




# RADIO TEST REPORT

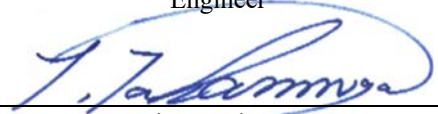
**Test Report No. : 13828809H-C-R1**

**Applicant** : DENSO TEN Limited  
**Type of EUT** : Car Audio  
**Model Number of EUT** : TN0023A  
**FCC ID** : BABTN0023A  
**Test regulation** : FCC Part 15 Subpart E: 2021  
**Test Result** : Complied (Refer to SECTION 3)

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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. Ise 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 13828809H-C. 13828809H-C is replaced with this report.

**Date of test:** June 17 to October 19, 2021

**Representative test engineer:**   
Takafumi Noguchi  
Engineer

**Approved by:**   
Tsubasa Takayama  
Leader



CERTIFICATE 5107.02

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## **REVISION HISTORY**

**Original Test Report No.: 13828809H-C**

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13828809H-C	October 20, 2021	-	-
1	13828809H-C-R1	October 26, 2021	P.11	Addition of Tested Antenna to Simultaneous transmission table
1	13828809H-C-R1	October 26, 2021	P.11	Correction of sentence *1) in Simultaneous transmission table

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## Reference: Abbreviations (Including words undescribed in this report)

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

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

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## **SECTION 1: Customer information**

Company Name : DENSO TEN Limited  
Address : 2-28, Goshō-dori 1-Chome, Hyogo-ku, Kobe, 652-8510 JAPAN  
Telephone Number : +81-78-682-2159  
Facsimile Number : +81-78-682-2169  
Contact Person : Kaoru Abe

The information provided from the customer is as follows;

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

## **SECTION 2: Equipment under test (EUT)**

### **2.1 Identification of EUT**

Type : Car Audio  
Model Number : TN0023A  
Serial Number : Refer to SECTION 4.2  
Rating : DC 12 V  
Receipt Date : June 4, 2021  
Country of Mass-production : Japan  
Condition : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)  
Modification : No Modification by the test lab.

## 2.2 Product Description

Model: TN0023A (referred to as the EUT in this report) is a Car Audio.

### Radio Specification

Radio Type : Transceiver  
Clock frequency(ies) : 7.3333333 GHz

	IEEE802.11b	IEEE802.11g/n (20 M band)	IEEE802.11a/n/ac (20 M band)	IEEE802.11n/ac (40 M band)	IEEE802.11ac (80 M band)
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5180 MHz - 5240 MHz 5745 MHz - 5825 MHz	5190 MHz - 5230 MHz 5755 MHz - 5795 MHz	5210 MHz 5775 MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM (IEEE802.11ac only))		
Channel spacing	5MHz		20MHz	40MHz	80MHz
Antenna type	Inverted F Antenna				
Antenna Connector type	U.FL-R-SMT-1(80)				
Antenna Gain	-1.41 dBi (Peak): 2.4 GHz Band 3.28 dBi (Peak) (ANT 1) / 1.79 dBi (Peak) (ANT 2) : 5 GHz Band				

	Bluetooth Ver.5.0 with EDR function
Frequency of operation	2402 MHz - 2480 MHz
Type of modulation	BT: FHSS (GFSK, $\pi/4$ -DQPSK, 8-DPSK) LE: GFSK
Channel spacing	BT: 1 MHz LE: 2 MHz
Antenna type	Inverted F Antenna
Antenna Connector type	U.FL-R-SMT-1(80)
Antenna Gain	0.70 dBi (Peak)

	Broadcast Receiver
Radio Type	Receiver
Frequency of Operation	AM, HD_AM: 530 kHz - 1710 kHz FM, RBDS/HD_FM: 87.75 MHz - 107.9 MHz SDARS: 2320 MHz - 2345 MHz
Channel spacing	AM, HD_AM: 10 kHz FM, RBDS/HD_FM: 200 kHz
Antenna connector type	HFC IV

\* This test report applies to WLAN (5 GHz Band) only.

## **SECTION 3: Test specification, procedures & results**

### **3.1 Test Specification**

Test Specification : FCC Part 15 Subpart E  
FCC Part 15 final revised on May 3, 2021 and effective July 2, 2021

Title : FCC 47 CFR Part 15 Radio Frequency Device Subpart E  
Unlicensed National Information Infrastructure Devices  
Section 15.407 General technical requirements

\* The revision does not affect the test result conducted before its effective date.

### **3.2 Procedures and results**

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 ISED: RSS-Gen 8.8	FCC: 15.407 (b) (6) / 15.207 ISED: RSS-Gen 8.8	-	N/A	*1)
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	-	N/A	*2)
Maximum Conducted Output Power	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1	See data	Complied a)	Conducted
Maximum Power Spectral Density	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1	See data	Complied b)	Conducted
Spurious Emission Restricted Band Edge	FCC: ANSI C63.10-2013 KDB Publication Number 789033 ISED: -	FCC: 15.407 (b), 15.205 and 15.209 ISED: RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2	6.0 dB 5000.078 MHz, AV, Hori.	Complied c) / d)	Conducted (< 30 MHz)/ Radiated (> 30 MHz) *3)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2.4.1	See data	Complied e)	Conducted
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. *1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line. *2) The test is not applicable since the EUT does not support to W53 and W56 bands. *3) Radiated test was selected over 30 MHz based on FCC 15.407 (b) and KDB 789033 D02 G.3.b). a) Refer to APPENDIX 1 (data of Maximum Conducted Output Power) b) Refer to APPENDIX 1 (data of Maximum Power Spectral Density) c) Refer to APPENDIX 1 (data of Radiated Spurious Emission) d) Refer to APPENDIX 1 (data of Conducted Spurious Emission) e) 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)**

This EUT provides stable voltage constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

### **FCC Part 15.203 Antenna requirement**

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

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**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

### 3.3 Addition to standard

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

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

### 3.4 Uncertainty

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

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

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#### Antenna Terminal test

Test Item	Uncertainty (+/-)
20 dB Bandwidth / 99 % Occupied Bandwidth	0.96 %
Maximum Peak Output Power / Average Output Power	1.4 dB
Carrier Frequency Separation	0.42 %
Dwell time / Burst rate	0.10 %
Conducted Spurious Emission	2.6 dB

#### Radiated emission

Measurement distance	Frequency range	Uncertainty (+/-)
3 m	9 kHz to 30 MHz	3.3 dB
10 m		3.2 dB
3 m	30 MHz to 200 MHz (Horizontal) (Vertical)	4.8 dB
		5.0 dB
	200 MHz to 1000 MHz (Horizontal) (Vertical)	5.2 dB
		6.3 dB
10 m	30 MHz to 200 MHz (Horizontal) (Vertical)	4.8 dB
		4.8 dB
	200 MHz to 1000 MHz (Horizontal) (Vertical)	5.0 dB
		5.0 dB
3 m	1 GHz to 6 GHz	4.9 dB
	6 GHz to 18 GHz	5.2 dB
1 m	10 GHz to 26.5 GHz	5.5 dB
	26.5 GHz to 40 GHz	5.5 dB
10 m	1 GHz to 18 GHz	5.2 dB



### 3.5 Test Location

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\*A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 199967

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

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

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

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

### 3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

## **SECTION 4: Operation of EUT during testing**

### **4.1 Operating Mode(s)**

Test operating mode was determined as follows according to “Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals -” of TCB Council Workshop October 2009

<b>Mode</b>	<b>Remarks*</b>
IEEE 802.11a (11a)	54 Mbps, PN9
IEEE 802.11n SISO 20 MHz BW (11n-20)	MCS 7 (Short GI), PN9
IEEE 802.11n SISO 40 MHz BW (11n-40)	MCS 7 (Short GI), PN9
IEEE 802.11ac SISO 20 MHz BW (11ac-20)	MCS 7 (Short GI), PN9
IEEE 802.11ac SISO 40 MHz BW (11ac-40)	MCS 7 (Short GI), PN9
IEEE 802.11ac SISO 80 MHz BW (11ac-80)	MCS 7 (Short GI), PN9
* The worst antenna and condition was determined based on the test of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; Power settings:      11a: 7.5 dBm 11n-20: 6.5 dBm 11n-40: 5.5 dBm 11ac-20: 6.5 dBm (5.5 dBm for MCS 8) 11ac-40: 5.5 dBm (3.5 dBm for MCS 8 and MCS 9) 11ac-80: 4.5 dBm (2.5 dBm for MCS 8 and MCS 9) Software:              QRCT ver.3.0.144.0 (Date: October 9, 2017) TeraTerm ver.4.104 (Date: August 30, 2019) (Storage location: Driven by connected PC)	
*This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

\*The details of Operation mode(s)

Test Item	Operating Mode	Tested Antenna *2)	Tested Frequency			
			Lower Band	Middle Band	Additional Band	Upper Band
99 % Occupied Bandwidth, 6 dB Bandwidth	11a Tx 11n-20 Tx 11ac-20 Tx	2	5180 MHz 5220 MHz 5240 MHz	-	-	5745 MHz 5785 MHz 5825 MHz
	11n-40 Tx 11ac-40 Tx	2	5190 MHz 5230 MHz	-	-	5755 MHz 5795 MHz
	11ac-80 Tx	2	5210 MHz	-	-	5775 MHz
Maximum Power Spectral Density	11a Tx 11n-20 Tx 11ac-20 Tx	1, 2	5180 MHz 5220 MHz 5240 MHz	-	-	5745 MHz 5785 MHz 5825 MHz
	11n-40 Tx 11ac-40 Tx	1, 2	5190 MHz 5230 MHz	-	-	5755 MHz 5795 MHz
	11ac-80 Tx	1, 2	5210 MHz	-	-	5775 MHz
Maximum Conducted Output Power	11a Tx 11n-20 Tx 11ac-20 Tx	1, 2	5180 MHz 5220 MHz 5240 MHz	-	-	5745 MHz 5785 MHz 5825 MHz
	11n-40 Tx 11ac-40 Tx	1, 2	5190 MHz 5230 MHz	-	-	5755 MHz 5795 MHz
	11ac-80 Tx	1, 2	5210 MHz	-	-	5775 MHz
Radiated Spurious Emission (Below 1 GHz)	11a Tx *1)	1	5180 MHz	-	-	-
Radiated Spurious Emission (Above 1 GHz)	11a Tx 11ac-20 Tx *3)	1	5180 MHz 5220 MHz 5240 MHz	-	-	5745 MHz 5785 MHz 5825 MHz
	11ac-40 Tx *3)	1	5190 MHz 5230 MHz 5755 MHz	-	-	5755 MHz 5795 MHz
	11ac-80 Tx	1	5210 MHz	-	-	5775 MHz
Conducted Spurious Emission	11a Tx *1)	1	5180 MHz	-	-	-

\*1) The mode was tested as a representative, because it had the highest power(e.i.r.p.) at antenna terminal test.

\*2) The worst antenna (Ant: x) and condition was determined as follows:

- 1: Radiated Spurious Emission: Used Ant:1 based on the result of Maximum Conducted Output Power (e.i.r.p).
- 2: Antenna Terminal Conducted test on the limit which is not considered antenna gain: Used Ant 2: based on the result of Conducted Output power.
- 3: Antenna Terminal Conducted test on the limit which is considered antenna gain: Used Ant 1: based on the result of Conducted Output power (e.i.r.p.)
- 4: Antenna Terminal Conducted test on the limit which has both condition 2 and 3: Used Ant 1 and Ant 2

\*3) Since 11n-20 and 11ac-20, 11n-40 and 11ac-40, have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest output power.

#### Simultaneous transmission

Test Item	Mode *1)	Tested Antenna
Radiated Spurious Emission	Tx 11a 5240 MHz + Tx BT DH5 Hopping On	11a (Antenna 2) + Bluetooth (Antenna 2)
*1) The test was performed on the mode as a representative, because it had the highest power (Bluetooth DH5) of Bluetooth at antenna terminal test.		

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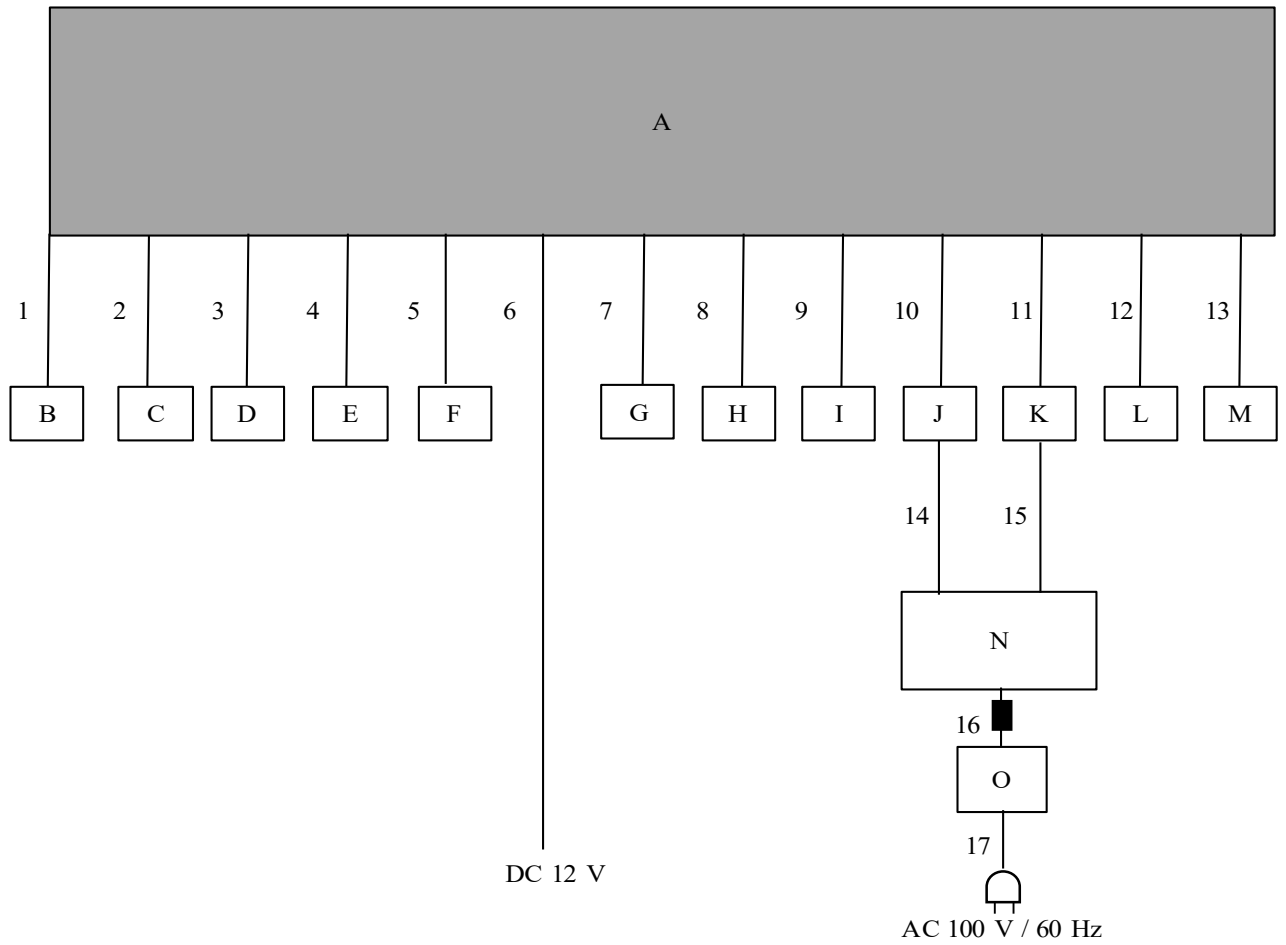
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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## 4.2 Configuration and peripherals

