TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBERD-WTW-P23120358-4
FCC ID:	JEH7748AX5
Product:	AX5
Brand:	NCR Voyix
Model No.:	7748
Received Date:	2023/12/15
Test Date:	2023/12/22 ~ 2024/1/11
Issued Date:	2024/2/5
Applicant:	NCR Voyix Corporation
Address:	864 Spring Street NW, Atlanta GA 30308, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy Lin , **Date:** **2024/2/5**

Jeremy Lin / Project Engineer

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Prepared by : Pettie Chen / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBERD-WTW-P23120358-4	Original release.	2024/2/5

1 Certificate

Product:	AX5
Brand:	NCR Voyix
Test Model:	7748
Sample Status:	Engineering sample
Applicant:	NCR Voyix Corporation
Test Date:	2023/12/22 ~ 2024/1/11
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 v02r01 KDB 789033 D02 General UNII Test Procedure New Rules v02r01 KDB 662911 D01 Multiple Transmitter Output 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)(8)	Maximum RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(8)	Maximum Power Spectral Density	Pass	Meet the requirement of limit.
15.407(a)(10)	Emission Bandwidth	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 -7.21 dB at 0.43484 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -6.1 dB at 419.94 MHz
15.407(b)(6) 15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -2.5 dB at 5925.00 and 7125.00 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.
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

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:

Parameter	Specification	Uncertainty (±)
Occupied Bandwidth	-	72 Hz
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.88 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 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	AX5
Brand	NCR Voyix
Test Model	7748
Status of EUT	Engineering sample
Power Supply Rating	Refer to Note as below
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA in 11ax mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	Up to 2401.9 Mbps
Operating Frequency	5.935 GHz ~ 6.415 GHz 6.435 GHz ~ 6.525 GHz 6.535 GHz ~ 6.865 GHz 6.875 GHz ~ 7.115 GHz
Number of Channel	802.11a, 802.11ax (HE20): 60 802.11ax (HE40): 29 802.11ax (HE80): 14 802.11ax (HE160): 7
Output Power	Under controlled by Standard Power AP: 5.935 GHz ~ 6.415 GHz: EIRP: 236.618 mW (23.74 dBm) 6.535 GHz ~ 6.865 GHz: EIRP: 157.221 mW (21.97 dBm) Under controlled by Low-Power Indoor AP: 5.935 GHz ~ 6.415 GHz: EIRP: 38.589 mW (15.86 dBm) 6.435 GHz ~ 6.525 GHz: EIRP: 32.132 mW (15.07 dBm) 6.535 GHz ~ 6.865 GHz: EIRP: 37.682 mW (15.76 dBm) 6.875 GHz ~ 7.115 GHz: EIRP: 33.077 mW (15.20 dBm)
Equipment Class	6CD: 15E 6 GHz Dual client

Note:

1. The EUT uses following accessories.

CPU		
Brand	Model	
Qualcomm	QCS5430	
BT/WLAN Module		
Brand		
Qualcomm WCN6750		
AC Adapter		
Brand	Model	Specification
FSP	FSP150-A24C14	AC Input : 100-240V, 2A , 50-60Hz DC Output : 24V , 6.25A
Power cord		
Brand	Model	Specification
N/A	N/A	3m
Type C to Type C cable		
Brand	Model	
N/A	N/A	

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Ant. No.	RF Chain No.	Antenna Net Gain (dBi)	Frequency	Antenna Type	Connector Type
1	0	0.8	6150MHz	PIFA	ipex(MHF)
1	0	0.5	6550MHz	PIFA	ipex(MHF)
1	0	0.2	7150MHz	PIFA	ipex(MHF)
2	1	2.8	6150MHz	PIFA	ipex(MHF)
2	1	1.5	6550MHz	PIFA	ipex(MHF)
2	1	0.9	7150MHz	PIFA	ipex(MHF)

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

2. The EUT incorporates a MIMO function:

6 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11a	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX
802.11ax (HE160)	2TX	2RX

3.3 Channel List

U-NII-5:

25 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
2	5935 MHz	1	5955 MHz	5	5975 MHz	9	5995 MHz
13	6015 MHz	17	6035 MHz	21	6055 MHz	25	6075 MHz
29	6095 MHz	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	6415 MHz						

12 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
3	5965 MHz	11	6005 MHz	19	6045 MHz	27	6085 MHz
35	6125 MHz	43	6165 MHz	51	6205 MHz	59	6245 MHz
67	6285 MHz	75	6325 MHz	83	6365 MHz	91	6405 MHz

6 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
7	5985 MHz	23	6065 MHz	39	6145 MHz	55	6225 MHz
71	6305 MHz	87	6385 MHz				

3 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency	Channel	Frequency
15	6025 MHz	47	6185 MHz	79	6345 MHz

U-NII-6:

5 channels are provided for 802.11a, 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 channel 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:

17 channels are provided for 802.11a, 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						

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:

13 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
185	6875 MHz	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
233	7115 MHz						

6 channels are provided for 802.11ax (HE40):

Channel	Frequency	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 are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
199	6945 MHz	215	7025 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
207	6985 MHz

Note: * mean these are straddle channels and operating under control by under control of a low-power indoor access point only.

3.4 Test Mode Applicability and Tested Channel Detail

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A	802.11a	2, 1, 45, 93, 117, 149, 181	BPSK	6Mb/s
	A	802.11ax (HE20)	2, 1, 45, 93, 117, 149, 181	BPSK	MCS0
	A	802.11ax (HE40)	3, 43, 91, 123, 155, 179	BPSK	MCS0
	A	802.11ax (HE80)	7, 39, 87, 135, 151, 167	BPSK	MCS0
	A	802.11ax (HE160)	15, 47, 79, 143	BPSK	MCS0
	B	802.11a	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	6Mb/s
	B	802.11ax (HE20)	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	B	802.11ax (HE40)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	B	802.11ax (HE80)	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	B	802.11ax (HE160)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
Power Spectral Density/ Emission Bandwidth	A	802.11a	2, 1, 45, 93, 117, 149, 181	BPSK	6Mb/s
	A	802.11ax (HE20)	2, 1, 45, 93, 117, 149, 181	BPSK	MCS0
	A	802.11ax (HE40)	3, 43, 91, 123, 155, 179	BPSK	MCS0
	A	802.11ax (HE80)	7, 39, 87, 135, 151, 167	BPSK	MCS0
	A	802.11ax (HE160)	15, 47, 79, 143	BPSK	MCS0
	B	802.11a	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	6Mb/s
	B	802.11ax (HE20)	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	B	802.11ax (HE40)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	B	802.11ax (HE80)	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	B	802.11ax (HE160)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
In-Band Emission Mask	A	802.11a	2, 1, 45, 93, 117, 149, 181	BPSK	6Mb/s
	A	802.11ax (HE20)	2, 1, 45, 93, 117, 149, 181	BPSK	MCS0
	A	802.11ax (HE40)	3, 43, 91, 123, 155, 179	BPSK	MCS0
	A	802.11ax (HE80)	7, 39, 87, 135, 151, 167	BPSK	MCS0
	A	802.11ax (HE160)	15, 47, 79, 143	BPSK	MCS0
	B	802.11a	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	6Mb/s
	B	802.11ax (HE20)	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	B	802.11ax (HE40)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	B	802.11ax (HE80)	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	B	802.11ax (HE160)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0

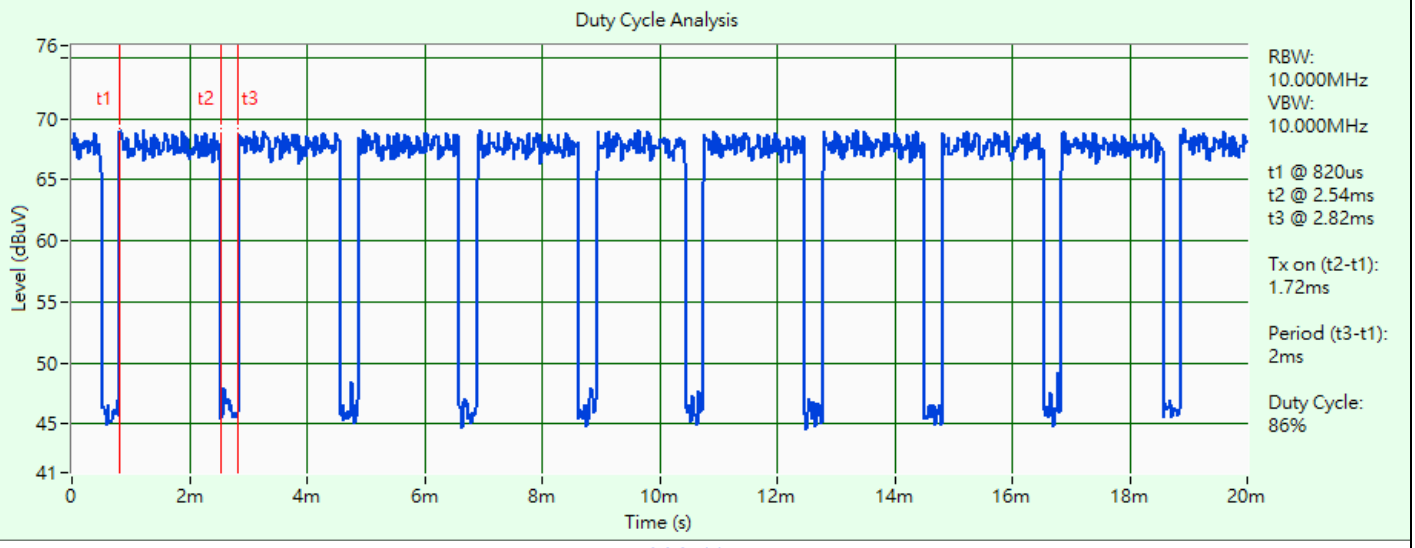
Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter
Occupied Bandwidth	A	802.11a	2, 1, 45, 93, 117, 149, 181	BPSK	6Mb/s
	A	802.11ax (HE20)	2, 1, 45, 93, 117, 149, 181	BPSK	MCS0
	A	802.11ax (HE40)	3, 43, 91, 123, 155, 179	BPSK	MCS0
	A	802.11ax (HE80)	7, 39, 87, 135, 151, 167	BPSK	MCS0
	A	802.11ax (HE160)	15, 47, 79, 143	BPSK	MCS0
	B	802.11a	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	6Mb/s
	B	802.11ax (HE20)	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	B	802.11ax (HE40)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	B	802.11ax (HE80)	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	B	802.11ax (HE160)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
Frequency Stability	A	802.11a	2	unmodulated	-
Contention-based Protocol	B	802.11ax (HE20)	45, 105, 149, 209	BPSK	MCS0
	B	802.11ax (HE160)	47, 111, 143, 207	BPSK	MCS0
AC Power Conducted Emissions	A	802.11a	45	BPSK	6Mb/s
	B	802.11ax (HE160)	15	BPSK	MCS0
Unwanted Emissions below 1 GHz	A	802.11a	45	BPSK	6Mb/s
	B	802.11ax (HE160)	15	BPSK	MCS0
Unwanted Emissions above 1 GHz	A	802.11a	2, 1, 45, 93, 117, 149, 181	BPSK	6Mb/s
	A	802.11ax (HE20)	2, 1, 45, 93, 117, 149, 181	BPSK	MCS0
	A	802.11ax (HE40)	3, 43, 91, 123, 155, 179	BPSK	MCS0
	A	802.11ax (HE80)	7, 39, 87, 135, 151, 167	BPSK	MCS0
	A	802.11ax (HE160)	15, 47, 79, 143	BPSK	MCS0
	B	802.11a	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	6Mb/s
	B	802.11ax (HE20)	2, 1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	B	802.11ax (HE40)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	B	802.11ax (HE80)	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	B	802.11ax (HE160)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0

EUT Configure Mode	Mode	Description
	A	Under controlled by Standard Power AP
	B	Under controlled by Low-Power Indoor AP

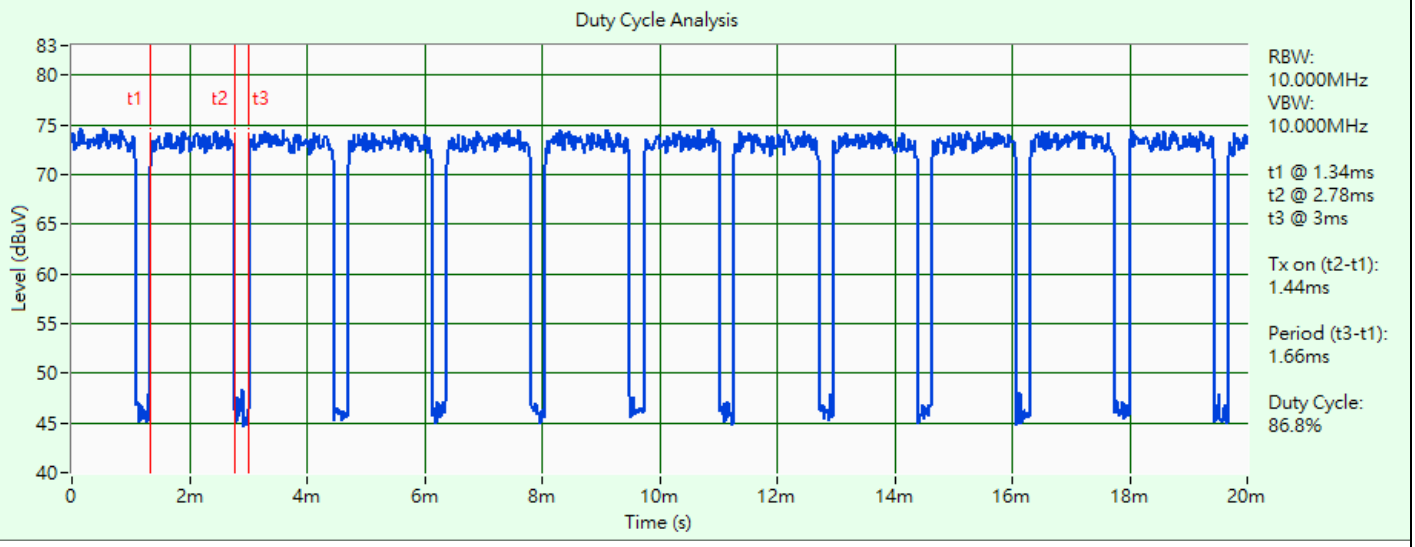
3.5 Duty Cycle of Test Signal

Test Mode A

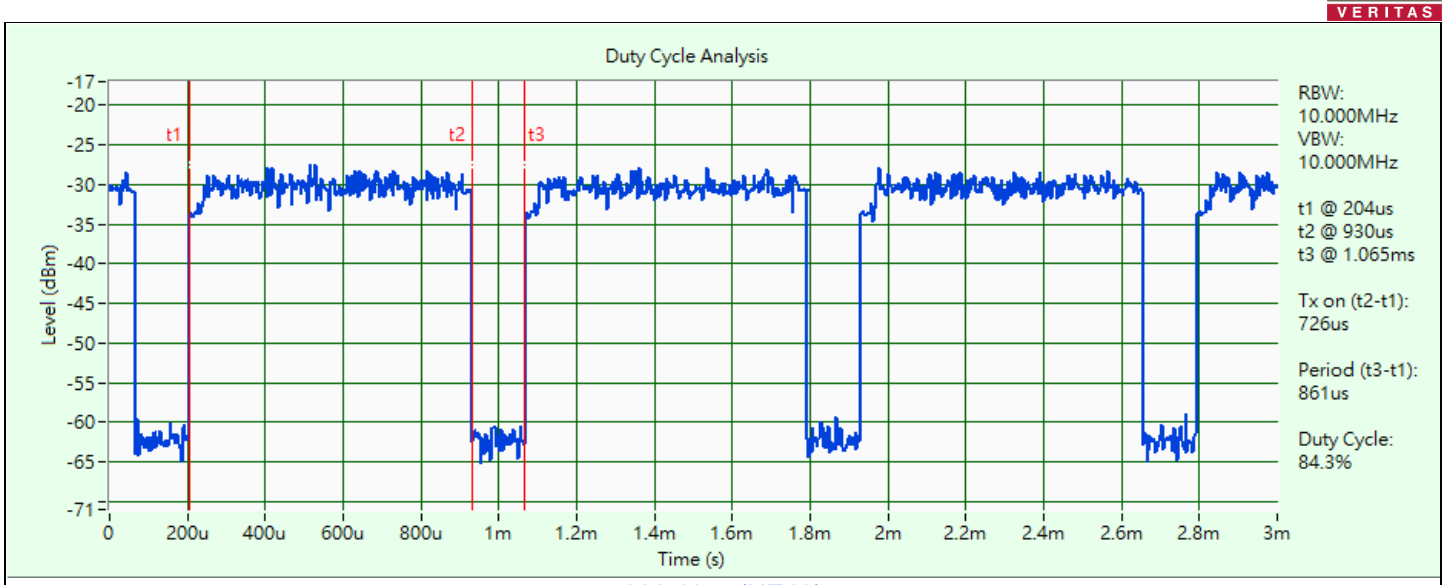
802.11a: Duty cycle = 1.72 ms / 2 ms x 100% = 86.0%, duty factor = 10 * log (1/Duty cycle) = 0.66 dB
802.11ax (HE20): Duty cycle = 1.44 ms / 1.66 ms x 100% = 86.8%, duty factor = 10 * log (1/Duty cycle) = 0.62 dB
802.11ax (HE40): Duty cycle = 0.726 ms / 0.861 ms x 100% = 84.3%, duty factor = 10 * log (1/Duty cycle) = 0.74 dB
802.11ax (HE80): Duty cycle = 0.549 ms / 0.651 ms x 100% = 84.3%, duty factor = 10 * log (1/Duty cycle) = 0.74 dB
802.11ax (HE160): Duty cycle = 0.555 ms / 0.66 ms x 100% = 84.1%, duty factor = 10 * log (1/Duty cycle) = 0.75 dB



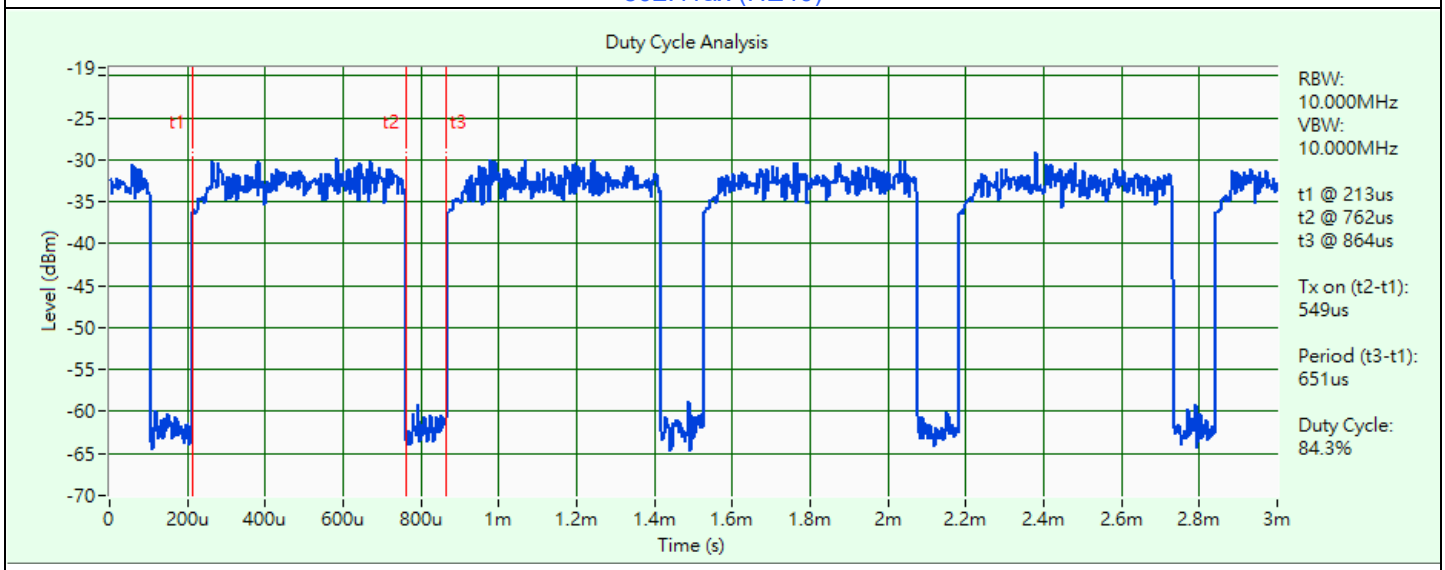
802.11a



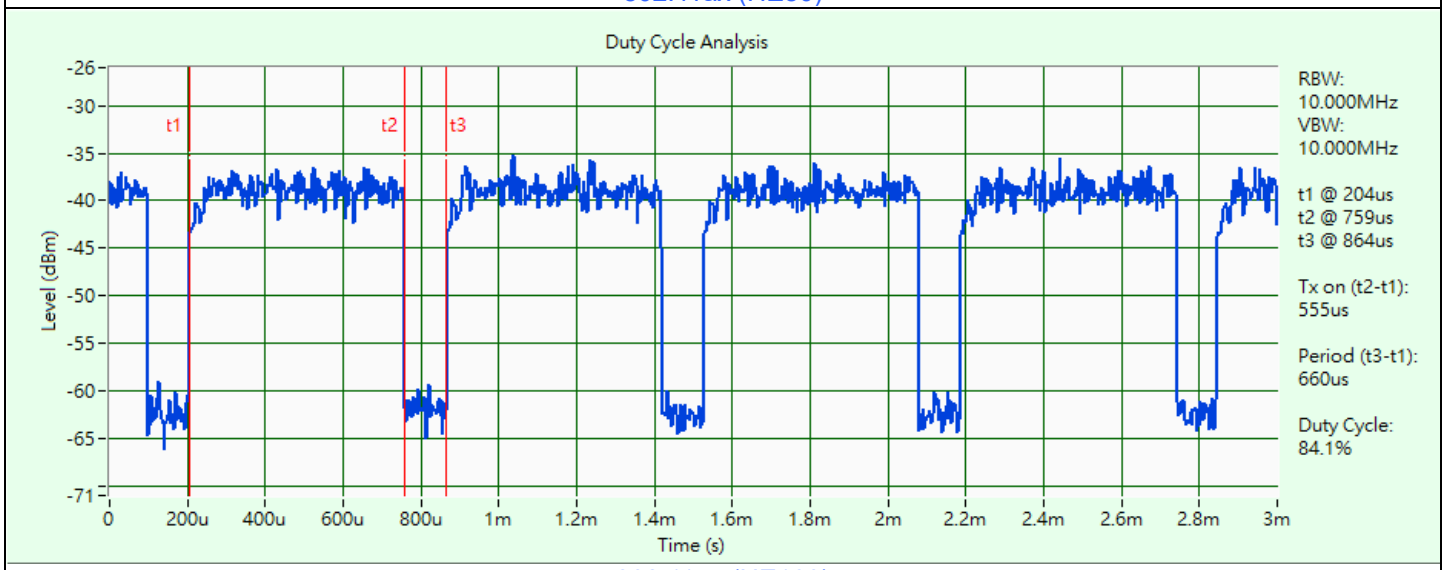
802.11ax (HE20)



802.11ax (HE40)



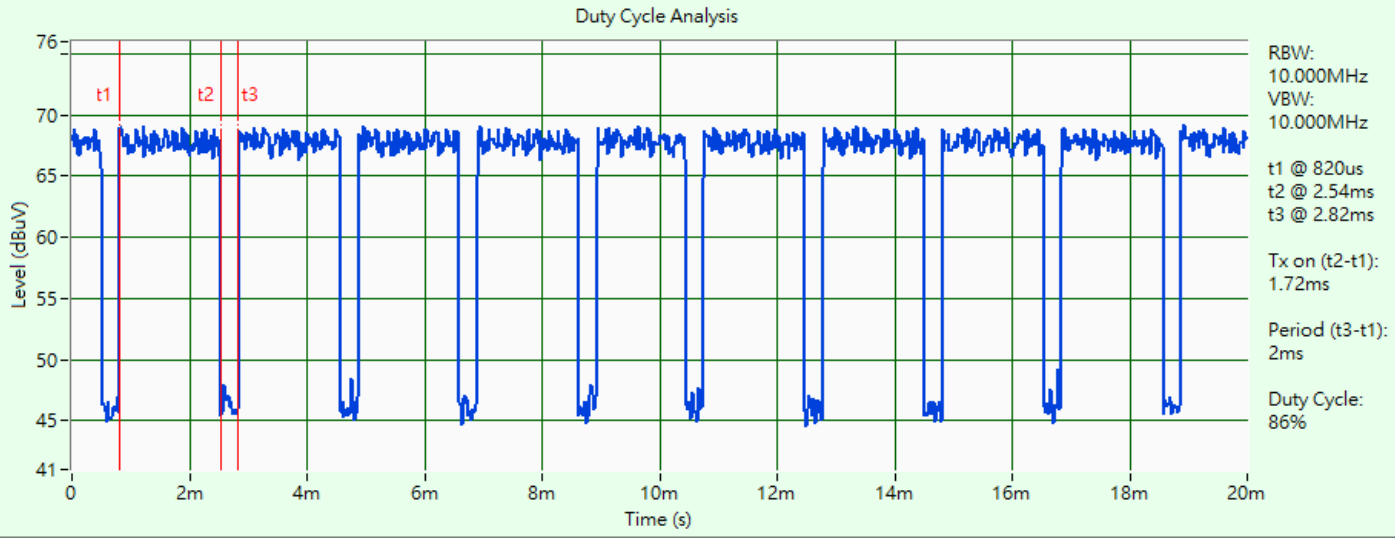
802.11ax (HE80)



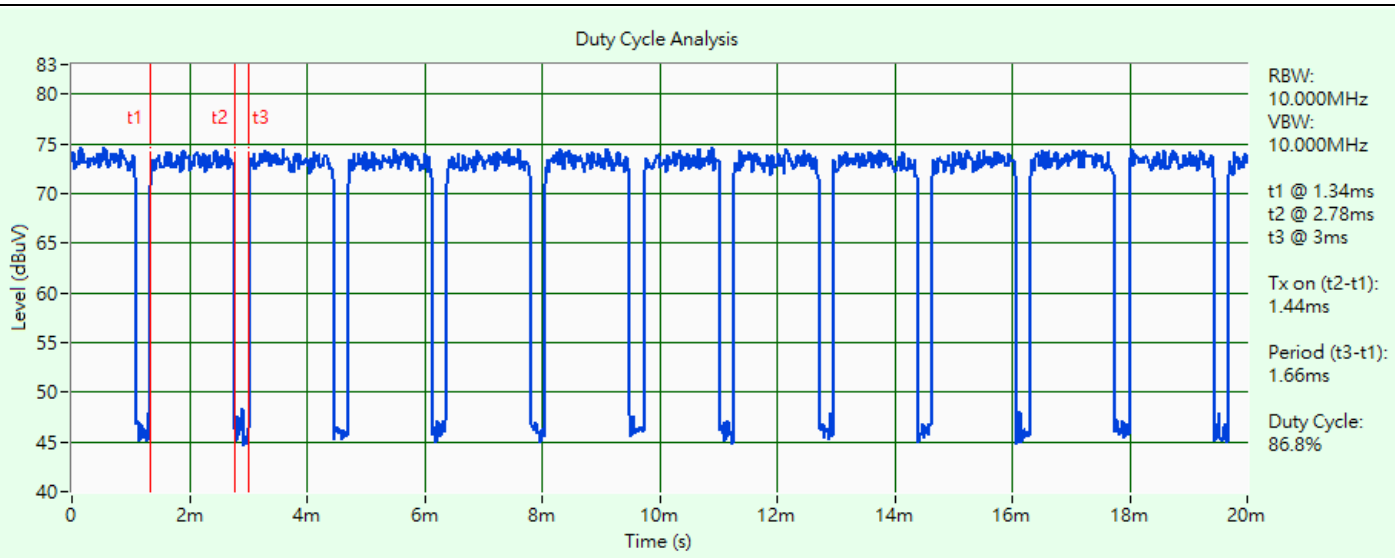
802.11ax (HE160)

Test Mode B

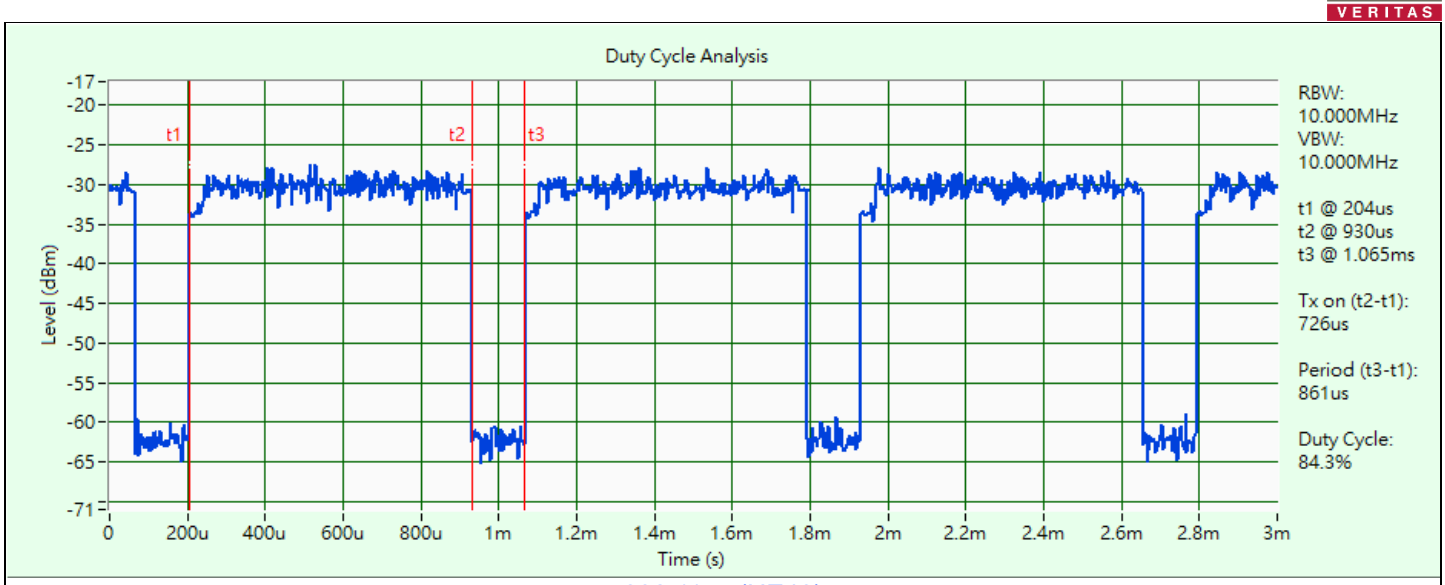
802.11a: Duty cycle = 1.72 ms / 2 ms x 100% = 86.0%, duty factor = 10 * log (1/Duty cycle) = 0.66 dB
802.11ax (HE20): Duty cycle = 1.44 ms / 1.66 ms x 100% = 86.8%, duty factor = 10 * log (1/Duty cycle) = 0.62 dB
802.11ax (HE40): Duty cycle = 0.726 ms / 0.861 ms x 100% = 84.3%, duty factor = 10 * log (1/Duty cycle) = 0.74 dB
802.11ax (HE80): Duty cycle = 0.549 ms / 0.651 ms x 100% = 84.3%, duty factor = 10 * log (1/Duty cycle) = 0.74 dB
802.11ax (HE160): Duty cycle = 0.555 ms / 0.66 ms x 100% = 84.1%, duty factor = 10 * log (1/Duty cycle) = 0.75 dB



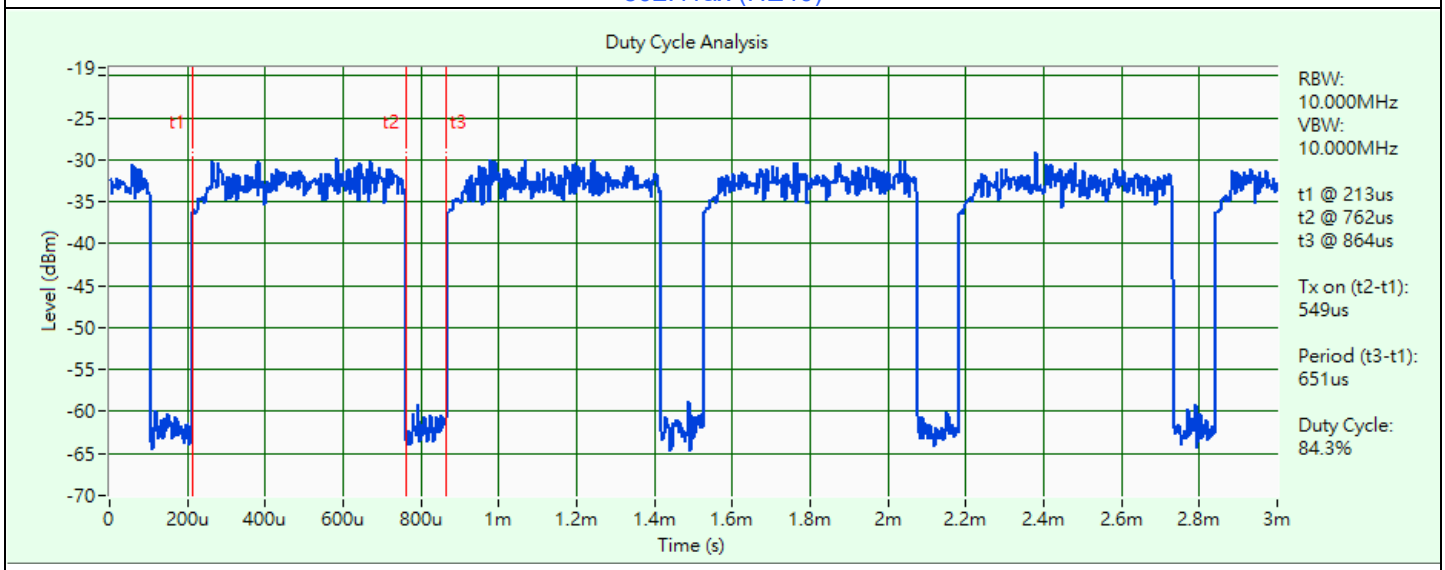
802.11a



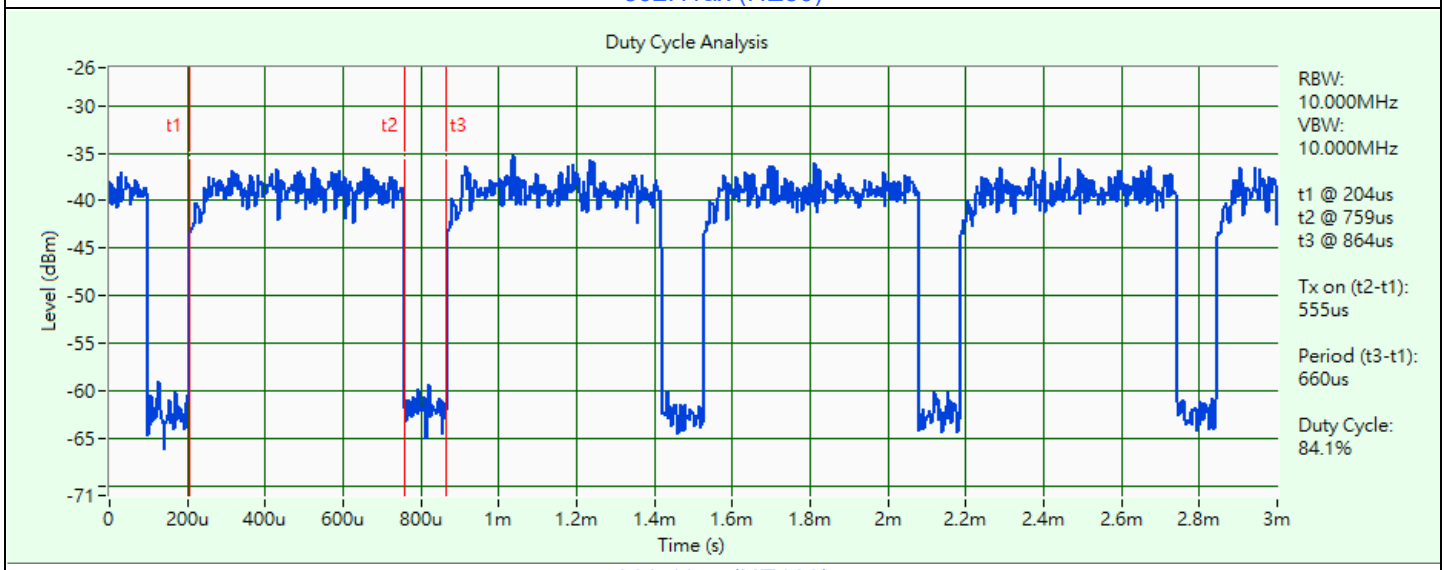
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

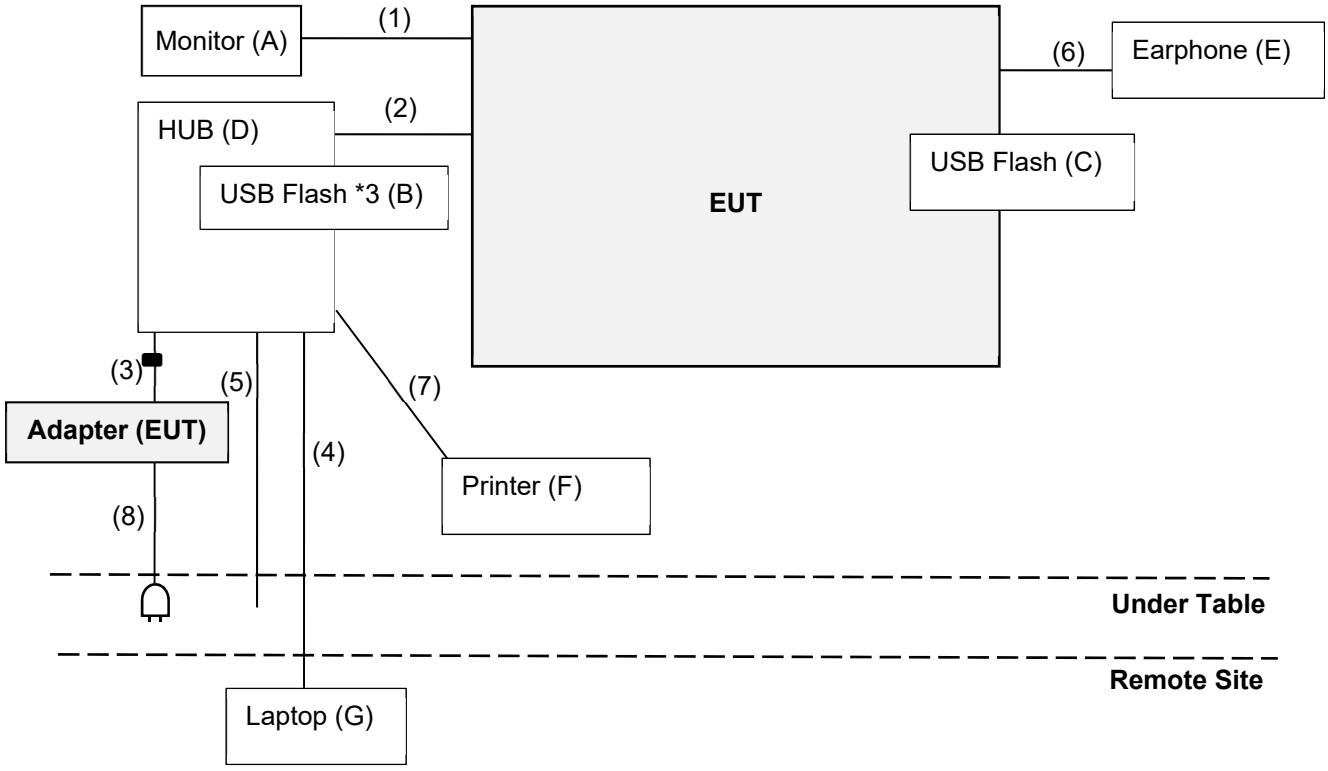


802.11ax (HE160)

3.6 Test Program Used and Operation Descriptions

Controlling software QRCT_4.0.209.0 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.	Monitor	NCR	1607-0000-9090	N/A	N/A	Supplied by applicant
B.	USB Flash*3	SanDisk	SDDDC3-032G	N/A	N/A	Provided by Lab
C.	USB Flash	SanDisk	SDDDC3-032G	N/A	N/A	Provided by Lab
D.	HUB	N/A	N/A	N/A	N/A	Supplied by applicant
E.	Earphone	APPLE	MB77PFEB	N/A	N/A	Provided by Lab
F.	Printer	NCR	N/A	N/A	N/A	Supplied by applicant
G.	Laptop	Lenovo	L440	R9-0GFJKK	N/A	Provided by Lab

No.	Cable Descriptions	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Qty.)	Remark
1.	Type-C Cable	1	1.5	Yes	0	Supplied by applicant
2.	Type C to Type C cable	1	2	Yes	0	Accessory of EUT
3.	DC Cable	1	1.5	Yes	1	Accessory of EUT
4.	RJ45 Cable	1	10	No	0	Provided by Lab
5.	RJ11 Cable	1	1.5	No	0	Supplied by applicant
6.	Audio Cable	1	1.2	No	0	Provided by Lab
7.	Type-B Cable	1	1	Yes	0	Supplied by applicant
8.	AC Cable	1	3	No	0	Supplied by applicant

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 Maximum RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Peak Power Analyzer Keysight	8990B	MY51000485	2023/1/19	2024/1/18
Wideband Power Sensor Keysight	N1923A	MY58020002	2023/1/18	2024/1/17
		MY58140009	2023/1/18	2024/1/17

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/12/31 ~ 2024/1/3

4.2 Maximum Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal & Spectrum Analyzer R&S	FSV3044	101504	2023/6/5	2024/6/4
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/12/31 ~ 2024/1/3

4.3 Emission Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 In-Band Emission Mask

Refer to section 4.2 to get information of the instruments.

