

# RADIO TEST REPORT

(for 5 GHz WLAN)

Project No. : JB-Z0543-B  
 Client : Sony Corporation  
 Client's Address : 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan  
 Product Name : Digital Media Player  
 Model No. : NW-A105  
 FCC ID : AK8NWA100  
 Test Standard : 47 CFR Part 15 Subpart E  
 Sample Receipt Date : May 21, 2019  
 Test Date : May 28, 2019 to June 26, 2019  
 Original Report Date : July 5, 2019  
 Amend Report Date : August 1, 2019  
 Test Result : Complied

Notice:

- \* These test results relate only to the items (combination equipment, test configuration, operation condition etc.) tested.
- \* This report shall not be reproduced except in full, without written approval of the laboratory.
- \* This report must not be used by the client to claim product endorsement by A2LA or any agency of the U.S.
- \* Hereby certify that no party is subject to a denial of federal benefits pursuant to section 5301 of the Anti-Drug Abuse Act.
- \* All test results are traceable to the national and / or international standards.
- \* The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory.
- \* This report replaces and supersedes all previous versions. Refer to Revision History on the following page.

Reported by:

*T. Oho*

Takanori Oho  
 Technical Manager  
 EMC/RF Test Laboratory, Main Lab.  
 Design Technology Division

Approved Signatory:

*T. Kurihara*

Teruki Kurihara  
 Technical Manager  
 EMC/RF Test Laboratory, Main Lab.  
 Design Technology Division



Format No.: NV1-1-01 Version 5.0

## TABLE OF CONTENTS

1.	General Information.....	3
1.1.	Description of Equipment Under Test (EUT).....	3
1.2.	Summary of Test Result.....	4
1.3.	Tested Methodology .....	4
1.4.	Measurement Procedures .....	5
1.5.	Test Location.....	7
1.6.	Uncertainty .....	7
2.	Test Specification .....	8
2.1.	Validation .....	8
2.2.	Operating Condition.....	8
2.3.	Special Accessories .....	9
2.4.	EUT Modifications .....	9
2.5.	Configuration of EUT System .....	10
2.6.	View of Measurement Facility.....	12
3.	Test Data.....	13
3.1.	AC Power-line Conducted Emissions .....	13
3.2.	26dB Emission Bandwidth .....	15
3.3.	6dB Emission Bandwidth.....	22
3.4.	99% Occupied Bandwidth .....	25
3.5.	Maximum Conducted Output Power .....	38
3.6.	Maximum Power Spectral Density.....	41
3.7.	Unwanted Emissions.....	54
4.	Method of Calculation .....	347
4.1.	AC Power-line Conducted Emissions .....	347
4.2.	Maximum Conducted Output Power .....	347
4.3.	Maximum Power Spectral Density.....	347
4.4.	Unwanted Emissions.....	348
5.	List of Test Equipment.....	349
5.1.	AC Power-line Conducted Emissions .....	349
5.2.	Antenna-port Conducted Measurements.....	349
5.3.	Unwanted Emissions.....	349
6.	Photographs of test setup.....	350
6.1.	AC Power-line Conducted Emissions Photo(s).....	350
6.2.	Antenna-port Conducted Measurements Photo(s) .....	350
6.3.	Unwanted Emissions Photo(s).....	351

### Note

- indicates that the listed condition, standard or equipment is applicable for this report.  
-indicates that the listed condition, standard or equipment is not applicable for this report.

### Revision History

Revision	Date	Overview	Page
JB-Z0543 (Original)	June 26, 2019	-	-
JB-Z0543-A	July 26, 2019	Add procedures and measurement facility drawings for spurious.	P.6,12
JB-Z0543-B	August 1, 2019	Correction of Maximum Conducted Output Power result and Margin.	P38
		Add description to procedures for spurious emission.	P.6

## 1. General Information

### 1.1. Description of Equipment Under Test (EUT)

#### General Specification

Test Sample Condition :  Prototype  Pre-production  Mass-production  
 Product Name : Digital Media Player  
 Trade Name : SONY  
 Model No. : NW-A105  
 Serial No. : 3, 5  
 Power Rating of the EUT : DC 3.7 V (Internal Battery) or DC 5 V (USB)

Similar model(s) to be covered by this report

Model No. : None

#### Radio Specification

Function of the Equipment : Transceiver  
 Operating Frequency :

IEEE Standard	Operating Frequency	Channel Spacing	Channel Bandwidth	Number of Channel
802.11a/n HT20 802.11ac VHT20	5180 - 5320 MHz,	20 MHz	20 MHz	8
	5500 - 5720 MHz (except 5600 - 5640 MHz),			9
	5745 - 5825 MHz			5
802.11n HT40 802.11ac VHT40	5190 - 5310 MHz,	40 MHz	40 MHz	4
	5510 - 5710 MHz (except 5590 - 5630 MHz),			4
	5755 - 5795 MHz			2
802.11ac VHT80	5210 - 5290 MHz,	80 MHz	80 MHz	2
	5530 - 5690 MHz (except 5610 MHz),			2
	5775 MHz			1

Modulation Type : OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)  
 Antenna Type : Inverted-F antenna  
 Antenna Connector Type : None  
 Antenna Gain : +3.0 dBi  
 Operating Temperature : +5 to +35 deg.C

## 1.2. Summary of Test Result

Test Item	Test Method	Worst Margin	Results	Note
AC Power-line Conducted Emissions	Conducted	18.2 dB (QP) 0.180 MHz L1	Complied	-
26dB Emission Bandwidth	Conducted	Refer to the test data	N/A	-
6dB Emission Bandwidth	Conducted	Refer to the test data	Complied	-
Maximum Conducted Output Power	Conducted	16.77 dB	Complied	-
Maximum Power Spectral Density	Conducted	8.25 dB	Complied	-
Unwanted Emissions	Radiated	2.6 dB (PK) 5725.000 MHz Vertical	Complied	-
Dynamic Frequency Selection	-	-	-	*1

Note

\*1: For DFS test results, referred to JB-Z0544 issued by Sony Global Manufacturing & Operations Corporation.

### Other requirements

Part 15.31(e) Supply voltage requirement

: Complied (The voltage supplied from USB or battery are converted to regulated DC voltage by the built-in power circuit of the EUT.)

Part 15.203 / 212 Antenna requirement

: Complied (The EUT has an internal antenna which cannot be replaced by users.)

## 1.3. Tested Methodology

Test Standard : 47 CFR Part15 Subpart E

Test Method : ANSI C63.10 - 2013  
KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Condition

### AC Power-line Conducted Emissions

Dimensions of the EUT table : 0.8 m height, 1.5 m width and 1 m depth.

### Unwanted Emissions

Test Distance :  3 m  10m (9 kHz to 30 MHz)  
 3 m  10m (30 MHz to 1000 MHz)  
 3 m (1 GHz to 40 GHz)

Dimensions of the EUT table : 0.8 m (below 1 GHz) or 1.5 m (above 1 GHz) height, 2 m width and 1 m depth.

Dimensions of validated test volume : 2.5 m diameter, 3 m top height, 0.5 m bottom height.

## 1.4. Measurement Procedures

We performed the measurements in accordance with NV3-10, available upon the request.

- No deviation  
 Deviation from the above procedure

The summary of the above procedure is mentioned below

### AC Power-line Conducted Emissions

- The non-conductive table (EUT table) made of ( FRP,  wood,  other non-conductive material) was placed 0.4 m from its rear to the vertical reference ground plane.
- The EUT was placed on the center of tabletop and its rear was flush with the rear of the table, connected through a LISN to the input power mains.
- The LISN was placed in 80 cm from the nearest part of the EUT chassis.
- The excess length of the AC cable between the EUT and the LISN receptacle, or an adaptor or extension cable connected to and measured with LISN, was folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- The connection of the all other equipment to the second LISN was performed. The second LISN was terminated with a 50-ohm terminator.
- Interconnecting cables that hang closer than 40 cm to the horizontal reference ground plane was folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between the horizontal reference ground plane and the tabletop.
- Find the worst mode and arrangement of the EUT according to the follows:
  - Connecting all peripherals and change the position of peripherals and cables.
  - Changing the all test operation modes of the EUT.
  - On every condition, exploring the highest emissions with the spectrum analyzer. (150 kHz to 30 MHz, peak detector, RBW: 10 kHz)
- On the worst condition of the EUT found in above, choose the six highest emissions on the spectrum data. The final measurements carried out on these emissions with EMI test receiver. (quasi-peak and average detector, RBW: 9 kHz)

### Antenna-port Conducted Measurements

- Antenna-port of the EUT was connected to the power sensor (Maximum Conducted Output Power) or the spectrum analyzer. (other test items).
- For each EUT operation mode, the Antenna-port Conducted Measurements were measured with the power sensor or the spectrum analyzer.

Test Item	Detector	RBW
Antenna-port Conducted Measurements		
26dB Emission Bandwidth	Peak	100 kHz : IEEE 802.11a, 11n(HT20), 11ac(VHT20) 300 kHz : IEEE 802.11n(HT40), 11ac(VHT40) 1 MHz : IEEE 802.11ac(VHT80)
6dB Emission Bandwidth	Peak	100 kHz
99% Occupied Bandwidth	Peak	300 kHz : IEEE 802.11a, 11n(HT20), 11ac(VHT20) 1 MHz : IEEE 802.11n(HT40), 11ac(VHT40), 11ac(VHT80)
Maximum Conducted Output Power	Average	-
Maximum Power Spectral Density	RMS	100 kHz : U-NII-3 1 MHz : U-NII-1/-2A/-2C

**Unwanted Emissions**

1. The non-conductive table (EUT table) made of ( FRP,  Styrene Foam,  other non-conductive material) was placed in the center of the turntable.
2. The EUT was placed on the center of the tabletop.
3. The test antenna was placed away from the EUT at test distance.
4. The limits were compensated the distance factor with follows:  
 9 kHz to 490 kHz [Limit at 3 m] = [Limit at 300 m] + 40log (300[m] / 3[m])  
 490 kHz to 30 MHz [Limit at 3 m] = [Limit at 30 m] + 40log (30[m] / 3[m])
5. Find the worst arrangement of the EUT according to follows;
  - Rotating the turntable and/or scanning the antenna.
  - On every condition, exploring the highest emissions with the spectrum analyzer. (9 kHz to 40 GHz, peak detector)
6. On the worst arrangement of the EUT found in above, choose the six highest harmonics or spurious emissions on the spectrum data.(\*excluding carrier band edges)  
 The final measurements of all test operating modes carried out on these emissions as follows:

The test antenna and the turntable were performed with follows;

	9 kHz to 30 MHz	30 MHz to 1000 MHz	1 GHz to 40 GHz
Antenna	Loop Antenna	Bi-conical Antenna, Log-periodic Antenna	Horn Antenna
Antenna scanning range	1 m, Vertical, 360 degrees	1 m to 4 m, Horizontal and Vertical	1 m to 4 m *, Horizontal and Vertical
Turntable rotating range	360 degrees	360 degrees	360 degrees

\*: When the measurement frequencies above 1 GHz, final measurements are performed keeping the antenna in the "cone of radiation" from EUT area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.

Instruments settings were carried out with follows;

	9 kHz to 90 kHz 110 kHz to 490 kHz	90 kHz to 110 kHz 490 kHz to 30 MHz	30 MHz to 1000 MHz	1 GHz to 40 GHz
Detector	Peak / Average	Quasi-peak	Quasi-peak	Peak / Average
RBW	200 Hz (6 dB) or 9 kHz (6 dB) *1	200 Hz (6 dB) or 9 kHz (6 dB) *1	120 kHz (6 dB)	1 MHz (6 dB)
VBW	N/A	N/A	N/A	3 MHz (for peak) 10 kHz (for average) *2
Instrument	EMI test receiver	EMI test receiver	EMI test receiver	Spectrum analyzer

\*1: When the measurement frequencies below 150 kHz, RBW: 200 Hz was used.

\*2: VBW setting (for average) was higher than 1/T. (T is the minimum transmission duration)

7. If the final average measurement result exceeded the limit in the authorized band edge, the integration method is carried out with follows;

	Unwanted emissions within 2 MHz of the band edge
Detector	Peak
RBW	100 kHz (6 dB)
Instrument	Spectrum analyzer
Function	Channel Power (integration BW : 1 MHz)

8. Although these tests for below 30MHz were performed other than open field area test site, adequate comparison measurements were confirmed against 30 m open field area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

Further these test for above 1GHz were performed test site complied with CISPR 16-1-4.

In the case of EUT size smaller than the validated test volume, the antenna position is adjusted such that the distance between the EUT and the antenna reference point is identical to the 3m used for the S-VSWR validation measurements. These method based on clause 7.3.1 of CISPR16-1-4 Edition 4, therefore correcting distance factor is not applied.

**1.5. Test Location**

Test Facility Name : Sony Global Manufacturing & Operations Corporation  
EMC/RF Test Laboratory, Main Lab.  
Address : 8-4 Shiomi Kisarazu-shi Chiba-ken, 292-0834, Japan  
Phone : +81 438 37 2750

A2LA Certificate No. : 3203.01  
Cert. Validated Date : Oct. 31, 2019

AC Power-line Conducted Emissions

Shielded Room

 4th Site     EMC Site
Antenna-port Conducted Measurements

Shielded Room

 4th Site SR1
Unwanted Emissions

Semi-Anechoic chamber

 4th Site     EMC Site
**1.6. Uncertainty**

Test Item	Frequency	4th Site SR1
Maximum Conducted Output Power	1 GHz to 6 GHz	± 0.84 dB
Maximum Power Spectral Density	below 6 GHz	± 1.25 dB

Test Item	Frequency	Distance	4th Site	EMC Site
AC Power-line Conducted Emissions	150 kHz to 30 MHz	-	± 3.34 dB	± 3.35 dB
Radiated Emissions	9 kHz to 30 MHz	3m	± 2.60 dB	± 3.13 dB
	30 MHz to 1000 MHz	3m	± 4.96 dB	± 5.26 dB
	1 GHz to 18 GHz	3m	± 5.22 dB	± 5.50 dB
	18 GHz to 26.5 GHz	3m	± 5.36 dB	± 5.63 dB
	26.5 GHz to 40 GHz	3m	± 6.07 dB	± 6.31 dB

## 2. Test Specification

### 2.1. Validation

The system was configured for testing in a typical (as a customer would normally use it).  
The tests were conducted with the worst-case modes as follows.

### 2.2. Operating Condition

The tests have been carried out the following conditions.