### Antenna Terminal Conducted Tests



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

**Description of EUT and Support equipment**

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Car Audio	TN0023A	AT300014	DENSO TEN Limited	EUT
B	Switch	-	-	-	-
C	DCM	19MC_DCM	E-033720026/008	DENSO Corporation	-
D	Steering Switch	PA6-GF30	39	TOYOTA	-
E	Low noise Amp	ZX60-242GLN-S+	S 2036302044	Mini-Circuits	-
F	GPS Antenna	23D900113	No.48	yokowo co.,ltd.	-
G	FM/AM connector (Main)	86300-30C30	AS500586	DENSO TEN Limited	-
H	FM/AM connector (Sub)	86300-30C70	AS400124	DENSO TEN Limited	-
I	Back Camera	GP-KD7301RC	85C602752	Panasonic	-
J	USB LAN transfer	ETX3-US2	G000024	I-O DATA	-
K	Jig Board	135943-58990920	3700980A186	DENSO TEN Limited	-
L	Mic	SDA3510A	0AC067100	Panasonic	-
M	Mic	SDA3510A	0AC067082	Panasonic	-
N	Laptop PC	CF-LX4EDHCS	5GKSA17377	Panasonic	-
O	AC Adapter	CF-AA62J2C	64B2CM114703755B	Panasonic	-

**List of cables used**

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Signal Cable	2.4	Unshielded	Unshielded	-
2	Signal Cable	2.4	Unshielded	Unshielded	-
3	Signal Cable	2.4	Unshielded	Unshielded	-
4	Signal Cable	1.0	Unshielded	Unshielded	-
5	GNSS Antenna Cable	2.6	Shielded	Shielded	-
6	DC Cable	3.4	Unshielded	Unshielded	-
7	Signal Cable	2.6	Unshielded	Unshielded	-
8	Signal Cable	2.6	Unshielded	Unshielded	-
9	Signal Cable	2.4	Unshielded	Unshielded	-
10	USB Cable	3.2	Shielded	Shielded	-
11	Signal Cable	0.1	Unshielded	Unshielded	-
12	Signal Cable	2.7	Unshielded	Unshielded	-
13	Signal Cable	2.7	Unshielded	Unshielded	-
14	LAN Cable	1.0	Unshielded	Unshielded	-
15	USB Cable	0.2	Shielded	Shielded	-
16	DC Cable	0.9	Unshielded	Unshielded	-
17	AC Cable	0.8	Unshielded	Unshielded	-

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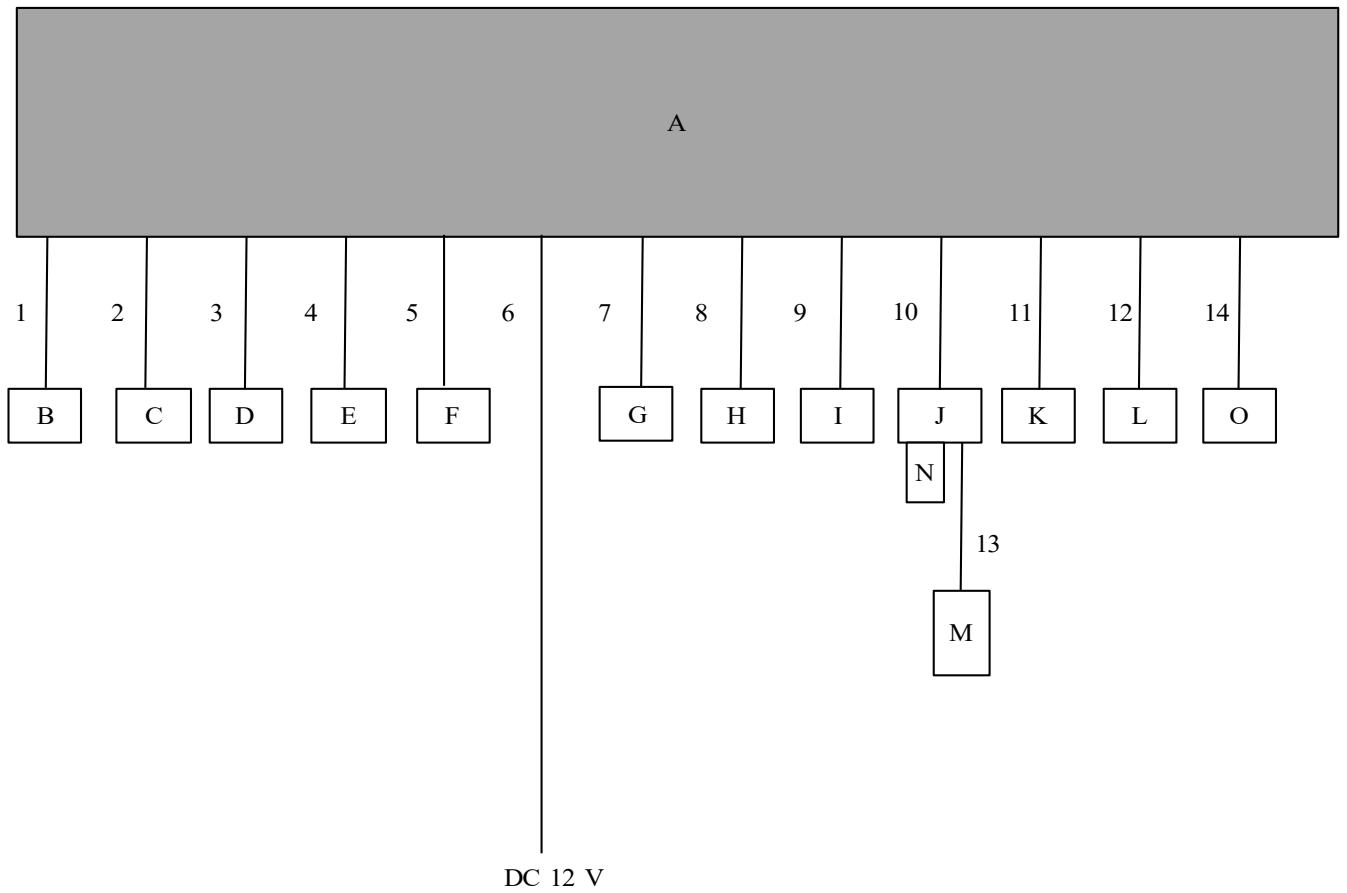
**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

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**Radiated Spurious Emission**



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

**Description of EUT and Support equipment**

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Car Audio	TN0023A	AT300013	DENSO TEN Limited	EUT
B	Switch	-	-	-	-
C	DCM	19MC_DCM	E-033720026/006	DENSO Corporation	-
D	Steering Switch	PA6-GF30	48	TOYOTA	-
E	Low noise Amp	ZX60-242GLN-S+	S 2036302044	Mini-Circuits	-
F	GPS Antenna	23D90058	No.17	yokowo co.,ltd.	-
G	FM/AM connector (Main)	86300-30C30	PS600112	DENSO TEN Limited	-
H	FM/AM connector (Sub)	86300-30C70	PS6020494	DENSO TEN Limited	-
I	Back Camera	GP-KD7301RC	64F000037	Panasonic	-
J	USB/AUX socket	86190-12040	No.17	Kojima Industries Corporation	-
K	Mic	SDA3510A	0DC040830	Panasonic	-
L	Mic	SDA3510A	0DC040817	Panasonic	-
M	iPod touch	A1367	CCQ50WDDCPC	Apple	-
N	USB Memory	USM4GR B	17116 DGGNN	SONY	-
O	Speaker Dummy	-	-	-	-

**List of cables used**

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Signal Cable	2.4	Unshielded	Unshielded	-
2	Signal Cable	2.4	Unshielded	Unshielded	-
3	Signal Cable	2.4	Unshielded	Unshielded	-
4	Signal Cable	1.0	Unshielded	Unshielded	-
5	GNSS Antenna Cable	2.6	Shielded	Shielded	-
6	DC Cable	3.4	Unshielded	Unshielded	-
7	Signal Cable	2.6	Unshielded	Unshielded	-
8	Signal Cable	2.6	Unshielded	Unshielded	-
9	Signal Cable	2.4	Unshielded	Unshielded	-
10	USB Cable	3.2	Shielded	Shielded	-
11	Signal Cable	2.7	Unshielded	Unshielded	-
12	Signal Cable	2.7	Unshielded	Unshielded	-
13	Audio Cable	1.5	Shielded	Shielded	-
14	Speaker Cable	3.2	Unshielded	Unshielded	-

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**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## **SECTION 5: Radiated Spurious Emission and Band Edge Compliance**

### **Test Procedure**

< Below 1GHz >

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The 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 a Test Antennas are used as below;**

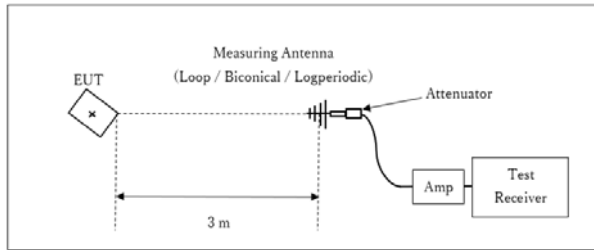
Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

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

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

**Figure 1: Test Setup**

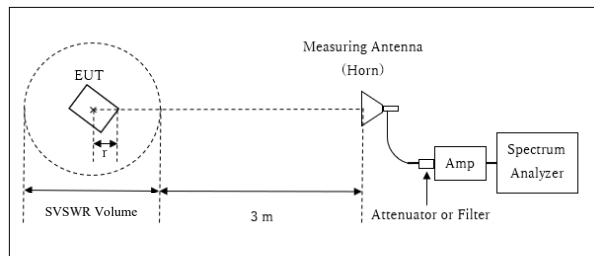
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 10 GHz

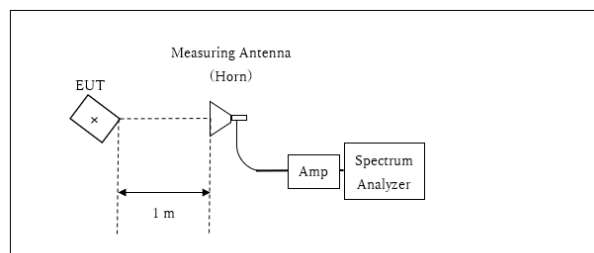


r : Radius of an outer periphery of EUT  
 × : Center of turn table

Distance Factor:  $20 \times \log(3.6 / 3.0 \text{ m}) = 1.59 \text{ dB}$   
 \* Test Distance:  $(3 + \text{SVSWR Volume} / 2) - r = 3.6 \text{ m}$

SVSWR Volume : 1.5 m  
 (SVSWR Volume has been calibrated based on CISPR 16-1-4.)  
 $r = 0.15 \text{ m}$

10 GHz - 40 GHz



× : Center of turn table

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

The test was made on EUT at the normal use position.

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 6: Antenna Terminal Conducted Tests**

### **Test Procedure**

The tests were made with below setting connected to the antenna port.

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

\* 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 ( $10 \log(500 \text{ kHz} / 470 \text{ kHz})$ ) was added to the test result.

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

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

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

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

**Test data** : APPENDIX  
**Test result** : Pass

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**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

**APPENDIX 1: Test data**

**99 % Occupied Bandwidth**

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx

11a

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 1	5180	17024.5
	5220	17026.7
	5240	16960.3
	5745	16971.8
	5785	17019.8
	5825	16973.7

11n-20

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 1	5180	18052.9
	5220	18028.3
	5240	18060.8
	5745	18052.7
	5785	18002.6
	5825	18040.4

11ac-20

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 1	5180	17987.5
	5220	17971.9
	5240	18024.8
	5745	17939.8
	5785	18026.8
	5825	17950.0

## 99 % Occupied Bandwidth

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx

### 11n-40

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 1	5190	36850.3
	5230	36820.4
	5755	36713.8
	5795	36739.6

### 11ac-40

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 1	5190	36489.5
	5230	36604.5
	5755	36557.6
	5795	36734.1

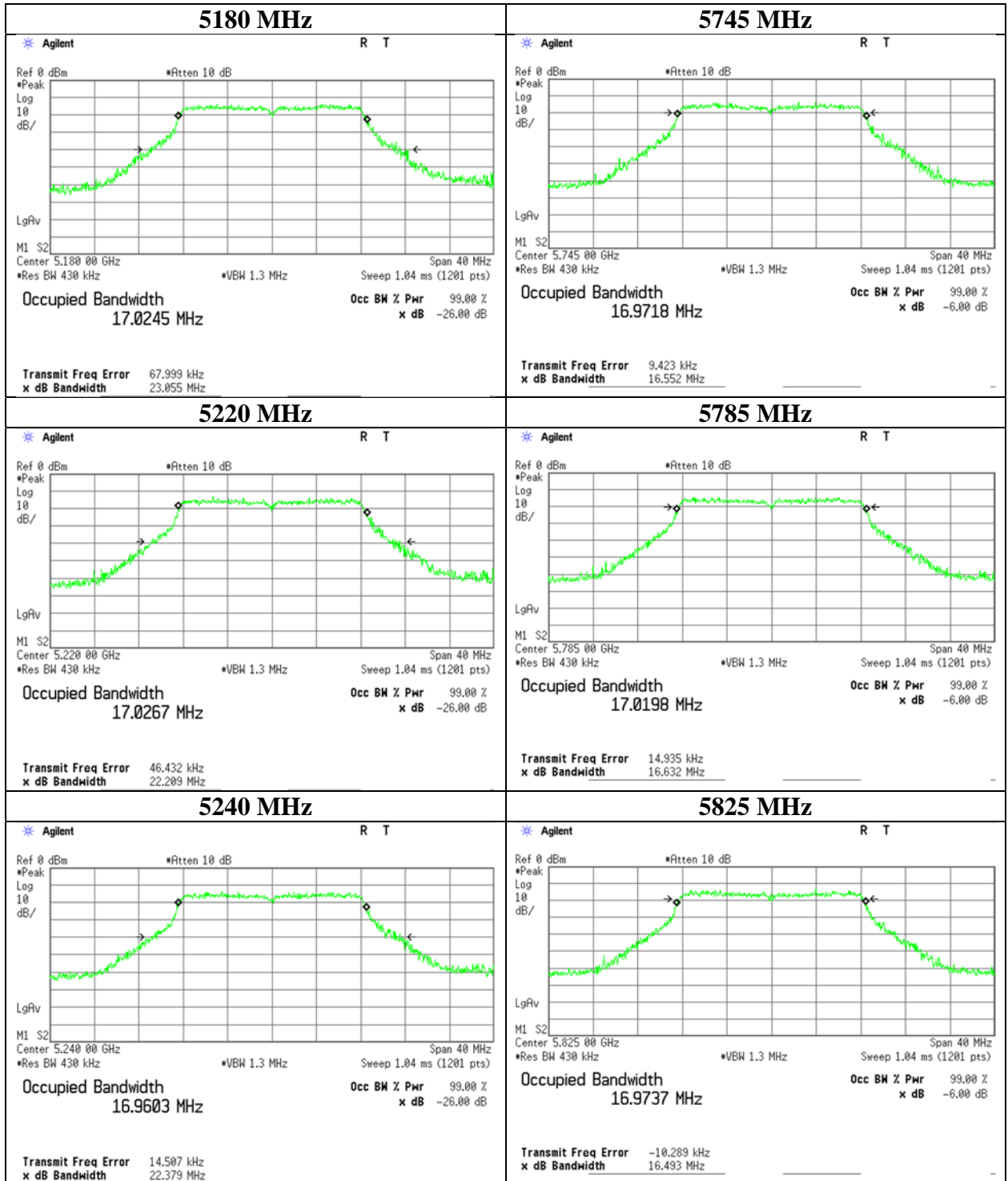
### 11ac-80

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 1	5210	76500.3
	5775	76608.6

