



RADIO TEST REPORT

Test Report No. 14173119H-C

Customer	Sony Interactive Entertainment Inc.
Description of EUT	Wireless communication module
Model Number of EUT	AW-XM546
FCC ID	AK8M21DAU1
Test Regulation	FCC Part 15 Subpart E: 2021
Test Result	Complied (Refer to SECTION 3)
Issue Date	March 11, 2022
Remarks	WLAN (5 GHz band) part Except for DFS test

Representative Test Engineer

T. Noguchi

Takafumi Noguchi
Engineer

Approved By

Takayuki S.

Takayuki Shimada
Leader



CERTIFICATE 5107.02

- ☐ 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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REVISION HISTORY

Original Test Report No.: 14173119H-C

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14173119H-C	March 11, 2022	-

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

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

* The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Wireless communication module
Model Number	AW-XM546
Serial Number	Refer to SECTION 4.2
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	January 23, 2022
Test Date	January 24 to February 14, 2022

2.2 Product Description

General Specification

Rating	DC 3.3 V
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Radio Specification

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

Equipment Type	Transceiver	
Frequency of Operation	2412 MHz to 2462 MHz	
Type of Modulation	DSSS, OFDM	
	OFDMA (IEEE802.11ax only)	20 MHz: 26/52/106/242-tone RU
Bandwidth & Channel spacing	Less than 20 MHz & 5 MHz	
Method of frequency generation	Synthesizer	
Antenna Type	PIFA	
Antenna Gain: G_{ANT}	Antenna 1: 5.0 dBi Antenna 2: 5.0 dBi	
Directional Gain *1)	8.01 dBi	
Maximum clock frequency	640 MHz	

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

Equipment Type	Transceiver	
Frequency of Operation	20 M Band: 5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5720 MHz 5745 MHz to 5825 MHz	
	40 M Band: 5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5710 MHz 5755 MHz to 5795 MHz	
	80 M Band: 5210 MHz 5290 MHz 5530 MHz to 5690 MHz 5775 MHz	
Type of Modulation	OFDM	
	OFDMA (IEEE802.11ax only)	20 MHz: 26/52/106/242-tone RU
		40 MHz: 26/52/106/242/484-tone RU
		80 MHz: 26/52/106/242/484/996-tone RU
Bandwidth & Channel spacing	Less than 20 MHz / 40 MHz / 80 MHz & 20 MHz / 40 MHz / 80 MHz	
Method of frequency generation	Synthesizer	
Antenna Type	PIFA	
Antenna Gain: G_{ANT}	Antenna 1: 6.4 dBi Antenna 3: 5.0 dBi	
Directional Gain *1)	8.74 dBi	
Maximum clock frequency	640 MHz	

BT1: Bluetooth (BR / EDR / Low Energy)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	BT: FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK) BT LE: GFSK
Bandwidth / Channel spacing	BT: 79 MHz / 1 MHz BT LE: 1 MHz & 2 MHz / 2 MHz
Method of frequency generation	Synthesizer
Antenna Type	PIFA
Antenna Gain	Antenna 3: 5.8 dBi
Maximum clock frequency	640 MHz

BT2: Bluetooth (BR / EDR / Low Energy)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	BT: FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK) BT LE: GFSK
Bandwidth / Channel spacing	BT: 79 MHz / 1 MHz BT LE: 1 MHz & 2 MHz / 2 MHz
Method of frequency generation	Synthesizer
Antenna Type	PIFA
Antenna Gain	Antenna 4: 5.8 dBi
Maximum clock frequency	640 MHz

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

*This test report applies to Wireless LAN (5GHz Band) part.

SECTION 3: Test specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart E FCC Part 15 final revised on May 3, 2021 and effective July 2, 2021
Title	FCC 47 CFR Part 15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements

3.2 Procedures and Results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 ISED: RSS-Gen 8.8	FCC: 15.407 (b) (6) / 15.207 ISED: RSS-Gen 8.8	21.62 dB, 24.75428 MHz, AV, L	Complied a)	-
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	See data	Complied b)	Conducted
Maximum Conducted Output Power	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1		Complied c)	Conducted
Maximum Power Spectral Density	FCC: KDB Publication Number 789033 ISED: -	FCC : 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1		Complied d)	Conducted
Spurious Emission Restricted Band Edge	FCC: ANSI C63.10-2013 KDB Publication Number 789033 ISED: -	FCC: 15.407 (b), 15.205 and 15.209 ISED: RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2	5.0 dB 5460.0 MHz, AV, Horizontal	Complied e) / f)	Conducted (< 30 MHz) / Radiated (> 30 MHz) *1)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2.4.1	See data	Complied g)	Conducted
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 FCC 15.407 (b) and KDB 789033 D02 G.3.b).					
a) Refer to APPENDIX 1 (data of Conducted Emission) b) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth) c) Refer to APPENDIX 1 (data of Maximum Conducted Output Power) d) Refer to APPENDIX 1 (data of Maximum Power Spectral Density) e) Refer to APPENDIX 1 (data of Radiated Spurious Emission) f) Refer to APPENDIX 1 (data of Conducted Spurious Emission) g) Refer to APPENDIX 1 (data of 6 dB Bandwidth)					
Symbols: Complied The data of this test item has enough margin, more than the measurement uncertainty. Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration					

FCC Part 15.31 (e)

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

FCC Part 15.203/212 Antenna requirement

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

3.3 Addition to Standard

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
99 % Occupied Band Width	ISED: RSS-Gen 6.7	ISED: -	N/A	- a)	Conducted

a) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth)

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

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the following results are derived depending on whether or not laboratory uncertainty is applied.

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

Conducted emission

Using Item	Frequency range	Uncertainty (+/-)
AMN (LISN)	0.009 MHz to 0.15 MHz	3.7 dB
	0.15 MHz to 30 MHz	3.3 dB

Radiated emission

Measurement distance	Frequency range		Uncertainty (+/-)
3 m	9 kHz to 30 MHz		3.2 dB
10 m			3.0 dB
3 m	30 MHz to 200 MHz	(Horizontal)	4.8 dB
		(Vertical)	5.0 dB
	200 MHz to 1000 MHz	(Horizontal)	5.1 dB
		(Vertical)	6.2 dB
10 m	30 MHz to 200 MHz	(Horizontal)	4.8 dB
		(Vertical)	4.8 dB
	200 MHz to 1000 MHz	(Horizontal)	5.0 dB
		(Vertical)	5.0 dB
3 m	1 GHz to 6 GHz		4.9 dB
	6 GHz to 18 GHz		5.2 dB
1 m	10 GHz to 26.5 GHz		5.4 dB
	26.5 GHz to 40 GHz		5.4 dB
0.5 m	26.5 GHz to 40 GHz		5.4 dB
10 m	1 GHz to 18 GHz		5.4 dB

Antenna Terminal test

Test Item	Uncertainty (+/-)
26 dB Emission Bandwidth / 6 dB Emission Bandwidth / 99 % Occupied Bandwidth	0.96 %
Maximum Conducted Output Power / Average Output Power	1.5 dB
Burst Rate	0.10 %
Maximum Power Spectral Density	2.7 dB
Conducted Spurious Emission	2.7 dB

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.

*A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 884919

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

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

Telephone: +81 596 24 8999, Facsimile: +81 596 24 8124

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room	2.6 x 3.4 x 2.5	N/A	-	-
Large Chamber	16.9 x 22.1 x 10.17	16.9 x 22.1	-	10 m
Small Chamber	5.3 x 6.69 x 3.59	5.3 x 6.69	-	-

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

3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

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

Mode	Remarks*
IEEE 802.11a (11a)	6 Mbps, PN9
IEEE 802.11n MIMO 20 MHz BW (11n-20)	MCS 0, PN9
IEEE 802.11ac MIMO 20 MHz BW (11ac-20)	MCS 0 (1TX), PN9
IEEE 802.11ax MIMO 20 MHz BW (11ax-20)	MCS 0 (1TX), PN9
IEEE 802.11n MIMO 40 MHz BW (11n-40)	MCS 0, PN9
IEEE 802.11ac MIMO 40 MHz BW (11ac-40)	MCS 0 (1TX), PN9
IEEE 802.11ax MIMO 40 MHz BW (11ax-40)	MCS 0 (1TX), PN9
IEEE 802.11ac MIMO 80 MHz BW (11ac-80)	MCS 0 (1TX), PN9
IEEE 802.11ax MIMO 80 MHz BW (11ax-80)	MCS 0 (1TX), PN9
*The worst antenna and condition was determined based on the test result of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; Power Setting: See the table below Software: autotest_for-ULJ.sh (Date: January 19, 2022, 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.	

