RADIO TEST REPORT

Test Report No. 14781152S-B-R3

Customer	**Canon Inc.**
Description of EUT	**Wireless Module**
Model Number of EUT	**ES205**
FCC ID	**AZD248**
Test Regulation	**FCC Part 15 Subpart C**
Test Result	**Complied**
Issue Date	**July 5, 2024**
Remarks	**WLAN (2.4 GHz band), BT LE parts**

Representative Test Engineer	**Approved By**
Makoto Hosaka Engineer	Toyokazu Imamura Engineer

CERTIFICATE 1266.03

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.

☒ There is no testing item of "Non-accreditation".

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- The information provided from the customer for this report is identified in Section 1.
- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

REVISION HISTORY

Original Test Report No.: 14781152S-B

This report is a revised version of 14781152S-B-R2. 14781152S-B-R2 is replaced with this report.

Revision	Test Report No.	Date	Revised Contents
- (Original)	14781152S-B	June 7, 2024	-
1	14781152S-B-R1	June 13, 2024	Section 2 Added rating: DC 1.8 V
2	14781152S-B-R2	June 26, 2024	Cover page Corrected FCC ID: AZD 248 to AZD248
			Section 2.2 Addition of the value and explanation of the Directional Gain.
			Section 3 Modification of FCC Part 15.31 (e) From: The RF Module has its own regulator. The RF Module is constantly provided voltage through the regulator regardless of input voltage. Therefore, this EUT complies with the requirement. To: The module is constantly provided the stable voltage (DC 3.3 V / 1.8 V) from the host device regardless of input voltage. Therefore, this EUT complies with the requirement.
			P14 to 16 Modification of cable length for No.1, No.2: 0.01 => 0.02
			P22 to 28 Correction of Limit2(AV) line.
3	14781152S-B-R3	July 5, 2024	Section 2.2 Adjusted table for the antenna gain

Reference: Abbreviations (Including words undescribed in this report)

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

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SECTION 1: Customer Information

Company Name	Canon Inc.
Address	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501 Japan
Telephone Number	+81-3-5482-4941
Contact Person	Yasuhito Yukita

The information provided from the customer is as follows;
- Customer, Description 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 and Test Date
- SECTION 4: Operation of EUT during testing

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Wireless Module
Model Number	ES205
Serial Number	Refer to SECTION 4.2
Condition	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	May 8, 2023
Test Date	May 29, 2023 to May 12, 2024

2.2 Product Description

General Specification

Rating	DC 3.3 V / DC 1.8 V
Operating temperature	-40 deg. C to +85 deg. C

Radio Specification

This report contains data provided by the customer which can impact the validity of results. UL Japan, Inc. is only responsible for the validity of results after the integration of the data provided by the customer. The data provided by the customer is marked “a)” in the table below.

Bluetooth (BR/EDR/BTLE)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	FHSS, GFSK / π/4-DQPSK, 8DPSK / GFSK
Antenna Type	Monopole Antenna
Antenna Gain a)	2.67 dBi

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: (20 MHz band): 26/52/106/242-tone RU	
Antenna Type	Monopole Antenna	
Antenna Gain a)	Antenna Gain	Directinal Gain *1)
	2.67 dBi	5.69 dBi

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 MHz Band:	5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5700 MHz 5745 MHz to 5825 MHz 5955 MHz to 6415 MHz 6435 MHz to 6515 MHz 6535 MHz to 6875 MHz (*6875 MHz:straddle ch) 6895 MHz to 7095 MHz	
	40 MHz Band	5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5670 MHz 5755 MHz to 5795 MHz 5965 MHz to 6405 MHz 6445 MHz to 6525 MHz (*6525 MHz:straddle ch) 6565 MHz to 6885 MHz (*6885 MHz:straddle ch) 6925 MHz to 7085 MHz	
	80 MHz band	5210 MHz 5290 MHz 5530 MHz to 5610 MHz 5775 MHz 5985 MHz to 6385 MHz 6465 MHz to 6545 MHz (*6545 MHz:straddle ch) 6625 MHz to 6865 MHz (*6865 MHz:straddle ch) 6945 MHz to 7025 MHz	
Type of Modulation	OFDM		
	OFDMA (IEEE802.11ax only)	(20 MHz band): 26/52/106/242-tone RU	
		(40 MHz band): 26/52/106/242/484-tone RU	
		(80 MHz band): 26/52/106/242/484/996-tone RU	
Antenna Type	Monopole Antenna		
Antenna Gain a)	Antenna Gain	Directinal Gain *1)	Band
	5.14 dBi	8.16 dBi	(WLAN UNII-1 and UNII-2A band)
	3.53 dBi	6.55 dBi	(WLAN UNII-2C band)
	3.05 dBi	6.07 dBi	(WLAN UNII-3 band)
	1.61 dBi	4.63 dBi	(WLAN UNII-5 and UNII-6 band)
	0.60 dBi	3.62 dBi	(WLAN UNII-7 and UNII-8 band)

*1) Directional Gain = Antenna Gain + Arry Gain
Arry Gain = 10 * log (Number of transmit Antennas / Number of spatial streams)
Number of transmit Antennas = 2, Number of spatial streams = 1

SECTION 3: Test Specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart C The latest version on the first day of the testing period
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

3.2 Procedures and Results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013 6. Standard test methods	**FCC:** Section 15.207	26.9 dB 0.15000 MHz, QP, N Mode: 1M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 MHz 0.15000 MHz, QP, L1 Mode: 2M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 MHz	Complied	-
	ISED: RSS-Gen 8.8	**ISED:** RSS-Gen 8.8			
6 dB Bandwidth	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section 15.247(a)(2)	See data.	Complied	Conducted
	ISED: -	**ISED:** RSS-247 5.2(a)			
Maximum Peak Output Power	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section 15.247(b)(3)		Complied	Conducted
	ISED: RSS-Gen 6.12	**ISED:** RSS-247 5.4(d)			
Power Density	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section 15.247(e)		Complied	Conducted
	ISED: -	**ISED:** RSS-247 5.2(b)			
Spurious Emission Restricted Band Edges	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section15.247(d)	WLAN 2.9 dB 2390.000 MHz, AV, Hori., Mode: Tx 11ax-20 (OFDM) 2412 MHz BT LE 3.5 dB 7206.000 MHz, AV, Hori., Mode: Tx BT LE 1M-PHY, 2402 MHz	Complied	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *1)
	ISED: RSS-Gen 6.13	**ISED:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10			

Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.
* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

*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.

FCC Part 15.31 (e)
The module is constantly provided the stable voltage (DC 3.3 V / 1.8 V) from the host device regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
The EUT has a unique coupling/antenna connector (MHF-4L (IPEX)). Therefore the equipment complies with the requirement of 15.203.

3.3 Addition to Standard

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
99 % Occupied Bandwidth	**ISED:** RSS-Gen 6.7	**ISED:** -	N/A	-	Conducted

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

3.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

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

Item	Frequency range	Uncertainty (+/-)
Conducted Emission (AC Mains) LISN	150 kHz to 30 MHz	3.2 dB
Radiated Emission (Measurement distance: 3 m)	9 kHz to 30 MHz	3.3 dB
	30 MHz to 200 MHz	4.9 dB
	200 MHz to 1 GHz	6.2 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 18 GHz	5.3 dB
	18 GHz to 40 GHz	5.5 dB
Radiated Emission (Measurement distance: 1 m)	1 GHz to 18 GHz	5.6 dB
	18 GHz to 40 GHz	5.8 dB

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector) SPM-06	1.1 dB
Power Measurement above 1 GHz (Peak Detector) SPM-06	1.8 dB
Power Measurement above 1 GHz (Average Detector) SPM-07	1.0 dB
Power Measurement above 1 GHz (Peak Detector) SPM-07	1.2 dB
Power Measurement above 1 GHz (Average Detector) SPM-13	0.81 dB
Power Measurement above 1 GHz (Peak Detector) SPM-13	1.1 dB
Spurious Emission (Conducted) below 1 GHz	0.91 dB
Conducted Emissions Power Density Measurement 1 GHz to 3 GHz	1.3 dB
Conducted Emissions Power Density Measurement 3 GHz to 18 GHz	2.5 dB
Spurious Emission (Conducted) 18 GHz to 26.5 GHz	2.8 dB
Spurious Emission (Conducted) 26.5 GHz to 40 GHz	2.6 dB
Bandwidth Measurement	0.012 %
Duty Cycle and Time Measurement	0.27 %
Temperature_SCH-01	0.96 deg.C.
Humidity_SCH-01	4.0 %
Temperature_SCH-02	2.2 deg.C.
Voltage	0.74 %

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 Japan
Telephone: +81-463-50-6400
A2LA Certificate Number: 1266.03
(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

Test room	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber (SAC1)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber (SAC2)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber (SAC3)	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber (SAC4)	8.1 x 5.1 x 3.55	8.1 x 5.1	-
Wireless anechoic chamber 1 (WAC1)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
Wireless anechoic chamber 2 (WAC2)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
No.1 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 Shielded room	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	2.55 x 4.1 x 2.5	-	-
No.2 Measurement room	4.5 x 3.5 x 2.5	-	-
Wireless shielded room 1	3.0 x 4.5 x 2.7	3.0 x 4.5	-
Wireless shielded room 2	3.0 x 4.5 x 2.7	3.0 x 4.5	-

3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

Mode		Remarks*
IEEE 802.11b (11b)		11 Mbps, PN9
IEEE 802.11g (11g)		54 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)		MCS 13, PN9
IEEE 802.11ax 20 MHz BW (11ax-20)		MCS 7 (2SS), PN9
Bluetooth Low Energy (BT LE)	Uncoded 1 Mbps PHY (1M-PHY)	Maximum packet data, PRBS9
	Uncoded 2 Mbps PHY (2M-PHY)	Maximum packet data, PRBS9

*The worst condition was determined based on the test result of Maximum Peak Output Power.
(* SS: Spatial Stream)

*Power of the EUT was set by the software as follows;

Power Setting: Non-OFDMA: 10 dBm
OFDMA: -1 dBm (26-tone), 2 dBm (52-tone), 5 dBm (106-tone), 9 dBm (242-tone)
Pre-correction: -11 dBm
BT LE: Fixed

Software: 18.53 (For WLAN)
001.002.087.0186 (For Bluetooth)
(Date: 2023.05 29, 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.

Test operating mode was determined as follows according to “Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - ” of TCB Council Workshop October 2009 and also was judged the necessity of 802.11ac/ax mode by the pre-test.

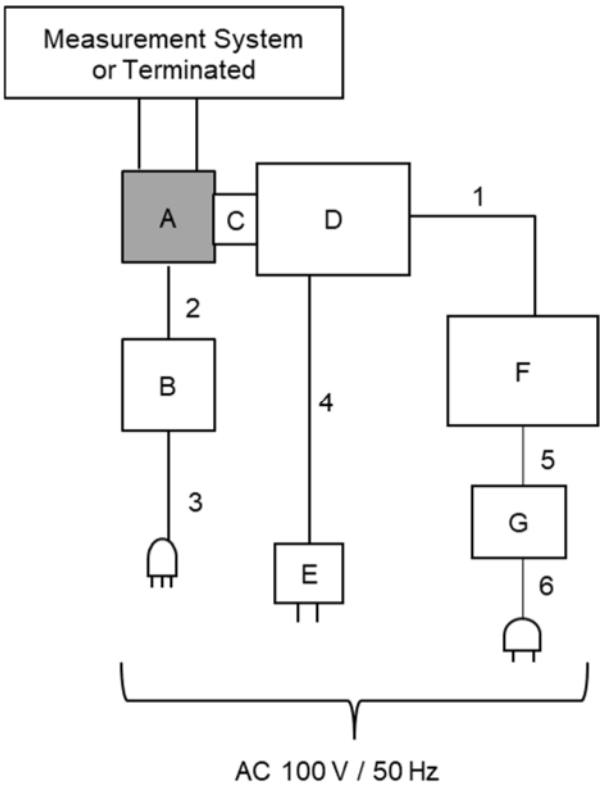
*The Details of Operating Mode(s)

Test Item	Operating Mode	Tested Antenna	Tested Frequency
Radiated Spurious Emission (Below 1 GHz)	Tx 11ax-20 (OFDM) *2)	ANT0 + ANT1	2412 MHz
	Tx BT LE 1M-PHY *1) Tx BT LE 2M-PHY *1)	ANT0	2440 MHz
Conducted Spurious Emission	Tx 11ax-20 (OFDM) *2)	ANT1 *4)	2412 MHz
	Tx BT LE 1M-PHY *1) Tx BT LE 2M-PHY *1)	ANT0	2440 MHz
Conducted Emission	Tx 11ax-20 (OFDM) *2)	ANT0 + ANT1	2412 MHz
	Tx BT LE 1M-PHY *2) Tx BT LE 2M-PHY *2)	ANT0	2440 MHz
	1M-PHY BT LE with Tx 11ax-40 (OFDM) 5510 MHz 2M-PHY BT LE with Tx 11ax-40 (OFDM) 5510 MHz 1M-PHY BT LE with Tx 11ax-40 (OFDM) 6445 MHz 2M-PHY BT LE with Tx 11ax-40 (OFDM) 6445 MHz	ANT0 + ANT1	
Maximum Peak Output Power	Tx 11b Tx 11g Tx 11n-20 Tx 11ax-20 (OFDM) Tx 11ax-20 (OFDMA)	ANT0 + ANT1	2412 MHz 2437 MHz 2462 MHz
	Tx BT LE 1M-PHY Tx BT LE 2M-PHY	ANT0	2402 MHz 2440 MHz 2480 MHz
6 dB Bandwidth, 99 % Occupied Bandwidth	Tx 11b Tx 11g Tx 11n-20 Tx 11ax-20 (OFDM) Tx 11ax-20 (OFDMA)	ANT1 *4)	2412 MHz 2437 MHz 2462 MHz
	Tx BT LE 1M-PHY Tx BT LE 2M-PHY	ANT0	2402 MHz 2440 MHz 2480 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx 11b Tx 11g Tx 11n-20 Tx 11ax-20 (OFDM) Tx 11ax-20 (OFDMA) *3)	ANT0 + ANT1	2412 MHz 2437 MHz 2462 MHz
	Tx BT LE 1M-PHY Tx BT LE 2M-PHY	ANT0	2402 MHz 2440 MHz 2480 MHz
	1M-PHY BT LE with Tx 11ax-40 (OFDM) 5510 MHz 2M-PHY BT LE with Tx 11ax-40 (OFDM) 5510 MHz 1M-PHY BT LE with Tx 11ax-40 (OFDM) 6445 MHz 2M-PHY BT LE with Tx 11ax-40 (OFDM) 6445 MHz	ANT0 + ANT1	2440 MHz
Radiated Spurious Emission (Band edge)	1M-PHY BT LE with Tx 11ax-40 (OFDM) 5510 MHz 2M-PHY BT LE with Tx 11ax-40 (OFDM) 5510 MHz 1M-PHY BT LE with Tx 11ax-40 (OFDM) 6445 MHz 2M-PHY BT LE with Tx 11ax-40 (OFDM) 6445 MHz	ANT0 + ANT1	2402 MHz 2480 MHz
Power Density	Tx 11b Tx 11g Tx 11n-20 Tx 11ax-20 (OFDM) Tx 11ax-20 (OFDMA)	ANT0 + ANT1	2412 MHz 2437 MHz 2462 MHz
	Tx BT LE 1M-PHY Tx BT LE 2M-PHY	ANT0	2402 MHz 2440 MHz 2480 MHz

*1) Conducted emissions and Spurious emissions for frequencies below 1 GHz were limited to the channel that had the highest power during the antenna terminal test, as preliminary testing indicated that changing the operating frequency had no significant impact on the emissions in those frequency bands.
*2) The mode was tested as a representative, because it had the highest power at antenna terminal test.
*3) OFDMA configuration tests were conducted only at the band edge since preliminary testing indicated that the other spurious emission was lower than OFDM.
*4) The antenna port was tested as a representative, because it had the highest power at antenna terminal test.

4.2 Configuration and Peripherals

<For Antenna Terminal Conducted Tests (WLAN)>



Description of EUT and Support Equipment

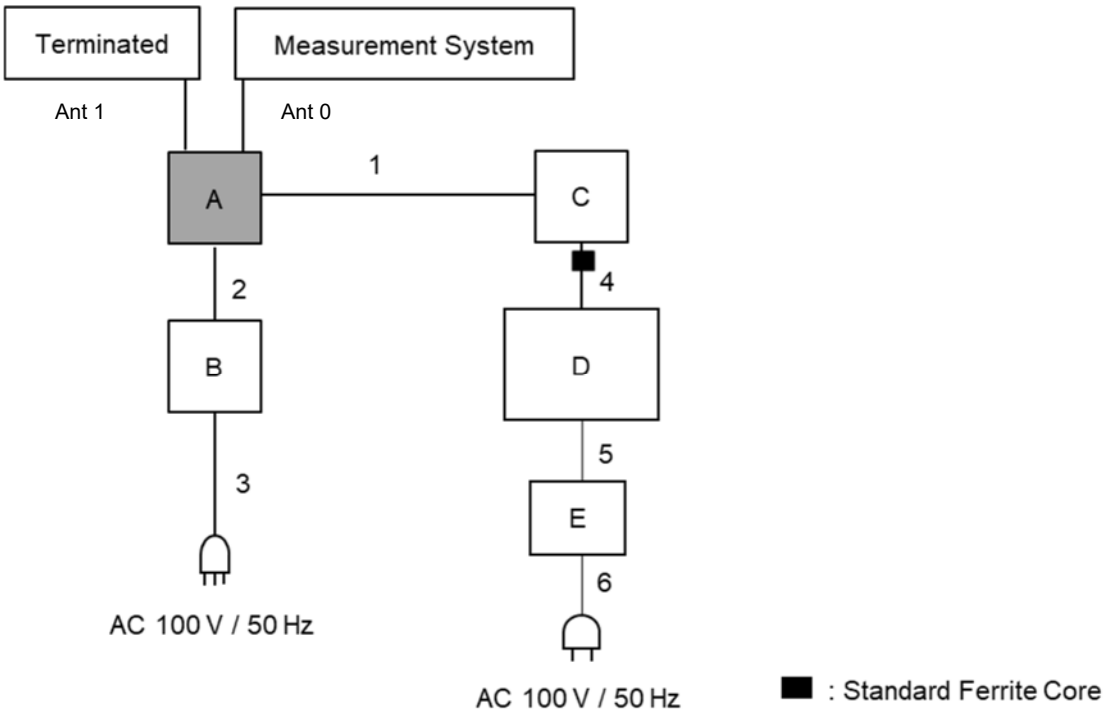
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B1	Canon Inc.	EUT *1)
B	Power Supply (DC)	PW16-5ADP	19100034	GW Instek	-
C	Interface board	WJIG2021_2	A17	Canon Inc.	-
D	Raspberry Pi board	600-90768-01 REV2.0	2-4	Infineon Technologies AG	-
E	AC Adapter	QFWB-30-12-US01	07	Qualtek	-
F	Laptop PC	HP 250 G9/CT	JPH318LWC6	HP	-
G	AC Adapter	TPN-LA15	-	Lite-On Technology Corp.	-

*1) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	LAN	1.1	Unshielded	Unshielded	-
2	DC	0.9	Unshielded	Unshielded	-
3	AC	2.0	Unshielded	Unshielded	-
4	DC	1.5	Unshielded	Unshielded	-
5	DC	1.7	Unshielded	Unshielded	-
6	AC	0.9	Unshielded	Unshielded	-

<For Antenna Terminal Conducted Tests (BT LE)>



Description of EUT and Support Equipment

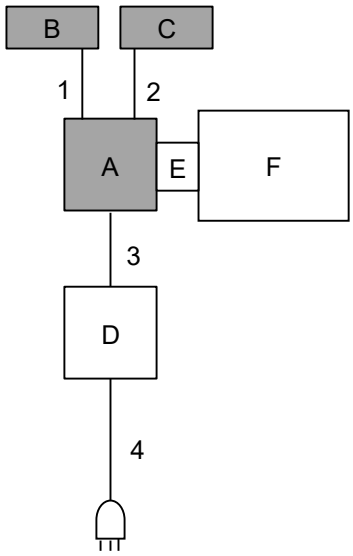
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B5	Canon Inc.	EUT *1)
B	Power Supply (DC)	PW16-5ADP	19100034	GW Instek	-
C	UART-USB converter board	-	BP001	Canon Inc.	-
D	Laptop PC	HP 250 G9/CT	JPH318LWC6	HP	-
E	AC Adapter	TPN-LA15	-	Lite-On Technology Corp.	-

*1) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	UART	0.1	Unshielded	Unshielded	-
2	DC	0.9	Unshielded	Unshielded	-
3	AC	2.0	Unshielded	Unshielded	-
4	USB	1.0	Shielded	Shielded	-
5	DC	1.7	Unshielded	Unshielded	-
6	AC	0.9	Unshielded	Unshielded	-

<For Radiated Emission tests and Conducted Emission Tests (WLAN)>



AC 100 V / 50 Hz
AC 120 V / 60 Hz *1)

*1) Only Conducted emission tests

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

Description of EUT and Support Equipment

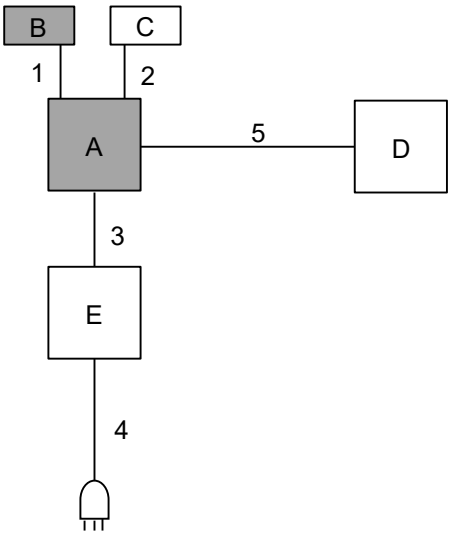
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B4	Canon Inc.	EUT *2)
B	Antenna	19AA-10-tmp	1	Canon Inc.	EUT (Ant0)
C	Antenna	19AA-10-tmp	2	Canon Inc.	EUT (Ant1)
D	Power Supply (DC)	PAN35-10A	DE001677	Kikusui Electronics Corp.	-
E	Interface board	WJIG2021_2	A15	Canon Inc.	-
F	Raspberry Pi board	600-90768-01 REV2.0	2-2	Infineon Technologies AG	-

*2) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna	0.02	Shielded	Shielded	-
2	Antenna	0.02	Shielded	Shielded	-
3	DC	0.9 + 1.0	Unshielded	Unshielded	-
4	AC	2.0	Unshielded	Unshielded	-

<For Radiated Emission tests and Conducted Emission Tests (BT LE)>



AC 100 V / 50 Hz
AC 120 V / 60 Hz *1)

*1) Only Conducted emission tests

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

Description of EUT and Support Equipment

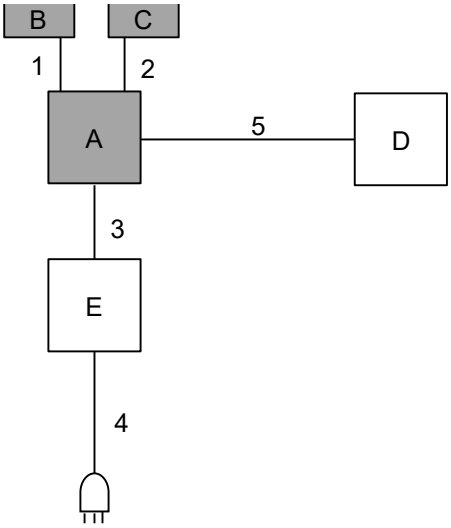
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B4	Canon Inc.	EUT *2)
B	Antenna	19AA-10-tmp	1	Canon Inc.	EUT (Ant0)
C	Antenna	19AA-10-tmp	2	Canon Inc.	- (Ant1)
D	UART-USB converter board	-	BP006	Canon Inc.	-
E	Power Supply (DC)	PAN35-10A	DE001677	Kikusui Electronics Corp.	-

*2) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna	0.02	Shielded	Shielded	-
2	Antenna	0.02	Shielded	Shielded	-
3	DC	0.9 + 1.0	Unshielded	Unshielded	-
4	AC	0.9	Unshielded	Unshielded	-
5	UART	0.1	Unshielded	Unshielded	-

< For Radiated Emission tests and Conducted Emission Tests (Simultaneous transmission of BT LE and WLAN)>



AC 100 V / 50 Hz
AC 120 V / 60 Hz *1)

*1) Only Conducted emission tests

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

Description of EUT and Support Equipment

No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B4	Canon Inc.	EUT *2)
B	Antenna	19AA-10-tmp	1	Canon Inc.	EUT (Ant0)
C	Antenna	19AA-10-tmp	2	Canon Inc.	EUT (Ant1)
D	UART-USB converter board	-	BP006	Canon Inc.	-
E	Power Supply (DC)	PAN35-10A	DE001677	Kikusui Electronics Corp.	-

*2) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna	0.02	Shielded	Shielded	-
2	Antenna	0.02	Shielded	Shielded	-
3	DC	0.9 + 1.0	Unshielded	Unshielded	-
4	AC	0.9	Unshielded	Unshielded	-
5	UART	0.1	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and Conditions

EUT was placed on a urethane platform of nominal size, 1.0 m by 2.0 m, raised 0.8 m above the conducting ground plane.
The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

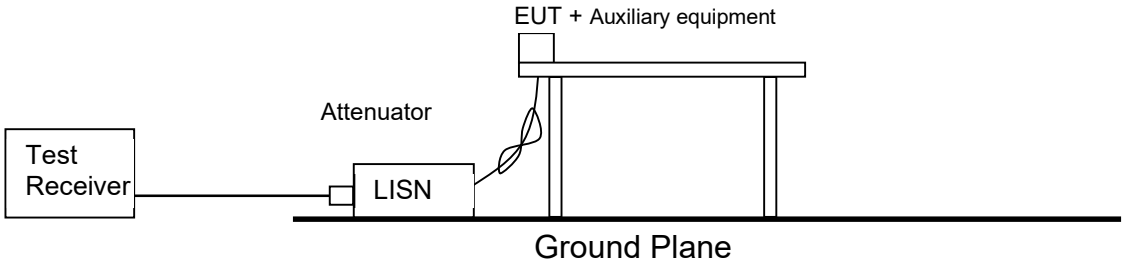
For the tests on EUT with other peripherals (as a whole system)
I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT via Auxiliary equipment in a Shielded room.
The EUT via Auxiliary equipment 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 to 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 0.5 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. 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 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.
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

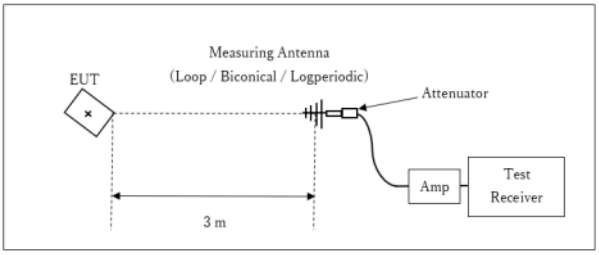
In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating,
the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz
bandwidth within the band that contains the highest level of the desired 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	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	11.12.2.5.1 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces 11.12.2.5.2 The duty cycle was less than 98% for detected noise, a duty factor was added to the 11.12.2.5.1 results.	RBW: 100 kHz VBW: 300 kHz

Figure 2: Test Setup

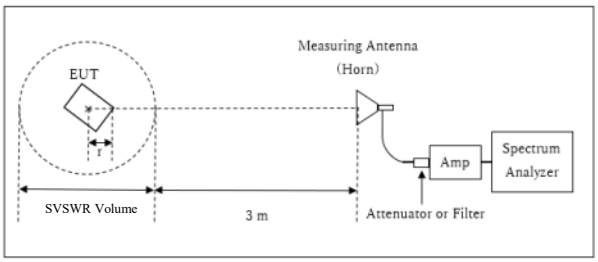
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz

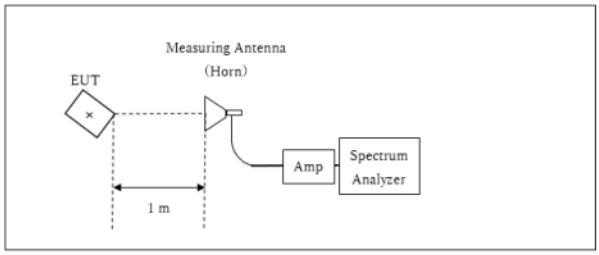


r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.995 m / 3.0 m) = 2.49 dB
* Test Distance: (3 + SVSWR Volume /2) - r = 3.995 m

SVSWR Volume : 2.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r = 0.005 m

10 GHz to 26.5 GHz



× : Center of turn table

Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.54 dB
*Test Distance: 1 m

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT and Antenna 0, Antenna 1 to see the position of maximum noise, and the test was made at the position that has the maximum noise.

[WLAN]
EUT

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	X	X	X
Vertical	Z	Z	X	X

Antenna 0 (ANT 0)

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	X	X	X
Vertical	Z	Z	X	X

Antenna 1 (ANT 1)

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	X	X	X
Vertical	Z	Z	X	X

[BT LE]
EUT

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	Z	X	X
Vertical	X	X	X	X

Antenna 0 (ANT 0)

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	X	X	X
Vertical	X	Y	X	X

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

Measurement Range : 30 MHz to 26.5 GHz
Test Data : APPENDIX
Test Result : Pass

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	50 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: 160 MHz BW)
Peak Power Density	1.5 times the 6 dB Bandwidth	3 kHz	9.1 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	10 kHz	30 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 not detected as shown in the chart.
(9 kHz - 150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 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 Ohmes. 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

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/30

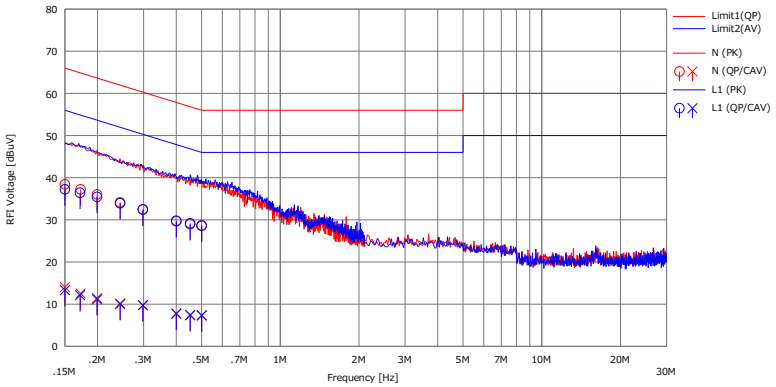
Mode : Tx 11ax-20 (OFDM), 2412 MHz

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 27 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Makoto Hosaka



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		(QP)	(CAV)		(QP)	(CAV)	(QP)	(AV)	(QP)	(AV)		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.00	1.60	12.42	38.42	14.02	66.00	56.00	27.5	41.9	N	
2	0.17233	24.80	0.10	12.42	37.22	12.52	64.85	54.85	27.6	42.3	N	
3	0.19919	23.60	-1.00	12.42	36.02	11.42	63.64	53.64	27.6	42.2	N	
4	0.24410	21.70	-2.30	12.44	34.14	10.14	61.96	51.96	27.8	41.8	N	
5	0.29809	20.00	-2.70	12.45	32.45	9.75	60.30	50.30	27.8	40.5	N	
6	0.40035	17.20	-4.70	12.45	29.65	7.75	57.85	47.85	28.2	40.1	N	
7	0.45237	16.50	-5.10	12.45	28.95	7.35	56.83	46.83	27.8	39.4	N	
8	0.50056	16.10	-5.20	12.46	28.56	7.26	56.00	46.00	27.4	38.7	N	
9	0.15000	24.80	0.90	12.43	37.23	13.33	66.00	56.00	28.7	42.6	L1	
10	0.17145	24.00	-0.30	12.42	36.42	12.12	64.89	54.89	28.4	42.7	L1	
11	0.19919	23.00	-1.30	12.43	35.43	11.13	63.64	53.64	28.2	42.5	L1	
12	0.24410	21.50	-2.40	12.42	33.92	10.02	61.96	51.96	28.0	41.9	L1	
13	0.29809	20.00	-2.70	12.44	32.44	9.74	60.30	50.30	27.8	40.5	L1	
14	0.40035	17.30	-4.70	12.46	29.76	7.76	57.85	47.85	28.0	40.0	L1	
15	0.45237	16.70	-5.00	12.46	29.16	7.46	56.83	46.83	27.6	39.3	L1	
16	0.50056	16.20	-5.10	12.47	28.67	7.37	56.00	46.00	27.3	38.6	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/30

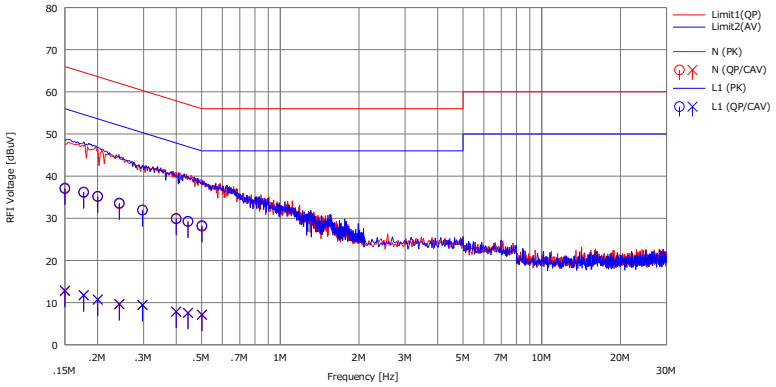
Mode : Tx BT LE 1M-PHY, 2440 MHz

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 27 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Makoto Hosaka



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈CAV〉		〈QP〉	〈CAV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	24.80	0.50	12.42	37.22	12.92	66.00	56.00	28.7	43.0	N	
2	0.17709	23.70	-0.60	12.42	36.12	11.82	64.62	54.62	28.5	42.8	N	
3	0.20027	22.70	-1.70	12.42	35.12	10.72	63.60	53.60	28.4	42.8	N	
4	0.24228	21.00	-2.80	12.44	33.44	9.64	62.02	52.02	28.5	42.3	N	
5	0.29709	19.50	-3.00	12.45	31.95	9.45	60.32	50.32	28.3	40.8	N	
6	0.40000	17.40	-4.60	12.45	29.85	7.85	57.85	47.85	28.0	40.0	N	
7	0.44362	16.80	-4.90	12.45	29.25	7.55	56.99	46.99	27.7	39.4	N	
8	0.50130	15.60	-5.40	12.46	28.06	7.06	56.00	46.00	27.9	38.9	N	
9	0.15000	24.60	0.30	12.43	37.03	12.73	66.00	56.00	28.9	43.2	L1	
10	0.17709	23.80	-0.70	12.42	36.22	11.72	64.62	54.62	28.4	42.9	L1	
11	0.20027	22.80	-1.70	12.43	35.23	10.73	63.60	53.60	28.3	42.8	L1	
12	0.24228	21.20	-2.80	12.42	33.62	9.62	62.02	52.02	28.4	42.4	L1	
13	0.29709	19.50	-3.00	12.44	31.94	9.44	60.32	50.32	28.3	40.8	L1	
14	0.40000	17.50	-4.60	12.46	29.96	7.86	57.85	47.85	27.8	39.9	L1	
15	0.44362	16.80	-4.90	12.46	29.26	7.56	56.99	46.99	27.7	39.4	L1	
16	0.50130	15.80	-5.30	12.47	28.27	7.17	56.00	46.00	27.7	38.8	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/30

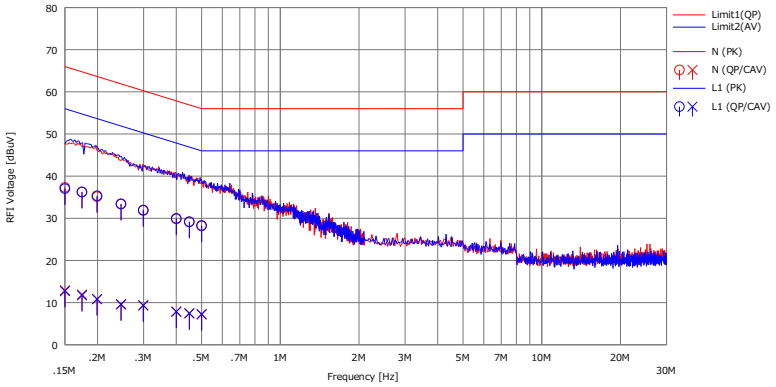
Mode : Tx BT LE 2M-PHY, 2440 MHz

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 27 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Makoto Hosaka



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈CAV〉		〈QP〉	〈CAV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	24.90	0.50	12.42	37.32	12.92	66.00	56.00	28.6	43.0	N	
2	0.17437	23.80	-0.50	12.42	36.22	11.92	64.75	54.75	28.5	42.8	N	
3	0.19917	22.70	-1.60	12.42	35.12	10.82	63.65	53.65	28.5	42.8	N	
4	0.24593	20.90	-2.90	12.44	33.34	9.54	61.89	51.89	28.5	42.3	N	
5	0.29919	19.40	-3.10	12.45	31.85	9.35	60.27	50.27	28.4	40.9	N	
6	0.40040	17.40	-4.60	12.45	29.85	7.85	57.85	47.85	28.0	40.0	N	
7	0.44903	16.70	-5.00	12.45	29.15	7.45	56.89	46.89	27.7	39.4	N	
8	0.50006	15.70	-5.30	12.46	28.16	7.16	56.00	46.00	27.8	38.8	N	
9	0.15000	24.60	0.30	12.43	37.03	12.73	66.00	56.00	28.9	43.2	L1	
10	0.17437	23.80	-0.70	12.42	36.22	11.72	64.75	54.75	28.5	43.0	L1	
11	0.19917	22.90	-1.60	12.43	35.33	10.83	63.65	53.65	28.3	42.8	L1	
12	0.24593	21.00	-2.80	12.42	33.42	9.62	61.89	51.89	28.4	42.2	L1	
13	0.29919	19.50	-3.10	12.44	31.94	9.34	60.27	50.27	28.3	40.9	L1	
14	0.40040	17.50	-4.60	12.46	29.96	7.86	57.85	47.85	27.8	39.9	L1	
15	0.44903	16.70	-5.00	12.46	29.16	7.46	56.89	46.89	27.7	39.4	L1	
16	0.50006	15.80	-5.20	12.47	28.27	7.27	56.00	46.00	27.7	38.7	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/29

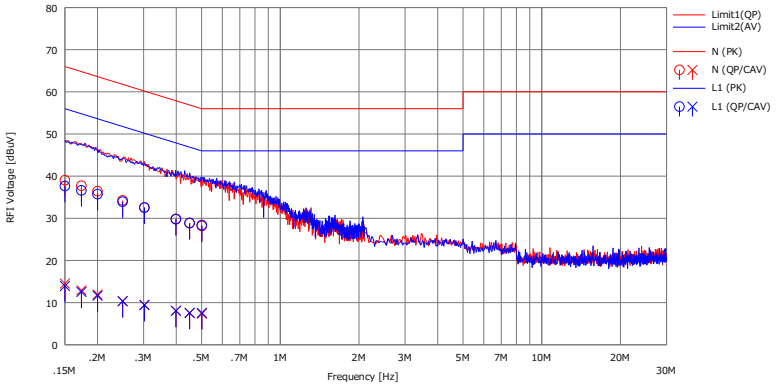
Mode : Refer to Remarks

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 20 deg.C. / 27 %RH

Remarks : 1M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 MHz

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Yusuke Tanikawara



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈CAV〉		〈QP〉	〈CAV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.60	2.10	12.42	39.02	14.52	66.00	56.00	26.9	41.4	N	
2	0.17356	25.30	0.50	12.42	37.72	12.92	64.79	54.79	27.0	41.8	N	
3	0.20005	24.00	-0.50	12.42	36.42	11.92	63.61	53.61	27.1	41.6	N	
4	0.24945	21.80	-2.10	12.44	34.24	10.34	61.78	51.78	27.5	41.4	N	
5	0.30224	20.10	-3.00	12.45	32.55	9.45	60.18	50.18	27.6	40.7	N	
6	0.39884	17.40	-4.40	12.45	29.85	8.05	57.88	47.88	28.0	39.8	N	
7	0.45002	16.40	-4.90	12.45	28.85	7.55	56.87	46.87	28.0	39.3	N	
8	0.50118	15.70	-5.10	12.46	28.16	7.36	56.00	46.00	27.8	38.6	N	
9	0.15000	25.20	1.50	12.43	37.63	13.93	66.00	56.00	28.3	42.0	L1	
10	0.17356	24.20	0.10	12.42	36.62	12.52	64.79	54.79	28.1	42.2	L1	
11	0.20005	23.30	-0.80	12.43	35.73	11.63	63.61	53.61	27.8	41.9	L1	
12	0.24945	21.50	-2.10	12.42	33.92	10.32	61.78	51.78	27.8	41.4	L1	
13	0.30224	20.10	-3.00	12.44	32.54	9.44	60.18	50.18	27.6	40.7	L1	
14	0.39884	17.30	-4.40	12.46	29.76	8.06	57.88	47.88	28.1	39.8	L1	
15	0.45002	16.40	-4.90	12.46	28.86	7.56	56.87	46.87	28.0	39.3	L1	
16	0.50118	15.90	-4.90	12.47	28.37	7.57	56.00	46.00	27.6	38.4	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/29

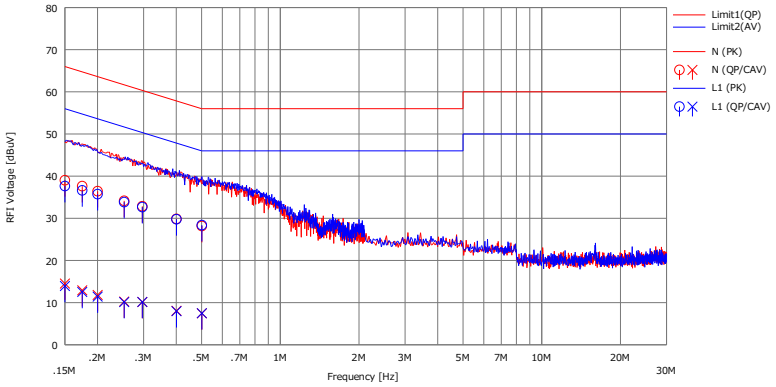
Mode : Refer to Remarks

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 20 deg.C. / 27 %RH

Remarks : 2M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 5510 MHz

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Yusuke Tanikawara



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		(QP)	(CAV)		(QP)	(CAV)	(QP)	(AV)	(QP)	(AV)		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.60	2.10	12.42	39.02	14.52	66.00	56.00	26.9	41.4	N	
2	0.17479	25.20	0.50	12.42	37.62	12.92	64.73	54.73	27.1	41.8	N	
3	0.20013	24.00	-0.60	12.42	36.42	11.82	63.61	53.61	27.1	41.7	N	
4	0.25287	21.70	-2.20	12.44	34.14	10.24	61.66	51.66	27.5	41.4	N	
5	0.29664	20.40	-2.30	12.45	32.85	10.15	60.34	50.34	27.4	40.1	N	
6	0.40075	17.40	-4.40	12.45	29.85	8.05	57.84	47.84	27.9	39.7	N	
7	0.50101	15.70	-5.00	12.46	28.16	7.46	56.00	46.00	27.8	38.5	N	
8	0.15000	25.20	1.50	12.43	37.63	13.93	66.00	56.00	28.3	42.0	L1	
9	0.17479	24.20	0.10	12.42	36.62	12.52	64.73	54.73	28.1	42.2	L1	
10	0.20013	23.30	-1.00	12.43	35.73	11.43	63.61	53.61	27.8	42.1	L1	
11	0.25287	21.40	-2.30	12.42	33.82	10.12	61.66	51.66	27.8	41.5	L1	
12	0.29664	20.20	-2.30	12.44	32.64	10.14	60.34	50.34	27.7	40.2	L1	
13	0.40075	17.30	-4.50	12.46	29.76	7.96	57.84	47.84	28.0	39.8	L1	
14	0.50101	15.90	-5.00	12.47	28.37	7.47	56.00	46.00	27.6	38.5	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/30

