



RADIO TEST REPORT

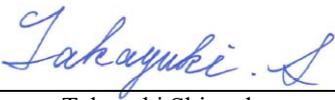
Test Report No. : 13671144H-A

Applicant : Sony Interactive Entertainment Inc.
Type of EUT : Wireless communication module
Model Number of EUT : AW-XM501
FCC ID : AK8M20DAL1
Test regulation : FCC Part 15 Subpart C: 2021
*WLAN (2.4 GHz band) and Bluetooth Low Energy parts
Test Result : Complied (Refer to SECTION 3)

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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6. This test report covers Radio technical requirements.
It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Ise EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in Section 1.

Date of test: January 14 to February 4, 2021

Representative test engineer: 
Nachi Konegawa
Engineer
Consumer Technology Division

Approved by: 
Takayuki Shimada
Leader
Consumer Technology Division



CERTIFICATE 5107.02

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

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REVISION HISTORY

Original Test Report No.: 13671144H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13671144H-A	March 23, 2021	-	-

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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	AT	Antenna Terminal Conducted Tests
FHSS	Frequency Hopping Spread Spectrum	CE	Conducted Emission test
FM	Frequency Modulation	RE	Radiated Spurious Emission test
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 AzureWave Technologies, Inc. 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	AW-XM501
Serial Number	Refer to SECTION 4.2
Country of Manufacture	China
Receipt Date	January 12, 2021
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: AW-XM501 (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

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	IFA	
Antenna Gain: G_{ANT}	Antenna 1: 4.0 dBi Antenna 2: 3.5 dBi	
Directional Gain *1)	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	IFA	PIFA
Antenna Gain: G_{ANT}	Antenna 1: 6.0 dBi	Antenna 3: 4.5 dBi
Directional Gain *1)	8.29 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	PIFA
Antenna Gain	Antenna 3: 5.8 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	PIFA
Antenna Gain	Antenna 4: 5.8 dBi
Maximum clock frequency	128 MHz

*1) Directional antenna gain = $10 \log \left(\frac{G_{ANT1}}{(10^{20}} + \frac{G_{ANT2}}{10^{20}})^2 / 2 \right)$

*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 January 12, 2021 and effective February 11, 2021

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	15.79 dB, 22.04230 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 619.080 MHz, Vertical, QP (11ax-20 OFDM 2462 MHz) 2483.500 MHz, Vertical, AV (11ax-20 OFDMA 2462 MHz (242-tone RU))	Complied# e), f)
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.

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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

[Antenna 1 and 2] The antenna is not removable from the EUT.

[Antenna 3 and 4] The EUT has a unique coupling/antenna connector (U.FL).

Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to standard

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

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3.5 Test Location

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*A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 199967

ISED Lab Company Number: 2973C / CAB identifier: JP0002

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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.

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SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

[WLAN]

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

Mode	Remarks*
IEEE 802.11b (11b)	1 Mbps, PN9
IEEE 802.11g (11g)	24 Mbps, PN9
IEEE 802.11n MIMO 20 MHz BW (11n-20)	MCS 14, PN9
IEEE 802.11ax MIMO 20 MHz BW (11ax-20)	MCS 6 (1TX), PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Low Channel)	
*Power of the EUT was set by the software as follows; Power settings: OFDM: 8.0 dBm OFDMA: -2 dBm (26-tone RU), 1.5 dBm (52-tone RU), 4.5 dBm (106-tone RU), 8.0 dBm(242-tone RU) Software: Dut Labtool Version: 1.0.0.110 (Date: January 13, 2021, 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 WLAN

Test Item	Operating Mode	Tested Antenna	Tested frequency
Conducted Emission, Radiated Spurious Emission (Below 1 GHz)	11ax-20 OFDM Tx *1)	Antenna 1 + 2	2462 MHz
Radiated Spurious Emission (Above 1 GHz)	11b Tx 11ax-20 OFDMA Tx *2) 11ax-20 OFDM Tx *3)	Antenna 1 + 2	2412 MHz 2437 MHz 2462 MHz
Conducted Spurious Emission	11ax-20 OFDM Tx *1)	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 1 *4)	2412 MHz 2437 MHz 2462 MHz
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test. *2) OFDMA configuration tests were conducted only at the band edge since they had lower power and density than OFDM. *3) 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. *4) After the comparison between Antenna 1 and Antenna 2, the test was performed with the antenna that had higher power as a representative.			

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[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
<p>*Power of the EUT was set by the software as follows; Power settings: 2 dBm Software: Dut Labtool Version: 1.0.0.110 (Date: January 13, 2021, Storage location: Driven by connected PC)</p> <p>*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.</p>	

*Details of Operating mode for BT LE

Test Item	Operating Mode	Tested Antenna	Tested frequency
Conducted Emission	BT LE, 1M-PHY	Antenna 3 (BT1)	2402 MHz
	BT LE, 2M-PHY	Antenna 4 (BT2)	2440 MHz
			2480 MHz
Radiated Spurious Emission	BT LE, 1M-PHY	Antenna 3 (BT1)	2402 MHz
	BT LE, 2M-PHY	Antenna 4 (BT2)	2440 MHz
			2480 MHz
Maximum Peak Output Power Power Density	BT LE, 1M-PHY	Antenna 3 (BT1)	2402 MHz
	BT LE, 2M-PHY	Antenna 4 (BT2)	2440 MHz
			2480 MHz
6dB Bandwidth 99% Occupied Bandwidth Conducted Spurious Emission	BT LE, 1M-PHY	Antenna 3 (BT1)	2402 MHz
	BT LE, 2M-PHY	Antenna 4 (BT2)	2440 MHz
			2480 MHz

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

Test Item	Mode *1)	Tested Antenna
Radiated Spurious Emission	Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-20 (OFDM) 5700 MHz	Antenna 3 (BT1)
	Tx BT LE 2M-PHY 2440 MHz + Tx 11ax-20 (OFDM) 5700 MHz	
	Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-20 (OFDM) 5700 MHz	
*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, 1.0 m by 1.5 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.

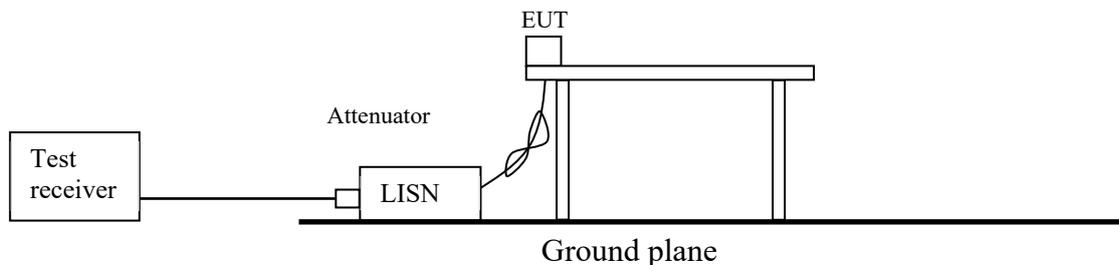
The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber. The EUT was connected to a LISN (AMN).

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 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

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

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

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

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

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

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

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	<u>11.12.2.5.1</u> RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces <u>11.12.2.5.2</u> 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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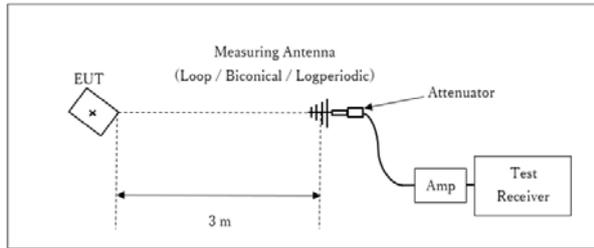
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Figure 2: Test Setup

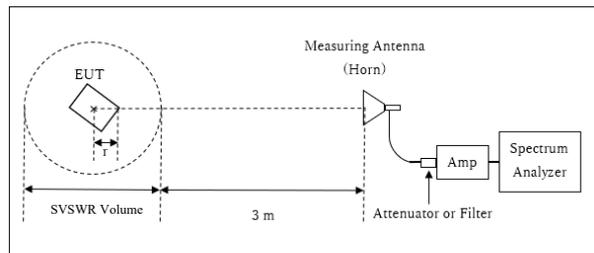
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 10 GHz



r : Radius of an outer periphery of EUT

× : Center of turn table

For WLAN (Antenna 1 and 2) at 3AC

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

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

SVSWR Volume : 2.0 m

r = 0.0m

For BT (Antenna 3 and 4) at 3AC

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

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

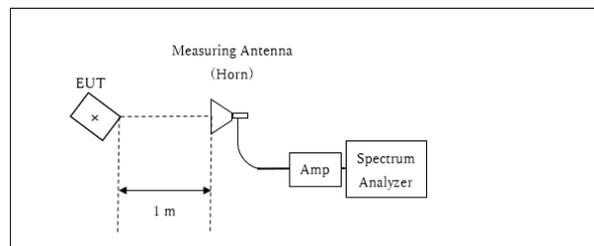
SVSWR Volume : 2.0 m

r = 0.05m

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

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

10 GHz - 26.5 GHz



× : Center of turn table

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

*Test Distance: 1 m

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

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

Measurement range : 30 MHz - 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 30MHz, RBW was narrowed to separate the noise contents.

Then, wide-band noise near the limit was checked separately, however the noise was low enough 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.

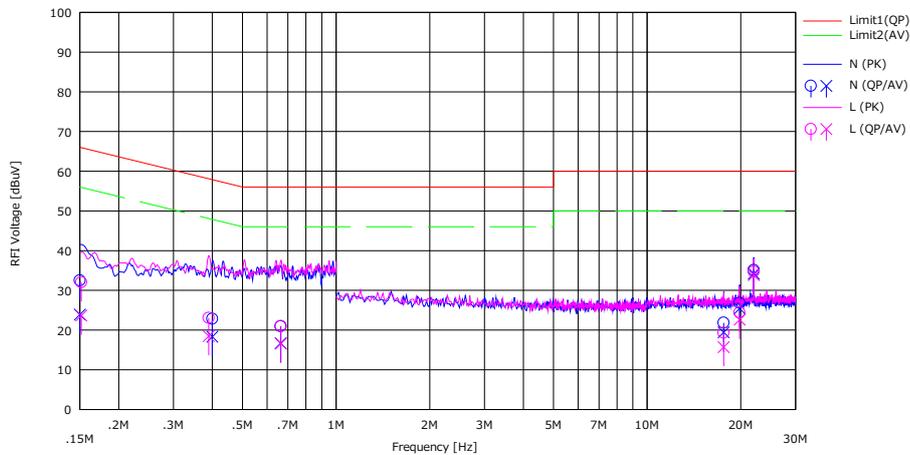
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

Report No. 13671144H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 3, 2021
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Hiroki Numata
Mode Tx 11ax-20 (OFDM) 2462MHz

Limit : FCC_Part 15 Subpart C(15.207)



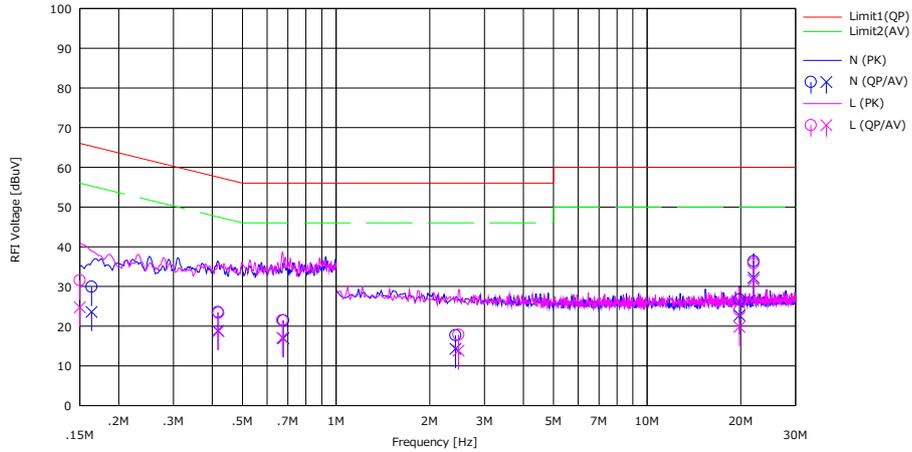
No.	Freq. [MHz]	Reading		LISN	LOSS	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]			(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]				
1	0.15000	19.20	10.60	0.07	13.23	32.50	23.90	66.00	56.00	33.50	32.10	N	
2	0.39990	9.50	5.00	0.06	13.26	22.82	18.32	57.86	47.86	35.04	29.54	N	
3	0.66340	7.60	3.30	0.06	13.28	20.94	16.64	56.00	46.00	35.06	29.36	N	
4	17.63320	7.60	5.20	0.36	13.87	21.83	19.43	60.00	50.00	38.17	30.57	N	
5	19.83730	12.50	11.10	0.40	13.92	26.82	25.42	60.00	50.00	33.18	24.58	N	
6	22.04230	20.70	19.80	0.44	13.97	35.11	34.21	60.00	50.00	24.89	15.79	N	
7	0.15170	18.70	10.30	0.10	13.23	32.03	23.63	65.91	55.91	33.88	32.28	L	
8	0.38970	9.70	5.10	0.10	13.26	23.06	18.46	58.07	48.07	35.01	29.61	L	
9	0.66510	7.60	3.20	0.11	13.28	20.99	16.59	56.00	46.00	35.01	29.41	L	
10	17.63260	5.00	1.40	0.43	13.87	19.30	15.70	60.00	50.00	40.70	34.30	L	
11	19.83700	10.00	8.20	0.48	13.92	24.40	22.60	60.00	50.00	35.60	27.40	L	
12	22.04220	20.20	19.30	0.54	13.97	34.71	33.81	60.00	50.00	25.29	16.19	L	

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

Conducted Emission (BT1)

Report No. 13671144H
 Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
 Date February 3, 2021
 Temperature / Humidity 23 deg. C / 39 % RH
 Engineer Hiroki Numata
 Mode Tx BT LE 1M-PHY 2402MHz

Limit : FCC_Part 15 Subpart C(15.207)

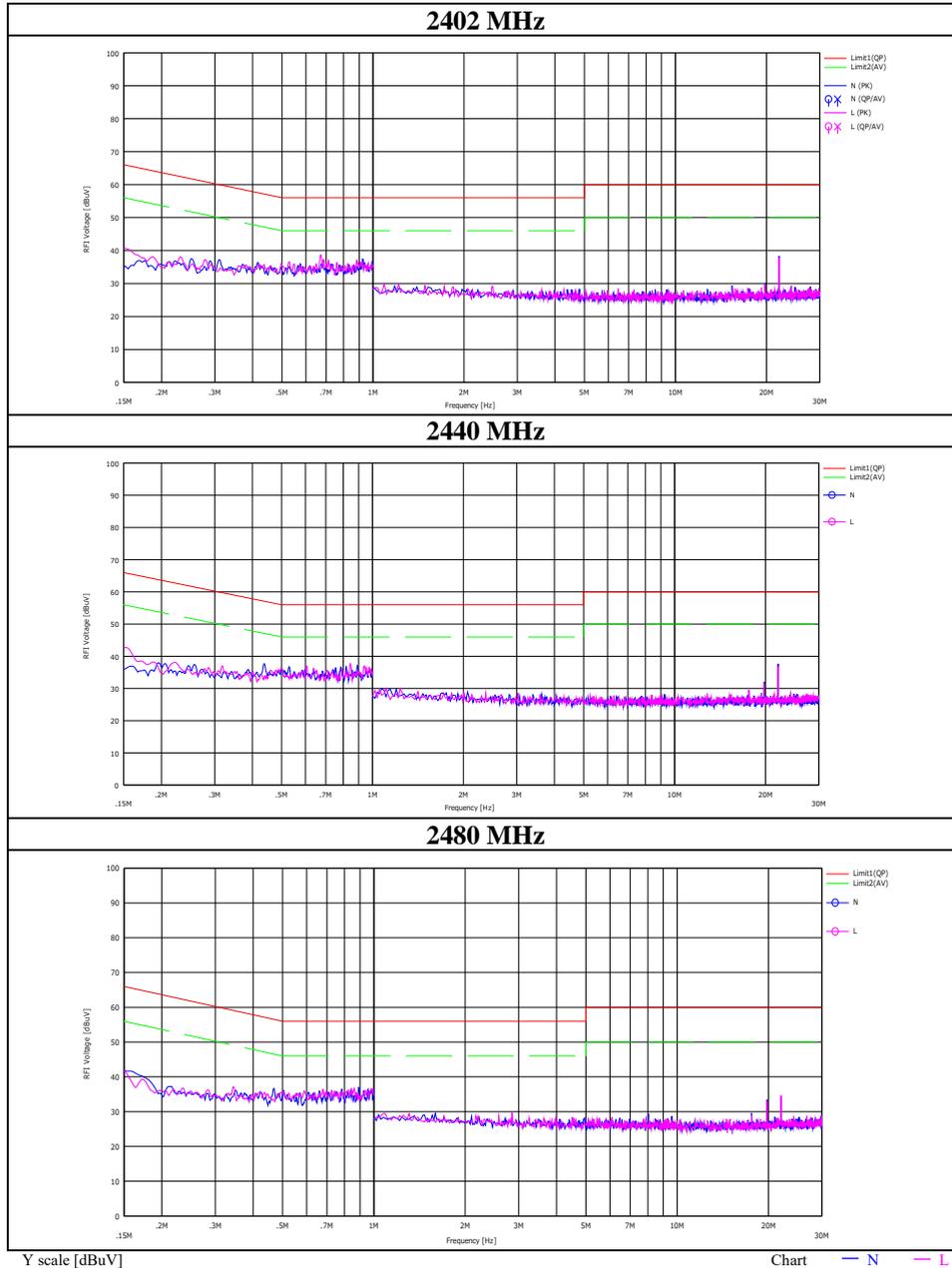


No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]			(QP) [dBuV]	(AV) [dBuV]	(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]		
1	0.16360	16.60	10.30	0.07	13.23	29.90	23.60	65.28	55.28	35.38	31.68	N	
2	0.41690	10.20	5.50	0.06	13.26	23.52	18.82	57.51	47.51	33.99	28.69	N	
3	0.67700	8.10	3.60	0.06	13.28	21.44	16.94	56.00	46.00	34.56	29.06	N	
4	2.42200	4.20	0.80	0.09	13.40	17.69	14.29	56.00	46.00	38.31	31.71	N	
5	19.81280	12.40	8.40	0.40	13.92	26.72	22.72	60.00	50.00	33.28	27.28	N	
6	22.01320	21.90	17.80	0.44	13.97	36.31	32.21	60.00	50.00	23.69	17.79	N	
7	0.15010	18.20	11.40	0.10	13.23	31.53	24.73	65.99	55.99	34.46	31.26	L	
8	0.41860	10.00	5.40	0.10	13.26	23.36	18.76	57.48	47.48	34.12	28.72	L	
9	0.67190	8.10	3.70	0.11	13.28	21.49	17.09	56.00	46.00	34.51	28.91	L	
10	2.47600	4.30	0.30	0.14	13.40	17.84	13.84	56.00	46.00	38.16	32.16	L	
11	19.81160	9.60	5.40	0.48	13.92	24.00	19.80	60.00	50.00	36.00	30.20	L	
12	22.01320	21.30	17.10	0.54	13.97	35.81	31.61	60.00	50.00	24.19	18.39	L	

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

Conducted Emission (BT1)

Report No.	13671144H
Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Date	February 3, 2021
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Hiroki Numata
Mode	Tx BT LE 1M-PHY



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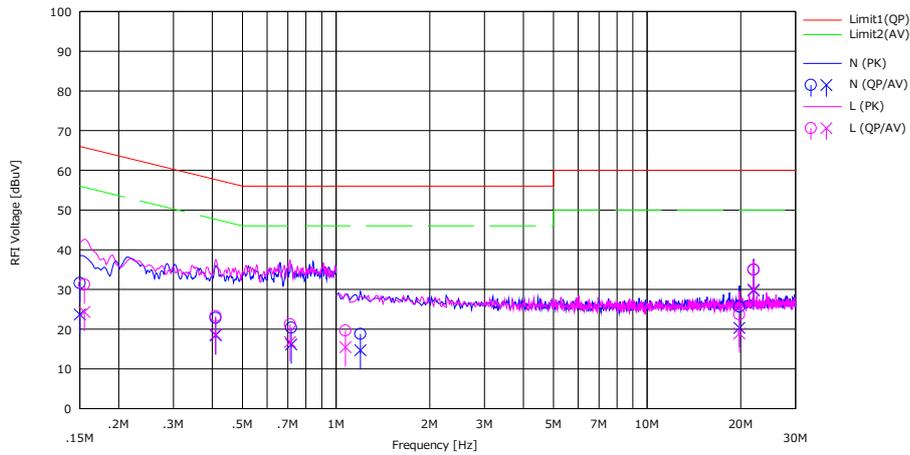
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission (BT1)

Report No. 13671144H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 3, 2021
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Hiroki Numata
Mode Tx BT LE 2M-PHY 2402MHz

Limit : FCC_Part 15 Subpart C(15.207)

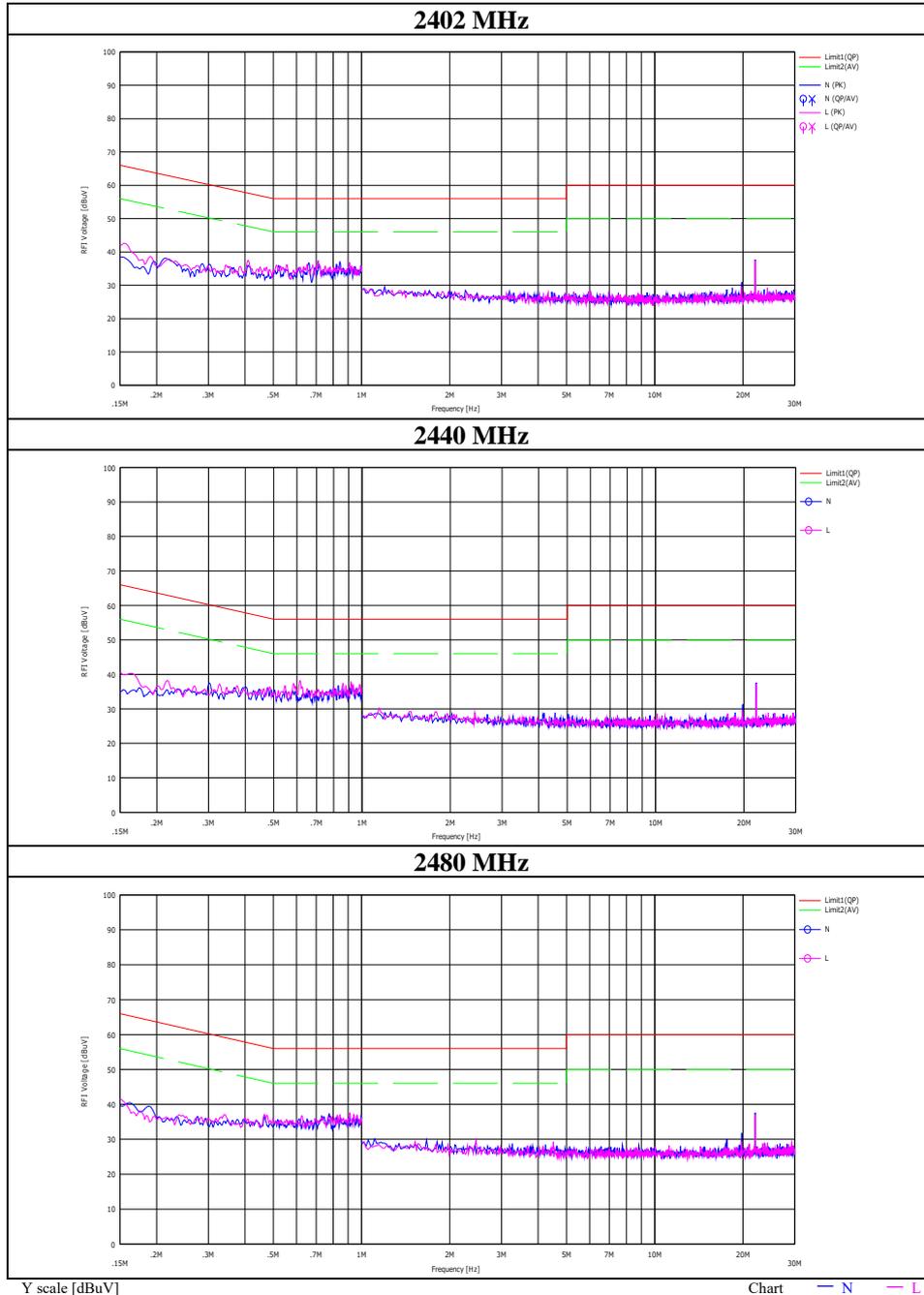


No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]			(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]				
1	0.15010	18.30	10.40	0.07	13.23	31.60	23.70	65.99	55.99	34.39	32.29	N	
2	0.41010	9.50	5.10	0.06	13.26	22.82	18.42	57.65	47.65	34.83	29.23	N	
3	0.71780	7.00	2.80	0.06	13.29	20.35	16.15	56.00	46.00	35.65	29.85	N	
4	1.19800	5.40	1.30	0.07	13.32	18.79	14.69	56.00	46.00	37.21	31.31	N	
5	19.79680	11.30	6.00	0.40	13.92	25.62	20.32	60.00	50.00	34.38	29.68	N	
6	22.00000	20.60	15.30	0.44	13.97	35.01	29.71	60.00	50.00	24.99	20.29	N	
7	0.15510	17.90	11.00	0.10	13.23	31.23	24.33	65.72	55.72	34.49	31.39	L	
8	0.41010	9.90	5.30	0.10	13.26	23.26	18.66	57.65	47.65	34.39	28.99	L	
9	0.71100	7.80	3.40	0.11	13.29	21.20	16.80	56.00	46.00	34.80	29.20	L	
10	1.07200	6.20	2.00	0.12	13.31	19.63	15.43	56.00	46.00	36.37	30.57	L	
11	19.80070	9.30	4.50	0.48	13.92	23.70	18.90	60.00	50.00	36.30	31.10	L	
12	22.00190	20.40	15.50	0.54	13.97	34.91	30.01	60.00	50.00	25.09	19.99	L	

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

Conducted Emission (BT1)

Report No.	13671144H
Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Date	February 3, 2021
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Hiroki Numata
Mode	Tx BT LE 2M-PHY



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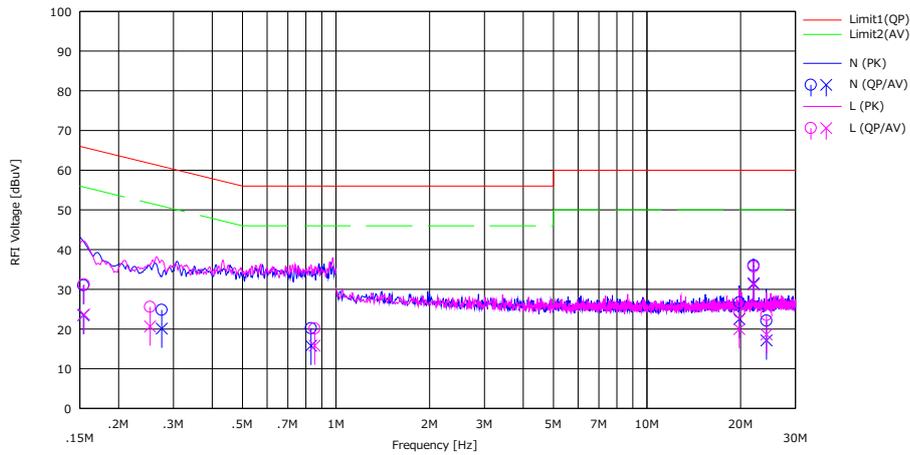
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission (BT2)

Report No. 13671144H
 Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
 Date February 4, 2021
 Temperature / Humidity 24 deg. C / 32 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 1M-PHY 2402 MHz

Limit : FCC_Part 15 Subpart C(15.207)

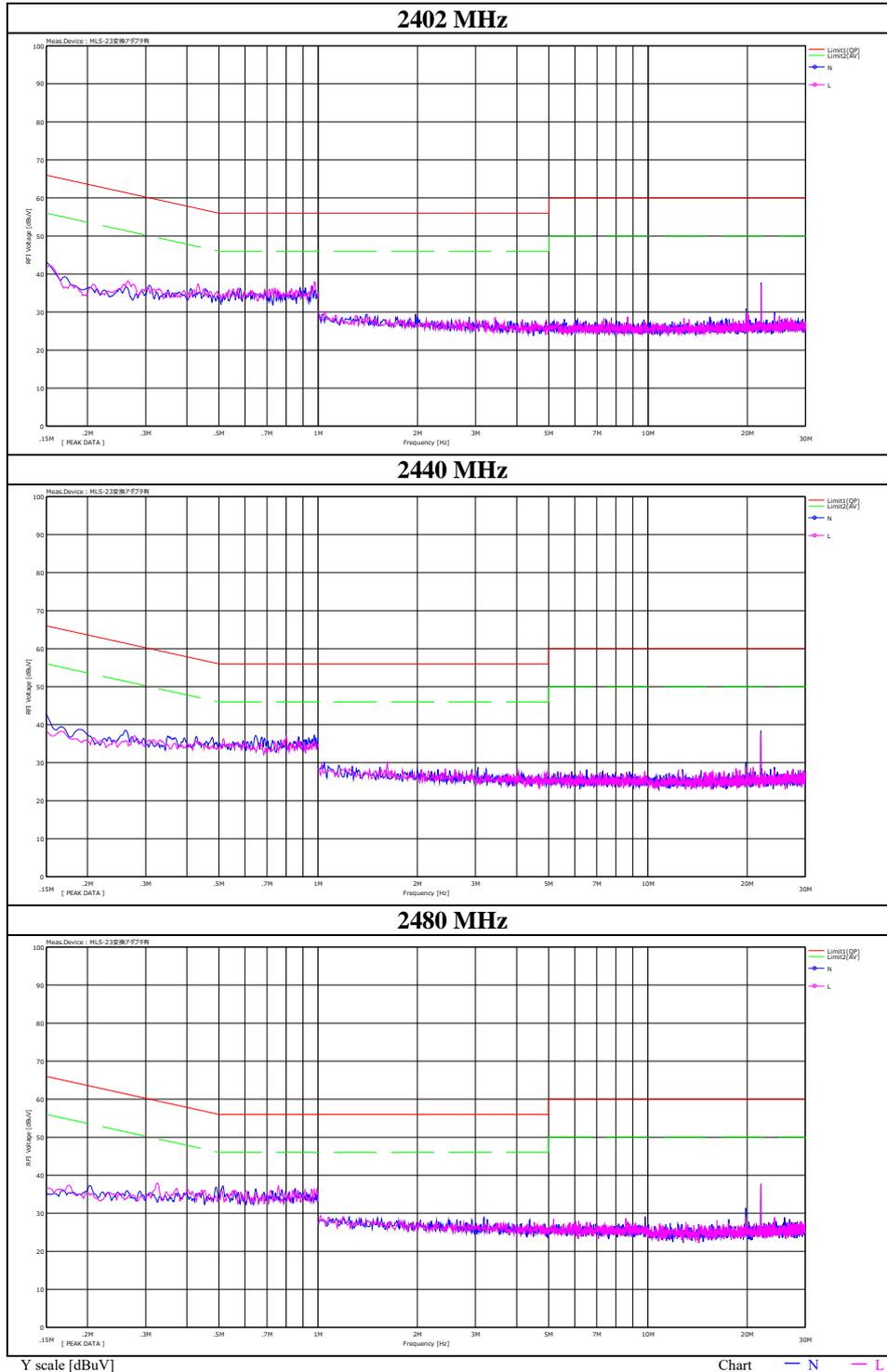


No.	Freq. [MHz]	Reading		USN	LOSS	Results		Limit		Margin		Phase	Comment
		(QP)	(AV)			(QP)	(AV)	(QP)	(AV)				
		[dBuV]	[dBuV]			[dB]	[dB]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15410	17.70	10.20	0.07	13.23	31.00	23.50	65.78	55.78	34.78	32.28	N	
2	0.27505	11.50	6.80	0.06	13.25	24.81	20.11	60.96	50.96	36.15	30.85	N	
3	0.83110	6.80	2.40	0.07	13.30	20.17	15.77	56.00	46.00	35.83	30.23	N	
4	19.82195	12.40	8.20	0.40	13.92	26.72	22.52	60.00	50.00	33.28	27.48	N	
5	22.02595	21.60	17.10	0.44	13.97	36.01	31.51	60.00	50.00	23.99	18.49	N	
6	24.22970	7.60	2.60	0.49	14.01	22.10	17.10	60.00	50.00	37.90	32.90	N	
7	0.15470	17.90	10.30	0.10	13.23	31.23	23.63	65.74	55.74	34.51	32.11	L	
8	0.25230	12.20	7.30	0.10	13.24	25.54	20.64	61.68	51.68	36.14	31.04	L	
9	0.85340	6.70	2.40	0.11	13.30	20.11	15.81	56.00	46.00	35.89	30.19	L	
10	19.82195	9.80	5.60	0.48	13.92	24.20	20.00	60.00	50.00	35.80	30.00	L	
11	22.02595	21.20	16.70	0.54	13.97	35.71	31.21	60.00	50.00	24.29	18.79	L	
12	24.22970	8.90	4.00	0.60	14.01	23.51	18.61	60.00	50.00	36.49	31.39	L	

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

Conducted Emission (BT2)

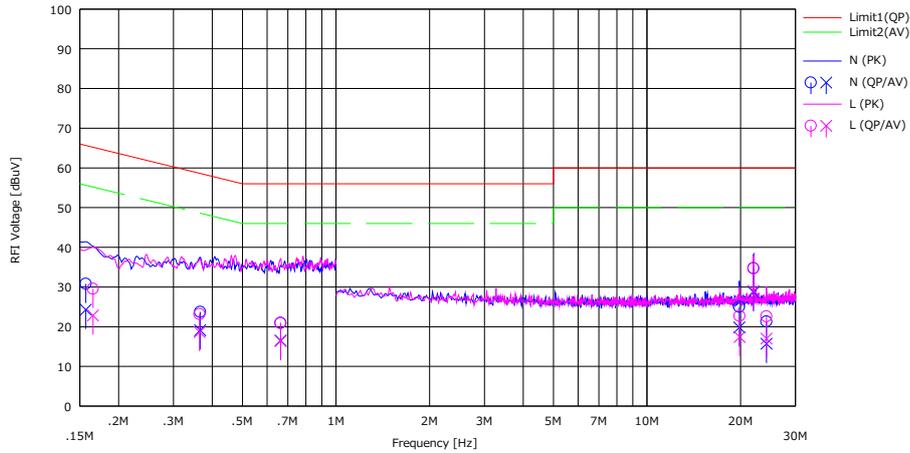
Report No.	13671144H
Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Date	February 4, 2021
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Nachi Konegawa
Mode	Tx BT LE 1M-PHY



Conducted Emission (BT2)

Report No. 13671144H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 4, 2021
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Hiroki Numata
Mode Tx BT LE 2M-PHY 2402 MHz

Limit : FCC_Part 15 Subpart C(15.207)

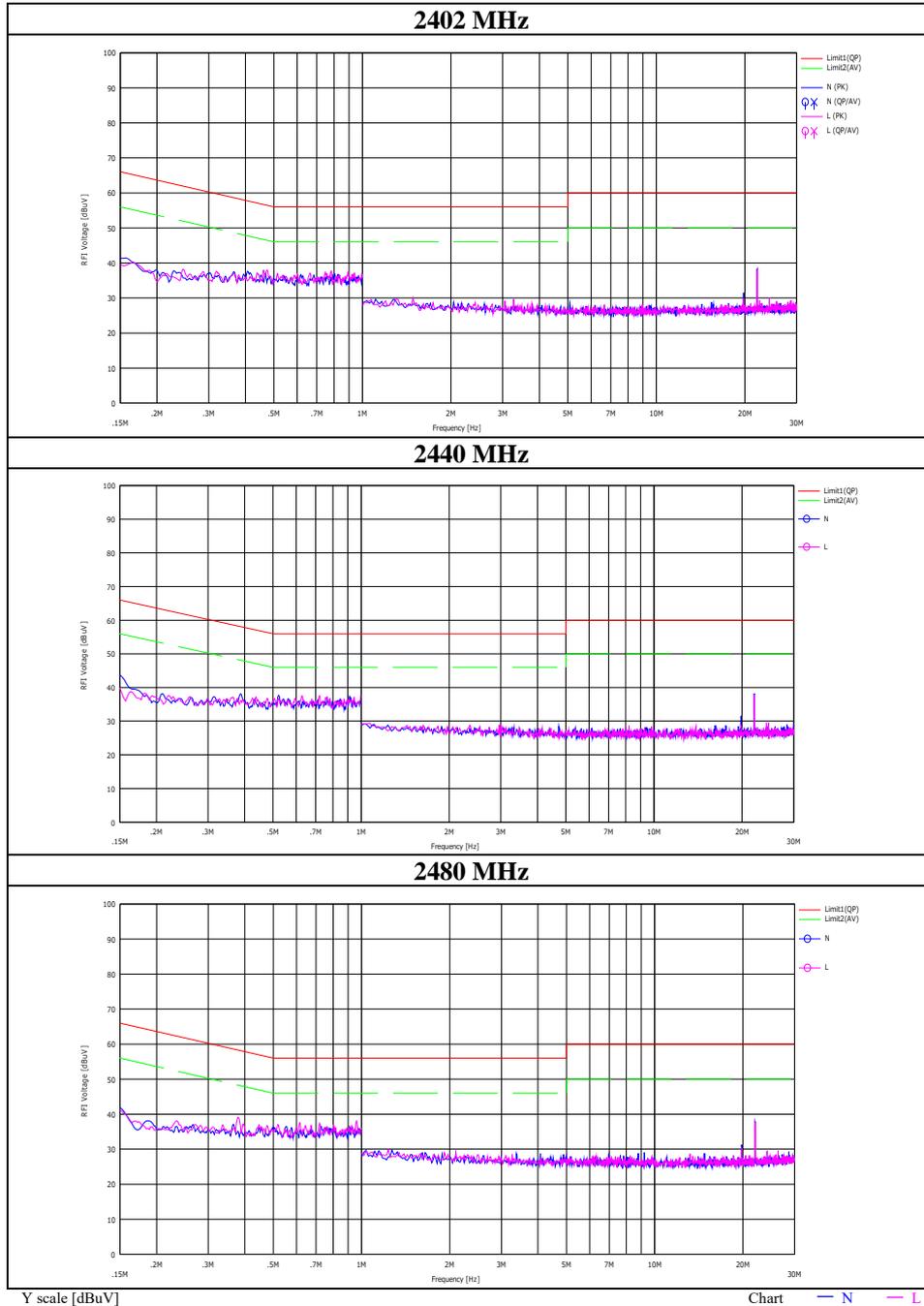


No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]			(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]	(QP) [dB]	(AV) [dB]		
1	0.15680	17.50	11.00	0.07	13.23	30.80	24.30	65.63	55.63	34.83	31.33	N	
2	0.36590	10.40	5.80	0.06	13.26	23.72	19.12	58.59	48.59	34.87	29.47	N	
3	0.66340	7.60	3.20	0.06	13.28	20.94	16.54	56.00	46.00	35.06	29.46	N	
4	19.80240	10.70	5.50	0.40	13.92	25.02	19.82	60.00	50.00	34.98	30.18	N	
5	22.01100	20.30	14.30	0.44	13.97	34.71	28.71	60.00	50.00	25.29	21.29	N	
6	24.20850	6.80	1.20	0.49	14.01	21.30	15.70	60.00	50.00	38.70	34.30	N	
7	0.16530	16.20	9.50	0.10	13.23	29.53	22.83	65.19	55.19	35.66	32.36	L	
8	0.36420	9.80	5.30	0.10	13.26	23.16	18.66	58.63	48.63	35.47	29.97	L	
9	0.66340	7.50	3.00	0.11	13.28	20.89	16.39	56.00	46.00	35.11	29.61	L	
10	19.84000	8.30	3.00	0.48	13.92	22.70	17.40	60.00	50.00	37.30	32.60	L	
11	22.00610	20.20	14.50	0.54	13.97	34.71	29.01	60.00	50.00	25.29	20.99	L	
12	24.20620	8.00	2.40	0.60	14.01	22.61	17.01	60.00	50.00	37.39	32.99	L	

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

Conducted Emission (BT2)

Report No.	13671144H
Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Date	February 4, 2021
Temperature / Humidity	23 deg. C / 39 % RH
Engineer	Hiroki Numata
Mode	Tx BT LE 2M-PHY



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6 dB Bandwidth and 99 % Occupied Bandwidth

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 19, 2021 January 20, 2021
Temperature / Humidity 22 deg. C / 46 % RH 23 deg. C / 50 % RH
Engineer Junya Okuno Junya Okuno
Mode Tx

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
11b	2412	13352.4	10.087	> 0.5000
	2437	13322.2	10.076	> 0.5000
	2462	13339.2	10.078	> 0.5000
11g	2412	17170.1	16.494	> 0.5000
	2437	17186.9	16.494	> 0.5000
	2462	17193.0	16.491	> 0.5000
11n-20	2412	17982.4	17.650	> 0.5000
	2437	17954.0	17.672	> 0.5000
	2462	17962.8	17.664	> 0.5000
11ax-20 (OFDM)	2412	18865.5	18.657	> 0.5000
	2437	18854.4	18.728	> 0.5000
	2462	18862.6	18.754	> 0.5000

6 dB Bandwidth and 99 % Occupied Bandwidth

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 26, 2021
Temperature / Humidity 22 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
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	18164.1	2.014	> 0.5000
			4	17051.7	2.666	> 0.5000
			8	18368.1	1.985	> 0.5000
	2437		0	18343.6	2.011	> 0.5000
			4	17079.7	2.650	> 0.5000
			8	18368.6	2.010	> 0.5000
	2462		0	18305.9	1.985	> 0.5000
			4	17089.4	2.658	> 0.5000
			8	18397.5	2.046	> 0.5000
	2412	52-tone RU	37	18190.0	3.984	> 0.5000
			38	17054.2	4.087	> 0.5000
			40	18295.3	3.990	> 0.5000
	2437		37	18195.5	3.871	> 0.5000
			38	17061.8	4.081	> 0.5000
			40	18274.1	4.022	> 0.5000
	2462		37	18173.6	4.001	> 0.5000
			38	17051.9	4.096	> 0.5000
			40	18247.0	3.997	> 0.5000
	2412	106-tone RU	53	18097.5	8.282	> 0.5000
			54	18155.2	8.289	> 0.5000
			2437	53	18084.6	8.163
	54			18189.0	8.271	> 0.5000
	2462			53	18086.3	8.289
			54	18212.2	8.233	> 0.5000
2412			242-tone RU		18849.5	18.747
				18882.3	18.919	> 0.5000
				18880.2	18.623	> 0.5000

6 dB Bandwidth and 99 % Occupied Bandwidth

Report No.	13671144H	
Test place	Ise EMC Lab. No.8 Measurement Room	
Date	January 14, 2021	January 15, 2021
Temperature / Humidity	22 deg. C / 36 % RH	22 deg. C / 36 % RH
Engineer	Nachi Konegawa	Nachi Konegawa
	BT1	BT2
Mode	Tx BT LE	

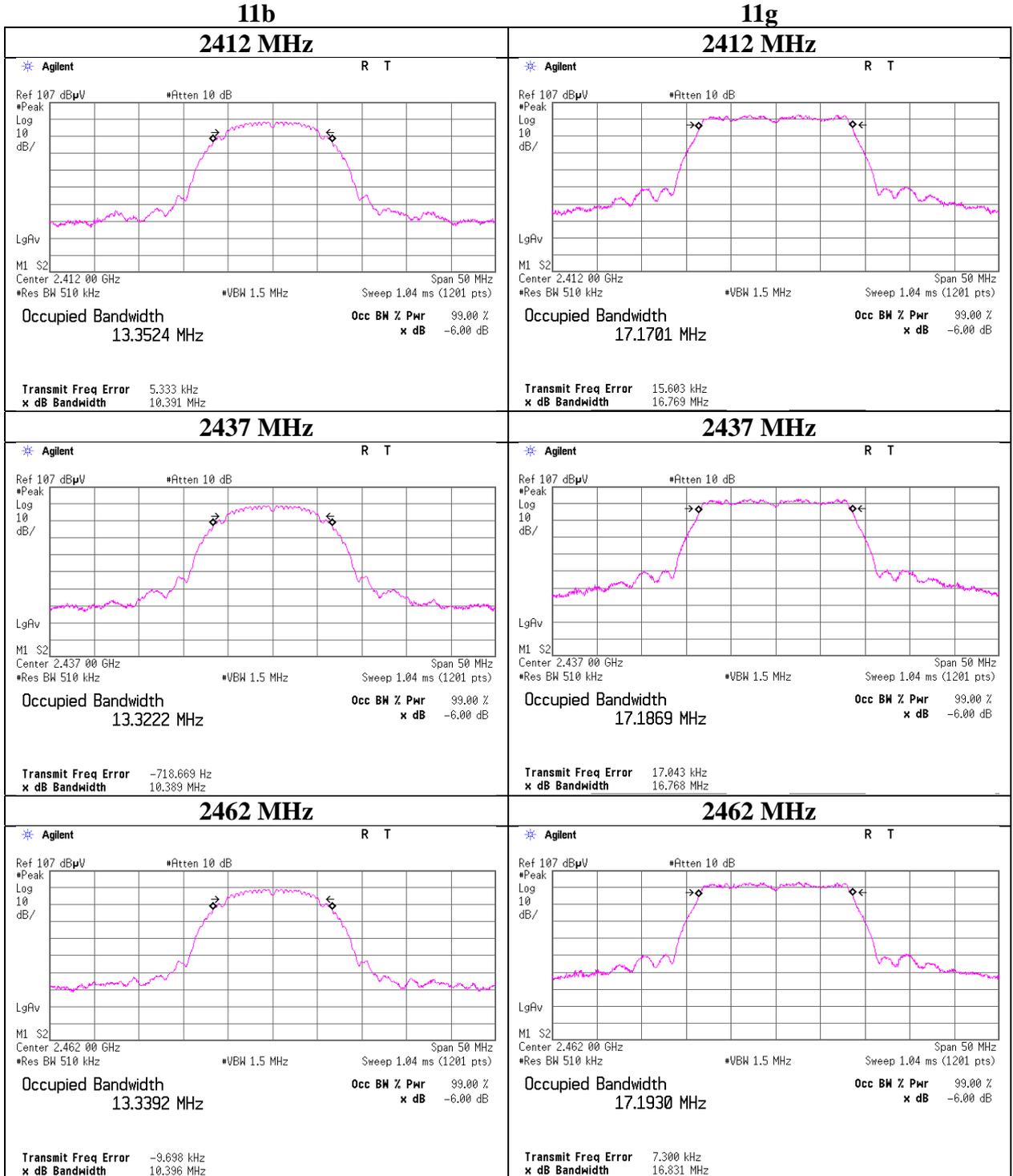
BT1

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
1M-PHY	2402	1038.2	0.699	> 0.5000
	2440	1039.1	0.687	> 0.5000
	2480	1038.0	0.686	> 0.5000
2M-PHY	2402	2058.1	1.174	> 0.5000
	2440	2058.0	1.174	> 0.5000
	2480	2059.1	1.175	> 0.5000

BT2

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
1M-PHY	2402	1037.7	0.684	> 0.5000
	2440	1036.1	0.698	> 0.5000
	2480	1038.2	0.686	> 0.5000
2M-PHY	2402	2058.6	1.167	> 0.5000
	2440	2059.4	1.172	> 0.5000
	2480	2058.8	1.172	> 0.5000

99 % Occupied Bandwidth



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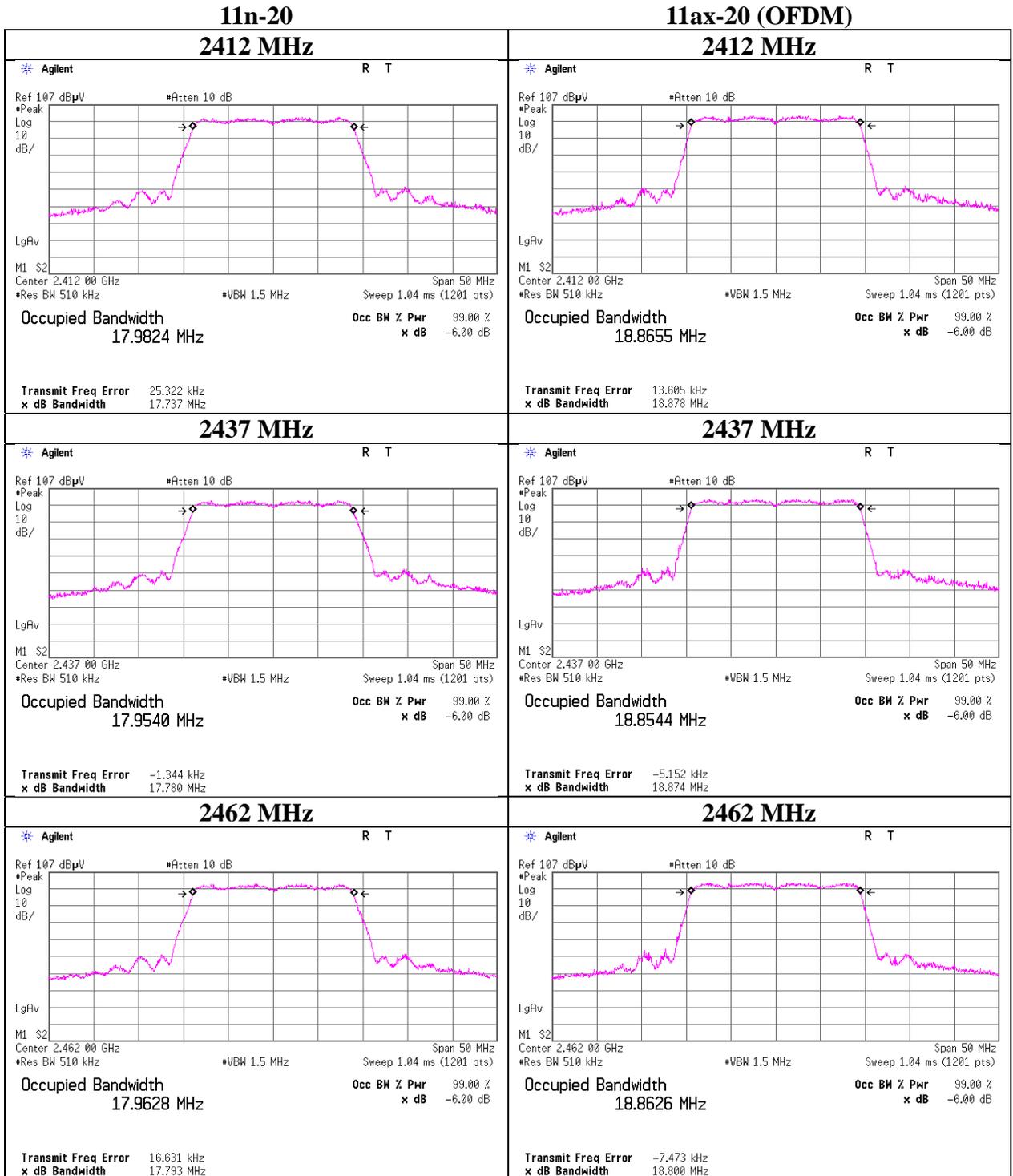
Ise EMC Lab.

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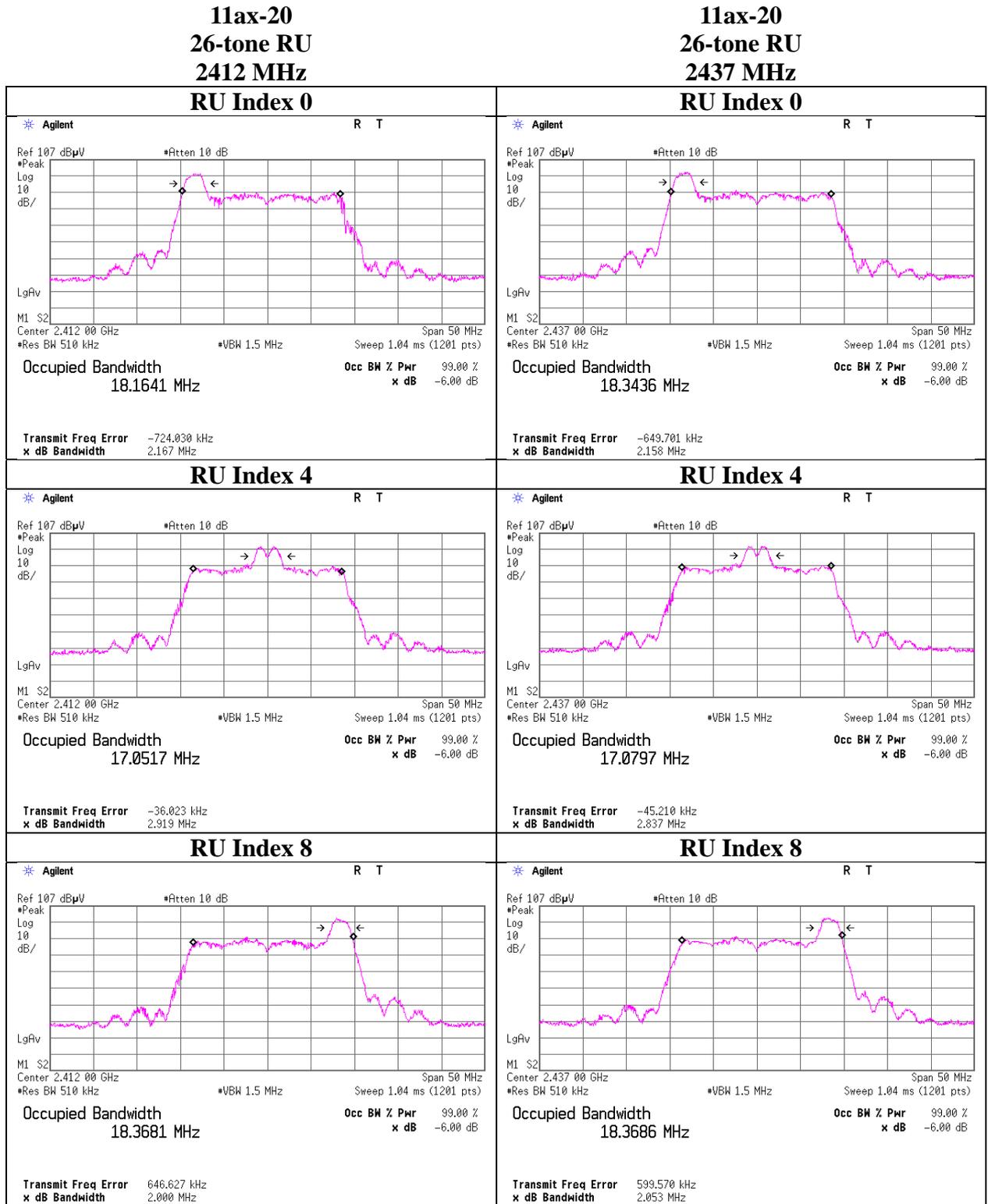
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

99 % Occupied Bandwidth



99 % Occupied Bandwidth



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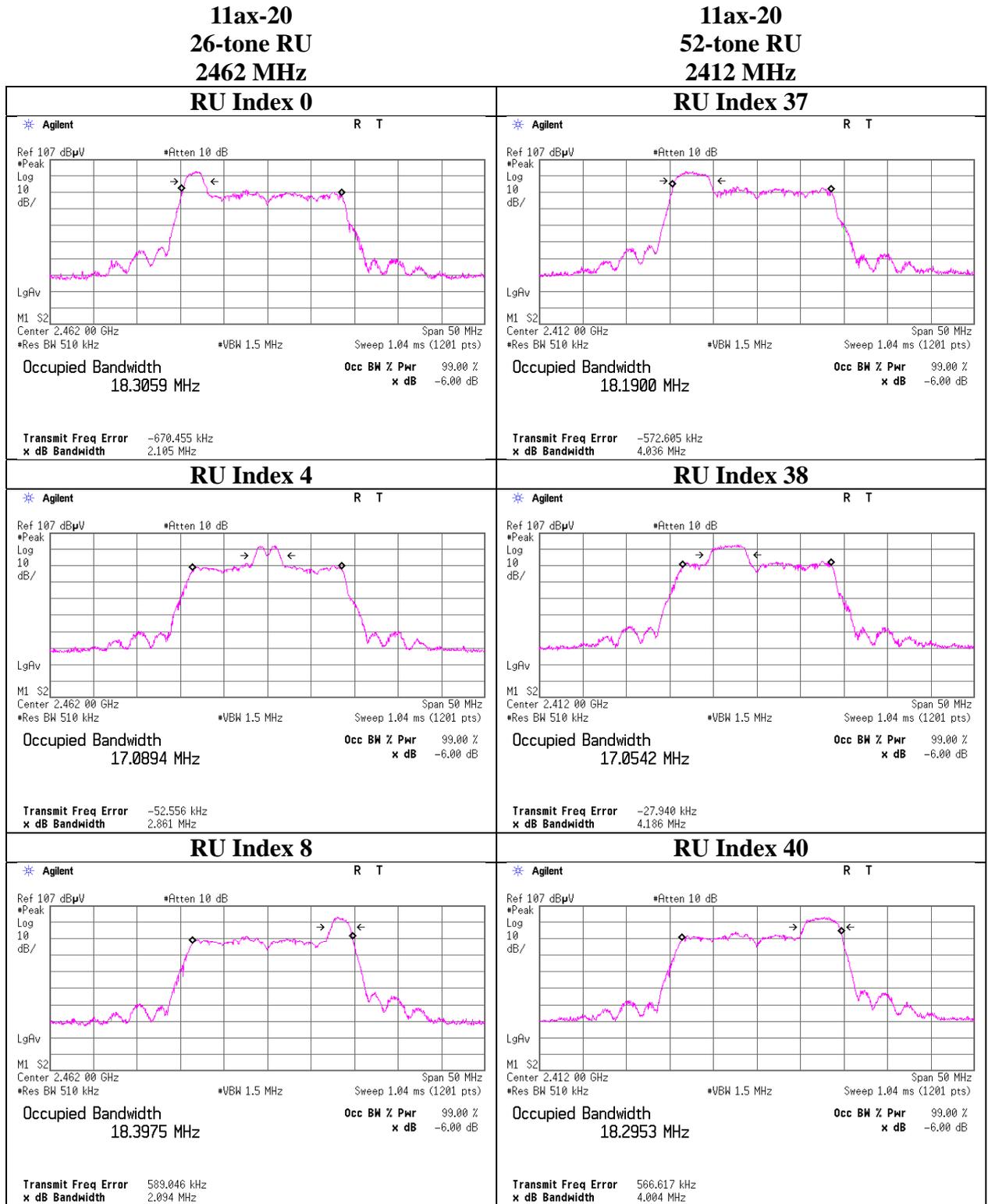
Ise EMC Lab.

