



RADIO TEST REPORT

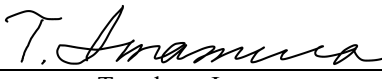
Test Report No. : 13004393S-E-R2

Applicant : Murata Manufacturing Co., Ltd.
Type of Equipment : Communication Module
Model No. : Type1VY
FCC ID : VPYLB1VY
Test regulation : FCC Part 15 Subpart E: 2019
Test result : Complied (Refer to SECTION 3.2)

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by the A2LA accreditation body.
6. This test report covers Radio technical requirements.
It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Shonan EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in SECTION 1.
10. This report is a revised version of 13004393S-E-R1. 13004393S-E-R1 is replaced with this report.

Date of test: September 4 to October 3, 2019

Representative test engineer: 
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Toyokazu Imamura
Leader
Consumer Technology Division



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.: 13004393S-E

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13004393S-E	December 2, 2019	-	-
1	13004393S-E-R1	December 9, 2019	93	Fixed the antenna gain at 5270 MHz and 5310 MHz of Chain1. 4 dBi→1.04 dBi
2	13004393S-E-R2	December 23, 2019	7	Addition: “Additional information of specification: ... except the mode of Config.5.”
			100-101	Correction of 26 EBW value: 20.540 → 20.799 20.146 → 20.532 21.080 → 20.847

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Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	NS	No signal detect.
AC	Alternating Current	NSA	Normalized Site Attenuation
AFH	Adaptive Frequency Hopping	NVLAP	National Voluntary Laboratory Accreditation Program
AM	Amplitude Modulation	OBW	Occupied Band Width
Amp, AMP	Amplifier	OFDM	Orthogonal Frequency Division Multiplexing
ANSI	American National Standards Institute	P/M	Power meter
Ant, ANT	Antenna	PCB	Printed Circuit Board
AP	Access Point	PER	Packet Error Rate
Atten., ATT	Attenuator	PHY	Physical Layer
AV	Average	PK	Peak
BPSK	Binary Phase-Shift Keying	PN	Pseudo random Noise
BR	Bluetooth Basic Rate	PRBS	Pseudo-Random Bit Sequence
BT	Bluetooth	PSD	Power Spectral Density
BT LE	Bluetooth Low Energy	QAM	Quadrature Amplitude Modulation
BW	BandWidth	QP	Quasi-Peak
Cal Int	Calibration Interval	QPSK	Quadri-Phase Shift Keying
CCK	Complementary Code Keying	RBW	Resolution Band Width
Ch., CH	Channel	RDS	Radio Data System
CISPR	Comite International Special des Perturbations Radioelectriques	RE	Radio Equipment
CW	Continuous Wave	RF	Radio Frequency
DBPSK	Differential BPSK	RMS	Root Mean Square
DC	Direct Current	RSS	Radio Standards Specifications
DFS	Dynamic Frequency Selection	Rx	Receiving
DQPSK	Differential QPSK	SA, S/A	Spectrum Analyzer
DSSS	Direct Sequence Spread Spectrum	SG	Signal Generator
EDR	Enhanced Data Rate	SS	Spatial Stream
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	SVSWR	Site-Voltage Standing Wave Ratio
EMC	ElectroMagnetic Compatibility	TR	Test Receiver
EMI	ElectroMagnetic Interference	Tx	Transmitting
EN	European Norm	VBW	Video BandWidth
ERP, e.r.p.	Effective Radiated Power	Vert.	Vertical
EU	European Union	WLAN	Wireless LAN
EUT	Equipment Under Test		
Fac.	Factor		
FCC	Federal Communications Commission		
FHSS	Frequency Hopping Spread Spectrum		
FM	Frequency Modulation		
Freq.	Frequency		
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		
MCS	Modulation and Coding Scheme		
MRA	Mutual Recognition Arrangement		
NIST	National Institute of Standards and Technology		

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SECTION 1: Customer information

Company Name : Murata Manufacturing Co., Ltd.
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Telephone Number : +81-75-955-6736
Facsimile Number : +81-75-955-6634
Contact Person : Motoo Hayashi

The information provided from the customer is as follows;

- Applicant, Type of Equipment, Model No., 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 (E.U.T.)
 - SECTION 4: Operation of E.U.T. 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 (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Communication Module
Model No. : Type1VY
Serial No. : Refer to SECTION 4.2
Rating : VDD_3P3, 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, Min.: DC 3.14 V, Max: DC 3.46 V

Receipt Date of Sample : August 25, 2019
(Information from test lab.)
Country of Mass-production : China, Japan
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab.

2.2 Product Description

Model: Type1VY (referred to as the EUT in this report) is a Communication Module.

Clock frequency(ies) in the system : 48 MHz

Radio Specification

Equipment type	:	Transceiver
Frequency of operation	:	2.4 GHz: 2402 MHz – 2480 MHz (Bluetooth BDR/EDR/Low Energy (LE)) 2412 MHz – 2462 MHz (IEEE 802.11b, 11g, 11n-20) U-NII-1: 5180 MHz – 5240 MHz (IEEE 802.11a, 11n-20, 11ac-20) 5190 MHz – 5230 MHz (IEEE 802.11n-40, 11ac-40) 5210 MHz (IEEE 802.11ac-80) U-NII-2A: 5260 MHz – 5320 MHz (IEEE 802.11a, 11n-20, 11ac-20) 5270 MHz – 5310 MHz (IEEE 802.11n-40, 11ac-40) 5290 MHz (IEEE 802.11ac-80) U-NII-2B: 5500 MHz – 5720 MHz (IEEE 802.11a, 11n-20, 11ac-20) 5510 MHz – 5710 MHz (IEEE 802.11n-40, 11ac-40) 5530 MHz – 5690 MHz (IEEE 802.11ac-80) U-NII-3: 5745 MHz – 5825 MHz (IEEE 802.11a, 11n-20, 11ac-20) 5755 MHz – 5795 MHz (IEEE 802.11n-40, 11ac-40) 5775 MHz (IEEE 802.11ac-80)
Bandwidth	:	20 MHz (IEEE 802.11a/b/g/n/ac), 40 MHz (IEEE 802.11n/ac), 80 MHz (IEEE 802.11ac), 79 MHz (Bluetooth BDR/EDR), 1 MHz (Bluetooth LE)
Channel spacing	:	5 MHz (Wi-Fi 2.4 GHz), 20 MHz/40 MHz/80 MHz (Wi-Fi 5 GHz), 1 MHz (Bluetooth BDR/EDR), 2 MHz (Bluetooth LE)
Type of modulation	:	DSSS (IEEE 802.11b), OFDM (IEEE 802.11a/g/n/ac), FHSS (Bluetooth BDR/EDR), GFSK (Bluetooth LE)
Antenna type	:	2.4 GHz: Monopole antenna/Slot antenna/Dual Monopole antenna 5 GHz: Slot antenna/ Dual Monopole antenna
Antenna connector type	:	Spring
Antenna gain	:	Chain-0: [2.4 GHz] Dual Monopole antenna: +0.93 dBi [5 GHz] Dual Monopole antenna: +1.04 dBi Chain-1: [2.4 GHz] Dual Monopole antenna: +0.93 dBi [2.4 GHz] Slot antenna: +1.97 dBi [2.4 GHz] Monopole antenna: +1.98 dBi [5 GHz] Dual Monopole antenna: +1.04 dBi [5 GHz] Slot antenna: +1.98 dBi
ITU code	:	F1D, G1D (Bluetooth BDR/EDR), F1D (Bluetooth LE) D1D, G1D (IEEE802.11b/g/n/a/ac)
Operation temperature range	:	-30 deg. C to +85 deg. C

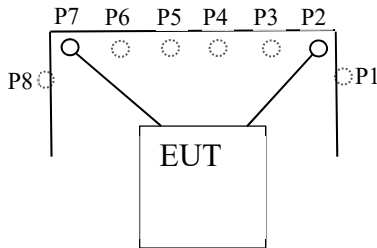
* The EUT has 2-type of jig for the measurement; PCB_A and PCB_B and the corresponding antenna is different. Refer to section 4.2 for details of the combination.

Additional information of specification:

serial no. A-**

The radio output port 0 of the radio circuit is configured with a path such as a chip resistor so that it can be connected only to the connector P2 on the jig board.

The wireless circuit port 1 of the wireless circuit is configured with a chip resistor and so on so that it can be connected only to connector P7 on the jig board.

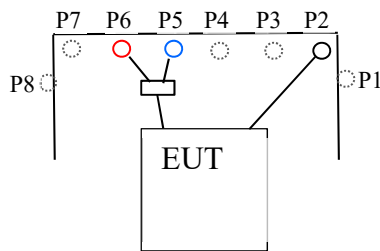


serial no. B-**

The radio output port 0 of the radio circuit is configured with a path such as a chip resistor so that it can be connected only to the connector P2 on the jig board.

The radio output port 1 of the radio circuit is configured with a path such as a chip resistor so that it can be connected to the jig board connector P5 and connector P6 via duplexer in the jig board.

(* P5 is for 2.4 GHz band signal only. P6 is for 5 GHz band signal only.)



Transmission pattern

		Config. 1	Config. 2	Config. 3	Config. 4	Config. 5
chain 0	Bluetooth	-	-	transmit	transmit	transmit
	WLAN 2.4 GHz	-	transmit	-	-	-
	WLAN 5 GHz	transmit	-	-	transmit	-
chain 1	WLAN 2.4 GHz	-	transmit	-	-	transmit
	WLAN 5 GHz	transmit	-	-	transmit	-

Bluetooth mode is only chain 0 output.

WLAN all mode is simultaneous transmission at chain 0 and chain 1 output except the mode of Config.5.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart E
FCC Part 15 final revised on July 19, 2019 and effective August 19, 2019 except 15.258

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	FCC: 15.407 (b) (6) / 15.207	16.5 dB, 9.32599 MHz, N, AV Mode: Tx 11ac-40 (MIMO), 5190 MHz	Complied a)	-
	ISED: RSS-Gen 8.8	ISED: RSS-Gen 8.8			
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033	FCC: 15.407 (a) (1) (2) (3)	See data	Complied b)	Conducted
	ISED: -	ISED: -			
Maximum Conducted Output Power	FCC: KDB Publication Number 789033	FCC: 15.407 (a) (1) (2) (3)	See data	Complied c)	Conducted
	ISED: -	ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1			
Maximum Power Spectral Density	FCC: KDB Publication Number 789033	FCC : 15.407 (a) (1) (2) (3)	See data	Complied d)	Conducted
	ISED: -	ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1			
Spurious Emission Restricted Band Edge	FCC: ANSI C63.10-2013 KDB Publication Number 789033	FCC: 15.407 (b), 15.205 and 15.209	0.6 dB 5470.000 MHz, PK, Horizontal Mode: Tx 11ac-80 (CDD), Tx 5530 MHz, (EUT serial no. A-7)	Complied# e) / f)	Conducted (< 30 MHz) / Radiated (> 30 MHz) *1)
	ISED: -	ISED: RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2			
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013	FCC: 15.407 (e)	See data	Complied g)	Conducted
	ISED: -	ISED: RSS-247 6.2.4.1			

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

* For DFS tests, please see the test report number 13004393S-G issued by UL Japan, Inc.

* 1) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b).

- a) Refer to APPENDIX 1 (data of Conducted Emission)
- b) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth)
- c) Refer to APPENDIX 1 (data of Maximum Conducted Output Power)
- d) Refer to APPENDIX 1 (data of Maximum Power Spectral Density)
- e) Refer to APPENDIX 1 (data of Radiated Spurious Emission)
- f) Refer to APPENDIX 1 (data of Conducted Spurious Emission)
- g) Refer to APPENDIX 1 (data of 6 dB Bandwidth)

Symbols:

Complied The data of this test item has enough margin, more than the measurement uncertainty.

Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

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

FCC Part 15.31 (e)

The EUT has the power supply regulator. However one of the input voltages to RF part doesn't go through the regulator. The stable voltage will be supplied by the end product, which will be required to have a power supply regulator. Therefore, the EUT complies with the requirement.

FCC Part 15.203/212

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

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3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99 % Occupied Bandwidth	RSS-Gen 6.7	ISED: -	N/A	- a)	Conducted
a) Refer to APPENDIX 1 (data of 6 dB Bandwidth and 99 % Occupied Bandwidth)					

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

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the 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 $k=2$.
Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)			
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR	No. 4 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.9 dB	2.8 dB	2.9 dB	2.9 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.0 dB	3.0 dB	3.1 dB	-
	30 MHz-200 MHz	4.6 dB	4.6 dB	4.7 dB	-
	200 MHz-1 GHz	6.0 dB	6.0 dB	6.1 dB	-
	1 GHz-6 GHz	4.8 dB	4.8 dB	4.8 dB	-
	6 GHz-18 GHz	5.4 dB	5.4 dB	5.4 dB	-
	18 GHz-40 GHz	5.6 dB	5.6 dB	5.6 dB	-
Radiated emission (Measurement distance: 1 m)	1 GHz-18 GHz	5.7 dB	5.7 dB	5.7 dB	-
	18 GHz-40 GHz	5.9 dB	5.9 dB	5.9 dB	-

SAC=Semi-Anechoic Chamber

SR= Shielded Room is applied besides radiated emission

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	0.81 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	1.53 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.95 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.21 dB
Power Measurement above 1 GHz (Average Detector)_SPM-13	0.90 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-13	1.04 dB
Spurious emission (Conducted) below 1GHz	1.8 dB
Spurious emission (Conducted) 1 GHz-3 GHz	1.7 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.3 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.4 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.4 dB
Bandwidth Measurement	0.61 %
Duty cycle and Time Measurement	0.012 %

3.5 Test Location

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A2LA Certificate Number: 1266.03 (FCC Test Firm Registration Number: 626366, ISED Lab Company Number: 2973D)

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	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 E.U.T. during testing

4.1 Operating Mode(s)

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

Mode	Remarks*
IEEE 802.11a (11a)	54 Mbps, PN9
IEEE 802.11n CDD 20 MHz BW (11n-20 (CDD))	MCS 7, PN9
IEEE 802.11n MIMO 20 MHz BW (11n-20 (MIMO))	MCS 15, PN9
IEEE 802.11ac CDD 20 MHz BW (11ac-20 (CDD))	MCS 7, 1 Spatial Stream (1SS), PN9
IEEE 802.11ac MIMO 20 MHz BW (11ac-20 (MIMO))	MCS 7, 2 Spatial Stream (2SS), PN9
IEEE 802.11n CDD 40 MHz BW (11n-40 (CDD))	MCS 0, PN9
IEEE 802.11n MIMO 40 MHz BW (11n-40 (MIMO))	MCS 14, PN9
IEEE 802.11ac CDD 40 MHz BW (11ac-40 (CDD))	MCS 0, 1 Spatial Stream (1SS), PN9
IEEE 802.11ac MIMO 40 MHz BW (11ac-40 (MIMO))	MCS 8, 2 Spatial Stream (2SS), PN9
IEEE 802.11ac CDD 80 MHz BW (11ac-80 (CDD))	MCS 7, 1 Spatial Stream (1SS), PN9
IEEE 802.11ac MIMO 80 MHz BW (11ac-80 (MIMO))	MCS 8, 2 Spatial Stream (2SS), 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 settings: refer to power setting table Software: Tera Term, Version 4.87 QRCT Version 3.0.276.0	
*Worst rate is determined by antenna terminal power for Antenna terminated testing and EIRP for Radiated Emission testing. *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) (1/3)

Test Item	Operating Mode *5)	Tested Antenna (Chain)	Tested Frequency			
			U-NII-1 Band	U-NII-2A Band	U-NII-2C Band	U-NII-3 Band
Conducted emission *1)	Transmitting (Tx), IEEE 802.11ac-40(MIMO) (EUT serial no. A-7)	0 & 1	5190 MHz	-	-	-
26 dB Emission Bandwidth	Transmitting (Tx), IEEE 802.11a Transmitting (Tx), IEEE 802.11n-20(CDD) Transmitting (Tx), IEEE 802.11n-20(MIMO) Transmitting (Tx), IEEE 802.11ac-20(CDD) Transmitting (Tx), IEEE 802.11ac-20(MIMO) (EUT serial no. B-5)	1 *2)	-	5260 MHz 5300 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz 5720 MHz	-
	Transmitting (Tx), IEEE 802.11n-40(CDD) Transmitting (Tx), IEEE 802.11n-40(MIMO) Transmitting (Tx), IEEE 802.11ac-40(CDD) Transmitting (Tx), IEEE 802.11ac-40(MIMO) (EUT serial no. A-7)	0 *2)	-	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz 5710 MHz	-
	Transmitting (Tx), IEEE 802.11ac-80(CDD) (EUT serial no. B-5) Transmitting (Tx), IEEE 802.11ac-80(MIMO) (EUT serial no. A-7)	1 *2)	-	5290 MHz	5530 MHz 5610 MHz 5690 MHz	-
99 % Occupied Bandwidth	Transmitting (Tx), IEEE 802.11a Transmitting (Tx), IEEE 802.11n-20(CDD) Transmitting (Tx), IEEE 802.11n-20(MIMO) Transmitting (Tx), IEEE 802.11ac-20(CDD) Transmitting (Tx), IEEE 802.11ac-20(MIMO) (EUT serial no. B-5)	1 *2)	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
	Transmitting (Tx), IEEE 802.11n-40(CDD) Transmitting (Tx), IEEE 802.11n-40(MIMO) Transmitting (Tx), IEEE 802.11ac-40(CDD) Transmitting (Tx), IEEE 802.11ac-40(MIMO) (EUT serial no. A-7)	0 *2)	5190 MHz 5230 MHz	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz 5710 MHz	5755 MHz 5795 MHz
	Transmitting (Tx), IEEE 802.11ac-80(CDD) (EUT serial no. B-5) Transmitting (Tx), IEEE 802.11ac-80(MIMO) (EUT serial no. A-7)	1 *2)	5210 MHz	5290 MHz	5530 MHz 5610 MHz 5690 MHz	5775 MHz
6 dB Bandwidth	Transmitting (Tx), IEEE 802.11a Transmitting (Tx), IEEE 802.11n-20(CDD) Transmitting (Tx), IEEE 802.11n-20(MIMO) Transmitting (Tx), IEEE 802.11ac-20(CDD) Transmitting (Tx), IEEE 802.11ac-20(MIMO) (EUT serial no. B-5)	1 *2)	-	-	-	5745 MHz 5785 MHz 5825 MHz
	Transmitting (Tx), IEEE 802.11n-40(CDD) Transmitting (Tx), IEEE 802.11n-40(MIMO) Transmitting (Tx), IEEE 802.11ac-40(CDD) Transmitting (Tx), IEEE 802.11ac-40(MIMO) (EUT serial no. A-7)	0 *2)	-	-	-	5755 MHz 5795 MHz
	Transmitting (Tx), IEEE 802.11ac-80(CDD) (EUT serial no. B-5) Transmitting (Tx), IEEE 802.11ac-80(MIMO) (EUT serial no. A-7)	1 *2)	-	-	-	5775 MHz

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*The details of Operation mode(s) (2/3)

Test Item	Operating Mode *5)	Tested Antenna (Chain)	Tested Frequency			
			U-NII-1 Band	U-NII-2A Band	U-NII-2C Band	U-NII-3 Band
Maximum Conducted Output Power, Maximum Power Spectral Density	Transmitting (Tx), IEEE 802.11a Transmitting (Tx), IEEE 802.11n-20(CDD) Transmitting (Tx), IEEE 802.11n-20(MIMO) Transmitting (Tx), IEEE 802.11ac-20(CDD) Transmitting (Tx), IEEE 802.11ac-20(MIMO) (EUT serial no. A-7 and B-5)	0 & 1	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
	Transmitting (Tx), IEEE 802.11n-40(CDD) Transmitting (Tx), IEEE 802.11n-40(MIMO) Transmitting (Tx), IEEE 802.11ac-40(CDD) Transmitting (Tx), IEEE 802.11ac-40(MIMO) (EUT serial no. A-7 and B-5)	0 & 1	5190 MHz 5230 MHz	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz 5710 MHz	5755 MHz 5795 MHz
	Transmitting (Tx), IEEE 802.11ac-80(CDD) Transmitting (Tx), IEEE 802.11ac-80(MIMO) (EUT serial no. A-7 and B-5)	0 & 1	5210 MHz	5290 MHz	5530 MHz 5610 MHz 5690 MHz	5775 MHz
Conducted Spurious Emission *1)	Transmitting (Tx), IEEE 802.11ac -40(MIMO) (EUT serial no. A-7)	1	5190 MHz	-	-	-
Radiated Spurious Emission (Below 1 GHz), *1)	Transmitting (Tx), IEEE 802.11ac -40(MIMO) (EUT serial no. A-7)	0 & 1	5190 MHz	-	-	-
	Transmitting (Tx), IEEE 802.11n -20(MIMO) (EUT serial no. B-5)	0 & 1	-	-	5580 MHz	-
	Transmitting (Tx), IEEE 802.11ac -40(CDD) With 3DH5 hopping (EUT serial no. A-7)	0 & 1	5190 MHz	-	-	-
	Transmitting (Tx), IEEE 802.11n -20(CDD) With 3DH5 hopping (EUT serial no. B-5)	0 & 1	-	5320 MHz	-	-

*The details of Operation mode(s) (3/3)

Test Item	Operating Mode *5)	Tested Antenna (Chain)	Tested Frequency			
			U-NII-1 Band	U-NII-2A Band	U-NII-2C Band	U-NII-3 Band
Radiated Spurious Emission (Above 1 GHz) *3)	Transmitting (Tx), IEEE 802.11n-20(MIMO) (EUT serial no. A-7 & B-5)	0 & 1	5180 MHz 5240 MHz	5320 MHz	5500 MHz 5580 MHz 5700 MHz	5745 MHz 5785 MHz 5825 MHz
	Transmitting (Tx), IEEE 802.11n-20(CDD) *4) (EUT serial no. A-7 & B-5)	0 & 1	5180 MHz	5320 MHz	5500 MHz 5700 MHz	5745 MHz 5825 MHz
	Transmitting (Tx), IEEE 802.11n-20(CDD) With 3DH5 hopping *4) (EUT serial no. A-7 & B-5)	0 & 1	5190 MHz 5230 MHz	5310 MHz	5510 MHz 5550 MHz 5670 MHz	5755 MHz 5795 MHz
	Transmitting (Tx), IEEE 802.11ac-40(MIMO) (EUT serial no. A-7 & B-5)	0 & 1	5190 MHz	5310 MHz	5510 MHz 5670 MHz	5755 MHz 5795 MHz
	Transmitting (Tx), IEEE 802.11ac-40(CDD) *4) (EUT serial no. A-7 & B-5)	0 & 1	5190 MHz	5310 MHz	5510 MHz 5670 MHz	5755 MHz 5795 MHz
	Transmitting (Tx), IEEE 802.11ac-40(CDD) With 3DH5 hopping *4) (EUT serial no. A-7 & B-5)	0 & 1	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz
	Transmitting (Tx), IEEE 802.11ac-80(MIMO) (EUT serial no. A-7 & B-5)	0 & 1	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz
	Transmitting (Tx), IEEE 802.11ac-80(CDD) *4) (EUT serial no. A-7 & B-5)	0 & 1	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz
	Transmitting (Tx), IEEE 802.11ac-80(CDD) With 3DH5 hopping *4) (EUT serial no. A-7 & B-5)	0 & 1	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz
	Transmitting (Tx), IEEE 802.11ac-80(CDD) With 3DH5 hopping *4) (EUT serial no. A-7 & B-5)	0 & 1	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz
	Transmitting (Tx), IEEE 802.11ac-80(CDD) With 3DH5 hopping *4) (EUT serial no. A-7 & B-5)	0 & 1	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz

*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.
*3) Since 11a, 11n and 11ac mode have the same modulation method and no differences in transmitting specification, tests were performed on the representative mode as below table "Selected mode for Radiated Spurious Emission".
*4) This mode wasn't worst, but only band edge of spurious emissions were measured for confirmation.
*5) All items was tested with High power setting, and as for Low power, only Maximum Conducted Output Power was tested.

Selected mode for Radiated Spurious Emission

Select of EUT (mode)	Measurement range		
	Below 1 GHz	Above 1 GHz	Band edge
Serial No. A-7 (MIMO) *1)	x	x	x
Serial No. A-7 (CDD)	-	-	x
Serial No. A-7 (CDD) With 3DH5 hopping	x	-	x
Serial No. B-5 (MIMO) *1)	x	x	-
Serial No. B-5 (CDD) *2)	-	-	x
Serial No. B-5 (CDD) With 3DH5 hopping	x	-	x

- *1) The mode was tested as a representative, because it had the highest power at antenna terminal test.
*2) MIMO and CDD of Serial No. A-7 were compared and the worse mode was selected.

Power setting for testing (High power)

All the target power except MCS 9 of IEEE 802.11ac is 9 dBm. The target power of MCS 9 of IEEE 802.11ac is 8 dBm.
The test was conducted with the following settings to be as close as possible to the target power according to the customer requirements.

Bandwidth	Channel frequency [MHz]	Power setting [dBm]									
		11a	11n-20 (CDD)	11n-20 (MIMO)	11ac-20 (CDD)	11ac-20 (MIMO)	11a	11n-20 (CDD)	11n-20 (MIMO)	11ac-20 (CDD)	11ac-20 (MIMO)
	EUT serial No.	A-7	A-7	A-7	A-7	A-7	B-5	B-5	B-5	B-5	B-5
20 MHz	5180	10.0	10.0	10.0	10.0	10.0	10.5	10.5	10.5	10.5	10.5
	5220	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0
	5240	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0
	5260	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0
	5300	10.0	10.0	10.0	10.0	10.0	10.5	11.0	10.5	11.0	10.5
	5320	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0
	5500	9.5	9.5	9.5	9.5	9.5	10.0	10.0	10.0	10.0	10.0
	5580	9.0	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0
	5700	11.0	11.0	11.0	11.0	11.0	11.5	11.5	11.5	11.5	11.5
	5720	11.0	11.0	11.0	11.0	11.0	11.5	11.5	11.5	11.5	11.5
	5745	10.5	10.5	10.5	10.5	10.5	11.5	11.5	11.5	11.5	11.5
	5785	10.5	10.5	10.5	10.5	10.5	11.5	11.5	11.5	11.5	11.5
	5825	10.5	10.5	10.5	10.5	10.5	11.5	11.5	11.5	11.5	11.5

Bandwidth	Channel frequency [MHz]	Power setting [dBm]							
		11n-40 (CDD)	11n-40 (MIMO)	11ac-40 (CDD)	11ac-40 (MIMO)	11n-40 (CDD)	11n-40 (MIMO)	11ac-40 (CDD)	11ac-40 (MIMO)
	EUT serial No.	A-7	A-7	A-7	A-7	B-5	B-5	B-5	B-5
40 MHz	5190	10.0	10.0	10.0	10.0	10.5	10.5	10.5	10.5
	5230	10.0	10.0	10.0	10.0	10.5	10.5	10.5	10.5
	5270	10.0	10.0	10.0	10.0	10.5	10.5	10.5	10.5
	5310	10.0	10.0	10.0	10.0	10.5	10.5	10.5	10.5
	5510	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
	5550	9.0	9.0	9.0	9.0	9.5	9.5	9.5	9.5
	5670	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0
	5710	10.5	10.5	10.5	10.5	11.0	11.0	11.0	11.0
	5755	10.0	10.0	10.0	10.0	11.5	11.5	11.5	11.5
	5795	10.5	10.5	10.5	10.5	11.5	11.5	11.5	11.5

Bandwidth	Channel frequency [MHz]	Power setting [dBm]			
		11ac-80 (CDD)	11ac-80 (MIMO)	11ac-80 (CDD)	11ac-80 (MIMO)
	EUT serial No.	A-7	A-7	B-5	B-5
80 MHz	5210	10.0	10.0	10.5	10.5
	5290	10.0	10.0	10.5	10.5
	5530	9.0	9.0	9.5	9.5
	5610	9.0	9.0	9.5	9.5
	5690	10.5	10.5	11.5	11.0
	5775	10.5	10.5	11.5	11.5

* All tests are carried out with this table setting regarding worst case although typical power setting is 9.0 dBm.

Power setting for testing (Low power)

All the target power except MCS 9 of IEEE 802.11ac is 6.5 dBm. The target power of MCS 9 of IEEE 802.11ac is 5.5 dBm.
The test was conducted with the following settings to be as close as possible to the target power according to the customer requirements.

Bandwidth	Channel frequency [MHz]	Power setting [dBm]									
		11a	11n-20 (CDD)	11n-20 (MIMO)	11ac-20 (CDD)	11ac-20 (MIMO)	11a	11n-20 (CDD)	11n-20 (MIMO)	11ac-20 (CDD)	11ac-20 (MIMO)
	EUT serial No.	A-7	A-7	A-7	A-7	A-7	B-5	B-5	B-5	B-5	B-5
20 MHz	5180	7.5	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.0
	5220	7.5	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.0
	5240	7.5	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.0
	5260	7.5	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.0
	5300	7.5	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.0
	5320	7.5	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.0
	5500	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
	5580	6.5	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0	7.0
	5700	8.5	8.5	8.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0
	5720	8.5	8.5	8.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0
	5745	8.0	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0	9.0
	5785	8.0	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0	9.0
5825	8.0	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0	9.0	

Bandwidth	Channel frequency [MHz]	Power setting [dBm]							
		11n-40 (CDD)	11n-40 (MIMO)	11ac-40 (CDD)	11ac-40 (MIMO)	11n-40 (CDD)	11n-40 (MIMO)	11ac-40 (CDD)	11ac-40 (MIMO)
	EUT serial No.	A-7	A-7	A-7	A-7	B-5	B-5	B-5	B-5
40 MHz	5190	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0
	5230	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0
	5270	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0
	5310	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0
	5510	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
	5550	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0
	5670	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0
	5710	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0
	5755	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0
	5795	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0

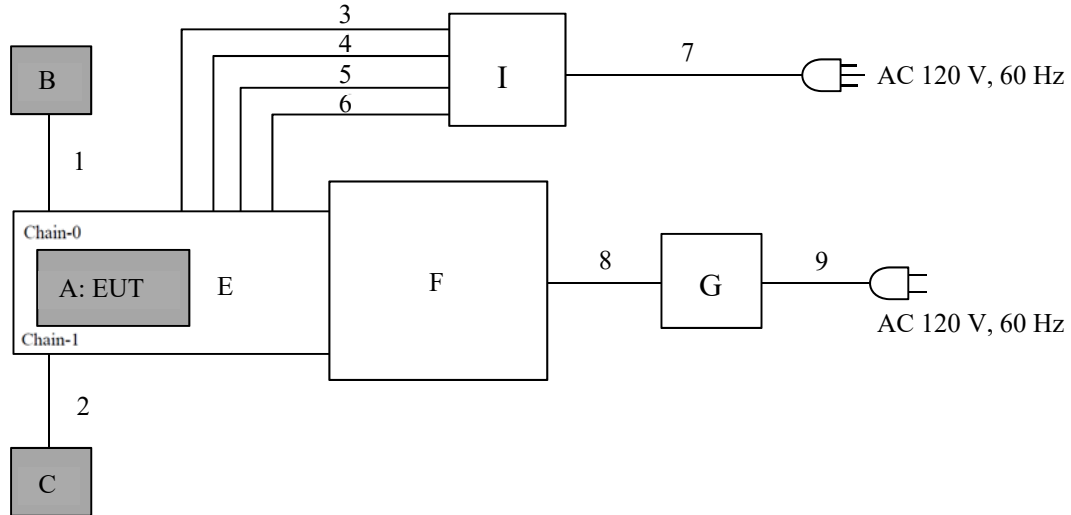
Bandwidth	Channel frequency [MHz]	Power setting [dBm]			
		11ac-80 (CDD)	11ac-80 (MIMO)	11ac-80 (CDD)	11ac-80 (MIMO)
	EUT serial No.	A-7	A-7	B-5	B-5
80 MHz	5210	7.5	7.5	8.0	8.0
	5290	7.5	7.5	8.0	8.0
	5530	7.0	7.0	7.0	7.0
	5610	6.5	6.5	7.0	7.0
	5690	8.0	8.0	9.0	8.5
	5775	8.0	8.0	9.0	9.0

* All tests are carried out with this table setting regarding worst case although typical power setting is 6.5 dBm.

4.2 Configuration and peripherals

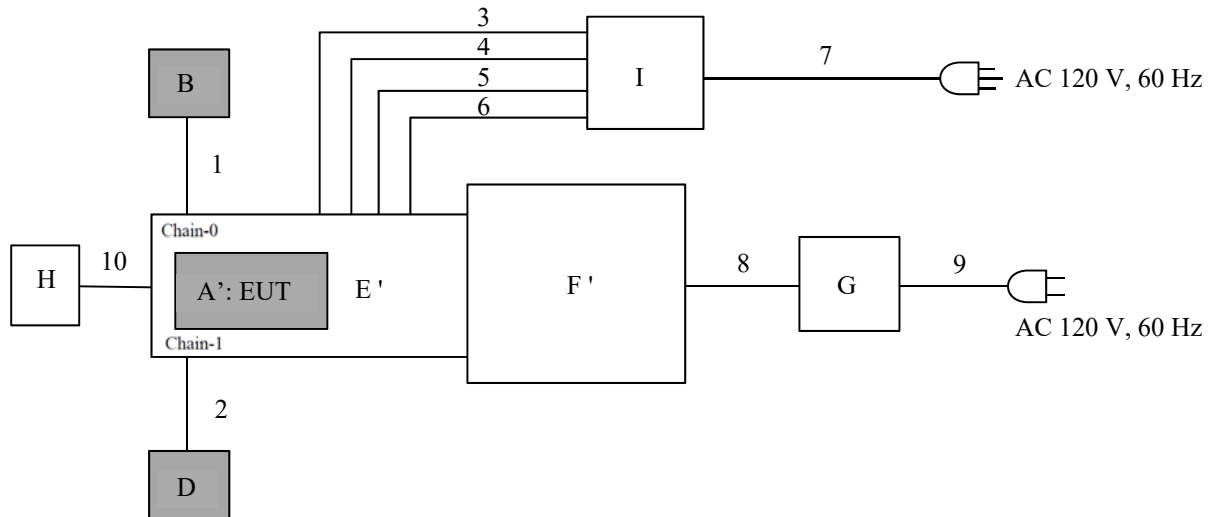
Config.1

Chain-0: Dual Monopole Antenna
 Chain-1: Dual Monopole Antenna



Config.2

Chain-0: Dual Monopole Antenna
 Chain-1: Slot Antenna



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

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Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Communication Module	Type1VY	A-7	Murata Manufacturing Co., Ltd.	EUT
A'	Communication Module	Type1VY	B-5	Murata Manufacturing Co., Ltd.	EUT
B	Dual Monopole Antenna	M-d	No.1	SONY	EUT
C	Dual Monopole Antenna	M-d	No.2	SONY	EUT
D	Slot Antenna	S-5	No.1	SONY	EUT
E	PCB	P2ML7925	A-7	Murata Manufacturing Co., Ltd.	-
E'	PCB	P2ML7925	B-5	Murata Manufacturing Co., Ltd.	-
F	Platform	iMX8	-	NXP Semiconductors	-
F'	Platform	iMX8	-	NXP Semiconductors	-
G	AC Adapter	EA10682N-120	-	EDACPOWER ELEC.	-
H	Terminator	M1459A	89025	Weinschel	-
I	Power Supply (DC)	PAN35-10A	DE001677	KIKUSUI	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Coaxial Cable	0.1	Shielded	Shielded	-
2	Coaxial Cable	0.1	Shielded	Shielded	-
3	DC Cable	0.7 + 2.0	Unshielded	Unshielded	-
4	DC Cable	0.7 + 2.0	Unshielded	Unshielded	-
5	DC Cable	0.7 + 2.0	Unshielded	Unshielded	-
6	DC Cable	0.7 + 2.0	Unshielded	Unshielded	-
7	AC Cable	2.4	Unshielded	Unshielded	-
8	DC Cable	1.2	Unshielded	Unshielded	-
9	AC Cable	1.5	Unshielded	Unshielded	-
10	Coaxial Cable	0.1	Shielded	Shielded	-

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a platform of nominal size, 2.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

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.

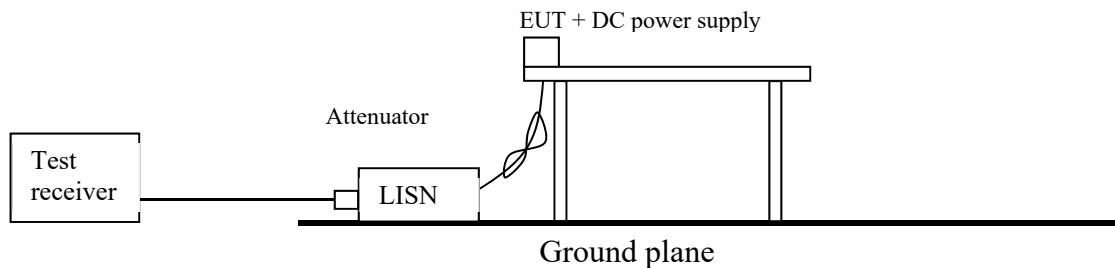
The EUT via DC power supply was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

Detector : QP and CISPR Average
Measurement range : 0.15 MHz - 30 MHz
Test data : APPENDIX
Test result : Pass

Figure 1: Test Setup



SECTION 6: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >

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

< Above 1GHz >

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

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

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

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

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

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

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

< Below 1GHz >

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

< Above 1GHz >

Inside of restricted bands (Section 15.205):

Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:

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

For W58 Bandedge

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

Restricted band edge:

Apply to limit in the Section 15.209 (a).

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

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

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

Test Antennas are used as below;

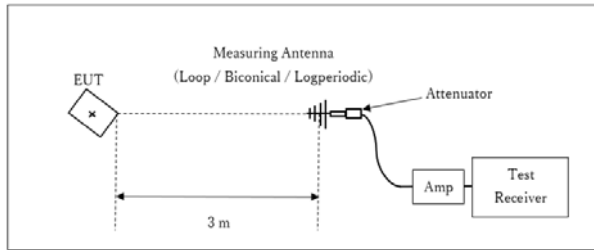
Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

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	Method VB *1) RBW: 1 MHz VBW: 1/T (T: burst length, refer to Burst rate confirmation sheet) Detector: Peak Trace: Max Hold

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

Figure 2: Test Setup

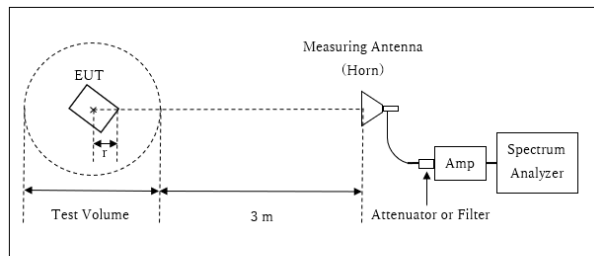
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz



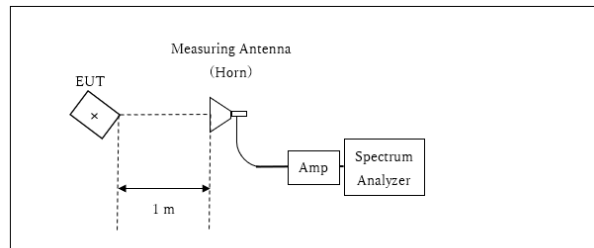
r : Radius of an outer periphery of EUT
× : Center of turn table

*1)
Distance Factor: $20 \times \log(3.84 \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.84 \text{ m}$
 $r = 0.16 \text{ m}$

*2)
Distance Factor: $20 \times \log(3.79 \text{ m} / 3.0 \text{ m}) = 2.04 \text{ dB}$
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.79 \text{ m}$
 $r = 0.21 \text{ m}$

Test Volume : 2.0 m
(Test Volume has been calibrated based on CISPR 16-1-4.)

13 GHz – 40 GHz



× : 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

*1) For configuration 1 of section 4.2.

*2) For configuration 2 of section 4.2.

- 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.

<Configuration 1 of section 4.2>

Module axis

	Carrier	Spurious				
		Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 40 GHz
Horizontal	X	X	X	X	X	X
Vertical	X	X	X	X	X	X

Antenna axis : Chain 0

	Carrier	Spurious				
		Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 40 GHz
Horizontal	X	X	Z	Z	Z	Z
Vertical	Z	X	Z	Z	Z	Z

Antenna axis : Chain 1

	Carrier	Spurious				
		Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 40 GHz
Horizontal	X	X	X	X	X	X
Vertical	Z	X	Z	Z	Z	Z

<Configuration 2 of section 4.2>

Module axis

	Carrier	Spurious				
		Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 40 GHz
Horizontal	X	X	X	X	X	X
Vertical	X	X	X	X	X	X

Antenna axis : Chain 0

	Carrier	Spurious				
		Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 40 GHz
Horizontal	X	Z	Z	Z	Z	Z
Vertical	Z	Z	Z	Z	Z	Z

Antenna axis : Chain 1

	Carrier	Spurious				
		Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 40 GHz
Horizontal	Z	X	X	X	X	X
Vertical	Y	X	X	X	X	X

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

Measurement range : 30 MHz - 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 *4)	Average	-	Power Meter (Sensor: 160 MHz BW) (Method PM-G)
Maximum Power Spectral Density	Encompass the entire EBW	1 MHz or 100 kHz *2)	≥ 3 RBW	Auto *4)	RMS Power Averaging (100 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3)	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) Power was measured with using the gate function.

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

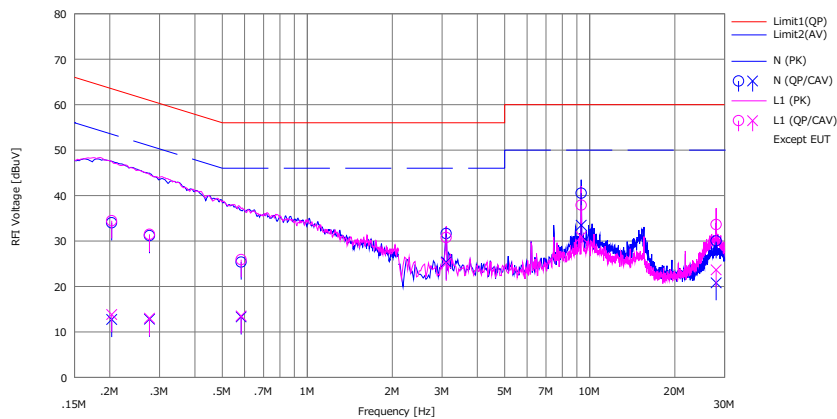
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2019/09/21

Mode : Tx 11ac-40 (MIMO) 5190 MHz
Power : AC 120 V/60 Hz
Temp./Humi. : 22 deg.C / 64 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Takahiro Suzuki



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	0.20308	21.57	0.29	12.44	34.01	12.73	63.48	53.48	29.4	40.7	N	
2	0.27631	18.74	0.36	12.44	31.18	12.80	60.93	50.93	29.7	38.1	N	
3	0.58327	12.89	0.84	12.46	25.35	13.30	56.00	46.00	30.6	32.7	N	
4	3.10352	19.05	12.77	12.60	31.65	25.37	56.00	46.00	24.3	20.6	N	
5	9.32599	27.63	20.59	12.89	40.52	33.48	60.00	50.00	19.4	16.5	N	
6	28.01913	16.43	7.19	13.61	30.04	20.80	60.00	50.00	29.9	29.2	N	
7	0.20308	22.00	1.38	12.44	34.44	13.82	63.48	53.48	29.0	39.6	L1	
8	0.27631	19.00	0.58	12.44	31.44	13.02	60.93	50.93	29.4	37.9	L1	
9	0.58327	13.43	1.05	12.46	25.89	13.51	56.00	46.00	30.1	32.4	L1	
10	3.10352	18.18	12.48	12.60	30.78	25.08	56.00	46.00	25.2	20.9	L1	
11	9.32599	25.01	18.04	12.89	37.90	30.93	60.00	50.00	22.1	19.0	L1	
12	28.01913	20.01	10.02	13.61	33.62	23.63	60.00	50.00	26.3	26.3	L1	

Calculation: Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN))+Cable+ATT[dB]
LISN(AMN): SLS-05

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Report No.	13004393S-E-R2		
Test place	Shonan EMC Lab.		
	No.3 Shielded Room	No.3 Shielded Room	No.1 Shielded Room
Date	September 11, 2019	September 18, 2019	October 3, 2019
Temperature / Humidity	24 deg. C / 58 % RH	24 deg. C / 57 % RH	25 deg. C / 46 % RH
Engineer	Takahiro Kawakami	Hiromasa Sato	Makoto Hosaka
Mode	Tx		

11a

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 1	5180	-	17081.1
	5220	-	17122.7
	5240	-	17031.2
	5260	20.799	17100.2
	5300	20.532	17083.1
	5320	20.847	17091.1
	5500	21.057	17158.3
	5580	20.295	17069.9
	5700	21.034	17108.7
	5720	21.182	17112.0
	5745	-	17090.0
	5785	-	17054.6
5825	-	17075.8	

11n-20 (CDD)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 1	5180	-	18162.2
	5220	-	18131.9
	5240	-	18204.5
	5260	21.015	18132.5
	5300	21.255	18185.2
	5320	21.344	18160.0
	5500	21.330	18152.9
	5580	21.430	18197.7
	5700	21.285	18191.1
	5720	21.334	18174.6
	5745	-	18182.8
	5785	-	18207.9
5825	-	18161.7	

11n-20 (MIMO)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 1	5180	-	18211.1
	5220	-	18193.9
	5240	-	18225.7
	5260	21.483	18245.4
	5300	21.428	18173.6
	5320	21.213	18145.8
	5500	21.461	18175.7
	5580	21.448	18104.9
	5700	21.342	18184.4
	5720	21.086	18196.2
	5745	-	18164.6
	5785	-	18260.9
5825	-	18228.9	

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Report No.	13004393S-E-R2	
Test place	Shonan EMC Lab.	
	No.3 Shielded Room	No.1 Shielded Room
Date	September 12, 2019	October 3, 2019
Temperature / Humidity	25 deg. C / 50 % RH	25 deg. C / 46 % RH
Engineer	Hiromasa Sato	Makoto Hosaka
Mode	Tx	

11ac-20 (CDD)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 1	5180	-	18214.7
	5220	-	18158.2
	5240	-	18239.8
	5260	21.958	18211.9
	5300	21.504	18093.5
	5320	21.619	18196.8
	5500	21.347	18207.0
	5580	21.414	18155.8
	5700	21.688	18132.9
	5720	20.797	18217.3
	5745	-	18246.4
	5785	-	18128.3
	5825	-	18207.4

11ac-20 (MIMO)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 1	5180	-	18227.0
	5220	-	18139.2
	5240	-	18140.1
	5260	21.761	18116.0
	5300	21.413	18186.6
	5320	21.327	18184.6
	5500	21.266	18125.7
	5580	21.468	18195.0
	5700	21.367	18144.6
	5720	21.513	18181.8
	5745	-	18149.7
	5785	-	18200.7
	5825	-	18214.5

11n-40 (CDD)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 0	5190	-	35882.8
	5230	-	35862.1
	5270	39.483	35884.2
	5310	39.215	35837.8
	5510	39.308	35862.0
	5550	39.118	35872.8
	5670	39.277	35870.4
	5710	39.173	35924.9
	5755	-	35833.3
	5795	-	35894.1

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 13, 2019 September 19, 2019
Temperature / Humidity 25 deg. C / 52 % RH 25 deg. C / 56 % RH
Engineer Kenichi Adachi Kazuya Noda
Mode Tx

11n-40 (MIMO)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 0	5190	-	36927.8
	5230	-	36796.3
	5270	42.495	36846.3
	5310	42.656	36916.3
	5510	42.335	36905.6
	5550	42.962	36908.1
	5670	42.325	36894.0
	5710	42.411	37006.3
	5755	-	36854.2
5795	-	36905.7	

11ac-40 (CDD)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 0	5190	-	35847.9
	5230	-	35942.6
	5270	39.511	35930.8
	5310	39.447	35861.6
	5510	39.532	35807.1
	5550	39.767	35888.2
	5670	39.636	35919.2
	5710	39.880	35980.7
	5755	-	35951.0
5795	-	35958.3	

11ac-40 (MIMO)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 0	5190	-	36804.5
	5230	-	36868.2
	5270	42.095	36853.3
	5310	42.429	36783.7
	5510	43.532	36791.1
	5550	42.722	36864.3
	5670	42.731	36726.2
	5710	42.630	36815.1
	5755	-	36797.7
5795	-	36941.5	

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.1 Shielded Room
Date October 3, 2019
Temperature / Humidity 25 deg. C / 46 % RH
Engineer Makoto Hosaka
Mode Tx

11ac-80 (CDD)

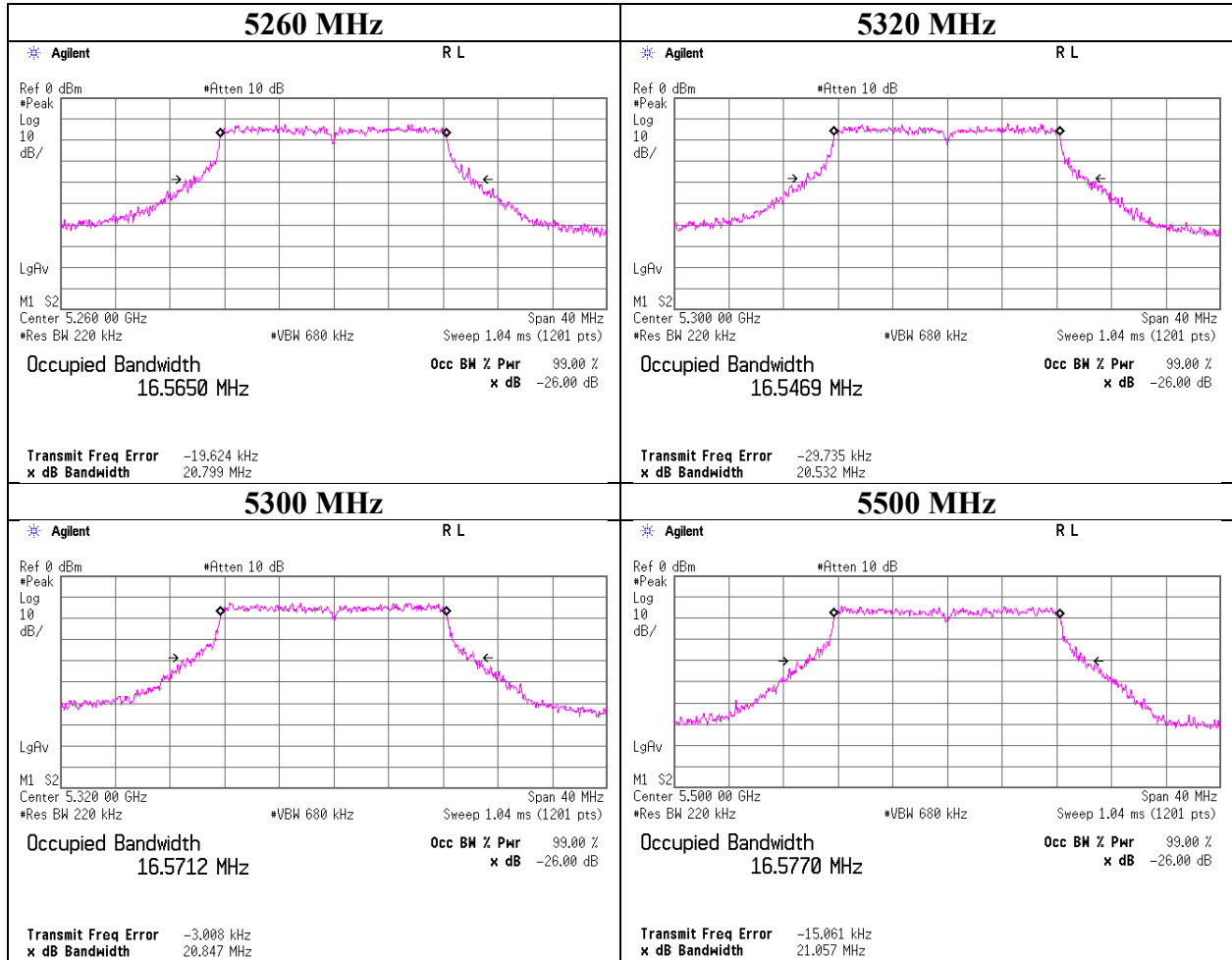
Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 1	5210	-	76384.6
	5290	85.310	76547.0
	5530	85.240	76591.2
	5610	85.457	76574.8
	5690	85.498	76605.6
	5775	-	76439.0

11ac-80 (MIMO)

Antenna	Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
Chain 1	5210	-	76355.3
	5290	83.821	76666.4
	5530	84.860	76587.2
	5610	84.665	76633.2
	5690	85.312	76574.0
	5775	-	76562.4

26 dB Emission Bandwidth

11a



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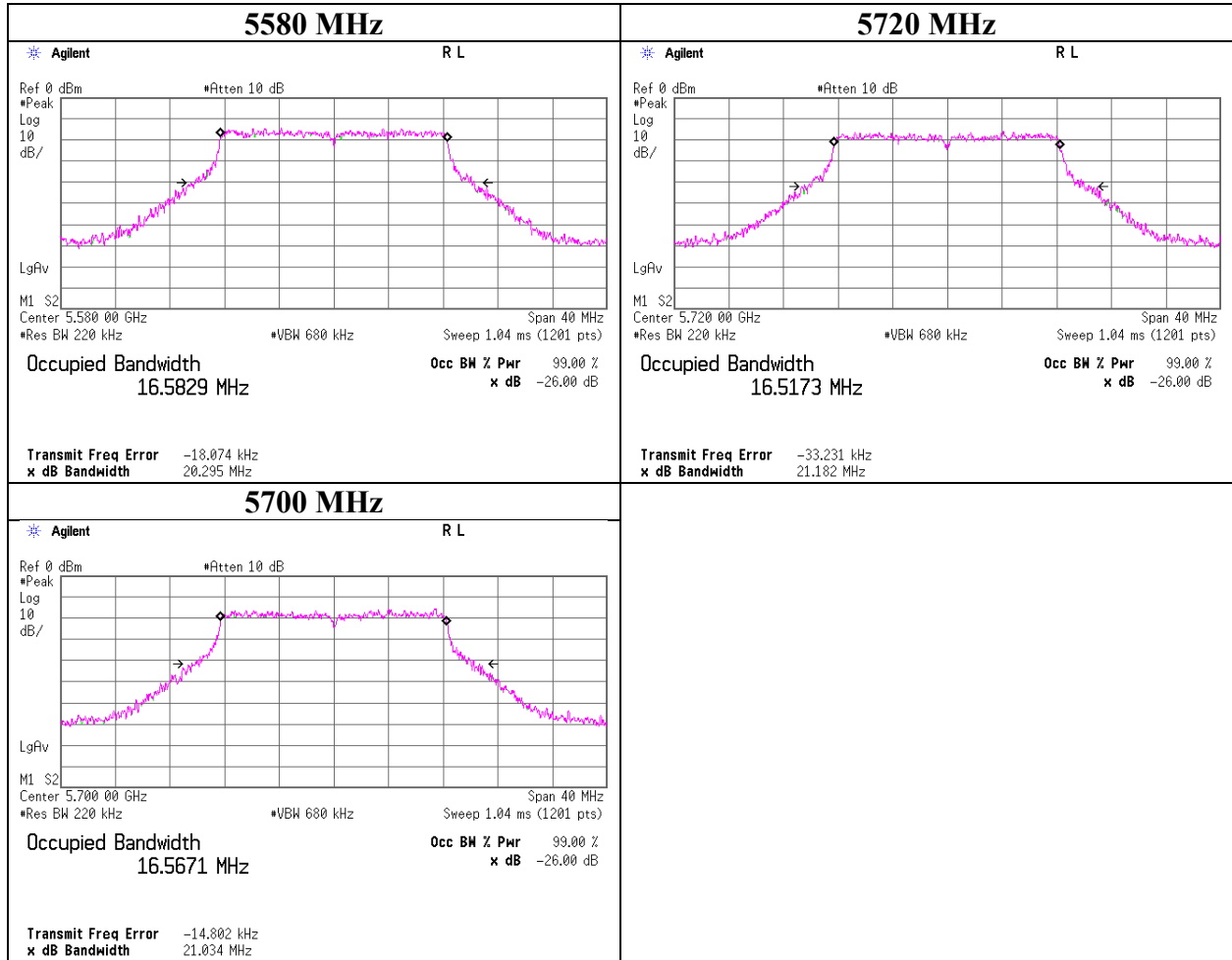
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

26 dB Emission Bandwidth

11a



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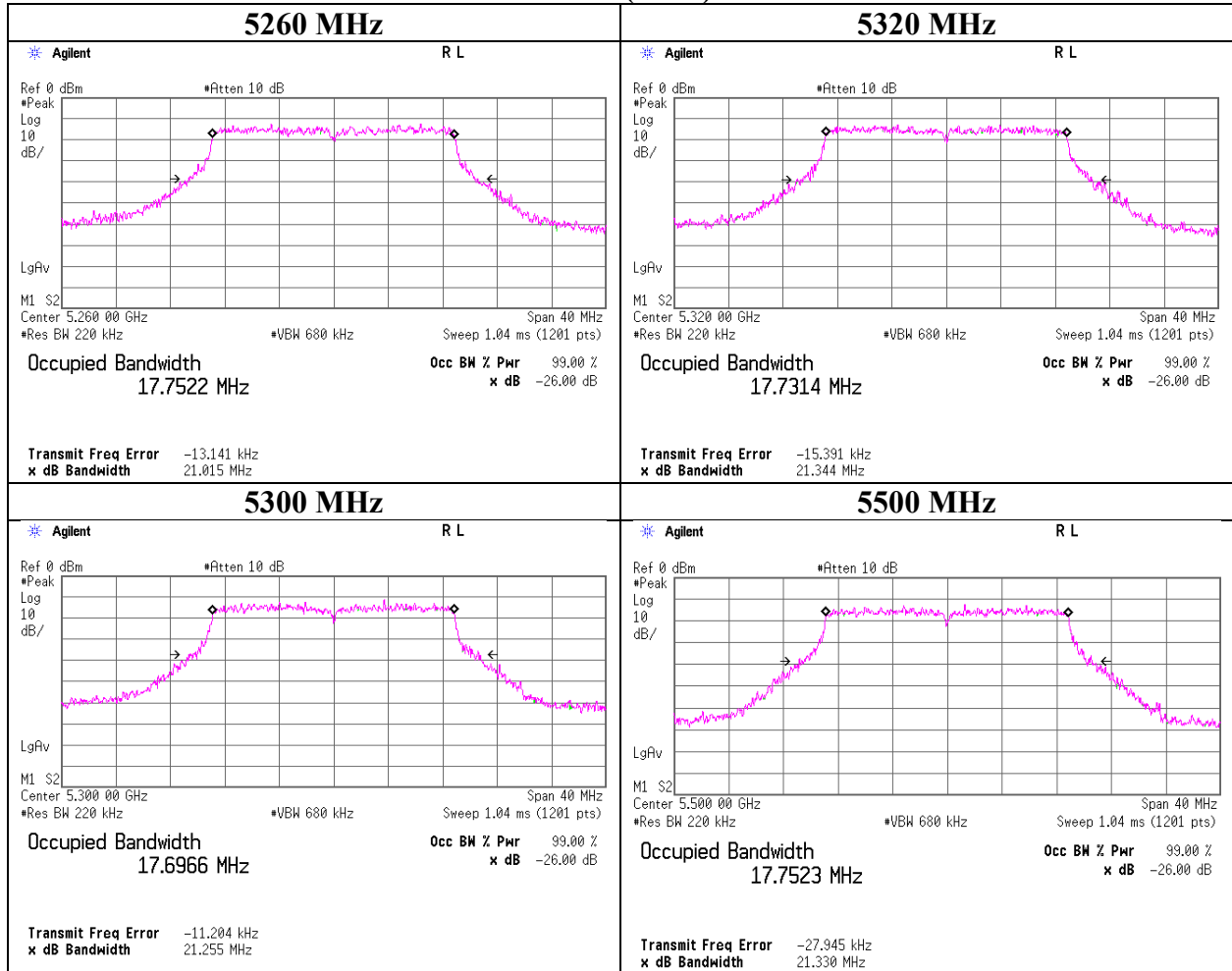
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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26 dB Emission Bandwidth

11n-20 (CDD)



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Shonan EMC Lab.

