


Test Report No:  
 NIE: 68826RRF.002A1

## Partial Test Report

### USA FCC Part 15.407, 15.209

(*) Identification of item tested	XGS-PON 10G ONT Home Gateway
(*) Trademark	Altice Labs
(*) Model and / or type reference	FiberGateway XSR150Dx
Other identification of the product	HW version: PCB 1497 SW version: 2.3 FCC ID: 2ACJF-FGW-XSR150DX
(*) Features	1 x XGS-PON, 1 x FXS, 4 x Ethernet Gigabit, 1 SFP Slot (Optical or Electrical), Dual Band Wi-Fi 6 4T4R and 1 x USB 3.1 Type C Gen1.
Applicant	Altice Labs S.A. Rua Eng. Ferreira Pinto Basto 3810-106 Aveiro Portugal
Test method requested, standard	USA FCC Part 15.407 (10-1-20) Edition: Unlicensed National Information Infrastructure (U-NII) Devices. General technical requirements. USA FCC Part 15.209 (10-1-20) Edition: Radiated emission limits; general requirements. Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017. Guidance for Emission Testing of Transmitters with Multiple Outputs in the Same Band 662911 D01 Multiple Transmitter Output v02r01 dated 10/31/2013 ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Approved by (name / position & signature)	Rafael López Martín EMC Consumer & RF Lab. Manager  2022.06.09 13:15:10 +02'00'
Date of issue	2022-06-09
Report template No	FDT08_24 (*) "Data provided by the client"

# Index

General Conditions .....	3
Uncertainty .....	3
Data provided by the client.....	3
Usage of samples .....	4
Test sample description .....	5
Identification of the client.....	6
Testing period and place.....	6
Document history.....	6
Environmental conditions .....	6
Remarks and comments .....	7
Testing verdicts.....	8
Summary .....	8
Appendix A: Tests results for the U-NII-3: 5.725 GHz – 5.85 GHz Band .....	9

## Competences and guarantees

---

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification S.A.U. is an FCC-recognized accredited testing laboratory with the appropriate scope of accreditation that covers the performed test in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

**IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification S.A.U.

## General Conditions

---

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

## Uncertainty

---

Uncertainty (factor  $k=2$ ) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

## Data provided by the client

---

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample of the FiberGateway is an Optical Terminal Equipment (ONT) unit for Passive Optical Networks (PON) termination in a FTTH (Fiber-To-The-Home) service delivery architecture. FiberGateway communicates with the OLT (Optical Line Terminal) for the PON side and with the customer's premises for the client side. This equipment supports triple-play services - high speed internet (HSI), voice (VoIP), video (IPTV) and Wi-Fi (Dual Band).

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of result.

## Usage of samples

Samples undergoing test have been selected by: The client.

- Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Reception
68826B/002	XGS-PON 10G ONT Home Gateway	FiberGateway XSR150Dx	PTIN205A5BCF	2021/07/22

Auxiliary elements used with the Sample S/01:

Control Nº	Description	Model	Serial Nº	Reception
68826B/003	AC/DC Adapter	WA-36N12FU	--	2021/07/22

Sample S/01 has undergone the test(s): All radiated tests indicated in the Appendixes A.

- Sample S/02 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Reception
68826B/019	XGS-PON 10G ONT Home Gateway	FiberGateway XSR150Dx	5054494E205A5DDF	2022/2/09

Auxiliary elements used with the Sample S/02:

Control Nº	Description	Model	Serial Nº	Reception
68826B/007	AC/DC Adapter	WA-36N12FU	--	2021/07/22
68826B/012	SMA to UFL cable	--	--	2021/10/01
68826B/013	SMA to UFL cable	--	--	2021/10/01
68826B/014	SMA to UFL cable	--	--	2021/10/01
68826B/015	SMA to UFL cable	--	--	2021/10/01

Sample S/02 has undergone the test(s): All conducted tests indicated in the Appendixes A.

## Test sample description

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded	Coupled to patient <sup>(3)</sup>		
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Supplementary information to the ports..... :							
Rated power supply .....	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	DC:					
<input type="checkbox"/>	DC:						
Rated Power .....							
Clock frequencies..... :							
Other parameters .....							
Software version .....	Rev 2.3						
Hardware version .....	PCB 1497						
Dimensions in cm (W x H x D) .....							
Mounting position .....	<input type="checkbox"/>	Table top equipment					
	<input type="checkbox"/>	Wall/Ceiling mounted equipment					
	<input type="checkbox"/>	Floor standing equipment					
	<input type="checkbox"/>	Hand-held equipment					
	<input type="checkbox"/>	Other:					
Modules/parts..... :	Module/parts of test item		Type	Manufacturer			
Accessories (not part of the test item) .....	Description		Type	Manufacturer			
Documents as provided by the applicant .....	Description		File name	Issue date			

<sup>(3)</sup> Only applicable to medical equipments.

## Identification of the client

Altice Labs S.A.  
Rua Eng. Ferreira Pinto Basto 3810-106 Aveiro, Portugal

## Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2021-10-19
Date (finish)	2022-02-24

## Document history

Report number	Date	Description
68826RRF.002	2022-03-09	First release.
68826RRF.002A1	2022-06-09	Second release. Inclusion of clarifications. This modification test report cancels and replaces the test report 68826RRF.002.

## Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

## Remarks and comments

The tests have been performed by the technical personnel: Nicolás Salguero, Alfonso Gutiérrez, Francisco Javier Fernandez and Pablo Redondo.

Used instrumentation:

### Conducted Measurements:

	Last Calibration	Due Calibration
1. Shielded Room ETS LINDGREN S101	N/A	N/A
2. Signal and Spectrum Analyzer ROHDE AND SCHWARZ FSV 40	2021/02	2023/02

### Radiated Measurements:

	Last Calibration	Due Calibration
1. Semianechoic Absorber Lined Chamber ETS LINDGREN FACT 3 200 STP	N/A	N/A
2. Shielded Room ETS LINDGREN S101	N/A	N/A
3. EMI Test Receiver 7 GHz ROHDE AND SCHWARZ ESR7	2020/12	2022/12
4. Preamplifier G>40dB 10MHz-6GHz, BONN ELEKTRONIK, BLNA 0160-01N	2021/03	2022/03
5. Biconical/Log Antenna 30 MHz - 6 GHz ETS LINDGREN 3142E	2020/04	2023/04
6. Attenuator 3dB, 2W, DC-18GHz, TECHNIWAVE TWTS2G	2021/02	2022/02
7. Spectrum Analyzer ROHDE AND SCHWARZ FSW50	2020/07	2022/07
8. RF Preamplifier, 40 dB ,1-18 GHz BONN ELEKTRONIK BLMA 0118-1M	2021/06	2022/06
9. Horn Antenna 1-18 GHz SCHWARZBECK MESS-ELEKTRONIK BBHA 9120 D	2019/11	2022/11
10. Low Noise Amplifier G>30dB, 18 - 40 GHz BONN ELEKTRONIK BLMA 1840-3G	2019/11	2021/11
11. Horn Antenna 18-40 GHz SCHWARZBECK MESS-ELEKTRONIK BBHA 9170	2020/05	2023/05
12. DC Power Supply 30V/5A KEYSIGHT TECHNOLOGIES U8002A	N/A	N/A
13. Digital Multimeter FLUKE 175	2020/11	2021/11

## Testing verdicts

Not applicable:	N/A
Pass:	P
Fail:	F
Not measured:	N/M

## Summary

### U-NII-3: 5.725 GHz – 5.85 GHz Band

FCC PART 15 PARAGRAPH / RSS-247		Verdict	Remark
Requirement – Test case			
Transmitter. Duty Cycle		P	
Transmitter. 99% Occupied Bandwidth		P	
FCC 15.407 (e)	6 dB Bandwidth.	P	
FCC 15.407 (a)(3)	Transmitter Maximum conducted Output Power	P	
FCC 15.407 (a)(3)	Transmitter Maximum Power Spectral Density	P	
FCC 15.407 (b) (4)	Transmitter Band Edge Radiated Emissions	P	
FCC 15.407 (b) (4) (6)	Transmitter Out of Band Radiated Emissions	P	
<u>Supplementary information and remarks:</u>			
None.			



## Appendix A: Tests results for the U-NII-3: 5.725 GHz – 5.85 GHz Band

## INDEX

TEST CONDITIONS .....	11
Transmitter Duty Cycle. ....	17
Transmitter 99% Occupied Bandwidth .....	18
FCC 15.407 (e) 6 dB Bandwidth .....	14
FCC 15.407 (a)(3)(i) Transmitter Maximum Conducted Output Power .....	42
FCC 15.407 (a)(3)(i) Transmitter Maximum Power Spectral Density .....	55
FCC 15.407(b)(4)(6) Transmitter Out of Band Radiated Emissions and Transmitter Band Edge Radiated Emissions. ....	58

## TEST CONDITIONS

(\*) Declared by the Client.

### POWER SUPPLY (\*):

Vnominal: 110 Vac  
Type of Power Supply: AC/DC Adapter.

### POWER SUPPLY (\*):

Vnominal: 110 Vac  
Type of Power Supply: AC/DC Adapter.

### ANTENNAS – WLAN (\*):

Ant 0 – DB1: 4.4 dBi, Polarization: Vertical  
Ant 1 – DB2: 4.7 dBi, Polarization: Horizontal  
Ant 2 – DB3: 4.1 dBi, Polarization: Horizontal  
Ant 3 – DB4: 4.5 dBi, Polarization: Vertical

### Directional Antenna Gain Calculations for CDD MIMO:

- For 4Tx CDD MIMO modes, in accordance with KDB 662911 D01 v02r01 Section F)2)c)(ii), directional gain was calculated as (worst case):

$N_{SS} = 1$ ,  $N_{ANT} = 4$ ,  $G_{ANT0} = 4.4$  dBi,  $G_{ANT1} = 4.7$  dBi,  $G_{ANT2} = 4.1$  dBi,  $G_{ANT3} = 4.3$  dBi

- EIRP Measurement

Antennas horizontal polatization:

Directional Gain =  $G_{Ant}$  (higher gain) + Array Gain = 4.7 dBi + 0 dB = 4.7 dBi

Antennas vertical polatization:

Directional Gain =  $G_{Ant}$  (higher gain) + Array Gain = 4.5 dBi + 0 dB = 4.5 dBi

- PSD Measurement

Array Gain =  $10 \log(N_{ANT}/N_{SS})$  dB

$N_{ANT} = 2$

$N_{SS} = 1$  (worst case)

Antennas horizontal polatization:

Directional Gain =  $G_{Ant}$  (higher gain) + Array Gain = 4.7 dBi +  $10 \log(N_{ANT}/N_{SS})$  dB = 4.7 dBi + 3 dB = 7.7 dBi

Antennas vertical polatization:

Directional Gain =  $G_{Ant}$  (higher gain) + Array Gain = 4.5 dBi +  $10 \log(N_{ANT}/N_{SS})$  dB = 4.5 dBi + 3 dB = 7.5 dBi

TEST FREQUENCIES (\*):

U-NII-3:

Technology Tested:	WLAN (IEEE 802.11 a20 1x1 / ac204080 4x4 / ax204080 4x4)	
Modes:	802.11a: 6, 9, 12, 18, 24, 36, 48 & 54 Mbps (SISO)	
	802.11ac VHT20: MCS0 to MCS9 (4 spatial stream) (MIMO with CDD without TxBF)	
	802.11ac VHT40: MCS0 to MCS9 (4 spatial stream) (MIMO with CDD without TxBF)	
	802.11ac VHT80: MCS0 to MCS9 (4 spatial stream) (MIMO with CDD without TxBF)	
	802.11ax HE20: MCS0 to MCS9 (4 spatial stream) (MIMO with CDD without TxBF)	
	802.11ax HE40: MCS0 to MCS9 (4 spatial stream) (MIMO with CDD without TxBF)	
	802.11ax HE80: MCS0 to MCS9 (4 spatial stream) (MIMO with CDD without TxBF)	
Setting of cores / ports:	ANT0, ANT0+ANT1+ANT2+ANT3	
Beamforming:	No.	
Frequency Range:	5725 MHz to 5850 MHz	
Operating Channel Bandwidth:	20 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Lowest (149)	5745
	Middle (157)	5785
	Highest (165)	5825
Operating Channel Bandwidth:	40 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Lowest (151)	5755
	Highest (159)	5795
Operating Channel Bandwidth:	80 MHz	
Transmission Channels:	Single (155)	5775

POWER SETTINGS (\*):

**U-NII-3. FCC:**

**SISO:ANT0**

Channel	Frequency	11a
149	5745 MHz	28.00 dBm
153	5765 MHz	28.00 dBm
157	5785 MHz	28.00 dBm
161	5805 MHz	28.00 dBm
165	5825 MHz	28.00 dBm

**MIMO:ANT0+ANT1+ANT2+ANT3**

Channel	Frequency	11ac	11he
149	5745 MHz	26.00 dBm	25.00 dBm
151	5755 MHz	24.00 dBm	24.50 dBm
153	5765 MHz	26.00 dBm	25.00 dBm
155	5775 MHz	21.50 dBm	22.00 dBm
157	5785 MHz	26.00 dBm	25.00 dBm
159	5795 MHz	26.00 dBm	25.00 dBm
161	5805 MHz	26.00 dBm	25.00 dBm
165	5825 MHz	26.00 dBm	25.00 dBm

The test set-up was made in accordance to the general provisions of FCC Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017.

The EUT was tested in the following operating mode:

- Continuously transmitting with a modulated carrier at maximum power in all required channels using the supported data rates/modulations types.

The field strength at the band edges was evaluated for each mode on the lowest and highest channels at the rated power for the channel under test.

For all modes, the EUT was configured in test mode using a software application. The application was used to enable a continuous transmission and to select the test channels as required. The client supplied instructions to configure the EUT. The customer supplied a document containing the setup instructions.

The worst cases for testing were identified for output power and spurious levels at the band edges which were selected based on preliminary testing that correspond to next data rates:

- 802.11a:	6 Mbps SISO 1Tx on WLAN1 / MIMO 2Tx on WLAN12.
- 802.11ac VHT20:	MCS0 SISO 1Tx on WLAN1 / MIMO 2Tx on WLAN12.
- 802.11ac VHT40:	MCS0 SISO 1Tx on WLAN1 / MIMO 2Tx on WLAN12.
- 802.11ac VHT80:	MCS0 SISO 1Tx on WLAN1 / MIMO 2Tx on WLAN12.
- 802.11ax HE20:	MCS0 SISO 1Tx on WLAN1 / MIMO 2Tx on WLAN12.
- 802.11ax HE40:	MCS0 SISO 1Tx on WLAN1 / MIMO 2Tx on WLAN12.
- 802.11ax HE80:	MCS0 SISO 1Tx on WLAN1 / MIMO 2Tx on WLAN12.

#### CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and connected to the spectrum analyzer using a low loss RF cable. The reading in the spectrum analyzer is corrected taking into account the internal and external RF cable loss.

For all modes:



### RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz) and 1 GHz-18 GHz Double ridge horn antenna is situated at a distance of 3 m and a distance of 1 m for the frequency range 17 GHz-40 GHz (18 GHz-40 GHz horn antenna).

For radiated emissions in the range 17 GHz-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

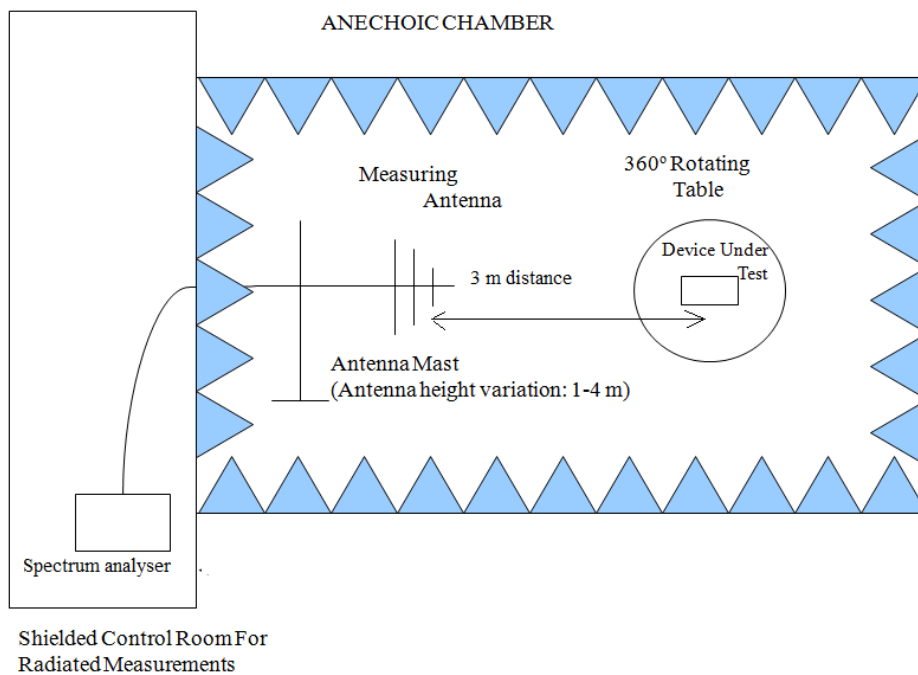
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

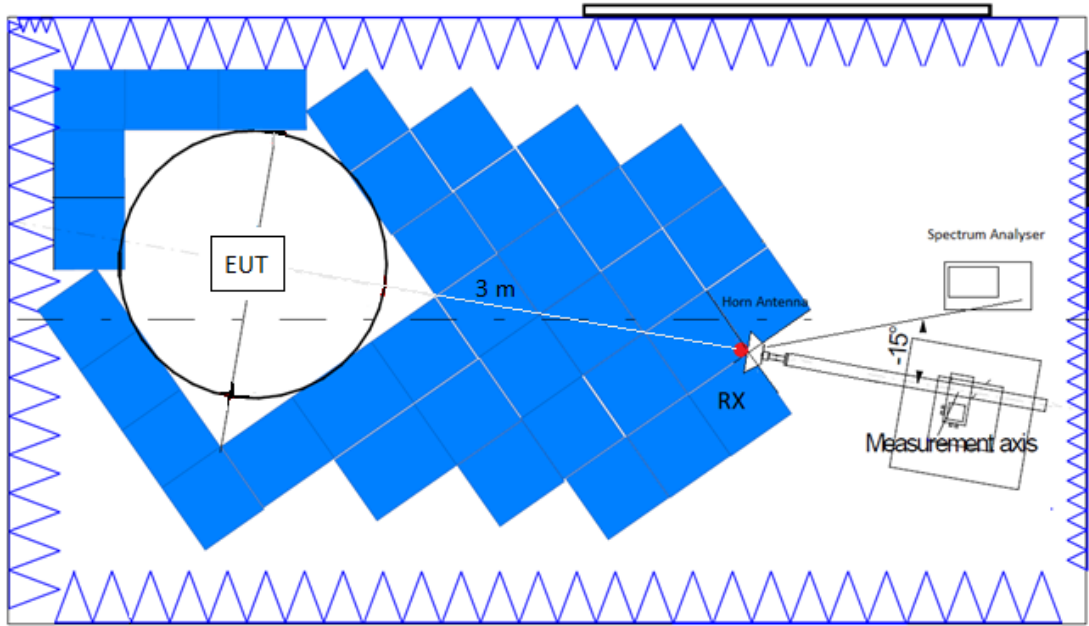
The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.

A resolution bandwidth / video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

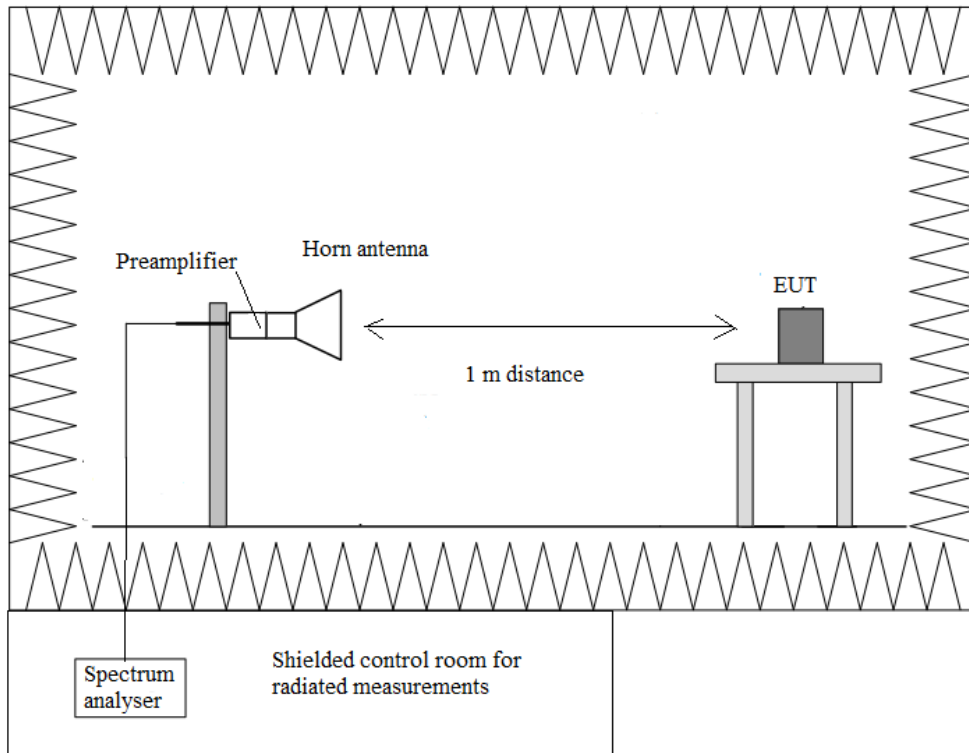
Radiated measurements setup  $f < 1$  GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup  $f > 17$  GHz:





## Transmitter. Duty Cycle.

### SPECIFICATION

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

### RESULTS:

The results below are for data rates with a duty cycle less than 98%. The results for all rest of modes having a value > 98%.

Subband	Technique	Mode	Pulse Duration (us)	Period (us)	Duty Cycle correction (dB)
U-NII-3	MIMO	802.11ax / 20 MHz	449.1864	464.9629	0.15
U-NII-3	MIMO	802.11ax / 40 MHz	267.2532	282.8260	0.25
U-NII-3	MIMO	802.11ax / 80 MHz	168.0106	183.3633	0.38
U-NII-3	MIMO	802.11ac / 80 MHz	460.0143	479.3316	0.18

## Transmitter 99% Occupied Bandwidth

The following modes and data rates were selected based on preliminary testing that identified those corresponding to the worst cases:

- 802.11a: 6 Mbps SISO 1Tx on ANT0
- 802.11ac VHT20: MIMO 4Tx on ANT0+ANT1+ANT2+ANT3.
- 802.11ac VHT40: MIMO 4Tx on ANT0+ANT1+ANT2+ANT3.
- 802.11ac VHT80: MIMO 4Tx on ANT0+ANT1+ANT2+ANT3.
- 802.11ax HE20: MIMO 4Tx on ANT0+ANT1+ANT2+ANT3.
- 802.11ax HE40: MIMO 4Tx on ANT0+ANT1+ANT2+ANT3.
- 802.11ax HE80: MIMO 4Tx on ANT0+ANT1+ANT2+ANT3.

- **SISO: ANT0.**

### Mode 802.11 a20

	Occ. BW (MHz)	Measurement uncertainty (kHz)
channel 149 (5745 MHz)	22.85	<±36.37
channel 157 (5785 MHz)	22.28	
channel 165 (5825 MHz)	22.43	

- **MIMO: ANT0+ANT1+ANT2+ANT3.**

### Mode 802.11 ac20

	Occ. BW (MHz)				Measurement uncertainty (kHz)
	Ant0	Ant1	Ant2	Ant3	
channel 149 (5745 MHz)	18.63	18.56	18.46	18.53	<±36.37
channel 157 (5785 MHz)	18.57	18.75	18.73	18.77	
channel 165 (5825 MHz)	18.67	19.13	19.42	19.11	

### Mode 802.11 ac40

	Occ. BW (MHz)				Measurement uncertainty (kHz)
	Ant0	Ant1	Ant2	Ant3	
channel 151 (5755 MHz)	36.68	36.48	36.51	36.51	<±62.36
channel 159 (5795 MHz)	37.10	37.07	37.34	37.24	

### Mode 802.11 ac80

	Occ. BW (MHz)				Measurement uncertainty (kHz)
	Ant0	Ant1	Ant2	Ant3	
channel 155 (5775 MHz)	76.04	76.01	75.82	75.76	<±124.71

### Mode 802.11 ax20

	Occ. BW (MHz)				Measurement uncertainty (kHz)
	Ant0	Ant1	Ant2	Ant3	
channel 149 (5745 MHz)	19.10	19.23	19.23	19.25	<±36.37
channel 157 (5785 MHz)	19.07	19.25	19.28	19.29	
channel 165 (5825 MHz)	19.08	19.29	19.35	19.37	

### Mode 802.11 ax40

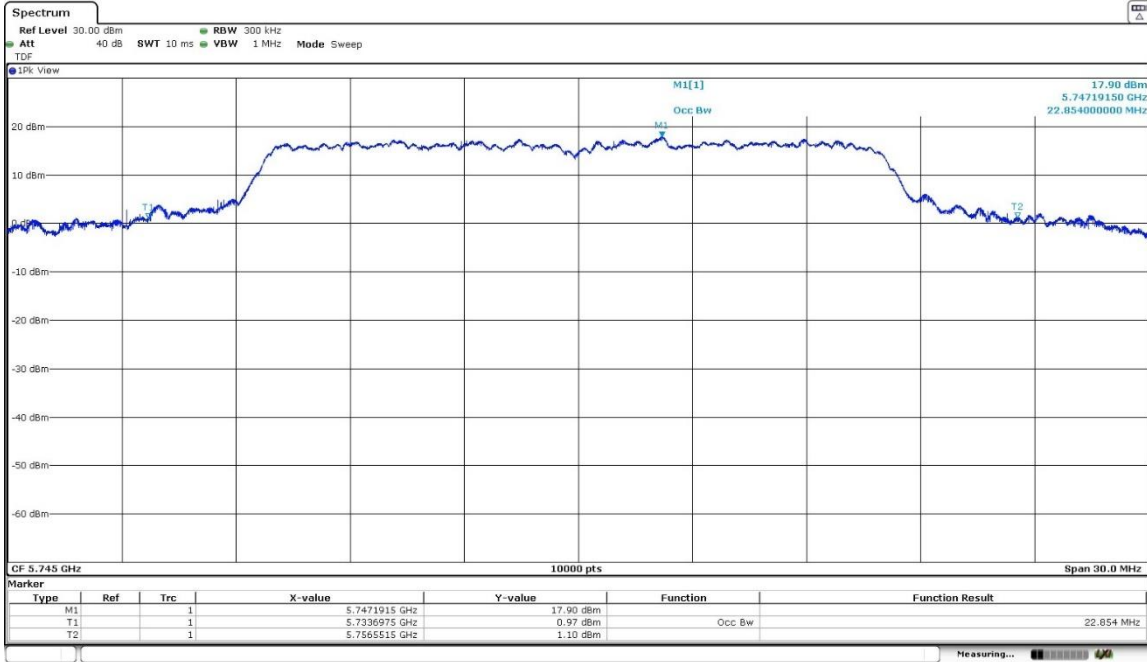
	Occ. BW (MHz)				Measurement uncertainty (kHz)
	Ant0	Ant1	Ant2	Ant3	
channel 151 (5755 MHz)	37.65	37.88	37.72	37.68	<±62.36
channel 159 (5795 MHz)	37.65	37.92	37.81	37.86	

