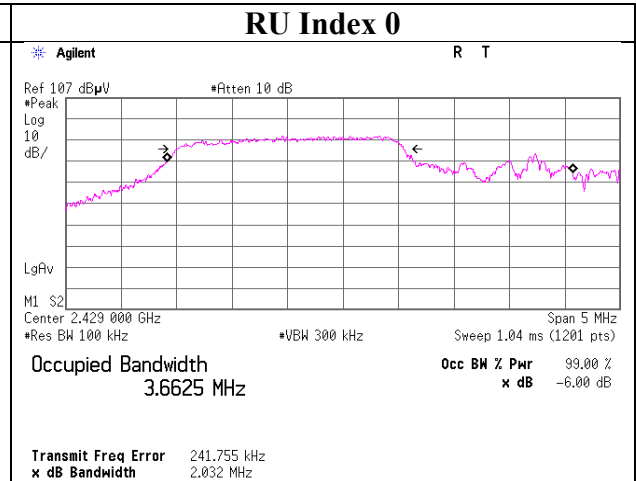
Facsimile : +81 596 24 8124

6dB Bandwidth

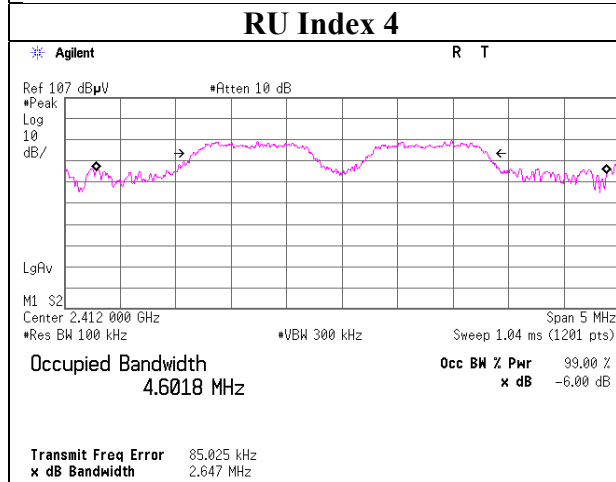
11ax-20
26-tone RU
2412 MHz
RU Index 0



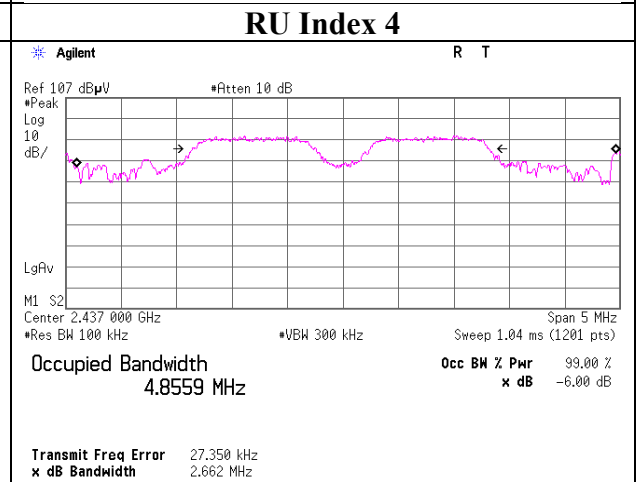
11ax-20
26-tone RU
2437 MHz
RU Index 0



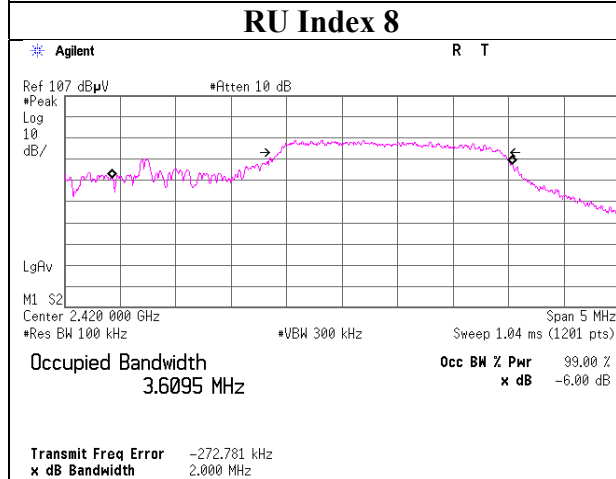
RU Index 4



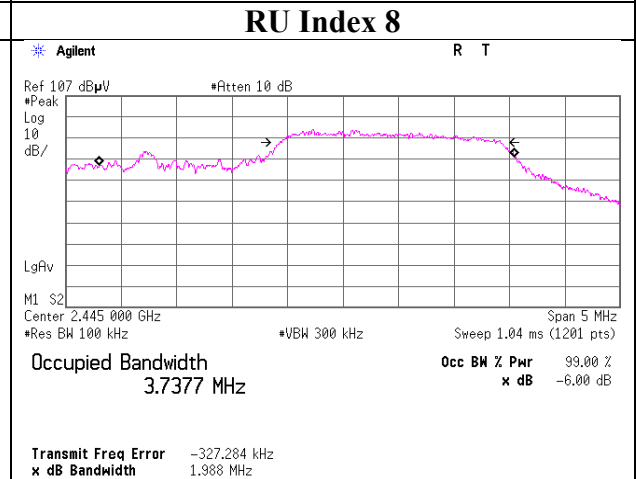
RU Index 4



RU Index 8



RU Index 8



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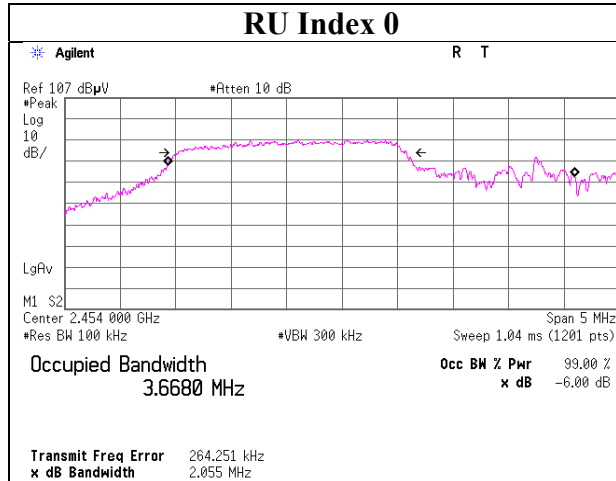
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

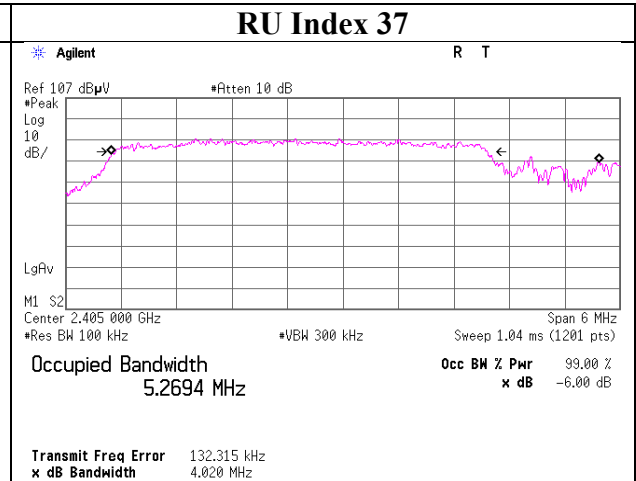
Facsimile : +81 596 24 8124

6dB Bandwidth

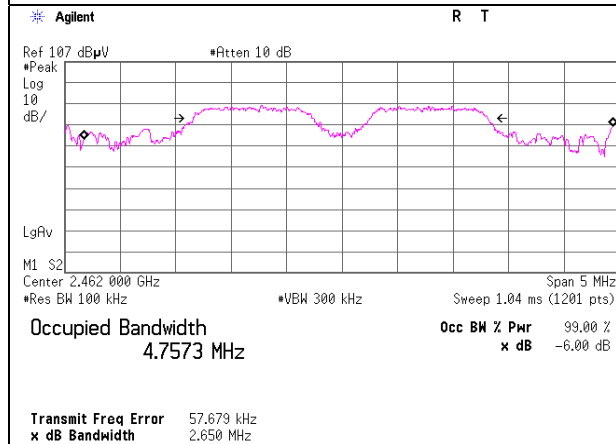
11ax-20 26-tone RU 2462 MHz RU Index 0



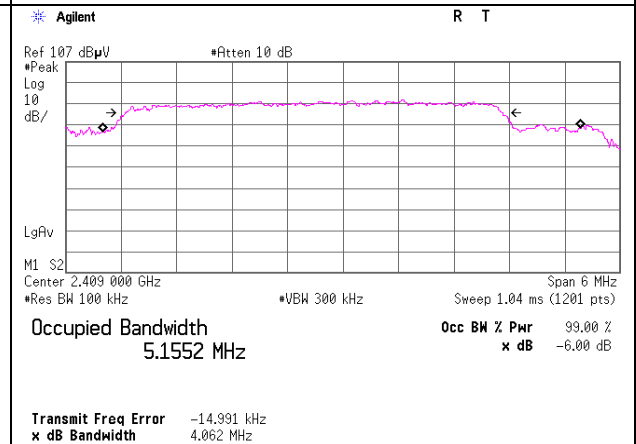
11ax-20 52-tone RU 2412 MHz RU Index 37



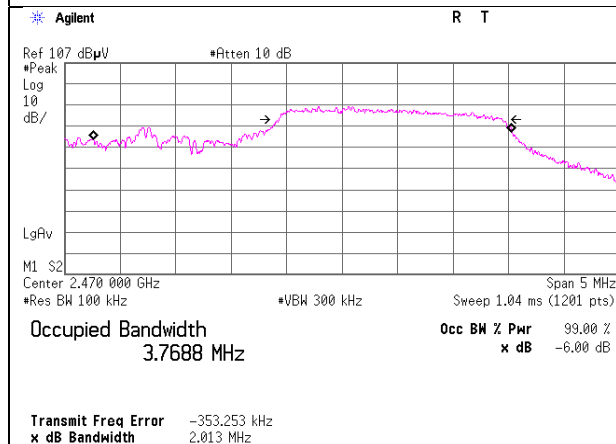
RU Index 4



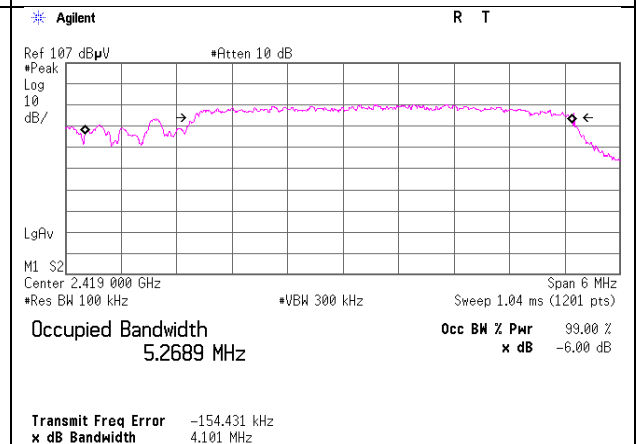
RU Index 38



RU Index 8



RU Index 40



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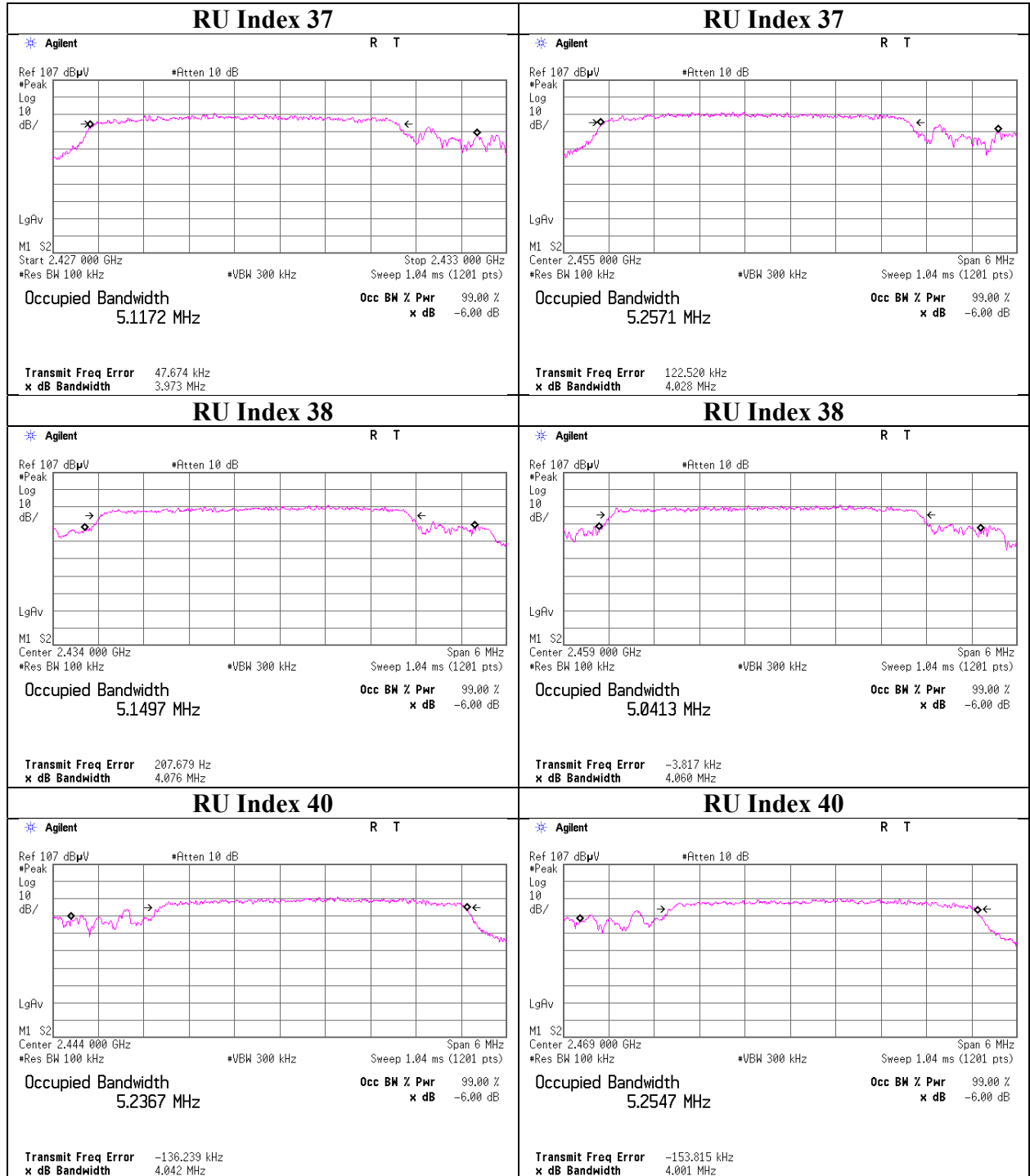
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Facsimile : +81 596 24 8124

6dB Bandwidth

11ax-20
52-tone RU
2437 MHz

11ax-20
52-tone RU
2462 MHz



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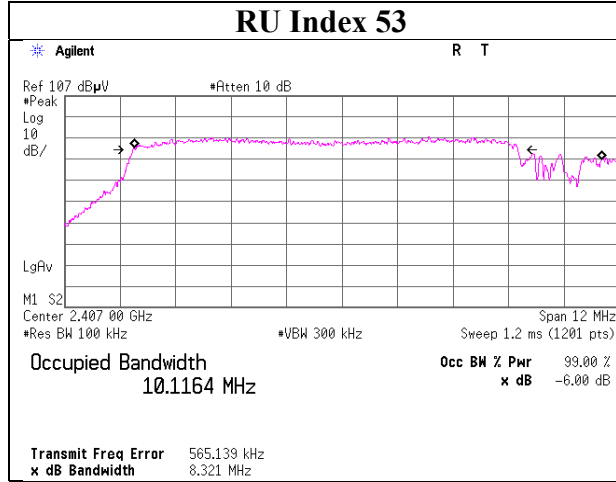
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

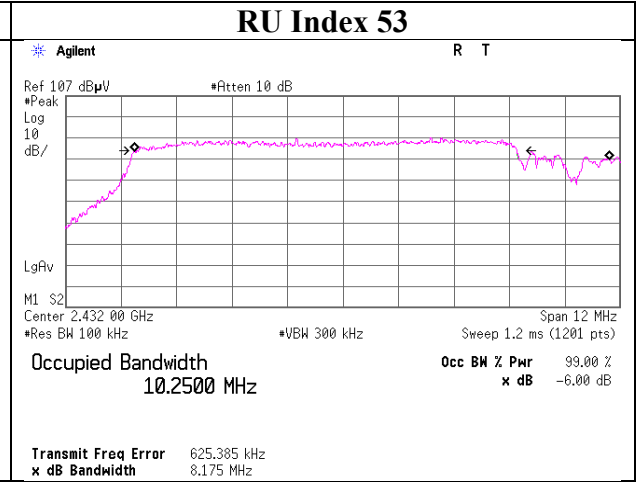
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6dB Bandwidth

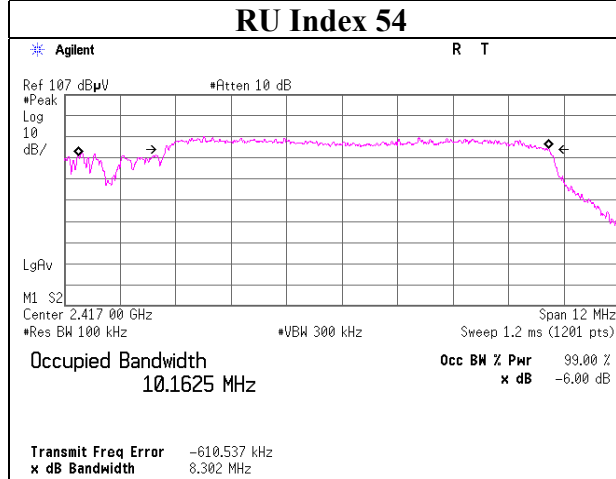
11ax-20
106-tone RU
2412 MHz
RU Index 53



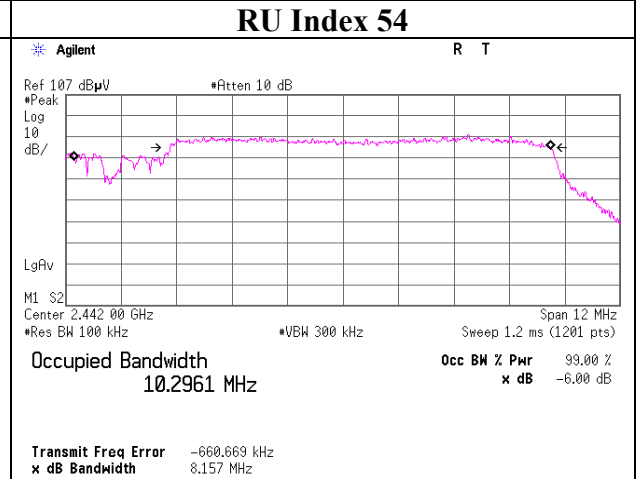
11ax-20
106-tone RU
2437 MHz
RU Index 53



RU Index 54



RU Index 54



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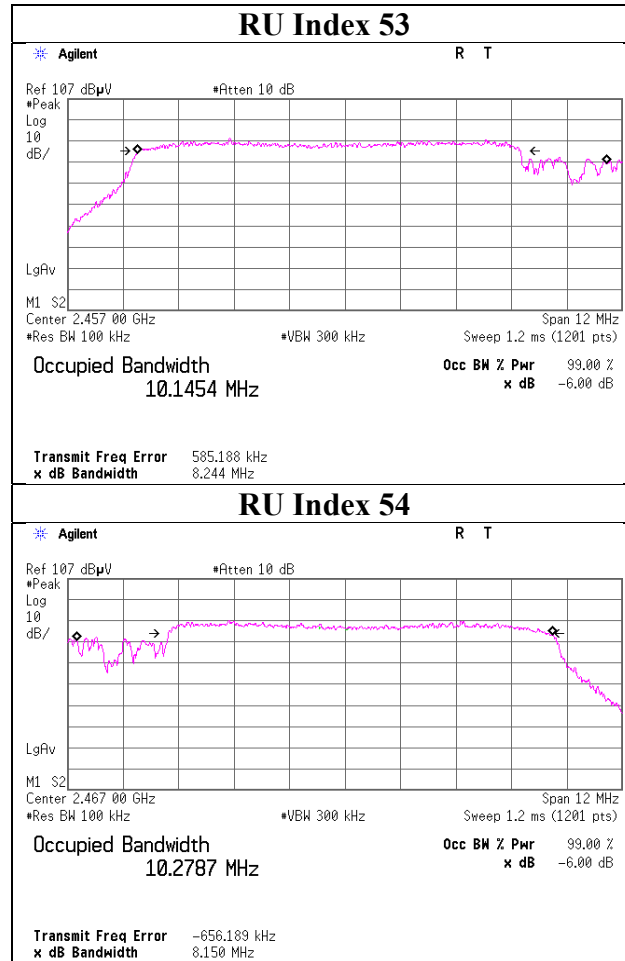
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Facsimile : +81 596 24 8124

6dB Bandwidth

11ax-20
106-tone RU
2462 MHz



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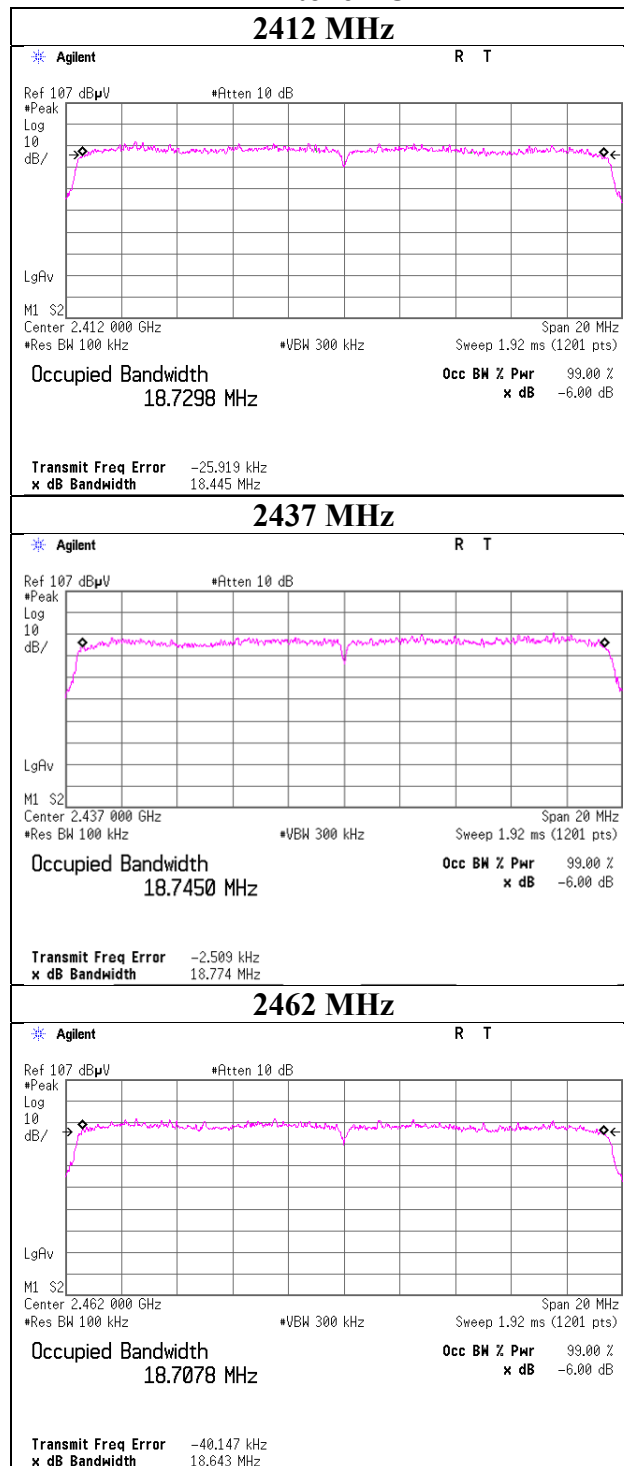
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

6dB Bandwidth

11ax-20 242-tone RU



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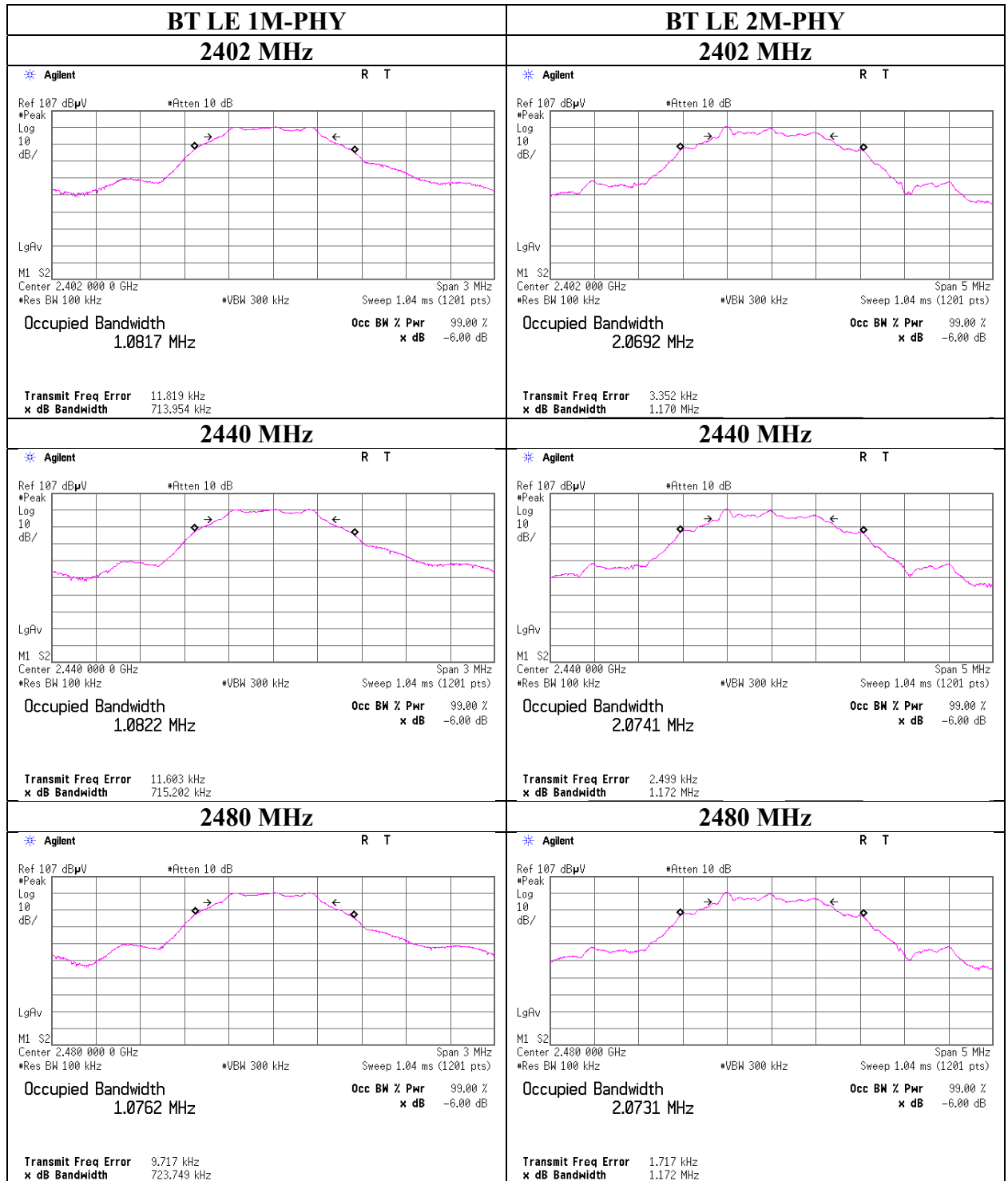
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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

6dB Bandwidth

BT1



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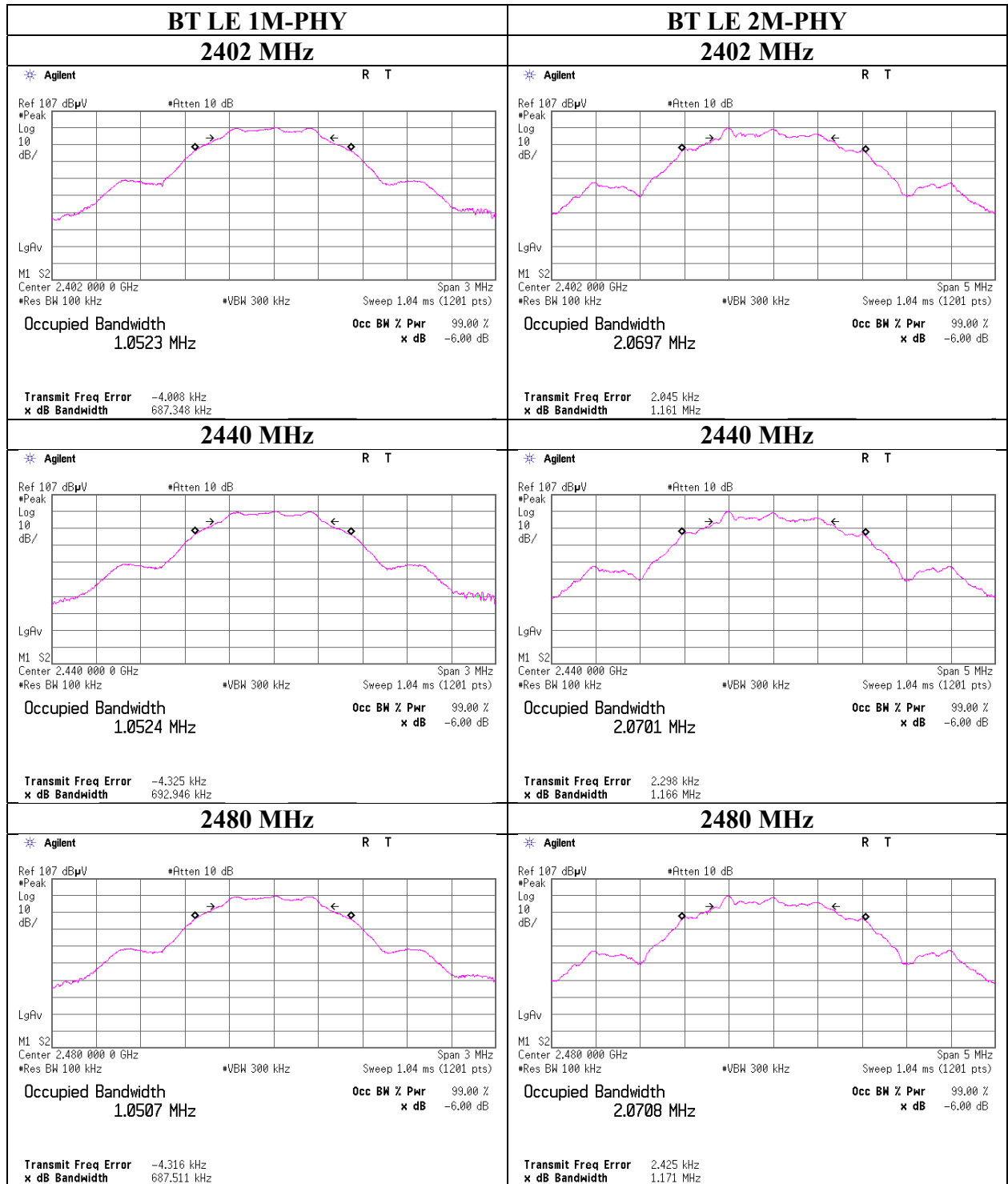
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

6dB Bandwidth

BT2



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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Maximum Peak Output Power

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 16, 2019
Temperature / Humidity	24 deg. C / 30 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11b

Antenna 1 + Antenna 2			Conducted Power					e.i.r.p.					
Freq.	Antenna 1 Result	Antenna 2 Result	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.39	10.09	12.67	18.49	26.99	500	14.32	9.01	21.68	147.19	36.02	4000.00	14.34
2437	8.79	10.69	12.90	19.48	26.99	500	14.09	9.01	21.91	155.10	36.02	4000.00	14.11
2462	8.99	10.72	12.95	19.71	26.99	500	14.04	9.01	21.96	156.92	36.02	4000.00	14.06

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	-1.25	0.50	9.99	9.24	8.39
2437	-1.05	0.50	9.99	9.44	8.79
2462	-0.95	0.50	9.99	9.54	8.99

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	-0.19	0.50	9.73	10.04	10.09
2437	0.06	0.50	9.73	10.29	10.69
2462	0.07	0.50	9.73	10.30	10.72

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

2412MHz

Rate [Mbps]	Antenna 1 Reading Peak		Antenna 2 Reading Peak		Total Reading Power		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
1	-0.60	0.87	-0.18	0.96	2.63	1.83	*
2	-0.63	0.86	-0.19	0.96	2.61	1.82	
5.5	-0.69	0.85	-0.20	0.95	2.57	1.81	
11	-0.69	0.85	-0.20	0.95	2.57	1.81	

*Worst Rate

The worst antenna gain was applied for e.i.r.p.

UL Japan, Inc.

Ise EMC Lab.

