

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)

Report No.: RFBAOZ-WTW-P21060679D-3

FCC ID: 2AHKM-ARIA34118

Product: Tri-band WiFi Extender

Brand: hitron

Model No.: ARIA3411

Series Model: OS3411

Received Date: 2022/9/21

Test Date: 2022/9/24 ~ 2022/11/20

Issued Date: 2022/12/6

Applicant: Hitron Technologies Inc.

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FCC Registration / 723255 / TW2022

Designation Number:

Approved by: _____, **Date:** 2022/12/6
May Chen / Manager

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Prepared by : Vivian Huang / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBAOZ-WTW-P21060679D-3	Original release.	2022/12/6

1 Certificate

Product: Tri-band WiFi Extender

Brand: hitron

Test Model: ARIA3411

Series Model: OS3411

Sample Status: Engineering sample

Applicant: Hitron Technologies Inc.

Test Date: 2022/9/24 ~ 2022/11/20

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)

Measurement procedure: ANSI C63.10-2013
KDB 987594 D02 U-NII 6 GHz EMC Measurement v01v01
KDB 789033 D02 General UNII Test Procedure New Rules v02r01

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.407(a)(5)(6)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(5)(6)	Power Spectral Density	Pass	Meet the requirement of limit.
15.407(a)(10)	Occupied Bandwidth	Pass	Meet the requirement of limit.
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -13.38 dB at 19.26172 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.4 dB at 53.95 MHz
15.407(b)(6) 15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -2.0 dB at 7131.13 MHz
15.407(b)(7)	In-Band Emission Mask	Pass	Meet the requirement of limit.
15.407(d)(6)	Contention-based Protocol	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.407(d)	Operational restrictions for 6 GHz U-NII devices	Pass	Declaration by applicant.
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.
---	Emission Bandwidth	-	Reference only.

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

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.4 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.0 dB
	18 GHz ~ 40 GHz	5.3 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Tri-band WiFi Extender
Brand	hitron
Test Model	ARIA3411
Series Model	OS3411
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc from power adapter
Modulation Type	1024QAM for OFDMA in 11ax HE mode
Modulation Technology	OFDMA
Transfer Rate	802.11ax: up to 4083.9 Mbps
Operating Frequency	6.115 GHz ~ 6.415 GHz 6.435 GHz ~ 6.525 GHz 6.525 GHz ~ 6.875 GHz 6.875 GHz ~ 7.095 GHz
Number of Channel	802.11ax (HE20): 50 802.11ax (HE40): 25 802.11ax (HE80): 12 802.11ax (HE160): 6
Output Power	CDD Mode: MCS0NSS1 6.115 GHz ~ 6.415 GHz : EIRP: 133.968 mW (21.27 dBm) 6.435 GHz ~ 6.525 GHz : EIRP: 127.938 mW (21.07 dBm) 6.525 GHz ~ 6.875 GHz : EIRP: 130.918 mW (21.17 dBm) 6.875 GHz ~ 7.095 GHz : EIRP: 137.088 mW (21.37 dBm) MCS0NSS4 6.115 GHz ~ 6.415 GHz : EIRP: 377.572 mW (25.77 dBm) 6.435 GHz ~ 6.525 GHz : EIRP: 377.572 mW (25.77 dBm) 6.525 GHz ~ 6.875 GHz : EIRP: 414 mW (26.17 dBm) 6.875 GHz ~ 7.095 GHz : EIRP: 386.367 mW (25.87 dBm) Beamforming Mode: MCS0NSS1 6.115 GHz ~ 6.415 GHz : EIRP: 306.902 mW (24.87 dBm) 6.435 GHz ~ 6.525 GHz : EIRP: 198.153 mW (22.97 dBm) 6.525 GHz ~ 6.875 GHz : EIRP: 238.232 mW (23.77 dBm) 6.875 GHz ~ 7.095 GHz : EIRP: 249.459 mW (23.97 dBm) MCS0NSS2 6.115 GHz ~ 6.415 GHz : EIRP: 352.371 mW (25.47 dBm) 6.435 GHz ~ 6.525 GHz : EIRP: 293.089 mW (24.67 dBm) 6.525 GHz ~ 6.875 GHz : EIRP: 344.35 mW (24.97 dBm) 6.875 GHz ~ 7.095 GHz : EIRP: 249.459 mW (23.97 dBm)
EUT Category	Indoor Access Point + Subordinate Device

Note:

1. The EUT has two model names which are identical to each other in all aspects except for the followings:

Model Name	Difference
ARIA3411	with black housing
OS3411	with white housing

Note: From the above models, the radiated emission worst case was found in **model: ARIA3411**. Therefore only the test data of the mode was recorded in this report.

2. Simultaneously transmission condition.

Condition	Technology			
1	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz	Bluetooth

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

3. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3	Radio 4
Bluetooth	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz

4. The EUT uses following accessories.

1. The EOT uses following accessories:

AC Adapter 1			
Brand	Model	Specification	Description
APD	WA-30P12FU	AC Input : 100-240V~,50-60 Hz ; 0.9 A Max DC Output : 12V--2.5A Signal Line : 1.5 meter	Black (for model: ARIA3411), White (for model: OS3411)
RJ45 Cable (Yellow for Model: ARIA3411)			
Brand	Model	Specification	
EKSON	ZQ01-C069	Signal Line : 1.5 meter, unshielded	
RJ45 Cable (White for Model: OS3411)			
Brand	Model	Specification	
EKSON	MT01-C044	Signal Line : 1.5 meter, unshielded	

5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna NO.	RF Chain NO.	Model	Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type	Cable Length
1	0	RFPCA252525IMLB901	2.63	2.4~2.4835	printed PCB	ipex(MHF)	24cm
			4.02	5.15~5.85			
2	1	RFPCA282525IMLB901	2.6	2.4~2.4835	printed PCB	ipex(MHF)	24cm
			3.81	5.15~5.85			
3	0	RFPCA212009IMMB901	3.59	5.85~7.125	printed PCB	ipex(MHF)	10cm
4	1	RFPCA221508IMMB901	4.71	5.85~7.125	printed PCB	ipex(MHF)	7.5cm
5	2	RFPCA221514IMMB901	4.7	5.85~7.125	printed PCB	ipex(MHF)	13.5cm
6	3	RFPCA212009IMMB902	4.59	5.85~7.125	printed PCB	ipex(MHF)	8.5cm
7 (for BT)	-	RFPCA381007IMAB301	4.77	2.4~2.4835	printed PCB	ipex(MHF)	6.5cm

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

6GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
802.11ax (HE80)	4TX	4RX
802.11ax (HE160)	4TX	4RX

Note:

- The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

3.3 Channel List

U-NII-5:

16 channels are provided for 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
33	6115 MHz	37	6135 MHz	41	6155 MHz	45	6175 MHz
49	6195 MHz	53	6215 MHz	57	6235 MHz	61	6255 MHz
65	6275 MHz	69	6295 MHz	73	6315 MHz	77	6335 MHz
81	6355 MHz	85	6375 MHz	89	6395 MHz	93	6415MHz

8 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
35	6125 MHz	43	6165 MHz	51	6205 MHz	59	6245 MHz
67	6285MHz	75	6325 MHz	83	6365 MHz	91	6405 MHz

4 channel is provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
39	6145 MHz	55	6225 MHz	71	6305 MHz	87	6385 MHz

2 channel is provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency
47	6185 MHz	79	6345 MHz

U-NII-6:

5 channels are provided for 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
97	6435 MHz	101	6455 MHz	105	6475 MHz	109	6495 MHz
113	6515 MHz						

3 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency
99	6445 MHz	107	6485 MHz	*115	6525 MHz

1 channels is provided for 802.11ax (HE80):

Channel	Frequency
103	6465 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
*111	6505 MHz

U-NII-7:

18 channels are provided for 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
117	6535 MHz	121	6555 MHz	125	6575 MHz	129	6595 MHz
133	6615 MHz	137	6635 MHz	141	6655 MHz	145	6675 MHz
149	6695 MHz	153	6715 MHz	157	6735 MHz	161	6755 MHz
165	6775 MHz	169	6795 MHz	173	6815 MHz	177	6835 MHz
181	6855 MHz	*185	6875 MHz				

8 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
123	6565 MHz	131	6605 MHz	139	6645 MHz	147	6685 MHz
155	6725 MHz	163	6765 MHz	171	6805 MHz	179	6845 MHz

5 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
*119	6545 MHz	135	6625 MHz	151	6705 MHz	167	6785 MHz
*183	6865 MHz						

2 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency
143	6665 MHz	175	*6825 MHz

U-NII-8:

11 channels are provided for 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
189	6895 MHz	193	6915 MHz	197	6935 MHz	201	6955 MHz
205	6975 MHz	209	6995 MHz	213	7015 MHz	217	7035 MHz
221	7055 MHz	225	7075 MHz	229	7095 MHz		

6 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency
*187	6885 MHz	195	6925 MHz	203	6965 MHz
211	7005 MHz	219	7045 MHz	227	7085 MHz

2 channels is provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
199	6945 MHz	215	7025 MHz

1 channels are provided for 802.11ax (HE160):

Channel	Frequency
207	6985 MHz

Note: * mean these are straddle channels and operating under control by Low-power indoor AP only.

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. The RJ45 Cable has the following appearance: yellow/white. Pre-scan these of RJ45 Cable and find the worst case as a representative test condition. 2. 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).
Worst Case:	1. RJ45 Cable Worst condition : yellow RJ45 cable

Following channel(s) was (were) selected for the final test as listed below:

Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power / Power Spectral Density	802.11ax (HE20)	CDD	33, 61, 93, 97, 105, 113, 117, 153, 181, 185, 213, 229	BPSK	MCS0NSS1, MCS0NSS4
	802.11ax (HE40)	CDD	35, 59, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0NSS1, MCS0NSS4
	802.11ax (HE80)	CDD	39, 55, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0NSS1, MCS0NSS4
	802.11ax (HE160)	CDD	47, 79, 111, 143, 175, 207	BPSK	MCS0NSS1, MCS0NSS4
	802.11ax (HE20)	Beamforming	33, 61, 93, 97, 105, 113, 117, 153, 181, 185, 213, 229	BPSK	MCS0NSS1, MCS0NSS2
	802.11ax (HE40)	Beamforming	35, 59, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0NSS1, MCS0NSS2
	802.11ax (HE80)	Beamforming	39, 55, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0NSS1, MCS0NSS2
	802.11ax (HE160)	Beamforming	47, 79, 111, 143, 175, 207	BPSK	MCS0NSS1, MCS0NSS2
Emission Bandwidth	802.11ax (HE20)	CDD	33, 61, 93, 97, 105, 113, 117, 153, 181, 185, 213, 229	BPSK	MCS0NSS4
	802.11ax (HE40)	CDD	35, 59, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0NSS4
	802.11ax (HE80)	CDD	39, 55, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0NSS4
	802.11ax (HE160)	CDD	47, 79, 111, 143, 175, 207	BPSK	MCS0NSS4

Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
In-Band Emission Mask	802.11ax (HE20)	CDD	33, 61, 93, 97, 105, 113, 117, 153, 181, 185, 213, 229	BPSK	MCS0NSS4
	802.11ax (HE40)	CDD	35, 59, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0NSS4
	802.11ax (HE80)	CDD	39, 55, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0NSS4
	802.11ax (HE160)	CDD	47, 79, 111, 143, 175, 207	BPSK	MCS0NSS4
Occupied Bandwidth	802.11ax (HE20)	CDD	33, 61, 93, 97, 105, 113, 117, 153, 181, 185, 213, 229	BPSK	MCS0NSS4
	802.11ax (HE40)	CDD	35, 59, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0NSS4
	802.11ax (HE80)	CDD	39, 55, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0NSS4
	802.11ax (HE160)	CDD	47, 79, 111, 143, 175, 207	BPSK	MCS0NSS4
Frequency Stability	802.11ax (HE20)	-	33	un-modulation	-
Contention-based Protocol	802.11ax (HE20)	CDD	45, 97, 149, 209	-	-
	802.11ax (HE160)	CDD	47, 111, 143, 207	-	-
AC Power Conducted Emissions	802.11ax (HE160)	CDD	175	BPSK	MCS0NSS4
Unwanted Emissions below 1 GHz	802.11ax (HE160)	CDD	175	BPSK	MCS0NSS4
Unwanted Emissions above 1 GHz	802.11ax (HE20)	CDD	33, 61, 93, 97, 105, 113, 117, 153, 181, 185, 213, 229	BPSK	MCS0NSS1, MCS0NSS4
	802.11ax (HE40)	CDD	35, 59, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0NSS1, MCS0NSS4
	802.11ax (HE80)	CDD	39, 55, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0NSS1, MCS0NSS4
	802.11ax (HE160)	CDD	47, 79, 111, 143, 175, 207	BPSK	MCS0NSS1, MCS0NSS4

Note: Partial RU (resource unit) and channel puncturing configurations are not supported.

3.5 Duty Cycle of Test Signal

802.11ax (HE20) CDD MCS0NSS1: Duty cycle = 5.445 ms / 6.315 ms x 100% = 86.2%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.64 dB

802.11ax (HE20) CDD MCS0NSS4: Duty cycle = 5.445 ms / 6.36 ms x 100% = 85.6%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.67 dB

802.11ax (HE40) CDD MCS0NSS1: Duty cycle = 5.446 ms / 6.333 ms x 100% = 86.0%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.66 dB

802.11ax (HE40) CDD MCS0NSS4: Duty cycle = 5.444 ms / 6.314 ms x 100% = 86.2%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.64 dB

802.11ax (HE80) CDD MCS0NSS1: Duty cycle = 5.444 ms / 6.385 ms x 100% = 85.3%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.69 dB

802.11ax (HE80) CDD MCS0NSS4: Duty cycle = 5.445 ms / 5.9 ms x 100% = 92.3%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.35 dB

802.11ax (HE160) CDD MCS0NSS1: Duty cycle = 5.445 ms / 6.314 ms x 100% = 86.2%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.64 dB

802.11ax (HE160) CDD MCS0NSS4: Duty cycle = 5.445 ms / 5.972 ms x 100% = 91.2%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.40 dB

802.11ax (HE20) Beamforming MCS0NSS1: Duty cycle = 82.265 ms / 100 ms x 100% = 82.3%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.85 dB

802.11ax (HE20) Beamforming MCS0NSS2: Duty cycle = 80.023 ms / 100 ms x 100% = 80.0%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.97 dB

802.11ax (HE40) Beamforming MCS0NSS1: Duty cycle = 94.592 ms / 100 ms x 100% = 94.6%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.24 dB

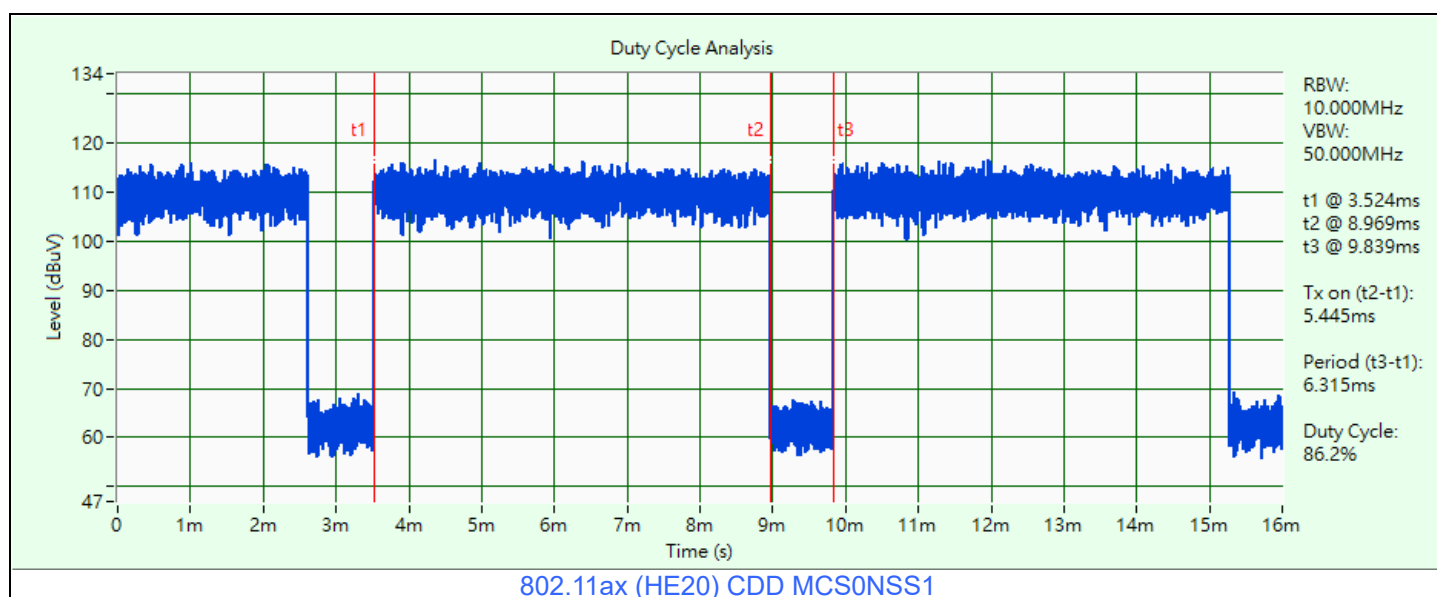
802.11ax (HE40) Beamforming MCS0NSS2: Duty cycle = 94.592 ms / 100 ms x 100% = 94.6%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.24 dB

802.11ax (HE80) Beamforming MCS0NSS1: Duty cycle = 90.569 ms / 100 ms x 100% = 90.6%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.43 dB

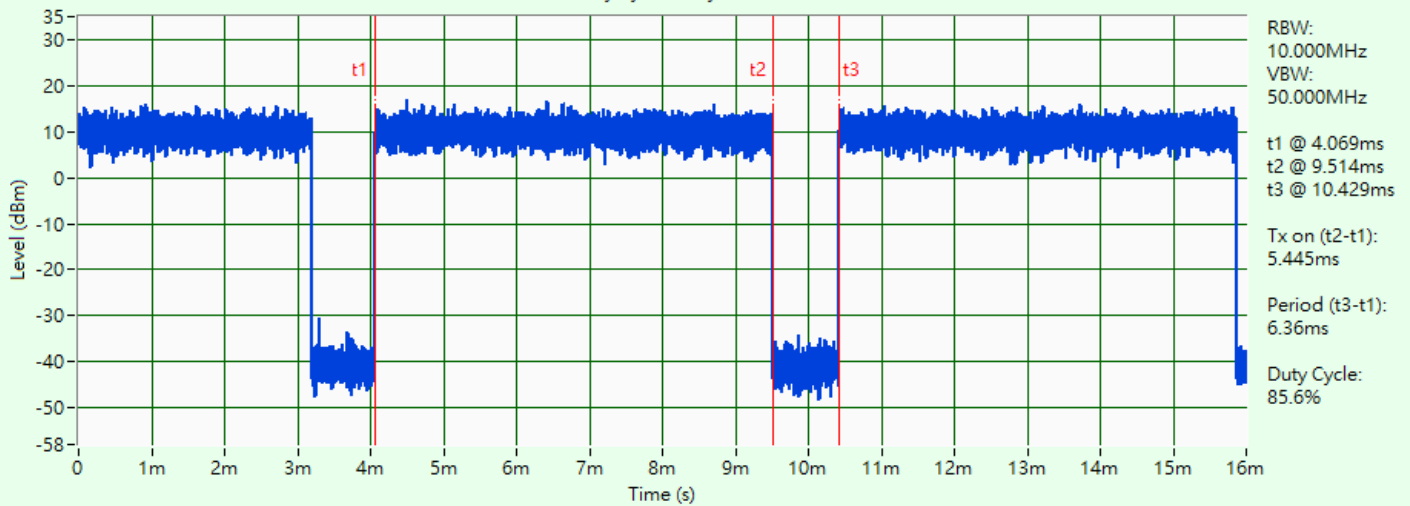
802.11ax (HE80) Beamforming MCS0NSS2: Duty cycle = 80.251 ms / 100 ms x 100% = 80.3%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 0.96 dB

802.11ax (HE160) Beamforming MCS0NSS1: Duty cycle = 73.1 ms / 100 ms x 100% = 73.1%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 1.36 dB

802.11ax (HE160) Beamforming MCS0NSS2: Duty cycle = 79.197 ms / 100 ms x 100% = 79.2%, duty factor = $10 * \log (1/\text{Duty cycle})$ = 1.01 dB