### Mode 802.11 ax80

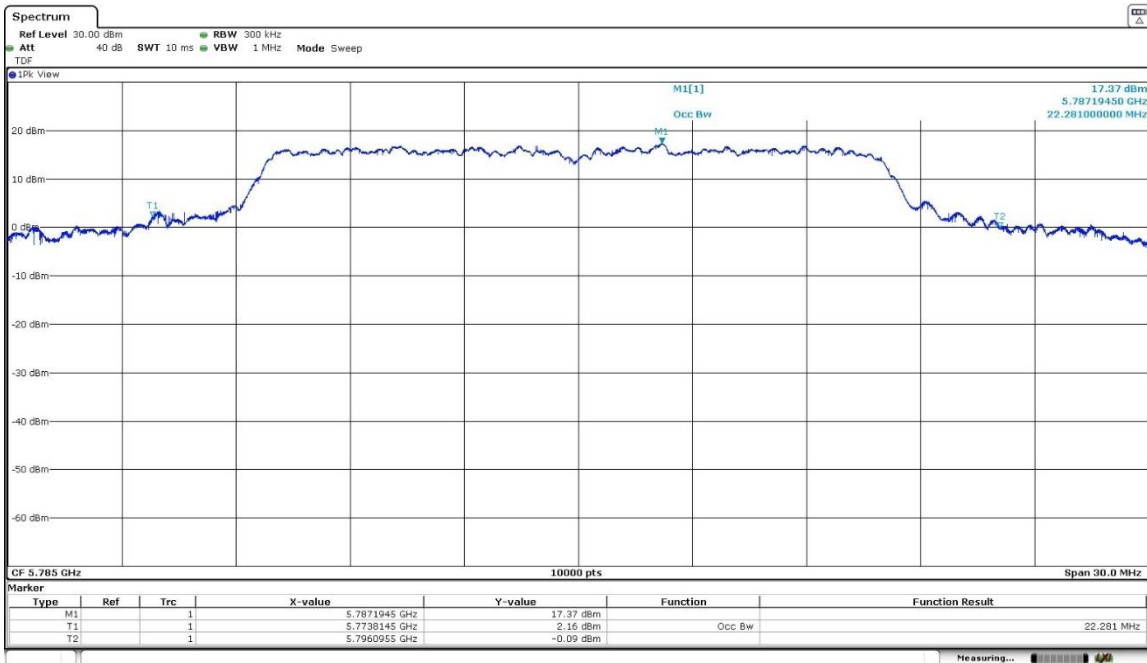
	Occ. BW (MHz)				Measurement uncertainty (kHz)
	Ant0	Ant1	Ant2	Ant3	
channel 155 (5775 MHz)	77.20	77.16	77.29	77.45	<±124.71

### Mode 802.11 a20

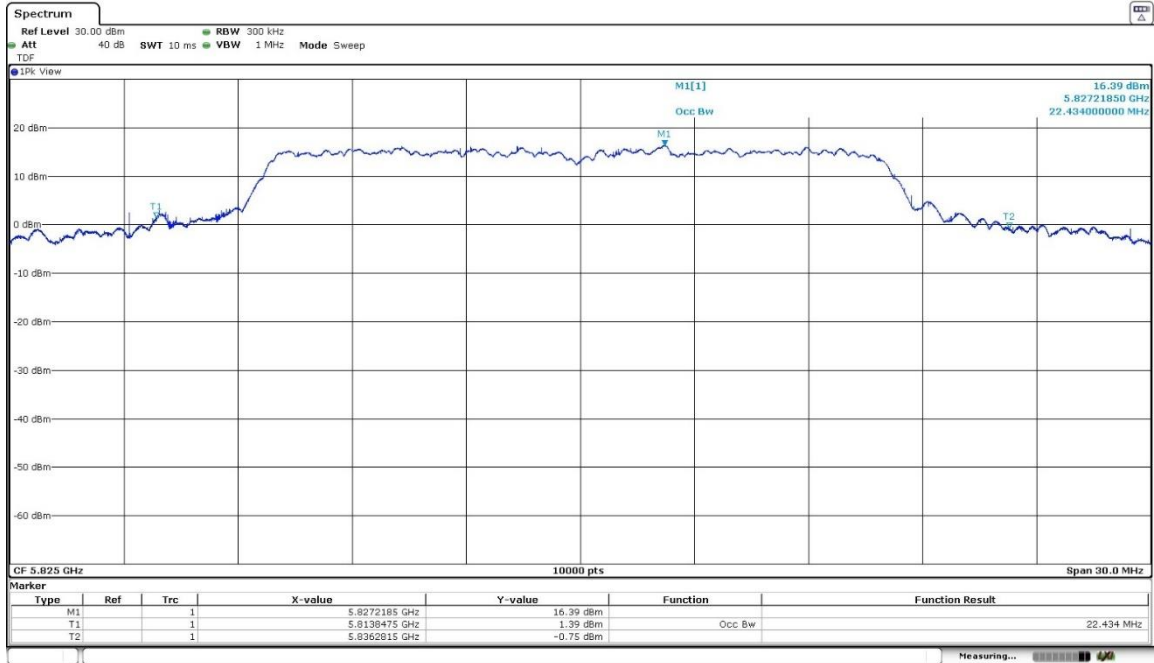
channel 149 (5745 MHz)



channel 157 (5785 MHz)

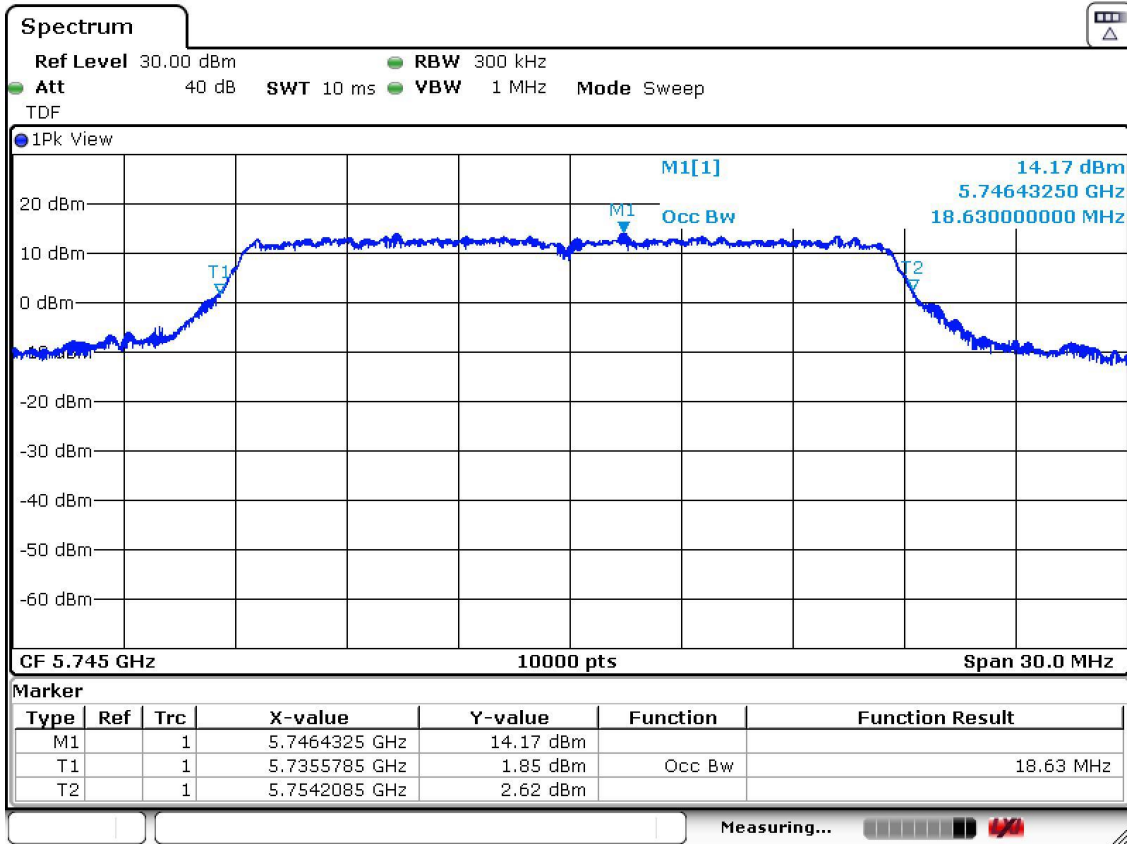


channel 165 (5825 MHz)



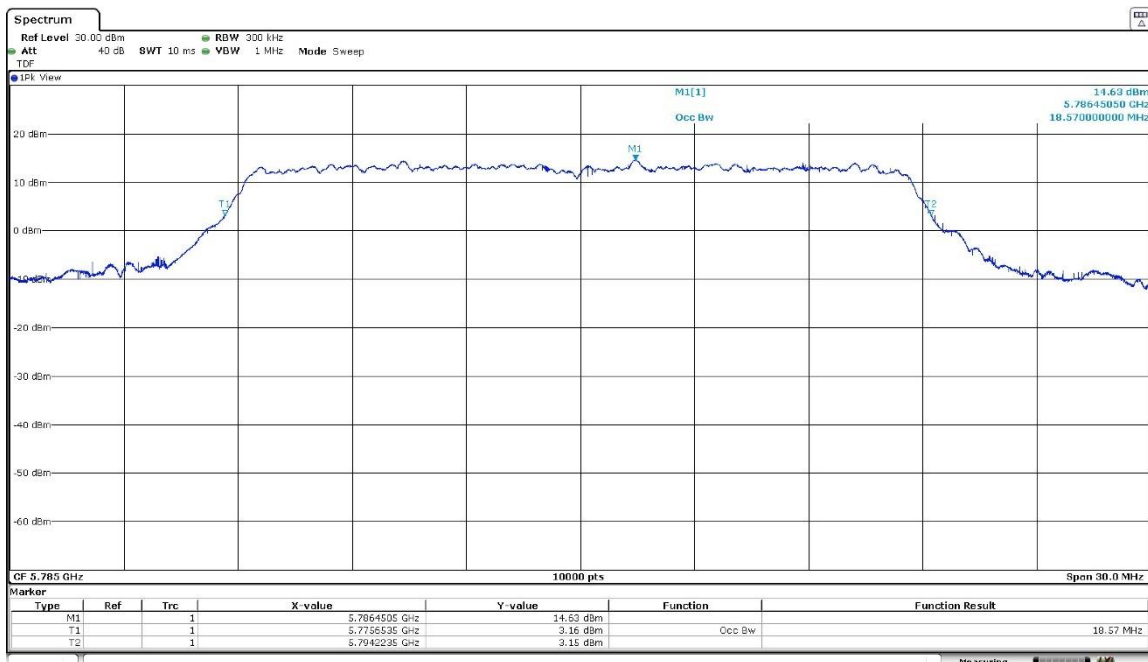
### Mode 802.11 ac20

channel 149 (5745 MHz)



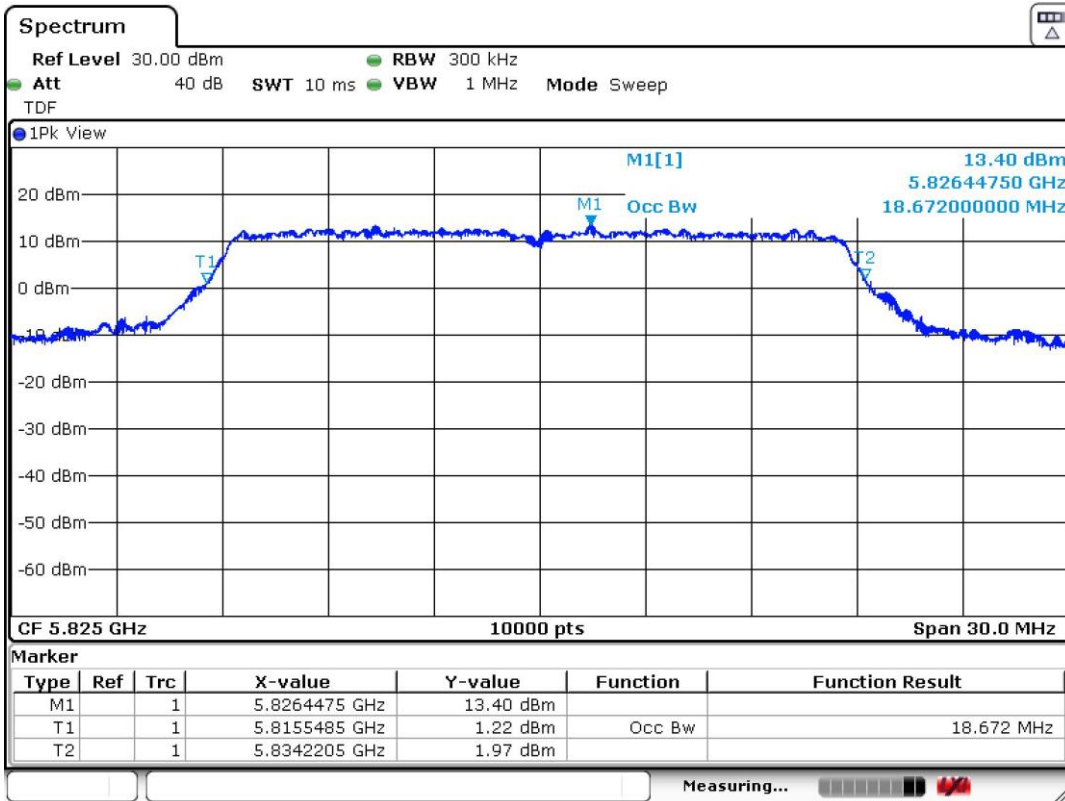
This plot corresponds to Ant0

channel 157 (5785 MHz)



This plot corresponds to Ant0

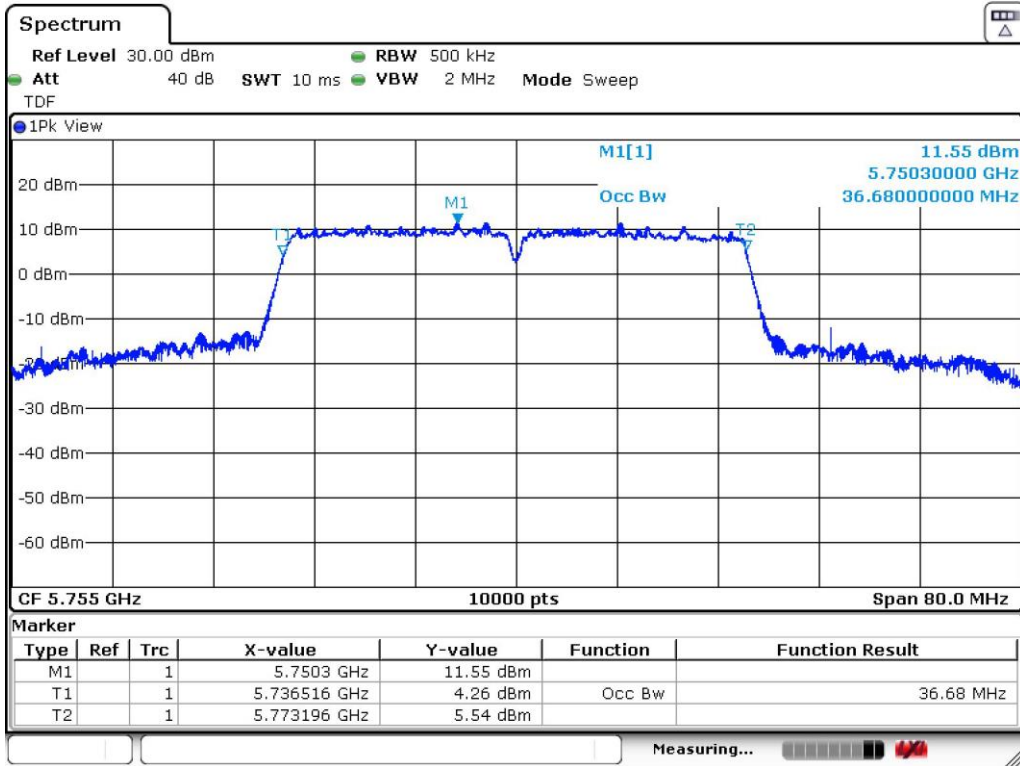
channel 165 (5825 MHz)



