

<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	CN2205TH(P15E-WiFi) 001	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	238538787	Seite 1 von 34 Page 1 of 34	
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	2022-01-17		
<b>Auftraggeber:</b> <i>Client:</i>	VIA Technologies, Inc 8F, No.535, Zhongzheng Rd., Xindian Dist, New Taipei City 231, Taiwan				
<b>Prüfgegenstand:</b> <i>Test item:</i>	IVT01				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	IVT01				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	FCC Part 15E Test report (WiFi 5GHz)				
<b>Prüfgrundlage:</b> <i>Test specification:</i>	FCC 47CFR Part 15: Subpart E Section 15.407				
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2022-01-18				
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A003202360-003				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2022-04-13 - 2022-05-12				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	EMC/RF Taipei Testing Site				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	Taipei Testing Laboratories				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass				
<b>zusammengestellt von:</b> <i>compiled by:</i>	<b>genehmigt von:</b> <i>authorized by:</i>				
<b>Datum:</b> <i>Date:</i> 2022-05-18	 Ethan Shao		 Brenda Chen		
<b>Stellung / Position:</b>	Assistant Project Engineer		Senior Project Manager		
<b>Sonstiges / Other:</b>					
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T = nicht getestet
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

## TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	15.407(a) & 15.203	Antenna Requirement	Pass
5.1.2	15.407(a)	Maximum Conducted Output Power	Pass
5.1.3	15.407(a)	26 dB Bandwidth	Pass
5.1.3	2.1049	99% Occupied Bandwidth	Pass
5.1.4	15.407(e)	6 dB Bandwidth (U-NII-3 Band only)	Pass
5.1.5	15.407(g)	Frequency Stability	Pass
5.1.6	15.407(a)	Power Spectral Density	Pass
5.1.7	15.407(b) & 15.205 & 15.209	Radiated Spurious Emissions and Band Edges	Pass
-	15.407(h) & KDB 905462 D02	Dynamic Frequency Selection	Not Applicable
5.2.1	15.207	Mains Conducted Emission	Pass

**Note:** Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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**APPENDIX A - TEST RESULT OF CONDUCTED**

**APPENDIX B - TEST RESULT OF RADIATED EMISSIONS & MAINS CONDUCTED EMISSION**

**APPENDIX SP - PHOTOGRAPHS OF TEST SETUP**

**APPENDIX EP - PHOTOGRAPHS OF EUT**

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## HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN2205TH(P15E-WiFi) 001	Original Release	2022-05-18

## 1. General Remarks

### 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

**Appendix A - Test Result of Conducted**

**Appendix B - Test Result of Radiated Emissions & Mains Conducted Emission**

**Appendix SP - Photographs of Test Setup**

**Appendix EP - Photographs of EUT**

### Applied Standard and Test Levels

Radio
FCC 47CFR Part 15: Subpart E Section 15.407
FCC 47CFR Part 2: Subpart J Section 2.1049
ANSI C63.10:2013
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

### 1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

## 2. Test Sites

### 2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.  
Taipei City 105  
Taiwan (R.O.C.)

### 2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,  
New Taipei City 244  
Taiwan (R.O.C.)  
FCC Registration No.: 226631  
ISED Registration No.: 25563

## 2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of  $k=2$  to indicate a 95% level of confidence.

### Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	$\pm 1.15$ dB
Radiated Emission (30 MHz ~ 200 MHz)	$\pm 1.30$ dB
Radiated Emission (200 MHz ~ 1 GHz)	$\pm 1.30$ dB
Radiated Emission (1 GHz ~ 18 GHz)	$\pm 1.54$ dB
Radiated Emission (18 GHz ~ 40 GHz)	$\pm 2.52$ dB
Mains Conducted Emission	$\pm 1.65$ dB



### 3. General Product Information

#### 3.1 Product Function and Intended Use

The EUT is an IVT01. It contains a WLAN compatible module enabling the user to communicate data through a Wireless interface.

For details refer to the User Guide, Data Sheet and Circuit Diagram.

#### 3.2 System Details and Ratings

##### Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	IVT01
Type Identification	IVT01
FCC ID	NCI-IVT01

##### Technical Specification of EUT

Item	EUT information
Operating Frequency	Band 1: 5180 MHz ~ 5240 MHz Band 4: 5745 MHz ~ 5825 MHz
Channel Number	Band 1: 4 for 802.11a, 802.11n HT20, 802.11ac VHT20 2 for 802.11n HT40, 802.11ac VHT40 1 for 802.11ac VHT80 Band 4: 5 for 802.11a, 802.11n HT20, 802.11ac VHT20 2 for 802.11n HT40, 802.11ac VHT40 1 for 802.11ac VHT80
Data Rate	802.11a: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7 802.11ac: up to MCS9
Operation Voltage	12Vdc
Modulation	802.11a, 802.11n HT20, 802.11n HT40: OFDM-BPSK, QPSK, 16QAM, 64QAM 802.11ac VHT20, 802.11ac VHT40, 802.11ac VHT80: OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM
Maximum Output Power (mW)	5180 ~ 5240 MHz: 98.91 5745 ~ 5825 MHz: 99.59
DFS Mode	Not applicable
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.4

### **3.3 Noise Generating and Noise Suppressing Parts**

Refer to the Circuit Diagram.

### **3.4 Submitted Documents**

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

## 4. Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use.

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output expected by the customer and is going to be fixed on the firmware of the final end product.

**Table for Parameters of Test Software Setting**

802.11a		802.11n HT20		802.11n HT40		802.11ac VHT20		802.11ac VHT40		802.11ac VHT80	
Channel	Power Setting	Channel	Power Setting	Channel	Power Setting	Channel	Power Setting	Channel	Power Setting	Channel	Power Setting
36	7	36	6	38	1	36	6	38	1	42	0.5
40	9.5	40	10	46	7	40	10	46	7	155	6.5
48	9.5	48	7	151	14	48	7	151	14		
149	14.5	149	15	159	14	149	15	159	14		
157	14	157	14.5			157	14.5				
165	14	165	14			165	14				

### 4.2 Carrier Frequency and Channel

Band	Channel	Frequency (MHz)	802.11a 802.11n HT20 802.11ac VHT20	802.11n HT40 802.11ac VHT40	802.11ac VHT80
U-NII-1 (Band 1)	36	5180	V		
	38	5190		V	
	40	5200	V		
	42	5210			V
	44	5220	V		
	46	5230		V	
	48	5240	V		
U-NII-3 (Band 4)	149	5745	V		
	151	5755		V	
	153	5765	V		
	155	5775			V
	157	5785	V		
	159	5795		V	
	161	5805	V		
165	5825	V			

### 4.3 Test Operation and Test Software

Setup for testing: Test samples are provided with a USB interface which makes it possible to control them through a test software installed on a notebook computer.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed as below.

Test Software	Tera Team 4.9.2
---------------	-----------------

The samples were used as follows:  
A003202360-003

Full test was applied on all test modes, but only worst case was shown.

The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers.

Modulation Mode	Tx Function
802.11a	2TX (MIMO)
802.11n HT20	2TX (MIMO)
802.11n HT40	2TX (MIMO)
802.11ac VHT20	2TX (MIMO)
802.11ac VHT40	2TX (MIMO)
802.11ac VHT80	2TX (MIMO)

\* The modulation and bandwidth are similar for 802.11n mode HT20/HT40 and 802.11ac mode VHT20/VHT40, therefore investigated worse case as representative mode in test report.

EUT Configure Mode	Applicable To			Mains Conducted Emission	Description
	Antenna Port Conducted Measurement	Radiated Spurious Emissions above 1 GHz	Radiated Spurious Emissions below 1 GHz		
-	√	√	√	√	-

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on Y-plane.
2. "-" means no effect.

**Antenna Port Conducted Measurement**

- Pre-Scan full test was applied on all test modes, but only worst case was shown.  
 Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
	802.11a	5180-5240	36 to 48	36, 40, 48	6.0
		5745-5825	149 to 165	149, 157, 165	
	802.11n HT20	5180-5240	36 to 48	36, 40, 48	MCS0
		5745-5825	149 to 165	149, 157, 165	
	802.11n HT40	5180-5240	38 to 46	38, 46	MCS0
		5745-5825	151 to 159	151, 159	
	802.11ac VHT20	5180-5240	36 to 48	36, 40, 48	NSS1 MCS0
		5745-5825	149 to 165	149, 157, 165	
	802.11ac VHT40	5180-5240	38 to 46	38, 46	NSS1 MCS0
		5745-5825	151 to 159	151, 159	
	802.11ac VHT80	5180-5240	36 to 48	42	NSS1 MCS0
		5745-5825	149 to 165	155	

**Radiated Spurious Emissions (Above 1 GHz)**

- Pre-Scan full test was applied on all test modes, but only worst case was shown.  
 Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
	802.11a	5180-5240	36 to 48	36, 40, 48	6.0
		5745-5825	149 to 165	149, 157, 165	
	802.11ac VHT20	5180-5240	36 to 48	36, 40, 48	NSS1 MCS0
		5745-5825	149 to 165	149, 157, 165	
	802.11ac VHT40	5180-5240	38 to 46	38, 46	NSS1 MCS0
		5745-5825	151 to 159	151, 159	
	802.11ac VHT80	5180-5240	36 to 48	42	NSS1 MCS0
		5745-5825	149 to 165	155	

**Radiated Spurious Emissions (Below 1 GHz)**

- Pre-Scan full test was applied on all test modes, but only worst case was shown.  
 Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11a	5745-5825	149 to 165	165	6.0

**Mains Conducted Emission Test**

- Pre-Scan full test was applied on all test modes, but only worst case was shown.  
 Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11a	5745-5825	149 to 165	165	6.0

**Test Condition**

Test Item	Ambient Temperature	Relative Humidity	Tested by
Conducted Measurement	22.7-23.3 °C	61-68 %	Andy Chen
Radiated Spurious Emissions above 1 GHz	21.1-21.9 °C	60-64 %	Chuan Chu
Radiated Spurious Emissions below 1 GHz	21.1-21.9 °C	60-64 %	Chuan Chu
Mains Conducted Emission	21.9 °C	59 %	Ray Huang

## 4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

### Accessory of EUT

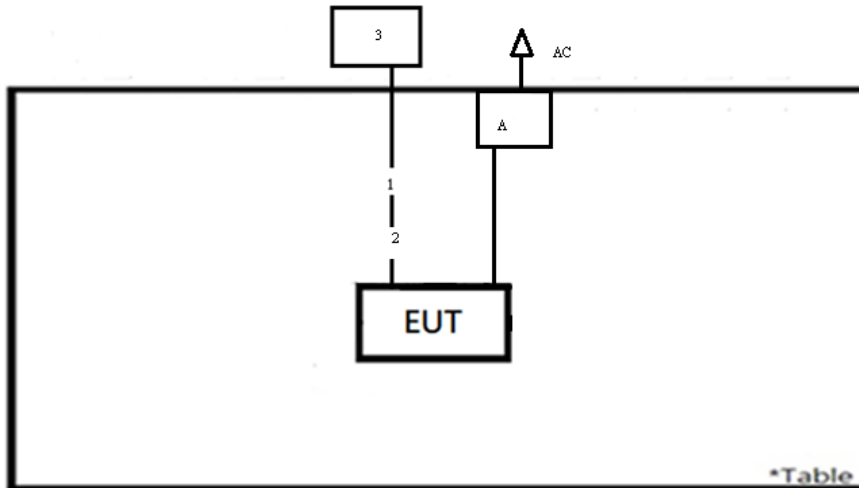
None.

### Support Unit

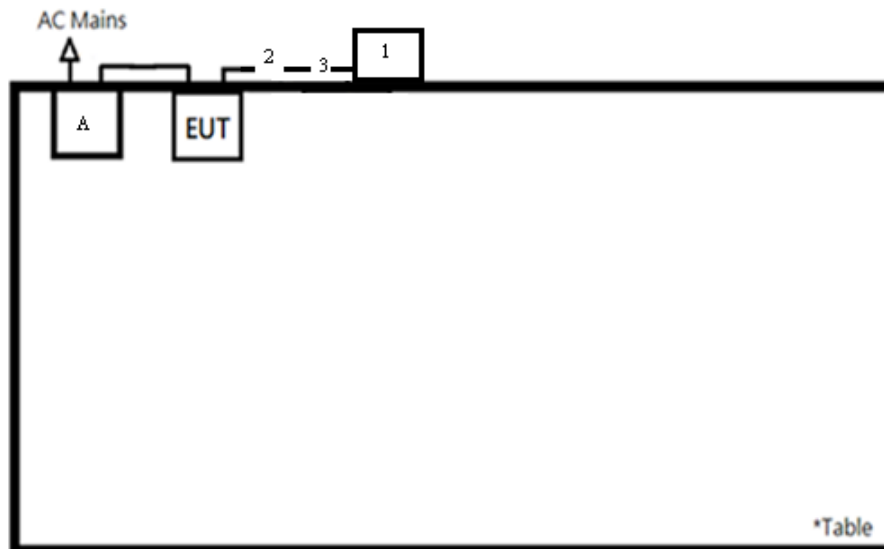
No.	Description	Brand	Model	S/N	Remark
<b>Radiated Test</b>					
A	Adapter	FSP	FSP060-DIBAN2	-	150 cm non-shielded cable with core
1	USB TO USB cable	TUV	TUV-01	-	300 cm non-shielded cable with core
2	USB to Micro	TUV	TUV-02	-	200 cm non-shielded cable with core
3	Notebook	Lenovo	81BL	MP1DCD6Y	-
<b>Mains Conducted Test</b>					
A	Adapter	FSP	FSP060-DIBAN2	-	150 cm non-shielded cable with core
1	Notebook	Lenovo	81BL	MP1DCD6Y	-
2	Micro USB Cable	TUV	TUV-01	-	200 cm non-shielded cable with core
3	USB Cable	TUV	TUV-02	-	300 cm non-shielded cable with core
<b>Conducted Test</b>					
-	Notebook	HP	TPN-C139	CND93662VF	-

### 4.5 Test Setup Diagram

<Radiated Spurious Emissions mode>

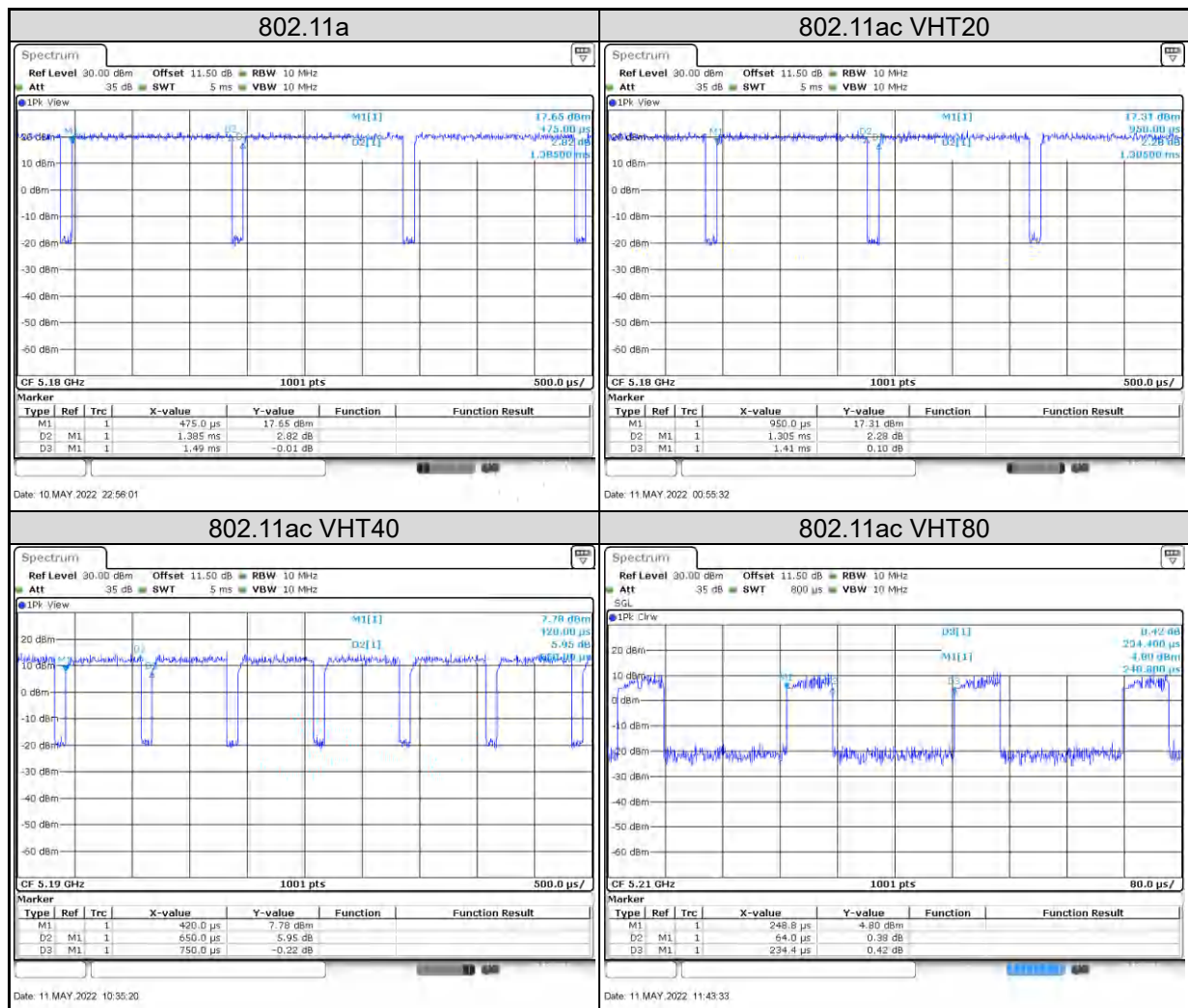


<Mains Conducted Emission mode>



## 4.6 Duty Cycle of Test Signal

Mode	On + Off Time (ms)	On Time (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11a	1.49	1.385	92.95	0.32
802.11ac VHT20	1.41	1.305	92.55	0.34
802.11ac VHT40	0.75	0.65	86.67	0.62
802.11ac VHT80	0.2344	0.064	27.30	5.64





## 5. Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

**Requirement** Use of approved antennas only

According to the manufacturer declaration, the EUT's antenna specifications are described as below. The antenna is used with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

ANT	Antenna Type	Gain (dBi)	
		5180~5240 MHz	5745~5825 MHz
1	PCB	2.34	2.86
2	PCB	2.63	2.60
Max Peak Gain		2.63	2.86
CDD Mode	Power Directional Gain =	2.63	2.86
	PSD Directional Gain = $10\log\left[\frac{10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20}}{N_{ANT}}\right]$ =	5.50	5.74

Refer to EUT photo for details.

## 5.1.2 Maximum Conducted Output Power

### Limit

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A	---	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C	---	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-3	---	1 Watt (30 dBm)

Note: B\* is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

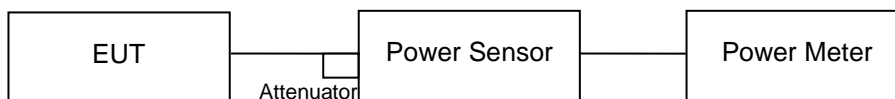
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

Array Gain = 5 log( $N_{ANT}/N_{SS}$ ) dB or 3 dB, whichever is less for 20 MHz channel widths with  $N_{ANT} \geq 5$ .

For power measurements on all other devices: Array Gain = 10 log( $N_{ANT}/N_{SS}$ ) dB.

**Kind of Test Site**                      Shielded room

### Test Setup



### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Power Meter	Anritsu	ML2495A	1901008	2022/3/15	2023/3/14	2022/4/13	2022/5/12
Power Sensor	Anritsu	MA2411B	1725269	2022/3/15	2023/3/14	2022/4/13	2022/5/12

### Test Procedures

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to AVERAGE. Duty factor is not added to measured value.

**Test Result**
**<802.11a>**

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
36	5180	16.73	14.15	18.64	73.10	24.00
40	5200	17.87	15.76	19.95	98.91	24.00
48	5240	17.37	15.65	19.60	91.30	24.00
149	5745	17.51	15.97	19.82	95.90	30.00
157	5785	17.55	16.10	19.90	97.62	30.00
165	5825	17.62	16.21	19.98	99.59	30.00

**<802.11n HT20>**

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
36	5180	15.81	13.67	17.88	61.39	24.00
40	5200	17.72	15.70	19.84	96.31	24.00
48	5240	15.98	14.16	18.17	65.69	24.00
149	5745	17.52	16.08	19.87	97.04	30.00
157	5785	17.51	16.14	19.89	97.48	30.00
165	5825	17.47	16.13	19.86	96.87	30.00

**<802.11n HT40>**

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
38	5190	11.32	9.55	13.53	22.57	24.00
46	5230	16.33	13.51	18.16	65.39	24.00
151	5755	17.58	16.02	19.88	97.27	30.00
159	5795	17.50	16.14	19.88	97.35	30.00

**<802.11ac VHT20>**

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
36	5180	15.89	13.79	17.98	62.75	24.00
40	5200	17.80	15.77	19.91	98.01	24.00
48	5240	16.05	14.22	18.24	66.70	24.00
149	5745	17.57	16.15	19.93	98.36	30.00
157	5785	17.59	16.23	19.97	99.39	30.00
165	5825	17.53	16.22	19.93	98.50	30.00

**<802.11ac VHT40>**

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
38	5190	11.43	9.67	13.65	23.17	24.00
46	5230	16.41	13.58	18.23	66.56	24.00
151	5755	17.64	16.08	19.94	98.63	30.00
159	5795	17.59	16.21	19.96	99.19	30.00

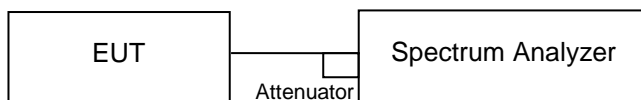
**<802.11ac VHT80>**

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
42	5210	11.19	9.32	13.37	21.70	24.00
155	5775	13.55	11.33	15.59	36.23	30.00

### 5.1.3 26 dB Bandwidth and 99% Occupied Bandwidth

**Kind of Test Site**                      Shielded room

**Test Setup**



**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/5/10	2022/5/11

**Test Procedure**

- a. Set RBW = approximately 1% of the emission bandwidth.
- b. Set the VBW > RBW.
- c. Detector = Peak.
- d. Trace mode = max hold.
- e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- f. For 99% Bandwidth Measurement, the transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to PEAK. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

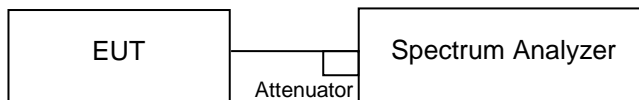
**Test Results**

Please refer to Appendix A

### 5.1.4 6 dB Bandwidth (5725-5850MHz)

**Kind of Test Site**                      Shielded room

**Test Setup**



**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/5/11	2022/5/11

**Test Procedure**

MEASUREMENT PROCEDURE REF

- a. Set resolution bandwidth (RBW) = 100 kHz
- b. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

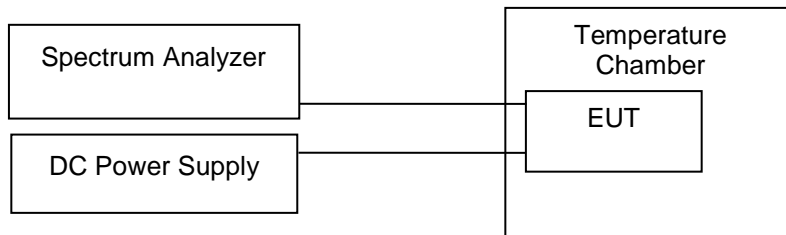
**Test Results**

Please refer to Appendix A

### 5.1.5 Frequency Stability Measurement

**Kind of Test Site**                      Shielded room

**Test Setup**



**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/5/10	2022/5/11

**Test Procedure**

- a. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
- c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

**Test Results**
**<Ant 1>**

Frequency(MHz)	5180			
Voltage (Vdc)	Measurement Frequency (MHz)			Deviation(ppm)
13.2	5179.96614			6.537
12	5179.96614			6.537
10.8	5179.96585			6.593
Min Temp°C	0	2	5	10
60	5179.97424	5179.99103	5179.998335	5180.00116
50	5179.97167	5179.97324	5179.97217	5179.97237
40	5179.97321	5179.97414	5179.97341	5179.97255
30	5179.97011	5179.97209	5179.97037	5179.97278
20	5179.96614	5179.96643	5179.96729	5179.96845
10	5179.98611	5179.97689	5179.97402	5179.97517
0	5179.98172	5179.97055	5179.99127	5179.9677
-10	5179.97569	5179.99132	5179.99161	5179.9919
Max. Deviation (ppm)	6.537	6.481	6.315	6.236

Frequency(MHz)	5785			
Voltage (Vdc)	Measurement Frequency (MHz)			Deviation(ppm)
13.2	5784.97019			5.153
12	5784.97135			4.952
10.8	5784.96845			5.454
Min Temp°C	0	2	5	10
60	5785.00203	5785.01505	5785.0165	5785.01708
50	5784.9826	5784.99617	5784.99535	5784.98392
40	5784.99123	5784.98595	5784.98476	5784.98848
30	5784.98022	5785.00193	5784.99837	5784.98414
20	5784.97135	5784.97598	5784.97742	5784.97829
10	5784.9837	5784.98971	5784.97753	5784.97928
0	5784.99024	5784.99008	5784.99359	5784.97897
-10	5785.00174	5784.99942	5784.99913	5784.99913
Max. Deviation (ppm)	5.385	4.515	4.244	4.081



**<Ant 2>**

Frequency(MHz)	5180			
Voltage (Vdc)	Measurement Frequency (MHz)			Deviation(ppm)
13.2	5179.96874			6.035
12	5179.96874			6.035
10.8	5179.96845			6.091
Min Temp°C	0	2	5	10
60	5180.00347	5180.00347	5180.00434	5180.00463
50	5179.97428	5179.98135	5179.97733	5179.98722
40	5179.99124	5179.98774	5179.99901	5179.99479
30	5179.98958	5179.97763	5179.99262	5180.00337
20	5179.96874	5179.96903	5179.96961	5179.97048
10	5179.98418	5179.97673	5179.98822	5179.98483
0	5179.98947	5179.99109	5179.98566	5179.9776
-10	5179.9919	5179.99161	5179.99132	5179.99161
Max. Deviation (ppm)	6.035	5.979	5.867	5.699

Frequency(MHz)	5785			
Voltage (Vdc)	Measurement Frequency (MHz)			Deviation(ppm)
13.2	5784.97829			3.753
12	5784.97829			3.753
10.8	5784.97829			3.753
Min Temp°C	0	2	5	10
60	5785.01708	5785.01708	5785.01708	5785.01737
50	5785.00671	5784.98219	5784.99037	5784.99606
40	5784.99245	5784.98041	5785.01655	5784.98815
30	5784.98081	5785.00389	5784.99311	5785.00262
20	5784.97829	5784.97858	5784.97887	5784.97945
10	5784.98579	5784.99383	5784.99548	5784.99892
0	5784.9809	5784.99716	5784.99551	5784.99073
-10	5784.99913	5784.99913	5784.99913	5784.99913
Max. Deviation (ppm)	4.081	4.026	3.972	3.863

## 5.1.6 Power Spectral Density

### Limit

For the 5.15~5.25GHz Bands:

For mobile and portable client devices in the 5.15~5.25GHz band, the Maximum Power spectral density shall not exceed 11dBm/MHz. For an indoor access point operating in the band 5.15~5.25GHz, the maximum power spectral density shall not exceed 17dBm/MHz.

For the 5.25~5.35GHz and 5.47~5.725GHz Bands:

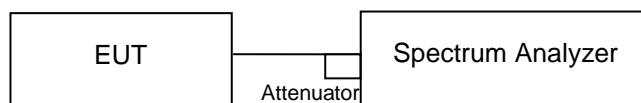
The maximum power spectral density shall not exceed 11dBm/MHz.

For the 5.745~5.85GHz Bands:

The maximum power spectral density shall not exceed 30dBm/500kHz.

