RADIO TEST REPORT

Product	:	WLAN TRANSCEIVER
Model Name	:	IP110H
FCC ID	:	AFJ399510
Test Regulation	:	FCC 47 CFR Part 15 Subpart E (Section 15.407)
Received Date	:	2022/10/19
Test Date	:	2022/10/24 ~ 2022/11/4
Issued Date	:	2023/2/9
Applicant	:	Icom Incorporated 1-1-32, Kamiminami, Hirano-Ku, Osaka, 547-0003, Japan
Issued By	:	Underwriters Laboratories Taiwan Co., Ltd. Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Testing Laboratory
3398

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REVISION HISTORY

Original Test Report No.: 4790590080-US-R1-V1

Rev.	Test report No.	Date	Page revised	Contents
Original	4790590080-US-R1-V0	2022/12/27	-	Initial issue
V1	4790590080-US-R1-V1	2023/2/9	P.13 P.19	1. Add sample calculation. 2. Add attenuator information into the table of antenna port conducted measurement

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1. Attestation of Test Results

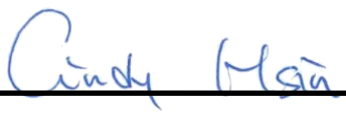
APPLICANT:	Icom Incorporated 1-1-32, Kamiminami, Hirano-Ku, Osaka, 547-0003, Japan
MANUFACTURER:	Icom Incorporated 1-1-32, Kamiminami, Hirano-Ku, Osaka, 547-0003, Japan
EUT DESCRIPTION:	WLAN TRANSCEIVER
BRAND:	ICOM
MODEL:	IP110H
SAMPLE STAGE:	Engineering Verification Test sample
DATE of TESTED:	2022/10/24 ~ 2022/11/4

APPLICABLE STANDARDS	
STANDARD	**Test Results**
FCC 47 CFR PART 15 Subpart E (Section 15.407)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:



Cindy Hsin Date : 2023/2/9
Project Handler

Approved and Authorized By:

Eric Lee Date : 2023/2/9
Senior Laboratory Engineer

2. Summary of Test Results

Summary of Test Results		
FCC Clause	**Test Items**	**Result**
15.407(e)	6dB Bandwidth	PASS
15.403(i)	26dB Bandwidth	PASS
2.1049	Occupied Bandwidth	See Note
15.407(a)(1/2/3)	Conducted Output Power	PASS
15.407(a)(1/2/3)	Power Spectral Density	PASS
15.407(g)	Frequency Stability	PASS
15.407(b) (1/2/3/4(i/ii)/9)	Radiated Emissions and Band Edge Measurement	PASS
15.407(b)(9)	AC Power Conducted Emission	PASS
15.203	Antenna Requirement	PASS
15.407(h)	Dynamic Frequency Selection & Transmit power control	See Note 2

Note:
1. The Occupied Bandwidth was reference only.
2. The "Dynamic Frequency Selection & Transmit power control measurement" was recorded in Report No.: 4790590080-US-R2-V0

3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB 789033 D02 General UNII Test Procedure New Rules v02r01, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

5. Measurement Uncertainty

For statement of conformity, accuracy method (Section 8.2.4 and 8.2.5 of ISO Guide 98-4) was applied as decision rule for measurement in this test report.

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

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	±2.9 dB
RF Conducted	9 kHz - 40GHz	±2.4 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	±1.9 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	±5.8 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	±4.8 dB

6. Equipment under Test

6.1. Description of EUT

Product	WLAN TRANSCEIVER	
Brand Name	ICOM	
Model Name	IP110H	
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz, 5745 ~ 5825 MHz	
Modulation	256QAM, 64QAM, 16QAM, QPSK, BPSK	
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to MCS7 802.11ac: up to MCS9	
Number of Channel	5180 ~ 5240 MHz	4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20)
		2 for 802.11n (HT40), 802.11ac (VHT40)
		1 for 802.11ac (VHT80)
	5260 ~ 5320 MHz	4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20)
		2 for 802.11n (HT40), 802.11ac (VHT40)
		1 for 802.11ac (VHT80)
	5500 ~ 5700 MHz	11 for 802.11a, 802.11n (HT20), 802.11ac (VHT20)
		5 for 802.11n (HT40), 802.11ac (VHT40)
		2 for 802.11ac (VHT80)
	5745 ~ 5825 MHz	5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20)
		2 for 802.11n (HT40), 802.11ac (VHT40)
		1 for 802.11ac (VHT80)
Maximum Output Power	5180 ~ 5240 MHz: 7.38 dBm 5260 ~ 5320 MHz: 7.94 dBm 5500 ~ 5700 MHz: 7.84 dBm 5745 ~ 5825 MHz: 7.90 dBm	
Normal Voltage	5Vdc from host 3.75Vdc for battery	
Sample ID	5427308	

Note:

1. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitters and one receivers.

Modulation Mode	Tx,Rx Function
802.11a	1TX,1RX
802.11n (HT20)	1TX,1RX
802.11n (HT40)	1TX,1RX
802.11ac (VHT20)	1TX,1RX
802.11ac (VHT40)	1TX,1RX
802.11ac (VHT80)	1TX,1RX

* The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40 / VHT80, therefore investigated worst case to representative mode in test report.

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
AC Adapter 1	ICOM	BC-258	Input: 100-240V, 50/60Hz, 0.45A, Output: 5.0V, 2A
USB Cable	ICOM	OPC-2480	Length: 1m
Charger Cradle	ICOM	BC-257	-
AC Adapter (for Cradle)	ICOM	BC-228	-

3. The EUT could be supplied with rechargeable battery as the following table:

Brand Name	Model	Description
ICOM	RB-LB1081	3.75V, 3200mAh 12Wh

4. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual.

6.2. Channel List

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20),:

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40),:

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

FOR 5500 ~ 5700MHz

11 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	-	-

5 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	-	-

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530MHz	122	5610 MHz

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz	-	-

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

6.3. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power	Test Date	Tested by
Antenna Port Conducted Measurement	SR4	21~28°C/ 51~58%RH	3.75Vdc from battery & 5Vdc from host	2022/10/24~ 2022/11/04	Rex Chen
Radiated Spurious Emission	966-2	21~28°C/ 51~58%RH	3.75Vdc from battery & 5Vdc from host	2022/10/24~ 2022/11/04	Rex Chen
AC power Line Conducted Emission	SR1	21~28°C/ 51~58%RH	3.75Vdc from battery & 5Vdc from host	2022/10/24~ 2022/11/04	Rex Chen

FCC Test Firm Registration Number: 498077

Sample Calculation:

Antenna Port Conducted Measurement:

- Where relevant, the follow sample calculation is provided:
  Result Value (dBm) = Reading Value (dBm) +Attenuator Factor (dB) + Cable Loss (dB).
  Example: Result Value (10dBm) = Reading Value (-2dBm) +Attenuator Factor (10dB) + Cable Loss(2dB).
  *Test plot only shown the “Result Value”.

Radiated Spurious Emission:

- Where relevant, the follow sample calculation is provided:
  Result Value (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
  Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
  Example: Result Value (34.5dBuV/m) = Reading Value (40.1dBuV) + Antenna Factor (18.7dB/m) + Cable Loss (4.2dB) - Preamp Factor (28.5dB).

AC power Line Conducted Emission:

- Where relevant, the follow sample calculation is provided:
  Result Value (dBuV) = Reading Value (dBuV) + Correction Factor (dB).
  Correction Factor (dB) = Insertion loss(dB) + Cable loss(dB).
  Example: Result Value (53.7dBuV) = Reading Value (35.1dBuV) + Insertion loss(18.1dB) + Cable loss(0.5dB).

6.4. Description of Available Antennas

Ant. No.	Brand Name	Model Name	Ant. Type	Maximum Gain (dBi)
1	Japan Aviation Electronics Industry, Limited	AN01DL25C00R3200	Split ring	2.4GHz: 1.15 5.18~5.32GHz: 0.15 5.50~5.82GHz:0.62

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual.

6.5. Test Mode Applicability and Tested Channel Detail

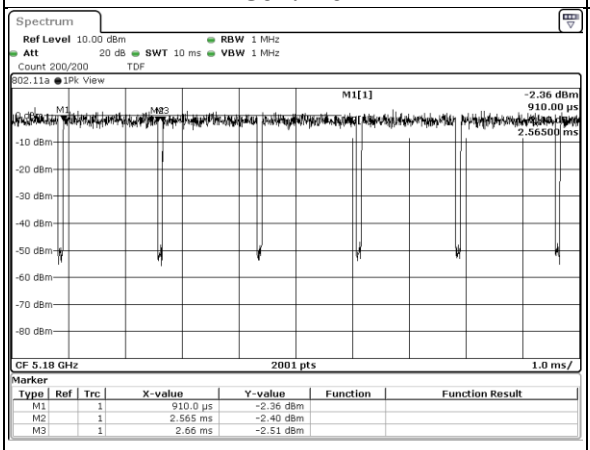
- The fundamental of the EUT was investigated in three orthogonal axes X-Y/Y-Z/X-Z, it was determined that Y-Z plane was worst-case. Therefore, all final radiated testing was performed with the EUT in Y-Z plane.
- The EUT has two power source types: 3.75Vdc from battery and 5Vdc from Host, above two types was pre-tested, the worst case was found in the 5Vdc. Therefore only the test data of the 5Vdc was recorded in this report.
- For Antenna Port Conducted Measurement, this item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.
- For below 1 GHz radiated emission and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Test Item	Mode	Modulation Technology	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Emissions (Above 1GHz)	802.11a	5180-5240	OFDM	36 to 48	36, 44, 48	6Mbps
	802.11ac20			36 to 48	36, 44, 48	MCS0
	802.11ac40			38 to 46	38, 46	MCS0
	802.11ac80			42	42	MCS0
	802.11a	5260-5320	OFDM	52 to 64	52, 60, 64	6Mbps
	802.11ac20			52 to 64	52, 60, 64	MCS0
	802.11ac40			54 to 62	54, 62	MCS0
	802.11ac80			58	58	MCS0
	802.11a	5500-5700	OFDM	100 to 140	100, 116, 140	6Mbps
	802.11ac20			100 to 140	100, 116, 140	MCS0
	802.11ac40			102 to 134	102, 110, 134,	MCS0
	802.11ac80			106	106	MCS0
	802.11a	5745-5825	OFDM	149 to 165	149, 157, 165	6Mbps
	802.11ac20			149 to 165	149, 157, 165	MCS0
	802.11ac40			151 to 159	151, 159	MCS0
	802.11ac80			155	155	MCS0
Radiated Emissions (Below 1GHz)	802.11a	5500-5700	OFDM	100 to 140	140	MCS0
AC Power Line Conducted Emission	802.11a	5500-5700	OFDM	100 to 140	140	MCS0
Antenna Port Conducted Measurement	802.11a	5180-5240	OFDM	36 to 48	36, 44, 48	6Mbps
	802.11ac20			36 to 48	36, 44, 48	MCS0
	802.11ac40			38 to 46	38, 46	MCS0
	802.11ac80			42	42	MCS0
	802.11a	5260-5320	OFDM	52 to 64	52, 60, 64	6Mbps
	802.11ac20			52 to 64	52, 60, 64	MCS0
	802.11ac40			54 to 62	54, 62	MCS0
	802.11ac80			58	58	MCS0
	802.11a	5500-5700	OFDM	100 to 140	100, 116, 140	6Mbps
	802.11ac20			100 to 140	100, 116, 140	MCS0
	802.11ac40			102 to 134	102, 110, 134	MCS0
	802.11ac80			106	106	MCS0
	802.11a	5745-5825	OFDM	149 to 165	149, 157, 165	6Mbps
	802.11ac20			149 to 165	149, 157, 165	MCS0
	802.11ac40			151 to 159	151, 159	MCS0
	802.11ac80			155	155	MCS0

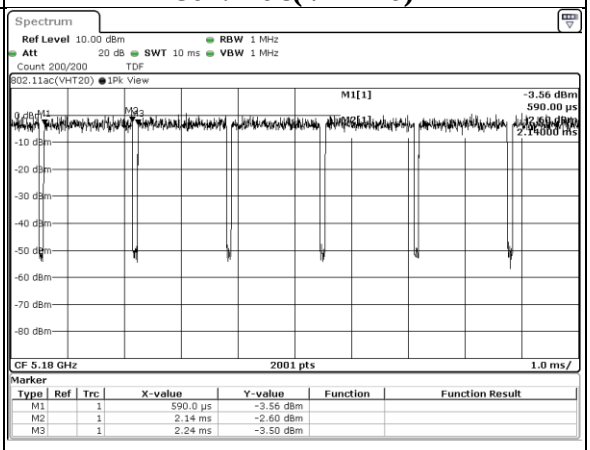
6.6. Duty cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle	Duty Factor (dB)	VBW Set (above 1GHz)
802.11a	1.655	1.750	0.9457	0.24	1kHz
802.11ac(VHT20)	1.550	1.650	0.9394	0.27	1kHz
802.11ac(VHT40)	0.760	0.865	0.8786	0.56	2kHz
802.11ac(VHT80)	0.380	0.465	0.8172	0.88	3kHz

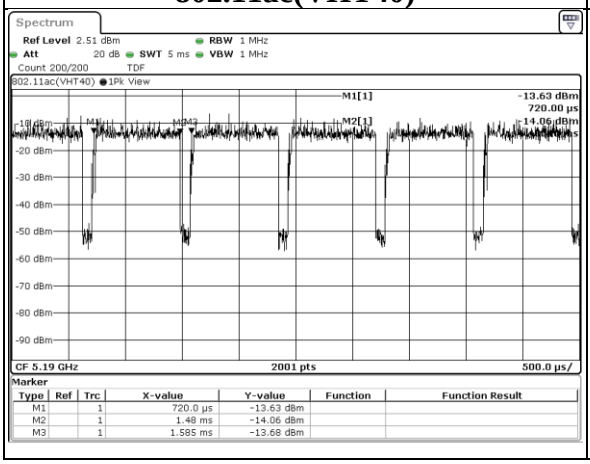
802.11a



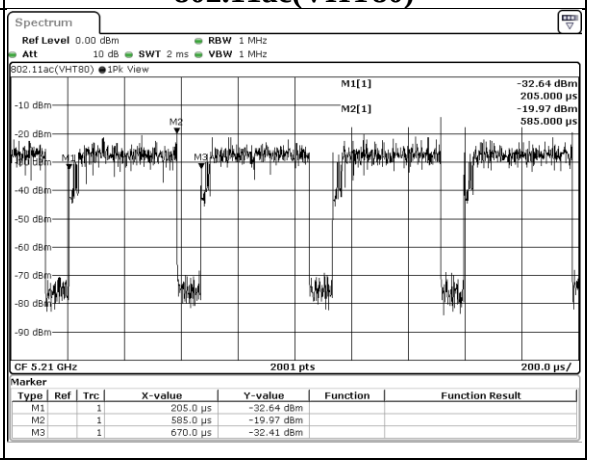
802.11ac(VHT20)



802.11ac(VHT40)



802.11ac(VHT80)



7. Test Equipment

Test Equipment List					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Expired date**
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	2021/11/9	2022/11/8
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2021/12/10	2022/12/9
Loop Antenna	ETS lindgren	6502	00213440	2021/12/23	2022/12/22
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2022/2/8	2023/2/7
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	2021/12/13	2022/12/12
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	2021/12/17	2022/12/16
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2022/6/7	2023/6/6
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	2022/2/16	2023/2/15
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	2022/5/17	2023/5/16
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2021/12/3	2022/12/2
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-1 & 170214-2	2021/12/3	2022/12/2