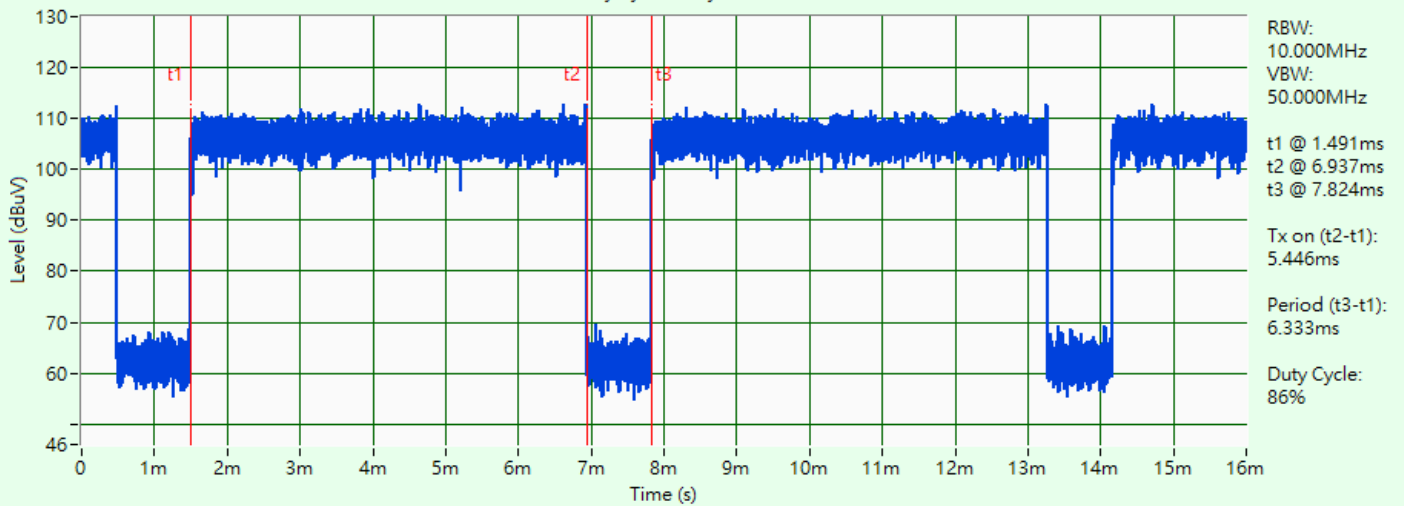


Duty Cycle Analysis



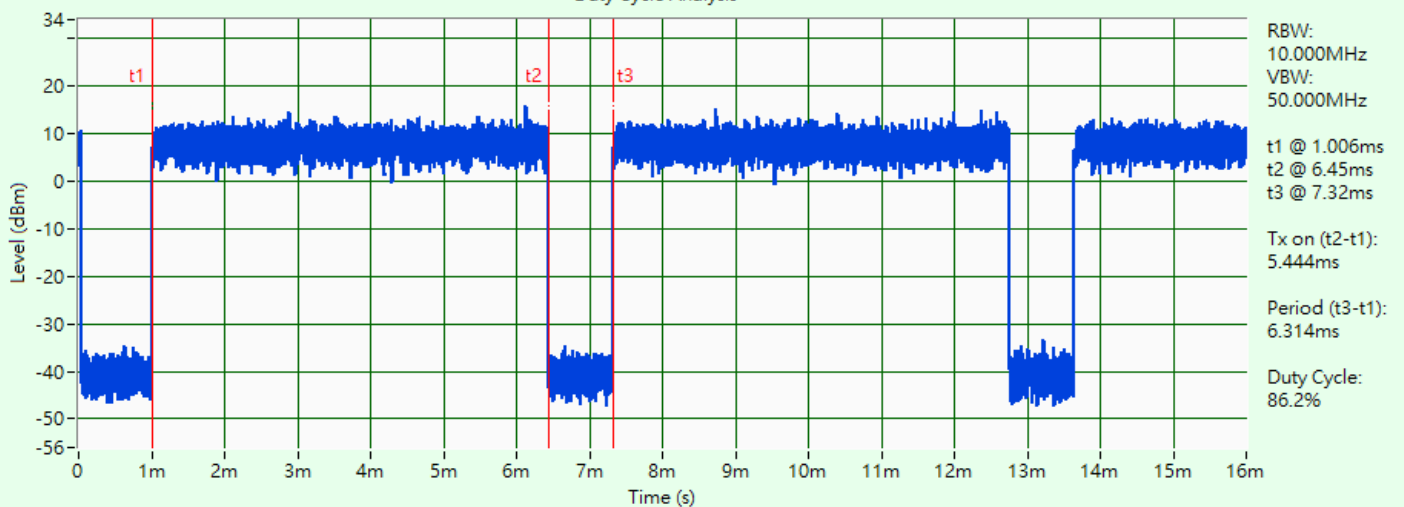
802.11ax (HE20) CDD MCS0NSS4

Duty Cycle Analysis



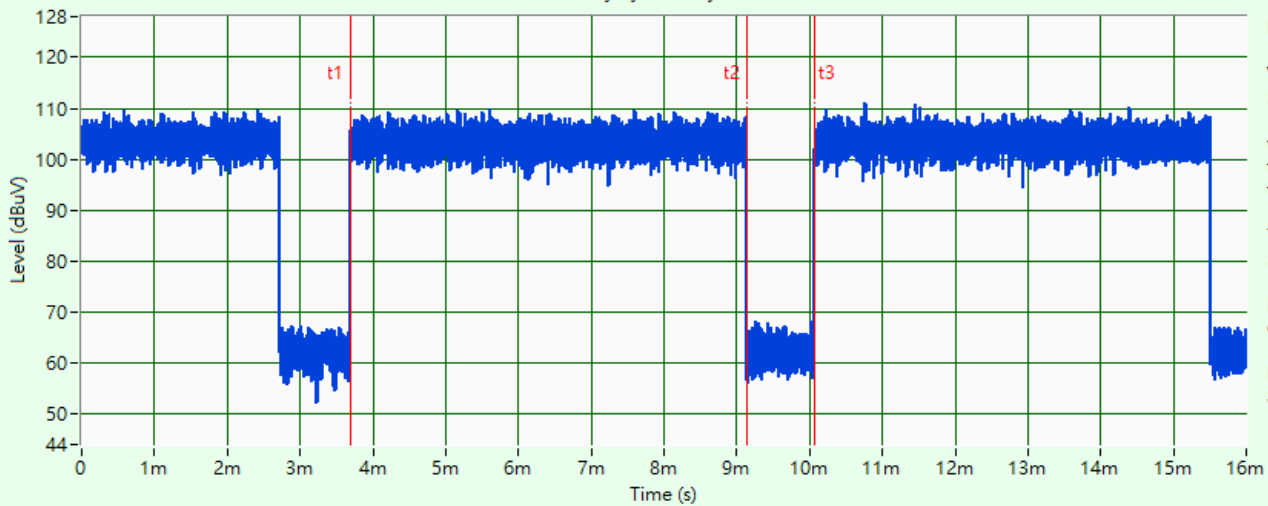
802.11ax (HE40) CDD MCS0NSS1

Duty Cycle Analysis



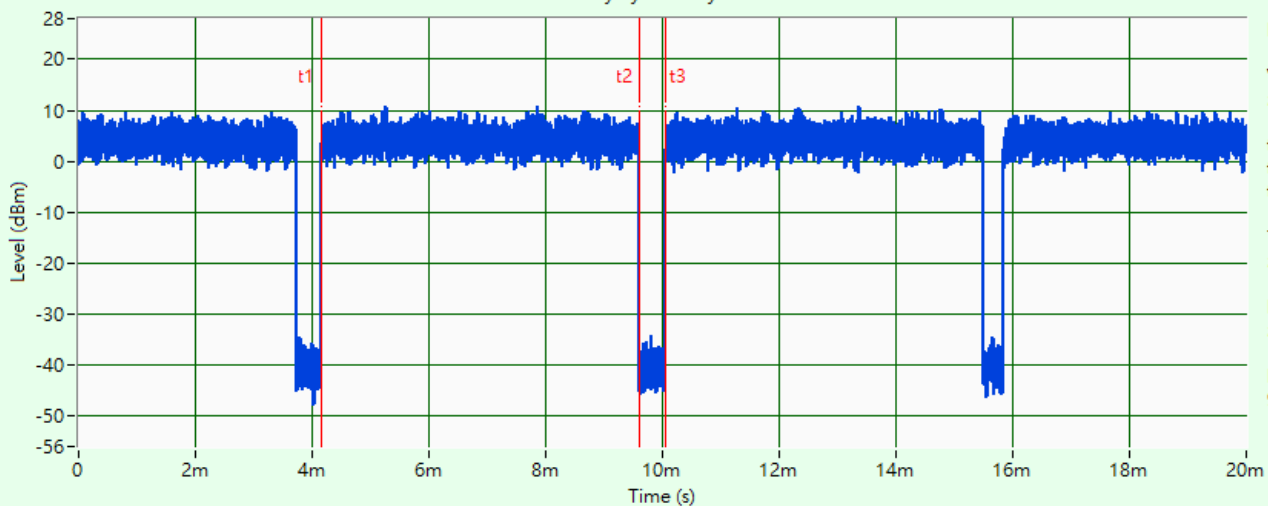
802.11ax (HE40) CDD MCS0NSS4

Duty Cycle Analysis



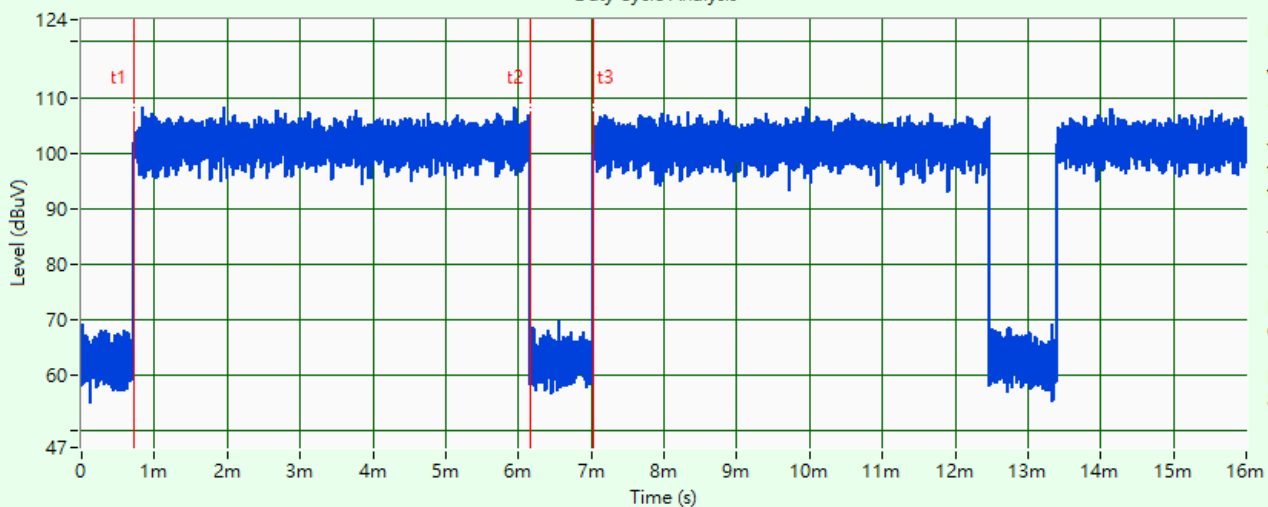
802.11ax (HE80) CDD MCS0NSS1

Duty Cycle Analysis

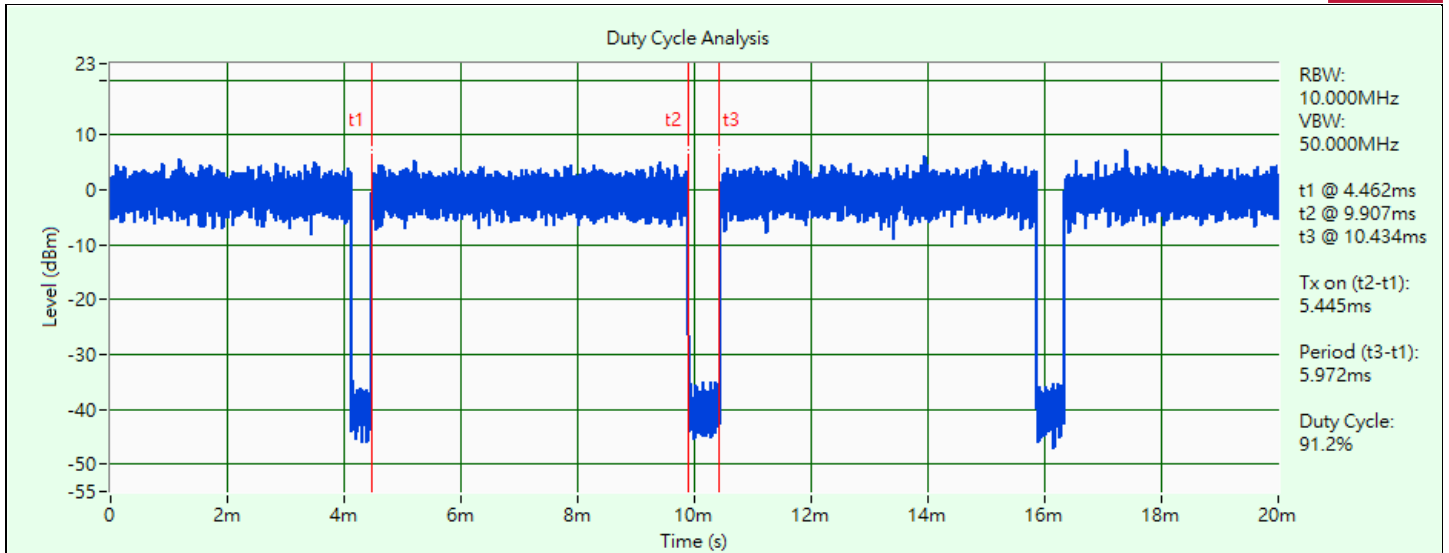


802.11ax (HE80) CDD MCS0NSS4

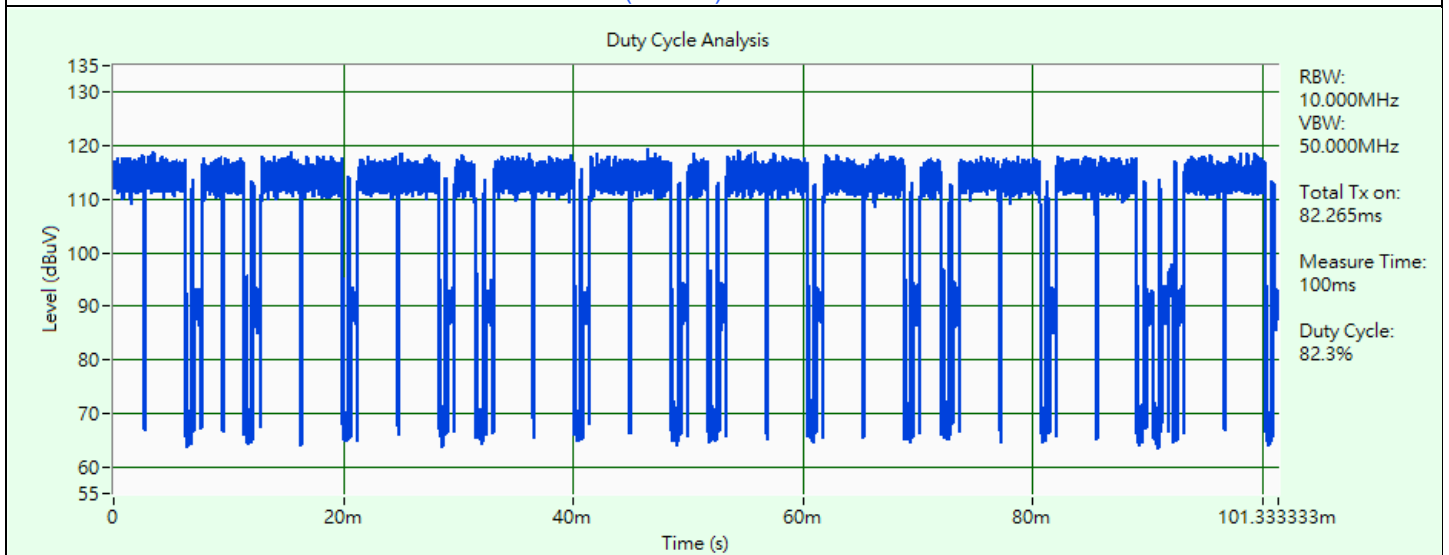
Duty Cycle Analysis



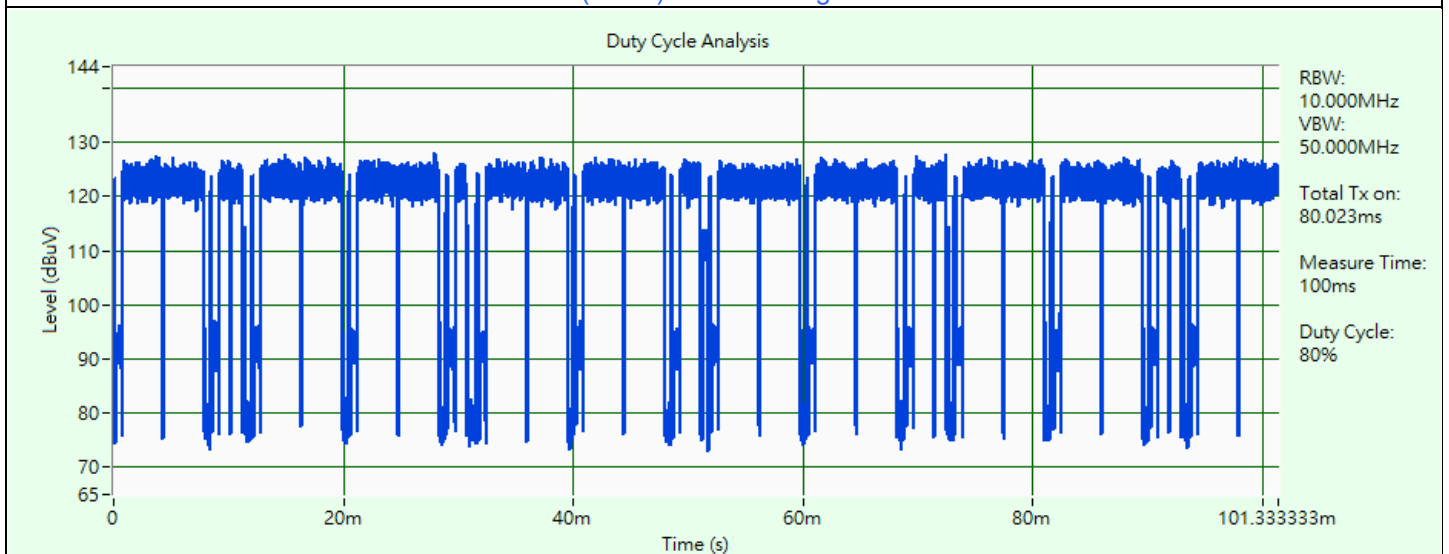
802.11ax (HE160) CDD MCS0NSS1



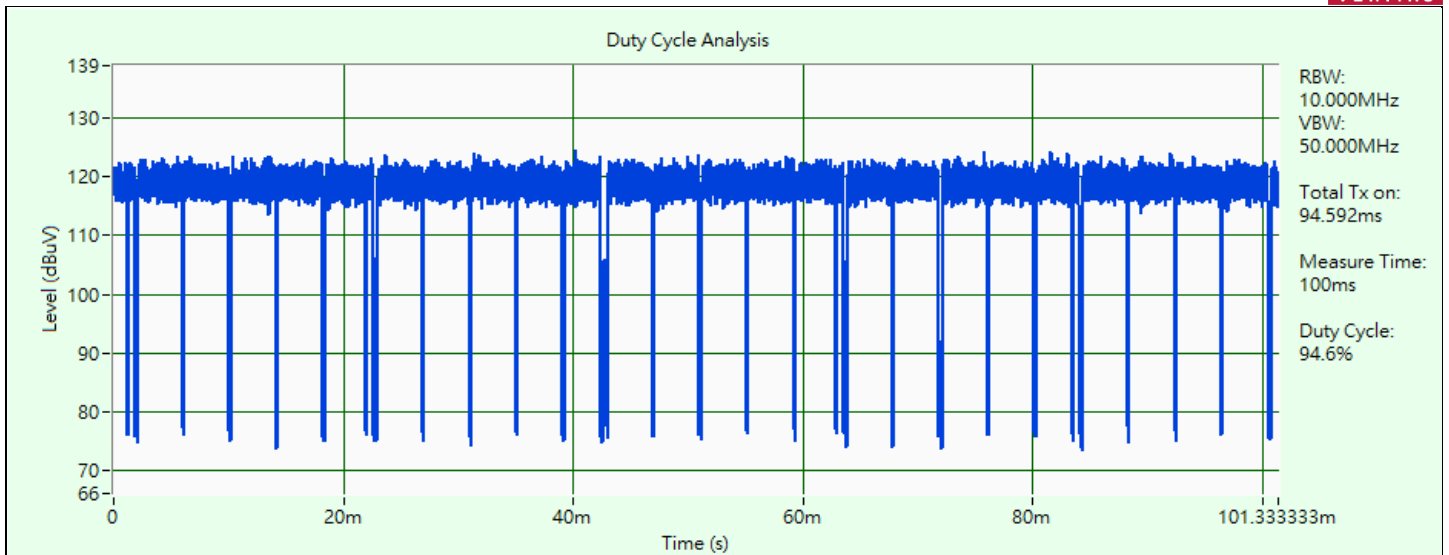
802.11ax (HE160) CDD MCS0NSS4



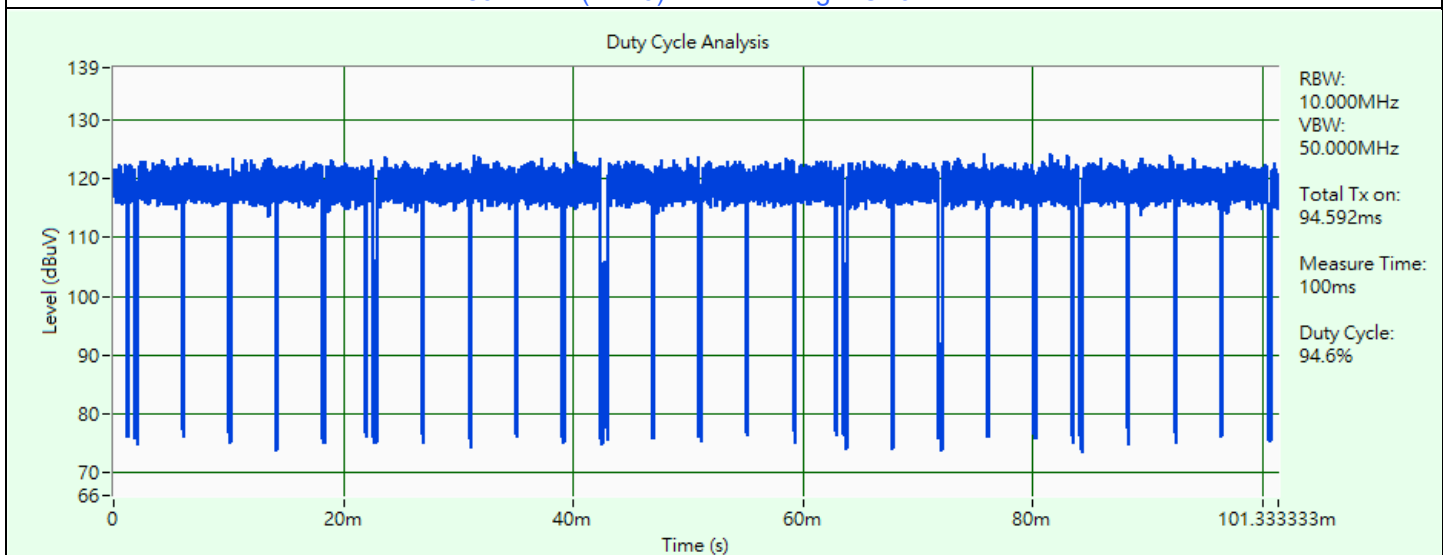
802.11ax (HE20) Beamforming MCS0NSS1



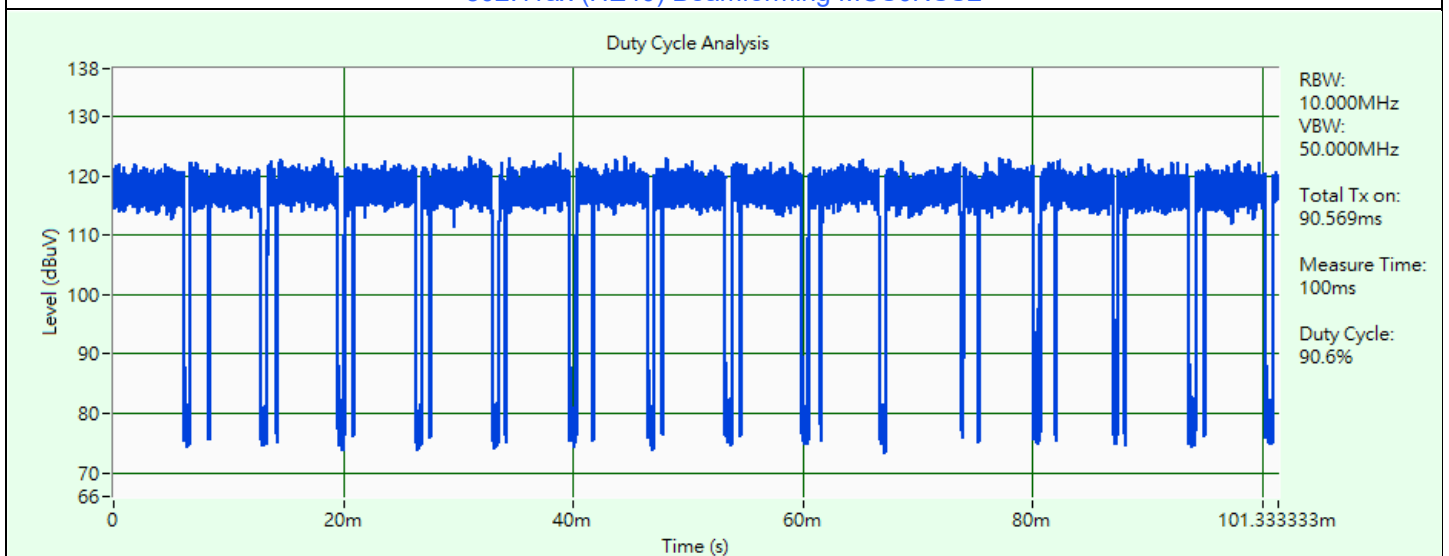
802.11ax (HE20) Beamforming MCS0NSS2



802.11ax (HE40) Beamforming MCS0NSS1

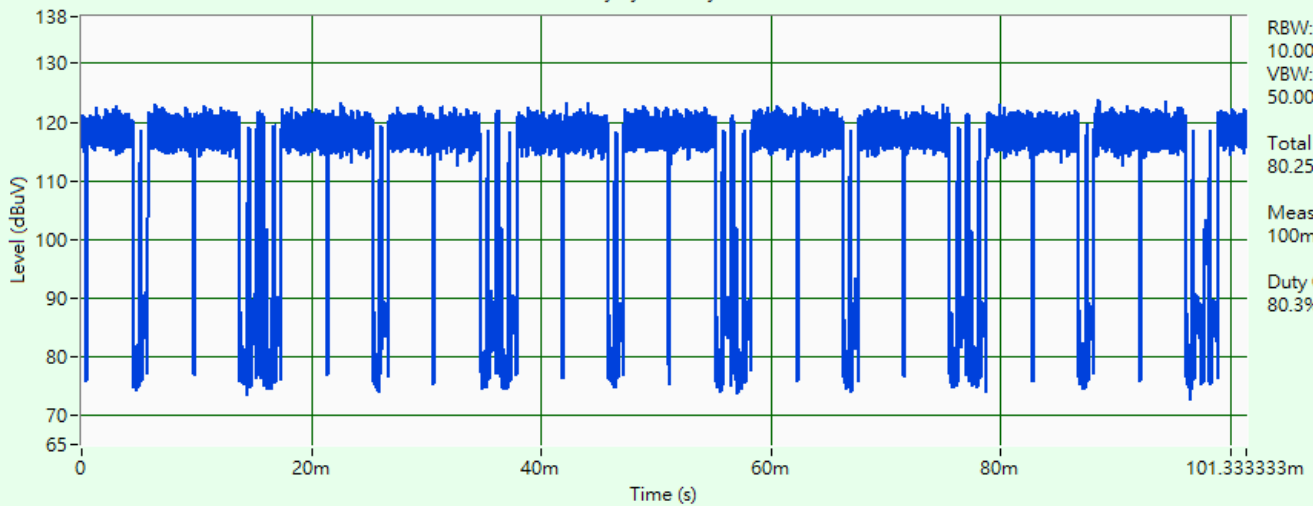


802.11ax (HE40) Beamforming MCS0NSS2



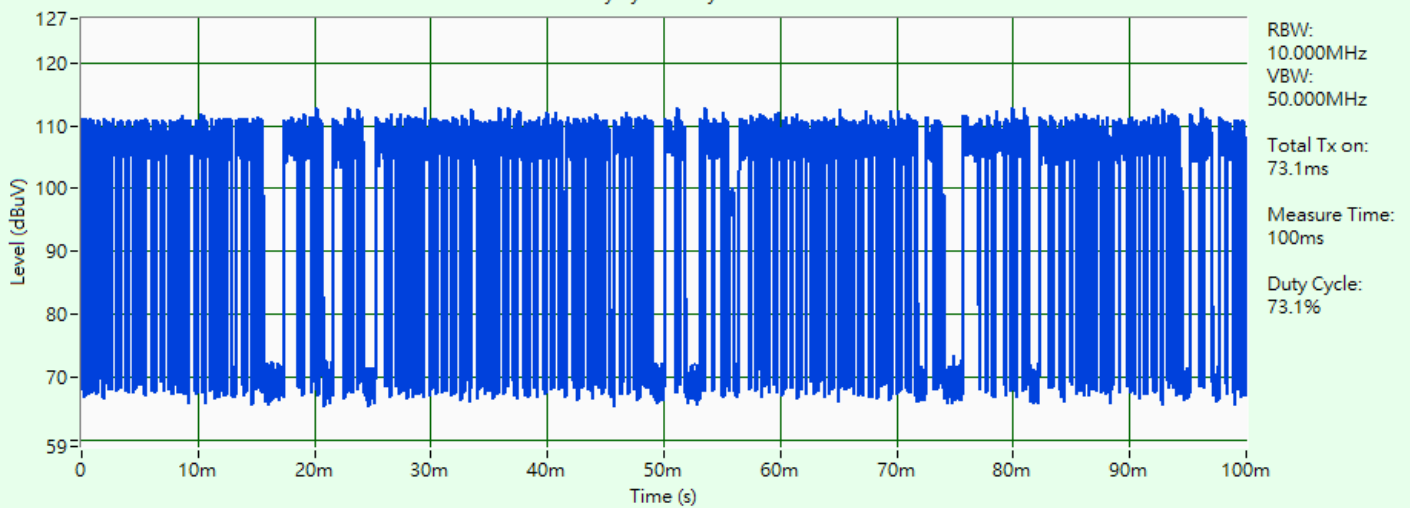
802.11ax (HE80) Beamforming MCS0NSS1

Duty Cycle Analysis



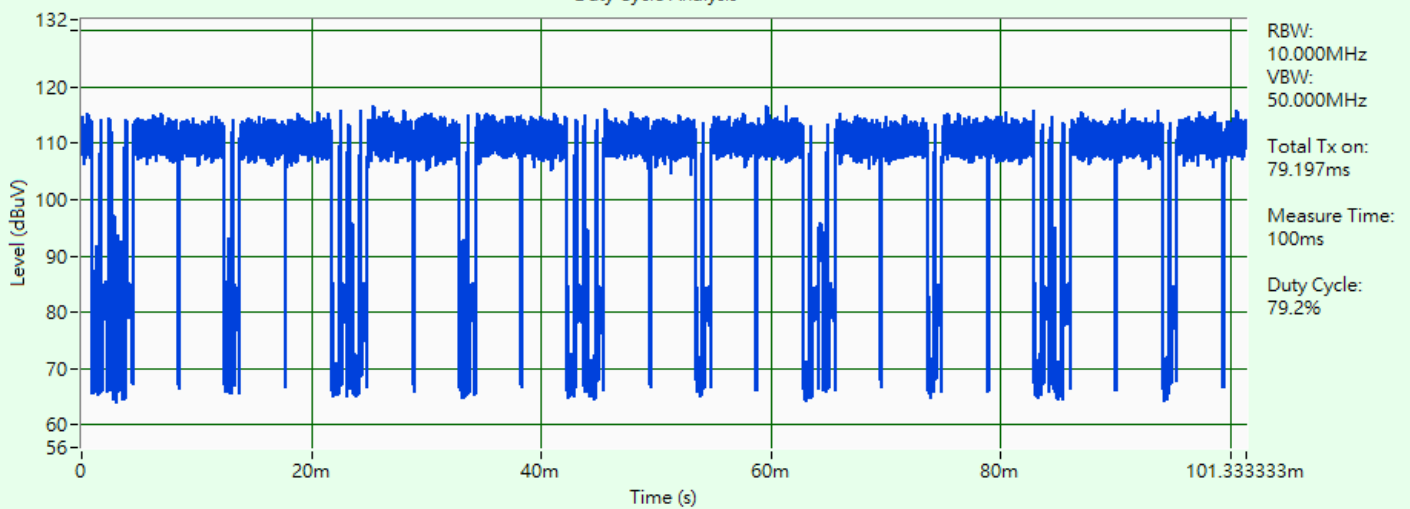
802.11ax (HE80) Beamforming MCS0NSS2

Duty Cycle Analysis



802.11ax (HE160) Beamforming MCS0NSS1

Duty Cycle Analysis

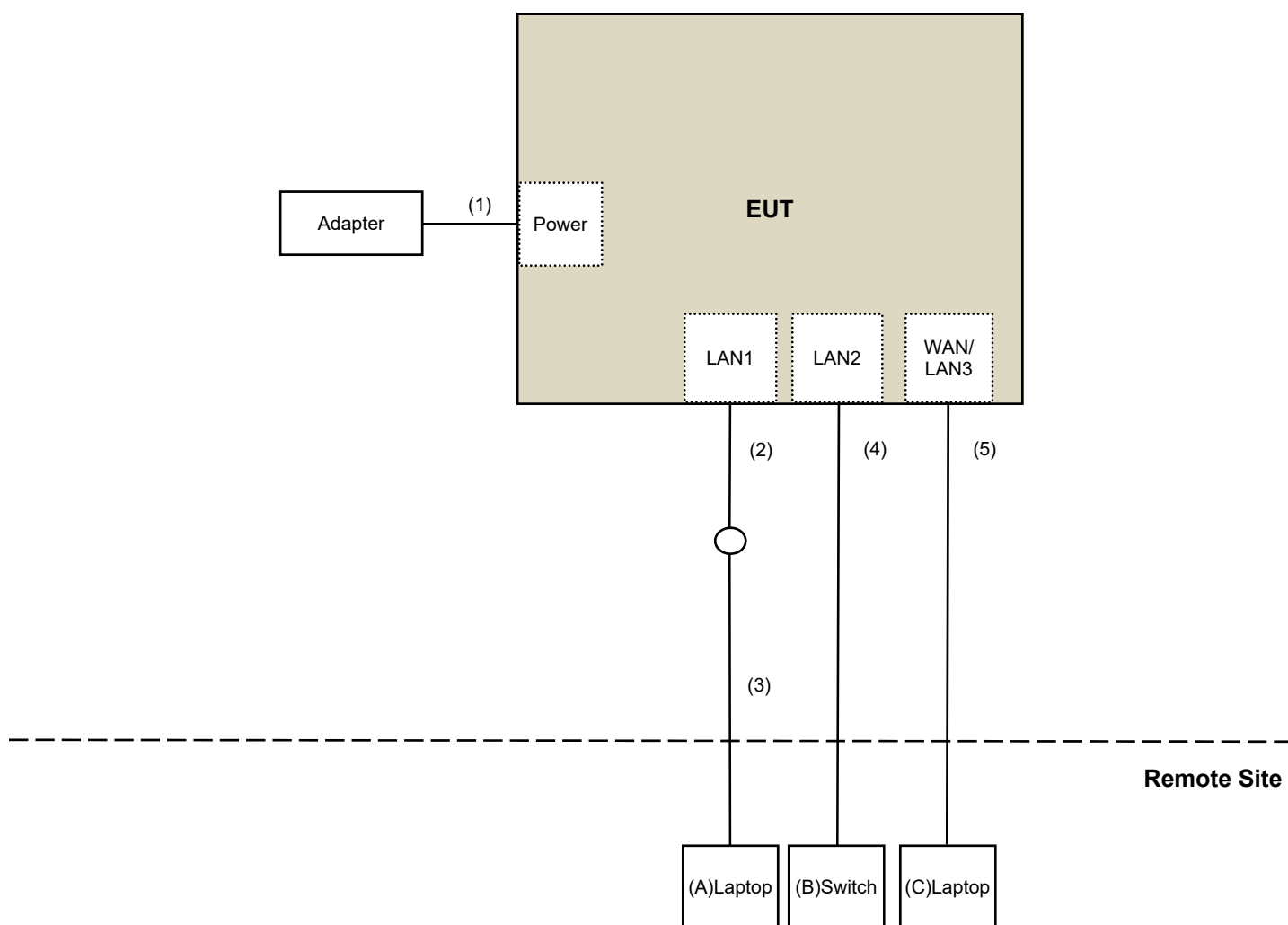


802.11ax (HE160) Beamforming MCS0NSS2

3.6 Test Program Used and Operation Descriptions

Controlling software (qdart_conn.win.1.0_installer_00076.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Provided by Lab
B	Switch	D-Link	DGS-1005D	DR8WC92000523	N/A	Provided by Lab
C	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.5	No	0	Supplied by applicant
2	RJ-45 Cable	1	1.5	No	0	Supplied by applicant
3	RJ-45 Cable	1	10	No	0	Provided by Lab
4	RJ-45 Cable	1	10	No	0	Provided by Lab
5	RJ-45 Cable	1	10	No	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA9120-D	9120D-406	2021/11/14 2022/11/13	2022/11/13 2023/11/12
Pre_Amplifier EMCI	EMC12630SE	980384	2022/1/10	2023/1/9
RF Cable EMCI	EMC104-SM-SM-6000	210201	2022/5/10	2023/5/9
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2022/4/25	2023/4/24
	EMC104-SM-SM-2000	180601	2022/6/6	2023/6/5
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25
Test Receiver KEYSIGHT	N9038A	MY59050100	2022/6/20	2023/6/19

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2022/11/11 ~ 2022/11/15

4.2 Power Spectral Density

Refer to section 4.1 to get information of the instruments.

4.3 Emission Bandwidth

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/11/11 ~ 2022/11/15

4.4 In-Band Emission Mask

Refer to section 4.3 to get information of the instruments.

4.5 Occupied Bandwidth

Refer to section 4.3 to get information of the instruments.

4.6 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
AC Power Source GOOD WILL	6905S	1991551	NA	NA
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2022/1/14	2023/1/13
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/11/11

4.7 Contention-based Protocol

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Direct Coupler EMCI	CS20-18-436/16	1139	2022/1/10	2023/1/9
ESG Vector signal generator Agilent	E4438C	MY45094468	2021/11/21	2022/11/20
MXG X-Series RF Vector Signal Generator Keysight	N5182B	MY53052647	2022/11/8	2023/11/7
Power Splitter/combiner Mini-Circuits	ZN4PD-642W-S+	408501327_01	2022/4/5	2023/4/4
		408501327_02	2022/9/14	2023/9/13
Spectrum Analyzer Keysight	N9030A	MY55410176	2022/6/21	2023/6/20
Upgrade the software license on current E4438C ESG Agilent	E4438CK-403	ESG E4_010001	N/A	N/A

Notes:

1. The test was performed in Adaptivity room.
2. Tested Date: 2022/11/20

4.8 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
Fixed attenuator STI	STI02-2200-10	005	2022/8/24	2023/8/23
LISN R&S	ESH3-Z5	848773/004	2022/10/18	2023/10/17
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2022/8/24	2023/8/23
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2022/10/14	2023/10/13

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2022/11/7

4.9 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2022/9/14	2023/9/13
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
Pre_Amplifier Agilent	8447D	2944A10636	2022/3/19	2023/3/18
Pre_Amplifier Mini-Circuits	ZFL-1000VH2	QA0838008	2022/10/4	2023/10/3
RF Coaxial Cable COMMATE/PEWC	8D	966-3-2	2022/2/26	2023/2/25
		966-3-3	2022/2/26	2023/2/25
		966-4-1	2022/3/8	2023/3/7
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6	2023/1/5
		LOOPCAB-002	2022/1/6	2023/1/5
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25
Test Receiver KEYSIGHT	N9038A	MY59050100	2022/6/20	2023/6/19
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-361	2022/10/21	2023/10/20

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2022/11/7

4.10 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9170	9170-739	2021/11/14 2022/11/13	2022/11/13 2023/11/12
	BBHA9120-D	9120D-406	2021/11/14 2022/11/13	2022/11/13 2023/11/12
Pre_Amplifier EMCI	EMC12630SE	980384	2022/1/10	2023/1/9
	EMC184045SE	980387	2022/1/10	2023/1/9
RF Cable EMCI	EMC104-SM-SM-6000	210201	2022/5/10	2023/5/9
RF Cable-Frequency range: 1- 40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10	2023/1/9
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC104-SM-SM-1500	180504	2022/4/25	2023/4/24
	EMC104-SM-SM-2000	180601	2022/6/6	2023/6/5
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25
Test Receiver KEYSIGHT	N9038A	MY59050100	2022/6/20	2023/6/19

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2022/9/24 ~ 2022/11/14

5 Limits of Test Items

5.1 RF Output Power

Operation Band	EUT Category	Limit
		Max Average Power
U-NII-5 U-NII-6 U-NII-7 U-NII-8	Indoor AP / Subordinate Device	EIRP 30 dBm

5.2 Power Spectral Density

Operation Band	EUT Category	Limit
		Peak Power Density
U-NII-5 U-NII-6 U-NII-7 U-NII-8	Indoor AP / Subordinate Device	EIRP 5 dBm/MHz

5.3 Emission Bandwidth

The results are for reference only.

5.4 In-Band Emission Mask

Test Item	Frequencies (MHz)	(X) dBc ^{*1}
Emission Mask	At 1 MHz outside of channel edge	20
	At one channel bandwidth from the channel center ^{*2}	28
	At one- and one-half times the channel bandwidth away from channel center ^{*3}	40
	More than one- and one-half times the channel bandwidth	40

^{*1} : The power spectral density must be suppressed by "x" dB

^{*2} : At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression,

^{*3} : At frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression.

5.5 Occupied Bandwidth

The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 MHz.

5.6 Frequency Stability

The frequency of the carrier signal shall be maintained within band of operation.

5.7 Contention-based Protocol

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62 dBm (The threshold is referenced to a 0 dBi antenna gain.) or lower. Additionally, indoor low-power devices must detect co-channel energy with 90% or greater certainty.

5.8 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.9 Unwanted Emissions below 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.10 Unwanted Emissions above 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Frequencies (MHz)	EIRP Limit	Equivalent Field Strength at 3 m
5925 MHz > F > 7125 MHz	Peak: -7 (dBm/MHz)	88.2 (dBuV/m)
	Average: -27 (dBm/MHz)	68.2 (dBuV/m)

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

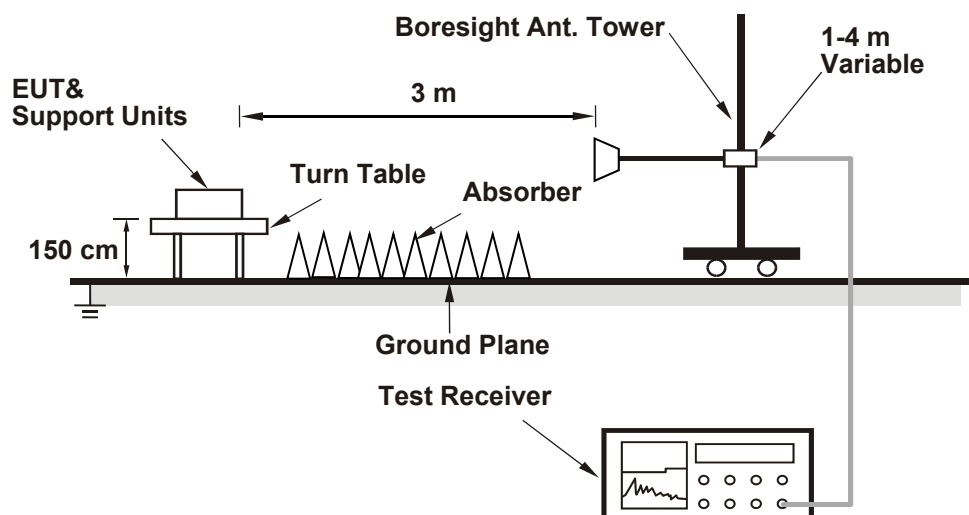
$$E = \frac{1000000 \sqrt{30P}}{3} \quad \mu\text{V/m, where P is the eirp (Watts).}$$

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

Radiated Measurement Method



6.1.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP level.
- Follow ANSI C63.10 section 12.7.3, $EIRP \text{ Value (dBm)} = \text{Field Strength Value (dBuV / m)} + \text{Correction Factor @ 3 m}$.
- $\text{Correction Factor (dB) @ 3 m} = 20\log(D) - 104.77$; where D is the measurement distance @3 m = -95.23 dB

Spectrum analyzer setting as below:

Method SA-2

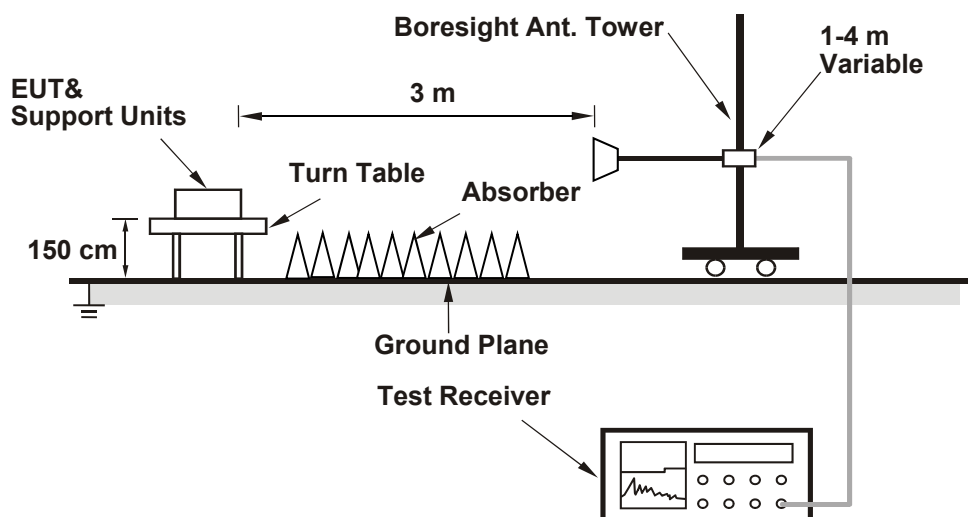
- a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
- b. Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
- c. Sweep points $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- d. Sweep time = auto, trigger set to "free run".
- e. Trace average at least 100 traces in power averaging mode.
- f. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- g. Record the max value and add $10 \log (1/\text{duty cycle})$.

Note: When measuring power, use compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument's band power measurement function, with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW or 99% OBW of the spectrum.

6.2 Power Spectral Density

6.2.1 Test Setup

Radiated Measurement Method



6.2.2 Test Procedure

Radiated Measurement Method

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP level.
- Follow ANSI C63.10 section 12.7.3, $EIRP \text{ Value (dBm)} = \text{Field Strength Value (dBuV/m)} + \text{Correction Factor @ 3 m}$.
- $\text{Correction Factor (dB) @ 3 m} = 20\log(D) - 104.77$; where D is the measurement distance @3 m = -95.23 dB

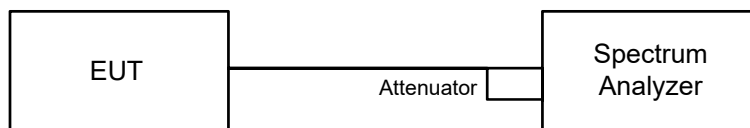
Spectrum analyzer setting as below:

Method SA-2

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
- Sweep points $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- Sweep time = auto, trigger set to "free run".
- Trace average at least 100 traces in power averaging mode.
- Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- Record the max value and add $10 \log (1/\text{duty cycle})$.

6.3 Emission Bandwidth

6.3.1 Test Setup

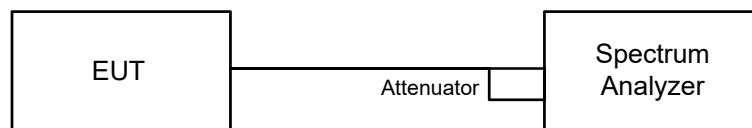


6.3.2 Test Procedure

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- 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%.

6.4 In-Band Emission Mask

6.4.1 Test Setup

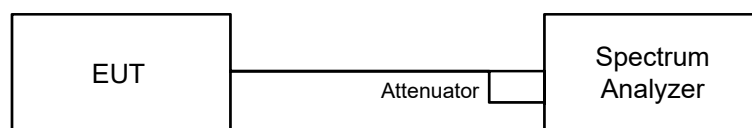


6.4.2 Test Procedure

- a. Connect output of the antenna port to a spectrum analyzer and adjust appropriate attenuation.
- b. Measure the 26 dB EBW using the test procedure 12.4.1 of ANSI C63.10-2013. (Determine the channel edge.)
- c. Measure the power spectral density (for emissions mask reference) using the following procedure:
 - a) Set the span to encompass the entire 26 dB EBW of the signal.
 - b) Set RBW = same RBW used for 26 dB EBW measurement.
 - c) Set VBW $\geq [3 \times \text{RBW}]$.
 - d) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$.
 - e) Sweep time = auto.
 - f) Detector = RMS (i.e., power averaging).
 - g) Trace average at least 100 traces in power averaging (rms) mode.
 - h) Use the peak search function on the instrument to find the peak of the spectrum.
- d. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
 - a) Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)
 - b) Suppressed by 28 dB at one channel bandwidth from the channel center.
 - c) Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
- e. Adjust the span to encompass the entire mask as necessary and clear trace.
- f. Trace average at least 100 traces in power averaging (rms) mode.
- g. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask

6.5 Occupied Bandwidth

6.5.1 Test Setup

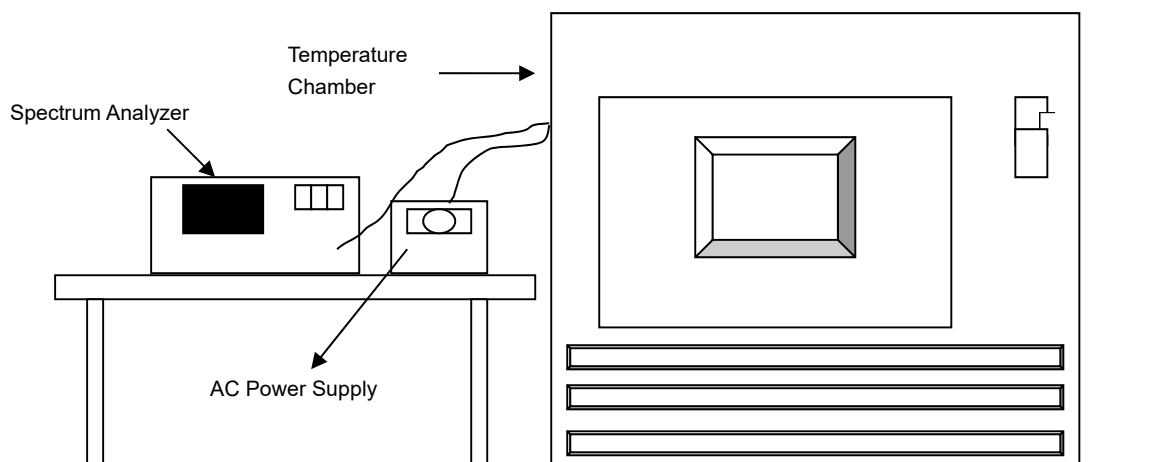


6.5.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to Sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

6.6 Frequency Stability

6.6.1 Test Setup

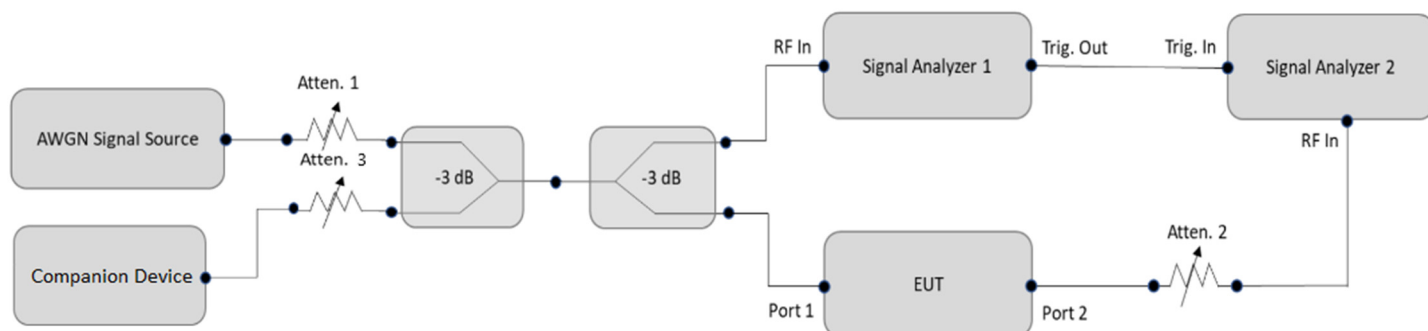


6.6.2 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
- Repeat step (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

6.7 Contention-based Protocol

6.7.1 Test Setup



6.7.2 Test Procedure

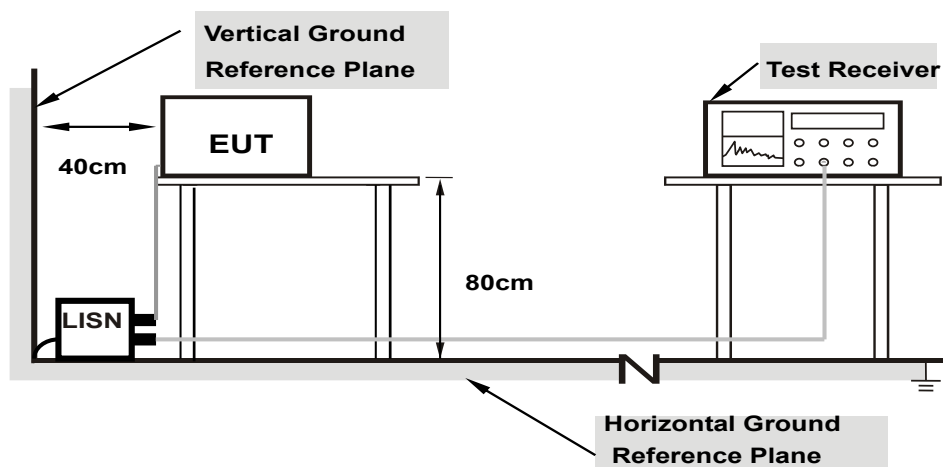
- Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT. Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
- Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters (set as following section 4.7.5 EUT operating condition).
- Determine number of times detection threshold test as following table,

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leq BW_{Inc}$	Once	Same as EUT transmission
$BW_{Inc} < BW_{EUT} \leq 2x BW_{Inc}$	Once	Contained within BW_{EUT}
$2x BW_{Inc} < BW_{EUT} \leq 4x BW_{Inc}$	Twice. (Incumbent transmission is contained within BW_{EUT})	Closely to the lower edge and upper edge of the EUT Channel
$BW_{EUT} > 4x BW_{Inc}$	Three times	Closely to the lower edge ,in the middle and upper edge of the EUT Channel

- Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use step c table to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
- Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT.
- Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
- Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
- (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
- Refer to step c table to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step d, choose a different center frequency for the AWGN signal and repeat the process.

6.8 AC Power Conducted Emissions

6.8.1 Test Setup



Note: 1.Support units were connected to second LISN.

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

6.8.2 Test Procedure

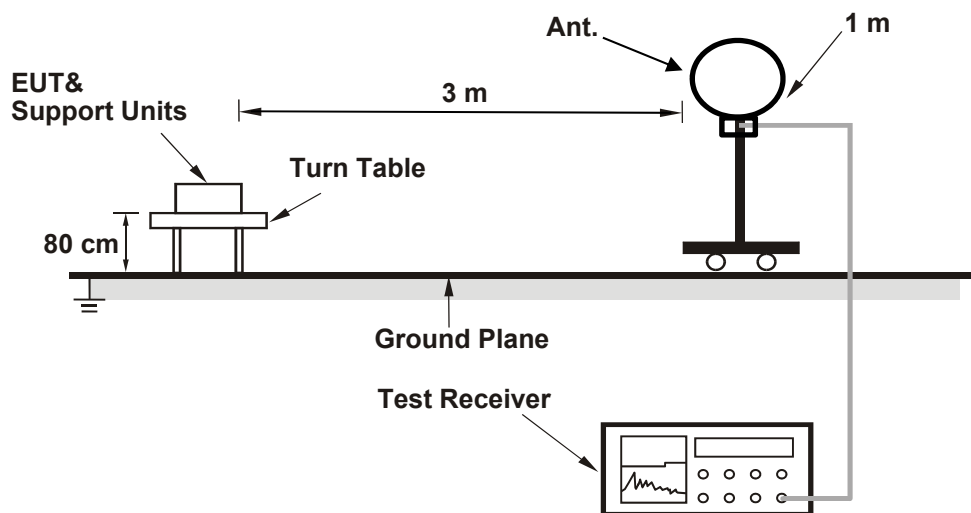
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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

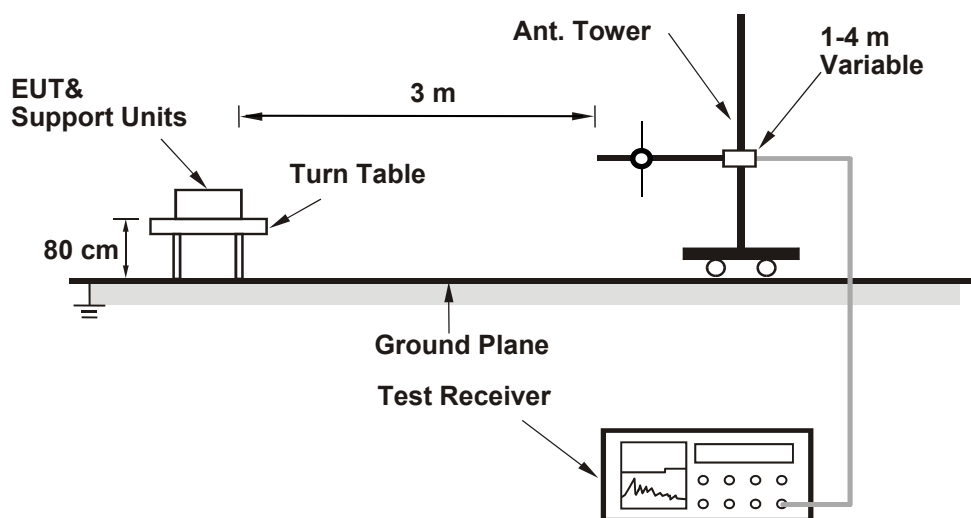
6.9 Unwanted Emissions below 1 GHz

6.9.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.9.2 Test Procedure

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

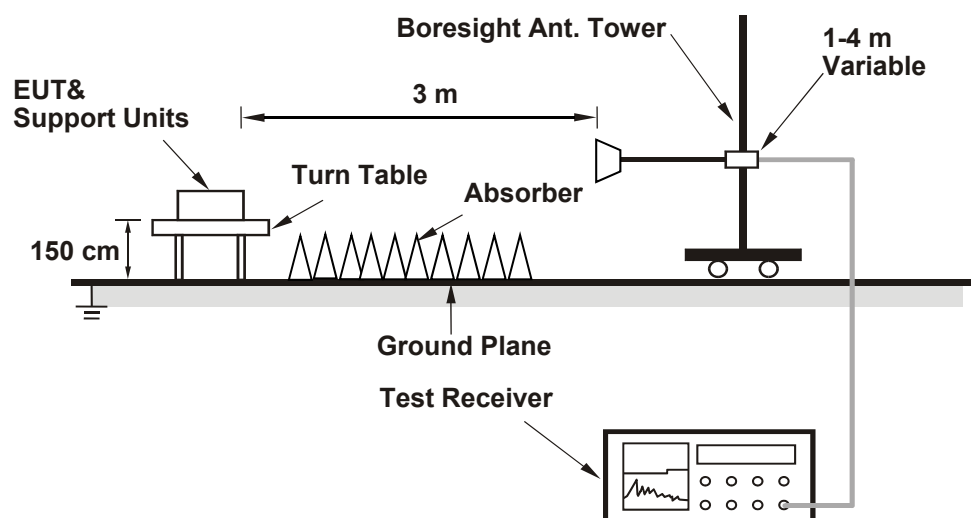
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the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

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.10 Unwanted Emissions above 1 GHz

6.10.1 Test Setup



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

6.10.2 Test Procedure

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

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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802.11ax (HE20) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
33	6115	107.8	-95.23	18.072	12.57	30	Pass
61	6255	107.6	-95.23	17.258	12.37	30	Pass
93	6415	107.7	-95.23	17.66	12.47	30	Pass
97	6435	107.5	-95.23	16.866	12.27	30	Pass
105	6475	107.7	-95.23	17.66	12.47	30	Pass
113	6515	107.4	-95.23	16.482	12.17	30	Pass
117	6535	107.6	-95.23	17.258	12.37	30	Pass
153	6715	107.7	-95.23	17.66	12.47	30	Pass
181	6855	107.5	-95.23	16.866	12.27	30	Pass
185	6875	107.8	-95.23	18.072	12.57	30	Pass
213	7015	107.9	-95.23	18.493	12.67	30	Pass
229	7095	107.7	-95.23	17.66	12.47	30	Pass

802.11ax (HE20) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
33	6115	111.2	-95.23	39.537	15.97	30	Pass
61	6255	111.4	-95.23	41.4	16.17	30	Pass
93	6415	111.5	-95.23	42.364	16.27	30	Pass
97	6435	111.5	-95.23	42.364	16.27	30	Pass
105	6475	111.3	-95.23	40.458	16.07	30	Pass
113	6515	111.5	-95.23	42.364	16.27	30	Pass
117	6535	111.7	-95.23	44.361	16.47	30	Pass
153	6715	111.3	-95.23	40.458	16.07	30	Pass
181	6855	111.4	-95.23	41.4	16.17	30	Pass
185	6875	111.6	-95.23	43.351	16.37	30	Pass
213	7015	111.8	-95.23	45.394	16.57	30	Pass
229	7095	111.9	-95.23	46.452	16.67	30	Pass

802.11ax (HE40) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
35	6125	111.2	-95.23	39.537	15.97	30	Pass
59	6245	110.7	-95.23	35.237	15.47	30	Pass
91	6405	110.8	-95.23	36.058	15.57	30	Pass
99	6445	110.4	-95.23	32.885	15.17	30	Pass
107	6485	110.6	-95.23	34.435	15.37	30	Pass
115	6525	110.3	-95.23	32.137	15.07	30	Pass
123	6565	110.6	-95.23	34.435	15.37	30	Pass
155	6725	110.5	-95.23	33.651	15.27	30	Pass
179	6845	110.7	-95.23	35.237	15.47	30	Pass
187	6885	110.4	-95.23	32.885	15.17	30	Pass
211	7005	110.8	-95.23	36.058	15.57	30	Pass
227	7085	110.6	-95.23	34.435	15.37	30	Pass

802.11ax (HE40) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
35	6125	113.8	-95.23	71.945	18.57	30	Pass
59	6245	113.9	-95.23	73.621	18.67	30	Pass
91	6405	114	-95.23	75.336	18.77	30	Pass
99	6445	114.1	-95.23	77.09	18.87	30	Pass
107	6485	113.7	-95.23	70.307	18.47	30	Pass
115	6525	113.9	-95.23	73.621	18.67	30	Pass
123	6565	114	-95.23	75.336	18.77	30	Pass
155	6725	113.8	-95.23	71.945	18.57	30	Pass
179	6845	114.1	-95.23	77.09	18.87	30	Pass
187	6885	114.3	-95.23	80.724	19.07	30	Pass
211	7005	113.9	-95.23	73.621	18.67	30	Pass
227	7085	114.1	-95.23	77.09	18.87	30	Pass