## 99 % Occupied Bandwidth

Report No.	13828809H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	June 18, 2021
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx

### 11a



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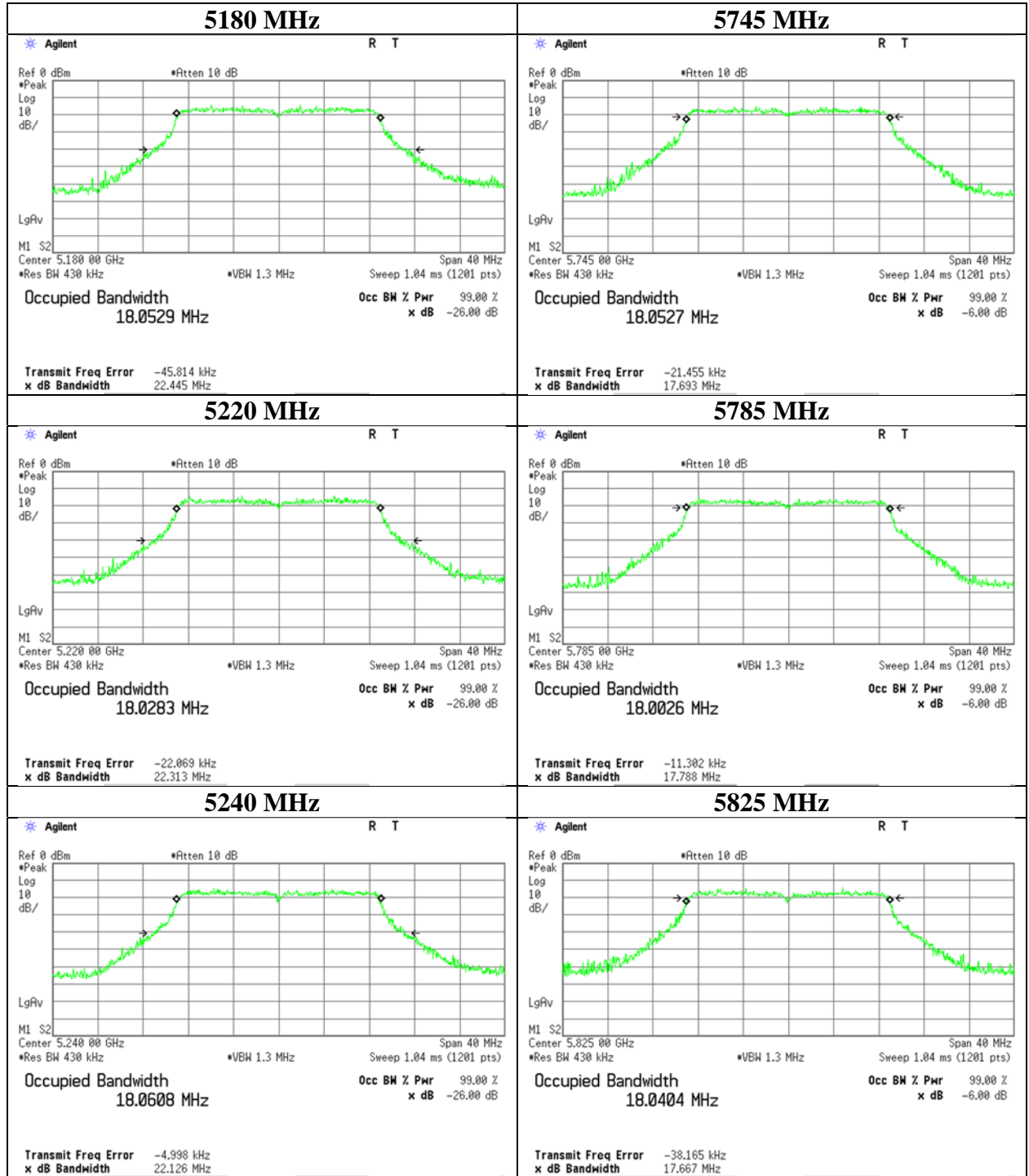
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Facsimile : +81 596 24 8124

**99 % Occupied Bandwidth**

**11n-20**



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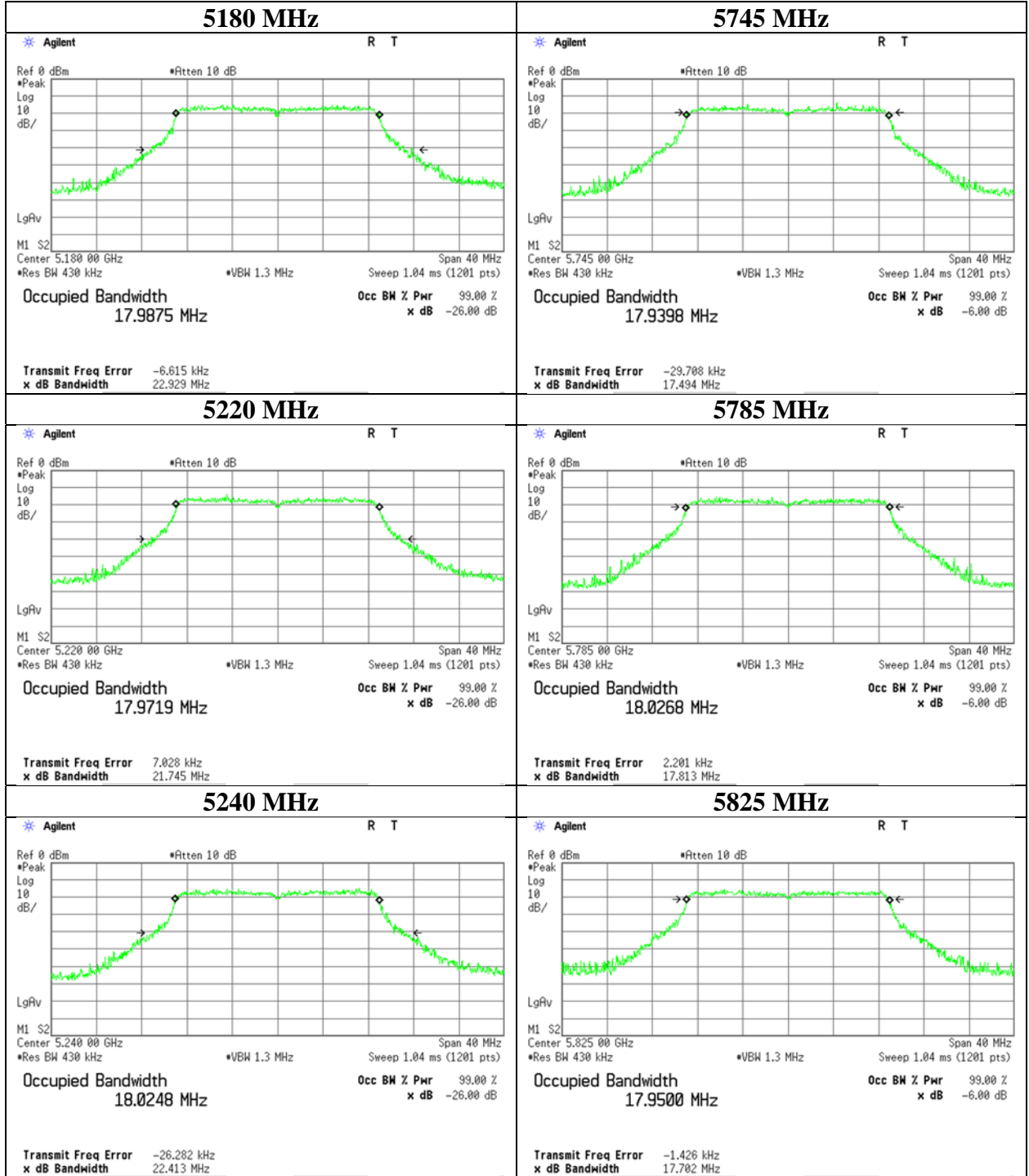
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**99 % Occupied Bandwidth**

**11ac-20**



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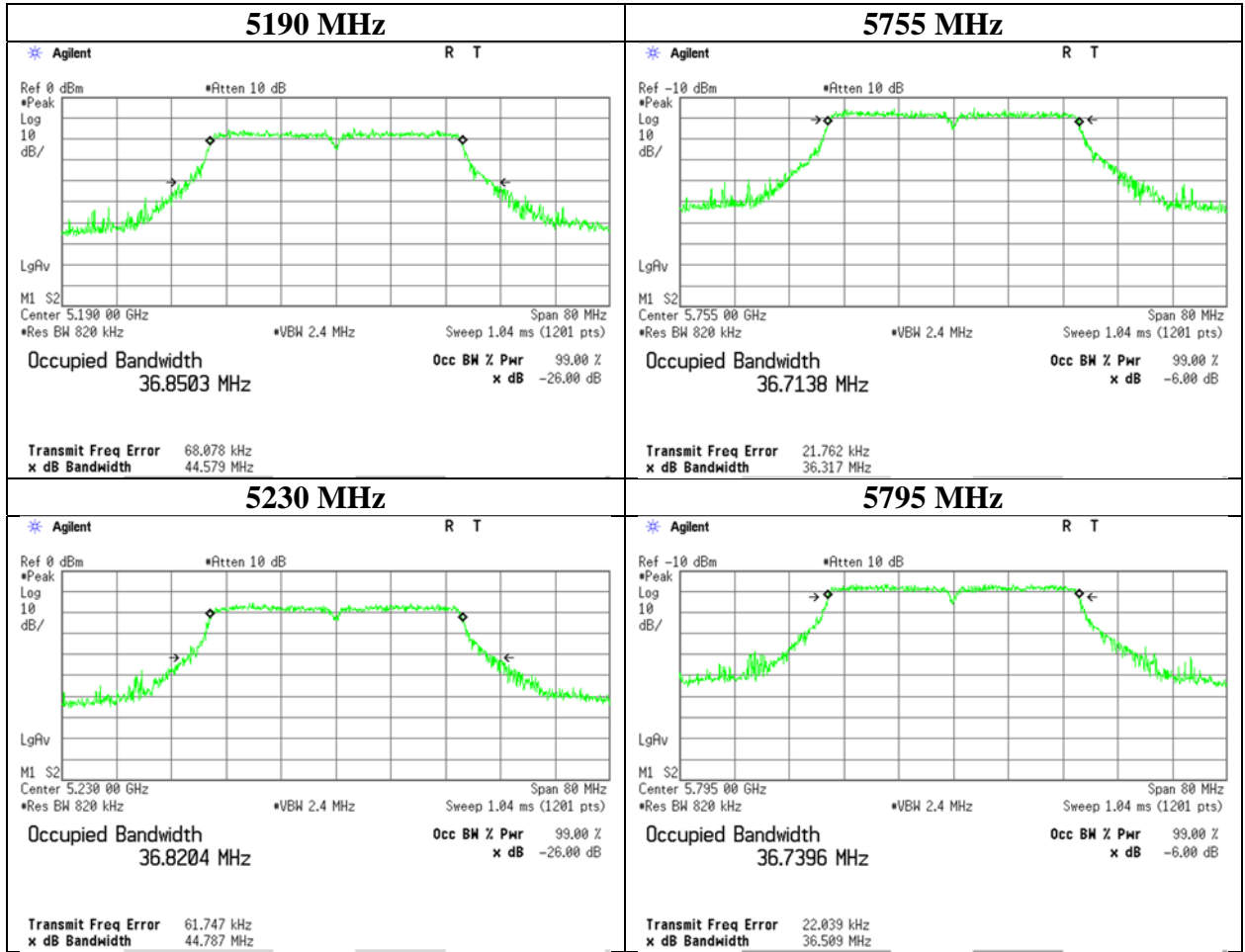
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**99 % Occupied Bandwidth**

**11n-40**



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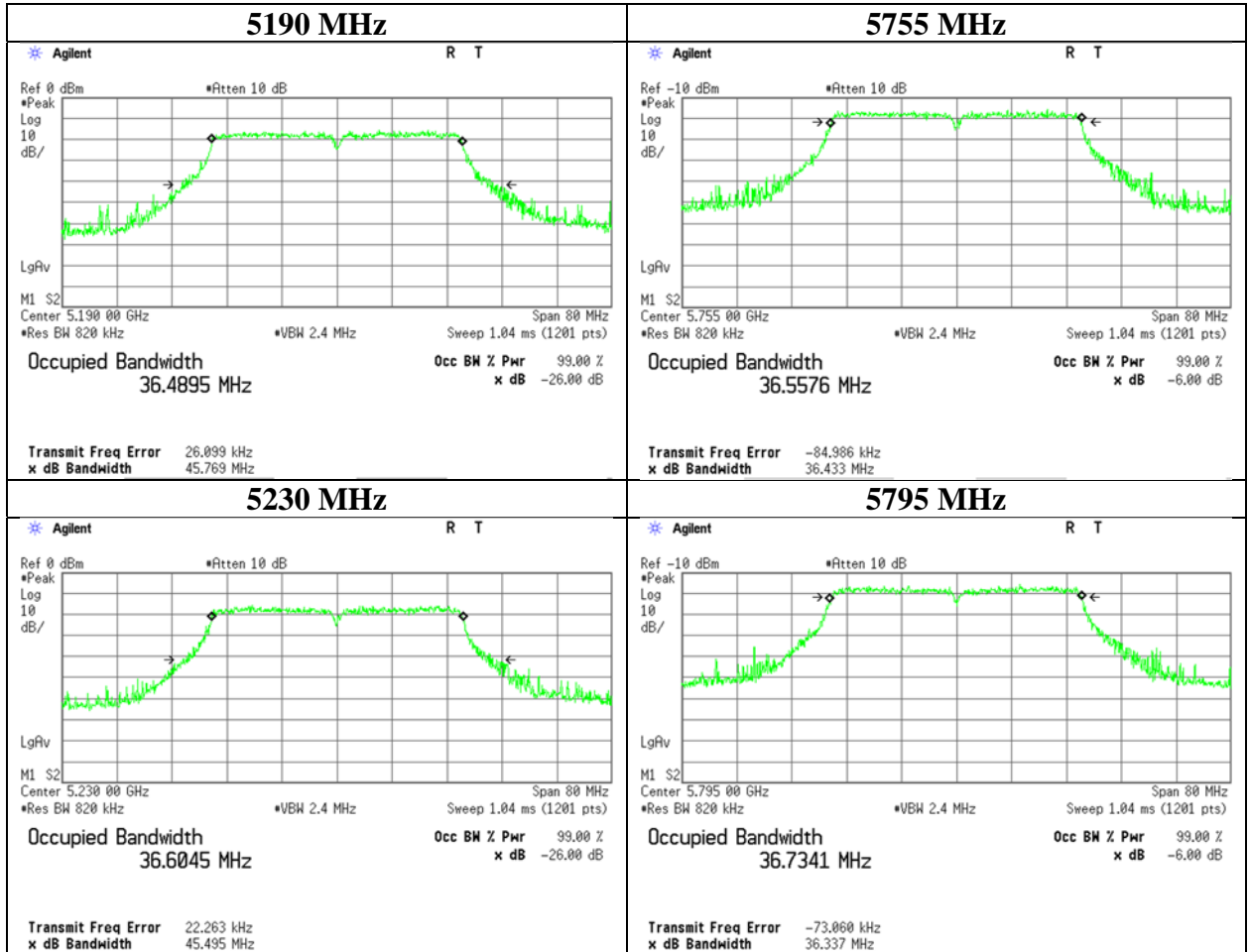
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**99 % Occupied Bandwidth**

