TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.:	RFBARR-WTW-P21060023L
FCC ID:	RAS-MT7922A12L
Product:	2TX 11ax (WiFi6E) BW160+BT/BLE Combo Card
Brand:	MediaTek
Model No.:	MT7922A12L
Received Date:	2021/6/1
Test Date:	2021/6/28 ~ 2021/8/15 (For Test Mode A: 2TX) 2022/3/17 ~ 2022/4/29 (For Test Mode A: 802.11a_1TX) 2022/5/12 ~ 2022/5/25 (For Test Mode A: 802.11ax (HE160)_1TX) 2023/4/10 ~ 2023/4/20 (For all tests of Test Mode B except RF Output Power, Power Spectral Density, Emission Bandwidth, In-Band Emission Mask, Occupied Bandwidth tests of 802.11ax (HE160)) 2023/7/14 ~ 2023/7/15 (For Test Mode B (802.11ax (HE160)): RF Output Power, Power Spectral Density, Emission Bandwidth, In-Band Emission Mask, Occupied Bandwidth tests)
Issued Date:	2023/7/19
Applicant:	MediaTek Inc.
Address:	No. 1, Dusing 1st Rd., Hsinchu Science Park Hsinchu City 30078, Taiwan
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:** 2023/7/19

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
RFBARR-WTW-P21060023L	Original release.	2023/7/19

1 Certificate

Product:	2TX 11ax (WiFi6E) BW160+BT/BLE Combo Card
Brand:	MediaTek
Test Model:	MT7922A12L
Sample Status:	Engineering sample
Applicant:	MediaTek Inc.
Test Date:	2021/6/28 ~ 2021/8/15 (For Test Mode A: 2TX) 2022/3/17 ~ 2022/4/29 (For Test Mode A: 802.11a_1TX) 2022/5/12 ~ 2022/5/25 (For Test Mode A: 802.11ax (HE160)_1TX) 2023/4/10 ~ 2023/4/20 (For all tests of Test Mode B except RF Output Power, Power Spectral Density, Emission Bandwidth, In-Band Emission Mask, Occupied Bandwidth tests of 802.11ax (HE160)) 2023/7/14 ~ 2023/7/15 (For Test Mode B (802.11ax (HE160)): RF Output Power, Power Spectral Density, Emission Bandwidth, In-Band Emission Mask, Occupied Bandwidth tests)
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 987594 D02 U-NII 6 GHz EMC Measurement v01v01 KDB 789033 D02 General UNII Test Procedure New Rules v02r01 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)(7)(8)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(7)(8)	Power Spectral Density	Pass	Meet the requirement of limit.
15.407(a)(10)	Occupied Bandwidth	Pass	Meet the requirement of limit.
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -12.85 dB at 2.62600 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -0.7 dB at 298.69 MHz
15.407(b)(6) 15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.5 dB at 11910.00 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.
15.407(d)	Operational restrictions for 6 GHz U-NII devices	Pass	Declaration by applicant
15.203	Antenna Requirement	Pass	Antenna connector is i-pex (MHF) not a standard connector.
---	Emission Bandwidth	-	Reference only.

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

2.1 Measurement Uncertainty

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

Measurement	Specification	Expanded Uncertainty (k=2) (±)
Occupied Bandwidth	-	491.896 Hz
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.99 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.6 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 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	2TX 11ax (WiFi6E) BW160+BT/BLE Combo Card
Brand	MediaTek
Test Model	MT7922A12L
Status of EUT	Engineering sample
Power Supply Rating	3.3 Vdc from host equipment
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	**Under control by Low-power indoor access point:** 802.11a: up to 54 Mbps 802.11ax: up to 2401.9 Mbps **Under control by Standard power access point:** 802.11a: up to 54 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	**Under control by Low-power indoor access point:** 5.955 ~ 6.415GHz, 6.435 ~ 6.525GHz, 6.525 ~ 6.875GHz, 6.875 ~ 7.115GHz **Under control by Standard power access point:** 5.955 ~ 6.415 GHz, 6.535 ~ 6.855 GHz
Number of Channel	**Under control by Low-power indoor access point:** 802.11a/ax (HE20): 59 802.11ax (HE40): 29 802.11ax (HE80): 14 802.11ax (HE160): 7 **Under control by Standard power access point:** 802.11a, 802.11ax (HE20): 41 802.11ax (HE40): 20 802.11ax (HE80): 9 802.11ax (HE160): 4
Output Power	**Under control by Low-power indoor access point:** 5.955 ~ 6.415GHz: 18.796 mW (EIRP: 17.50 dBm / 56.234 mW) 6.435 ~ 6.525GHz: 17.291 mW (EIRP: 16.67 dBm / 46.452 mW) 6.525 ~ 6.855GHz: 18.317 mW (EIRP: 17.24 dBm / 52.966 mW) 6.875 ~ 7.115GHz: 17.531 mW (EIRP: 16.53 dBm / 44.978 mW) **Under control by Standard power access point:** 5.955 ~ 6.415 GHz: 331.894 mW (EIRP: 993.115 mW / 29.97 dBm) 6.535 ~ 6.855 GHz: 337.021 mW (EIRP: 974.220 mW / 29.89 dBm)
EUT Category	Client Device (controlled of either a low-power indoor access point or Standard power access point)

Note:

1. This is apply as a dual client device (6CD), the indoor client device category (6XD) has been certifed, therefore the 6XD test results are refer to original report No: RFBARR-WTW-P21060023-6 & RFBARR-WTW-P21060023F & RFBARR-WTW-P21060023H. According to above conditions, Under control by Standard power access point had been re-tested.
2. There are Bluetooth and WLAN (2.4GHz & 5GHz & 5.9GHz & 6GHz) technology used for the EUT.
3. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (5GHz)	Bluetooth
2	WLAN (6GHz)	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

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

3.2 Antenna Description of EUT

1. The antennas provided to the EUT, please refer to the following table:

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain0	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
	Chain1	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
2	Chain0	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
	Chain1	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
3	Chain0	MSI	WA-P-LE-02-045	2.24 2.68 3.01 -1.23 -1.96 -3.68	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX-4L	190
	Chain1	MSI	WA-P-LE-02-046	-2.96 1.16 0.99 -2.31 -2.54 -7.44	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX-4L	325
4	Chain0	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300
	Chain1	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300
Note: Max. gain was selected for the final test.								

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

2. The EUT incorporates a MIMO function:

6GHz Band				
Modulation Mode	Tx configuration		CDD mode	Beamforming mode
802.11a	SISO	1TX	Not Support	Not Support
802.11ax (HE160)		1TX	Not Support	Not Support
802.11a	MIMO	2TX	Support	Not Support
802.11ax (HE20)		2TX	Support	Not Support
802.11ax (HE40)		2TX	Support	Not Support
802.11ax (HE80)		2TX	Support	Not Support
802.11ax (HE160)		2TX	Support	Not Support
802.11ax (RU26/52/106/242/484/996/1992)		2TX	Support	Not Support

*In WLAN 6 GHz 802.11ax mode, DUT supports RU26, RU52, RU106, RU242, RU484, RU996, RU1992 and Full RU modes. After pre-testing, the Full RU mode is the worst mode. Except for the output power, power spectral density, Emission Bandwidth, In-Band Emission Mask, Occupied Bandwidth and Unwanted Emissions above 1 GHz test items, all DUTs are measured separately in the supported RU mode, and the rest of the test items are finally measured in the Full RU mode.

*The EUT device modulation technique OFDMA does not support channel puncturing/bandwidth reduction mechanisms.

3.3 Channel List

Under controlled by low-power indoor access point

FOR 5925 ~ 6425MHz (U-NII-5 band)

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

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
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 channel is 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

FOR 6425 ~ 6525MHz (U-NII-6 band)

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

2 channel are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
103	6465 MHz	*119	6545 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
*111	6505 MHz

FOR 6525 ~ 6875MHz (U-NII-7 band)

18 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	*185	6875 MHz				

9 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
*187	6885 MHz						

4 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
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

FOR 6875 ~ 7125MHz (U-NII-8 band):

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

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
189	6895 MHz	193	6915 MHz	197	6935 MHz	201	6955 MHz
205	6975 MHz	209	6995 MHz	213	7015 MHz	217	7035 MHz
221	7055 MHz	225	7075 MHz	229	7095 MHz	233	7115 MHz

5 channels are provided for 802.11ax (HE40):

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

2 channel is 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 this's straddle channel.

Under controlled by Standard Power AP

U-NII-5:

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

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
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 channel is 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-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

3 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency
135	6625 MHz	151	6705 MHz	167	6785 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
143	6665 MHz

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	X-axis/ Y-axis/ Z-axis Worst Condition: Z-axis (Test Mode A), Y-axis (Test Mode B)

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

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter	TX configuration
RF Output Power	A	802.11a (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	2TX
	A	802.11ax (HE40) (Full RU)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0	2TX
	A	802.11ax (HE80) (Full RU)	7, 39, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0	2TX
	A	802.11ax (HE160) (Full RU)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (RU26)	1, 93, 97, 117, 181, 213	BPSK	MCS0	2TX
	A	802.11ax (HE20) (RU52)	1, 93, 97, 117, 181, 213	BPSK	MCS0	2TX
	A	802.11ax (HE20) (RU106)	1, 93, 97, 117, 181, 213	BPSK	MCS0	2TX
	B	802.11a (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	2TX
	B	802.11ax (HE40) (Full RU)	3, 43, 91, 123, 155, 179	BPSK	MCS0	2TX
	B	802.11ax (HE80) (Full RU)	7, 39, 87, 135, 151, 167	BPSK	MCS0	2TX
	B	802.11ax (HE160) (Full RU)	15, 47, 79, 143	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (RU26)	1, 93, 117, 181	BPSK	MCS0	2TX
	B	802.11ax (HE20) (RU52)	1, 93, 117, 181	BPSK	MCS0	2TX
	B	802.11ax (HE20) (RU106)	1, 93, 117, 181	BPSK	MCS0	2TX

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter	TX configuration
Power Spectral Density/ Emission Bandwidth	A	802.11a (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	2TX
	A	802.11ax (HE40) (Full RU)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0	2TX
	A	802.11ax (HE80) (Full RU)	7, 39, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0	2TX
	A	802.11ax (HE160) (Full RU)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (RU26)	1, 93, 97, 117, 181, 213	BPSK	MCS0	2TX
	A	802.11ax (HE20) (RU52)	1, 93, 97, 117, 181, 213	BPSK	MCS0	2TX
	A	802.11ax (HE20) (RU106)	1, 93, 97, 117, 181, 213	BPSK	MCS0	2TX
	B	802.11a (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	2TX
	B	802.11ax (HE40) (Full RU)	3, 43, 91, 123, 155, 179	BPSK	MCS0	2TX
	B	802.11ax (HE80) (Full RU)	7, 39, 87, 135, 151, 167	BPSK	MCS0	2TX
	B	802.11ax (HE160) (Full RU)	15, 47, 79, 143	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (RU26)	1, 93, 117, 181	BPSK	MCS0	2TX
	B	802.11ax (HE20) (RU52)	1, 93, 117, 181	BPSK	MCS0	2TX
	B	802.11ax (HE20) (RU106)	1, 93, 117, 181	BPSK	MCS0	2TX

