

RADIO TEST REPORT

Test Report No. 15471317S-E-R1

Customer	Murata Manufacturing Co., Ltd.
Description of EUT	Communication Module
Model Number of EUT	Type1VY-002
FCC ID	VPYLB1VY002
Test Regulation	FCC Part 15 Subpart E
Test Result	Complied
Issue Date	April 18, 2025
Remarks	WLAN (5 GHz band) part Except for DFS test

Representative Test EngineerYosuke Murakami
Engineer**Approved By**Kazutaka Takeyama
Leader

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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REVISION HISTORY

Original Test Report No. 15471317S-E

This report is a revised version of 15471317S-E. 15471317S-E is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15471317S-E	April 14, 2025	-
1	15471317S-E-R1	April 18, 2025	Clause 3.2 [FCC Part 15.203 Antenna requirement] Corrected from; "The EUT has an external antenna connector, but it is installed inside the end product by the professionals." to; "The EUT has a unique coupling/antenna connector (U.FL connector)." Appendix 1 (Test Data) <u>Maximum Power Spectral Density</u> Added W58 test result to Tx 11ac-80 data. <u>Radiated Spurious Emission</u> Corrected frequency from "5460.001" to "5460.000" in the table of "(Calculation) (above 1 GHz Outside of the restricted band)" for "11ac-80 5530 MHz with BT LE 1M-PHY 2480 MHz".

Reference: Abbreviations (Including words undescribed in this report)

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

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SECTION 1: Customer Information

Company Name	Murata Manufacturing Co., Ltd.
Address	1-10-1 Higashikotari, Nagaokakyo-shi, Kyoto 617-8555 Japan
Telephone Number	+81-50-1737-2801
Contact Person	Kenji Hayashikoshi

The information provided by 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	Communication Module
Model Number	Type1VY-002
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	September 5 and 9 and November 13, 2024
Test Date	September 24, 2024 to February 6, 2025

2.2 Product Description

General Specification

Rating	VDD3P3, SWREG_IN, VDD_FEM: Typ.: DC 3.3 V, Min.: DC 3.135 V, Max.: DC 3.465 V VDDIO_GPIO, VDDIO_AO: Typ.: DC 3.3 V, 1.8 V, Min.: DC 3.135 V, 1.71 V, Max.: DC 3.465 V, 1.89 V
Operating Temperature	-30 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 / $\pi/4$ -DQPSK, 8DPSK / GFSK
Antenna Gain ^{a)}	0.82 dBi

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

Equipment Type	Transceiver
Frequency of Operation	2412 MHz to 2462 MHz
Type of Modulation	DSSS, OFDM
Antenna Gain ^{a)}	0.82 dBi

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

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band:	5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5720 MHz 5745 MHz to 5825 MHz
	40 MHz Band:	5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5710 MHz 5755 MHz to 5795 MHz
	80 MHz Band:	5210 MHz 5290 MHz 5530 MHz to 5690 MHz 5775 MHz
Type of Modulation	OFDM	
Antenna Gain ^{a)}	0.96 dBi	

Transmission patterns

Mode	Config.1	Config.2	Config.3	Config.4	Config.5	
Bluetooth	-	-	Transmit	Transmit *1)	Transmit *2)	-
2.4 GHz	Transmit	-	-	-	-	Transmit *2)
5 GHz	-	Transmit	-	Transmit *1)	-	-

*1) Simultaneous operation of WLAN and BT

*2) Exclusive operation of either WLAN or BT

SECTION 3: Test specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart E The latest version on the first day of the testing period
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) (9) / 15.207 ISED: RSS-Gen 8.8	28.4 dB, 0.18303 MHz, N, QP Mode: Tx 11ac-40 5550 MHz	Complied	-
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	See data	Complied	Conducted
Maximum Conducted Output Power	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2		Complied	Conducted
Maximum Power Spectral Density	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2		Complied	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	0.3 dB 7333.316 MHz, AV, Hori. Mode: Tx 11a 5500 MHz	Complied	Conducted (below 30 MHz) / Radiated (above 30 MHz) *1)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2	See data	Complied	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).					

FCC Part 15.31 (e)

The module is constantly provided with the stable voltage from the host device. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

The EUT has a unique coupling/antenna connector (U.FL connector). 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	-	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	3.0 dB
Radiated Emission (Measurement distance: 3 m)	9 kHz to 30 MHz	3.3 dB
	30 MHz to 200 MHz	4.8 dB
	200 MHz to 1 GHz	6.1 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)	1.3 dB
Power Measurement above 1 GHz (Peak Detector)	1.5 dB
Spurious Emission (Conducted) below 1 GHz	0.93 dB
Conducted Emissions Power Density Measurement 1 GHz to 3 GHz	0.93 dB
Conducted Emissions Power Density Measurement 3 GHz to 18 GHz	3.0 dB
Spurious Emission (Conducted) 18 GHz to 26.5 GHz	2.8 dB
Spurious Emission (Conducted) 26.5 GHz to 40 GHz	2.3 dB
Bandwidth Measurement	0.012 %
Duty Cycle and Time Measurement	0.27 %
Temperature	2.2 deg.C.
Humidity	3.4 %
Voltage	0.92 %

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 802.11a (11a)	48 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)	MCS 5, PN9
IEEE 802.11ac 20 MHz BW (11ac-20)	MCS 5, PN9
IEEE 802.11n 40 MHz BW (11n-40)	MCS 5, PN9
IEEE 802.11ac 40 MHz BW (11ac-40)	MCS 5, PN9
IEEE 802.11ac 80 MHz BW (11ac-80)	MCS 5, PN9
*The worst condition was determined based on the test result of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; Power Setting: High power mode: 10.5 (Setting value) Standard power mode: 6 (Setting value) Software: QRCT version 3.0.276.0 (QMSL version 6.1.274.QOHONEMS) (Date: 2024.9.11, 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	

*Details of Operation Mode(s)

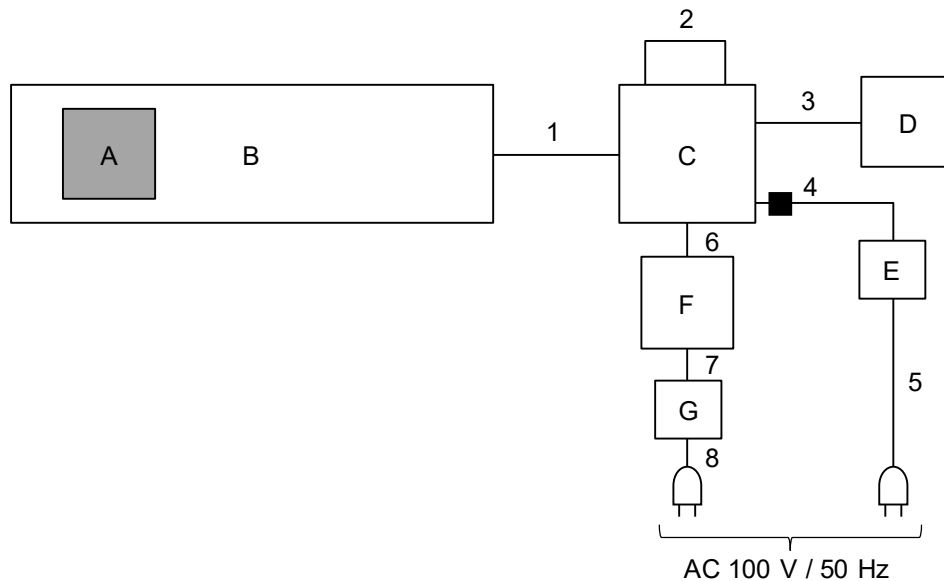
Test Item	Operating Mode	Tested Frequency			
		Lower Band	Middle Band	Additional Band	Upper Band
Conducted emission	Tx 11ac-40 *1)	-	-	5550 MHz	-
26 dB Emission Bandwidth *2)	Tx 11a Tx 11ac-20	-	5260 MHz 5300 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz 5720 MHz	-
	Tx 11ac-40	-	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz 5710 MHz	-
	Tx 11ac-80	-	5290 MHz	5530 MHz 5610 MHz 5690 MHz	-
99 % Occupied Bandwidth, Maximum Conducted Output Power, Maximum Power Spectral Density *2)	Tx 11a Tx 11ac-20	5180 MHz 5220 MHz 5240 MHz	5260 MHz 5300 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz 5720 MHz	5745 MHz 5785 MHz 5825 MHz
	Tx 11ac-40	5190 MHz 5230 MHz	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz 5710 MHz	5755 MHz 5795 MHz
	Tx 11ac-80	5210 MHz	5290 MHz	5530 MHz 5610 MHz 5690 MHz	5775 MHz
6 dB Bandwidth *2)	Tx 11a Tx 11ac-20	-	-	-	5745 MHz 5785 MHz 5825 MHz
	Tx 11ac-40	-	-	-	5755 MHz 5795 MHz
	Tx 11ac-80	-	-	-	5775 MHz
Radiated Spurious Emission (Below 1 GHz)	Tx 11ac-40 *1)	-	-	5550 MHz	-
Radiated Spurious Emission (Above 1 GHz) *2)	Tx 11a Tx 11ac-20	5180 MHz 5240 MHz	5320 MHz	5500 MHz 5580 MHz 5700 MHz	5745 MHz 5785 MHz 5825 MHz
	Tx 11ac-40	5190 MHz 5230 MHz	5310 MHz	5510 MHz 5550 MHz 5670 MHz	5755 MHz 5795 MHz
	Tx 11ac-80	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz
Conducted Spurious Emission	Tx 11ac-40 *1)	-	-	5550 MHz	-
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test. *2) Since each mode of 11n/11ac have same modulation method and no differences in transmitting specification, the test was performed on the representative mode that had the highest output power.					

Simultaneous transmission

Test Item	Mode *1)
Radiated Spurious Emission (Spurious)	Tx 11a 5500 MHz + BLE 1M-PHY 2480 MHz
Radiated Spurious Emission (Band edge)	Tx 11ac-80 5530 MHz + BLE 1M-PHY 2480 MHz
*1) Simultaneous transmission was tested on the channel that was the worst for single transmission.	

4.2 Configuration and Peripherals

<For Antenna Terminal Conducted Test>



■: Standard Ferrite Core

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

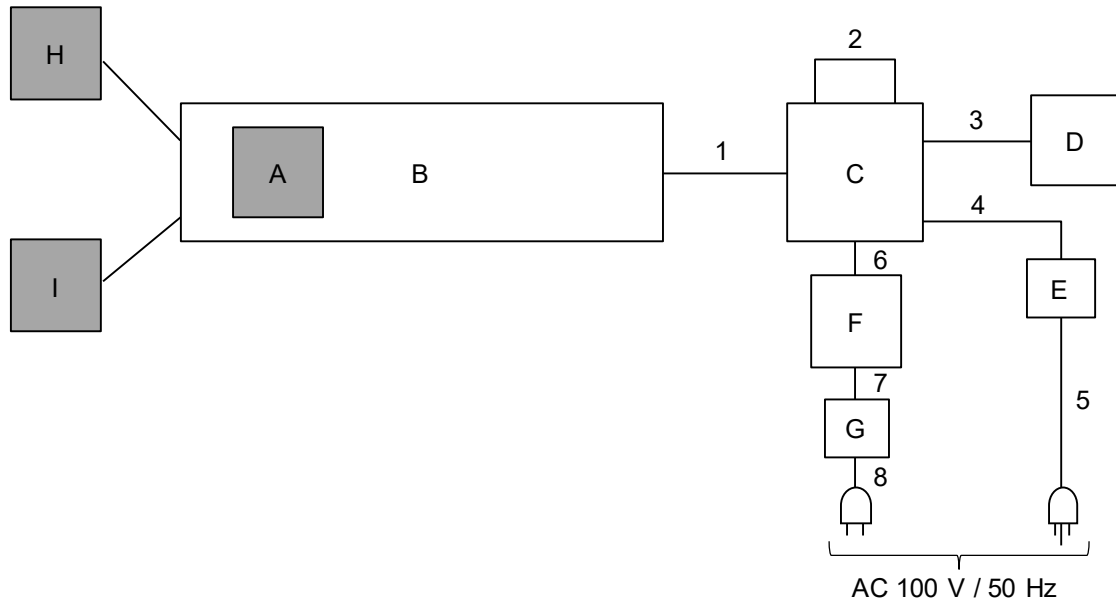
Description of EUT and Support Equipment

No.	Item	Model Number	Serial Number	Manufacturer	Remarks
A	Communication Module	Type1VY-002	#001	Murata Manufacturing Co., Ltd.	EUT
B	Jig Board	P2ML11773	#001	Murata Manufacturing Co., Ltd.	-
C	Mini personal computer	Brix	No.i7-No.04	GIGABYTE	-
D	SSD	SSD370S	H32675-1153	Transcend	-
E	AC Adaptor	FSP065-REB	H4511000372	FSP GROUP INC.	-
F	Laptop Computer	ThinkPad L580	PF-1LTWJ8	LENOVO	-
G	AC Adaptor	ADLX45YLC2A	8SSA10E75842L1CZ94J0D3D	LENOVO	-

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Signal	0.15	Unshielded	Unshielded	-
2	USB	0.5	Shielded	Shielded	-
3	Singal	0.1	Shielded	Shielded	-
4	DC	1.6	Unshielded	Unshielded	-
5	AC	0.6	Unshielded	Unshielded	-
6	LAN	2.0	Unshielded	Unshielded	-
7	DC	1.8	Unshielded	Unshielded	-
8	AC	0.9	Unshielded	Unshielded	-