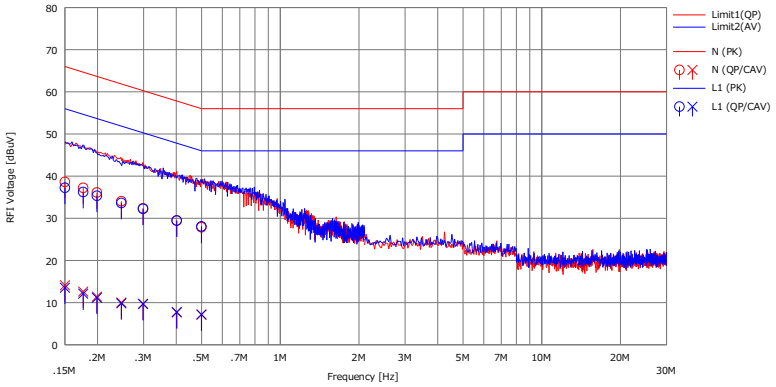
Mode : Refer to Remarks

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 27 %RH

Remarks : 1M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 6445 MHz

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Makoto Hosaka



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈CAV〉		〈QP〉	〈CAV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.20	1.70	12.42	38.62	14.12	66.00	56.00	27.3	41.8	N	
2	0.17631	24.80	0.20	12.42	37.22	12.62	64.66	54.66	27.4	42.0	N	
3	0.19883	23.70	-1.00	12.42	36.12	11.42	63.66	53.66	27.5	42.2	N	
4	0.24664	21.60	-2.40	12.44	34.04	10.04	61.87	51.87	27.8	41.8	N	
5	0.29866	19.90	-2.70	12.45	32.35	9.75	60.28	50.28	27.9	40.5	N	
6	0.40164	17.00	-4.80	12.45	29.45	7.65	57.82	47.82	28.3	40.1	N	
7	0.49916	15.40	-5.30	12.46	27.86	7.16	56.01	46.01	28.1	38.8	N	
8	0.15000	24.80	1.10	12.43	37.23	13.53	66.00	56.00	28.7	42.4	L1	
9	0.17631	23.80	-0.30	12.42	36.22	12.12	64.66	54.66	28.4	42.5	L1	
10	0.19883	22.90	-1.30	12.43	35.33	11.13	63.66	53.66	28.3	42.5	L1	
11	0.24664	21.20	-2.60	12.42	33.62	9.82	61.87	51.87	28.2	42.0	L1	
12	0.29866	19.80	-2.80	12.44	32.24	9.64	60.28	50.28	28.0	40.6	L1	
13	0.40164	17.00	-4.70	12.46	29.46	7.76	57.82	47.82	28.3	40.0	L1	
14	0.49916	15.60	-5.30	12.47	28.07	7.17	56.01	46.01	27.9	38.8	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/30

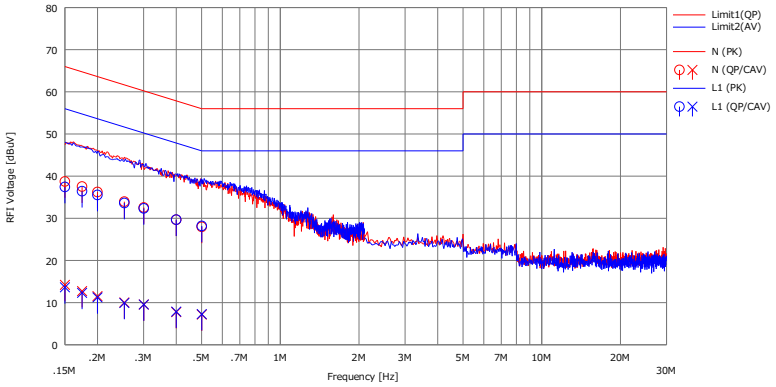
Mode : Refer to Remarks

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 27 %RH

Remarks : 2M-PHY BT LE 2440 MHz With Tx 11ax-40 (OFDM), 6445 MHz

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Makoto Hosaka



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<CAV>		<QP>	<CAV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.30	1.80	12.42	38.72	14.22	66.00	56.00	27.2	41.7	N	
2	0.17452	25.10	0.30	12.42	37.52	12.72	64.74	54.74	27.2	42.0	N	
3	0.19992	23.80	-0.90	12.42	36.22	11.52	63.61	53.61	27.3	42.0	N	
4	0.25318	21.50	-2.40	12.44	33.94	10.04	61.65	51.65	27.7	41.6	N	
5	0.30050	20.10	-2.90	12.45	32.55	9.55	60.23	50.23	27.6	40.6	N	
6	0.40015	17.20	-4.70	12.45	29.65	7.75	57.85	47.85	28.2	40.1	N	
7	0.50066	15.50	-5.30	12.46	27.96	7.16	56.00	46.00	28.0	38.8	N	
8	0.15000	25.00	1.20	12.43	37.43	13.63	66.00	56.00	28.5	42.3	L1	
9	0.17452	24.00	-0.10	12.42	36.42	12.32	64.74	54.74	28.3	42.4	L1	
10	0.19992	23.10	-1.20	12.43	35.53	11.23	63.61	53.61	28.0	42.3	L1	
11	0.25318	21.20	-2.50	12.42	33.62	9.92	61.65	51.65	28.0	41.7	L1	
12	0.30050	19.90	-2.90	12.44	32.34	9.54	60.23	50.23	27.8	40.6	L1	
13	0.40015	17.20	-4.60	12.46	29.66	7.86	57.85	47.85	28.1	39.9	L1	
14	0.50066	15.70	-5.20	12.47	28.17	7.27	56.00	46.00	27.8	38.7	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

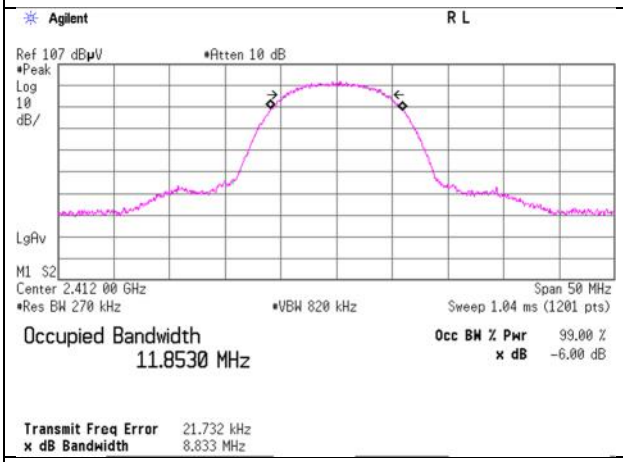
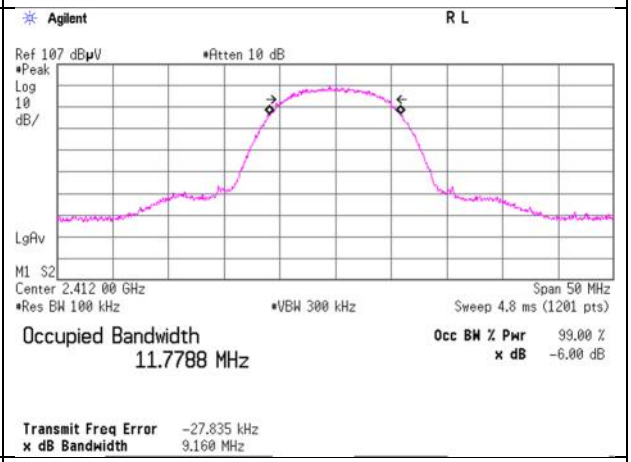
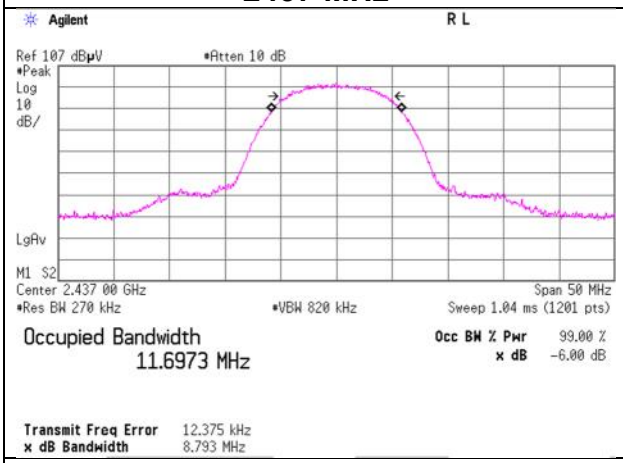
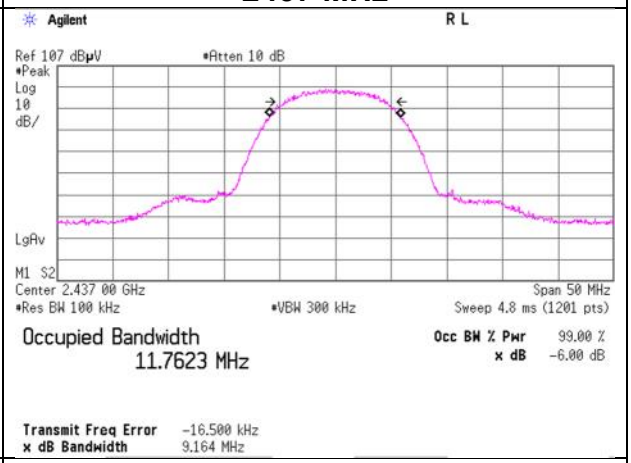
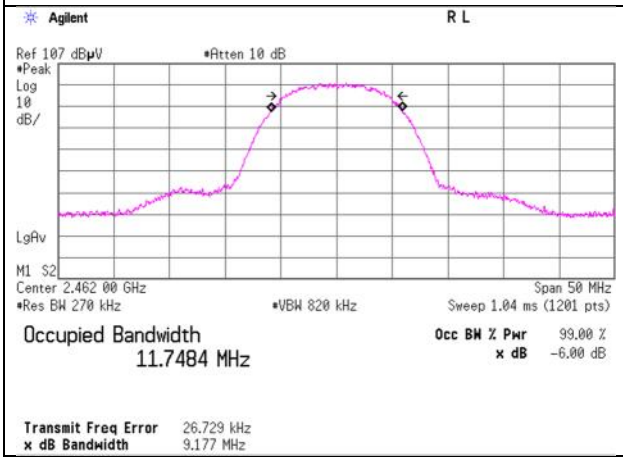
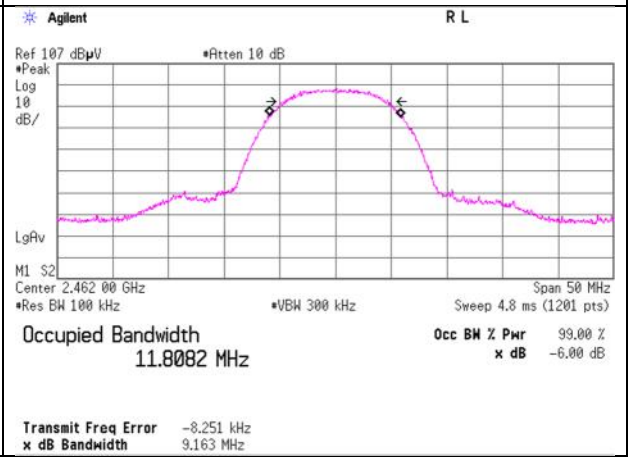
99 % Occupied Bandwidth and 6 dB Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 5, 2023
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Kenichi Adachi
Mode	Tx

Mode	Frequency [MHz]	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
11b	2412	11853.0	9.160	> 0.5000
	2437	11697.3	9.164	> 0.5000
	2462	11748.4	9.163	> 0.5000
11g	2412	17124.9	16.538	> 0.5000
	2437	17126.2	16.548	> 0.5000
	2462	17108.5	16.544	> 0.5000
11n-20	2412	18168.2	17.809	> 0.5000
	2437	18159.8	17.809	> 0.5000
	2462	18113.4	17.803	> 0.5000
11ax-20	2412	19122.3	19.138	> 0.5000
	2437	19110.7	19.136	> 0.5000
	2462	19178.6	19.145	> 0.5000

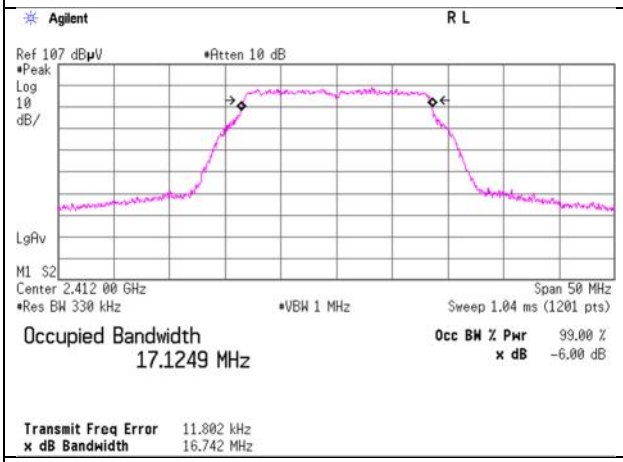
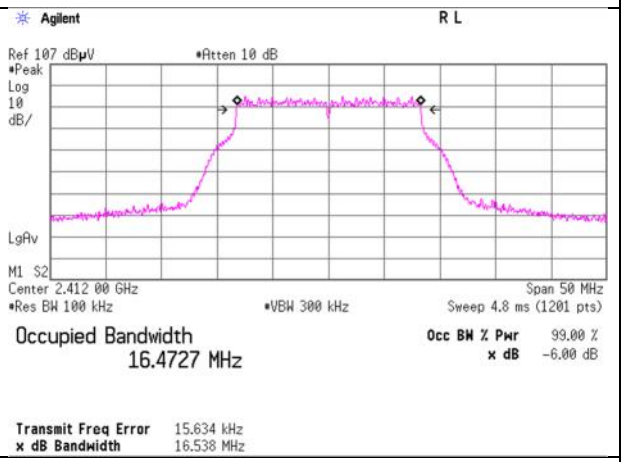
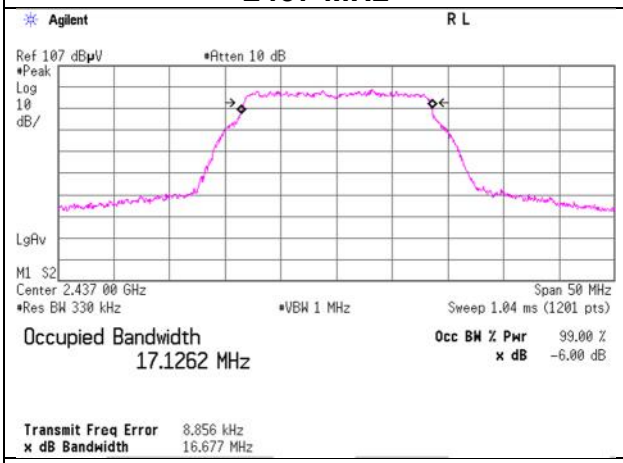
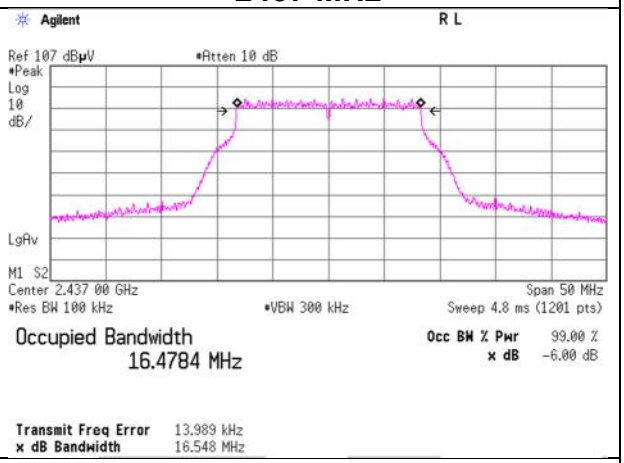
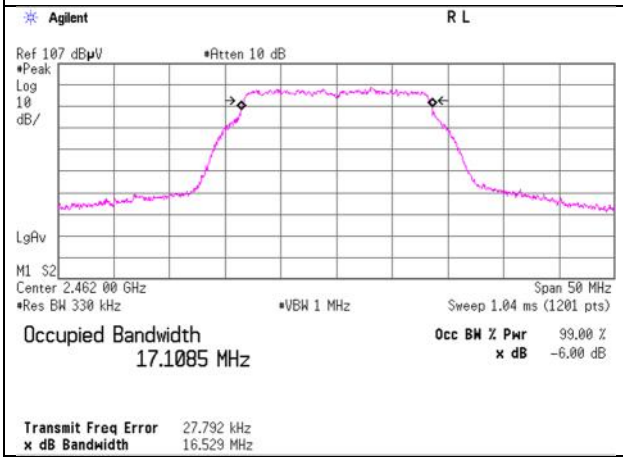
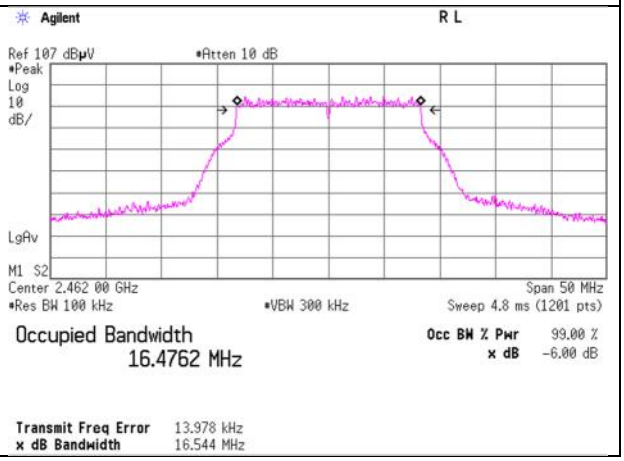
99 % Occupied Bandwidth and 6 dB Bandwidth

11b

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

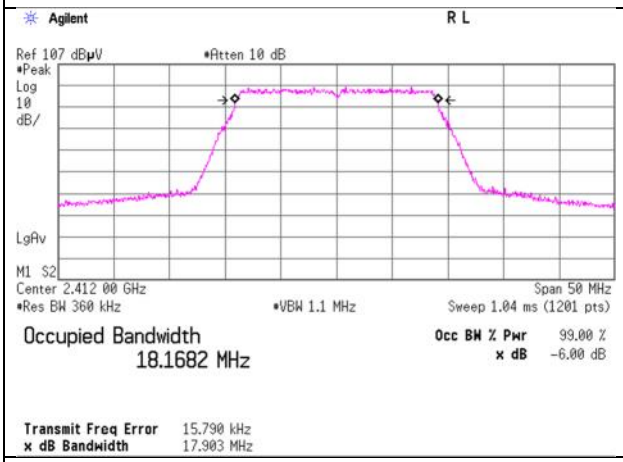
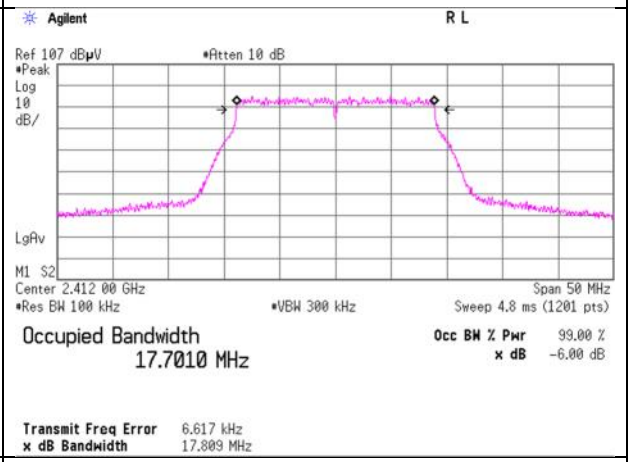
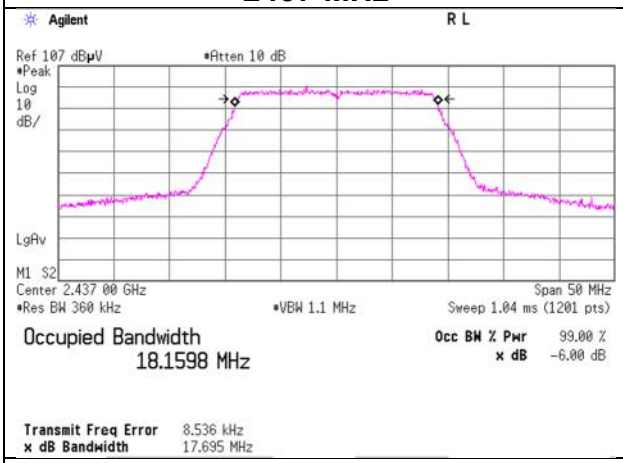
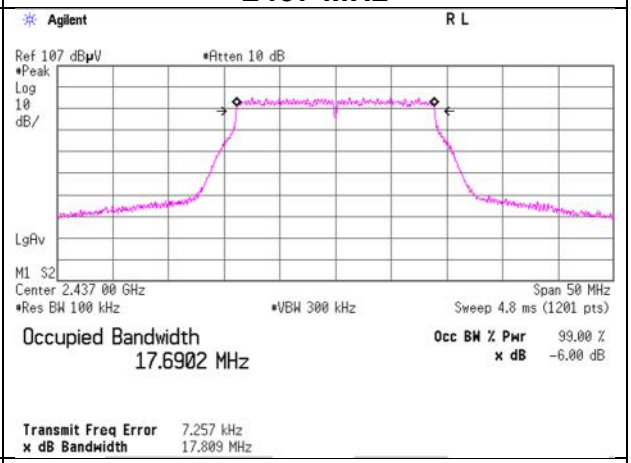
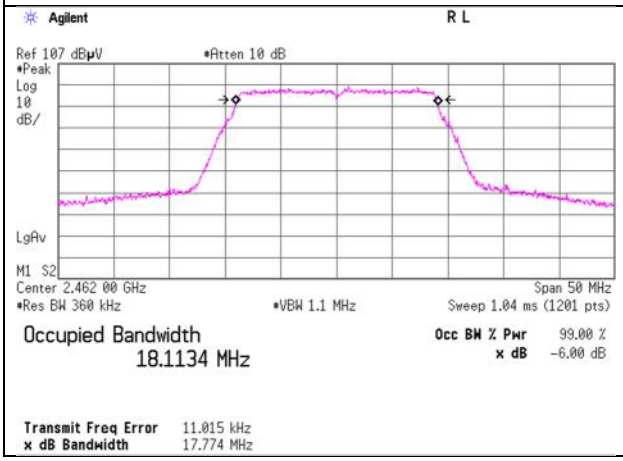
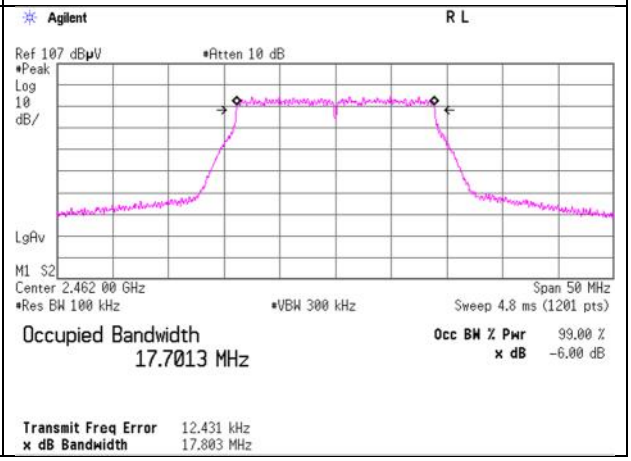
99 % Occupied Bandwidth and 6 dB Bandwidth

11g

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

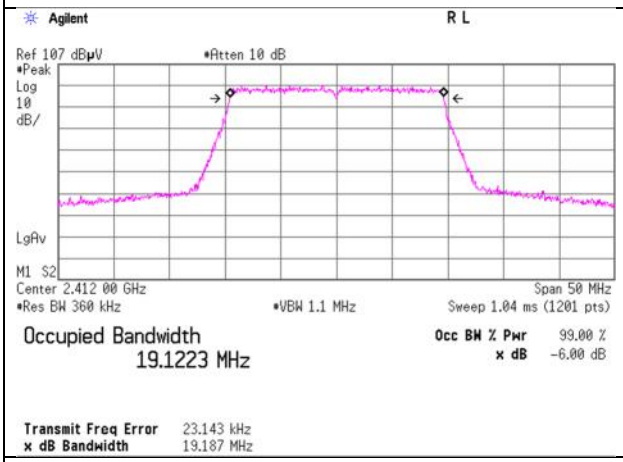
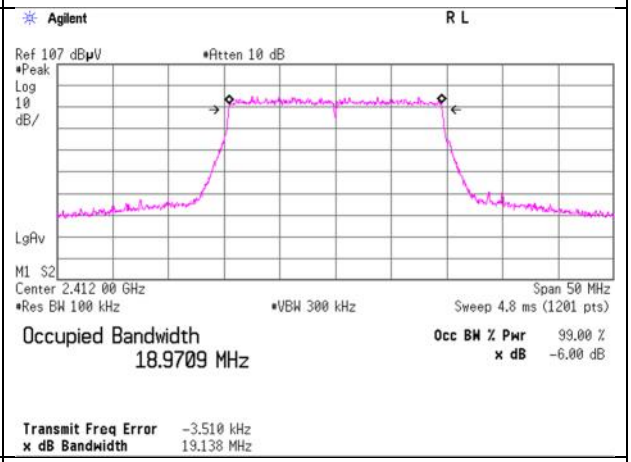
99 % Occupied Bandwidth and 6 dB Bandwidth

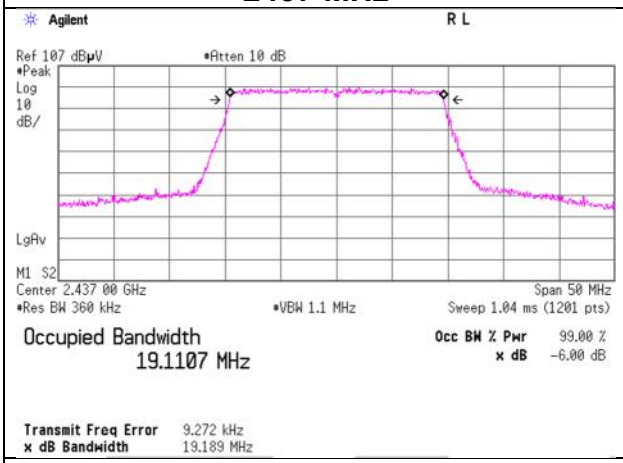
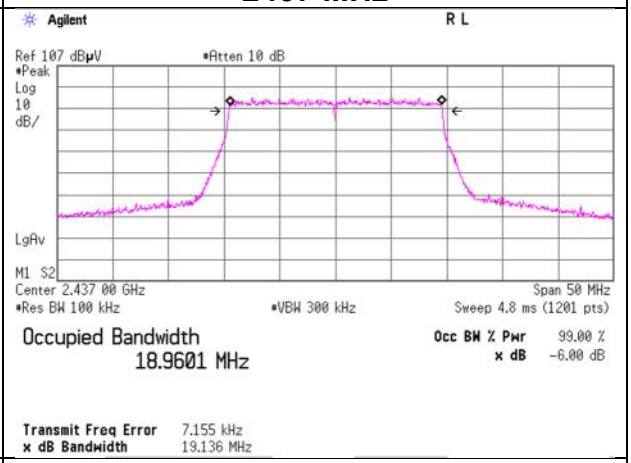
11n-20

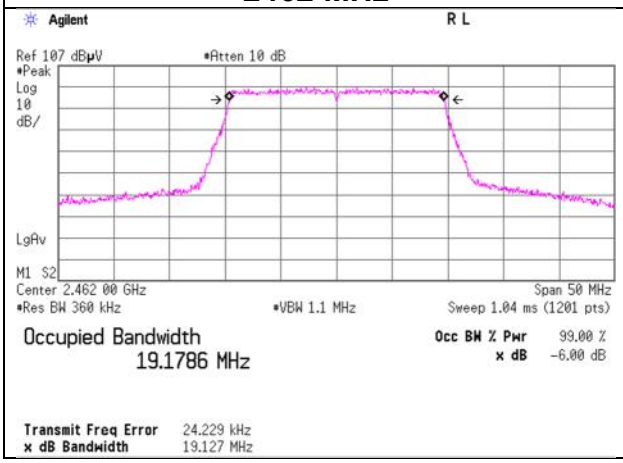
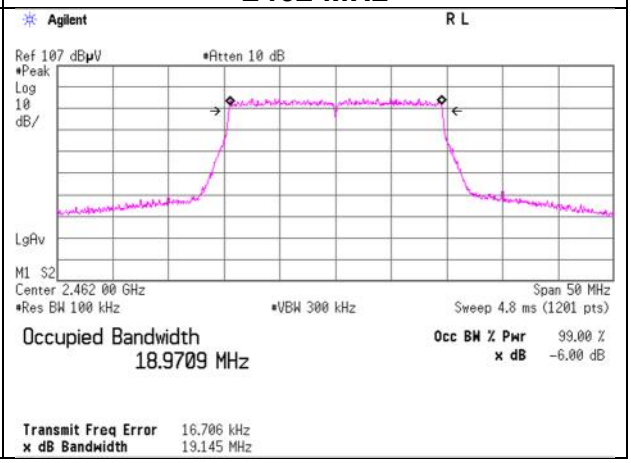
99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDM)

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	

2437 MHz	**2437 MHz**
	

2462 MHz	**2462 MHz**
	

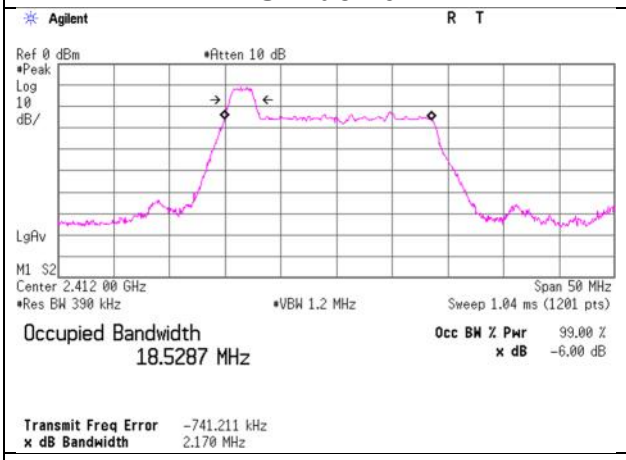
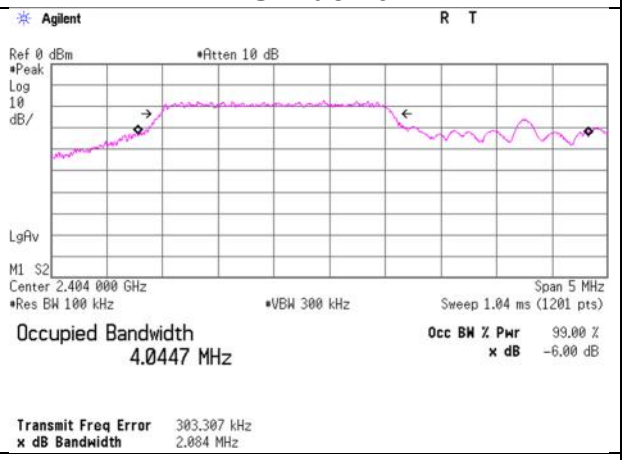
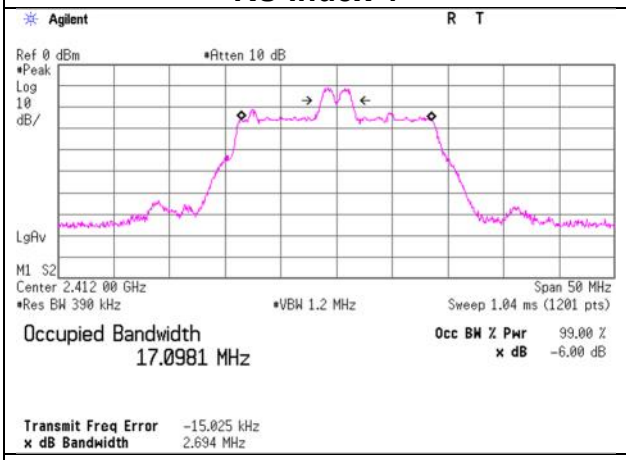
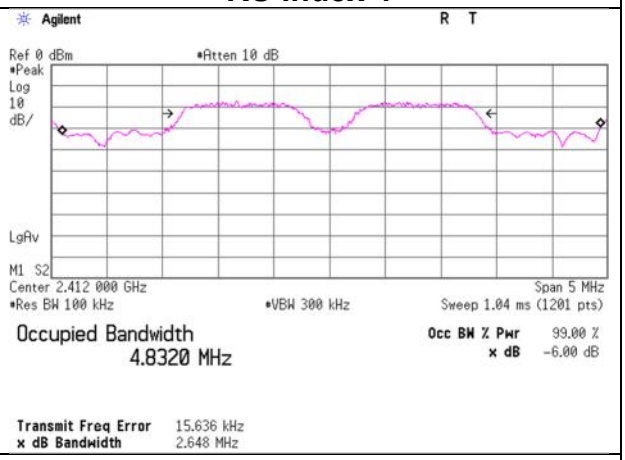
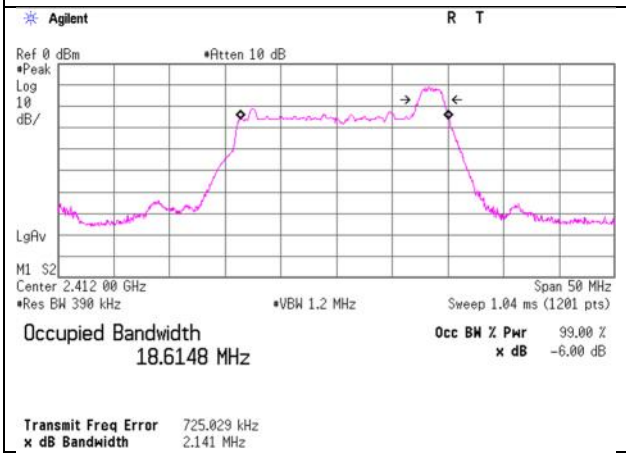
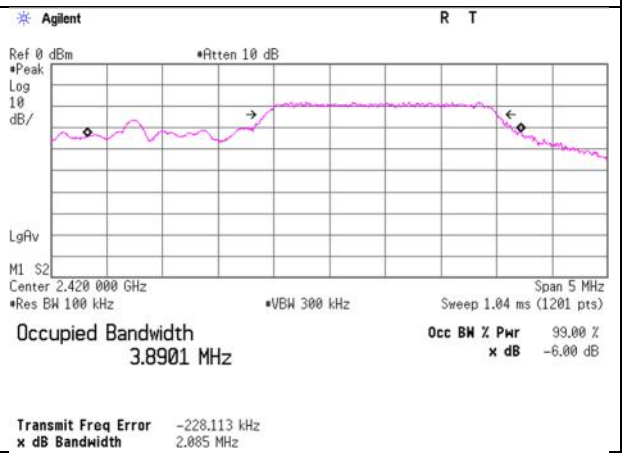
99 % Occupied Bandwidth and 6 dB Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 12, 2024
Temperature / Humidity	22 deg. C / 47 % RH
Engineer	Yuta Shiba
Mode	Tx 11ax-20 (OFDMA)

Mode	Frequency [MHz]	RU index	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
26-tone RU	2412	0	18528.7	2.084	> 0.500
		4	17098.1	2.648	> 0.500
		8	18614.8	2.085	> 0.500
	2437	0	18498.2	2.088	> 0.500
		4	17086.3	2.647	> 0.500
		8	18584.5	2.083	> 0.500
	2462	0	18502.2	2.072	> 0.500
		4	17063.7	2.652	> 0.500
		8	18580.4	2.076	> 0.500
52-tone RU	2412	37	18394.1	4.095	> 0.500
		38	17076.4	4.111	> 0.500
		40	18372.1	4.551	> 0.500
	2437	37	18412.7	4.558	> 0.500
		38	17068.6	4.071	> 0.500
		40	18371.1	4.554	> 0.500
	2462	37	18408.7	4.071	> 0.500
		38	17121.5	4.066	> 0.500
		40	18416.8	4.077	> 0.500
106-tone RU	2412	53	18313.2	8.358	> 0.500
		54	18280.8	8.372	> 0.500
	2437	53	18309.3	8.381	> 0.500
		54	18231.8	8.379	> 0.500
	2462	53	18328.7	8.360	> 0.500
		54	18253.9	8.374	> 0.500
242-tone RU	2412	61	19161.3	19.126	> 0.500
	2437	61	19161.9	19.137	> 0.500
	2462	61	19174.1	19.140	> 0.500

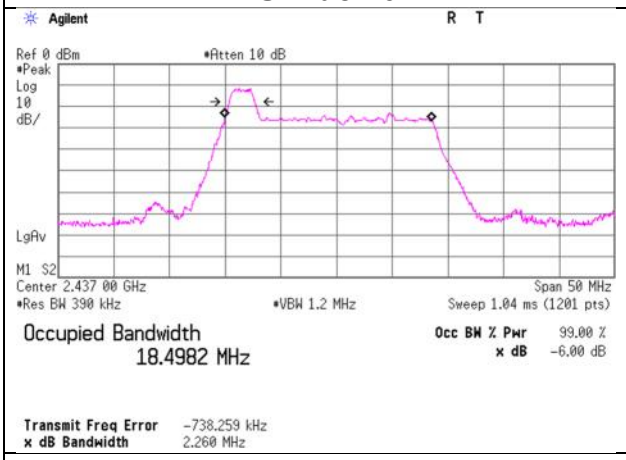
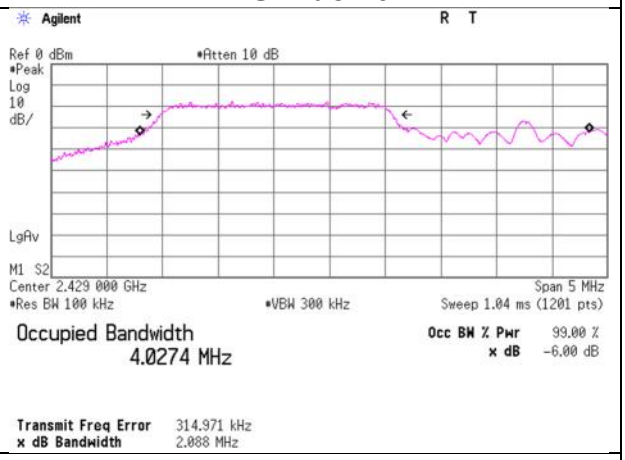
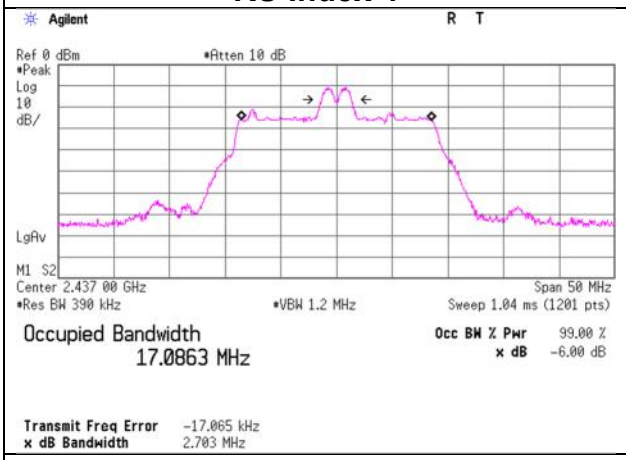
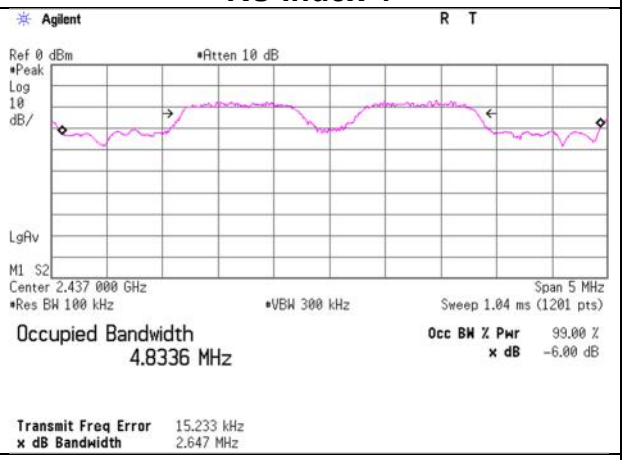
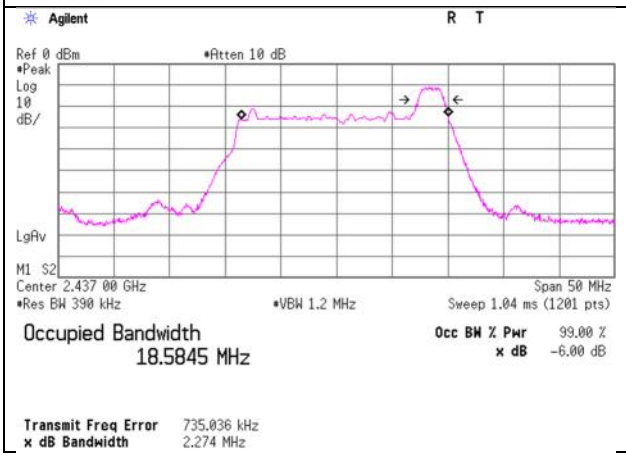
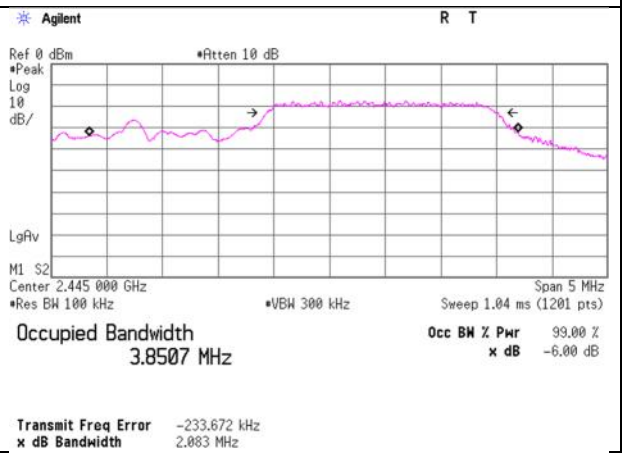
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 26-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	2412 MHz
RU Index 0	RU Index 0
	