**11ac-40**



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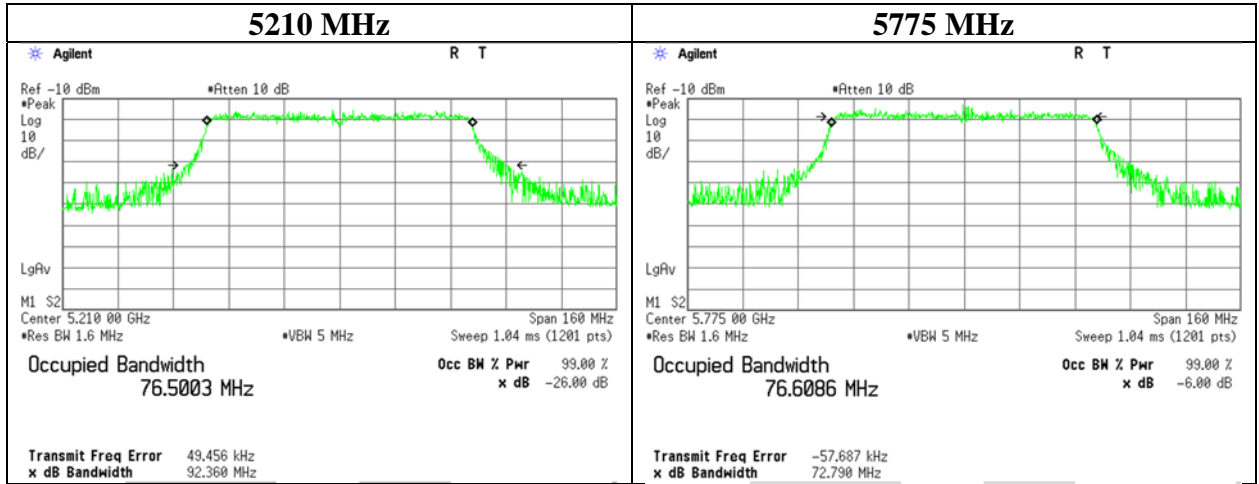
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**99 % Occupied Bandwidth**

**11ac-80**



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Facsimile : +81 596 24 8124

## 6 dB Bandwidth

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx

### 11a

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5745	16.442	> 0.500
	5785	16.477	> 0.500
	5825	16.474	> 0.500

### 11n-20

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5745	17.656	> 0.500
	5785	17.731	> 0.500
	5825	17.576	> 0.500

### 11ac-20

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5745	17.384	> 0.500
	5785	17.657	> 0.500
	5825	17.655	> 0.500

### 11n-40

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5755	36.413	> 0.500
	5795	36.459	> 0.500

### 11ac-40

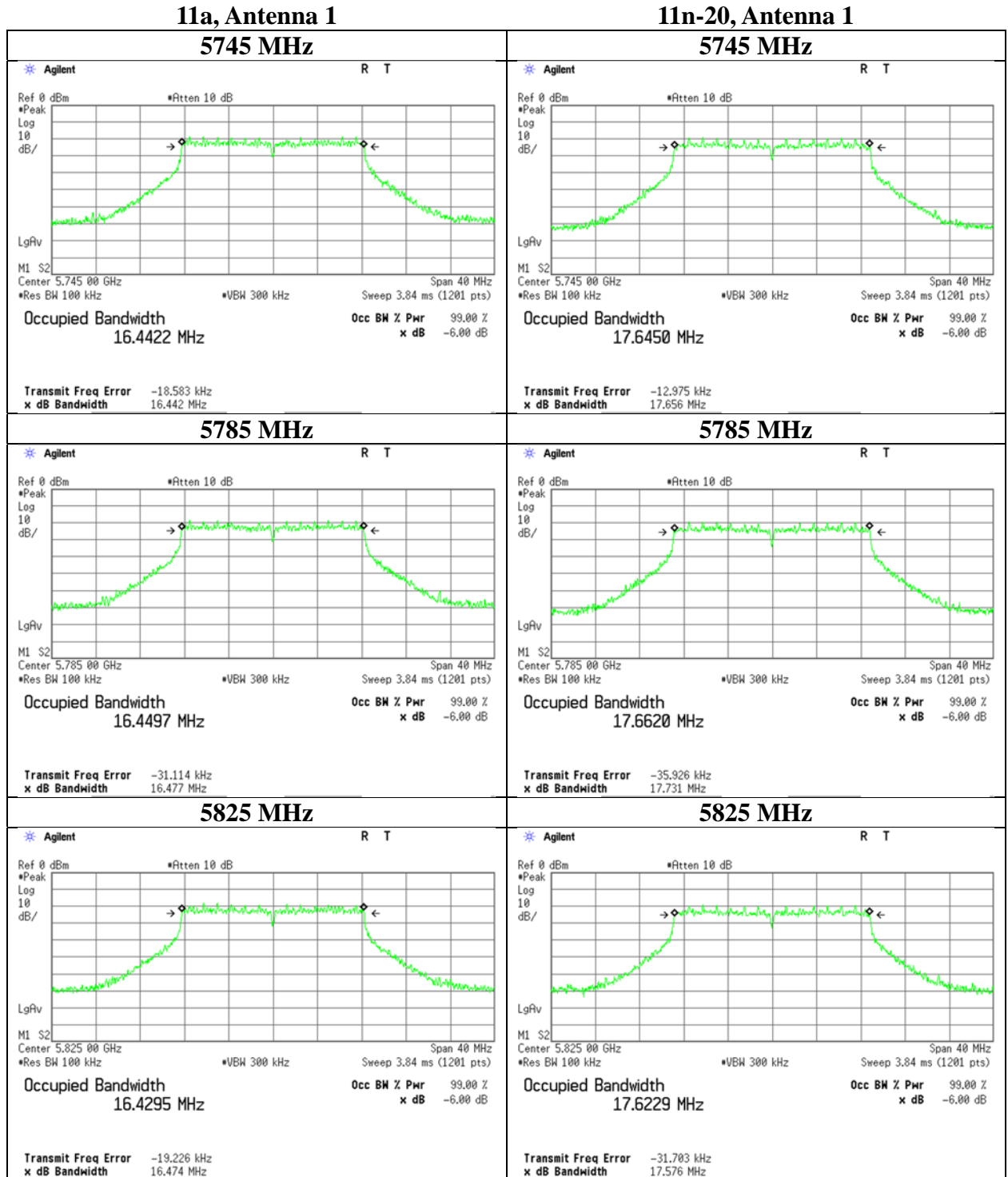
Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5755	36.443	> 0.500
	5795	36.458	> 0.500

### 11ac-80

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5775	76.201	> 0.500

### 6 dB Bandwidth

Report No.	13828809H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	June 18, 2021
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx

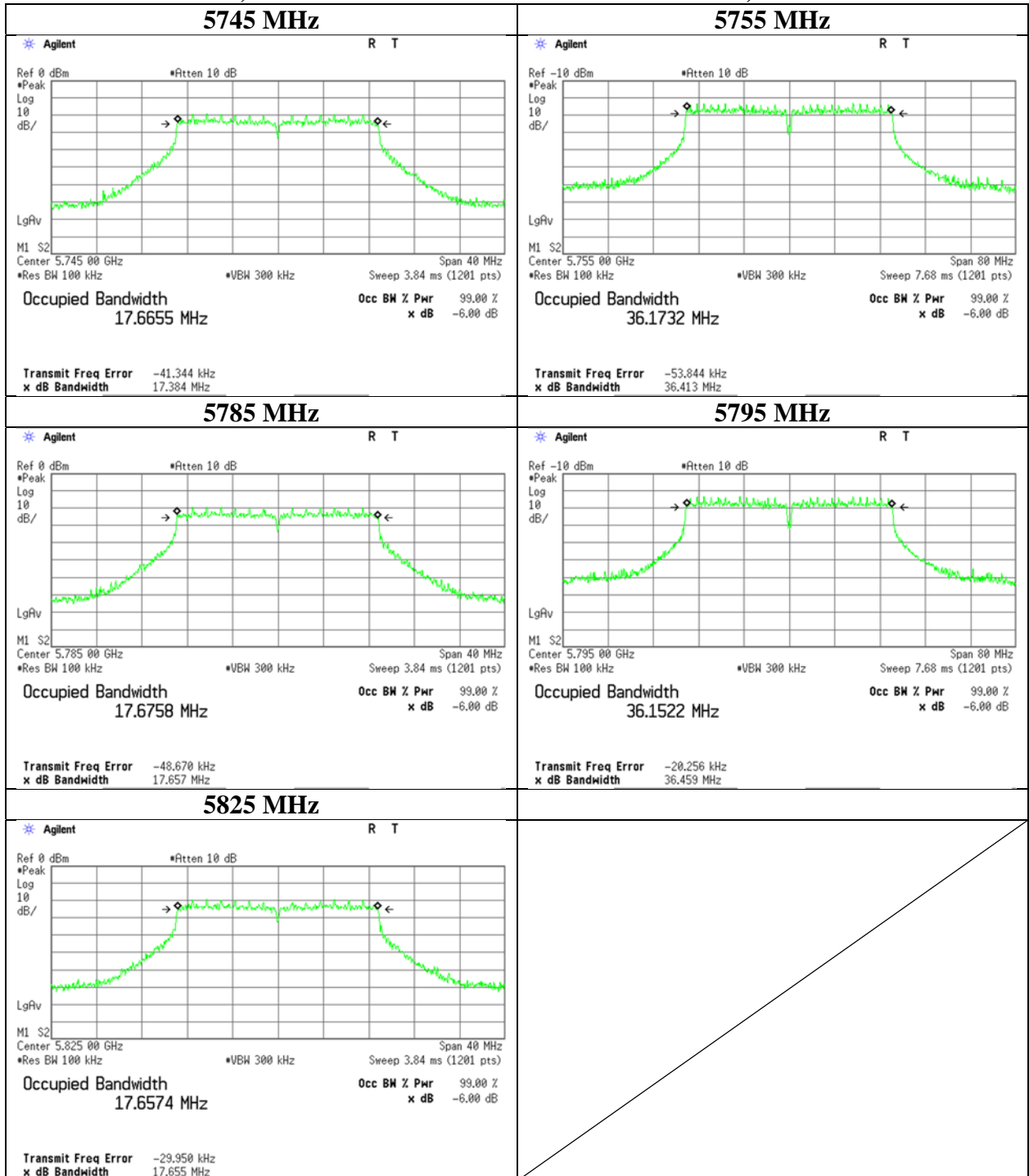


### 6 dB Bandwidth

Report No. 13828809H  
 Test place Ise EMC Lab. No.6 Measurement Room  
 Date June 18, 2021  
 Temperature / Humidity 22 deg. C / 62 % RH  
 Engineer Takafumi Noguchi  
 Mode Tx

#### 11ac-20, Antenna 1

#### 11n-40, Antenna 1



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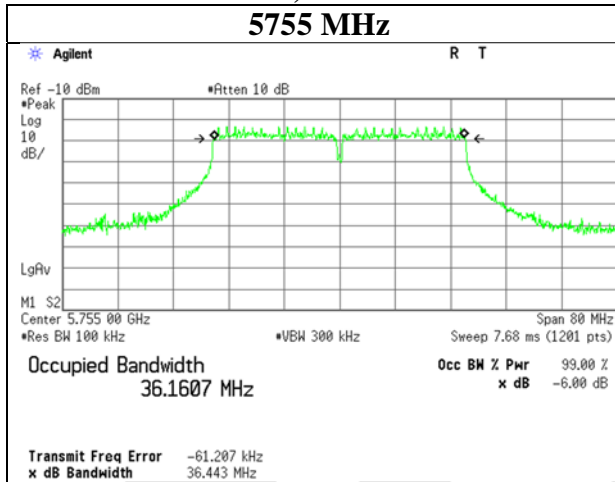
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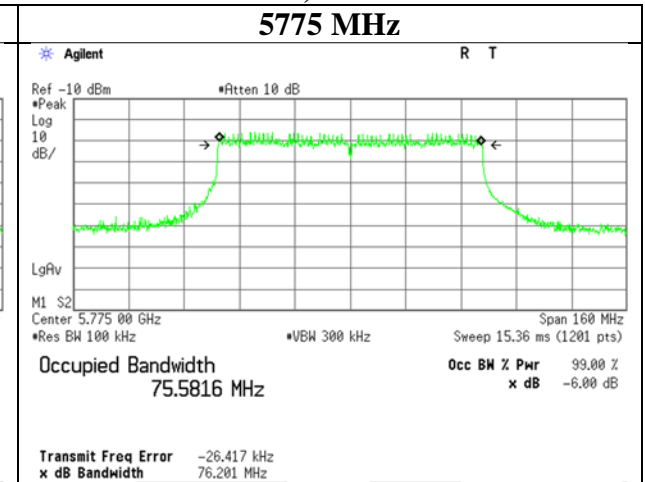
## 6 dB Bandwidth

Report No.	13828809H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	June 18, 2021
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx

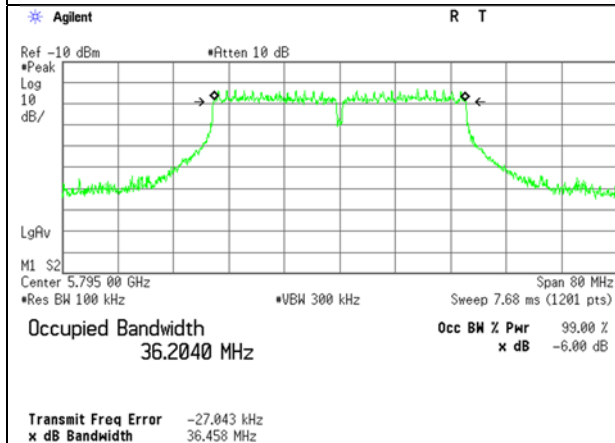
### 11ac-40, Antenna 1



### 11ac-80, Antenna 1



### 5795 MHz



## Maximum Conducted Output Power

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11a

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power			e.i.r.p.				
							Result [dBm]	Limit [dBm]	Margin [dB]	Result [dBm]	Limit [dBm]	Margin [dB]		
5180	-6.67	2.17	10.09	0.00	3.28	17.0245	5.59	3.62	23.97	18.38	8.87	7.71	29.97	21.10
5220	-6.76	2.18	10.09	0.00	3.28	17.0267	5.51	3.56	23.97	18.46	8.79	7.57	29.97	21.18
5240	-6.79	2.19	10.09	0.00	3.28	16.9603	5.49	3.54	23.97	18.48	8.77	7.53	29.97	21.20
5745	-7.36	2.32	10.09	0.00	3.28	16.9718	5.05	3.20	30.00	24.95	8.33	6.81	36.00	27.67
5785	-7.33	2.32	10.09	0.00	3.28	17.0198	5.08	3.22	30.00	24.92	8.36	6.85	36.00	27.64
5825	-7.14	2.34	10.09	0.00	3.28	16.9737	5.29	3.38	30.00	24.71	8.57	7.19	36.00	27.43

Sample Calculation:

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

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

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

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

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power			e.i.r.p.				
							Result [dBm]	Limit [dBm]	Margin [dB]	Result [dBm]	Limit [dBm]	Margin [dB]		
5180	-6.60	2.24	10.09	0.00	1.79	17.0245	5.73	3.74	23.97	18.24	7.52	5.65	29.97	22.45
5220	-6.82	2.25	10.09	0.00	1.79	17.0267	5.52	3.56	23.97	18.45	7.31	5.38	29.97	22.66
5240	-6.80	2.26	10.09	0.00	1.79	16.9603	5.55	3.59	23.97	18.42	7.34	5.42	29.97	22.63
5745	-7.78	2.40	10.09	0.00	1.79	16.9718	4.71	2.96	30.00	25.29	6.50	4.47	36.00	29.50
5785	-7.85	2.40	10.09	0.00	1.79	17.0198	4.64	2.91	30.00	25.36	6.43	4.40	36.00	29.57
5825	-7.79	2.42	10.09	0.00	1.79	16.9737	4.72	2.96	30.00	25.28	6.51	4.48	36.00	29.49

Sample Calculation:

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

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

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

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

### 5180 MHz

Mode	ANT	Rate Mbps	Reading (Burst Power) [dBm]	Antenna Gain [dBi]	e.i.r.p [dBm]
11a	1	6	-6.77	3.28	-3.49
		9	-6.87	3.28	-3.59
		12	-6.84	3.28	-3.56
		18	-6.70	3.28	-3.42
		24	-6.77	3.28	-3.49
		36	-6.74	3.28	-3.46
		48	-6.71	3.28	-3.43
		54	-6.67	3.28	<b>-3.39</b>
	2	6	-6.70	1.79	-4.91
		9	-6.65	1.79	-4.86
		12	-6.62	1.79	-4.83
		18	-6.63	1.79	-4.84
		24	-6.62	1.79	-4.83
		54	-6.53	1.79	-4.74

Sample Calculation: e.i.r.p = Reading + Antenna Gain

Reading (Burst Power) is used the gating functionality of the power meter.