802.11ax (HE80) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
39	6145	113.5	-95.23	67.143	18.27	30	Pass
55	6225	113.3	-95.23	64.121	18.07	30	Pass
87	6385	113.6	-95.23	68.707	18.37	30	Pass
103	6465	113.4	-95.23	65.615	18.17	30	Pass
119	6545	113.2	-95.23	62.661	17.97	30	Pass
135	6625	113.1	-95.23	61.235	17.87	30	Pass
151	6705	113.3	-95.23	64.121	18.07	30	Pass
167	6785	113.4	-95.23	65.615	18.17	30	Pass
183	6865	113.5	-95.23	67.143	18.27	30	Pass
199	6945	113.3	-95.23	64.121	18.07	30	Pass
215	7025	113.7	-95.23	70.307	18.47	30	Pass

802.11ax (HE80) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
39	6145	118	-95.23	189.234	22.77	30	Pass
55	6225	117.8	-95.23	180.717	22.57	30	Pass
87	6385	117.6	-95.23	172.584	22.37	30	Pass
103	6465	117.9	-95.23	184.927	22.67	30	Pass
119	6545	118	-95.23	189.234	22.77	30	Pass
135	6625	117.5	-95.23	168.655	22.27	30	Pass
151	6705	117.8	-95.23	180.717	22.57	30	Pass
167	6785	117.7	-95.23	176.604	22.47	30	Pass
183	6865	117.9	-95.23	184.927	22.67	30	Pass
199	6945	118	-95.23	189.234	22.77	30	Pass
215	7025	117.7	-95.23	176.604	22.47	30	Pass

802.11ax (HE160) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
47	6185	116.5	-95.23	133.968	21.27	30	Pass
79	6345	116.2	-95.23	125.026	20.97	30	Pass
111	6505	116.3	-95.23	127.938	21.07	30	Pass
143	6665	115.8	-95.23	114.025	20.57	30	Pass
175	6825	116.4	-95.23	130.918	21.17	30	Pass
207	6985	116.6	-95.23	137.088	21.37	30	Pass

802.11ax (HE160) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
47	6185	120.4	-95.23	328.852	25.17	30	Pass
79	6345	121	-95.23	377.572	25.77	30	Pass
111	6505	121	-95.23	377.572	25.77	30	Pass
143	6665	120.9	-95.23	368.978	25.67	30	Pass
175	6825	121.4	-95.23	414	26.17	30	Pass
207	6985	121.1	-95.23	386.367	25.87	30	Pass

802.11ax (HE20) Beamforming MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
33	6115	111.4	-95.23	41.4	16.17	30	Pass
61	6255	110.3	-95.23	32.137	15.07	30	Pass
93	6415	110.3	-95.23	32.137	15.07	30	Pass
97	6435	111.5	-95.23	42.364	16.27	30	Pass
105	6475	110.5	-95.23	33.651	15.27	30	Pass
113	6515	111.7	-95.23	44.361	16.47	30	Pass
117	6535	112.8	-95.23	57.148	17.57	30	Pass
153	6715	111.4	-95.23	41.4	16.17	30	Pass
181	6855	112	-95.23	47.534	16.77	30	Pass
185	6875	111.5	-95.23	42.364	16.27	30	Pass
213	7015	111	-95.23	37.757	15.77	30	Pass
229	7095	110.8	-95.23	36.058	15.57	30	Pass

802.11ax (HE20) Beamforming MCS0NSS2

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
33	6115	111.6	-95.23	43.351	16.37	30	Pass
61	6255	111.5	-95.23	42.364	16.27	30	Pass
93	6415	111.4	-95.23	41.4	16.17	30	Pass
97	6435	111.5	-95.23	42.364	16.27	30	Pass
105	6475	111.5	-95.23	42.364	16.27	30	Pass
113	6515	111.4	-95.23	41.4	16.17	30	Pass
117	6535	110	-95.23	29.992	14.77	30	Pass
153	6715	111.5	-95.23	42.364	16.27	30	Pass
181	6855	111.4	-95.23	41.4	16.17	30	Pass
185	6875	111.5	-95.23	42.364	16.27	30	Pass
213	7015	111.4	-95.23	41.4	16.17	30	Pass
229	7095	111.4	-95.23	41.4	16.17	30	Pass

802.11ax (HE40) Beamforming MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
35	6125	113.8	-95.23	71.945	18.57	30	Pass
59	6245	114	-95.23	75.336	18.77	30	Pass
91	6405	113.8	-95.23	71.945	18.57	30	Pass
99	6445	114	-95.23	75.336	18.77	30	Pass
107	6485	113.9	-95.23	73.621	18.67	30	Pass
115	6525	114	-95.23	75.336	18.77	30	Pass
123	6565	113.8	-95.23	71.945	18.57	30	Pass
155	6725	114.2	-95.23	78.886	18.97	30	Pass
179	6845	113.7	-95.23	70.307	18.47	30	Pass
187	6885	114.2	-95.23	78.886	18.97	30	Pass
211	7005	114.3	-95.23	80.724	19.07	30	Pass
227	7085	115.3	-95.23	101.625	20.07	30	Pass

802.11ax (HE40) Beamforming MCS0NSS2

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
35	6125	112.9	-95.23	58.479	17.67	30	Pass
59	6245	113.2	-95.23	62.661	17.97	30	Pass
91	6405	113.1	-95.23	61.235	17.87	30	Pass
99	6445	112.7	-95.23	55.847	17.47	30	Pass
107	6485	112.8	-95.23	57.148	17.57	30	Pass
115	6525	114.5	-95.23	84.528	19.27	30	Pass
123	6565	112.8	-95.23	57.148	17.57	30	Pass
155	6725	113	-95.23	59.841	17.77	30	Pass
179	6845	113.1	-95.23	61.235	17.87	30	Pass
187	6885	113.2	-95.23	62.661	17.97	30	Pass
211	7005	112.9	-95.23	58.479	17.67	30	Pass
227	7085	114.2	-95.23	78.886	18.97	30	Pass

802.11ax (HE80) Beamforming MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
39	6145	116.8	-95.23	143.549	21.57	30	Pass
55	6225	117.1	-95.23	153.815	21.87	30	Pass
87	6385	117.1	-95.23	153.815	21.87	30	Pass
103	6465	116.7	-95.23	140.281	21.47	30	Pass
119	6545	116.9	-95.23	146.893	21.67	30	Pass
135	6625	117.2	-95.23	157.398	21.97	30	Pass
151	6705	116.7	-95.23	140.281	21.47	30	Pass
167	6785	117.3	-95.23	161.065	22.07	30	Pass
183	6865	117.2	-95.23	157.398	21.97	30	Pass
199	6945	116.8	-95.23	143.549	21.57	30	Pass
215	7025	117.3	-95.23	161.065	22.07	30	Pass

802.11ax (HE80) Beamforming MCS0NSS2

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
39	6145	116.6	-95.23	137.088	21.37	30	Pass
55	6225	116.9	-95.23	146.893	21.67	30	Pass
87	6385	116.5	-95.23	133.968	21.27	30	Pass
103	6465	116.7	-95.23	140.281	21.47	30	Pass
119	6545	116.9	-95.23	146.893	21.67	30	Pass
135	6625	116.6	-95.23	137.088	21.37	30	Pass
151	6705	116.8	-95.23	143.549	21.57	30	Pass
167	6785	116.8	-95.23	143.549	21.57	30	Pass
183	6865	116.8	-95.23	143.549	21.57	30	Pass
199	6945	116.7	-95.23	140.281	21.47	30	Pass
215	7025	116.6	-95.23	137.088	21.37	30	Pass

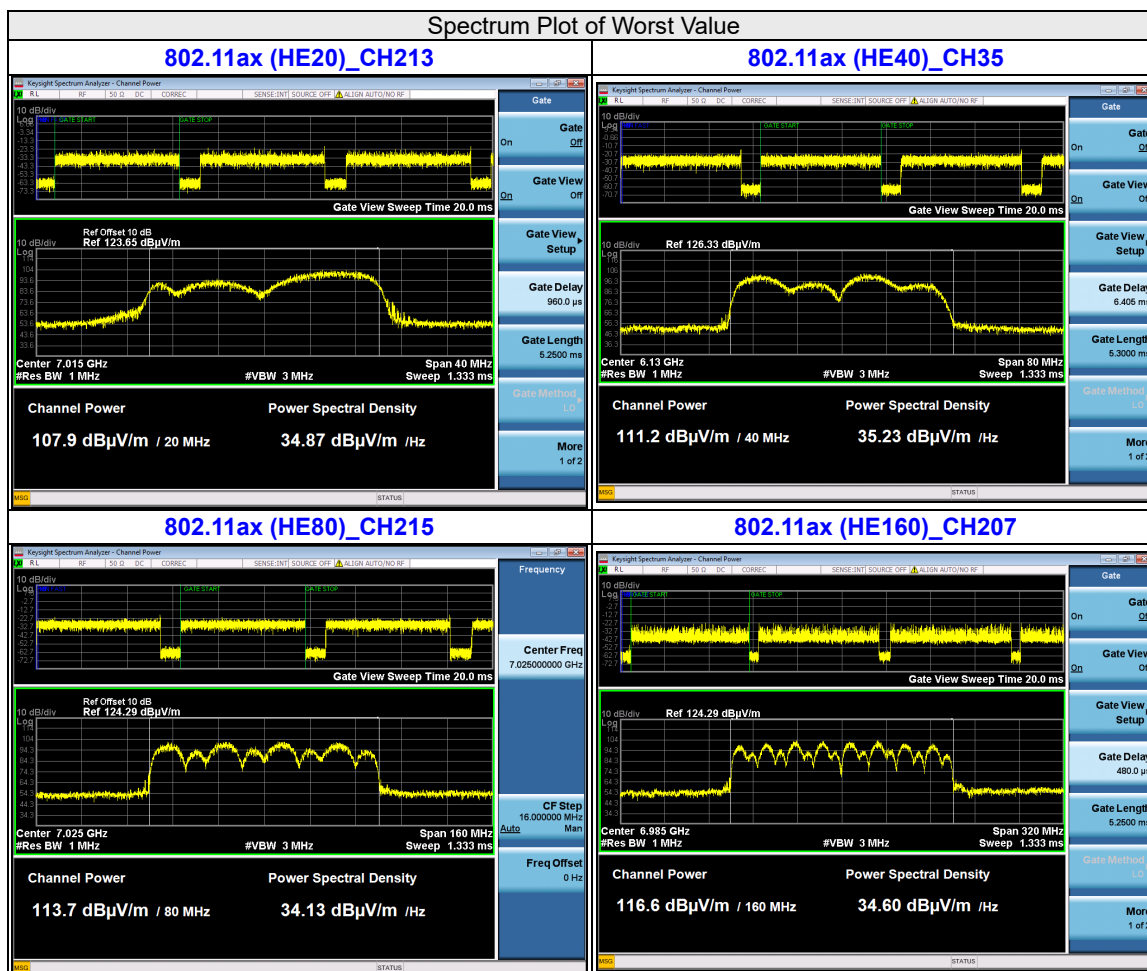
802.11ax (HE160) Beamforming MCS0NSS1

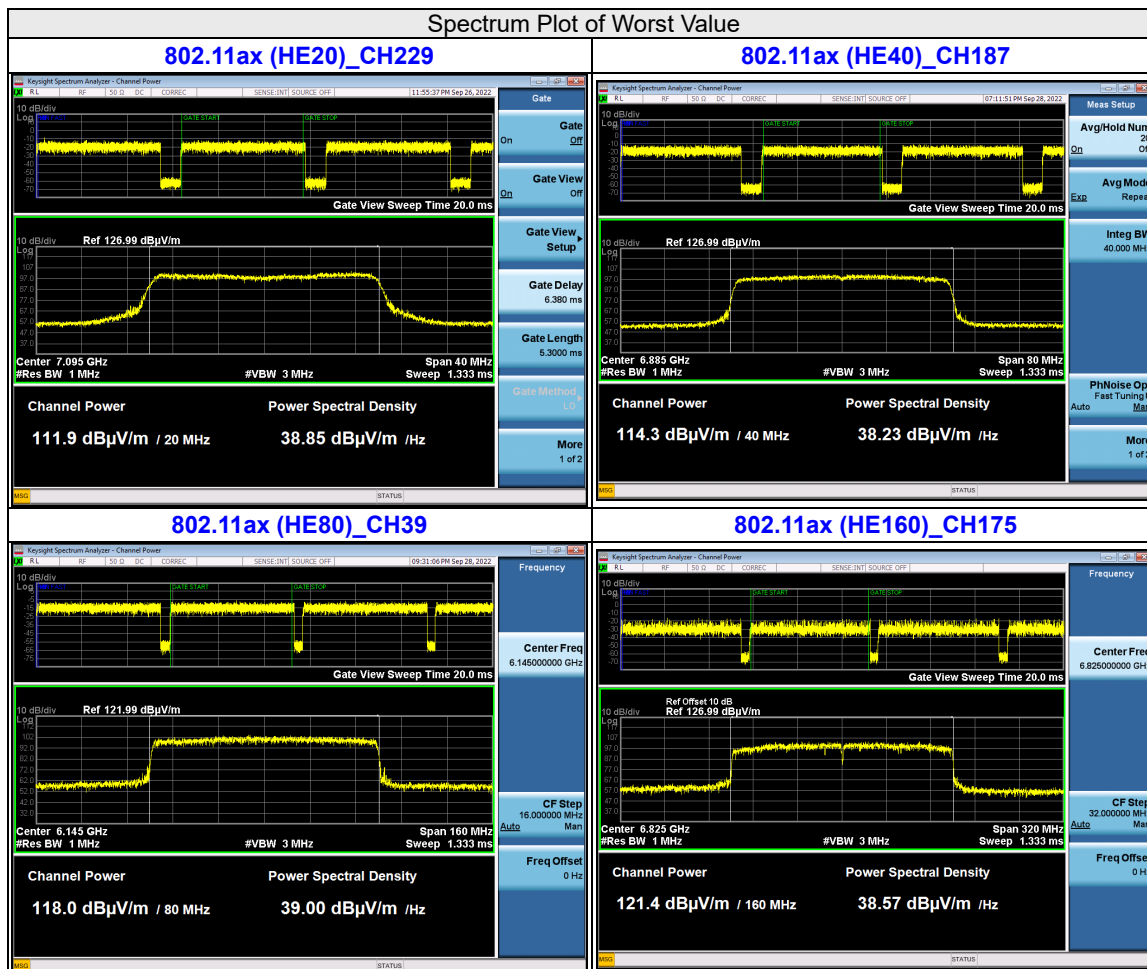
Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
47	6185	120.1	-95.23	306.902	24.87	30	Pass
79	6345	120	-95.23	299.916	24.77	30	Pass
111	6505	118.2	-95.23	198.153	22.97	30	Pass
143	6665	117.7	-95.23	176.604	22.47	30	Pass
175	6825	119	-95.23	238.232	23.77	30	Pass
207	6985	119.2	-95.23	249.459	23.97	30	Pass

802.11ax (HE160) Beamforming MCS0NSS2

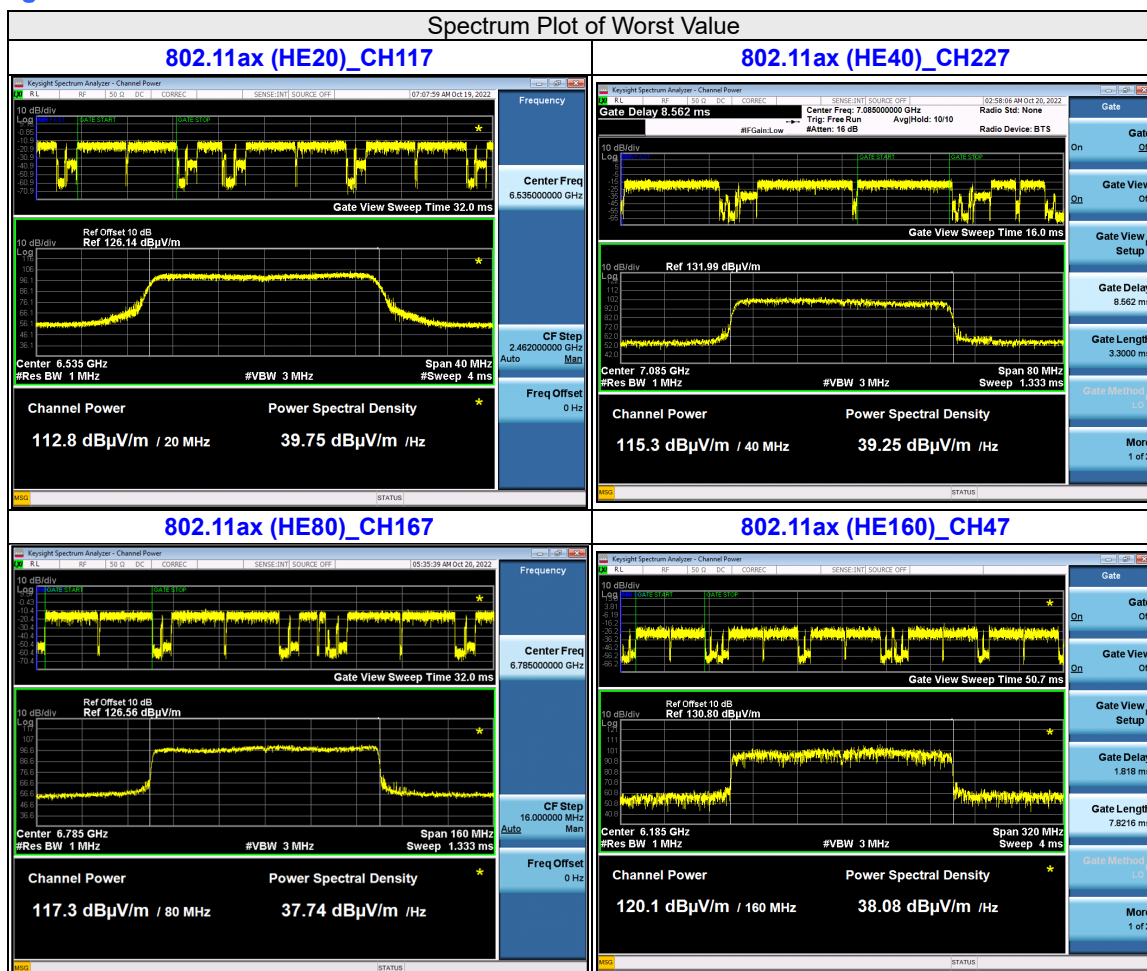
Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
47	6185	120.7	-95.23	352.371	25.47	30	Pass
79	6345	120.7	-95.23	352.371	25.47	30	Pass
111	6505	119.9	-95.23	293.089	24.67	30	Pass
143	6665	120.6	-95.23	344.35	25.37	30	Pass
175	6825	120.2	-95.23	314.051	24.97	30	Pass
207	6985	119.2	-95.23	249.459	23.97	30	Pass

CDD MCS0NSS1

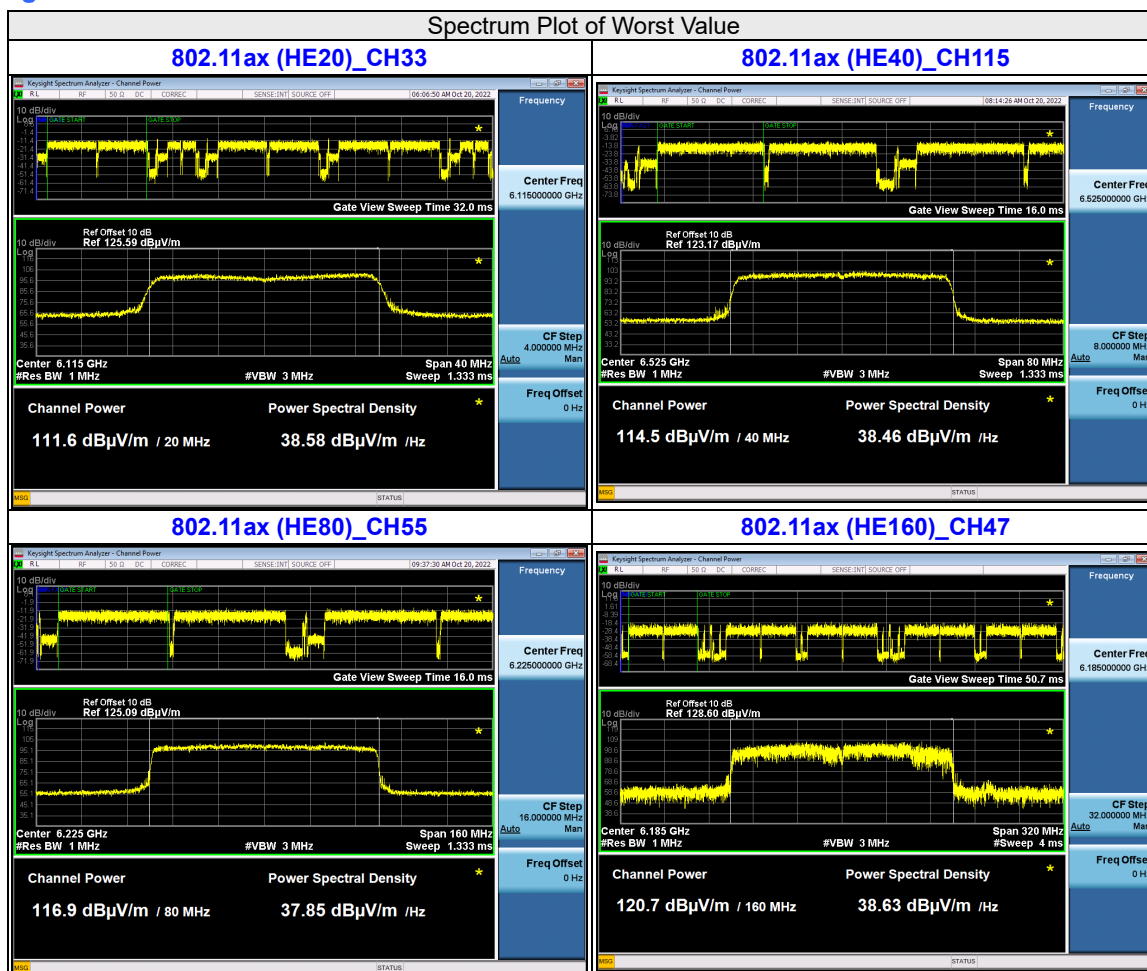




Beamforming MCS0NSS1



Beamforming MCS0NSS2



7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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802.11ax (HE20) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
33	6115	100.02	-95.23	4.79	5	Pass
61	6255	100.02	-95.23	4.79	5	Pass
93	6415	99.97	-95.23	4.74	5	Pass
97	6435	99.95	-95.23	4.72	5	Pass
105	6475	100.01	-95.23	4.78	5	Pass
113	6515	100.03	-95.23	4.80	5	Pass
117	6535	99.97	-95.23	4.74	5	Pass
153	6715	99.98	-95.23	4.75	5	Pass
181	6855	100.04	-95.23	4.81	5	Pass
185	6875	100.03	-95.23	4.80	5	Pass
213	7015	100.03	-95.23	4.80	5	Pass
229	7095	100.03	-95.23	4.80	5	Pass

802.11ax (HE20) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
33	6115	100.04	-95.23	4.81	5	Pass
61	6255	99.97	-95.23	4.74	5	Pass
93	6415	100.01	-95.23	4.78	5	Pass
97	6435	99.98	-95.23	4.75	5	Pass
105	6475	100.01	-95.23	4.78	5	Pass
113	6515	99.96	-95.23	4.73	5	Pass
117	6535	100.05	-95.23	4.82	5	Pass
153	6715	100.02	-95.23	4.79	5	Pass
181	6855	99.94	-95.23	4.71	5	Pass
185	6875	100.06	-95.23	4.83	5	Pass
213	7015	100.03	-95.23	4.80	5	Pass
229	7095	100.20	-95.23	4.97	5	Pass

802.11ax (HE40) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
35	6125	100.00	-95.23	4.77	5	Pass
59	6245	99.97	-95.23	4.74	5	Pass
91	6405	99.96	-95.23	4.73	5	Pass
99	6445	100.04	-95.23	4.81	5	Pass
107	6485	100.13	-95.23	4.90	5	Pass
115	6525	100.01	-95.23	4.78	5	Pass
123	6565	99.98	-95.23	4.75	5	Pass
155	6725	99.95	-95.23	4.72	5	Pass
179	6845	100.05	-95.23	4.82	5	Pass
187	6885	99.98	-95.23	4.75	5	Pass
211	7005	99.97	-95.23	4.74	5	Pass
227	7085	100.13	-95.23	4.90	5	Pass

802.11ax (HE40) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
35	6125	100.06	-95.23	4.83	5	Pass
59	6245	100.04	-95.23	4.81	5	Pass
91	6405	100.12	-95.23	4.89	5	Pass
99	6445	100.09	-95.23	4.86	5	Pass
107	6485	100.17	-95.23	4.94	5	Pass
115	6525	100.07	-95.23	4.84	5	Pass
123	6565	100.03	-95.23	4.80	5	Pass
155	6725	99.98	-95.23	4.75	5	Pass
179	6845	99.94	-95.23	4.71	5	Pass
187	6885	100.04	-95.23	4.81	5	Pass
211	7005	99.96	-95.23	4.73	5	Pass
227	7085	100.02	-95.23	4.79	5	Pass

802.11ax (HE80) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
39	6145	100.02	-95.23	4.79	5	Pass
55	6225	99.95	-95.23	4.72	5	Pass
87	6385	99.98	-95.23	4.75	5	Pass
103	6465	99.97	-95.23	4.74	5	Pass
119	6545	99.95	-95.23	4.72	5	Pass
135	6625	99.94	-95.23	4.71	5	Pass
151	6705	99.97	-95.23	4.74	5	Pass
167	6785	100.04	-95.23	4.81	5	Pass
183	6865	100.03	-95.23	4.80	5	Pass
199	6945	99.94	-95.23	4.71	5	Pass
215	7025	99.99	-95.23	4.76	5	Pass

802.11ax (HE80) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
39	6145	100.21	-95.23	4.98	5	Pass
55	6225	100.12	-95.23	4.89	5	Pass
87	6385	100.06	-95.23	4.83	5	Pass
103	6465	100.08	-95.23	4.85	5	Pass
119	6545	99.99	-95.23	4.76	5	Pass
135	6625	100.02	-95.23	4.79	5	Pass
151	6705	99.96	-95.23	4.73	5	Pass
167	6785	100.11	-95.23	4.88	5	Pass
183	6865	99.99	-95.23	4.76	5	Pass
199	6945	100.02	-95.23	4.79	5	Pass
215	7025	99.99	-95.23	4.76	5	Pass

802.11ax (HE160) CDD MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
47	6185	100.17	-95.23	4.94	5	Pass
79	6345	100.05	-95.23	4.82	5	Pass
111	6505	100.01	-95.23	4.78	5	Pass
143	6665	99.99	-95.23	4.76	5	Pass
175	6825	99.96	-95.23	4.73	5	Pass
207	6985	100.03	-95.23	4.80	5	Pass

802.11ax (HE160) CDD MCS0NSS4

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
47	6185	100.08	-95.23	4.85	5	Pass
79	6345	100.02	-95.23	4.79	5	Pass
111	6505	99.99	-95.23	4.76	5	Pass
143	6665	100.12	-95.23	4.89	5	Pass
175	6825	100.19	-95.23	4.96	5	Pass
207	6985	100.19	-95.23	4.96	5	Pass

802.11ax (HE20) Beamforming MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
33	6115	100.12	-95.23	4.89	5	Pass
61	6255	100.10	-95.23	4.87	5	Pass
93	6415	100.12	-95.23	4.89	5	Pass
97	6435	100.15	-95.23	4.92	5	Pass
105	6475	100.13	-95.23	4.90	5	Pass
113	6515	100.14	-95.23	4.91	5	Pass
117	6535	100.15	-95.23	4.92	5	Pass
153	6715	100.11	-95.23	4.88	5	Pass
181	6855	100.14	-95.23	4.91	5	Pass
185	6875	100.11	-95.23	4.88	5	Pass
213	7015	100.11	-95.23	4.88	5	Pass
229	7095	100.14	-95.23	4.91	5	Pass

802.11ax (HE20) Beamforming MCS0NSS2

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
33	6115	100.11	-95.23	4.88	5	Pass
61	6255	99.98	-95.23	4.75	5	Pass
93	6415	99.96	-95.23	4.73	5	Pass
97	6435	99.99	-95.23	4.76	5	Pass
105	6475	100.00	-95.23	4.77	5	Pass
113	6515	100.01	-95.23	4.78	5	Pass
117	6535	100.13	-95.23	4.90	5	Pass
153	6715	100.07	-95.23	4.84	5	Pass
181	6855	100.05	-95.23	4.82	5	Pass
185	6875	100.01	-95.23	4.78	5	Pass
213	7015	100.11	-95.23	4.88	5	Pass
229	7095	100.13	-95.23	4.90	5	Pass

802.11ax (HE40) Beamforming MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
35	6125	99.93	-95.23	4.70	5	Pass
59	6245	100.03	-95.23	4.80	5	Pass
91	6405	100.01	-95.23	4.78	5	Pass
99	6445	100.01	-95.23	4.78	5	Pass
107	6485	100.07	-95.23	4.84	5	Pass
115	6525	100.11	-95.23	4.88	5	Pass
123	6565	100.05	-95.23	4.82	5	Pass
155	6725	100.06	-95.23	4.83	5	Pass
179	6845	100.10	-95.23	4.87	5	Pass
187	6885	100.06	-95.23	4.83	5	Pass
211	7005	100.09	-95.23	4.86	5	Pass
227	7085	100.07	-95.23	4.84	5	Pass

802.11ax (HE40) Beamforming MCS0NSS2

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
35	6125	100.11	-95.23	4.88	5	Pass
59	6245	100.04	-95.23	4.81	5	Pass
91	6405	100.11	-95.23	4.88	5	Pass
99	6445	99.98	-95.23	4.75	5	Pass
107	6485	100.01	-95.23	4.78	5	Pass
115	6525	100.15	-95.23	4.92	5	Pass
123	6565	99.99	-95.23	4.76	5	Pass
155	6725	100.10	-95.23	4.87	5	Pass
179	6845	100.10	-95.23	4.87	5	Pass
187	6885	100.00	-95.23	4.77	5	Pass
211	7005	100.10	-95.23	4.87	5	Pass
227	7085	100.10	-95.23	4.87	5	Pass

802.11ax (HE80) Beamforming MCS0NSS1

Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
39	6145	100.13	-95.23	4.90	5	Pass
55	6225	100.03	-95.23	4.80	5	Pass
87	6385	100.02	-95.23	4.79	5	Pass
103	6465	100.10	-95.23	4.87	5	Pass
119	6545	100.15	-95.23	4.92	5	Pass
135	6625	100.08	-95.23	4.85	5	Pass
151	6705	100.12	-95.23	4.89	5	Pass
167	6785	99.98	-95.23	4.75	5	Pass
183	6865	100.08	-95.23	4.85	5	Pass
199	6945	99.98	-95.23	4.75	5	Pass
215	7025	100.12	-95.23	4.89	5	Pass

802.11ax (HE80) Beamforming MCS0NSS2

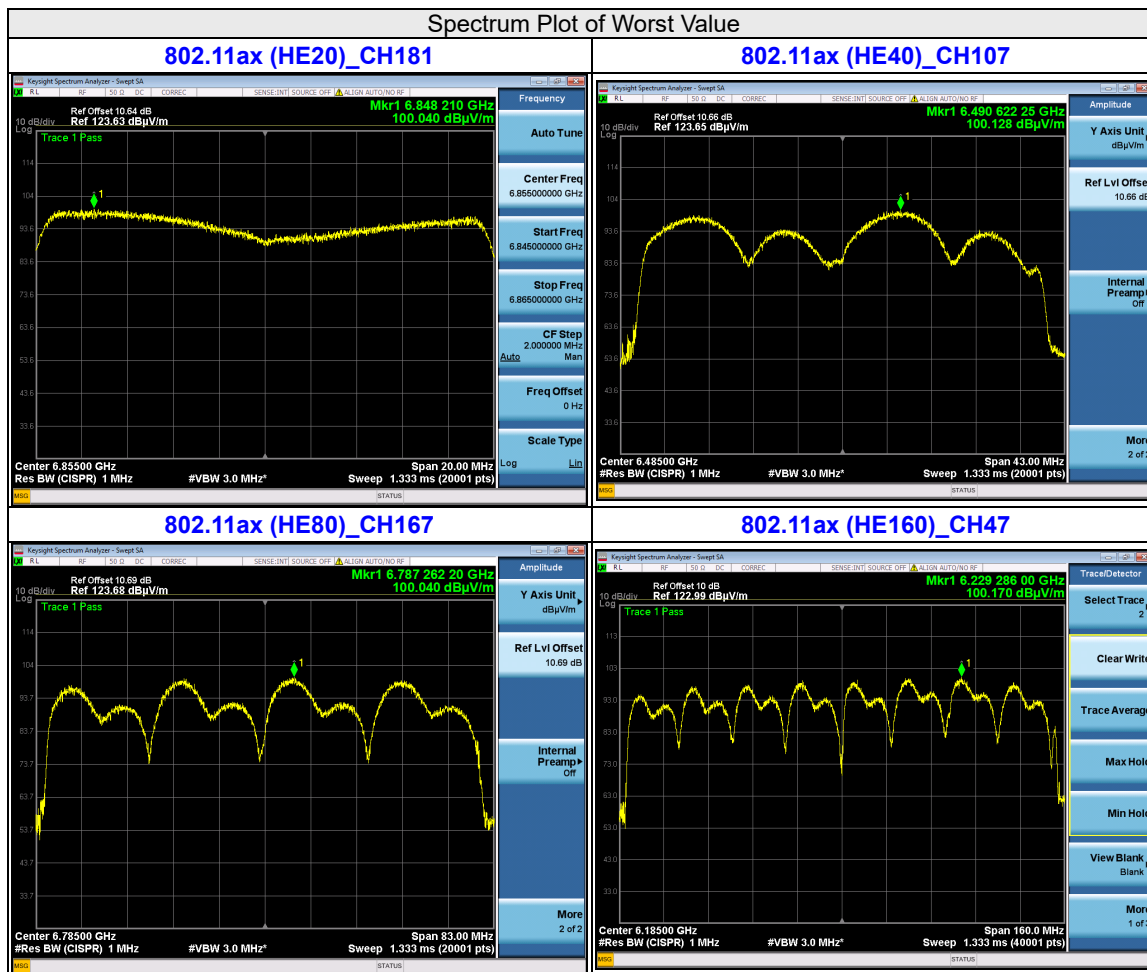
Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
39	6145	100.14	-95.23	4.91	5	Pass
55	6225	100.10	-95.23	4.87	5	Pass
87	6385	100.08	-95.23	4.85	5	Pass
103	6465	100.08	-95.23	4.85	5	Pass
119	6545	100.10	-95.23	4.87	5	Pass
135	6625	100.05	-95.23	4.82	5	Pass
151	6705	100.02	-95.23	4.79	5	Pass
167	6785	100.02	-95.23	4.79	5	Pass
183	6865	100.02	-95.23	4.79	5	Pass
199	6945	100.04	-95.23	4.81	5	Pass
215	7025	100.15	-95.23	4.92	5	Pass

802.11ax (HE160) Beamforming MCS0NSS1

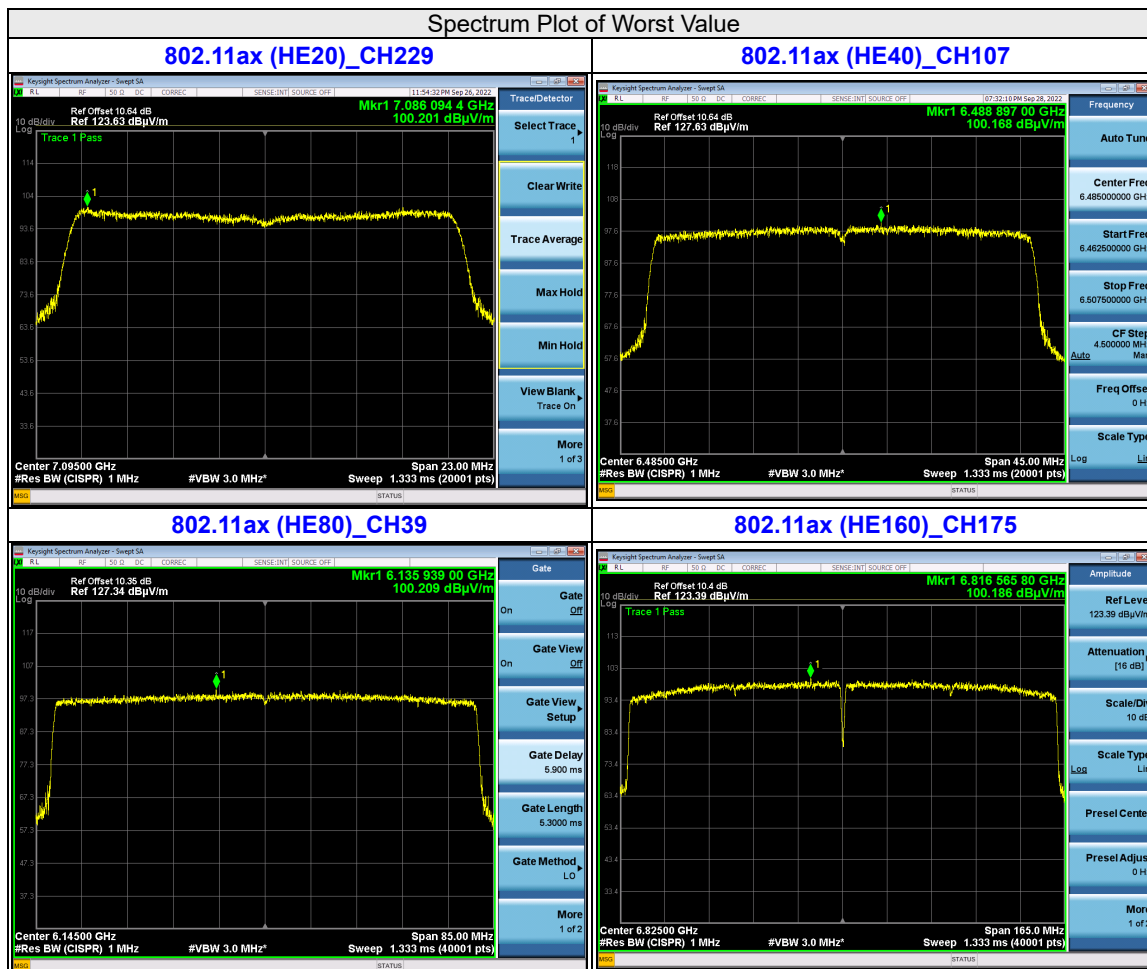
Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
47	6185	100.14	-95.23	4.91	5	Pass
79	6345	100.08	-95.23	4.85	5	Pass
111	6505	100.06	-95.23	4.83	5	Pass
143	6665	100.11	-95.23	4.88	5	Pass
175	6825	100.09	-95.23	4.86	5	Pass
207	6985	100.16	-95.23	4.93	5	Pass

802.11ax (HE160) Beamforming MCS0NSS2

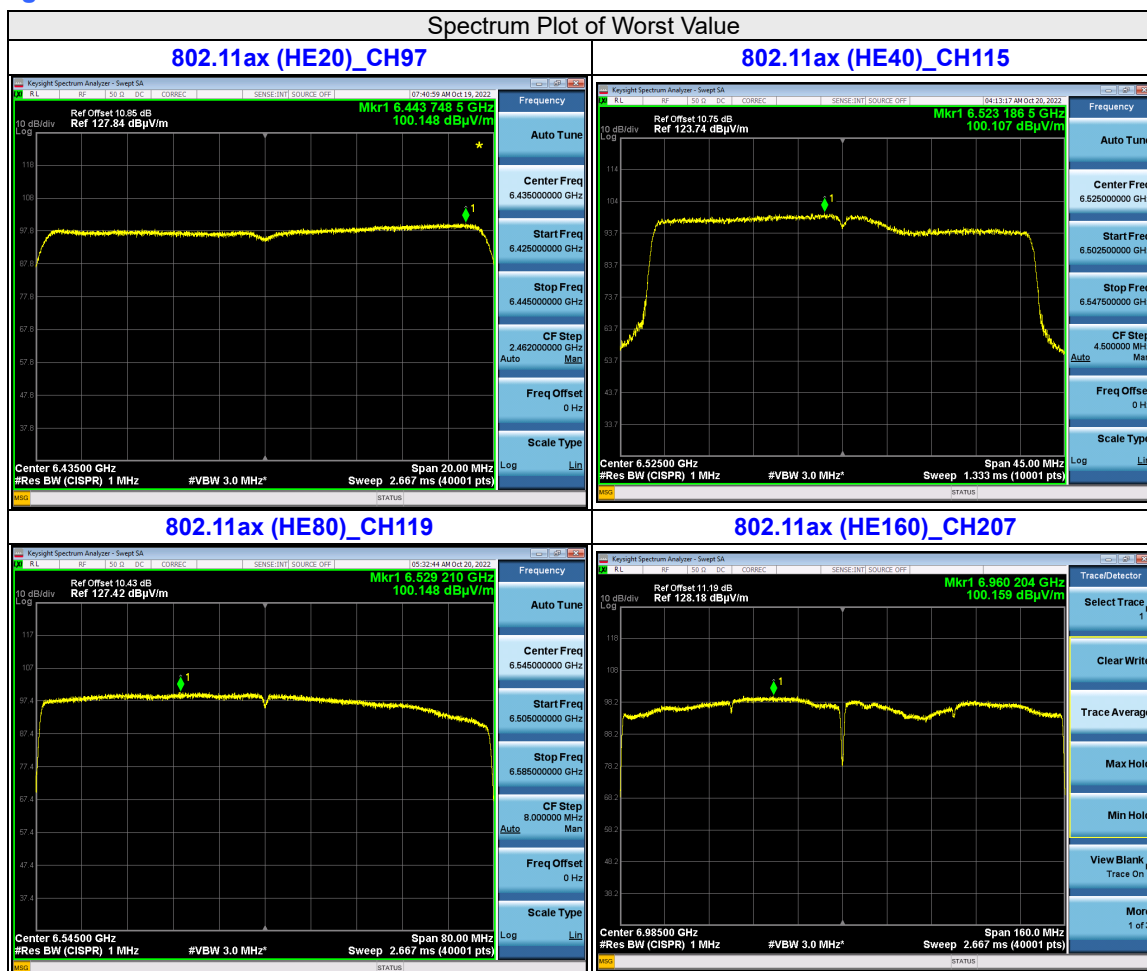
Chan.	Chan. Freq. (MHz)	Field Strength (dBuV/m)	Correction Factor (dB)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
47	6185	100.06	-95.23	4.83	5	Pass
79	6345	99.99	-95.23	4.76	5	Pass
111	6505	100.05	-95.23	4.82	5	Pass
143	6665	100.08	-95.23	4.85	5	Pass
175	6825	100.13	-95.23	4.90	5	Pass
207	6985	100.09	-95.23	4.86	5	Pass