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter	TX configuration
In-Band Emission Mask	A	802.11a (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	2TX
	A	802.11ax (HE40) (Full RU)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0	2TX
	A	802.11ax (HE80) (Full RU)	7, 39, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0	2TX
	A	802.11ax (HE160) (Full RU)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0	1TX/2TX
	B	802.11a (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	2TX
	B	802.11ax (HE40) (Full RU)	3, 43, 91, 123, 155, 179	BPSK	MCS0	2TX
	B	802.11ax (HE80) (Full RU)	7, 39, 87, 135, 151, 167	BPSK	MCS0	2TX
	B	802.11ax (HE160) (Full RU)	15, 47, 79, 143	BPSK	MCS0	1TX/2TX

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter	TX configuration
Occupied Bandwidth	A	802.11a (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	2TX
	A	802.11ax (HE40) (Full RU)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0	2TX
	A	802.11ax (HE80) (Full RU)	7, 39, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0	2TX
	A	802.11ax (HE160) (Full RU)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0	1TX/2TX
	B	802.11a (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	2TX
	B	802.11ax (HE40) (Full RU)	3, 43, 91, 123, 155, 179	BPSK	MCS0	2TX
	B	802.11ax (HE80) (Full RU)	7, 39, 87, 135, 151, 167	BPSK	MCS0	2TX
	B	802.11ax (HE160) (Full RU)	15, 47, 79, 143	BPSK	MCS0	1TX/2TX
Frequency Stability	A	802.11a (Full RU)	1	unmodulated	-	-
	B	802.11a (Full RU)	1	unmodulated	-	-
Contention-based Protocol	A	802.11ax (HE20) (Full RU)	1, 97, 129, 193	BPSK	MCS0	2TX
	A	802.11ax (HE160) (Full RU)	15, 111, 143, 207	BPSK	MCS0	2TX
	B	802.11ax (HE20) (Full RU)	1, 129	BPSK	MCS0	2TX
	B	802.11ax (HE160) (Full RU)	15, 143	BPSK	MCS0	2TX
AC Power Conducted Emissions	A	802.11ax (HE80) (Full RU)	167	BPSK	MCS0	2TX
	B	802.11ax (HE80) (Full RU)	135	BPSK	MCS0	2TX
Unwanted Emissions below 1 GHz	A	802.11ax (HE80) (Full RU)	167	BPSK	MCS0	2TX
	B	802.11ax (HE80) (Full RU)	135	BPSK	MCS0	2TX

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter	TX configuration
Unwanted Emissions above 1 GHz	A	802.11a (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (Full RU)	1, 45, 93, 97, 105, 113, 117, 153, 181, 185, 213, 233	BPSK	MCS0	2TX
	A	802.11ax (HE40) (Full RU)	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0	2TX
	A	802.11ax (HE80) (Full RU)	7, 39, 87, 103, 119, 135, 151, 167, 183, 199, 215	BPSK	MCS0	2TX
	A	802.11ax (HE160) (Full RU)	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0	1TX/2TX
	A	802.11ax (HE20) (RU26)	1, 93, 97, 117, 181, 213, 233	BPSK	MCS0	2TX
	A	802.11ax (HE20) (RU52)	1, 93, 97, 117, 181, 213, 233	BPSK	MCS0	2TX
	A	802.11ax (HE20) (RU106)	1, 93, 97, 117, 181, 213, 233	BPSK	MCS0	2TX
	B	802.11a (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (Full RU)	1, 45, 93, 117, 153, 181	BPSK	MCS0	2TX
	B	802.11ax (HE40) (Full RU)	3, 43, 91, 123, 155, 179	BPSK	MCS0	2TX
	B	802.11ax (HE80) (Full RU)	7, 39, 87, 135, 151, 167	BPSK	MCS0	2TX
	B	802.11ax (HE160) (Full RU)	15, 47, 79, 143	BPSK	MCS0	1TX/2TX
	B	802.11ax (HE20) (RU26)	1, 93, 117, 181	BPSK	MCS0	2TX
	B	802.11ax (HE20) (RU52)	1, 93, 117, 181	BPSK	MCS0	2TX
	B	802.11ax (HE20) (RU106)	1, 93, 117, 181	BPSK	MCS0	2TX

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

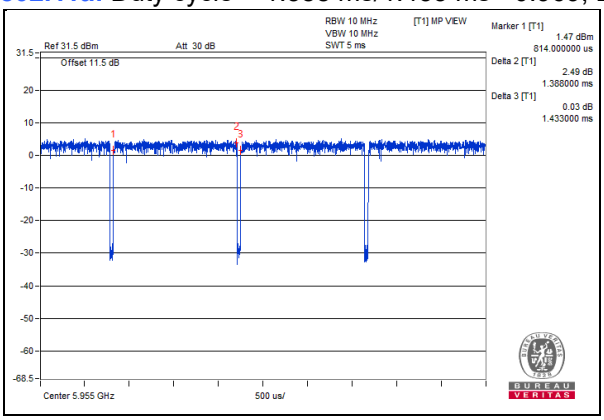
3.5 Duty Cycle of Test Signal

Test Mode A

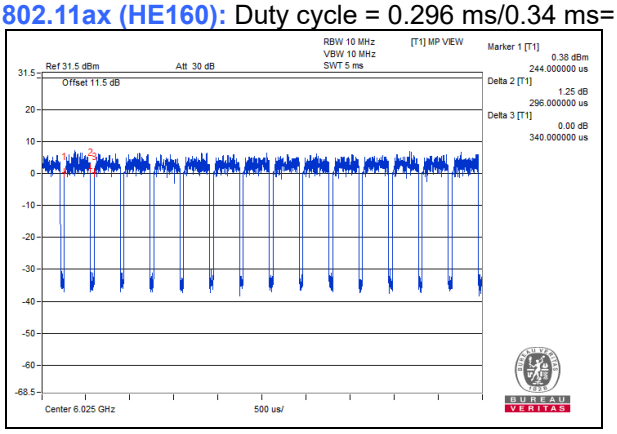
1TX

Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 1.388 ms/1.433 ms= 0.969, Duty factor = 10 * log(1/ Duty cycle) = 0.14 dB



802.11ax (HE160): Duty cycle = 0.296 ms/0.34 ms= 0.871, Duty factor = 10 * log(1/ Duty cycle) = 0.6 dB

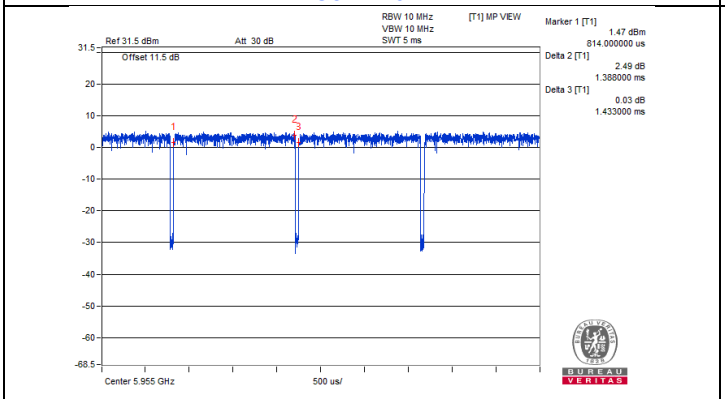


2TX

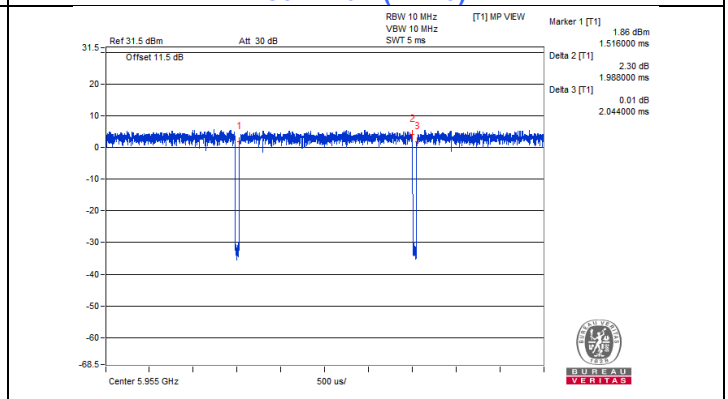
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 1.388 ms/1.433 ms= 0.969, Duty factor = 10 * log(1/ Duty cycle) = 0.14 dB
802.11ax (HE20): Duty cycle = 1.988 ms/2.044 ms= 0.973, Duty factor = 10 * log(1/ Duty cycle) = 0.12 dB
802.11ax (HE40): Duty cycle = 1.941 ms/1.994 ms= 0.973, Duty factor = 10 * log(1/ Duty cycle) = 0.12 dB
802.11ax (HE80): Duty cycle = 0.967 ms/1.013 ms= 0.955, Duty factor = 10 * log(1/ Duty cycle) = 0.20 dB
802.11ax (HE160): Duty cycle = 0.215 ms/0.260 ms= 0.827, Duty factor = 10 * log(1/ Duty cycle) = 0.83 dB

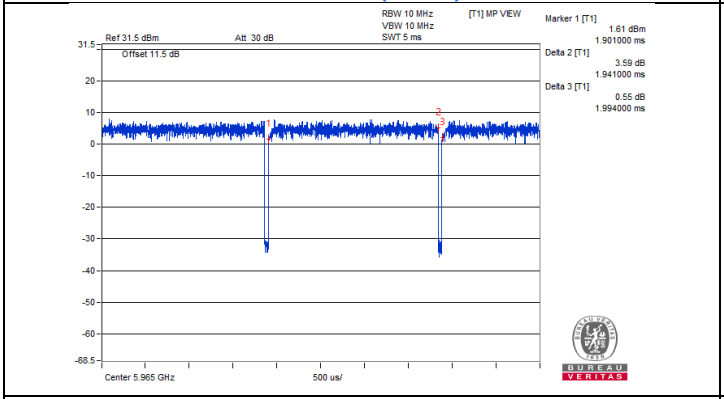
802.11a



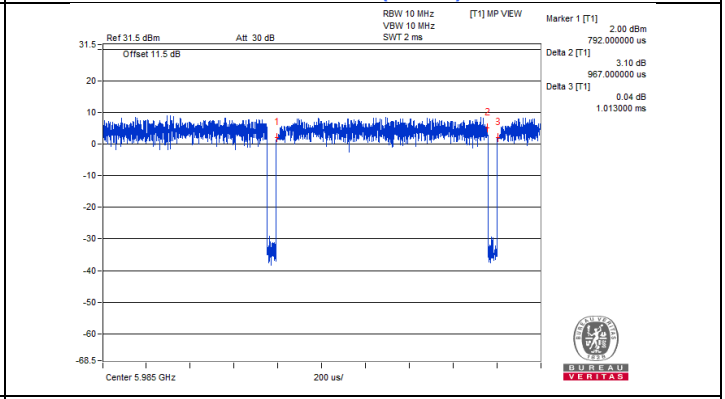
802.11ax (HE20)