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

Telephone : +81 596 24 8999

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 16, 2019 December 17, 2019
Temperature / Humidity 24 deg. C / 30 % RH 23 deg. C / 39 % RH
Engineer Takafumi Noguchi Takafumi Noguchi
Mode Tx 11g

Antenna 1 + Antenna 2			Conducted Power						e.i.r.p.					
Freq.	Antenna 1 Result	Antenna 2 Result	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin	
			[dBm]	[mW]	[dBm]	[mW]			[dB]	[dBm]	[mW]	[dBm]		[mW]
[MHz]	[mW]	[mW]					[dB]	[dBi]					[dB]	
2412	59.70	70.96	21.16	130.66	26.99	500	5.83	9.01	30.17	1040.27	36.02	4000.00	5.85	
2437	59.02	71.61	21.16	130.63	26.99	500	5.83	9.01	30.17	1040.06	36.02	4000.00	5.85	
2462	60.39	73.79	21.28	134.19	26.99	500	5.71	9.01	30.29	1068.33	36.02	4000.00	5.73	

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	7.27	0.50	9.99	17.76	59.70
2437	7.22	0.50	9.99	17.71	59.02
2462	7.32	0.50	9.99	17.81	60.39

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	8.28	0.50	9.73	18.51	70.96
2437	8.32	0.50	9.73	18.55	71.61
2462	8.45	0.50	9.73	18.68	73.79

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

2412MHz

Rate [Mbps]	Antenna 1 Reading Peak		Antenna 2 Reading Peak		Total Reading Power		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
6	7.63	5.79	8.27	6.71	10.97	12.51	
9	7.66	5.83	8.24	6.67	10.97	12.50	
12	7.42	5.52	7.95	6.24	10.70	11.76	
18	7.33	5.41	8.22	6.64	10.81	12.04	
24	7.67	5.85	8.27	6.71	10.99	12.56	*
36	7.00	5.01	7.63	5.79	10.34	10.81	
48	7.53	5.66	8.19	6.59	10.88	12.25	
54	7.50	5.62	8.22	6.64	10.89	12.26	

*Worst Rate

The worst antenna gain was applied for e.i.r.p.

Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 16, 2019 December 17, 2019
Temperature / Humidity 24 deg. C / 30 % RH 23 deg. C / 39 % RH
Engineer Takafumi Noguchi Takafumi Noguchi
Mode Tx 11n-20

Antenna 1 + Antenna 2			Conducted Power						e.i.r.p.					
Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin	Antenna Gain [dBi]	Result		Limit		Margin	
			[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dB]			
2412	63.97	84.14	21.71	148.11	26.99	500	5.28	9.01	30.72	1179.22	36.02	4000.00	5.30	
2437	66.07	90.99	21.96	157.06	26.99	500	5.03	9.01	30.97	1250.45	36.02	4000.00	5.05	
2462	68.87	91.41	22.05	160.28	26.99	500	4.94	9.01	31.06	1276.06	36.02	4000.00	4.96	

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	7.57	0.50	9.99	18.06	63.97
2437	7.71	0.50	9.99	18.20	66.07
2462	7.89	0.50	9.99	18.38	68.87

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	9.02	0.50	9.73	19.25	84.14
2437	9.36	0.50	9.73	19.59	90.99
2462	9.38	0.50	9.73	19.61	91.41

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

2412MHz

MCS Number	Antenna 1 Reading Peak		Antenna 2 Reading Peak		Total Reading Power		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
0	7.98	6.28	8.54	7.14	11.28	13.43	
1	7.97	6.27	8.54	7.14	11.27	13.41	
2	7.82	6.05	8.55	7.16	11.21	13.21	
3	7.87	6.12	8.54	7.14	11.23	13.27	
4	7.83	6.07	8.65	7.33	11.27	13.40	
5	7.92	6.19	8.67	7.36	11.32	13.56	
6	7.92	6.19	8.35	6.84	11.15	13.03	
7	7.82	6.05	8.38	6.89	11.12	12.94	
8	7.73	5.93	8.45	7.00	11.12	12.93	
9	7.08	5.11	8.54	7.14	10.88	12.25	
10	7.59	5.74	8.37	6.87	11.01	12.61	
11	7.93	6.21	8.62	7.28	11.30	13.49	
12	7.97	6.27	8.55	7.16	11.28	13.43	
13	7.52	5.65	7.98	6.28	10.77	11.93	
14	8.06	6.40	9.00	7.94	11.57	14.34	*
15	7.45	5.56	8.84	7.66	11.21	13.22	

*Worst MCS

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

The worst antenna gain was applied for e.i.r.p.

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 16, 2019 December 17, 2019
Temperature / Humidity 24 deg. C / 30 % RH 23 deg. C / 39 % RH
Engineer Takafumi Noguchi Takafumi Noguchi
Mode Tx 11ax-20 (OFDM)

Antenna 1 + Antenna 2			Conducted Power					e.i.r.p.					
Freq.	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin	Antenna Gain [dBi]	Result		Limit		Margin
[MHz]			[dBm]	[mW]	[dBm]	[mW]	[dB]		[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	73.45	89.95	22.13	163.40	26.99	500	4.86	9.01	31.14	1300.93	36.02	4000.00	4.88
2437	78.16	96.38	22.42	174.55	26.99	500	4.57	9.01	31.43	1389.66	36.02	4000.00	4.59
2462	79.80	100.23	22.55	180.03	26.99	500	4.44	9.01	31.56	1433.33	36.02	4000.00	4.46

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1					
Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
2412	8.17	0.50	9.99	18.66	73.45
2437	8.44	0.50	9.99	18.93	78.16
2462	8.53	0.50	9.99	19.02	79.80

Antenna 2					
Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
2412	9.31	0.50	9.73	19.54	89.95
2437	9.61	0.50	9.73	19.84	96.38
2462	9.78	0.50	9.73	20.01	100.23

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

2412MHz								
Mode	MCS Number	Antenna 1 Reading Peak		Antenna 2 Reading Peak		Total Reading Power		Remark
		[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
1TX	0	7.90	6.17	8.60	7.24	11.27	13.41	
	1	8.66	7.35	8.93	7.82	11.81	15.16	
	2	8.37	6.87	8.89	7.74	11.65	14.62	
	3	8.14	6.52	8.80	7.59	11.49	14.10	
	4	8.05	6.38	8.95	7.85	11.53	14.23	
	5	8.30	6.76	8.94	7.83	11.64	14.60	
	6	8.76	7.52	9.38	8.67	12.09	16.19	*
	7	8.32	6.79	9.14	8.20	11.76	15.00	
	8	8.32	6.79	8.90	7.76	11.63	14.55	
	9	7.93	6.21	8.90	7.76	11.45	13.97	
	10	8.00	6.31	8.82	7.62	11.44	13.93	
2TX	11	8.17	6.56	8.96	7.87	11.59	14.43	
	0	7.90	6.17	9.19	8.30	11.60	14.46	
	1	9.44	8.79	8.59	7.23	12.05	16.02	
	2	7.60	5.75	8.88	7.73	11.30	13.48	
	3	7.98	6.28	9.20	8.32	11.64	14.60	
	4	7.64	5.81	8.65	7.33	11.18	13.14	
	5	7.74	5.94	8.68	7.38	11.25	13.32	
	6	8.19	6.59	9.01	7.96	11.63	14.55	
	7	8.08	6.43	8.86	7.69	11.50	14.12	
	8	7.98	6.28	8.71	7.43	11.37	13.71	
	9	8.20	6.61	8.77	7.53	11.50	14.14	
	10	8.31	6.78	8.90	7.76	11.63	14.54	
	11	8.97	7.89	9.04	8.02	12.02	15.91	

*Worst MCS

The worst antenna gain was applied for e.i.r.p.

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 7, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (26-tone RU)

Antenna 1 + Antenna 2					Conducted Power					e.i.r.p.					
Freq.	RU Type	RU Index	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin	Antenna Gain [dBi]	Result		Limit		Margin
[MHz]					[dBm]	[mW]	[dBm]	[mW]	[dB]		[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	26-tone RU	0	7.53	8.11	11.94	15.64	26.99	500	15.05	9.01	20.95	124.54	36.02	4000.00	15.07
		4	7.94	7.98	12.02	15.92	26.99	500	14.97	9.01	21.03	126.77	36.02	4001.00	14.99
		8	7.48	7.53	11.77	15.02	26.99	500	15.22	9.01	20.78	119.55	36.02	4002.00	15.25
0		7.28	7.33	11.65	14.61	26.99	500	15.34	9.01	20.66	116.29	36.02	4000.00	15.37	
4		6.10	7.05	11.19	13.14	26.99	500	15.80	9.01	20.20	104.63	36.02	4001.00	15.82	
8		6.15	7.98	11.50	14.13	26.99	500	15.49	9.01	20.51	112.51	36.02	4002.00	15.51	
0		7.62	8.63	12.11	16.25	26.99	500	14.88	9.01	21.12	129.38	36.02	4000.00	14.90	
4		8.34	8.39	12.24	16.73	26.99	500	14.75	9.01	21.25	133.21	36.02	4001.00	14.78	
8		7.91	7.93	12.00	15.83	26.99	500	14.99	9.01	21.01	126.05	36.02	4002.00	15.02	

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1							
Freq.	RU Type	RU Index	Reading	Cable Loss	Atten. Loss	Result	
[MHz]			[dBm]	[dB]	[dB]	[dBm]	[mW]
2412	26-tone RU	0	-5.78	4.82	9.73	8.77	7.53
		4	-5.55	4.82	9.73	9.00	7.94
		8	-5.81	4.82	9.73	8.74	7.48
2437		0	-5.93	4.82	9.73	8.62	7.28
		4	-6.70	4.82	9.73	7.85	6.10
		8	-6.66	4.82	9.73	7.89	6.15
2462		0	-5.72	4.81	9.73	8.82	7.62
		4	-5.33	4.81	9.73	9.21	8.34
		8	-5.56	4.81	9.73	8.98	7.91

Antenna 2							
Freq.	RU Type	RU Index	Reading	Cable Loss	Atten. Loss	Result	
[MHz]			[dBm]	[dB]	[dB]	[dBm]	[mW]
2412	26-tone RU	0	-5.46	4.82	9.73	9.09	8.11
		4	-5.53	4.82	9.73	9.02	7.98
		8	-5.78	4.82	9.73	8.77	7.53
2437		0	-5.90	4.82	9.73	8.65	7.33
		4	-6.07	4.82	9.73	8.48	7.05
		8	-5.53	4.82	9.73	9.02	7.98
2462		0	-5.18	4.81	9.73	9.36	8.63
		4	-5.30	4.81	9.73	9.24	8.39
		8	-5.55	4.81	9.73	8.99	7.93

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

The worst antenna gain was applied for e.i.r.p.

Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 7, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (52-tone RU)

Antenna 1 + Antenna 2					Conducted Power					e.i.r.p.					
Freq.	RU Type	RU Index	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]					[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	52-tone RU	37	16.11	17.26	15.23	33.36	26.99	500	11.76	9.01	24.24	265.64	36.02	4000.00	11.78
		38	19.91	20.42	16.06	40.32	26.99	500	10.93	9.01	25.07	321.04	36.02	4001.00	10.96
		40	16.41	16.44	15.17	32.85	26.99	500	11.82	9.01	24.18	261.54	36.02	4002.00	11.85
37		14.06	15.21	14.66	29.27	26.99	500	12.33	9.01	23.67	233.00	36.02	4000.00	12.35	
38		15.17	15.52	14.87	30.69	26.99	500	12.12	9.01	23.88	244.38	36.02	4001.00	12.14	
40		13.06	17.06	14.79	30.12	26.99	500	12.20	9.01	23.80	239.82	36.02	4002.00	12.22	
37		16.94	18.28	15.47	35.22	26.99	500	11.52	9.01	24.48	280.44	36.02	4000.00	11.54	
38		19.86	19.91	16.00	39.77	26.99	500	10.99	9.01	25.01	316.61	36.02	4001.00	11.02	
40		16.29	16.37	15.14	32.66	26.99	500	11.85	9.01	24.15	260.03	36.02	4002.00	11.87	

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1								
Freq.	RU Type	RU Index	Reading	Cable Loss	Atten. Loss	Result		
[MHz]			[dBm]	[dB]	[dB]	[dBm]	[mW]	
2412	52-tone RU	37	-2.48	4.82	9.73	12.07	16.11	
		38	-1.56	4.82	9.73	12.99	19.91	
		40	-2.40	4.82	9.73	12.15	16.41	
2437		37	-3.07	4.82	9.73	11.48	14.06	
		38	-2.74	4.82	9.73	11.81	15.17	
		40	-3.39	4.82	9.73	11.16	13.06	
2462		37	-2.25	4.81	9.73	12.29	16.94	
		38	-1.56	4.81	9.73	12.98	19.86	
		40	-2.42	4.81	9.73	12.12	16.29	

Antenna 2								
Freq.	RU Type	RU Index	Reading	Cable Loss	Atten. Loss	Result		
[MHz]			[dBm]	[dB]	[dB]	[dBm]	[mW]	
2412	52-tone RU	37	-2.18	4.82	9.73	12.37	17.26	
		38	-1.45	4.82	9.73	13.10	20.42	
		40	-2.39	4.82	9.73	12.16	16.44	
2437		37	-2.73	4.82	9.73	11.82	15.21	
		38	-2.64	4.82	9.73	11.91	15.52	
		40	-2.23	4.82	9.73	12.32	17.06	
2462		37	-1.92	4.81	9.73	12.62	18.28	
		38	-1.55	4.81	9.73	12.99	19.91	
		40	-2.40	4.81	9.73	12.14	16.37	

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

The worst antenna gain was applied for e.i.r.p.

Maximum Peak Output Power

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	February 7, 2020
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 (106-tone RU)

Antenna 1 + Antenna 2				Conducted Power					Margin	Antenna Gain [dBi]	e.i.r.p.				
Freq.	RU Type	RU Index	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit				Result	Limit		Margin	
[MHz]					[dBm]	[mW]	[dBm]	[mW]			[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	106-tone RU	53	33.88	35.08	18.39	68.96	26.99	500	8.60	9.01	27.40	549.03	36.02	4000.00	8.62
		54	31.99	31.99	18.06	63.98	26.99	500	8.93	9.01	27.07	509.37	36.02	4002.00	8.95
2437		53	32.73	33.27	18.20	66.00	26.99	500	8.79	9.01	27.21	525.47	36.02	4000.00	8.82
		54	28.64	32.89	17.89	61.53	26.99	500	9.10	9.01	26.90	489.85	36.02	4002.00	9.12
2462		53	34.83	35.32	18.46	70.15	26.99	500	8.53	9.01	27.47	558.52	36.02	4000.00	8.55
		54	33.42	34.59	18.33	68.01	26.99	500	8.66	9.01	27.34	541.50	36.02	4002.00	8.69

Sample Calculation:
Result = Antenna 1 + Antenna 2
e.i.r.p. Result = Conducted Power Result + Antenna Gain
*This Limit was reduced by the amount in dB (3.01 dB)
that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1								
Freq.	RU Type	RU Index	Reading	Cable Loss	Atten. Loss	Result		
[MHz]			[dBm]	[dB]	[dB]	[dBm]	[mW]	
2412	106-tone RU	53	0.75	4.82	9.73	15.30	33.88	
		54	0.50	4.82	9.73	15.05	31.99	
2437		53	0.60	4.82	9.73	15.15	32.73	
		54	0.02	4.82	9.73	14.57	28.64	
2462		53	0.88	4.81	9.73	15.42	34.83	
		54	0.70	4.81	9.73	15.24	33.42	

Antenna 2								
Freq.	RU Type	RU Index	Reading	Cable Loss	Atten. Loss	Result		
[MHz]			[dBm]	[dB]	[dB]	[dBm]	[mW]	
2412	106-tone RU	53	0.90	4.82	9.73	15.45	35.08	
		54	0.50	4.82	9.73	15.05	31.99	
2437		53	0.67	4.82	9.73	15.22	33.27	
		54	0.62	4.82	9.73	15.17	32.89	
2462		53	0.94	4.81	9.73	15.48	35.32	
		54	0.85	4.81	9.73	15.39	34.59	

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

The worst antenna gain was applied for e.i.r.p.

UL Japan, Inc.

Ise EMC Lab.

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Maximum Peak Output Power

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	March 28, 2020
Temperature / Humidity	24 deg. C / 51 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 (242-tone RU)

Antenna 1 + Antenna 2			Conducted Power					e.i.r.p.					
Freq.	Antenna 1 Result	Antenna 2 Result	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	73.45	73.79	21.68	147.24	26.99	500	5.31	9.01	30.69	1172.28	36.02	4000.00	5.33
2437	65.16	75.16	21.47	140.33	26.99	500	5.52	9.01	30.48	1117.21	36.02	4000.00	5.54
2462	74.82	76.91	21.81	151.73	26.99	500	5.18	9.01	30.82	1208.01	36.02	4000.00	5.20

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
2412	4.11	4.82	9.73	18.66	73.45
2437	3.59	4.82	9.73	18.14	65.16
2462	4.20	4.81	9.73	18.74	74.82

Antenna 2

Freq.	Reading	Cable Loss	Atten. Loss	Result	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
2412	4.13	4.82	9.73	18.68	73.79
2437	4.21	4.82	9.73	18.76	75.16
2462	4.32	4.81	9.73	18.86	76.91

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

The worst antenna gain was applied for e.i.r.p.

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE

BT1					Conducted Power					e.i.r.p. for RSS-247					
Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]			[dB]	[dBi]	[dBm]	[mW]	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
1M-PHY	2402.0	-8.73	0.50	9.73	1.50	1.41	20.96	125	19.46	5.80	7.30	5.37	36.02	4000	28.72
	2440.0	-8.72	0.50	9.73	1.51	1.42	20.96	125	19.45	5.80	7.31	5.38	36.02	4000	28.71
	2480.0	-8.74	0.50	9.73	1.49	1.41	20.96	125	19.47	5.80	7.29	5.36	36.02	4000	28.73
2M-PHY	2402.0	-8.70	0.50	9.73	1.53	1.42	20.96	125	19.43	5.80	7.33	5.41	36.02	4000	28.69
	2440.0	-8.69	0.50	9.73	1.54	1.43	20.96	125	19.42	5.80	7.34	5.42	36.02	4000	28.68
	2480.0	-8.71	0.50	9.73	1.52	1.42	20.96	125	19.44	5.80	7.32	5.40	36.02	4000	28.70

BT2					Conducted Power					e.i.r.p. for RSS-247					
Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
1M-PHY	2402.0	-8.38	0.50	9.99	2.11	1.63	20.96	125	18.85	5.80	7.91	6.18	36.02	4000	28.11
	2440.0	-8.44	0.50	9.99	2.05	1.60	20.96	125	18.91	5.80	7.85	6.10	36.02	4000	28.17
	2480.0	-8.57	0.50	9.99	1.92	1.56	20.96	125	19.04	5.80	7.72	5.92	36.02	4000	28.30
2M-PHY	2402.0	-8.35	0.50	9.99	2.14	1.64	20.96	125	18.82	5.80	7.94	6.22	36.02	4000	28.08
	2440.0	-8.42	0.50	9.99	2.07	1.61	20.96	125	18.89	5.80	7.87	6.12	36.02	4000	28.15
	2480.0	-8.55	0.50	9.99	1.94	1.56	20.96	125	19.02	5.80	7.74	5.94	36.02	4000	28.28

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

The worst antenna gain was applied for e.i.r.p.

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Average Output Power (Reference data for RF Exposure)

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11b

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result (Burst average)	
			[dBm]	[mW]
2412	4.38	5.27	9.84	9.65
2437	4.55	5.61	10.07	10.16
2462	4.67	5.65	10.14	10.32

Sample Calculation:

Result = Antenna 1 + Antenna 2

11b 1 Mbps Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-4.08	0.50	9.99	6.41	4.38	0.00	6.41	4.38
2437	-3.91	0.50	9.99	6.58	4.55	0.00	6.58	4.55
2462	-3.80	0.50	9.99	6.69	4.67	0.00	6.69	4.67

11b 1 Mbps Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-3.01	0.50	9.73	7.22	5.27	0.00	7.22	5.27
2437	-2.74	0.50	9.73	7.49	5.61	0.00	7.49	5.61
2462	-2.71	0.50	9.73	7.52	5.65	0.00	7.52	5.65

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

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Average Output Power (Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx 11g

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result (Burst average)	
			[dBm]	[mW]
2412	4.66	6.03	10.29	10.68
2437	4.93	6.37	10.53	11.30
2462	5.01	6.38	10.57	11.39

Sample Calculation:

Result = Antenna 1 + Antenna 2

11g 6 Mbps Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-3.83	0.50	9.99	6.66	4.63	0.02	6.68	4.66
2437	-3.58	0.50	9.99	6.91	4.91	0.02	6.93	4.93
2462	-3.51	0.50	9.99	6.98	4.99	0.02	7.00	5.01

11g 6 Mbps Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-2.45	0.50	9.73	7.78	6.00	0.02	7.80	6.03
2437	-2.21	0.50	9.73	8.02	6.34	0.02	8.04	6.37
2462	-2.20	0.50	9.73	8.03	6.35	0.02	8.05	6.38

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power (Reference data for RF Exposure)

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-20

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result (Burst average)	
			[dBm]	[mW]
2412	4.67	6.04	10.30	10.71
2437	4.95	6.37	10.54	11.32
2462	5.02	6.43	10.59	11.45

Sample Calculation:

Result = Antenna 1 + Antenna 2

11n-20 MCS 0 Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-3.83	0.50	9.99	6.66	4.63	0.03	6.69	4.67
2437	-3.57	0.50	9.99	6.92	4.92	0.03	6.95	4.95
2462	-3.51	0.50	9.99	6.98	4.99	0.03	7.01	5.02

11n-20 MCS 0 Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-2.45	0.50	9.73	7.78	6.00	0.03	7.81	6.04
2437	-2.22	0.50	9.73	8.01	6.32	0.03	8.04	6.37
2462	-2.18	0.50	9.73	8.05	6.38	0.03	8.08	6.43

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

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Average Output Power (Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (OFDM)

Antenna 1 + Antenna 2

Mode	Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result (Burst average)	
				[dBm]	[mW]
1TX	2412	4.95	6.41	10.56	11.37
	2437	5.14	6.70	10.73	11.84
	2462	5.24	6.71	10.77	11.95

Sample Calculation:

Result = Antenna 1 + Antenna 2

11ax-20 MCS 0 Antenna 1

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
					[dBm]	[mW]		[dBm]	[mW]
1TX	2412	-3.57	0.50	9.99	6.92	4.92	0.03	6.95	4.95
	2437	-3.41	0.50	9.99	7.08	5.11	0.03	7.11	5.14
	2462	-3.33	0.50	9.99	7.16	5.20	0.03	7.19	5.24

11ax-20 MCS 0 Antenna 2

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
					[dBm]	[mW]		[dBm]	[mW]
1TX	2412	-2.19	0.50	9.73	8.04	6.37	0.03	8.07	6.41
	2437	-2.00	0.50	9.73	8.23	6.65	0.03	8.26	6.70
	2462	-1.99	0.50	9.73	8.24	6.67	0.03	8.27	6.71

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

*) The test on 11ax-20 was performed on OFDM / OFDMA(242-tone RU) was the worst condition.

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power (Reference data for RF Exposure)

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	March 28, 2020
Temperature / Humidity	24 deg. C / 51 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 (242-tone RU)

Antenna 1 + Antenna 2

Mode	Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result (Burst average)	
				[dBm]	[mW]
1TX	2412	5.36	5.40	10.32	10.75
	2437	4.48	5.32	9.91	9.80
	2462	5.52	5.52	10.43	11.04

Sample Calculation:

Result = Antenna 1 + Antenna 2

11ax-20 MCS 0 Antenna 1

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
					[dBm]	[mW]		[dBm]	[mW]
1TX	2412	-7.77	4.82	9.73	6.78	4.76	0.51	7.29	5.36
	2437	-8.55	4.82	9.73	6.00	3.98	0.51	6.51	4.48
	2462	-7.63	4.81	9.73	6.91	4.91	0.51	7.42	5.52

11ax-20 MCS 0 Antenna 2

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
					[dBm]	[mW]		[dBm]	[mW]
1TX	2412	-7.74	4.82	9.73	6.81	4.80	0.51	7.32	5.40
	2437	-7.80	4.82	9.73	6.75	4.73	0.51	7.26	5.32
	2462	-7.63	4.81	9.73	6.91	4.91	0.51	7.42	5.52

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

*) The test on 11ax-20 was performed on OFDM / OFDMA(242-tone RU) was the worst condition.

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE

BT1

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)	
					[dBm]	[mW]
1M-PHY	2402.0	-11.14	0.50	9.73	-0.91	0.81
	2440.0	-11.13	0.50	9.73	-0.90	0.81
	2480.0	-11.15	0.50	9.73	-0.92	0.81
2M-PHY	2402.0	-13.93	0.50	9.73	-3.70	0.43
	2440.0	-13.92	0.50	9.73	-3.69	0.43
	2480.0	-13.94	0.50	9.73	-3.71	0.43

BT2

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)	
					[dBm]	[mW]
1M-PHY	2402.0	-10.71	0.50	9.99	-0.22	0.95
	2440.0	-10.79	0.50	9.99	-0.30	0.93
	2480.0	-10.92	0.50	9.99	-0.43	0.91
2M-PHY	2402.0	-13.49	0.50	9.99	-3.00	0.50
	2440.0	-13.58	0.50	9.99	-3.09	0.49
	2480.0	-13.71	0.50	9.99	-3.22	0.48

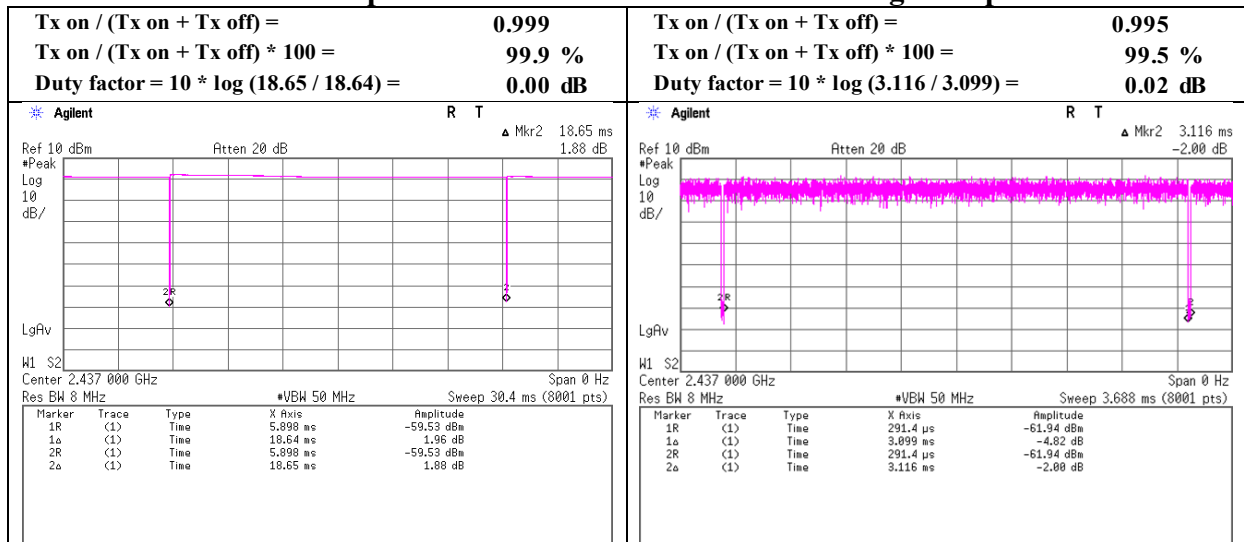
Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

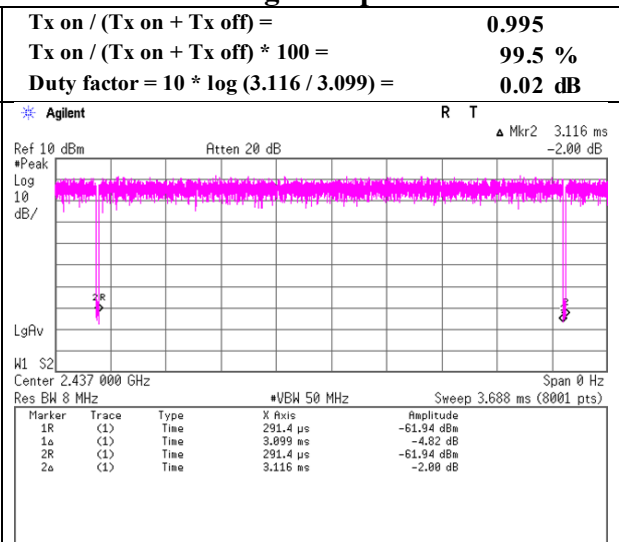
Burst rate confirmation

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx

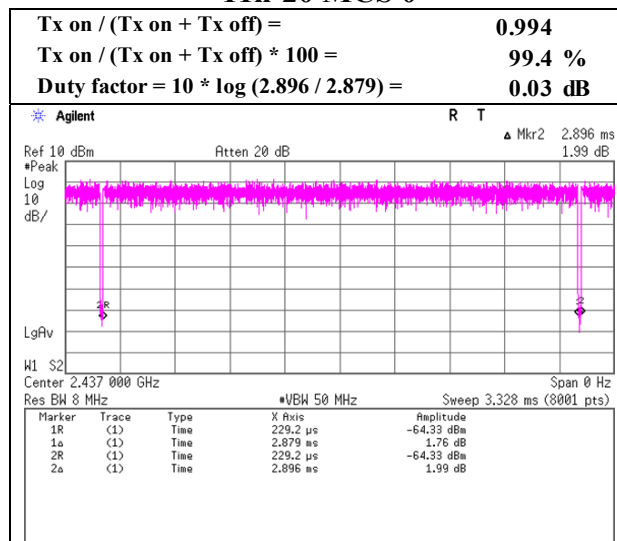
11b 1 Mbps



11g 6 Mbps



11n-20 MCS 0

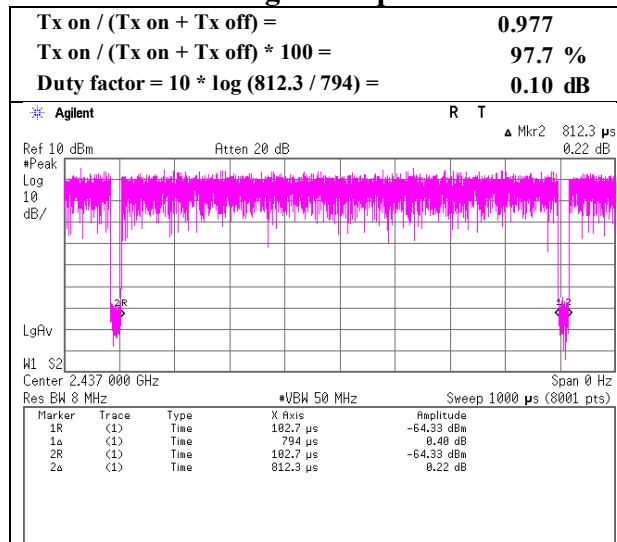


* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

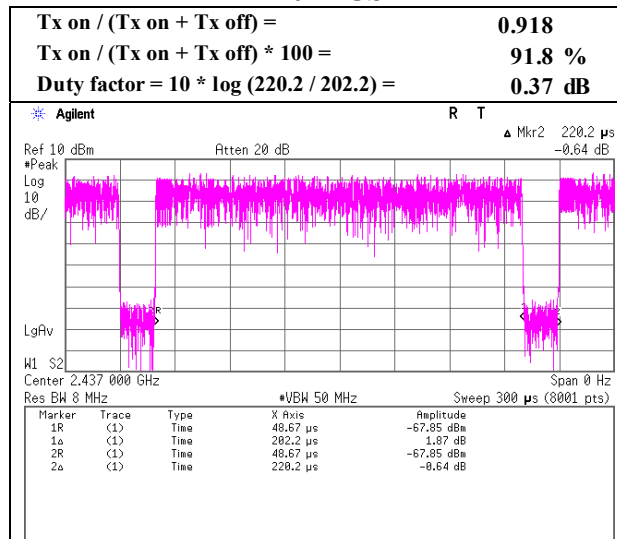
Burst rate confirmation

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11g 24 Mbps



11n-20 MCS 14



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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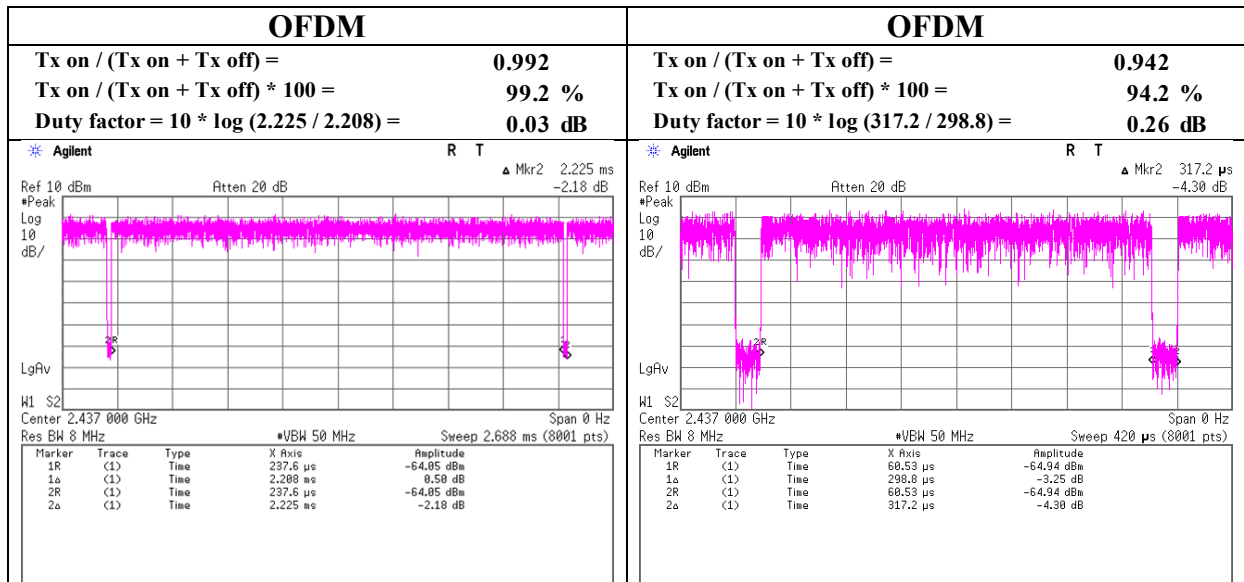
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Burst rate confirmation

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	December 17, 2019
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-20 MCS 0

11ax-20 MCS 6



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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Burst rate confirmation

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	February 27, 2020
Temperature / Humidity	20 deg. C / 30 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-20 MCS 6