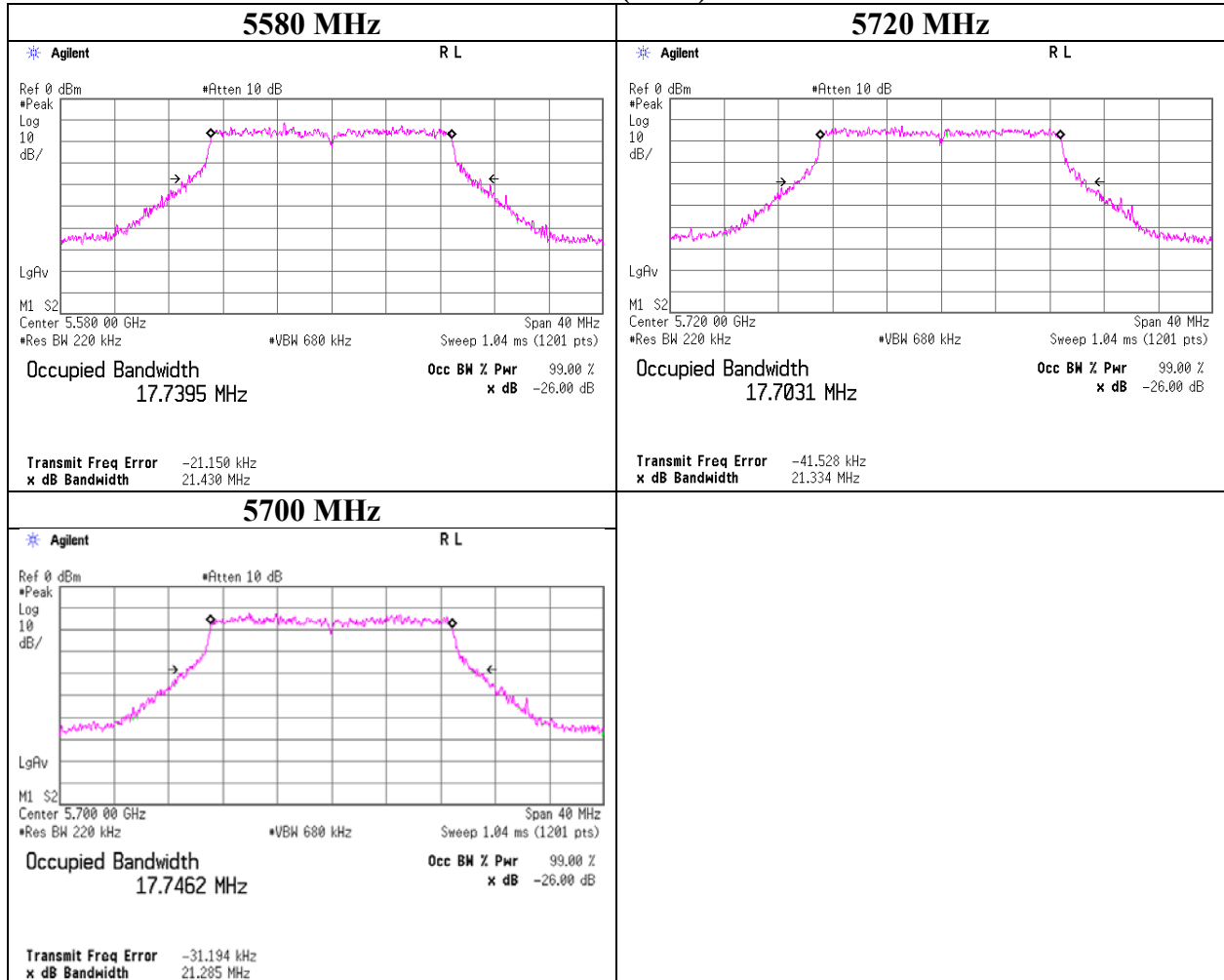
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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26 dB Emission Bandwidth

11n-20 (CDD)



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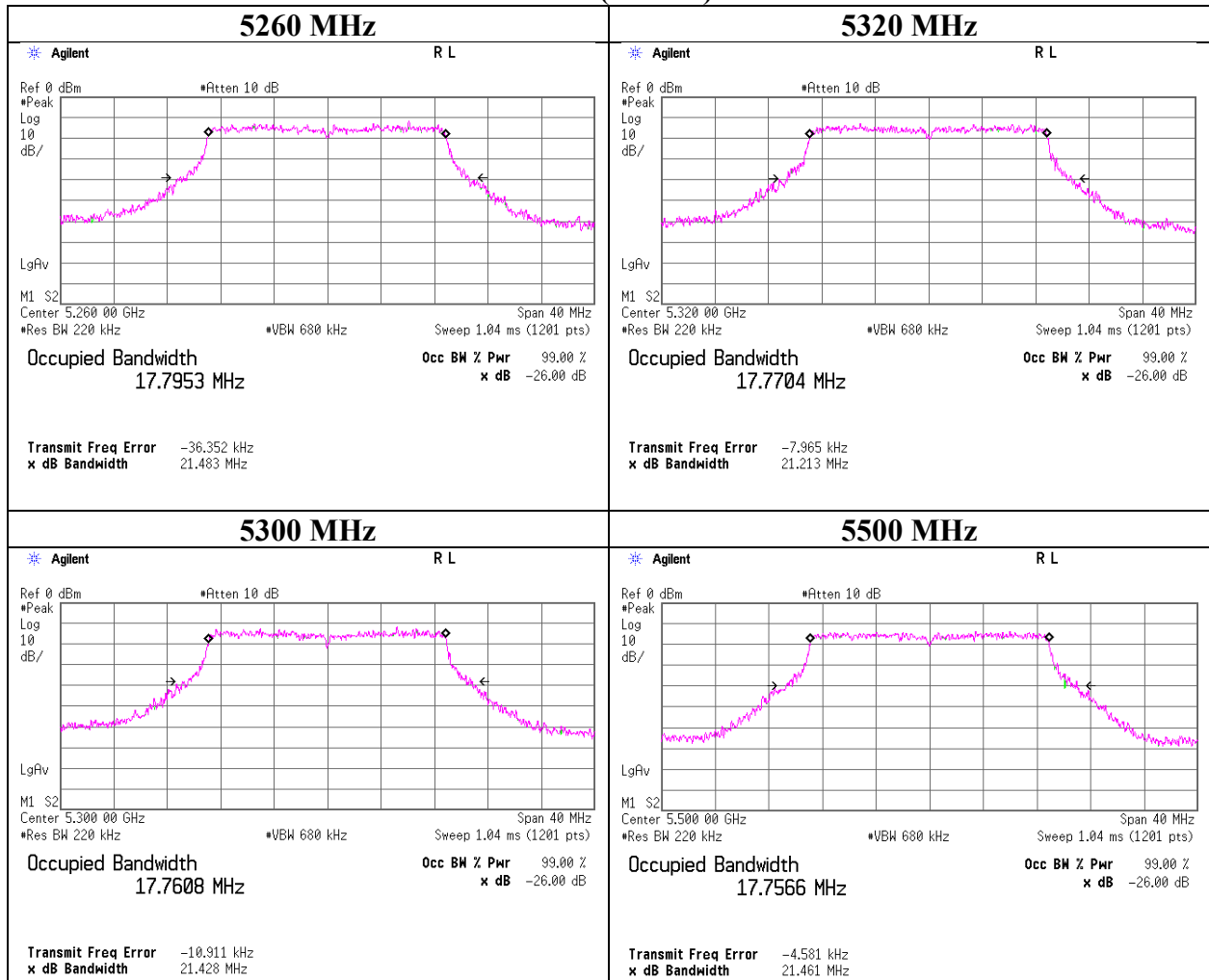
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26 dB Emission Bandwidth

11n-20 (MIMO)



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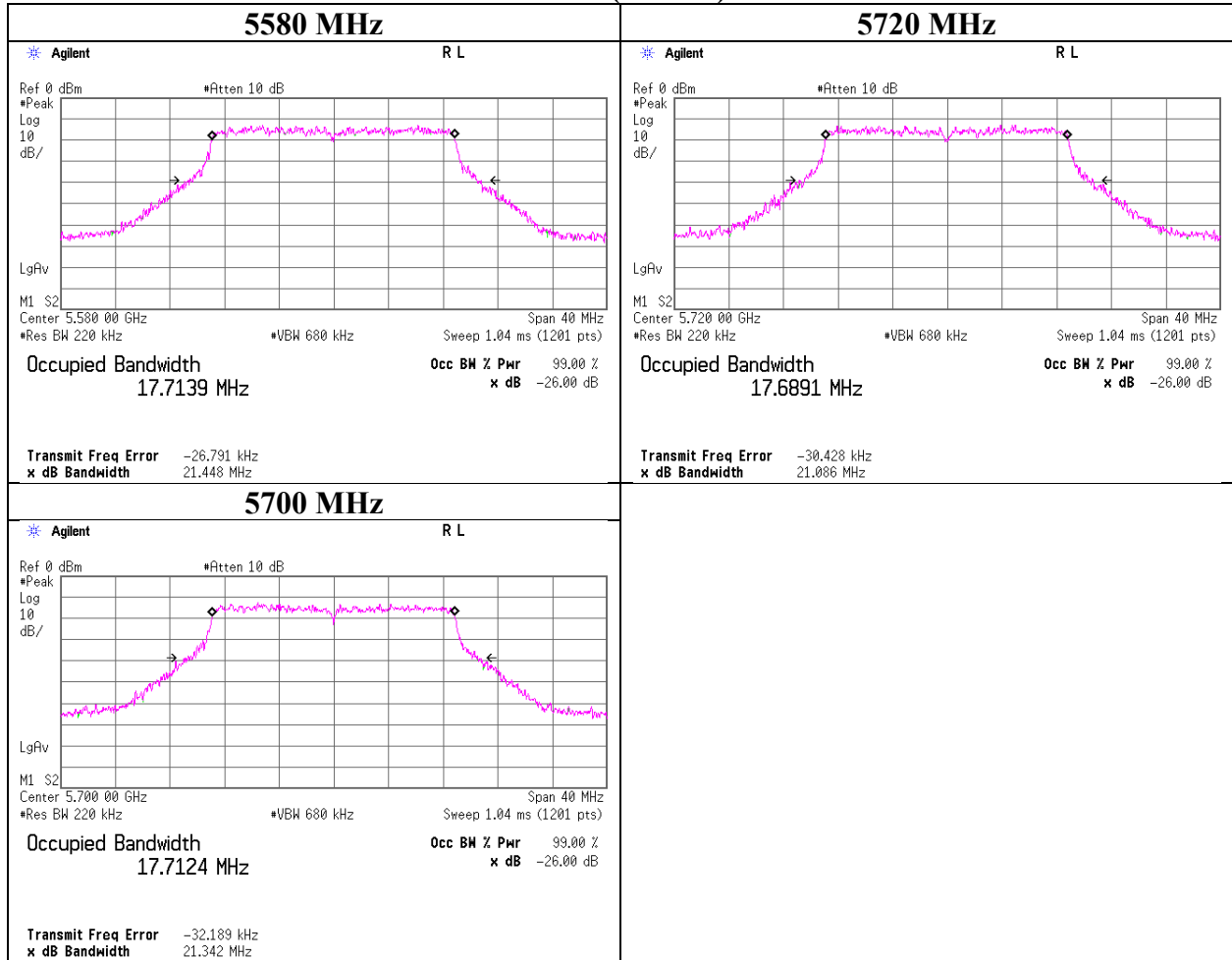
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26 dB Emission Bandwidth

11n-20 (MIMO)



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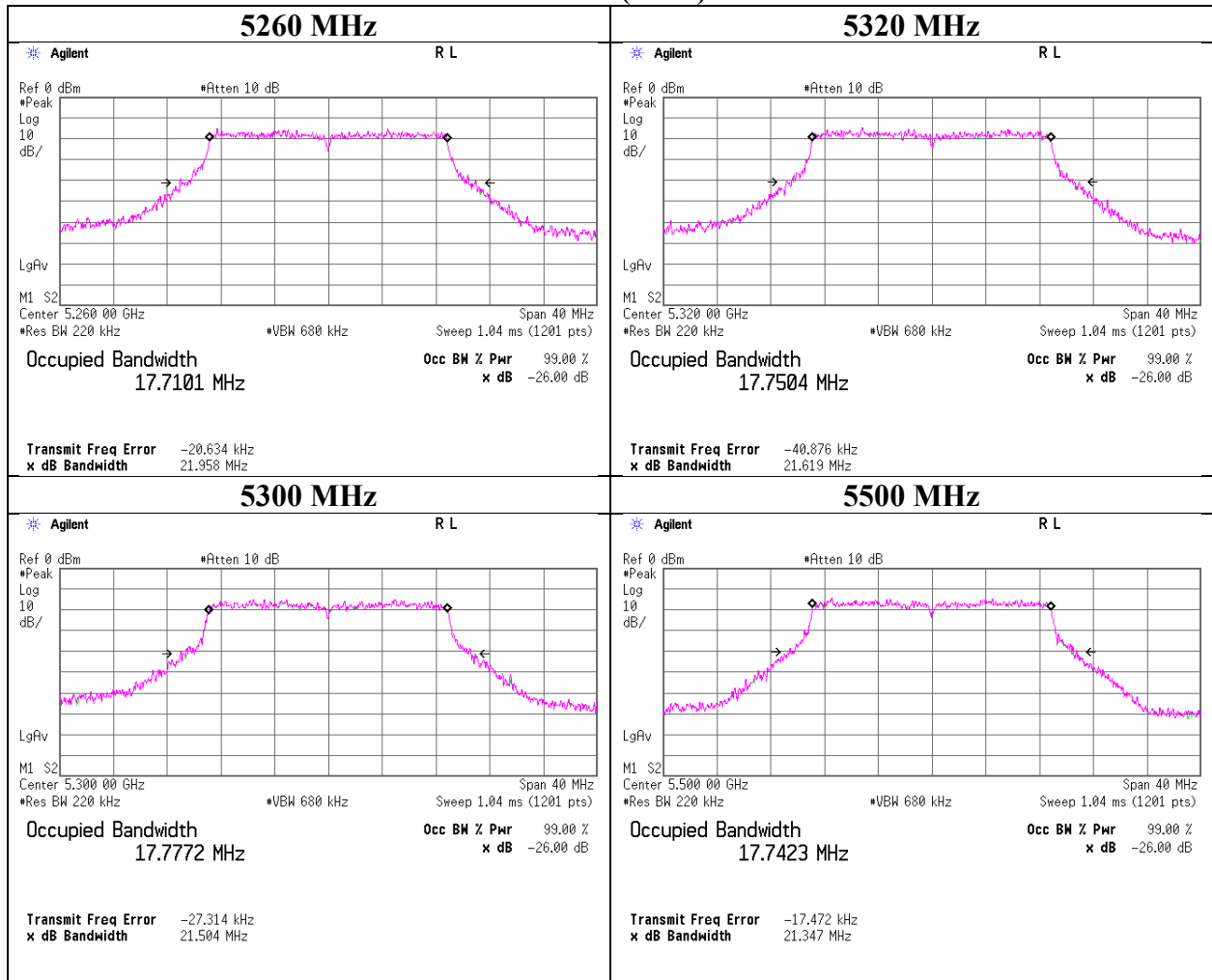
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26 dB Emission Bandwidth

11ac-20 (CDD)



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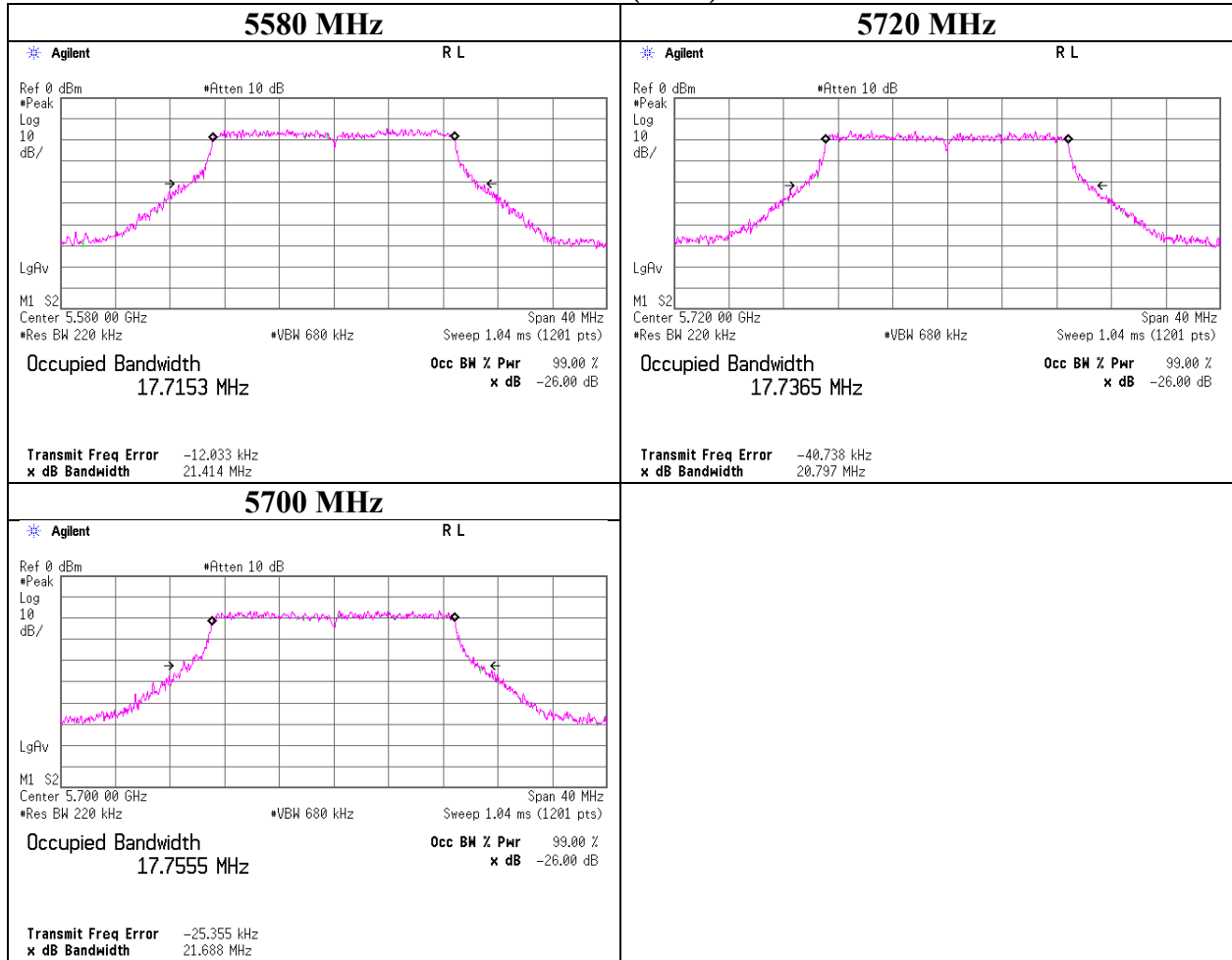
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26 dB Emission Bandwidth

11ac-20 (CDD)



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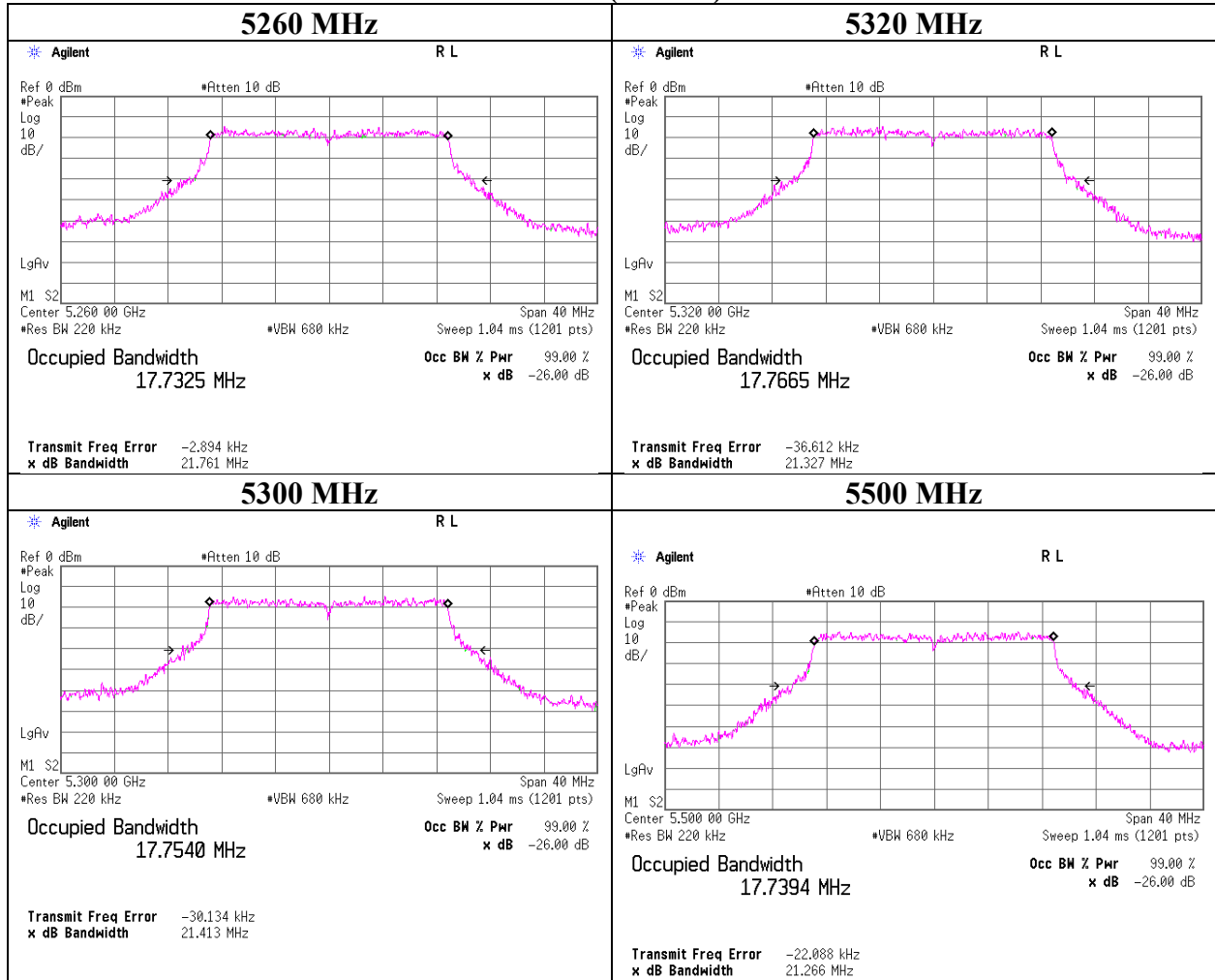
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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26 dB Emission Bandwidth

11ac-20 (MIMO)



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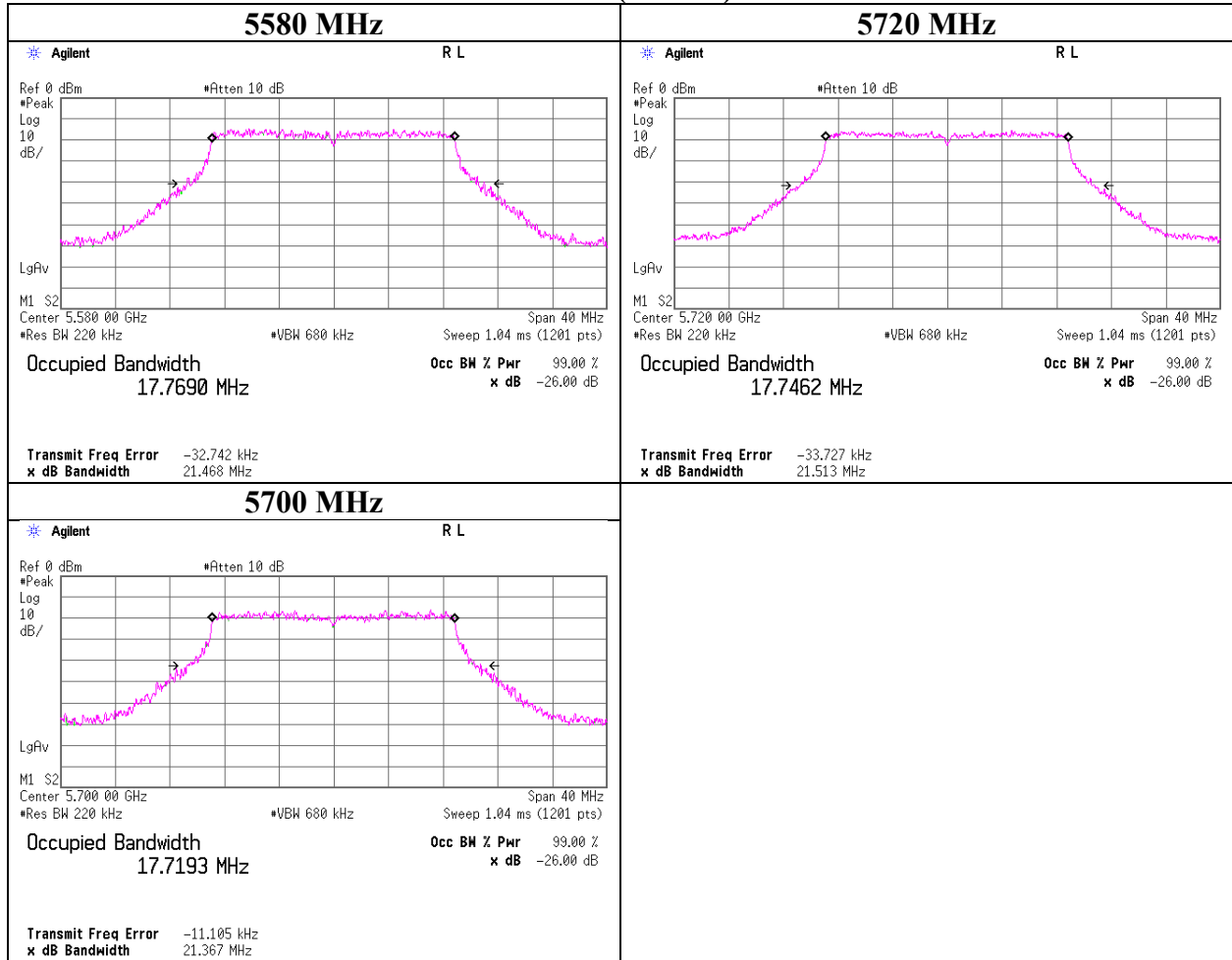
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Telephone : +81 463 50 6400

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26 dB Emission Bandwidth

11ac-20 (MIMO)



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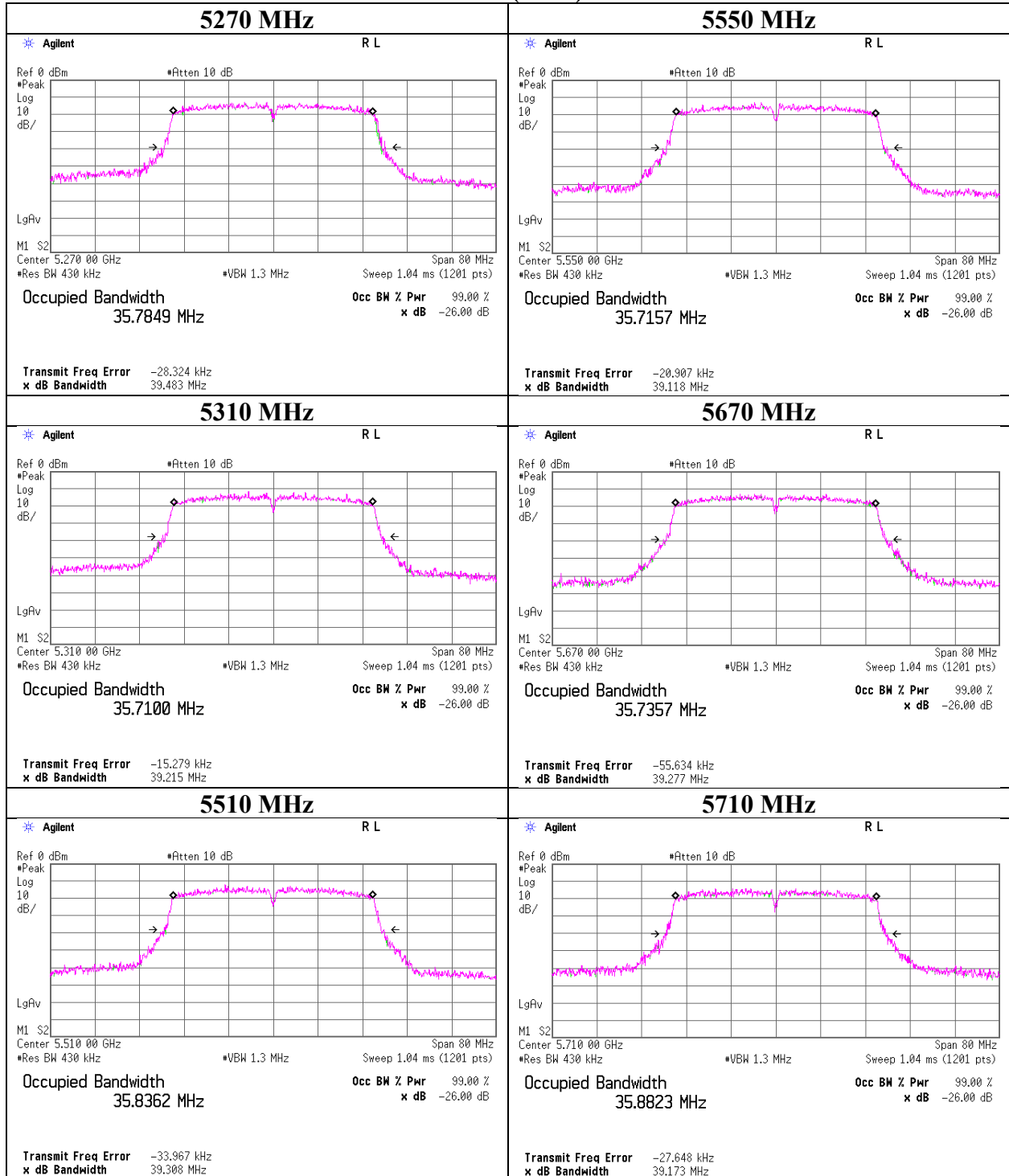
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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

26 dB Emission Bandwidth

11n-40 (CDD)



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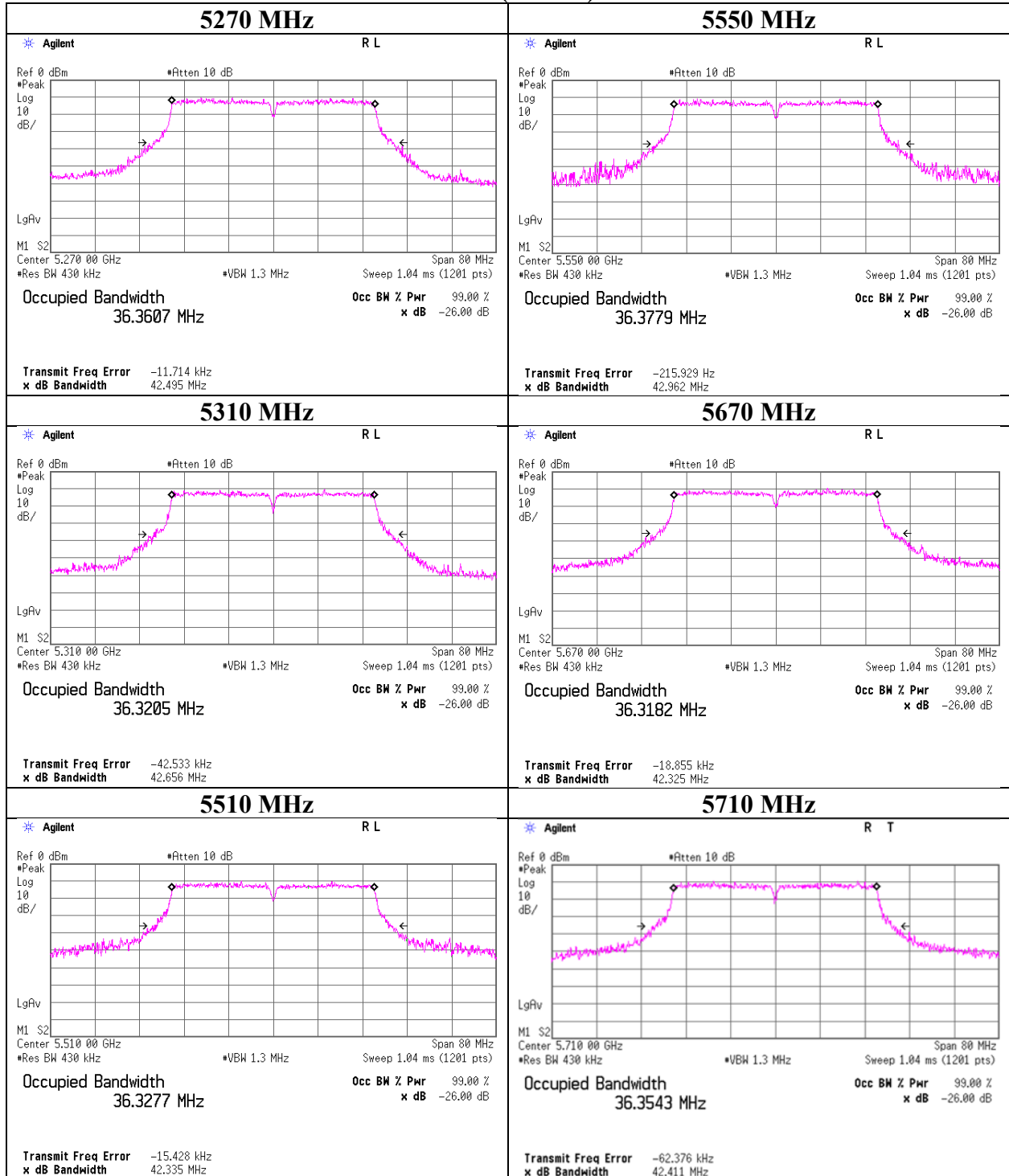
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26 dB Emission Bandwidth

11n-40 (MIMO)



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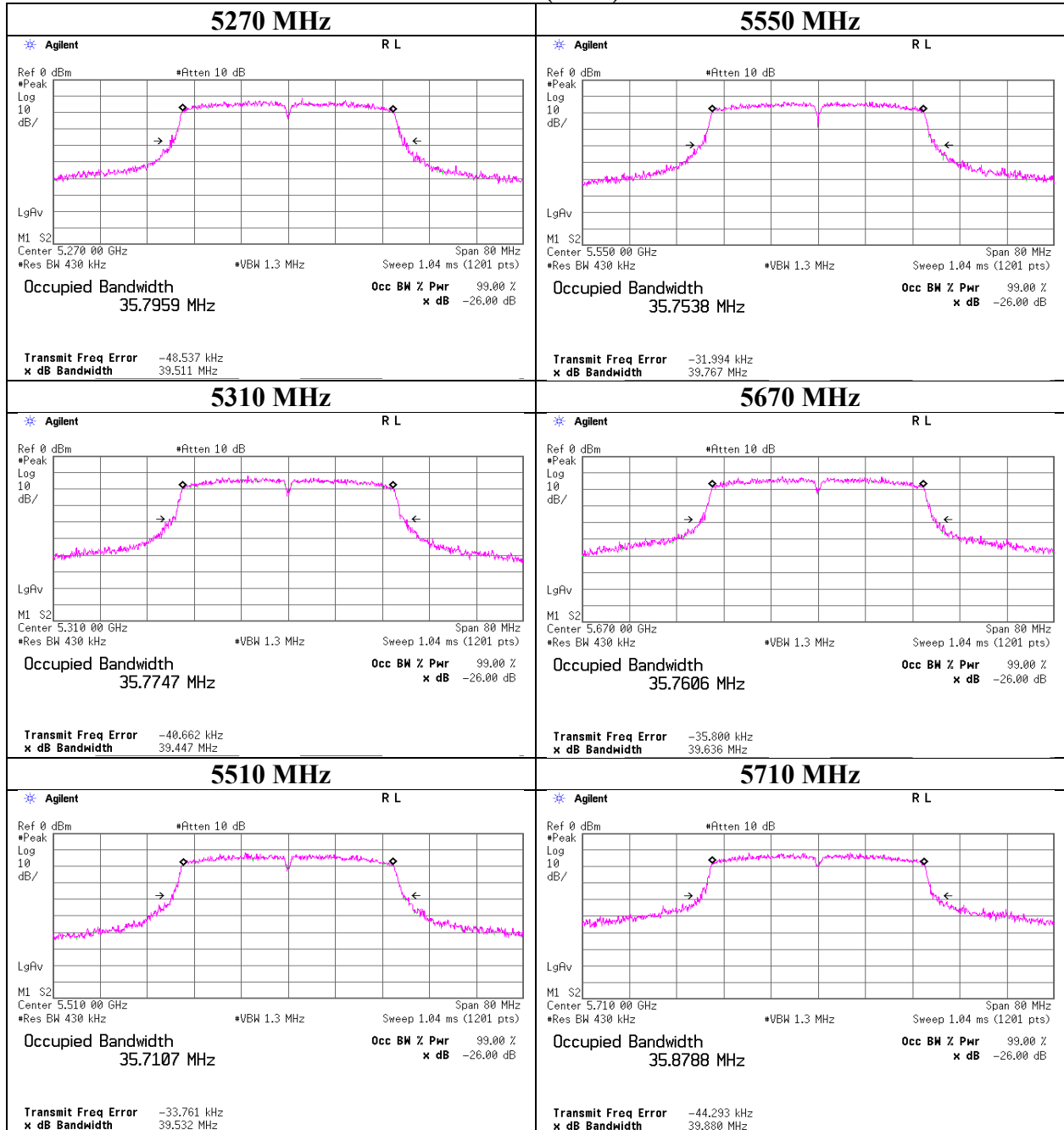
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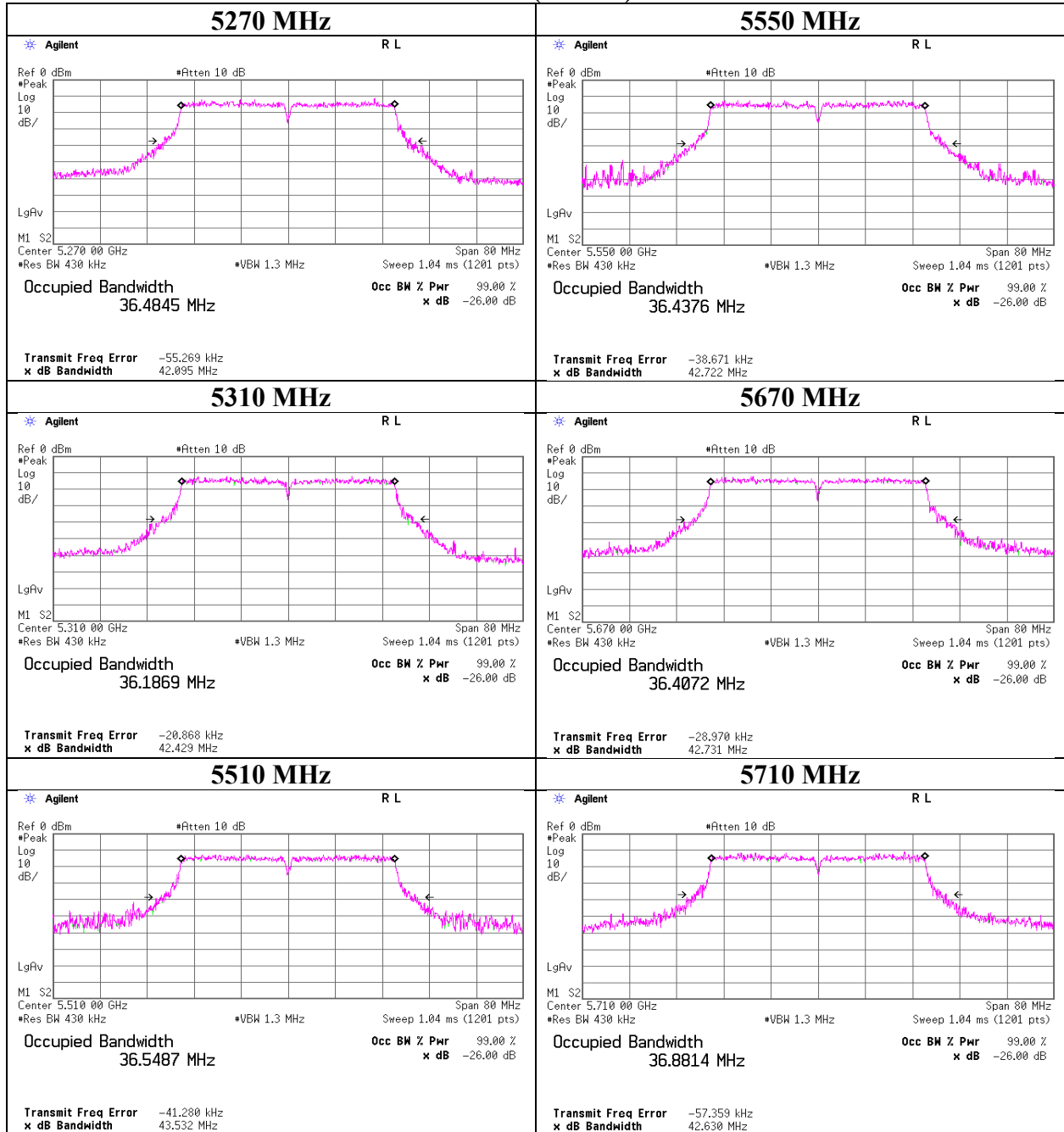
26 dB Emission Bandwidth

11ac-40 (CDD)



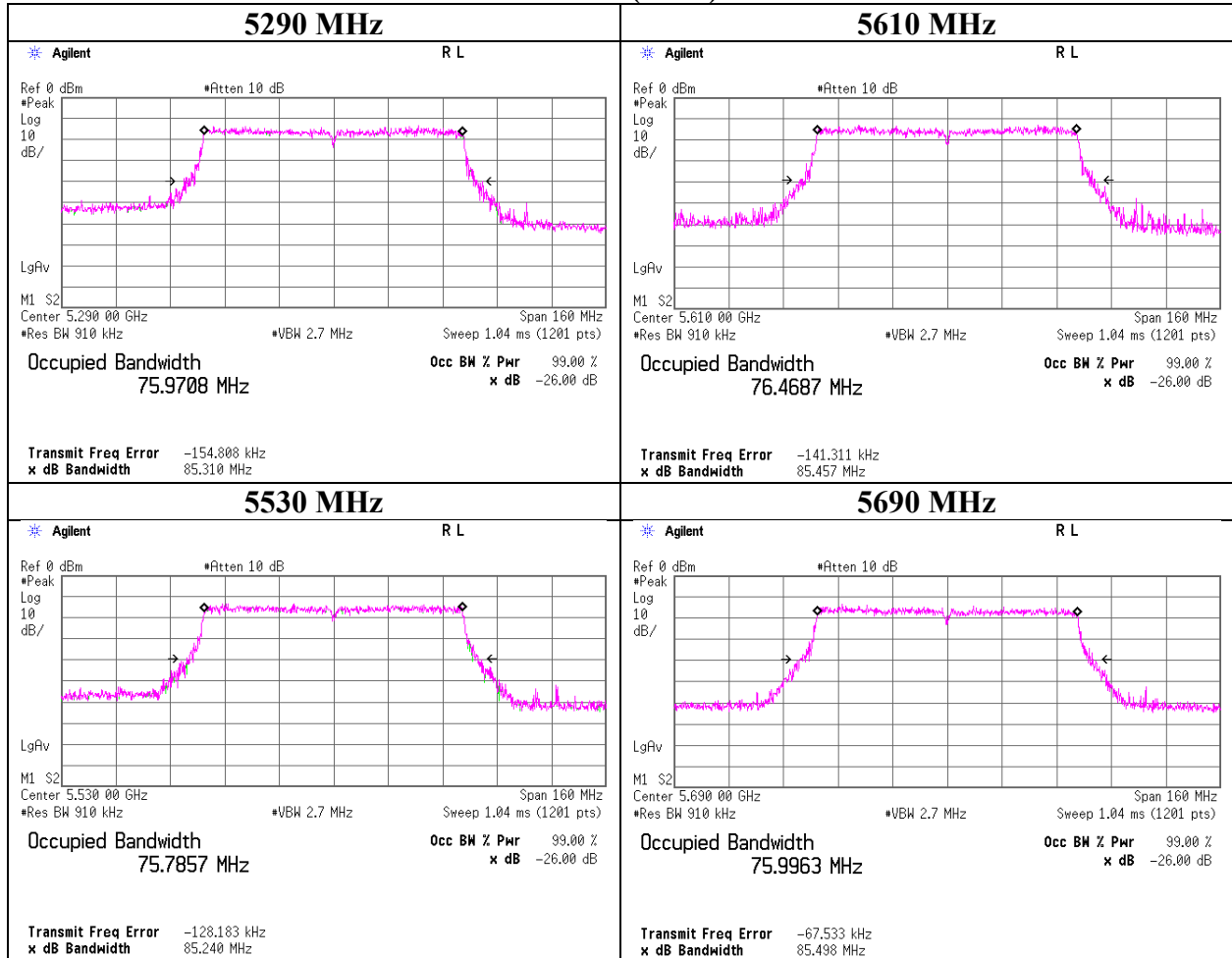
26 dB Emission Bandwidth

11ac-40 (MIMO)



26 dB Emission Bandwidth

11ac-80 (CDD)



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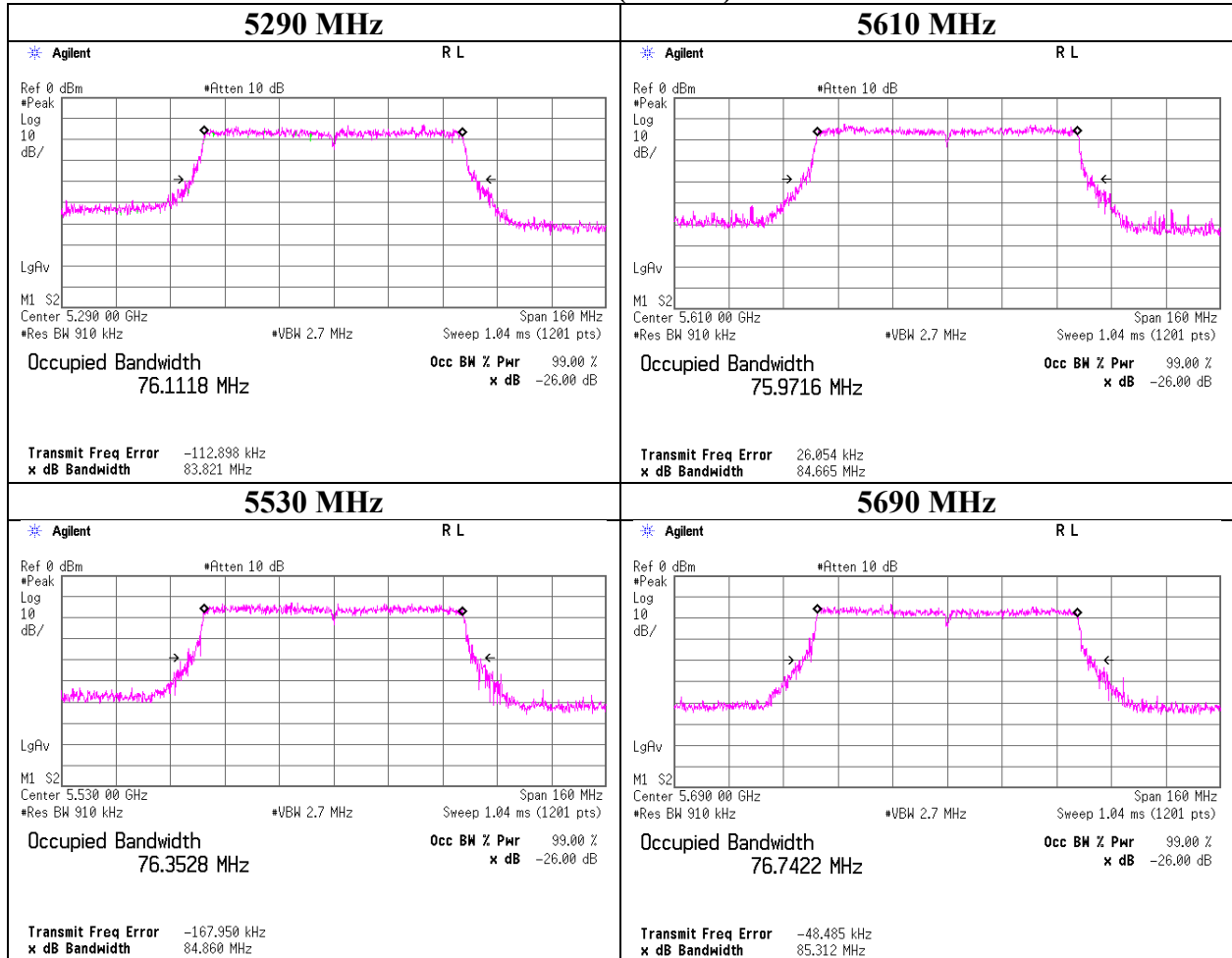
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26 dB Emission Bandwidth

11ac-80 (MIMO)