Test Equipment List					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Expired date**
Antenna Port Conducted Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070834	2022/10/24	2023/10/23
USB Power Sensor	Anritsu	MA24408A	12031	2022/6/22	2023/6/21
Attenuator	EMCI	EMC-40ATK2W10	17002	2022/12/9	2023/12/8
Temperature &Humidity Test Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA1701-010	2022/3/11	2023/3/10
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2021/11/15	2022/11/14
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2022/8/29	2023/8/28
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2022/8/30	2023/8/29
Cables	TITAN	CFD200	T0732ACFD20020A300-2	2022/4/9	2023/4/8

UL Software		
Description	**Name**	**Version**
Radiated measurement	e3	6.191211 (V6)
Conducted measurement	RF-Conducted-FCC 15407	ver 1.1
AC power Line Conducted Emission	EZ_EMC	UL-3A1.2

8. Description of Test Setup

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
A	Laptop	DELL	Latitude E5470	3JFKWF2	Provide by lab
B	Adapter	ICOM	BC-258	DYS810-050200U-6	Supplied by client

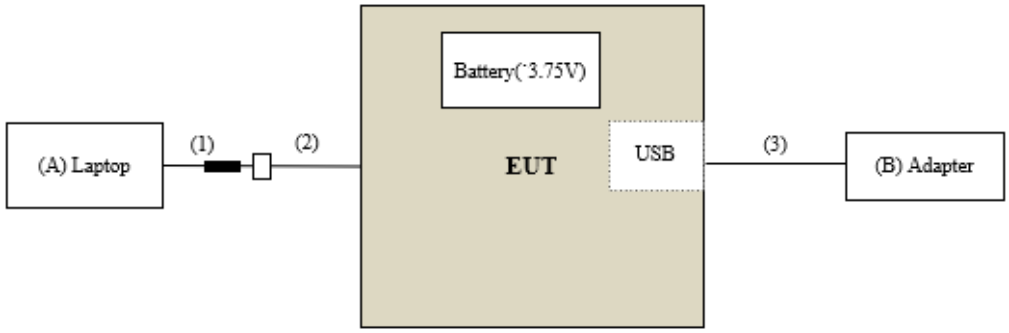
I/O Cables

ID	Equipment	Brand Name	Model Name	Length (m)	Remark
1	Mini USB Cable	ICOM	N/A	1.5	Supplied by client with one core
2	Type B Cable	ICOM	OPC-478UC	0.83	Supplied by client
3	USB cable (typeA-typeC)	ICOM	OPC-2480	1	Supplied by client

Test Setup

Controlled using a bespoke application (MFG Tool) on a test Notebook. The application was used to enable a continuous transmission mode and to select the test channels, data rates, modulation schemes and power setting as required.

Setup Diagram for Test



9. Test Results

9.1. 6dB Bandwidth

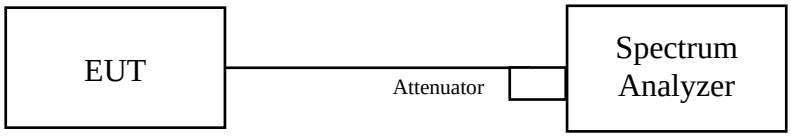
Requirements

The minimum 6 dB bandwidth shall be at least 500 kHz.

Test procedure

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x 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 Setup

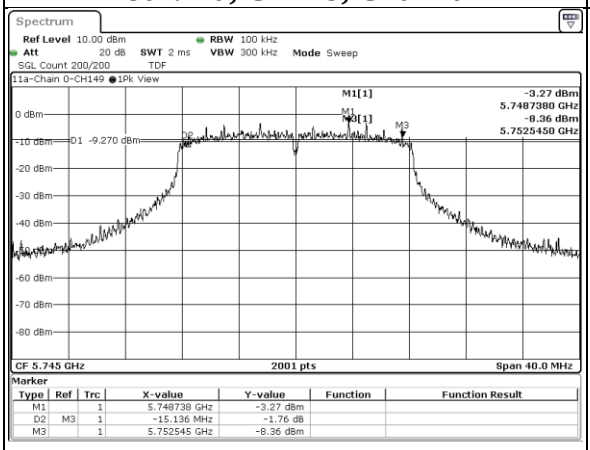


The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

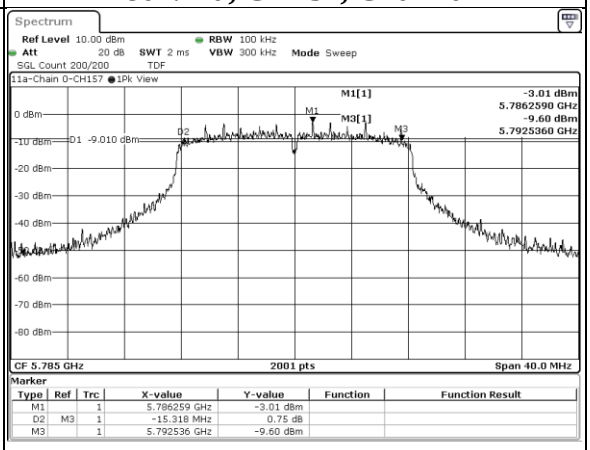
Test Data

Mode	CH	Freq (MHz)	6dB BW (MHz) Chain 0	Limit (MHz)	Result
802.11a	149	5745	15.136	0.5	PASS
	157	5785	15.318	0.5	PASS
	165	5825	15.081	0.5	PASS

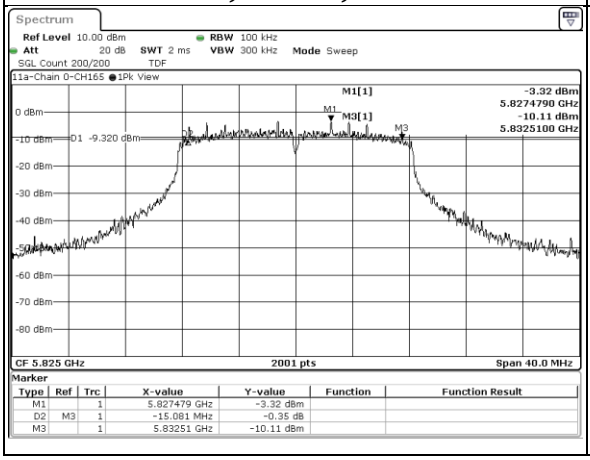
802.11a, CH149, Chain 0



802.11a, CH157, Chain 0

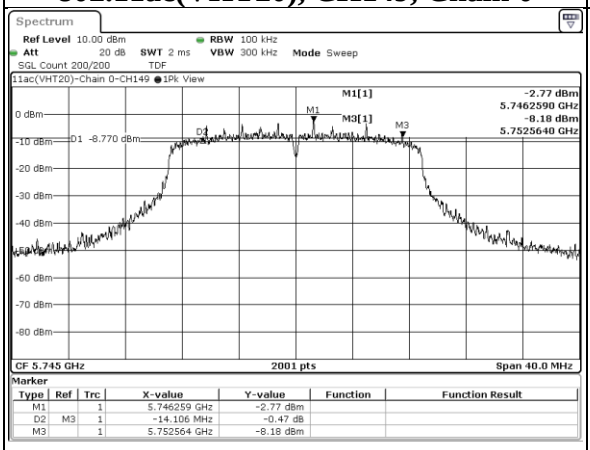


802.11a, CH165, Chain 0

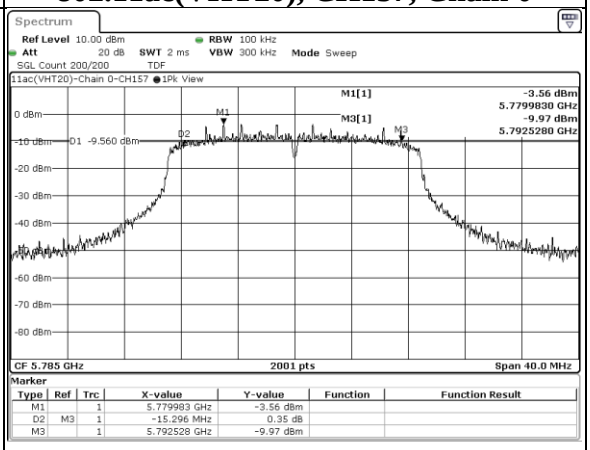


Mode	CH	Freq (MHz)	6dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11ac(VHT20)	149	5745	14.106	0.5	PASS
	157	5785	15.296	0.5	PASS
	165	5825	13.842	0.5	PASS

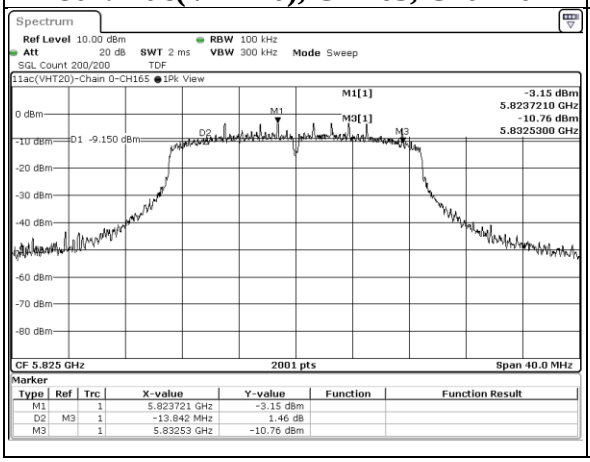
802.11ac(VHT20), CH149, Chain 0



802.11ac(VHT20), CH157, Chain 0

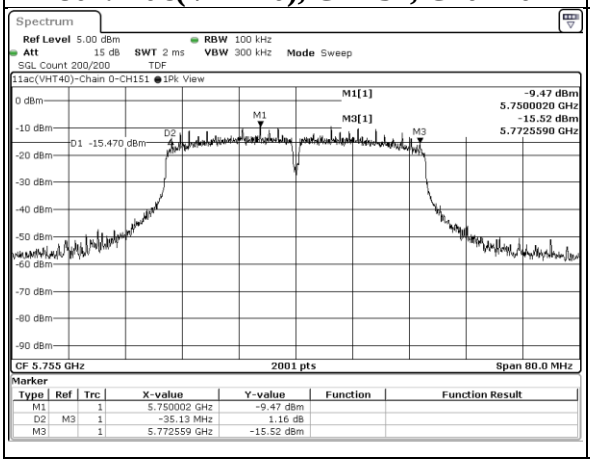


802.11ac(VHT20), CH165, Chain 0

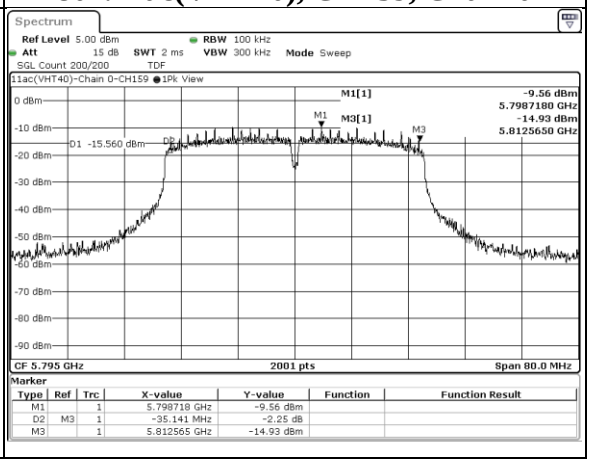


Mode	CH	Freq (MHz)	6dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11ac(VHT40)	151	5755	35.13	0.5	PASS
	159	5795	35.141	0.5	PASS

802.11ac(VHT40), CH151, Chain 0

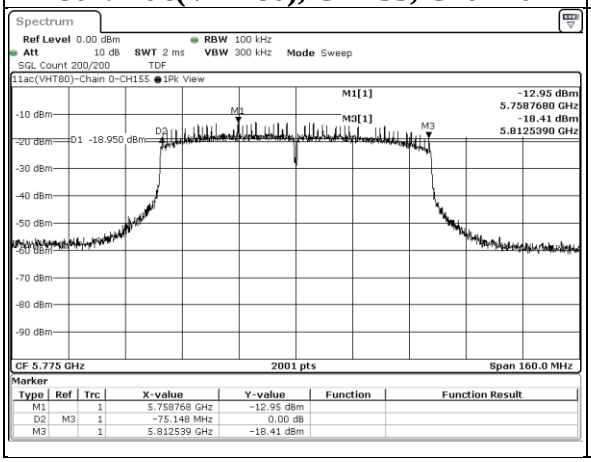


802.11ac(VHT40), CH159, Chain 0



Mode	CH	Freq (MHz)	6dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11ac(VHT80)	155	5775	75.148	0.5	PASS

802.11ac(VHT80), CH155, Chain 0

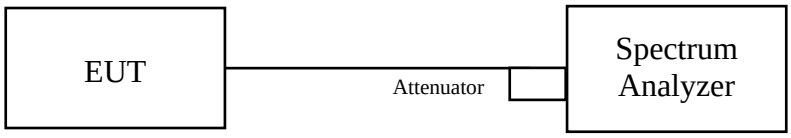


9.2. 26dB Bandwidth

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%.

Test Setup

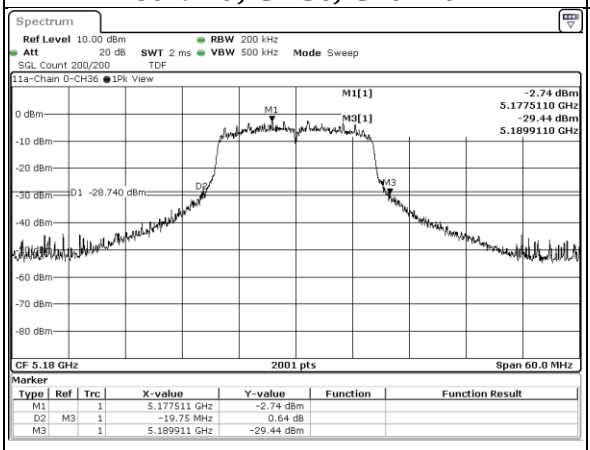


The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

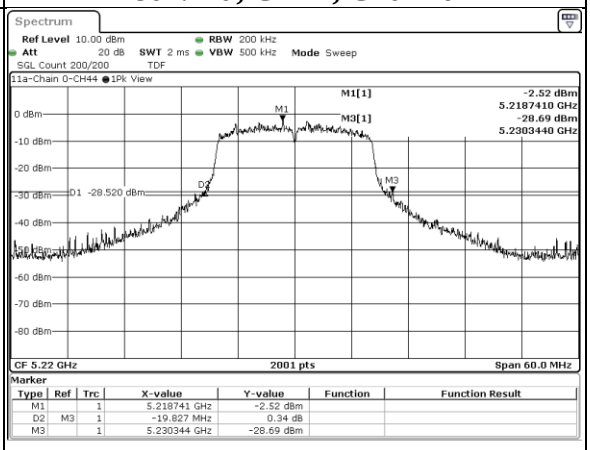
Test Data

Mode	CH	Freq (MHz)	26dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11a	36	5180	19.75	N/A	PASS
	44	5220	19.827	N/A	PASS
	48	5240	19.809	N/A	PASS
	52	5260	19.545	N/A	PASS
	60	5300	19.641	N/A	PASS
	64	5320	19.76	N/A	PASS
	100	5500	19.235	N/A	PASS
	116	5580	19.134	N/A	PASS
	140	5700	19.18	N/A	PASS