RU Index 4	RU Index 4
	
RU Index 8	RU Index 8
	

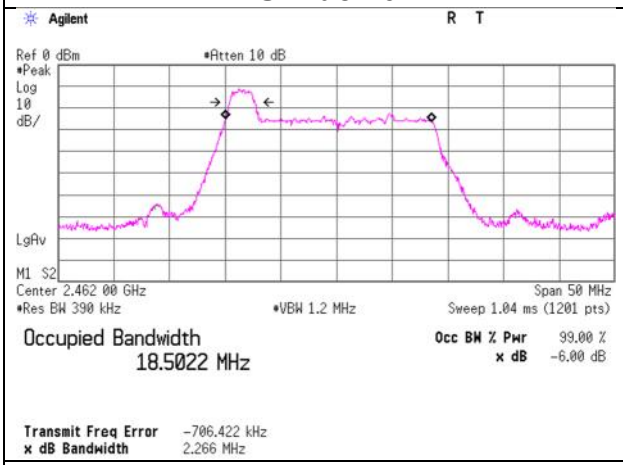
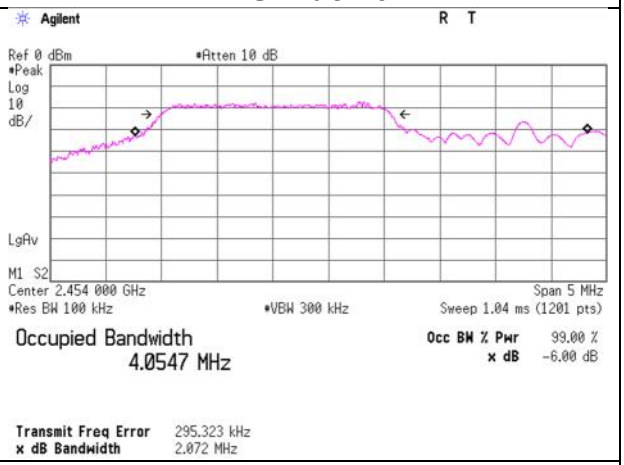
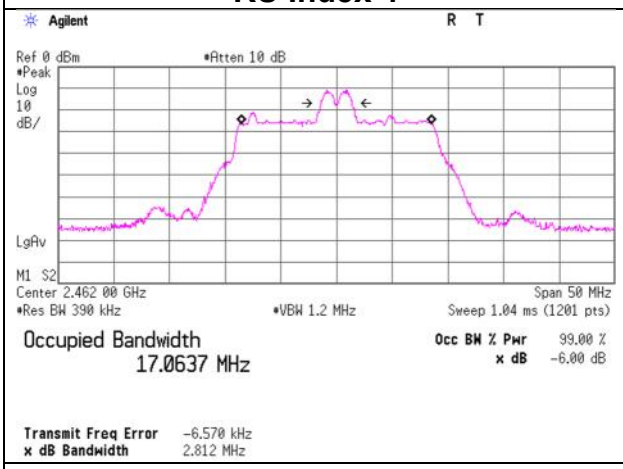
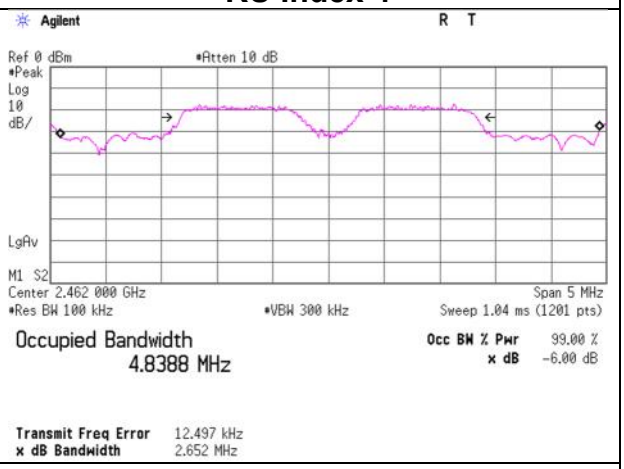
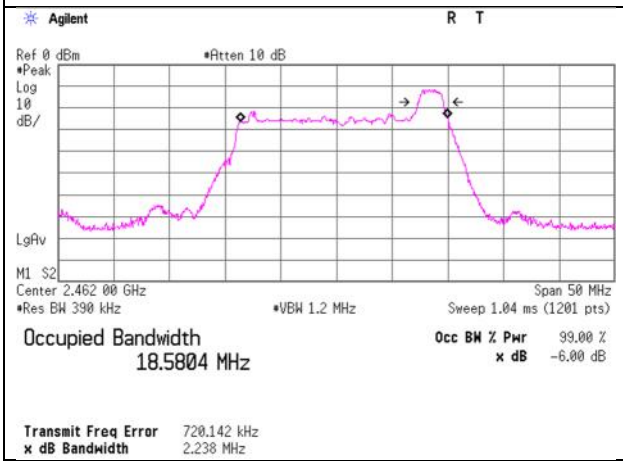
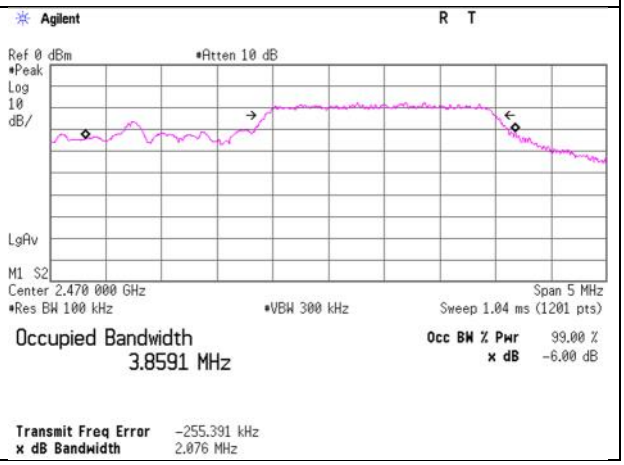
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 26-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2437 MHz	2437 MHz
RU Index 0	RU Index 0
	
RU Index 4	RU Index 4
	
RU Index 8	RU Index 8
	

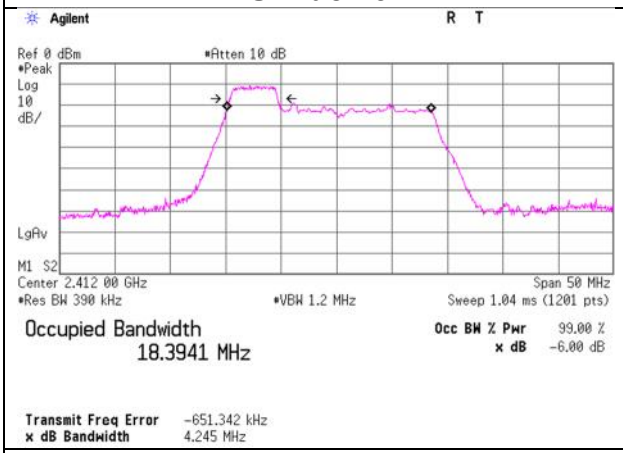
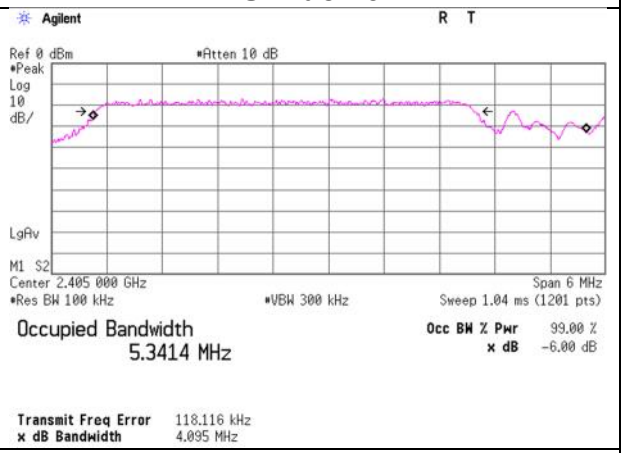
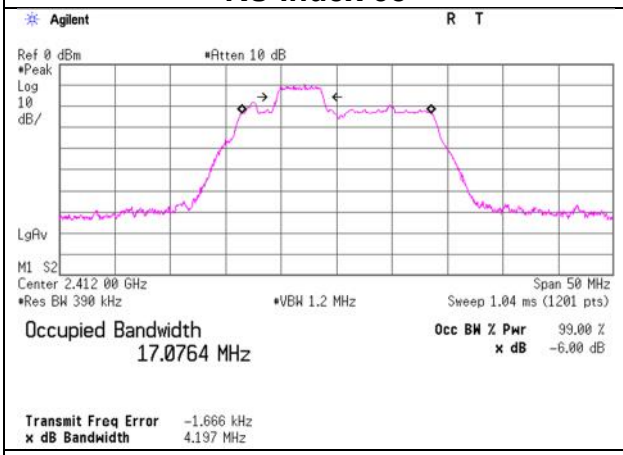
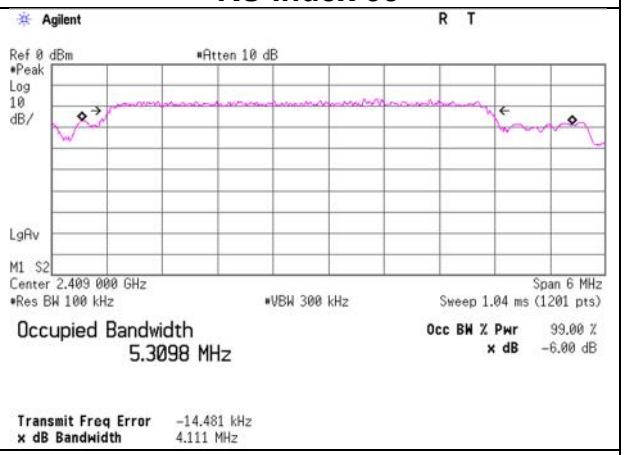
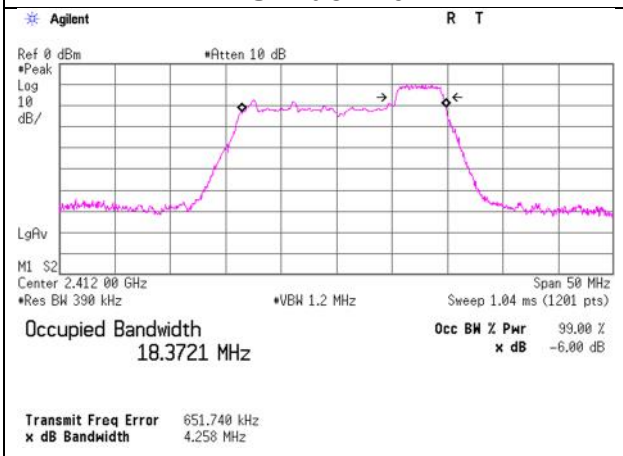
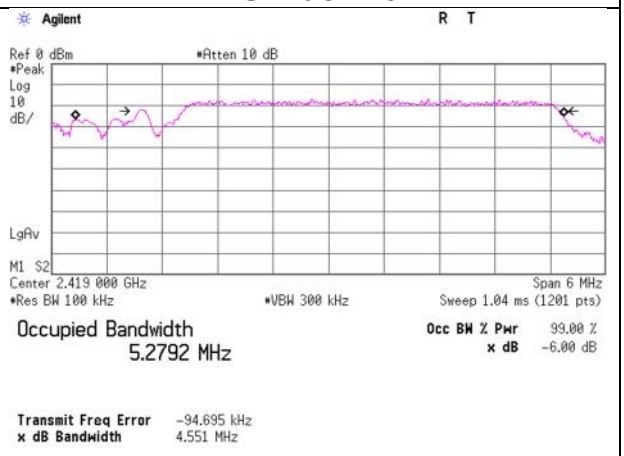
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 26-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2462 MHz	2462 MHz
RU Index 0	RU Index 0
	
RU Index 4	RU Index 4
	
RU Index 8	RU Index 8
	

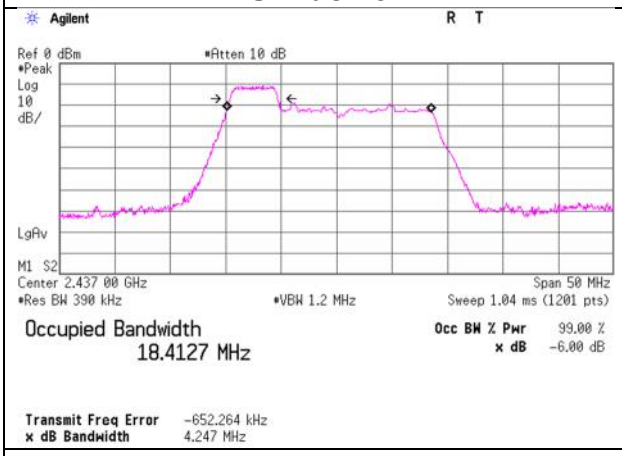
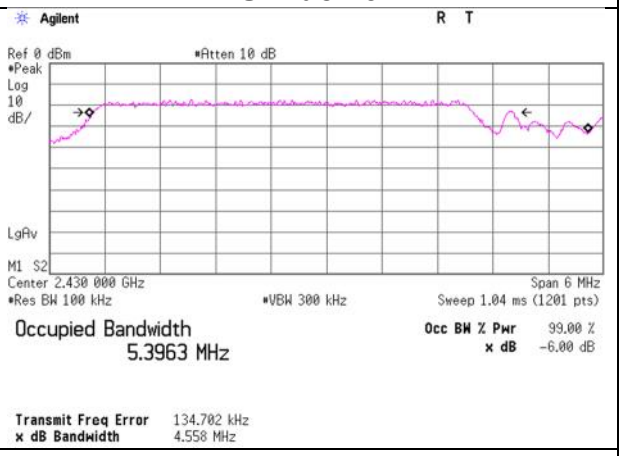
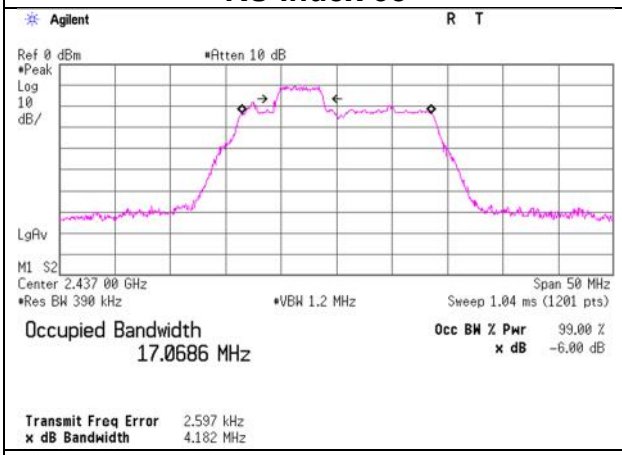
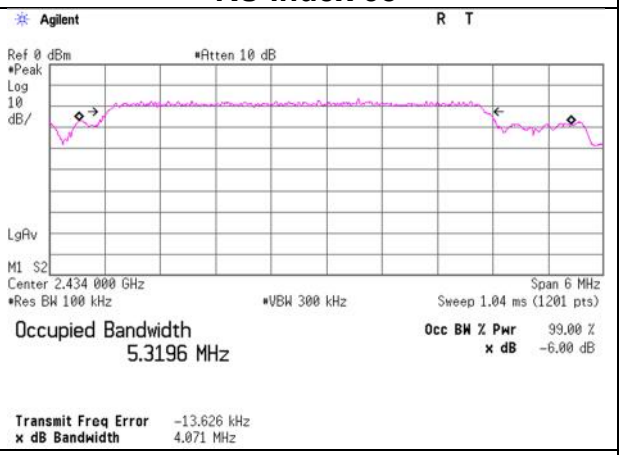
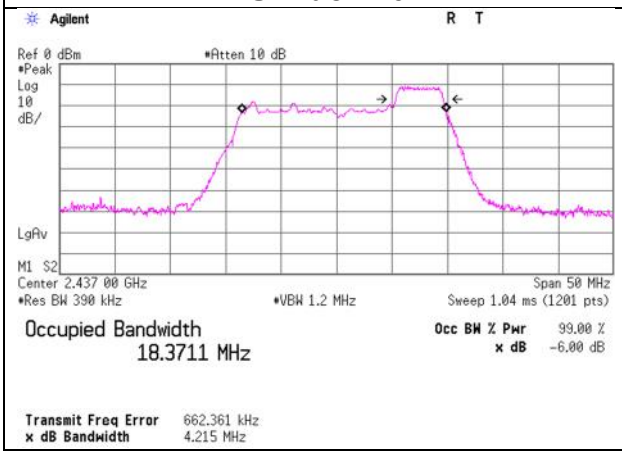
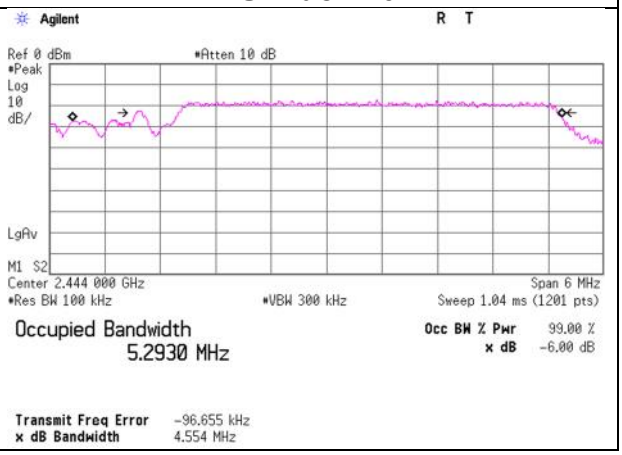
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 52-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	2412 MHz
RU Index 37	RU Index 37
	
RU Index 38	RU Index 38
	
RU Index 40	RU Index 40
	

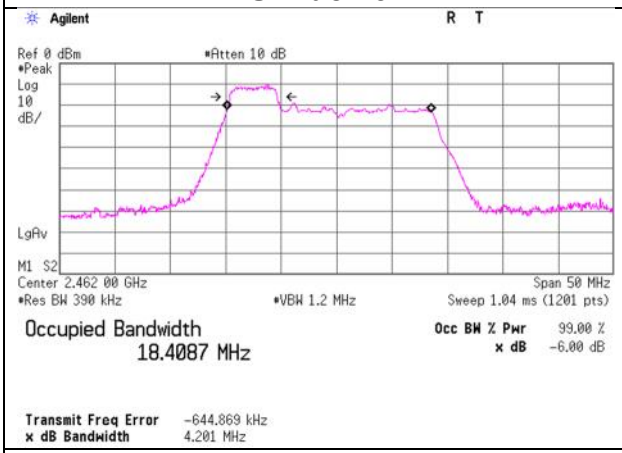
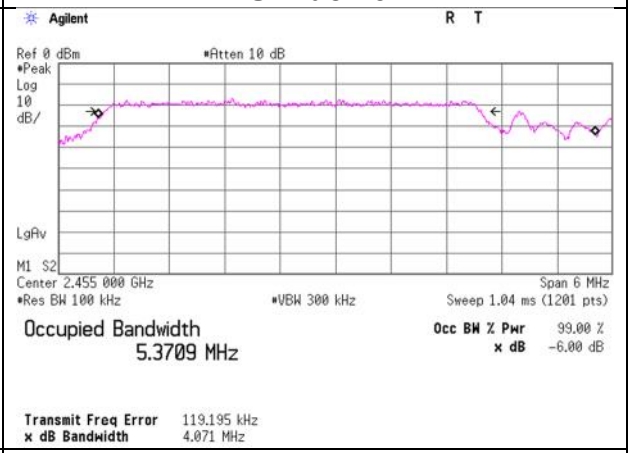
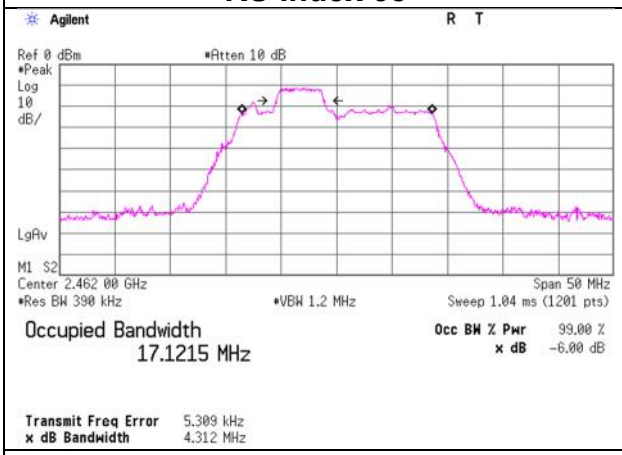
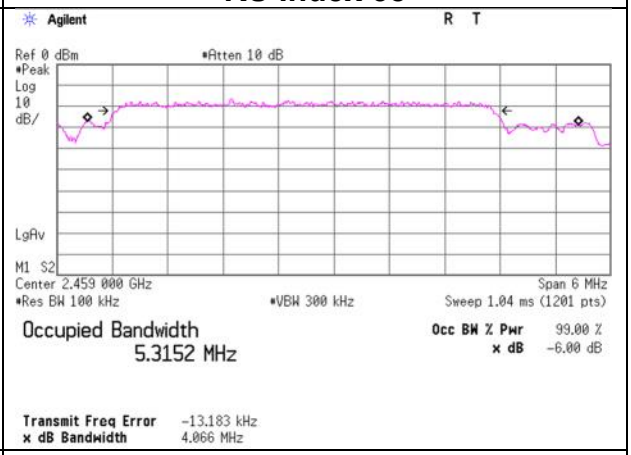
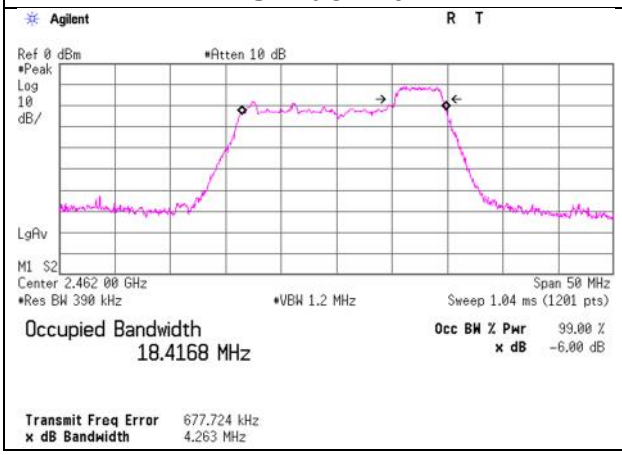
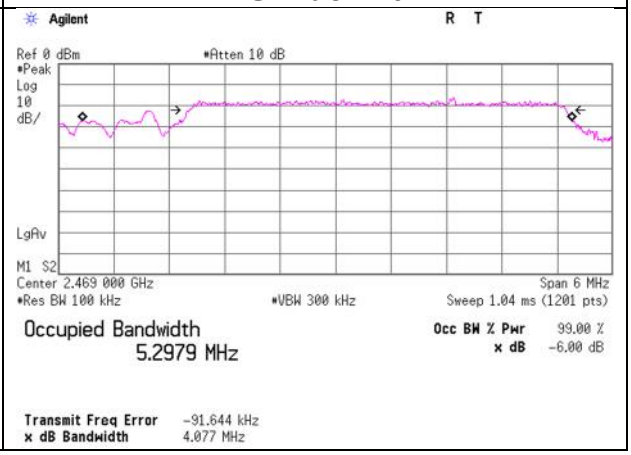
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 52-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2437 MHz	2437 MHz
RU Index 37	RU Index 37
	
RU Index 38	RU Index 38
	
RU Index 40	RU Index 40
	

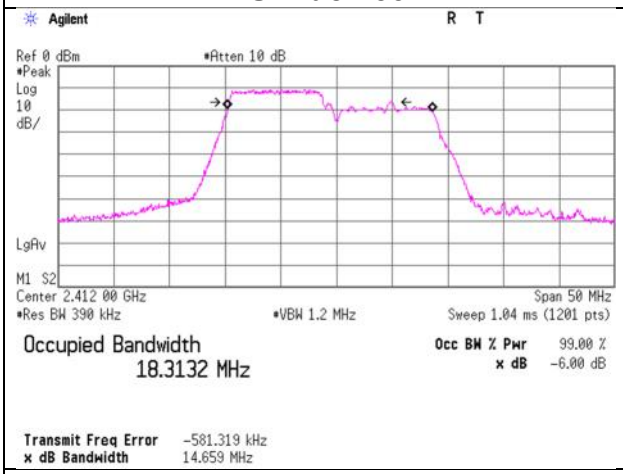
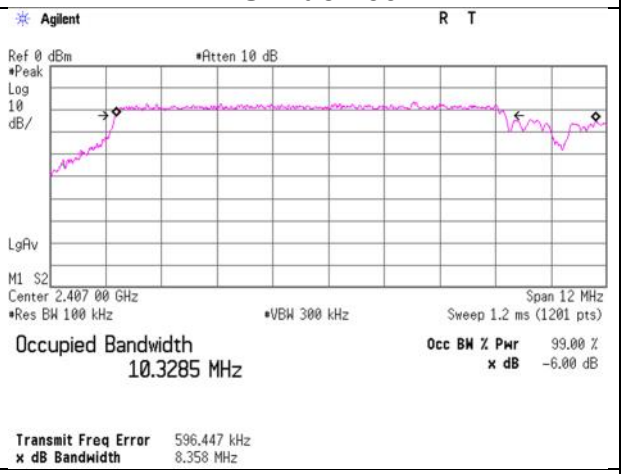
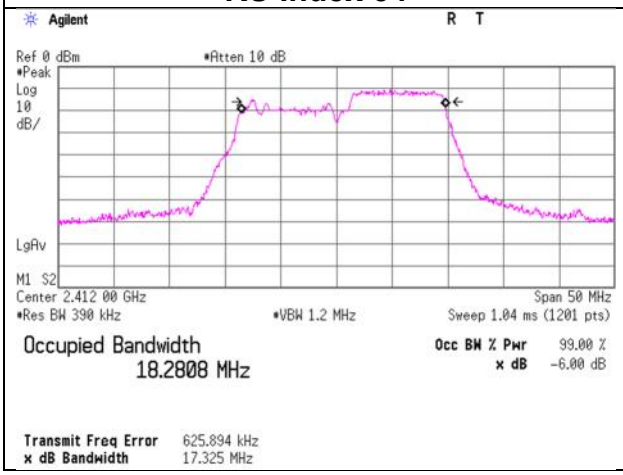
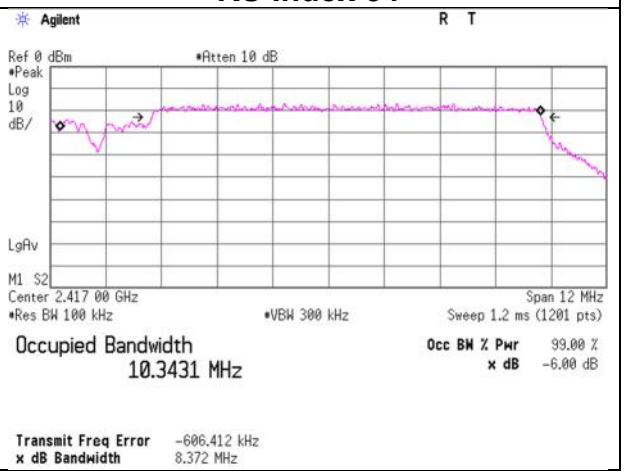
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 52-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2462 MHz	2462 MHz
RU Index 37	RU Index 37
	
RU Index 38	RU Index 38
	
RU Index 40	RU Index 40
	

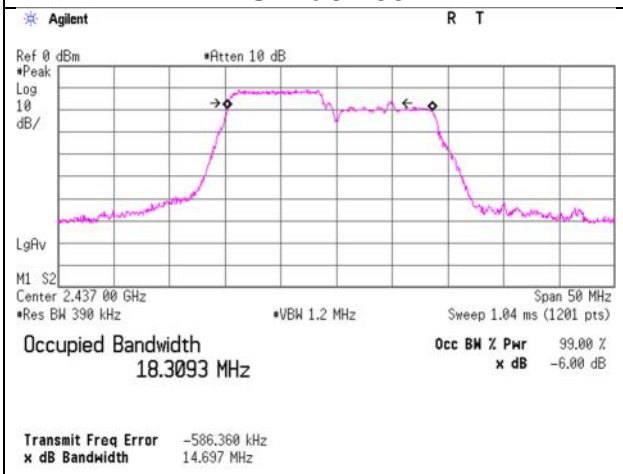
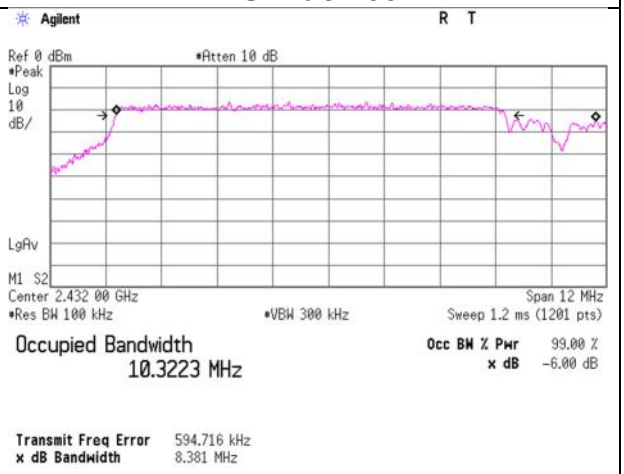
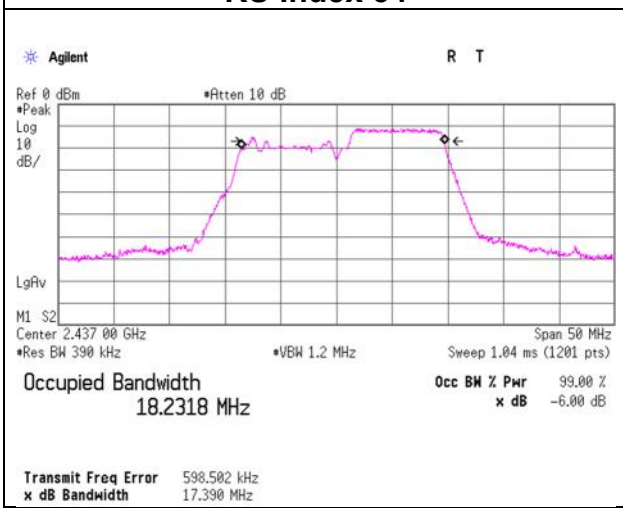
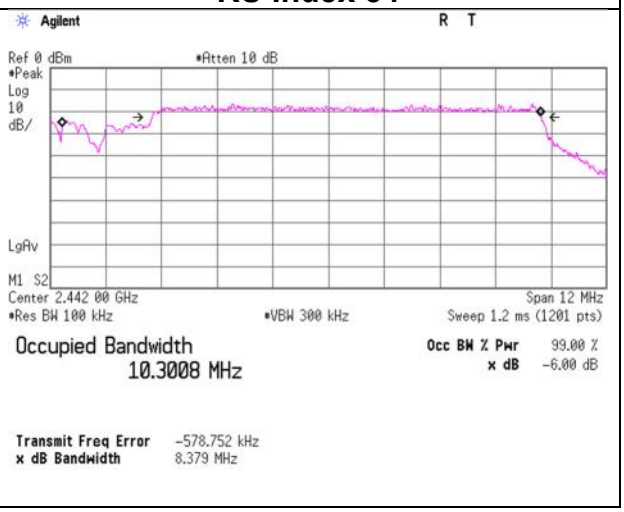
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 106-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	2412 MHz
RU Index 53	RU Index 53
	
RU Index 54	RU Index 54
	

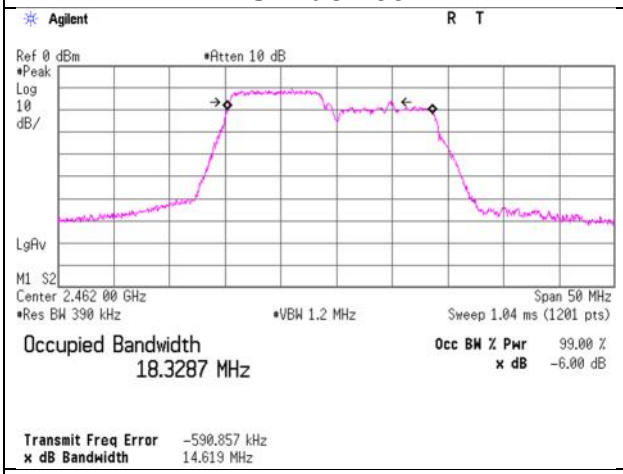
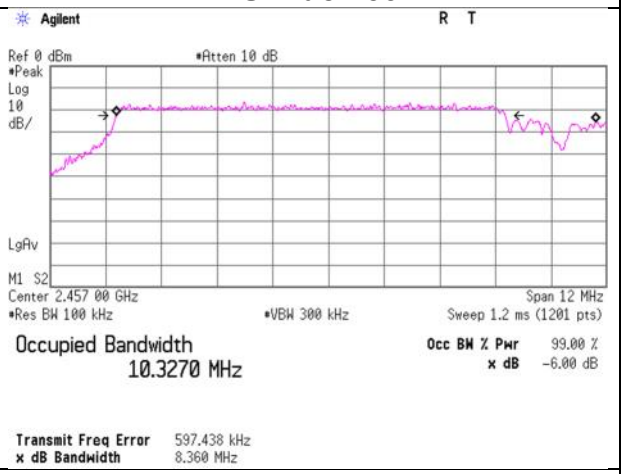
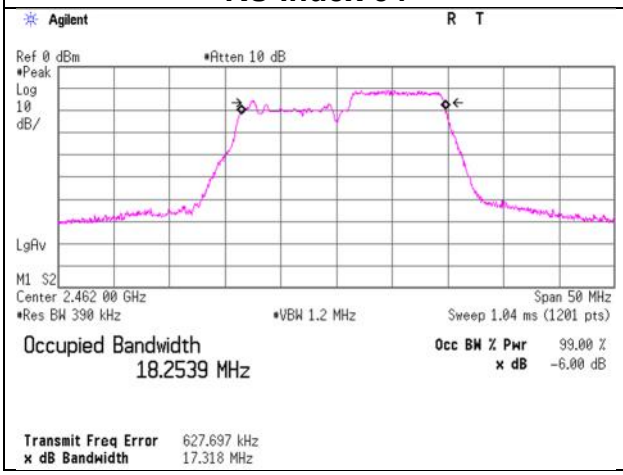
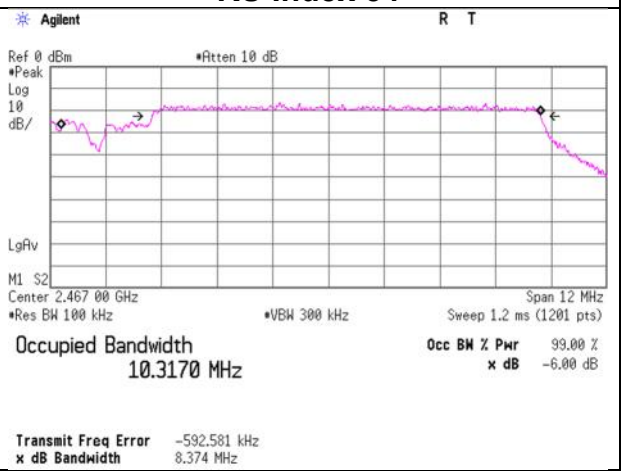
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 106-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2437 MHz	2437 MHz
RU Index 53	RU Index 53
	
RU Index 54	RU Index 54
	

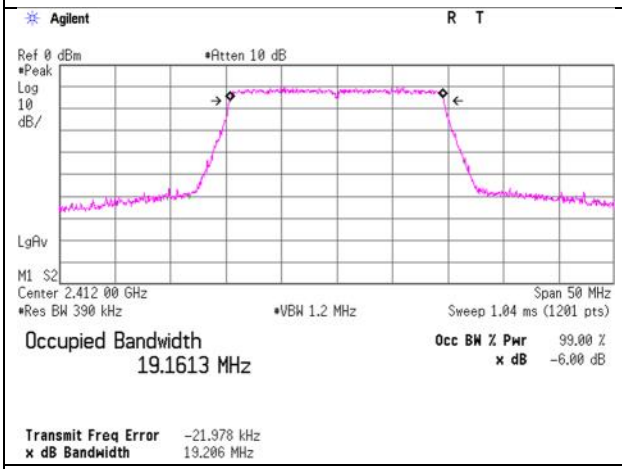
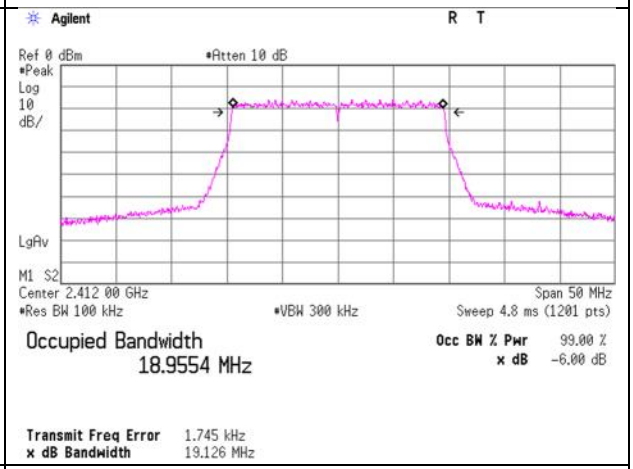
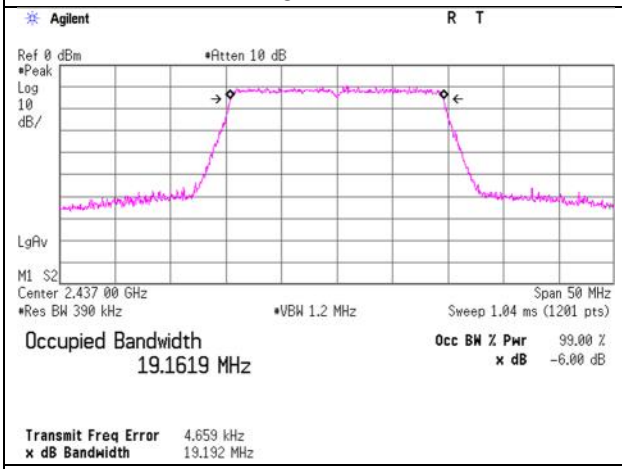
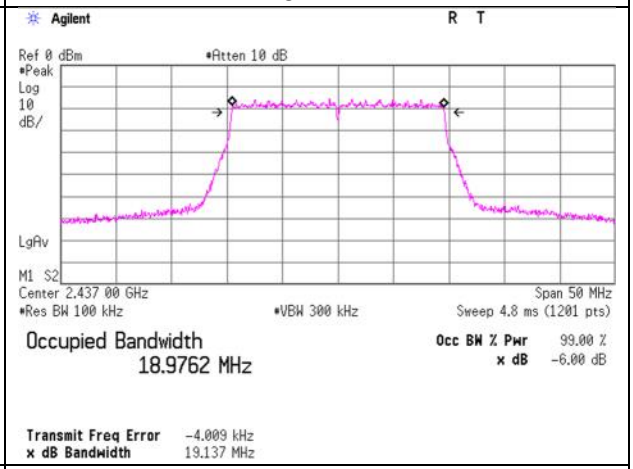
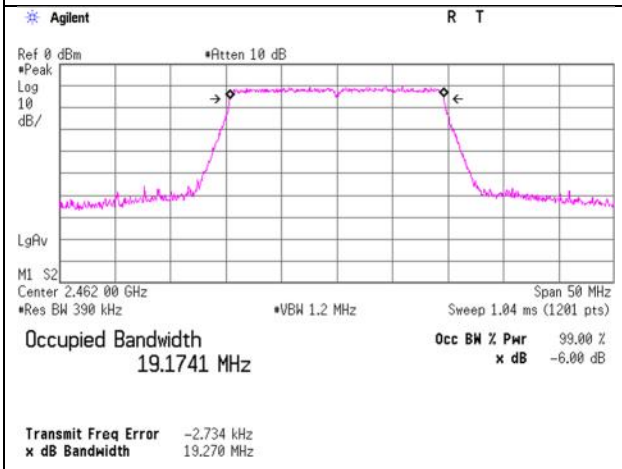
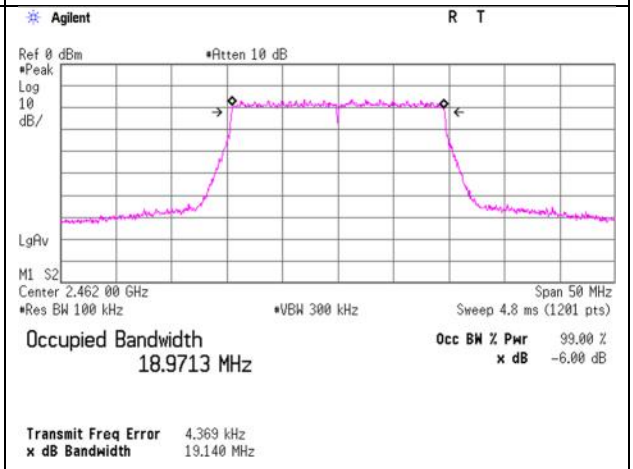
99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 106-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2462 MHz	2462 MHz
RU Index 53	RU Index 53
	
RU Index 54	RU Index 54
	

99 % Occupied Bandwidth and 6 dB Bandwidth

11ax-20 (OFDMA), 242-tone RU

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

99 % Occupied Bandwidth and 6 dB Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 5, 2023
Temperature / Humidity	24 deg. C / 42 % RH
Engineer	Yusuke Tanikawara
Mode	Tx BT LE