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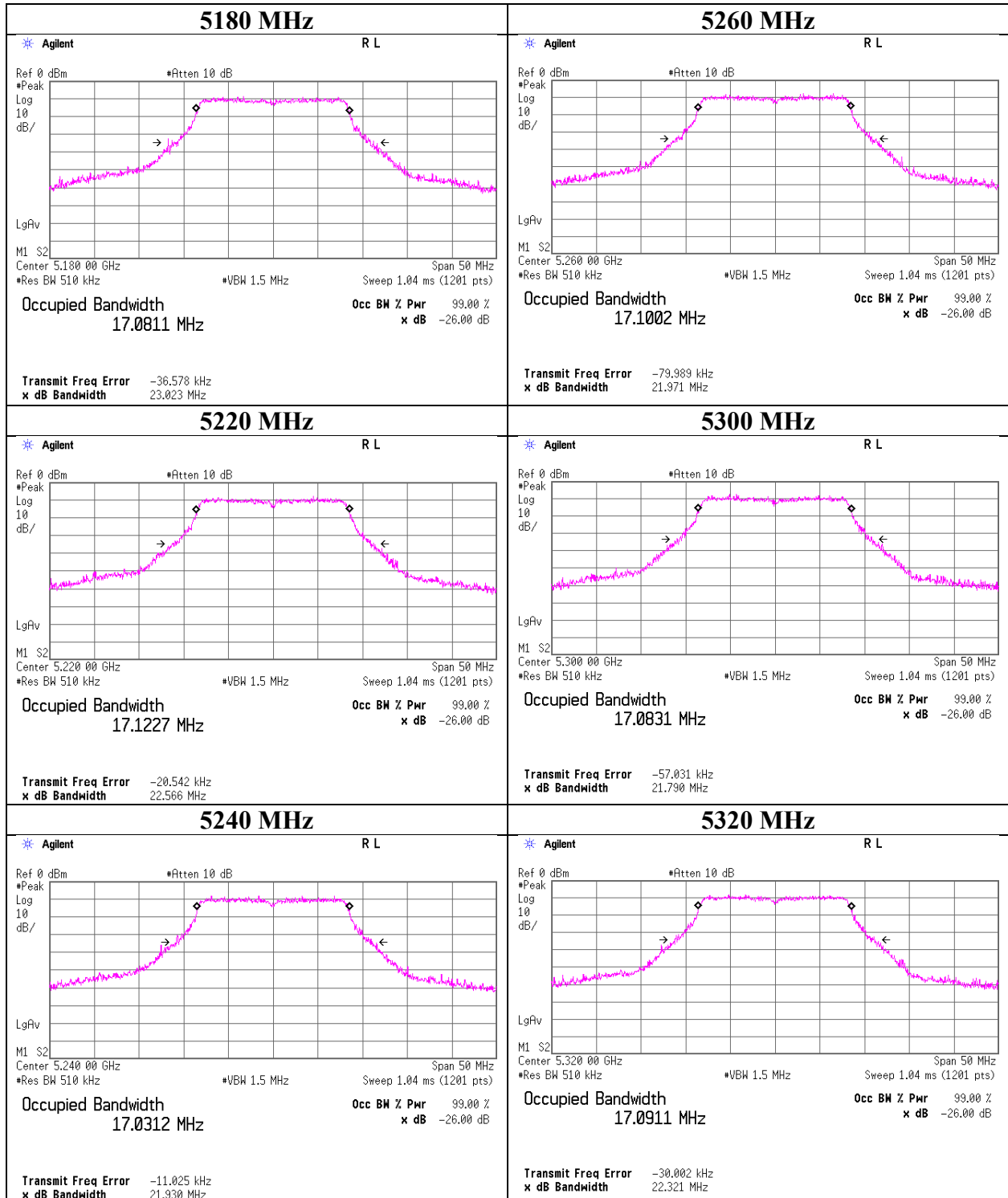
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11a



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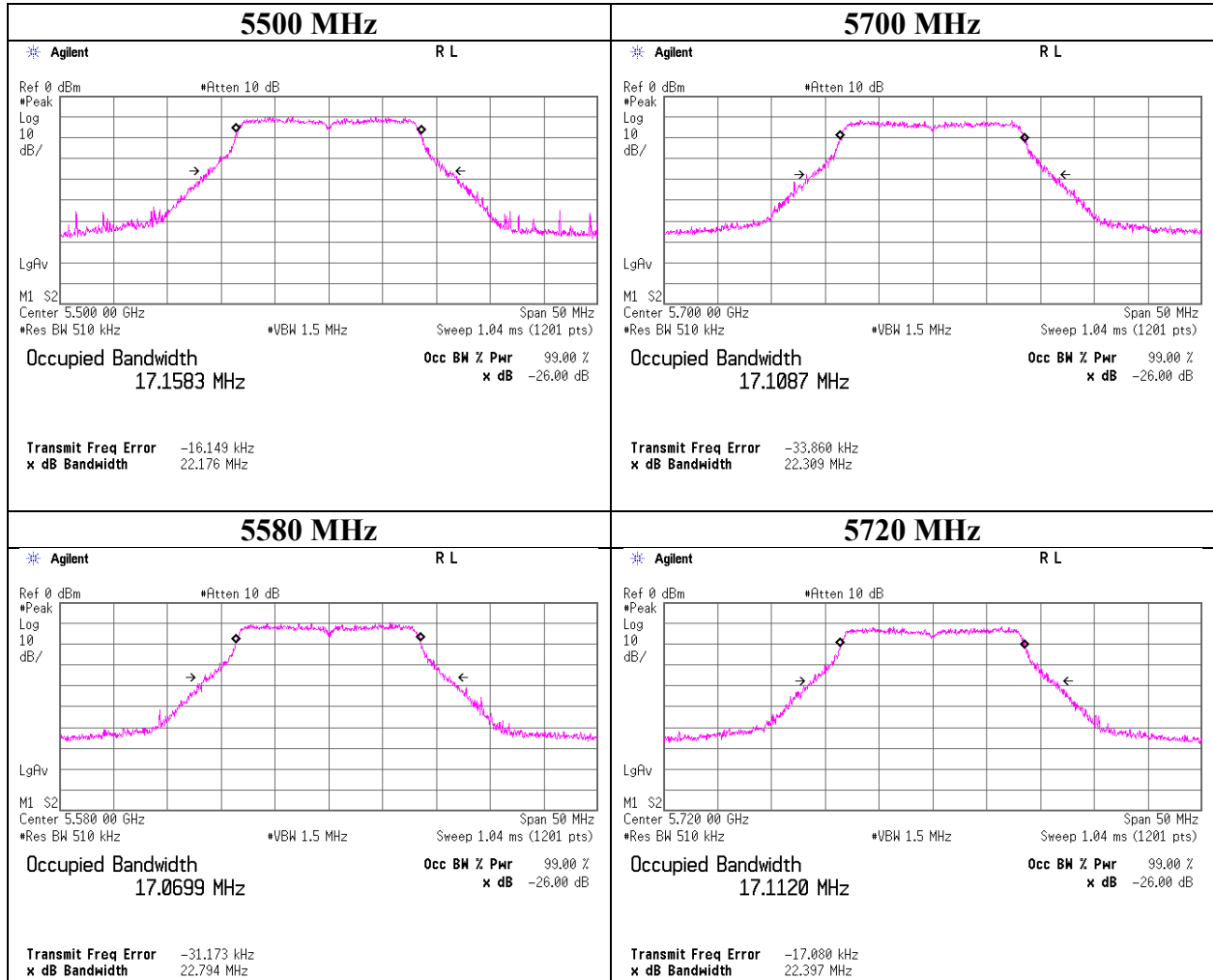
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99 % Occupied Bandwidth

11a



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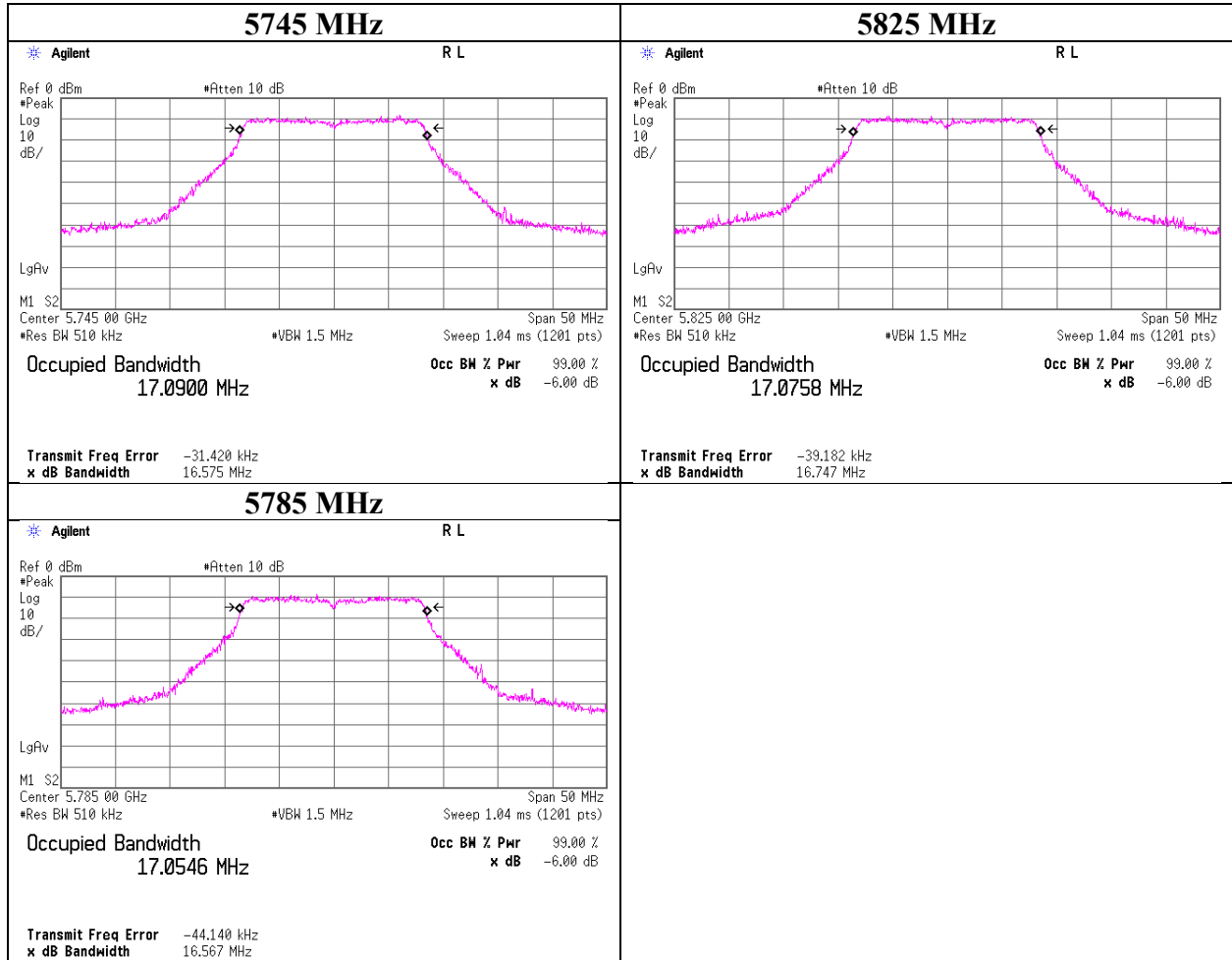
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99 % Occupied Bandwidth

11a



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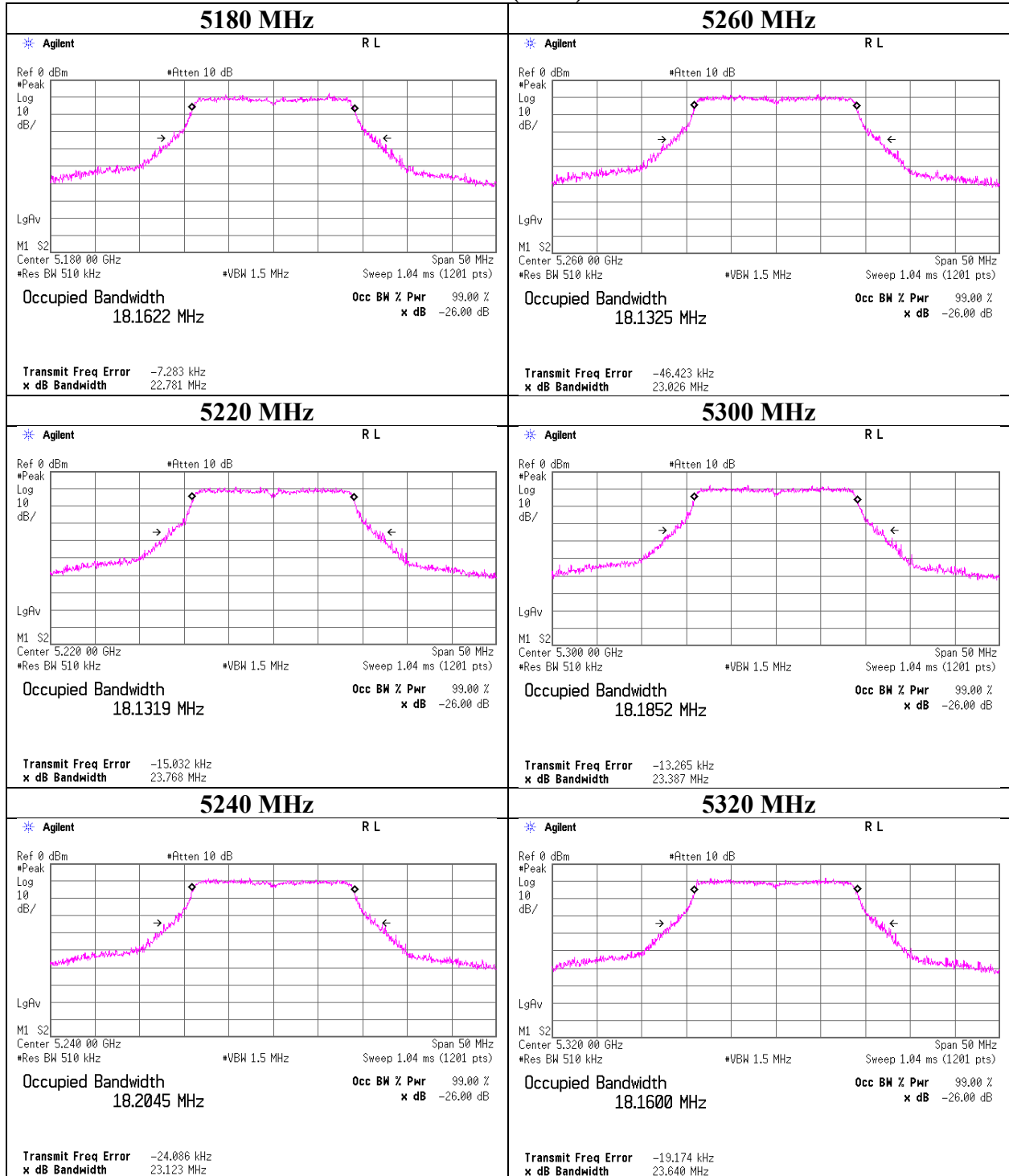
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99 % Occupied Bandwidth

11n-20 (CDD)



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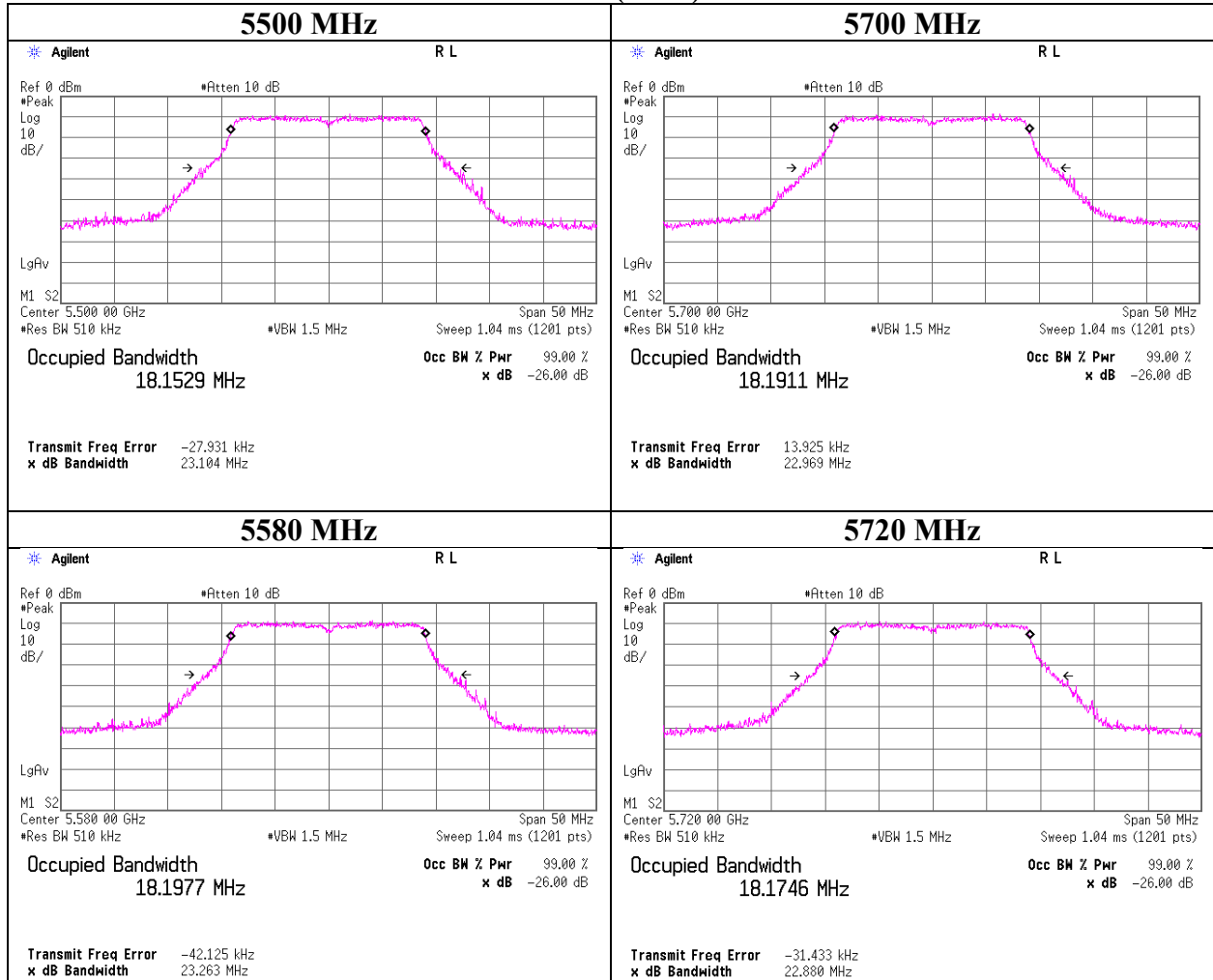
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Facsimile : +81 463 50 6401

99 % Occupied Bandwidth

11n-20 (CDD)



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Shonan EMC Lab.

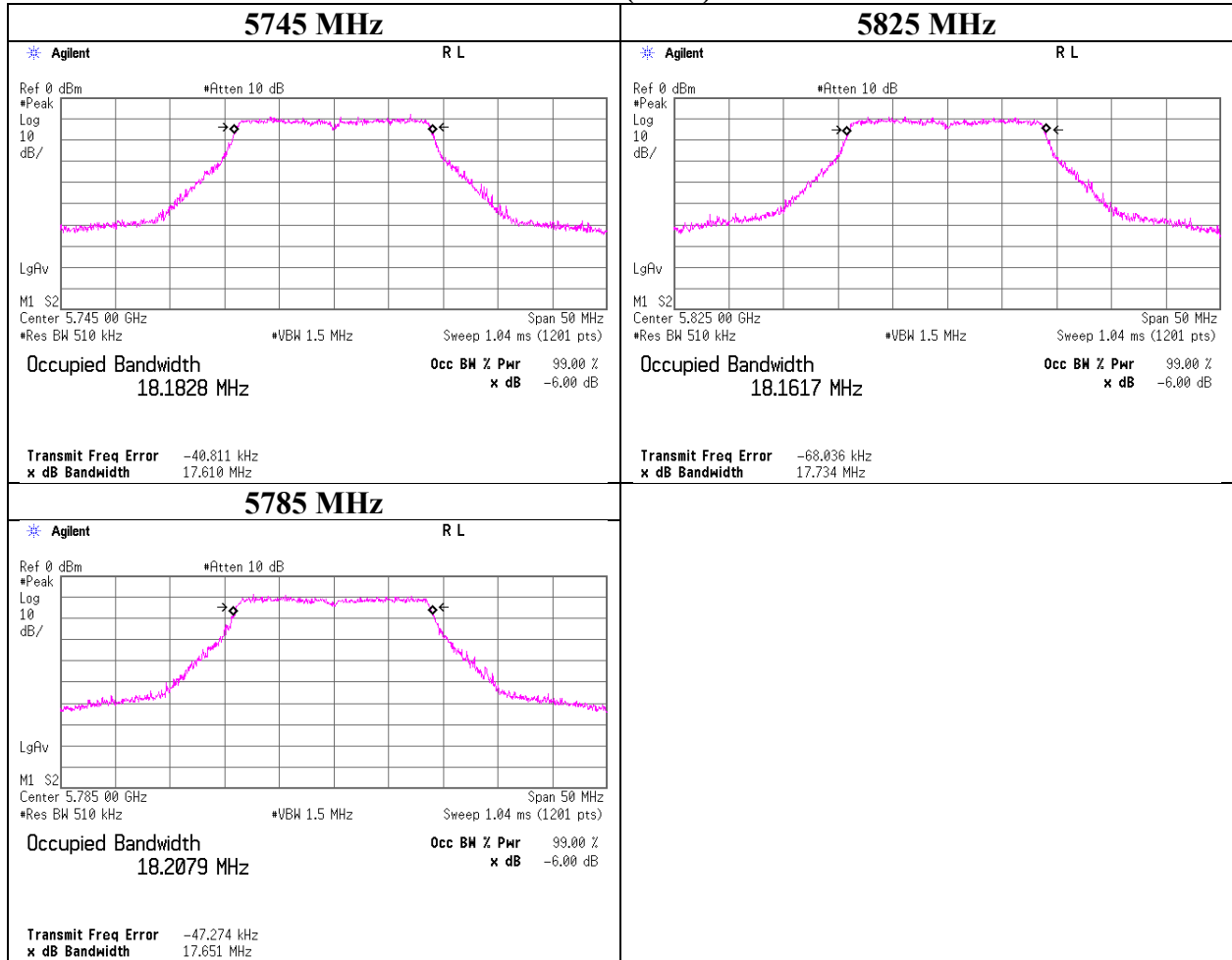
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99 % Occupied Bandwidth

11n-20 (CDD)



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Shonan EMC Lab.

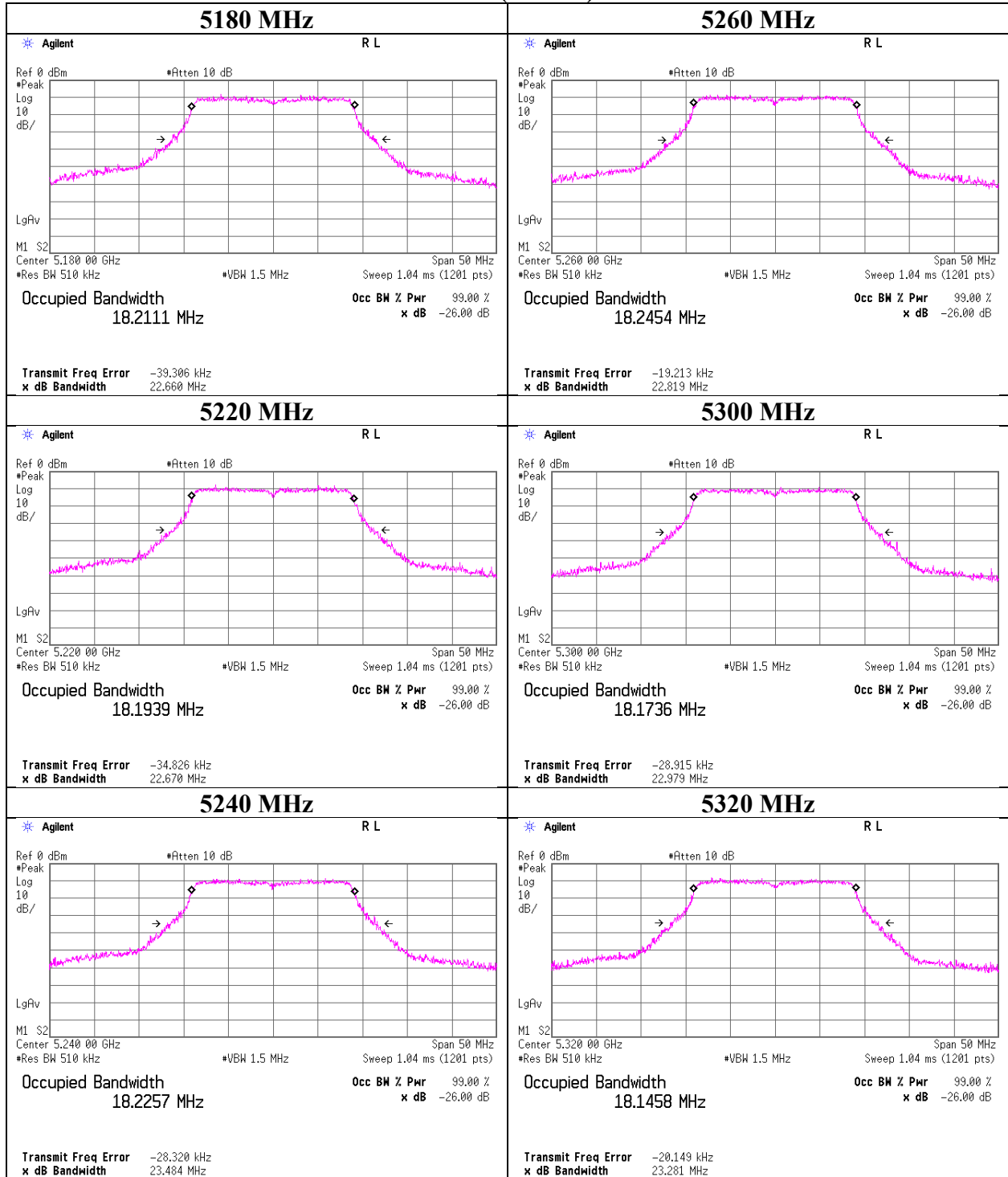
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99 % Occupied Bandwidth

11n-20 (MIMO)



UL Japan, Inc.

Shonan EMC Lab.

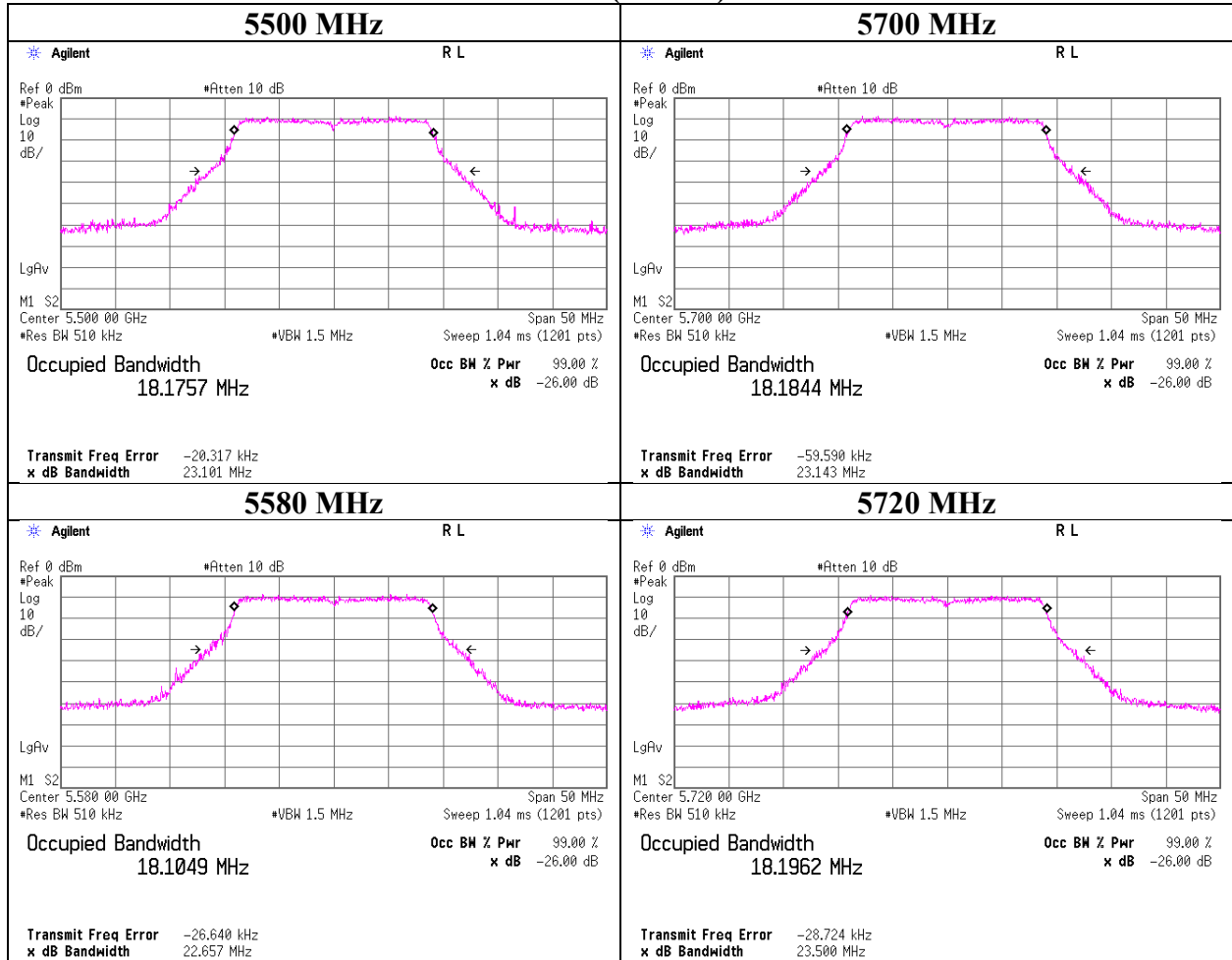
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99 % Occupied Bandwidth

11n-20 (MIMO)



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Shonan EMC Lab.

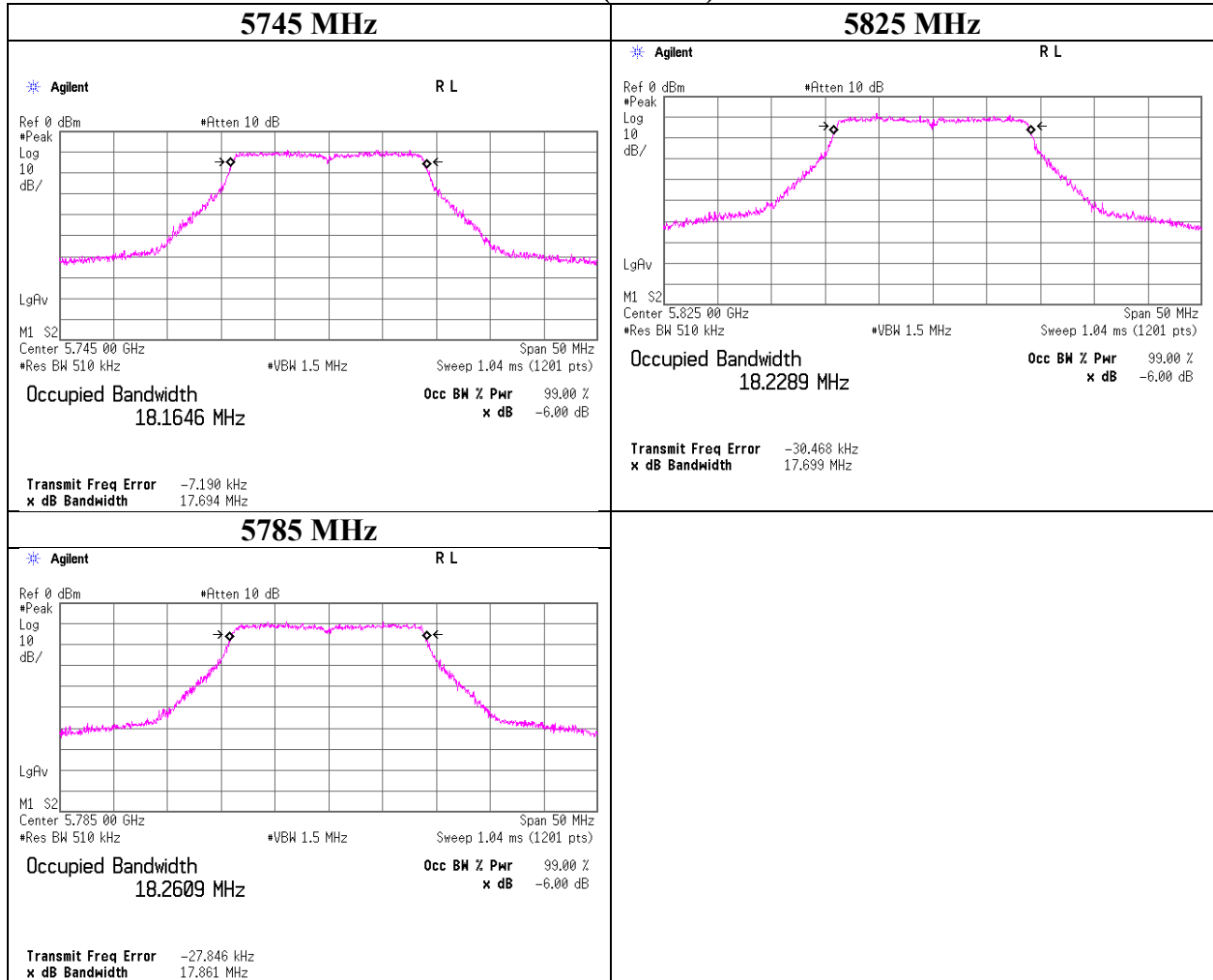
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99 % Occupied Bandwidth

11n-20 (MIMO)



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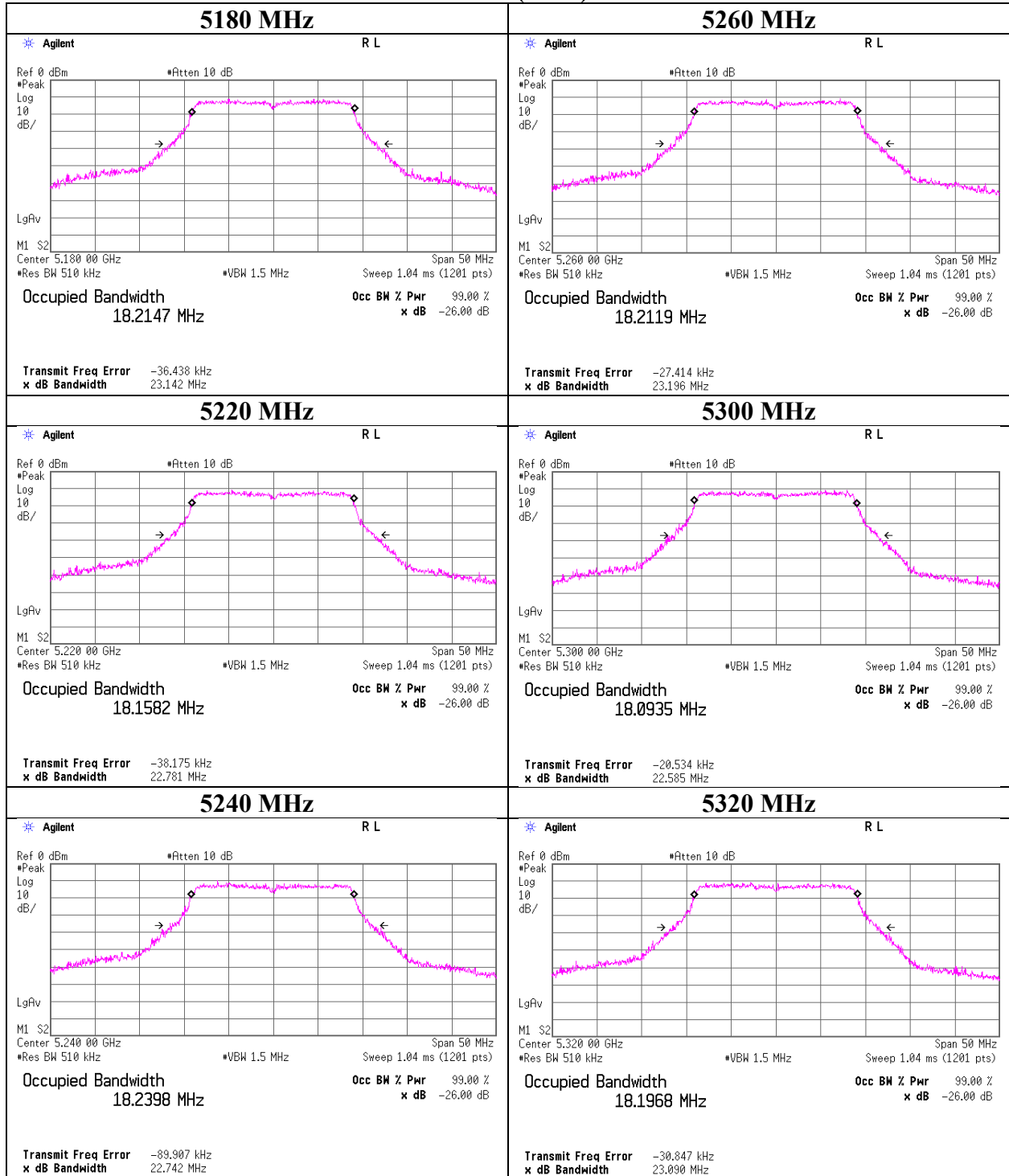
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99 % Occupied Bandwidth

11ac-20 (CDD)



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Shonan EMC Lab.

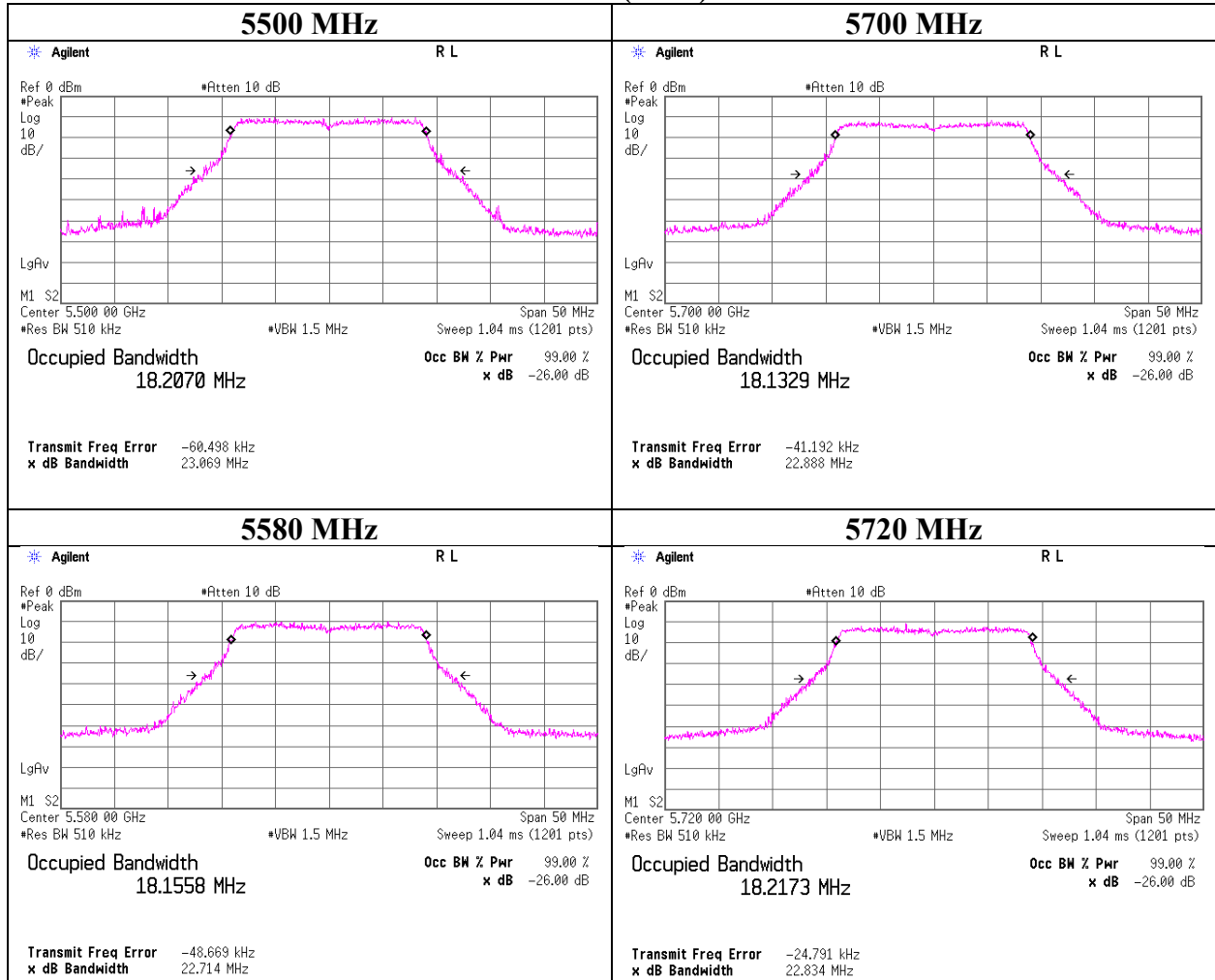
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11ac-20 (CDD)



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Shonan EMC Lab.

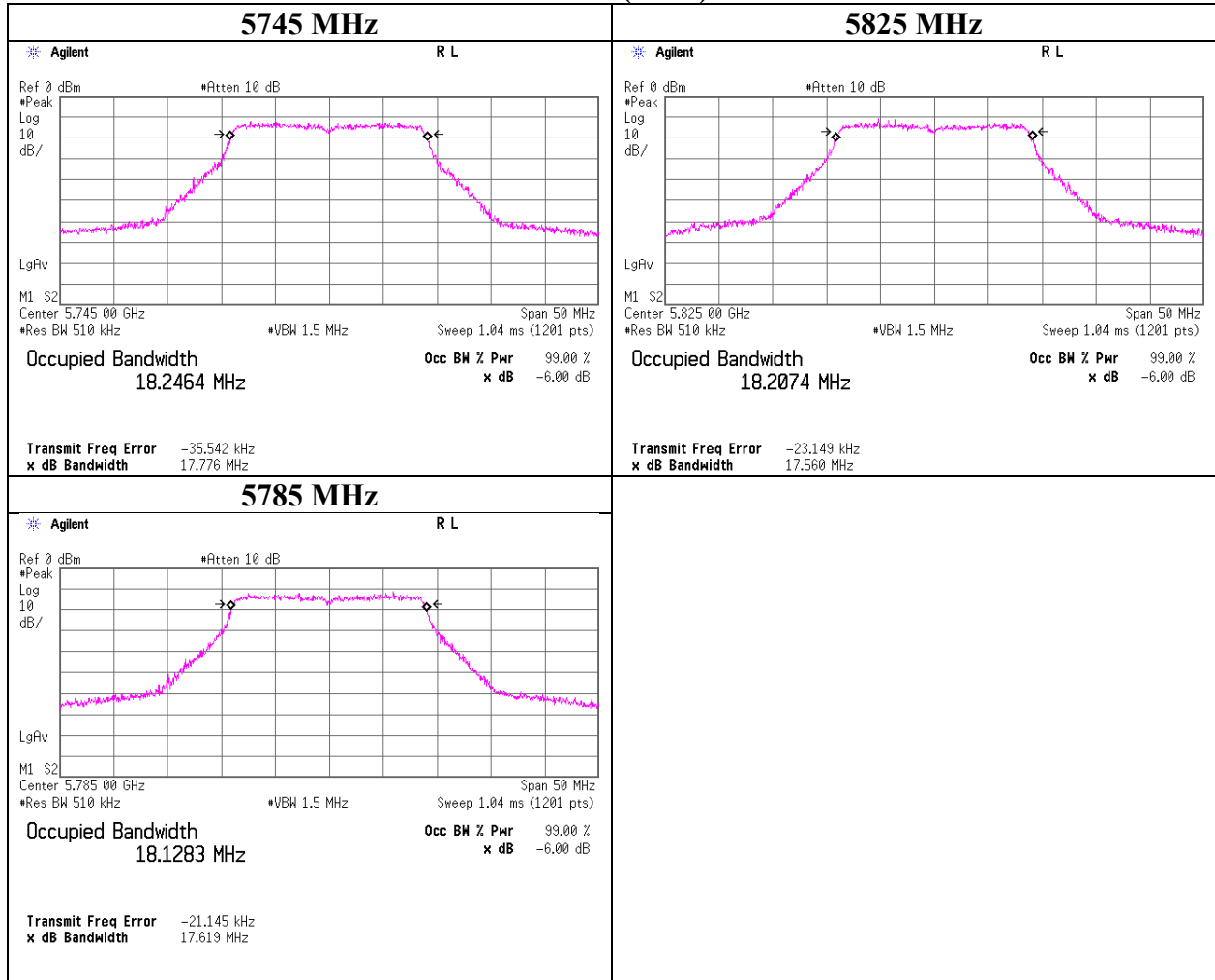
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11ac-20 (CDD)



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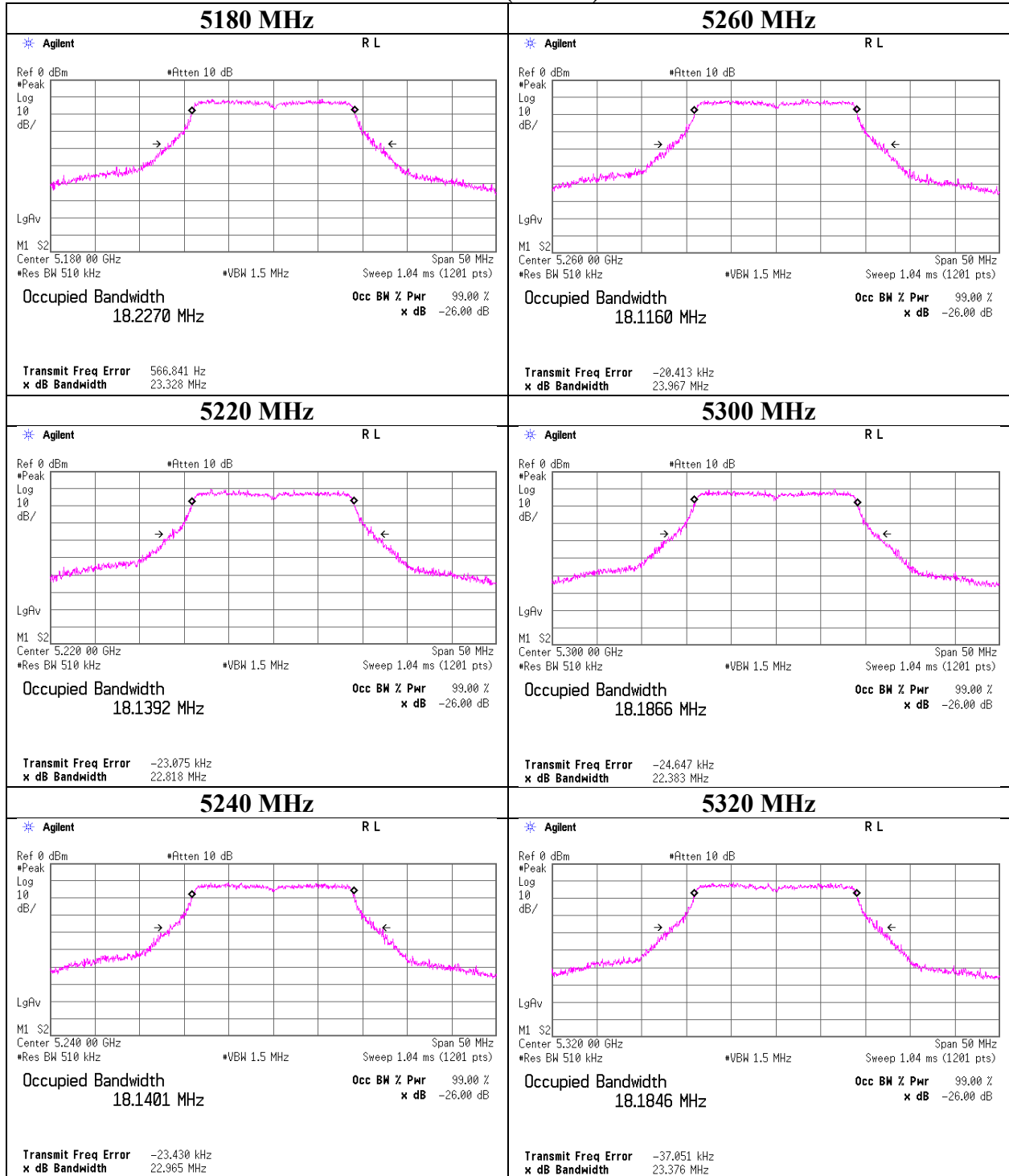
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11ac-20 (MIMO)



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Shonan EMC Lab.

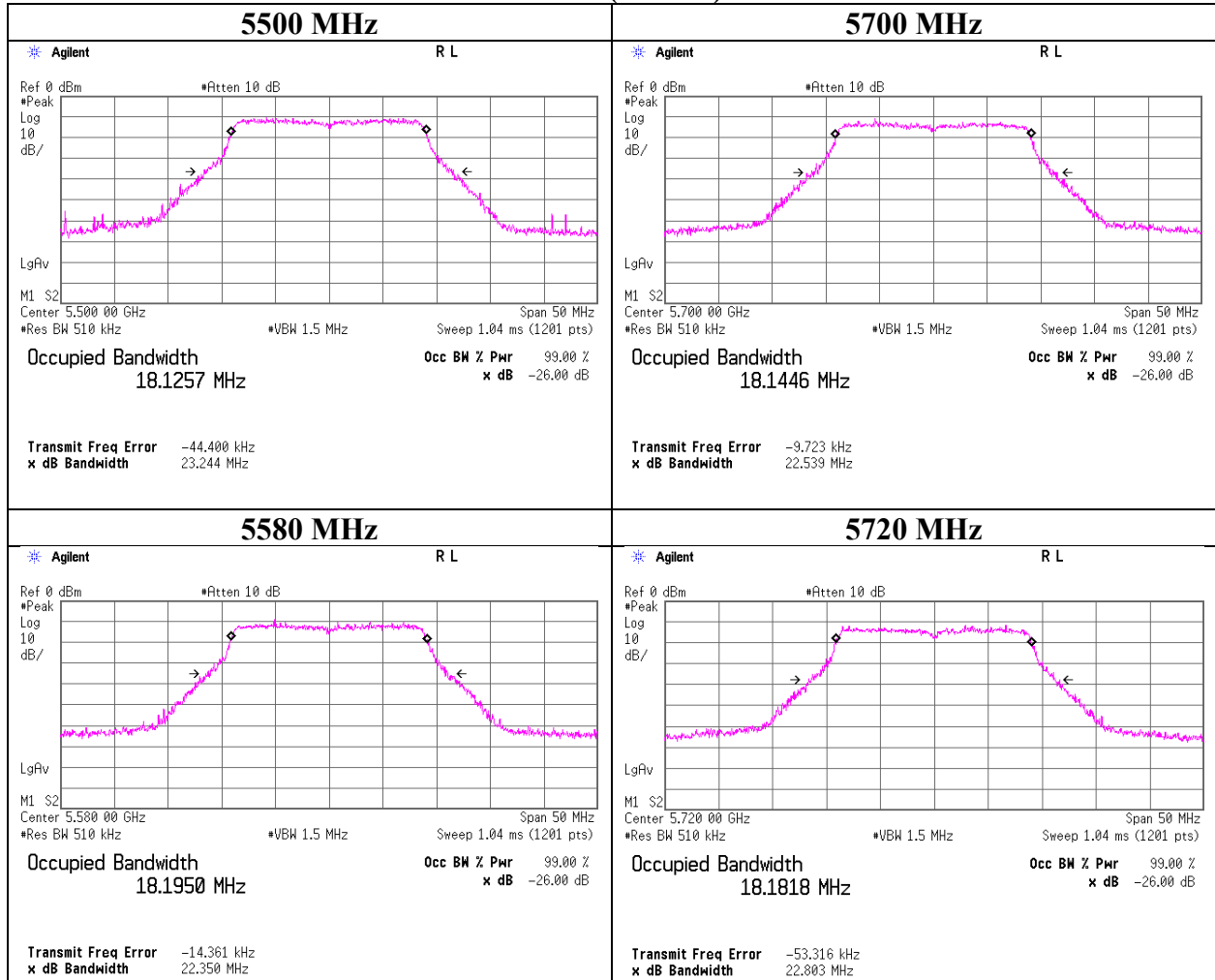
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99 % Occupied Bandwidth

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Shonan EMC Lab.