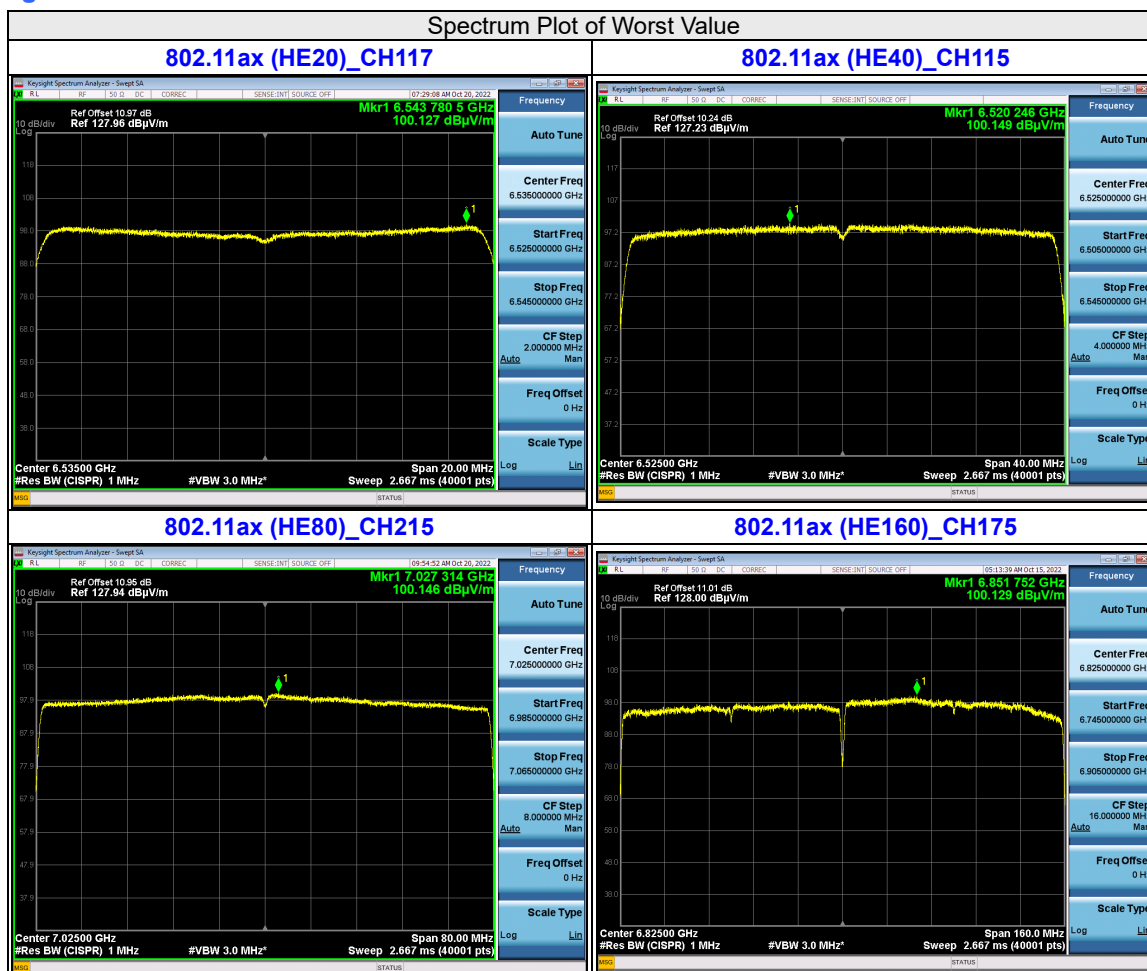
CDD MCS0NSS4



Beamforming MCS0NSS1



Beamforming MCS0NSS2



7.3 Emission Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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802.11ax (HE20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
33	6115	22.29	23.22	22.42	22.43
61	6255	22.43	22.66	22.43	22.45
93	6415	22.54	22.76	22.59	22.63
97	6435	22.30	22.88	22.43	22.38
105	6475	22.57	22.78	22.30	22.67
113	6515	22.34	22.57	22.51	22.27
117	6535	22.54	22.62	22.42	22.67
153	6715	22.47	22.76	22.68	22.61
181	6855	22.18	22.75	22.76	22.64
185	6875	22.33	22.41	22.49	22.57
213	7015	22.28	22.45	22.41	22.15
229	7095	22.43	22.49	22.50	22.69

802.11ax (HE40)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
35	6125	41.85	41.75	41.85	41.62
59	6245	41.78	41.52	41.68	41.65
91	6405	41.78	41.82	41.78	41.81
99	6445	41.79	41.84	41.59	41.61
107	6485	41.60	41.69	41.79	42.07
115	6525	41.99	41.80	41.76	41.66
123	6565	41.71	41.50	41.70	41.92
155	6725	41.66	41.59	41.87	41.75
179	6845	41.67	41.51	41.64	41.67
187	6885	41.80	41.88	41.68	41.68
211	7005	41.67	41.65	41.54	41.52
227	7085	41.64	41.59	41.56	41.79

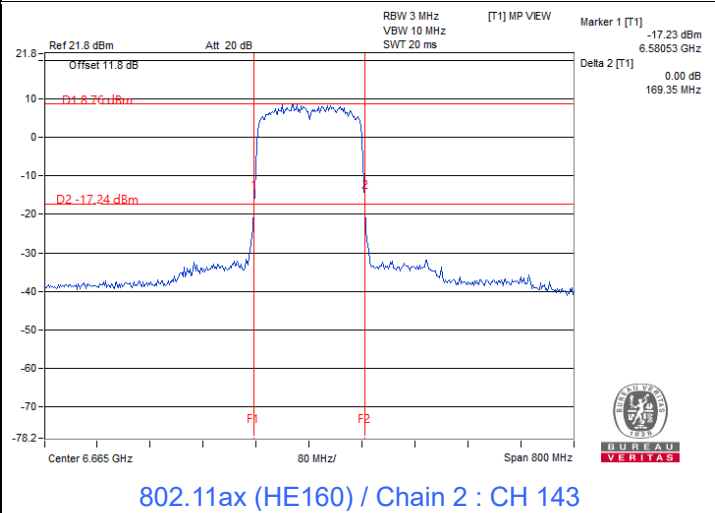
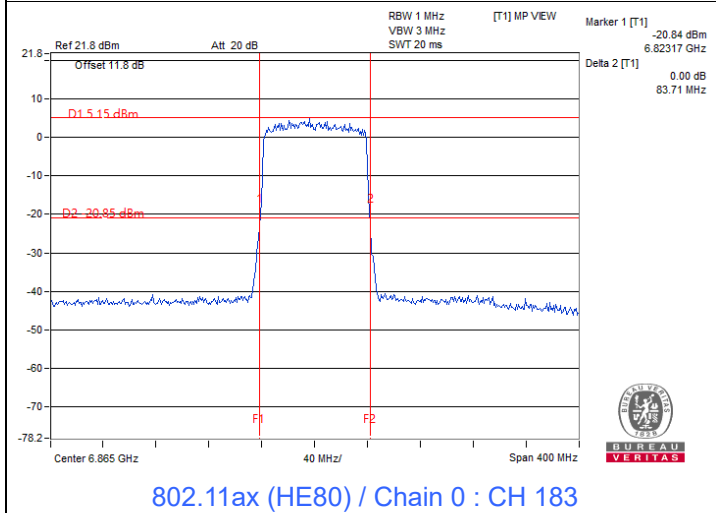
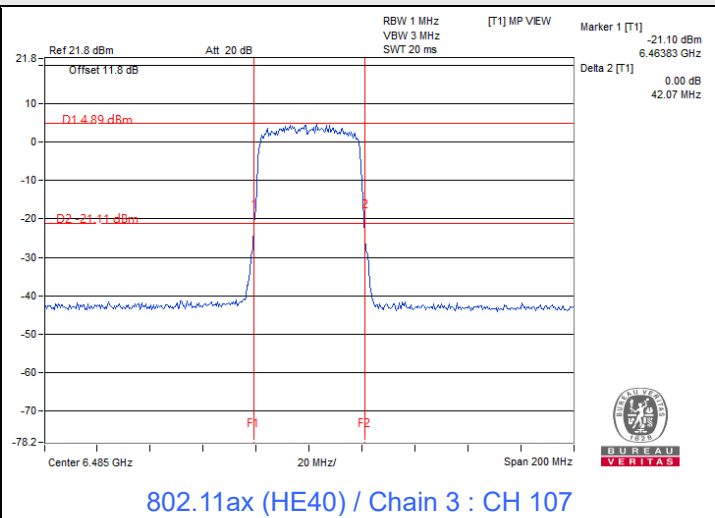
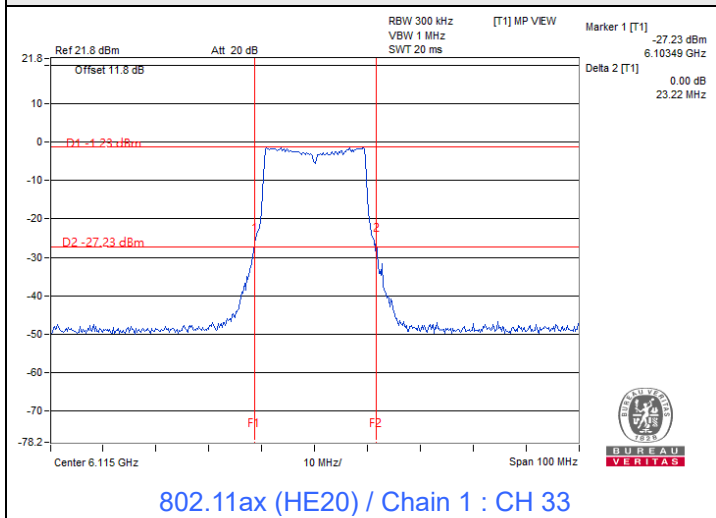
802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
39	6145	83.47	83.48	83.05	83.53
55	6225	82.97	83.35	83.18	83.47
87	6385	83.36	83.07	83.28	83.00
103	6465	83.44	83.25	83.42	82.78
119	6545	83.22	82.97	83.21	83.39
135	6625	83.31	83.07	82.84	83.13
151	6705	83.28	82.79	83.35	83.01
167	6785	82.81	83.16	83.37	82.88
183	6865	83.71	83.18	83.59	83.19
199	6945	83.69	83.25	83.11	83.08
215	7025	83.35	82.49	83.59	83.05

802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
47	6185	168.16	168.26	168.95	167.90
79	6345	168.06	168.25	168.95	168.40
111	6505	168.76	169.10	167.96	168.22
143	6665	168.24	167.49	169.35	168.84
175	6825	168.35	168.00	168.01	168.70
207	6985	168.92	168.40	168.57	167.65

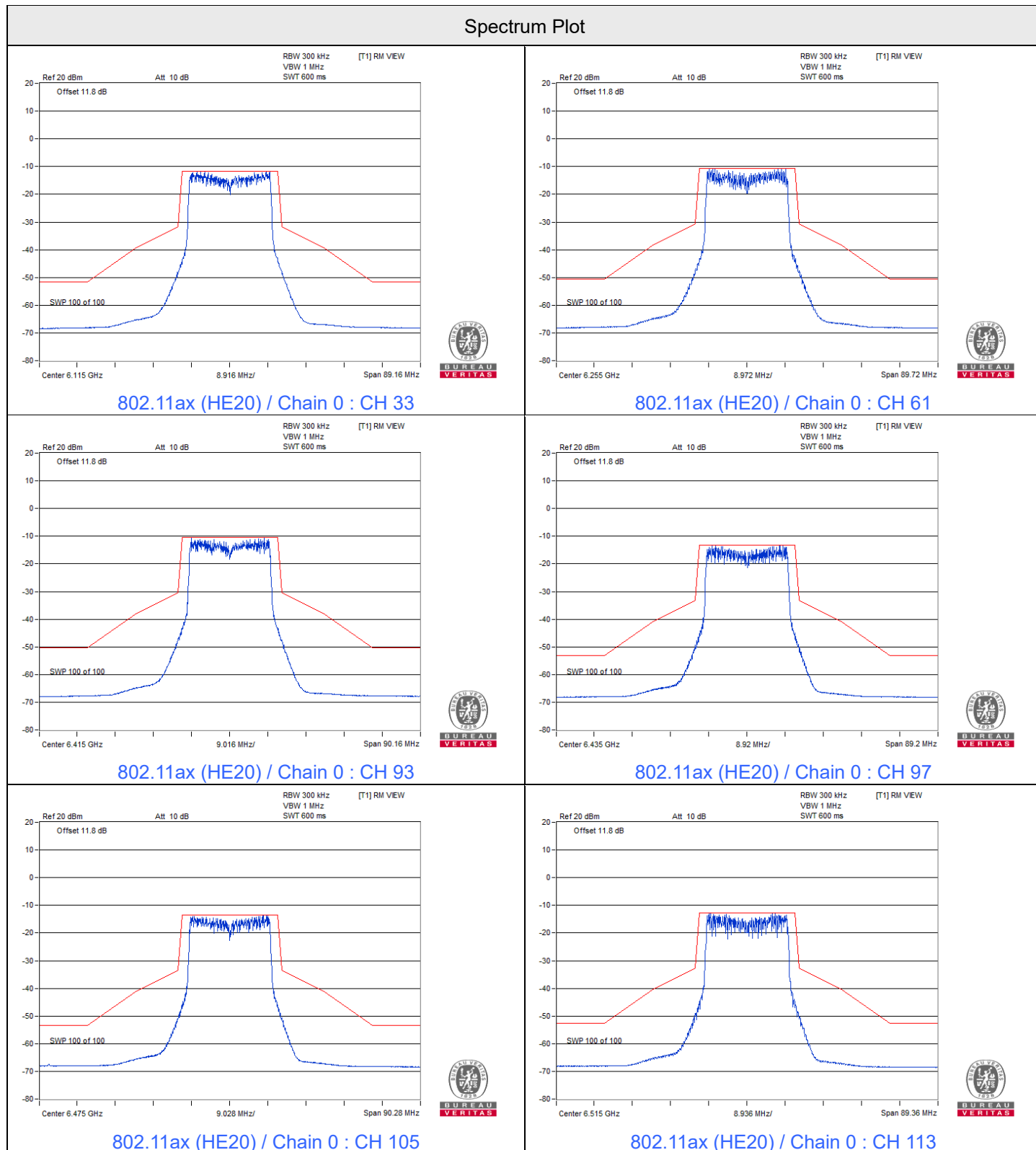
Spectrum Plot of Maximum Value



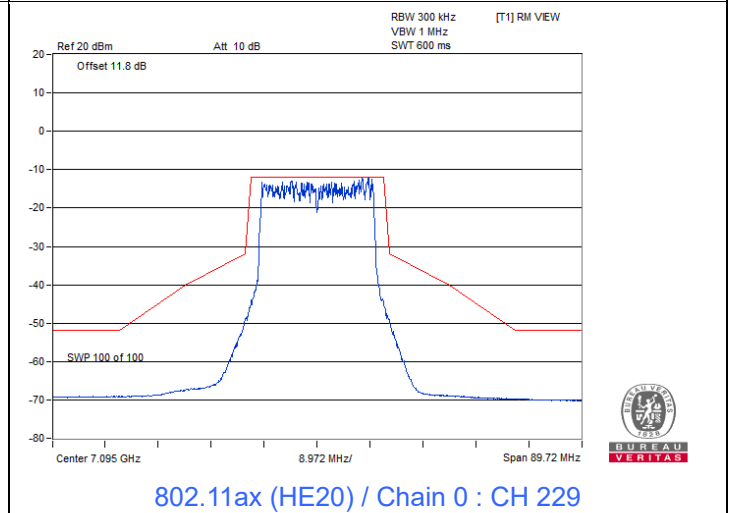
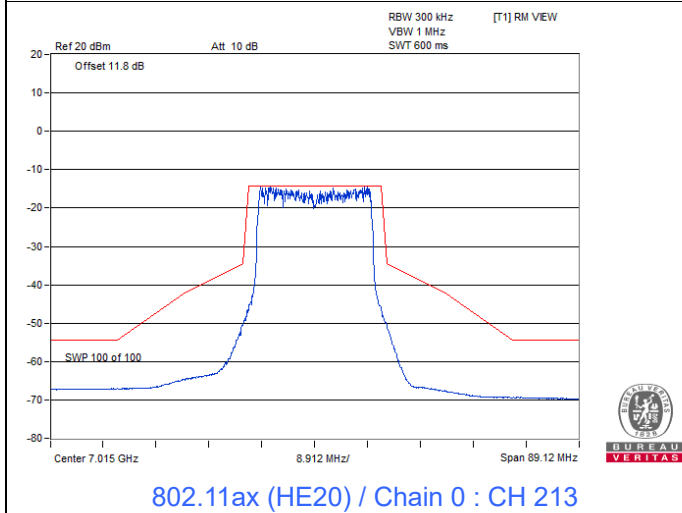
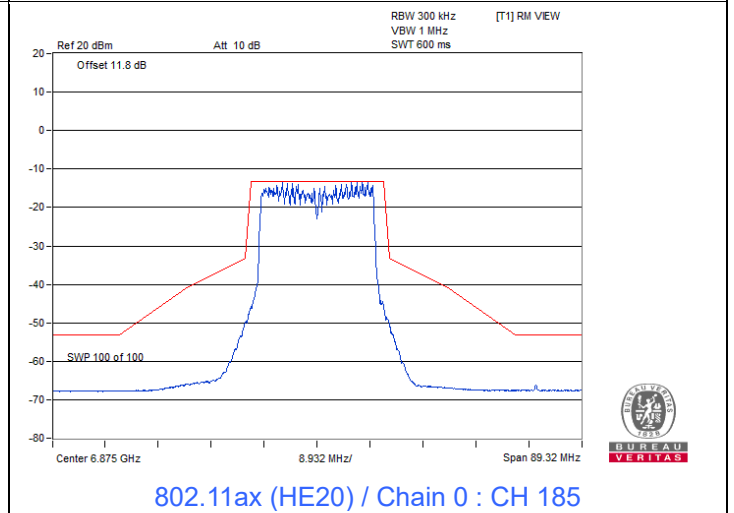
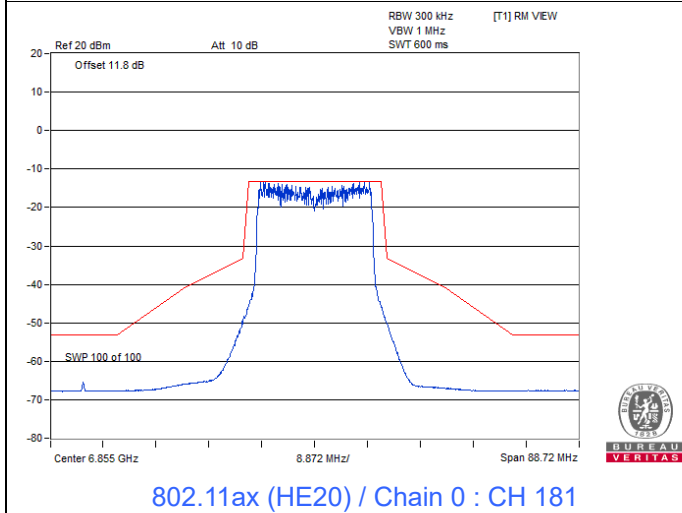
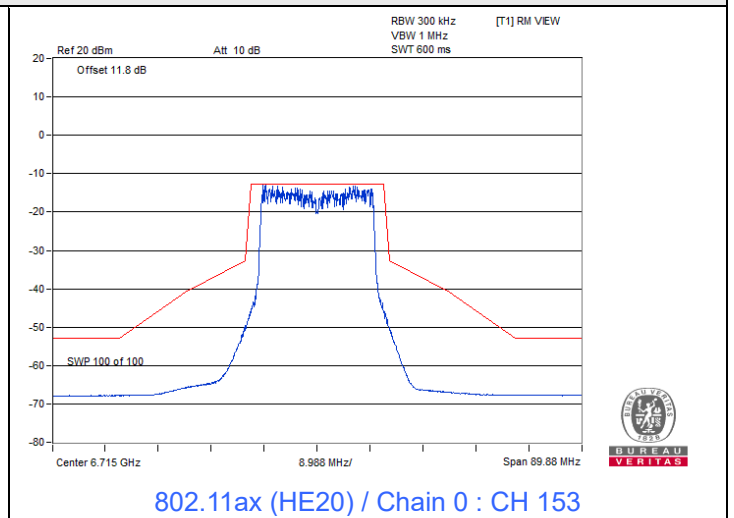
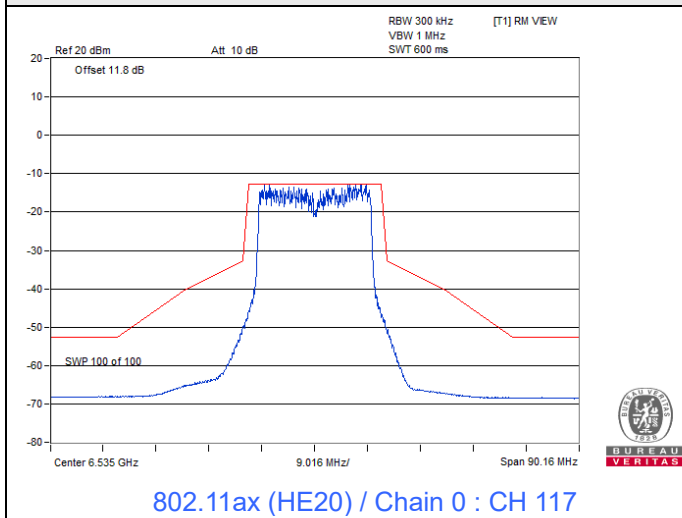
7.4 In-Band Emission Mask

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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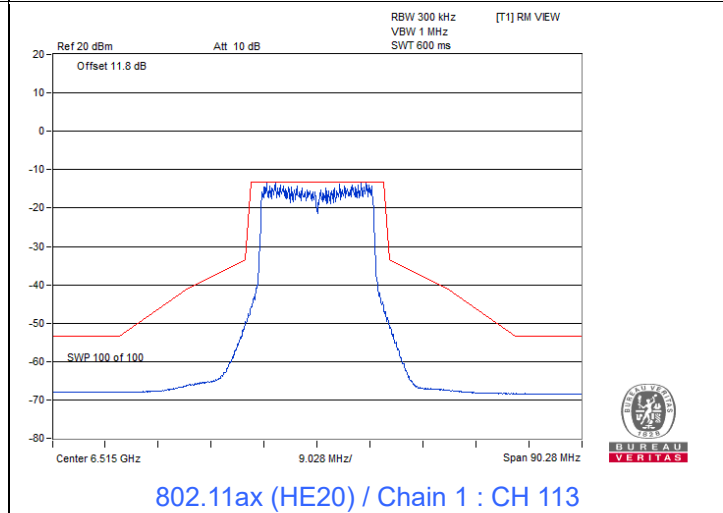
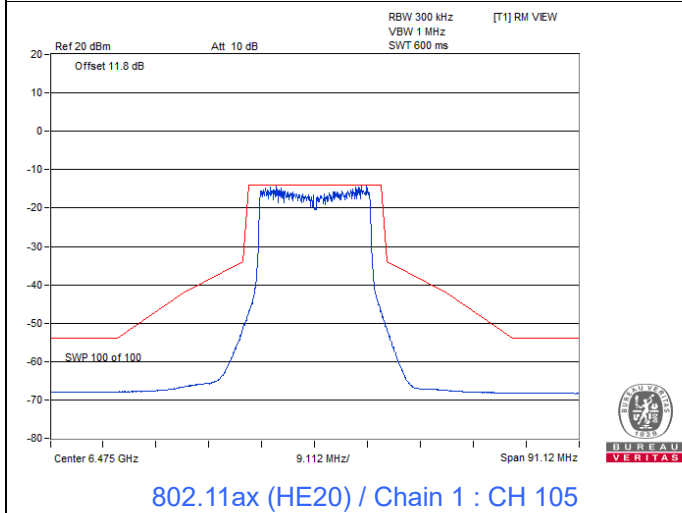
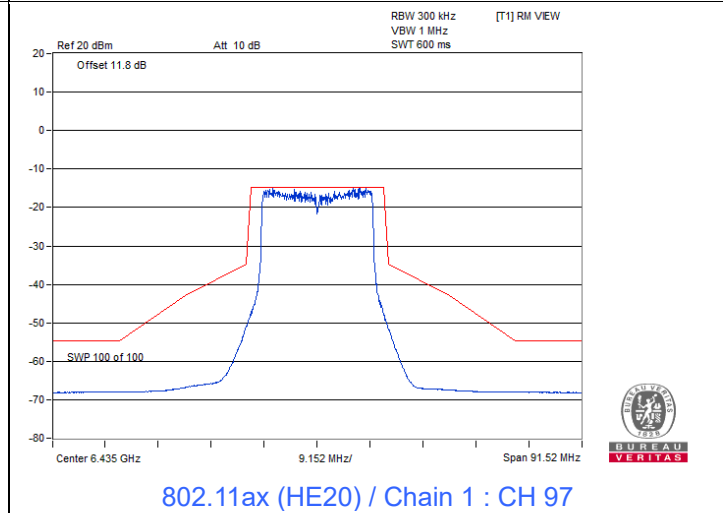
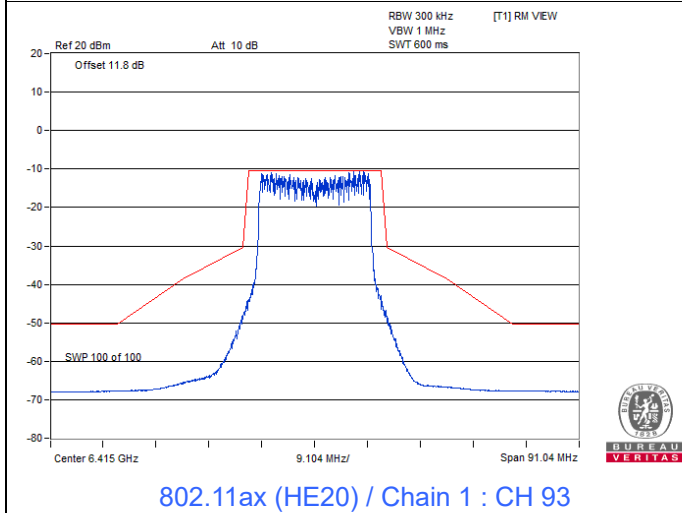
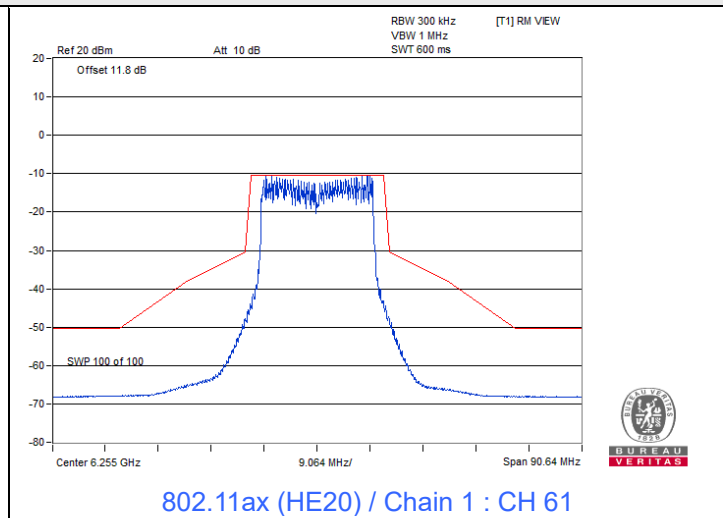
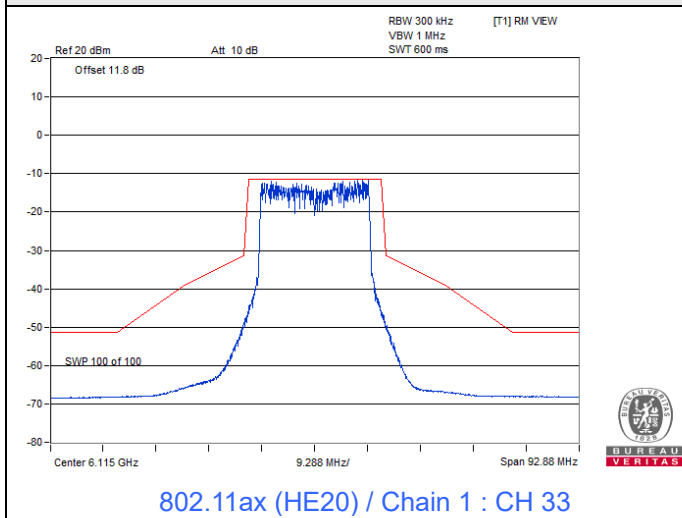
802.11ax (HE20)



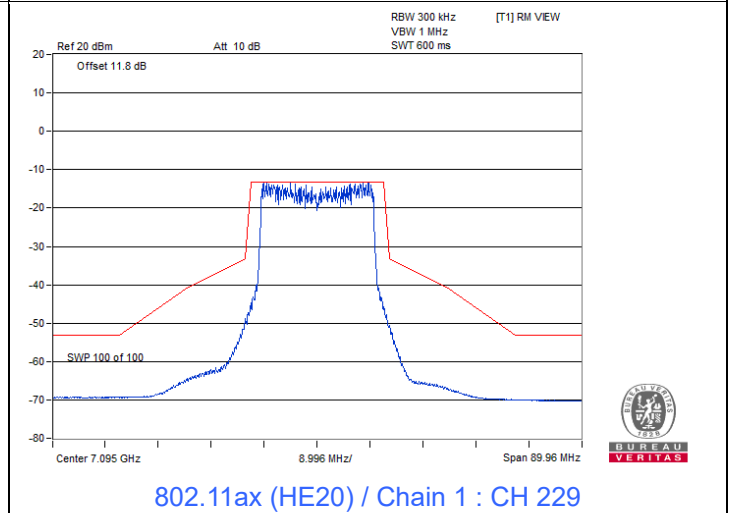
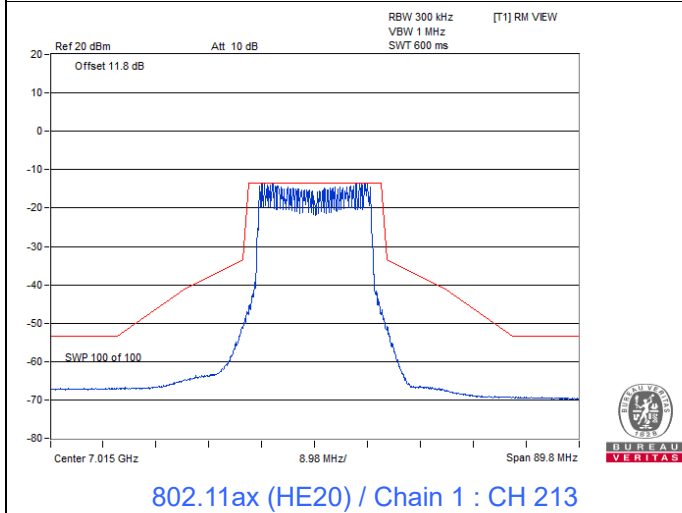
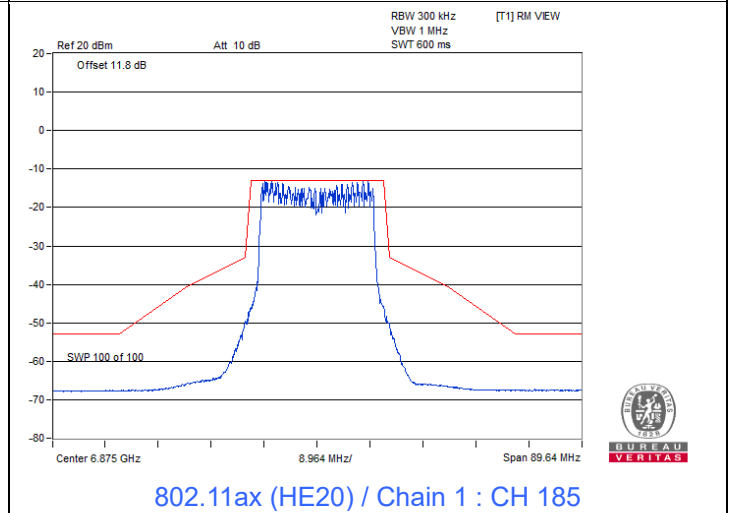
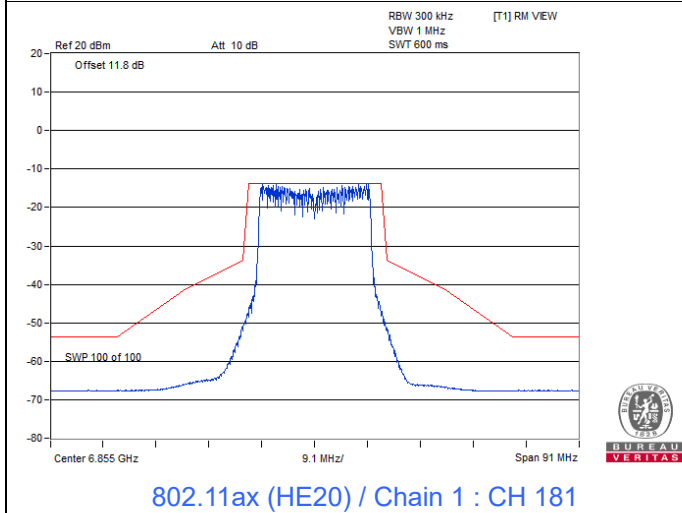
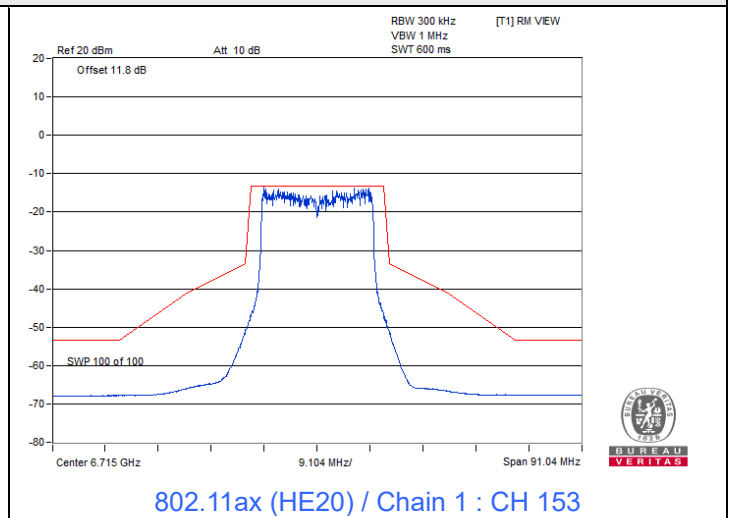
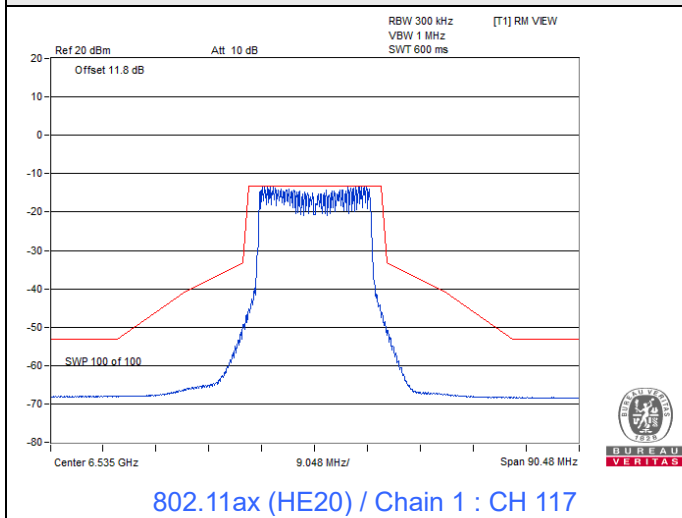
Spectrum Plot



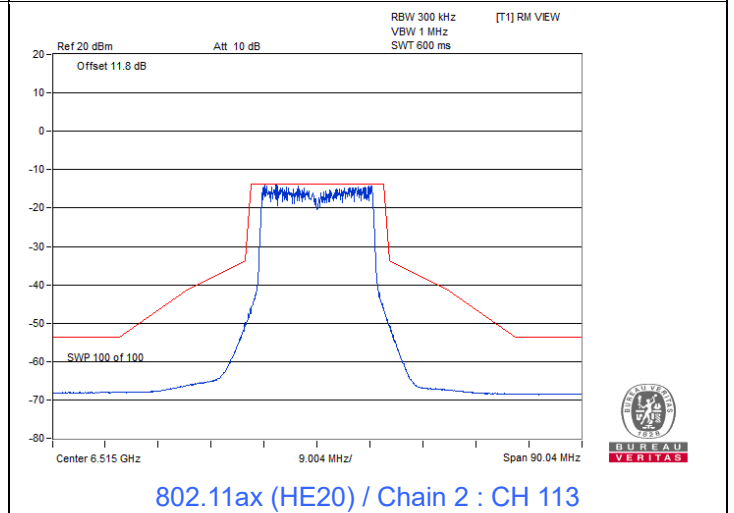
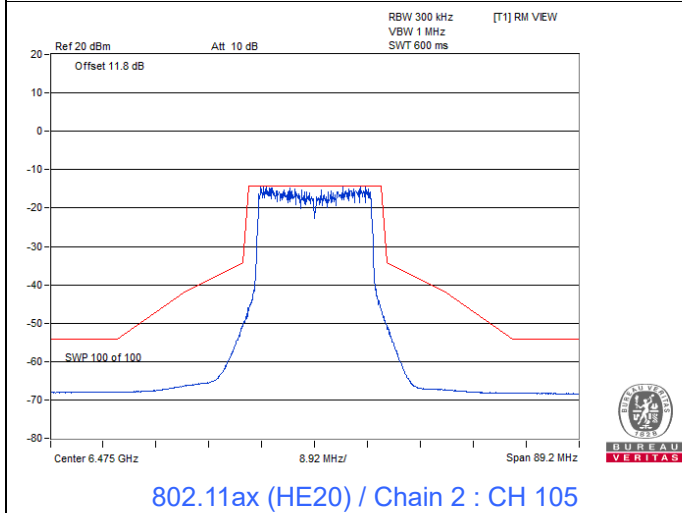
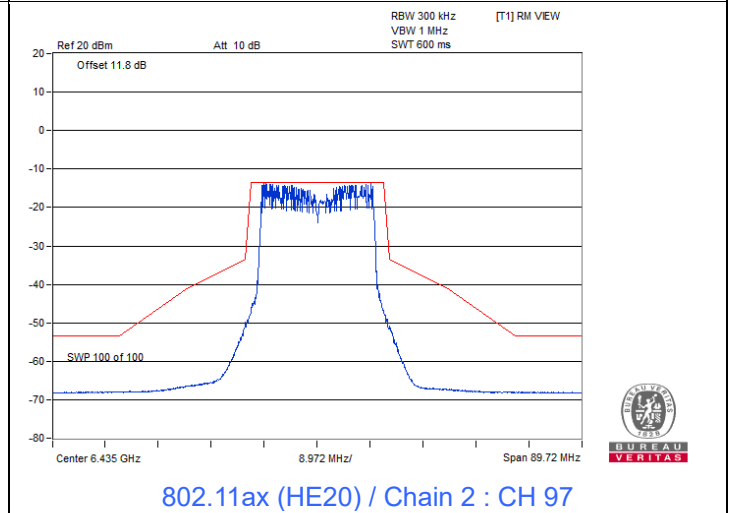
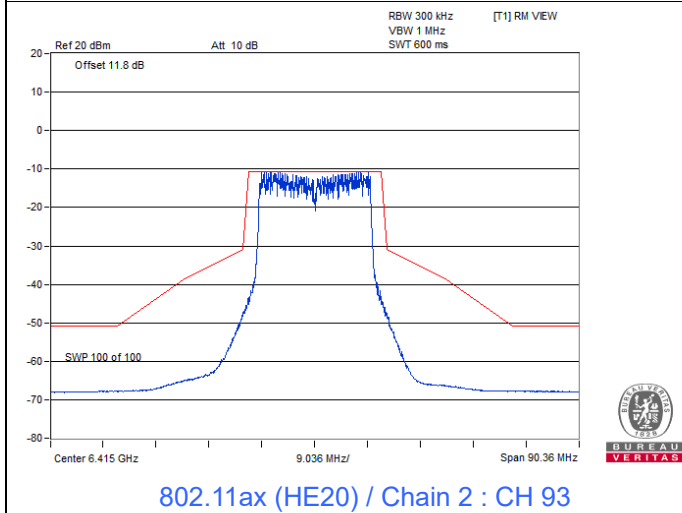
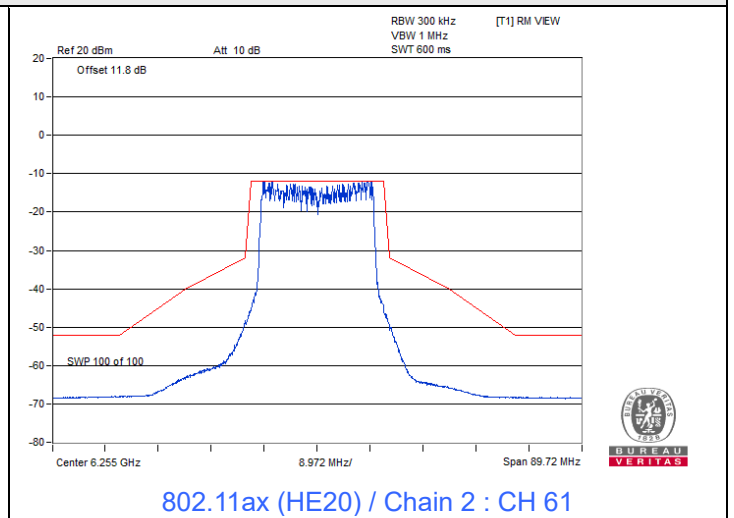
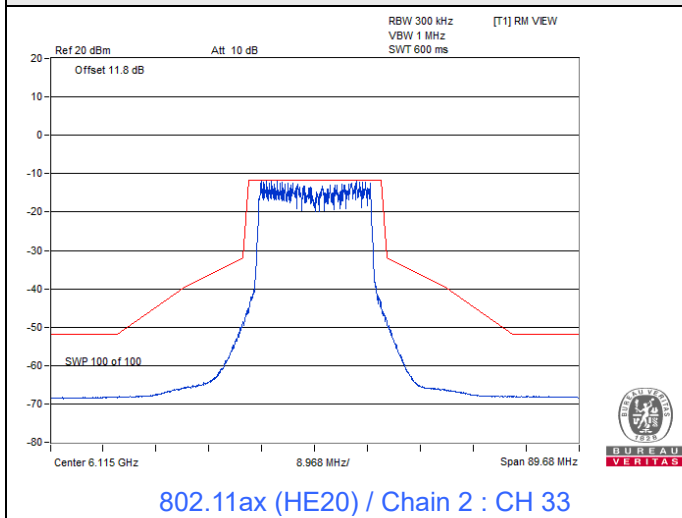
Spectrum Plot



