



RADIO TEST REPORT

Test Report No. : 14027963S-C-R1

Applicant : JVCKENWOOD Corporation
Type of EUT : Monitor with Receiver
Model Number of EUT : DMX958XR
FCC ID : IOMJ5268
Test regulation : FCC Part 15 Subpart E: 2021
Test item : Antenna Terminal Conducted Tests
Test result : Complied (Refer to SECTION 3)

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8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in SECTION 1.
10. This report is a revised version of 14027963S-C. 14027963S-C is replaced with this report.

Date of test: October 4 to 7, 2021

Representative test engineer: T. Kawakami
Takahiro Kawakami
Engineer

Approved by: K. Noda
Kazuya Noda
Leader



CERTIFICATE 1266.03

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

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REVISION HISTORY

Original Test Report No.: 14027963-C

Revision	Test report No.	Date	Page revised	Contents
- (Original)	14027963S-C	November 10, 2021	-	-
1	14027963S-C-R1	November 24, 2021	P.10	Correction of Software "SoC" From: 0.0.0805.4800 To: 0.0.0805.4600

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Reference: Abbreviations (Including words undescribed in this report)

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

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CONTENTS	PAGE
SECTION 1: Customer information.....	5
SECTION 2: Equipment under test (EUT).....	5
SECTION 3: Test specification, procedures & results.....	7
SECTION 4: Operation of EUT during testing.....	10
SECTION 5: Antenna Terminal Conducted Tests.....	13
APPENDIX 1: Test data	14
99 % Occupied Bandwidth	14
6 dB Bandwidth	22
Maximum Conducted Output Power	30
Maximum Power Spectral Density	47
Conducted Spurious Emission	66
APPENDIX 2: Test instruments	67
APPENDIX 3: Photographs of test setup.....	68
Antenna Terminal Conducted Tests.....	68

SECTION 1: Customer information

Company Name : JVCKENWOOD Corporation
Address : 2967-3, Ishikawa-machi, Hachioji, Tokyo 192-8525 Japan
Telephone Number : +81-42-646-5525
Contact Person : Seigo Tsutsumi

The information provided from the customer is as follows;

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

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Type : Monitor with Receiver
Model Number : DMX958XR
Serial Number : Refer to SECTION 4.2
Condition : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date : October 4, 2021
Modification : No Modification by the test lab

2.2 Product Description

Model: DMX958XR (referred to as the EUT in this report) is a Monitor with Receiver.

There are three variant models DMX908S, DMX9708S, KW-M875BW
These models are identical except for presence of Panel, Dashboard Camera control terminal,
HD Radio, HD Camera Ready, Display and these difference do not affect the radio.

General Specification

Rating : DC 12 V

Radio Specification

Type of radio	Bluetooth (BR/EDR)	IEEE802.11b	IEEE802.11g	IEEE802.11a	IEEE802.11n (20 MHz BW)	IEEE802.11n (40 MHz BW)	IEEE802.11ac
Frequency of operation	2402 MHz - 2480 MHz	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5745 MHz - 5805 MHz	2412 MHz - 2462 MHz 5745 MHz - 5805 MHz	5755 MHz - 5795 MHz	5745 MHz-5805 MHz (20 MHz BW) 5755 MHz-5795 MHz (40 MHz BW) 5775 MHz (80 MHz BW)
Type of modulation	FHSS	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)			OFDM (256QAM, 16QAM, QPSK, BPSK)
Channel spacing	1 MHz	5 MHz		20 MHz	2.4 GHz band 5 MHz 5 GHz band 20 MHz	40 MHz	20 MHz (20 MHz BW) 40 MHz (40 MHz BW) 80 MHz (80 MHz BW)

Antenna type	Internal Antenna (Chip Antenna)
Antenna Gain	Antenna 0 (ANT-0) : -7.7 dBi (2.4 GHz Wireless LAN only), -4.7 dBi (5 GHz) Antenna 1 (ANT-1) : -9.9 dBi (2.4 GHz Bluetooth only), -4.6 dBi (5 GHz)
Power Supply (radio art input)	DC 3.6 V/ 3.3 V/1.8 V
Clock frequency (Maximum)	37.4 MHz
Clock frequency in the system (Maximum)	6.2208 GHz

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

* Also the EUT complies with FCC Part 15 Subpart B.

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	N/A	N/A *1)	-
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	See data	N/A	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 a)	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 b)	Conducted
Spurious Emission (below 30 MHz)	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		See data	Complied c)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2.4.1	See data	Complied d)	Conducted
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. *1) The test is not applicable since the EUT does not have AC Mains. a) Refer to APPENDIX 1 (data of Maximum Conducted Output Power) b) Refer to APPENDIX 1 (data of Maximum Power Spectral Density) c) Refer to APPENDIX 1 (data of Conducted Spurious Emission) d) 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.					

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

FCC Part 15.31 (e)

The EUT provides stable voltage constantly to the wireless transmitter regardless of input voltage. Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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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 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 $k=2$.

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Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	1.2 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	2.0 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	1.2 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.3 dB
Power Measurement above 1 GHz (Average Detector)_SPM-13	1.3 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-13	1.3 dB
Spurious emission (Conducted) below 1GHz	0.93 dB
Spurious emission (Conducted) 1 GHz-3 GHz	0.92 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.3 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.3 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.3 dB
Bandwidth Measurement	0.012 %
Duty cycle and Time Measurement	0.27 %
Temperature_SCH-01	0.93 deg.C.
Humidity_SCH-01	4.1 %
Temperature_SCH-02	2.0 deg.C.
Humidity_SCH-02	6.6 %
Voltage	0.97 %

3.5 Test Location

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A2LA Certificate Number: 1266.03

(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
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	-	-

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	Worst Data mode*
Transmitting (Tx), IEEE 802.11a (11a)	18 Mbps (ANT-1), PN9
Transmitting (Tx), IEEE 802.11n SISO 20 MHz BW (11n-20)	MCS 6 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11ac SISO 20 MHz BW (11ac-20)	MCS 7 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11n MIMO 20 MHz BW (11n-20)	MCS 8 (2 Streams), PN9
Transmitting (Tx), IEEE 802.11ac MIMO 20 MHz BW (11ac-20)	MCS 6 (2 Streams), PN9
Transmitting (Tx), IEEE 802.11n SISO 40 MHz BW (11n-40)	MCS 1 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11ac SISO 40 MHz BW (11ac-40)	MCS 6 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11n MIMO 40 MHz BW (11n-40)	MCS 8 (2 Streams), PN9
Transmitting (Tx), IEEE 802.11ac MIMO 40 MHz BW (11ac-40)	MCS 0 (2 Streams), PN9
Transmitting (Tx), IEEE 802.11ac SISO 80 MHz BW (11ac-80)	MCS 1 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11ac MIMO 80 MHz BW (11ac-80)	MCS 0 (2 Streams), PN9
*The worst antenna (ANT-1) 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 settings: Fixed Software: SoC: 0.0.0805.4600 Syscom: 1.0.0479.3100 Panel: 1.0.0209.3700 (Date: 2021.10.4, Storage location: EUT memory)	
*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.	

*The details of Operation mode(s)

Test Item	Operating Mode	Tested Antenna *2)	Tested Frequency
99 % Occupied Bandwidth, Maximum Conducted Output Power 6 dB Bandwidth, Maximum Power Spectral Density	Tx 11a	ANT-1	5745 MHz
	Tx 11n-20 (SISO)		5785 MHz
	Tx 11ac-20 (SISO)		5805 MHz
	Tx 11n-20 (MIMO) Tx 11ac-20 (MIMO)	ANT-0+ ANT-1	5755 MHz 5795 MHz
		Tx 11n-40 (SISO) Tx 11ac-40 (SISO)	
	Tx 11n-40 (MIMO) Tx 11ac-40 (MIMO)	ANT-0+ ANT-1	5775 MHz
		Tx 11ac-80 (SISO) Tx 11ac-80 (MIMO)	
	Conducted Spurious Emission *1)	Tx 11ac-20 (MIMO)	ANT-0+ ANT-1

*1) The mode was tested as a representative, because it had the highest power at antenna terminal test.
*2) The test was performed with the antenna that had higher power as a representative.

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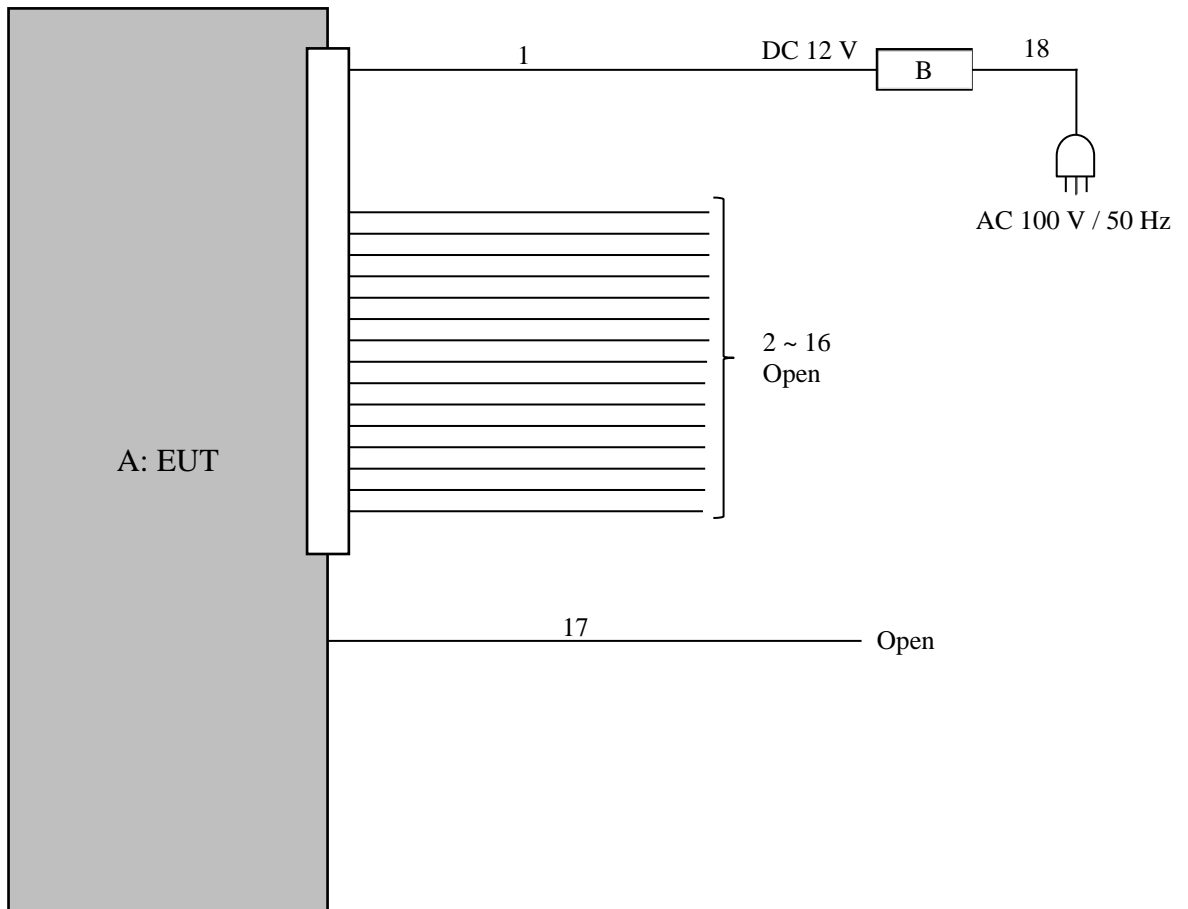
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4.2 Configuration and peripherals

Antenna Terminal Conducted 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	Monitor with Receiver	DMX958XR	PK-X0006	JVCKENWOOD	EUT
B	DC Power Supply	PW18-2ATP	19056351	TEXIO	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC(ACC,B+,GND)	1.8	Unshielded	Unshielded	-
2	Speaker (Front-L) +	0.1	Unshielded	Unshielded	-
3	Speaker (Front-R) +	0.1	Unshielded	Unshielded	-
4	Speaker (Rear-L) +	0.1	Unshielded	Unshielded	-
5	Speaker (Rear-R) +	0.1	Unshielded	Unshielded	-
6	Speaker (Front-L) -	0.1	Unshielded	Unshielded	-
7	Speaker (Front-R) -	0.1	Unshielded	Unshielded	-
8	Speaker (Rear-L) -	0.1	Unshielded	Unshielded	-
9	Speaker (Rear-R) -	0.1	Unshielded	Unshielded	-
10	P-CONT	0.1	Unshielded	Unshielded	-
11	REMOTE CONT	0.1	Unshielded	Unshielded	-
12	MUTE	0.1	Unshielded	Unshielded	-
13	ANT.CONT	0.1	Unshielded	Unshielded	-
14	ILLUMI	0.1	Unshielded	Unshielded	-
15	REVERSE	0.1	Unshielded	Unshielded	-
16	PRK SW	0.1	Unshielded	Unshielded	-
17	FM/AM ANT	0.1	Shielded	Shielded	-
18	AC	2.0	Unshielded	Unshielded	-

SECTION 5: 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
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)
Maximum Power Spectral Density	Encompass the entire EBW	100 kHz *2)	≥ 3 RBW	Auto	RMS Power Averaging (100 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3) *4)	9 kHz – 150 kHz 150 kHz – 30 MHz	200 Hz 10 kHz	620 Hz 30 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-5.850 GHz, but it is not possible with spectrum analyzer, so RBW Correction Factor ($10 \log(500 \text{ kHz} / 100 \text{ kHz})$) 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 not detected as shown in the chart. (9 kHz-150 kHz: RBW = 200 Hz, 150 kHz-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.

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

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APPENDIX 1: Test data

99 % Occupied Bandwidth

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx

11a

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5745	17546.0	-
	5785	17572.3	-
	5805	17501.7	-

11n-20 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5745	18286.0	-
	5785	18305.0	-
	5805	18239.3	-

11ac-20 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5745	18328.6	-
	5785	18280.2	-
	5805	18255.8	-

11n-40 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5755	36553.5	-
	5795	36510.8	-

11ac-40 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5755	36578.0	-
	5795	36489.7	-

11ac-80 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5775	76308.4	-

99 % Occupied Bandwidth

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx

11n-20 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5745	18342.1	-
	5785	18189.2	-
	5805	18215.7	-

11ac-20 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5745	18289.7	-
	5785	18176.0	-
	5805	18198.3	-

11n-40 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5755	36585.7	-
	5795	36650.7	-