11ax-20 MCS 6



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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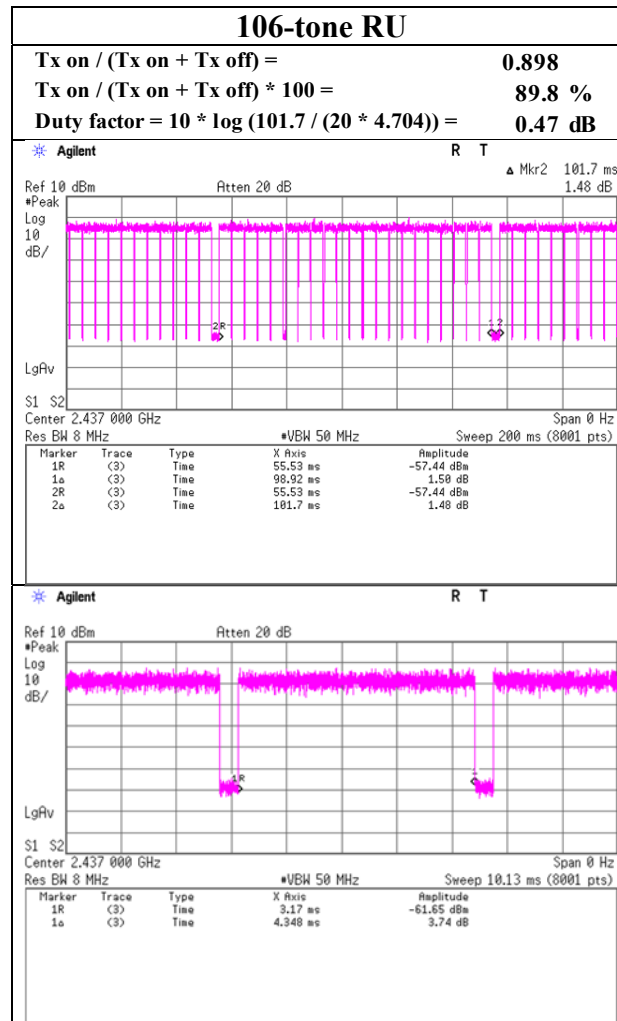
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Burst rate confirmation

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	February 27, 2020
Temperature / Humidity	20 deg. C / 30 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-20 MCS 6



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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Burst rate confirmation

Report No.	13170804H
Test place	Ise EMC Lab. No.3 Measurement Room
Date	March 28, 2020
Temperature / Humidity	24 deg. C / 51 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-20 MCS 0

11ax-20 MCS 6



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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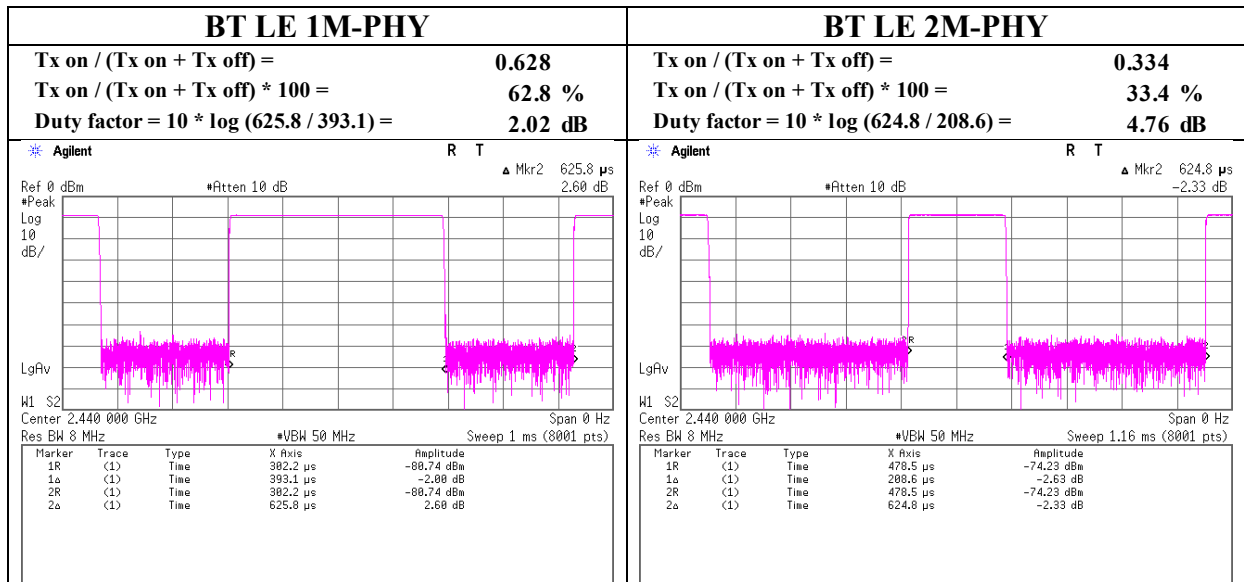
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

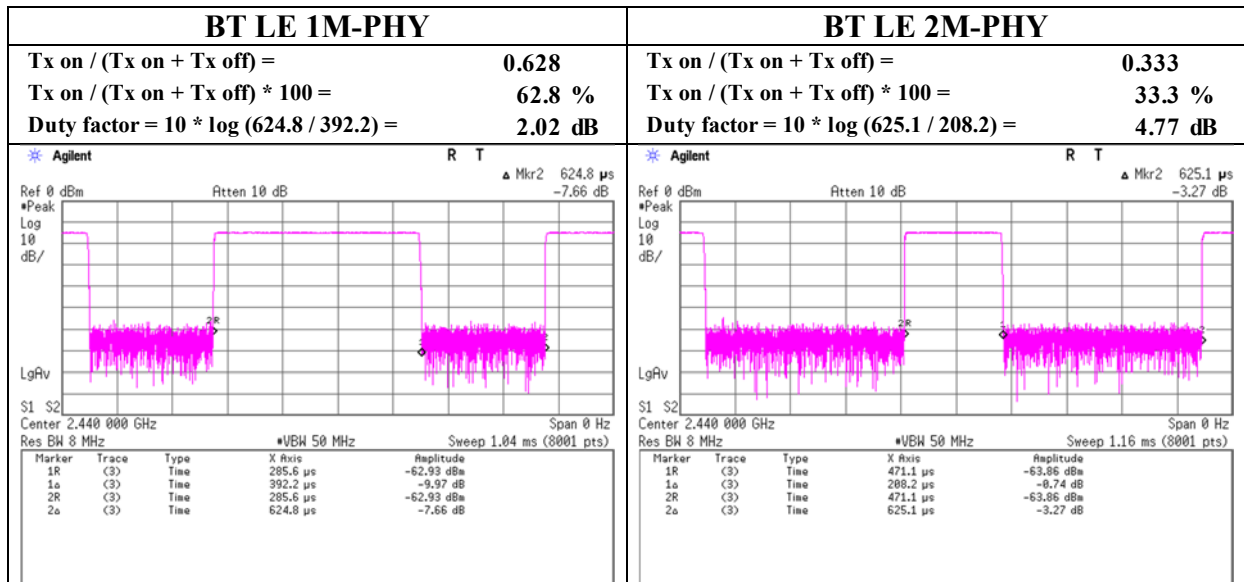
Burst rate confirmation

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE Yuta Moriya

BT1



BT2



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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Radiated Spurious Emission (PIFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 19, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)
Mode	Tx 11b 2412 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	43.9	27.7	5.4	32.8	-	44.2	73.9	29.7	
Hori.	4824.000	PK	39.7	31.6	7.5	31.8	-	46.9	73.9	27.0	Floor noise
Hori.	7236.000	PK	41.2	36.0	8.9	32.7	-	53.5	73.9	20.5	Floor noise
Hori.	9648.000	PK	40.6	38.6	9.4	33.3	-	55.3	73.9	18.6	Floor noise
Hori.	2390.000	AV	34.5	27.7	5.4	32.8	-	34.8	53.9	19.1	
Hori.	4824.000	AV	32.2	31.6	7.5	31.8	-	39.5	53.9	14.4	Floor noise
Hori.	7236.000	AV	31.8	36.0	8.9	32.7	-	44.1	53.9	9.8	Floor noise
Hori.	9648.000	AV	32.9	38.6	9.4	33.3	-	47.5	53.9	6.4	Floor noise
Vert.	2390.000	PK	46.7	27.7	5.4	32.8	-	47.1	73.9	26.8	
Vert.	4824.000	PK	39.9	31.6	7.5	31.8	-	47.1	73.9	26.8	Floor noise
Vert.	7236.000	PK	41.3	36.0	8.9	32.7	-	53.5	73.9	20.4	Floor noise
Vert.	9648.000	PK	40.8	38.6	9.4	33.3	-	55.4	73.9	18.5	Floor noise
Vert.	2390.000	AV	34.7	27.7	5.4	32.8	-	35.0	53.9	18.9	
Vert.	4824.000	AV	32.1	31.6	7.5	31.8	-	39.4	53.9	14.5	Floor noise
Vert.	7236.000	AV	31.9	36.0	8.9	32.7	-	44.1	53.9	9.8	Floor noise
Vert.	9648.000	AV	32.9	38.6	9.4	33.3	-	47.5	53.9	6.4	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	94.3	27.6	5.4	32.7	94.6	-	-	Carrier
Hori.	2400.000	PK	37.4	27.7	5.4	32.7	37.8	74.6	36.9	
Vert.	2412.000	PK	95.4	27.6	5.4	32.7	95.7	-	-	Carrier
Vert.	2400.000	PK	37.4	27.7	5.4	32.7	37.7	75.7	38.0	

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

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Ise EMC Lab.

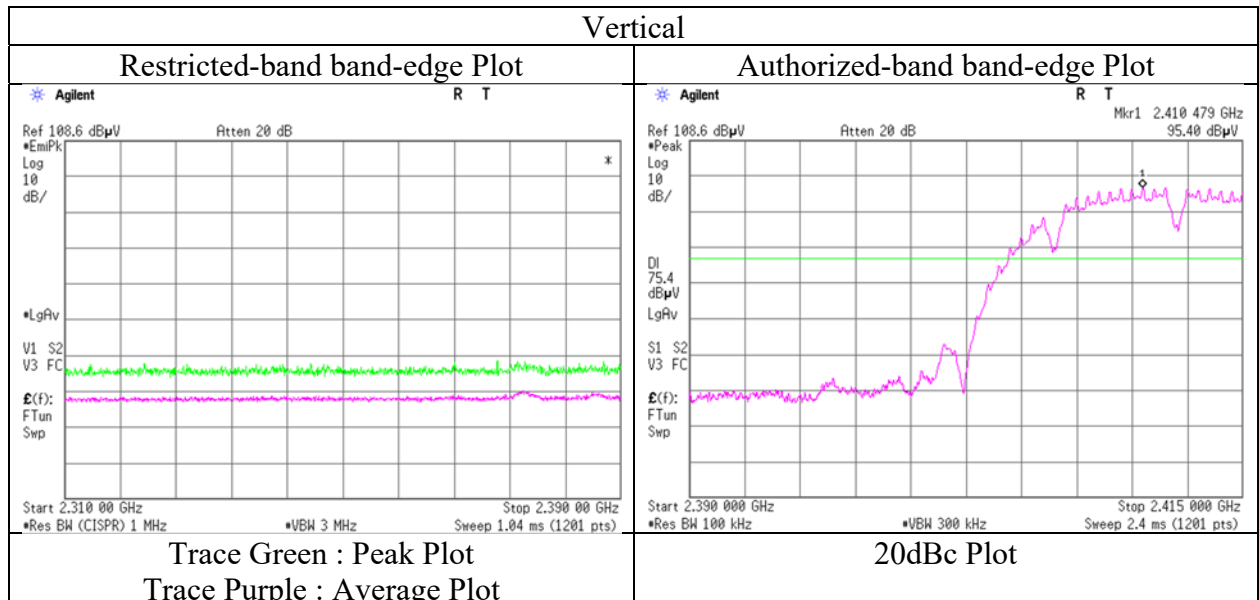
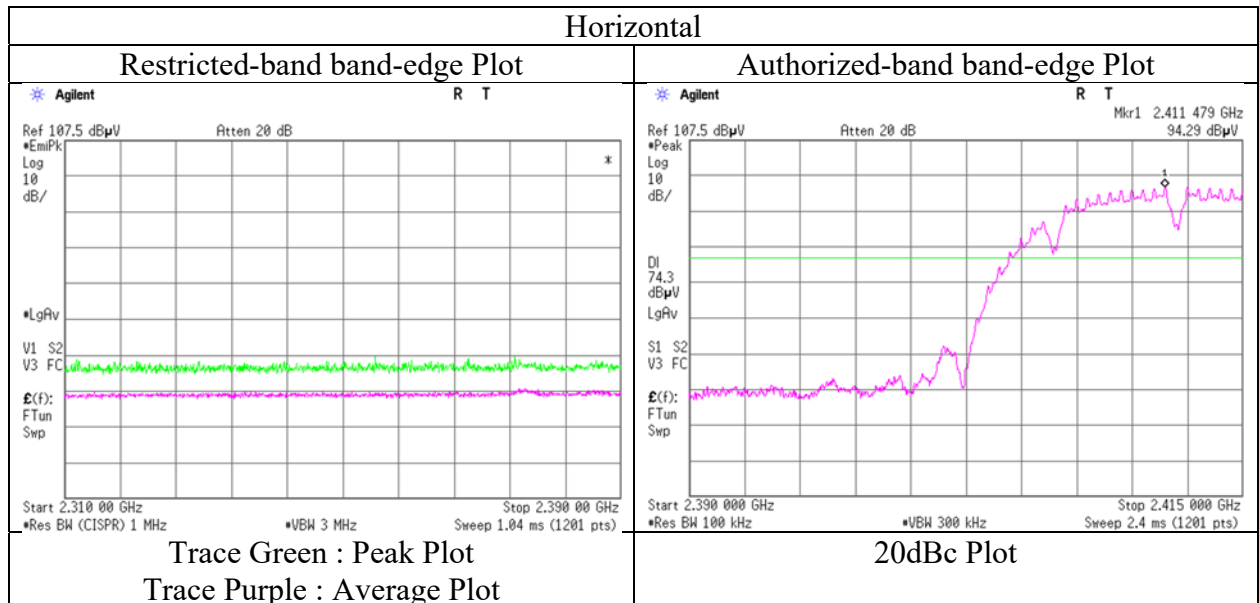
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 19, 2019
Temperature / Humidity	23 deg. C / 40 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)
Mode	Tx 11b 2412 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 (PIFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 19, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)
Mode	Tx 11b 2437 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	PK	40.6	31.6	7.5	31.8	-	47.8	73.9	26.1	Floor noise
Hori.	7311.000	PK	41.4	36.2	8.9	32.7	-	53.8	73.9	20.1	Floor noise
Hori.	9748.000	PK	41.5	38.8	9.4	33.4	-	56.3	73.9	17.6	Floor noise
Hori.	4874.000	AV	32.1	31.6	7.5	31.8	-	39.3	53.9	14.6	Floor noise
Hori.	7311.000	AV	31.9	36.2	8.9	32.7	-	44.3	53.9	9.6	Floor noise
Hori.	9748.000	AV	32.7	38.8	9.4	33.4	-	47.5	53.9	6.4	Floor noise
Vert.	4874.000	PK	40.5	31.6	7.5	31.8	-	47.7	73.9	26.2	Floor noise
Vert.	7311.000	PK	41.5	36.2	8.9	32.7	-	53.9	73.9	20.0	Floor noise
Vert.	9748.000	PK	41.6	38.8	9.4	33.4	-	56.4	73.9	17.5	Floor noise
Vert.	4874.000	AV	32.1	31.6	7.5	31.8	-	39.4	53.9	14.5	Floor noise
Vert.	7311.000	AV	32.0	36.2	8.9	32.7	-	44.4	53.9	9.5	Floor noise
Vert.	9748.000	AV	32.6	38.8	9.4	33.4	-	47.4	53.9	6.5	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

Radiated Spurious Emission (PIFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 19, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)
Mode	Tx 11b 2462 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	43.5	27.5	5.5	32.7	-	43.7	73.9	30.2	
Hori.	4924.000	PK	39.8	31.5	7.5	31.8	-	47.0	73.9	26.9	Floor noise
Hori.	7386.000	PK	41.3	36.3	8.9	32.7	-	53.8	73.9	20.1	Floor noise
Hori.	9848.000	PK	40.7	39.0	9.4	33.4	-	55.7	73.9	18.2	Floor noise
Hori.	2483.500	AV	35.0	27.5	5.5	32.7	-	35.2	53.9	18.7	
Hori.	4924.000	AV	32.1	31.5	7.5	31.8	-	39.4	53.9	14.5	Floor noise
Hori.	7386.000	AV	32.6	36.3	8.9	32.7	-	45.1	53.9	8.8	Floor noise
Hori.	9848.000	AV	32.6	39.0	9.4	33.4	-	47.5	53.9	6.4	Floor noise
Vert.	2483.500	PK	43.1	27.5	5.5	32.7	-	43.3	73.9	30.6	
Vert.	4924.000	PK	40.0	31.5	7.5	31.8	-	47.3	73.9	26.6	Floor noise
Vert.	7386.000	PK	41.2	36.3	8.9	32.7	-	53.7	73.9	20.2	Floor noise
Vert.	9848.000	PK	40.8	39.0	9.4	33.4	-	55.8	73.9	18.1	Floor noise
Vert.	2483.500	AV	35.5	27.5	5.5	32.7	-	35.7	53.9	18.2	
Vert.	4924.000	AV	32.1	31.5	7.5	31.8	-	39.3	53.9	14.6	Floor noise
Vert.	7386.000	AV	32.4	36.3	8.9	32.7	-	44.9	53.9	9.0	Floor noise
Vert.	9848.000	AV	32.4	39.0	9.4	33.4	-	47.4	53.9	6.5	Floor noise

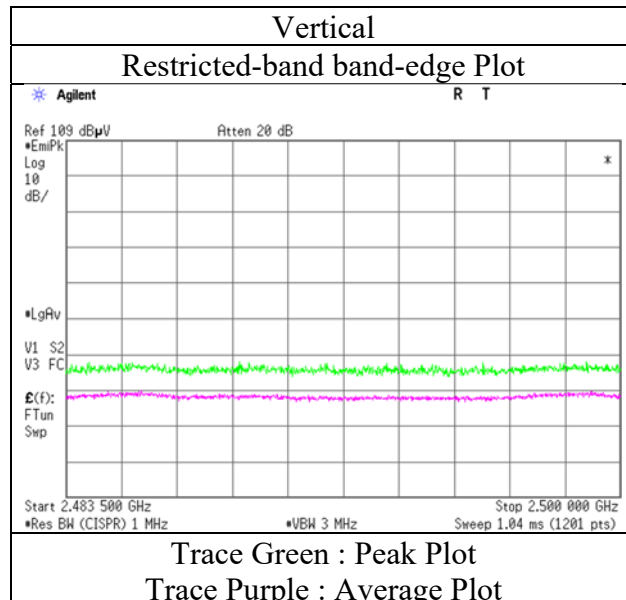
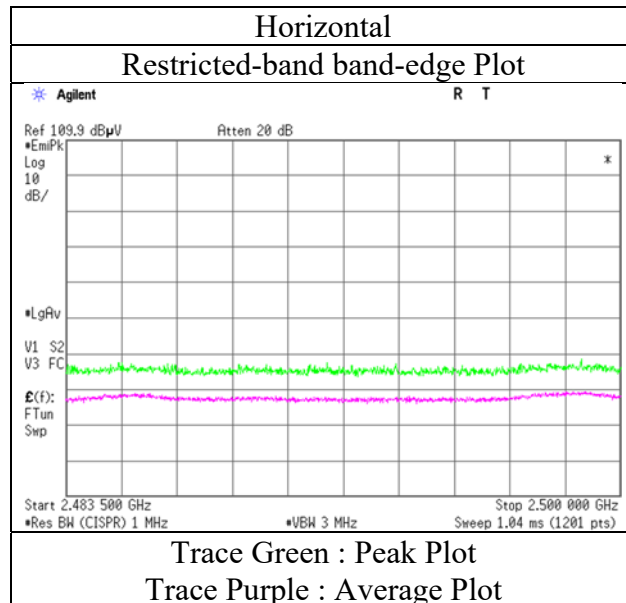
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 19, 2019
Temperature / Humidity	23 deg. C / 40 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)
Mode	Tx 11b 2462 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 (PIFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 19, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Yuta Moriya	Tomohisa Nakagawa	Junki Nagatomi
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx 11ax-20 2412MHz (OFDM)		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	49.9	27.7	5.4	32.8	-	50.2	73.9	23.7	
Hori.	4824.000	PK	39.9	31.6	7.5	31.8	-	47.2	73.9	26.7	Floor noise
Hori.	7236.000	PK	40.8	36.0	8.9	32.7	-	53.0	73.9	20.9	Floor noise
Hori.	9648.000	PK	40.4	38.6	9.4	33.3	-	55.1	73.9	18.8	Floor noise
Hori.	2390.000	AV	38.8	27.7	5.4	32.8	0.3	39.4	53.9	14.5	*1)
Hori.	4824.000	AV	31.8	31.6	7.5	31.8	-	39.1	53.9	14.8	Floor noise
Hori.	7236.000	AV	31.9	36.0	8.9	32.7	-	44.1	53.9	9.8	Floor noise
Hori.	9648.000	AV	32.9	38.6	9.4	33.3	-	47.5	53.9	6.4	Floor noise
Vert.	2390.000	PK	49.8	27.7	5.4	32.8	-	50.1	73.9	23.8	
Vert.	4824.000	PK	38.9	31.6	7.5	31.8	-	46.1	73.9	27.8	Floor noise
Vert.	7236.000	PK	40.7	36.0	8.9	32.7	-	53.0	73.9	20.9	Floor noise
Vert.	9648.000	PK	40.6	38.6	9.4	33.3	-	55.2	73.9	18.7	Floor noise
Vert.	2390.000	AV	39.3	27.7	5.4	32.8	0.3	39.9	53.9	14.0	*1)
Vert.	4824.000	AV	31.6	31.6	7.5	31.8	-	38.9	53.9	15.0	Floor noise
Vert.	7236.000	AV	31.8	36.0	8.9	32.7	-	44.0	53.9	9.9	Floor noise
Vert.	9648.000	AV	32.6	38.6	9.4	33.3	-	47.3	53.9	6.6	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	95.4	27.6	5.4	32.7	95.7	-	-	Carrier
Hori.	2400.000	PK	45.8	27.7	5.4	32.7	46.1	75.7	29.6	
Vert.	2412.000	PK	95.5	27.6	5.4	32.7	95.8	-	-	Carrier
Vert.	2400.000	PK	46.0	27.7	5.4	32.7	46.3	75.8	29.5	

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

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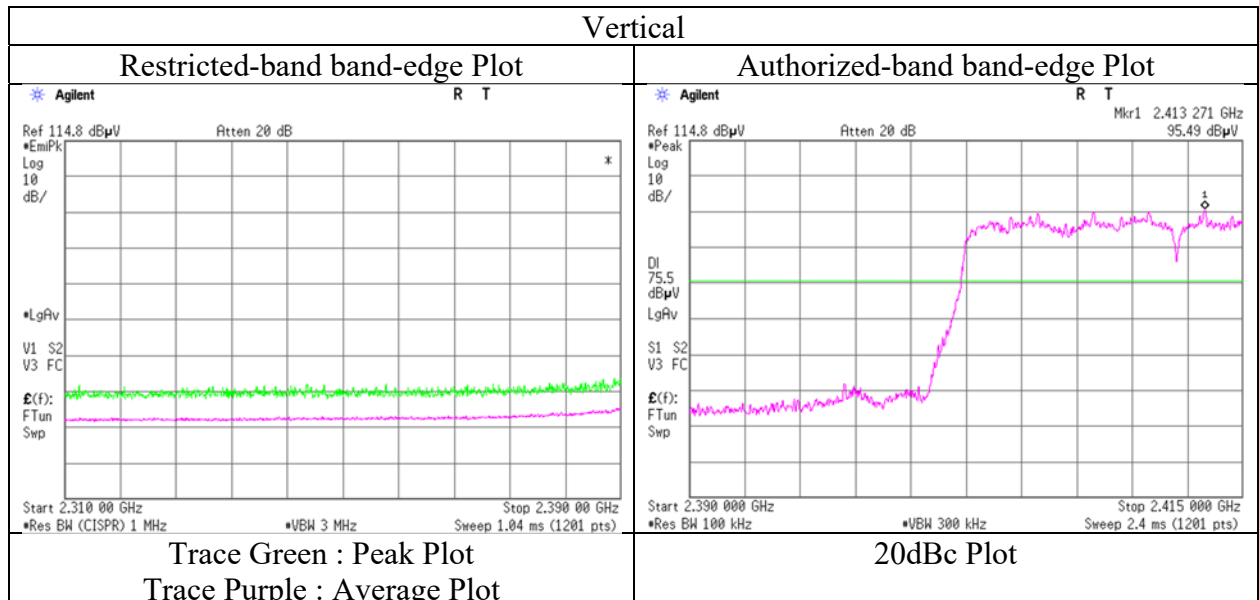
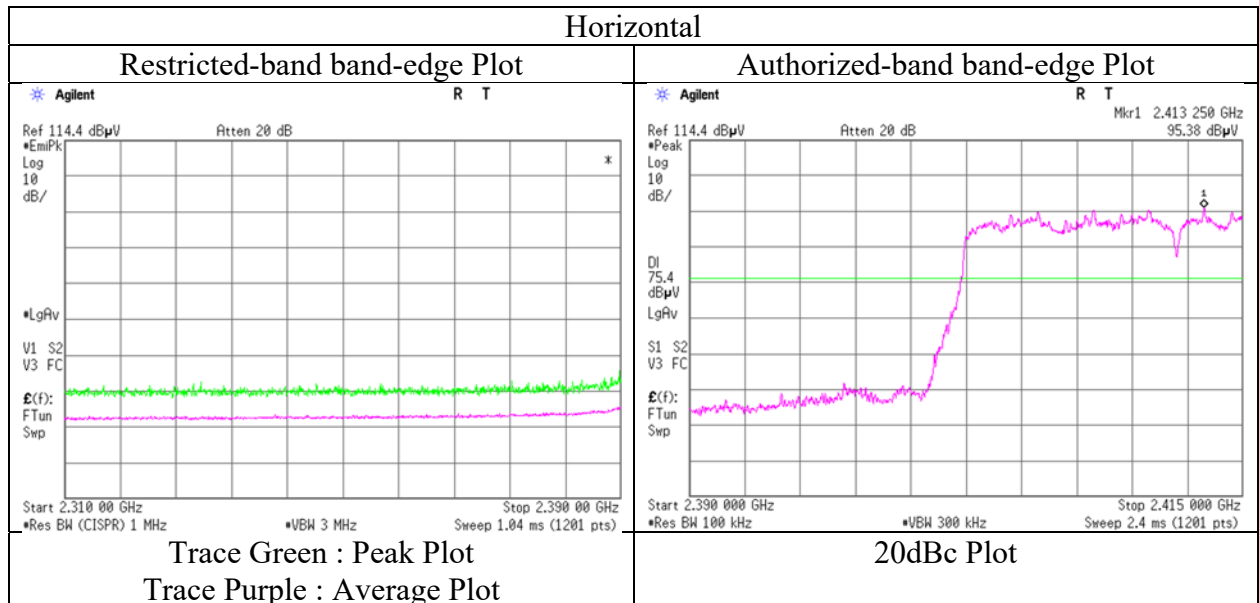
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 19, 2019
Temperature / Humidity	23 deg. C / 40 % RH
Engineer	Yuta Moriya
	(1 GHz - 10 GHz)
Mode	Tx 11ax-20 2412MHz (OFDM)



* 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 (PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2412 MHz (26-tone RU)

RU Index 0

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dBm]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	42.3	27.7	4.9	32.8	-	42.1	73.9	31.8	
Hori.	2390.000	AV	33.8	27.7	4.9	32.8	0.4	34.1	53.9	19.8	*1)
Vert.	2390.000	PK	45.5	27.7	4.9	32.8	-	45.3	73.9	28.6	
Vert.	2390.000	AV	33.8	27.7	4.9	32.8	0.4	34.1	53.9	19.8	*1)

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

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

20dBc Data Sheet

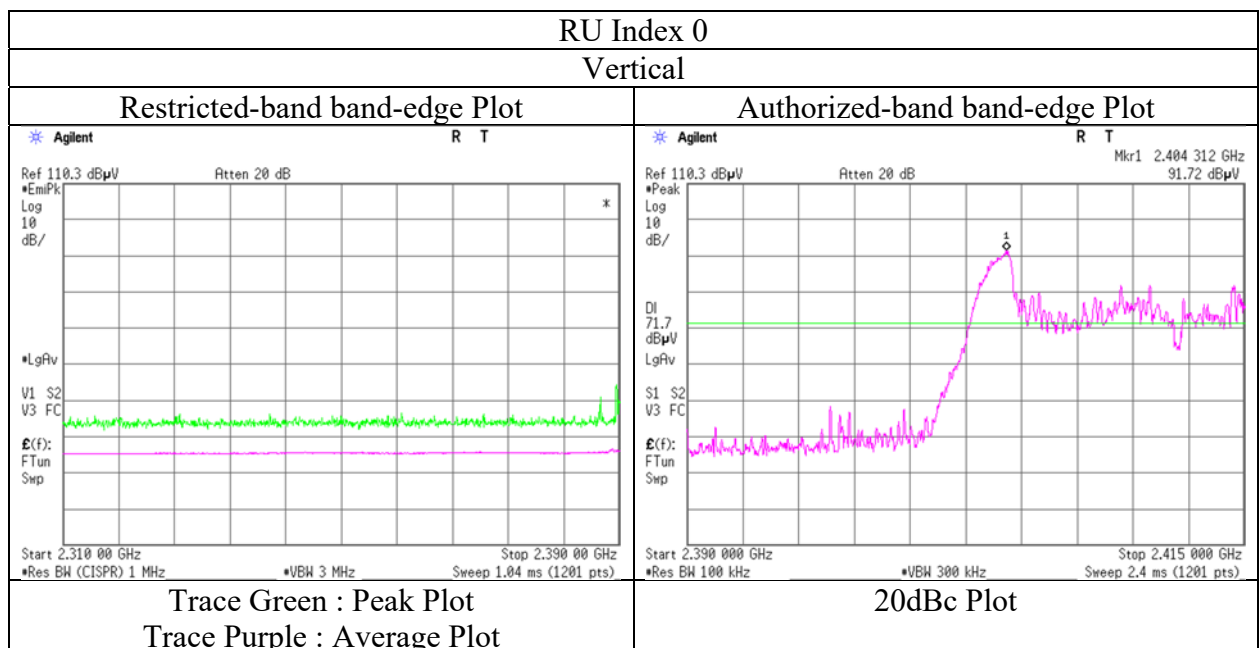
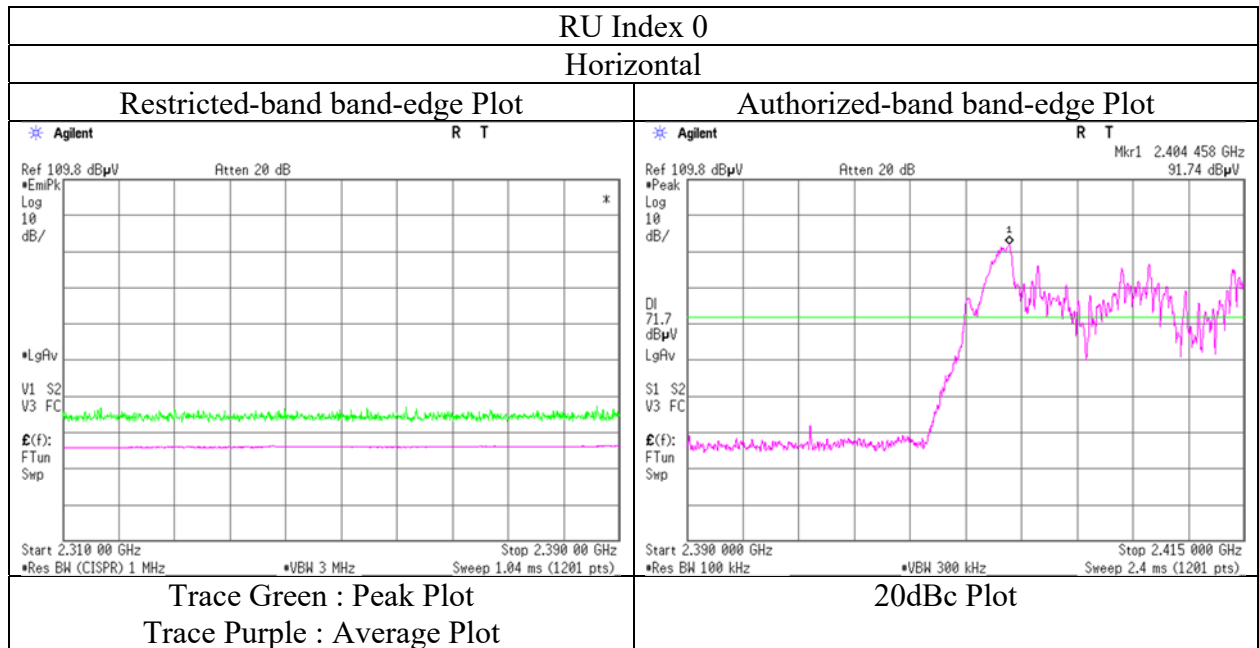
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	91.7	27.6	4.9	32.7	91.6	-	-	Carrier
Hori.	2400.000	PK	40.8	27.7	4.9	32.7	40.7	71.6	30.9	
Vert.	2412.000	PK	91.7	27.6	4.9	32.7	91.5	-	-	Carrier
Vert.	2400.000	PK	52.4	27.7	4.9	32.7	52.2	71.5	19.3	

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2412 MHz (26-tone RU)



* 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 (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2412 MHz (52-tone RU)

RU Index 37

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Duty Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2390.000	PK	49.0	27.7	4.9	32.8	-	48.8	73.9	25.1	
Hori.	2390.000	AV	34.1	27.7	4.9	32.8	0.5	34.4	53.9	19.5	*1)
Vert.	2390.000	PK	47.3	27.7	4.9	32.8	-	47.1	73.9	26.8	
Vert.	2390.000	AV	34.3	27.7	4.9	32.8	0.5	34.6	53.9	19.3	*1)