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

Italic font is worst rate. (It was calculated respectively in the Burst Power and e.i.r.p.)

\* The test was performed with Gate function.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124



## Maximum Conducted Output Power

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11n-20

### 11n-20 Antenna

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5180	-7.69	2.17	10.09	0.00	3.28	18.0529	4.57	2.86	23.97	19.40	7.85	6.10	29.97	22.12
5220	-7.89	2.18	10.09	0.00	3.28	18.0283	4.38	2.74	23.97	19.59	7.66	5.83	29.97	22.31
5240	-7.85	2.19	10.09	0.00	3.28	18.0608	4.43	2.77	23.97	19.54	7.71	5.90	29.97	22.26
5745	-8.34	2.32	10.09	0.00	3.28	18.0527	4.07	2.55	30.00	25.93	7.35	5.43	36.00	28.65
5785	-8.36	2.32	10.09	0.00	3.28	18.0026	4.05	2.54	30.00	25.95	7.33	5.41	36.00	28.67
5825	-8.20	2.34	10.09	0.00	3.28	18.0404	4.23	2.65	30.00	25.77	7.51	5.64	36.00	28.49

Sample Calculation:

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

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

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

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

### 11n-20 Antenna2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5180	-7.62	2.24	10.09	0.00	1.79	18.0529	4.71	2.96	23.97	19.26	6.50	4.47	29.97	23.47
5220	-7.83	2.25	10.09	0.00	1.79	18.0283	4.51	2.82	23.97	19.46	6.30	4.27	29.97	23.67
5240	-7.86	2.26	10.09	0.00	1.79	18.0608	4.49	2.81	23.97	19.48	6.28	4.25	29.97	23.69
5745	-8.81	2.40	10.09	0.00	1.79	18.0527	3.68	2.33	30.00	26.32	5.47	3.52	36.00	30.53
5785	-8.87	2.40	10.09	0.00	1.79	18.0026	3.62	2.30	30.00	26.38	5.41	3.48	36.00	30.59
5825	-8.88	2.42	10.09	0.00	1.79	18.0404	3.63	2.31	30.00	26.37	5.42	3.48	36.00	30.58

Sample Calculation:

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

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

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

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

### 5180 MHz

Mode	ANT	MCS Number	Reading (Burst Power)		Antenna Gain [dBi]	e.i.r.p	
			Short GI [dBm]	Long GI [dBm]		Short GI [dBm]	Long GI [dBm]
11n-20	1	0	-7.94	-	3.28	-4.66	-
		1	-7.95	-	3.28	-4.67	-
		2	-7.87	-	3.28	-4.59	-
		3	-7.76	-	3.28	-4.48	-
		4	-7.72	-	3.28	-4.44	-
		5	-7.71	-	3.28	-4.43	-
		6	-7.67	-	3.28	-4.39	-
	7	-7.65	-7.69	3.28	-4.37	-4.41	
	2	0	-7.87	-	1.79	-6.08	-
		1	-7.74	-	1.79	-5.95	-
		2	-7.76	-	1.79	-5.97	-
		3	-7.63	-	1.79	-5.84	-
		4	-7.59	-	1.79	-5.80	-
		5	-7.57	-	1.79	-5.78	-
6		-7.61	-	1.79	-5.82	-	
7	-7.55	-7.63	1.79	-5.76	-5.84		

Sample Calculation: e.i.r.p = Reading + Antenna Gain

Reading (Burst Power) is used the gating functionality of the power meter.

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

Italic font is worst rate. (It was calculated respectively in the Burst Power and e.i.r.p.)

\* The test was performed with Gate function.

**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Maximum Conducted Output Power

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-20

### 11ac-20 Antenna1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power			e.i.r.p.				
							Result [dBm]	Limit [dBm]	Margin [dB]	Result [dBm]	Limit [dBm]	Margin [dB]		
5180	-7.68	2.17	10.09	0.00	3.28	17.9875	4.58	2.87	23.97	19.39	7.86	6.11	29.97	22.11
5220	-7.83	2.18	10.09	0.00	3.28	17.9719	4.44	2.78	23.97	19.53	7.72	5.92	29.97	22.25
5240	-7.83	2.19	10.09	0.00	3.28	18.0248	4.45	2.79	23.97	19.52	7.73	5.93	29.97	22.24
5745	-8.32	2.32	10.09	0.00	3.28	17.9398	4.09	2.56	30.00	25.91	7.37	5.46	36.00	28.63
5785	-8.33	2.32	10.09	0.00	3.28	18.0268	4.08	2.56	30.00	25.92	7.36	5.45	36.00	28.64
5825	-8.19	2.34	10.09	0.00	3.28	17.9500	4.24	2.65	30.00	25.76	7.52	5.65	36.00	28.48

Sample Calculation:

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

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

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

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

### 11ac-20 Antenna2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power			e.i.r.p.				
							Result [dBm]	Limit [dBm]	Margin [dB]	Result [dBm]	Limit [dBm]	Margin [dB]		
5180	-7.60	2.24	10.09	0.00	1.79	17.9875	4.73	2.97	23.97	19.24	6.52	4.49	29.97	23.45
5220	-7.79	2.25	10.09	0.00	1.79	17.9719	4.55	2.85	23.97	19.42	6.34	4.31	29.97	23.63
5240	-7.84	2.26	10.09	0.00	1.79	18.0248	4.51	2.82	23.97	19.46	6.30	4.27	29.97	23.67
5745	-8.79	2.40	10.09	0.00	1.79	17.9398	3.70	2.34	30.00	26.30	5.49	3.54	36.00	30.51
5785	-8.77	2.40	10.09	0.00	1.79	18.0268	3.72	2.36	30.00	26.28	5.51	3.56	36.00	30.49
5825	-8.80	2.42	10.09	0.00	1.79	17.9500	3.71	2.35	30.00	26.29	5.50	3.55	36.00	30.50

Sample Calculation:

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

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

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

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

### 5180 MHz

Mode	ANT	MCS Number	Reading (Burst Power)		Antenna Gain [dBi]	e.i.r.p	
			Short GI [dBm]	Long GI [dBm]		Short GI [dBm]	Long GI [dBm]
11ac-20	1	0	-7.91	-	3.28	-4.63	-
		1	-7.95	-	3.28	-4.67	-
		2	-7.89	-	3.28	-4.61	-
		3	-7.80	-	3.28	-4.52	-
		4	-7.75	-	3.28	-4.47	-
		5	-7.77	-	3.28	-4.49	-
		6	-7.71	-	3.28	-4.43	-
		7	-7.69	-7.70	3.28	<b>-4.41</b>	-4.42
	8	-7.70	-	3.28	-4.42	-	
	2	0	-7.79	-	1.79	-6.00	-
		1	-7.75	-	1.79	-5.96	-
		2	-7.70	-	1.79	-5.91	-
		3	-7.61	-	1.79	-5.82	-
		4	-7.64	-	1.79	-5.85	-
		5	-7.61	-	1.79	-5.82	-
		6	-7.59	-	1.79	-5.80	-
7		<b>-7.53</b>	-7.64	1.79	-5.74	-5.85	
8	-7.61	-	1.79	-5.82	-		

Sample Calculation: e.i.r.p = Reading + Antenna Gain

Reading (Burst Power) is used the gating functionality of the power meter.

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

Italic font is worst rate. (It was calculated respectively in the Burst Power and e.i.r.p.)

\* The test was performed with Gate function.

**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Maximum Conducted Output Power

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11n-40

### 11n-40 Antenna1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5190	-8.52	2.18	10.09	0.00	3.28	36.8503	3.75	2.37	23.97	20.22	7.03	5.05	29.97	22.94
5230	-8.62	2.19	10.09	0.00	3.28	36.8204	3.66	2.32	23.97	20.31	6.94	4.94	29.97	23.03
5755	-9.21	2.32	10.09	0.00	3.28	36.7138	3.20	2.09	30.00	26.80	6.48	4.45	36.00	29.52
5795	-9.16	2.32	10.09	0.00	3.28	36.7396	3.25	2.11	30.00	26.75	6.53	4.50	36.00	29.47

Sample Calculation:

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

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

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

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

### 11n-40 Antenna2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5190	-8.15	2.24	10.09	0.00	1.79	36.8503	4.18	2.62	23.97	19.79	5.97	3.95	29.97	24.00
5230	-8.67	2.26	10.09	0.00	1.79	36.8204	3.68	2.33	23.97	20.29	5.47	3.52	29.97	24.50
5755	-9.68	2.40	10.09	0.00	1.79	36.7138	2.81	1.91	30.00	27.19	4.60	2.88	36.00	31.40
5795	-9.73	2.40	10.09	0.00	1.79	36.7396	2.76	1.89	30.00	27.24	4.55	2.85	36.00	31.45

Sample Calculation:

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

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

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

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

### 5190 MHz

Mode	ANT	MCS Number	Reading (Burst Power)		Antenna Gain [dBi]	e.i.r.p	
			Short GI [dBm]	Long GI [dBm]		Short GI [dBm]	Long GI [dBm]
11n-40	1	0	-8.56	-	3.28	-5.28	-
		1	-8.55	-	3.28	-5.27	-
		2	-8.54	-	3.28	-5.26	-
		3	-8.58	-	3.28	-5.30	-
		4	-8.56	-	3.28	-5.28	-
		5	-8.54	-	3.28	-5.26	-
		6	-8.56	-	3.28	-5.28	-
	7	-8.52	-8.53	3.28	<b>-5.24</b>	-5.25	
	2	0	-8.24	-	1.79	-6.45	-
		1	-8.11	-	1.79	-6.32	-
		2	-8.41	-	1.79	-6.62	-
		3	-8.49	-	1.79	-6.70	-
		4	-8.42	-	1.79	-6.63	-
		5	-8.33	-	1.79	-6.54	-
6		-8.30	-	1.79	-6.51	-	
7	<b>-8.09</b>	-8.16	1.79	-6.30	-6.37		

Sample Calculation: e.i.r.p = Reading + Antenna Gain

Reading (Burst Power) is used the gating functionality of the power meter.

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

Italic font is worst rate. (It was calculated respectively in the Burst Power and e.i.r.p.)

\* The test was performed with Gate function.

## Maximum Conducted Output Power

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-40

### 11ac-40 Antenna1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5190	-8.51	2.18	10.09	0.00	3.28	36.4895	3.76	2.38	23.97	20.21	7.04	5.06	29.97	22.93
5230	-8.61	2.19	10.09	0.00	3.28	36.6045	3.67	2.33	23.97	20.30	6.95	4.95	29.97	23.02
5755	-9.19	2.32	10.09	0.00	3.28	36.5576	3.22	2.10	30.00	26.78	6.50	4.47	36.00	29.50
5795	-9.15	2.32	10.09	0.00	3.28	36.7341	3.26	2.12	30.00	26.74	6.54	4.51	36.00	29.46

Sample Calculation:

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

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

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

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

### 11ac-40 Antenna2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5190	-8.13	2.24	10.09	0.00	1.79	36.4895	4.20	2.63	23.97	19.77	5.99	3.97	29.97	23.98
5230	-8.65	2.26	10.09	0.00	1.79	36.6045	3.70	2.34	23.97	20.27	5.49	3.54	29.97	24.48
5755	-9.64	2.40	10.09	0.00	1.79	36.5576	2.85	1.93	30.00	27.15	4.64	2.91	36.00	31.36
5795	-9.58	2.40	10.09	0.00	1.79	36.7341	2.91	1.95	30.00	27.09	4.70	2.95	36.00	31.30

Sample Calculation:

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

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

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

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

### 5190 MHz

Mode	ANT	MCS Number	Reading (Burst Power)		Antenna Gain [dBi]	e.i.r.p	
			Short GI [dBm]	Long GI [dBm]		Short GI [dBm]	Long GI [dBm]
11ac-40	1	0	-8.61	-	3.28	-5.33	-
		1	-8.55	-	3.28	-5.27	-
		2	-8.56	-	3.28	-5.28	-
		3	-8.59	-	3.28	-5.31	-
		4	-8.60	-	3.28	-5.32	-
		5	-8.57	-	3.28	-5.29	-
		6	-8.60	-	3.28	-5.32	-
		7	-8.51	-8.52	3.28	<i>-5.23</i>	<i>-5.24</i>
		8	-8.53	-	3.28	-5.25	-
	9	-8.55	-	3.28	-5.27	-	
	2	0	-8.25	-	1.79	-6.46	-
		1	-8.10	-	1.79	-6.31	-
		2	-8.44	-	1.79	-6.65	-
		3	-8.45	-	1.79	-6.66	-
		4	-8.43	-	1.79	-6.64	-
		5	-8.29	-	1.79	-6.50	-
		6	-8.20	-	1.79	-6.41	-
		7	<i>-8.07</i>	-8.14	1.79	-6.28	-6.35
8		-8.19	-	1.79	-6.40	-	
9	-8.18	-	1.79	-6.39	-		

Sample Calculation: e.i.r.p = Reading + Antenna Gain

Reading (Burst Power) is used the gating functionality of the power meter.

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

Italic font is worst rate. (It was calculated respectively in the Burst Power and e.i.r.p.)

\* The test was performed with Gate function.