[ Transmitting mode ]

Test Items	Test Channels [MHz]				Worst Data Rate *1
	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3	
AC Power-line Conducted Emissions *2	5180	-	-	-	802.11a : 18 Mbps
26dB Emission Bandwidth	-	5260 5300 5320	5500 5580 5700 5720	-	802.11a : 18 Mbps 802.11n(HT20) : MCS6 802.11ac(VHT20): MCS6
	-	5270 5310	5510 5550 5670 5710	-	802.11n(HT40) : MCS4 802.11ac(VHT40): MCS4
	-	5290	5530 5690	-	802.11ac(VHT80): MCS6
6dB Emission Bandwidth	-	-	-	5745 5785 5825	802.11a : 18 Mbps 802.11n(HT20) : MCS6 802.11ac(VHT20): MCS6
	-	-	-	5755 5795	802.11n(HT40) : MCS4 802.11ac(VHT40): MCS4
	-	-	-	5775	802.11ac(VHT80): MCS6
Maximum Conducted Output Power	5180 5200 5220 5240	5260 5280 5300 5320	5500 5580 5700 5720	5745 5785 5825	802.11a : 18 Mbps 802.11n(HT20) : MCS6 802.11ac(VHT20): MCS6
	5190 5230	5270 5310	5510 5550 5670 5710	5755 5795	802.11n(HT40) : MCS4 802.11ac(VHT40): MCS4
	5210	5290	5530 5690	5775	802.11ac(VHT80): MCS6
99% Occupied Bandwidth, Maximum Power Spectral Density	5180 5220 5240	5260 5300 5320	5500 5580 5700 5720	5745 5785 5825	802.11a : 18 Mbps 802.11n(HT20) : MCS6 802.11ac(VHT20): MCS6
	5190 5230	5270 5310	5510 5550 5670 5710	5755 5795	802.11n(HT40) : MCS4 802.11ac(VHT40): MCS4
	5210	5290	5530 5610 5690	5775	802.11ac(VHT80): MCS6

Test Items	Test Channels [MHz]				Worst Data Rate *1
	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3	
Unwanted Emissions *2 (Below 1 GHz)	5180	-	-	-	802.11a : 18 Mbps
Unwanted Emissions (Above 1 GHz)	5180	5260 5320	5500 5580 *3 5700	5745 5785 *3 5825	802.11a : 18 Mbps 802.11ac(VHT20): MCS6
	5190	5270 5310	5510 5550 *4 5670	5755 5795	802.11n(HT40) : MCS4 802.11ac(VHT40): MCS4
	5210	5290	5530	5775	802.11ac(VHT80): MCS6

## Note

\*1: The worst data rate has been decided based on the result of Maximum Conducted Output Power.

\*2: The test was performed with the representative mode that had been found as the worst emissions while exploratory testing.

\*3: It applies only to IEEE802.11a.

\*4: It applies only to IEEE802.11n.

**The Software for Operating Mode**

Software Name : LBEE5ZZ1PJ-331 RF Test  
Software Version : 0.6

**2.3. Special Accessories**

Special accessories needed for connecting the EUT to achieve compliance:

Item	Manufacturer	Model No.	Serial No.	Remark
-	-	-	-	-

**2.4. EUT Modifications**

- No equipment modification to achieve compliance to the standard levels was done during the tests.  
 Equipment was modified to achieve compliance to the standard level as below.

Responsible Party Signature

\_\_\_\_\_  
Typed/ Print Name :  
Responsible Party :  
Position :  
Date :

## 2.5. Configuration of EUT System

### AC Power-line Conducted Emissions

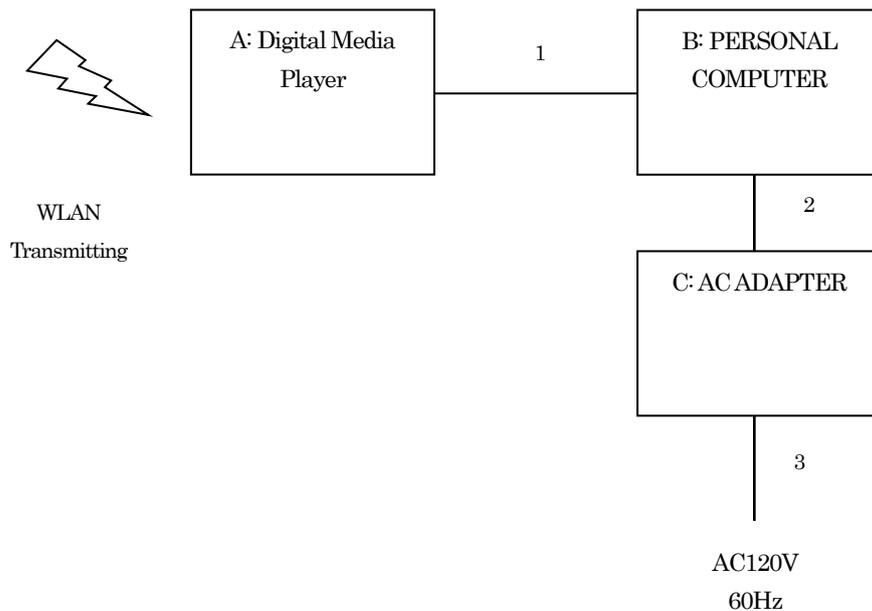
[ EUT and Associated Equipment (AE) ]

Symbol	EUT/ AE	Item	Manufacturer	Model No.	Serial No.
A	EUT	Digital Media Player	SONY	NW-A105	3
B	AE	PERSONAL COMPUTER	SONY	VJS131C11N	4120398
C	AE	AC ADAPTER	SONY	VJ8AC10V9	274969

[ Type of Cable ]

Symbol	Description	Identification (Manufacturer etc.)	Shielded Yes / No	Ferrite Core	Length (m)	Bundled
1	USB Cable	Kailai	Yes	No	0.5	No
2	DC Cable	-	No	No	1.8	Yes
3	AC Cable	-	No	No	1.5	Yes

[ Connecting Diagram ]



**Antenna-port Conducted Measurements**

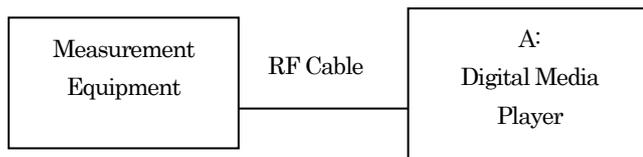
[ EUT and Associated Equipment (AE) ]

Symbol	EUT/AE	Item	Manufacturer	Model No.	Serial No.
A	EUT	Digital Media Player	SONY	NW-A105	5

[ Type of Cable ]

Symbol	Description	Identification (Manufacturer etc.)	Shielded Yes / No	Ferrite Core	Length (m)	Bundled
-	-	-	-	-	-	-

[ Connecting Diagram ]



**Unwanted Emissions**

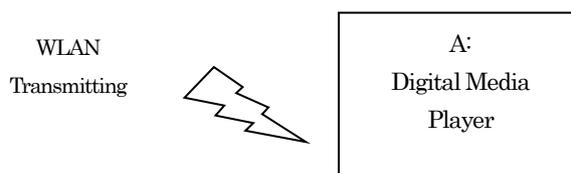
[ EUT and Associated Equipment (AE) ]

Symbol	EUT/AE	Item	Manufacturer	Model No.	Serial No.
A	EUT	Digital Media Player	SONY	NW-A105	3

[ Type of Cable ]

Symbol	Description	Identification (Manufacturer etc.)	Shielded Yes / No	Ferrite Core	Length (m)	Bundled
-	-	-	-	-	-	-

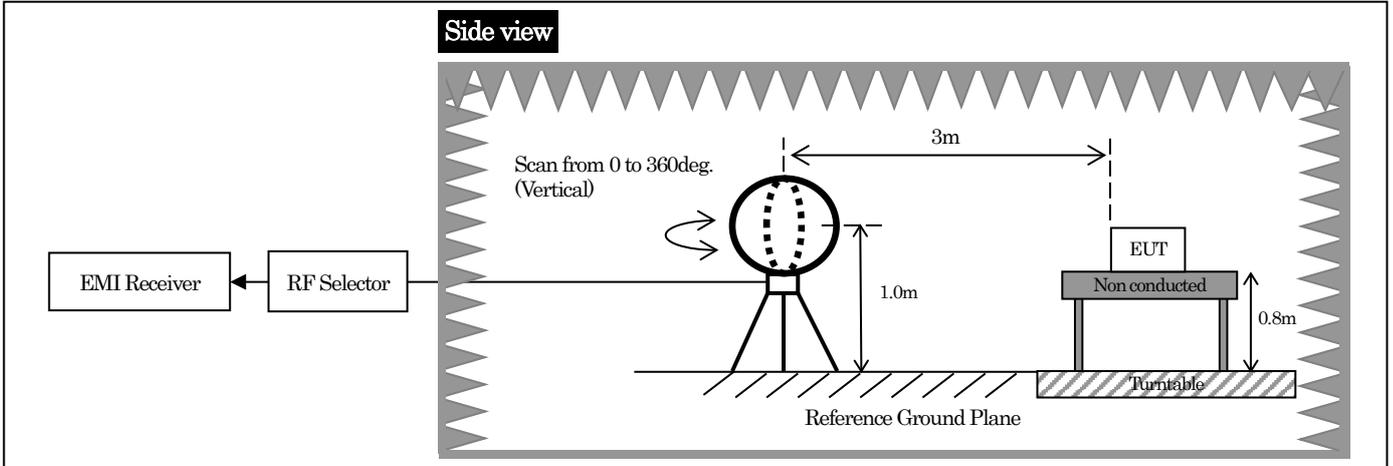
[ Connecting Diagram ]



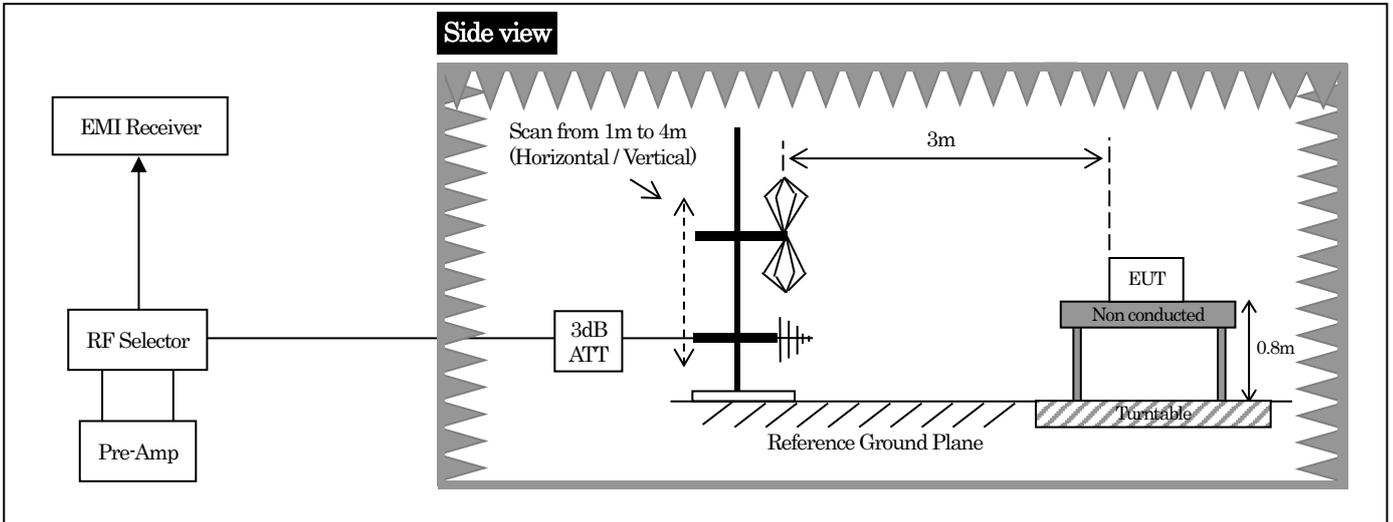
### 2.6. View of Measurement Facility

#### Radiated spurious emissions

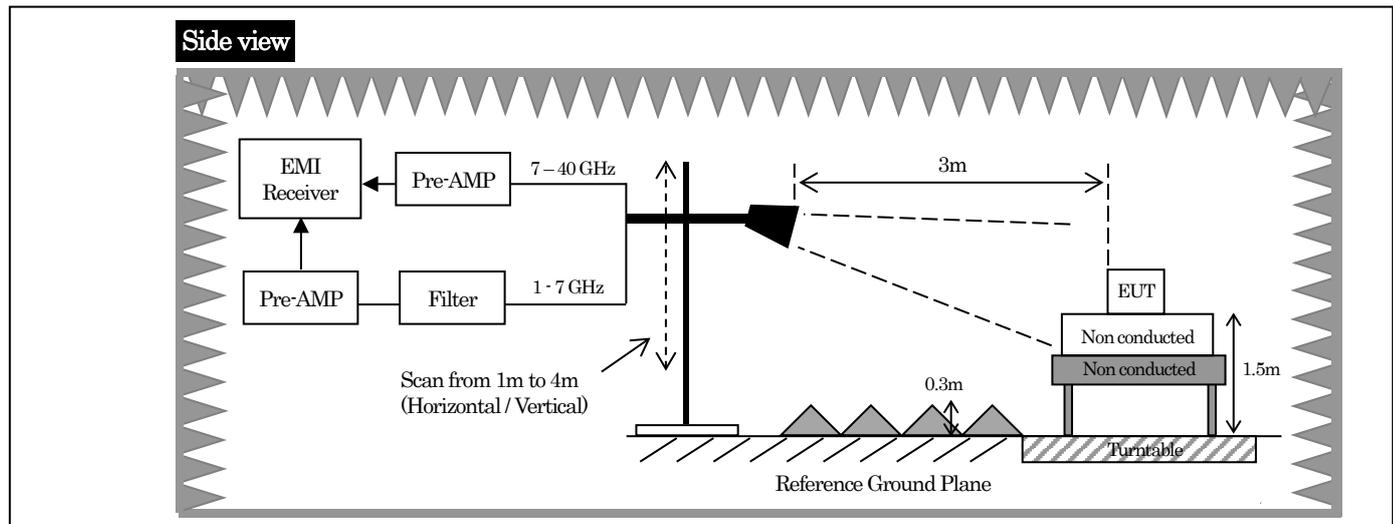
< 9 kHz - 30 MHz >



< 30 MHz - 1000 MHz >



< 1 GHz - 40 GHz >



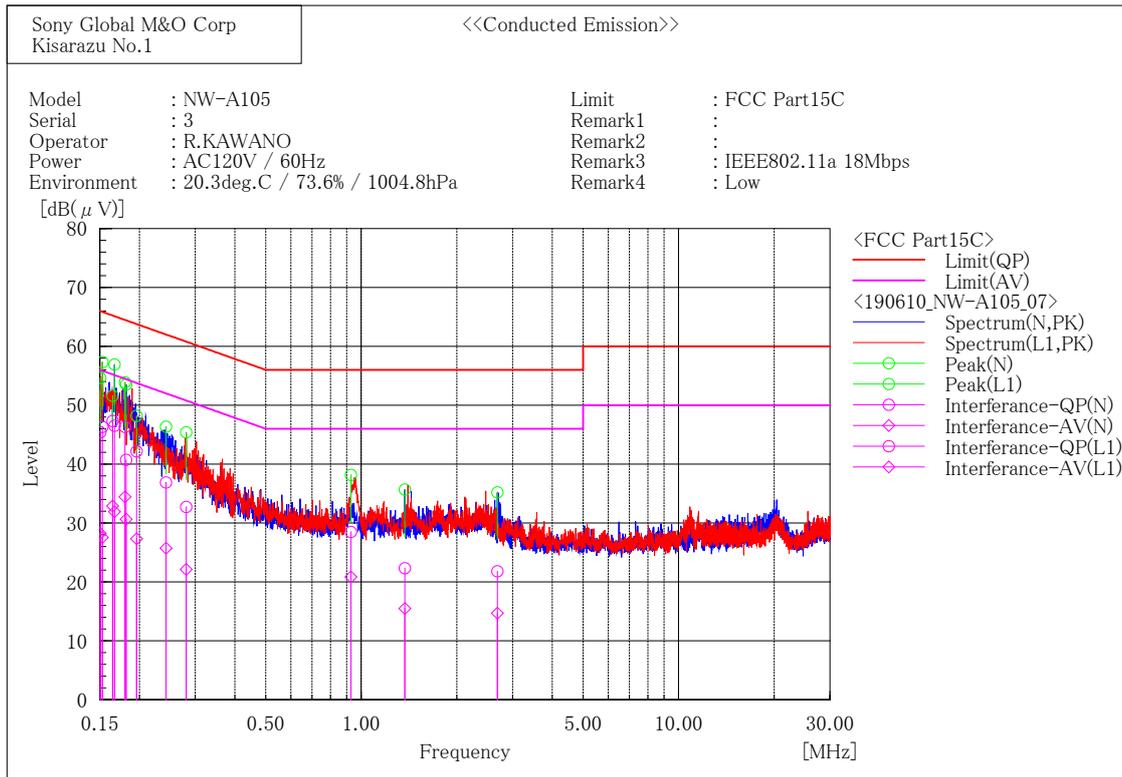
### 3. Test Data

#### 3.1. AC Power-line Conducted Emissions

1) Date of measurement : June 10, 2019

The test data is mentioned as follows.