4.5 Occupied Bandwidth

Refer to section 4.2 to get information of the instruments.

4.6 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
AC Power Supply JIN YIH Technology	6905S	1720444	N/A	N/A
Digital Multimeter Fluke	87-III	70360742	2023/7/6	2024/7/5
Signal & Spectrum Analyzer R&S	FSV3044	101504	2023/6/5	2024/6/4
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber Terchy	HRM-120RF	931022	2023/12/19	2024/12/18

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/12/31

4.7 Contention-based Protocol

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
EXA Signal Analyzer Agilent	N9010A	MY52220207	2023/1/3	2024/1/2
MXG Vector Signal Generator Agilent	N5182B	MY53050430	2023/12/4	2024/12/3
MXG Vector Signal Generator Keysight	N5182BU	MY59360189	2023/12/4	2024/12/3
Power Divider Woken	0120A02058001M	DCMD33WIK3	2023/5/5	2024/5/4
		DCMD33WIK7	2023/5/5	2024/5/4

Notes:

1. The test was performed in Adaptivity room.
2. Tested Date: 2023/12/22

4.8 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance HUBER+SUHNER	E1-011276	01	2023/2/1	2024/1/31
	E1-011312	10	2023/1/30	2024/1/29
	E1-011591	17	2023/2/1	2024/1/31
DC-LISN Schwarzbeck	NNBM 8126G	8126G-069	2023/11/7	2024/11/6
EMI Test Receiver R&S	ESR3	102783	2023/12/13	2024/12/12
Fixed Attenuator SGH	BNC10W10dB	PAD-COND2-01	2023/9/2	2024/9/1
LISN R&S	ESH2-Z5	100100	2023/3/7	2024/3/6
	ESH3-Z5	100312	2023/9/12	2024/9/11
RF Coaxial Cable Woken	5D-FB	Cable-cond2-01	2023/9/2	2024/9/1
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2023/8/31	2024/8/30

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2023/12/28 ~ 2024/1/11

4.9 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2023/10/16	2024/10/15
EXA Signal Analyzer Agilent	N9010A	MY52220207	2023/1/3 2023/12/28	2024/1/2 2024/12/27
Loop Antenna Electro-Metrics	EM-6879	269	2023/9/23	2024/9/22
Loop Antenna TESEQ	HLA 6121	45745	2023/8/8	2024/8/7
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Preamplifier EMCI	EMC 330H	980112	2023/9/27	2024/9/26
	EMC001340	980201	2023/9/27	2024/9/26
RF Coaxial Cable EMCI	5D-NM-BM	140901	2023/9/27	2024/9/26
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2023/9/27	2024/9/26
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2023/12/27 ~ 2024/1/11

4.10 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
EXA Signal Analyzer Agilent	N9010A	MY52220207	2023/1/3	2024/1/2
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2023/11/12	2024/11/11
	BBHA 9170	148	2023/11/12	2024/11/11
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Notch Filter Micro-Tronics	BRM17690	004	2023/1/11	2024/1/10
	BRM50716	060	2023/12/25	2024/12/24
Preamplifier EMCI	EMC 012645	980115	2023/9/27	2024/9/26
	EMC 184045	980116	2023/9/27	2024/9/26
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2023/7/8	2024/7/7
	EMC102-KM-KM-3000	150929	2023/7/8	2024/7/7
	EMC104-SM-SM-8000+3000	171005	2023/9/27	2024/9/26
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	2023/9/27	2024/9/26
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2023/12/25 ~ 2023/12/26

5 Limits of Test Items

5.1 Maximum RF Output Power

Operation Band	Equipment Class	Limit
		Maximum Average Power
U-NII-5 U-NII-6 U-NII-7 U-NII-8	6CD: 15E 6 GHz Dual client (under control of a low-power indoor access point)	EIRP 24 dBm
U-NII-5 U-NII-7	6CD: 15E 6 GHz Dual client (under control of a Standard power access point)	EIRP 30 dBm

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

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

5.2 Maximum Power Spectral Density

Operation Band	Equipment Class	Limit
		Maximum Power Density
U-NII-5 U-NII-6 U-NII-7 U-NII-8	6CD: 15E 6 GHz Dual client (under control of a low-power indoor access point)	EIRP -1 dBm/MHz
U-NII-5 U-NII-7	6CD: 15E 6 GHz Dual client (under control of a Standard power access point)	EIRP 17 dBm/MHz

5.3 Emission Bandwidth

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

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:

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

6 Test Arrangements

6.1 Maximum RF Output Power

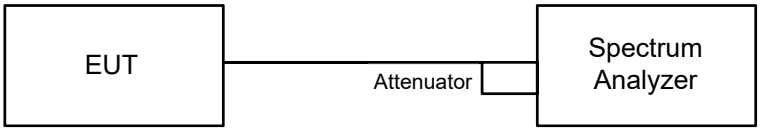
6.1.1 Test Setup

6.1.2 Test Procedure

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

6.2 Maximum Power Spectral Density

6.2.1 Test Setup



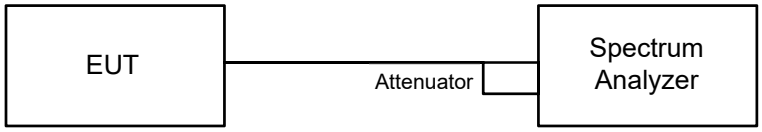
6.2.2 Test Procedure

For specified measurement bandwidth 1 MHz:
Method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ 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/duty cycle).

6.3 Emission Bandwidth

6.3.1 Test Setup

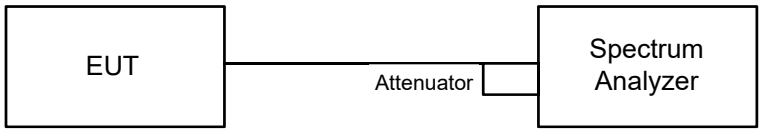


6.3.2 Test Procedure

a. Set RBW = approximately 1% of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6.4 In-Band Emission Mask

6.4.1 Test Setup

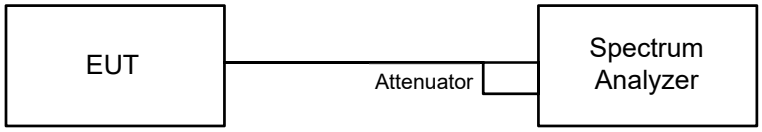


6.4.2 Test Procedure

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 ≥ [3 X RBW].
d) Number of points in sweep ≥ [2 X span / 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

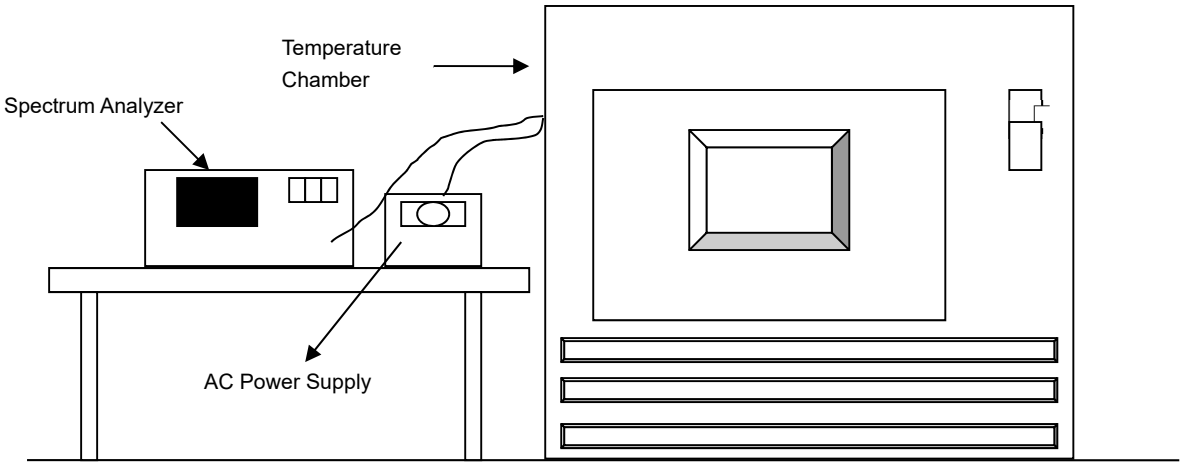


6.5.2 Test Procedure

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

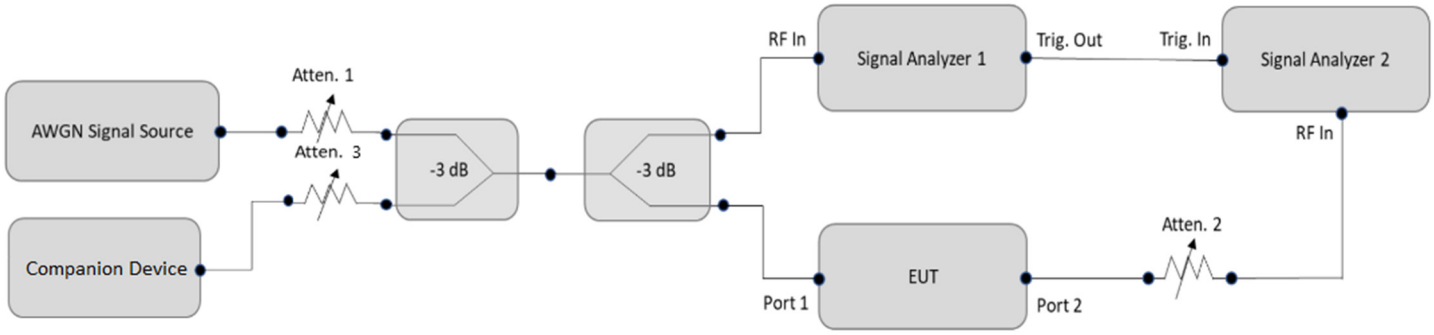


6.6.2 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. 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.
e. Repeat step (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.
f. 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

a. 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.

b. 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).

c. Determine number of times detection threshold test as following table,

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

d. 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.

e. 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.

f. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.

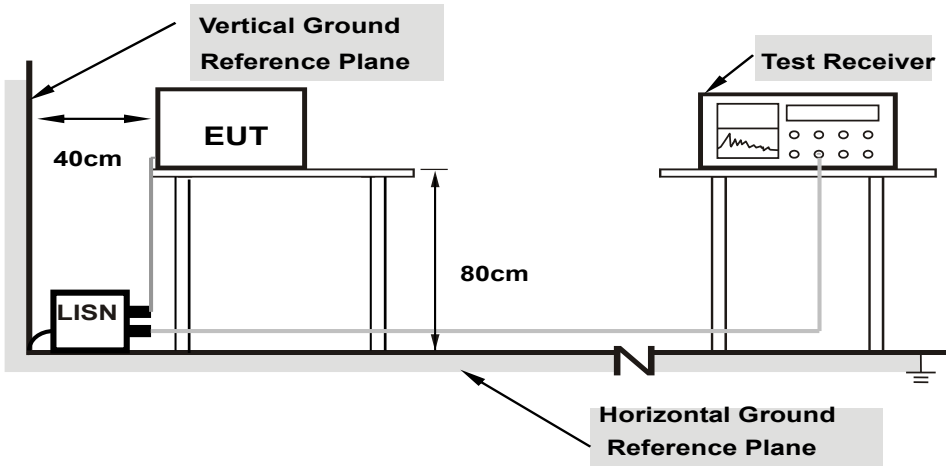
g. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.

h. (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.

i. 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

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

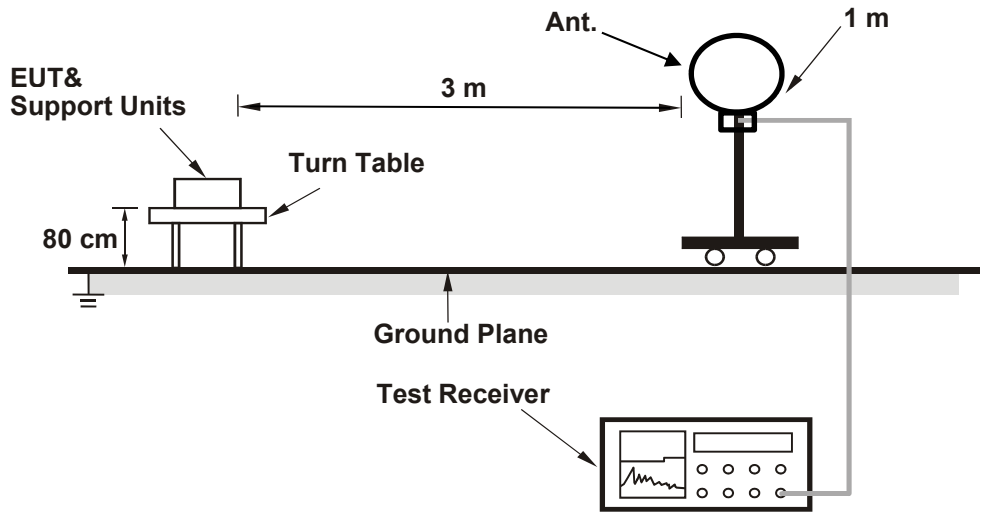
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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

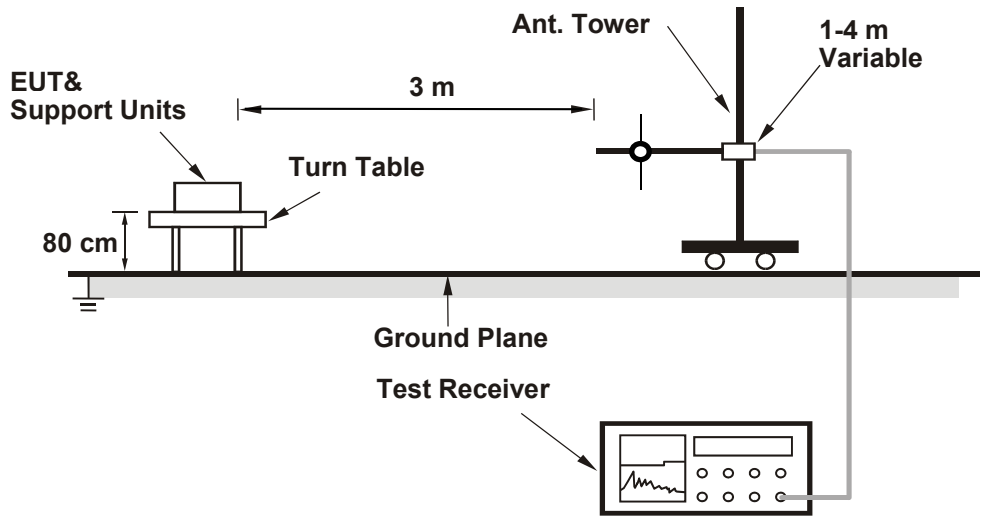
6.9 Unwanted Emissions below 1 GHz

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.

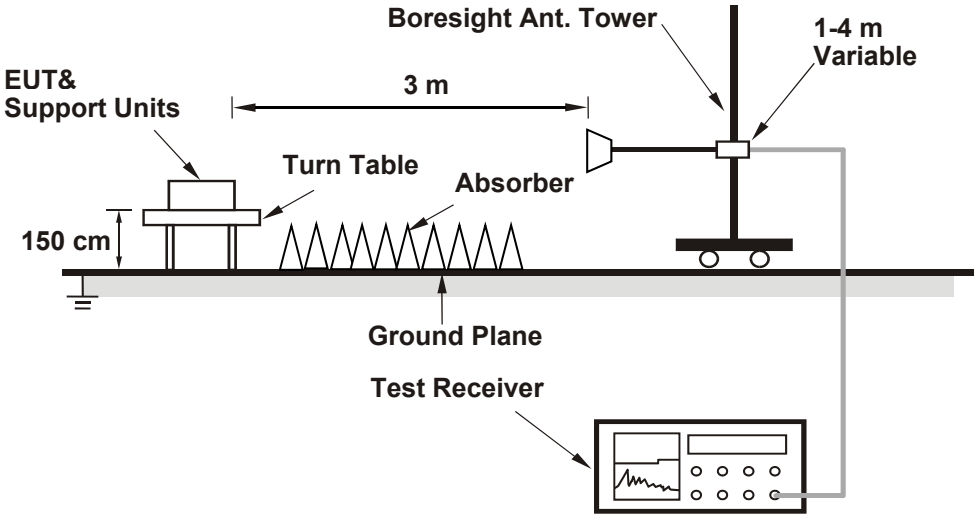
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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

a. 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.

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 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:

1. 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.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
   For 802.11ax (HE20) CH2, CH233: Integration method
   a) For peak emissions measurements:
      1) Set RBW = 100 kHz
      2) Detection = peak.
      3) Max hold.
      4) Perform band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.
   b) For average emissions measurements:
      1) Set RBW = 100 kHz.
      2) Perform band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.
3. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 Maximum RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	21°C, 69% RH	Tested By:	Tim Chen

Test Mode A

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
2	5935	11.62	12.28	31.426	14.97	2.80	59.881	17.77	30	Pass
1	5955	17.05	17.85	111.653	20.48	2.80	212.75	23.28	30	Pass
45	6175	17.89	17.97	124.179	20.94	2.80	236.618	23.74	30	Pass
93	6415	16.87	17.97	111.302	20.47	2.80	212.082	23.27	30	Pass
117	6535	17.02	17.85	111.304	20.47	1.50	157.221	21.97	30	Pass
149	6695	16.91	17.61	106.767	20.28	1.50	150.812	21.78	30	Pass
181	6855	17.56	17.72	116.173	20.65	1.50	164.099	22.15	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-7, the maximum gain is 1.5 dBi.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
2	5935	8.19	8.84	14.248	11.54	2.80	27.149	14.34	30	Pass
1	5955	16.07	16.89	89.323	19.51	2.80	170.201	22.31	30	Pass
45	6175	16.21	16.97	91.557	19.62	2.80	174.458	22.42	30	Pass
93	6415	16.18	16.98	91.384	19.61	2.80	174.129	22.41	30	Pass
117	6535	15.95	16.98	89.243	19.51	1.50	126.059	21.01	30	Pass
149	6695	16.41	16.86	92.281	19.65	1.50	130.35	21.15	30	Pass
181	6855	16.66	16.88	95.098	19.78	1.50	134.329	21.28	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-7, the maximum gain is 1.5 dBi.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
3	5965	15.37	16.47	78.796	18.97	2.80	150.143	21.77	30	Pass
43	6165	16.15	16.49	85.775	19.33	2.80	163.441	22.13	30	Pass
91	6405	15.15	16.20	74.421	18.72	2.80	141.806	21.52	30	Pass
123	6565	14.89	16.36	74.083	18.70	1.50	104.645	20.2	30	Pass
155	6725	16.01	16.42	83.756	19.23	1.50	118.308	20.73	30	Pass
179	6845	16.06	16.39	83.916	19.24	1.50	118.535	20.74	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-7, the maximum gain is 1.5 dBi.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
7	5985	14.96	15.85	69.792	18.44	2.80	132.986	21.24	30	Pass
39	6145	15.90	15.97	78.441	18.95	2.80	149.466	21.75	30	Pass
87	6385	15.11	15.98	72.062	18.58	2.80	137.311	21.38	30	Pass
135	6625	15.62	15.91	75.47	18.78	1.50	106.604	20.28	30	Pass
151	6705	15.68	15.94	76.247	18.82	1.50	107.702	20.32	30	Pass
167	6785	15.64	15.93	75.818	18.80	1.50	107.096	20.3	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-7, the maximum gain is 1.5 dBi.

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
15	6025	15.24	15.45	68.495	18.36	2.80	130.515	21.16	30	Pass
47	6185	14.83	15.31	64.371	18.09	2.80	122.656	20.89	30	Pass
79	6345	14.51	15.48	63.567	18.03	2.80	121.124	20.83	30	Pass
143	6665	14.09	15.18	58.606	17.68	1.50	82.783	19.18	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-7, the maximum gain is 1.5 dBi.

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 69% RH	Tested By:	Tim Chen

Test Mode B

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
2	5935	4.13	4.82	5.622	7.50	2.80	10.713	10.3	24	Pass
1	5955	3.68	4.29	5.019	7.01	2.80	9.564	9.81	24	Pass
45	6175	4.12	4.79	5.595	7.48	2.80	10.661	10.28	24	Pass
93	6415	4.15	4.85	5.655	7.52	2.80	10.775	10.32	24	Pass
97	6435	4.68	5.33	6.35	8.03	2.80	12.1	10.83	24	Pass
105	6475	4.66	5.29	6.305	8.00	2.80	12.014	10.8	24	Pass
113	6515	4.63	5.27	6.269	7.97	2.80	11.945	10.77	24	Pass
117	6535	5.59	6.23	7.82	8.93	1.50	11.046	10.43	24	Pass
149	6695	5.56	6.22	7.785	8.91	1.50	10.997	10.41	24	Pass
181	6855	5.61	6.26	7.866	8.96	1.50	11.111	10.46	24	Pass
185	6875	5.57	6.24	7.813	8.93	1.50	11.036	10.43	24	Pass
209	6995	5.11	5.87	7.107	8.52	0.90	8.744	9.42	24	Pass
233	7115	3.33	3.81	4.557	6.59	0.90	5.606	7.49	24	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-6, the maximum gain is 2.8 dBi.
4. For U-NII-7, the maximum gain is 1.5 dBi.
5. For U-NII-8, the maximum gain is 0.9 dBi.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
2	5935	4.21	4.96	5.77	7.61	2.80	10.995	10.41	24	Pass
1	5955	3.73	4.44	5.14	7.11	2.80	9.794	9.91	24	Pass
45	6175	4.24	4.99	5.81	7.64	2.80	11.071	10.44	24	Pass
93	6415	4.22	4.98	5.79	7.63	2.80	11.033	10.43	24	Pass
97	6435	4.74	5.49	6.518	8.14	2.80	12.42	10.94	24	Pass
105	6475	4.76	5.52	6.557	8.17	2.80	12.494	10.97	24	Pass
113	6515	4.73	5.44	6.471	8.11	2.80	12.33	10.91	24	Pass
117	6535	5.69	6.43	8.102	9.09	1.50	11.444	10.59	24	Pass
149	6695	5.66	6.41	8.057	9.06	1.50	11.381	10.56	24	Pass
181	6855	5.67	6.42	8.075	9.07	1.50	11.406	10.57	24	Pass
185	6875	5.58	6.37	7.949	9.00	1.50	11.228	10.5	24	Pass
209	6995	5.03	6.82	7.993	9.03	0.90	9.834	9.93	24	Pass
233	7115	-0.53	-1.18	1.6472	2.17	0.90	2.026	3.07	24	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-6, the maximum gain is 2.8 dBi.
4. For U-NII-7, the maximum gain is 1.5 dBi.
5. For U-NII-8, the maximum gain is 0.9 dBi.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
3	5965	5.05	5.73	6.94	8.41	2.80	13.224	11.21	24	Pass
43	6165	5.58	6.27	7.851	8.95	2.80	14.96	11.75	24	Pass
91	6405	6.55	7.23	9.803	9.91	2.80	18.679	12.71	24	Pass
99	6445	6.03	6.78	8.773	9.43	2.80	16.717	12.23	24	Pass
107	6485	6.06	6.81	8.834	9.46	2.80	16.833	12.26	24	Pass
115	6525	6.52	7.33	9.895	9.95	2.80	18.855	12.75	24	Pass
123	6565	7.51	8.29	12.382	10.93	1.50	17.49	12.43	24	Pass
155	6725	7.53	8.32	12.454	10.95	1.50	17.592	12.45	24	Pass
179	6845	7.57	8.35	12.554	10.99	1.50	17.733	12.49	24	Pass
187	6885	8.09	8.82	14.062	11.48	0.90	17.3	12.38	24	Pass
211	7005	8.11	8.86	14.163	11.51	0.90	17.424	12.41	24	Pass
227	7085	8.13	8.89	14.246	11.54	0.90	17.526	12.44	24	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-6, the maximum gain is 2.8 dBi.
4. For U-NII-7, the maximum gain is 1.5 dBi.
5. For U-NII-8, the maximum gain is 0.9 dBi.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
7	5985	6.17	6.79	8.915	9.50	2.80	16.987	12.3	24	Pass
39	6145	7.63	8.34	12.618	11.01	2.80	24.043	13.81	24	Pass
87	6385	7.65	8.37	12.692	11.04	2.80	24.184	13.84	24	Pass
103	6465	7.62	8.32	12.573	10.99	2.80	23.957	13.79	24	Pass
119	6545	8.66	9.35	15.955	12.03	1.50	22.537	13.53	24	Pass
151	6705	8.61	9.32	15.812	11.99	1.50	22.335	13.49	24	Pass
183	6865	8.64	9.33	15.882	12.01	1.50	22.434	13.51	24	Pass
199	6945	9.67	10.35	20.108	13.03	0.90	24.738	13.93	24	Pass
215	7025	9.13	9.89	17.935	12.54	0.90	22.065	13.44	24	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-6, the maximum gain is 2.8 dBi.
4. For U-NII-7, the maximum gain is 1.5 dBi.
5. For U-NII-8, the maximum gain is 0.9 dBi.

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1							
15	6025	9.76	10.33	20.252	13.06	2.80	38.589	15.86	24	Pass
47	6185	9.74	10.31	20.159	13.04	2.80	38.412	15.84	24	Pass
79	6345	8.42	9.08	15.041	11.77	2.80	28.66	14.57	24	Pass
111	6505	8.97	9.53	16.863	12.27	2.80	32.132	15.07	24	Pass
143	6665	10.93	11.55	26.677	14.26	1.50	37.682	15.76	24	Pass
175	6825	10.88	11.51	26.404	14.22	1.50	37.297	15.72	24	Pass
207	6985	10.98	11.57	26.886	14.30	0.90	33.077	15.20	24	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, the maximum gain is 2.8 dBi.
3. For U-NII-6, the maximum gain is 2.8 dBi.
4. For U-NII-7, the maximum gain is 1.5 dBi.
5. For U-NII-8, the maximum gain is 0.9 dBi.

7.2 Maximum Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	21°C, 69% RH	Tested By:	Tim Chen

Test Mode A

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
2	5935	-2.71	-2.09	0.66	1.28	4.87	6.15	17	Pass
1	5955	1.81	2.81	0.66	6.01	4.87	10.88	17	Pass
45	6175	2.45	3.74	0.66	6.81	4.87	11.68	17	Pass
93	6415	3.01	3.77	0.66	7.08	4.87	11.95	17	Pass
117	6535	2.44	2.63	0.66	6.21	4.02	10.23	17	Pass
149	6695	2.23	3.06	0.66	6.34	4.02	10.36	17	Pass
181	6855	3.43	3.71	0.66	7.24	4.02	11.26	17	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-7, The directional gain is 4.02 dBi.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
2	5935	-4.90	-4.66	0.62	-1.15	4.87	3.72	17	Pass
1	5955	1.34	2.51	0.62	5.59	4.87	10.46	17	Pass
45	6175	2.17	2.88	0.62	6.17	4.87	11.04	17	Pass
93	6415	2.64	2.69	0.62	6.30	4.87	11.17	17	Pass
117	6535	1.48	2.28	0.62	5.53	4.02	9.55	17	Pass
149	6695	1.52	2.99	0.62	5.95	4.02	9.97	17	Pass
181	6855	1.20	2.42	0.62	5.48	4.02	9.5	17	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-7, The directional gain is 4.02 dBi.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
3	5965	-0.32	0.27	0.74	3.74	4.87	8.61	17	Pass
43	6165	0.26	0.94	0.74	4.36	4.87	9.23	17	Pass
91	6405	-0.45	0.06	0.74	3.56	4.87	8.43	17	Pass
123	6565	-1.28	-0.67	0.74	2.79	4.02	6.81	17	Pass
155	6725	0.02	0.73	0.74	4.14	4.02	8.16	17	Pass
179	6845	0.15	0.33	0.74	3.99	4.02	8.01	17	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-7, The directional gain is 4.02 dBi.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
7	5985	-3.10	-2.73	0.74	0.84	4.87	5.71	17	Pass
39	6145	-3.21	-2.51	0.74	0.90	4.87	5.77	17	Pass
87	6385	-3.94	-3.17	0.74	0.21	4.87	5.08	17	Pass
135	6625	-3.63	-3.10	0.74	0.39	4.02	4.41	17	Pass
151	6705	-2.89	-2.27	0.74	1.18	4.02	5.2	17	Pass
167	6785	-3.57	-2.86	0.74	0.55	4.02	4.57	17	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-7, The directional gain is 4.02 dBi.

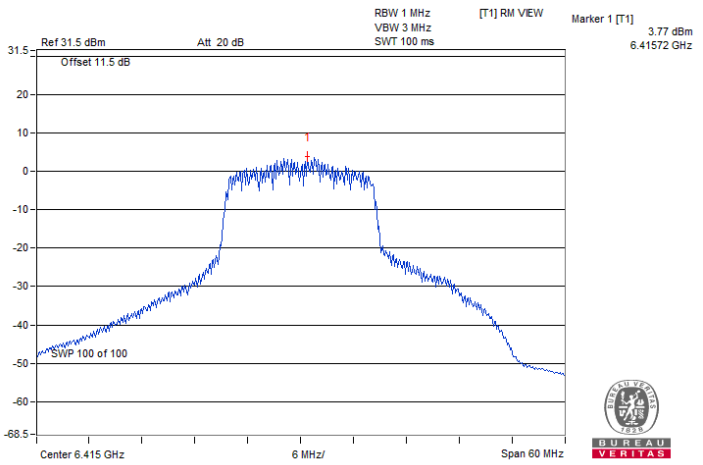
802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
15	6025	-6.26	-5.57	0.75	-2.14	4.87	2.73	17	Pass
47	6185	-6.47	-5.93	0.75	-2.43	4.87	2.44	17	Pass
79	6345	-6.88	-6.22	0.75	-2.78	4.87	2.09	17	Pass
143	6665	-7.53	-7.05	0.75	-3.52	4.02	0.5	17	Pass

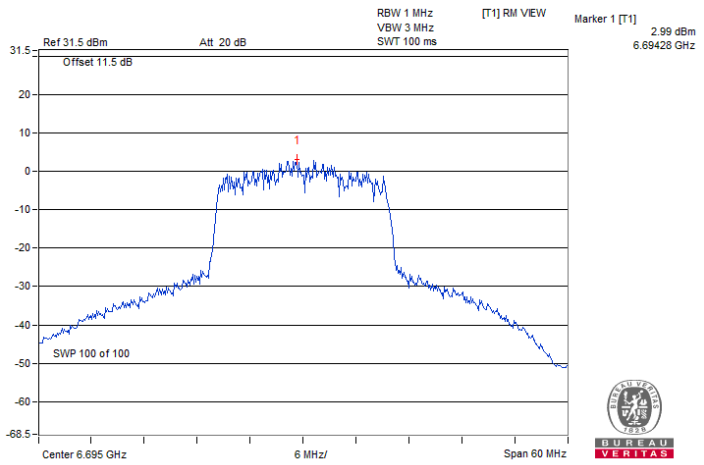
Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-7, The directional gain is 4.02 dBi.