BT LE 1M-PHY

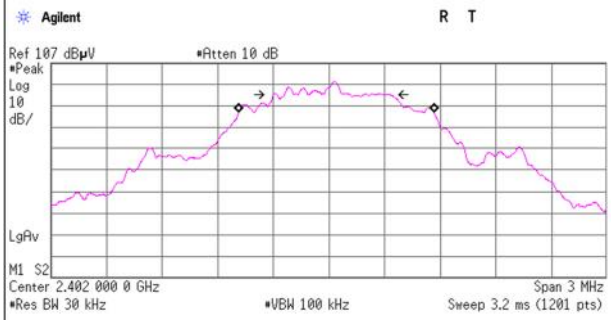
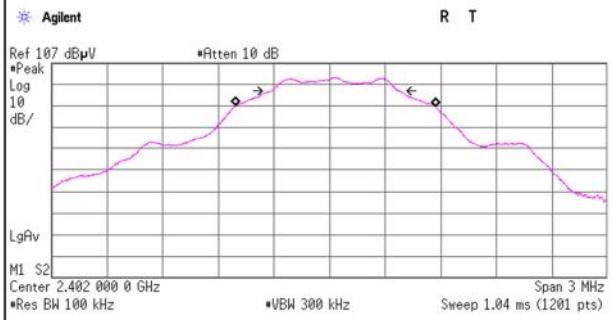
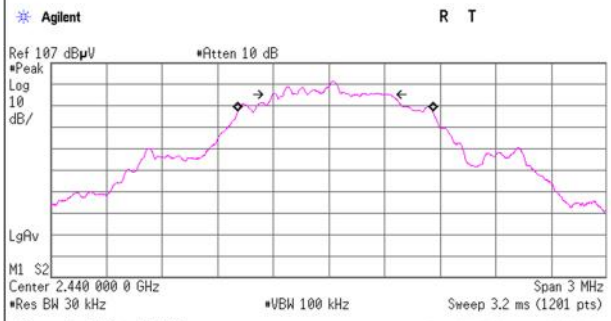
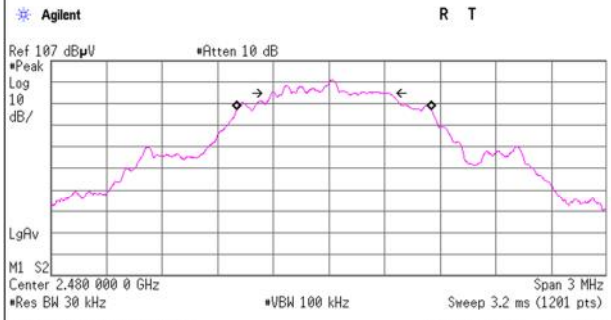
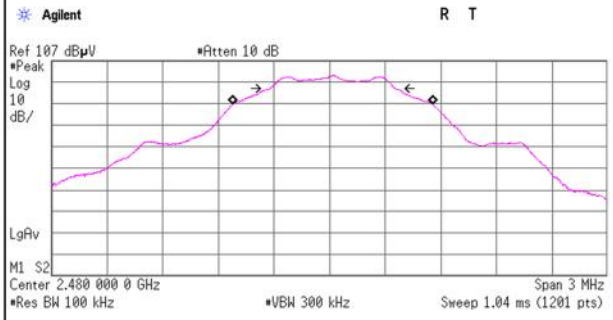
Frequency [MHz]	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
2402	1051.9	0.677	> 0.5000
2440	1051.6	0.679	> 0.5000
2480	1051.6	0.678	> 0.5000

BT LE 2M-PHY

Frequency [MHz]	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
2402	2041.8	1.280	> 0.5000
2440	2042.0	1.280	> 0.5000
2480	2040.4	1.279	> 0.5000

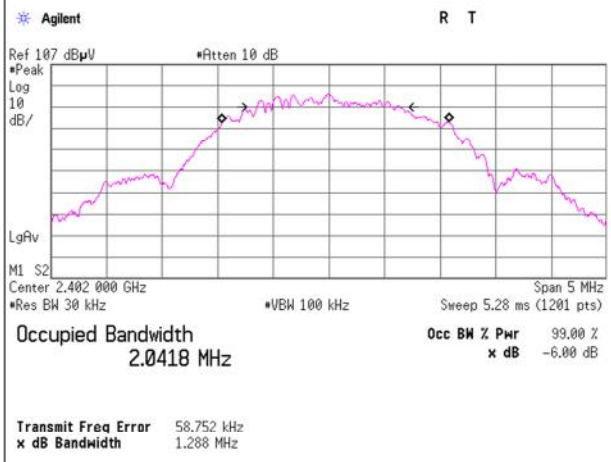
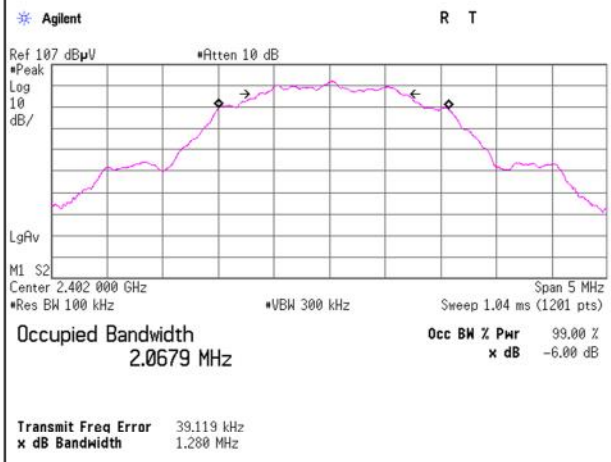
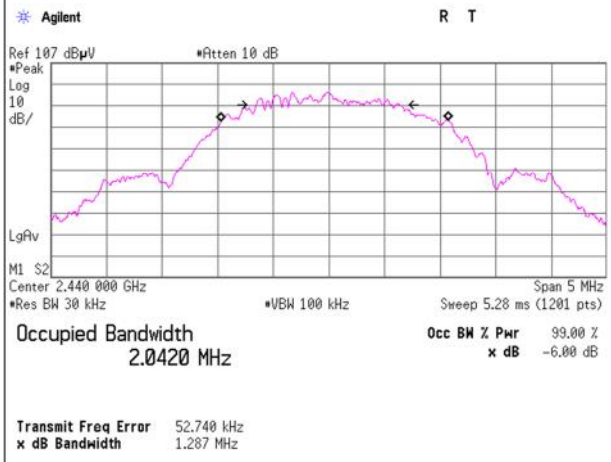
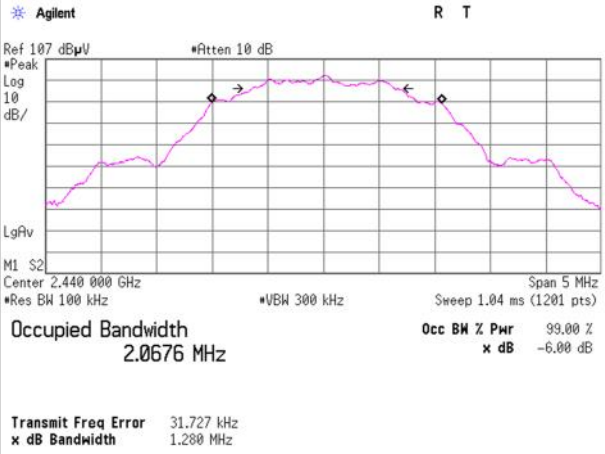
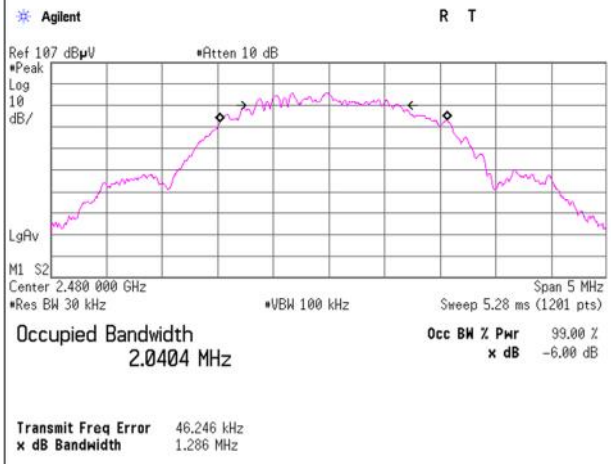
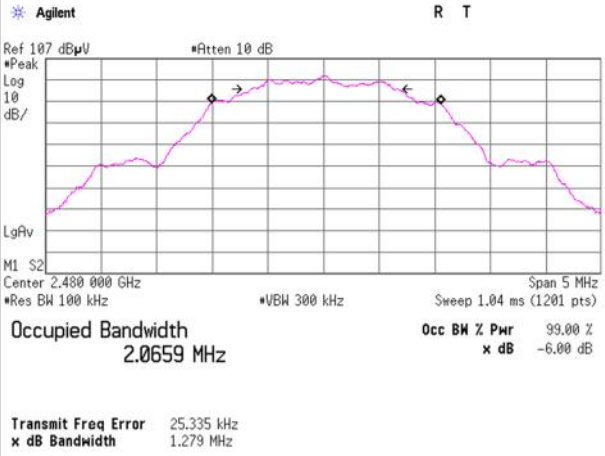
99 % Occupied Bandwidth and 6 dB Bandwidth

BT LE 1M-PHY

99 % Occupied Bandwidth	6 dB Bandwidth
2402 MHz	**2402 MHz**
 Occupied Bandwidth 1.0519 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 39.580 kHz x dB Bandwidth 624.871 kHz	 Occupied Bandwidth 1.0777 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 31.166 kHz x dB Bandwidth 677.427 kHz
2440 MHz	**2440 MHz**
 Occupied Bandwidth 1.0516 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 33.519 kHz x dB Bandwidth 620.107 kHz	 Occupied Bandwidth 1.0777 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 25.236 kHz x dB Bandwidth 678.629 kHz
2480 MHz	**2480 MHz**
 Occupied Bandwidth 1.0516 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 27.078 kHz x dB Bandwidth 624.432 kHz	 Occupied Bandwidth 1.0775 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 18.727 kHz x dB Bandwidth 677.890 kHz

99 % Occupied Bandwidth and 6 dB Bandwidth

BT LE 2M-PHY

99 % Occupied Bandwidth	6 dB Bandwidth
2402 MHz	**2402 MHz**
	
2440 MHz	**2440 MHz**
	
2480 MHz	**2480 MHz**
	

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 29, 2023
Temperature / Humidity	26 deg. C / 39 % RH
Engineer	Kenichi Adachi
Mode	Tx 11b

ANT0 + ANT1

Freq.	ANT0 Result	ANT1 Result	Conducted Power					e.i.r.p.				
			Result		Limit		Margin	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	17.46	20.80	15.83	38.26	30.00	1000	14.17	18.50	70.74	36.02	4000.00	17.52
2437	16.90	20.09	15.68	37.00	30.00	1000	14.32	18.35	68.41	36.02	4000.00	17.67
2462	16.18	18.66	15.42	34.84	30.00	1000	14.58	18.09	64.44	36.02	4000.00	17.93

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	0.42	2.06	9.94	12.42	17.46	2.67	15.09	32.28
2437	0.26	2.08	9.94	12.28	16.90	2.67	14.95	31.26
2462	0.06	2.09	9.94	12.09	16.18	2.67	14.76	29.92

ANT1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	1.06	2.08	10.04	13.18	20.80	2.67	15.85	38.46
2437	0.89	2.10	10.04	13.03	20.09	2.67	15.70	37.15
2462	0.56	2.11	10.04	12.71	18.66	2.67	15.38	34.51

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Worst Rate Check (2412 MHz)

Rate	ANT0					ANT1					Total Result Power		Remark
	Reading	Cable Loss	Atten. Loss	Result		Reading	Cable Loss	Atten. Loss	Result				
[Mbps]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
1	-0.22	2.06	9.94	11.78	15.07	0.48	2.08	10.04	12.60	18.20	15.22	33.26	-
2	-0.16	2.06	9.94	11.84	15.28	0.52	2.08	10.04	12.64	18.37	15.27	33.64	-
5.5	0.15	2.06	9.94	12.15	16.41	0.58	2.08	10.04	12.70	18.62	15.44	35.03	-
11	0.42	2.06	9.94	12.42	17.46	1.06	2.08	10.04	13.18	20.80	**15.83**	**38.26**	*

*Worst Rate
Sample Calculation:
Each port Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Total Result = ANT0 Result + ANT1 Result

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 29, 2023
Temperature / Humidity	26 deg. C / 39 % RH
Engineer	Kenichi Adachi
Mode	Tx 11g

ANT0 + ANT1

Freq.	ANT0 Result	ANT1 Result	Conducted Power Result		Conducted Power Limit		Conducted Power Margin	e.i.r.p. Result		e.i.r.p. Limit		e.i.r.p. Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	85.11	105.68	22.81	190.80	30.00	1000	7.19	25.48	352.83	36.02	4000.00	10.54
2437	79.80	100.46	22.56	180.26	30.00	1000	7.44	25.23	333.35	36.02	4000.00	10.79
2462	76.74	99.77	22.47	176.51	30.00	1000	7.53	25.14	326.41	36.02	4000.00	10.88

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	7.30	2.06	9.94	19.30	85.11	2.67	21.97	157.40
2437	7.00	2.08	9.94	19.02	79.80	2.67	21.69	147.57
2462	6.82	2.09	9.94	18.85	76.74	2.67	21.52	141.91

ANT1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	8.12	2.08	10.04	20.24	105.68	2.67	22.91	195.43
2437	7.88	2.10	10.04	20.02	100.46	2.67	22.69	185.78
2462	7.84	2.11	10.04	19.99	99.77	2.67	22.66	184.50

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Worst Rate Check (2412 MHz)

Rate	ANT0 Reading	ANT0 Cable Loss	ANT0 Atten. Loss	ANT0 Result		ANT1 Reading	ANT1 Cable Loss	ANT1 Atten. Loss	ANT1 Result		Total Result Power		Remark
[Mbps]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
6	3.04	2.06	9.94	15.04	31.92	4.50	2.08	10.04	16.62	45.92	18.91	77.84	-
9	2.32	2.06	9.94	14.32	27.04	4.29	2.08	10.04	16.41	43.75	18.50	70.79	-
12	2.21	2.06	9.94	14.21	26.36	2.99	2.08	10.04	15.11	32.43	17.69	58.80	-
18	2.79	2.06	9.94	14.79	30.13	3.64	2.08	10.04	15.76	37.67	18.31	67.80	-
24	3.38	2.06	9.94	15.38	34.51	4.13	2.08	10.04	16.25	42.17	18.85	76.68	-
36	3.68	2.06	9.94	15.68	36.98	4.35	2.08	10.04	16.47	44.36	19.10	81.34	-
48	7.05	2.06	9.94	19.05	80.35	7.86	2.08	10.04	19.98	99.54	22.55	179.89	-
54	7.30	2.06	9.94	19.30	85.11	8.12	2.08	10.04	20.24	105.68	**22.81**	**190.80**	*

*Worst Rate
Sample Calculation:
Each port Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Total Result = ANT0 Result + ANT1 Result

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 29, 2023
Temperature / Humidity	26 deg. C / 39 % RH
Engineer	Kenichi Adachi
Mode	Tx 11n-20

ANT0 + ANT1

Freq.	ANT0 Result	ANT1 Result	Conducted Power Result		Conducted Power Limit		Conducted Power Margin	e.i.r.p. Result		e.i.r.p. Limit		e.i.r.p. Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	85.11	143.22	23.59	228.33	30.00	1000	6.41	26.26	422.25	36.02	4000.00	9.76
2437	82.79	141.25	23.50	224.05	30.00	1000	6.50	26.17	414.32	36.02	4000.00	9.85
2462	82.60	132.74	23.33	215.34	30.00	1000	6.67	26.00	398.23	36.02	4000.00	10.02

Sample Calculation:
Result = ANT0 Result +ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	7.30	2.06	9.94	19.30	85.11	2.67	21.97	157.40
2437	7.16	2.08	9.94	19.18	82.79	2.67	21.85	153.11
2462	7.14	2.09	9.94	19.17	82.60	2.67	21.84	152.76

ANT1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	9.44	2.08	10.04	21.56	143.22	2.67	24.23	264.85
2437	9.36	2.10	10.04	21.50	141.25	2.67	24.17	261.22
2462	9.08	2.11	10.04	21.23	132.74	2.67	23.90	245.47

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Worst Rate Check (2412 MHz)

Rate	ANT0 Reading	ANT0 Cable Loss	ANT0 Atten. Loss	ANT0 Result		ANT1 Reading	ANT1 Cable Loss	ANT1 Atten. Loss	ANT1 Result		Total Result Power		Remark
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
0	4.41	2.06	9.94	16.41	43.75	5.52	2.08	10.04	17.64	58.08	20.08	101.83	-
1	3.56	2.06	9.94	15.56	35.97	4.23	2.08	10.04	16.35	43.15	18.98	79.13	-
2	3.45	2.06	9.94	15.45	35.08	4.44	2.08	10.04	16.56	45.29	19.05	80.36	-
3	3.69	2.06	9.94	15.69	37.07	4.66	2.08	10.04	16.78	47.64	19.28	84.71	-
4	4.13	2.06	9.94	16.13	41.02	4.68	2.08	10.04	16.80	47.86	19.49	88.88	-
5	7.82	2.06	9.94	19.82	95.94	8.92	2.08	10.04	21.04	127.06	23.48	223.00	-
6	7.14	2.06	9.94	19.14	82.04	8.69	2.08	10.04	20.81	120.50	23.07	202.54	-
7	8.17	2.06	9.94	20.17	103.99	8.42	2.08	10.04	20.54	113.24	23.37	217.23	-
8	3.20	2.06	9.94	15.20	33.11	5.19	2.08	10.04	17.31	53.83	19.39	86.94	-
9	3.60	2.06	9.94	15.60	36.31	4.20	2.08	10.04	16.32	42.85	18.99	79.16	-
10	2.85	2.06	9.94	14.85	30.55	5.14	2.08	10.04	17.26	53.21	19.23	83.76	-
11	3.49	2.06	9.94	15.49	35.40	5.32	2.08	10.04	17.44	55.46	19.58	90.86	-
12	3.96	2.06	9.94	15.96	39.45	4.94	2.08	10.04	17.06	50.82	19.56	90.26	-
13	7.30	2.06	9.94	19.30	85.11	9.44	2.08	10.04	21.56	143.22	**23.59**	**228.33**	*
14	7.91	2.06	9.94	19.91	97.95	8.67	2.08	10.04	20.79	119.95	23.38	217.90	-
15	7.51	2.06	9.94	19.51	89.33	8.17	2.08	10.04	20.29	106.91	22.93	196.24	-

*Worst Rate
Sample Calculation:
Each port Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Total Result = ANT0 Result + ANT1 Result

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 30, 2023
Temperature / Humidity	26 deg. C / 46 % RH
Engineer	Kenichi Adachi
Mode	Tx 11ax-20 (OFDM)

ANT0 + ANT1			Conducted Power					e.i.r.p.				
Freq.	ANT0 Result	ANT1 Result	Result		Limit		Margin	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	117.22	144.88	24.18	262.10	30.00	1000	5.82	26.85	484.69	36.02	4000.00	9.17
2437	94.19	133.35	23.57	227.54	30.00	1000	6.43	26.24	420.78	36.02	4000.00	9.78
2462	90.36	116.41	23.16	206.78	30.00	1000	6.84	25.83	382.39	36.02	4000.00	10.20

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	8.69	2.06	9.94	20.69	117.22	2.67	23.36	216.77
2437	7.72	2.08	9.94	19.74	94.19	2.67	22.41	174.18
2462	7.53	2.09	9.94	19.56	90.36	2.67	22.23	167.11

ANT1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	9.49	2.08	10.04	21.61	144.88	2.67	24.28	267.92
2437	9.11	2.10	10.04	21.25	133.35	2.67	23.92	246.60
2462	8.51	2.11	10.04	20.66	116.41	2.67	23.33	215.28

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Worst Rate Check (2412 MHz)

MCS	ANT0					ANT1					Total Result Power		Remark
	Reading	Cable Loss	Atten. Loss	Result		Reading	Cable Loss	Atten. Loss	Result				
	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
0 (1SS)	3.67	2.06	9.94	15.67	36.90	4.26	2.08	10.04	16.38	43.45	19.05	80.35	-
1 (1SS)	3.52	2.06	9.94	15.52	35.65	4.43	2.08	10.04	16.55	45.19	19.08	80.83	-
2 (1SS)	3.88	2.06	9.94	15.88	38.73	5.00	2.08	10.04	17.12	51.52	19.55	90.25	-
3 (1SS)	4.44	2.06	9.94	16.44	44.06	5.16	2.08	10.04	17.28	53.46	19.89	97.51	-
4 (1SS)	4.10	2.06	9.94	16.10	40.74	5.39	2.08	10.04	17.51	56.36	19.87	97.10	-
5 (1SS)	8.38	2.06	9.94	20.38	109.14	9.10	2.08	10.04	21.22	132.43	23.83	241.58	-
6 (1SS)	8.12	2.06	9.94	20.12	102.80	9.21	2.08	10.04	21.33	135.83	23.78	238.63	-
7 (1SS)	8.36	2.06	9.94	20.36	108.64	9.46	2.08	10.04	21.58	143.88	24.02	252.52	-
8 (1SS)	8.31	2.06	9.94	20.31	107.40	9.30	2.08	10.04	21.42	138.68	23.91	246.07	-
9 (1SS)	8.02	2.06	9.94	20.02	100.46	8.80	2.08	10.04	20.92	123.59	23.50	224.06	-
10 (1SS)	8.20	2.06	9.94	20.20	104.71	9.10	2.08	10.04	21.22	132.43	23.75	237.15	-
11 (1SS)	7.94	2.06	9.94	19.94	98.63	8.76	2.08	10.04	20.88	122.46	23.45	221.09	-
0 (2SS)	4.62	2.06	9.94	16.62	45.92	4.93	2.08	10.04	17.05	50.70	19.85	96.62	-
1 (2SS)	3.88	2.06	9.94	15.88	38.73	4.68	2.08	10.04	16.80	47.86	19.37	86.59	-
2 (2SS)	3.33	2.06	9.94	15.33	34.12	4.41	2.08	10.04	16.53	44.98	18.98	79.10	-
3 (2SS)	4.12	2.06	9.94	16.12	40.93	4.73	2.08	10.04	16.85	48.42	19.51	89.34	-
4 (2SS)	4.35	2.06	9.94	16.35	43.15	5.49	2.08	10.04	17.61	57.68	20.04	100.83	-
5 (2SS)	7.82	2.06	9.94	19.82	95.94	8.96	2.08	10.04	21.08	128.23	23.51	224.17	-
6 (2SS)	8.23	2.06	9.94	20.23	105.44	9.11	2.08	10.04	21.23	132.74	23.77	238.18	-
7 (2SS)	8.69	2.06	9.94	20.69	117.22	9.49	2.08	10.04	21.61	144.88	**24.18**	**262.10**	*
8 (2SS)	7.90	2.06	9.94	19.90	97.72	8.92	2.08	10.04	21.04	127.06	23.52	224.78	-
9 (2SS)	8.26	2.06	9.94	20.26	106.17	9.00	2.08	10.04	21.12	129.42	23.72	235.59	-
10 (2SS)	7.87	2.06	9.94	19.87	97.05	8.96	2.08	10.04	21.08	128.23	23.53	225.28	-
11 (2SS)	8.28	2.06	9.94	20.28	106.66	8.88	2.08	10.04	21.00	125.89	23.67	232.55	-

*Worst Rate
Sample Calculation: (* SS: Spatial Stream)
Each port Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Total Result = ANT0 Result + ANT1 Result

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 12, 2023
Temperature / Humidity	25 deg. C / 38 % RH
Engineer	Miku Ikudome
Mode	Tx 11ax-20 (OFDMA) 26-tone RU

ANT0 + ANT1

Freq. [MHz]	RU Index	ANT0 Result [mW]	ANT1 Result [mW]	Conducted Power Result [dBm]	Conducted Power Result [mW]	Conducted Power Limit [dBm]	Conducted Power Limit [mW]	Conducted Power Margin [dB]	e.i.r.p. Result [dBm]	e.i.r.p. Result [mW]	e.i.r.p. Limit [dBm]	e.i.r.p. Limit [mW]	e.i.r.p. Margin [dB]
2412	0	8.38	8.11	12.17	16.48	30.00	1000	17.83	14.84	30.49	36.02	4000.00	21.18
	4	9.33	8.69	12.56	18.02	30.00	1000	17.44	15.23	33.33	36.02	4000.00	20.79
	8	6.43	8.59	11.77	15.02	30.00	1000	18.23	14.44	27.77	36.02	4000.00	21.58
2437	0	6.47	7.43	11.43	13.90	30.00	1000	18.57	14.10	25.71	36.02	4000.00	21.92
	4	6.61	7.93	11.62	14.53	30.00	1000	18.38	14.29	26.87	36.02	4000.00	21.73
	8	6.98	8.65	11.94	15.63	30.00	1000	18.06	14.61	28.91	36.02	4000.00	21.41
2462	0	6.89	7.59	11.61	14.47	30.00	1000	18.39	14.28	26.76	36.02	4000.00	21.75
	4	7.26	6.89	11.51	14.15	30.00	1000	18.49	14.18	26.16	36.02	4000.00	21.84
	8	6.24	7.24	11.30	13.48	30.00	1000	18.70	13.97	24.93	36.02	4000.00	22.05

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq. [MHz]	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Result [mW]	Antenna Gain [dBi]	Result (e.i.r.p) [dBm]	Result (e.i.r.p) [mW]
2412	0	-2.77	2.06	9.94	9.23	8.38	2.67	11.9	15.49
	4	-2.30	2.06	9.94	9.70	9.33	2.67	12.37	17.26
	8	-3.92	2.06	9.94	8.08	6.43	2.67	10.75	11.89
2437	0	-3.91	2.08	9.94	8.11	6.47	2.67	10.78	11.97
	4	-3.82	2.08	9.94	8.20	6.61	2.67	10.87	12.22
	8	-3.58	2.08	9.94	8.44	6.98	2.67	11.11	12.91
2462	0	-3.65	2.09	9.94	8.38	6.89	2.67	11.05	12.74
	4	-3.42	2.09	9.94	8.61	7.26	2.67	11.28	13.43
	8	-4.08	2.09	9.94	7.95	6.24	2.67	10.62	11.53

ANT1

Freq. [MHz]	RU Index	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Result [mW]	Antenna Gain [dBi]	Result (e.i.r.p) [dBm]	Result (e.i.r.p) [mW]
2412	0	-3.03	2.08	10.04	9.09	8.11	2.67	11.76	15.00
	4	-2.73	2.08	10.04	9.39	8.69	2.67	12.06	16.07
	8	-2.78	2.08	10.04	9.34	8.59	2.67	12.01	15.89
2437	0	-3.43	2.10	10.04	8.71	7.43	2.67	11.38	13.74
	4	-3.15	2.10	10.04	8.99	7.93	2.67	11.66	14.66
	8	-2.77	2.10	10.04	9.37	8.65	2.67	12.04	16.00
2462	0	-3.35	2.11	10.04	8.80	7.59	2.67	11.47	14.03
	4	-3.77	2.11	10.04	8.38	6.89	2.67	11.05	12.74
	8	-3.55	2.11	10.04	8.60	7.24	2.67	11.27	13.40

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 12, 2023
Temperature / Humidity	25 deg. C / 38 % RH
Engineer	Miku Ikudome
Mode	Tx 11ax-20 (OFDMA) 52-tone RU

ANT0 + ANT1

Freq.	RU Index	ANT0 Result	ANT1 Result	Conducted Power Result		Conducted Power Limit		Conducted Power Margin	e.i.r.p. Result		e.i.r.p. Limit		e.i.r.p. Margin
[MHz]		[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	37	14.39	20.61	15.44	34.99	30.00	1000	14.56	18.11	64.71	36.02	4000.00	17.91
	38	13.52	22.86	15.61	36.38	30.00	1000	14.39	18.28	67.27	36.02	4000.00	17.74
	40	13.96	21.93	15.55	35.89	30.00	1000	14.45	18.22	66.37	36.02	4000.00	17.80
2437	37	13.77	20.42	15.34	34.19	30.00	1000	14.66	18.01	63.23	36.02	4000.00	18.01
	38	13.77	21.83	15.51	35.60	30.00	1000	14.49	18.18	65.83	36.02	4000.00	17.84
	40	13.52	21.43	15.43	34.95	30.00	1000	14.57	18.10	64.63	36.02	4000.00	17.92
2462	37	12.94	19.36	15.09	32.31	30.00	1000	14.91	17.76	59.74	36.02	4000.00	18.26
	38	13.55	17.66	14.94	31.21	30.00	1000	15.06	17.61	57.72	36.02	4000.00	18.41
	40	13.96	17.82	15.02	31.79	30.00	1000	14.98	17.69	58.78	36.02	4000.00	18.33

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	37	-0.42	2.06	9.94	11.58	14.39	2.67	14.25	26.61
	38	-0.69	2.06	9.94	11.31	13.52	2.67	13.98	25.00
	40	-0.55	2.06	9.94	11.45	13.96	2.67	14.12	25.82
2437	37	-0.63	2.08	9.94	11.39	13.77	2.67	14.06	25.47
	38	-0.63	2.08	9.94	11.39	13.77	2.67	14.06	25.47
	40	-0.71	2.08	9.94	11.31	13.52	2.67	13.98	25.00
2462	37	-0.91	2.09	9.94	11.12	12.94	2.67	13.79	23.93
	38	-0.71	2.09	9.94	11.32	13.55	2.67	13.99	25.06
	40	-0.58	2.09	9.94	11.45	13.96	2.67	14.12	25.82

ANT1

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	37	1.02	2.08	10.04	13.14	20.61	2.67	15.81	38.11
	38	1.47	2.08	10.04	13.59	22.86	2.67	16.26	42.27
	40	1.29	2.08	10.04	13.41	21.93	2.67	16.08	40.55
2437	37	0.96	2.10	10.04	13.10	20.42	2.67	15.77	37.76
	38	1.25	2.10	10.04	13.39	21.83	2.67	16.06	40.36
	40	1.17	2.10	10.04	13.31	21.43	2.67	15.98	39.63
2462	37	0.72	2.11	10.04	12.87	19.36	2.67	15.54	35.81
	38	0.32	2.11	10.04	12.47	17.66	2.67	15.14	32.66
	40	0.36	2.11	10.04	12.51	17.82	2.67	15.18	32.96

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 11, 2023
Temperature / Humidity	23 deg. C / 42 % RH
Engineer	Miku Ikudome
Mode	Tx 11ax-20 (OFDMA) 106-tone RU

ANT0 + ANT1

Freq.	RU Index	ANT0 Result	ANT1 Result	Conducted Power					e.i.r.p.				
				Result		Limit		Margin	Result		Limit		Margin
[MHz]		[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	53	33.27	40.46	18.68	73.72	30.00	1000	11.32	21.35	136.33	36.02	4000.00	14.67
	54	29.11	37.07	18.21	66.18	30.00	1000	11.79	20.88	122.38	36.02	4000.00	15.14
2437	53	32.89	33.34	18.21	66.23	30.00	1000	11.79	20.88	122.47	36.02	4000.00	15.14
	54	27.86	32.28	17.79	60.15	30.00	1000	12.21	20.46	111.23	36.02	4000.00	15.56
2462	53	28.84	32.28	17.86	61.13	30.00	1000	12.14	20.53	113.04	36.02	4000.00	15.49
	54	28.51	33.11	17.90	61.62	30.00	1000	12.10	20.57	113.96	36.02	4000.00	15.45

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	53	3.22	2.06	9.94	15.22	33.27	2.67	17.89	61.52
	54	2.64	2.06	9.94	14.64	29.11	2.67	17.31	53.83
2437	53	3.15	2.08	9.94	15.17	32.89	2.67	17.84	60.81
	54	2.43	2.08	9.94	14.45	27.86	2.67	17.12	51.52
2462	53	2.57	2.09	9.94	14.60	28.84	2.67	17.27	53.33
	54	2.52	2.09	9.94	14.55	28.51	2.67	17.22	52.72

ANT1

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	53	3.95	2.08	10.04	16.07	40.46	2.67	18.74	74.82
	54	3.57	2.08	10.04	15.69	37.07	2.67	18.36	68.55
2437	53	3.09	2.10	10.04	15.23	33.34	2.67	17.9	61.66
	54	2.95	2.10	10.04	15.09	32.28	2.67	17.76	59.70
2462	53	2.94	2.11	10.04	15.09	32.28	2.67	17.76	59.70
	54	3.05	2.11	10.04	15.20	33.11	2.67	17.87	61.24

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 11, 2023
Temperature / Humidity	23 deg. C / 42 % RH
Engineer	Miku Ikudome
Mode	Tx 11ax-20 (OFDMA) 242-tone RU

ANT0 + ANT1

Freq.	RU Index	ANT0 Result	ANT1 Result	Conducted Power					e.i.r.p.				
				Result		Limit		Margin	Result		Limit		Margin
[MHz]		[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	61	81.47	100.00	22.59	181.47	30.00	1000	7.41	25.26	335.59	36.02	4000.00	10.76
2437	61	83.37	94.41	22.50	177.77	30.00	1000	7.50	25.17	328.75	36.02	4000.00	10.85
2462	61	74.47	89.74	22.15	164.22	30.00	1000	7.85	24.82	303.68	36.02	4000.00	11.20

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	61	7.11	2.06	9.94	19.11	81.47	2.67	21.78	150.66
2437	61	7.19	2.08	9.94	19.21	83.37	2.67	21.88	154.17
2462	61	6.69	2.09	9.94	18.72	74.47	2.67	21.39	137.72

ANT1

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	61	7.88	2.08	10.04	20.00	100.00	2.67	22.67	184.93
2437	61	7.61	2.10	10.04	19.75	94.41	2.67	22.42	174.58
2462	61	7.38	2.11	10.04	19.53	89.74	2.67	22.2	165.96

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 12, 2024
Temperature / Humidity	25 deg. C / 35 % RH
Engineer	Makoto Hosaka
Mode	Tx 11ax-20 (OFDMA) 26-tone RU, Pre-correction mode (Lowest power)

ANT0 + ANT1

Freq.	RU Index	ANT0 Result	ANT1 Result	Conducted Power					e.i.r.p.				
				Result		Limit		Margin	Result		Limit		Margin
[MHz]		[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	0	0.72	0.80	1.83	1.52	30.00	1000	28.17	4.50	2.82	36.02	4000.00	31.52
	4	0.78	0.91	2.27	1.69	30.00	1000	27.73	4.94	3.12	36.02	4000.00	31.08
	8	0.71	0.89	2.05	1.60	30.00	1000	27.95	4.72	2.97	36.02	4000.00	31.30
2437	0	0.67	0.82	1.71	1.48	30.00	1000	28.29	4.38	2.74	36.02	4000.00	31.64
	4	0.75	0.88	2.14	1.64	30.00	1000	27.86	4.81	3.03	36.02	4000.00	31.21
	8	0.76	0.87	2.13	1.63	30.00	1000	27.87	4.80	3.02	36.02	4000.00	31.23
2462	0	0.66	0.79	1.62	1.45	30.00	1000	28.38	4.29	2.69	36.02	4000.00	31.73
	4	0.77	0.90	2.21	1.66	30.00	1000	27.79	4.88	3.08	36.02	4000.00	31.14
	8	0.68	0.80	1.68	1.47	30.00	1000	28.32	4.35	2.73	36.02	4000.00	31.67

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	0	-3.53	2.12	0.00	-1.41	0.72	2.67	1.26	1.34
	4	-3.20	2.12	0.00	-1.08	0.78	2.67	1.59	1.44
	8	-3.59	2.12	0.00	-1.47	0.71	2.67	1.2	1.32
2437	0	-3.91	2.14	0.00	-1.77	0.67	2.67	0.9	1.23
	4	-3.37	2.14	0.00	-1.23	0.75	2.67	1.44	1.39
	8	-3.33	2.14	0.00	-1.19	0.76	2.67	1.48	1.41
2462	0	-3.97	2.15	0.00	-1.82	0.66	2.67	0.85	1.22
	4	-3.29	2.15	0.00	-1.14	0.77	2.67	1.53	1.42
	8	-3.84	2.15	0.00	-1.69	0.68	2.67	0.98	1.25

ANT1

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	0	-3.14	2.17	0.00	-0.97	0.80	2.67	1.7	1.48
	4	-2.59	2.17	0.00	-0.42	0.91	2.67	2.25	1.68
	8	-2.67	2.17	0.00	-0.50	0.89	2.67	2.17	1.65
2437	0	-3.07	2.19	0.00	-0.88	0.82	2.67	1.79	1.51
	4	-2.73	2.19	0.00	-0.54	0.88	2.67	2.13	1.63
	8	-2.79	2.19	0.00	-0.60	0.87	2.67	2.07	1.61
2462	0	-3.20	2.20	0.00	-1.00	0.79	2.67	1.67	1.47
	4	-2.68	2.20	0.00	-0.48	0.90	2.67	2.19	1.66
	8	-3.19	2.20	0.00	-0.99	0.80	2.67	1.68	1.47

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain
*The equipment and cables were not used for factor 0 dB of the data sheets.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 12, 2024
Temperature / Humidity	25 deg. C / 35 % RH
Engineer	Makoto Hosaka
Mode	Tx 11ax-20 (OFDMA) 52-tone RU, Pre-correction mode (Lowest power)

ANT0 + ANT1

Freq.	RU Index	ANT0 Result	ANT1 Result	Conducted Power					e.i.r.p.				
				Result		Limit		Margin	Result		Limit		Margin
[MHz]		[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	37	0.73	1.09	2.58	1.81	30.00	1000	27.42	5.25	3.35	36.02	4000.00	30.77
	38	0.73	1.07	2.56	1.80	30.00	1000	27.44	5.23	3.33	36.02	4000.00	30.80
	40	0.75	1.11	2.69	1.86	30.00	1000	27.31	5.36	3.44	36.02	4000.00	30.66
2437	37	0.73	1.07	2.55	1.80	30.00	1000	27.45	5.22	3.33	36.02	4000.00	30.80
	38	0.72	1.05	2.50	1.78	30.00	1000	27.50	5.17	3.29	36.02	4000.00	30.86
	40	0.76	1.08	2.65	1.84	30.00	1000	27.35	5.32	3.41	36.02	4000.00	30.70
2462	37	0.73	0.95	2.26	1.68	30.00	1000	27.74	4.93	3.11	36.02	4000.00	31.09
	38	0.76	1.02	2.49	1.78	30.00	1000	27.51	5.16	3.28	36.02	4000.00	30.86
	40	0.79	0.96	2.42	1.74	30.00	1000	27.58	5.09	3.23	36.02	4000.00	30.93

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	37	-3.51	2.12	0.00	-1.39	0.73	2.67	1.28	1.34
	38	-3.46	2.12	0.00	-1.34	0.73	2.67	1.33	1.36
	40	-3.39	2.12	0.00	-1.27	0.75	2.67	1.4	1.38
2437	37	-3.53	2.14	0.00	-1.39	0.73	2.67	1.28	1.34
	38	-3.54	2.14	0.00	-1.40	0.72	2.67	1.27	1.34
	40	-3.33	2.14	0.00	-1.19	0.76	2.67	1.48	1.41
2462	37	-3.50	2.15	0.00	-1.35	0.73	2.67	1.32	1.36
	38	-3.36	2.15	0.00	-1.21	0.76	2.67	1.46	1.40
	40	-3.19	2.15	0.00	-1.04	0.79	2.67	1.63	1.46

ANT1

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	37	-1.81	2.17	0.00	0.36	1.09	2.67	3.03	2.01
	38	-1.89	2.17	0.00	0.28	1.07	2.67	2.95	1.97
	40	-1.71	2.17	0.00	0.46	1.11	2.67	3.13	2.06
2437	37	-1.88	2.19	0.00	0.31	1.07	2.67	2.98	1.99
	38	-1.97	2.19	0.00	0.22	1.05	2.67	2.89	1.95
	40	-1.85	2.19	0.00	0.34	1.08	2.67	3.01	2.00
2462	37	-2.42	2.20	0.00	-0.22	0.95	2.67	2.45	1.76
	38	-2.12	2.20	0.00	0.08	1.02	2.67	2.75	1.88
	40	-2.39	2.20	0.00	-0.19	0.96	2.67	2.48	1.77

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain
*The equipment and cables were not used for factor 0 dB of the data sheets.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 12, 2024
Temperature / Humidity	25 deg. C / 35 % RH
Engineer	Makoto Hosaka
Mode	Tx 11ax-20 (OFDMA) 106-tone RU, Pre-correction mode (Lowest power)

ANT0 + ANT1

Freq.	RU Index	ANT0 Result	ANT1 Result	Conducted Power					e.i.r.p.				
				Result		Limit		Margin	Result		Limit		Margin
[MHz]		[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	53	0.92	0.99	2.82	1.92	30.00	1000	27.18	5.49	3.54	36.02	4000.00	30.53
	54	0.92	0.95	2.73	1.87	30.00	1000	27.27	5.40	3.46	36.02	4000.00	30.62
2437	53	0.91	1.00	2.80	1.91	30.00	1000	27.20	5.47	3.53	36.02	4000.00	30.55
	54	0.89	0.96	2.66	1.85	30.00	1000	27.34	5.33	3.41	36.02	4000.00	30.69
2462	53	0.88	0.95	2.62	1.83	30.00	1000	27.38	5.29	3.38	36.02	4000.00	30.73
	54	0.86	0.99	2.66	1.85	30.00	1000	27.34	5.33	3.41	36.02	4000.00	30.69

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	53	-2.47	2.12	0.00	-0.35	0.92	2.67	2.32	1.71
	54	-2.46	2.12	0.00	-0.34	0.92	2.67	2.33	1.71
2437	53	-2.54	2.14	0.00	-0.40	0.91	2.67	2.27	1.69
	54	-2.66	2.14	0.00	-0.52	0.89	2.67	2.15	1.64
2462	53	-2.72	2.15	0.00	-0.57	0.88	2.67	2.1	1.62
	54	-2.83	2.15	0.00	-0.68	0.86	2.67	1.99	1.58

ANT1

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	53	-2.20	2.17	0.00	-0.03	0.99	2.67	2.64	1.84
	54	-2.40	2.17	0.00	-0.23	0.95	2.67	2.44	1.75
2437	53	-2.21	2.19	0.00	-0.02	1.00	2.67	2.65	1.84
	54	-2.37	2.19	0.00	-0.18	0.96	2.67	2.49	1.77
2462	53	-2.42	2.20	0.00	-0.22	0.95	2.67	2.45	1.76
	54	-2.24	2.20	0.00	-0.04	0.99	2.67	2.63	1.83

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain
*The equipment and cables were not used for factor 0 dB of the data sheets.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 12, 2024
Temperature / Humidity	25 deg. C / 35 % RH
Engineer	Makoto Hosaka
Mode	Tx 11ax-20 (OFDMA) 242-tone RU, Pre-correction mode (Lowest power)

ANT0 + ANT1

Freq.	RU Index	ANT0 Result	ANT1 Result	Conducted Power					e.i.r.p.				
				Result		Limit		Margin	Result		Limit		Margin
[MHz]		[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	61	0.91	1.20	3.24	2.11	30.00	1000	26.76	5.91	3.90	36.02	4000.00	30.11
2437	61	0.87	1.12	3.01	2.00	30.00	1000	26.99	5.68	3.70	36.02	4000.00	30.34
2462	61	0.87	1.11	2.96	1.98	30.00	1000	27.04	5.63	3.65	36.02	4000.00	30.39

Sample Calculation:
Result = ANT0 Result + ANT1 Result
e.i.r.p. Result = ANT0 Result (e.i.r.p) + ANT1 Result (e.i.r.p)

ANT0

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	61	-2.51	2.12	0.00	-0.39	0.91	2.67	2.28	1.69
2437	61	-2.72	2.14	0.00	-0.58	0.87	2.67	2.09	1.62
2462	61	-2.77	2.15	0.00	-0.62	0.87	2.67	2.05	1.60

ANT1

Freq.	RU Index	Reading	Cable Loss	Atten. Loss	Result		Antenna Gain	Result (e.i.r.p)	
[MHz]		[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBi]	[dBm]	[mW]
2412	61	-1.39	2.17	0.00	0.78	1.20	2.67	3.45	2.21
2437	61	-1.68	2.19	0.00	0.51	1.12	2.67	3.18	2.08
2462	61	-1.75	2.20	0.00	0.45	1.11	2.67	3.12	2.05

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result(e.i.r.p.) = Result + Antenna Gain
*The equipment and cables were not used for factor 0 dB of the data sheets.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	June 5, 2023	July 11, 2023
Temperature / Humidity	24 deg. C / 42 % RH	25 deg. C / 35 % RH
Engineer	Yusuke Tanikawara	Makoto Hosaka
Mode	Tx BT LE	

BT LE 1M-PHY
Maximum peak output power

				Conducted Power					e.i.r.p. for RSS-247					
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2402	-5.83	2.06	9.94	6.17	4.14	30.00	1000	23.83	2.67	8.84	7.66	36.02	4000	27.18
2440	-5.81	2.08	9.94	6.21	4.18	30.00	1000	23.79	2.67	8.88	7.73	36.02	4000	27.14
2480	-6.12	2.10	9.94	5.92	3.91	30.00	1000	24.08	2.67	8.59	7.23	36.02	4000	27.43

BT LE 2M-PHY
Maximum peak output power

				Conducted Power					e.i.r.p. for RSS-247					
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2402	-5.58	2.06	9.94	6.42	4.39	30.00	1000	23.58	2.67	9.09	8.11	36.02	4000	26.93
2440	-5.50	2.08	9.94	6.52	4.49	30.00	1000	23.48	2.67	9.19	8.30	36.02	4000	26.83
2480	-5.83	2.10	9.94	6.21	4.18	30.00	1000	23.79	2.67	8.88	7.73	36.02	4000	27.14

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

BT LE 1M-PHY
Average power

Freq.	Reading	Cable Loss	Atten. Loss	Result (Time average)		Duty factor	Result (Burst power average)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2402	-8.54	2.06	9.94	3.46	2.22	1.96	5.42	3.48
2440	-8.45	2.08	9.94	3.57	2.28	1.96	5.53	3.57
2480	-8.82	2.10	9.94	3.22	2.10	1.96	5.18	3.30

BT LE 2M-PHY
Average power

Freq.	Reading	Cable Loss	Atten. Loss	Result (Time average)		Duty factor	Result (Burst power average)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2402	-7.58	2.06	9.94	4.42	2.77	0.92	5.34	3.42
2440	-7.43	2.08	9.94	4.59	2.88	0.92	5.51	3.56
2480	-7.85	2.10	9.94	4.19	2.62	0.92	5.11	3.24

Sample Calculation:
Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result (Burst power average) = Result (Time average) + Duty factor
*The equipment and cables were not used for factor 0 dB of the data sheets.