<For Radiated Emission test>



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

Description of EUT and Support Equipment

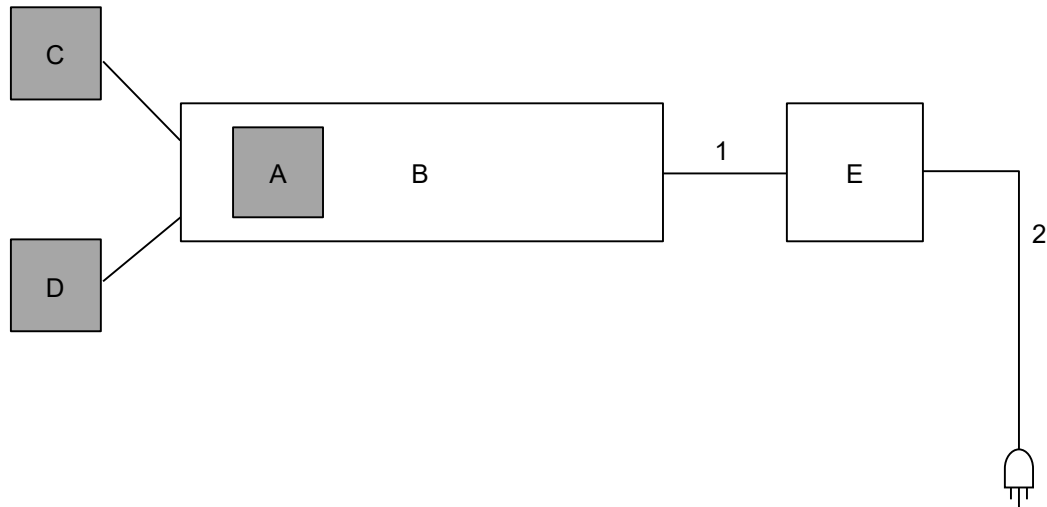
No.	Item	Model Number	Serial Number	Manufacturer	Remarks
A	Communication module	Type1VY-002	#002	Murata Manufacturing Co., Ltd.	EUT
B	Jig Board	P2ML11773	#002	Murata Manufacturing Co., Ltd.	-
C	Mini personal computer	Brix	No.i5-32	GIGABYTE	-
D	SSD	SSD370S	F3559-2490	Transcend	-
E	Power Supply (DC)	PAN35-10A	CY002947	Kikusui Electronics Corp.	-
F	Laptop Computer	A6G7FPF8D511	90054652H	TOSHIBA	-
G	AC Adaptor	PA5177U-1ACA	K80611667CGD	TOSHIBA	-
H	Antenna (monopole)	chain0 monopole 5 GHz	#1	SONY	EUT
I	Antenna (monopole)	chain0 monopole 2.4 GHz	#2	SONY	EUT *1)

*1) Not used for 5 GHz WLAN transmission/reception.

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Signal	0.3	Unshielded	Unshielded	-
2	USB	0.6	Shielded	Shielded	-
3	Signal	0.1	Shielded	Shielded	-
4	DC	1.6	Unshielded	Unshielded	-
5	AC	1.0	Unshielded	Unshielded	-
6	LAN	1.6	Unshielded	Unshielded	-
7	DC	1.8	Unshielded	Unshielded	-
8	AC	0.9	Unshielded	Unshielded	-

<For Radiated Emission test (Simultaneous Transmission) and Conducted Emission test>



AC 100 V / 50 Hz (Radiated Emission test)
AC 120 V / 60 Hz (Conducted Emission test)

* 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	Communication module	Type1VY-002	#020	Murata Manufacturing Co., Ltd.	EUT
B	Jig Board	P2ML11773	#020	Murata Manufacturing Co., Ltd.	-
C	Antenna (monopole)	chain0 monopole 5 GHz	#1	SONY	EUT
D	Antenna (monopole)	chain0 monopole 2.4 GHz	#2	SONY	EUT
E	Power Supply (DC)	PAN35-10A	NA000955 *1) DE001677 *2)	Kikusui Electronics Corp.	-

*1) Used for Radiated Emission test.

*2) Used for Conducted Emission test.

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC	2.0	Unshielded	Unshielded	-
2	AC	1.8	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and Conditions

EUT was placed on a wooden table of nominal size, 0.8 m by 1.6 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 was 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.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT via DC power supply in a Shielded Room.

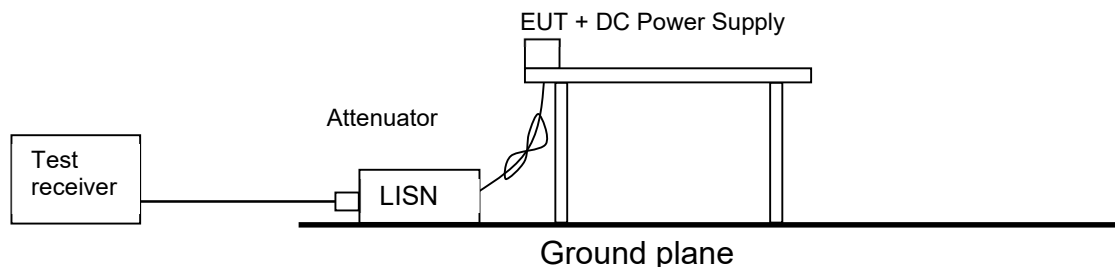
The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Test results are rounded off and limit are rounded down, 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 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.

< 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.

< Below 1 GHz >

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

< Above 1 GHz >

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 5.8 GHz band 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:

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

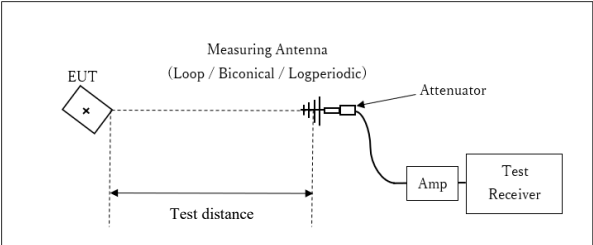
Test Antennas are used as below;

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	RBW: 1 MHz VBW: 1/T (T: burst length, refer to Burst rate confirmation sheet) Detector: Peak

Figure 2: Test Setup

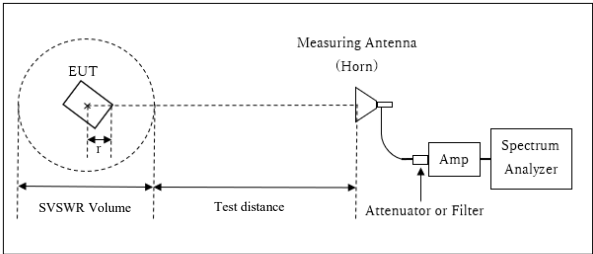
Below 1 GHz



x : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz

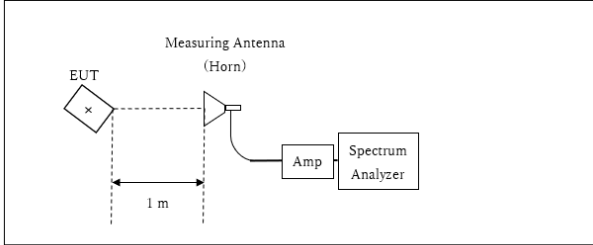


r : Radius of an outer periphery of EUT
x : Center of turn table

Distance Factor: $20 \times \log (3.86 \text{ m} / 3.0 \text{ m}) = 2.19 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.86 \text{ m}$

SVSWR Volume : 2.0 m
(SVSWR Volume has been calibrated based on
CISPR 16-1-4.)
 $r = 0.14 \text{ m}$

10 GHz to 40 GHz



x : Center of turn table

Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$
*Test Distance: 1 m

The carrier level and noise levels were confirmed at each position of 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.

	Antenna polarization	Carrier	Spurious (30 MHz to 1 GHz)	Spurious (1 GHz to 6.4 GHz)	Spurious (6.4 GHz to 10 GHz)	Spurious (10 GHz to 18 GHz)	Spurious (18 GHz to 26.5 GHz)	Spurious (26.5 GHz to 40 GHz)
Module	Horizontal	Z	X	Z	Y	X	X	X
	Vertical	Z	X	Z	X	X	X	X
Antenna	Horizontal	X	X	X	Z	X	X	X
	Vertical	Y	X	Y	Y	Y	Y	X

Test results are rounded off and limit are rounded down, 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: 160 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 (100 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3) *4)	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) 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 kHz / 470 kHz)) was added to the test result.

*3) In the frequency range below 30 MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9 kHz to 150 kHz: RBW = 200 Hz, 150 kHz to 30 MHz: RBW = 10 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.

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

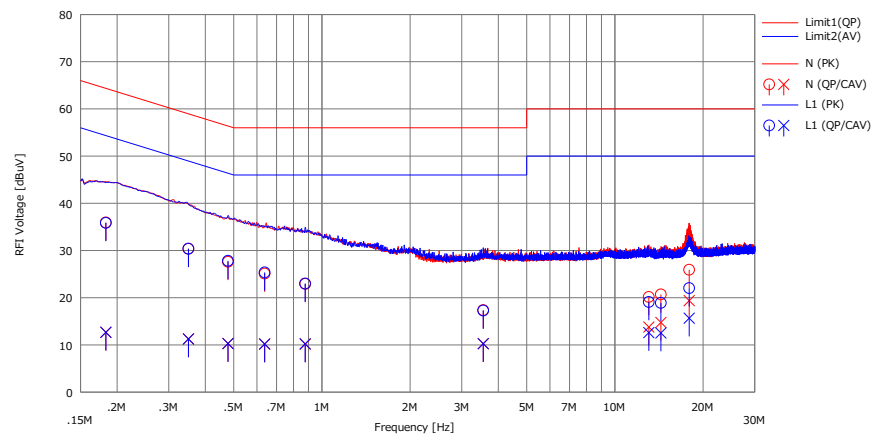
Test Data : APPENDIX
Test Result : Pass

APPENDIX 1: Test Data

Conducted Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date December 5, 2024
Temperature / Humidity 23 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx 11ac-40 5550 MHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		[QP] [dBuV]	[CAV] [dBuV]		[QP] [dBuV]	[CAV] [dBuV]	[QP] [dBuV]	[AV] [dBuV]	[QP] [dB]	[AV] [dB]		
1	0.18303	20.51	-2.74	15.42	35.93	12.68	64.35	54.35	28.4	41.6	N	
2	0.35045	14.91	-4.18	15.43	30.34	11.25	58.95	48.95	28.6	37.7	N	
3	0.47792	12.14	-5.15	15.46	27.60	10.31	56.38	46.38	28.7	36.0	N	
4	0.63777	9.63	-5.29	15.48	25.11	10.19	56.00	46.00	30.8	35.8	N	
5	0.87783	7.41	-5.33	15.50	22.91	10.17	56.00	46.00	33.0	35.8	N	
6	3.55330	1.70	-5.37	15.66	17.36	10.29	56.00	46.00	38.6	35.7	N	
7	13.05338	4.01	-2.35	16.14	20.15	13.79	60.00	50.00	39.8	36.2	N	
8	14.36139	4.50	-1.45	16.20	20.70	14.75	60.00	50.00	39.3	35.2	N	
9	17.93635	9.57	3.03	16.35	25.92	19.38	60.00	50.00	34.0	30.6	N	
10	0.18303	20.43	-2.75	15.41	35.84	12.66	64.35	54.35	28.5	41.6	L1	
11	0.35045	14.96	-4.17	15.43	30.39	11.26	58.95	48.95	28.5	37.6	L1	
12	0.47792	12.36	-5.17	15.45	27.81	10.28	56.38	46.38	28.5	36.1	L1	
13	0.63777	9.89	-5.28	15.47	25.36	10.19	56.00	46.00	30.6	35.8	L1	
14	0.87646	7.49	-5.28	15.51	23.00	10.23	56.00	46.00	33.0	35.7	L1	
15	3.55330	1.61	-5.42	15.66	17.27	10.24	56.00	46.00	38.7	35.7	L1	
16	13.05338	3.06	-3.42	16.03	19.09	12.61	60.00	50.00	40.9	37.3	L1	
17	14.36139	2.83	-3.55	16.07	18.90	12.52	60.00	50.00	41.1	37.4	L1	
18	17.93635	5.85	-0.52	16.18	22.03	15.66	60.00	50.00	37.9	34.3	L1	

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

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.5 Shielded Room
October 1, 2024
25 deg. C / 58 % RH
Yosuke Murakami
Tx

11a

Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5180	-	17208.6
5220	-	17188.6
5240	-	17177.5
5260	22.786	17199.2
5300	22.890	17200.2
5320	22.631	17190.1
5500	22.693	17175.3
5580	22.696	17186.7
5700	22.672	17181.3
5720	22.640	17167.1
5745	-	17176.2
5785	-	17169.9
5825	-	17176.5

11ac-20

Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5180	-	18120.0
5220	-	18121.0
5240	-	18118.6
5260	22.997	18128.0
5300	22.971	18115.3
5320	22.947	18112.7
5500	23.033	18109.9
5580	23.053	18113.5
5700	22.892	18129.0
5720	22.915	18109.2
5745	-	18117.4
5785	-	18104.6
5825	-	18111.5

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.5 Shielded Room
October 1, 2024
25 deg. C / 58 % RH
Yosuke Murakami
Tx