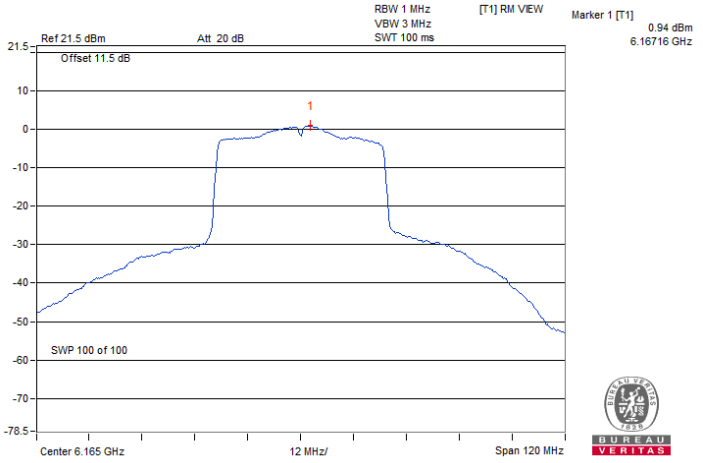
Spectrum Plot of Maximum Value



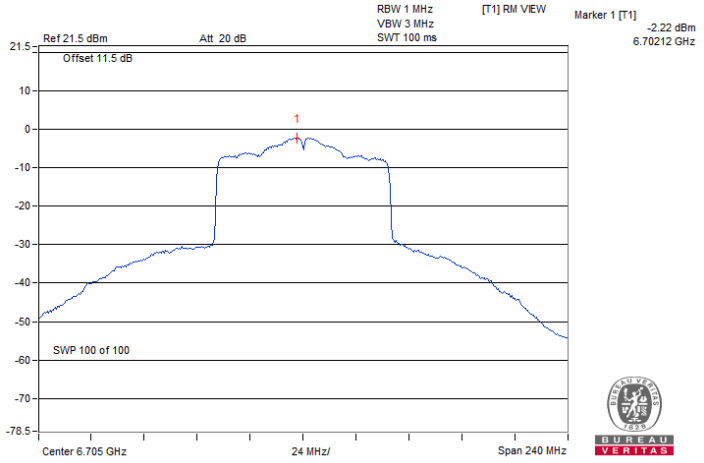
802.11a / Chain 1 : CH 93



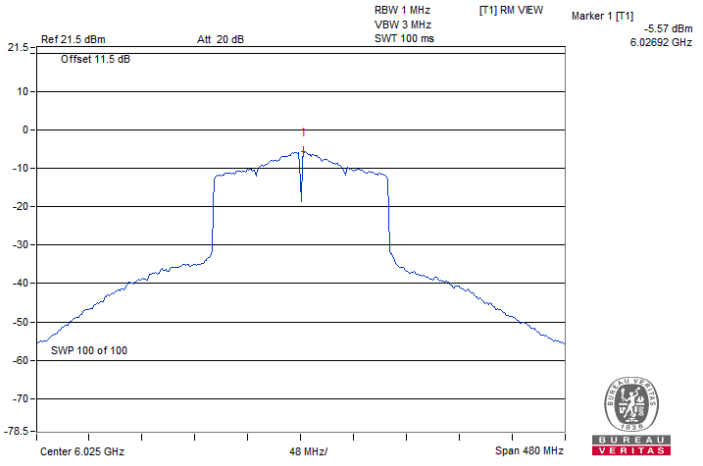
802.11ax (HE20) / Chain 1 : CH 149



802.11ax (HE40) / Chain 1 : CH 43



802.11ax (HE80) / Chain 1 : CH 151



802.11ax (HE160) / Chain 1 : CH 15

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 69% RH	Tested By:	Tim Chen

Test Mode B

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
2	5935	-10.24	-9.57	0.66	-6.22	4.87	-1.35	-1	Pass
1	5955	-10.14	-9.25	0.66	-6.00	4.87	-1.13	-1	Pass
45	6175	-10.46	-9.30	0.66	-6.17	4.87	-1.3	-1	Pass
93	6415	-10.43	-9.46	0.66	-6.25	4.87	-1.38	-1	Pass
97	6435	-10.54	-9.27	0.66	-6.19	4.87	-1.32	-1	Pass
105	6475	-10.65	-9.18	0.66	-6.18	4.87	-1.31	-1	Pass
113	6515	-10.42	-9.39	0.66	-6.20	4.87	-1.33	-1	Pass
117	6535	-9.72	-8.52	0.66	-5.41	4.02	-1.39	-1	Pass
149	6695	-9.27	-8.33	0.66	-5.10	4.02	-1.08	-1	Pass
181	6855	-9.76	-8.40	0.66	-5.36	4.02	-1.34	-1	Pass
185	6875	-9.44	-8.46	0.66	-5.25	4.02	-1.23	-1	Pass
209	6995	-8.75	-7.86	0.66	-4.61	3.57	-1.04	-1	Pass
233	7115	-8.74	-8.07	0.66	-4.72	3.57	-1.15	-1	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-6, The directional gain is 4.87 dBi.
5. For U-NII-7, The directional gain is 4.02 dBi.
6. For U-NII-8, The directional gain is 3.57 dBi.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
2	5935	-10.14	-9.22	0.62	-6.03	4.87	-1.16	-1	Pass
1	5955	-10.36	-9.38	0.62	-6.21	4.87	-1.34	-1	Pass
45	6175	-10.37	-9.66	0.62	-6.37	4.87	-1.5	-1	Pass
93	6415	-10.68	-9.22	0.62	-6.26	4.87	-1.39	-1	Pass
97	6435	-10.19	-9.14	0.62	-6.00	4.87	-1.13	-1	Pass
105	6475	-10.19	-9.43	0.62	-6.16	4.87	-1.29	-1	Pass
113	6515	-10.56	-9.55	0.62	-6.40	4.87	-1.53	-1	Pass
117	6535	-10.63	-8.93	0.62	-6.07	4.02	-2.05	-1	Pass
149	6695	-9.68	-8.17	0.62	-5.23	4.02	-1.21	-1	Pass
181	6855	-9.55	-8.24	0.62	-5.22	4.02	-1.2	-1	Pass
185	6875	-9.41	-8.43	0.62	-5.26	4.02	-1.24	-1	Pass
209	6995	-8.78	-7.79	0.62	-4.63	3.57	-1.06	-1	Pass
233	7115	-14.15	-13.40	0.62	-10.13	3.57	-6.56	-1	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-6, The directional gain is 4.87 dBi.
5. For U-NII-7, The directional gain is 4.02 dBi.
6. For U-NII-8, The directional gain is 3.57 dBi.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
3	5965	-10.12	-9.52	0.74	-6.06	4.87	-1.19	-1	Pass
43	6165	-10.28	-9.35	0.74	-6.04	4.87	-1.17	-1	Pass
91	6405	-10.29	-9.36	0.74	-6.05	4.87	-1.18	-1	Pass
99	6445	-10.45	-9.32	0.74	-6.10	4.87	-1.23	-1	Pass
107	6485	-10.54	-9.37	0.74	-6.17	4.87	-1.3	-1	Pass
115	6525	-10.60	-9.49	0.74	-6.26	4.87	-1.39	-1	Pass
123	6565	-9.90	-8.33	0.74	-5.29	4.02	-1.27	-1	Pass
155	6725	-9.76	-8.56	0.74	-5.37	4.02	-1.35	-1	Pass
179	6845	-9.43	-8.51	0.74	-5.20	4.02	-1.18	-1	Pass
187	6885	-8.93	-7.94	0.74	-4.66	3.57	-1.09	-1	Pass
211	7005	-8.79	-7.96	0.74	-4.60	3.57	-1.03	-1	Pass
227	7085	-8.73	-8.23	0.74	-4.72	3.57	-1.15	-1	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-6, The directional gain is 4.87 dBi.
5. For U-NII-7, The directional gain is 4.02 dBi.
6. For U-NII-8, The directional gain is 3.57 dBi.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
7	5985	-10.05	-9.58	0.74	-6.06	4.87	-1.19	-1	Pass
39	6145	-10.29	-9.35	0.74	-6.04	4.87	-1.17	-1	Pass
87	6385	-10.70	-9.27	0.74	-6.18	4.87	-1.31	-1	Pass
103	6465	-10.65	-9.31	0.74	-6.18	4.87	-1.31	-1	Pass
119	6545	-10.08	-8.30	0.74	-5.35	4.02	-1.33	-1	Pass
151	6705	-9.68	-8.64	0.74	-5.38	4.02	-1.36	-1	Pass
183	6865	-9.69	-8.34	0.74	-5.21	4.02	-1.19	-1	Pass
199	6945	-9.07	-7.95	0.74	-4.72	3.57	-1.15	-1	Pass
215	7025	-9.09	-8.18	0.74	-4.86	3.57	-1.29	-1	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-6, The directional gain is 4.87 dBi.
5. For U-NII-7, The directional gain is 4.02 dBi.
6. For U-NII-8, The directional gain is 3.57 dBi.

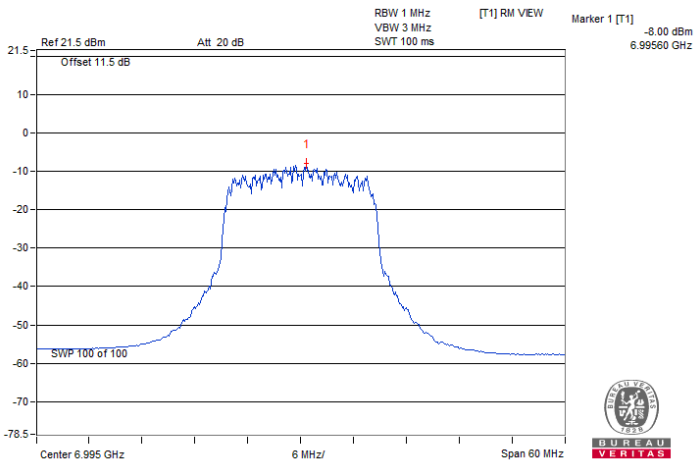
802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1						
15	6025	-10.15	-9.68	0.75	-6.15	4.87	-1.28	-1	Pass
47	6185	-10.18	-9.66	0.75	-6.15	4.87	-1.28	-1	Pass
79	6345	-10.23	-9.53	0.75	-6.11	4.87	-1.24	-1	Pass
111	6505	-10.26	-9.74	0.75	-6.23	4.87	-1.36	-1	Pass
143	6665	-9.29	-8.71	0.75	-5.23	4.02	-1.21	-1	Pass
175	6825	-9.34	-8.96	0.75	-5.39	4.02	-1.37	-1	Pass
207	6985	-8.95	-8.12	0.75	-4.75	3.57	-1.18	-1	Pass

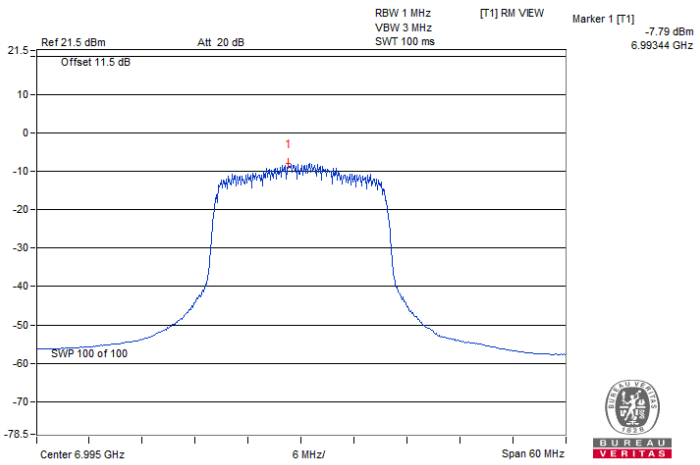
Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-5, The directional gain is 4.87 dBi.
4. For U-NII-6, The directional gain is 4.87 dBi.
5. For U-NII-7, The directional gain is 4.02 dBi.
6. For U-NII-8, The directional gain is 3.57 dBi.

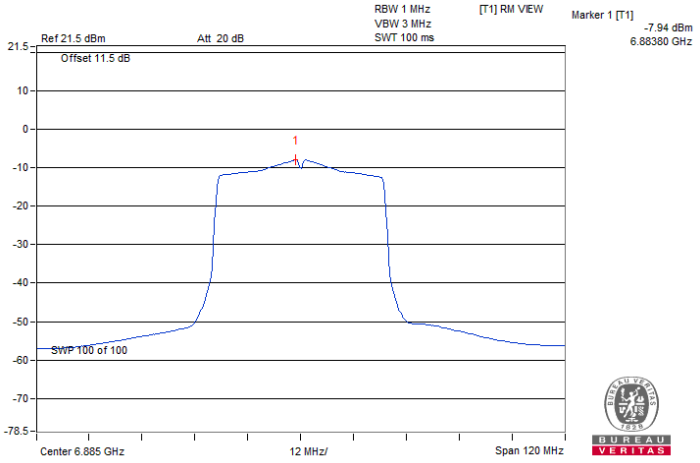
Spectrum Plot of Maximum Value



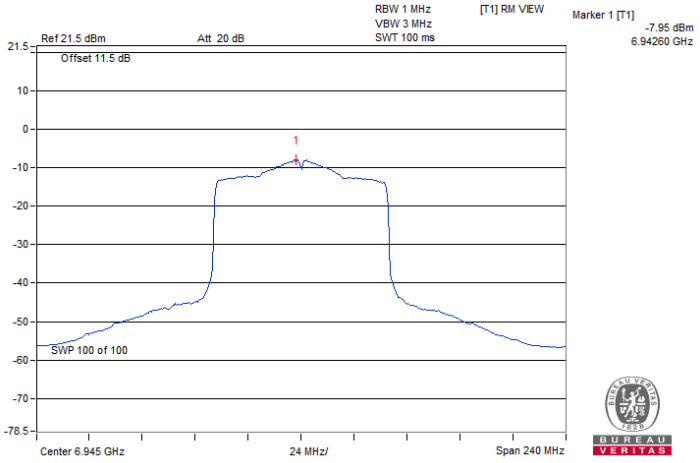
802.11a / Chain 1 : CH 209



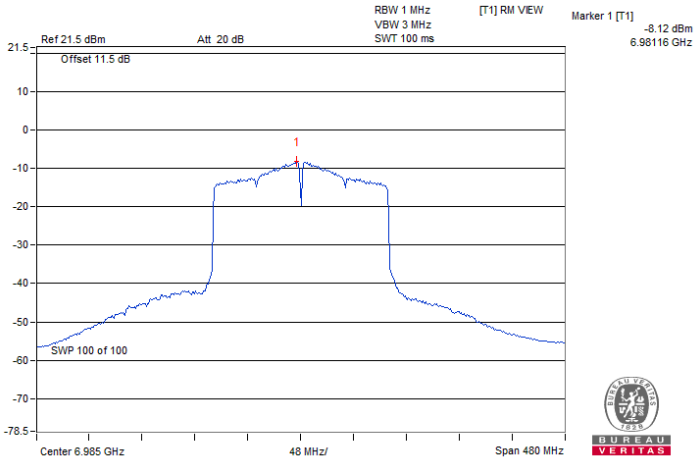
802.11ax (HE20) / Chain 1 : CH 209



802.11ax (HE40) / Chain 1 : CH 187



802.11ax (HE80) / Chain 1 : CH 199



802.11ax (HE160) / Chain 1 : CH 207

7.3 Emission Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	21°C, 69% RH	Tested By:	Tim Chen

Test Mode A

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	19.89	19.66	320	Pass
1	5955	23.06	23.32	320	Pass
45	6175	28.47	32.81	320	Pass
93	6415	26.27	23.52	320	Pass
117	6535	29.13	23.62	320	Pass
149	6695	21.72	23.26	320	Pass
181	6855	26.53	24.06	320	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	20.94	20.72	320	Pass
1	5955	21.37	22.64	320	Pass
45	6175	29.92	33.67	320	Pass
93	6415	22.90	21.99	320	Pass
117	6535	21.30	29.92	320	Pass
149	6695	22.30	21.01	320	Pass
181	6855	20.95	21.39	320	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	5965	41.07	40.82	320	Pass
43	6165	41.11	41.02	320	Pass
91	6405	40.97	41.30	320	Pass
123	6565	41.13	41.22	320	Pass
155	6725	41.01	41.46	320	Pass
179	6845	41.28	45.44	320	Pass

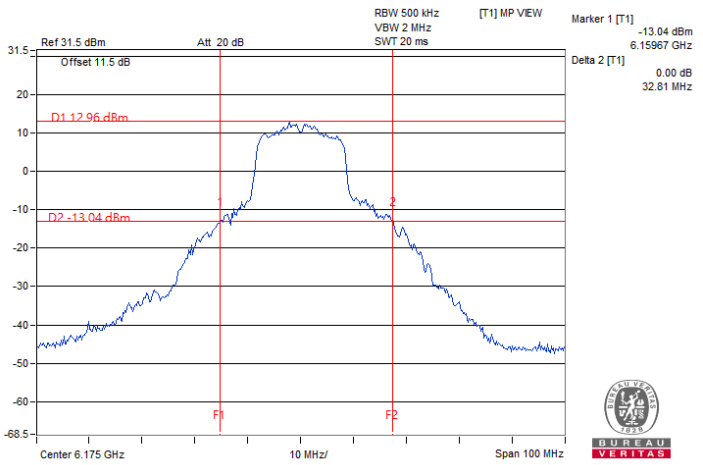
802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
7	5985	83.93	83.02	320	Pass
39	6145	82.58	82.90	320	Pass
87	6385	82.73	82.80	320	Pass
135	6625	82.82	83.32	320	Pass
151	6705	83.59	83.33	320	Pass
167	6785	82.89	82.92	320	Pass

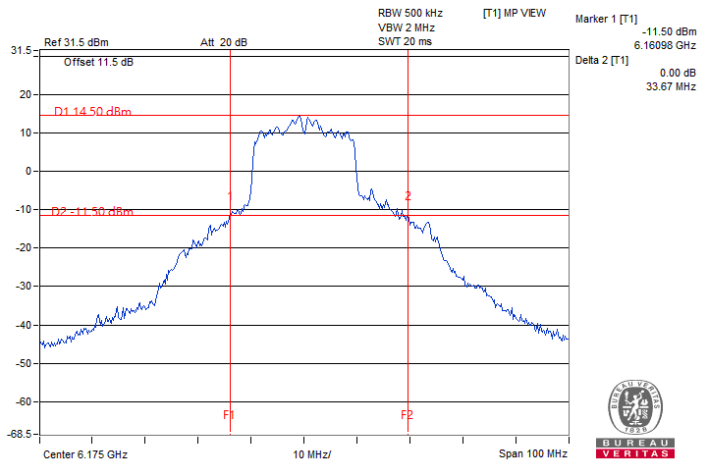
802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
15	6025	167.77	167.49	320	Pass
47	6185	168.52	167.27	320	Pass
79	6345	166.90	166.23	320	Pass
143	6665	166.15	166.96	320	Pass

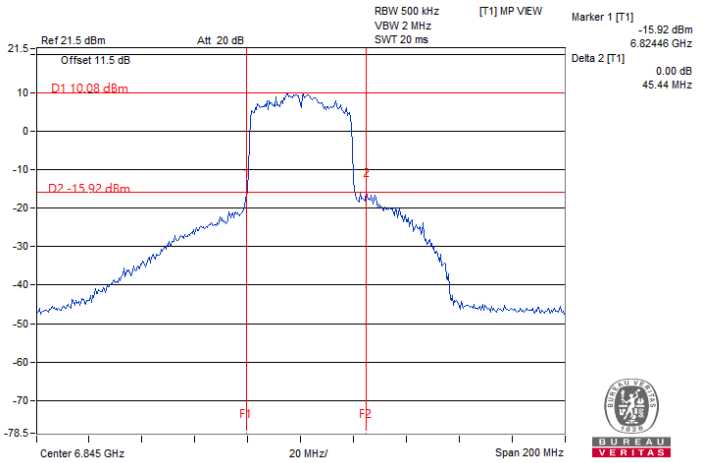
Spectrum Plot of Maximum Value



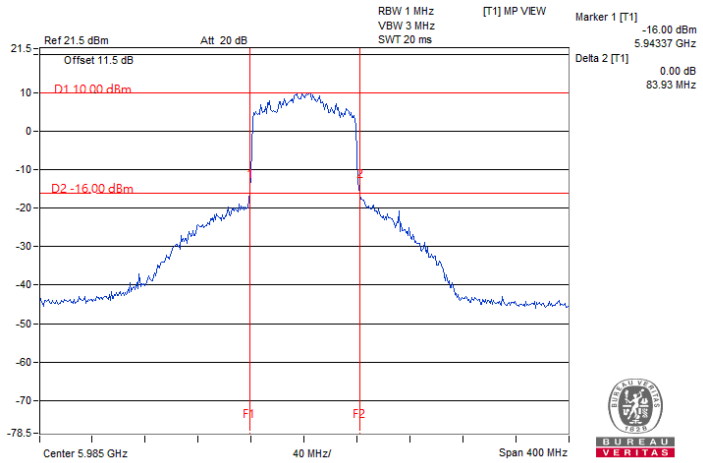
802.11a / Chain 1 : CH 45



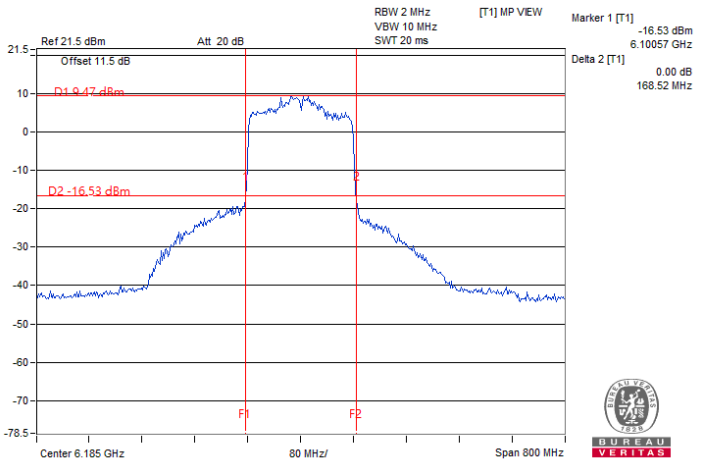
802.11ax (HE20) / Chain 1 : CH 45



802.11ax (HE40) / Chain 1 : CH 179



802.11ax (HE80) / Chain 0 : CH 7



802.11ax (HE160) / Chain 0 : CH 47

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 69% RH	Tested By:	Tim Chen

Test Mode B

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	18.85	18.82	320	Pass
1	5955	18.87	18.73	320	Pass
45	6175	18.82	18.83	320	Pass
93	6415	18.93	19.65	320	Pass
97	6435	18.84	19.70	320	Pass
105	6475	19.71	18.95	320	Pass
113	6515	19.49	18.96	320	Pass
117	6535	19.66	18.81	320	Pass
149	6695	18.84	18.83	320	Pass
181	6855	19.53	18.87	320	Pass
185	6875	19.60	18.81	320	Pass
209	6995	18.75	18.80	320	Pass
233	7115	18.81	18.80	320	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	21.07	20.98	320	Pass
1	5955	20.96	20.82	320	Pass
45	6175	20.93	21.12	320	Pass
93	6415	21.01	20.73	320	Pass
97	6435	21.02	20.97	320	Pass
105	6475	20.89	21.07	320	Pass
113	6515	20.94	20.91	320	Pass
117	6535	21.05	20.95	320	Pass
149	6695	20.98	20.97	320	Pass
181	6855	20.79	20.93	320	Pass
185	6875	20.92	20.86	320	Pass
209	6995	20.87	21.00	320	Pass
233	7115	21.10	20.88	320	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	5965	40.82	40.33	320	Pass
43	6165	40.96	40.65	320	Pass
91	6405	40.85	40.78	320	Pass
99	6445	40.75	40.54	320	Pass
107	6485	40.78	40.68	320	Pass
115	6525	40.75	40.90	320	Pass
123	6565	40.84	40.80	320	Pass
155	6725	40.59	40.79	320	Pass
179	6845	40.64	40.72	320	Pass
187	6885	40.81	40.66	320	Pass
211	7005	40.59	40.83	320	Pass
227	7085	40.71	40.58	320	Pass

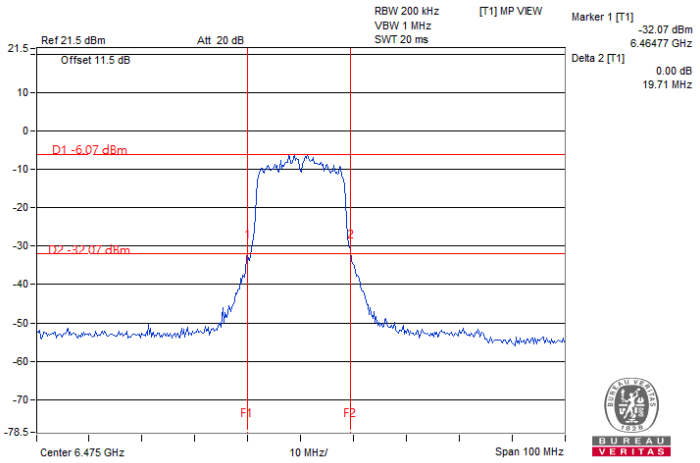
802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
7	5985	82.10	81.67	320	Pass
39	6145	82.61	82.22	320	Pass
87	6385	82.09	82.45	320	Pass
103	6465	82.49	82.45	320	Pass
119	6545	82.13	82.79	320	Pass
151	6705	82.15	82.46	320	Pass
183	6865	82.24	82.58	320	Pass
199	6945	82.70	82.76	320	Pass
215	7025	82.52	82.49	320	Pass

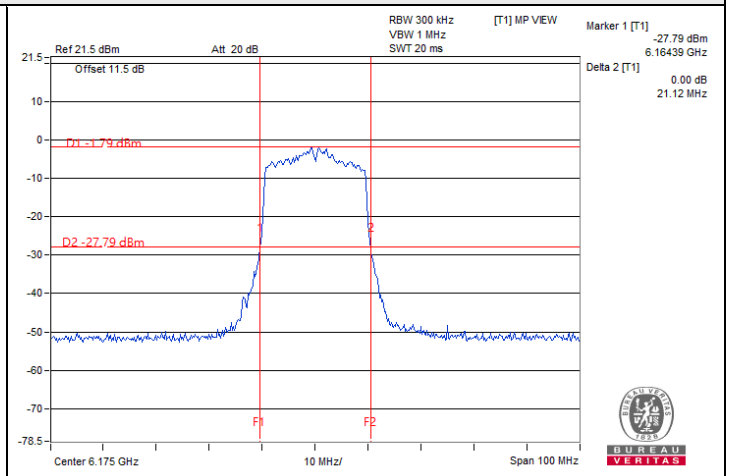
802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
15	6025	166.10	164.44	320	Pass
47	6185	166.62	166.87	320	Pass
79	6345	166.33	166.67	320	Pass
111	6505	166.31	166.59	320	Pass
143	6665	165.63	166.57	320	Pass
175	6825	166.77	167.82	320	Pass
207	6985	166.23	166.16	320	Pass

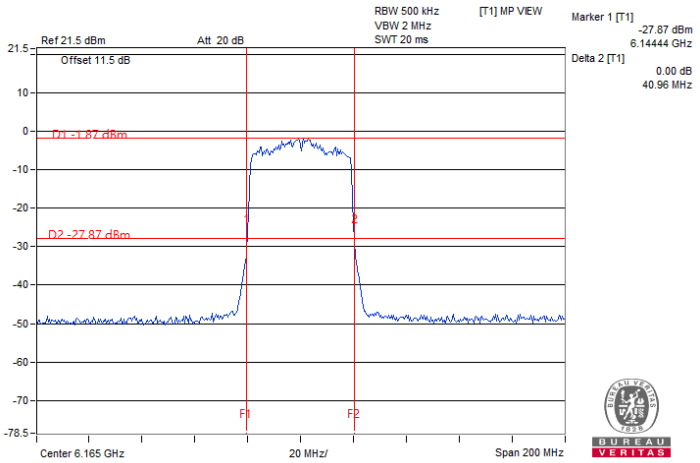
Spectrum Plot of Maximum Value



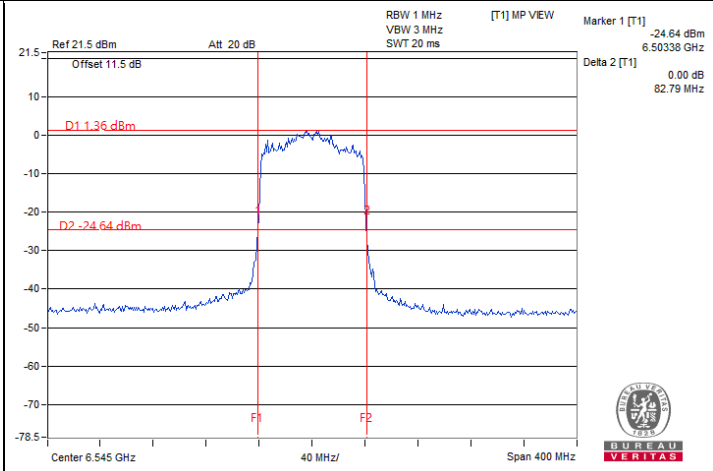
802.11a / Chain 0 : CH 105



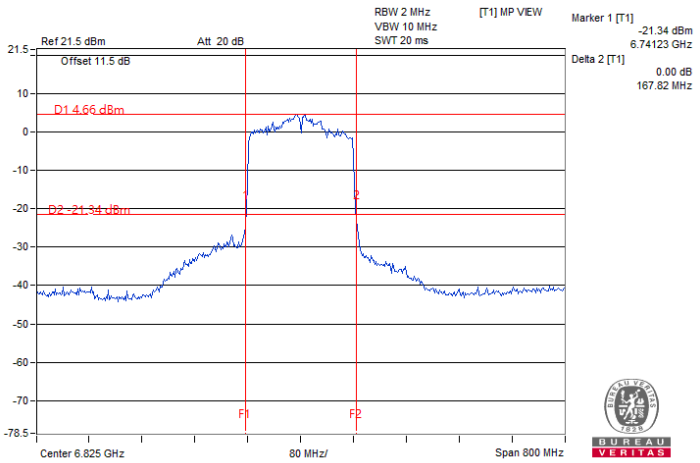
802.11ax (HE20) / Chain 1 : CH 45



802.11ax (HE40) / Chain 0 : CH 43



802.11ax (HE80) / Chain 1 : CH 119



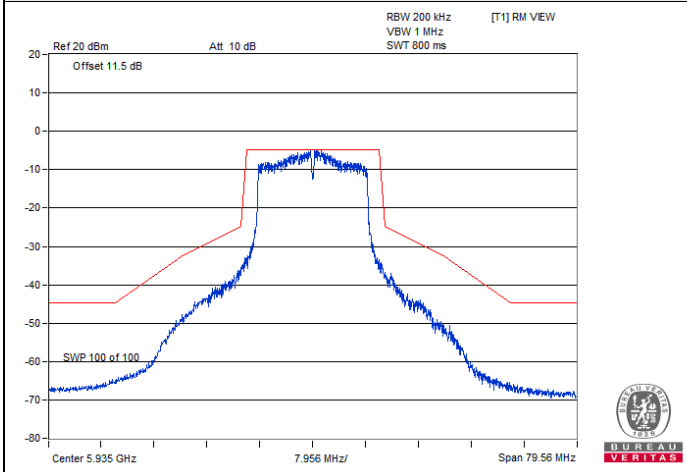
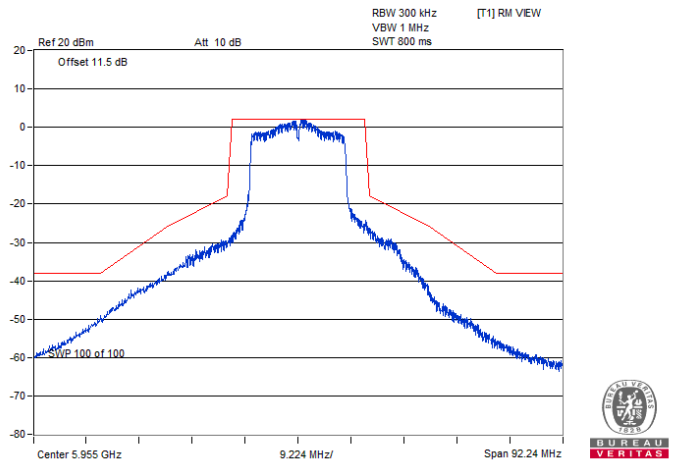
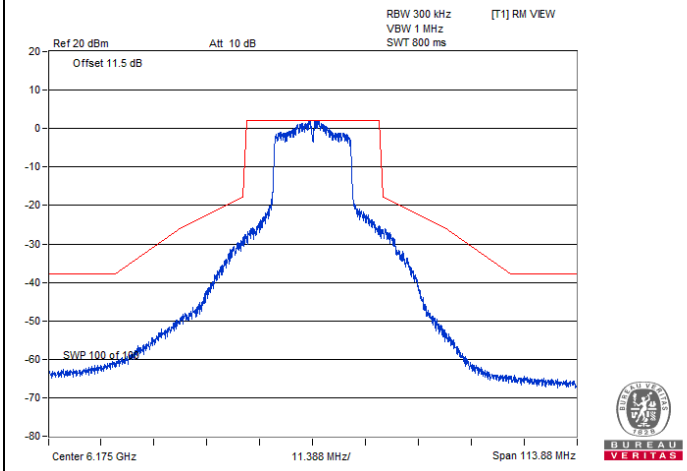
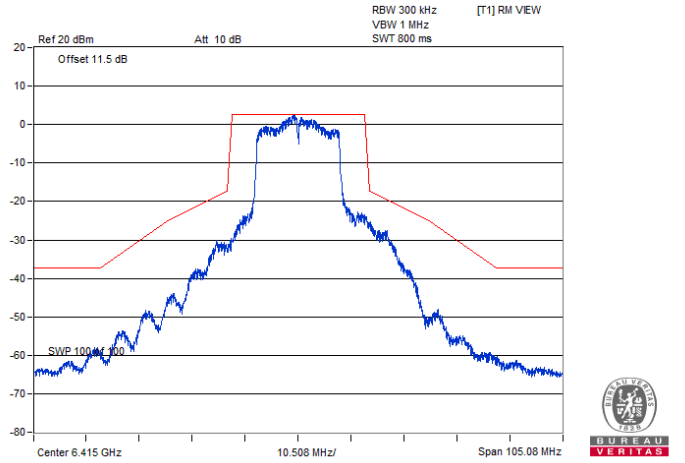
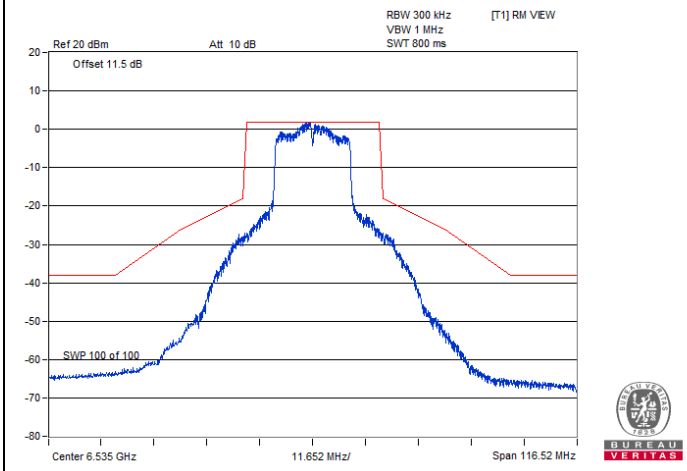
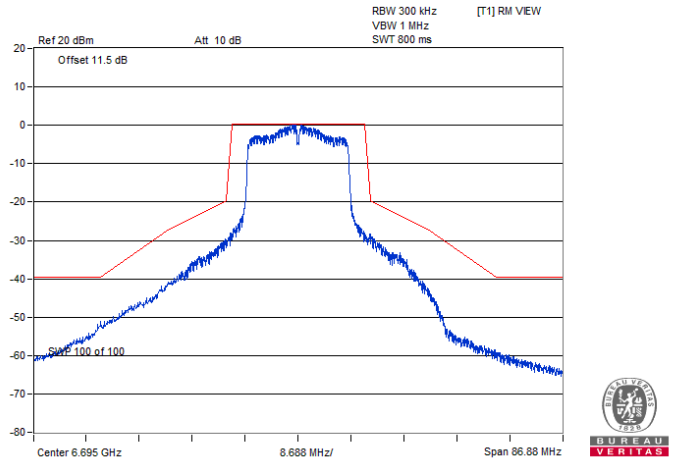
802.11ax (HE160) / Chain 1 : CH 175

7.4 In-Band Emission Mask

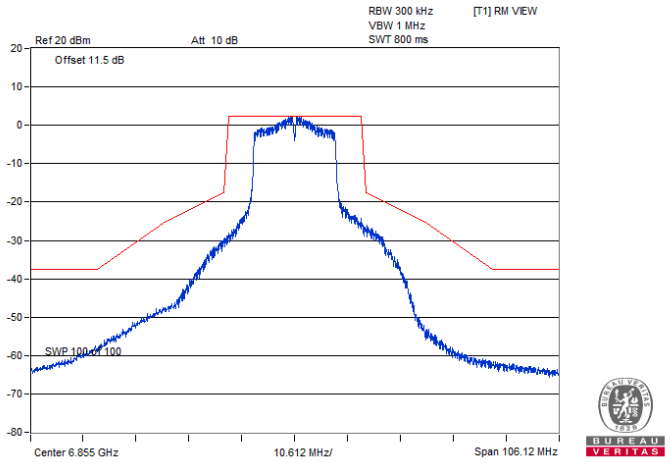
Input Power:	120 Vac, 60 Hz	Environmental Conditions:	21°C, 69% RH	Tested By:	Tim Chen

Test Mode A

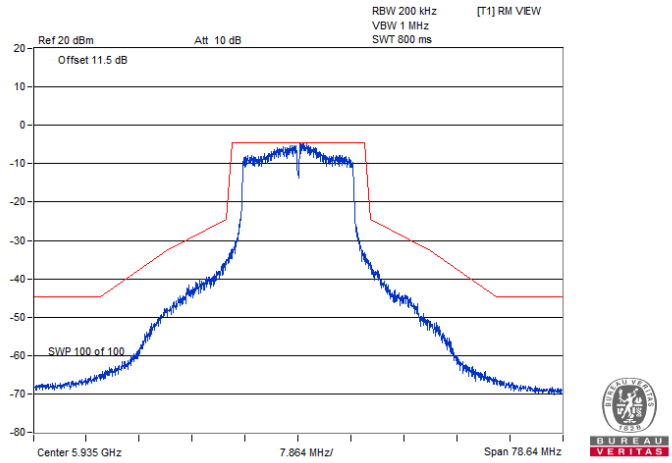
802.11a

Spectrum Plot	
 802.11a / Chain 0 : CH 2	 802.11a / Chain 0 : CH 1
 802.11a / Chain 0 : CH 45	 802.11a / Chain 0 : CH 93
 802.11a / Chain 0 : CH 117	 802.11a / Chain 0 : CH 149