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	May 29, 2023	May 30, 2023
Temperature / Humidity	26 deg. C / 39 % RH	26 deg. C / 46 % RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx	

11b 11 Mbps

		ANT0					ANT1					Total Power	
Frequency	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	0.04	-3.17	2.06	9.94	8.87	7.71	-2.52	2.08	10.04	9.64	9.20	**12.28**	**16.91**
2437	0.04	-3.36	2.08	9.94	8.70	7.41	-2.64	2.10	10.04	9.54	8.99	12.15	16.40
2462	0.04	-3.55	2.09	9.94	8.52	7.11	-2.93	2.11	10.04	9.26	8.43	11.92	15.54

11g 48 Mbps

		ANT0					ANT1					Total Power	
Frequency	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	0.26	-4.05	2.06	9.94	8.21	6.62	-3.55	2.08	10.04	8.83	7.63	11.54	14.25
2437	0.26	-4.19	2.08	9.94	8.09	6.44	-3.60	2.10	10.04	8.80	7.58	11.47	14.02
2462	0.26	-4.29	2.09	9.94	8.00	6.31	-3.90	2.11	10.04	8.51	7.09	11.27	13.40

11n-20 MCS 13

		ANT0					ANT1					Total Power	
Frequency	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	0.07	-3.91	2.06	9.94	8.16	6.55	-3.19	2.08	10.04	9.00	7.95	11.61	14.50
2437	0.07	-3.96	2.08	9.94	8.13	6.51	-3.35	2.10	10.04	8.86	7.70	11.52	14.21
2462	0.07	-4.09	2.09	9.94	8.01	6.33	-3.76	2.11	10.04	8.46	7.02	11.26	13.35

11ax-20 (OFDM) MCS 7 (2SS)

		ANT0					ANT1					Total Power	
Frequency	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	0.08	-3.48	2.06	9.94	8.60	7.24	-2.91	2.08	10.04	9.29	8.49	11.97	15.73
2437	0.08	-3.56	2.08	9.94	8.54	7.14	-3.04	2.10	10.04	9.18	8.27	11.88	15.41
2462	0.08	-3.89	2.09	9.94	8.22	6.63	-3.46	2.11	10.04	8.77	7.53	11.51	14.16

Sample Calculation: (* SS: Spatial Stream)
Result [dBm] = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss + Duty factor
Total Result = ANT0 Result + ANT1 Result

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 12, 2023
Temperature / Humidity	25 deg. C / 38 % RH
Engineer	Miku Ikudome
Mode	Tx 11ax-20 (OFDMA)

11ax-20 (OFDMA), MCS 7 (2SS)
26-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	0	0.08	-14.12	2.06	9.94	-2.04	0.63	-13.99	2.08	10.04	-1.79	0.66	1.10	1.29
	4	0.08	-14.50	2.06	9.94	-2.42	0.57	-13.70	2.08	10.04	-1.50	0.71	1.07	1.28
	8	0.08	-14.61	2.06	9.94	-2.53	0.56	-13.98	2.08	10.04	-1.78	0.66	0.87	1.22
2437	0	0.08	-14.83	2.08	9.94	-2.73	0.53	-14.08	2.10	10.04	-1.86	0.65	0.74	1.18
	4	0.08	-14.66	2.08	9.94	-2.56	0.55	-13.91	2.10	10.04	-1.69	0.68	0.91	1.23
	8	0.08	-14.16	2.08	9.94	-2.06	0.62	-13.69	2.10	10.04	-1.47	0.71	**1.26**	1.34
2462	0	0.08	-14.07	2.09	9.94	-1.96	0.64	-14.71	2.11	10.04	-2.48	0.56	0.80	1.20
	4	0.08	-14.41	2.09	9.94	-2.30	0.59	-14.52	2.11	10.04	-2.29	0.59	0.72	1.18
	8	0.08	-14.89	2.09	9.94	-2.78	0.53	-14.78	2.11	10.04	-2.55	0.56	0.35	1.08

11ax-20 (OFDMA), MCS 7 (2SS)
52-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	37	0.08	-11.36	2.06	9.94	0.72	1.18	-10.92	2.08	10.04	1.28	1.34	**4.02**	2.52
	38	0.08	-11.55	2.06	9.94	0.53	1.13	-10.74	2.08	10.04	1.46	1.40	**4.03**	2.53
	40	0.08	-11.63	2.06	9.94	0.45	1.11	-11.02	2.08	10.04	1.18	1.31	**3.84**	2.42
2437	37	0.08	-11.70	2.08	9.94	0.40	1.10	-11.07	2.10	10.04	1.15	1.30	**3.80**	2.40
	38	0.08	-11.53	2.08	9.94	0.57	1.14	-10.89	2.10	10.04	1.33	1.36	**3.98**	2.50
	40	0.08	-11.83	2.08	9.94	0.27	1.06	-11.09	2.10	10.04	1.13	1.30	**3.73**	2.36
2462	37	0.08	-11.81	2.09	9.94	0.30	1.07	-11.24	2.11	10.04	0.99	1.26	**3.67**	2.33
	38	0.08	-11.63	2.09	9.94	0.48	1.12	-11.66	2.11	10.04	0.57	1.14	**3.54**	2.26
	40	0.08	-11.69	2.09	9.94	0.42	1.10	-11.73	2.11	10.04	0.50	1.12	**3.47**	2.22

Sample Calculation: (*SS: Spatial Stream)
Result [dBm] = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss + Duty factor
Total Result = ANT0 Result + ANT1 Result

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 11, 2023
Temperature / Humidity	23 deg. C / 42 % RH
Engineer	Miku Ikudome
Mode	Tx 11ax-20 (OFDMA)

11ax-20 (OFDMA), MCS 7 (2SS)
106-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	53	0.08	-8.56	2.06	9.94	3.52	2.25	-7.65	2.08	10.04	4.55	2.85	**7.08**	5.10
	54	0.08	-8.49	2.06	9.94	3.59	2.29	-7.79	2.08	10.04	4.41	2.76	7.03	5.05
2437	53	0.08	-8.57	2.08	9.94	3.53	2.25	-8.22	2.10	10.04	4.00	2.51	6.78	4.77
	54	0.08	-8.53	2.08	9.94	3.57	2.28	-8.15	2.10	10.04	4.07	2.55	6.84	4.83
2462	53	0.08	-8.57	2.09	9.94	3.54	2.26	-8.30	2.11	10.04	3.93	2.47	6.75	4.73
	54	0.08	-8.48	2.09	9.94	3.63	2.31	-8.47	2.11	10.04	3.76	2.38	6.71	4.68

11ax-20 (OFDMA), MCS 7 (2SS)
242-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	61	0.08	-4.63	2.06	9.94	7.45	5.56	-3.65	2.08	10.04	8.55	7.16	**11.05**	12.72
2437	61	0.08	-4.69	2.08	9.94	7.41	5.51	-4.21	2.10	10.04	8.01	6.32	**10.73**	11.83
2462	61	0.08	-4.63	2.09	9.94	7.48	5.60	-4.79	2.11	10.04	7.44	5.55	**10.47**	11.14

Sample Calculation: (* SS: Spatial Stream)
Result [dBm] = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss + Duty factor
Total Result = ANT0 Result + ANT1 Result

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 12, 2024
Temperature / Humidity	25 deg. C / 35 % RH
Engineer	Makoto Hosaka
Mode	Tx 11ax-20 (OFDMA) Pre-correction mode (Lowest power)

11ax-20 (OFDMA), MCS 7 (2SS)
26-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	0	0.08	-14.46	2.12	0.00	-12.26	0.06	-13.72	2.17	0.00	-11.47	0.07	-8.84	0.13
	4	0.08	-14.34	2.12	0.00	-12.14	0.06	-13.59	2.17	0.00	-11.34	0.07	-8.71	0.13
	8	0.08	-14.30	2.12	0.00	-12.10	0.06	-13.71	2.17	0.00	-11.46	0.07	-8.76	0.13
2437	0	0.08	-14.50	2.14	0.00	-12.28	0.06	-13.68	2.19	0.00	-11.41	0.07	-8.81	0.13
	4	0.08	-14.17	2.14	0.00	-11.95	0.06	-13.51	2.19	0.00	-11.24	0.08	**-8.57**	0.14
	8	0.08	-14.43	2.14	0.00	-12.21	0.06	-13.98	2.19	0.00	-11.71	0.07	-8.94	0.13
2462	0	0.08	-14.67	2.15	0.00	-12.44	0.06	-13.94	2.20	0.00	-11.66	0.07	-9.02	0.13
	4	0.08	-14.29	2.15	0.00	-12.06	0.06	-13.55	2.20	0.00	-11.27	0.07	-8.64	0.14
	8	0.08	-14.50	2.15	0.00	-12.27	0.06	-14.37	2.20	0.00	-12.09	0.06	-9.17	0.12

11ax-20 (OFDMA), MCS 7 (2SS)
52-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	37	0.08	-14.42	2.12	0.00	-12.22	0.06	-13.76	2.17	0.00	-11.51	0.07	-8.84	0.13
	38	0.08	-14.21	2.12	0.00	-12.01	0.06	-13.57	2.17	0.00	-11.32	0.07	-8.64	0.14
	40	0.08	-14.43	2.12	0.00	-12.23	0.06	-13.69	2.17	0.00	-11.44	0.07	-8.81	0.13
2437	37	0.08	-14.37	2.14	0.00	-12.15	0.06	-13.56	2.19	0.00	-11.29	0.07	-8.69	0.14
	38	0.08	-14.12	2.14	0.00	-11.90	0.06	-13.94	2.19	0.00	-11.67	0.07	-8.77	0.13
	40	0.08	-14.45	2.14	0.00	-12.23	0.06	-13.84	2.19	0.00	-11.57	0.07	-8.88	0.13
2462	37	0.08	-14.41	2.15	0.00	-12.18	0.06	-14.21	2.20	0.00	-11.93	0.06	-9.04	0.12
	38	0.08	-14.24	2.15	0.00	-12.01	0.06	-14.04	2.20	0.00	-11.76	0.07	-8.87	0.13
	40	0.08	-14.37	2.15	0.00	-12.14	0.06	-14.23	2.20	0.00	-11.95	0.06	-9.03	0.12

Sample Calculation: (*SS: Spatial Stream)
Result [dBm] = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss + Duty factor
Total Result = ANT0 Result + ANT1 Result

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 12, 2024
Temperature / Humidity	25 deg. C / 35 % RH
Engineer	Makoto Hosaka
Mode	Tx 11ax-20 (OFDMA) Pre-correction mode (Lowest power)

11ax-20 (OFDMA), MCS 7 (2SS)
106-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	53	0.08	-14.37	2.12	0.00	-12.17	0.06	-13.66	2.17	0.00	-11.41	0.07	-8.76	0.13
	54	0.08	-14.38	2.12	0.00	-12.18	0.06	-13.66	2.17	0.00	-11.41	0.07	-8.77	0.13
2437	53	0.08	-14.28	2.14	0.00	-12.06	0.06	-13.46	2.19	0.00	-11.19	0.08	**-8.59**	0.14
	54	0.08	-14.28	2.14	0.00	-12.06	0.06	-13.81	2.19	0.00	-11.54	0.07	-8.78	0.13
2462	53	0.08	-14.45	2.15	0.00	-12.22	0.06	-13.70	2.20	0.00	-11.42	0.07	-8.79	0.13
	54	0.08	-14.46	2.15	0.00	-12.23	0.06	-13.67	2.20	0.00	-11.39	0.07	-8.78	0.13

11ax-20 (OFDMA), MCS 7 (2SS)
242-tone RU

			ANT0					ANT1					Total Power	
Frequenc	RU Index	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)	
[MHz]		[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]
2412	61	0.08	-14.21	2.12	0.00	-12.01	0.06	-13.67	2.17	0.00	-11.42	0.07	-8.69	0.14
2437	61	0.08	-14.44	2.14	0.00	-12.22	0.06	-13.70	2.19	0.00	-11.43	0.07	-8.80	0.13
2462	61	0.08	-14.48	2.15	0.00	-12.25	0.06	-13.68	2.20	0.00	-11.40	0.07	-8.79	0.13

Sample Calculation: (* SS: Spatial Stream)
Result [dBm] = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss + Duty factor
Total Result = ANT0 Result + ANT1 Result

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	May 29, 2023
Temperature / Humidity	26 deg. C / 39 % RH
Engineer	Kenichi Adachi
Mode	Tx

Worst Rate Check (2412 MHz)

11b

		ANT0					ANT1					Total Power		Remarks
Rate	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)		
[Mbps]	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
1	0.03	-3.61	2.08	9.94	8.44	6.98	-2.88	2.10	10.04	9.29	8.49	11.89	15.46	-
2	0.04	-3.55	2.08	9.94	8.51	7.09	-2.84	2.10	10.04	9.34	8.58	11.95	15.67	-
5.5	0.04	-3.13	2.08	9.94	8.93	7.82	-2.70	2.10	10.04	9.48	8.88	12.23	16.70	-
11	0.04	-3.17	2.08	9.94	8.89	7.74	-2.52	2.10	10.04	9.66	9.24	12.30	16.99	*

11g

		ANT0					ANT1					Total Power		Remarks
Rate	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)		
[Mbps]	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
6	0.07	-4.55	2.08	9.94	7.54	5.68	-3.77	2.10	10.04	8.44	6.99	11.03	12.67	-
9	0.07	-4.79	2.08	9.94	7.30	5.38	-4.18	2.10	10.04	8.03	6.36	10.69	11.73	-
12	0.07	-4.72	2.08	9.94	7.37	5.46	-4.10	2.10	10.04	8.11	6.48	10.77	11.94	-
18	0.10	-4.35	2.08	9.94	7.77	5.99	-3.63	2.10	10.04	8.61	7.27	11.22	13.25	-
24	0.13	-4.29	2.08	9.94	7.86	6.11	-3.49	2.10	10.04	8.78	7.55	11.35	13.66	-
36	0.20	-4.21	2.08	9.94	8.01	6.32	-3.63	2.10	10.04	8.71	7.43	11.38	13.75	-
48	0.26	-4.05	2.08	9.94	8.23	6.65	-3.55	2.10	10.04	8.85	7.67	11.56	14.32	*
54	0.27	-4.13	2.08	9.94	8.16	6.55	-3.67	2.10	10.04	8.74	7.49	11.47	14.03	-

Sample Calculation:
Result [dBm] = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss + Duty factor
Total Result = ANT0 Result + ANT1 Result

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	May 29, 2023	May 30, 2023
Temperature / Humidity	26 deg. C / 39 % RH	26 deg. C / 46 % RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx	

Worst Rate Check (2412 MHz)

11n-20

		ANT0					ANT1					Total Power		Remarks
MCS	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)		
	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
0	0.07	-4.54	2.08	9.94	7.55	5.69	-3.72	2.10	10.04	8.49	7.07	11.06	12.76	-
1	0.07	-4.92	2.08	9.94	7.17	5.22	-4.32	2.10	10.04	7.89	6.16	10.56	11.37	-
2	0.07	-4.63	2.08	9.94	7.46	5.58	-3.76	2.10	10.04	8.45	7.00	11.00	12.58	-
3	0.07	-4.36	2.08	9.94	7.73	5.93	-3.53	2.10	10.04	8.68	7.39	11.25	13.32	-
4	0.07	-4.15	2.08	9.94	7.94	6.22	-3.52	2.10	10.04	8.69	7.40	11.34	13.62	-
5	0.07	-3.99	2.08	9.94	8.10	6.46	-3.22	2.10	10.04	8.99	7.93	11.58	14.38	-
6	0.07	-3.93	2.08	9.94	8.16	6.55	-3.26	2.10	10.04	8.95	7.85	11.58	14.40	-
7	0.07	-3.90	2.08	9.94	8.19	6.60	-3.22	2.10	10.04	8.99	7.93	11.62	14.53	-
8	0.07	-4.39	2.08	9.94	7.70	5.89	-3.66	2.10	10.04	8.55	7.17	11.16	13.06	-
9	0.07	-4.93	2.08	9.94	7.16	5.20	-4.34	2.10	10.04	7.87	6.13	10.54	11.33	-
10	0.08	-4.52	2.08	9.94	7.58	5.73	-3.77	2.10	10.04	8.45	7.00	11.05	12.72	-
11	0.07	-4.38	2.08	9.94	7.71	5.91	-3.56	2.10	10.04	8.65	7.33	11.22	13.24	-
12	0.07	-4.16	2.08	9.94	7.93	6.21	-3.45	2.10	10.04	8.76	7.52	11.38	13.74	-
13	0.07	-3.91	2.08	9.94	8.18	6.58	-3.19	2.10	10.04	9.02	7.99	**11.63**	**14.57**	*
14	0.07	-3.94	2.08	9.94	8.15	6.54	-3.20	2.10	10.04	9.01	7.97	11.62	14.51	-
15	0.07	-4.10	2.08	9.94	7.99	6.30	-3.35	2.10	10.04	8.86	7.70	11.46	14.00	-

11ax-20 (OFDM)

		ANT0					ANT1					Total Power		Remarks
MCS	Duty factor	Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Reading (Average)	Cable Loss	Atten. Loss	Result (Average)		Result (Average)		
	[dB]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	
0 (1SS)	0.07	-4.18	2.08	9.94	7.91	6.18	-3.55	2.10	10.04	8.66	7.34	11.31	13.52	-
1 (1SS)	0.08	-4.69	2.08	9.94	7.41	5.50	-4.00	2.10	10.04	8.22	6.63	10.84	12.13	-
2 (1SS)	0.07	-4.14	2.08	9.94	7.95	6.23	-3.57	2.10	10.04	8.64	7.31	11.32	13.54	-
3 (1SS)	0.07	-4.06	2.08	9.94	8.03	6.36	-3.47	2.10	10.04	8.74	7.49	11.41	13.84	-
4 (1SS)	0.08	-3.98	2.08	9.94	8.12	6.48	-3.26	2.10	10.04	8.96	7.87	11.57	14.35	-
5 (1SS)	0.08	-3.70	2.08	9.94	8.40	6.91	-3.14	2.10	10.04	9.08	8.09	11.76	15.00	-
6 (1SS)	0.07	-3.54	2.08	9.94	8.55	7.17	-2.92	2.10	10.04	9.29	8.50	11.95	15.66	-
7 (1SS)	0.07	-3.48	2.08	9.94	8.61	7.27	-2.95	2.10	10.04	9.26	8.44	11.96	15.71	-
8 (1SS)	0.07	-3.54	2.08	9.94	8.55	7.17	-2.94	2.10	10.04	9.27	8.46	11.94	15.63	-
9 (1SS)	0.07	-3.65	2.08	9.94	8.44	6.99	-2.93	2.10	10.04	9.28	8.48	11.89	15.47	-
10 (1SS)	0.07	-3.54	2.08	9.94	8.55	7.17	-3.07	2.10	10.04	9.14	8.21	11.87	15.38	-
11 (1SS)	0.07	-3.58	2.08	9.94	8.51	7.10	-3.02	2.10	10.04	9.19	8.30	11.88	15.40	-
0 (2SS)	0.07	-4.12	2.08	9.94	7.97	6.27	-3.45	2.10	10.04	8.76	7.52	11.39	13.79	-
1 (2SS)	0.08	-4.72	2.08	9.94	7.38	5.47	-4.07	2.10	10.04	8.15	6.53	10.79	11.99	-
2 (2SS)	0.07	-4.25	2.08	9.94	7.84	6.08	-3.53	2.10	10.04	8.68	7.38	11.29	13.47	-
3 (2SS)	0.07	-4.09	2.08	9.94	8.00	6.31	-3.30	2.10	10.04	8.91	7.78	11.49	14.10	-
4 (2SS)	0.07	-3.88	2.08	9.94	8.21	6.63	-3.32	2.10	10.04	8.89	7.75	11.58	14.37	-
5 (2SS)	0.07	-3.65	2.08	9.94	8.44	6.98	-3.10	2.10	10.04	9.11	8.14	11.79	15.12	-
6 (2SS)	0.08	-3.49	2.08	9.94	8.61	7.25	-3.03	2.10	10.04	9.19	8.29	11.92	15.55	-
7 (2SS)	0.08	-3.48	2.08	9.94	8.62	7.27	-2.91	2.10	10.04	9.31	8.53	**11.99**	**15.80**	*
8 (2SS)	0.07	-3.64	2.08	9.94	8.45	7.00	-3.05	2.10	10.04	9.16	8.25	11.83	15.25	-
9 (2SS)	0.08	-3.61	2.08	9.94	8.49	7.06	-3.20	2.10	10.04	9.02	7.97	11.77	15.03	-
10 (2SS)	0.07	-3.55	2.08	9.94	8.54	7.15	-2.91	2.10	10.04	9.30	8.52	11.95	15.66	-
11 (2SS)	0.07	-3.58	2.08	9.94	8.51	7.10	-2.95	2.10	10.04	9.26	8.44	11.91	15.54	-

Sample Calculation: (*SS: Spatial Stream)
Result [dBm] = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss + Duty factor
Total Result = ANT0 Result + ANT1 Result

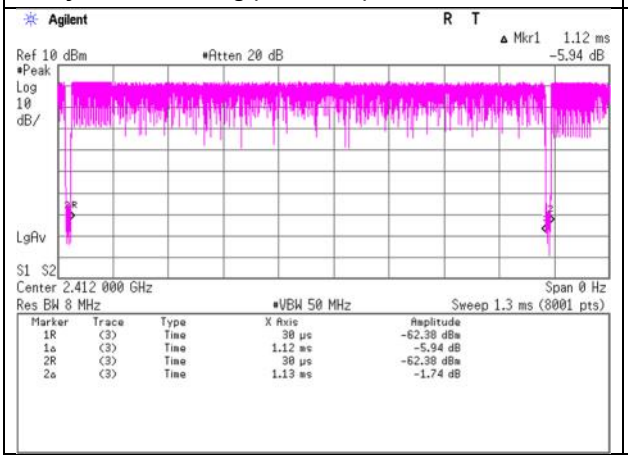
*The equipment and cables were not used for factor 0 dB of the data sheets.
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation (For Average Power)

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	May 29, 2023	May 30, 2023
Temperature / Humidity	26 deg. C / 39 % RH	26 deg. C / 46 % RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx	

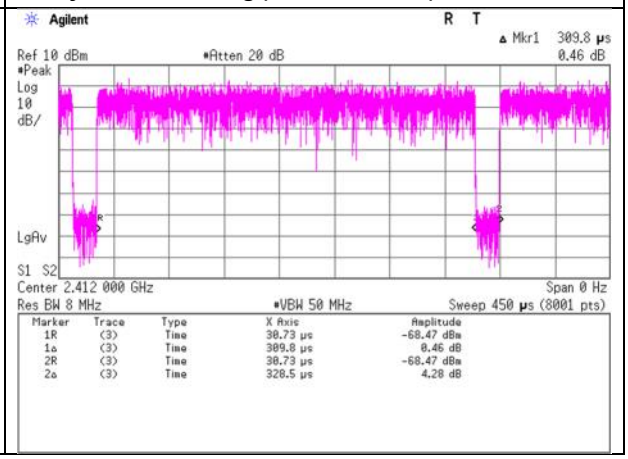
11b, 11 Mbps

Tx on / (Tx on + Tx off) =	0.999
Tx on / (Tx on + Tx off) * 100 =	99.9 %
Duty factor = 10 * log (1.13 / 1.12) =	0.04 dB



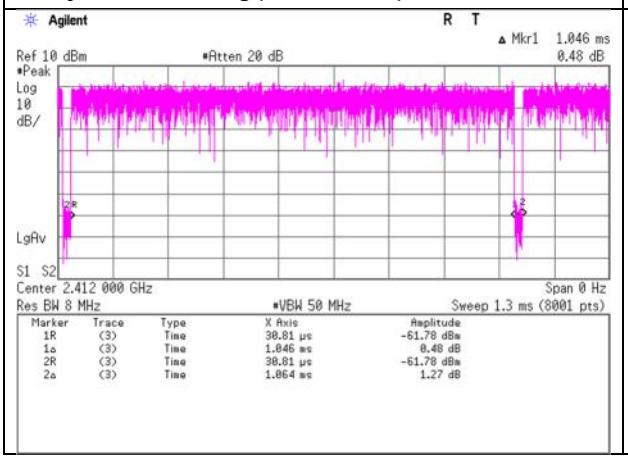
11g, 48 Mbps

Tx on / (Tx on + Tx off) =	0.943
Tx on / (Tx on + Tx off) * 100 =	94.3 %
Duty factor = 10 * log (0.3285 / 0.3098) =	0.26 dB



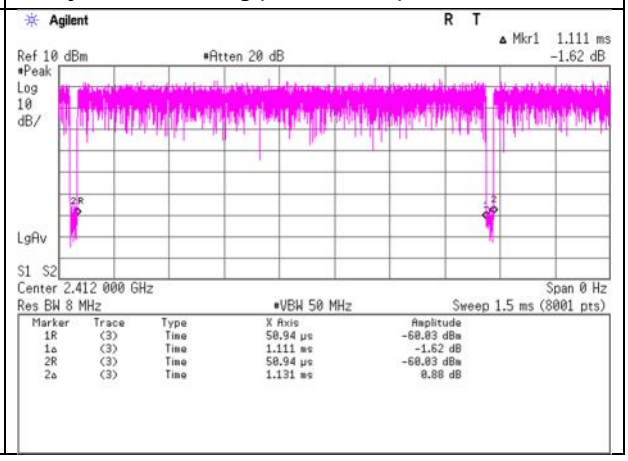
11n-20, MCS 13

Tx on / (Tx on + Tx off) =	0.983
Tx on / (Tx on + Tx off) * 100 =	98.3 %
Duty factor = 10 * log (1.064 / 1.046) =	0.07 dB



11ax-20 (OFDM), MCS 7 (2SS)

Tx on / (Tx on + Tx off) =	0.982
Tx on / (Tx on + Tx off) * 100 =	98.2 %
Duty factor = 10 * log (1.131 / 1.111) =	0.08 dB



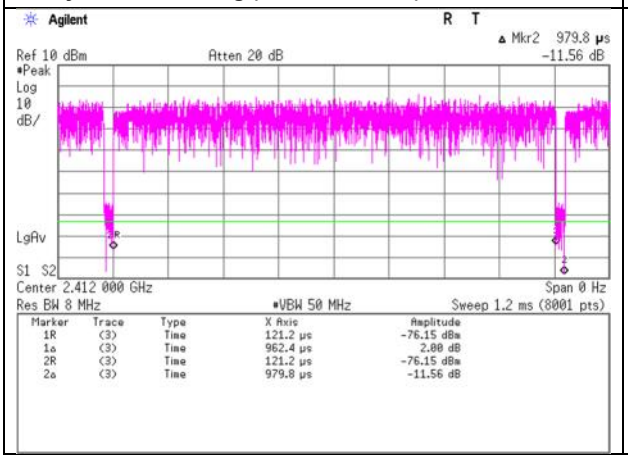
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation (For Average Power)

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 12, 2023
Temperature / Humidity	25 deg. C / 38 % RH
Engineer	Miku Ikudome
Mode	Tx

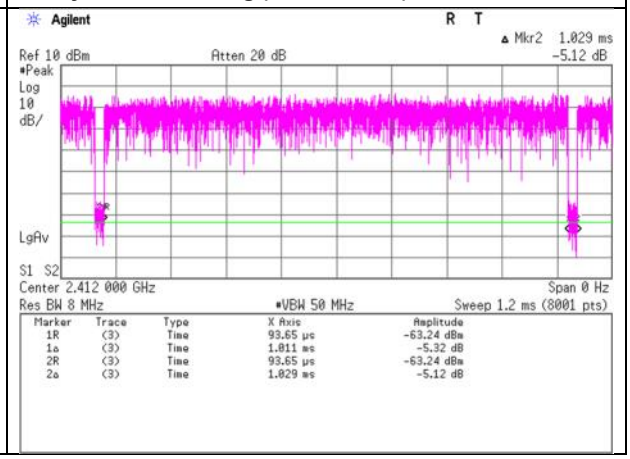
11ax-20 (OFDMA) 26-tone RU, MCS 7 (2SS)

Tx on / (Tx on + Tx off) =	0.982
Tx on / (Tx on + Tx off) * 100 =	98.2 %
Duty factor = 10 * log (0.9798 / 0.9624) =	0.08 dB



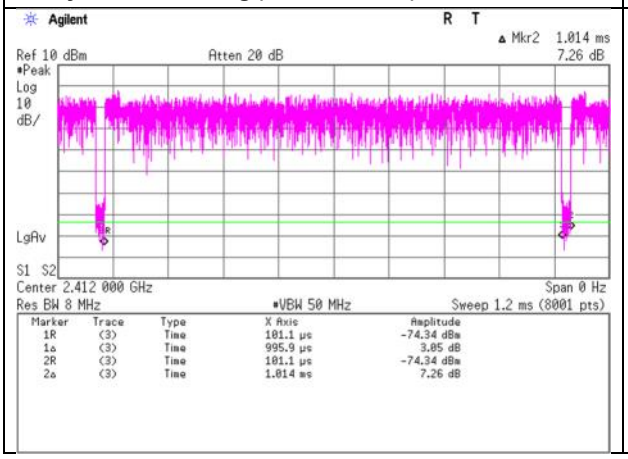
11ax-20 (OFDMA) 52-tone RU, MCS 7 (2SS)

Tx on / (Tx on + Tx off) =	0.983
Tx on / (Tx on + Tx off) * 100 =	98.3 %
Duty factor = 10 * log (1.029 / 1.011) =	0.08 dB



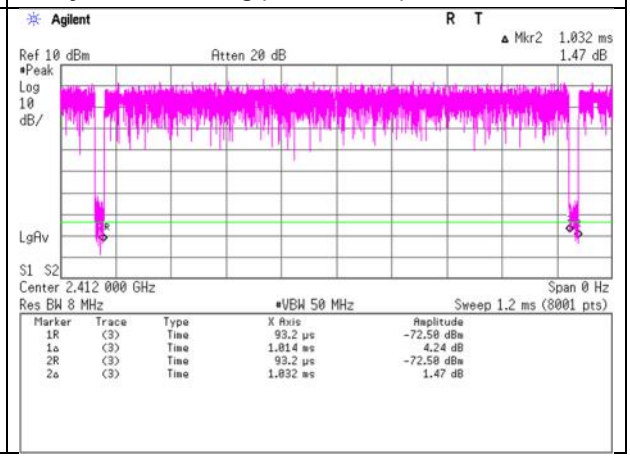
11ax-20 (OFDMA) 106-tone RU, MCS 7 (2SS)

Tx on / (Tx on + Tx off) =	0.982
Tx on / (Tx on + Tx off) * 100 =	98.2 %
Duty factor = 10 * log (1.014 / 0.9959) =	0.08 dB



11ax-20 (OFDMA) 242-tone RU, MCS 7 (2SS)

Tx on / (Tx on + Tx off) =	0.983
Tx on / (Tx on + Tx off) * 100 =	98.3 %
Duty factor = 10 * log (1.032 / 1.014) =	0.08 dB

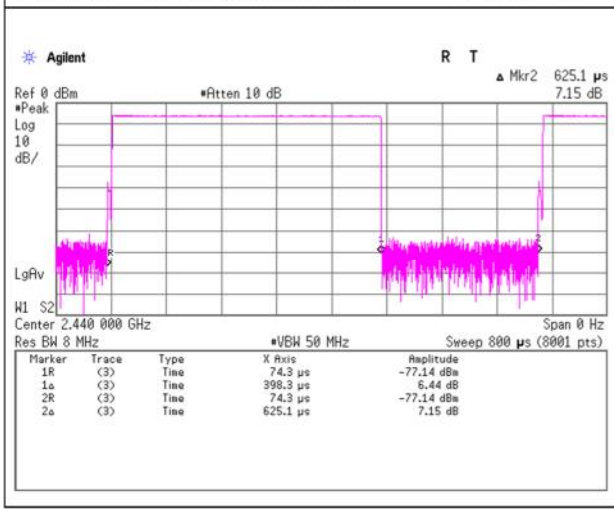


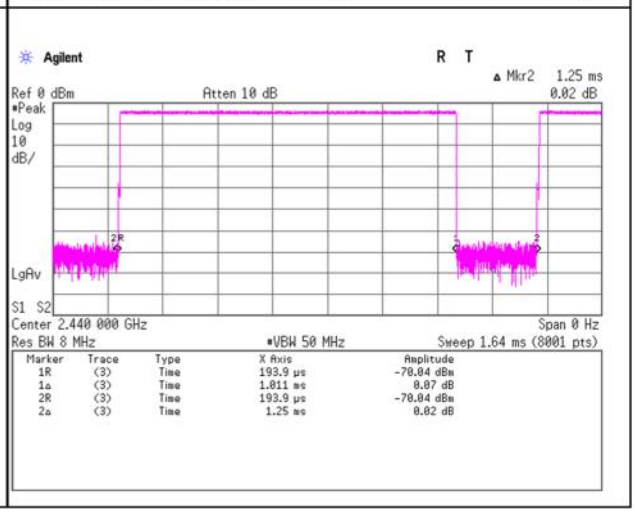
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	June 5, 2023	July 13, 2023
Temperature / Humidity	24 deg. C / 42 % RH	22 deg. C / 57 % RH
Engineer	Yusuke Tanikawara	Hiromasa Sato
Mode	Tx BT LE	

BT LE 1M-PHY (for Average power) *1)		BT LE 2M-PHY (for Average power) *3)	
BT LE 1M-PHY (for Radiated emission) *2)		BT LE 2M-PHY (for Radiated emission) *4)	
Tx on / (Tx on + Tx off) =	0.637	Tx on / (Tx on + Tx off) =	0.809
Tx on / (Tx on + Tx off) * 100 =	63.7 %	Tx on / (Tx on + Tx off) * 100 =	80.9 %
Duty factor = 10 * log (0.625 / 0.398) =	1.96 dB *1)	Duty factor = 10 * log (1.25 / 1.011) =	0.92 dB *3)
Duty factor = 20 * log (0.625 / 0.398) =	3.92 dB *2)	Duty factor = 20 * log (1.25 / 1.011) =	1.84 dB *4)





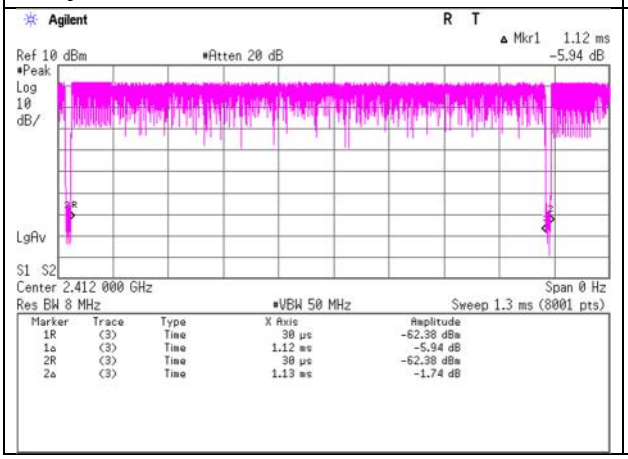
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation (For Radiated Emission)

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	May 29, 2023	May 30, 2023
Temperature / Humidity	26 deg. C / 39 % RH	26 deg. C / 46 % RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx	

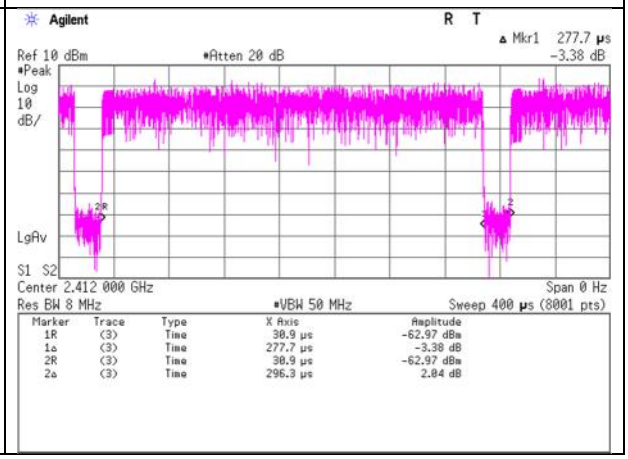
11b 11 Mbps

Tx on / (Tx on + Tx off) = 0.991
Tx on / (Tx on + Tx off) * 100 = 99.1 %
Duty >98 %



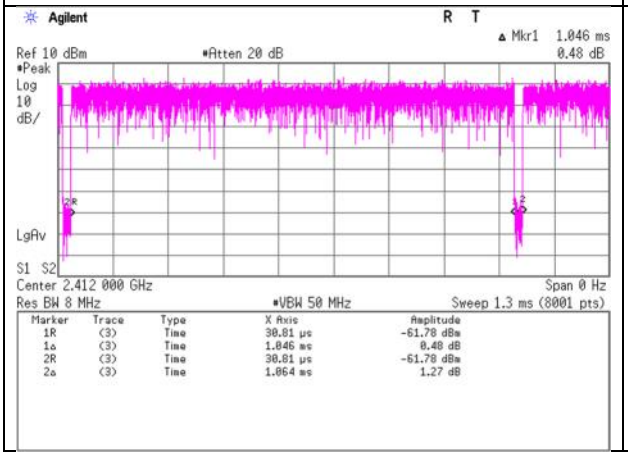
11g 54 Mbps

Tx on / (Tx on + Tx off) = 0.937
Tx on / (Tx on + Tx off) * 100 = 93.7 %
Duty factor = 20 * log (0.2963 / 0.2777) = 0.57 dB



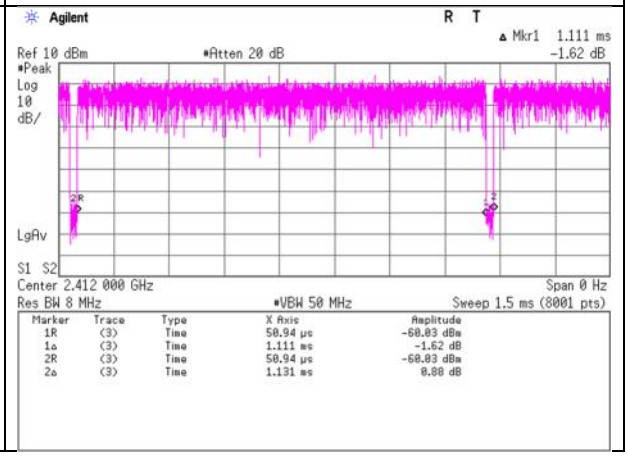
11n-20 MCS 13

Tx on / (Tx on + Tx off) = 0.983
Tx on / (Tx on + Tx off) * 100 = 98.3 %
Duty >98 %



11ax-20 (OFDM) MCS 7 (2SS)

Tx on / (Tx on + Tx off) = 0.982
Tx on / (Tx on + Tx off) * 100 = 98.2 %
Duty >98 %



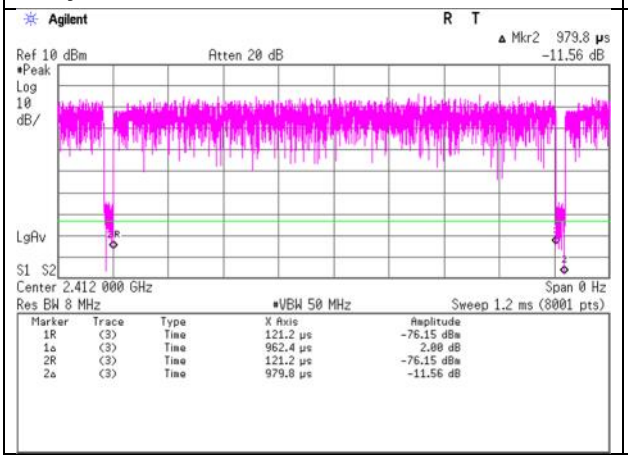
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation (For Radiated Emission)

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 12, 2023
Temperature / Humidity	25 deg. C / 38 % RH
Engineer	Miku Ikudome
Mode	Tx 11ax-20 (OFDMA)

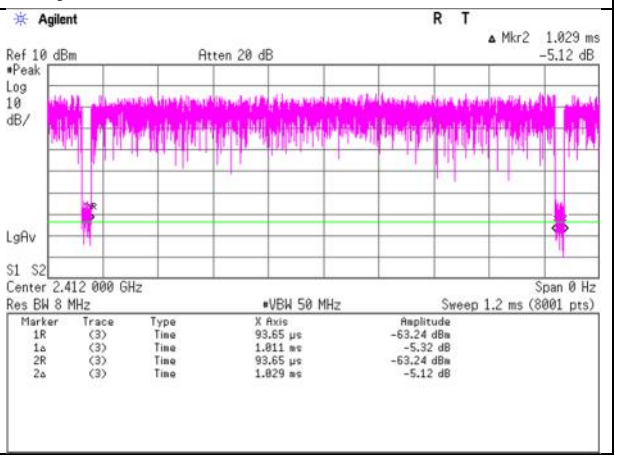
11ax-20 (OFDMA) 26-tone RU MCS 7 (2SS)