October 2, 2024
25 deg. C / 53 % RH
Yosuke Murakami

11ac-40

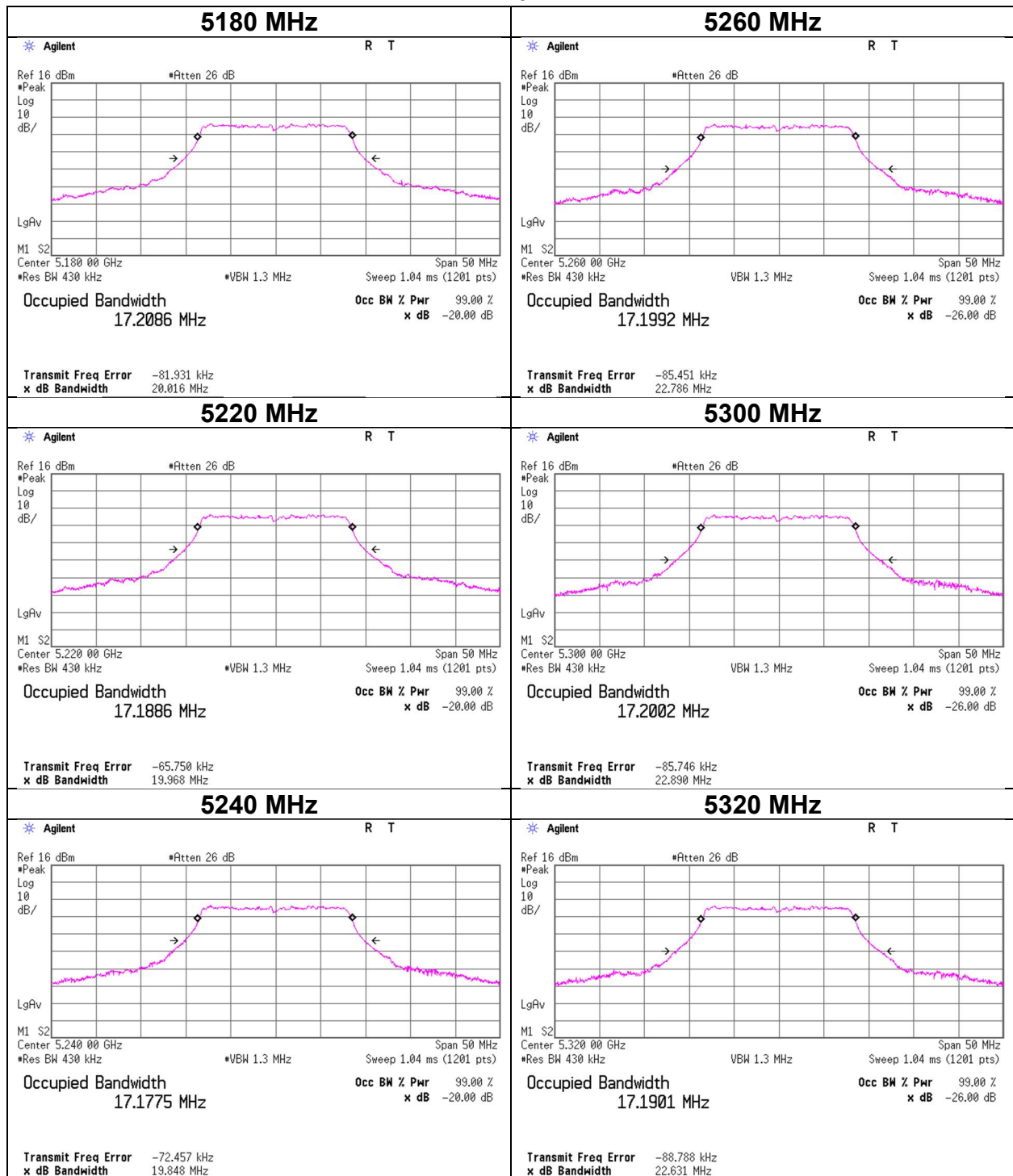
Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5190	-	37154.3
5230	-	37124.3
5270	45.562	37116.0
5310	45.256	37074.9
5510	45.483	37051.1
5550	45.345	37100.5
5670	45.377	37079.6
5710	44.923	37059.4
5755	-	37062.7
5795	-	37029.6

11ac-80

Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5210	-	77119.5
5290	98.513	76827.4
5530	97.057	76890.4
5610	98.677	76953.5
5690	96.161	76906.4
5775	-	76830.4

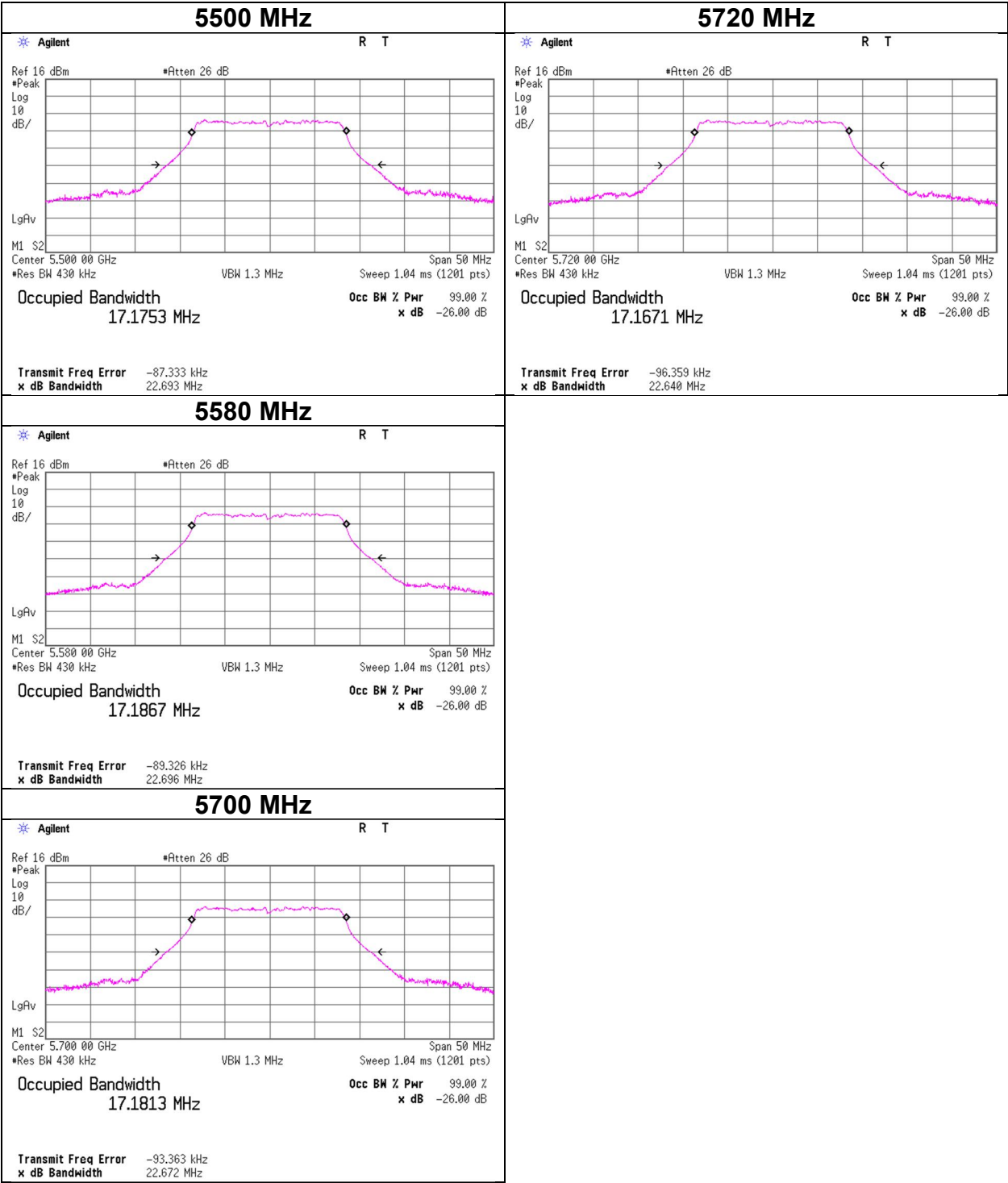
26 dB Emission Bandwidth and 99 % Occupied Bandwidth