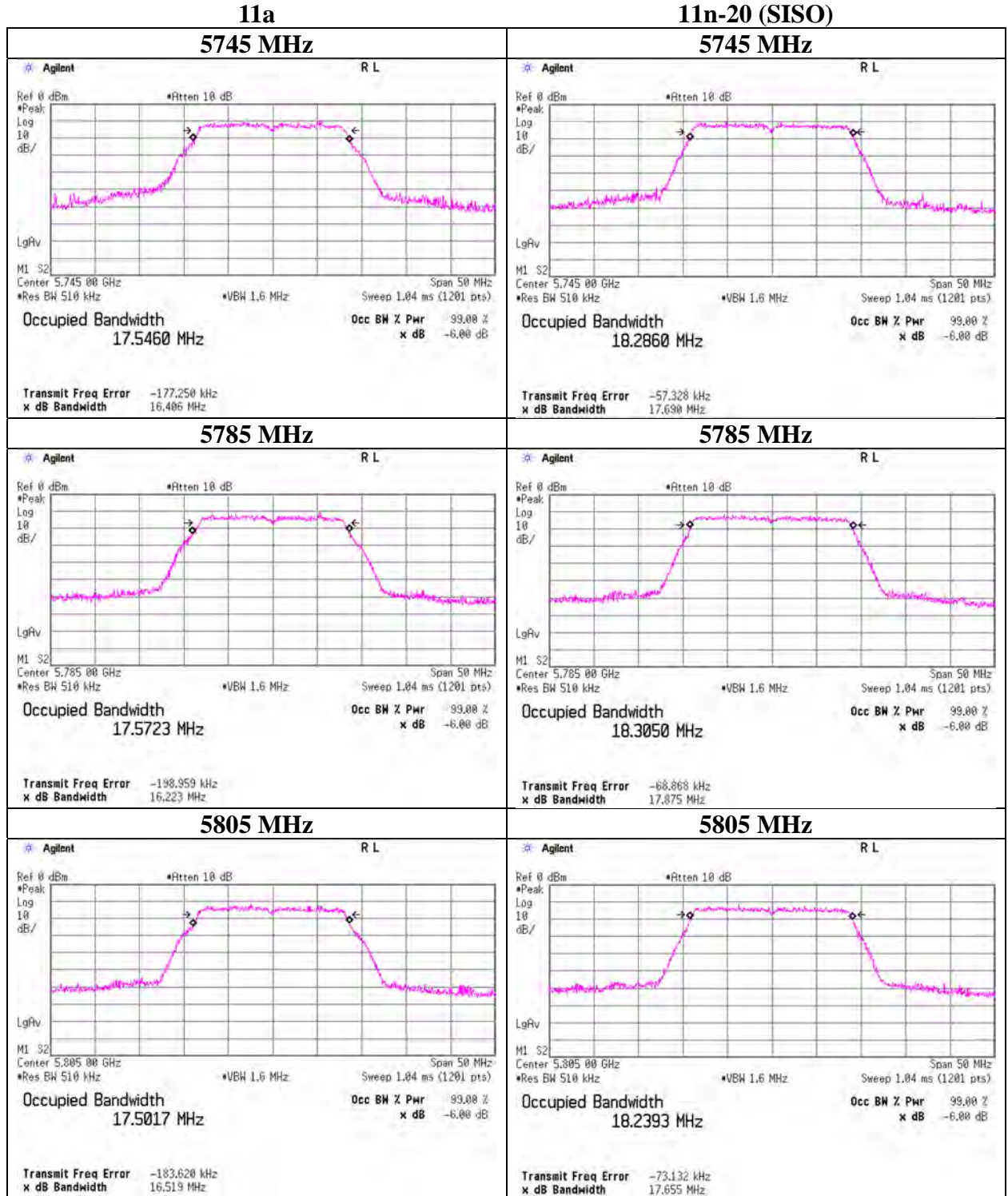
11ac-40 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5755	36608.3	-
	5795	36609.9	-

11ac-80 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth	Limit [MHz]
		[kHz]	
Ant 1	5775	75883.0	-

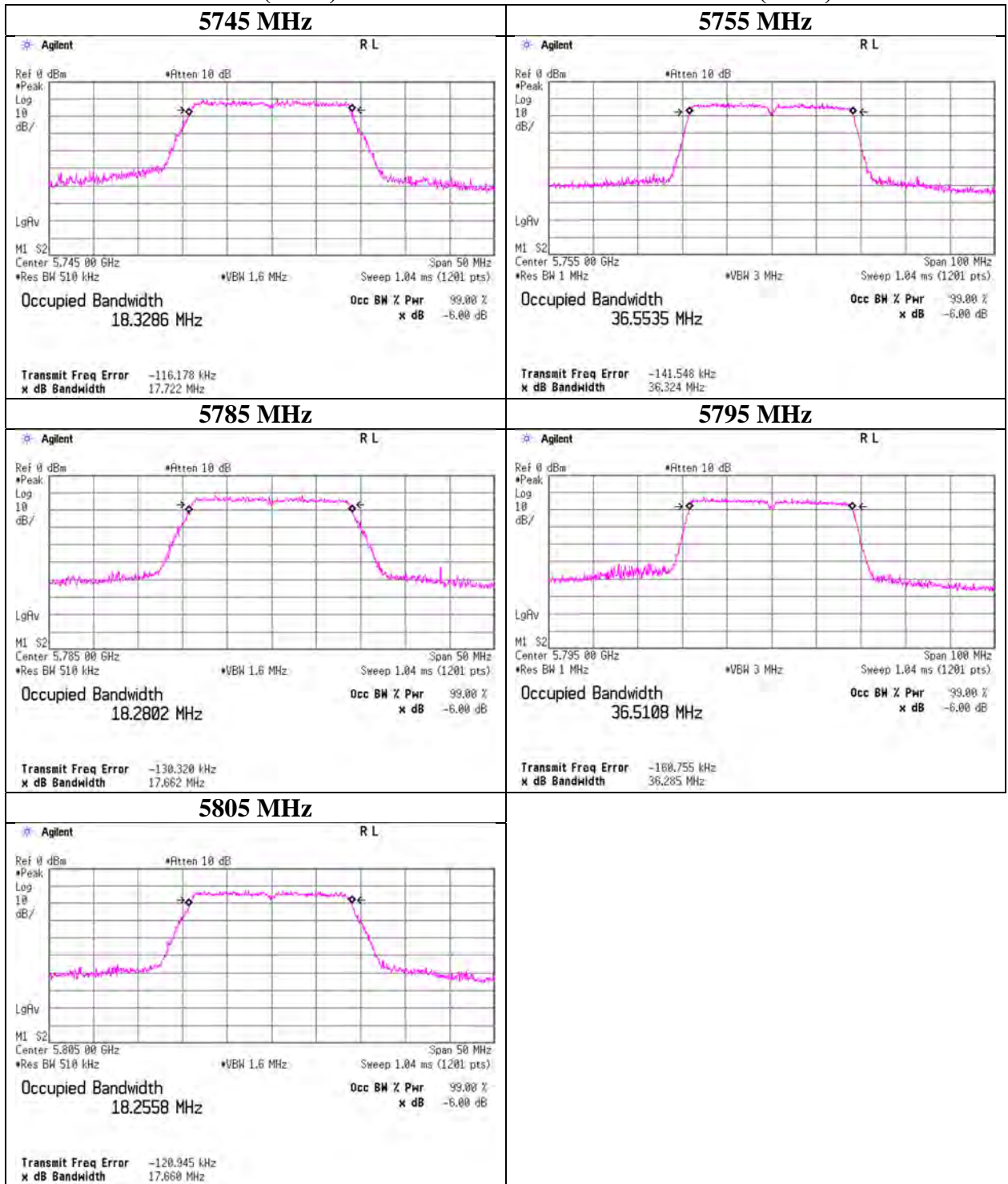
99 % Occupied Bandwidth



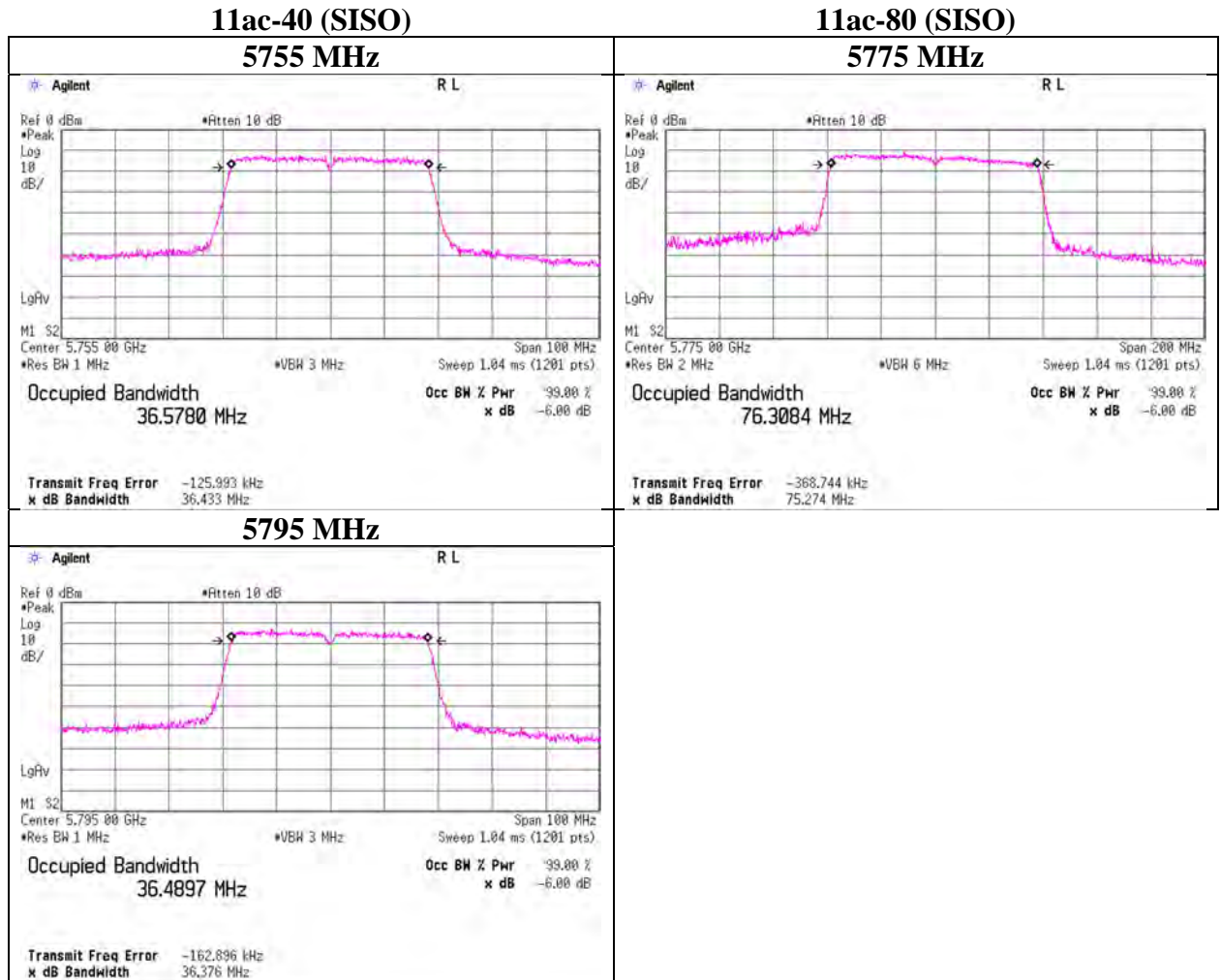
99 % Occupied Bandwidth

11ac-20 (SISO)

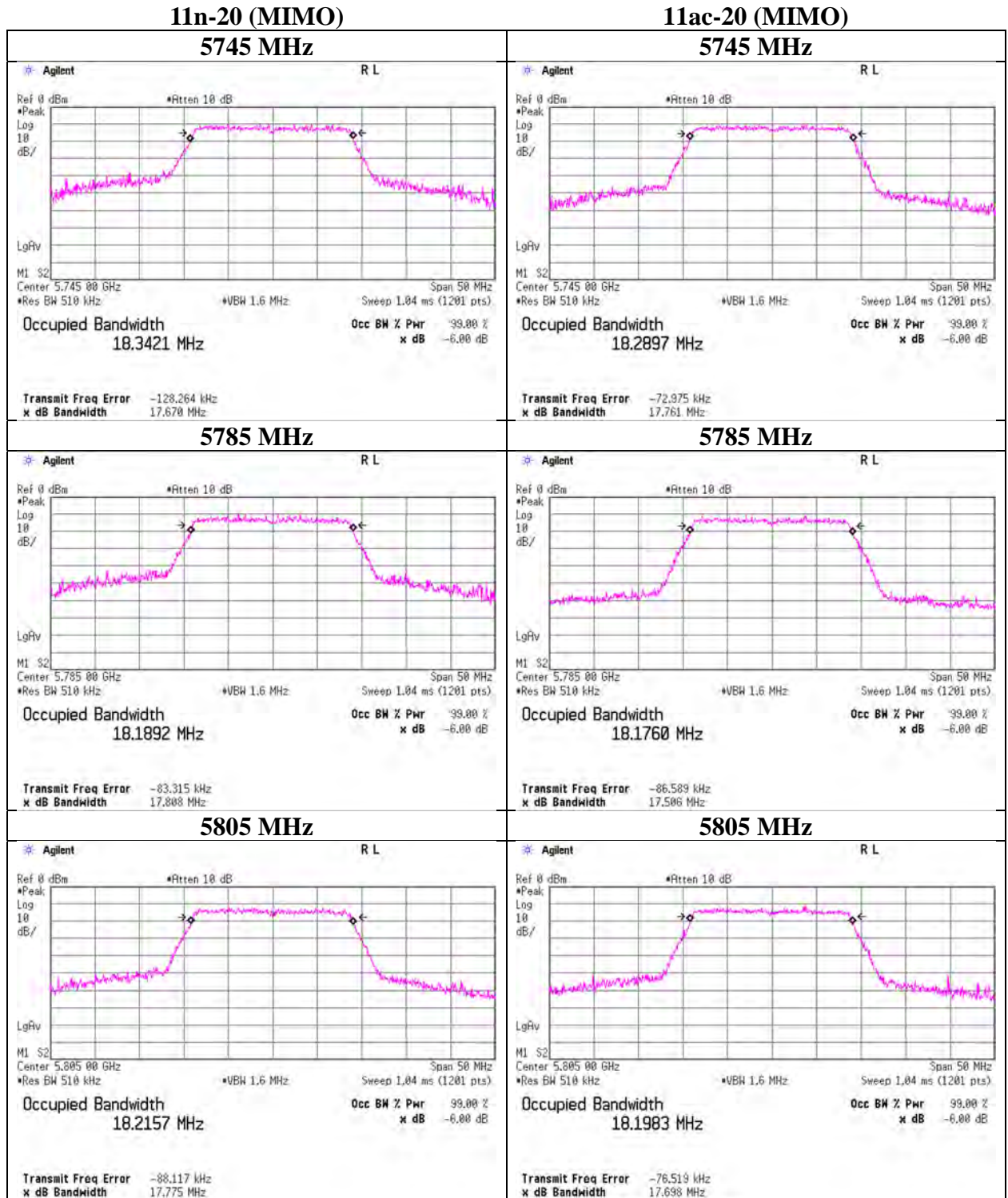
11n-40 (SISO)