Tx on / (Tx on + Tx off) = 0.982
Tx on / (Tx on + Tx off) * 100 = 98.2 %
Duty >98 %



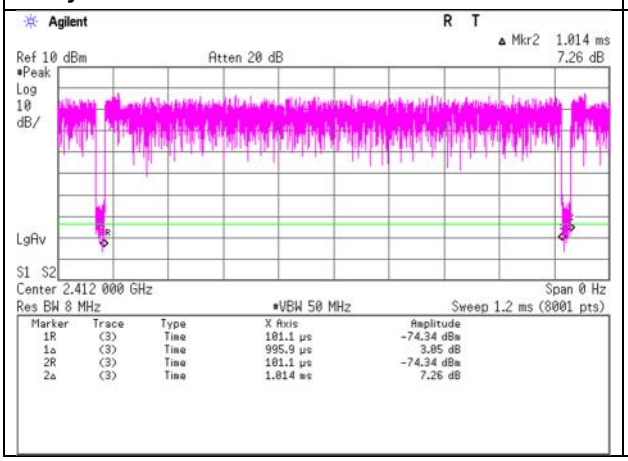
11ax-20 (OFDMA) 52-tone RU MCS 7 (2SS)

Tx on / (Tx on + Tx off) = 0.983
Tx on / (Tx on + Tx off) * 100 = 98.3 %
Duty >98 %



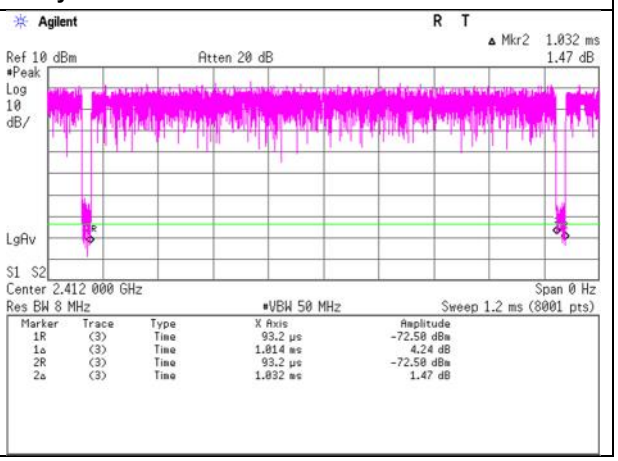
11ax-20 (OFDMA) 106-tone RU MCS 7 (2SS)

Tx on / (Tx on + Tx off) = 0.982
Tx on / (Tx on + Tx off) * 100 = 98.2 %
Duty >98 %



11ax-20 (OFDMA) 242-tone RU MCS 7 (2SS)

Tx on / (Tx on + Tx off) = 0.983
Tx on / (Tx on + Tx off) * 100 = 98.3 %
Duty >98 %



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 10, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 51 %RH	21 deg.C, 52 %RH
Engineer	Kenichi Adachi (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11b 2412 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	49.30	27.98	15.21	41.61	2.49	53.37	73.9	20.5	165	287	-
Hori.	4824.000	PK	48.65	31.41	7.93	42.87	2.49	47.61	73.9	26.2	265	103	-
Hori.	7236.000	PK	48.24	37.15	9.61	43.36	2.49	54.13	73.9	19.7	150	0	-
Hori.	9648.000	PK	48.02	38.72	11.15	43.09	2.49	57.29	73.9	16.6	150	0	-
Hori.	2390.000	AV	41.62	27.98	15.21	41.61	2.49	45.69	53.9	8.2	165	287	-
Hori.	4824.000	AV	40.43	31.41	7.93	42.87	2.49	39.39	53.9	14.5	265	103	-
Hori.	7236.000	AV	39.02	37.15	9.61	43.36	2.49	44.91	53.9	8.9	150	0	Floor noise
Hori.	9648.000	AV	39.12	38.72	11.15	43.09	2.49	48.39	53.9	**5.5**	150	0	Floor noise
Vert.	2390.000	PK	48.04	27.98	15.21	41.61	2.49	52.11	73.9	21.7	175	229	-
Vert.	4824.000	PK	48.28	31.41	7.93	42.87	2.49	47.24	73.9	26.6	130	105	-
Vert.	7236.000	PK	48.14	37.15	9.61	43.36	2.49	54.03	73.9	19.8	150	0	-
Vert.	9648.000	PK	47.96	38.72	11.15	43.09	2.49	57.23	73.9	16.6	150	0	-
Vert.	2390.000	AV	40.64	27.98	15.21	41.61	2.49	44.71	53.9	9.1	175	229	-
Vert.	4824.000	AV	40.37	31.41	7.93	42.87	2.49	39.33	53.9	14.5	130	105	-
Vert.	7236.000	AV	38.98	37.15	9.61	43.36	2.49	44.87	53.9	9.0	150	0	Floor noise
Vert.	9648.000	AV	39.04	38.72	11.15	43.09	2.49	48.31	53.9	**5.5**	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

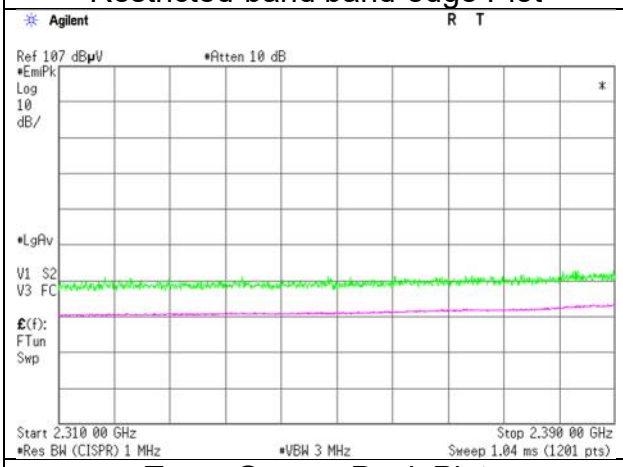
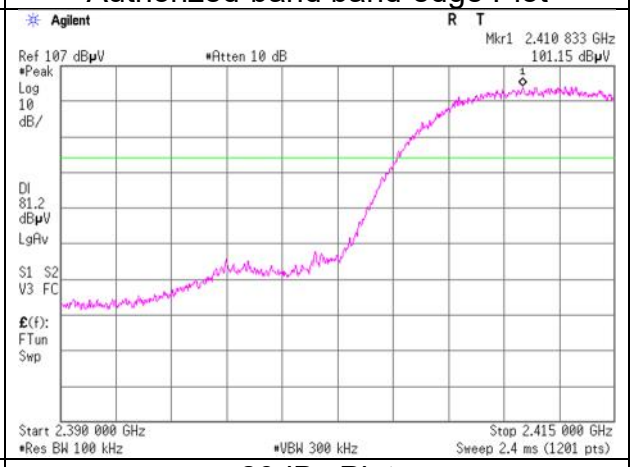
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

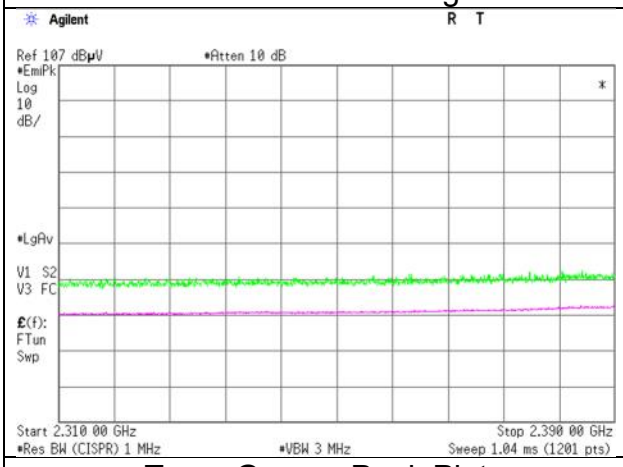
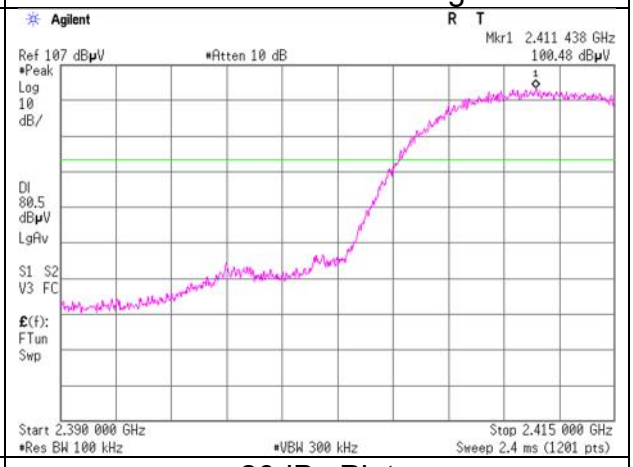
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	101.26	27.95	15.24	41.61	2.49	105.33	-	-	Carrier
Hori.	2398.043	PK	52.93	27.97	15.22	41.61	2.49	57.00	85.3	28.3	-
Hori.	2400.000	PK	50.16	27.97	15.22	41.61	2.49	54.23	85.3	31.0	-
Vert.	2412.000	PK	100.98	27.95	15.24	41.61	2.49	105.05	-	-	Carrier
Vert.	2398.043	PK	52.15	27.97	15.22	41.61	2.49	56.22	85.0	28.7	-
Vert.	2400.000	PK	48.55	27.97	15.22	41.61	2.49	52.62	85.0	32.3	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 10, 2023
Temperature / Humidity	23 deg.C, 51 %RH
Engineer	Kenichi Adachi
Mode	Tx 11b 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11b 2437 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	51.48	31.50	7.95	42.88	2.49	50.54	73.9	23.3	189	86	-
Hori.	7311.000	PK	48.77	37.24	9.65	43.41	2.49	54.74	73.9	19.1	150	0	-
Hori.	9748.000	PK	49.03	39.00	11.18	43.02	2.49	58.68	73.9	15.2	150	0	-
Hori.	4874.000	AV	41.03	31.50	7.95	42.88	2.49	40.09	53.9	13.8	189	86	-
Hori.	7311.000	AV	38.78	37.24	9.65	43.41	2.49	44.75	53.9	9.1	150	0	Floor noise
Hori.	9748.000	AV	39.06	39.00	11.18	43.02	2.49	48.71	53.9	5.1	150	0	Floor noise
Vert.	4874.000	PK	50.00	31.50	7.95	42.88	2.49	49.06	73.9	24.8	137	171	-
Vert.	7311.000	PK	48.81	37.24	9.65	43.41	2.49	54.78	73.9	19.1	150	0	-
Vert.	9748.000	PK	49.35	39.00	11.18	43.02	2.49	59.00	73.9	14.9	150	0	-
Vert.	4874.000	AV	40.57	31.50	7.95	42.88	2.49	39.63	53.9	14.2	137	171	-
Vert.	7311.000	AV	38.77	37.24	9.65	43.41	2.49	44.74	53.9	9.1	150	0	Floor noise
Vert.	9748.000	AV	39.31	39.00	11.18	43.02	2.49	48.96	53.9	**4.9**	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11b 2462 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	50.00	27.89	15.32	41.64	2.49	54.06	73.9	19.8	220	282	-
Hori.	4924.000	PK	49.57	31.61	7.98	42.89	2.49	48.76	73.9	25.1	170	86	-
Hori.	7386.000	PK	48.85	37.36	9.69	43.46	2.49	54.93	73.9	18.9	150	0	-
Hori.	9848.000	PK	49.05	39.06	11.23	42.94	2.49	58.89	73.9	15.0	150	0	-
Hori.	2483.500	AV	40.97	27.89	15.32	41.64	2.49	45.03	53.9	8.8	220	282	-
Hori.	4924.000	AV	40.37	31.61	7.98	42.89	2.49	39.56	53.9	14.3	170	86	-
Hori.	7386.000	AV	38.96	37.36	9.69	43.46	2.49	45.04	53.9	8.8	150	0	Floor noise
Hori.	9848.000	AV	39.02	39.06	11.23	42.94	2.49	48.86	53.9	5.0	150	0	Floor noise
Vert.	2483.500	PK	49.56	27.89	15.32	41.64	2.49	53.62	73.9	20.2	235	183	-
Vert.	4924.000	PK	50.50	31.61	7.98	42.89	2.49	49.69	73.9	24.2	126	103	-
Vert.	7386.000	PK	49.02	37.36	9.69	43.46	2.49	55.10	73.9	18.8	150	0	-
Vert.	9848.000	PK	49.45	39.06	11.23	42.94	2.49	59.29	73.9	14.6	150	0	-
Vert.	2483.500	AV	41.05	27.89	15.32	41.64	2.49	45.11	53.9	8.7	235	183	-
Vert.	4924.000	AV	39.53	31.61	7.98	42.89	2.49	38.72	53.9	15.1	126	103	-
Vert.	7386.000	AV	38.56	37.36	9.69	43.46	2.49	44.64	53.9	9.2	150	0	Floor noise
Vert.	9848.000	AV	39.15	39.06	11.23	42.94	2.49	48.99	53.9	**4.9**	150	0	Floor noise

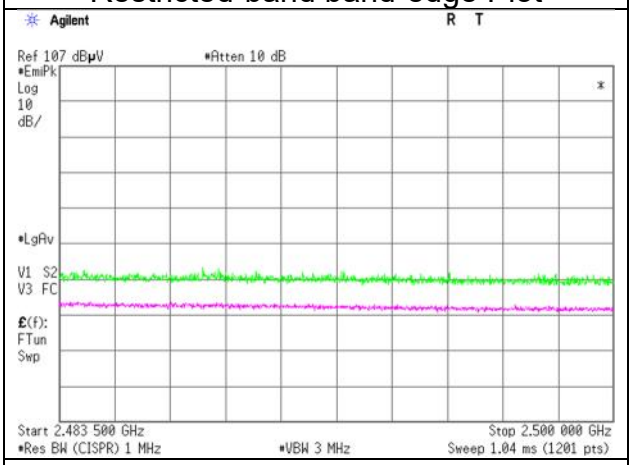
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 11, 2023
Temperature / Humidity	23 deg.C, 53 %RH
Engineer	Yohsuke Matsuzawa
Mode	Tx 11b 2462 MHz

Horizontal

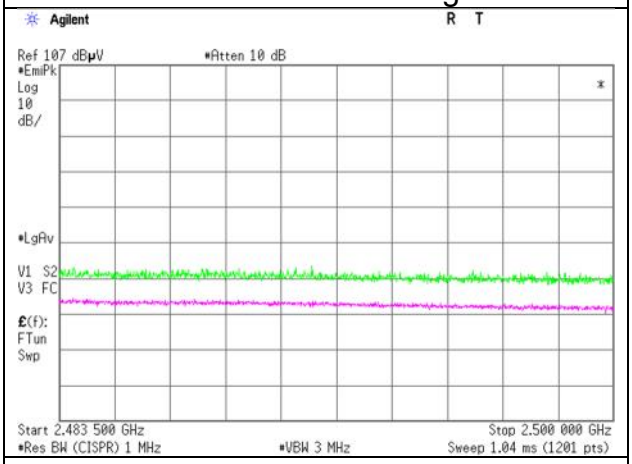
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11g 2412 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	52.67	27.98	15.21	41.61	2.49	56.74	73.9	17.1	232	288	-
Hori.	4824.000	PK	49.26	31.41	7.93	42.87	2.49	48.22	73.9	25.6	147	85	-
Hori.	7236.000	PK	48.32	37.15	9.61	43.36	2.49	54.21	73.9	19.6	150	0	-
Hori.	9648.000	PK	48.62	38.72	11.15	43.09	2.49	57.89	73.9	16.0	150	0	-
Hori.	7236.000	AV	39.16	37.15	9.61	43.36	2.49	45.05	53.9	8.8	150	0	Floor noise
Hori.	9648.000	AV	39.77	38.72	11.15	43.09	2.49	49.04	53.9	**4.8**	150	0	Floor noise
Vert.	2390.000	PK	50.56	27.98	15.21	41.61	2.49	54.63	73.9	19.2	176	142	-
Vert.	4824.000	PK	49.30	31.41	7.93	42.87	2.49	48.26	73.9	25.6	157	169	-
Vert.	7236.000	PK	48.63	37.15	9.61	43.36	2.49	54.52	73.9	19.3	150	0	-
Vert.	9648.000	PK	48.77	38.72	11.15	43.09	2.49	58.04	73.9	15.8	150	0	-
Vert.	7236.000	AV	39.73	37.15	9.61	43.36	2.49	45.62	53.9	8.2	150	0	Floor noise
Vert.	9648.000	AV	39.33	38.72	11.15	43.09	2.49	48.60	53.9	5.3	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	42.72	27.98	15.21	41.61	0.57	2.49	47.36	53.9	6.5	*1)
Hori.	4824.000	AV	40.62	31.41	7.93	42.87	0.57	2.49	40.15	53.9	13.7	-
Vert.	2390.000	AV	41.33	27.98	15.21	41.61	0.57	2.49	45.97	53.9	7.9	*1)
Vert.	4824.000	AV	39.26	31.41	7.93	42.87	0.57	2.49	38.79	53.9	15.1	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

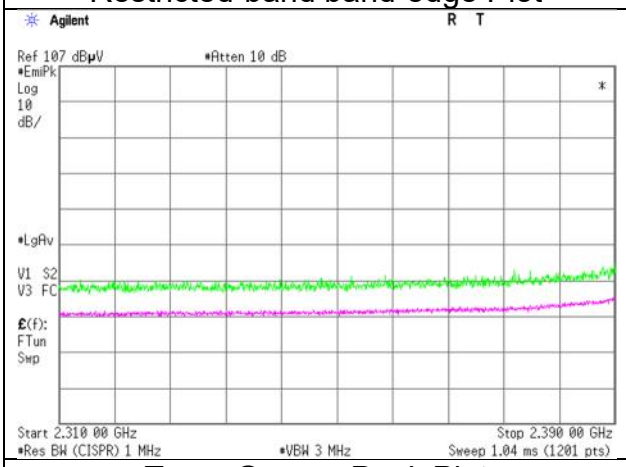
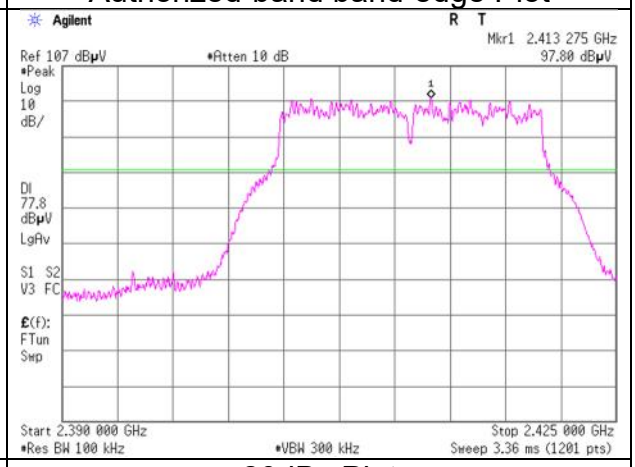
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

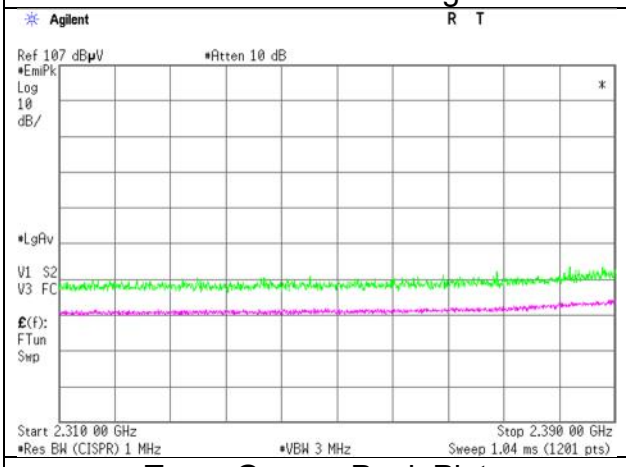
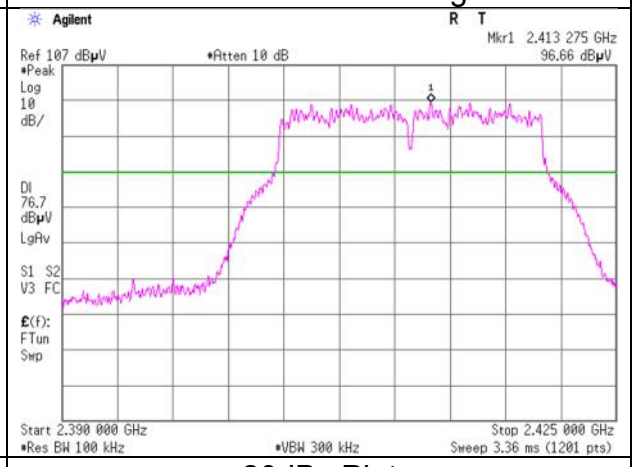
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	97.80	27.95	15.24	41.61	2.49	101.87	-	-	Carrier
Hori.	2400.000	PK	52.15	27.97	15.22	41.61	2.49	56.22	81.8	25.5	-
Vert.	2412.000	PK	96.66	27.95	15.24	41.61	2.49	100.73	-	-	Carrier
Vert.	2400.000	PK	50.77	27.97	15.22	41.61	2.49	54.84	80.7	25.8	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 11, 2023
Temperature / Humidity	23 deg.C, 53 %RH
Engineer	Yohsuke Matsuzawa
Mode	Tx 11g 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11g 2437 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	49.37	31.50	7.95	42.88	2.49	48.43	73.9	25.4	139	137	-
Hori.	7311.000	PK	47.88	37.24	9.65	43.41	2.49	53.85	73.9	20.0	150	0	-
Hori.	9748.000	PK	48.26	39.00	11.18	43.02	2.49	57.91	73.9	15.9	150	0	-
Hori.	7311.000	AV	38.51	37.24	9.65	43.41	2.49	44.48	53.9	9.4	150	0	Floor noise
Hori.	9748.000	AV	39.31	39.00	11.18	43.02	2.49	48.96	53.9	**4.9**	150	0	Floor noise
Vert.	4874.000	PK	49.73	31.50	7.95	42.88	2.49	48.79	73.9	25.1	174	170	-
Vert.	7311.000	PK	48.61	37.24	9.65	43.41	2.49	54.58	73.9	19.3	150	0	-
Vert.	9748.000	PK	48.56	39.00	11.18	43.02	2.49	58.21	73.9	15.6	150	0	-
Vert.	7311.000	AV	38.78	37.24	9.65	43.41	2.49	44.75	53.9	9.1	150	0	Floor noise
Vert.	9748.000	AV	39.23	39.00	11.18	43.02	2.49	48.88	53.9	5.0	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	AV	38.62	31.50	7.95	42.88	0.57	2.49	38.25	53.9	15.6	-
Vert.	4874.000	AV	38.52	31.50	7.95	42.88	0.57	2.49	38.15	53.9	15.7	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11g 2462 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	52.00	27.89	15.32	41.64	2.49	56.06	73.9	17.8	174	288	-
Hori.	4924.000	PK	48.75	31.61	7.98	42.89	2.49	47.94	73.9	25.9	136	268	-
Hori.	7386.000	PK	47.57	37.36	9.69	43.46	2.49	53.65	73.9	20.2	150	0	-
Hori.	9848.000	PK	47.55	39.06	11.23	42.94	2.49	57.39	73.9	16.5	150	0	-
Hori.	7386.000	AV	39.03	37.36	9.69	43.46	2.49	45.11	53.9	8.7	150	0	Floor noise
Hori.	9848.000	AV	39.18	39.06	11.23	42.94	2.49	49.02	53.9	**4.8**	150	0	Floor noise
Vert.	2483.500	PK	51.76	27.89	15.32	41.64	2.49	55.82	73.9	18.0	236	201	-
Vert.	4924.000	PK	50.20	31.61	7.98	42.89	2.49	49.39	73.9	24.5	254	120	-
Vert.	7386.000	PK	47.28	37.36	9.69	43.46	2.49	53.36	73.9	20.5	150	0	-
Vert.	9848.000	PK	48.77	39.06	11.23	42.94	2.49	58.61	73.9	15.2	150	0	-
Vert.	7386.000	AV	39.08	37.36	9.69	43.46	2.49	45.16	53.9	8.7	150	0	Floor noise
Vert.	9848.000	AV	39.15	39.06	11.23	42.94	2.49	48.99	53.9	4.9	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	42.00	27.89	15.32	41.64	0.57	2.49	46.63	53.9	7.2	*1)
Hori.	4924.000	AV	38.38	31.61	7.98	42.89	0.57	2.49	38.14	53.9	15.7	-
Vert.	2483.500	AV	40.88	27.89	15.32	41.64	0.57	2.49	45.51	53.9	8.3	*1)
Vert.	4924.000	AV	39.15	31.61	7.98	42.89	0.57	2.49	38.91	53.9	14.9	-

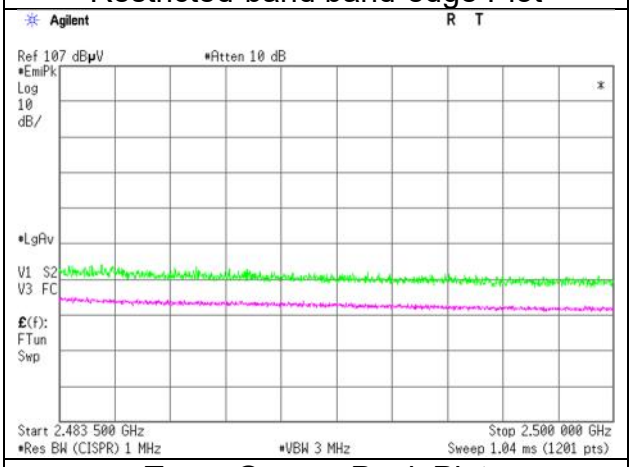
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 11, 2023
Temperature / Humidity	23 deg.C, 53 %RH
Engineer	Yohsuke Matsuzawa
Mode	Tx 11g 2462 MHz

Horizontal

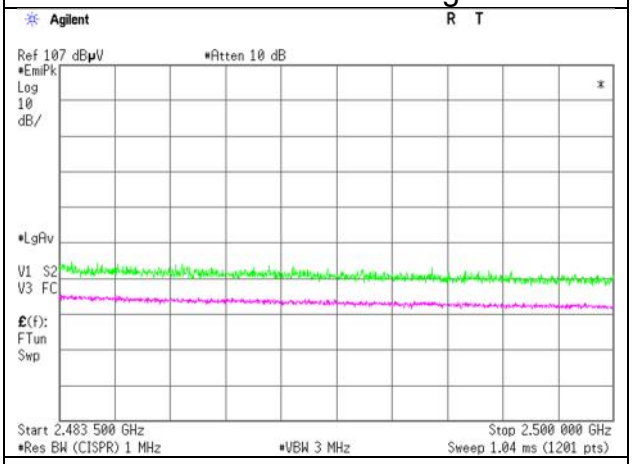
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11n-20 2412 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	52.33	27.98	15.21	41.61	2.49	56.40	73.9	17.5	155	267	-
Hori.	4824.000	PK	49.00	31.41	7.93	42.87	2.49	47.96	73.9	25.9	200	254	-
Hori.	7236.000	PK	47.51	37.15	9.61	43.36	2.49	53.40	73.9	20.5	150	0	-
Hori.	9648.000	PK	48.68	38.72	11.15	43.09	2.49	57.95	73.9	15.9	150	0	-
Hori.	2390.000	AV	41.86	27.98	15.21	41.61	2.49	45.93	53.9	7.9	155	267	-
Hori.	4824.000	AV	39.23	31.41	7.93	42.87	2.49	38.19	53.9	15.7	200	254	-
Hori.	7236.000	AV	39.20	37.15	9.61	43.36	2.49	45.09	53.9	8.8	150	0	Floor noise
Hori.	9648.000	AV	39.62	38.72	11.15	43.09	2.49	48.89	53.9	**5.0**	150	0	Floor noise
Vert.	2390.000	PK	53.27	27.98	15.21	41.61	2.49	57.34	73.9	16.5	280	217	-
Vert.	4824.000	PK	49.27	31.41	7.93	42.87	2.49	48.23	73.9	25.6	162	187	-
Vert.	7236.000	PK	48.25	37.15	9.61	43.36	2.49	54.14	73.9	19.7	150	0	-
Vert.	9648.000	PK	48.57	38.72	11.15	43.09	2.49	57.84	73.9	16.0	150	0	-
Vert.	2390.000	AV	42.85	27.98	15.21	41.61	2.49	46.92	53.9	6.9	280	217	-
Vert.	4824.000	AV	40.83	31.41	7.93	42.87	2.49	39.79	53.9	14.1	162	187	-
Vert.	7236.000	AV	39.13	37.15	9.61	43.36	2.49	45.02	53.9	8.8	150	0	Floor noise
Vert.	9648.000	AV	39.52	38.72	11.15	43.09	2.49	48.79	53.9	5.1	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

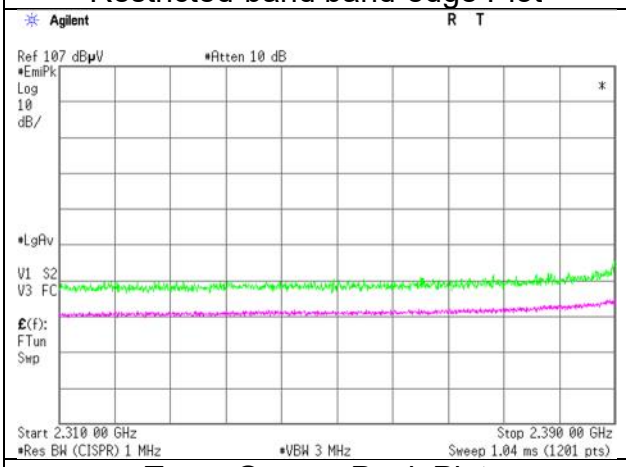
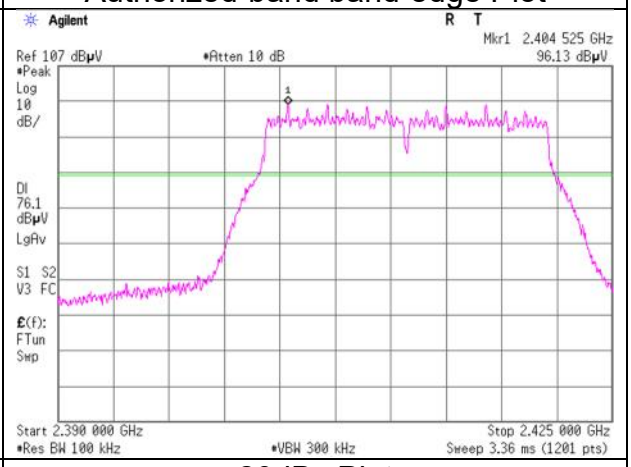
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

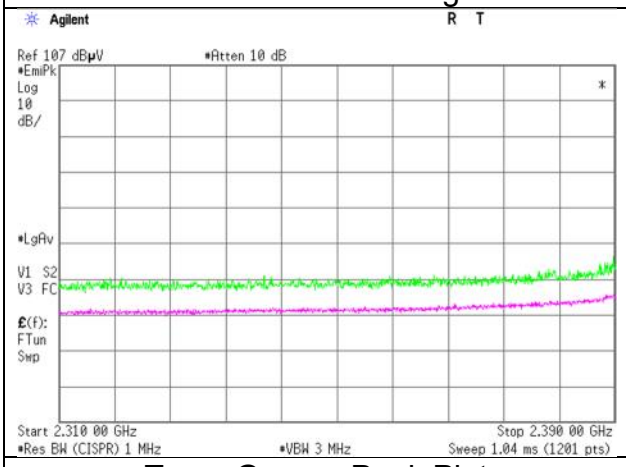
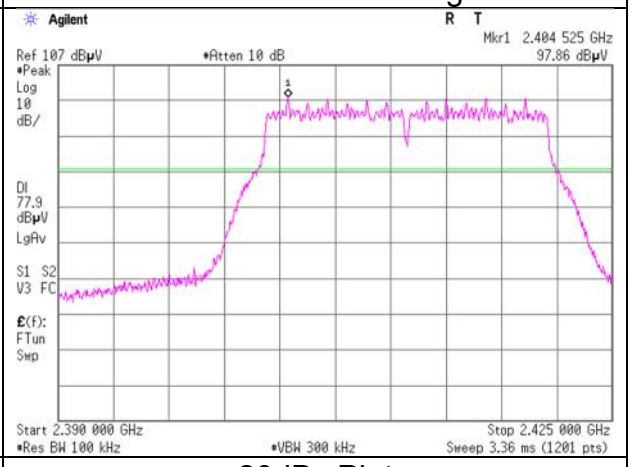
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	96.13	27.95	15.24	41.61	2.49	100.20	-	-	Carrier
Hori.	2400.000	PK	50.21	27.97	15.22	41.61	2.49	54.28	80.2	25.9	-
Vert.	2412.000	PK	97.86	27.95	15.24	41.61	2.49	101.93	-	-	Carrier
Vert.	2400.000	PK	54.28	27.97	15.22	41.61	2.49	58.35	81.9	23.5	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 11, 2023
Temperature / Humidity	23 deg.C, 53 %RH	23 deg.C, 53 %RH
Engineer	Yohsuke Matsuzawa	Yohsuke Matsuzawa
Mode	Tx 11n-20 2412 MHz	

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11n-20, 2437 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	49.53	31.50	7.95	42.88	2.49	48.59	73.9	25.3	139	258	-
Hori.	7311.000	PK	47.78	37.24	9.65	43.41	2.49	53.75	73.9	20.1	150	0	-
Hori.	9748.000	PK	48.60	39.00	11.18	43.02	2.49	58.25	73.9	15.6	150	0	-
Hori.	4874.000	AV	39.73	31.50	7.95	42.88	2.49	38.79	53.9	15.1	139	258	-
Hori.	7311.000	AV	38.76	37.24	9.65	43.41	2.49	44.73	53.9	9.1	150	0	Floor noise
Hori.	9748.000	AV	39.26	39.00	11.18	43.02	2.49	48.91	53.9	4.9	150	0	Floor noise
Vert.	4874.000	PK	49.32	31.50	7.95	42.88	2.49	48.38	73.9	25.5	141	191	-
Vert.	7311.000	PK	47.63	37.24	9.65	43.41	2.49	53.60	73.9	20.3	150	0	-
Vert.	9748.000	PK	47.76	39.00	11.18	43.02	2.49	57.41	73.9	16.4	150	0	-
Vert.	4874.000	AV	40.11	31.50	7.95	42.88	2.49	39.17	53.9	14.7	141	191	-
Vert.	7311.000	AV	38.58	37.24	9.65	43.41	2.49	44.55	53.9	9.3	150	0	Floor noise
Vert.	9748.000	AV	39.41	39.00	11.18	43.02	2.49	49.06	53.9	**4.8**	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 11, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 53 %RH	21 deg.C, 52 %RH
Engineer	Yohsuke Matsuzawa (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11n-20 2462 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	56.71	27.89	15.32	41.64	2.49	60.77	73.9	13.1	174	291	-
Hori.	4924.000	PK	49.00	31.61	7.98	42.89	2.49	48.19	73.9	25.7	139	132	-
Hori.	7386.000	PK	48.32	37.36	9.69	43.46	2.49	54.40	73.9	19.5	150	0	-
Hori.	9848.000	PK	47.75	39.06	11.23	42.94	2.49	57.59	73.9	16.3	150	0	-
Hori.	2483.500	AV	42.24	27.89	15.32	41.64	2.49	46.30	53.9	7.6	174	291	-
Hori.	4924.000	AV	39.67	31.61	7.98	42.89	2.49	38.86	53.9	15.0	139	132	-
Hori.	7386.000	AV	39.11	37.36	9.69	43.46	2.49	45.19	53.9	8.7	150	0	Floor noise
Hori.	9848.000	AV	39.26	39.06	11.23	42.94	2.49	49.10	53.9	**4.8**	150	0	Floor noise
Vert.	2483.500	PK	55.57	27.89	15.32	41.64	2.49	59.63	73.9	14.2	175	200	-
Vert.	4924.000	PK	49.45	31.61	7.98	42.89	2.49	48.64	73.9	25.2	163	178	-
Vert.	7386.000	PK	46.91	37.36	9.69	43.46	2.49	52.99	73.9	20.9	150	0	-
Vert.	9848.000	PK	48.66	39.06	11.23	42.94	2.49	58.50	73.9	15.4	150	0	-
Vert.	2483.500	AV	41.77	27.89	15.32	41.64	2.49	45.83	53.9	8.0	175	200	-
Vert.	4924.000	AV	39.86	31.61	7.98	42.89	2.49	39.05	53.9	14.8	163	178	-
Vert.	7386.000	AV	39.12	37.36	9.69	43.46	2.49	45.20	53.9	8.7	150	0	Floor noise
Vert.	9848.000	AV	39.25	39.06	11.23	42.94	2.49	49.09	53.9	**4.8**	150	0	Floor noise

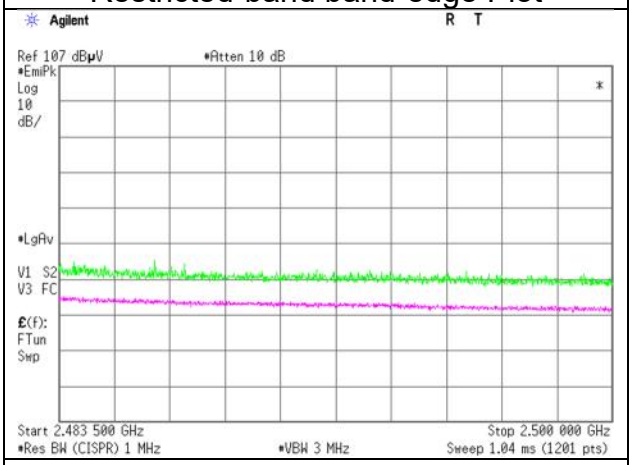
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 11, 2023
Temperature / Humidity	23 deg.C, 53 %RH
Engineer	Yohsuke Matsuzawa
Mode	Tx 11n-20 2462 MHz

Horizontal

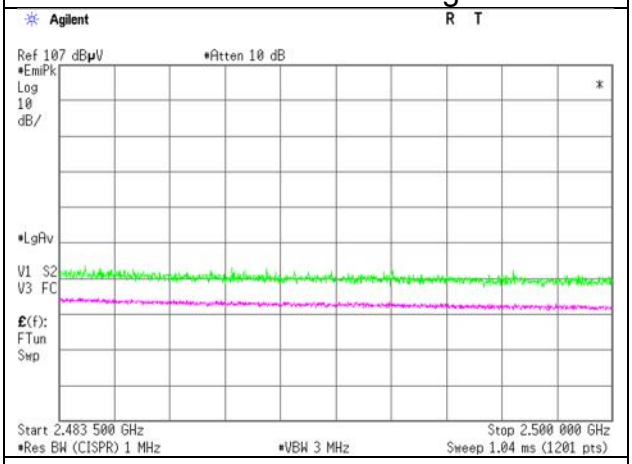
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	October 20, 2023	June 10, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 44 %RH	23 deg.C, 51 %RH	21 deg.C, 52 %RH
Engineer	Hiromasa Sato	Kenichi Adachi	Hiromasa Sato
	(30 MHz -1 GHz)	(1 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDM) 2412 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	32.722	QP	21.22	17.96	6.64	32.20	0.00	16.11	40.0	23.8	150	359	-
Hori.	34.734	QP	24.51	0.00	6.66	32.20	0.00	1.46	40.0	38.5	150	163	-
Hori.	38.038	QP	21.62	15.92	6.70	32.19	0.00	14.54	40.0	25.4	150	1	-
Hori.	802.698	QP	19.87	20.83	10.64	31.64	0.00	22.19	46.0	23.8	150	2	-
Hori.	2390.000	PK	60.09	27.98	15.21	41.61	2.49	64.16	73.9	9.7	159	289	-
Hori.	4824.000	PK	48.44	31.41	7.93	42.87	2.49	47.40	73.9	26.5	263	104	-
Hori.	7236.000	PK	48.30	37.15	9.61	43.36	2.49	54.19	73.9	19.7	150	0	-
Hori.	9648.000	PK	48.14	38.72	11.15	43.09	2.49	57.41	73.9	16.4	150	0	-
Hori.	2390.000	AV	46.86	27.98	15.21	41.61	2.49	50.93	53.9	**2.9**	159	289	-
Hori.	4824.000	AV	40.82	31.41	7.93	42.87	2.49	39.78	53.9	14.1	263	104	-
Hori.	7236.000	AV	39.12	37.15	9.61	43.36	2.49	45.01	53.9	8.8	150	0	Floor noise
Hori.	9648.000	AV	39.16	38.72	11.15	43.09	2.49	48.43	53.9	5.4	150	0	Floor noise
Vert.	34.734	QP	21.12	17.23	6.66	32.20	0.00	15.30	40.0	24.7	150	2	-
Vert.	596.787	QP	19.94	19.30	9.89	31.94	0.00	19.68	46.0	26.3	150	0	-
Vert.	705.999	QP	20.11	19.96	10.32	31.87	0.00	21.01	46.0	24.9	150	1	-
Vert.	2390.000	PK	55.47	27.98	15.21	41.61	2.49	59.54	73.9	14.3	171	231	-
Vert.	4824.000	PK	48.23	31.41	7.93	42.87	2.49	47.19	73.9	26.7	119	102	-
Vert.	7236.000	PK	48.22	37.15	9.61	43.36	2.49	54.11	73.9	19.7	150	0	-
Vert.	9648.000	PK	48.06	38.72	11.15	43.09	2.49	57.33	73.9	16.5	150	0	-
Vert.	2390.000	AV	44.48	27.98	15.21	41.61	2.49	48.55	53.9	5.3	171	231	-
Vert.	4824.000	AV	40.75	31.41	7.93	42.87	2.49	39.71	53.9	14.1	119	102	-
Vert.	7236.000	AV	39.06	37.15	9.61	43.36	2.49	44.95	53.9	8.9	150	0	Floor noise
Vert.	9648.000	AV	39.11	38.72	11.15	43.09	2.49	48.38	53.9	5.5	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

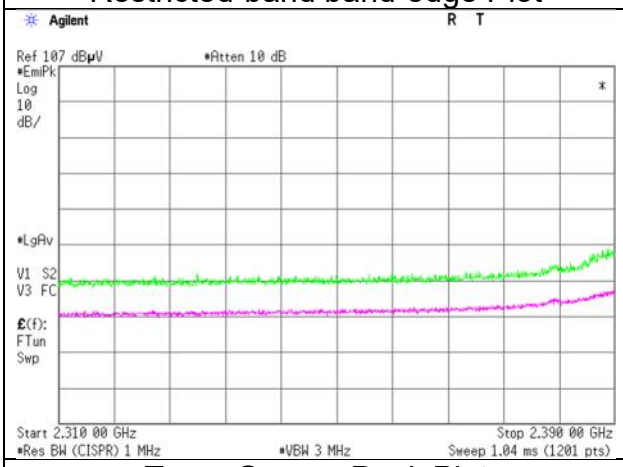
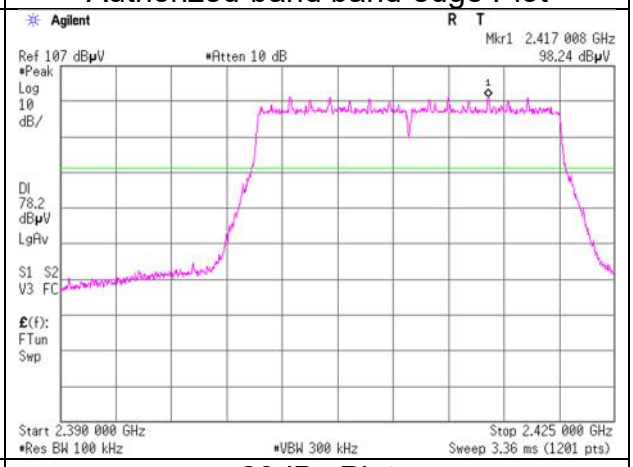
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