11a

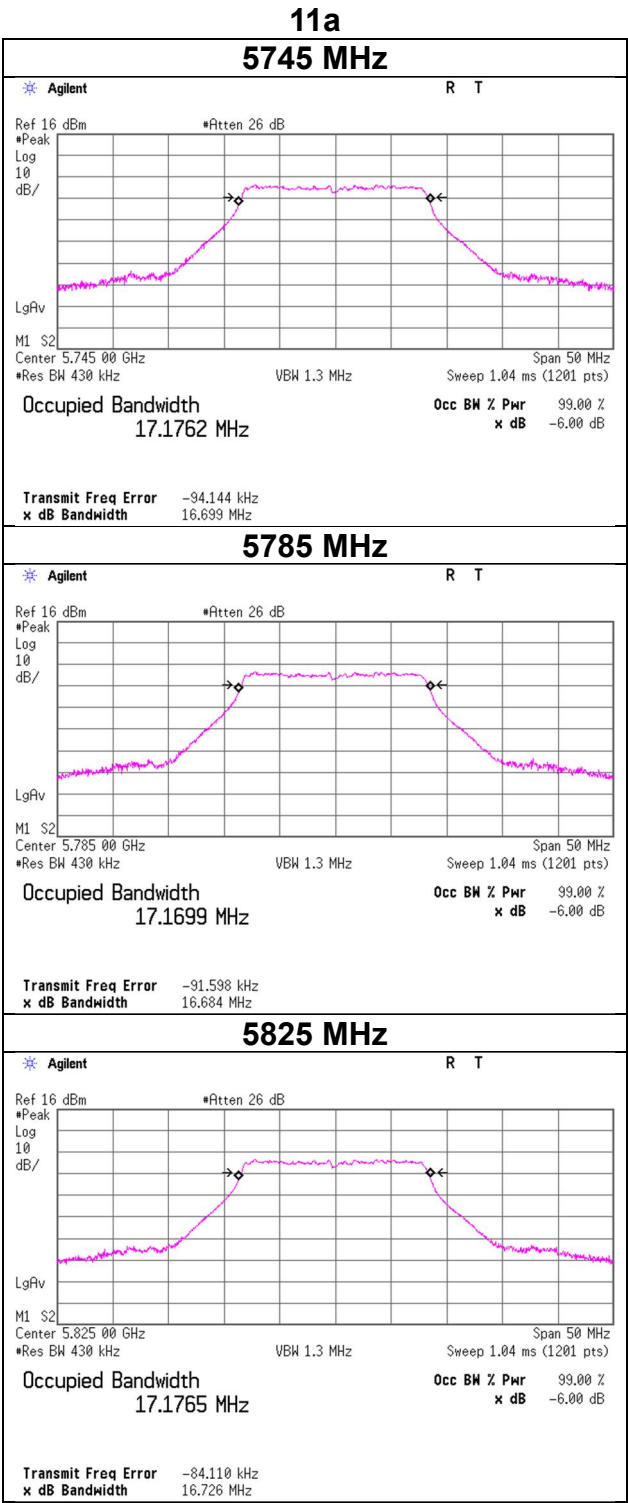


26 dB Emission Bandwidth and 99 % Occupied Bandwidth

11a

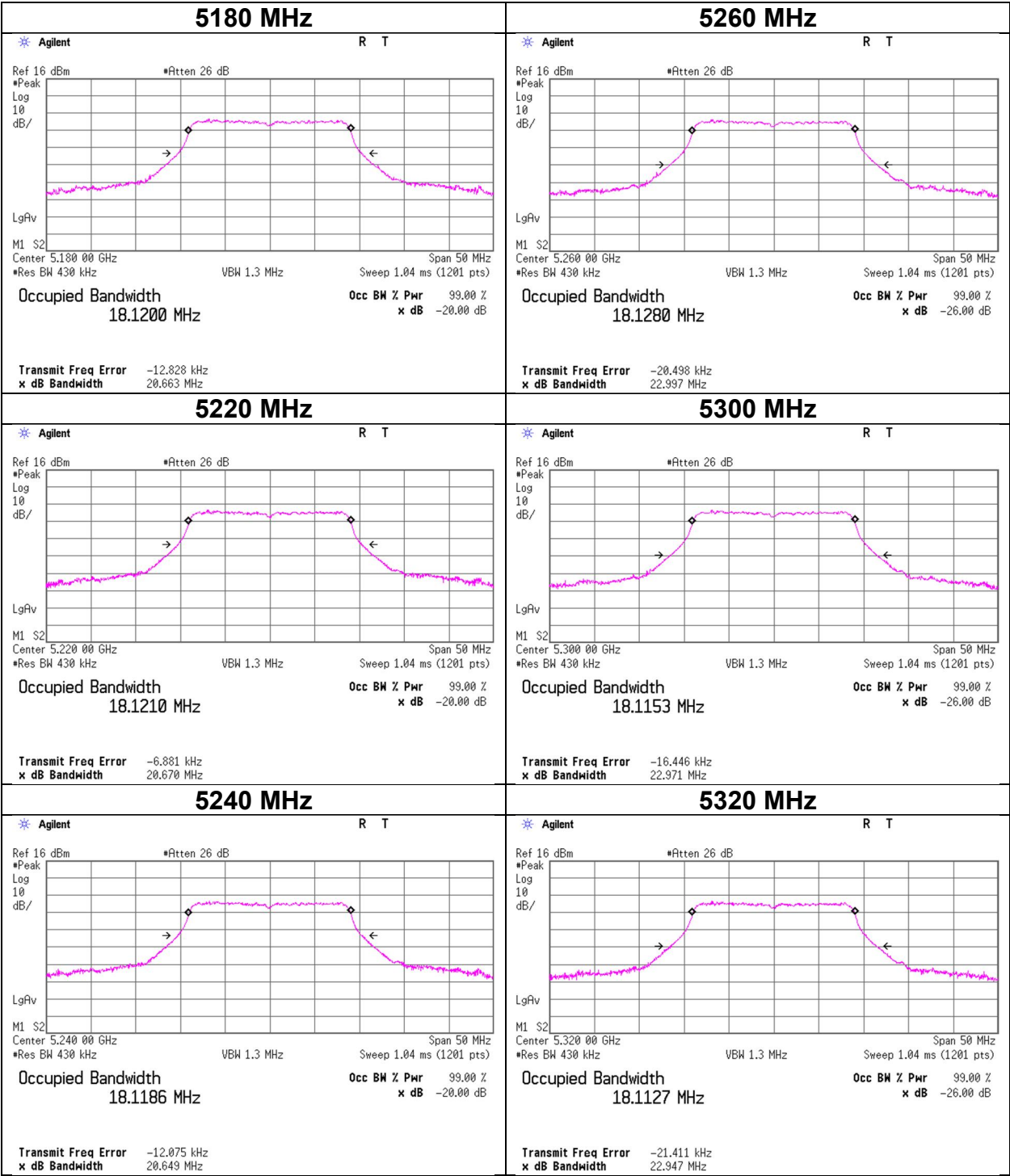


26 dB Emission Bandwidth and 99 % Occupied Bandwidth



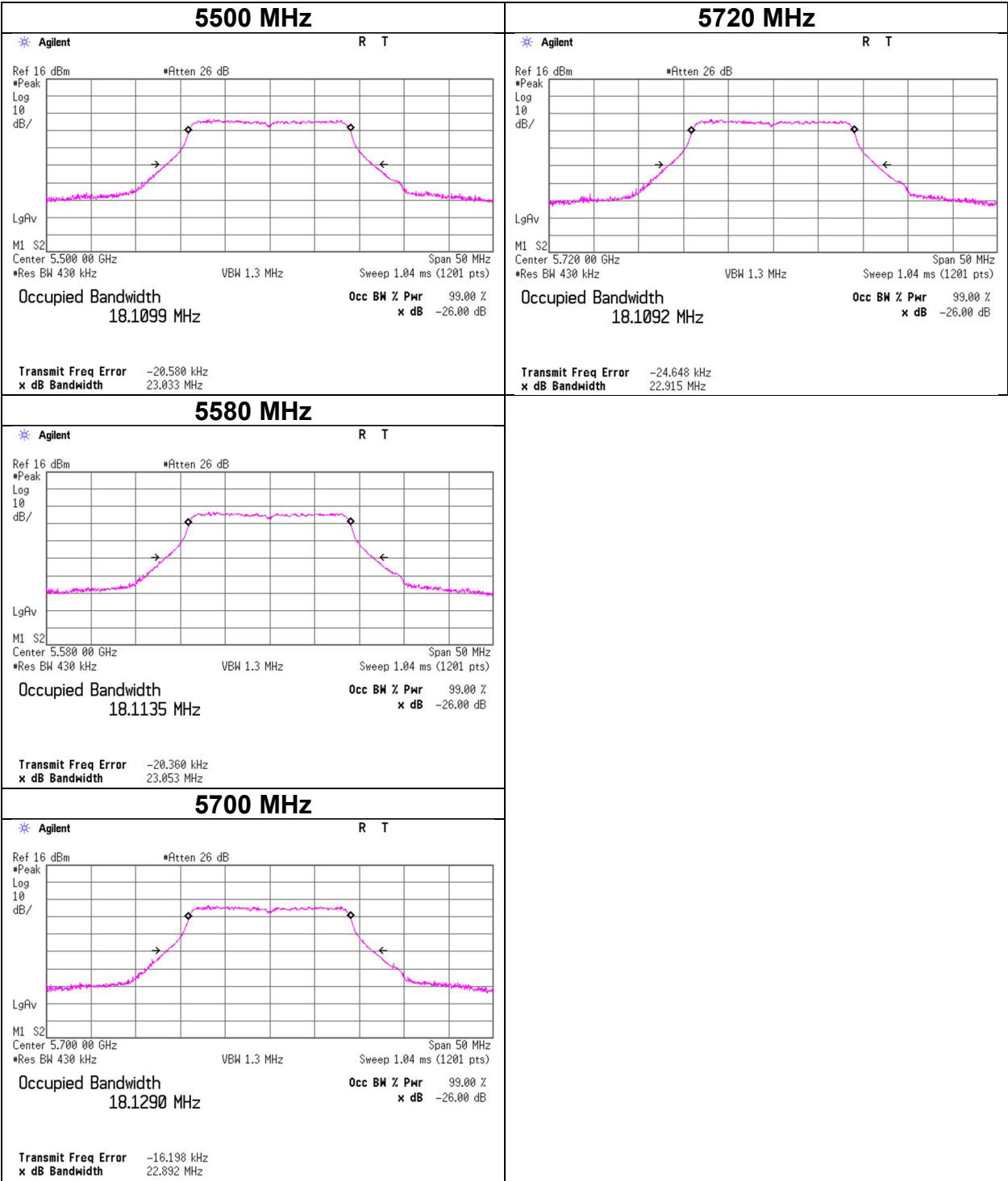
26 dB Emission Bandwidth and 99 % Occupied Bandwidth