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

99 % Occupied Bandwidth



UL Japan, Inc.

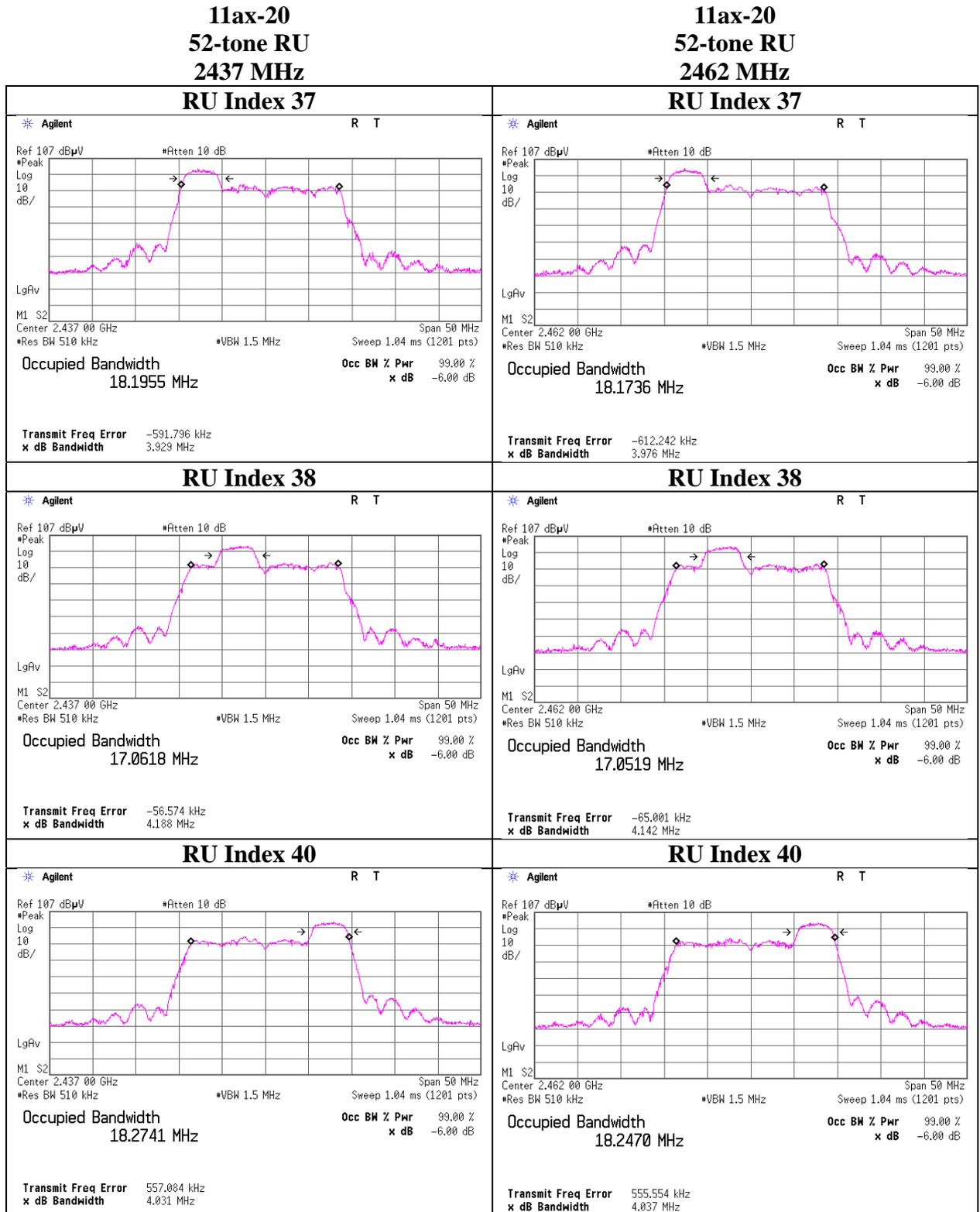
Ise EMC Lab.

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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

99 % Occupied Bandwidth



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Ise EMC Lab.

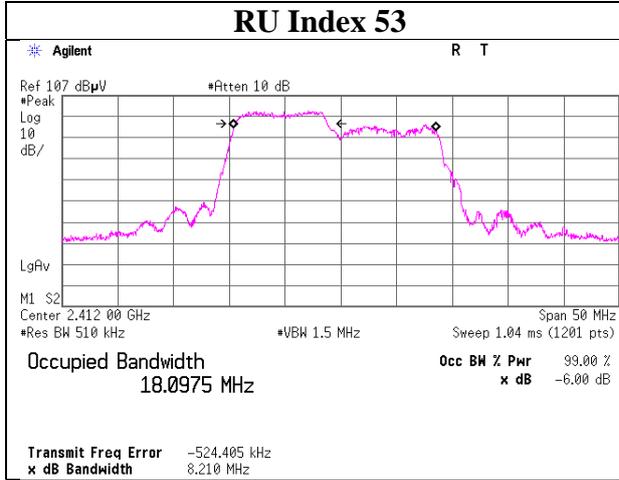
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

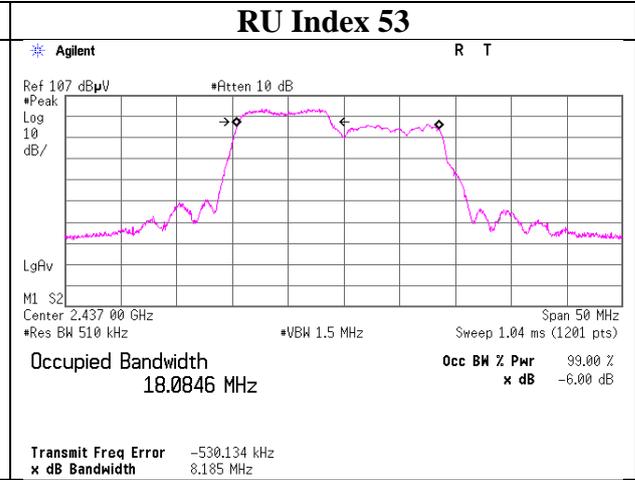
Facsimile : +81 596 24 8124

99 % Occupied Bandwidth

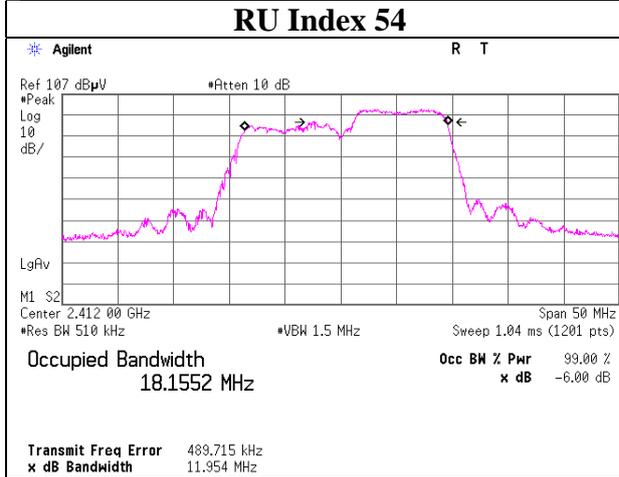
11ax-20
106-tone RU
2412 MHz
RU Index 53



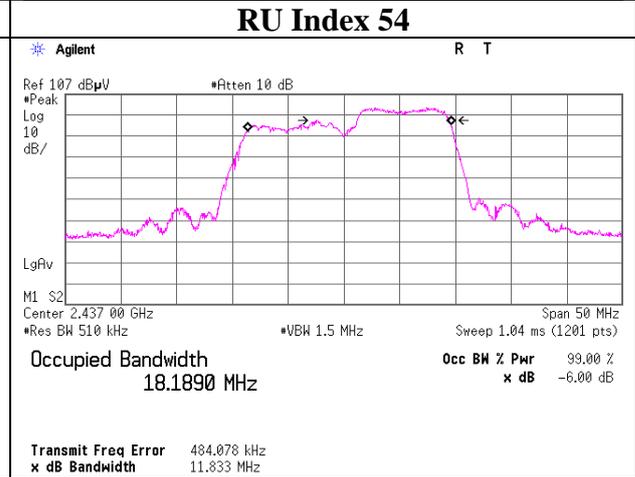
11ax-20
106-tone RU
2437 MHz
RU Index 53



RU Index 54



RU Index 54



UL Japan, Inc.

Ise EMC Lab.

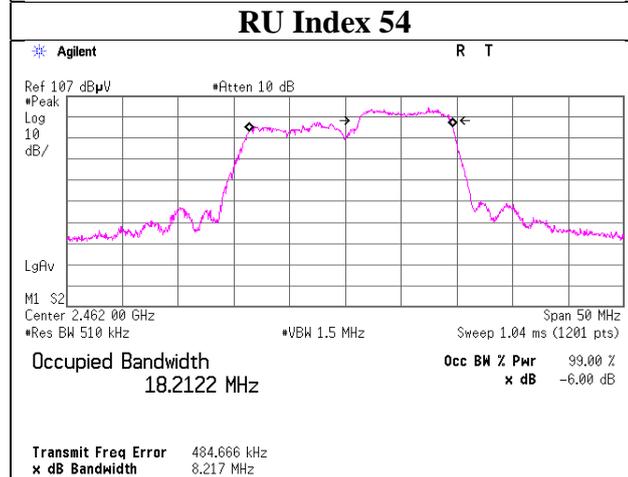
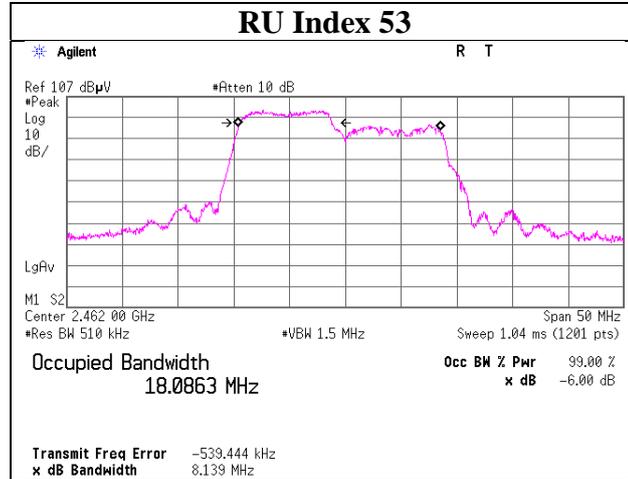
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Facsimile : +81 596 24 8124

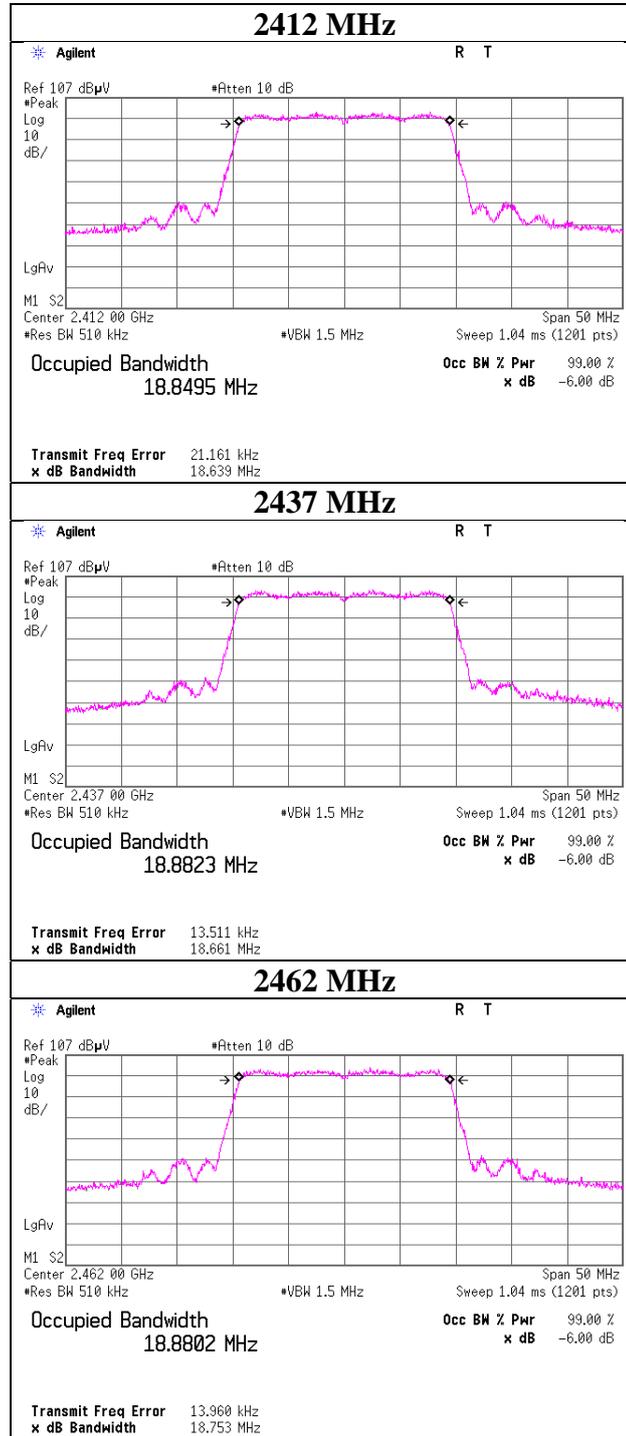
99 % Occupied Bandwidth

**11ax-20
106-tone RU
2462 MHz**



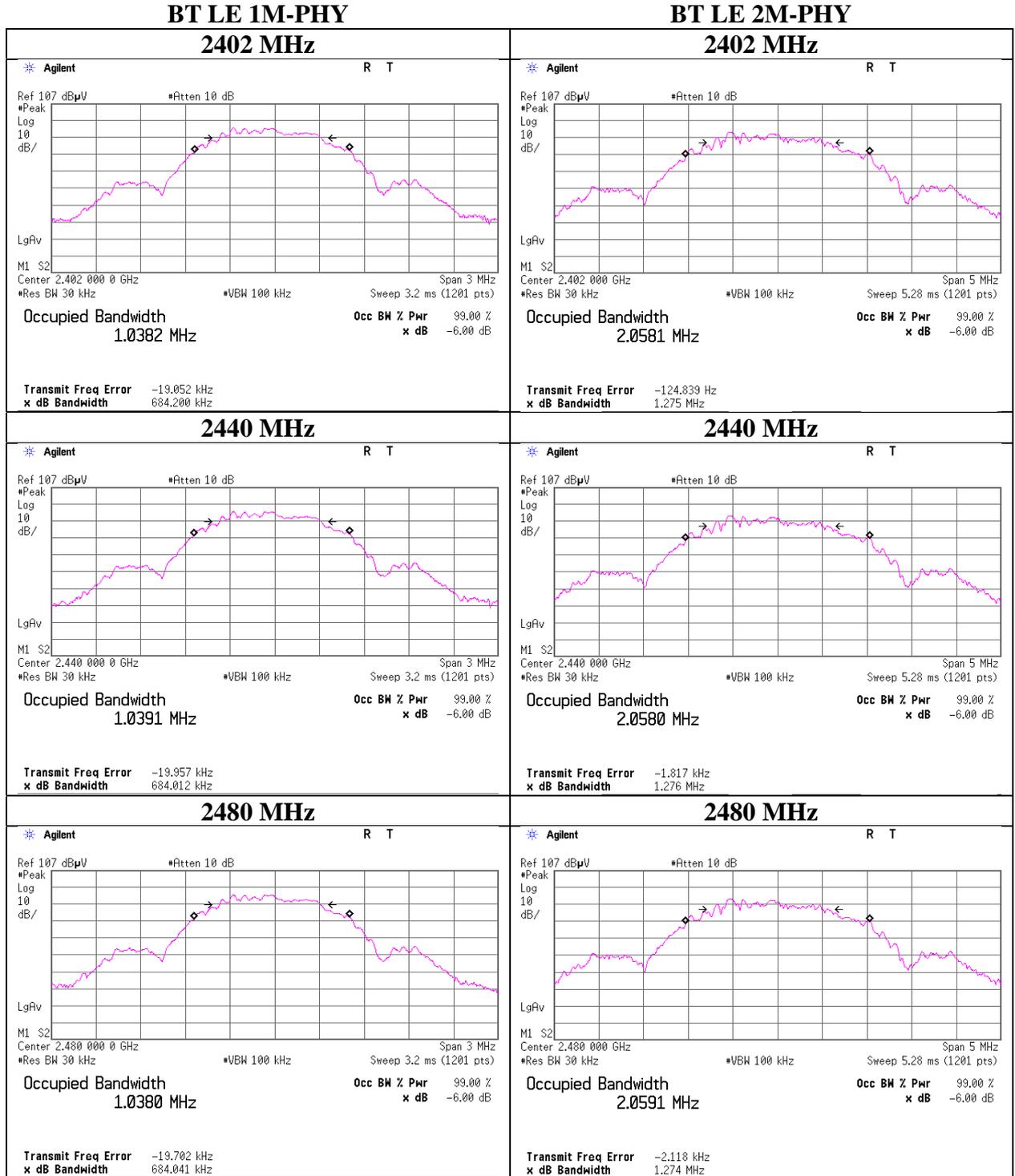
99 % Occupied Bandwidth

**11ax-20
242-tone RU**



99 % Occupied Bandwidth

BT1



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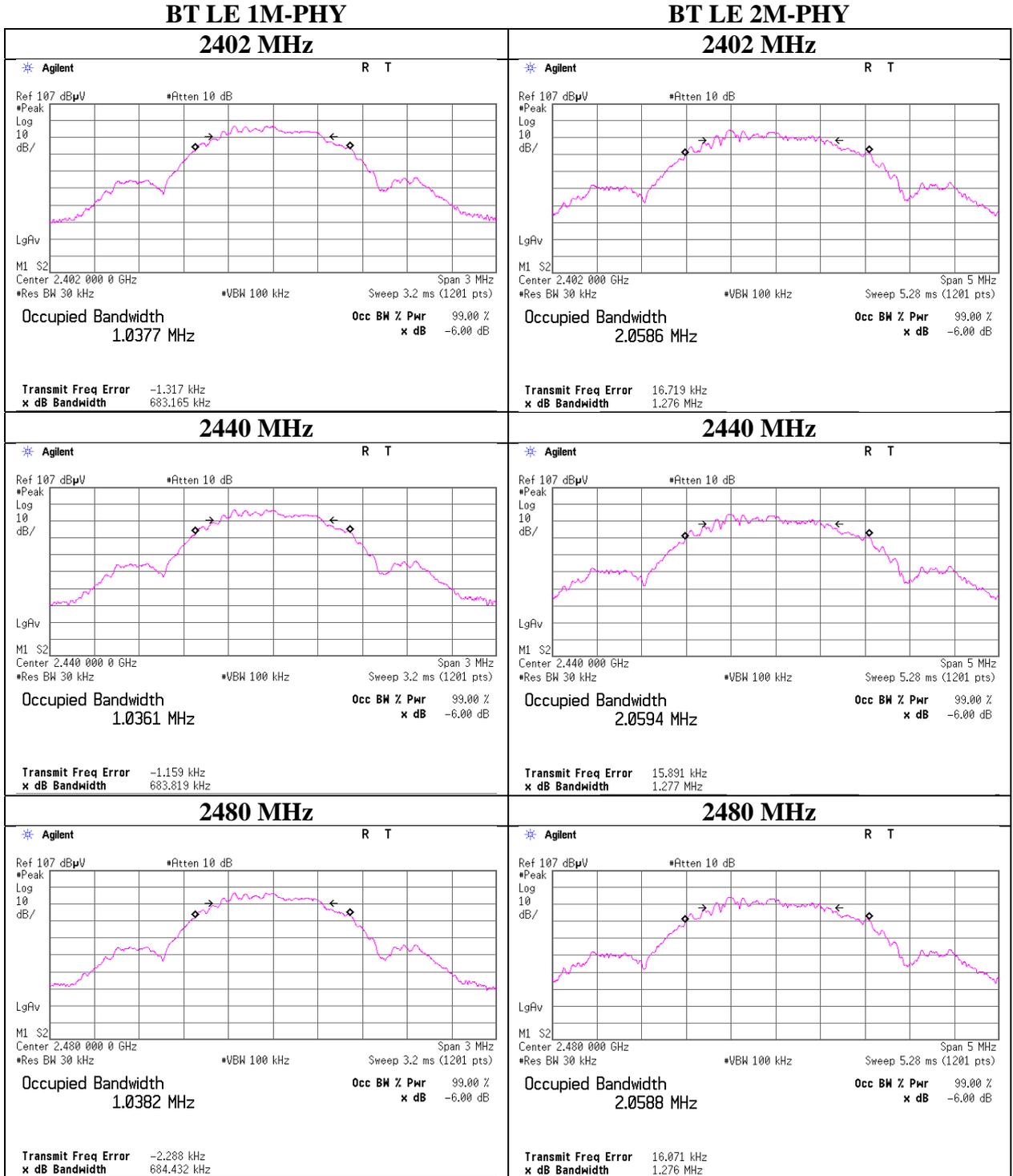
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Telephone : +81 596 24 8999

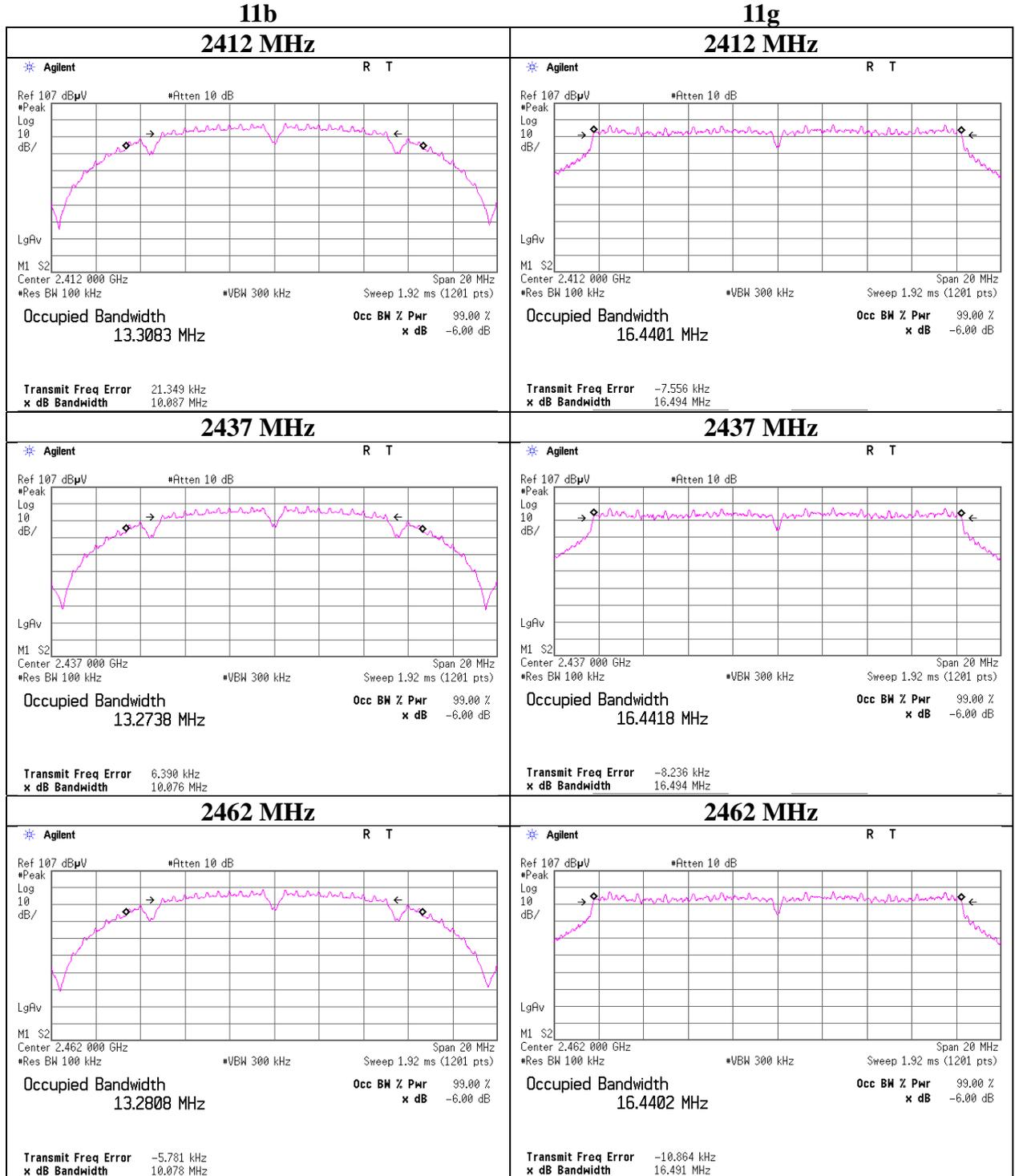
Facsimile : +81 596 24 8124

99 % Occupied Bandwidth

BT2



6 dB Bandwidth



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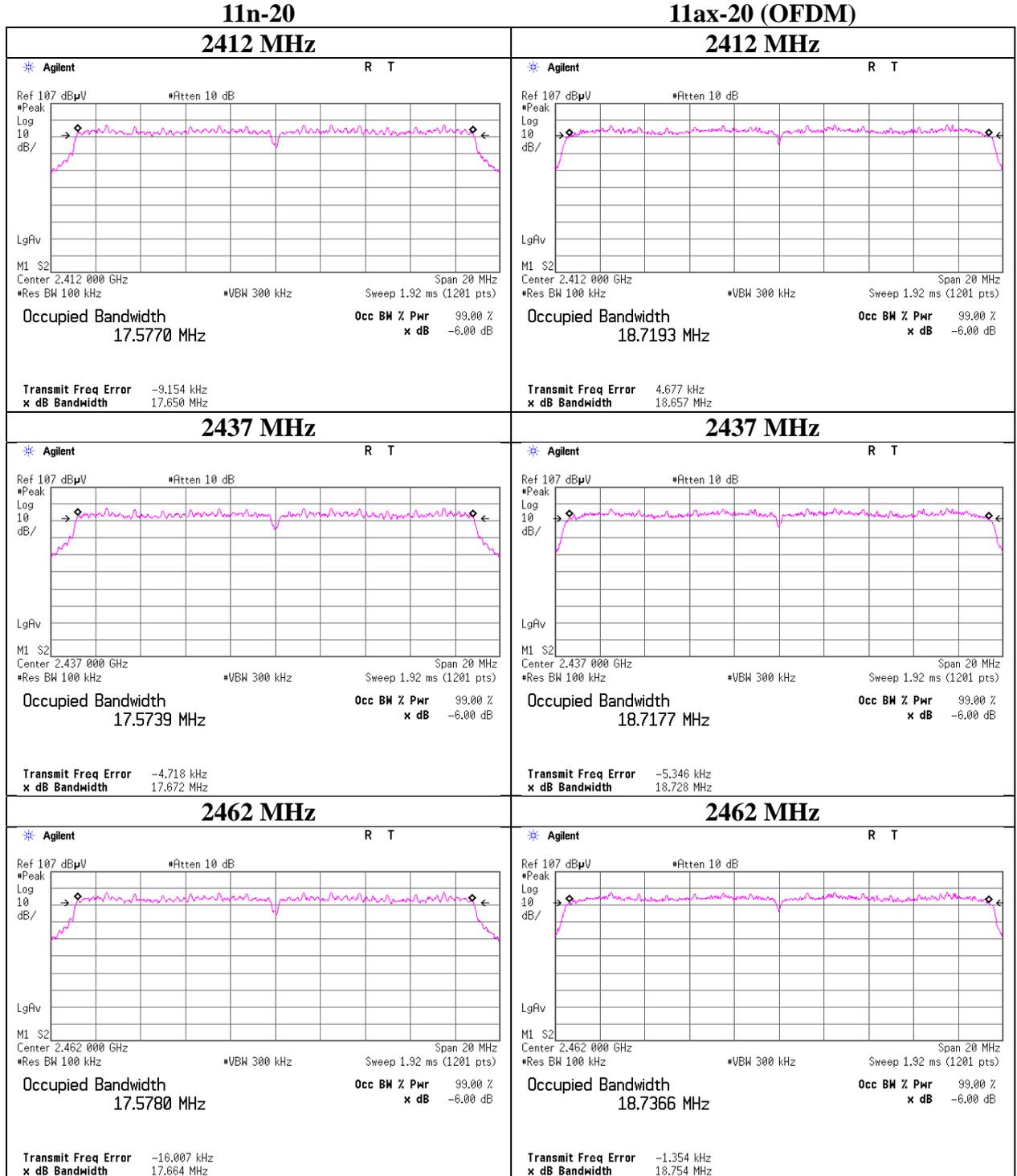
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6 dB Bandwidth



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Ise EMC Lab.

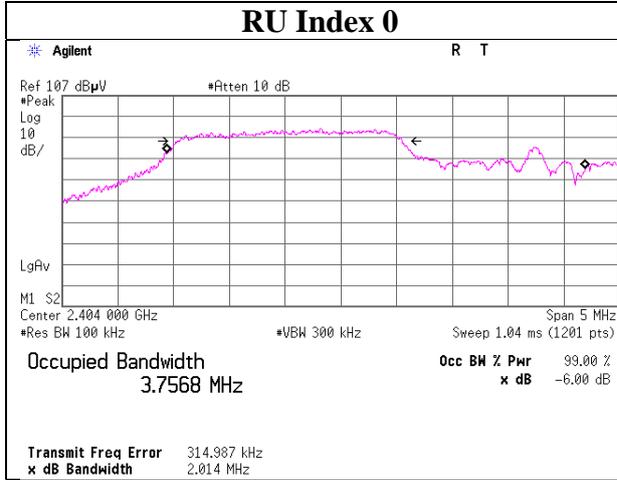
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Telephone : +81 596 24 8999

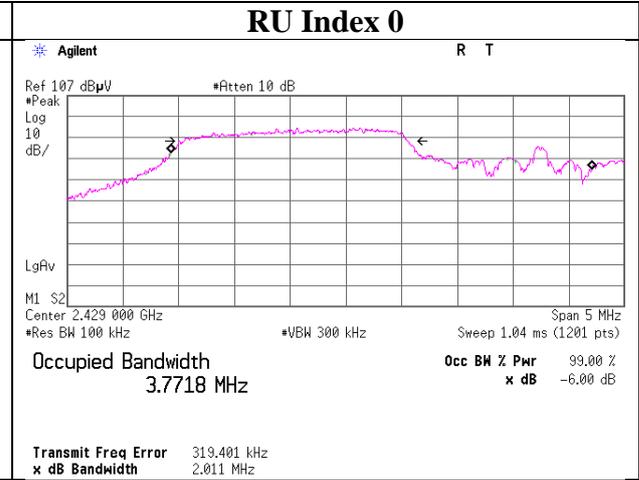
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6 dB Bandwidth

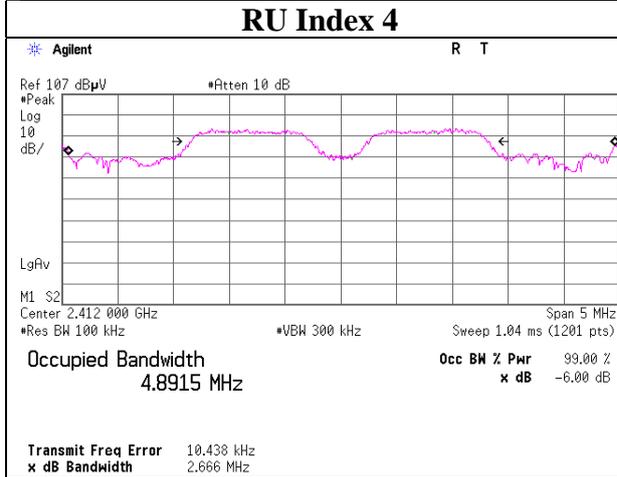
11ax-20
26-tone RU
2412 MHz
RU Index 0



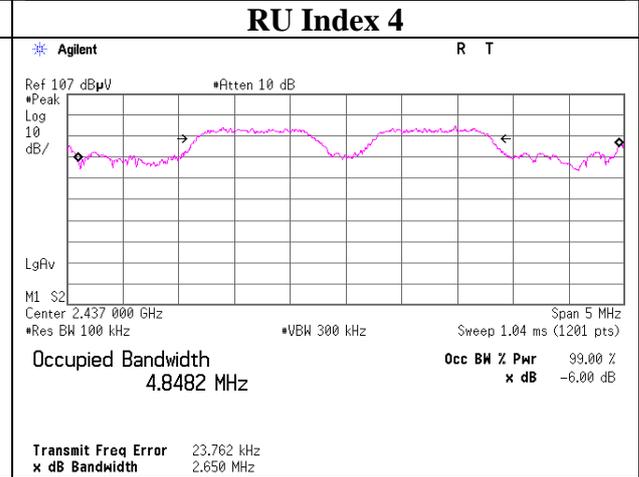
11ax-20
26-tone RU
2437 MHz
RU Index 0



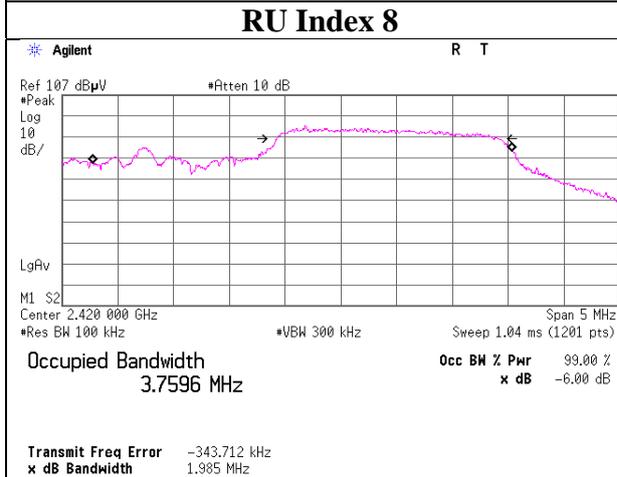
RU Index 4



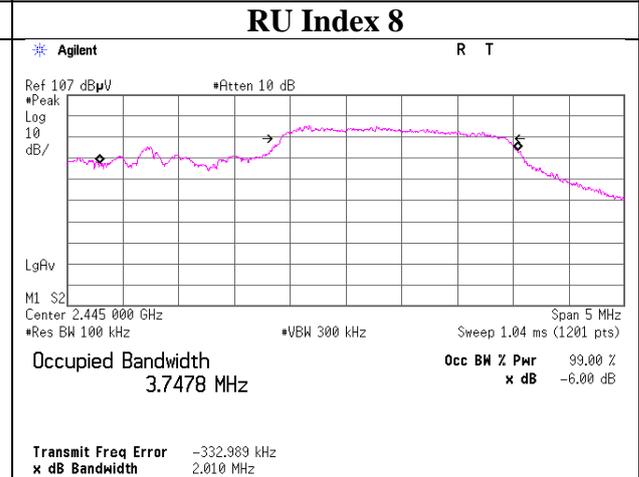
RU Index 4



RU Index 8

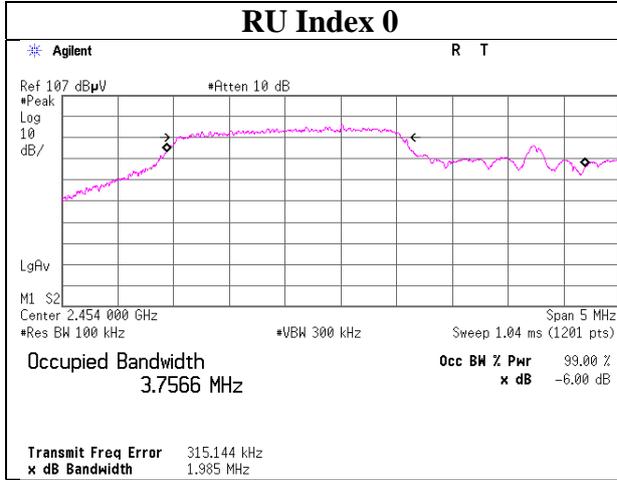


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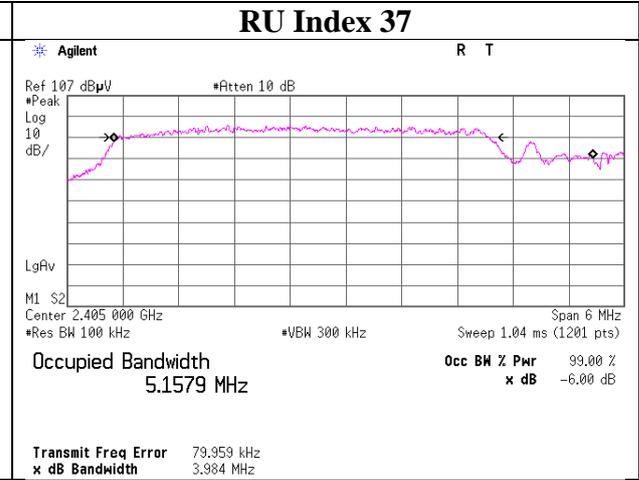


6 dB Bandwidth

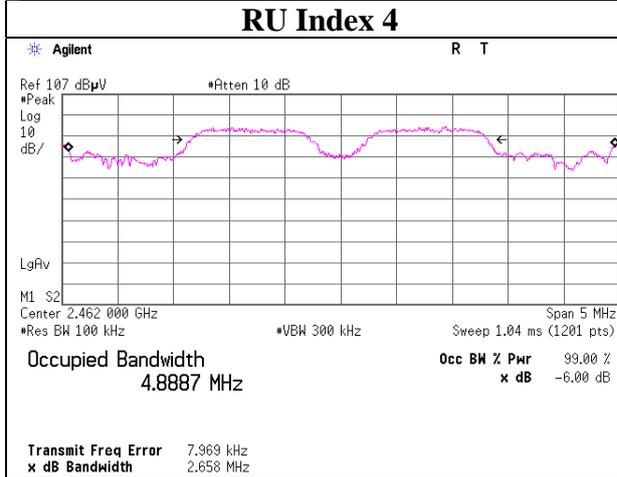
11ax-20
26-tone RU
2462 MHz
RU Index 0



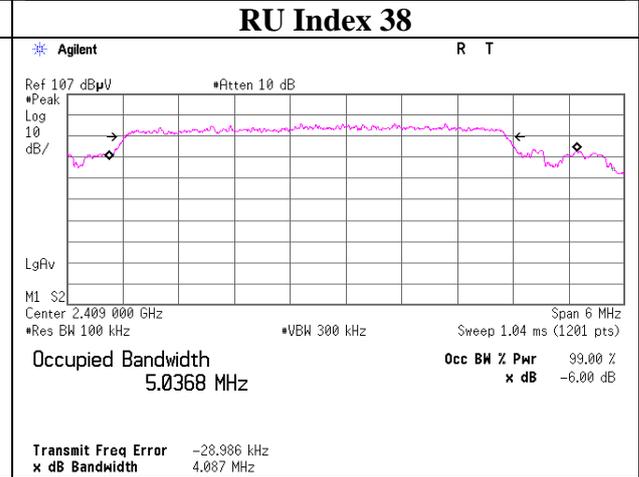
11ax-20
52-tone RU
2412 MHz
RU Index 37



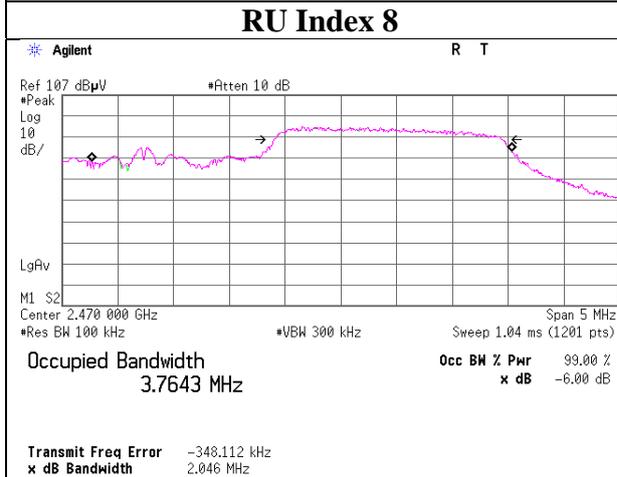
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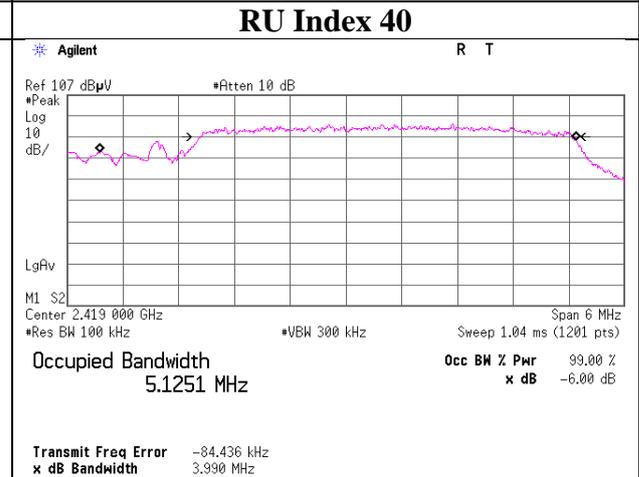
RU Index 38



RU Index 8

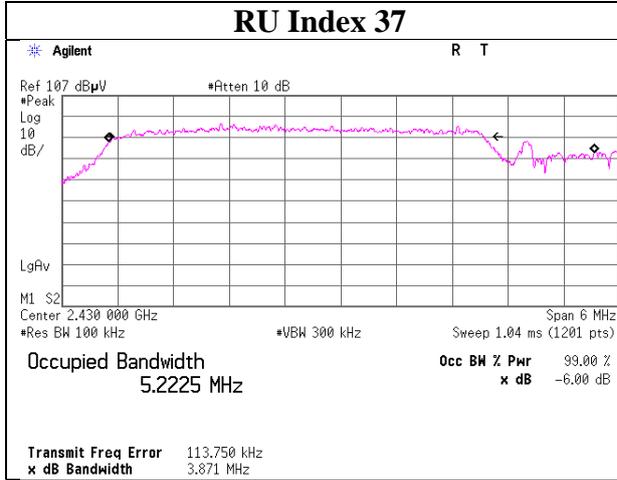


RU Index 40

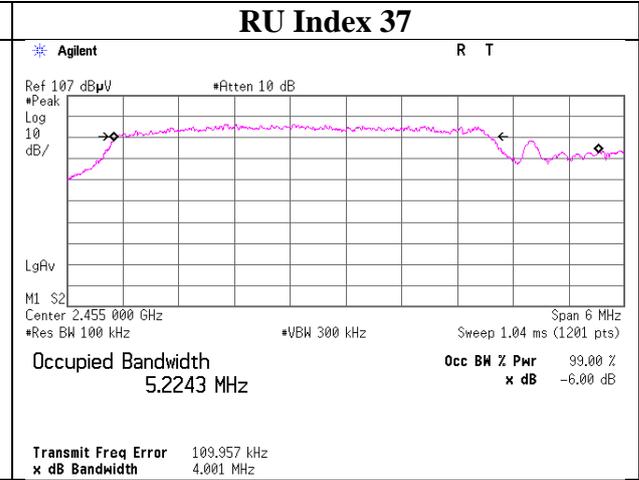


6 dB Bandwidth

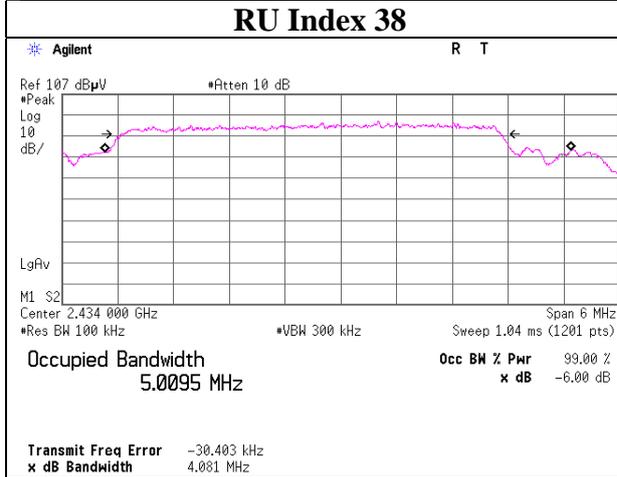
11ax-20
52-tone RU
2437 MHz
RU Index 37



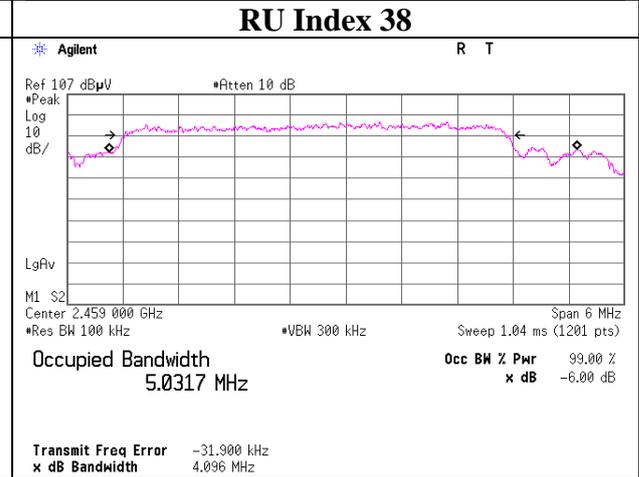
11ax-20
52-tone RU
2462 MHz
RU Index 37



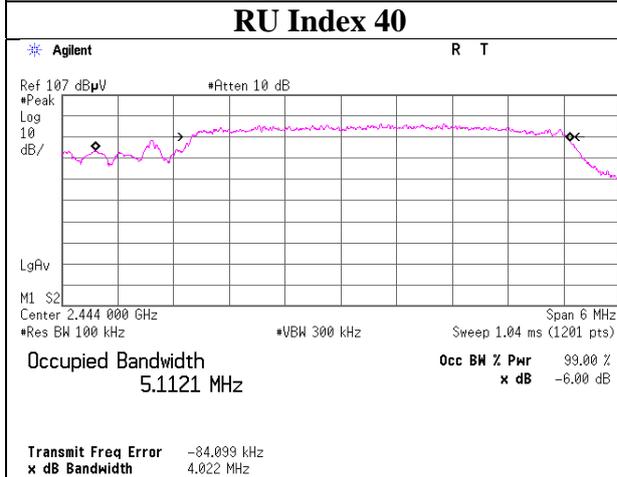
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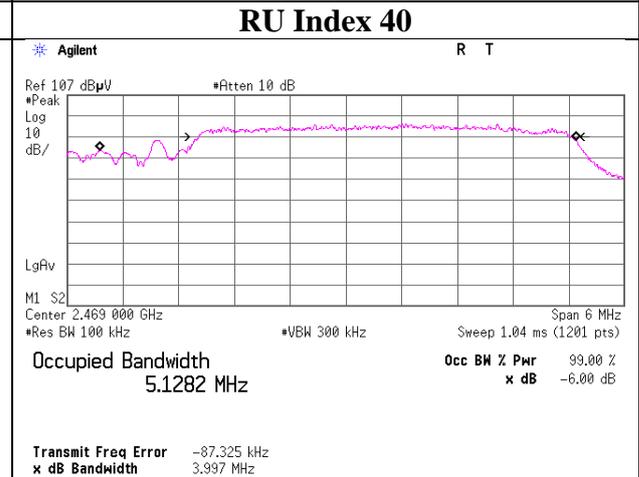
RU Index 38



RU Index 40

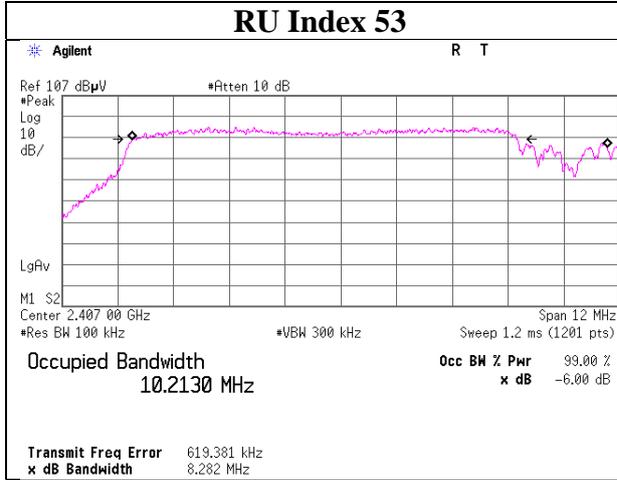


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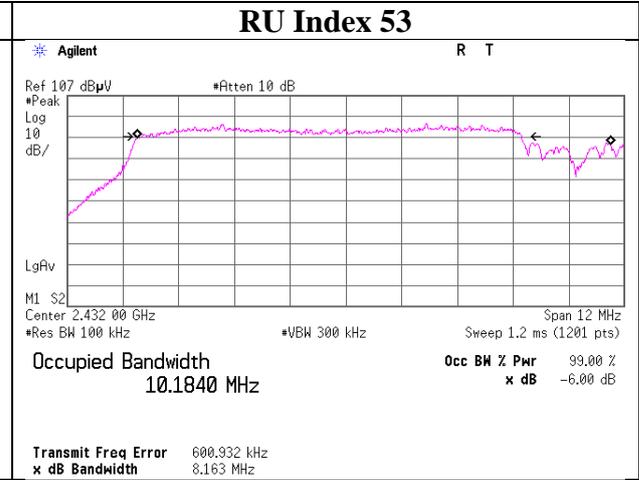


6 dB Bandwidth

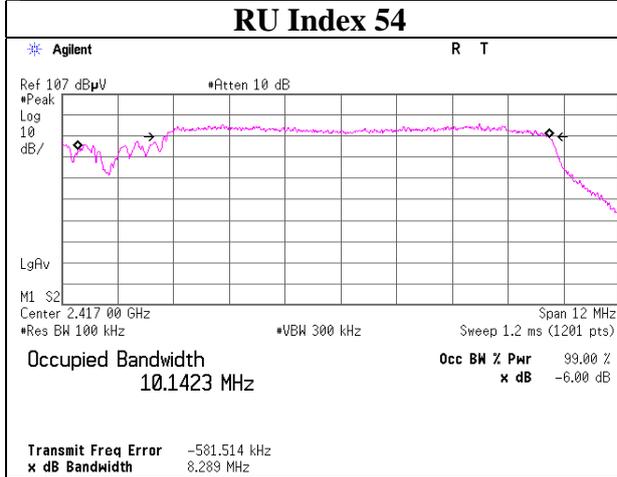
11ax-20
106-tone RU
2412 MHz
RU Index 53



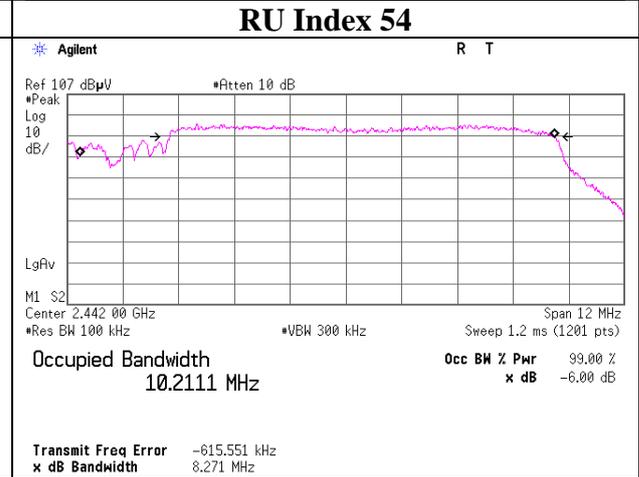
11ax-20
106-tone RU
2437 MHz
RU Index 53