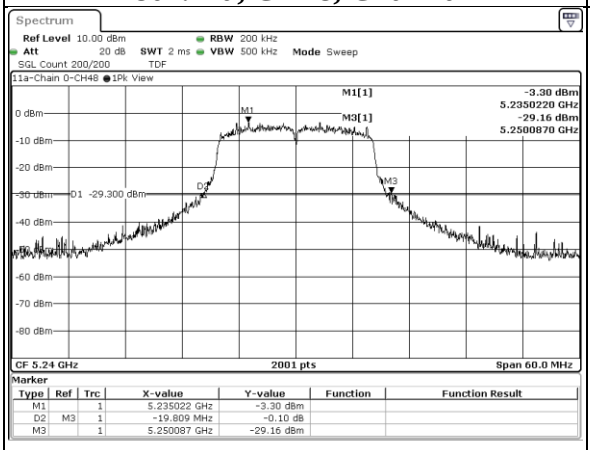
802.11a, CH36, Chain 0



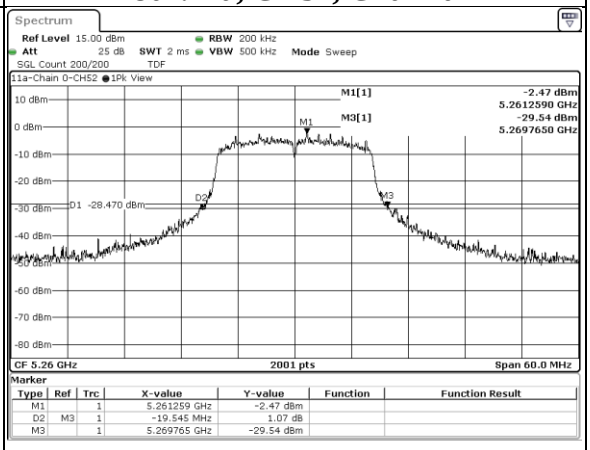
802.11a, CH44, Chain 0



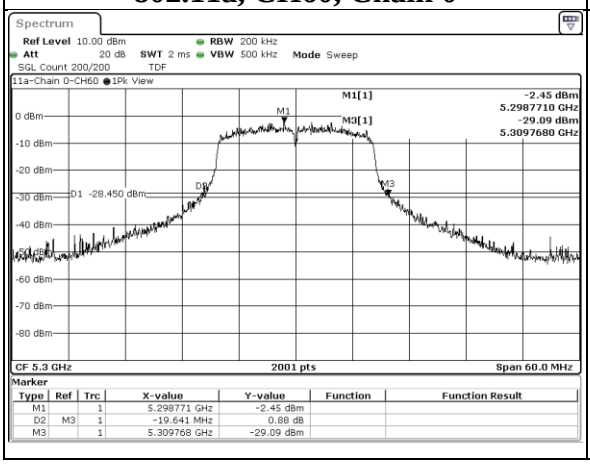
802.11a, CH48, Chain 0



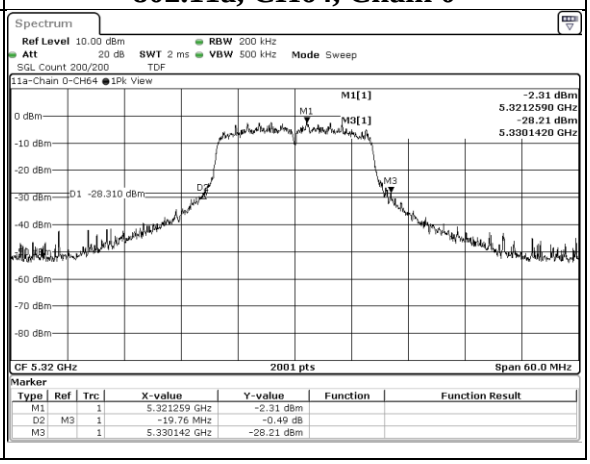
802.11a, CH52, Chain 0



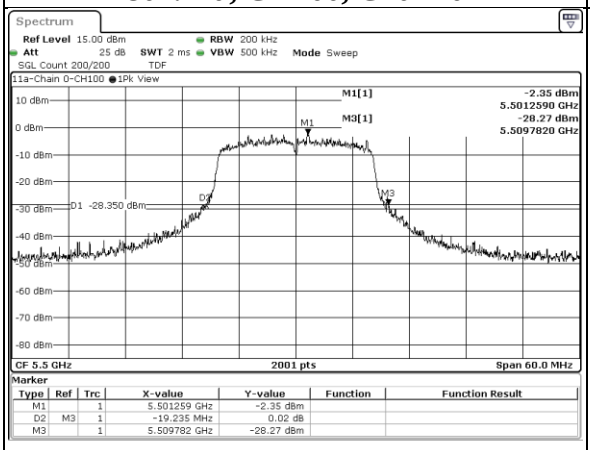
802.11a, CH60, Chain 0



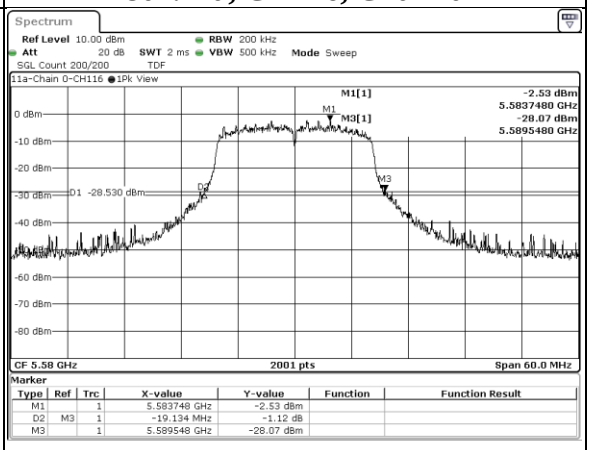
802.11a, CH64, Chain 0



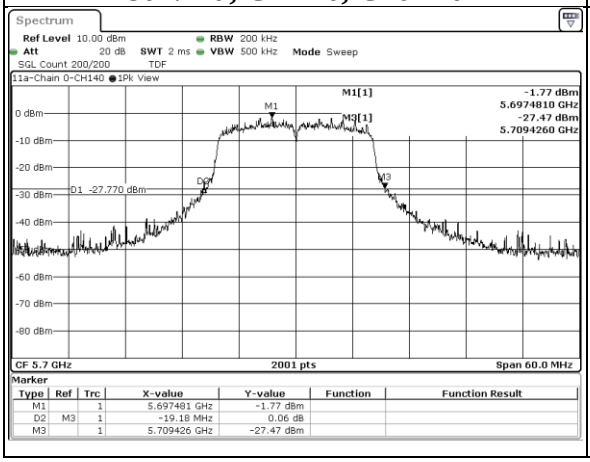
802.11a, CH100, Chain 0



802.11a, CH116, Chain 0

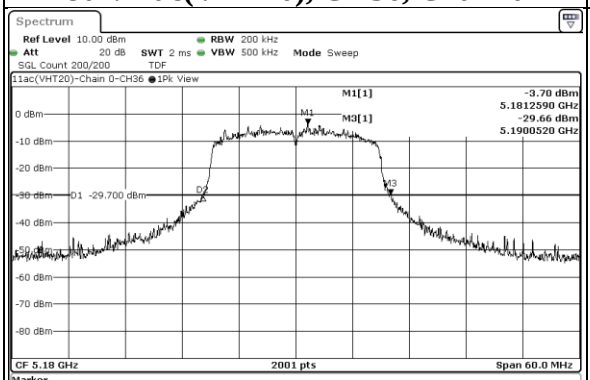


802.11a, CH140, Chain 0



Mode	CH	Freq (MHz)	26dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11ac(VHT20)	36	5180	19.845	N/A	PASS
	44	5220	19.97	N/A	PASS
	48	5240	19.735	N/A	PASS
	52	5260	19.72	N/A	PASS
	60	5300	19.878	N/A	PASS
	64	5320	19.748	N/A	PASS
	100	5500	20.996	N/A	PASS
	116	5580	19.824	N/A	PASS
	140	5700	19.928	N/A	PASS

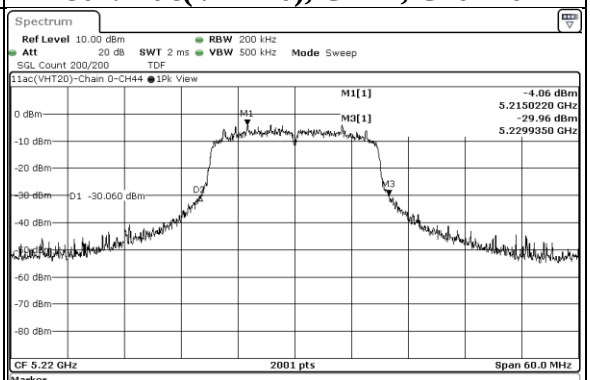
802.11ac(VHT20), CH36, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.181259 GHz	-3.70 dBm		
D2	M3	1	-19.845 MHz	-0.49 dB		
M3		1	5.190052 GHz	-29.66 dBm		

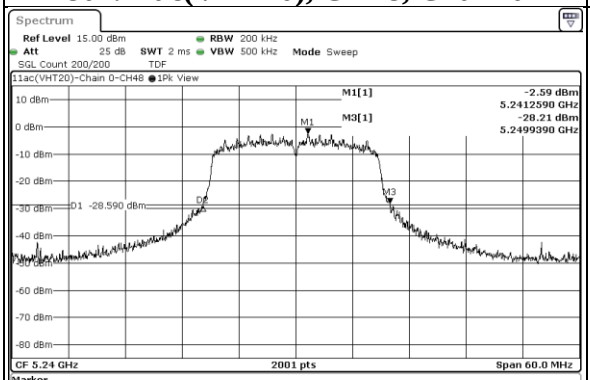
802.11ac(VHT20), CH44, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.215022 GHz	-4.06 dBm		
D2	M3	1	-19.97 MHz	-0.23 dB		
M3		1	5.229935 GHz	-29.96 dBm		

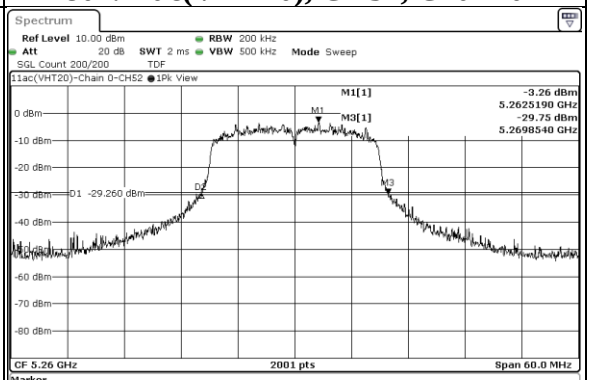
802.11ac(VHT20), CH48, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.241259 GHz	-2.59 dBm		
D2	M3	1	-19.735 MHz	-0.94 dB		
M3		1	5.249939 GHz	-28.21 dBm		

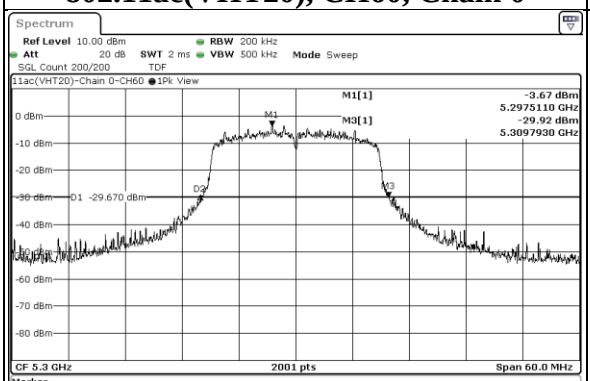
802.11ac(VHT20), CH52, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.262519 GHz	-3.26 dBm		
D2	M3	1	-19.72 MHz	0.28 dB		
M3		1	5.269854 GHz	-29.75 dBm		

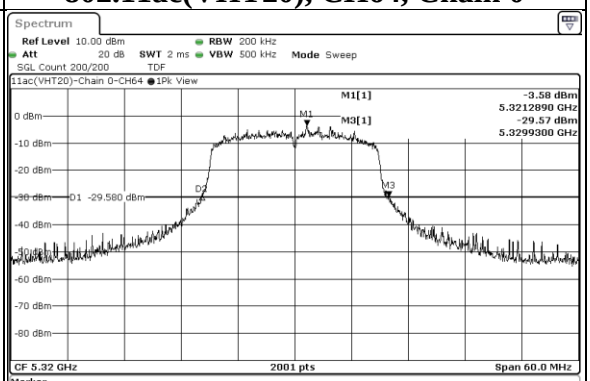
802.11ac(VHT20), CH60, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.297511 GHz	-3.67 dBm		
D2	M3	1	-19.878 MHz	0.70 dB		
M3		1	5.309793 GHz	-29.92 dBm		

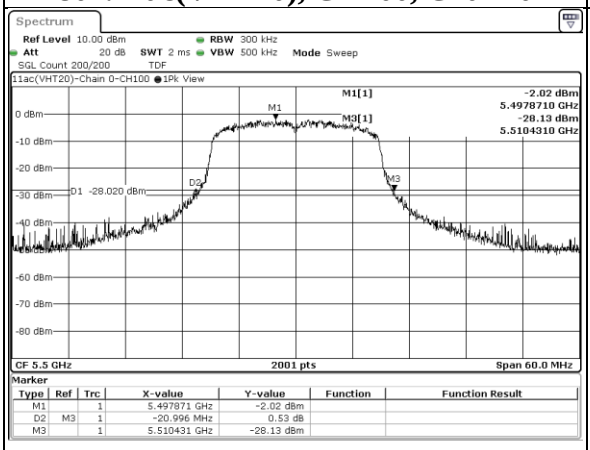
802.11ac(VHT20), CH64, Chain 0



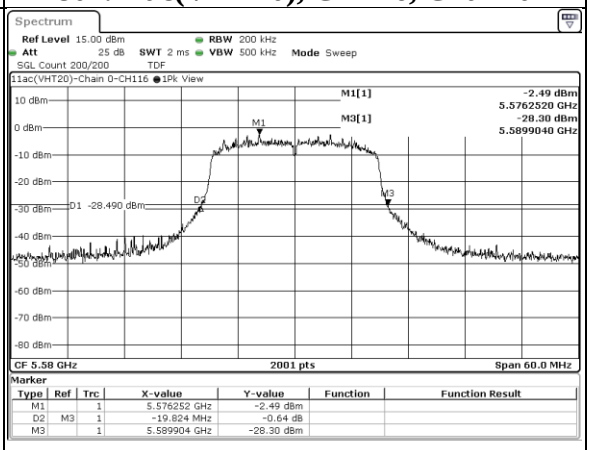
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.321209 GHz	-3.58 dBm		
D2	M3	1	-19.748 MHz	0.35 dB		
M3		1	5.32993 GHz	-29.57 dBm		