[ 802.11a/ 5180 MHz ]



Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.151	29.5	12.3	15.9	45.4	28.2	66.0	56.0	20.6	27.8
2	0.167	30.2	15.6	16.3	46.5	31.9	65.1	55.1	18.6	23.2
3	0.182	24.5	14.4	16.2	40.7	30.6	64.4	54.4	23.7	23.8
4	0.243	21.2	10.0	15.7	36.9	25.7	62.0	52.0	25.1	26.3
5	1.371	6.4	-0.4	15.9	22.3	15.5	56.0	46.0	33.7	30.5
6	2.684	5.9	-1.2	15.9	21.8	14.7	56.0	46.0	34.2	31.3

--- L1 Phase ---

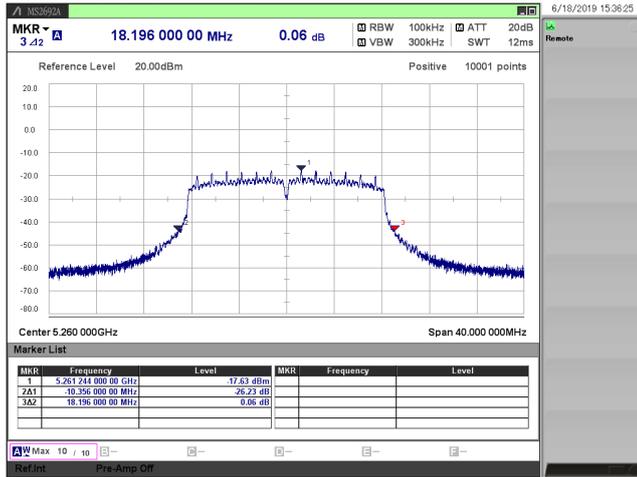
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.153	30.3	11.5	16.0	46.3	27.5	65.8	55.8	19.5	28.3
2	0.165	31.1	16.7	16.2	47.3	32.9	65.2	55.2	17.9	22.3
3	0.180	30.1	18.3	16.2	46.3	34.5	64.5	54.5	18.2	20.0
4	0.196	26.2	11.3	16.0	42.2	27.3	63.8	53.8	21.6	26.5
5	0.281	16.9	6.3	15.8	32.7	22.1	60.8	50.8	28.1	28.7
6	0.929	12.5	4.8	16.0	28.5	20.8	56.0	46.0	27.5	25.2

## 3.2. 26dB Emission Bandwidth

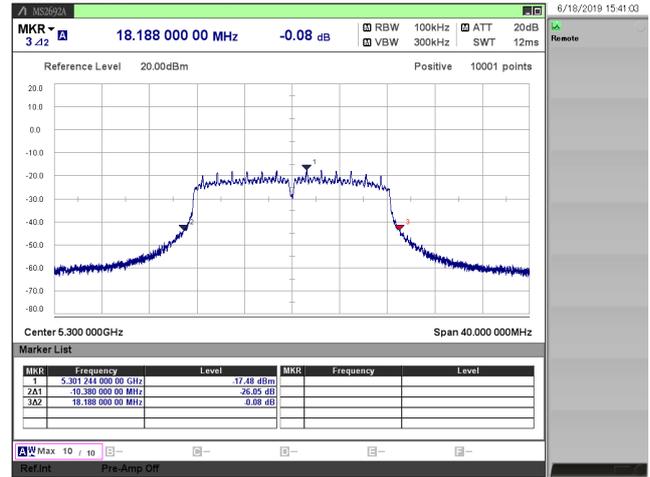
- |                        |   |                   |               |               |
|------------------------|---|-------------------|---------------|---------------|
| 1) Ambient temperature | : | 19.6 deg.C        | 22.6 deg.C    | 21.6 deg.C    |
| 2) Relative humidity   | : | 55.9 %            | 50.6 %        | 64.7 %        |
| 3) Date of measurement | : | June 14, 2019     | June 17, 2019 | June 18, 2019 |
| 4) Measured by         | : | H.WAKI            | H.WAKI        | H.WAKI        |
| 5) Operating mode      | : | Transmitting mode |               |               |

Mode	Rate [Mbps]	Channel [MHz]	Result [MHz]	Limit [MHz]
11a	18	5260	18.196	-
		5300	18.188	-
		5320	18.248	-
		5500	18.216	-
		5580	18.196	-
		5700	18.172	-
		5720	18.164	-
11n (HT20)	MCS6	5260	20.292	-
		5300	20.292	-
		5320	20.300	-
		5500	20.284	-
		5580	20.276	-
		5700	20.280	-
		5720	20.268	-
11n (HT40)	MCS4	5270	42.560	-
		5310	42.568	-
		5510	42.528	-
		5550	42.520	-
		5670	42.616	-
		5710	42.544	-
11ac (VHT20)	MCS6	5260	20.540	-
		5300	20.352	-
		5320	20.316	-
		5500	20.352	-
		5580	20.304	-
		5700	20.304	-
		5720	20.288	-
11ac (VHT40)	MCS4	5270	43.216	-
		5310	43.704	-
		5510	43.520	-
		5550	43.432	-
		5670	43.544	-
		5710	43.408	-
11ac (VHT80)	MCS6	5290	85.760	-
		5530	87.824	-
		5690	84.976	-

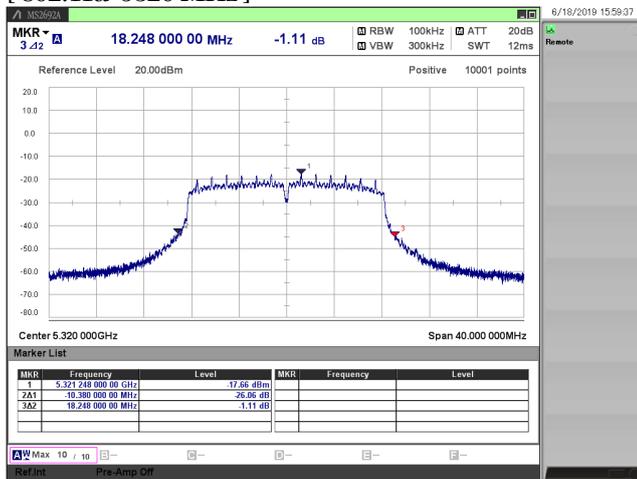
[ 802.11a/ 5260 MHz ]



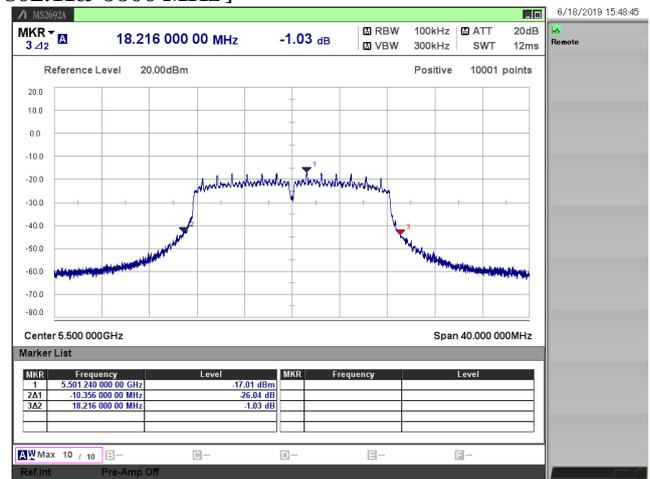
[ 802.11a/ 5300 MHz ]



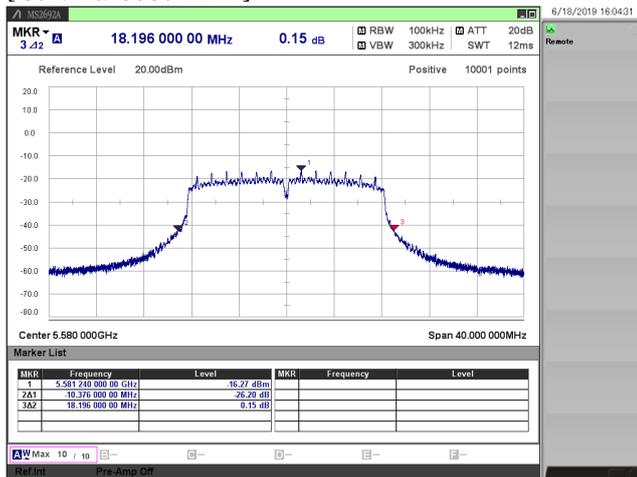
[ 802.11a/ 5320 MHz ]



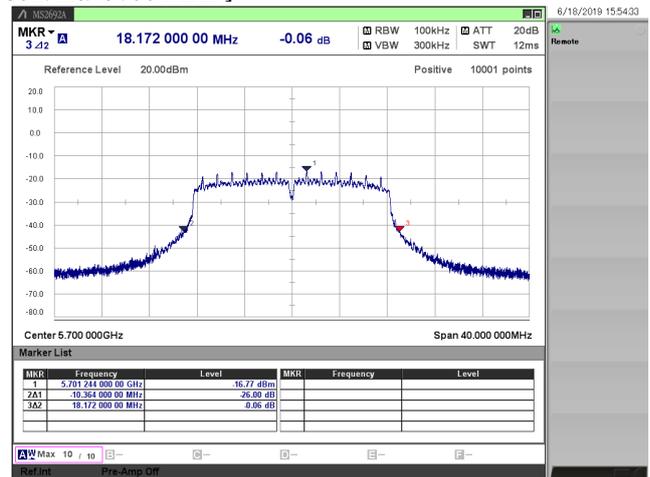
[ 802.11a/ 5500 MHz ]



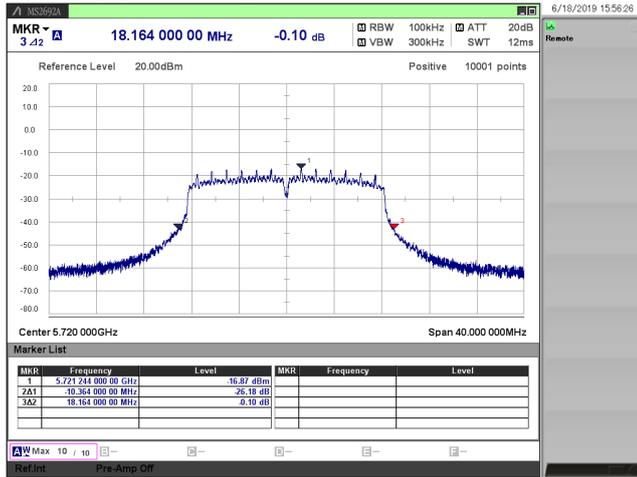
[ 802.11a/ 5580 MHz ]



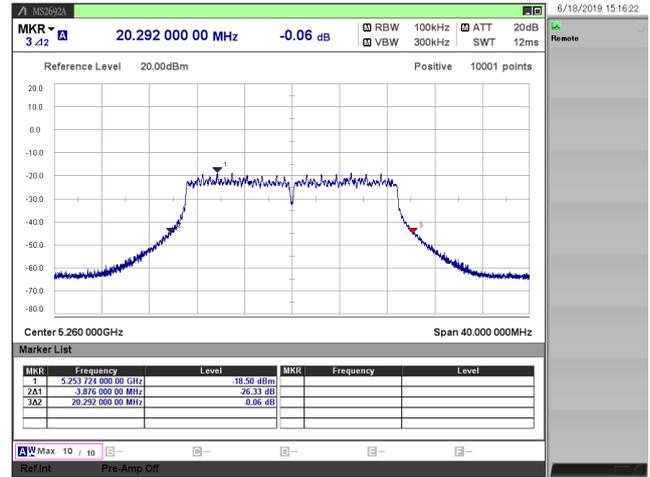
[ 802.11a/ 5700 MHz ]



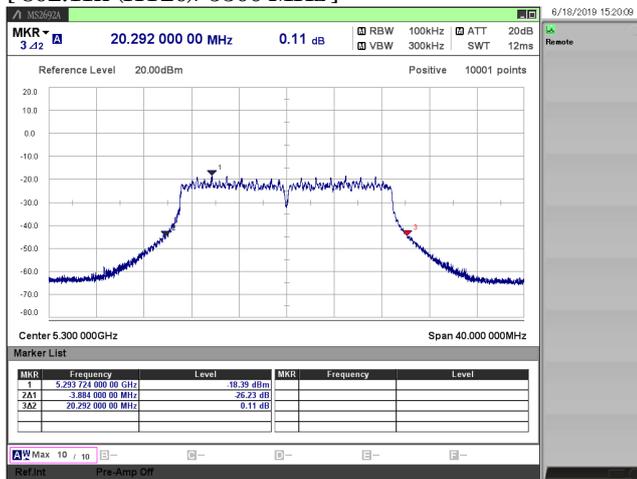
[ 802.11a/ 5720 MHz ]



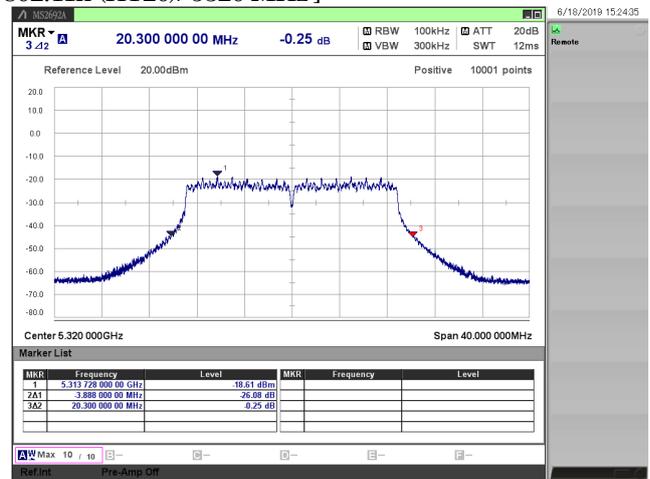
[ 802.11n (HT20)/ 5260 MHz ]



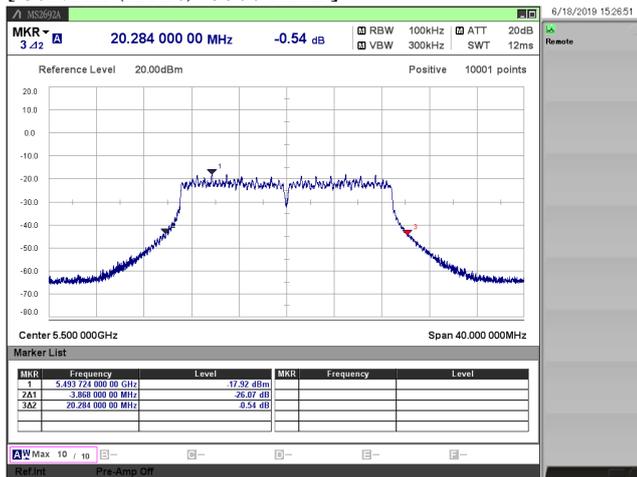
[ 802.11n (HT20)/ 5300 MHz ]