**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Maximum Conducted Output Power

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-80

### 11ac-80 Antenna1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5210	-9.55	2.18	10.09	0.00	3.28	76.5003	2.72	1.87	23.97	21.25	6.00	3.98	29.97	23.97
5775	-10.23	2.32	10.09	0.00	3.28	76.6086	2.18	1.65	30.00	27.82	5.46	3.52	36.00	30.54

Sample Calculation:

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

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

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

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

### 11ac-80 Antenna2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	99% OBW (B for 1C) [MHz]	Conducted Power				e.i.r.p.			
							Result [dBm]	[mW]	Limit [dBm]	Margin [dB]	Result [dBm]	[mW]	Limit [dBm]	Margin [dB]
5210	-9.57	2.25	10.09	0.00	1.79	76.5003	2.77	1.89	23.97	21.20	4.56	2.86	29.97	25.41
5775	-10.79	2.40	10.09	0.00	1.79	76.6086	1.70	1.48	30.00	28.30	3.49	2.23	36.00	32.51

Sample Calculation:

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

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

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

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

### 5210 MHz

Mode	ANT	MCS Number	Reading (Burst Power)		Antenna Gain [dBi]	e.i.r.p	
			Short GI [dBm]	Long GI [dBm]		Short GI [dBm]	Long GI [dBm]
11ac-80	1	0	-9.76		3.28	-6.48	
		1	-9.71		3.28	-6.43	
		2	-9.69		3.28	-6.41	
		3	-9.67		3.28	-6.39	
		4	-9.63		3.28	-6.35	
		5	-9.62		3.28	-6.34	
		6	-9.59		3.28	-6.31	
		7	-9.55	-9.57	3.28	-6.27	-6.29
		8	-9.56		3.28	-6.28	
	9	-9.58		3.28	-6.30		
	2	0	-9.62		1.79	-7.83	
		1	-9.60		1.79	-7.81	
		2	-9.59		1.79	-7.80	
		3	-9.63		1.79	-7.84	
		4	-9.62		1.79	-7.83	
		5	-9.58		1.79	-7.79	
		6	-9.53		1.79	-7.74	
		7	-9.51	-9.62	1.79	-7.72	-7.83
8		-9.52		1.79	-7.73		
9	-9.53		1.79	-7.74			

Sample Calculation: e.i.r.p = Reading + Antenna Gain

Reading (Burst Power) is used the gating functionality of the power meter.

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

Italic font is worst rate. (It was calculated respectively in the Burst Power and e.i.r.p.)

\* The test was performed with Gate function.

**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

**Average Output Power**  
**(Reference data for RF Exposure)**

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11a

**Antenna 1**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5180	-7.12	2.17	10.09	5.14	3.27
5220	-7.17	2.18	10.09	5.10	3.24
5240	-7.14	2.19	10.09	5.14	3.27
5745	-7.68	2.32	10.09	4.73	2.97
5785	-7.60	2.32	10.09	4.81	3.03
5825	-7.66	2.34	10.09	4.77	3.00

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

**Antenna 2**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5180	-7.06	2.24	10.09	5.27	3.37
5220	-7.12	2.25	10.09	5.22	3.33
5240	-7.20	2.26	10.09	5.15	3.27
5745	-8.17	2.40	10.09	4.32	2.70
5785	-8.21	2.40	10.09	4.28	2.68
5825	-8.16	2.42	10.09	4.35	2.72

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

\* The test was performed with Gate function.

**The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.**

**Average Output Power**  
**(Reference data for RF Exposure)**

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11n-20

**Antenna 1**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5180	-8.31	2.17	10.09	3.95	2.48
5220	-8.46	2.18	10.09	3.81	2.40
5240	-8.40	2.19	10.09	3.88	2.44
5745	-8.97	2.32	10.09	3.44	2.21
5785	-8.92	2.32	10.09	3.49	2.23
5825	-8.76	2.34	10.09	3.67	2.33

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

**Antenna 2**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5180	-8.23	2.24	10.09	4.10	2.57
5220	-8.39	2.25	10.09	3.95	2.48
5240	-8.47	2.26	10.09	3.88	2.44
5745	-9.46	2.40	10.09	3.03	2.01
5785	-9.43	2.40	10.09	3.06	2.02
5825	-9.41	2.42	10.09	3.10	2.04

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

\* The test was performed with Gate function.

**The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.**

**Average Output Power**  
**(Reference data for RF Exposure)**

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-20

**Antenna 1**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5180	-8.24	2.17	10.09	4.02	2.52
5220	-8.34	2.18	10.09	3.93	2.47
5240	-8.34	2.19	10.09	3.94	2.48
5745	-8.94	2.32	10.09	3.47	2.22
5785	-8.91	2.32	10.09	3.50	2.24
5825	-8.75	2.34	10.09	3.68	2.33

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

**Antenna 2**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5180	-8.16	2.24	10.09	4.17	2.61
5220	-8.37	2.25	10.09	3.97	2.49
5240	-8.36	2.26	10.09	3.99	2.51
5745	-9.41	2.40	10.09	3.08	2.03
5785	-9.42	2.40	10.09	3.07	2.03
5825	-9.34	2.42	10.09	3.17	2.07

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

\* The test was performed with Gate function.

**The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.**



**Average Output Power**  
**(Reference data for RF Exposure)**

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11n-40

**Antenna 1**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5190	-9.23	2.18	10.09	3.04	2.01
5230	-9.34	2.19	10.09	2.94	1.97
5755	-9.88	2.32	10.09	2.53	1.79
5795	-9.80	2.32	10.09	2.61	1.82

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

**Antenna 2**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5190	-9.16	2.24	10.09	3.17	2.07
5230	-9.46	2.26	10.09	2.89	1.95
5755	-10.39	2.40	10.09	2.10	1.62
5795	-10.44	2.40	10.09	2.05	1.60

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

\* The test was performed with Gate function.

**The average output power was measured with the lowest order modulation and  
lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.**

**Average Output Power**  
**(Reference data for RF Exposure)**

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-40

**Antenna 1**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5190	-9.21	2.18	10.09	3.06	2.02
5230	-9.31	2.19	10.09	2.97	1.98
5755	-9.83	2.32	10.09	2.58	1.81
5795	-9.79	2.32	10.09	2.62	1.83

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

**Antenna 2**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5190	-9.15	2.24	10.09	3.18	2.08
5230	-9.37	2.26	10.09	2.98	1.99
5755	-10.32	2.40	10.09	2.17	1.65
5795	-10.38	2.40	10.09	2.11	1.63

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

\* The test was performed with Gate function.

**The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.**

**Average Output Power**  
**(Reference data for RF Exposure)**

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 17, 2021  
Temperature / Humidity 23 deg. C / 46 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-80

**Antenna 1**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5210	-10.85	2.18	10.09	1.42	1.39
5775	-11.41	2.32	10.09	1.00	1.26

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

**Antenna 2**

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Burst power average)	
				[dBm]	[mW]
5210	-10.81	2.25	10.09	1.53	1.42
5775	-11.99	2.40	10.09	0.50	1.12

Sample Calculation:

Result (Burst power average) = Reading + Cable Loss + Atten. Loss

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

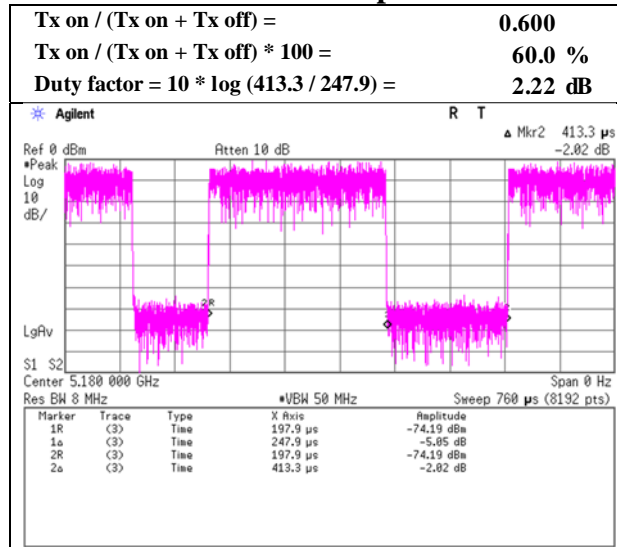
\* The test was performed with Gate function.

**The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.**

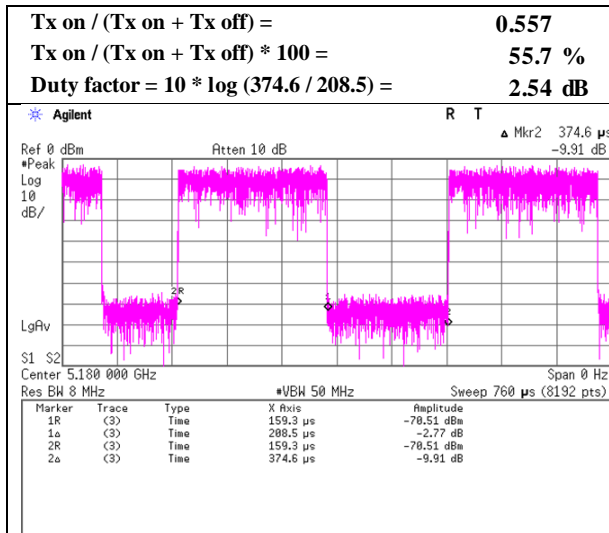
### Burst rate confirmation

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx

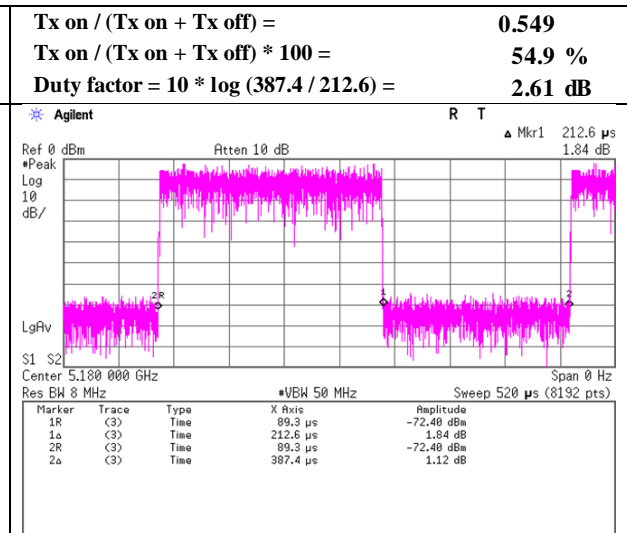
#### 11a 54 Mbps



#### 11n-20 MCS 7 SGI



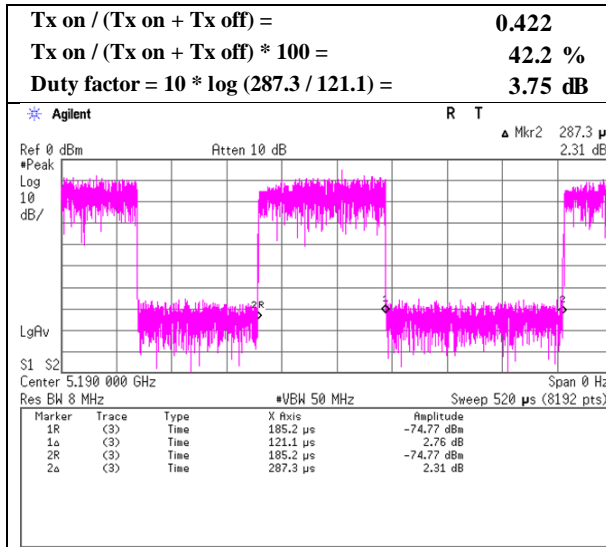
#### 11ac-20 MCS 7 SGI



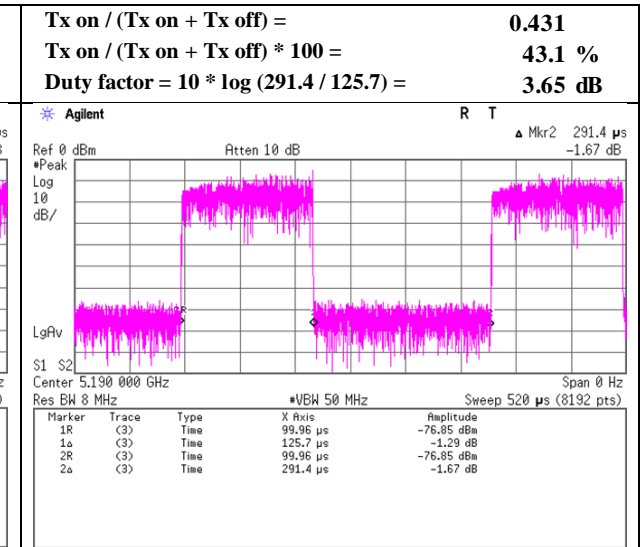
### Burst rate confirmation

Report No. 13828809H  
 Test place Ise EMC Lab. No.6 Measurement Room  
 Date June 18, 2021  
 Temperature / Humidity 22 deg. C / 62 % RH  
 Engineer Takafumi Noguchi  
 Mode Tx

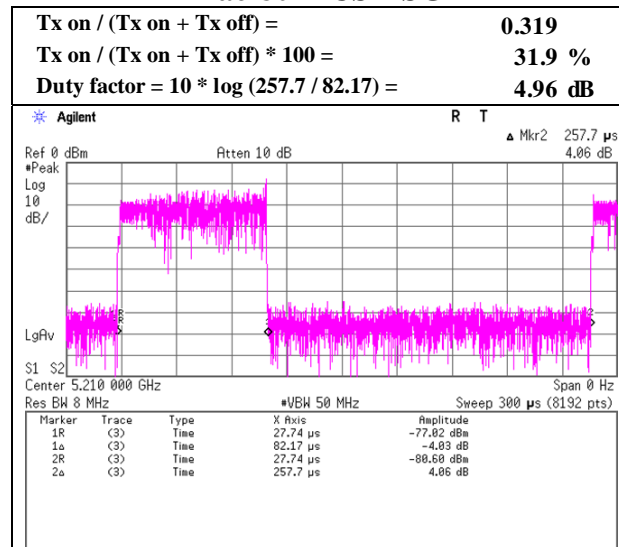
#### 11n-40 MCS 7 SGI



#### 11ac-40 MCS 7 SGI



#### 11ac-80 MCS 7 SGI



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**Ise EMC Lab.**

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

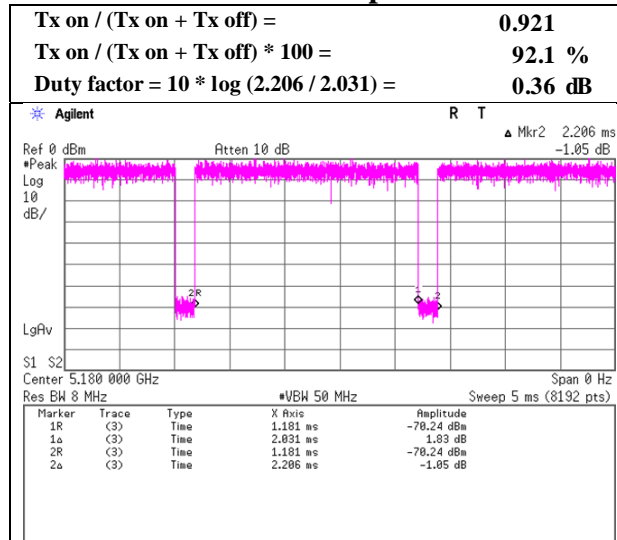
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