Power Setting

		W52			W53/W56/W58		
		20 MHz BW	40 MHz BW	80 MHz BW	20 MHz BW	40 MHz BW	80 MHz BW
OFDM		6.5			8.0		
OFDMA	26-tone RU	-2.0			-0.5		
	52-tone RU	1.0			2.5		
	106-tone RU	4.0			5.5		
	242-tone RU	6.5			8.0		
	484-tone RU	-	6.5		-	8.0	
	996-tone RU	-	-	6.5	-	-	8.0

(dBm)

*The details of Operation mode(s) (1/2)

Test Item	Operating Mode	Tested Antenna	Tested Frequency			
			Lower Band	Middle Band	Additional Band	Upper Band
Conducted emission, Radiated Spurious Emission (Below 1 GHz)	Tx 11ax-20 OFDM *1)	Antenna 1 + 3	-	5260 MHz	-	-
26 dB Emission Bandwidth	Tx 11a	Antenna 3 *2)	-	5260 MHz	5500 MHz	-
	Tx 11n-20		-	5300 MHz	5580 MHz	-
	Tx 11ac-20		-	5320 MHz	5700 MHz	-
	Tx 11ax-20 OFDM		-	-	5720 MHz	-
	Tx 11ax-20 OFDMA		-	-	-	-
	Tx 11n-40		-	5270 MHz	5510 MHz	-
	Tx 11ac-40		-	5310 MHz	5550 MHz	-
	Tx 11ax-40 OFDM		-	-	5670 MHz	-
	Tx 11ax-40 OFDMA		-	-	5710 MHz	-
99 % Occupied Bandwidth	Tx 11a	Antenna 3 *2)	5180 MHz	5260 MHz	5500 MHz	5745 MHz
	Tx 11n-20		5220 MHz	5300 MHz	5580 MHz	5785 MHz
	Tx 11ac-20		5240 MHz	5320 MHz	5700 MHz	5825 MHz
	Tx 11ax-20 OFDM		-	-	5720 MHz	-
	Tx 11ax-20 OFDMA		-	-	-	-
	Tx 11n-40		5190 MHz	5270 MHz	5510 MHz	5755 MHz
	Tx 11ac-40		5230 MHz	5310 MHz	5550 MHz	5795 MHz
	Tx 11ax-40 OFDM		-	-	5670 MHz	-
	Tx 11ax-40 OFDMA		-	-	5710 MHz	-
Maximum Conducted Output Power, Maximum Power Spectral Density	Tx 11a	Antenna 1 Antenna 3 Antenna 1 + 3	5180 MHz	5260 MHz	5500 MHz	5745 MHz
	Tx 11n-20		5220 MHz	5300 MHz	5580 MHz	5785 MHz
	Tx 11ac-20		5240 MHz	5320 MHz	5700 MHz	5825 MHz
	Tx 11ax-20 OFDM		-	-	5720 MHz	-
	Tx 11ax-20 OFDMA		-	-	-	-
	Tx 11n-40		5190 MHz	5270 MHz	5510 MHz	5755 MHz
	Tx 11ac-40		5230 MHz	5310 MHz	5550 MHz	5795 MHz
	Tx 11ax-40 OFDM		-	-	5670 MHz	-
	Tx 11ax-40 OFDMA		-	-	5710 MHz	-
	Tx 11ac-80		5210 MHz	5290 MHz	5530 MHz	5775 MHz
	Tx 11ax-80 OFDM		-	-	5610 MHz	-
	Tx 11ax-80 OFDMA		-	-	5690 MHz	-
			-	-	-	-

*The details of Operation mode(s) (2/2)

Test Item	Operating Mode	Tested Antenna	Tested Frequency			
			Lower Band	Middle Band	Additional Band	Upper Band
6 dB Bandwidth	Tx 11a Tx 11n-20 Tx 11ac-20 Tx 11ax-20 OFDM Tx 11ax-20 OFDMA	Antenna 3 *2)	-	-	-	5745 MHz 5785 MHz 5825 MHz
	Tx 11n-40 Tx 11ac-40 Tx 11ax-40 OFDM Tx 11ax-40 OFDMA		-	-	-	5755 MHz 5795 MHz
	Tx 11ac-80 Tx 11ax-80 OFDM Tx 11ax-80 OFDMA		-	-	-	5775 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx 11ax-20 OFDM *3) Tx 11ax-20 OFDMA *4)	Antenna 1 + 3	5180 MHz	5260 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz	5745 MHz 5785 MHz 5825 MHz
	Tx 11ax-40 OFDM *3) Tx 11ax-40 OFDMA *4)		5190 MHz	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz	5755 MHz 5795 MHz
	Tx 11ax-80 OFDM *3) Tx 11ax-80 OFDMA *4)		5210 MHz	5290 MHz	5530 MHz 5610 MHz 5690 MHz	5775 MHz
Conducted Spurious Emission	Tx 11ax-20 OFDM *1)	Antenna 3	-	5260 MHz	-	-

*1) The mode was tested as a representative, because it had the highest power at antenna terminal test.
*2) After the comparison between Antenna 1 and Antenna 3, the test was performed with the antenna that had higher power as a representative.
*3) Since each of 20 MHz BW (11n-20 / 11ac-20 / 11ax-20), 40 MHz BW (11n-40 / 11ac-40 / 11ax-40) and 80 MHz BW (11ac-80 / 11ax-80) have the same modulation method and no differences in transmitting specification, the test was performed on the representative mode that had the highest output power.
*4) OFDMA configuration tests were conducted only at the band edge since preliminary testing indicated that the other spurious emission was lower than OFDM.

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

Test Item	Mode *1)	Tested Antenna
Radiated Spurious Emission	Tx 11ax-40 5510 MHz (484-tone RU) + BT1 3DH5 Hopping	Antenna 3

*1) The test was performed on the mode as a representative, because it had the highest power of BT1 at antenna terminal test.

4.2 Configuration and Peripherals

This page has been submitted for a separate exhibit.

SECTION 5: Conducted Emission

Test Procedure and Conditions

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane.

The rear of tabletop was located 40cm 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 80cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

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

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

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber.

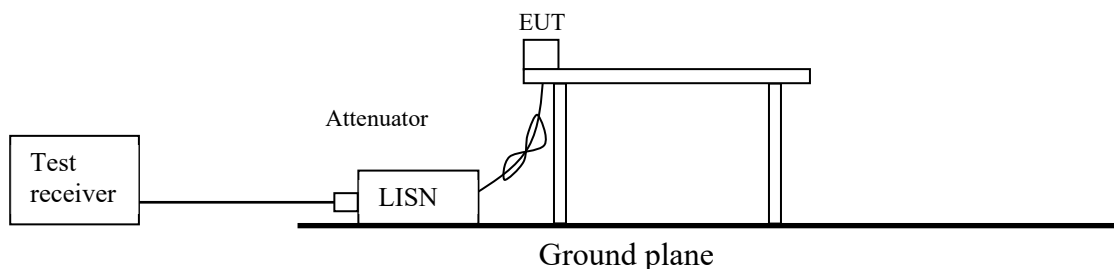
The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

Detector	: QP and CISPR Average
Measurement Range	: 0.15 MHz to 30 MHz
Test Data	: APPENDIX
Test Result	: Pass

Figure 1: Test Setup



SECTION 6: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >

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

< Above 1GHz >

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 1.5 m above the conducting ground plane.

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

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

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

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

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

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

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

< Below 1GHz >

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

< Above 1GHz >

Inside of restricted bands (Section 15.205):

Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:

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

For W58 Bandedge

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

Restricted band edge:

Apply to limit in the Section 15.209 (a).

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

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

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

Test Antennas are used as below;

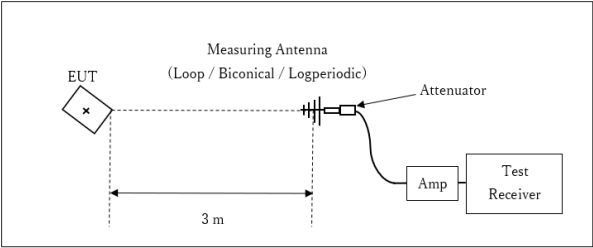
Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

Frequency	Below 1 GHz	Above 1 GHz	
Instrument Used	Test Receiver	Spectrum Analyzer	
Detector	QP	Peak	Average
IF Bandwidth	BW: 120 kHz	RBW: 1 MHz VBW: 3 MHz	Method AD *1) RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: ≥ 100 traces If duty cycle was less than 98%, a duty factor was added to the results.

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".

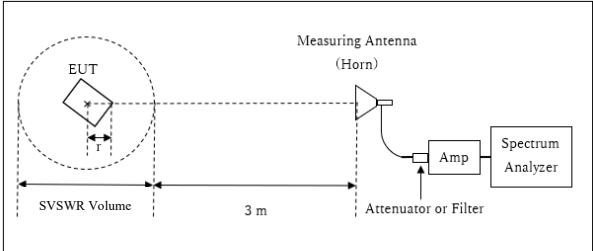
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

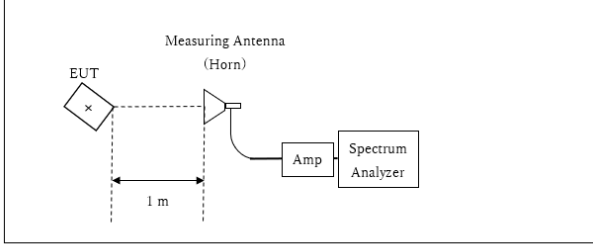
1 GHz to 10 GHz



Distance Factor: $20 \times \log (3.65 \text{ m} / 3.0 \text{ m}) = 1.71 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.65 \text{ m}$

SVSWR Volume : 1.5 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
 $r = 0.1 \text{ m}$

10 GHz to 40 GHz



Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$
*Test Distance: 1 m

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

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

Measurement Range : 30 MHz to 40 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 and Test method
26 dB Bandwidth	Enough to capture the emission	Close to 1 % of EBW	> RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 % to 5 % of OBW	≥ 3 RBW	Auto	Peak	Max Hold	Spectrum Analyzer
6 dB Bandwidth	Enough to capture the emission	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Conducted Output Power	-	-	-	Auto	Average	-	Power Meter (Sensor: 80 MHz BW) (Method PM-G)
Maximum Power Spectral Density	Encompass the entire EBW	1 MHz or 470 kHz *2)	≥ 3 RBW	Auto	RMS Power Averaging (200 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3) *4)	9 kHz to 150 kHz 150 kHz to 30 MHz	200 Hz 9.1 kHz	620 Hz 27 kHz	Auto	Peak	Max Hold	Spectrum Analyzer

* The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".

*1) Peak hold was applied as Worst-case measurement.

*2) KDB 789033 D02 says that RBW is set to be 500 kHz for 5.725 GHz to 5.850 GHz, but it is not possible with spectrum analyzer, so RBW Correction Factor ($10 \log(500 \text{ kHz} / 470 \text{ kHz})$) was added to the test result.

*3) In the frequency range below 30 MHz, RBW was narrowed to separate the noise contents.

Then, wide-band noise near the limit was checked separately, however the noise was low enough as shown in the chart. (9 kHz to 150 kHz: RBW = 200 Hz, 150 kHz to 30 MHz: RBW = 9.1 kHz).