**Kind of Test Site**                      Shielded room

### Test Setup



### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/5/10	2022/5/11

### Test Procedure

**For U-NII-1, U-NII-2A, U-NII-2C band:**

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to "free run".
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add 10 log (1/duty cycle)

**※For U-NII-3:**

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 500 kHz, Set VBW  $\geq$  3 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
4. Sweep time = auto, trigger set to "free run".
5. Trace average at least 100 traces in power averaging mode.
6. Record the max value and add 10 log (1/duty cycle)

For MIMO mode, calculation method follows FCC KDB 662911 Method 2) a) of power density measurement using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

**Test Results**

Please refer to Appendix A

## 5.1.7 Radiated Spurious Emissions

### Limit

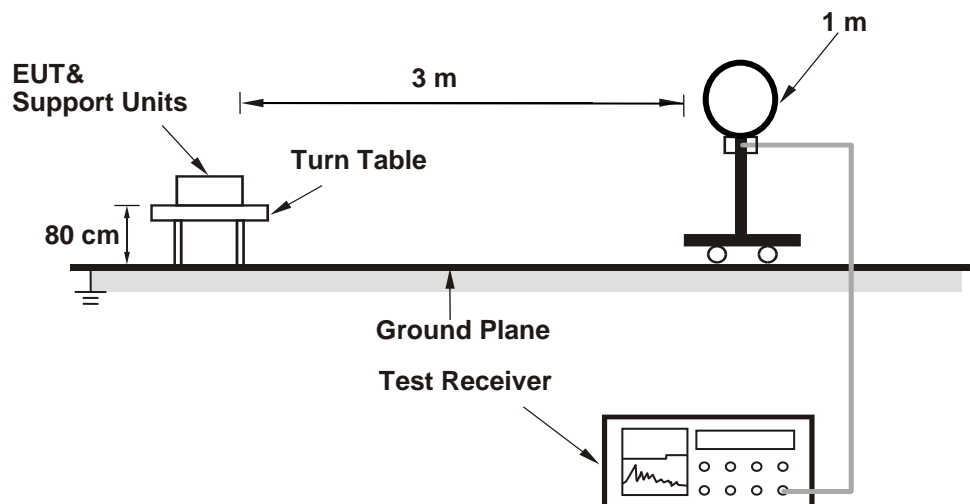
Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).

Emissions radiated outside the restricted and authorized frequency bands must either comply with the radiated emission limits specified for the restricted bands or in §15.407(b).

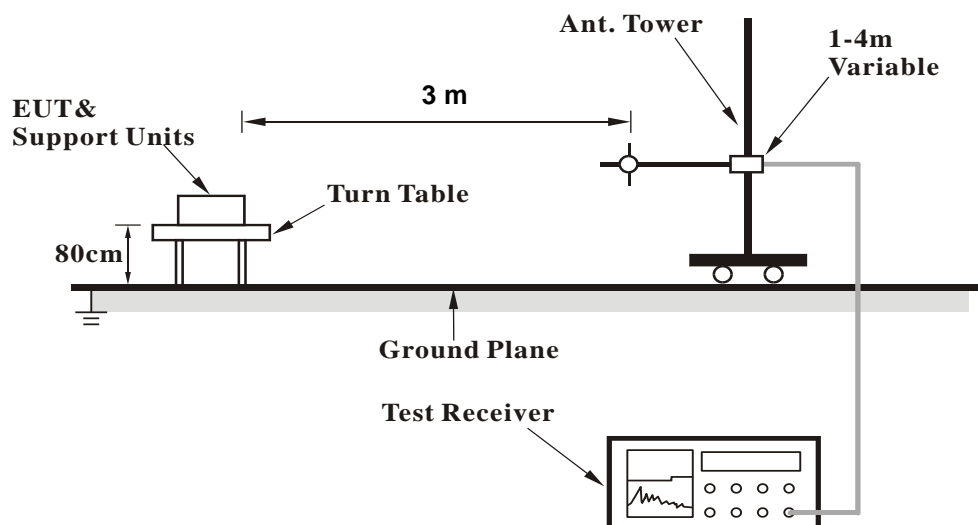
**Kind of Test Site**                      3m Semi-Anechoic Chamber

### Test Setup

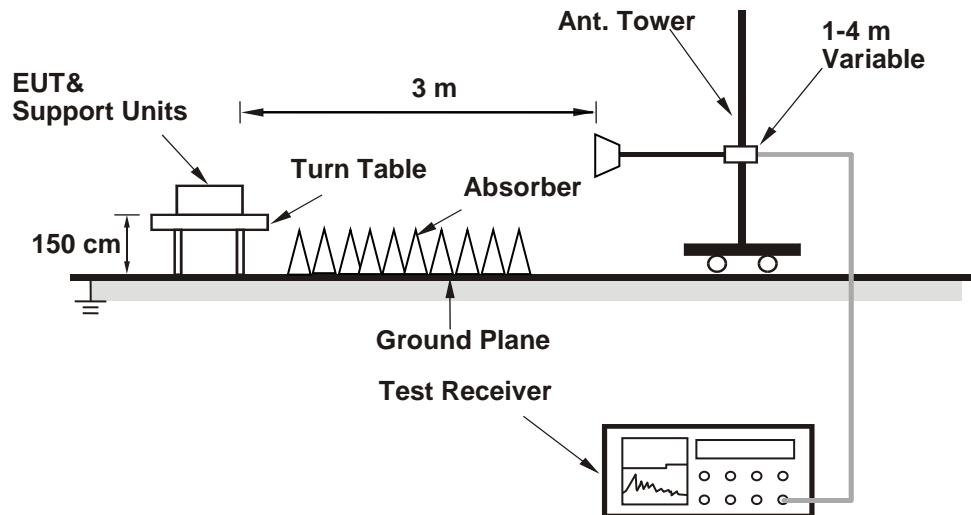
**<Radiated Emissions below 30 MHz>**



**<Radiated Emissions 30 MHz to 1 GHz>**



## &lt;Radiated Emissions above 1 GHz&gt;



For the actual test configuration, please refer to the attached file (Test Setup Photo).

**Test Instruments**

Below 30MHz: 2022/4/26

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Receiver	R&S	ESR7	102109	2022/2/25	2023/2/24
Microwave Cable	SUCOFLEX 104EA	800056/4EA	804680/4	2022/3/22	2023/3/21
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2021/12/8	2022/12/7

30MHz-1GHz: 2022/5/3

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Receiver	R&S	ESR7	102109	2022/2/25	2023/2/24
Bilog Antenna	SCHWARZBECK	VULB-9168	00949	2021/5/30	2022/5/29
LF-AMP	Agilent	8447D	2727A05146	2022/2/16	2023/2/15

Above 1GHz: 2022/4/18-2022/5/3

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV40	101513	2021/5/28	2022/5/27
Horn Antenna	ETS-Lindgren	3117	00218929	2021/11/25	2022/11/24
HF-AMP + AC source	EMCI	EMC051845SE	980635	2022/1/20	2023/1/19
HF-AMP + AC source	EMCI	EMC184045SE	980656	2022/1/20	2023/1/19
Horn Antenna	SCHWARZBECK	BBHA 9170	00887	2022/3/29	2023/3/28

**Test Procedures****For Radiated Emissions below 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

## Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

**For Radiated Emissions above 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

## Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98 %) or 10 Hz (Duty cycle  $\geq 98$  %) for Average detection (AV) at frequency above 1 GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.

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**Test Results**

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)  
Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Please refer to Appendix B.



## 5.2 Mains Emission

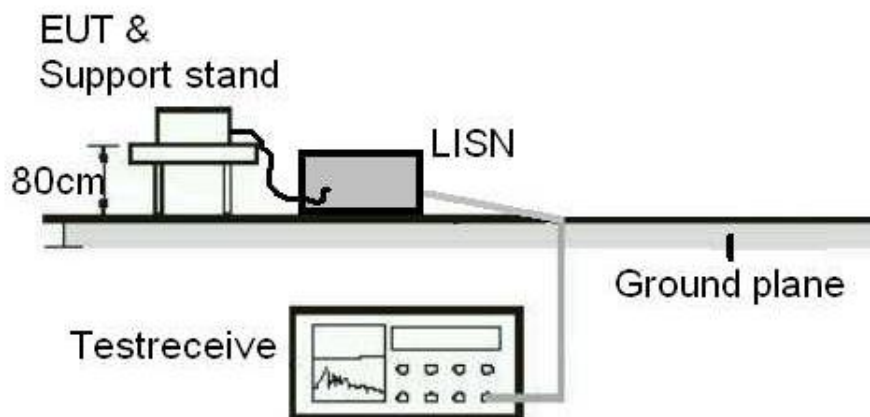
### 5.2.1 Mains Conducted Emission

#### Limit

Mains Conducted emissions as defined in §15.207 must comply with the mains conducted emission limits.

**Kind of Test Site**                      Shielded room

#### Test Setup



#### Test Instruments

Test Date: 2022/5/7

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Two-Line V-Network	Rohde & Schwarz	ENV216	101938	2021/9/23	2022/9/22
EMI Test Receiver	R&S	ESCI	1816063	2021/11/15	2022/11/14

#### **Test Procedures**

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

#### **Test Results**

Please refer to Appendix B.

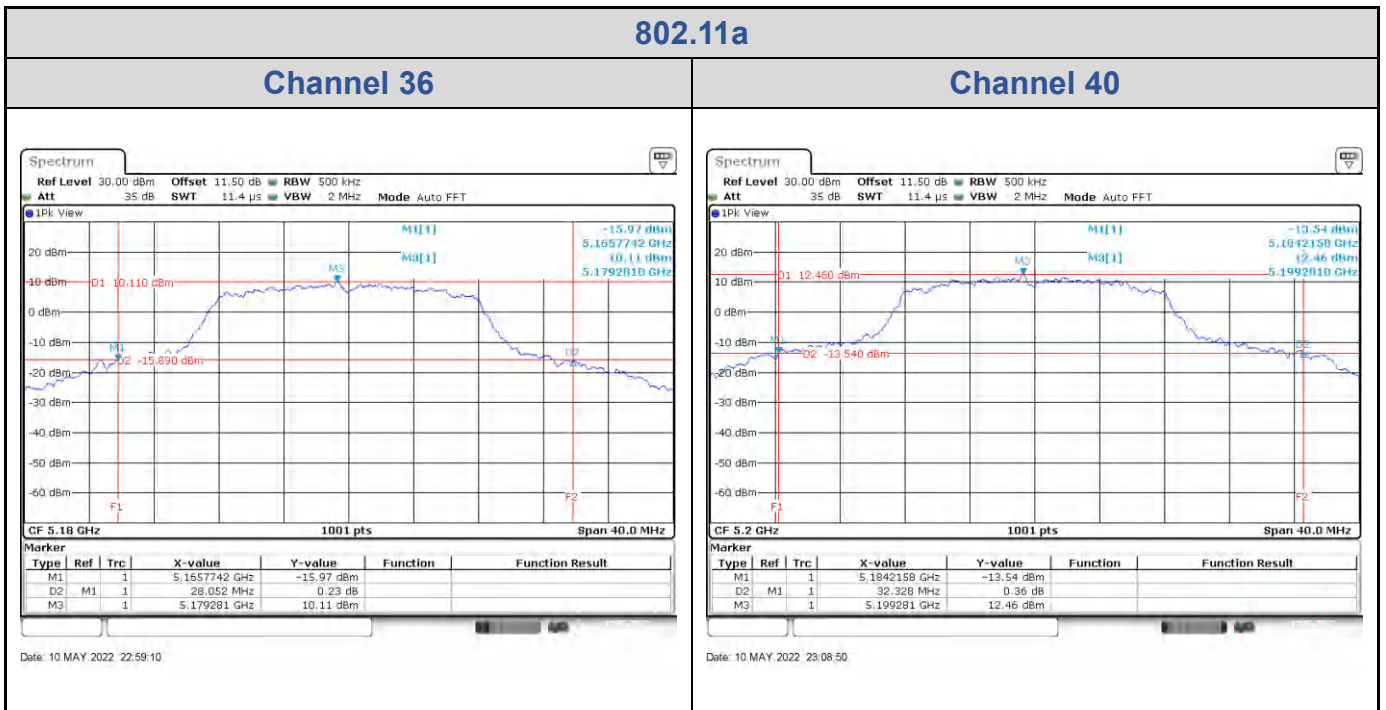
## Appendix A: Test Results of Conducted Test

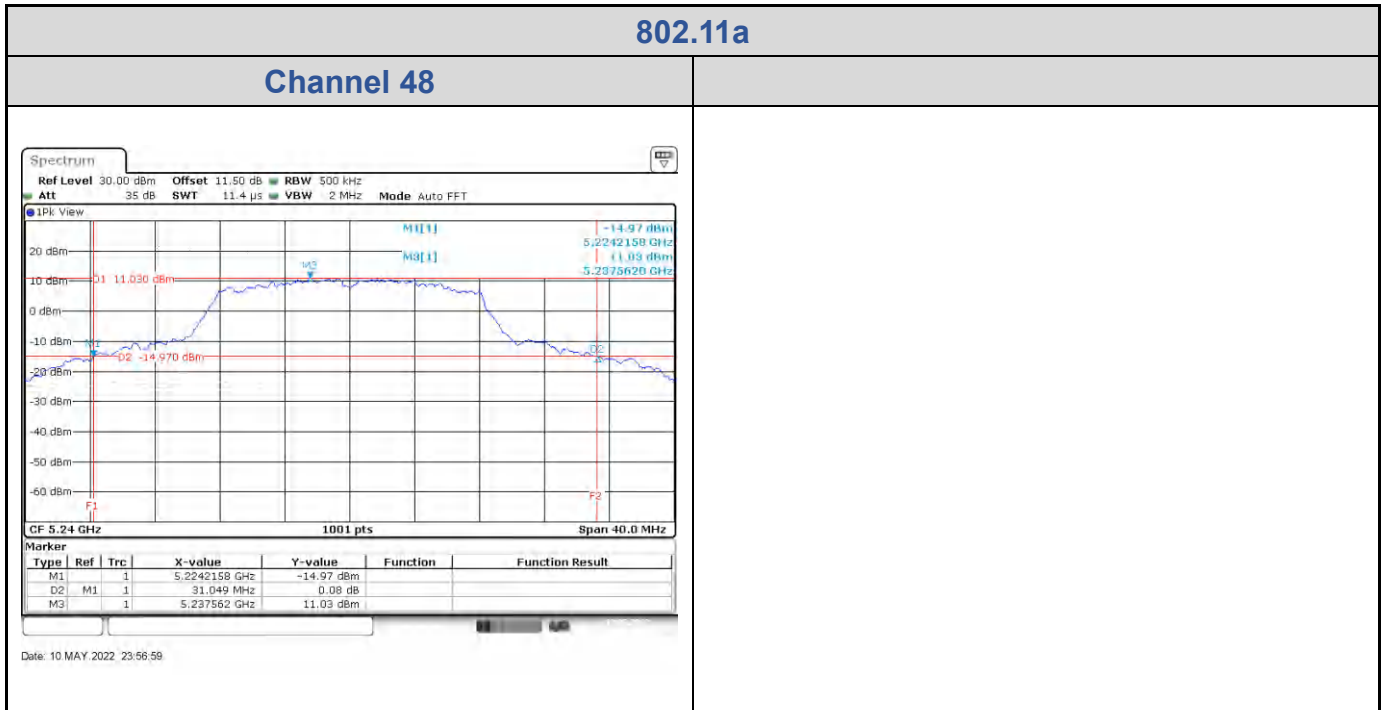
### Test Result of 26 dB Bandwidth

#### 802.11a

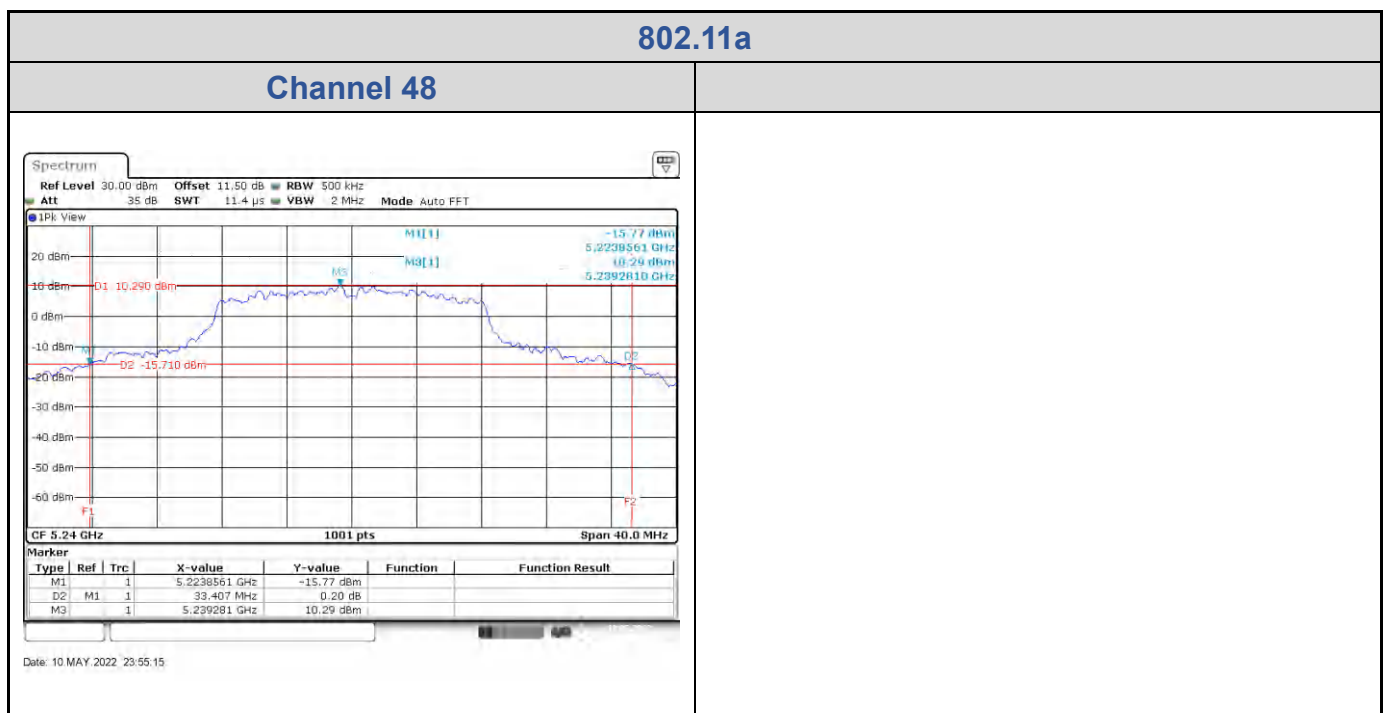
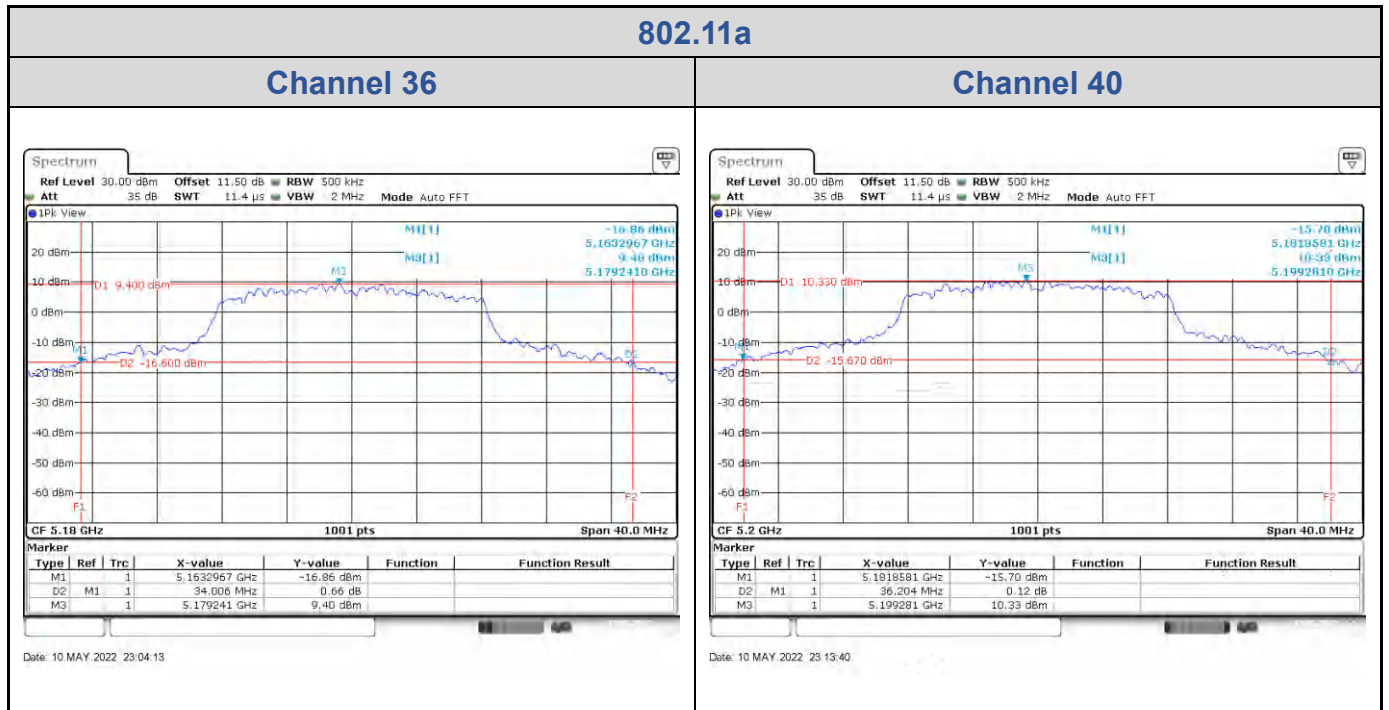
Band	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	36	5180	28.05	34.01
	40	5200	32.33	36.20
	48	5240	31.05	33.41

<Chain 0>





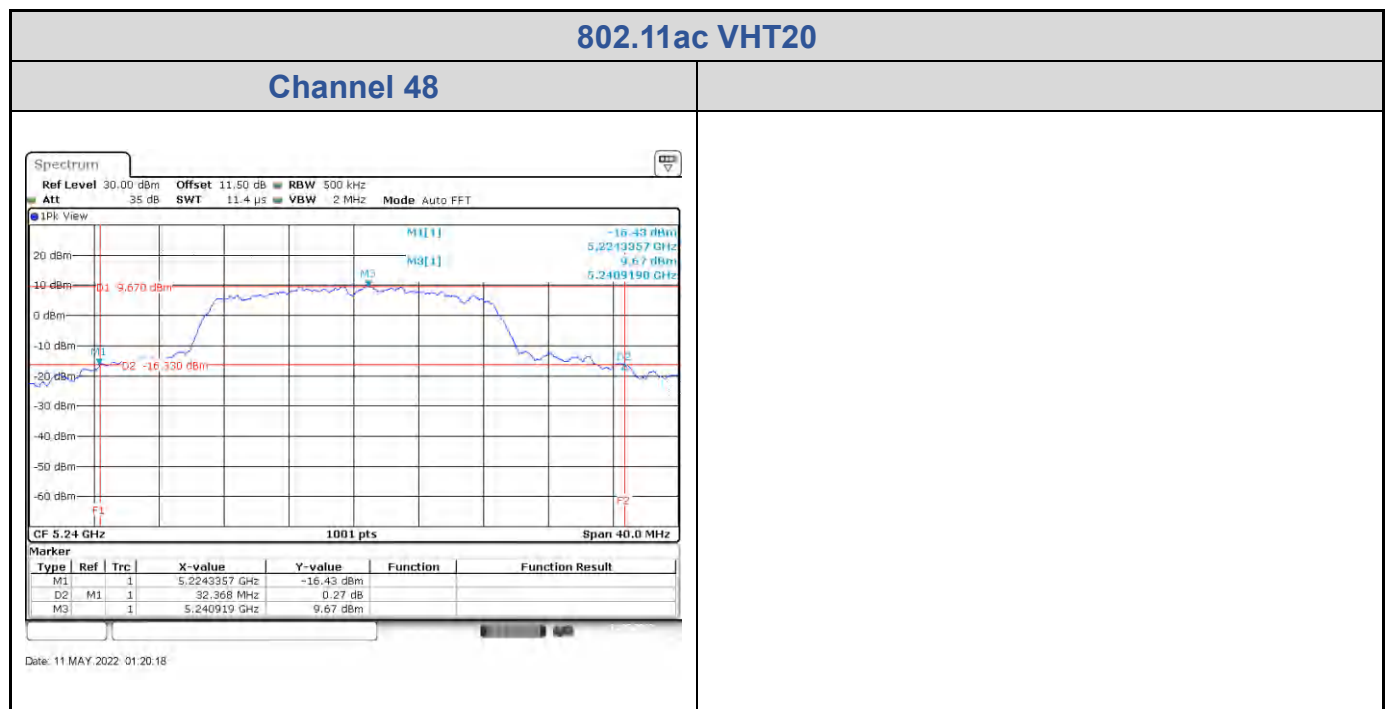
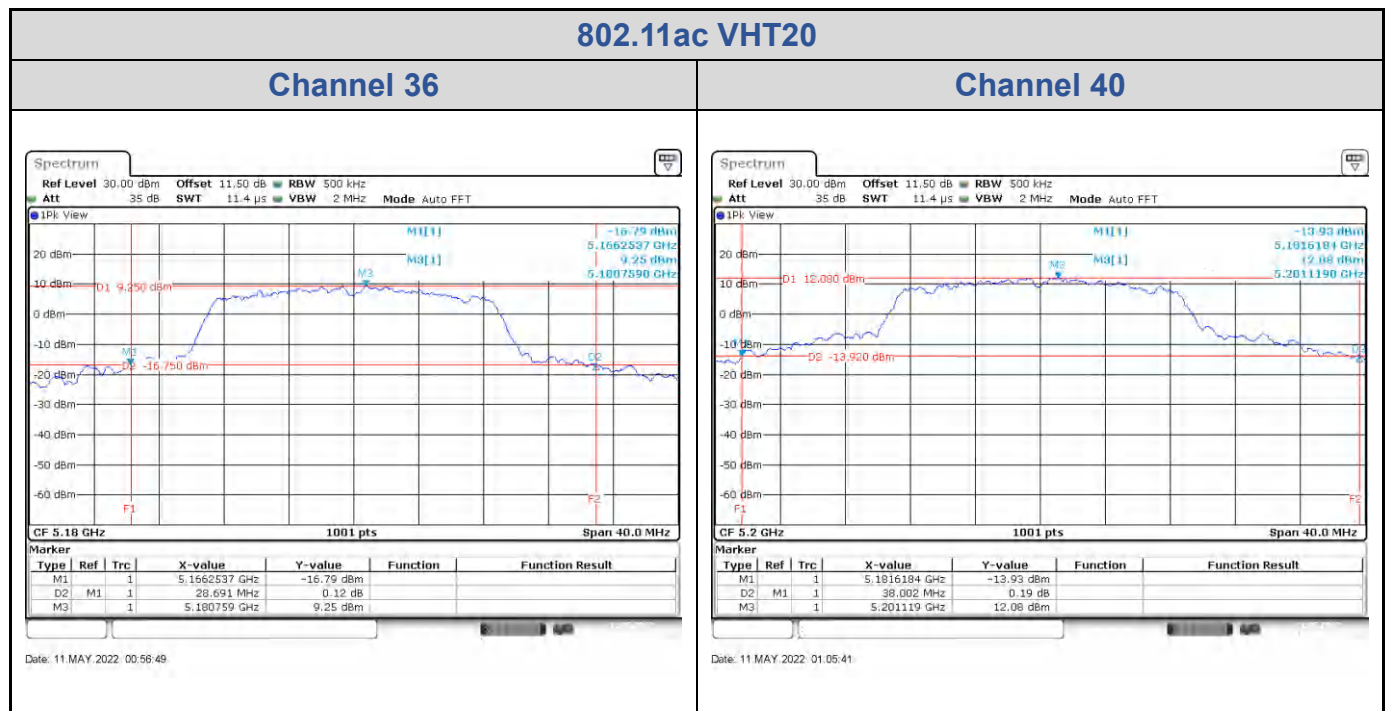
<Chain 1>