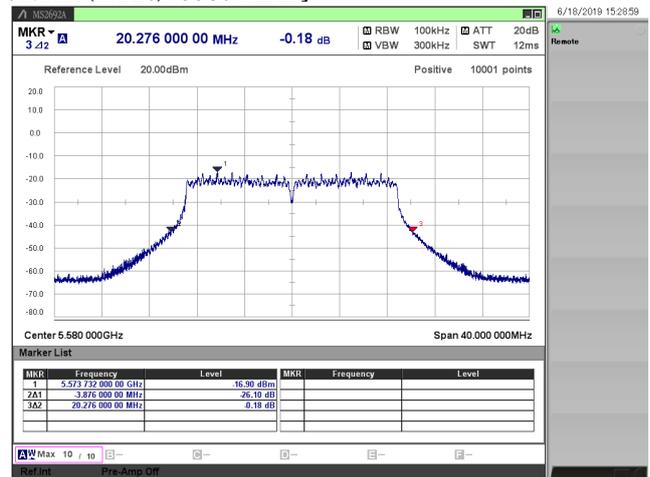
[ 802.11n (HT20)/ 5320 MHz ]



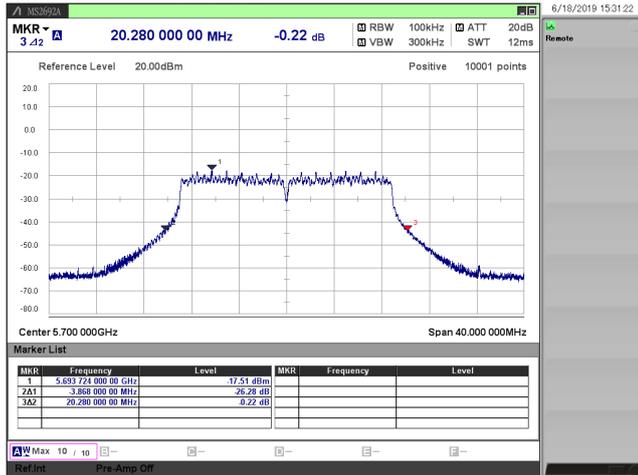
[ 802.11n (HT20)/ 5500 MHz ]



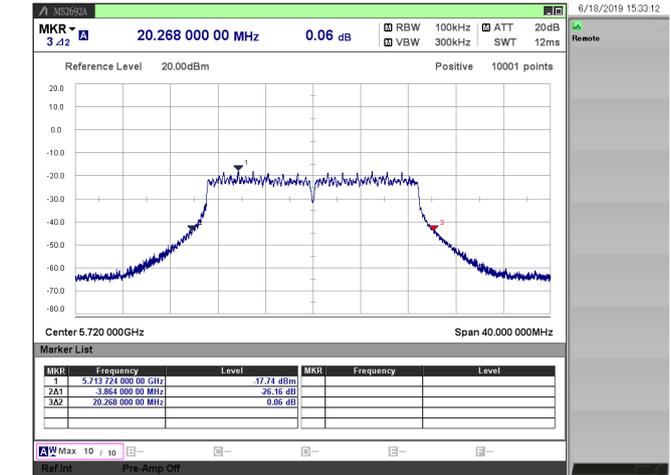
[ 802.11n (HT20)/ 5580 MHz ]



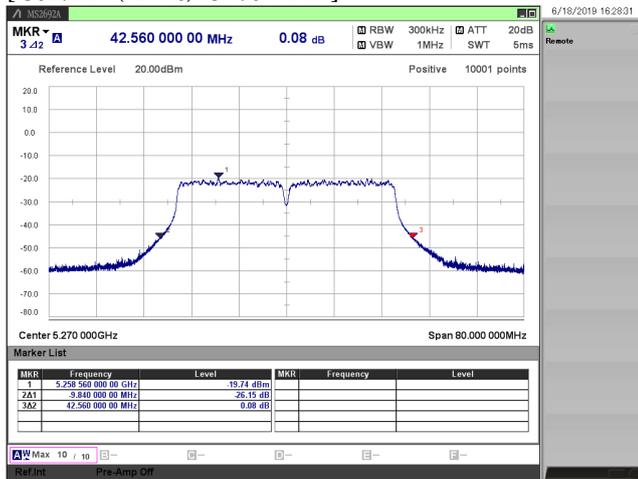
[ 802.11n (HT20)/ 5700 MHz ]



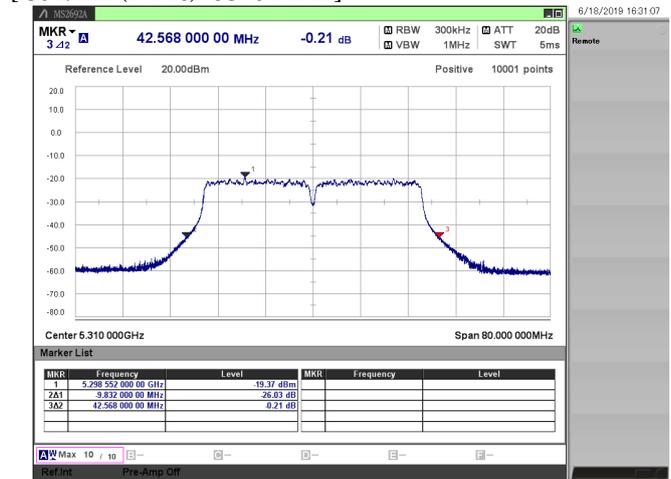
[ 802.11n (HT20)/ 5720 MHz ]



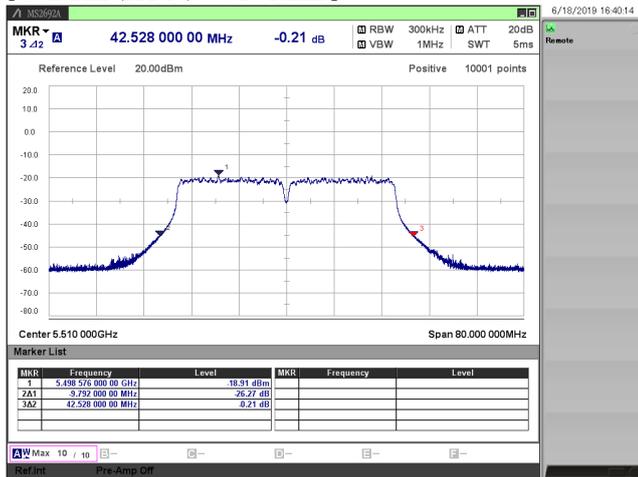
[ 802.11n (HT40)/ 5270 MHz ]



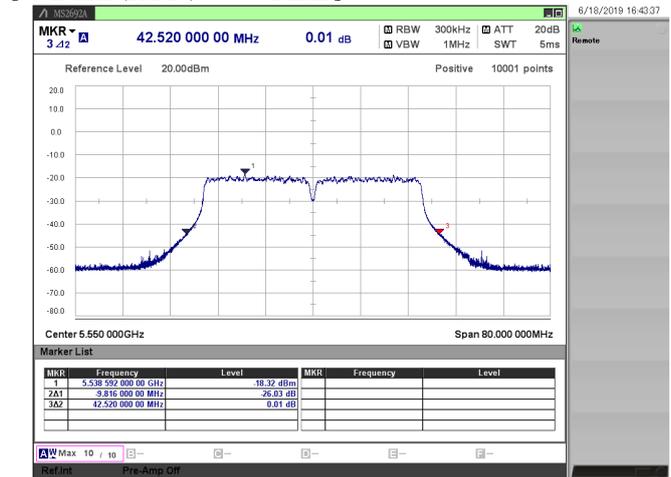
[ 802.11n (HT40)/ 5310 MHz ]



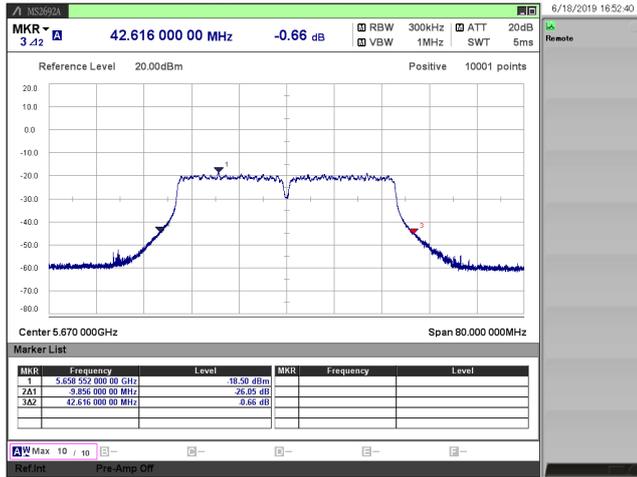
[ 802.11n (HT40)/ 5510 MHz ]



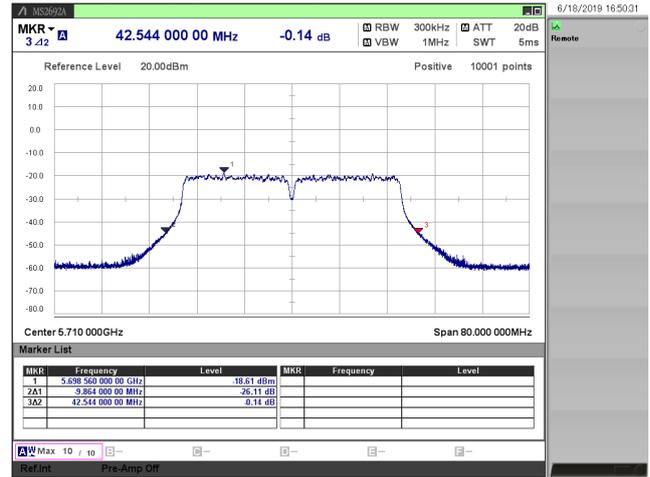
[ 802.11n (HT40)/ 5550 MHz ]



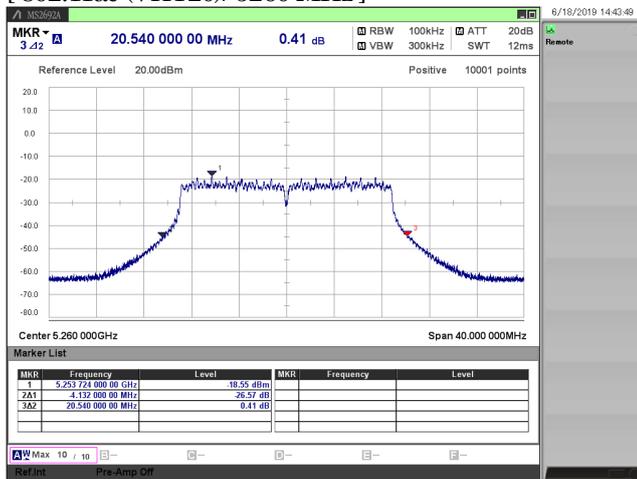
[ 802.11n (HT40)/ 5670 MHz ]



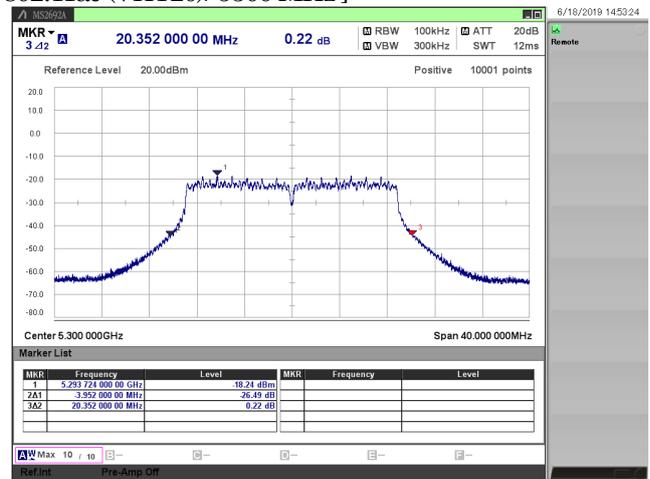
[ 802.11n (HT40)/ 5710 MHz ]



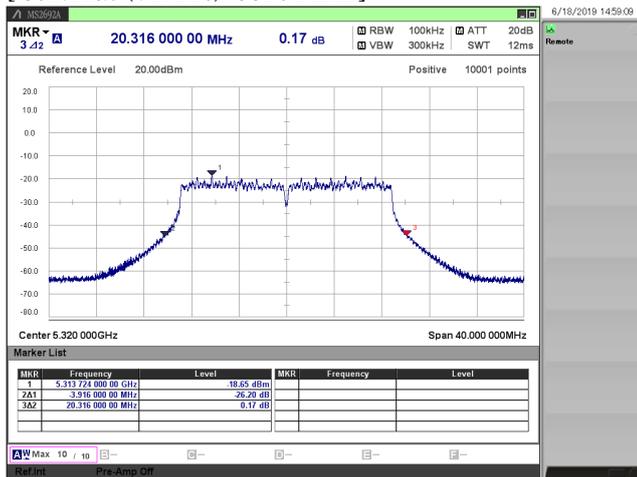
[ 802.11ac (VHT20)/ 5260 MHz ]



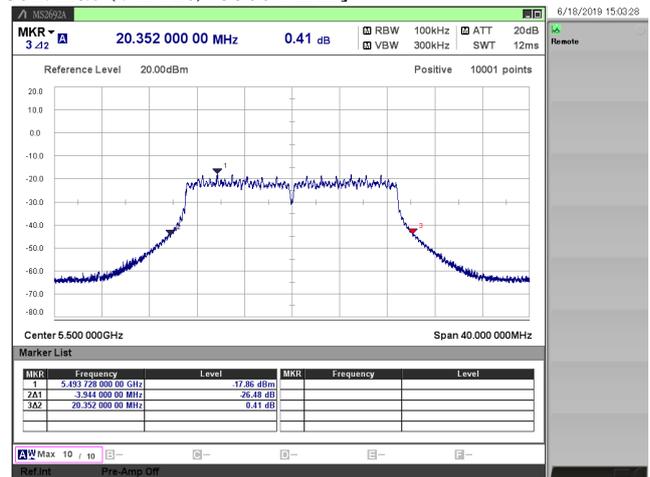
[ 802.11ac (VHT20)/ 5300 MHz ]



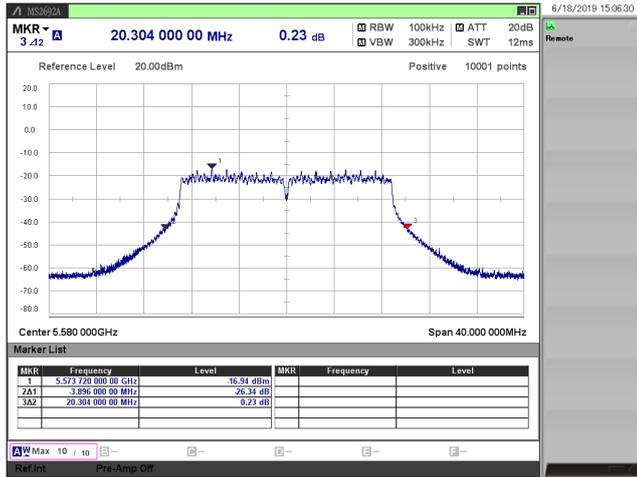
[ 802.11ac (VHT20)/ 5320 MHz ]