*4) The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to $45.5 - 51.5 = -6.0$ dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

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

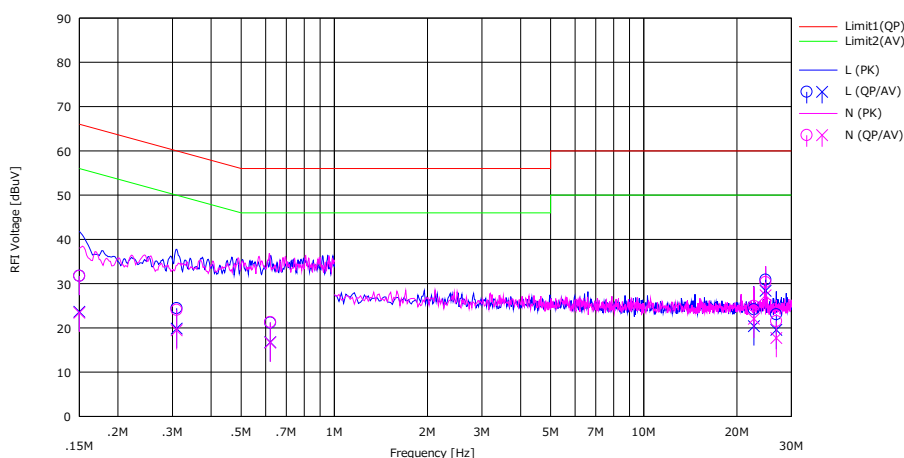
Test Data : APPENDIX
Test Result : Pass

APPENDIX 1: Test data

Conducted Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 14, 2022
Temperature / Humidity 22 deg. C / 33 % RH
Engineer Junya Okuno
Mode Tx 11ax-20 5260 MHz (OFDM)

Limit : FCC_Part 15 Subpart E(15.207)



No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]			<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	18.50	10.40	0.06	13.18	31.74	23.64	66.00	56.00	34.26	32.36	L	
2	0.30936	11.20	6.60	0.05	13.20	24.45	19.85	59.99	49.99	35.54	30.14	L	
3	0.62113	7.90	3.50	0.05	13.23	21.18	16.78	56.00	46.00	34.82	29.22	L	
4	22.69242	9.80	6.00	0.46	13.93	24.19	20.39	60.00	50.00	35.81	29.61	L	
5	24.75428	16.40	13.90	0.51	13.97	30.88	28.38	60.00	50.00	29.12	21.62	L	
6	26.81654	8.50	5.00	0.55	14.01	23.06	19.56	60.00	50.00	36.94	30.44	L	
7	0.15000	18.50	10.20	0.06	13.18	31.74	23.44	66.00	56.00	34.26	32.56	N	
8	0.30936	10.80	6.20	0.06	13.20	24.06	19.46	59.99	49.99	35.93	30.53	N	
9	0.62113	8.00	3.40	0.06	13.23	21.29	16.69	56.00	46.00	34.71	29.31	N	
10	22.69106	10.60	7.70	0.43	13.93	24.96	22.06	60.00	50.00	35.04	27.94	N	
11	24.75439	15.90	12.90	0.47	13.97	30.34	27.34	60.00	50.00	29.66	22.66	N	
12	26.81787	7.00	3.20	0.51	14.01	21.52	17.72	60.00	50.00	38.48	32.28	N	

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

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
Date February 2, 2022
Temperature / Humidity 24 deg. C / 33 % RH
Engineer Junki Nagatomi
Mode Tx

11a

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5180	-	17270.1
	5220	-	17292.6
	5240	-	16531.5
	5260	22.649	17269.4
	5300	24.733	17391.8
	5320	23.117	17414.9
	5500	24.620	17471.1
	5580	23.554	17300.8
	5700	24.802	17392.6
	5720	23.144	17266.8
	5745	-	17271.2
	5785	-	17311.8
	5825	-	17274.4

11n-20

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5180	-	17970.3
	5220	-	17969.5
	5240	-	17586.2
	5260	23.881	18014.6
	5300	23.949	18074.5
	5320	23.768	18050.8
	5500	23.924	18059.7
	5580	23.071	17968.4
	5700	24.048	18035.7
	5720	23.331	18007.6
	5745	-	17983.4
	5785	-	17986.7
	5825	-	17978.8

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
Date February 2, 2022
Temperature / Humidity 24 deg. C / 33 % RH
Engineer Junki Nagatomi
Mode Tx

11ac-20

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5180	-	17979.8
	5220	-	17951.9
	5240	-	17588.6
	5260	23.498	17986.6
	5300	23.660	18057.5
	5320	23.467	18027.7
	5500	22.794	18063.9
	5580	23.541	17969.8
	5700	23.597	18085.1
	5720	23.629	17987.9
	5745	-	17990.0
	5785	-	17987.6
	5825	-	17988.8

11ax-20 (OFDM)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5180	-	19222.4
	5220	-	19235.0
	5240	-	18798.6
	5260	24.253	19238.3
	5300	23.472	19249.1
	5320	24.089	19280.1
	5500	23.851	19239.8
	5580	23.530	19228.7
	5700	23.749	19248.4
	5720	23.679	19221.6
	5745	-	19230.2
	5785	-	19225.9
	5825	-	19224.2

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
 Date February 3, 2022 February 8, 2022
 Temperature / Humidity 25 deg. C / 34 % RH 27 deg. C / 25 % RH
 Engineer Junki Nagatomi Takafumi Noguchi
 Mode Tx

11ax-20 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	26-tone RU	5180	0	-	19385.1
			4	-	17026.1
			8	-	19224.9
		5220	0	-	19021.9
			4	-	17049.1
			8	-	19196.1
		5240	0	-	18178.1
			4	-	16865.8
			8	-	18141.3
		5260	0	20.444	19297.7
			4	18.024	17040.6
			8	20.662	19208.0
		5300	0	20.445	19191.4
			4	18.043	17035.1
			8	20.327	19220.8
		5320	0	20.283	19214.3
			4	18.038	17010.3
			8	20.515	19262.8
		5500	0	20.655	19225.4
			4	18.034	17026.3
			8	20.845	19352.9
		5580	0	20.609	19211.6
			4	17.991	17011.8
			8	21.313	19288.0
		5700	0	20.703	19224.5
			4	17.996	17046.9
			8	20.778	19209.4
		5720	0	20.254	19233.1
			4	18.010	17046.7
			8	20.856	19181.9
		5745	0	-	19196.4
			4	-	17023.5
			8	-	19151.1
		5785	0	-	19306.0
			4	-	17035.7
			8	-	19193.9
		5825	0	-	19181.4
			4	-	17036.6
			8	-	19213.3

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
Date February 3, 2022
Temperature / Humidity 25 deg. C / 34 % RH
Engineer Junki Nagatomi
Mode Tx

11ax-20 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	52-tone RU	5180	37	-	18678.3
			38	-	17072.4
			40	-	18780.4
		5220	37	-	18856.4
			38	-	17076.5
			40	-	18775.3
		5240	37	-	18061.4
			38	-	16884.9
			40	-	18027.4
		5260	37	20.789	18793.2
			38	18.160	17084.8
			40	20.989	18751.2
		5300	37	21.343	18843.0
			38	18.179	17089.4
			40	20.698	18783.4
		5320	37	20.796	18717.9
			38	18.226	17082.4
			40	20.768	18817.2
		5500	37	21.402	18720.9
			38	18.177	17089.5
			40	21.356	18761.3
		5580	37	21.117	18885.3
			38	18.195	17090.9
			40	22.096	18764.9
		5700	37	20.749	18838.5
			38	18.206	17076.3
			40	20.906	18798.3
		5720	37	20.745	18714.3
			38	18.257	17094.0
			40	21.915	18736.7
		5745	37	-	18805.2
			38	-	17095.5
			40	-	18784.7
		5785	37	-	18688.8
			38	-	17086.4
			40	-	18788.5
		5825	37	-	18733.0
			38	-	17096.6
			40	-	18763.1

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 3, 2022
Temperature / Humidity	25 deg. C / 34 % RH
Engineer	Junki Nagatomi
Mode	Tx

11ax-20 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	106-tone RU	5180	53	-	18492.3
			54	-	18531.4
		5220	53	-	18484.1
			54	-	18439.0
		5240	53	-	17995.3
			54	-	17956.0
		5260	53	21.630	18538.6
			54	22.061	18508.3
		5300	53	21.273	18509.0
			54	21.613	18510.0
		5320	53	22.156	18564.9
			54	21.195	18450.0
		5500	53	20.893	18446.7
			54	21.289	18531.0
		5580	53	21.523	18484.5
			54	22.484	18550.7
		5700	53	22.127	18428.8
			54	22.013	18521.8
		5720	53	21.431	18520.8
			54	21.993	18490.0
		5745	53	-	18466.8
			54	-	18503.7
		5785	53	-	18513.5
			54	-	18572.0
		5825	53	-	18556.5
			54	-	18495.7

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 4, 2022
Temperature / Humidity	26 deg. C / 28 % RH
Engineer	Junki Nagatomi
Mode	Tx

11ax-20 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	242-tone RU	5180	-	19303.4
		5220	-	19216.1
		5240	-	18789.6
		5260	24.511	19290.0
		5300	24.073	19295.5
		5320	24.032	19268.3
		5500	24.436	19227.4
		5580	24.407	19248.7
		5700	24.768	19254.4
		5720	24.061	19311.3
		5745	-	19335.9
		5785	-	19328.7
		5825	-	19322.6

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
Date February 2, 2022
Temperature / Humidity 24 deg. C / 33 % RH
Engineer Junki Nagatomi
Mode Tx

11n-40

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5190	-	35979.6
	5230	-	36003.9
	5270	38.853	35848.4
	5310	39.079	35996.0
	5510	38.990	35941.4
	5550	39.187	36045.4
	5670	39.215	36014.2
	5710	39.083	36029.1
	5755	-	35972.6
	5795	-	35957.6