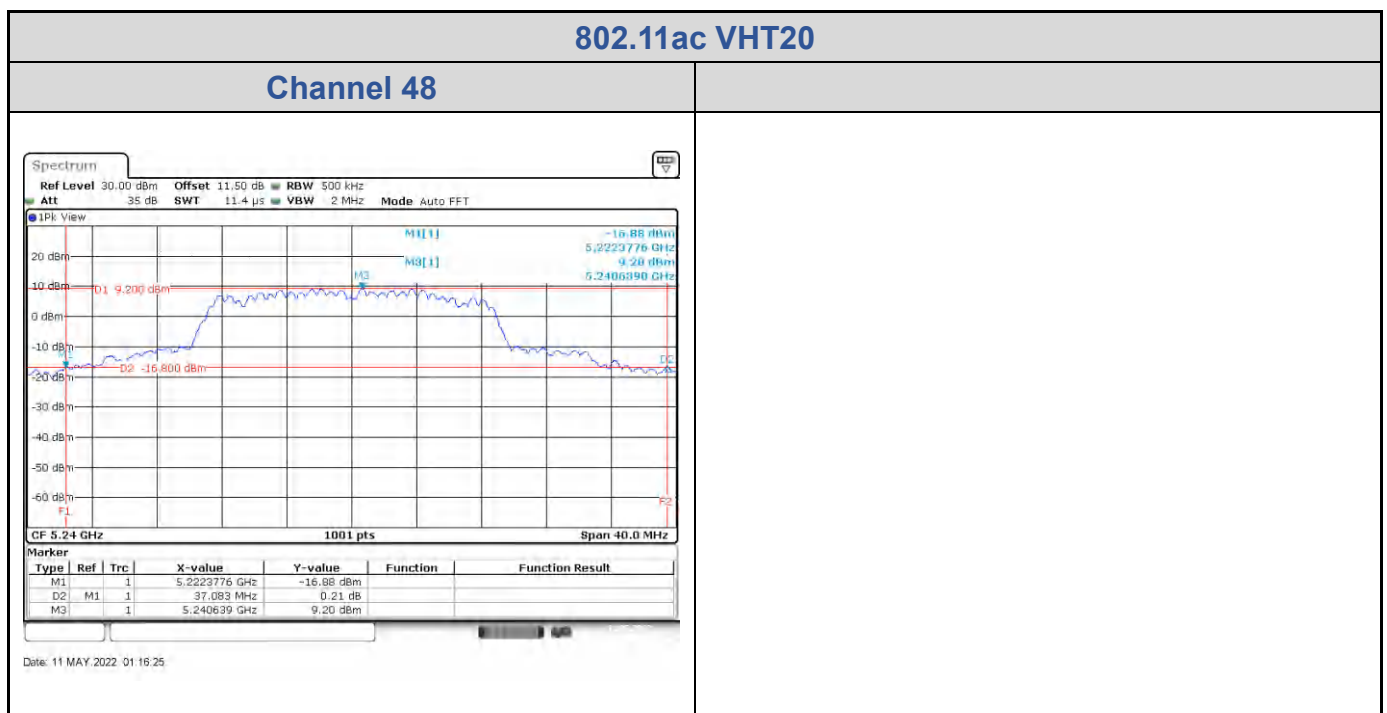
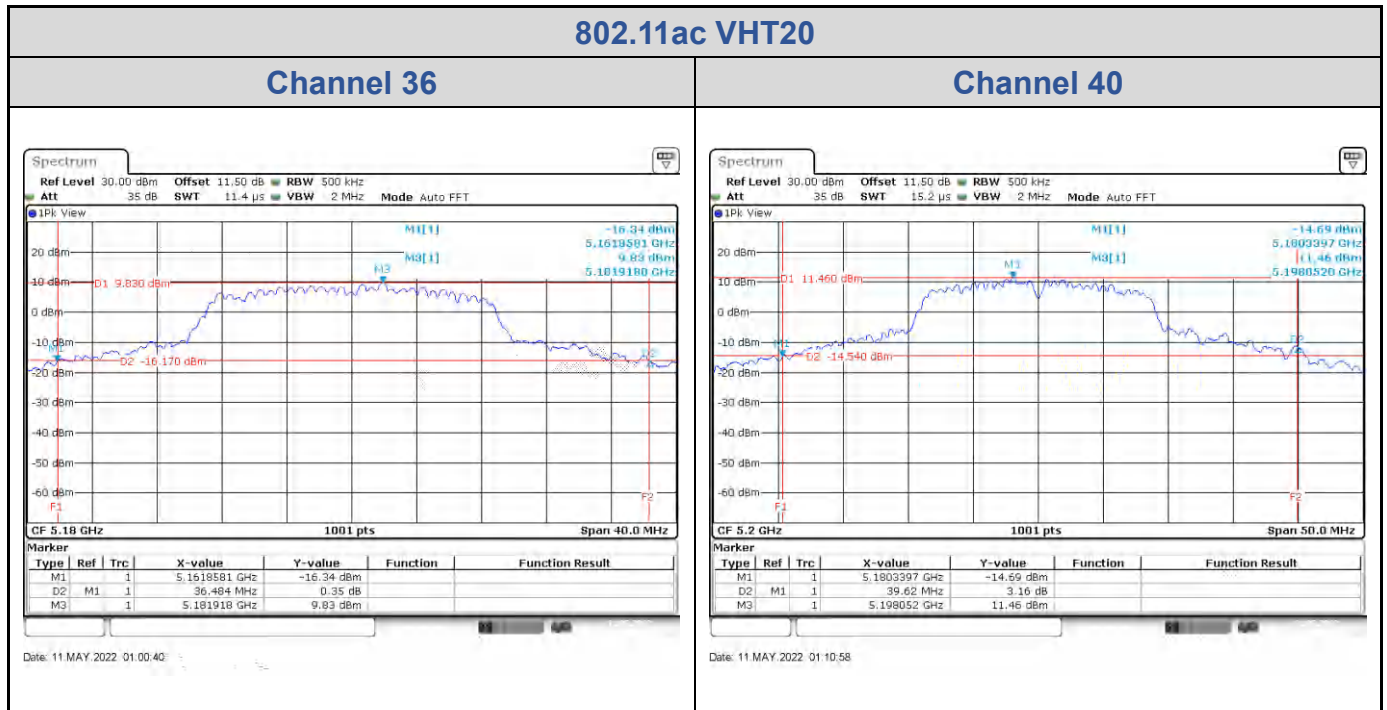
**802.11ac VHT20**

Band	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	36	5180	28.69	36.48
	40	5200	38.00	39.62
	48	5240	32.37	37.08

&lt;Chain 0&gt;



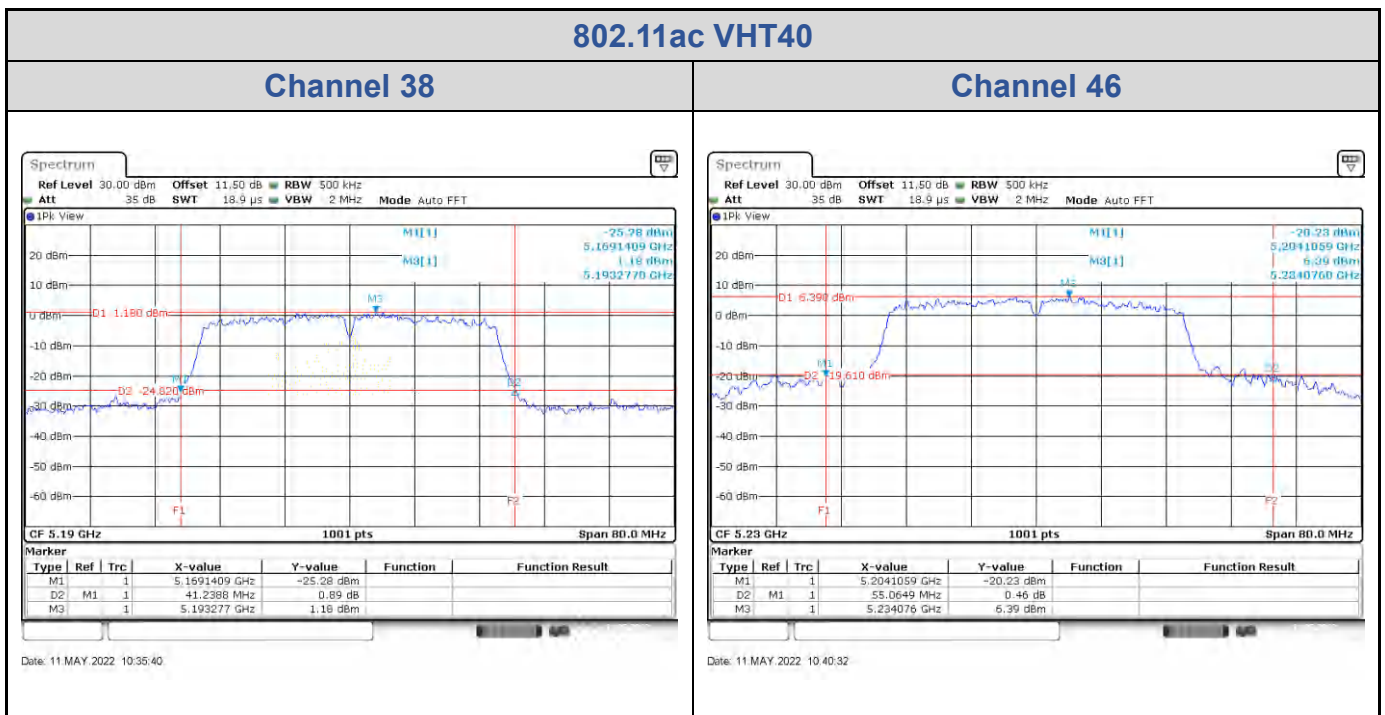
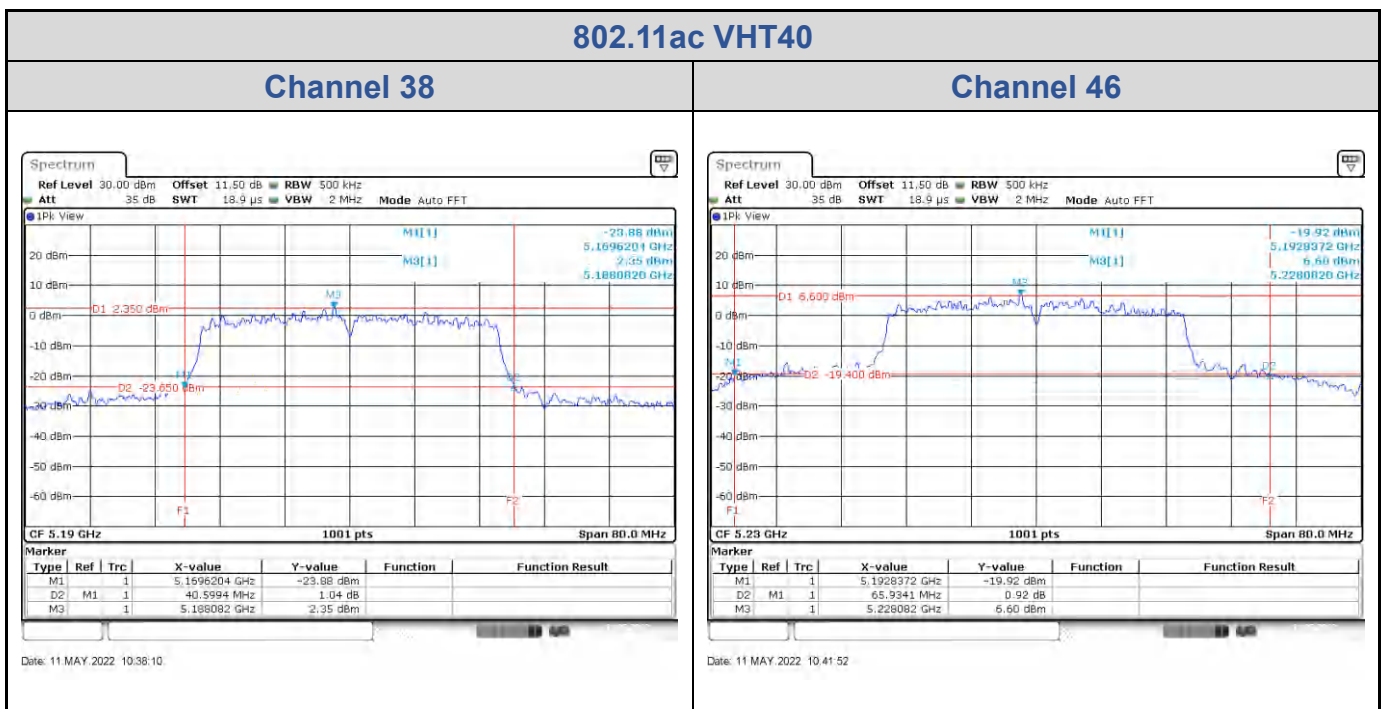
&lt;Chain 1&gt;





**802.11ac VHT40**

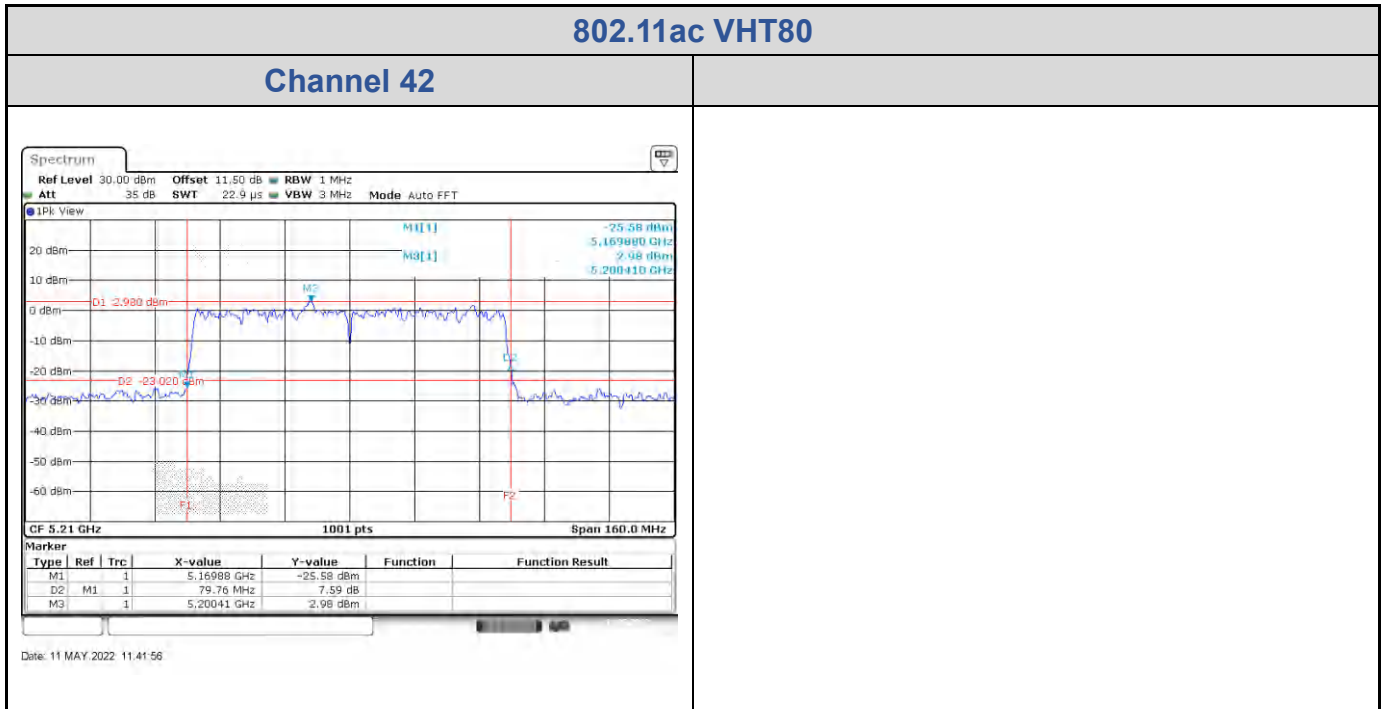
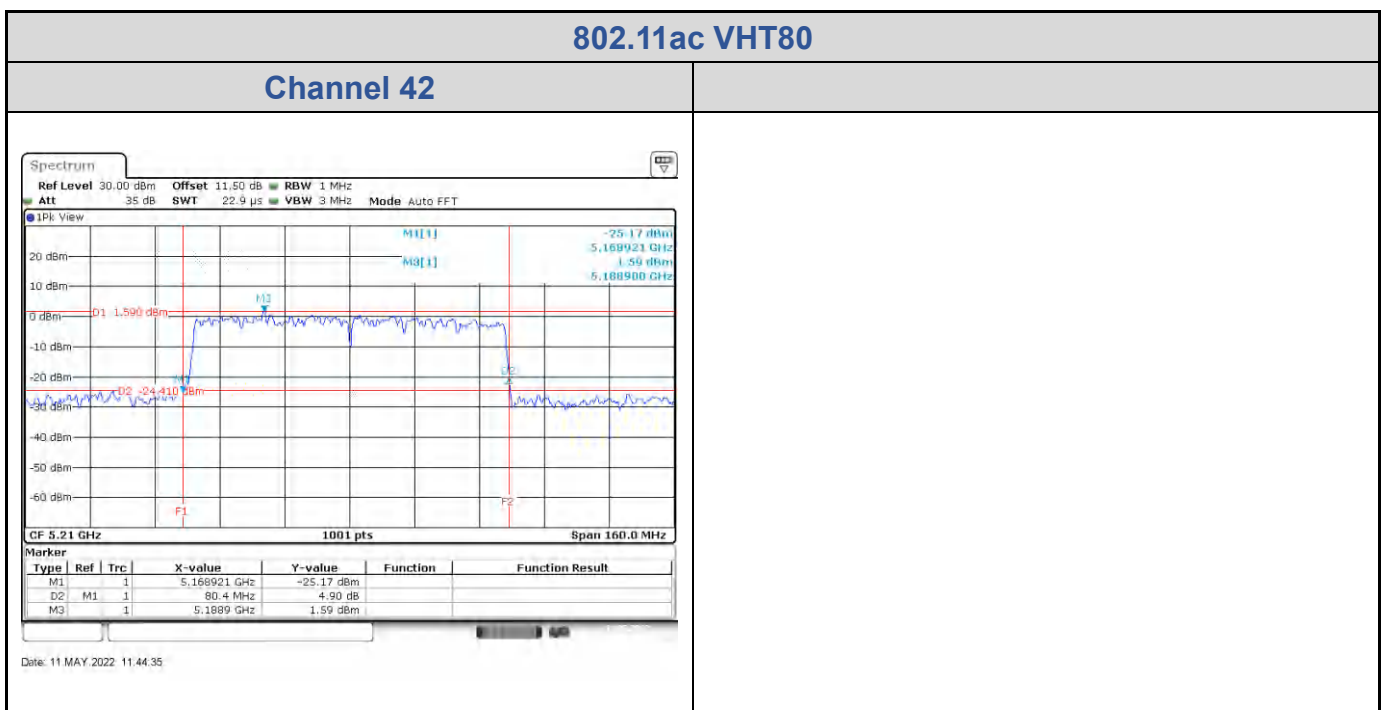
Band	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	38	5190	41.24	40.60
	46	5230	55.06	65.93

**<Chain 0>**

**<Chain 1>**




**802.11ac VHT80**

Band	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	42	5210	79.76	80.40

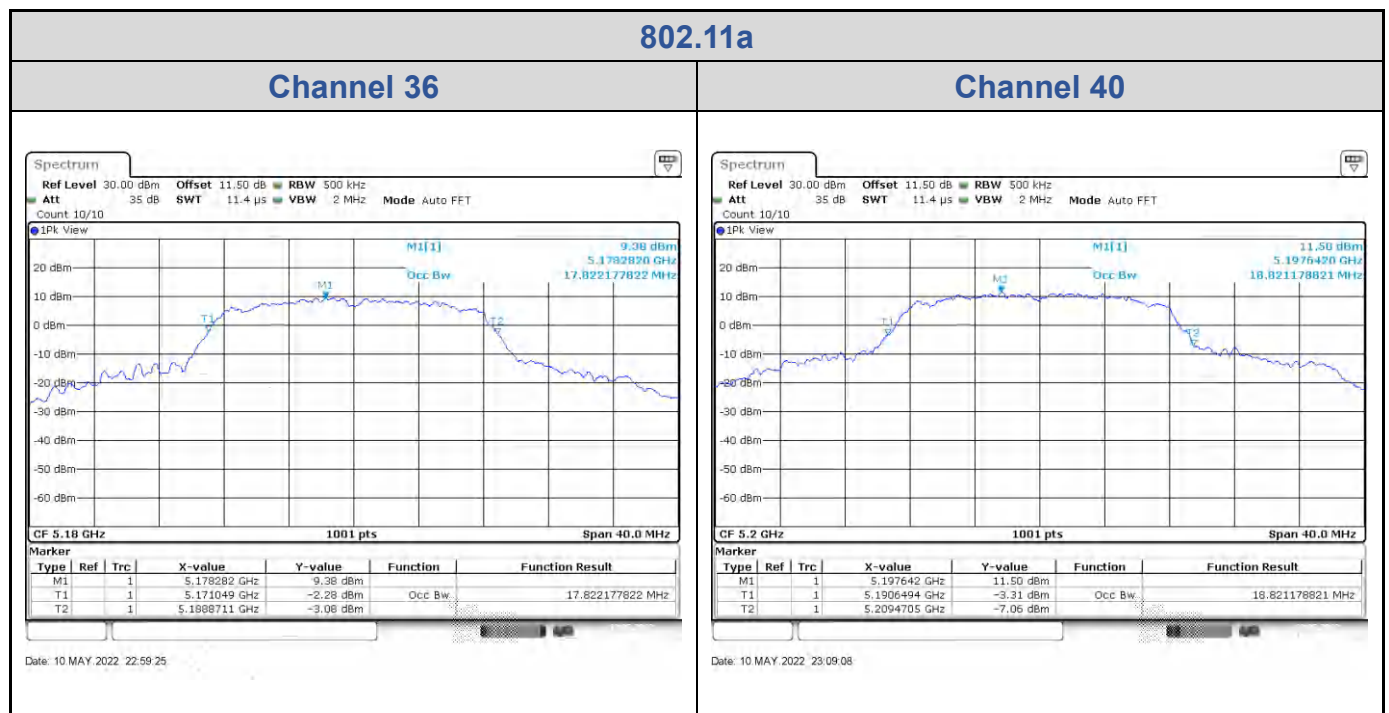
**<Chain 0>**

**<Chain 1>**


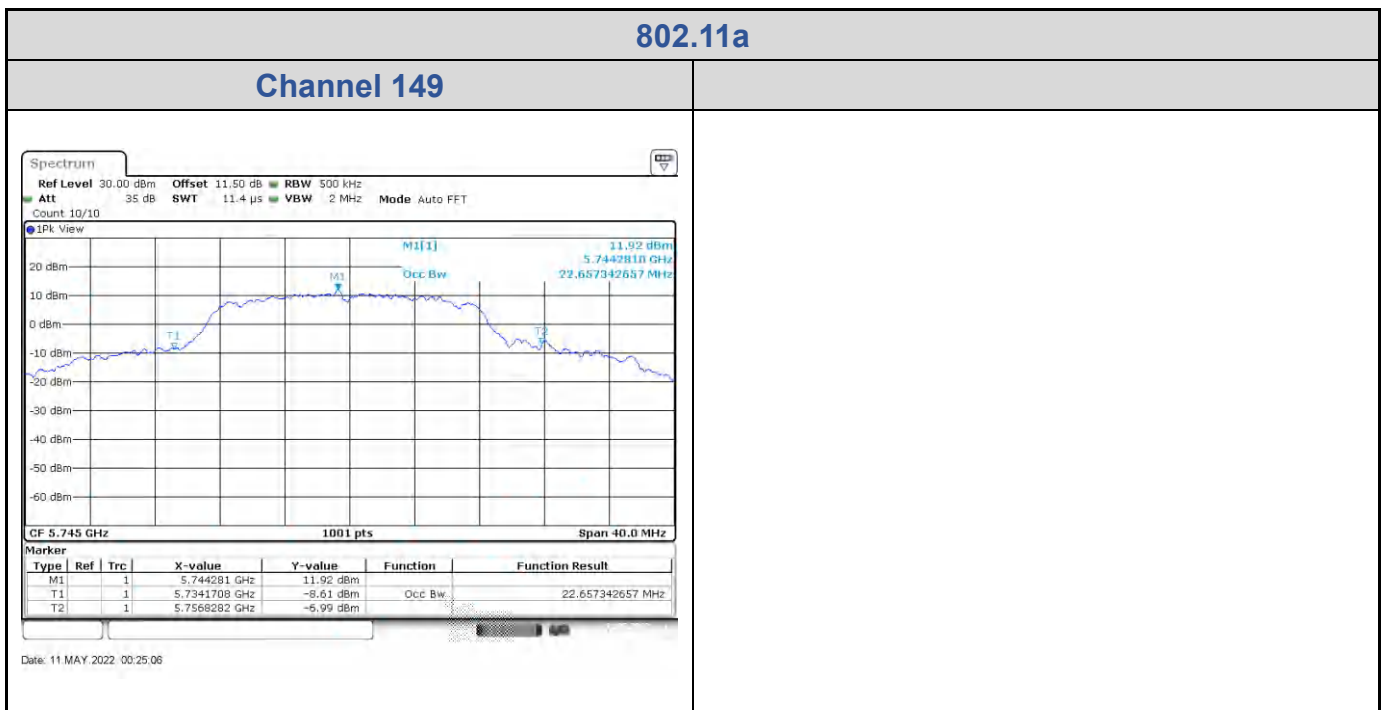
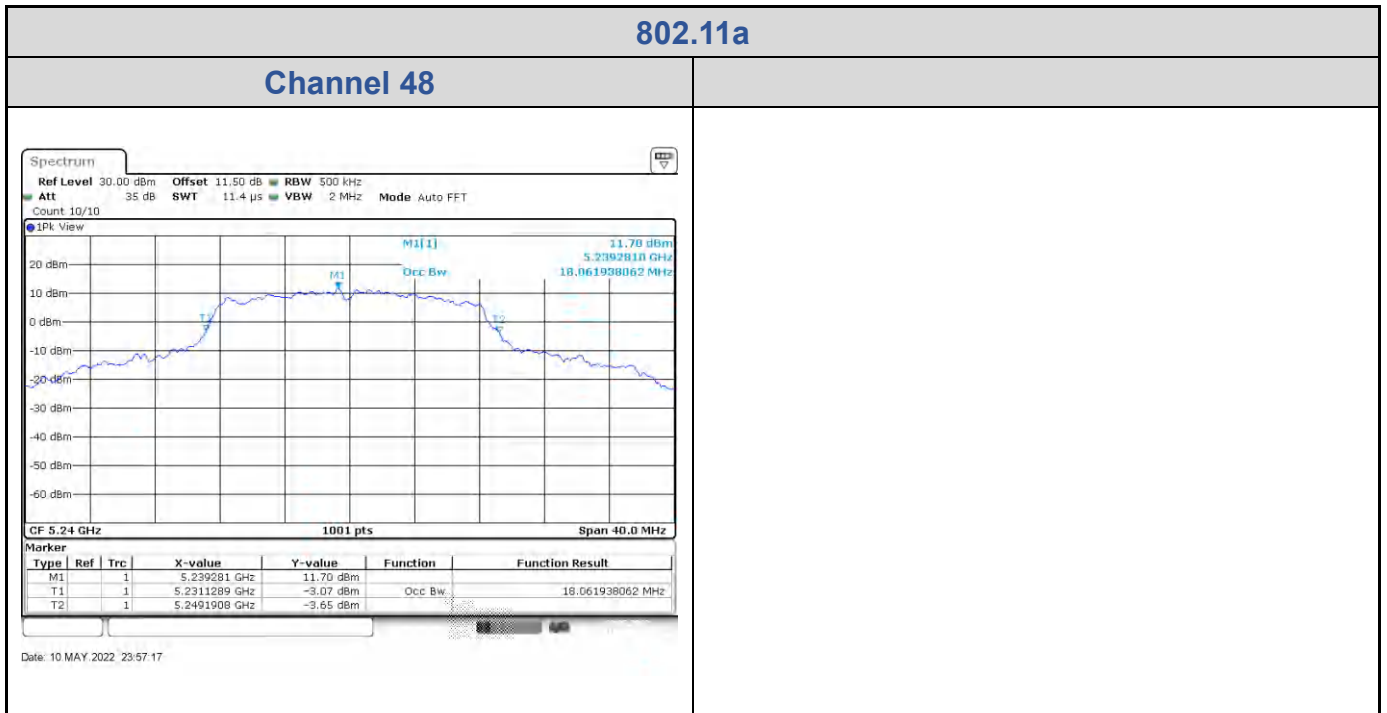
## Test Result of 99% Occupied Bandwidth

### 802.11a

Band	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	36	5180	17.82	19.86
	40	5200	18.82	22.18
	48	5240	18.06	19.58
U-NII-3	149	5745	22.69	22.38
	157	5785	24.66	22.94
	165	5825	23.70	22.66