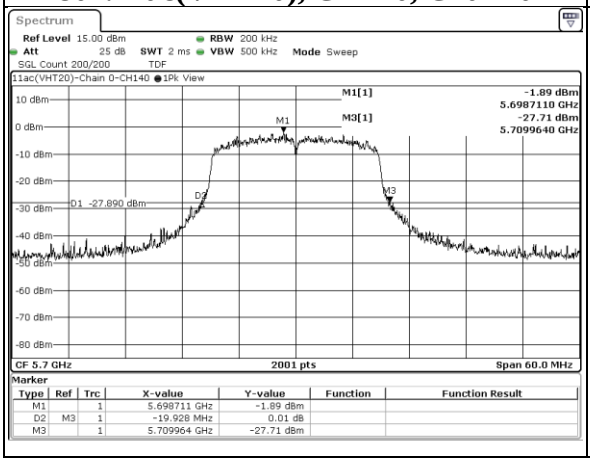
802.11ac(VHT20), CH100, Chain 0



802.11ac(VHT20), CH116, Chain 0

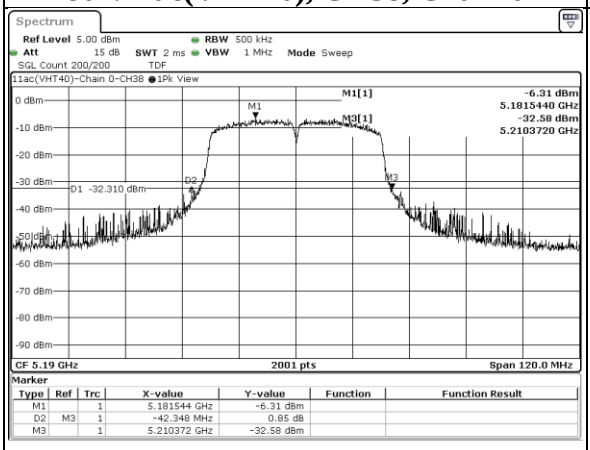


802.11ac(VHT20), CH140, Chain 0

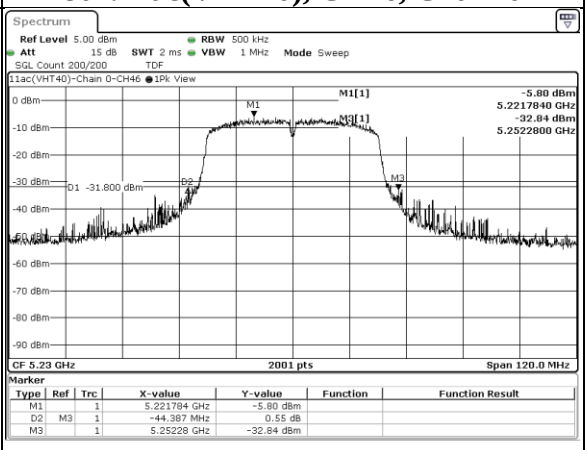


Mode	CH	Freq (MHz)	26dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11ac(VHT40)	38	5190	42.348	N/A	PASS
	46	5230	44.387	N/A	PASS
	54	5270	40.396	N/A	PASS
	62	5310	41.126	N/A	PASS
	102	5510	41.104	N/A	PASS
	110	5550	40.652	N/A	PASS
	134	5670	40.261	N/A	PASS

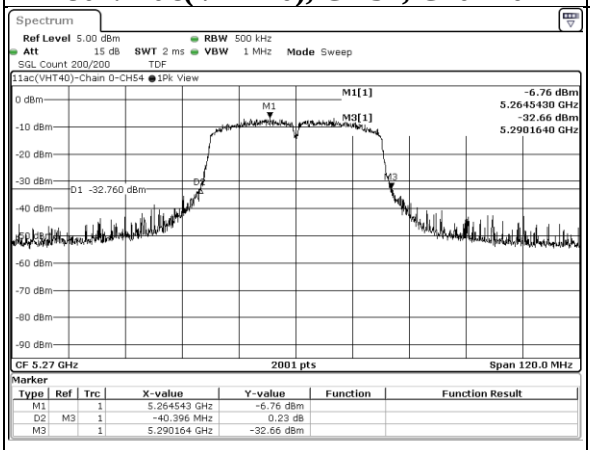
802.11ac(VHT40), CH38, Chain 0



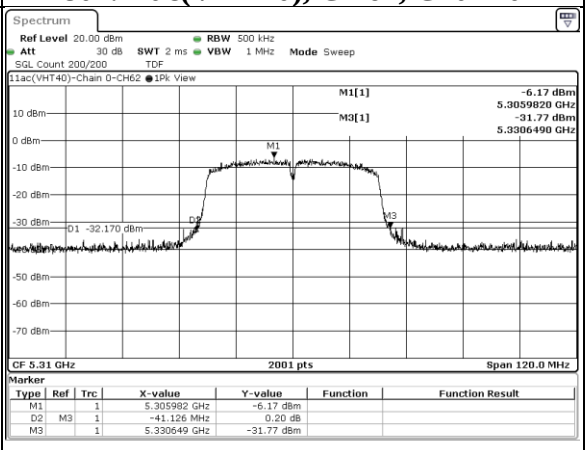
802.11ac(VHT40), CH46, Chain 0



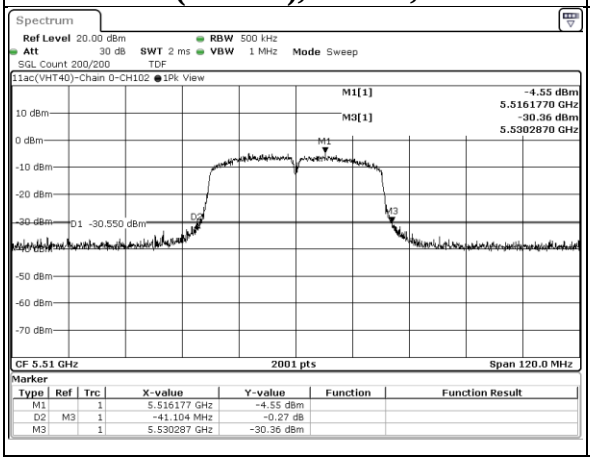
802.11ac(VHT40), CH54, Chain 0



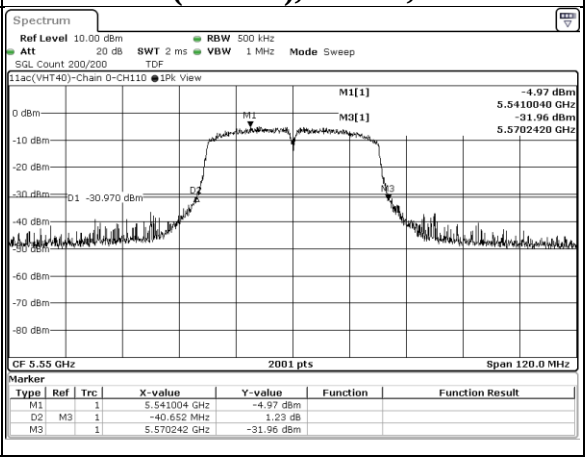
802.11ac(VHT40), CH62, Chain 0

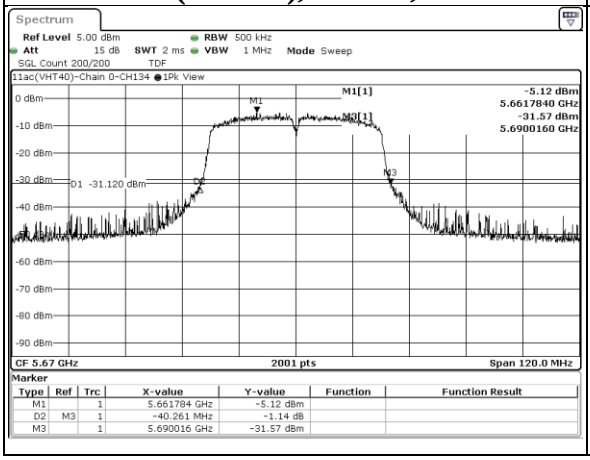


802.11ac(VHT40), CH102, Chain 0



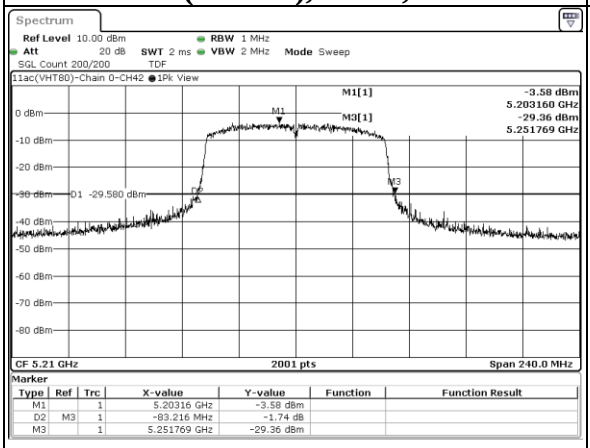
802.11ac(VHT40), CH110, Chain 0



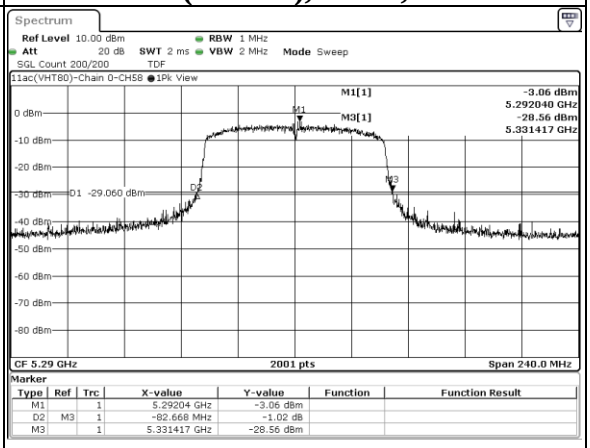
802.11ac(VHT40), CH134, Chain 0	
	

Mode	CH	Freq (MHz)	26dB BW (MHz) Chain 0	Limit (MHz)	Result
802.11ac(VHT80)	42	5210	83.216	N/A	PASS
	58	5290	82.668	N/A	PASS
	106	5530	83.216	N/A	PASS
	122	5610	80.989	N/A	PASS

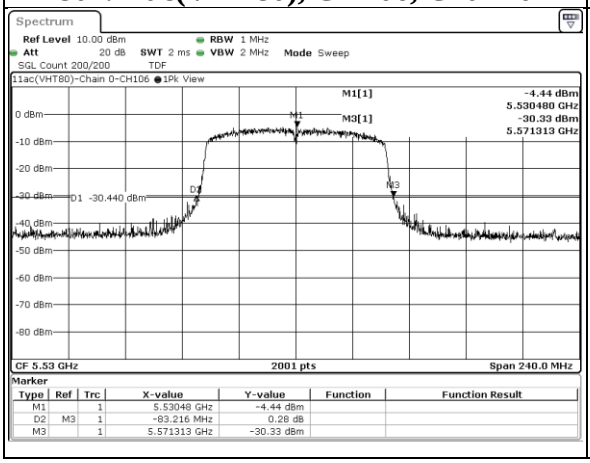
802.11ac(VHT80), CH42, Chain 0



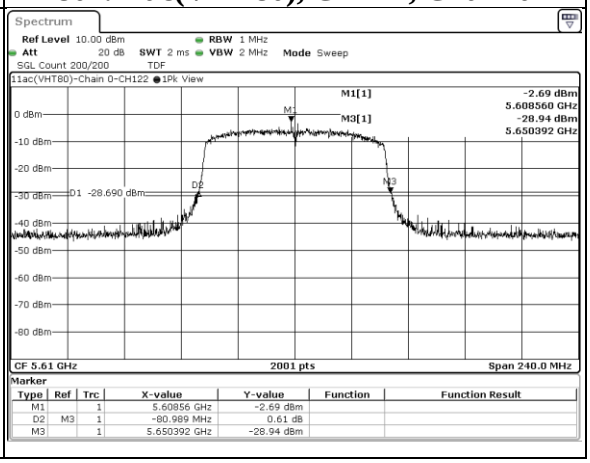
802.11ac(VHT80), CH58, Chain 0



802.11ac(VHT80), CH106, Chain 0



802.11ac(VHT80), CH122, Chain 0

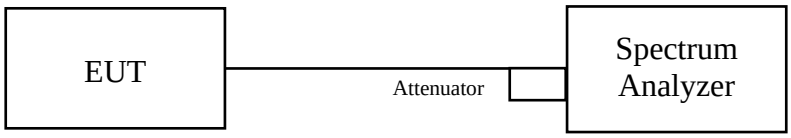


9.3. Occupied Bandwidth

Test procedure

a. Set center frequency to the nominal EUT channel center frequency.
b. Set span = 1.5 times to 5.0 times the OBW.
c. Set RBW = 1% to 5% of the OBW
d. Set VBW ≥ 3 x RBW
e. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f. Use the 99% power bandwidth function of the instrument (if available).
g. If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

Test Setup

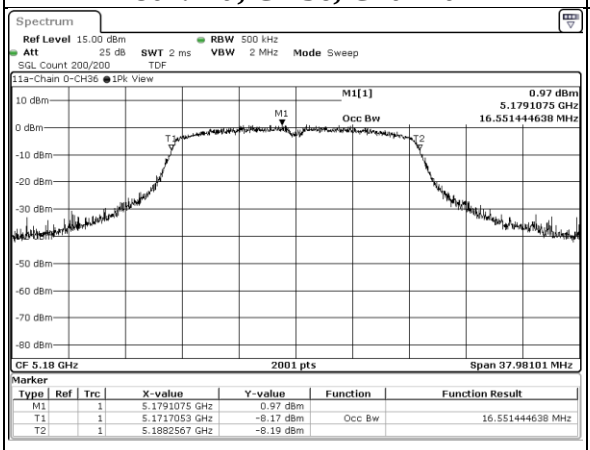


The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Mode	CH	Freq (MHz)	OBW (MHz) Chain 0	Limit (MHz)	Result
802.11a	36	5180	16.551	N/A	PASS
	44	5220	16.513	N/A	PASS
	48	5240	16.532	N/A	PASS
	52	5260	16.532	N/A	PASS
	60	5300	16.547	N/A	PASS
	64	5320	16.554	N/A	PASS
	100	5500	16.529	N/A	PASS
	116	5580	16.536	N/A	PASS
	140	5700	16.532	N/A	PASS
	149	5745	16.537	N/A	PASS
	157	5785	16.515	N/A	PASS
	165	5825	16.557	N/A	PASS

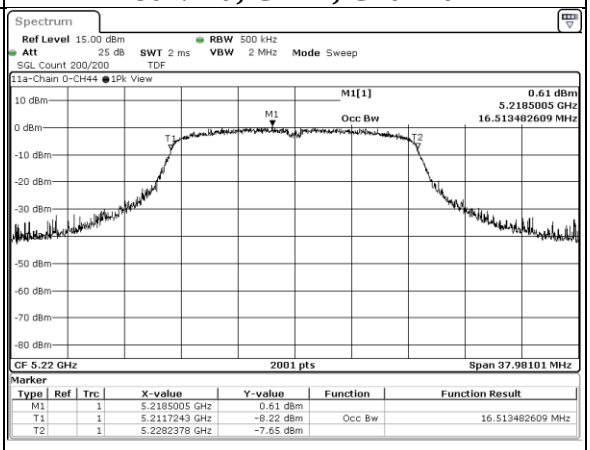
802.11a, CH36, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.1791075 GHz	0.97 dBm		
T1		1	5.1717053 GHz	-8.17 dBm	Occ Bw	16.551444638 MHz
T2		1	5.1882567 GHz	-8.19 dBm		

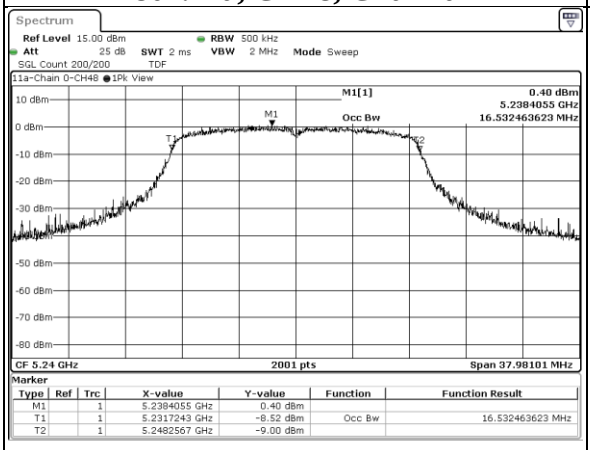
802.11a, CH44, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.2185005 GHz	0.61 dBm		
T1		1	5.2117243 GHz	-8.22 dBm	Occ Bw	16.513482609 MHz
T2		1	5.2282378 GHz	-7.65 dBm		