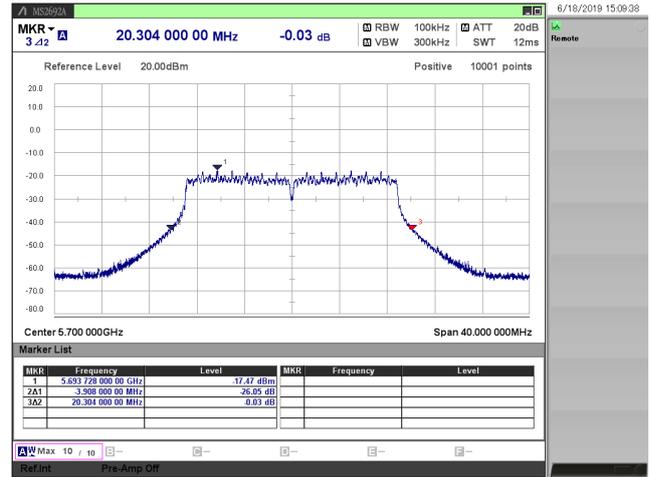
[ 802.11ac (VHT20)/ 5500 MHz ]



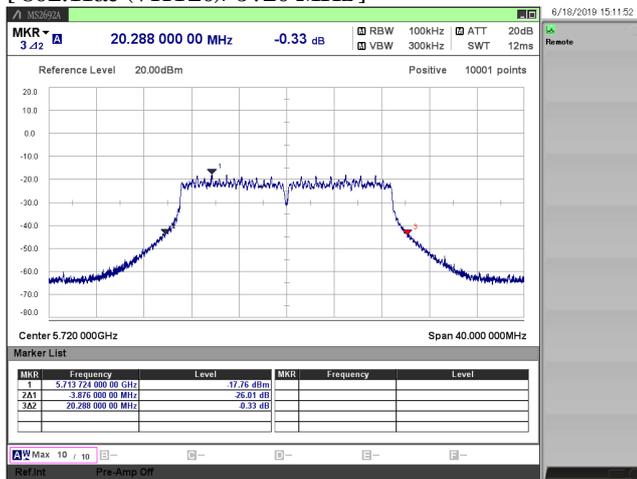
[ 802.11ac (VHT20)/ 5580 MHz ]



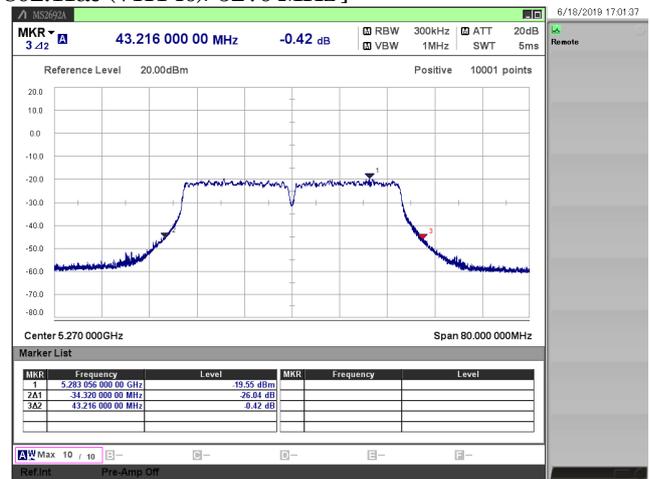
[ 802.11ac (VHT20)/ 5700 MHz ]



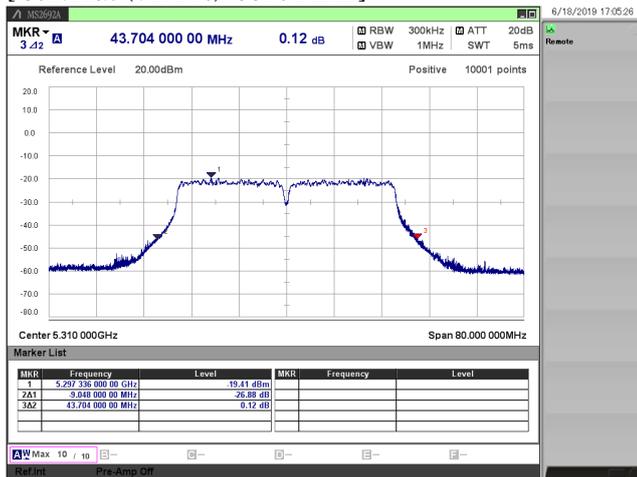
[ 802.11ac (VHT20)/ 5720 MHz ]



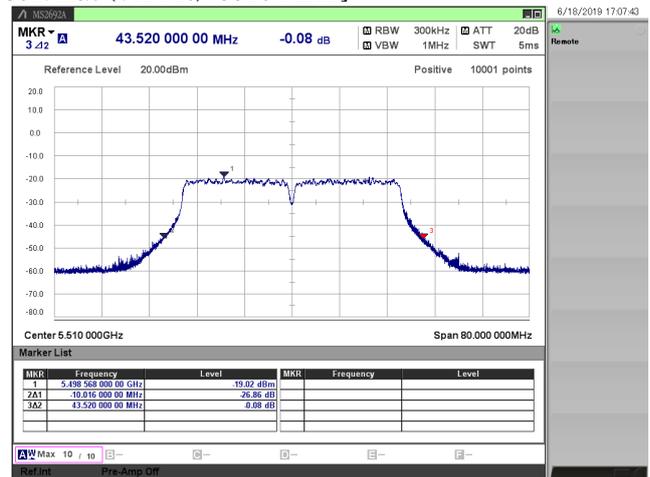
[ 802.11ac (VHT40)/ 5270 MHz ]



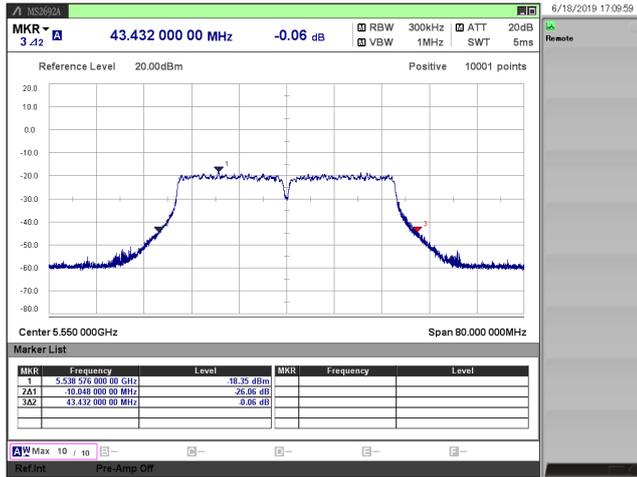
[ 802.11ac (VHT40)/ 5310 MHz ]



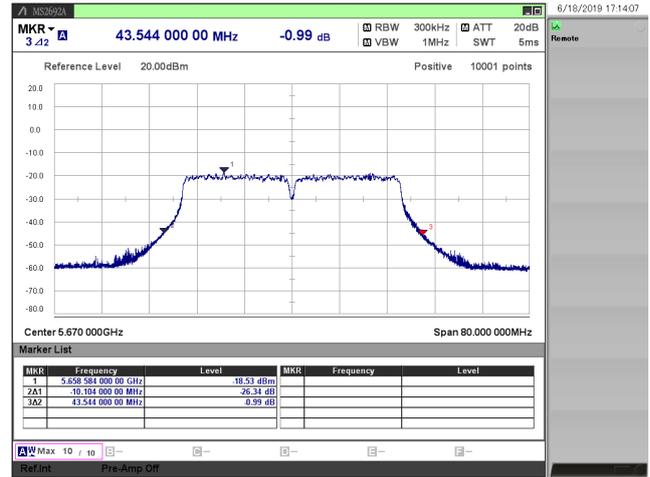
[ 802.11ac (VHT40)/ 5510 MHz ]



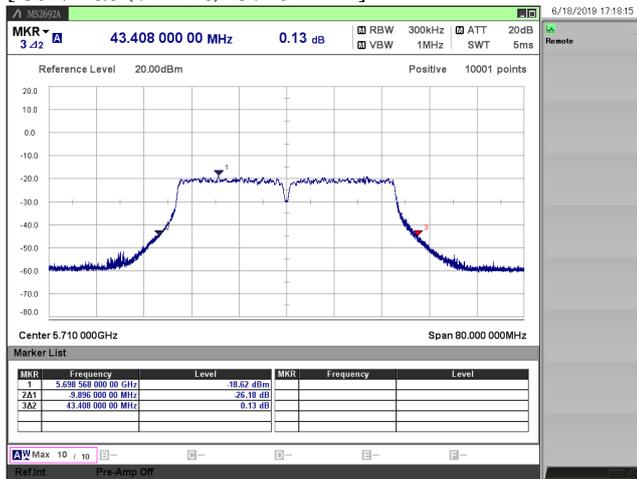
[ 802.11ac (VHT40)/ 5550 MHz ]



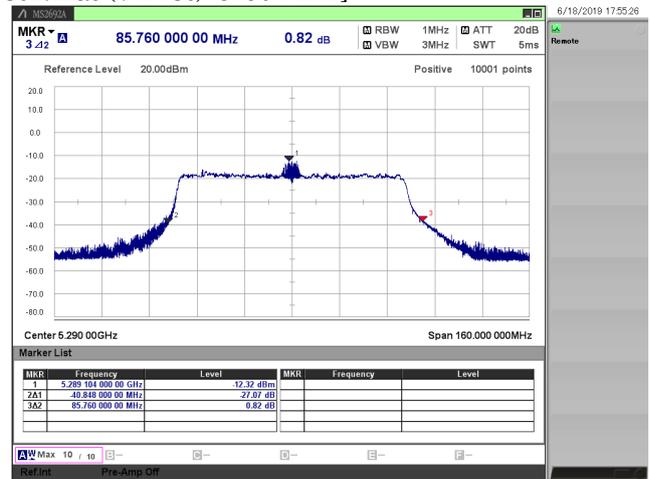
[ 802.11ac (VHT40)/ 5670 MHz ]



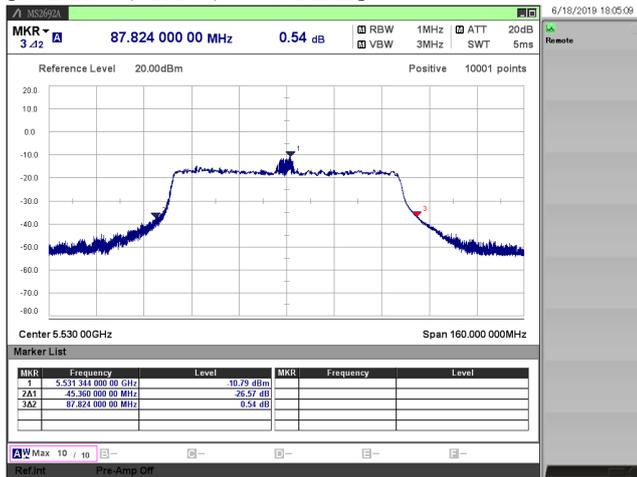
[ 802.11ac (VHT40)/ 5710 MHz ]



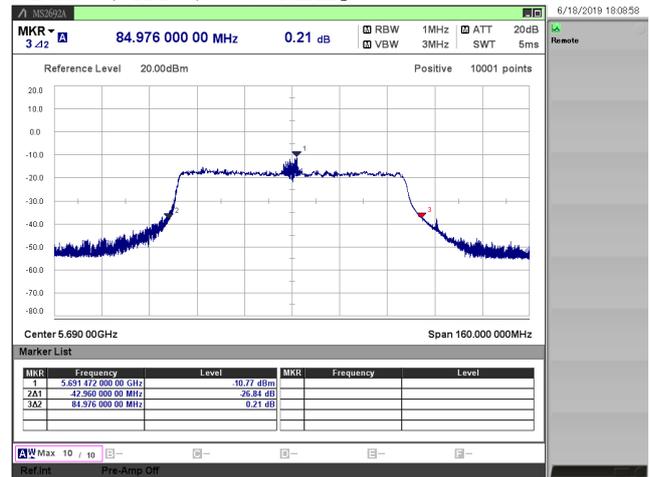
[ 802.11ac (VHT80)/ 5290 MHz ]



[ 802.11ac (VHT80)/ 5530 MHz ]



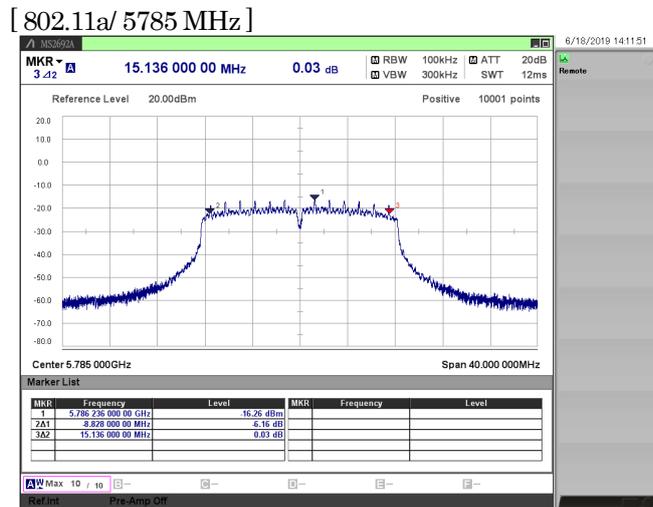
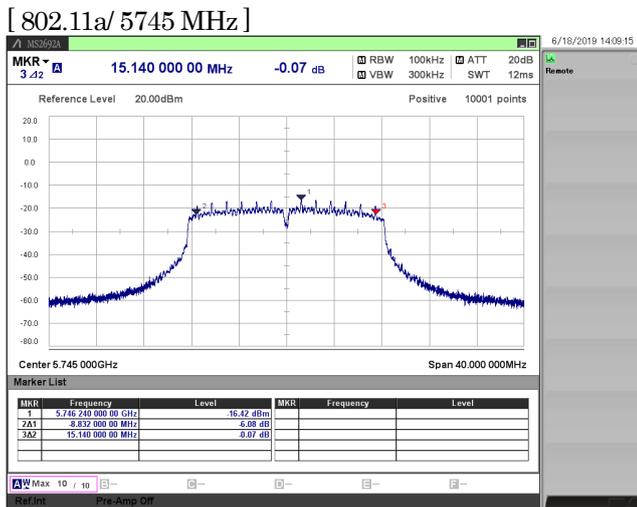
[ 802.11ac (VHT80)/ 5690 MHz ]



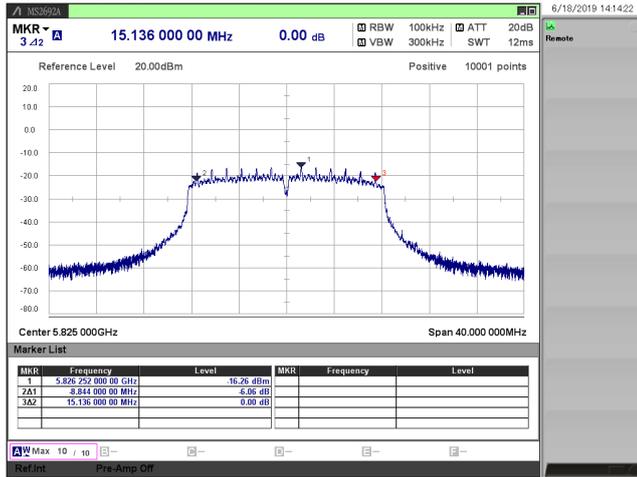
### 3.3. 6dB Emission Bandwidth

- |                        |   |                   |               |               |
|------------------------|---|-------------------|---------------|---------------|
| 1) Ambient temperature | : | 19.6 deg.C        | 22.6 deg.C    | 21.6 deg.C    |
| 2) Relative humidity   | : | 55.9 %            | 50.6 %        | 64.7 %        |
| 3) Date of measurement | : | June 14, 2019     | June 17, 2019 | June 18, 2019 |
| 4) Measured by         | : | H.WAKI            | H.WAKI        | H.WAKI        |
| 5) Operating mode      | : | Transmitting mode |               |               |