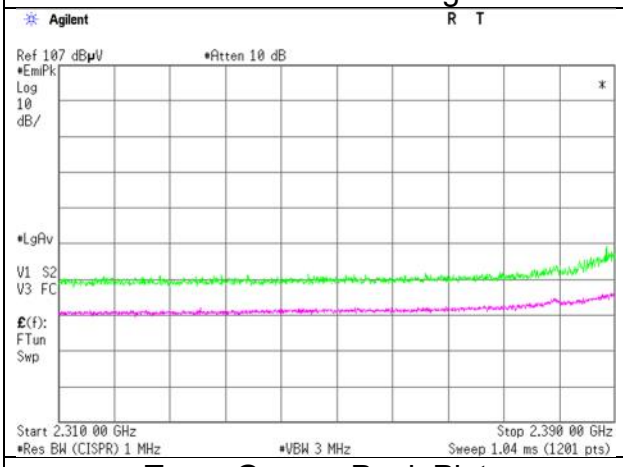
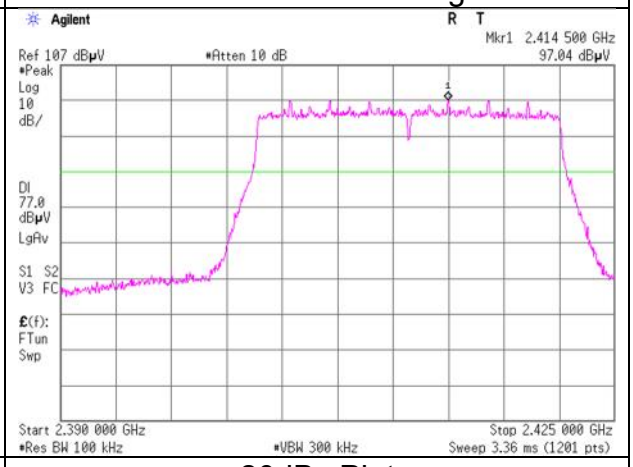
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	98.37	27.95	15.24	41.61	2.49	102.44	-	-	Carrier
Hori.	2400.000	PK	52.18	27.97	15.22	41.61	2.49	56.25	82.4	26.1	-
Vert.	2412.000	PK	97.23	27.95	15.24	41.61	2.49	101.30	-	-	Carrier
Vert.	2400.000	PK	49.78	27.97	15.22	41.61	2.49	53.85	81.3	27.4	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 10, 2023
Temperature / Humidity	23 deg.C, 51 %RH
Engineer	Kenichi Adachi
Mode	Tx 11ax-20 (OFDM) 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 10, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 51 %RH	21 deg.C, 52 %RH
Engineer	Kenichi Adachi (1 GHz -10 GHz)	Hiromasa Sato (10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDM), 2437 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	48.03	31.50	7.95	42.88	2.49	47.09	73.9	26.8	261	104	-
Hori.	7311.000	PK	48.24	37.24	9.65	43.41	2.49	54.21	73.9	19.6	150	0	-
Hori.	9748.000	PK	48.08	39.00	11.18	43.02	2.49	57.73	73.9	16.1	150	0	-
Hori.	4874.000	AV	40.48	31.50	7.95	42.88	2.49	39.54	53.9	14.3	261	104	-
Hori.	7311.000	AV	39.02	37.24	9.65	43.41	2.49	44.99	53.9	8.9	150	0	Floor noise
Hori.	9748.000	AV	39.16	39.00	11.18	43.02	2.49	48.81	53.9	**5.0**	150	0	Floor noise
Vert.	4874.000	PK	47.87	31.50	7.95	42.88	2.49	46.93	73.9	26.9	134	106	-
Vert.	7311.000	PK	48.18	37.24	9.65	43.41	2.49	54.15	73.9	19.7	150	0	-
Vert.	9748.000	PK	48.04	39.00	11.18	43.02	2.49	57.69	73.9	16.2	150	0	-
Vert.	4874.000	AV	40.36	31.50	7.95	42.88	2.49	39.42	53.9	14.4	134	106	-
Vert.	7311.000	AV	38.98	37.24	9.65	43.41	2.49	44.95	53.9	8.9	150	0	Floor noise
Vert.	9748.000	AV	39.06	39.00	11.18	43.02	2.49	48.71	53.9	5.1	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	June 10, 2023	June 30, 2023
Temperature / Humidity	23 deg.C, 51 %RH	21 deg.C, 52 %RH
Engineer	Kenichi Adachi	Hiromasa Sato
	(1 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDM), 2462 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	55.06	27.89	15.32	41.64	2.49	59.12	73.9	14.7	162	286	-
Hori.	4924.000	PK	48.55	31.61	7.98	42.89	2.49	47.74	73.9	26.1	262	102	-
Hori.	7386.000	PK	47.44	37.36	9.69	43.46	2.49	53.52	73.9	20.3	150	0	-
Hori.	9848.000	PK	47.74	39.06	11.23	42.94	2.49	57.58	73.9	16.3	150	0	-
Hori.	2483.500	AV	45.19	27.89	15.32	41.64	2.49	49.25	53.9	**4.6**	162	286	-
Hori.	4924.000	AV	40.78	31.61	7.98	42.89	2.49	39.97	53.9	13.9	262	102	-
Hori.	7386.000	AV	39.81	37.36	9.69	43.46	2.49	45.89	53.9	8.0	150	0	Floor noise
Hori.	9848.000	AV	39.09	39.06	11.23	42.94	2.49	48.93	53.9	4.9	150	0	Floor noise
Vert.	2483.500	PK	54.04	27.89	15.32	41.64	2.49	58.10	73.9	15.8	168	230	-
Vert.	4924.000	PK	48.08	31.61	7.98	42.89	2.49	47.27	73.9	26.6	133	105	-
Vert.	7386.000	PK	47.38	37.36	9.69	43.46	2.49	53.46	73.9	20.4	150	0	-
Vert.	9848.000	PK	47.66	39.06	11.23	42.94	2.49	57.50	73.9	16.4	150	0	-
Vert.	2483.500	AV	44.20	27.89	15.32	41.64	2.49	48.26	53.9	5.6	168	230	-
Vert.	4924.000	AV	40.50	31.61	7.98	42.89	2.49	39.69	53.9	14.2	133	105	-
Vert.	7386.000	AV	39.73	37.36	9.69	43.46	2.49	45.81	53.9	8.0	150	0	Floor noise
Vert.	9848.000	AV	39.05	39.06	11.23	42.94	2.49	48.89	53.9	5.0	150	0	Floor noise

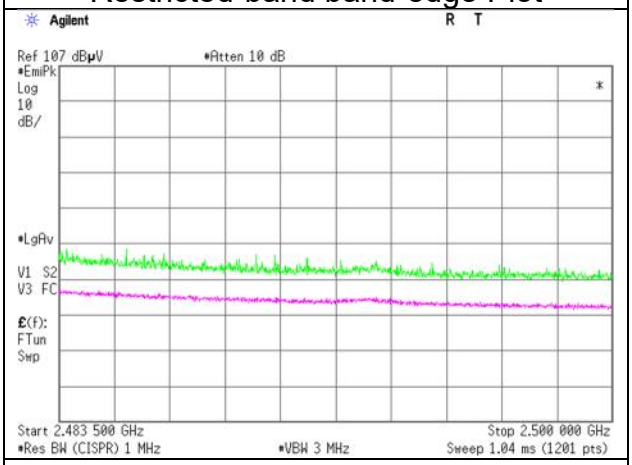
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 10, 2023
Temperature / Humidity	23 deg.C, 51 %RH
Engineer	Kenichi Adachi
Mode	Tx 11ax-20 (OFDM), 2462 MHz

Horizontal

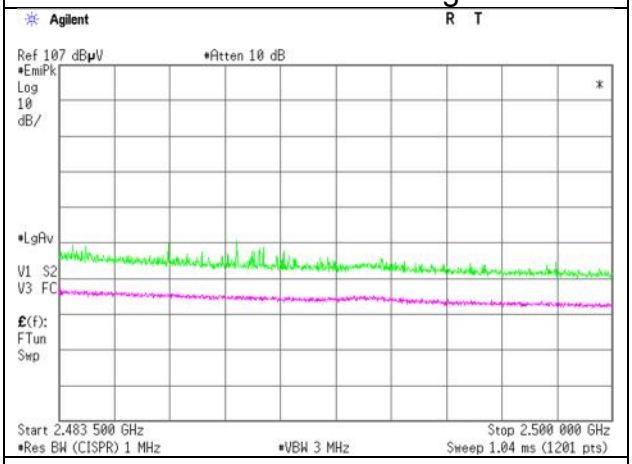
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 26-tone RU, 2412 MHz		

Band edge: RU Index 0
Other: RU Index 4

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	48.38	27.98	14.48	41.61	2.49	51.72	73.9	22.1	144	296	-
Hori.	4824.000	PK	50.85	31.41	7.41	42.87	2.49	49.29	73.9	24.6	114	268	-
Hori.	7236.000	PK	49.65	37.15	8.74	43.36	2.49	54.67	73.9	19.2	150	0	-
Hori.	9648.000	PK	48.63	38.72	9.94	43.09	2.49	56.69	73.9	17.2	150	0	-
Hori.	2390.000	AV	38.37	27.98	14.48	41.61	2.49	41.71	53.9	12.1	144	296	-
Hori.	4824.000	AV	40.65	31.41	7.41	42.87	2.49	39.09	53.9	14.8	114	268	-
Hori.	7236.000	AV	39.62	37.15	8.74	43.36	2.49	44.64	53.9	9.2	150	0	Floor noise
Hori.	9648.000	AV	39.33	38.72	9.94	43.09	2.49	47.39	53.9	**6.5**	150	0	Floor noise
Vert.	2390.000	PK	48.23	27.98	14.48	41.61	2.49	51.57	73.9	22.3	123	295	-
Vert.	4824.000	PK	50.94	31.41	7.41	42.87	2.49	49.38	73.9	24.5	284	106	-
Vert.	7236.000	PK	48.79	37.15	8.74	43.36	2.49	53.81	73.9	20.0	150	0	-
Vert.	9648.000	PK	49.10	38.72	9.94	43.09	2.49	57.16	73.9	16.7	150	0	-
Vert.	2390.000	AV	38.29	27.98	14.48	41.61	2.49	41.63	53.9	12.2	123	295	-
Vert.	4824.000	AV	41.08	31.41	7.41	42.87	2.49	39.52	53.9	14.3	284	106	-
Vert.	7236.000	AV	37.24	37.15	8.74	43.36	2.49	42.26	53.9	11.6	150	0	Floor noise
Vert.	9648.000	AV	37.82	38.72	9.94	43.09	2.49	45.88	53.9	8.0	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

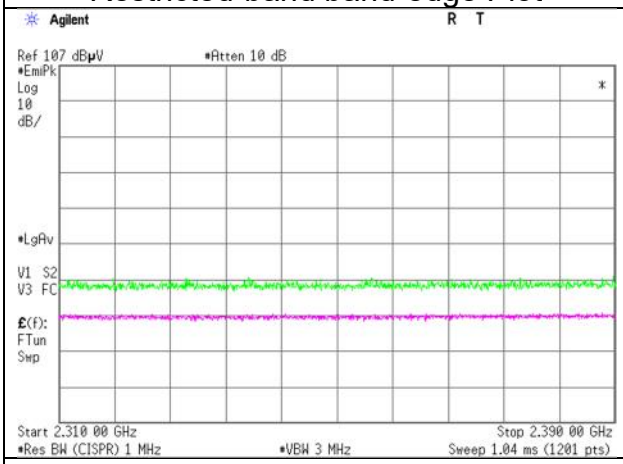
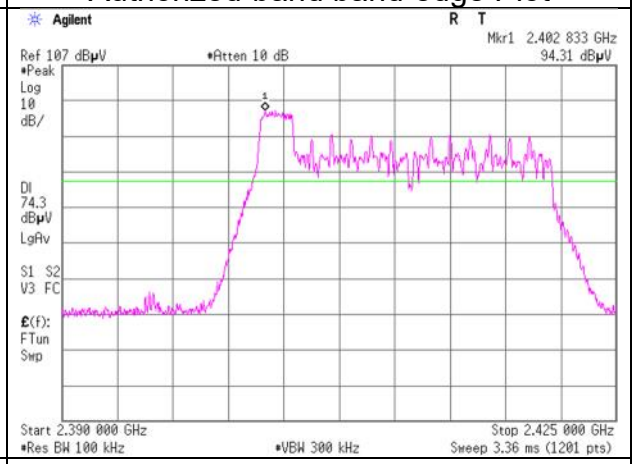
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

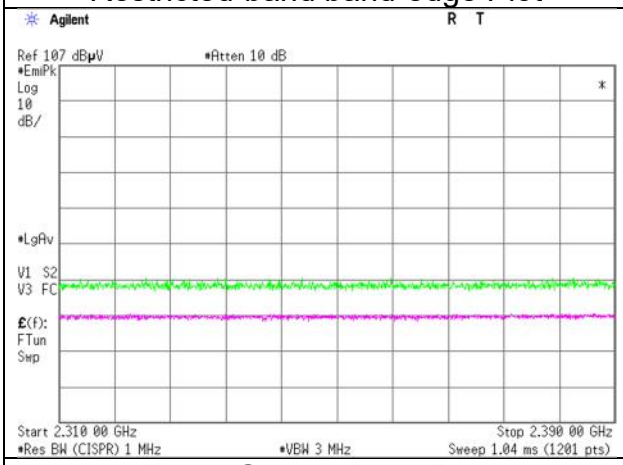
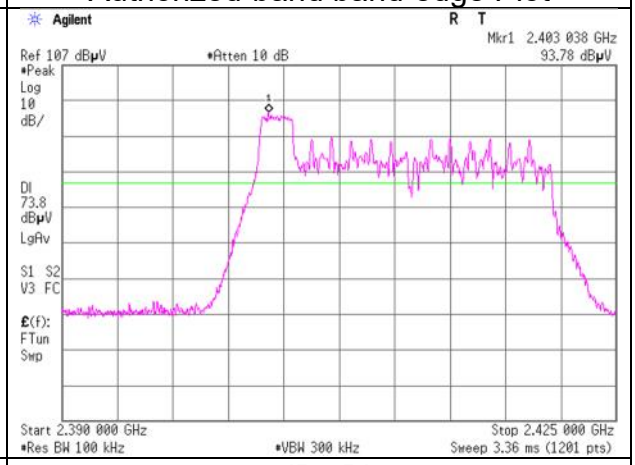
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	94.31	27.95	14.51	41.61	2.49	97.65	-	-	Carrier
Hori.	2400.000	PK	46.46	27.97	14.49	41.61	2.49	49.80	77.6	27.8	-
Vert.	2412.000	PK	93.78	27.95	14.51	41.61	2.49	97.12	-	-	Carrier
Vert.	2400.000	PK	45.93	27.97	14.49	41.61	2.49	49.27	77.1	27.8	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 26-tone RU, 2412 MHz

RU Index 0	
Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

RU Index 0	
Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 26-tone RU, 2437 MHz		

RU Index 0

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	50.32	31.50	7.43	42.88	2.49	48.86	73.9	25.0	192	199	-
Hori.	7311.000	PK	49.32	37.24	8.78	43.41	2.49	54.42	73.9	19.4	150	0	-
Hori.	9748.000	PK	48.23	39.00	9.98	43.02	2.49	56.68	73.9	17.2	150	0	-
Hori.	4874.000	AV	40.13	31.50	7.43	42.88	2.49	38.67	53.9	15.2	192	199	-
Hori.	7311.000	AV	39.62	37.24	8.78	43.41	2.49	44.72	53.9	9.1	150	0	Floor noise
Hori.	9748.000	AV	39.37	39.00	9.98	43.02	2.49	47.82	53.9	**6.0**	150	0	Floor noise
Vert.	4874.000	PK	50.24	31.50	7.43	42.88	2.49	48.78	73.9	25.1	268	99	-
Vert.	7311.000	PK	48.70	37.24	8.78	43.41	2.49	53.80	73.9	20.1	150	0	-
Vert.	9748.000	PK	48.64	39.00	9.98	43.02	2.49	57.09	73.9	16.8	150	0	-
Vert.	4874.000	AV	39.95	31.50	7.43	42.88	2.49	38.49	53.9	15.4	268	99	-
Vert.	7311.000	AV	37.80	37.24	8.78	43.41	2.49	42.90	53.9	11.0	150	0	Floor noise
Vert.	9748.000	AV	37.81	39.00	9.98	43.02	2.49	46.26	53.9	7.6	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 26-tone RU, 2462 MHz		

Band edge: RU Index 8
Other: RU Index 4

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	48.60	27.89	14.59	41.64	2.49	51.93	73.9	21.9	232	292	-
Hori.	4924.000	PK	49.25	31.61	7.46	42.89	2.49	47.92	73.9	25.9	173	202	-
Hori.	7386.000	PK	49.00	37.36	8.83	43.46	2.49	54.22	73.9	19.6	150	0	-
Hori.	9848.000	PK	48.68	39.06	10.03	42.94	2.49	57.32	73.9	16.5	150	0	-
Hori.	2483.500	AV	38.36	27.89	14.59	41.64	2.49	41.69	53.9	12.2	232	292	-
Hori.	4924.000	AV	39.16	31.61	7.46	42.89	2.49	37.83	53.9	16.0	173	202	-
Hori.	7386.000	AV	39.56	37.36	8.83	43.46	2.49	44.78	53.9	9.1	150	0	Floor noise
Hori.	9848.000	AV	39.33	39.06	10.03	42.94	2.49	47.97	53.9	**5.9**	150	0	Floor noise
Vert.	2483.500	PK	47.79	27.89	14.59	41.64	2.49	51.12	73.9	22.7	124	280	-
Vert.	4924.000	PK	49.41	31.61	7.46	42.89	2.49	48.08	73.9	25.8	281	107	-
Vert.	7386.000	PK	48.63	37.36	8.83	43.46	2.49	53.85	73.9	20.0	100	0	-
Vert.	9848.000	PK	48.84	39.06	10.03	42.94	2.49	57.48	73.9	16.4	100	0	-
Vert.	2483.500	AV	38.42	27.89	14.59	41.64	2.49	41.75	53.9	12.1	124	280	-
Vert.	4924.000	AV	38.91	31.61	7.46	42.89	2.49	37.58	53.9	16.3	281	107	-
Vert.	7386.000	AV	37.98	37.36	8.83	43.46	2.49	43.20	53.9	10.7	100	0	Floor noise
Vert.	9848.000	AV	37.51	39.06	10.03	42.94	2.49	46.15	53.9	7.7	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

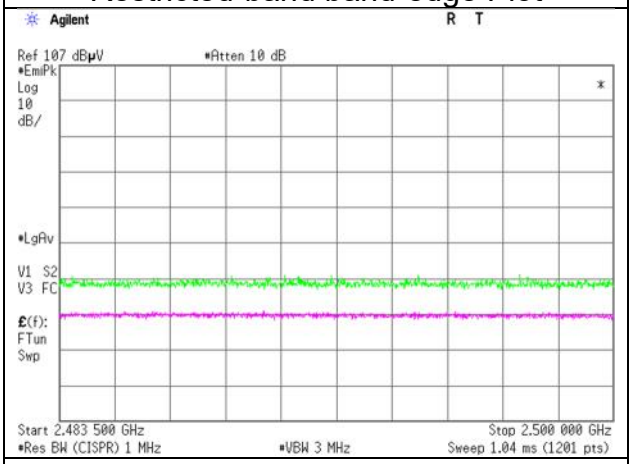
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 26-tone RU, 2462 MHz

RU Index 8

Horizontal

Restricted-band band-edge Plot

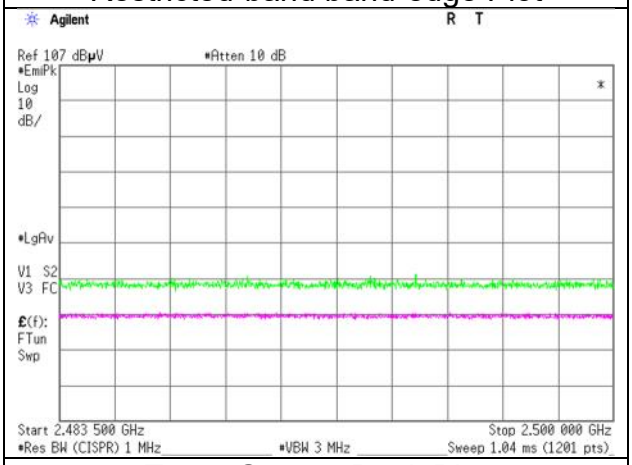


Trace Green : Peak Plot
Trace Purple : Average Plot

RU Index 8

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 52-tone RU, 2412 MHz		

Band edge: RU Index 37
Other: RU Index 37

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	49.63	27.98	14.48	41.61	2.49	52.97	73.9	20.9	144	297	-
Hori.	4824.000	PK	50.11	31.41	7.41	42.87	2.49	48.55	73.9	25.3	181	274	-
Hori.	7236.000	PK	49.31	37.15	8.74	43.36	2.49	54.33	73.9	19.5	150	0	-
Hori.	9648.000	PK	48.86	38.72	9.94	43.09	2.49	56.92	73.9	16.9	150	0	-
Hori.	2390.000	AV	38.97	27.98	14.48	41.61	2.49	42.31	53.9	11.5	144	297	-
Hori.	4824.000	AV	39.56	31.41	7.41	42.87	2.49	38.00	53.9	15.9	181	274	-
Hori.	7236.000	AV	39.36	37.15	8.74	43.36	2.49	44.38	53.9	9.5	150	0	Floor noise
Hori.	9648.000	AV	39.13	38.72	9.94	43.09	2.49	47.19	53.9	**6.7**	150	0	Floor noise
Vert.	2390.000	PK	49.10	27.98	14.48	41.61	2.49	52.44	73.9	21.4	126	291	-
Vert.	4824.000	PK	50.56	31.41	7.41	42.87	2.49	49.00	73.9	24.9	284	105	-
Vert.	7236.000	PK	48.62	37.15	8.74	43.36	2.49	53.64	73.9	20.2	100	0	-
Vert.	9648.000	PK	48.81	38.72	9.94	43.09	2.49	56.87	73.9	17.0	100	0	-
Vert.	2390.000	AV	38.26	27.98	14.48	41.61	2.49	41.60	53.9	12.3	126	291	-
Vert.	4824.000	AV	40.61	31.41	7.41	42.87	2.49	39.05	53.9	14.8	284	105	-
Vert.	7236.000	AV	38.17	37.15	8.74	43.36	2.49	43.19	53.9	10.7	100	0	Floor noise
Vert.	9648.000	AV	38.14	38.72	9.94	43.09	2.49	46.20	53.9	7.7	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

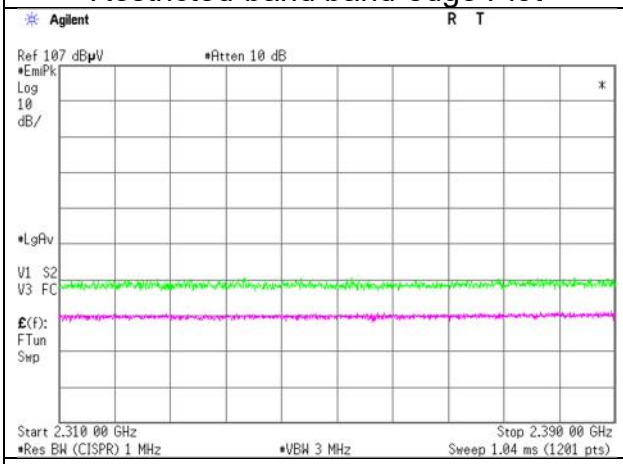
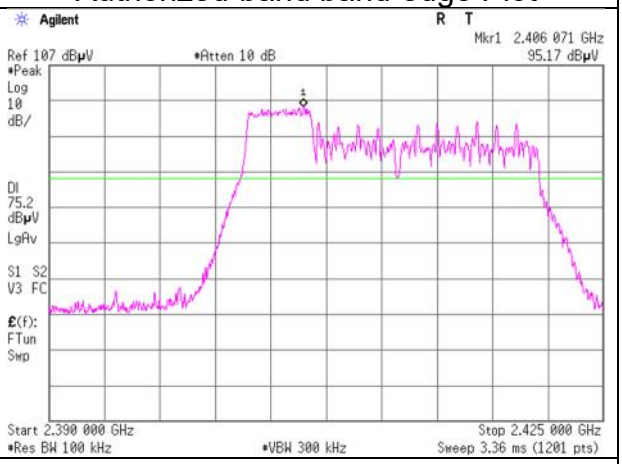
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

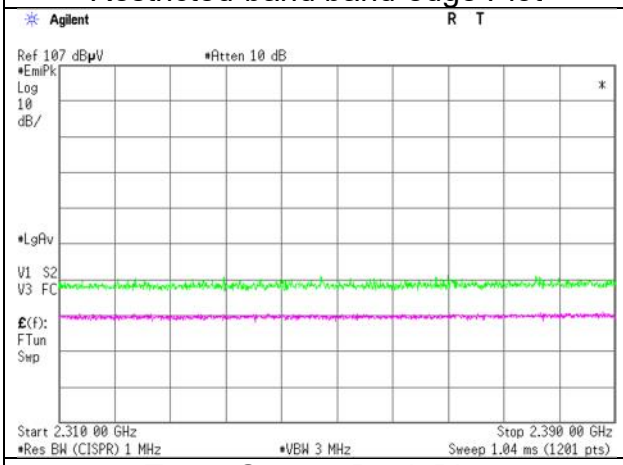
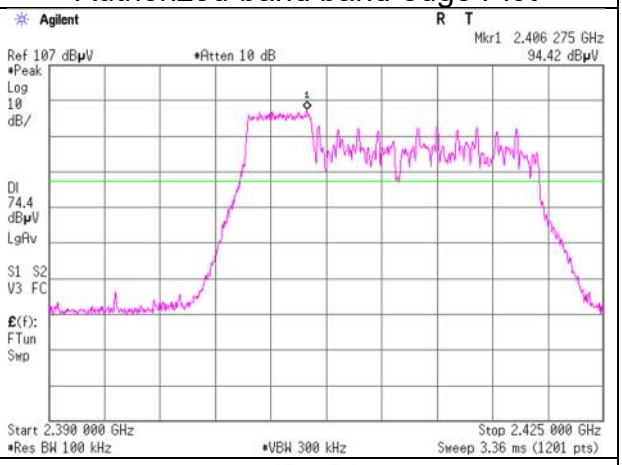
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	95.17	27.95	14.51	41.61	2.49	98.51	-	-	Carrier
Hori.	2400.000	PK	49.64	27.97	14.49	41.61	2.49	52.98	78.5	25.5	-
Vert.	2412.000	PK	94.42	27.95	14.51	41.61	2.49	97.76	-	-	Carrier
Vert.	2400.000	PK	49.13	27.97	14.49	41.61	2.49	52.47	77.7	25.2	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 52-tone RU, 2412 MHz

RU Index 37	
Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

RU Index 37	
Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 52-tone RU, 2437 MHz		

RU Index 37

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4824.000	PK	50.11	31.41	7.41	42.87	2.49	48.55	73.9	25.3	181	274	-
Hori.	7236.000	PK	49.31	37.15	8.74	43.36	2.49	54.33	73.9	19.5	150	0	-
Hori.	9648.000	PK	48.86	38.72	9.94	43.09	2.49	56.92	73.9	16.9	150	0	-
Hori.	4824.000	AV	39.56	31.41	7.41	42.87	2.49	38.00	53.9	15.9	181	274	-
Hori.	7236.000	AV	39.36	37.15	8.74	43.36	2.49	44.38	53.9	9.5	150	0	Floor noise
Hori.	9648.000	AV	39.13	38.72	9.94	43.09	2.49	47.19	53.9	**6.7**	150	0	Floor noise
Vert.	4824.000	PK	50.56	31.41	7.41	42.87	2.49	49.00	73.9	24.9	284	105	-
Vert.	7236.000	PK	48.62	37.15	8.74	43.36	2.49	53.64	73.9	20.2	100	0	-
Vert.	9648.000	PK	48.81	38.72	9.94	43.09	2.49	56.87	73.9	17.0	100	0	-
Vert.	4824.000	AV	40.61	31.41	7.41	42.87	2.49	39.05	53.9	14.8	284	105	-
Vert.	7236.000	AV	38.17	37.15	8.74	43.36	2.49	43.19	53.9	10.7	100	0	Floor noise
Vert.	9648.000	AV	38.14	38.72	9.94	43.09	2.49	46.20	53.9	7.7	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 52-tone RU, 2462 MHz		

Band edge: RU Index 40
Other: RU Index 38

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	49.55	27.89	14.59	41.64	2.49	52.88	73.9	21.0	231	294	-
Hori.	4924.000	PK	49.25	31.61	7.46	42.89	2.49	47.92	73.9	25.9	173	202	-
Hori.	7386.000	PK	49.13	37.36	8.83	43.46	2.49	54.35	73.9	19.5	150	0	-
Hori.	9848.000	PK	49.11	39.06	10.03	42.94	2.49	57.75	73.9	16.1	150	0	-
Hori.	2483.500	AV	38.81	27.89	14.59	41.64	2.49	42.14	53.9	11.7	231	294	-
Hori.	4924.000	AV	39.55	31.61	7.46	42.89	2.49	38.22	53.9	15.6	173	202	-
Hori.	7386.000	AV	39.28	37.36	8.83	43.46	2.49	44.50	53.9	9.4	150	0	Floor noise
Hori.	9848.000	AV	39.17	39.06	10.03	42.94	2.49	47.81	53.9	**6.0**	150	0	Floor noise
Vert.	2483.500	PK	48.84	27.89	14.59	41.64	2.49	52.17	73.9	21.7	120	287	-
Vert.	4924.000	PK	50.38	31.61	7.46	42.89	2.49	49.05	73.9	24.8	283	107	-
Vert.	7386.000	PK	48.67	37.36	8.83	43.46	2.49	53.89	73.9	20.0	150	0	-
Vert.	9848.000	PK	49.01	39.06	10.03	42.94	2.49	57.65	73.9	16.2	150	0	-
Vert.	2483.500	AV	38.42	27.89	14.59	41.64	2.49	41.75	53.9	12.1	120	287	-
Vert.	4924.000	AV	39.19	31.61	7.46	42.89	2.49	37.86	53.9	16.0	283	107	-
Vert.	7386.000	AV	37.38	37.36	8.83	43.46	2.49	42.60	53.9	11.3	150	0	Floor noise
Vert.	9848.000	AV	38.29	39.06	10.03	42.94	2.49	46.93	53.9	6.9	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

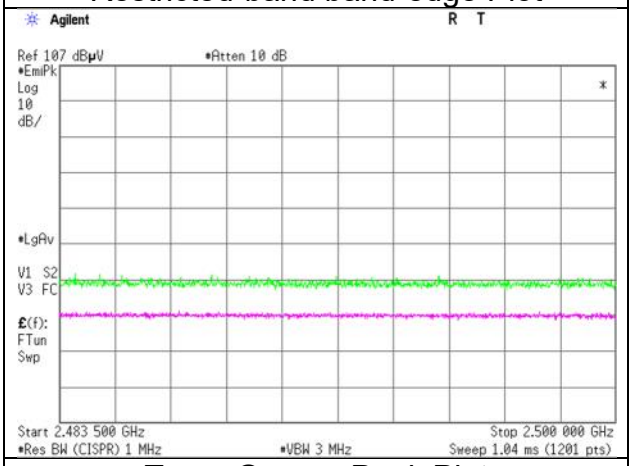
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 52-tone RU, 2462 MHz

RU Index 40

Horizontal

Restricted-band band-edge Plot

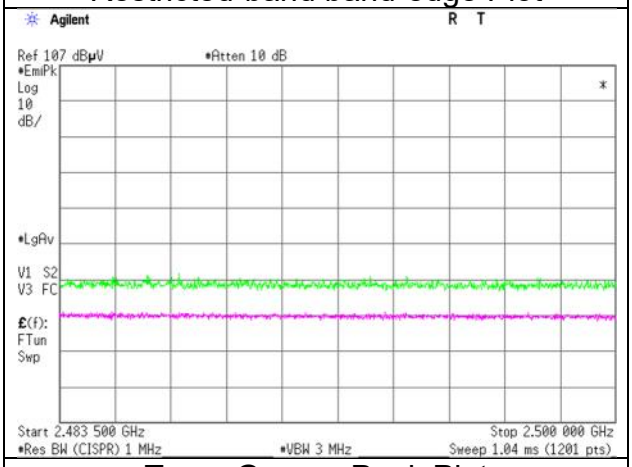


Trace Green : Peak Plot
Trace Purple : Average Plot

RU Index 40

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 106-tone RU, 2412 MHz		

Band edge: RU Index 53
Other: RU Index 54

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	50.06	27.98	14.48	41.61	2.49	53.40	73.9	20.5	142	294	-
Hori.	4824.000	PK	49.86	31.41	7.41	42.87	2.49	48.30	73.9	25.6	183	274	-
Hori.	7236.000	PK	49.12	37.15	8.74	43.36	2.49	54.14	73.9	19.7	150	0	-
Hori.	9648.000	PK	48.51	38.72	9.94	43.09	2.49	56.57	73.9	17.3	150	0	-
Hori.	2390.000	AV	41.15	27.98	14.48	41.61	2.49	44.49	53.9	9.4	142	294	-
Hori.	4824.000	AV	40.58	31.41	7.41	42.87	2.49	39.02	53.9	14.8	183	274	-
Hori.	7236.000	AV	39.25	37.15	8.74	43.36	2.49	44.27	53.9	9.6	150	0	Floor noise
Hori.	9648.000	AV	39.67	38.72	9.94	43.09	2.49	47.73	53.9	**6.1**	150	0	Floor noise
Vert.	2390.000	PK	48.98	27.98	14.48	41.61	2.49	52.32	73.9	21.5	124	284	-
Vert.	4824.000	PK	50.65	31.41	7.41	42.87	2.49	49.09	73.9	24.8	282	106	-
Vert.	7236.000	PK	48.64	37.15	8.74	43.36	2.49	53.66	73.9	20.2	100	0	-
Vert.	9648.000	PK	49.07	38.72	9.94	43.09	2.49	57.13	73.9	16.7	100	0	-
Vert.	2390.000	AV	39.30	27.98	14.48	41.61	2.49	42.64	53.9	11.2	124	284	-
Vert.	4824.000	AV	40.88	31.41	7.41	42.87	2.49	39.32	53.9	14.5	282	106	-
Vert.	7236.000	AV	38.29	37.15	8.74	43.36	2.49	43.31	53.9	10.5	100	0	Floor noise
Vert.	9648.000	AV	38.38	38.72	9.94	43.09	2.49	46.44	53.9	7.4	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

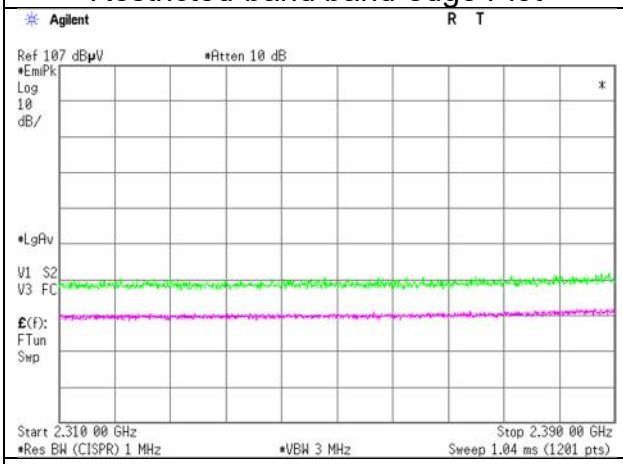
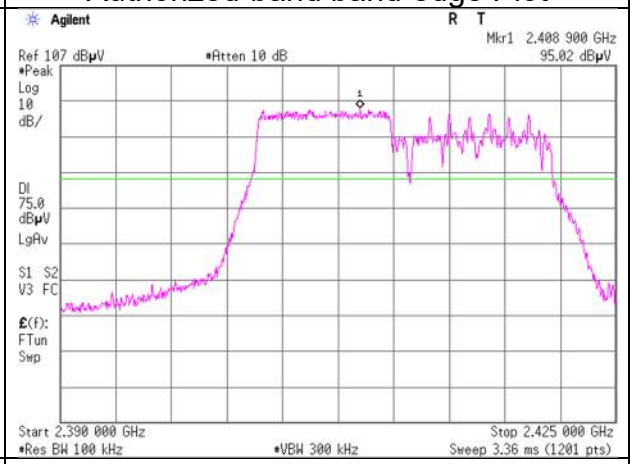
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

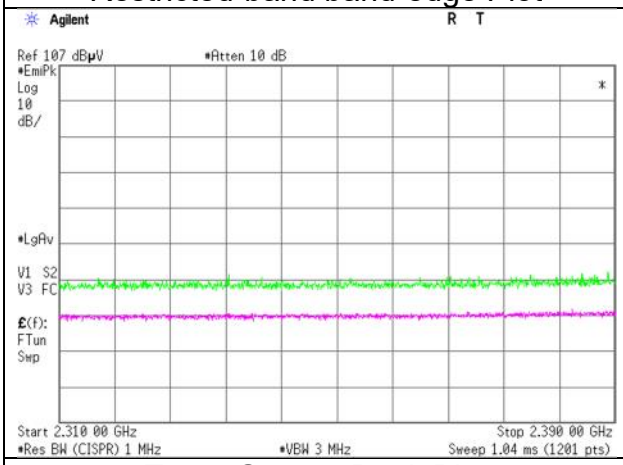
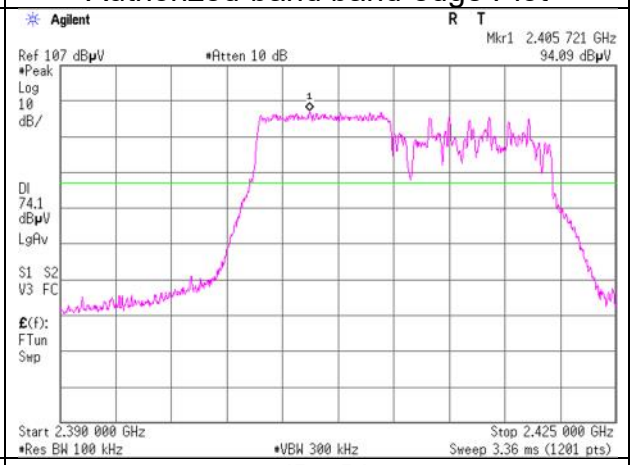
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	95.02	27.95	14.51	41.61	2.49	98.36	-	-	Carrier
Hori.	2400.000	PK	51.12	27.97	14.49	41.61	2.49	54.46	78.3	23.8	-
Vert.	2412.000	PK	94.09	27.95	14.51	41.61	2.49	97.43	-	-	Carrier
Vert.	2400.000	PK	50.25	27.97	14.49	41.61	2.49	53.59	77.4	23.8	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 106-tone RU, 2412 MHz

RU Index 53	
Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

RU Index 53	
Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 106-tone RU, 2437 MHz		

RU Index 53

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	49.73	31.50	7.43	42.88	2.49	48.27	73.9	25.6	118	197	-
Hori.	7311.000	PK	48.87	37.24	8.78	43.41	2.49	53.97	73.9	19.9	150	0	-
Hori.	9748.000	PK	49.33	39.00	9.98	43.02	2.49	57.78	73.9	16.1	150	0	-
Hori.	4874.000	AV	39.68	31.50	7.43	42.88	2.49	38.22	53.9	15.6	118	197	-
Hori.	7311.000	AV	39.26	37.24	8.78	43.41	2.49	44.36	53.9	9.5	150	0	Floor noise
Hori.	9748.000	AV	39.18	39.00	9.98	43.02	2.49	47.63	53.9	**6.2**	150	0	Floor noise
Vert.	4874.000	PK	50.03	31.50	7.43	42.88	2.49	48.57	73.9	25.3	299	100	-
Vert.	7311.000	PK	49.19	37.24	8.78	43.41	2.49	54.29	73.9	19.6	150	0	-
Vert.	9748.000	PK	48.77	39.00	9.98	43.02	2.49	57.22	73.9	16.6	150	0	-
Vert.	4874.000	AV	39.37	31.50	7.43	42.88	2.49	37.91	53.9	15.9	299	100	-
Vert.	7311.000	AV	37.59	37.24	8.78	43.41	2.49	42.69	53.9	11.2	150	0	Floor noise
Vert.	9748.000	AV	37.56	39.00	9.98	43.02	2.49	46.01	53.9	7.8	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 106-tone RU, 2462 MHz		

Band edge: RU Index 54
Other: RU Index 54

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	52.45	27.89	14.59	41.64	2.49	55.78	73.9	18.1	235	294	-
Hori.	4924.000	PK	49.65	31.61	7.46	42.89	2.49	48.32	73.9	25.5	217	197	-
Hori.	7386.000	PK	49.11	37.36	8.83	43.46	2.49	54.33	73.9	19.5	150	0	-
Hori.	9848.000	PK	49.52	39.06	10.03	42.94	2.49	58.16	73.9	15.7	150	0	-
Hori.	2483.500	AV	39.35	27.89	14.59	41.64	2.49	42.68	53.9	11.2	235	294	-
Hori.	4924.000	AV	39.72	31.61	7.46	42.89	2.49	38.39	53.9	15.5	217	197	-
Hori.	7386.000	AV	39.31	37.36	8.83	43.46	2.49	44.53	53.9	9.3	150	0	Floor noise
Hori.	9848.000	AV	39.18	39.06	10.03	42.94	2.49	47.82	53.9	**6.0**	150	0	Floor noise
Vert.	2483.500	PK	52.44	27.89	14.59	41.64	2.49	55.77	73.9	18.1	123	291	-
Vert.	4924.000	PK	49.64	31.61	7.46	42.89	2.49	48.31	73.9	25.5	281	106	-
Vert.	7386.000	PK	48.67	37.36	8.83	43.46	2.49	53.89	73.9	20.0	150	0	-
Vert.	9848.000	PK	48.93	39.06	10.03	42.94	2.49	57.57	73.9	16.3	150	0	-
Vert.	2483.500	AV	39.25	27.89	14.59	41.64	2.49	42.58	53.9	11.3	123	291	-
Vert.	4924.000	AV	39.57	31.61	7.46	42.89	2.49	38.24	53.9	15.6	281	106	-
Vert.	7386.000	AV	37.68	37.36	8.83	43.46	2.49	42.90	53.9	11.0	150	0	Floor noise
Vert.	9848.000	AV	38.02	39.06	10.03	42.94	2.49	46.66	53.9	7.2	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