11ac-20

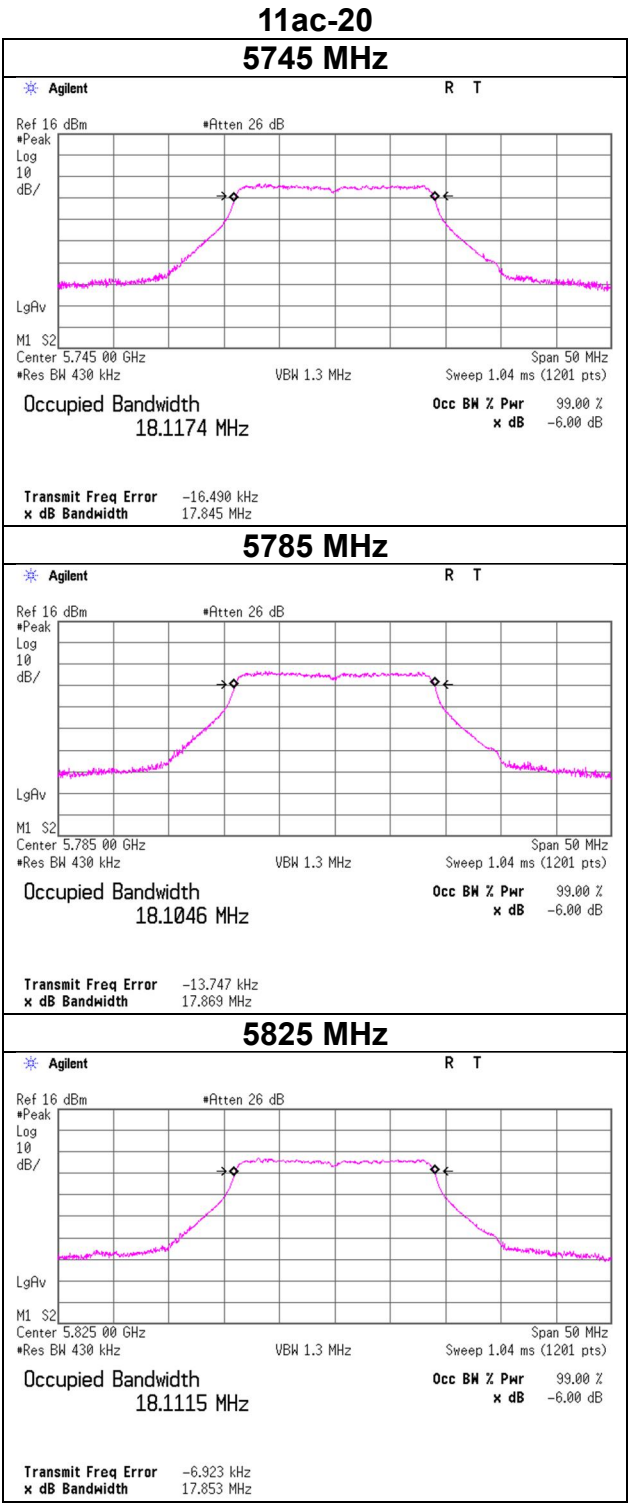


26 dB Emission Bandwidth and 99 % Occupied Bandwidth

11ac-20

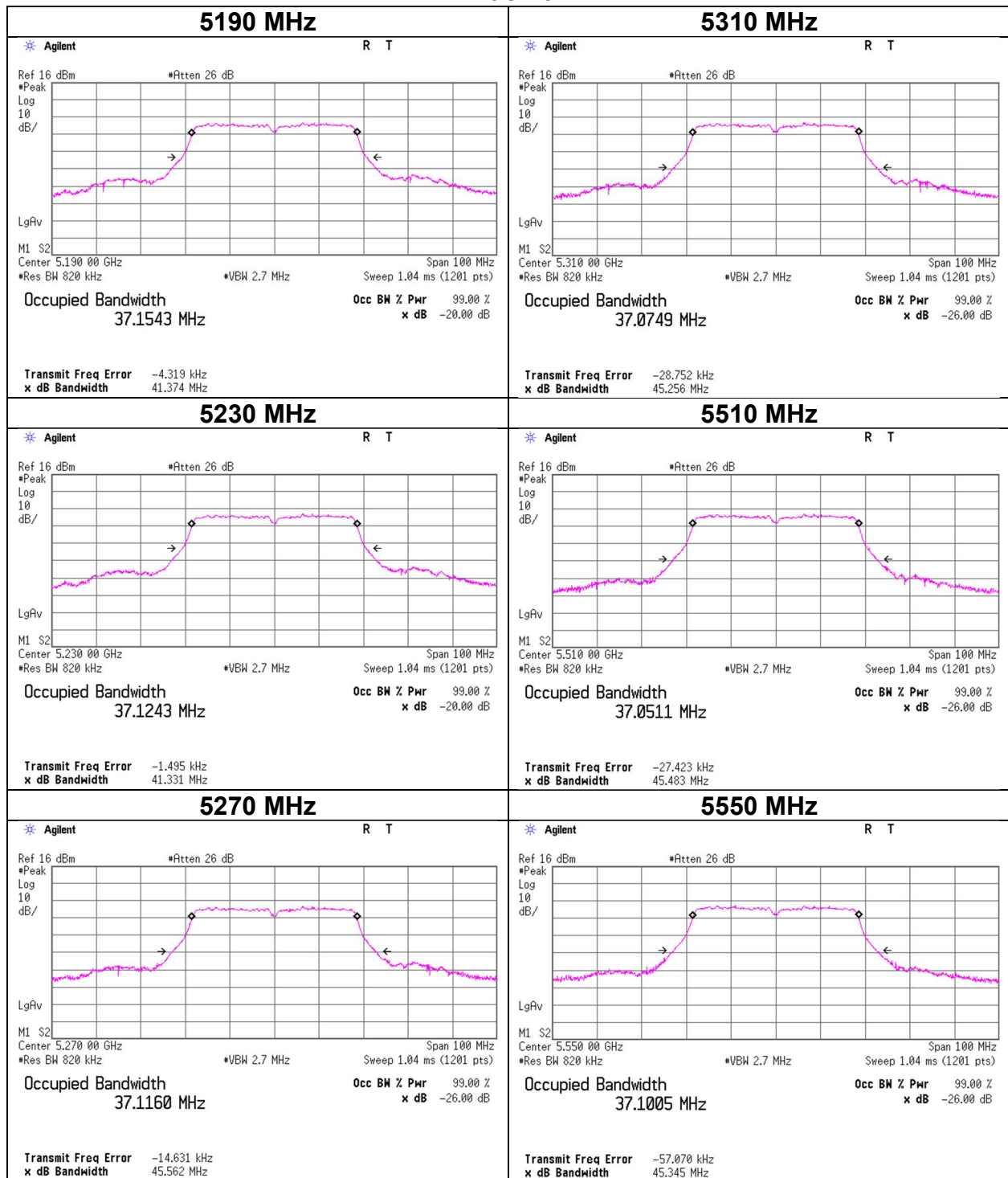


26 dB Emission Bandwidth and 99 % Occupied Bandwidth



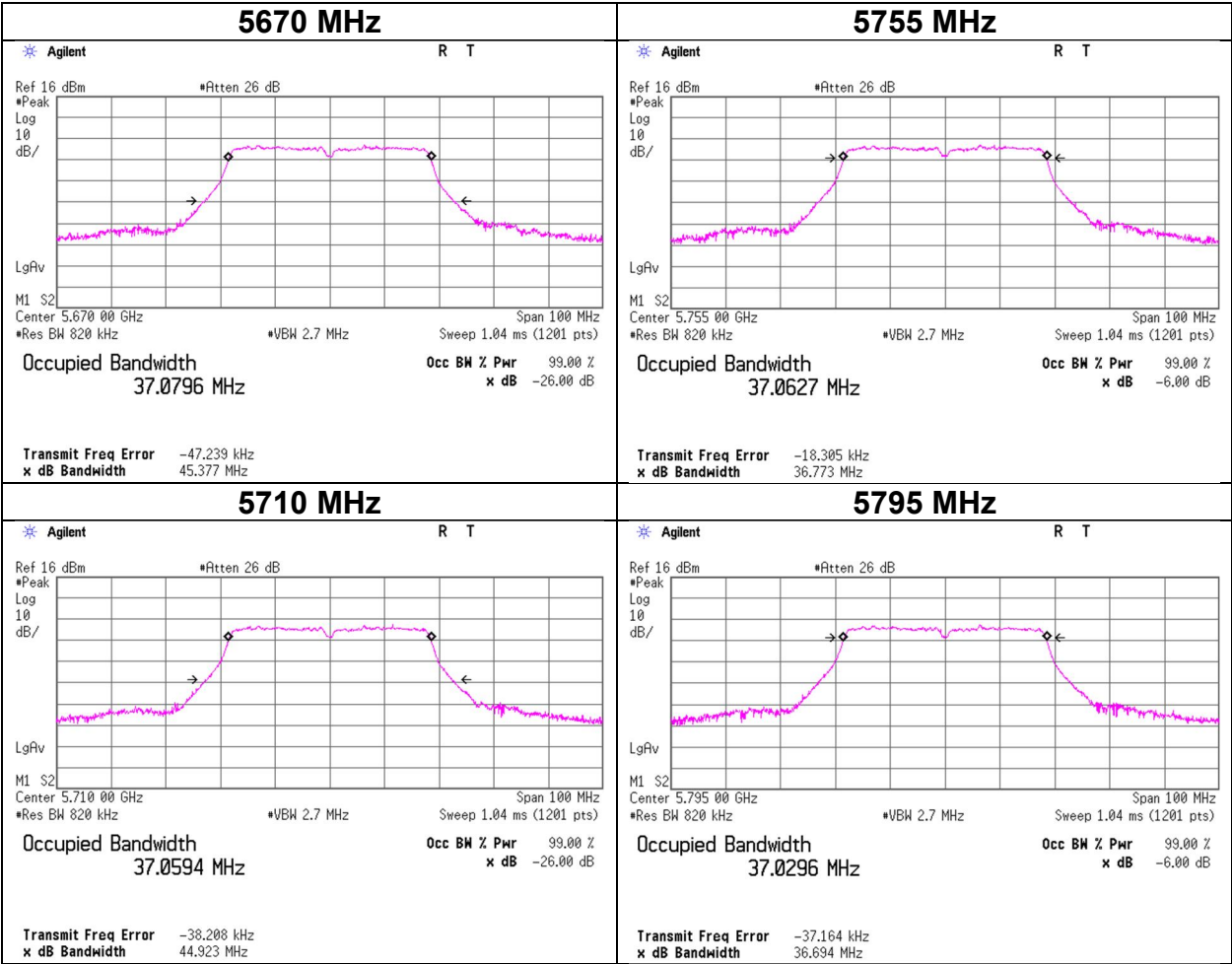
26 dB Emission Bandwidth and 99 % Occupied Bandwidth

11ac-40



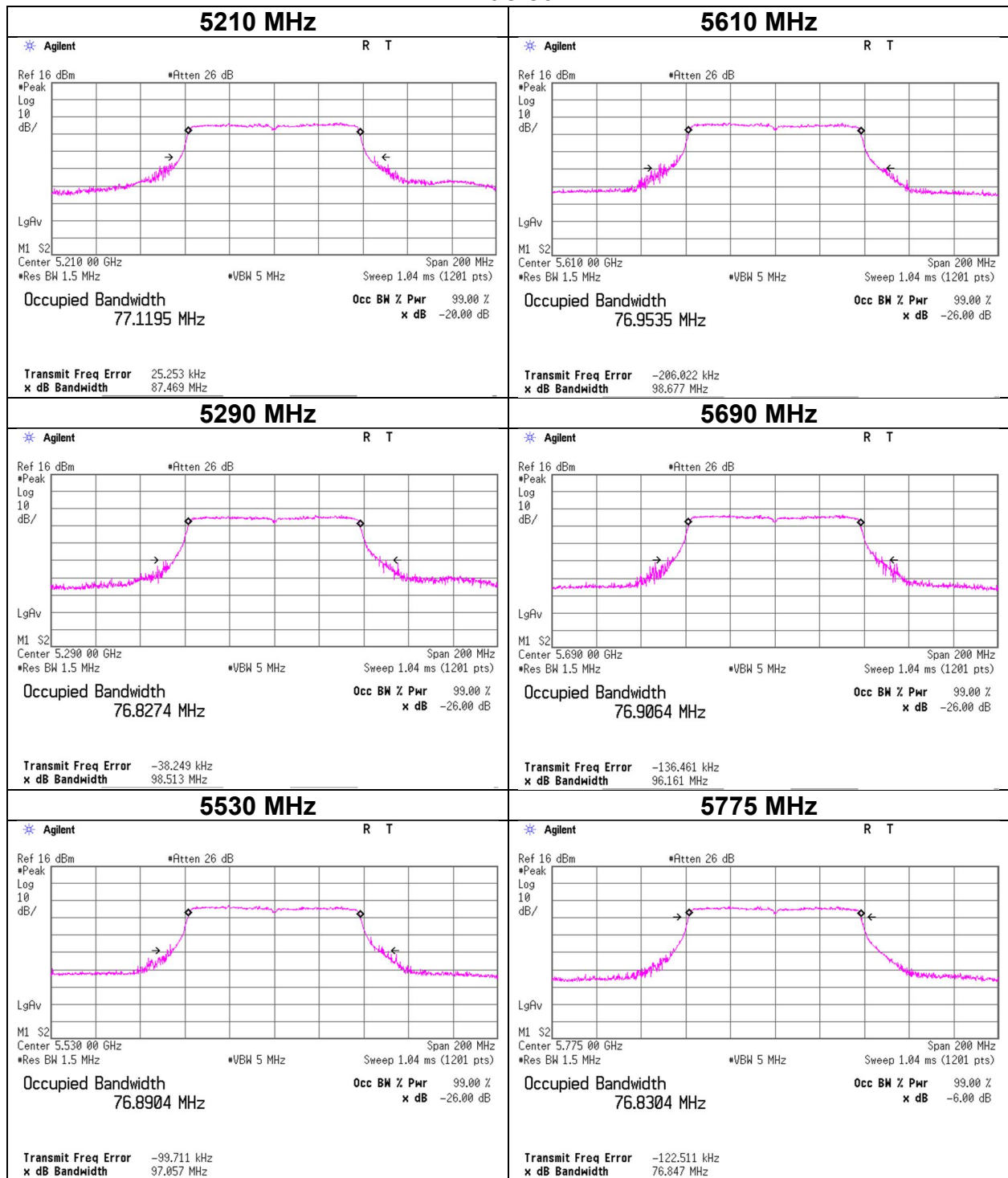
26 dB Emission Bandwidth and 99 % Occupied Bandwidth

11ac-40



26 dB Emission Bandwidth and 99 % Occupied Bandwidth

11ac-80



6 dB Bandwidth

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.5 Shielded Room
October 1, 2024
25 deg. C / 58 % RH
Yosuke Murakami
Tx

11a

Tested Frequency [MHz]	6 dB Emission Bandwidth [MHz]
5745	16.523
5785	16.523
5825	16.545

11ac-20

Tested Frequency [MHz]	6 dB Emission Bandwidth [MHz]
5745	17.748
5785	17.733
5825	17.766

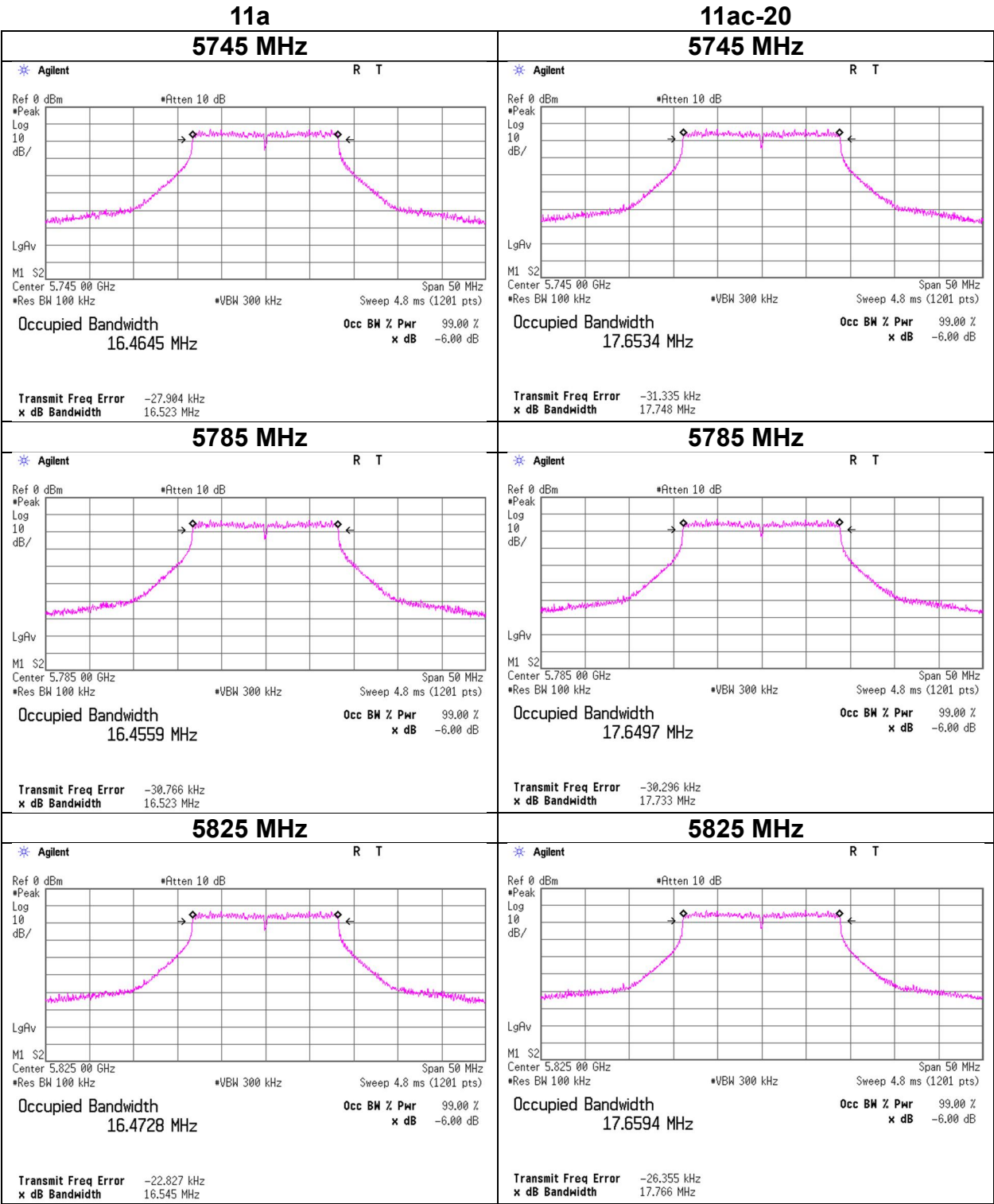
11ac-40

Tested Frequency [MHz]	6 dB Emission Bandwidth [MHz]
5755	36.557
5795	36.561

11ac-80

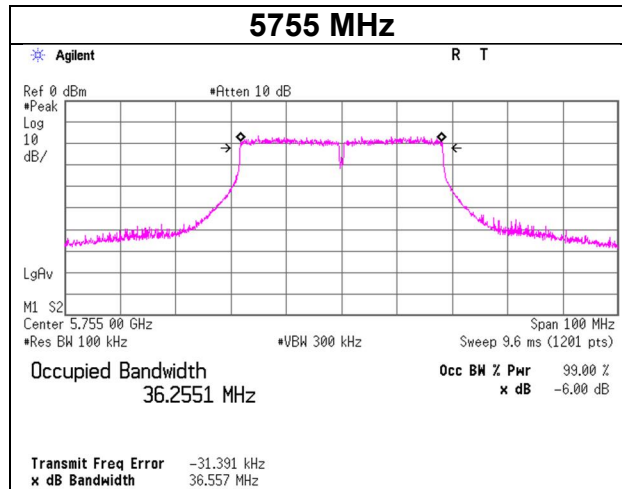
Tested Frequency [MHz]	6 dB Emission Bandwidth [MHz]
5775	76.613

6 dB Bandwidth

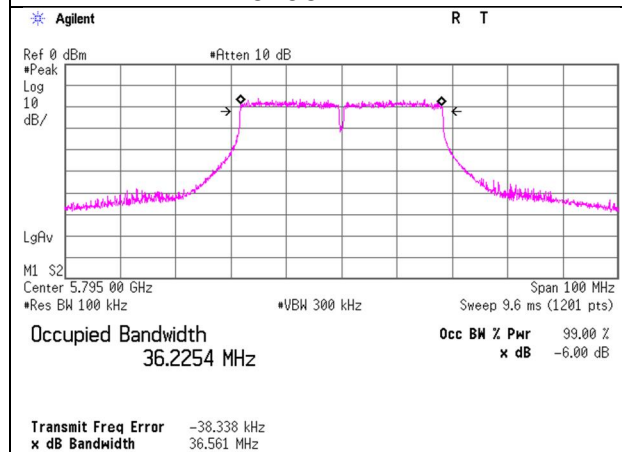


6 dB Bandwidth

11ac-40

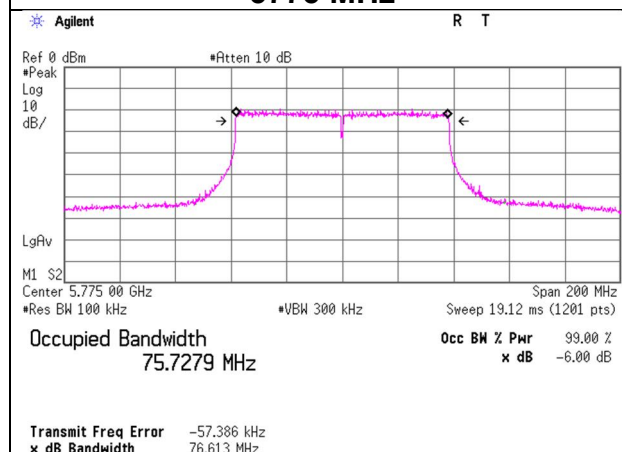
5755 MHz

5795 MHz



11ac-80

5775 MHz



Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 24, 2024
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Yuta Shiba
Mode Tx 11a, High power mode