11ac-40

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5190	-	36025.1
	5230	-	35985.5
	5270	38.880	36034.7
	5310	39.168	35953.3
	5510	39.141	36017.4
	5550	39.087	35968.2
	5670	39.096	37451.5
	5710	38.890	35954.2
	5755	-	36015.5
	5795	-	35971.1

11ax-40 (OFDM)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5190	-	37521.1
	5230	-	37521.1
	5270	39.526	37523.7
	5310	39.479	37483.8
	5510	39.390	37455.2
	5550	39.447	37572.3
	5670	39.371	37451.5
	5710	39.323	37461.0
	5755	-	37536.6
	5795	-	37532.3

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
Date February 4, 2022
Temperature / Humidity 26 deg. C / 28 % RH
Engineer Junki Nagatomi
Mode Tx

11ax-40 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	26-tone RU	5190	0	-	18048.1
			8	-	22043.8
			17	-	17944.5
		5230	0	-	18021.7
			8	-	21806.1
			17	-	17979.6
		5270	0	19.179	18061.9
			8	22.781	21907.8
			17	19.060	17991.8
		5310	0	19.142	18057.2
			8	22.370	21819.0
			17	19.084	18017.1
		5510	0	19.164	18009.3
			8	22.767	21934.8
			17	19.123	17951.8
		5550	0	19.225	17989.0
			8	22.509	21971.7
			17	19.080	18023.7
		5670	0	19.206	18025.4
			8	21.965	21947.2
			17	19.086	17992.7
		5710	0	19.248	18017.5
			8	22.228	21793.4
			17	19.075	17994.8
		5755	0	-	17999.3
			8	-	22073.9
			17	-	17962.1
		5795	0	-	17986.6
			8	-	21716.8
			17	-	17968.4

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
Date February 4, 2022
Temperature / Humidity 26 deg. C / 28 % RH
Engineer Junki Nagatomi
Mode Tx

11ax-40 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	52-tone RU	5190	37	-	17903.0
			40	-	21559.5
			44	-	17849.4
		5230	37	-	17997.2
			40	-	21748.3
			44	-	17845.4
		5270	37	19.440	17955.4
			40	23.348	21685.4
			44	19.327	17829.7
		5310	37	19.417	17879.5
			40	23.313	21665.2
			44	19.201	17853.8
		5510	37	19.425	17892.2
			40	23.208	21501.1
			44	19.278	17840.0
		5550	37	19.338	17917.5
			40	22.607	21704.2
			44	19.239	17837.5
		5670	37	19.317	17934.7
			40	23.076	21541.1
			44	19.236	17848.8
		5710	37	19.459	17897.4
			40	23.119	21639.1
			44	19.236	17828.5
		5755	37	-	17878.8
			40	-	21563.6
			44	-	17857.3
		5795	37	-	17912.2
			40	-	21706.7
			44	-	17844.5

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 5, 2022
Temperature / Humidity	23 deg. C / 26 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-40 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	106-tone RU	5190	53	-	17726.3
			54	-	20573.1
			56	-	17632.1
		5230	53	-	17725.1
			54	-	21316.6
			56	-	17648.4
		5270	53	19.435	17742.4
			54	24.061	20615.2
			56	19.390	17606.8
		5310	53	19.485	17720.1
			54	23.191	20794.8
			56	19.286	17662.2
		5510	53	19.457	17687.0
			54	26.542	21344.4
			56	19.354	17644.1
		5550	53	19.408	17722.0
			54	24.331	21070.9
			56	19.377	17618.0
		5670	53	19.401	17689.2
			54	23.744	20856.2
			56	19.376	17633.3
		5710	53	19.449	17697.2
			54	27.382	21129.8
			56	19.426	17662.0
		5755	53	-	17674.9
			54	-	20625.9
			56	-	17679.2
		5795	53	-	17702.7
			54	-	20891.6
			56	-	17629.3

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 5, 2022
Temperature / Humidity	23 deg. C / 26 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-40 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	242-tone RU	5190	61	-	24477.9
			62	-	24683.8
		5230	61	-	26556.6
			62	-	21820.0
		5270	61	39.399	24987.8
			62	39.372	25979.3
		5310	61	39.484	26751.0
			62	39.382	25188.7
		5510	61	39.371	27630.1
			62	39.275	24097.7
		5550	61	39.355	28129.7
			62	39.489	23053.0
		5670	61	39.434	25040.0
			62	39.437	24786.5
		5710	61	39.375	26345.8
			62	39.380	23673.5
		5755	61	-	25944.4
			62	-	29029.1
		5795	61	-	24816.6
			62	-	22611.7

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 5, 2022
Temperature / Humidity	23 deg. C / 26 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-40 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	484-tone RU	5190	-	37375.0
		5230	-	37313.2
		5270	39.473	37428.3
		5310	39.539	37449.4
		5510	39.539	37435.4
		5550	39.454	37371.8
		5670	39.463	37332.6
		5710	39.488	37440.5
		5755	-	37368.6
		5795	-	37388.9

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place Ise EMC Lab. No.8 Measurement Room
Date February 2, 2022
Temperature / Humidity 24 deg. C / 33 % RH
Engineer Junki Nagatomi
Mode Tx

11ac-80

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5210	-	74953.0
	5290	79.051	74920.0
	5530	78.754	74881.3
	5610	79.048	74889.9
	5690	78.988	74811.7
	5775	-	74835.8

11ax-80 (OFDM)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	5210	-	76674.2
	5290	80.155	76902.5
	5530	80.038	76810.4
	5610	79.908	76861.2
	5690	79.990	76852.0
	5775	-	76873.9

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 8, 2022
Temperature / Humidity	27 deg. C / 25 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-80 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	26-tone RU	5210	0	-	19518.0
			18	-	36875.7
			36	-	19410.8
		5290	0	20.056	19612.9
			18	38.871	37237.4
			36	19.812	19479.6
		5530	0	19.797	19527.4
			18	38.930	37113.6
			36	19.844	19436.8
		5610	0	20.020	19511.4
			18	38.837	37191.4
			36	19.695	19350.2
		5690	0	19.814	19209.9
			18	38.704	37068.5
			36	19.825	19504.2
		5775	0	-	19499.8
			18	-	37251.5
			36	-	19443.7

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 8, 2022
Temperature / Humidity	27 deg. C / 25 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-80 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	52-tone RU	5210	37	-	19707.9
			44	-	26894.0
			52	-	19163.4
		5290	37	20.730	20134.2
			44	24.788	26138.5
			52	20.180	19294.0
		5530	37	20.683	20153.0
			44	24.883	27001.6
			52	20.018	19335.8
		5610	37	21.041	20109.9
			44	25.533	26091.8
			52	20.043	19123.2
		5690	37	20.757	19900.2
			44	25.575	25977.5
			52	20.255	19129.1
		5775	37	-	20014.6
			44	-	25980.7
			52	-	19228.8

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room	
Date	February 8, 2022	February 8, 2022
Temperature / Humidity	27 deg. C / 25 % RH	24 deg. C / 24 % RH
Engineer	Takafumi Noguchi	Kiyoshiro Okazaki
Mode	Tx	

11ax-80 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	106-tone RU	5210	53	-	19345.4
			56	-	27151.4
			60	-	18924.7
		5290	53	21.762	19840.6
			56	26.556	24600.4
			60	20.743	19133.1
		5530	53	21.836	19519.0
			56	25.431	26142.7
			60	20.634	19084.9
		5610	53	22.115	19903.5
			56	27.831	25294.8
			60	20.644	19119.7
		5690	53	22.184	19556.9
			56	25.865	24731.9
			60	20.765	19143.7
		5775	53	-	19629.5
			56	-	24063.8
			60	-	19024.2

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room
Date	February 8, 2022
Temperature / Humidity	27 deg. C / 25 % RH
Engineer	Takafumi Noguchi
Mode	Tx

11ax-80 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	242-tone RU	5210	61	-	23623.4
			62	-	42078.8
			64	-	22532.6
		5290	61	29.080	22814.4
			62	45.968	41188.5
			64	28.437	22704.6
		5530	61	28.812	23180.8
			62	47.389	41071.1
			64	27.300	22885.0
		5610	61	27.649	23114.8
			62	46.660	41491.0
			64	28.552	22454.7
		5690	61	27.134	23039.2
			62	47.819	41100.4
			64	28.736	22728.0
		5775	61	-	22933.9
			62	-	41237.8
			64	-	22500.9

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Ise EMC Lab. No.8 Measurement Room	
Date	February 8, 2022	February 8, 2022
Temperature / Humidity	27 deg. C / 25 % RH	24 deg. C / 24 % RH
Engineer	Takafumi Noguchi	Kiyoshiro Okazaki
Mode	Tx	

11ax-80 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	484-tone RU	5210	65	-	71459.4
			66	-	55727.4
		5290	65	79.790	62158.4
			66	79.654	58188.6
		5530	65	79.985	67684.6
			66	79.740	59973.9
		5610	65	79.920	68860.9
			66	79.508	56260.8
		5690	65	79.797	63716.1
			66	79.614	57588.5
		5775	65	-	67031.7
			66	-	58729.4