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

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

20dBc Data Sheet

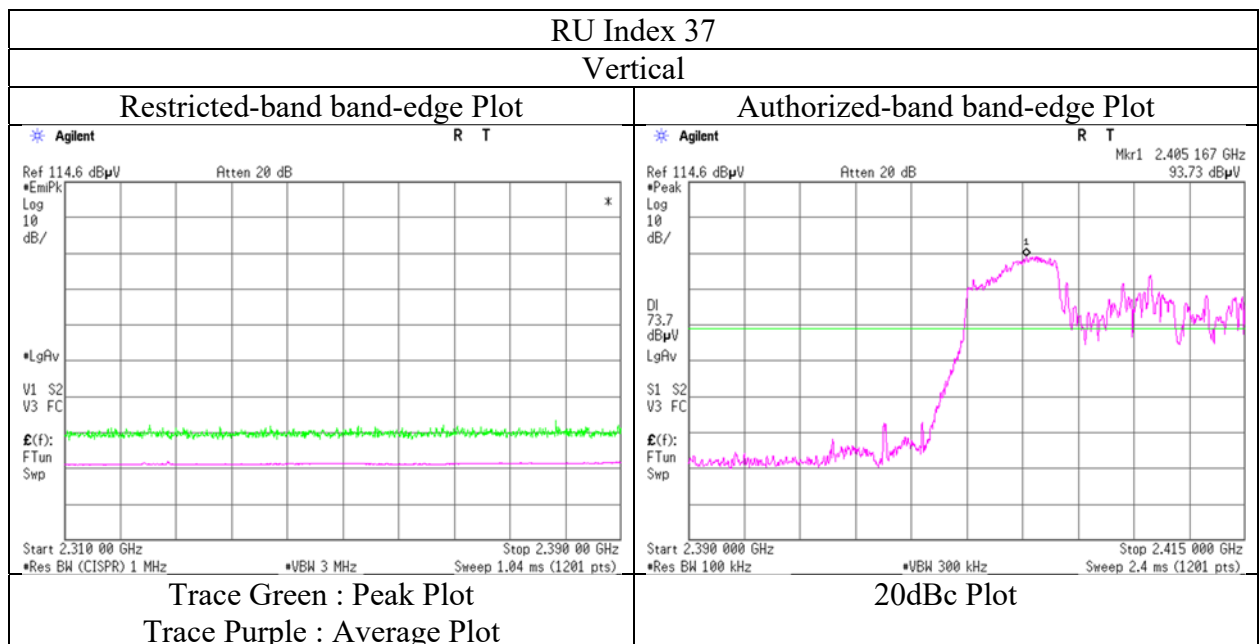
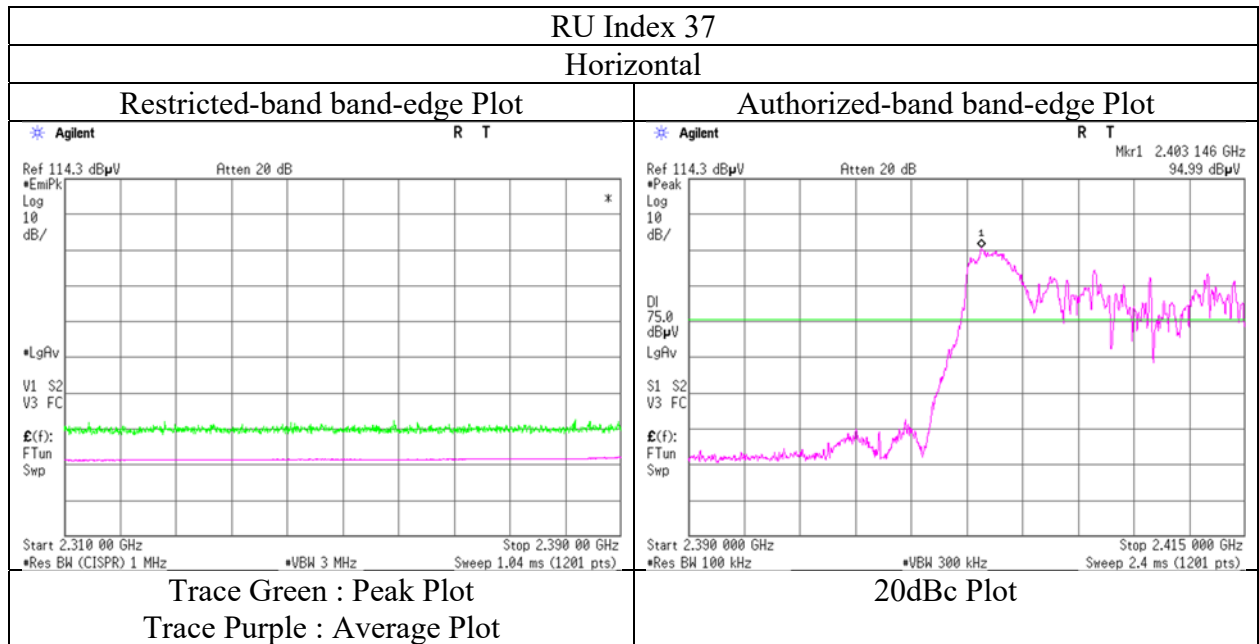
Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2412.000	PK	95.0	27.6	4.9	32.7	94.8	-	-	Carrier
Hori.	2400.000	PK	45.3	27.7	4.9	32.7	45.2	74.8	29.6	
Vert.	2412.000	PK	93.7	27.6	4.9	32.7	93.5	-	-	Carrier
Vert.	2400.000	PK	44.9	27.7	4.9	32.7	44.8	73.5	28.8	

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

Distance factor: 1 GHz - 10 GHz $20\log(4.45 \text{ m} / 3.0 \text{ m}) = 3.43 \text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2412 MHz (52-tone RU)



* 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.

Ise EMC Lab.

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Radiated Spurious Emission (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2412 MHz (106-tone RU)

RU Index 53

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	49.8	27.7	4.9	32.8	-	49.6	73.9	24.3	
Hori.	2390.000	AV	34.6	27.7	4.9	32.8	0.5	34.9	53.9	19.0	*1)
Vert.	2390.000	PK	51.9	27.7	4.9	32.8	-	51.7	73.9	22.2	
Vert.	2390.000	AV	35.7	27.7	4.9	32.8	0.5	36.0	53.9	17.9	*1)

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	93.8	27.6	4.9	32.7	93.6	-	-	Carrier
Hori.	2400.000	PK	46.1	27.7	4.9	32.7	46.0	73.6	27.7	
Vert.	2412.000	PK	94.6	27.6	4.9	32.7	94.4	-	-	Carrier
Vert.	2400.000	PK	47.2	27.7	4.9	32.7	47.0	74.4	27.4	

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

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Ise EMC Lab.

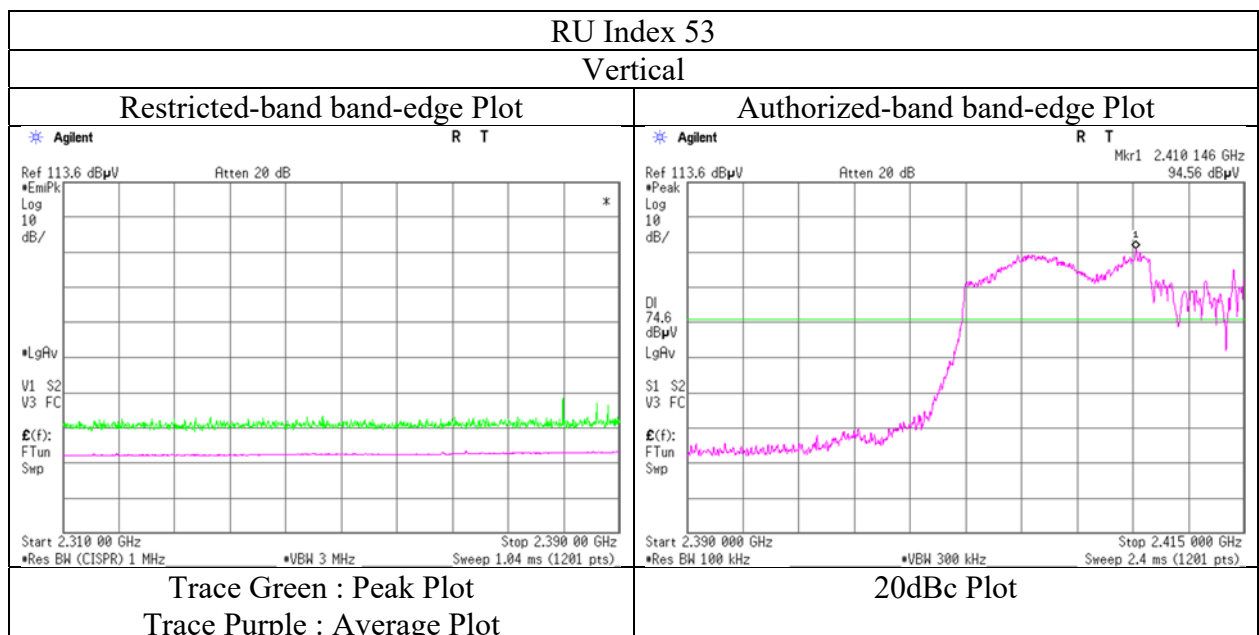
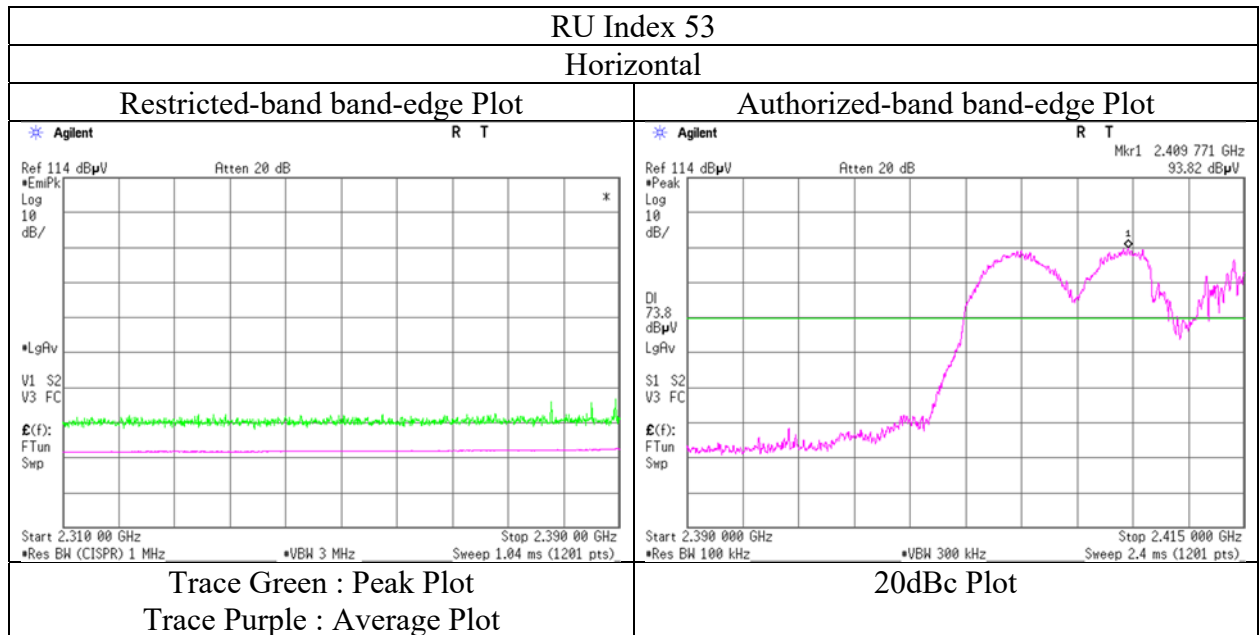
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
Mode	Band edge Tx 11ax-20 2412 MHz (106-tone RU)



* 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 (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	April 4, 2020
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Takafumi Noguchi
	Band edge
Mode	Tx 11ax-20 2412 MHz (242-tone RU)

RU Index 61

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2389.033	PK	63.8	27.7	4.9	32.7	-	63.6	73.9	10.3	
Hori.	2390.000	PK	59.3	27.7	4.9	32.7	-	59.1	73.9	14.8	
Hori.	2389.033	AV	44.4	27.7	4.9	32.7	0.5	44.7	53.9	9.2	
Hori.	2390.000	AV	42.4	27.7	4.9	32.7	0.5	42.7	53.9	11.2	*1)
Vert.	2389.033	PK	64.4	27.7	4.9	32.7	-	64.3	73.9	9.6	
Vert.	2390.000	PK	59.4	27.7	4.9	32.7	-	59.2	73.9	14.7	
Vert.	2389.033	AV	44.9	27.7	4.9	32.7	0.5	45.3	53.9	8.6	
Vert.	2390.000	AV	43.3	27.7	4.9	32.7	0.5	43.6	53.9	10.3	*1)

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	93.8	27.6	4.9	32.7	93.6	-	-	Carrier
Hori.	2398.575	PK	52.7	27.7	4.9	32.7	52.6	73.6	21.0	
Hori.	2400.000	PK	50.8	27.7	4.9	32.7	50.7	73.6	23.0	
Vert.	2412.000	PK	94.7	27.6	4.9	32.7	94.5	-	-	Carrier
Vert.	2398.575	PK	54.0	27.7	4.9	32.7	53.8	74.5	20.7	
Vert.	2400.000	PK	52.0	27.7	4.9	32.7	51.8	74.5	22.7	

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

UL Japan, Inc.

Ise EMC Lab.

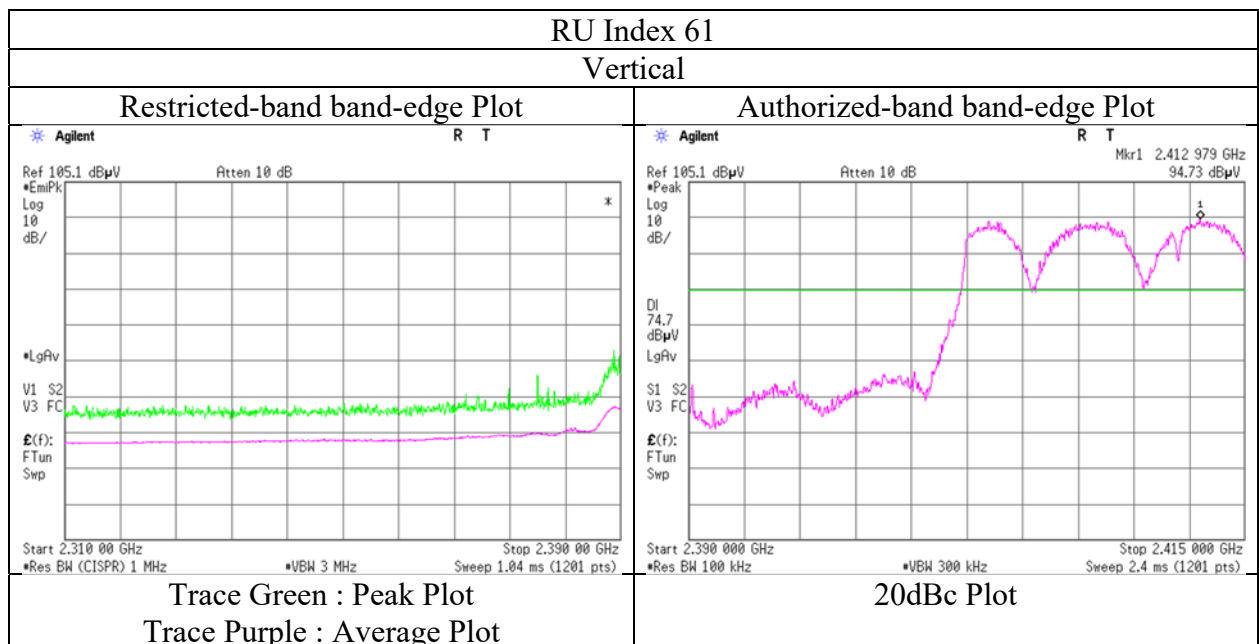
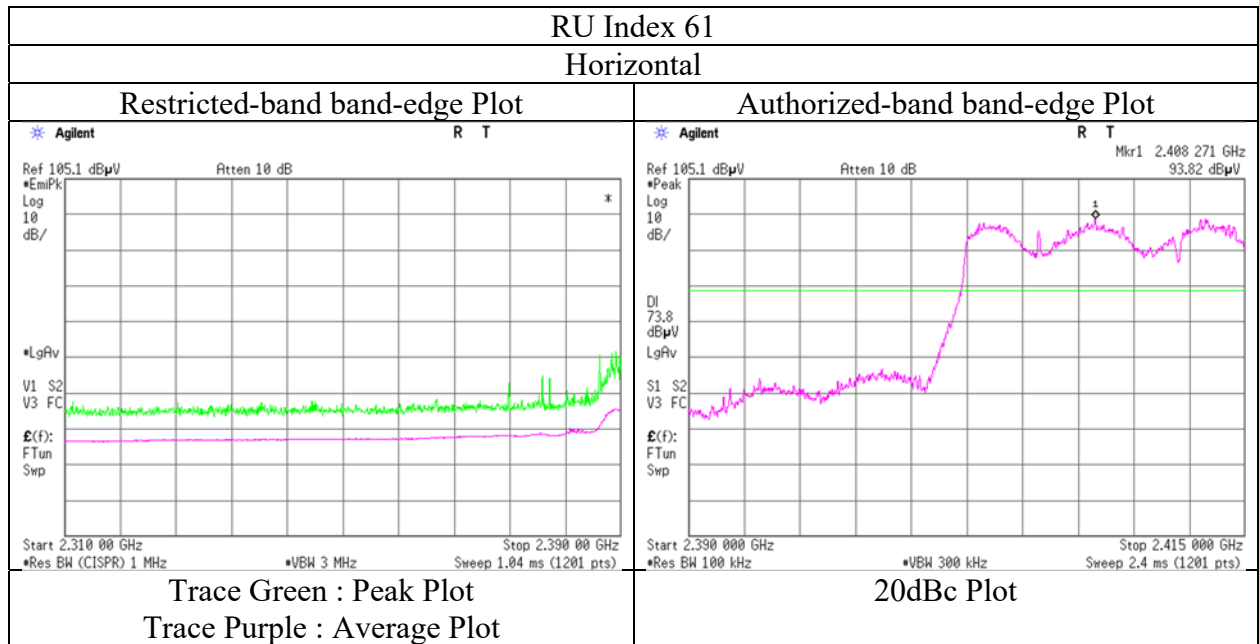
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	April 4, 2020
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Takafumi Noguchi
	Band edge
Mode	Tx 11ax-20 2412 MHz (242-tone RU)



* 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 (PIFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 19, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)
Mode	Tx 11ax-20 2437 MHz (OFDM)		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	PK	40.3	31.6	7.5	31.8	-	47.5	73.9	26.4	Floor noise
Hori.	7311.000	PK	41.4	36.2	8.9	32.7	-	53.7	73.9	20.2	Floor noise
Hori.	9748.000	PK	40.3	38.8	9.4	33.4	-	55.1	73.9	18.8	Floor noise
Hori.	4874.000	AV	31.6	31.6	7.5	31.8	-	38.8	53.9	15.1	Floor noise
Hori.	7311.000	AV	32.1	36.2	8.9	32.7	-	44.5	53.9	9.4	Floor noise
Hori.	9748.000	AV	32.2	38.8	9.4	33.4	-	46.9	53.9	7.0	Floor noise
Vert.	4874.000	PK	40.3	31.6	7.5	31.8	-	47.6	73.9	26.3	Floor noise
Vert.	7311.000	PK	41.2	36.2	8.9	32.7	-	53.6	73.9	20.3	Floor noise
Vert.	9748.000	PK	40.3	38.8	9.4	33.4	-	55.1	73.9	18.8	Floor noise
Vert.	4874.000	AV	31.7	31.6	7.5	31.8	-	38.9	53.9	15.0	Floor noise
Vert.	7311.000	AV	32.0	36.2	8.9	32.7	-	44.4	53.9	9.6	Floor noise
Vert.	9748.000	AV	32.3	38.8	9.4	33.4	-	47.1	53.9	6.8	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

Radiated Spurious Emission (PIFA Antenna)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 19, 2019	January 9, 2020	January 9, 2020	January 10, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	23 deg. C / 35 % RH
Engineer	Yuta Moriya	Tomohisa Nakagawa	Junki Nagatomi	Tomohisa Nakagawa
	(1 GHz – 10 GHz)	(10 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(Below 1GHz)
Mode	Tx 11ax-20 2462 MHz (OFDM)			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	62.258	QP	25.0	7.4	7.6	32.2	-	7.7	40.0	32.3	
Hori.	104.991	QP	22.6	11.0	8.1	32.1	-	9.6	43.5	33.9	
Hori.	162.303	QP	22.6	15.5	8.8	32.1	-	14.8	43.5	28.7	
Hori.	341.300	QP	22.2	14.9	10.3	31.9	-	15.4	46.0	30.6	
Hori.	576.300	QP	22.3	18.6	11.8	32.0	-	20.7	46.0	25.3	
Hori.	879.600	QP	22.1	22.0	13.4	31.1	-	26.4	46.0	19.6	
Hori.	2483.500	PK	51.2	27.5	5.5	32.7	-	51.5	73.9	22.4	
Hori.	4924.000	PK	39.8	31.5	7.5	31.8	-	47.0	73.9	26.9	Floor noise
Hori.	7386.000	PK	40.5	36.3	8.9	32.7	-	53.0	73.9	20.9	Floor noise
Hori.	9848.000	PK	41.1	39.0	9.4	33.4	-	56.0	73.9	17.9	Floor noise
Hori.	2483.500	AV	39.5	27.5	5.5	32.7	0.3	40.0	53.9	13.9	*1)
Hori.	4924.000	AV	30.9	31.5	7.5	31.8	-	38.1	53.9	15.8	Floor noise
Hori.	7386.000	AV	32.5	36.3	8.9	32.7	-	44.9	53.9	9.0	Floor noise
Hori.	9848.000	AV	32.8	39.0	9.4	33.4	-	47.8	53.9	6.1	Floor noise
Vert.	62.215	QP	33.4	7.4	7.6	32.2	-	16.1	40.0	23.9	
Vert.	95.634	QP	26.6	9.5	8.0	32.2	-	11.9	43.5	31.6	
Vert.	162.345	QP	22.6	15.5	8.8	32.1	-	14.8	43.5	28.7	
Vert.	341.300	QP	22.3	14.9	10.3	31.9	-	15.5	46.0	30.5	
Vert.	576.200	QP	22.1	18.6	11.8	32.0	-	20.5	46.0	25.5	
Vert.	879.200	QP	22.4	22.0	13.4	31.1	-	26.7	46.0	19.3	
Vert.	2483.500	PK	48.8	27.5	5.5	32.7	-	49.0	73.9	24.9	
Vert.	4924.000	PK	39.7	31.5	7.5	31.8	-	46.9	73.9	27.0	Floor noise
Vert.	7386.000	PK	40.8	36.3	8.9	32.7	-	53.3	73.9	20.7	Floor noise
Vert.	9848.000	PK	41.2	39.0	9.4	33.4	-	56.2	73.9	17.7	Floor noise
Vert.	2483.500	AV	37.7	27.5	5.5	32.7	0.3	38.2	53.9	15.7	*1)
Vert.	4924.000	AV	31.2	31.5	7.5	31.8	-	38.5	53.9	15.4	Floor noise
Vert.	7386.000	AV	32.4	36.3	8.9	32.7	-	44.9	53.9	9.0	Floor noise
Vert.	9848.000	AV	32.8	39.0	9.4	33.4	-	47.7	53.9	6.2	Floor noise

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

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

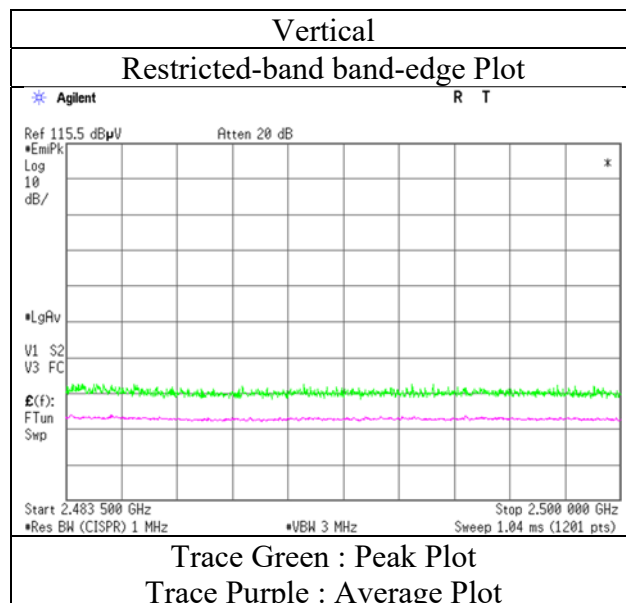
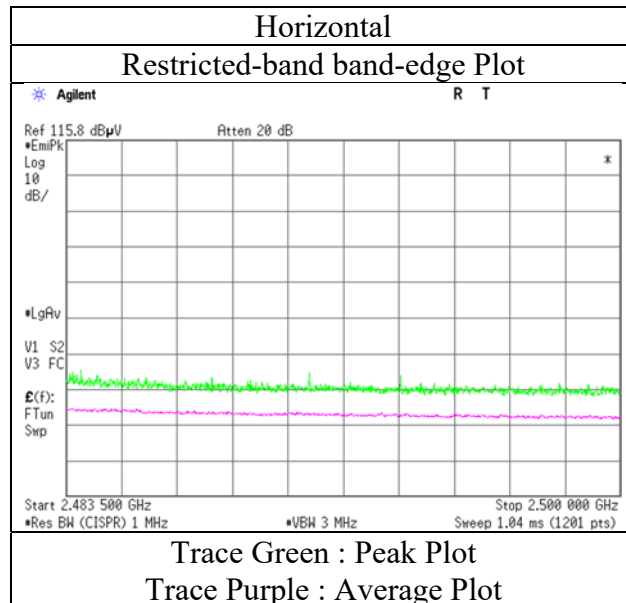
Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 19, 2019
Temperature / Humidity	23 deg. C / 40 % RH
Engineer	Yuta Moriya
	(1 GHz – 10 GHz)
Mode	Tx 11ax-20 2462 MHz (OFDM)



* 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 (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2462 MHz (26-tone RU)

RU Index 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	43.0	27.5	5.0	32.7	-	42.7	73.9	31.2	
Hori.	2483.500	AV	34.7	27.5	5.0	32.7	0.4	34.8	53.9	19.1	*1)
Vert.	2483.500	PK	48.5	27.5	5.0	32.7	-	48.2	73.9	25.7	
Vert.	2483.500	AV	34.4	27.5	5.0	32.7	0.4	34.6	53.9	19.4	*1)

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.95 m / 3.0 m) = 2.39 dB

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

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Ise EMC Lab.

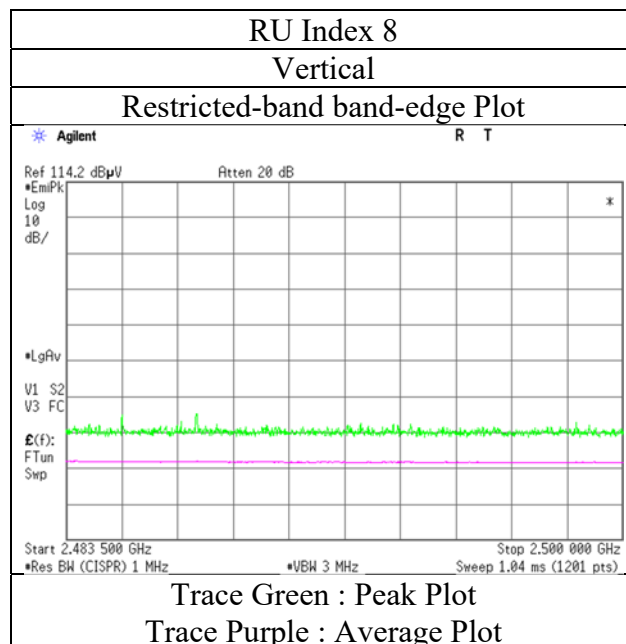
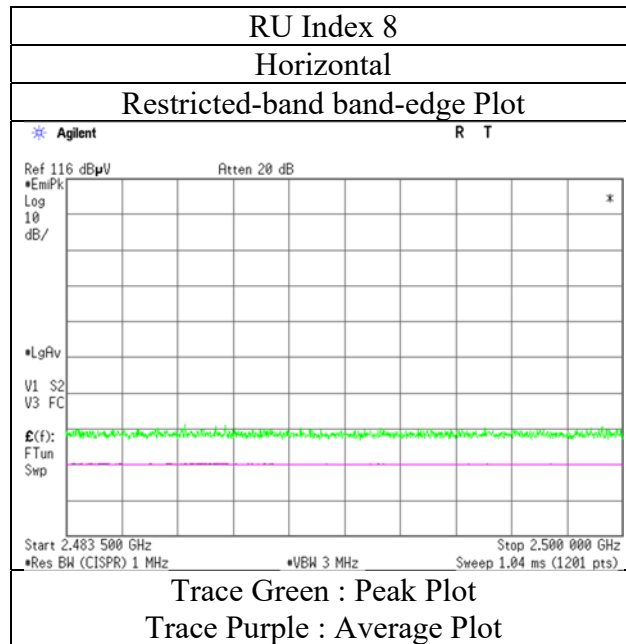
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2462 MHz (26-tone RU)



* 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 (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2462 MHz (52-tone RU)

RU Index 40

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	45.3	27.5	5.0	32.7	-	45.0	73.9	28.9	
Hori.	2483.500	AV	36.1	27.5	5.0	32.7	0.5	36.2	53.9	17.7	*1)
Vert.	2483.500	PK	48.1	27.5	5.0	32.7	-	47.8	73.9	26.1	
Vert.	2483.500	AV	35.0	27.5	5.0	32.7	0.5	35.1	53.9	18.8	*1)

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.95 m / 3.0 m) = 2.39 dB

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

UL Japan, Inc.

Ise EMC Lab.

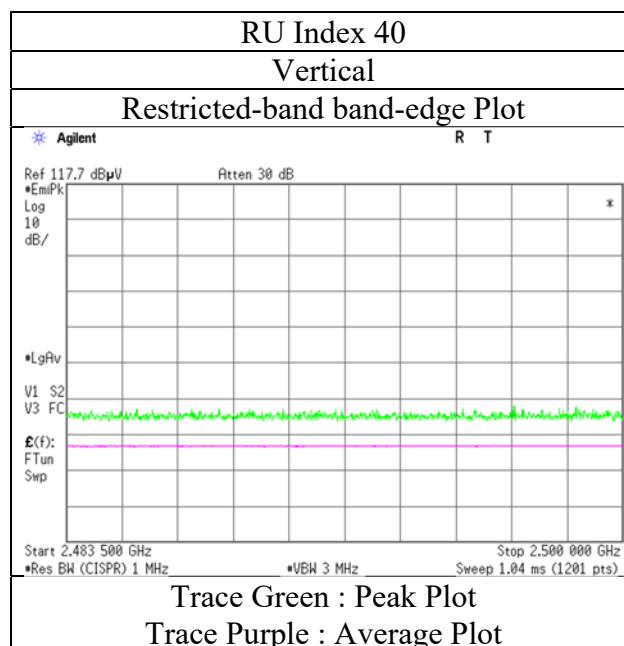
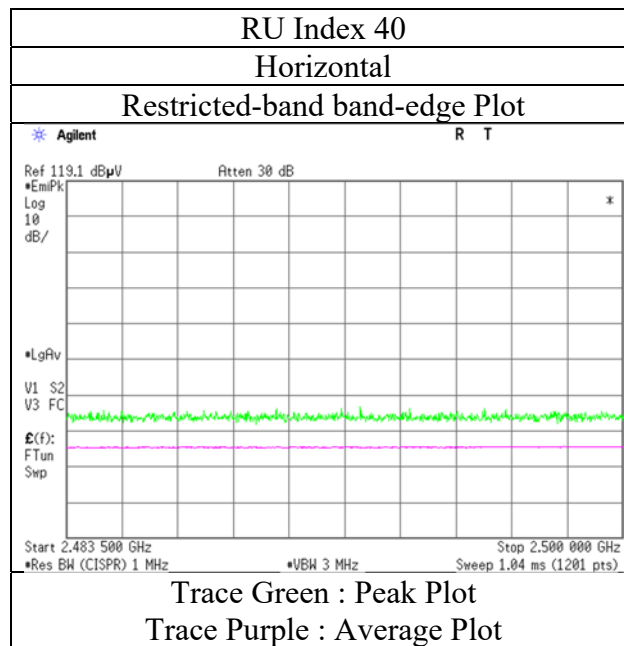
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Facsimile : +81 596 24 8124

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2462 MHz(52-tone RU)



* 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 (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2462 MHz (106-tone RU)

RU Index 54

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	45.3	27.5	5.0	32.7	-	45.0	73.9	28.9	
Hori.	2483.500	AV	36.1	27.5	5.0	32.7	0.5	36.2	53.9	17.7	*1)
Vert.	2483.500	PK	46.2	27.5	5.0	32.7	-	45.9	73.9	28.0	
Vert.	2483.500	AV	36.7	27.5	5.0	32.7	0.5	36.9	53.9	17.0	*1)

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.95 m / 3.0 m) = 2.39 dB

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

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Ise EMC Lab.