11a (*) Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result	Limit	Margin		Result	Limit	Margin	
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-2.33	3.20	9.93	0.00	0.96	-	17.209	10.80	12.02	23.97	13.17	11.76	14.99	29.97	18.21
5220	-2.33	3.14	9.93	0.00	0.96	-	17.189	10.74	11.84	23.97	13.24	11.70	14.77	29.97	18.28
5240	-2.21	3.27	9.93	0.00	0.96	-	17.177	10.99	12.55	23.97	12.98	11.95	15.66	29.97	18.02
5260	-2.69	3.20	9.93	0.00	0.96	22.786	17.199	10.44	11.07	23.97	13.53	11.40	13.81	29.97	18.57
5300	-2.47	3.20	9.93	0.00	0.96	22.890	17.200	10.66	11.64	23.97	13.31	11.62	14.52	29.97	18.35
5320	-2.36	3.38	9.93	0.00	0.96	22.631	17.190	10.95	12.44	23.97	13.02	11.91	15.52	29.97	18.06
5500	-2.11	3.31	9.93	0.00	0.96	22.693	17.175	11.13	12.97	23.97	12.84	12.09	16.18	29.97	17.88
5580	-2.20	3.29	9.93	0.00	0.96	22.696	17.187	11.02	12.63	23.97	12.96	11.98	15.76	29.97	18.00
5700	-2.35	3.12	9.93	0.00	0.96	22.672	17.181	10.70	11.76	23.97	13.27	11.66	14.67	29.97	18.31
5720	-2.41	3.20	9.93	0.00	0.96	22.640	17.167	10.72	11.80	23.97	13.25	11.68	14.71	29.97	18.29
5745	-2.23	3.18	9.94	0.00	0.96	-	17.176	10.89	12.26	30.00	19.11	11.85	15.30	36.00	24.15
5785	-2.30	3.13	9.94	0.00	0.96	-	17.170	10.77	11.94	30.00	19.23	11.73	14.89	36.00	24.27
5825	-2.14	3.11	9.94	0.00	0.96	-	17.177	10.91	12.32	30.00	19.09	11.87	15.37	36.00	24.13

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Antenna Gain (*) Power was measured with using the gate function of power meter.
Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower
Conducted Power Limit (5725 MHz-5850 MHz) = 1W
Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 26, 2024
Temperature / Humidity 21 deg. C / 40 % RH
Engineer Yuta Shiba
Mode Tx 11a, Standard power mode

11a		(*)						Applied limit: 15.407, mobile and portable client device							
Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-6.36	3.20	9.93	0.00	0.96	-	17.209	6.77	4.75	23.97	17.20	7.73	5.93	29.97	22.24
5220	-6.27	3.14	9.93	0.00	0.96	-	17.189	6.80	4.78	23.97	17.18	7.76	5.96	29.97	22.22
5240	-6.08	3.27	9.93	0.00	0.96	-	17.177	7.12	5.15	23.97	16.85	8.08	6.42	29.97	21.89
5260	-6.77	3.20	9.93	0.00	0.96	22.786	17.199	6.36	4.33	23.97	17.61	7.32	5.40	29.97	22.65
5300	-6.59	3.20	9.93	0.00	0.96	22.890	17.200	6.54	4.51	23.97	17.43	7.50	5.62	29.97	22.47
5320	-6.48	3.38	9.93	0.00	0.96	22.631	17.190	6.83	4.82	23.97	17.14	7.79	6.01	29.97	22.18
5500	-6.12	3.31	9.93	0.00	0.96	22.693	17.175	7.12	5.15	23.97	16.85	8.08	6.43	29.97	21.89
5580	-6.31	3.29	9.93	0.00	0.96	22.696	17.187	6.91	4.90	23.97	17.07	7.87	6.12	29.97	22.11
5700	-6.31	3.12	9.93	0.00	0.96	22.672	17.181	6.74	4.72	23.97	17.23	7.70	5.89	29.97	22.27
5720	-6.28	3.20	9.93	0.00	0.96	22.640	17.167	6.85	4.84	23.97	17.12	7.81	6.04	29.97	22.16
5745	-6.20	3.18	9.94	0.00	0.96	-	17.176	6.92	4.92	30.00	23.08	7.88	6.13	36.00	28.12
5785	-6.27	3.13	9.94	0.00	0.96	-	17.170	6.80	4.78	30.00	23.20	7.76	5.97	36.00	28.24
5825	-5.88	3.11	9.94	0.00	0.96	-	17.177	7.17	5.21	30.00	22.83	8.13	6.50	36.00	27.87

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Antenna Gain
Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower
Conducted Power Limit (5725 MHz-5850 MHz) = 1W
Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 24, 2024
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Yuta Shiba
Mode Tx 11ac-20, High power mode

11ac-20

(*)

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result	Limit	Margin		Result	Limit	Margin	
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-2.34	3.20	9.93	0.00	0.96	-	18.120	10.79	11.99	23.97	13.18	11.75	14.95	29.97	18.22
5220	-2.26	3.14	9.93	0.00	0.96	-	18.121	10.81	12.04	23.97	13.17	11.77	15.01	29.97	18.21
5240	-2.25	3.27	9.93	0.00	0.96	-	18.119	10.95	12.44	23.97	13.02	11.91	15.51	29.97	18.06
5260	-2.60	3.20	9.93	0.00	0.96	22.997	18.128	10.53	11.30	23.97	13.44	11.49	14.10	29.97	18.48
5300	-2.53	3.20	9.93	0.00	0.96	22.971	18.115	10.60	11.48	23.97	13.37	11.56	14.32	29.97	18.41
5320	-2.41	3.38	9.93	0.00	0.96	22.947	18.113	10.90	12.30	23.97	13.07	11.86	15.35	29.97	18.11
5500	-2.05	3.31	9.93	0.00	0.96	23.033	18.110	11.19	13.15	23.97	12.78	12.15	16.41	29.97	17.82
5580	-2.21	3.29	9.93	0.00	0.96	23.053	18.113	11.01	12.60	23.97	12.97	11.97	15.72	29.97	18.01
5700	-2.38	3.12	9.93	0.00	0.96	22.892	18.129	10.67	11.68	23.97	13.30	11.63	14.57	29.97	18.34
5720	-2.39	3.20	9.93	0.00	0.96	22.915	18.109	10.74	11.85	23.97	13.23	11.70	14.78	29.97	18.27
5745	-2.26	3.18	9.94	0.00	0.96	-	18.117	10.86	12.18	30.00	19.14	11.82	15.19	36.00	24.18
5785	-2.32	3.13	9.94	0.00	0.96	-	18.105	10.75	11.88	30.00	19.25	11.71	14.82	36.00	24.29
5825	-2.13	3.11	9.94	0.00	0.96	-	18.112	10.92	12.35	30.00	19.08	11.88	15.41	36.00	24.12

Sample Calculation:

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

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

(*) Power was measured with using the gate function of power meter.

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 27, 2024
Temperature / Humidity 24 deg. C / 46 % RH
Engineer Yuta Shiba
Mode Tx 11ac-20, Standard power mode

11ac-20

(*)

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result	Limit	Margin	Result	Limit	Margin		
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-6.30	3.20	9.93	0.00	0.96	-	18.120	6.83	4.82	23.97	17.14	7.79	6.01	29.97	22.18
5220	-6.29	3.14	9.93	0.00	0.96	-	18.121	6.78	4.76	23.97	17.20	7.74	5.94	29.97	22.24
5240	-6.04	3.27	9.93	0.00	0.96	-	18.119	7.16	5.20	23.97	16.81	8.12	6.48	29.97	21.85
5260	-6.71	3.20	9.93	0.00	0.96	22.997	18.128	6.42	4.39	23.97	17.55	7.38	5.47	29.97	22.59
5300	-6.58	3.20	9.93	0.00	0.96	22.971	18.115	6.55	4.52	23.97	17.42	7.51	5.64	29.97	22.46
5320	-6.52	3.38	9.93	0.00	0.96	22.947	18.113	6.79	4.78	23.97	17.18	7.75	5.96	29.97	22.22
5500	-6.13	3.31	9.93	0.00	0.96	23.033	18.110	7.11	5.14	23.97	16.86	8.07	6.41	29.97	21.90
5580	-6.35	3.29	9.93	0.00	0.96	23.053	18.113	6.87	4.86	23.97	17.11	7.83	6.06	29.97	22.15
5700	-6.28	3.12	9.93	0.00	0.96	22.892	18.129	6.77	4.76	23.97	17.20	7.73	5.93	29.97	22.24
5720	-6.45	3.20	9.93	0.00	0.96	22.915	18.109	6.68	4.65	23.97	17.29	7.64	5.80	29.97	22.33
5745	-6.24	3.18	9.94	0.00	0.96	-	18.117	6.88	4.87	30.00	23.12	7.84	6.08	36.00	28.16
5785	-6.23	3.13	9.94	0.00	0.96	-	18.105	6.84	4.83	30.00	23.16	7.80	6.02	36.00	28.20
5825	-5.80	3.11	9.94	0.00	0.96	-	18.112	7.25	5.31	30.00	22.75	8.21	6.62	36.00	27.79

Sample Calculation:

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

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

(*) Power was measured with using the gate function of power meter.

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 24, 2024
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Yuta Shiba
Mode Tx 11ac-40, High power mode

11ac-40 (*) Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result	Limit	Margin		Result	Limit	Margin	
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5190	-2.38	3.16	9.93	0.00	0.96	-	37.154	10.71	11.78	23.97	13.26	11.67	14.69	29.97	18.30
5230	-2.18	3.20	9.93	0.00	0.96	-	37.124	10.95	12.45	23.97	13.02	11.91	15.52	29.97	18.06
5270	-2.39	3.24	9.93	0.00	0.96	45.562	37.116	10.78	11.96	23.97	13.19	11.74	14.92	29.97	18.23
5310	-2.28	3.19	9.93	0.00	0.96	45.256	37.075	10.84	12.14	23.97	13.13	11.80	15.14	29.97	18.17
5510	-1.95	3.32	9.93	0.00	0.96	45.483	37.051	11.30	13.49	23.97	12.67	12.26	16.82	29.97	17.71
5550	-1.91	3.29	9.93	0.00	0.96	45.345	37.100	11.31	13.52	23.97	12.66	12.27	16.86	29.97	17.70
5670	-2.18	3.22	9.93	0.00	0.96	45.377	37.080	10.97	12.50	23.97	13.00	11.93	15.59	29.97	18.04
5710	-2.15	3.19	9.93	0.00	0.96	44.923	37.059	10.97	12.51	23.97	13.00	11.93	15.60	29.97	18.04
5755	-1.99	3.14	9.94	0.00	0.96	-	37.063	11.09	12.85	30.00	18.91	12.05	16.02	36.00	23.95
5795	-2.03	3.17	9.94	0.00	0.96	-	37.030	11.08	12.82	30.00	18.92	12.04	15.99	36.00	23.96

Sample Calculation:

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

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

(*) Power was measured with using the gate function of power meter.

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 27, 2024
Temperature / Humidity 24 deg. C / 46 % RH
Engineer Yuta Shiba
Mode Tx 11ac-40, Standard power mode

11ac-40

(*)

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
								[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5190	-6.17	3.16	9.93	0.00	0.96	-	37.154	6.92	4.92	23.97	17.05	7.88	6.14	29.97	22.09
5230	-6.15	3.20	9.93	0.00	0.96	-	37.124	6.98	4.99	23.97	16.99	7.94	6.22	29.97	22.03
5270	-6.68	3.24	9.93	0.00	0.96	45.562	37.116	6.49	4.45	23.97	17.48	7.45	5.55	29.97	22.52
5310	-6.49	3.19	9.93	0.00	0.96	45.256	37.075	6.63	4.60	23.97	17.34	7.59	5.74	29.97	22.38
5510	-6.19	3.32	9.93	0.00	0.96	45.483	37.051	7.06	5.08	23.97	16.91	8.02	6.34	29.97	21.95
5550	-6.11	3.29	9.93	0.00	0.96	45.345	37.100	7.11	5.14	23.97	16.86	8.07	6.41	29.97	21.90
5670	-6.41	3.22	9.93	0.00	0.96	45.377	37.080	6.74	4.72	23.97	17.23	7.70	5.89	29.97	22.27
5710	-6.28	3.19	9.93	0.00	0.96	44.923	37.059	6.84	4.83	23.97	17.13	7.80	6.03	29.97	22.17
5755	-6.25	3.14	9.94	0.00	0.96	-	37.063	6.83	4.82	30.00	23.17	7.79	6.01	36.00	28.21
5795	-6.31	3.17	9.94	0.00	0.96	-	37.030	6.80	4.78	30.00	23.20	7.76	5.97	36.00	28.24

Sample Calculation:

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

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

(*) Power was measured with using the gate function of power meter.