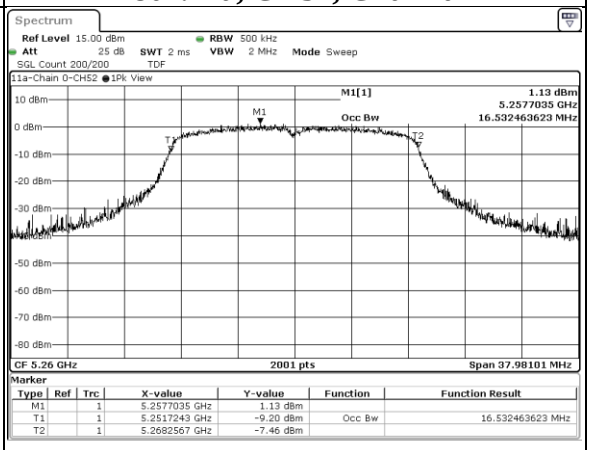
802.11a, CH48, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.2384055 GHz	0.40 dBm		
T1		1	5.2317243 GHz	-8.52 dBm	Occ Bw	16.532463623 MHz
T2		1	5.2482567 GHz	-9.00 dBm		

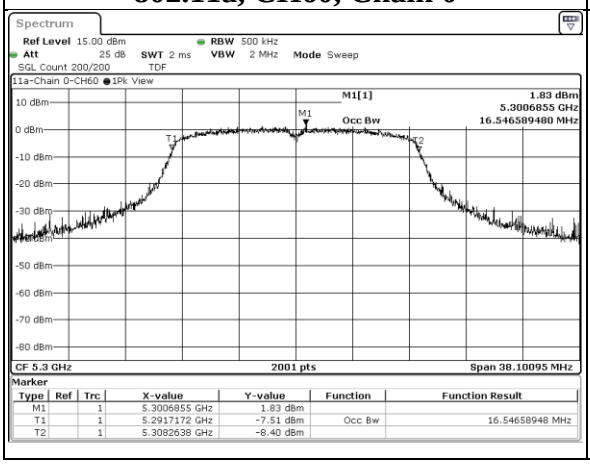
802.11a, CH52, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.2577035 GHz	1.13 dBm		
T1		1	5.2517243 GHz	-9.20 dBm	Occ Bw	16.532463623 MHz
T2		1	5.2682567 GHz	-7.46 dBm		

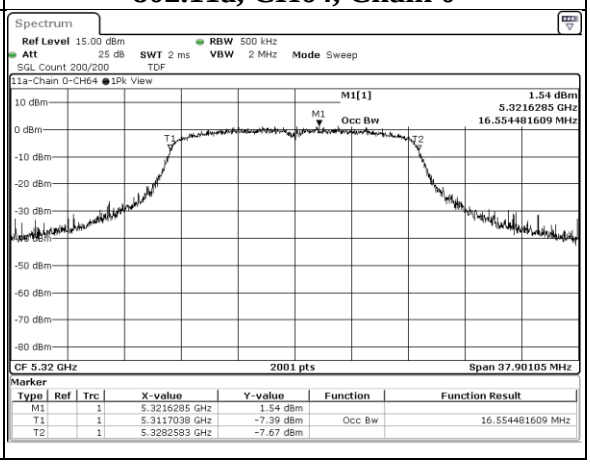
802.11a, CH60, Chain 0



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.3006855 GHz	1.83 dBm		
T1		1	5.2917172 GHz	-7.51 dBm	Occ Bw	16.54658948 MHz
T2		1	5.3082638 GHz	-8.40 dBm		

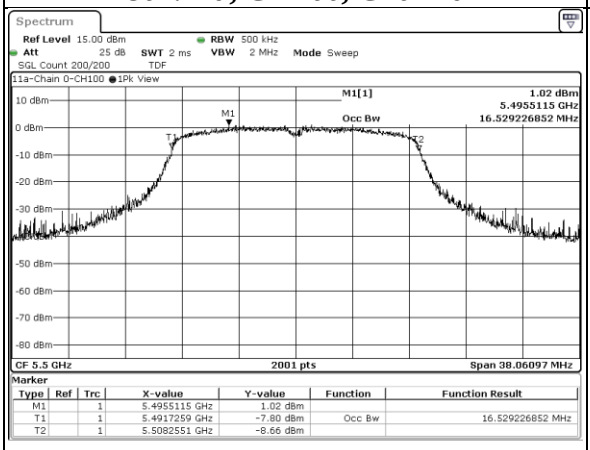
802.11a, CH64, Chain 0



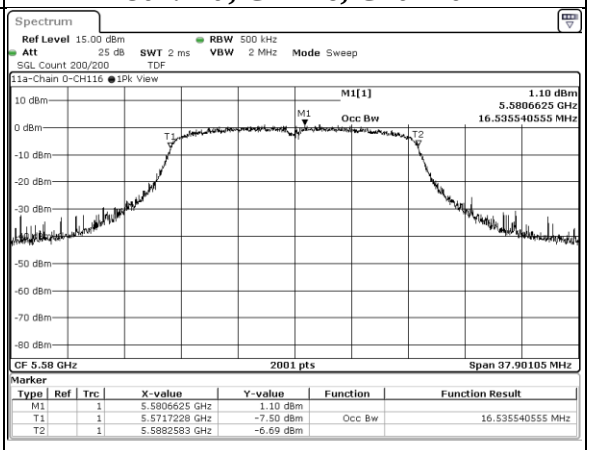
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.3216285 GHz	1.54 dBm		
T1		1	5.3117038 GHz	-7.39 dBm	Occ Bw	16.554481609 MHz
T2		1	5.3282583 GHz	-7.67 dBm		

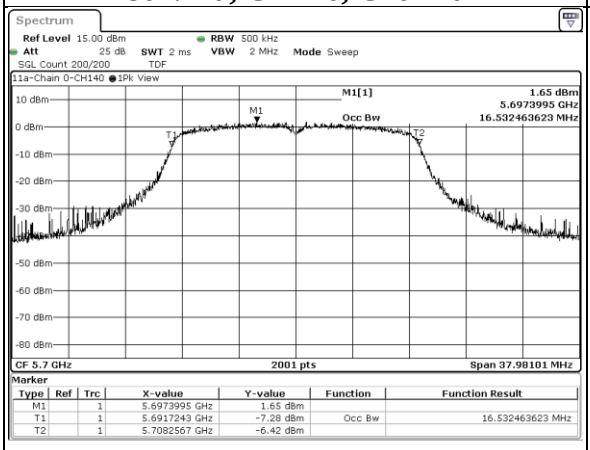
802.11a, CH100, Chain 0



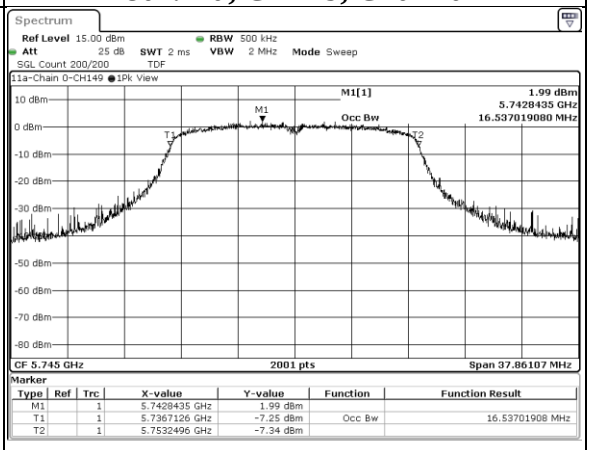
802.11a, CH116, Chain 0



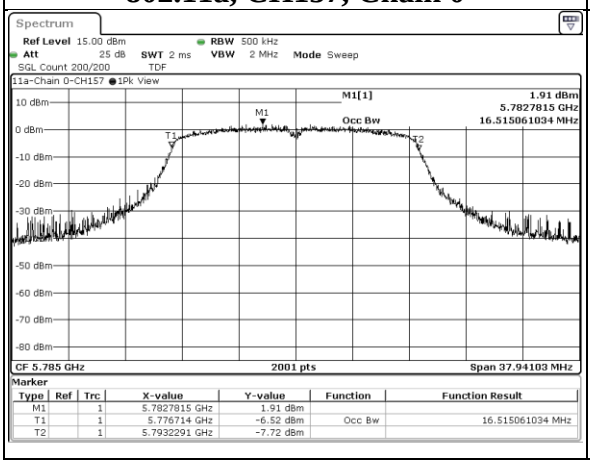
802.11a, CH140, Chain 0



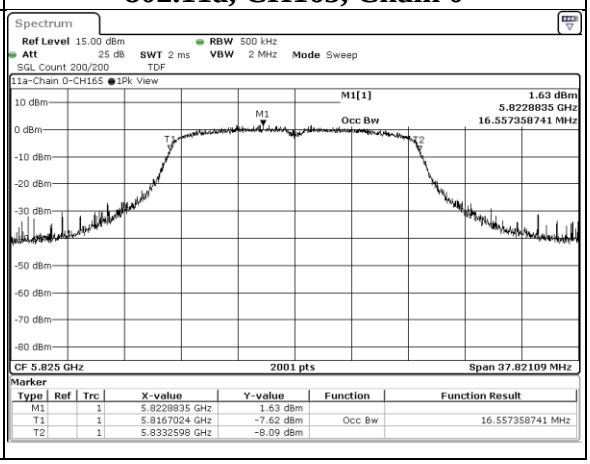
802.11a, CH149, Chain 0



802.11a, CH157, Chain 0

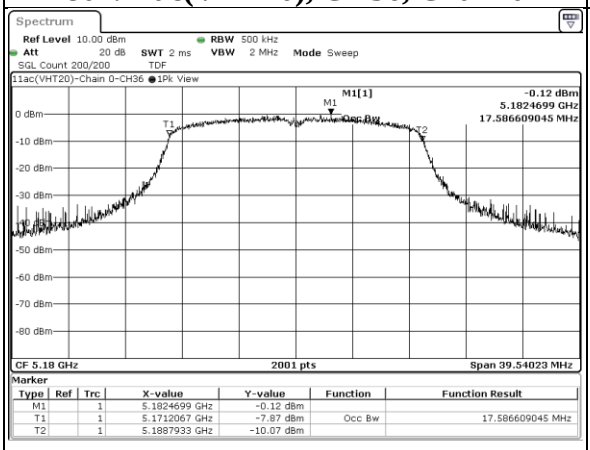


802.11a, CH165, Chain 0

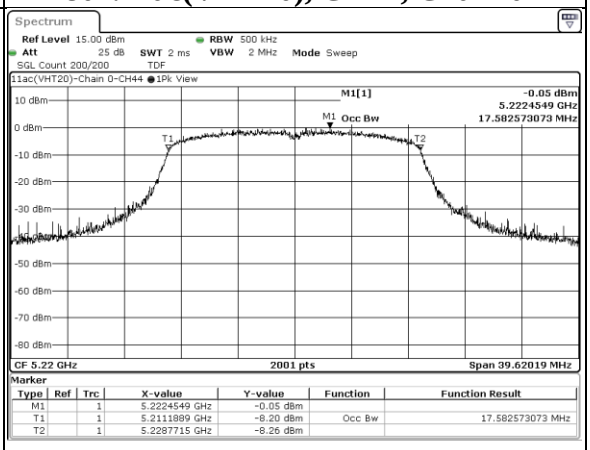


Mode	CH	Freq (MHz)	OBW (MHz) Chain 0	Limit (MHz)	Result
802.11ac(VHT20)	36	5180	17.587	N/A	PASS
	44	5220	17.583	N/A	PASS
	48	5240	17.596	N/A	PASS
	52	5260	17.6	N/A	PASS
	60	5300	17.583	N/A	PASS
	64	5320	17.622	N/A	PASS
	100	5500	17.6	N/A	PASS
	116	5580	17.587	N/A	PASS
	140	5700	17.583	N/A	PASS
	149	5745	17.606	N/A	PASS
	157	5785	17.576	N/A	PASS
	165	5825	17.602	N/A	PASS