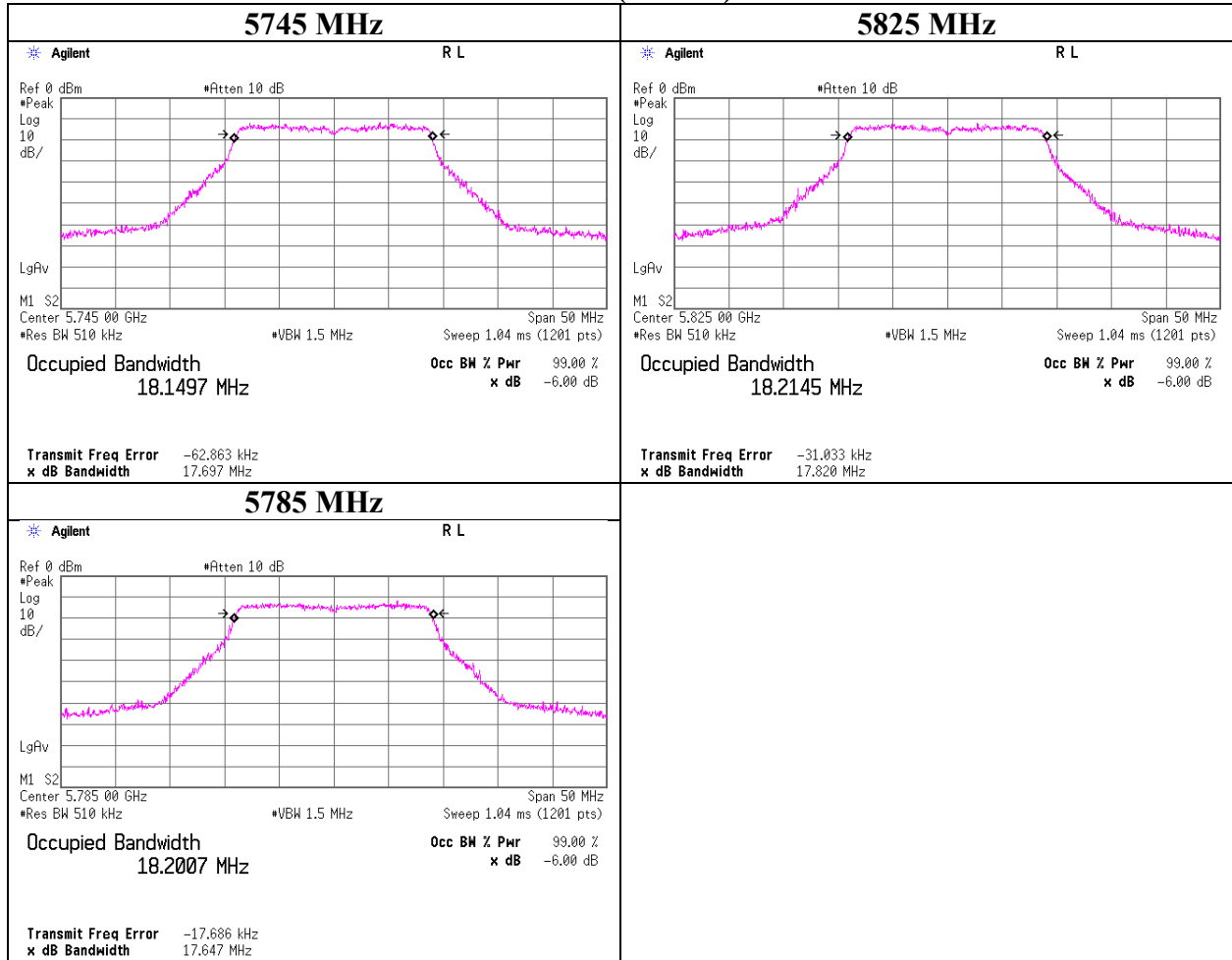
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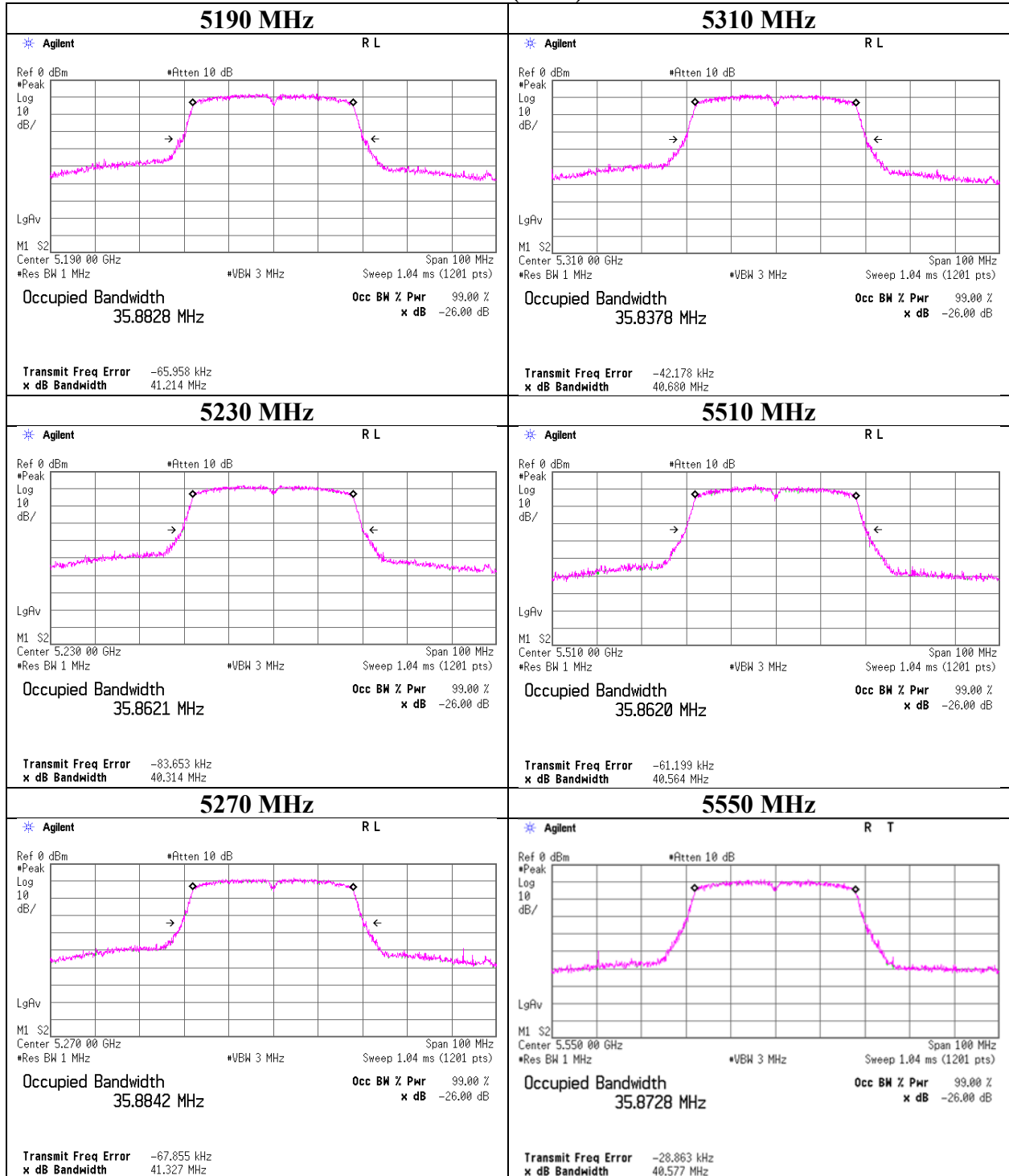
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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99 % Occupied Bandwidth

11n-40 (CDD)



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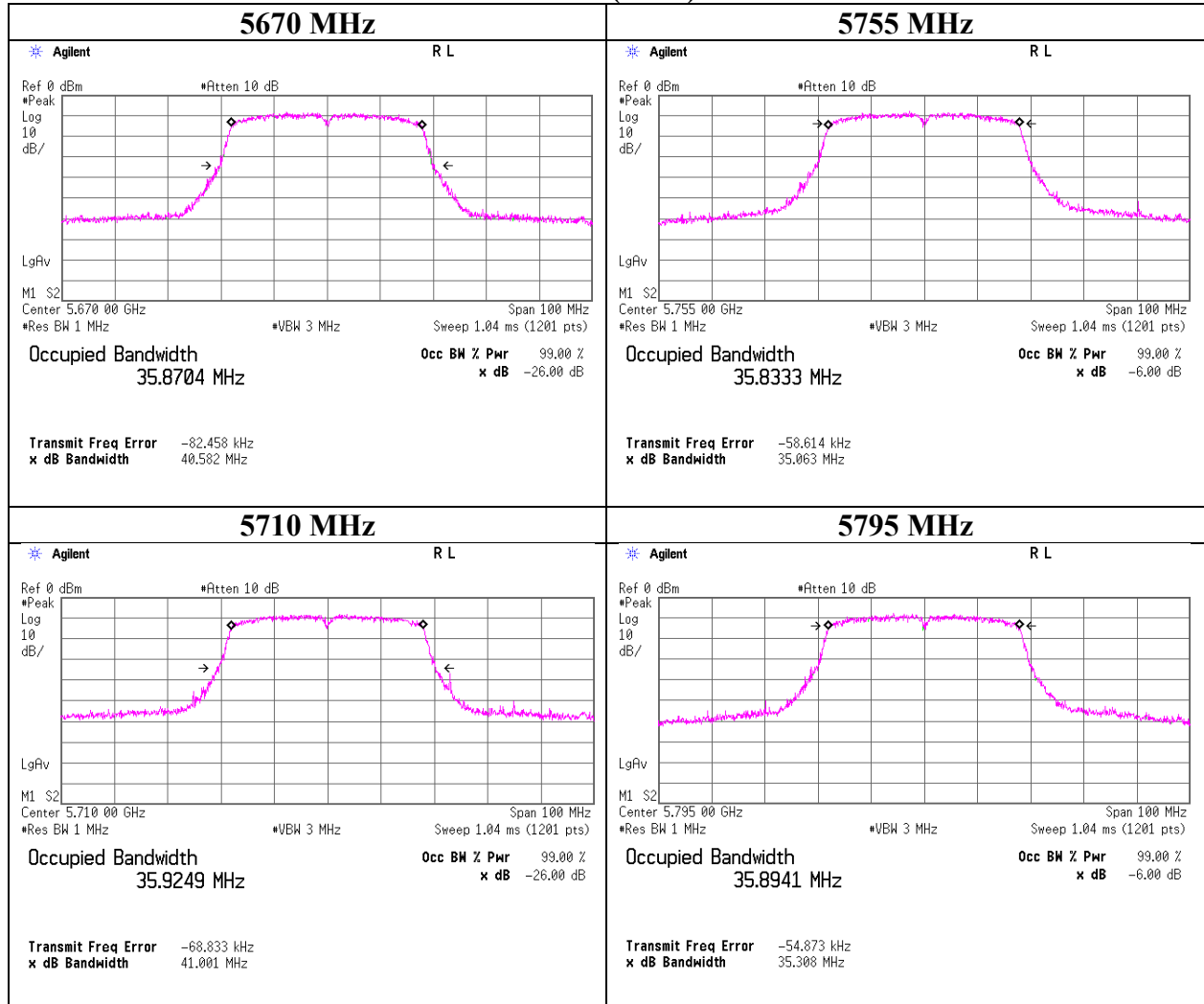
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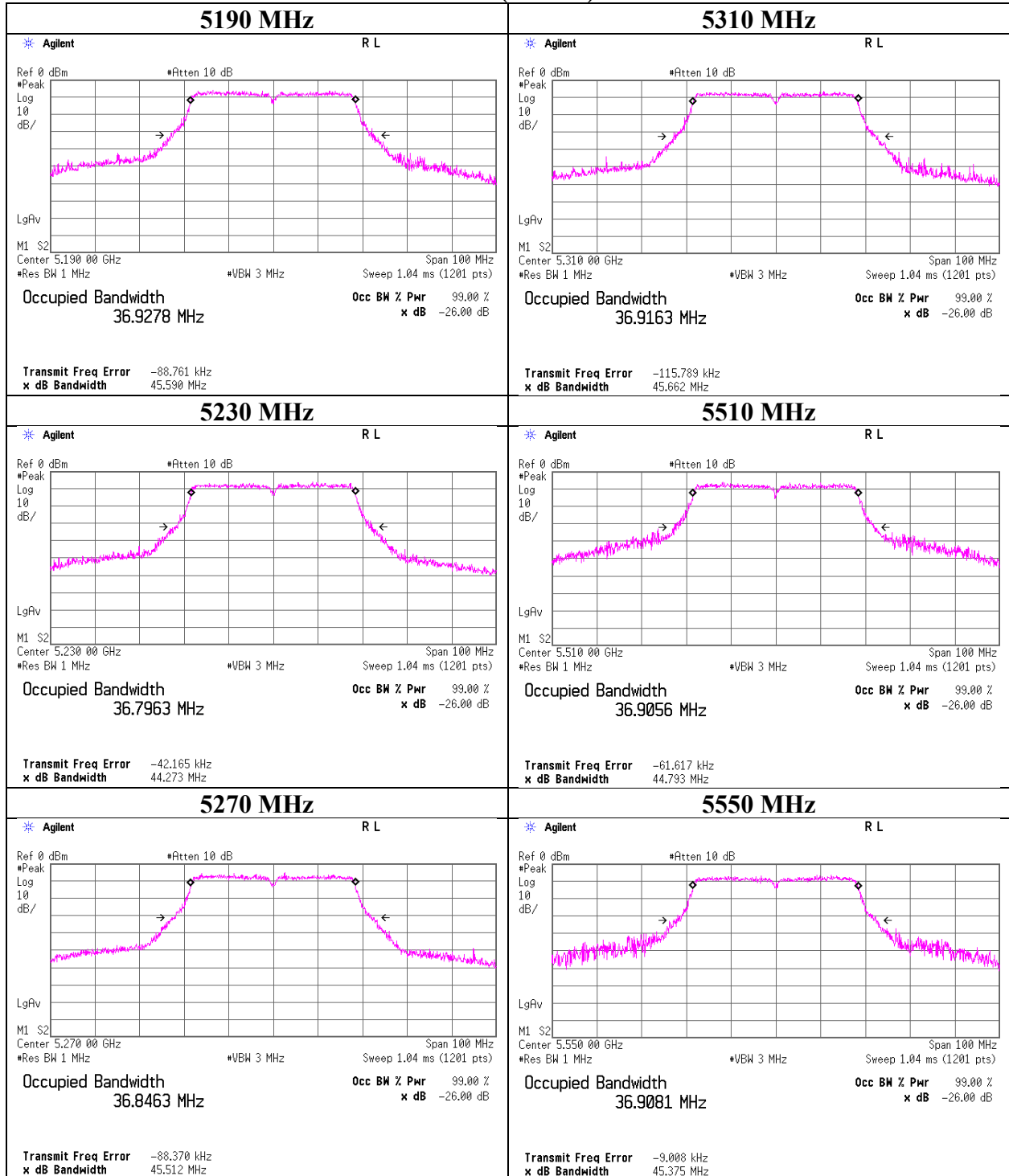
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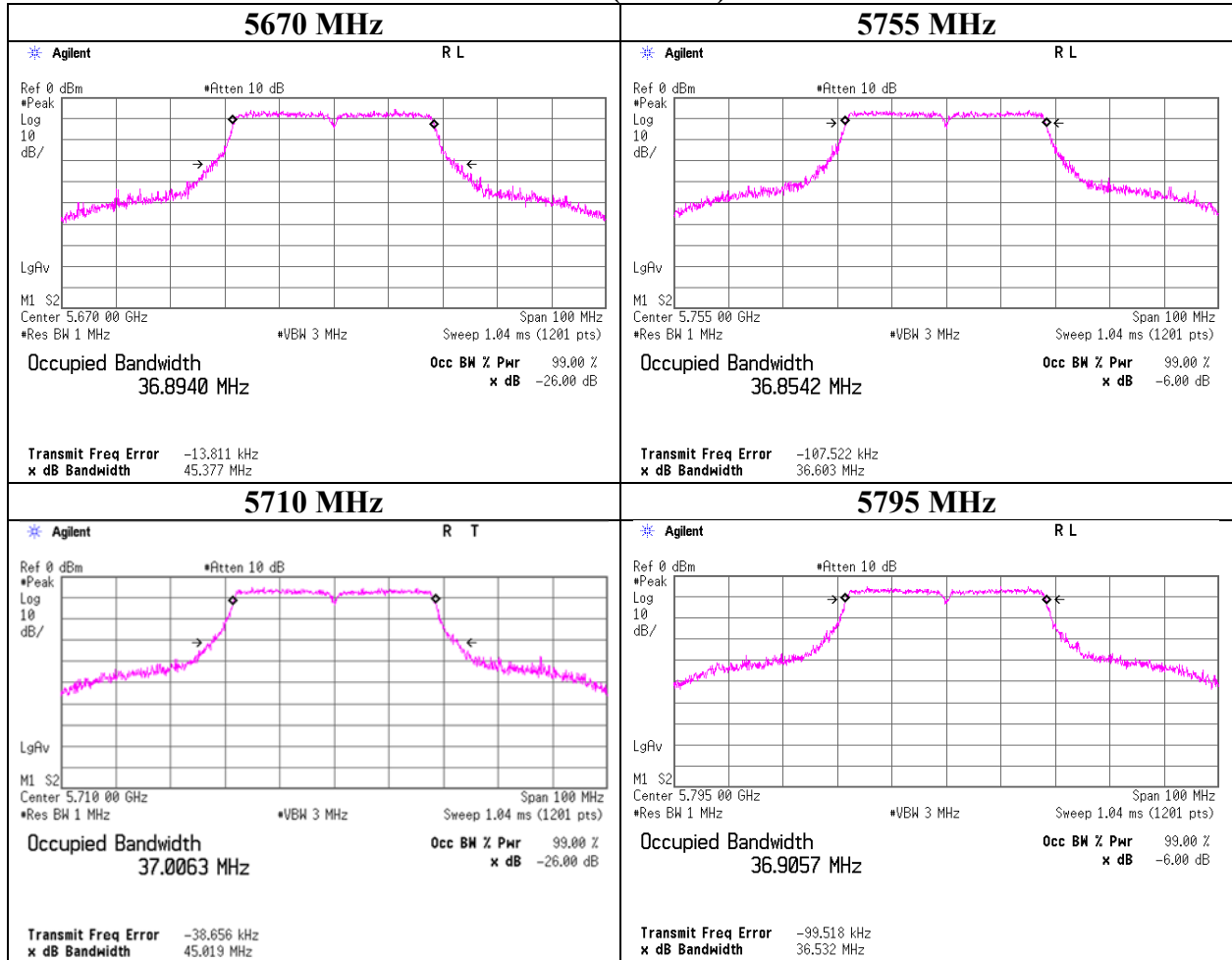
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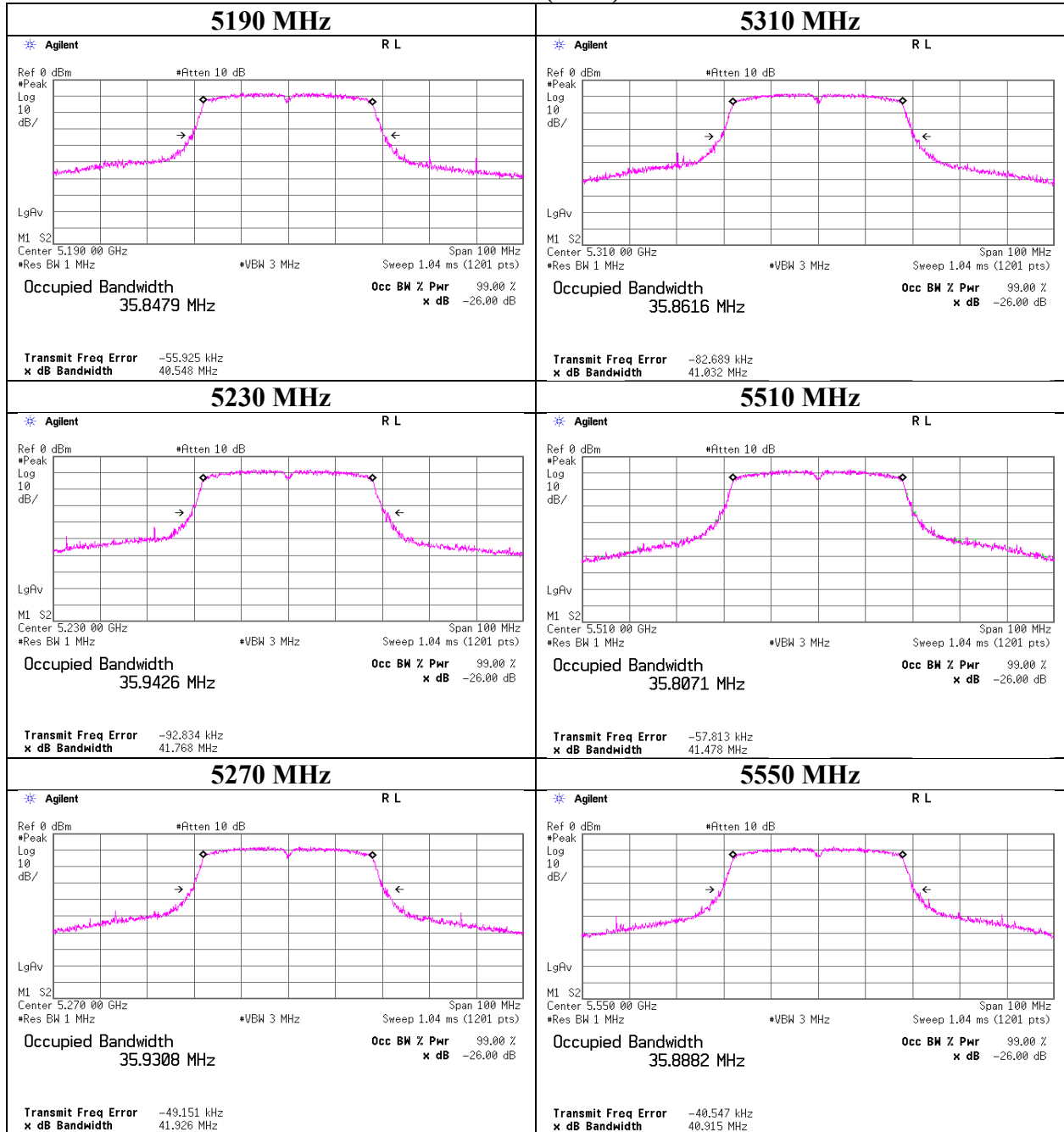
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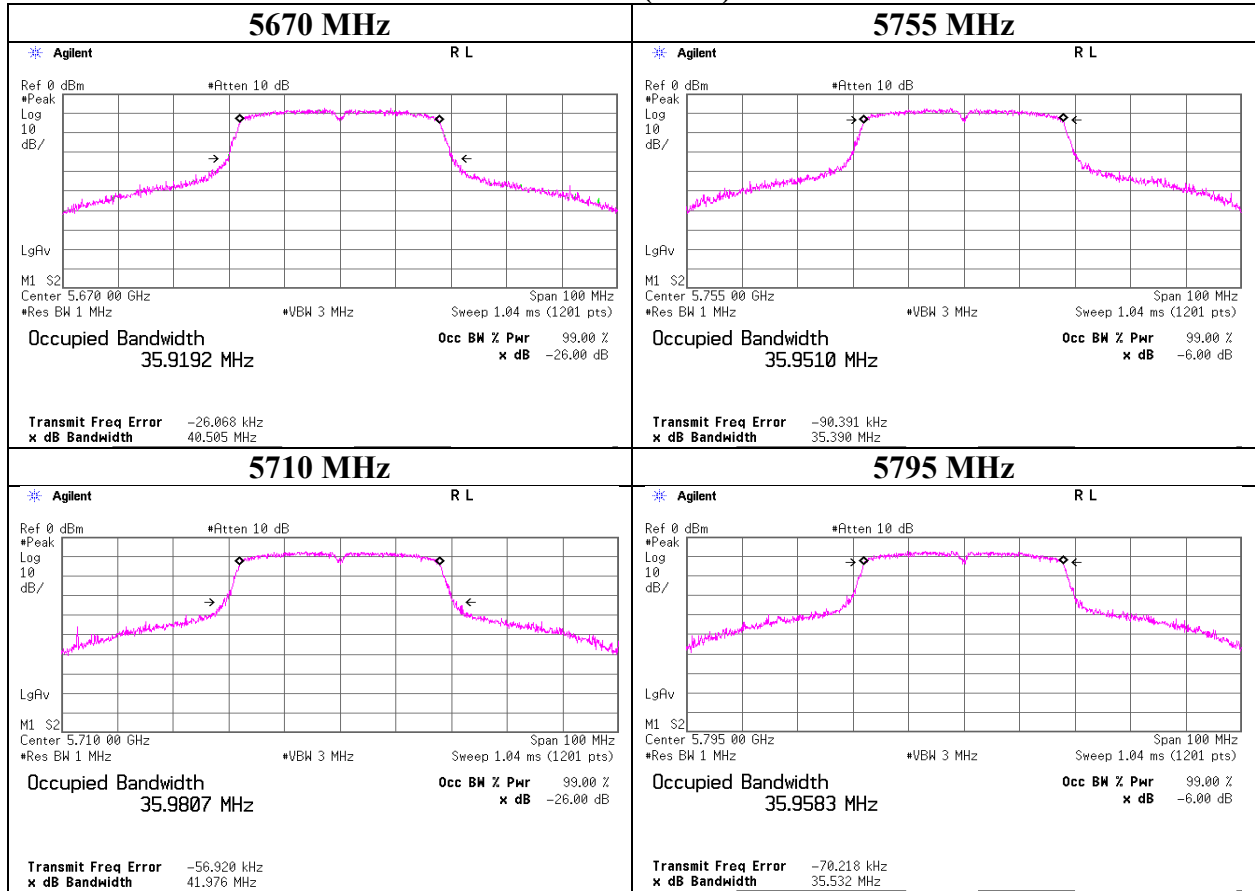
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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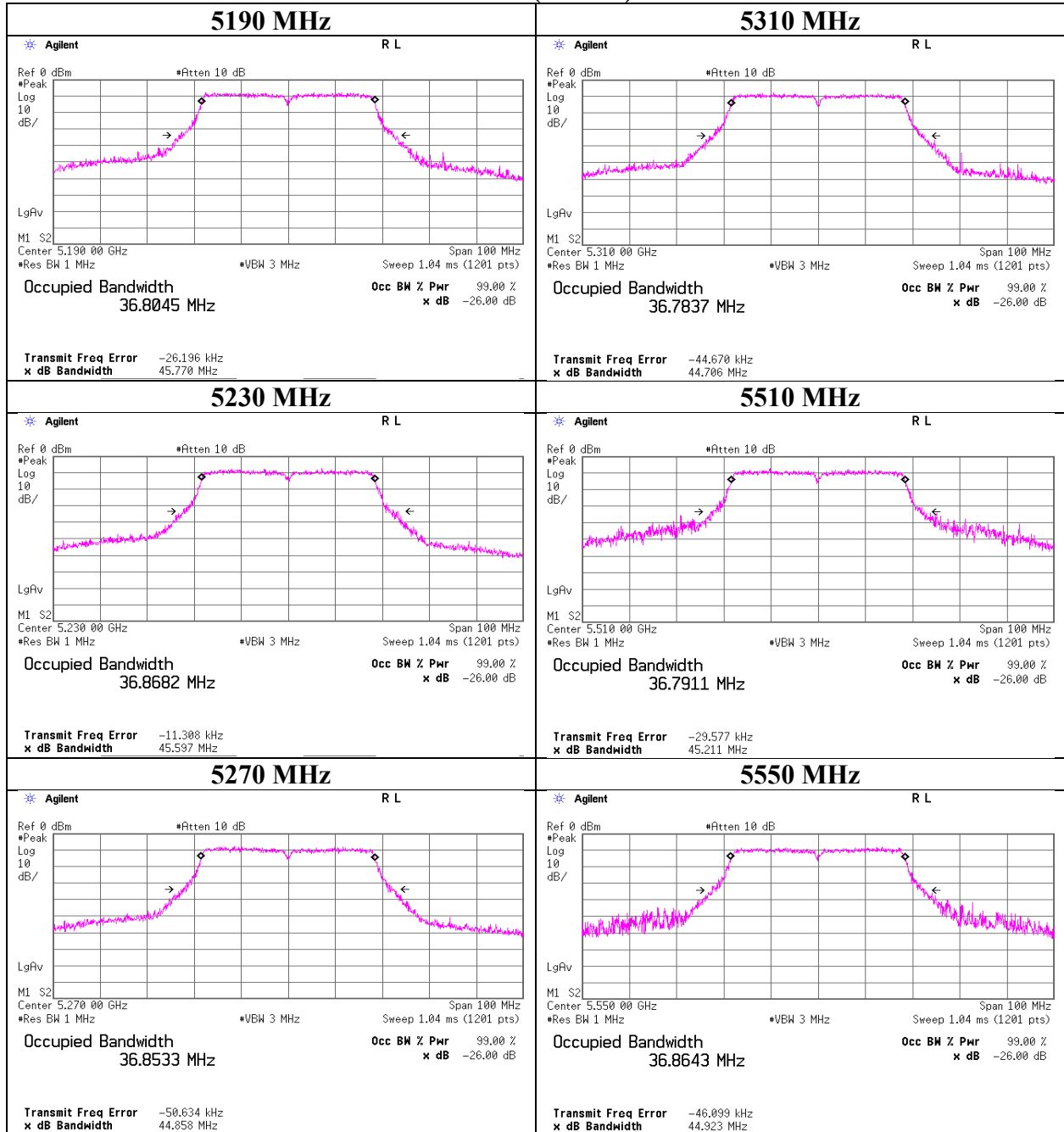
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99 % Occupied Bandwidth

11ac-40 (MIMO)



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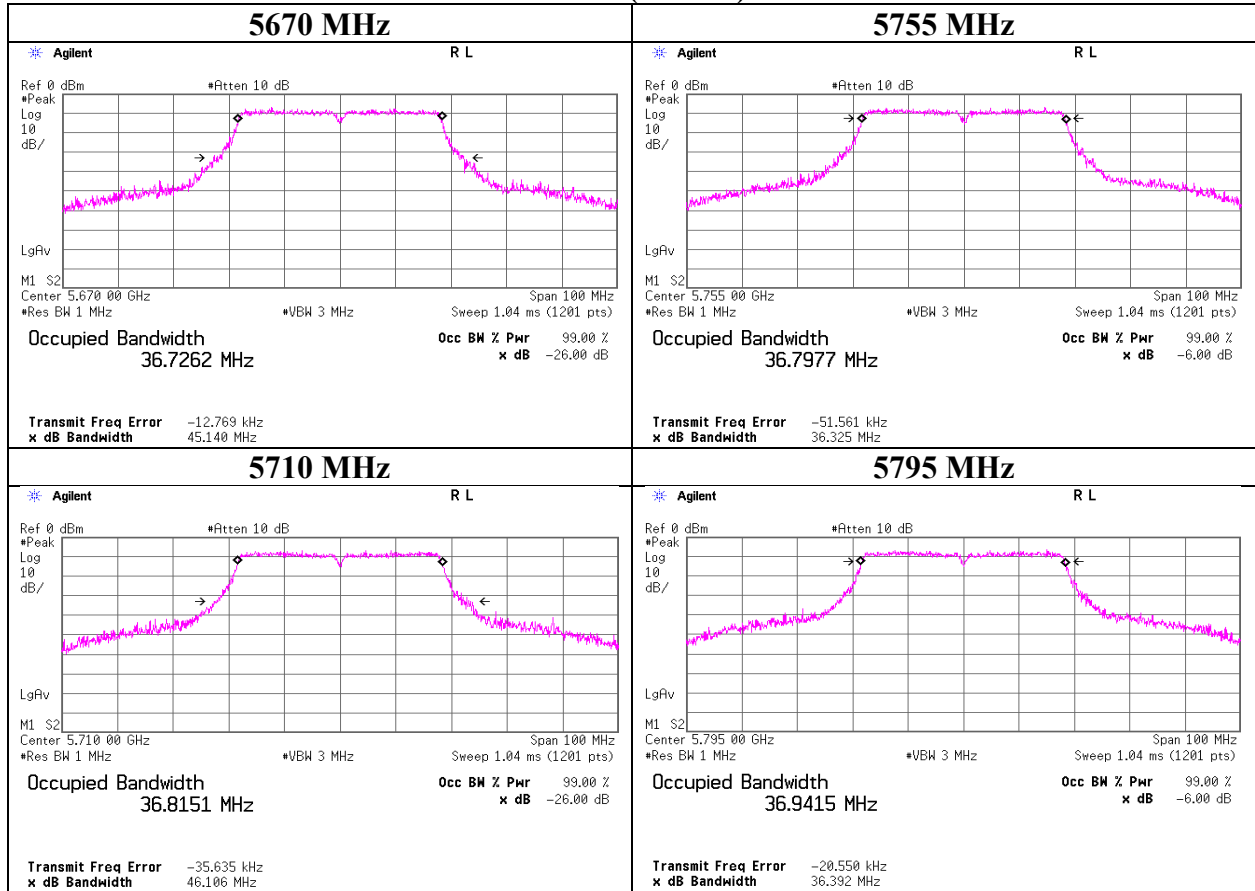
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99 % Occupied Bandwidth

11ac-40 (MIMO)



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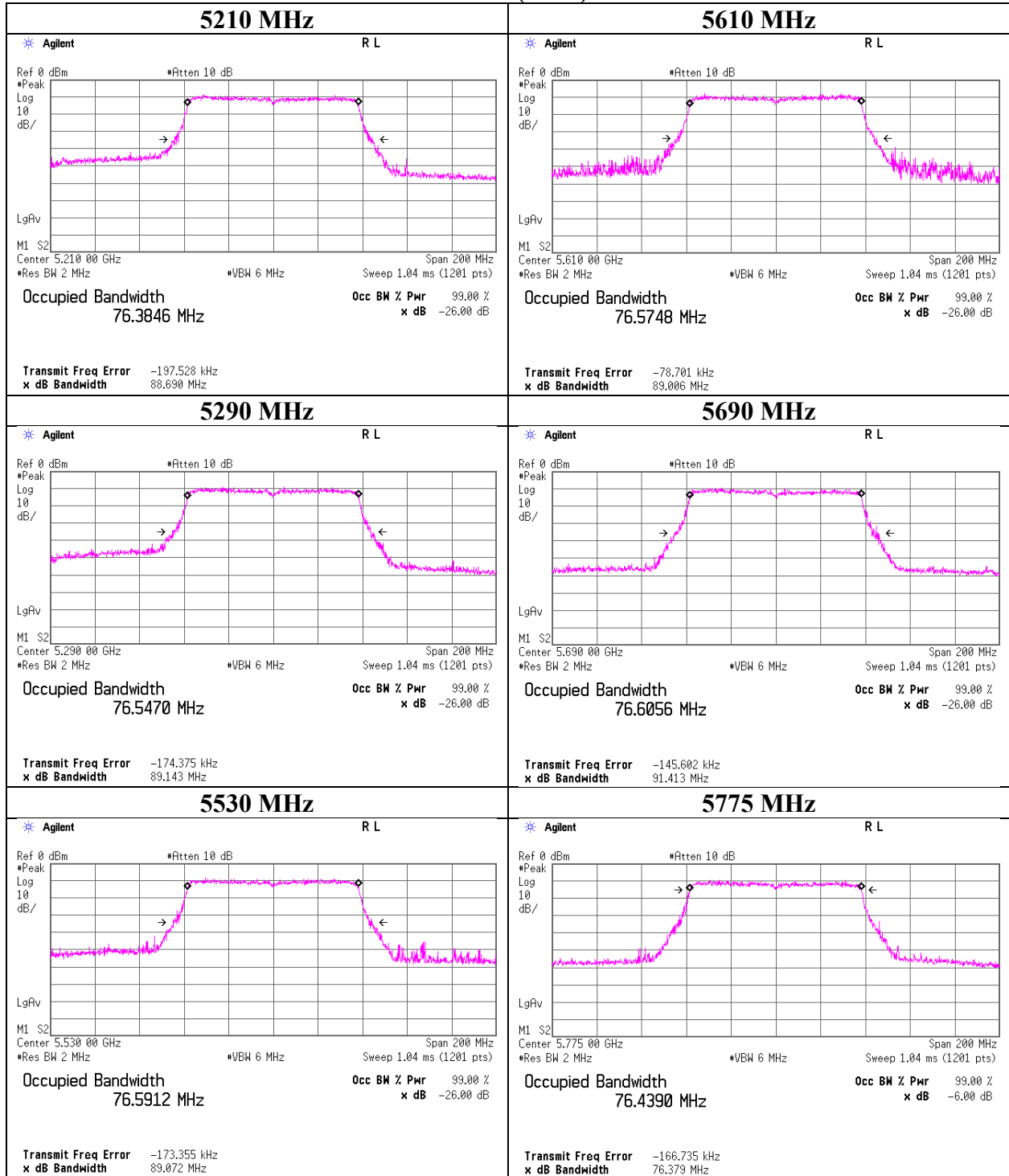
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Facsimile : +81 463 50 6401

99 % Occupied Bandwidth

11ac-80 (CDD)



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Shonan EMC Lab.

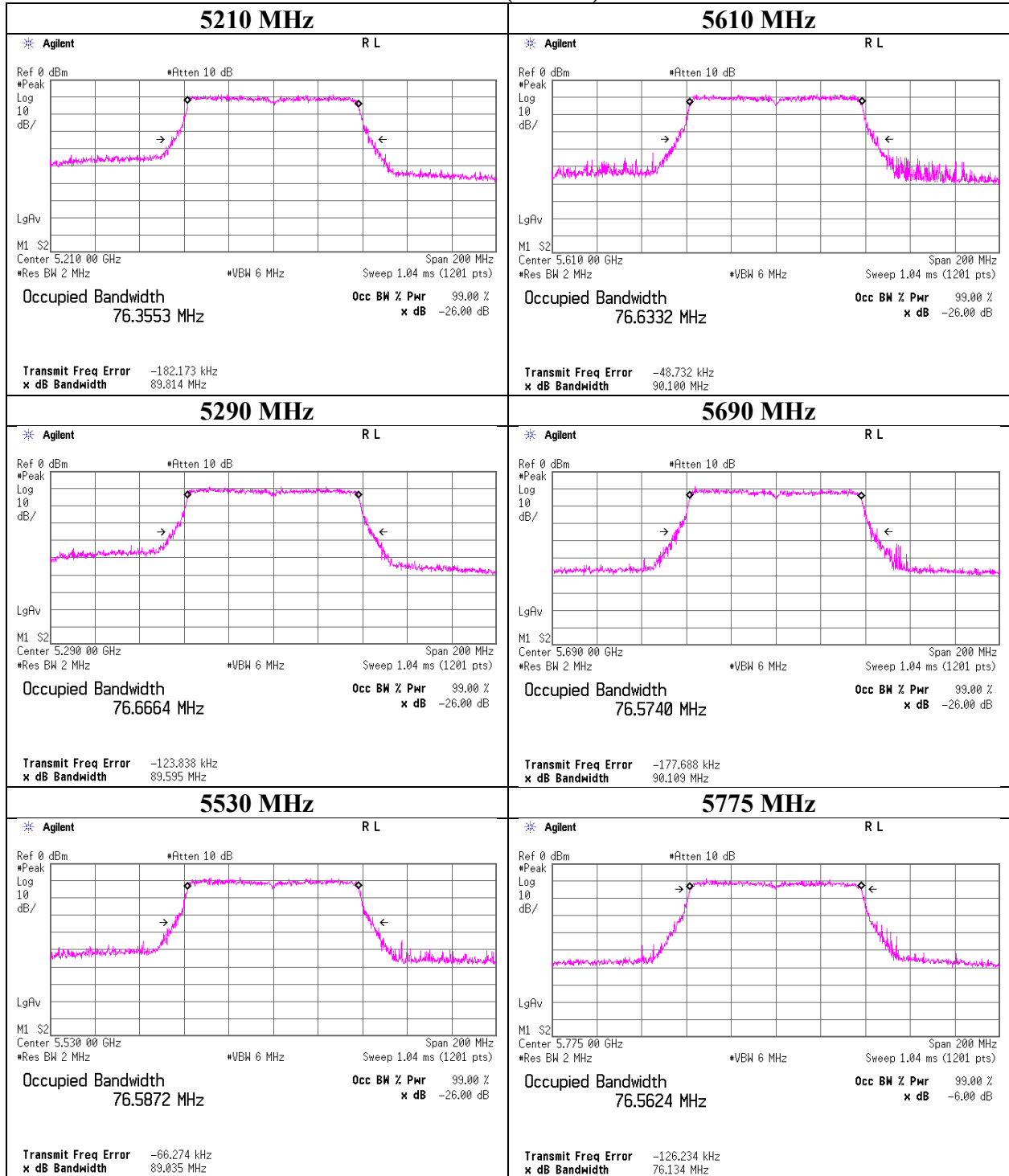
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Facsimile : +81 463 50 6401

99 % Occupied Bandwidth

11ac-80 (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

Report No.	13004393S-E-R2		
Test place	Shonan EMC Lab.		
	No.3 Shielded Room	No.3 Shielded Room	No.1 Shielded Room
Date	September 11, 2019	September 18, 2019	October 3, 2019
Temperature / Humidity	24 deg. C / 58 % RH	24 deg. C / 57 % RH	25 deg. C / 46 % RH
Engineer	Takahiro Kawakami	Hiromasa Sato	Makoto Hosaka
Mode	Tx		

11a (CDD)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 1	5745	16.449	> 0.500
	5785	16.508	> 0.500
	5825	16.500	> 0.500

11n-20 (CDD)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 1	5745	17.707	> 0.500
	5785	17.735	> 0.500
	5825	17.732	> 0.500

11n-20 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 1	5745	17.689	> 0.500
	5785	17.750	> 0.500
	5825	17.711	> 0.500

11ac-20 (CDD)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 1	5745	17.738	> 0.500
	5785	17.709	> 0.500
	5825	17.768	> 0.500

11ac-20 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 1	5745	17.705	> 0.500
	5785	17.743	> 0.500
	5825	17.724	> 0.500

6 dB Bandwidth

Report No.	13004393S-E-R2			
Test place	Shonan EMC Lab.			
	No.3 Shielded Room	No.3 Shielded Room	No.3 Shielded Room	No.1 Shielded Room
Date	September 12, 2019	September 13, 2019	September 19, 2019	October 3, 2019
Temperature / Humidity	25 deg. C / 50 % RH	25 deg. C / 52 % RH	25 deg. C / 56 % RH	25 deg. C / 46 % RH
Engineer	Hiomasa Sato	Kenichi Adachi	Kazuya Noda	Makoto Hosaka
Mode	Tx			

11n-40 (CDD)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 0	5755	31.382	> 0.500
	5795	35.181	> 0.500

11n-40 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 0	5755	36.567	> 0.500
	5795	36.526	> 0.500

11ac-40 (CDD)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 0	5755	33.862	> 0.500
	5795	35.507	> 0.500

11ac-40 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 0	5755	36.560	> 0.500
	5795	36.550	> 0.500

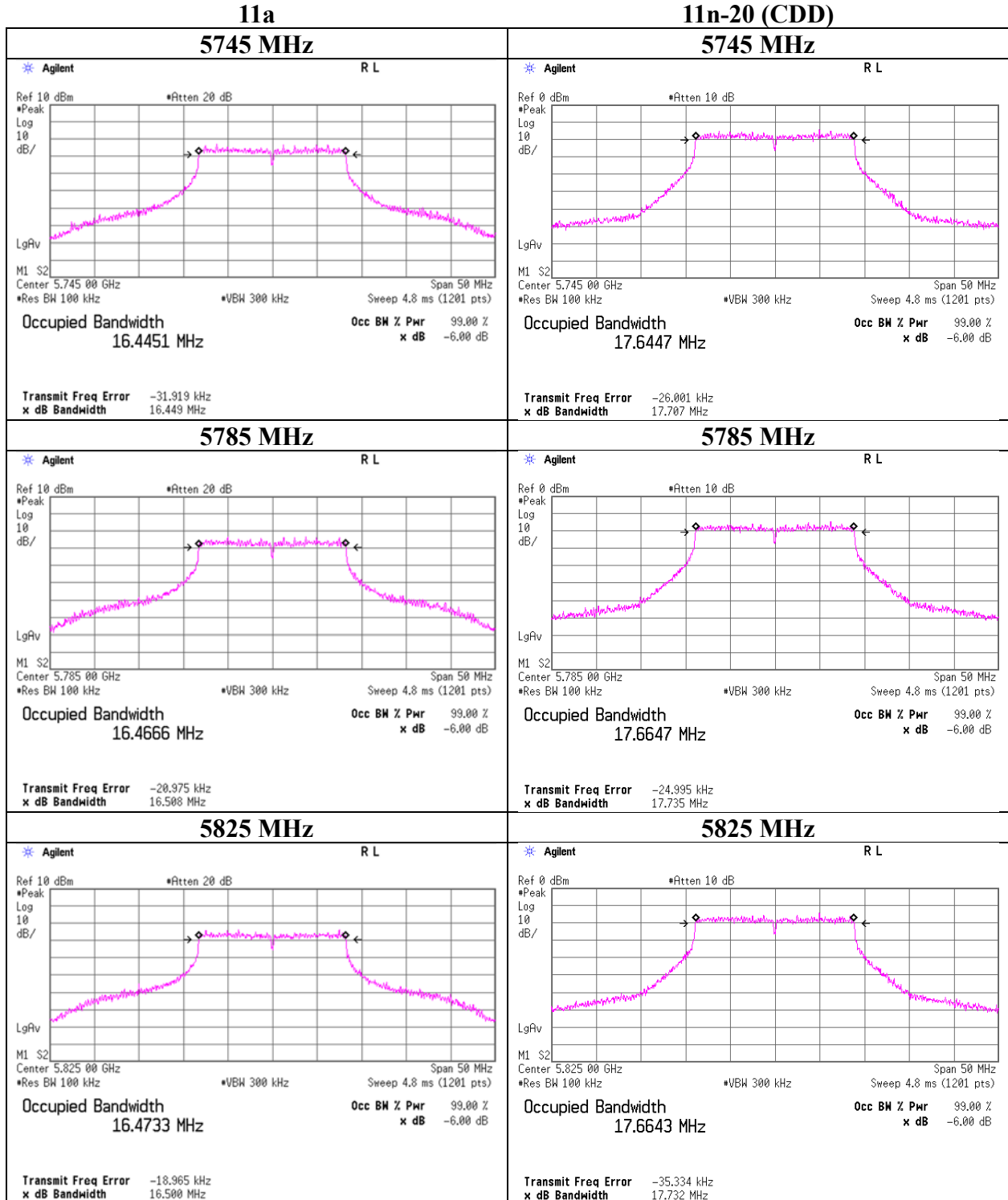
11ac-80 (CDD)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 1	5775	76.487	> 0.500

11ac-80 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Chain 1	5775	76.499	> 0.500

6 dB Bandwidth



UL Japan, Inc.

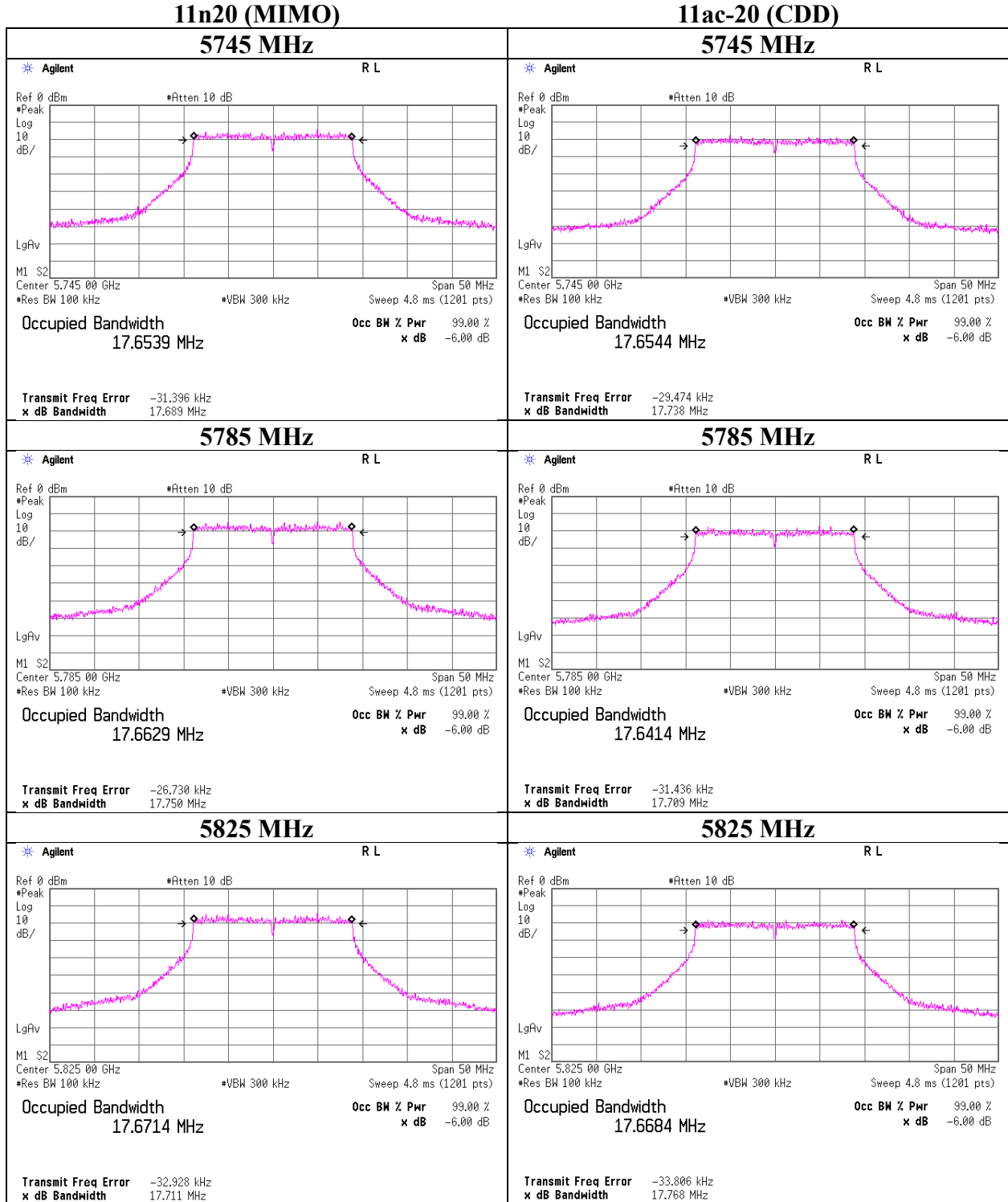
Shonan EMC Lab.

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

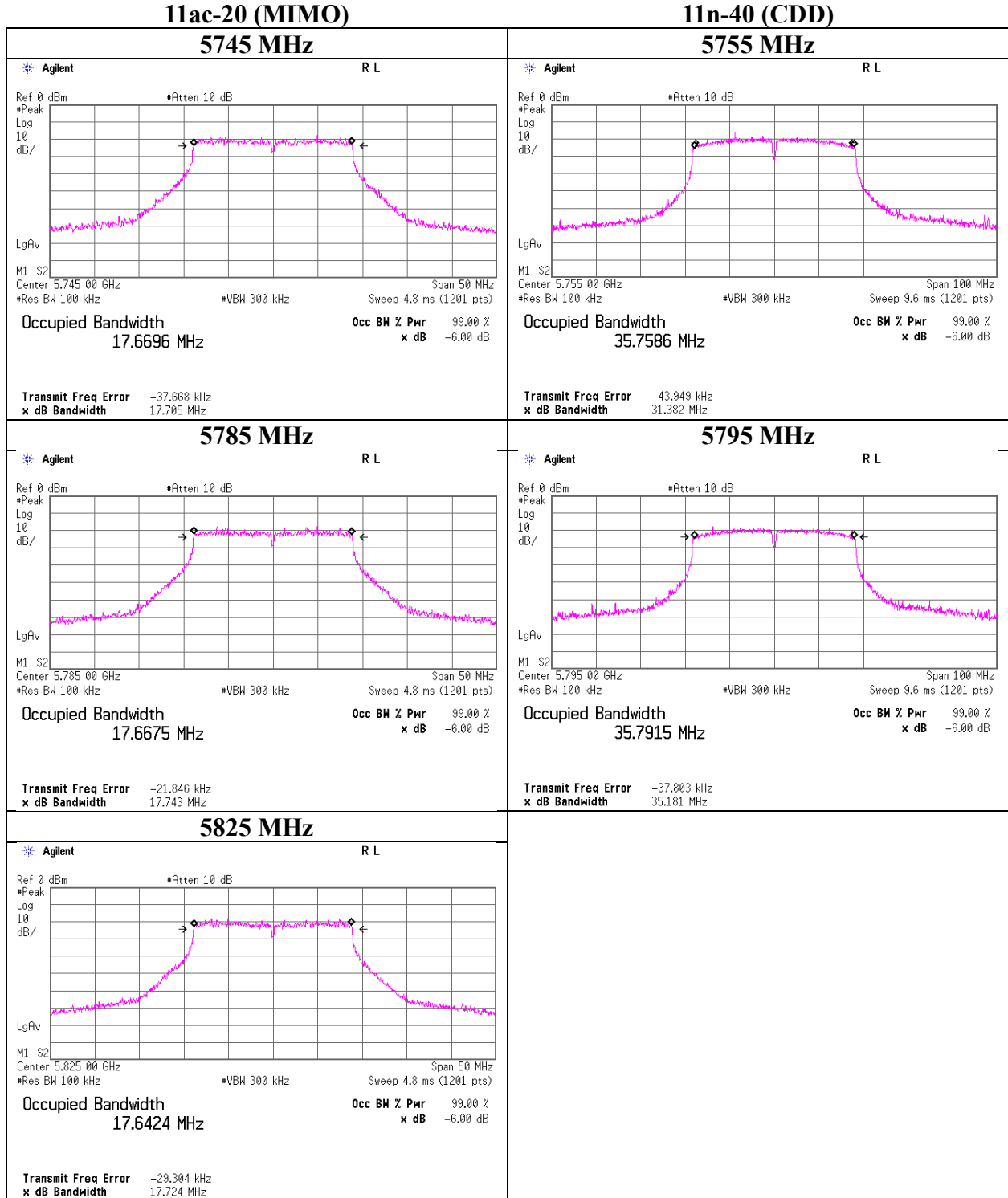
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

6 dB Bandwidth



6 dB Bandwidth



UL Japan, Inc.

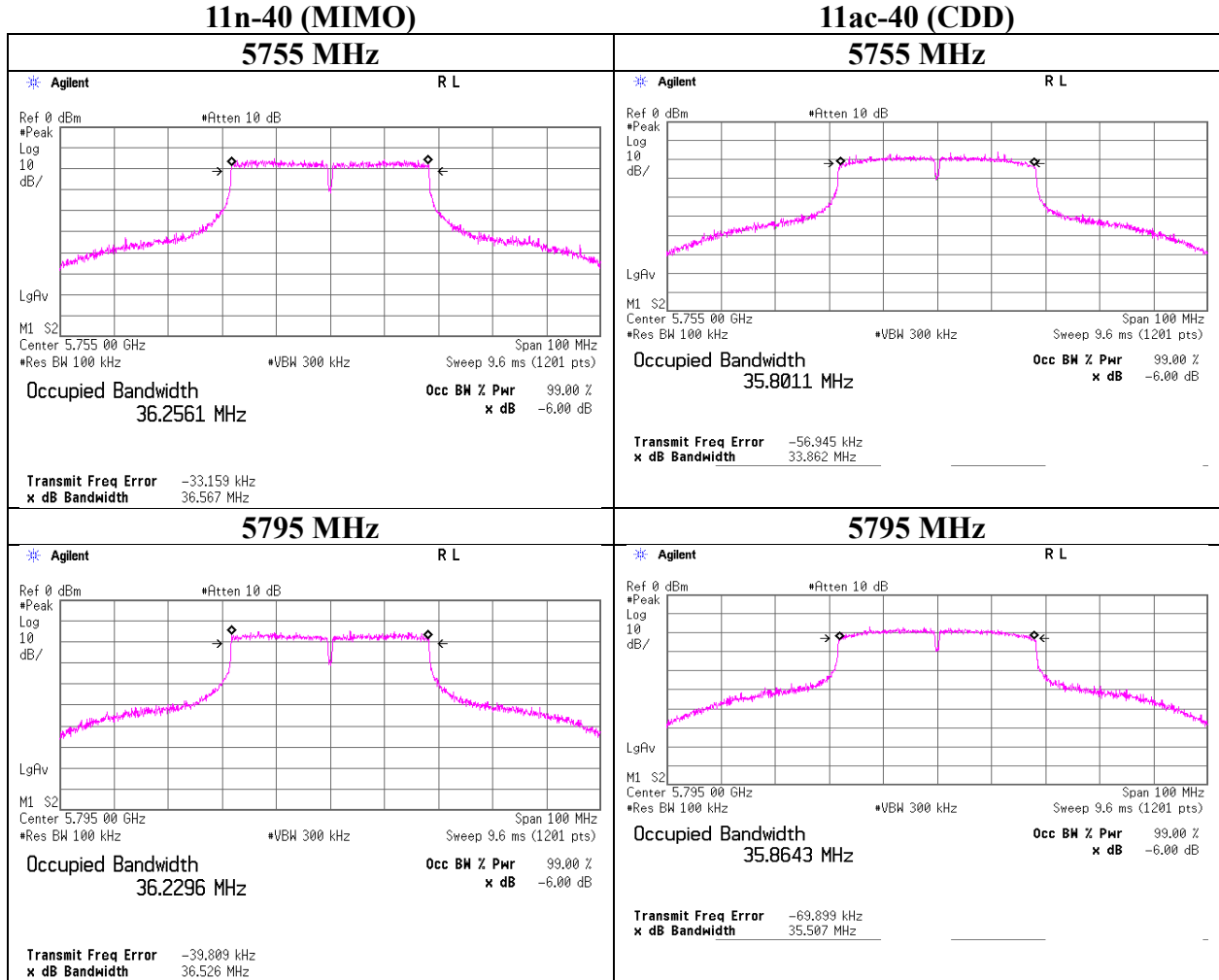
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

6 dB Bandwidth



UL Japan, Inc.

Shonan EMC Lab.