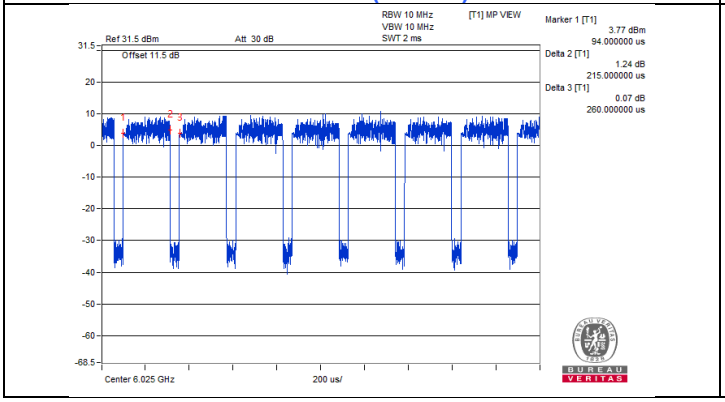
802.11ax (HE40)



802.11ax (HE80)



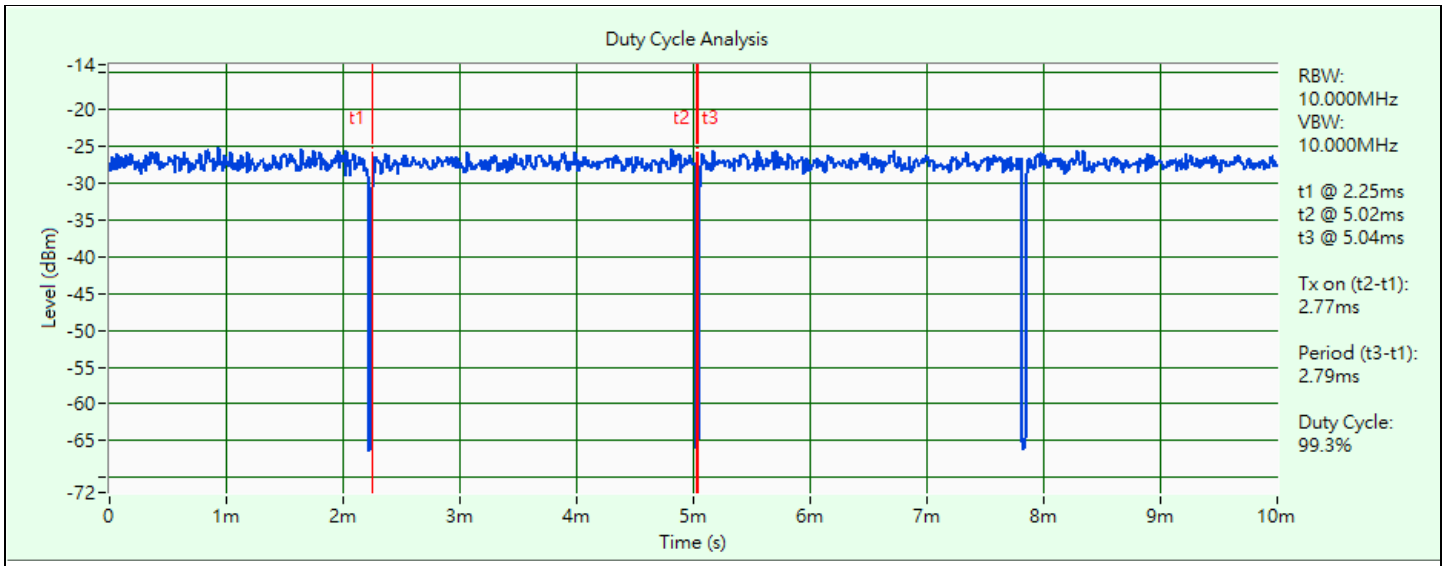
802.11ax (HE160)



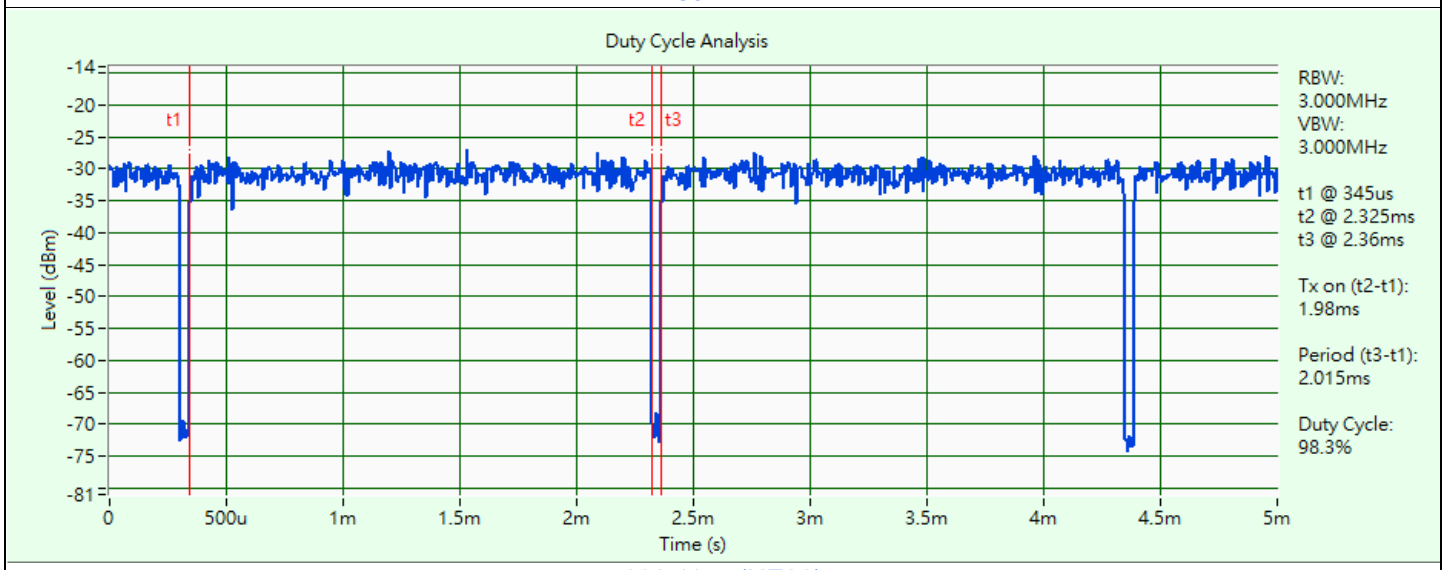
Test Mode B

2TX

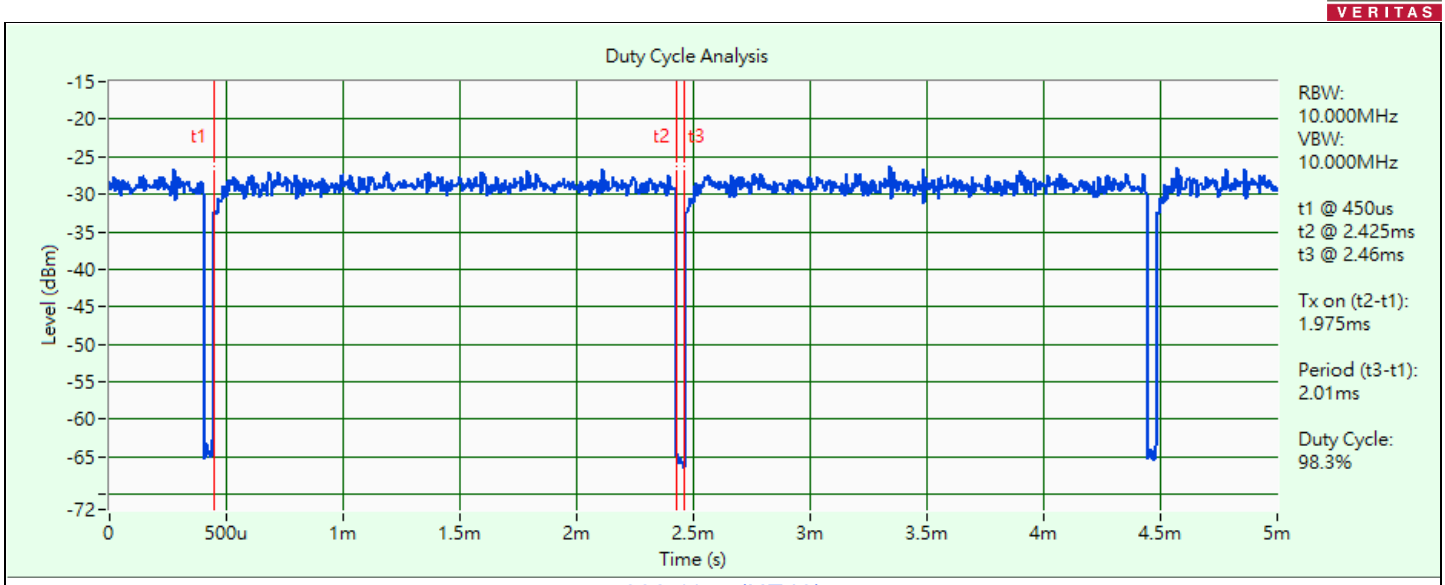
802.11a: Duty cycle = 2.77 ms / 2.79 ms x 100% = 99.3%
802.11ax (HE20): Duty cycle = 1.98 ms / 2.015 ms x 100% = 98.3%
802.11ax (HE40): Duty cycle = 1.975 ms / 2.01 ms x 100% = 98.3%
802.11ax (HE80): Duty cycle = 1.85 ms / 1.885 ms x 100% = 98.1%
802.11ax (HE160): Duty cycle = 0.96 ms / 0.995 ms x 100% = 96.5%, duty factor = 10 * log (1/Duty cycle) = 0.16 dB