### <Chain 0>

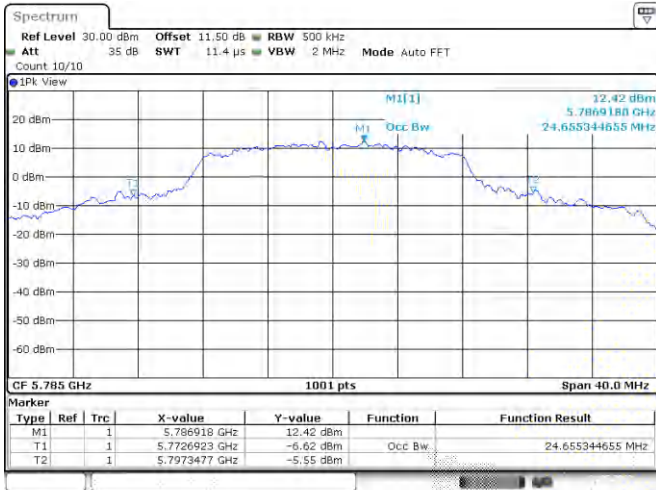




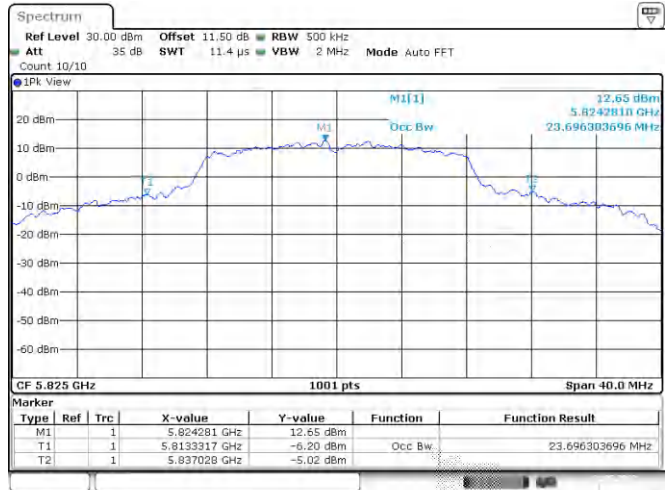
802.11a

Channel 157

Channel 165



Date: 11 MAY 2022 00:41:12



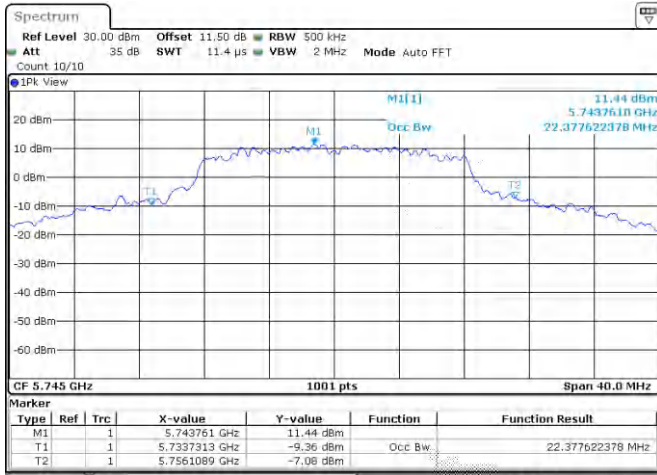
Date: 11 MAY 2022 00:50:09

&lt;Chain 1&gt;



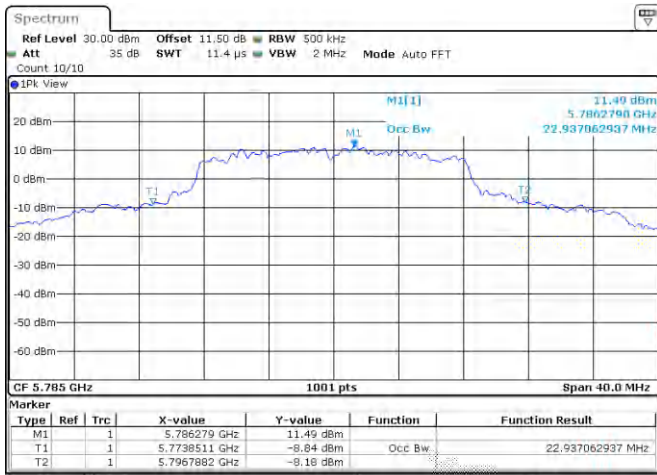
802.11a

Channel 149



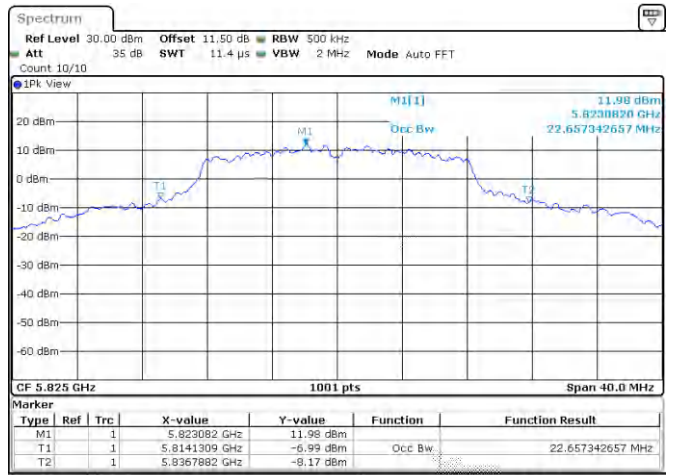
Date: 11 MAY 2022 00:38:33

Channel 157



Date: 11 MAY 2022 00:43:40

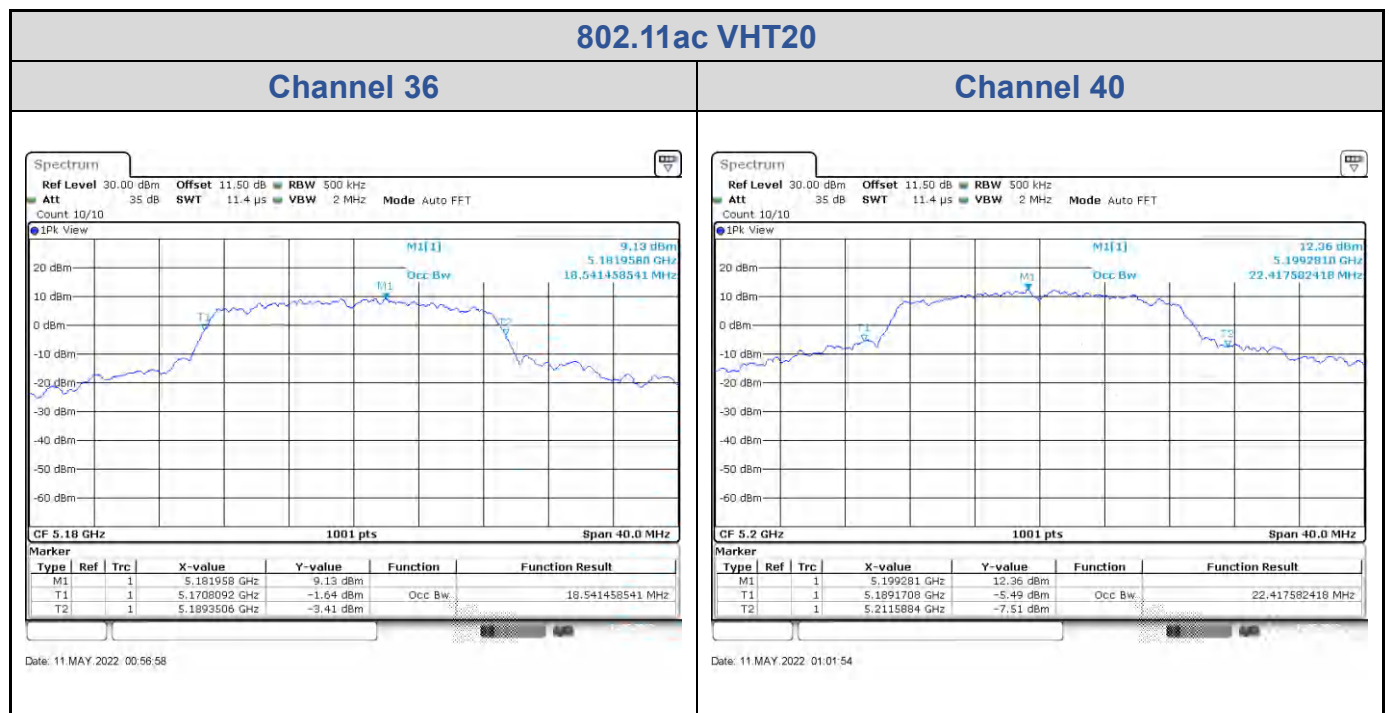
Channel 165



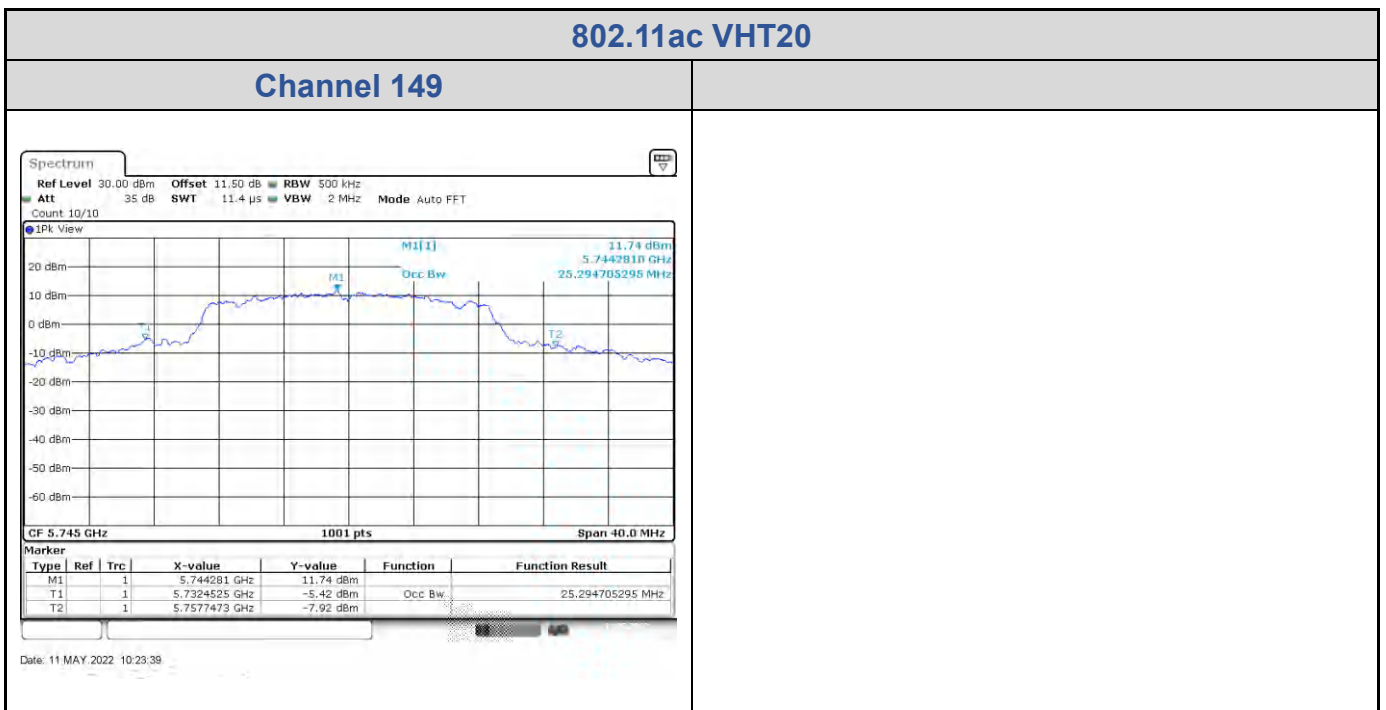
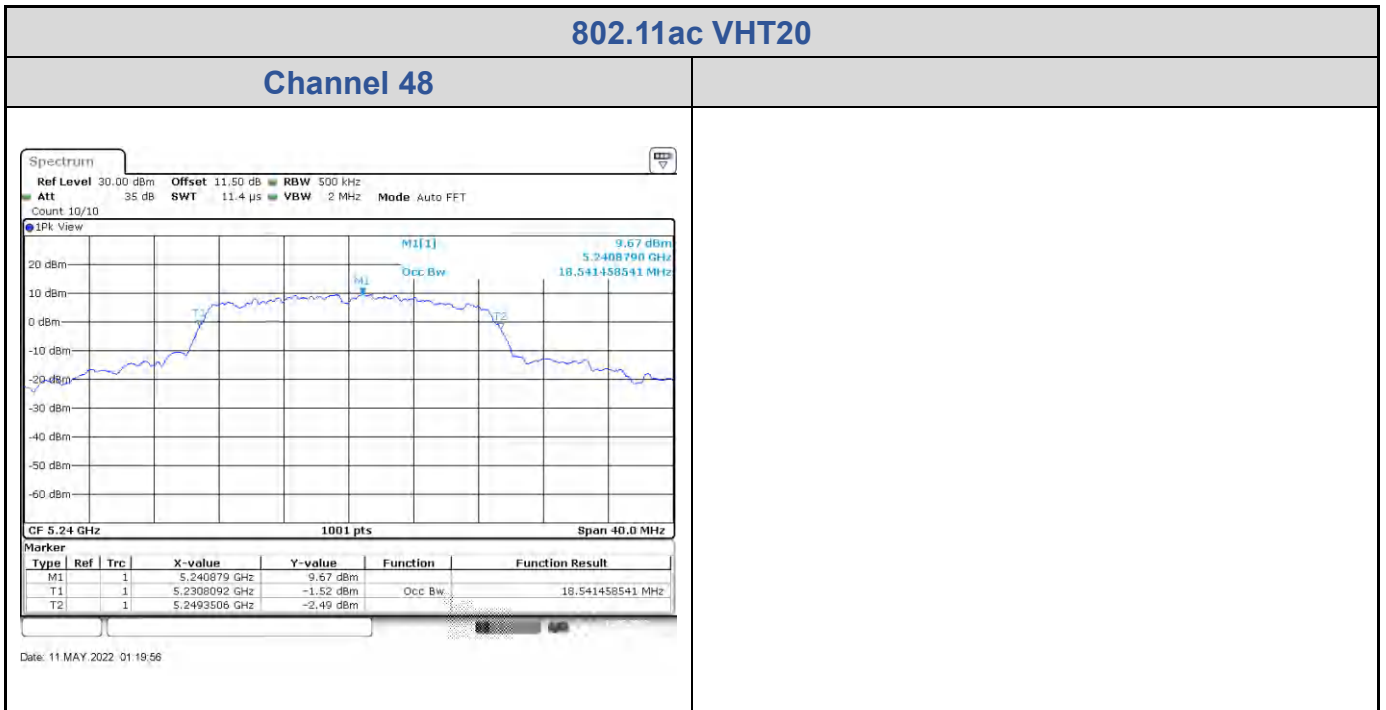
Date: 11 MAY 2022 00:51:38

**802.11ac VHT20**

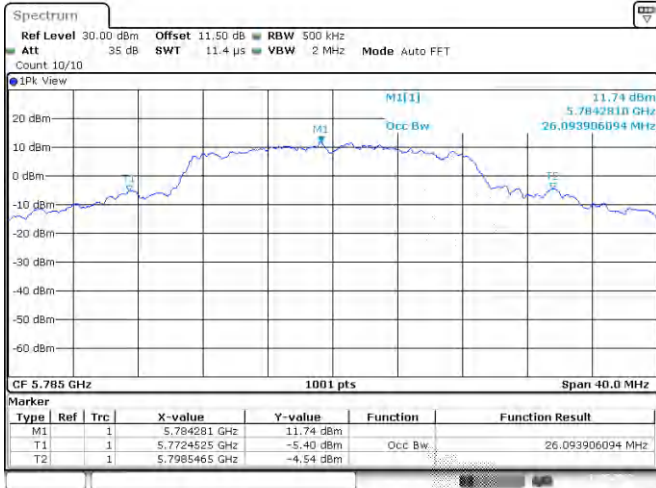
Band	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	36	5180	18.54	21.46
	40	5200	22.42	25.41
	48	5240	18.54	19.78
U-NII-3	149	5745	25.29	24.98
	157	5785	26.09	25.01
	165	5825	25.69	23.30

**<Chain 0>**


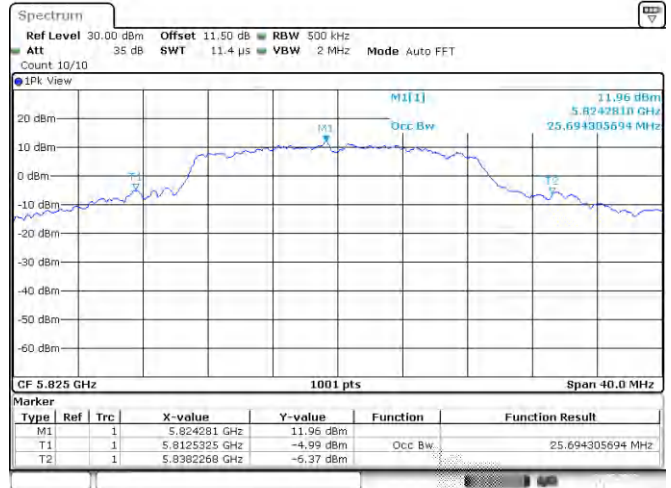






**802.11ac VHT20**
**Channel 157**
**Channel 165**


Date: 11 MAY 2022 10:27:34



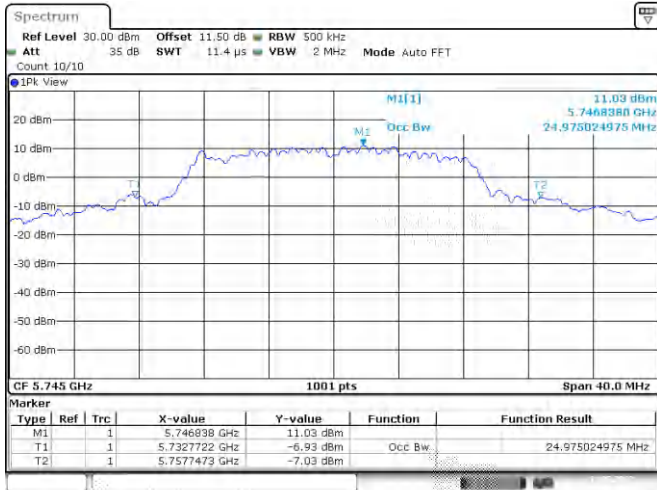
Date: 11 MAY 2022 10:30:40

&lt;Chain 1&gt;



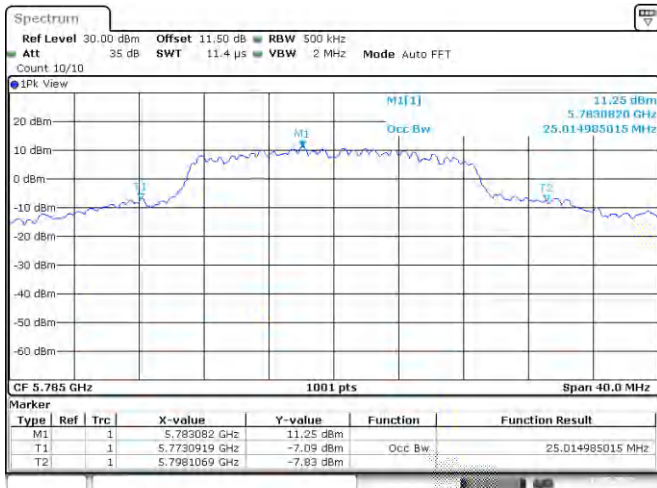
### 802.11ac VHT20

#### Channel 149



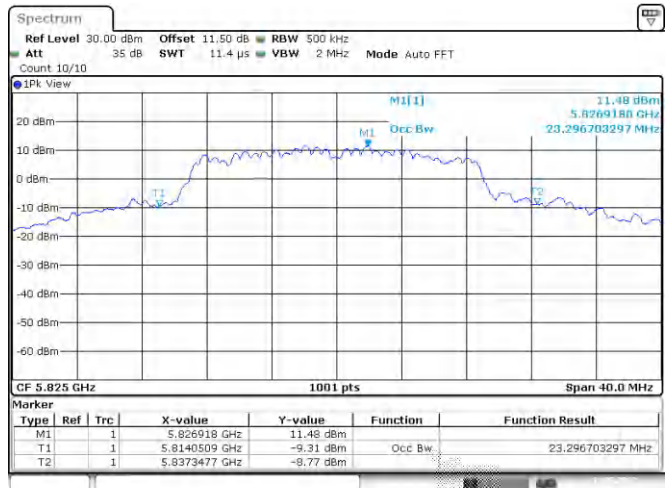
Date: 11 MAY 2022 10:24:59

#### Channel 157



Date: 11 MAY 2022 10:28:57

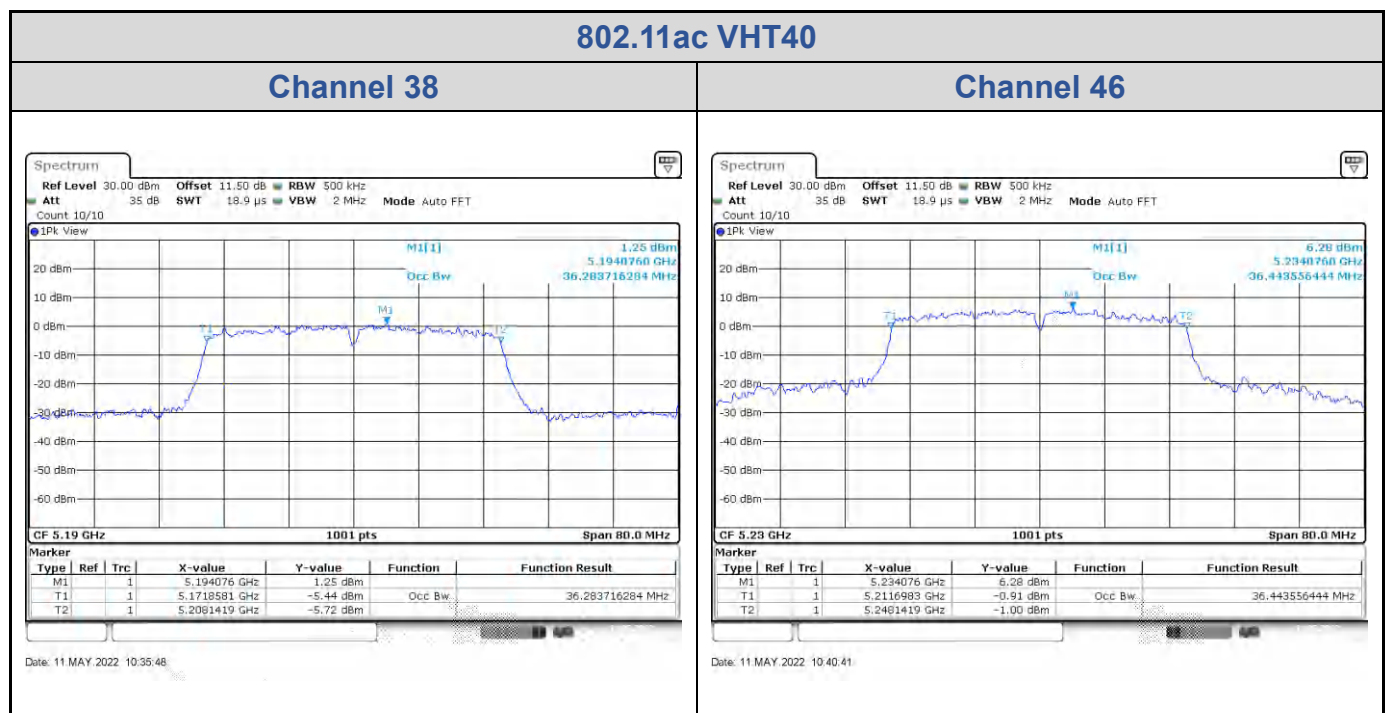
#### Channel 165

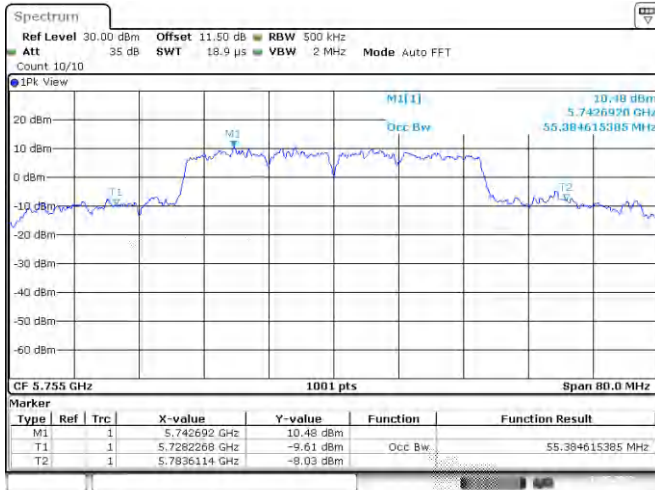


Date: 11 MAY 2022 10:32:12

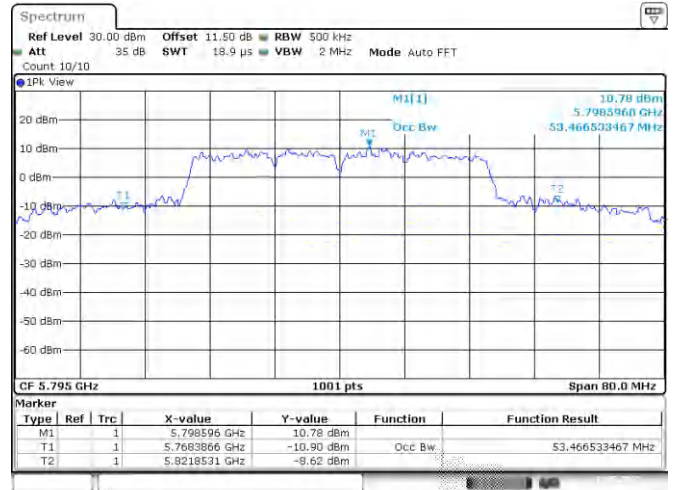
**802.11ac VHT40**

Band	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	38	5190	36.28	36.36
	46	5230	36.44	37.08
U-NII-3	151	5755	55.38	56.82
	159	5795	53.47	57.22