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

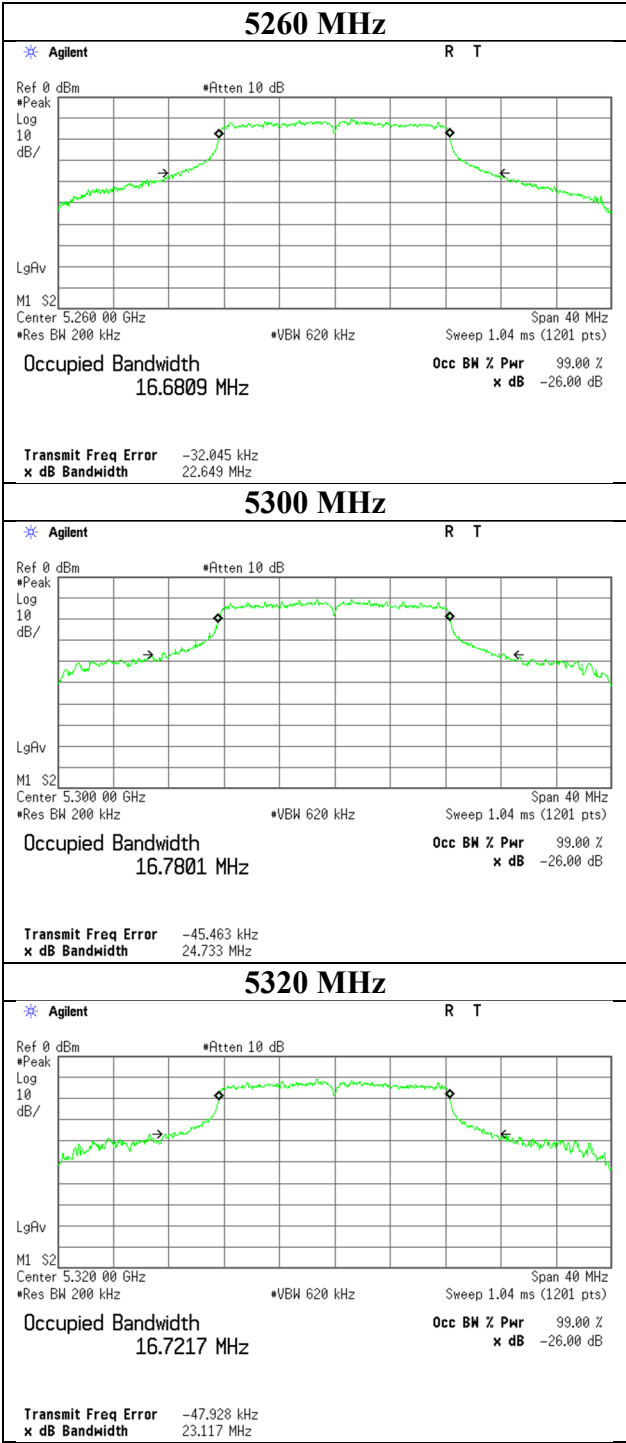
Test place	Ise EMC Lab. No.8 Measurement Room	
Date	February 8, 2022	February 8, 2022
Temperature / Humidity	27 deg. C / 25 % RH	24 deg. C / 24 % RH
Engineer	Takafumi Noguchi	Kiyoshiro Okazaki
Mode	Tx	

11ax-80 (OFDMA)

Antenna	RU Type	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 3	996-tone RU	5210	-	76502.6
		5290	80.121	76559.0
		5530	79.734	76770.7
		5610	79.813	76698.4
		5690	79.771	76563.4
		5775	-	76747.2