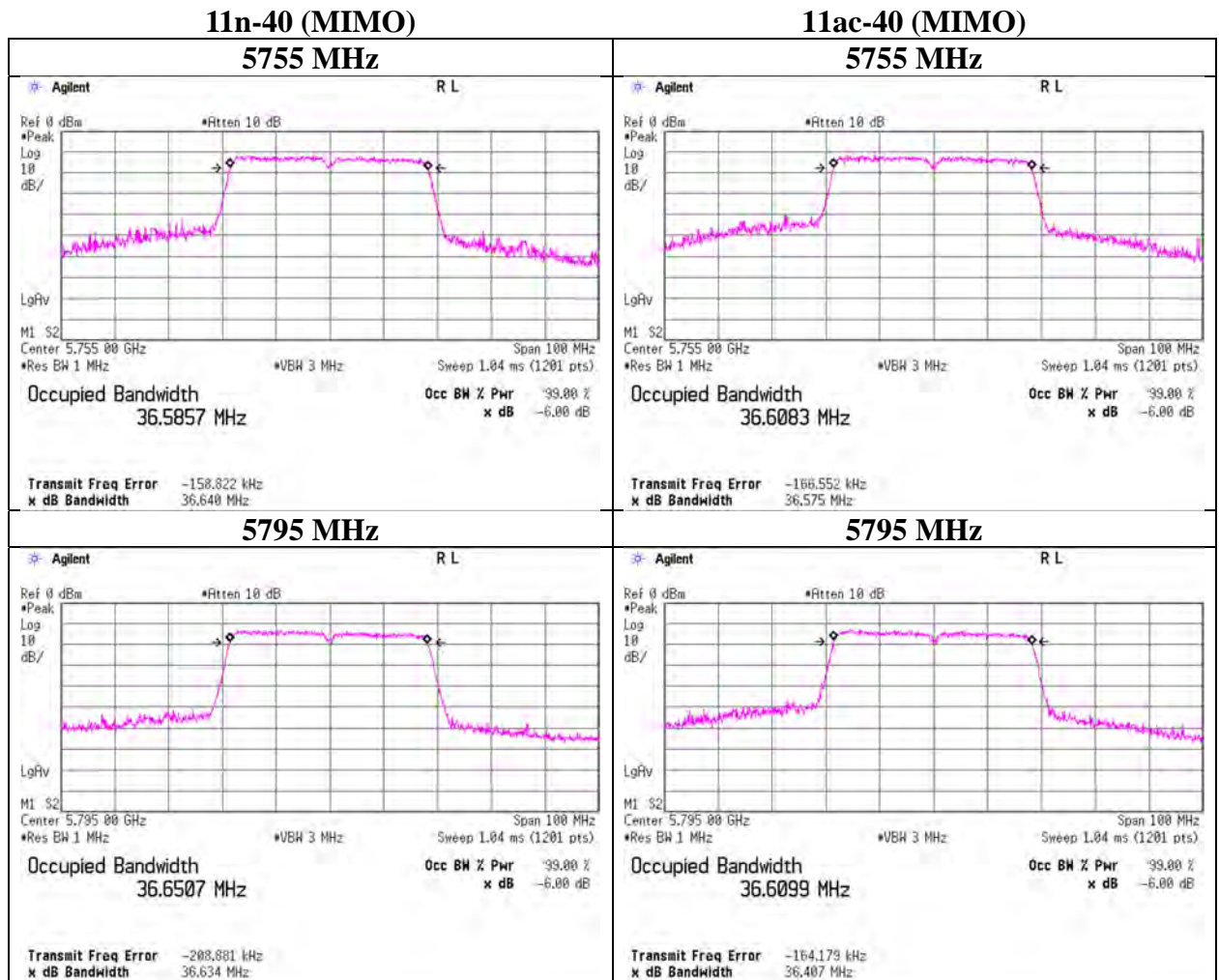
99 % Occupied Bandwidth



99 % Occupied Bandwidth

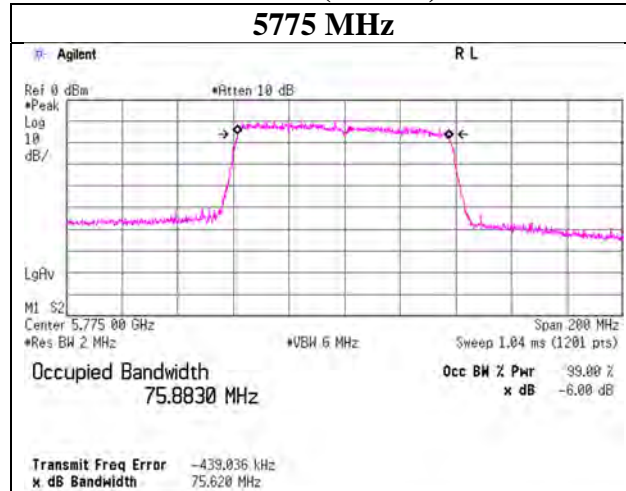


99 % Occupied Bandwidth



99 % Occupied Bandwidth

11ac-80 (MIMO)



6 dB Bandwidth

Report No.	14027963S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 7, 2021
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Takahiro Kawakami
Mode	Tx

11a

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5745	16.443	> 0.500
	5785	16.433	> 0.500
	5805	16.361	> 0.500

11n-20 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5745	17.665	> 0.500
	5785	17.734	> 0.500
	5805	17.734	> 0.500

11ac-20 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5745	17.704	> 0.500
	5785	17.714	> 0.500
	5805	17.712	> 0.500

11n-40 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5755	36.135	> 0.500
	5795	36.035	> 0.500

11ac-40 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5755	36.492	> 0.500
	5795	36.311	> 0.500

11ac-80 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5775	75.800	> 0.500

6 dB Bandwidth

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx

11n-20 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5745	17.639	> 0.500
	5785	17.679	> 0.500
	5805	17.631	> 0.500

11ac-20 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5745	17.708	> 0.500
	5785	17.729	> 0.500
	5805	17.698	> 0.500

11n-40 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 1	5755	36.175	> 0.500
	5795	36.115	> 0.500

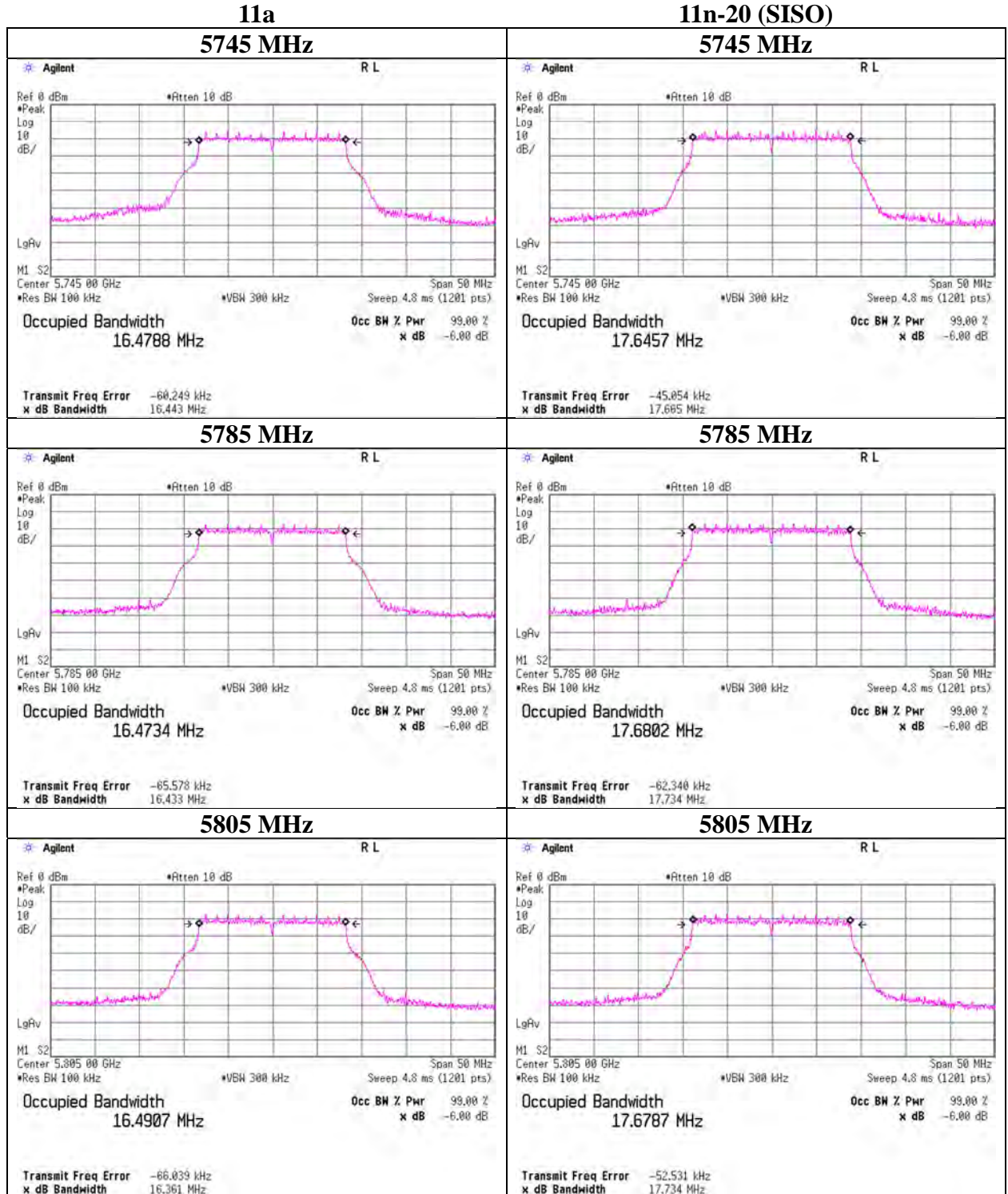
11ac-40 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 0	5755	36.387	> 0.500
	5795	36.355	> 0.500

11ac-80 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Ant 0	5775	75.890	> 0.500

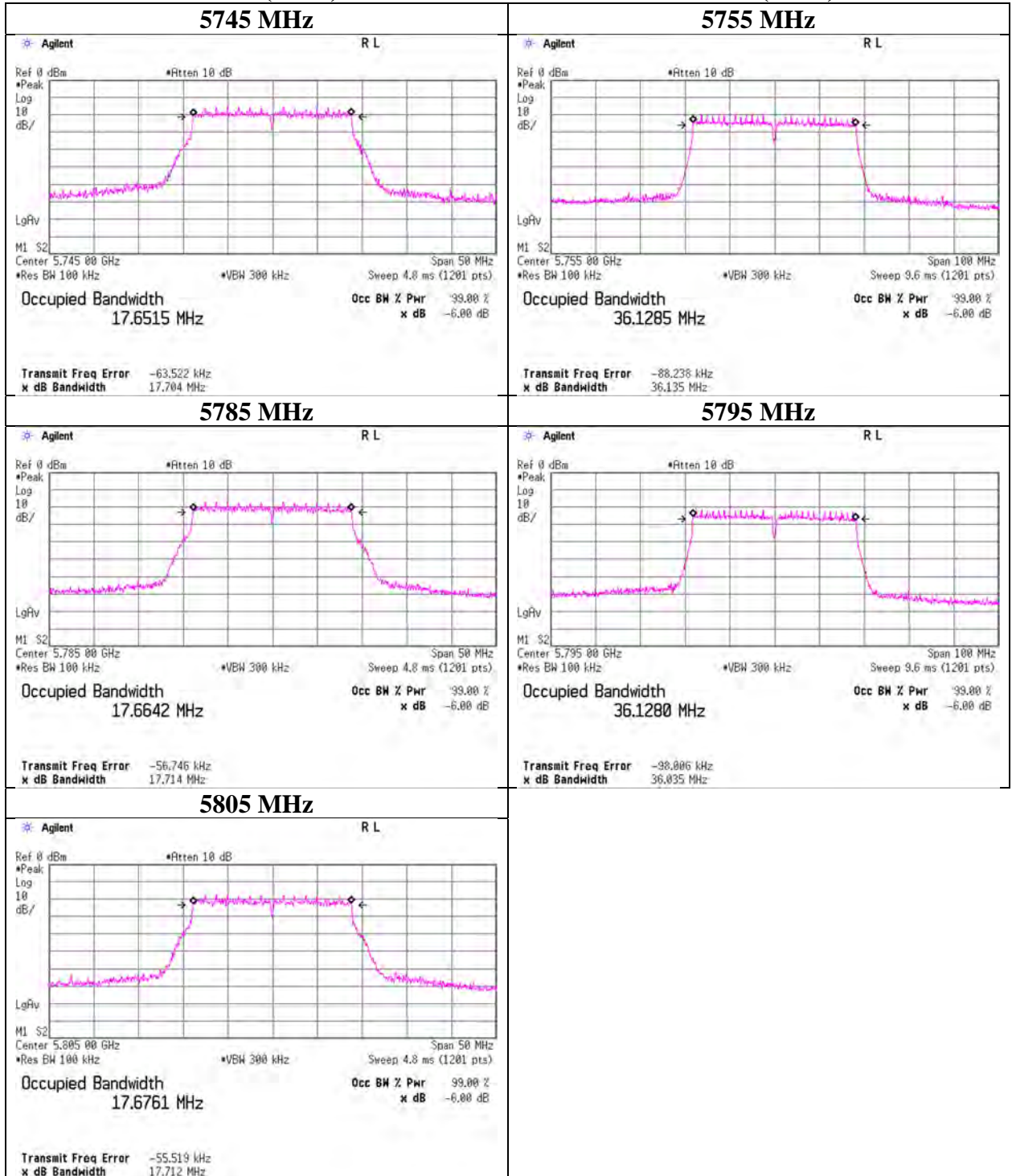
6 dB Bandwidth



6 dB Bandwidth

11ac-20 (SISO)

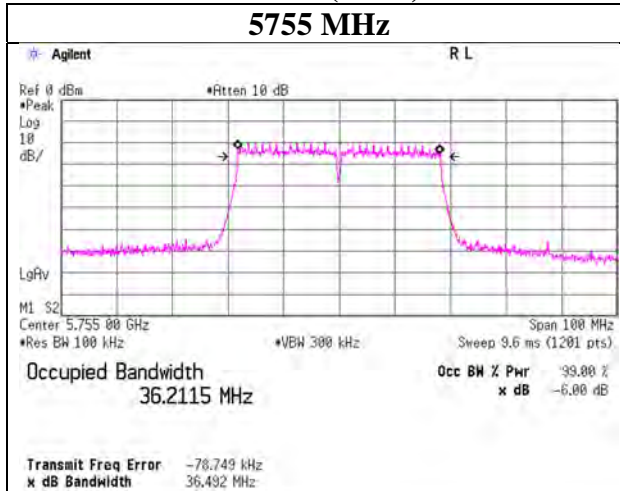
11n-40 (SISO)



6 dB Bandwidth

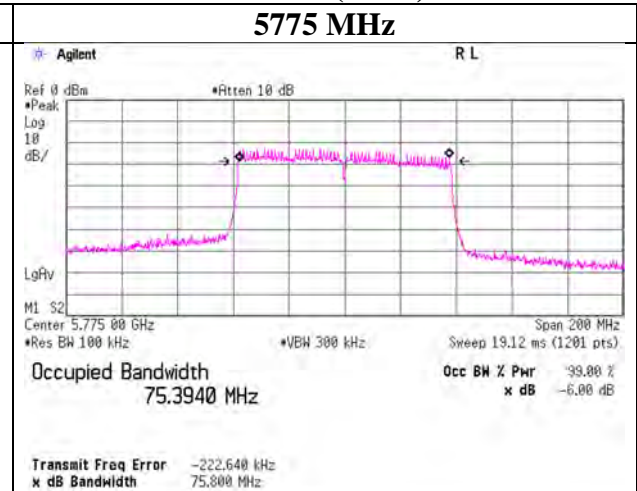
11ac-40 (SISO)

5755 MHz

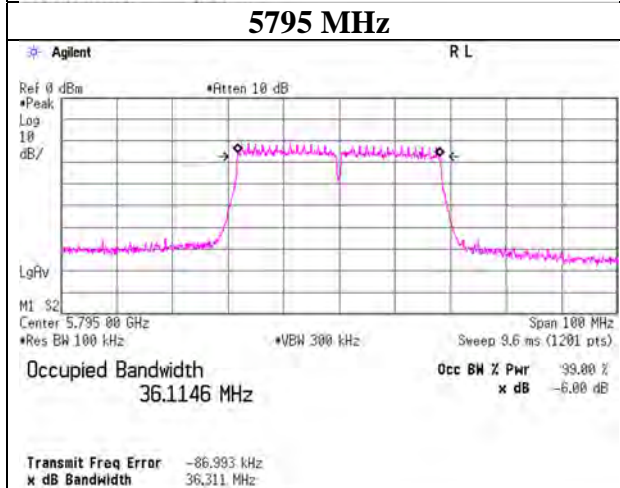


11ac-80 (SISO)

5775 MHz



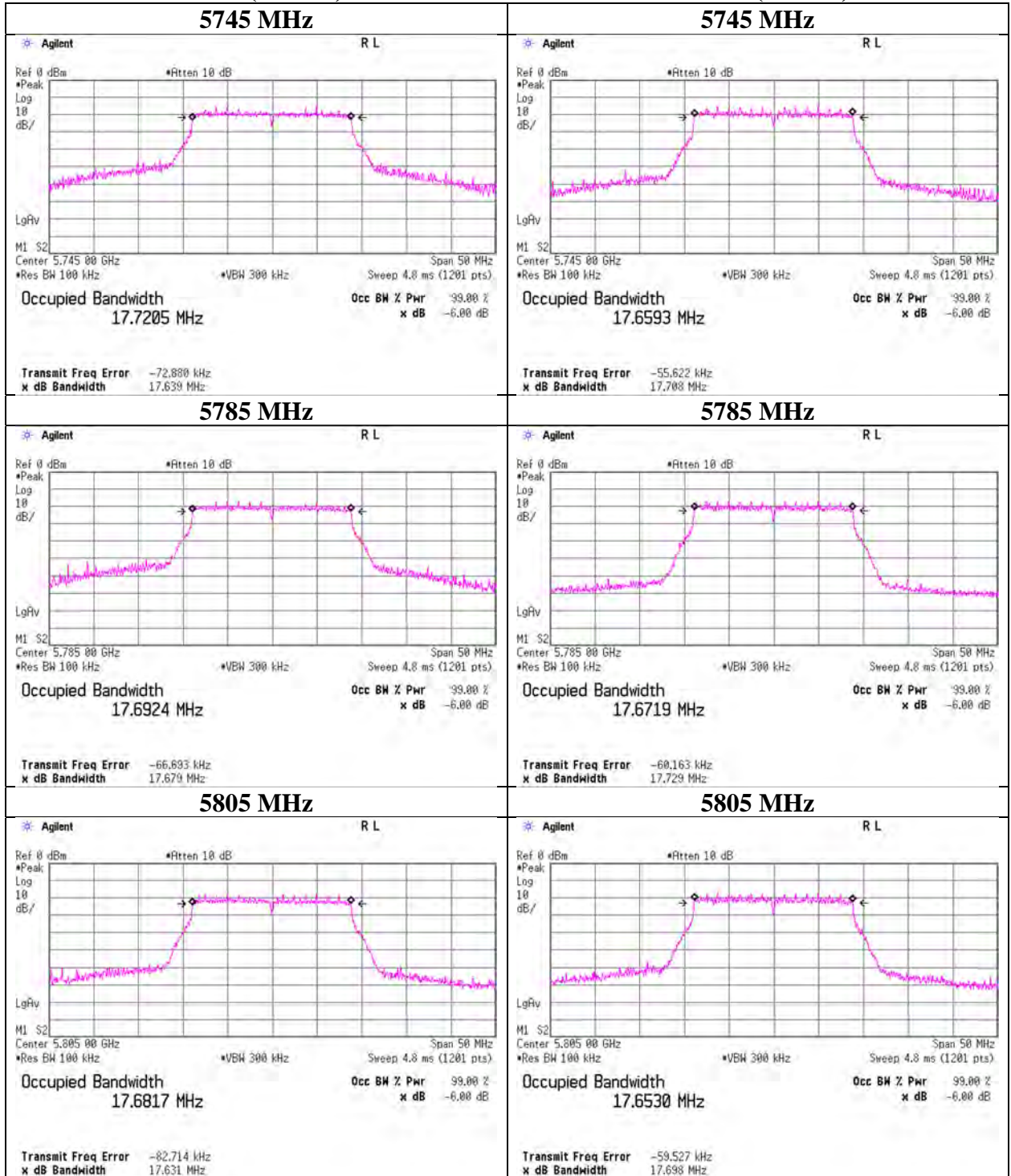
5795 MHz



6 dB Bandwidth

11n-20 (MIMO)

11ac-20 (MIMO)



UL Japan, Inc.