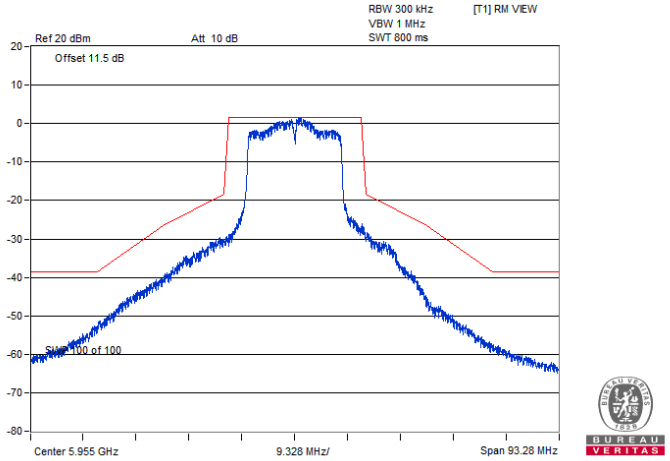
Spectrum Plot



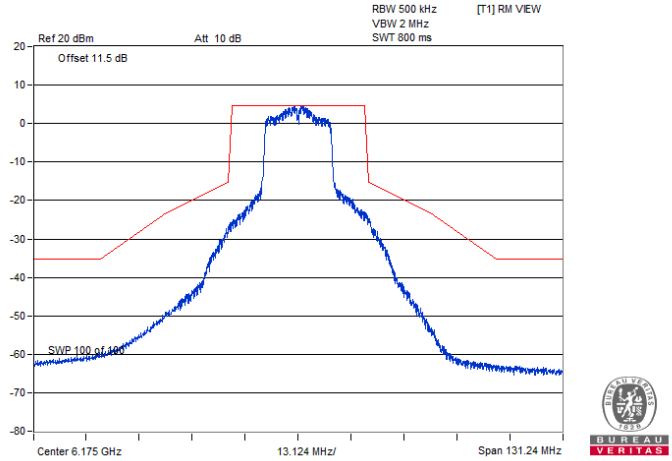
802.11a / Chain 0 : CH 181



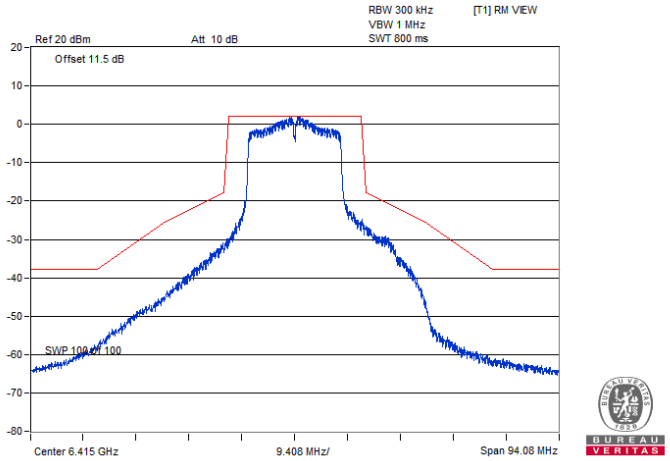
802.11a / Chain 1 : CH 2



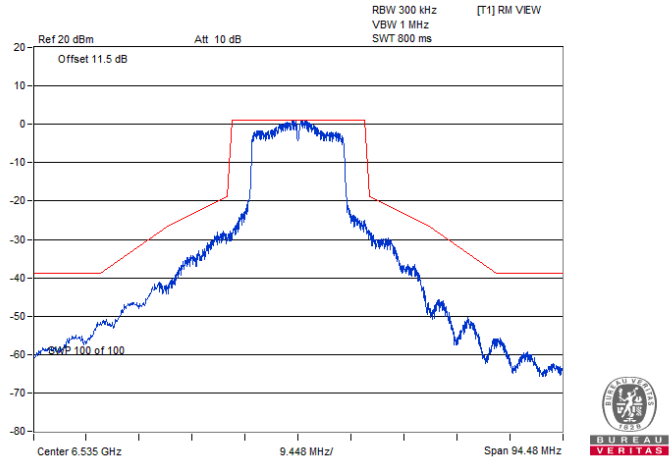
802.11a / Chain 1 : CH 1



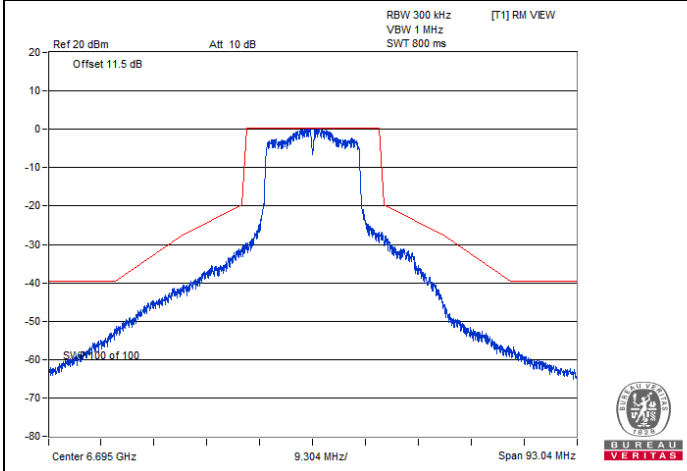
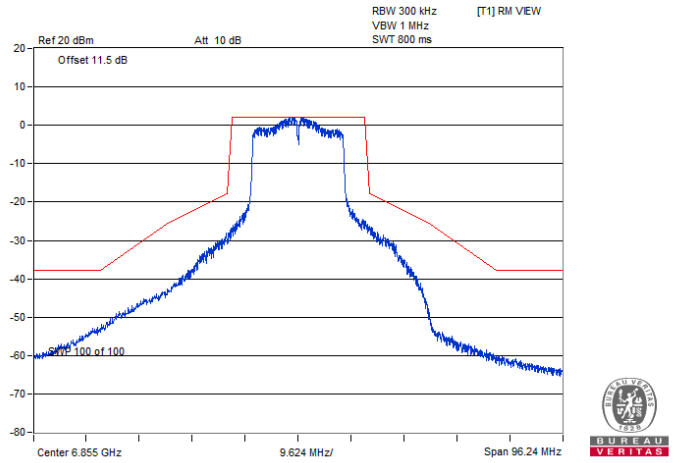
802.11a / Chain 1 : CH 45



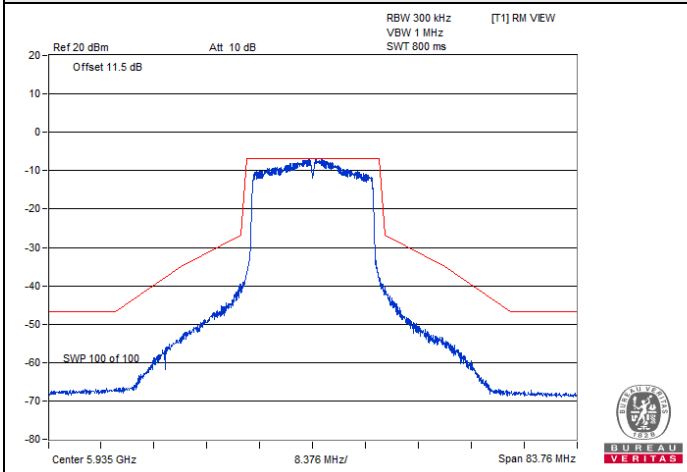
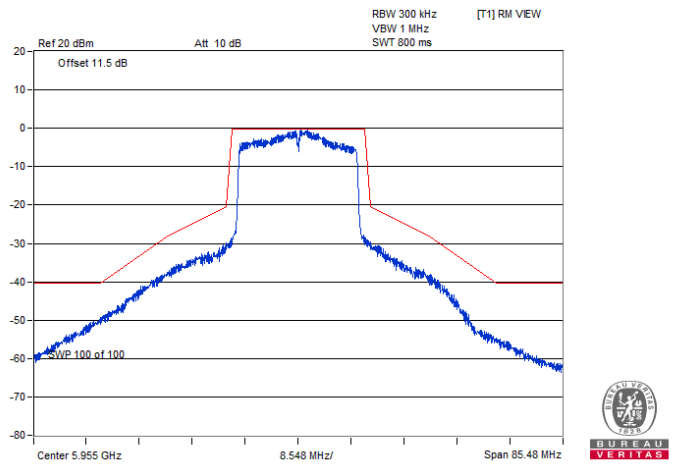
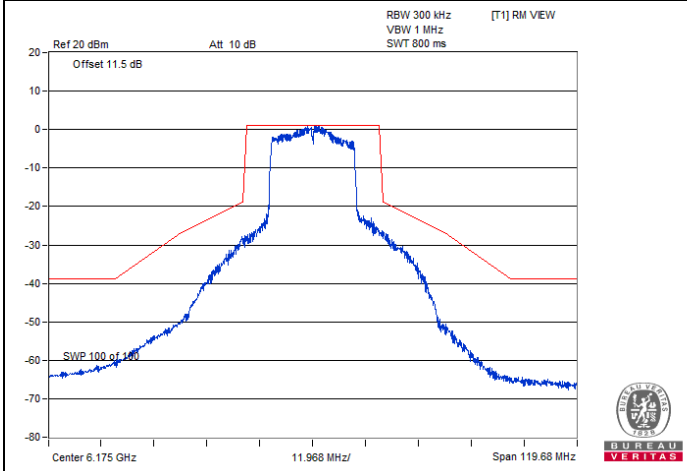
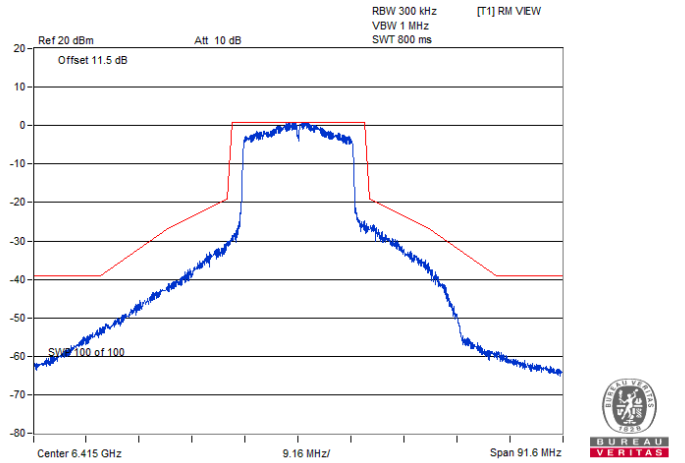
802.11a / Chain 1 : CH 93



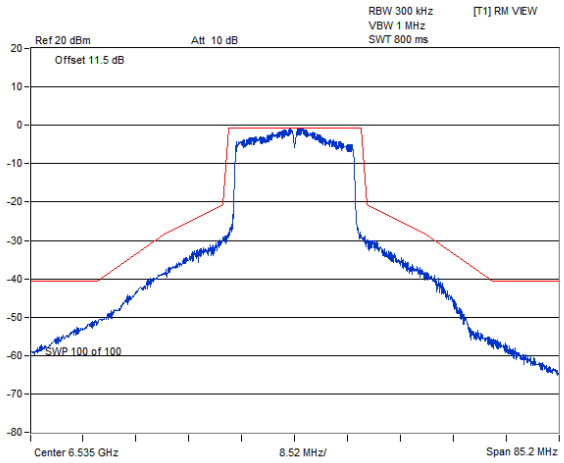
802.11a / Chain 1 : CH 117

Spectrum Plot	
	
802.11a / Chain 1 : CH 149	802.11a / Chain 1 : CH 181

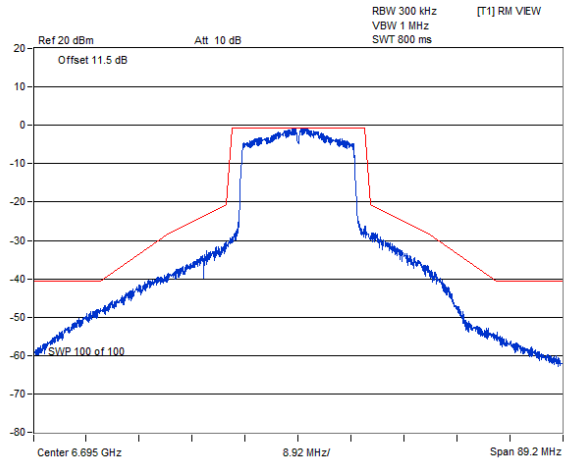
802.11ax (HE20)

Spectrum Plot	
	
802.11ax (HE20) / Chain 0 : CH 2	802.11ax (HE20) / Chain 0 : CH 1
	
802.11ax (HE20) / Chain 0 : CH 45	802.11ax (HE20) / Chain 0 : CH 93

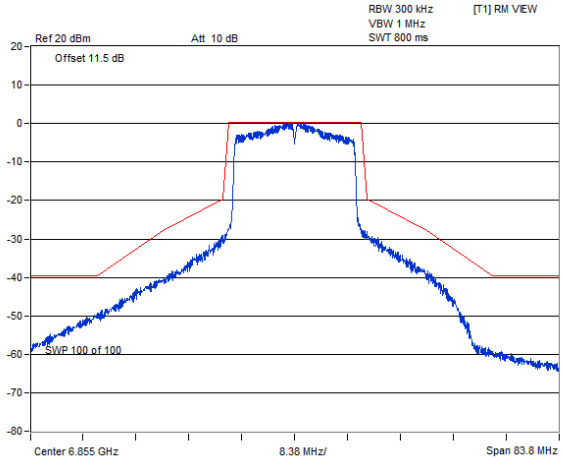
Spectrum Plot



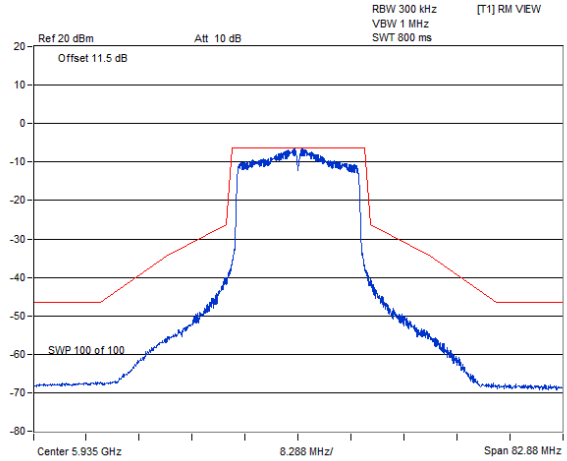
802.11ax (HE20) / Chain 0 : CH 117



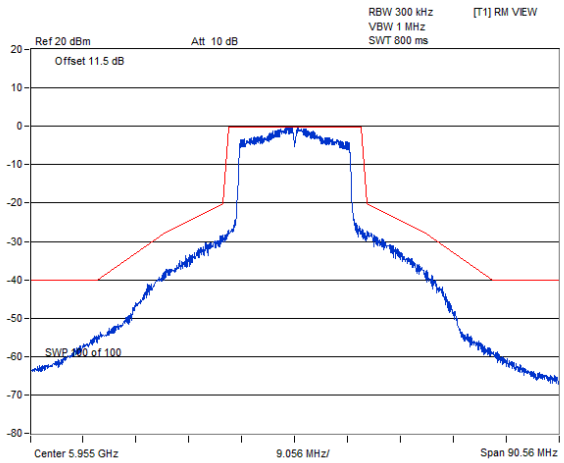
802.11ax (HE20) / Chain 0 : CH 149



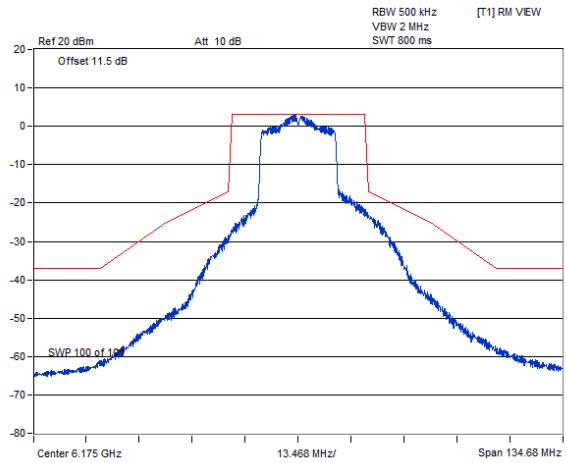
802.11ax (HE20) / Chain 0 : CH 181



802.11ax (HE20) / Chain 1 : CH 2

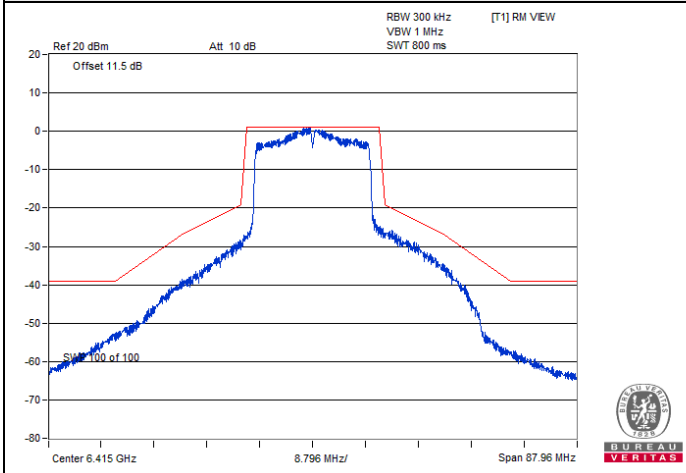


802.11ax (HE20) / Chain 1 : CH 1

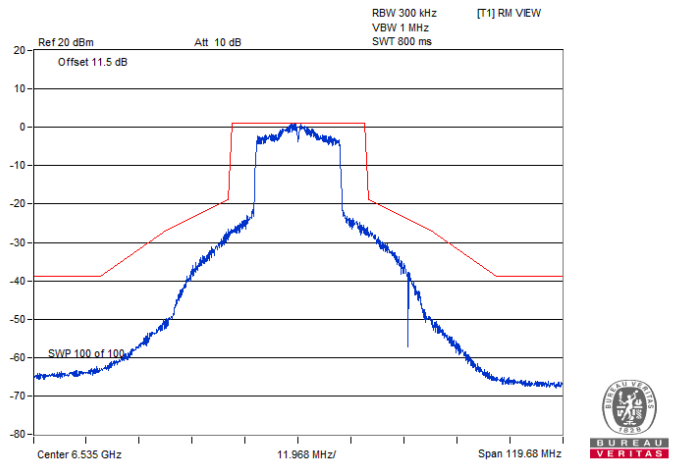


802.11ax (HE20) / Chain 1 : CH 45

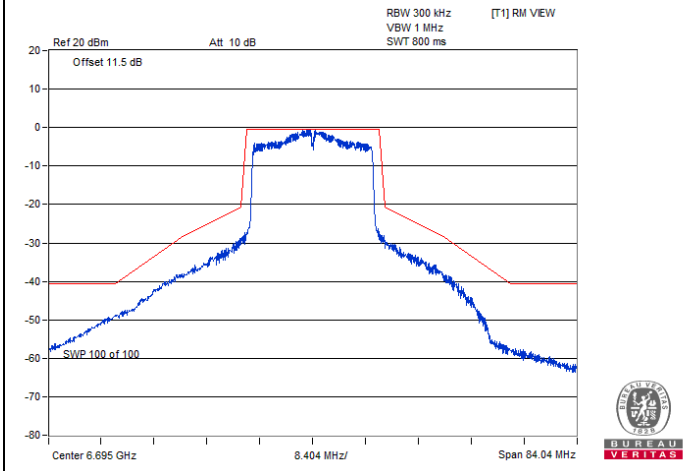
Spectrum Plot



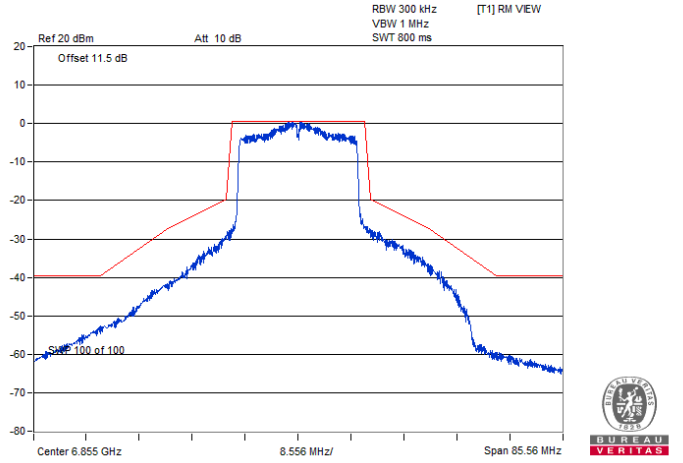
802.11ax (HE20) / Chain 1 : CH 93



802.11ax (HE20) / Chain 1 : CH 117

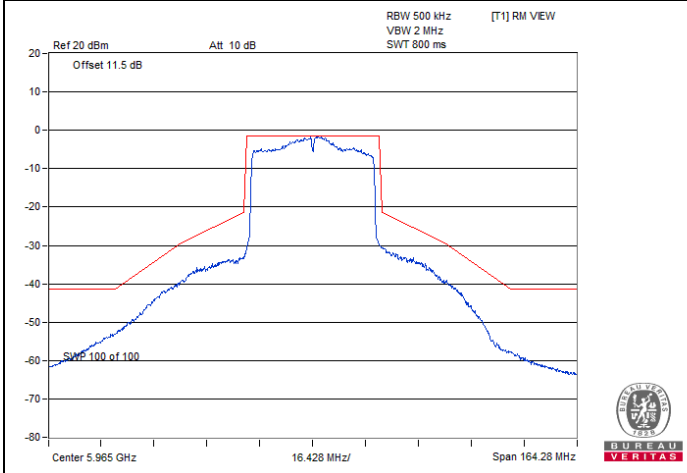
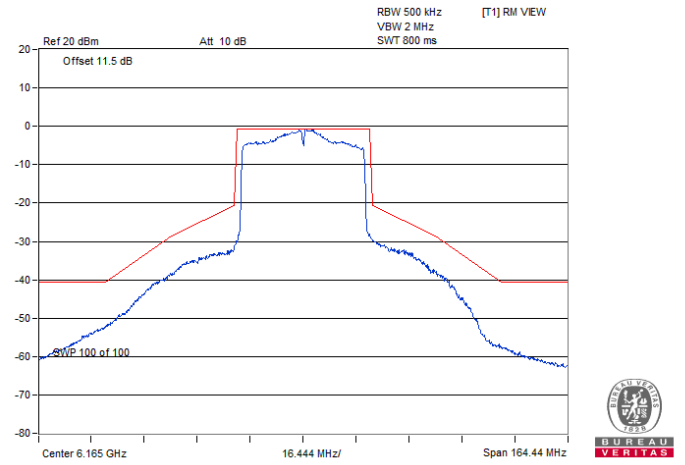
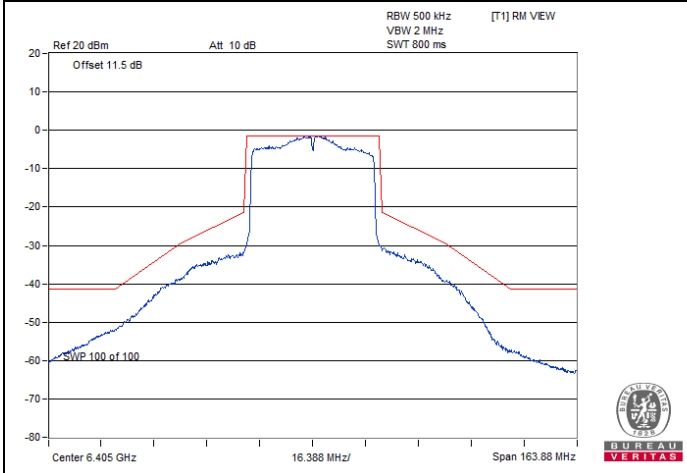
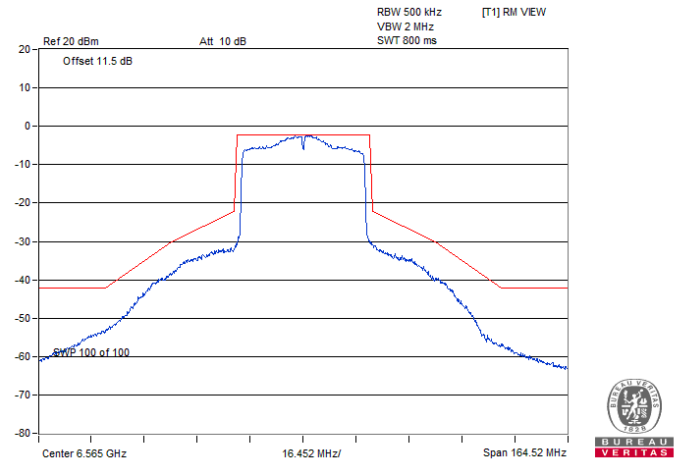
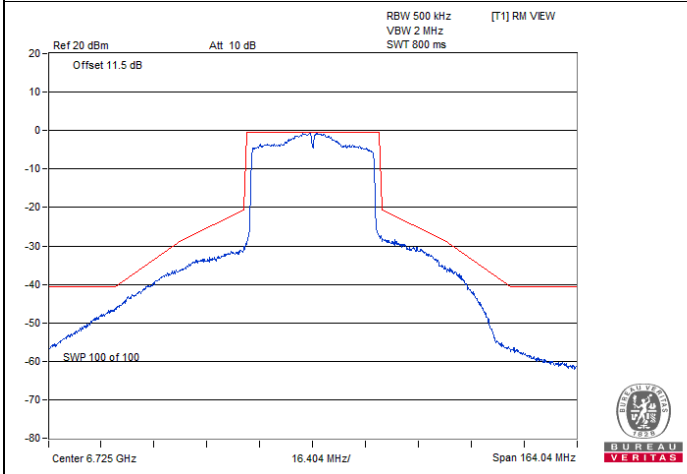
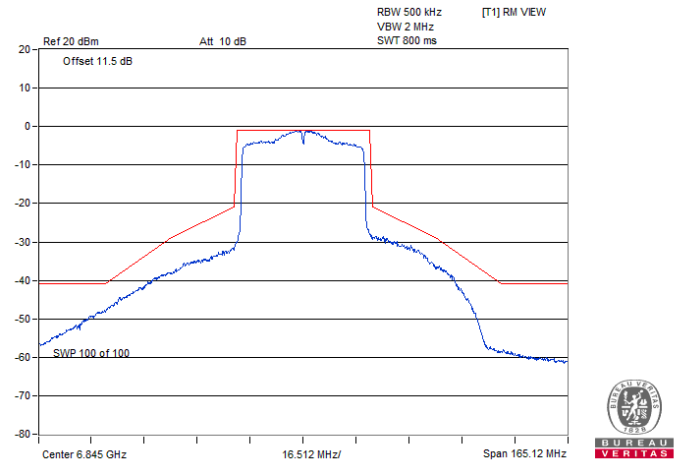


802.11ax (HE20) / Chain 1 : CH 149

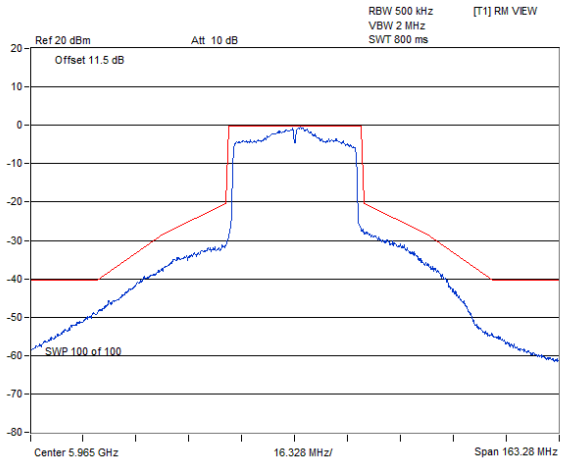


802.11ax (HE20) / Chain 1 : CH 181

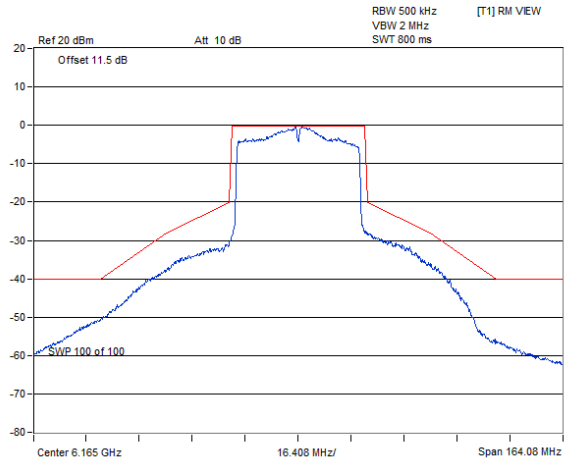
802.11ax (HE40)

Spectrum Plot	
	
802.11ax (HE40) / Chain 0 : CH 3	802.11ax (HE40) / Chain 0 : CH 43
	
802.11ax (HE40) / Chain 0 : CH 91	802.11ax (HE40) / Chain 0 : CH 123
	
802.11ax (HE40) / Chain 0 : CH 155	802.11ax (HE40) / Chain 0 : CH 179

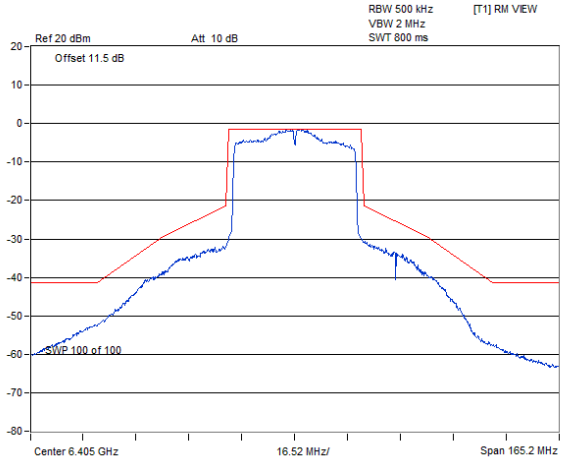
Spectrum Plot



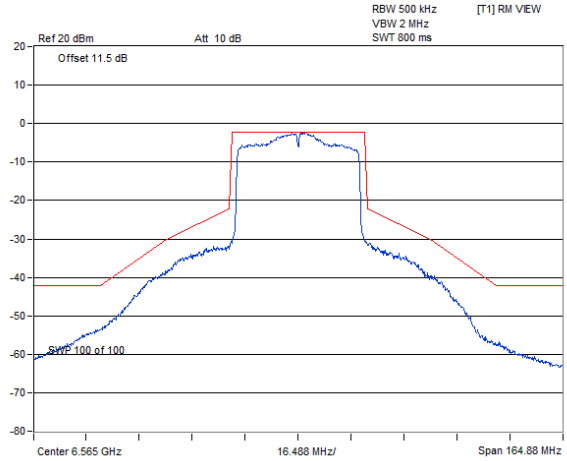
802.11ax (HE40) / Chain 1 : CH 3



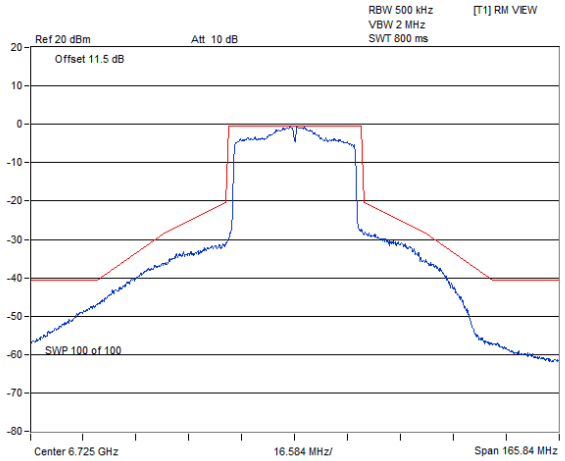
802.11ax (HE40) / Chain 1 : CH 43



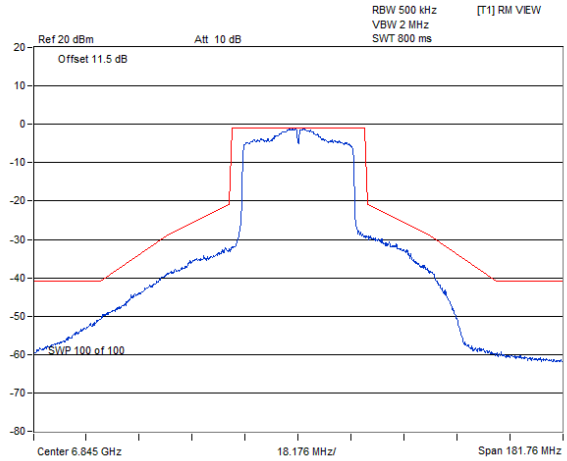
802.11ax (HE40) / Chain 1 : CH 91



802.11ax (HE40) / Chain 1 : CH 123

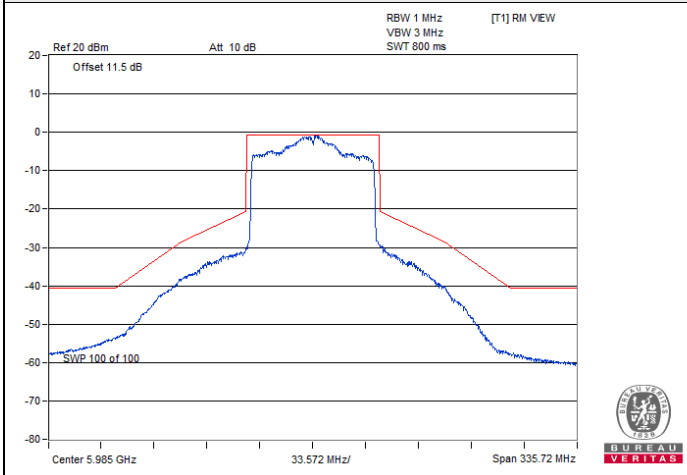
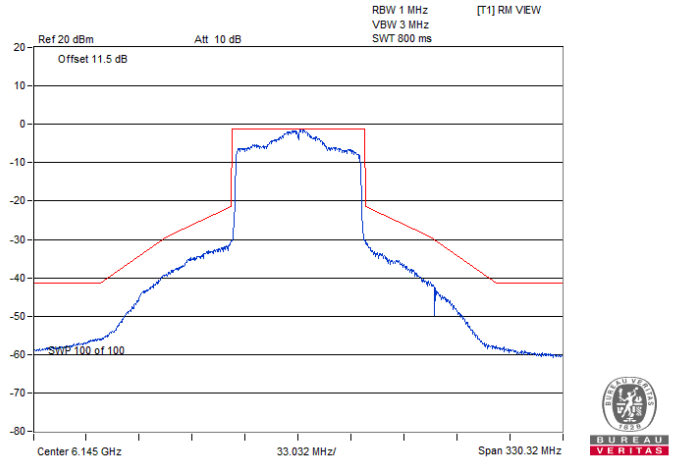
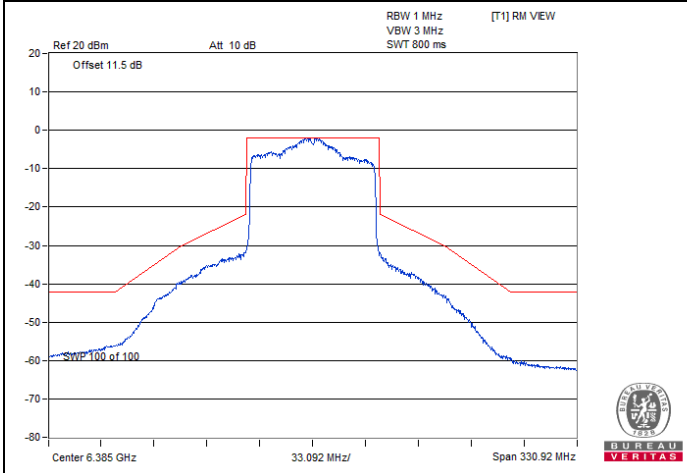
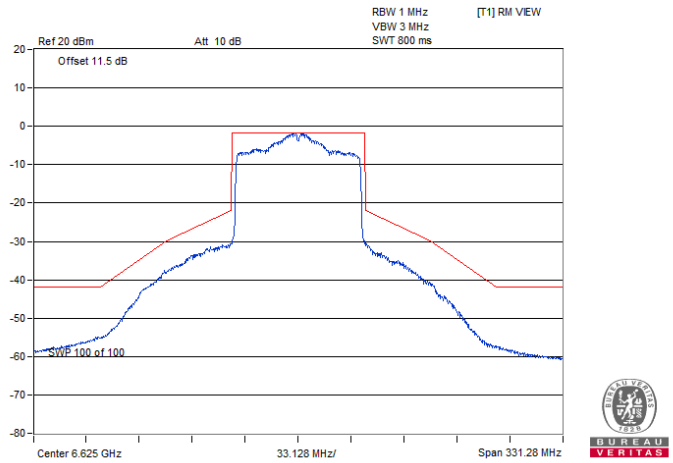
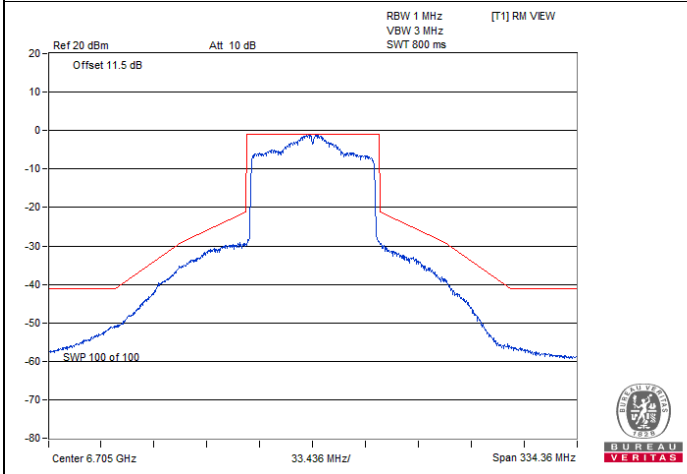
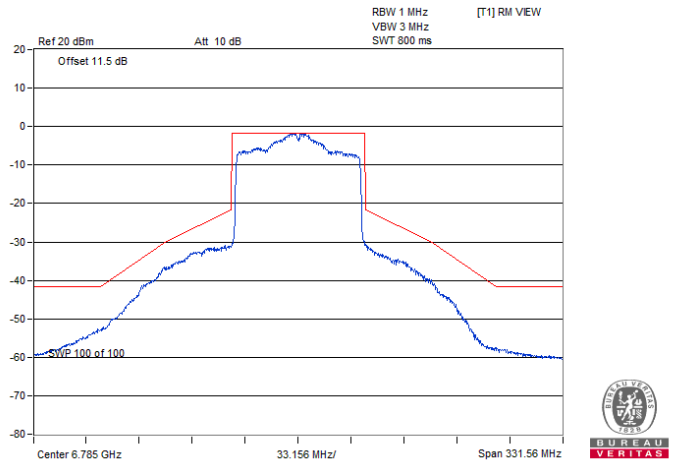