This plot corresponds to Ant0

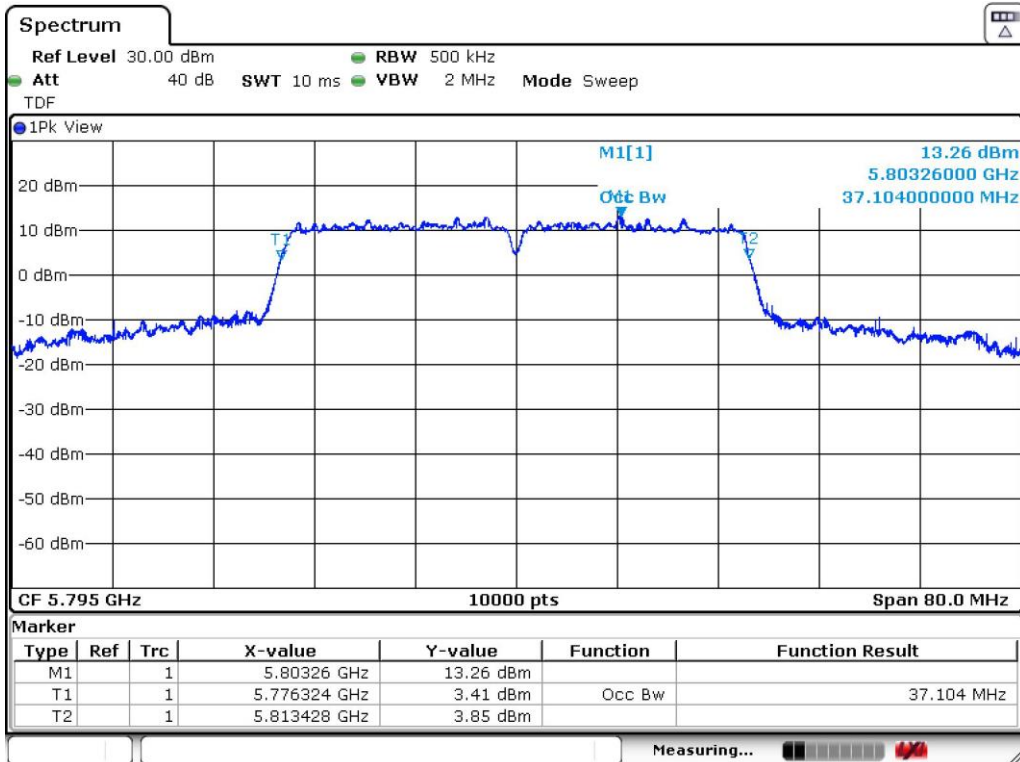
### Mode 802.11 ac40

channel 151 (5755 MHz)



This plot corresponds to Ant0

channel 159 (5795 MHz)

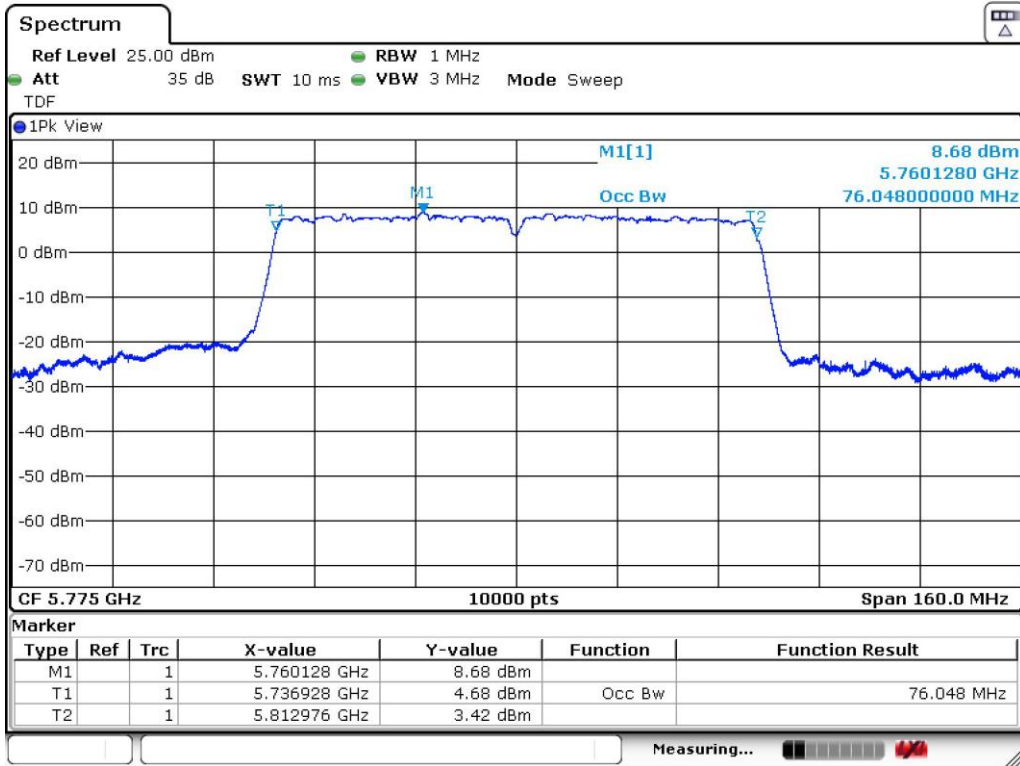


This plot corresponds to Ant0



### Mode 802.11 ac80

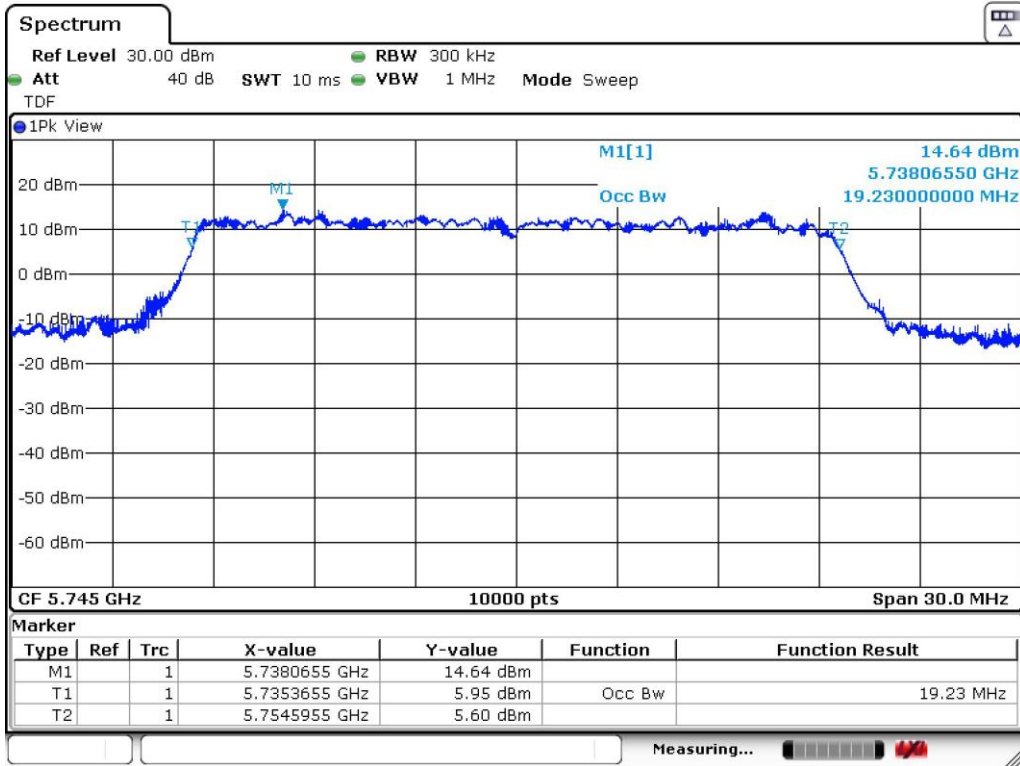
channel 155 (5775 MHz)



This plot corresponds to Ant0

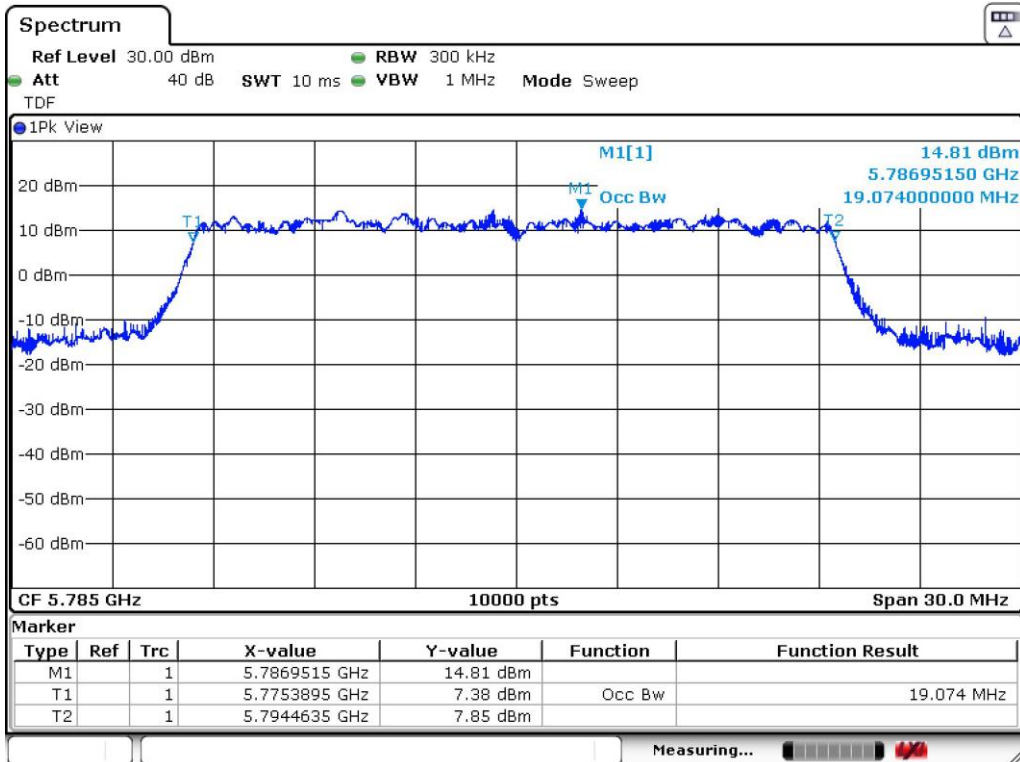
### Mode 802.11 ax20

channel 149 (5745 MHz)



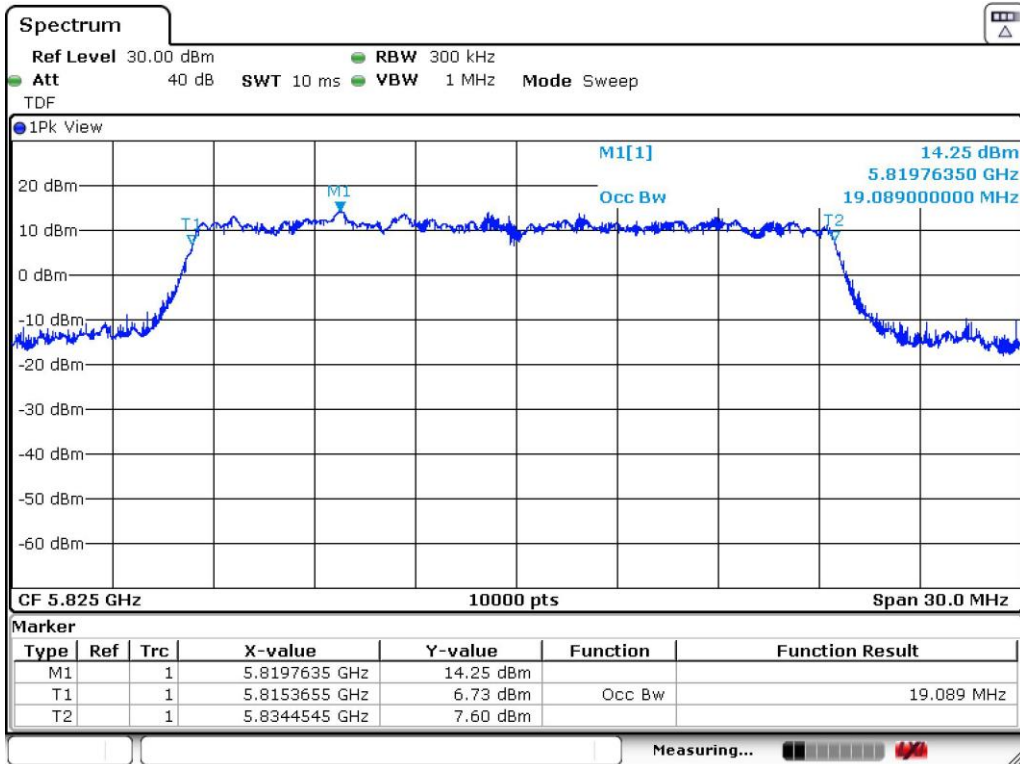
This plot corresponds to Ant0

channel 157 (5785 MHz)