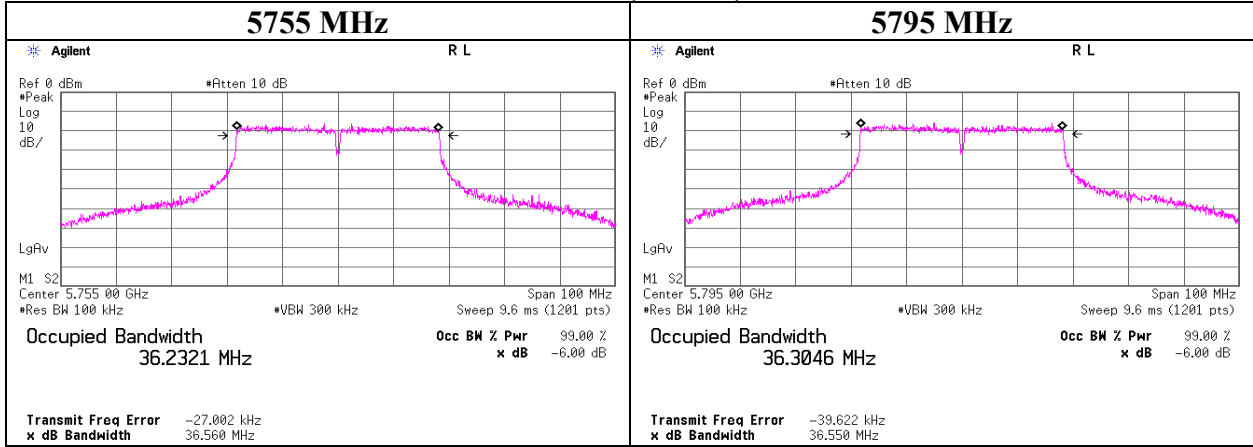
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

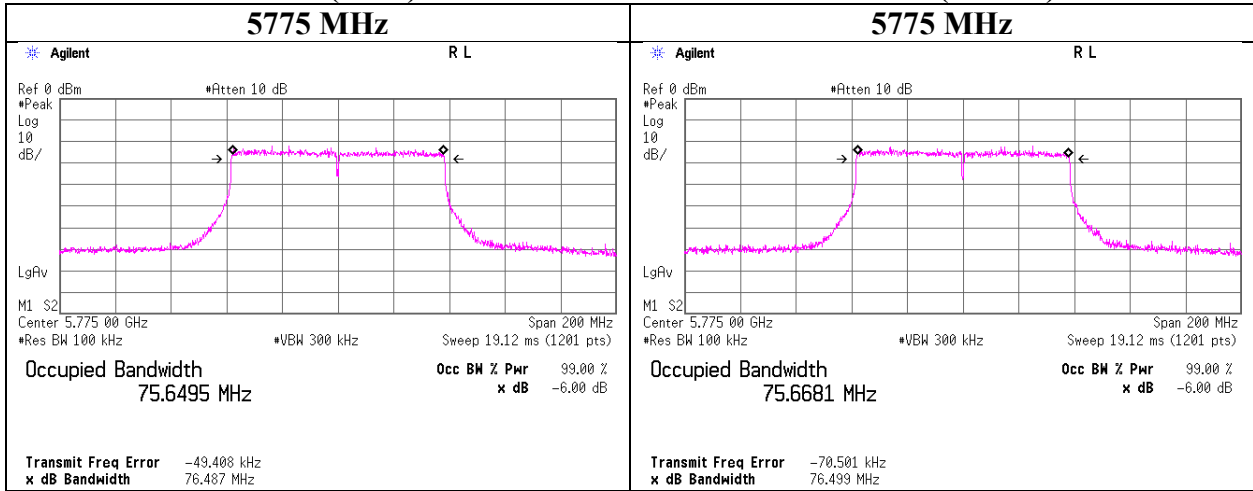
6 dB Bandwidth

11ac-40 (MIMO)



11ac-80 (CDD)

11ac-80 (MIMO)



Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11a, (serial no. A-7)

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]					Chain 1 [mW]					
5180	-	17.081	13.37	13.80	27.17	14.34	23.97	9.63	16.98	17.54	34.52	15.38	29.97	14.59
5220	-	17.123	12.94	13.68	26.62	14.25	23.97	9.72	16.44	17.38	33.82	15.29	29.97	14.68
5240	-	17.031	12.58	13.09	25.68	14.10	23.97	9.87	15.99	16.63	32.62	15.14	29.97	14.83
5260	20.799	17.100	13.06	12.97	26.03	14.16	23.97	9.81	16.60	16.48	33.08	15.20	29.97	14.77
5300	20.532	17.083	12.97	12.79	25.77	14.11	23.97	9.86	16.48	16.26	32.74	15.15	29.97	14.82
5320	20.847	17.091	12.45	12.79	25.24	14.02	23.97	9.95	15.81	16.26	32.07	15.06	29.97	14.91
5500	21.057	17.158	13.23	13.24	26.48	14.23	23.97	9.74	16.82	16.83	33.64	15.27	29.97	14.70
5580	20.295	17.070	13.03	11.75	24.78	13.94	23.97	10.03	16.56	14.93	31.49	14.98	29.97	14.99
5700	21.034	17.109	12.87	14.03	26.90	14.30	23.97	9.67	16.35	17.82	34.18	15.34	29.97	14.63
5720	21.182	17.112	13.00	13.90	26.90	14.30	23.97	9.67	16.52	17.66	34.18	15.34	29.97	14.63
5745	-	17.090	11.62	13.15	24.77	13.94	30.00	16.06	14.77	16.71	31.48	14.98	36.00	21.02
5785	-	17.055	11.80	13.21	25.02	13.98	30.00	16.02	15.00	16.79	31.78	15.02	36.00	20.98
5825	-	17.076	11.79	12.71	24.50	13.89	30.00	16.11	14.98	16.14	31.13	14.93	36.00	21.07

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0					Antenna: Chain 1					Result	
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result Cond. Power [dBm]	e.i.r.p. [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-2.55	3.91	9.90	1.04	11.26	12.30	-2.82	4.01	10.21	1.04	11.40	12.44
5220	0.00	-2.71	3.92	9.91	1.04	11.12	12.16	-2.87	4.02	10.21	1.04	11.36	12.40
5240	0.00	-2.84	3.93	9.91	1.04	11.00	12.04	-3.08	4.04	10.21	1.04	11.17	12.21
5260	0.00	-2.69	3.94	9.91	1.04	11.16	12.20	-3.13	4.05	10.21	1.04	11.13	12.17
5300	0.00	-2.73	3.95	9.91	1.04	11.13	12.17	-3.20	4.06	10.21	1.04	11.07	12.11
5320	0.00	-2.91	3.95	9.91	1.04	10.95	11.99	-3.21	4.07	10.21	1.04	11.07	12.11
5500	0.00	-2.70	4.00	9.92	1.04	11.22	12.26	-3.15	4.15	10.22	1.04	11.22	12.26
5580	0.00	-2.77	4.01	9.91	1.04	11.15	12.19	-3.68	4.16	10.22	1.04	10.70	11.74
5700	0.00	-2.69	3.89	9.90	1.04	11.10	12.14	-2.83	4.07	10.23	1.04	11.47	12.51
5720	0.00	-2.66	3.90	9.90	1.04	11.14	12.18	-2.88	4.08	10.23	1.04	11.43	12.47
5745	0.00	-3.15	3.90	9.90	1.04	10.65	11.69	-3.12	4.08	10.23	1.04	11.19	12.23
5785	0.00	-3.08	3.91	9.89	1.04	10.72	11.76	-3.12	4.09	10.24	1.04	11.21	12.25
5825	0.00	-3.10	3.93	9.89	1.04	10.72	11.76	-3.30	4.10	10.24	1.04	11.04	12.08

Sample Calculation: (*1) Power was measured with using the gate function of power meter.)
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Directional Gain
Directional Gain = G ANT + Array Gain
G ANT = Set equal to the gain of the antenna having the highest gain
Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4
N ANT = number of transmit antennas = 2
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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11a, (serial no. B-5)

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	17.081	12.97	12.25	25.22	14.02	23.97	9.95	20.46	19.32	39.78	16.00	29.97	13.97
5220	-	17.123	13.77	14.06	27.83	14.45	23.97	9.52	21.73	22.18	43.91	16.43	29.97	13.54
5240	-	17.031	13.58	13.74	27.32	14.36	23.97	9.61	21.42	21.68	43.10	16.34	29.97	13.63
5260	20.799	17.100	13.27	13.80	27.08	14.33	23.97	9.64	20.94	21.78	42.72	16.31	29.97	13.66
5300	20.532	17.083	12.65	12.65	25.29	14.03	23.97	9.94	19.95	19.95	39.91	16.01	29.97	13.96
5320	20.847	17.091	13.18	13.58	26.77	14.28	23.97	9.69	20.80	21.43	42.23	16.26	29.97	13.71
5500	21.057	17.158	12.35	13.71	26.06	14.16	23.97	9.81	19.49	21.63	41.11	16.14	29.97	13.83
5580	20.295	17.070	13.68	14.09	27.77	14.44	23.97	9.53	21.58	22.23	43.81	16.42	29.97	13.55
5700	21.034	17.109	12.46	13.61	26.08	14.16	23.97	9.81	19.66	21.48	41.14	16.14	29.97	13.83
5720	21.182	17.112	12.82	13.61	26.44	14.22	23.97	9.75	20.23	21.48	41.71	16.20	29.97	13.77
5745	-	17.090	12.51	13.15	25.66	14.09	30.00	15.91	19.74	20.75	40.49	16.07	36.00	19.93
5785	-	17.055	12.65	12.74	25.38	14.05	30.00	15.95	19.95	20.09	40.04	16.03	36.00	19.97
5825	-	17.076	12.52	12.65	25.17	14.01	30.00	15.99	19.75	19.95	39.70	15.99	36.00	20.01

Tested Frequency [MHz]	Antenna: Chain 0						Antenna: Chain 1						
	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-2.68	3.91	9.90	1.98	11.13	13.11	-3.99	4.66	10.21	1.98	10.88	12.86
5220	0.00	-2.44	3.92	9.91	1.98	11.39	13.37	-3.40	4.67	10.21	1.98	11.48	13.46
5240	0.00	-2.51	3.93	9.91	1.98	11.33	13.31	-3.52	4.69	10.21	1.98	11.38	13.36
5260	0.00	-2.62	3.94	9.91	1.98	11.23	13.21	-3.51	4.70	10.21	1.98	11.40	13.38
5300	0.00	-2.84	3.95	9.91	1.98	11.02	13.00	-3.90	4.71	10.21	1.98	11.02	13.00
5320	0.00	-2.66	3.95	9.91	1.98	11.20	13.18	-3.60	4.72	10.21	1.98	11.33	13.31
5500	0.00	-3.00	4.00	9.92	1.98	10.92	12.90	-3.65	4.80	10.22	1.98	11.37	13.35
5580	0.00	-2.56	4.01	9.91	1.98	11.36	13.34	-3.54	4.81	10.22	1.98	11.49	13.47
5700	0.00	-2.83	3.89	9.90	1.98	10.96	12.94	-3.61	4.72	10.23	1.98	11.34	13.32
5720	0.00	-2.72	3.90	9.90	1.98	11.08	13.06	-3.62	4.73	10.23	1.98	11.34	13.32
5745	0.00	-2.83	3.90	9.90	1.98	10.97	12.95	-3.77	4.73	10.23	1.98	11.19	13.17
5785	0.00	-2.78	3.91	9.89	1.98	11.02	13.00	-3.93	4.74	10.24	1.98	11.05	13.03
5825	0.00	-2.84	3.93	9.89	1.98	11.08	12.96	-3.97	4.75	10.24	1.98	11.02	13.00

Sample Calculation: (*1) Power was measured with using the gate function of power meter.)
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Directional Gain
Directional Gain = G ANT + Array Gain
G ANT = Set equal to the gain of the antenna having the highest gain
Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4
N ANT = number of transmit antennas = 2
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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11n-20 (CDD), (serial no. A-7)

11n-20 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
			Chain 0	Chain 1	Sum				Chain 0	Chain 1	Sum			
	(B for FCC)	(B for IC)	[mW]	[mW]	[mW]	[dBm]	[dBm]	[dB]	[mW]	[mW]	[mW]	[dBm]	[dBm]	[dB]
5180	-	18.162	13.12	13.84	26.96	14.31	23.97	9.66	16.67	17.58	34.25	15.35	29.97	14.62
5220	-	18.132	12.88	13.84	26.72	14.27	23.97	9.70	16.37	17.58	33.95	15.31	29.97	14.66
5240	-	18.205	12.82	13.37	26.18	14.18	23.97	9.79	16.29	16.98	33.27	15.22	29.97	14.75
5260	21.015	18.132	12.59	12.79	25.38	14.05	23.97	9.92	16.00	16.26	32.25	15.09	29.97	14.88
5300	21.255	18.185	12.76	12.79	25.56	14.08	23.97	9.89	16.22	16.26	32.47	15.12	29.97	14.85
5320	21.344	18.160	12.25	12.71	24.95	13.97	23.97	10.00	15.56	16.14	31.70	15.01	29.97	14.96
5500	21.330	18.153	13.64	13.68	27.31	14.36	23.97	9.61	17.33	17.38	34.70	15.40	29.97	14.57
5580	21.430	18.198	12.97	11.72	24.69	13.93	23.97	10.04	16.48	14.89	31.38	14.97	29.97	15.00
5700	21.285	18.191	12.52	14.00	26.51	14.23	23.97	9.74	15.91	17.78	33.69	15.27	29.97	14.70
5720	21.334	18.175	12.74	13.87	26.60	14.25	23.97	9.72	16.18	17.62	33.80	15.29	29.97	14.68
5745	-	18.183	11.33	12.71	24.04	13.81	30.00	16.19	14.40	16.14	30.54	14.85	36.00	21.15
5785	-	18.208	11.32	12.85	24.18	13.83	30.00	16.17	14.39	16.33	30.72	14.87	36.00	21.13
5825	-	18.162	11.79	12.94	24.73	13.93	30.00	16.07	14.98	16.44	31.43	14.97	36.00	21.03

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 1					
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-2.63	3.91	9.90	1.04	11.18	12.22	-2.81	4.01	10.21	1.04	11.41	12.45
5220	0.00	-2.73	3.92	9.91	1.04	11.10	12.14	-2.82	4.02	10.21	1.04	11.41	12.45
5240	0.00	-2.76	3.93	9.91	1.04	11.08	12.12	-2.99	4.04	10.21	1.04	11.26	12.30
5260	0.00	-2.85	3.94	9.91	1.04	11.00	12.04	-3.19	4.05	10.21	1.04	11.07	12.11
5300	0.00	-2.80	3.95	9.91	1.04	11.06	12.10	-3.20	4.06	10.21	1.04	11.07	12.11
5320	0.00	-2.98	3.95	9.91	1.04	10.88	11.92	-3.24	4.07	10.21	1.04	11.04	12.08
5500	0.00	-2.57	4.00	9.92	1.04	11.35	12.39	-3.01	4.15	10.22	1.04	11.36	12.40
5580	0.00	-2.79	4.01	9.91	1.04	11.13	12.17	-3.69	4.16	10.22	1.04	10.69	11.73
5700	0.00	-2.81	3.89	9.90	1.04	10.98	12.02	-2.84	4.07	10.23	1.04	11.46	12.50
5720	0.00	-2.75	3.90	9.90	1.04	11.05	12.09	-2.89	4.08	10.23	1.04	11.42	12.46
5745	0.00	-3.26	3.90	9.90	1.04	10.54	11.58	-3.27	4.08	10.23	1.04	11.04	12.08
5785	0.00	-3.26	3.91	9.89	1.04	10.54	11.58	-3.24	4.09	10.24	1.04	11.09	12.13
5825	0.00	-3.10	3.93	9.89	1.04	10.72	11.76	-3.22	4.10	10.24	1.04	11.12	12.16

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

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Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 19, 2019
Temperature / Humidity 25 deg. C / 56 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-20 (CDD), (serial no. B-5)

11n-20 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.162	12.94	12.22	25.16	14.01	23.97	9.96	20.42	19.28	39.69	15.99	29.97	13.98
5220	-	18.132	13.74	13.96	27.70	14.43	23.97	9.54	21.68	22.03	43.71	16.41	29.97	13.56
5240	-	18.205	13.86	13.46	27.32	14.36	23.97	9.61	21.87	21.23	43.10	16.34	29.97	13.63
5260	21.015	18.132	14.00	13.58	27.58	14.41	23.97	9.56	22.08	21.43	43.51	16.39	29.97	13.58
5300	21.255	18.185	13.61	13.96	27.58	14.41	23.97	9.56	21.48	22.03	43.51	16.39	29.97	13.58
5320	21.344	18.160	13.30	13.96	27.27	14.36	23.97	9.61	20.99	22.03	43.02	16.34	29.97	13.63
5500	21.330	18.153	12.32	13.74	26.06	14.16	23.97	9.81	19.44	21.68	41.12	16.14	29.97	13.83
5580	21.430	18.198	13.80	14.13	27.93	14.46	23.97	9.51	21.78	22.28	44.06	16.44	29.97	13.53
5700	21.285	18.191	12.43	13.49	25.92	14.14	23.97	9.83	19.61	21.28	40.89	16.12	29.97	13.85
5720	21.334	18.175	12.68	13.68	26.35	14.21	23.97	9.76	20.00	21.58	41.58	16.19	29.97	13.78
5745	-	18.183	12.45	13.06	25.52	14.07	30.00	15.93	19.65	20.61	40.25	16.05	36.00	19.95
5785	-	18.208	12.62	12.85	25.47	14.06	30.00	15.94	19.91	20.28	40.18	16.04	36.00	19.96
5825	-	18.162	12.49	12.74	25.23	14.02	30.00	15.98	19.71	20.09	39.80	16.00	36.00	20.00

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1 [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-2.69	3.91	9.90	1.98	11.12	13.10	-4.00	4.66	10.21	1.98	10.87	12.85
5220	0.00	-2.45	3.92	9.91	1.98	11.38	13.36	-3.43	4.67	10.21	1.98	11.45	13.43
5240	0.00	-2.42	3.93	9.91	1.98	11.42	13.40	-3.61	4.69	10.21	1.98	11.29	13.27
5260	0.00	-2.39	3.94	9.91	1.98	11.46	13.44	-3.58	4.70	10.21	1.98	11.33	13.31
5300	0.00	-2.52	3.95	9.91	1.98	11.34	13.32	-3.47	4.71	10.21	1.98	11.45	13.43
5320	0.00	-2.62	3.95	9.91	1.98	11.24	13.22	-3.48	4.72	10.21	1.98	11.45	13.43
5500	0.00	-3.01	4.00	9.92	1.98	10.91	12.89	-3.64	4.80	10.22	1.98	11.38	13.36
5580	0.00	-2.52	4.01	9.91	1.98	11.40	13.38	-3.53	4.81	10.22	1.98	11.50	13.48
5700	0.00	-2.84	3.89	9.90	1.98	10.95	12.93	-3.65	4.72	10.23	1.98	11.30	13.28
5720	0.00	-2.77	3.90	9.90	1.98	11.03	13.01	-3.60	4.73	10.23	1.98	11.36	13.34
5745	0.00	-2.85	3.90	9.90	1.98	10.95	12.93	-3.80	4.73	10.23	1.98	11.16	13.14
5785	0.00	-2.79	3.91	9.89	1.98	11.01	12.99	-3.89	4.74	10.24	1.98	11.09	13.07
5825	0.00	-2.85	3.93	9.89	1.98	10.97	12.95	-3.94	4.75	10.24	1.98	11.05	13.03

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

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Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11n-20 (MIMO), (serial no. A-7)

11n-20 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.211	13.52	14.03	27.55	14.40	23.97	9.57	17.18	17.82	35.00	15.44	29.97	14.53
5220	-	18.194	12.71	13.90	26.61	14.25	23.97	9.72	16.14	17.66	33.80	15.29	29.97	14.68
5240	-	18.226	12.82	13.30	26.12	14.17	23.97	9.80	16.29	16.90	33.19	15.21	29.97	14.76
5260	21.483	18.245	12.76	13.03	25.80	14.12	23.97	9.85	16.22	16.56	32.78	15.16	29.97	14.81
5300	21.428	18.174	13.09	12.94	26.03	14.16	23.97	9.81	16.63	16.44	33.08	15.20	29.97	14.77
5320	21.213	18.146	12.30	12.94	25.24	14.02	23.97	9.95	15.63	16.44	32.08	15.06	29.97	14.91
5500	21.461	18.176	13.14	13.37	26.51	14.23	23.97	9.74	16.70	16.98	33.68	15.27	29.97	14.70
5580	21.448	18.105	13.09	11.80	24.90	13.96	23.97	10.01	16.63	15.00	31.63	15.00	29.97	14.97
5700	21.342	18.184	11.52	12.27	23.80	13.77	23.97	10.20	14.64	15.60	30.24	14.81	29.97	15.16
5720	21.086	18.196	12.77	13.96	26.73	14.27	23.97	9.70	16.22	17.74	33.96	15.31	29.97	14.66
5745	-	18.165	11.36	12.82	24.18	13.83	30.00	16.17	14.43	16.29	30.72	14.87	36.00	21.13
5785	-	18.261	11.53	12.97	24.51	13.89	30.00	16.11	14.66	16.48	31.14	14.93	36.00	21.07
5825	-	18.229	12.04	12.68	24.72	13.93	30.00	16.07	15.30	16.11	31.40	14.97	36.00	21.03

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 1					
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-2.50	3.91	9.90	1.04	11.31	12.35	-2.75	4.01	10.21	1.04	11.47	12.51
5220	0.00	-2.79	3.92	9.91	1.04	11.04	12.08	-2.80	4.02	10.21	1.04	11.43	12.47
5240	0.00	-2.76	3.93	9.91	1.04	11.08	12.12	-3.01	4.04	10.21	1.04	11.24	12.28
5260	0.00	-2.79	3.94	9.91	1.04	11.06	12.10	-3.11	4.05	10.21	1.04	11.15	12.19
5300	0.00	-2.69	3.95	9.91	1.04	11.17	12.21	-3.15	4.06	10.21	1.04	11.12	12.16
5320	0.00	-2.96	3.95	9.91	1.04	10.90	11.94	-3.16	4.07	10.21	1.04	11.12	12.16
5500	0.00	-2.73	4.00	9.92	1.04	11.19	12.23	-3.11	4.15	10.22	1.04	11.26	12.30
5580	0.00	-2.75	4.01	9.91	1.04	11.17	12.21	-3.66	4.16	10.22	1.04	10.72	11.76
5700	0.00	-3.17	3.89	9.90	1.04	10.62	11.66	-3.41	4.07	10.23	1.04	10.89	11.93
5720	0.00	-2.74	3.90	9.90	1.04	11.06	12.10	-2.86	4.08	10.23	1.04	11.45	12.49
5745	0.00	-3.25	3.90	9.90	1.04	10.55	11.59	-3.23	4.08	10.23	1.04	11.08	12.12
5785	0.00	-3.18	3.91	9.89	1.04	10.62	11.66	-3.20	4.09	10.24	1.04	11.13	12.17
5825	0.00	-3.01	3.93	9.89	1.04	10.81	11.85	-3.31	4.10	10.24	1.04	11.03	12.07

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

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Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 19, 2019
Temperature / Humidity 25 deg. C / 56 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-20 (MIMO), (serial no. B-5)

11n-20 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna		Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		Result [dBm]	Limit [dBm]	Margin [dB]		
			Chain 0 [mW]	Chain 1 [mW]				Chain 0 [mW]	Chain 1 [mW]					
5180	-	18.211	12.91	12.25	25.16	14.01	23.97	9.96	16.41	19.32	35.73	15.53	29.97	14.44
5220	-	18.194	14.06	13.87	27.93	14.46	23.97	9.51	17.86	21.88	39.74	15.99	29.97	13.98
5240	-	18.226	14.02	13.65	27.67	14.42	23.97	9.55	17.82	21.53	39.34	15.95	29.97	14.02
5260	21.483	18.245	13.80	13.55	27.36	14.37	23.97	9.60	17.54	21.38	38.92	15.90	29.97	14.07
5300	21.428	18.174	12.65	12.65	25.29	14.03	23.97	9.94	16.07	19.95	36.02	15.57	29.97	14.40
5320	21.213	18.146	13.27	13.96	27.24	14.35	23.97	9.62	16.87	22.03	38.89	15.90	29.97	14.07
5500	21.461	18.176	12.24	13.68	25.92	14.14	23.97	9.83	15.55	21.58	37.13	15.70	29.97	14.27
5580	21.448	18.105	13.87	14.09	27.96	14.47	23.97	9.50	17.62	22.23	39.85	16.00	29.97	13.97
5700	21.342	18.184	12.46	13.55	26.01	14.15	23.97	9.82	15.83	21.38	37.21	15.71	29.97	14.26
5720	21.086	18.196	12.68	13.61	26.29	14.20	23.97	9.77	16.11	21.48	37.59	15.75	29.97	14.22
5745	-	18.165	12.60	13.18	25.78	14.11	30.00	15.89	16.01	20.80	36.80	15.66	36.00	20.34
5785	-	18.261	12.74	12.97	25.71	14.10	30.00	15.90	16.18	20.46	36.65	15.64	36.00	20.36
5825	-	18.229	12.69	12.85	25.55	14.07	30.00	15.93	16.13	20.28	36.40	15.61	36.00	20.39

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 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]
5180	0.00	-2.70	3.91	9.90	1.04	11.11	12.15	-3.99	4.66	10.21	1.98	10.88	12.86
5220	0.00	-2.35	3.92	9.91	1.04	11.48	12.52	-3.46	4.67	10.21	1.98	11.42	13.40
5240	0.00	-2.37	3.93	9.91	1.04	11.47	12.51	-3.55	4.69	10.21	1.98	11.35	13.33
5260	0.00	-2.45	3.94	9.91	1.04	11.40	12.44	-3.59	4.70	10.21	1.98	11.32	13.30
5300	0.00	-2.84	3.95	9.91	1.04	11.02	12.06	-3.90	4.71	10.21	1.98	11.02	13.00
5320	0.00	-2.63	3.95	9.91	1.04	11.23	12.27	-3.48	4.72	10.21	1.98	11.45	13.43
5500	0.00	-3.04	4.00	9.92	1.04	10.88	11.92	-3.66	4.80	10.22	1.98	11.36	13.34
5580	0.00	-2.50	4.01	9.91	1.04	11.42	12.46	-3.54	4.81	10.22	1.98	11.49	13.47
5700	0.00	-2.83	3.89	9.90	1.04	10.96	12.00	-3.63	4.72	10.23	1.98	11.32	13.30
5720	0.00	-2.77	3.90	9.90	1.04	11.03	12.07	-3.62	4.73	10.23	1.98	11.34	13.32
5745	0.00	-2.80	3.90	9.90	1.04	11.00	12.04	-3.76	4.73	10.23	1.98	11.20	13.18
5785	0.00	-2.75	3.91	9.89	1.04	11.05	12.09	-3.85	4.74	10.24	1.98	11.13	13.11
5825	0.00	-2.78	3.93	9.89	1.04	11.04	12.08	-3.90	4.75	10.24	1.98	11.09	13.07

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

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 Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 6, 2019
Temperature / Humidity 24 deg. C / 50 % RH
Engineer Hiromasa Sato
Mode Tx, 11ac-20 (CDD), (serial no. A-7)

11ac-20 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.215	13.15	13.74	26.89	14.30	23.97	9.67	16.71	17.46	34.17	15.34	29.97	14.63
5220	-	18.158	12.79	13.61	26.41	14.22	23.97	9.75	16.26	17.30	33.55	15.26	29.97	14.71
5240	-	18.240	12.88	13.40	26.27	14.20	23.97	9.77	16.36	17.02	33.38	15.24	29.97	14.73
5260	21.958	18.212	12.85	12.91	25.77	14.11	23.97	9.86	16.33	16.41	32.74	15.15	29.97	14.82
5300	21.504	18.093	12.97	12.65	25.62	14.09	23.97	9.88	16.48	16.07	32.55	15.13	29.97	14.84
5320	21.619	18.197	12.53	12.71	25.24	14.02	23.97	9.95	15.92	16.14	32.07	15.06	29.97	14.91
5500	21.347	18.207	13.11	12.91	26.03	14.15	23.97	9.82	16.66	16.41	33.07	15.19	29.97	14.78
5580	21.414	18.156	13.12	11.69	24.82	13.95	23.97	10.02	16.67	14.86	31.53	14.99	29.97	14.98
5700	21.688	18.133	12.61	13.74	26.35	14.21	23.97	9.76	16.02	17.46	33.47	15.25	29.97	14.72
5720	20.797	18.217	13.21	14.06	27.27	14.36	23.97	9.61	16.79	17.86	34.65	15.40	29.97	14.57
5745	-	18.246	12.28	13.30	25.59	14.08	30.00	15.92	15.61	16.90	32.51	15.12	36.00	20.88
5785	-	18.128	12.16	12.65	24.81	13.95	30.00	16.05	15.45	16.07	31.52	14.99	36.00	21.01
5825	-	18.207	12.07	12.79	24.86	13.96	30.00	16.04	15.33	16.26	31.59	15.00	36.00	21.00

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 1					
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-2.62	3.91	9.90	1.04	11.19	12.23	-2.84	4.01	10.21	1.04	11.38	12.42
5220	0.00	-2.76	3.92	9.91	1.04	11.07	12.11	-2.89	4.02	10.21	1.04	11.34	12.38
5240	0.00	-2.74	3.93	9.91	1.04	11.10	12.14	-2.98	4.04	10.21	1.04	11.27	12.31
5260	0.00	-2.76	3.94	9.91	1.04	11.09	12.13	-3.15	4.05	10.21	1.04	11.11	12.15
5300	0.00	-2.73	3.95	9.91	1.04	11.13	12.17	-3.25	4.06	10.21	1.04	11.02	12.06
5320	0.00	-2.88	3.95	9.91	1.04	10.98	12.02	-3.24	4.07	10.21	1.04	11.04	12.08
5500	0.00	-2.74	4.00	9.92	1.04	11.18	12.22	-3.26	4.15	10.22	1.04	11.11	12.15
5580	0.00	-2.74	4.01	9.91	1.04	11.18	12.22	-3.70	4.16	10.22	1.04	10.68	11.72
5700	0.00	-2.78	3.89	9.90	1.04	11.01	12.05	-2.92	4.07	10.23	1.04	11.38	12.42
5720	0.00	-2.59	3.90	9.90	1.04	11.21	12.25	-2.83	4.08	10.23	1.04	11.48	12.52
5745	0.00	-2.91	3.90	9.90	1.04	10.89	11.93	-3.07	4.08	10.23	1.04	11.24	12.28
5785	0.00	-2.95	3.91	9.89	1.04	10.85	11.89	-3.31	4.09	10.24	1.04	11.02	12.06
5825	0.00	-3.00	3.93	9.89	1.04	10.82	11.86	-3.27	4.10	10.24	1.04	11.07	12.11

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

Shonan EMC Lab.

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Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 19, 2019
Temperature / Humidity 25 deg. C / 56 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-20 (CDD), (serial no. B-5)

11ac-20 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]					Chain 1 [mW]					
5180	-	18.215	12.74	11.91	24.65	13.92	23.97	10.05	20.09	18.79	38.88	15.90	29.97	14.07
5220	-	18.158	13.93	13.90	27.83	14.45	23.97	9.52	21.98	21.93	43.91	16.43	29.97	13.54
5240	-	18.240	13.70	13.37	27.07	14.32	23.97	9.65	21.62	21.09	42.70	16.30	29.97	13.67
5260	21.958	18.212	13.65	13.55	27.20	14.35	23.97	9.62	21.53	21.38	42.91	16.33	29.97	13.64
5300	21.504	18.093	13.65	14.06	27.71	14.43	23.97	9.54	21.53	22.18	43.71	16.41	29.97	13.56
5320	21.619	18.197	13.12	13.90	27.02	14.32	23.97	9.65	20.70	21.93	42.63	16.30	29.97	13.67
5500	21.347	18.207	12.38	13.77	26.15	14.18	23.97	9.79	19.53	21.73	41.26	16.16	29.97	13.81
5580	21.414	18.156	13.74	13.93	27.67	14.42	23.97	9.55	21.68	21.98	43.66	16.40	29.97	13.57
5700	21.688	18.133	12.29	13.58	25.87	14.13	23.97	9.84	19.39	21.43	40.82	16.11	29.97	13.86
5720	20.797	18.217	12.65	13.65	26.29	14.20	23.97	9.77	19.95	21.53	41.48	16.18	29.97	13.79
5745	-	18.246	12.51	13.09	25.60	14.08	30.00	15.92	19.74	20.65	40.39	16.06	36.00	19.94
5785	-	18.128	12.56	12.79	25.35	14.04	30.00	15.96	19.82	20.18	40.00	16.02	36.00	19.98
5825	-	18.207	12.49	12.85	25.34	14.04	30.00	15.96	19.71	20.28	39.98	16.02	36.00	19.98

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-2.76	3.91	9.90	1.98	11.05	13.03	-4.11	4.66	10.21	1.98	10.76	12.74
5220	0.00	-2.39	3.92	9.91	1.98	11.44	13.42	-3.45	4.67	10.21	1.98	11.43	13.41
5240	0.00	-2.47	3.93	9.91	1.98	11.37	13.35	-3.64	4.69	10.21	1.98	11.26	13.24
5260	0.00	-2.50	3.94	9.91	1.98	11.35	13.33	-3.59	4.70	10.21	1.98	11.32	13.30
5300	0.00	-2.51	3.95	9.91	1.98	11.35	13.33	-3.44	4.71	10.21	1.98	11.48	13.46
5320	0.00	-2.68	3.95	9.91	1.98	11.18	13.16	-3.50	4.72	10.21	1.98	11.43	13.41
5500	0.00	-2.99	4.00	9.92	1.98	10.93	12.91	-3.63	4.80	10.22	1.98	11.39	13.37
5580	0.00	-2.54	4.01	9.91	1.98	11.38	13.36	-3.59	4.81	10.22	1.98	11.44	13.42
5700	0.00	-2.89	3.89	9.90	1.98	10.90	12.88	-3.62	4.72	10.23	1.98	11.33	13.31
5720	0.00	-2.78	3.90	9.90	1.98	11.02	13.00	-3.61	4.73	10.23	1.98	11.35	13.33
5745	0.00	-2.83	3.90	9.90	1.98	10.97	12.95	-3.79	4.73	10.23	1.98	11.17	13.15
5785	0.00	-2.81	3.91	9.89	1.98	10.99	12.97	-3.91	4.74	10.24	1.98	11.07	13.05
5825	0.00	-2.85	3.93	9.89	1.98	10.97	12.95	-3.90	4.75	10.24	1.98	11.09	13.07

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 6, 2019
Temperature / Humidity 24 deg. C / 50 % RH
Engineer Hiromasa Sato
Mode Tx, 11ac-20 (MIMO), (serial no. A-7)

11ac-20 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.227	13.40	13.96	27.36	14.37	23.97	9.60	17.02	17.74	34.76	15.41	29.97	14.56
5220	-	18.139	12.76	13.65	26.41	14.22	23.97	9.75	16.22	17.34	33.56	15.26	29.97	14.71
5240	-	18.140	12.76	13.18	25.94	14.14	23.97	9.83	16.21	16.75	32.96	15.18	29.97	14.79
5260	21.761	18.116	12.76	12.62	25.38	14.05	23.97	9.92	16.22	16.03	32.25	15.09	29.97	14.88
5300	21.413	18.187	13.18	12.94	26.12	14.17	23.97	9.80	16.75	16.44	33.19	15.21	29.97	14.76
5320	21.327	18.185	12.65	13.18	25.83	14.12	23.97	9.85	16.07	16.75	32.82	15.16	29.97	14.81
5500	21.266	18.126	12.99	12.79	25.79	14.11	23.97	9.86	16.51	16.26	32.76	15.15	29.97	14.82
5580	21.468	18.195	13.12	11.59	24.71	13.93	23.97	10.04	16.67	14.72	31.40	14.97	29.97	15.00
5700	21.367	18.145	12.75	13.96	26.72	14.27	23.97	9.70	16.20	17.74	33.94	15.31	29.97	14.66
5720	21.513	18.182	13.03	13.90	26.93	14.30	23.97	9.67	16.56	17.66	34.22	15.34	29.97	14.63
5745	-	18.150	11.62	12.79	24.42	13.88	30.00	16.12	14.77	16.26	31.02	14.92	36.00	21.08
5785	-	18.201	12.02	12.94	24.96	13.97	30.00	16.03	15.28	16.44	31.72	15.01	36.00	20.99
5825	-	18.215	11.87	12.74	24.61	13.91	30.00	16.09	15.09	16.18	31.27	14.95	36.00	21.05

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 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]
5180	0.00	-2.54	3.91	9.90	1.04	11.27	12.31	-2.77	4.01	10.21	1.04	11.45	12.49
5220	0.00	-2.77	3.92	9.91	1.04	11.06	12.10	-2.88	4.02	10.21	1.04	11.35	12.39
5240	0.00	-2.78	3.93	9.91	1.04	11.06	12.10	-3.05	4.04	10.21	1.04	11.20	12.24
5260	0.00	-2.79	3.94	9.91	1.04	11.06	12.10	-3.25	4.05	10.21	1.04	11.01	12.05
5300	0.00	-2.66	3.95	9.91	1.04	11.20	12.24	-3.15	4.06	10.21	1.04	11.12	12.16
5320	0.00	-2.84	3.95	9.91	1.04	11.02	12.06	-3.08	4.07	10.21	1.04	11.20	12.24
5500	0.00	-2.78	4.00	9.92	1.04	11.14	12.18	-3.30	4.15	10.22	1.04	11.07	12.11
5580	0.00	-2.74	4.01	9.91	1.04	11.18	12.22	-3.74	4.16	10.22	1.04	10.64	11.68
5700	0.00	-2.73	3.89	9.90	1.04	11.06	12.10	-2.85	4.07	10.23	1.04	11.45	12.49
5720	0.00	-2.65	3.90	9.90	1.04	11.15	12.19	-2.88	4.08	10.23	1.04	11.43	12.47
5745	0.00	-3.15	3.90	9.90	1.04	10.65	11.69	-3.24	4.08	10.23	1.04	11.07	12.11
5785	0.00	-3.00	3.91	9.89	1.04	10.80	11.84	-3.21	4.09	10.24	1.04	11.12	12.16
5825	0.00	-3.07	3.93	9.89	1.04	10.75	11.79	-3.29	4.10	10.24	1.04	11.05	12.09

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 19, 2019
Temperature / Humidity 25 deg. C / 56 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-20 (MIMO), (serial no. B-5)

11ac-20 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power							e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				
5180	-	18.227	12.76	12.16	24.93	13.97	23.97	10.00	16.22	19.19	35.40	15.49	29.97	14.48	
5220	-	18.139	14.00	13.93	27.93	14.46	23.97	9.51	17.78	21.98	39.76	15.99	29.97	13.98	
5240	-	18.140	13.89	13.46	27.35	14.37	23.97	9.60	17.65	21.23	38.89	15.90	29.97	14.07	
5260	21.761	18.116	13.55	13.71	27.26	14.36	23.97	9.61	17.22	21.63	38.85	15.89	29.97	14.08	
5300	21.413	18.187	12.53	12.65	25.18	14.01	23.97	9.96	15.92	19.95	35.87	15.55	29.97	14.42	
5320	21.327	18.185	13.61	14.00	27.61	14.41	23.97	9.56	17.30	22.08	39.38	15.95	29.97	14.02	
5500	21.266	18.126	12.35	13.80	26.16	14.18	23.97	9.79	15.69	21.78	37.47	15.74	29.97	14.23	
5580	21.468	18.195	13.77	14.09	27.86	14.45	23.97	9.52	17.50	22.23	39.73	15.99	29.97	13.98	
5700	21.367	18.145	12.46	13.74	26.20	14.18	23.97	9.79	15.83	21.68	37.51	15.74	29.97	14.23	
5720	21.513	18.182	12.82	13.87	26.69	14.26	23.97	9.71	16.29	21.88	38.17	15.82	29.97	14.15	
5745	-	18.150	12.60	13.37	25.96	14.14	30.00	15.86	16.01	21.09	37.09	15.69	36.00	20.31	
5785	-	18.201	12.85	13.09	25.94	14.14	30.00	15.86	16.33	20.65	36.98	15.68	36.00	20.32	
5825	-	18.215	12.72	13.12	25.84	14.12	30.00	15.88	16.17	20.70	36.87	15.67	36.00	20.33	

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	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]
5180	0.00	-2.75	3.91	9.90	1.04	11.06	12.10	-4.02	4.66	10.21	1.98	10.85	12.83
5220	0.00	-2.37	3.92	9.91	1.04	11.46	12.50	-3.44	4.67	10.21	1.98	11.44	13.42
5240	0.00	-2.41	3.93	9.91	1.04	11.43	12.47	-3.61	4.69	10.21	1.98	11.29	13.27
5260	0.00	-2.53	3.94	9.91	1.04	11.32	12.36	-3.54	4.70	10.21	1.98	11.37	13.35
5300	0.00	-2.88	3.95	9.91	1.04	10.98	12.02	-3.90	4.71	10.21	1.98	11.02	13.00
5320	0.00	-2.52	3.95	9.91	1.04	11.34	12.38	-3.47	4.72	10.21	1.98	11.46	13.44
5500	0.00	-3.00	4.00	9.92	1.04	10.92	11.96	-3.62	4.80	10.22	1.98	11.40	13.38
5580	0.00	-2.53	4.01	9.91	1.04	11.39	12.43	-3.54	4.81	10.22	1.98	11.49	13.47
5700	0.00	-2.83	3.89	9.90	1.04	10.96	12.00	-3.57	4.72	10.23	1.98	11.38	13.36
5720	0.00	-2.72	3.90	9.90	1.04	11.08	12.12	-3.54	4.73	10.23	1.98	11.42	13.40
5745	0.00	-2.80	3.90	9.90	1.04	11.00	12.04	-3.70	4.73	10.23	1.98	11.26	13.24
5785	0.00	-2.71	3.91	9.89	1.04	11.09	12.13	-3.81	4.74	10.24	1.98	11.17	13.15
5825	0.00	-2.77	3.93	9.89	1.04	11.05	12.09	-3.81	4.75	10.24	1.98	11.18	13.16

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

Shonan EMC Lab.

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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (CDD), (serial no. A-7)

11n-40 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	35.883	13.93	13.71	27.64	14.42	23.97	9.55	17.70	17.42	35.12	15.46	29.97	14.51
5230	-	35.862	13.90	14.03	27.93	14.46	23.97	9.51	17.66	17.82	35.48	15.50	29.97	14.47
5270	39.483	35.884	13.46	12.91	26.37	14.21	23.97	9.76	17.10	16.41	33.51	15.25	29.97	14.72
5310	39.215	35.838	13.27	12.74	26.01	14.15	23.97	9.82	16.87	16.18	33.05	15.19	29.97	14.78
5510	39.308	35.862	13.96	13.46	27.42	14.38	23.97	9.59	17.74	17.10	34.84	15.42	29.97	14.55
5550	39.118	35.873	13.00	12.25	25.25	14.02	23.97	9.95	16.52	15.56	32.08	15.06	29.97	14.91
5670	39.277	35.870	11.22	13.03	24.25	13.85	23.97	10.12	14.26	16.56	30.81	14.89	29.97	15.08
5710	39.173	35.925	12.27	12.62	24.89	13.96	30.00	16.04	15.60	16.03	31.63	15.00	29.97	14.97
5755	-	35.833	11.07	12.82	23.89	13.78	30.00	16.22	14.06	16.29	30.35	14.82	36.00	21.18
5795	-	35.894	12.42	13.84	26.25	14.19	30.00	15.81	15.78	17.58	33.36	15.23	36.00	20.77

Tested Frequency [MHz]	Duty Factor [*1] [dB]	Antenna: Chain 0						Antenna: Chain 1					
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-2.37	3.91	9.90	1.04	11.44	12.48	-2.85	4.01	10.21	1.04	11.37	12.41
5230	0.00	-2.40	3.93	9.90	1.04	11.43	12.47	-2.77	4.03	10.21	1.04	11.47	12.51
5270	0.00	-2.56	3.94	9.91	1.04	11.29	12.33	-3.15	4.05	10.21	1.04	11.11	12.15
5310	0.00	-2.63	3.95	9.91	1.04	11.23	12.27	-3.23	4.07	10.21	1.04	11.05	12.09
5510	0.00	-2.47	4.00	9.92	1.04	11.45	12.49	-3.08	4.15	10.22	1.04	11.29	12.33
5550	0.00	-2.77	4.00	9.91	1.04	11.14	12.18	-3.50	4.16	10.22	1.04	10.88	11.92
5670	0.00	-3.35	3.95	9.90	1.04	10.50	11.54	-3.20	4.12	10.23	1.04	11.15	12.19
5710	0.00	-2.91	3.90	9.90	1.04	10.89	11.93	-3.30	4.08	10.23	1.04	11.01	12.05
5755	0.00	-3.36	3.90	9.90	1.04	10.44	11.48	-3.25	4.09	10.24	1.04	11.08	12.12
5795	0.00	-2.86	3.91	9.89	1.04	10.94	11.98	-2.92	4.09	10.24	1.04	11.41	12.45

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

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Telephone : +81 463 50 6400

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Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 19, 2019
Temperature / Humidity 25 deg. C / 56 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (CDD), (serial no. B-5)

11n-40 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5190	-	35.883	13.71	12.82	26.53	14.24	23.97	9.73	21.63	20.23	41.86	16.22	29.97	13.75
5230	-	35.862	12.94	12.36	25.30	14.03	23.97	9.94	20.42	19.50	39.92	16.01	29.97	13.96
5270	39.483	35.884	12.50	12.68	25.18	14.01	23.97	9.96	19.72	20.00	39.72	15.99	29.97	13.98
5310	39.215	35.838	12.62	13.00	25.62	14.09	23.97	9.88	19.91	20.51	40.42	16.07	29.97	13.90
5510	39.308	35.862	11.86	12.68	24.53	13.90	23.97	10.07	18.71	20.00	38.71	15.88	29.97	14.09
5550	39.118	35.873	12.36	12.68	25.04	13.99	23.97	9.98	19.50	20.00	39.50	15.97	29.97	14.00
5670	39.277	35.870	12.02	12.59	24.61	13.91	23.97	10.06	18.97	19.86	38.83	15.89	29.97	14.08
5710	39.173	35.925	11.78	12.79	24.57	13.90	30.00	16.10	18.58	20.18	38.76	15.88	29.97	14.09
5755	-	35.833	13.09	13.46	26.55	14.24	30.00	15.76	20.65	21.23	41.89	16.22	36.00	19.78
5795	-	35.894	13.24	13.24	26.49	14.23	30.00	15.77	20.89	20.89	41.79	16.21	36.00	19.79

Antenna: Chain 0						Antenna: Chain 1							
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-2.44	3.91	9.90	1.98	11.37	13.35	-3.79	4.66	10.21	1.98	11.08	13.06
5230	0.00	-2.71	3.93	9.90	1.98	11.12	13.10	-3.97	4.68	10.21	1.98	10.92	12.90
5270	0.00	-2.88	3.94	9.91	1.98	10.97	12.95	-3.88	4.70	10.21	1.98	11.03	13.01
5310	0.00	-2.85	3.95	9.91	1.98	11.01	12.99	-3.79	4.72	10.21	1.98	11.14	13.12
5510	0.00	-3.18	4.00	9.92	1.98	10.74	12.72	-3.99	4.80	10.22	1.98	11.03	13.01
5550	0.00	-2.99	4.00	9.91	1.98	10.92	12.90	-4.00	4.81	10.22	1.98	11.03	13.01
5670	0.00	-3.05	3.95	9.90	1.98	10.80	12.78	-4.00	4.77	10.23	1.98	11.00	12.98
5710	0.00	-3.09	3.90	9.90	1.98	10.71	12.69	-3.89	4.73	10.23	1.98	11.07	13.05
5755	0.00	-2.63	3.90	9.90	1.98	11.17	13.15	-3.69	4.74	10.24	1.98	11.29	13.27
5795	0.00	-2.58	3.91	9.89	1.98	11.22	13.20	-3.76	4.74	10.24	1.98	11.22	13.20

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

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Telephone : +81 463 50 6400

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Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (MIMO), (serial no. A-7)

11n-40 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	36.928	14.03	13.87	27.90	14.46	23.97	9.51	17.82	17.62	35.44	15.50	29.97	14.47
5230	-	36.796	13.46	13.71	27.17	14.34	23.97	9.63	17.10	17.42	34.52	15.38	29.97	14.59
5270	42.495	36.846	13.27	12.71	25.98	14.15	23.97	9.82	16.87	16.14	33.01	15.19	29.97	14.78
5310	42.656	36.916	13.34	12.79	26.13	14.17	23.97	9.80	16.94	16.26	33.20	15.21	29.97	14.76
5510	42.335	36.906	14.03	13.43	27.46	14.39	23.97	9.58	17.82	17.06	34.88	15.43	29.97	14.54
5550	42.962	36.908	12.97	12.36	25.33	14.04	23.97	9.93	16.48	15.70	32.19	15.08	29.97	14.89
5670	42.325	36.894	10.89	12.91	23.80	13.77	23.97	10.20	13.84	16.41	30.24	14.81	29.97	15.16
5710	42.411	37.006	12.30	12.62	24.92	13.97	30.00	16.03	15.63	16.03	31.66	15.01	29.97	14.96
5755	-	36.854	10.99	12.85	23.84	13.77	30.00	16.23	13.96	16.33	30.29	14.81	36.00	21.19
5795	-	36.906	12.33	13.27	25.60	14.08	30.00	15.92	15.67	16.87	32.53	15.12	36.00	20.88

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 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]
5190	0.00	-2.34	3.91	9.90	1.04	11.47	12.51	-2.80	4.01	10.21	1.04	11.42	12.46
5230	0.00	-2.54	3.93	9.90	1.04	11.29	12.33	-2.87	4.03	10.21	1.04	11.37	12.41
5270	0.00	-2.62	3.94	9.91	1.04	11.23	12.27	-3.22	4.05	10.21	1.04	11.04	12.08
5310	0.00	-2.61	3.95	9.91	1.04	11.25	12.29	-3.21	4.07	10.21	1.04	11.07	12.11
5510	0.00	-2.45	4.00	9.92	1.04	11.47	12.51	-3.09	4.15	10.22	1.04	11.28	12.32
5550	0.00	-2.78	4.00	9.91	1.04	11.13	12.17	-3.46	4.16	10.22	1.04	10.92	11.96
5670	0.00	-3.48	3.95	9.90	1.04	10.37	11.41	-3.24	4.12	10.23	1.04	11.11	12.15
5710	0.00	-2.90	3.90	9.90	1.04	10.90	11.94	-3.30	4.08	10.23	1.04	11.01	12.05
5755	0.00	-3.39	3.90	9.90	1.04	10.41	11.45	-3.24	4.09	10.24	1.04	11.09	12.13
5795	0.00	-2.89	3.91	9.89	1.04	10.91	11.95	-3.10	4.09	10.24	1.04	11.23	12.27

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

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Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (MIMO), (serial no. B-5)

11n-40 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	36.928	13.46	12.97	26.43	14.22	23.97	9.75	17.10	20.46	37.56	15.75	29.97	14.22
5230	-	36.796	12.94	12.45	25.39	14.05	23.97	9.92	16.44	19.63	36.08	15.57	29.97	14.40
5270	42.495	36.846	12.76	12.71	25.47	14.06	23.97	9.91	16.22	20.04	36.26	15.59	29.97	14.38
5310	42.656	36.916	12.76	12.85	25.62	14.09	23.97	9.88	16.22	20.28	36.49	15.62	29.97	14.35
5510	42.335	36.906	11.89	12.74	24.62	13.91	23.97	10.06	15.10	20.09	35.19	15.46	29.97	14.51
5550	42.962	36.908	12.36	12.74	25.09	14.00	23.97	9.97	15.70	20.09	35.79	15.54	29.97	14.43
5670	42.325	36.894	11.86	12.71	24.56	13.90	23.97	10.07	15.07	20.04	35.11	15.45	29.97	14.52
5710	42.411	37.006	11.69	12.71	24.40	13.87	30.00	16.13	14.86	20.04	34.90	15.43	29.97	14.54
5755	-	36.854	13.27	13.74	27.01	14.32	30.00	15.68	16.87	21.68	38.54	15.86	36.00	20.14
5795	-	36.906	13.34	13.55	26.89	14.30	30.00	15.70	16.94	21.38	38.32	15.83	36.00	20.17

Antenna: Chain 0								Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor [*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]	
5190	0.00	-2.52	3.91	9.90	1.04	11.29	12.33	-3.74	4.66	10.21	1.98	11.13	13.11	
5230	0.00	-2.71	3.93	9.90	1.04	11.12	12.16	-3.94	4.68	10.21	1.98	10.95	12.93	
5270	0.00	-2.79	3.94	9.91	1.04	11.06	12.10	-3.87	4.70	10.21	1.98	11.04	13.02	
5310	0.00	-2.80	3.95	9.91	1.04	11.06	12.10	-3.84	4.72	10.21	1.98	11.09	13.07	
5510	0.00	-3.17	4.00	9.92	1.04	10.75	11.79	-3.97	4.80	10.22	1.98	11.05	13.03	
5550	0.00	-2.99	4.00	9.91	1.04	10.92	11.96	-3.98	4.81	10.22	1.98	11.05	13.03	
5670	0.00	-3.11	3.95	9.90	1.04	10.74	11.78	-3.96	4.77	10.23	1.98	11.04	13.02	
5710	0.00	-3.12	3.90	9.90	1.04	10.68	11.72	-3.92	4.73	10.23	1.98	11.04	13.02	
5755	0.00	-2.57	3.90	9.90	1.04	11.23	12.27	-3.60	4.74	10.24	1.98	11.38	13.36	
5795	0.00	-2.55	3.91	9.89	1.04	11.25	12.29	-3.66	4.74	10.24	1.98	11.32	13.30	

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (CDD), (serial no. A-7)

11ac-40 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				1 [mW]	2 [mW]	Sum [mW]			
5190	-	35.848	14.03	13.77	27.80	14.44	23.97	9.53	17.82	17.50	35.32	15.48	29.97	14.49
5230	-	35.943	13.58	13.49	27.07	14.33	23.97	9.64	17.26	17.14	34.40	15.37	29.97	14.60
5270	39.511	35.931	13.18	12.56	25.74	14.11	23.97	9.86	16.75	15.96	32.71	15.15	29.97	14.82
5310	39.447	35.862	13.24	12.71	25.95	14.14	23.97	9.83	16.83	16.14	32.97	15.18	29.97	14.79
5510	39.532	35.807	14.09	13.27	27.37	14.37	23.97	9.60	17.91	16.87	34.77	15.41	29.97	14.56
5550	39.767	35.888	12.97	12.13	25.11	14.00	23.97	9.97	16.48	15.42	31.90	15.04	29.97	14.93
5670	39.636	35.919	11.04	12.88	23.92	13.79	23.97	10.18	14.03	16.37	30.40	14.83	29.97	15.14
5710	39.880	35.981	12.33	12.59	24.92	13.97	30.00	16.03	15.67	16.00	31.66	15.01	29.97	14.96
5755	-	35.951	10.99	12.76	23.75	13.76	30.00	16.24	13.96	16.22	30.18	14.80	36.00	21.20
5795	-	35.958	12.19	13.46	25.65	14.09	30.00	15.91	15.49	17.10	32.59	15.13	36.00	20.87

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 1					
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-2.34	3.91	9.90	1.04	11.47	12.51	-2.83	4.01	10.21	1.04	11.39	12.43
5230	0.00	-2.50	3.93	9.90	1.04	11.33	12.37	-2.94	4.03	10.21	1.04	11.30	12.34
5270	0.00	-2.65	3.94	9.91	1.04	11.20	12.24	-3.27	4.05	10.21	1.04	10.99	12.03
5310	0.00	-2.64	3.95	9.91	1.04	11.22	12.26	-3.24	4.07	10.21	1.04	11.04	12.08
5510	0.00	-2.43	4.00	9.92	1.04	11.49	12.53	-3.14	4.15	10.22	1.04	11.23	12.27
5550	0.00	-2.78	4.00	9.91	1.04	11.13	12.17	-3.54	4.16	10.22	1.04	10.84	11.88
5670	0.00	-3.42	3.95	9.90	1.04	10.43	11.47	-3.25	4.12	10.23	1.04	11.10	12.14
5710	0.00	-2.89	3.90	9.90	1.04	10.91	11.95	-3.31	4.08	10.23	1.04	11.00	12.04
5755	0.00	-3.39	3.90	9.90	1.04	10.41	11.45	-3.27	4.09	10.24	1.04	11.06	12.10
5795	0.00	-2.94	3.91	9.89	1.04	10.86	11.90	-3.04	4.09	10.24	1.04	11.29	12.33

Sample Calculation: (*1) Power was measured with using the gate function of power meter.)
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Directional Gain
Directional Gain = G ANT + Array Gain
G ANT = Set equal to the gain of the antenna having the highest gain
Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4
N ANT = number of transmit antennas = 2
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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (CDD), (serial no. B-5)

11ac-40 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5190	-	35.848	13.52	12.74	26.26	14.19	23.97	9.78	21.33	20.09	41.42	16.17	29.97	13.80
5230	-	35.943	12.91	12.59	25.50	14.07	23.97	9.90	20.37	19.86	40.23	16.05	29.97	13.92
5270	39.511	35.931	12.65	12.65	25.29	14.03	23.97	9.94	19.95	19.95	39.91	16.01	29.97	13.96
5310	39.447	35.862	12.76	12.82	25.59	14.08	23.97	9.89	20.14	20.23	40.37	16.06	29.97	13.91
5510	39.532	35.807	11.75	12.62	24.37	13.87	23.97	10.10	18.54	19.91	38.44	15.85	29.97	14.12
5550	39.767	35.888	12.30	12.68	24.98	13.98	23.97	9.99	19.41	20.00	39.41	15.96	29.97	14.01
5670	39.636	35.919	11.99	12.62	24.61	13.91	23.97	10.06	18.92	19.91	38.83	15.89	29.97	14.08
5710	39.880	35.981	11.83	12.71	24.54	13.90	30.00	16.10	18.66	20.04	38.71	15.88	29.97	14.09
5755	-	35.951	13.21	13.61	26.83	14.29	30.00	15.71	20.84	21.48	42.32	16.27	36.00	19.73
5795	-	35.958	13.30	13.55	26.86	14.29	30.00	15.71	20.99	21.38	42.37	16.27	36.00	19.73

Antenna: Chain 0						Antenna: Chain 1							
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-2.50	3.91	9.90	1.98	11.31	13.29	-3.82	4.66	10.21	1.98	11.05	13.03
5230	0.00	-2.72	3.93	9.90	1.98	11.11	13.09	-3.89	4.68	10.21	1.98	11.00	12.98
5270	0.00	-2.83	3.94	9.91	1.98	11.02	13.00	-3.89	4.70	10.21	1.98	11.02	13.00
5310	0.00	-2.80	3.95	9.91	1.98	11.06	13.04	-3.85	4.72	10.21	1.98	11.08	13.06
5510	0.00	-3.22	4.00	9.92	1.98	10.70	12.68	-4.01	4.80	10.22	1.98	11.01	12.99
5550	0.00	-3.01	4.00	9.91	1.98	10.90	12.88	-4.00	4.81	10.22	1.98	11.03	13.01
5670	0.00	-3.06	3.95	9.90	1.98	10.79	12.77	-3.99	4.77	10.23	1.98	11.01	12.99
5710	0.00	-3.07	3.90	9.90	1.98	10.73	12.71	-3.92	4.73	10.23	1.98	11.04	13.02
5755	0.00	-2.59	3.90	9.90	1.98	11.21	13.19	-3.64	4.74	10.24	1.98	11.34	13.32
5795	0.00	-2.56	3.91	9.89	1.98	11.24	13.22	-3.66	4.74	10.24	1.98	11.32	13.30

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

Shonan EMC Lab.