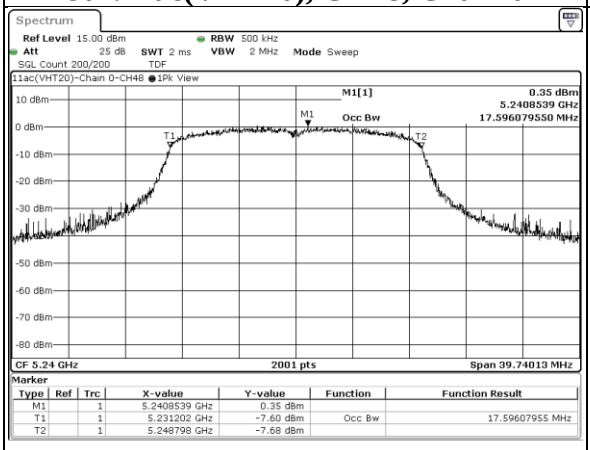
802.11ac(VHT20), CH36, Chain 0



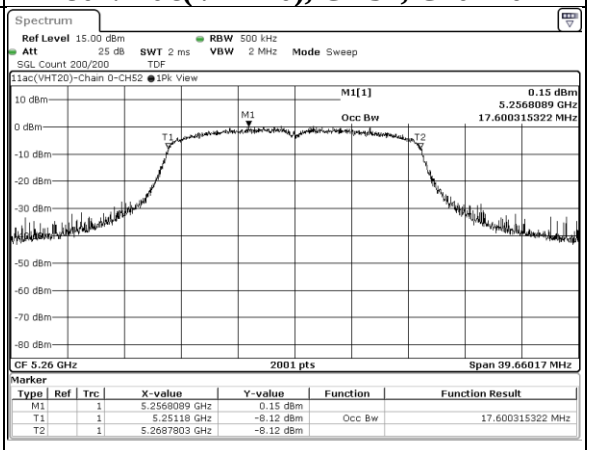
802.11ac(VHT20), CH44, Chain 0



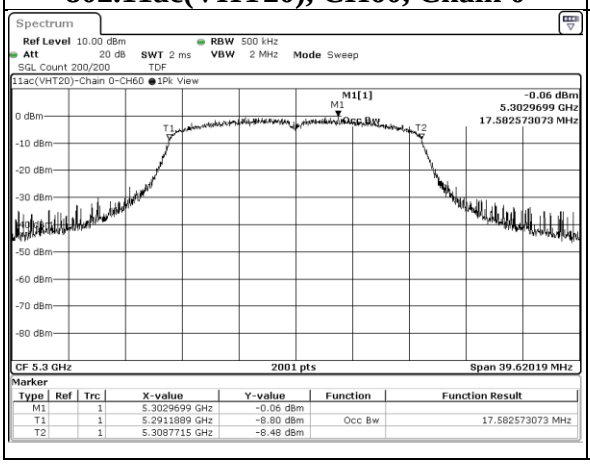
802.11ac(VHT20), CH48, Chain 0



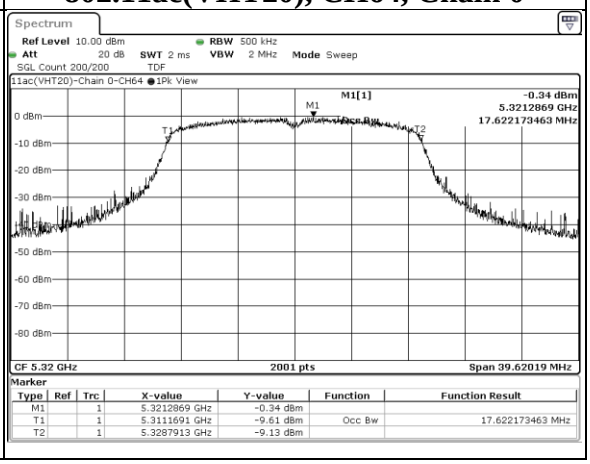
802.11ac(VHT20), CH52, Chain 0



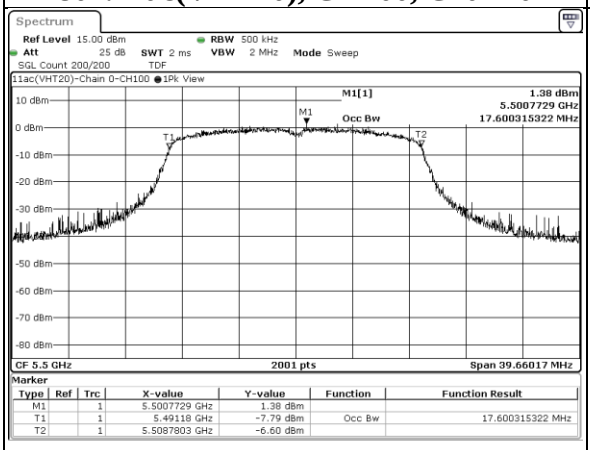
802.11ac(VHT20), CH60, Chain 0



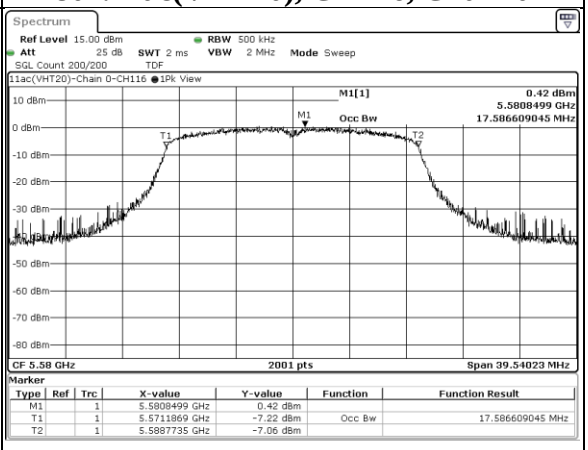
802.11ac(VHT20), CH64, Chain 0



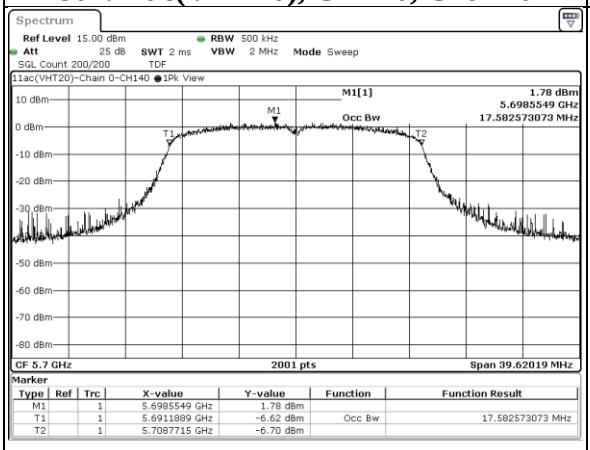
802.11ac(VHT20), CH100, Chain 0



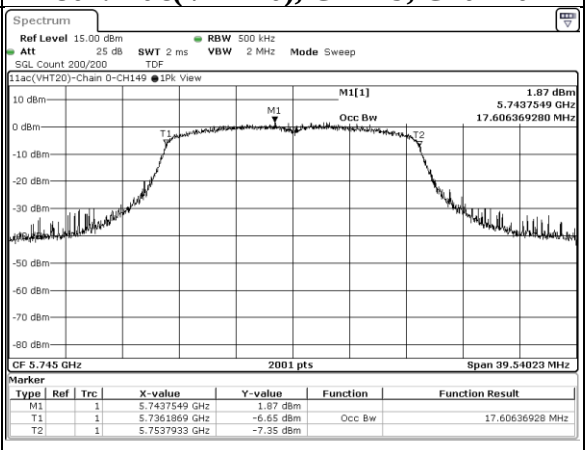
802.11ac(VHT20), CH116, Chain 0



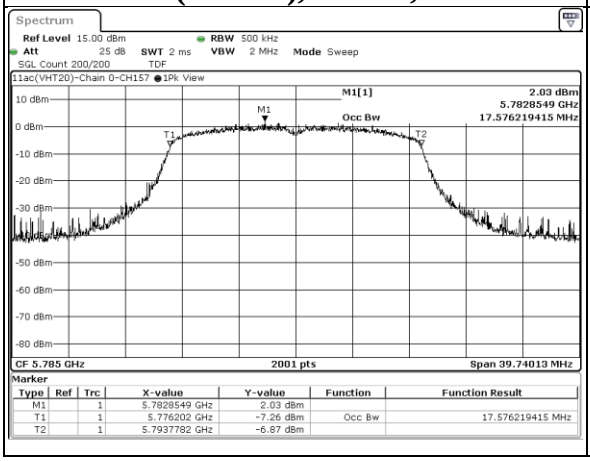
802.11ac(VHT20), CH140, Chain 0



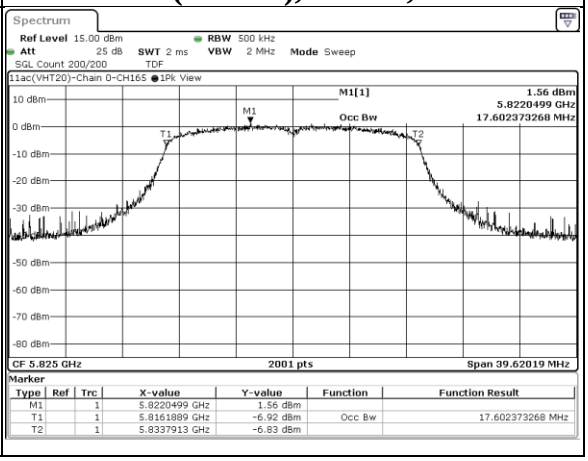
802.11ac(VHT20), CH149, Chain 0



802.11ac(VHT20), CH157, Chain 0

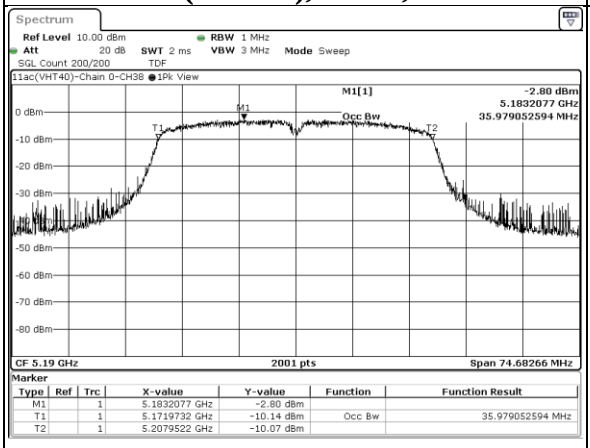


802.11ac(VHT20), CH165, Chain 0

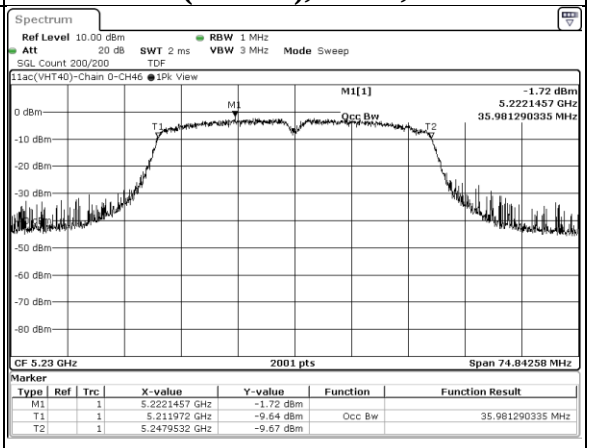


Mode	CH	Freq (MHz)	OBW (MHz) Chain 0	Limit (MHz)	Result
802.11ac(VHT40)	38	5190	35.979	N/A	PASS
	46	5230	35.981	N/A	PASS
	54	5270	35.905	N/A	PASS
	62	5310	35.944	N/A	PASS
	102	5510	35.904	N/A	PASS
	110	5550	35.98	N/A	PASS
	134	5670	35.941	N/A	PASS
	151	5755	35.941	N/A	PASS
	159	5795	35.98	N/A	PASS

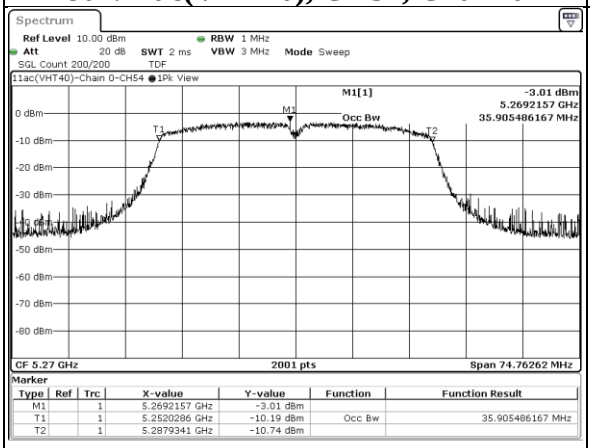
802.11ac(VHT40), CH38, Chain 0



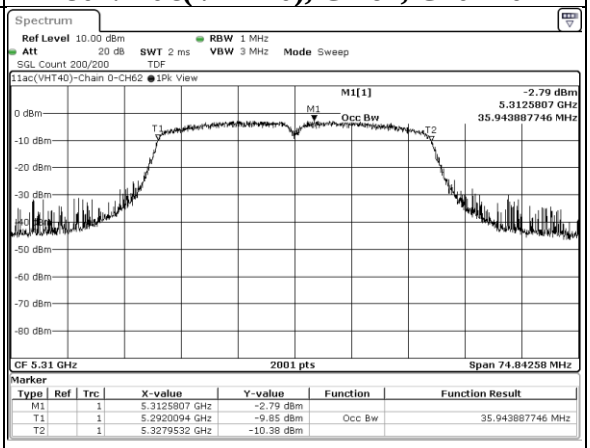
802.11ac(VHT40), CH46, Chain 0



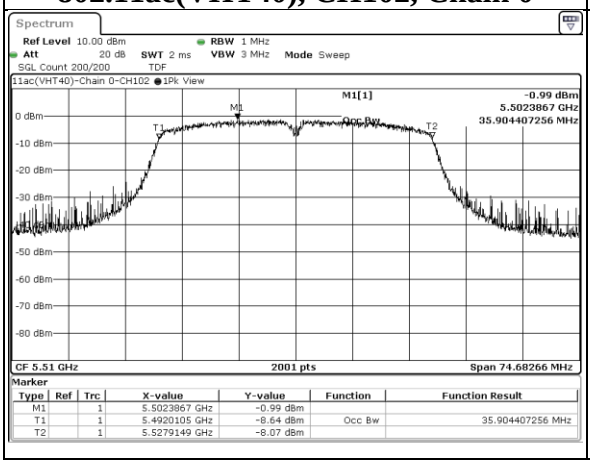
802.11ac(VHT40), CH54, Chain 0



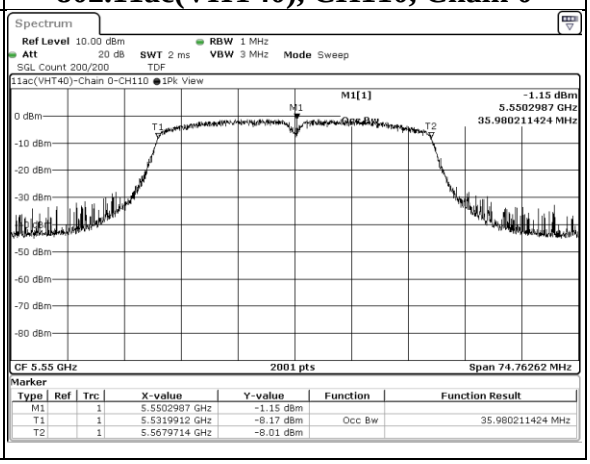
802.11ac(VHT40), CH62, Chain 0



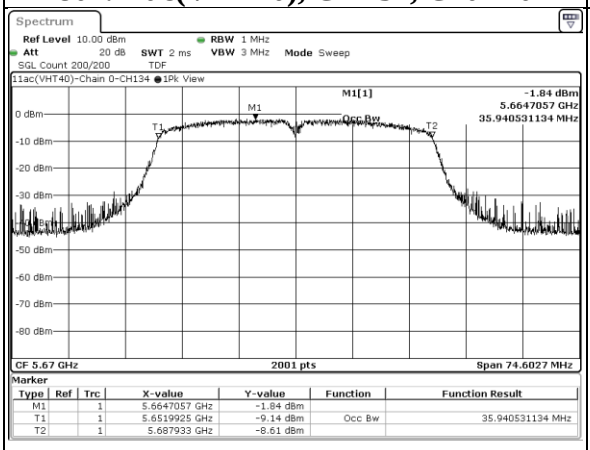
802.11ac(VHT40), CH102, Chain 0



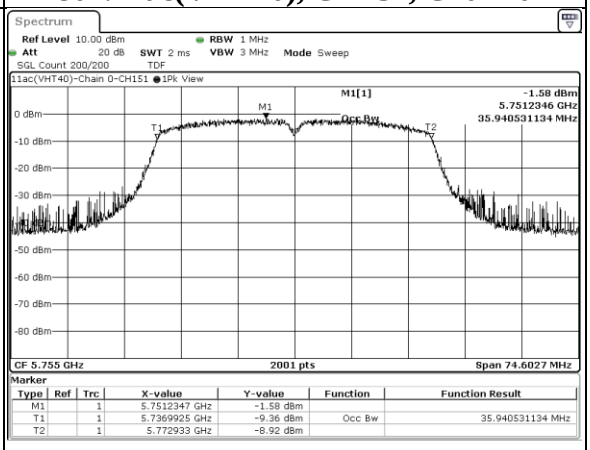
802.11ac(VHT40), CH110, Chain 0



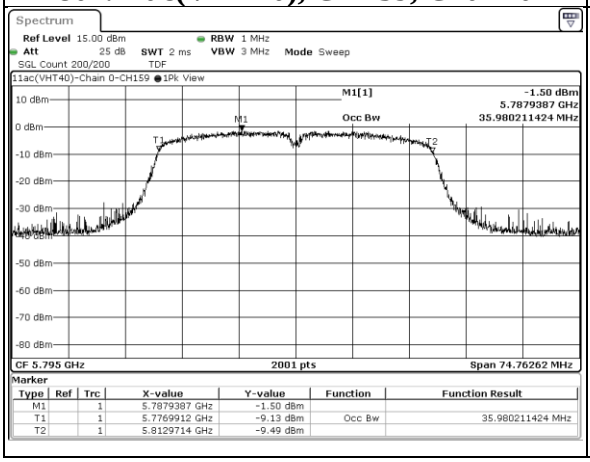
802.11ac(VHT40), CH134, Chain 0



802.11ac(VHT40), CH151, Chain 0

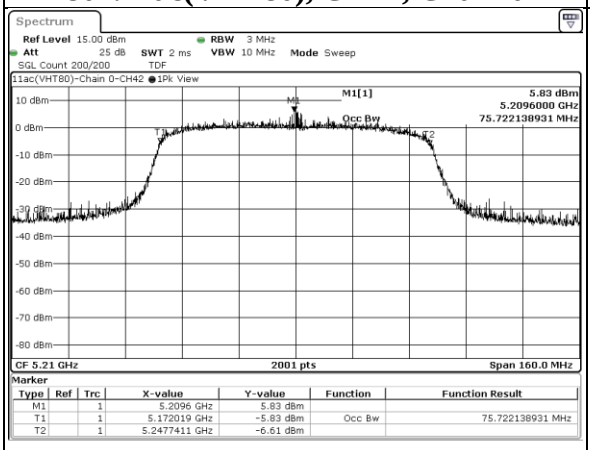


802.11ac(VHT40), CH159, Chain 0

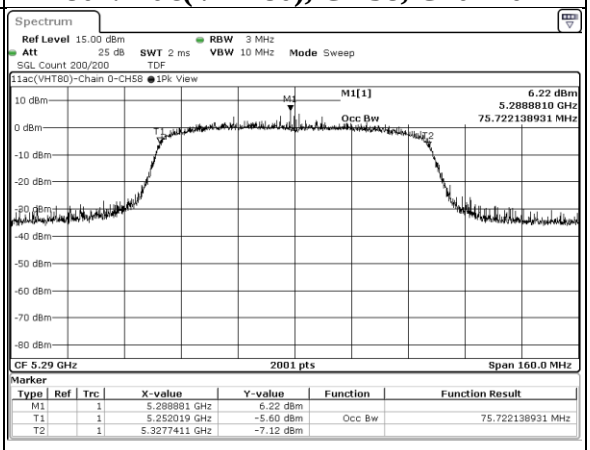


Mode	CH	Freq (MHz)	OBW (MHz) Chain 0	Limit (MHz)	Result
802.11ac(VHT80)	42	5210	75.722	N/A	PASS
	58	5290	75.722	N/A	PASS
	106	5530	75.722	N/A	PASS
	122	5610	75.722	N/A	PASS
	155	5775	75.802	N/A	PASS