This plot corresponds to Ant0

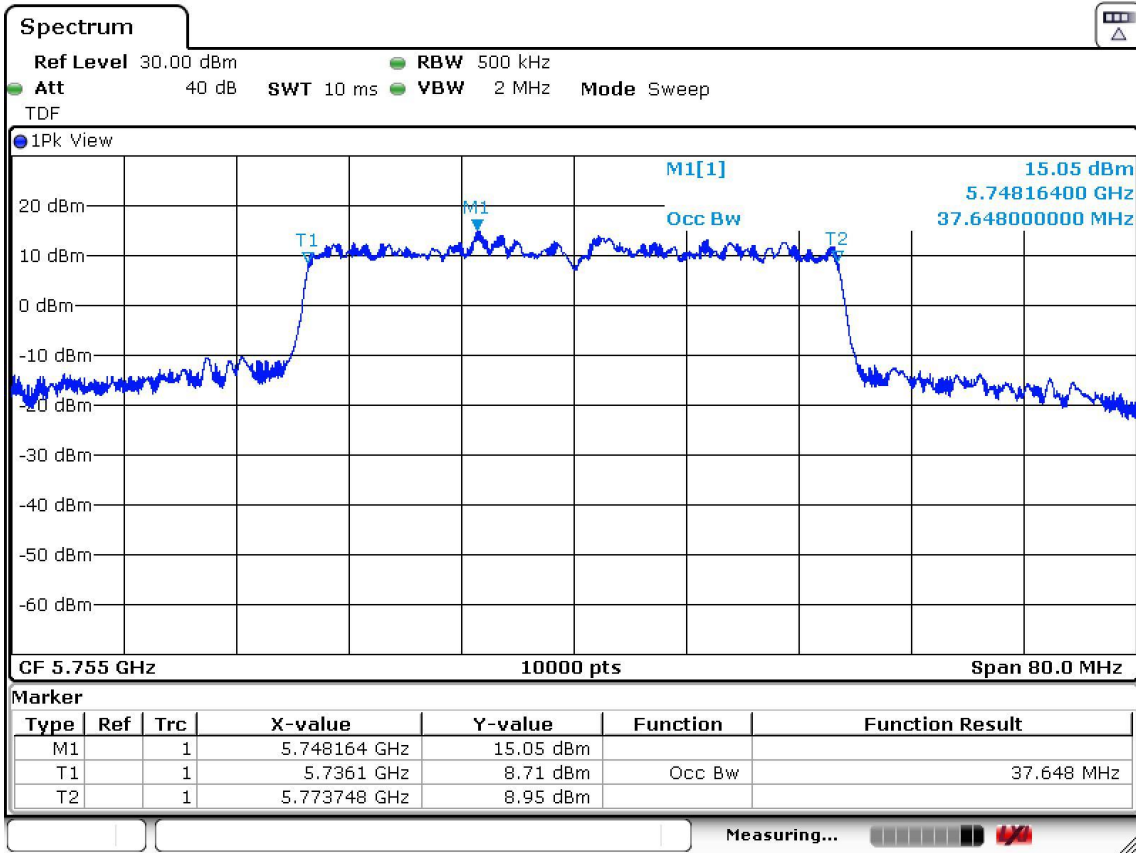
channel 165 (5825 MHz)



This plot corresponds to Ant0

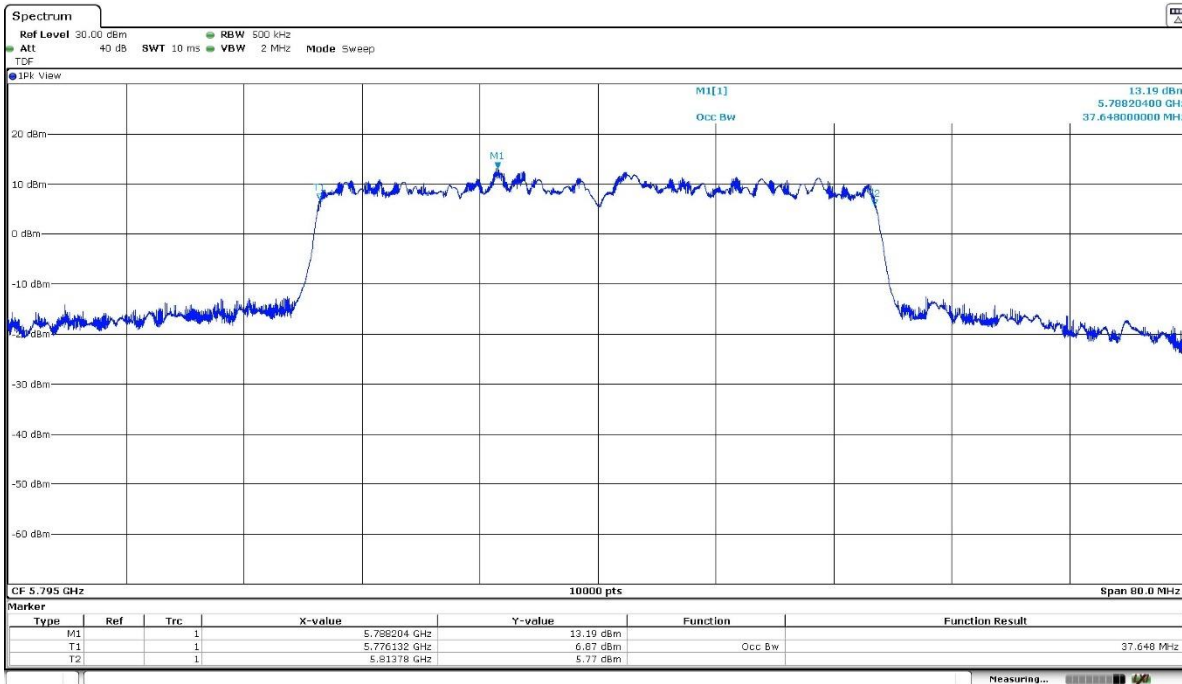
### Mode 802.11 ax40

channel 151 (5755 MHz)



This plot corresponds to Ant0

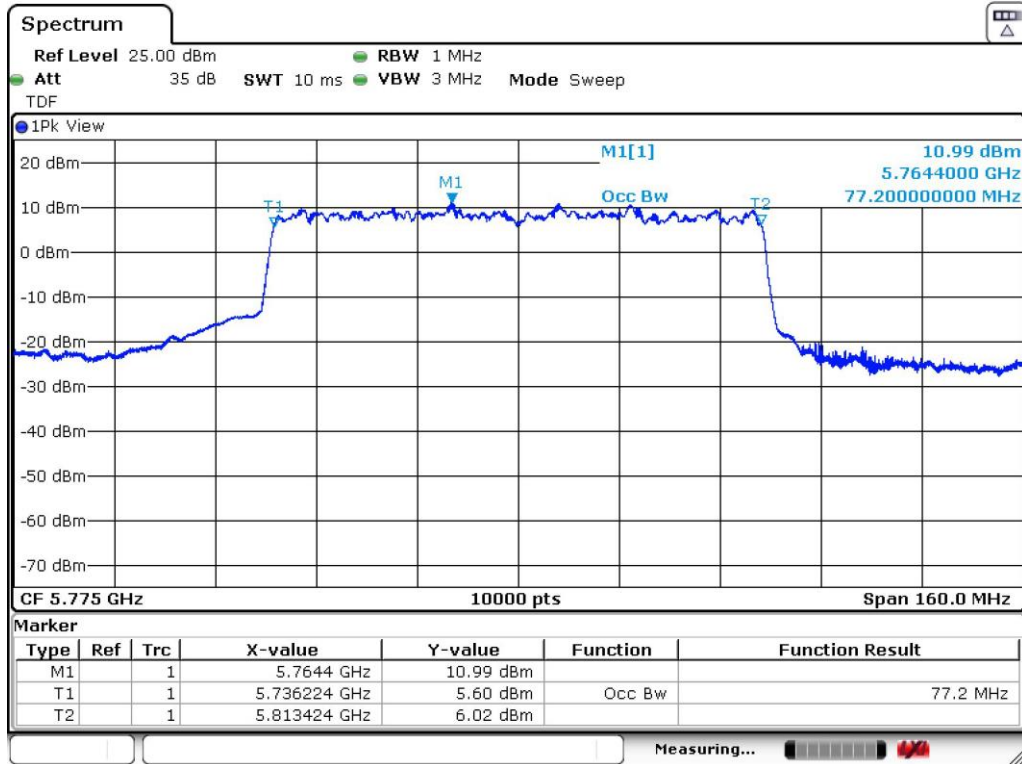
channel 159 (5795 MHz)



This plot corresponds to Ant0

## Mode 802.11 ax80

channel 155 (5775 MHz)



This plot corresponds to Ant0

## FCC 15.407 (e) / RSS-247 6.2.4.1. 6 dB Bandwidth

**SPECIFICATION:**

\* FCC 15.407: The minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

**RESULTS:**

- SISO: Ant0
- MIMO: Ant0+Ant1+Ant2+Ant3

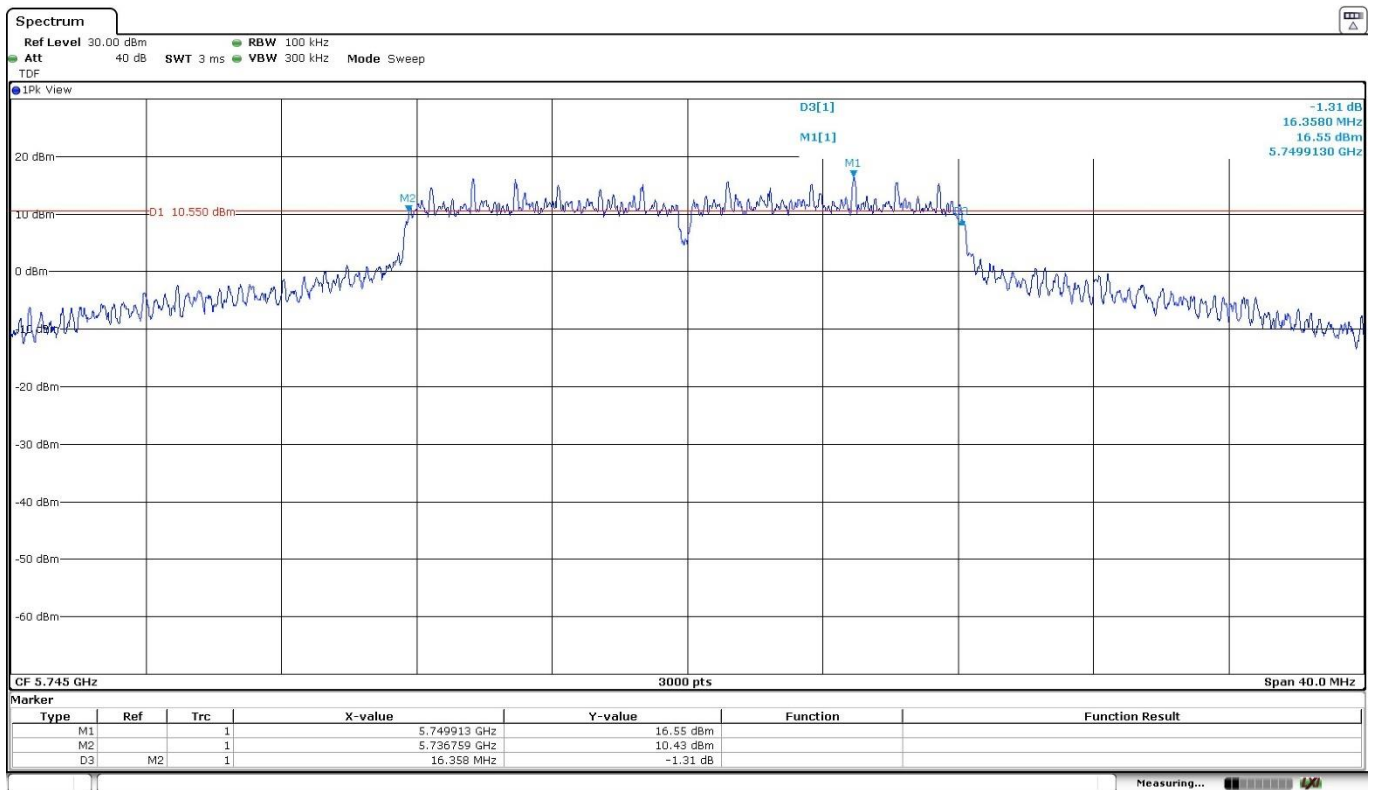
**SISO:**

**802.11 a20:**

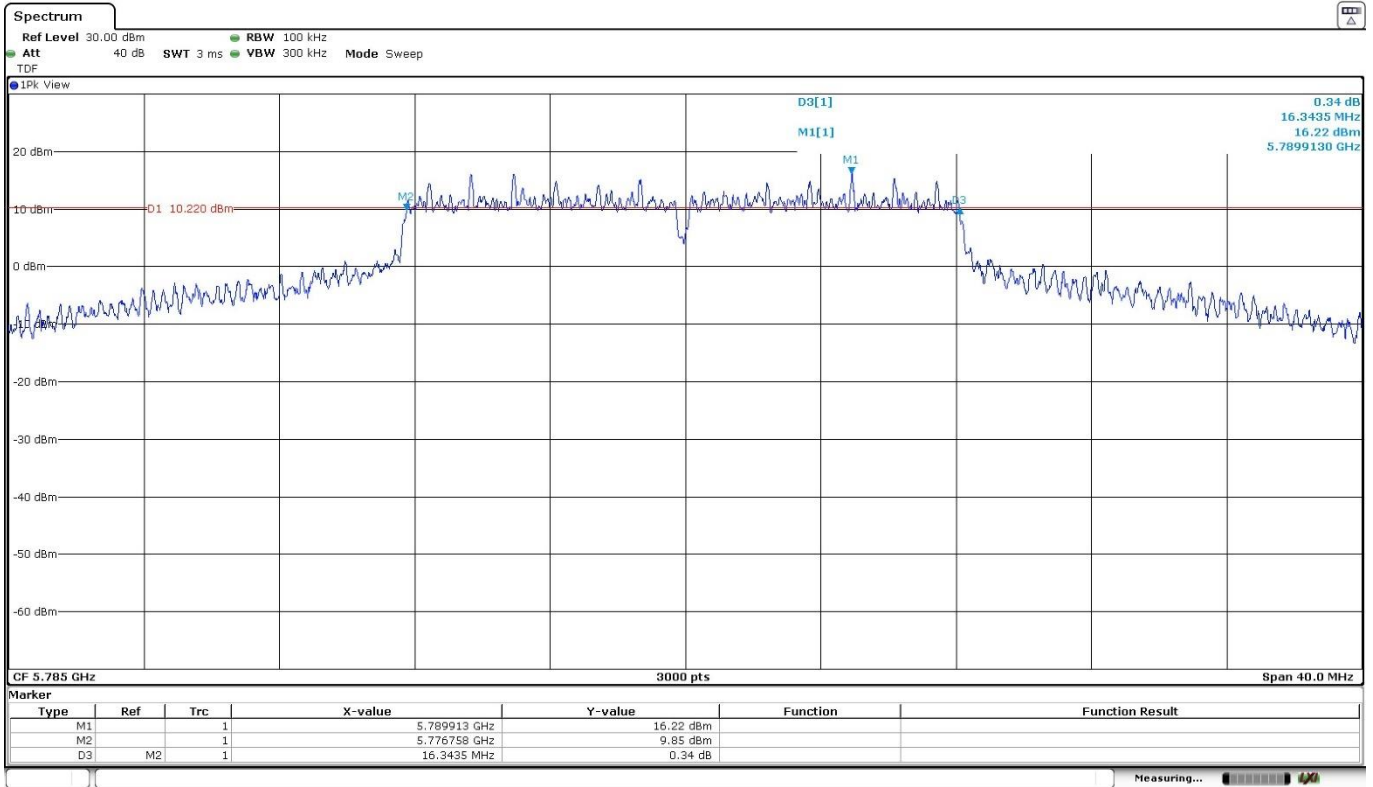
**U-NII-3 (5725-5850 MHz):**

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	16.35	16.34	16.35
Measurement uncertainty (kHz)	<±19.25		