**<Chain 0>**


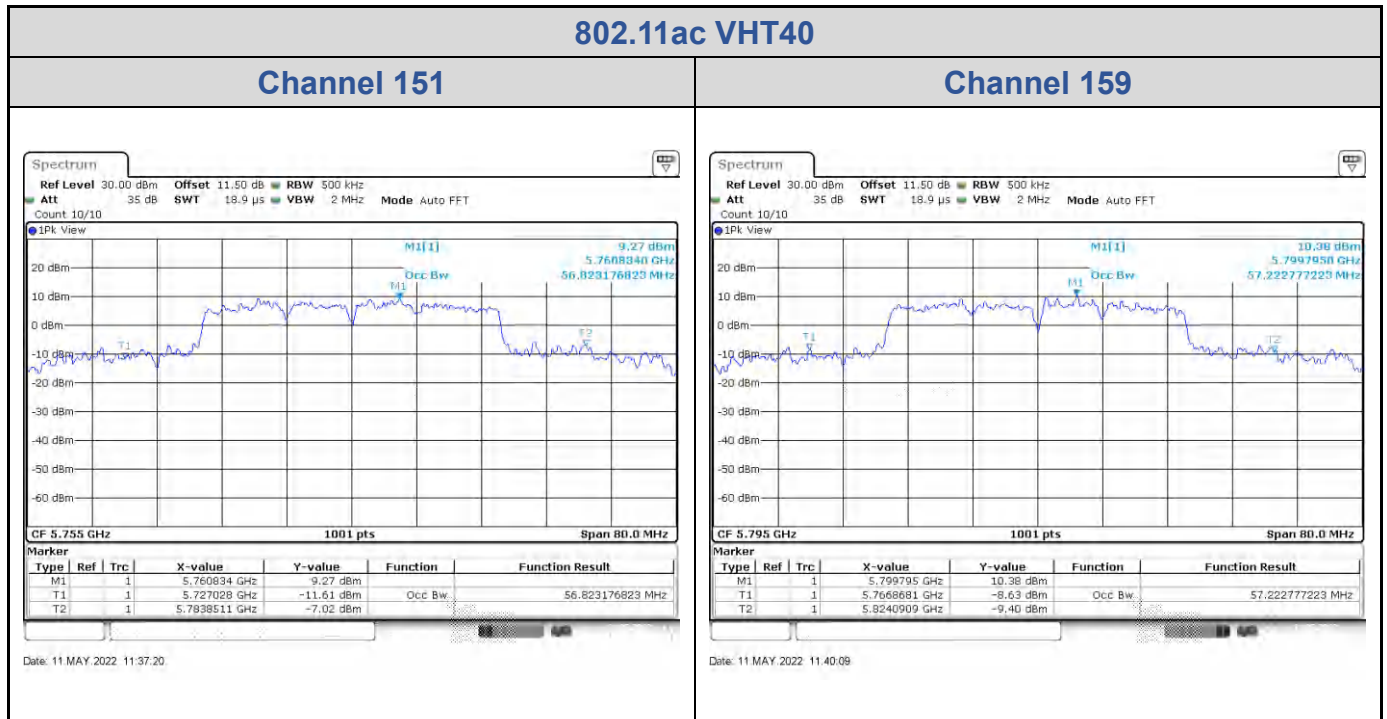
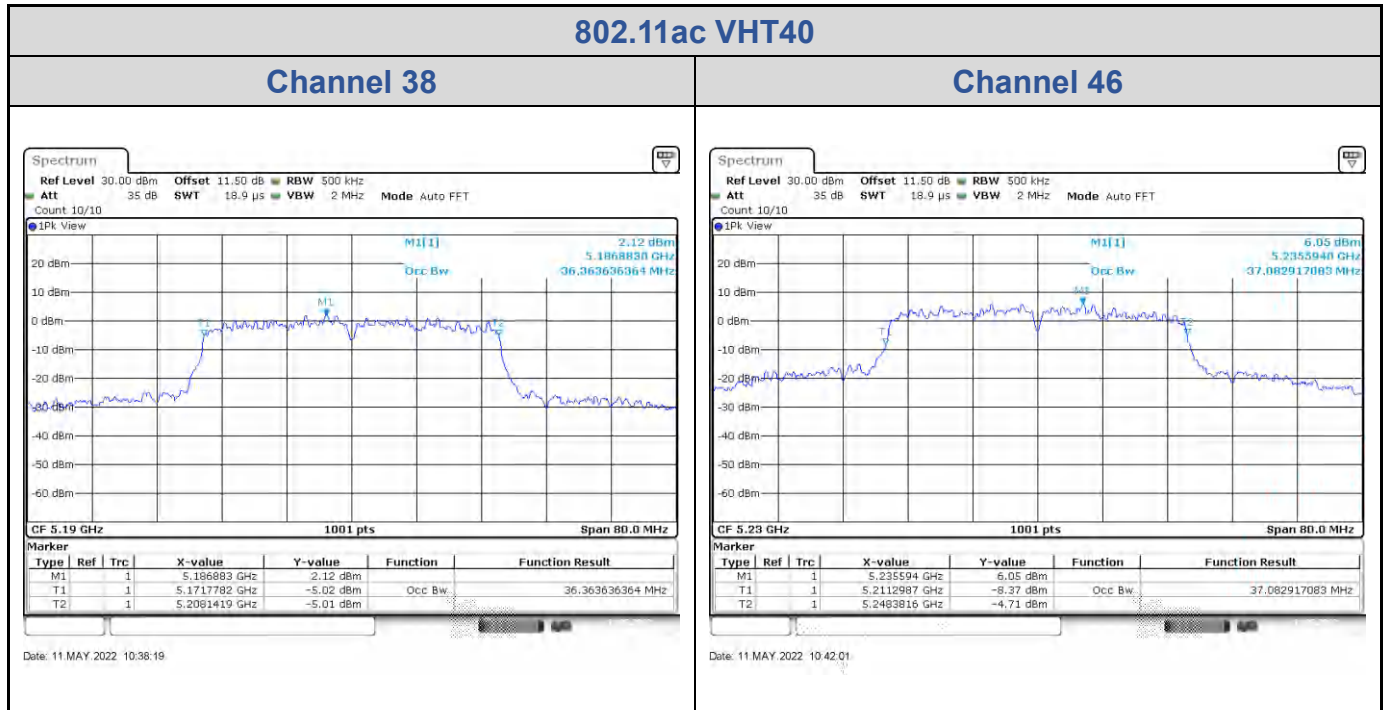
**802.11ac VHT40**
**Channel 151**
**Channel 159**


Date: 11 MAY 2022 11:36:08



Date: 11 MAY 2022 11:39:02

&lt;Chain 1&gt;

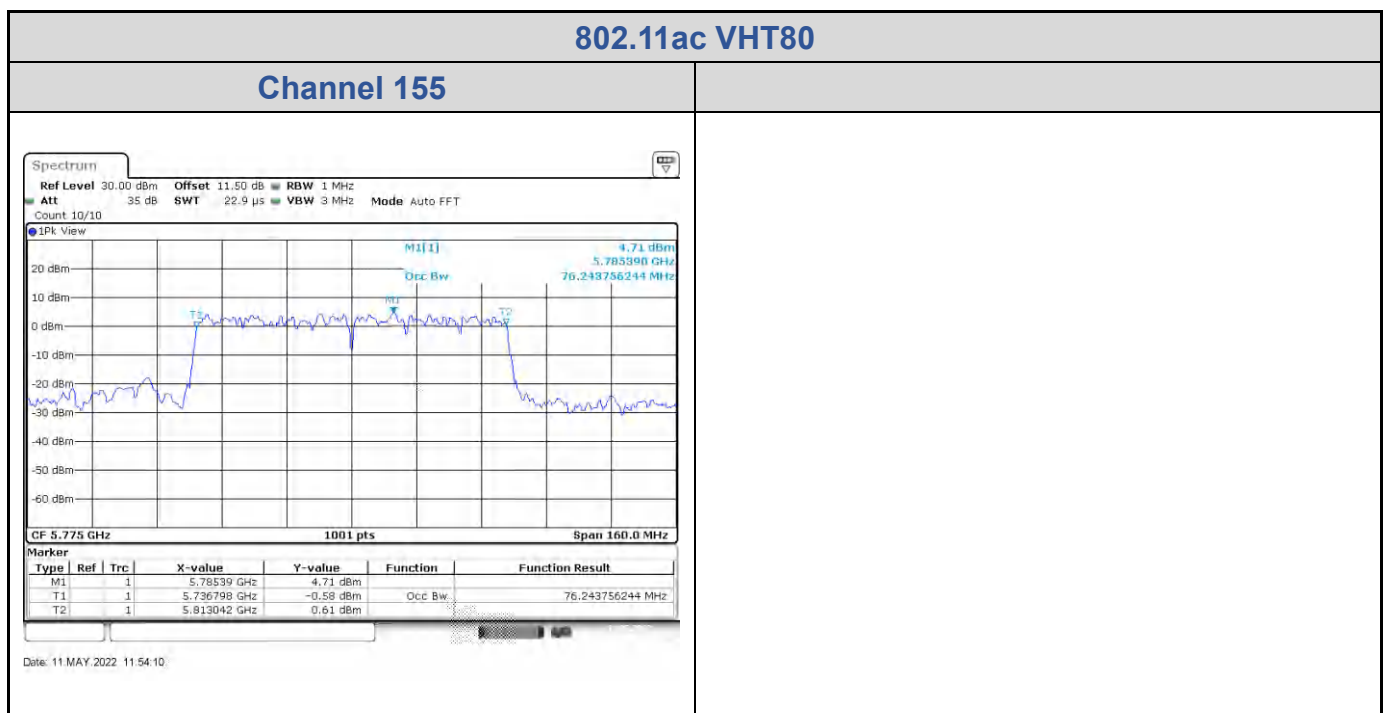
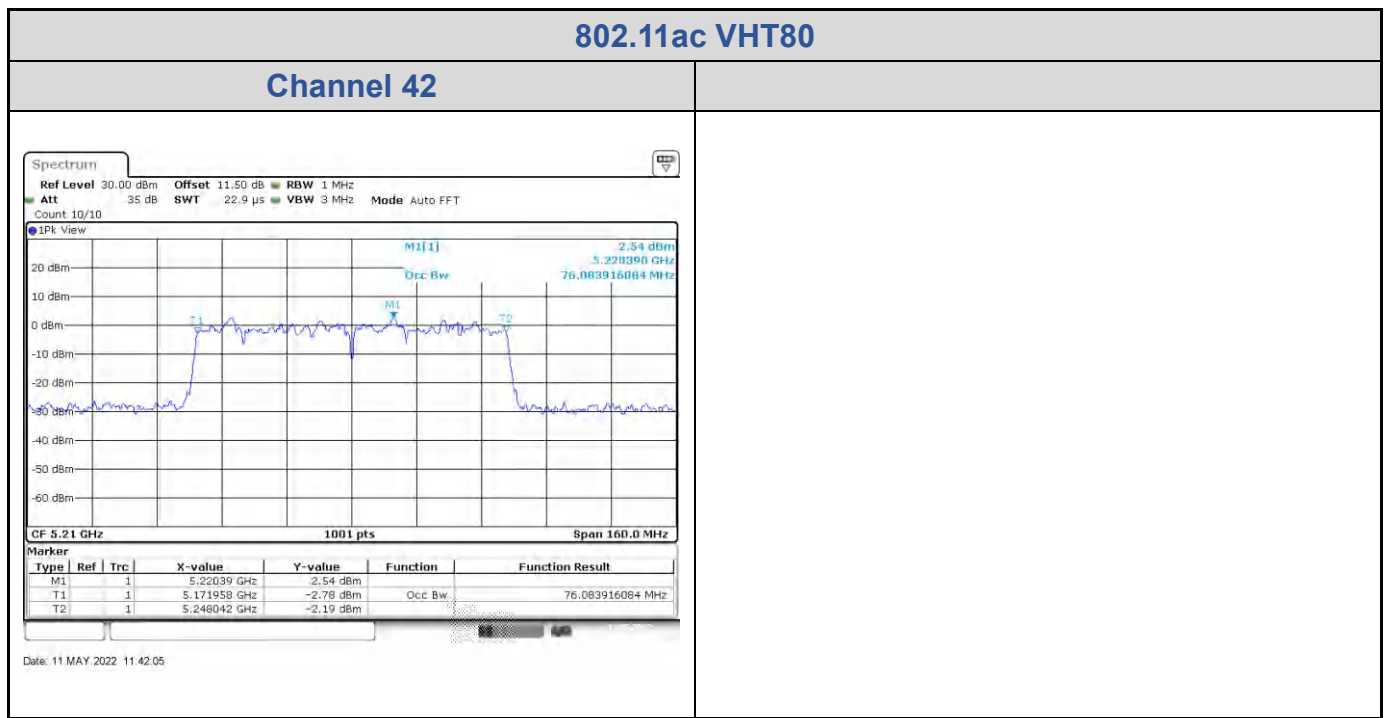




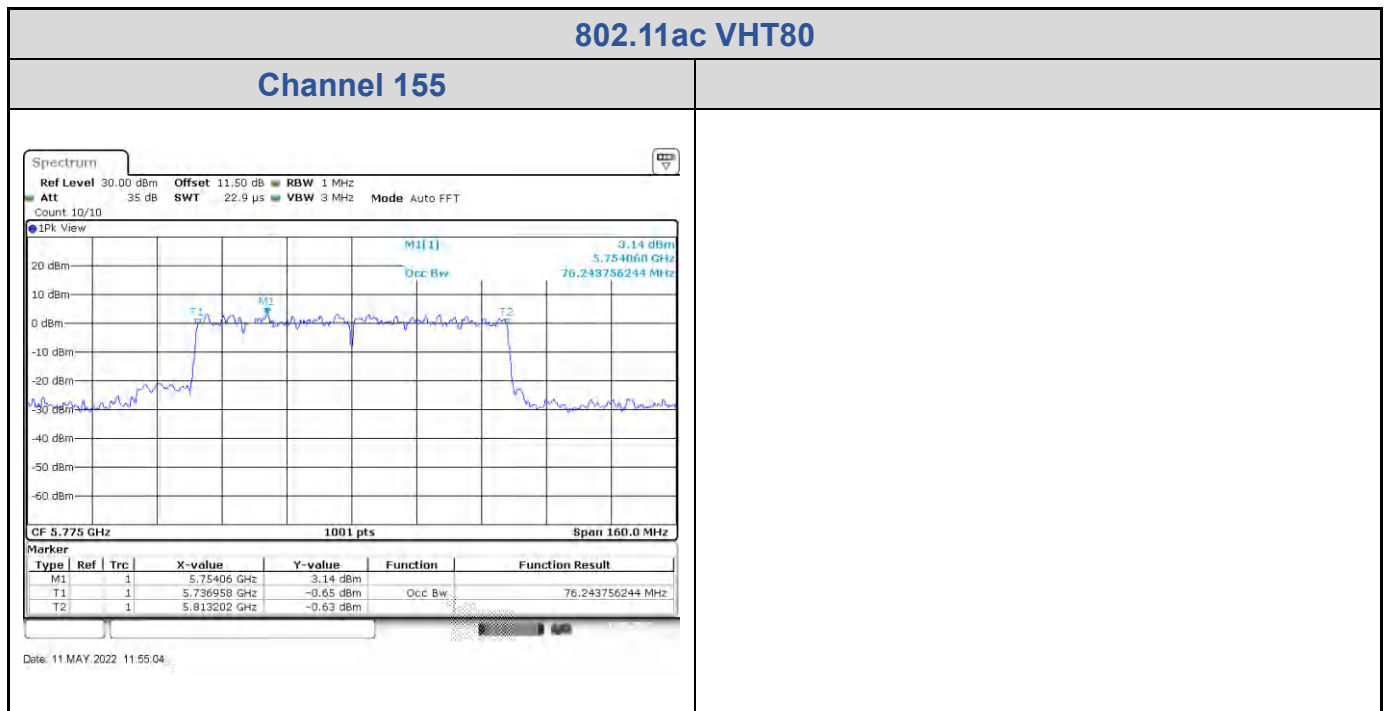
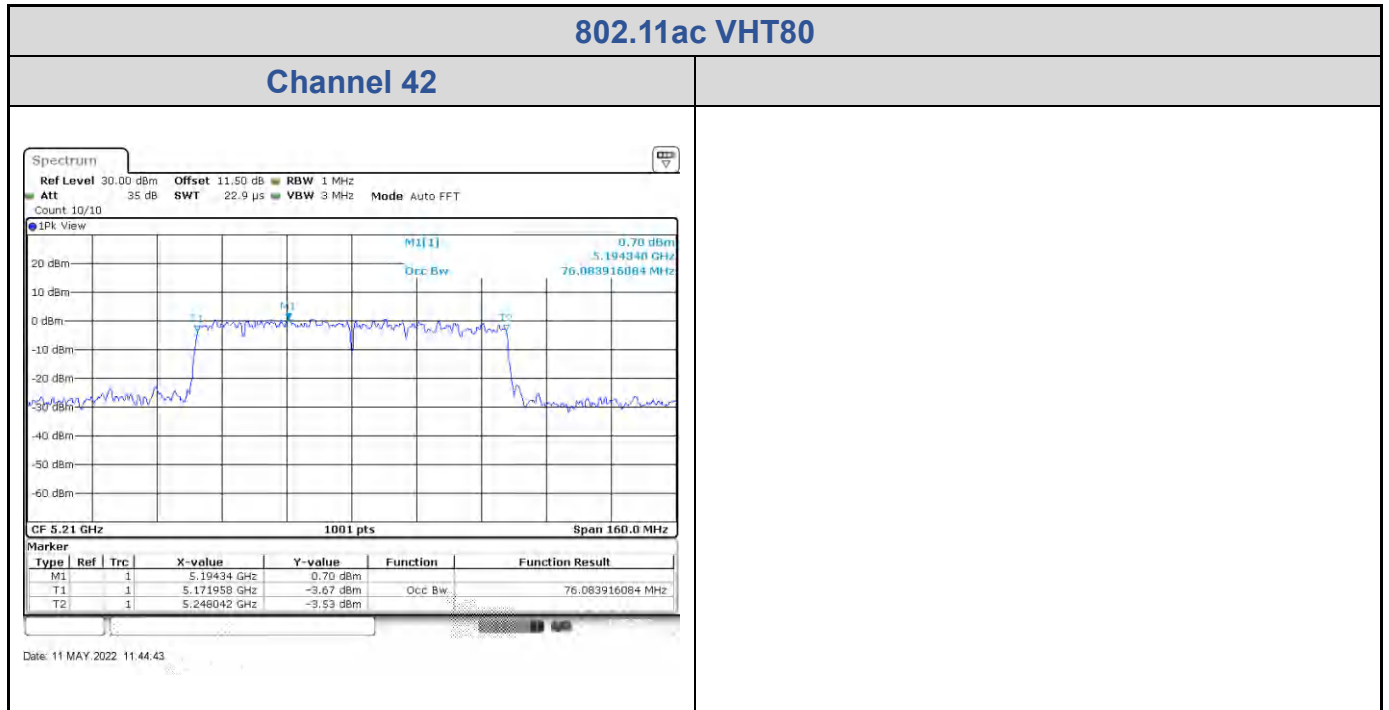
**802.11ac VHT80**

Band	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-1	42	5210	76.08	76.08
U-NII-3	155	5775	76.24	76.24

&lt;Chain 0&gt;



<Chain 1>



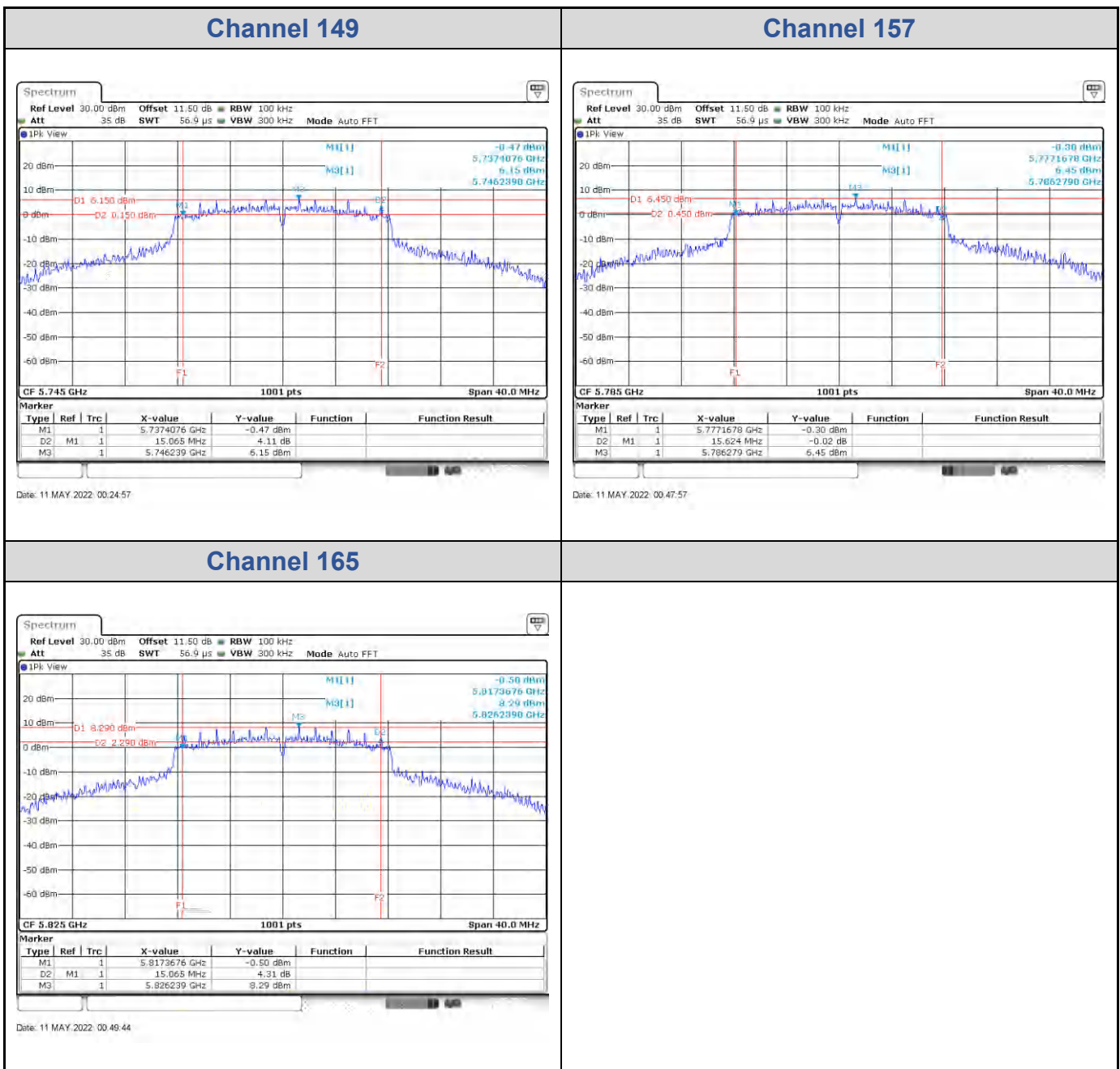


## Test Result of 6 dB Bandwidth

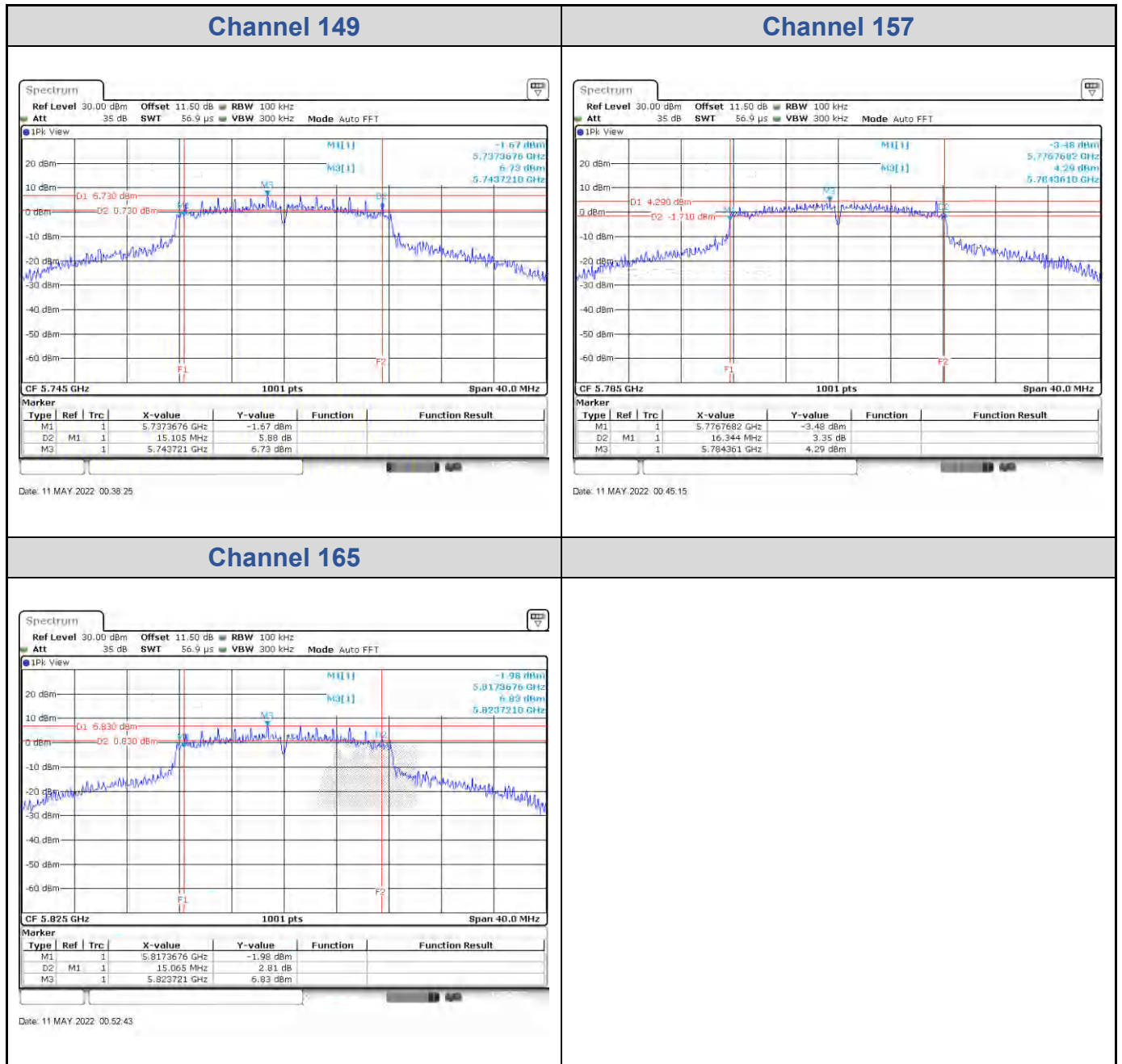
**802.11a**

Band	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-3	149	5745	15.07	15.11
	157	5785	15.62	16.34
	165	5825	15.07	15.07

&lt;Chain 0&gt;