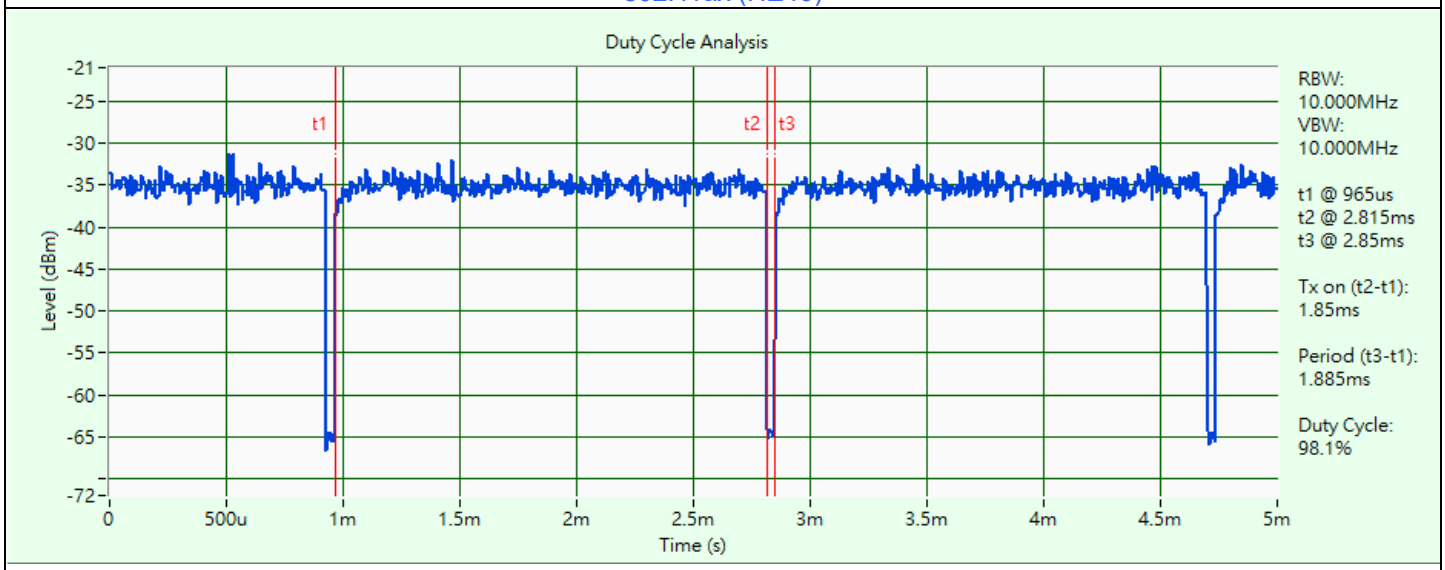
802.11a



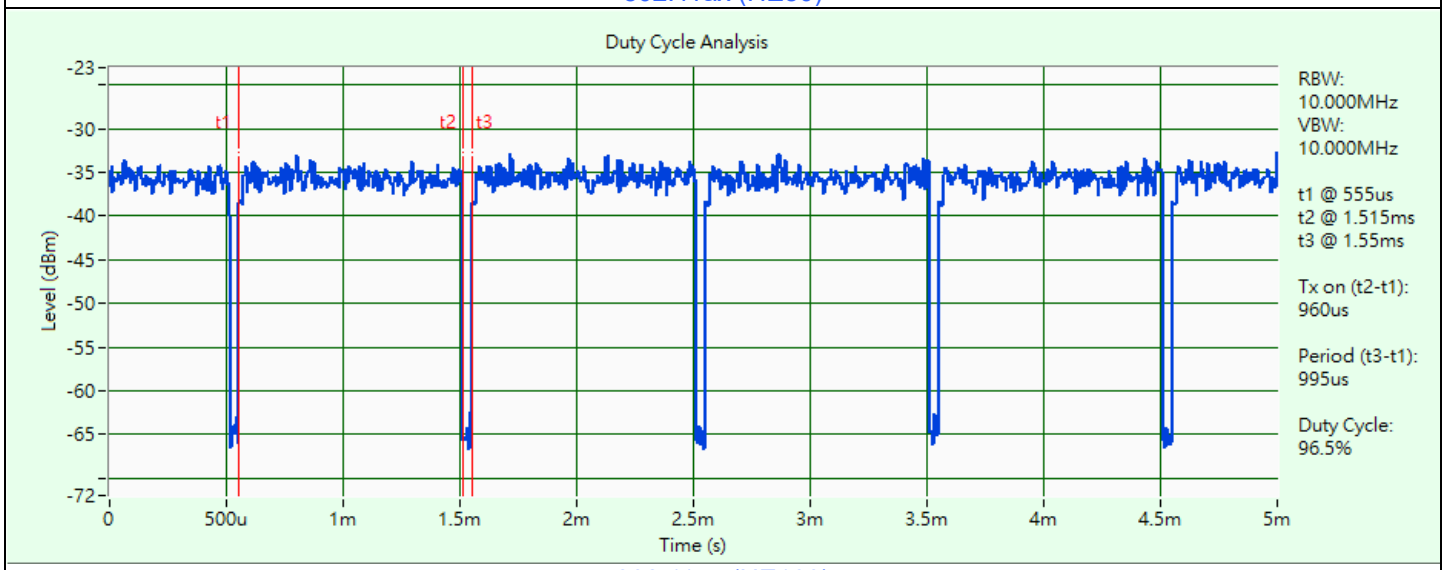
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

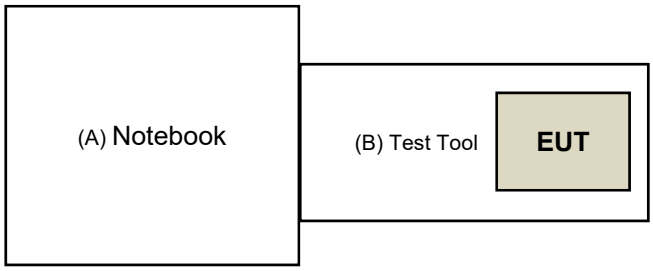


802.11ax (HE160)

3.6 Test Program Used and Operation Descriptions

Controlling software QATool 0.0.2.33 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	Notebook	Lenovo	L470	PF0XEHC5	N/A	Provided by Lab
B	Test Tool	MediaTek	MTK1849	NA	NA	Supplied by client

4 Test Instruments

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

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	2020/7/13 2021/7/12	2021/7/12 2022/7/11

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2021/6/28 ~ 2021/8/15, 2022/3/17 ~ 2022/4/29, 2022/5/12 ~ 2022/5/25

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	2022/7/13	2023/7/12

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/4/13

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55190002/MY55190009/MY55210002/MY55210004	2023/6/6	2024/6/5

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/7/14 ~ 2023/7/15

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal and spectrum analyzer Rohde&Schwarz	FSP40	100269	2020/6/9 2021/6/7	2021/6/8 2022/6/6
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2021/6/28~2021/8/15

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal and spectrum analyzer Rohde&Schwarz	FSP40	100269	2021/6/7	2022/6/6
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2022/3/17 ~ 2022/4/29, 2022/5/12 ~ 2022/5/25

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal and spectrum analyzer Rohde&Schwarz	FSV3044	101105	2023/2/22	2024/2/21
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/4/13, 2023/7/14 ~ 2023/7/15

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
3-channel DC power supply JIN YIH Technology	ODP3033	ODP30332128138	N/A	N/A
Digital Multimeter Fluke	87-III	70360742	2021/6/24	2022/6/23
Signal and spectrum analyzer Rohde&Schwarz	FSV3044	101105	2021/2/8	2022/2/7
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	2020/12/24	2021/12/23

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2021/6/28~2021/8/15

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
3-channel DC power supply JIN YIH Technology	ODP3033	ODP30332128138	N/A	N/A
Digital Multimeter Fluke	87-III	70360742	2022/6/23	2023/6/22
Signal and spectrum analyzer Rohde&Schwarz	FSV3044	101105	2023/2/22	2024/2/21
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	2022/12/27	2023/12/26

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/4/13

4.7 Contention-based Protocol

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer R&S	FSW8	101497	2020/11/10	2021/11/9
Spectrum Analyzer R&S	FSV40	101516	2021/3/8	2022/3/7
MXG X-Series RF Vector Signal Generator Agilent	N5182B	MY59100182	2021/4/22	2022/4/21
Frequency Extender KEYSIGHT	N5182BX07	MY59360203	2020/12/10	2021/12/9
Power Splitter/combiner Mini-Circuits	ZFRSC-123-S+	F698501347_01	2021/1/27	2022/1/26

Notes:

1. The test was performed in Adaptivity room.
2. Tested Date: 2021/6/28~2021/8/15

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Combiner / Splitter Mini-Circuits	ZN2PD-9G	ZN2PD-9G	2022/6/9	2023/6/8
MXG Vector signal generator KEYSIGHT	N5182B	MY53052282	2023/1/6	2024/1/5
PXA Signal Analyzer KEYSIGHT	N9030B	MY57140488	2023/3/6	2024/3/5
PXA KEYSIGHT	N9030B	MY57140953	2022/7/1	2023/6/30
Signal Analyzer Rohde&Schwarz	FSV7	104056	2022/5/20	2023/5/19

Notes:

1. The test was performed in Adaptivity room.
2. Tested Date: 2023/4/20

4.8 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver ROHDE & SCHWARZ	ESCI	100613	2020/12/4	2021/12/3
RF signal cable Woken	5D-FB	Cable-cond1-01	2021/1/16	2022/1/15
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	2021/2/25	2022/2/24
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	2020/8/28	2021/8/27
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2021/6/28~2021/8/15

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver ROHDE & SCHWARZ	ESCI	100613	2021/12/3	2022/12/2
RF signal cable Woken	5D-FB	Cable-cond1-01	2022/1/15	2023/1/14
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	2022/3/14	2023/3/13
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	2021/9/7	2022/9/6
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2022/3/17 ~ 2022/4/29

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver ROHDE & SCHWARZ	ESR3	102783	2021/12/20	2022/12/19
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	2021/9/4	2022/9/3
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	2022/2/17	2023/2/16
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	2021/9/17	2022/9/16
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2022/5/12 ~ 2022/5/25

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
LISN Rohde&Schwarz	ESH3-Z5	100116	2023/2/15	2024/2/14
		100311	2022/9/12	2023/9/11
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2023/1/7	2024/1/6
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
Test Receiver Rohde&Schwarz	ESCI	100613	2022/12/5	2023/12/4
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2022/8/31	2023/8/30

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2023/4/13

4.9 Unwanted Emissions below 1 GHz

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102579	2020/7/7	2021/7/6
			2021/7/5	2022/7/4
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	2020/6/9	2021/6/8
			2021/6/7	2022/6/6
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	2020/8/16	2021/8/15
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	2021/3/22	2022/3/21
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	2020/8/16	2021/8/15
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	2020/8/16	2021/8/15
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104- SM-SM-8000	Cable-CH3-03 (309224+170907)	2020/8/16	2021/8/15
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. Tested Date: 2021/6/28 ~ 2021/8/15

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Bi_Log Antenna Schwarbeck	VULB9168	9168-160	2022/10/20	2023/10/19
Loop Antenna EMCI	EM-6879	269	2022/9/19	2023/9/18
Loop Antenna TESEQ	HLA 6121	45745	2022/7/27	2023/7/26
Pre-amplifier EMCI	EMC001340	980201	2022/9/23	2023/9/22
Preamplifier Agilent	8447D	2944A10638	2022/5/14	2023/5/13
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2023/1/7	2024/1/6
RF Coaxial Cable WOKEN	8D-FB	Cable-CH9-01	2022/5/14	2023/5/13
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer Rohde&Schwarz	FSW43	101867	2022/12/30	2023/12/29
Test Receiver KEYSIGHT	N9038A	MY55420137	2022/4/27	2023/4/26
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2023/4/13

4.10 Unwanted Emissions above 1 GHz

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102579	2020/7/7	2021/7/6
			2021/7/5	2022/7/4
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	2020/6/9	2021/6/8
			2021/6/7	2022/6/6
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	2020/8/16	2021/8/15
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	2021/3/22	2022/3/21
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	2020/8/16	2021/8/15
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	2020/8/16	2021/8/15
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM-8000	Cable-CH3-03 (309224+170907)	2020/8/16	2021/8/15
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. Tested Date: 2021/6/28 ~ 2021/8/15

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY50010158	2021/10/26	2022/10/25
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	2021/6/10	2022/6/9
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	2021/6/5	2022/6/4
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	2022/2/16	2023/2/15
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2022/1/15	2023/1/14
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2022/1/15	2023/1/14
RF signal cable Woken	8D-FB	Cable-CH9-01	2021/6/5	2022/6/4
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. Tested Date: 2022/3/17 ~ 2022/4/29