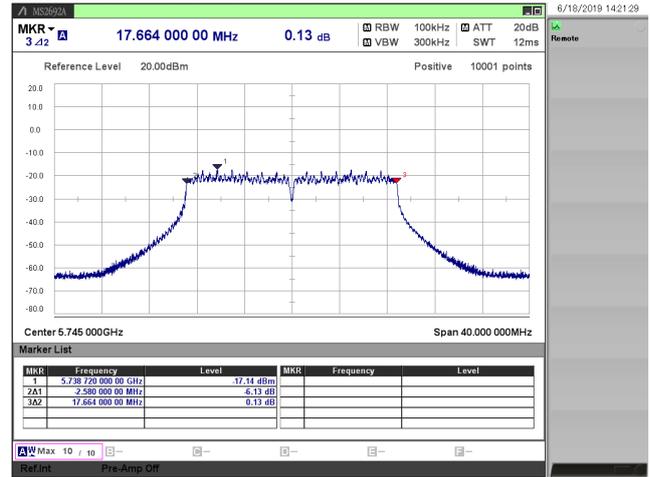
Mode	Rate [Mbps]	Channel [MHz]	Result [MHz]	Limit [MHz]
11a	18	5745	15.140	0.5
		5785	15.136	0.5
		5825	15.136	0.5
11n (HT20)	MCS6	5745	17.664	0.5
		5785	17.664	0.5
		5825	17.664	0.5
11n (HT40)	MCS4	5755	36.448	0.5
		5795	36.432	0.5
11ac (VHT20)	MCS6	5745	17.660	0.5
		5785	17.680	0.5
		5825	17.656	0.5
11ac (VHT40)	MCS4	5755	36.448	0.5
		5795	36.448	0.5
11ac (VHT80)	MCS6	5775	76.064	0.5



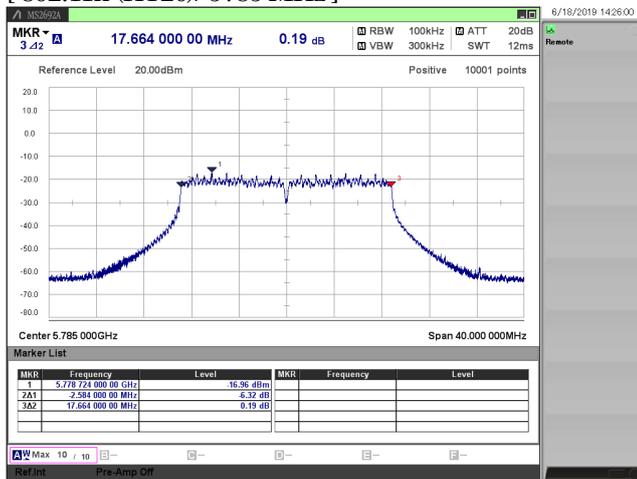
[ 802.11a/ 5825 MHz ]



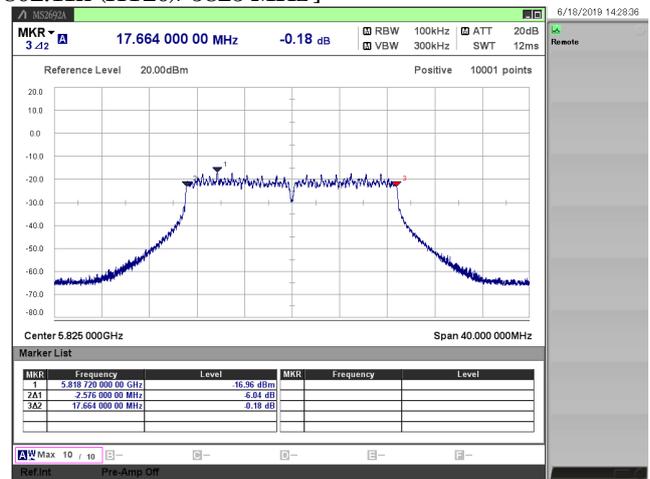
[ 802.11n (HT20)/ 5745 MHz ]



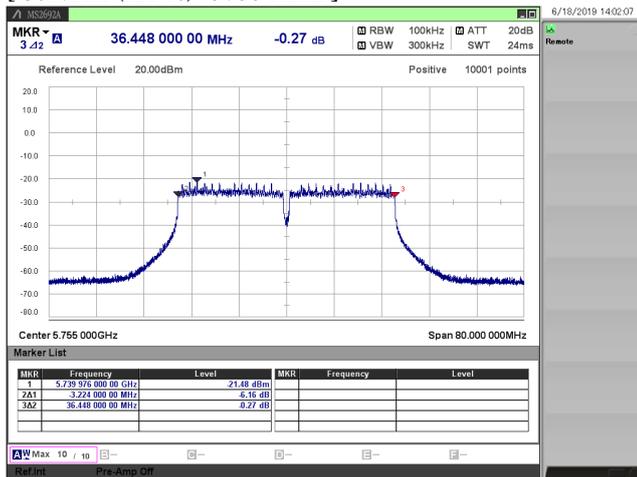
[ 802.11n (HT20)/ 5785 MHz ]



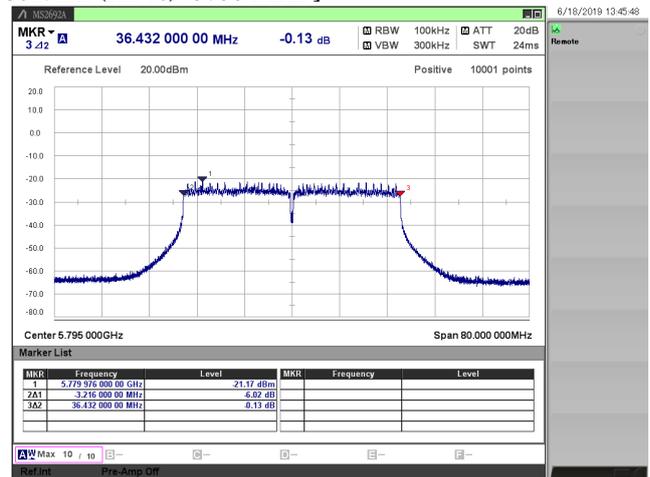
[ 802.11n (HT20)/ 5825 MHz ]



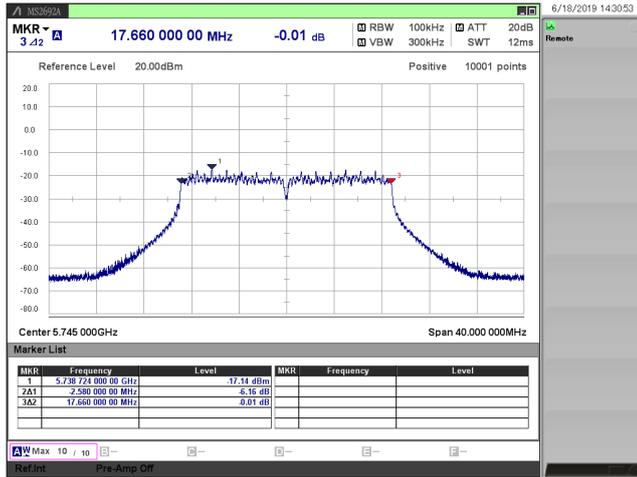
[ 802.11n (HT40)/ 5755 MHz ]



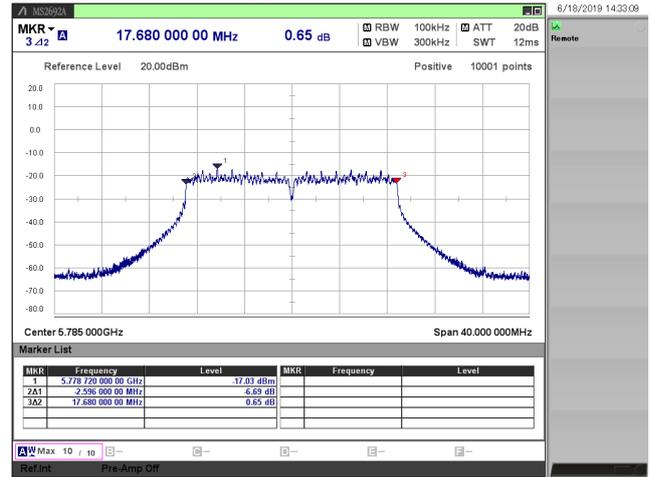
[ 802.11n (HT40)/ 5795 MHz ]



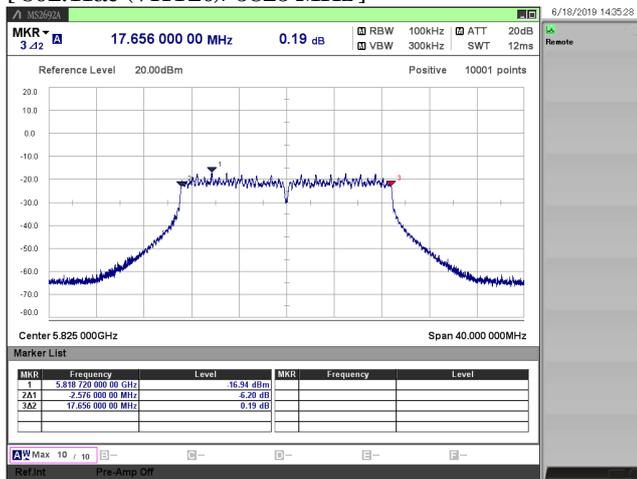
[ 802.11ac (VHT20)/ 5745 MHz ]



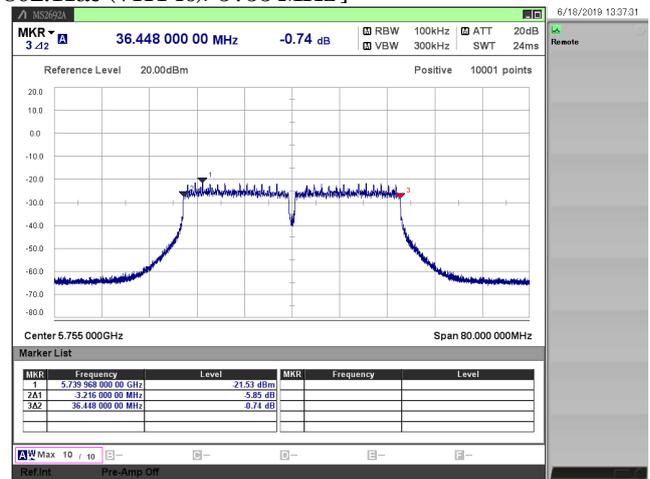
[ 802.11ac (VHT20)/ 5785 MHz ]



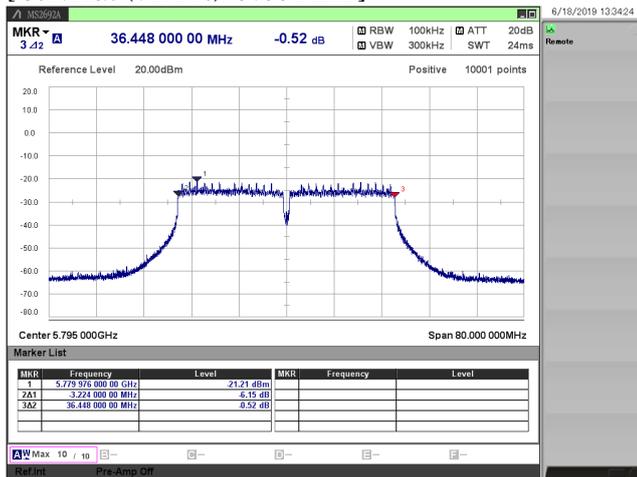
[ 802.11ac (VHT20)/ 5825 MHz ]



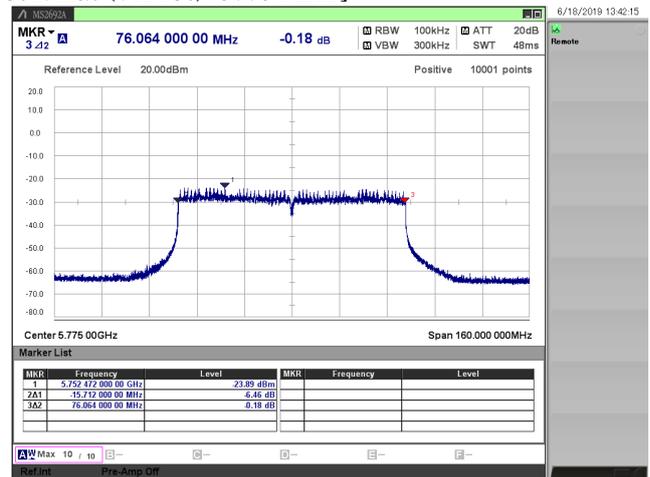
[ 802.11ac (VHT40)/ 5755 MHz ]



[ 802.11ac (VHT40)/ 5795 MHz ]



[ 802.11ac (VHT80)/ 5775 MHz ]



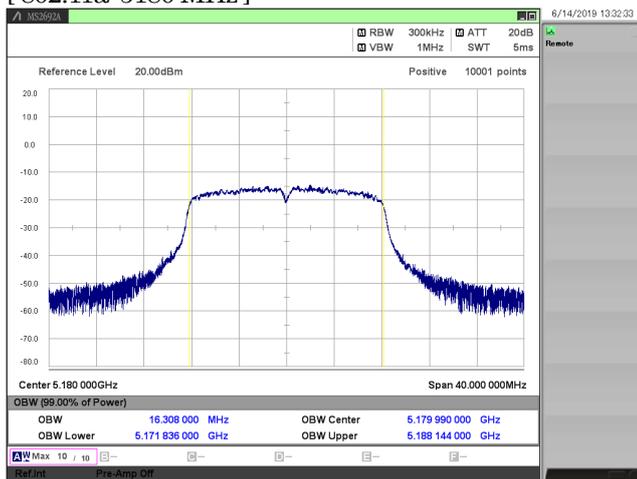
## 3.4. 99% Occupied Bandwidth

1) Ambient temperature	:	19.6 deg.C	22.6 deg.C	21.6 deg.C
2) Relative humidity	:	55.9 %	50.6 %	64.7 %
3) Date of measurement	:	June 14, 2019	June 17, 2019	June 18, 2019
4) Measured by	:	H.WAKI	H.WAKI	H.WAKI
5) Operating mode	:	Transmitting mode		

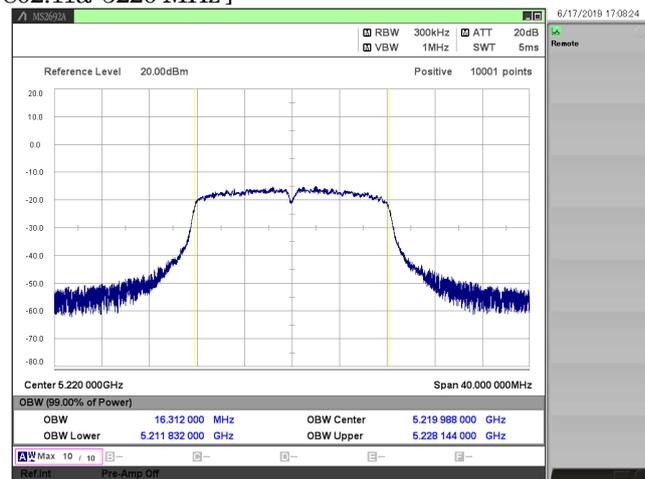
Mode	Rate [Mbps]	Channel [MHz]	Result [MHz]	Limit [MHz]
11a	18	5180	16.308	-
		5220	16.312	-
		5240	16.308	-
		5260	16.316	-
		5300	16.320	-
		5320	16.312	-
		5500	16.312	-
		5580	16.304	-
		5700	16.312	-
		5720	16.320	-
		5745	16.312	-
11n (HT20)	MCS6	5180	17.852	-
		5220	17.856	-
		5240	17.848	-
		5260	17.840	-
		5300	17.836	-
		5320	17.848	-
		5500	17.852	-
		5580	17.860	-
		5700	17.856	-
		5720	17.856	-
		5745	17.848	-
11n (HT40)	MCS4	5190	37.080	-
		5230	37.104	-
		5270	37.080	-
		5310	37.096	-
		5510	37.072	-
		5550	37.088	-
		5670	37.096	-
		5710	37.128	-
		5755	37.072	-
5795	37.064	-		