802.11ax (HE40) / Chain 1 : CH 155

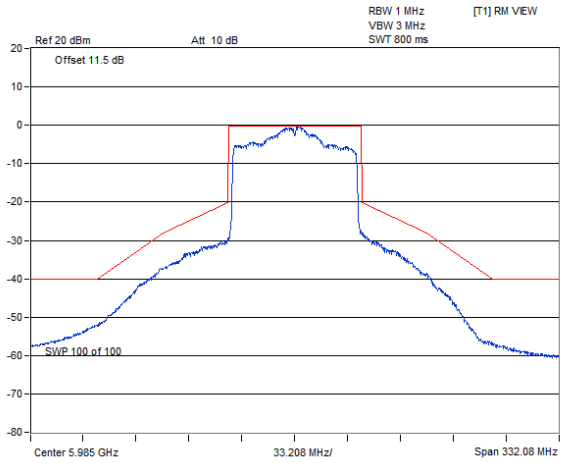


802.11ax (HE40) / Chain 1 : CH 179

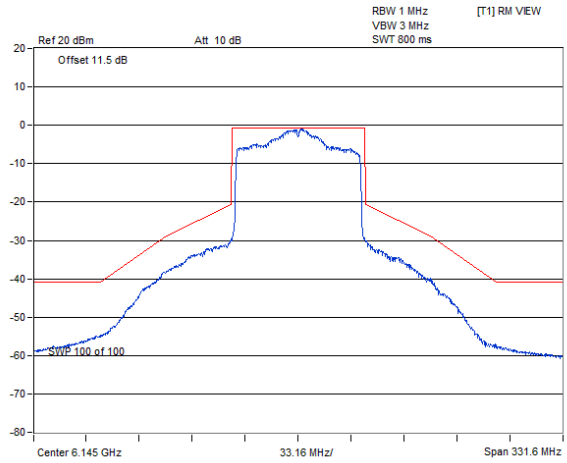
802.11ax (HE80)

Spectrum Plot	
	
802.11ax (HE80) / Chain 0 : CH 7	802.11ax (HE80) / Chain 0 : CH 39
	
802.11ax (HE80) / Chain 0 : CH 87	802.11ax (HE80) / Chain 0 : CH 135
	
802.11ax (HE80) / Chain 0 : CH 151	802.11ax (HE80) / Chain 0 : CH 167

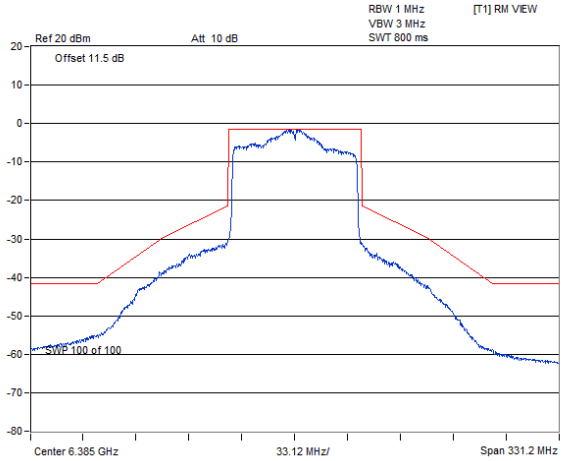
Spectrum Plot



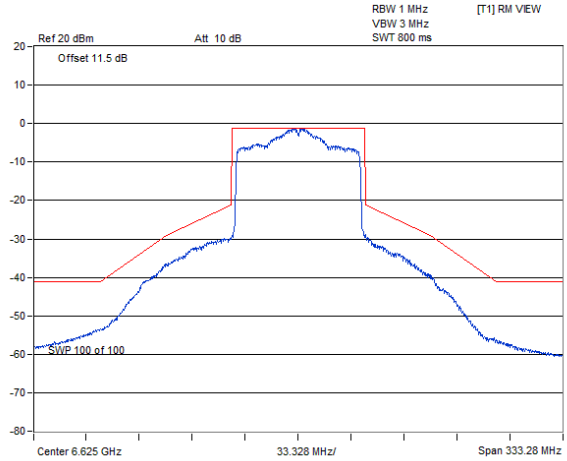
802.11ax (HE80) / Chain 1 : CH 7



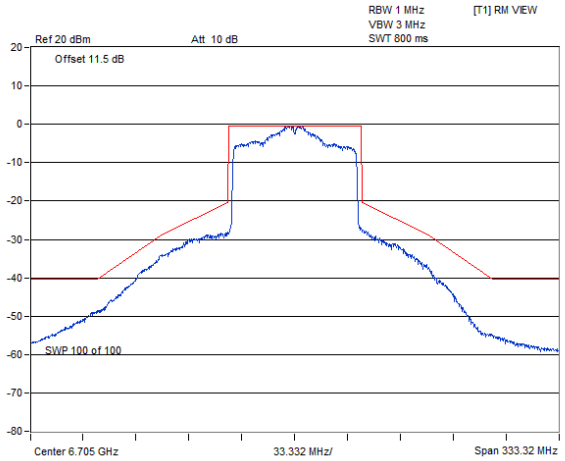
802.11ax (HE80) / Chain 1 : CH 39



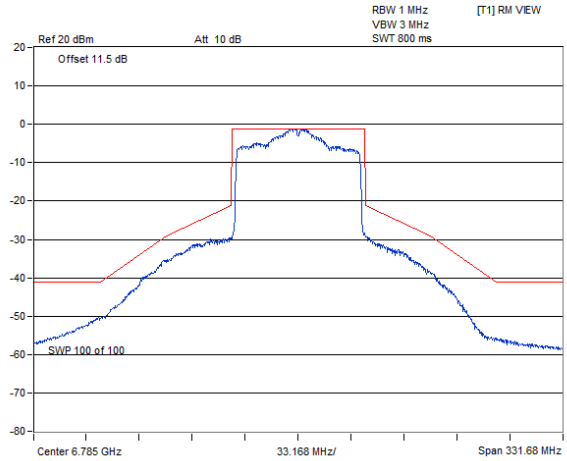
802.11ax (HE80) / Chain 1 : CH 87



802.11ax (HE80) / Chain 1 : CH 135

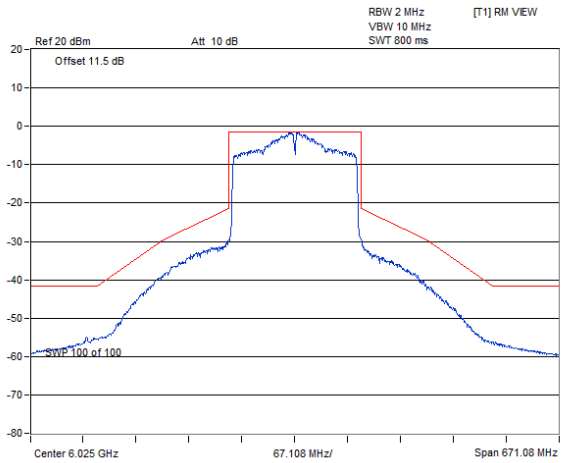
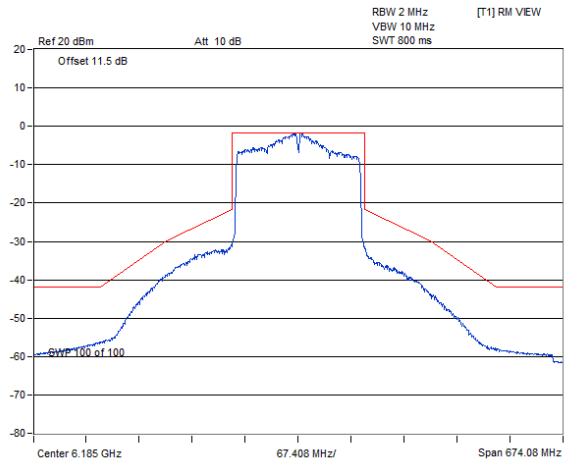
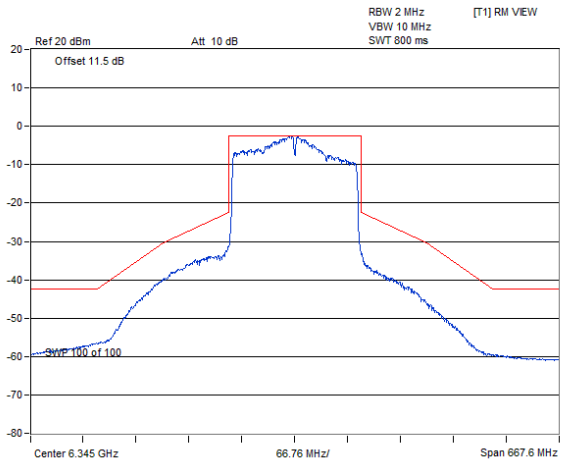
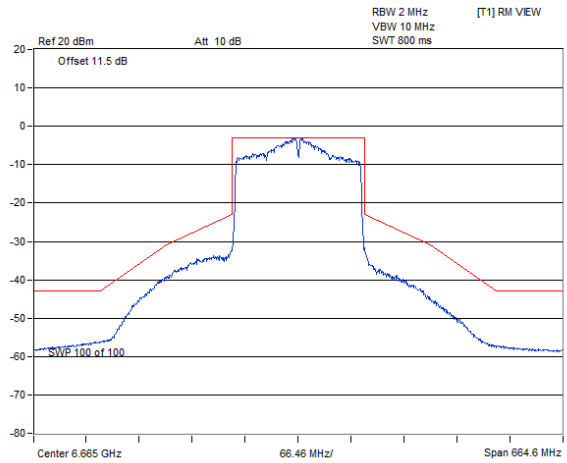
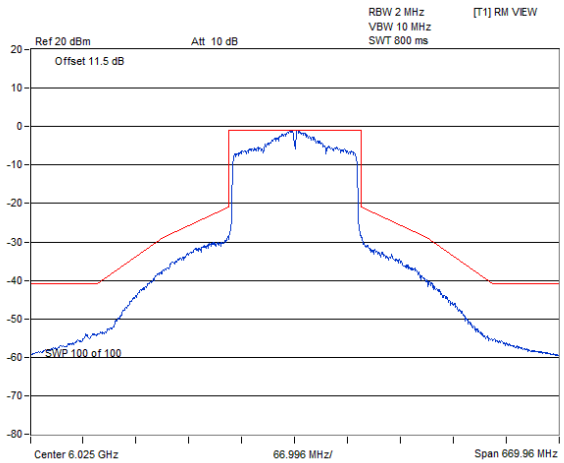
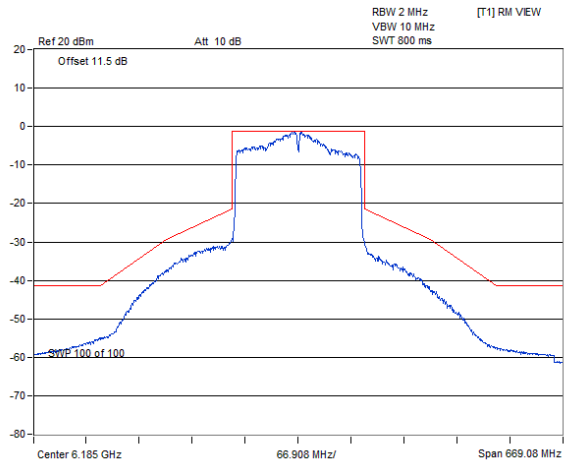


802.11ax (HE80) / Chain 1 : CH 151

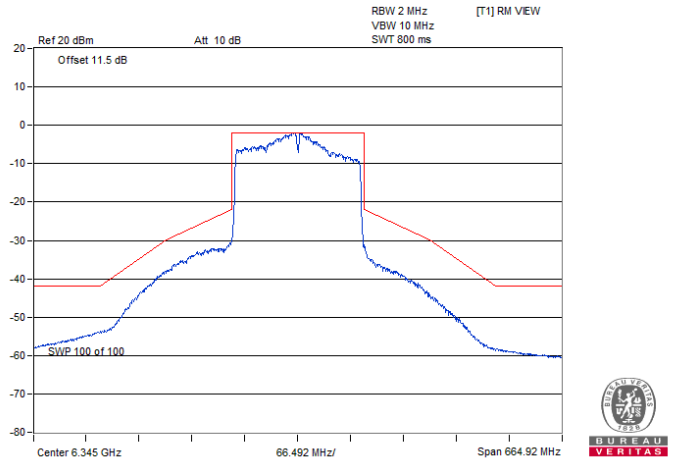


802.11ax (HE80) / Chain 1 : CH 167

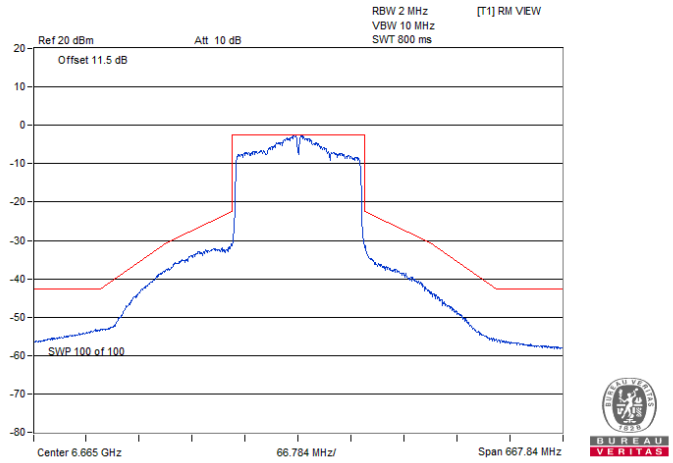
802.11ax (HE160)

Spectrum Plot	
	
802.11ax (HE160) / Chain 0 : CH 15	802.11ax (HE160) / Chain 0 : CH 47
	
802.11ax (HE160) / Chain 0 : CH 79	802.11ax (HE160) / Chain 0 : CH 143
	
802.11ax (HE160) / Chain 1 : CH 15	802.11ax (HE160) / Chain 1 : CH 47

Spectrum Plot



802.11ax (HE160) / Chain 1 : CH 79

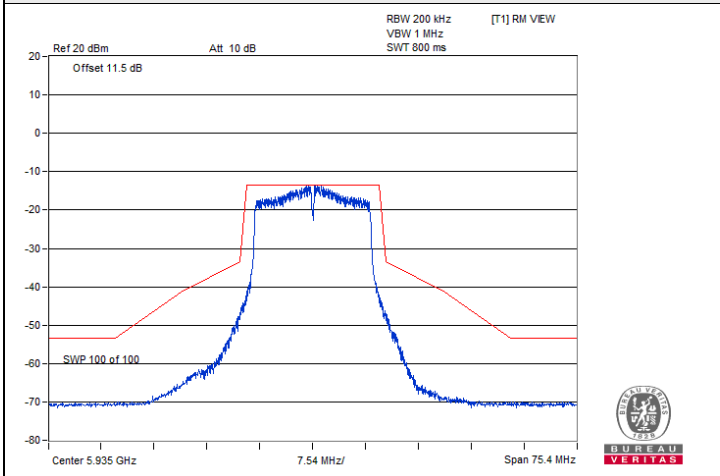
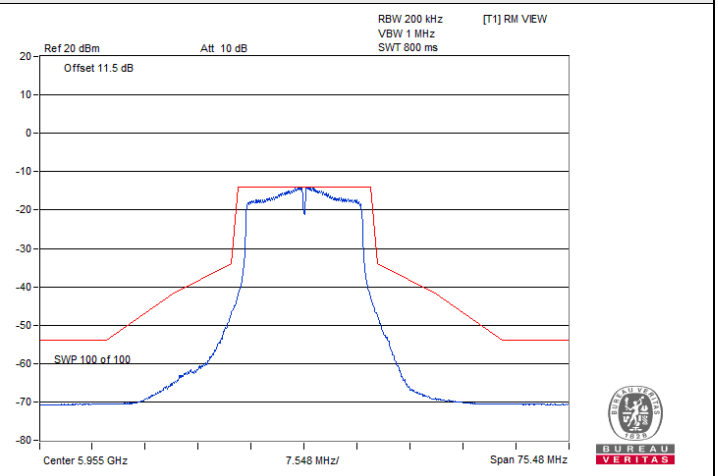
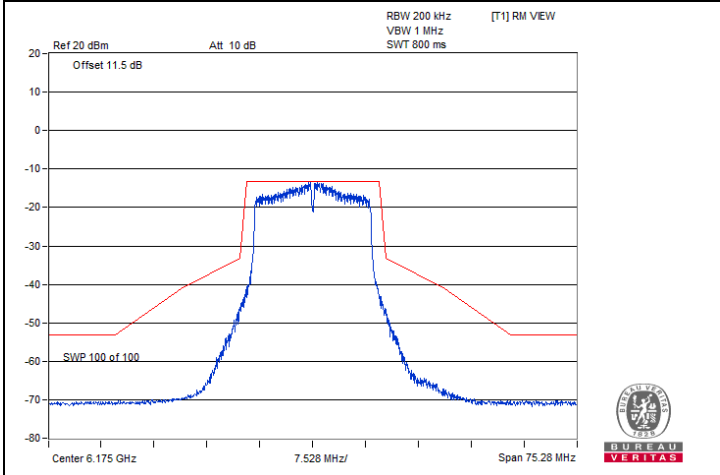
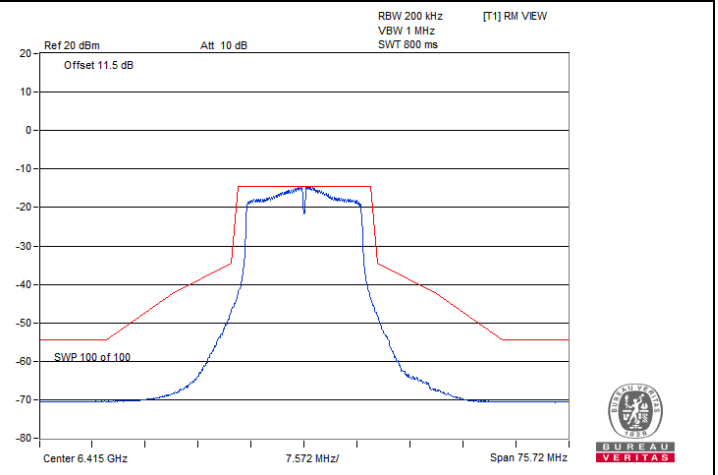
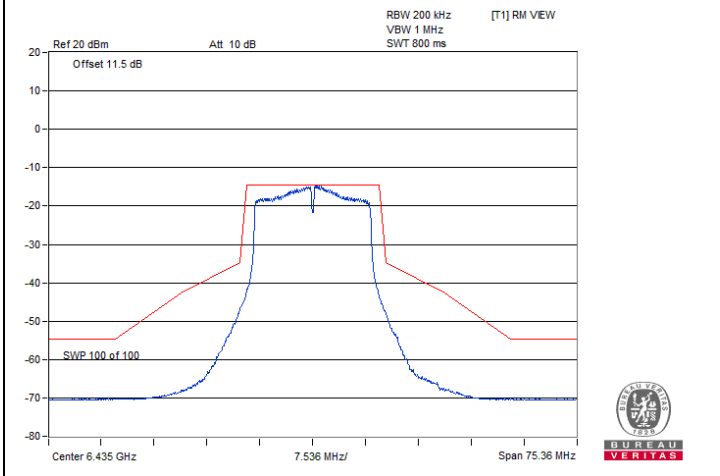
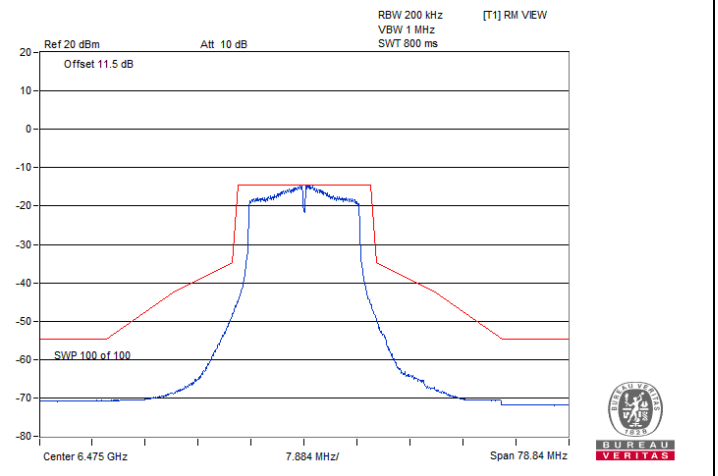


802.11ax (HE160) / Chain 1 : CH 143

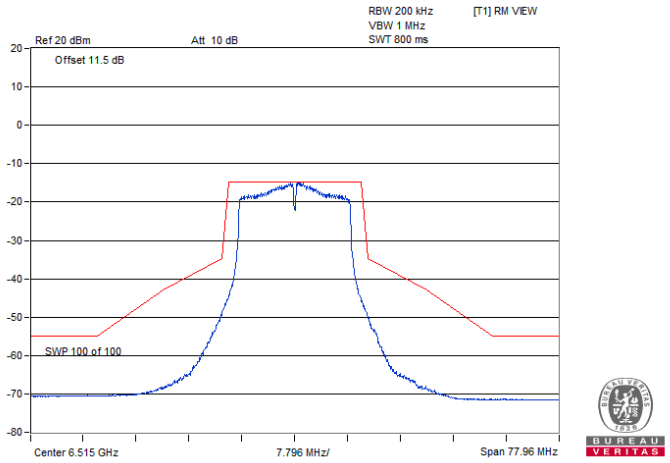
Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 69% RH	Tested By:	Tim Chen

Test Mode B

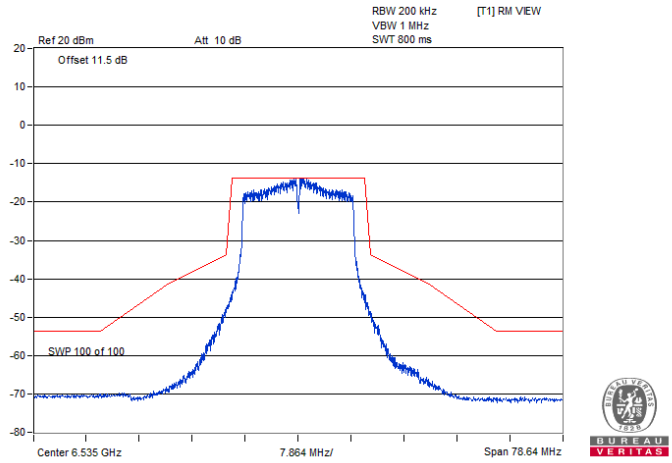
802.11a

Spectrum Plot	
	
802.11a / Chain 0 : CH 2	802.11a / Chain 0 : CH 1
	
802.11a / Chain 0 : CH 45	802.11a / Chain 0 : CH 93
	
802.11a / Chain 0 : CH 97	802.11a / Chain 0 : CH 105

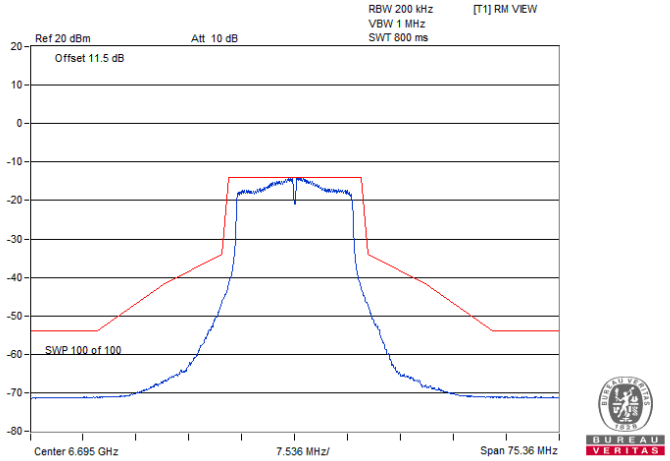
Spectrum Plot



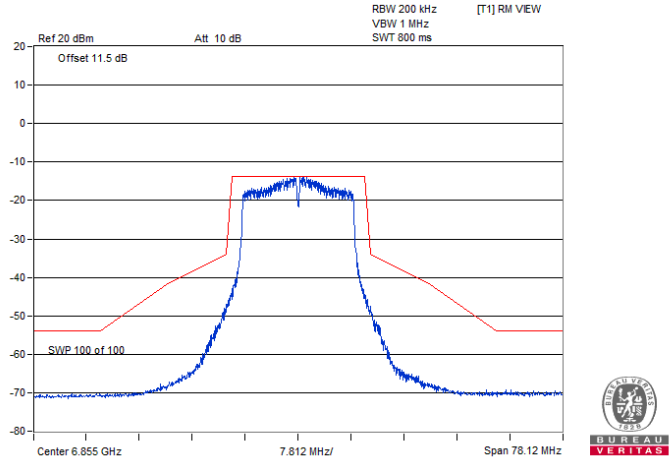
802.11a / Chain 0 : CH 113



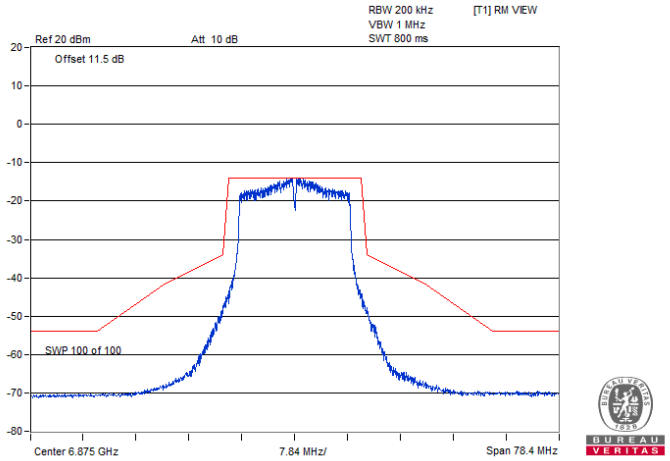
802.11a / Chain 0 : CH 117



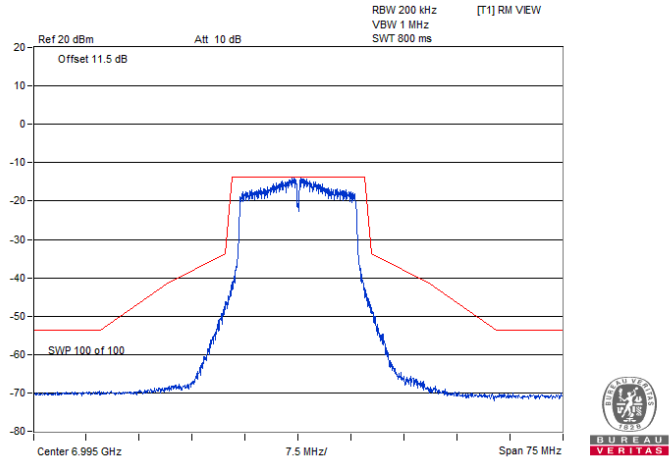
802.11a / Chain 0 : CH 149



802.11a / Chain 0 : CH 181

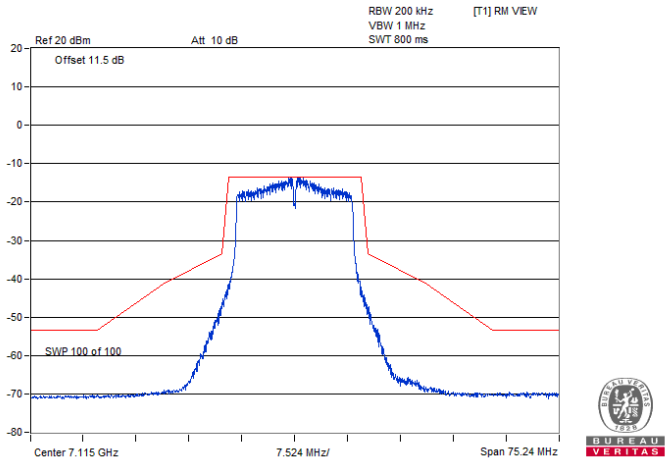


802.11a / Chain 0 : CH 185

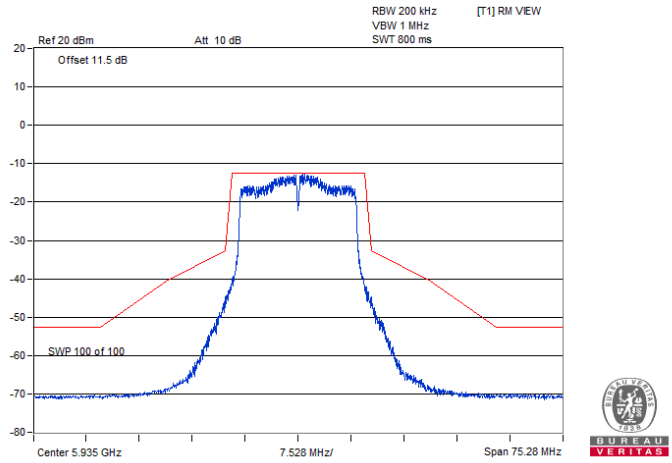


802.11a / Chain 0 : CH 209

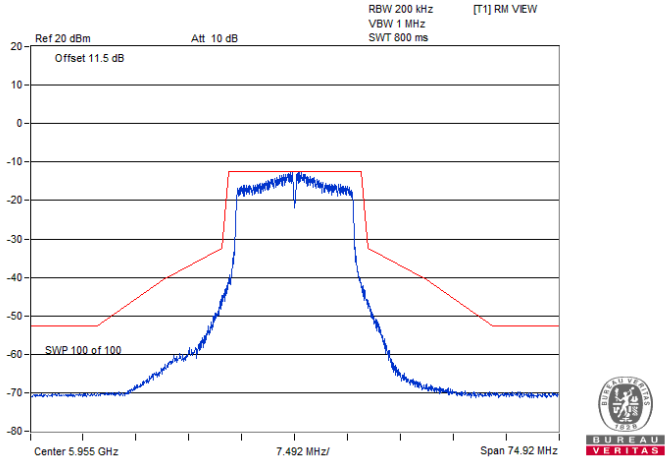
Spectrum Plot



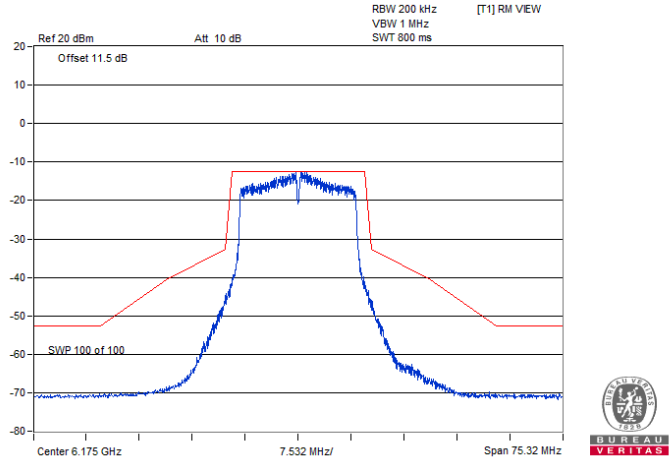
802.11a / Chain 0 : CH 233



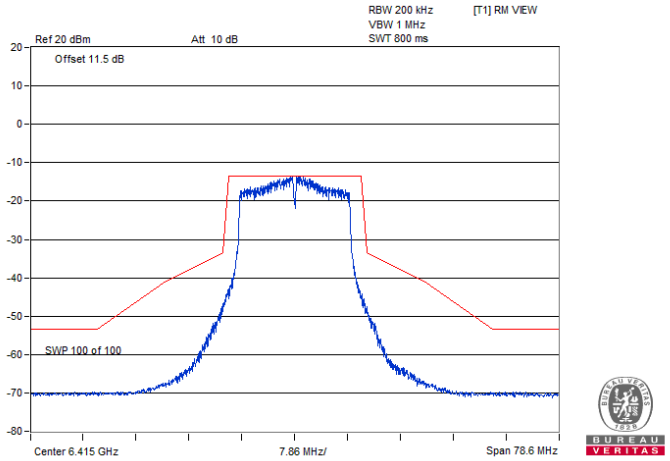
802.11a / Chain 1 : CH 2



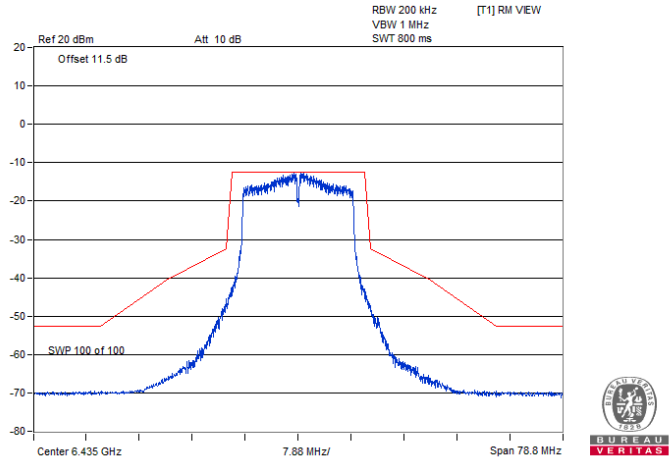
802.11a / Chain 1 : CH 1



802.11a / Chain 1 : CH 45

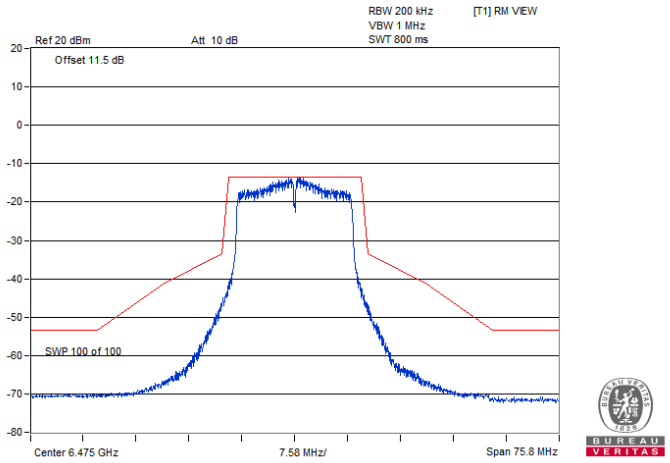


802.11a / Chain 1 : CH 93

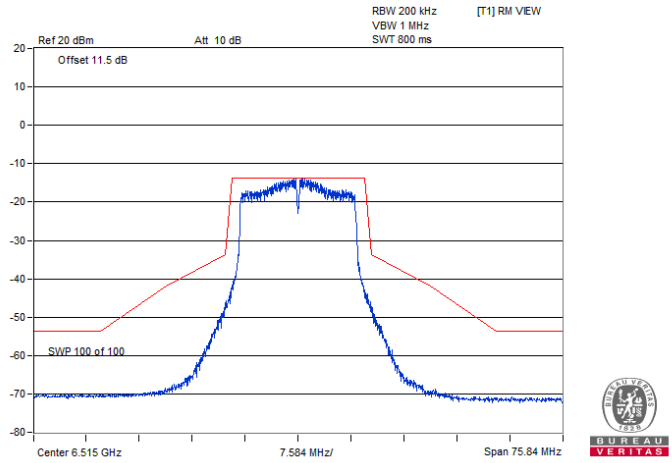


802.11a / Chain 1 : CH 97

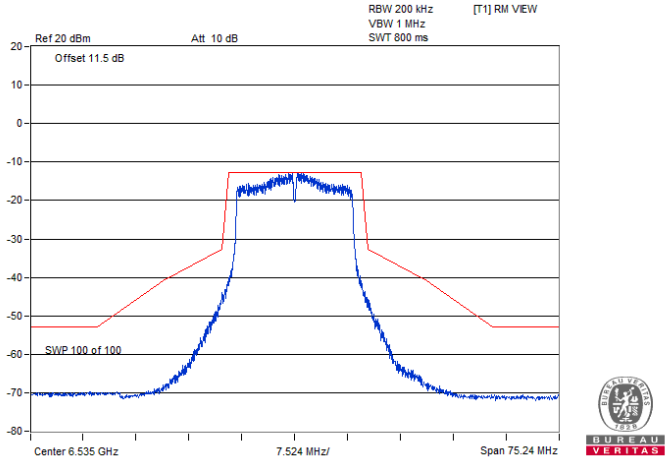
Spectrum Plot



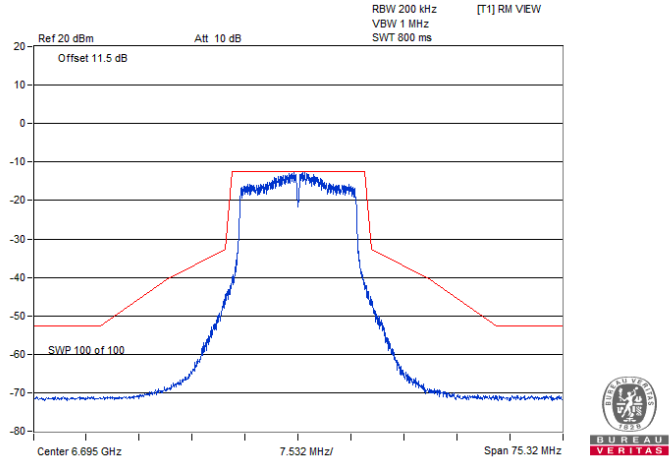
802.11a / Chain 1 : CH 105



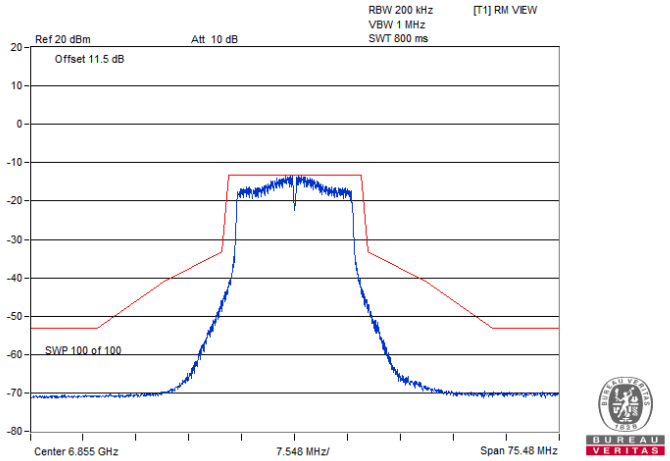
802.11a / Chain 1 : CH 113



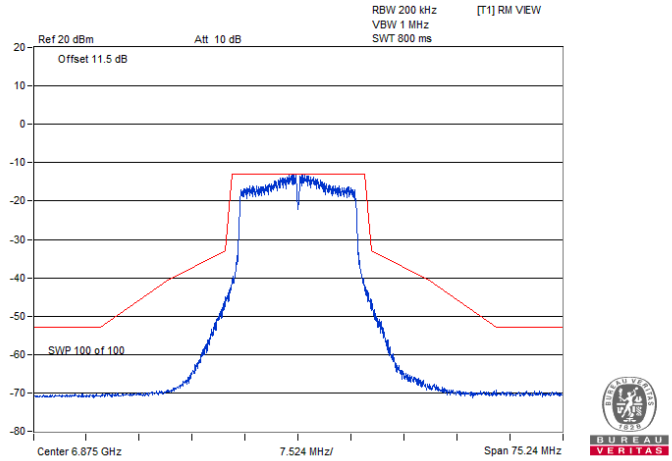
802.11a / Chain 1 : CH 117



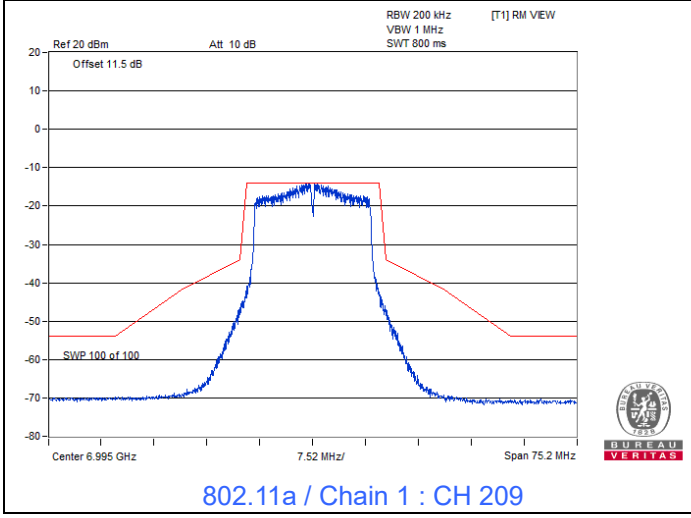
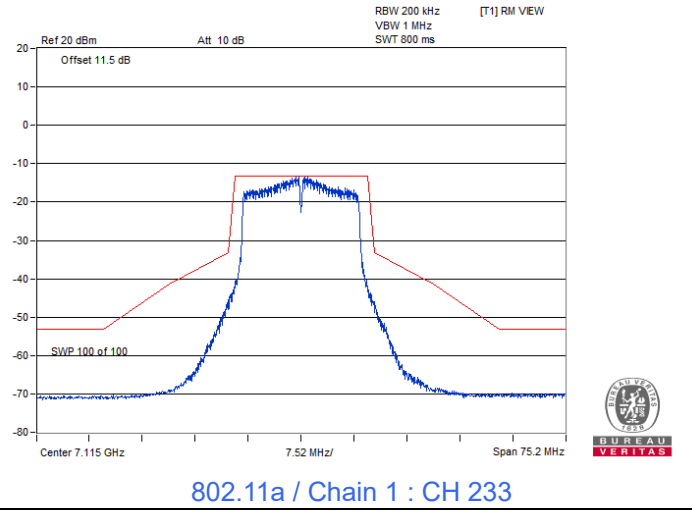
802.11a / Chain 1 : CH 149