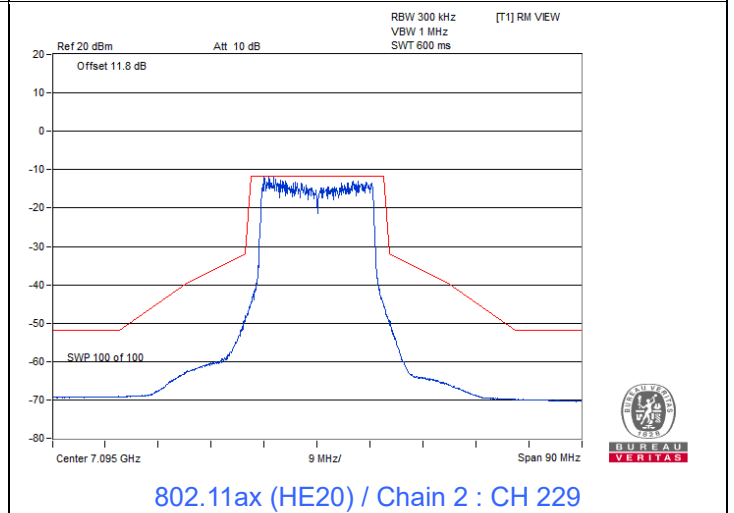
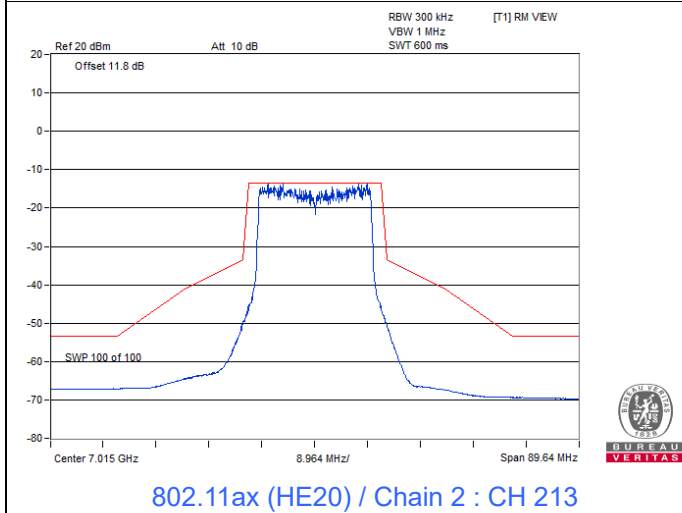
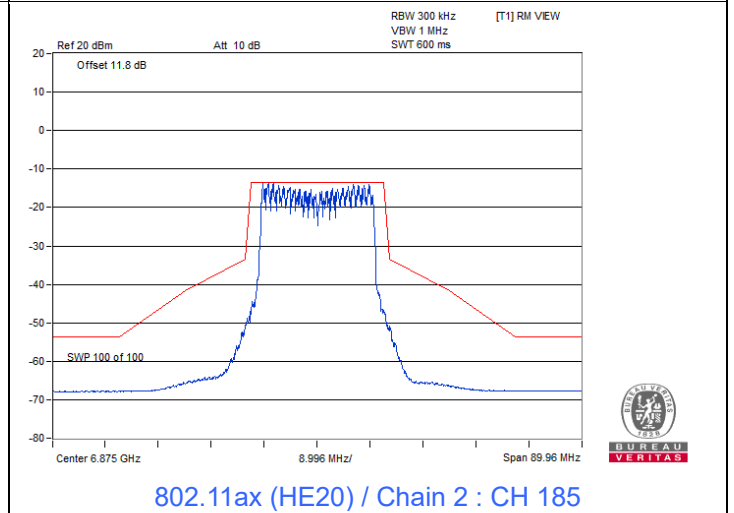
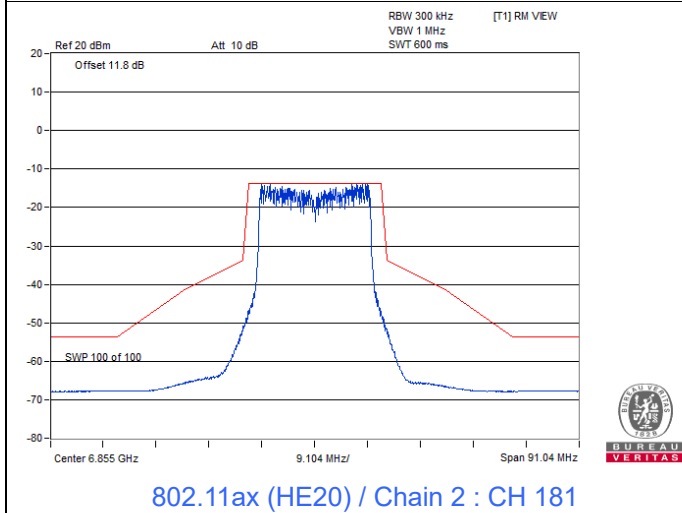
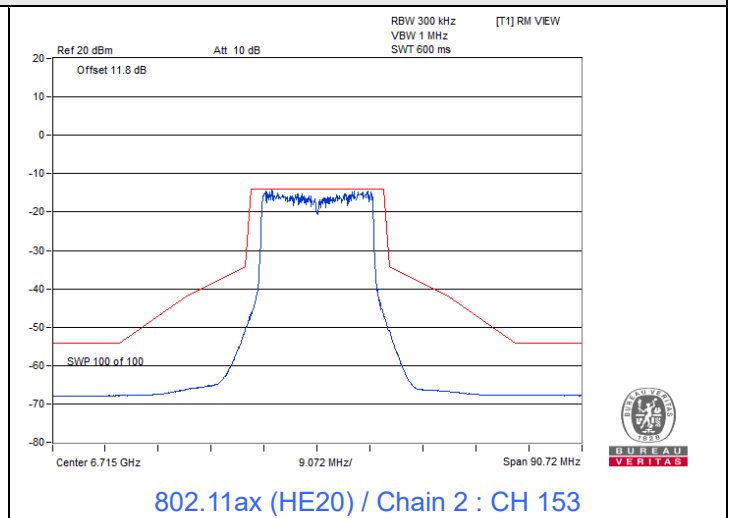
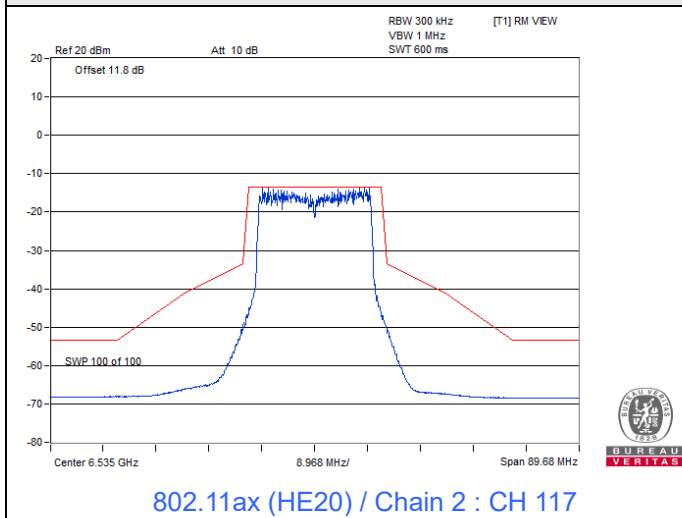
Spectrum Plot



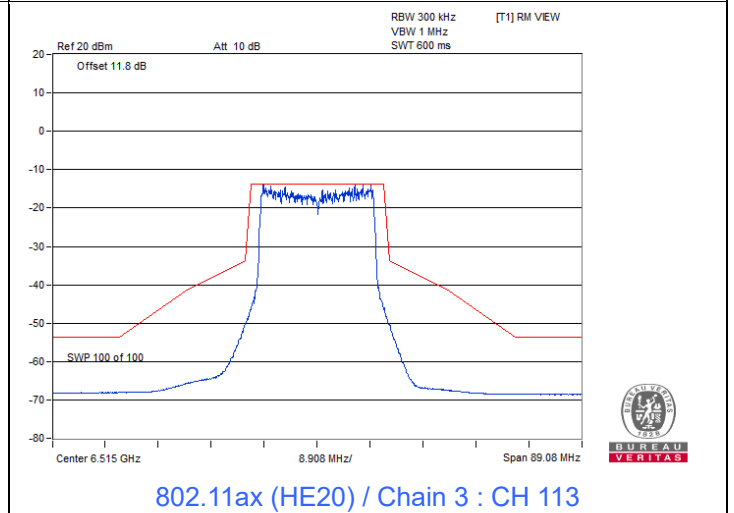
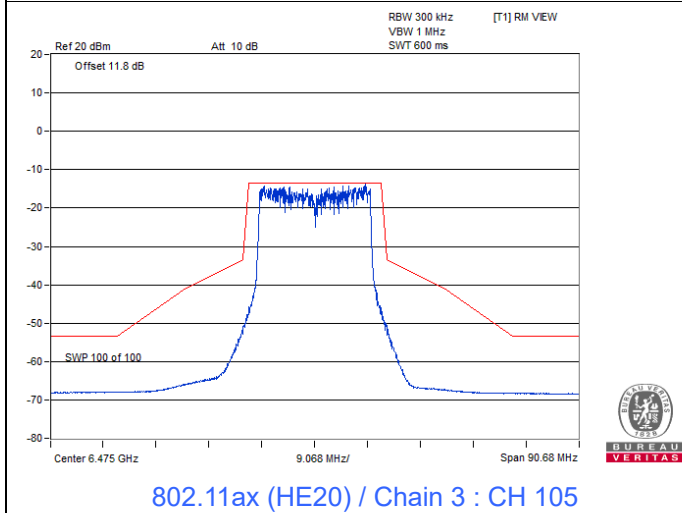
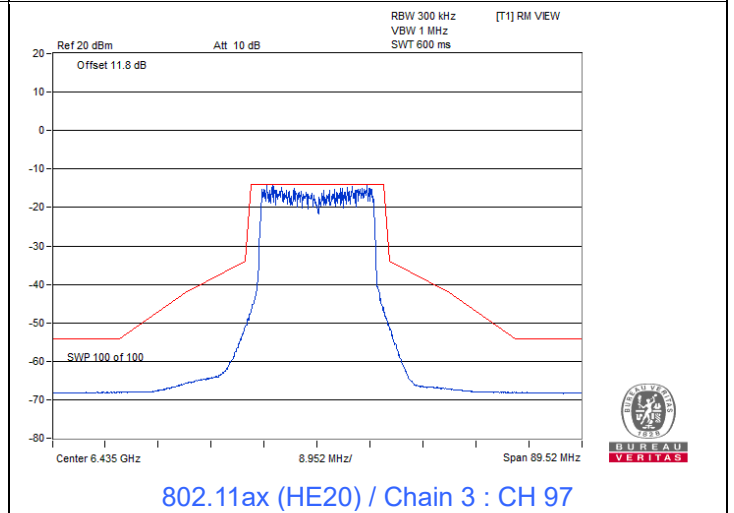
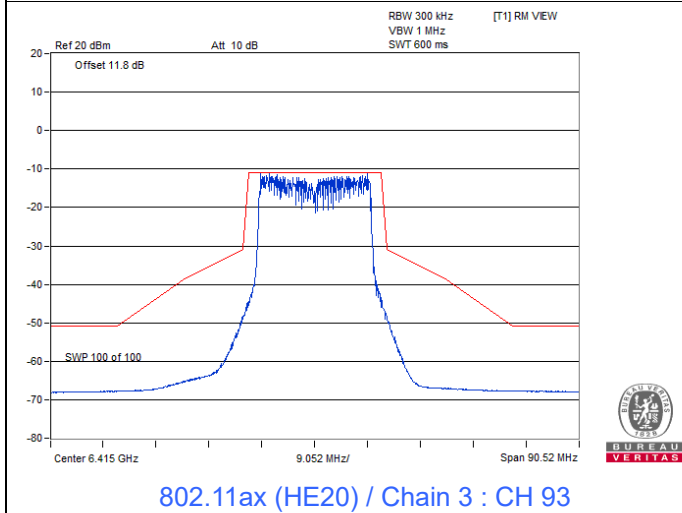
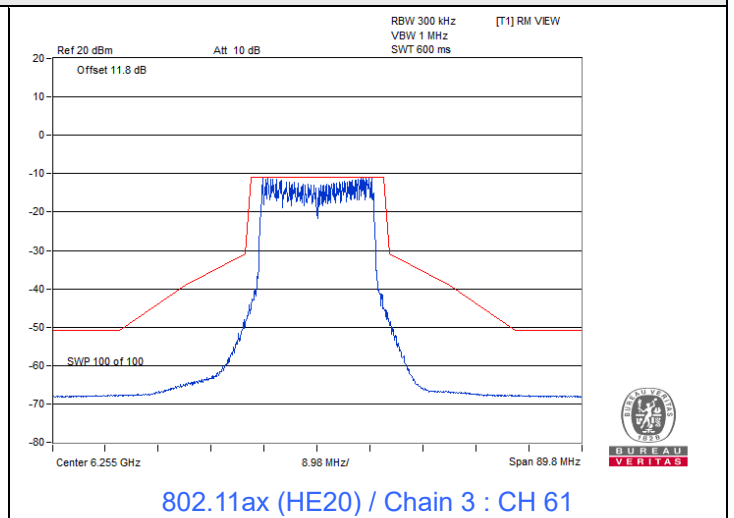
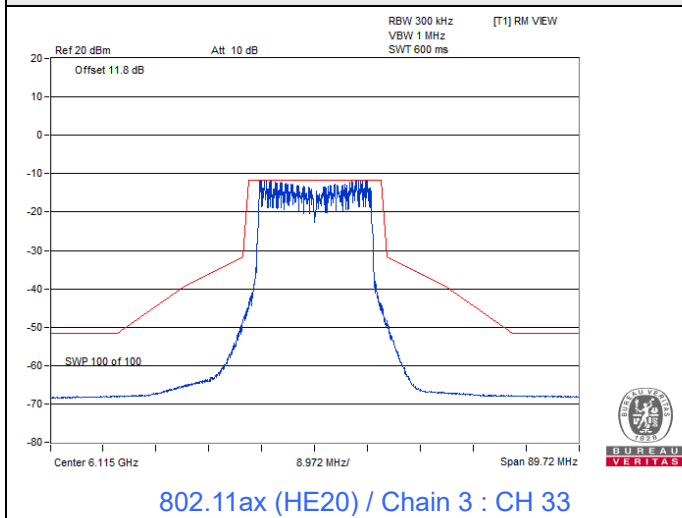
Spectrum Plot



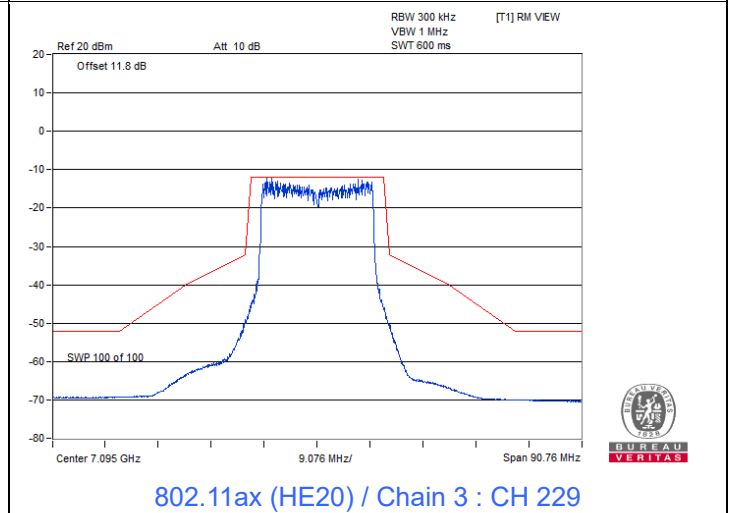
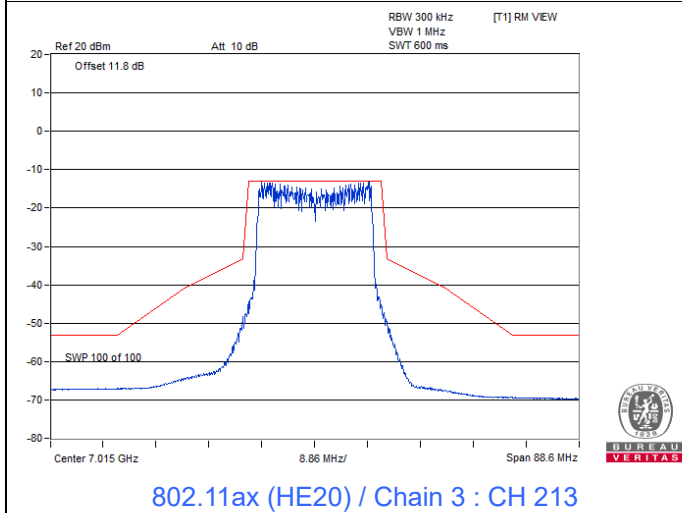
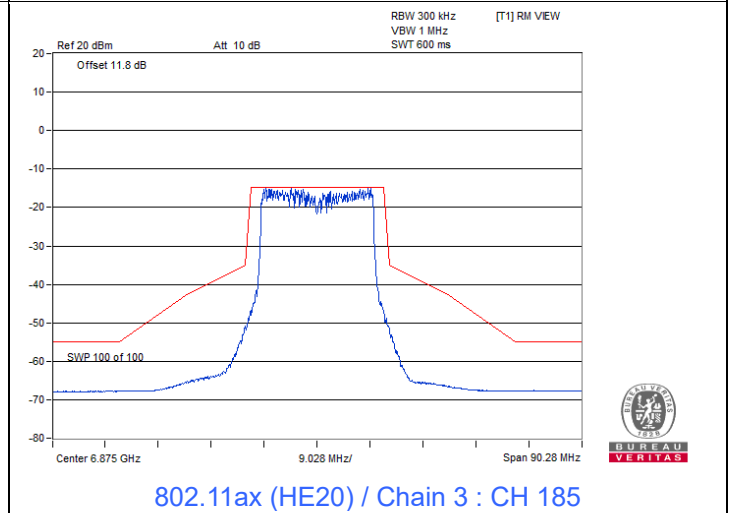
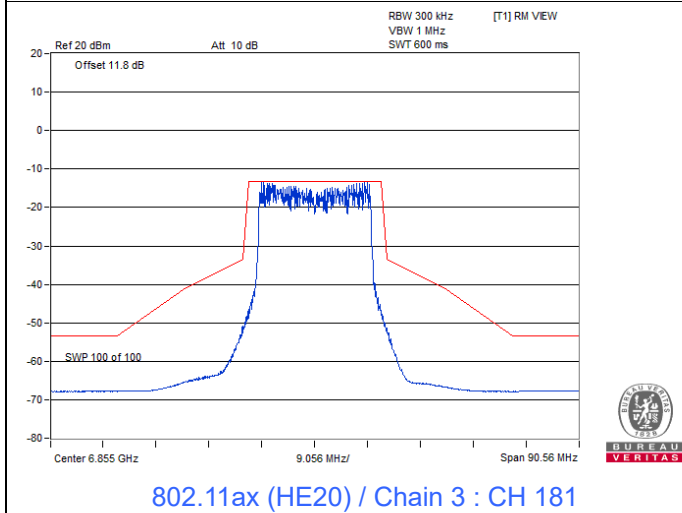
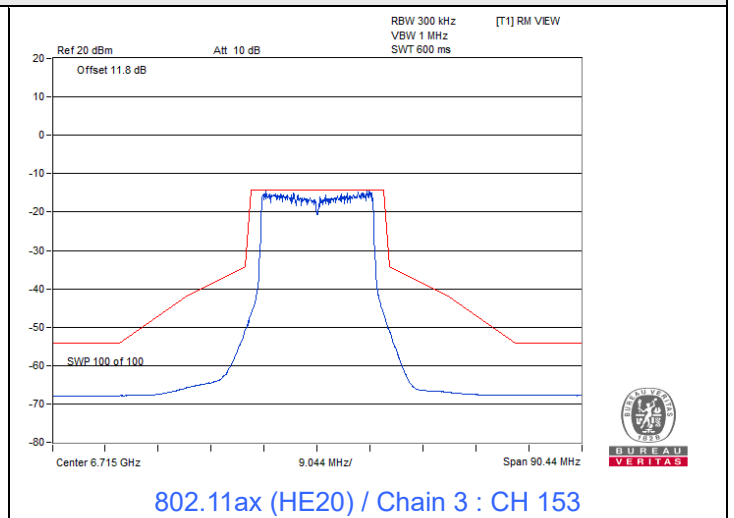
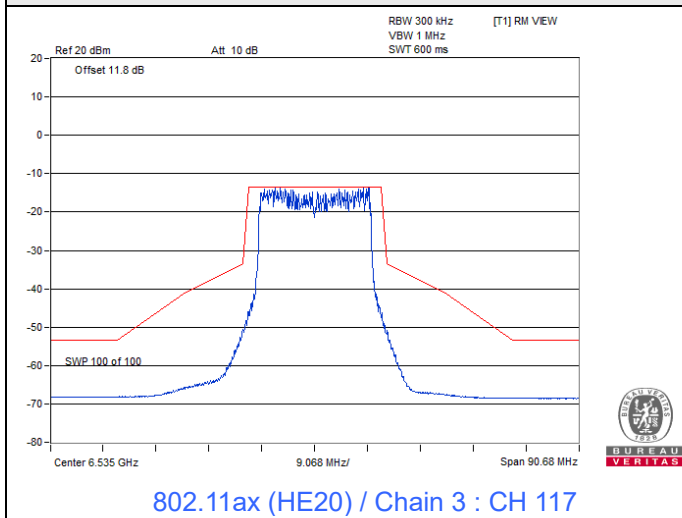
Spectrum Plot



Spectrum Plot

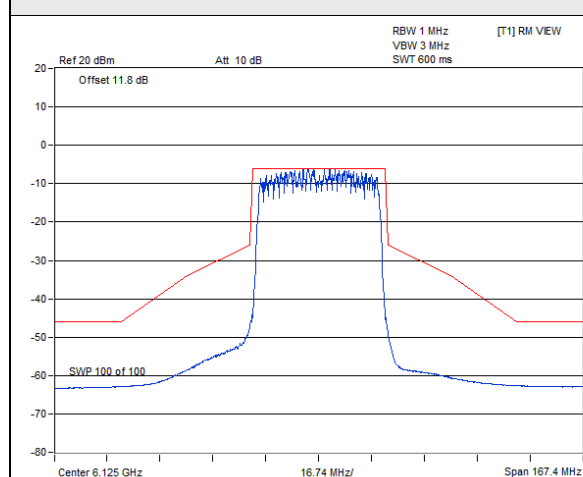


Spectrum Plot

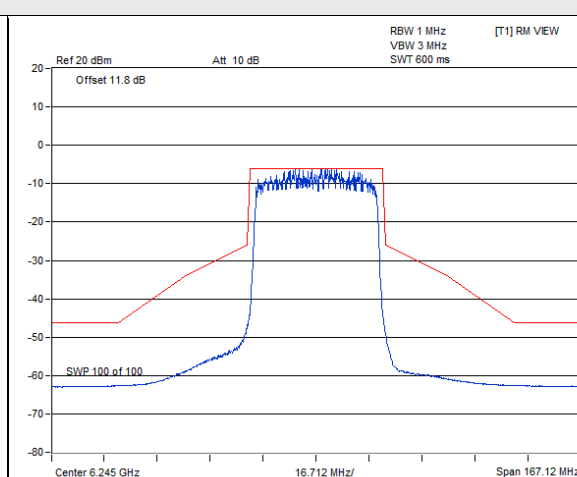


802.11ax (HE40)