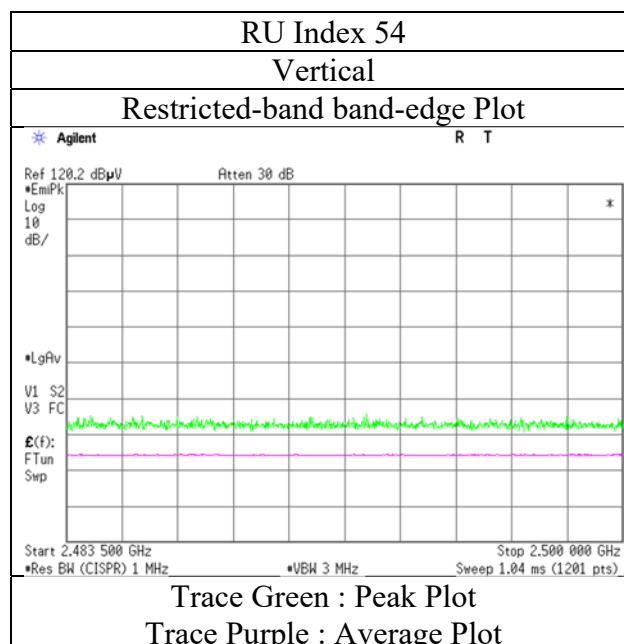
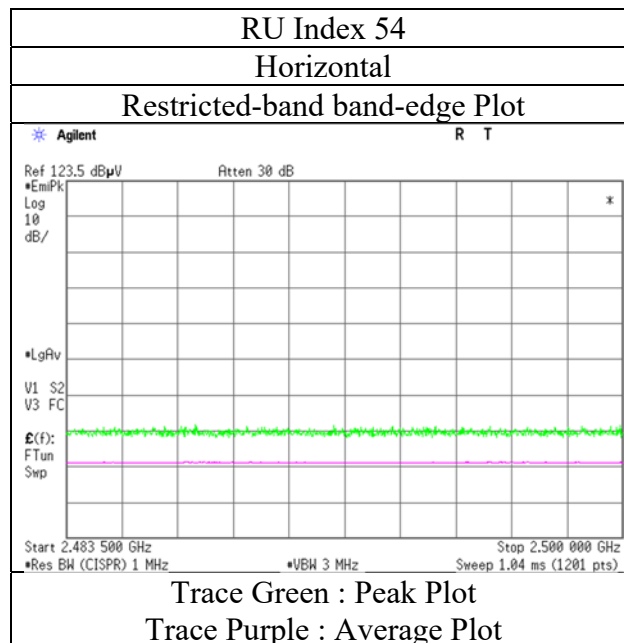
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Junki Nagatomi
	Band edge
Mode	Tx 11ax-20 2462 MHz (106-tone RU)



* 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.

Ise EMC Lab.

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Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date April 4, 2020
Temperature / Humidity 22 deg. C / 40 % RH
Engineer Takafumi Noguchi
Band edge
Mode Tx 11ax-20 2462 MHz (242-tone RU)

RU Index 61

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	67.8	27.5	4.9	32.7	-	67.5	73.9	6.4	
Hori.	2483.500	AV	48.2	27.5	4.9	32.7	0.5	48.4	53.9	5.5	*1)
Vert.	2483.500	PK	68.3	27.5	4.9	32.7	-	68.0	73.9	5.9	
Vert.	2483.500	AV	48.3	27.5	4.9	32.7	0.5	48.5	53.9	5.4	*1)

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

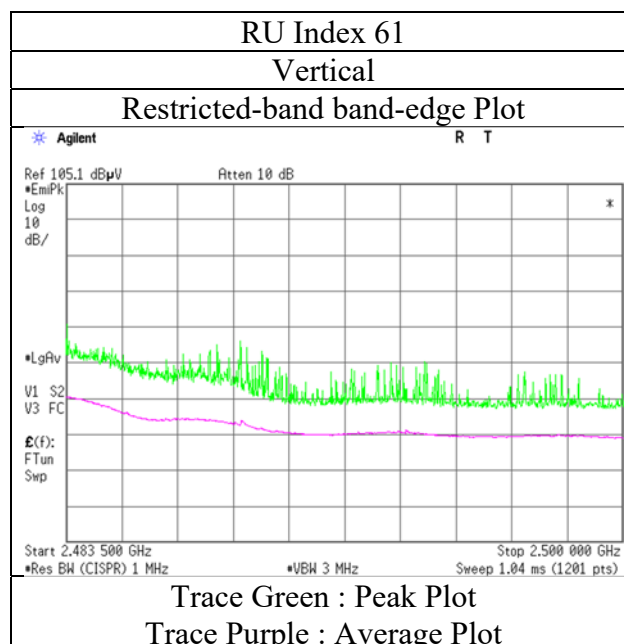
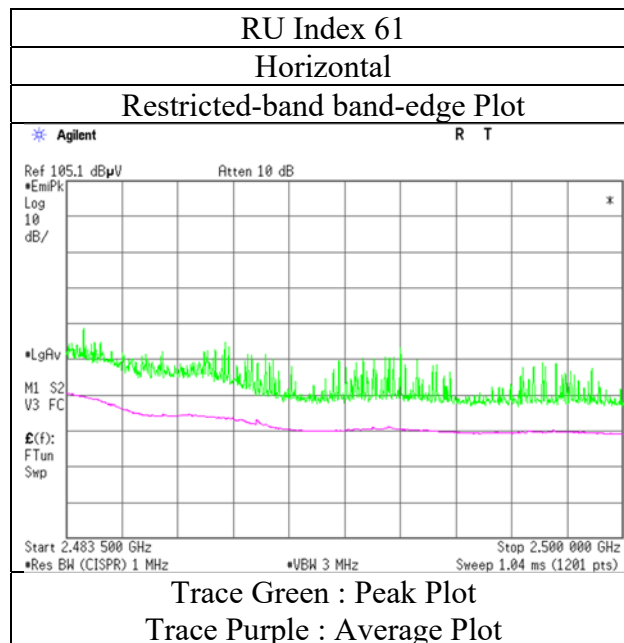
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

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

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	April 4, 2020
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Takafumi Noguchi
	Band edge
Mode	Tx 11ax-20 2462 MHz (242-tone RU)



* 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.

Ise EMC Lab.

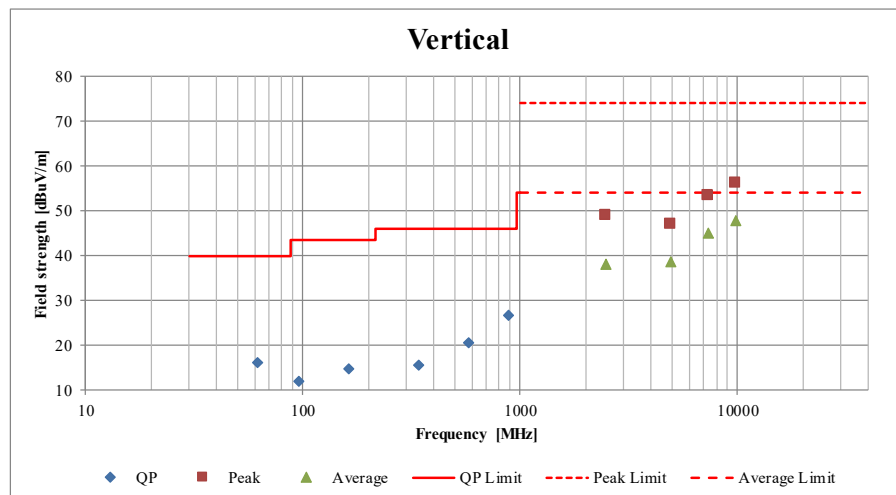
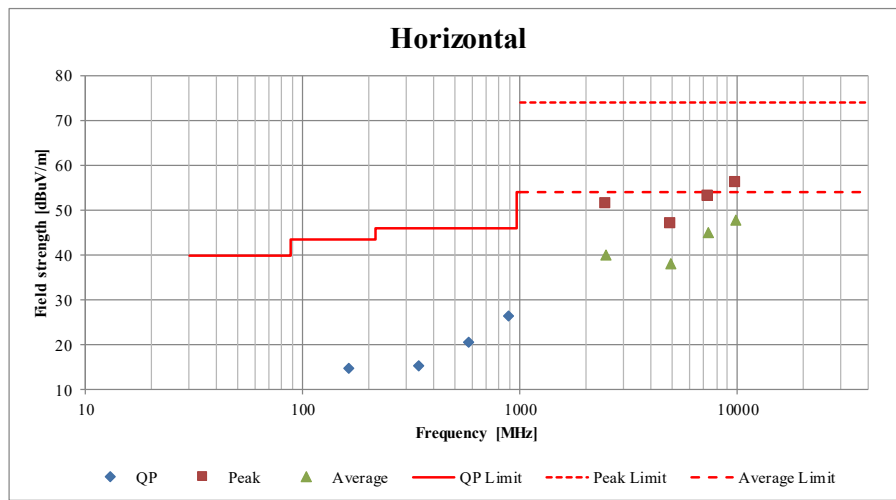
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Radiated Spurious Emission
(Plot data, Worst case)
(PIFA Antenna WLAN)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 19, 2019	January 9, 2020	January 9, 2020	January 10, 2020
Temperature / Humidity	23 deg. C / 40 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	23 deg. C / 35 % RH
Engineer	Yuta Moriya (1 GHz – 10 GHz)	Tomohisa Nakagawa (10 GHz – 18 GHz)	Junki Nagatomi (18 GHz – 26.5 GHz)	Tomohisa Nakagawa (Below 1GHz)
Mode	Tx 11ax-20 2462 MHz (OFDM)			



Radiated Spurious Emission (PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 23 deg. C / 43 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Akihiko Maeda Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 1M-PHY 2402 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.288	QP	24.3	8.1	7.5	32.2	-	7.7	40.0	32.3	
Hori.	62.277	QP	23.0	7.3	7.6	32.2	-	5.7	40.0	34.3	
Hori.	128.949	QP	22.8	13.8	8.4	32.1	-	12.9	43.5	30.6	
Hori.	352.995	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.3	
Hori.	590.593	QP	22.2	19.1	11.9	32.0	-	21.1	46.0	24.9	
Hori.	879.126	QP	21.7	22.0	13.4	31.1	-	26.0	46.0	20.0	
Hori.	2339.989	PK	47.6	27.8	5.4	32.8	-	48.0	73.9	25.9	
Hori.	2390.000	PK	57.5	27.7	5.4	32.8	-	57.9	73.9	16.0	
Hori.	4804.000	PK	41.3	31.6	7.5	31.8	-	48.6	73.9	25.3	Floor noise
Hori.	7206.000	PK	42.3	36.0	8.9	32.7	-	54.5	73.9	19.4	Floor noise
Hori.	9608.000	PK	42.3	38.5	9.4	33.3	-	56.9	73.9	17.0	Floor noise
Hori.	2339.989	AV	39.1	27.8	5.4	32.8	2.0	41.5	53.9	12.4	*2)
Hori.	2390.000	AV	43.2	27.7	5.4	32.8	2.0	45.5	53.9	8.4	*1)
Hori.	4804.000	AV	32.5	31.6	7.5	31.8	-	39.8	53.9	14.1	Floor noise
Hori.	7206.000	AV	33.7	36.0	8.9	32.7	-	46.0	53.9	8.0	Floor noise
Hori.	9608.000	AV	32.3	38.5	9.4	33.3	-	46.8	53.9	7.1	Floor noise
Vert.	59.288	QP	29.1	8.1	7.5	32.2	-	12.5	40.0	27.5	
Vert.	62.277	QP	25.8	7.3	7.6	32.2	-	8.5	40.0	31.5	
Vert.	128.949	QP	22.7	13.8	8.4	32.1	-	12.8	43.5	30.7	
Vert.	352.995	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.3	
Vert.	590.593	QP	22.1	19.1	11.9	32.0	-	21.0	46.0	25.0	
Vert.	879.126	QP	21.8	22.0	13.4	31.1	-	26.1	46.0	19.9	
Vert.	2339.989	PK	47.5	27.8	5.4	32.8	-	47.9	73.9	26.1	
Vert.	2390.000	PK	55.6	27.7	5.4	32.8	-	55.9	73.9	18.0	
Vert.	4804.000	PK	41.0	31.6	7.5	31.8	-	48.3	73.9	25.6	Floor noise
Vert.	7206.000	PK	42.7	36.0	8.9	32.7	-	54.9	73.9	19.0	Floor noise
Vert.	9608.000	PK	42.1	38.5	9.4	33.3	-	56.7	73.9	17.2	Floor noise
Vert.	2339.989	AV	38.0	27.8	5.4	32.8	2.0	40.4	53.9	13.5	*2)
Vert.	2390.000	AV	41.2	27.7	5.4	32.8	2.0	43.5	53.9	10.4	*1)
Vert.	4804.000	AV	32.5	31.6	7.5	31.8	-	39.8	53.9	14.1	Floor noise
Vert.	7206.000	AV	34.0	36.0	8.9	32.7	-	46.2	53.9	7.7	Floor noise
Vert.	9608.000	AV	32.1	38.5	9.4	33.3	-	46.7	53.9	7.2	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	96.7	27.7	5.4	32.7	97.0	-	-	Carrier
Hori	2400.000	PK	53.6	27.7	5.4	32.7	54.0	77.0	23.0	
Vert	2402.000	PK	94.0	27.7	5.4	32.7	94.3	-	-	Carrier
Vert	2400.000	PK	51.0	27.7	5.4	32.7	51.4	74.3	22.9	

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

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Ise EMC Lab.

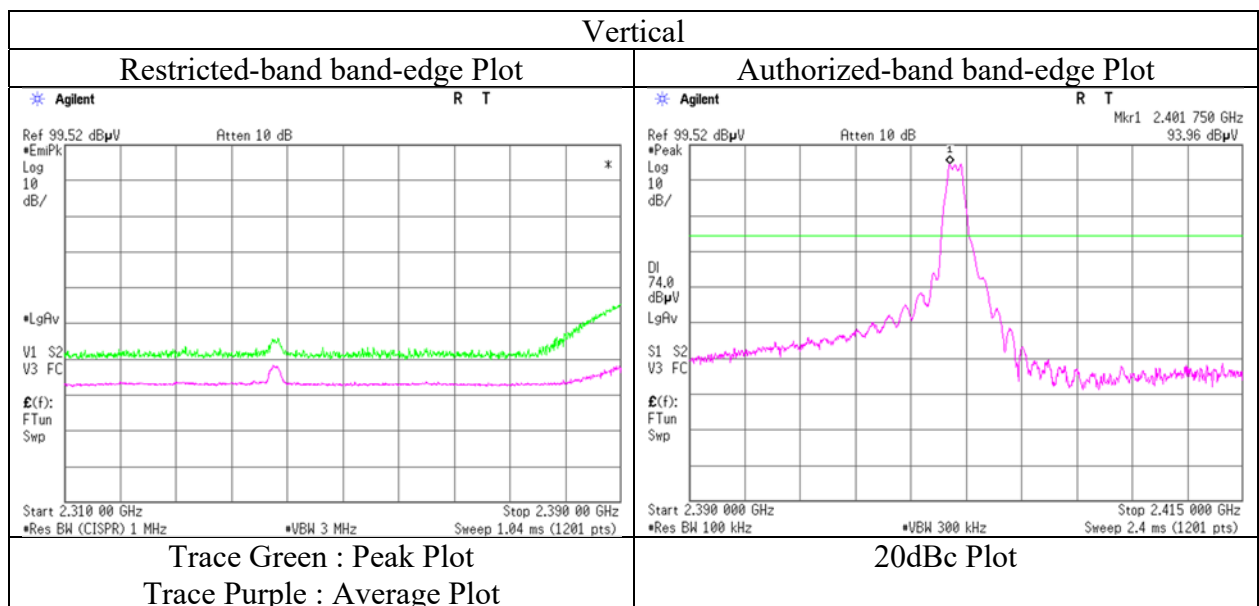
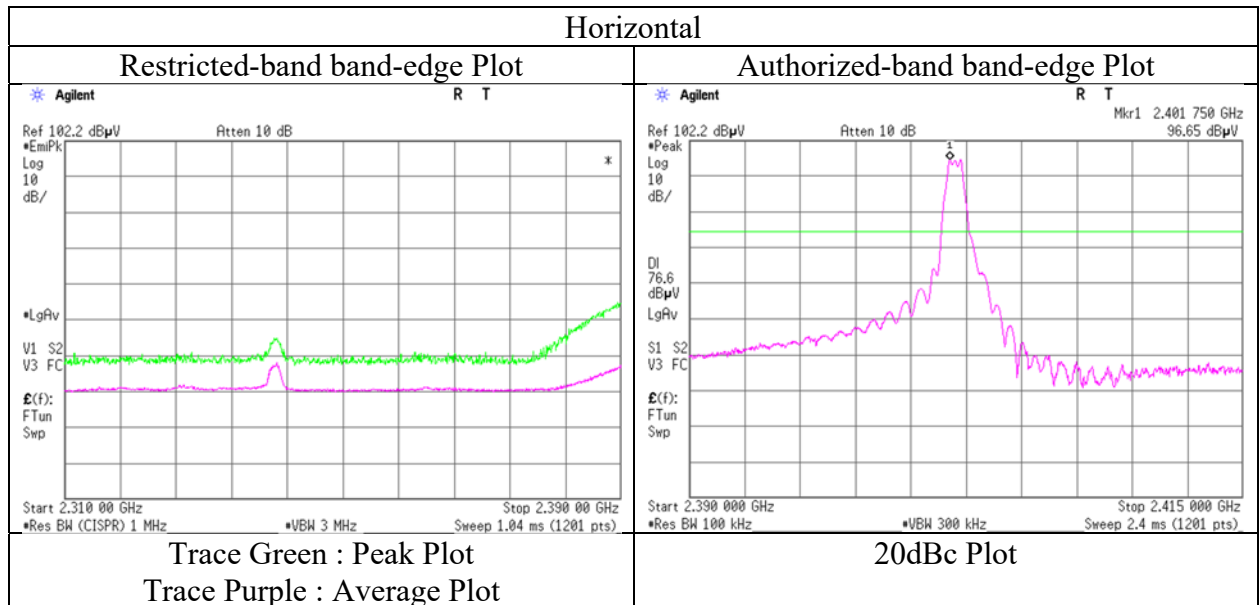
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 22, 2019
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Akihiko Maeda
	(1 GHz -10 GHz)
Mode	Tx BT LE 1M-PHY 2402 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.

Ise EMC Lab.

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Radiated Spurious Emission (PIFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 22, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)
Mode	Tx BT LE 1M-PHY 2440 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.281	QP	24.1	8.1	7.5	32.2	-	7.5	40.0	32.5	
Hori.	62.268	QP	22.9	7.4	7.6	32.2	-	5.6	40.0	34.4	
Hori.	181.979	QP	22.1	16.4	9.0	32.1	-	15.4	43.5	28.1	
Hori.	337.644	QP	22.3	14.8	10.2	31.9	-	15.4	46.0	30.6	
Hori.	491.358	QP	22.2	17.6	11.3	32.0	-	19.1	46.0	26.9	
Hori.	959.676	QP	23.9	22.2	13.8	30.6	-	29.2	46.0	16.8	
Hori.	2373.968	PK	47.9	27.7	5.4	32.8	-	48.3	73.9	25.6	
Hori.	4880.000	PK	42.0	31.5	7.5	31.8	-	49.3	73.9	24.6	Floor noise
Hori.	7320.000	PK	41.7	36.2	8.9	32.7	-	54.1	73.9	19.8	Floor noise
Hori.	9760.000	PK	41.9	38.8	9.4	33.4	-	56.7	73.9	17.2	Floor noise
Hori.	2373.968	AV	39.3	27.7	5.4	32.8	2.0	41.7	53.9	12.2	*1)
Hori.	4880.000	AV	32.2	31.5	7.5	31.8	-	39.4	53.9	14.5	Floor noise
Hori.	7320.000	AV	33.6	36.2	8.9	32.7	-	46.0	53.9	7.9	Floor noise
Hori.	9760.000	AV	32.3	38.8	9.4	33.4	-	47.1	53.9	6.8	Floor noise
Vert.	59.281	QP	29.2	8.1	7.5	32.2	-	12.6	40.0	27.4	
Vert.	62.268	QP	25.7	7.4	7.6	32.2	-	8.4	40.0	31.6	
Vert.	181.979	QP	22.2	16.4	9.0	32.1	-	15.5	43.5	28.0	
Vert.	337.644	QP	22.4	14.8	10.2	31.9	-	15.5	46.0	30.5	
Vert.	491.358	QP	22.3	17.6	11.3	32.0	-	19.2	46.0	26.8	
Vert.	959.676	QP	23.3	22.2	13.8	30.6	-	28.6	46.0	17.4	
Vert.	2373.968	PK	46.9	27.7	5.4	32.8	-	47.2	73.9	26.7	
Vert.	4880.000	PK	41.2	31.5	7.5	31.8	-	48.4	73.9	25.5	Floor noise
Vert.	7320.000	PK	43.2	36.2	8.9	32.7	-	55.5	73.9	18.4	Floor noise
Vert.	9760.000	PK	41.6	38.8	9.4	33.4	-	56.4	73.9	17.5	Floor noise
Vert.	2373.968	AV	38.8	27.7	5.4	32.8	2.0	41.2	53.9	12.8	*1)
Vert.	4880.000	AV	32.4	31.5	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Vert.	7320.000	AV	33.6	36.2	8.9	32.7	-	46.0	53.9	7.9	Floor noise
Vert.	9760.000	AV	32.2	38.8	9.4	33.4	-	47.0	53.9	6.9	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

10 GHz - 26.5 GHz $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (PIFA Antenna BT1)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 22, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	23 deg. C / 43 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2480 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.407	QP	24.3	8.0	7.5	32.2	-	7.7	40.0	32.3	
Hori.	62.780	QP	22.9	7.3	7.6	32.2	-	5.6	40.0	34.4	
Hori.	145.199	QP	22.6	14.8	8.6	32.1	-	13.9	43.5	29.6	
Hori.	354.545	QP	22.2	15.0	10.4	31.9	-	15.7	46.0	30.3	
Hori.	500.950	QP	22.1	17.7	11.3	32.0	-	19.2	46.0	26.8	
Hori.	959.794	QP	24.0	22.2	13.8	30.6	-	29.3	46.0	16.7	
Hori.	2483.500	PK	59.4	27.5	5.5	32.7	-	59.6	73.9	14.3	
Hori.	4960.000	PK	41.2	31.6	7.5	31.8	-	48.5	73.9	25.4	Floor noise
Hori.	7440.000	PK	43.0	36.3	8.9	32.7	-	55.5	73.9	18.4	Floor noise
Hori.	9920.000	PK	42.1	38.9	9.4	33.4	-	57.0	73.9	16.9	Floor noise
Hori.	2483.500	AV	44.7	27.5	5.5	32.7	2.0	46.9	53.9	7.0	*1)
Hori.	4960.000	AV	32.2	31.6	7.5	31.8	-	39.5	53.9	14.4	Floor noise
Hori.	7440.000	AV	34.5	36.3	8.9	32.7	-	46.9	53.9	7.0	Floor noise
Hori.	9920.000	AV	32.4	38.9	9.4	33.4	-	47.2	53.9	6.7	Floor noise
Vert.	59.407	QP	29.2	8.0	7.5	32.2	-	12.6	40.0	27.4	
Vert.	62.780	QP	25.9	7.3	7.6	32.2	-	8.6	40.0	31.4	
Vert.	145.199	QP	22.7	14.8	8.6	32.1	-	14.0	43.5	29.5	
Vert.	354.545	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Vert.	500.950	QP	22.3	17.7	11.3	32.0	-	19.4	46.0	26.6	
Vert.	959.794	QP	23.3	22.2	13.8	30.6	-	28.6	46.0	17.4	
Vert.	2483.500	PK	54.8	27.5	5.5	32.7	-	55.0	73.9	18.9	
Vert.	4960.000	PK	41.2	31.6	7.5	31.8	-	48.5	73.9	25.4	Floor noise
Vert.	7440.000	PK	42.5	36.3	8.9	32.7	-	54.9	73.9	19.0	Floor noise
Vert.	9920.000	PK	42.8	38.9	9.4	33.4	-	57.7	73.9	16.2	Floor noise
Vert.	2483.500	AV	41.5	27.5	5.5	32.7	2.0	43.8	53.9	10.1	*1)
Vert.	4960.000	AV	32.5	31.6	7.5	31.8	-	39.8	53.9	14.1	Floor noise
Vert.	7440.000	AV	34.4	36.3	8.9	32.7	-	46.9	53.9	7.0	Floor noise
Vert.	9920.000	AV	32.3	38.9	9.4	33.4	-	47.2	53.9	6.7	Floor noise

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

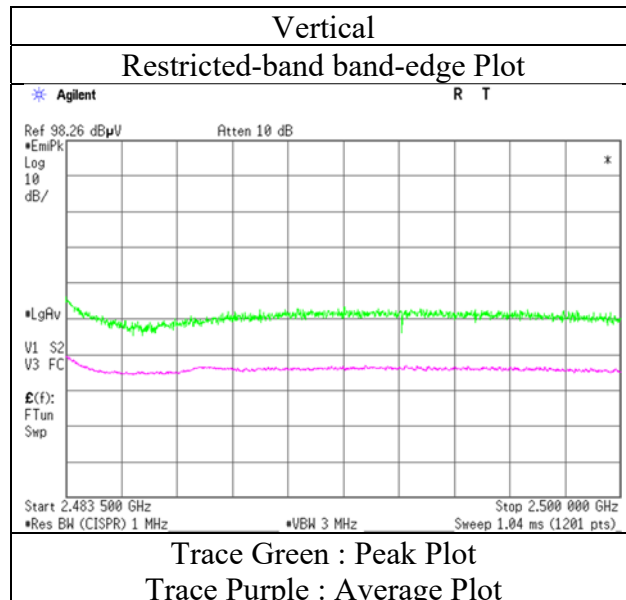
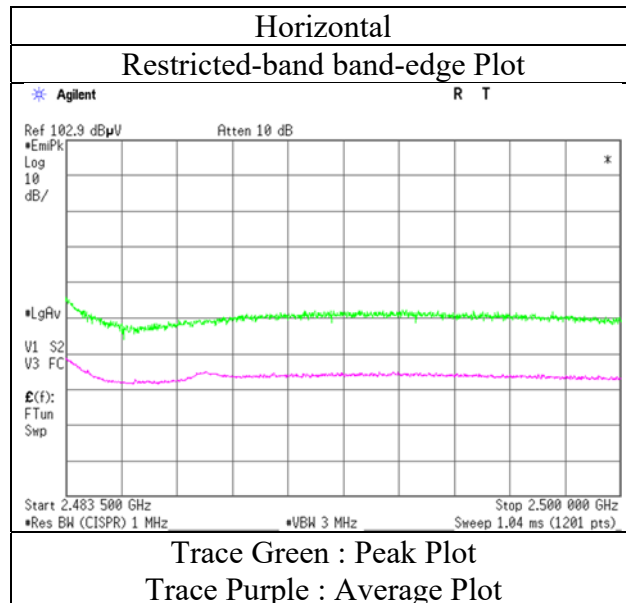
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 22, 2019
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Akihiko Maeda (1 GHz -10 GHz)
Mode	Tx BT LE 1M-PHY 2480 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.

Ise EMC Lab.

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Radiated Spurious Emission (PIFA Antenna BT1)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 22, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	23 deg. C / 43 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.235	QP	24.1	8.1	7.5	32.2	-	7.5	40.0	32.5	
Hori.	62.991	QP	22.8	7.3	7.6	32.2	-	5.4	40.0	34.6	
Hori.	175.140	QP	22.9	16.1	8.9	32.1	-	15.9	43.5	27.7	
Hori.	341.535	QP	22.3	14.9	10.3	31.9	-	15.5	46.0	30.5	
Hori.	544.779	QP	22.1	17.8	11.6	32.0	-	19.5	46.0	26.5	
Hori.	959.777	QP	24.1	22.2	13.8	30.6	-	29.4	46.0	16.6	
Hori.	2339.989	PK	48.9	27.8	5.4	32.8	-	49.3	73.9	24.6	
Hori.	2390.000	PK	57.4	27.7	5.4	32.8	-	57.7	73.9	16.2	
Hori.	4804.000	PK	41.2	31.6	7.5	31.8	-	48.5	73.9	25.4	Floor noise
Hori.	7206.000	PK	42.2	36.0	8.9	32.7	-	54.4	73.9	19.5	Floor noise
Hori.	9608.000	PK	42.0	38.5	9.4	33.3	-	56.6	73.9	17.3	Floor noise
Hori.	2339.989	AV	40.2	27.8	5.4	32.8	4.8	45.4	53.9	8.5	*2)
Hori.	2390.000	AV	43.4	27.7	5.4	32.8	4.8	48.5	53.9	5.4	*1)
Hori.	4804.000	AV	32.6	31.6	7.5	31.8	-	39.9	53.9	14.0	Floor noise
Hori.	7206.000	AV	33.5	36.0	8.9	32.7	-	45.8	53.9	8.2	Floor noise
Hori.	9608.000	AV	32.2	38.5	9.4	33.3	-	46.8	53.9	7.1	Floor noise
Vert.	59.235	QP	29.0	8.1	7.5	32.2	-	12.4	40.0	27.6	
Vert.	62.991	QP	25.8	7.3	7.6	32.2	-	8.4	40.0	31.6	
Vert.	175.140	QP	22.7	16.1	8.9	32.1	-	15.7	43.5	27.9	
Vert.	341.535	QP	22.1	14.9	10.3	31.9	-	15.3	46.0	30.7	
Vert.	544.779	QP	22.2	17.8	11.6	32.0	-	19.6	46.0	26.4	
Vert.	959.777	QP	23.2	22.2	13.8	30.6	-	28.5	46.0	17.5	
Vert.	2339.989	PK	46.8	27.8	5.4	32.8	-	47.2	73.9	26.7	
Vert.	2390.000	PK	55.1	27.7	5.4	32.8	-	55.4	73.9	18.5	
Vert.	4804.000	PK	41.0	31.6	7.5	31.8	-	48.3	73.9	25.7	Floor noise
Vert.	7206.000	PK	42.3	36.0	8.9	32.7	-	54.5	73.9	19.4	Floor noise
Vert.	9608.000	PK	42.0	38.5	9.4	33.3	-	56.6	73.9	17.3	Floor noise
Vert.	2339.989	AV	36.8	27.8	5.4	32.8	4.8	42.0	53.9	11.9	*2)
Vert.	2390.000	AV	40.3	27.7	5.4	32.8	4.8	45.4	53.9	8.5	*1)
Vert.	4804.000	AV	32.3	31.6	7.5	31.8	-	39.6	53.9	14.4	Floor noise
Vert.	7206.000	AV	34.1	36.0	8.9	32.7	-	46.3	53.9	7.6	Floor noise
Vert.	9608.000	AV	32.1	38.5	9.4	33.3	-	46.7	53.9	7.2	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	96.3	27.7	5.4	32.7	96.6	-	-	Carrier
Hori.	2400.000	PK	53.2	27.7	5.4	32.7	53.6	76.6	23.1	
Vert.	2402.000	PK	94.3	27.7	5.4	32.7	94.6	-	-	Carrier
Vert.	2400.000	PK	51.2	27.7	5.4	32.7	51.5	74.6	23.1	