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	2022/4/27	2023/4/26
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	2021/6/10	2022/6/9
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	2021/6/5	2022/6/4
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	2022/2/16	2023/2/15
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2022/1/15	2023/1/14
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2022/1/15	2023/1/14
RF signal cable Woken	8D-FB	Cable-CH9-01	2021/6/5	2022/6/4
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. Tested Date: 2022/5/12 ~ 2022/5/25

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	9120D	9120D-1169	2022/11/13	2023/11/12
	BBHA 9170	9170-480	2022/11/13	2023/11/12
		BBHA9170243	2022/11/13	2023/11/12
Pre-Ammlifier EMCI	EMC 184045	980116	2022/10/1	2023/9/30
Preamplifier Agilent	8449B	3008A02367	2023/2/15	2024/2/14
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2022/7/9	2023/7/8
	EMC102-KM-KM-3000	150929	2022/7/9	2023/7/8
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2023/1/7	2024/1/6
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2023/1/7	2024/1/6
RF FLITER MICRO-TRONICS	BRM17690	004	2023/1/11	2024/1/10
	BRM50716	060	2023/1/11	2024/1/10
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer Rohde&Schwarz	FSW43	101867	2022/12/30	2023/12/29
Test Receiver KEYSIGHT	N9038A	MY55420137	2022/4/27	2023/4/26
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2023/4/10 ~ 2023/4/13

5 Limits of Test Items

5.1 RF Output Power

Operation Band	EUT Category	Limit
		Max Average Power
U-NII-5 U-NII-6 U-NII-7 U-NII-8	Client Devices (controlled of an indoor AP)	EIRP 24 dBm

Operation Band	EUT Category	Limit
		Max Average Power
U-NII-5 U-NII-7	Client Devices (controlled of an standard power AP)	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 Power Spectral Density

Operation Band	EUT Category	Limit
		Peak Power Density (EIRP)
U-NII-5 U-NII-6 U-NII-7 U-NII-8	Client Devices (controlled of an indoor AP)	-1 dBm/MHz

Operation Band	EUT Category	Limit
		Peak Power Density
U-NII-5 U-NII-7	Client Devices (controlled of an standard power AP)	EIRP 17 dBm/MHz

5.3 Emission Bandwidth

The results are for reference only.

5.4 In-Band Emission Mask

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

*1 : The power spectral density must be suppressed by “x” dB

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

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

5.5 Occupied Bandwidth

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

5.6 Frequency Stability

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

5.7 Contention-based Protocol

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

5.8 AC Power Conducted Emissions

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

Notes:

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

5.9 Unwanted Emissions below 1 GHz

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

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

Notes:

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

5.10 Unwanted Emissions above 1 GHz

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

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

Notes:

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

Limits of unwanted emission out of the restricted bands

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

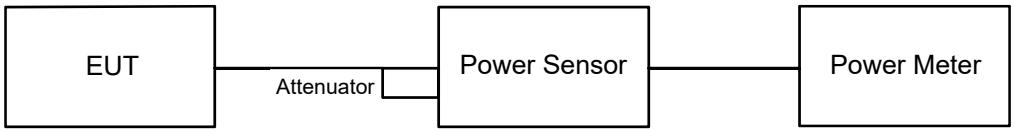
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

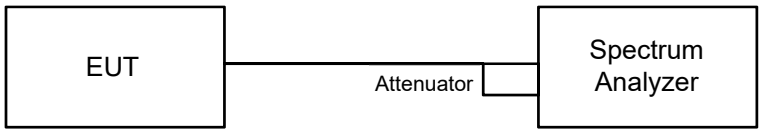


6.1.2 Test Procedure

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 Power Spectral Density

6.2.1 Test Setup



6.2.2 Test Procedure

For specified measurement bandwidth 1 MHz:
Method SA-1

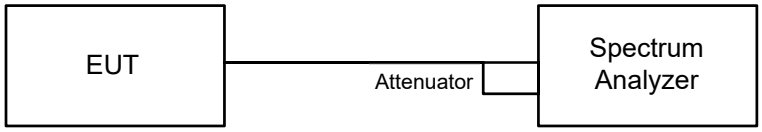
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
d. Sweep time = auto, trigger set to “free run”.
e. Trace average at least 100 traces in power averaging mode.
f. Record the max value

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

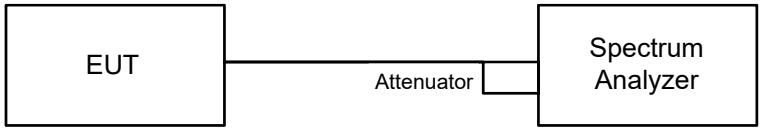


6.3.2 Test Procedure

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

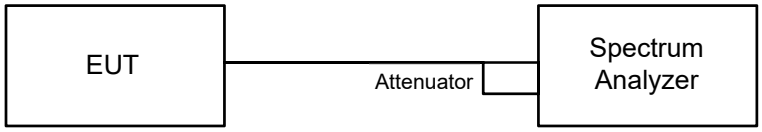


6.4.2 Test Procedure

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

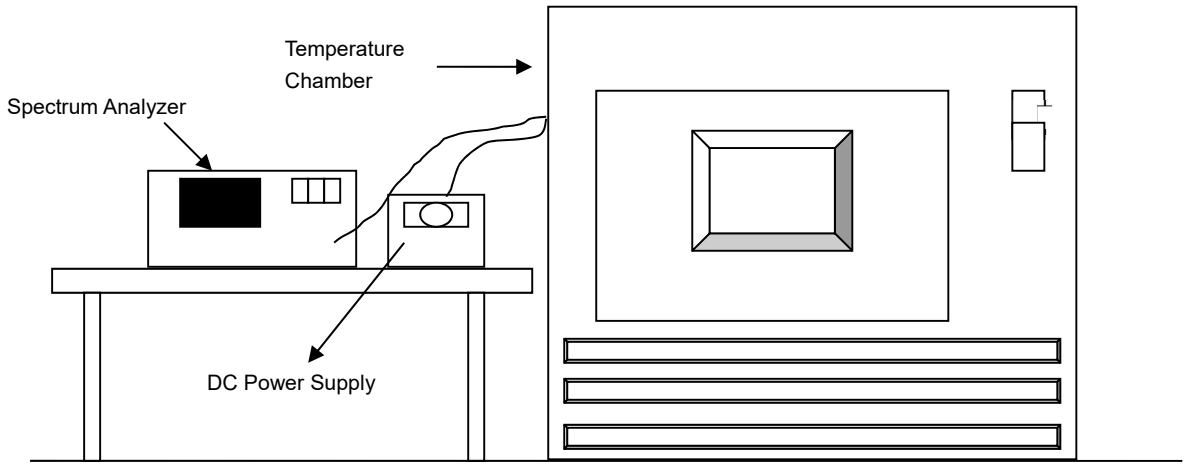


6.5.2 Test Procedure

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

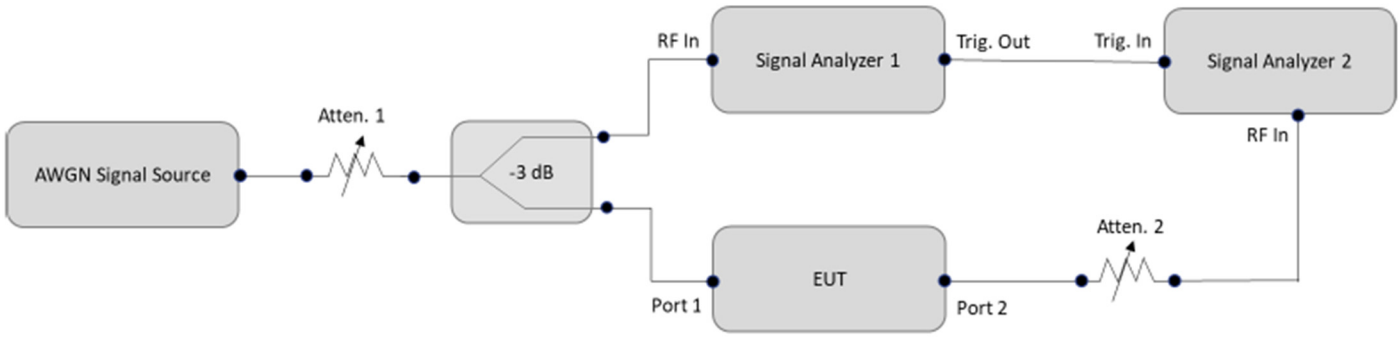


6.6.2 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal DC 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.

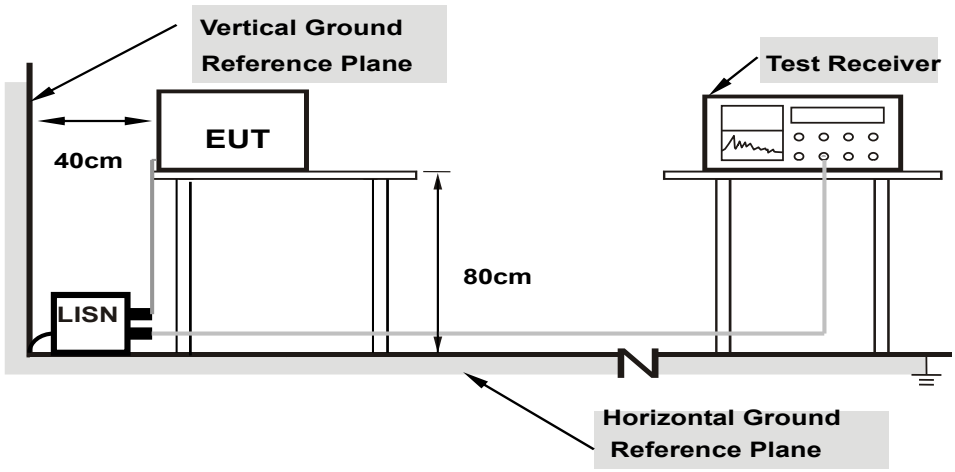
g. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.

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.

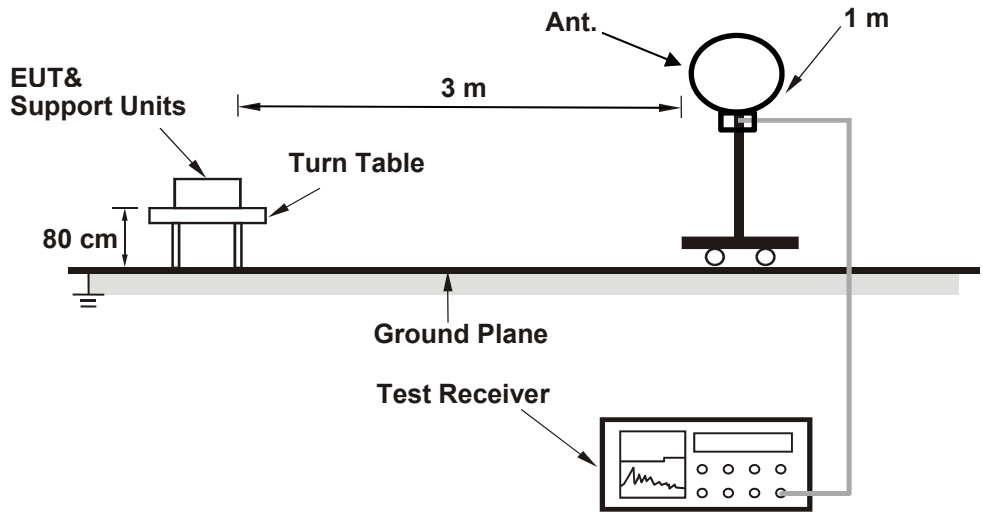
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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.