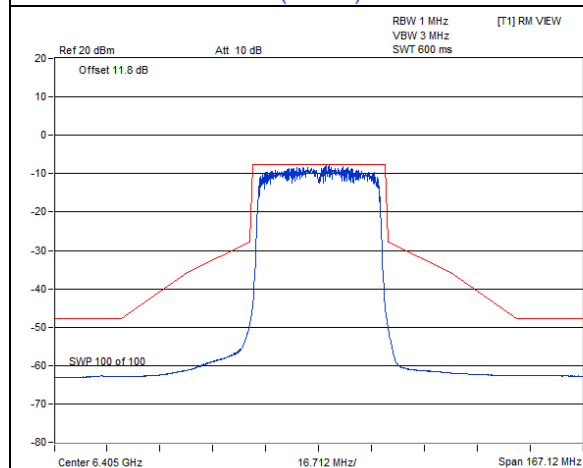
Spectrum Plot



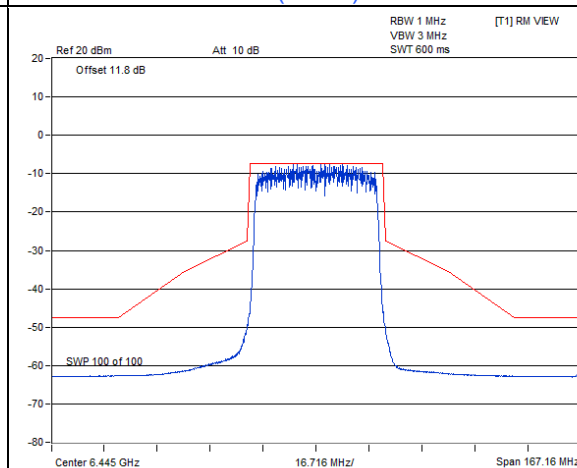
802.11ax (HE40) / Chain 0 : CH 35



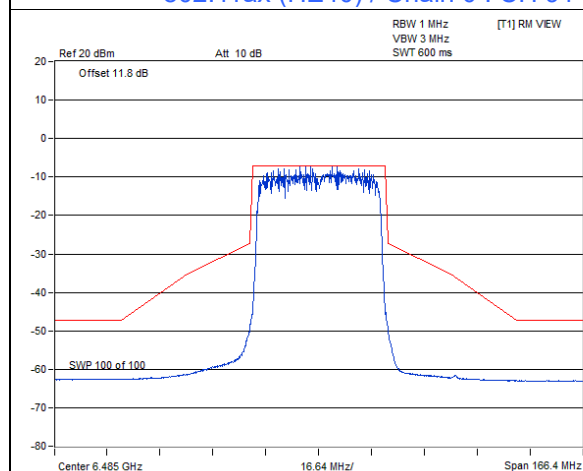
802.11ax (HE40) / Chain 0 : CH 59



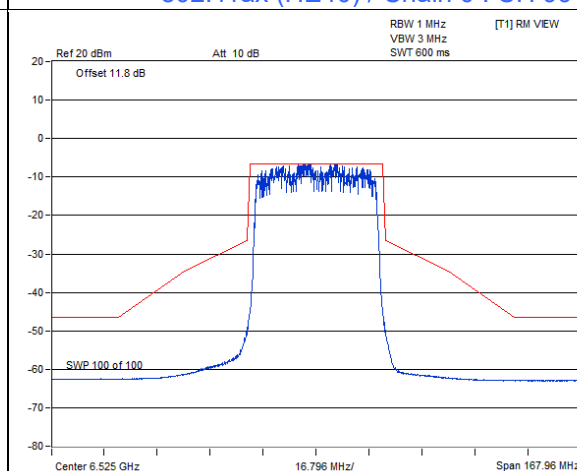
802.11ax (HE40) / Chain 0 : CH 91



802.11ax (HE40) / Chain 0 : CH 99

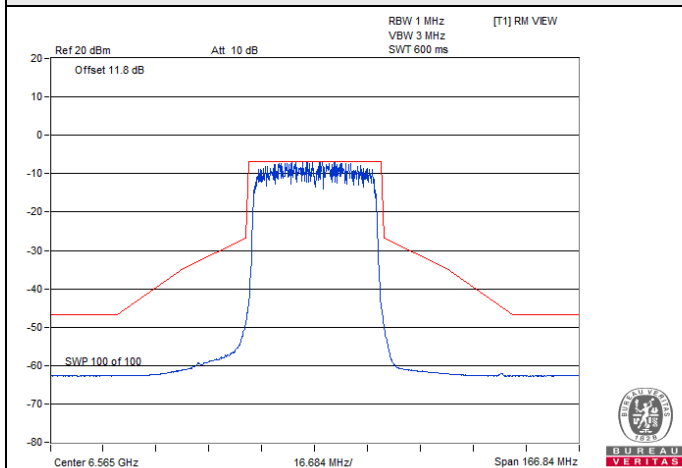


802.11ax (HE40) / Chain 0 : CH 107

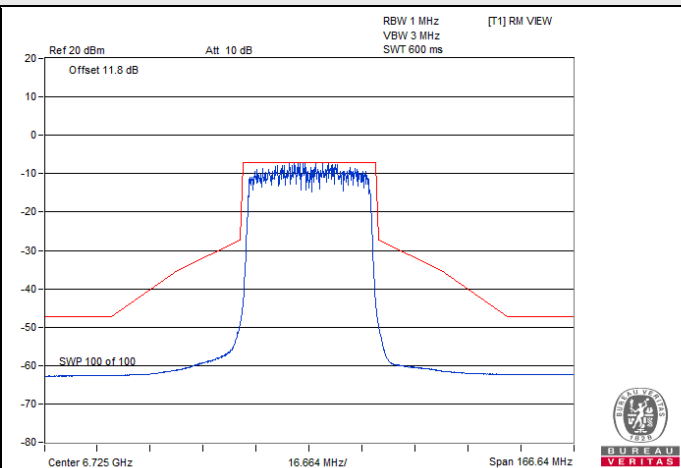


802.11ax (HE40) / Chain 0 : CH 115

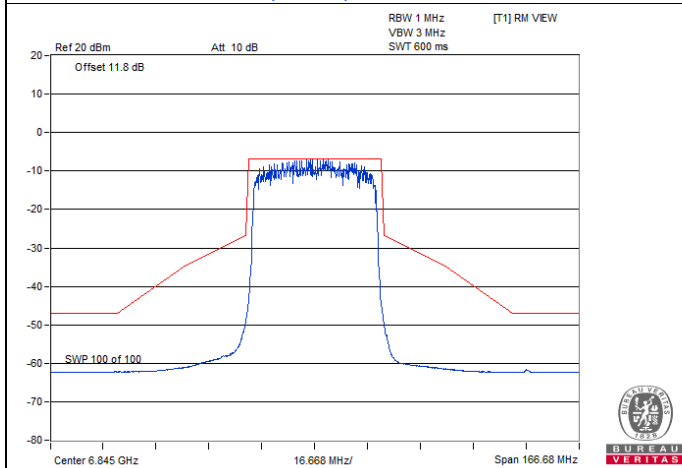
Spectrum Plot



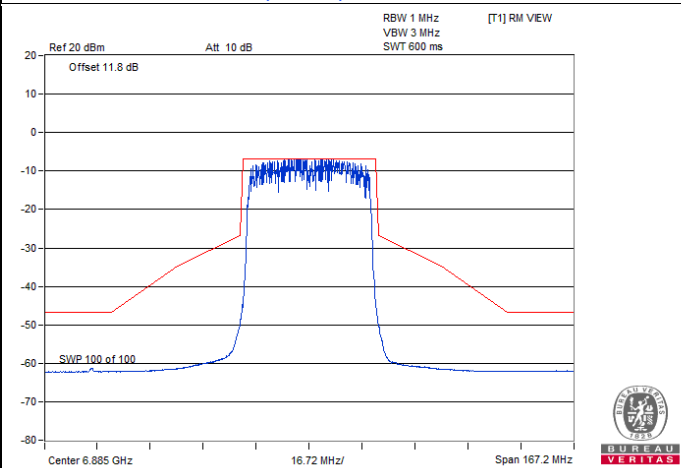
802.11ax (HE40) / Chain 0 : CH 123



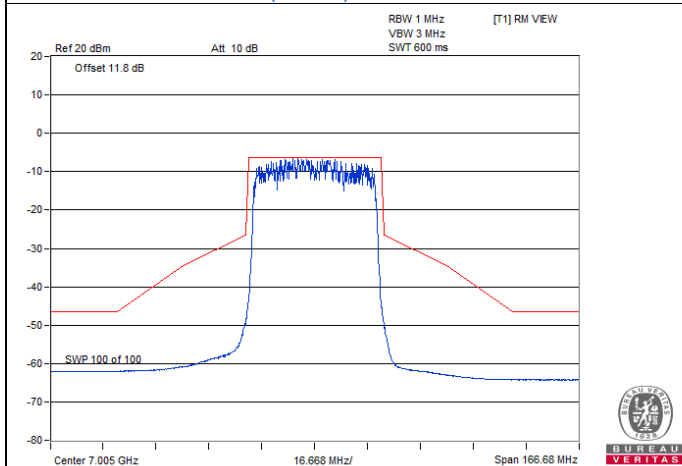
802.11ax (HE40) / Chain 0 : CH 155



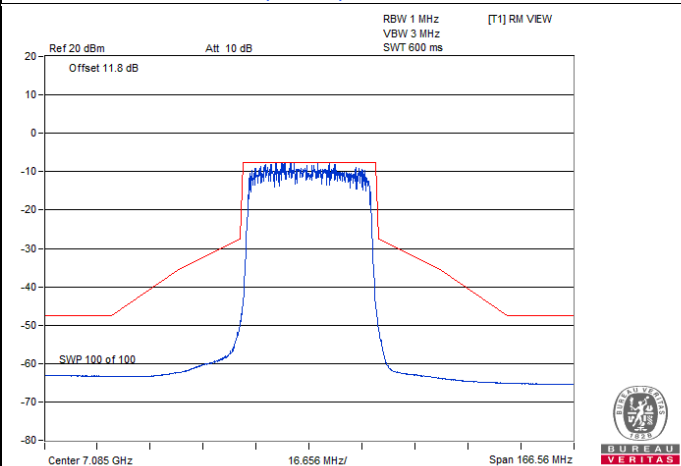
802.11ax (HE40) / Chain 0 : CH 179



802.11ax (HE40) / Chain 0 : CH 187

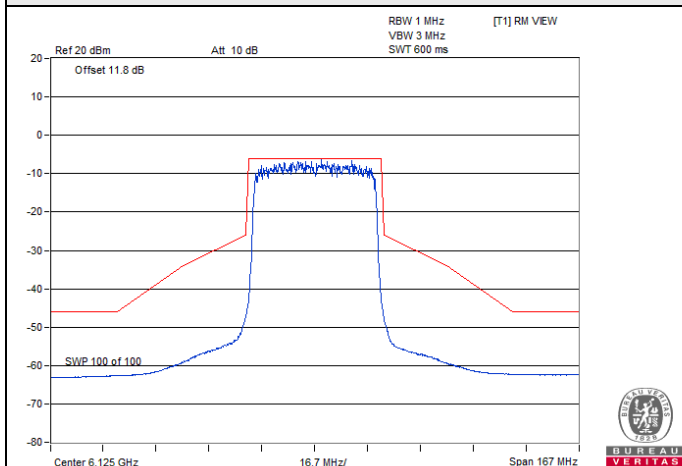


802.11ax (HE40) / Chain 0 : CH 211

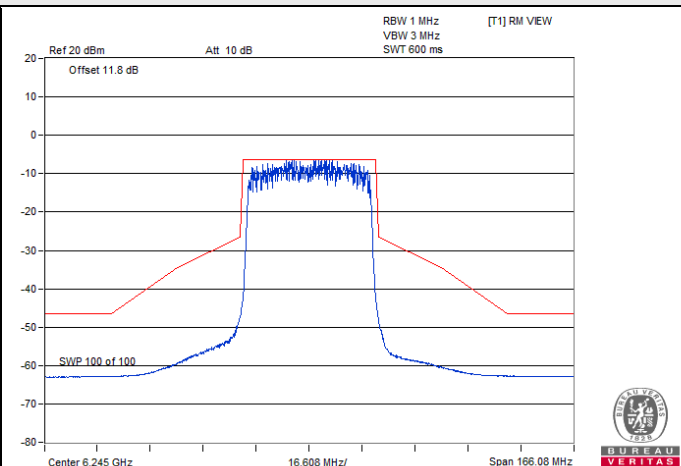


802.11ax (HE40) / Chain 0 : CH 227

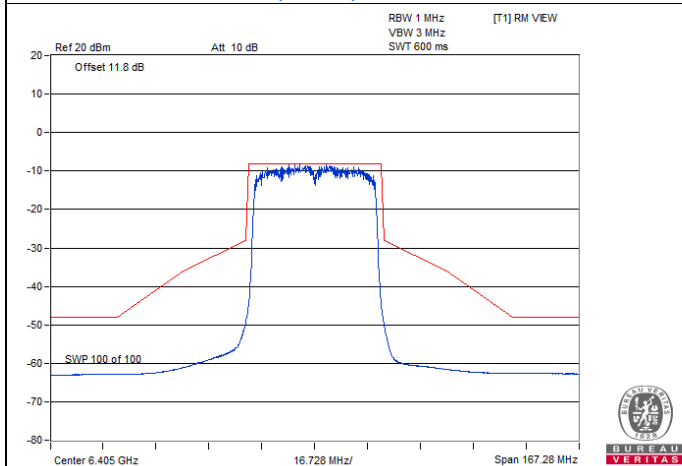
Spectrum Plot



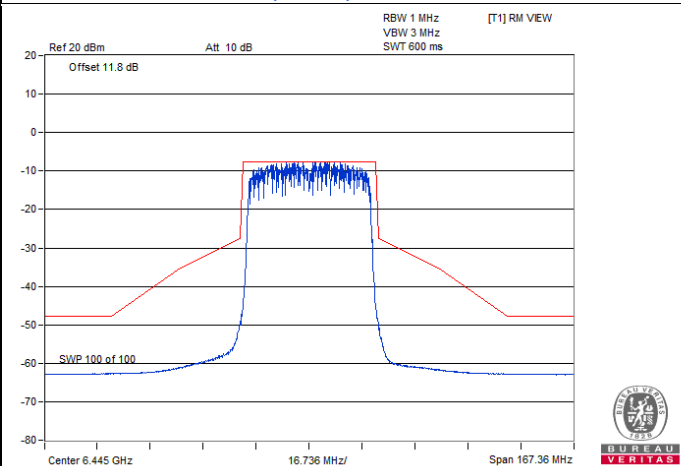
802.11ax (HE40) / Chain 1 : CH 35



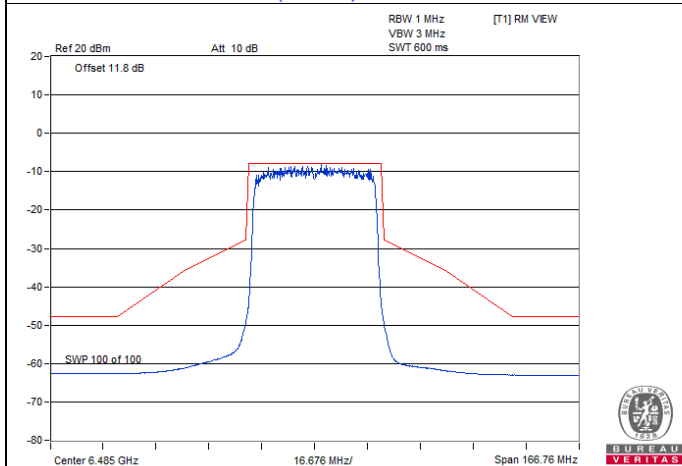
802.11ax (HE40) / Chain 1 : CH 59



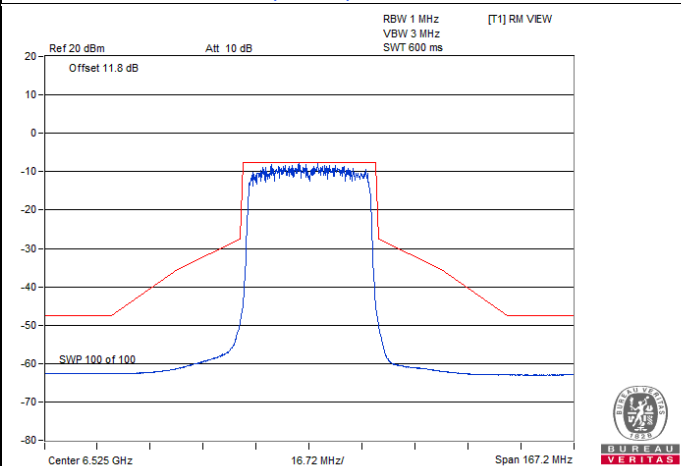
802.11ax (HE40) / Chain 1 : CH 91



802.11ax (HE40) / Chain 1 : CH 99

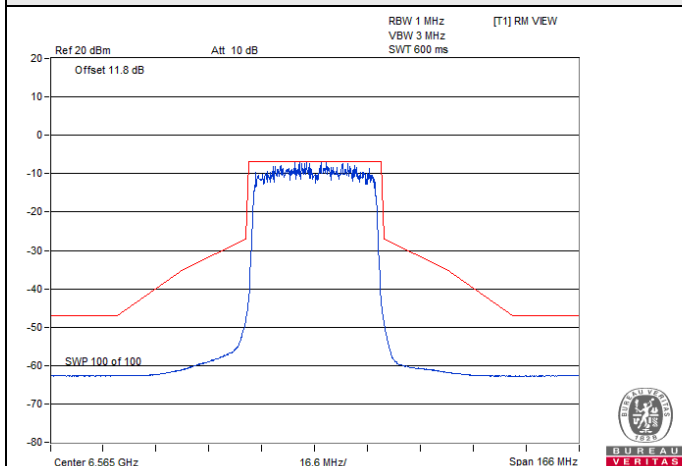


802.11ax (HE40) / Chain 1 : CH 107

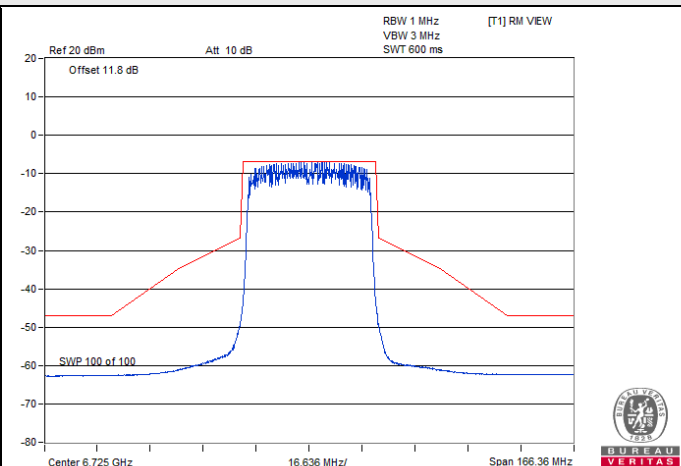


802.11ax (HE40) / Chain 1 : CH 115

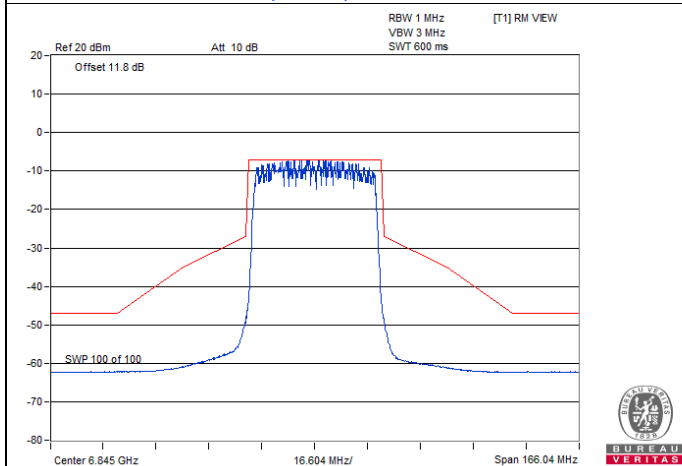
Spectrum Plot



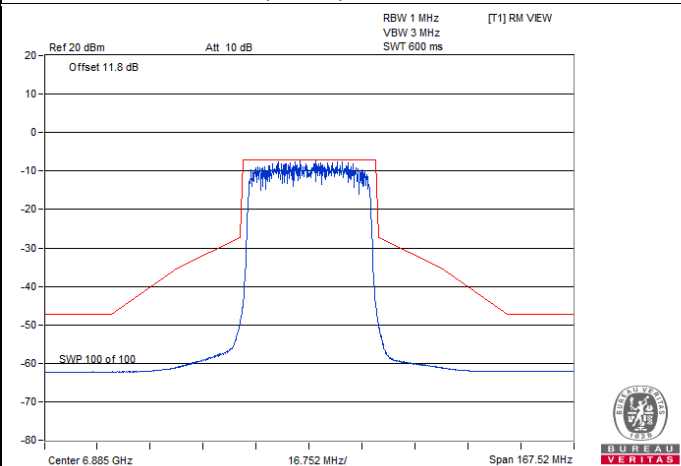
802.11ax (HE40) / Chain 1 : CH 123



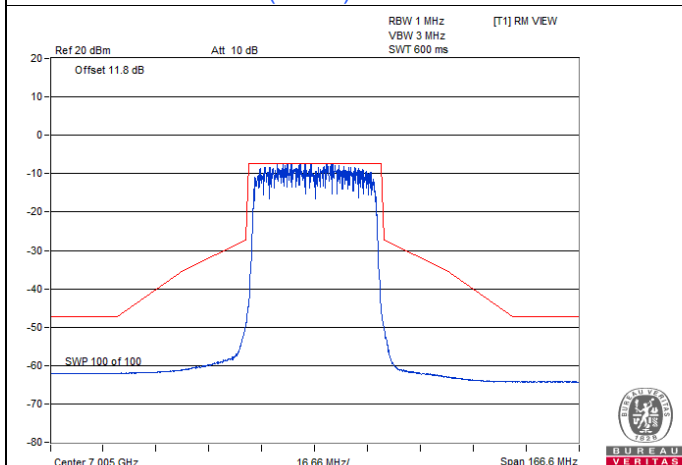
802.11ax (HE40) / Chain 1 : CH 155



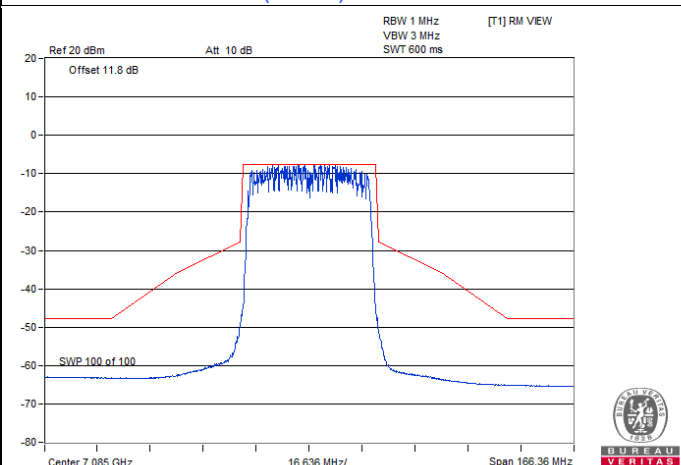
802.11ax (HE40) / Chain 1 : CH 179



802.11ax (HE40) / Chain 1 : CH 187

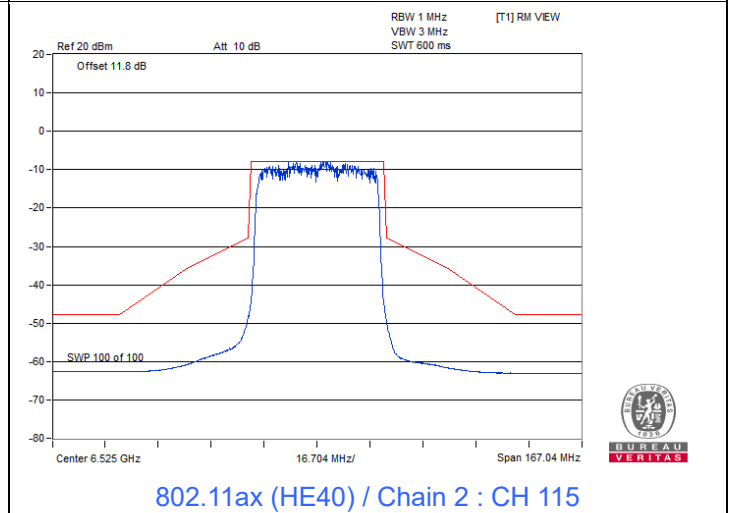
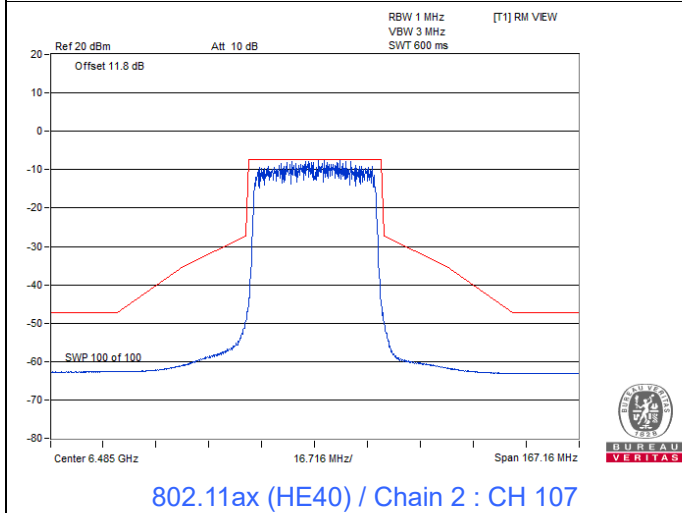
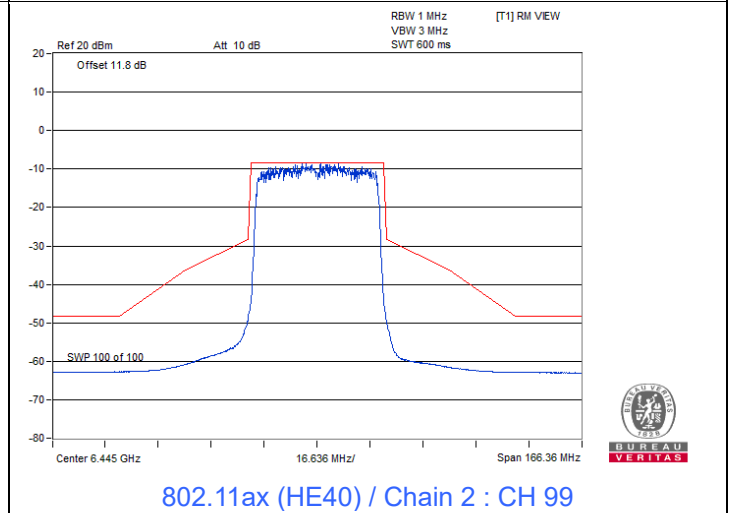
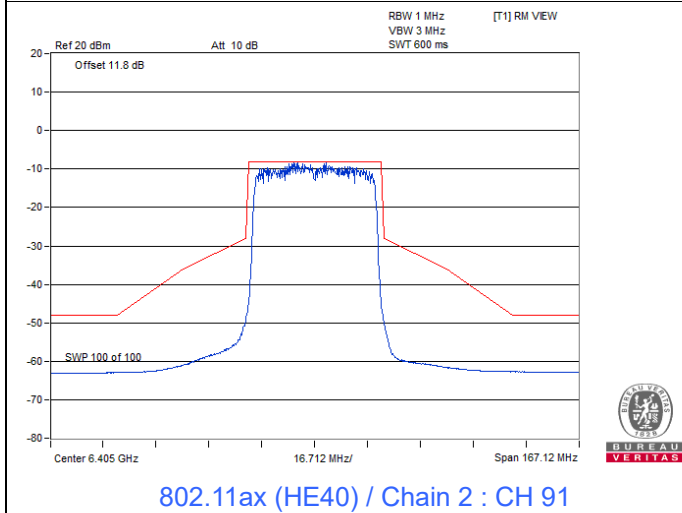
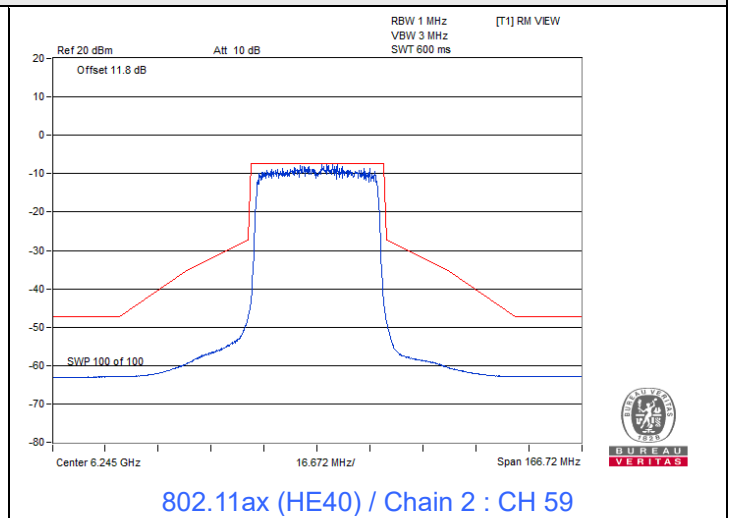
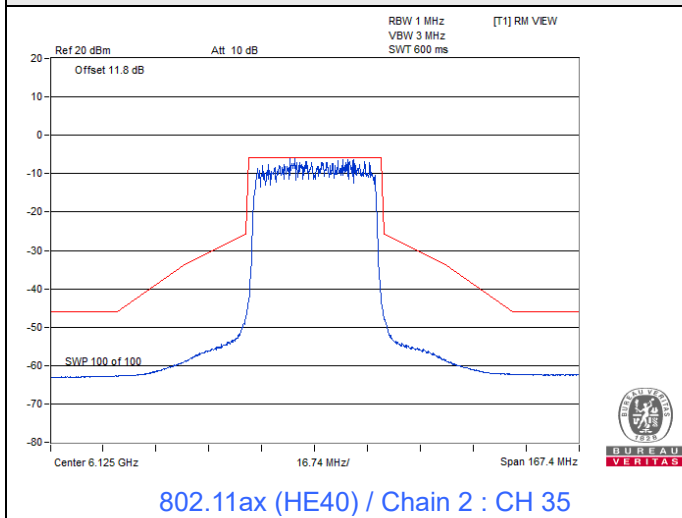


802.11ax (HE40) / Chain 1 : CH 211

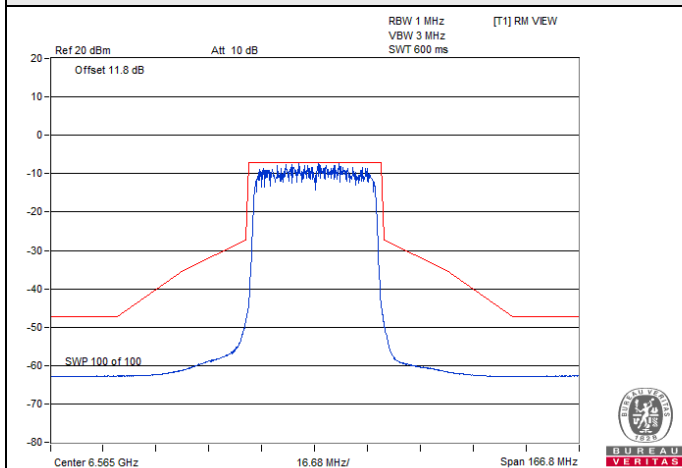


802.11ax (HE40) / Chain 1 : CH 227

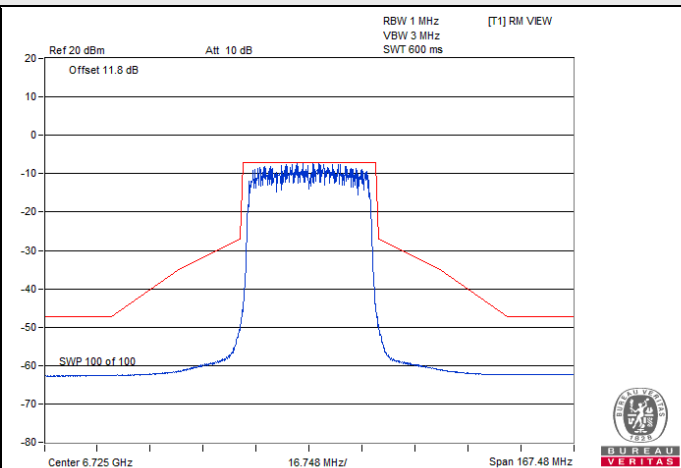
Spectrum Plot



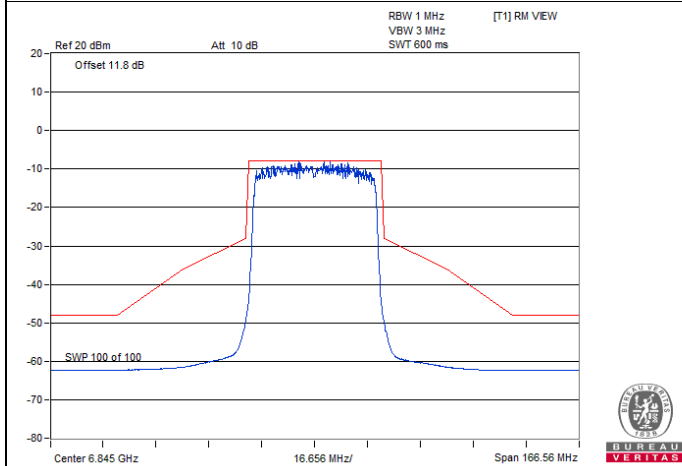
Spectrum Plot



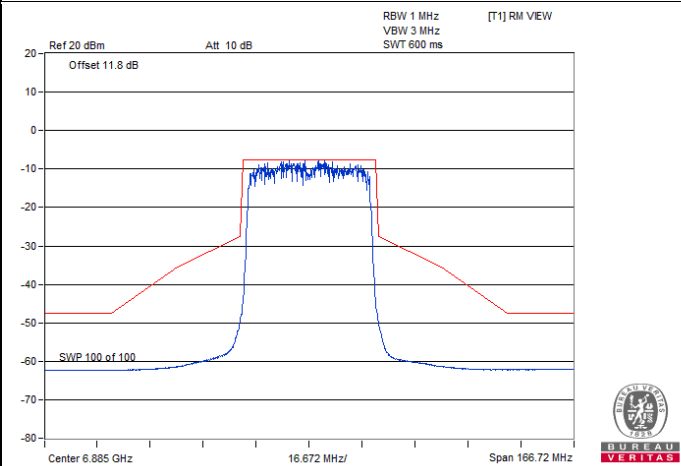
802.11ax (HE40) / Chain 2 : CH 123



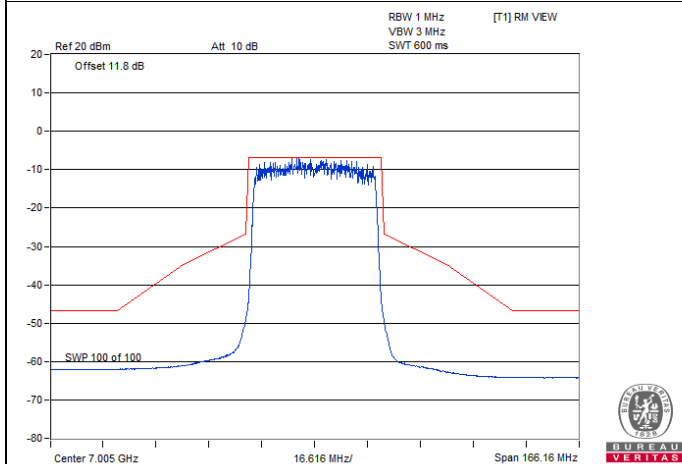
802.11ax (HE40) / Chain 2 : CH 155



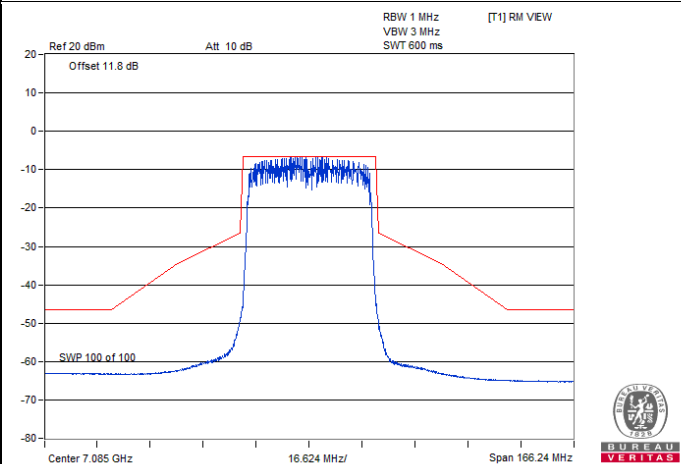
802.11ax (HE40) / Chain 2 : CH 179



802.11ax (HE40) / Chain 2 : CH 187

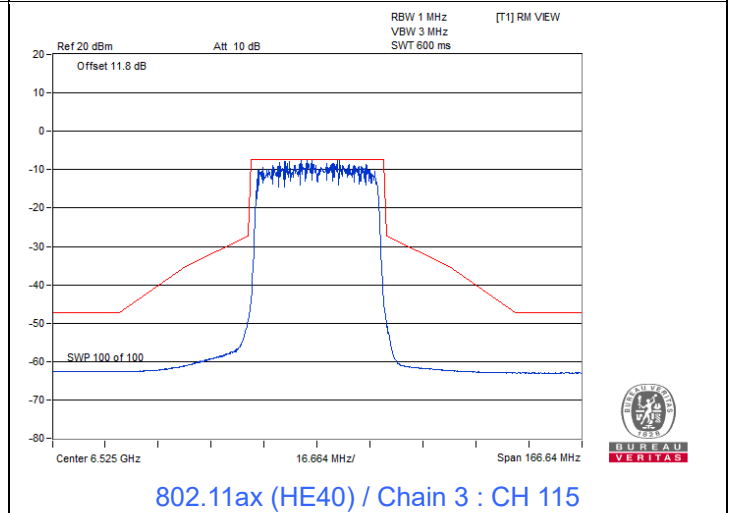
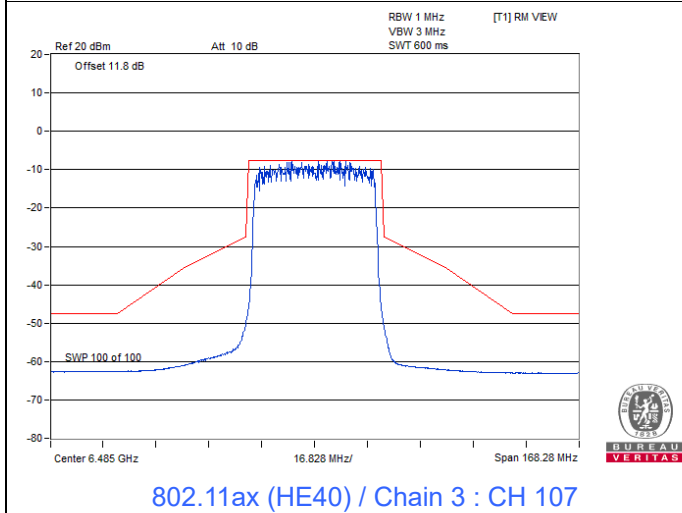
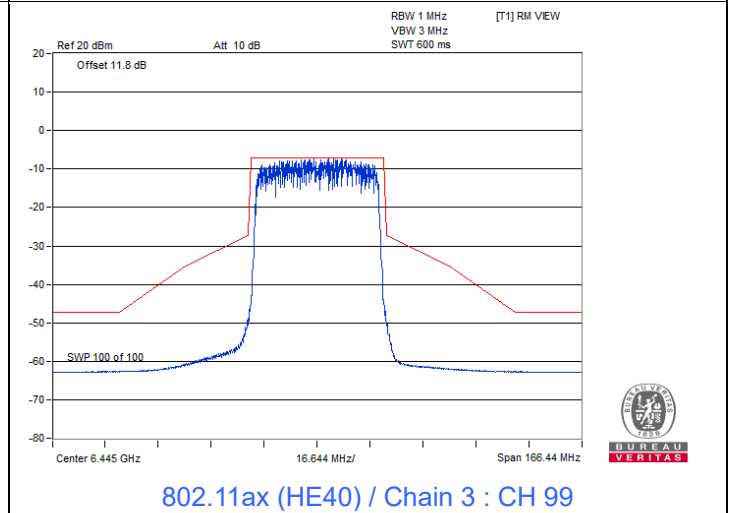
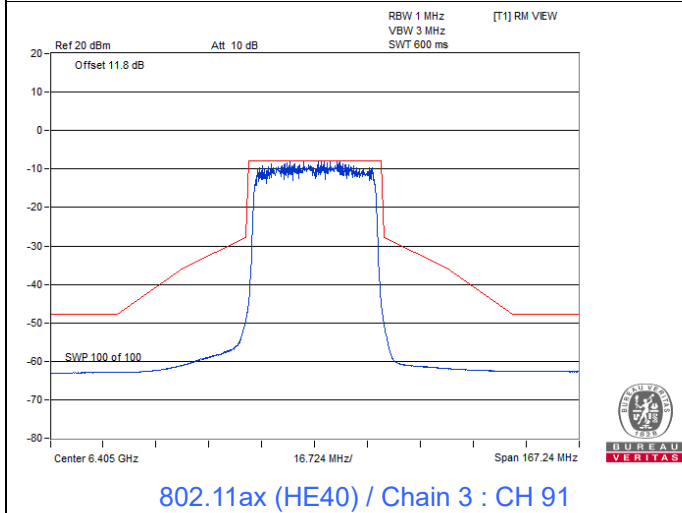
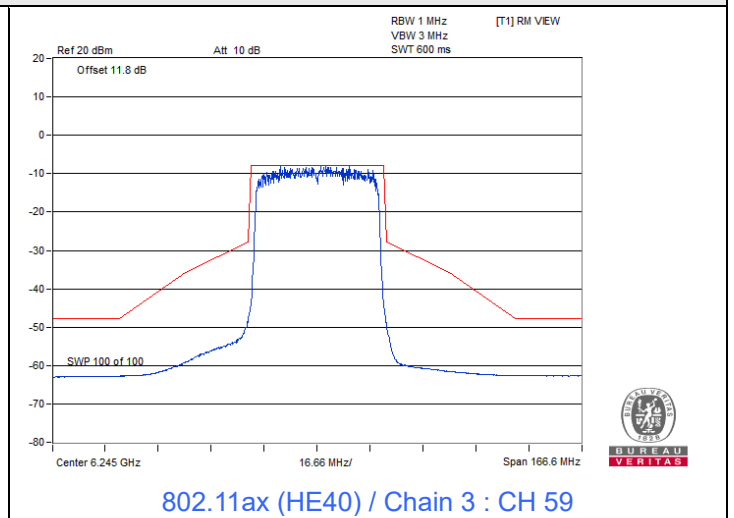
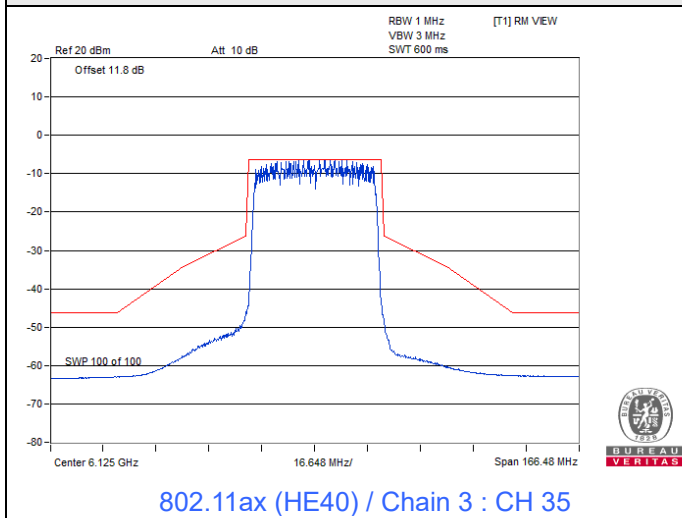


802.11ax (HE40) / Chain 2 : CH 211

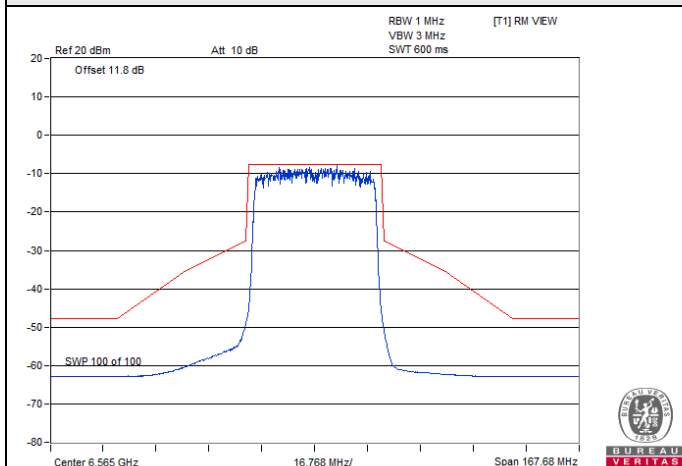


802.11ax (HE40) / Chain 2 : CH 227

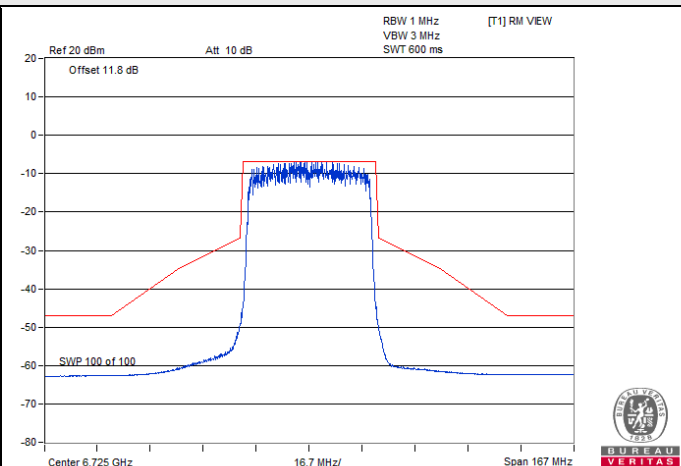
Spectrum Plot



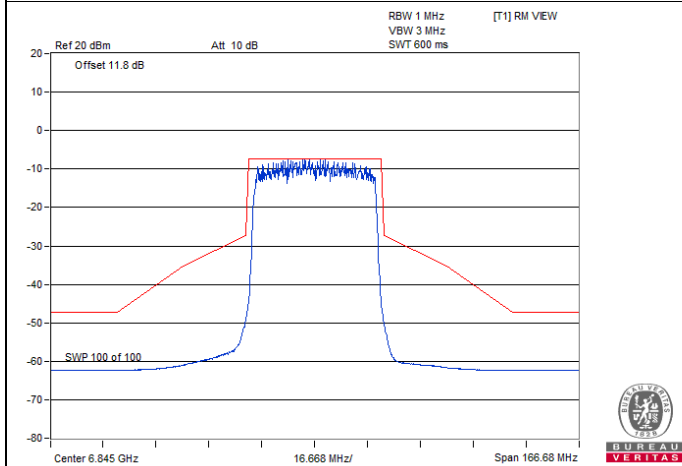
Spectrum Plot



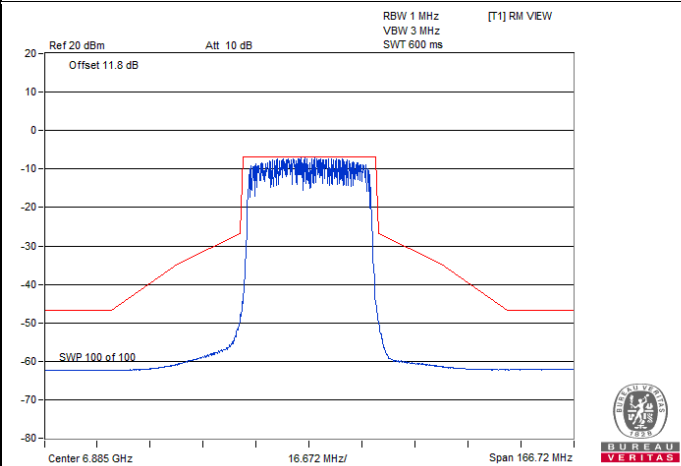
802.11ax (HE40) / Chain 3 : CH 123



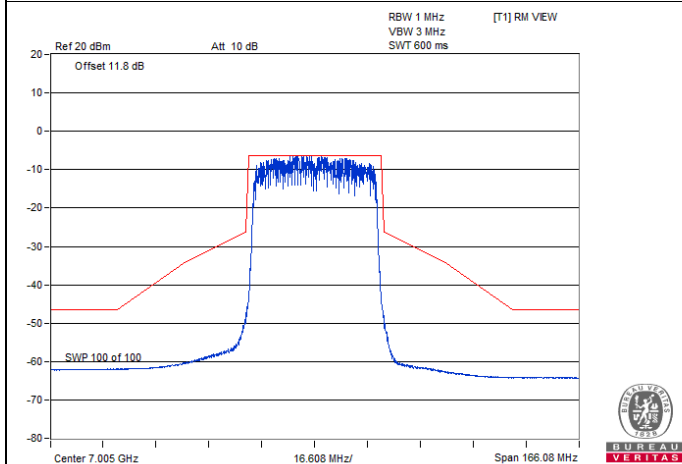
802.11ax (HE40) / Chain 3 : CH 155



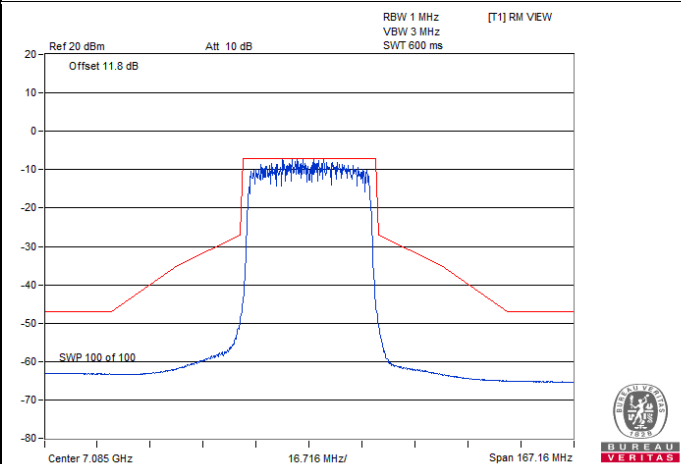
802.11ax (HE40) / Chain 3 : CH 179



802.11ax (HE40) / Chain 3 : CH 187



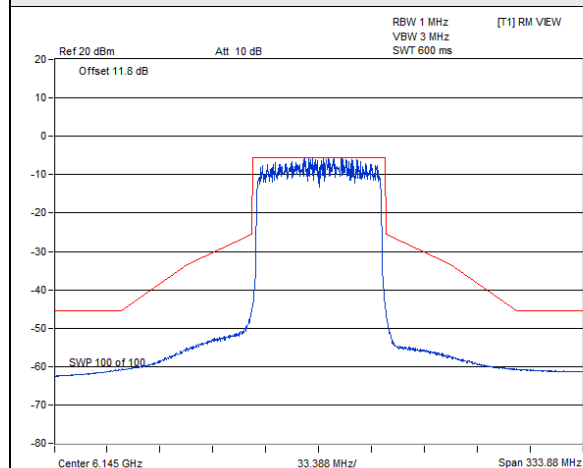
802.11ax (HE40) / Chain 3 : CH 211



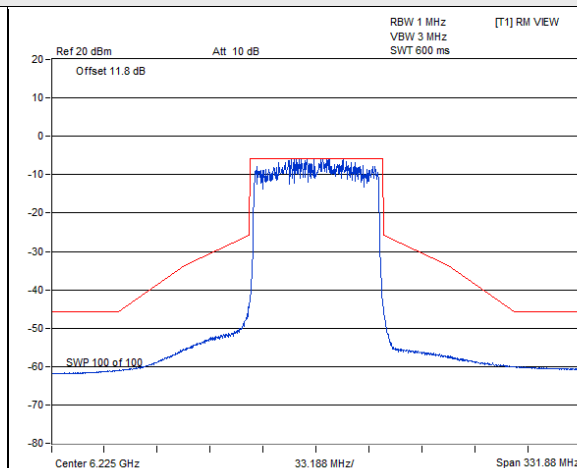
802.11ax (HE40) / Chain 3 : CH 227

802.11ax (HE80)

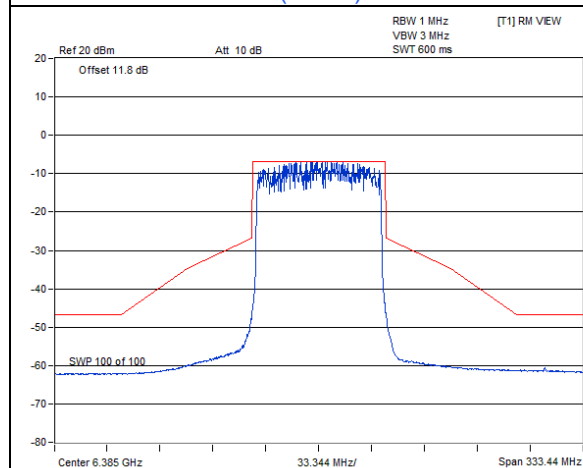
Spectrum Plot



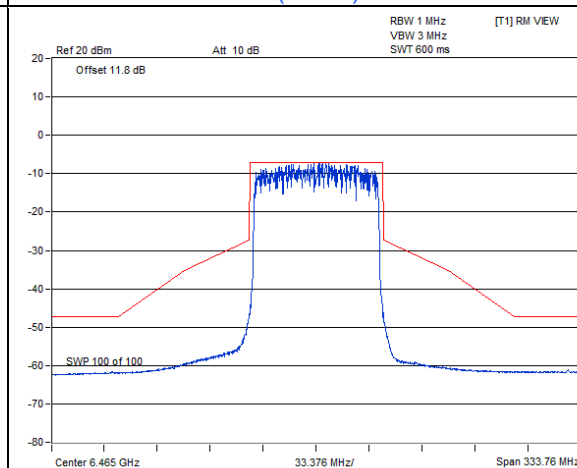
802.11ax (HE80) / Chain 0 : CH 39



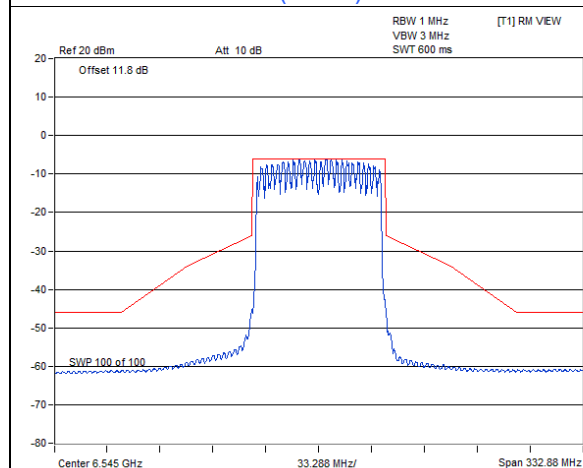
802.11ax (HE80) / Chain 0 : CH 55



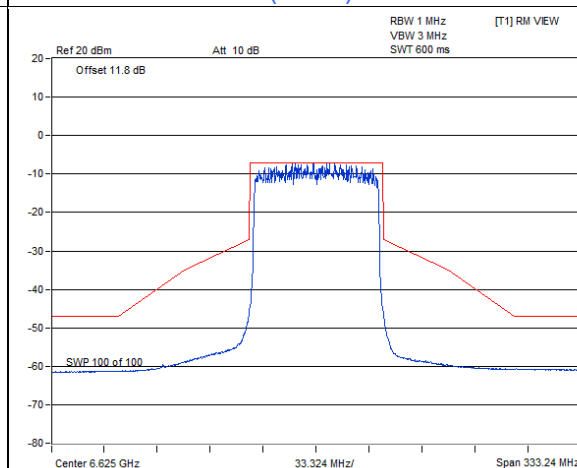
802.11ax (HE80) / Chain 0 : CH 87



802.11ax (HE80) / Chain 0 : CH 103

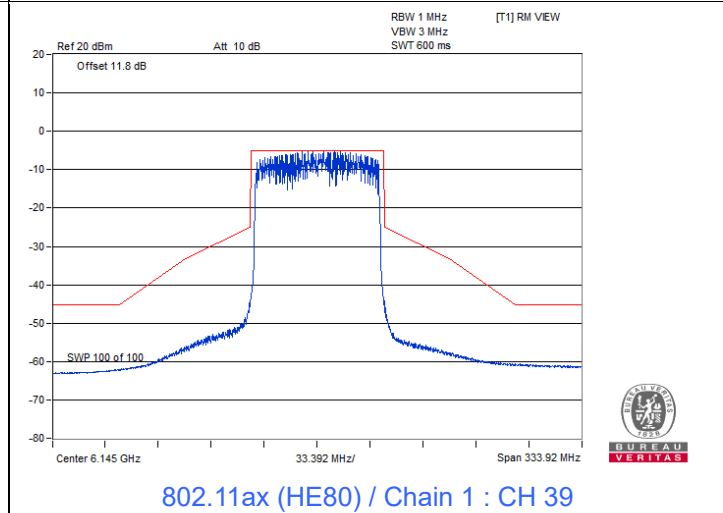
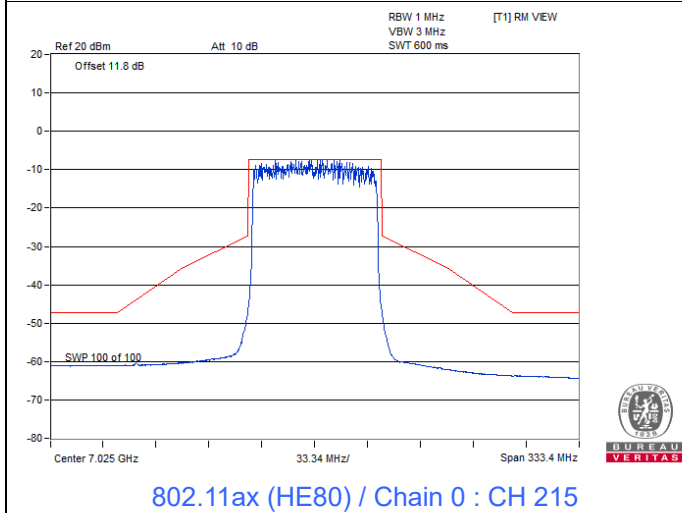
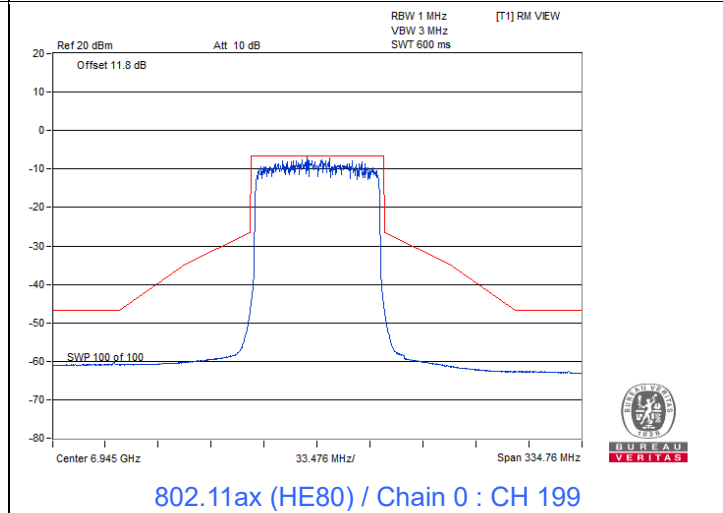
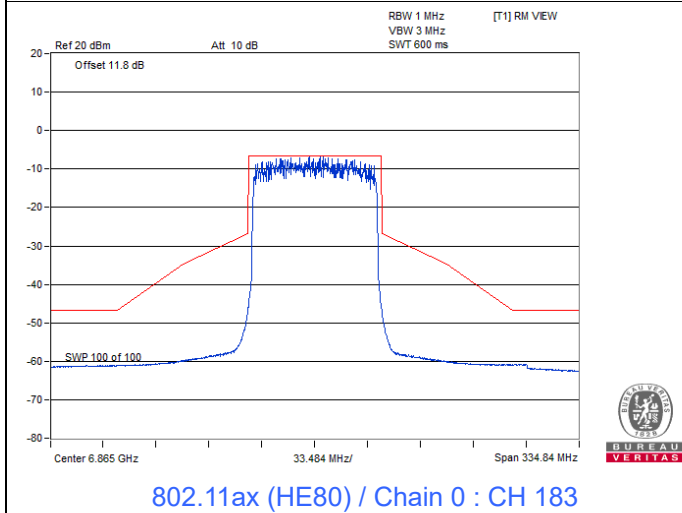
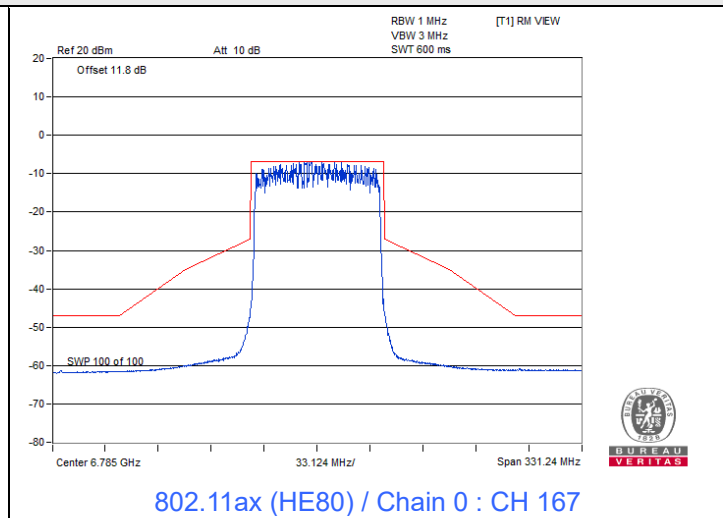
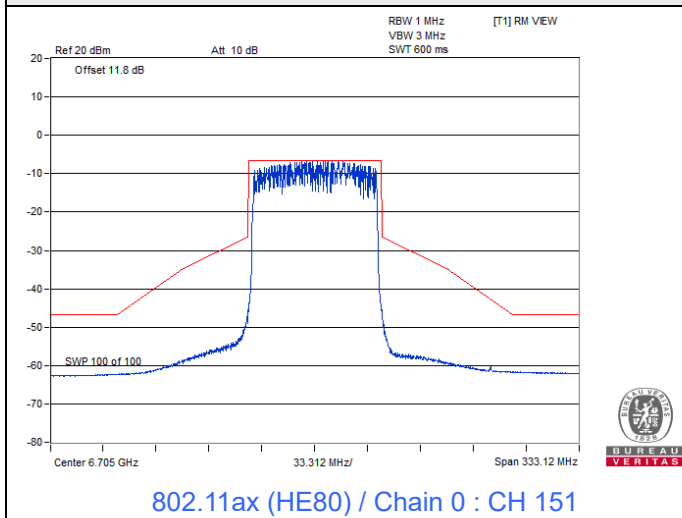