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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (MIMO), (serial no. A-7)

11ac-40 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	36.804	14.00	13.96	27.96	14.47	23.97	9.50	17.78	17.74	35.52	15.51	29.97	14.46
5230	-	36.868	13.55	13.87	27.42	14.38	23.97	9.59	17.22	17.62	34.84	15.42	29.97	14.55
5270	42.095	36.853	13.55	12.91	26.46	14.23	23.97	9.74	17.22	16.41	33.62	15.27	29.97	14.70
5310	42.429	36.784	13.34	13.03	26.37	14.21	23.97	9.76	16.94	16.56	33.50	15.25	29.97	14.72
5510	43.532	36.791	14.06	13.30	27.37	14.37	23.97	9.60	17.86	16.90	34.77	15.41	29.97	14.56
5550	42.722	36.864	13.09	12.25	25.34	14.04	23.97	9.93	16.63	15.56	32.19	15.08	29.97	14.89
5670	42.731	36.726	11.14	12.85	24.00	13.80	23.97	10.17	14.16	16.33	30.49	14.84	29.97	15.13
5710	42.630	36.815	12.47	12.62	25.09	14.00	30.00	16.00	15.85	16.03	31.88	15.04	29.97	14.93
5755	-	36.798	11.22	12.97	24.19	13.84	30.00	16.16	14.26	16.48	30.74	14.88	36.00	21.12
5795	-	36.942	12.33	13.46	25.79	14.11	30.00	15.89	15.67	17.10	32.77	15.15	36.00	20.85

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0					Antenna: Chain 1					Result	
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-2.35	3.91	9.90	1.04	11.46	12.50	-2.77	4.01	10.21	1.04	11.45	12.49
5230	0.00	-2.51	3.93	9.90	1.04	11.32	12.36	-2.82	4.03	10.21	1.04	11.42	12.46
5270	0.00	-2.53	3.94	9.91	1.04	11.32	12.36	-3.15	4.05	10.21	1.04	11.11	12.15
5310	0.00	-2.61	3.95	9.91	1.04	11.25	12.29	-3.13	4.07	10.21	1.04	11.15	12.19
5510	0.00	-2.44	4.00	9.92	1.04	11.48	12.52	-3.13	4.15	10.22	1.04	11.24	12.28
5550	0.00	-2.74	4.00	9.91	1.04	11.17	12.21	-3.50	4.16	10.22	1.04	10.88	11.92
5670	0.00	-3.38	3.95	9.90	1.04	10.47	11.51	-3.26	4.12	10.23	1.04	11.09	12.13
5710	0.00	-2.84	3.90	9.90	1.04	10.96	12.00	-3.30	4.08	10.23	1.04	11.01	12.05
5755	0.00	-3.30	3.90	9.90	1.04	10.50	11.54	-3.20	4.09	10.24	1.04	11.13	12.17
5795	0.00	-2.89	3.91	9.89	1.04	10.91	11.95	-3.04	4.09	10.24	1.04	11.29	12.33

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (MIMO), (serial no. B-5)

11ac-40 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz] (B for FCC)	99% OBW [MHz] (B for IC)	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	36.804	13.87	13.03	26.90	14.30	23.97	9.67	17.62	20.56	38.18	15.82	29.97	14.15
5230	-	36.868	13.06	12.65	25.71	14.10	23.97	9.87	16.60	19.95	36.55	15.63	29.97	14.34
5270	42.095	36.853	12.88	12.85	25.74	14.11	23.97	9.86	16.37	20.28	36.64	15.64	29.97	14.33
5310	42.429	36.784	12.85	13.12	25.97	14.15	23.97	9.82	16.33	20.70	37.03	15.69	29.97	14.28
5510	43.532	36.791	11.99	12.82	24.82	13.95	23.97	10.02	15.24	20.23	35.47	15.50	29.97	14.47
5550	42.722	36.864	12.56	12.88	25.44	14.06	23.97	9.91	15.96	20.32	36.28	15.60	29.97	14.37
5670	42.731	36.726	12.08	12.71	24.78	13.94	23.97	10.03	15.35	20.04	35.39	15.49	29.97	14.48
5710	42.630	36.815	11.91	12.91	24.82	13.95	30.00	16.05	15.14	20.37	35.51	15.50	29.97	14.47
5755	-	36.798	13.37	13.77	27.14	14.34	30.00	15.66	16.98	21.73	38.71	15.88	36.00	20.12
5795	-	36.942	13.40	13.65	27.04	14.32	30.00	15.68	17.02	21.53	38.55	15.86	36.00	20.14

Antenna: Chain 0								Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor [*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]	
5190	0.00	-2.39	3.91	9.90	1.04	11.42	12.46	-3.72	4.66	10.21	1.98	11.15	13.13	
5230	0.00	-2.67	3.93	9.90	1.04	11.16	12.20	-3.87	4.68	10.21	1.98	11.02	13.00	
5270	0.00	-2.75	3.94	9.91	1.04	11.10	12.14	-3.82	4.70	10.21	1.98	11.09	13.07	
5310	0.00	-2.77	3.95	9.91	1.04	11.09	12.13	-3.75	4.72	10.21	1.98	11.18	13.16	
5510	0.00	-3.13	4.00	9.92	1.04	10.79	11.83	-3.94	4.80	10.22	1.98	11.08	13.06	
5550	0.00	-2.92	4.00	9.91	1.04	10.99	12.03	-3.93	4.81	10.22	1.98	11.10	13.08	
5670	0.00	-3.03	3.95	9.90	1.04	10.82	11.86	-3.96	4.77	10.23	1.98	11.04	13.02	
5710	0.00	-3.04	3.90	9.90	1.04	10.76	11.80	-3.85	4.73	10.23	1.98	11.11	13.09	
5755	0.00	-2.54	3.90	9.90	1.04	11.26	12.30	-3.59	4.74	10.24	1.98	11.39	13.37	
5795	0.00	-2.53	3.91	9.89	1.04	11.27	12.31	-3.63	4.74	10.24	1.98	11.35	13.33	

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-80 (CDD), (serial no. A-7)

11ac-80 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5210	-	76.385	13.71	13.58	27.29	14.36	23.97	9.61	17.42	17.26	34.68	15.40	29.97	14.57
5290	85.310	76.547	13.27	12.62	25.89	14.13	23.97	9.84	16.87	16.03	32.90	15.17	29.97	14.80
5530	85.240	76.591	12.62	12.11	24.72	13.93	23.97	10.04	16.03	15.38	31.41	14.97	29.97	15.00
5610	85.457	76.575	13.34	12.27	25.61	14.08	23.97	9.89	16.94	15.60	32.54	15.12	29.97	14.85
5690	85.498	76.606	12.18	12.85	25.03	13.99	30.00	16.01	15.48	16.33	31.81	15.03	29.97	14.94
5775	-	76.439	12.02	13.21	25.24	14.02	30.00	15.98	15.28	16.79	32.06	15.06	36.00	20.94

Tested Frequency [MHz]	Antenna: Chain 0						Antenna: Chain 1						
	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5210	0.00	-2.44	3.91	9.90	1.04	11.37	12.41	-2.90	4.02	10.21	1.04	11.33	12.37
5290	0.00	-2.62	3.94	9.91	1.04	11.23	12.27	-3.26	4.06	10.21	1.04	11.01	12.05
5530	0.00	-2.90	4.00	9.91	1.04	11.01	12.05	-3.55	4.16	10.22	1.04	10.83	11.87
5610	0.00	-2.60	3.94	9.91	1.04	11.25	12.29	-3.45	4.11	10.23	1.04	10.89	11.93
5690	0.00	-2.95	3.91	9.90	1.04	10.86	11.90	-3.22	4.08	10.23	1.04	11.09	12.13
5775	0.00	-3.00	3.91	9.89	1.04	10.80	11.84	-3.12	4.09	10.24	1.04	11.21	12.25

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019
Temperature / Humidity 24 deg. C / 48 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-80 (CDD), (serial no. B-5)

11ac-80 CDD High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]					Chain 1 [mW]					
5210	-	76.385	13.34	12.79	26.13	14.17	23.97	9.80	21.04	20.18	41.22	16.15	29.97	13.82
5290	85.310	76.547	12.68	12.65	25.32	14.04	23.97	9.93	20.00	19.95	39.95	16.02	29.97	13.95
5530	85.240	76.591	11.97	12.65	24.61	13.91	23.97	10.06	18.88	19.95	38.83	15.89	29.97	14.08
5610	85.457	76.575	12.79	12.50	25.30	14.03	23.97	9.94	20.18	19.72	39.91	16.01	29.97	13.96
5690	85.498	76.606	12.99	14.00	26.99	14.31	30.00	15.69	20.50	22.08	42.58	16.29	29.97	13.68
5775	-	76.439	13.03	13.46	26.49	14.23	30.00	15.77	20.56	21.23	41.79	16.21	36.00	19.79

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5210	0.00	-2.56	3.91	9.90	1.98	11.25	13.23	-3.81	4.67	10.21	1.98	11.07	13.05
5290	0.00	-2.82	3.94	9.91	1.98	11.03	13.01	-3.90	4.71	10.21	1.98	11.02	13.00
5530	0.00	-3.13	4.00	9.91	1.98	10.78	12.76	-4.01	4.81	10.22	1.98	11.02	13.00
5610	0.00	-2.78	3.94	9.91	1.98	11.07	13.05	-4.02	4.76	10.23	1.98	10.97	12.95
5690	0.00	-2.67	3.91	9.90	1.98	11.14	13.12	-3.50	4.73	10.23	1.98	11.46	13.44
5775	0.00	-2.65	3.91	9.89	1.98	11.15	13.13	-3.69	4.74	10.24	1.98	11.29	13.27

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power
(High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11ac-80 (MIMO), (serial no. A-7)

11ac-80 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5210	-	76.355	13.55	13.87	27.42	14.38	23.97	9.59	17.22	17.62	34.84	15.42	29.97	14.55
5290	83.821	76.666	13.40	13.09	26.49	14.23	23.97	9.74	17.02	16.63	33.66	15.27	29.97	14.70
5530	84.860	76.587	13.18	12.25	25.43	14.05	23.97	9.92	16.75	15.56	32.31	15.09	29.97	14.88
5610	84.665	76.633	13.49	12.05	25.54	14.07	23.97	9.90	17.14	15.31	32.45	15.11	29.97	14.86
5690	85.312	76.574	12.61	12.88	25.49	14.06	30.00	15.94	16.02	16.37	32.39	15.10	29.97	14.87
5775	-	76.562	12.79	13.49	26.28	14.20	30.00	15.80	16.26	17.14	33.40	15.24	36.00	20.76

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0					Antenna: Chain 1					Result	
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result Cond. Power [dBm]	e.i.r.p. [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result Cond. Power [dBm]	e.i.r.p. [dBm]
5210	0.00	-2.49	3.91	9.90	1.04	11.32	12.36	-2.81	4.02	10.21	1.04	11.42	12.46
5290	0.00	-2.58	3.94	9.91	1.04	11.27	12.31	-3.10	4.06	10.21	1.04	11.17	12.21
5530	0.00	-2.71	4.00	9.91	1.04	11.20	12.24	-3.50	4.16	10.22	1.04	10.88	11.92
5610	0.00	-2.55	3.94	9.91	1.04	11.30	12.34	-3.53	4.11	10.23	1.04	10.81	11.85
5690	0.00	-2.80	3.91	9.90	1.04	11.01	12.05	-3.21	4.08	10.23	1.04	11.10	12.14
5775	0.00	-2.73	3.91	9.89	1.04	11.07	12.11	-3.03	4.09	10.24	1.04	11.30	12.34

Sample Calculation: (*1) Power was measured with using the gate function of power meter.)
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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (High Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11ac-80 (MIMO), (serial no. B-5)

11ac-80 MIMO High power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]									
5210	-	76.355	13.00	12.71	25.71	14.10	23.97	9.87	16.52	20.04	36.56	15.63	29.97	14.34
5290	83.821	76.666	12.79	12.88	25.68	14.10	23.97	9.87	16.26	20.32	36.58	15.63	29.97	14.34
5530	84.860	76.587	11.91	12.68	24.59	13.91	23.97	10.06	15.14	20.00	35.13	15.46	29.97	14.51
5610	84.665	76.633	13.06	12.30	25.36	14.04	23.97	9.93	16.60	19.41	36.00	15.56	29.97	14.41
5690	85.312	76.574	13.20	13.80	27.01	14.31	30.00	15.69	16.78	21.78	38.55	15.86	29.97	14.11
5775	-	76.562	13.15	13.24	26.40	14.22	30.00	15.78	16.71	20.89	37.60	15.75	36.00	20.25

Antenna: Chain 0									Antenna: Chain 1					
Tested Frequency [MHz]	Duty Factor *1) [dB]	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]	
5210	0.00	-2.67	3.91	9.90	1.04	11.14	12.18	-3.84	4.67	10.21	1.98	11.04	13.02	
5290	0.00	-2.78	3.94	9.91	1.04	11.07	12.11	-3.82	4.71	10.21	1.98	11.10	13.08	
5530	0.00	-3.15	4.00	9.91	1.04	10.76	11.80	-4.00	4.81	10.22	1.98	11.03	13.01	
5610	0.00	-2.69	3.94	9.91	1.04	11.16	12.20	-4.09	4.76	10.23	1.98	10.90	12.88	
5690	0.00	-2.60	3.91	9.90	1.04	11.21	12.25	-3.56	4.73	10.23	1.98	11.40	13.38	
5775	0.00	-2.61	3.91	9.89	1.04	11.19	12.23	-3.76	4.74	10.24	1.98	11.22	13.20	

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11a, (serial no. A-7)

11a CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz] (B for FCC)	99% OBW [MHz] (B for IC)	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	17.081	7.03	7.57	14.60	11.64	23.97	12.33	8.93	9.62	18.55	12.68	29.97	17.29
5220	-	17.123	6.87	7.82	14.69	11.67	23.97	12.30	8.73	9.93	18.66	12.71	29.97	17.26
5240	-	17.031	6.85	7.43	14.28	11.55	23.97	12.42	8.71	9.44	18.15	12.59	29.97	17.38
5260	20.799	17.100	6.84	7.08	13.92	11.44	23.97	12.53	8.69	8.99	17.68	12.48	29.97	17.49
5300	20.532	17.083	6.93	7.11	14.05	11.48	23.97	12.49	8.81	9.04	17.85	12.52	29.97	17.45
5320	20.847	17.091	6.76	7.11	13.87	11.42	23.97	12.55	8.59	9.04	17.63	12.46	29.97	17.51
5500	21.057	17.158	7.01	7.31	14.32	11.56	23.97	12.41	8.91	9.29	18.20	12.60	29.97	17.37
5580	20.295	17.070	7.11	6.64	13.75	11.38	23.97	12.59	9.04	8.43	17.47	12.42	29.97	17.55
5700	21.034	17.109	7.10	7.45	14.55	11.63	23.97	12.34	9.03	9.46	18.49	12.67	29.97	17.30
5720	21.182	17.112	7.31	7.38	14.69	11.67	23.97	12.30	9.29	9.38	18.67	12.71	29.97	17.26
5745	-	17.090	6.51	7.60	14.11	11.49	30.00	18.51	8.27	9.66	17.93	12.53	36.00	23.47
5785	-	17.055	6.50	7.55	14.05	11.48	30.00	18.52	8.26	9.59	17.85	12.52	36.00	23.48
5825	-	17.076	6.48	7.26	13.74	11.38	30.00	18.62	8.23	9.23	17.46	12.42	36.00	23.58

Antenna: Chain 0								Antenna: Chain 1							
Tested Frequency [MHz]	Duty Factor [*1] [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result			
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]		
5180	0.00	-5.34	3.91	9.90	1.04	8.47	9.51	-5.43	4.01	10.21	1.04	8.79	9.83		
5220	0.00	-5.46	3.92	9.91	1.04	8.37	9.41	-5.30	4.02	10.21	1.04	8.93	9.97		
5240	0.00	-5.48	3.93	9.91	1.04	8.36	9.40	-5.54	4.04	10.21	1.04	8.71	9.75		
5260	0.00	-5.50	3.94	9.91	1.04	8.35	9.39	-5.76	4.05	10.21	1.04	8.50	9.54		
5300	0.00	-5.45	3.95	9.91	1.04	8.41	9.45	-5.75	4.06	10.21	1.04	8.52	9.56		
5320	0.00	-5.56	3.95	9.91	1.04	8.30	9.34	-5.76	4.07	10.21	1.04	8.52	9.56		
5500	0.00	-5.46	4.00	9.92	1.04	8.46	9.50	-5.73	4.15	10.22	1.04	8.64	9.68		
5580	0.00	-5.40	4.01	9.91	1.04	8.52	9.56	-6.16	4.16	10.22	1.04	8.22	9.26		
5700	0.00	-5.27	3.89	9.90	1.04	8.52	9.56	-5.58	4.07	10.23	1.04	8.72	9.76		
5720	0.00	-5.16	3.90	9.90	1.04	8.64	9.68	-5.63	4.08	10.23	1.04	8.68	9.72		
5745	0.00	-5.67	3.90	9.90	1.04	8.13	9.17	-5.50	4.08	10.23	1.04	8.81	9.85		
5785	0.00	-5.67	3.91	9.89	1.04	8.13	9.17	-5.55	4.09	10.24	1.04	8.78	9.82		
5825	0.00	-5.70	3.93	9.89	1.04	8.12	9.16	-5.73	4.10	10.24	1.04	8.61	9.65		

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11a, (serial no. B-5)

11a CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain1 [mW]	Sum [mW]				Chain 0 [mW]	Chain1 [mW]	Sum [mW]			
5180	-	17.081	7.13	7.80	14.93	11.74	23.97	12.23	11.25	12.30	23.55	13.72	29.97	16.25
5220	-	17.123	6.87	7.78	14.65	11.66	23.97	12.31	10.84	12.27	23.11	13.64	29.97	16.33
5240	-	17.031	6.82	7.57	14.39	11.58	23.97	12.39	10.76	11.94	22.70	13.56	29.97	16.41
5260	20.799	17.100	6.76	7.55	14.31	11.56	23.97	12.41	10.67	11.91	22.58	13.54	29.97	16.43
5300	20.532	17.083	6.90	7.89	14.79	11.70	23.97	12.27	10.89	12.45	23.33	13.68	29.97	16.29
5320	20.847	17.091	6.67	7.74	14.41	11.59	23.97	12.38	10.52	12.22	22.74	13.57	29.97	16.40
5500	21.057	17.158	6.23	7.31	13.54	11.32	23.97	12.65	9.83	11.53	21.37	13.30	29.97	16.67
5580	20.295	17.070	6.98	7.33	14.31	11.56	23.97	12.41	11.02	11.56	22.58	13.54	29.97	16.43
5700	21.034	17.109	6.99	7.87	14.86	11.72	23.97	12.25	11.03	12.42	23.45	13.70	29.97	16.27
5720	21.182	17.112	7.21	7.93	15.14	11.80	23.97	12.17	11.38	12.50	23.88	13.78	29.97	16.19
5745	-	17.090	7.07	7.62	14.69	11.67	30.00	18.33	11.15	12.02	23.17	13.65	36.00	22.35
5785	-	17.055	7.29	7.48	14.78	11.70	30.00	18.30	11.51	11.80	23.31	13.68	36.00	22.32
5825	-	17.076	7.04	7.31	14.35	11.57	30.00	18.43	11.11	11.53	22.64	13.55	36.00	22.45

Tested Frequency [MHz]	Antenna: Chain 0						Antenna: Chain 1						
	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-5.28	3.91	9.90	1.98	8.53	10.51	-5.95	4.66	10.21	1.98	8.92	10.90
5220	0.00	-5.46	3.92	9.91	1.98	8.37	10.35	-5.97	4.67	10.21	1.98	8.91	10.89
5240	0.00	-5.50	3.93	9.91	1.98	8.34	10.32	-6.11	4.69	10.21	1.98	8.79	10.77
5260	0.00	-5.55	3.94	9.91	1.98	8.30	10.28	-6.13	4.70	10.21	1.98	8.78	10.76
5300	0.00	-5.47	3.95	9.91	1.98	8.39	10.37	-5.95	4.71	10.21	1.98	8.97	10.95
5320	0.00	-5.62	3.95	9.91	1.98	8.24	10.22	-6.04	4.72	10.21	1.98	8.89	10.87
5500	0.00	-5.97	4.00	9.92	1.98	7.95	9.93	-6.38	4.80	10.22	1.98	8.64	10.62
5580	0.00	-5.48	4.01	9.91	1.98	8.44	10.42	-6.38	4.81	10.22	1.98	8.65	10.63
5700	0.00	-5.34	3.89	9.90	1.98	8.45	10.43	-5.99	4.72	10.23	1.98	8.96	10.94
5720	0.00	-5.22	3.90	9.90	1.98	8.58	10.56	-5.97	4.73	10.23	1.98	8.99	10.97
5745	0.00	-5.31	3.90	9.90	1.98	8.49	10.47	-6.14	4.73	10.23	1.98	8.82	10.80
5785	0.00	-5.17	3.91	9.89	1.98	8.63	10.61	-6.24	4.74	10.24	1.98	8.74	10.72
5825	0.00	-5.34	3.93	9.89	1.98	8.48	10.46	-6.35	4.75	10.24	1.98	8.64	10.62

Sample Calculation: (*1) Power was measured with using the gate function of power meter.)
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Directional Gain
Directional Gain = G ANT + Array Gain
G ANT = Set equal to the gain of the antenna having the highest gain
Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4
N ANT = number of transmit antennas = 2
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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

**Maximum Conducted Output Power
(Low Power)**

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-20 (CDD), (serial no. A-7)

11n-20 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.162	7.06	7.74	14.81	11.70	23.97	12.27	8.97	9.84	18.81	12.74	29.97	17.23
5220	-	18.132	7.00	7.87	14.87	11.72	23.97	12.25	8.89	10.00	18.89	12.76	29.97	17.21
5240	-	18.205	6.96	7.55	14.51	11.62	23.97	12.35	8.85	9.59	18.44	12.66	29.97	17.31
5260	21.015	18.132	6.85	7.14	14.00	11.46	23.97	12.51	8.71	9.08	17.79	12.50	29.97	17.47
5300	21.255	18.185	7.06	7.31	14.37	11.58	23.97	12.39	8.97	9.29	18.26	12.62	29.97	17.35
5320	21.344	18.160	6.81	7.13	13.94	11.44	23.97	12.53	8.65	9.06	17.71	12.48	29.97	17.49
5500	21.330	18.153	7.22	7.45	14.67	11.66	23.97	12.31	9.18	9.46	18.64	12.70	29.97	17.27
5580	21.430	18.198	7.14	6.65	13.80	11.40	23.97	12.57	9.08	8.45	17.53	12.44	29.97	17.53
5700	21.285	18.191	7.19	7.52	14.70	11.67	23.97	12.30	9.13	9.55	18.68	12.71	29.97	17.26
5720	21.334	18.175	7.30	7.43	14.73	11.68	23.97	12.29	9.27	9.44	18.71	12.72	29.97	17.25
5745	-	18.183	6.49	7.66	14.15	11.51	30.00	18.49	8.25	9.73	17.97	12.55	36.00	23.45
5785	-	18.208	6.62	7.80	14.42	11.59	30.00	18.41	8.41	9.91	18.32	12.63	36.00	23.37
5825	-	18.162	6.59	7.43	14.02	11.47	30.00	18.53	8.37	9.44	17.81	12.51	36.00	23.49

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-5.32	3.91	9.90	1.04	8.49	9.53	-5.33	4.01	10.21	1.04	8.89	9.93
5220	0.00	-5.38	3.92	9.91	1.04	8.45	9.49	-5.27	4.02	10.21	1.04	8.96	10.00
5240	0.00	-5.41	3.93	9.91	1.04	8.43	9.47	-5.47	4.04	10.21	1.04	8.78	9.82
5260	0.00	-5.49	3.94	9.91	1.04	8.36	9.40	-5.72	4.05	10.21	1.04	8.54	9.58
5300	0.00	-5.37	3.95	9.91	1.04	8.49	9.53	-5.63	4.06	10.21	1.04	8.64	9.68
5320	0.00	-5.53	3.95	9.91	1.04	8.33	9.37	-5.75	4.07	10.21	1.04	8.53	9.57
5500	0.00	-5.33	4.00	9.92	1.04	8.59	9.63	-5.65	4.15	10.22	1.04	8.72	9.76
5580	0.00	-5.38	4.01	9.91	1.04	8.54	9.58	-6.15	4.16	10.22	1.04	8.23	9.27
5700	0.00	-5.22	3.89	9.90	1.04	8.57	9.61	-5.54	4.07	10.23	1.04	8.76	9.80
5720	0.00	-5.17	3.90	9.90	1.04	8.63	9.67	-5.60	4.08	10.23	1.04	8.71	9.75
5745	0.00	-5.68	3.90	9.90	1.04	8.12	9.16	-5.47	4.08	10.23	1.04	8.84	9.88
5785	0.00	-5.59	3.91	9.89	1.04	8.21	9.25	-5.41	4.09	10.24	1.04	8.92	9.96
5825	0.00	-5.63	3.93	9.89	1.04	8.19	9.23	-5.63	4.10	10.24	1.04	8.71	9.75

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

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

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-20 (CDD), (serial no. B-5)

11n-20 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5180	-	18.162	6.92	7.64	14.56	11.63	23.97	12.34	10.91	12.05	22.96	13.61	29.97	16.36
5220	-	18.132	6.78	7.66	14.43	11.59	23.97	12.38	10.69	12.08	22.77	13.57	29.97	16.40
5240	-	18.205	6.76	7.48	14.24	11.54	23.97	12.43	10.66	11.80	22.46	13.52	29.97	16.45
5260	21.015	18.132	6.78	7.53	14.31	11.56	23.97	12.41	10.69	11.89	22.58	13.54	29.97	16.43
5300	21.255	18.185	6.84	7.83	14.67	11.67	23.97	12.30	10.79	12.36	23.15	13.65	29.97	16.32
5320	21.344	18.160	6.58	7.71	14.29	11.55	23.97	12.42	10.38	12.16	22.54	13.53	29.97	16.44
5500	21.330	18.153	6.19	7.33	13.52	11.31	23.97	12.66	9.77	11.56	21.33	13.29	29.97	16.68
5580	21.430	18.198	6.97	7.35	14.31	11.56	23.97	12.41	10.99	11.59	22.58	13.54	29.97	16.43
5700	21.285	18.191	6.94	7.93	14.87	11.72	23.97	12.25	10.95	12.50	23.46	13.70	29.97	16.27
5720	21.334	18.175	7.21	7.80	15.01	11.76	23.97	12.21	11.38	12.30	23.68	13.74	29.97	16.23
5745	-	18.183	7.08	7.71	14.79	11.70	30.00	18.30	11.18	12.16	23.34	13.68	36.00	22.32
5785	-	18.208	7.19	7.43	14.62	11.65	30.00	18.35	11.35	11.72	23.07	13.63	36.00	22.37
5825	-	18.162	7.20	7.41	14.62	11.65	30.00	18.35	11.37	11.69	23.06	13.63	36.00	22.37

Tested Frequency [MHz]	Antenna: Chain 0						Antenna: Chain 1						
	Duty Factor (*1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result Cond. Power [dBm]	Result e.i.r.p. [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result Power [dBm]	Result e.i.r.p. [dBm]
5180	0.00	-5.41	3.91	9.90	1.98	8.40	10.38	-6.04	4.66	10.21	1.98	8.83	10.81
5220	0.00	-5.52	3.92	9.91	1.98	8.31	10.29	-6.04	4.67	10.21	1.98	8.84	10.82
5240	0.00	-5.54	3.93	9.91	1.98	8.30	10.28	-6.16	4.69	10.21	1.98	8.74	10.72
5260	0.00	-5.54	3.94	9.91	1.98	8.31	10.29	-6.14	4.70	10.21	1.98	8.77	10.75
5300	0.00	-5.51	3.95	9.91	1.98	8.35	10.33	-5.98	4.71	10.21	1.98	8.94	10.92
5320	0.00	-5.68	3.95	9.91	1.98	8.18	10.16	-6.06	4.72	10.21	1.98	8.87	10.85
5500	0.00	-6.00	4.00	9.92	1.98	7.92	9.90	-6.37	4.80	10.22	1.98	8.65	10.63
5580	0.00	-5.49	4.01	9.91	1.98	8.43	10.41	-6.37	4.81	10.22	1.98	8.66	10.64
5700	0.00	-5.37	3.89	9.90	1.98	8.42	10.40	-5.96	4.72	10.23	1.98	8.99	10.97
5720	0.00	-5.22	3.90	9.90	1.98	8.58	10.56	-6.04	4.73	10.23	1.98	8.92	10.90
5745	0.00	-5.30	3.90	9.90	1.98	8.50	10.48	-6.09	4.73	10.23	1.98	8.87	10.85
5785	0.00	-5.23	3.91	9.89	1.98	8.57	10.55	-6.27	4.74	10.24	1.98	8.71	10.69
5825	0.00	-5.24	3.93	9.89	1.98	8.58	10.56	-6.29	4.75	10.24	1.98	8.70	10.68

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

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

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-20 (MIMO), (serial no. A-7)

11n-20 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.211	7.21	7.80	15.01	11.76	23.97	12.21	9.16	9.91	19.07	12.80	29.97	17.17
5220	-	18.194	7.05	7.89	14.94	11.74	23.97	12.23	8.95	10.02	18.98	12.78	29.97	17.19
5240	-	18.226	7.04	7.69	14.74	11.68	23.97	12.29	8.95	9.77	18.72	12.72	29.97	17.25
5260	21.483	18.245	7.05	7.36	14.41	11.59	23.97	12.38	8.95	9.35	18.31	12.63	29.97	17.34
5300	21.428	18.174	7.14	7.40	14.54	11.63	23.97	12.34	9.08	9.40	18.48	12.67	29.97	17.30
5320	21.213	18.146	6.90	7.38	14.28	11.55	23.97	12.42	8.77	9.38	18.15	12.59	29.97	17.38
5500	21.461	18.176	7.41	7.57	14.98	11.75	23.97	12.22	9.41	9.62	19.03	12.79	29.97	17.18
5580	21.448	18.105	7.38	6.79	14.17	11.51	23.97	12.46	9.38	8.63	18.01	12.55	29.97	17.42
5700	21.342	18.184	7.22	7.73	14.95	11.75	23.97	12.22	9.17	9.82	18.99	12.79	29.97	17.18
5720	21.086	18.196	7.43	7.67	15.10	11.79	23.97	12.18	9.44	9.75	19.19	12.83	29.97	17.14
5745	-	18.165	6.60	7.82	14.41	11.59	30.00	18.41	8.38	9.93	18.31	12.63	36.00	23.37
5785	-	18.261	6.64	7.83	14.47	11.61	30.00	18.39	8.43	9.95	18.39	12.65	36.00	23.35
5825	-	18.229	6.57	7.41	13.98	11.46	30.00	18.54	8.35	9.42	17.77	12.50	36.00	23.50

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 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]
5180	0.00	-5.23	3.91	9.90	1.04	8.58	9.62	-5.30	4.01	10.21	1.04	8.92	9.96
5220	0.00	-5.35	3.92	9.91	1.04	8.48	9.52	-5.26	4.02	10.21	1.04	8.97	10.01
5240	0.00	-5.36	3.93	9.91	1.04	8.48	9.52	-5.39	4.04	10.21	1.04	8.86	9.90
5260	0.00	-5.37	3.94	9.91	1.04	8.48	9.52	-5.59	4.05	10.21	1.04	8.67	9.71
5300	0.00	-5.32	3.95	9.91	1.04	8.54	9.58	-5.58	4.06	10.21	1.04	8.69	9.73
5320	0.00	-5.47	3.95	9.91	1.04	8.39	9.43	-5.60	4.07	10.21	1.04	8.68	9.72
5500	0.00	-5.22	4.00	9.92	1.04	8.70	9.74	-5.58	4.15	10.22	1.04	8.79	9.83
5580	0.00	-5.24	4.01	9.91	1.04	8.68	9.72	-6.06	4.16	10.22	1.04	8.32	9.36
5700	0.00	-5.20	3.89	9.90	1.04	8.59	9.63	-5.42	4.07	10.23	1.04	8.88	9.92
5720	0.00	-5.09	3.90	9.90	1.04	8.71	9.75	-5.46	4.08	10.23	1.04	8.85	9.89
5745	0.00	-5.61	3.90	9.90	1.04	8.19	9.23	-5.38	4.08	10.23	1.04	8.93	9.97
5785	0.00	-5.58	3.91	9.89	1.04	8.22	9.26	-5.39	4.09	10.24	1.04	8.94	9.98
5825	0.00	-5.64	3.93	9.89	1.04	8.18	9.22	-5.64	4.10	10.24	1.04	8.70	9.74

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

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 Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-20 (MIMO), (serial no. B-5)

11n-20 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5180	-	18.211	7.08	7.85	14.93	11.74	23.97	12.23	8.99	12.39	21.38	13.30	29.97	16.67
5220	-	18.194	6.90	7.76	14.66	11.66	23.97	12.31	8.77	12.25	21.02	13.23	29.97	16.74
5240	-	18.226	6.93	7.60	14.53	11.62	23.97	12.35	8.81	11.99	20.80	13.18	29.97	16.79
5260	21.483	18.245	6.84	7.73	14.57	11.63	23.97	12.34	8.69	12.19	20.88	13.20	29.97	16.77
5300	21.428	18.174	6.73	7.91	14.64	11.65	23.97	12.32	8.55	12.47	21.02	13.23	29.97	16.74
5320	21.213	18.146	6.67	7.82	14.48	11.61	23.97	12.36	8.47	12.33	20.80	13.18	29.97	16.79
5500	21.461	18.176	6.29	7.43	13.72	11.37	23.97	12.60	7.99	11.72	19.72	12.95	29.97	17.02
5580	21.448	18.105	7.01	7.43	14.44	11.60	23.97	12.37	8.91	11.72	20.63	13.15	29.97	16.82
5700	21.342	18.184	7.06	7.91	14.96	11.75	23.97	12.22	8.97	12.47	21.44	13.31	29.97	16.66
5720	21.086	18.196	7.33	7.93	15.25	11.83	23.97	12.14	9.31	12.50	21.81	13.39	29.97	16.58
5745	-	18.165	7.20	7.82	15.02	11.77	30.00	18.23	9.15	12.33	21.48	13.32	36.00	22.68
5785	-	18.261	7.36	7.62	14.98	11.76	30.00	18.24	9.35	12.02	21.38	13.30	36.00	22.70
5825	-	18.229	7.22	7.52	14.74	11.68	30.00	18.32	9.17	11.86	21.03	13.23	36.00	22.77

Tested Frequency [MHz]	Antenna: Chain 0						Antenna: Chain 1						
	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result Cond. Power [dBm]	Result e.i.r.p. [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result Cond. Power [dBm]	Result e.i.r.p. [dBm]
5180	0.00	-5.31	3.91	9.90	1.04	8.50	9.54	-5.92	4.66	10.21	1.98	8.95	10.93
5220	0.00	-5.44	3.92	9.91	1.04	8.39	9.43	-5.98	4.67	10.21	1.98	8.90	10.88
5240	0.00	-5.43	3.93	9.91	1.04	8.41	9.45	-6.09	4.69	10.21	1.98	8.81	10.79
5260	0.00	-5.50	3.94	9.91	1.04	8.35	9.39	-6.03	4.70	10.21	1.98	8.88	10.86
5300	0.00	-5.58	3.95	9.91	1.04	8.28	9.32	-5.94	4.71	10.21	1.98	8.98	10.96
5320	0.00	-5.62	3.95	9.91	1.04	8.24	9.28	-6.00	4.72	10.21	1.98	8.93	10.91
5500	0.00	-5.93	4.00	9.92	1.04	7.99	9.03	-6.31	4.80	10.22	1.98	8.71	10.69
5580	0.00	-5.46	4.01	9.91	1.04	8.46	9.50	-6.32	4.81	10.22	1.98	8.71	10.69
5700	0.00	-5.30	3.89	9.90	1.04	8.49	9.53	-5.97	4.72	10.23	1.98	8.98	10.96
5720	0.00	-5.15	3.90	9.90	1.04	8.65	9.69	-5.97	4.73	10.23	1.98	8.99	10.97
5745	0.00	-5.23	3.90	9.90	1.04	8.57	9.61	-6.03	4.73	10.23	1.98	8.93	10.91
5785	0.00	-5.13	3.91	9.89	1.04	8.67	9.71	-6.16	4.74	10.24	1.98	8.82	10.80
5825	0.00	-5.23	3.93	9.89	1.04	8.59	9.63	-6.23	4.75	10.24	1.98	8.76	10.74

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-20 (CDD), (serial no. A-7)

11ac-20 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.215	7.29	7.83	15.13	11.80	23.97	12.17	9.27	9.95	19.22	12.84	29.97	17.13
5220	-	18.158	7.08	7.93	15.00	11.76	23.97	12.21	8.99	10.07	19.06	12.80	29.97	17.17
5240	-	18.240	7.04	7.59	14.63	11.65	23.97	12.32	8.95	9.64	18.59	12.69	29.97	17.28
5260	21.958	18.212	6.89	7.21	14.10	11.49	23.97	12.48	8.75	9.16	17.91	12.53	29.97	17.44
5300	21.504	18.093	7.14	7.35	14.49	11.61	23.97	12.36	9.08	9.33	18.41	12.65	29.97	17.32
5320	21.619	18.197	6.85	7.21	14.07	11.48	23.97	12.49	8.71	9.16	17.87	12.52	29.97	17.45
5500	21.347	18.207	7.24	7.41	14.65	11.66	23.97	12.31	9.20	9.42	18.62	12.70	29.97	17.27
5580	21.414	18.156	7.16	6.61	13.77	11.39	23.97	12.58	9.10	8.39	17.49	12.43	29.97	17.54
5700	21.688	18.133	7.20	7.53	14.74	11.68	23.97	12.29	9.15	9.57	18.72	12.72	29.97	17.25
5720	20.797	18.217	7.45	7.53	14.98	11.76	23.97	12.21	9.46	9.57	19.04	12.80	29.97	17.17
5745	-	18.246	6.45	7.69	14.14	11.50	30.00	18.50	8.19	9.77	17.96	12.54	36.00	23.46
5785	-	18.128	6.56	7.74	14.31	11.56	30.00	18.44	8.34	9.84	18.18	12.60	36.00	23.40
5825	-	18.207	6.59	7.40	13.98	11.46	30.00	18.54	8.37	9.40	17.76	12.50	36.00	23.50

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-5.18	3.91	9.90	1.04	8.63	9.67	-5.28	4.01	10.21	1.04	8.94	9.98
5220	0.00	-5.33	3.92	9.91	1.04	8.50	9.54	-5.24	4.02	10.21	1.04	8.99	10.03
5240	0.00	-5.36	3.93	9.91	1.04	8.48	9.52	-5.45	4.04	10.21	1.04	8.80	9.84
5260	0.00	-5.47	3.94	9.91	1.04	8.38	9.42	-5.68	4.05	10.21	1.04	8.58	9.62
5300	0.00	-5.32	3.95	9.91	1.04	8.54	9.58	-5.61	4.06	10.21	1.04	8.66	9.70
5320	0.00	-5.50	3.95	9.91	1.04	8.36	9.40	-5.70	4.07	10.21	1.04	8.58	9.62
5500	0.00	-5.32	4.00	9.92	1.04	8.60	9.64	-5.67	4.15	10.22	1.04	8.70	9.74
5580	0.00	-5.37	4.01	9.91	1.04	8.55	9.59	-6.18	4.16	10.22	1.04	8.20	9.24
5700	0.00	-5.21	3.89	9.90	1.04	8.58	9.62	-5.53	4.07	10.23	1.04	8.77	9.81
5720	0.00	-5.08	3.90	9.90	1.04	8.72	9.76	-5.54	4.08	10.23	1.04	8.77	9.81
5745	0.00	-5.71	3.90	9.90	1.04	8.09	9.13	-5.45	4.08	10.23	1.04	8.86	9.90
5785	0.00	-5.63	3.91	9.89	1.04	8.17	9.21	-5.44	4.09	10.24	1.04	8.89	9.93
5825	0.00	-5.63	3.93	9.89	1.04	8.19	9.23	-5.65	4.10	10.24	1.04	8.69	9.73

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

Shonan EMC Lab.

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Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-20 (CDD), (serial no. B-5)

11ac-20 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]					Chain 1 [mW]					
5180	-	18.215	6.93	7.59	14.52	11.62	23.97	12.35	10.94	11.97	22.91	13.60	29.97	16.37
5220	-	18.158	6.76	7.78	14.54	11.63	23.97	12.34	10.67	12.27	22.94	13.61	29.97	16.36
5240	-	18.240	6.76	7.52	14.27	11.55	23.97	12.42	10.66	11.86	22.52	13.53	29.97	16.44
5260	21.958	18.212	6.68	7.57	14.25	11.54	23.97	12.43	10.54	11.94	22.48	13.52	29.97	16.45
5300	21.504	18.093	6.79	7.89	14.68	11.67	23.97	12.30	10.72	12.45	23.16	13.65	29.97	16.32
5320	21.619	18.197	6.59	7.67	14.27	11.54	23.97	12.43	10.40	12.11	22.51	13.52	29.97	16.45
5500	21.347	18.207	6.22	7.19	13.41	11.28	23.97	12.69	9.81	11.35	21.16	13.26	29.97	16.71
5580	21.414	18.156	6.92	7.28	14.20	11.52	23.97	12.45	10.91	11.48	22.40	13.50	29.97	16.47
5700	21.688	18.133	6.93	7.85	14.78	11.70	23.97	12.27	10.93	12.39	23.32	13.68	29.97	16.29
5720	20.797	18.217	7.10	7.82	14.91	11.74	23.97	12.23	11.20	12.33	23.53	13.72	29.97	16.25
5745	-	18.246	7.04	7.66	14.69	11.67	30.00	18.33	11.10	12.08	23.18	13.65	36.00	22.35
5785	-	18.128	7.19	7.46	14.66	11.66	30.00	18.34	11.35	11.78	23.13	13.64	36.00	22.36
5825	-	18.207	7.15	7.33	14.48	11.61	30.00	18.39	11.29	11.56	22.85	13.59	36.00	22.41

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.00	-5.40	3.91	9.90	1.98	8.41	10.39	-6.07	4.66	10.21	1.98	8.80	10.78
5220	0.00	-5.53	3.92	9.91	1.98	8.30	10.28	-5.97	4.67	10.21	1.98	8.91	10.89
5240	0.00	-5.54	3.93	9.91	1.98	8.30	10.28	-6.14	4.69	10.21	1.98	8.76	10.74
5260	0.00	-5.60	3.94	9.91	1.98	8.25	10.23	-6.12	4.70	10.21	1.98	8.79	10.77
5300	0.00	-5.54	3.95	9.91	1.98	8.32	10.30	-5.95	4.71	10.21	1.98	8.97	10.95
5320	0.00	-5.67	3.95	9.91	1.98	8.19	10.17	-6.08	4.72	10.21	1.98	8.85	10.83
5500	0.00	-5.98	4.00	9.92	1.98	7.94	9.92	-6.45	4.80	10.22	1.98	8.57	10.55
5580	0.00	-5.52	4.01	9.91	1.98	8.40	10.38	-6.41	4.81	10.22	1.98	8.62	10.60
5700	0.00	-5.38	3.89	9.90	1.98	8.41	10.39	-6.00	4.72	10.23	1.98	8.95	10.93
5720	0.00	-5.29	3.90	9.90	1.98	8.51	10.49	-6.03	4.73	10.23	1.98	8.93	10.91
5745	0.00	-5.33	3.90	9.90	1.98	8.47	10.45	-6.12	4.73	10.23	1.98	8.84	10.82
5785	0.00	-5.23	3.91	9.89	1.98	8.57	10.55	-6.25	4.74	10.24	1.98	8.73	10.71
5825	0.00	-5.27	3.93	9.89	1.98	8.55	10.53	-6.34	4.75	10.24	1.98	8.65	10.63

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

Shonan EMC Lab.

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-20 (MIMO), (serial no. A-7)

11ac-20 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5180	-	18.227	7.19	7.82	15.01	11.76	23.97	12.21	9.14	9.93	19.07	12.80	29.97	17.17
5220	-	18.139	7.05	7.91	14.95	11.75	23.97	12.22	8.95	10.05	19.00	12.79	29.97	17.18
5240	-	18.140	7.00	7.55	14.55	11.63	23.97	12.34	8.89	9.59	18.48	12.67	29.97	17.30
5260	21.761	18.116	6.97	7.23	14.19	11.52	23.97	12.45	8.85	9.18	18.03	12.56	29.97	17.41
5300	21.413	18.187	7.08	7.23	14.31	11.56	23.97	12.41	8.99	9.18	18.18	12.60	29.97	17.37
5320	21.327	18.185	6.93	7.16	14.10	11.49	23.97	12.48	8.81	9.10	17.91	12.53	29.97	17.44
5500	21.266	18.126	7.32	7.43	14.75	11.69	23.97	12.28	9.30	9.44	18.75	12.73	29.97	17.24
5580	21.468	18.195	7.23	6.73	13.96	11.45	23.97	12.52	9.18	8.55	17.73	12.49	29.97	17.48
5700	21.367	18.145	7.14	7.53	14.67	11.66	23.97	12.31	9.07	9.57	18.64	12.70	29.97	17.27
5720	21.513	18.182	7.31	7.60	14.92	11.74	23.97	12.23	9.29	9.66	18.95	12.78	29.97	17.19
5745	-	18.150	6.48	7.71	14.18	11.52	30.00	18.48	8.23	9.79	18.02	12.56	36.00	23.44
5785	-	18.201	6.53	7.80	14.33	11.56	30.00	18.44	8.30	9.91	18.21	12.60	36.00	23.40
5825	-	18.215	6.50	7.43	13.93	11.44	30.00	18.56	8.25	9.44	17.69	12.48	36.00	23.52

Tested Frequency [MHz]	Duty Factor [*1] [dB]	Antenna: Chain 0						Antenna: Chain 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]
5180	0.00	-5.24	3.91	9.90	1.04	8.57	9.61	-5.29	4.01	10.21	1.04	8.93	9.97
5220	0.00	-5.35	3.92	9.91	1.04	8.48	9.52	-5.25	4.02	10.21	1.04	8.98	10.02
5240	0.00	-5.39	3.93	9.91	1.04	8.45	9.49	-5.47	4.04	10.21	1.04	8.78	9.82
5260	0.00	-5.42	3.94	9.91	1.04	8.43	9.47	-5.67	4.05	10.21	1.04	8.59	9.63
5300	0.00	-5.36	3.95	9.91	1.04	8.50	9.54	-5.68	4.06	10.21	1.04	8.59	9.63
5320	0.00	-5.45	3.95	9.91	1.04	8.41	9.45	-5.73	4.07	10.21	1.04	8.55	9.59
5500	0.00	-5.27	4.00	9.92	1.04	8.65	9.69	-5.66	4.15	10.22	1.04	8.71	9.75
5580	0.00	-5.33	4.01	9.91	1.04	8.59	9.63	-6.10	4.16	10.22	1.04	8.28	9.32
5700	0.00	-5.25	3.89	9.90	1.04	8.54	9.58	-5.53	4.07	10.23	1.04	8.77	9.81
5720	0.00	-5.16	3.90	9.90	1.04	8.64	9.68	-5.50	4.08	10.23	1.04	8.81	9.85
5745	0.00	-5.69	3.90	9.90	1.04	8.11	9.15	-5.44	4.08	10.23	1.04	8.87	9.91
5785	0.00	-5.65	3.91	9.89	1.04	8.15	9.19	-5.41	4.09	10.24	1.04	8.92	9.96
5825	0.00	-5.69	3.93	9.89	1.04	8.13	9.17	-5.63	4.10	10.24	1.04	8.71	9.75

Sample Calculation: (*1) Power was measured with using the gate function of power meter.)
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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-20 (MIMO), (serial no. B-5)

11ac-20 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5180	-	18.227	7.08	7.83	14.91	11.74	23.97	12.23	8.99	12.36	21.35	13.29	29.97	16.68
5220	-	18.139	6.81	7.83	14.64	11.66	23.97	12.31	8.65	12.36	21.01	13.22	29.97	16.75
5240	-	18.140	6.88	7.57	14.45	11.60	23.97	12.37	8.75	11.94	20.69	13.16	29.97	16.81
5260	21.761	18.116	6.82	7.71	14.53	11.62	23.97	12.35	8.67	12.16	20.83	13.19	29.97	16.78
5300	21.413	18.187	6.87	7.91	14.78	11.70	23.97	12.27	8.73	12.47	21.20	13.26	29.97	16.71
5320	21.327	18.185	6.53	7.71	14.24	11.54	23.97	12.43	8.30	12.16	20.46	13.11	29.97	16.86
5500	21.266	18.126	6.26	7.38	13.64	11.35	23.97	12.62	7.96	11.64	19.60	12.92	29.97	17.05
5580	21.468	18.195	7.03	7.45	14.48	11.61	23.97	12.36	8.93	11.75	20.68	13.16	29.97	16.81
5700	21.367	18.145	6.90	7.91	14.80	11.70	23.97	12.27	8.76	12.47	21.23	13.27	29.97	16.70
5720	21.513	18.182	7.24	7.83	15.08	11.78	23.97	12.19	9.21	12.36	21.56	13.34	29.97	16.63
5745	-	18.150	7.04	7.76	14.80	11.70	30.00	18.30	8.94	12.25	21.19	13.26	36.00	22.74
5785	-	18.201	7.26	7.59	14.85	11.72	30.00	18.28	9.23	11.97	21.19	13.26	36.00	22.74
5825	-	18.215	7.01	7.33	14.34	11.56	30.00	18.44	8.90	11.56	20.47	13.11	36.00	22.89

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor (*1) [dB]	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]
5180	0.00	-5.31	3.91	9.90	1.04	8.50	9.54	-5.93	4.66	10.21	1.98	8.94	10.92
5220	0.00	-5.50	3.92	9.91	1.04	8.33	9.37	-5.94	4.67	10.21	1.98	8.94	10.92
5240	0.00	-5.46	3.93	9.91	1.04	8.38	9.42	-6.11	4.69	10.21	1.98	8.79	10.77
5260	0.00	-5.51	3.94	9.91	1.04	8.34	9.38	-6.04	4.70	10.21	1.98	8.87	10.85
5300	0.00	-5.49	3.95	9.91	1.04	8.37	9.41	-5.94	4.71	10.21	1.98	8.98	10.96
5320	0.00	-5.71	3.95	9.91	1.04	8.15	9.19	-6.06	4.72	10.21	1.98	8.87	10.85
5500	0.00	-5.95	4.00	9.92	1.04	7.97	9.01	-6.34	4.80	10.22	1.98	8.68	10.66
5580	0.00	-5.45	4.01	9.91	1.04	8.47	9.51	-6.31	4.81	10.22	1.98	8.72	10.70
5700	0.00	-5.40	3.89	9.90	1.04	8.39	9.43	-5.97	4.72	10.23	1.98	8.98	10.96
5720	0.00	-5.20	3.90	9.90	1.04	8.60	9.64	-6.02	4.73	10.23	1.98	8.94	10.92
5745	0.00	-5.33	3.90	9.90	1.04	8.47	9.51	-6.06	4.73	10.23	1.98	8.90	10.88
5785	0.00	-5.19	3.91	9.89	1.04	8.61	9.65	-6.18	4.74	10.24	1.98	8.80	10.78
5825	0.00	-5.36	3.93	9.89	1.04	8.46	9.50	-6.34	4.75	10.24	1.98	8.65	10.63

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (CDD), (serial no. A-7)

11n-40 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	35.883	7.74	7.83	15.58	11.93	23.97	12.04	9.84	9.95	19.79	12.97	29.97	17.00
5230	-	35.862	7.43	7.64	15.07	11.78	23.97	12.19	9.44	9.71	19.15	12.82	29.97	17.15
5270	39.483	35.884	7.33	7.08	14.41	11.59	23.97	12.38	9.31	8.99	18.31	12.63	29.97	17.34
5310	39.215	35.838	7.24	7.18	14.42	11.59	23.97	12.38	9.20	9.12	18.32	12.63	29.97	17.34
5510	39.308	35.862	7.66	7.48	15.14	11.80	23.97	12.17	9.73	9.51	19.23	12.84	29.97	17.13
5550	39.118	35.873	7.18	6.93	14.11	11.50	23.97	12.47	9.12	8.81	17.93	12.54	29.97	17.43
5670	39.277	35.870	6.84	7.87	14.71	11.68	23.97	12.29	8.69	10.00	18.69	12.72	29.97	17.25
5710	39.173	35.925	6.95	7.14	14.10	11.49	30.00	18.51	8.83	9.08	17.91	12.53	29.97	17.44
5755	-	35.833	6.89	7.93	14.81	11.71	30.00	18.29	8.75	10.07	18.82	12.75	36.00	23.25
5795	-	35.894	6.75	7.73	14.47	11.61	30.00	18.39	8.57	9.82	18.39	12.65	36.00	23.35

Tested Frequency [MHz]	Duty Factor [*1] [dB]	Antenna: Chain 0						Antenna: Chain 1					
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-4.92	3.91	9.90	1.04	8.89	9.93	-5.28	4.01	10.21	1.04	8.94	9.98
5230	0.00	-5.12	3.93	9.90	1.04	8.71	9.75	-5.41	4.03	10.21	1.04	8.83	9.87
5270	0.00	-5.20	3.94	9.91	1.04	8.65	9.69	-5.76	4.05	10.21	1.04	8.50	9.54
5310	0.00	-5.26	3.95	9.91	1.04	8.60	9.64	-5.72	4.07	10.21	1.04	8.56	9.60
5510	0.00	-5.08	4.00	9.92	1.04	8.84	9.88	-5.63	4.15	10.22	1.04	8.74	9.78
5550	0.00	-5.35	4.00	9.91	1.04	8.56	9.60	-5.97	4.16	10.22	1.04	8.41	9.45
5670	0.00	-5.50	3.95	9.90	1.04	8.35	9.39	-5.39	4.12	10.23	1.04	8.96	10.00
5710	0.00	-5.38	3.90	9.90	1.04	8.42	9.46	-5.77	4.08	10.23	1.04	8.54	9.58
5755	0.00	-5.42	3.90	9.90	1.04	8.38	9.42	-5.34	4.09	10.24	1.04	8.99	10.03
5795	0.00	-5.51	3.91	9.89	1.04	8.29	9.33	-5.45	4.09	10.24	1.04	8.88	9.92

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

UL Japan, Inc.