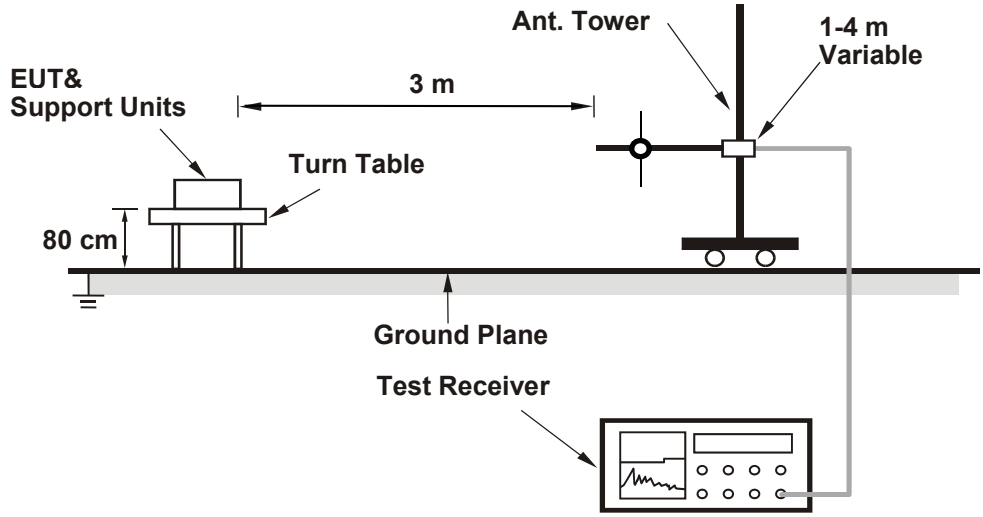
6.9 Unwanted Emissions below 1 GHz

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.

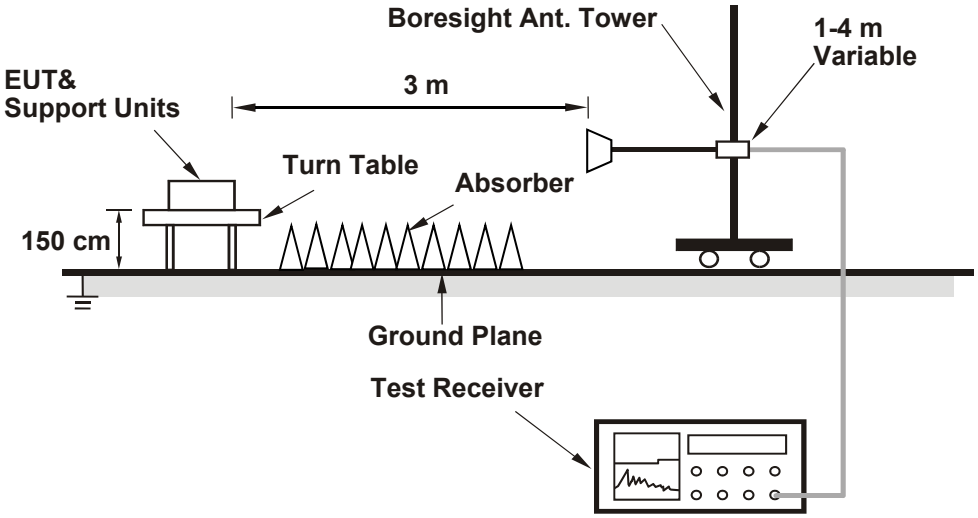
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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.
3. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Test Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Ivan Tseng/ Chun Wu

1TX

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)	Average Power (mW)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
1	5955	6.98	4.989	4.76	14.928	11.74	24	Pass
45	6175	6.92	4.920	4.76	14.723	11.68	24	Pass
93	6415	6.91	4.909	4.76	14.689	11.67	24	Pass
97	6435	7.50	5.623	4.29	15.101	11.79	24	Pass
105	6475	7.53	5.662	4.29	15.205	11.82	24	Pass
113	6515	7.48	5.598	4.29	15.031	11.77	24	Pass
117	6535	7.06	5.082	4.61	14.689	11.67	24	Pass
153	6715	7.01	5.023	4.61	14.521	11.62	24	Pass
181	6855	7.06	5.082	4.61	14.689	11.67	24	Pass
185	6875	7.63	5.794	4.09	14.859	11.72	24	Pass
213	7015	7.60	5.754	4.09	14.757	11.69	24	Pass
233	7115	7.58	5.728	4.09	14.689	11.67	24	Pass

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
15	6025	**18.24**	**12.61**	4.76	54.576	17.37	24	Pass
47	6185	16.63	12.21	4.76	49.774	16.97	24	Pass
79	6345	17.50	12.43	4.76	52.36	17.19	24	Pass
111	6505	**17.06**	**12.32**	4.29	45.814	16.61	24	Pass
143	6665	16.83	12.26	4.61	48.641	16.87	24	Pass
175	6825	**17.62**	**12.46**	4.61	50.933	17.07	24	Pass
207	6985	**17.10**	**12.33**	4.09	43.853	16.42	24	Pass

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

2TX

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
1	5955	1.01	0.75	2.450	3.89	4.76	7.328	8.65	24	Pass
45	6175	1.08	0.71	2.460	3.91	4.76	7.362	8.67	24	Pass
93	6415	1.25	1.08	2.616	4.18	4.76	7.834	8.94	24	Pass
97	6435	1.33	1.23	2.686	4.29	4.29	7.211	8.58	24	Pass
105	6475	1.48	1.21	2.727	4.36	4.29	7.328	8.65	24	Pass
113	6515	1.63	0.89	2.683	4.29	4.29	7.211	8.58	24	Pass
117	6535	1.35	1.11	2.656	4.24	4.61	7.674	8.85	24	Pass
153	6715	1.37	1.02	2.636	4.21	4.61	7.621	8.82	24	Pass
181	6855	1.43	1.17	2.699	4.31	4.61	7.798	8.92	24	Pass
185	6875	1.51	1.30	2.765	4.42	4.09	7.096	8.51	24	Pass
213	7015	1.21	1.13	2.618	4.18	4.09	6.714	8.27	24	Pass
233	7115	1.05	1.02	2.538	4.04	4.09	6.501	8.13	24	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
1	5955	1.25	0.75	2.522	4.02	4.76	7.551	8.78	24	Pass
45	6175	1.36	0.82	2.576	4.11	4.76	7.709	8.87	24	Pass
93	6415	1.39	0.79	2.577	4.11	4.76	7.709	8.87	24	Pass
97	6435	1.77	1.52	2.922	4.66	4.29	7.852	8.95	24	Pass
105	6475	2.01	1.41	2.972	4.73	4.29	7.980	9.02	24	Pass
113	6515	1.48	2.04	3.006	4.78	4.29	8.072	9.07	24	Pass
117	6535	1.60	1.30	2.794	4.46	4.61	8.072	9.07	24	Pass
153	6715	1.85	1.67	3.000	4.77	4.61	8.670	9.38	24	Pass
181	6855	1.52	0.62	2.573	4.10	4.61	7.430	8.71	24	Pass
185	6875	1.71	1.92	3.038	4.83	4.09	7.798	8.92	24	Pass
213	7015	0.57	2.51	2.923	4.66	4.09	7.499	8.75	24	Pass
233	7115	1.41	2.25	3.062	4.86	4.09	7.852	8.95	24	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
3	5965	4.80	4.61	5.911	7.72	4.76	17.701	12.48	24	Pass
43	6165	4.92	4.33	5.815	7.65	4.76	17.418	12.41	24	Pass
91	6405	4.90	4.30	5.782	7.62	4.76	17.298	12.38	24	Pass
99	6445	4.82	4.23	5.682	7.55	4.29	15.276	11.84	24	Pass
107	6485	4.67	4.14	5.525	7.42	4.29	14.825	11.71	24	Pass
115	6525	4.25	3.99	5.167	7.13	4.61	14.928	11.74	24	Pass
123	6565	4.13	3.94	5.066	7.05	4.61	14.655	11.66	24	Pass
155	6725	4.25	4.01	5.178	7.14	4.61	14.962	11.75	24	Pass
179	6845	4.29	4.05	5.226	7.18	4.61	15.101	11.79	24	Pass
187	6885	4.31	4.01	5.215	7.17	4.09	13.366	11.26	24	Pass
211	7005	4.75	4.21	5.622	7.50	4.09	14.421	11.59	24	Pass
227	7085	4.95	4.72	6.091	7.85	4.09	15.631	11.94	24	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
7	5985	7.16	6.89	10.086	10.04	4.76	30.200	14.80	24	Pass
39	6145	7.15	6.85	10.030	10.01	4.76	29.992	14.77	24	Pass
87	6385	7.35	6.91	10.342	10.15	4.76	30.974	14.91	24	Pass
103	6465	7.43	6.99	10.534	10.23	4.29	28.314	14.52	24	Pass
119	6545	7.58	6.95	10.682	10.29	4.61	30.903	14.90	24	Pass
135	6625	7.82	7.01	11.077	10.44	4.61	31.989	15.05	24	Pass
151	6705	7.89	7.13	11.316	10.54	4.61	32.734	15.15	24	Pass
167	6785	7.85	7.29	11.453	10.59	4.61	33.113	15.20	24	Pass
183	6865	7.85	7.23	11.380	10.56	4.61	32.885	15.17	24	Pass
199	6945	7.89	7.21	11.412	10.57	4.09	29.242	14.66	24	Pass
215	7025	7.91	7.29	11.538	10.62	4.09	29.580	14.71	24	Pass

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
15	6025	9.79	9.67	18.796	12.74	4.76	56.234	17.50	24	Pass
47	6185	9.43	9.13	16.955	12.29	4.76	50.699	17.05	24	Pass
79	6345	9.78	9.52	18.460	12.66	4.76	55.208	17.42	24	Pass
111	6505	9.69	9.02	17.291	12.38	4.29	46.452	16.67	24	Pass
143	6665	9.58	9.25	17.492	12.43	4.61	50.582	17.04	24	Pass
175	6825	9.78	9.45	18.317	12.63	4.61	52.966	17.24	24	Pass
207	6985	9.68	9.16	17.531	12.44	4.09	44.978	16.53	24	Pass

20MHz Preamble

802.11ax (RU26)

RU Configuration	Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
			Chain 0	Chain 1							
26/0	1	5955	-6.98	-7.08	0.396	-4.02	4.76	1.186	0.74	24	Pass
26/8	93	6415	-6.85	-7.09	0.402	-3.96	4.76	1.202	0.80	24	Pass
26/0	97	6435	-6.87	-7.03	0.404	-3.94	4.29	1.084	0.35	24	Pass
26/0	117	6535	-6.92	-7.05	0.401	-3.97	4.61	1.159	0.64	24	Pass
26/8	181	6855	-6.81	-7.13	0.402	-3.96	4.61	1.161	0.65	24	Pass
26/8	213	7015	-7.02	-7.68	0.369	-4.33	4.09	0.946	-0.24	24	Pass