802.11ax (HE80) / Chain 0 : CH 119

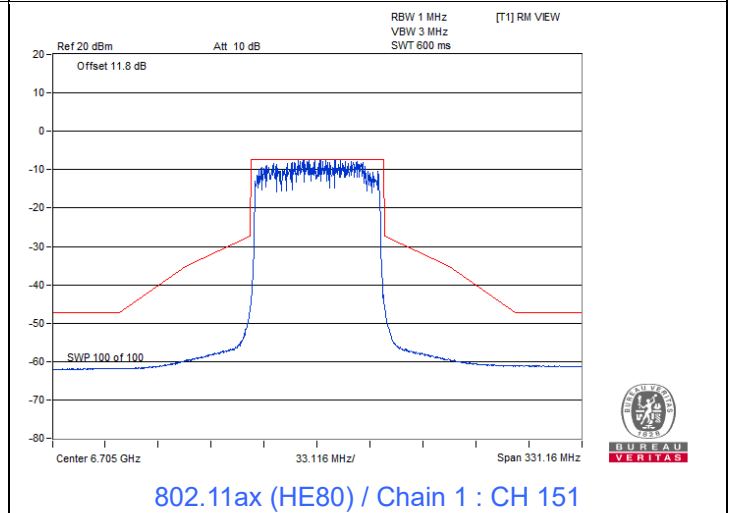
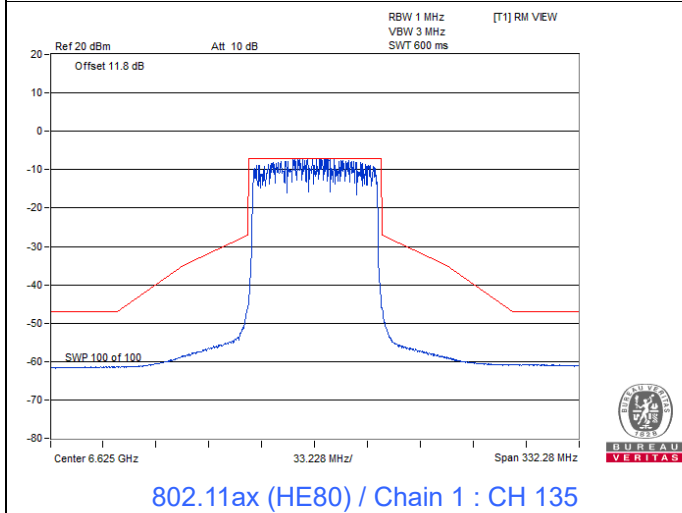
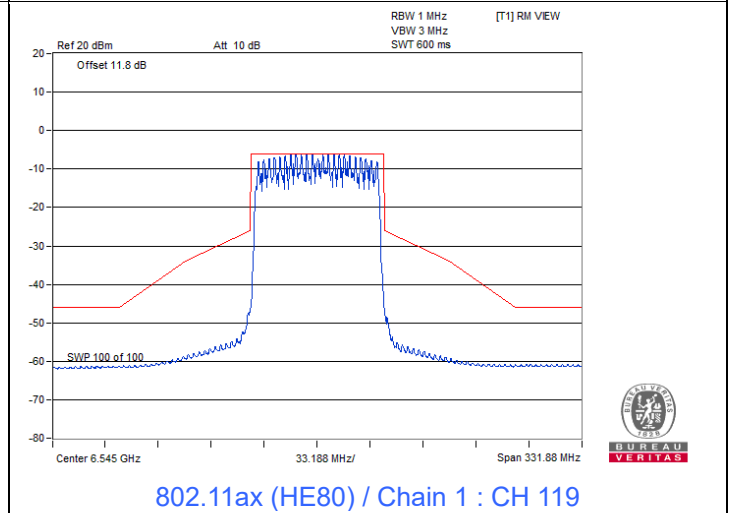
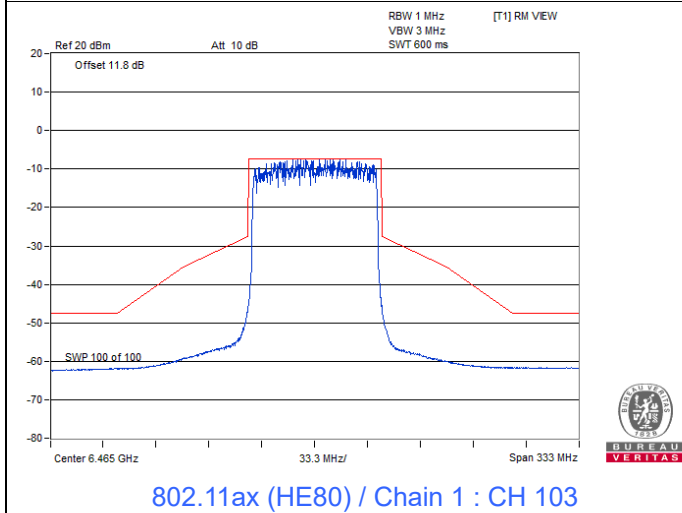
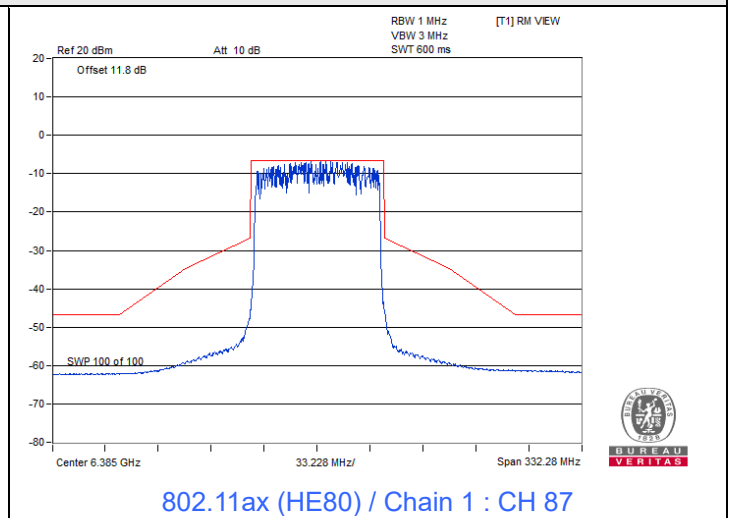
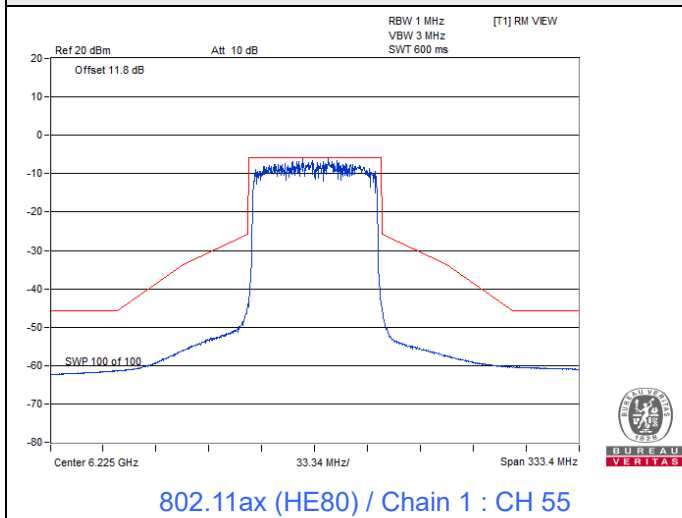


802.11ax (HE80) / Chain 0 : CH 135

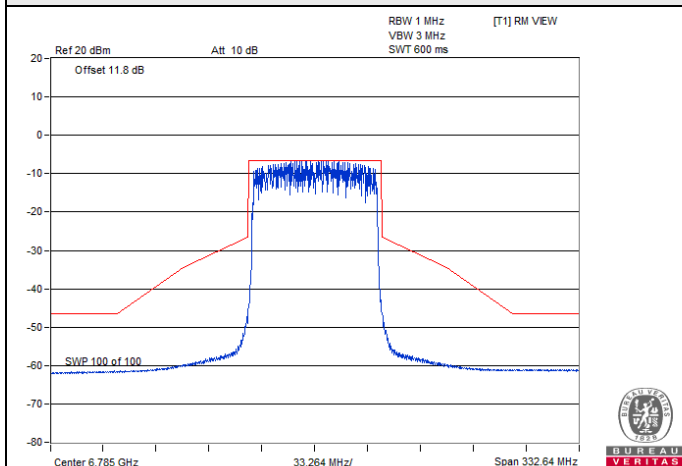
Spectrum Plot



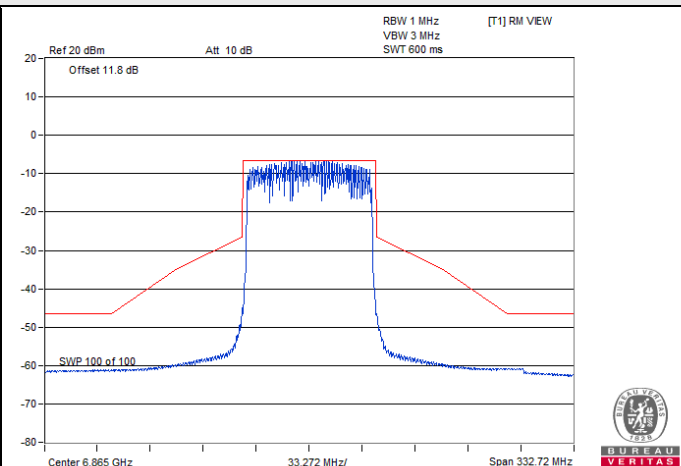
Spectrum Plot



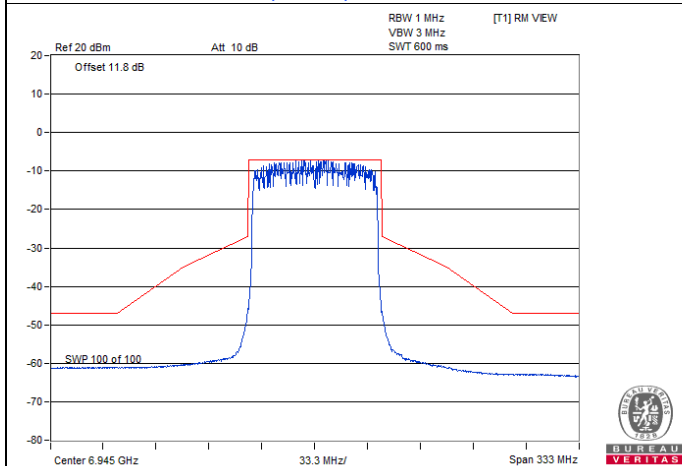
Spectrum Plot



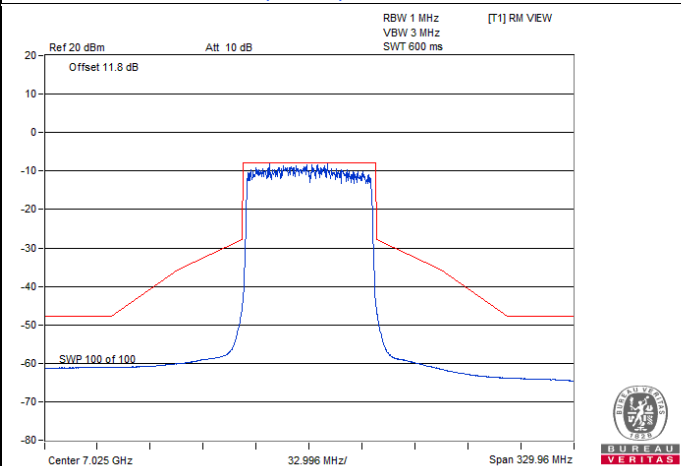
802.11ax (HE80) / Chain 1 : CH 167



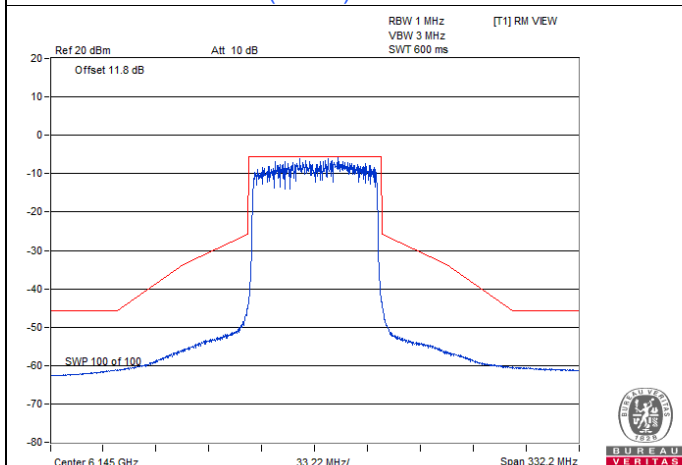
802.11ax (HE80) / Chain 1 : CH 183



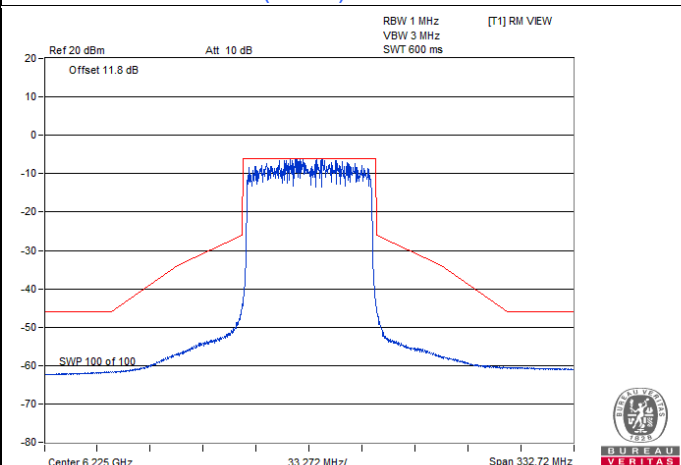
802.11ax (HE80) / Chain 1 : CH 199



802.11ax (HE80) / Chain 1 : CH 215

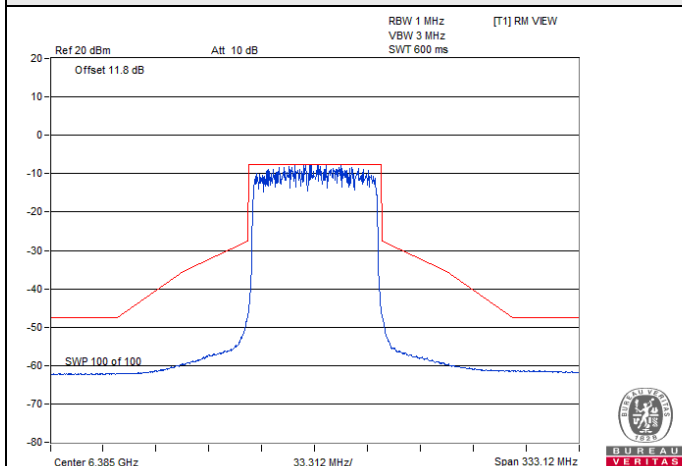


802.11ax (HE80) / Chain 2 : CH 39

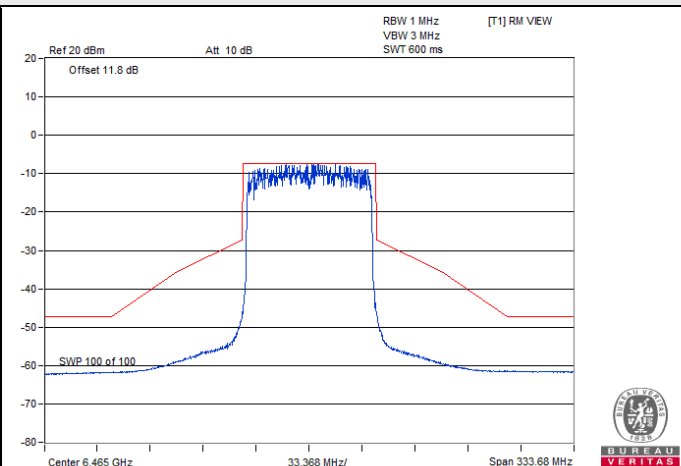


802.11ax (HE80) / Chain 2 : CH 55

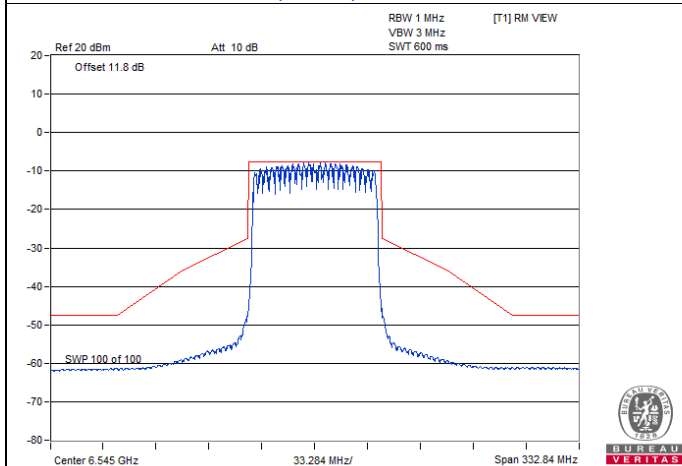
Spectrum Plot



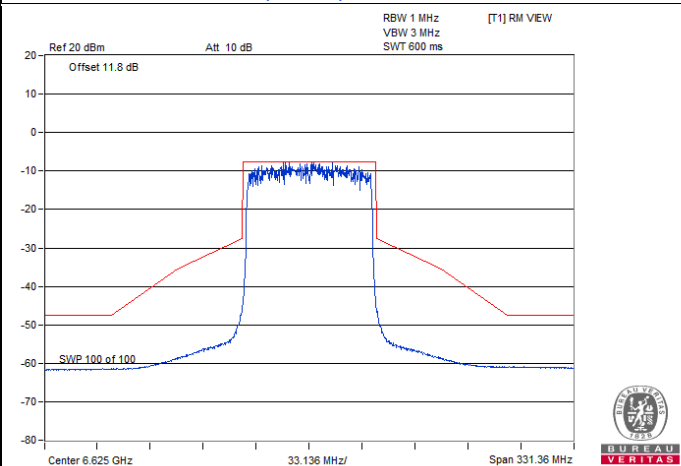
802.11ax (HE80) / Chain 2 : CH 87



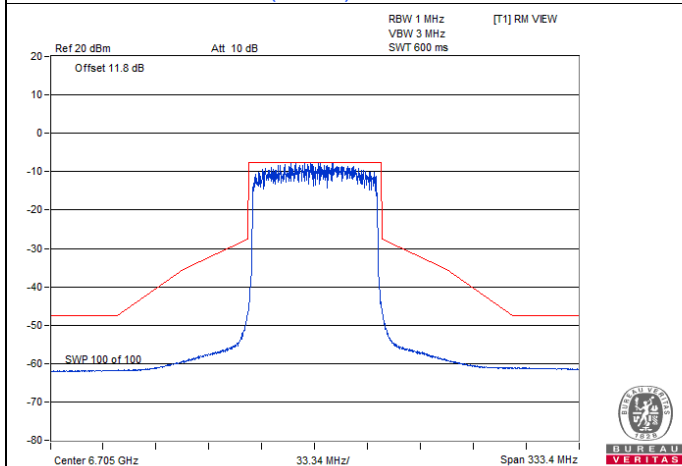
802.11ax (HE80) / Chain 2 : CH 103



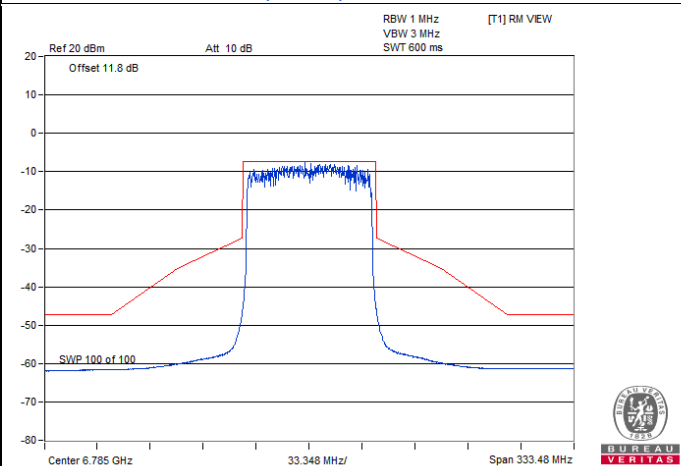
802.11ax (HE80) / Chain 2 : CH 119



802.11ax (HE80) / Chain 2 : CH 135

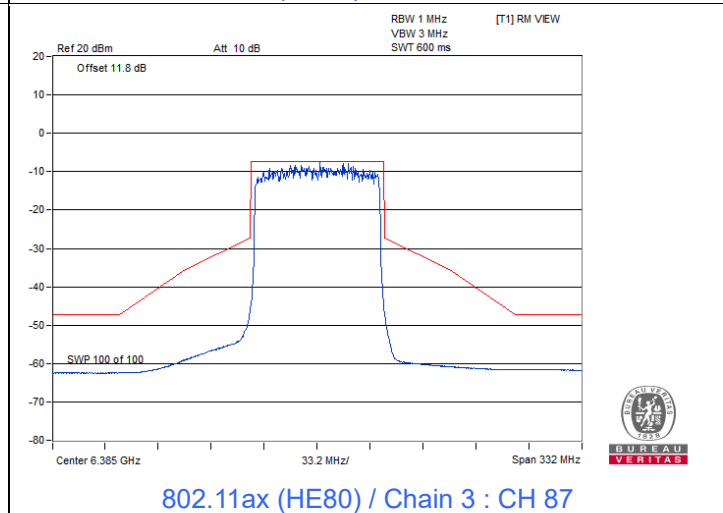
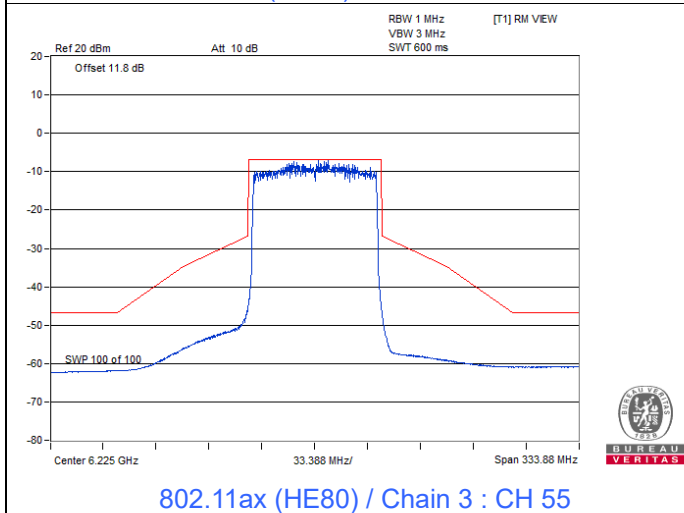
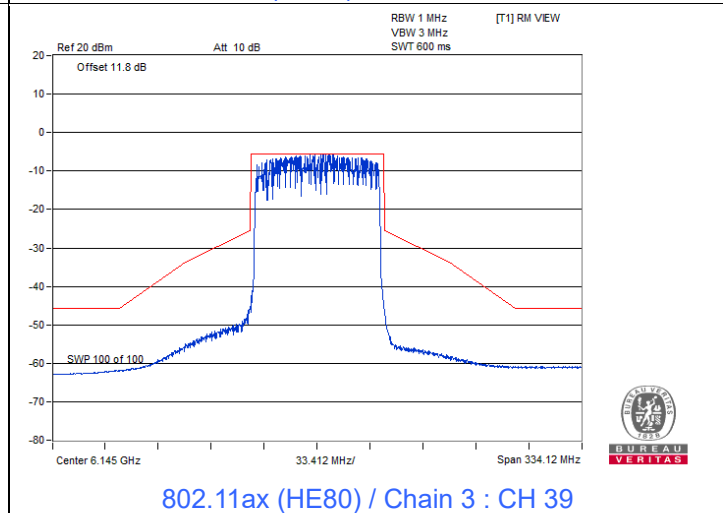
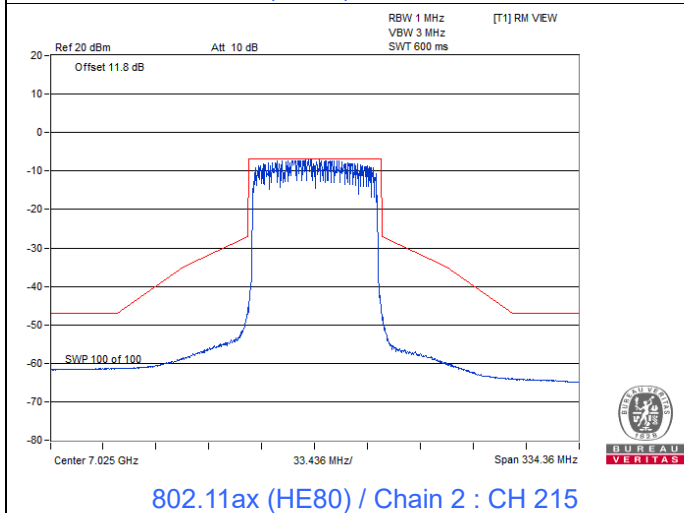
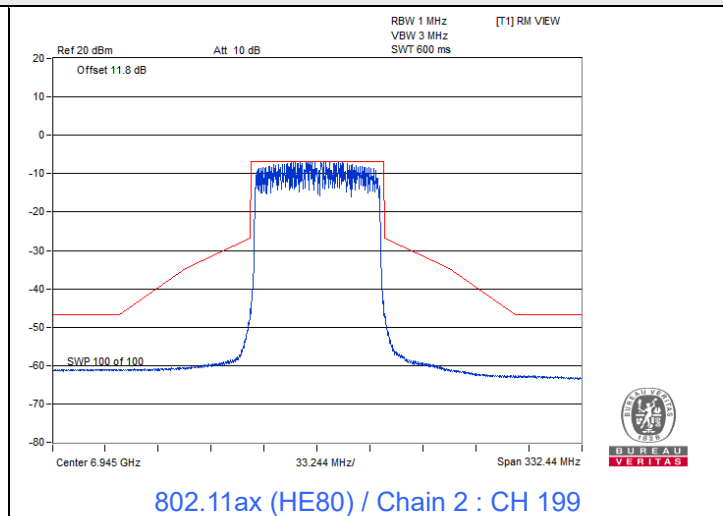
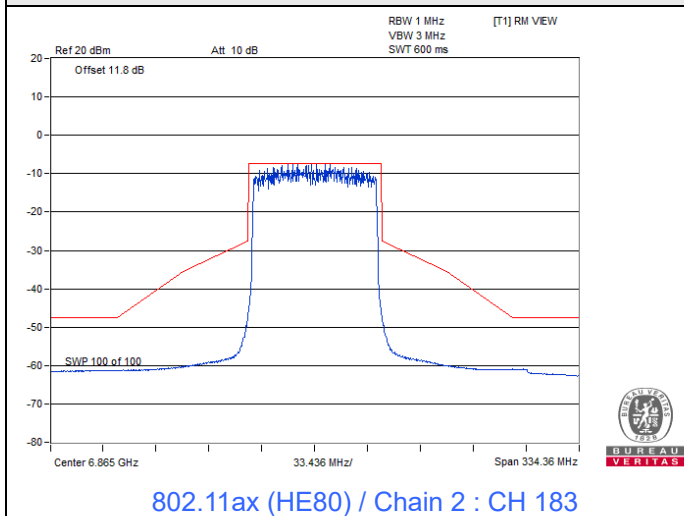


802.11ax (HE80) / Chain 2 : CH 151

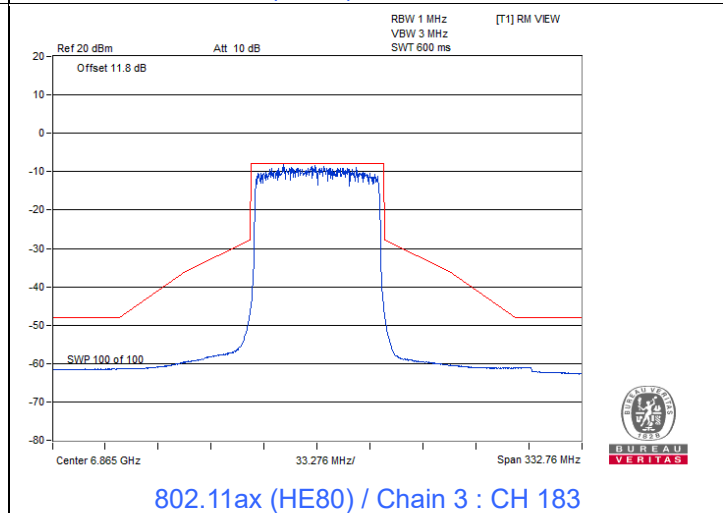
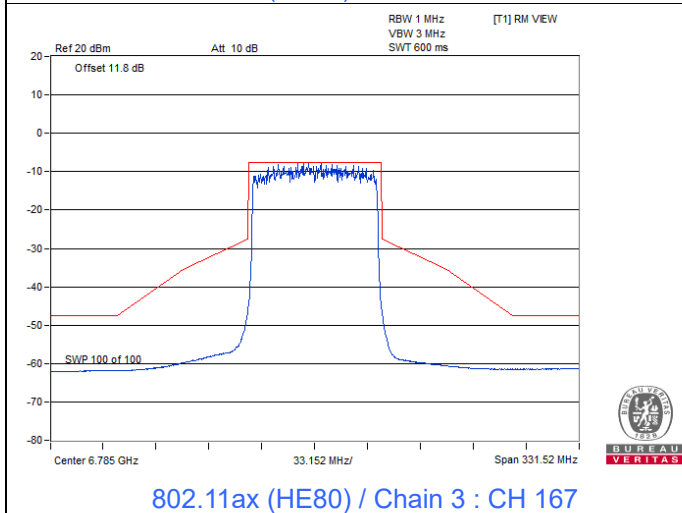
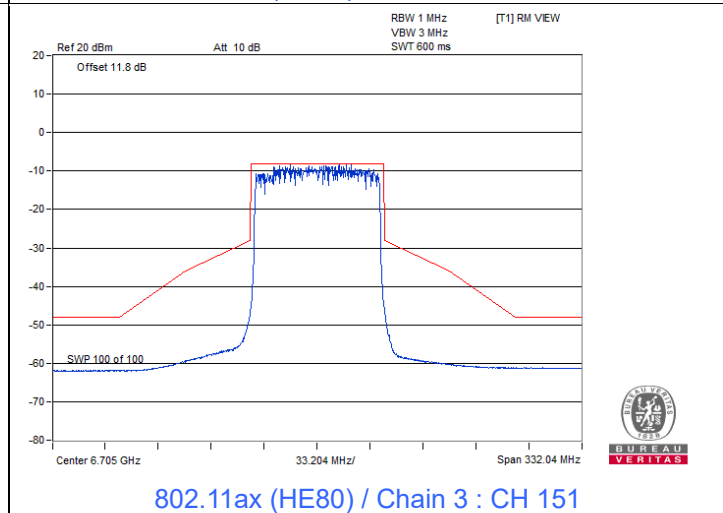
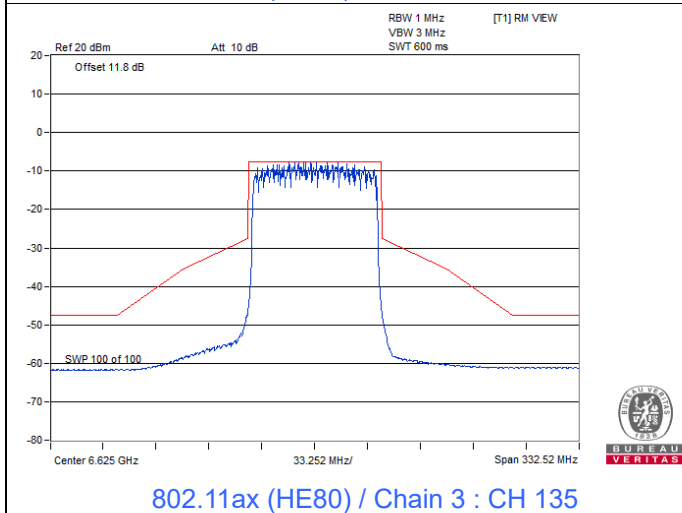
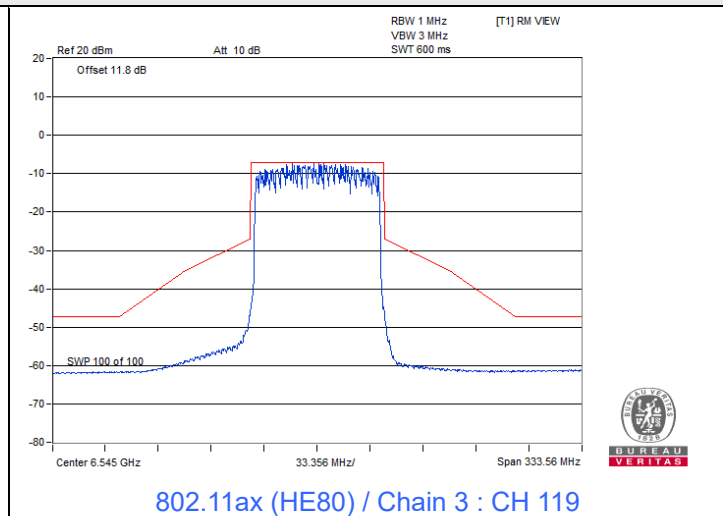
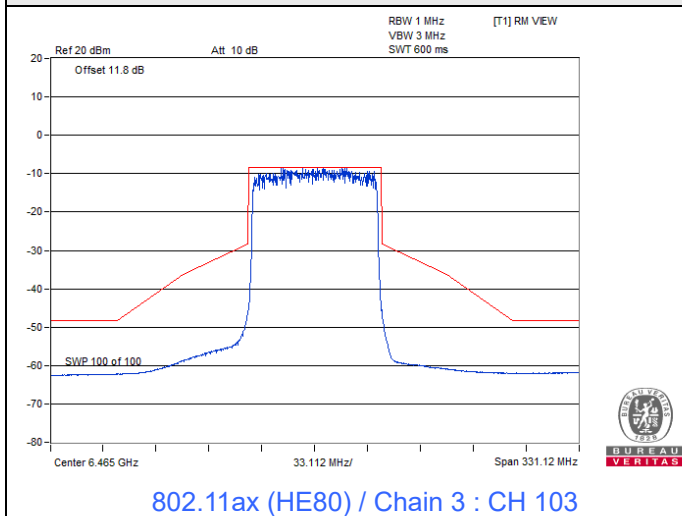


802.11ax (HE80) / Chain 2 : CH 167

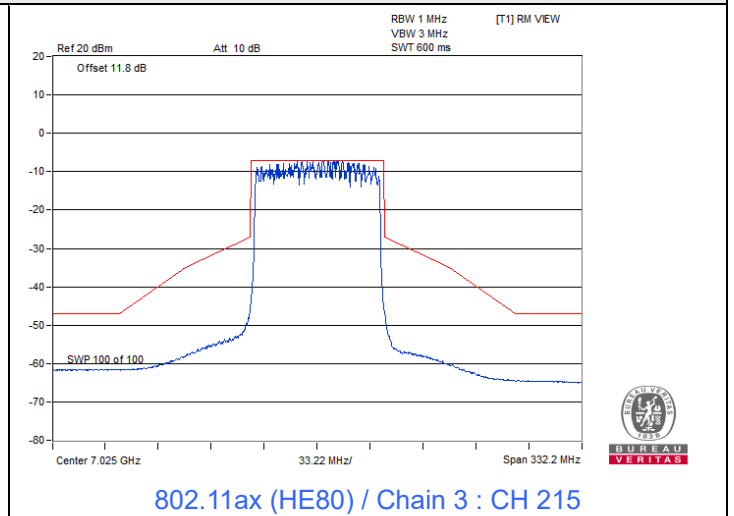
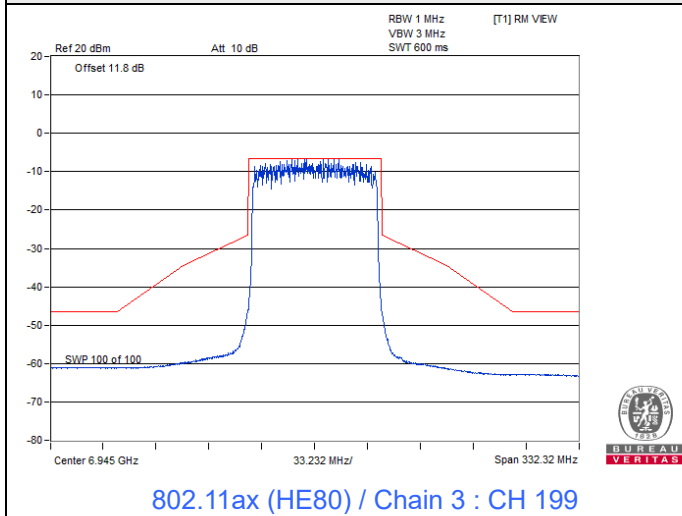
Spectrum Plot



Spectrum Plot

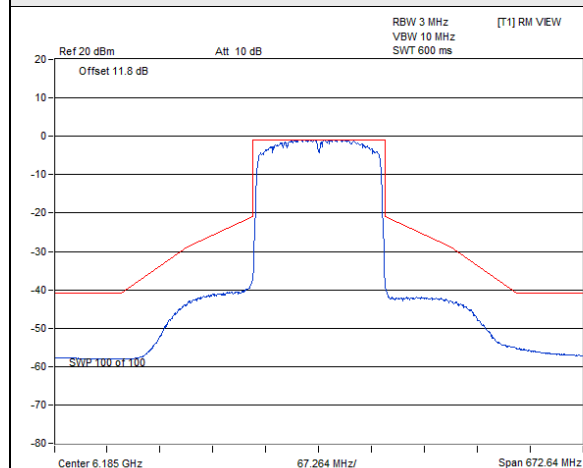


Spectrum Plot

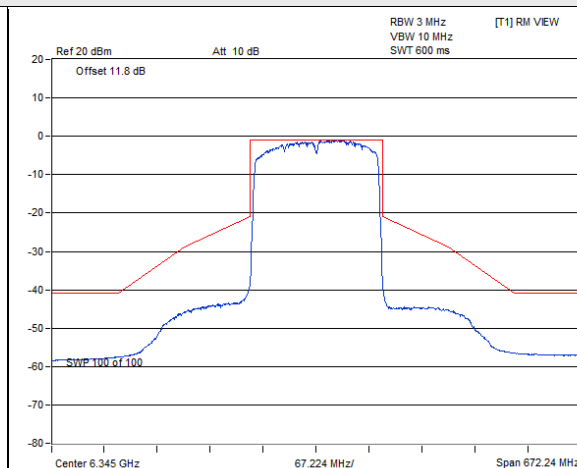


802.11ax (HE160)