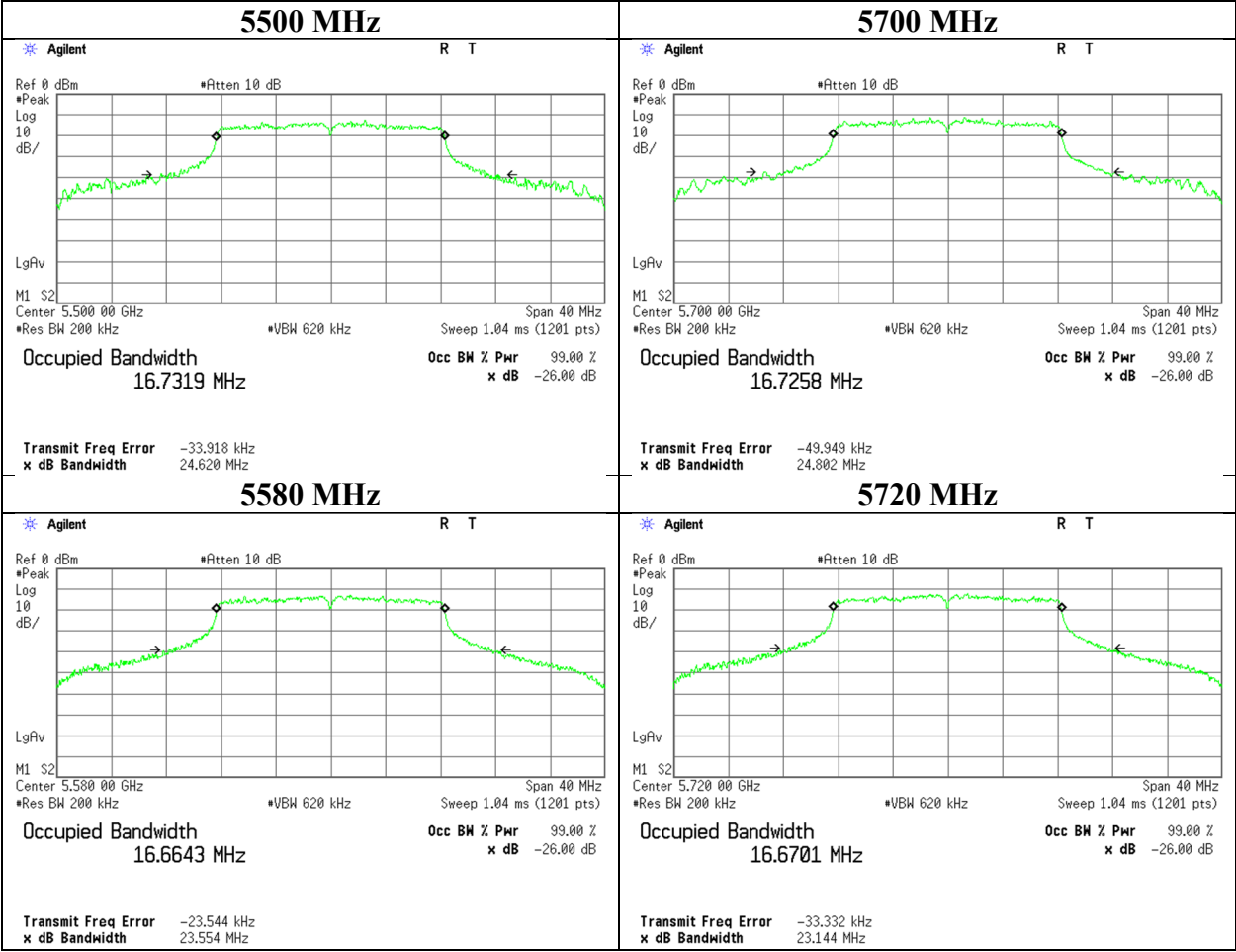
26 dB Emission Bandwidth

11a



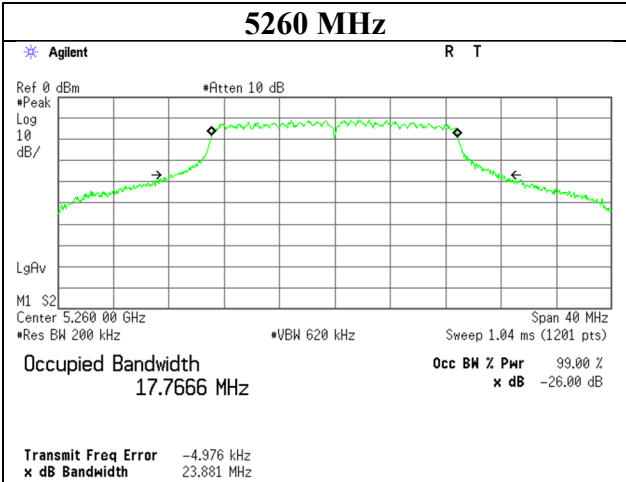
26 dB Emission Bandwidth

11a

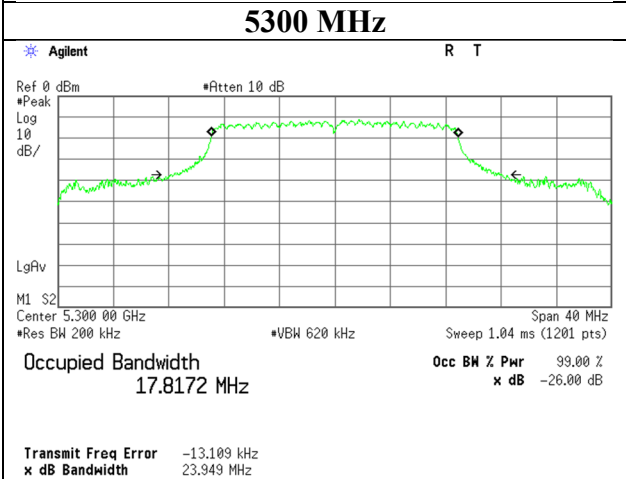


26 dB Emission Bandwidth

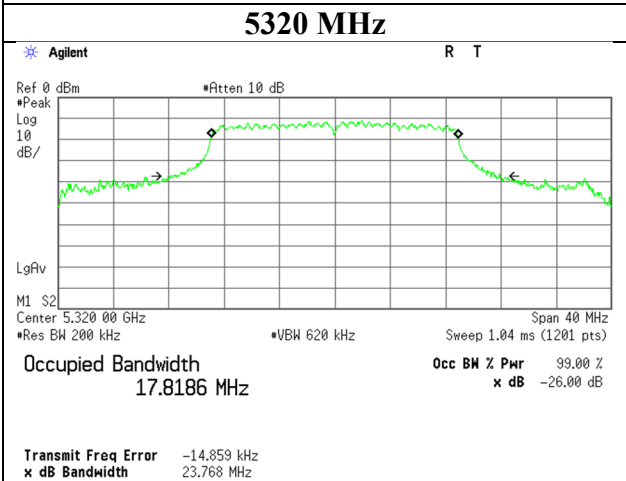
11n-20
5260 MHz



5300 MHz

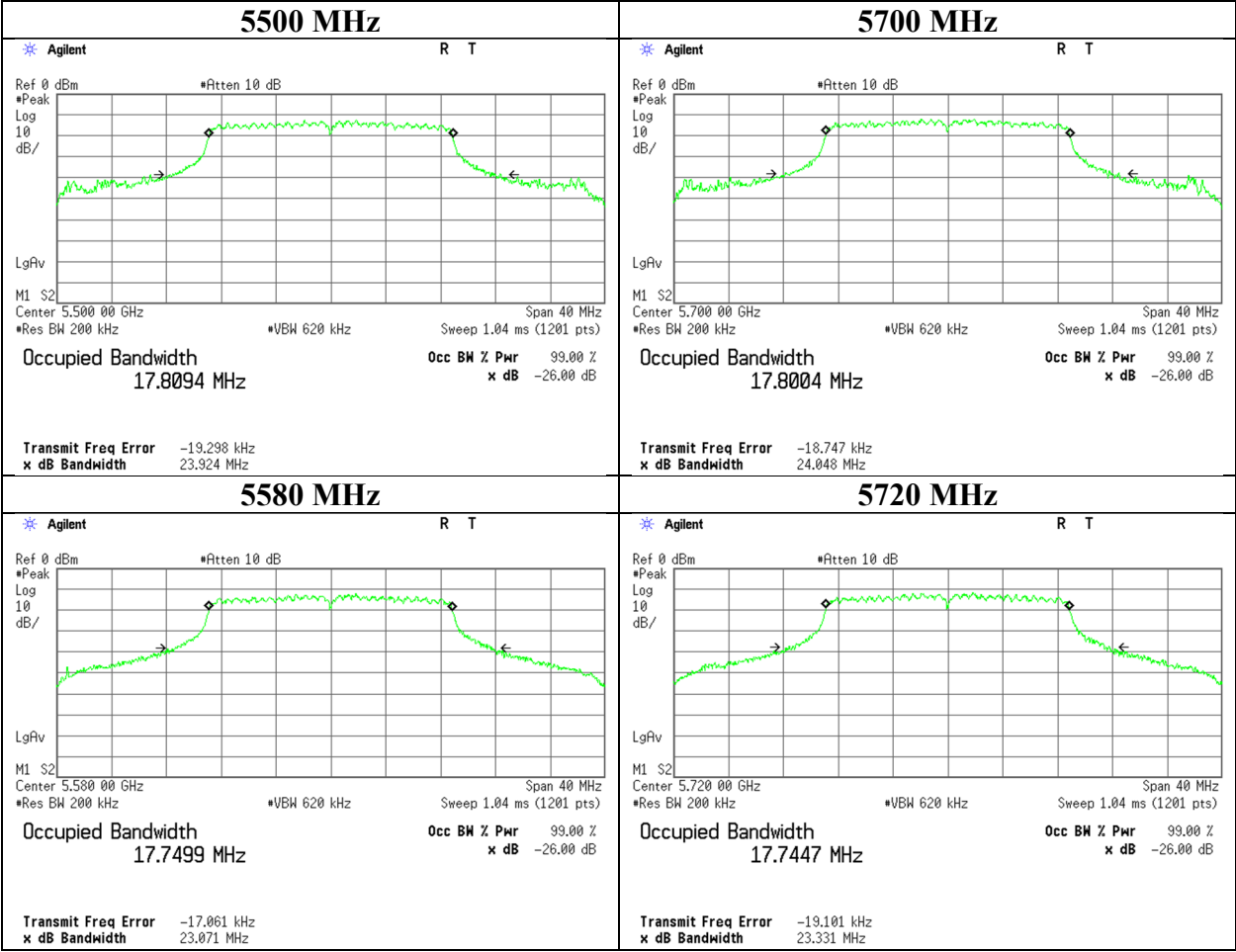


5320 MHz



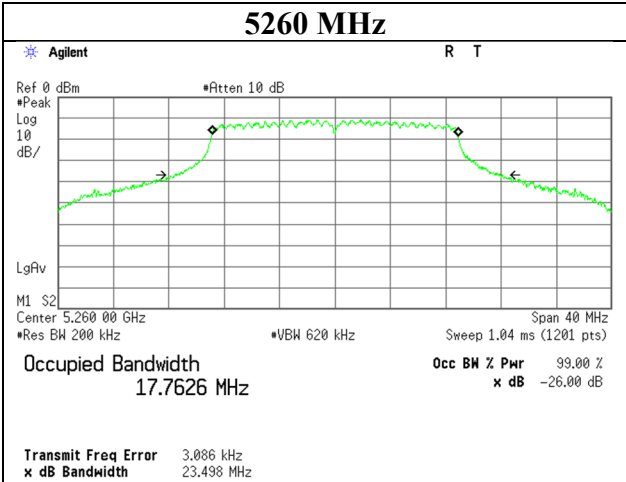
26 dB Emission Bandwidth

11n-20

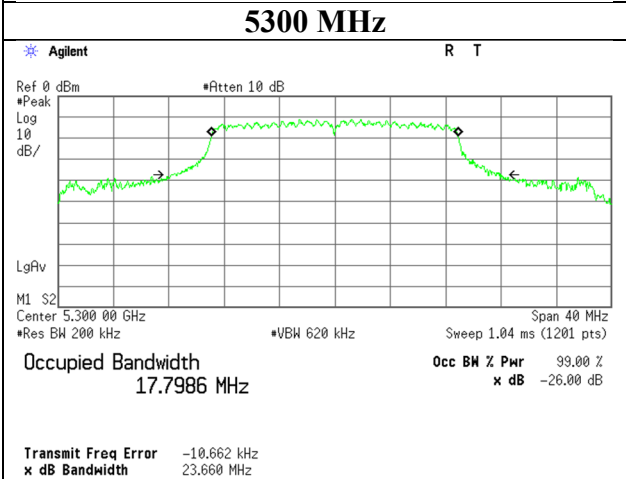