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 24, 2024
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Yuta Shiba
Mode Tx 11ac-80, High power mode

11ac-80								Applied limit: 15.407, mobile and portable client device							
Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result	Limit	Margin		Result	Limit	Margin	
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5210	-2.38	3.16	9.93	0.00	0.96	-	77.120	10.71	11.76	23.97	13.27	11.67	14.67	29.97	18.31
5290	-2.40	3.21	9.93	0.00	0.96	98.513	76.827	10.74	11.86	23.97	13.23	11.70	14.80	29.97	18.27
5530	-1.97	3.32	9.93	0.00	0.96	97.057	76.890	11.28	13.43	23.97	12.69	12.24	16.75	29.97	17.73
5610	-2.28	3.26	9.93	0.00	0.96	98.677	76.954	10.91	12.33	23.97	13.06	11.87	15.38	29.97	18.10
5690	-2.20	3.20	9.93	0.00	0.96	96.161	76.906	10.93	12.40	23.97	13.04	11.89	15.47	29.97	18.08
5775	-2.10	3.17	9.94	0.00	0.96	-	76.830	11.01	12.63	30.00	18.99	11.97	15.75	36.00	24.03

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Antenna Gain (*1) Power was measured with using the gate function of power meter.
Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower
Conducted Power Limit (5725 MHz-5850 MHz) = 1W
Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date September 27, 2024
Temperature / Humidity 24 deg. C / 46 % RH
Engineer Yuta Shiba
Mode Tx 11ac-80, Standard power mode

11ac-80

(*)

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99 % OBW (B for IC)	Conducted Power				e.i.r.p.			
								Result		Limit	Margin	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5210	-6.22	3.16	9.93	0.00	0.96	-	77.120	6.87	4.86	23.97	17.11	7.83	6.06	29.97	22.15
5290	-6.65	3.21	9.93	0.00	0.96	98.513	76.827	6.49	4.46	23.97	17.48	7.45	5.56	29.97	22.52
5530	-6.19	3.32	9.93	0.00	0.96	97.057	76.890	7.06	5.08	23.97	16.91	8.02	6.34	29.97	21.95
5610	-6.44	3.26	9.93	0.00	0.96	98.677	76.954	6.75	4.73	23.97	17.22	7.71	5.90	29.97	22.26
5690	-6.35	3.20	9.93	0.00	0.96	96.161	76.906	6.78	4.77	23.97	17.19	7.74	5.95	29.97	22.23
5775	-6.34	3.17	9.94	0.00	0.96	-	76.830	6.77	4.76	30.00	23.23	7.73	5.93	36.00	28.27

Sample Calculation:

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

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

(*) Power was measured with using the gate function of power meter.

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Conducted Output Power

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.5 Shielded Room
September 24, 2024
26 deg. C / 47 % RH
Kenichi Adachi
Tx 11a

5180 MHz

(*1)

Data rate [Mbps]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	Remarks
6	-4.21	3.20	9.93	0.00	8.92	Worst
9	-4.20	3.20	9.93	0.00	8.93	
12	-4.19	3.20	9.93	0.00	8.94	
18	-4.11	3.20	9.93	0.00	9.02	
24	-4.04	3.20	9.93	0.00	9.09	
36	-3.86	3.20	9.93	0.00	9.27	
48	-3.69	3.20	9.93	0.00	9.44	
54	-3.70	3.20	9.93	0.00	9.43	

Sample Calculation:

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

(*1) Power was measured with using the gate function of power meter.

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

Maximum Conducted Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2024
Temperature / Humidity	24 deg. C / 51 % RH
Engineer	Yuta Shiba
Mode	Tx 11n-20, 11ac-20

5180 MHz

(*1)

Mode (MCS)		P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	Remarks
11n-20	0	-4.43	3.20	9.93	0.00	8.70	
	1	-4.49	3.20	9.93	0.00	8.64	
	2	-4.36	3.20	9.93	0.00	8.77	
	3	-3.94	3.20	9.93	0.00	9.19	
	4	-3.91	3.20	9.93	0.00	9.22	
	5	-3.90	3.20	9.93	0.00	9.23	
	6	-3.92	3.20	9.93	0.00	9.21	
	7	-4.11	3.20	9.93	0.00	9.02	
11ac-20	0	-4.47	3.20	9.93	0.00	8.66	Worst
	1	-4.47	3.20	9.93	0.00	8.66	
	2	-4.29	3.20	9.93	0.00	8.84	
	3	-3.93	3.20	9.93	0.00	9.20	
	4	-3.92	3.20	9.93	0.00	9.21	
	5	-3.89	3.20	9.93	0.00	9.24	
	6	-3.99	3.20	9.93	0.00	9.14	
	7	-3.92	3.20	9.93	0.00	9.21	
	8	-3.91	3.20	9.93	0.00	9.22	
	9	-3.91	3.20	9.93	0.00	9.22	

Sample Calculation:

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

(*1) Power was measured with using the gate function of power meter.

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

Maximum Conducted Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2024
Temperature / Humidity	24 deg. C / 51 % RH
Engineer	Yuta Shiba
Mode	Tx 11n-40, 11ac-40

5190 MHz

(*1)

Mode		P/M (AV) Reading	Cable Loss	Atten. Loss	Duty factor	Result	Remarks
(MCS)		[dBm]	[dB]	[dB]	[dB]	[dBm]	
11n-40	0	-3.90	3.16	9.93	0.00	9.19	
	1	-3.91	3.16	9.93	0.00	9.18	
	2	-3.92	3.16	9.93	0.00	9.17	
	3	-3.90	3.16	9.93	0.00	9.19	
	4	-3.91	3.16	9.93	0.00	9.18	
	5	-3.84	3.16	9.93	0.00	9.25	
	6	-3.92	3.16	9.93	0.00	9.17	
	7	-3.86	3.16	9.93	0.00	9.23	
11ac-40	0	-3.88	3.16	9.93	0.00	9.21	Worst
	1	-3.93	3.16	9.93	0.00	9.16	
	2	-3.94	3.16	9.93	0.00	9.15	
	3	-3.92	3.16	9.93	0.00	9.17	
	4	-3.87	3.16	9.93	0.00	9.22	
	5	-3.83	3.16	9.93	0.00	9.26	
	6	-3.87	3.16	9.93	0.00	9.22	
	7	-3.92	3.16	9.93	0.00	9.17	
	8	-3.91	3.16	9.93	0.00	9.18	
	9	-4.92	3.16	9.93	0.00	8.17	

Sample Calculation:

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

(*1) Power was measured with using the gate function of power meter.

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

Maximum Conducted Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	September 24, 2024
Temperature / Humidity	24 deg. C / 51 % RH
Engineer	Yuta Shiba
Mode	Tx 11ac-80

5210 MHz

(*1)

Mode (MCS)	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty factor [dB]	Result [dBm]	Remarks
0	-3.99	3.16	9.93	0.00	9.10	Worst
1	-4.05	3.16	9.93	0.00	9.03	
2	-3.91	3.16	9.93	0.00	9.18	
3	-3.93	3.16	9.93	0.00	9.16	
4	-3.91	3.16	9.93	0.00	9.18	
5	-3.87	3.16	9.93	0.00	9.22	
6	-3.92	3.16	9.93	0.00	9.17	
7	-3.91	3.16	9.93	0.00	9.18	
8	-3.91	3.16	9.93	0.00	9.18	
9	-4.80	3.16	9.93	0.00	8.29	

Sample Calculation:

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

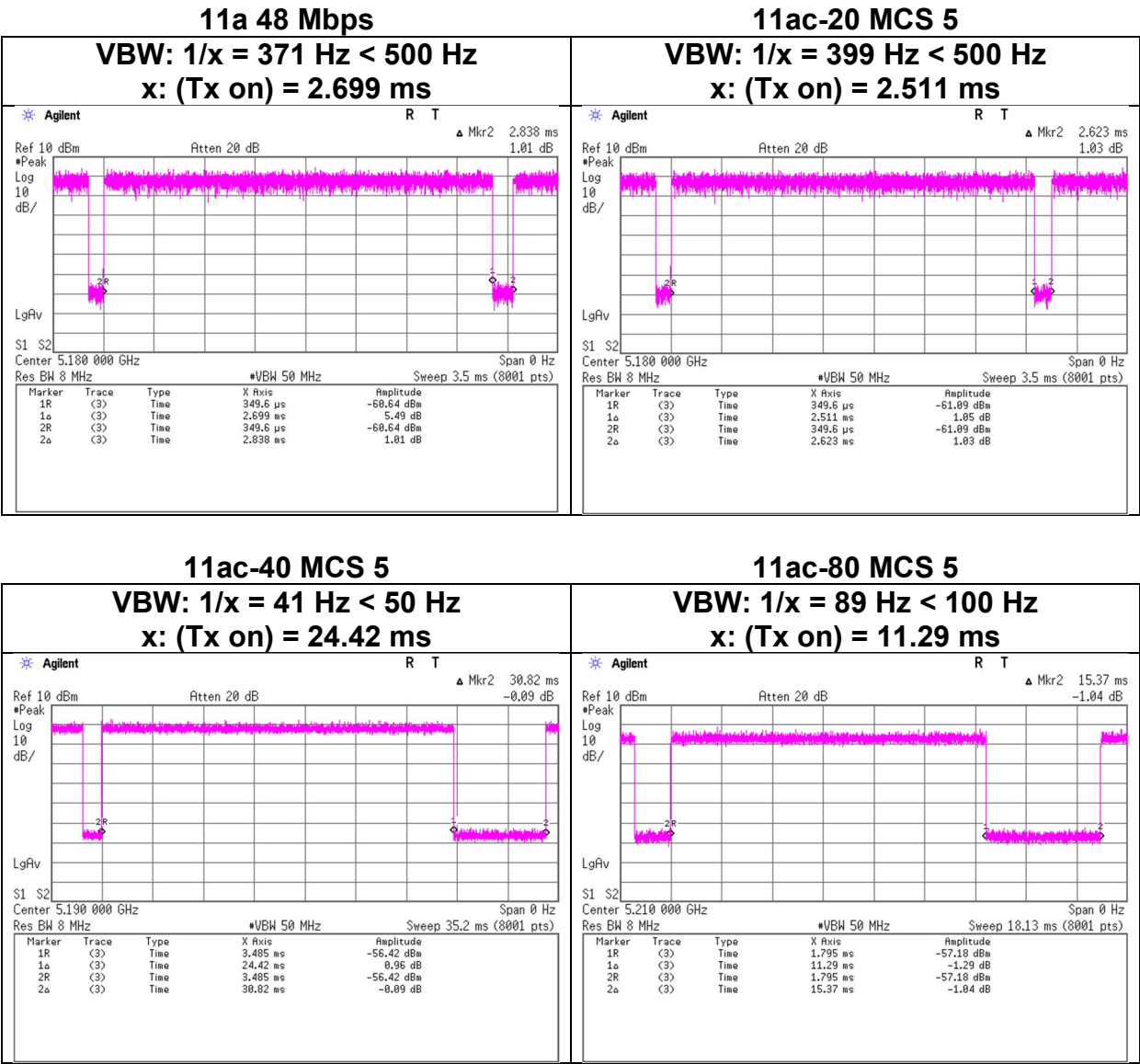
(*1) Power was measured with using the gate function of power meter.

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

Burst rate confirmation

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.5 Shielded Room
October 3, 2024
26 deg. C / 50 % RH
Yosuke Murakami
Tx



Maximum Power Spectral Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 1, 2024
Temperature / Humidity 25 deg. C / 58 % RH
Engineer Yosuke Murakami
Mode Tx 11a

11a (*1) Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-12.97	3.20	9.93	0.00	0.96	0.00	0.16	11.00	10.84	1.12	17.00	15.88
5220	-12.79	3.14	9.93	0.00	0.96	0.00	0.27	11.00	10.73	1.23	17.00	15.77
5240	-12.34	3.27	9.93	0.00	0.96	0.00	0.86	11.00	10.14	1.82	17.00	15.18
5260	-13.42	3.20	9.93	0.00	0.96	0.00	-0.29	11.00	11.29	0.67	17.00	16.33
5300	-13.02	3.20	9.93	0.00	0.96	0.00	0.11	11.00	10.89	1.07	17.00	15.93
5320	-13.13	3.38	9.93	0.00	0.96	0.00	0.18	11.00	10.82	1.14	17.00	15.86
5500	-12.94	3.31	9.93	0.00	0.96	0.00	0.30	11.00	10.70	1.26	17.00	15.74
5580	-12.74	3.29	9.93	0.00	0.96	0.00	0.47	11.00	10.53	1.43	17.00	15.57
5700	-12.49	3.12	9.93	0.00	0.96	0.00	0.57	11.00	10.43	1.53	17.00	15.47
5720	-12.75	3.20	9.93	0.00	0.96	0.00	0.38	11.00	10.62	1.34	17.00	15.66
5745	-16.11	3.18	9.94	0.00	0.96	0.27	-2.72	30.00	32.72	-1.76	36.00	37.76
5785	-15.68	3.13	9.94	0.00	0.96	0.27	-2.34	30.00	32.34	-1.38	36.00	37.38
5825	-15.86	3.11	9.94	0.00	0.96	0.27	-2.54	30.00	32.54	-1.58	36.00	37.58

Sample Calculation:

PSD: Power Spectral Density (*1) Power density was measured with using the gate function of spectrum analyzer.