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

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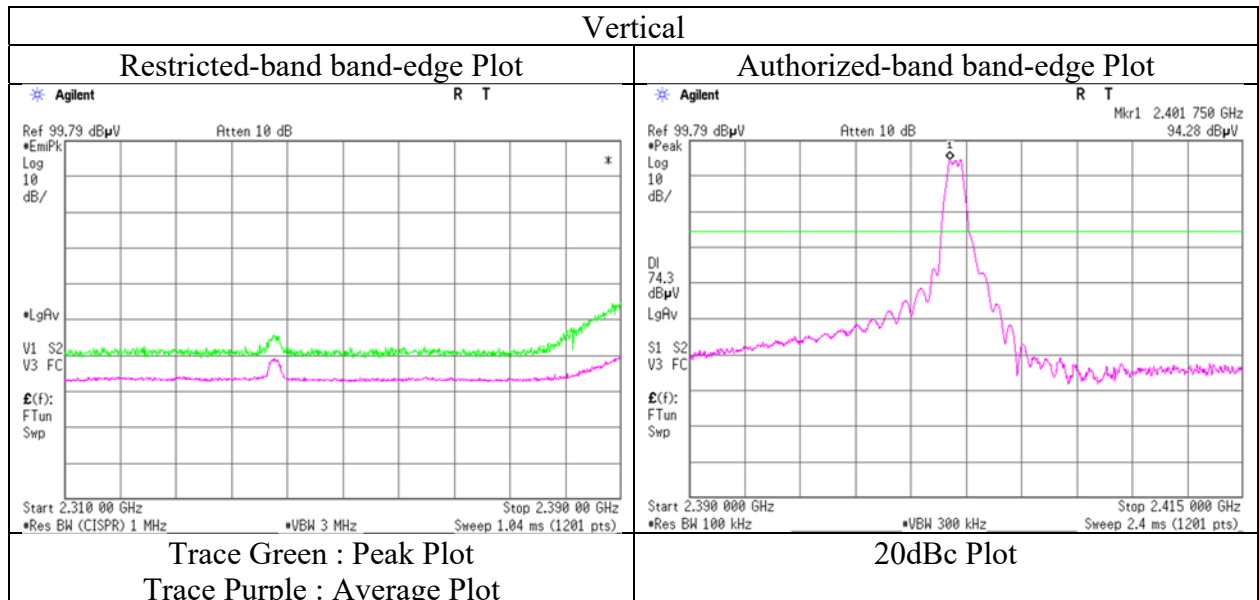
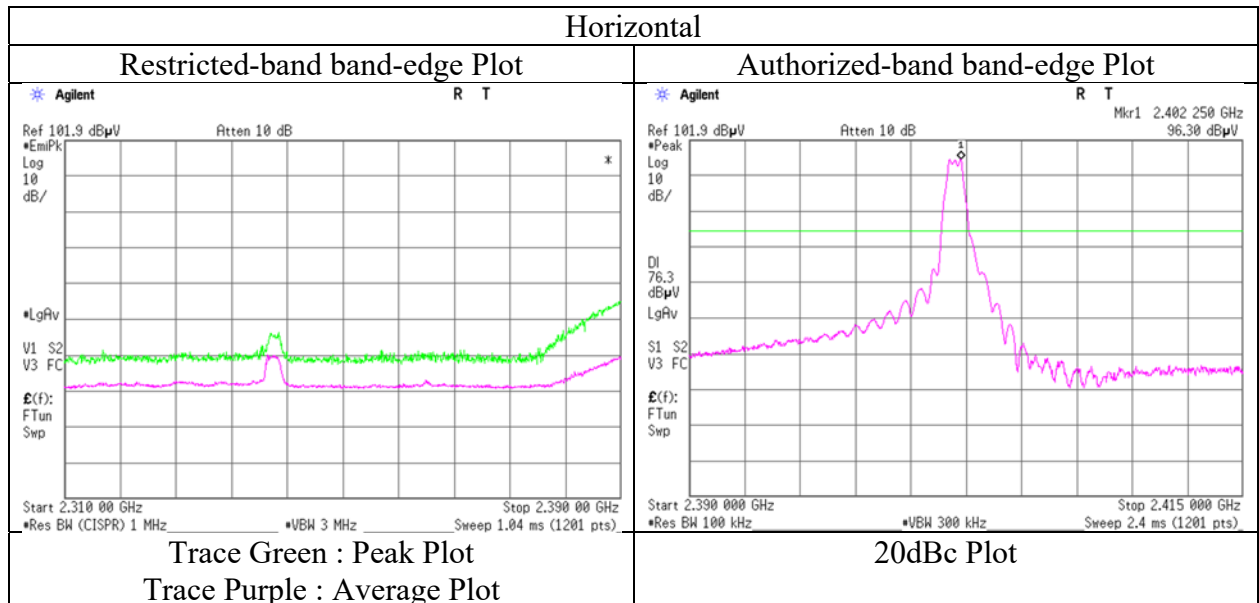
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 22, 2019
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Akihiko Maeda (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2402 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 (PIFA Antenna BT1)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 22, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	23 deg. C / 43 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2440 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.259	QP	24.2	8.1	7.5	32.2	-	7.6	40.0	32.4	
Hori.	62.516	QP	22.9	7.3	7.6	32.2	-	5.6	40.0	34.4	
Hori.	130.109	QP	22.1	13.8	8.4	32.1	-	12.2	43.5	31.3	
Hori.	345.690	QP	22.2	15.0	10.3	31.9	-	15.5	46.0	30.5	
Hori.	502.203	QP	22.1	17.7	11.3	32.0	-	19.2	46.0	26.8	
Hori.	959.846	QP	24.5	22.2	13.8	30.6	-	29.8	46.0	16.2	
Hori.	2373.968	PK	47.9	27.7	5.4	32.8	-	48.2	73.9	25.7	
Hori.	4880.000	PK	42.1	31.5	7.5	31.8	-	49.4	73.9	24.6	Floor noise
Hori.	7320.000	PK	41.6	36.2	8.9	32.7	-	54.0	73.9	20.0	Floor noise
Hori.	9760.000	PK	42.0	38.8	9.4	33.4	-	56.8	73.9	17.1	Floor noise
Hori.	2373.968	AV	38.9	27.7	5.4	32.8	4.8	44.0	53.9	9.9	*1)
Hori.	4880.000	AV	32.4	31.5	7.5	31.8	-	39.6	53.9	14.3	Floor noise
Hori.	7320.000	AV	33.4	36.2	8.9	32.7	-	45.8	53.9	8.1	Floor noise
Hori.	9760.000	AV	32.2	38.8	9.4	33.4	-	47.0	53.9	6.9	Floor noise
Vert.	59.259	QP	29.2	8.1	7.5	32.2	-	12.6	40.0	27.4	
Vert.	62.516	QP	25.7	7.3	7.6	32.2	-	8.4	40.0	31.6	
Vert.	130.109	QP	22.4	13.8	8.4	32.1	-	12.5	43.5	31.0	
Vert.	345.690	QP	22.3	15.0	10.3	31.9	-	15.6	46.0	30.4	
Vert.	502.203	QP	22.3	17.7	11.3	32.0	-	19.4	46.0	26.6	
Vert.	959.846	QP	23.3	22.2	13.8	30.6	-	28.6	46.0	17.4	
Vert.	2373.968	PK	48.0	27.7	5.4	32.8	-	48.3	73.9	25.6	
Vert.	4880.000	PK	41.0	31.5	7.5	31.8	-	48.2	73.9	25.7	Floor noise
Vert.	7320.000	PK	43.3	36.2	8.9	32.7	-	55.7	73.9	18.3	Floor noise
Vert.	9760.000	PK	41.3	38.8	9.4	33.4	-	56.1	73.9	17.8	Floor noise
Vert.	2373.968	AV	39.0	27.7	5.4	32.8	4.8	44.1	53.9	9.8	*1)
Vert.	4880.000	AV	32.5	31.5	7.5	31.8	-	39.8	53.9	14.1	Floor noise
Vert.	7320.000	AV	33.5	36.2	8.9	32.7	-	45.9	53.9	8.0	Floor noise
Vert.	9760.000	AV	32.1	38.8	9.4	33.4	-	46.9	53.9	7.0	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (PIFA Antenna BT1)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 22, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	23 deg. C / 43 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Akihiko Maeda (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.075	QP	24.5	8.1	7.5	32.2	-	8.0	40.0	32.0	
Hori.	62.278	QP	23.2	7.3	7.6	32.2	-	5.9	40.0	34.1	
Hori.	171.909	QP	22.7	16.0	8.9	32.1	-	15.4	43.5	28.1	
Hori.	356.774	QP	22.1	15.0	10.4	31.9	-	15.6	46.0	30.4	
Hori.	627.392	QP	22.1	19.5	12.1	32.0	-	21.6	46.0	24.4	
Hori.	959.934	QP	27.9	22.2	13.8	30.6	-	33.2	46.0	12.8	
Hori.	2483.500	PK	58.3	27.5	5.5	32.7	-	58.6	73.9	15.4	
Hori.	4960.000	PK	41.3	31.6	7.5	31.8	-	48.6	73.9	25.3	Floor noise
Hori.	7440.000	PK	43.1	36.3	8.9	32.7	-	55.5	73.9	18.4	Floor noise
Hori.	9920.000	PK	42.8	38.9	9.4	33.4	-	57.6	73.9	16.3	Floor noise
Hori.	2483.500	AV	45.0	27.5	5.5	32.7	4.8	50.0	53.9	3.9	*1)
Hori.	4960.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Hori.	7440.000	AV	34.3	36.3	8.9	32.7	-	46.7	53.9	7.2	Floor noise
Hori.	9920.000	AV	32.2	38.9	9.4	33.4	-	47.1	53.9	6.8	Floor noise
Vert.	59.075	QP	29.5	8.1	7.5	32.2	-	13.0	40.0	27.0	
Vert.	62.278	QP	27.3	7.3	7.6	32.2	-	10.0	40.0	30.0	
Vert.	171.909	QP	22.6	16.0	8.9	32.1	-	15.3	43.5	28.2	
Vert.	356.774	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Vert.	627.392	QP	22.0	19.5	12.1	32.0	-	21.5	46.0	24.5	
Vert.	959.934	QP	23.5	22.2	13.8	30.6	-	28.8	46.0	17.2	
Vert.	2483.500	PK	56.5	27.5	5.5	32.7	-	56.7	73.9	17.2	
Vert.	4960.000	PK	41.5	31.6	7.5	31.8	-	48.8	73.9	25.2	Floor noise
Vert.	7440.000	PK	42.3	36.3	8.9	32.7	-	54.8	73.9	19.1	Floor noise
Vert.	9920.000	PK	42.4	38.9	9.4	33.4	-	57.3	73.9	16.6	Floor noise
Vert.	2483.500	AV	42.1	27.5	5.5	32.7	4.8	47.1	53.9	6.8	*1)
Vert.	4960.000	AV	32.5	31.6	7.5	31.8	-	39.8	53.9	14.1	Floor noise
Vert.	7440.000	AV	34.5	36.3	8.9	32.7	-	47.0	53.9	6.9	Floor noise
Vert.	9920.000	AV	32.5	38.9	9.4	33.4	-	47.3	53.9	6.6	Floor noise

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

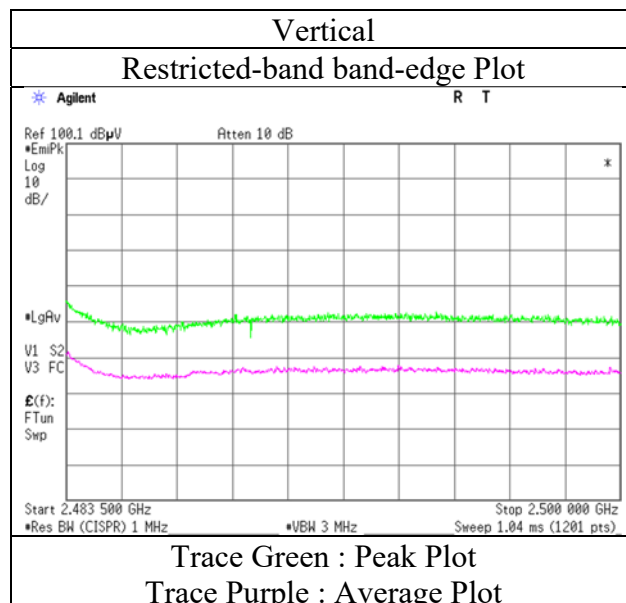
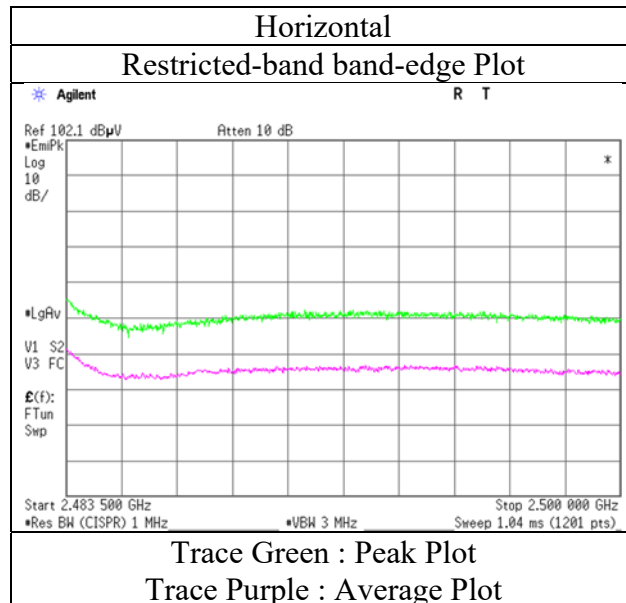
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 22, 2019
Temperature / Humidity	23 deg. C / 43 % RH
Engineer	Akihiko Maeda (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2480 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 (PIFA Antenna BT2)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 24, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2402 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.189	QP	24.5	8.1	7.5	32.2	-	7.9	40.0	32.1	
Hori.	62.882	QP	23.1	7.3	7.6	32.2	-	5.8	40.0	34.2	
Hori.	191.870	QP	22.3	16.5	9.0	32.1	-	15.8	43.5	27.7	
Hori.	344.717	QP	22.2	15.0	10.3	31.9	-	15.5	46.0	30.5	
Hori.	543.895	QP	22.3	17.8	11.6	32.0	-	19.7	46.0	26.4	
Hori.	959.485	QP	26.7	22.1	13.8	30.6	-	32.0	46.0	14.0	
Hori.	2339.989	PK	46.5	27.8	5.4	32.8	-	46.9	73.9	27.0	
Hori.	2390.000	PK	55.7	27.7	5.4	32.8	-	56.1	73.9	17.8	
Hori.	4804.000	PK	40.5	31.6	7.5	31.8	-	47.7	73.9	26.2	Floor noise
Hori.	7206.000	PK	40.7	36.0	8.9	32.7	-	52.9	73.9	21.0	Floor noise
Hori.	9608.000	PK	40.8	38.5	9.4	33.3	-	55.4	73.9	18.5	Floor noise
Hori.	2339.989	AV	38.0	27.8	5.4	32.8	2.0	40.4	53.9	13.5	*2)
Hori.	2390.000	AV	40.7	27.7	5.4	32.8	2.0	43.1	53.9	10.8	*1)
Hori.	4804.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Hori.	7206.000	AV	32.4	36.0	8.9	32.7	-	44.7	53.9	9.3	Floor noise
Hori.	9608.000	AV	32.1	38.5	9.4	33.3	-	46.7	53.9	7.2	Floor noise
Vert.	59.189	QP	29.5	8.1	7.5	32.2	-	12.9	40.0	27.1	
Vert.	62.882	QP	25.8	7.3	7.6	32.2	-	8.5	40.0	31.5	
Vert.	191.870	QP	22.5	16.5	9.0	32.1	-	16.0	43.5	27.5	
Vert.	344.717	QP	22.4	15.0	10.3	31.9	-	15.7	46.0	30.3	
Vert.	543.895	QP	22.1	17.8	11.6	32.0	-	19.5	46.0	26.6	
Vert.	959.485	QP	23.5	22.1	13.8	30.6	-	28.8	46.0	17.2	
Vert.	2339.989	PK	45.4	27.8	5.4	32.8	-	45.8	73.9	28.1	
Vert.	2390.000	PK	54.6	27.7	5.4	32.8	-	55.0	73.9	18.9	
Vert.	4804.000	PK	41.5	31.6	7.5	31.8	-	48.7	73.9	25.2	Floor noise
Vert.	7206.000	PK	42.0	36.0	8.9	32.7	-	54.2	73.9	19.7	Floor noise
Vert.	9608.000	PK	40.5	38.5	9.4	33.3	-	55.1	73.9	18.8	Floor noise
Vert.	2339.989	AV	37.2	27.8	5.4	32.8	2.0	39.6	53.9	14.3	*2)
Vert.	2390.000	AV	39.7	27.7	5.4	32.8	2.0	42.0	53.9	11.9	*1)
Vert.	4804.000	AV	32.5	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Vert.	7206.000	AV	31.8	36.0	8.9	32.7	-	44.0	53.9	9.9	Floor noise
Vert.	9608.000	AV	32.2	38.5	9.4	33.3	-	46.8	53.9	7.1	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	94.5	27.7	5.4	32.7	94.8	-	-	Carrier
Hori.	2400.000	PK	54.0	27.7	5.4	32.7	54.4	74.8	20.4	
Vert.	2402.000	PK	94.0	27.7	5.4	32.7	94.4	-	-	Carrier
Vert.	2400.000	PK	53.5	27.7	5.4	32.7	53.9	74.4	20.5	

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

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Ise EMC Lab.

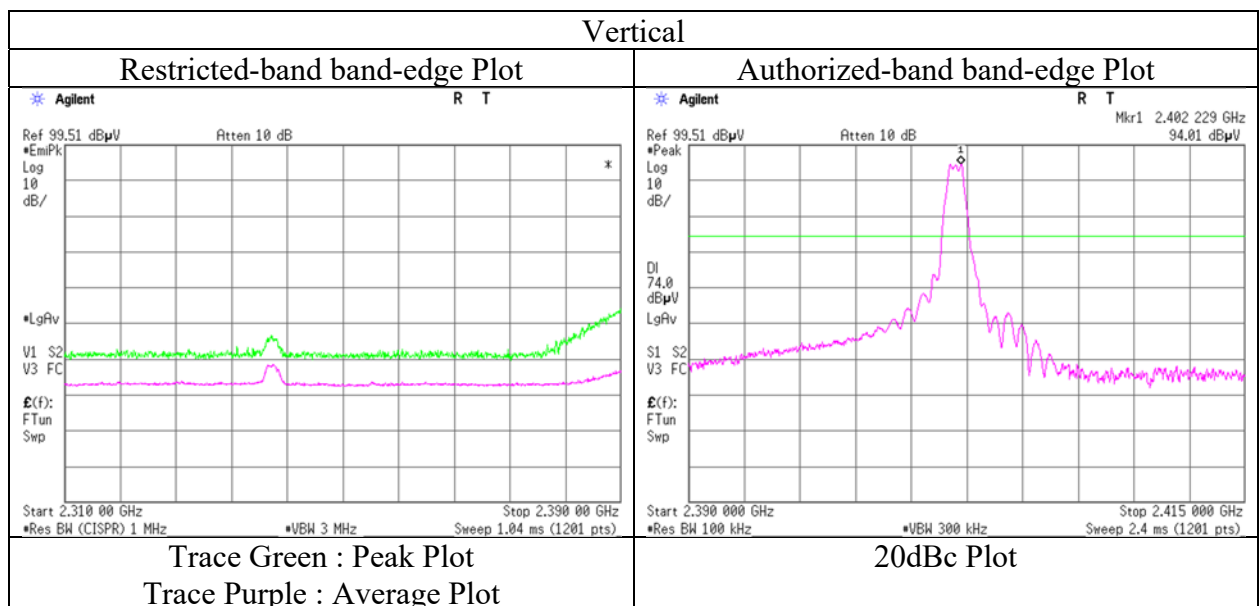
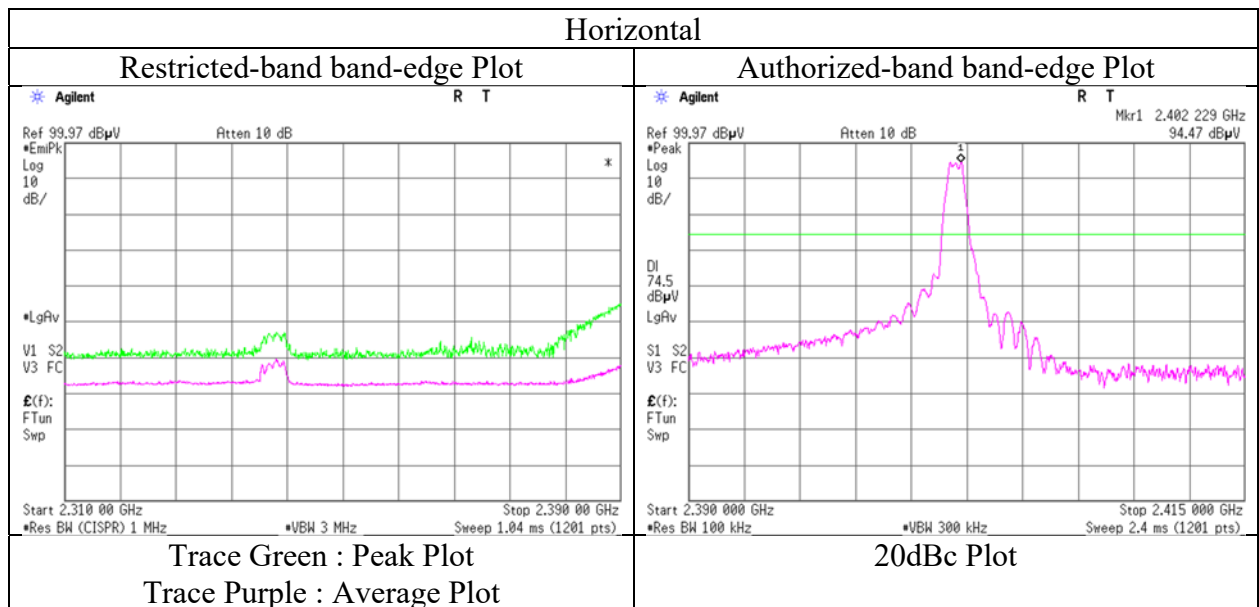
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT2)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 24, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya
	(1 GHz -10 GHz)
Mode	Tx BT LE 1M-PHY 2402 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.

Ise EMC Lab.

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Radiated Spurious Emission (PIFA Antenna BT2)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 24, 2019	January 9, 2020	January 9, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH
Engineer	Yuta Moriya	Tomohisa Nakagawa	Junki Nagatomi
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 1M-PHY 2440 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.171	QP	24.1	8.1	7.5	32.2	-	7.5	40.0	32.5	
Hori.	62.432	QP	22.8	7.3	7.6	32.2	-	5.5	40.0	34.5	
Hori.	167.730	QP	22.3	15.7	8.8	32.1	-	14.8	43.5	28.7	
Hori.	348.436	QP	22.2	15.0	10.3	31.9	-	15.6	46.0	30.4	
Hori.	581.713	QP	21.9	18.7	11.8	32.0	-	20.4	46.0	25.6	
Hori.	959.915	QP	26.5	22.2	13.8	30.6	-	31.8	46.0	14.2	
Hori.	2373.968	PK	47.2	27.7	5.4	32.8	-	47.6	73.9	26.3	
Hori.	4880.000	PK	40.4	31.5	7.5	31.8	-	47.7	73.9	26.2	Floor noise
Hori.	7320.000	PK	41.5	36.2	8.9	32.7	-	53.9	73.9	20.0	Floor noise
Hori.	9760.000	PK	40.5	38.8	9.4	33.4	-	55.3	73.9	18.7	Floor noise
Hori.	2373.968	AV	37.0	27.7	5.4	32.8	2.0	39.4	53.9	14.5	*1)
Hori.	4880.000	AV	32.3	31.5	7.5	31.8	-	39.6	53.9	14.4	Floor noise
Hori.	7320.000	AV	32.1	36.2	8.9	32.7	-	44.5	53.9	9.4	Floor noise
Hori.	9760.000	AV	32.2	38.8	9.4	33.4	-	47.0	53.9	6.9	Floor noise
Vert.	59.171	QP	29.2	8.1	7.5	32.2	-	12.6	40.0	27.4	
Vert.	62.432	QP	26.0	7.3	7.6	32.2	-	8.7	40.0	31.3	
Vert.	167.730	QP	22.3	15.7	8.8	32.1	-	14.8	43.5	28.7	
Vert.	348.436	QP	22.4	15.0	10.3	31.9	-	15.8	46.0	30.2	
Vert.	581.713	QP	22.2	18.7	11.8	32.0	-	20.7	46.0	25.3	
Vert.	959.915	QP	23.6	22.2	13.8	30.6	-	28.9	46.0	17.1	
Vert.	2373.968	PK	46.1	27.7	5.4	32.8	-	46.5	73.9	27.4	
Vert.	4880.000	PK	40.6	31.5	7.5	31.8	-	47.9	73.9	26.0	Floor noise
Vert.	7320.000	PK	41.6	36.2	8.9	32.7	-	54.0	73.9	19.9	Floor noise
Vert.	9760.000	PK	40.6	38.8	9.4	33.4	-	55.4	73.9	18.5	Floor noise
Vert.	2373.968	AV	36.4	27.7	5.4	32.8	2.0	38.7	53.9	15.2	*1)
Vert.	4880.000	AV	32.4	31.5	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Vert.	7320.000	AV	32.1	36.2	8.9	32.7	-	44.5	53.9	9.4	Floor noise
Vert.	9760.000	AV	32.2	38.8	9.4	33.4	-	47.0	53.9	6.9	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (PIFA Antenna BT2)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 24, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 1M-PHY 2480 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.226	QP	24.3	8.1	7.5	32.2	-	7.7	40.0	32.3	
Hori.	62.527	QP	22.9	7.3	7.6	32.2	-	5.6	40.0	34.4	
Hori.	172.313	QP	22.3	16.0	8.9	32.1	-	15.0	43.5	28.5	
Hori.	375.315	QP	22.3	15.1	10.5	31.9	-	16.0	46.0	30.0	
Hori.	592.826	QP	22.0	19.1	11.9	32.0	-	21.0	46.0	25.0	
Hori.	959.616	QP	26.1	22.1	13.8	30.6	-	31.4	46.0	14.6	
Hori.	2483.500	PK	60.1	27.5	5.5	32.7	-	60.3	73.9	13.6	
Hori.	4960.000	PK	39.9	31.6	7.5	31.8	-	47.2	73.9	26.7	Floor noise
Hori.	7440.000	PK	41.3	36.3	8.9	32.7	-	53.8	73.9	20.1	Floor noise
Hori.	9920.000	PK	40.7	38.9	9.4	33.4	-	55.6	73.9	18.3	Floor noise
Hori.	2483.500	AV	46.9	27.5	5.5	32.7	2.0	49.1	53.9	4.8	*1)
Hori.	4960.000	AV	32.1	31.6	7.5	31.8	-	39.4	53.9	14.5	Floor noise
Hori.	7440.000	AV	32.8	36.3	8.9	32.7	-	45.3	53.9	8.6	Floor noise
Hori.	9920.000	AV	32.2	38.9	9.4	33.4	-	47.1	53.9	6.8	Floor noise
Vert.	59.226	QP	29.1	8.1	7.5	32.2	-	12.5	40.0	27.5	
Vert.	62.527	QP	26.1	7.3	7.6	32.2	-	8.8	40.0	31.2	
Vert.	172.313	QP	22.3	16.0	8.9	32.1	-	15.0	43.5	28.5	
Vert.	375.315	QP	22.3	15.1	10.5	31.9	-	16.0	46.0	30.0	
Vert.	592.826	QP	22.1	19.1	11.9	32.0	-	21.1	46.0	24.9	
Vert.	959.616	QP	23.3	22.1	13.8	30.6	-	28.6	46.0	17.4	
Vert.	2483.500	PK	57.9	27.5	5.5	32.7	-	58.1	73.9	15.8	
Vert.	4960.000	PK	40.1	31.6	7.5	31.8	-	47.4	73.9	26.5	Floor noise
Vert.	7440.000	PK	41.2	36.3	8.9	32.7	-	53.7	73.9	20.2	Floor noise
Vert.	9920.000	PK	40.9	38.9	9.4	33.4	-	55.8	73.9	18.2	Floor noise
Vert.	2483.500	AV	45.1	27.5	5.5	32.7	2.0	47.3	53.9	6.6	*1)
Vert.	4960.000	AV	32.0	31.6	7.5	31.8	-	39.3	53.9	14.6	Floor noise
Vert.	7440.000	AV	32.2	36.3	8.9	32.7	-	44.7	53.9	9.2	Floor noise
Vert.	9920.000	AV	32.1	38.9	9.4	33.4	-	47.0	53.9	6.9	Floor noise

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

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

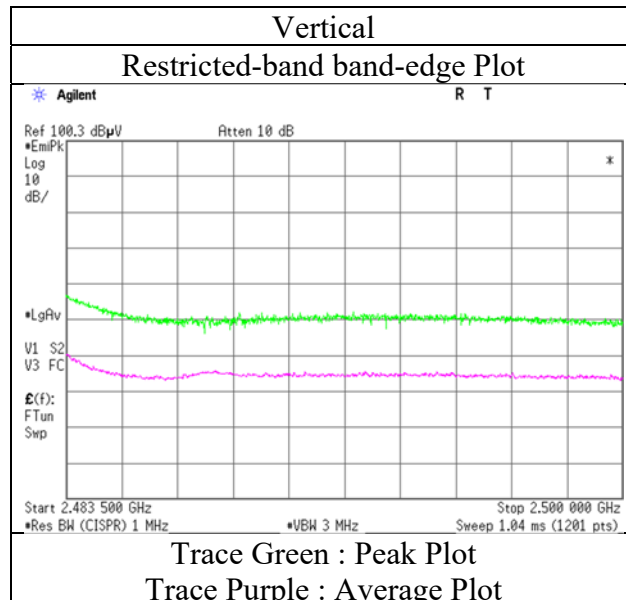
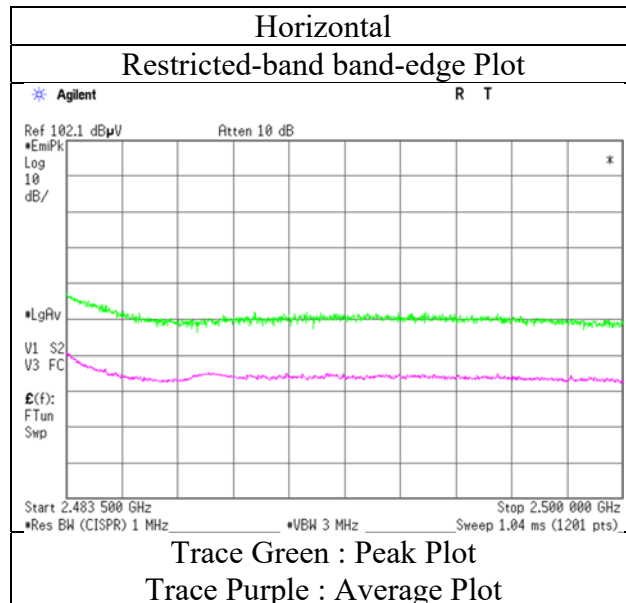
Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT2)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 24, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya (1 GHz -10 GHz)
Mode	Tx BT LE 1M-PHY 2480 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 (PIFA Antenna BT2)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 24, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.383	QP	24.3	8.0	7.5	32.2	-	7.7	40.0	32.3	
Hori.	62.531	QP	23.0	7.3	7.6	32.2	-	5.7	40.0	34.3	
Hori.	177.338	QP	22.5	16.2	8.9	32.1	-	15.6	43.5	28.0	
Hori.	352.644	QP	22.2	15.0	10.4	31.9	-	15.7	46.0	30.4	
Hori.	631.873	QP	22.1	19.4	12.1	32.0	-	21.6	46.0	24.4	
Hori.	959.640	QP	26.3	22.1	13.8	30.6	-	31.6	46.0	14.4	
Hori.	2337.277	PK	51.4	27.8	5.4	32.8	-	51.8	73.9	22.1	
Hori.	2390.000	PK	56.6	27.7	5.4	32.8	-	57.0	73.9	17.0	
Hori.	4804.000	PK	40.1	31.6	7.5	31.8	-	47.4	73.9	26.5	Floor noise
Hori.	7206.000	PK	41.0	36.0	8.9	32.7	-	53.2	73.9	20.7	Floor noise
Hori.	9608.000	PK	40.7	38.5	9.4	33.3	-	55.3	73.9	18.6	Floor noise
Hori.	2337.277	AV	40.8	27.8	5.4	32.8	4.8	45.9	53.9	8.0	*2)
Hori.	2390.000	AV	42.0	27.7	5.4	32.8	4.8	47.1	53.9	6.8	*1)
Hori.	4804.000	AV	32.4	31.6	7.5	31.8	-	39.7	53.9	14.3	Floor noise
Hori.	7206.000	AV	32.0	36.0	8.9	32.7	-	44.3	53.9	9.7	Floor noise
Hori.	9608.000	AV	31.8	38.5	9.4	33.3	-	46.4	53.9	7.5	Floor noise
Vert.	59.383	QP	29.3	8.0	7.5	32.2	-	12.7	40.0	27.3	
Vert.	62.531	QP	26.1	7.3	7.6	32.2	-	8.8	40.0	31.2	
Vert.	177.338	QP	22.3	16.2	8.9	32.1	-	15.4	43.5	28.2	
Vert.	352.644	QP	22.4	15.0	10.4	31.9	-	15.9	46.0	30.2	
Vert.	631.873	QP	22.2	19.4	12.1	32.0	-	21.7	46.0	24.3	
Vert.	959.640	QP	23.4	22.1	13.8	30.6	-	28.7	46.0	17.3	
Vert.	2337.277	PK	49.7	27.8	5.4	32.8	-	50.1	73.9	23.8	
Vert.	2390.000	PK	56.3	27.7	5.4	32.8	-	56.7	73.9	17.3	
Vert.	4804.000	PK	40.4	31.6	7.5	31.8	-	47.7	73.9	26.2	Floor noise
Vert.	7206.000	PK	40.9	36.0	8.9	32.7	-	53.1	73.9	20.8	Floor noise
Vert.	9608.000	PK	40.7	38.5	9.4	33.3	-	55.3	73.9	18.6	Floor noise
Vert.	2337.277	AV	40.0	27.8	5.4	32.8	4.8	45.2	53.9	8.7	*2)
Vert.	2390.000	AV	43.1	27.7	5.4	32.8	4.8	48.2	53.9	5.7	*1)
Vert.	4804.000	AV	32.3	31.6	7.5	31.8	-	39.6	53.9	14.3	Floor noise
Vert.	7206.000	AV	32.1	36.0	8.9	32.7	-	44.3	53.9	9.6	Floor noise
Vert.	9608.000	AV	31.6	38.5	9.4	33.3	-	46.2	53.9	7.7	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	94.2	27.7	5.4	32.7	94.6	-	-	Carrier
Hori.	2400.000	PK	62.4	27.7	5.4	32.7	62.8	74.6	11.8	
Vert.	2402.000	PK	93.5	27.7	5.4	32.7	93.8	-	-	Carrier
Vert.	2400.000	PK	61.4	27.7	5.4	32.7	61.8	73.8	12.0	

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

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Ise EMC Lab.