26 dB Emission Bandwidth

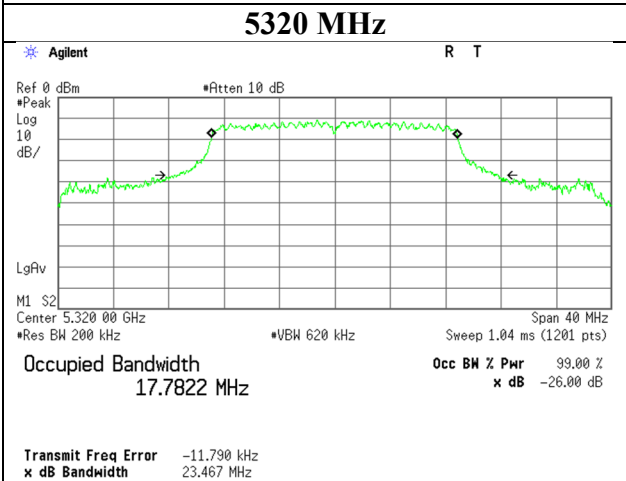
11ac-20
5260 MHz



5300 MHz

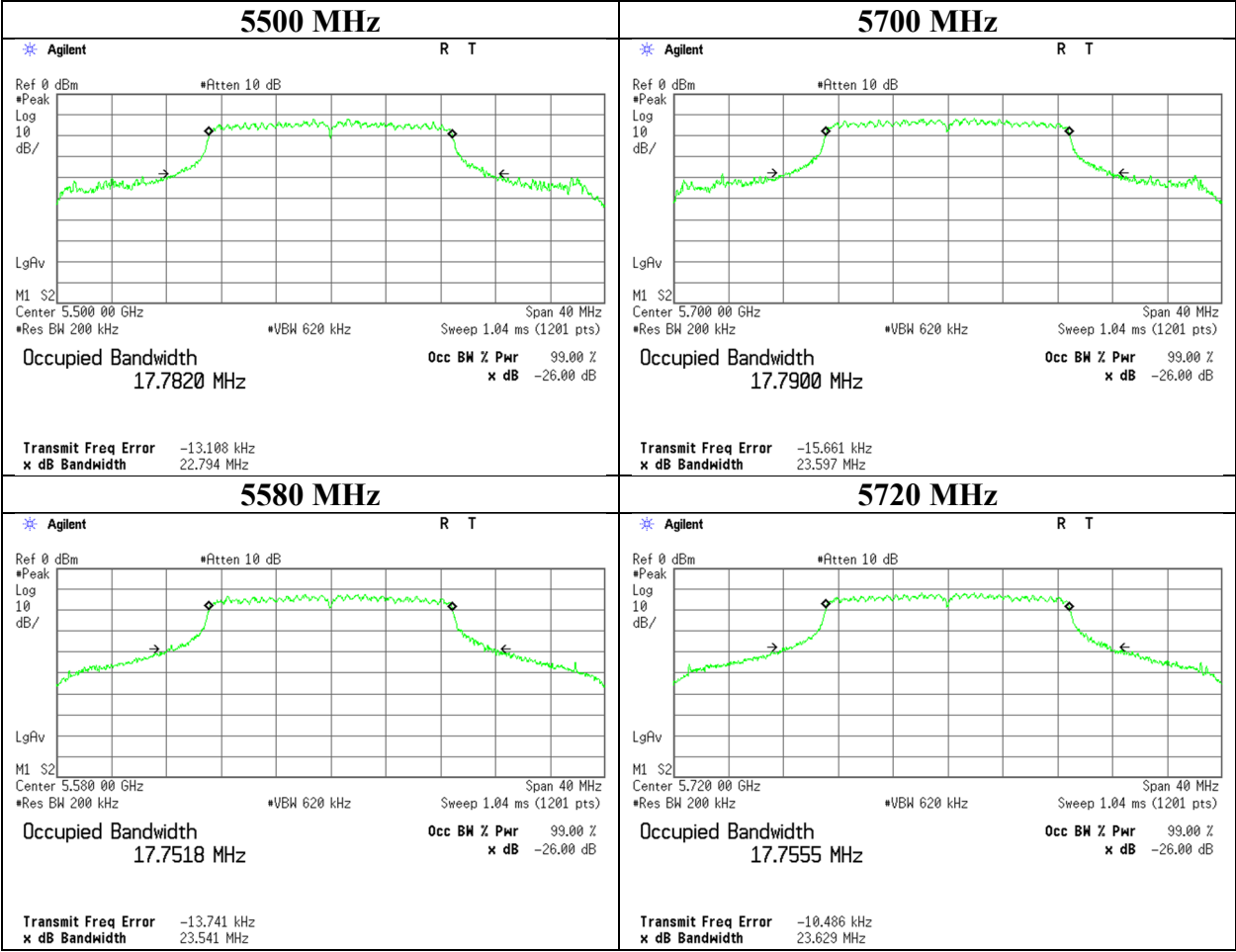


5320 MHz



26 dB Emission Bandwidth

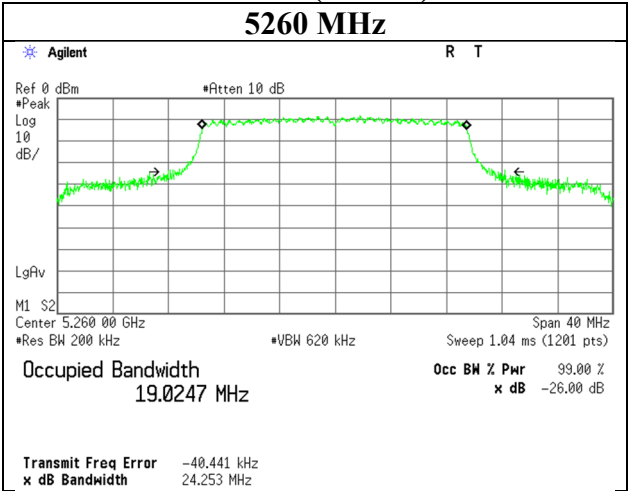
11ac-20



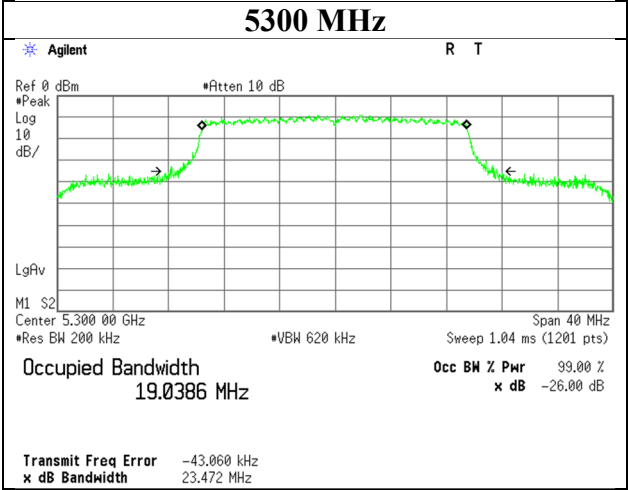
26 dB Emission Bandwidth

11ax-20 (OFDM)

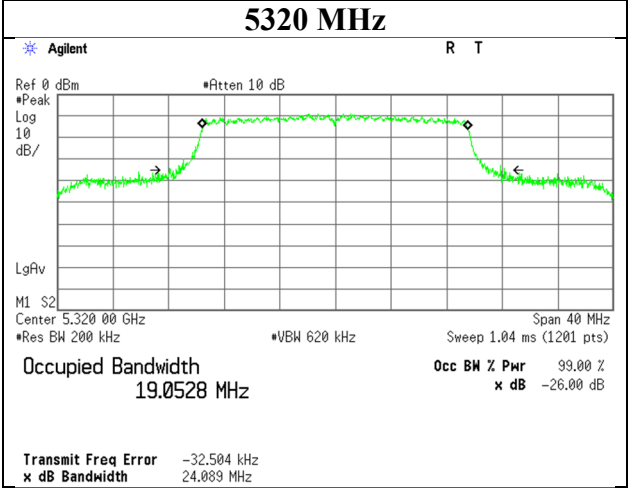
5260 MHz



5300 MHz

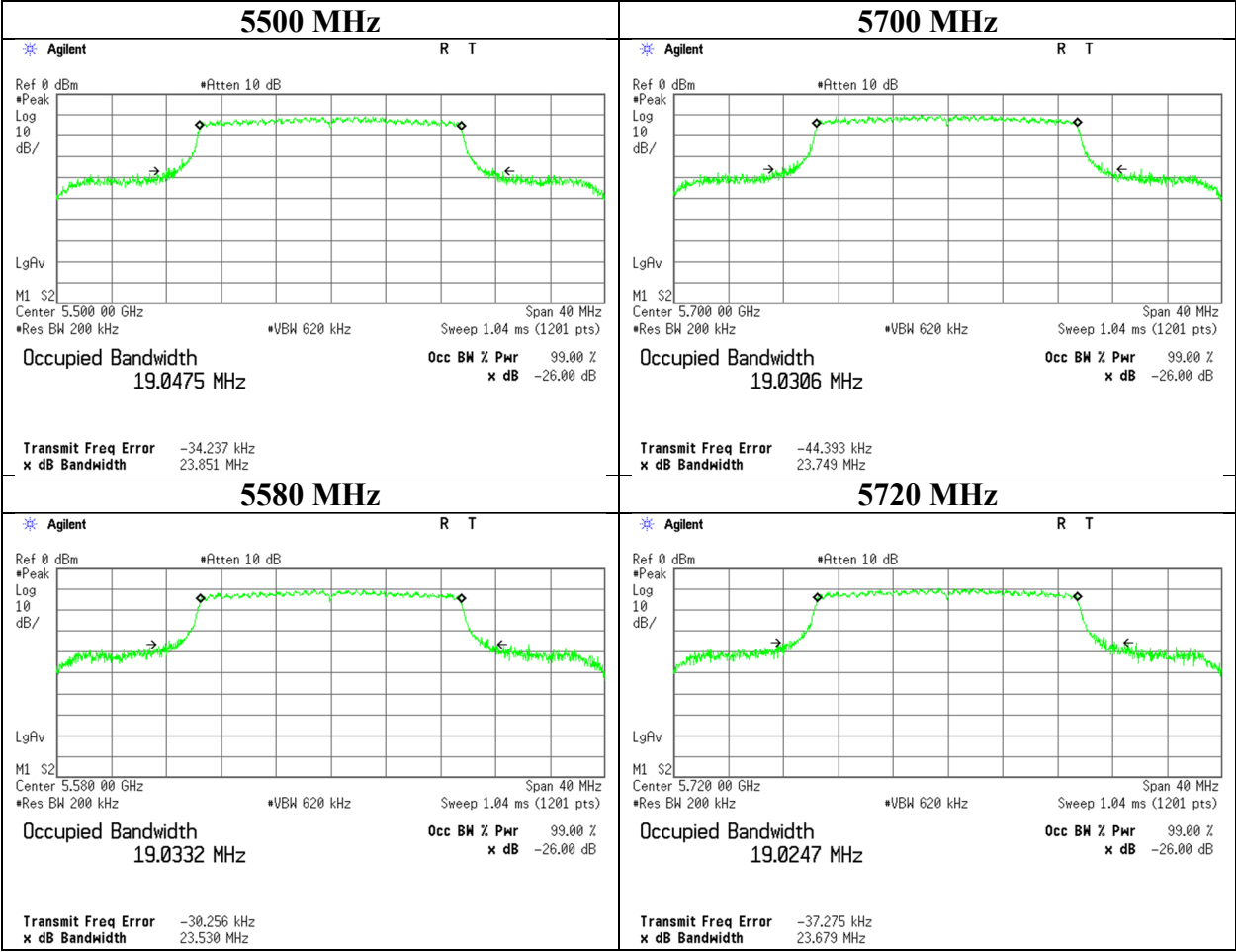


5320 MHz



26 dB Emission Bandwidth

11ax-20 (OFDM)