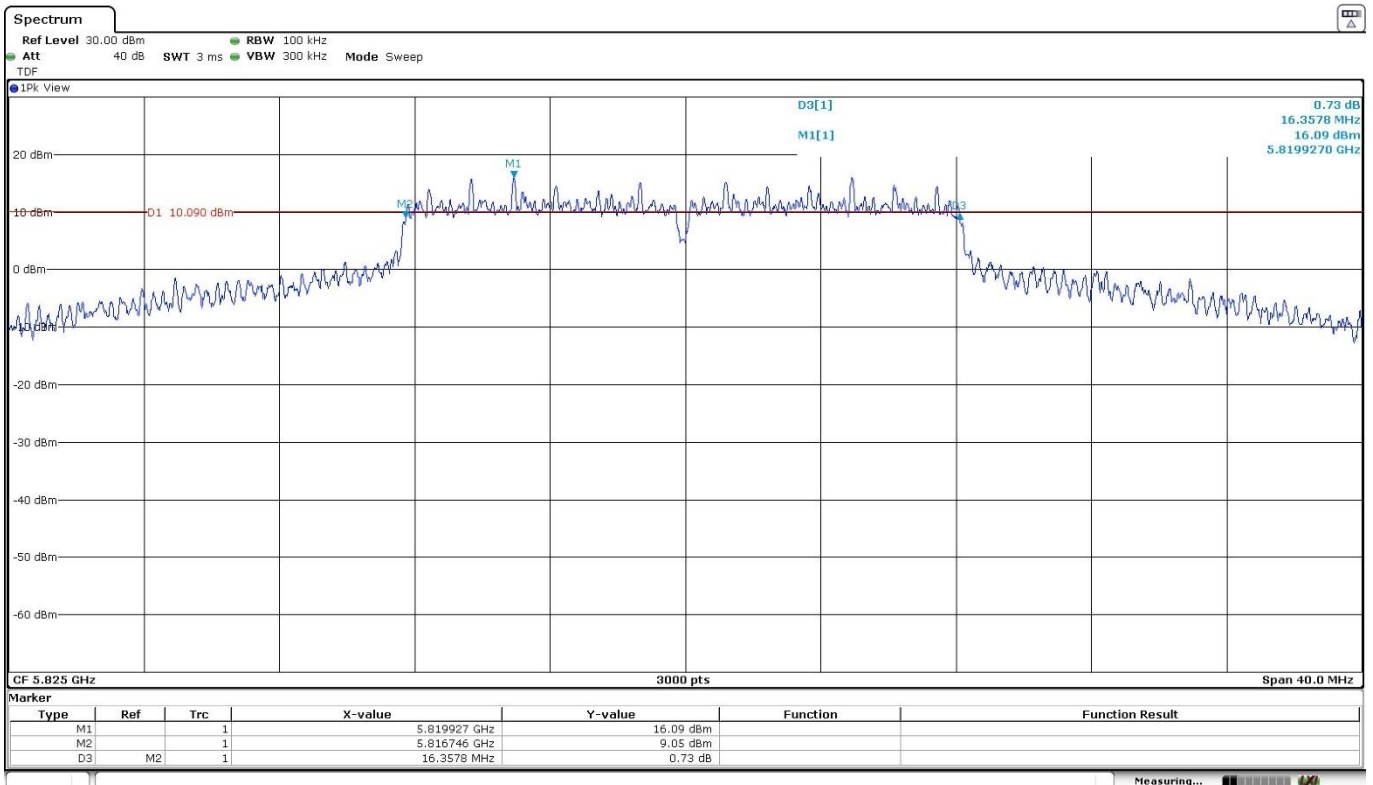
- Low Channel 149 (5745 MHz):



- Middle Channel 157 (5785 MHz):



- High Channel 165 (5825 MHz):



**MIMO:**

**802.11 ac20 (VHT20):**

**U-NII-3 (5725-5850 MHz):**

Channels	Low Channel 149 (5745 MHz)				Middle Channel 157 (5785 MHz)				High Channel 165 (5825 MHz)			
	ANT0	ANT1	ANT2	ANT3	ANT0	ANT1	ANT2	ANT3	ANT0	ANT1	ANT2	ANT3
6 dB Bandwidth (MHz)	17.59	17.59	17.60	17.60	17.59	17.56	17.59	17.59	17.59	17.60	17.59	17.59
Measurement uncertainty (kHz)	<±19.25											

**802.11 ax20 (HE20):**

**U-NII-3 (5725-5850 MHz):**

Channels	Low Channel 149 (5745 MHz)				Middle Channel 157 (5785 MHz)				High Channel 165 (5825 MHz)			
	ANT0	ANT1	ANT2	ANT3	ANT0	ANT1	ANT2	ANT3	ANT0	ANT1	ANT2	ANT3
6 dB Bandwidth (MHz)	18.86	18.67	18.98	18.74	18.91	18.24	18.97	18.51	18.89	18.60	18.96	18.53
Measurement uncertainty (kHz)	<±19.25											

**802.11 ac40 (VHT40):**

**U-NII-3 (5725-5850 MHz):**

Channels	Low Channel 151 (5755 MHz)				High Channel 159 (5795 MHz)			
	ANT0	ANT1	ANT2	ANT3	ANT0	ANT1	ANT2	ANT3
6 dB Bandwidth (MHz)	36.34	36.37	36.34	36.34	36.29	36.37	36.37	36.34
Measurement uncertainty (kHz)	<± 26.95							

**802.11 ax40 (HE40):**

**U-NII-3 (5725-5850 MHz):**

Channels	Low Channel 151 (5755 MHz)				High Channel 159 (5795 MHz)			
	ANT0	ANT1	ANT2	ANT3	ANT0	ANT1	ANT2	ANT3
6 dB Bandwidth (MHz)	37.70	37.08	37.70	37.11	37.71	37.60	37.68	37.09
Measurement uncertainty (kHz)	<± 26.95							



**802.11 ac80 (VHT80):**

**U-NII-3 (5725-5850 MHz):**

Channel	Single Channel 155 (5775 MHz)			
	ANT0	ANT1	ANT2	ANT3
6 dB Bandwidth (MHz)	75.58	75.85	75.85	76.12
Measurement uncertainty (kHz)	<± 42.35			

**802.11 ax80 (HE80):**

**U-NII-3 (5725-5850 MHz):**

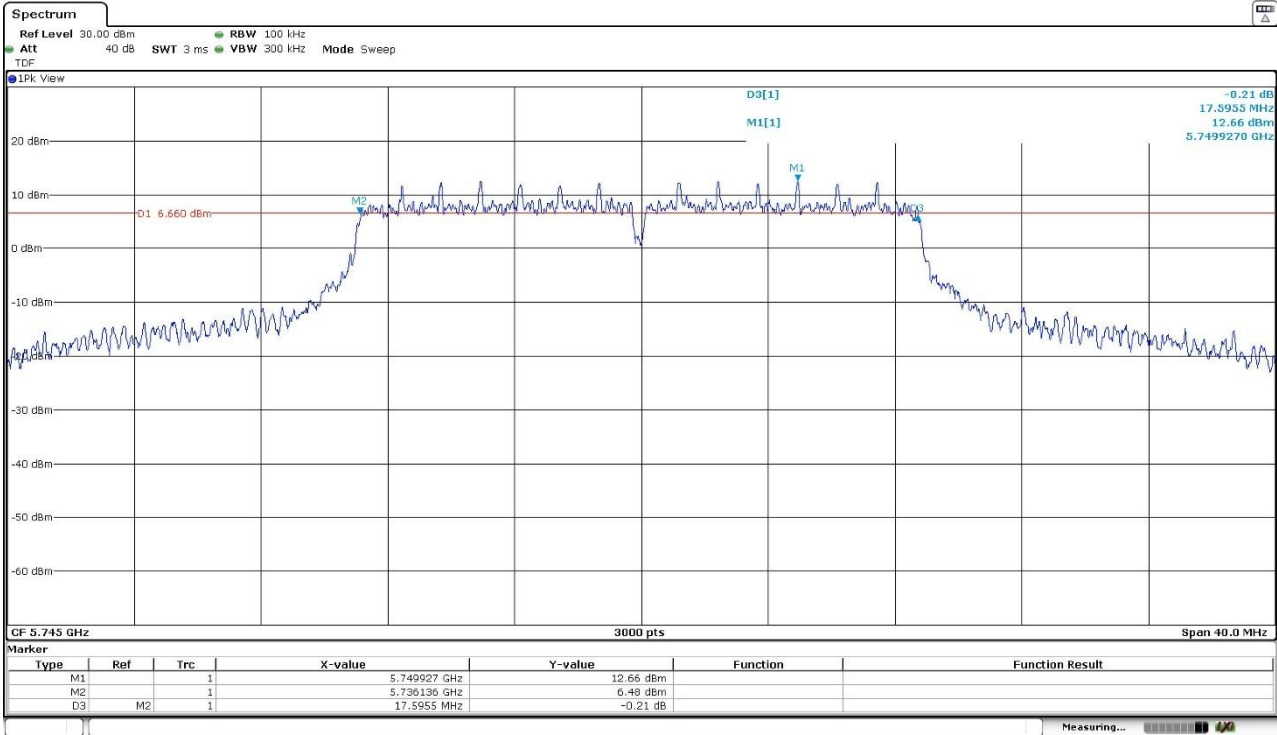
Channel	Single Channel 155 (5775 MHz)			
	ANT0	ANT1	ANT2	ANT3
6 dB Bandwidth (MHz)	76.99	76.46	76.51	76.89
Measurement uncertainty (kHz)	<± 42.35			

Verdict: PASS

**MIMO 802.11 ac20 (VHT20):**

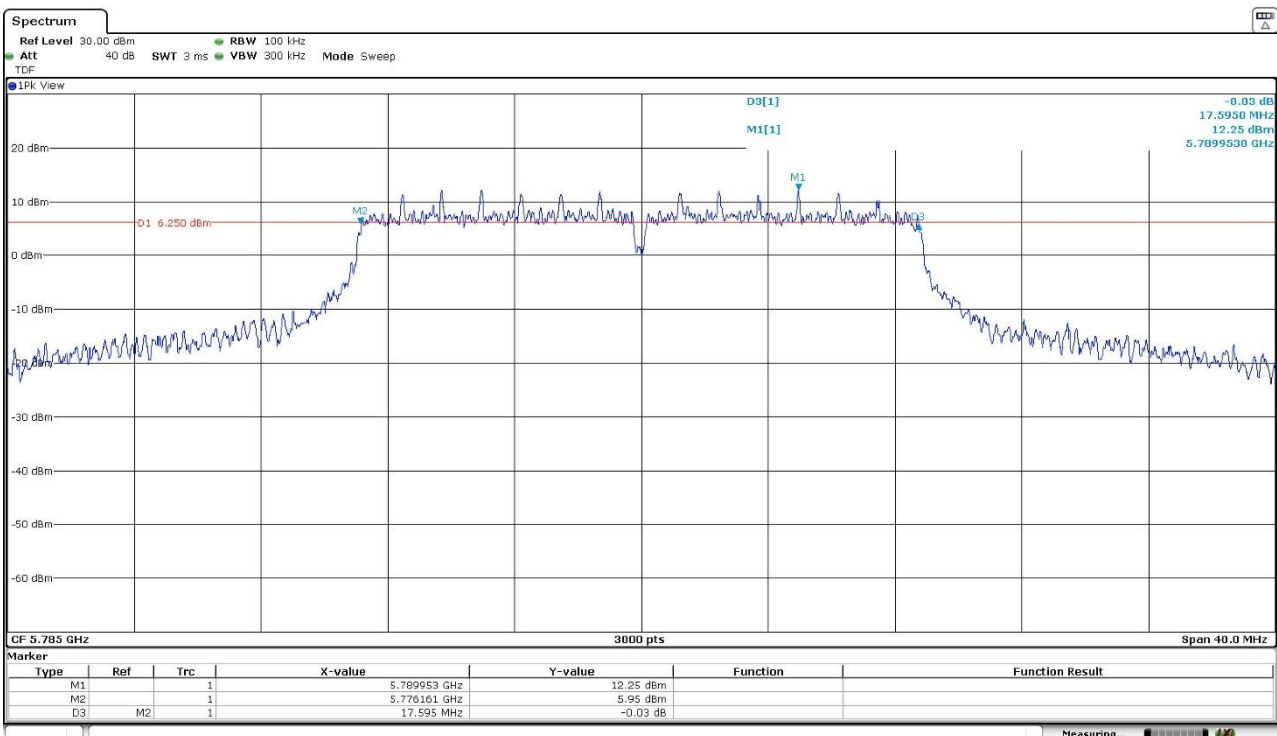
**U-NII-3 (5725-5850 MHz)**

- Low Channel 149 (5745 MHz):