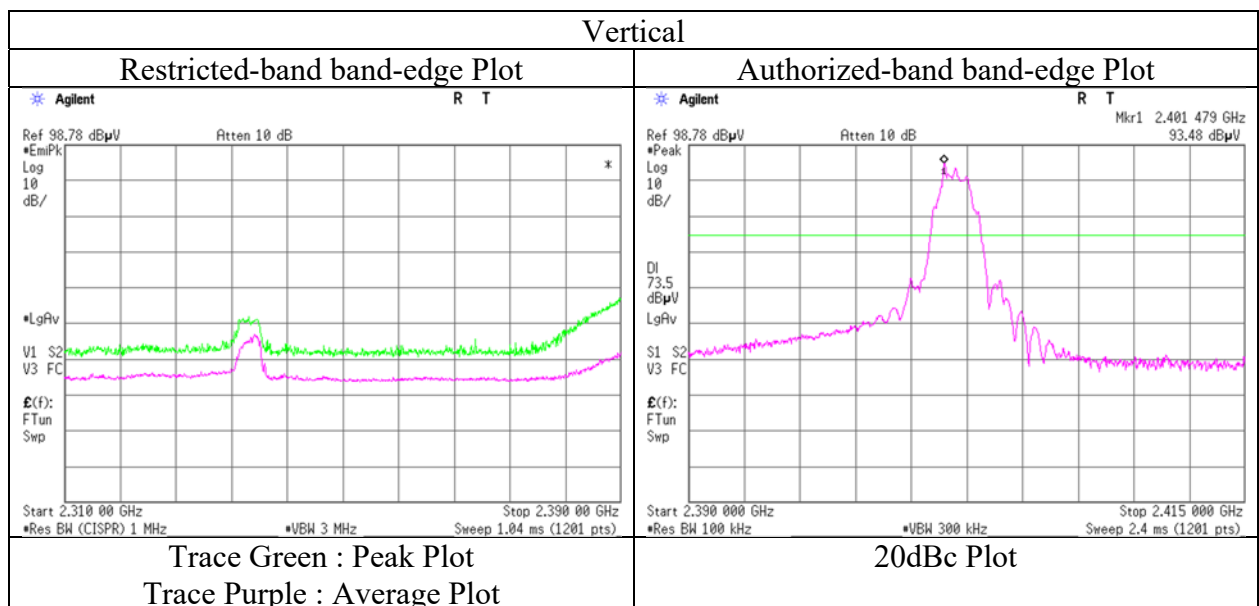
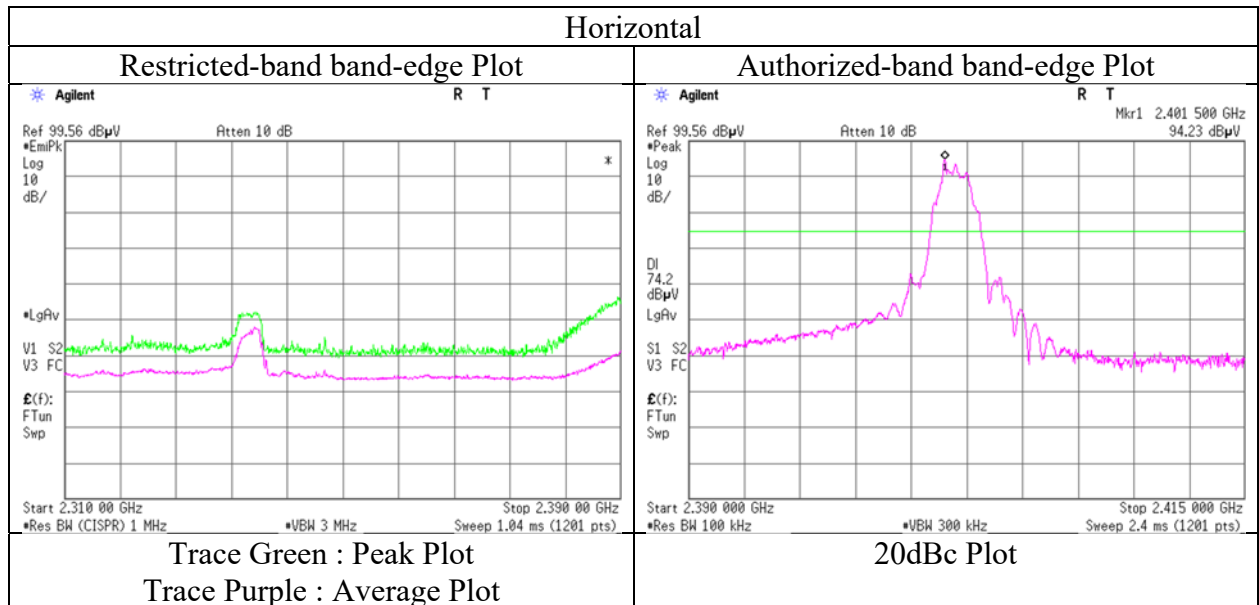
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT2)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 24, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2402 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 (PIFA Antenna BT2)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 24, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2440 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.484	QP	24.1	8.0	7.5	32.2	-	7.5	40.0	32.6	
Hori.	62.617	QP	23.1	7.3	7.6	32.2	-	5.8	40.0	34.2	
Hori.	167.532	QP	22.3	15.7	8.8	32.1	-	14.8	43.5	28.8	
Hori.	345.537	QP	22.5	15.0	10.3	31.9	-	15.8	46.0	30.2	
Hori.	570.883	QP	22.2	18.4	11.8	32.0	-	20.4	46.0	25.6	
Hori.	959.929	QP	27.6	22.2	13.8	30.6	-	32.9	46.0	13.1	
Hori.	2371.427	PK	51.9	27.7	5.4	32.8	-	52.3	73.9	21.6	
Hori.	4880.000	PK	39.7	31.5	7.5	31.8	-	47.0	73.9	26.9	Floor noise
Hori.	7320.000	PK	40.2	36.2	8.9	32.7	-	52.6	73.9	21.3	Floor noise
Hori.	9760.000	PK	40.4	38.8	9.4	33.4	-	55.2	73.9	18.7	Floor noise
Hori.	2371.427	AV	40.1	27.7	5.4	32.8	4.8	45.2	53.9	8.7	*1)
Hori.	4880.000	AV	32.0	31.5	7.5	31.8	-	39.2	53.9	14.7	Floor noise
Hori.	7320.000	AV	31.8	36.2	8.9	32.7	-	44.2	53.9	9.7	Floor noise
Hori.	9760.000	AV	32.3	38.8	9.4	33.4	-	47.1	53.9	6.8	Floor noise
Vert.	59.484	QP	29.4	8.0	7.5	32.2	-	12.8	40.0	27.3	
Vert.	62.617	QP	26.2	7.3	7.6	32.2	-	8.9	40.0	31.1	
Vert.	167.532	QP	22.4	15.7	8.8	32.1	-	14.9	43.5	28.7	
Vert.	345.537	QP	22.4	15.0	10.3	31.9	-	15.7	46.0	30.3	
Vert.	570.883	QP	22.1	18.4	11.8	32.0	-	20.3	46.0	25.7	
Vert.	959.929	QP	23.5	22.2	13.8	30.6	-	28.8	46.0	17.2	
Vert.	2371.427	PK	49.5	27.7	5.4	32.8	-	49.8	73.9	24.1	
Vert.	4880.000	PK	39.7	31.5	7.5	31.8	-	47.0	73.9	26.9	Floor noise
Vert.	7320.000	PK	40.2	36.2	8.9	32.7	-	52.6	73.9	21.3	Floor noise
Vert.	9760.000	PK	40.4	38.8	9.4	33.4	-	55.2	73.9	18.7	Floor noise
Vert.	2371.427	AV	38.2	27.7	5.4	32.8	4.8	43.4	53.9	10.6	*1)
Vert.	4880.000	AV	31.8	31.5	7.5	31.8	-	39.1	53.9	14.9	Floor noise
Vert.	7320.000	AV	31.8	36.2	8.9	32.7	-	44.2	53.9	9.7	Floor noise
Vert.	9760.000	AV	32.1	38.8	9.4	33.4	-	46.9	53.9	7.0	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

10 GHz - 26.5 GHz $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (PIFA Antenna BT2)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 24, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	59.237	QP	24.3	8.1	7.5	32.2	-	7.7	40.0	32.3	
Hori.	62.466	QP	23.1	7.3	7.6	32.2	-	5.8	40.0	34.2	
Hori.	162.921	QP	22.2	15.5	8.8	32.1	-	14.4	43.5	29.1	
Hori.	365.505	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Hori.	498.459	QP	22.2	17.7	11.3	32.0	-	19.3	46.0	26.7	
Hori.	959.919	QP	27.4	22.2	13.8	30.6	-	32.7	46.0	13.3	
Hori.	2483.500	PK	61.8	27.5	5.5	32.7	-	62.0	73.9	11.9	
Hori.	4960.000	PK	40.2	31.6	7.5	31.8	-	47.5	73.9	26.4	Floor noise
Hori.	7440.000	PK	41.6	36.3	8.9	32.7	-	54.1	73.9	19.8	Floor noise
Hori.	9920.000	PK	41.9	38.9	9.4	33.4	-	56.8	73.9	17.1	Floor noise
Hori.	2483.500	AV	45.1	27.5	5.5	32.7	4.8	50.1	53.9	3.8	*1)
Hori.	4960.000	AV	32.1	31.6	7.5	31.8	-	39.4	53.9	14.5	Floor noise
Hori.	7440.000	AV	32.9	36.3	8.9	32.7	-	45.4	53.9	8.6	Floor noise
Hori.	9920.000	AV	32.8	38.9	9.4	33.4	-	47.7	53.9	6.2	Floor noise
Vert.	59.237	QP	29.3	8.1	7.5	32.2	-	12.7	40.0	27.3	
Vert.	62.466	QP	26.1	7.3	7.6	32.2	-	8.8	40.0	31.2	
Vert.	162.921	QP	22.3	15.5	8.8	32.1	-	14.5	43.5	29.0	
Vert.	365.505	QP	22.3	15.0	10.4	31.9	-	15.8	46.0	30.2	
Vert.	498.459	QP	22.1	17.7	11.3	32.0	-	19.2	46.0	26.8	
Vert.	959.919	QP	23.3	22.2	13.8	30.6	-	28.6	46.0	17.4	
Vert.	2483.500	PK	61.6	27.5	5.5	32.7	-	61.8	73.9	12.1	
Vert.	4960.000	PK	40.3	31.6	7.5	31.8	-	47.6	73.9	26.3	Floor noise
Vert.	7440.000	PK	41.7	36.3	8.9	32.7	-	54.2	73.9	19.7	Floor noise
Vert.	9920.000	PK	41.5	38.9	9.4	33.4	-	56.4	73.9	17.5	Floor noise
Vert.	2483.500	AV	43.7	27.5	5.5	32.7	4.8	48.7	53.9	5.2	*1)
Vert.	4960.000	AV	32.2	31.6	7.5	31.8	-	39.5	53.9	14.4	Floor noise
Vert.	7440.000	AV	32.8	36.3	8.9	32.7	-	45.3	53.9	8.6	Floor noise
Vert.	9920.000	AV	32.8	38.9	9.4	33.4	-	47.7	53.9	6.2	Floor noise

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

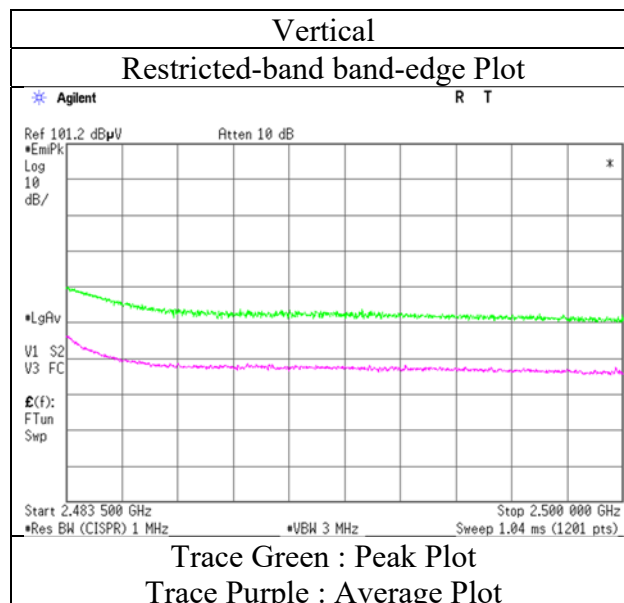
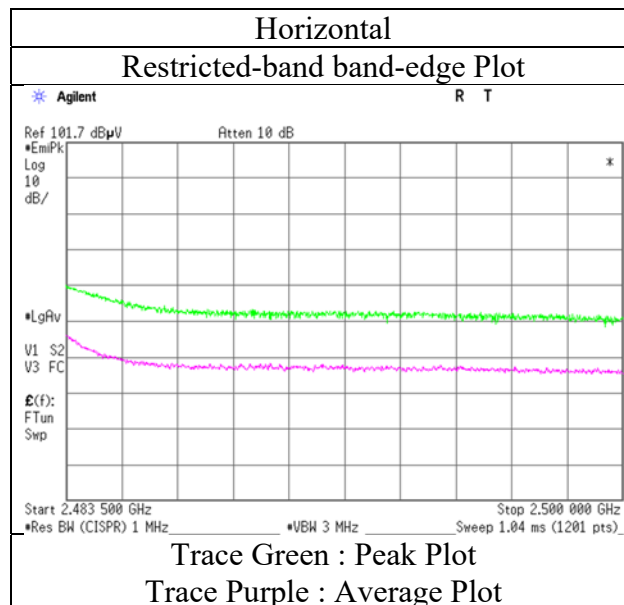
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT2)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 24, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2480 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.

Ise EMC Lab.

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Radiated Spurious Emission (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 20, 2020
Temperature / Humidity	22 deg. C / 30 % RH
Engineer	Koji Yamamoto
	(1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2336.881	PK	55.6	27.8	5.1	35.3	-	53.2	73.9	20.7	
Hori.	2390.000	PK	50.7	27.6	5.2	35.2	-	48.3	73.9	25.6	
Hori.	2336.881	AV	44.9	27.8	5.1	35.3	4.8	47.3	53.9	6.7	*2)
Hori.	2390.000	AV	38.7	27.6	5.2	35.2	4.8	41.0	53.9	12.9	*1)
Vert.	2336.881	PK	55.5	27.8	5.1	35.3	-	53.1	73.9	20.8	
Vert.	2390.000	PK	50.0	27.6	5.2	35.2	-	47.6	73.9	26.3	
Vert.	2336.881	AV	42.5	27.8	5.1	35.3	4.8	44.8	53.9	9.1	*2)
Vert.	2390.000	AV	38.8	27.6	5.2	35.2	4.8	41.1	53.9	12.8	*1)

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 1.83\text{ dB}$

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

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	98.2	27.6	5.2	35.2	95.7	-	-	Carrier
Hori	2400.000	PK	66.2	27.6	5.2	35.2	63.7	75.7	12.0	
Vert	2402.000	PK	97.3	27.6	5.2	35.2	94.8	-	-	Carrier
Vert	2400.000	PK	65.5	27.6	5.2	35.2	63.0	74.8	11.8	

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

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$

UL Japan, Inc.

Ise EMC Lab.

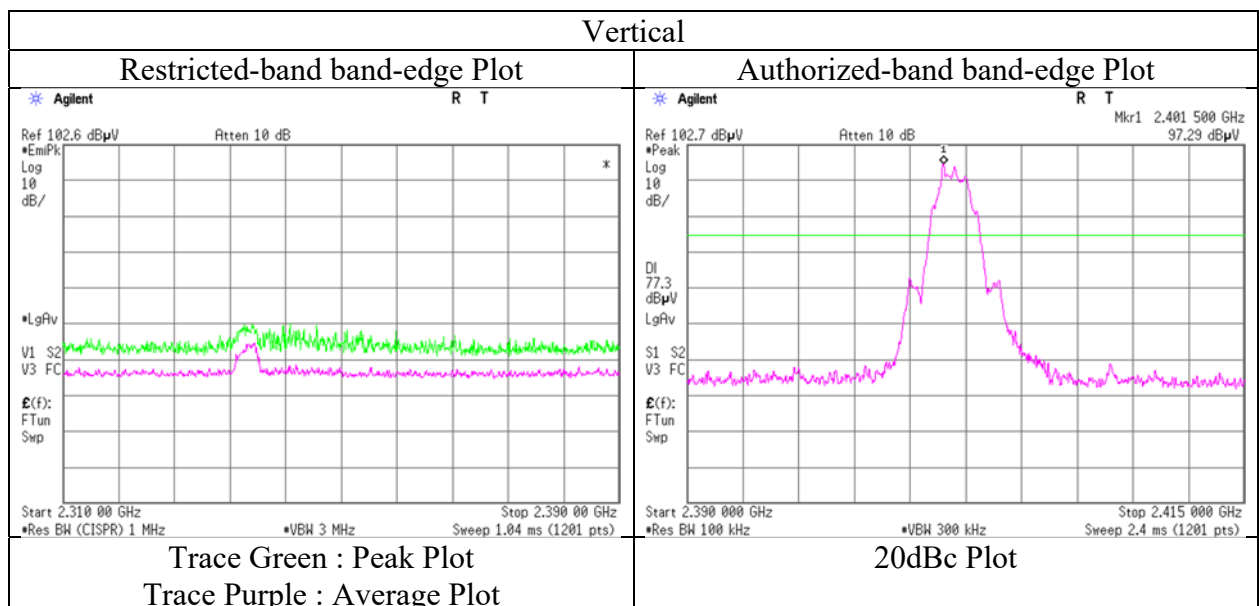
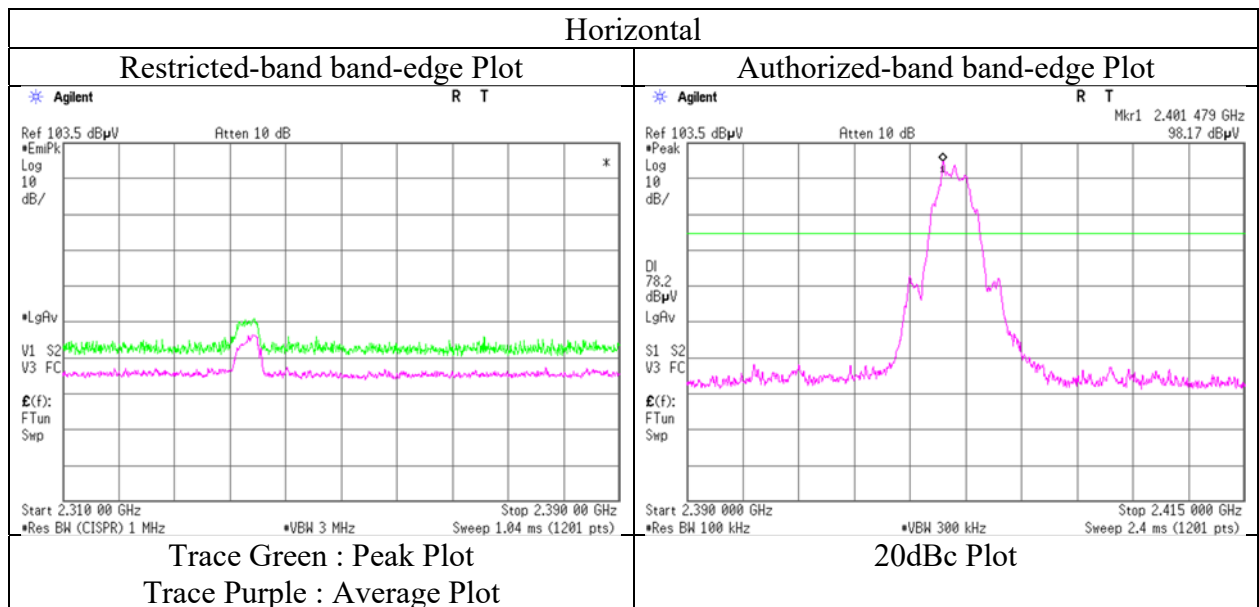
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Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 20, 2020
Temperature / Humidity	22 deg. C / 30 % RH
Engineer	Koji Yamamoto
	(1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz (OFDM)



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

UL Japan, Inc.

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Radiated Spurious Emission (PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date January 20, 2020 No.2 January 21, 2020 No.2 January 22, 2020
Temperature / Humidity 22 deg. C / 30 % RH 22 deg. C / 30 % RH 21 deg. C / 41 % RH
Engineer Koji Yamamoto Koji Yamamoto Takumi Shimada
(1 GHz -10 GHz) (10 GHz -26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2440 MHz + Tx 11ax-40 5755MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	31.854	QP	27.1	17.7	7.0	30.5	-	21.4	40.0	18.6	
Hori.	54.472	QP	25.0	9.7	7.4	30.4	-	11.7	40.0	28.3	
Hori.	91.656	QP	25.8	8.8	7.9	30.2	-	12.3	43.5	31.2	
Hori.	343.829	QP	25.2	14.9	10.1	29.4	-	20.8	46.0	25.2	
Hori.	503.935	QP	23.8	17.5	11.1	30.0	-	22.3	46.0	23.7	
Hori.	985.547	QP	22.1	22.3	13.3	27.8	-	29.9	54.0	24.1	
Hori.	2371.475	PK	55.7	27.6	5.2	35.2	-	53.3	73.9	20.6	
Hori.	4880.000	PK	46.4	31.6	7.5	34.4	-	51.0	73.9	22.9	Floor noise
Hori.	7320.000	PK	46.3	36.1	8.4	34.4	-	56.4	73.9	17.6	Floor noise
Hori.	9760.000	PK	46.2	39.2	9.6	34.9	-	60.1	73.9	13.8	Floor noise
Hori.	2371.475	AV	45.1	27.6	5.2	35.2	4.8	47.5	53.9	6.4	*1)
Hori.	4880.000	AV	34.1	31.6	7.5	34.4	-	38.7	53.9	15.2	Floor noise
Hori.	7320.000	AV	33.3	36.1	8.4	34.4	-	43.4	53.9	10.5	Floor noise
Hori.	9760.000	AV	33.4	39.2	9.6	34.9	-	47.3	53.9	6.6	Floor noise
Vert.	31.854	QP	28.9	17.7	7.0	30.5	-	23.2	40.0	16.8	
Vert.	54.472	QP	30.3	9.7	7.4	30.4	-	17.0	40.0	23.0	
Vert.	91.656	QP	32.2	8.8	7.9	30.2	-	18.7	43.5	24.8	
Vert.	343.829	QP	24.0	14.9	10.1	29.4	-	19.6	46.0	26.4	
Vert.	503.935	QP	23.8	17.5	11.1	30.0	-	22.3	46.0	23.7	
Vert.	985.547	QP	22.0	22.3	13.3	27.8	-	29.8	54.0	24.2	
Vert.	2371.475	PK	54.6	27.6	5.2	35.2	-	52.2	73.9	21.7	
Vert.	4880.000	PK	48.3	31.6	7.5	34.4	-	52.9	73.9	21.0	Floor noise
Vert.	7320.000	PK	47.1	36.1	8.4	34.4	-	57.2	73.9	16.7	Floor noise
Vert.	9760.000	PK	46.3	39.2	9.6	34.9	-	60.2	73.9	13.8	Floor noise
Vert.	2371.475	AV	43.4	27.6	5.2	35.2	4.8	45.7	53.9	8.2	*1)
Vert.	4880.000	AV	36.4	31.6	7.5	34.4	-	41.0	53.9	12.9	Floor noise
Vert.	7320.000	AV	34.2	36.1	8.4	34.4	-	44.3	53.9	9.6	Floor noise
Vert.	9760.000	AV	33.2	39.2	9.6	34.9	-	47.1	53.9	6.8	Floor noise

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

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

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

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 20, 2020
Temperature / Humidity	22 deg. C / 30 % RH
Engineer	Koji Yamamoto (1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	62.3	27.5	5.2	35.2	-	59.9	73.9	14.1	
Hori.	2483.500	AV	45.6	27.5	5.2	35.2	4.8	47.8	53.9	6.1	*1)
Vert.	2483.500	PK	63.7	27.5	5.2	35.2	-	61.3	73.9	12.7	
Vert.	2483.500	AV	47.6	27.5	5.2	35.2	4.8	49.8	53.9	4.1	*1)

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

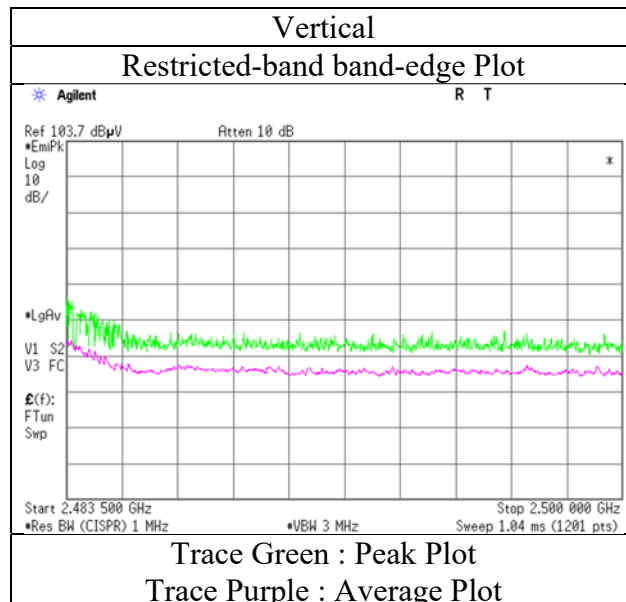
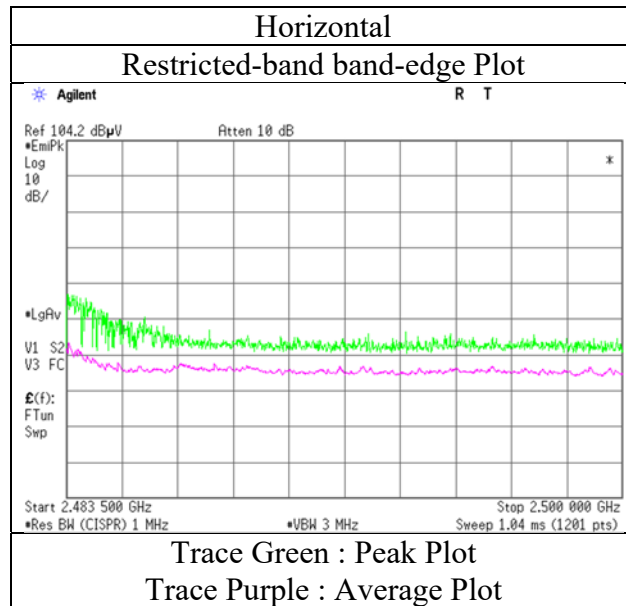
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

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

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

Radiated Spurious Emission (Reference Plot for band-edge) (PIFA Antenna BT1)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	January 20, 2020
Temperature / Humidity	22 deg. C / 30 % RH
Engineer	Koji Yamamoto
	(1 GHz -10 GHz)
Mode	Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz (OFDM)



* 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.

Ise EMC Lab.

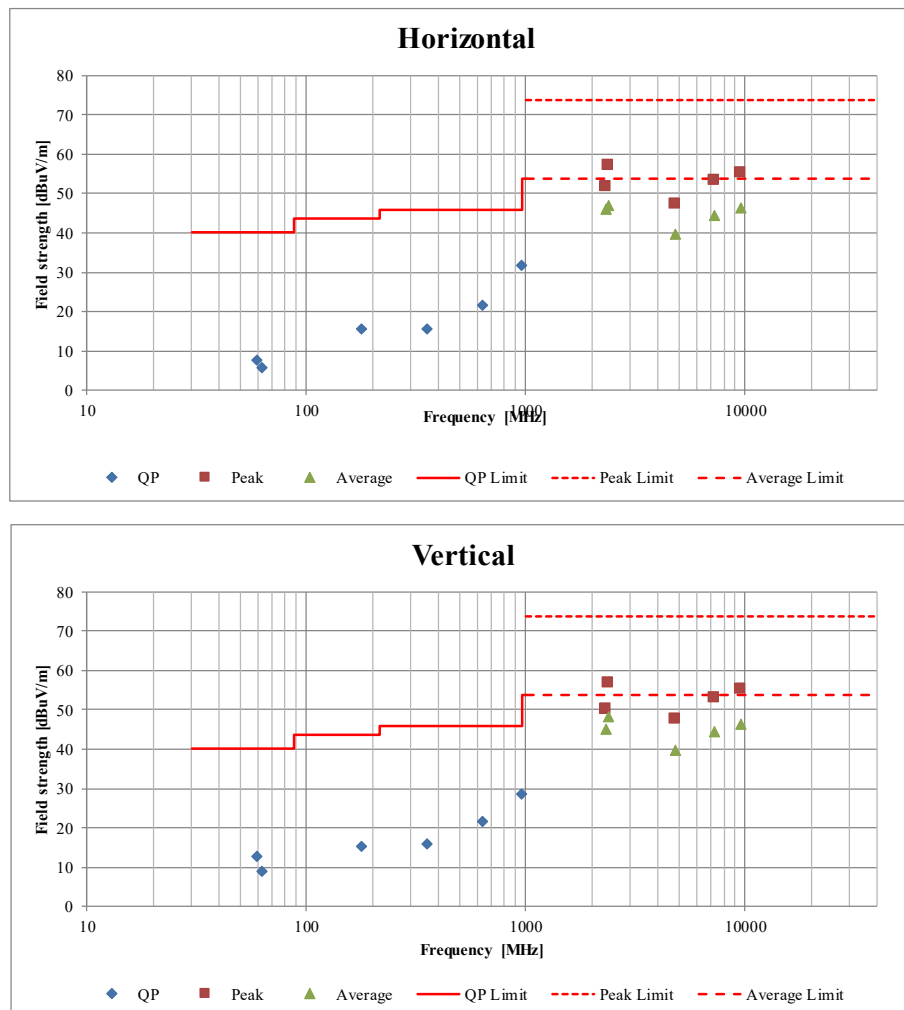
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Radiated Spurious Emission
(Plot data, Worst case)
(PIFA Antenna BT2)

Report No.	13170804H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	December 24, 2019	January 9, 2020	January 9, 2020	January 11, 2020
Temperature / Humidity	21 deg. C / 41 % RH	23 deg. C / 35 % RH	22 deg. C / 34 % RH	22 deg. C / 37 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Tomohisa Nakagawa (10 GHz - 18 GHz)	Junki Nagatomi (18 GHz - 26.5 GHz)	Koji Yamamoto (Below 1 GHz)
Mode	Tx BT LE 2M-PHY 2402 MHz			



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

Radiated Spurious Emission (IFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 25, 2019	January 8, 2020	January 8, 2020
Temperature / Humidity	21 deg. C / 41 % RH	22 deg. C / 39 % RH	23 deg. C / 35 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Junki Nagatomi (10 GHz - 18 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)
Mode	Tx 11b 2412 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	46.1	27.7	5.4	32.8	-	46.4	73.9	27.5	
Hori.	4824.000	PK	40.2	31.6	7.5	31.8	-	47.5	73.9	26.4	Floor noise
Hori.	7236.000	PK	41.2	36.0	8.9	32.7	-	53.5	73.9	20.4	Floor noise
Hori.	9648.000	PK	41.3	38.6	9.4	33.3	-	56.0	73.9	17.9	Floor noise
Hori.	2390.000	AV	34.8	27.7	5.4	32.8	-	35.2	53.9	18.7	
Hori.	4824.000	AV	32.2	31.6	7.5	31.8	-	39.5	53.9	14.4	Floor noise
Hori.	7236.000	AV	32.0	36.0	8.9	32.7	-	44.3	53.9	9.6	Floor noise
Hori.	9648.000	AV	32.3	38.6	9.4	33.3	-	46.9	53.9	7.0	Floor noise
Vert.	2390.000	PK	53.2	27.7	5.4	32.8	-	53.5	73.9	20.4	
Vert.	4824.000	PK	40.3	31.6	7.5	31.8	-	47.6	73.9	26.4	Floor noise
Vert.	7236.000	PK	41.3	36.0	8.9	32.7	-	53.6	73.9	20.3	Floor noise
Vert.	9648.000	PK	41.4	38.6	9.4	33.3	-	56.1	73.9	17.8	Floor noise
Vert.	2390.000	AV	38.2	27.7	5.4	32.8	-	38.5	53.9	15.4	
Vert.	4824.000	AV	32.3	31.6	7.5	31.8	-	39.6	53.9	14.3	Floor noise
Vert.	7236.000	AV	32.0	36.0	8.9	32.7	-	44.3	53.9	9.6	Floor noise
Vert.	9648.000	AV	32.3	38.6	9.4	33.3	-	47.0	53.9	6.9	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

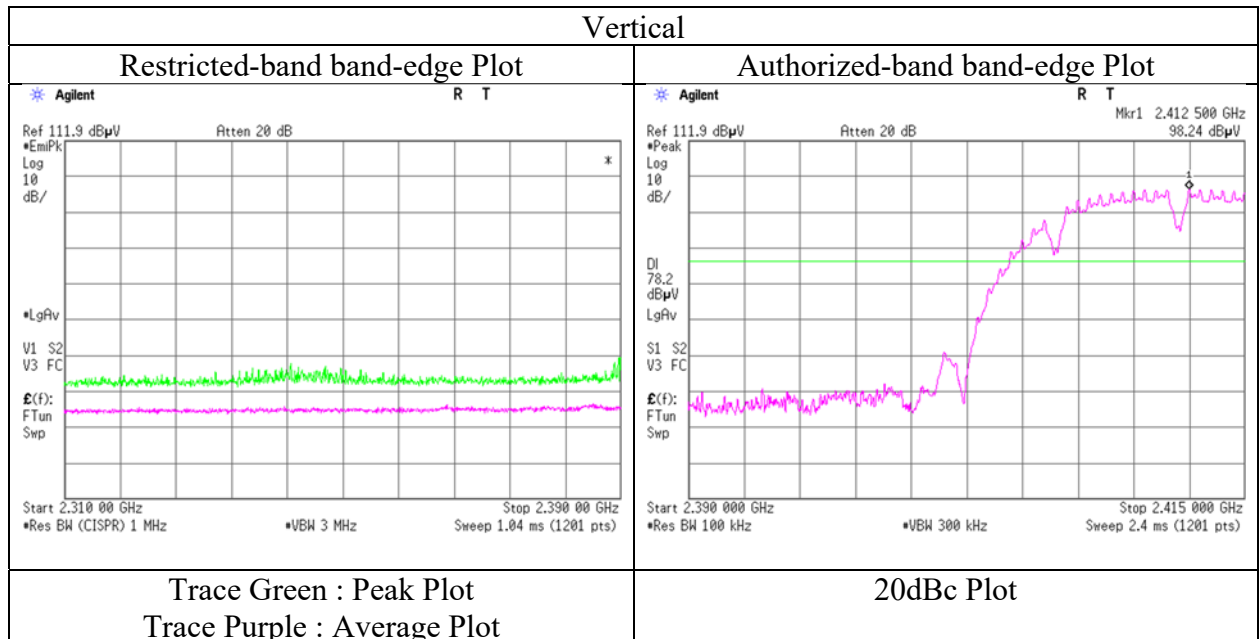
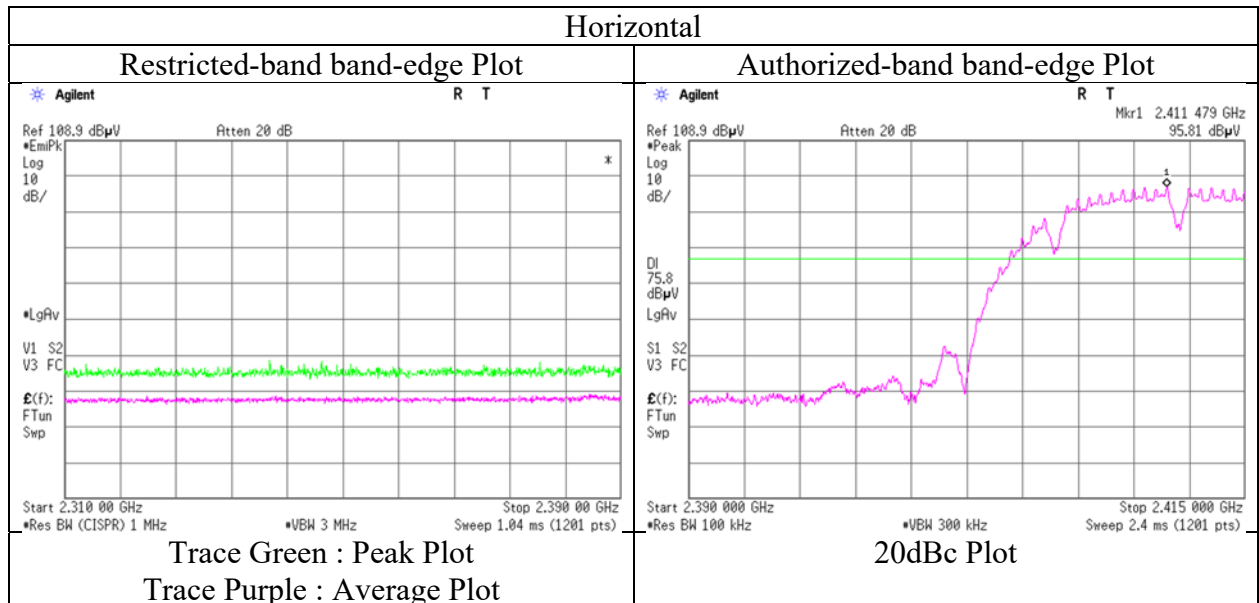
20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	95.8	27.6	5.4	32.7	96.1	-	-	Carrier
Hori.	2400.000	PK	38.4	27.7	5.4	32.7	38.8	76.1	37.4	
Vert.	2412.000	PK	98.2	27.6	5.4	32.7	98.6	-	-	Carrier
Vert.	2400.000	PK	38.6	27.7	5.4	32.7	39.0	78.6	39.6	