Shonan EMC Lab.

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Telephone : +81 463 50 6400

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Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (CDD), (serial no. B-5)

11n-40 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power							e.i.r.p.					
			Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		e.i.r.p.				
			Chain 0 [mW]	Chain 1 [mW]									Chain 0 [mW]	Chain 1 [mW]	Sum [mW]
5190	-	35.883	7.31	7.69	15.00	11.76	23.97	12.21	11.53	12.13	23.67	13.74	29.97	16.23	
5230	-	35.862	7.01	7.50	14.51	11.62	23.97	12.35	11.07	11.83	22.90	13.60	29.97	16.37	
5270	39.483	35.884	6.76	7.53	14.29	11.55	23.97	12.42	10.67	11.89	22.55	13.53	29.97	16.44	
5310	39.215	35.838	6.82	7.78	14.60	11.64	23.97	12.33	10.76	12.27	23.04	13.62	29.97	16.35	
5510	39.308	35.862	6.43	7.35	13.77	11.39	23.97	12.58	10.14	11.59	21.73	13.37	29.97	16.60	
5550	39.118	35.873	6.64	7.40	14.03	11.47	23.97	12.50	10.47	11.67	22.14	13.45	29.97	16.52	
5670	39.277	35.870	7.19	7.89	15.08	11.78	23.97	12.19	11.35	12.45	23.80	13.76	29.97	16.21	
5710	39.173	35.925	7.08	7.83	14.91	11.74	30.00	18.26	11.17	12.36	23.53	13.72	29.97	16.25	
5755	-	35.833	7.23	7.64	14.87	11.72	30.00	18.28	11.40	12.05	23.45	13.70	36.00	22.30	
5795	-	35.894	7.13	7.67	14.80	11.70	30.00	18.30	11.25	12.11	23.35	13.68	36.00	22.32	

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-5.17	3.91	9.90	1.98	8.64	10.62	-6.01	4.66	10.21	1.98	8.86	10.84
5230	0.00	-5.37	3.93	9.90	1.98	8.46	10.44	-6.14	4.68	10.21	1.98	8.75	10.73
5270	0.00	-5.55	3.94	9.91	1.98	8.30	10.28	-6.14	4.70	10.21	1.98	8.77	10.75
5310	0.00	-5.52	3.95	9.91	1.98	8.34	10.32	-6.02	4.72	10.21	1.98	8.91	10.89
5510	0.00	-5.84	4.00	9.92	1.98	8.08	10.06	-6.36	4.80	10.22	1.98	8.66	10.64
5550	0.00	-5.69	4.00	9.91	1.98	8.22	10.20	-6.34	4.81	10.22	1.98	8.69	10.67
5670	0.00	-5.28	3.95	9.90	1.98	8.57	10.55	-6.03	4.77	10.23	1.98	8.97	10.95
5710	0.00	-5.30	3.90	9.90	1.98	8.50	10.48	-6.02	4.73	10.23	1.98	8.94	10.92
5755	0.00	-5.21	3.90	9.90	1.98	8.59	10.57	-6.15	4.74	10.24	1.98	8.83	10.81
5795	0.00	-5.27	3.91	9.89	1.98	8.53	10.51	-6.13	4.74	10.24	1.98	8.85	10.83

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (MIMO), (serial no. A-7)

11n-40 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	36.928	7.59	7.74	15.33	11.86	23.97	12.11	9.64	9.84	19.48	12.90	29.97	17.07
5230	-	36.796	7.31	7.66	14.97	11.75	23.97	12.22	9.29	9.73	19.02	12.79	29.97	17.18
5270	42.495	36.846	7.19	7.05	14.24	11.54	23.97	12.43	9.14	8.95	18.09	12.58	29.97	17.39
5310	42.656	36.916	7.35	7.19	14.54	11.63	23.97	12.34	9.33	9.14	18.47	12.67	29.97	17.30
5510	42.335	36.906	7.74	7.53	15.28	11.84	23.97	12.13	9.84	9.57	19.41	12.88	29.97	17.09
5550	42.962	36.908	7.21	6.97	14.18	11.52	23.97	12.45	9.16	8.85	18.01	12.56	29.97	17.41
5670	42.325	36.894	6.92	7.93	14.84	11.72	23.97	12.25	8.79	10.07	18.86	12.76	29.97	17.21
5710	42.411	37.006	6.90	7.28	14.18	11.52	30.00	18.48	8.77	9.25	18.02	12.56	29.97	17.41
5755	-	36.854	6.87	7.82	14.69	11.67	30.00	18.33	8.73	9.93	18.66	12.71	36.00	23.29
5795	-	36.906	6.85	7.64	14.49	11.61	30.00	18.39	8.71	9.71	18.41	12.65	36.00	23.35

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0						Antenna: Chain 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]
5190	0.00	-5.01	3.91	9.90	1.04	8.80	9.84	-5.33	4.01	10.21	1.04	8.89	9.93
5230	0.00	-5.19	3.93	9.90	1.04	8.64	9.68	-5.40	4.03	10.21	1.04	8.84	9.88
5270	0.00	-5.28	3.94	9.91	1.04	8.57	9.61	-5.78	4.05	10.21	1.04	8.48	9.52
5310	0.00	-5.20	3.95	9.91	1.04	8.66	9.70	-5.71	4.07	10.21	1.04	8.57	9.61
5510	0.00	-5.03	4.00	9.92	1.04	8.89	9.93	-5.60	4.15	10.22	1.04	8.77	9.81
5550	0.00	-5.33	4.00	9.91	1.04	8.58	9.62	-5.95	4.16	10.22	1.04	8.43	9.47
5670	0.00	-5.45	3.95	9.90	1.04	8.40	9.44	-5.36	4.12	10.23	1.04	8.99	10.03
5710	0.00	-5.41	3.90	9.90	1.04	8.39	9.43	-5.69	4.08	10.23	1.04	8.62	9.66
5755	0.00	-5.43	3.90	9.90	1.04	8.37	9.41	-5.40	4.09	10.24	1.04	8.93	9.97
5795	0.00	-5.44	3.91	9.89	1.04	8.36	9.40	-5.50	4.09	10.24	1.04	8.83	9.87

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11n-40 (MIMO), (serial no. B-5)

11n-40 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5190	-	36.928	7.38	7.78	15.16	11.81	23.97	12.16	9.38	12.27	21.65	13.35	29.97	16.62
5230	-	36.796	6.98	7.57	14.55	11.63	23.97	12.34	8.87	11.94	20.81	13.18	29.97	16.79
5270	42.495	36.846	6.85	7.59	14.44	11.60	23.97	12.37	8.71	11.97	20.68	13.15	29.97	16.82
5310	42.656	36.916	6.76	7.82	14.58	11.64	23.97	12.33	8.59	12.33	20.92	13.21	29.97	16.76
5510	42.335	36.906	6.37	7.35	13.71	11.37	23.97	12.60	8.09	11.59	19.68	12.94	29.97	17.03
5550	42.962	36.908	6.68	7.43	14.11	11.50	23.97	12.47	8.49	11.72	20.21	13.06	29.97	16.91
5670	42.325	36.894	7.13	7.93	15.05	11.78	23.97	12.19	9.06	12.50	21.56	13.34	29.97	16.63
5710	42.411	37.006	7.23	7.91	15.13	11.80	30.00	18.20	9.18	12.47	21.66	13.36	29.97	16.61
5755	-	36.854	7.13	7.78	14.91	11.73	30.00	18.27	9.06	12.27	21.33	13.29	36.00	22.71
5795	-	36.906	7.14	7.66	14.80	11.70	30.00	18.30	9.08	12.08	21.16	13.25	36.00	22.75

Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Antenna: Chain 0					Antenna: Chain 1					Result	
			Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]	
5190	0.00	-5.13	3.91	9.90	1.04	8.68	9.72	-5.96	4.66	10.21	1.98	8.91	10.89	
5230	0.00	-5.39	3.93	9.90	1.04	8.44	9.48	-6.10	4.68	10.21	1.98	8.79	10.77	
5270	0.00	-5.49	3.94	9.91	1.04	8.36	9.40	-6.11	4.70	10.21	1.98	8.80	10.78	
5310	0.00	-5.56	3.95	9.91	1.04	8.30	9.34	-6.00	4.72	10.21	1.98	8.93	10.91	
5510	0.00	-5.88	4.00	9.92	1.04	8.04	9.08	-6.36	4.80	10.22	1.98	8.66	10.64	
5550	0.00	-5.66	4.00	9.91	1.04	8.25	9.29	-6.32	4.81	10.22	1.98	8.71	10.69	
5670	0.00	-5.32	3.95	9.90	1.04	8.53	9.57	-6.01	4.77	10.23	1.98	8.99	10.97	
5710	0.00	-5.21	3.90	9.90	1.04	8.59	9.63	-5.98	4.73	10.23	1.98	8.98	10.96	
5755	0.00	-5.27	3.90	9.90	1.04	8.53	9.57	-6.07	4.74	10.24	1.98	8.91	10.89	
5795	0.00	-5.26	3.91	9.89	1.04	8.54	9.58	-6.14	4.74	10.24	1.98	8.84	10.82	

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (CDD), (serial no. A-7)

11ac-40 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	35.848	7.64	7.69	15.33	11.86	23.97	12.11	9.71	9.77	19.48	12.90	29.97	17.07
5230	-	35.943	7.26	7.64	14.90	11.73	23.97	12.24	9.23	9.71	18.93	12.77	29.97	17.20
5270	39.511	35.931	7.13	6.97	14.09	11.49	23.97	12.48	9.06	8.85	17.91	12.53	29.97	17.44
5310	39.447	35.862	7.21	7.23	14.44	11.60	23.97	12.37	9.16	9.18	18.35	12.64	29.97	17.33
5510	39.532	35.807	7.71	7.36	15.07	11.78	23.97	12.19	9.79	9.35	19.15	12.82	29.97	17.15
5550	39.767	35.888	7.16	6.90	14.06	11.48	23.97	12.49	9.10	8.77	17.87	12.52	29.97	17.45
5670	39.636	35.919	6.81	7.91	14.71	11.68	23.97	12.29	8.65	10.05	18.70	12.72	29.97	17.25
5710	39.880	35.981	6.90	7.13	14.03	11.47	30.00	18.53	8.77	9.06	17.83	12.51	29.97	17.46
5755	-	35.951	6.85	7.73	14.58	11.64	30.00	18.36	8.71	9.82	18.53	12.68	36.00	23.32
5795	-	35.958	6.79	7.78	14.57	11.64	30.00	18.36	8.63	9.89	18.52	12.68	36.00	23.32

Tested Frequency [MHz]	Duty Factor [*1] [dB]	Antenna: Chain 0						Antenna: Chain 1					
		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-4.98	3.91	9.90	1.04	8.83	9.87	-5.36	4.01	10.21	1.04	8.86	9.90
5230	0.00	-5.22	3.93	9.90	1.04	8.61	9.65	-5.41	4.03	10.21	1.04	8.83	9.87
5270	0.00	-5.32	3.94	9.91	1.04	8.53	9.57	-5.83	4.05	10.21	1.04	8.43	9.47
5310	0.00	-5.28	3.95	9.91	1.04	8.58	9.62	-5.69	4.07	10.21	1.04	8.59	9.63
5510	0.00	-5.05	4.00	9.92	1.04	8.87	9.91	-5.70	4.15	10.22	1.04	8.67	9.71
5550	0.00	-5.36	4.00	9.91	1.04	8.55	9.59	-5.99	4.16	10.22	1.04	8.39	9.43
5670	0.00	-5.52	3.95	9.90	1.04	8.33	9.37	-5.37	4.12	10.23	1.04	8.98	10.02
5710	0.00	-5.41	3.90	9.90	1.04	8.39	9.43	-5.78	4.08	10.23	1.04	8.53	9.57
5755	0.00	-5.44	3.90	9.90	1.04	8.36	9.40	-5.45	4.09	10.24	1.04	8.88	9.92
5795	0.00	-5.48	3.91	9.89	1.04	8.32	9.36	-5.42	4.09	10.24	1.04	8.91	9.95

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (CDD), (serial no. B-5)

11ac-40 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		e.i.r.p.			
			Chain 0 [mW]	Chain 1 [mW]									Chain 0 [mW]	Chain 1 [mW]
5190	-	35.848	7.16	7.67	14.84	11.71	23.97	12.26	11.30	12.11	23.40	13.69	29.97	16.28
5230	-	35.943	6.87	7.50	14.37	11.57	23.97	12.40	10.84	11.83	22.67	13.55	29.97	16.42
5270	39.511	35.931	6.84	7.50	14.34	11.56	23.97	12.41	10.79	11.83	22.62	13.54	29.97	16.43
5310	39.447	35.862	6.84	7.71	14.55	11.63	23.97	12.34	10.79	12.16	22.95	13.61	29.97	16.36
5510	39.532	35.807	6.44	7.29	13.74	11.38	23.97	12.59	10.16	11.51	21.67	13.36	29.97	16.61
5550	39.767	35.888	6.58	7.29	13.87	11.42	23.97	12.55	10.38	11.51	21.88	13.40	29.97	16.57
5670	39.636	35.919	7.19	7.91	15.10	11.79	23.97	12.18	11.35	12.47	23.82	13.77	29.97	16.20
5710	39.880	35.981	7.16	7.91	15.07	11.78	30.00	18.22	11.30	12.47	23.77	13.76	29.97	16.21
5755	-	35.951	7.18	7.69	14.87	11.72	30.00	18.28	11.32	12.13	23.46	13.70	36.00	22.30
5795	-	35.958	7.19	7.71	14.90	11.73	30.00	18.27	11.35	12.16	23.51	13.71	36.00	22.29

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.00	-5.26	3.91	9.90	1.98	8.55	10.53	-6.02	4.66	10.21	1.98	8.85	10.83
5230	0.00	-5.46	3.93	9.90	1.98	8.37	10.35	-6.14	4.68	10.21	1.98	8.75	10.73
5270	0.00	-5.50	3.94	9.91	1.98	8.35	10.33	-6.16	4.70	10.21	1.98	8.75	10.73
5310	0.00	-5.51	3.95	9.91	1.98	8.35	10.33	-6.06	4.72	10.21	1.98	8.87	10.85
5510	0.00	-5.83	4.00	9.92	1.98	8.09	10.07	-6.39	4.80	10.22	1.98	8.63	10.61
5550	0.00	-5.73	4.00	9.91	1.98	8.18	10.16	-6.40	4.81	10.22	1.98	8.63	10.61
5670	0.00	-5.28	3.95	9.90	1.98	8.57	10.55	-6.02	4.77	10.23	1.98	8.98	10.96
5710	0.00	-5.25	3.90	9.90	1.98	8.55	10.53	-5.98	4.73	10.23	1.98	8.98	10.96
5755	0.00	-5.24	3.90	9.90	1.98	8.56	10.54	-6.12	4.74	10.24	1.98	8.86	10.84
5795	0.00	-5.23	3.91	9.89	1.98	8.57	10.55	-6.11	4.74	10.24	1.98	8.87	10.85

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (MIMO), (serial no. A-7)

11ac-40 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5190	-	36.804	7.73	7.91	15.63	11.94	23.97	12.03	9.82	10.05	19.86	12.98	29.97	16.99
5230	-	36.868	7.43	7.76	15.19	11.82	23.97	12.15	9.44	9.86	19.30	12.86	29.97	17.11
5270	42.095	36.853	7.23	7.19	14.42	11.59	23.97	12.38	9.18	9.14	18.32	12.63	29.97	17.34
5310	42.429	36.784	7.26	7.33	14.59	11.64	23.97	12.33	9.23	9.31	18.54	12.68	29.97	17.29
5510	43.532	36.791	7.82	7.57	15.38	11.87	23.97	12.10	9.93	9.62	19.55	12.91	29.97	17.06
5550	42.722	36.864	7.26	7.00	14.26	11.54	23.97	12.43	9.23	8.89	18.12	12.58	29.97	17.39
5670	42.731	36.726	6.89	7.91	14.79	11.70	23.97	12.27	8.75	10.05	18.80	12.74	29.97	17.23
5710	42.630	36.815	6.87	7.29	14.17	11.51	30.00	18.49	8.73	9.27	18.00	12.55	29.97	17.42
5755	-	36.798	6.92	7.89	14.81	11.70	30.00	18.30	8.79	10.02	18.81	12.74	36.00	23.26
5795	-	36.942	6.89	7.73	14.61	11.65	30.00	18.35	8.75	9.82	18.57	12.69	36.00	23.31

Tested Frequency [MHz]	Duty Factor *1 [dB]	Antenna: Chain 0						Antenna: Chain 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]
5190	0.00	-4.93	3.91	9.90	1.04	8.88	9.92	-5.24	4.01	10.21	1.04	8.98	10.02
5230	0.00	-5.12	3.93	9.90	1.04	8.71	9.75	-5.34	4.03	10.21	1.04	8.90	9.94
5270	0.00	-5.26	3.94	9.91	1.04	8.59	9.63	-5.69	4.05	10.21	1.04	8.57	9.61
5310	0.00	-5.25	3.95	9.91	1.04	8.61	9.65	-5.63	4.07	10.21	1.04	8.65	9.69
5510	0.00	-4.99	4.00	9.92	1.04	8.93	9.97	-5.58	4.15	10.22	1.04	8.79	9.83
5550	0.00	-5.30	4.00	9.91	1.04	8.61	9.65	-5.93	4.16	10.22	1.04	8.45	9.49
5670	0.00	-5.47	3.95	9.90	1.04	8.38	9.42	-5.37	4.12	10.23	1.04	8.98	10.02
5710	0.00	-5.43	3.90	9.90	1.04	8.37	9.41	-5.68	4.08	10.23	1.04	8.63	9.67
5755	0.00	-5.40	3.90	9.90	1.04	8.40	9.44	-5.36	4.09	10.24	1.04	8.97	10.01
5795	0.00	-5.42	3.91	9.89	1.04	8.38	9.42	-5.45	4.09	10.24	1.04	8.88	9.92

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-40 (MIMO), (serial no. B-5)

11ac-40 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW [MHz]	99% OBW [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5190	-	36.804	7.35	7.85	15.20	11.82	23.97	12.15	9.33	12.39	21.72	13.37	29.97	16.60
5230	-	36.868	7.01	7.74	14.76	11.69	23.97	12.28	8.91	12.22	21.13	13.25	29.97	16.72
5270	42.095	36.853	6.89	7.74	14.63	11.65	23.97	12.32	8.75	12.22	20.97	13.22	29.97	16.75
5310	42.429	36.784	6.98	7.83	14.82	11.71	23.97	12.26	8.87	12.36	21.23	13.27	29.97	16.70
5510	43.532	36.791	6.46	7.43	13.89	11.43	23.97	12.54	8.20	11.72	19.93	12.99	29.97	16.98
5550	42.722	36.864	6.70	7.40	14.09	11.49	23.97	12.48	8.51	11.67	20.18	13.05	29.97	16.92
5670	42.731	36.726	7.19	7.93	15.12	11.80	23.97	12.17	9.14	12.50	21.64	13.35	29.97	16.62
5710	42.630	36.815	7.16	7.93	15.09	11.79	30.00	18.21	9.10	12.50	21.60	13.34	29.97	16.63
5755	-	36.798	7.16	7.89	15.05	11.78	30.00	18.22	9.10	12.45	21.54	13.33	36.00	22.67
5795	-	36.942	7.18	7.73	14.90	11.73	30.00	18.27	9.12	12.19	21.31	13.29	36.00	22.71

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	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]
5190	0.00	-5.15	3.91	9.90	1.04	8.66	9.70	-5.92	4.66	10.21	1.98	8.95	10.93
5230	0.00	-5.37	3.93	9.90	1.04	8.46	9.50	-6.00	4.68	10.21	1.98	8.89	10.87
5270	0.00	-5.47	3.94	9.91	1.04	8.38	9.42	-6.02	4.70	10.21	1.98	8.89	10.87
5310	0.00	-5.42	3.95	9.91	1.04	8.44	9.48	-5.99	4.72	10.21	1.98	8.94	10.92
5510	0.00	-5.82	4.00	9.92	1.04	8.10	9.14	-6.31	4.80	10.22	1.98	8.71	10.69
5550	0.00	-5.65	4.00	9.91	1.04	8.26	9.30	-6.34	4.81	10.22	1.98	8.69	10.67
5670	0.00	-5.28	3.95	9.90	1.04	8.57	9.61	-6.01	4.77	10.23	1.98	8.99	10.97
5710	0.00	-5.25	3.90	9.90	1.04	8.55	9.59	-5.97	4.73	10.23	1.98	8.99	10.97
5755	0.00	-5.25	3.90	9.90	1.04	8.55	9.59	-6.01	4.74	10.24	1.98	8.97	10.95
5795	0.00	-5.24	3.91	9.89	1.04	8.56	9.60	-6.10	4.74	10.24	1.98	8.88	10.86

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-80 (CDD), (serial no. A-7)

11ac-80 CDD Low power

Antenna: Chain 0 + Chain 1 Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5210	-	76.385	7.48	7.73	15.21	11.82	23.97	12.15	9.51	9.82	19.32	12.86	29.97	17.11
5290	85.310	76.547	7.16	7.13	14.29	11.55	23.97	12.42	9.10	9.06	18.16	12.59	29.97	17.38
5530	85.240	76.591	7.78	7.59	15.37	11.87	23.97	12.10	9.89	9.64	19.52	12.91	29.97	17.06
5610	85.457	76.575	7.33	6.78	14.10	11.49	23.97	12.48	9.31	8.61	17.92	12.53	29.97	17.44
5690	85.498	76.606	6.83	7.45	14.28	11.55	30.00	18.45	8.68	9.46	18.15	12.59	29.97	17.38
5775	-	76.439	6.84	7.64	14.48	11.61	30.00	18.39	8.69	9.71	18.39	12.65	36.00	23.35

Tested Frequency [MHz]	Antenna: Chain 0						Antenna: Chain 1						
	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5210	0.00	-5.07	3.91	9.90	1.04	8.74	9.78	-5.35	4.02	10.21	1.04	8.88	9.92
5290	0.00	-5.30	3.94	9.91	1.04	8.55	9.59	-5.74	4.06	10.21	1.04	8.53	9.57
5530	0.00	-5.00	4.00	9.91	1.04	8.91	9.95	-5.58	4.16	10.22	1.04	8.80	9.84
5610	0.00	-5.20	3.94	9.91	1.04	8.65	9.69	-6.03	4.11	10.23	1.04	8.31	9.35
5690	0.00	-5.46	3.91	9.90	1.04	8.35	9.39	-5.59	4.08	10.23	1.04	8.72	9.76
5775	0.00	-5.45	3.91	9.89	1.04	8.35	9.39	-5.50	4.09	10.24	1.04	8.83	9.87

Sample Calculation: (*1) Power was measured with using the gate function of power meter.)
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Directional Gain
Directional Gain = G ANT + Array Gain
G ANT = Set equal to the gain of the antenna having the highest gain
Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4
N ANT = number of transmit antennas = 2
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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-80 (CDD), (serial no. B-5)

11ac-80 CDD Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna		Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Antenna		e.i.r.p.		Limit [dBm]	Margin [dB]
Chain 0 [mW]	Chain 1 [mW]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]					Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]		
5210	-	76.385	7.01	7.69	14.71	11.67	23.97	12.30	11.07	12.13	23.20	13.65	29.97	16.32
5290	85.310	76.547	6.67	7.66	14.32	11.56	23.97	12.41	10.52	12.08	22.60	13.54	29.97	16.43
5530	85.240	76.591	6.55	7.26	13.81	11.40	23.97	12.57	10.33	11.46	21.78	13.38	29.97	16.59
5610	85.457	76.575	6.92	7.21	14.13	11.50	23.97	12.47	10.91	11.38	22.29	13.48	29.97	16.49
5690	85.498	76.606	7.07	7.78	14.86	11.72	30.00	18.28	11.16	12.27	23.44	13.70	29.97	16.27
5775	-	76.439	7.03	7.60	14.63	11.65	30.00	18.35	11.09	11.99	23.09	13.63	36.00	22.37

Antenna: Chain 0							Antenna: Chain 1						
Tested Frequency [MHz]	Duty Factor *1) [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	Result	
						Cond. Power [dBm]	e.i.r.p. [dBm]					Cond. Power [dBm]	e.i.r.p. [dBm]
5210	0.00	-5.35	3.91	9.90	1.98	8.46	10.44	-6.02	4.67	10.21	1.98	8.86	10.84
5290	0.00	-5.61	3.94	9.91	1.98	8.24	10.22	-6.08	4.71	10.21	1.98	8.84	10.82
5530	0.00	-5.75	4.00	9.91	1.98	8.16	10.14	-6.42	4.81	10.22	1.98	8.61	10.59
5610	0.00	-5.45	3.94	9.91	1.98	8.40	10.38	-6.41	4.76	10.23	1.98	8.58	10.56
5690	0.00	-5.31	3.91	9.90	1.98	8.50	10.48	-6.05	4.73	10.23	1.98	8.91	10.89
5775	0.00	-5.33	3.91	9.89	1.98	8.47	10.45	-6.17	4.74	10.24	1.98	8.81	10.79

Sample Calculation:

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

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

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

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 0 dB(i.e.,no array gain) for N ANT < 4

N ANT = number of transmit antennas = 2

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-80 (MIMO), (serial no. A-7)

11ac-80 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

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]
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]				Chain 0 [mW]	Chain 1 [mW]	Sum [mW]			
5210	-	76.355	7.60	7.93	15.53	11.91	23.97	12.06	9.66	10.07	19.73	12.95	29.97	17.02
5290	83.821	76.666	7.38	7.36	14.74	11.69	23.97	12.28	9.38	9.35	18.73	12.73	29.97	17.24
5530	84.860	76.587	7.93	7.78	15.71	11.96	23.97	12.01	10.07	9.89	19.95	13.00	29.97	16.97
5610	84.665	76.633	7.57	7.03	14.60	11.64	23.97	12.33	9.62	8.93	18.55	12.68	29.97	17.29
5690	85.312	76.574	6.90	7.66	14.55	11.63	30.00	18.37	8.76	9.73	18.49	12.67	29.97	17.30
5775	-	76.562	6.92	7.82	14.73	11.68	30.00	18.32	8.79	9.93	18.72	12.72	36.00	23.28

Tested Frequency [MHz]	Duty Factor *1) [dB]	Antenna: Chain 0					Antenna: Chain 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]
5210	0.00	-5.00	3.91	9.90	1.04	8.81	9.85	-5.24	4.02	10.21	1.04	8.99	10.03
5290	0.00	-5.17	3.94	9.91	1.04	8.68	9.72	-5.60	4.06	10.21	1.04	8.67	9.71
5530	0.00	-4.92	4.00	9.91	1.04	8.99	10.03	-5.47	4.16	10.22	1.04	8.91	9.95
5610	0.00	-5.06	3.94	9.91	1.04	8.79	9.83	-5.87	4.11	10.23	1.04	8.47	9.51
5690	0.00	-5.42	3.91	9.90	1.04	8.39	9.43	-5.47	4.08	10.23	1.04	8.84	9.88
5775	0.00	-5.40	3.91	9.89	1.04	8.40	9.44	-5.40	4.09	10.24	1.04	8.93	9.97

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power (Low Power)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 30, 2019
Temperature / Humidity 25 deg. C / 51 % RH
Engineer Makoto Hosaka
Mode Tx, 11ac-80 (MIMO), (serial no. B-5)

11ac-80 MIMO Low power

Antenna: Chain 0 + Chain 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]	Chain 0 [mW]	Chain 1 [mW]	Sum [mW]	Result [dBm]	Limit [dBm]	Margin [dB]
5210	-	76.355	7.21	7.78	14.99	11.76	23.97	12.21	9.16	12.27	21.44	13.31	29.97	16.66
5290	83.821	76.666	6.73	7.83	14.56	11.63	23.97	12.34	8.55	12.36	20.91	13.20	29.97	16.77
5530	84.860	76.587	6.55	7.50	14.05	11.48	23.97	12.49	8.32	11.83	20.15	13.04	29.97	16.93
5610	84.665	76.633	6.95	7.29	14.24	11.54	23.97	12.43	8.83	11.51	20.34	13.08	29.97	16.89
5690	85.312	76.574	7.01	7.93	14.93	11.74	30.00	18.26	8.91	12.50	21.41	13.31	29.97	16.66
5775	-	76.562	7.18	7.76	14.94	11.74	30.00	18.26	9.12	12.25	21.37	13.30	36.00	22.70

Antenna: Chain 0									Antenna: Chain 1					
Tested Frequency [MHz]	Duty Factor *1) [dB]	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]	
5210	0.00	-5.23	3.91	9.90	1.04	8.58	9.62	-5.97	4.67	10.21	1.98	8.91	10.89	
5290	0.00	-5.57	3.94	9.91	1.04	8.28	9.32	-5.98	4.71	10.21	1.98	8.94	10.92	
5530	0.00	-5.75	4.00	9.91	1.04	8.16	9.20	-6.28	4.81	10.22	1.98	8.75	10.73	
5610	0.00	-5.43	3.94	9.91	1.04	8.42	9.46	-6.36	4.76	10.23	1.98	8.63	10.61	
5690	0.00	-5.35	3.91	9.90	1.04	8.46	9.50	-5.97	4.73	10.23	1.98	8.99	10.97	
5775	0.00	-5.24	3.91	9.89	1.04	8.56	9.60	-6.08	4.74	10.24	1.98	8.90	10.88	

Sample Calculation:

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

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) = 1 W

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power
(Confirmation of worst rate)

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11a, (CDD)

5180 MHz

Mode	Rate	Reading						Duty factor *1) [dB]	Burst power			Remarks
		Chain							Chain			
		0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
11a	6	-2.95	-3.25	0.51	0.47	0.98	-0.09	0.00	-	-	-0.09	
	9	-2.90	-3.19	0.51	0.48	0.99	-0.03	0.00	-	-	-0.03	
	12	-2.89	-3.16	0.51	0.48	1.00	-0.01	0.00	-	-	-0.01	
	18	-2.84	-3.18	0.52	0.48	1.00	0.00	0.00	-	-	0.00	
	24	-2.66	-2.90	0.54	0.51	1.05	0.23	0.00	-	-	0.23	
	36	-2.67	-2.86	0.54	0.52	1.06	0.25	0.00	-	-	0.25	
	48	-2.61	-2.82	0.55	0.52	1.07	0.30	0.00	-	-	0.30	
	54	-2.55	-2.82	0.56	0.52	1.08	0.33	0.00	-	-	0.33	*

* Worst rate

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

$$\text{Burst power} = \text{Reading} + \text{Duty factor}$$

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

**Maximum Conducted Output Power
(Confirmation of worst rate)**

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11n-20 (CDD), (MIMO)

5180 MHz CDD

Mode	MCS Number	Reading Chain						Duty factor *1) [dB]	Burst power Chain			Remarks
		0	1	0	1	0+1	0+1		0	1	0+1	
		[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]		[dBm]	[dBm]	[dBm]	
11n-20	0	-3.12	-3.47	0.49	0.45	0.94	-0.28	0.00	-	-	-0.28	
	1	-3.11	-3.30	0.49	0.47	0.96	-0.19	0.00	-	-	-0.19	
	2	-3.10	-3.36	0.49	0.46	0.95	-0.22	0.00	-	-	-0.22	
	3	-2.64	-2.82	0.54	0.52	1.07	0.28	0.00	-	-	0.28	
	4	-2.69	-2.84	0.54	0.52	1.06	0.25	0.00	-	-	0.25	
	5	-2.64	-2.84	0.54	0.52	1.06	0.27	0.00	-	-	0.27	
	6	-2.65	-2.83	0.54	0.52	1.06	0.27	0.00	-	-	0.27	
7	-2.63	-2.81	0.55	0.52	1.07	0.29	0.00	-	-	0.29	*	

* Worst rate

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

Burst power = Reading + Duty factor

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

5180 MHz MIMO

Mode	MCS Number	Reading Chain						Duty factor *1) [dB]	Burst power Chain			Remarks
		0	1	0	1	0+1	0+1		0	1	0+1	
		[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]		[dBm]	[dBm]	[dBm]	
11n-20	8	-3.21	-3.38	0.48	0.46	0.94	-0.28	0.00	-	-	-0.28	
	9	-3.01	-3.26	0.50	0.47	0.97	-0.12	0.00	-	-	-0.12	
	10	-3.02	-3.31	0.50	0.47	0.97	-0.15	0.00	-	-	-0.15	
	11	-2.68	-2.75	0.54	0.53	1.07	0.30	0.00	-	-	0.30	
	12	-2.66	-2.80	0.54	0.52	1.07	0.28	0.00	-	-	0.28	
	13	-2.59	-2.81	0.55	0.52	1.07	0.31	0.00	-	-	0.31	
	14	-2.56	-2.77	0.55	0.53	1.08	0.35	0.00	-	-	0.35	
15	-2.50	-2.75	0.56	0.53	1.09	0.39	0.00	-	-	0.39	*	

* Worst rate

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

Burst power = Reading + Duty factor

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

UL Japan, Inc.

Shonan EMC Lab.

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**Maximum Conducted Output Power
(Confirmation of worst rate)**

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11ac-20 (CDD), (MIMO)

5180 MHz CDD

Mode	MCS Number	Reading						Duty factor *1) [dB]	Burst power			Remarks
		Chain							Chain			
		0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
11ac-20	0	-3.94	-4.93	0.40	0.32	0.73	-1.40	0.00	-	-	-1.40	
	1	-3.84	-4.84	0.41	0.33	0.74	-1.30	0.00	-	-	-1.30	
	2	-3.82	-4.82	0.41	0.33	0.74	-1.28	0.00	-	-	-1.28	
	3	-3.48	-4.48	0.45	0.36	0.81	-0.94	0.00	-	-	-0.94	
	4	-3.43	-4.43	0.45	0.36	0.81	-0.89	0.00	-	-	-0.89	
	5	-3.39	-4.39	0.46	0.36	0.82	-0.85	0.00	-	-	-0.85	
	6	-3.37	-4.37	0.46	0.37	0.83	-0.83	0.00	-	-	-0.83	
	7	-3.34	-4.28	0.46	0.37	0.84	-0.77	0.00	-	-	-0.77	*
	8	-3.42	-4.42	0.45	0.36	0.82	-0.88	0.00	-	-	-0.88	
9	-4.37	-5.17	0.37	0.30	0.67	-1.74	0.00	-	-	-1.74		

* Worst rate

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

Burst power = Reading + Duty factor

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

5180 MHz MIMO

Mode	MCS Number	Reading						Duty factor *1) [dB]	Burst power			Remarks
		Chain							Chain			
		0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
11ac-20	0	-3.86	-4.89	0.41	0.32	0.74	-1.33	0.00	-	-	-1.33	
	1	-3.84	-4.89	0.41	0.32	0.74	-1.32	0.00	-	-	-1.32	
	2	-3.82	-4.72	0.41	0.34	0.75	-1.24	0.00	-	-	-1.24	
	3	-3.51	-4.45	0.45	0.36	0.80	-0.94	0.00	-	-	-0.94	
	4	-3.44	-4.31	0.45	0.37	0.82	-0.84	0.00	-	-	-0.84	
	5	-3.31	-4.26	0.47	0.37	0.84	-0.75	0.00	-	-	-0.75	
	6	-3.29	-4.25	0.47	0.38	0.84	-0.73	0.00	-	-	-0.73	
	7	-3.26	-4.27	0.47	0.37	0.85	-0.73	0.00	-	-	-0.73	*
	8	-3.28	-4.28	0.47	0.37	0.84	-0.74	0.00	-	-	-0.74	
9	-4.41	-5.15	0.36	0.31	0.67	-1.75	0.00	-	-	-1.75		

* Worst rate

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

Burst power = Reading + Duty factor

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

**Maximum Conducted Output Power
(Confirmation of worst rate)**

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11n-40 (CDD), (MIMO)

5190 MHz CDD

Mode	MCS Number	Reading Chain						Duty factor *1) [dB]	Burst power Chain			Remarks
		0	1	0	1	0+1	0+1		0	1	0+1	
		[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]		[dBm]	[dBm]	[dBm]	
11n-40	0	-2.37	-2.85	0.58	0.52	1.10	0.41	0.00	-	-	0.41	*
	1	-2.38	-2.94	0.58	0.51	1.09	0.36	0.00	-	-	0.36	
	2	-2.44	-2.94	0.57	0.51	1.08	0.33	0.00	-	-	0.33	
	3	-2.37	-2.89	0.58	0.51	1.09	0.39	0.00	-	-	0.39	
	4	-2.41	-2.93	0.57	0.51	1.08	0.35	0.00	-	-	0.35	
	5	-2.44	-2.86	0.57	0.52	1.09	0.37	0.00	-	-	0.37	
	6	-2.43	-2.83	0.57	0.52	1.09	0.38	0.00	-	-	0.38	
7	-2.41	-2.89	0.57	0.51	1.09	0.37	0.00	-	-	0.37		

* Worst rate

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

Burst power = Reading + Duty factor

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

5190 MHz MIMO

Mode	MCS Number	Reading Chain						Duty factor *1) [dB]	Burst power Chain			Remarks
		0	1	0	1	0+1	0+1		0	1	0+1	
		[dBm]	[dBm]	[mW]	[mW]	[mW]	[dBm]		[dBm]	[dBm]	[dBm]	
11n-40	8	-2.42	-2.94	0.57	0.51	1.08	0.34	0.00	-	-	0.34	
	9	-2.40	-2.92	0.58	0.51	1.09	0.36	0.00	-	-	0.36	
	10	-2.48	-3.04	0.56	0.50	1.06	0.26	0.00	-	-	0.26	
	11	-2.45	-2.94	0.57	0.51	1.08	0.32	0.00	-	-	0.32	
	12	-2.42	-2.82	0.57	0.52	1.10	0.39	0.00	-	-	0.39	
	13	-2.35	-2.85	0.58	0.52	1.10	0.42	0.00	-	-	0.42	
	14	-2.34	-2.80	0.58	0.52	1.11	0.45	0.00	-	-	0.45	*
	15	-2.36	-2.80	0.58	0.52	1.11	0.44	0.00	-	-	0.44	

* Worst rate

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

Burst power = Reading + Duty factor

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

**Maximum Conducted Output Power
(Confirmation of worst rate)**

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 5, 2019
Temperature / Humidity 26 deg. C / 49 % RH
Engineer Hiromasa Sato
Mode Tx, 11ac-40 (CDD), (MIMO)

5190 MHz CDD

Mode	MCS Number	Reading						Duty factor *1) [dB]	Burst power			Remarks
		Chain							Chain			
		0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
11ac-40	0	-2.34	-2.83	0.58	0.52	1.10	0.43	0.00	-	-	0.43	*
	1	-2.48	-3.02	0.56	0.50	1.06	0.27	0.00	-	-	0.27	
	2	-2.51	-3.02	0.56	0.50	1.06	0.25	0.00	-	-	0.25	
	3	-2.52	-2.93	0.56	0.51	1.07	0.29	0.00	-	-	0.29	
	4	-2.39	-2.97	0.58	0.50	1.08	0.34	0.00	-	-	0.34	
	5	-2.45	-2.92	0.57	0.51	1.08	0.33	0.00	-	-	0.33	
	6	-2.46	-2.89	0.57	0.51	1.08	0.34	0.00	-	-	0.34	
	7	-2.42	-2.91	0.57	0.51	1.08	0.35	0.00	-	-	0.35	
	8	-2.46	-2.85	0.57	0.52	1.09	0.36	0.00	-	-	0.36	
9	-3.51	-3.80	0.45	0.42	0.86	-0.64	0.00	-	-	-0.64		

* Worst rate

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

Burst power = Reading + Duty factor

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

5190 MHz MIMO

Mode	MCS Number	Reading						Duty factor *1) [dB]	Burst power			Remarks
		Chain							Chain			
		0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
11ac-40	0	-2.42	-2.85	0.57	0.52	1.09	0.38	0.00	-	-	0.38	
	1	-2.44	-3.01	0.57	0.50	1.07	0.29	0.00	-	-	0.29	
	2	-2.44	-2.92	0.57	0.51	1.08	0.34	0.00	-	-	0.34	
	3	-2.43	-2.93	0.57	0.51	1.08	0.34	0.00	-	-	0.34	
	4	-2.43	-2.84	0.57	0.52	1.09	0.38	0.00	-	-	0.38	
	5	-2.37	-2.80	0.58	0.52	1.10	0.43	0.00	-	-	0.43	
	6	-2.38	-2.84	0.58	0.52	1.10	0.41	0.00	-	-	0.41	
	7	-2.38	-2.83	0.58	0.52	1.10	0.41	0.00	-	-	0.41	
	8	-2.35	-2.77	0.58	0.53	1.11	0.46	0.00	-	-	0.46	*
9	-3.42	-3.72	0.45	0.42	0.88	-0.56	0.00	-	-	-0.56		

* Worst rate

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

Burst power = Reading + Duty factor

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

**Maximum Conducted Output Power
(Confirmation of worst rate)**

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 4, 2019 September 5, 2019
Temperature / Humidity 24 deg. C / 48 % RH 26 deg. C / 49 % RH
Engineer Makoto Hosaka Hiromasa Sato
Mode Tx, 11ac-80 (CDD), (MIMO)

5210 MHz CDD

Mode	MCS Number	Reading						Duty factor *1) [dB]	Burst power			Remarks
		Chain							Chain			
		0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
11ac-80	0	-2.69	-3.15	0.54	0.48	1.02	0.10	0.00	-	-	0.10	
	1	-2.70	-3.10	0.54	0.49	1.03	0.11	0.00	-	-	0.11	
	2	-2.68	-3.14	0.54	0.49	1.02	0.11	0.00	-	-	0.11	
	3	-2.62	-3.01	0.55	0.50	1.05	0.20	0.00	-	-	0.20	
	4	-2.49	-2.98	0.56	0.50	1.07	0.28	0.00	-	-	0.28	
	5	-2.50	-2.95	0.56	0.51	1.07	0.29	0.00	-	-	0.29	
	6	-2.45	-2.91	0.57	0.51	1.08	0.34	0.00	-	-	0.34	
	7	-2.44	-2.90	0.57	0.51	1.08	0.35	0.00	-	-	0.35	*
	8	-2.44	-2.93	0.57	0.51	1.08	0.33	0.00	-	-	0.33	
9	-3.79	-3.86	0.42	0.41	0.83	-0.81	0.00	-	-	-0.81		

* Worst rate

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

Burst power = Reading + Duty factor

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

5210 MHz MIMO

Mode	MCS Number	Reading						Duty factor *1) [dB]	Burst power			Remarks
		Chain							Chain			
		0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]		0 [dBm]	1 [dBm]	0+1 [dBm]	
11ac-80	0	-2.79	-3.19	0.53	0.48	1.01	0.02	0.00	-	-	0.02	
	1	-2.82	-3.22	0.52	0.48	1.00	-0.01	0.00	-	-	-0.01	
	2	-2.66	-3.13	0.54	0.49	1.03	0.12	0.00	-	-	0.12	
	3	-2.48	-2.93	0.56	0.51	1.07	0.31	0.00	-	-	0.31	
	4	-2.44	-2.86	0.57	0.52	1.09	0.37	0.00	-	-	0.37	
	5	-2.48	-2.85	0.56	0.52	1.08	0.35	0.00	-	-	0.35	
	6	-2.56	-2.87	0.55	0.52	1.07	0.30	0.00	-	-	0.30	
	7	-2.44	-2.81	0.57	0.52	1.09	0.39	0.00	-	-	0.39	
	8	-2.39	-2.77	0.58	0.53	1.11	0.43	0.00	-	-	0.43	*
9	-3.44	-3.66	0.45	0.43	0.88	-0.54	0.00	-	-	-0.54		

* Worst rate

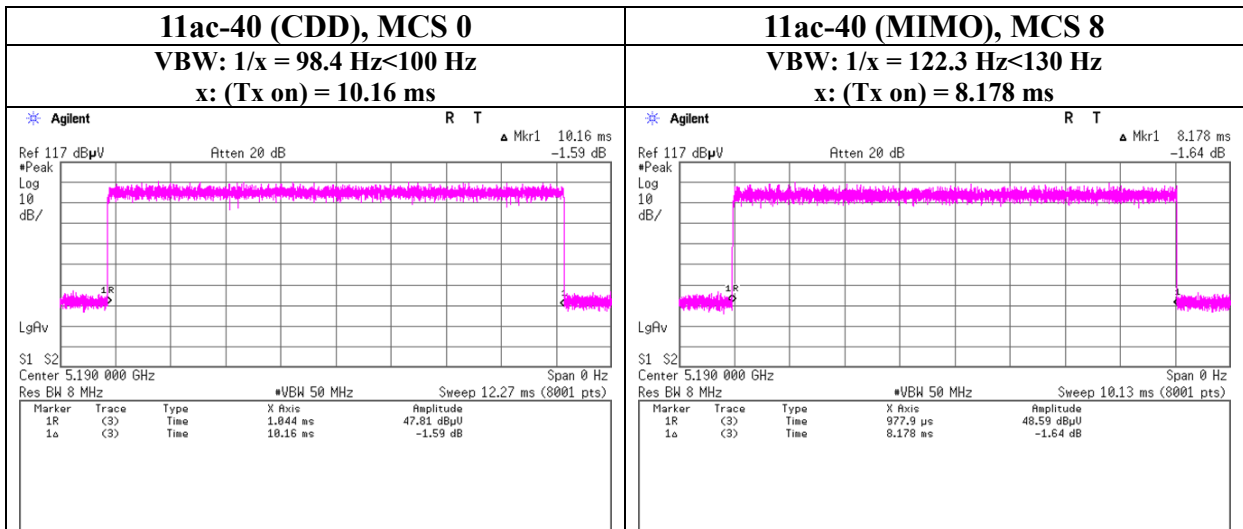
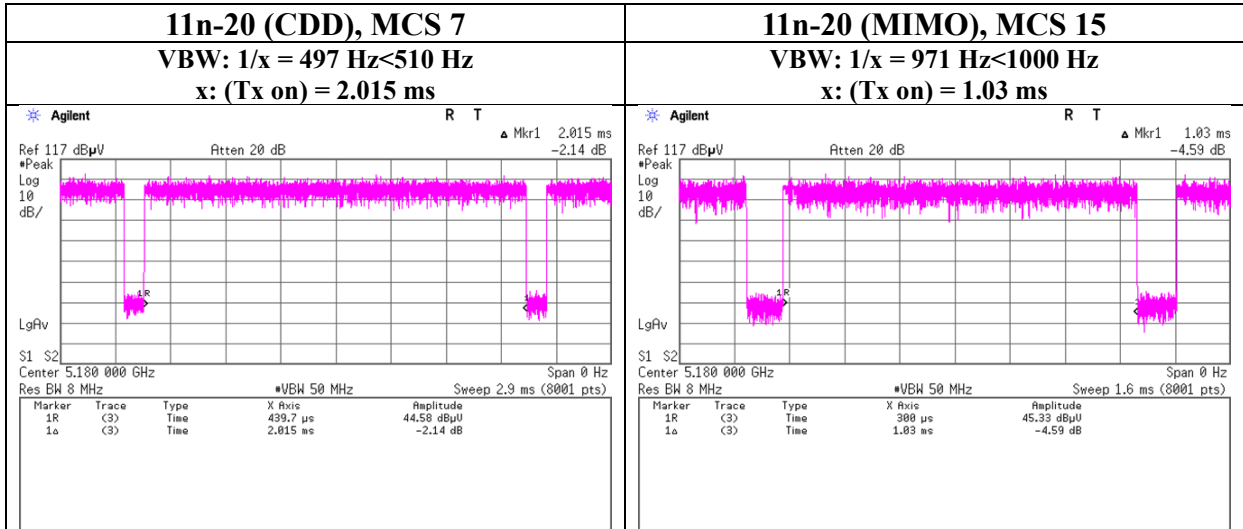
Sample Calculation: (*1) Power was measured with using the gate function of power meter.)

Burst power = Reading + Duty factor

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

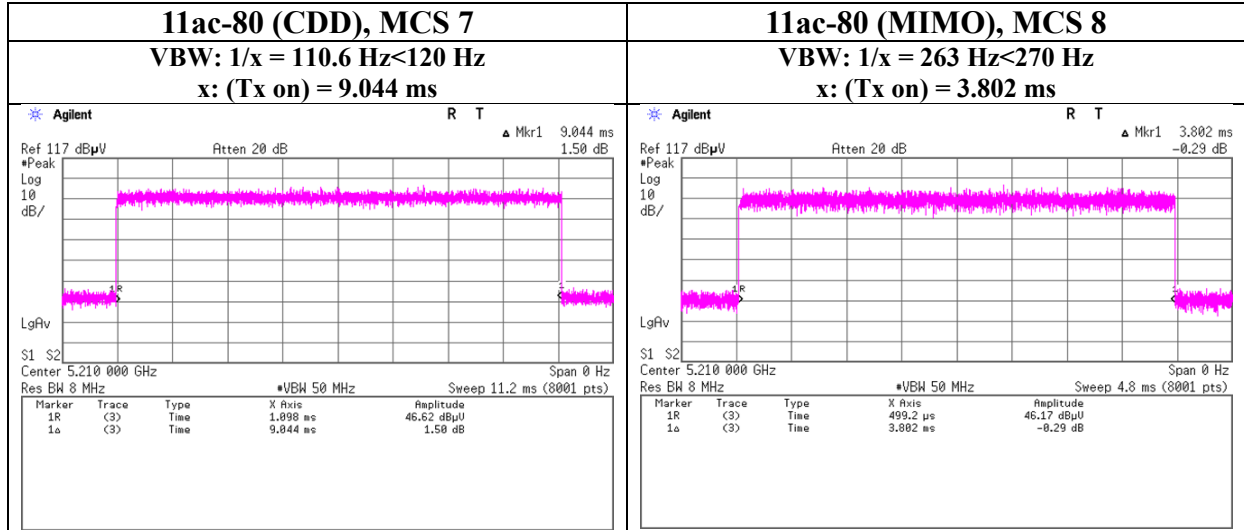
Burst rate confirmation

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date	September 6, 2019
Temperature / Humidity	24 deg. C / 61 % RH
Engineer	Kazuya Noda
Mode	Tx



Burst rate confirmation

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Date	September 5, 2019
Temperature / Humidity	25 deg. C / 65 % RH
Engineer	Kazuya Noda
Mode	Tx



Maximum Power Spectral Density

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 27, 2019
Temperature / Humidity 26 deg. C / 42 % RH
Engineer Takahiro Kawakami
Mode Tx, 11a, (serial no. A-7)

Chain 0+1		CDD					Applied limit: 15.407, mobile and portable client device					
Tested Frequency [MHz]	Antenna			PSD (Conducted)			PSD (e.i.r.p.)					
	Chain 0 [mW/MHz]	Chain 1 [mW/MHz]	Sum [mW/MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]	Chain 0 [mW/MHz]	Chain 1 [mW/MHz]	Sum [mW/MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]
5180	1.06	1.11	2.17	3.37	11.00	7.63	2.69	2.83	5.52	7.42	17.00	9.58
5220	0.93	1.06	1.99	2.98	11.00	8.02	2.35	2.70	5.05	7.03	17.00	9.97
5240	0.94	0.95	1.89	2.77	11.00	8.23	2.38	2.43	4.81	6.82	17.00	10.18
5260	0.93	1.04	1.97	2.95	11.00	8.05	2.37	2.64	5.01	7.00	17.00	10.00
5300	0.94	1.03	1.97	2.95	11.00	8.05	2.39	2.62	5.01	7.00	17.00	10.00
5320	1.02	1.01	2.02	3.06	11.00	7.94	2.59	2.56	5.14	7.11	17.00	9.89
5500	1.10	1.08	2.18	3.39	11.00	7.61	2.81	2.74	5.55	7.44	17.00	9.56
5580	1.14	0.98	2.12	3.26	11.00	7.74	2.90	2.48	5.38	7.31	17.00	9.69
5700	1.02	1.24	2.26	3.54	11.00	7.46	2.59	3.15	5.74	7.59	17.00	9.41
5720	1.02	1.19	2.21	3.44	11.00	7.56	2.58	3.03	5.62	7.49	17.00	9.51
5745	0.49	0.58	1.07	0.30	30.00	29.70	1.24	1.49	2.72	4.35	36.00	31.65
5785	0.50	0.58	1.08	0.33	30.00	29.67	1.26	1.48	2.74	4.38	36.00	31.62
5825	0.52	0.56	1.08	0.33	30.00	29.67	1.31	1.43	2.74	4.38	36.00	31.62

Tested Frequency [MHz]	Chain 0							Chain 1							
	Duty Factor [dB]	RBW Correction Factor [dB]	PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Directional 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]	Directional Gain [dBi]	PSD Result Cond. [dBm/MHz]	PSD Result e.i.r.p. [dBm/MHz]	
5180	0.00	0.00	-13.56	3.91	9.90	4.05	0.25	4.30	-13.75	4.01	10.21	4.05	0.47	4.52	
5220	0.00	0.00	-14.16	3.92	9.91	4.05	-0.33	3.72	-13.97	4.02	10.21	4.05	0.26	4.31	
5240	0.00	0.00	-14.13	3.93	9.91	4.05	-0.29	3.76	-14.45	4.04	10.21	4.05	-0.20	3.85	
5260	0.00	0.00	-14.15	3.94	9.91	4.05	-0.30	3.75	-14.10	4.05	10.21	4.05	0.16	4.21	
5300	0.00	0.00	-14.12	3.95	9.91	4.05	-0.26	3.79	-14.13	4.06	10.21	4.05	0.14	4.19	
5320	0.00	0.00	-13.78	3.95	9.91	4.05	0.08	4.13	-14.25	4.07	10.21	4.05	0.03	4.08	
5500	0.00	0.00	-13.49	4.00	9.92	4.05	0.43	4.48	-14.04	4.15	10.22	4.05	0.33	4.38	
5580	0.00	0.00	-13.34	4.01	9.91	4.05	0.58	4.63	-14.49	4.16	10.22	4.05	-0.11	3.94	
5700	0.00	0.00	-13.71	3.89	9.90	4.05	0.08	4.13	-13.37	4.07	10.23	4.05	0.94	4.99	
5720	0.00	0.00	-13.72	3.89	9.90	4.05	0.07	4.12	-13.54	4.08	10.23	4.05	0.77	4.82	
5745	0.00	6.99	-23.92	3.90	9.90	4.05	-3.13	0.92	-23.63	4.08	10.23	4.05	-2.33	1.72	
5785	0.00	6.99	-23.83	3.91	9.89	4.05	-3.04	1.01	-23.67	4.09	10.24	4.05	-2.35	1.70	
5825	0.00	6.99	-23.68	3.92	9.89	4.05	-2.88	1.17	-23.82	4.10	10.24	4.05	-2.49	1.56	

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 (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 + Directional Gain

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 10 log(N ANT/N SS) dB.