RU Index 54

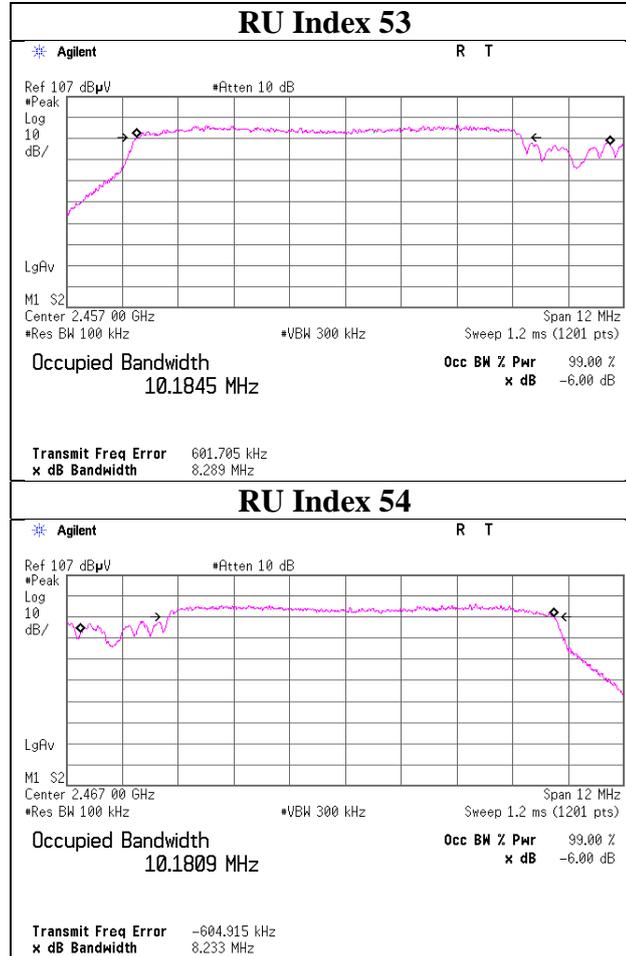


RU Index 54



6 dB Bandwidth

11ax-20
106-tone RU
2462 MHz



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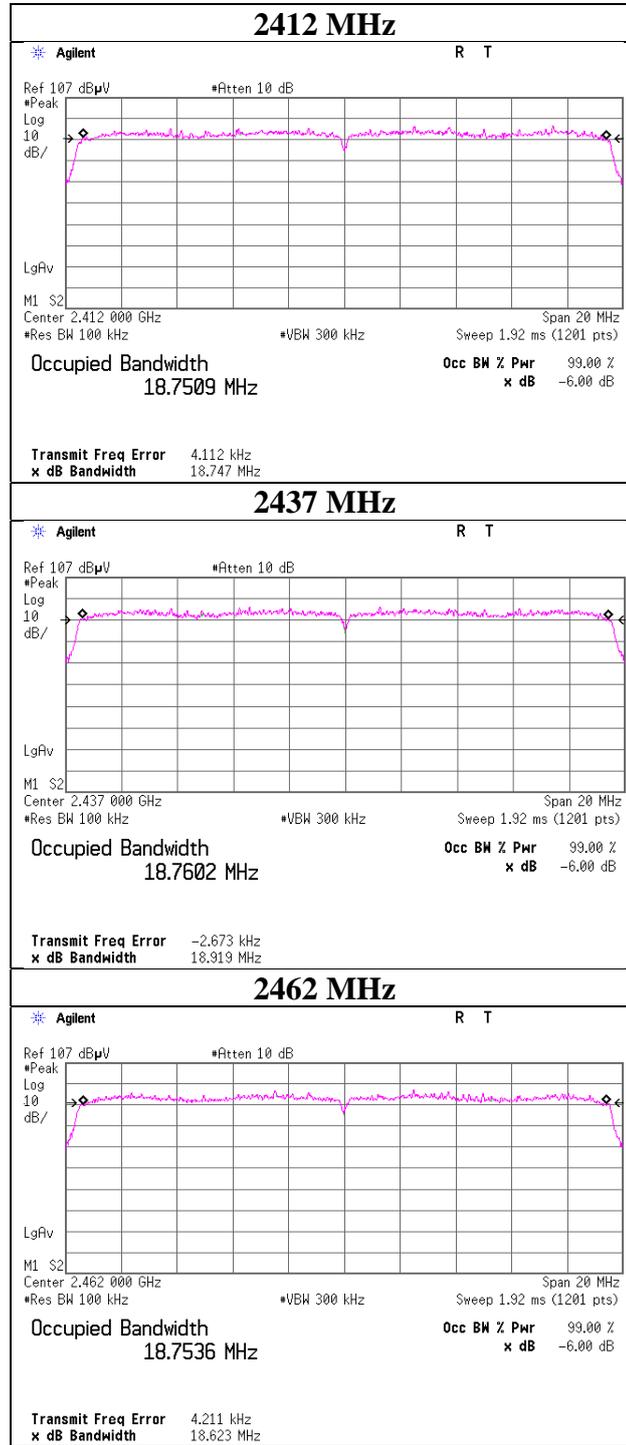
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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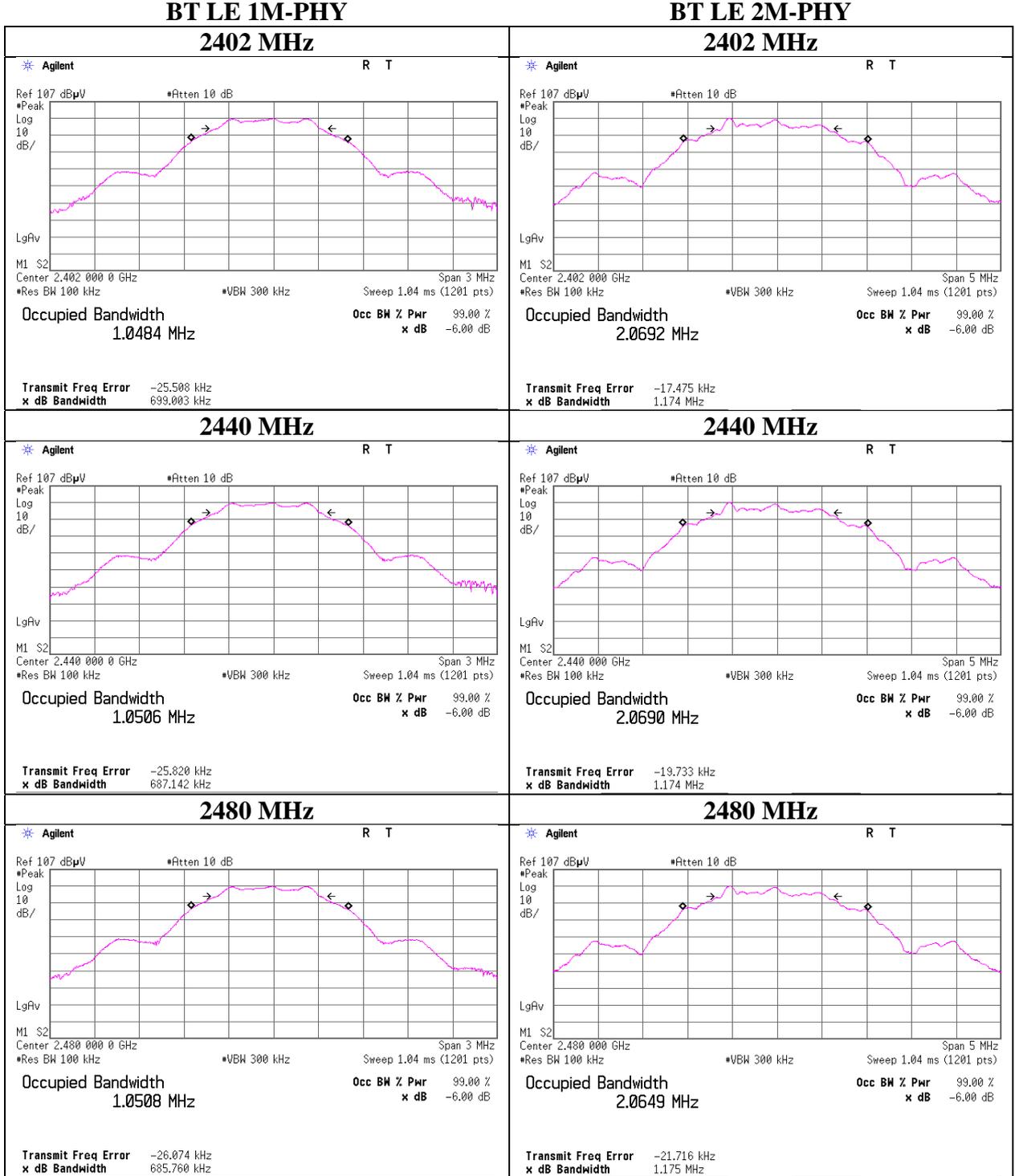
6 dB Bandwidth

11ax-20 242-tone RU



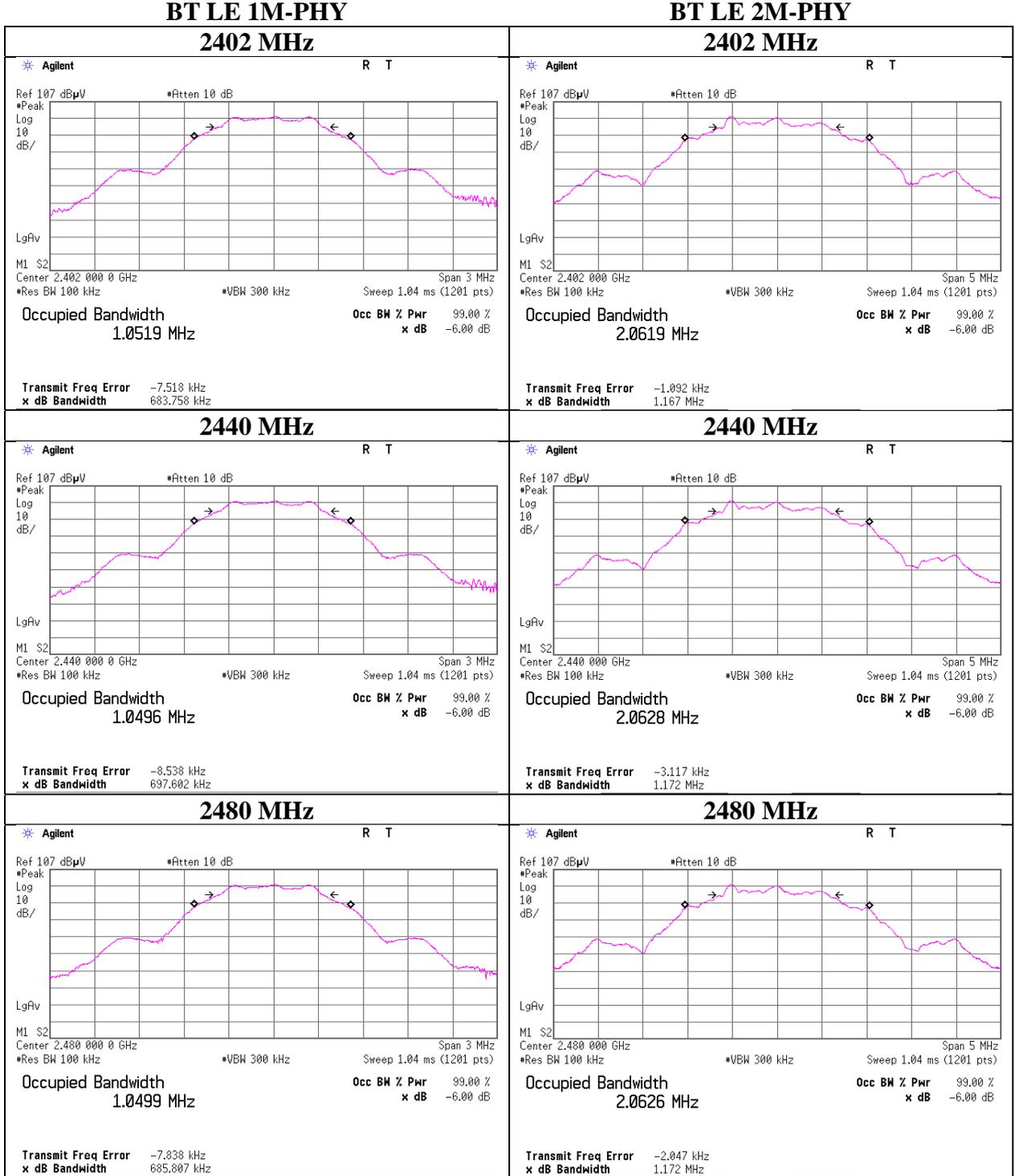
6 dB Bandwidth

BT1



6 dB Bandwidth

BT2



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Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 15, 2021 January 18, 2021
Temperature / Humidity 22 deg. C / 36 % RH 21 deg. C / 45 % RH
Engineer Takafumi Noguchi Junya Okuno
Mode Tx 11b

Antenna 1 + Antenna 2			Conducted Power					e.i.r.p.					
Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
2412	9.77	8.93	12.72	18.71	29.24	839	16.52	6.76	19.48	88.71	36.02	4000.00	16.54
2437	10.91	9.64	13.13	20.55	29.24	839	16.11	6.76	19.89	97.47	36.02	4000.00	16.13
2462	11.32	10.02	13.29	21.35	29.24	839	15.95	6.76	20.05	101.24	36.02	4000.00	15.97

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 (0.76 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	-0.38	0.50	9.78	9.90	9.77
2437	0.10	0.50	9.78	10.38	10.91
2462	0.26	0.50	9.78	10.54	11.32

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	-0.96	0.50	9.97	9.51	8.93
2437	-0.64	0.50	9.98	9.84	9.64
2462	-0.47	0.50	9.98	10.01	10.02

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	-0.21	0.95	-0.89	0.81	2.47	1.77	*
2	-0.23	0.95	-0.93	0.81	2.44	1.76	
5.5	-0.23	0.95	-0.99	0.80	2.42	1.74	
11	-0.21	0.95	-0.91	0.81	2.46	1.76	

*Worst Rate

Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 15, 2021 January 18, 2021
Temperature / Humidity 22 deg. C / 36 % RH 21 deg. C / 45 % RH
Engineer Takafumi Noguchi Junya Okuno
Mode Tx 11g

Antenna 1 + Antenna 2			Conducted Power					e.i.r.p.					
Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
2412	70.79	66.37	21.37	137.17	29.24	839	7.87	6.76	28.13	650.51	36.02	4000.00	7.89
2437	71.12	66.37	21.38	137.50	29.24	839	7.86	6.76	28.14	652.06	36.02	4000.00	7.88
2462	75.68	71.61	21.68	147.30	29.24	839	7.56	6.76	28.44	698.55	36.02	4000.00	7.58

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 (0.76 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	8.22	0.50	9.78	18.50	70.79
2437	8.24	0.50	9.78	18.52	71.12
2462	8.51	0.50	9.78	18.79	75.68

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	7.75	0.50	9.97	18.22	66.37
2437	7.74	0.50	9.98	18.22	66.37
2462	8.07	0.50	9.98	18.55	71.61

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	8.02	6.34	7.39	5.48	10.73	11.82	
9	8.04	6.37	7.37	5.46	10.73	11.83	
12	8.16	6.55	7.21	5.26	10.72	11.81	
18	7.75	5.96	7.37	5.46	10.57	11.41	
24	8.05	6.38	7.37	5.46	10.73	11.84	*
36	7.90	6.17	7.16	5.20	10.56	11.37	
48	7.96	6.25	7.43	5.53	10.71	11.79	
54	7.94	6.22	7.45	5.56	10.71	11.78	

*Worst Rate

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Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 15, 2021 January 18, 2021
Temperature / Humidity 22 deg. C / 36 % RH 21 deg. C / 45 % RH
Engineer Takafumi Noguchi Junya Okuno
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 [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
2412	83.75	82.60	22.21	166.36	29.24	839	7.03	6.76	28.97	788.93	36.02	4000.00	7.05
2437	86.70	84.53	22.34	171.22	29.24	839	6.90	6.76	29.10	812.02	36.02	4000.00	6.92
2462	89.33	87.10	22.47	176.43	29.24	839	6.77	6.76	29.23	836.69	36.02	4000.00	6.79

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 (0.76 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	8.95	0.50	9.78	19.23	83.75
2437	9.10	0.50	9.78	19.38	86.70
2462	9.23	0.50	9.78	19.51	89.33

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	8.70	0.50	9.97	19.17	82.60
2437	8.79	0.50	9.98	19.27	84.53
2462	8.92	0.50	9.98	19.40	87.10

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	8.16	6.55	7.46	5.57	10.83	12.12	
1	8.40	6.92	7.68	5.86	11.07	12.78	
2	8.53	7.13	7.65	5.82	11.12	12.95	
3	8.25	6.68	7.69	5.87	10.99	12.56	
4	8.13	6.50	7.72	5.92	10.94	12.42	
5	8.23	6.65	7.80	6.03	11.03	12.68	
6	8.21	6.62	7.70	5.89	10.97	12.51	
7	8.15	6.53	7.55	5.69	10.87	12.22	
8	8.21	6.62	7.65	5.82	10.95	12.44	
9	7.48	5.60	7.71	5.90	10.61	11.50	
10	8.29	6.75	7.64	5.81	10.99	12.55	
11	8.28	6.73	7.80	6.03	11.06	12.76	
12	8.27	6.71	7.84	6.08	11.07	12.80	
13	7.33	5.41	7.24	5.30	10.30	10.70	
14	8.49	7.06	7.72	5.92	11.13	12.98	*
15	7.69	5.87	7.69	5.87	10.70	11.75	

*Worst MCS

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

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Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 15, 2021 January 18, 2021
Temperature / Humidity 22 deg. C / 36 % RH 21 deg. C / 45 % RH
Engineer Takafumi Noguchi Junya Okuno
Mode Tx 11ax-20 (OFDM)

Antenna 1 + Antenna 2			Conducted Power					c.i.r.p.					
Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
2412	95.50	87.90	22.63	183.40	29.24	839	6.61	6.76	29.39	869.77	36.02	4000.00	6.63
2437	100.93	90.99	22.83	191.92	29.24	839	6.41	6.76	29.59	910.15	36.02	4000.00	6.43
2462	103.04	93.33	22.93	196.36	29.24	839	6.31	6.76	29.69	931.24	36.02	4000.00	6.33

Sample Calculation:

Result = Antenna 1 + Antenna 2

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

*This Limit was reduced by the amount in dB (0.76 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	9.52	0.50	9.78	19.80	95.50
2437	9.76	0.50	9.78	20.04	100.93
2462	9.85	0.50	9.78	20.13	103.04

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	8.97	0.50	9.97	19.44	87.90
2437	9.11	0.50	9.98	19.59	90.99
2462	9.22	0.50	9.98	19.70	93.33

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	8.34	6.82	7.84	6.08	11.11	12.90	
	1	8.93	7.82	8.05	6.38	11.52	14.20	
	2	8.52	7.11	8.05	6.38	11.30	13.49	
	3	8.62	7.28	8.10	6.46	11.38	13.73	
	4	8.60	7.24	8.00	6.31	11.32	13.55	
	5	8.63	7.29	8.00	6.31	11.34	13.60	
	6	9.00	7.94	8.49	7.06	11.76	15.01	*
	7	8.98	7.91	7.82	6.05	11.45	13.96	
	8	8.47	7.03	7.85	6.10	11.18	13.13	
	9	8.36	6.85	7.90	6.17	11.15	13.02	
	10	8.50	7.08	8.05	6.38	11.29	13.46	
2TX	0	8.26	6.70	8.22	6.64	11.25	13.34	
	1	9.07	8.07	7.97	6.27	11.57	14.34	
	2	8.20	6.61	7.98	6.28	11.10	12.89	
	3	8.54	7.14	8.24	6.67	11.40	13.81	
	4	7.90	6.17	8.05	6.38	10.99	12.55	
	5	8.16	6.55	7.92	6.19	11.05	12.74	
	6	8.63	7.29	8.00	6.31	11.34	13.60	
	7	8.40	6.92	7.81	6.04	11.13	12.96	
	8	8.30	6.76	7.86	6.11	11.10	12.87	
	9	8.39	6.90	7.83	6.07	11.13	12.97	
	10	8.53	7.13	7.90	6.17	11.24	13.29	
11	8.81	7.60	7.53	5.66	11.23	13.27		

*Worst MCS

Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 25, 2021
Temperature / Humidity 23 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (26-tone RU)

Antenna 1 + Antenna 2			Conducted Power						e.i.r.p.						
Freq. [MHz]	RU Type	RU Index	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]			
2412	26-tone RU	0	7.52	7.00	11.62	14.51	29.24	839	17.62	6.76	18.38	68.83	36.02	4000.00	17.64
		4	10.12	9.35	12.89	19.47	29.24	839	16.35	6.76	19.65	92.33	36.02	4001.00	16.37
		8	8.59	7.94	12.18	16.53	29.24	839	17.06	6.76	18.94	78.41	36.02	4002.00	17.08
2437		0	8.65	7.66	12.12	16.31	29.24	839	17.12	6.76	18.88	77.33	36.02	4000.00	17.14
		4	11.59	10.28	13.40	21.87	29.24	839	15.84	6.76	20.16	103.71	36.02	4001.00	15.86
		8	9.79	8.57	12.64	18.37	29.24	839	16.60	6.76	19.40	87.10	36.02	4002.00	16.62
2462		0	8.85	8.07	12.28	16.92	29.24	839	16.96	6.76	19.04	80.26	36.02	4000.00	16.98
		4	11.86	10.62	13.52	22.47	29.24	839	15.72	6.76	20.28	106.58	36.02	4001.00	15.74
		8	9.75	8.59	12.63	18.34	29.24	839	16.61	6.76	19.39	86.98	36.02	4002.00	16.63

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]	RU Type	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
2412	26-tone RU	0	-1.86	0.87	9.75	8.76	7.52
		4	-0.57	0.87	9.75	10.05	10.12
		8	-1.28	0.87	9.75	9.34	8.59
2437		0	-1.25	0.87	9.75	9.37	8.65
		4	0.02	0.87	9.75	10.64	11.59
		8	-0.71	0.87	9.75	9.91	9.79
2462		0	-1.15	0.87	9.75	9.47	8.85
		4	0.12	0.87	9.75	10.74	11.86
		8	-0.73	0.87	9.75	9.89	9.75

Antenna 2							
Freq. [MHz]	RU Type	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
2412	26-tone RU	0	-2.17	0.87	9.75	8.45	7.00
		4	-0.91	0.87	9.75	9.71	9.35
		8	-1.62	0.87	9.75	9.00	7.94
2437		0	-1.78	0.87	9.75	8.84	7.66
		4	-0.50	0.87	9.75	10.12	10.28
		8	-1.29	0.87	9.75	9.33	8.57
2462		0	-1.55	0.87	9.75	9.07	8.07
		4	-0.36	0.87	9.75	10.26	10.62
		8	-1.28	0.87	9.75	9.34	8.59

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

Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 25, 2021
Temperature / Humidity 23 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (52-tone RU)

Antenna 1 + Antenna 2			Conducted Power							e.i.r.p.					
Freq. [MHz]	RU Type	RU Index	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]			
2412	52-tone RU	37	18.03	17.30	15.48	35.33	29.24	839	13.76	6.76	22.24	167.54	36.02	4000.00	13.78
		38	17.14	14.76	15.04	31.90	29.24	839	14.20	6.76	21.80	151.27	36.02	4001.00	14.22
		40	16.67	14.22	14.90	30.90	29.24	839	14.34	6.76	21.66	146.52	36.02	4002.00	14.36
2437		37	21.63	18.84	16.07	40.46	29.24	839	13.17	6.76	22.83	191.90	36.02	4000.00	13.19
		38	18.92	16.71	15.52	35.63	29.24	839	13.72	6.76	22.28	168.99	36.02	4001.00	13.74
		40	18.88	15.14	15.32	34.02	29.24	839	13.92	6.76	22.08	161.32	36.02	4002.00	13.95
2462		37	21.33	19.28	16.09	40.61	29.24	839	13.15	6.76	22.85	192.57	36.02	4000.00	13.17
		38	20.42	17.91	15.83	38.32	29.24	839	13.41	6.76	22.59	181.75	36.02	4001.00	13.43
		40	18.16	15.28	15.24	33.43	29.24	839	14.00	6.76	22.00	158.54	36.02	4002.00	14.02

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. [MHz]	RU Type	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
2412	52-tone RU	37	1.94	0.87	9.75	12.56	18.03
		38	1.72	0.87	9.75	12.34	17.14
		40	1.60	0.87	9.75	12.22	16.67
2437		37	2.73	0.87	9.75	13.35	21.63
		38	2.15	0.87	9.75	12.77	18.92
		40	2.14	0.87	9.75	12.76	18.88
2462		37	2.67	0.87	9.75	13.29	21.33
		38	2.48	0.87	9.75	13.10	20.42
		40	1.97	0.87	9.75	12.59	18.16

Antenna 2

Freq. [MHz]	RU Type	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
2412	52-tone RU	37	1.76	0.87	9.75	12.38	17.30
		38	1.07	0.87	9.75	11.69	14.76
		40	0.91	0.87	9.75	11.53	14.22
2437		37	2.13	0.87	9.75	12.75	18.84
		38	1.61	0.87	9.75	12.23	16.71
		40	1.18	0.87	9.75	11.80	15.14
2462		37	2.23	0.87	9.75	12.85	19.28
		38	1.91	0.87	9.75	12.53	17.91
		40	1.22	0.87	9.75	11.84	15.28

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

Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 25, 2021
Temperature / Humidity 23 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (106-tone RU)

Antenna 1 + Antenna 2			Conducted Power							c.i.r.p.					
Freq. [MHz]	RU Type	RU Index	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]			
2412	106-tone RU	53	38.99	34.28	18.65	73.27	29.24	839	10.59	6.76	25.41	347.48	36.02	4000.00	10.61
		54	37.84	34.43	18.59	72.28	29.24	839	10.65	6.76	25.35	342.78	36.02	4002.00	10.67
2437		53	42.27	37.07	18.99	79.33	29.24	839	10.25	6.76	25.75	376.24	36.02	4000.00	10.27
		54	41.02	36.90	18.92	77.92	29.24	839	10.32	6.76	25.68	369.52	36.02	4002.00	10.35
2462		53	43.95	37.50	19.11	81.45	29.24	839	10.13	6.76	25.87	386.28	36.02	4000.00	10.15
		54	42.66	37.50	19.04	80.16	29.24	839	10.20	6.76	25.80	380.13	36.02	4002.00	10.22

Sample Calculation:
Result = Antenna 1 + Antenna 2
c.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]	RU Type	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
2412	106-tone RU	53	5.29	0.87	9.75	15.91	38.99
		54	5.16	0.87	9.75	15.78	37.84
2437		53	5.64	0.87	9.75	16.26	42.27
		54	5.51	0.87	9.75	16.13	41.02
2462		53	5.81	0.87	9.75	16.43	43.95
		54	5.68	0.87	9.75	16.30	42.66

Antenna 2							
Freq. [MHz]	RU Type	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
2412	106-tone RU	53	4.73	0.87	9.75	15.35	34.28
		54	4.75	0.87	9.75	15.37	34.43
2437		53	5.07	0.87	9.75	15.69	37.07
		54	5.05	0.87	9.75	15.67	36.90
2462		53	5.12	0.87	9.75	15.74	37.50
		54	5.12	0.87	9.75	15.74	37.50

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

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Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 25, 2021
Temperature / Humidity 23 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (242-tone RU)

Antenna 1 + Antenna 2			Conducted Power					e.i.r.p.					
Freq. [MHz]	Antenna 1 Result [mW]	Antenna 2 Result [mW]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
2412	87.70	82.22	22.30	169.92	29.24	839	6.94	6.76	29.06	805.85	36.02	4000.00	6.96
2437	100.46	89.54	22.79	190.00	29.24	839	6.45	6.76	29.55	901.05	36.02	4000.00	6.47
2462	98.17	95.94	22.88	194.11	29.24	839	6.36	6.76	29.64	920.57	36.02	4000.00	6.38

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	8.81	0.87	9.75	19.43	87.70
2437	9.40	0.87	9.75	20.02	100.46
2462	9.30	0.87	9.75	19.92	98.17

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
				[dBm]	[mW]
2412	8.53	0.87	9.75	19.15	82.22
2437	8.90	0.87	9.75	19.52	89.54
2462	9.20	0.87	9.75	19.82	95.94

Sample Calculation:

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

Maximum Peak Output Power

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 14, 2021 January 15, 2021
Temperature / Humidity 22 deg. C / 36 % RH 22 deg. C / 36 % RH
Engineer Nachi Konegawa Nachi Konegawa
BT1 BT2
Mode Tx BT LE

BT1					Conducted Power					e.i.r.p. for RSS-247					
Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
1M-PHY	2402	-9.91	0.50	9.75	0.34	1.08	30.00	1000	29.66	5.80	6.14	4.11	36.02	4000	29.88
	2440	-9.93	0.50	9.75	0.32	1.08	30.00	1000	29.68	5.80	6.12	4.09	36.02	4000	29.90
	2480	-9.96	0.50	9.75	0.29	1.07	30.00	1000	29.71	5.80	6.09	4.06	36.02	4000	29.93
2M-PHY	2402	-9.92	0.50	9.75	0.33	1.08	30.00	1000	29.67	5.80	6.13	4.10	36.02	4000	29.89
	2440	-9.94	0.50	9.75	0.31	1.07	30.00	1000	29.69	5.80	6.11	4.08	36.02	4000	29.91
	2480	-9.95	0.50	9.75	0.30	1.07	30.00	1000	29.70	5.80	6.10	4.07	36.02	4000	29.92

BT2					Conducted Power					e.i.r.p. for RSS-247					
Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
1M-PHY	2402	-8.80	0.50	9.75	1.45	1.40	30.00	1000	28.55	5.80	7.25	5.31	36.02	4000	28.77
	2440	-8.89	0.50	9.75	1.36	1.37	30.00	1000	28.64	5.80	7.16	5.20	36.02	4000	28.86
	2480	-9.00	0.50	9.75	1.25	1.33	30.00	1000	28.75	5.80	7.05	5.07	36.02	4000	28.97
2M-PHY	2402	-8.81	0.50	9.75	1.44	1.39	30.00	1000	28.56	5.80	7.24	5.30	36.02	4000	28.78
	2440	-8.89	0.50	9.75	1.36	1.37	30.00	1000	28.64	5.80	7.16	5.20	36.02	4000	28.86
	2480	-8.99	0.50	9.75	1.26	1.34	30.00	1000	28.74	5.80	7.06	5.08	36.02	4000	28.96

Sample Calculation:

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

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

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

Average Output Power
(Reference data for RF Exposure)

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 18, 2021
Temperature / Humidity 21 deg. C / 45 % RH
Engineer Junya Okuno
Mode Tx 11b

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result (Burst average)	
	Result [mW]	Result [mW]	[dBm]	[mW]
2412	5.20	4.71	13.89	9.91
2437	5.73	5.09	14.65	10.82
2462	5.94	5.26	14.95	11.20

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	-3.12	0.50	9.78	7.16	5.20	0.00	7.16	5.20
2437	-2.70	0.50	9.78	7.58	5.73	0.00	7.58	5.73
2462	-2.54	0.50	9.78	7.74	5.94	0.00	7.74	5.94

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	-3.74	0.50	9.97	6.73	4.71	0.00	6.73	4.71
2437	-3.41	0.50	9.98	7.07	5.09	0.00	7.07	5.09
2462	-3.27	0.50	9.98	7.21	5.26	0.00	7.21	5.26

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. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 18, 2021
Temperature / Humidity 21 deg. C / 45 % RH
Engineer Junya Okuno
Mode Tx 11g

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result (Burst average)	
	Result [mW]	Result [mW]	[dBm]	[mW]
2412	5.74	5.45	14.95	11.19
2437	6.31	5.85	15.67	12.16
2462	6.62	5.93	15.94	12.55

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	-2.71	0.50	9.78	7.57	5.71	0.02	7.59	5.74
2437	-2.30	0.50	9.78	7.98	6.28	0.02	8.00	6.31
2462	-2.09	0.50	9.78	8.19	6.59	0.02	8.21	6.62

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	-3.13	0.50	9.97	7.34	5.42	0.02	7.36	5.45
2437	-2.83	0.50	9.98	7.65	5.82	0.02	7.67	5.85
2462	-2.77	0.50	9.98	7.71	5.90	0.02	7.73	5.93

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. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 18, 2021
Temperature / Humidity 21 deg. C / 45 % RH
Engineer Junya Okuno
Mode Tx 11n-20

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result (Burst average)	
	Result [mW]	Result [mW]	[dBm]	[mW]
2412	5.79	5.45	14.99	11.24
2437	6.35	5.82	15.68	12.17
2462	6.62	5.93	15.94	12.55

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	-2.68	0.50	9.78	7.60	5.75	0.03	7.63	5.79
2437	-2.28	0.50	9.78	8.00	6.31	0.03	8.03	6.35
2462	-2.10	0.50	9.78	8.18	6.58	0.03	8.21	6.62

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	-3.14	0.50	9.97	7.33	5.41	0.03	7.36	5.45
2437	-2.86	0.50	9.98	7.62	5.78	0.03	7.65	5.82
2462	-2.78	0.50	9.98	7.70	5.89	0.03	7.73	5.93

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. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 18, 2021
Temperature / Humidity 21 deg. C / 45 % RH
Engineer Junya Okuno
Mode Tx 11ax-20 (OFDM)

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result (Burst average)	
	Result [mW]	Result [mW]	[dBm]	[mW]
2412	6.22	6.07	15.77	12.29
2437	6.85	6.70	16.62	13.55
2462	7.19	7.03	17.04	14.23

11ax-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	-2.37	0.50	9.78	7.91	6.18	0.03	7.94	6.22
2437	-1.95	0.50	9.78	8.33	6.81	0.03	8.36	6.85
2462	-1.74	0.50	9.78	8.54	7.14	0.03	8.57	7.19

11ax-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	-2.67	0.50	9.97	7.80	6.03	0.03	7.83	6.07
2437	-2.25	0.50	9.98	8.23	6.65	0.03	8.26	6.70
2462	-2.04	0.50	9.98	8.44	6.98	0.03	8.47	7.03

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. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 25, 2021
Temperature / Humidity 23 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (242-tone RU)

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result (Burst average)	
	Result [mW]	Result [mW]	[dBm]	[mW]
2412	6.37	5.77	15.65	12.14
2437	7.05	6.27	16.45	13.31
2462	7.06	6.40	16.55	13.46

11ax-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	-2.83	0.87	9.75	7.79	6.01	0.25	8.04	6.37
2437	-2.39	0.87	9.75	8.23	6.65	0.25	8.48	7.05
2462	-2.38	0.87	9.75	8.24	6.67	0.25	8.49	7.06

11ax-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	-3.26	0.87	9.75	7.36	5.45	0.25	7.61	5.77
2437	-2.90	0.87	9.75	7.72	5.92	0.25	7.97	6.27
2462	-2.81	0.87	9.75	7.81	6.04	0.25	8.06	6.40

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. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 14, 2021
Temperature / Humidity 22 deg. C / 36 % RH
Engineer Nachi Konegawa
Mode Tx BT LE

BT1

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]
1M-PHY	2402	-12.15	0.50	9.75	-1.90	0.65	2.01	0.11	1.03
	2440	-12.16	0.50	9.75	-1.91	0.64	2.01	0.10	1.02
	2480	-12.19	0.50	9.75	-1.94	0.64	2.01	0.07	1.02
2M-PHY	2402	-14.95	0.50	9.75	-4.70	0.34	4.74	0.04	1.01
	2440	-14.95	0.50	9.75	-4.70	0.34	4.74	0.04	1.01
	2480	-14.98	0.50	9.75	-4.73	0.34	4.74	0.01	1.00

BT2

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]
1M-PHY	2402	-11.00	0.50	9.75	-0.75	0.84	2.01	1.26	1.34
	2440	-11.10	0.50	9.75	-0.85	0.82	2.01	1.16	1.31
	2480	-11.21	0.50	9.75	-0.96	0.80	2.01	1.05	1.27
2M-PHY	2402	-13.78	0.50	9.75	-3.53	0.44	4.74	1.21	1.32
	2440	-13.87	0.50	9.75	-3.62	0.43	4.74	1.12	1.29
	2480	-13.98	0.50	9.75	-3.73	0.42	4.74	1.01	1.26

Sample Calculation:

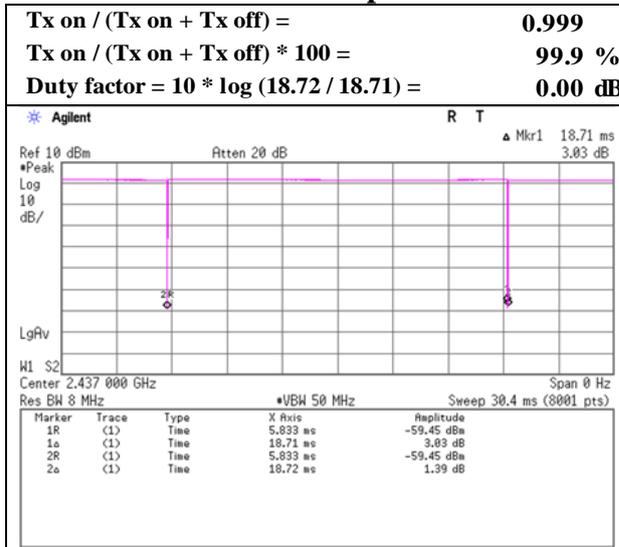
Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

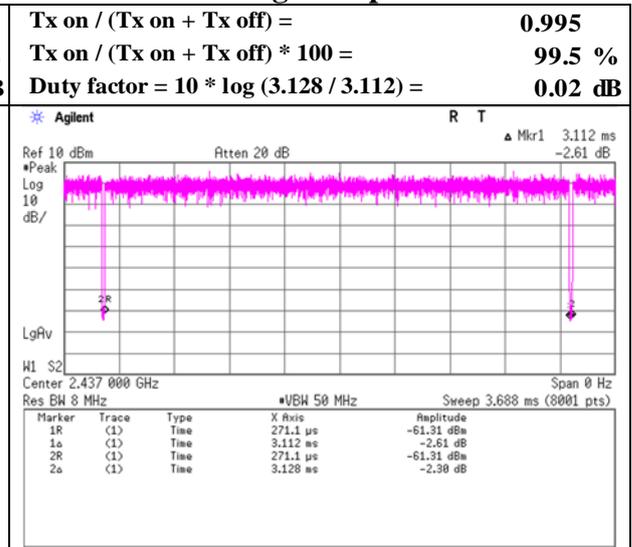
Burst rate confirmation

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 18, 2021
 Temperature / Humidity 21 deg. C / 45 % RH
 Engineer Junya Okuno
 Mode Tx

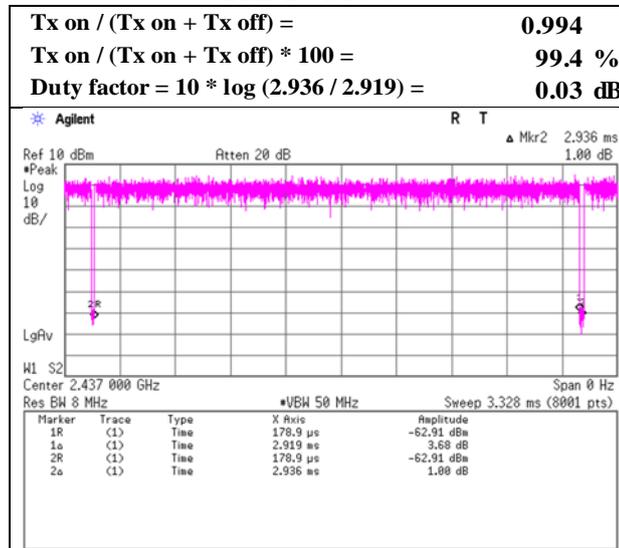
11b 1 Mbps



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.

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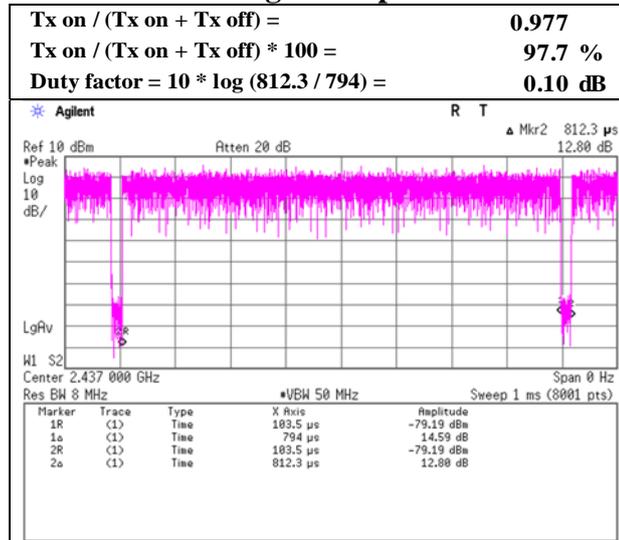
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

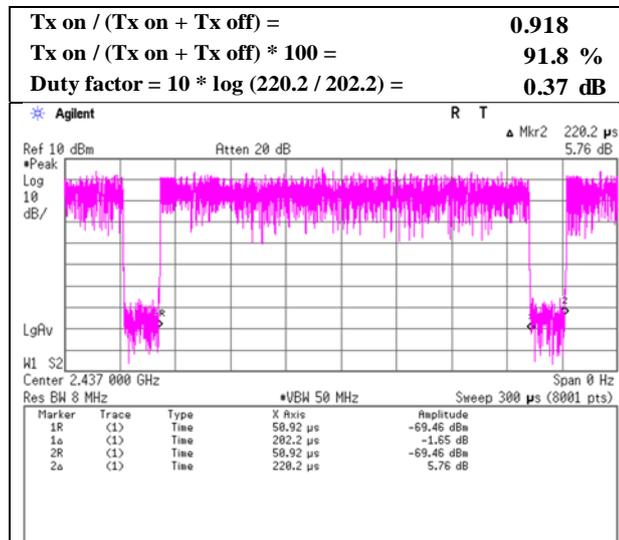
Burst rate confirmation

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 18, 2021
Temperature / Humidity 21 deg. C / 45 % RH
Engineer Junya Okuno
Mode Tx

11g 24 Mbps



11n-20 MCS 14



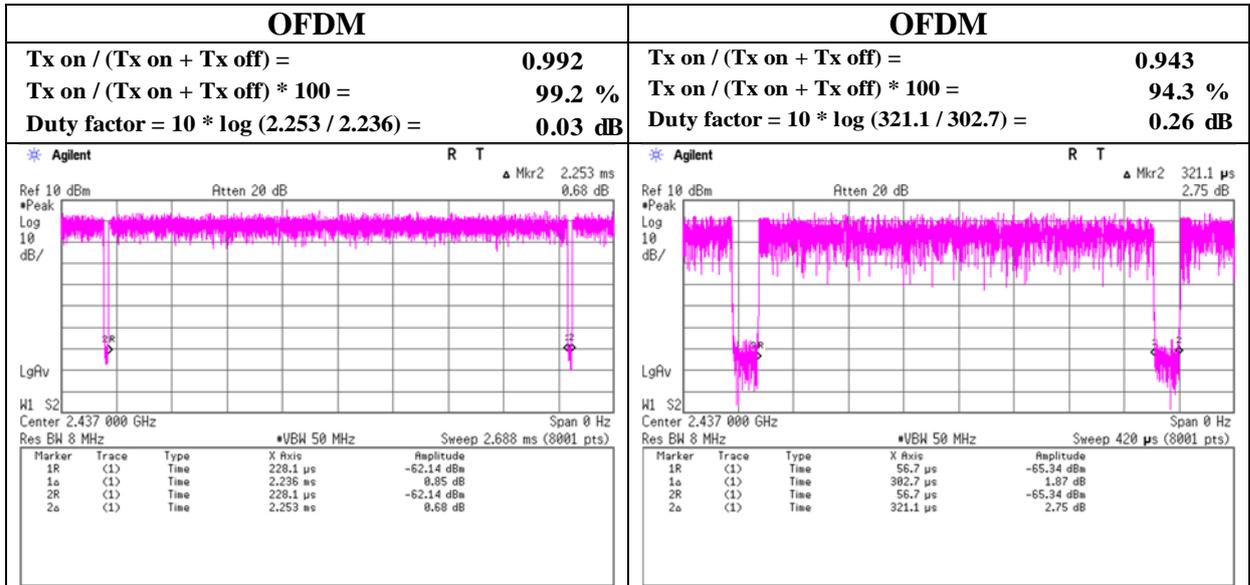
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 18, 2021
Temperature / Humidity 21 deg. C / 45 % RH
Engineer Junya Okuno
Mode Tx

11ax-20 MCS 0

11ax-20 MCS 6



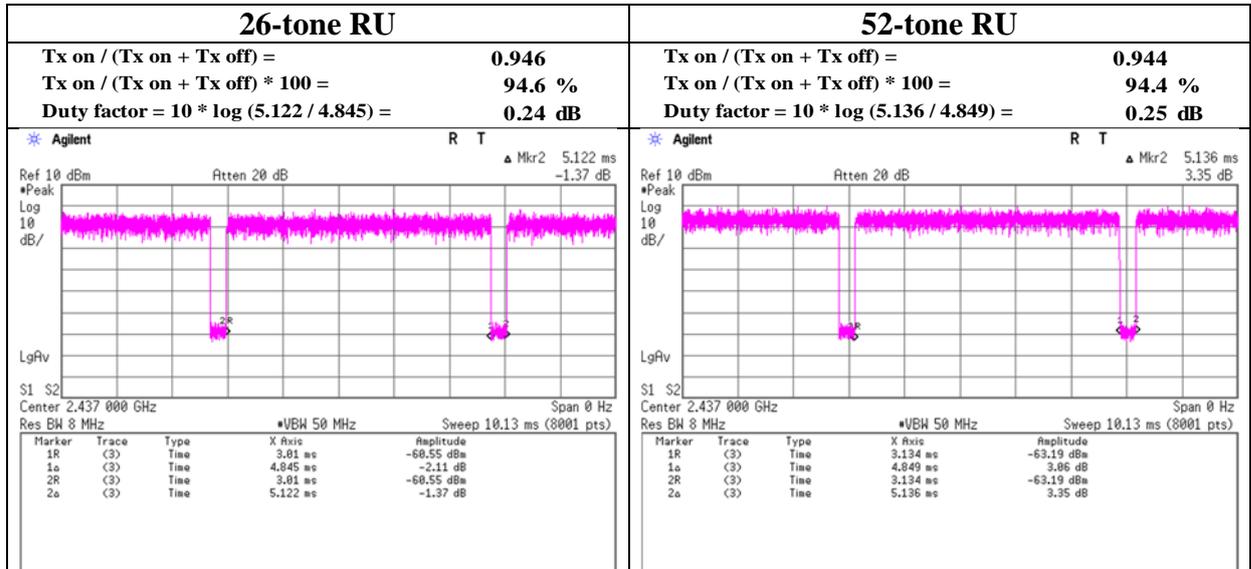
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 25, 2021
 Temperature / Humidity 23 deg. C / 42 % RH
 Engineer Hiroyuki Furutaka
 Mode Tx

11ax-20 MCS 6

11ax-20 MCS 6

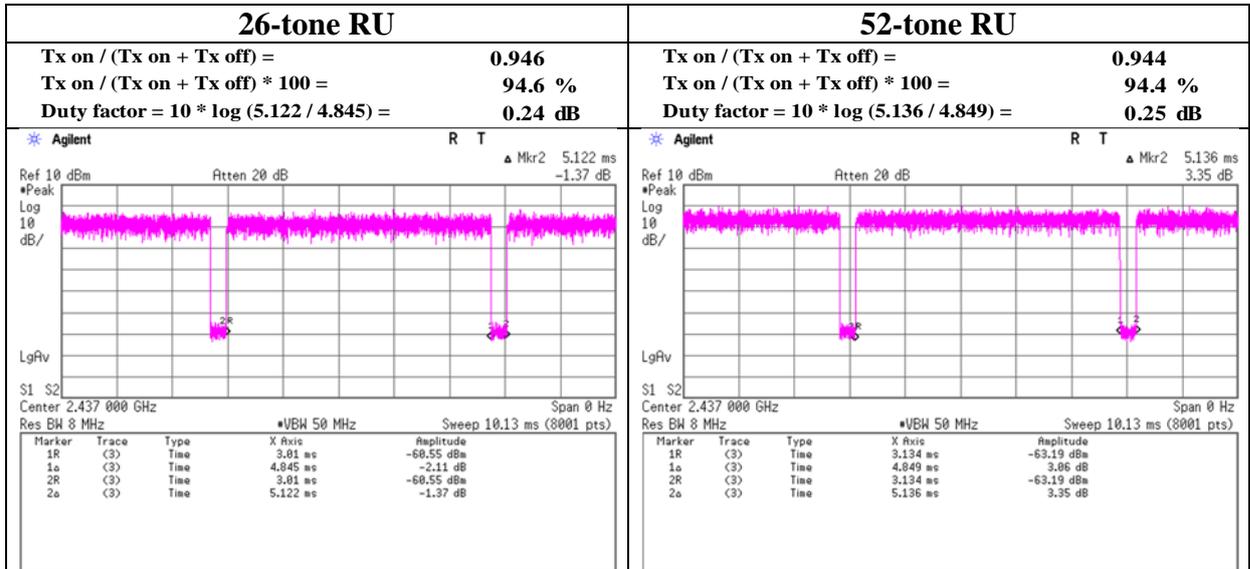


Burst rate confirmation

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 25, 2021
Temperature / Humidity 23 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx

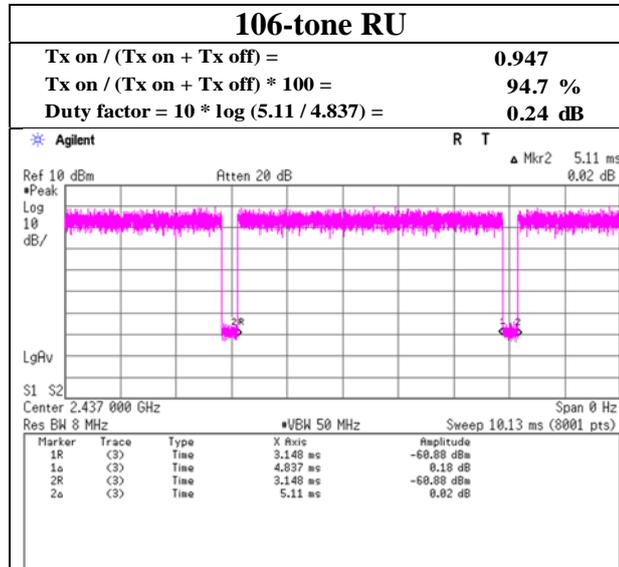
11ax-20 MCS 6

11ax-20 MCS 6



11ax-20 MCS 6

106-tone RU



* 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

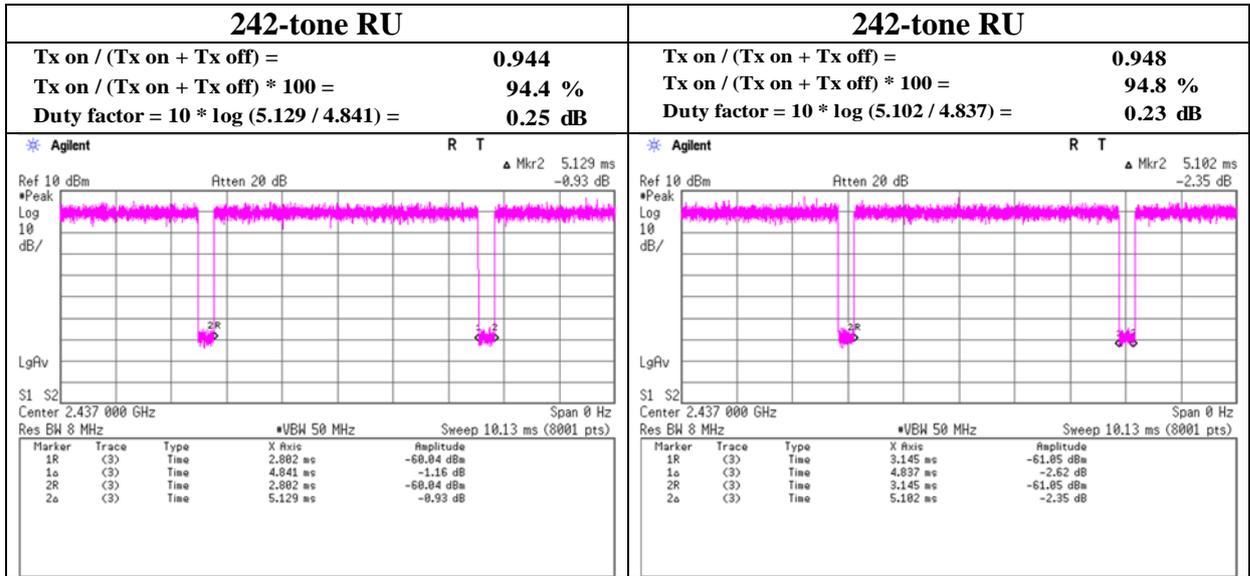
Facsimile : +81 596 24 8124

Burst rate confirmation

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 25, 2021
 Temperature / Humidity 23 deg. C / 42 % RH
 Engineer Hiroyuki Furutaka
 Mode Tx

11ax-20 MCS 0

11ax-20 MCS 6



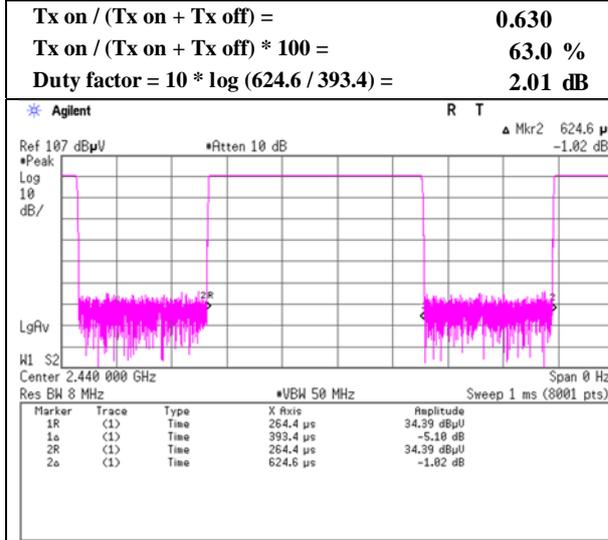
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

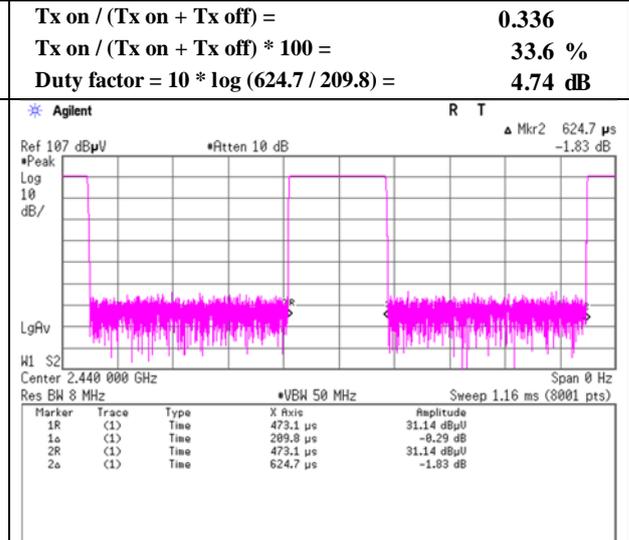
Report No.	13671144H	
Test place	Ise EMC Lab. No.8 Measurement Room	
Date	January 14, 2021	January 15, 2021
Temperature / Humidity	22 deg. C / 36 % RH	22 deg. C / 36 % RH
Engineer	Nachi Konegawa	Nachi Konegawa
	BT1	BT2
Mode	Tx BT LE	

BT1

BT LE 1M-PHY

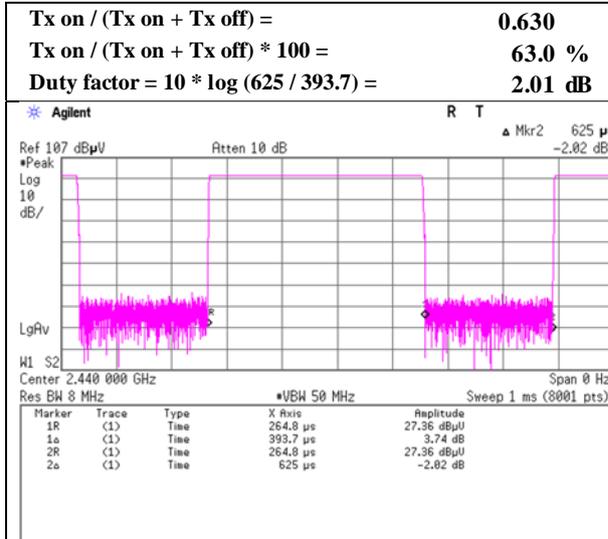


BT LE 2M-PHY

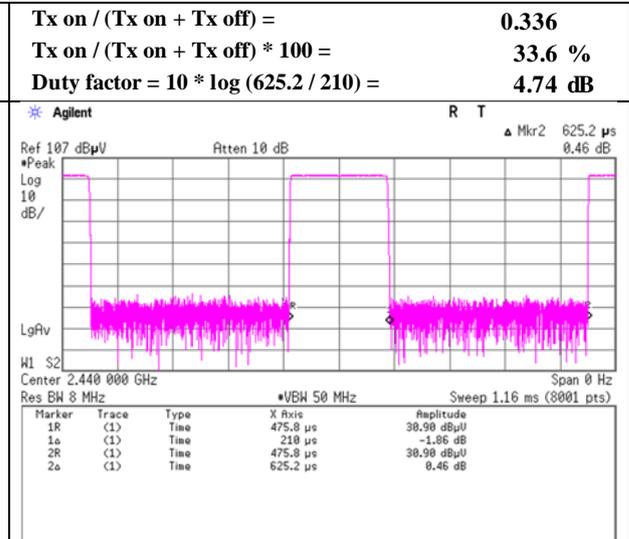


BT2

BT LE 1M-PHY



BT LE 2M-PHY



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

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 22, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa (1 GHz - 10 GHz)	Takeshi Hiyaji (10 GHz - 18 GHz)	Yuta Moriya (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	43.4	27.5	5.6	32.7	-	43.8	73.9	30.1	
Hori.	4824.000	PK	41.8	31.7	6.9	31.7	-	48.8	73.9	25.1	Floor noise
Hori.	7236.000	PK	42.5	36.1	8.1	32.6	-	54.1	73.9	19.8	Floor noise
Hori.	9648.000	PK	43.9	38.7	9.0	33.3	-	58.3	73.9	15.6	Floor noise
Hori.	2390.000	AV	34.7	27.5	5.6	32.7	-	35.1	53.9	18.8	
Hori.	4824.000	AV	30.6	31.7	6.9	31.7	-	37.5	53.9	16.4	Floor noise
Hori.	7236.000	AV	31.9	36.1	8.1	32.6	-	43.5	53.9	10.4	Floor noise
Hori.	9648.000	AV	32.9	38.7	9.0	33.3	-	47.3	53.9	6.6	Floor noise
Vert.	2390.000	PK	43.5	27.5	5.6	32.7	-	43.9	73.9	30.0	
Vert.	4824.000	PK	41.6	31.7	6.9	31.7	-	48.5	73.9	25.4	Floor noise
Vert.	7236.000	PK	43.5	36.1	8.1	32.6	-	55.1	73.9	18.8	Floor noise
Vert.	9648.000	PK	43.9	38.7	9.0	33.3	-	58.3	73.9	15.6	Floor noise
Vert.	2390.000	AV	35.2	27.5	5.6	32.7	-	35.6	53.9	18.3	
Vert.	4824.000	AV	32.8	31.7	6.9	31.7	-	39.7	53.9	14.2	Floor noise
Vert.	7236.000	AV	34.3	36.1	8.1	32.6	-	45.9	53.9	8.0	Floor noise
Vert.	9648.000	AV	32.9	38.7	9.0	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)

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

Distance factor: 1 GHz - 10 GHz 20log(4 m / 3.0 m) = 2.5 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	92.3	27.5	5.6	32.7	92.6	-	-	Carrier
Hori.	2398.967	PK	44.0	27.5	5.6	32.7	44.3	72.6	28.3	
Hori.	2400.000	PK	34.6	27.5	5.6	32.7	34.9	72.6	37.7	
Vert.	2412.000	PK	94.8	27.5	5.6	32.7	95.2	-	-	Carrier
Vert.	2398.967	PK	47.2	27.5	5.6	32.7	47.6	75.2	27.6	
Vert.	2400.000	PK	36.1	27.5	5.6	32.7	36.4	75.2	38.7	

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

UL Japan, Inc.