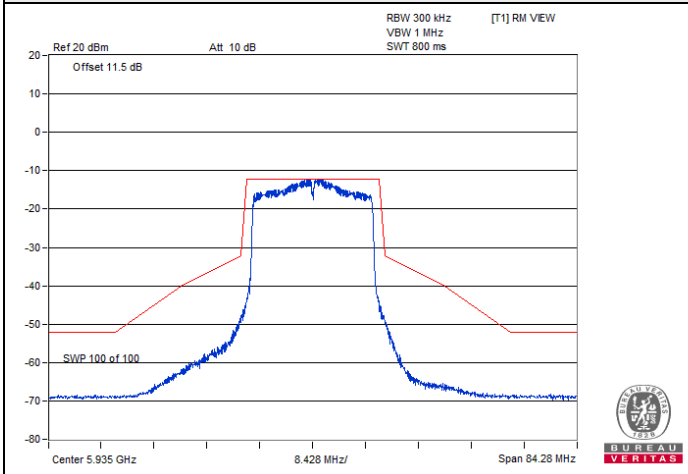
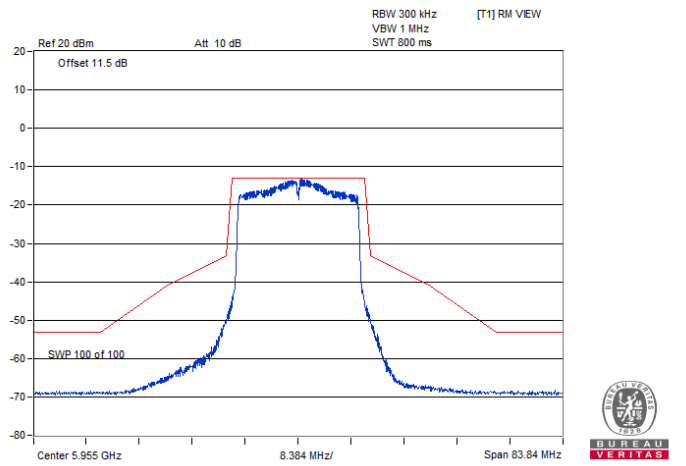
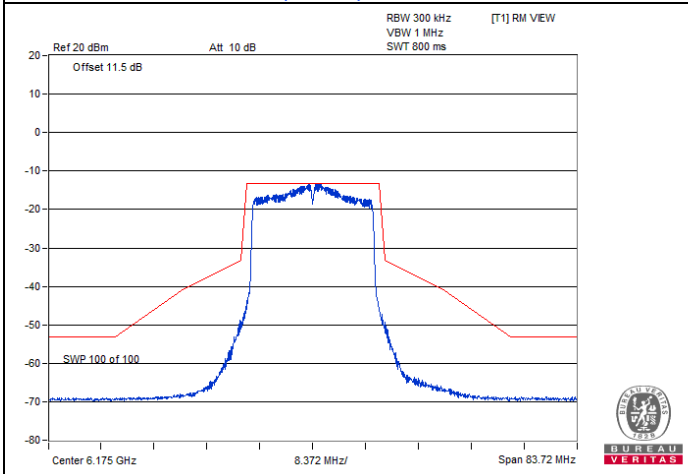
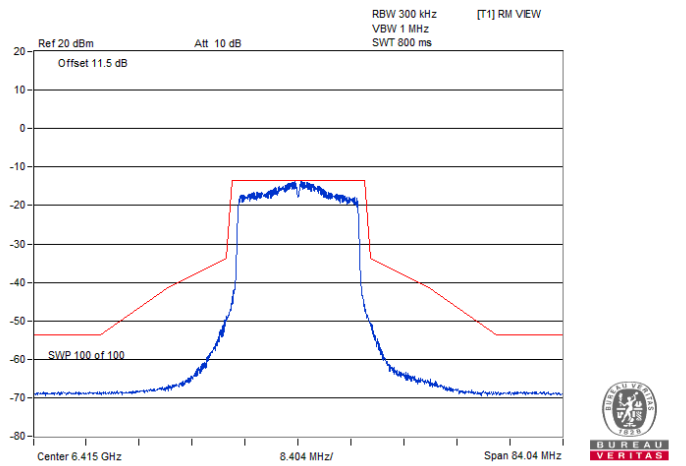
802.11a / Chain 1 : CH 181



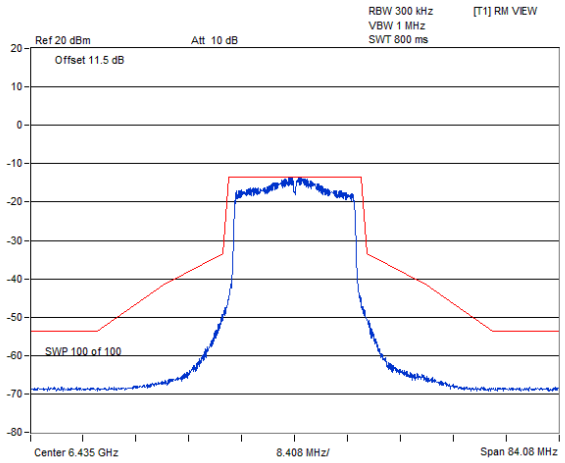
802.11a / Chain 1 : CH 185

Spectrum Plot	
	
802.11a / Chain 1 : CH 209	802.11a / Chain 1 : CH 233

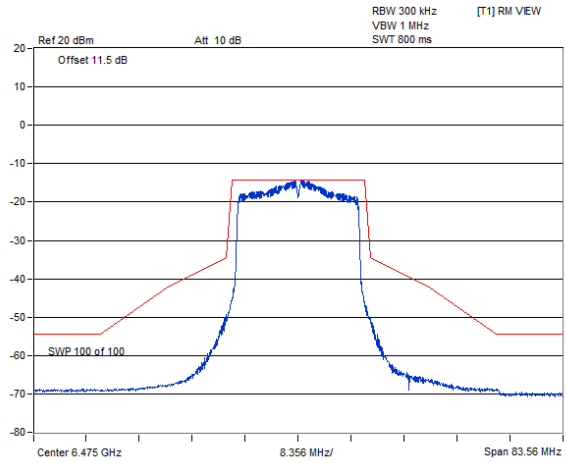
802.11ax (HE20)

Spectrum Plot	
	
802.11ax (HE20) / Chain 0 : CH 2	802.11ax (HE20) / Chain 0 : CH 1
	
802.11ax (HE20) / Chain 0 : CH 45	802.11ax (HE20) / Chain 0 : CH 93

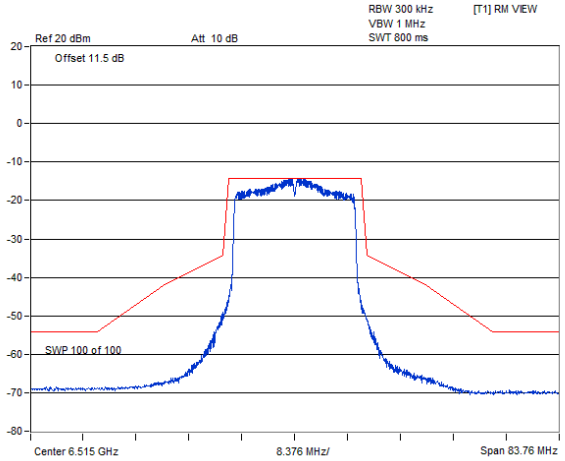
Spectrum Plot



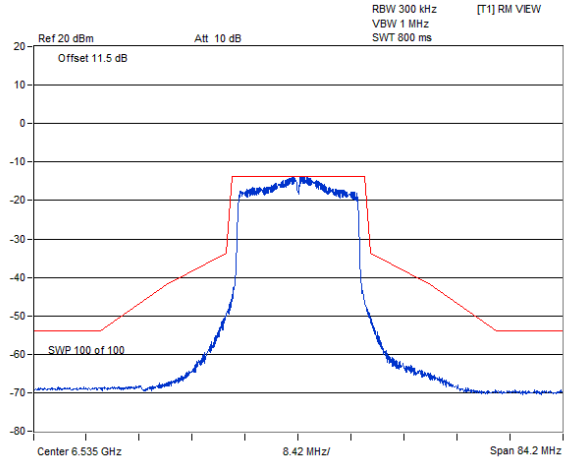
802.11ax (HE20) / Chain 0 : CH 97



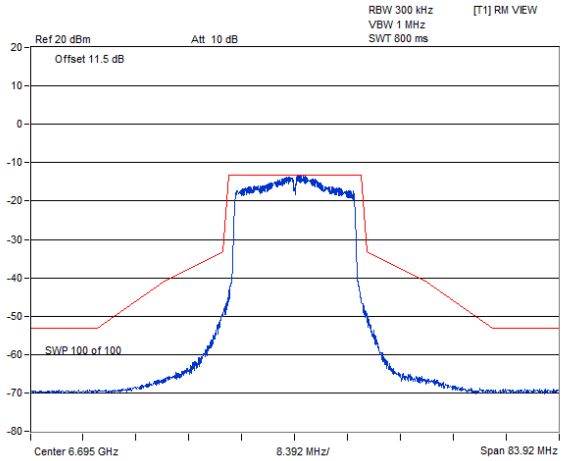
802.11ax (HE20) / Chain 0 : CH 105



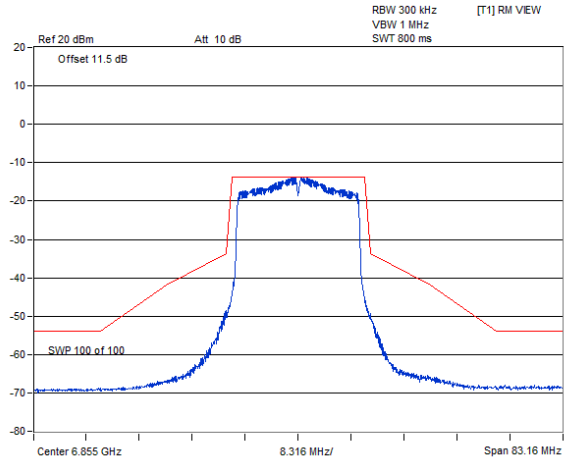
802.11ax (HE20) / Chain 0 : CH 113



802.11ax (HE20) / Chain 0 : CH 117

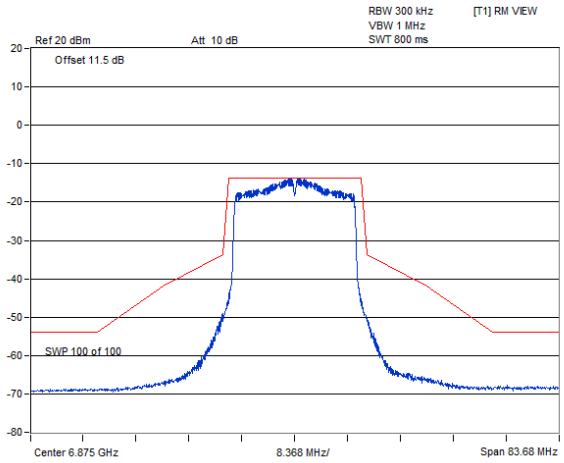


802.11ax (HE20) / Chain 0 : CH 149

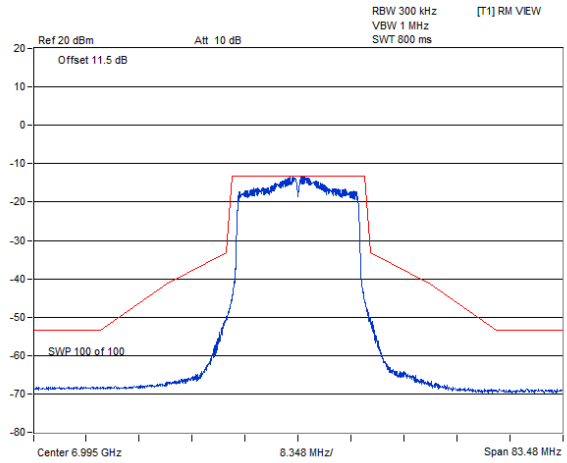


802.11ax (HE20) / Chain 0 : CH 181

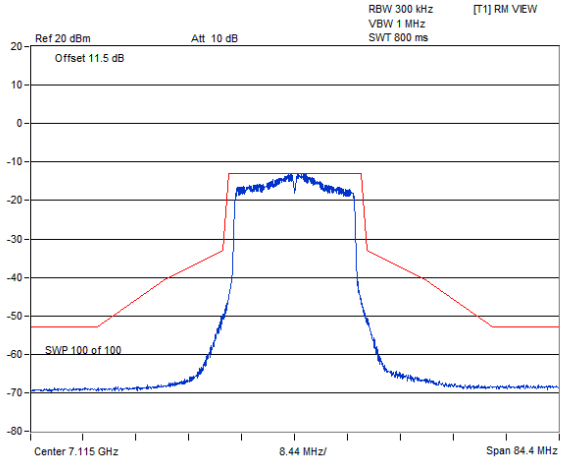
Spectrum Plot



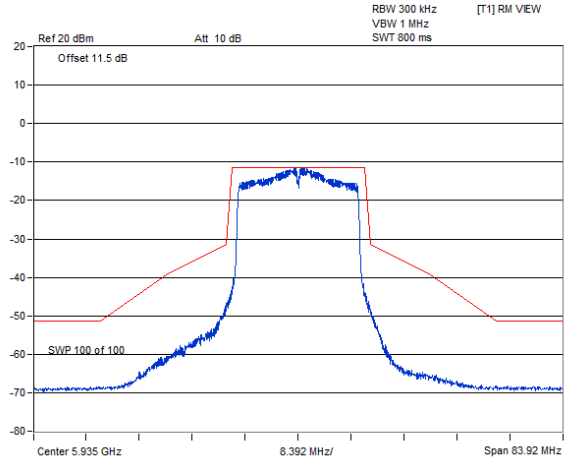
802.11ax (HE20) / Chain 0 : CH 185



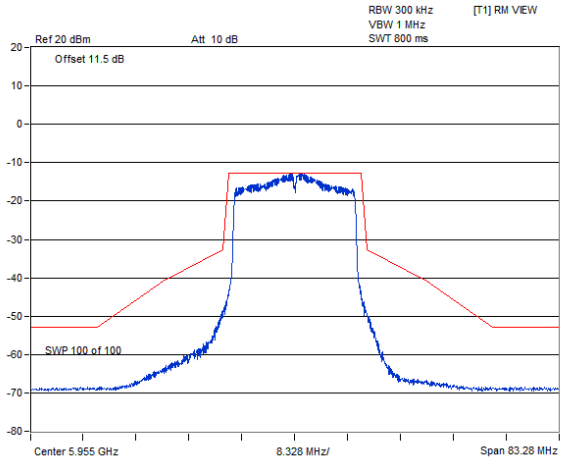
802.11ax (HE20) / Chain 0 : CH 209



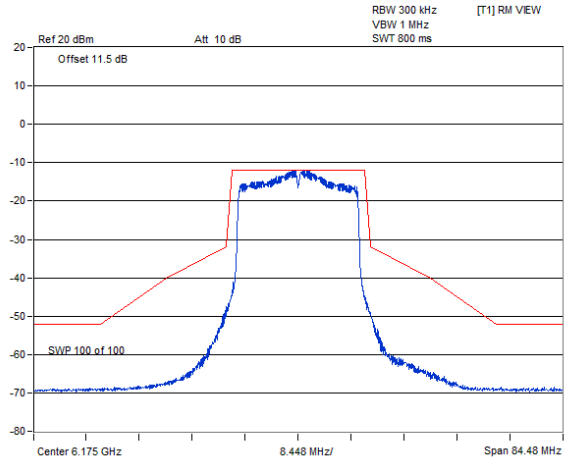
802.11ax (HE20) / Chain 0 : CH 233



802.11ax (HE20) / Chain 1 : CH 2

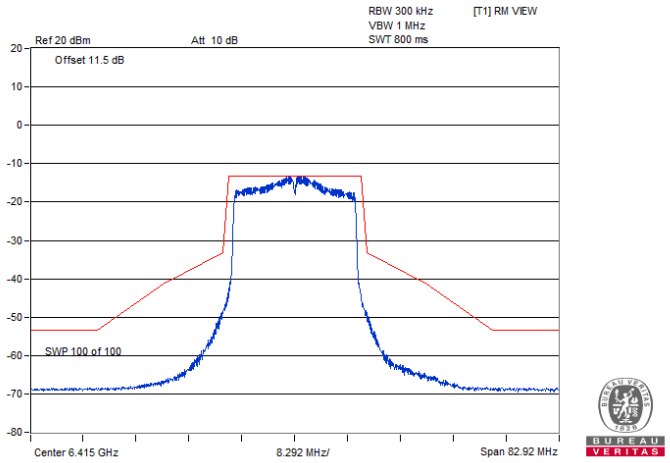


802.11ax (HE20) / Chain 1 : CH 1

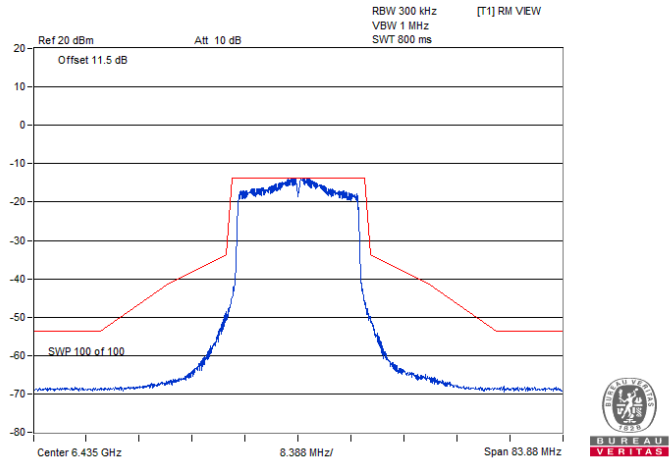


802.11ax (HE20) / Chain 1 : CH 45

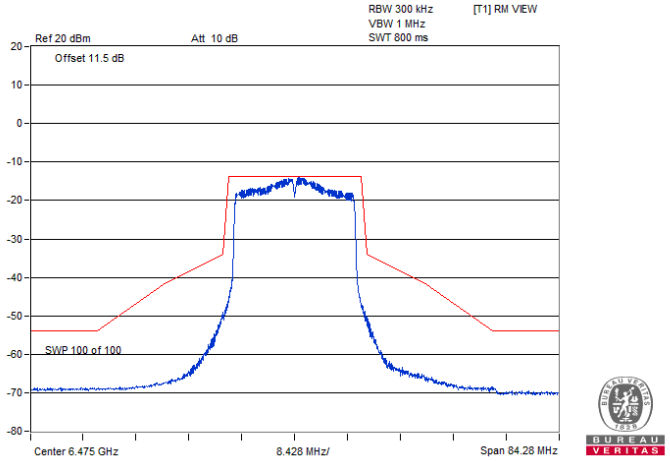
Spectrum Plot



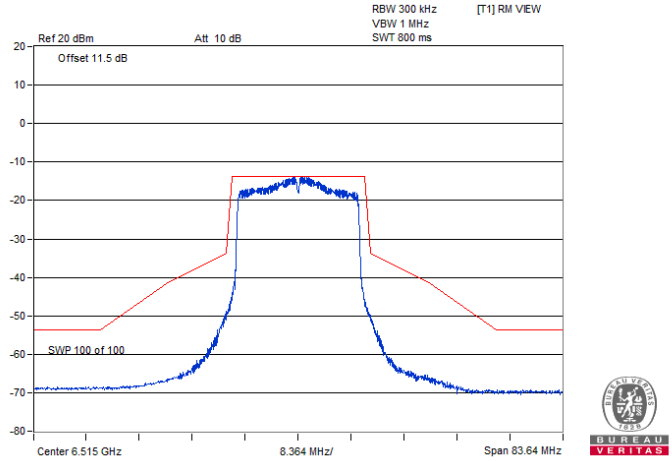
802.11ax (HE20) / Chain 1 : CH 93



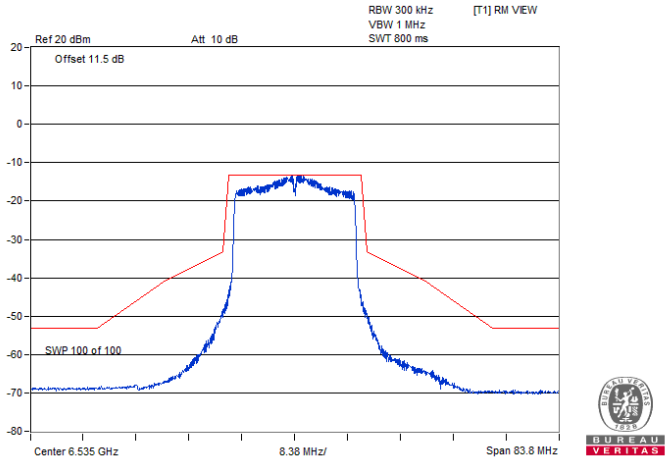
802.11ax (HE20) / Chain 1 : CH 97



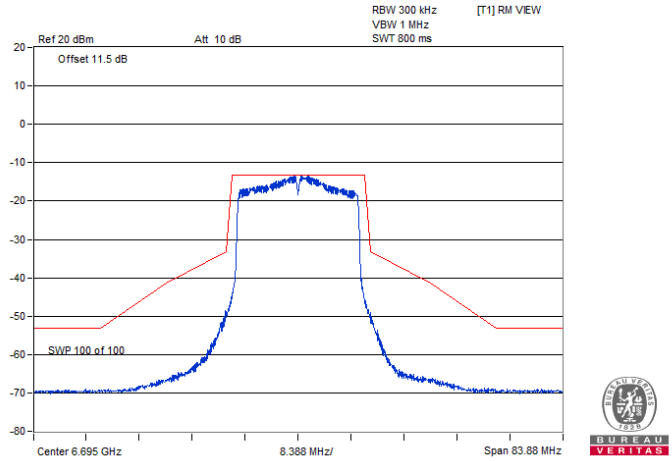
802.11ax (HE20) / Chain 1 : CH 105



802.11ax (HE20) / Chain 1 : CH 113

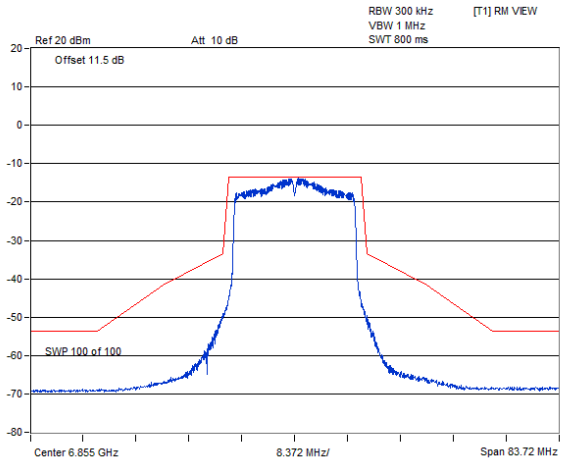


802.11ax (HE20) / Chain 1 : CH 117

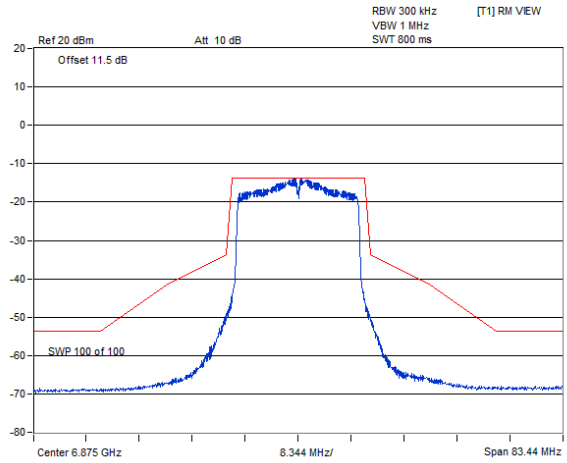


802.11ax (HE20) / Chain 1 : CH 149

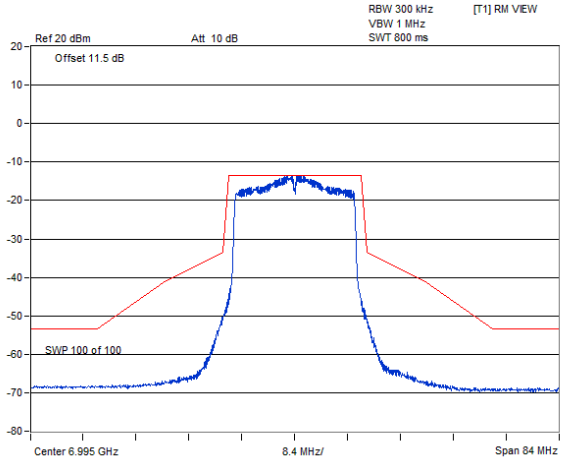
Spectrum Plot



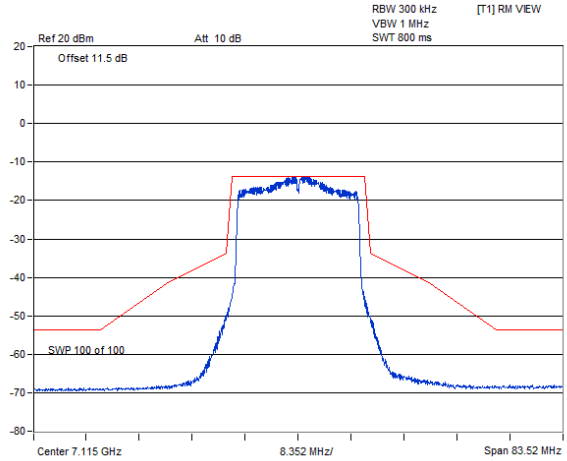
802.11ax (HE20) / Chain 1 : CH 181



802.11ax (HE20) / Chain 1 : CH 185

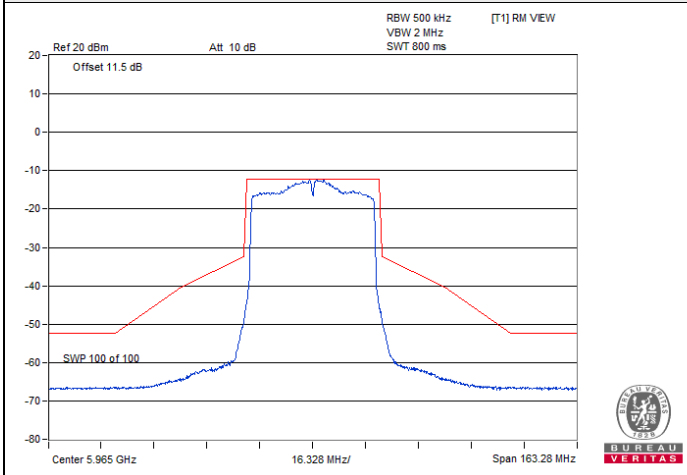
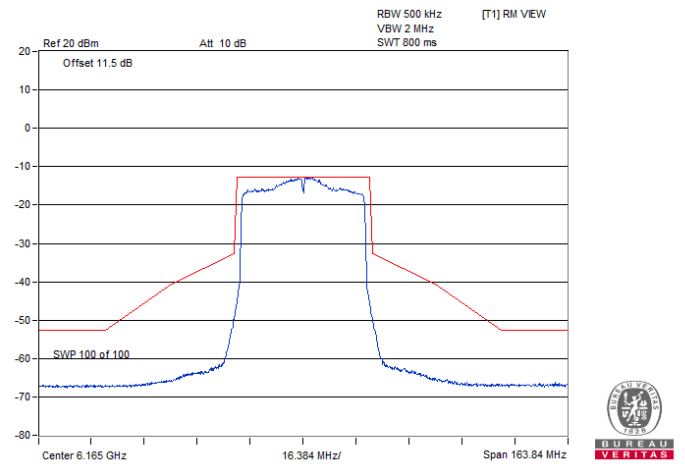
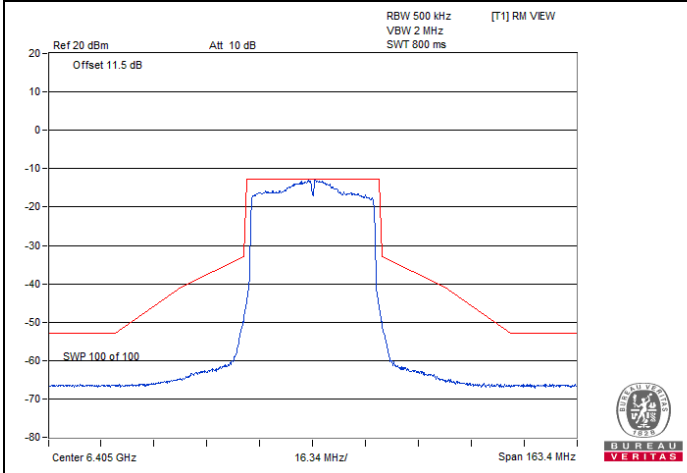
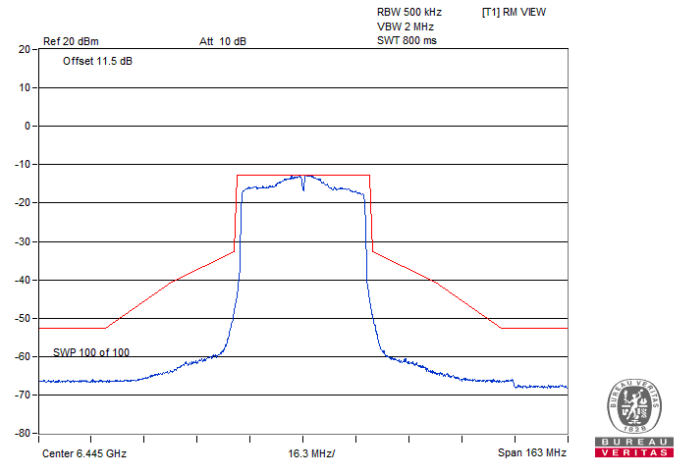
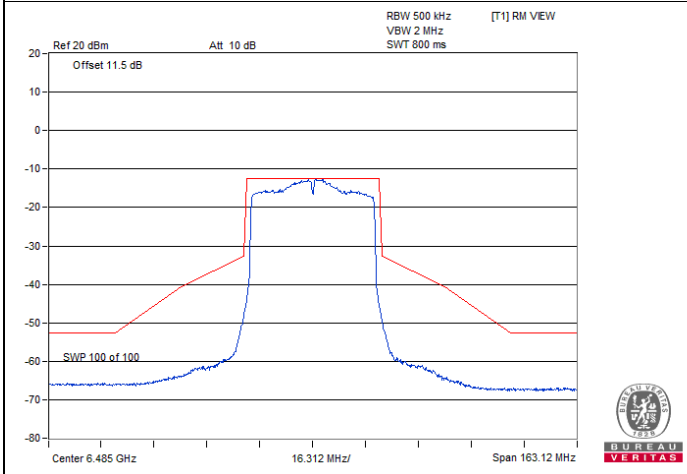
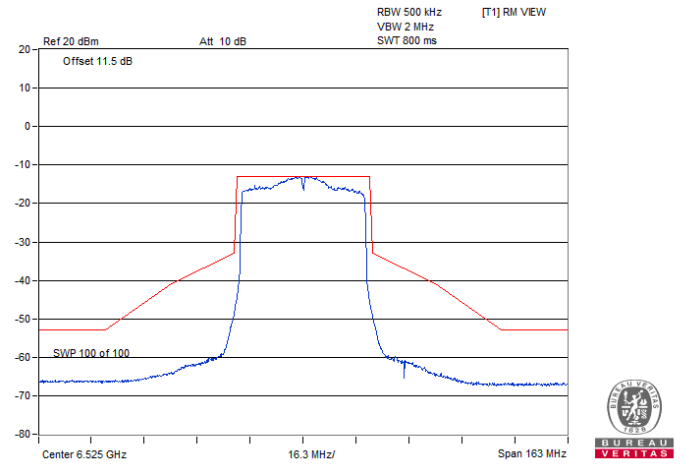


802.11ax (HE20) / Chain 1 : CH 209

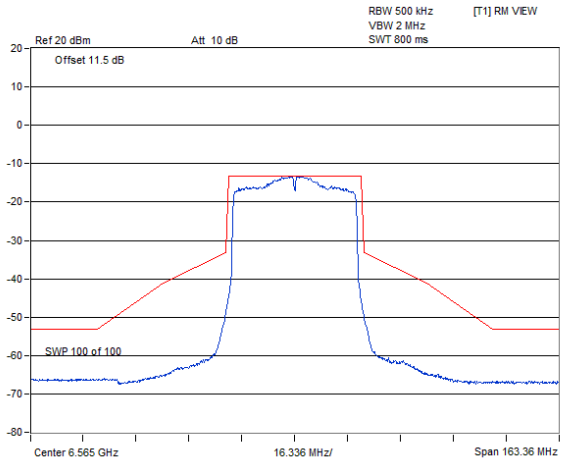


802.11ax (HE20) / Chain 1 : CH 233

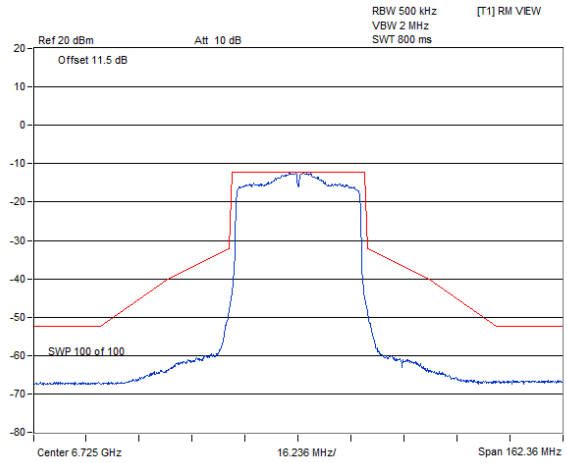
802.11ax (HE40)