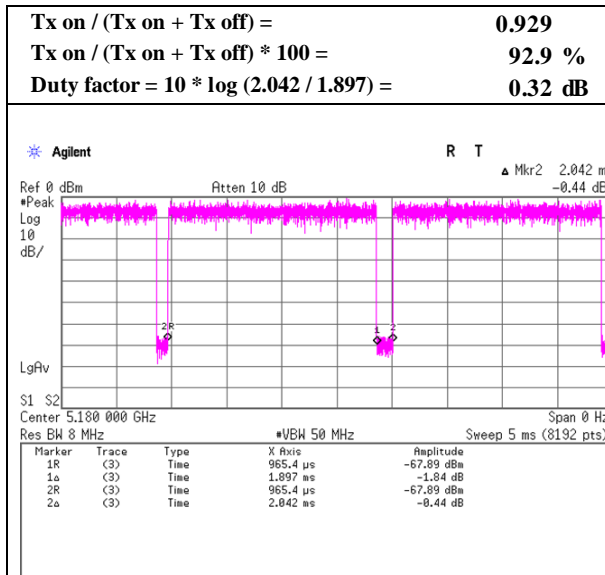
### Burst rate confirmation

Report No. 13828809H  
 Test place Ise EMC Lab. No.6 Measurement Room  
 Date June 18, 2021  
 Temperature / Humidity 22 deg. C / 62 % RH  
 Engineer Takafumi Noguchi  
 Mode Tx

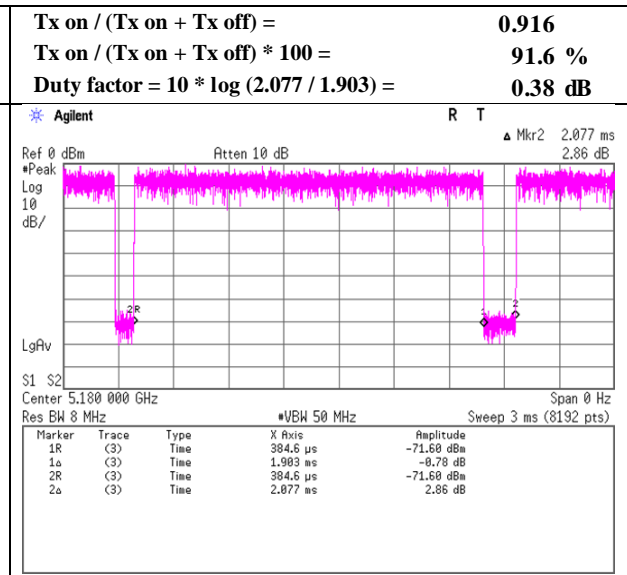
#### 11a 6 Mbps



#### 11n-20 MCS 0 LGI



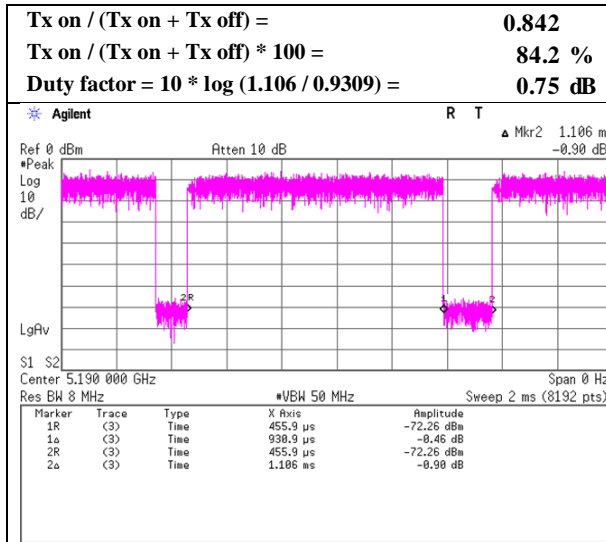
#### 11ac-20 MCS 0 LGI



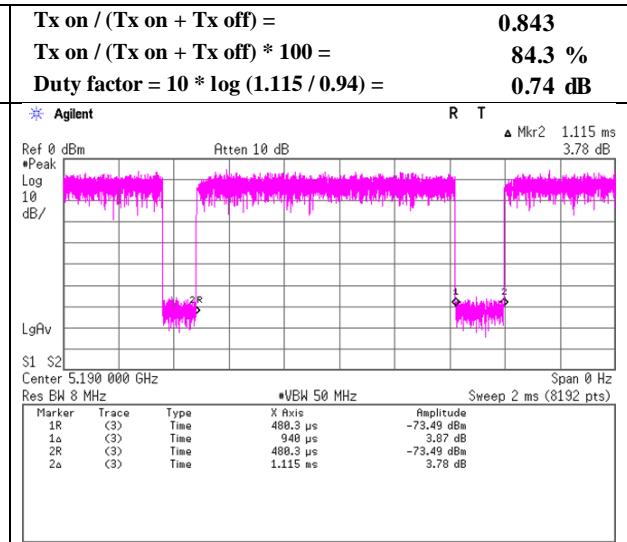
### Burst rate confirmation

Report No. 13828809H  
 Test place Ise EMC Lab. No.6 Measurement Room  
 Date June 18, 2021  
 Temperature / Humidity 22 deg. C / 62 % RH  
 Engineer Takafumi Noguchi  
 Mode Tx

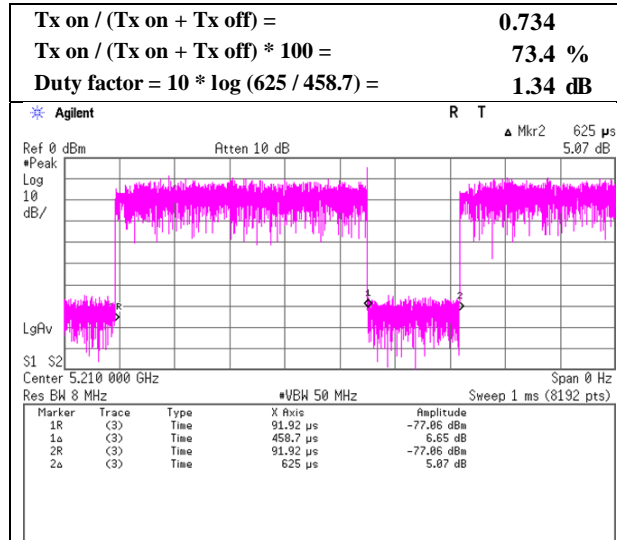
#### 11n-40 MCS 0 LGI



#### 11ac-40 MCS 0 LGI



#### 11ac-80 MCS 0 LGI



## Maximum Power Spectral Density

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11a

### Antenna 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-19.38	2.17	10.09	2.22	3.28	0.00	-4.90	11.00	15.90	-1.62	17.00	18.62
5220	-19.35	2.18	10.09	2.22	3.28	0.00	-4.86	11.00	15.86	-1.58	17.00	18.58
5240	-19.60	2.19	10.09	2.22	3.28	0.00	-5.10	11.00	16.10	-1.82	17.00	18.82
5745	-23.04	2.32	10.09	2.22	3.28	0.27	-8.14	30.00	38.14	-4.86	36.00	40.86
5785	-23.13	2.32	10.09	2.22	3.28	0.27	-8.23	30.00	38.23	-4.95	36.00	40.95
5825	-22.72	2.34	10.09	2.22	3.28	0.27	-7.81	30.00	37.81	-4.53	36.00	40.53

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

### Antenna 2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-18.93	2.24	10.09	2.22	1.79	0.00	-4.38	11.00	15.38	-2.59	17.00	19.59
5220	-19.35	2.25	10.09	2.22	1.79	0.00	-4.79	11.00	15.79	-3.00	17.00	20.00
5240	-19.48	2.26	10.09	2.22	1.79	0.00	-4.91	11.00	15.91	-3.12	17.00	20.12
5745	-23.40	2.40	10.09	2.22	1.79	0.27	-8.42	30.00	38.42	-6.63	36.00	42.63
5785	-23.77	2.40	10.09	2.22	1.79	0.27	-8.79	30.00	38.79	-7.00	36.00	43.00
5825	-23.25	2.42	10.09	2.22	1.79	0.27	-8.25	30.00	38.25	-6.46	36.00	42.46

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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



## Maximum Power Spectral Density

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11n-20

### Antenna 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-21.16	2.17	10.09	2.54	3.28	0.00	-6.36	11.00	17.36	-3.08	17.00	20.08
5220	-20.50	2.18	10.09	2.54	3.28	0.00	-5.69	11.00	16.69	-2.41	17.00	19.41
5240	-21.06	2.19	10.09	2.54	3.28	0.00	-6.24	11.00	17.24	-2.96	17.00	19.96
5745	-24.41	2.32	10.09	2.54	3.28	0.27	-9.19	30.00	39.19	-5.91	36.00	41.91
5785	-24.27	2.32	10.09	2.54	3.28	0.27	-9.05	30.00	39.05	-5.77	36.00	41.77
5825	-24.32	2.34	10.09	2.54	3.28	0.27	-9.08	30.00	39.08	-5.80	36.00	41.80

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

### Antenna 2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-20.79	2.24	10.09	2.54	1.79	0.00	-5.92	11.00	16.92	-4.13	17.00	21.13
5220	-21.18	2.25	10.09	2.54	1.79	0.00	-6.30	11.00	17.30	-4.51	17.00	21.51
5240	-20.83	2.26	10.09	2.54	1.79	0.00	-5.94	11.00	16.94	-4.15	17.00	21.15
5745	-25.06	2.40	10.09	2.54	1.79	0.27	-9.76	30.00	39.76	-7.97	36.00	43.97
5785	-24.96	2.40	10.09	2.54	1.79	0.27	-9.66	30.00	39.66	-7.87	36.00	43.87
5825	-25.10	2.42	10.09	2.54	1.79	0.27	-9.78	30.00	39.78	-7.99	36.00	43.99

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Maximum Power Spectral Density

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-20

### Antenna 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-20.47	2.17	10.09	2.61	3.28	0.00	-5.60	11.00	16.60	-2.32	17.00	19.32
5220	-21.18	2.18	10.09	2.61	3.28	0.00	-6.30	11.00	17.30	-3.02	17.00	20.02
5240	-20.94	2.19	10.09	2.61	3.28	0.00	-6.05	11.00	17.05	-2.77	17.00	19.77
5745	-24.29	2.32	10.09	2.61	3.28	0.27	-9.00	30.00	39.00	-5.72	36.00	41.72
5785	-24.34	2.32	10.09	2.61	3.28	0.27	-9.05	30.00	39.05	-5.77	36.00	41.77
5825	-24.07	2.34	10.09	2.61	3.28	0.27	-8.76	30.00	38.76	-5.48	36.00	41.48

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

### Antenna 2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5180	-20.76	2.24	10.09	2.61	1.79	0.00	-5.82	11.00	16.82	-4.03	17.00	21.03
5220	-20.89	2.25	10.09	2.61	1.79	0.00	-5.94	11.00	16.94	-4.15	17.00	21.15
5240	-20.72	2.26	10.09	2.61	1.79	0.00	-5.76	11.00	16.76	-3.97	17.00	20.97
5745	-24.98	2.40	10.09	2.61	1.79	0.27	-9.61	30.00	39.61	-7.82	36.00	43.82
5785	-24.59	2.40	10.09	2.61	1.79	0.27	-9.22	30.00	39.22	-7.43	36.00	43.43
5825	-24.68	2.42	10.09	2.61	1.79	0.27	-9.29	30.00	39.29	-7.50	36.00	43.50

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Maximum Power Spectral Density

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11n-40

### Antenna 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-25.06	2.18	10.09	3.75	3.28	0.00	-9.04	11.00	20.04	-5.76	17.00	22.76
5230	-25.67	2.19	10.09	3.75	3.28	0.00	-9.64	11.00	20.64	-6.36	17.00	23.36
5755	-28.68	2.32	10.09	3.75	3.28	0.27	-12.25	30.00	42.25	-8.97	36.00	44.97
5795	-28.93	2.32	10.09	3.75	3.28	0.27	-12.50	30.00	42.50	-9.22	36.00	45.22

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

### Antenna 2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-25.30	2.24	10.09	3.75	1.79	0.00	-9.22	11.00	20.22	-7.43	17.00	24.43
5230	-25.35	2.26	10.09	3.75	1.79	0.00	-9.25	11.00	20.25	-7.46	17.00	24.46
5755	-28.92	2.40	10.09	3.75	1.79	0.27	-12.41	30.00	42.41	-10.62	36.00	46.62
5795	-29.60	2.40	10.09	3.75	1.79	0.27	-13.09	30.00	43.09	-11.30	36.00	47.30

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

## Maximum Power Spectral Density

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-40

### Antenna 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-25.48	2.18	10.09	3.65	3.28	0.00	-9.56	11.00	20.56	-6.28	17.00	23.28
5230	-25.69	2.19	10.09	3.65	3.28	0.00	-9.76	11.00	20.76	-6.48	17.00	23.48
5755	-28.59	2.32	10.09	3.65	3.28	0.27	-12.26	30.00	42.26	-8.98	36.00	44.98
5795	-29.08	2.32	10.09	3.65	3.28	0.27	-12.75	30.00	42.75	-9.47	36.00	45.47

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

### Antenna 2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]	Result [dBm /MHz]	Limit [dBm /MHz]	Margin [dB]
5190	-25.35	2.24	10.09	3.65	1.79	0.00	-9.37	11.00	20.37	-7.58	17.00	24.58
5230	-25.27	2.26	10.09	3.65	1.79	0.00	-9.27	11.00	20.27	-7.48	17.00	24.48
5755	-29.02	2.40	10.09	3.65	1.79	0.27	-12.61	30.00	42.61	-10.82	36.00	46.82
5795	-28.93	2.40	10.09	3.65	1.79	0.27	-12.52	30.00	42.52	-10.73	36.00	46.73

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Maximum Power Spectral Density

Report No. 13828809H  
Test place Ise EMC Lab. No.6 Measurement Room  
Date June 18, 2021  
Temperature / Humidity 22 deg. C / 62 % RH  
Engineer Takafumi Noguchi  
Mode Tx 11ac-80

### Antenna 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm] /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm] /MHz]	Limit [dBm] /MHz]	Margin [dB]	Result [dBm] /MHz]	Limit [dBm] /MHz]	Margin [dB]
5210	-30.21	2.18	10.09	4.96	3.28	0.00	-12.98	11.00	23.98	-9.70	17.00	26.70
5775	-32.26	2.32	10.09	4.96	3.28	0.27	-14.62	30.00	44.62	-11.34	36.00	47.34

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 + Atten. Loss + Duty Factor + RBW Correction Factor

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

### Antenna 2

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm] /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted)			PSD (e.i.r.p.)		
							Result [dBm] /MHz]	Limit [dBm] /MHz]	Margin [dB]	Result [dBm] /MHz]	Limit [dBm] /MHz]	Margin [dB]
5210	-30.28	2.25	10.09	4.96	1.79	0.00	-12.98	11.00	23.98	-11.19	17.00	28.19
5775	-33.69	2.40	10.09	4.96	1.79	0.27	-15.97	30.00	45.97	-14.18	36.00	50.18

Sample Calculation:

PSD: Power Spectral Density

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

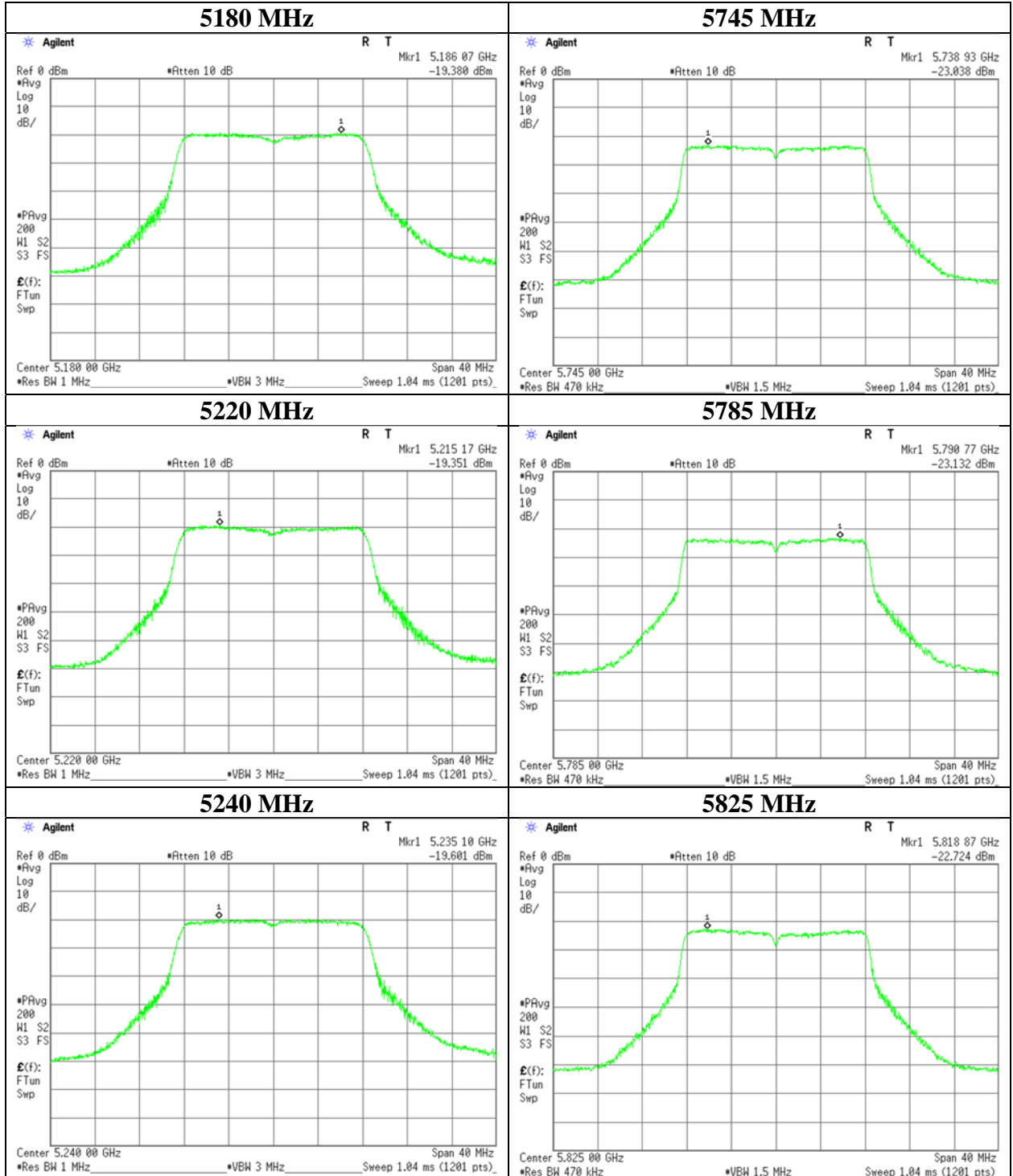
RBW Correction Factor =  $10 * \log(\text{Specified bandwidth} / \text{Measured bandwidth})$

PSD Result (Conducted) = Reading + Cable Loss + Atten. Loss + Duty Factor + RBW Correction Factor

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

## Maximum Power Spectral Density

Report No.	13828809H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	June 18, 2021
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a Antenna 1



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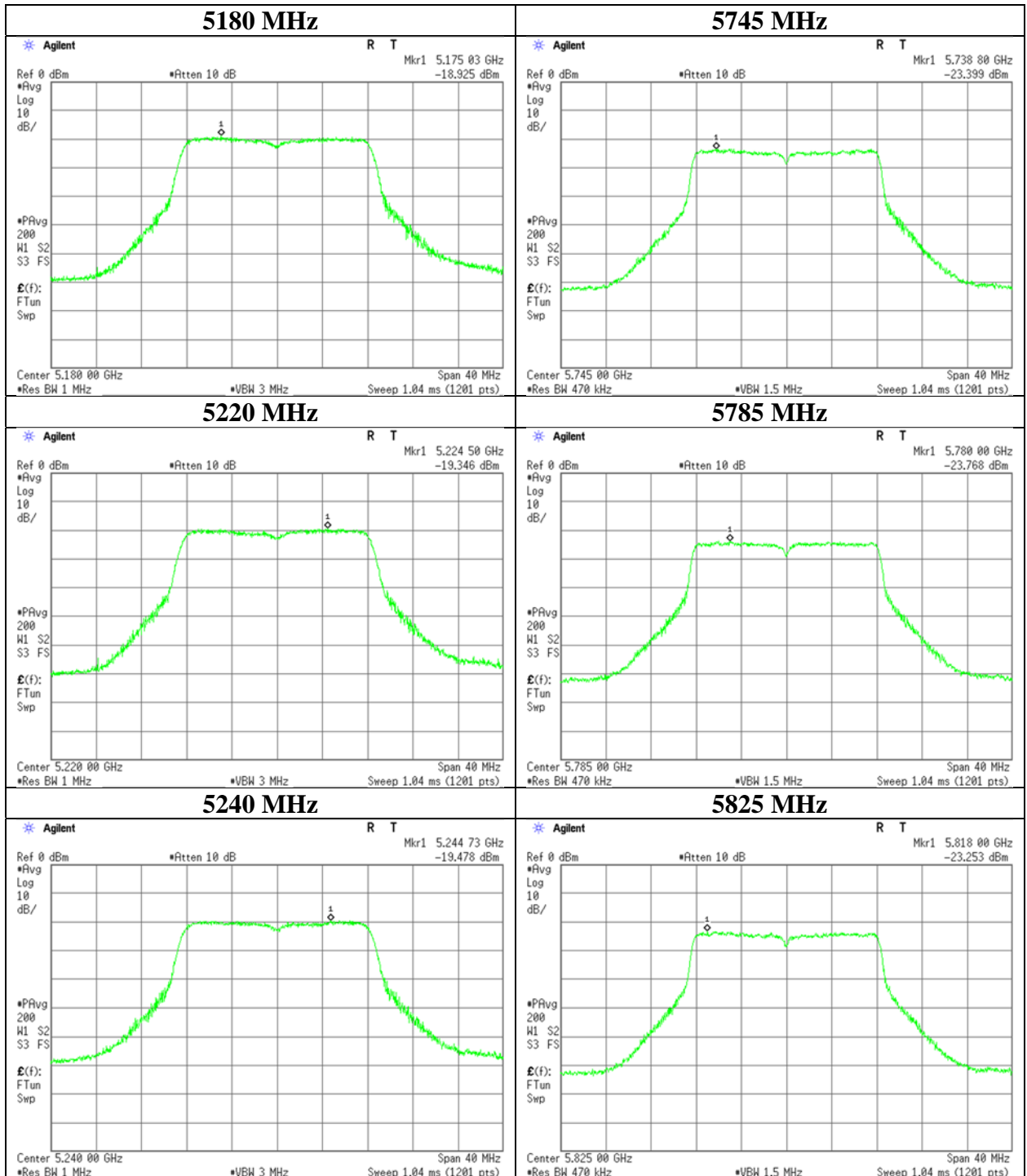
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

### Maximum Power Spectral Density

Report No.	13828809H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	June 18, 2021
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a Antenna 2



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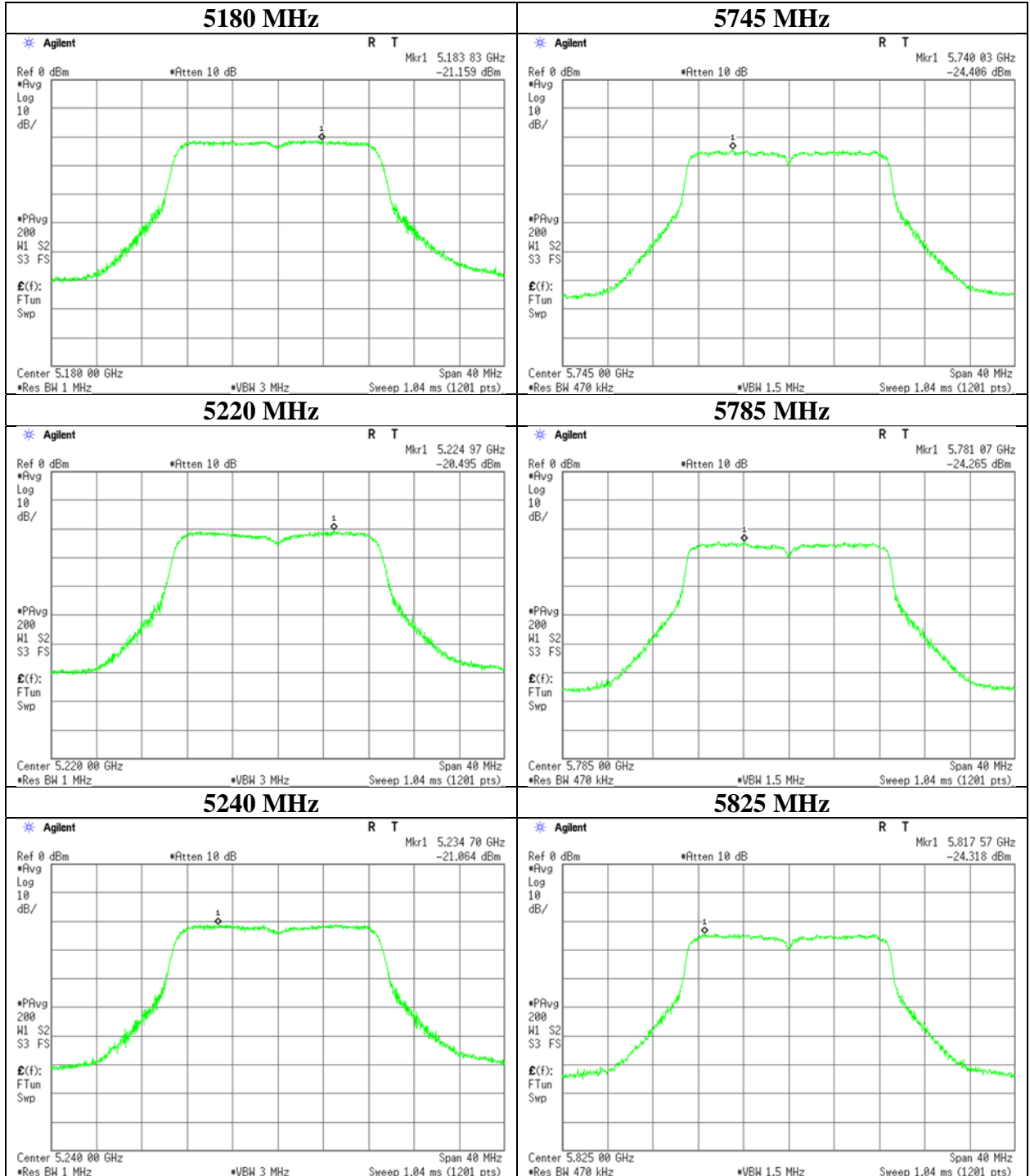
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Maximum Power Spectral Density

Report No.	13828809H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	June 18, 2021
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-20 Antenna 1



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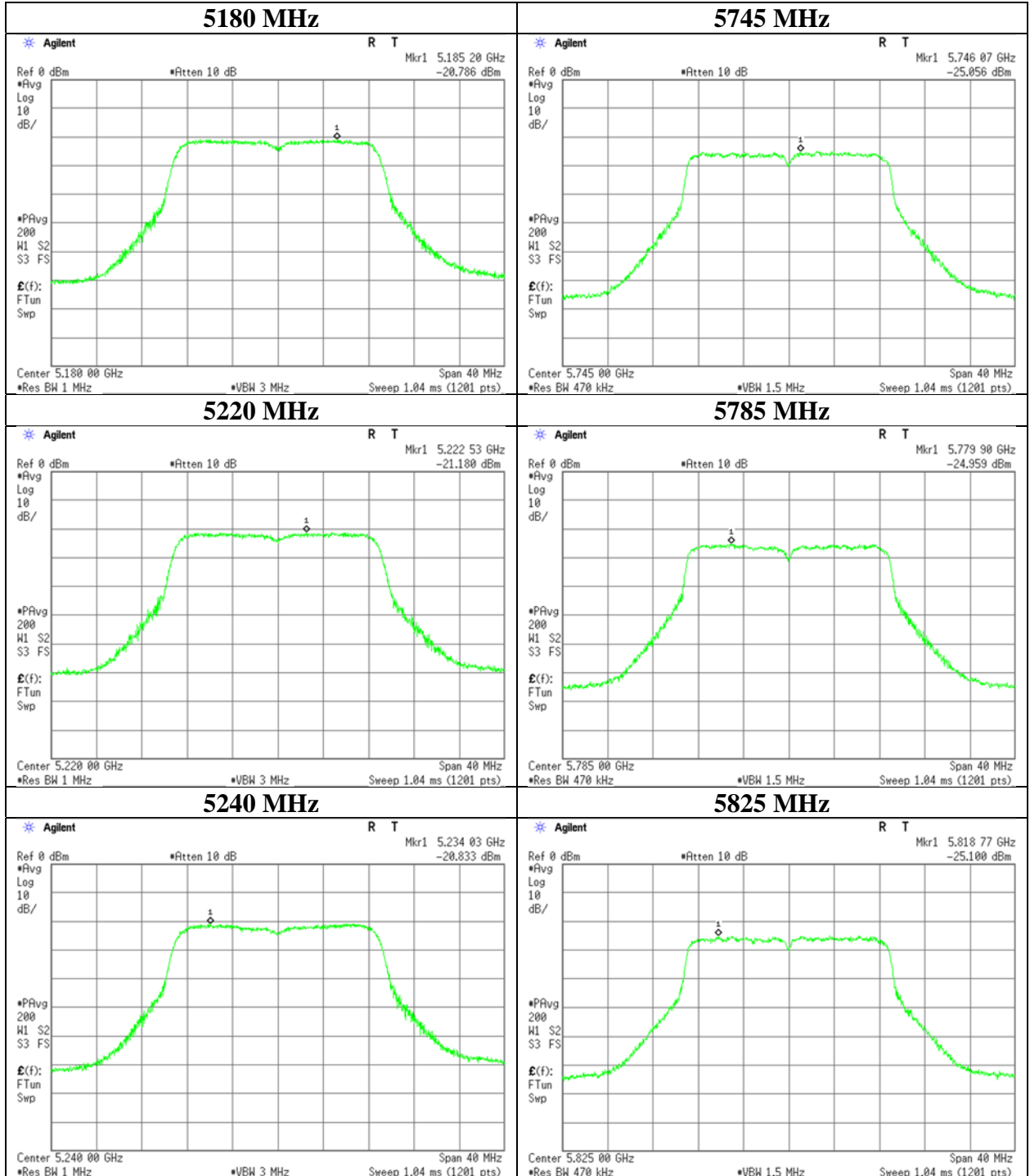
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124



## Maximum Power Spectral Density

Report No.	13828809H
Test place	Ise EMC Lab. No.6 Measurement Room
Date	June 18, 2021
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11n-20 Antenna 2



**UL Japan, Inc.**

**Ise EMC Lab.**

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124