Ise EMC Lab.

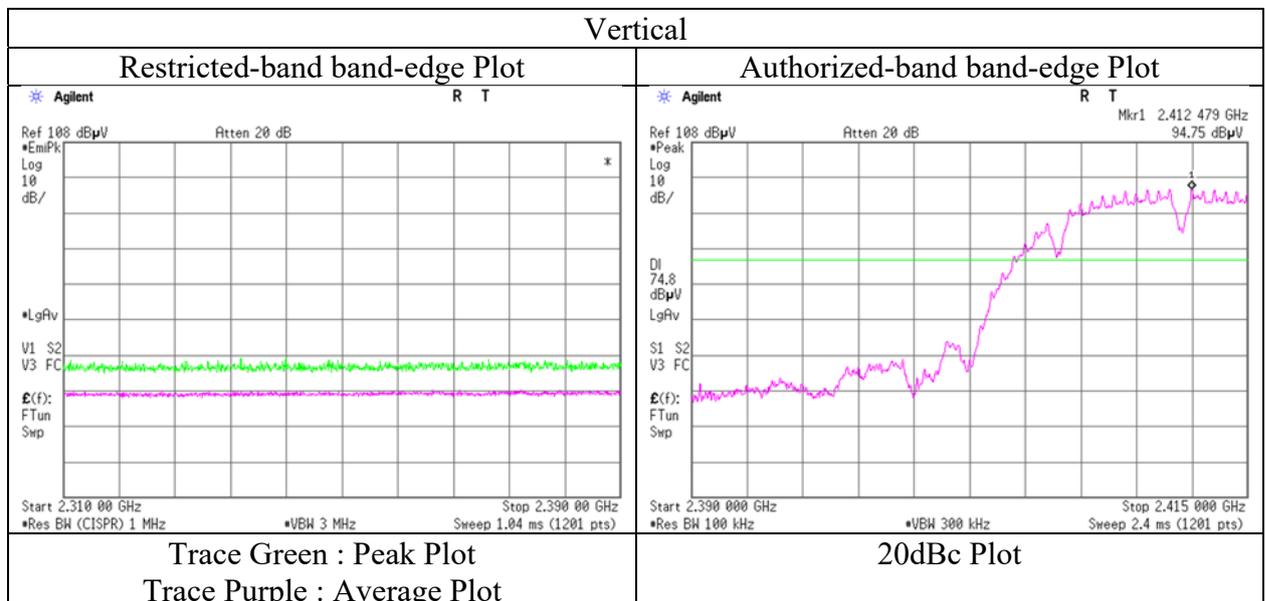
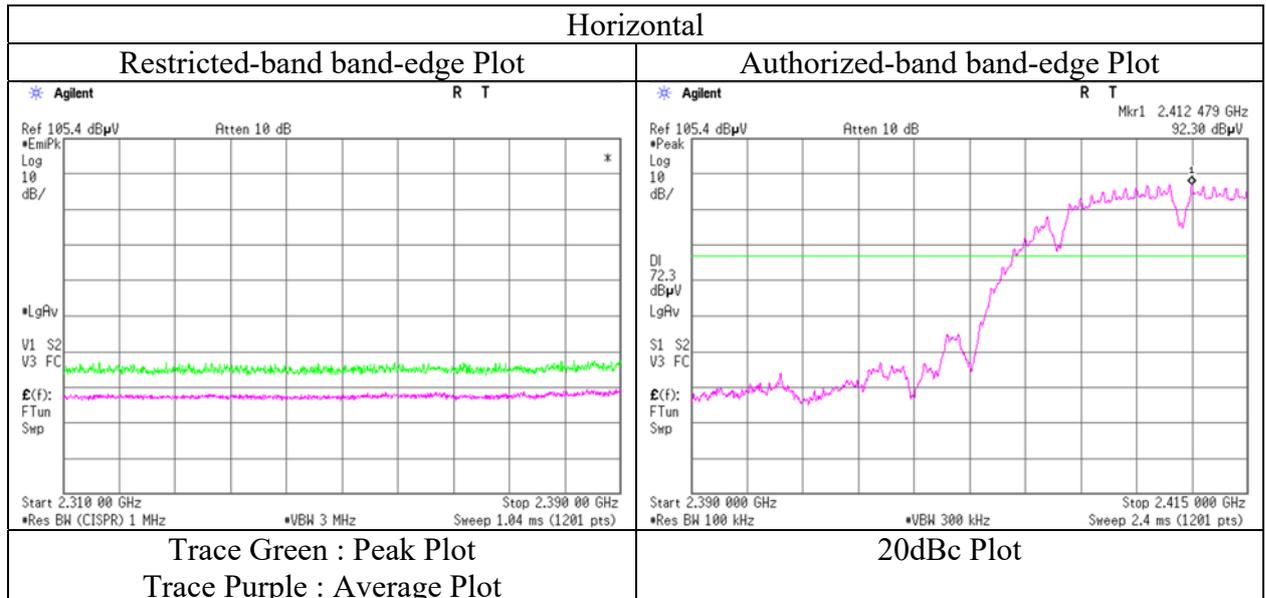
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	13671144H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 22, 2021
Temperature / Humidity	22 deg. C / 37 % RH
Engineer	Tomohisa Nakagawa (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.

Radiated Spurious Emission

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 22, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa (1 GHz - 10 GHz)	Takeshi Hiyaji (10 GHz - 18 GHz)	Yuta Moriya (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	41.4	31.5	7.7	31.6	-	48.9	73.9	25.0	Floor noise
Hori.	7311.000	PK	42.8	36.2	9.1	32.6	-	55.4	73.9	18.5	Floor noise
Hori.	9748.000	PK	42.9	39.0	9.6	33.4	-	58.1	73.9	15.8	Floor noise
Hori.	4874.000	AV	32.6	31.5	7.7	31.6	-	40.1	53.9	13.8	Floor noise
Hori.	7311.000	AV	34.2	36.2	9.1	32.6	-	46.8	53.9	7.1	Floor noise
Hori.	9748.000	AV	32.7	39.0	9.6	33.4	-	47.9	53.9	6.0	Floor noise
Vert.	4874.000	PK	41.3	31.5	7.7	31.6	-	48.9	73.9	25.0	Floor noise
Vert.	7311.000	PK	43.2	36.2	9.1	32.6	-	55.8	73.9	18.1	Floor noise
Vert.	9748.000	PK	42.7	39.0	9.6	33.4	-	57.9	73.9	16.0	Floor noise
Vert.	4874.000	AV	32.4	31.5	7.7	31.6	-	39.9	53.9	14.0	Floor noise
Vert.	7311.000	AV	33.8	36.2	9.1	32.6	-	46.5	53.9	7.4	Floor noise
Vert.	9748.000	AV	32.7	39.0	9.6	33.4	-	47.9	53.9	6.0	Floor noise

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

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

Distance factor: 1 GHz - 10 GHz $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 22, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa (1 GHz - 10 GHz)	Takeshi Hiyaji (10 GHz - 18 GHz)	Yuta Moriya (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	43.1	27.3	5.7	32.7	-	43.4	73.9	30.5	
Hori.	4924.000	PK	39.9	31.4	7.7	31.6	-	47.4	73.9	26.6	Floor noise
Hori.	7386.000	PK	41.5	36.2	9.1	32.7	-	54.1	73.9	19.8	Floor noise
Hori.	9848.000	PK	44.1	38.9	9.6	33.4	-	59.1	73.9	14.8	Floor noise
Hori.	2483.500	AV	34.9	27.3	5.7	32.7	-	35.2	53.9	18.7	
Hori.	4924.000	AV	32.3	31.4	7.7	31.6	-	39.7	53.9	14.2	Floor noise
Hori.	7386.000	AV	31.6	36.2	9.1	32.7	-	44.3	53.9	9.6	Floor noise
Hori.	9848.000	AV	32.6	38.9	9.6	33.4	-	47.6	53.9	6.3	Floor noise
Vert.	2483.500	PK	42.8	27.3	5.7	32.7	-	43.1	73.9	30.9	
Vert.	4924.000	PK	40.6	31.4	7.7	31.6	-	48.1	73.9	25.8	Floor noise
Vert.	7386.000	PK	42.4	36.2	9.1	32.7	-	55.0	73.9	18.9	Floor noise
Vert.	9848.000	PK	43.0	38.9	9.6	33.4	-	58.0	73.9	15.9	Floor noise
Vert.	2483.500	AV	32.4	27.3	5.7	32.7	-	32.7	53.9	21.2	
Vert.	4924.000	AV	29.9	31.4	7.7	31.6	-	37.3	53.9	16.6	Floor noise
Vert.	7386.000	AV	32.0	36.2	9.1	32.7	-	44.6	53.9	9.3	Floor noise
Vert.	9848.000	AV	32.5	38.9	9.6	33.4	-	47.5	53.9	6.4	Floor noise

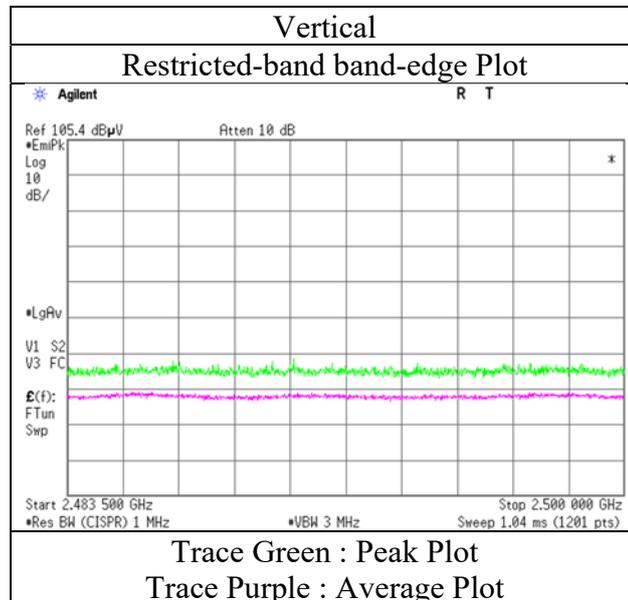
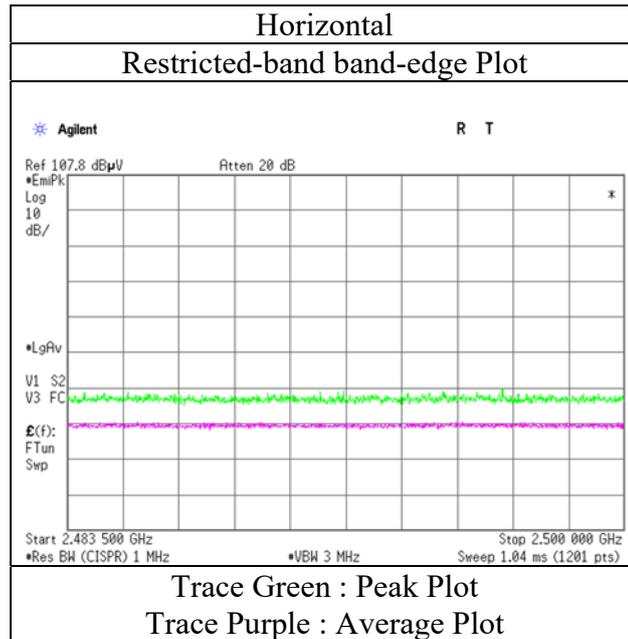
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

*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(4 m / 3.0 m) = 2.5 dB
 10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 22, 2021
Temperature / Humidity 22 deg. C / 37 % RH
Engineer Tomohisa Nakagawa
(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.

Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 22, 2021 January 29, 2021 January 31, 2021
Temperature / Humidity 22 deg. C / 37 % RH 20 deg. C / 32 % RH 22 deg. C / 23 % RH
Engineer Tomohisa Nakagawa Takeshi Hiyaji Yuta Moriya
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11ax-20 OFDM 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	56.1	27.5	5.6	32.7	-	56.5	73.9	17.4	
Hori.	4824.000	PK	42.6	31.7	7.7	31.7	-	50.3	73.9	23.6	Floor noise
Hori.	7236.000	PK	41.8	36.1	9.1	32.6	-	54.3	73.9	19.6	Floor noise
Hori.	9648.000	PK	43.1	38.7	9.6	33.3	-	58.1	73.9	15.8	Floor noise
Hori.	2390.000	AV	42.6	27.5	5.6	32.7	0.3	43.3	53.9	10.6	*1)
Hori.	4824.000	AV	30.7	31.7	7.7	31.7	-	38.4	53.9	15.5	Floor noise
Hori.	7236.000	AV	31.8	36.1	9.1	32.6	-	44.3	53.9	9.6	Floor noise
Hori.	9648.000	AV	32.9	38.7	9.6	33.3	-	47.8	53.9	6.1	Floor noise
Vert.	2390.000	PK	55.4	27.5	5.6	32.7	-	55.7	73.9	18.2	
Vert.	4824.000	PK	40.2	31.7	7.7	31.7	-	47.9	73.9	26.0	Floor noise
Vert.	7236.000	PK	41.8	36.1	9.1	32.6	-	54.3	73.9	19.6	Floor noise
Vert.	9648.000	PK	44.3	38.7	9.6	33.3	-	59.2	73.9	14.7	Floor noise
Vert.	2390.000	AV	41.5	27.5	5.6	32.7	0.3	42.2	53.9	11.8	*1)
Vert.	4824.000	AV	30.3	31.7	7.7	31.7	-	38.0	53.9	15.9	Floor noise
Vert.	7236.000	AV	32.2	36.1	9.1	32.6	-	44.7	53.9	9.2	Floor noise
Vert.	9648.000	AV	32.6	38.7	9.6	33.3	-	47.6	53.9	6.3	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(4 m / 3.0 m) = 2.5 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	93.0	27.5	5.6	32.7	93.4	-	-	Carrier
Hori.	2400.000	PK	51.2	27.5	5.6	32.7	51.6	73.4	21.8	
Vert.	2412.000	PK	92.3	27.5	5.6	32.7	92.7	-	-	Carrier
Vert.	2400.000	PK	50.3	27.5	5.6	32.7	50.6	72.7	22.0	

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

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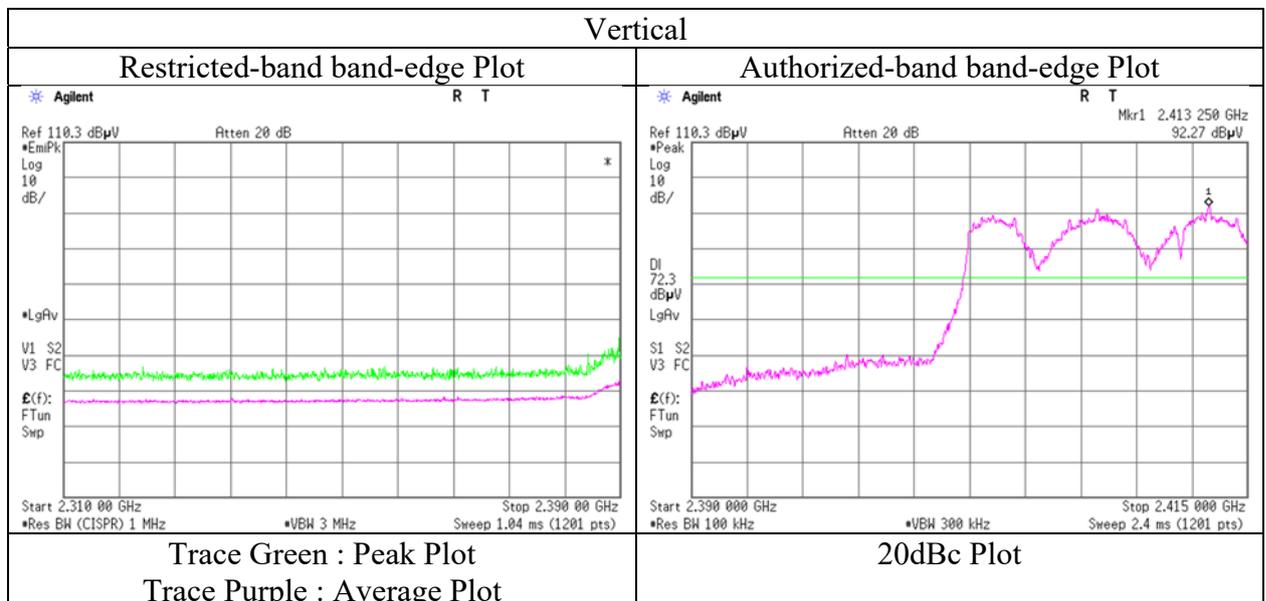
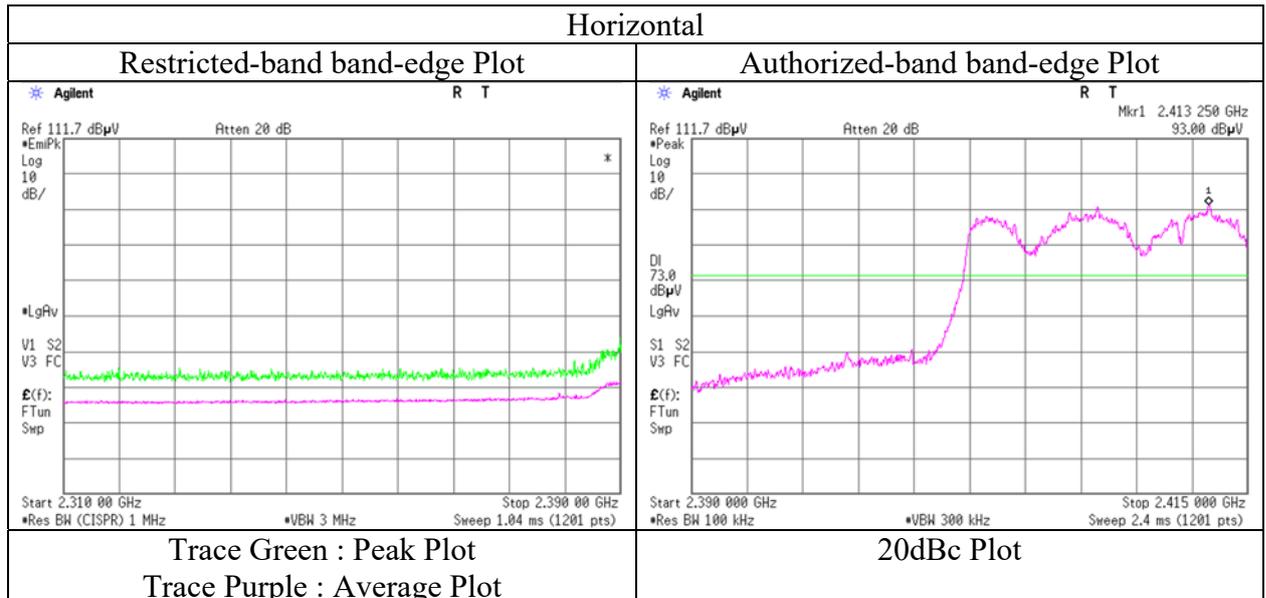
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Facsimile : +81 596 24 8124

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 22, 2021
Temperature / Humidity 22 deg. C / 37 % RH
Engineer Tomohisa Nakagawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDM 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.

Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	42.8	27.5	5.6	32.7	-	43.2	73.9	30.7	
Hori.	2390.000	AV	33.9	27.5	5.6	32.7	0.2	34.5	53.9	19.4	*1)
Vert.	2390.000	PK	42.7	27.5	5.6	32.7	-	43.1	73.9	30.9	
Vert.	2390.000	AV	33.6	27.5	5.6	32.7	0.2	34.2	53.9	19.7	*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 $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
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)

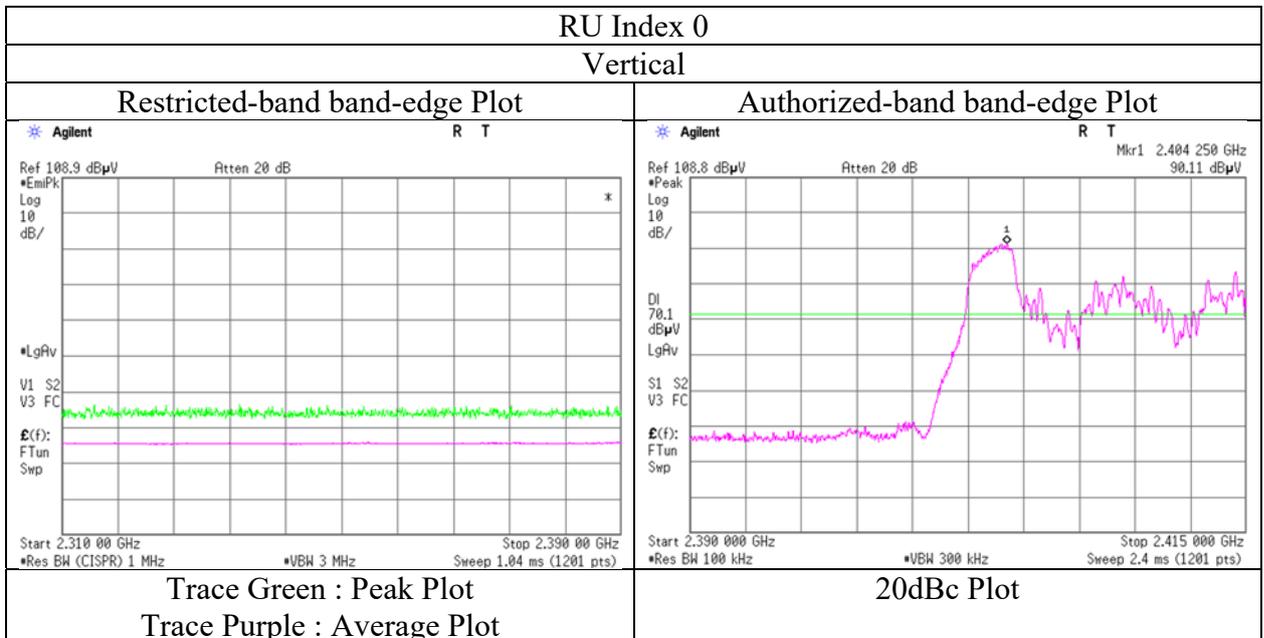
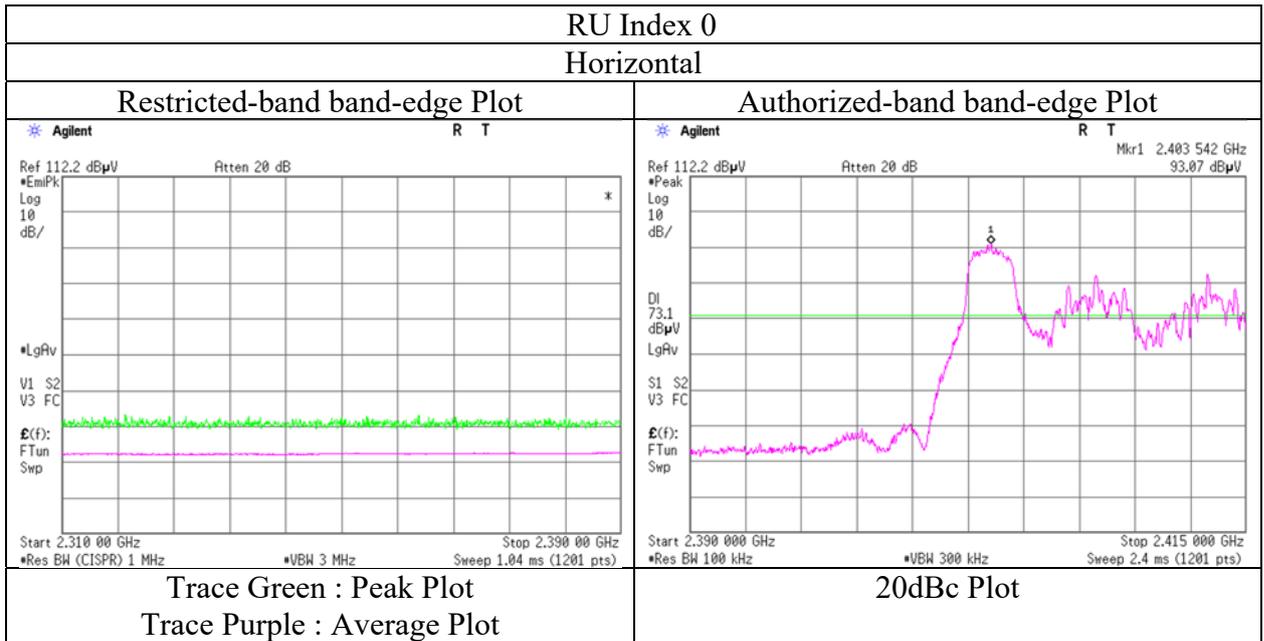
20dBc Data Sheet

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	93.1	27.5	5.6	32.7	93.4	-	-	Carrier
Hori.	2400.000	PK	42.3	27.5	5.6	32.7	42.6	73.4	30.8	
Vert.	2412.000	PK	90.1	27.5	5.6	32.7	90.5	-	-	Carrier
Vert.	2400.000	PK	40.9	27.5	5.6	32.7	41.2	70.5	29.2	

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	44.8	27.5	5.6	32.7	-	45.2	73.9	28.7	
Hori.	2390.000	AV	32.3	27.5	5.6	32.7	0.3	33.0	53.9	20.9	*1)
Vert.	2390.000	PK	46.2	27.5	5.6	32.7	-	46.6	73.9	27.3	
Vert.	2390.000	AV	34.5	27.5	5.6	32.7	0.3	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 $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
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)

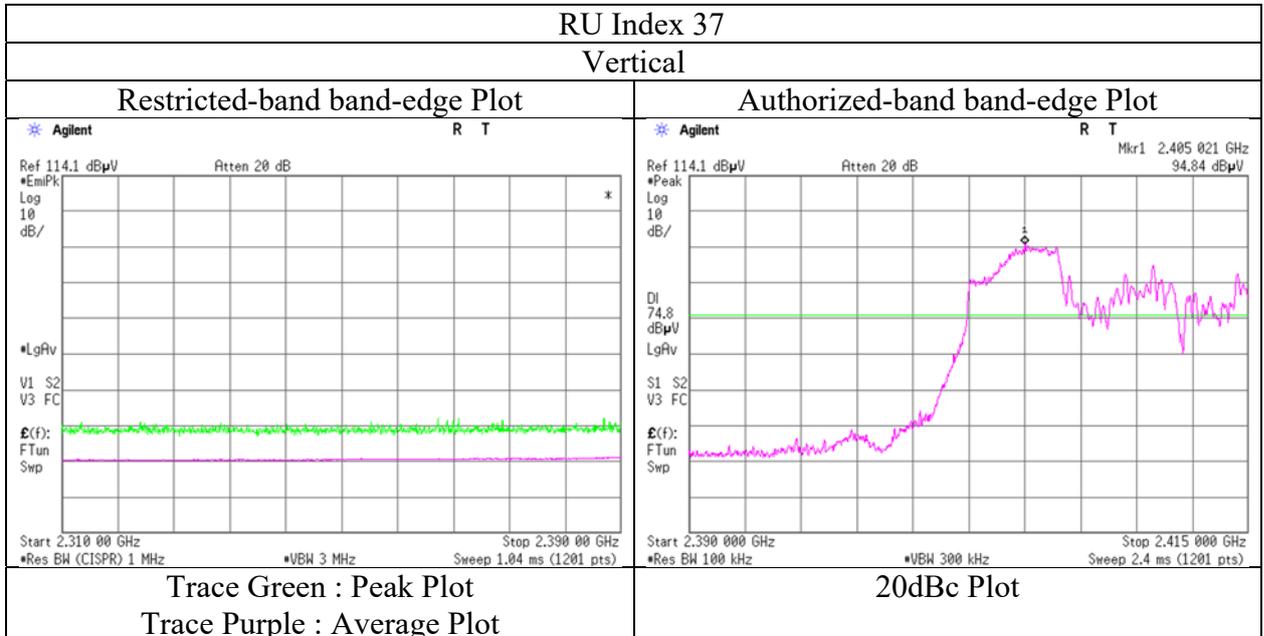
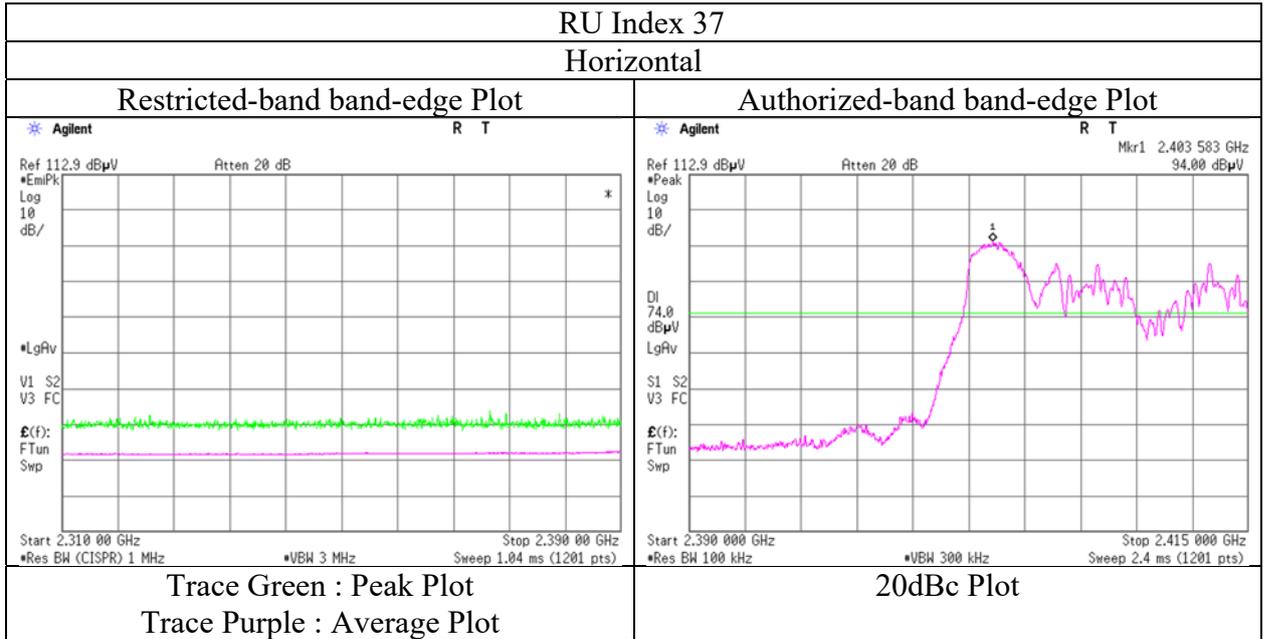
20dBc Data Sheet

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	94.0	27.5	5.6	32.7	94.4	-	-	Carrier
Hori.	2400.000	PK	44.5	27.5	5.6	32.7	44.8	74.4	29.5	
Vert.	2412.000	PK	94.8	27.5	5.6	32.7	95.2	-	-	Carrier
Vert.	2400.000	PK	45.3	27.5	5.6	32.7	45.7	75.2	29.5	

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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.

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

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Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	51.4	27.5	5.6	32.7	-	51.8	73.9	22.1	
Hori.	2390.000	AV	32.7	27.5	5.6	32.7	0.2	33.3	53.9	20.6	*1)
Vert.	2390.000	PK	55.8	27.5	5.6	32.7	-	56.2	73.9	17.7	
Vert.	2390.000	AV	33.2	27.5	5.6	32.7	0.2	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 $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
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)

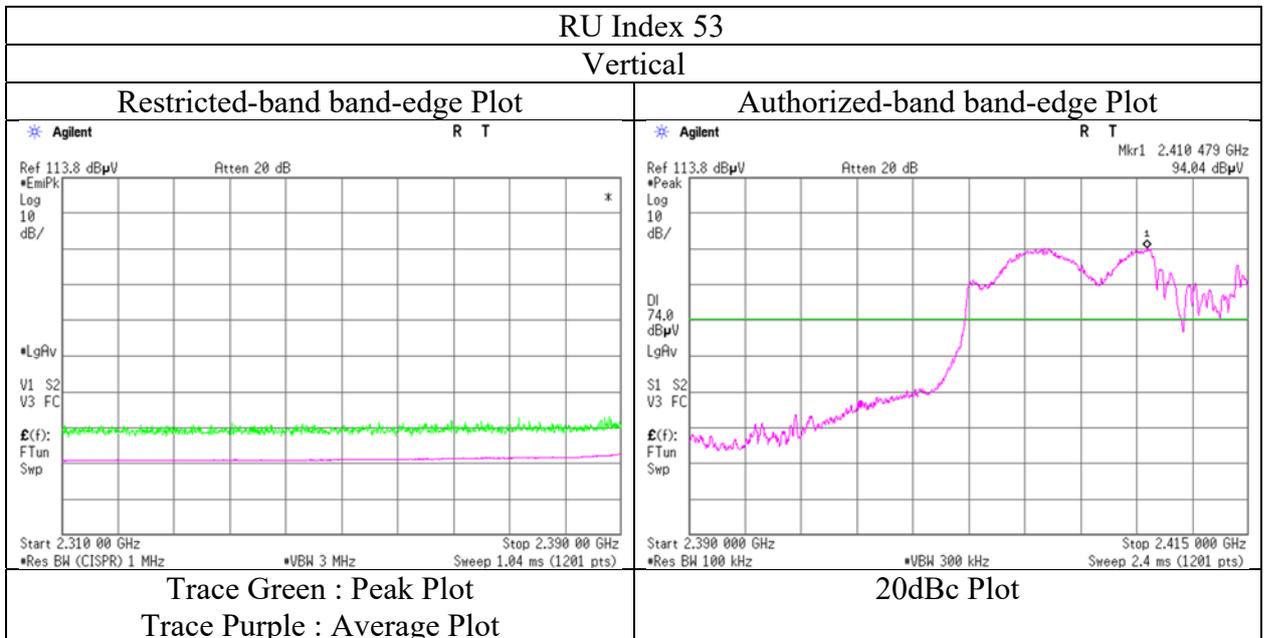
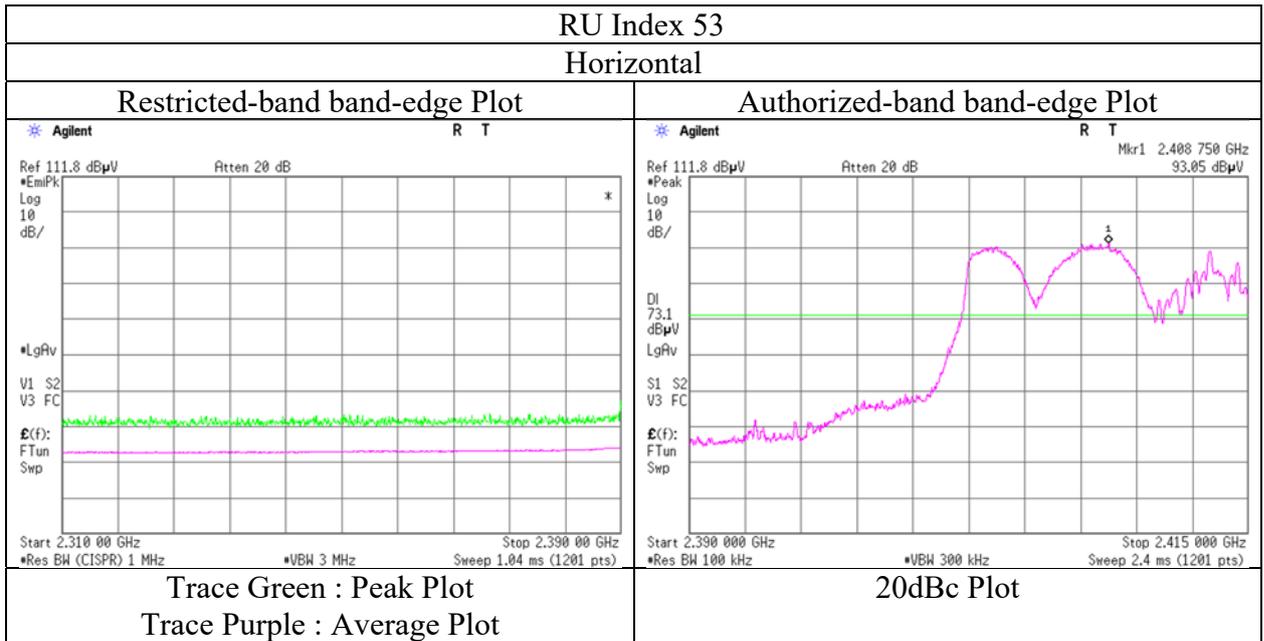
20dBc Data Sheet

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	93.1	27.5	5.6	32.7	93.4	-	-	Carrier
Hori.	2400.000	PK	49.8	27.5	5.6	32.7	50.2	73.4	23.3	
Vert.	2412.000	PK	94.0	27.5	5.6	32.7	94.4	-	-	Carrier
Vert.	2400.000	PK	54.1	27.5	5.6	32.7	54.4	74.4	20.0	

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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.

UL Japan, Inc.

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Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	60.0	27.5	5.6	32.7	-	60.4	73.9	13.5	
Hori.	2390.000	AV	42.5	27.5	5.6	32.7	0.2	43.2	53.9	10.8	*1)
Vert.	2390.000	PK	63.3	27.5	5.6	32.7	-	63.7	73.9	10.2	
Vert.	2390.000	AV	43.8	27.5	5.6	32.7	0.2	44.4	53.9	9.5	*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(4 m / 3.0 m) = 2.5 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

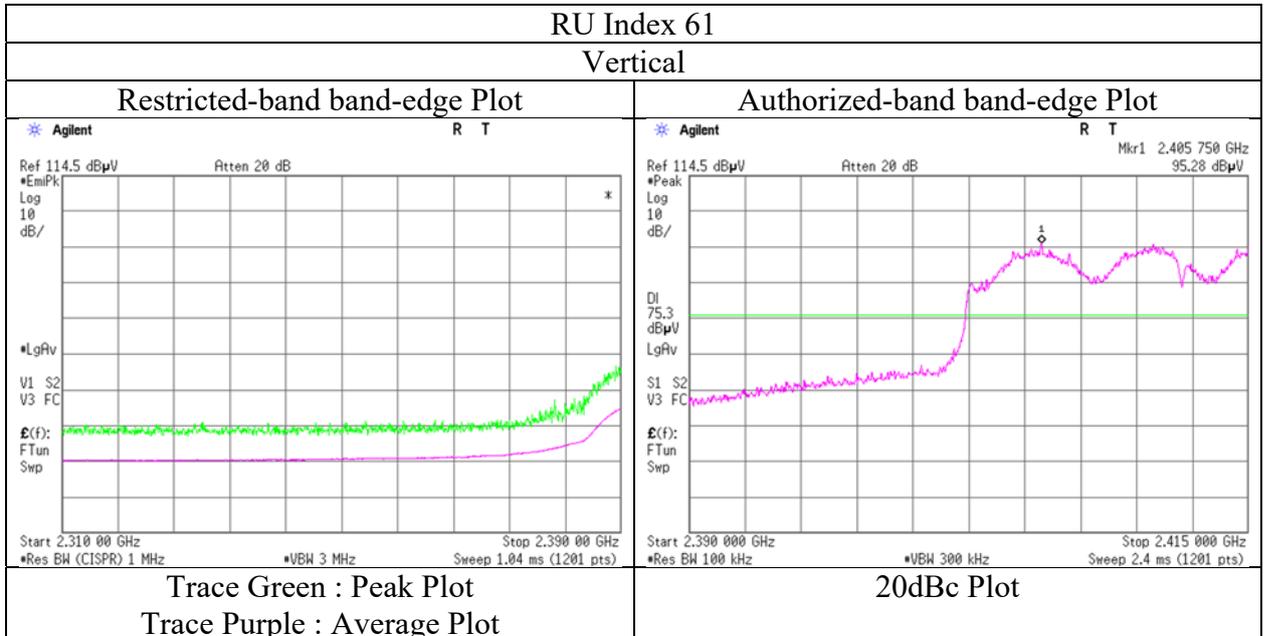
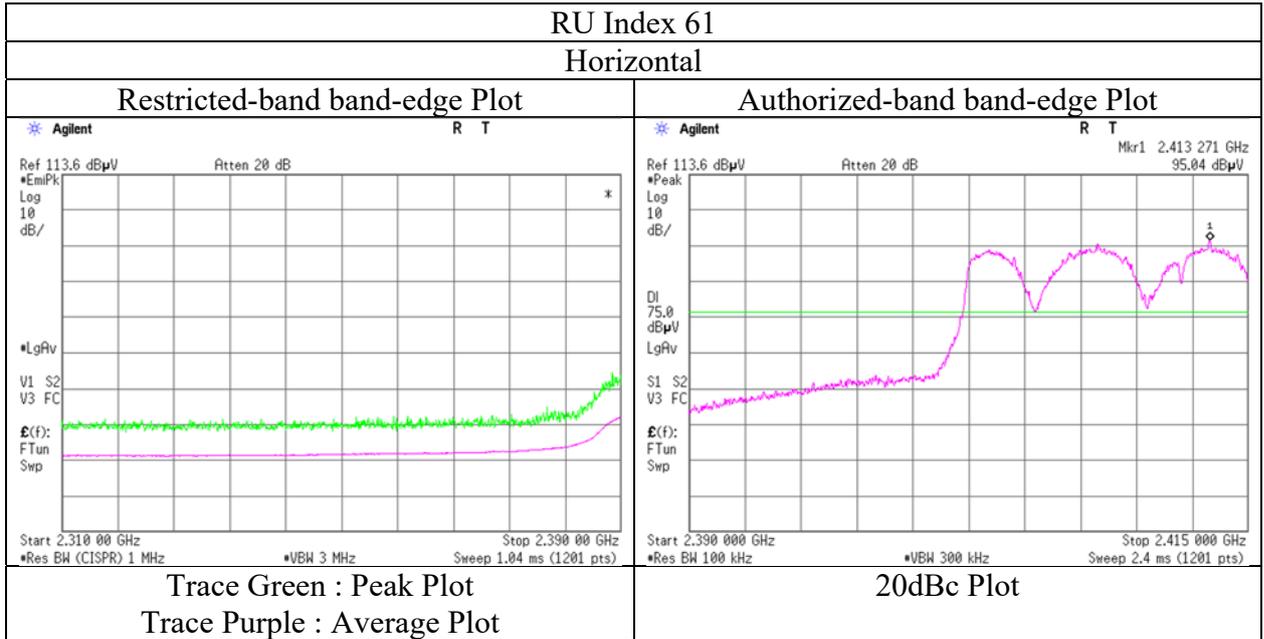
20dBc Data Sheet

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	95.0	27.5	5.6	32.7	95.4	-	-	Carrier
Hori.	2400.000	PK	56.9	27.5	5.6	32.7	57.3	75.4	18.1	
Vert.	2412.000	PK	95.3	27.5	5.6	32.7	95.6	-	-	Carrier
Vert.	2400.000	PK	61.1	27.5	5.6	32.7	61.5	75.6	14.2	

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 22, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa (1 GHz - 10 GHz)	Takeshi Hiyaji (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 26.5 GHz)
Mode	Tx 11ax-20 OFDM 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	41.2	31.5	7.7	31.6	-	48.7	73.9	25.2	Floor noise
Hori.	7311.000	PK	42.9	36.2	9.1	32.6	-	55.5	73.9	18.4	Floor noise
Hori.	9748.000	PK	43.0	39.0	9.6	33.4	-	58.2	73.9	15.7	Floor noise
Hori.	4874.000	AV	32.6	31.5	7.7	31.6	-	40.2	53.9	13.8	Floor noise
Hori.	7311.000	AV	33.7	36.2	9.1	32.6	-	46.3	53.9	7.6	Floor noise
Hori.	9748.000	AV	32.6	39.0	9.6	33.4	-	47.8	53.9	6.1	Floor noise
Vert.	4874.000	PK	41.2	31.5	7.7	31.6	-	48.7	73.9	25.2	Floor noise
Vert.	7311.000	PK	42.5	36.2	9.1	32.6	-	55.1	73.9	18.8	Floor noise
Vert.	9748.000	PK	43.7	39.0	9.6	33.4	-	58.9	73.9	15.0	Floor noise
Vert.	4874.000	AV	32.4	31.5	7.7	31.6	-	39.9	53.9	14.0	Floor noise
Vert.	7311.000	AV	34.0	36.2	9.1	32.6	-	46.6	53.9	7.3	Floor noise
Vert.	9748.000	AV	32.6	39.0	9.6	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 $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

Report No.	13671144H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	January 22, 2021	January 29, 2021	January 31, 2021	February 3, 2021
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH	20 deg. C / 31 % RH
Engineer	Tomohisa Nakagawa	Takeshi Hiyaji	Yuta Moriya	Nachi Konegawa
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)	(Below 1 GHz)
Mode	Tx 11ax-20 OFDM 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.	74.862	QP	42.2	6.5	7.9	32.2	-	24.4	40.0	15.6	
Hori.	81.474	QP	39.1	7.2	8.0	32.2	-	22.1	40.0	17.9	
Hori.	164.620	QP	32.9	15.7	8.9	32.1	-	25.4	43.5	18.1	
Hori.	613.530	QP	38.5	19.5	12.1	32.0	-	38.1	46.0	7.9	
Hori.	619.080	QP	39.7	19.5	12.1	32.0	-	39.4	46.0	6.6	
Hori.	856.121	QP	36.7	21.5	13.4	31.1	-	40.4	46.0	5.6	
Hori.	2483.500	PK	57.1	27.3	5.7	32.7	-	57.4	73.9	16.5	
Hori.	2486.005	PK	55.3	27.3	5.7	32.7	-	55.6	73.9	18.3	
Hori.	4924.000	PK	40.9	31.4	7.7	31.6	-	48.4	73.9	25.5	Floor noise
Hori.	7386.000	PK	41.9	36.2	9.1	32.7	-	54.5	73.9	19.4	Floor noise
Hori.	9848.000	PK	43.4	38.9	9.6	33.4	-	58.4	73.9	15.5	Floor noise
Hori.	2483.500	AV	39.5	27.3	5.7	32.7	0.3	40.1	53.9	13.9	*1)
Hori.	2486.005	AV	38.1	27.3	5.7	32.7	0.3	38.6	53.9	15.3	*2)
Hori.	4924.000	AV	30.5	31.4	7.7	31.6	-	38.0	53.9	15.9	Floor noise
Hori.	7386.000	AV	31.7	36.2	9.1	32.7	-	44.4	53.9	9.5	Floor noise
Hori.	9848.000	AV	32.3	38.9	9.6	33.4	-	47.3	53.9	6.6	Floor noise
Vert.	74.862	QP	50.9	6.5	7.9	32.2	-	33.1	40.0	6.9	
Vert.	81.474	QP	48.6	7.2	8.0	32.2	-	31.6	40.0	8.4	
Vert.	164.620	QP	37.4	15.7	8.9	32.1	-	29.9	43.5	13.6	
Vert.	613.530	QP	40.5	19.5	12.1	32.0	-	40.1	46.0	5.9	
Vert.	619.080	QP	42.5	19.5	12.1	32.0	-	42.2	46.0	3.8	
Vert.	856.121	QP	33.0	21.5	13.4	31.1	-	36.7	46.0	9.3	
Vert.	2483.500	PK	52.0	27.3	5.7	32.7	-	52.3	73.9	21.6	
Vert.	2486.005	PK	52.0	27.3	5.7	32.7	-	52.3	73.9	21.7	
Vert.	4924.000	PK	42.0	31.4	7.7	31.6	-	49.4	73.9	24.5	Floor noise
Vert.	7386.000	PK	42.1	36.2	9.1	32.7	-	54.8	73.9	19.1	Floor noise
Vert.	9848.000	PK	42.2	38.9	9.6	33.4	-	57.3	73.9	16.7	Floor noise
Vert.	2483.500	AV	35.6	27.3	5.7	32.7	0.3	36.2	53.9	17.8	*1)
Vert.	2486.005	AV	35.1	27.3	5.7	32.7	0.3	35.6	53.9	18.3	*2)
Vert.	4924.000	AV	30.1	31.4	7.7	31.6	-	37.6	53.9	16.4	Floor noise
Vert.	7386.000	AV	31.5	36.2	9.1	32.7	-	44.1	53.9	9.8	Floor noise
Vert.	9848.000	AV	32.3	38.9	9.6	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).

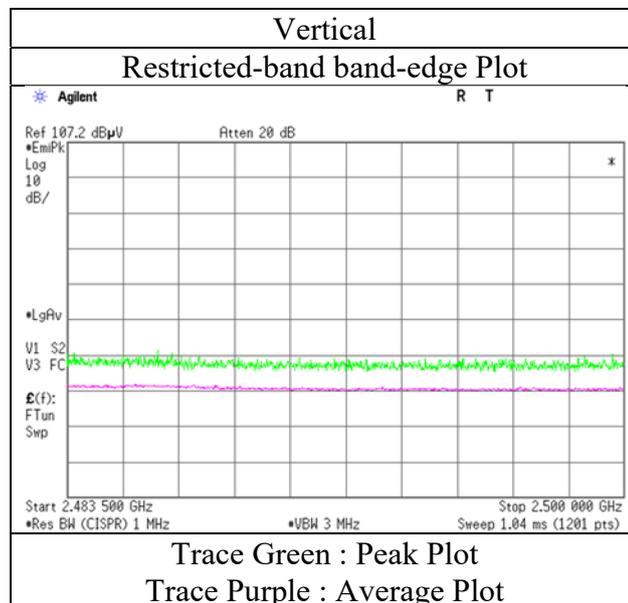
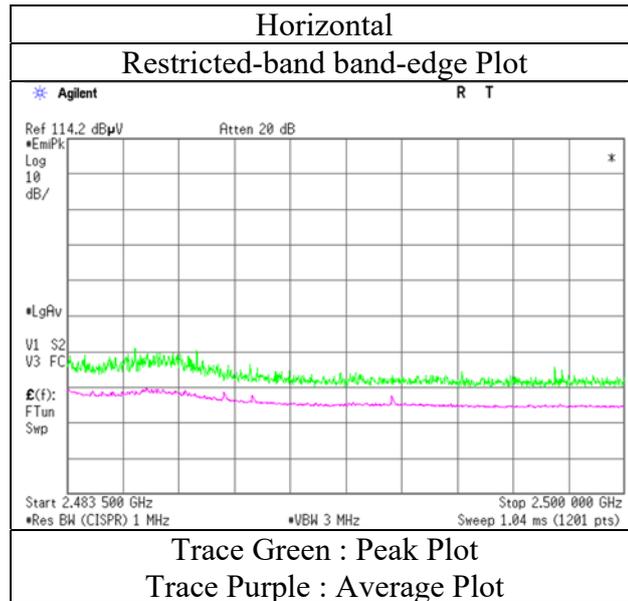
Distance factor: 1 GHz - 10 GHz $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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

*2) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 22, 2021
Temperature / Humidity 22 deg. C / 37 % RH
Engineer Tomohisa Nakagawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDM 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.

Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	42.9	27.3	5.7	32.7	-	43.2	73.9	30.7	
Hori.	2483.500	AV	34.5	27.3	5.7	32.7	0.2	35.0	53.9	18.9	*1)
Vert.	2483.500	PK	43.2	27.3	5.7	32.7	-	43.5	73.9	30.4	
Vert.	2483.500	AV	34.0	27.3	5.7	32.7	0.2	34.5	53.9	19.4	*1)

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

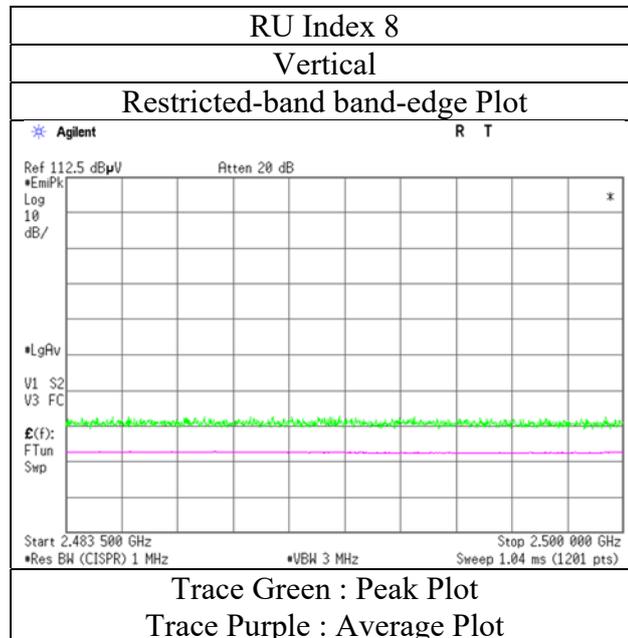
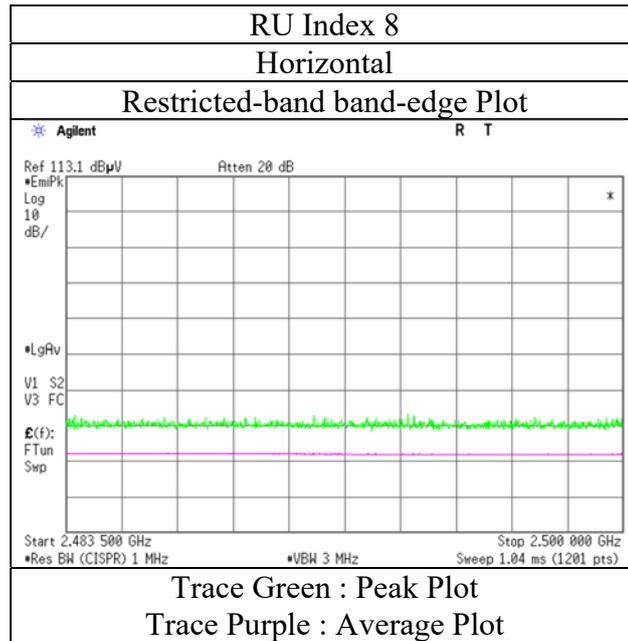
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
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)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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.

Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	44.4	27.3	5.7	32.7	-	44.7	73.9	29.3	
Hori.	2483.500	AV	32.9	27.3	5.7	32.7	0.3	33.4	53.9	20.5	*1)
Vert.	2483.500	PK	47.2	27.3	5.7	32.7	-	47.5	73.9	26.5	
Vert.	2483.500	AV	35.7	27.3	5.7	32.7	0.3	36.2	53.9	17.7	*1)

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

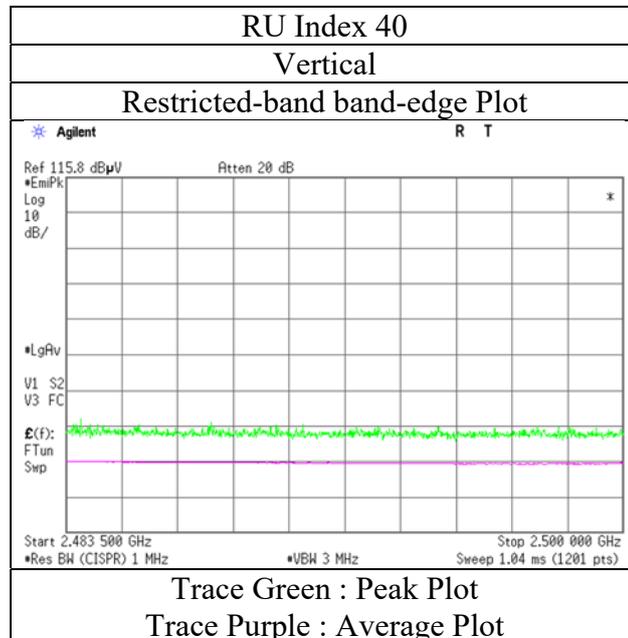
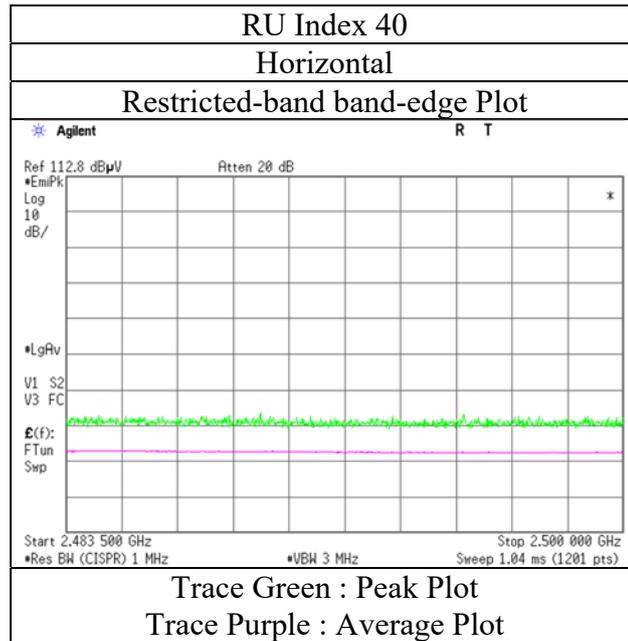
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
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)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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.

Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	47.1	27.3	5.7	32.7	-	47.4	73.9	26.5	
Hori.	2483.500	AV	34.6	27.3	5.7	32.7	0.2	35.2	53.9	18.7	*1)
Vert.	2483.500	PK	55.6	27.3	5.7	32.7	-	55.9	73.9	18.0	
Vert.	2483.500	AV	35.2	27.3	5.7	32.7	0.2	35.7	53.9	18.2	*1)

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

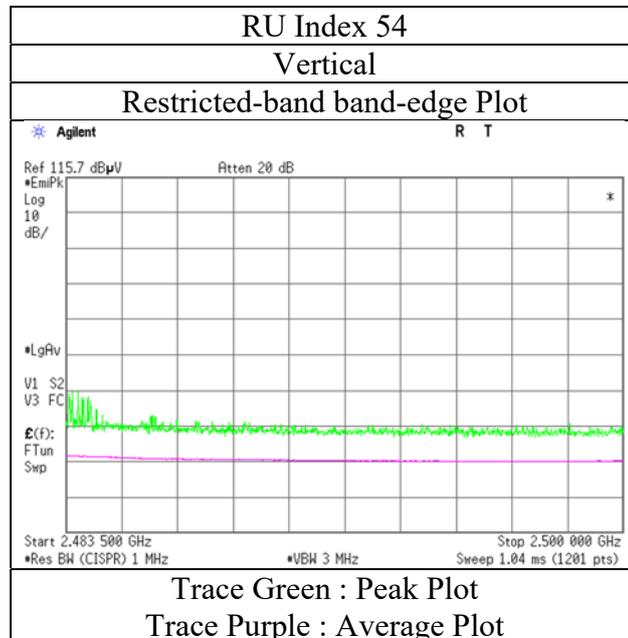
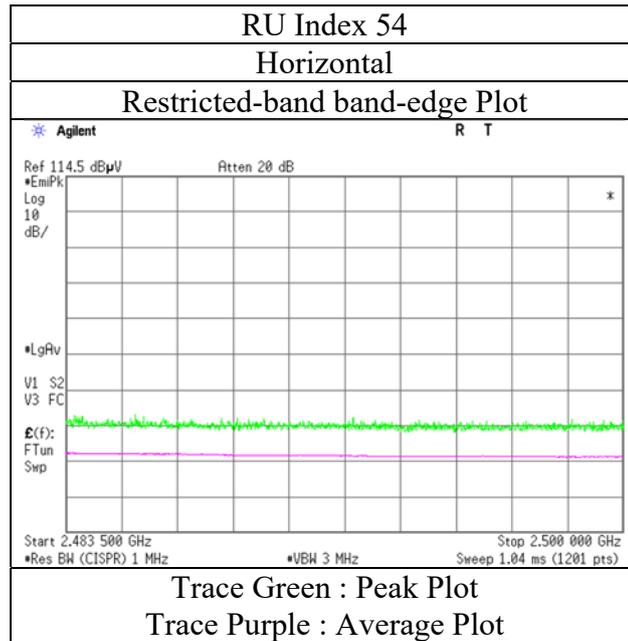
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
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)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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.

Radiated Spurious Emission

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 25, 2021
Temperature / Humidity 23 deg. C / 36 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx 11ax-20 OFDMA 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	57.7	27.3	5.7	32.7	-	58.0	73.9	15.9	
Hori.	2483.500	AV	42.6	27.3	5.7	32.7	0.2	43.1	53.9	10.8	*1)
Vert.	2483.500	PK	65.1	27.3	5.7	32.7	-	65.4	73.9	8.5	
Vert.	2483.500	AV	49.5	27.3	5.7	32.7	0.2	50.1	53.9	3.8	*1)

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

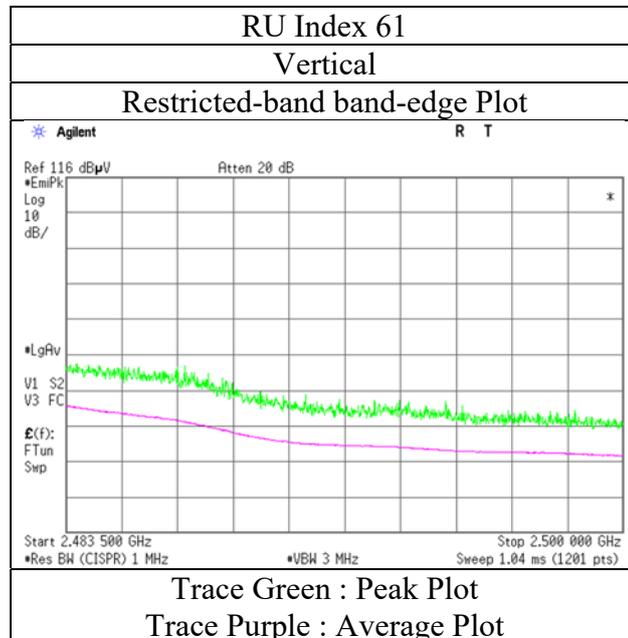
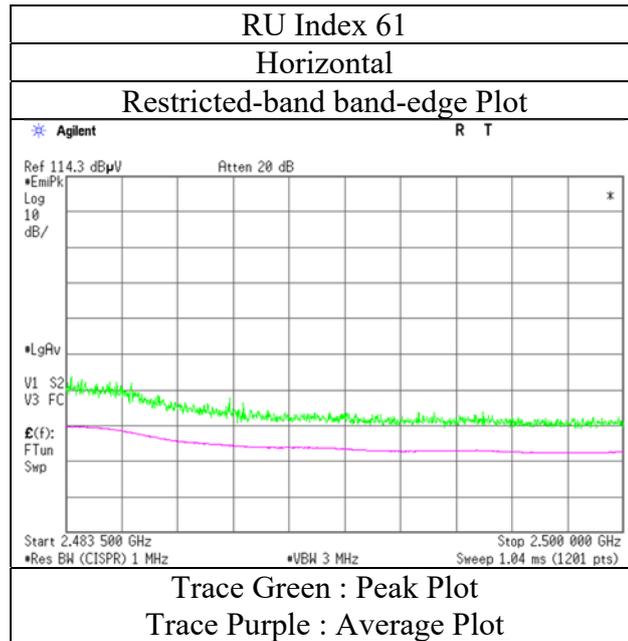
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(4\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$
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)

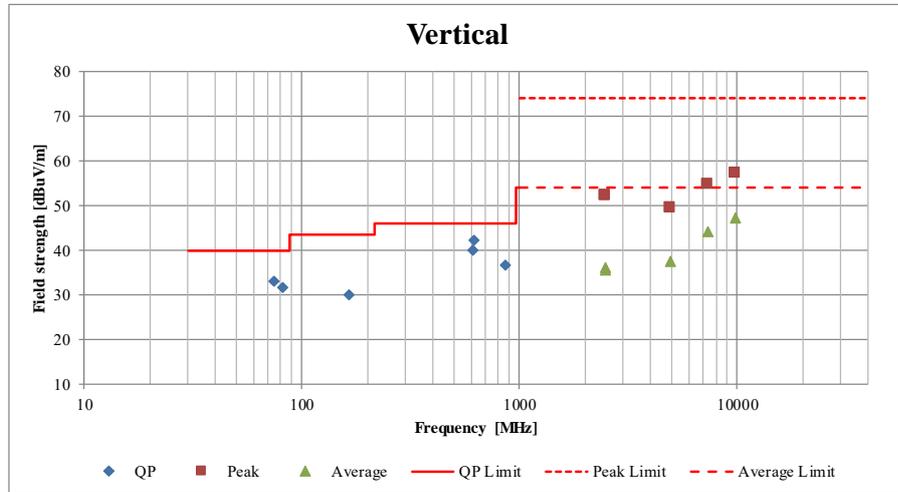
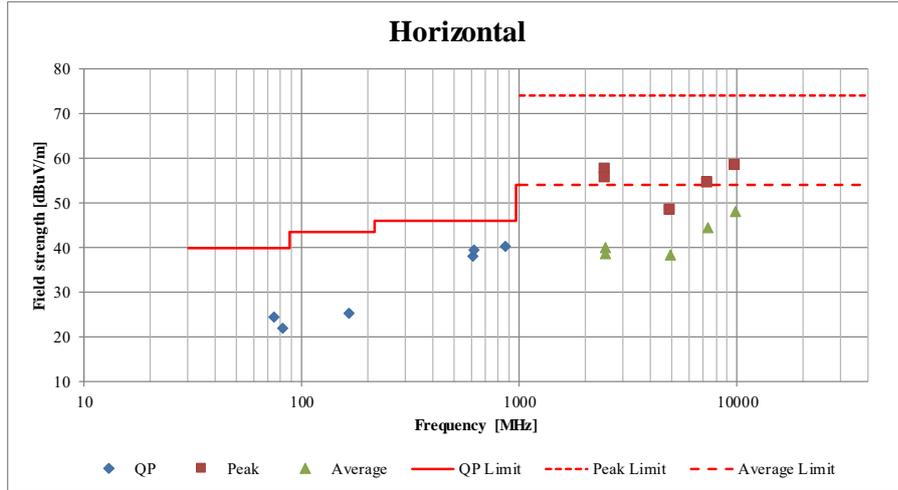
Report No.	13671144H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 25, 2021
Temperature / Humidity	23 deg. C / 36 % RH
Engineer	Nachi Konegawa (1 GHz - 10 GHz)
Mode	Tx 11ax-20 OFDMA 2462 MHz (242-tone RU)



* 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.

Radiated Spurious Emission
(Plot data, Worst case)

Report No.	13671144H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	January 22, 2021	January 29, 2021	January 31, 2021	February 3, 2021
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH	20 deg. C / 31 % RH
Engineer	Tomohisa Nakagawa	Takeshi Hiyaji	Yuta Moriya	Nachi Konegawa
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)	(Below 1 GHz)
Mode	Tx 11ax-20 OFDM 2462 MHz			



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

Radiated Spurious Emission
(BT1)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 20, 2021 January 28, 2021 January 31, 2021 February 1, 2021
Temperature / Humidity 18 deg. C / 24 % RH 23 deg. C / 35 % RH 22 deg. C / 23 % RH 23 deg. C / 39 % RH
Engineer Tomohisa Nakagawa Nachi Konegawa Yuta Moriya Nachi Konegawa
(1 GHz -10 GHz) (10 GHz -18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2402 MHz 1M-PHY

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.	74.762	QP	45.0	6.5	7.9	32.2	-	27.2	40.0	12.8	
Hori.	81.390	QP	40.6	7.2	8.0	32.2	-	23.6	40.0	16.4	
Hori.	164.940	QP	34.3	15.7	8.9	32.1	-	26.8	43.5	16.7	
Hori.	609.290	QP	36.4	19.4	12.1	32.0	-	35.9	46.0	10.1	
Hori.	615.180	QP	39.4	19.5	12.1	32.0	-	39.0	46.0	7.0	
Hori.	840.220	QP	34.4	21.1	13.3	31.2	-	37.6	46.0	8.4	
Hori.	2339.811	PK	46.0	27.7	5.4	32.7	-	46.4	73.9	27.5	
Hori.	2390.000	PK	45.6	27.5	5.5	32.7	-	45.9	73.9	28.0	
Hori.	4804.000	PK	40.6	31.7	7.6	31.7	-	48.3	73.9	25.7	Floor noise
Hori.	7206.000	PK	42.2	36.1	9.0	32.6	-	54.6	73.9	19.3	Floor noise
Hori.	9608.000	PK	43.7	38.7	9.4	33.3	-	58.5	73.9	15.4	Floor noise
Hori.	2339.811	AV	34.1	27.7	5.4	32.7	2.0	36.5	53.9	17.4	*2)
Hori.	2390.000	AV	31.9	27.5	5.5	32.7	2.0	34.2	53.9	19.7	*1)
Hori.	4804.000	AV	32.9	31.7	7.6	31.7	-	40.6	53.9	13.3	Floor noise
Hori.	7206.000	AV	34.6	36.1	9.0	32.6	-	47.0	53.9	6.9	Floor noise
Hori.	9608.000	AV	33.1	38.7	9.4	33.3	-	47.9	53.9	6.0	Floor noise
Vert.	74.762	QP	53.4	6.5	7.9	32.2	-	35.6	40.0	4.4	
Vert.	81.390	QP	48.8	7.2	8.0	32.2	-	31.8	40.0	8.2	
Vert.	164.940	QP	37.1	15.7	8.9	32.1	-	29.6	43.5	13.9	
Vert.	609.290	QP	38.0	19.4	12.1	32.0	-	37.5	46.0	8.5	
Vert.	615.180	QP	42.0	19.5	12.1	32.0	-	41.6	46.0	4.4	
Vert.	840.220	QP	31.8	21.1	13.3	31.2	-	35.0	46.0	11.0	
Vert.	2339.811	PK	47.7	27.7	5.4	32.7	-	48.1	73.9	25.8	
Vert.	2390.000	PK	44.2	27.5	5.5	32.7	-	44.5	73.9	29.4	
Vert.	4804.000	PK	41.0	31.7	7.6	31.7	-	48.6	73.9	25.3	Floor noise
Vert.	7206.000	PK	42.9	36.1	9.0	32.6	-	55.3	73.9	18.6	Floor noise
Vert.	9608.000	PK	43.5	38.7	9.4	33.3	-	58.3	73.9	15.6	Floor noise
Vert.	2339.811	AV	35.1	27.7	5.4	32.7	2.0	37.5	53.9	16.4	*2)
Vert.	2390.000	AV	34.4	27.5	5.5	32.7	2.0	36.7	53.9	17.2	*1)
Vert.	4804.000	AV	32.5	31.7	7.6	31.7	-	40.2	53.9	13.7	Floor noise
Vert.	7206.000	AV	34.4	36.1	9.0	32.6	-	46.9	53.9	7.0	Floor noise
Vert.	9608.000	AV	33.1	38.7	9.4	33.3	-	47.9	53.9	6.0	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) Not Out of Band emission(Leakage Power)
*2) Noise synchronized with duty of carrier frequency.

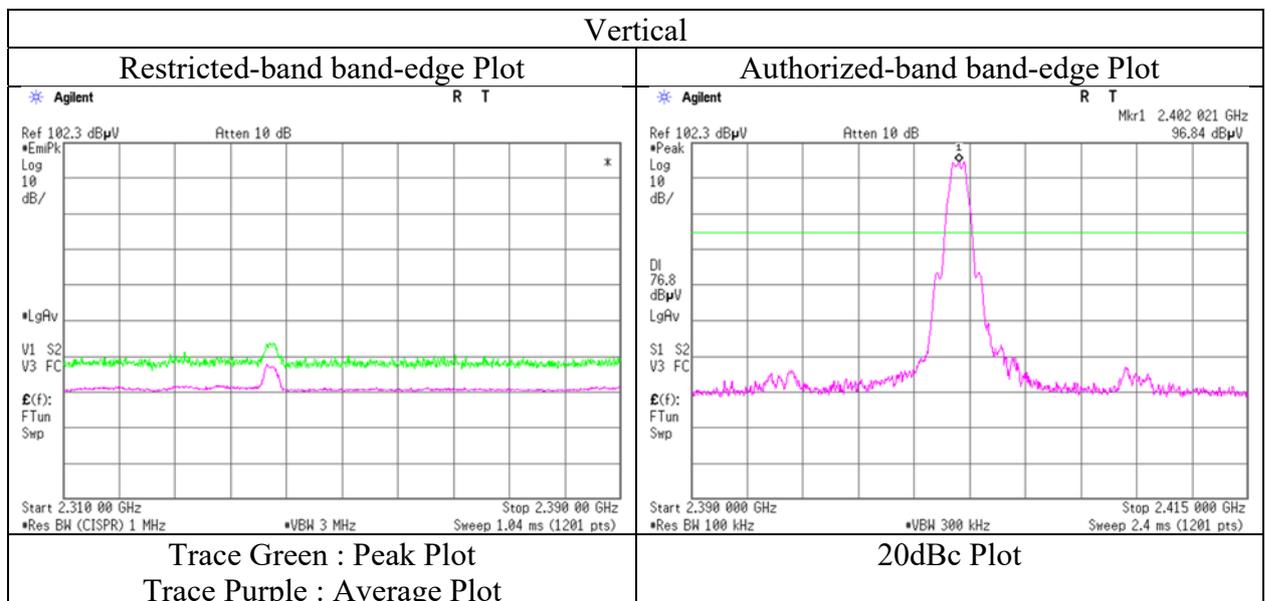
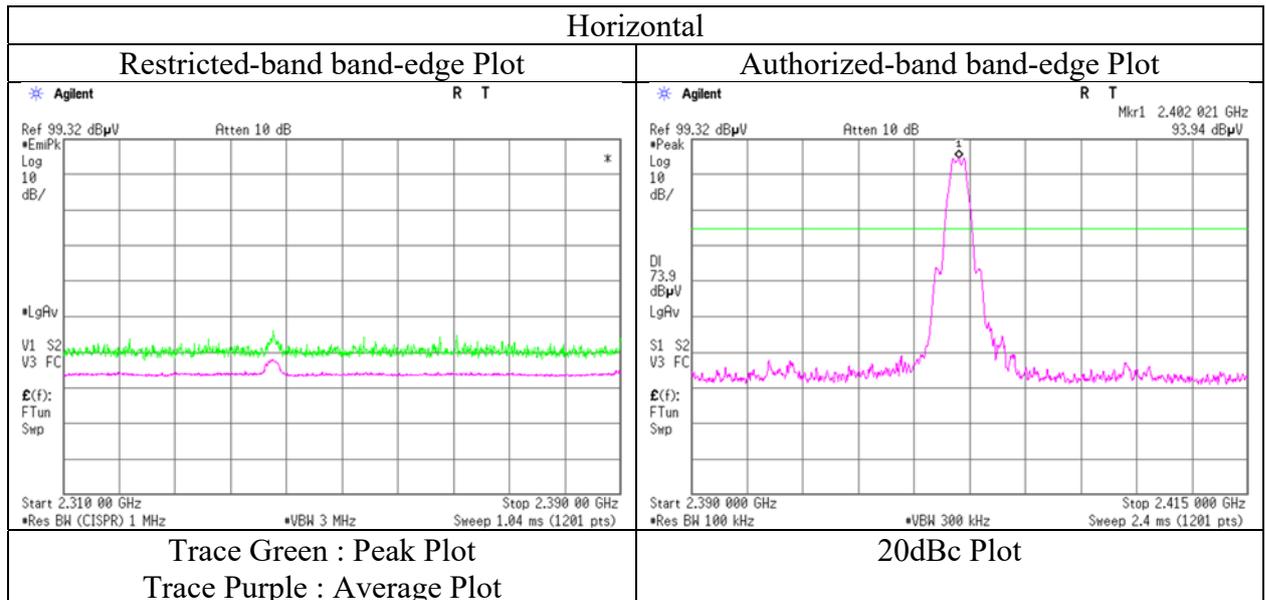
20dBc Data Sheet

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	93.9	27.5	5.5	32.7	94.2	-	-	Carrier
Hori.	2400.000	PK	38.2	27.5	5.5	32.7	38.4	74.2	35.7	
Vert.	2402.000	PK	96.8	27.5	5.5	32.7	97.1	-	-	Carrier
Vert.	2400.000	PK	39.2	27.5	5.5	32.7	39.4	77.1	37.7	

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

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

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 20, 2021
Temperature / Humidity 18 deg. C / 24 % RH
Engineer Tomohisa Nakagawa
(1 GHz -10 GHz)
Mode Tx BT LE 2402 MHz 1M-PHY



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

Radiated Spurious Emission
(BT1)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 20, 2021	January 28, 2021	January 31, 2021
Temperature / Humidity	18 deg. C / 24 % RH	23 deg. C / 35 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa (1 GHz -10 GHz)	Nachi Konegawa (10 GHz -18 GHz)	Yuta Moriya (18 GHz - 26.5 GHz)
Mode	Tx BT LE 2440 MHz 1M-PHY		

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.	74.830	QP	44.3	6.5	7.9	32.2	-	26.5	40.0	13.5	
Hori.	81.450	QP	39.0	7.2	8.0	32.2	-	22.0	40.0	18.0	
Hori.	165.060	QP	34.0	15.7	8.9	32.1	-	26.5	43.5	17.0	
Hori.	614.280	QP	37.9	19.5	12.1	32.0	-	37.5	46.0	8.5	
Hori.	620.040	QP	35.5	19.5	12.1	32.0	-	35.1	46.0	10.9	
Hori.	839.955	QP	34.4	21.1	13.3	31.2	-	37.6	46.0	8.4	
Hori.	2374.730	PK	48.7	27.6	5.5	32.7	-	49.0	73.9	24.9	
Hori.	4880.000	PK	41.2	31.5	7.6	31.6	-	48.6	73.9	25.3	Floor noise
Hori.	7320.000	PK	42.3	36.2	9.0	32.6	-	54.8	73.9	19.1	Floor noise
Hori.	9760.000	PK	43.0	39.0	9.5	33.4	-	58.1	73.9	15.8	Floor noise
Hori.	2374.730	AV	39.1	27.6	5.5	32.7	2.0	41.4	53.9	12.5	*1)
Hori.	4880.000	AV	32.6	31.5	7.6	31.6	-	40.0	53.9	13.9	Floor noise
Hori.	7320.000	AV	34.0	36.2	9.0	32.6	-	46.6	53.9	7.3	Floor noise
Hori.	9760.000	AV	32.7	39.0	9.5	33.4	-	47.8	53.9	6.1	Floor noise
Vert.	74.830	QP	53.0	6.5	7.9	32.2	-	35.2	40.0	4.8	
Vert.	81.450	QP	48.4	7.2	8.0	32.2	-	31.4	40.0	8.6	
Vert.	165.060	QP	36.5	15.7	8.9	32.1	-	29.0	43.5	14.5	
Vert.	614.720	QP	42.2	19.5	12.1	32.0	-	41.8	46.0	4.2	
Vert.	619.990	QP	40.4	19.5	12.1	32.0	-	40.0	46.0	6.0	
Vert.	839.220	QP	32.6	21.1	13.3	31.2	-	35.7	46.0	10.3	
Vert.	2374.730	PK	48.8	27.6	5.5	32.7	-	49.1	73.9	24.8	
Vert.	4880.000	PK	41.4	31.5	7.6	31.6	-	48.8	73.9	25.1	Floor noise
Vert.	7320.000	PK	43.0	36.2	9.0	32.6	-	55.5	73.9	18.4	Floor noise
Vert.	9760.000	PK	43.0	39.0	9.5	33.4	-	58.1	73.9	15.8	Floor noise
Vert.	2374.730	AV	34.5	27.6	5.5	32.7	2.0	36.8	53.9	17.1	*1)
Vert.	4880.000	AV	32.9	31.5	7.6	31.6	-	40.3	53.9	13.6	Floor noise
Vert.	7320.000	AV	34.6	36.2	9.0	32.6	-	47.1	53.9	6.8	Floor noise
Vert.	9760.000	AV	32.7	39.0	9.5	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) + 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
(BT1)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 20, 2021	January 28, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 23 % RH
Engineer	Yuta Moriya	Nachi Konegawa	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz -18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2480 MHz 1M-PHY		

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.	72.648	QP	37.7	6.4	7.8	32.2	-	19.8	40.0	20.2	
Hori.	74.820	QP	44.4	6.5	7.9	32.2	-	26.6	40.0	13.4	
Hori.	164.978	QP	34.1	15.7	8.9	32.1	-	26.6	43.5	16.9	
Hori.	614.960	QP	38.6	19.5	12.1	32.0	-	38.2	46.0	7.8	
Hori.	619.891	QP	35.7	19.5	12.1	32.0	-	35.3	46.0	10.7	
Hori.	840.320	QP	35.2	21.1	13.3	31.2	-	38.4	46.0	7.6	
Hori.	2483.500	PK	46.3	27.3	5.6	32.7	-	46.5	73.9	27.5	
Hori.	2487.845	PK	46.0	27.3	5.6	32.7	-	46.1	73.9	27.8	
Hori.	4960.000	PK	43.3	31.5	7.6	31.6	-	50.8	73.9	23.1	Floor noise
Hori.	7440.000	PK	43.1	36.3	9.0	32.7	-	55.7	73.9	18.2	Floor noise
Hori.	9920.000	PK	41.3	38.8	9.5	33.5	-	56.1	73.9	17.8	Floor noise
Hori.	2483.500	AV	35.7	27.3	5.6	32.7	2.0	37.9	53.9	16.0	*1)
Hori.	2487.845	AV	37.1	27.3	5.6	32.7	2.0	39.3	53.9	14.6	*2)
Hori.	4960.000	AV	32.2	31.5	7.6	31.6	-	39.7	53.9	14.2	Floor noise
Hori.	7440.000	AV	31.4	36.3	9.0	32.7	-	44.0	53.9	9.9	Floor noise
Hori.	9920.000	AV	30.8	38.8	9.5	33.5	-	45.7	53.9	8.2	Floor noise
Vert.	72.648	QP	45.9	6.4	7.8	32.2	-	28.0	40.0	12.0	
Vert.	74.820	QP	52.8	6.5	7.9	32.2	-	35.0	40.0	5.0	
Vert.	165.030	QP	36.4	15.7	8.9	32.1	-	28.9	43.5	14.6	
Vert.	614.960	QP	42.3	19.5	12.1	32.0	-	41.9	46.0	4.1	
Vert.	619.891	QP	39.7	19.5	12.1	32.0	-	39.3	46.0	6.7	
Vert.	840.320	QP	33.0	21.1	13.3	31.2	-	36.2	46.0	9.8	
Vert.	2483.500	PK	44.8	27.3	5.6	32.7	-	45.0	73.9	28.9	
Vert.	2487.845	PK	45.8	27.3	5.6	32.7	-	46.0	73.9	27.9	
Vert.	4960.000	PK	43.2	31.5	7.6	31.6	-	50.7	73.9	23.2	Floor noise
Vert.	7440.000	PK	42.2	36.3	9.0	32.7	-	54.7	73.9	19.2	Floor noise
Vert.	9920.000	PK	42.1	38.8	9.5	33.5	-	56.9	73.9	17.0	Floor noise
Vert.	2483.500	AV	35.2	27.3	5.6	32.7	2.0	37.4	53.9	16.5	*1)
Vert.	2487.845	AV	36.4	27.3	5.6	32.7	2.0	38.6	53.9	15.3	*2)
Vert.	4960.000	AV	32.0	31.5	7.6	31.6	-	39.4	53.9	14.5	Floor noise
Vert.	7440.000	AV	31.6	36.3	9.0	32.7	-	44.1	53.9	9.8	Floor noise
Vert.	9920.000	AV	30.8	38.8	9.5	33.5	-	45.6	53.9	8.3	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).

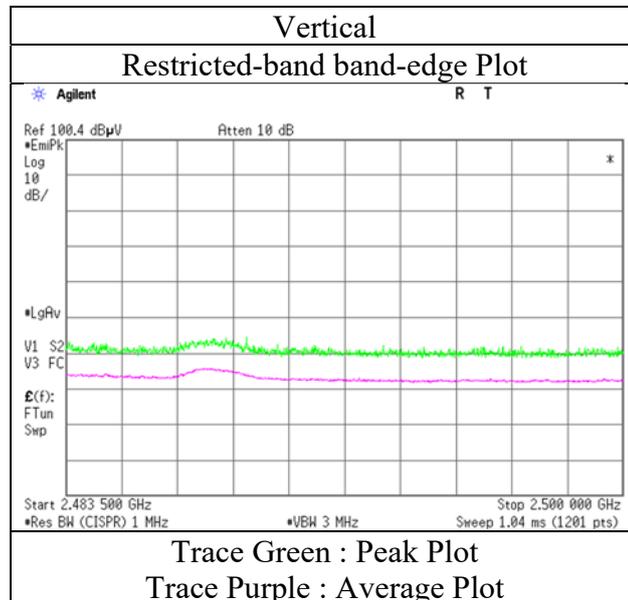
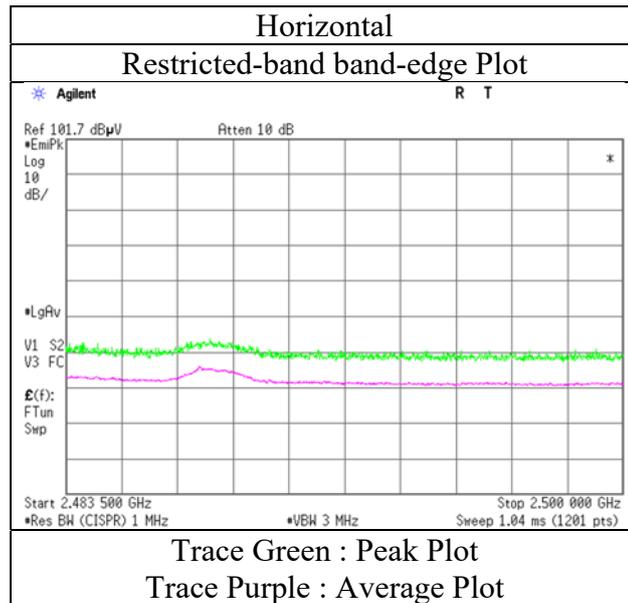
Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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

*2) Noise synchronized with duty of carrier frequency.

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

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 20, 2021
Temperature / Humidity 22 deg. C / 32 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx BT LE 2480 MHz 1M-PHY



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

Radiated Spurious Emission
(BT1)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 20, 2021 January 28, 2021 January 31, 2021 February 1, 2021
Temperature / Humidity 22 deg. C / 32 % RH 23 deg. C / 35 % RH 22 deg. C / 23 % RH 23 deg. C / 39 % RH
Engineer Yuta Moriya Nachi Konegawa Yuta Moriya Nachi Konegawa
(1 GHz - 10 GHz) (10 GHz -18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2402 MHz 2M-PHY

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.	74.800	QP	44.0	6.5	7.9	32.2	-	26.2	40.0	13.8	
Hori.	81.440	QP	38.6	7.2	8.0	32.2	-	21.6	40.0	18.4	
Hori.	165.013	QP	33.9	15.7	8.9	32.1	-	26.4	43.5	17.1	
Hori.	615.190	QP	38.7	19.5	12.1	32.0	-	38.3	46.0	7.7	
Hori.	620.770	QP	35.8	19.5	12.1	32.0	-	35.4	46.0	10.6	
Hori.	840.700	QP	35.3	21.1	13.3	31.2	-	38.5	46.0	7.5	
Hori.	2338.300	PK	50.8	27.7	5.4	32.7	-	51.2	73.9	22.8	
Hori.	2390.000	PK	43.9	27.5	5.5	32.7	-	44.2	73.9	29.7	
Hori.	4804.000	PK	42.6	31.7	7.6	31.7	-	50.2	73.9	23.7	Floor noise
Hori.	7206.000	PK	41.9	36.1	9.0	32.6	-	54.3	73.9	19.6	Floor noise
Hori.	9608.000	PK	41.0	38.7	9.4	33.3	-	55.8	73.9	18.1	Floor noise
Hori.	2338.300	AV	38.6	27.7	5.4	32.7	4.7	43.8	53.9	10.1	*2)
Hori.	2390.000	AV	34.6	27.5	5.5	32.7	4.7	39.6	53.9	14.3	*1)
Hori.	4804.000	AV	31.9	31.7	7.6	31.7	-	39.5	53.9	14.4	Floor noise
Hori.	7206.000	AV	31.1	36.1	9.0	32.6	-	43.6	53.9	10.3	Floor noise
Hori.	9608.000	AV	30.9	38.7	9.4	33.3	-	45.7	53.9	8.2	Floor noise
Vert.	74.800	QP	52.5	6.5	7.9	32.2	-	34.7	40.0	5.3	
Vert.	81.440	QP	48.0	7.2	8.0	32.2	-	31.0	40.0	9.0	
Vert.	164.990	QP	36.2	15.7	8.9	32.1	-	28.7	43.5	14.8	
Vert.	615.190	QP	42.3	19.5	12.1	32.0	-	41.9	46.0	4.1	
Vert.	620.770	QP	39.3	19.5	12.1	32.0	-	38.9	46.0	7.1	
Vert.	840.700	QP	33.0	21.1	13.3	31.2	-	36.2	46.0	9.8	
Vert.	2338.300	PK	52.4	27.7	5.4	32.7	-	52.8	73.9	21.1	
Vert.	2390.000	PK	44.1	27.5	5.5	32.7	-	44.3	73.9	29.6	
Vert.	4804.000	PK	42.1	31.7	7.6	31.7	-	49.8	73.9	24.1	Floor noise
Vert.	7206.000	PK	41.9	36.1	9.0	32.6	-	54.3	73.9	19.6	Floor noise
Vert.	9608.000	PK	40.9	38.7	9.4	33.3	-	55.7	73.9	18.2	Floor noise
Vert.	2338.300	AV	40.2	27.7	5.4	32.7	4.7	45.3	53.9	8.6	*2)
Vert.	2390.000	AV	34.6	27.5	5.5	32.7	4.7	39.6	53.9	14.3	*1)
Vert.	4804.000	AV	32.0	31.7	7.6	31.7	-	39.7	53.9	14.2	Floor noise
Vert.	7206.000	AV	31.6	36.1	9.0	32.6	-	44.0	53.9	9.9	Floor noise
Vert.	9608.000	AV	31.0	38.7	9.4	33.3	-	45.8	53.9	8.1	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 $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
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	96.8	27.5	5.5	32.7	97.0	-	-	Carrier
Hori.	2400.000	PK	64.8	27.5	5.5	32.7	65.0	77.0	12.0	
Vert.	2402.000	PK	97.0	27.5	5.5	32.7	97.3	-	-	Carrier
Vert.	2400.000	PK	65.5	27.5	5.5	32.7	65.7	77.3	11.6	

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

UL Japan, Inc.

Ise EMC Lab.

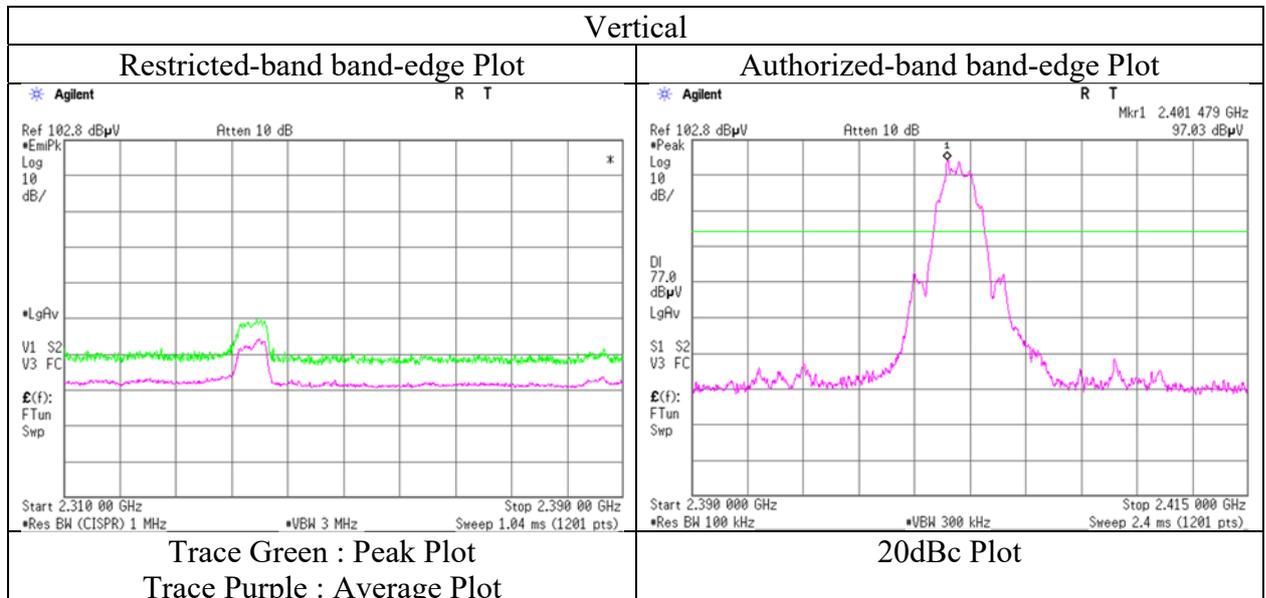
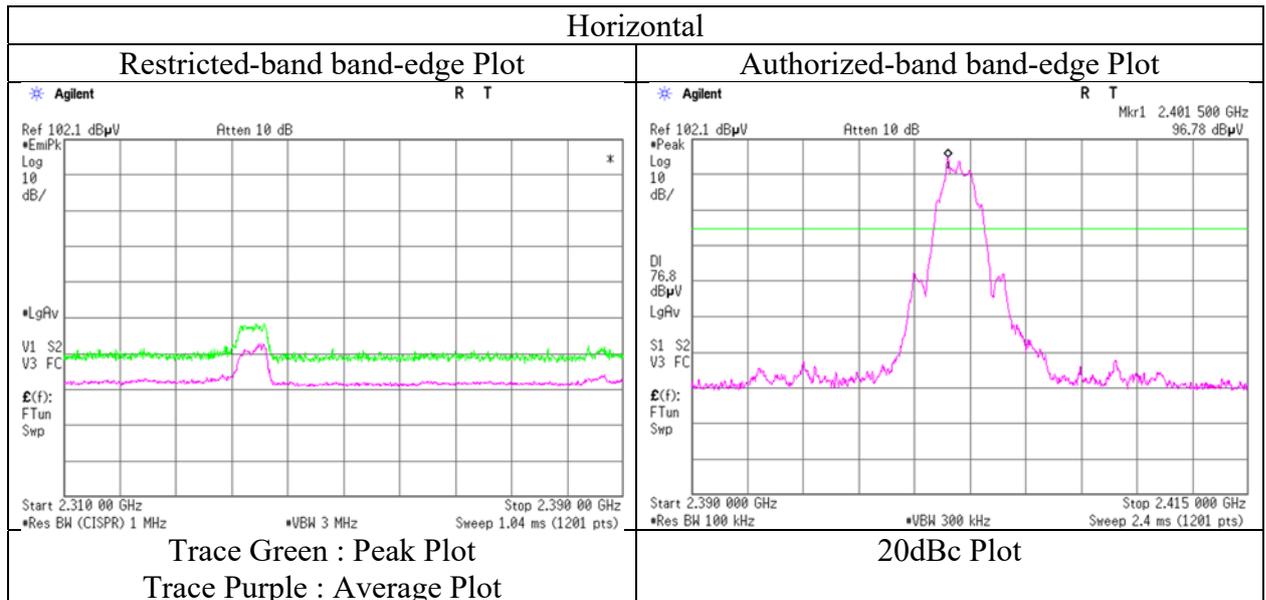
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 20, 2021
Temperature / Humidity 22 deg. C / 32 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx BT LE 2402 MHz 2M-PHY



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

Radiated Spurious Emission
(BT1)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 20, 2021	January 28, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 23 % RH
Engineer	Yuta Moriya	Nachi Konegawa	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz -18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2440 MHz 2M-PHY		
			February 1, 2021
			23 deg. C / 39 % RH
			Nachi Konegawa
			(Below 1 GHz)

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.	74.819	QP	43.9	6.5	7.9	32.2	-	26.1	40.0	13.9	
Hori.	81.380	QP	38.5	7.2	8.0	32.2	-	21.5	40.0	18.5	
Hori.	164.993	QP	33.7	15.7	8.9	32.1	-	26.2	43.5	17.3	
Hori.	609.745	QP	36.2	19.4	12.1	32.0	-	35.7	46.0	10.3	
Hori.	615.740	QP	38.6	19.5	12.1	32.0	-	38.2	46.0	7.8	
Hori.	847.118	QP	34.8	21.3	13.3	31.2	-	38.2	46.0	7.8	
Hori.	2372.023	PK	52.7	27.6	5.5	32.7	-	53.0	73.9	20.9	
Hori.	4880.000	PK	42.9	31.5	7.6	31.6	-	50.3	73.9	23.6	Floor noise
Hori.	7320.000	PK	42.0	36.2	9.0	32.6	-	54.6	73.9	19.3	Floor noise
Hori.	9760.000	PK	41.9	39.0	9.5	33.4	-	57.0	73.9	16.9	Floor noise
Hori.	2372.023	AV	40.9	27.6	5.5	32.7	4.7	46.0	53.9	8.0	*1)
Hori.	4880.000	AV	32.0	31.5	7.6	31.6	-	39.4	53.9	14.5	Floor noise
Hori.	7320.000	AV	32.1	36.2	9.0	32.6	-	44.6	53.9	9.3	Floor noise
Hori.	9760.000	AV	31.4	39.0	9.5	33.4	-	46.5	53.9	7.4	Floor noise
Vert.	74.819	QP	52.8	6.5	7.9	32.2	-	35.0	40.0	5.0	
Vert.	81.380	QP	48.1	7.2	8.0	32.2	-	31.1	40.0	8.9	
Vert.	164.993	QP	36.0	15.7	8.9	32.1	-	28.5	43.5	15.0	
Vert.	609.745	QP	39.0	19.4	12.1	32.0	-	38.5	46.0	7.5	
Vert.	615.740	QP	42.1	19.5	12.1	32.0	-	41.7	46.0	4.3	
Vert.	847.780	QP	32.9	21.3	13.3	31.2	-	36.3	46.0	9.7	
Vert.	2372.023	PK	52.2	27.6	5.5	32.7	-	52.5	73.9	21.4	
Vert.	4880.000	PK	42.6	31.5	7.6	31.6	-	50.0	73.9	23.9	Floor noise
Vert.	7320.000	PK	41.3	36.2	9.0	32.6	-	53.8	73.9	20.1	Floor noise
Vert.	9760.000	PK	40.3	39.0	9.5	33.4	-	55.4	73.9	18.5	Floor noise
Vert.	2372.023	AV	40.8	27.6	5.5	32.7	4.7	45.8	53.9	8.1	*1)
Vert.	4880.000	AV	32.1	31.5	7.6	31.6	-	39.5	53.9	14.4	Floor noise
Vert.	7320.000	AV	31.5	36.2	9.0	32.6	-	44.0	53.9	9.9	Floor noise
Vert.	9760.000	AV	31.0	39.0	9.5	33.4	-	46.1	53.9	7.8	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(3.95 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
(BT1)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 20, 2021	January 28, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 32 % RH	23 deg. C / 35 % RH	22 deg. C / 23 % RH
Engineer	Yuta Moriya	Nachi Konegawa	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz -18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2480 MHz 2M-PHY		

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.	74.820	QP	44.0	6.5	7.9	32.2	-	26.2	40.0	13.8	
Hori.	81.410	QP	38.6	7.2	8.0	32.2	-	21.6	40.0	18.4	
Hori.	164.990	QP	33.6	15.7	8.9	32.1	-	26.1	43.5	17.4	
Hori.	610.350	QP	36.2	19.4	12.1	32.0	-	35.7	46.0	10.3	
Hori.	615.669	QP	38.7	19.5	12.1	32.0	-	38.3	46.0	7.7	
Hori.	847.196	QP	34.7	21.3	13.3	31.2	-	38.1	46.0	7.9	
Hori.	2483.500	PK	57.8	27.3	5.6	32.7	-	58.0	73.9	16.0	
Hori.	4960.000	PK	42.3	31.5	7.6	31.6	-	49.8	73.9	24.1	Floor noise
Hori.	7440.000	PK	41.3	36.3	9.0	32.7	-	53.9	73.9	20.1	Floor noise
Hori.	9920.000	PK	40.8	38.8	9.5	33.5	-	55.6	73.9	18.3	Floor noise
Hori.	2483.500	AV	42.5	27.3	5.6	32.7	4.7	47.4	53.9	6.5	*1)
Hori.	4960.000	AV	32.4	31.5	7.6	31.6	-	39.9	53.9	14.0	Floor noise
Hori.	7440.000	AV	31.7	36.3	9.0	32.7	-	44.3	53.9	9.6	Floor noise
Hori.	9920.000	AV	31.0	38.8	9.5	33.5	-	45.9	53.9	8.0	Floor noise
Vert.	74.820	QP	52.6	6.5	7.9	32.2	-	34.8	40.0	5.2	
Vert.	81.410	QP	47.9	7.2	8.0	32.2	-	30.9	40.0	9.1	
Vert.	164.990	QP	35.6	15.7	8.9	32.1	-	28.1	43.5	15.4	
Vert.	610.350	QP	38.9	19.4	12.1	32.0	-	38.4	46.0	7.6	
Vert.	615.669	QP	42.2	19.5	12.1	32.0	-	41.8	46.0	4.2	
Vert.	847.196	QP	33.1	21.3	13.3	31.2	-	36.5	46.0	9.5	
Vert.	2483.500	PK	58.7	27.3	5.6	32.7	-	58.8	73.9	15.1	
Vert.	4960.000	PK	42.6	31.5	7.6	31.6	-	50.1	73.9	23.8	Floor noise
Vert.	7440.000	PK	41.3	36.3	9.0	32.7	-	53.8	73.9	20.1	Floor noise
Vert.	9920.000	PK	41.1	38.8	9.5	33.5	-	55.9	73.9	18.0	Floor noise
Vert.	2483.500	AV	43.4	27.3	5.6	32.7	4.7	48.3	53.9	5.6	*1)
Vert.	4960.000	AV	32.0	31.5	7.6	31.6	-	39.5	53.9	14.4	Floor noise
Vert.	7440.000	AV	31.2	36.3	9.0	32.7	-	43.8	53.9	10.1	Floor noise
Vert.	9920.000	AV	30.6	38.8	9.5	33.5	-	45.4	53.9	8.5	Floor noise

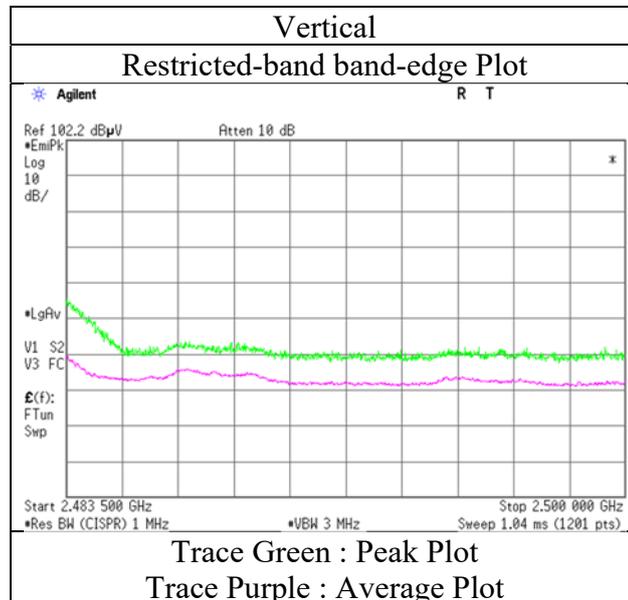
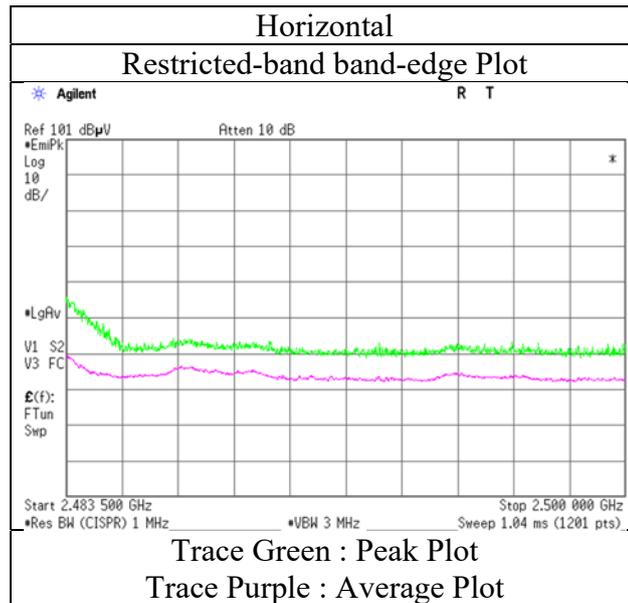
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

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)
(BT1)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 20, 2021
Temperature / Humidity 22 deg. C / 32 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx BT LE 2480 MHz 2M-PHY



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

Radiated Spurious Emission
(BT2)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 20, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	22 deg. C / 32 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Yuta Moriya	Takeshi Hiyaji	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2402 MHz 1M-PHY		

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.	72.686	QP	42.0	6.4	7.8	32.2	-	24.1	40.0	15.9	
Hori.	74.870	QP	42.8	6.5	7.9	32.2	-	25.0	40.0	15.0	
Hori.	165.140	QP	45.2	15.7	8.9	32.1	-	37.7	43.5	5.8	
Hori.	615.190	QP	38.1	19.5	12.1	32.0	-	37.7	46.0	8.3	
Hori.	620.530	QP	34.9	19.5	12.1	32.0	-	34.5	46.0	11.5	
Hori.	851.990	QP	33.6	21.4	13.3	31.2	-	37.2	46.0	8.8	
Hori.	2339.842	PK	47.6	27.7	5.4	32.7	-	48.0	73.9	25.9	
Hori.	2390.000	PK	42.9	27.5	5.5	32.7	-	43.2	73.9	30.8	
Hori.	4804.000	PK	42.1	31.7	7.6	31.7	-	49.7	73.9	24.2	Floor noise
Hori.	7206.000	PK	42.0	36.1	9.0	32.6	-	54.4	73.9	19.5	Floor noise
Hori.	9608.000	PK	41.4	38.7	9.4	33.3	-	56.2	73.9	17.7	Floor noise
Hori.	2339.842	AV	39.5	27.7	5.4	32.7	2.0	41.9	53.9	12.0	*2)
Hori.	2390.000	AV	34.7	27.5	5.5	32.7	2.0	37.0	53.9	17.0	*1)
Hori.	4804.000	AV	31.7	31.7	7.6	31.7	-	39.4	53.9	14.5	Floor noise
Hori.	7206.000	AV	32.0	36.1	9.0	32.6	-	44.5	53.9	9.4	Floor noise
Hori.	9608.000	AV	31.3	38.7	9.4	33.3	-	46.1	53.9	7.8	Floor noise
Vert.	72.686	QP	50.1	6.4	7.8	32.2	-	32.2	40.0	7.8	
Vert.	74.870	QP	51.1	6.5	7.9	32.2	-	33.3	40.0	6.7	
Vert.	165.140	QP	39.7	15.7	8.9	32.1	-	32.2	43.5	11.3	
Vert.	615.190	QP	41.6	19.5	12.1	32.0	-	41.2	46.0	4.8	
Vert.	620.530	QP	37.8	19.5	12.1	32.0	-	37.4	46.0	8.6	
Vert.	851.990	QP	32.8	21.4	13.3	31.2	-	36.4	46.0	9.6	
Vert.	2339.842	PK	47.0	27.7	5.4	32.7	-	47.4	73.9	26.5	
Vert.	2390.000	PK	42.9	27.5	5.5	32.7	-	43.2	73.9	30.7	
Vert.	4804.000	PK	42.9	31.7	7.6	31.7	-	50.6	73.9	23.4	Floor noise
Vert.	7206.000	PK	41.4	36.1	9.0	32.6	-	53.8	73.9	20.1	Floor noise
Vert.	9608.000	PK	40.9	38.7	9.4	33.3	-	55.7	73.9	18.2	Floor noise
Vert.	2339.842	AV	38.5	27.7	5.4	32.7	2.0	40.9	53.9	13.0	*2)
Vert.	2390.000	AV	35.1	27.5	5.5	32.7	2.0	37.3	53.9	16.6	*1)
Vert.	4804.000	AV	32.0	31.7	7.6	31.7	-	39.7	53.9	14.2	Floor noise
Vert.	7206.000	AV	31.9	36.1	9.0	32.6	-	44.4	53.9	9.5	Floor noise
Vert.	9608.000	AV	30.4	38.7	9.4	33.3	-	45.2	53.9	8.7	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.