Spectrum Plot	
	
802.11ax (HE40) / Chain 0 : CH 3	802.11ax (HE40) / Chain 0 : CH 43
	
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

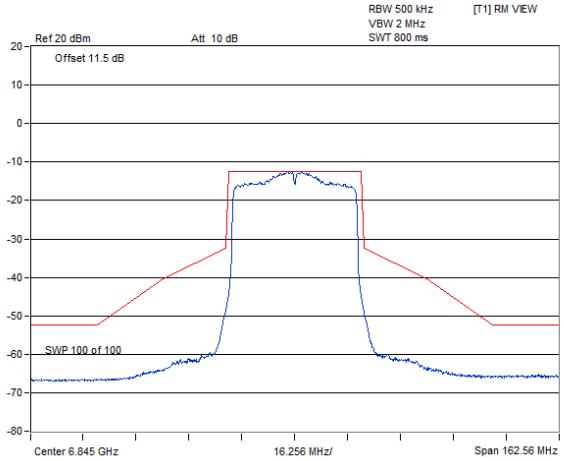
Spectrum Plot



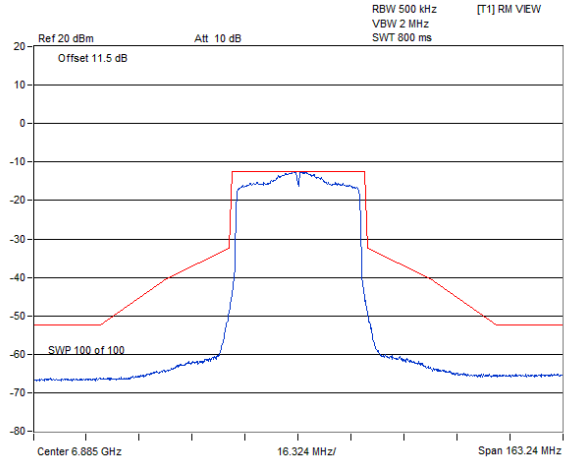
802.11ax (HE40) / Chain 0 : CH 123



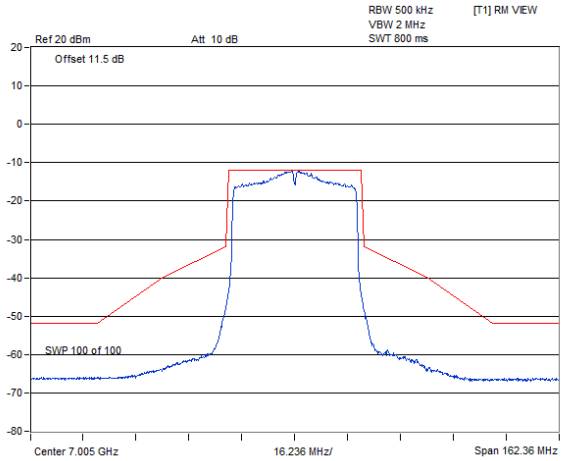
802.11ax (HE40) / Chain 0 : CH 155



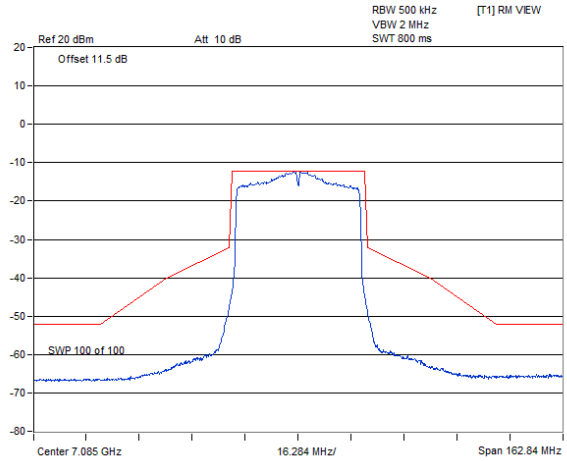
802.11ax (HE40) / Chain 0 : CH 179



802.11ax (HE40) / Chain 0 : CH 187

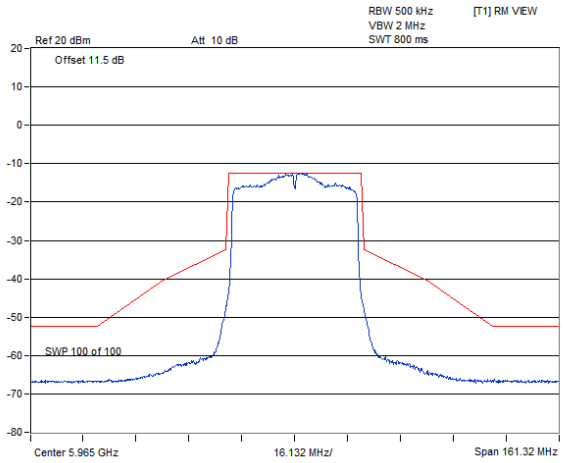


802.11ax (HE40) / Chain 0 : CH 211

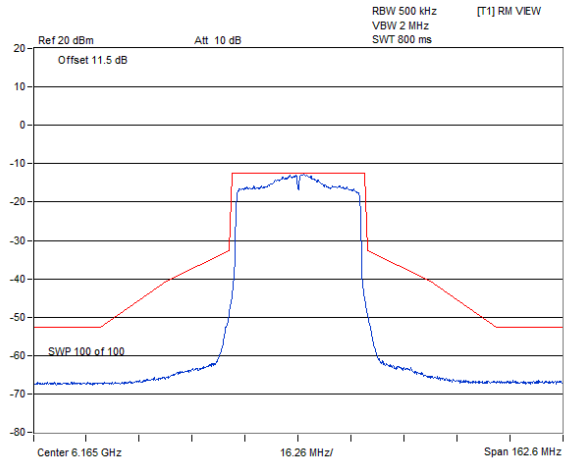


802.11ax (HE40) / Chain 0 : CH 227

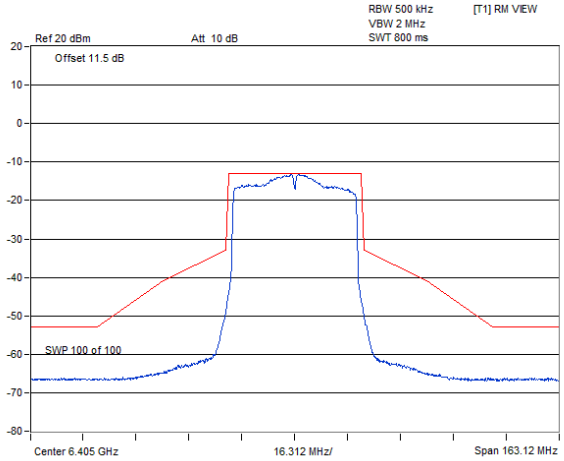
Spectrum Plot



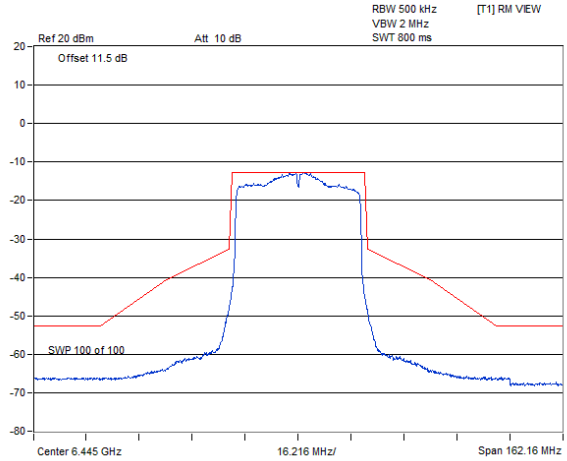
802.11ax (HE40) / Chain 1 : CH 3



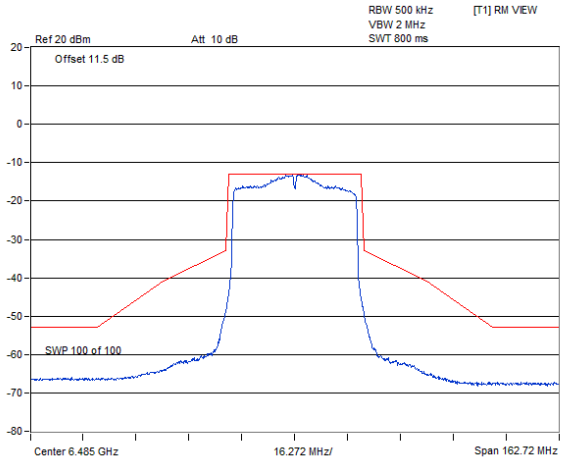
802.11ax (HE40) / Chain 1 : CH 43



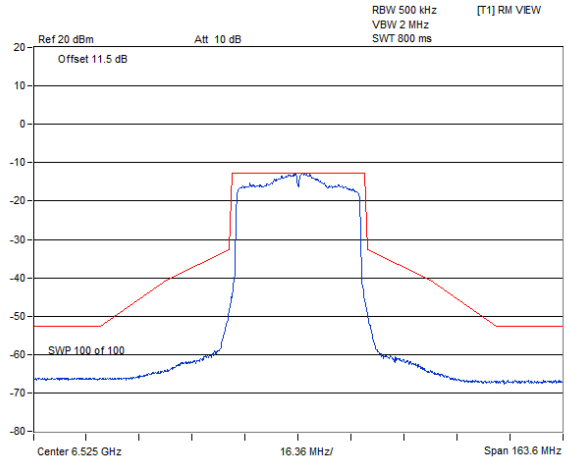
802.11ax (HE40) / Chain 1 : CH 91



802.11ax (HE40) / Chain 1 : CH 99

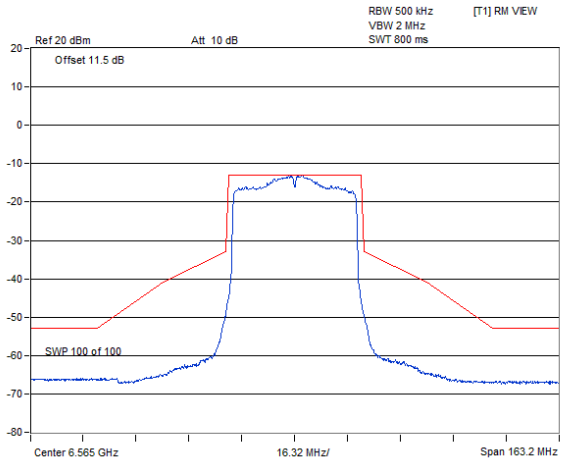


802.11ax (HE40) / Chain 1 : CH 107

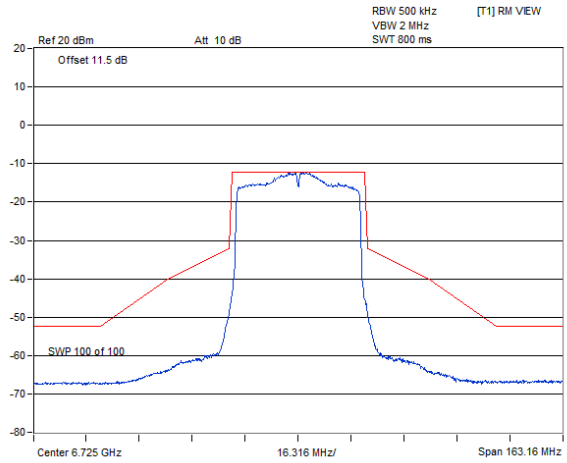


802.11ax (HE40) / Chain 1 : CH 115

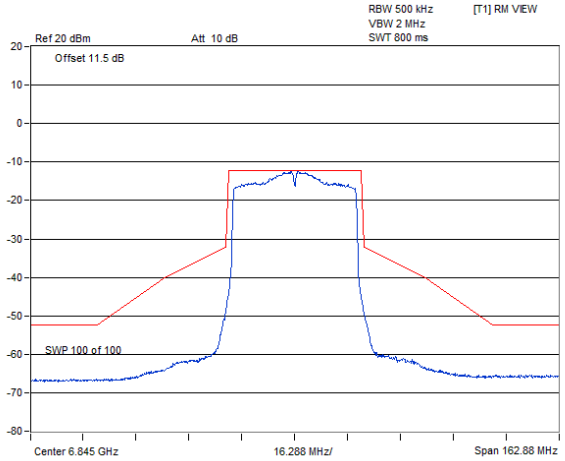
Spectrum Plot



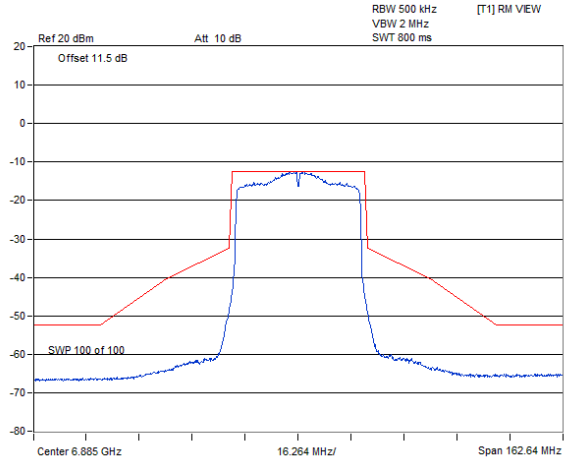
802.11ax (HE40) / Chain 1 : CH 123



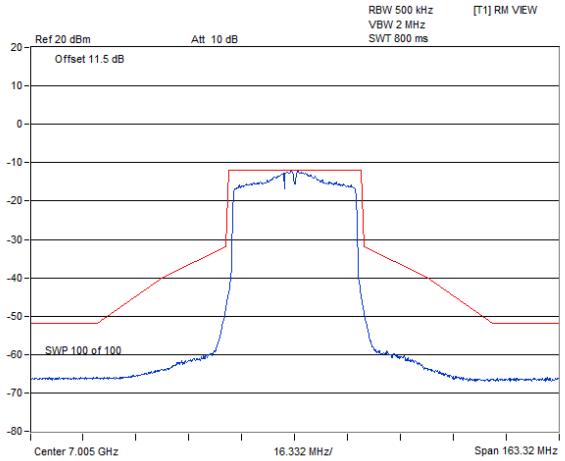
802.11ax (HE40) / Chain 1 : CH 155



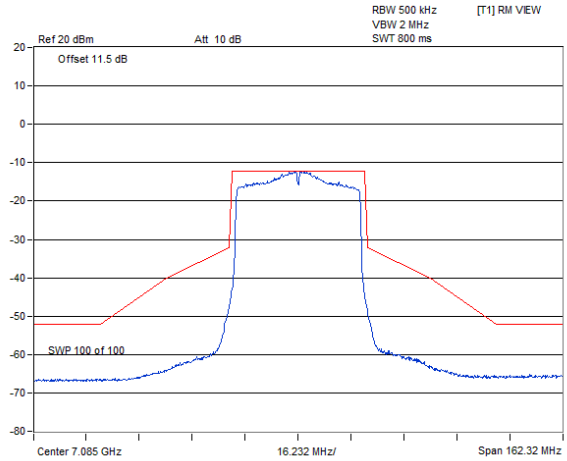
802.11ax (HE40) / Chain 1 : CH 179



802.11ax (HE40) / Chain 1 : CH 187

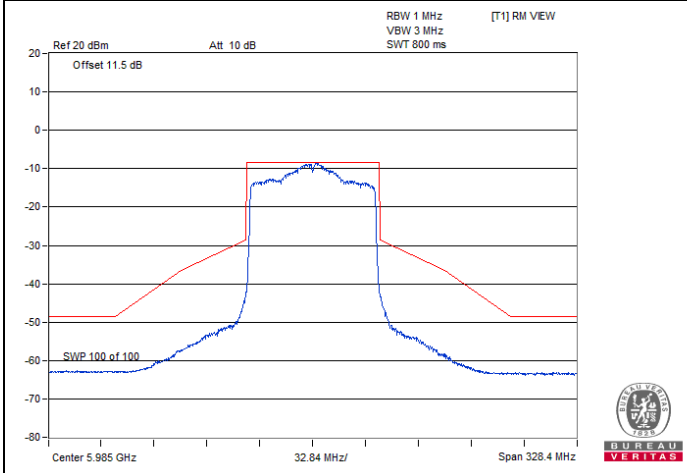
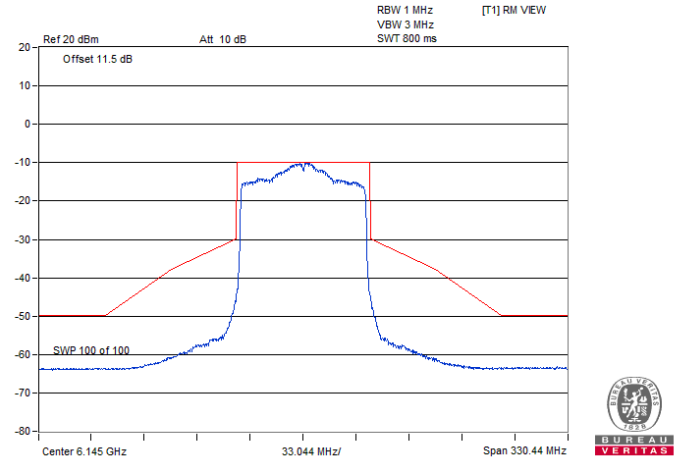
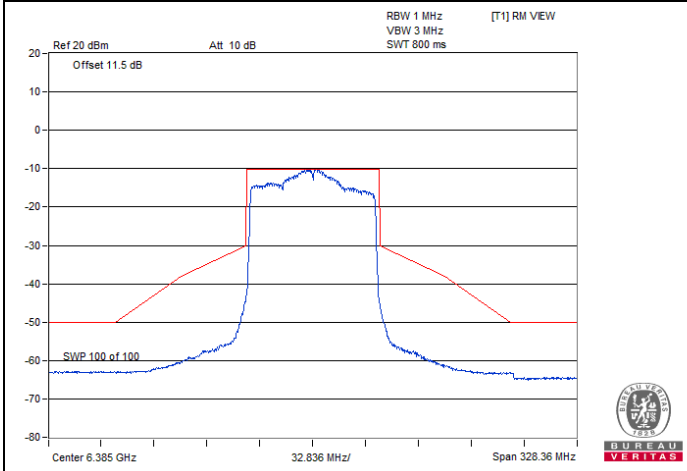
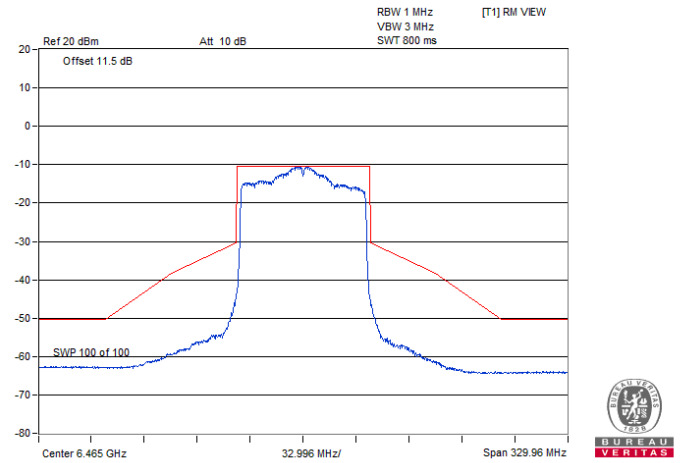
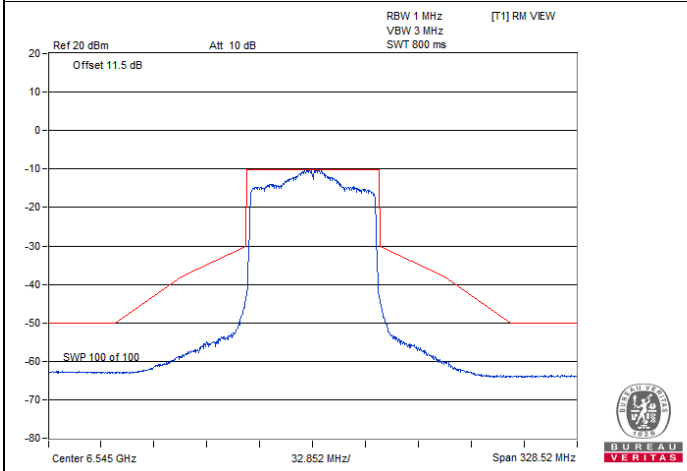
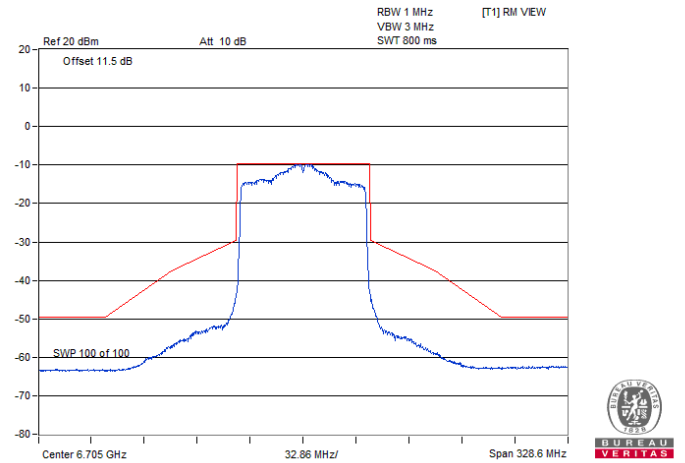


802.11ax (HE40) / Chain 1 : CH 211

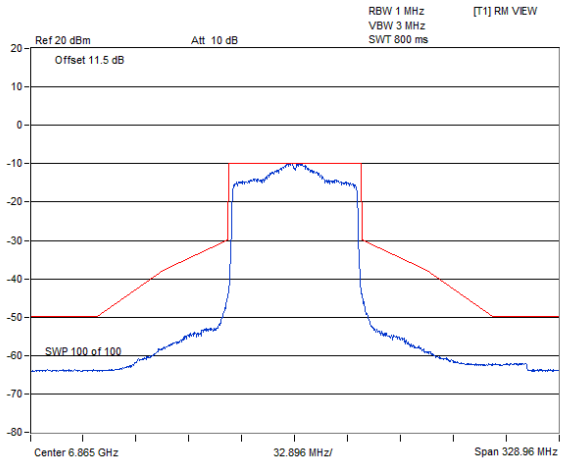


802.11ax (HE40) / Chain 1 : CH 227

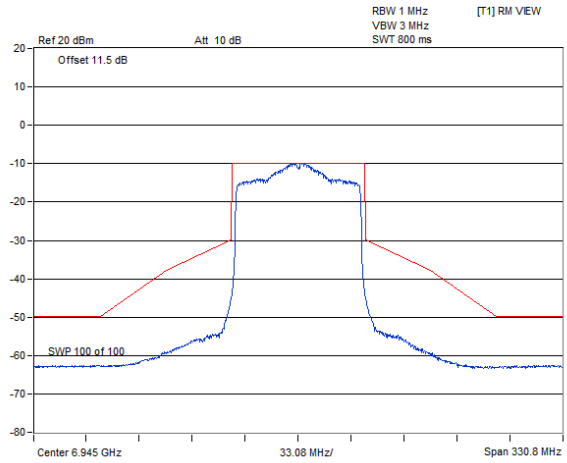
802.11ax (HE80)

Spectrum Plot	
	
802.11ax (HE80) / Chain 0 : CH 7	802.11ax (HE80) / Chain 0 : CH 39
	
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 151

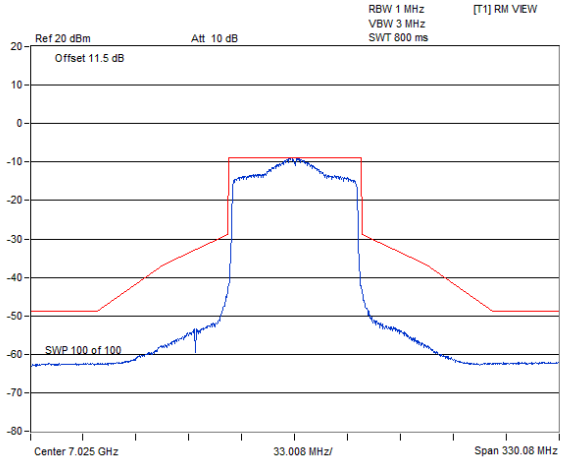
Spectrum Plot



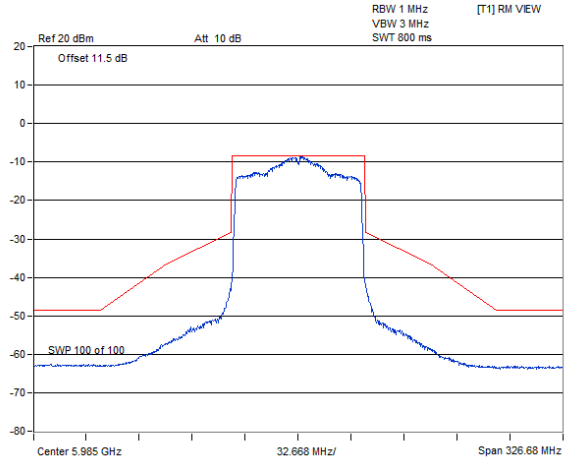
802.11ax (HE80) / Chain 0 : CH 183



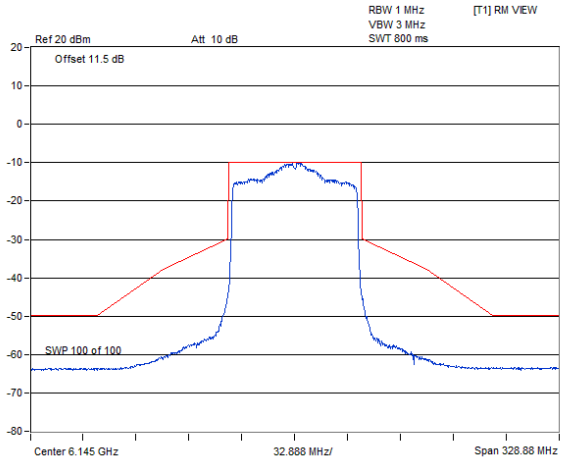
802.11ax (HE80) / Chain 0 : CH 199



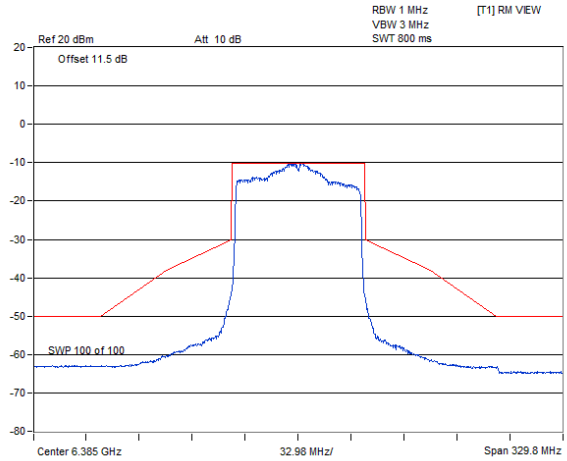
802.11ax (HE80) / Chain 0 : CH 215



802.11ax (HE80) / Chain 1 : CH 7

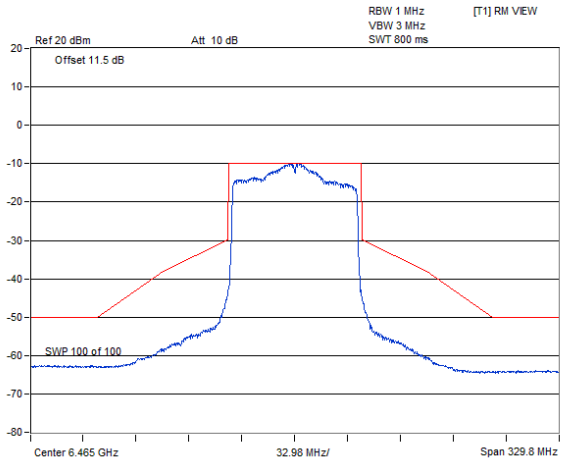


802.11ax (HE80) / Chain 1 : CH 39

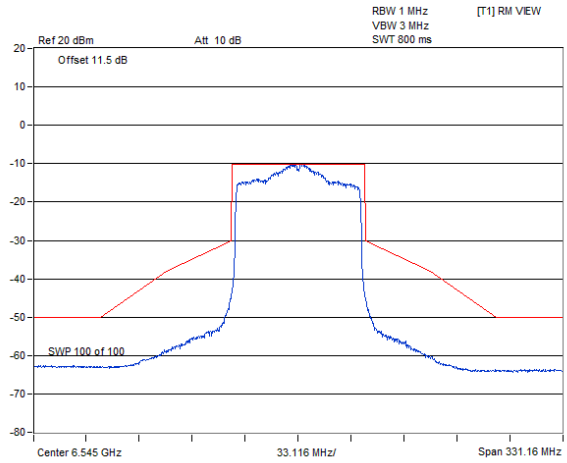


802.11ax (HE80) / Chain 1 : CH 87

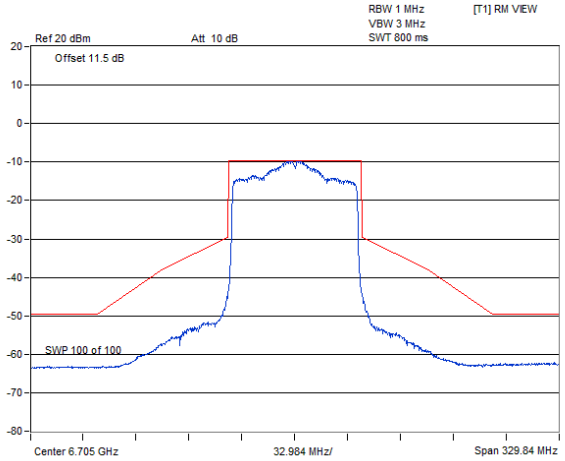
Spectrum Plot



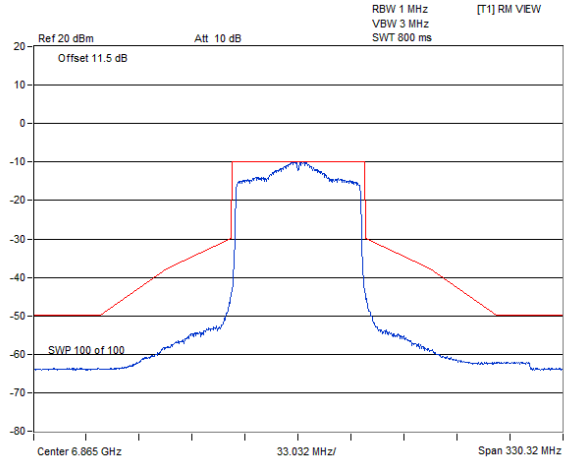
802.11ax (HE80) / Chain 1 : CH 103



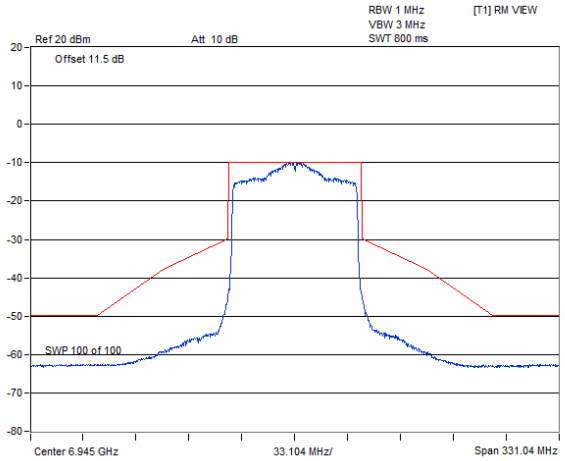
802.11ax (HE80) / Chain 1 : CH 119



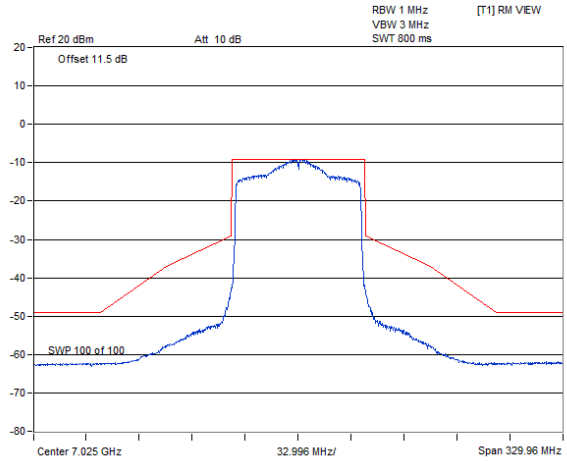
802.11ax (HE80) / Chain 1 : CH 151



802.11ax (HE80) / Chain 1 : CH 183

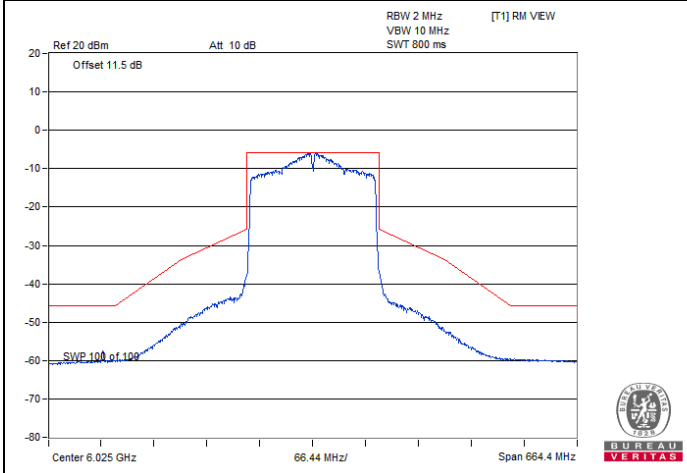
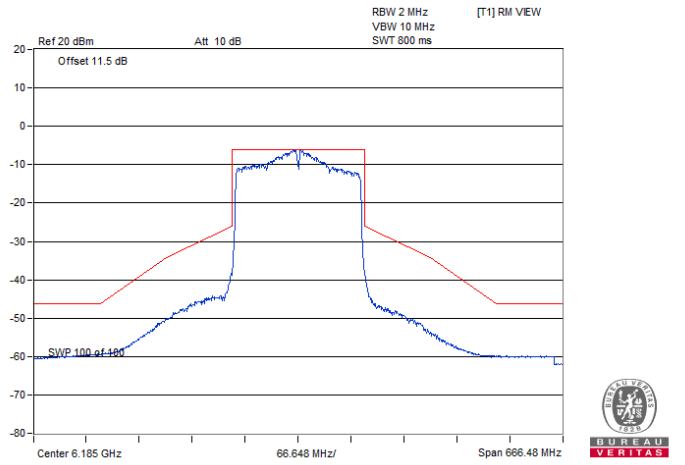
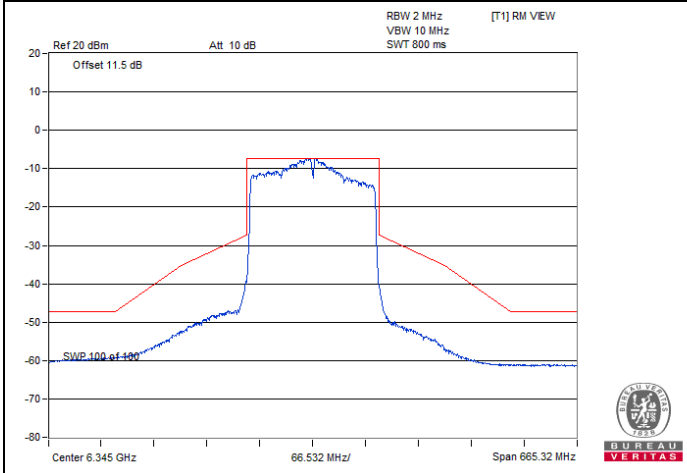
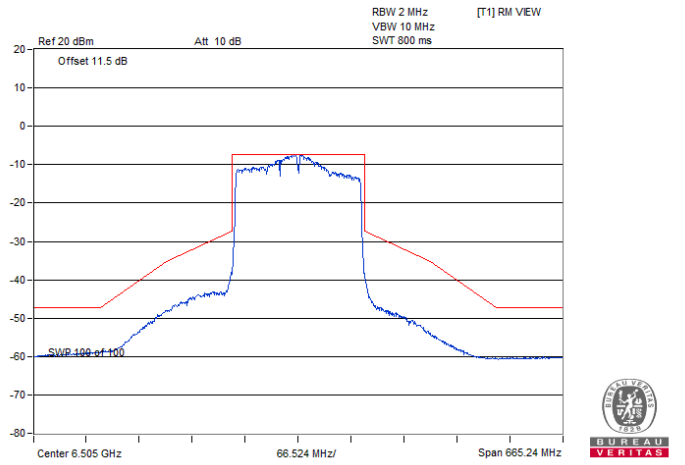
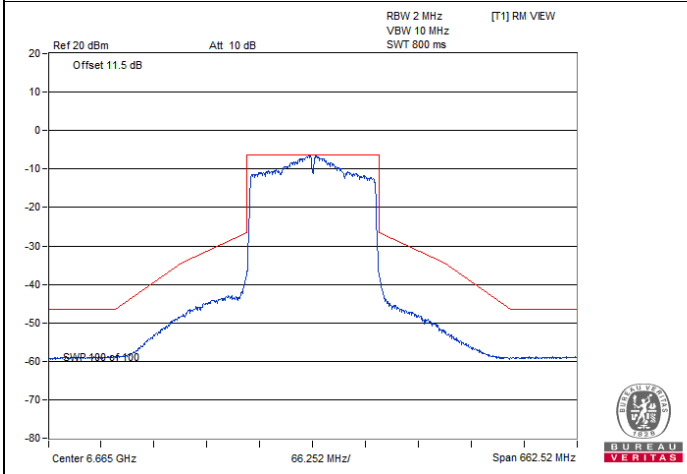
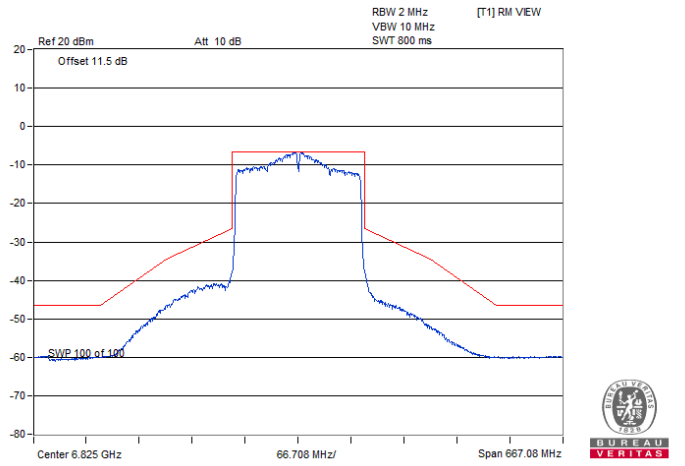