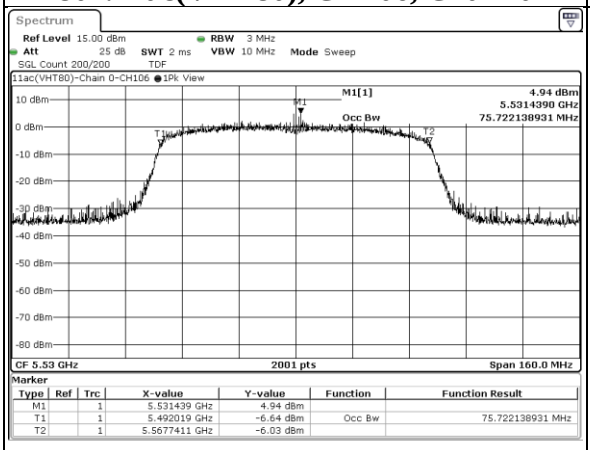
802.11ac(VHT80), CH42, Chain 0



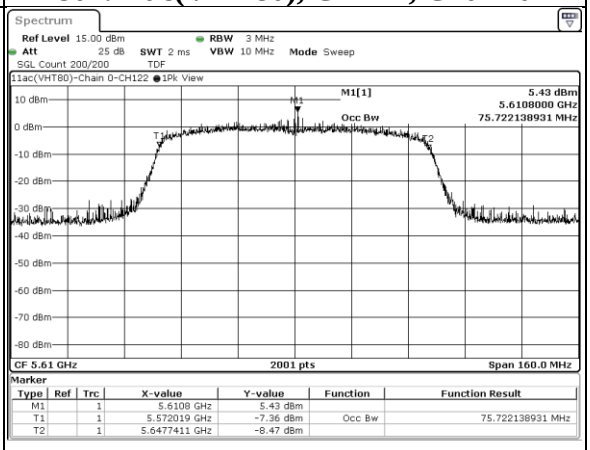
802.11ac(VHT80), CH58, Chain 0



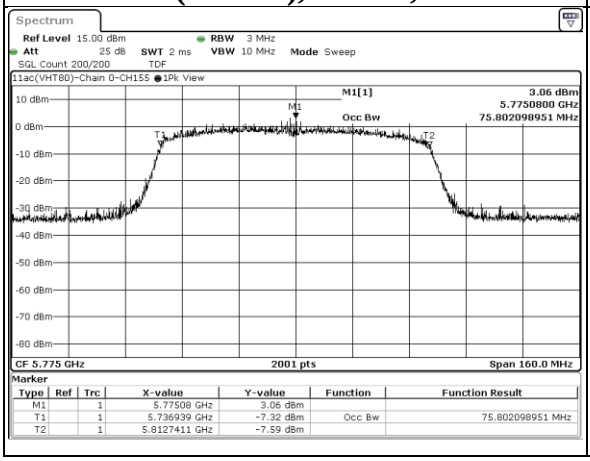
802.11ac(VHT80), CH106, Chain 0



802.11ac(VHT80), CH122, Chain 0



802.11ac(VHT80), CH155, Chain 0



9.4. Conducted output power

Requirements

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)
		Fixed point-to-point Access Point	1 Watt (30 dBm) If G_{TX} > 23 dBi, then P_{Out} = 30 – (G_{TX} – 23)
		Indoor Access Point	1 Watt (30 dBm) If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)
	√	Client device	250mW (24 dBm) If G_{TX} > 6 dBi, then P_{Out} = 23.98 – (G_{TX} – 6)
U-NII-2A	---		250mW (24 dBm) or 11 dBm+10 log B* If G_{TX} > 6 dBi, then P_{Out} = 23.98 – (G_{TX} – 6)
U-NII-2C	---		250mW (24 dBm) or 11 dBm+10 log B* If G_{TX} > 6 dBi, then P_{Out} = 23.98 – (G_{TX} – 6)
U-NII-3	---		For Point-to-multipoint systems (P2M): 1 Watt (30 dBm). If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6) For Point-to-point systems (P2P): 1 Watt (30 dBm)

Note:
1. P_{Out} = maximum conducted output power in dBm,
2. G_{TX} = the maximum transmitting antenna directional gain in dBi.
3. B is the 26 dB emission bandwidth in megahertz
4. Directional Gain = G_{ant} + 10 log (Nant) dBi.

   N*a*nt: Number of Transmit Antennas
   G1, G2,..., Gn: Gain of Individual Antennas (Same for Each Antenna)

5. Straddle Channel Power in each band = Straddle Channel Total Power * (Each band EBW / Straddle Channel Total EBW).

Test Procedure

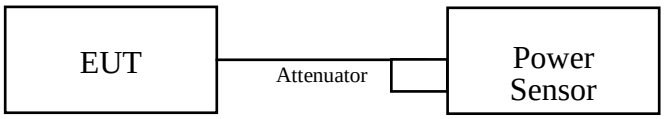
For Average Power Measurement

Test method PM

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 Setup

For Average Power Measurement



The loss between RF output port of the EUT and the input port of the Power Meter has been taken into consideration.

Test Data

802.11a

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
36	5180	5.47	7.38	23.98	PASS
44	5220	5.082	7.06	23.98	PASS
48	5240	5.093	7.07	23.98	PASS
52	5260	6.223	7.94	23.91	PASS
60	5300	6.209	7.93	23.93	PASS
64	5320	6.081	7.84	23.95	PASS
100	5500	5.212	7.17	23.84	PASS
116	5580	5.808	7.64	23.81	PASS
140	5700	6.081	7.84	23.82	PASS
149	5745	5.943	7.74	30	PASS
157	5785	6.012	7.79	30	PASS
165	5825	6.166	7.90	30	PASS

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
36	5180	4.56	6.59	23.98	PASS
44	5220	4.519	6.55	23.98	PASS
48	5240	4.842	6.85	23.98	PASS
52	5260	4.603	6.63	23.94	PASS
60	5300	4.624	6.65	23.98	PASS
64	5320	4.571	6.60	23.95	PASS
100	5500	5.023	7.01	23.98	PASS
116	5580	5.408	7.33	23.97	PASS
140	5700	5.284	7.23	23.98	PASS
149	5745	5.309	7.25	30	PASS
157	5785	5.284	7.23	30	PASS
165	5825	5.333	7.27	30	PASS

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
38	5190	2.355	3.72	23.98	PASS
46	5230	2.301	3.62	23.98	PASS
54	5270	2.582	4.12	23.98	PASS
62	5310	2.535	4.04	23.98	PASS
102	5510	3.006	4.78	23.98	PASS
110	5550	3.076	4.88	23.98	PASS
134	5670	3.02	4.80	23.98	PASS
151	5755	2.911	4.64	30	PASS
159	5795	2.931	4.67	30	PASS

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
42	5210	3.936	5.95	23.98	PASS
58	5290	3.864	5.87	23.98	PASS
106	5530	2.748	4.39	23.98	PASS
122	5610	2.754	4.40	23.98	PASS
155	5775	2.432	3.86	30	PASS

9.5. Power Spectral Density

Requirements

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz If G_{TX} > 6 dBi, then PSD = 17 – (G_{TX} – 6)
		Fixed point-to-point Access Point	17dBm/ MHz If G_{TX} > 23 dBi, then PSD = 17 – (G_{TX} – 23)
		Indoor Access Point	17dBm/ MHz If G_{TX} > 6 dBi, then PSD = 17 – (G_{TX} – 6)
	√	Client device	11dBm/ MHz If G_{TX} > 6 dBi, then PSD = 11 – (G_{TX} – 6)
U-NII-2A	---		11dBm/ MHz If G_{TX} > 6 dBi, then PSD = 11 – (G_{TX} – 6)
U-NII-2C	---		11dBm/ MHz If G_{TX} > 6 dBi, then PSD = 11 – (G_{TX} – 6)
U-NII-3	---		For Point-to-multipoint systems (P2M): 30dBm/ 500kHz. If G_{TX} > 6 dBi, then PSD = 30 – (G_{TX} – 6) For Point-to-point systems (P2P): 30dBm/ 500kHz

Note:
1. PSD = power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz
2. G_{TX} = the maximum transmitting antenna directional gain in dBi.
3. Directional Gain = G_{ant} + 10 log (Nant) dBi.

   Nant: Number of Transmit Antennas
   G1, G2,..., Gn: Gain of Individual Antennas (Same for Each Antenna)

Test procedure

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

Using method as below:

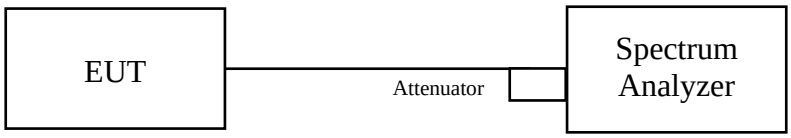
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
c. Sweep time = auto, trigger set to "free run".
d. Trace average at least 100 traces in power averaging mode.
e. Record the max value. (if Duty cycle <98 %, add 10 log (1/duty cycle))

For U-NII-3 band:

Using method as below:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10 log (500 kHz/300kHz)
e. Sweep time = auto, trigger set to "free run".
f. Trace average at least 100 traces in power averaging mode.
g. Record the max value. (if Duty cycle <98 %, add 10 log (1/duty cycle))

Test Setup



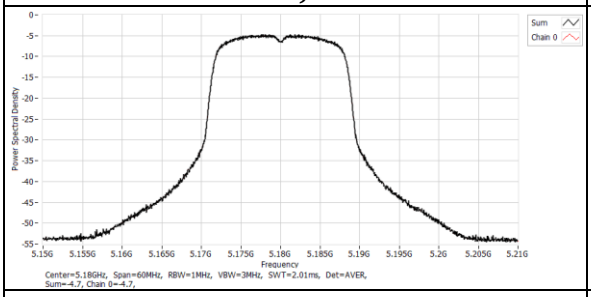
The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

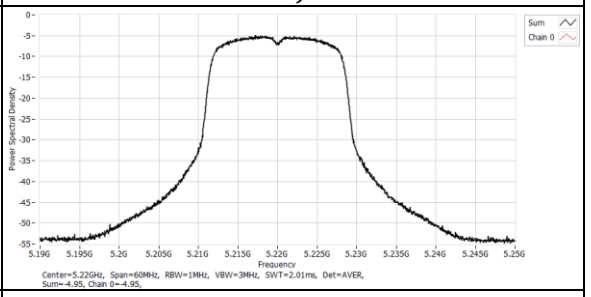
Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	36	5180	0.15	-4.7	11	PASS
	44	5220	0.15	-4.95	11	PASS
	48	5240	0.15	-4.63	11	PASS

Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11a	36	5180	-4.704
	44	5220	-4.953
	48	5240	-4.627

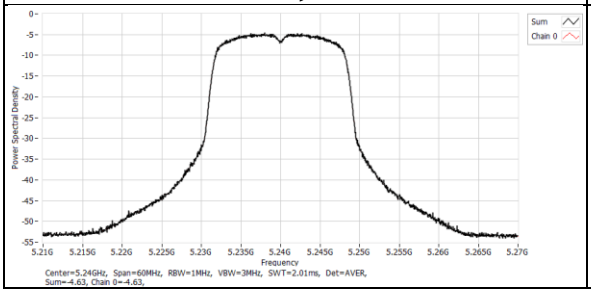
802.11a, CH36



802.11a, CH44



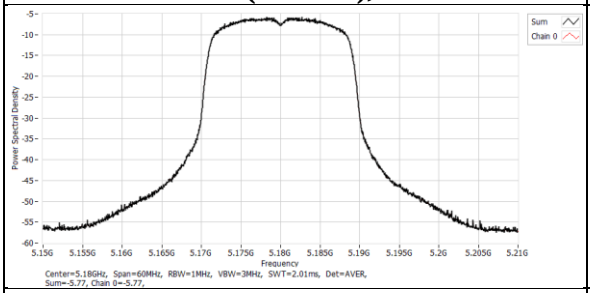
802.11a, CH48



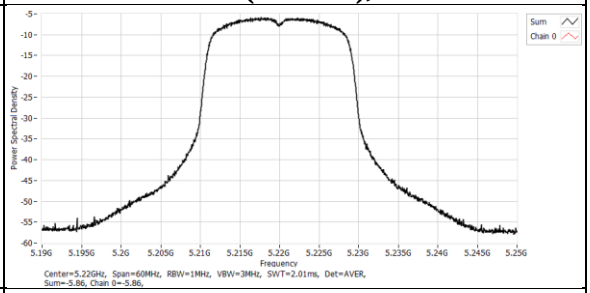
Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT20)	36	5180	0.15	-5.77	11	PASS
	44	5220	0.15	-5.86	11	PASS
	48	5240	0.15	-4.96	11	PASS

Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT20)	36	5180	-5.767
	44	5220	-5.862
	48	5240	-4.959