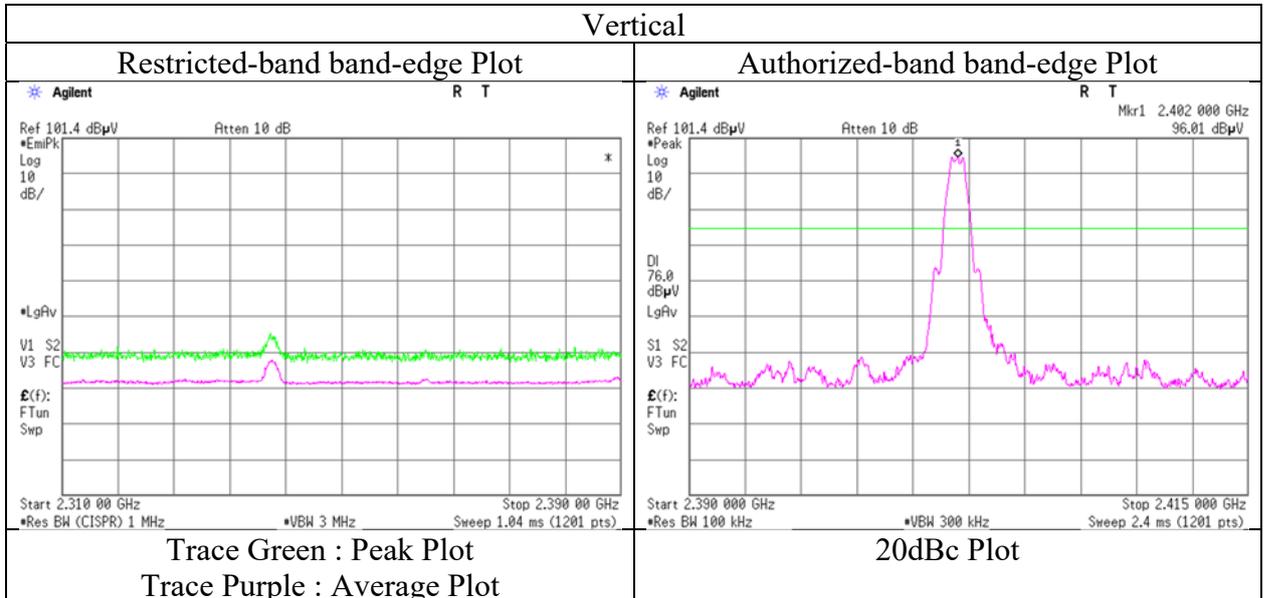
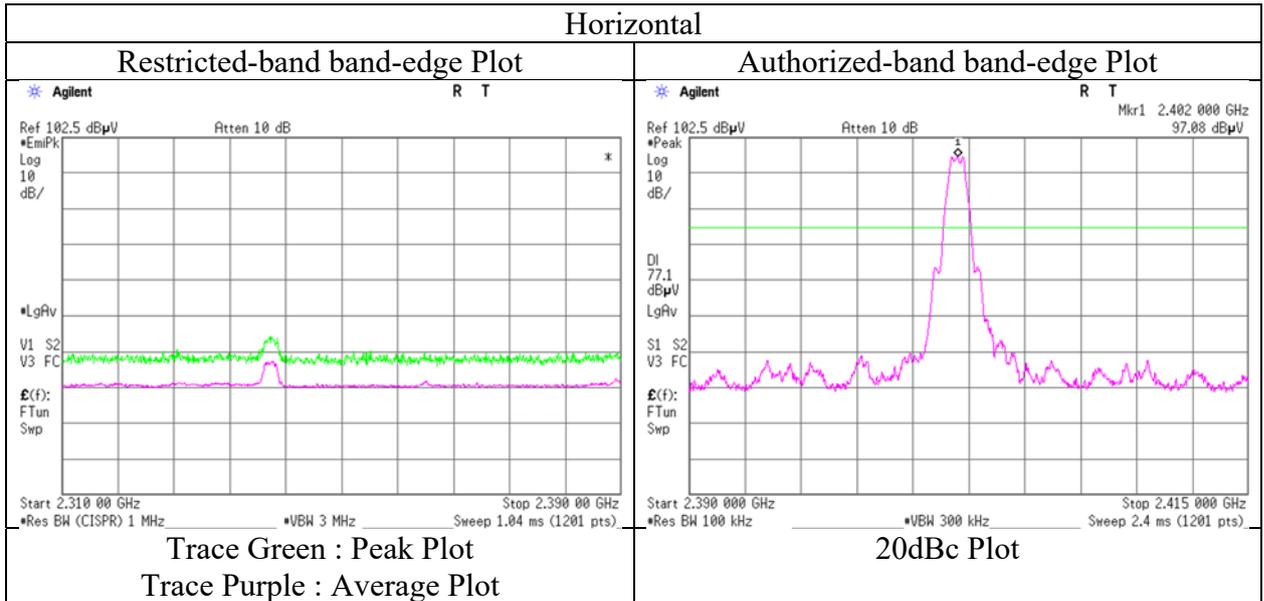
20dBc Data Sheet

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	97.1	27.5	5.5	32.7	97.3	-	-	Carrier
Hori.	2400.000	PK	42.0	27.5	5.5	32.7	42.3	77.3	35.1	
Vert.	2402.000	PK	96.0	27.5	5.5	32.7	96.3	-	-	Carrier
Vert.	2400.000	PK	40.9	27.5	5.5	32.7	41.1	76.3	35.2	

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

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

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 20, 2021
Temperature / Humidity 22 deg. C / 32 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx BT LE 2402 MHz 1M-PHY



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

Radiated Spurious Emission
(BT2)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	21 deg. C / 32 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa	Takeshi Hiyaji	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2440 MHz 1M-PHY		
			February 2, 2021
			21 deg. C / 38 % RH
			Nachi Konegawa
			(Below 1 GHz)

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.	72.688	QP	41.8	6.4	7.8	32.2	-	23.9	40.0	16.1	
Hori.	74.890	QP	42.5	6.5	7.9	32.2	-	24.7	40.0	15.3	
Hori.	165.152	QP	45.5	15.7	8.9	32.1	-	38.0	43.5	5.5	
Hori.	614.810	QP	38.2	19.5	12.1	32.0	-	37.8	46.0	8.2	
Hori.	620.690	QP	35.1	19.5	12.1	32.0	-	34.7	46.0	11.3	
Hori.	852.110	QP	33.2	21.4	13.3	31.2	-	36.8	46.0	9.2	
Hori.	2373.578	PK	47.3	27.6	5.5	32.7	-	47.6	73.9	26.3	
Hori.	4880.000	PK	41.3	31.5	7.6	31.6	-	48.7	73.9	25.2	Floor noise
Hori.	7320.000	PK	42.4	36.2	9.0	32.6	-	54.9	73.9	19.0	Floor noise
Hori.	9760.000	PK	44.0	39.0	9.5	33.4	-	59.1	73.9	14.8	Floor noise
Hori.	2373.578	AV	34.9	27.6	5.5	32.7	2.0	37.2	53.9	16.7	*1)
Hori.	4880.000	AV	32.6	31.5	7.6	31.6	-	40.1	53.9	13.9	Floor noise
Hori.	7320.000	AV	33.9	36.2	9.0	32.6	-	46.4	53.9	7.5	Floor noise
Hori.	9760.000	AV	32.8	39.0	9.5	33.4	-	47.9	53.9	6.0	Floor noise
Vert.	72.688	QP	50.2	6.4	7.8	32.2	-	32.3	40.0	7.7	
Vert.	74.890	QP	50.8	6.5	7.9	32.2	-	33.0	40.0	7.0	
Vert.	165.152	QP	39.9	15.7	8.9	32.1	-	32.4	43.5	11.1	
Vert.	614.810	QP	41.5	19.5	12.1	32.0	-	41.1	46.0	4.9	
Vert.	620.690	QP	37.9	19.5	12.1	32.0	-	37.5	46.0	8.5	
Vert.	852.110	QP	33.1	21.4	13.3	31.2	-	36.7	46.0	9.3	
Vert.	2373.578	PK	48.6	27.6	5.5	32.7	-	48.9	73.9	25.0	
Vert.	4880.000	PK	41.6	31.5	7.6	31.6	-	49.0	73.9	24.9	Floor noise
Vert.	7320.000	PK	42.8	36.2	9.0	32.6	-	55.3	73.9	18.6	Floor noise
Vert.	9760.000	PK	43.9	39.0	9.5	33.4	-	59.0	73.9	14.9	Floor noise
Vert.	2373.578	AV	34.6	27.6	5.5	32.7	2.0	36.9	53.9	17.0	*1)
Vert.	4880.000	AV	32.7	31.5	7.6	31.6	-	40.1	53.9	13.8	Floor noise
Vert.	7320.000	AV	34.0	36.2	9.0	32.6	-	46.5	53.9	7.4	Floor noise
Vert.	9760.000	AV	32.8	39.0	9.5	33.4	-	47.9	53.9	6.0	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
(BT2)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	21 deg. C / 32 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa	Takeshi Hiyaji	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2480 MHz 1M-PHY		
			February 2, 2021
			21 deg. C / 38 % RH
			Nachi Konegawa
			(Below 1 GHz)

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.	72.616	QP	41.2	6.4	7.8	32.2	-	23.3	40.0	16.7	
Hori.	74.850	QP	42.5	6.5	7.9	32.2	-	24.7	40.0	15.3	
Hori.	165.150	QP	45.4	15.7	8.9	32.1	-	37.9	43.5	5.6	
Hori.	614.910	QP	38.2	19.5	12.1	32.0	-	37.8	46.0	8.2	
Hori.	620.470	QP	35.1	19.5	12.1	32.0	-	34.7	46.0	11.3	
Hori.	852.150	QP	34.0	21.4	13.3	31.2	-	37.6	46.0	8.4	
Hori.	2483.500	PK	49.9	27.3	5.6	32.7	-	50.1	73.9	23.8	
Hori.	2484.359	PK	47.5	27.3	5.6	32.7	-	47.7	73.9	26.2	
Hori.	2487.571	PK	45.2	27.3	5.6	32.7	-	45.4	73.9	28.5	
Hori.	4960.000	PK	41.0	31.5	7.6	31.6	-	48.4	73.9	25.5	Floor noise
Hori.	7440.000	PK	42.1	36.3	9.0	32.7	-	54.7	73.9	19.2	Floor noise
Hori.	9920.000	PK	43.5	38.8	9.5	33.5	-	58.4	73.9	15.5	Floor noise
Hori.	2483.500	AV	36.3	27.3	5.6	32.7	2.0	38.5	53.9	15.4	*1)
Hori.	2484.359	AV	34.3	27.3	5.6	32.7	2.0	36.5	53.9	17.4	*2)
Hori.	2487.571	AV	33.9	27.3	5.6	32.7	2.0	36.1	53.9	17.8	*2)
Hori.	4960.000	AV	30.6	31.5	7.6	31.6	-	38.0	53.9	15.9	Floor noise
Hori.	7440.000	AV	31.8	36.3	9.0	32.7	-	44.4	53.9	9.5	Floor noise
Hori.	9920.000	AV	33.0	38.8	9.5	33.5	-	47.9	53.9	6.0	Floor noise
Vert.	72.616	QP	49.4	6.4	7.8	32.2	-	31.5	40.0	8.5	
Vert.	74.850	QP	50.9	6.5	7.9	32.2	-	33.1	40.0	6.9	
Vert.	165.150	QP	39.5	15.7	8.9	32.1	-	32.0	43.5	11.5	
Vert.	614.910	QP	41.5	19.5	12.1	32.0	-	41.1	46.0	4.9	
Vert.	620.470	QP	37.6	19.5	12.1	32.0	-	37.2	46.0	8.8	
Vert.	852.150	QP	33.1	21.4	13.3	31.2	-	36.7	46.0	9.3	
Vert.	2483.500	PK	50.0	27.3	5.6	32.7	-	50.2	73.9	23.7	
Vert.	2484.359	PK	46.3	27.3	5.6	32.7	-	46.5	73.9	27.4	
Vert.	2487.571	PK	45.9	27.3	5.6	32.7	-	46.1	73.9	27.8	
Vert.	4960.000	PK	41.5	31.5	7.6	31.6	-	48.9	73.9	25.0	Floor noise
Vert.	7440.000	PK	41.9	36.3	9.0	32.7	-	54.5	73.9	19.5	Floor noise
Vert.	9920.000	PK	43.1	38.8	9.5	33.5	-	57.9	73.9	16.0	Floor noise
Vert.	2483.500	AV	37.0	27.3	5.6	32.7	2.0	39.2	53.9	14.8	*1)
Vert.	2484.359	AV	34.0	27.3	5.6	32.7	2.0	36.1	53.9	17.8	*2)
Vert.	2487.571	AV	33.6	27.3	5.6	32.7	2.0	35.8	53.9	18.1	*2)
Vert.	4960.000	AV	30.5	31.5	7.6	31.6	-	38.0	53.9	15.9	Floor noise
Vert.	7440.000	AV	31.4	36.3	9.0	32.7	-	44.0	53.9	9.9	Floor noise
Vert.	9920.000	AV	33.1	38.8	9.5	33.5	-	47.9	53.9	6.0	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).

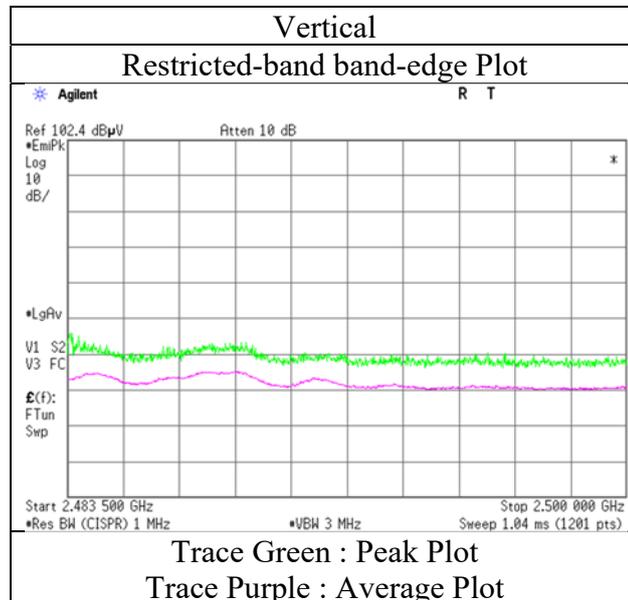
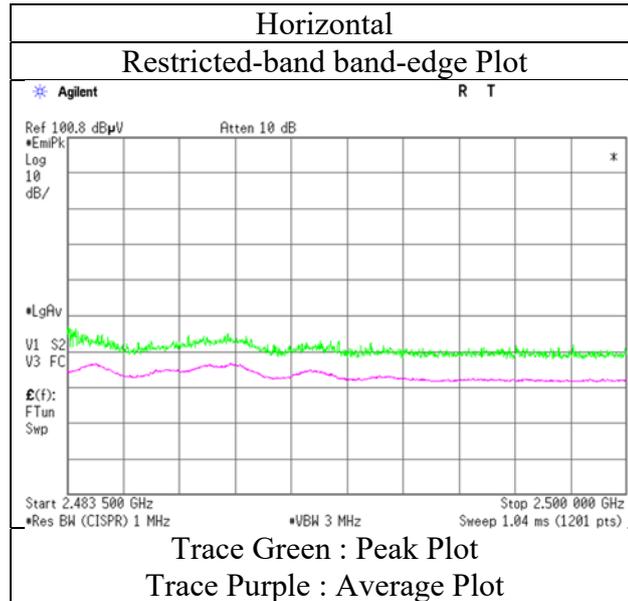
Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

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

*2) Noise synchronized with duty of carrier frequency.

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

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 21, 2021
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Tomohisa Nakagawa
(1 GHz - 10 GHz)
Mode Tx BT LE 2480 MHz 1M-PHY



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

Radiated Spurious Emission (BT2)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	21 deg. C / 32 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa	Takeshi Hiyaji	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2402 MHz 2M-PHY		

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.	74.698	QP	44.0	6.5	7.9	32.2	-	26.2	40.0	13.8	
Hori.	81.282	QP	38.7	7.2	8.0	32.2	-	21.7	40.0	18.3	
Hori.	164.786	QP	44.8	15.7	8.9	32.1	-	37.3	43.5	6.2	
Hori.	615.940	QP	38.4	19.5	12.1	32.0	-	38.0	46.0	8.0	
Hori.	621.420	QP	38.3	19.5	12.1	32.0	-	37.9	46.0	8.1	
Hori.	859.480	QP	34.2	21.6	13.4	31.1	-	38.1	46.0	7.9	
Hori.	2337.408	PK	50.1	27.7	5.4	32.8	-	50.5	73.9	23.4	
Hori.	2390.000	PK	45.3	27.5	5.5	32.7	-	45.5	73.9	28.4	
Hori.	4804.000	PK	41.2	31.7	7.6	31.7	-	48.9	73.9	25.0	Floor noise
Hori.	7206.000	PK	43.4	36.1	9.0	32.6	-	55.9	73.9	18.0	Floor noise
Hori.	9608.000	PK	43.9	38.7	9.4	33.3	-	58.7	73.9	15.2	Floor noise
Hori.	2337.408	AV	38.3	27.7	5.4	32.8	4.7	43.5	53.9	10.4	*2)
Hori.	2390.000	AV	34.6	27.5	5.5	32.7	4.7	39.6	53.9	14.3	*1)
Hori.	4804.000	AV	30.8	31.7	7.6	31.7	-	38.4	53.9	15.5	Floor noise
Hori.	7206.000	AV	31.9	36.1	9.0	32.6	-	44.3	53.9	9.6	Floor noise
Hori.	9608.000	AV	33.1	38.7	9.4	33.3	-	47.9	53.9	6.0	Floor noise
Vert.	74.698	QP	43.9	6.5	7.9	32.2	-	26.1	40.0	13.9	
Vert.	81.282	QP	42.1	7.2	8.0	32.2	-	25.1	40.0	14.9	
Vert.	164.786	QP	38.4	15.7	8.9	32.1	-	30.9	43.5	12.6	
Vert.	615.940	QP	40.7	19.5	12.1	32.0	-	40.3	46.0	5.7	
Vert.	621.420	QP	40.6	19.5	12.1	32.0	-	40.2	46.0	5.8	
Vert.	865.510	QP	32.8	21.7	13.4	31.1	-	36.8	46.0	9.2	
Vert.	2337.408	PK	50.6	27.7	5.4	32.8	-	51.0	73.9	22.9	
Vert.	2390.000	PK	44.2	27.5	5.5	32.7	-	44.5	73.9	29.4	
Vert.	4804.000	PK	40.8	31.7	7.6	31.7	-	48.5	73.9	25.4	Floor noise
Vert.	7206.000	PK	42.4	36.1	9.0	32.6	-	54.9	73.9	19.1	Floor noise
Vert.	9608.000	PK	43.2	38.7	9.4	33.3	-	58.0	73.9	15.9	Floor noise
Vert.	2337.408	AV	38.6	27.7	5.4	32.8	4.7	43.7	53.9	10.2	*2)
Vert.	2390.000	AV	34.3	27.5	5.5	32.7	4.7	39.3	53.9	14.6	*1)
Vert.	4804.000	AV	30.5	31.7	7.6	31.7	-	38.2	53.9	15.7	Floor noise
Vert.	7206.000	AV	32.2	36.1	9.0	32.6	-	44.7	53.9	9.2	Floor noise
Vert.	9608.000	AV	33.1	38.7	9.4	33.3	-	47.9	53.9	6.0	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) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

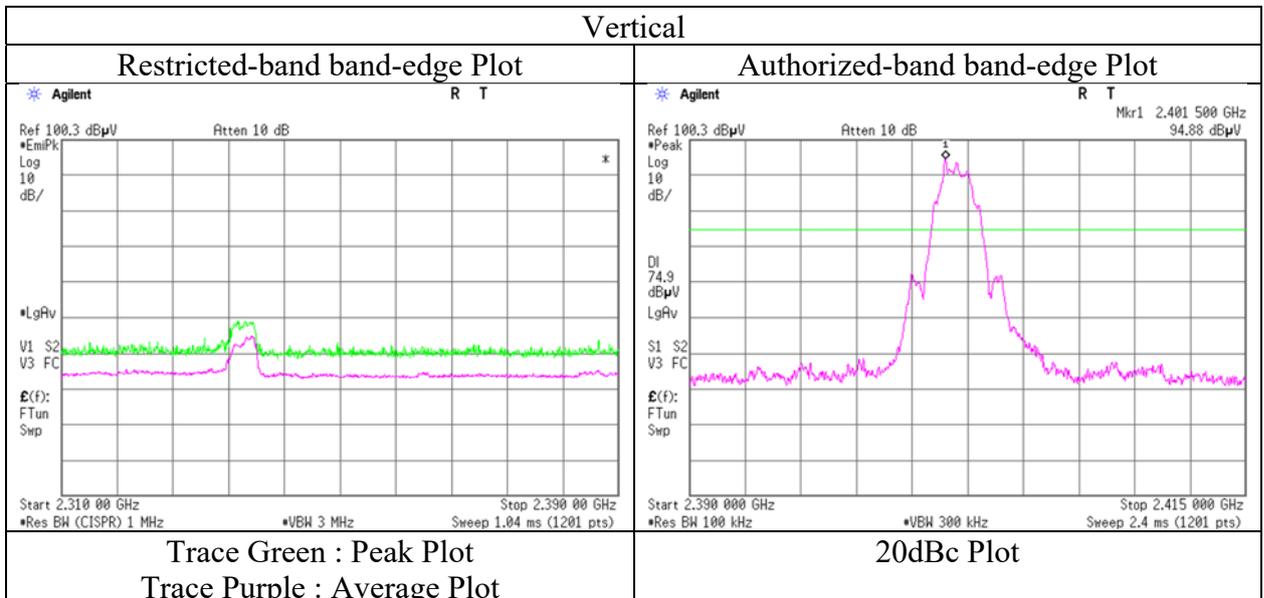
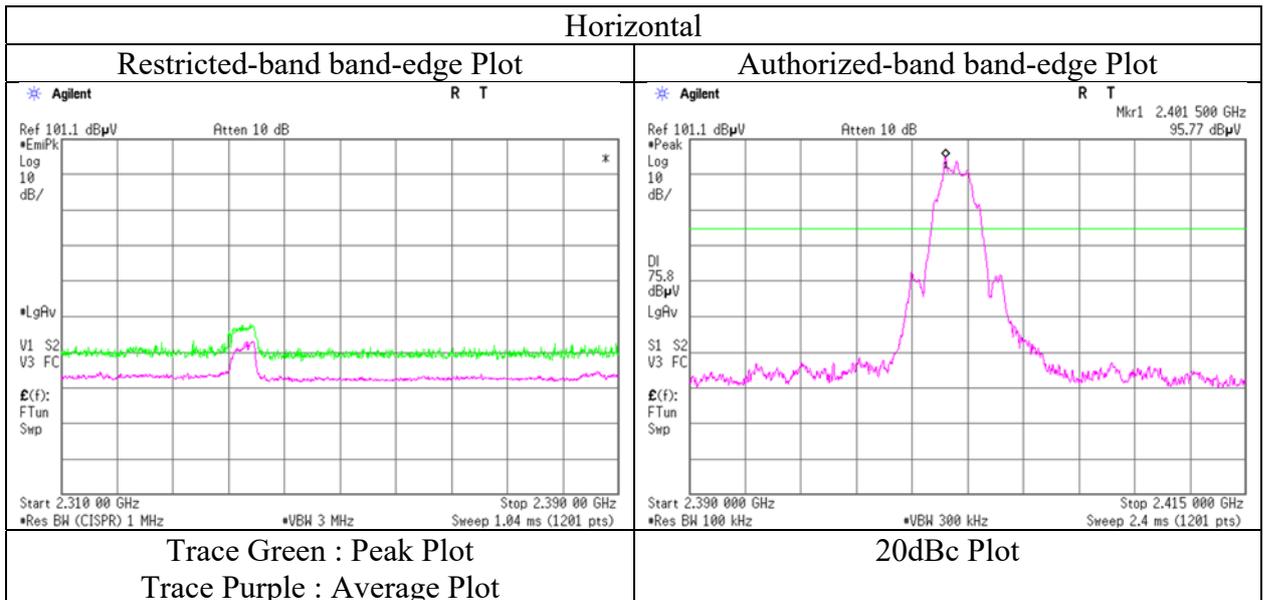
20dBc Data Sheet

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	95.8	27.5	5.5	32.7	96.1	-	-	Carrier
Hori.	2400.000	PK	63.8	27.5	5.5	32.7	64.0	76.1	12.0	
Vert.	2402.000	PK	94.9	27.5	5.5	32.7	95.2	-	-	Carrier
Vert.	2400.000	PK	62.7	27.5	5.5	32.7	63.0	75.2	12.2	

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

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

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 21, 2021
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Tomohisa Nakagawa
(1 GHz - 10 GHz)
Mode Tx BT LE 2402 MHz 2M-PHY



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

Radiated Spurious Emission
(BT2)

Report No.	13671144H		
Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2021	January 29, 2021	January 31, 2021
Temperature / Humidity	21 deg. C / 32 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH
Engineer	Tomohisa Nakagawa	Takeshi Hiyaji	Yuta Moriya
	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx BT LE 2440 MHz 2M-PHY		
			February 3, 2021
			20 deg. C / 31 % RH
			Nachi Konegawa
			(Below 1 GHz)

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.	72.494	QP	40.6	6.4	7.8	32.2	-	22.7	40.0	17.3	
Hori.	74.686	QP	44.1	6.5	7.9	32.2	-	26.3	40.0	13.7	
Hori.	164.748	QP	44.7	15.7	8.9	32.1	-	37.2	43.5	6.3	
Hori.	615.870	QP	38.4	19.5	12.1	32.0	-	38.0	46.0	8.0	
Hori.	621.610	QP	38.2	19.5	12.1	32.0	-	37.8	46.0	8.2	
Hori.	859.350	QP	34.2	21.6	13.4	31.1	-	38.1	46.0	8.0	
Hori.	2372.250	PK	43.4	27.6	5.5	32.7	-	43.8	73.9	30.2	
Hori.	4880.000	PK	40.4	31.5	7.6	31.6	-	47.8	73.9	26.1	Floor noise
Hori.	7320.000	PK	33.9	36.2	9.0	32.6	-	46.4	73.9	27.5	Floor noise
Hori.	9760.000	PK	43.1	39.0	9.5	33.4	-	58.2	73.9	15.7	Floor noise
Hori.	2372.250	AV	37.4	27.6	5.5	32.7	4.7	42.4	53.9	11.5	*1)
Hori.	4880.000	AV	32.5	31.5	7.6	31.6	-	39.9	53.9	14.0	Floor noise
Hori.	7320.000	AV	33.9	36.2	9.0	32.6	-	46.4	53.9	7.5	Floor noise
Hori.	9760.000	AV	32.7	39.0	9.5	33.4	-	47.8	53.9	6.1	Floor noise
Vert.	72.494	QP	40.7	6.4	7.8	32.2	-	22.8	40.0	17.2	
Vert.	74.686	QP	45.1	6.5	7.9	32.2	-	27.3	40.0	12.7	
Vert.	164.748	QP	38.3	15.7	8.9	32.1	-	30.8	43.5	12.7	
Vert.	615.870	QP	40.6	19.5	12.1	32.0	-	40.2	46.0	5.8	
Vert.	621.610	QP	40.6	19.5	12.1	32.0	-	40.2	46.0	5.8	
Vert.	859.350	QP	32.7	21.6	13.4	31.1	-	36.6	46.0	9.5	
Vert.	2372.250	PK	51.2	27.6	5.5	32.7	-	51.5	73.9	22.4	
Vert.	4880.000	PK	41.1	31.5	7.6	31.6	-	48.5	73.9	25.4	Floor noise
Vert.	7320.000	PK	42.6	36.2	9.0	32.6	-	55.1	73.9	18.8	Floor noise
Vert.	9760.000	PK	42.2	39.0	9.5	33.4	-	57.3	73.9	16.6	Floor noise
Vert.	2372.250	AV	40.0	27.6	5.5	32.7	4.7	45.0	53.9	8.9	*1)
Vert.	4880.000	AV	32.7	31.5	7.6	31.6	-	40.1	53.9	13.8	Floor noise
Vert.	7320.000	AV	34.6	36.2	9.0	32.6	-	47.1	53.9	6.8	Floor noise
Vert.	9760.000	AV	32.7	39.0	9.5	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) + 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
(BT2)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 21, 2021 January 29, 2021 January 31, 2021 February 3, 2021
Temperature / Humidity 21 deg. C / 32 % RH 20 deg. C / 32 % RH 22 deg. C / 23 % RH 20 deg. C / 31 % RH
Engineer Tomohisa Nakagawa Takeshi Hiyaji Yuta Moriya Nachi Konegawa
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2480 MHz 2M-PHY

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.	72.508	QP	40.8	6.4	7.8	32.2	-	22.9	40.0	17.1	
Hori.	74.701	QP	44.0	6.5	7.9	32.2	-	26.2	40.0	13.8	
Hori.	164.798	QP	44.8	15.7	8.9	32.1	-	37.3	43.5	6.2	
Hori.	615.860	QP	38.3	19.5	12.1	32.0	-	37.9	46.0	8.1	
Hori.	621.030	QP	38.5	19.5	12.1	32.0	-	38.1	46.0	7.9	
Hori.	859.300	QP	34.2	21.6	13.4	31.1	-	38.1	46.0	8.0	
Hori.	2483.500	PK	58.3	27.3	5.6	32.7	-	58.5	73.9	15.4	
Hori.	4960.000	PK	40.4	31.5	7.6	31.6	-	47.9	73.9	26.0	Floor noise
Hori.	7440.000	PK	41.6	36.3	9.0	32.7	-	54.2	73.9	19.7	Floor noise
Hori.	9920.000	PK	42.4	38.8	9.5	33.5	-	57.2	73.9	16.7	Floor noise
Hori.	2483.500	AV	42.4	27.3	5.6	32.7	4.7	47.3	53.9	6.6	*1)
Hori.	4960.000	AV	30.5	31.5	7.6	31.6	-	37.9	53.9	16.0	Floor noise
Hori.	7440.000	AV	31.9	36.3	9.0	32.7	-	44.5	53.9	9.4	Floor noise
Hori.	9920.000	AV	32.7	38.8	9.5	33.5	-	47.5	53.9	6.4	Floor noise
Vert.	72.508	QP	40.7	6.4	7.8	32.2	-	22.8	40.0	17.2	
Vert.	74.701	QP	44.6	6.5	7.9	32.2	-	26.8	40.0	13.2	
Vert.	164.798	QP	38.1	15.7	8.9	32.1	-	30.6	43.5	12.9	
Vert.	615.860	QP	40.5	19.5	12.1	32.0	-	40.1	46.0	5.9	
Vert.	621.030	QP	41.0	19.5	12.1	32.0	-	40.6	46.0	5.4	
Vert.	865.180	QP	32.7	21.7	13.4	31.1	-	36.7	46.0	9.3	
Vert.	2483.500	PK	40.5	27.3	5.6	32.7	-	40.6	73.9	33.3	
Vert.	4960.000	PK	40.0	31.5	7.6	31.6	-	47.5	73.9	26.4	Floor noise
Vert.	7440.000	PK	42.5	36.3	9.0	32.7	-	55.1	73.9	18.8	Floor noise
Vert.	9920.000	PK	42.9	38.8	9.5	33.5	-	57.8	73.9	16.1	Floor noise
Vert.	2483.500	AV	40.4	27.3	5.6	32.7	4.7	45.3	53.9	8.6	*1)
Vert.	4960.000	AV	32.6	31.5	7.6	31.6	-	40.1	53.9	13.8	Floor noise
Vert.	7440.000	AV	31.7	36.3	9.0	32.7	-	44.3	53.9	9.6	Floor noise
Vert.	9920.000	AV	32.8	38.8	9.5	33.5	-	47.6	53.9	6.3	Floor noise

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

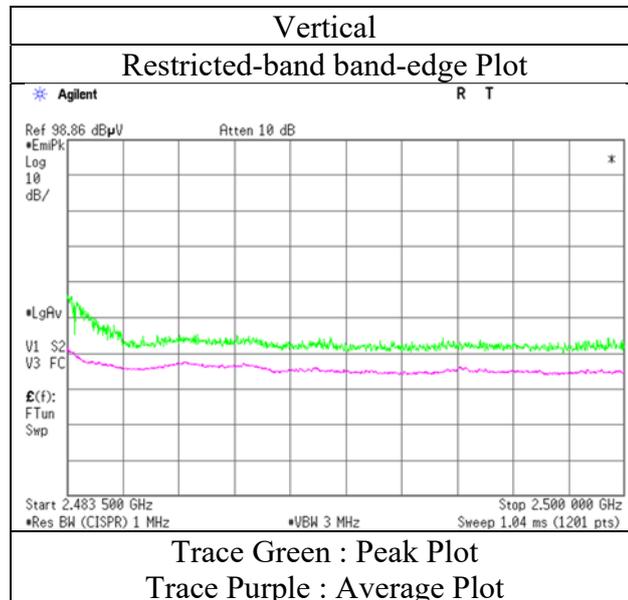
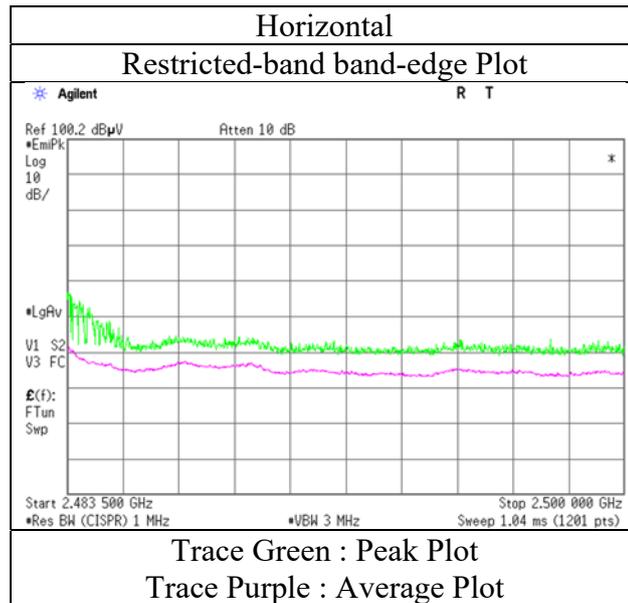
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

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)
(BT2)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 21, 2021
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Tomohisa Nakagawa
(1 GHz - 10 GHz)
Mode Tx BT LE 2480 MHz 2M-PHY



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

Radiated Spurious Emission
(BT1)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 28, 2021
Temperature / Humidity 23 deg. C / 35 % RH
Engineer Nachi Konegawa
(1 GHz - 18 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz + 11ax-20 OFDM 5700 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2338.300	PK	50.6	27.7	5.4	32.7	-	51.0	73.9	22.9	
Hori.	2390.000	PK	42.9	27.5	5.5	32.7	-	43.2	73.9	30.7	
Hori.	2338.300	AV	33.3	27.7	5.4	32.7	4.7	38.4	53.9	15.5	*2)
Hori.	2390.000	AV	33.7	27.5	5.5	32.7	4.7	38.7	53.9	15.2	*1)
Vert.	2338.300	PK	51.1	27.7	5.4	32.7	-	51.5	73.9	22.4	
Vert.	2390.000	PK	46.6	27.5	5.5	32.7	-	46.8	73.9	27.1	
Vert.	2338.300	AV	33.3	27.7	5.4	32.7	4.7	38.4	53.9	15.5	*2)
Vert.	2390.000	AV	31.7	27.5	5.5	32.7	4.7	36.7	53.9	17.2	*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 $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
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

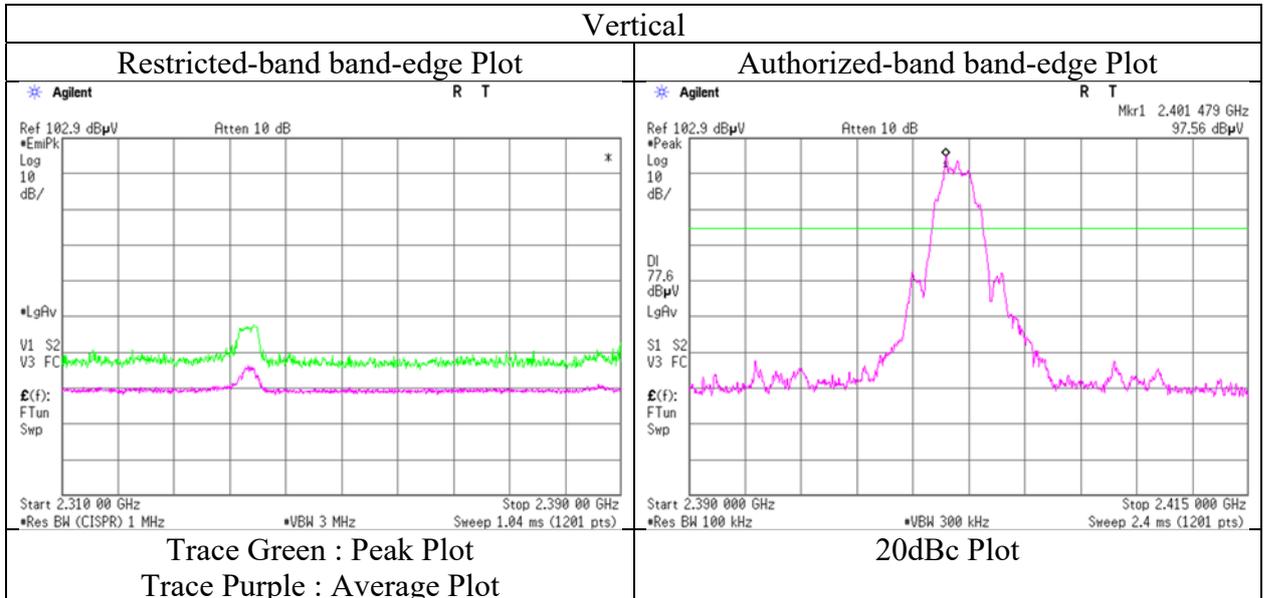
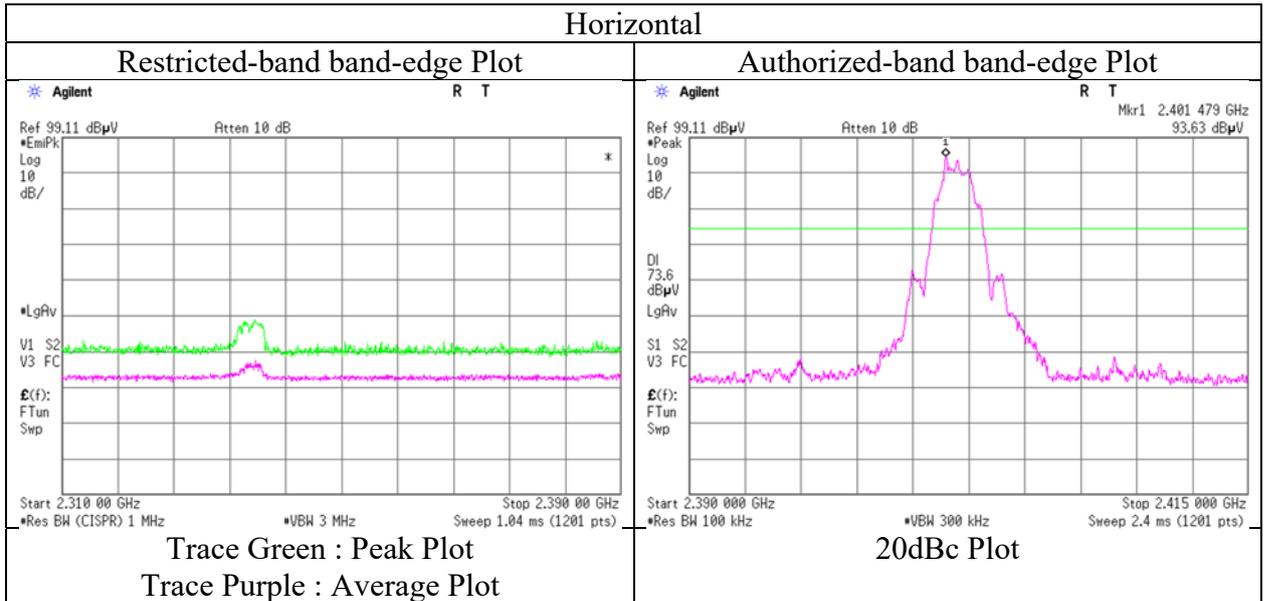
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	93.6	27.5	5.5	32.7	93.9	-	-	Carrier
Hori.	2400.000	PK	61.7	27.5	5.5	32.7	62.0	73.9	11.9	
Vert.	2402.000	PK	97.6	27.5	5.5	32.7	97.8	-	-	Carrier
Vert.	2400.000	PK	65.3	27.5	5.5	32.7	65.6	77.8	12.2	

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
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)
(BT1)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 28, 2021
Temperature / Humidity 23 deg. C / 35 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz + 11ax-20 OFDM 5700 MHz



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

Radiated Spurious Emission
(BT1)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date January 28, 2021 January 31, 2021 February 1, 2021
Temperature / Humidity 23 deg. C / 35 % RH 22 deg. C / 23 % RH 23 deg. C / 39 % RH
Engineer Nachi Konegawa Yuta Moriya Nachi Konegawa
(1 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2440 MHz + 11ax-20 OFDM 5700 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	72.909	QP	41.0	6.4	7.8	32.2	-	23.1	40.0	17.0	
Hori.	75.110	QP	43.0	6.5	7.9	32.2	-	25.2	40.0	14.8	
Hori.	163.410	QP	35.3	15.6	8.9	32.1	-	27.7	43.5	15.8	
Hori.	610.560	QP	39.1	19.4	12.1	32.0	-	38.6	46.0	7.4	
Hori.	615.850	QP	40.0	19.5	12.1	32.0	-	39.6	46.0	6.4	
Hori.	845.551	QP	37.2	21.2	13.3	31.2	-	40.6	46.0	5.4	
Hori.	2372.023	PK	50.7	27.6	5.5	32.7	-	51.0	73.9	22.9	
Hori.	4880.000	PK	40.8	31.5	7.6	31.6	-	48.2	73.9	25.7	Floor noise
Hori.	7320.000	PK	42.4	36.2	9.0	32.6	-	54.9	73.9	19.0	Floor noise
Hori.	9760.000	PK	41.8	39.0	9.5	33.4	-	56.9	73.9	17.0	Floor noise
Hori.	2372.023	AV	33.4	27.6	5.5	32.7	4.7	38.4	53.9	15.5	*1)
Hori.	4880.000	AV	31.9	31.5	7.6	31.6	-	39.3	53.9	14.6	Floor noise
Hori.	7320.000	AV	33.3	36.2	9.0	32.6	-	45.8	53.9	8.1	Floor noise
Hori.	9760.000	AV	32.1	39.0	9.5	33.4	-	47.2	53.9	6.7	Floor noise
Vert.	72.909	QP	41.7	6.4	7.8	32.2	-	23.8	40.0	16.3	
Vert.	75.110	QP	45.9	6.5	7.9	32.2	-	28.1	40.0	11.9	
Vert.	163.410	QP	37.2	15.6	8.9	32.1	-	29.6	43.5	13.9	
Vert.	610.560	QP	42.2	19.4	12.1	32.0	-	41.7	46.0	4.3	
Vert.	615.850	QP	43.7	19.5	12.1	32.0	-	43.3	46.0	2.7	
Vert.	845.551	QP	35.1	21.2	13.3	31.2	-	38.5	46.0	7.6	
Vert.	2372.023	PK	51.1	27.6	5.5	32.7	-	51.4	73.9	22.5	
Vert.	4880.000	PK	40.9	31.5	7.6	31.6	-	48.3	73.9	25.6	Floor noise
Vert.	7320.000	PK	42.4	36.2	9.0	32.6	-	54.9	73.9	19.0	Floor noise
Vert.	9760.000	PK	41.7	39.0	9.5	33.4	-	56.8	73.9	17.1	Floor noise
Vert.	2372.023	AV	33.3	27.6	5.5	32.7	4.7	38.4	53.9	15.5	*1)
Vert.	4880.000	AV	31.8	31.5	7.6	31.6	-	39.2	53.9	14.7	Floor noise
Vert.	7320.000	AV	33.4	36.2	9.0	32.6	-	45.9	53.9	8.0	Floor noise
Vert.	9760.000	AV	32.5	39.0	9.5	33.4	-	47.6	53.9	6.3	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
(BT1)

Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 28, 2021
Temperature / Humidity 23 deg. C / 35 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz + 11ax-20 OFDM 5700 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	57.5	27.3	5.6	32.7	-	57.7	73.9	16.3	
Hori.	2483.500	AV	43.3	27.3	5.6	32.7	4.7	48.3	53.9	5.6	*1)
Vert.	2483.500	PK	58.5	27.3	5.6	32.7	-	58.6	73.9	15.3	
Vert.	2483.500	AV	43.4	27.3	5.6	32.7	4.7	48.3	53.9	5.6	*1)

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

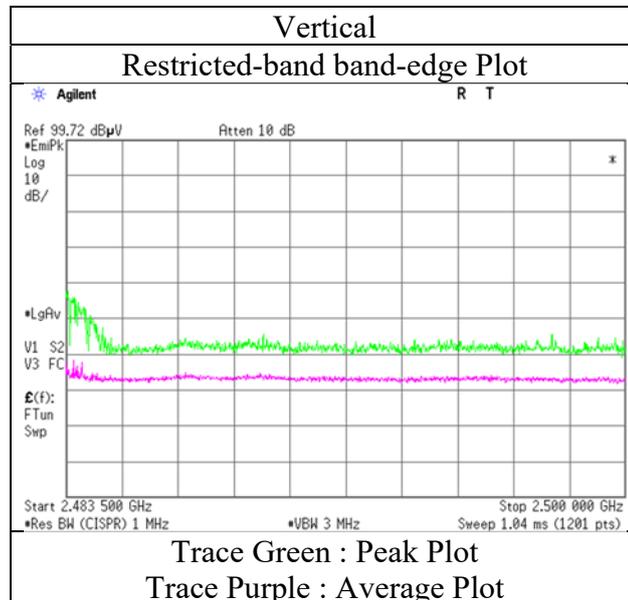
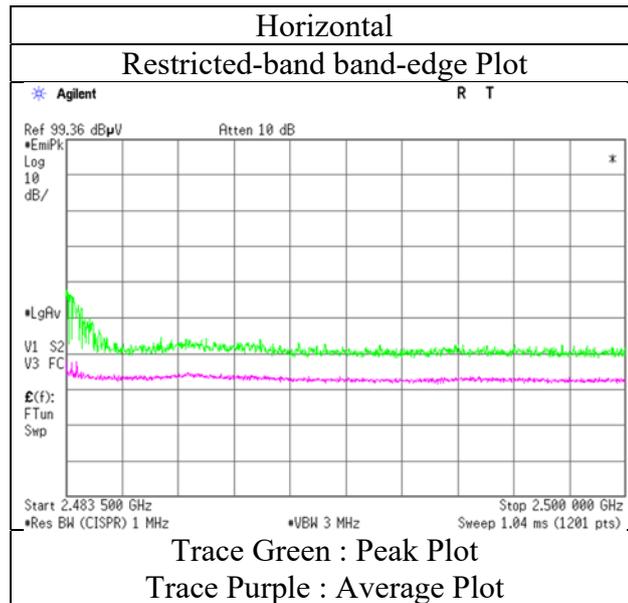
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$
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)
(BT1)

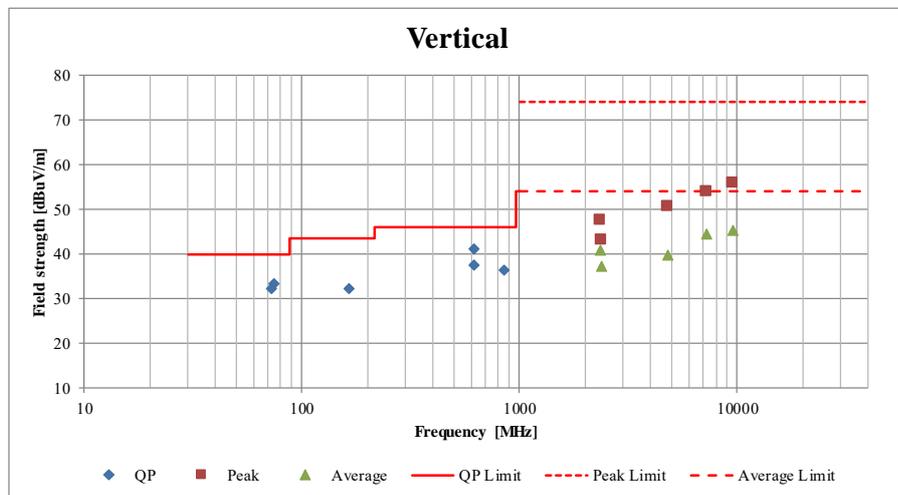
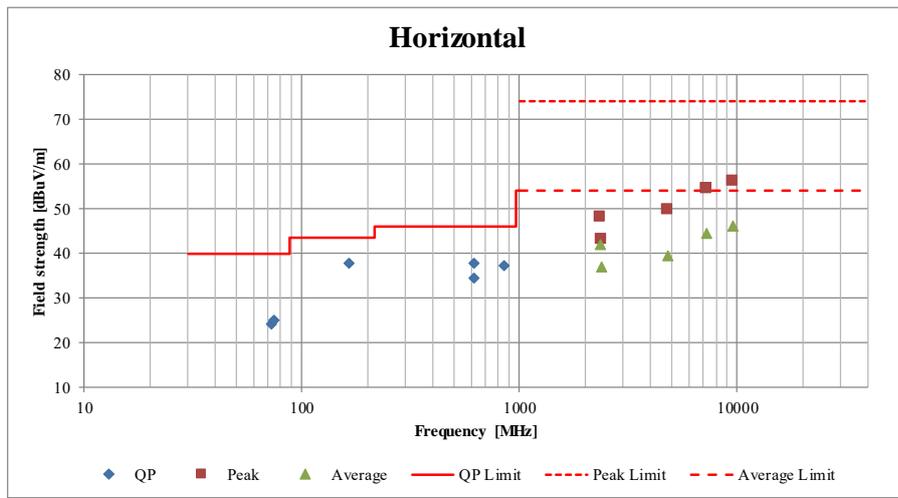
Report No. 13671144H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date January 28, 2021
Temperature / Humidity 23 deg. C / 35 % RH
Engineer Nachi Konegawa
(1 GHz - 10 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz + 11ax-20 OFDM 5700 MHz



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

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

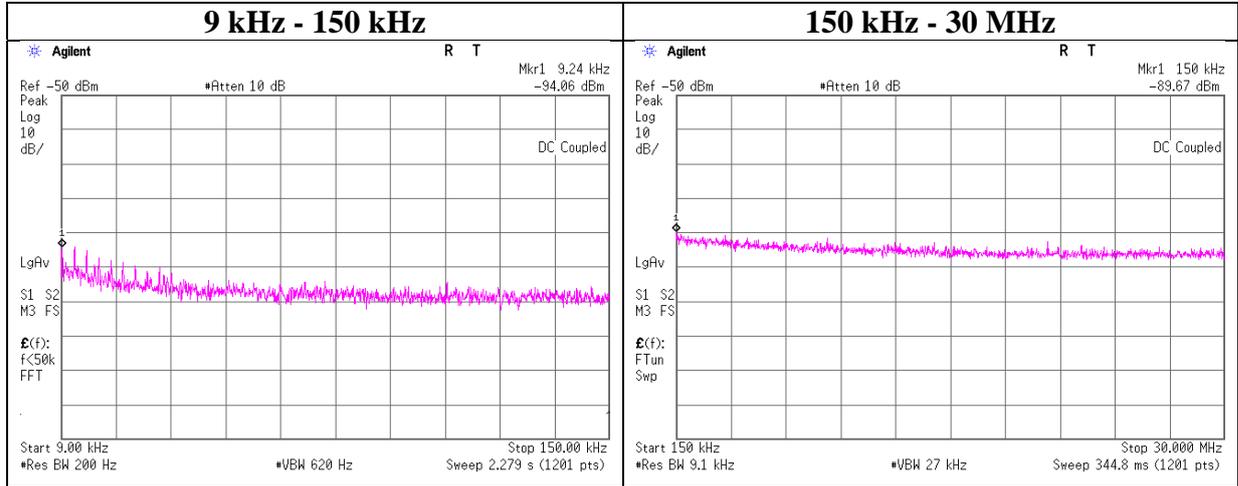
Report No.	13671144H			
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.3	No.3	No.3	No.3
Date	January 20, 2021	January 29, 2021	January 31, 2021	February 2, 2021
Temperature / Humidity	22 deg. C / 32 % RH	20 deg. C / 32 % RH	22 deg. C / 23 % RH	21 deg. C / 38 % RH
Engineer	Yuta Moriya (1 GHz - 10 GHz)	Takeshi Hiyaji (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 26.5 GHz)	Nachi Konegawa (Below 1 GHz)
Mode	Tx BT LE 2402 MHz 1M-PHY			



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

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 20, 2021
 Temperature / Humidity 23 deg. C / 50 % RH
 Engineer Junya Okuno
 Mode Tx 11ax-20 (OFDM) 2462 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.24	-94.1	0.50	9.8	6.8	2	-73.9	300	6.0	-12.7	48.2	60.9	
150.00	-89.7	0.50	9.8	6.8	2	-69.6	300	6.0	-8.3	24.0	32.3	

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

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

N: Number of output

The worst antenna gain was applied.