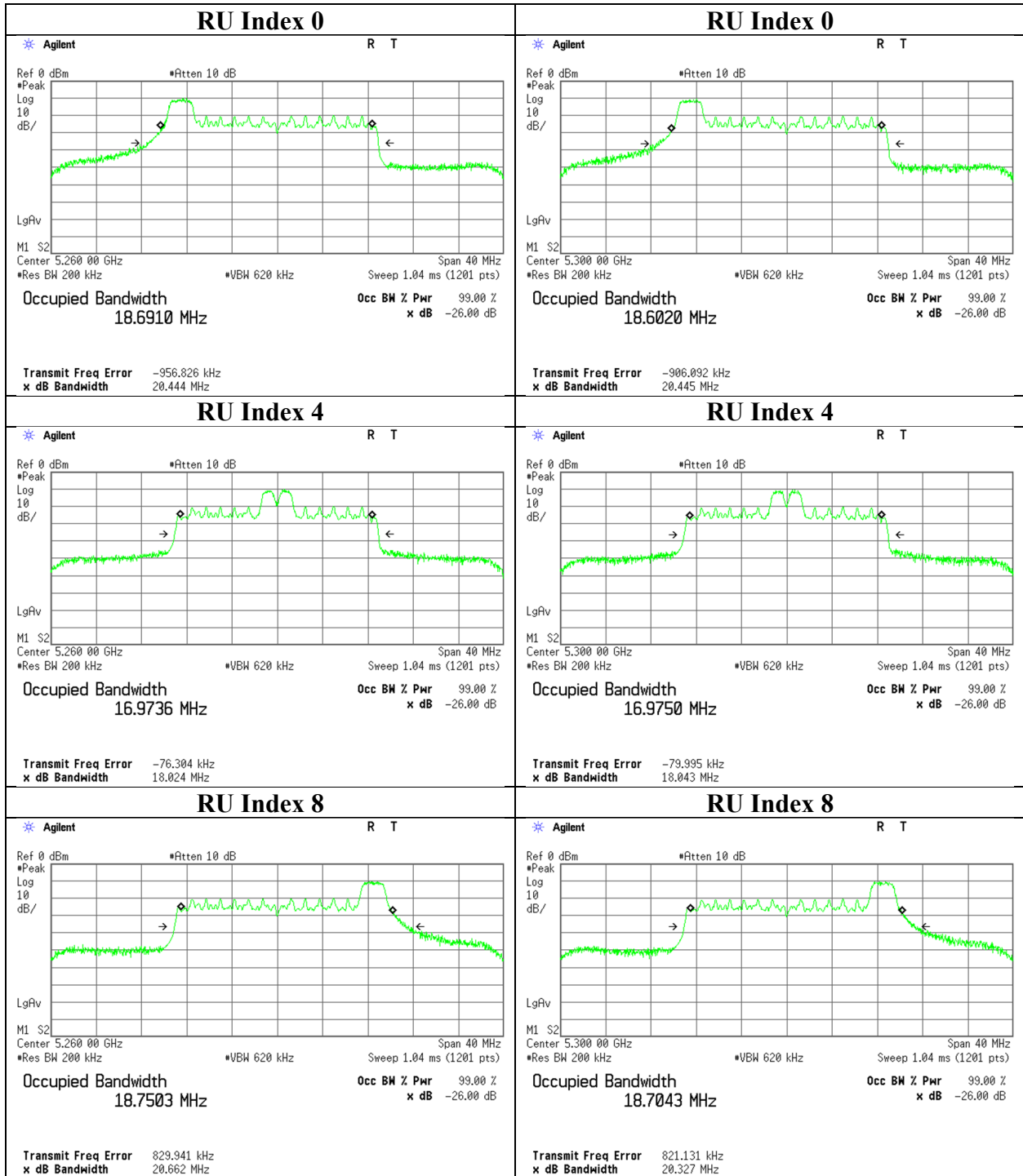


26 dB Emission Bandwidth

11ax-20 (OFDMA)

26-tone RU 5260 MHz

26-tone RU 5300 MHz

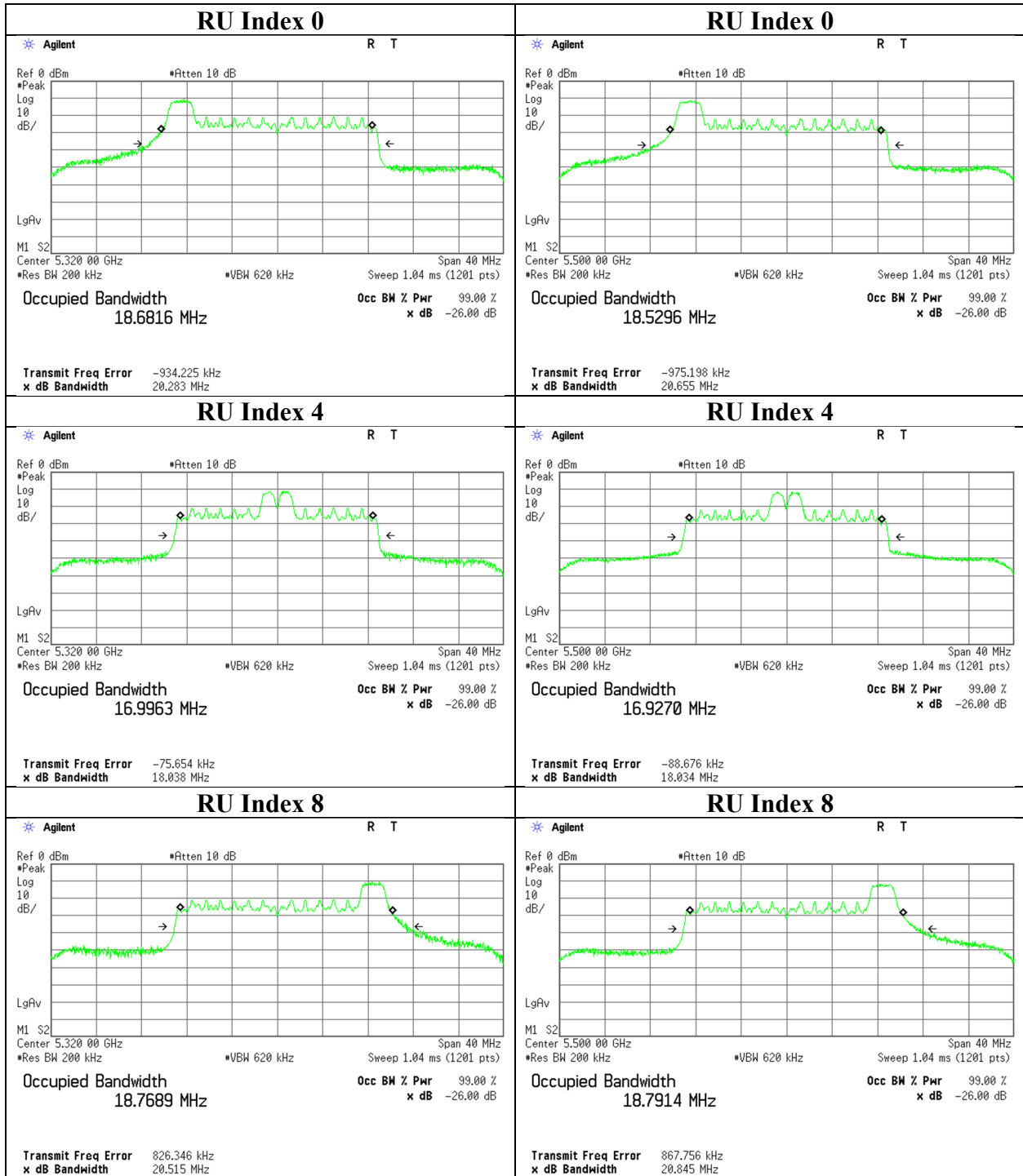


26 dB Emission Bandwidth

11ax-20 (OFDMA)

26-tone RU 5320 MHz

26-tone RU 5500 MHz

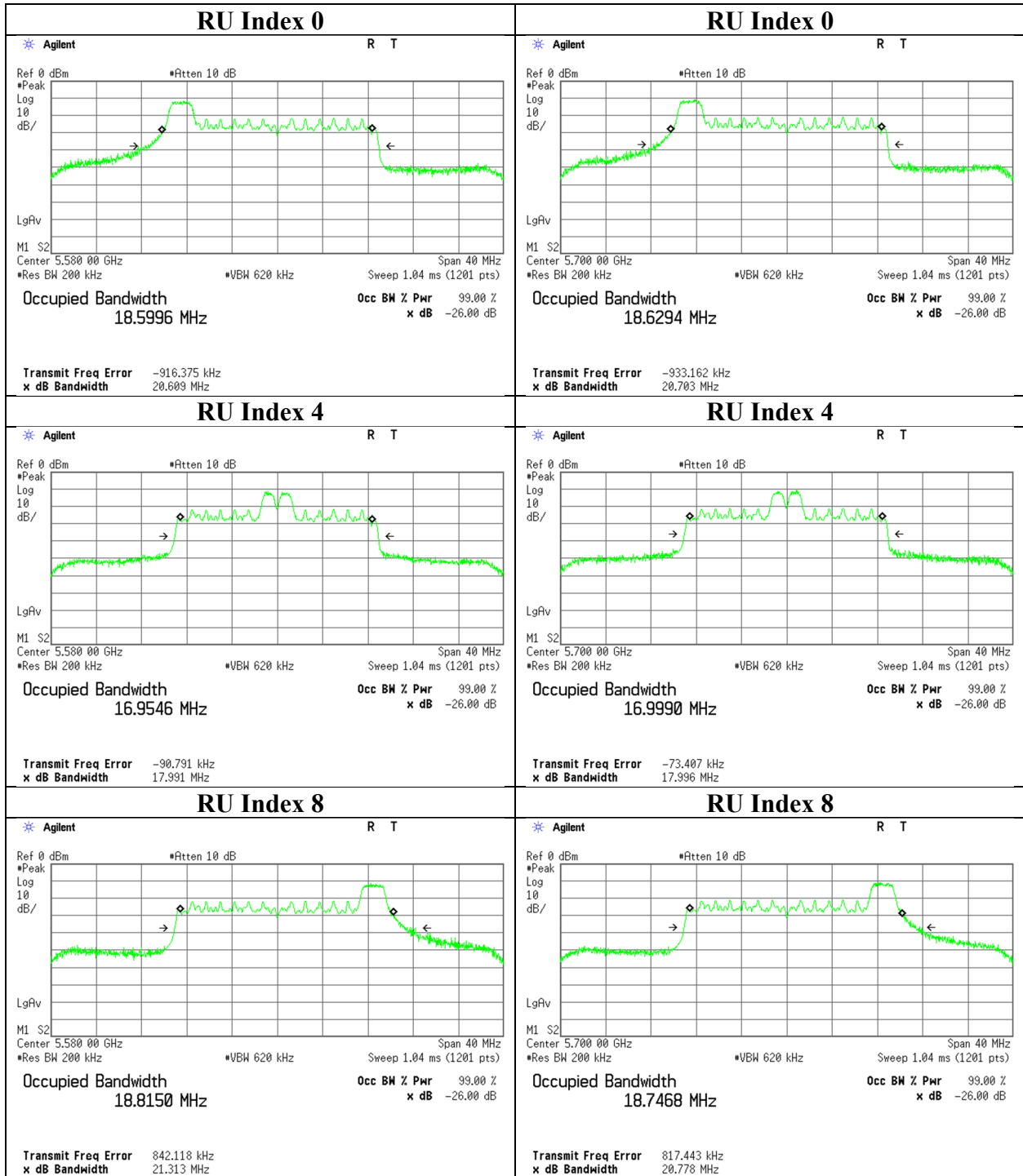


26 dB Emission Bandwidth

11ax-20 (OFDMA)

26-tone RU 5580 MHz

26-tone RU 5700 MHz



26 dB Emission Bandwidth

11ax-20 (OFDMA) 26-tone RU 5720 MHz