802.11ax (RU52)

RU Configuration	Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
			Chain 0	Chain 1							
52/37	1	5955	-3.86	-4.48	0.768	-1.15	4.76	2.296	3.61	24	Pass
52/40	93	6415	-3.83	-4.28	0.787	-1.04	4.76	2.355	3.72	24	Pass
52/37	97	6435	-3.81	-4.35	0.783	-1.06	4.29	2.104	3.23	24	Pass
52/37	117	6535	-3.79	-4.45	0.777	-1.10	4.61	2.244	3.51	24	Pass
52/40	181	6855	-3.75	-4.68	0.762	-1.18	4.61	2.203	3.43	24	Pass
52/40	213	7015	-3.89	-4.75	0.743	-1.29	4.09	1.905	2.80	24	Pass

802.11ax (RU106)

RU Configuration	Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
			Chain 0	Chain 1							
106/53	1	5955	-1.42	-1.68	1.400	1.46	4.76	4.188	6.22	24	Pass
106/54	93	6415	-1.35	-1.46	1.447	1.61	4.76	4.335	6.37	24	Pass
106/53	97	6435	-0.99	-1.38	1.524	1.83	4.29	4.093	6.12	24	Pass
106/53	117	6535	-0.99	-1.59	1.490	1.73	4.61	4.305	6.34	24	Pass
106/54	181	6855	-1.21	-1.68	1.436	1.57	4.61	4.150	6.18	24	Pass
106/54	213	7015	-1.25	-1.78	1.414	1.50	4.09	3.622	5.59	24	Pass

Test Mode B

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

1TX

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
1	5955	328.852	25.17	4.76	984.012	29.93	30	Pass
45	6175	321.366	25.07	4.76	961.612	29.83	30	Pass
93	6415	331.894	25.21	4.76	993.115	29.97	30	Pass
117	6535	314.051	24.97	4.61	907.821	29.58	30	Pass
153	6715	325.837	25.13	4.61	941.89	29.74	30	Pass
181	6855	319.89	25.05	4.61	924.7	29.66	30	Pass

Notes:

1. For U-NII-5, The antenna gain is 4.76 dBi
2. For U-NII-7, The antenna gain is 4.61 dBi

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
15	6025	156.675	21.95	4.76	468.813	26.71	30	Pass
47	6185	221.82	23.46	4.76	663.744	28.22	30	Pass
79	6345	155.955	21.93	4.76	466.659	26.69	30	Pass
143	6665	166.341	22.21	4.61	480.839	26.82	30	Pass

Notes:

1. For U-NII-5, The antenna gain is 4.76 dBi
2. For U-NII-7, The antenna gain is 4.61 dBi

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

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							
1	5955	18.82	18.93	154.371	21.89	4.76	461.919	26.65	30	Pass
45	6175	19.03	19.16	162.397	22.11	4.76	485.935	26.87	30	Pass
93	6415	19.08	19.23	164.663	22.17	4.76	492.715	26.93	30	Pass
117	6535	18.91	19.11	159.274	22.02	4.61	460.410	26.63	30	Pass
153	6715	19.14	19.33	167.739	22.25	4.61	484.880	26.86	30	Pass
181	6855	18.92	19.15	160.207	22.05	4.61	463.107	26.66	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 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							
1	5955	18.75	19.21	158.358	22.00	4.76	473.849	26.76	30	Pass
45	6175	18.52	19.32	156.628	21.95	4.76	468.672	26.71	30	Pass
93	6415	19.03	19.22	163.544	22.14	4.76	489.367	26.90	30	Pass
117	6535	18.88	19.52	166.805	22.22	4.61	482.180	26.83	30	Pass
153	6715	18.89	19.43	165.146	22.18	4.61	477.384	26.79	30	Pass
181	6855	18.91	19.35	163.903	22.15	4.61	473.791	26.76	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 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	21.09	21.53	270.762	24.33	4.76	810.192	29.09	30	Pass
43	6165	21.69	21.87	301.386	24.79	4.76	901.827	29.55	30	Pass
91	6405	21.95	22.01	315.53	24.99	4.76	944.149	29.75	30	Pass
123	6565	21.97	22.28	326.442	25.14	4.61	943.639	29.75	30	Pass
155	6725	21.79	22.38	323.99	25.11	4.61	936.551	29.72	30	Pass
179	6845	21.85	21.97	310.507	24.92	4.61	897.576	29.53	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 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	20.14	20.18	207.508	23.17	4.76	620.919	27.93	30	Pass
39	6145	21.81	22.09	313.513	24.96	4.76	938.114	29.72	30	Pass
87	6385	21.85	22.03	312.697	24.95	4.76	935.672	29.71	30	Pass
135	6625	22.16	22.37	337.021	25.28	4.61	974.220	29.89	30	Pass
151	6705	22.08	22.28	330.48	25.19	4.61	955.312	29.80	30	Pass
167	6785	22.02	22.22	325.946	25.13	4.61	942.206	29.74	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 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	19.87	20.11	199.616	23.00	4.76	597.304	27.76	30	Pass
47	6185	21.70	21.97	305.309	24.85	4.76	913.565	29.61	30	Pass
79	6345	19.92	20.26	204.344	23.10	4.76	611.451	27.86	30	Pass
143	6665	19.84	19.95	195.238	22.91	4.61	564.371	27.52	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 dBi

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

802.11ax (HE20) 26-tone RU

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							
1	5955	9.01	9.22	16.318	12.13	4.76	48.828	16.89	30	Pass
93	6415	8.99	9.19	16.224	12.10	4.76	48.547	16.86	30	Pass
117	6535	9.04	9.21	16.354	12.14	4.61	47.274	16.75	30	Pass
181	6855	9.39	9.66	17.937	12.54	4.61	51.85	17.15	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 dBi

802.11ax (HE20) 52-tone RU

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							
1	5955	11.97	12.42	33.198	15.21	4.76	99.337	19.97	30	Pass
93	6415	12.01	12.39	33.224	15.21	4.76	99.415	19.97	30	Pass
117	6535	12.11	12.49	33.997	15.31	4.61	98.274	19.92	30	Pass
181	6855	12.48	12.61	35.94	15.56	4.61	103.891	20.17	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 dBi

802.11ax (HE20) 106-tone RU

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							
1	5955	14.77	14.89	60.824	17.84	4.76	182.002	22.60	30	Pass
93	6415	14.81	14.93	61.386	17.88	4.76	183.683	22.64	30	Pass
117	6535	14.97	15.13	63.989	18.06	4.61	184.972	22.67	30	Pass
181	6855	15.01	15.28	65.424	18.16	4.61	189.12	22.77	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 4.76 dBi
3. For U-NII-7, The maximum gain is 4.61 dBi

7.2 Power Spectral Density

Test Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Ivan Tseng/ Chun Wu

1TX

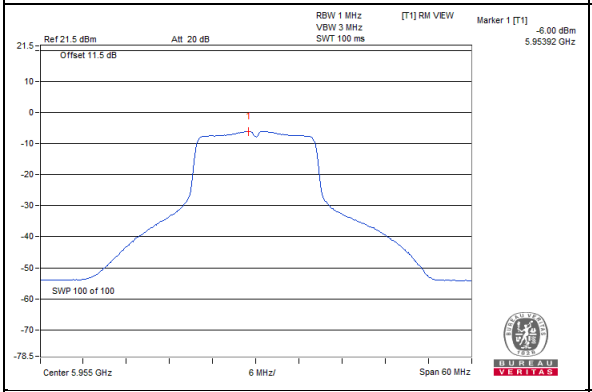
802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	Total PSD (dBm/MHz)	Antena Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Pass / Fail
1	5955	-6.00	0.14	-5.86	4.76	-1.10	-1.00	Pass
45	6175	-6.00	0.14	-5.86	4.76	-1.10	-1.00	Pass
93	6415	-6.07	0.14	-5.93	4.76	-1.17	-1.00	Pass
97	6435	-5.45	0.14	-5.31	4.29	-1.02	-1.00	Pass
105	6475	-5.45	0.14	-5.31	4.29	-1.02	-1.00	Pass
113	6515	-5.49	0.14	-5.35	4.29	-1.06	-1.00	Pass
117	6535	-5.91	0.14	-5.77	4.61	-1.16	-1.00	Pass
153	6715	-5.96	0.14	-5.82	4.61	-1.21	-1.00	Pass
181	6855	-5.87	0.14	-5.73	4.61	-1.12	-1.00	Pass
185	6875	-5.30	0.14	-5.16	4.09	-1.07	-1.00	Pass
213	7015	-5.24	0.14	-5.10	4.09	-1.01	-1.00	Pass
233	7115	-5.38	0.14	-5.24	4.09	-1.15	-1.00	Pass

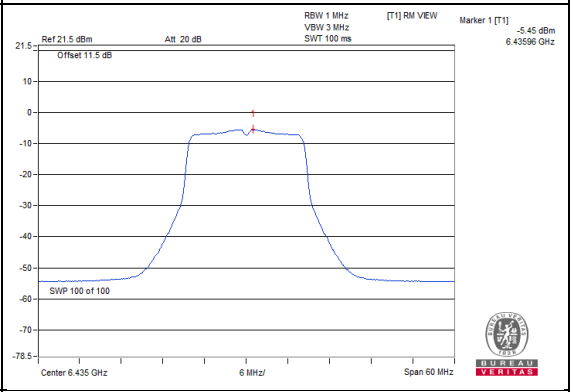
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

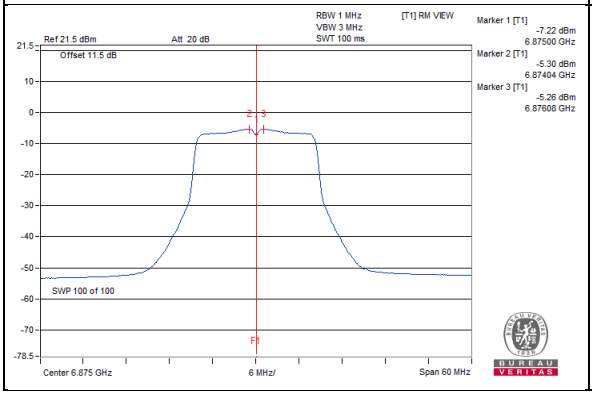
802.11a / CH1



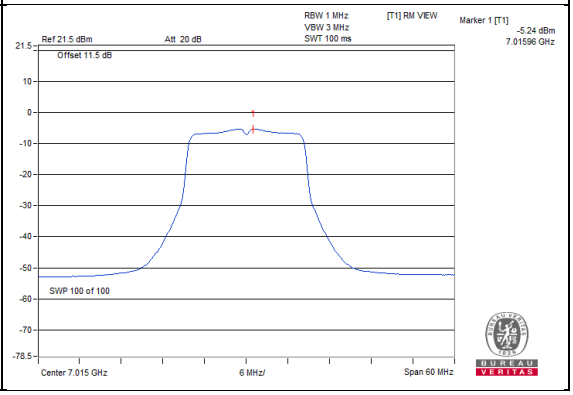
802.11a / CH105



802.11a / CH185



802.11a / CH213



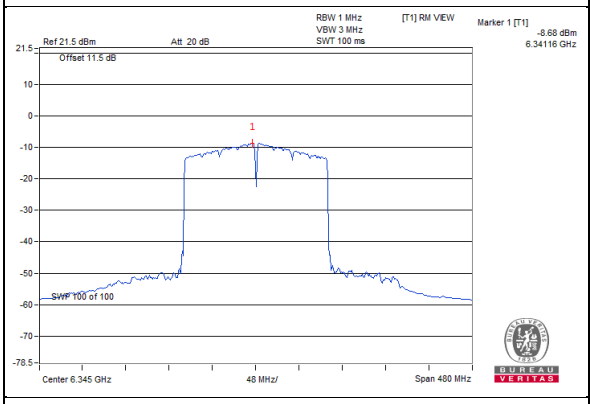
802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	Total PSD (dBm/MHz)	Antena Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Pass / Fail
15	6025	-8.79	0.6	-8.19	4.76	-3.43	-1.00	Pass
47	6185	-8.90	0.6	-8.30	4.76	-3.54	-1.00	Pass
79	6345	-8.68	0.6	-8.08	4.76	-3.32	-1.00	Pass
111	6505	-8.81	0.6	-8.21	4.29	-3.92	-1.00	Pass
143	6665	-8.64	0.6	-8.04	4.61	-3.43	-1.00	Pass
175	6825	-8.76	0.6	-8.16	4.61	-3.55	-1.00	Pass
207	6985	-8.26	0.6	-7.66	4.09	-3.57	-1.00	Pass