UL Japan, Inc.

Ise EMC Lab.

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

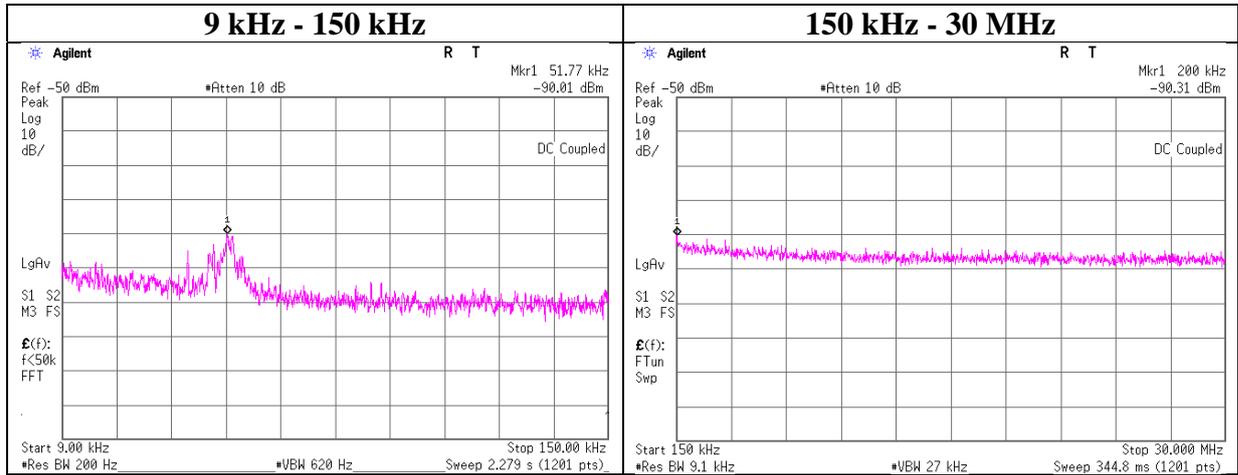
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 14, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 1M-PHY 2402 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
51.77	-90.0	0.50	9.8	5.8	1	-74.0	300	6.0	-12.7	33.3	46.0	
200.00	-90.3	0.50	9.8	5.8	1	-74.3	300	6.0	-13.0	21.5	34.5	

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

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

N: Number of output

UL Japan, Inc.

Ise EMC Lab.

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

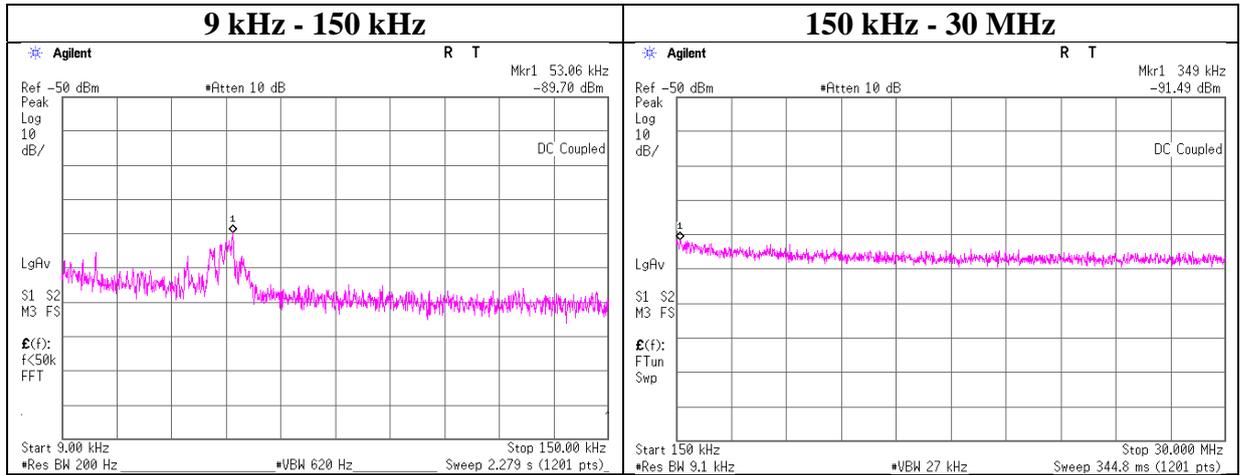
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 14, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 1M-PHY 2440 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
53.06	-89.7	0.50	9.8	5.8	1	-73.7	300	6.0	-12.4	33.1	45.5	
349.00	-91.5	0.50	9.8	5.8	1	-75.4	300	6.0	-14.2	16.7	30.9	

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

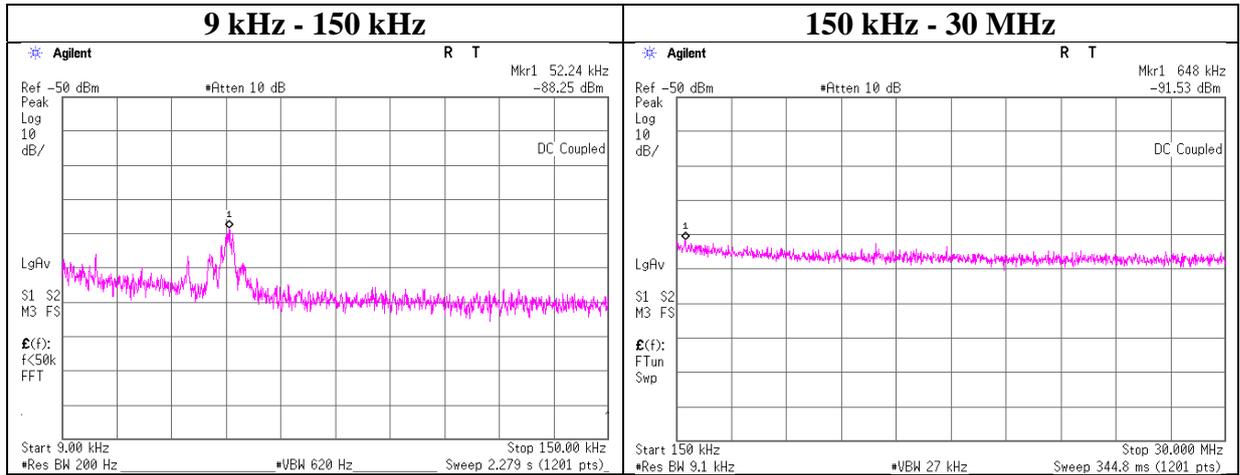
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 14, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 1M-PHY 2480 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
52.24	-88.3	0.50	9.8	5.8	1	-72.2	300	6.0	-10.9	33.2	44.1	
648.00	-91.5	0.50	9.8	5.8	1	-75.5	30	6.0	5.8	31.3	25.5	

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

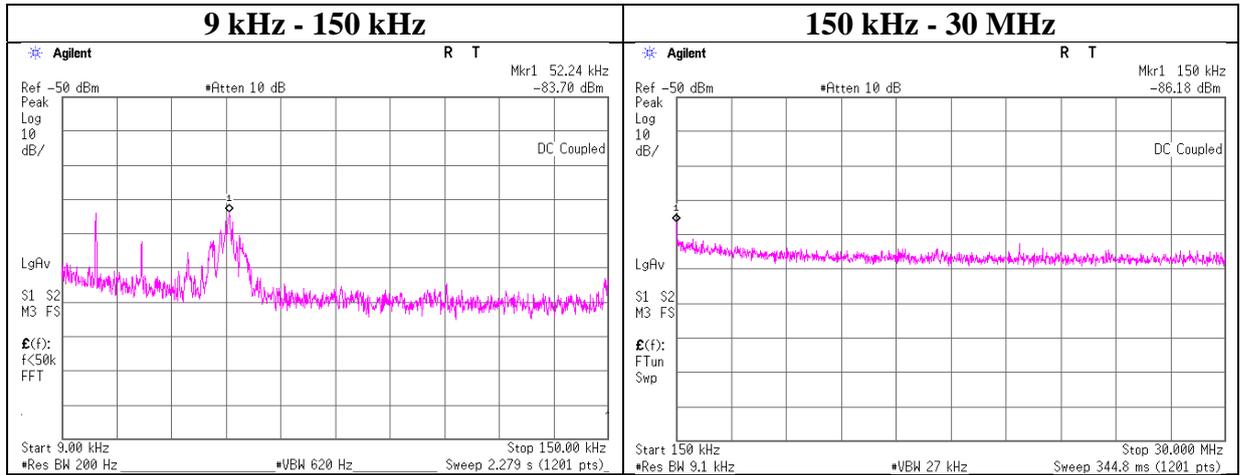
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 14, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 2M-PHY 2402 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
52.24	-83.7	0.50	9.8	5.8	1	-67.7	300	6.0	-6.4	33.2	39.6	
150.00	-86.2	0.50	9.8	5.8	1	-70.1	300	6.0	-8.9	24.0	32.9	

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

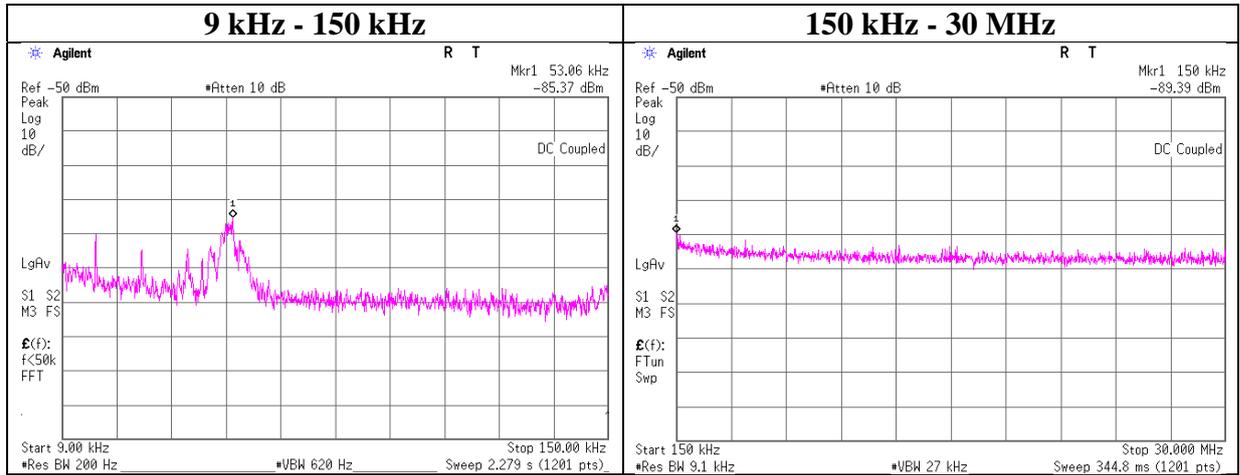
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 14, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 2M-PHY 2440 MHz

BT1



Frequency [kHz]	Reading	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
53.06	-85.4	0.50	9.8	5.8	1	-69.3	300	6.0	-8.1	33.1	41.2	
150.00	-89.4	0.50	9.8	5.8	1	-73.3	300	6.0	-12.1	24.0	36.1	

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

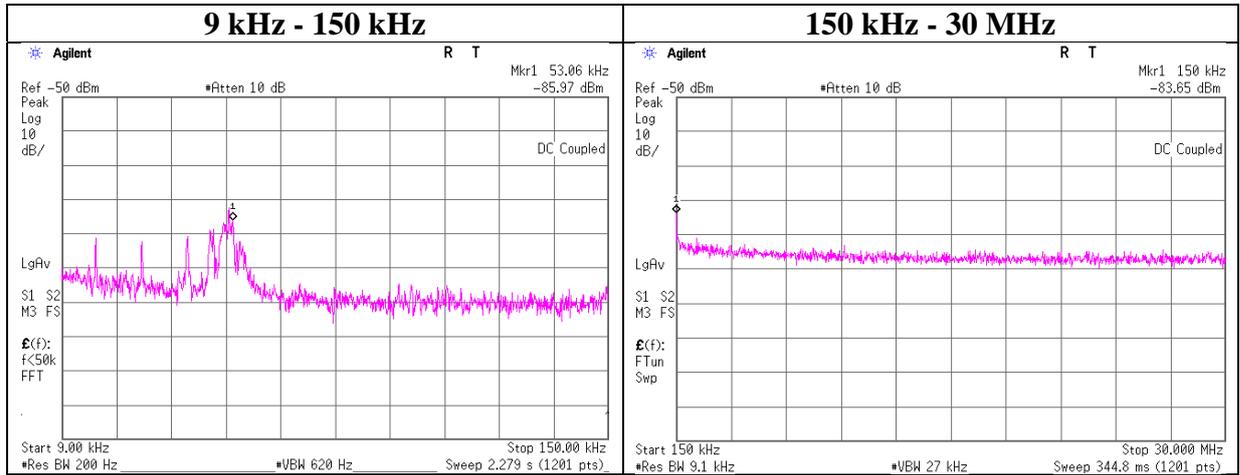
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 14, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 2M-PHY 2480 MHz

BT1



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
53.06	-86.0	0.50	9.8	5.8	1	-69.9	300	6.0	-8.7	33.1	41.8	
150.00	-83.7	0.50	9.8	5.8	1	-67.6	300	6.0	-6.3	24.0	30.3	

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

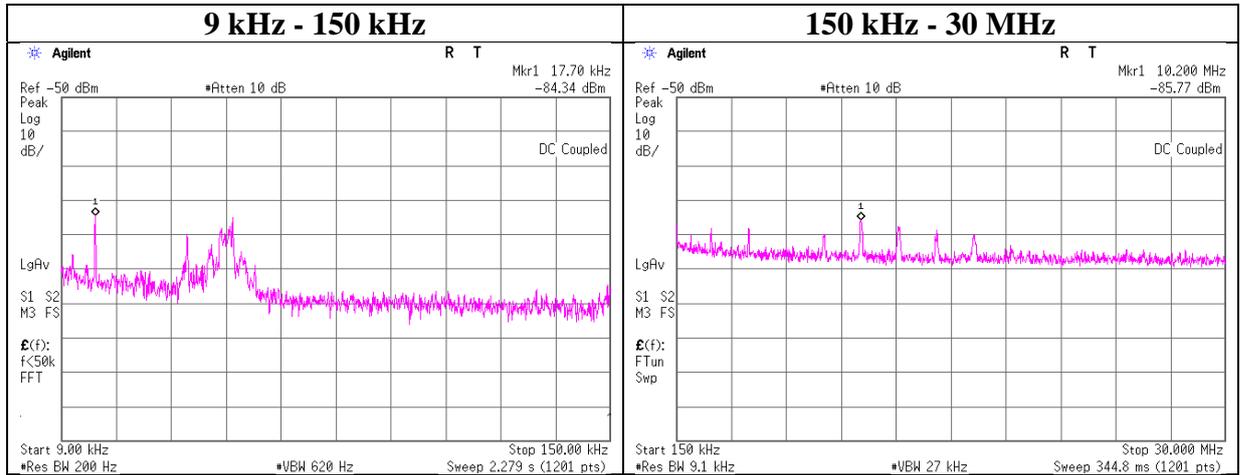
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 15, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 1M-PHY 2402 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
17.70	-84.3	0.50	9.8	5.8	1	-68.3	300	6.0	-7.0	42.6	49.6	
10200.00	-85.8	0.50	9.8	5.8	1	-69.7	30	6.0	11.5	29.5	18.0	

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

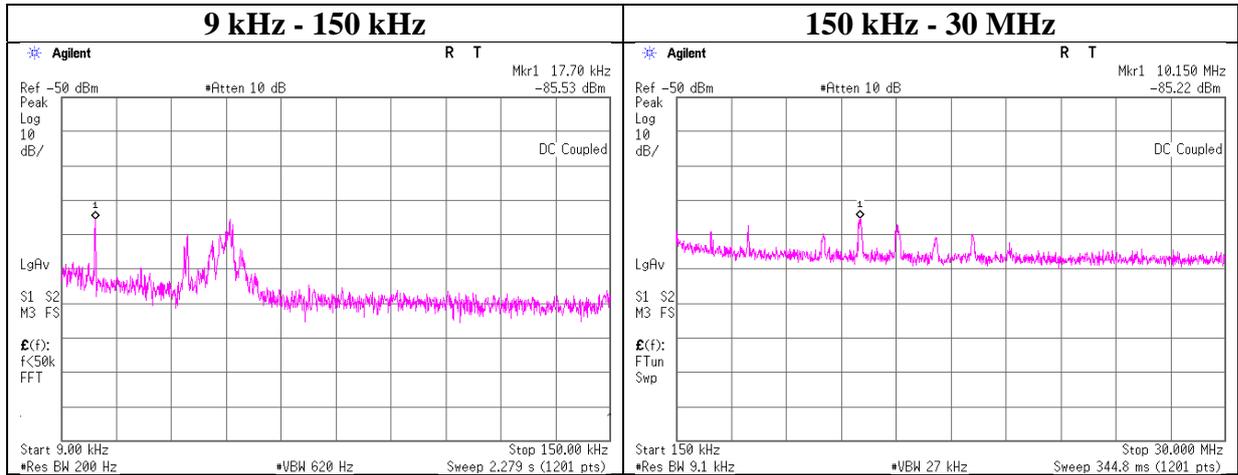
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 15, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 1M-PHY 2440 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
17.70	-85.5	0.50	9.8	5.8	1	-69.5	300	6.0	-8.2	42.6	50.8	
10150.00	-85.2	0.50	9.8	5.8	1	-69.2	30	6.0	12.1	29.5	17.5	

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

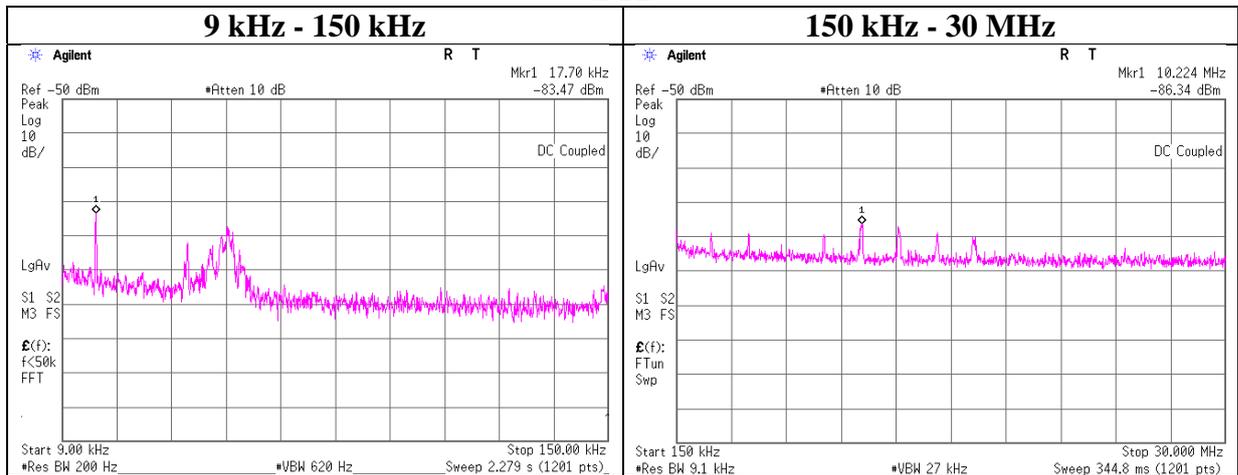
$$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 15, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 1M-PHY 2480 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
17.70	-83.5	0.50	9.8	5.8	1	-67.4	300	6.0	-6.2	42.6	48.8	
10224.00	-86.3	0.50	9.8	5.8	1	-70.3	30	6.0	11.0	29.5	18.6	

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

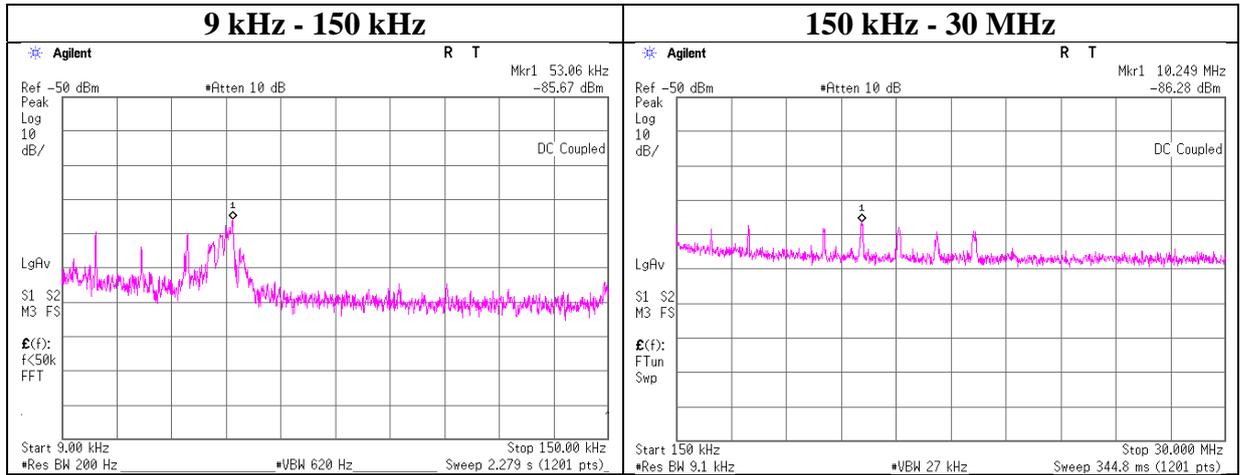
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 15, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 2M-PHY 2402 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
53.06	-85.7	0.50	9.8	5.8	1	-69.6	300	6.0	-8.4	33.1	41.5	
10249.00	-86.3	0.50	9.8	5.8	1	-70.2	30	6.0	11.0	29.5	18.5	

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

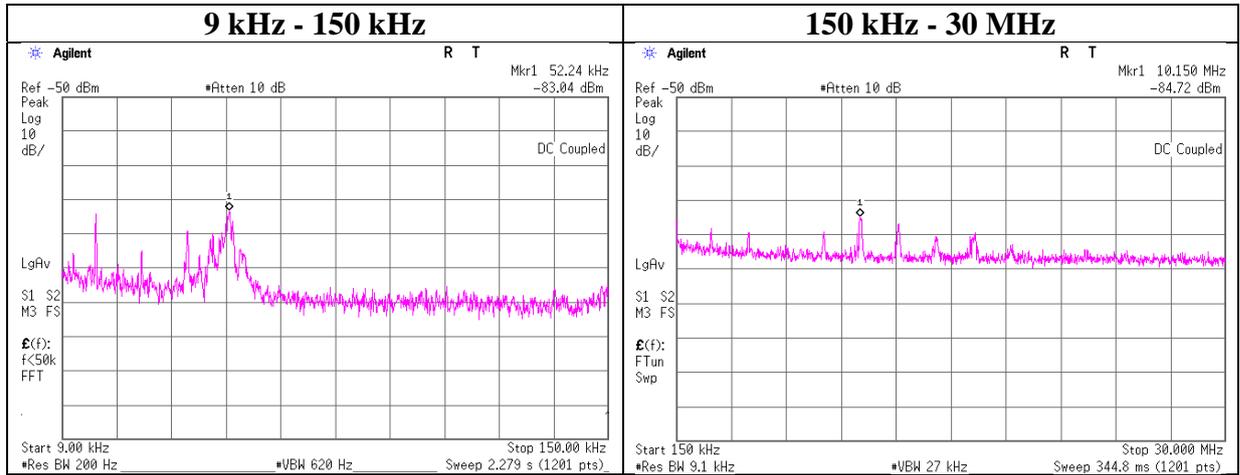
$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log(N)$

N: Number of output

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 15, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 2M-PHY 2440 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
52.24	-83.0	0.50	9.8	5.8	1	-67.0	300	6.0	-5.7	33.2	38.9	
10150.00	-84.7	0.50	9.8	5.8	1	-68.7	30	6.0	12.6	29.5	17.0	

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

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

N: Number of output

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Ise EMC Lab.

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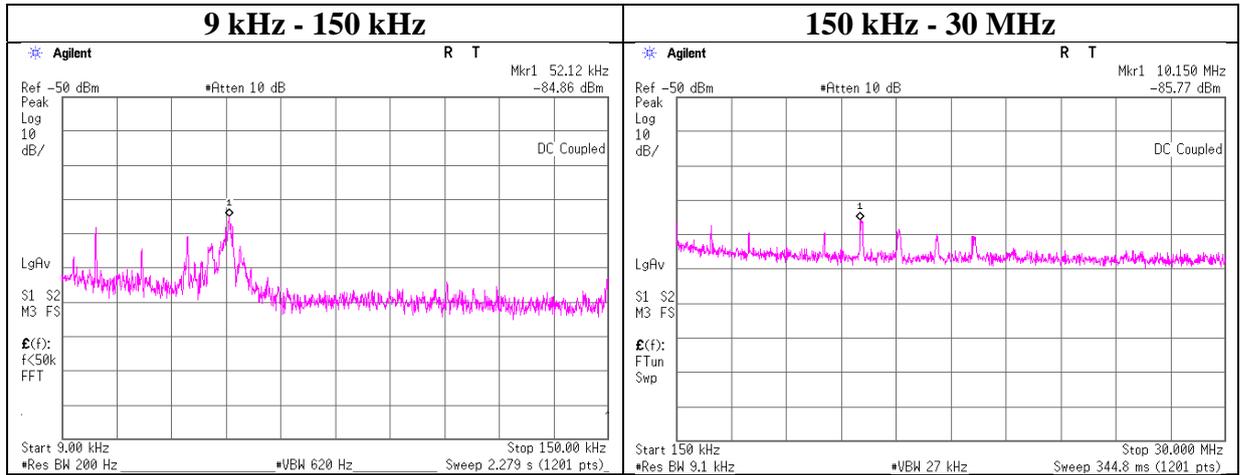
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Report No. 13671144H
 Test place Ise EMC Lab. No.8 Measurement Room
 Date January 15, 2021
 Temperature / Humidity 22 deg. C / 36 % RH
 Engineer Nachi Konegawa
 Mode Tx BT LE 2M-PHY 2480 MHz

BT2



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
52.12	-84.9	0.50	9.8	5.8	1	-68.8	300	6.0	-7.6	33.2	40.8	
10150.00	-85.8	0.50	9.8	5.8	1	-69.7	30	6.0	11.5	29.5	18.0	

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

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

N: Number of output

Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 20, 2021
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Junya Okuno
Mode Tx 11b

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result		Limit [dBm / 3 kHz]	Margin [dB]
	Result [mW]	Result [mW]	[dBm / 3 kHz]	[mW / 3 kHz]		
2412	0.076	0.064	-8.56	0.139	8.00	16.56
2437	0.084	0.068	-8.17	0.153	8.00	16.17
2462	0.086	0.059	-8.40	0.145	8.00	16.40

Antenna 1

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit [dBm / 3 kHz]	Margin [dB]
	[dBm]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-21.48	0.50	9.78	-11.20	0.076	8.00	19.20
2437	-21.02	0.50	9.78	-10.74	0.084	8.00	18.74
2462	-20.94	0.50	9.78	-10.66	0.086	8.00	18.66

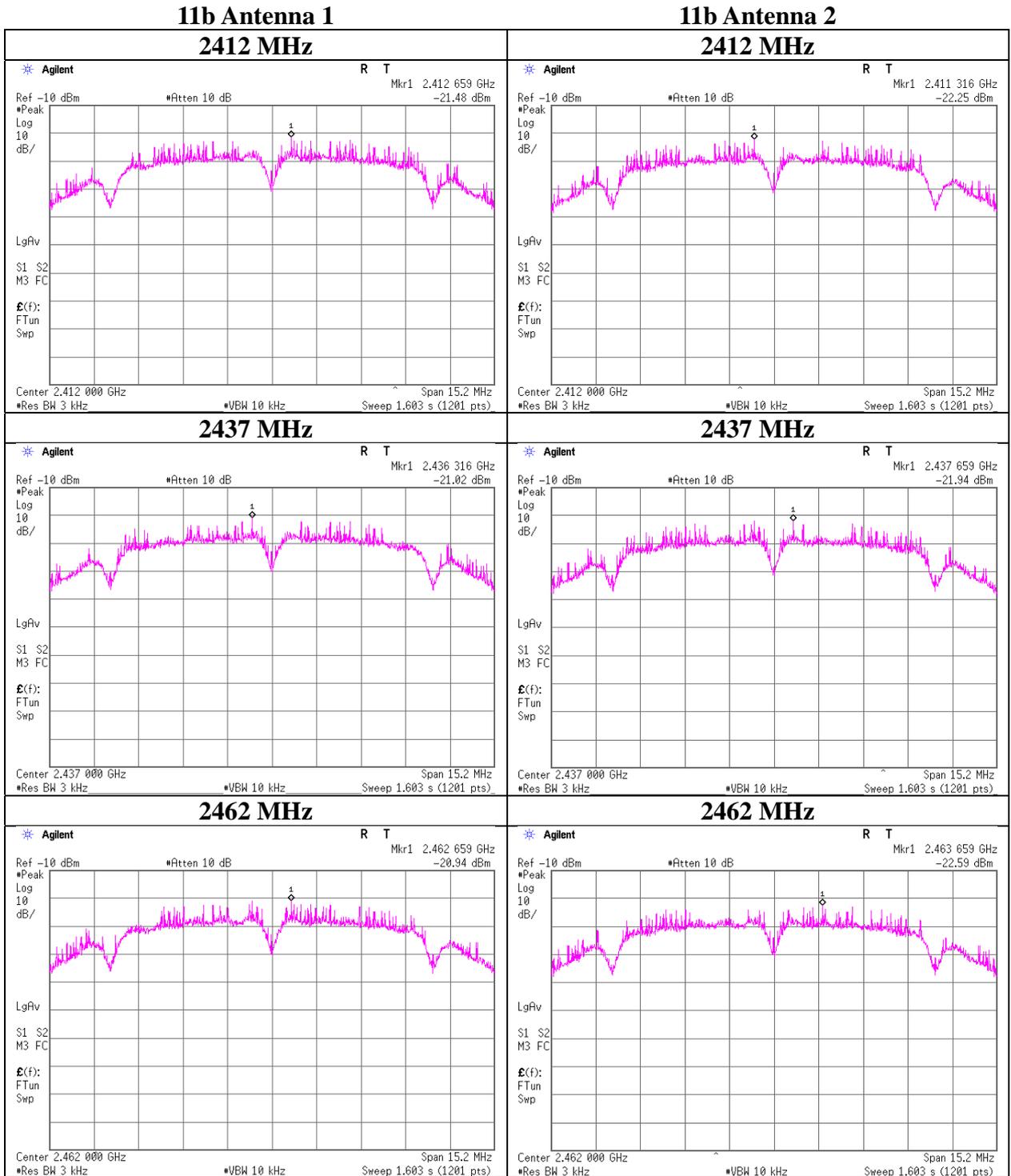
Antenna 2

Freq. [MHz]	Reading	Cable Loss	Atten. Loss	Result		Limit [dBm / 3 kHz]	Margin [dB]
	[dBm]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-22.25	0.50	9.78	-11.97	0.064	8.00	19.97
2437	-21.94	0.50	9.78	-11.66	0.068	8.00	19.66
2462	-22.59	0.50	9.78	-12.31	0.059	8.00	20.31

Sample Calculation:

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

Power Density



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Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 20, 2021
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Junya Okuno
Mode Tx 11g

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result		Limit	Margin
	Result [mW]	Result [mW]	[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
2412	0.019	0.013	-14.90	0.032	8.00	22.90
2437	0.020	0.014	-14.57	0.035	8.00	22.57
2462	0.025	0.023	-13.20	0.048	8.00	21.20

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-27.50	0.50	9.78	-17.22	0.019	8.00	25.22
2437	-27.17	0.50	9.78	-16.89	0.020	8.00	24.89
2462	-26.27	0.50	9.78	-15.99	0.025	8.00	23.99

Antenna 2

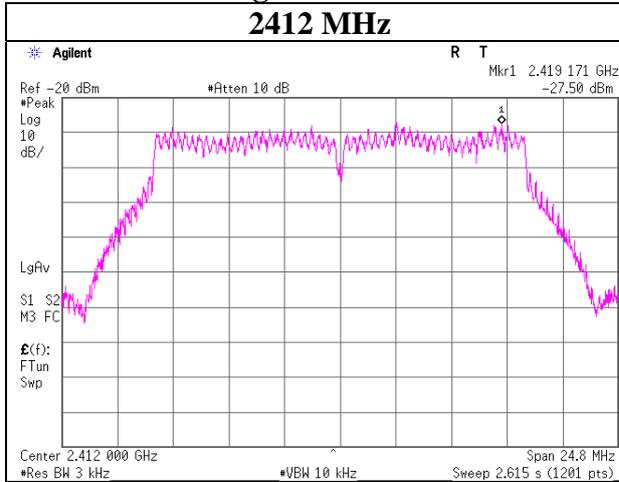
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-29.00	0.50	9.78	-18.72	0.013	8.00	26.72
2437	-28.67	0.50	9.78	-18.39	0.014	8.00	26.39
2462	-26.72	0.50	9.78	-16.44	0.023	8.00	24.44

Sample Calculation:

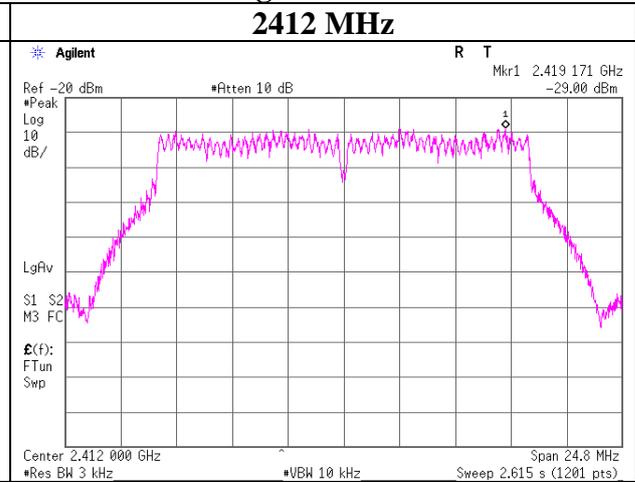
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

Power Density

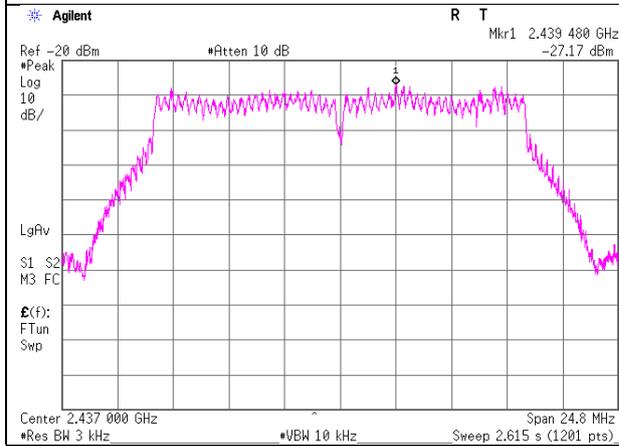
11g Antenna 1



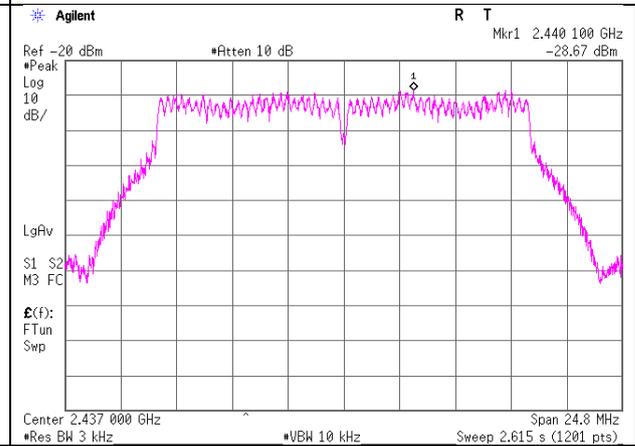
11g Antenna 2



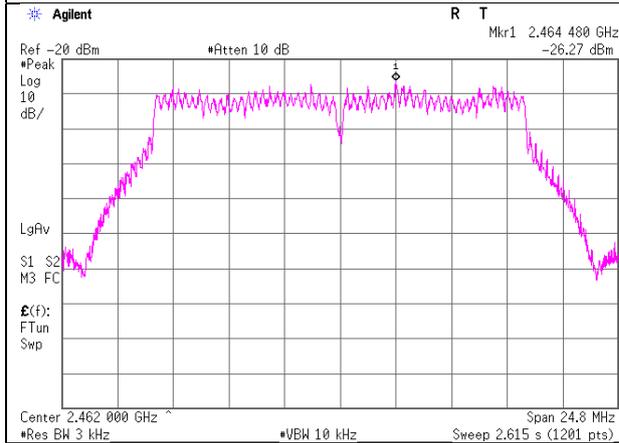
2437 MHz



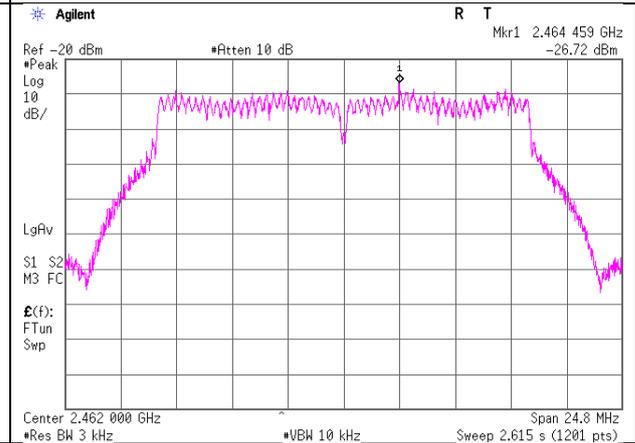
2437 MHz



2462 MHz



2462 MHz



Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 20, 2021
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Junya Okuno
Mode Tx 11n-20

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result		Limit [dBm / 3 kHz]	Margin [dB]
	Result [mW]	Result [mW]	[dBm / 3 kHz]	[mW / 3 kHz]		
2412	0.017	0.020	-14.35	0.037	8.00	22.35
2437	0.021	0.022	-13.61	0.044	8.00	21.61
2462	0.025	0.021	-13.36	0.046	8.00	21.36

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-27.95	0.50	9.78	-17.67	0.017	8.00	25.67
2437	-27.00	0.50	9.78	-16.72	0.021	8.00	24.72
2462	-26.25	0.50	9.78	-15.97	0.025	8.00	23.97

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-27.35	0.50	9.78	-17.07	0.020	8.00	25.07
2437	-26.81	0.50	9.78	-16.53	0.022	8.00	24.53
2462	-27.09	0.50	9.78	-16.81	0.021	8.00	24.81

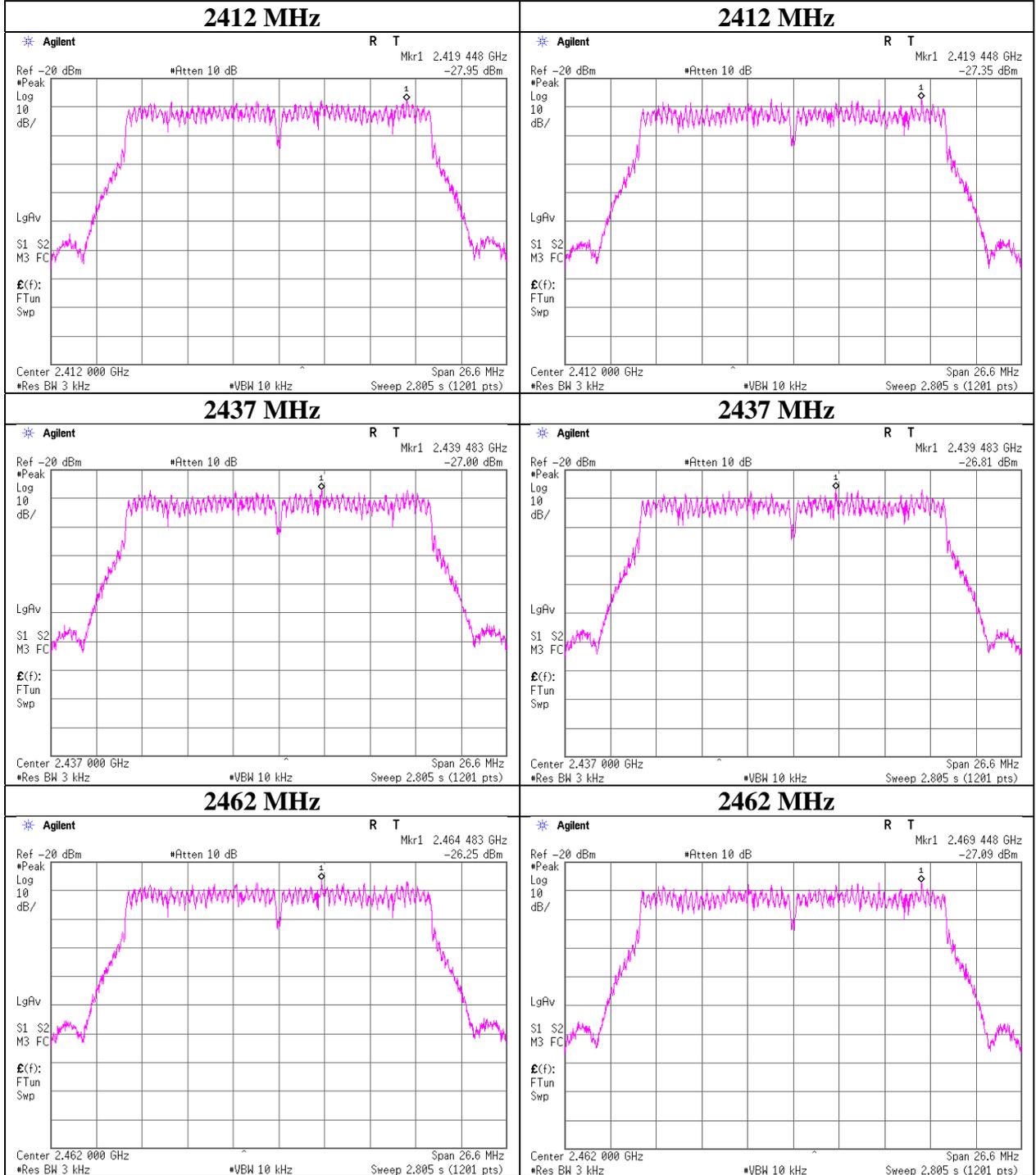
Sample Calculation:

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

Power Density

11n-20 Antenna 1

11n-20 Antenna 2



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Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 20, 2021
Temperature / Humidity 23 deg. C / 50 % RH
Engineer Junya Okuno
Mode Tx 11ax-20 (OFDM)

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1	Antenna 2	Result		Limit	Margin
	Result [mW]	Result [mW]	[dBm / 3 kHz]	[mW / 3 kHz]	[dBm / 3 kHz]	[dB]
2412	0.014	0.013	-15.59	0.028	8.00	23.59
2437	0.018	0.015	-14.88	0.033	8.00	22.88
2462	0.019	0.019	-14.24	0.038	8.00	22.24

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-28.70	0.50	9.78	-18.42	0.014	8.00	26.42
2437	-27.78	0.50	9.78	-17.50	0.018	8.00	25.50
2462	-27.54	0.50	9.78	-17.26	0.019	8.00	25.26

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-29.07	0.50	9.78	-18.79	0.013	8.00	26.79
2437	-28.59	0.50	9.78	-18.31	0.015	8.00	26.31
2462	-27.53	0.50	9.78	-17.25	0.019	8.00	25.25

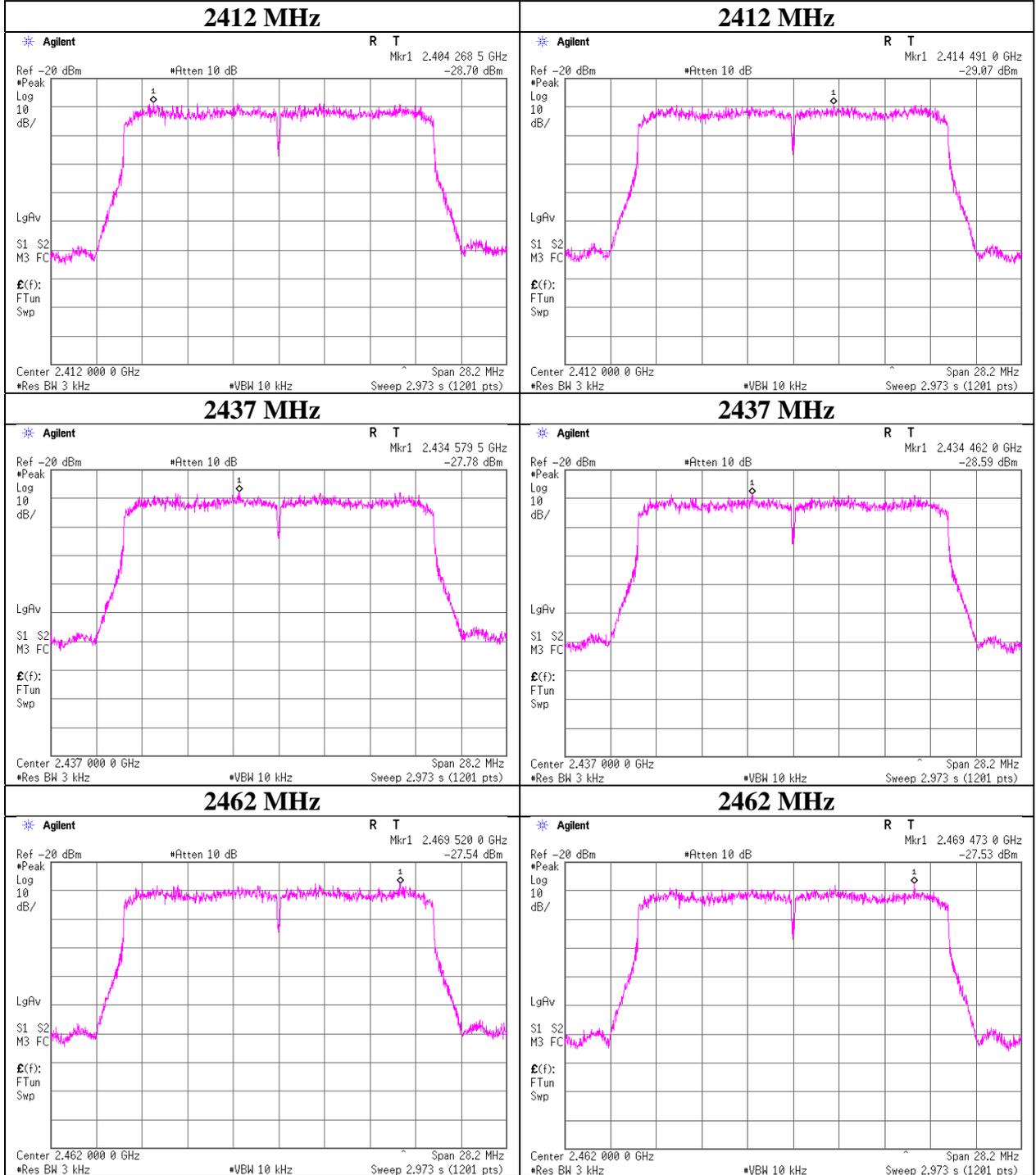
Sample Calculation:

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

Power Density

11ax-20 (OFDM) Antenna 1

11ax-20 (OFDM) Antenna 2



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Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 26, 2021
Temperature / Humidity 22 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (26-tone RU)

Antenna 1 + Antenna 2

RU Type	Freq. [MHz]	RU Index	Antenna 1	Antenna 2	Result		Limit [dBm / 3 kHz]	Margin [dB]
			Result [mW]	Result [mW]	[dBm / 3 kHz]	[mW / 3 kHz]		
26-tone RU	2412	0	0.012	0.011	-16.49	0.022	8.00	24.49
		4	0.011	0.008	-17.27	0.019	8.00	25.27
		8	0.012	0.008	-16.95	0.020	8.00	24.95
	2437	0	0.013	0.012	-16.08	0.025	8.00	24.08
		4	0.012	0.010	-16.55	0.022	8.00	24.55
		8	0.011	0.010	-16.81	0.021	8.00	24.81
	2462	0	0.013	0.009	-16.60	0.022	8.00	24.60
		4	0.016	0.010	-15.87	0.026	8.00	23.87
		8	0.011	0.010	-16.76	0.021	8.00	24.76

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

RU Type	Freq. [MHz]	RU Index	Reading	Cable	Atten.	Result		Limit [dBm / 3 kHz]	Margin [dB]
			[dBm]	Loss [dB]	Loss [dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
26-tone RU	2412	0	-29.99	0.87	9.75	-19.37	0.012	8.00	27.37
		4	-30.38	0.87	9.75	-19.76	0.011	8.00	27.76
		8	-29.94	0.87	9.75	-19.32	0.012	8.00	27.32
	2437	0	-29.57	0.87	9.75	-18.95	0.013	8.00	26.95
		4	-29.76	0.87	9.75	-19.14	0.012	8.00	27.14
		8	-30.26	0.87	9.75	-19.64	0.011	8.00	27.64
	2462	0	-29.57	0.87	9.75	-18.95	0.013	8.00	26.95
		4	-28.52	0.87	9.75	-17.90	0.016	8.00	25.90
		8	-30.13	0.87	9.75	-19.51	0.011	8.00	27.51

Antenna 2

RU Type	Freq. [MHz]	RU Index	Reading	Cable	Atten.	Result		Limit [dBm / 3 kHz]	Margin [dB]
			[dBm]	Loss [dB]	Loss [dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
26-tone RU	2412	0	-30.25	0.87	9.75	-19.63	0.011	8.00	27.63
		4	-31.50	0.87	9.75	-20.88	0.008	8.00	28.88
		8	-31.34	0.87	9.75	-20.72	0.008	8.00	28.72
	2437	0	-29.85	0.87	9.75	-19.23	0.012	8.00	27.23
		4	-30.64	0.87	9.75	-20.02	0.010	8.00	28.02
		8	-30.62	0.87	9.75	-20.00	0.010	8.00	28.00
	2462	0	-31.00	0.87	9.75	-20.38	0.009	8.00	28.38
		4	-30.76	0.87	9.75	-20.14	0.010	8.00	28.14
		8	-30.67	0.87	9.75	-20.05	0.010	8.00	28.05

Sample Calculation:

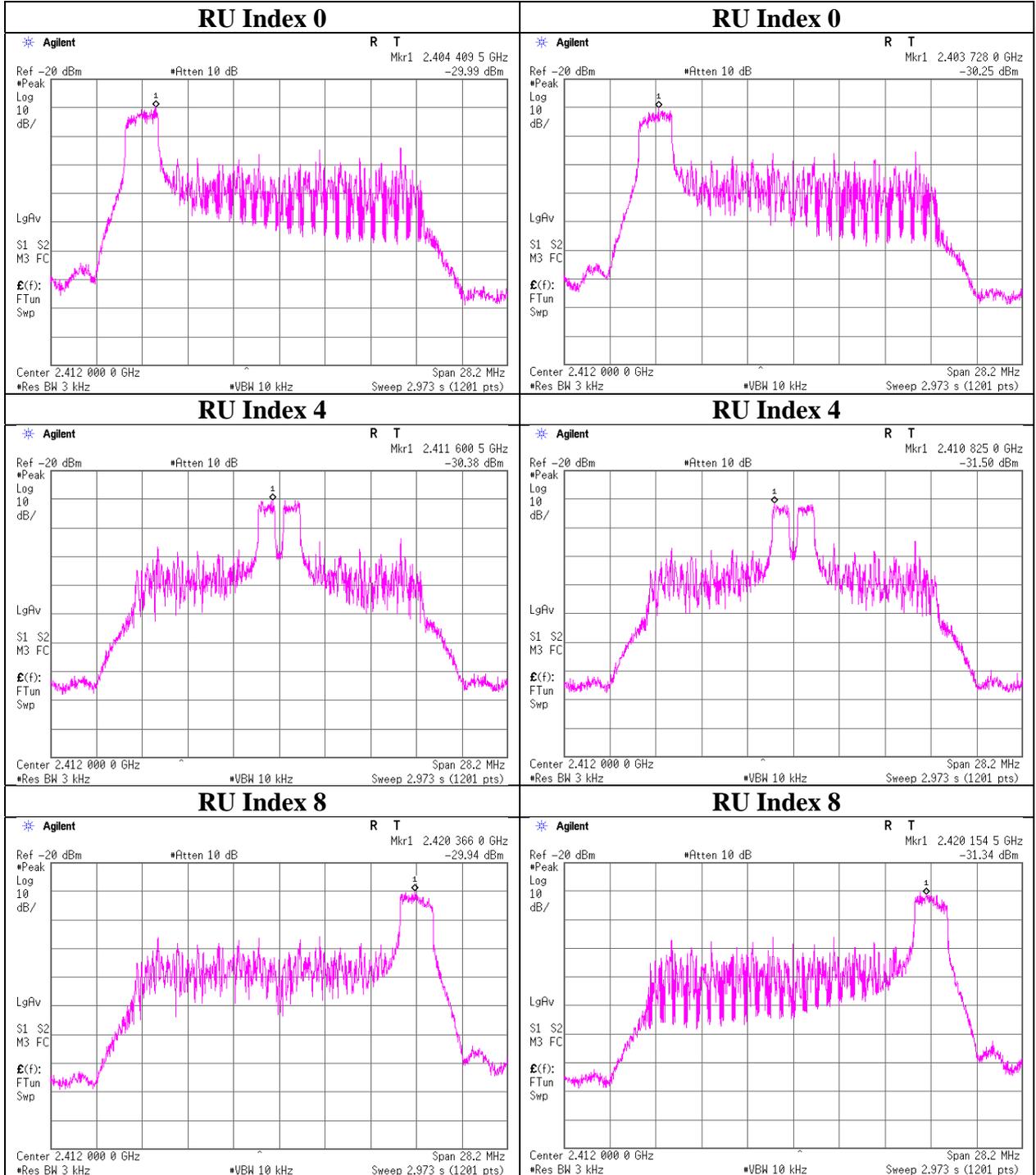
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

Power Density

**11ax-20 26-tone RU 2412 MHz
Antenna 1**

**11ax-20 26-tone RU 2412 MHz
Antenna 2**



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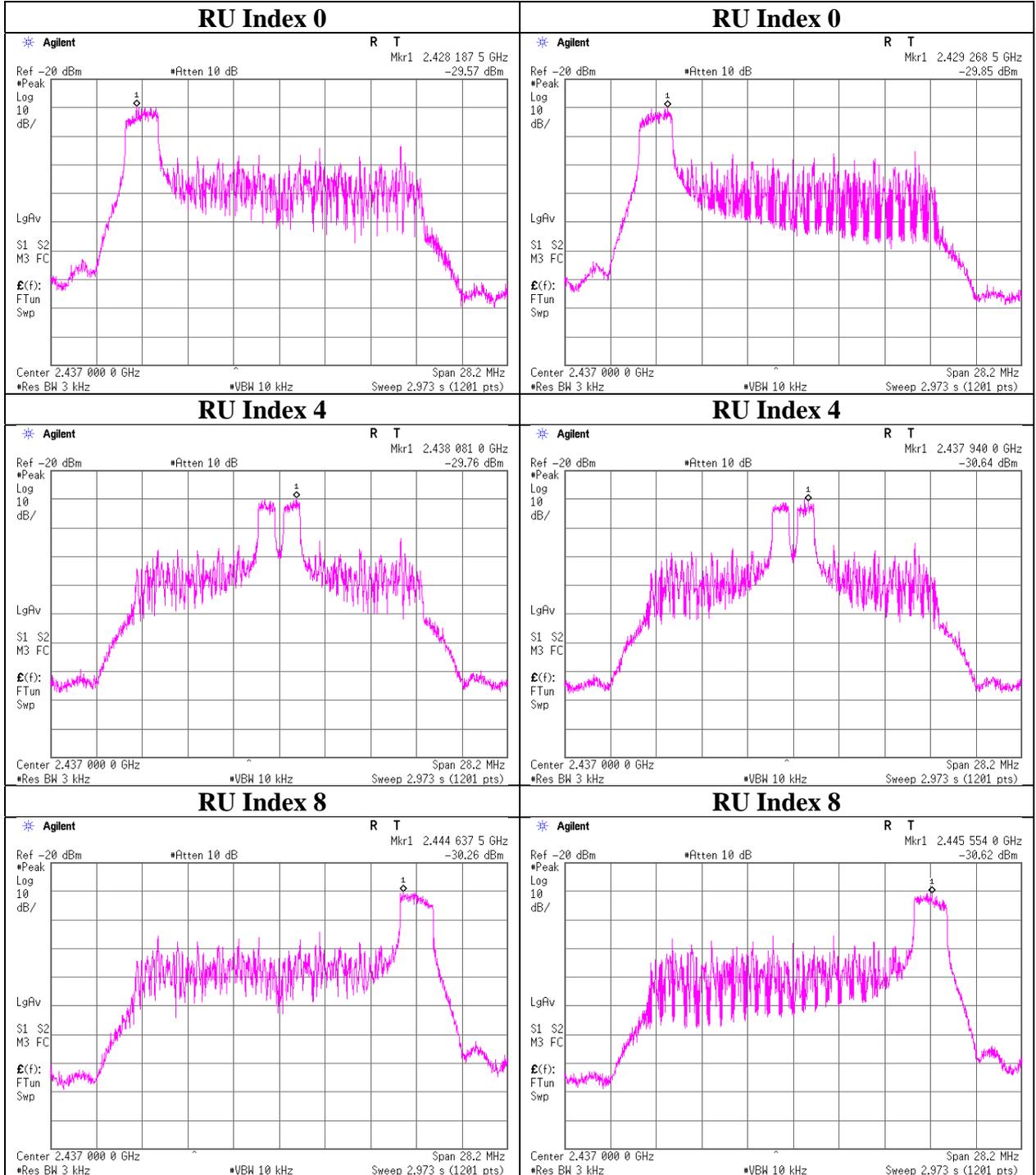
Power Density

11ax-20 26-tone RU 2437 MHz

11ax-20 26-tone RU 2437 MHz

Antenna 1

Antenna 2



UL Japan, Inc.