802.11ax (HE80) / Chain 1 : CH 199

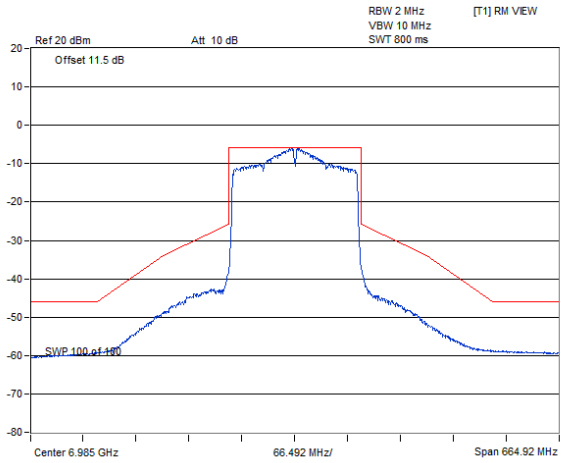


802.11ax (HE80) / Chain 1 : CH 215

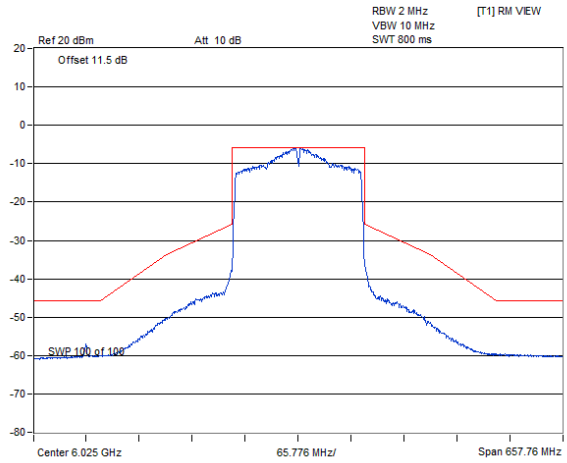
802.11ax (HE160)

Spectrum Plot	
	
802.11ax (HE160) / Chain 0 : CH 15	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

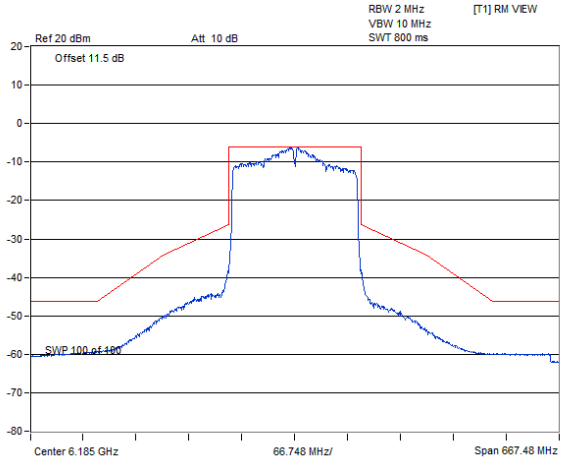
Spectrum Plot



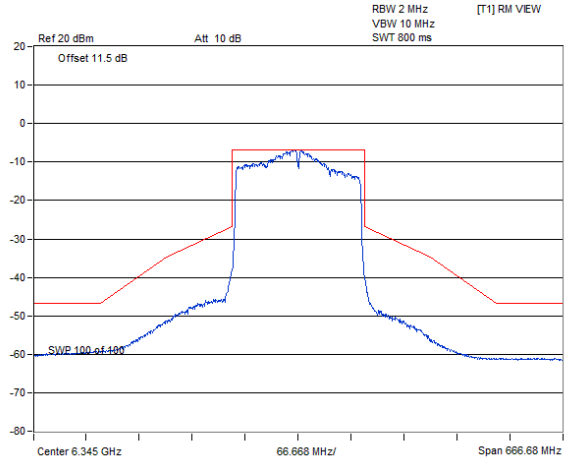
802.11ax (HE160) / Chain 0 : CH 207



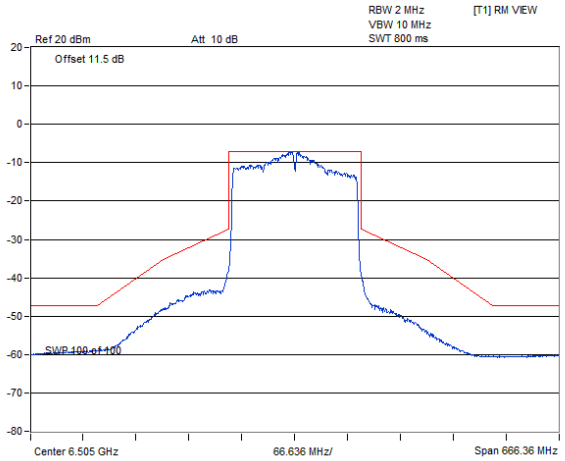
802.11ax (HE160) / Chain 1 : CH 15



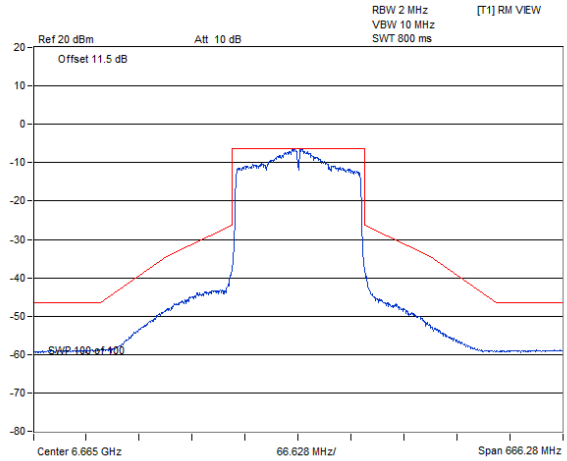
802.11ax (HE160) / Chain 1 : CH 47



802.11ax (HE160) / Chain 1 : CH 79

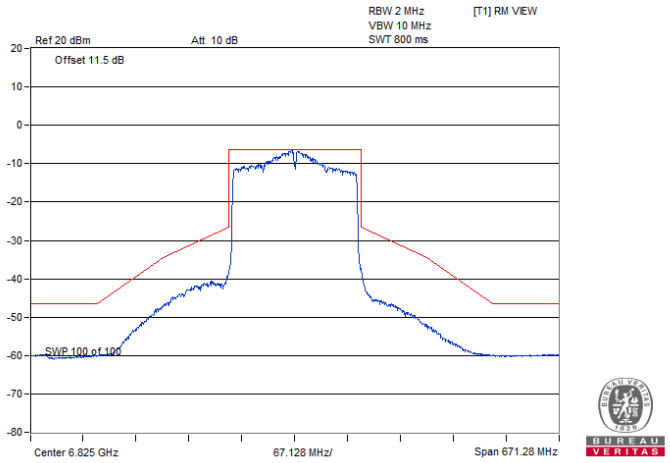


802.11ax (HE160) / Chain 1 : CH 111

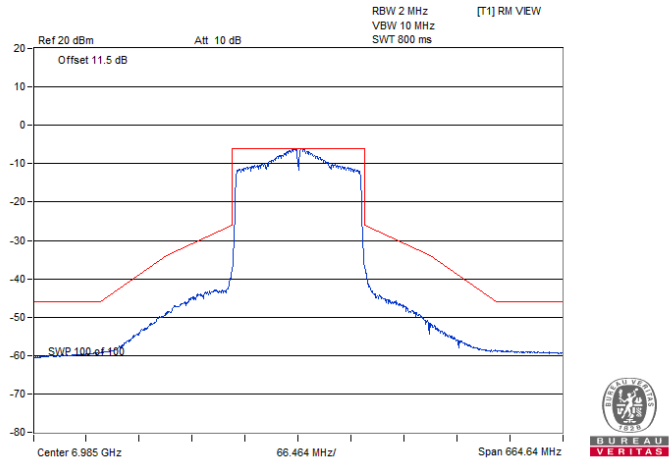


802.11ax (HE160) / Chain 1 : CH 143

Spectrum Plot



802.11ax (HE160) / Chain 1 : CH 175



802.11ax (HE160) / Chain 1 : CH 207

7.5 Occupied Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	21°C, 69% RH	Tested By:	Tim Chen

Test Mode A

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	16.32	16.32	320	Pass
1	5955	16.56	16.44	320	Pass
45	6175	17.04	18.12	320	Pass
93	6415	16.68	16.56	320	Pass
117	6535	17.04	16.56	320	Pass
149	6695	16.44	16.56	320	Pass
181	6855	16.56	16.56	320	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	18.96	18.84	320	Pass
1	5955	18.96	18.96	320	Pass
45	6175	19.08	20.76	320	Pass
93	6415	19.08	18.96	320	Pass
117	6535	18.96	19.08	320	Pass
149	6695	18.84	18.96	320	Pass
181	6855	18.96	18.96	320	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	5965	37.92	37.68	320	Pass
43	6165	37.92	37.92	320	Pass
91	6405	37.92	37.92	320	Pass
123	6565	37.92	37.92	320	Pass
155	6725	38.16	37.92	320	Pass
179	6845	37.92	38.16	320	Pass

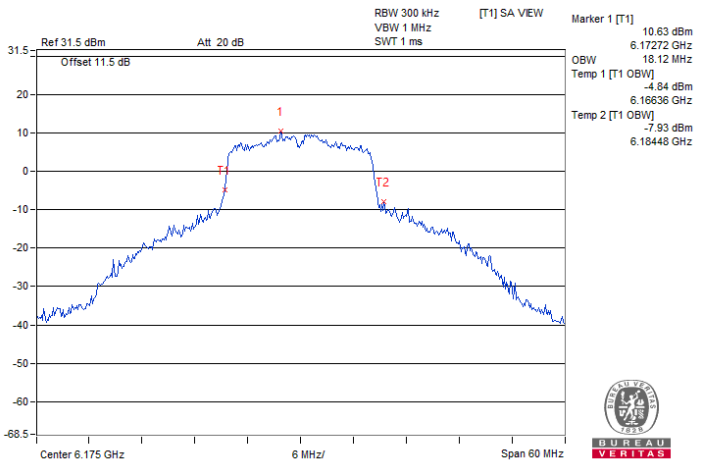
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
7	5985	77.28	77.28	320	Pass
39	6145	76.80	77.28	320	Pass
87	6385	76.80	77.28	320	Pass
135	6625	77.28	77.28	320	Pass
151	6705	77.28	77.28	320	Pass
167	6785	77.28	77.28	320	Pass

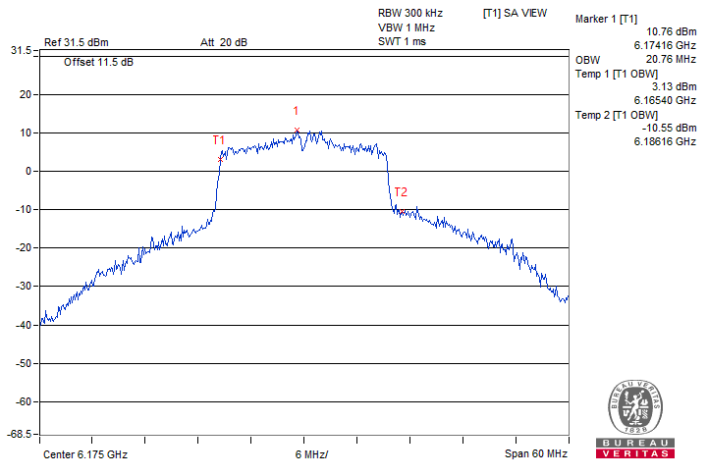
802.11ax (HE160)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
15	6025	156.48	156.48	320	Pass
47	6185	156.48	156.48	320	Pass
79	6345	155.52	155.52	320	Pass
143	6665	156.48	156.48	320	Pass

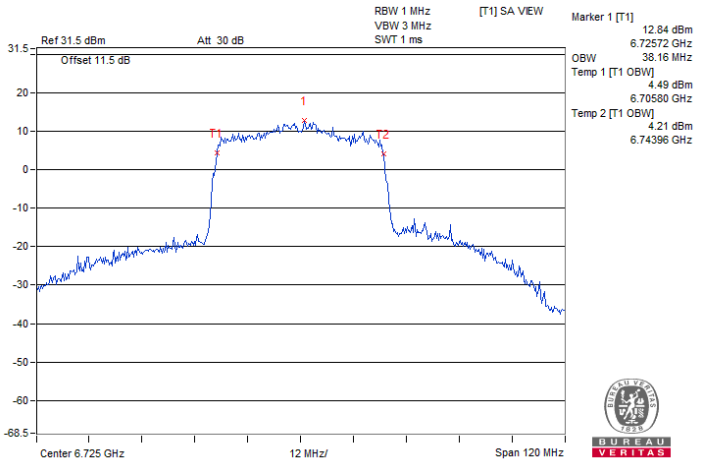
Spectrum Plot of Maximum Value



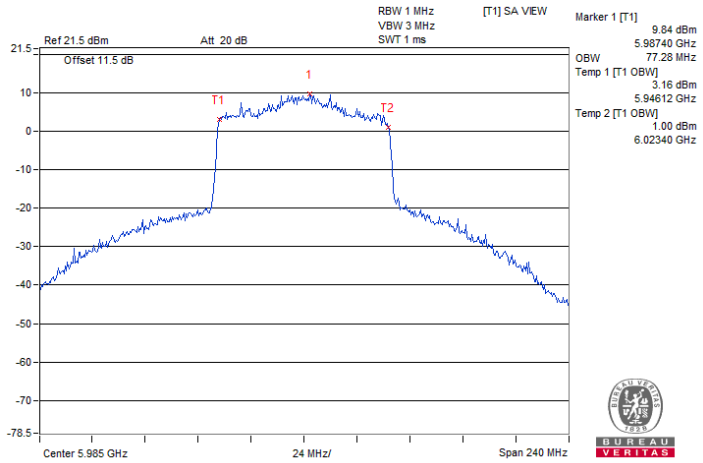
802.11a / Chain 1 : CH 45



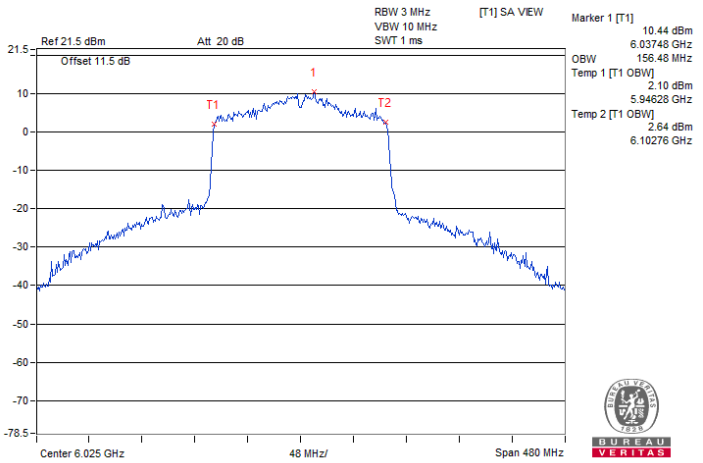
802.11ax (HE20) / Chain 1 : CH 45



802.11ax (HE40) / Chain 0 : CH 155



802.11ax (HE80) / Chain 0 : CH 7



802.11ax (HE160) / Chain 0 : CH 15

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 69% RH	Tested By:	Tim Chen

Test Mode B

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	16.32	16.32	320	Pass
1	5955	16.32	16.32	320	Pass
45	6175	16.32	16.32	320	Pass
93	6415	16.32	16.32	320	Pass
97	6435	16.32	16.32	320	Pass
105	6475	16.32	16.32	320	Pass
113	6515	16.32	16.32	320	Pass
117	6535	16.32	16.32	320	Pass
149	6695	16.32	16.32	320	Pass
181	6855	16.32	16.32	320	Pass
185	6875	16.32	16.32	320	Pass
209	6995	16.32	16.32	320	Pass
233	7115	16.32	16.32	320	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
2	5935	18.84	18.84	320	Pass
1	5955	18.84	18.84	320	Pass
45	6175	18.84	18.84	320	Pass
93	6415	18.84	18.84	320	Pass
97	6435	18.84	18.84	320	Pass
105	6475	18.84	18.84	320	Pass
113	6515	18.84	18.84	320	Pass
117	6535	18.84	18.84	320	Pass
149	6695	18.84	18.84	320	Pass
181	6855	18.84	18.84	320	Pass
185	6875	18.84	18.84	320	Pass
209	6995	18.84	18.84	320	Pass
233	7115	18.84	18.84	320	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	5965	37.68	37.68	320	Pass
43	6165	37.92	37.92	320	Pass
91	6405	37.92	38.16	320	Pass
99	6445	37.92	37.92	320	Pass
107	6485	37.68	37.68	320	Pass
115	6525	37.92	37.68	320	Pass
123	6565	37.68	37.92	320	Pass
155	6725	37.68	37.68	320	Pass
179	6845	37.68	37.92	320	Pass
187	6885	37.92	37.68	320	Pass
211	7005	37.68	37.68	320	Pass
227	7085	37.92	38.16	320	Pass

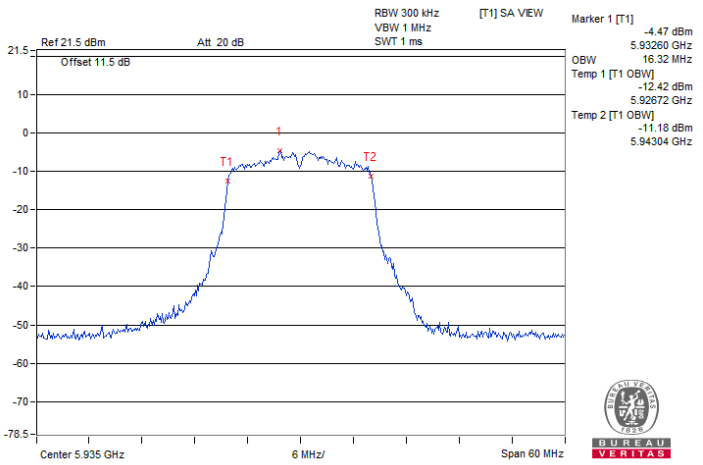
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
7	5985	76.56	76.80	320	Pass
39	6145	76.80	76.80	320	Pass
87	6385	76.80	76.80	320	Pass
103	6465	77.28	76.80	320	Pass
119	6545	77.28	76.80	320	Pass
151	6705	76.80	76.32	320	Pass
183	6865	77.28	76.32	320	Pass
199	6945	76.80	76.32	320	Pass
215	7025	77.28	77.28	320	Pass

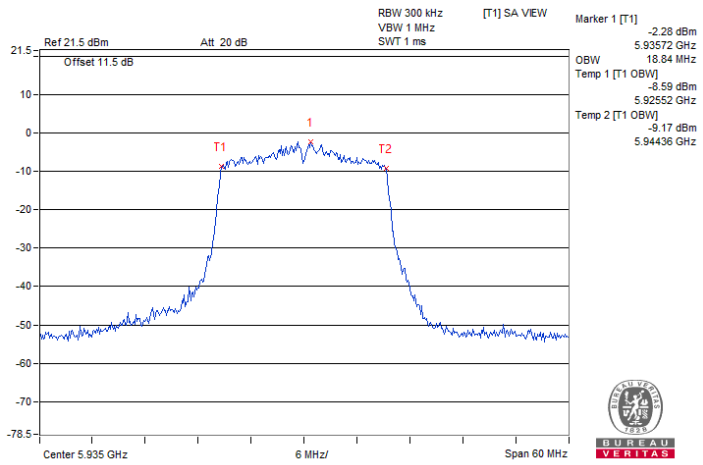
802.11ax (HE160)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1		
15	6025	156.00	155.52	320	Pass
47	6185	155.52	155.52	320	Pass
79	6345	155.52	155.52	320	Pass
111	6505	156.48	156.48	320	Pass
143	6665	156.48	155.52	320	Pass
175	6825	156.48	156.48	320	Pass
207	6985	155.52	156.48	320	Pass

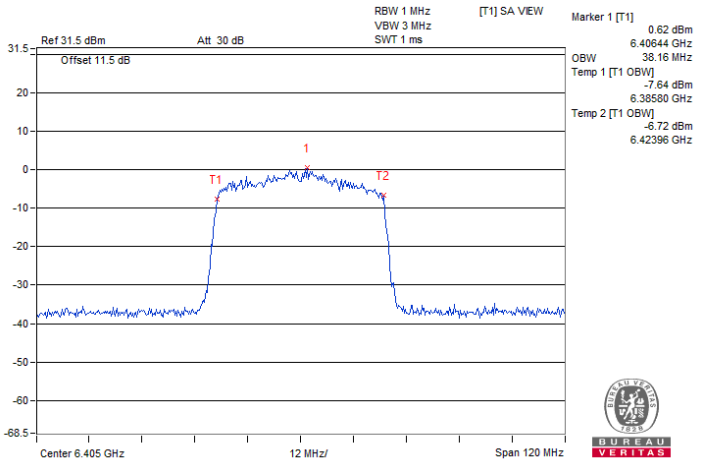
Spectrum Plot of Maximum Value



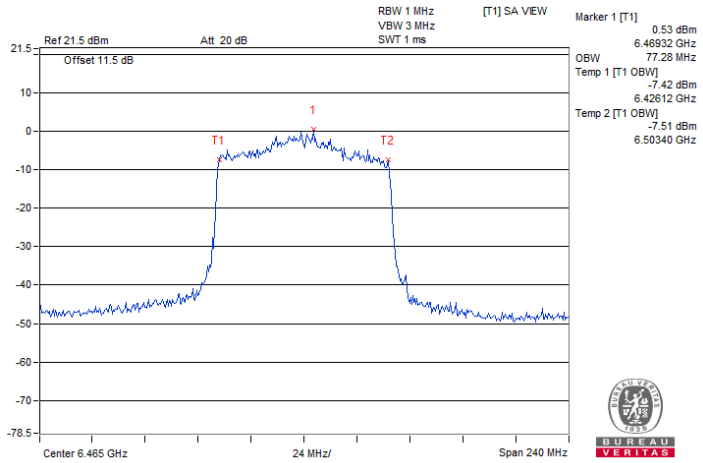
802.11a / Chain 0 : CH 2



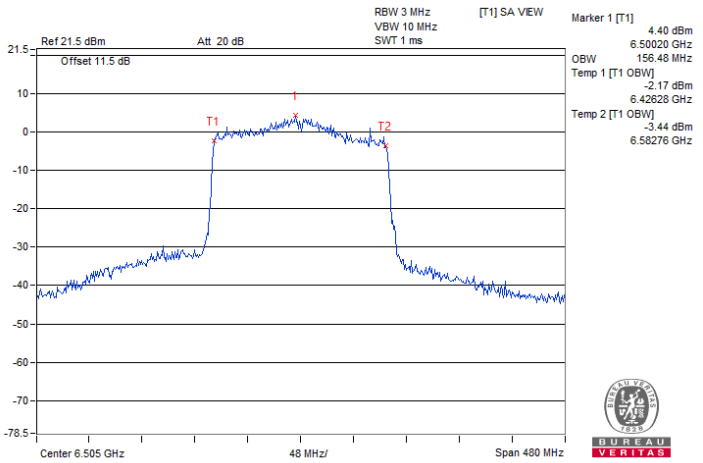
802.11ax (HE20) / Chain 0 : CH 2



802.11ax (HE40) / Chain 1 : CH 91



802.11ax (HE80) / Chain 0 : CH 103



802.11ax (HE160) / Chain 0 : CH 111

7.6 Frequency Stability

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	21°C, 69% RH	Tested By:	Tim Chen

Test Mode A

Frequency Stability Versus Temperature									
Operating Frequency: 5935 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
45	120	5934.9707	Pass	5934.973	Pass	5934.9692	Pass	5934.9686	Pass
40	120	5935.0188	Pass	5935.0198	Pass	5935.0199	Pass	5935.0197	Pass
30	120	5935.0101	Pass	5935.0093	Pass	5935.0101	Pass	5935.0135	Pass
20	120	5934.9823	Pass	5934.9841	Pass	5934.9846	Pass	5934.9849	Pass
10	120	5935.0021	Pass	5934.9979	Pass	5934.997	Pass	5935.0012	Pass
0	120	5934.998	Pass	5935.0003	Pass	5934.9976	Pass	5934.9981	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5935 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
20	138	5934.9867	Pass	5934.9914	Pass	5934.987	Pass	5934.9915	Pass
	120	5934.9823	Pass	5934.9841	Pass	5934.9846	Pass	5934.9849	Pass
	102	5934.981	Pass	5934.9835	Pass	5934.9834	Pass	5934.9807	Pass

7.7 Contention-based Protocol

Environmental Conditions:	25°C, 60% RH	Tested By:	Stan Shih

For U-NII-5

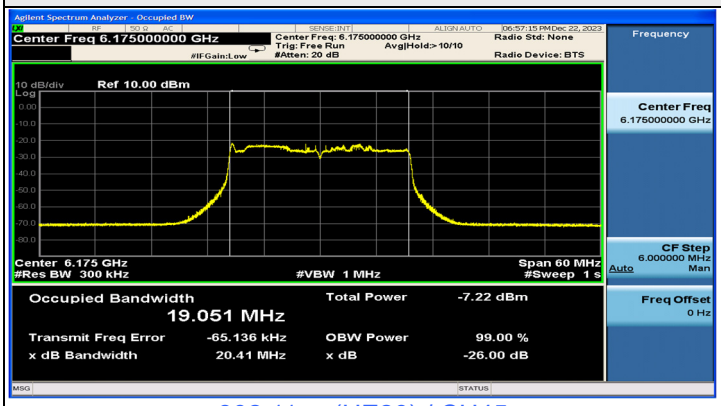
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 3)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	45	6175	6175	-72	0.2	0	-72.2	-62	OFF
					-76	0.2	0	-76.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON
	160	47	6185	6110	-65	0.2	0	-65.2	-62	OFF
					-73	0.2	0	-73.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON
				6185	-65	0.2	0	-65.2	-62	OFF
					-69	0.2	0	-69.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON
				6260	-71	0.2	0	-71.2	-62	OFF
					-75	0.2	0	-75.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON

Notes:

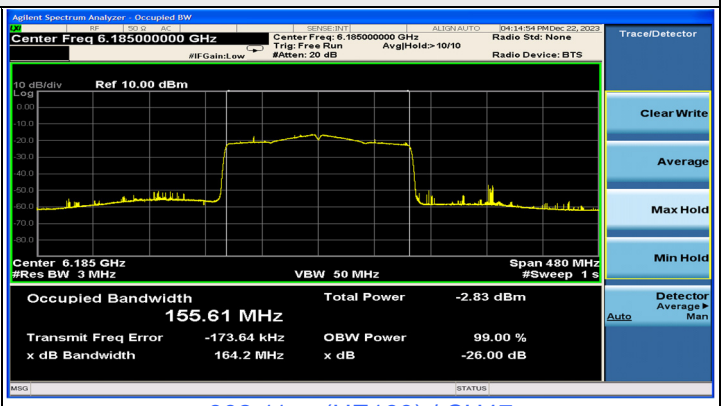
1. After investigation (consider antenna gain and path loss) , the one representative port (Chain 0) was measured and presented in the report.
2. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
3. Antenna gain values include all the applicable path losses.

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

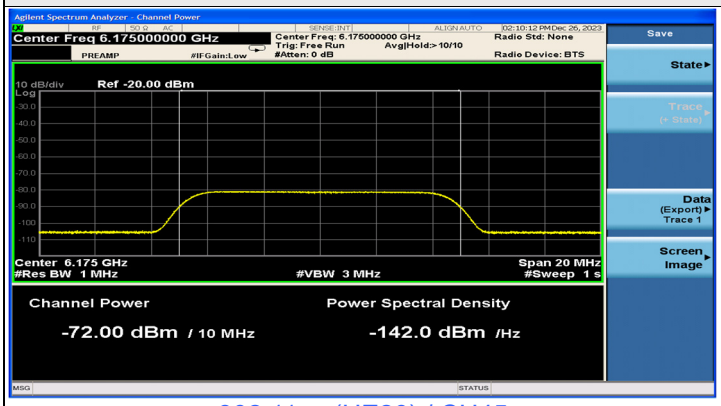


802.11ax (HE20) / CH45

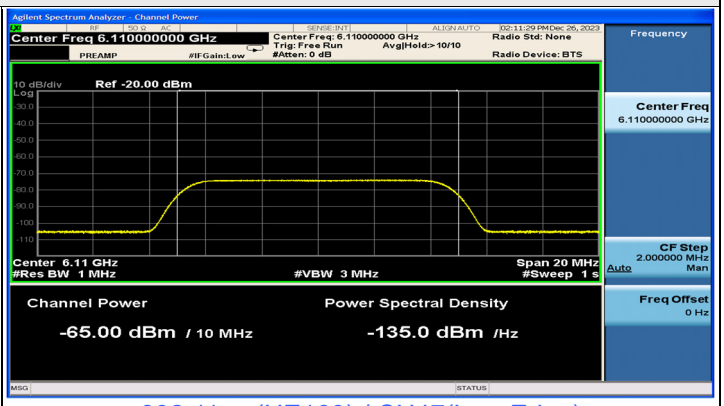


802.11ax (HE160) / CH47

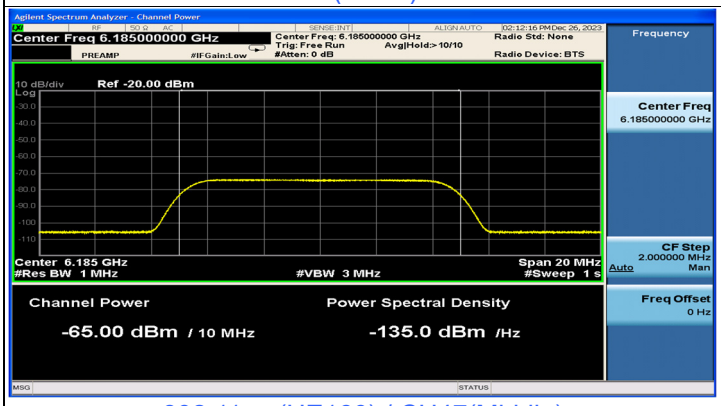
Plots of Injected signal (AWGN) level



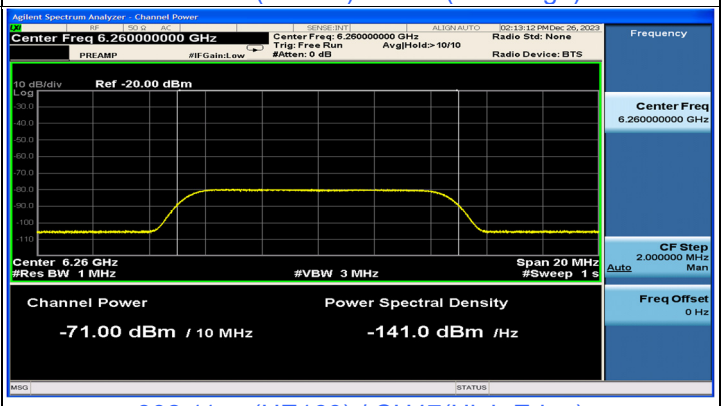
802.11ax (HE20) / CH45



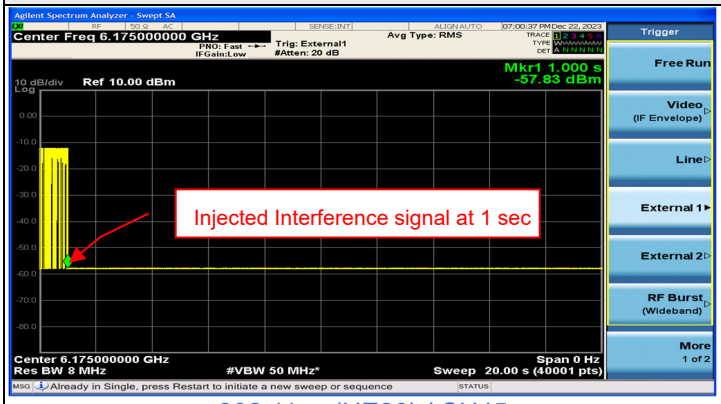
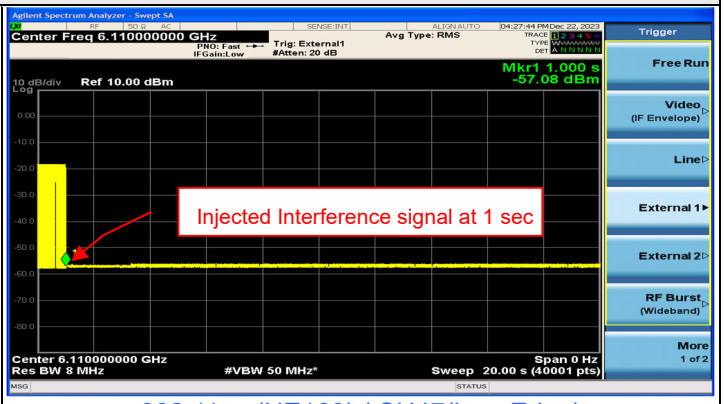
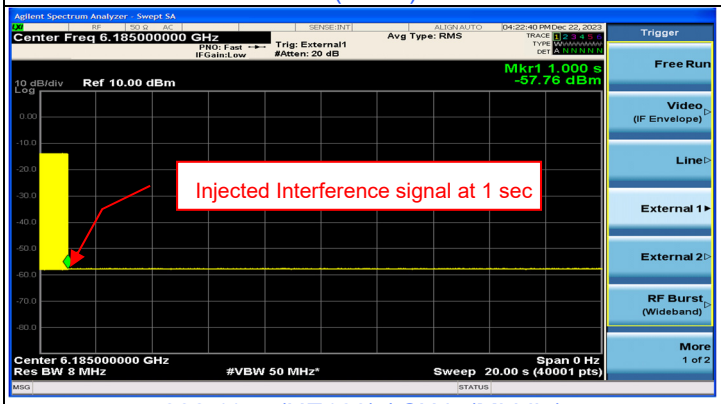
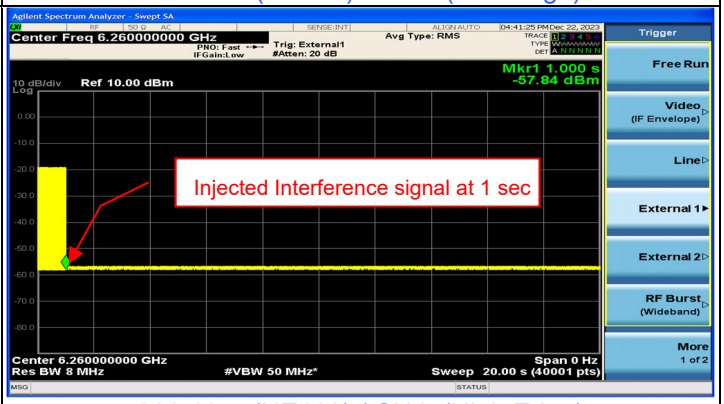
802.11ax (HE160) / CH47(Low Edge)



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)
	
802.11ax (HE160) / CH47(Middle)	802.11ax (HE160) / CH47(High Edge)

For U-NII-6

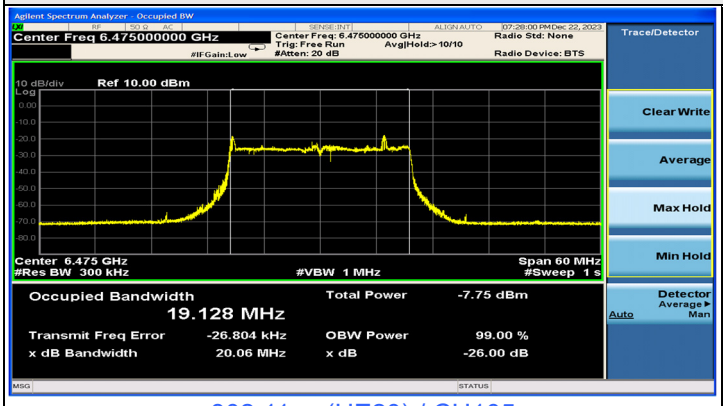
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 3)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	105	6475	6475	-70	0.2	0	-70.2	-62	OFF
					-74	0.2	0	-74.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON
	160	111	6505	6430	-70	0.2	0	-70.2	-62	OFF
					-73	0.2	0	-73.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON
				6505	-65	0.2	0	-65.2	-62	OFF
					-68	0.2	0	-68.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON
				6580	-70	0.2	0	-70.2	-62	OFF
					-73	0.2	0	-73.2	-62	Minimal
					-81.8	0.2	0	-82	-62	ON

Notes:

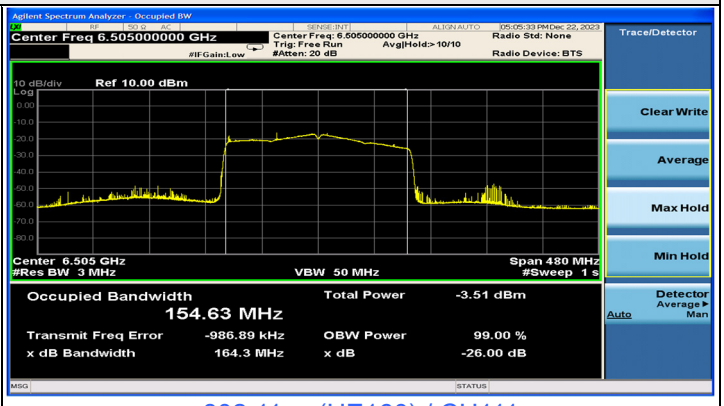
1. After investigation (consider antenna gain and path loss) , the one representative port (Chain 0) was measured and presented in the report.
2. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
3. Antenna gain values include all the applicable path losses.

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	6475	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

Plots of EUT Tx waveform



802.11ax (HE20) / CH105



802.11ax (HE160) / CH111