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

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

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

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

RBW Correction Factor = $10 \times \log (500 \text{ [kHz]} / 470 \text{ [kHz]})$

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Power Spectral Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 1, 2024
Temperature / Humidity 25 deg. C / 58 % RH
Engineer Yosuke Murakami
Mode Tx 11ac-20

11ac-20 (*1) Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-12.96	3.20	9.93	0.00	0.96	0.00	0.16	11.00	10.84	1.12	17.00	15.88
5220	-12.64	3.14	9.93	0.00	0.96	0.00	0.42	11.00	10.58	1.38	17.00	15.62
5240	-12.62	3.27	9.93	0.00	0.96	0.00	0.58	11.00	10.42	1.54	17.00	15.46
5260	-13.40	3.20	9.93	0.00	0.96	0.00	-0.26	11.00	11.26	0.70	17.00	16.30
5300	-13.37	3.20	9.93	0.00	0.96	0.00	-0.24	11.00	11.24	0.72	17.00	16.28
5320	-13.36	3.38	9.93	0.00	0.96	0.00	-0.05	11.00	11.05	0.91	17.00	16.09
5500	-13.20	3.31	9.93	0.00	0.96	0.00	0.04	11.00	10.96	1.00	17.00	16.00
5580	-13.01	3.29	9.93	0.00	0.96	0.00	0.20	11.00	10.80	1.16	17.00	15.84
5700	-13.20	3.12	9.93	0.00	0.96	0.00	-0.15	11.00	11.15	0.81	17.00	16.19
5720	-13.13	3.20	9.93	0.00	0.96	0.00	0.00	11.00	11.00	0.96	17.00	16.04
5745	-16.38	3.18	9.94	0.00	0.96	0.27	-2.99	30.00	32.99	-2.03	36.00	38.03
5785	-16.22	3.13	9.94	0.00	0.96	0.27	-2.88	30.00	32.88	-1.92	36.00	37.92
5825	-16.41	3.11	9.94	0.00	0.96	0.27	-3.10	30.00	33.10	-2.14	36.00	38.14

Sample Calculation:

PSD: Power Spectral Density (*1) Power density was measured with using the gate function of spectrum analyzer.

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

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

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

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

RBW Correction Factor = $10 \times \log (500 \text{ [kHz]} / 470 \text{ [kHz]})$

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Power Spectral Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 2, 2024
Temperature / Humidity 25 deg. C / 53 % RH
Engineer Yosuke Murakami
Mode Tx 11ac-40

11ac-40		(*)		Applied limit: 15.407, mobile and portable client device								
Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-16.75	3.16	9.93	0.00	0.96	0.00	-3.66	11.00	14.66	-2.70	17.00	19.70
5230	-16.31	3.20	9.93	0.00	0.96	0.00	-3.18	11.00	14.18	-2.22	17.00	19.22
5270	-16.70	3.24	9.93	0.00	0.96	0.00	-3.54	11.00	14.54	-2.58	17.00	19.58
5310	-16.86	3.19	9.93	0.00	0.96	0.00	-3.74	11.00	14.74	-2.78	17.00	19.78
5510	-16.29	3.32	9.93	0.00	0.96	0.00	-3.04	11.00	14.04	-2.08	17.00	19.08
5550	-15.93	3.29	9.93	0.00	0.96	0.00	-2.71	11.00	13.71	-1.75	17.00	18.75
5670	-16.10	3.22	9.93	0.00	0.96	0.00	-2.95	11.00	13.95	-1.99	17.00	18.99
5710	-15.89	3.19	9.93	0.00	0.96	0.00	-2.77	11.00	13.77	-1.81	17.00	18.81
5755	-19.37	3.14	9.94	0.00	0.96	0.27	-6.02	30.00	36.02	-5.06	36.00	41.06
5795	-19.42	3.17	9.94	0.00	0.96	0.27	-6.04	30.00	36.04	-5.08	36.00	41.08

Sample Calculation:

PSD: Power Spectral Density (*) Power density was measured with using the gate function of spectrum analyzer.

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

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

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

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

RBW Correction Factor = $10 \times \log (500 \text{ [kHz]} / 470 \text{ [kHz]})$

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Power Spectral Density

Test place Shonan EMC Lab. No.5 Shielded Room
Date October 2, 2024
Temperature / Humidity 25 deg. C / 53 % RH
Engineer Yosuke Murakami
Mode Tx 11ac-80

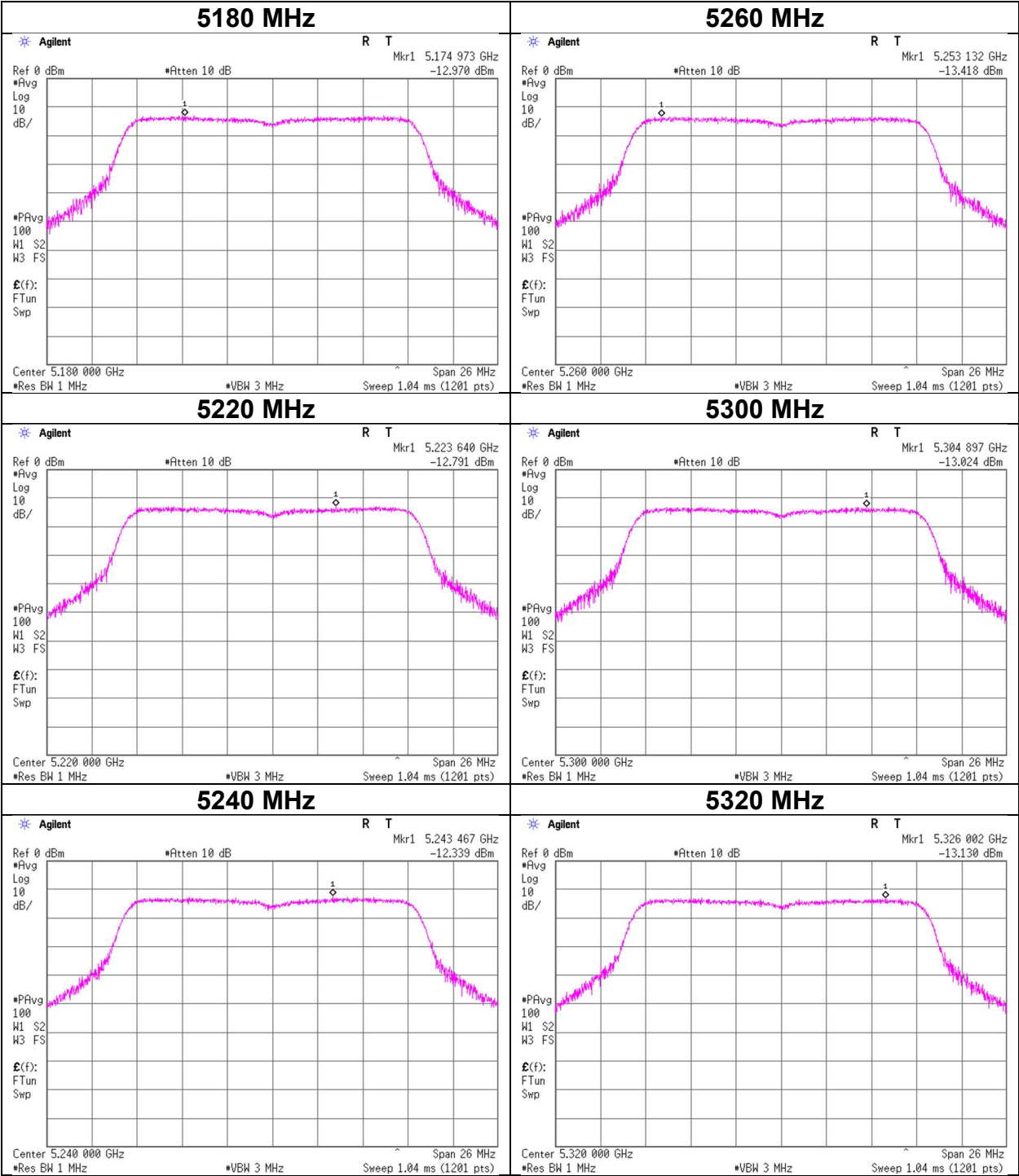
11ac-80							Applied limit: 15.407, mobile and portable client device					
Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5210	-20.12	3.16	9.93	0.00	0.96	0.00	-7.03	11.00	18.03	-6.07	17.00	23.07
5290	-20.73	3.21	9.93	0.00	0.96	0.00	-7.59	11.00	18.59	-6.63	17.00	23.63
5530	-19.32	3.32	9.93	0.00	0.96	0.00	-6.06	11.00	17.06	-5.10	17.00	22.10
5610	-19.78	3.26	9.93	0.00	0.96	0.00	-6.59	11.00	17.59	-5.63	17.00	22.63
5690	-19.55	3.20	9.93	0.00	0.96	0.00	-6.42	11.00	17.42	-5.46	17.00	22.46
5775	-23.10	3.17	9.94	0.00	0.96	0.27	-9.72	30.00	39.72	-8.76	36.00	44.76

Sample Calculation:
PSD: Power Spectral Density (*1) Power density was measured with using the gate function of spectrum analyzer.
The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.
RBW Correction Factor = 10 * log (Specified bandwidth / Measured bandwidth)
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor
PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain
RBW Correction Factor = 10 x log (500 [kHz] / 470 [kHz])
Although the EUT operates on Master mode, more stringent limit for Client device was applied. (U-NII-1 for FCC)

Maximum Power Spectral Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 1, 2024
Temperature / Humidity	25 deg. C / 58 % RH
Engineer	Yosuke Murakami
Mode	Tx 11a

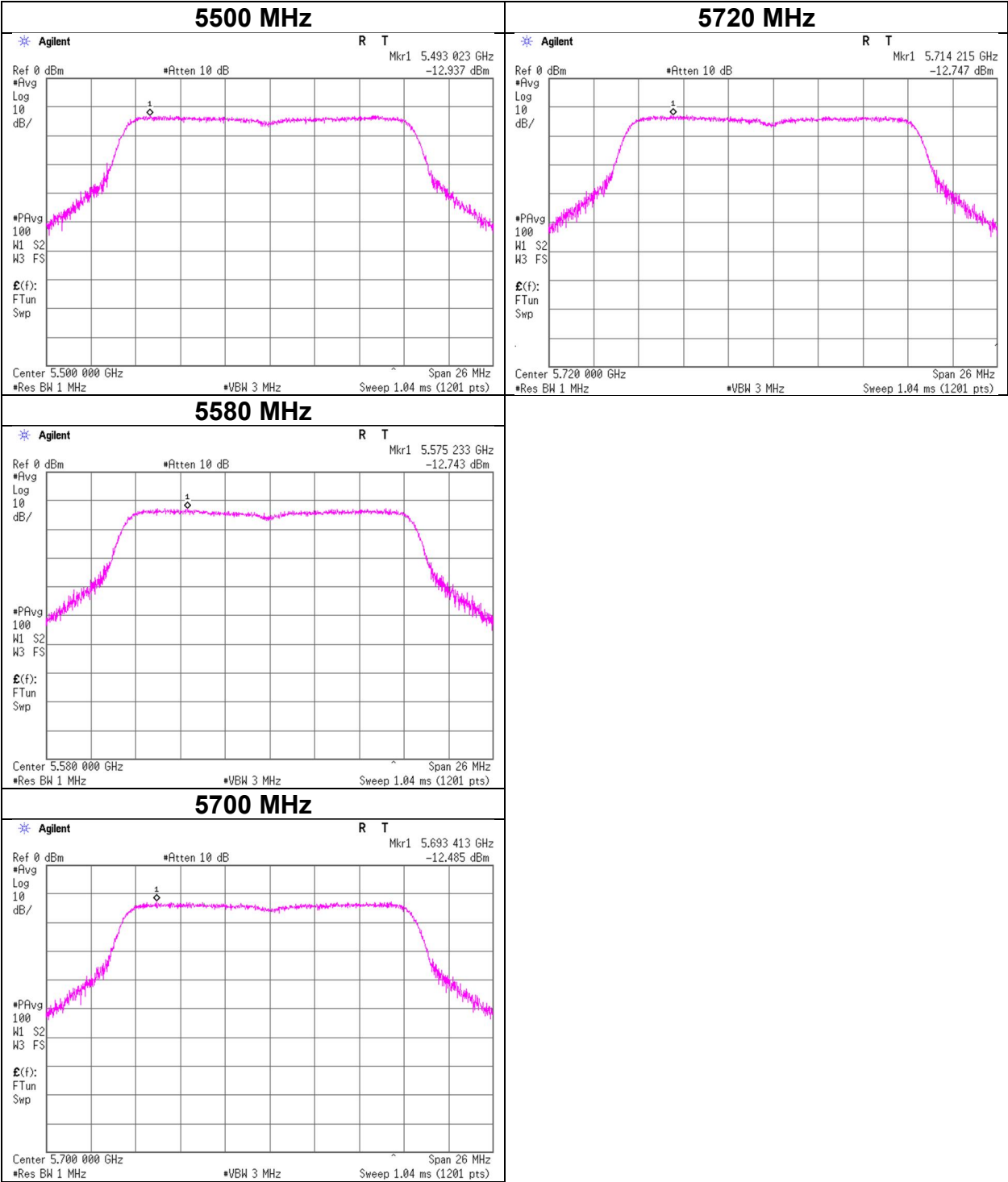
11a



Maximum Power Spectral Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 1, 2024
Temperature / Humidity	25 deg. C / 58 % RH
Engineer	Yosuke Murakami
Mode	Tx 11a

11a



Maximum Power Spectral Density

Test place
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab. No.5 Shielded Room
October 1, 2024
25 deg. C / 58 % RH
Yosuke Murakami
Tx 11a