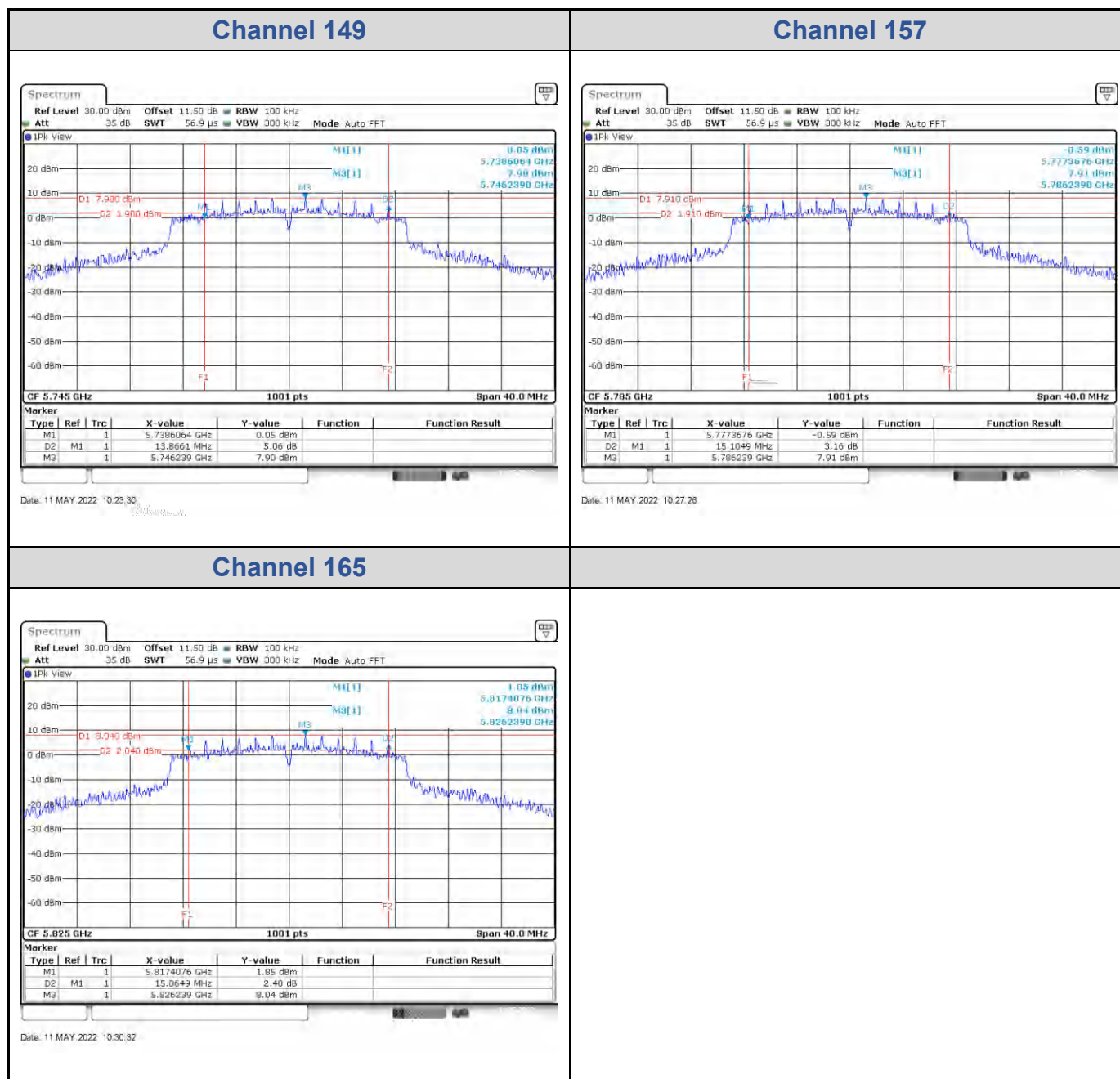


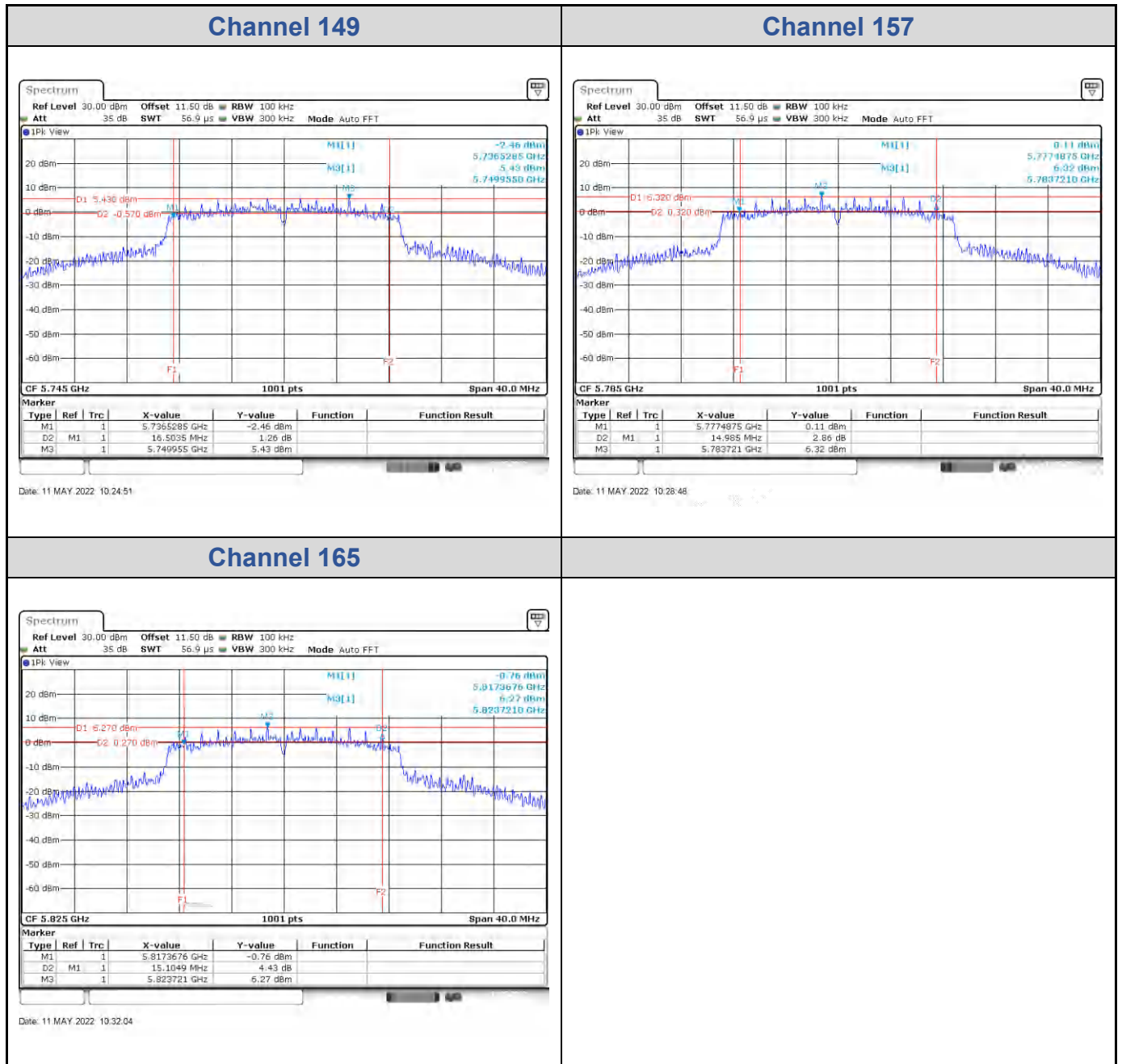
&lt;Chain 1&gt;



**802.11ac VHT20**

Band	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-3	149	5745	13.87	16.50
	157	5785	15.10	14.99
	165	5825	15.06	15.10

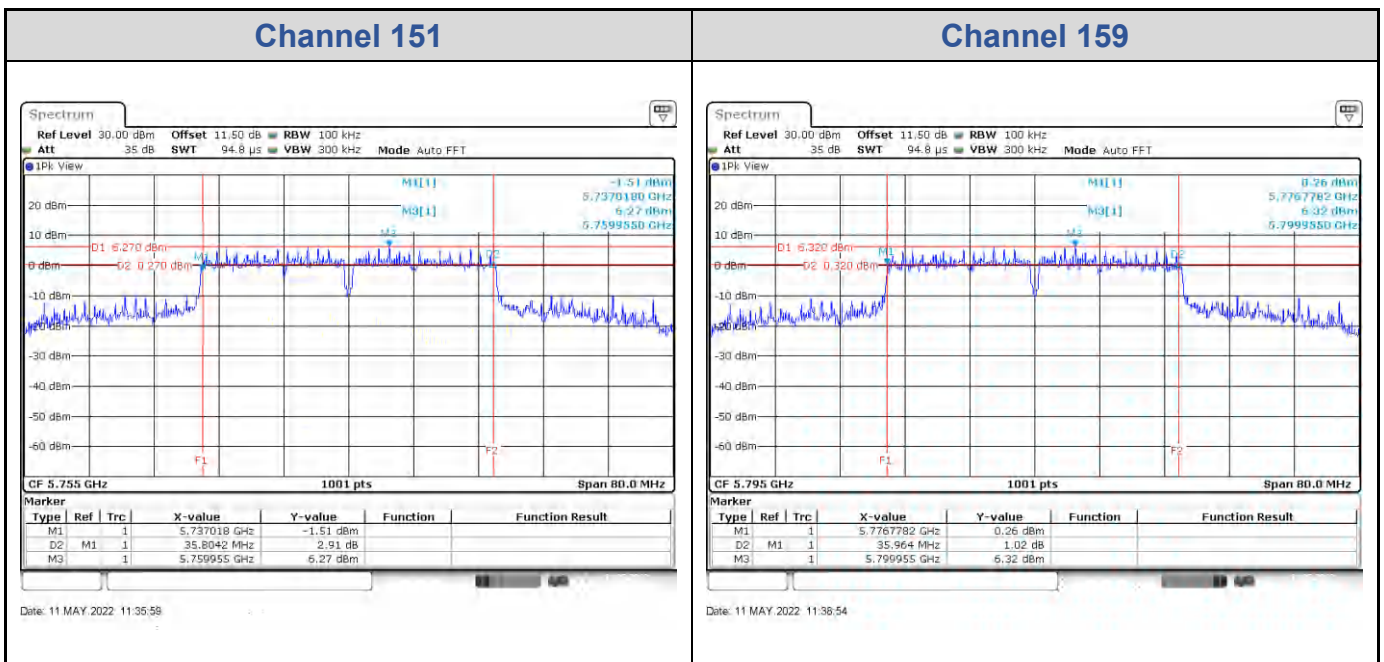
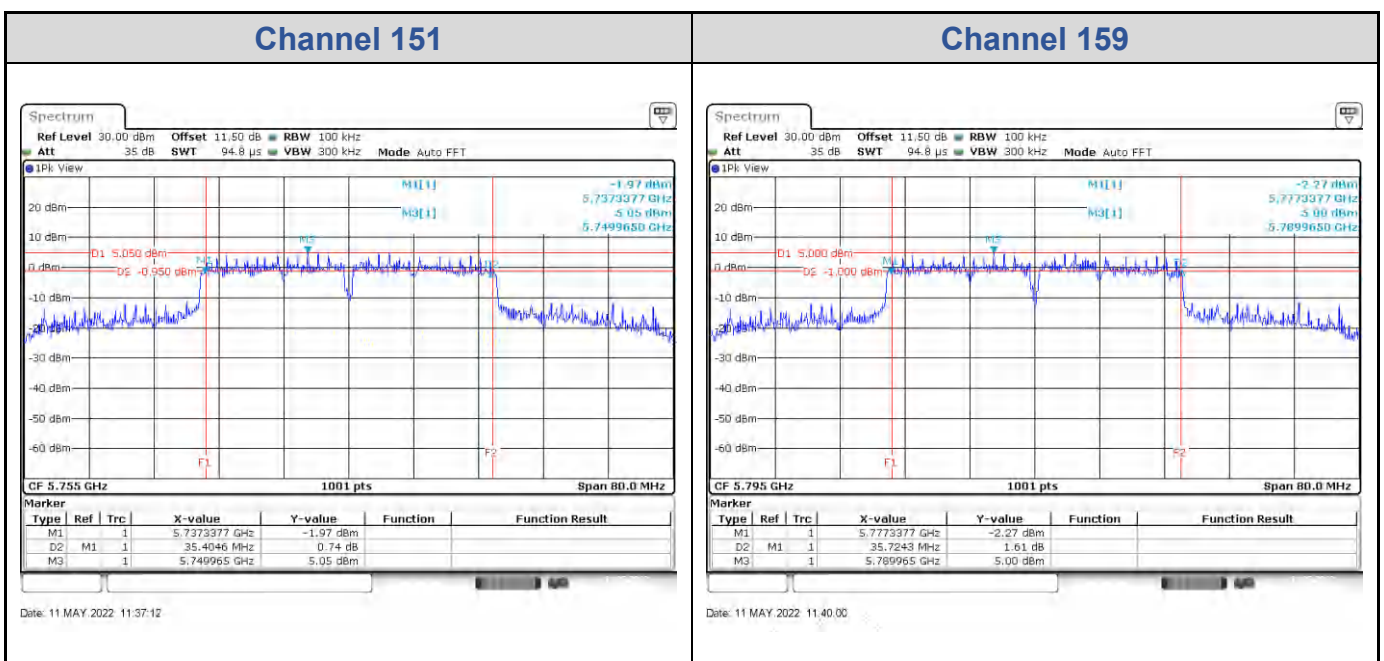
**<Chain 0>**


**<Chain 1>**




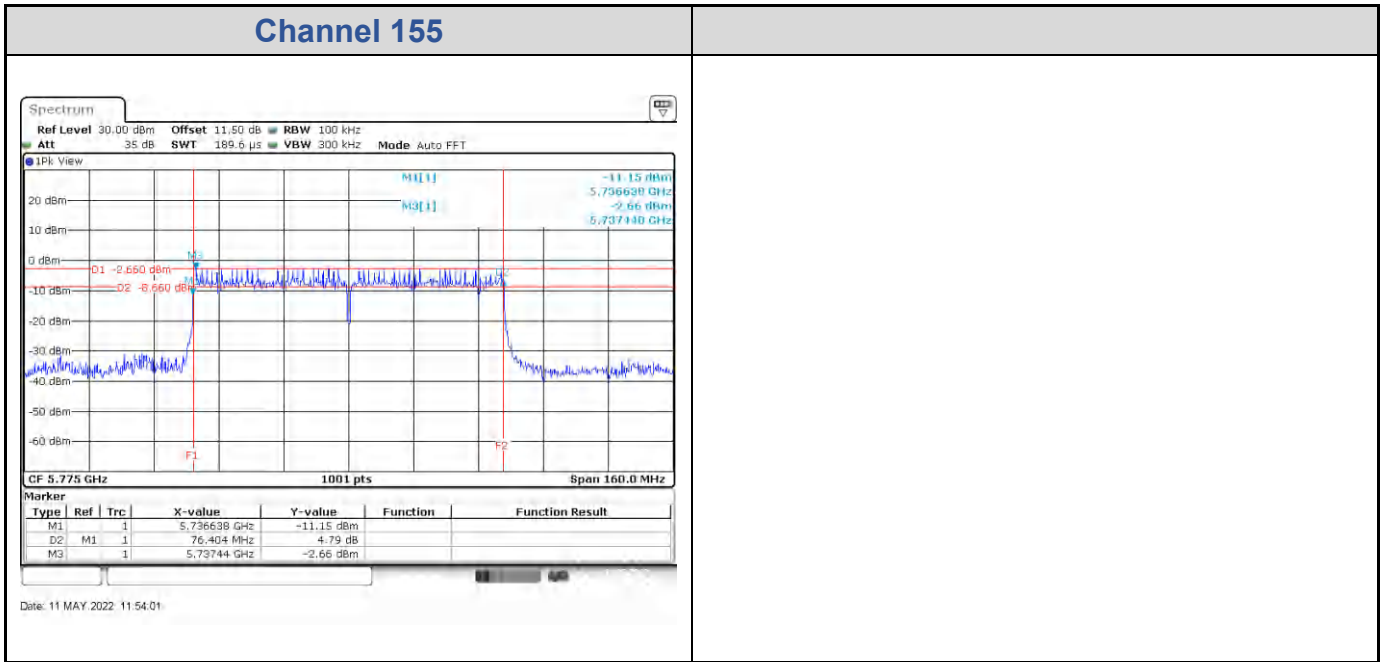
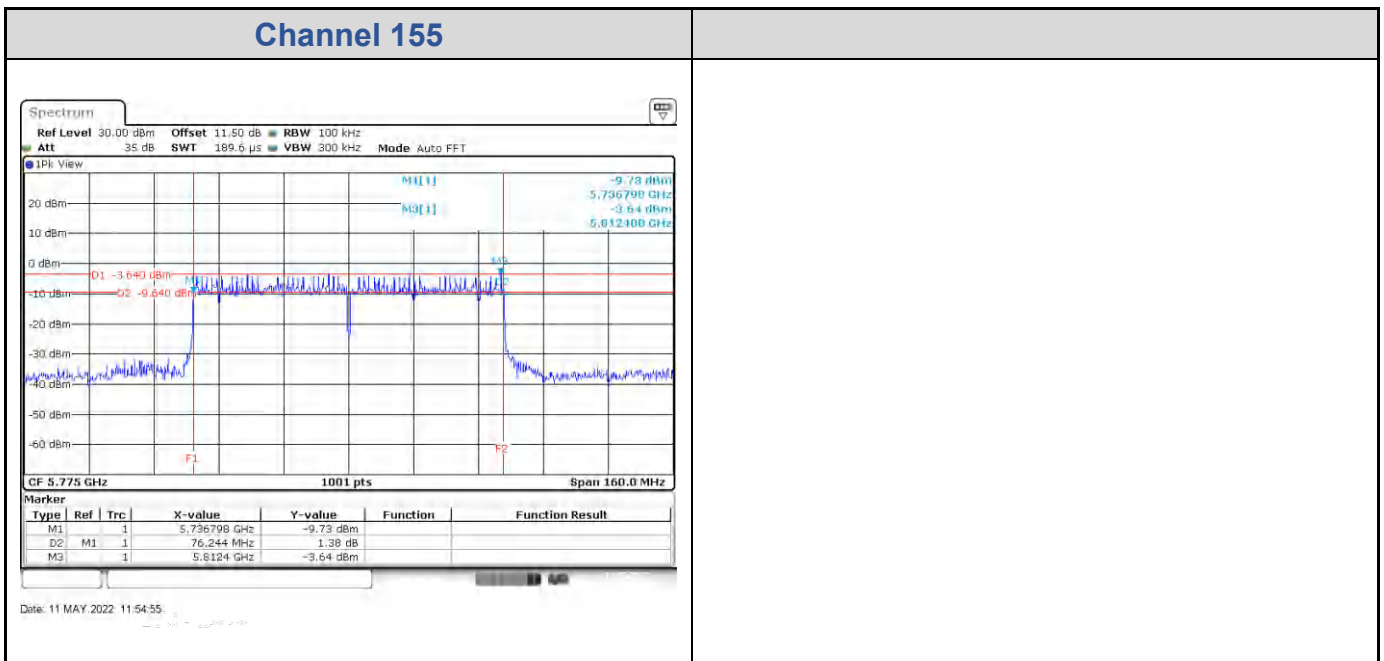
**802.11ac VHT40**

Band	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-3	151	5755	35.80	35.40
	159	5795	35.96	35.72

**<Chain 0>**

**<Chain 1>**


**802.11ac VHT80**

Band	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	
			Chain 0	Chain 1
U-NII-3	155	5775	76.40	76.24

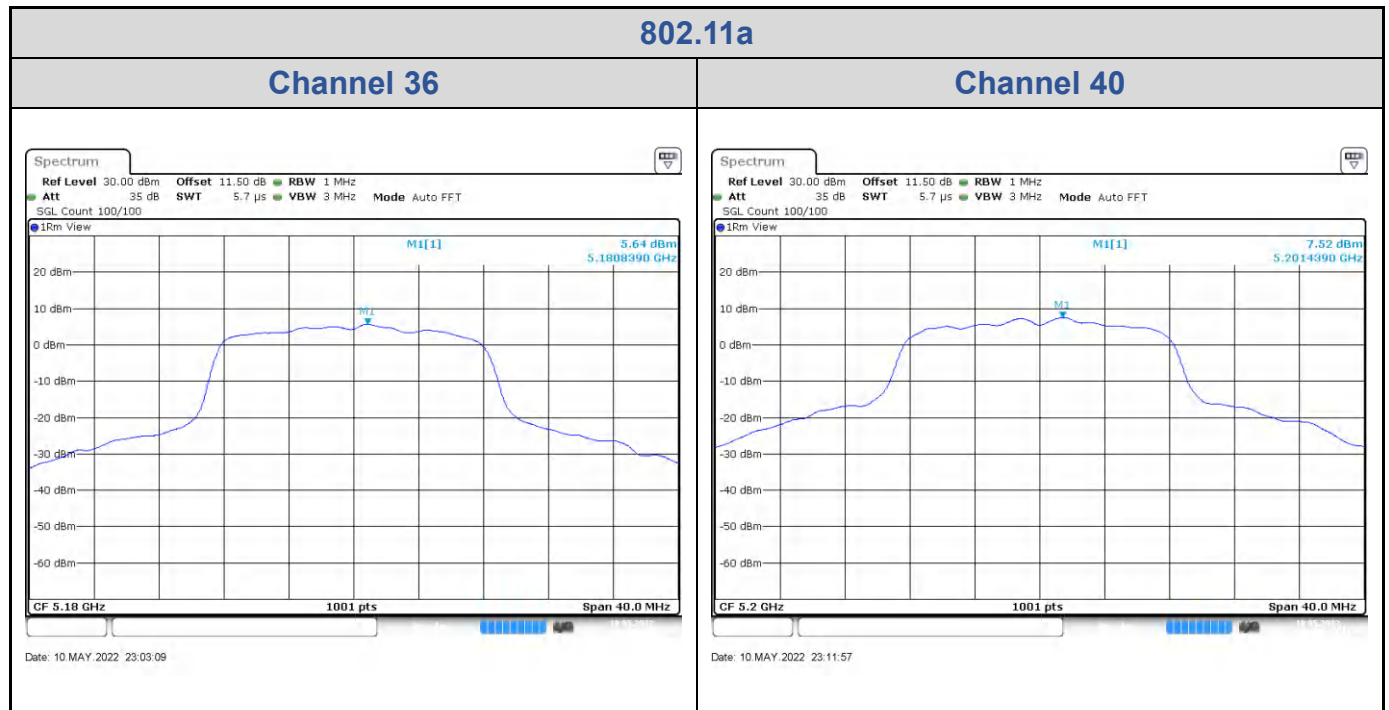
**<Chain 0>**

**<Chain 1>**


### Test Result of Power Spectral Density

#### 802.11a

Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/MHz)		Total PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-1	36	5180	5.64	4.43	8.40	11	Pass
	40	5200	7.52	5.47	9.94	11	Pass
	48	5240	7.22	5.09	9.61	11	Pass

<Chain 0>



802.11a

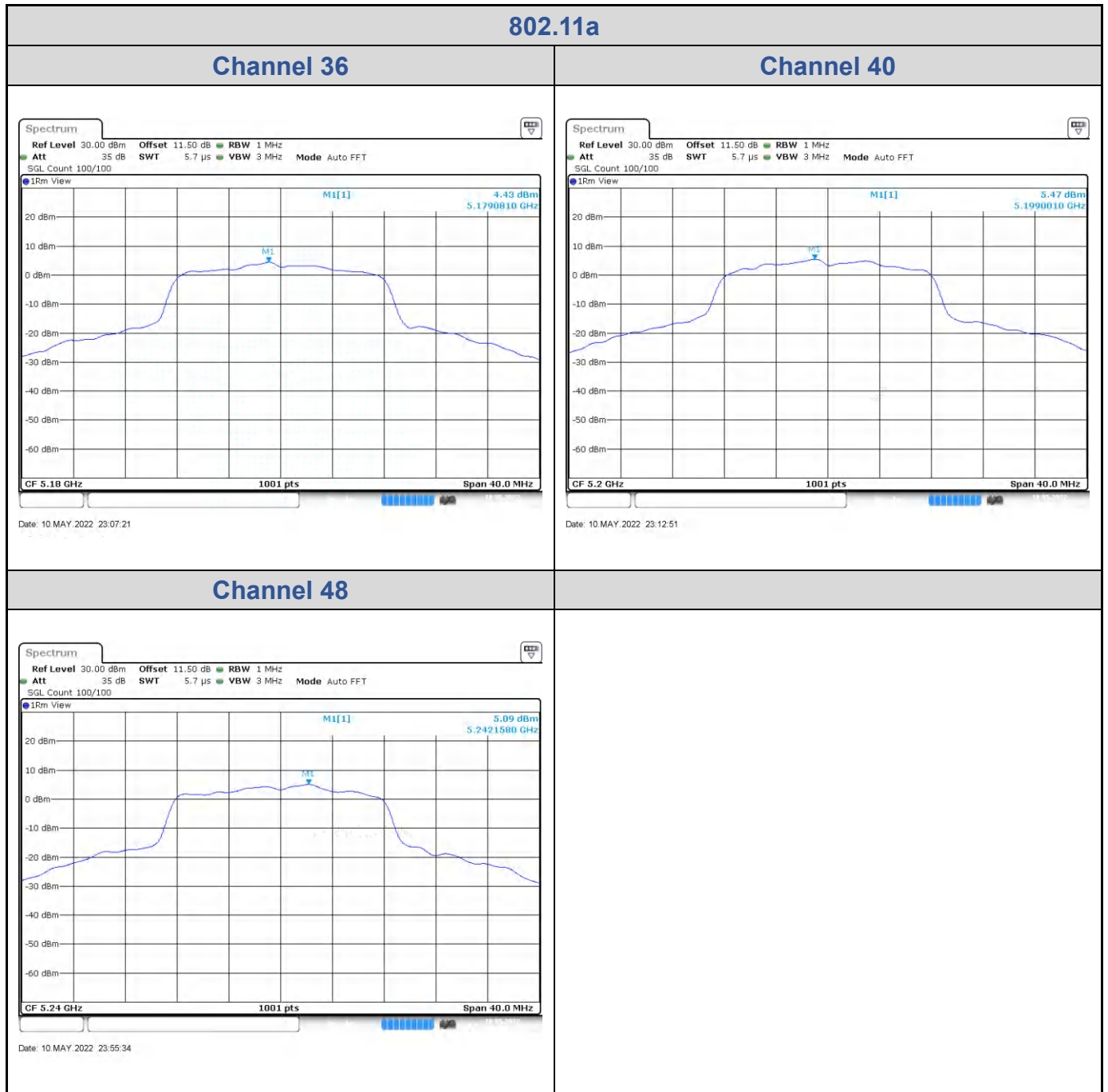
Channel 48

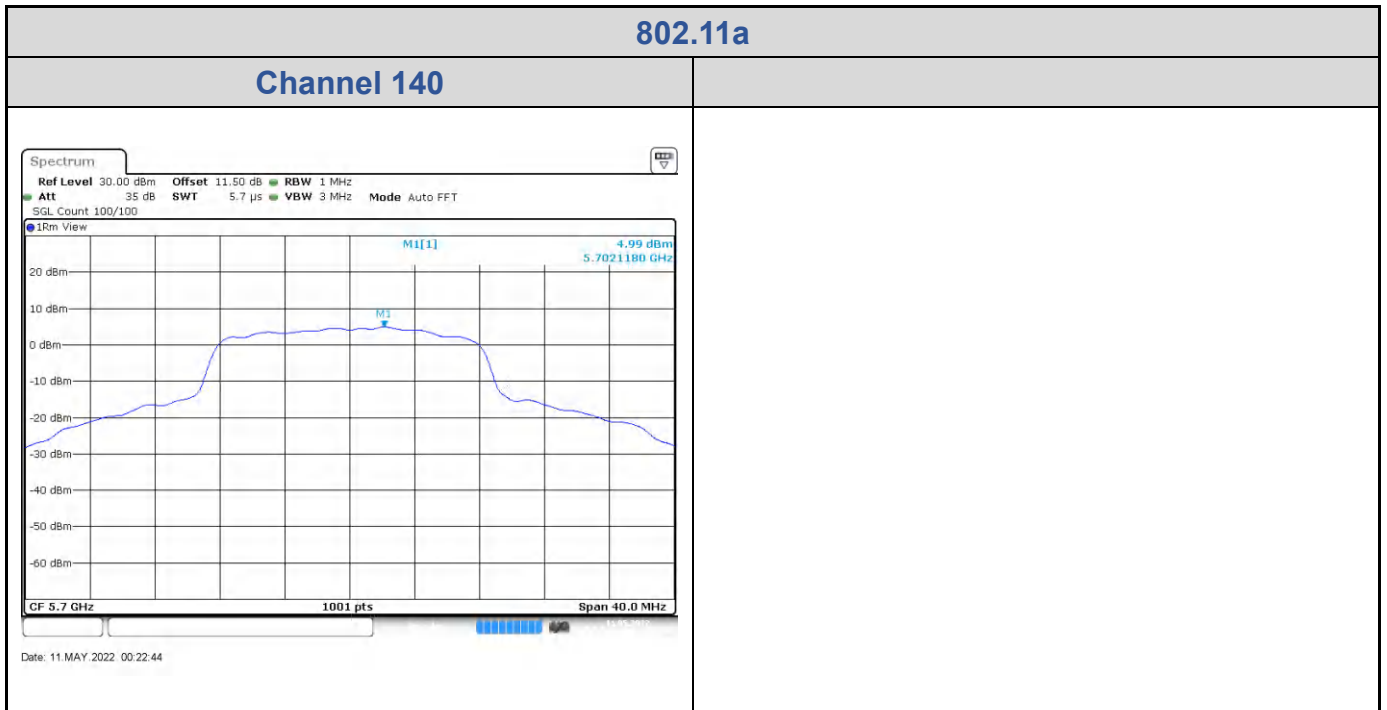


Date: 10 MAY 2022 23:56:33



<Chain 1>

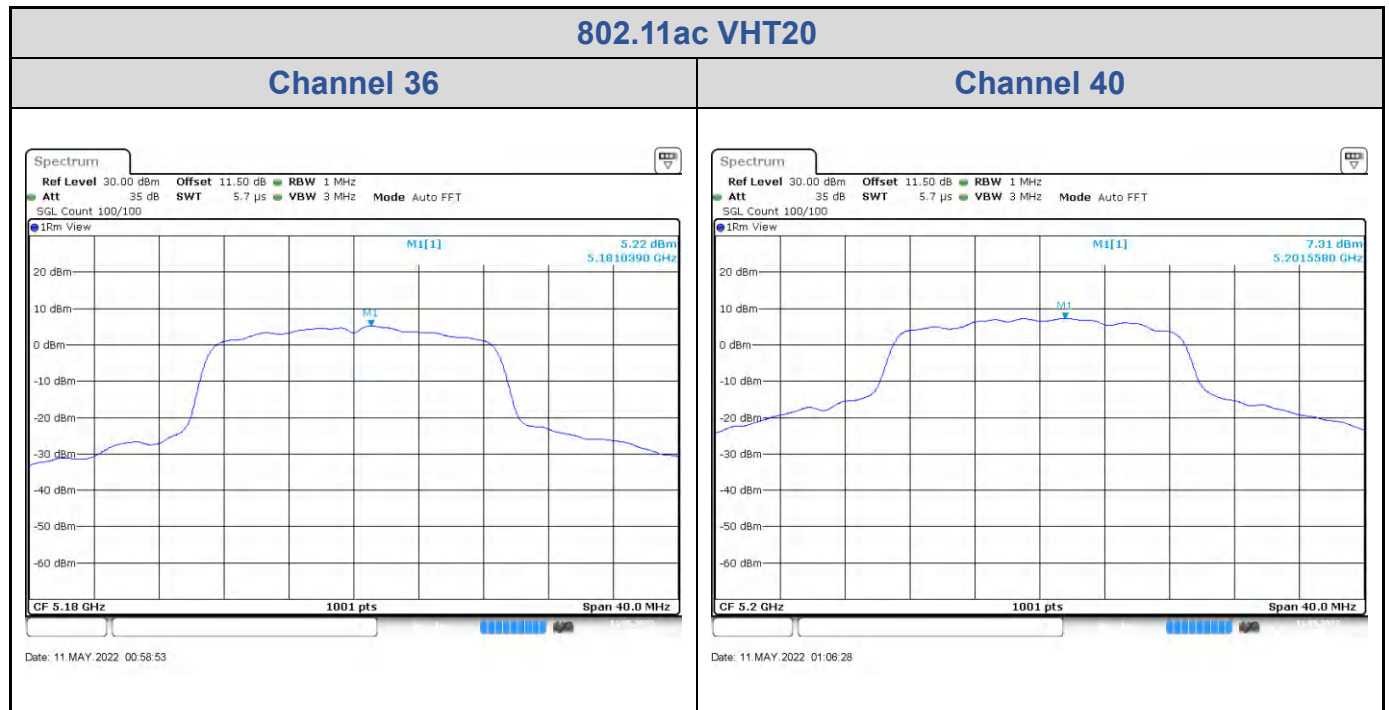




**802.11ac VHT20**

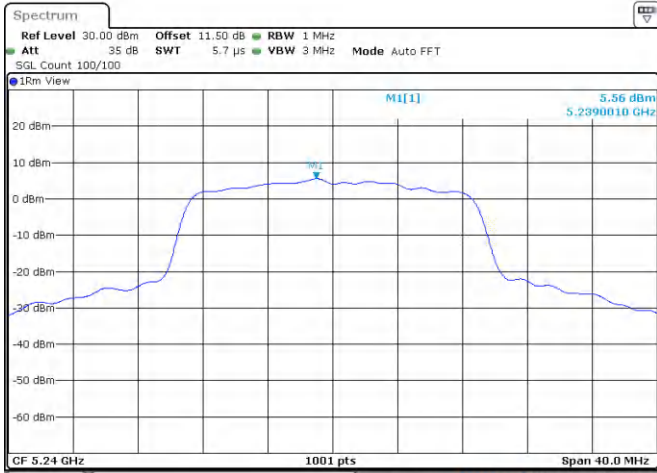
Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/MHz)		Total PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-1	36	5180	5.22	4.25	8.11	11	Pass
	40	5200	7.31	5.72	9.93	11	Pass
	48	5240	5.56	3.97	8.18	11	Pass