Mode	Rate [Mbps]	Channel [MHz]	Result [MHz]	Limit [MHz]
11ac (VHT20)	MCS6	5180	17.860	-
		5220	17.852	-
		5240	17.856	-
		5260	17.852	-
		5300	17.852	-
		5320	17.856	-
		5500	17.864	-
		5580	17.852	-
		5700	17.852	-
		5720	17.860	-
		5745	17.852	-
		5785	17.860	-
5825	17.860	-		
11ac (VHT40)	MCS4	5190	37.296	-
		5230	37.208	-
		5270	37.320	-
		5310	37.288	-
		5510	37.304	-
		5550	37.216	-
		5670	37.232	-
		5710	37.264	-
		5755	37.288	-
5795	37.288	-		
11ac (VHT80)	MCS6	5210	76.592	-
		5290	76.560	-
		5530	76.576	-
		5690	76.544	-
		5775	76.544	-

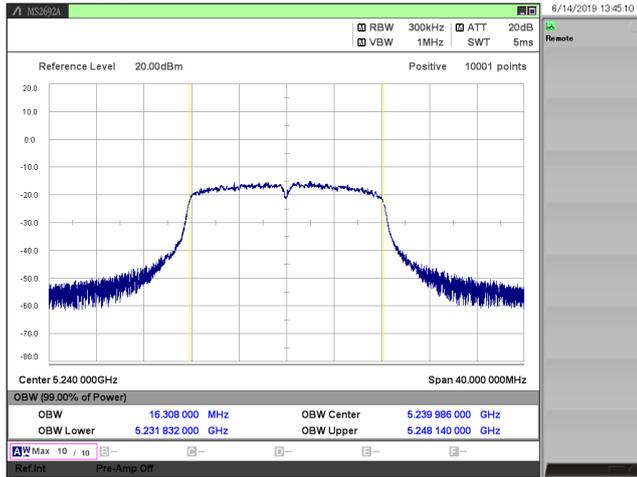
[ 802.11a/ 5180 MHz ]



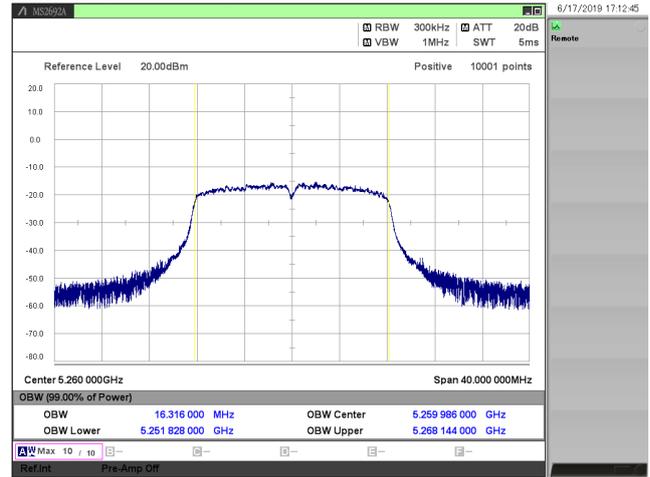
[ 802.11a/ 5220 MHz ]



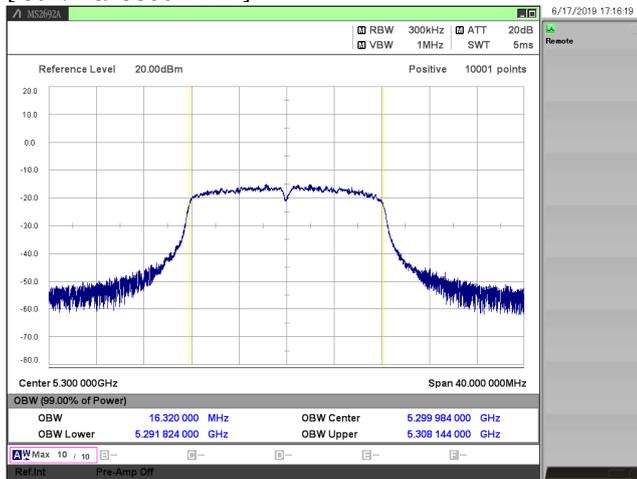
[ 802.11a/ 5240 MHz ]



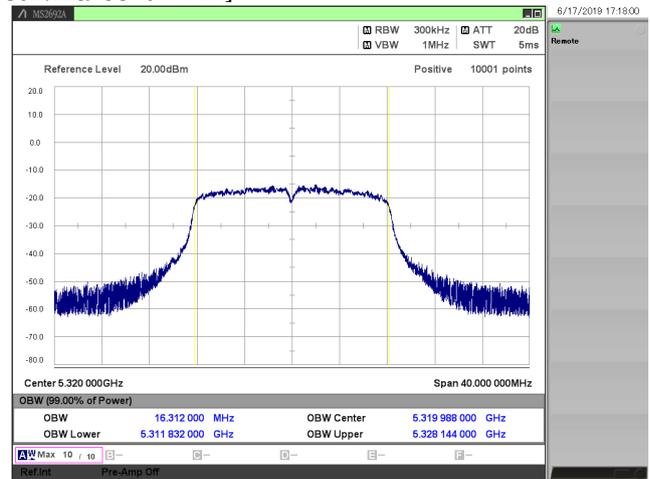
[ 802.11a/ 5260 MHz ]



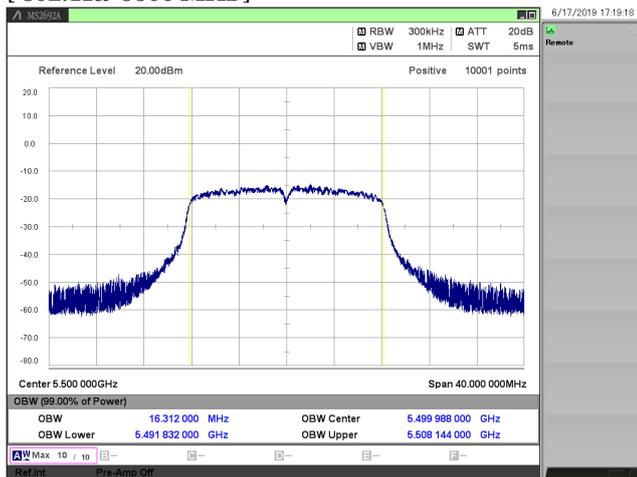
[ 802.11a/ 5300 MHz ]



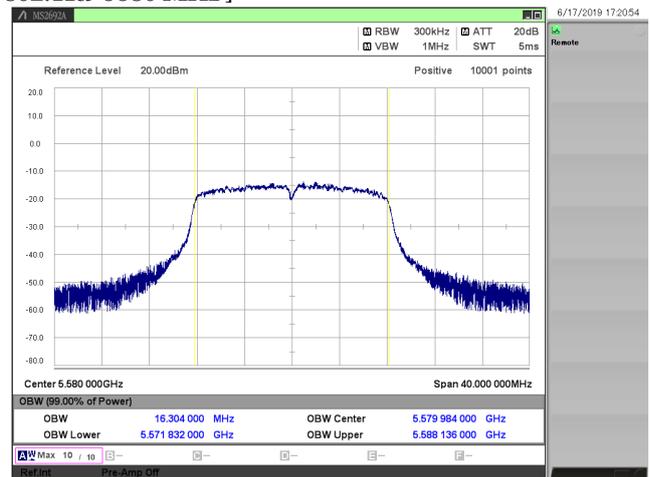
[ 802.11a/ 5320 MHz ]



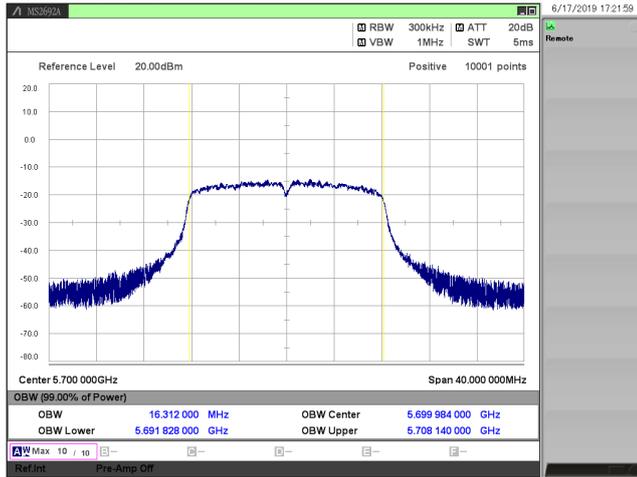
[ 802.11a/ 5500 MHz ]



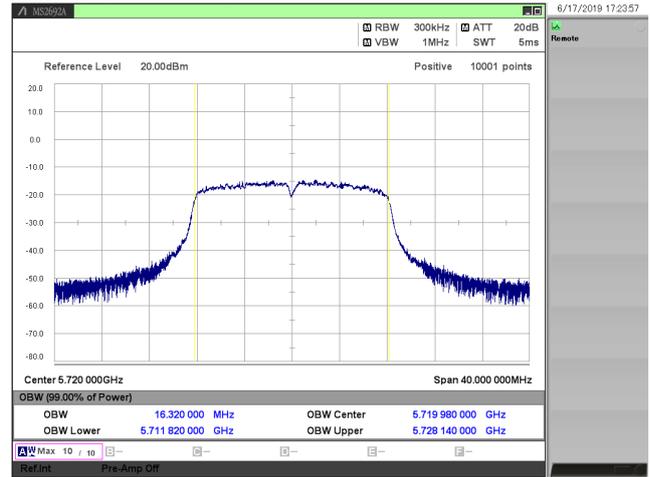
[ 802.11a/ 5580 MHz ]



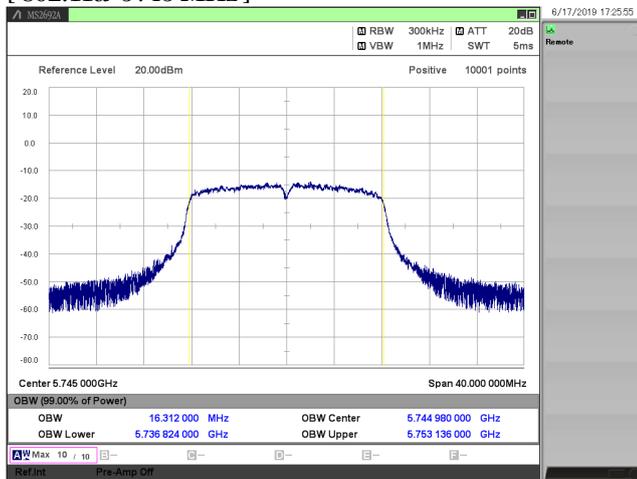
[ 802.11a/ 5700 MHz ]



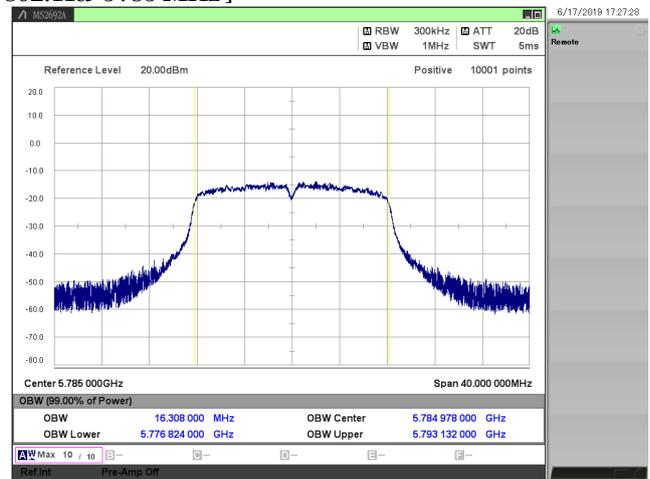
[ 802.11a/ 5720 MHz ]



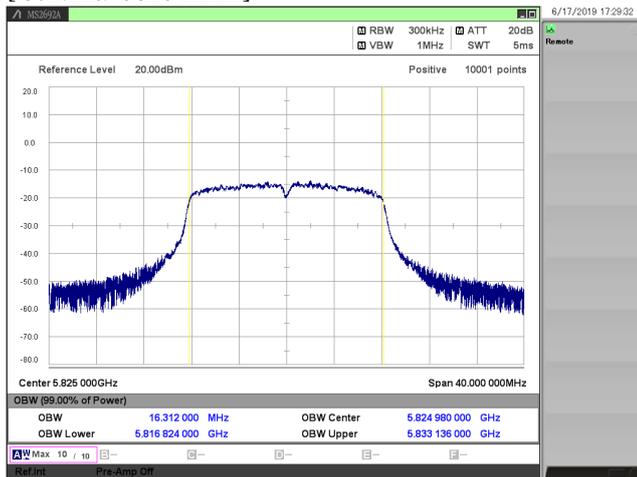
[ 802.11a/ 5745 MHz ]



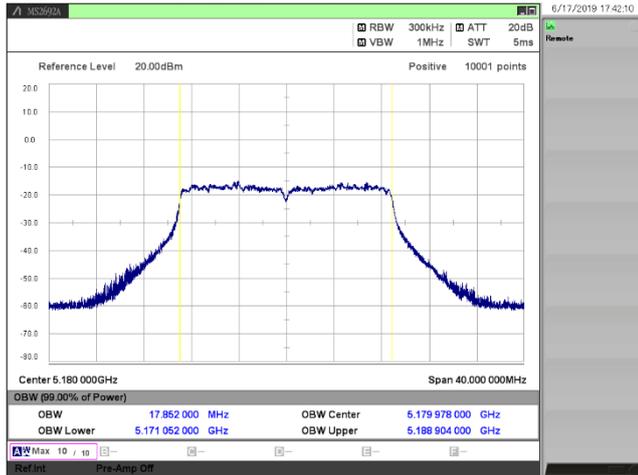
[ 802.11a/ 5785 MHz ]



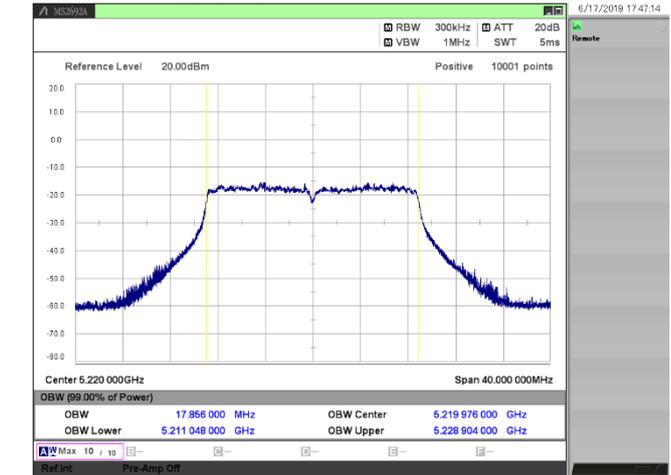
[ 802.11a/ 5825 MHz ]