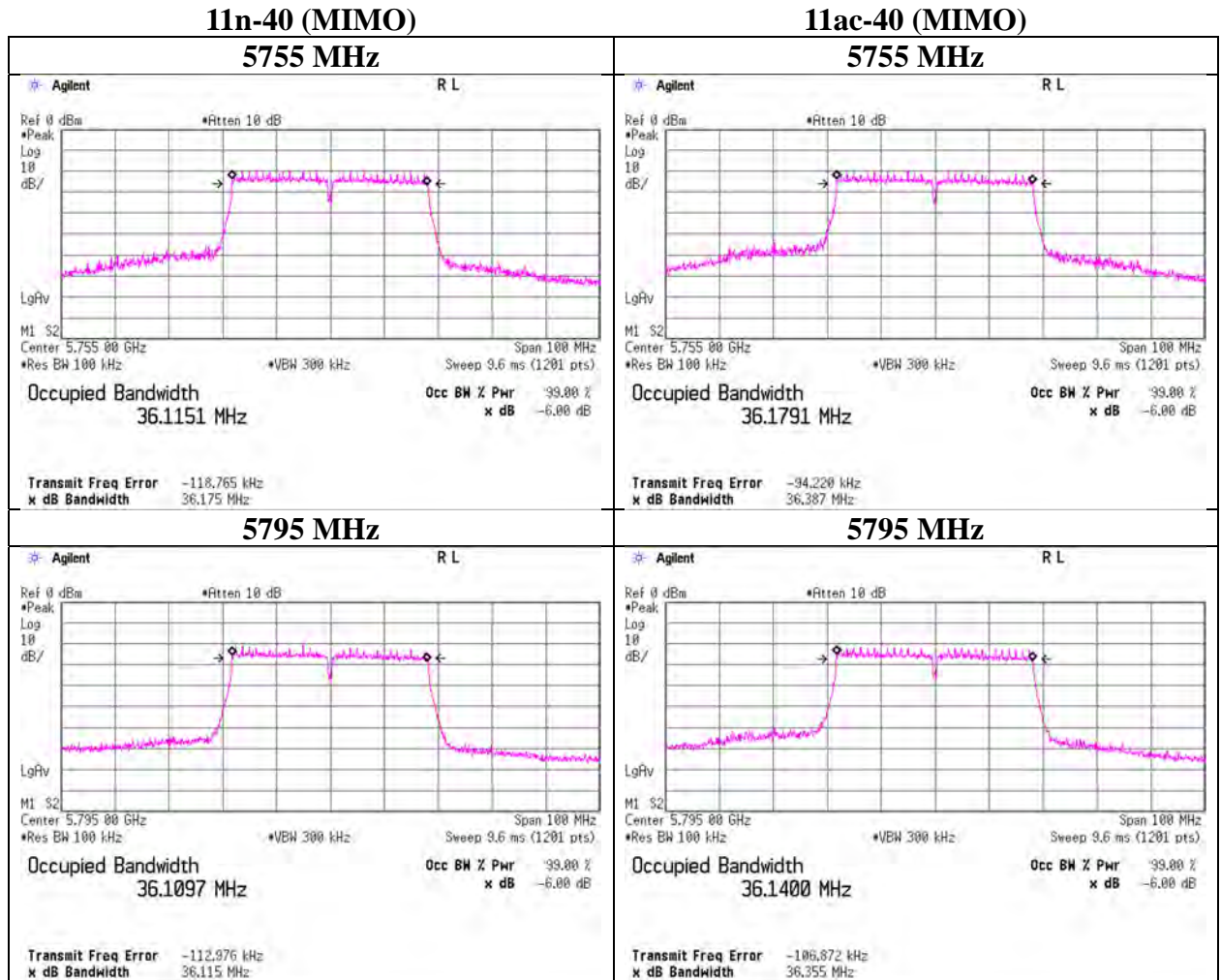
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

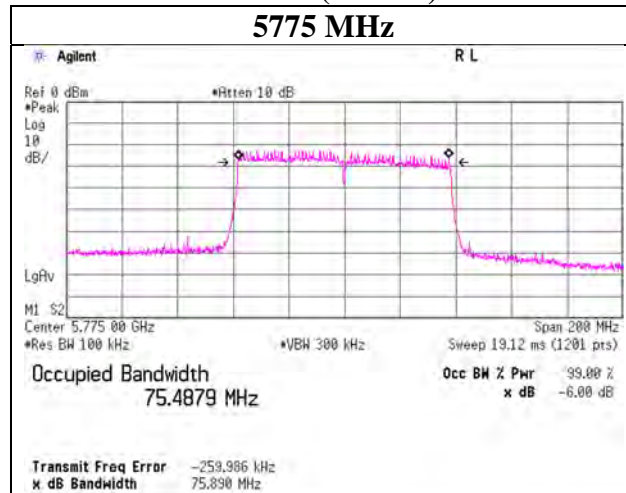
Facsimile : +81 463 50 6401

6 dB Bandwidth



6 dB Bandwidth

11ac-80 (MIMO)



Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx

Applied limit: 15.407, mobile and portable client device

Mode	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) [MHz]	99% OBW (B for IC) [MHz]	Conducted Power				e.i.r.p.			
									Result		Limit	Margin	Result		Limit	Margin
									[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
11a	5745	-5.84	2.01	10.01	0.78	-4.60	-	17.546	6.96	4.97	30.00	23.04	2.36	1.72	36.00	33.64
	5785	-6.91	2.01	10.02	0.78	-4.60	-	17.572	5.90	3.89	30.00	24.10	1.30	1.35	36.00	34.70
	5805	-7.62	2.02	10.02	0.78	-4.60	-	17.502	5.20	3.31	30.00	24.80	0.60	1.15	36.00	35.40
11n-20 (SISO)	5745	-6.81	2.01	10.01	1.84	-4.60	-	18.286	7.05	5.07	30.00	22.95	2.45	1.76	36.00	33.55
	5785	-8.00	2.01	10.02	1.84	-4.60	-	18.305	5.87	3.86	30.00	24.13	1.27	1.34	36.00	34.73
	5805	-8.66	2.02	10.02	1.84	-4.60	-	18.239	5.22	3.33	30.00	24.78	0.62	1.15	36.00	35.38
11ac-20 (SISO)	5745	-6.86	2.01	10.01	1.95	-4.60	-	18.329	7.11	5.14	30.00	22.89	2.51	1.78	36.00	33.49
	5785	-8.09	2.01	10.02	1.95	-4.60	-	18.280	5.89	3.88	30.00	24.11	1.29	1.35	36.00	34.71
	5805	-8.88	2.02	10.02	1.95	-4.60	-	18.256	5.11	3.24	30.00	24.89	0.51	1.12	36.00	35.49
11n-40 (SISO)	5755	-8.10	2.01	10.02	1.05	-4.60	-	36.554	4.98	3.15	30.00	25.02	0.38	1.09	36.00	35.62
	5795	-8.90	2.01	10.02	1.05	-4.60	-	36.511	4.18	2.62	30.00	25.82	-0.42	0.91	36.00	36.42
11ac-40 (SISO)	5755	-9.34	2.01	10.02	2.66	-4.60	-	36.578	5.35	3.43	30.00	24.65	0.75	1.19	36.00	35.25
	5795	-10.77	2.01	10.02	2.66	-4.60	-	36.490	3.92	2.47	30.00	26.08	-0.68	0.86	36.00	36.68
11ac-80 (SISO)	5775	-8.91	2.01	10.02	1.79	-4.60	-	76.308	4.91	3.10	30.00	25.09	0.31	1.07	36.00	35.69

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 (5725 MHz-5850 MHz) = 1 W

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx

Ant 0+1

Applied limit: 15.407, mobile and portable client device

Mode	Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
				Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
				0 [mW]	1 [mW]	Sum [mW]				0 [mW]	1 [mW]	Sum [mW]			
11n-20 (MIMO)	5745	-	18.342	4.00	5.04	9.03	9.56	30.00	20.44	1.36	1.75	3.10	4.92	36.00	31.08
	5785	-	18.189	2.86	4.14	7.00	8.45	30.00	21.55	0.97	1.44	2.41	3.81	36.00	32.19
	5805	-	18.216	2.23	3.41	5.65	7.52	30.00	22.48	0.76	1.18	1.94	2.88	36.00	33.12
11ac-20 (MIMO)	5745	-	18.290	4.00	5.09	9.09	9.59	30.00	20.41	1.36	1.77	3.12	4.94	36.00	31.06
	5785	-	18.176	2.87	3.94	6.81	8.33	30.00	21.67	0.97	1.36	2.34	3.69	36.00	32.31
	5805	-	18.198	2.20	3.39	5.59	7.47	30.00	22.53	0.74	1.17	1.92	2.83	36.00	33.17
11n-40 (MIMO)	5755	-	36.586	2.87	3.48	6.35	8.03	30.00	21.97	0.97	1.21	2.18	3.38	36.00	32.62
	5795	-	36.651	2.83	3.35	6.18	7.91	30.00	22.09	0.96	1.16	2.12	3.27	36.00	32.73
11ac-40 (MIMO)	5755	-	36.608	2.84	3.48	6.32	8.01	30.00	21.99	0.96	1.21	2.17	3.36	36.00	32.64
	5795	-	36.610	1.92	2.56	4.48	6.51	30.00	23.49	0.65	0.89	1.54	1.87	36.00	34.13
11ac-80 (MIMO)	5775	-	75.883	2.55	3.27	5.83	7.65	30.00	22.35	0.86	1.14	2.00	3.01	36.00	32.99

Mode	Tested Frequency [MHz]	Duty Factor [dB]	Ant 0						Ant 1					
			Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result	
							Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
11n-20 (MIMO)	5745	0.30	-6.64	2.25	10.11	-4.70	6.02	1.32	-5.30	2.01	10.01	-4.60	7.02	2.42
	5785	0.30	-8.10	2.26	10.11	-4.70	4.57	-0.13	-6.16	2.01	10.02	-4.60	6.17	1.57
	5805	0.30	-9.18	2.26	10.11	-4.70	3.49	-1.21	-7.01	2.02	10.02	-4.60	5.33	0.73
11ac-20 (MIMO)	5745	1.80	-8.14	2.25	10.11	-4.70	6.02	1.32	-6.75	2.01	10.01	-4.60	7.07	2.47
	5785	1.80	-9.59	2.26	10.11	-4.70	4.58	-0.12	-7.88	2.01	10.02	-4.60	5.95	1.35
	5805	1.80	-10.75	2.26	10.11	-4.70	3.42	-1.28	-8.54	2.02	10.02	-4.60	5.30	0.70
11n-40 (MIMO)	5755	0.59	-8.37	2.25	10.11	-4.70	4.58	-0.12	-7.21	2.01	10.02	-4.60	5.41	0.81
	5795	0.59	-8.44	2.26	10.11	-4.70	4.52	-0.18	-7.37	2.01	10.02	-4.60	5.25	0.65
11ac-40 (MIMO)	5755	0.58	-8.40	2.25	10.11	-4.70	4.54	-0.16	-7.20	2.01	10.02	-4.60	5.41	0.81
	5795	0.58	-10.11	2.26	10.11	-4.70	2.84	-1.86	-8.53	2.01	10.02	-4.60	4.08	-0.52
11ac-80 (MIMO)	5775	1.11	-9.40	2.25	10.11	-4.70	4.07	-0.63	-7.99	2.01	10.02	-4.60	5.15	0.55

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 (5725 MHz-5850 MHz) = 1 W

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11a

5785 MHz

Mode	Rate Mbps	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Ant 0	6	-7.54	0.29	-7.25	-
	9	-7.71	0.42	-7.29	-
	12	-7.63	0.54	-7.09	-
	18	-8.01	0.78	-7.23	-
	24	-8.91	1.01	-7.90	-
	36	-9.43	1.36	-8.07	-
	48	-9.56	1.75	-7.81	-
	54	-9.91	1.86	-8.05	-
Ant 1	6	-6.47	0.29	-6.18	-
	9	-6.58	0.42	-6.16	-
	12	-6.68	0.54	-6.14	-
	18	-6.91	0.78	-6.13	*
	24	-7.40	1.01	-6.39	-
	36	-7.62	1.36	-6.26	-
	48	-8.08	1.75	-6.33	-
	54	-8.08	1.86	-6.22	-

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-20 (SISO)

5785 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Ant 0	0	-8.23	0.30	-7.93	-
	1	-8.50	0.57	-7.93	-
	2	-8.69	0.80	-7.89	-
	3	-8.99	1.02	-7.97	-
	4	-9.20	1.40	-7.80	-
	5	-9.61	1.69	-7.92	-
	6	-9.64	1.84	-7.80	-
7	-9.70	1.97	-7.73	-	
Ant 1	0	-6.56	0.30	-6.26	-
	1	-6.77	0.57	-6.20	-
	2	-6.97	0.80	-6.17	-
	3	-7.19	1.02	-6.17	-
	4	-7.58	1.40	-6.18	-
	5	-7.91	1.69	-6.22	-
	6	-8.00	1.84	-6.16	*
7	-8.31	1.97	-6.34	-	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-20 (SISO)

5785 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Ant 0	0	-8.21	0.30	-7.91	-
	1	-8.52	0.57	-7.95	-
	2	-8.71	0.81	-7.90	-
	3	-8.83	1.02	-7.81	-
	4	-9.17	1.37	-7.80	-
	5	-9.50	1.69	-7.81	-
	6	-9.75	1.79	-7.96	-
	7	-9.74	1.95	-7.79	-
8	-11.24	2.15	-9.09	-	
Ant 1	0	-6.57	0.30	-6.27	-
	1	-6.73	0.57	-6.16	-
	2	-7.15	0.81	-6.34	-
	3	-7.22	1.02	-6.20	-
	4	-7.53	1.37	-6.16	-
	5	-7.95	1.69	-6.26	-
	6	-7.95	1.79	-6.16	-
	7	-8.09	1.95	-6.14	*
8	-9.55	2.15	-7.40	-	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-40 (SISO)