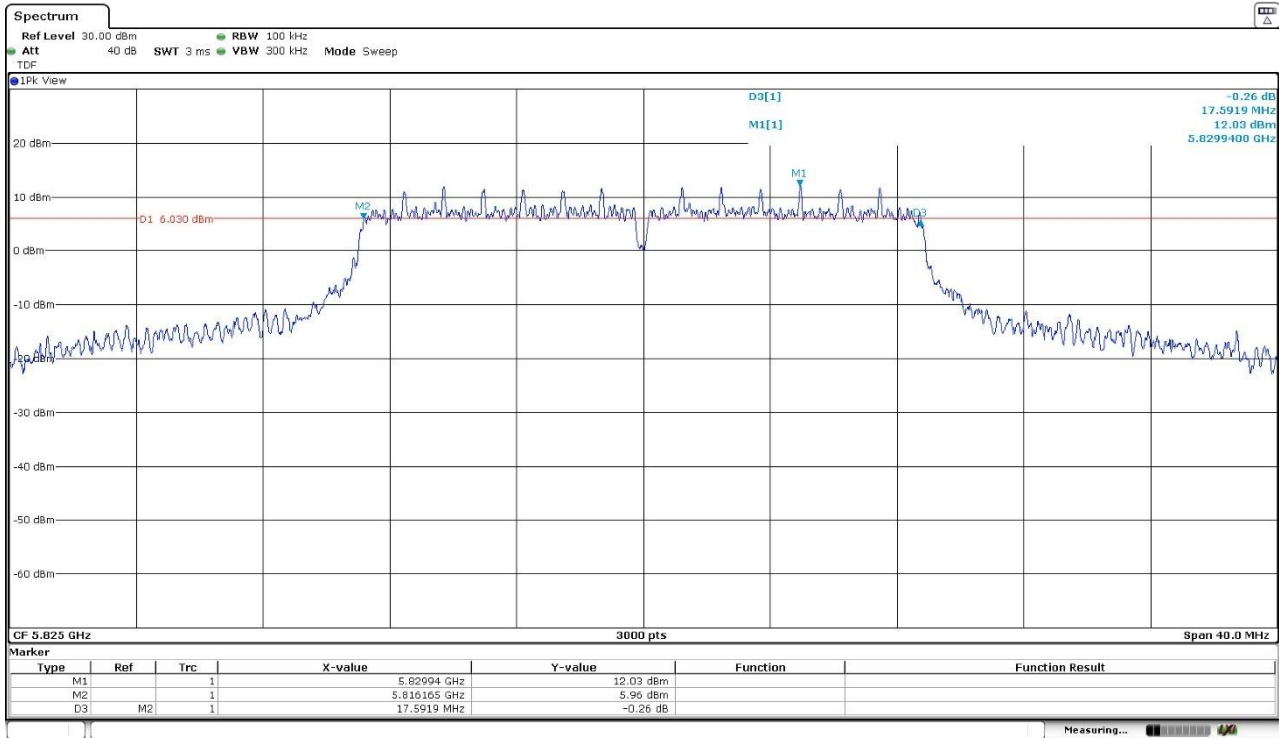
This plot corresponds to Ant0.

- Middle Channel 157 (5785 MHz):



This plot corresponds to Ant0.

- High Channel 165 (5825 MHz):

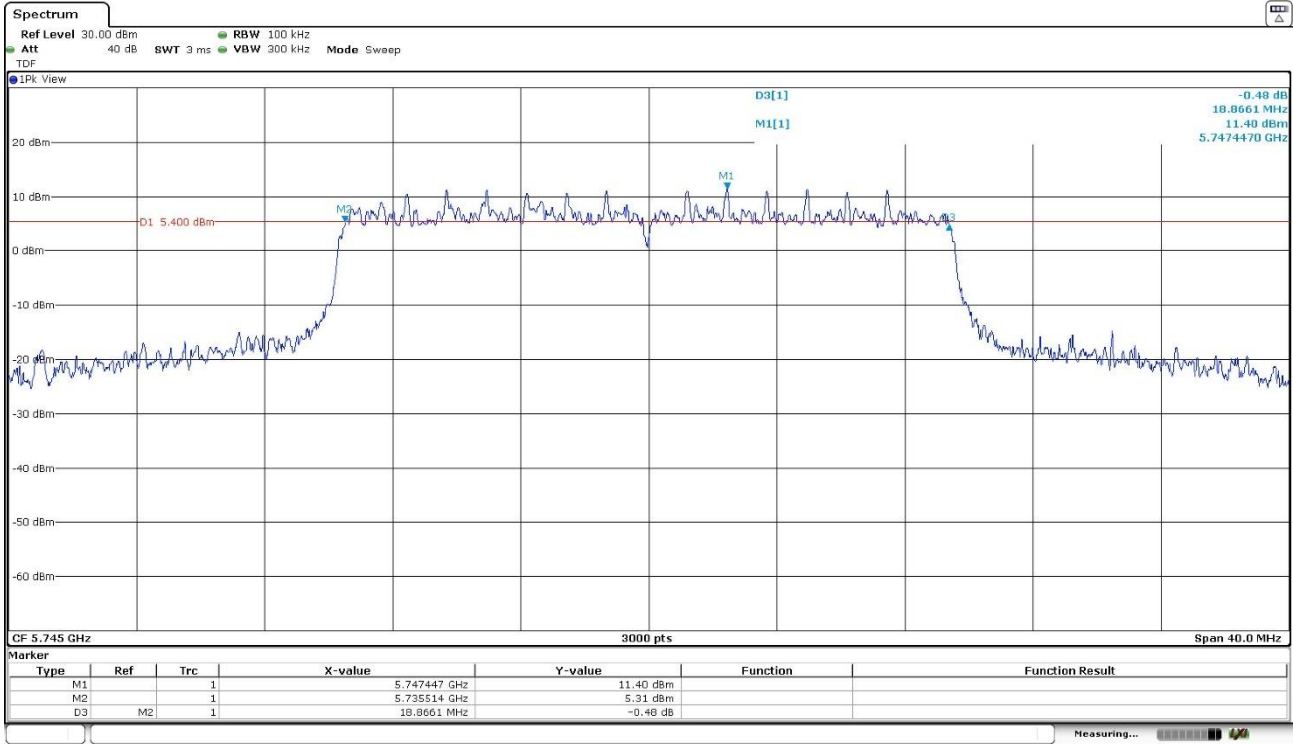


This plot corresponds to Ant0.

**MIMO 802.11 ax20 (HE20):**

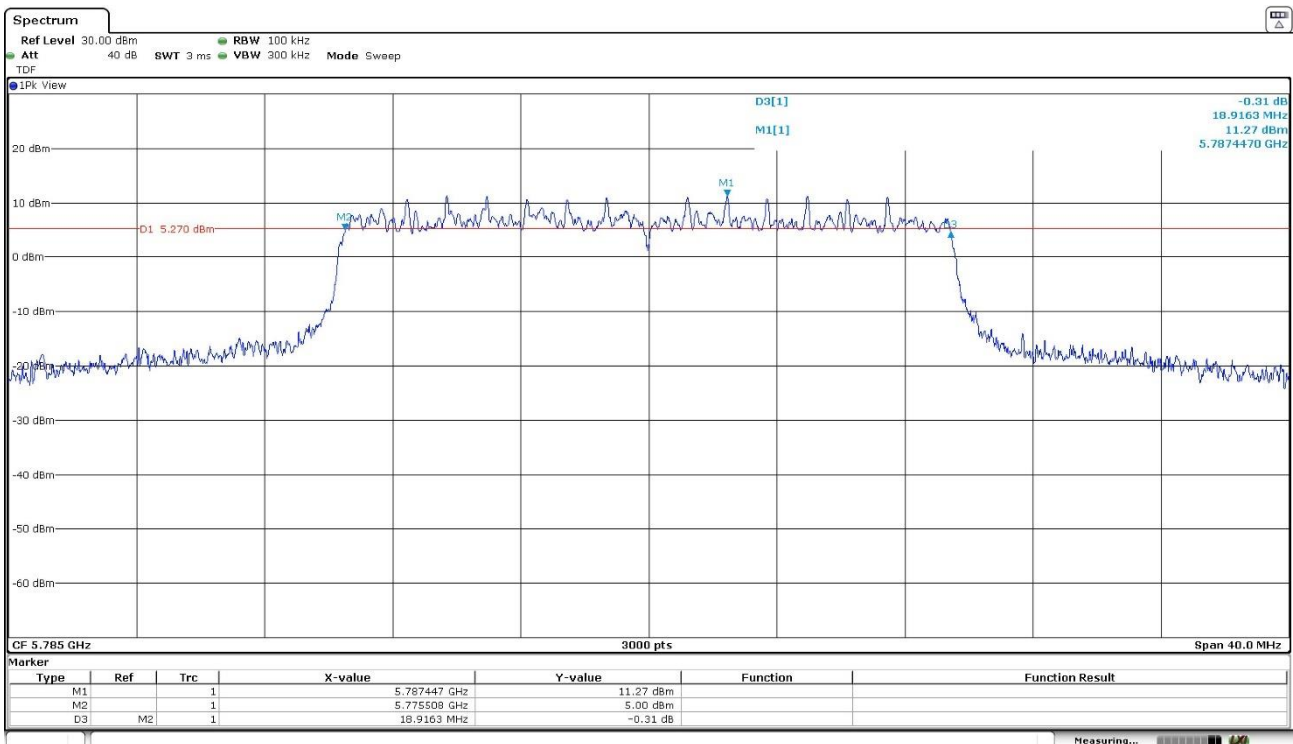
**U-NII-3 (5725-5850 MHz)**

- Low Channel 149 (5745 MHz):



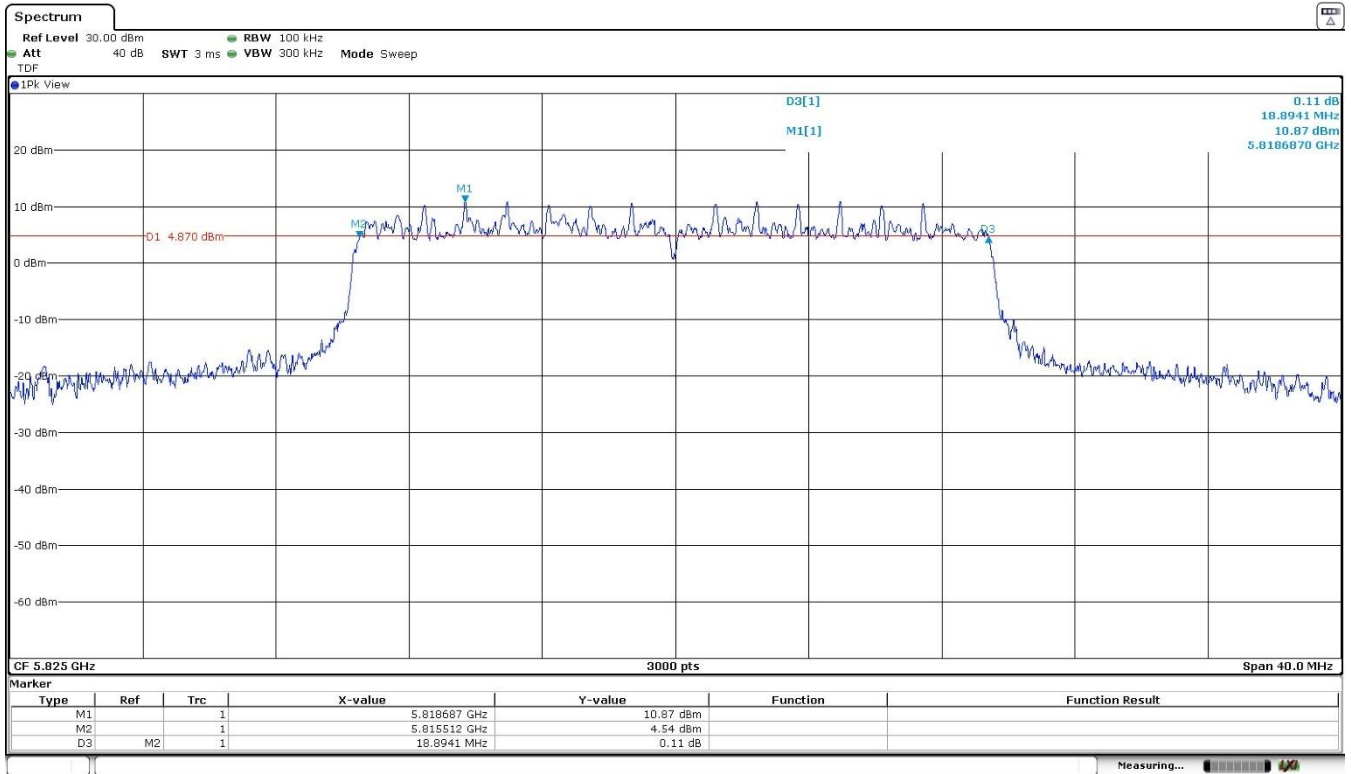
This plot corresponds to Ant0.

- Middle Channel 157 (5785 MHz):



This plot corresponds to Ant0.

- High Channel 165 (5825 MHz):

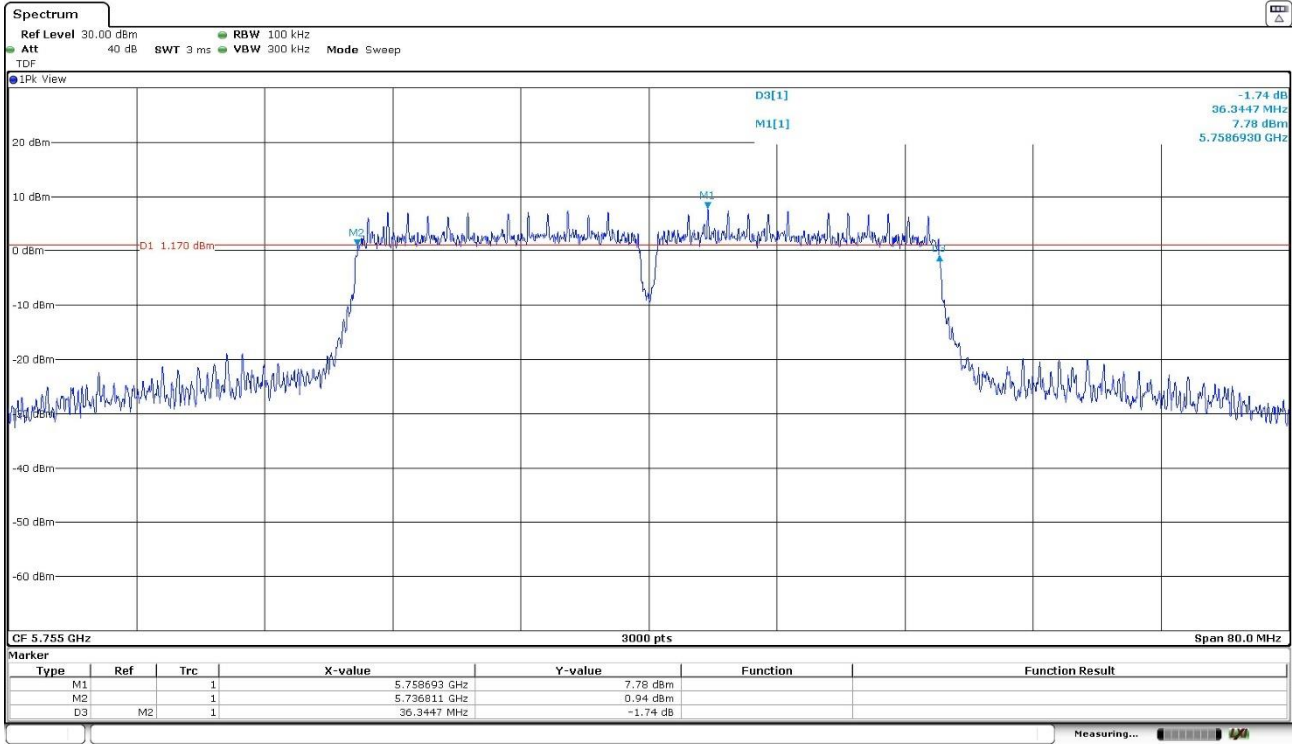


This plot corresponds to Ant0.