&lt;Chain 0&gt;



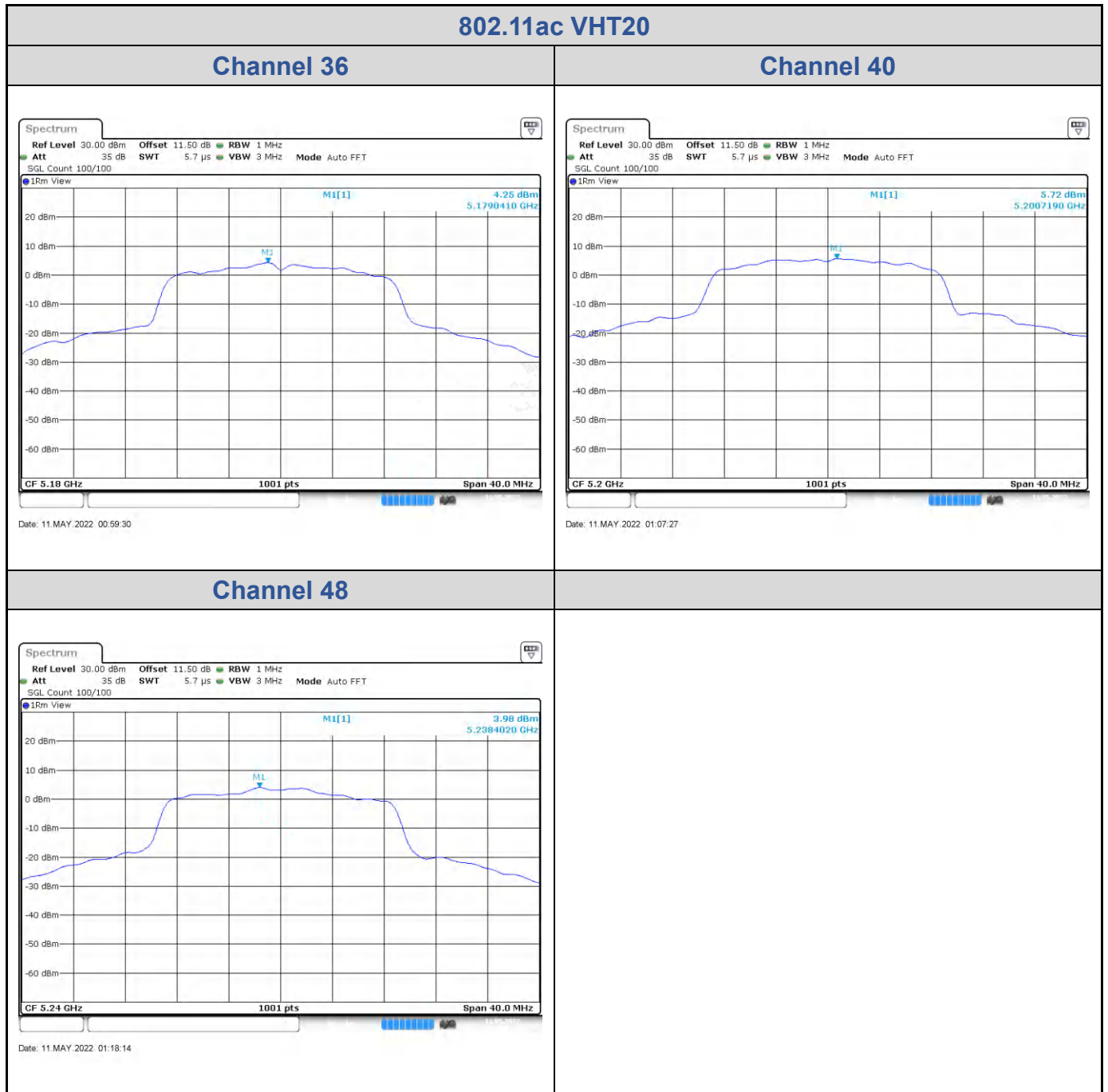
802.11ac VHT20

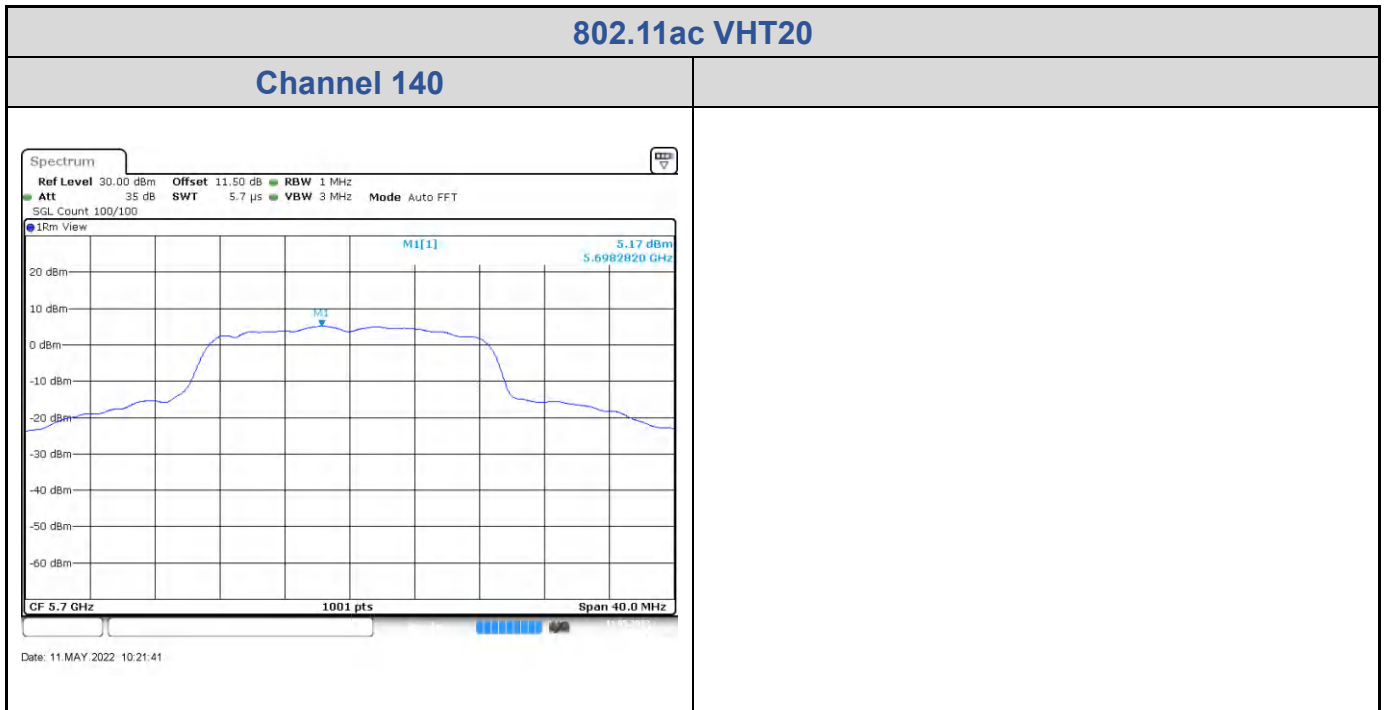
Channel 48



Date: 11 MAY 2022 01:19:38

<Chain 1>

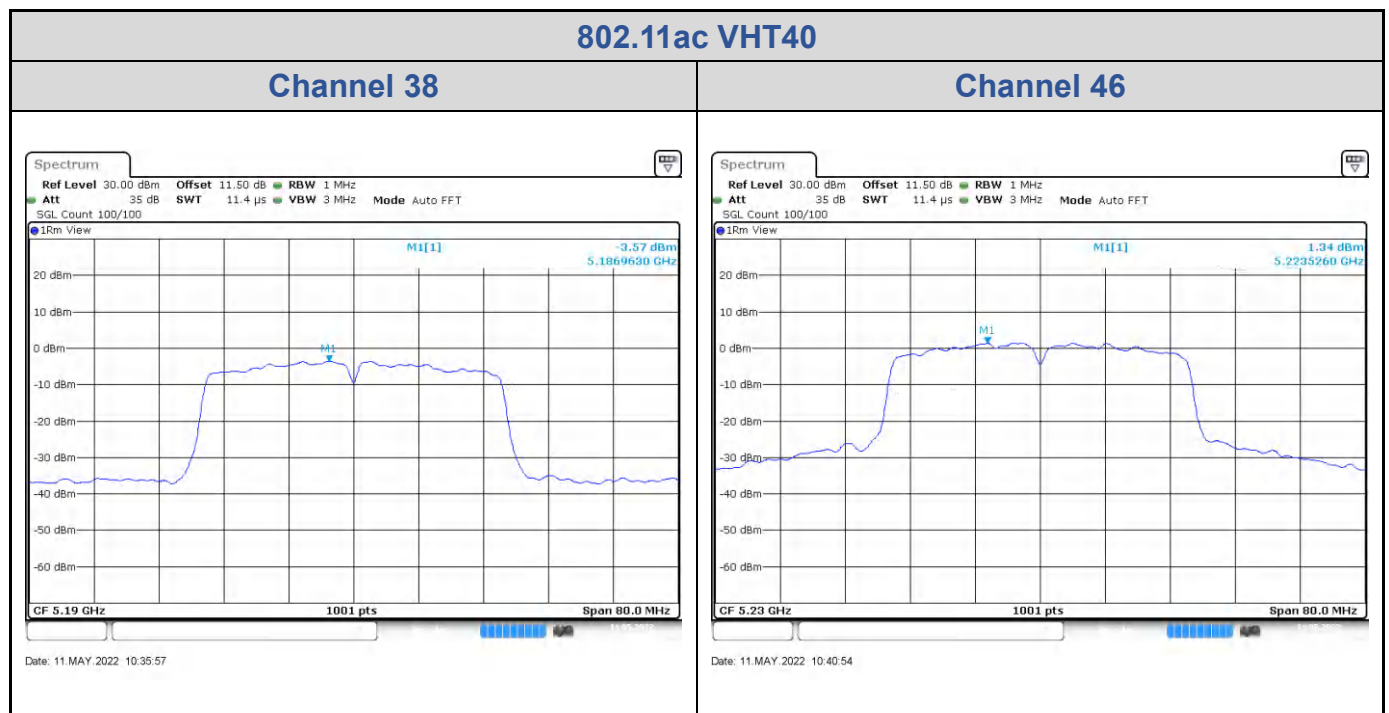




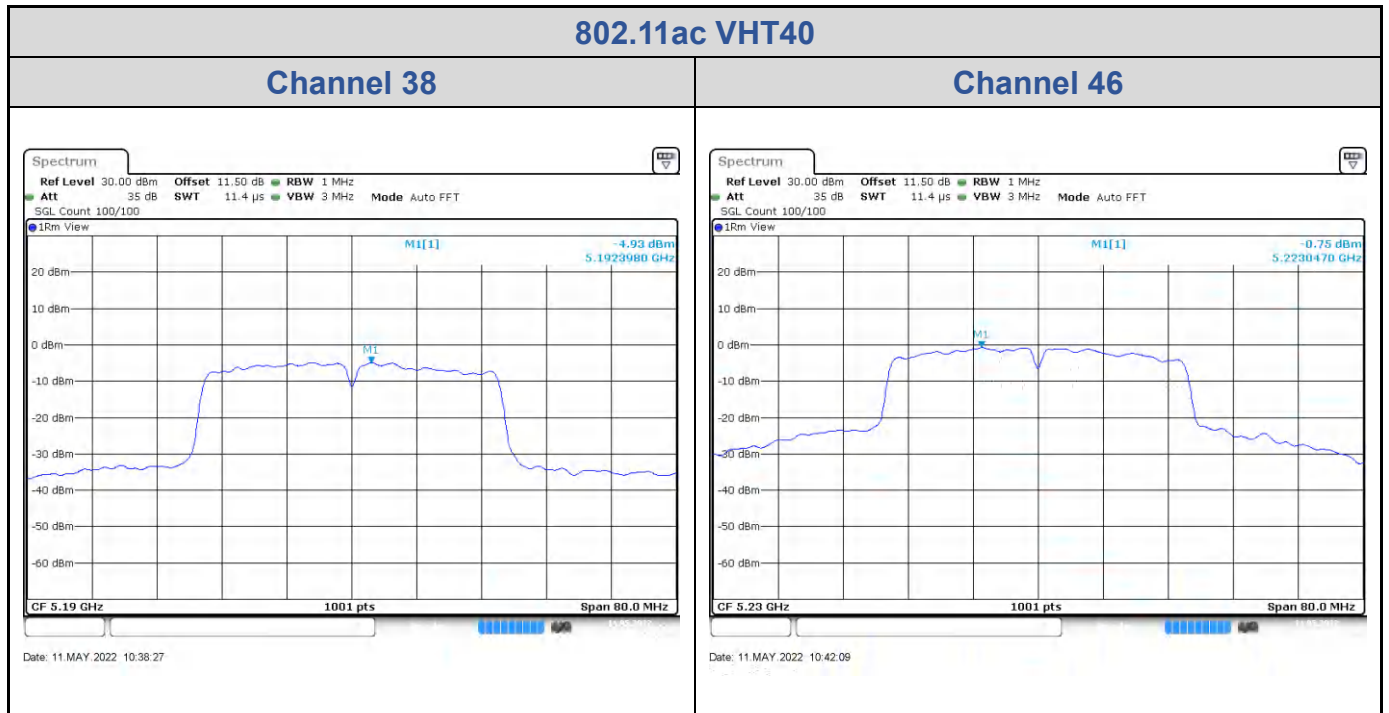
**802.11ac VHT40**

Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/MHz)		Total PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-1	38	5190	-3.57	-4.93	-0.57	11	Pass
	46	5230	1.34	-0.75	4.05	11	Pass

&lt;Chain 0&gt;



<Chain 1>

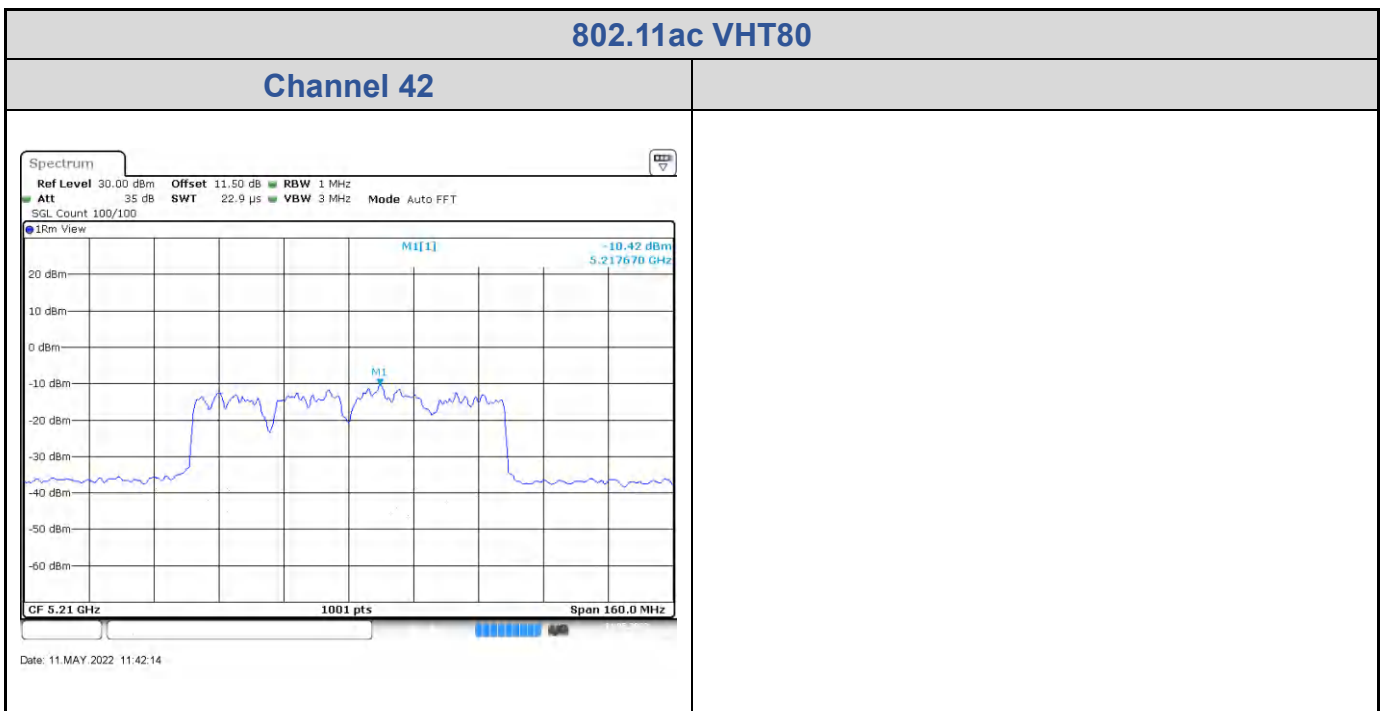




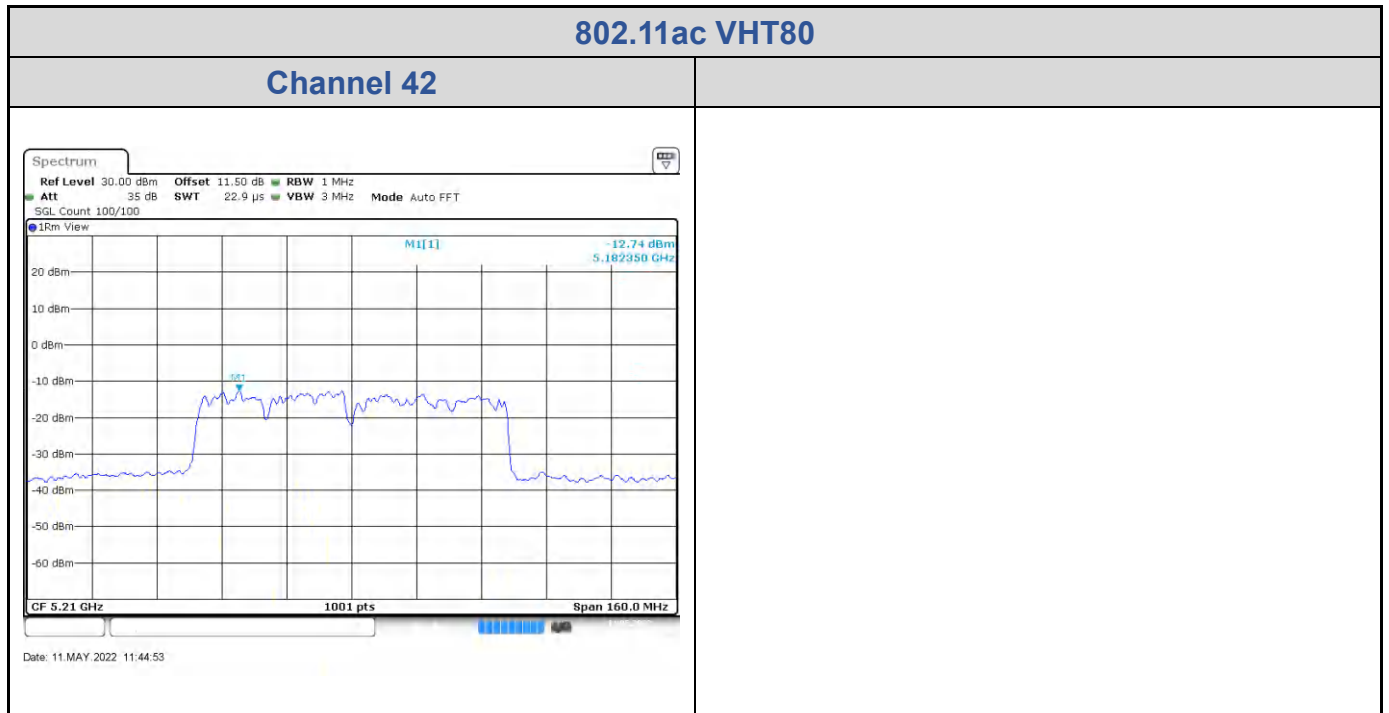
802.11ac VHT80

Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/MHz)		Total PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-1	42	5210	-10.42	-12.74	-2.78	11	Pass

<Chain 0>



<Chain 1>

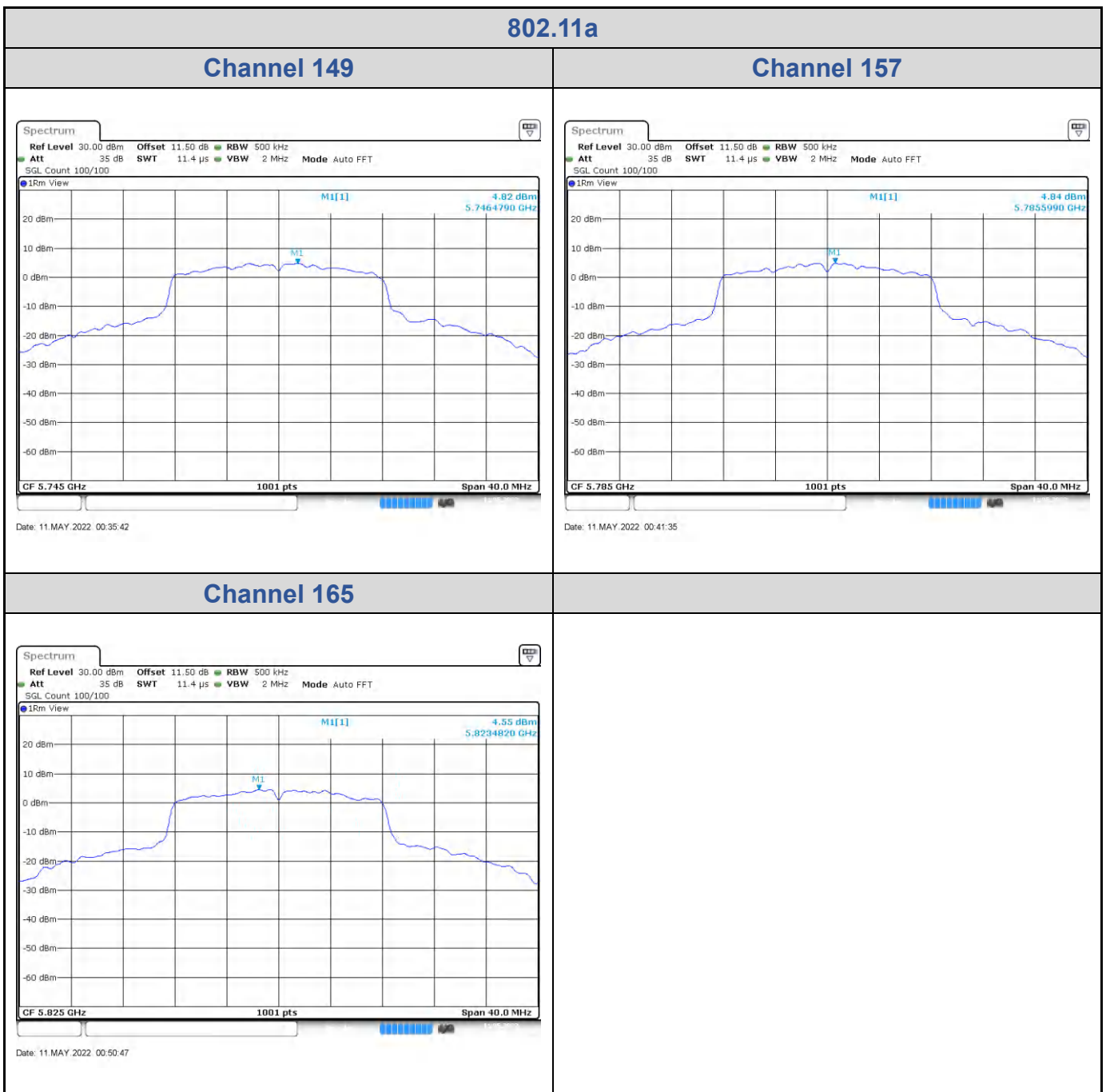


## Test Result of Power Spectral Density

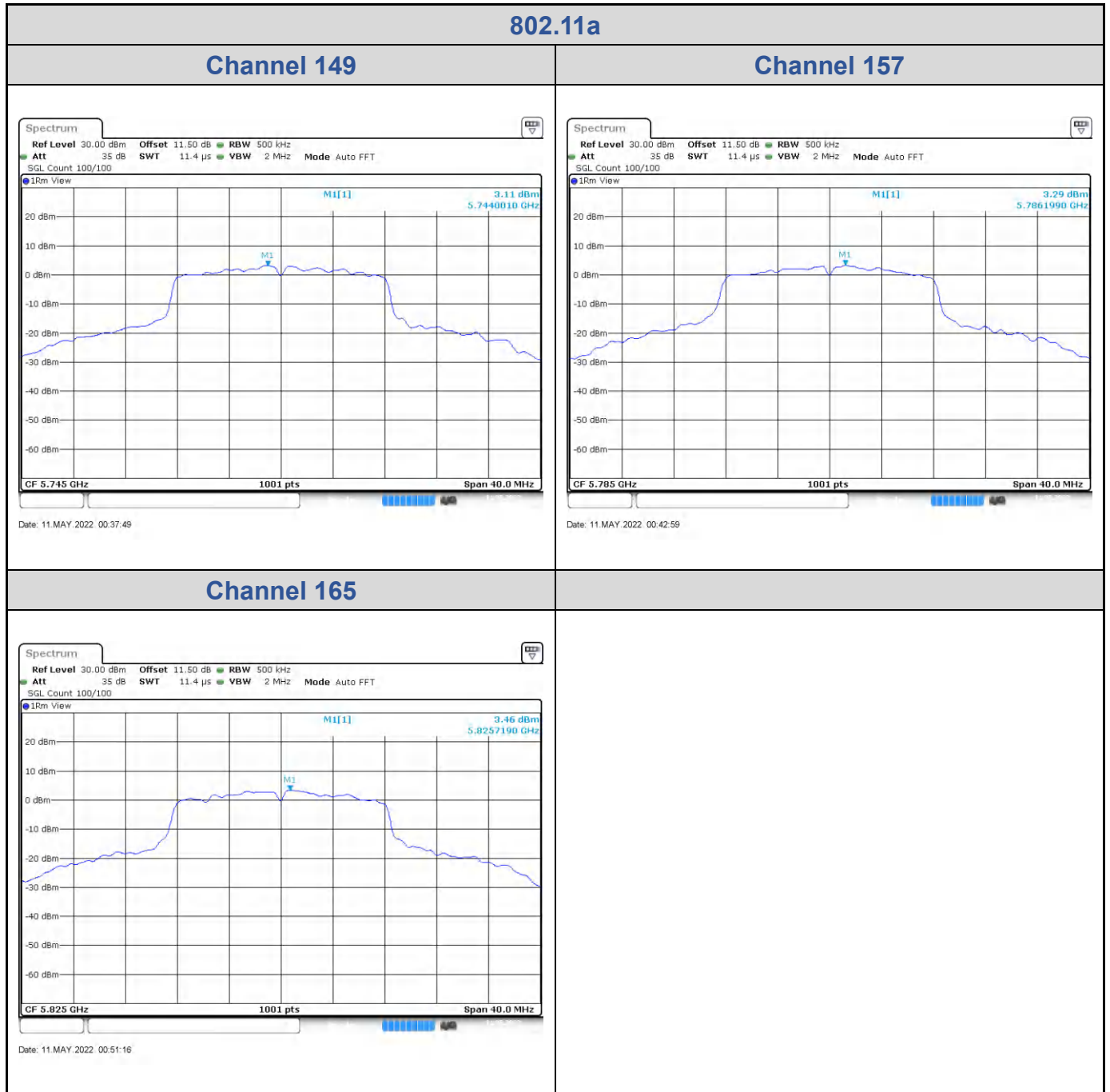
### 802.11a

Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/500kHz)		Total PSD with Duty Factor (dBm/500kHz)	Maximum Limit (dBm/500kHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-3	149	5745	4.82	3.11	7.38	30	Pass
	157	5785	4.84	3.29	7.46	30	Pass
	165	5825	4.55	3.46	7.37	30	Pass