5755 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Ant 0	0	-9.07	0.60	-8.47	-
	1	-9.65	1.05	-8.60	-
	2	-10.05	1.43	-8.62	-
	3	-10.40	1.74	-8.66	-
	4	-10.85	2.22	-8.63	-
	5	-11.25	2.59	-8.66	-
	6	-11.30	2.75	-8.55	-
Ant 1	7	-11.59	2.90	-8.69	-
	0	-7.76	0.60	-7.16	-
	1	-8.10	1.05	-7.05	*
	2	-8.66	1.43	-7.23	-
	3	-8.92	1.74	-7.18	-
	4	-9.49	2.22	-7.27	-
	5	-9.74	2.59	-7.15	-
6	-9.88	2.75	-7.13	-	
	7	-10.14	2.90	-7.24	-

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-40 (SISO)

5755 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Ant 0	0	-8.22	0.59	-7.63	-
	1	-8.98	1.06	-7.92	-
	2	-9.28	1.41	-7.87	-
	3	-9.68	1.70	-7.98	-
	4	-10.13	2.17	-7.96	-
	5	-10.31	2.54	-7.77	-
	6	-10.46	2.66	-7.80	-
	7	-10.76	2.81	-7.95	-
	8	-10.86	2.97	-7.89	-
	9	-12.25	3.17	-9.08	-
Ant 1	0	-7.48	0.59	-6.89	-
	1	-7.85	1.06	-6.79	-
	2	-8.31	1.41	-6.90	-
	3	-8.54	1.70	-6.84	-
	4	-9.23	2.17	-7.06	-
	5	-9.37	2.54	-6.83	-
	6	-9.34	2.66	-6.68	*
	7	-9.57	2.81	-6.76	-
	8	-9.84	2.97	-6.87	-
	9	-11.07	3.17	-7.90	-

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-80 (SISO)

5775 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Ant 0	0	-9.64	1.11	-8.53	-
	1	-10.18	1.79	-8.39	-
	2	-10.67	2.23	-8.44	-
	3	-11.09	2.58	-8.51	-
	4	-11.40	3.06	-8.34	-
	5	-11.83	3.35	-8.48	-
	6	-11.99	3.48	-8.51	-
	7	-12.09	3.62	-8.47	-
	8	-13.15	3.74	-9.41	-
9	-14.58	3.88	-10.70	-	
Ant 1	0	-8.45	1.11	-7.34	-
	1	-8.91	1.79	-7.12	*
	2	-9.44	2.23	-7.21	-
	3	-9.92	2.58	-7.34	-
	4	-10.52	3.06	-7.46	-
	5	-10.64	3.35	-7.29	-
	6	-10.90	3.48	-7.42	-
	7	-10.92	3.62	-7.30	-
	8	-12.22	3.74	-8.48	-
9	-13.11	3.88	-9.23	-	

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-20 (MIMO)

5785 MHz

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0	1	0	1	0+1	0+1		0	1	0+1	
	[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]	[dB]	[dBm]	[dBm]	[dBm]	
8	-8.10	-6.16	0.15	0.24	0.40	-4.01	0.30	-	-	-3.71	*
9	-8.31	-6.66	0.15	0.22	0.36	-4.40	0.57	-	-	-3.82	-
10	-8.69	-6.93	0.14	0.20	0.34	-4.71	0.83	-	-	-3.89	-
11	-8.76	-7.03	0.13	0.20	0.33	-4.80	1.02	-	-	-3.78	-
12	-9.16	-7.46	0.12	0.18	0.30	-5.22	1.38	-	-	-3.84	-
13	-9.56	-7.80	0.11	0.17	0.28	-5.58	1.70	-	-	-3.88	-
14	-9.61	-7.96	0.11	0.16	0.27	-5.70	1.82	-	-	-3.88	-
15	-9.65	-8.07	0.11	0.16	0.26	-5.78	1.98	-	-	-3.80	-

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-20 (MIMO)

5785 MHz

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-8.15	-6.39	0.15	0.23	0.38	-4.17	0.30	-	-	-3.87	-
1	-8.50	-6.57	0.14	0.22	0.36	-4.42	0.57	-	-	-3.85	-
2	-8.67	-6.85	0.14	0.21	0.34	-4.66	0.81	-	-	-3.85	-
3	-8.90	-7.05	0.13	0.20	0.33	-4.87	1.02	-	-	-3.85	-
4	-9.26	-7.42	0.12	0.18	0.30	-5.23	1.37	-	-	-3.86	-
5	-9.51	-7.76	0.11	0.17	0.28	-5.54	1.68	-	-	-3.86	-
6	-9.59	-7.88	0.11	0.16	0.27	-5.64	1.80	-	-	-3.84	*
7	-9.76	-8.09	0.11	0.16	0.26	-5.83	1.91	-	-	-3.92	-
8	-11.04	-9.31	0.08	0.12	0.20	-7.08	2.11	-	-	-4.97	-

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-40 (MIMO)

5755 MHz

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0	1	0	1	0+1	0+1		0	1	0+1	
	[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]	[dB]	[dBm]	[dBm]	[dBm]	
8	-8.37	-7.21	0.15	0.19	0.34	-4.74	0.59	-	-	-4.15	*
9	-8.82	-7.77	0.13	0.17	0.30	-5.25	1.06	-	-	-4.20	-
10	-9.13	-8.09	0.12	0.16	0.28	-5.57	1.41	-	-	-4.16	-
11	-9.70	-8.39	0.11	0.14	0.25	-5.99	1.73	-	-	-4.26	-
12	-10.18	-9.02	0.10	0.13	0.22	-6.55	2.20	-	-	-4.35	-
13	-10.46	-9.47	0.09	0.11	0.20	-6.93	2.58	-	-	-4.35	-
14	-10.63	-9.39	0.09	0.12	0.20	-6.96	2.73	-	-	-4.23	-
15	-10.71	-9.49	0.08	0.11	0.20	-7.05	2.88	-	-	-4.17	-

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-40 (MIMO)

5755 MHz

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0	1	0	1	0+1	0+1		0	1	0+1	
	[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]	[dB]	[dBm]	[dBm]	[dBm]	
0	-8.40	-7.20	0.14	0.19	0.34	-4.75	0.58	-	-	-4.16	*
1	-8.90	-7.66	0.13	0.17	0.30	-5.23	1.03	-	-	-4.20	-
2	-9.32	-7.94	0.12	0.16	0.28	-5.57	1.40	-	-	-4.17	-
3	-9.69	-8.55	0.11	0.14	0.25	-6.07	1.70	-	-	-4.38	-
4	-10.00	-8.99	0.10	0.13	0.23	-6.46	2.15	-	-	-4.30	-
5	-10.36	-9.21	0.09	0.12	0.21	-6.74	2.50	-	-	-4.24	-
6	-10.63	-9.33	0.09	0.12	0.20	-6.92	2.65	-	-	-4.27	-
7	-10.63	-9.44	0.09	0.11	0.20	-6.98	2.77	-	-	-4.22	-
8	-10.76	-9.78	0.08	0.11	0.19	-7.23	2.97	-	-	-4.26	-
9	-12.20	-11.10	0.06	0.08	0.14	-8.60	3.15	-	-	-5.46	-

* Worst rate

Sample Calculation:

$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

Maximum Conducted Output Power

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.1 Measurement Room
Date October 5, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-80 (MIMO)

5775 MHz

MCS Number	Reading (timed average)						Duty factor	Burst power			Remarks
	Antenna							Antenna			
	0	1	0	1	0+1	0+1		0	1	0+1	
	[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]	[dB]	[dBm]	[dBm]	[dBm]	
0	-9.40	-7.99	0.11	0.16	0.27	-5.63	1.11	-	-	-4.52	*
1	-10.19	-8.76	0.10	0.13	0.23	-6.41	1.78	-	-	-4.63	-
2	-10.62	-9.27	0.09	0.12	0.21	-6.88	2.25	-	-	-4.63	-
3	-11.01	-9.64	0.08	0.11	0.19	-7.26	2.57	-	-	-4.69	-
4	-11.34	-10.10	0.07	0.10	0.17	-7.67	3.04	-	-	-4.62	-
5	-11.63	-10.39	0.07	0.09	0.16	-7.96	3.35	-	-	-4.61	-
6	-11.75	-10.48	0.07	0.09	0.16	-8.06	3.39	-	-	-4.66	-
7	-11.84	-10.61	0.07	0.09	0.15	-8.17	3.60	-	-	-4.57	-
8	-13.17	-11.92	0.05	0.06	0.11	-9.49	3.73	-	-	-5.76	-
9	-14.30	-12.91	0.04	0.05	0.09	-10.54	3.88	-	-	-6.66	-

* Worst rate

Sample Calculation:

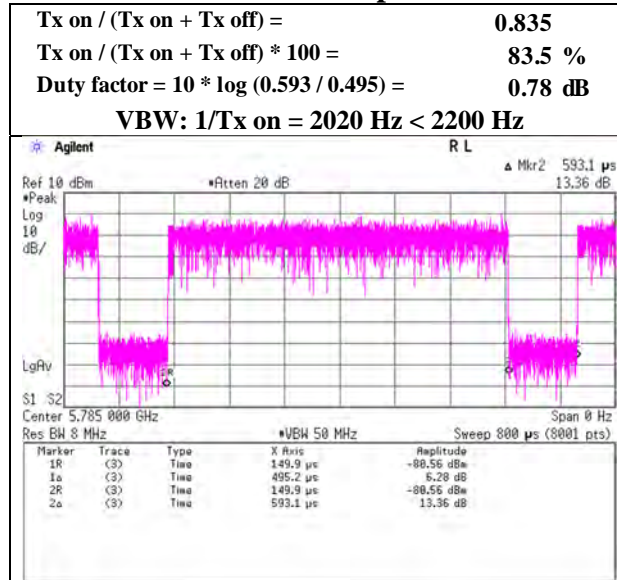
$$\text{Burst power} = \text{Reading (timed average)} + \text{Duty factor}$$

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

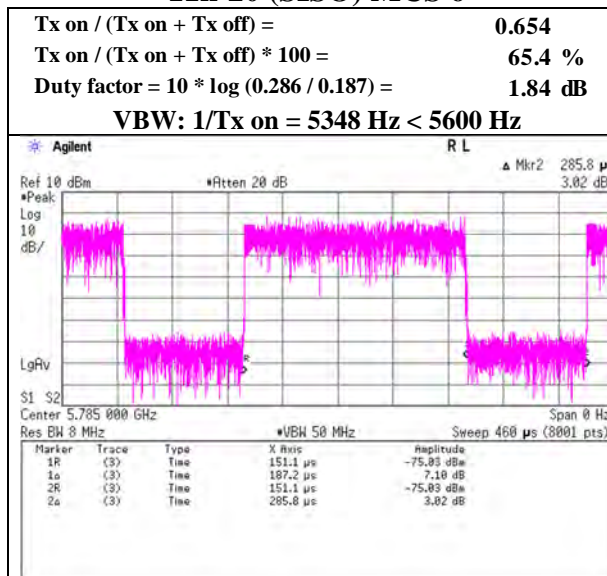
Burst rate confirmation

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 4, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx

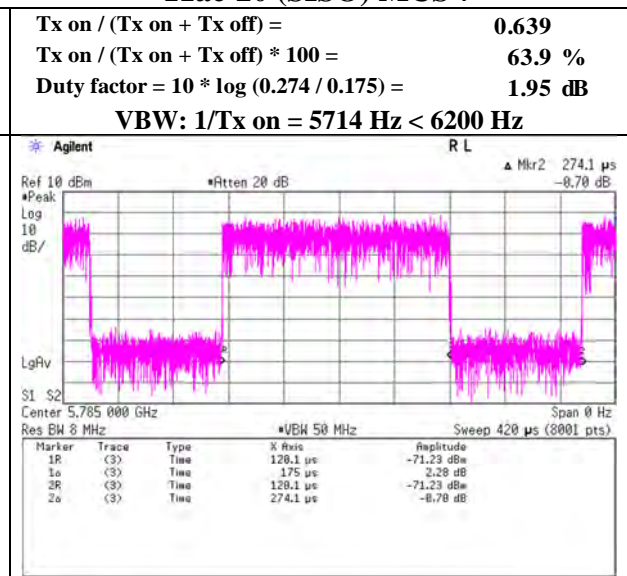
11a 18 Mbps



11n-20 (SISO) MCS 6



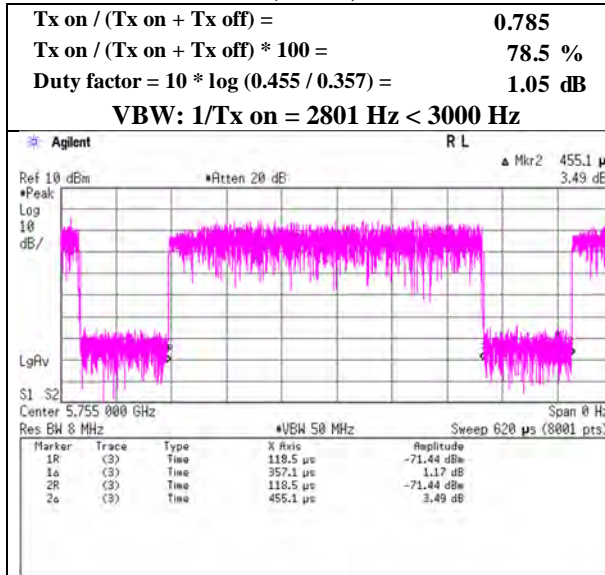
11ac-20 (SISO) MCS 7



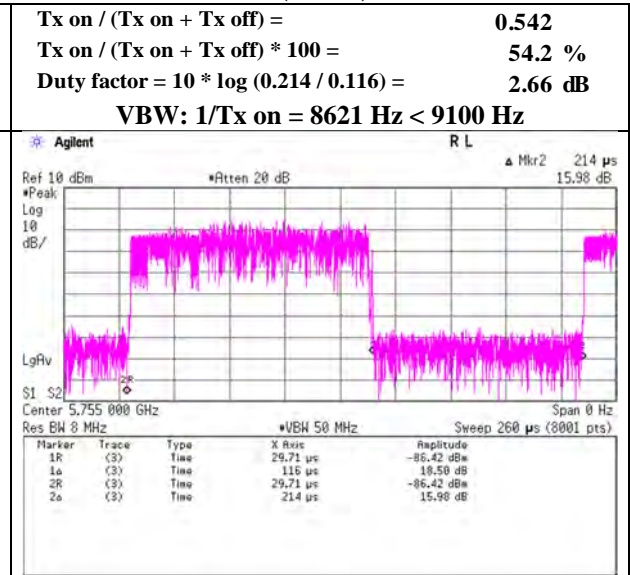
Burst rate confirmation

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 4, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx

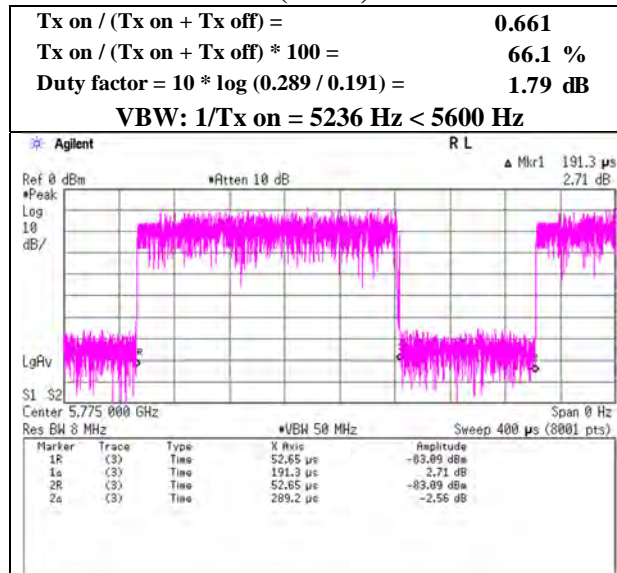
11n-40 (SISO) MCS 1



11ac-40 (SISO) MCS 6



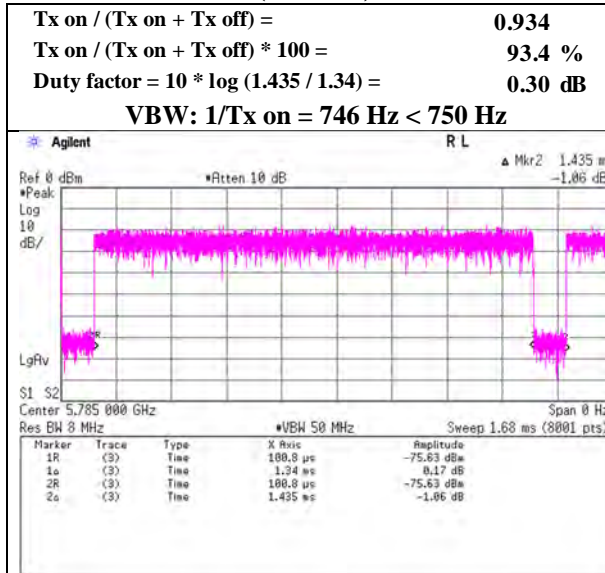
11ac-80 (SISO) MCS 1



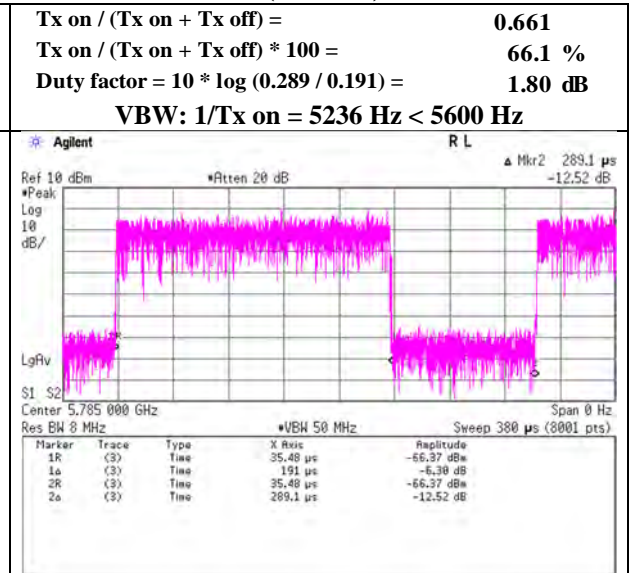
Burst rate confirmation

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 4, 2021
Temperature / Humidity 23 deg. C / 55 % RH
Engineer Takahiro Kawakami
Mode Tx

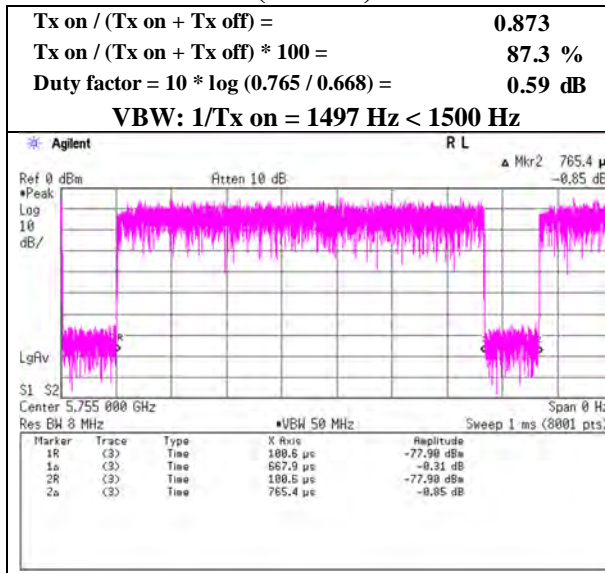
11n-20 (MIMO) MCS 8



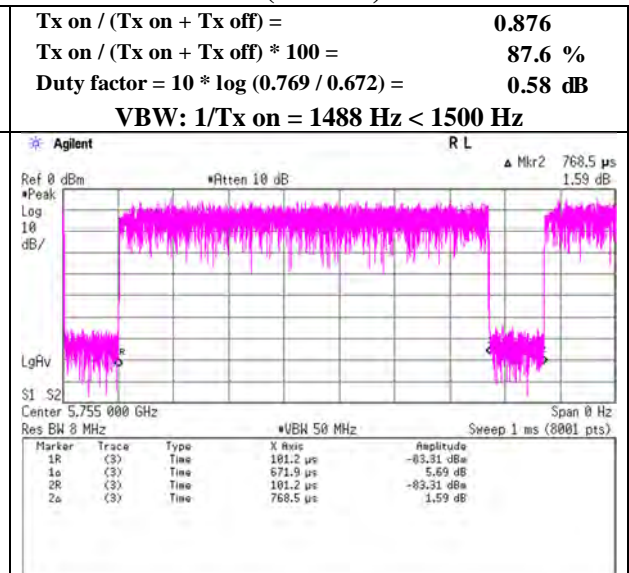
11ac-20 (MIMO) MCS 6



11n-40 (MIMO) MCS 8



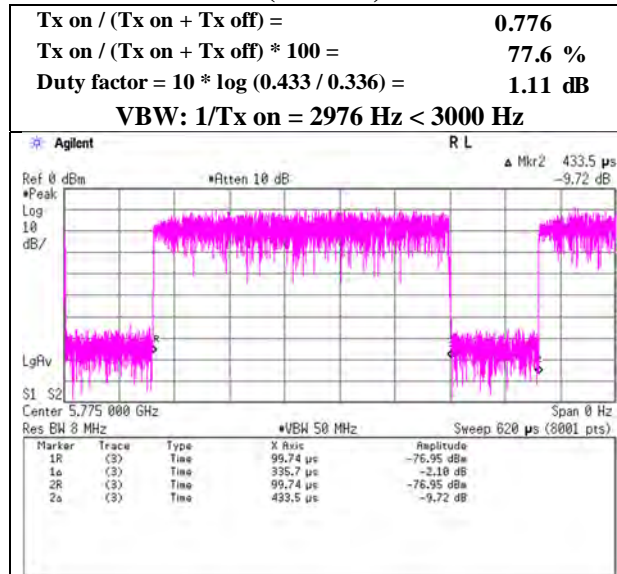
11ac-40 (MIMO) MCS 0



Burst rate confirmation

Report No. 14027963S-C-R1
 Test place Shonan EMC Lab. No.5 Shielded Room
 Date October 4, 2021
 Temperature / Humidity 23 deg. C / 55 % RH
 Engineer Takahiro Kawakami
 Mode Tx

11ac-80 (MIMO) MCS 0



Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11a

Ant 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]
5745	-24.20	2.01	10.01	0.78	-4.6	6.99	-4.41	30.00	34.41	-9.01	36.00	45.01
5785	-26.28	2.01	10.02	0.78	-4.6	6.99	-6.48	30.00	36.48	-11.08	36.00	47.08
5805	-26.00	2.02	10.02	0.78	-4.6	6.99	-6.19	30.00	36.19	-10.79	36.00	46.79

Sample Calculation:

PSD: Power Spectral Density

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

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

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

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-20 (SISO)

Ant 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]
5745	-25.00	2.01	10.01	1.84	-4.6	6.99	-4.15	30.00	34.15	-8.75	36.00	44.75
5785	-26.32	2.01	10.02	1.84	-4.6	6.99	-5.46	30.00	35.46	-10.06	36.00	46.06
5805	-26.29	2.02	10.02	1.84	-4.6	6.99	-5.42	30.00	35.42	-10.02	36.00	46.02

Sample Calculation:

PSD: Power Spectral Density

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

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

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

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-20 (SISO)

Ant 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]
5745	-25.08	2.01	10.01	1.95	-4.6	6.99	-4.12	30.00	34.12	-8.72	36.00	44.72
5785	-25.08	2.01	10.02	1.95	-4.6	6.99	-4.11	30.00	34.11	-8.71	36.00	44.71
5805	-26.54	2.02	10.02	1.95	-4.6	6.99	-5.56	30.00	35.56	-10.16	36.00	46.16

Sample Calculation:

PSD: Power Spectral Density

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

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

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

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-40 (SISO)

Ant 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]
5755	-29.91	2.01	10.02	1.05	-4.6	6.99	-9.84	30.00	39.84	-14.44	36.00	50.44
5795	-30.57	2.01	10.02	1.05	-4.6	6.99	-10.50	30.00	40.50	-15.10	36.00	51.10

Sample Calculation:

PSD: Power Spectral Density

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

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

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

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-40 (SISO)

Ant 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]
5755	-29.86	2.01	10.02	2.66	-4.6	6.99	-8.18	30.00	38.18	-12.78	36.00	48.78
5795	-30.90	2.01	10.02	2.66	-4.6	6.99	-9.22	30.00	39.22	-13.82	36.00	49.82

Sample Calculation:

PSD: Power Spectral Density

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

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

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

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-80 (SISO)

Ant 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]
5775	-33.03	2.02	10.02	1.79	-4.6	6.99	-12.21	30.00	42.21	-16.81	36.00	52.81

Sample Calculation:

PSD: Power Spectral Density

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

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

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

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Shonan EMC Lab.

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-20 (MIMO)

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]	Antenna			Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]
	0 [mW/MHz]	1 [mW/MHz]	Sum [mW/MHz]				0 [mW/MHz]	1 [mW/MHz]	Sum [mW/MHz]			
5745	0.19	0.30	0.49	-3.10	30.00	33.10	0.06	0.10	0.17	-7.74	36.00	43.74
5785	0.08	0.24	0.31	-5.02	30.00	35.02	0.03	0.08	0.11	-9.64	36.00	45.64
5825	0.07	0.20	0.27	-5.61	30.00	35.61	0.02	0.07	0.09	-10.24	36.00	46.24

Tested Frequency [MHz]	Duty Factor [dB]	RBW Correction Factor [dB]	Ant 0				Ant 1							
			PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	PSD Result Cond. [dBm/MHz]	PSD Result e.i.r.p. [dBm/MHz]	PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	PSD Result Cond. [dBm/MHz]	PSD Result e.i.r.p. [dBm/MHz]
5745	0.30	6.99	-26.57	2.01	10.01	-4.70	-7.26	-11.96	-24.51	2.01	10.01	-4.60	-5.20	-9.80
5785	0.30	6.99	-30.48	2.01	10.02	-4.70	-11.16	-15.86	-25.55	2.01	10.02	-4.60	-6.23	-10.83
5825	0.30	6.99	-30.73	2.02	10.02	-4.70	-11.40	-16.10	-26.27	2.02	10.02	-4.60	-6.94	-11.54

Sample Calculation:

PSD: Power Spectral Density

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

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

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

The conducted PSD limit was reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. (All frequencies for FCC, 5725 MHz-5850 MHz for IC)

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-20 (MIMO)

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	0	1	Sum				0	1	Sum			
[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	
5745	0.19	0.39	0.58	-2.36	30.00	32.36	0.06	0.14	0.20	-6.99	36.00	42.99
5785	0.11	0.31	0.42	-3.76	30.00	33.76	0.04	0.11	0.15	-8.38	36.00	44.38
5825	0.08	0.28	0.36	-4.45	30.00	34.45	0.03	0.10	0.12	-9.07	36.00	45.07

Tested Frequency [MHz]	Duty Factor [dB]	RBW Correction Factor [dB]	Ant 0				Ant 1					PSD Result		
			PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	PSD Result Cond. [dBm/MHz]	PSD Result e.i.r.p. [dBm/MHz]	PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	PSD Result Cond. [dBm/MHz]	PSD Result e.i.r.p. [dBm/MHz]
5745	1.80	6.99	-28.05	2.01	10.01	-4.70	-7.24	-11.94	-24.87	2.01	10.01	-4.60	-4.06	-8.66
5785	1.80	6.99	-30.53	2.01	10.02	-4.70	-9.71	-14.41	-25.85	2.01	10.02	-4.60	-5.03	-9.63
5825	1.80	6.99	-31.72	2.02	10.02	-4.70	-10.89	-15.59	-26.40	2.02	10.02	-4.60	-5.57	-10.17

Sample Calculation:

PSD: Power Spectral Density

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

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

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

The conducted PSD limit was reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. (All frequencies for FCC, 5725 MHz-5850 MHz for IC)

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11n-40 (MIMO)

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]	Antenna			Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]
	0 [mW/MHz]	1 [mW/MHz]	Sum [mW/MHz]				0 [mW/MHz]	1 [mW/MHz]	Sum [mW/MHz]			
5755	0.06	0.10	0.15	-8.14	30.00	38.14	0.02	0.03	0.05	-12.78	36.00	48.78
5795	0.04	0.07	0.11	-9.49	30.00	39.49	0.01	0.02	0.04	-14.12	36.00	50.12

Tested Frequency [MHz]	Ant 0						Ant 1							
	Duty Factor [dB]	RBW Correction Factor [dB]	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	e.i.r.p.	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	e.i.r.p.
			[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5755	0.59	6.99	-32.07	2.01	10.02	-4.70	-12.46	-17.16	-29.76	2.01	10.02	-4.60	-10.15	-14.75
5795	0.59	6.99	-33.52	2.01	10.02	-4.70	-13.91	-18.61	-31.04	2.01	10.02	-4.60	-11.43	-16.03

Sample Calculation:

PSD: Power Spectral Density

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

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

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

The conducted PSD limit was reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. (All frequencies for FCC, 5725 MHz-5850 MHz for IC)

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-40 (MIMO)

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	0	1	Sum				0	1	Sum			
[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	
5755	0.04	0.10	0.14	-8.50	30.00	38.50	0.01	0.04	0.05	-13.13	36.00	49.13
5795	0.04	0.08	0.12	-9.27	30.00	39.27	0.01	0.03	0.04	-13.90	36.00	49.90

Tested Frequency [MHz]	Ant 0						Ant 1							
	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	PSD Result e.i.r.p.	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	PSD Result e.i.r.p.
	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5755	0.58	6.99	-33.64	2.01	10.02	-4.70	-14.04	-18.74	-29.52	2.01	10.02	-4.60	-9.92	-14.52
5795	0.58	6.99	-33.28	2.01	10.02	-4.70	-13.68	-18.38	-30.82	2.01	10.02	-4.60	-11.22	-15.82

Sample Calculation:

PSD: Power Spectral Density

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

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

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

The conducted PSD limit was reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. (All frequencies for FCC, 5725 MHz-5850 MHz for IC)

Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-80 (MIMO)

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	0	1	Sum				0	1	Sum			
5775	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
	0.02	0.05	0.08	-11.17	30.00	41.17	0.01	0.02	0.03	-15.80	36.00	51.80

Tested Frequency [MHz]	Duty Factor [dB]	RBW Correction Factor [dB]	Ant 0					Ant 1						
			PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	PSD Result e.i.r.p.	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result Cond.	PSD Result e.i.r.p.
			[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5775	1.11	6.99	-36.76	2.01	10.02	-4.70	-16.63	-21.33	-32.76	2.01	10.02	-4.60	-12.63	-17.23

Sample Calculation:

PSD: Power Spectral Density

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

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

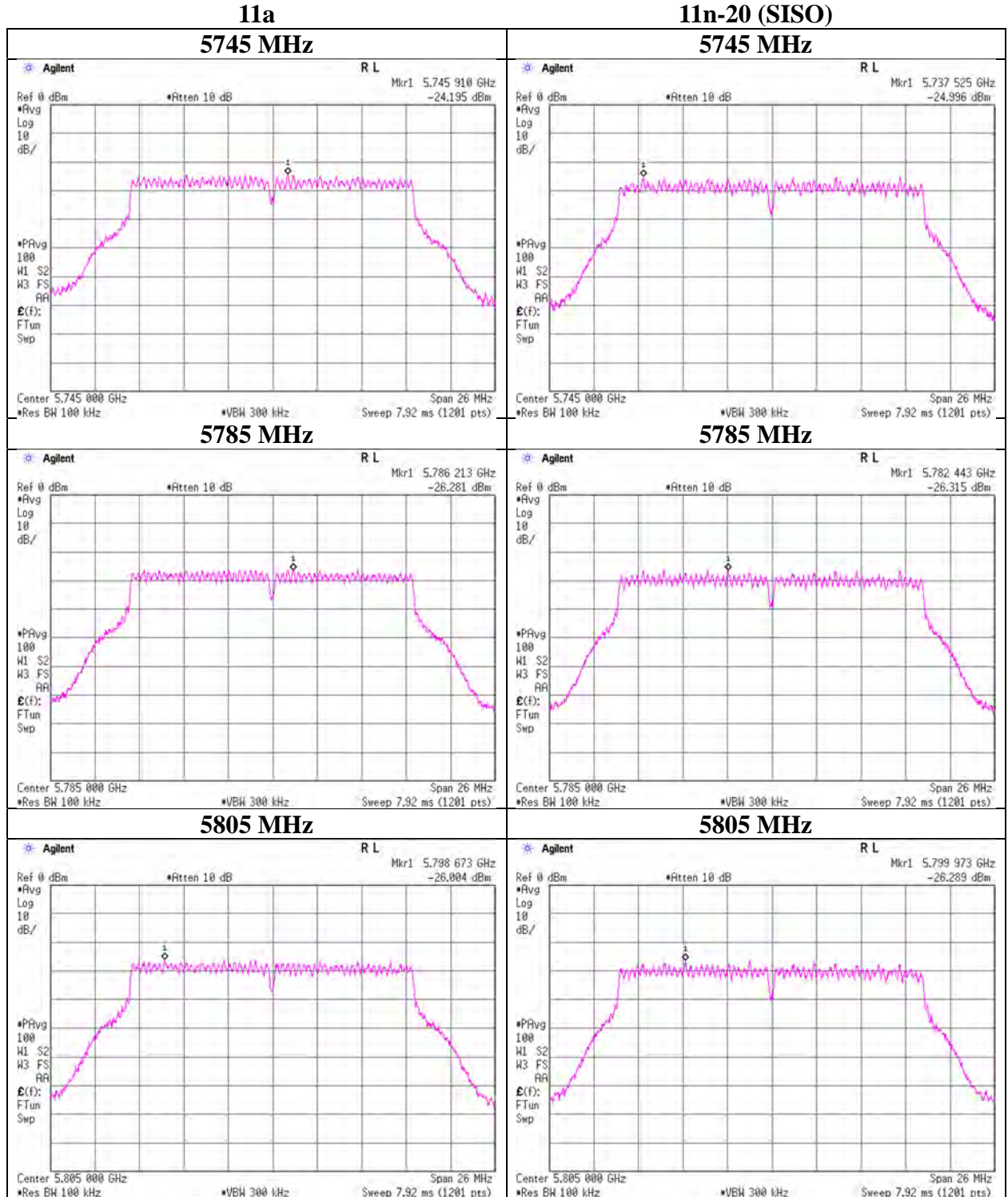
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

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

The conducted PSD limit was reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. (All frequencies for FCC, 5725 MHz-5850 MHz for IC)

Maximum Power Spectral Density

Report No.	14027963S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 7, 2021
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Takahiro Kawakami
Mode	Tx



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Shonan EMC Lab.

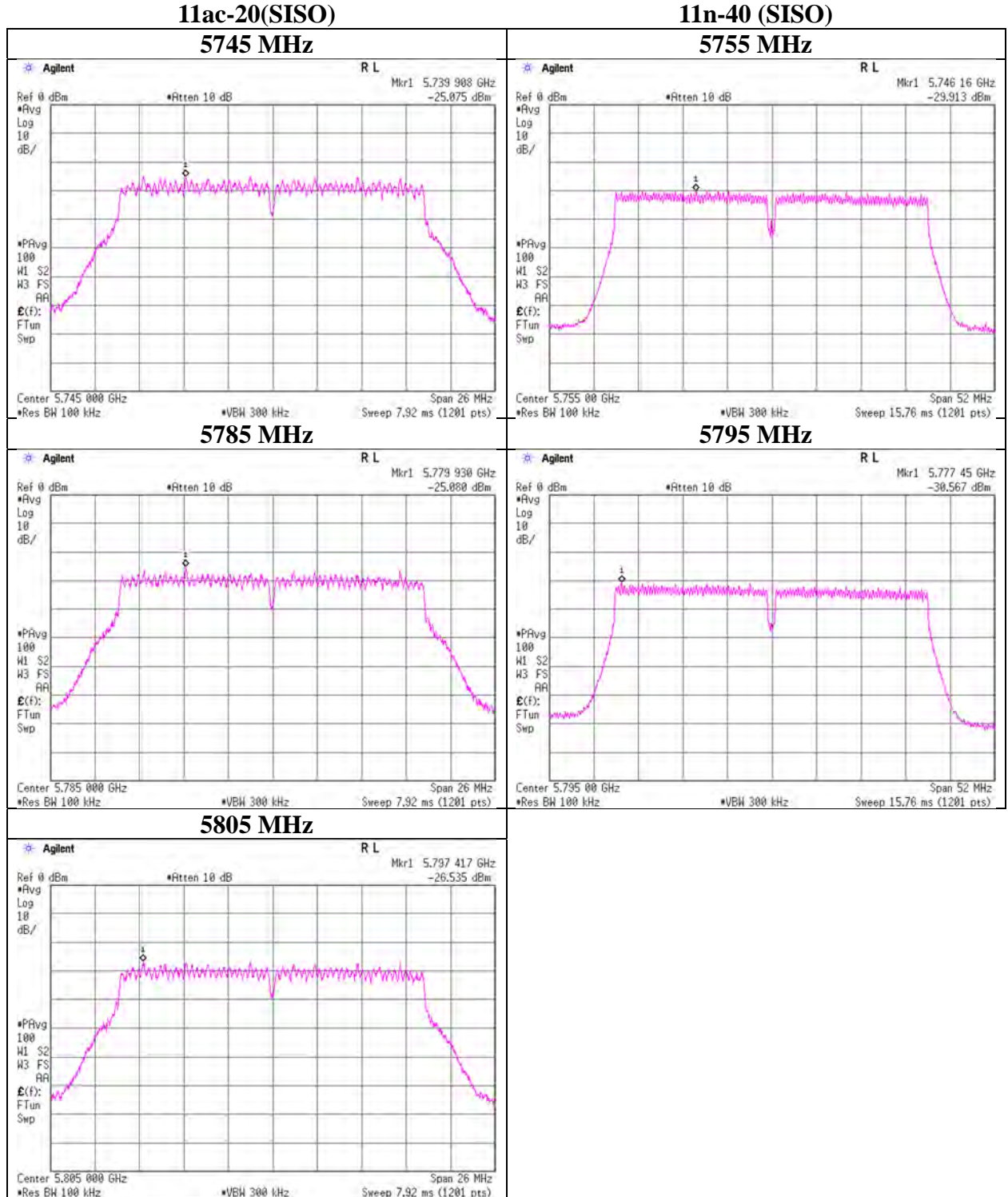
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Power Spectral Density

Report No.	14027963S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 7, 2021
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Takahiro Kawakami
Mode	Tx



UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

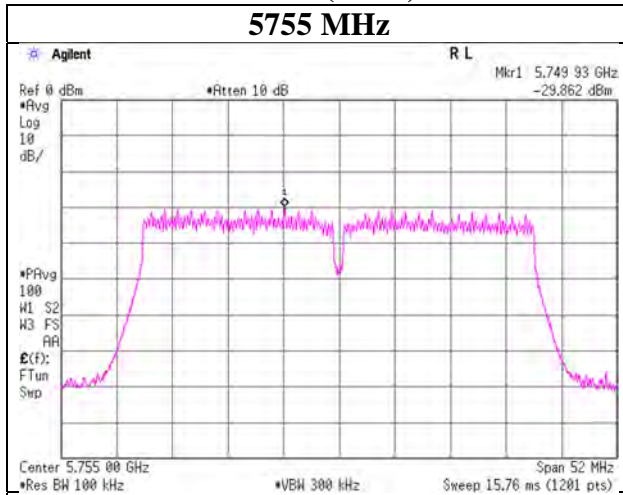
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Facsimile : +81 463 50 6401

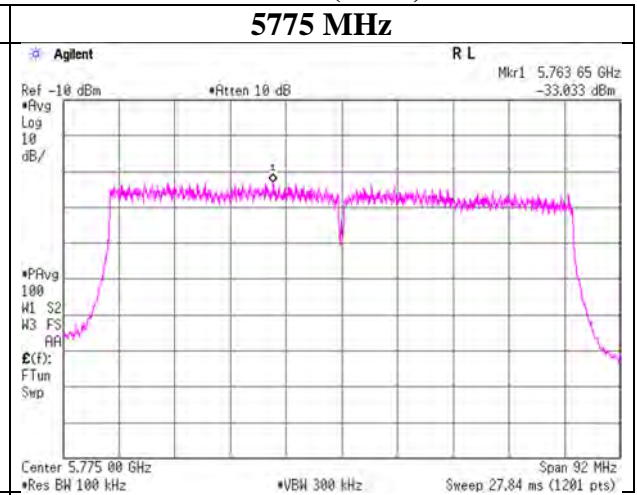
Maximum Power Spectral Density

Report No.	14027963S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 7, 2021
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Takahiro Kawakami
Mode	Tx

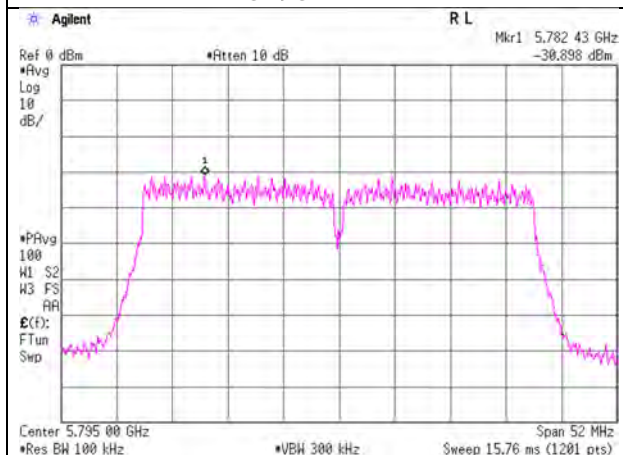
11ac-40(SISO)



11ac-80 (SISO)



5795 MHz

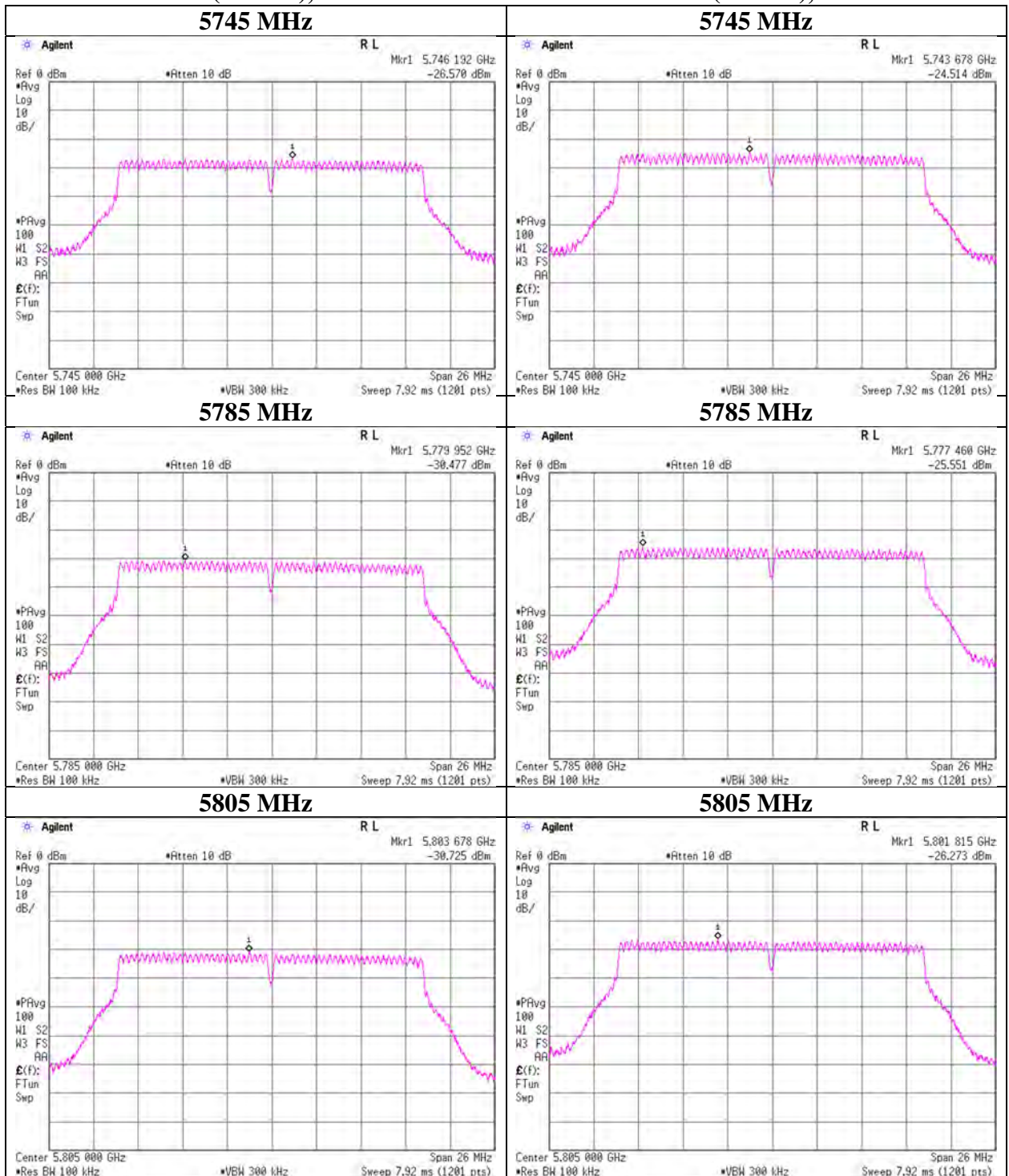


Maximum Power Spectral Density

Report No.	14027963S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 7, 2021
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Takahiro Kawakami
Mode	Tx 11n-20 (MIMO)

11n-20 (MIMO), Ant 0

11n-20 (MIMO), Ant 1



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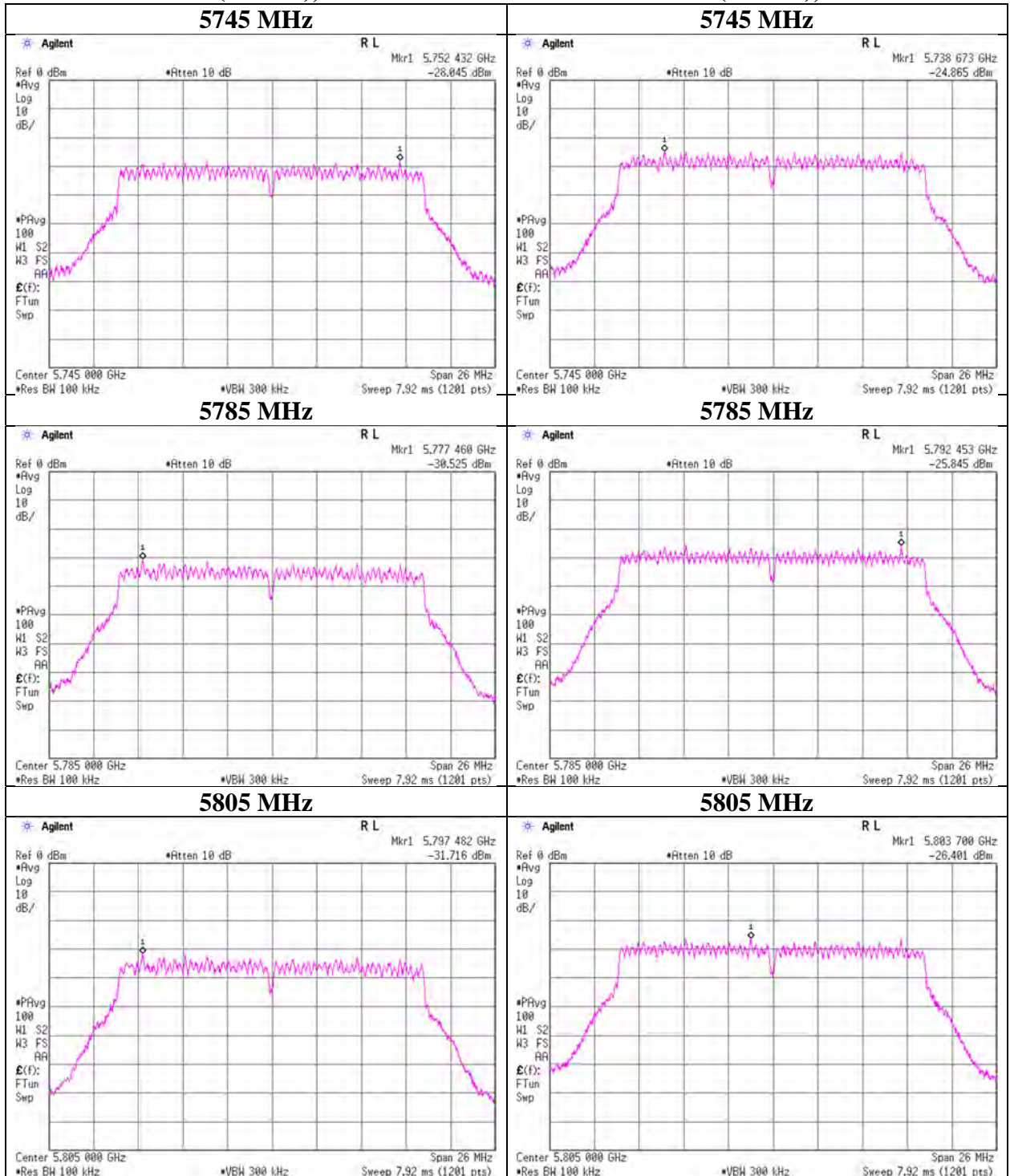
Facsimile : +81 463 50 6401