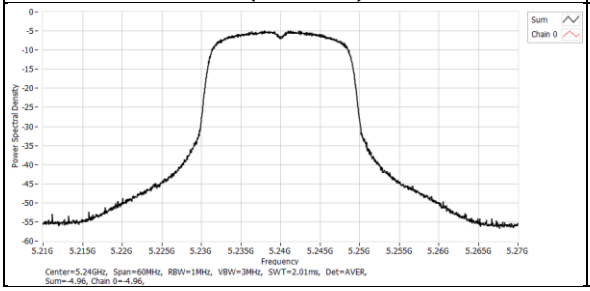
802.11ac(VHT20), CH36



802.11ac(VHT20), CH44



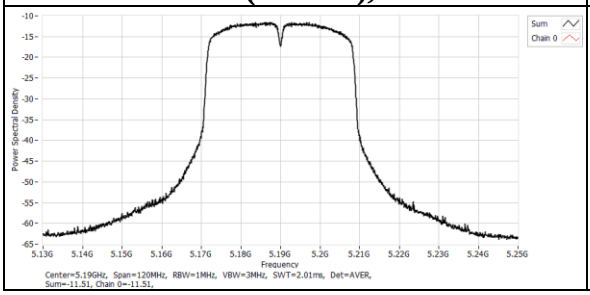
802.11ac(VHT20), CH48



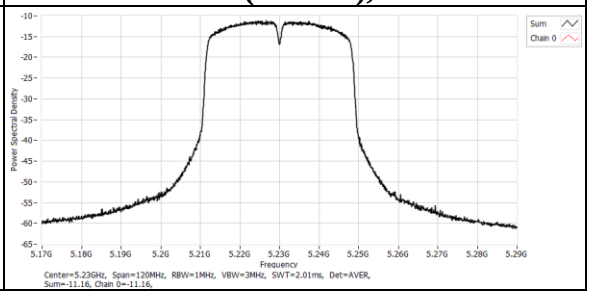
Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT40)	38	5190	0.15	-11.51	11	PASS
	46	5230	0.15	-11.16	11	PASS

Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT40)	38	5190	-11.508
	46	5230	-11.163

802.11ac(VHT40), CH38

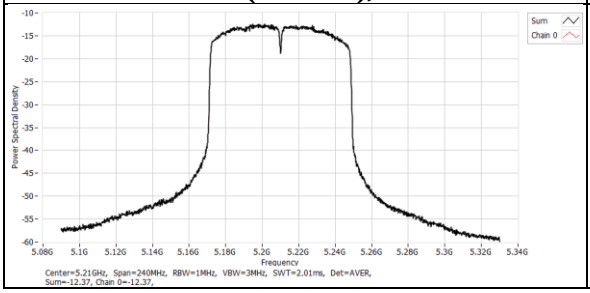


802.11ac(VHT40), CH46



Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT80)	42	5210	0.15	-12.37	11	PASS

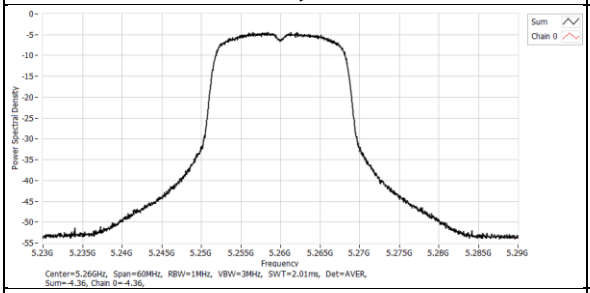
Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT80)	42	5210	-12.371

802.11ac(VHT80), CH42	
	

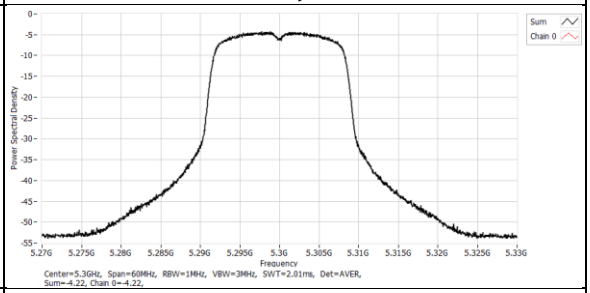
Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	52	5260	0.15	-4.36	11	PASS
	60	5300	0.15	-4.22	11	PASS
	64	5320	0.15	-4.33	11	PASS

Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11a	52	5260	-4.363
	60	5300	-4.22
	64	5320	-4.329

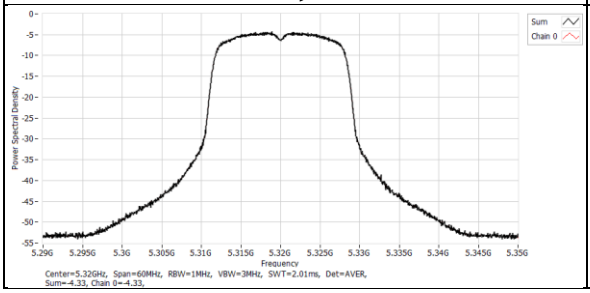
802.11a, CH52



802.11a, CH60



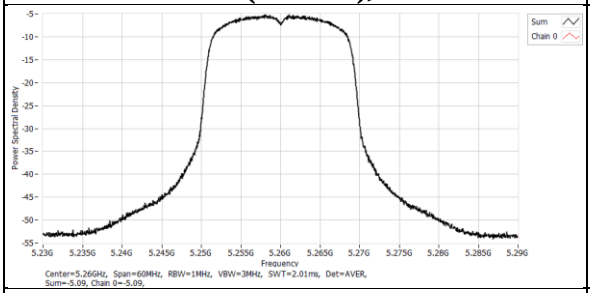
802.11a, CH64



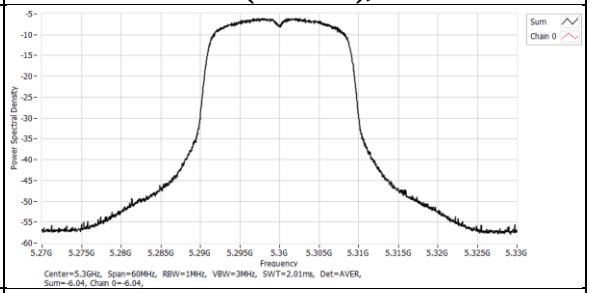
Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT20)	52	5260	0.15	-5.09	11	PASS
	60	5300	0.15	-6.04	11	PASS
	64	5320	0.15	-5.8	11	PASS

Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT20)	52	5260	-5.089
	60	5300	-6.037
	64	5320	-5.803

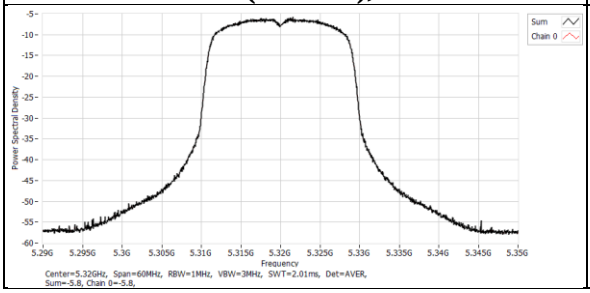
802.11ac(VHT20), CH52



802.11ac(VHT20), CH60

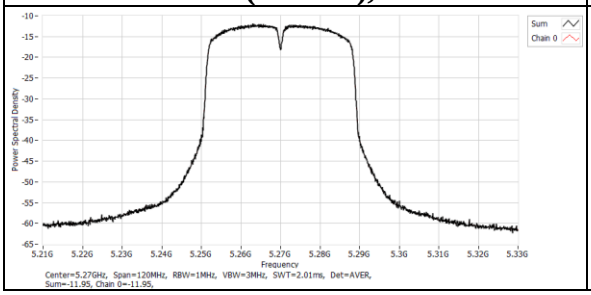
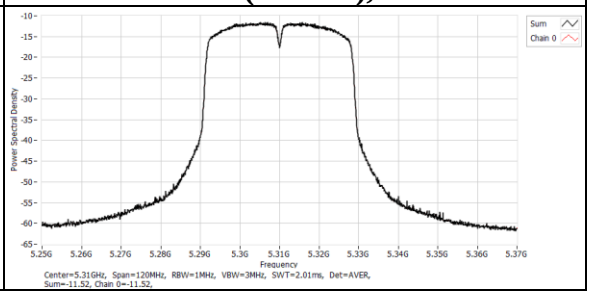


802.11ac(VHT20), CH64



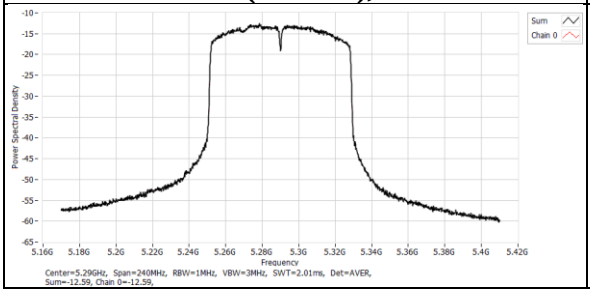
Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT40)	54	5270	0.15	-11.95	11	PASS
	62	5310	0.15	-11.52	11	PASS

Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT40)	54	5270	-11.954
	62	5310	-11.524

802.11ac(VHT40), CH54	802.11ac(VHT40), CH62
	

Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT80)	58	5290	0.15	-12.59	11	PASS

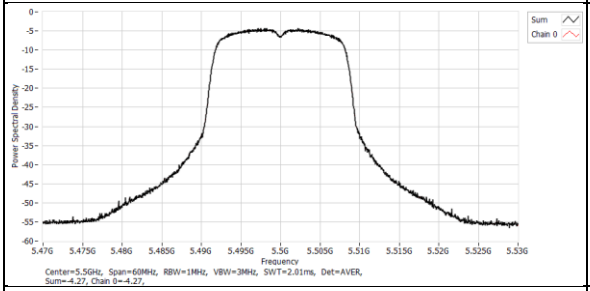
Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT80)	58	5290	-12.589

802.11ac(VHT80), CH58	
	

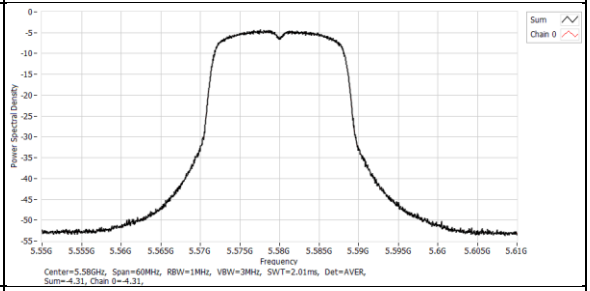
Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	100	5500	0.62	-4.27	11	PASS
	116	5580	0.62	-4.31	11	PASS
	140	5700	0.62	-3.53	11	PASS

Mode (U-NII-2C)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11a	100	5500	-4.267
	116	5580	-4.309
	140	5700	-3.525

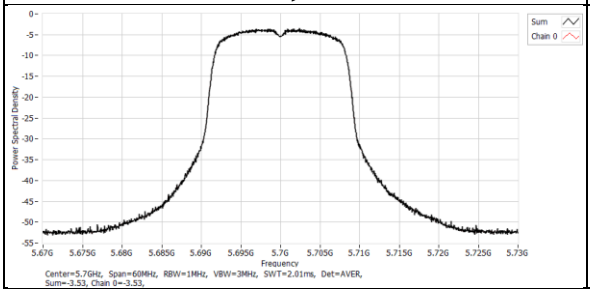
802.11a, CH100



802.11a, CH116



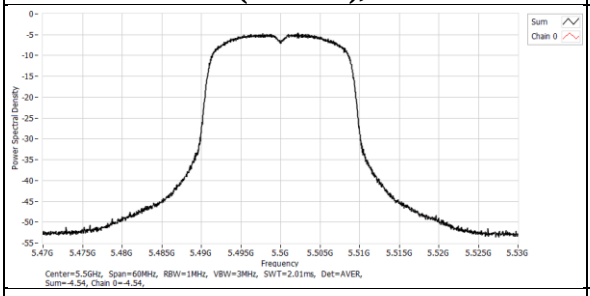
802.11a, CH140



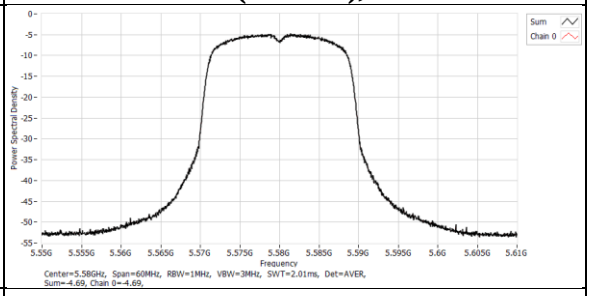
Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT20)	100	5500	0.62	-4.54	11	PASS
	116	5580	0.62	-4.69	11	PASS
	140	5700	0.62	-3.77	11	PASS

Mode (U-NII-2C)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT20)	100	5500	-4.545
	116	5580	-4.695
	140	5700	-3.768

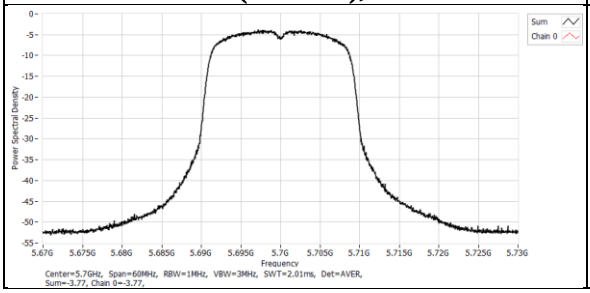
802.11ac(VHT20), CH100



802.11ac(VHT20), CH116



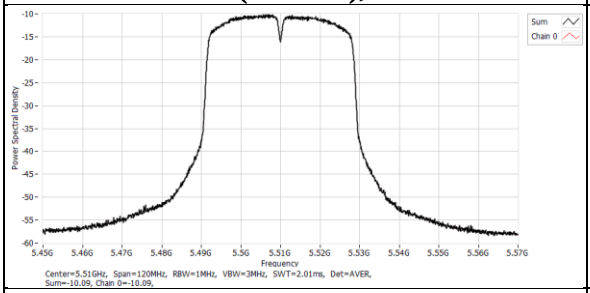
802.11ac(VHT20), CH140



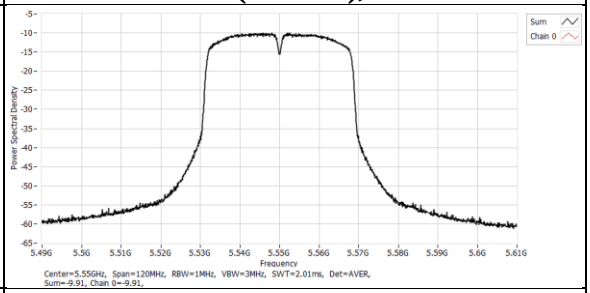
Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT40)	102	5510	0.62	-10.09	11	PASS
	110	5550	0.62	-9.91	11	PASS
	134	5670	0.62	-10.46	11	PASS

Mode (U-NII-2C)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT40)	102	5510	-10.087
	110	5550	-9.906
	134	5670	-10.462

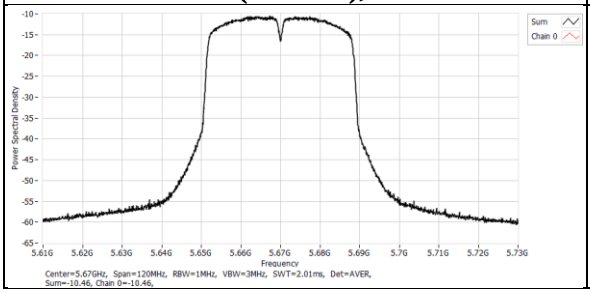
802.11ac(VHT40), CH102



802.11ac(VHT40), CH110



802.11ac(VHT40), CH134



Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT80)	106	5530	0.62	-13.48	11	PASS
	122	5610	0.62	-13.94	11	PASS

Mode (U-NII-2C)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11ac(VHT80)	106	5530	-13.479
	122	5610	-13.942

802.11ac(VHT80), CH106	802.11ac(VHT80), CH122