<Chain 0>

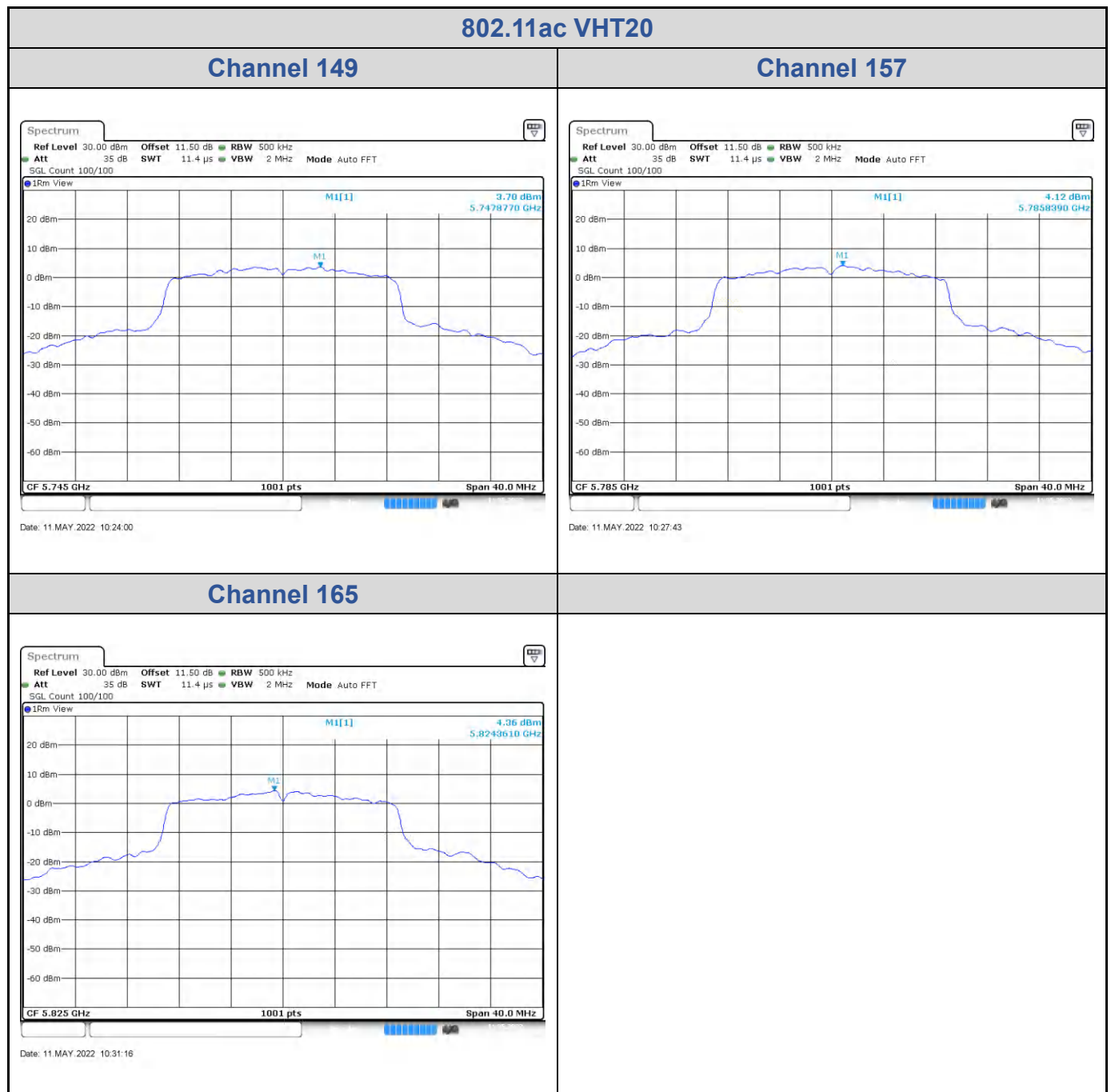


<Chain 1>



**802.11ac VHT20**

Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/500kHz)		Total PSD with Duty Factor (dBm/500kHz)	Maximum Limit (dBm/500kHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-3	149	5745	3.70	3.26	6.83	30	Pass
	157	5785	4.12	2.82	6.86	30	Pass
	165	5825	4.36	2.69	6.95	30	Pass

**<Chain 0>**


<Chain 1>

802.11ac VHT20

Channel 149

Channel 157

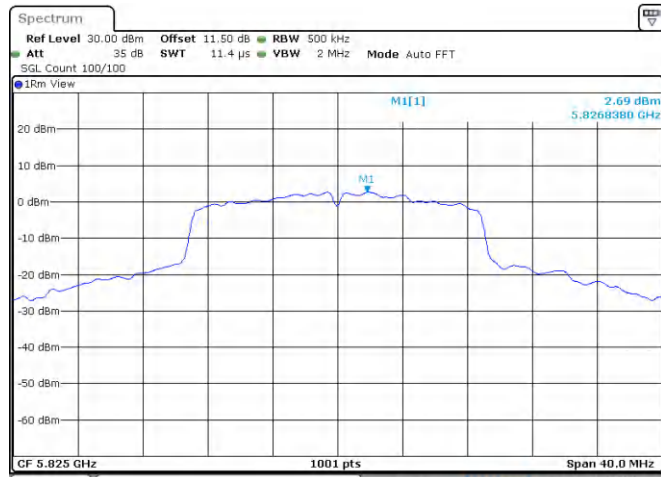


Date: 11 MAY 2022 10:25:08



Date: 11 MAY 2022 10:29:05

Channel 165

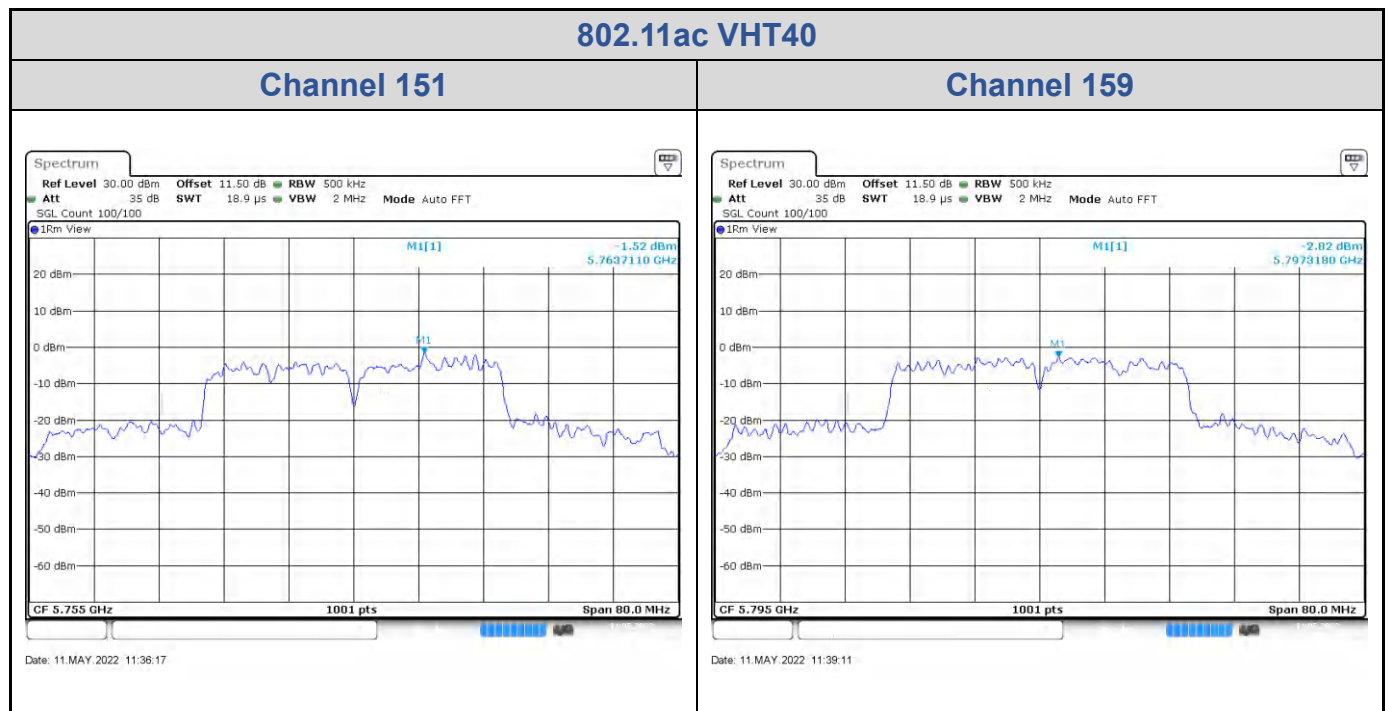


Date: 11 MAY 2022 10:32:21

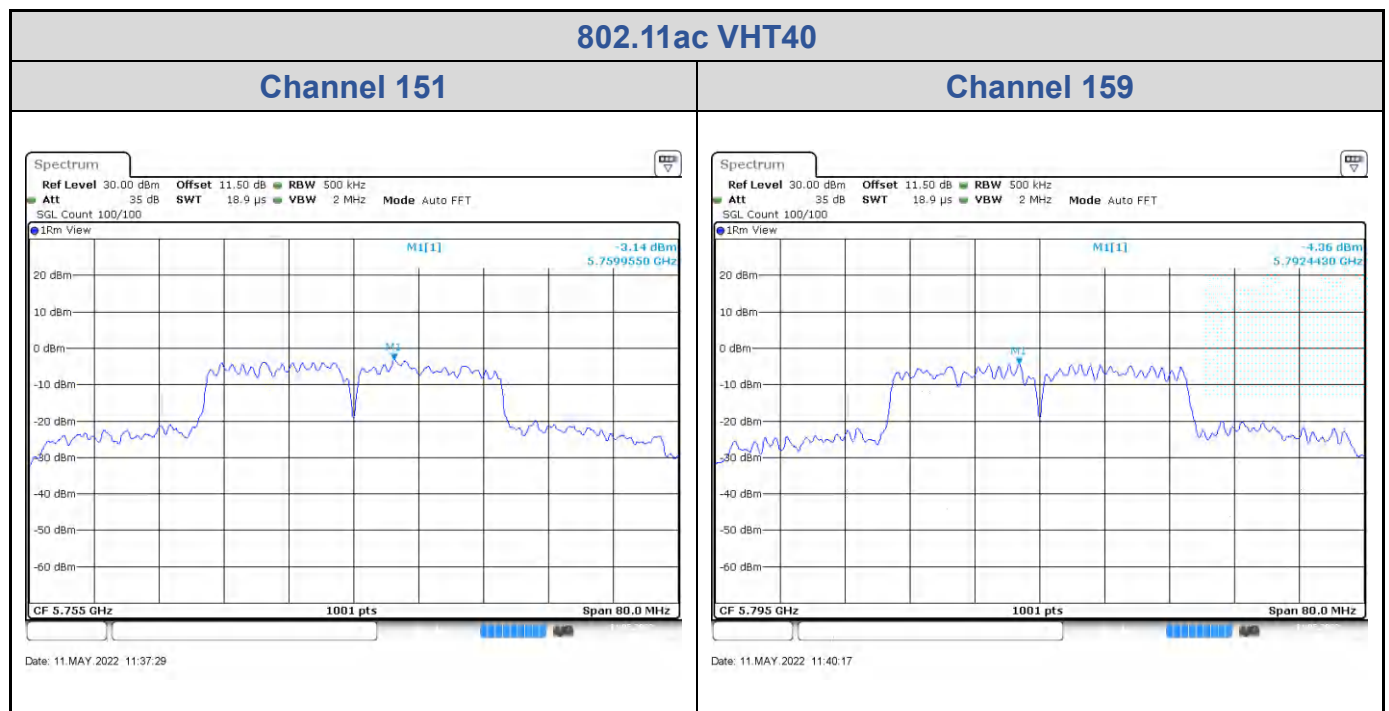
802.11ac VHT40

Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/500kHz)		Total PSD with Duty Factor (dBm/500kHz)	Maximum Limit (dBm/500kHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-3	151	5755	-1.52	-3.14	1.38	30	Pass
	159	5795	-2.82	-4.36	0.11	30	Pass

<Chain 0>



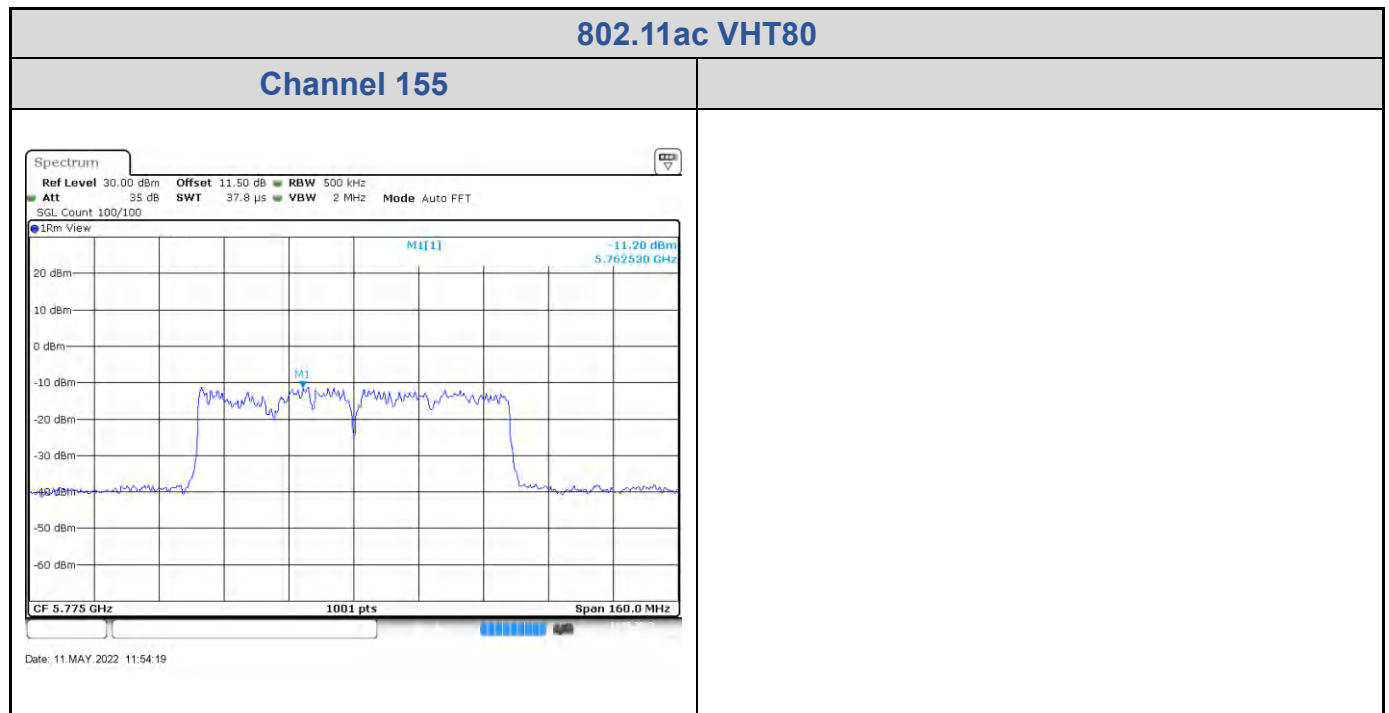
<Chain 1>



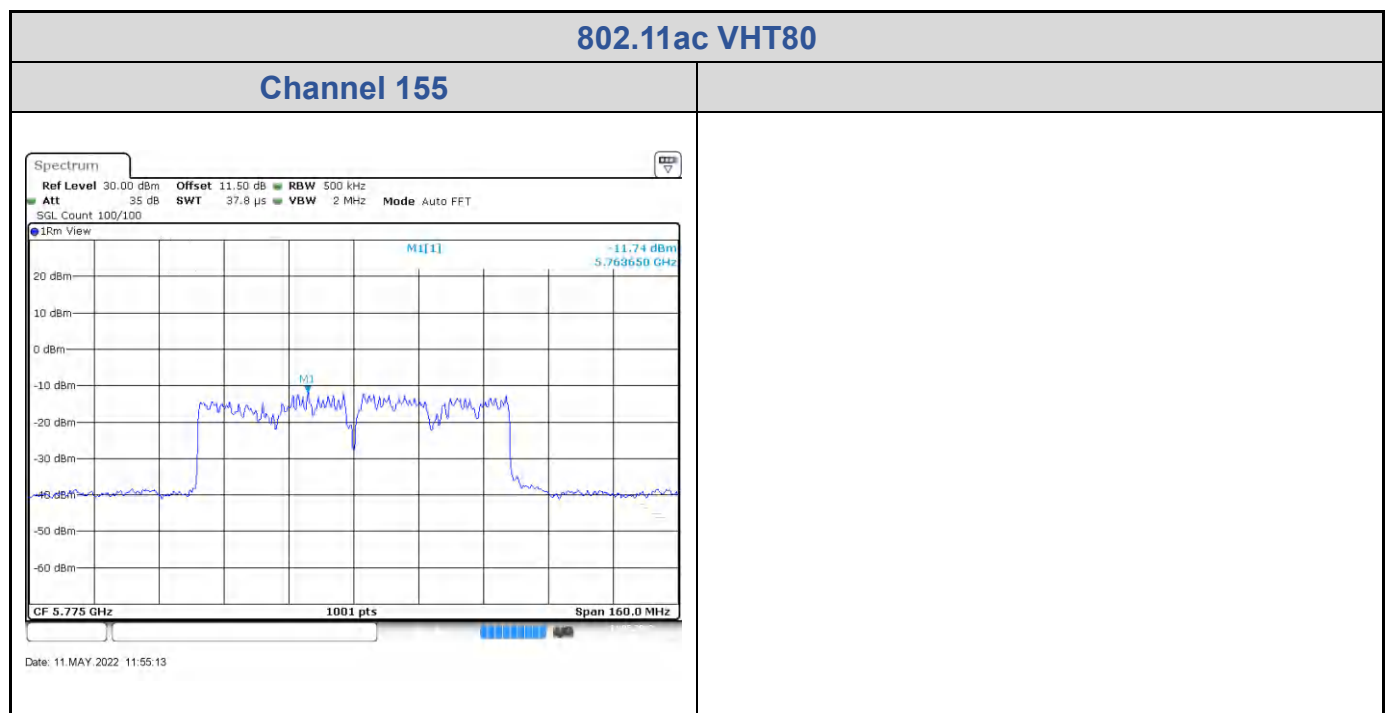
802.11ac VHT80

Band	Channel	Frequency (MHz)	PSD with Duty Factor (dBm/500kHz)		Total PSD with Duty Factor (dBm/500kHz)	Maximum Limit (dBm/500kHz)	Pass / Fail
			Chain 0	Chain 1			
U-NII-3	155	5775	-11.20	-11.74	-2.81	30	Pass

<Chain 0>



<Chain 1>





# Appendix B: Test Results of Radiation Spurious Emissions & Mains

## Conducted Emission

### Band Edges, 4.5GHz ~ 7GHz

#### U-NII-1

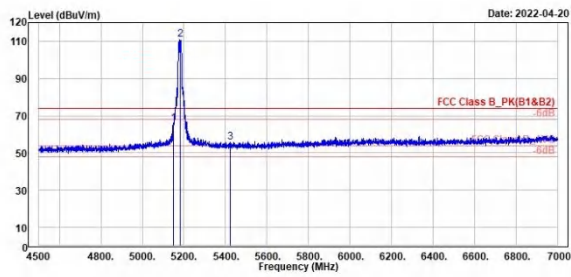
#### 802.11a

#### CH 36 (Horizontal) Peak

#### CH 36 (Vertical) Peak



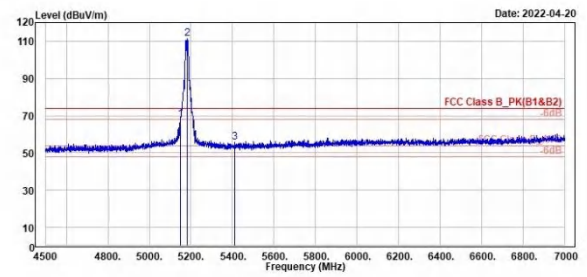
TUV Rheinland Taiwan Ltd.  
No. 438-18, Sec 2, Fenhiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322



1	2	3	4	5	6	7	8	9	10	11	12
1	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note		
1	Level	Level	Line	Limit	cm	deg					
1	dBuV/m	Factor	dB	dB							
1	MHz	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	5150.00	65.57	22.67	42.90	74.00	-8.43	199	157 Peak	Horizontal		
2 *	5180.00	118.95	67.97	42.98	74.00	36.95	199	157 Peak	Horizontal		
3	5422.50	55.88	12.65	43.23	74.00	-18.12	199	157 Peak	Horizontal		



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1	2	3	4	5	6	7	8	9	10	11	12
1	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note		
1	Level	Level	Line	Limit	cm	deg					
1	dBuV/m	Factor	dB	dB							
1	MHz	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	5150.00	68.11	25.21	42.90	74.00	-5.89	100	157 Peak	Vertical		
2 *	5180.00	111.28	68.30	42.98	74.00	37.28	100	157 Peak	Vertical		
3	5410.50	55.68	12.46	43.22	74.00	-18.32	100	157 Peak	Vertical		

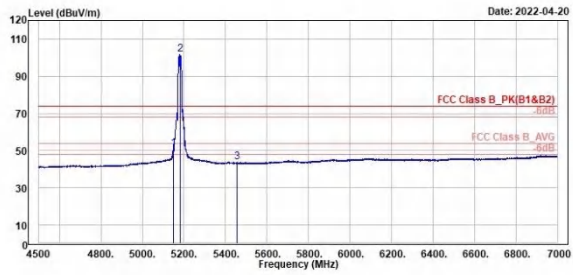
802.11a

CH 36 (Horizontal) Average

CH 36 (Vertical) Average



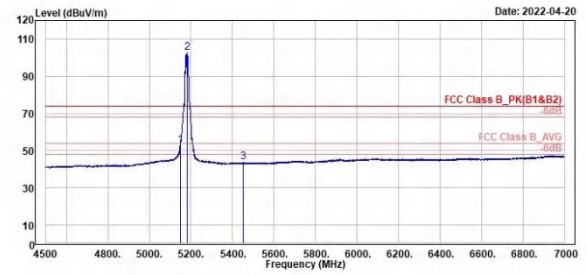
TÜV Rheinland Taiwan Ltd.  
No. 438-18, Sec. 2, Fenfiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322



1	2	3	Read Level	Read Level Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
1	2	3	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1			5150.00	51.26	8.36	42.90	54.00	-2.74	199	157	Average Horizontal
2	*		5180.00	101.77	58.79	42.98	54.00	47.77	199	157	Average Horizontal
3			5457.50	43.72	0.46	43.26	54.00	-10.28	199	157	Average Horizontal



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1	2	3	Read Level	Read Level Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
1	2	3	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1			5150.00	52.97	10.87	42.90	54.00	-1.03	180	157	Average Vertical
2	*		5180.00	102.66	59.68	42.98	54.00	46.66	180	157	Average Vertical
3			5450.50	43.71	0.46	43.25	54.00	-10.29	180	157	Average Vertical

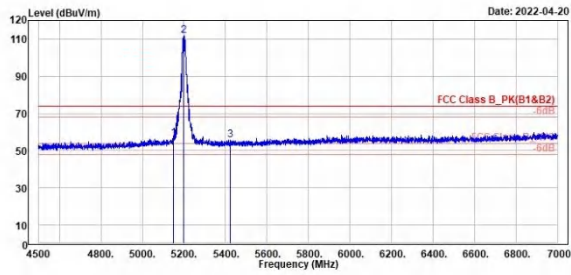
802.11a

CH 40 (Horizontal) Peak

CH 40 (Vertical) Peak



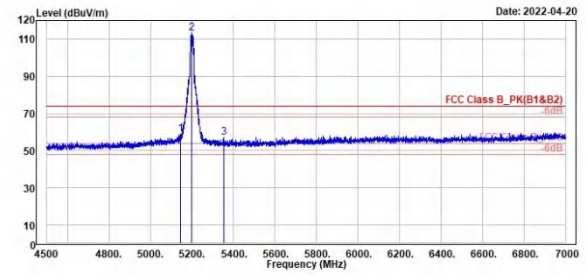
TÜV Rheinland Taiwan Ltd.  
No. 438-18, Sec. 2, Fenfiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322



Peak	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	5148.50	56.66	13.77	42.89	74.00	-17.34	100	168 Peak	Horizontal	
2 *	5200.00	111.59	68.55	43.04	74.00	37.59	100	168 Peak	Horizontal	
3	5422.50	55.87	12.64	43.23	74.00	-18.13	100	168 Peak	Horizontal	



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Peak	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	5145.50	58.83	15.97	42.86	74.00	-15.17	100	148 Peak	Vertical	
2 *	5200.00	113.32	70.28	43.04	74.00	39.32	100	148 Peak	Vertical	
3	5352.00	57.16	14.18	42.98	74.00	-16.84	100	148 Peak	Vertical	

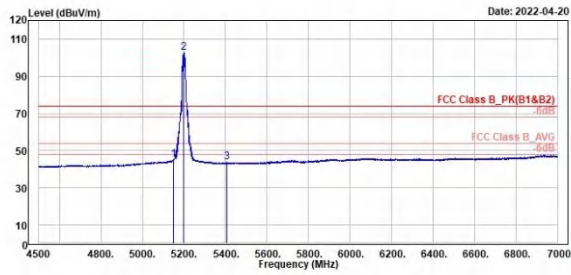
802.11a

CH 40 (Horizontal) Average

CH 40 (Vertical) Average



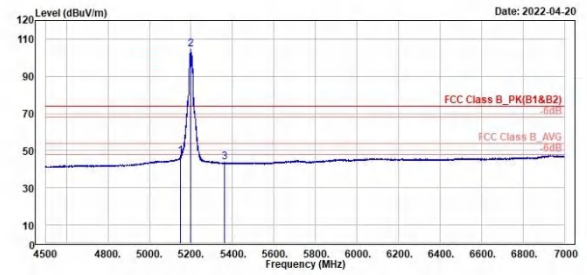
TUV Rheinland Taiwan Ltd.  
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1	2	3	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
5148.00	44.97	2.00	42.89	54.00	-9.03	100	168	Average	Horizontal		
5200.00	102.55	59.51	43.04	54.00	48.55	100	168	Average	Horizontal		
5408.00	43.67	0.45	43.22	54.00	-10.33	100	168	Average	Horizontal		



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1	2	3	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
5150.00	47.16	4.26	42.90	54.00	-6.84	100	148	Average	Vertical		
5200.00	104.28	61.24	43.04	54.00	50.28	100	148	Average	Vertical		
5362.50	43.59	0.56	43.03	54.00	-10.41	100	148	Average	Vertical		