Maximum Power Spectral Density

Report No. 14027963S-C-R1
 Test place Shonan EMC Lab. No.5 Shielded Room
 Date October 7, 2021
 Temperature / Humidity 23 deg. C / 64 % RH
 Engineer Takahiro Kawakami
 Mode Tx 11ac-20 (MIMO)

11ac-20 (MIMO), Ant 0

11ac-20 (MIMO), Ant 1

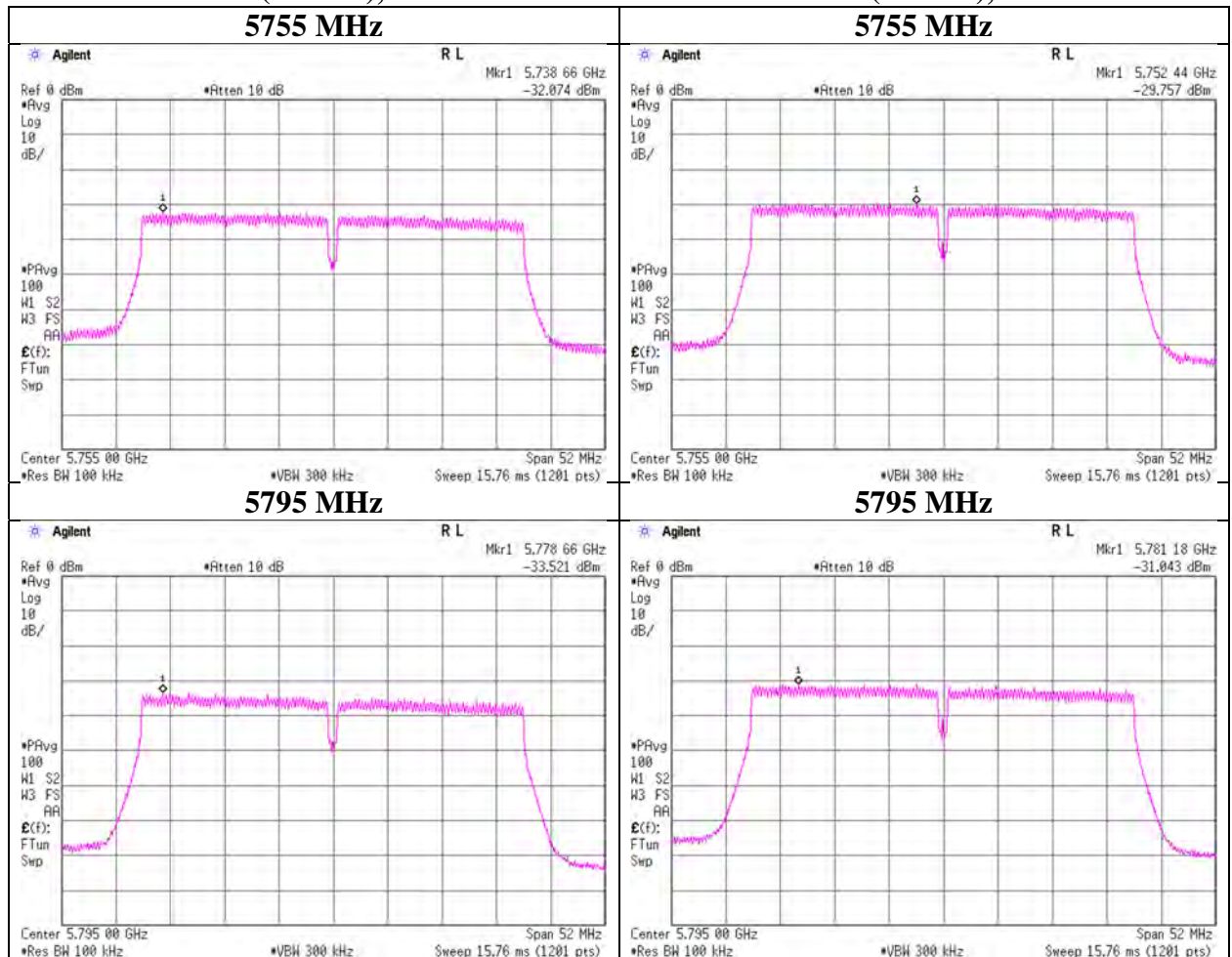


Maximum Power Spectral Density

Report No.	14027963S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 7, 2021
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Takahiro Kawakami
Mode	Tx 11n-40 (MIMO)

11n-40 (MIMO), Ant 0

11n-40 (MIMO), Ant 1



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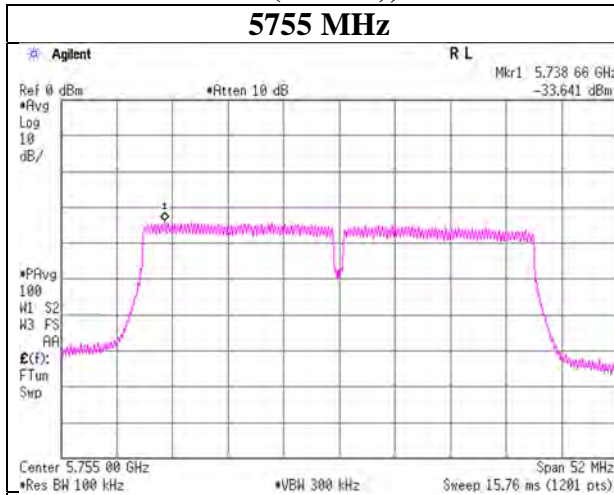
Telephone : +81 463 50 6400

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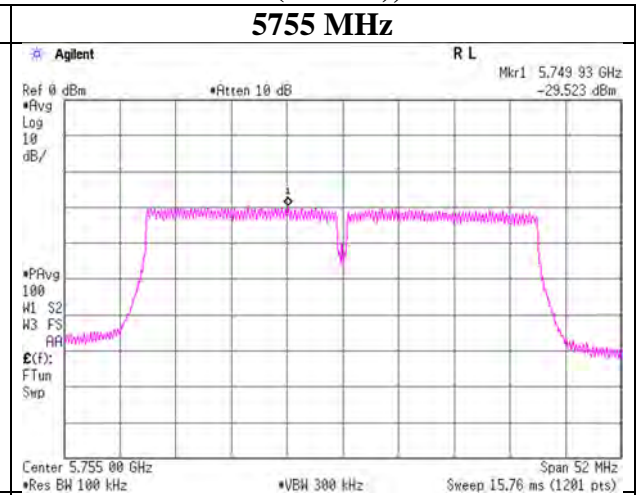
Maximum Power Spectral Density

Report No.	14027963S-C-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	October 7, 2021
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Takahiro Kawakami
Mode	Tx 11ac-40 (MIMO)

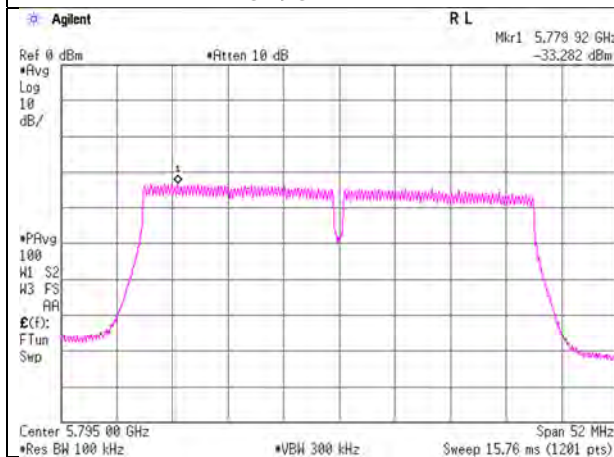
11ac-40 (MIMO), Ant 0



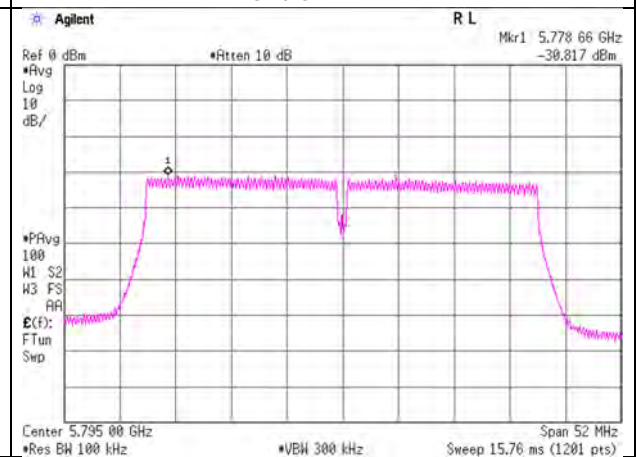
11ac-40 (MIMO), Ant 1



5795 MHz



5795 MHz



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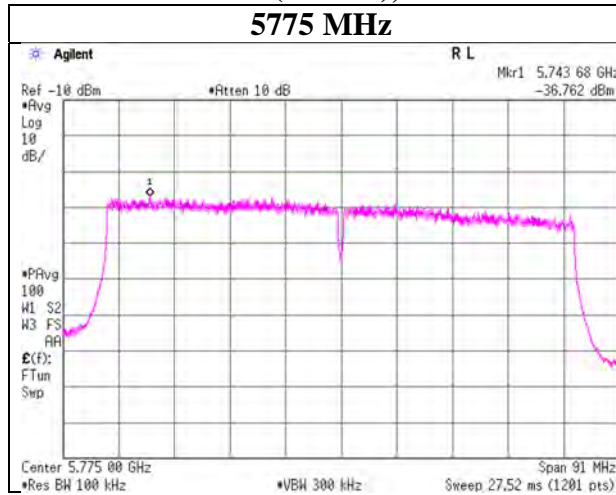
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

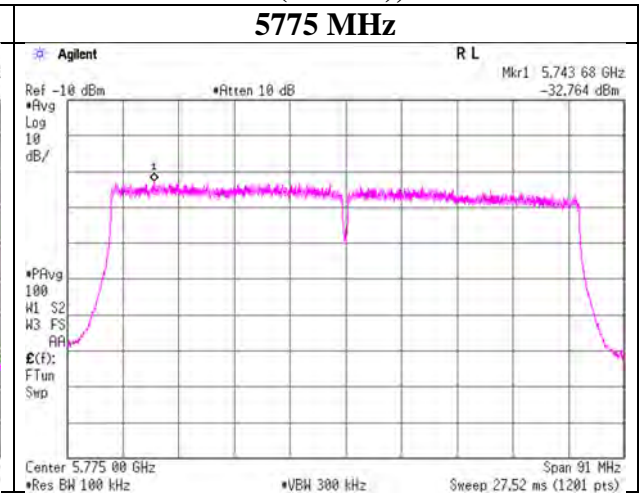
Maximum Power Spectral Density

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-80 (MIMO)

11ac-80 (MIMO), Ant 0

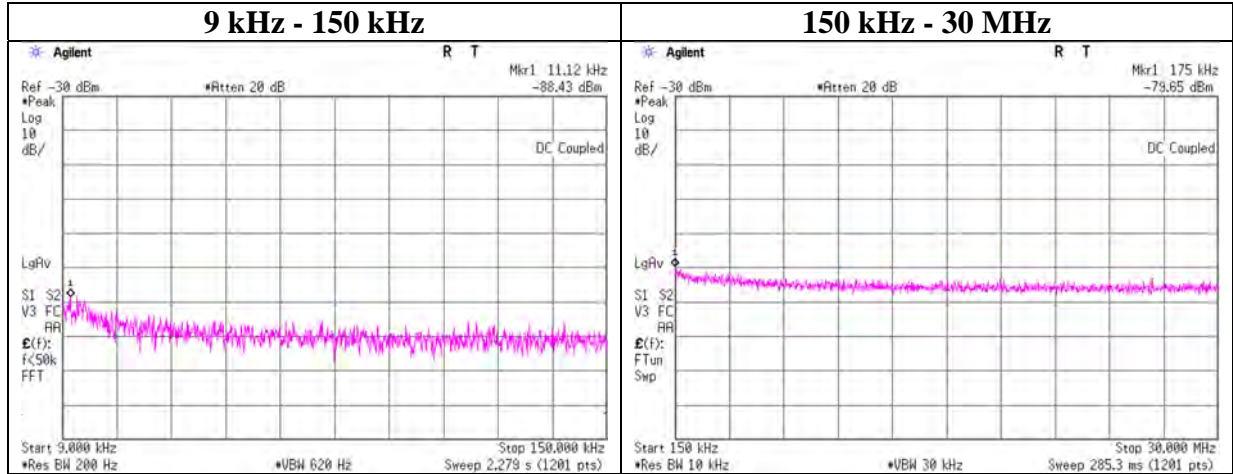


11ac-80 (MIMO), Ant 1



Conducted Spurious Emission

Report No. 14027963S-C-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date October 7, 2021
Temperature / Humidity 23 deg. C / 64 % RH
Engineer Takahiro Kawakami
Mode Tx 11ac-20(MIMO) 5745 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.12	-88.4	0.01	9.91	2.0	2	-73.5	300	6.0	-12.2	46.6	58.8	-
175.00	-79.7	0.01	9.91	2.0	2	-64.7	300	6.0	-3.5	22.7	26.2	-

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

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

N: Number of output

*2.0 dBi was applied to the test result based on KDB 789033 since antenna gain was less than 2.0 dBi.

APPENDIX 2: Test instruments

Test equipment

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	KTS-07	145111	Digital Tester	SANWA	PC500	7019232	2021/09/14	12
AT	KTS-08	145095	Digital Tester	SANWA	PC500	7019224	2021/04/26	12
AT	SAT10-22	204926	Attenuator	Weinschel Corp.	54A-10	-	2021/02/09	12
AT	SAT10-23	204927	Attenuator	Weinschel Corp.	54A-10	-	2021/02/09	12
AT	SCC-G12	145040	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	2021/03/04	12
AT	SCC-G64	196945	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	803414/2	2021/03/01	12
AT	SOS-19	175823	Humidity Indicator	CUSTOM. Inc	CTH-201	-	2020/10/01	12
AT	SOS-28	191846	Humidity Indicator	CUSTOM. Inc	CTH-201	-	2021/08/02	12
AT	SPM-07	146247	Power Meter	Keysight Technologies Inc	8990B	MY5100272	2021/05/25	12
AT	SPSS-04	146310	Power sensor	Keysight Technologies Inc	N1923A	MY5326009	2021/05/25	12
AT	SPSS-05	146311	Power sensor	Keysight Technologies Inc	N1923A	MY5349008	2021/05/25	12
AT	SRENT-15	160899	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46185516	2021/01/26	12
AT	SRENT-22	202830	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY48250036	2020/11/24	12
AT	STM-G6	146207	Terminator	JFW	50T-128	-	2020/11/19	12

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

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

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

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

Test item:

AT: Antenna Terminal Conducted test

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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