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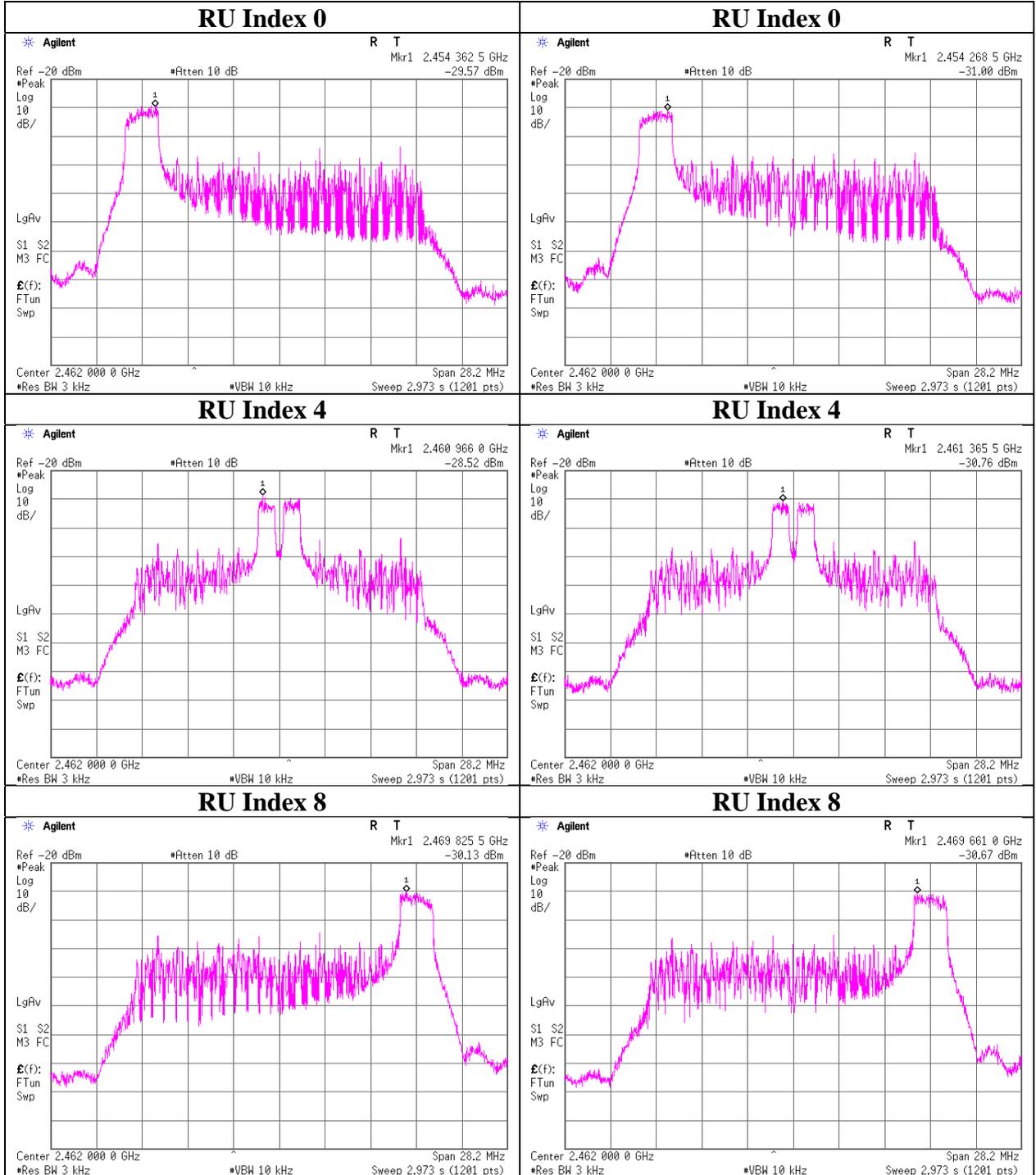
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

11ax-20 26-tone RU 2462 MHz
Antenna 1

11ax-20 26-tone RU 2462 MHz
Antenna 2



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Facsimile : +81 596 24 8124

Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 26, 2021
Temperature / Humidity 22 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (52-tone RU)

Antenna 1 + Antenna 2

RU Type	Freq. [MHz]	RU Index	Antenna 1	Antenna 2	Result		Limit [dBm / 3 kHz]	Margin [dB]
			Result [mW]	Result [mW]	[dBm / 3 kHz]	[mW / 3 kHz]		
52-tone RU	2412	37	0.012	0.010	-16.55	0.022	8.00	24.55
		38	0.012	0.013	-16.13	0.024	8.00	24.13
		40	0.014	0.010	-16.11	0.025	8.00	24.11
	2437	37	0.018	0.012	-15.20	0.030	8.00	23.20
		38	0.016	0.013	-15.29	0.030	8.00	23.29
		40	0.014	0.011	-15.93	0.026	8.00	23.93
	2462	37	0.013	0.013	-15.93	0.026	8.00	23.93
		38	0.017	0.014	-15.11	0.031	8.00	23.11
		40	0.015	0.012	-15.71	0.027	8.00	23.71

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

RU Type	Freq. [MHz]	RU Index	Reading	Cable	Atten.	Result		Limit [dBm / 3 kHz]	Margin [dB]
			[dBm]	Loss [dB]	Loss [dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
52-tone RU	2412	37	-29.89	0.87	9.75	-19.27	0.012	8.00	27.27
		38	-29.99	0.87	9.75	-19.37	0.012	8.00	27.37
		40	-29.09	0.87	9.75	-18.47	0.014	8.00	26.47
	2437	37	-28.04	0.87	9.75	-17.42	0.018	8.00	25.42
		38	-28.48	0.87	9.75	-17.86	0.016	8.00	25.86
		40	-29.08	0.87	9.75	-18.46	0.014	8.00	26.46
	2462	37	-29.50	0.87	9.75	-18.88	0.013	8.00	26.88
		38	-28.40	0.87	9.75	-17.78	0.017	8.00	25.78
		40	-28.97	0.87	9.75	-18.35	0.015	8.00	26.35

Antenna 2

RU Type	Freq. [MHz]	RU Index	Reading	Cable	Atten.	Result		Limit [dBm / 3 kHz]	Margin [dB]
			[dBm]	Loss [dB]	Loss [dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
52-tone RU	2412	37	-30.50	0.87	9.75	-19.88	0.010	8.00	27.88
		38	-29.55	0.87	9.75	-18.93	0.013	8.00	26.93
		40	-30.50	0.87	9.75	-19.88	0.010	8.00	27.88
	2437	37	-29.80	0.87	9.75	-19.18	0.012	8.00	27.18
		38	-29.40	0.87	9.75	-18.78	0.013	8.00	26.78
		40	-30.10	0.87	9.75	-19.48	0.011	8.00	27.48
	2462	37	-29.63	0.87	9.75	-19.01	0.013	8.00	27.01
		38	-29.10	0.87	9.75	-18.48	0.014	8.00	26.48
		40	-29.74	0.87	9.75	-19.12	0.012	8.00	27.12

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.

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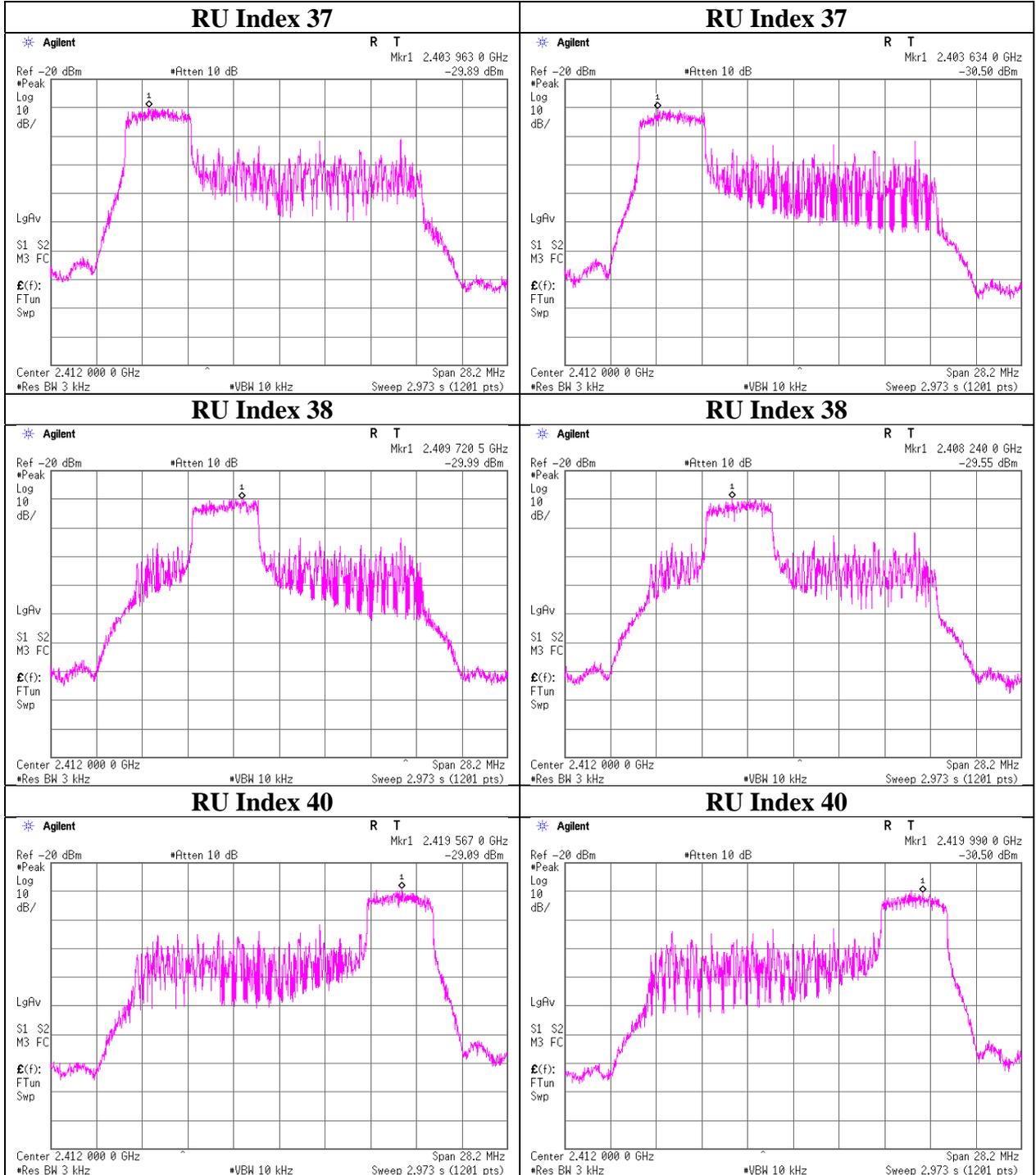
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

11ax-20 52-tone RU 2412 MHz
Antenna 1

11ax-20 52-tone RU 2412 MHz
Antenna 2



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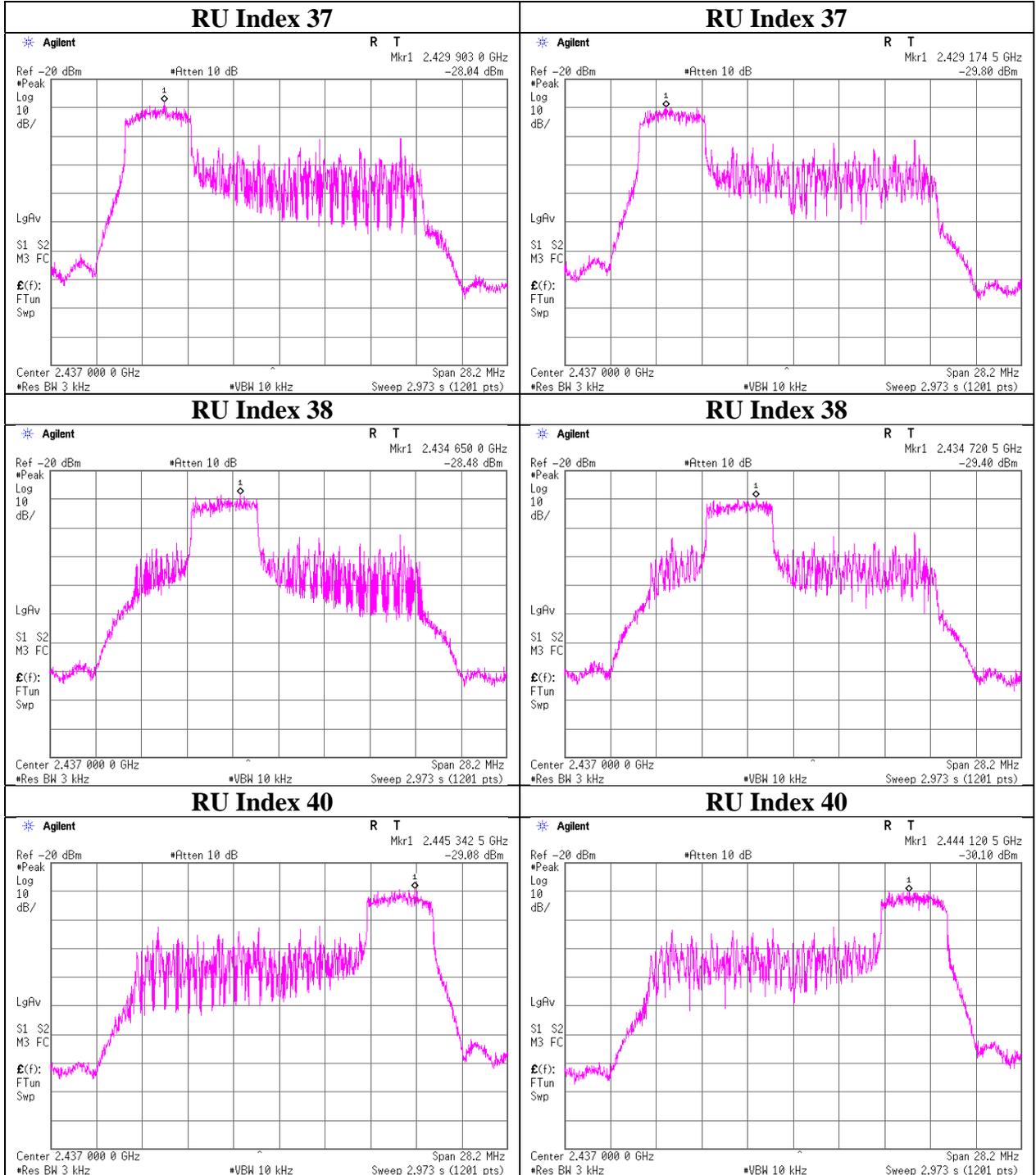
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

**11ax-20 52-tone RU 2437 MHz
Antenna 1**

**11ax-20 52-tone RU 2437 MHz
Antenna 2**



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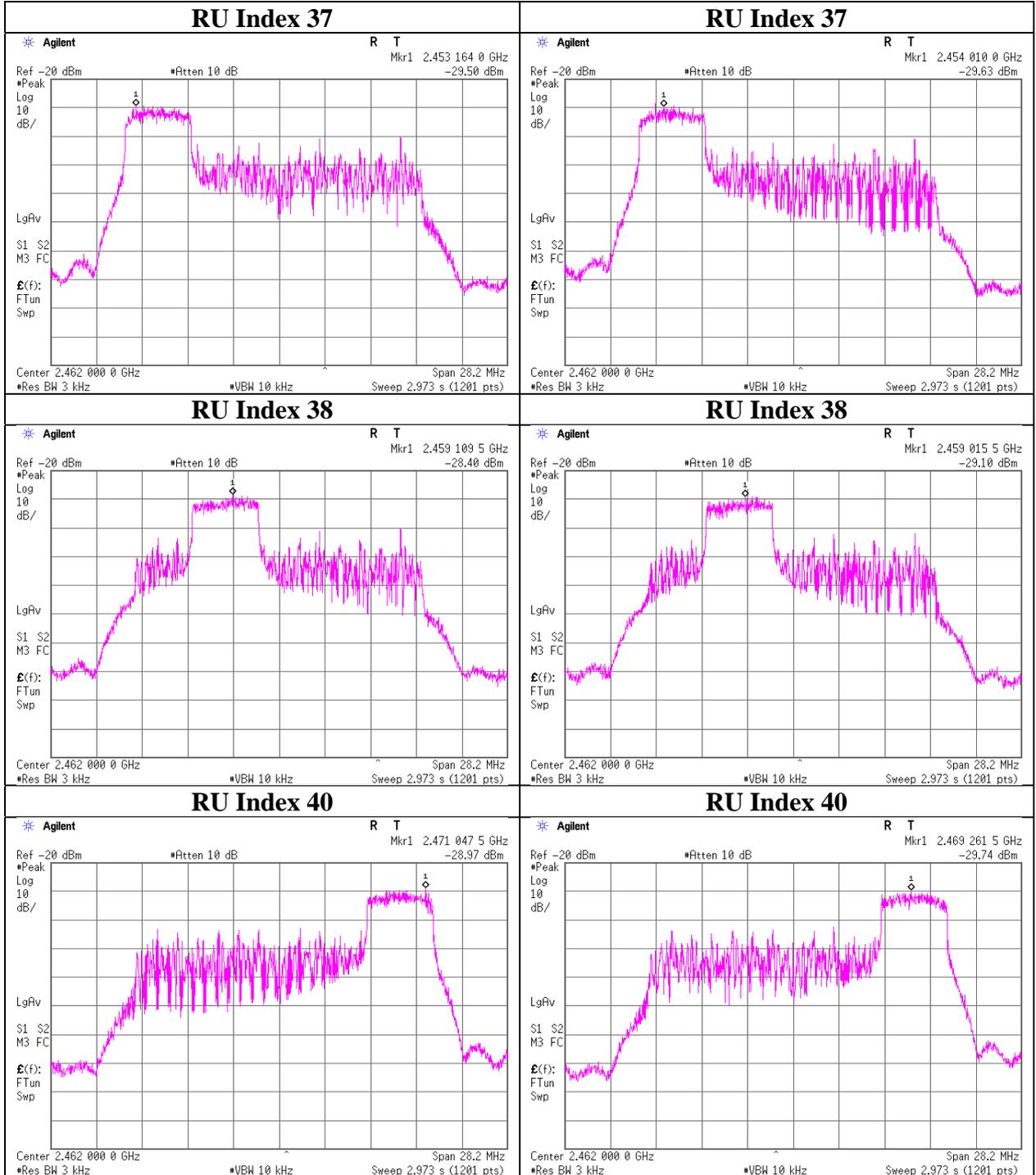
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

**11ax-20 52-tone RU 2462 MHz
Antenna 1**

**11ax-20 52-tone RU 2462 MHz
Antenna 2**



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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 26, 2021
Temperature / Humidity 22 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (106-tone RU)

Antenna 1 + Antenna 2

RU Type	Freq. [MHz]	RU Index	Antenna 1	Antenna 2	Result		Limit [dBm / 3 kHz]	Margin [dB]
			Result [mW]	Result [mW]	[dBm / 3 kHz]	[mW / 3 kHz]		
106-tone RU	2412	53	0.013	0.012	-15.89	0.026	8.00	23.89
		54	0.015	0.013	-15.60	0.028	8.00	23.60
	2437	53	0.016	0.014	-15.33	0.029	8.00	23.33
		54	0.014	0.012	-15.89	0.026	8.00	23.89
	2462	53	0.015	0.012	-15.71	0.027	8.00	23.71
		54	0.016	0.012	-15.59	0.028	8.00	23.59

Sample Calculation:

Result = Antenna 1 + Antenna 2

Antenna 1

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit [dBm / 3 kHz]	Margin [dB]
			[dBm]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
106-tone RU	2412	53	-29.33	0.87	9.75	-18.71	0.013	8.00	26.71
		54	-28.87	0.87	9.75	-18.25	0.015	8.00	26.25
	2437	53	-28.68	0.87	9.75	-18.06	0.016	8.00	26.06
		54	-29.25	0.87	9.75	-18.63	0.014	8.00	26.63
	2462	53	-28.98	0.87	9.75	-18.36	0.015	8.00	26.36
		54	-28.57	0.87	9.75	-17.95	0.016	8.00	25.95

Antenna 2

RU Type	Freq. [MHz]	RU Index	Reading	Cable Loss	Atten. Loss	Result		Limit [dBm / 3 kHz]	Margin [dB]
			[dBm]	[dB]	[dB]	[dBm / 3 kHz]	[mW / 3 kHz]		
106-tone RU	2412	53	-29.71	0.87	9.75	-19.09	0.012	8.00	27.09
		54	-29.63	0.87	9.75	-19.01	0.013	8.00	27.01
	2437	53	-29.25	0.87	9.75	-18.63	0.014	8.00	26.63
		54	-29.80	0.87	9.75	-19.18	0.012	8.00	27.18
	2462	53	-29.74	0.87	9.75	-19.12	0.012	8.00	27.12
		54	-29.98	0.87	9.75	-19.36	0.012	8.00	27.36

Sample Calculation:

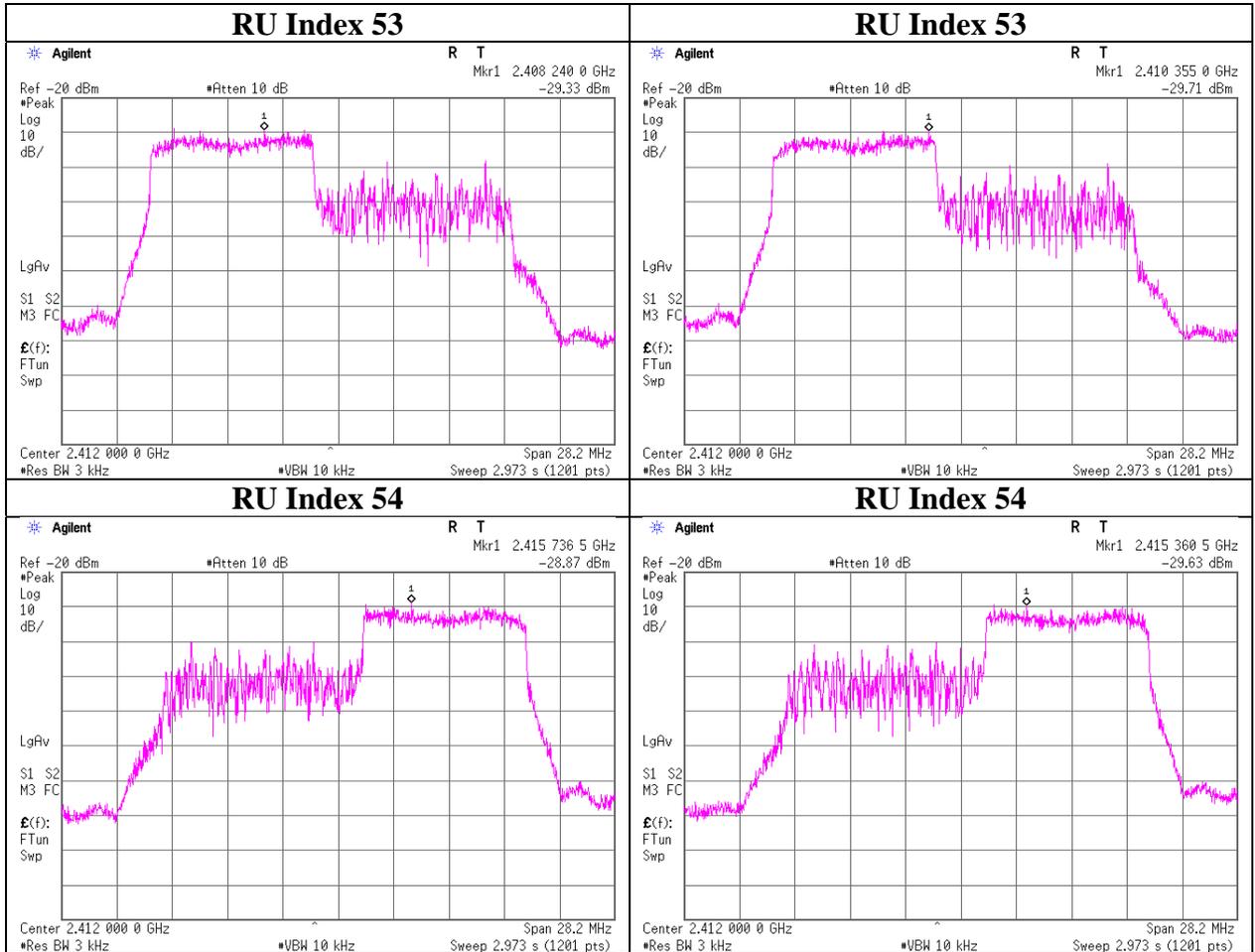
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

Power Density

**11ax-20 106-tone RU 2412 MHz
Antenna 1**

**11ax-20 106-tone RU 2412 MHz
Antenna 2**



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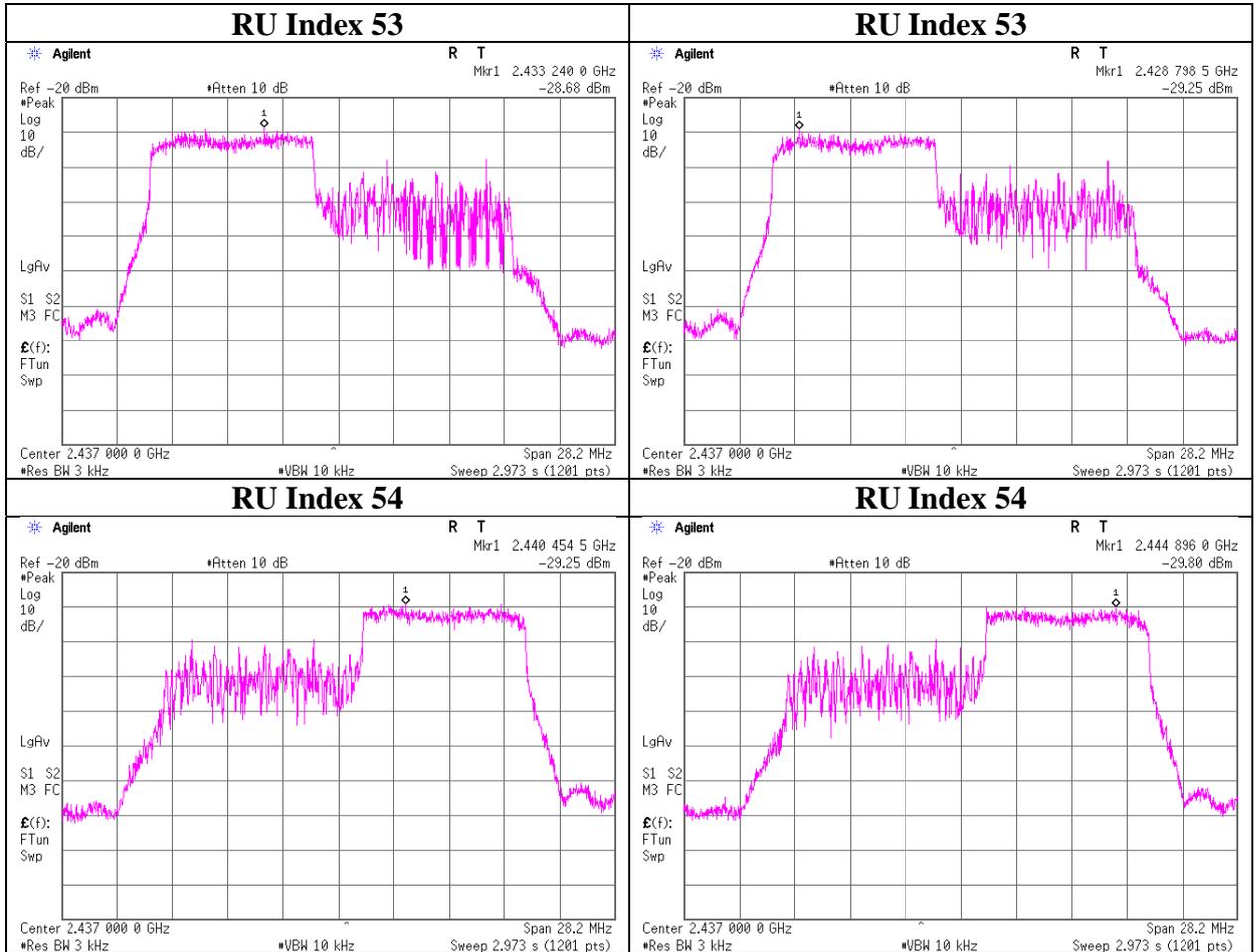
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

11ax-20 106-tone RU 2437 MHz
Antenna 1

11ax-20 106-tone RU 2437 MHz
Antenna 2



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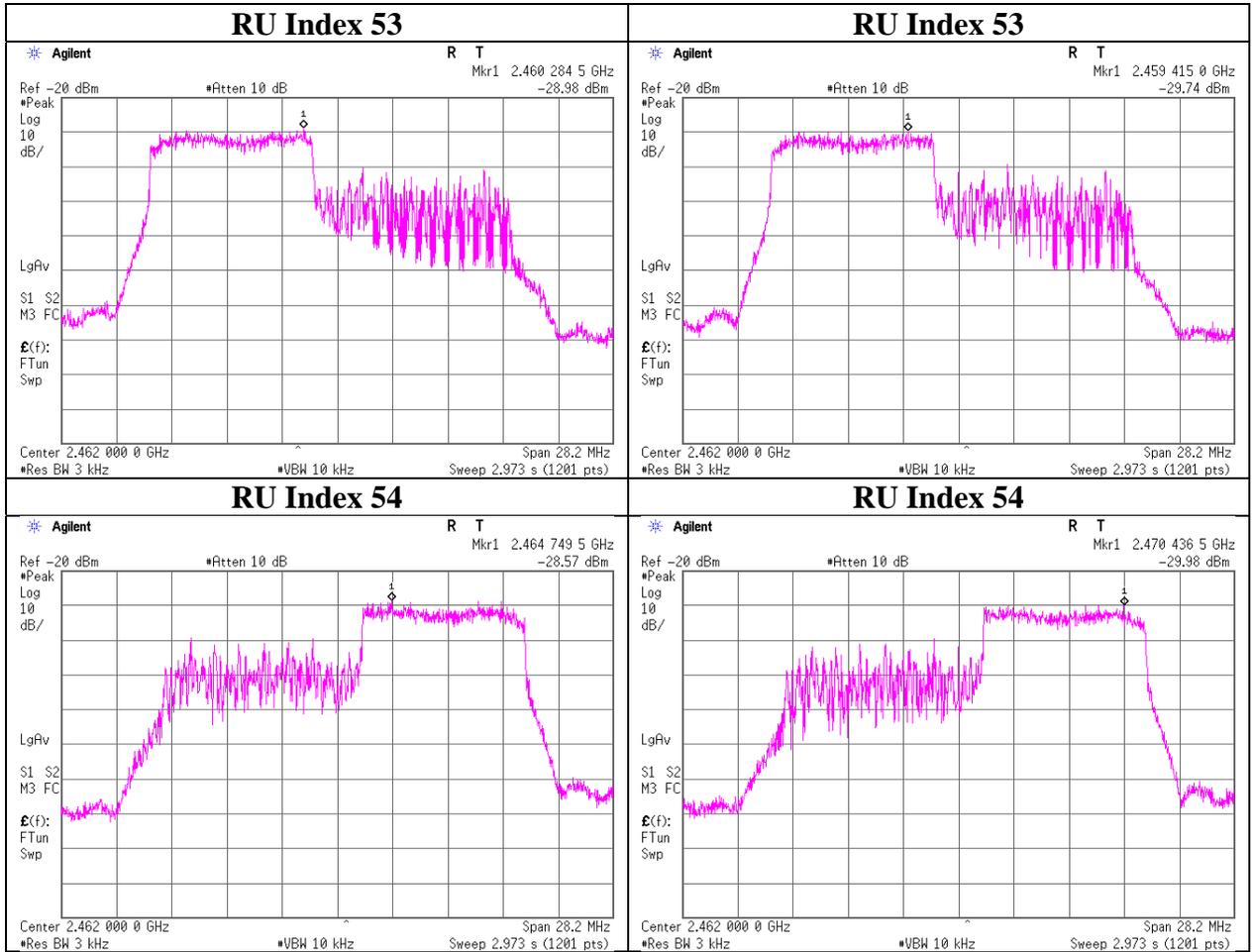
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Power Density

**11ax-20 106-tone RU 2462 MHz
Antenna 1**

**11ax-20 106-tone RU 2462 MHz
Antenna 2**



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Telephone : +81 596 24 8999

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Power Density

Report No. 13671144H
Test place Ise EMC Lab. No.8 Measurement Room
Date January 26, 2021
Temperature / Humidity 22 deg. C / 42 % RH
Engineer Hiroyuki Furutaka
Mode Tx 11ax-20 (242-tone RU)

Antenna 1 + Antenna 2

Freq. [MHz]	Antenna 1 Result	Antenna 2 Result	Result		Limit [dBm / 3 kHz]	Margin [dB]
	[mW]	[mW]	[dBm / 3 kHz]	[mW / 3 kHz]		
2412	0.02	0.01	-15.06	0.03	8.00	23.06
2437	0.02	0.01	-15.10	0.03	8.00	23.10
2462	0.02	0.02	-14.85	0.03	8.00	22.85

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-28.35	0.87	9.75	-17.73	0.02	8.00	25.73
2437	-28.41	0.87	9.75	-17.79	0.02	8.00	25.79
2462	-28.59	0.87	9.75	-17.97	0.02	8.00	25.97

Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit [dBm / 3 kHz]	Margin [dB]
				[dBm / 3 kHz]	[mW / 3 kHz]		
2412	-29.05	0.87	9.75	-18.43	0.01	8.00	26.43
2437	-29.07	0.87	9.75	-18.45	0.01	8.00	26.45
2462	-28.38	0.87	9.75	-17.76	0.02	8.00	25.76

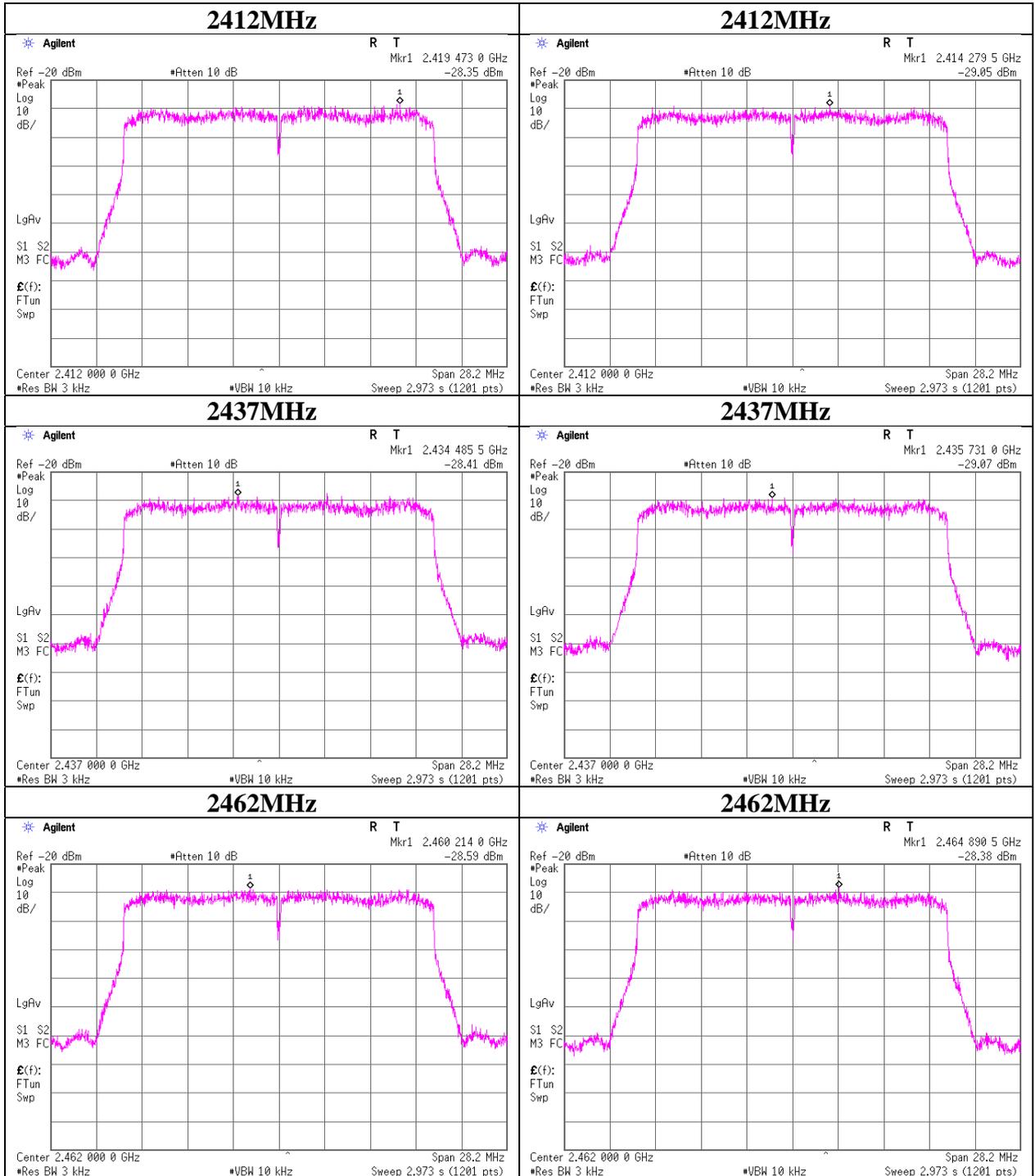
Sample Calculation:

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

Power Density

**11ax-20 (242-tone RU)
Antenna 1**

**11ax-20 (242-tone RU)
Antenna 2**



Power Density

Report No.	13671144H	
Test place	Ise EMC Lab. No.8 Measurement Room	
Date	January 14, 2021	January 15, 2021
Temperature / Humidity	22 deg. C / 36 % RH	22 deg. C / 36 % RH
Engineer	Nachi Konegawa	Nachi Konegawa
	BT1	BT2
Mode	Tx BT LE	

BT1

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result	Limit	Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm / 3 kHz]	[dBm / 3 kHz]	[dB]
1M-PHY	2402	-25.15	0.50	9.75	-14.90	8.00	22.90
	2440	-25.16	0.50	9.75	-14.91	8.00	22.91
	2480	-25.14	0.50	9.75	-14.89	8.00	22.89
2M-PHY	2402	-27.59	0.50	9.75	-17.34	8.00	25.34
	2440	-27.63	0.50	9.75	-17.38	8.00	25.38
	2480	-27.54	0.50	9.75	-17.29	8.00	25.29

BT2

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result	Limit	Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm / 3 kHz]	[dBm / 3 kHz]	[dB]
1M-PHY	2402	-24.07	0.50	9.75	-13.82	8.00	21.82
	2440	-24.20	0.50	9.75	-13.95	8.00	21.95
	2480	-24.27	0.50	9.75	-14.02	8.00	22.02
2M-PHY	2402	-26.53	0.50	9.75	-16.28	8.00	24.28
	2440	-26.71	0.50	9.75	-16.46	8.00	24.46
	2480	-26.78	0.50	9.75	-16.53	8.00	24.53

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.

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Telephone : +81 596 24 8999

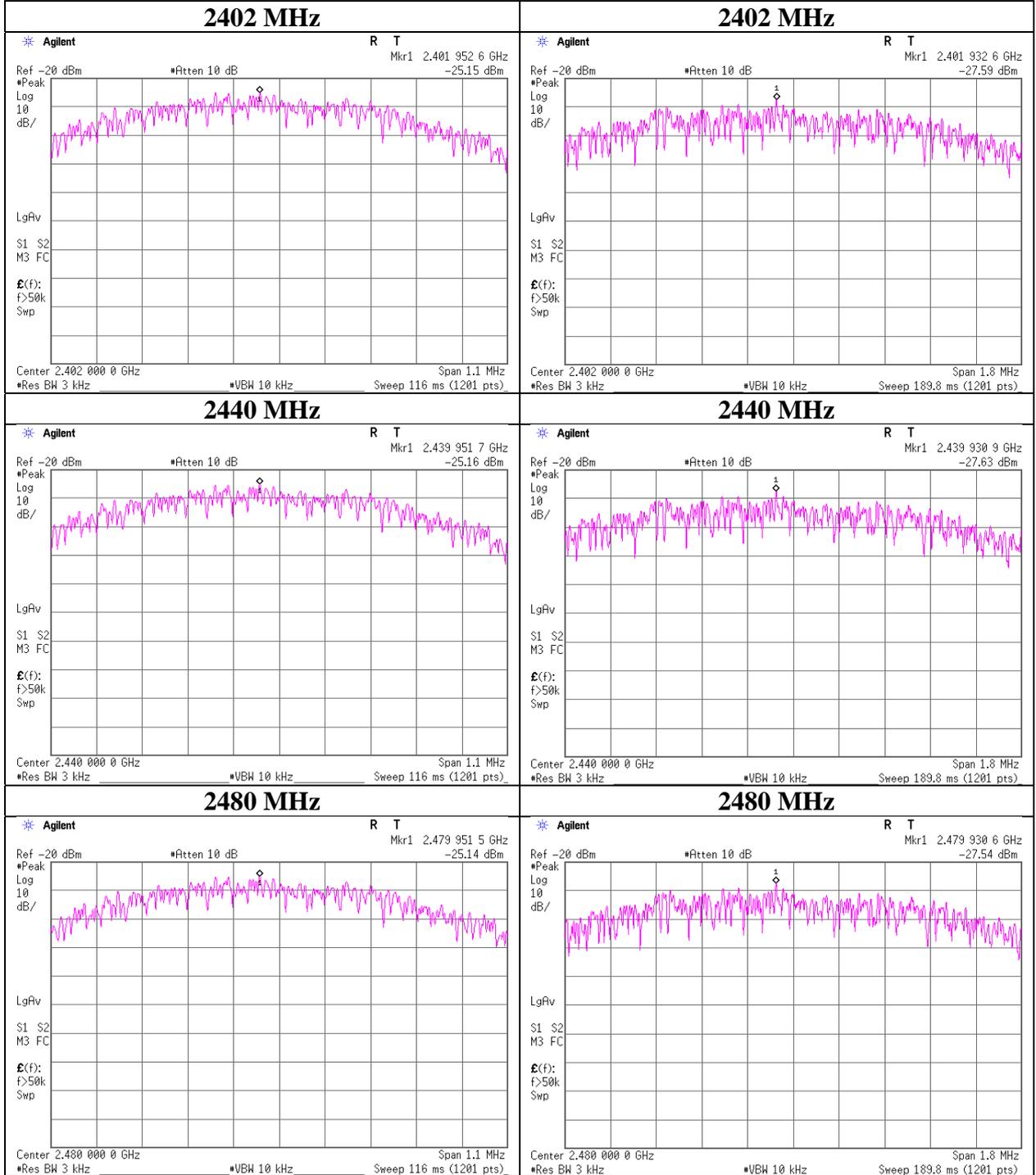
Facsimile : +81 596 24 8124

Power Density

BT1

BT LE 1M-PHY

BT LE 2M-PHY



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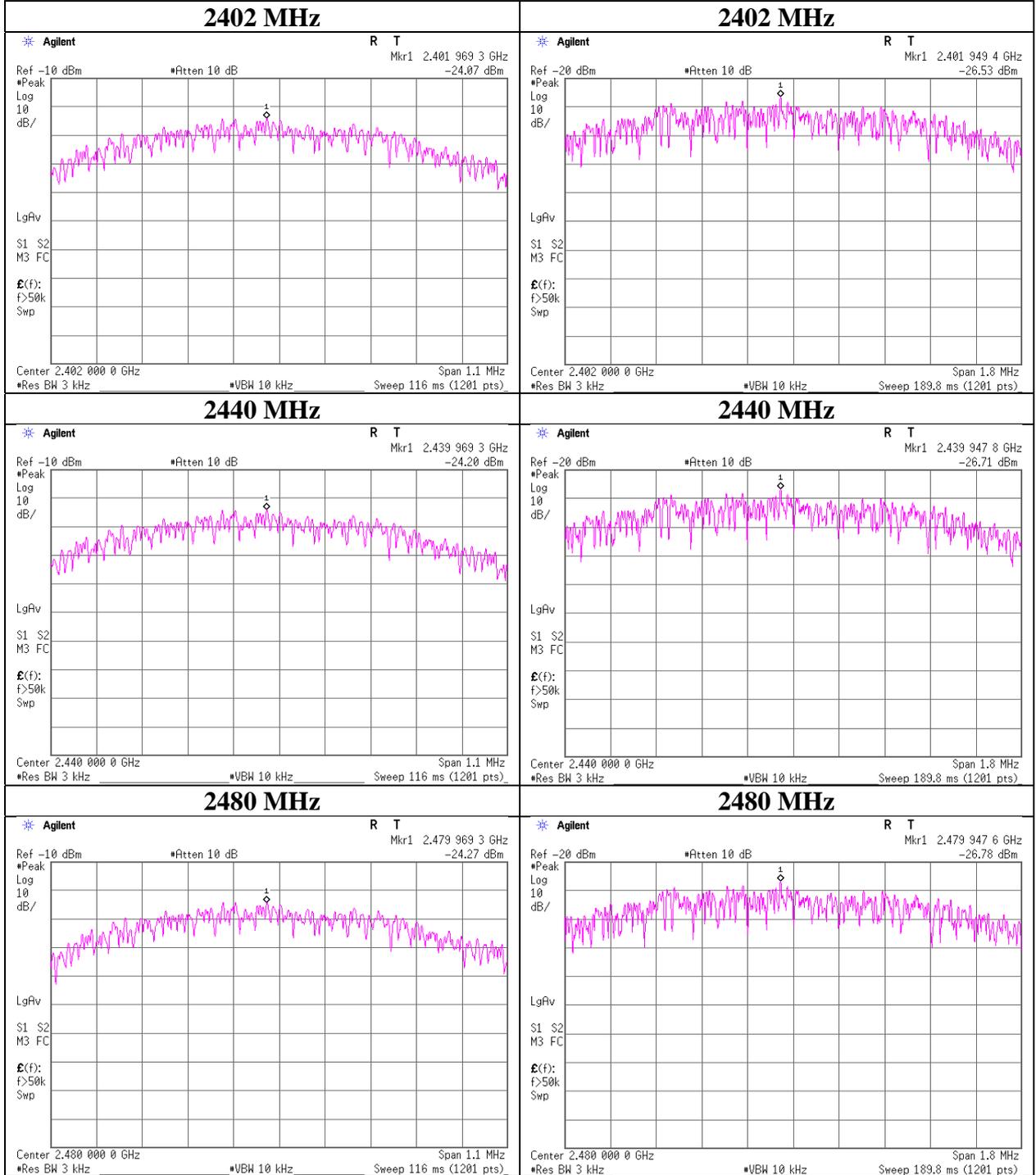
Facsimile : +81 596 24 8124

Power Density

BT2

BT LE 1M-PHY

BT LE 2M-PHY



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APPENDIX 2: Test instruments

Test equipment (1/2)

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	MOS-28	141567	Thermo-Hygrometer	CUSTOM	CTH-201	8	01/15/2021	12
AT	MMM-17	141557	DIGITAL HiTESTER	HIOKI	3805	70900530	01/07/2021	12
AT	MSA-13	141900	Spectrum Analyzer	AGILENT	E4440A	MY46185823	09/24/2020	12
AT	MAT-89	141419	Attenuator	Weinschel Associates	WA56-10	56100305	05/27/2020	12
AT	MPM-08	141805	Power Meter	ANRITSU	ML2495A	6K00003338	10/15/2020	12
AT	MPSE-11	141840	Power sensor	ANRITSU	MA2411B	11737	10/15/2020	12
AT	MPM-13	141810	Power Meter	ANRITSU	ML2495A	824014	12/14/2020	12
AT	MPM-12	141809	Power Meter	ANRITSU	ML2495A	825002	05/07/2020	12
AT	MPSE-18	141832	Power sensor	ANRITSU	MA2411B	738174	12/14/2020	12
AT	MPSE-17	141830	Power sensor	ANRITSU	MA2411B	738285	05/07/2020	12
AT	MAT-91	141420	Attenuator	Weinschel Associates	WA56-10	56100307	05/25/2020	12
AT	MAT-92	141421	Attenuator	Weinschel Associates	WA56-10	56100308	05/25/2020	12
AT	MPM-16	141812	Power Meter	AGILENT	8990B	MY51000271	08/20/2020	12
AT	MPSE-22	141842	Power sensor	AGILENT	N1923A	MY54070003	08/20/2020	12
AT	MPSE-23	141835	Power sensor	AGILENT	N1923A	MY54070004	08/20/2020	12
AT	MRENT-130	141855	Spectrum Analyzer	AGILENT	E4440A	MY46187750	11/18/2020	12
AT	MAT-10	141156	Attenuator(10dB)	Weinschel Corp	2	BL1173	11/13/2020	12
AT	MCC-96	141375	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	30817/2	05/21/2020	12
RE	MAEC-03	142008	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	05/22/2020	24
RE	MOS-13	141554	Thermo-Hygrometer	CUSTOM	CTH-180	1301	01/15/2021	12
RE	MMM-08	141532	DIGITAL HiTESTER	HIOKI	3805	51201197	01/07/2021	12
RE	MJM-16	142183	Measure	KOMELON	KMC-36	-	-	-
RE	COTS-MEMI-02	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	MAEC-03-SVSWR	142013	Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/08/2020	12
RE	MHA-20	141507	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	10/31/2020	12
RE	MCC-231	177964	Microwave Cable	Junkosha INC.	MMX221	1901S329(1m)/1902S579(5m)	03/04/2021	12
RE	MHF-25	141232	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	1	09/23/2020	12
RE	MSA-16	141903	Spectrum Analyzer	AGILENT	E4440A	MY46186390	12/18/2020	12
RE	MPA-11	141580	MicroWave System Amplifier	AGILENT	83017A	MY39500779	03/24/2020	12
RE	MSA-03	141884	Spectrum Analyzer	AGILENT	E4448A	MY44020357	03/04/2020	12
RE	MHF-22	141293	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCB	602	01/14/2021	12
RE	MCC-177	141226	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S304	03/01/2021	12
RE	MHA-16	141513	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	05/21/2020	12
RE	MAT-95	142314	Attenuator	Pasternack	PE7390-6	D/C 1504	06/17/2020	12
RE	MBA-03	141424	Biconical Antenna	Schwarzbeck	BBA9106	1915	08/13/2020	12
RE	MCC-51	141323	Coaxial cable	UL Japan	-	-	07/06/2020	12
RE	MLA-22	141266	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	911B-191	08/13/2020	12
RE	MPA-13	141582	Pre Amplifier	SONOMA INSTRUMENT	11/5/1900	260834	02/03/2021	12
RE	MTR-03	141942	Test Receiver	Rohde & Schwarz	ESCI	100300	08/18/2020	12
RE	MSA-04	141885	Spectrum Analyzer	AGILENT	E4448A	US44300523	11/09/2020	12

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Telephone : +81 596 24 8999

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Test equipment (2/2)

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
CE	MAEC-03	142008	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	05/22/2020	24
CE	MOS-13	141554	Thermo-Hygrometer	CUSTOM	CTH-180	1301	01/15/2021	12
CE	MMM-08	141532	DIGITAL HiTESTER	HIOKI	3805	51201197	01/07/2021	12
CE	MJM-16	142183	Measure	KOMELON	KMC-36	-	-	-
CE	COTS-MEMI-02	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
CE	MLS-23	141357	LISN(AMN)	Schwarzbeck	NSLK8127	8127-729	07/22/2020	12
CE	MCC-112	141216	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W/SFM14/sucoform141-PE/421-010/RFM-E321(SW)	-/00640	07/06/2020	12
CE	MTR-03	141942	Test Receiver	Rohde & Schwarz	ESCI	100300	08/18/2020	12
CE	MSA-04	141885	Spectrum Analyzer	AGILENT	E4448A	US44300523	11/09/2020	12
CE	MAT-67	141248	Attenuator	JFW Industries, Inc.	50FP-013H2 N	-	12/07/2020	12

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

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

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

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

Test item: **CE: Conducted Emission test**
 RE: Radiated Emission test
 AT: Antenna Terminal Conducted test