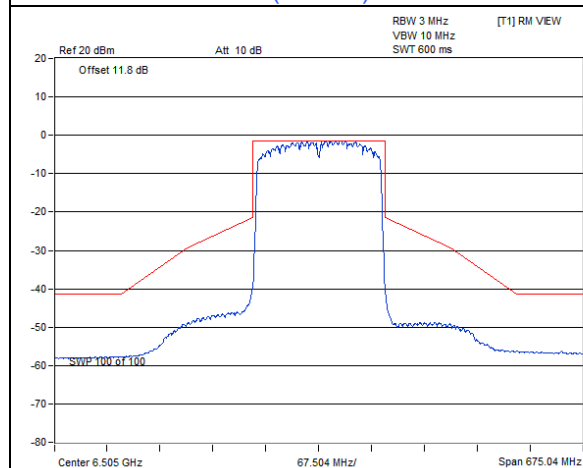
Spectrum Plot



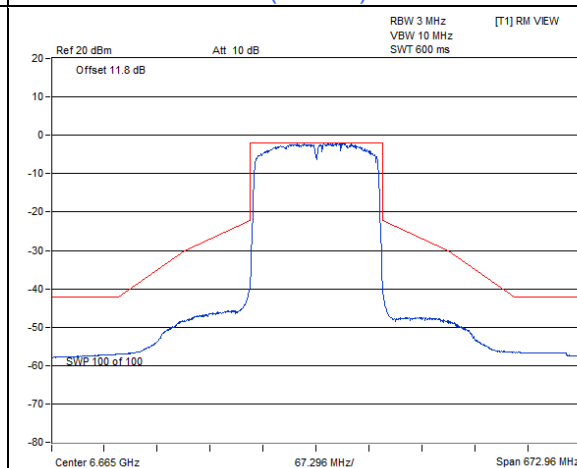
802.11ax (HE160) / Chain 0 : CH 47



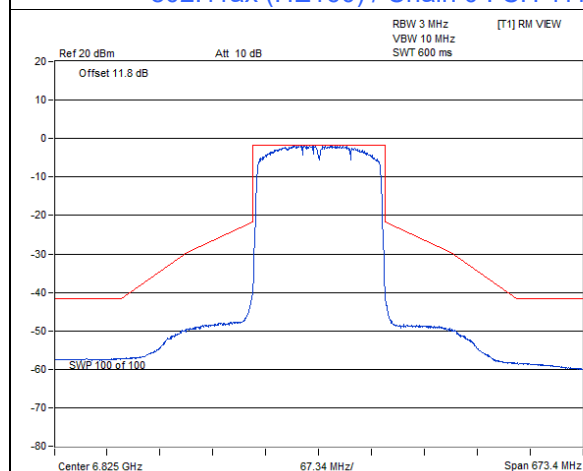
802.11ax (HE160) / Chain 0 : CH 79



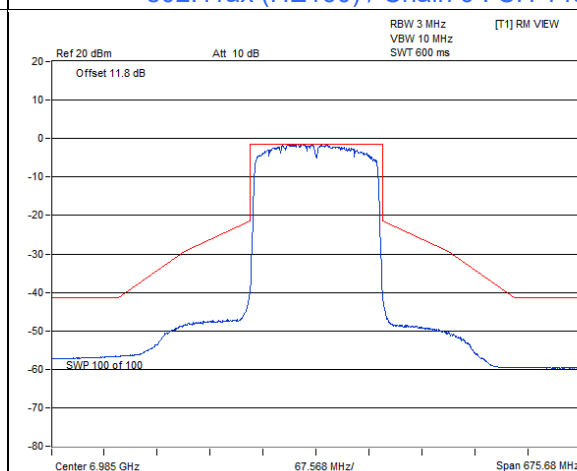
802.11ax (HE160) / Chain 0 : CH 111



802.11ax (HE160) / Chain 0 : CH 143

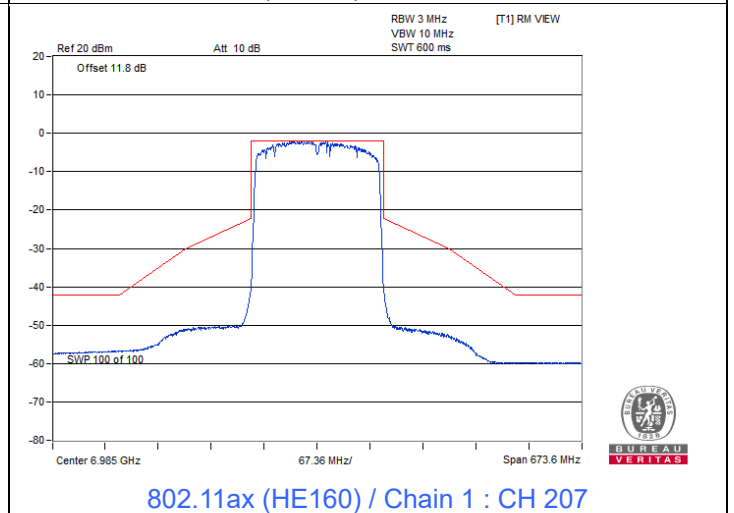
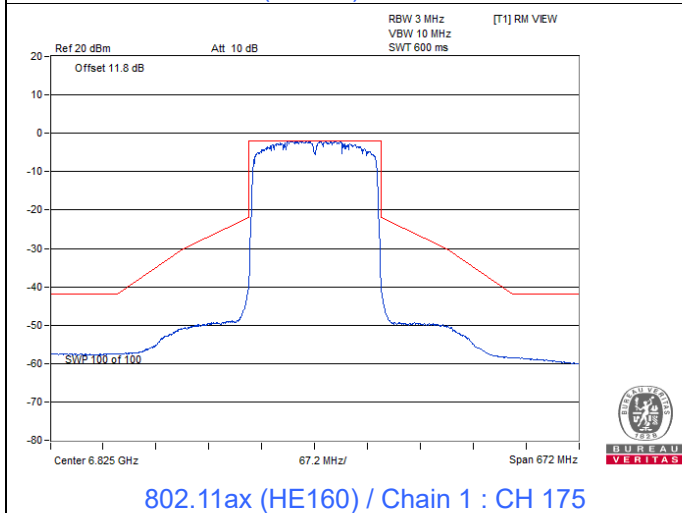
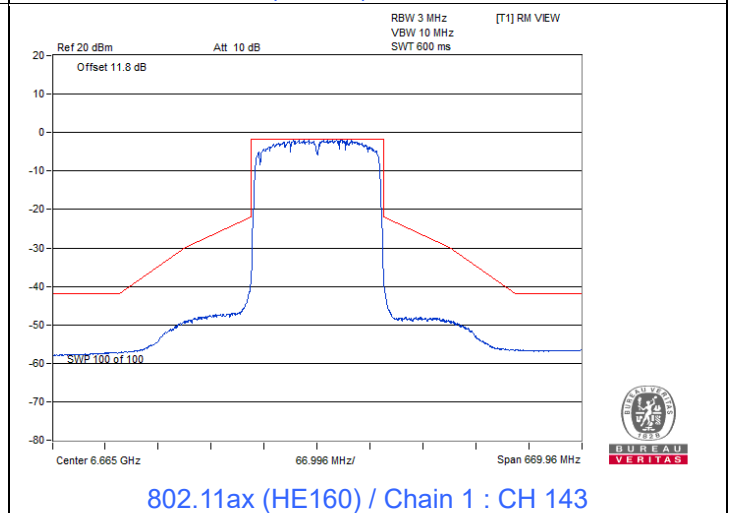
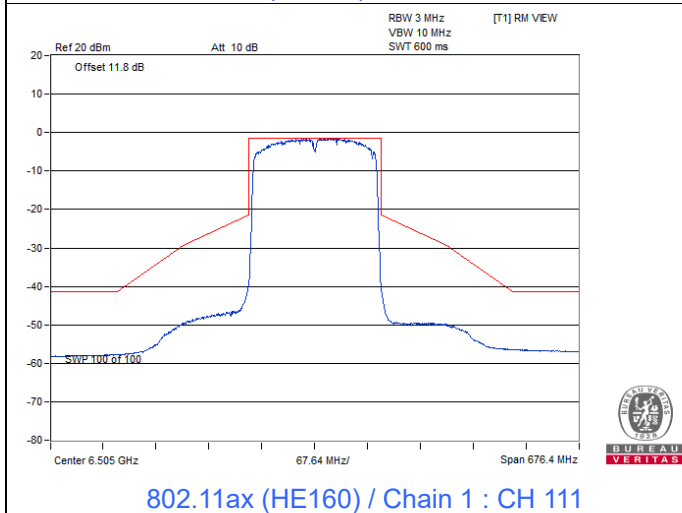
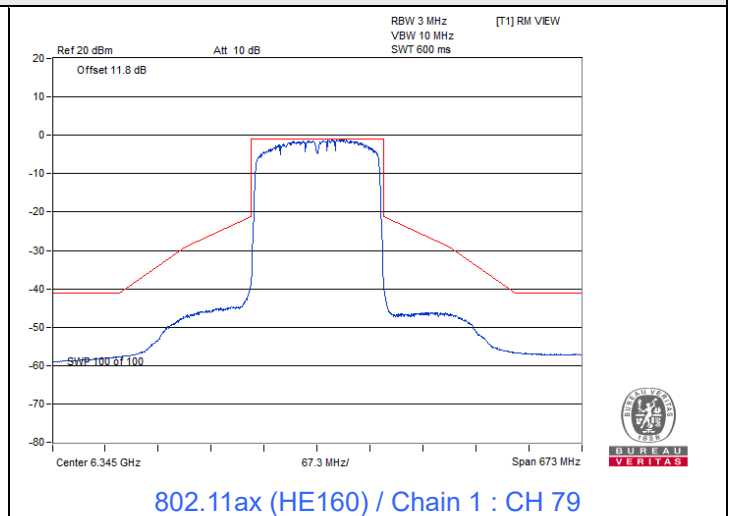
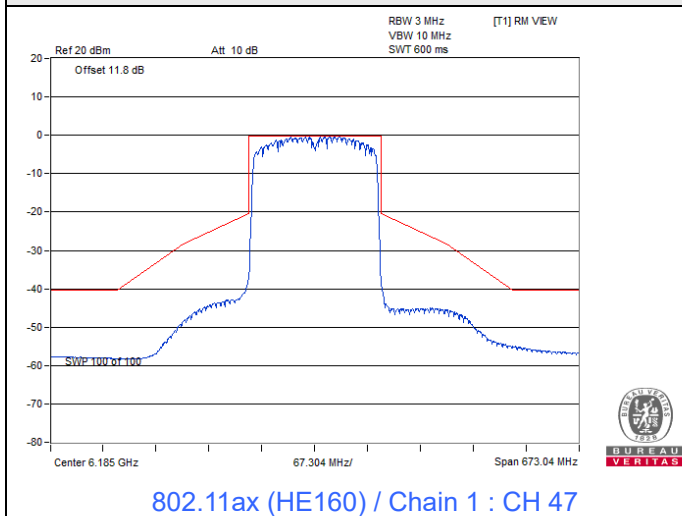


802.11ax (HE160) / Chain 0 : CH 175

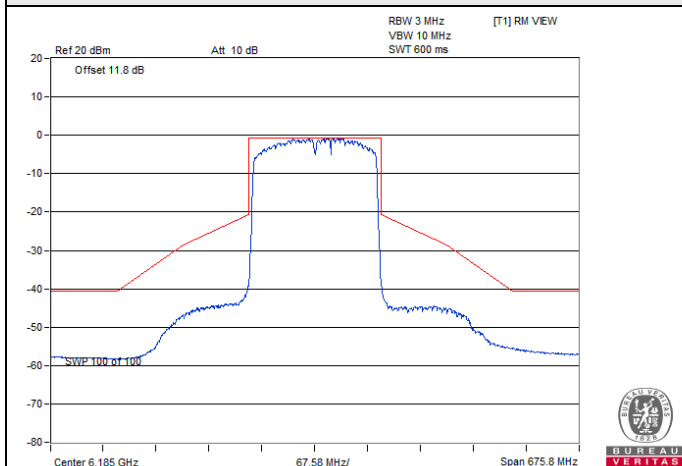


802.11ax (HE160) / Chain 0 : CH 207

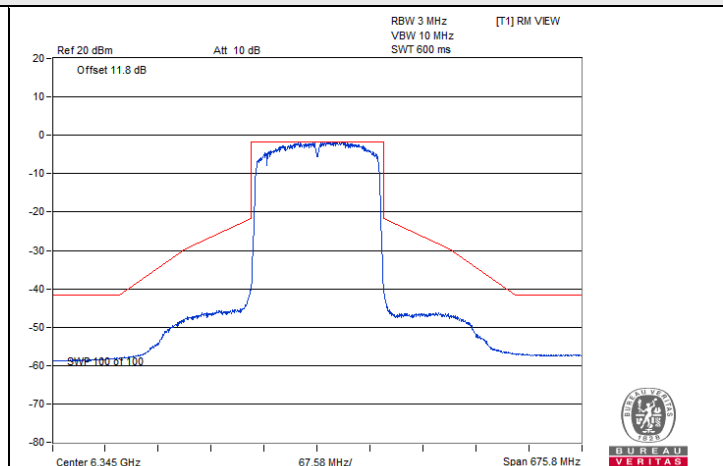
Spectrum Plot



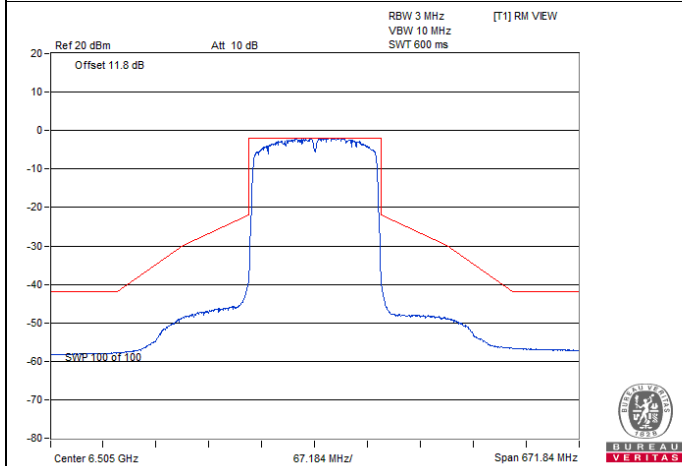
Spectrum Plot



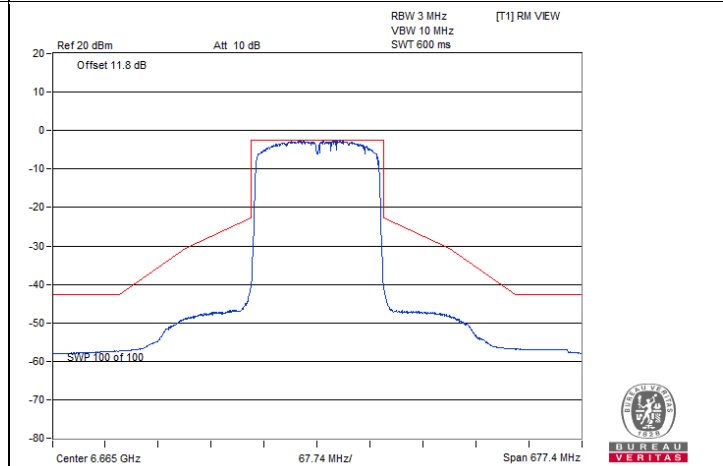
802.11ax (HE160) / Chain 2 : CH 47



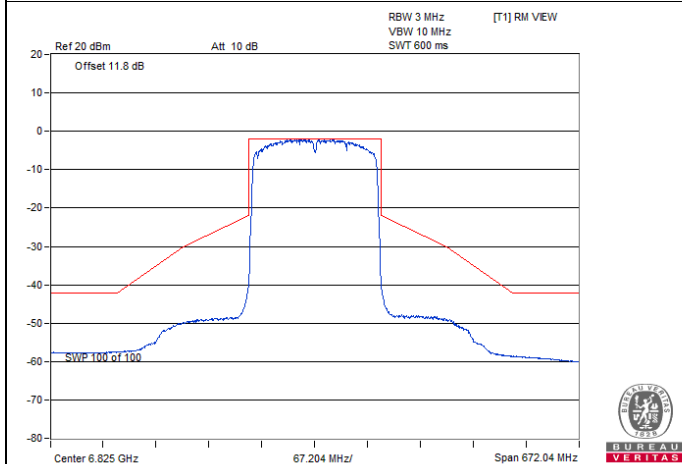
802.11ax (HE160) / Chain 2 : CH 79



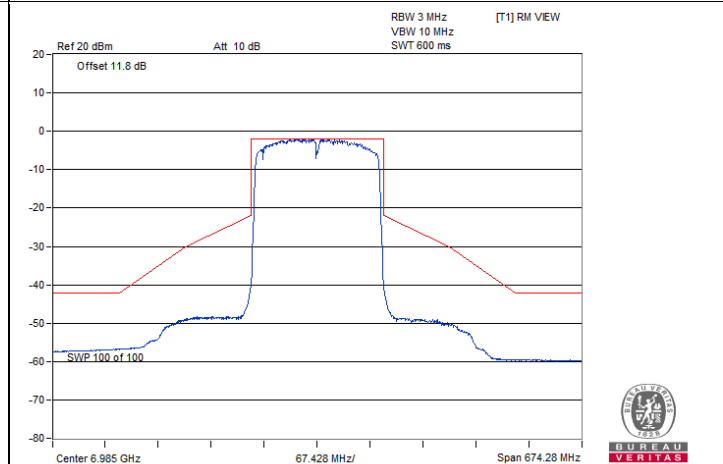
802.11ax (HE160) / Chain 2 : CH 111



802.11ax (HE160) / Chain 2 : CH 143

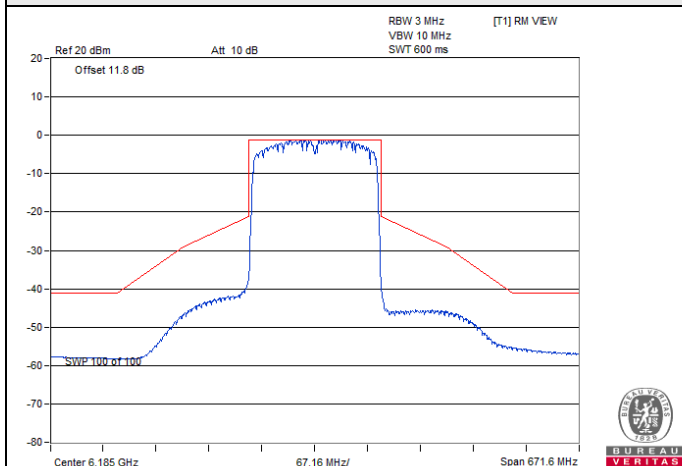


802.11ax (HE160) / Chain 2 : CH 175

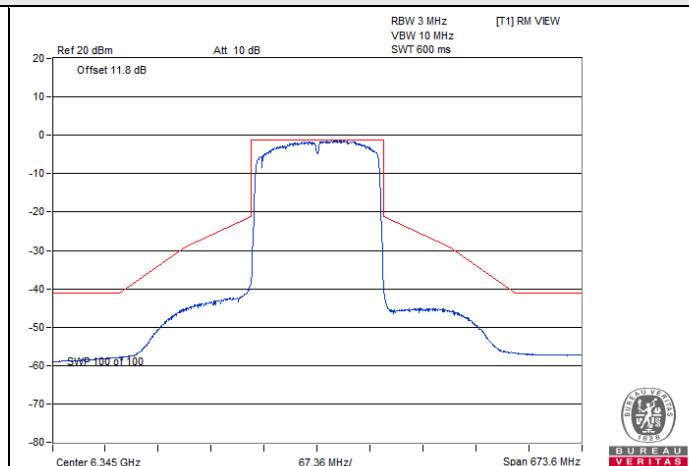


802.11ax (HE160) / Chain 2 : CH 207

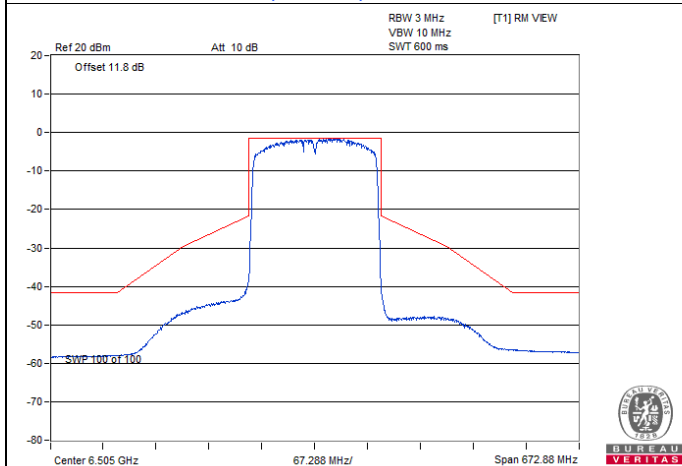
Spectrum Plot



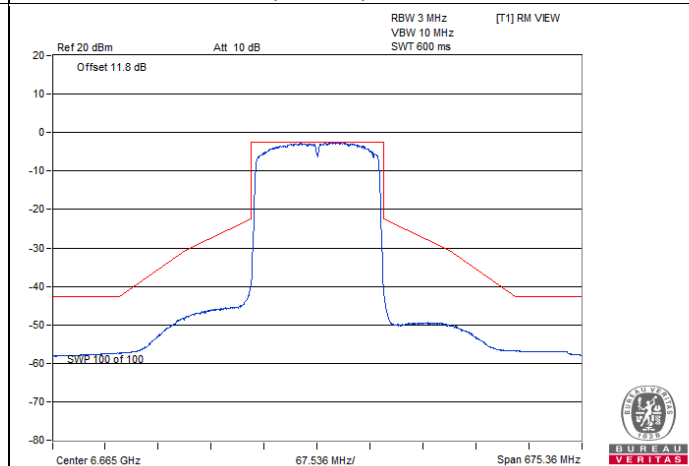
802.11ax (HE160) / Chain 3 : CH 47



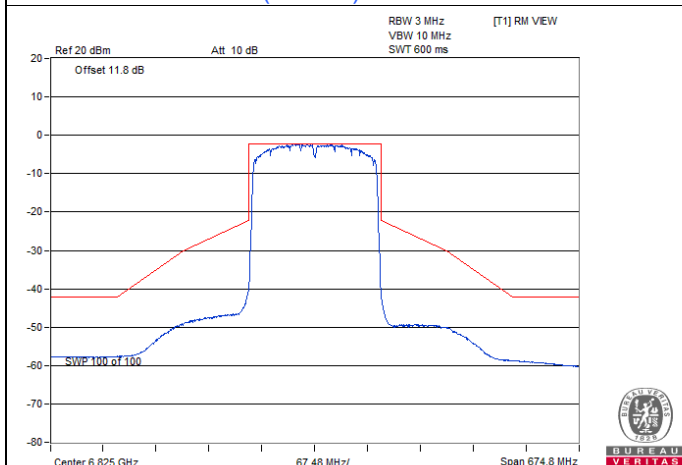
802.11ax (HE160) / Chain 3 : CH 79



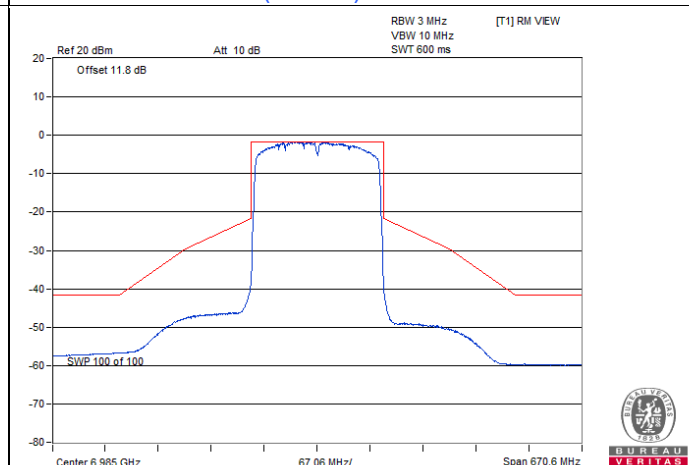
802.11ax (HE160) / Chain 3 : CH 111



802.11ax (HE160) / Chain 3 : CH 143



802.11ax (HE160) / Chain 3 : CH 175



802.11ax (HE160) / Chain 3 : CH 207

7.5 Occupied Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
33	6115	19.20	19.20	19.20	19.20	320	Pass
61	6255	19.20	19.20	19.08	19.20	320	Pass
93	6415	19.08	19.20	19.20	19.20	320	Pass
97	6435	19.08	19.20	19.08	19.20	320	Pass
105	6475	19.08	19.08	19.20	19.08	320	Pass
113	6515	19.20	19.20	19.08	19.08	320	Pass
117	6535	19.08	19.08	19.08	19.20	320	Pass
153	6715	19.08	19.20	19.08	19.20	320	Pass
181	6855	19.08	19.08	19.08	19.20	320	Pass
185	6875	19.08	19.20	19.08	19.08	320	Pass
213	7015	19.08	19.08	19.08	19.08	320	Pass
229	7095	19.20	19.20	19.08	19.20	320	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
35	6125	37.92	37.92	37.92	37.92	320	Pass
59	6245	37.92	37.92	37.92	37.92	320	Pass
91	6405	37.92	37.92	37.92	37.92	320	Pass
99	6445	38.16	37.92	37.92	37.92	320	Pass
107	6485	38.16	37.92	37.92	38.16	320	Pass
115	6525	37.92	37.92	37.92	37.92	320	Pass
123	6565	37.92	37.92	37.92	37.92	320	Pass
155	6725	37.92	37.92	37.92	37.92	320	Pass
179	6845	37.92	37.92	37.92	37.92	320	Pass
187	6885	37.92	37.92	37.92	37.92	320	Pass
211	7005	37.92	37.92	37.92	37.92	320	Pass
227	7085	37.92	37.92	37.68	37.92	320	Pass

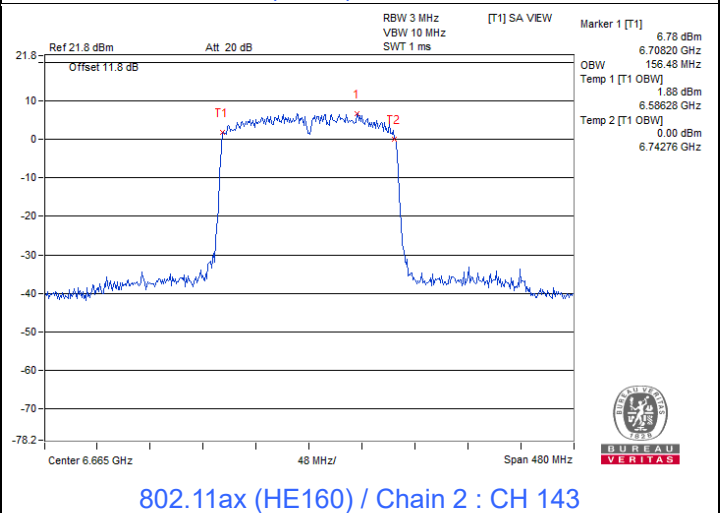
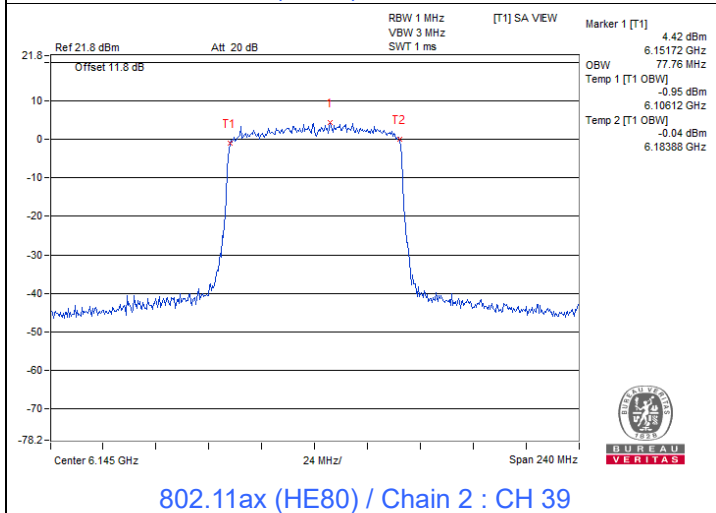
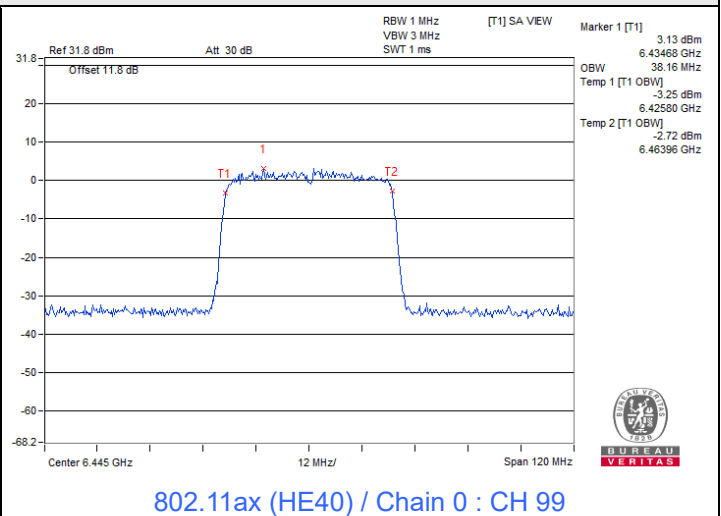
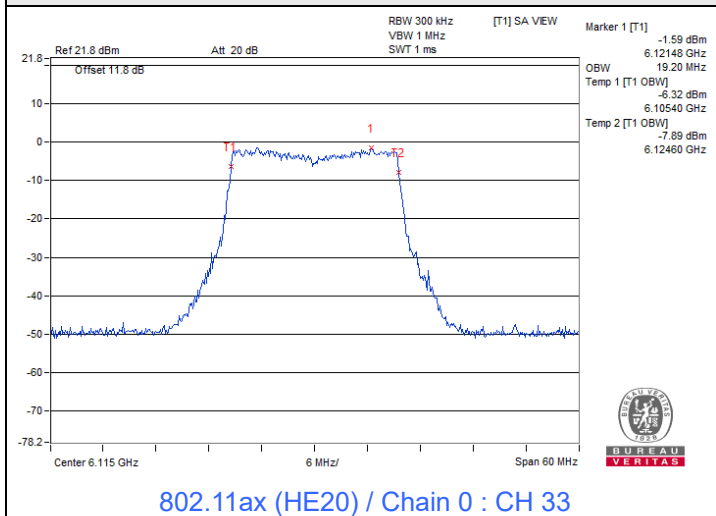
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
39	6145	77.28	77.28	77.76	77.28	320	Pass
55	6225	77.28	77.28	77.28	77.28	320	Pass
87	6385	77.28	77.28	76.80	77.28	320	Pass
103	6465	77.28	77.28	77.28	77.28	320	Pass
119	6545	76.80	76.80	77.28	77.76	320	Pass
135	6625	77.28	77.28	77.28	77.28	320	Pass
151	6705	77.28	76.80	77.28	77.28	320	Pass
167	6785	77.28	77.28	77.28	76.80	320	Pass
183	6865	77.28	77.28	77.28	77.28	320	Pass
199	6945	77.28	77.28	77.28	77.28	320	Pass
215	7025	77.28	77.28	77.76	77.28	320	Pass

802.11ax (HE160)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
47	6185	155.52	155.52	155.52	155.52	320	Pass
79	6345	155.52	155.52	155.52	155.52	320	Pass
111	6505	155.52	155.52	155.52	155.52	320	Pass
143	6665	155.52	155.52	156.48	155.52	320	Pass
175	6825	154.56	155.52	156.48	156.48	320	Pass
207	6985	154.56	153.60	153.60	153.60	320	Pass

Spectrum Plot of Maximum Value



7.6 Frequency Stability

802.11ax (HE20)

Frequency Stability Versus Temp.									
Operating Frequency: 6115MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
40	120	6115.0213	Pass	6115.0199	Pass	6115.0223	Pass	6115.0212	Pass
30	120	6115.0052	Pass	6115.0003	Pass	6115.0043	Pass	6115.0043	Pass
20	120	6114.994	Pass	6114.9972	Pass	6114.9982	Pass	6114.9936	Pass
10	120	6114.9895	Pass	6114.9915	Pass	6114.9899	Pass	6114.9903	Pass
0	120	6115.0094	Pass	6115.0091	Pass	6115.0084	Pass	6115.0105	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 6115MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency(MHz)	Pass/Fail	Measured Frequency(MHz)	Pass/Fail	Measured Frequency(MHz)	Pass/Fail	Measured Frequency(MHz)	Pass/Fail
20	138	6114.9985	Pass	6114.995	Pass	6114.9979	Pass	6114.9925	Pass
	120	6114.994	Pass	6114.9972	Pass	6114.9982	Pass	6114.9936	Pass
	102	6115.0024	Pass	6115.0028	Pass	6115.0045	Pass	6115.007	Pass

7.7 Contention-based Protocol

Environmental Conditions:	25°C, 60% RH	Tested By:	Tobey Chen
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For U-NII-5

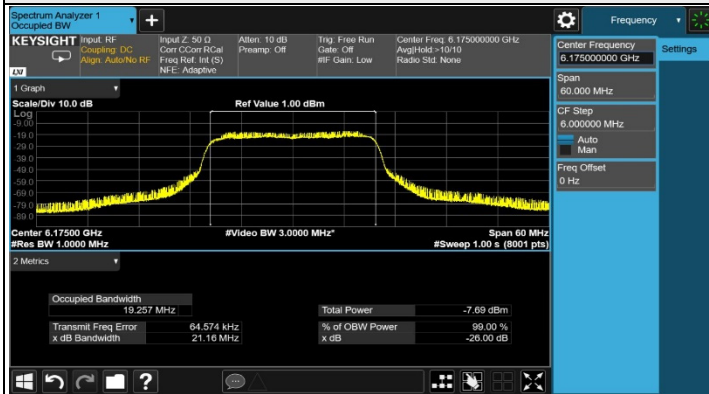
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 2)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	45	6175	6175	-64.06	3.59	0	-67.65	-62	OFF
					-64.56	3.59	0	-68.15	-62	Minimal
					-78.41	3.59	0	-82	-62	ON
	160	47	6185	6110	-64.04	3.59	0	-67.63	-62	OFF
					-64.54	3.59	0	-68.13	-62	Minimal
					-78.41	3.59	0	-82	-62	ON
				6185	-62.06	3.59	0	-65.65	-62	OFF
					-62.56	3.59	0	-66.15	-62	Minimal
					-78.41	3.59	0	-82	-62	ON
				6260	-65.05	3.59	0	-68.64	-62	OFF
					-65.55	3.59	0	-69.14	-62	Minimal
					-78.41	3.59	0	-82	-62	ON

Notes:

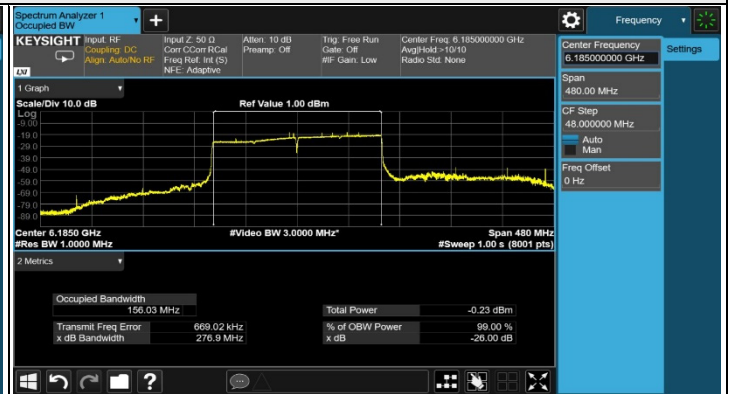
- Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
- Antenna gain values include all the applicable path losses.
- After evaluation, only the Chain0 was chosen for test and presented in the test report.

Contention Based Protocol Detection Probability															
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6175	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6110	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6185	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6260	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

Plots of EUT Tx waveform

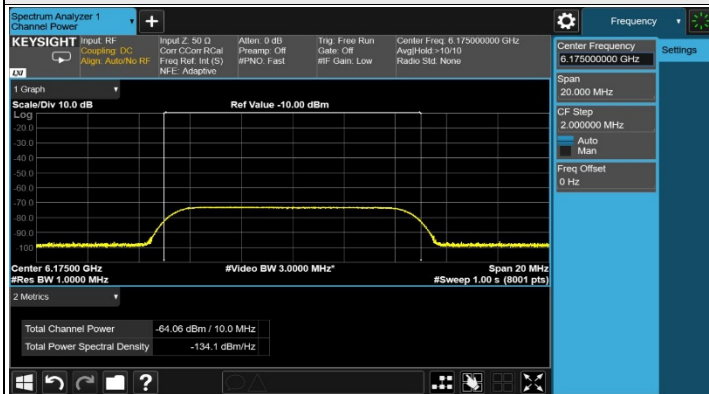


802.11ax (HE20) / CH45

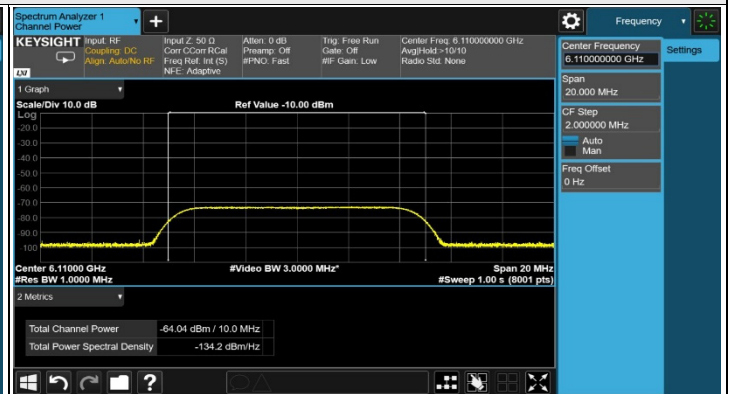


802.11ax (HE160) / CH47

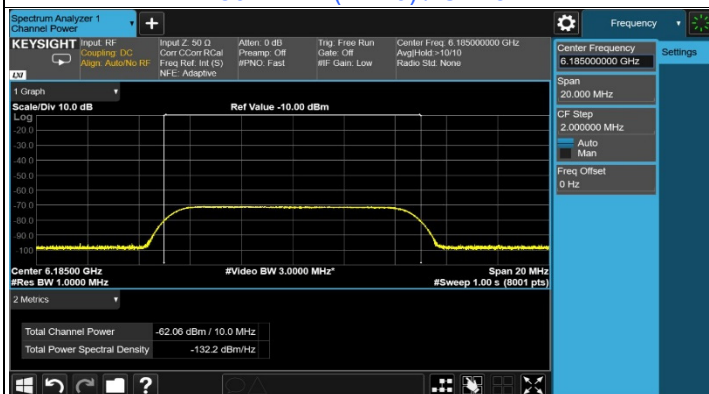
Plots of Injected signal (AWGN) level



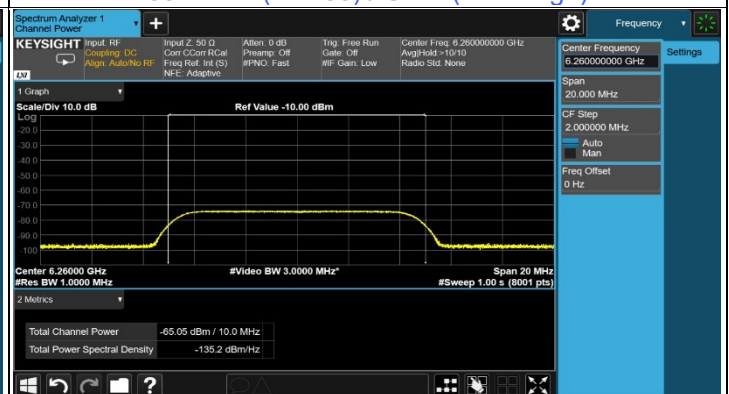
802.11ax (HE20) / CH45



802.11ax (HE160) / CH47(Low Edge)



802.11ax (HE160) / CH47(Middle)



802.11ax (HE160) / CH47(High Edge)

Plots of EUT ceased transmission in the time domain

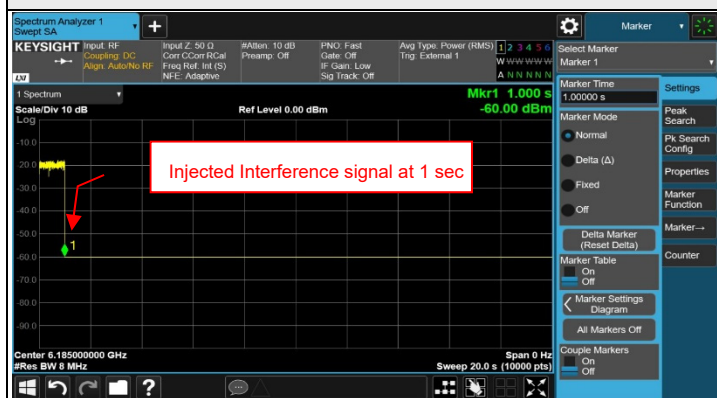


802.11ax (HE20) / CH45

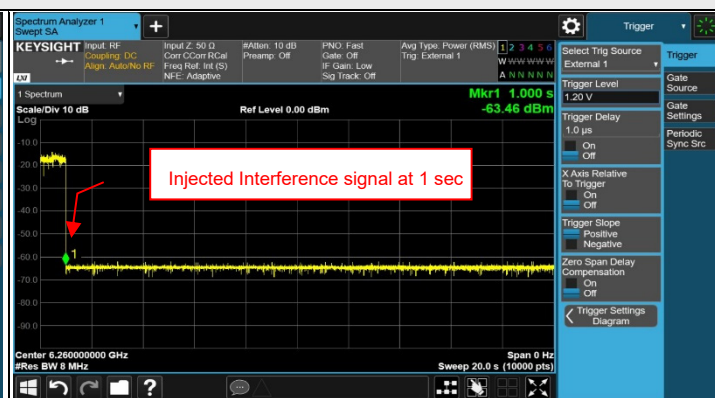


802.11ax (HE160) / CH47(Low Edge)

Plots of EUT ceased transmission in the time domain



802.11ax (HE160) / CH47(Middle)



802.11ax (HE160) / CH47(High Edge)

For U-NII-6

Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 2)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	97	6435	6435	-64.04	3.59	0	-67.63	-62	OFF
					-64.54	3.59	0	-68.13	-62	Minimal
					-78.41	3.59	0	-82	-62	ON
	160	111	6505	6430	-65.05	3.59	0	-68.64	-62	OFF
					-65.55	3.59	0	-69.14	-62	Minimal
					-78.41	3.59	0	-82	-62	ON
				6505	-64.03	3.59	0	-67.62	-62	OFF
					-64.53	3.59	0	-68.12	-62	Minimal
					-78.41	3.59	0	-82	-62	ON
				6580	-62.02	3.59	0	-65.61	-62	OFF
					-62.52	3.59	0	-66.11	-62	Minimal
					-78.41	3.59	0	-82	-62	ON

Notes:

- Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
- Antenna gain values include all the applicable path losses.
- After evaluation, only the Chain0 was chosen for test and presented in the test report.

Contention Based Protocol Detection Probability															
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6435	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6430	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6505	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6580	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