**MIMO 802.11 ac40 (VHT40):**

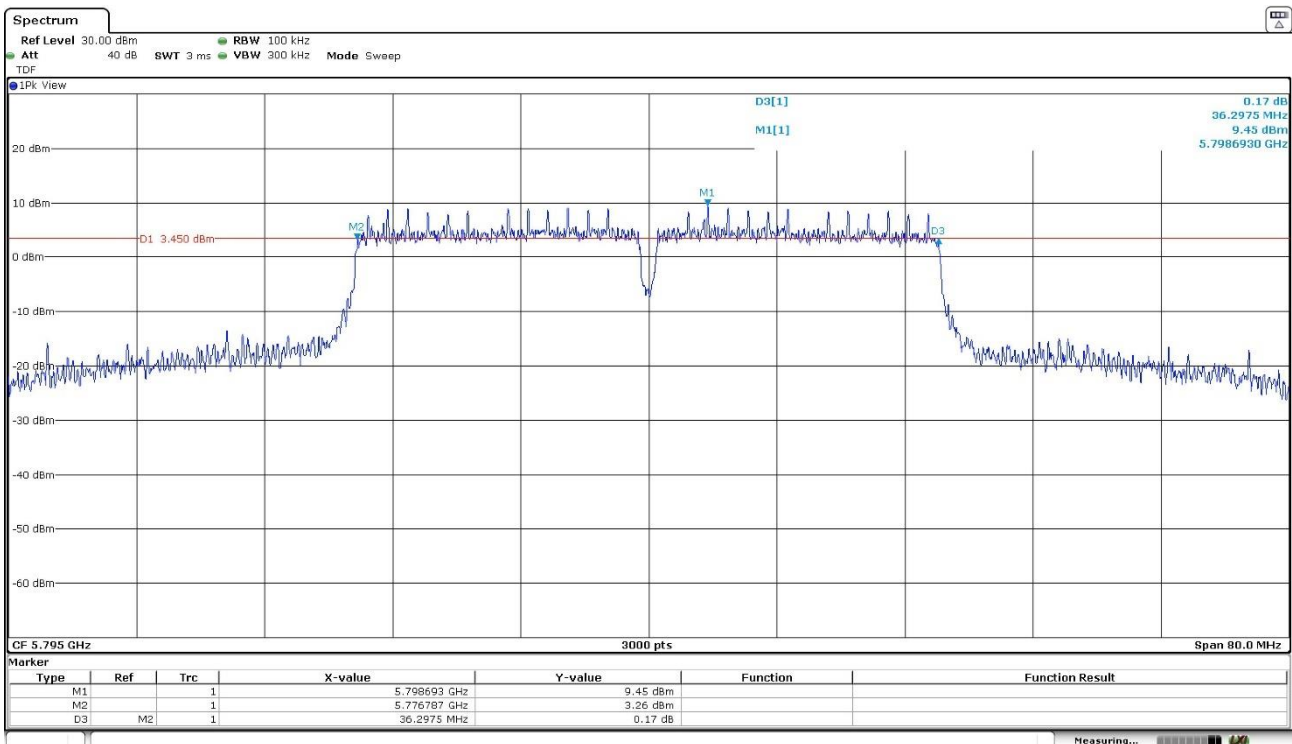
**U-NII-3 (5725-5850 MHz)**

- Low Channel 151 (5755 MHz):



This plot corresponds to Ant0.

- High Channel 159 (5795 MHz):

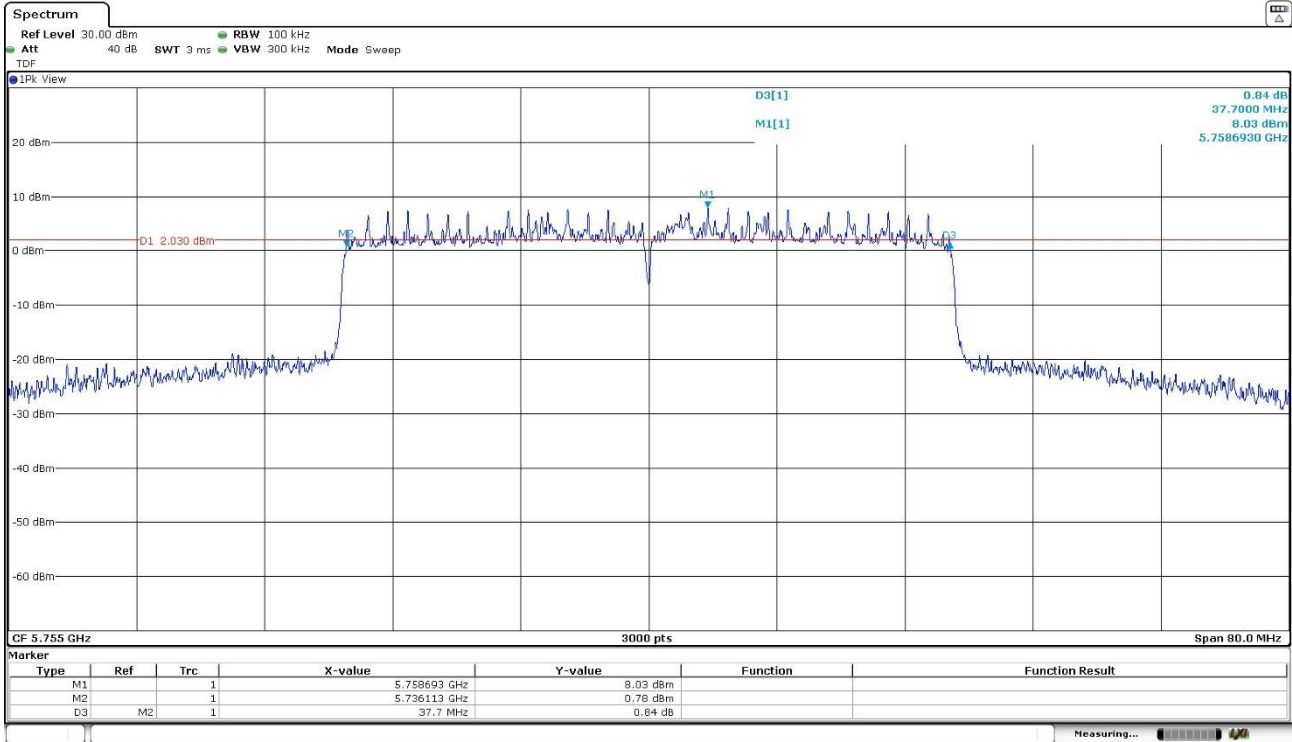


This plot corresponds to Ant0.

**MIMO 802.11 ax40 (HE40):**

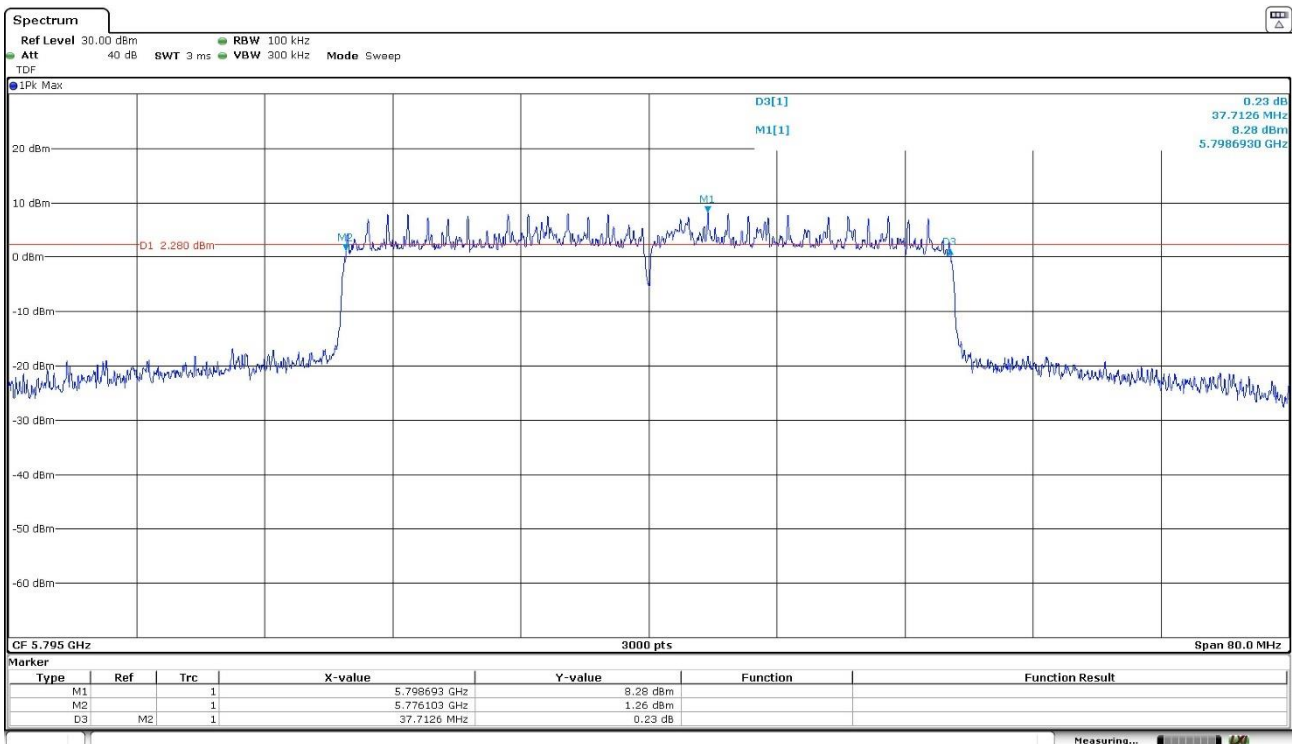
**U-NII-3 (5725-5850 MHz)**

- Low Channel 151 (5755 MHz):



This plot corresponds to Ant0.

- High Channel 159 (5795 MHz):

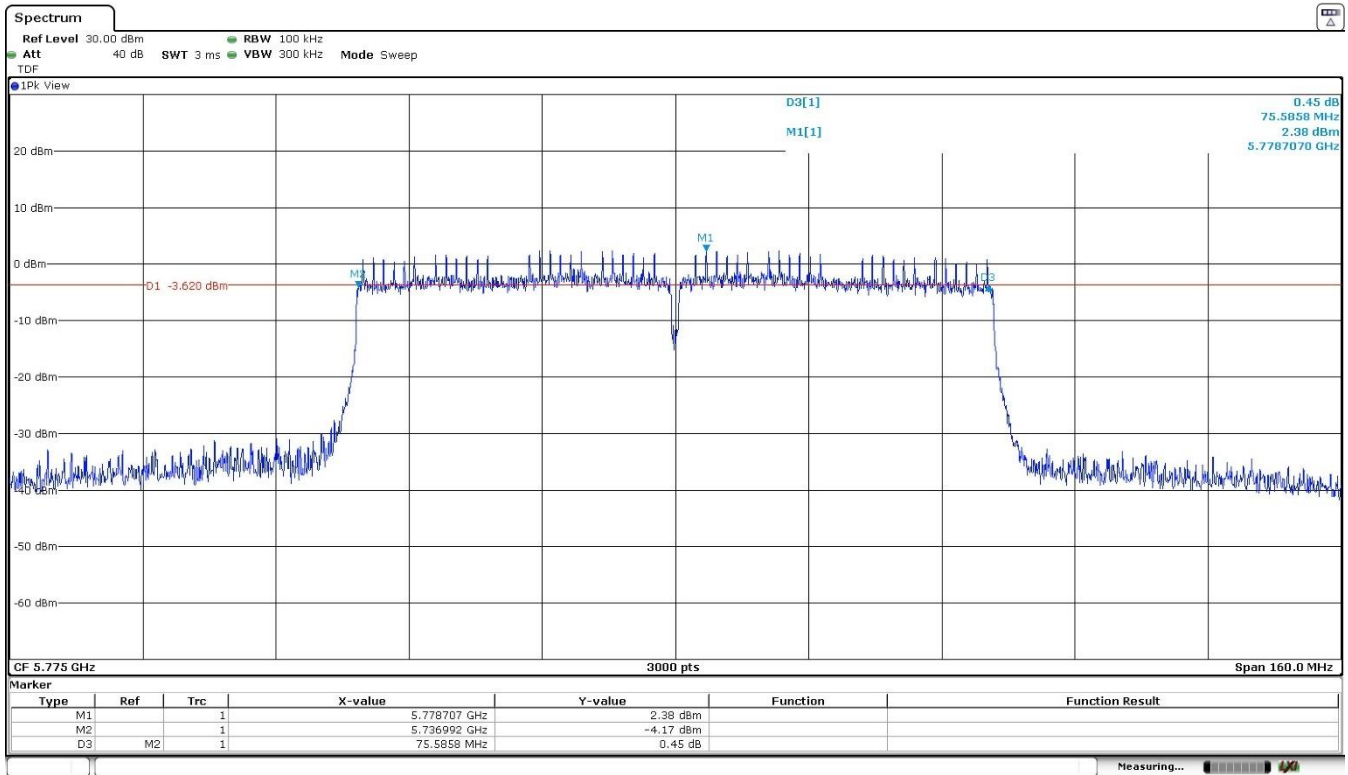


This plot corresponds to Ant0.

**MIMO 802.11 ac80 (VHT80):**

**U-NII-3 (5725-5850 MHz)**

- Single Channel 155 (5775 MHz):



This plot corresponds to Ant0.