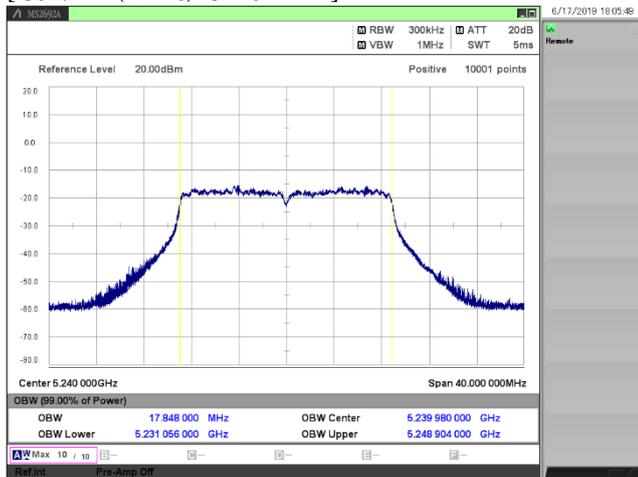
[ 802.11n (HT20)/ 5180 MHz ]



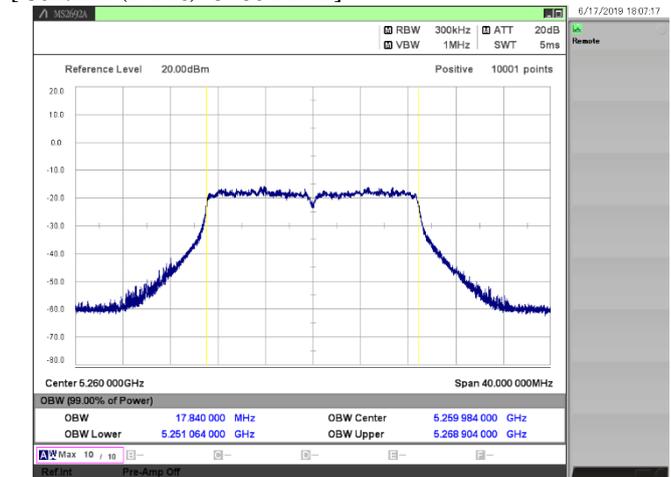
[ 802.11n (HT20)/ 5220 MHz ]



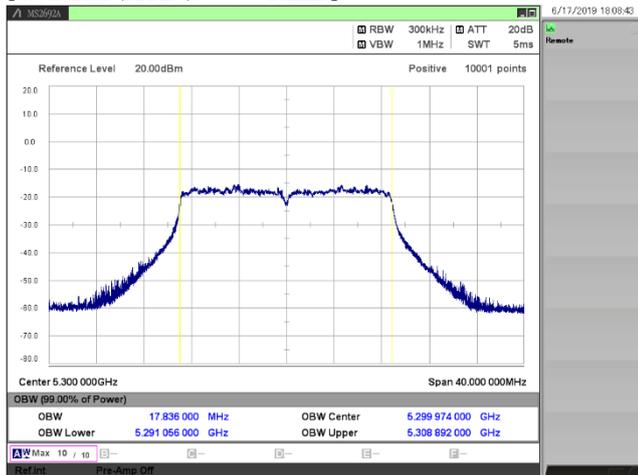
[ 802.11n (HT20)/ 5240 MHz ]



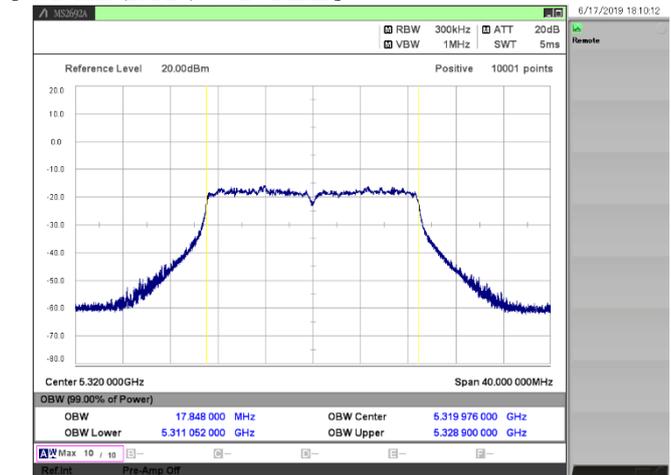
[ 802.11n (HT20)/ 5260 MHz ]



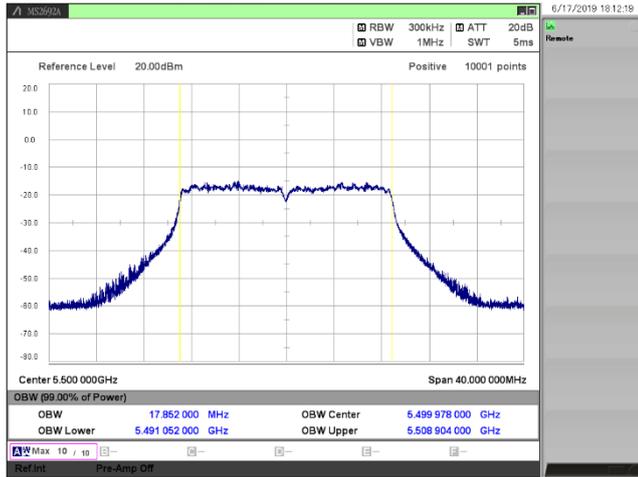
[ 802.11n (HT20)/ 5300 MHz ]



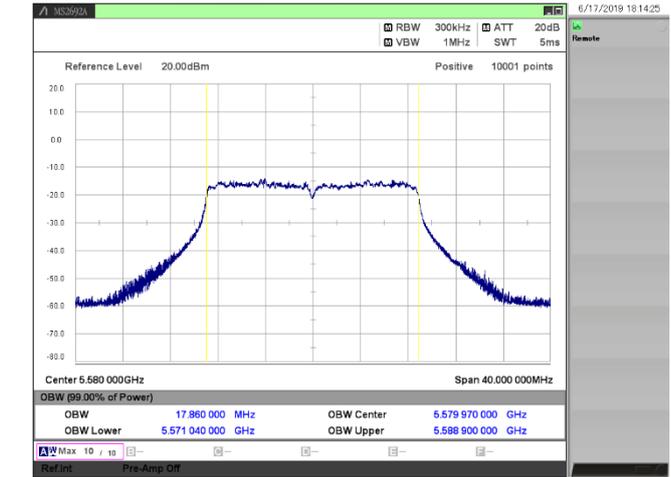
[ 802.11n (HT20)/ 5320 MHz ]



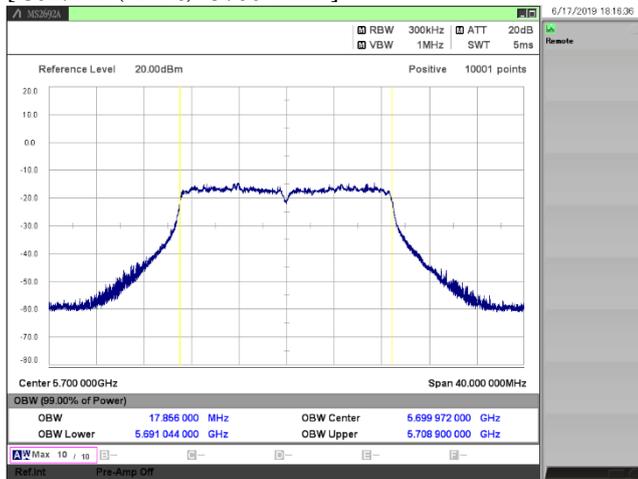
[ 802.11n (HT20)/ 5500 MHz ]



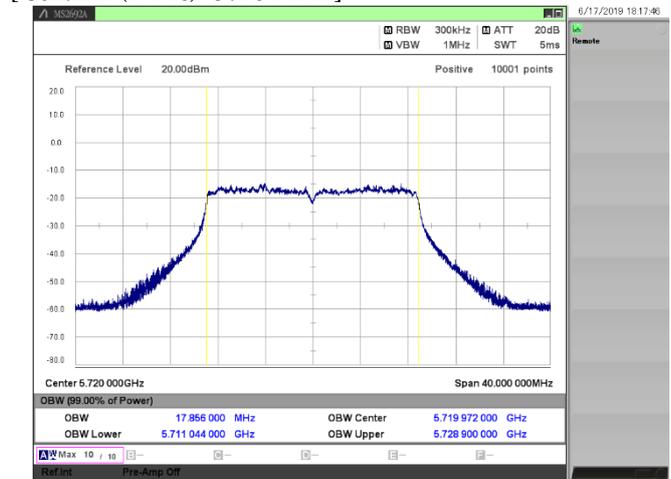
[ 802.11n (HT20)/ 5580 MHz ]



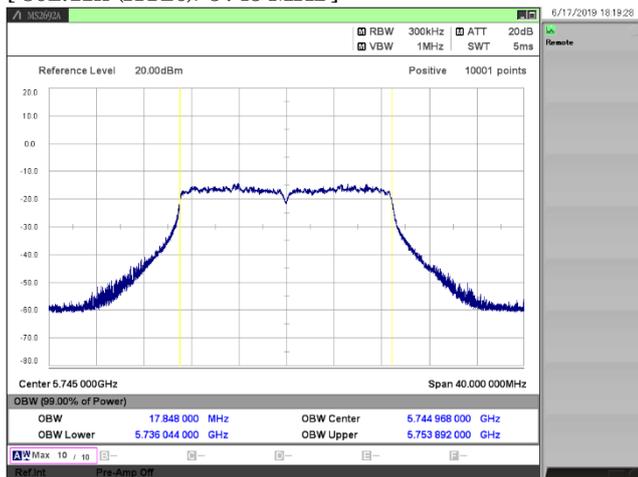
[ 802.11n (HT20)/ 5700 MHz ]



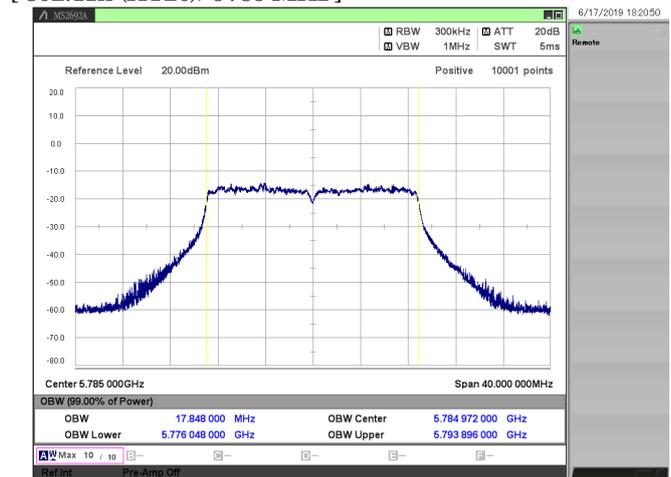
[ 802.11n (HT20)/ 5720 MHz ]



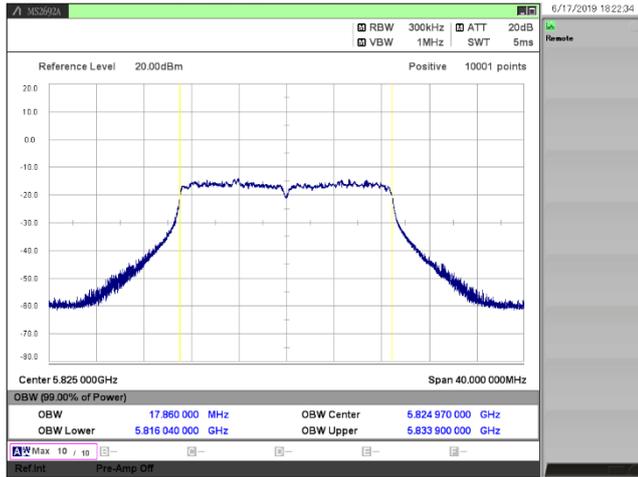
[ 802.11n (HT20)/ 5745 MHz ]



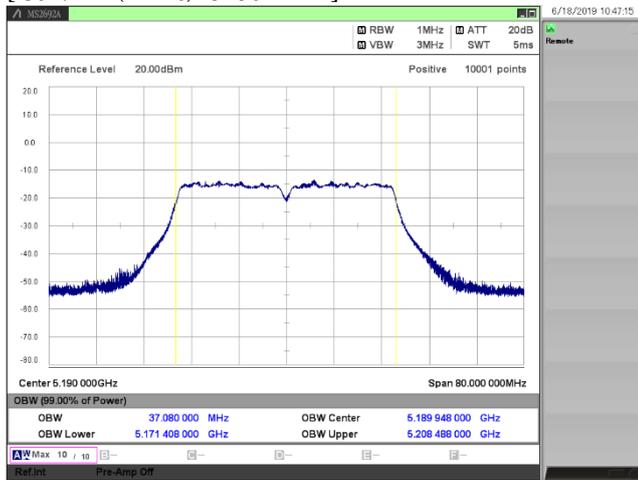
[ 802.11n (HT20)/ 5785 MHz ]



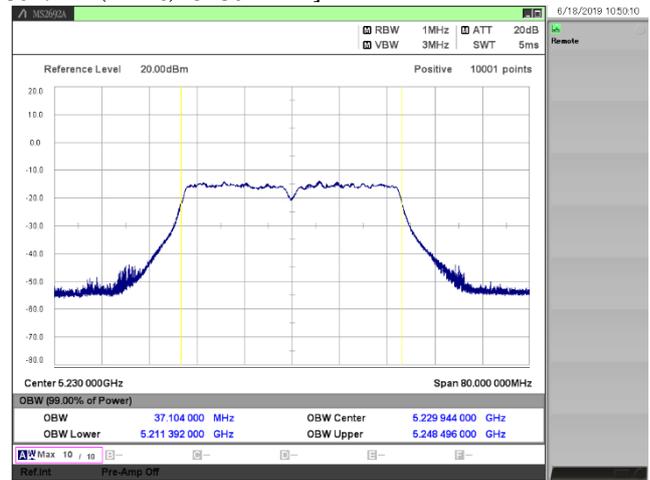
[ 802.11n (HT20)/ 5825 MHz ]



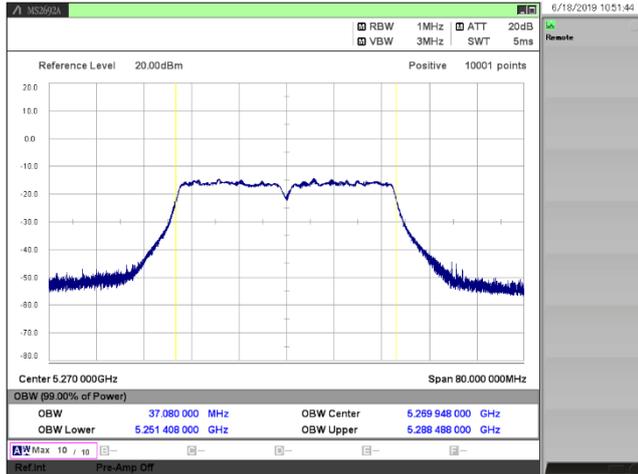
[ 802.11n (HT40)/ 5190 MHz ]



[ 802.11n (HT40)/ 5230 MHz ]



[ 802.11n (HT40)/ 5270 MHz ]



[ 802.11n (HT40)/ 5310 MHz ]