N ANT = number of transmit antennas = 2

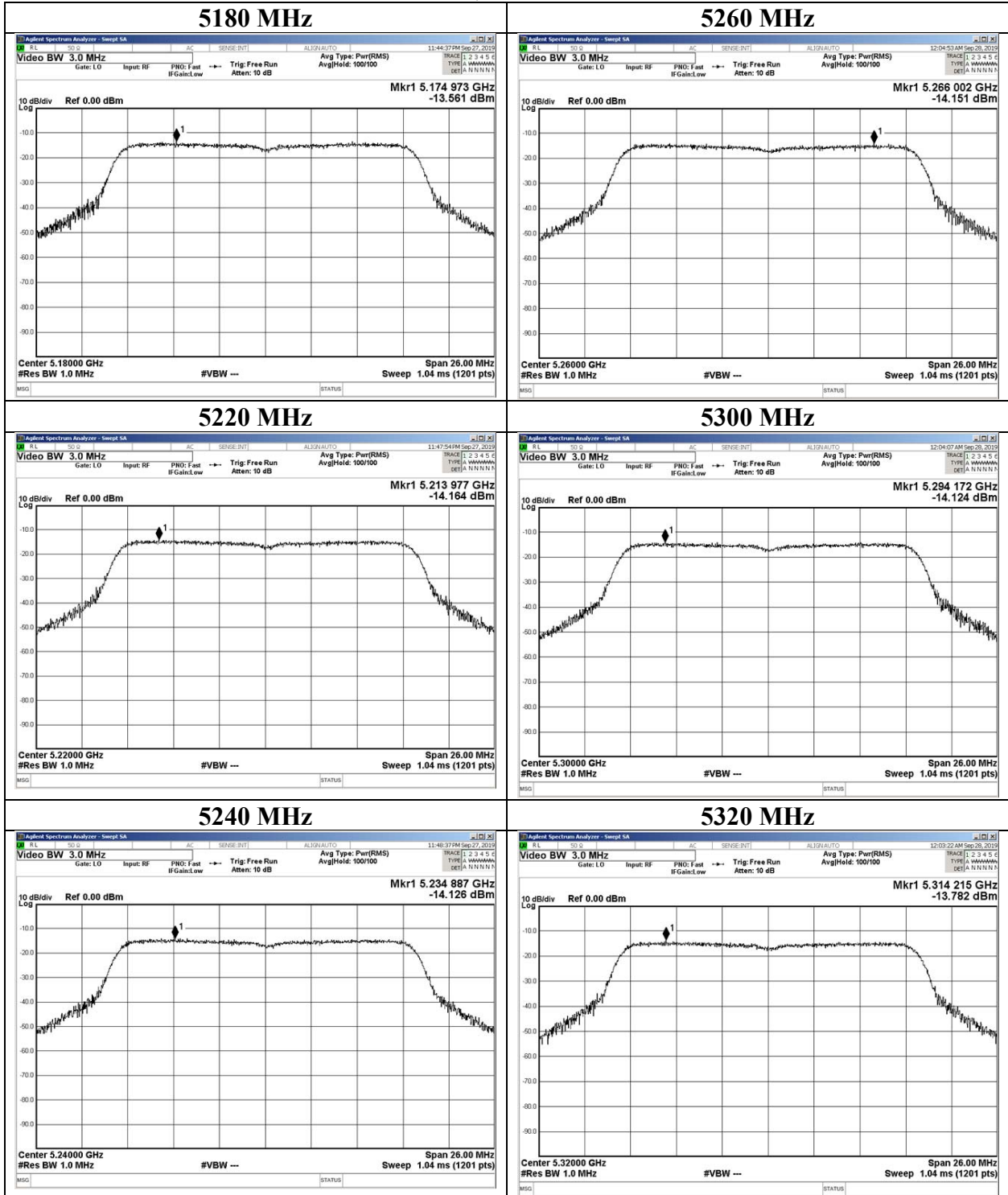
N SS = number of spatial streams = 1

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 27, 2019
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Takahiro Kawakami
Mode	Tx, 11a, CDD (serial no. A-7)

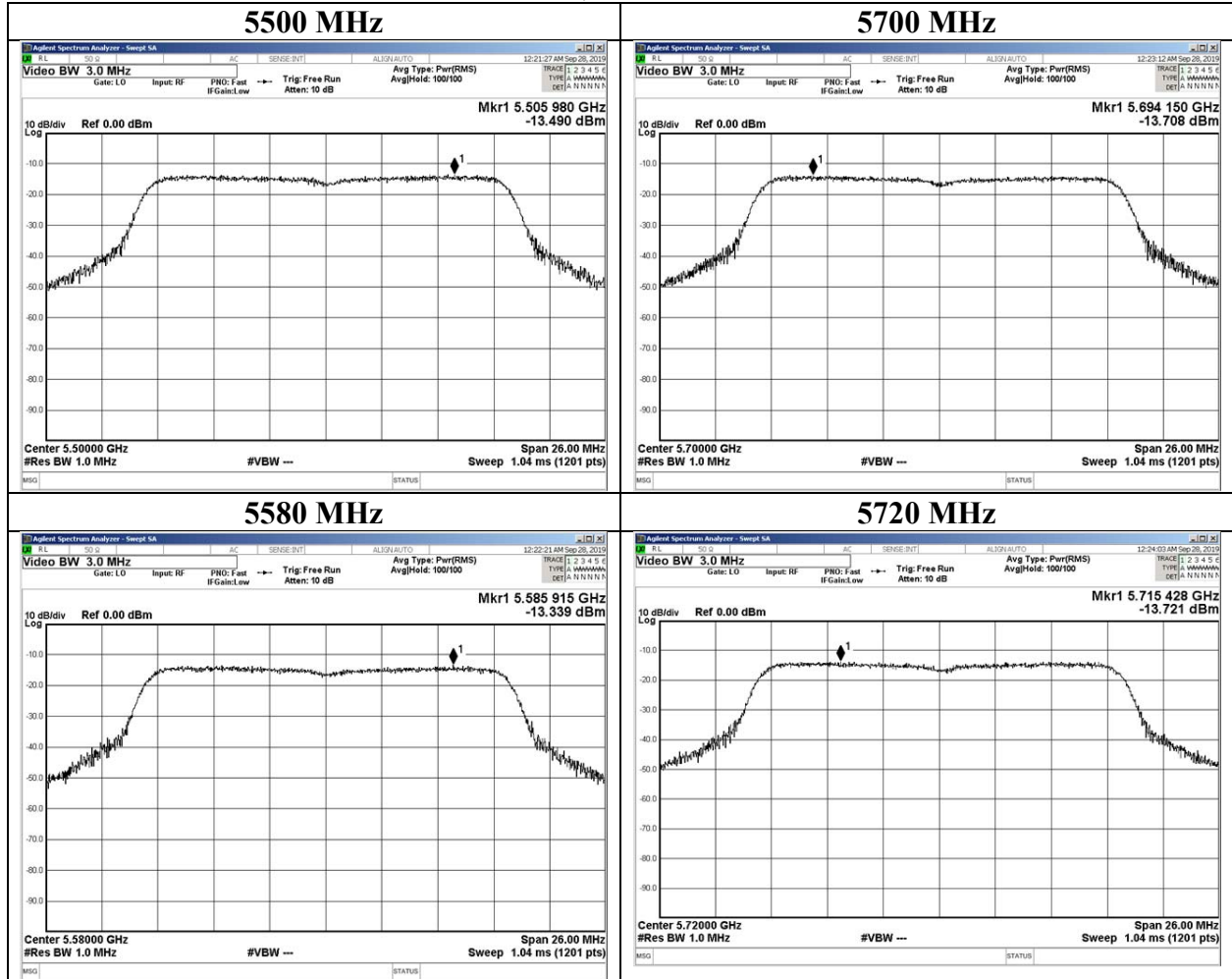
11a, Chain 0



Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 27, 2019
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Takahiro Kawakami
Mode	Tx, 11a, CDD (serial no. A-7)

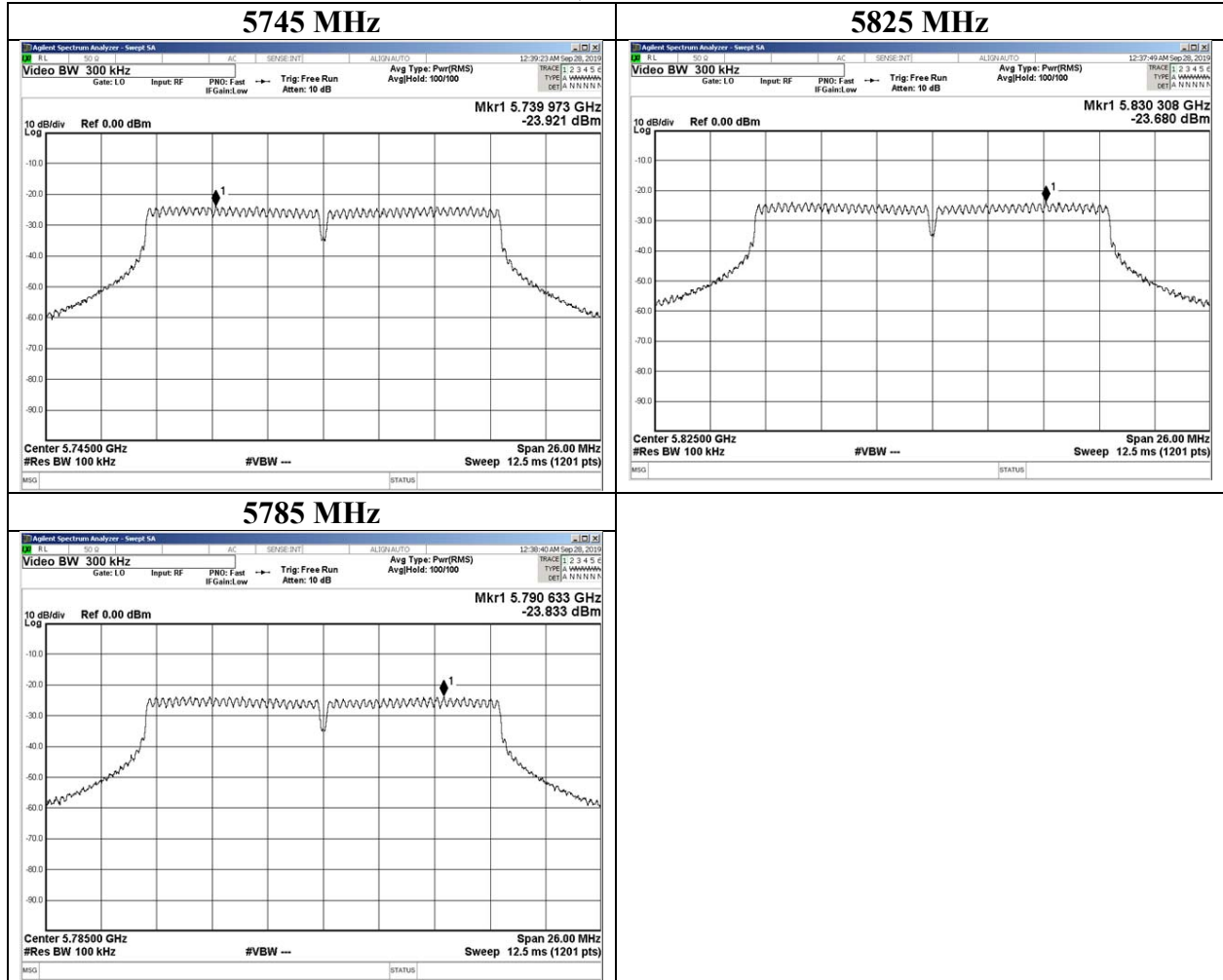
11a, Chain 0



Maximum Power Spectral Density

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 27, 2019
Temperature / Humidity 26 deg. C / 42 % RH
Engineer Takahiro Kawakami
Mode Tx, 11a, CDD (serial no. A-7)

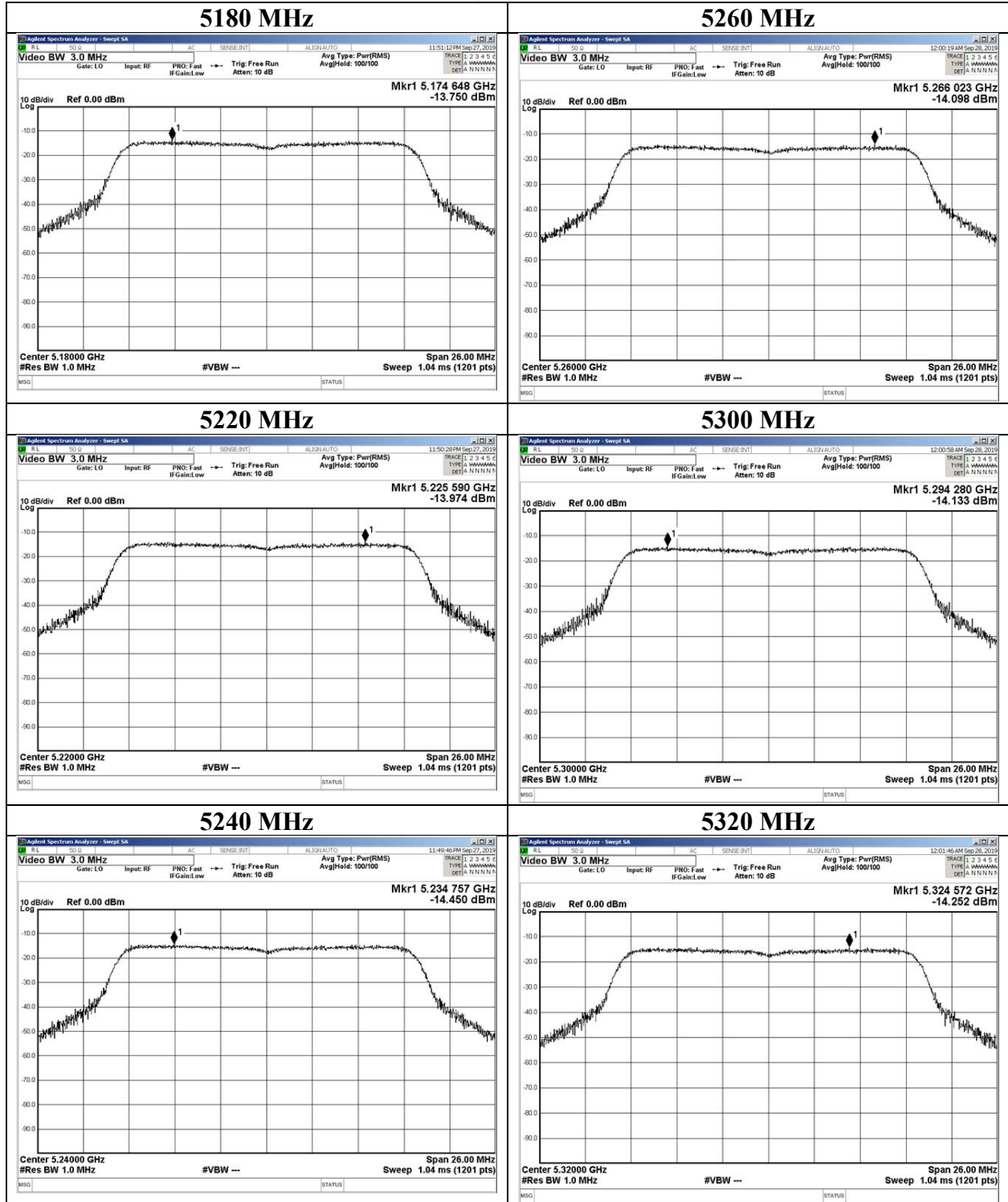
11a, Chain 0



Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 27, 2019
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Takahiro Kawakami
Mode	Tx, 11a, CDD (serial no. A-7)

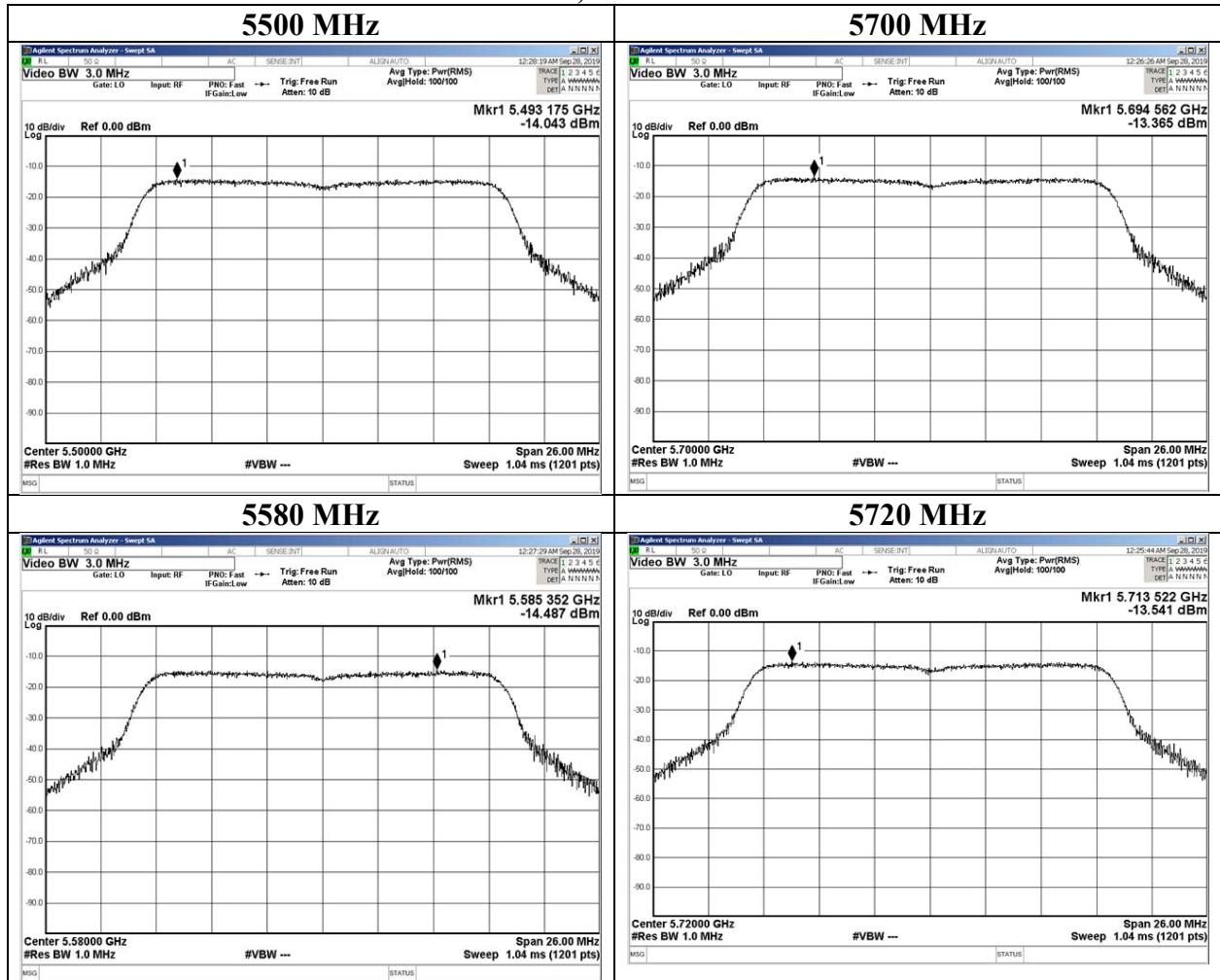
11a, Chain 1



Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 27, 2019
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Takahiro Kawakami
Mode	Tx, 11a, CDD (serial no. A-7)

11a, Chain 1



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Shonan EMC Lab.

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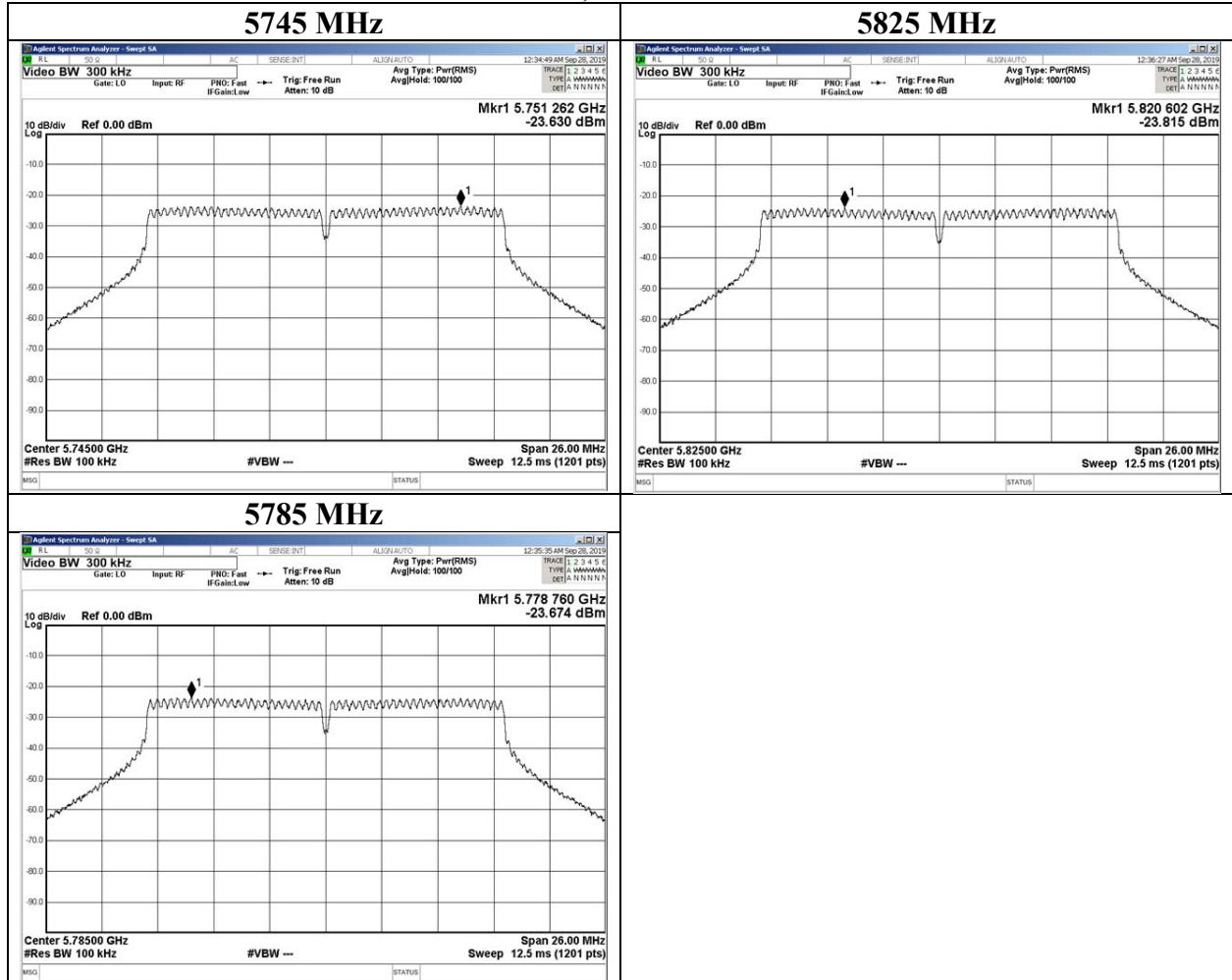
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 27, 2019
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Takahiro Kawakami
Mode	Tx, 11a, CDD (serial no. A-7)

11a, Chain 1



Maximum Power Spectral Density

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 20, 2019
Temperature / Humidity 25 deg. C / 50 % RH
Engineer Kenichi Adachi
Mode Tx, 11a, CDD (serial no. B-5)

Chain 0+1 CDD 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]
	Chain 0 [mW/MHz]	Chain 1 [mW/MHz]	Sum [mW/MHz]				Chain 0 [mW/MHz]	Chain 1 [mW/MHz]	Sum [mW/MHz]			
5180	0.91	0.97	1.88	2.74	11.00	8.26	2.86	3.07	5.93	7.73	17.00	9.27
5220	0.99	1.14	2.12	3.27	11.00	7.73	3.11	3.59	6.70	8.26	17.00	8.74
5240	1.01	1.01	2.02	3.06	11.00	7.94	3.19	3.18	6.38	8.05	17.00	8.95
5260	1.13	1.07	2.20	3.42	11.00	7.58	3.56	3.37	6.93	8.41	17.00	8.59
5300	0.91	0.93	1.85	2.66	11.00	8.34	2.88	2.94	5.82	7.65	17.00	9.35
5320	1.07	1.06	2.13	3.29	11.00	7.71	3.37	3.36	6.72	8.28	17.00	8.72
5500	1.05	1.12	2.17	3.37	11.00	7.63	3.32	3.53	6.85	8.36	17.00	8.64
5580	1.21	1.23	2.44	3.88	11.00	7.12	3.82	3.89	7.71	8.87	17.00	8.13
5700	1.00	1.12	2.13	3.28	11.00	7.72	3.17	3.55	6.72	8.27	17.00	8.73
5720	1.02	1.13	2.15	3.32	11.00	7.68	3.21	3.56	6.77	8.31	17.00	8.69
5745	0.56	0.57	1.12	0.51	30.00	29.49	1.76	1.79	3.54	5.50	36.00	30.50
5785	0.60	0.59	1.19	0.74	30.00	29.26	1.88	1.86	3.74	5.73	36.00	30.27
5825	0.58	0.57	1.14	0.58	30.00	29.42	1.82	1.79	3.60	5.57	36.00	30.43

Tested Frequency [MHz]	Duty Factor [dB]	RBW Correction Factor [dB]	Chain 0					Chain 1						
			PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	PSD Result		PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Directional Gain [dBi]	PSD Result	
							Cond. [dBm/MHz]	e.i.r.p. [dBm/MHz]					Cond. [dBm/MHz]	e.i.r.p. [dBm/MHz]
5180	0.00	0.00	-14.24	3.91	9.90	4.99	-0.43	4.56	-14.99	4.66	10.21	4.99	-0.12	4.87
5220	0.00	0.00	-13.89	3.92	9.91	4.99	-0.06	4.93	-14.32	4.67	10.21	4.99	0.56	5.55
5240	0.00	0.00	-13.79	3.93	9.91	4.99	0.05	5.04	-14.86	4.69	10.21	4.99	0.04	5.03
5260	0.00	0.00	-13.33	3.94	9.91	4.99	0.52	5.51	-14.62	4.70	10.21	4.99	0.29	5.28
5300	0.00	0.00	-14.25	3.95	9.91	4.99	-0.39	4.60	-15.23	4.71	10.21	4.99	-0.31	4.68
5320	0.00	0.00	-13.58	3.95	9.91	4.99	0.28	5.27	-14.66	4.72	10.21	4.99	0.27	5.26
5500	0.00	0.00	-13.70	4.00	9.92	4.99	0.22	5.21	-14.53	4.80	10.22	4.99	0.49	5.48
5580	0.00	0.00	-13.09	4.01	9.91	4.99	0.83	5.82	-14.12	4.81	10.22	4.99	0.91	5.90
5700	0.00	0.00	-13.77	3.89	9.90	4.99	0.02	5.01	-14.44	4.72	10.23	4.99	0.51	5.50
5720	0.00	0.00	-13.72	3.89	9.90	4.99	0.07	5.06	-14.43	4.73	10.23	4.99	0.53	5.52
5745	0.00	6.99	-23.33	3.90	9.90	4.99	-2.54	2.45	-24.42	4.73	10.23	4.99	-2.47	2.52
5785	0.00	6.99	-23.04	3.91	9.89	4.99	-2.25	2.74	-24.26	4.74	10.24	4.99	-2.29	2.70
5825	0.00	6.99	-23.20	3.92	9.89	4.99	-2.40	2.59	-24.45	4.75	10.24	4.99	-2.47	2.52

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 (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 + Directional Gain

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = 10 log(N ANT/N SS) dB.

N ANT = number of transmit antennas = 2

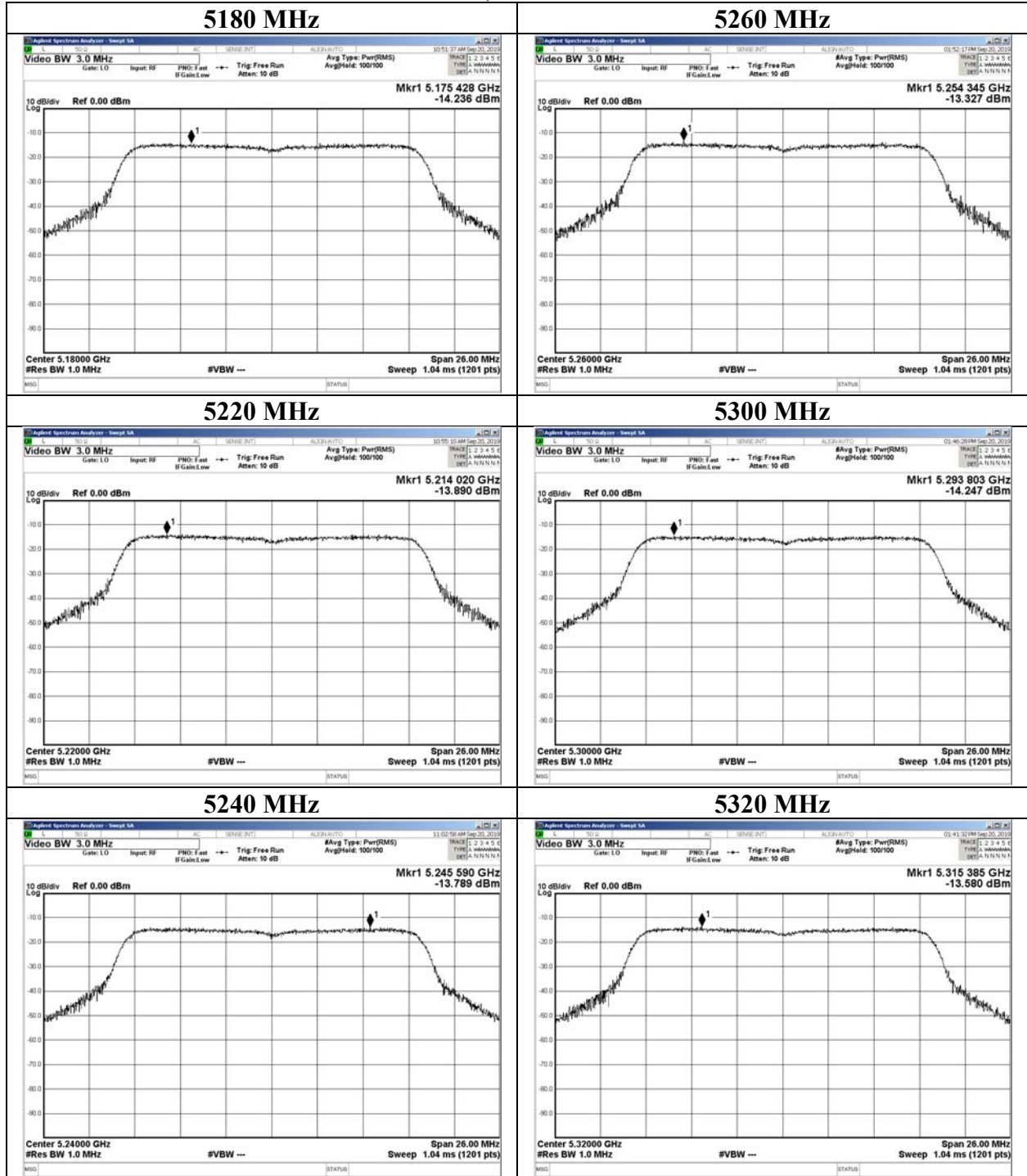
N SS = number of spatial streams = 1

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 20, 2019
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Kenichi Adachi
Mode	Tx, 11a, CDD (serial no. B-5)

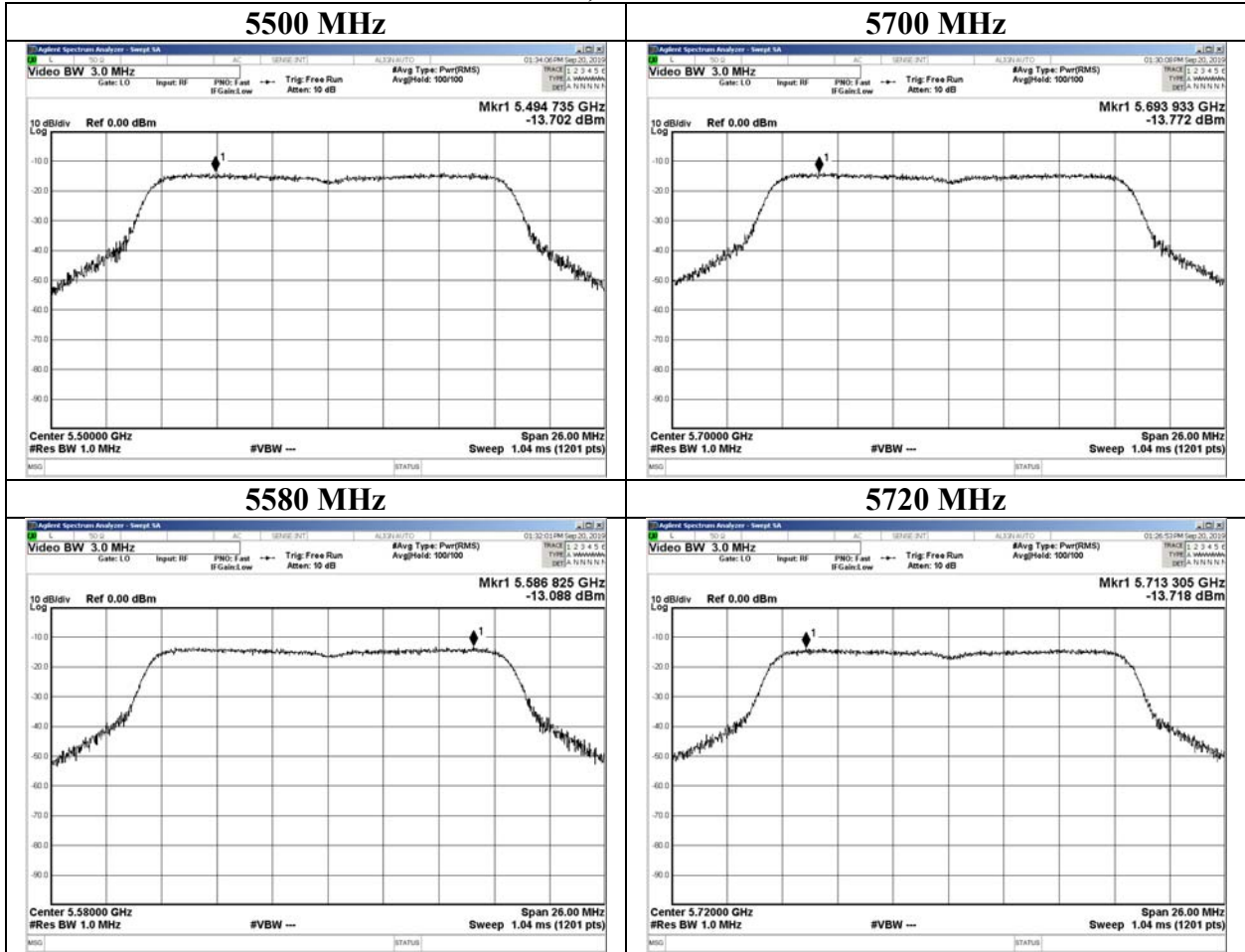
11a, Chain 0



Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 20, 2019
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Kenichi Adachi
Mode	Tx, 11a, CDD (serial no. B-5)

11a, Chain 0



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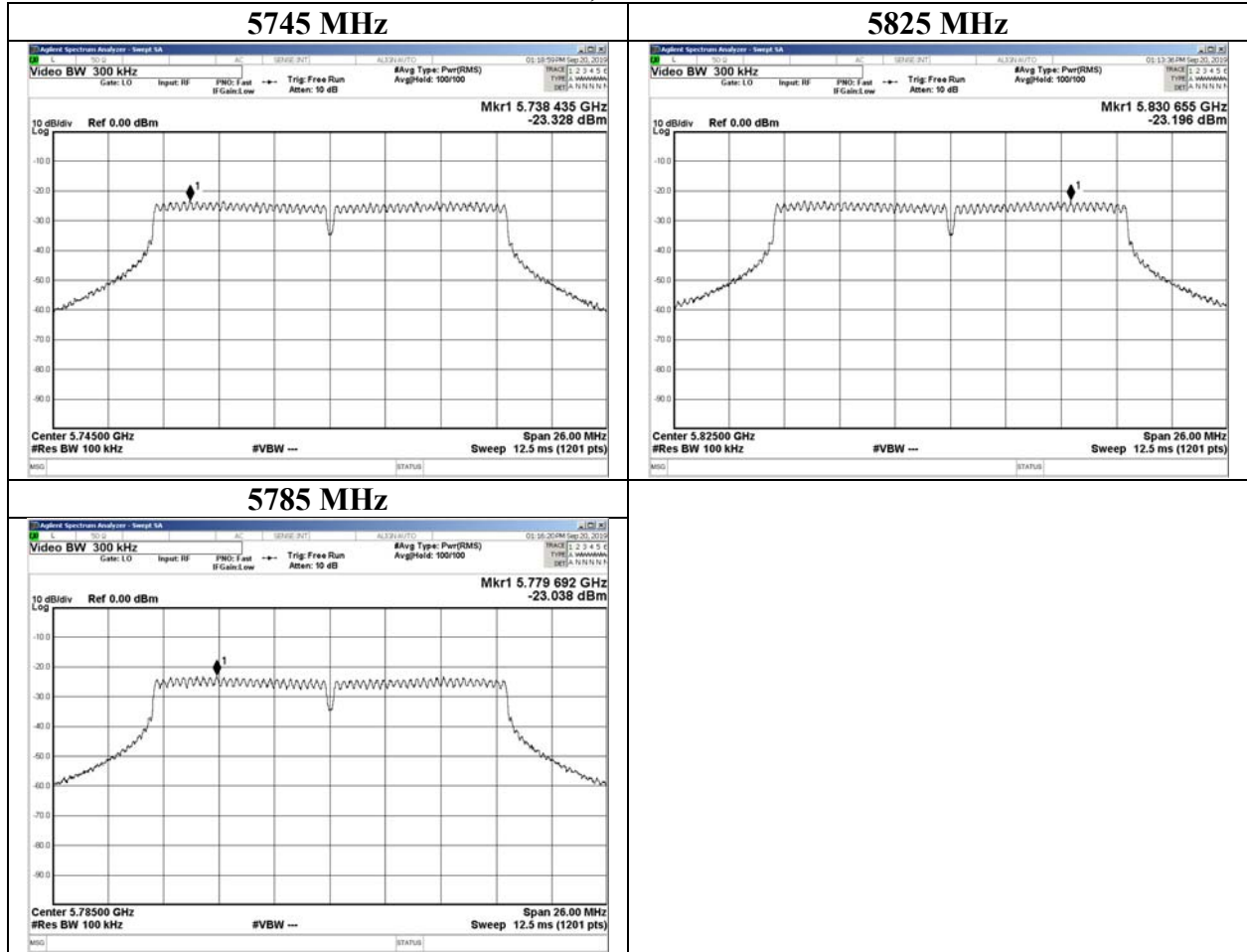
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 20, 2019
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Kenichi Adachi
Mode	Tx, 11a, CDD (serial no. B-5)

11a, Chain 0



UL Japan, Inc.

Shonan EMC Lab.

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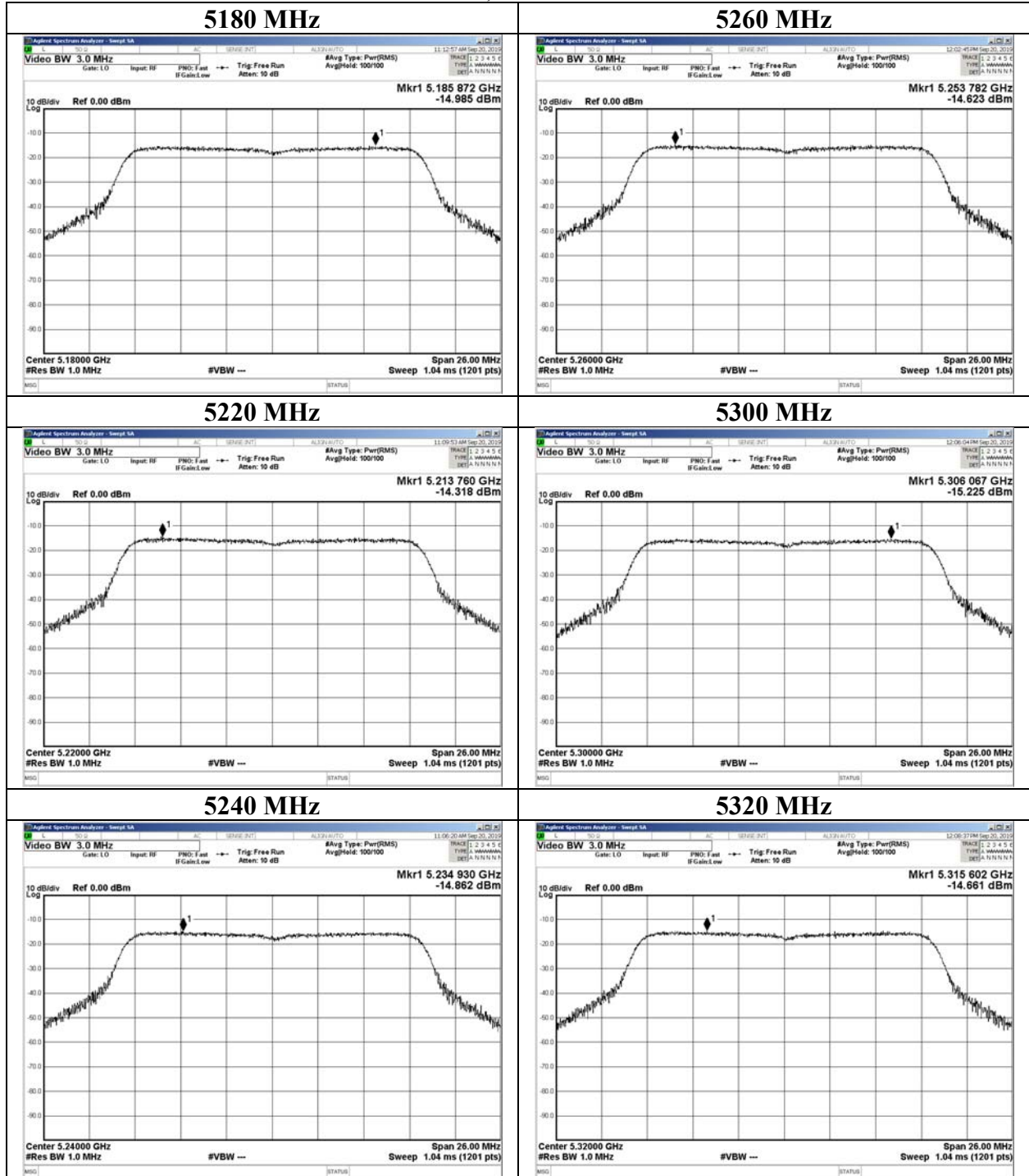
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 20, 2019
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Kenichi Adachi
Mode	Tx, 11a, CDD (serial no. B-5)

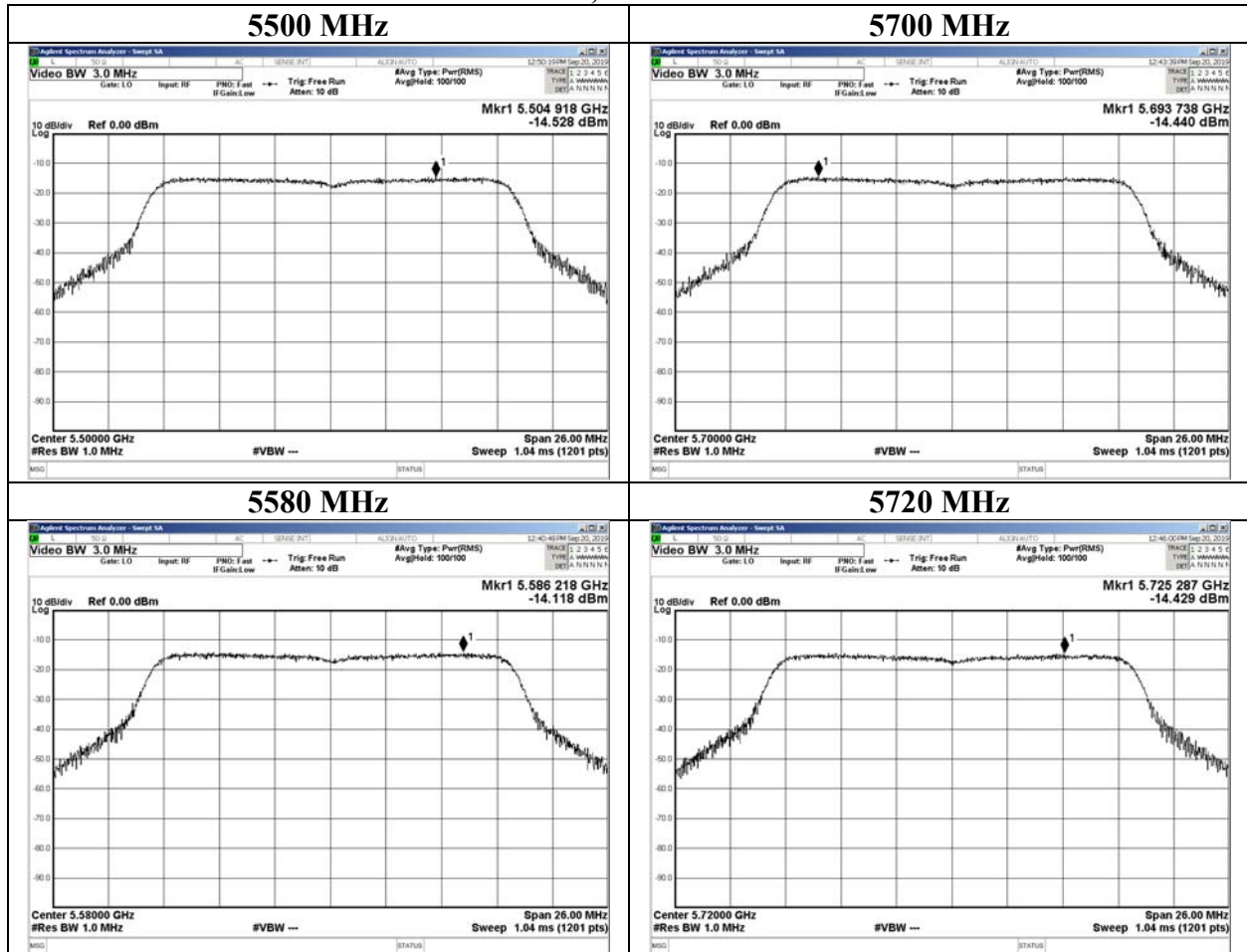
11a, Chain 1



Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 20, 2019
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Kenichi Adachi
Mode	Tx, 11a, CDD (serial no. B-5)

11a, Chain 1



UL Japan, Inc.

Shonan EMC Lab.

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

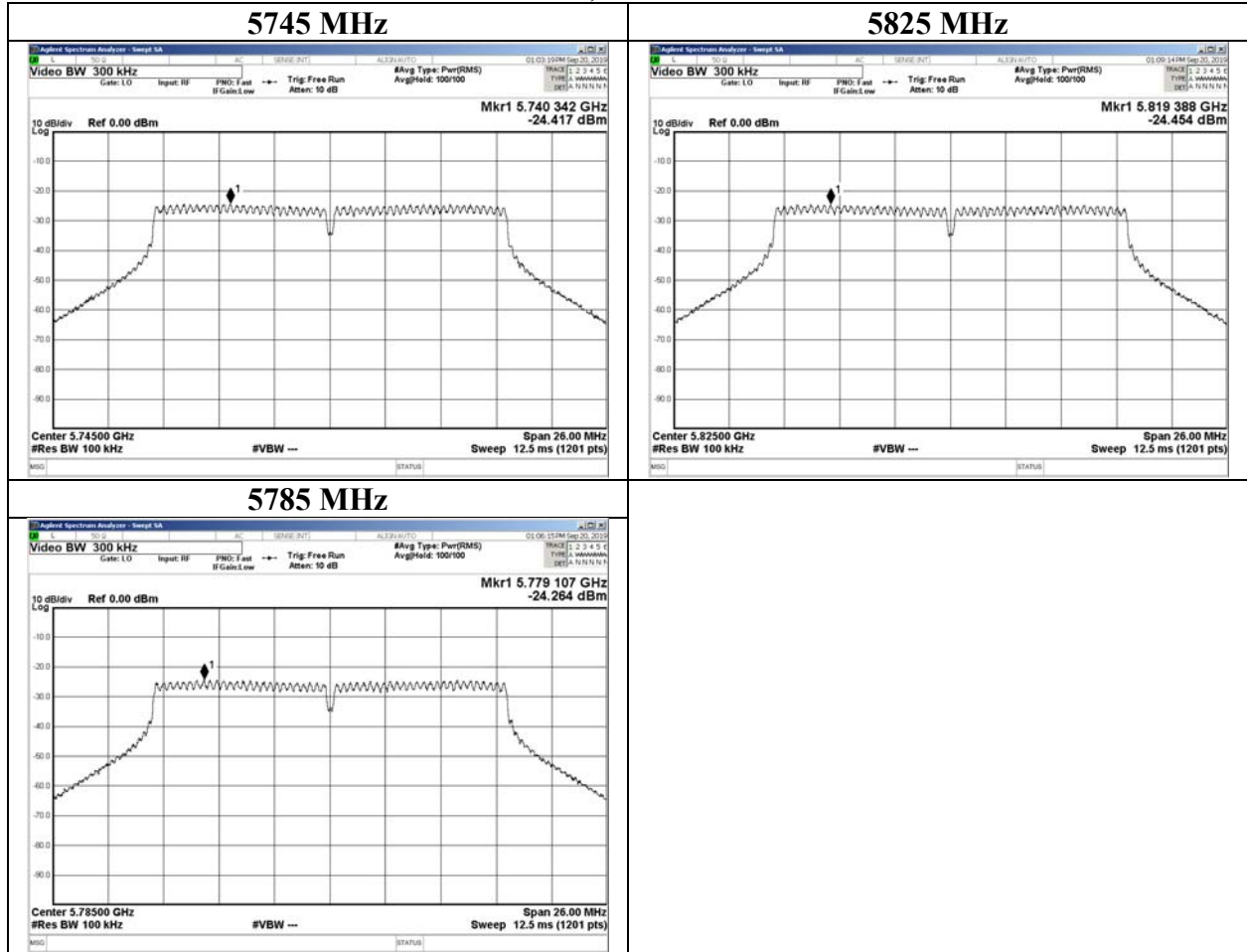
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 20, 2019
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Kenichi Adachi
Mode	Tx, 11a, CDD (serial no. B-5)

11a, Chain 1



Maximum Power Spectral Density

Report No. 13004393S-E-R2
Test place Shonan EMC Lab. No.3 Shielded Room
Date September 27, 2019
Temperature / Humidity 26 deg. C / 42 % RH
Engineer Takahiro Kawakami
Mode Tx, 11n-20 (CDD), (serial no. A-7)

Chain 0+1 CDD 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]
	Chain 0 [mW/MHz]	Chain 1 [mW/MHz]	Sum [mW/MHz]				Chain 0 [mW/MHz]	Chain 1 [mW/MHz]	Sum [mW/MHz]			
5180	0.91	0.96	1.87	2.71	11.00	8.29	2.32	2.43	4.75	6.76	17.00	10.24
5220	0.89	0.96	1.85	2.68	11.00	8.32	2.27	2.44	4.71	6.73	17.00	10.27
5240	0.95	0.90	1.84	2.66	11.00	8.34	2.41	2.27	4.68	6.71	17.00	10.29
5260	0.88	0.87	1.75	2.44	11.00	8.56	2.23	2.22	4.45	6.49	17.00	10.51
5300	0.90	0.92	1.82	2.61	11.00	8.39	2.29	2.34	4.64	6.66	17.00	10.34
5320	0.90	0.94	1.84	2.64	11.00	8.36	2.28	2.39	4.66	6.69	17.00	10.31
5500	1.03	0.89	1.92	2.83	11.00	8.17	2.62	2.25	4.87	6.88	17.00	10.12
5580	1.02	0.89	1.91	2.82	11.00	8.18	2.59	2.27	4.87	6.87	17.00	10.13
5700	0.97	1.05	2.02	3.05	11.00	7.95	2.46	2.68	5.13	7.10	17.00	9.90
5720	0.96	1.10	2.06	3.14	11.00	7.86	2.43	2.81	5.24	7.19	17.00	9.81
5745	0.49	0.52	1.00	0.02	30.00	29.98	1.24	1.31	2.55	4.07	36.00	31.93
5785	0.49	0.52	1.01	0.04	30.00	29.96	1.24	1.33	2.57	4.09	36.00	31.91
5825	0.48	0.52	1.01	0.02	30.00	29.98	1.22	1.33	2.55	4.07	36.00	31.93

Tested Frequency [MHz]	Duty Factor [dB]	RBW Correction Factor [dB]	Chain 0					Chain 1						
			PSD Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Directional 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]	Directional Gain [dBi]	PSD Result Cond. [dBm/MHz]	PSD Result e.i.r.p. [dBm/MHz]
			5180	0.00	0.00	-14.21	3.91	9.90	4.05	-0.40	3.65	-14.42	4.01	10.21
5220	0.00	0.00	-14.32	3.92	9.91	4.05	-0.49	3.56	-14.41	4.02	10.21	4.05	-0.18	3.87
5240	0.00	0.00	-14.07	3.93	9.91	4.05	-0.23	3.82	-14.73	4.04	10.21	4.05	-0.48	3.57
5260	0.00	0.00	-14.41	3.94	9.91	4.05	-0.56	3.49	-14.85	4.05	10.21	4.05	-0.59	3.47
5300	0.00	0.00	-14.31	3.95	9.91	4.05	-0.45	3.60	-14.62	4.06	10.21	4.05	-0.35	3.70
5320	0.00	0.00	-14.34	3.95	9.91	4.05	-0.48	3.57	-14.55	4.07	10.21	4.05	-0.27	3.78
5500	0.00	0.00	-13.78	4.00	9.92	4.05	0.14	4.19	-14.90	4.15	10.22	4.05	-0.53	3.52
5580	0.00	0.00	-13.83	4.01	9.91	4.05	0.09	4.14	-14.86	4.16	10.22	4.05	-0.48	3.57
5700	0.00	0.00	-13.94	3.89	9.90	4.05	-0.15	3.91	-14.08	4.07	10.23	4.05	0.22	4.27
5720	0.00	0.00	-13.98	3.89	9.90	4.05	-0.19	3.86	-13.88	4.08	10.23	4.05	0.43	4.48
5745	0.00	6.99	-23.92	3.90	9.90	4.05	-3.13	0.92	-24.16	4.08	10.23	4.05	-2.86	1.19
5785	0.00	6.99	-23.92	3.91	9.89	4.05	-3.13	0.92	-24.13	4.09	10.24	4.05	-2.81	1.24
5825	0.00	6.99	-23.97	3.92	9.89	4.05	-3.17	0.88	-24.14	4.10	10.24	4.05	-2.81	1.24

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 + Directional Gain

Directional Gain = G ANT + Array Gain

G ANT = Set equal to the gain of the antenna having the highest gain

Array Gain = $10 \log(N \text{ ANT} / N \text{ SS}) \text{ dB}$.

N ANT = number of transmit antennas = 2

N SS = number of spatial streams = 1

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Report No.	13004393S-E-R2
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	September 27, 2019
Temperature / Humidity	26 deg. C / 42 % RH
Engineer	Takahiro Kawakami
Mode	Tx, 11n-20 (CDD), (serial no. A-7)

11n-20, Chain 0