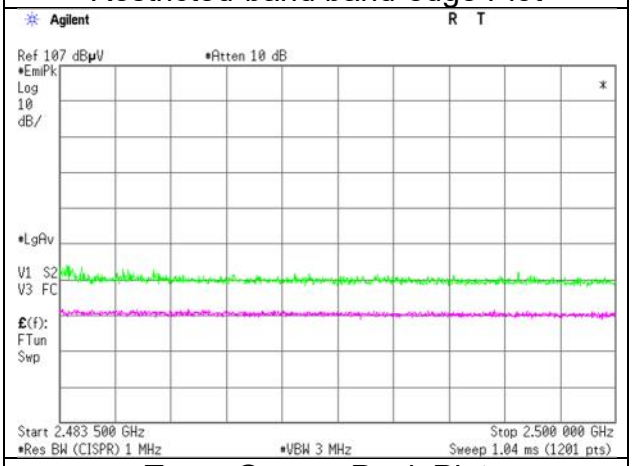
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 106-tone RU, 2462 MHz

RU Index 54

Horizontal

Restricted-band band-edge Plot

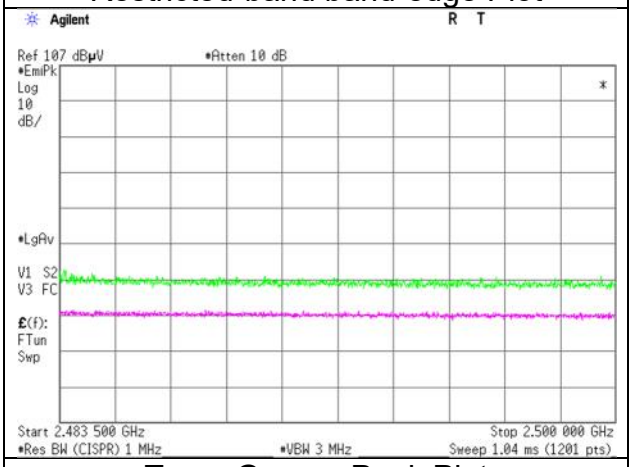


Trace Green : Peak Plot
Trace Purple : Average Plot

RU Index 54

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 242-tone RU, 2412 MHz		

RU Index 61

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	56.26	27.98	14.48	41.61	2.49	59.60	73.9	14.3	140	295	-
Hori.	4824.000	PK	49.61	31.41	7.41	42.87	2.49	48.05	73.9	25.8	250	203	-
Hori.	7236.000	PK	48.42	37.15	8.74	43.36	2.49	53.44	73.9	20.4	150	0	-
Hori.	9648.000	PK	48.92	38.72	9.94	43.09	2.49	56.98	73.9	16.9	150	0	-
Hori.	2390.000	AV	44.16	27.98	14.48	41.61	2.49	47.50	53.9	**6.4**	140	295	-
Hori.	4824.000	AV	39.03	31.41	7.41	42.87	2.49	37.47	53.9	16.4	250	203	-
Hori.	7236.000	AV	37.55	37.15	8.74	43.36	2.49	42.57	53.9	11.3	150	0	Floor noise
Hori.	9648.000	AV	39.15	38.72	9.94	43.09	2.49	47.21	53.9	6.6	150	0	Floor noise
Vert.	2390.000	PK	55.65	27.98	14.48	41.61	2.49	58.99	73.9	14.9	126	292	-
Vert.	4824.000	PK	50.73	31.41	7.41	42.87	2.49	49.17	73.9	24.7	284	107	-
Vert.	7236.000	PK	48.93	37.15	8.74	43.36	2.49	53.95	73.9	19.9	150	0	-
Vert.	9648.000	PK	49.01	38.72	9.94	43.09	2.49	57.07	73.9	16.8	150	0	-
Vert.	2390.000	AV	43.20	27.98	14.48	41.61	2.49	46.54	53.9	7.3	126	292	-
Vert.	4824.000	AV	40.62	31.41	7.41	42.87	2.49	39.06	53.9	14.8	284	107	-
Vert.	7236.000	AV	37.43	37.15	8.74	43.36	2.49	42.45	53.9	11.4	150	0	Floor noise
Vert.	9648.000	AV	38.13	38.72	9.94	43.09	2.49	46.19	53.9	7.7	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

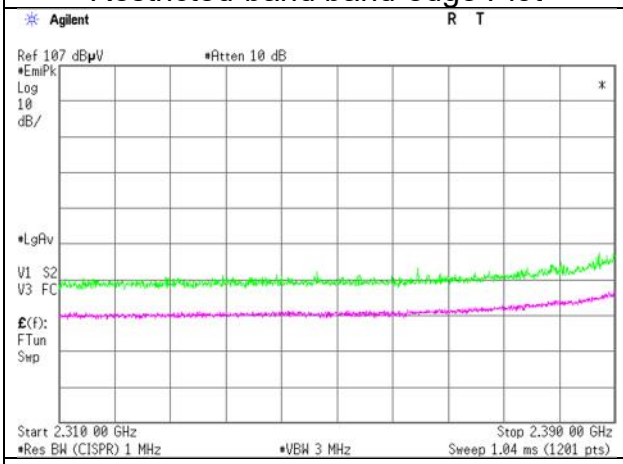
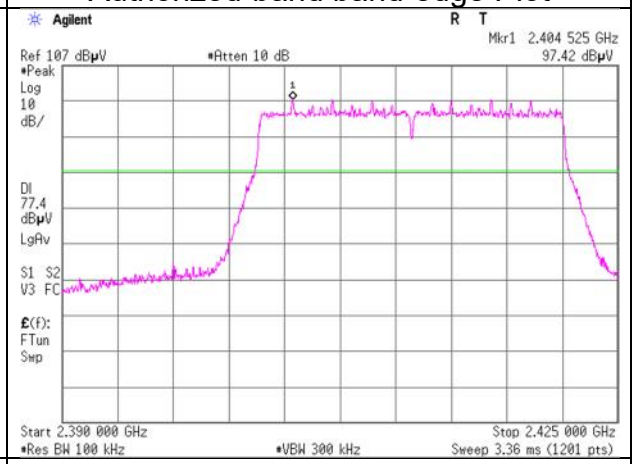
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

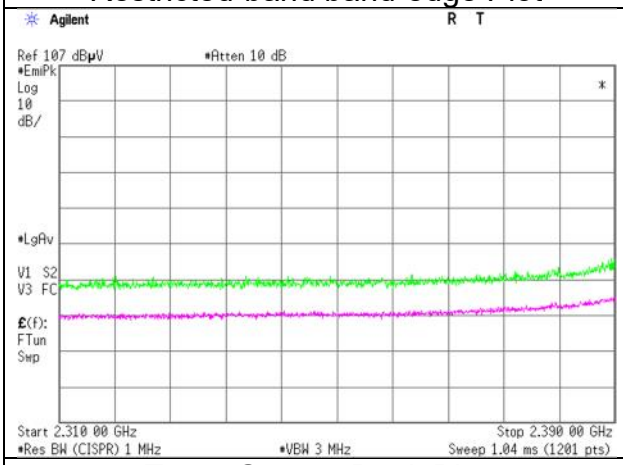
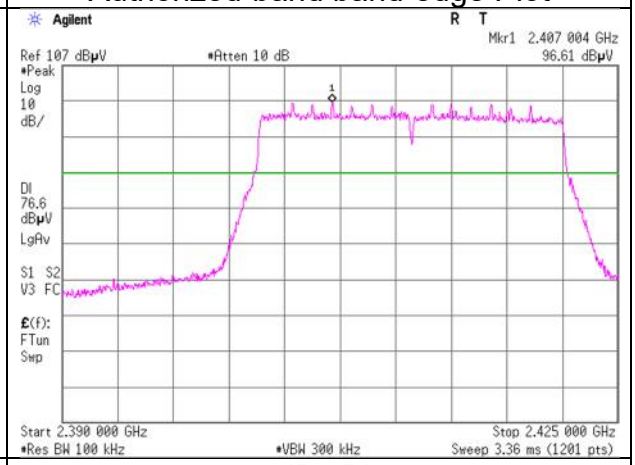
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	97.42	27.95	14.51	41.61	2.49	100.76	-	-	Carrier
Hori.	2400.000	PK	53.45	27.97	14.49	41.61	2.49	56.79	80.7	23.9	-
Vert.	2412.000	PK	96.61	27.95	14.51	41.61	2.49	99.95	-	-	Carrier
Vert.	2400.000	PK	52.78	27.97	14.49	41.61	2.49	56.12	79.9	23.7	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 242-tone RU, 2412 MHz

RU Index 61	
Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

RU Index 61	
Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 242-tone RU, 2437 MHz		

RU Index 61

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	49.02	31.50	7.43	42.88	2.49	47.56	73.9	26.3	281	203	-
Hori.	7311.000	PK	48.14	37.24	8.78	43.41	2.49	53.24	73.9	20.6	150	0	-
Hori.	9748.000	PK	48.15	39.00	9.98	43.02	2.49	56.60	73.9	17.3	150	0	-
Hori.	4874.000	AV	38.53	31.50	7.43	42.88	2.49	37.07	53.9	16.8	281	203	-
Hori.	7311.000	AV	37.80	37.24	8.78	43.41	2.49	42.90	53.9	11.0	150	0	Floor noise
Hori.	9748.000	AV	37.52	39.00	9.98	43.02	2.49	45.97	53.9	7.9	150	0	Floor noise
Vert.	4874.000	PK	50.45	31.50	7.43	42.88	2.49	48.99	73.9	24.9	303	101	-
Vert.	7311.000	PK	48.20	37.24	8.78	43.41	2.49	53.30	73.9	20.6	150	0	-
Vert.	9748.000	PK	48.97	39.00	9.98	43.02	2.49	57.42	73.9	16.4	150	0	-
Vert.	4874.000	AV	39.98	31.50	7.43	42.88	2.49	38.52	53.9	15.3	303	101	-
Vert.	7311.000	AV	37.78	37.24	8.78	43.41	2.49	42.88	53.9	11.0	150	0	Floor noise
Vert.	9748.000	AV	37.84	39.00	9.98	43.02	2.49	46.29	53.9	**7.6**	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	September 14, 2023	October 11, 2023	October 12, 2023
Temperature / Humidity	23 deg.C, 46 %RH	21 deg.C, 49 %RH	21 deg.C, 46 %RH
Engineer	Kouki Yamada	Hiromasa Sato	Hiromasa Sato
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx 11ax-20 (OFDMA) 242-tone RU, 2462 MHz		

RU Index 61

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	55.70	27.89	14.59	41.64	2.49	59.03	73.9	14.8	231	288	-
Hori.	4924.000	PK	49.24	31.61	7.46	42.89	2.49	47.91	73.9	25.9	112	87	-
Hori.	7386.000	PK	48.93	37.36	8.83	43.46	2.49	54.15	73.9	19.7	150	0	-
Hori.	9848.000	PK	49.26	39.06	10.03	42.94	2.49	57.90	73.9	16.0	150	0	-
Hori.	2483.500	AV	42.84	27.89	14.59	41.64	2.49	46.17	53.9	7.7	231	288	-
Hori.	4924.000	AV	38.41	31.61	7.46	42.89	2.49	37.08	53.9	16.8	112	87	-
Hori.	7386.000	AV	37.95	37.36	8.83	43.46	2.49	43.17	53.9	10.7	150	0	Floor noise
Hori.	9848.000	AV	37.84	39.06	10.03	42.94	2.49	46.48	53.9	7.4	150	0	Floor noise
Vert.	2483.500	PK	54.89	27.89	14.59	41.64	2.49	58.22	73.9	15.6	121	298	-
Vert.	4924.000	PK	49.72	31.61	7.46	42.89	2.49	48.39	73.9	25.5	263	106	-
Vert.	7386.000	PK	48.43	37.36	8.83	43.46	2.49	53.65	73.9	20.2	150	0	-
Vert.	9848.000	PK	49.14	39.06	10.03	42.94	2.49	57.78	73.9	16.1	150	0	-
Vert.	2483.500	AV	41.25	27.89	14.59	41.64	2.49	44.58	53.9	9.3	121	298	-
Vert.	4924.000	AV	39.01	31.61	7.46	42.89	2.49	37.68	53.9	16.2	263	106	-
Vert.	7386.000	AV	37.61	37.36	8.83	43.46	2.49	42.83	53.9	11.0	150	0	Floor noise
Vert.	9848.000	AV	38.37	39.06	10.03	42.94	2.49	47.01	53.9	**6.8**	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

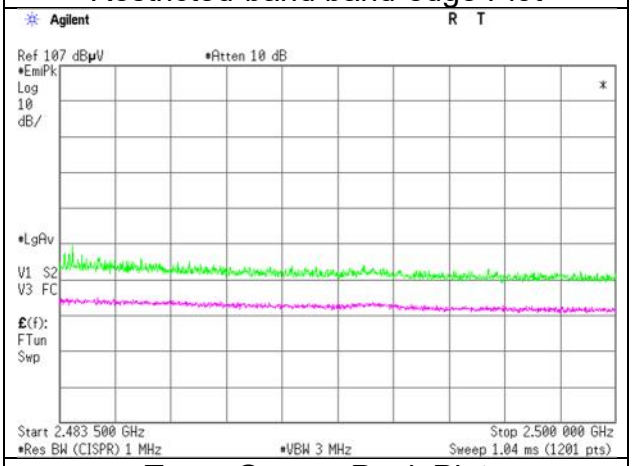
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	September 14, 2023
Temperature / Humidity	23 deg.C, 46 %RH
Engineer	Kouki Yamada
Mode	Tx 11ax-20 (OFDMA) 242-tone RU, 2462 MHz

RU Index 61

Horizontal

Restricted-band band-edge Plot

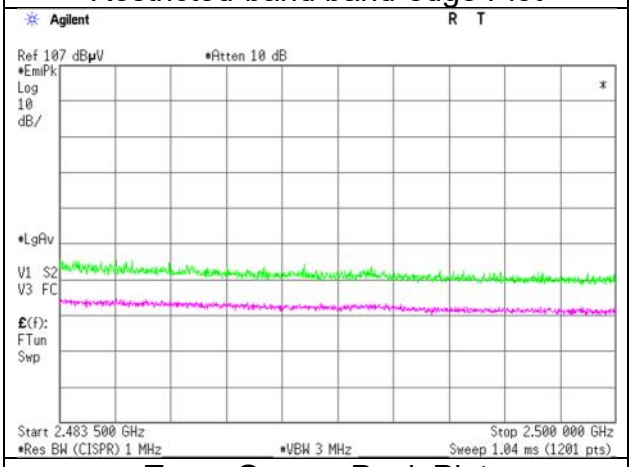


Trace Green : Peak Plot
Trace Purple : Average Plot

RU Index 61

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	June 30, 2023	June 23, 2023	June 27, 2023	June 29, 2023
Temperature / Humidity	20 deg.C, 54 %RH	24 deg.C, 47 %RH	23 deg.C, 40 %RH	20 deg.C, 54 %RH
Engineer	Yasumasa Owaki	Ken Fujita	Yasumasa Owaki	Yasumasa Owaki
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx BT LE 1M-PHY, 2402 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	48.86	27.98	14.49	41.61	2.49	52.21	73.9	21.6	236	152	-
Hori.	3202.710	PK	52.40	28.86	6.55	41.91	2.49	48.39	73.9	25.5	262	275	-
Hori.	4804.000	PK	51.79	31.39	7.39	42.87	2.49	50.19	73.9	23.7	346	126	-
Hori.	7206.000	PK	50.09	37.12	8.73	43.34	2.49	55.09	73.9	18.8	205	154	-
Hori.	9608.000	PK	48.49	38.58	9.90	43.12	2.49	56.34	73.9	17.5	150	0	-
Hori.	9608.000	AV	39.37	38.58	9.90	43.12	2.49	47.22	53.9	6.6	150	0	Floor noise
Vert.	2390.000	PK	47.67	27.98	14.49	41.61	2.49	51.02	73.9	22.8	239	248	-
Vert.	3202.710	PK	53.56	28.86	6.55	41.91	2.49	49.55	73.9	24.3	102	39	-
Vert.	4804.000	PK	49.69	31.39	7.39	42.87	2.49	48.09	73.9	25.8	251	232	-
Vert.	7206.000	PK	49.41	37.12	8.73	43.34	2.49	54.41	73.9	19.4	219	291	-
Vert.	9608.000	PK	49.21	38.58	9.90	43.12	2.49	57.06	73.9	16.8	150	0	-
Vert.	9608.000	AV	39.60	38.58	9.90	43.12	2.49	47.45	53.9	6.4	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	38.55	27.98	14.49	41.61	3.92	2.49	45.82	53.9	8.0	*1)
Hori.	3202.710	AV	46.35	28.86	6.55	41.91	3.92	2.49	46.26	53.9	7.6	-
Hori.	4804.000	AV	42.03	31.39	7.39	42.87	3.92	2.49	44.35	53.9	9.5	-
Hori.	7206.000	AV	41.44	37.12	8.73	43.34	3.92	2.49	50.36	53.9	**3.5**	-
Vert.	2390.000	AV	36.71	27.98	14.49	41.61	3.92	2.49	43.98	53.9	9.9	*1)
Vert.	3202.710	AV	47.39	28.86	6.55	41.91	3.92	2.49	47.30	53.9	6.5	-
Vert.	4804.000	AV	40.80	31.39	7.39	42.87	3.92	2.49	43.12	53.9	10.7	-
Vert.	7206.000	AV	41.20	37.12	8.73	43.34	3.92	2.49	50.12	53.9	3.7	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

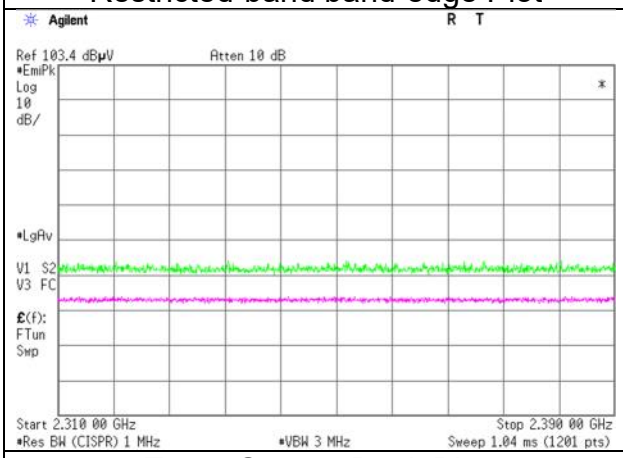
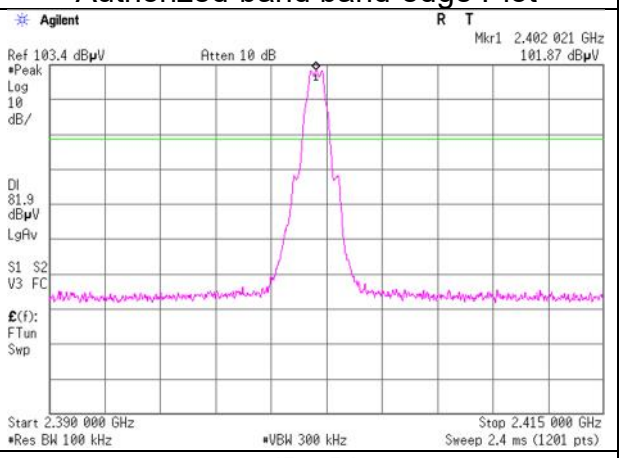
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

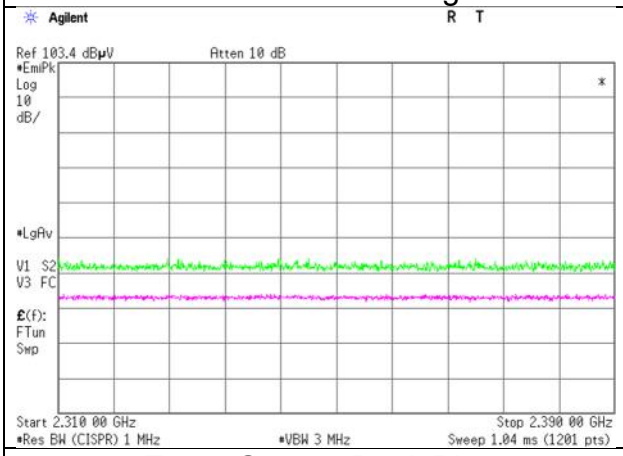
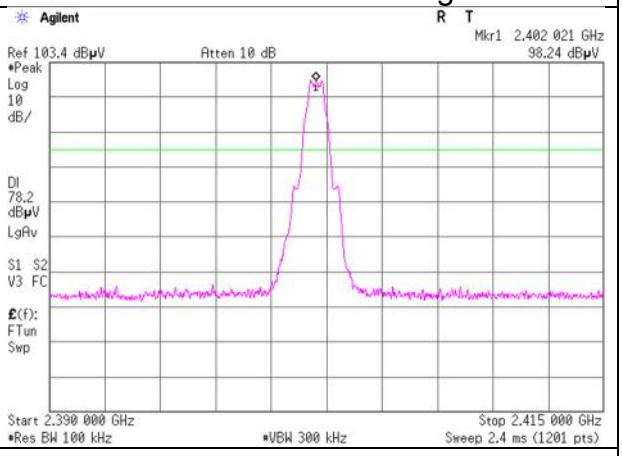
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	101.87	27.97	14.50	41.61	2.49	105.22	-	-	Carrier
Hori.	2400.000	PK	42.36	27.97	14.50	41.61	2.49	45.71	85.2	39.4	-
Vert.	2402.000	PK	98.24	27.97	14.50	41.61	2.49	101.59	-	-	Carrier
Vert.	2400.000	PK	41.34	27.97	14.50	41.61	2.49	44.69	81.5	36.8	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 23, 2023
Temperature / Humidity	24 deg.C, 47 %RH
Engineer	Ken Fujita
Mode	Tx BT LE 1M-PHY, 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 31, 2024	June 26, 2023	June 27, 2023	June 29, 2023
Temperature / Humidity	21 deg.C, 23 %RH	24 deg.C, 40 %RH	23 deg.C, 40 %RH	20 deg.C, 54 %RH
Engineer	Takayuki Kobayashi	Yasumasa Owaki	Yasumasa Owaki	Yasumasa Owaki
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx BT LE 1M-PHY, 2440 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	30.766	QP	23.60	18.73	6.62	32.20	0.00	16.75	40.0	23.2	119	111	-
Hori.	612.403	QP	23.00	19.51	9.94	31.94	0.00	20.51	46.0	25.4	152	82	-
Hori.	886.802	QP	22.40	22.00	10.92	31.14	0.00	24.18	46.0	21.8	120	202	-
Hori.	957.307	QP	22.50	21.96	11.14	30.65	0.00	24.95	46.0	21.0	183	162	-
Hori.	3253.365	PK	52.26	28.68	6.59	41.96	2.49	48.06	73.9	25.8	283	281	-
Hori.	4880.000	PK	50.42	31.51	7.43	42.88	2.49	48.97	73.9	24.9	333	130	-
Hori.	7320.000	PK	49.90	37.25	8.79	43.42	2.49	55.01	73.9	18.8	219	244	-
Hori.	9760.000	PK	48.39	39.02	9.99	43.01	2.49	56.88	73.9	17.0	150	0	-
Hori.	9760.000	AV	39.18	39.02	9.99	43.01	2.49	47.67	53.9	6.2	150	0	Floor noise
Vert.	30.425	QP	23.60	18.86	6.61	32.20	0.00	16.87	40.0	23.1	184	157	-
Vert.	515.633	QP	22.70	17.78	9.55	31.95	0.00	18.08	46.0	27.9	299	113	-
Vert.	875.938	QP	22.50	22.02	10.89	31.20	0.00	24.21	46.0	21.7	108	176	-
Vert.	958.310	QP	22.50	21.96	11.15	30.64	0.00	24.97	46.0	21.0	158	2	-
Vert.	3253.365	PK	53.40	28.68	6.59	41.96	2.49	49.20	73.9	24.7	161	50	-
Vert.	4880.000	PK	51.81	31.51	7.43	42.88	2.49	50.36	73.9	23.5	382	297	-
Vert.	7320.000	PK	48.74	37.25	8.79	43.42	2.49	53.85	73.9	20.0	292	297	-
Vert.	9760.000	PK	48.33	39.02	9.99	43.01	2.49	56.82	73.9	17.0	150	0	-
Vert.	9760.000	AV	39.37	39.02	9.99	43.01	2.49	47.86	53.9	6.0	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	3253.365	AV	44.97	28.68	6.59	41.96	3.92	2.49	44.69	53.9	9.2	-
Hori.	4880.000	AV	41.55	31.51	7.43	42.88	3.92	2.49	44.02	53.9	9.8	-
Hori.	7320.000	AV	40.49	37.25	8.79	43.42	3.92	2.49	49.52	53.9	**4.3**	-
Vert.	3253.365	AV	46.81	28.68	6.59	41.96	3.92	2.49	46.53	53.9	7.3	-
Vert.	4880.000	AV	43.28	31.51	7.43	42.88	3.92	2.49	45.75	53.9	8.1	-
Vert.	7320.000	AV	40.22	37.25	8.79	43.42	3.92	2.49	49.25	53.9	4.6	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	June 23, 2023	June 27, 2023	June 29, 2023
Temperature / Humidity	24 deg.C, 47 %RH	23 deg.C, 40 %RH	20 deg.C, 54 %RH
Engineer	Ken Fujita	Yasumasa Owaki	Yasumasa Owaki
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx BT LE 1M-PHY, 2480 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	48.89	27.89	14.60	41.64	2.49	52.23	73.9	21.6	207	284	-
Hori.	3306.690	PK	52.25	28.51	6.63	42.00	2.49	47.88	73.9	26.0	228	289	-
Hori.	4960.000	PK	49.30	31.73	7.49	42.89	2.49	48.12	73.9	25.7	263	144	-
Hori.	7440.000	PK	48.47	37.42	8.87	43.50	2.49	53.75	73.9	20.1	150	0	-
Hori.	9920.000	PK	48.23	38.95	10.09	42.89	2.49	56.87	73.9	17.0	150	0	-
Hori.	7440.000	AV	39.41	37.42	8.87	43.50	2.49	44.69	53.9	9.2	150	0	Floor noise
Hori.	9920.000	AV	38.62	38.95	10.09	42.89	2.49	47.26	53.9	6.6	150	0	Floor noise
Vert.	2483.500	PK	49.19	27.89	14.60	41.64	2.49	52.53	73.9	21.3	103	205	-
Vert.	3306.690	PK	53.17	28.51	6.63	42.00	2.49	48.80	73.9	25.1	190	51	-
Vert.	4960.000	PK	50.97	31.73	7.49	42.89	2.49	49.79	73.9	24.1	388	274	-
Vert.	7440.000	PK	48.41	37.42	8.87	43.50	2.49	53.69	73.9	20.2	150	0	-
Vert.	9920.000	PK	47.94	38.95	10.09	42.89	2.49	56.58	73.9	17.3	150	0	-
Vert.	7440.000	AV	39.35	37.42	8.87	43.50	2.49	44.63	53.9	9.2	150	0	Floor noise
Vert.	9920.000	AV	38.72	38.95	10.09	42.89	2.49	47.36	53.9	**6.5**	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	37.26	27.89	14.60	41.64	3.92	2.49	44.52	53.9	9.3	*1)
Hori.	3306.690	AV	44.93	28.51	6.63	42.00	3.92	2.49	44.48	53.9	9.4	-
Hori.	4960.000	AV	40.69	31.73	7.49	42.89	3.92	2.49	43.43	53.9	10.4	-
Vert.	2483.500	AV	37.66	27.89	14.60	41.64	3.92	2.49	44.92	53.9	8.9	*1)
Vert.	3306.690	AV	46.13	28.51	6.63	42.00	3.92	2.49	45.68	53.9	8.2	-
Vert.	4960.000	AV	41.83	31.73	7.49	42.89	3.92	2.49	44.57	53.9	9.3	-

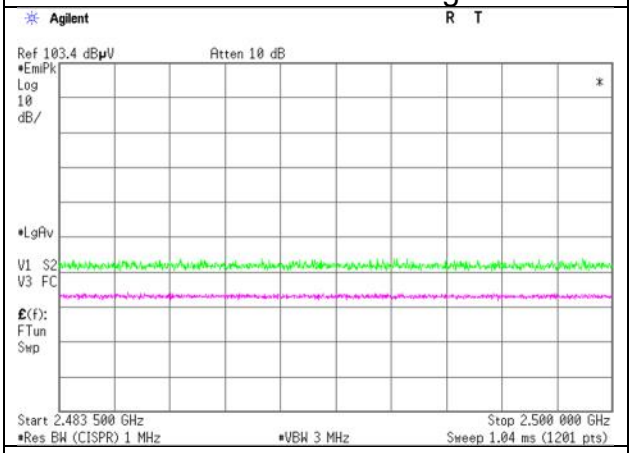
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 23, 2023
Temperature / Humidity	24 deg.C, 47 %RH
Engineer	Ken Fujita
Mode	Tx BT LE 1M-PHY, 2480 MHz

Horizontal

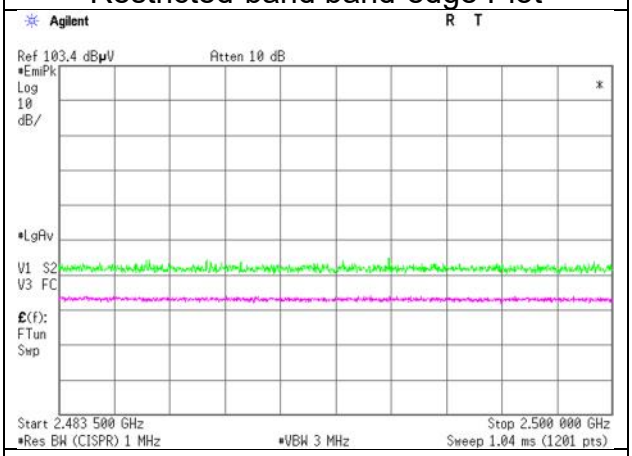
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	July 13, 2023
Temperature / Humidity	22 deg.C, 57 %RH
Engineer	Hiromasa Sato (1 GHz -26.5 GHz)
Mode	Tx BT LE 2M-PHY, 2402 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	46.86	27.98	14.48	41.61	2.49	50.20	73.9	23.7	259	281	-
Hori.	3202.710	PK	53.73	28.86	6.55	41.91	2.49	49.72	73.9	24.1	235	283	-
Hori.	4804.000	PK	48.18	31.39	7.39	42.87	2.49	46.58	73.9	27.3	380	165	-
Hori.	7206.000	PK	49.73	37.12	8.73	43.34	2.49	54.73	73.9	19.1	262	170	-
Hori.	9608.000	PK	48.52	38.58	9.90	43.12	2.49	56.37	73.9	17.5	150	0	-
Hori.	9608.000	AV	39.33	38.58	9.90	43.12	2.49	47.18	53.9	**6.7**	150	0	Floor noise
Vert.	2390.000	PK	47.40	27.98	14.48	41.61	2.49	50.74	73.9	23.1	164	264	-
Vert.	3202.710	PK	52.24	28.86	6.55	41.91	2.49	48.23	73.9	25.6	126	30	-
Vert.	4804.000	PK	48.32	31.39	7.39	42.87	2.49	46.72	73.9	27.1	251	254	-
Vert.	7206.000	PK	48.47	37.12	8.73	43.34	2.49	53.47	73.9	20.4	207	263	-
Vert.	9608.000	PK	48.63	38.58	9.90	43.12	2.49	56.48	73.9	17.4	150	0	-
Vert.	9608.000	AV	39.26	38.58	9.90	43.12	2.49	47.11	53.9	**6.7**	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	37.77	27.98	14.48	41.61	1.84	2.49	42.95	53.9	10.9	*1)
Hori.	3202.710	AV	46.70	28.86	6.55	41.91	1.84	2.49	44.53	53.9	9.3	-
Hori.	4804.000	AV	38.98	31.39	7.39	42.87	1.84	2.49	39.22	53.9	14.6	-
Hori.	7206.000	AV	40.04	37.12	8.73	43.34	1.84	2.49	46.88	53.9	7.0	-
Vert.	2390.000	AV	37.79	27.98	14.48	41.61	1.84	2.49	42.97	53.9	10.9	*1)
Vert.	3202.710	AV	46.38	28.86	6.55	41.91	1.84	2.49	44.21	53.9	9.6	-
Vert.	4804.000	AV	39.71	31.39	7.39	42.87	1.84	2.49	39.95	53.9	13.9	-
Vert.	7206.000	AV	39.85	37.12	8.73	43.34	1.84	2.49	46.69	53.9	7.2	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

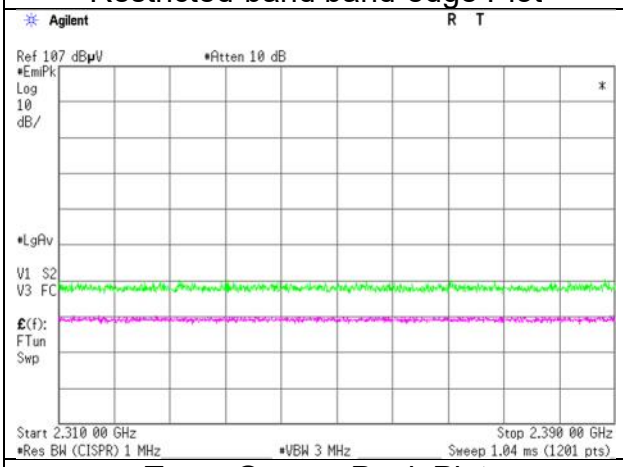
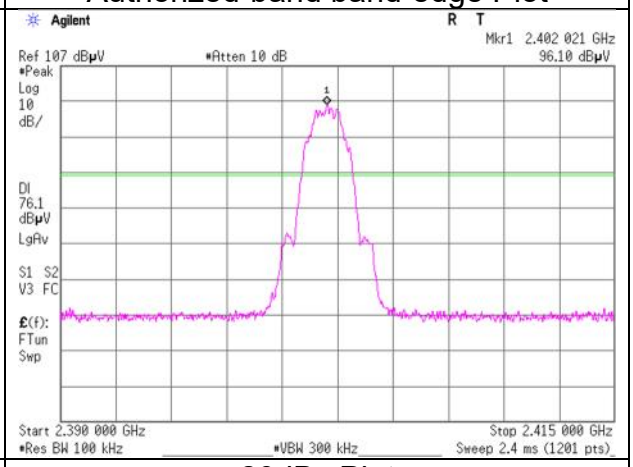
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

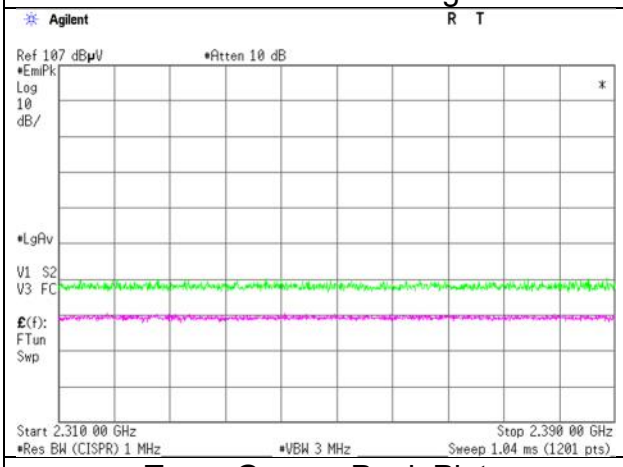
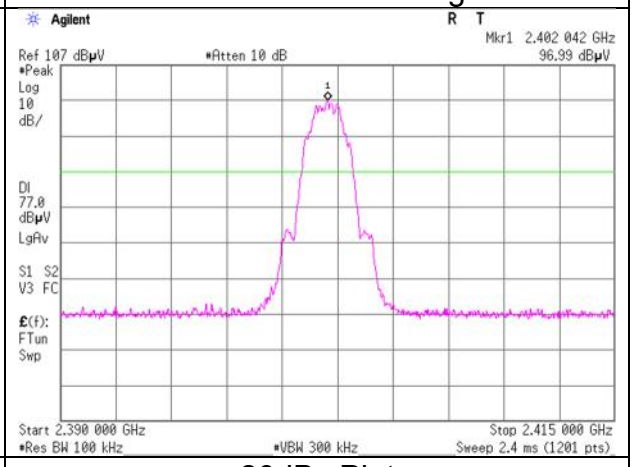
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	96.10	27.97	14.49	41.61	2.49	99.44	-	-	Carrier
Hori.	2400.000	PK	56.51	27.97	14.49	41.61	2.49	59.85	79.4	19.5	-
Vert.	2402.000	PK	96.99	27.97	14.49	41.61	2.49	100.33	-	-	Carrier
Vert.	2400.000	PK	57.64	27.97	14.49	41.61	2.49	60.98	80.3	19.3	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	July 13, 2023
Temperature / Humidity	22 deg.C, 57 %RH
Engineer	Hiromasa Sato
Mode	Tx BT LE 2M-PHY, 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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

Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	SAC 3	SAC 3
Date	January 31, 2024	July 13, 2023
Temperature / Humidity	21 deg.C, 23 %RH	22 deg.C, 57 %RH
Engineer	Takayuki Kobayashi (30 MHz -1 GHz)	Hiromasa Sato (1 GHz -26.5 GHz)
Mode	Tx BT LE 2M-PHY, 2440 MHz	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	30.531	QP	23.70	18.82	6.62	32.20	0.00	16.94	40.0	23.0	307	359	-
Hori.	592.300	QP	23.00	19.20	9.87	31.95	0.00	20.12	46.0	25.8	109	2	-
Hori.	876.396	QP	22.60	22.02	10.89	31.20	0.00	24.31	46.0	21.6	168	353	-
Hori.	954.600	QP	22.50	21.97	11.14	30.68	0.00	24.93	46.0	21.0	201	48	-
Hori.	3253.225	PK	52.55	28.68	6.59	41.96	2.49	48.35	73.9	25.5	224	268	-
Hori.	4880.000	PK	50.24	31.51	7.43	42.88	2.49	48.79	73.9	25.1	294	152	-
Hori.	7320.000	PK	48.33	37.25	8.79	43.42	2.49	53.44	73.9	20.4	219	206	-
Hori.	9760.000	PK	48.56	39.02	9.99	43.01	2.49	57.05	73.9	16.8	150	0	-
Hori.	9760.000	AV	39.48	39.02	9.99	43.01	2.49	47.97	53.9	**5.9**	150	0	Floor noise
Vert.	31.232	QP	23.60	18.56	6.62	32.20	0.00	16.58	40.0	23.4	292	207	-
Vert.	588.761	QP	21.40	19.11	9.85	31.95	0.00	18.41	46.0	27.5	100	159	-
Vert.	875.202	QP	22.60	22.01	10.89	31.21	0.00	24.29	46.0	21.7	138	161	-
Vert.	957.773	QP	22.50	21.96	11.15	30.64	0.00	24.97	46.0	21.0	154	330	-
Vert.	3253.225	PK	51.71	28.68	6.59	41.96	2.49	47.51	73.9	26.3	152	49	-
Vert.	4880.000	PK	50.77	31.51	7.43	42.88	2.49	49.32	73.9	24.5	322	251	-
Vert.	7320.000	PK	48.23	37.25	8.79	43.42	2.49	53.34	73.9	20.5	273	306	-
Vert.	9760.000	PK	48.86	39.02	9.99	43.01	2.49	57.35	73.9	16.5	150	0	-
Vert.	9760.000	AV	39.23	39.02	9.99	43.01	2.49	47.72	53.9	6.1	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	3253.225	AV	46.17	28.68	6.59	41.96	1.84	2.49	43.81	53.9	10.0	-
Hori.	4880.000	AV	43.15	31.51	7.43	42.88	1.84	2.49	43.54	53.9	10.3	-
Hori.	7320.000	AV	40.21	37.25	8.79	43.42	1.84	2.49	47.16	53.9	6.7	-
Vert.	3253.225	AV	45.54	28.68	6.59	41.96	1.84	2.49	43.18	53.9	10.7	-
Vert.	4880.000	AV	42.46	31.51	7.43	42.88	1.84	2.49	42.85	53.9	11.0	-
Vert.	7320.000	AV	39.70	37.25	8.79	43.42	1.84	2.49	46.65	53.9	7.2	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	July 13, 2023
Temperature / Humidity	22 deg.C, 57 %RH
Engineer	Hiromasa Sato (1 GHz -26.5 GHz)
Mode	Tx BT LE 2M-PHY, 2480 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	47.62	27.89	14.59	41.64	2.49	50.95	73.9	22.9	252	284	-
Hori.	3306.690	PK	51.72	28.51	6.63	42.00	2.49	47.35	73.9	26.5	224	266	-
Hori.	4960.000	PK	49.22	31.73	7.49	42.89	2.49	48.04	73.9	25.8	263	165	-
Hori.	7440.000	PK	48.24	37.42	8.87	43.50	2.49	53.52	73.9	20.3	150	0	-
Hori.	9920.000	PK	48.39	38.95	10.09	42.89	2.49	57.03	73.9	16.8	150	0	-
Hori.	7440.000	AV	39.28	37.42	8.87	43.50	2.49	44.56	53.9	9.3	150	0	Floor noise
Hori.	9920.000	AV	38.77	38.95	10.09	42.89	2.49	47.41	53.9	**6.4**	150	0	Floor noise
Vert.	2483.500	PK	49.08	27.89	14.59	41.64	2.49	52.41	73.9	21.4	181	269	-
Vert.	3306.690	PK	49.88	28.51	6.63	42.00	2.49	45.51	73.9	28.3	194	45	-
Vert.	4960.000	PK	49.35	31.73	7.49	42.89	2.49	48.17	73.9	25.7	308	133	-
Vert.	7440.000	PK	48.10	37.42	8.87	43.50	2.49	53.38	73.9	20.5	150	0	-
Vert.	9920.000	PK	48.40	38.95	10.09	42.89	2.49	57.04	73.9	16.8	150	0	-
Vert.	7440.000	AV	39.16	37.42	8.87	43.50	2.49	44.44	53.9	9.4	150	0	Floor noise
Vert.	9920.000	AV	38.63	38.95	10.09	42.89	2.49	47.27	53.9	6.6	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	38.55	27.89	14.59	41.64	1.84	2.49	43.72	53.9	10.1	*1)
Hori.	3306.690	AV	43.68	28.51	6.63	42.00	1.84	2.49	41.15	53.9	12.7	-
Hori.	4960.000	AV	39.25	31.73	7.49	42.89	1.84	2.49	39.91	53.9	13.9	-
Vert.	2483.500	AV	38.45	27.89	14.59	41.64	1.84	2.49	43.62	53.9	10.2	*1)
Vert.	3306.690	AV	43.76	28.51	6.63	42.00	1.84	2.49	41.23	53.9	12.6	-
Vert.	4960.000	AV	40.13	31.73	7.49	42.89	1.84	2.49	40.79	53.9	13.1	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)