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

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 25, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya
	(1 GHz - 10 GHz)
Mode	Tx 11b 2412 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 (IFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 25, 2019	January 8, 2020	January 8, 2020
Temperature / Humidity	21 deg. C / 41 % RH	22 deg. C / 39 % RH	23 deg. C / 35 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Junki Nagatomi (10 GHz - 18 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)
Mode	Tx 11b 2437 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	PK	41.3	31.6	7.5	31.8	-	48.6	73.9	25.3	Floor noise
Hori.	7311.000	PK	41.5	36.2	8.9	32.7	-	53.9	73.9	20.0	Floor noise
Hori.	9748.000	PK	41.3	38.8	9.4	33.4	-	56.1	73.9	17.8	Floor noise
Hori.	4874.000	AV	32.3	31.6	7.5	31.8	-	39.6	53.9	14.3	Floor noise
Hori.	7311.000	AV	32.0	36.2	8.9	32.7	-	44.4	53.9	9.5	Floor noise
Hori.	9748.000	AV	32.7	38.8	9.4	33.4	-	47.5	53.9	6.4	Floor noise
Vert.	4874.000	PK	41.3	31.6	7.5	31.8	-	48.5	73.9	25.4	Floor noise
Vert.	7311.000	PK	41.5	36.2	8.9	32.7	-	53.8	73.9	20.1	Floor noise
Vert.	9748.000	PK	41.3	38.8	9.4	33.4	-	56.1	73.9	17.8	Floor noise
Vert.	4874.000	AV	32.5	31.6	7.5	31.8	-	39.7	53.9	14.2	Floor noise
Vert.	7311.000	AV	31.9	36.2	8.9	32.7	-	44.3	53.9	9.6	Floor noise
Vert.	9748.000	AV	32.7	38.8	9.4	33.4	-	47.5	53.9	6.4	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
 10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission (IFA Antenna)

Report No.	13170804H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	December 25, 2019	January 8, 2020	January 8, 2020
Temperature / Humidity	21 deg. C / 41 % RH	22 deg. C / 39 % RH	23 deg. C / 35 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Junki Nagatomi (10 GHz - 18 GHz)	Tomohisa Nakagawa (18 GHz - 26.5 GHz)
Mode	Tx 11b 2462 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	43.5	27.5	5.5	32.7	-	43.8	73.9	30.1	
Hori.	4924.000	PK	39.9	31.5	7.5	31.8	-	47.1	73.9	26.8	Floor noise
Hori.	7386.000	PK	41.3	36.3	8.9	32.7	-	53.8	73.9	20.2	Floor noise
Hori.	9848.000	PK	40.7	39.0	9.4	33.4	-	55.7	73.9	18.2	Floor noise
Hori.	2483.500	AV	36.5	27.5	5.5	32.7	-	36.7	53.9	17.2	*1)
Hori.	4924.000	AV	32.0	31.5	7.5	31.8	-	39.2	53.9	14.7	Floor noise
Hori.	7386.000	AV	32.8	36.3	8.9	32.7	-	45.3	53.9	8.6	Floor noise
Hori.	9848.000	AV	32.8	39.0	9.4	33.4	-	47.7	53.9	6.2	Floor noise
Vert.	2483.500	PK	45.5	27.5	5.5	32.7	-	45.7	73.9	28.2	
Vert.	4924.000	PK	39.8	31.5	7.5	31.8	-	47.0	73.9	26.9	Floor noise
Vert.	7386.000	PK	41.6	36.3	8.9	32.7	-	54.0	73.9	19.9	Floor noise
Vert.	9848.000	PK	40.6	39.0	9.4	33.4	-	55.6	73.9	18.3	Floor noise
Vert.	2483.500	AV	38.5	27.5	5.5	32.7	-	38.7	53.9	15.2	*1)
Vert.	4924.000	AV	32.0	31.5	7.5	31.8	-	39.2	53.9	14.7	Floor noise
Vert.	7386.000	AV	32.8	36.3	8.9	32.7	-	45.3	53.9	8.6	Floor noise
Vert.	9848.000	AV	32.9	39.0	9.4	33.4	-	47.8	53.9	6.1	Floor noise

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

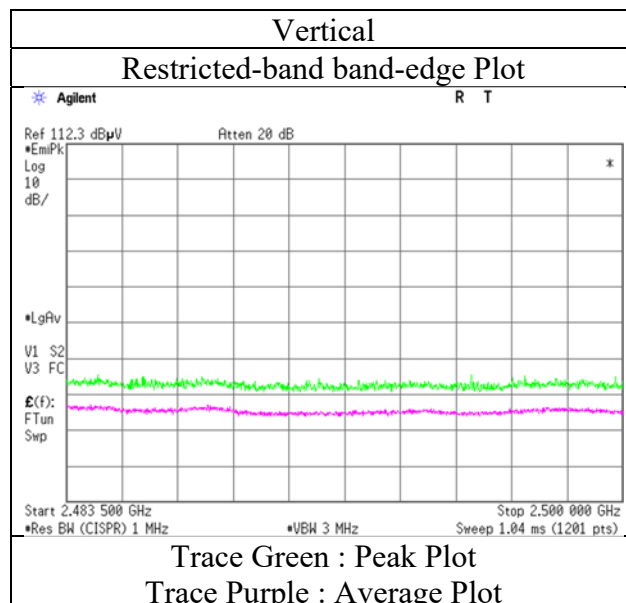
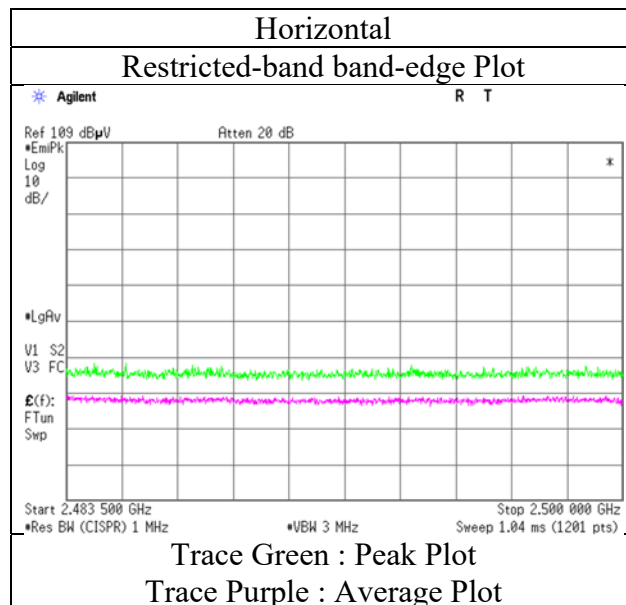
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 25, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)
Mode	Tx 11b 2462 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 (IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 25, 2019 January 8, 2020 January 8, 2020
Temperature / Humidity 21 deg. C / 41 % RH 22 deg. C / 39 % RH 23 deg. C / 35 % RH
Engineer Yuta Moriya Junki Nagatomi Tomohisa Nakagawa
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11ax-20 2412 MHz (OFDM)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	52.8	27.7	5.4	32.8	-	53.2	73.9	20.7	
Hori.	4824.000	PK	40.1	31.6	7.5	31.8	-	47.3	73.9	26.6	Floor noise
Hori.	7236.000	PK	42.1	36.0	8.9	32.7	-	54.4	73.9	19.5	Floor noise
Hori.	9648.000	PK	41.4	38.6	9.4	33.3	-	56.0	73.9	17.9	Floor noise
Hori.	2390.000	AV	42.2	27.7	5.4	32.8	-	42.5	53.9	11.4	
Hori.	4824.000	AV	32.2	31.6	7.5	31.8	-	39.5	53.9	14.5	Floor noise
Hori.	7236.000	AV	32.2	36.0	8.9	32.7	-	44.4	53.9	9.5	Floor noise
Hori.	9648.000	AV	32.5	38.6	9.4	33.3	-	47.1	53.9	6.8	Floor noise
Vert.	2390.000	PK	53.3	27.7	5.4	32.8	-	53.6	73.9	20.3	
Vert.	4824.000	PK	40.0	31.6	7.5	31.8	-	47.3	73.9	26.6	Floor noise
Vert.	7236.000	PK	42.1	36.0	8.9	32.7	-	54.4	73.9	19.6	Floor noise
Vert.	9648.000	PK	41.5	38.6	9.4	33.3	-	56.2	73.9	17.7	Floor noise
Vert.	2390.000	AV	40.8	27.7	5.4	32.8	-	41.2	53.9	12.8	
Vert.	4824.000	AV	32.2	31.6	7.5	31.8	-	39.5	53.9	14.5	Floor noise
Vert.	7236.000	AV	32.2	36.0	8.9	32.7	-	44.4	53.9	9.5	Floor noise
Vert.	9648.000	AV	32.5	38.6	9.4	33.3	-	47.1	53.9	6.8	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	96.5	27.6	5.4	32.7	96.8	-	-	Carrier
Hori.	2400.000	PK	50.9	27.7	5.4	32.7	51.3	76.8	25.6	
Vert.	2412.000	PK	95.6	27.6	5.4	32.7	95.9	-	-	Carrier
Vert.	2400.000	PK	48.2	27.7	5.4	32.7	48.6	75.9	27.3	

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

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Ise EMC Lab.

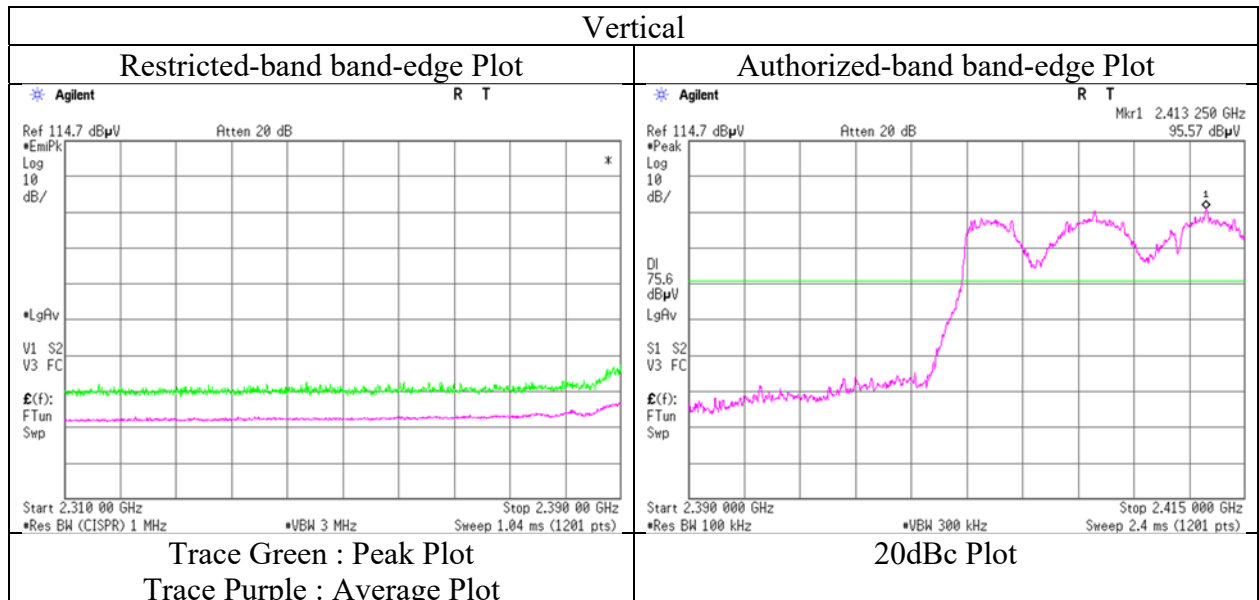
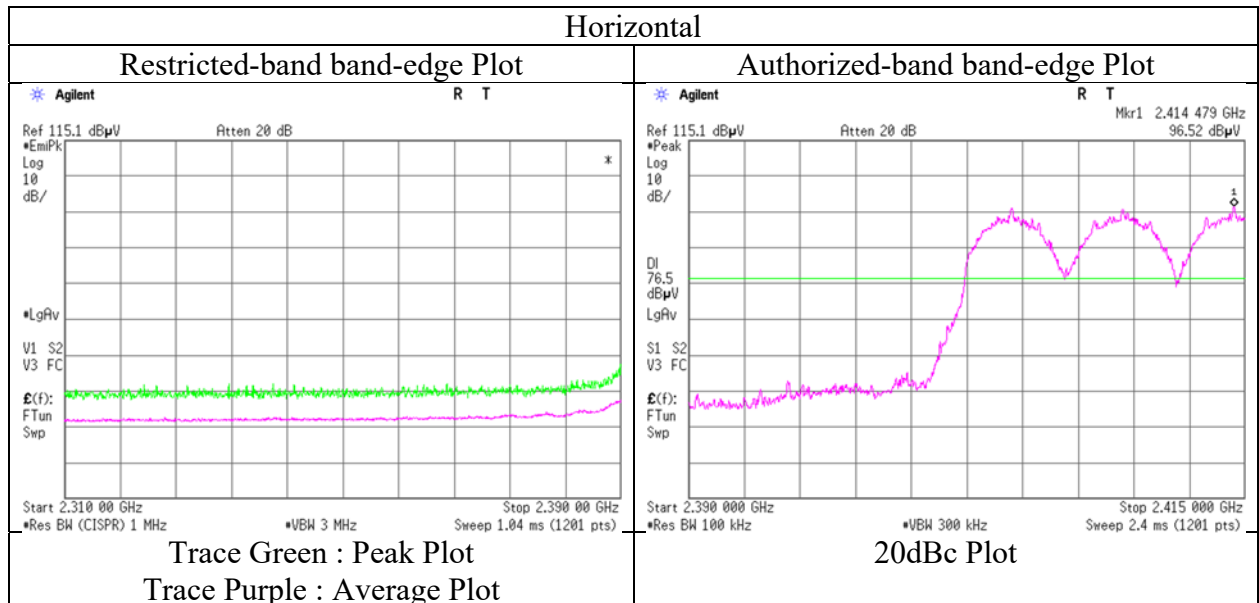
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Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 25, 2019
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuta Moriya
	(1 GHz - 10 GHz)
Mode	Tx 11ax-20 2412 MHz (OFDM)



* 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 (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	21 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2412 MHz (26-tone RU)

RU Index 0

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	45.8	27.7	4.7	32.8	-	45.4	73.9	28.5	
Hori.	2390.000	AV	34.8	27.7	4.7	32.8	0.4	34.9	53.9	19.0	*1)
Vert.	2390.000	PK	43.2	27.7	4.7	32.8	-	42.8	73.9	31.1	
Vert.	2390.000	AV	32.5	27.7	4.7	32.8	0.4	32.6	53.9	21.4	*1)

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.9\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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

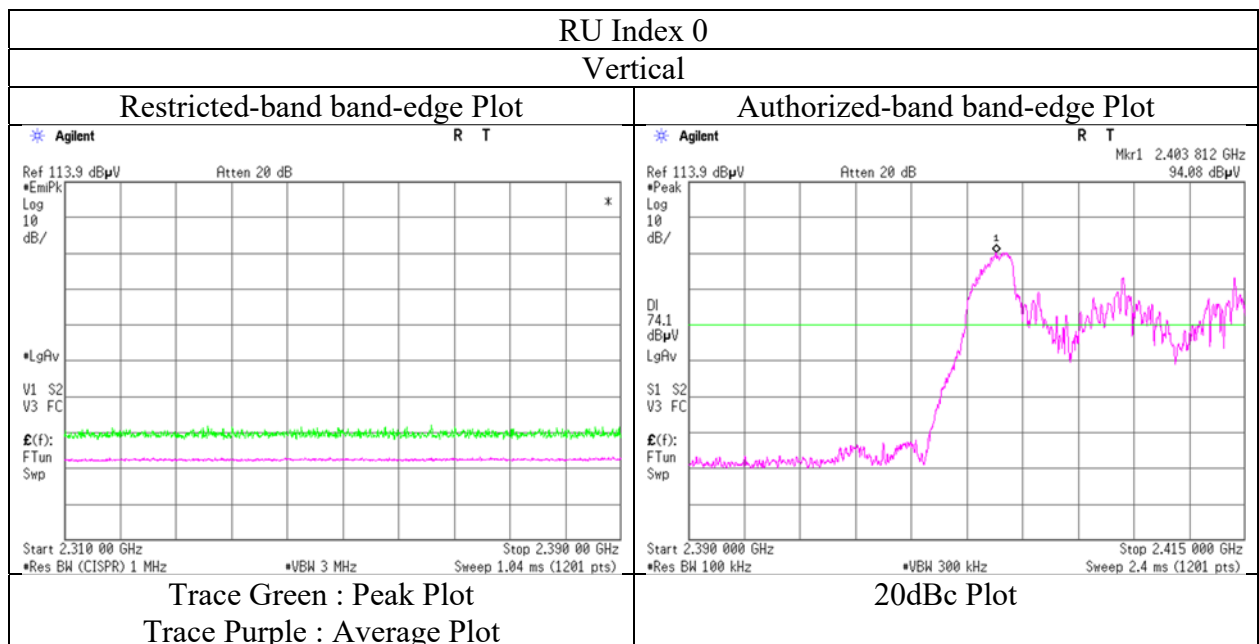
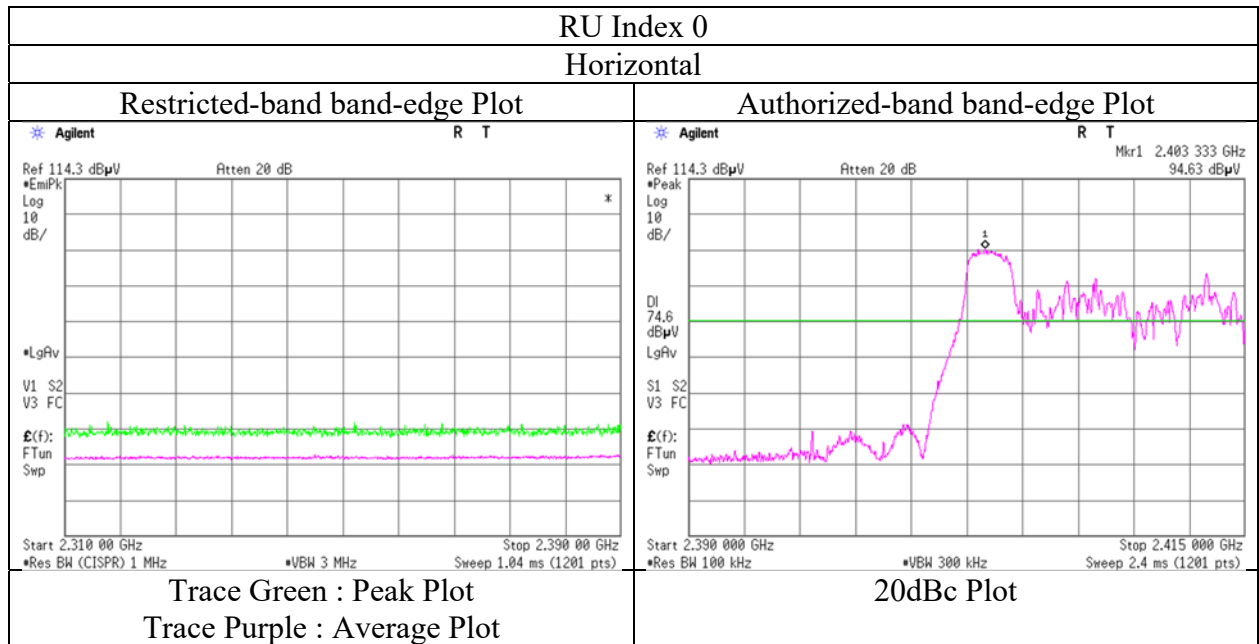
20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	94.6	27.6	4.7	32.7	94.2	-	-	Carrier
Hori.	2400.000	PK	45.0	27.7	4.7	32.7	44.6	74.2	29.6	
Vert.	2412.000	PK	94.1	27.6	4.7	32.7	93.7	-	-	Carrier
Vert.	2390.000	AV	32.5	27.7	4.7	32.8	32.1	73.7	41.6	

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

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	23 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
Band edge	
Mode	Tx 11ax-20 2412 MHz (26-tone RU)



* 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 (IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 21 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (52-tone RU)

RU Index 37

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	47.1	27.7	4.7	32.8	-	46.7	73.9	27.2	
Hori.	2390.000	AV	32.7	27.7	4.7	32.8	0.5	32.8	53.9	21.1	*1)
Vert.	2390.000	PK	47.2	27.7	4.7	32.8	-	46.8	73.9	27.1	
Vert.	2390.000	AV	33.5	27.7	4.7	32.8	0.5	33.6	53.9	20.3	*1)

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.9\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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

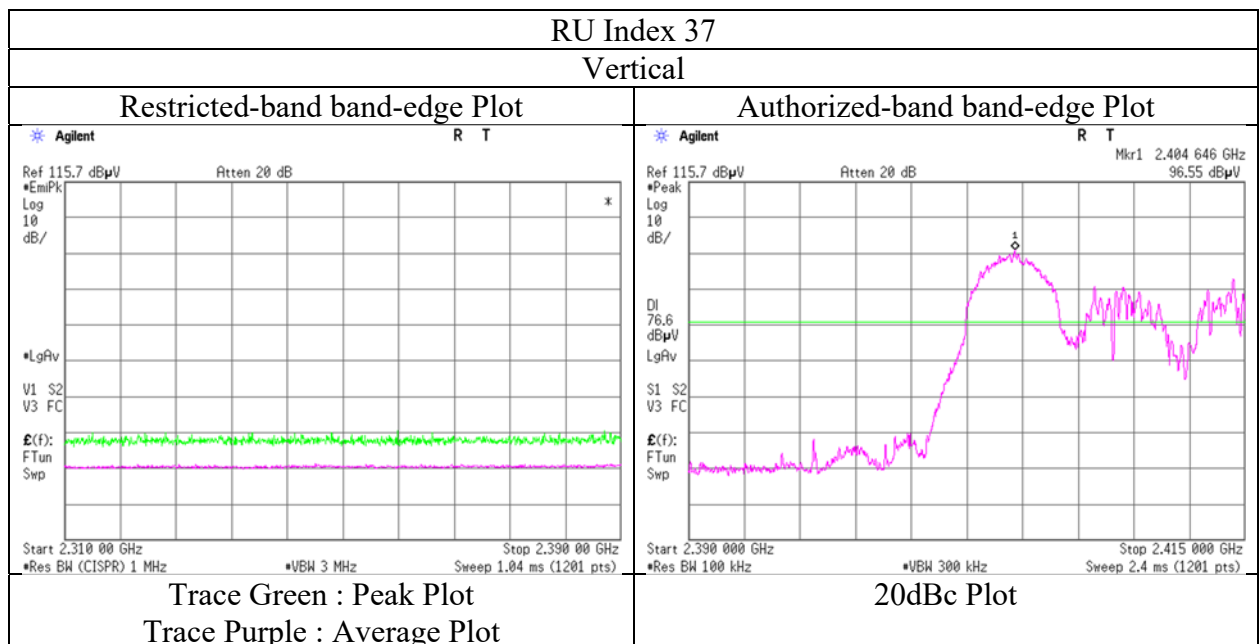
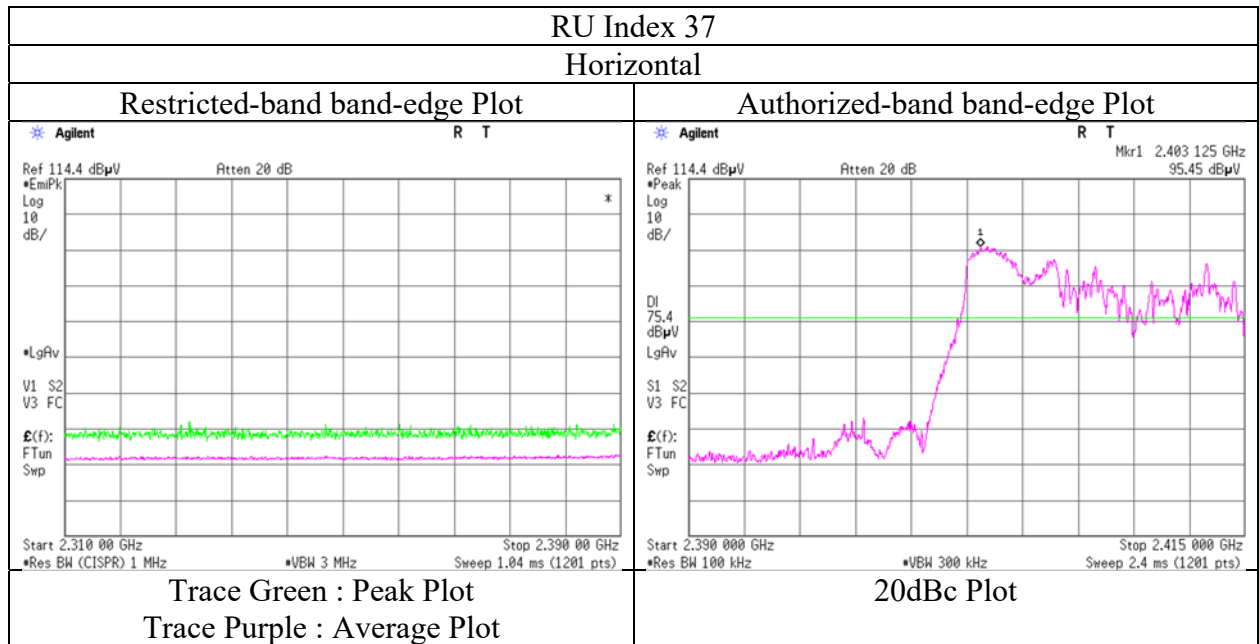
20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	95.5	27.6	4.7	32.7	95.0	-	-	Carrier
Hori.	2400.000	PK	45.9	27.7	4.7	32.7	45.5	75.0	29.5	
Vert.	2412.000	PK	96.6	27.6	4.7	32.7	96.1	-	-	Carrier
Vert.	2400.000	PK	45.8	27.7	4.7	32.7	45.4	76.1	30.7	

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

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	23 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
	Band edge
Mode	Tx 11ax-20 2412 MHz (52-tone RU)



* 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 (IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 21 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (106-tone RU)

RU index 53

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	50.4	27.7	4.7	32.8	-	50.0	73.9	23.9	
Hori.	2390.000	AV	34.3	27.7	4.7	32.8	0.5	34.4	53.9	19.5	*1)
Vert.	2390.000	PK	53.0	27.7	4.7	32.8	-	52.6	73.9	21.3	
Vert.	2390.000	AV	33.7	27.7	4.7	32.8	0.5	33.8	53.9	20.1	*1)

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

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

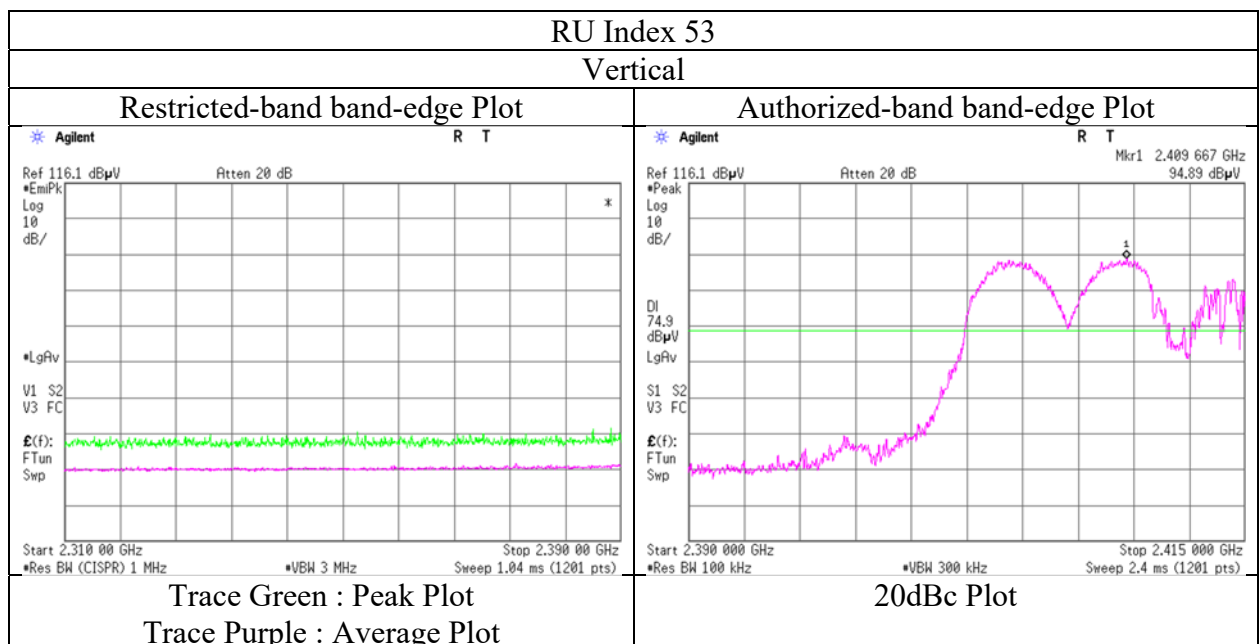
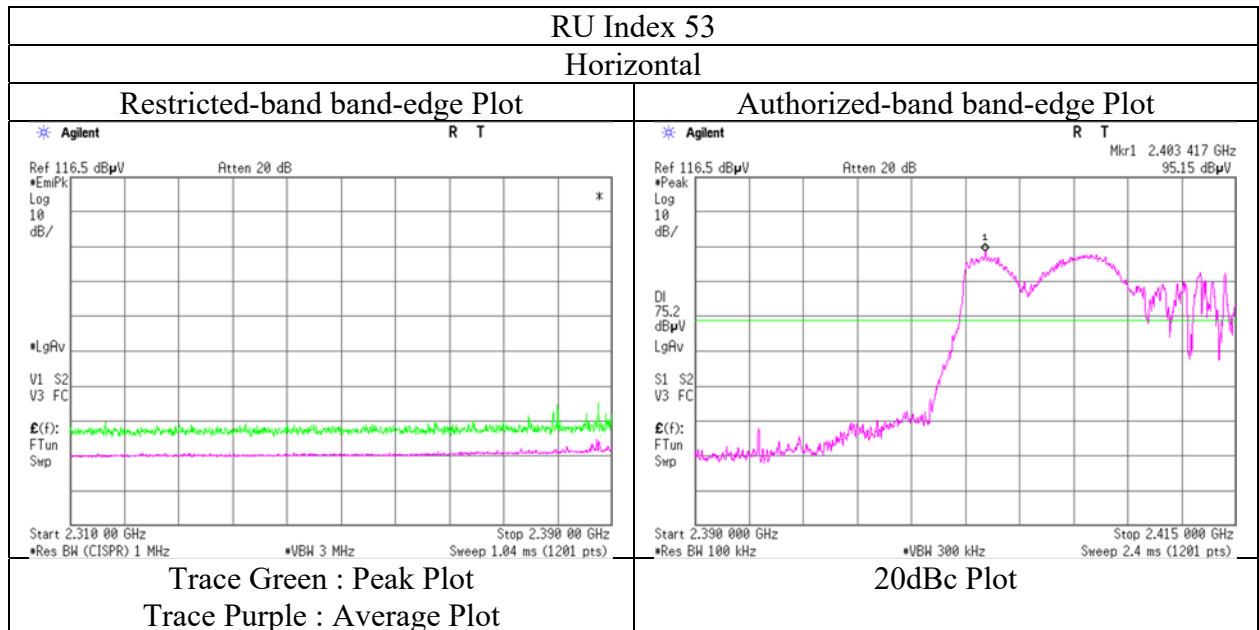
20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	95.2	27.6	4.7	32.7	94.7	-	-	Carrier
Hori.	2400.000	PK	49.8	27.7	4.7	32.7	49.4	74.7	25.3	
Vert.	2412.000	PK	94.9	27.6	4.7	32.7	94.5	-	-	Carrier
Vert.	2400.000	PK	46.9	27.7	4.7	32.7	46.5	74.5	28.0	

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

Radiated Spurious Emission (Reference Plot for band-edge) (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	February 2, 2020
Temperature / Humidity	23 deg. C / 34 % RH
Engineer	Tomohisa Nakagawa
Band edge	
Mode	Tx 11ax-20 2412 MHz (106-tone RU)



* 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 (IFA Antenna)

Report No.	13170804H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	April 10, 2020
Temperature / Humidity	20 deg. C / 28 % RH
Engineer	Yuta Moriya
	Band edge
Mode	Tx 11ax-20 2412 MHz (242-tone RU)

RU Index 61

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	59.6	27.9	5.0	31.9	-	60.6	73.9	13.3	
Hori.	2390.000	AV	45.3	27.9	5.0	31.9	0.5	46.8	53.9	7.1	*1)
Vert.	2390.000	PK	59.0	27.9	5.0	31.9	-	60.0	73.9	13.9	
Vert.	2390.000	AV	45.2	27.9	5.0	31.9	0.5	46.7	53.9	7.2	*1)

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.9\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	94.8	27.9	5.0	31.9	95.8	-	-	Carrier
Hori.	2400.000	PK	52.8	27.9	5.0	31.9	53.8	75.8	22.0	
Vert.	2412.000	PK	95.8	27.9	5.0	31.9	96.8	-	-	Carrier
Vert.	2400.000	PK	53.0	27.9	5.0	31.9	54.0	76.8	22.8	

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

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