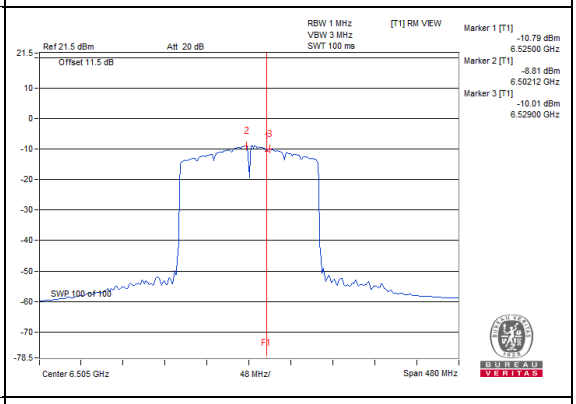
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

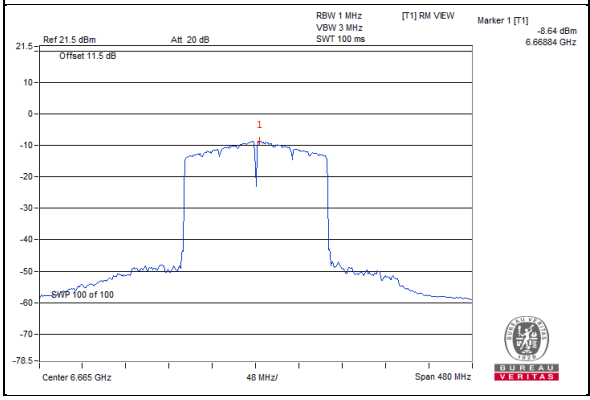
CH79



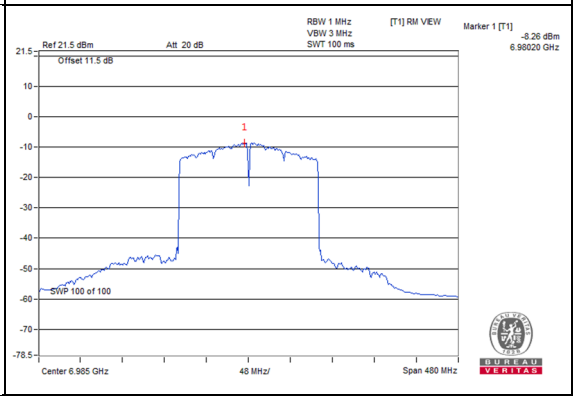
CH111



CH143



CH207



Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

2TX

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)	Pass / Fail
		Chain 0	Chain 1						
1	5955	-12.14	-12.08	0.14	-8.96	7.77	-1.19	-1.00	Pass
45	6175	-12.14	-12.06	0.14	-8.95	7.77	-1.18	-1.00	Pass
93	6415	-12.07	-12.15	0.14	-8.96	7.77	-1.19	-1.00	Pass
97	6435	-11.82	-11.68	0.14	-8.60	7.30	-1.30	-1.00	Pass
105	6475	-11.86	-11.69	0.14	-8.63	7.30	-1.33	-1.00	Pass
113	6515	-11.79	-11.78	0.14	-8.64	7.30	-1.34	-1.00	Pass
117	6535	-11.96	-11.97	0.14	-8.82	7.62	-1.20	-1.00	Pass
153	6715	-12.04	-12.11	0.14	-8.93	7.62	-1.31	-1.00	Pass
181	6855	-11.97	-11.96	0.14	-8.82	7.62	-1.20	-1.00	Pass
185	6875	-11.43	-11.46	0.14	-8.30	7.10	-1.20	-1.00	Pass
213	7015	-11.54	-11.52	0.14	-8.38	7.10	-1.28	-1.00	Pass
233	7115	-11.45	-11.58	0.14	-8.37	7.10	-1.27	-1.00	Pass

Note: 1. Method 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. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi

3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi

4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi

5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi

6. Refer to section 3.3 for duty cycle spectrum plot.

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)	Pass / Fail
		Chain 0	Chain 1						
1	5955	-12.09	-12.05	0.12	-8.94	7.77	-1.17	-1.00	Pass
45	6175	-12.13	-12.04	0.12	-8.95	7.77	-1.18	-1.00	Pass
93	6415	-12.02	-11.98	0.12	-8.87	7.77	-1.10	-1.00	Pass
97	6435	-11.53	-11.56	0.12	-8.41	7.30	-1.11	-1.00	Pass
105	6475	-11.56	-11.56	0.12	-8.43	7.30	-1.13	-1.00	Pass
113	6515	-11.51	-11.57	0.12	-8.41	7.30	-1.11	-1.00	Pass
117	6535	-11.82	-11.97	0.12	-8.76	7.62	-1.14	-1.00	Pass
153	6715	-11.79	-11.89	0.12	-8.71	7.62	-1.09	-1.00	Pass
181	6855	-11.93	-11.82	0.12	-8.74	7.62	-1.12	-1.00	Pass
185	6875	-11.52	-11.75	0.12	-8.50	7.10	-1.40	-1.00	Pass
213	7015	-11.30	-11.32	0.12	-8.18	7.10	-1.08	-1.00	Pass
233	7115	-11.44	-11.45	0.12	-8.31	7.10	-1.21	-1.00	Pass

Note: 1. Method 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. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi

3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi

4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi

5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi

6. Refer to section 3.3 for duty cycle spectrum plot.

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)	Pass / Fail
		Chain 0	Chain 1						
3	5965	-12.11	-11.98	0.12	-8.92	7.77	-1.15	-1.00	Pass
43	6165	-12.19	-12.02	0.12	-8.98	7.77	-1.21	-1.00	Pass
91	6405	-12.14	-12.08	0.12	-8.98	7.77	-1.21	-1.00	Pass
99	6445	-11.42	-11.78	0.12	-8.47	7.30	-1.17	-1.00	Pass
107	6485	-11.71	-11.61	0.12	-8.53	7.30	-1.23	-1.00	Pass
115	6525	-11.93	-11.82	0.12	-8.75	7.62	-1.13	-1.00	Pass
123	6565	-11.84	-11.97	0.12	-8.78	7.62	-1.16	-1.00	Pass
155	6725	-11.89	-11.81	0.12	-8.72	7.62	-1.10	-1.00	Pass
179	6845	-11.76	-11.91	0.12	-8.71	7.62	-1.09	-1.00	Pass
187	6885	-11.46	-11.27	0.12	-8.24	7.10	-1.14	-1.00	Pass
211	7005	-11.24	-11.60	0.12	-8.29	7.10	-1.19	-1.00	Pass
227	7085	-11.27	-11.33	0.12	-8.17	7.10	-1.07	-1.00	Pass

Note: 1. Method 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. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi

3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi

4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi

5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi

6. Refer to section 3.3 for duty cycle spectrum plot.

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)	Pass / Fail
		Chain 0	Chain 1						
7	5985	-12.33	-12.18	0.20	-9.04	7.77	-1.27	-1.00	Pass
39	6145	-12.10	-12.23	0.20	-8.95	7.77	-1.18	-1.00	Pass
87	6385	-12.30	-12.19	0.20	-9.03	7.77	-1.26	-1.00	Pass
103	6465	-12.13	-11.65	0.20	-8.67	7.30	-1.37	-1.00	Pass
119	6545	-12.07	-11.81	0.20	-8.73	7.62	-1.11	-1.00	Pass
135	6625	-12.05	-12.16	0.20	-8.89	7.62	-1.27	-1.00	Pass
151	6705	-12.15	-11.96	0.20	-8.84	7.62	-1.22	-1.00	Pass
167	6785	-11.98	-12.34	0.20	-8.94	7.62	-1.32	-1.00	Pass
183	6865	-12.13	-11.94	0.20	-8.82	7.62	-1.20	-1.00	Pass
199	6945	-11.54	-11.58	0.20	-8.35	7.10	-1.25	-1.00	Pass
215	7025	-11.59	-11.51	0.20	-8.34	7.10	-1.24	-1.00	Pass

Note: 1. Method 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. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi

3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi

4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi

5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi

6. Refer to section 3.3 for duty cycle spectrum plot.

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)	Pass / Fail
		Chain 0	Chain 1						
15	6025	-12.89	-13.38	0.83	-9.29	7.77	-1.52	-1.00	Pass
47	6185	-12.72	-12.87	0.83	-8.96	7.77	-1.19	-1.00	Pass
79	6345	-13.50	-13.07	0.83	-9.44	7.77	-1.67	-1.00	Pass
111	6505	-12.49	-12.55	0.83	-8.68	7.30	-1.38	-1.00	Pass
143	6665	-12.55	-12.65	0.83	-8.76	7.62	-1.14	-1.00	Pass
175	6825	-12.80	-12.77	0.83	-8.95	7.62	-1.33	-1.00	Pass
207	6985	-12.65	-12.34	0.83	-8.66	7.10	-1.56	-1.00	Pass

Note: 1. Method 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. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi

3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi

4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi

5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi

6. Refer to section 3.3 for duty cycle spectrum plot.

20MHz Preamble

802.11ax (RU26)

RU Configuration	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)	Pass / Fail
			Chain 0	Chain 1						
26/0	1	5955	-12.74	-11.94	0.12	-9.19	7.77	-1.42	-1.00	Pass
26/8	93	6415	-12.23	-12.69	0.12	-9.32	7.77	-1.55	-1.00	Pass
26/0	97	6435	-11.49	-11.96	0.12	-8.59	7.30	-1.29	-1.00	Pass
26/0	117	6535	-11.88	-12.18	0.12	-8.90	7.62	-1.28	-1.00	Pass
26/8	181	6855	-12.12	-12.30	0.12	-9.08	7.62	-1.46	-1.00	Pass
26/8	213	7015	-12.12	-12.36	0.12	-9.11	7.10	-2.01	-1.00	Pass

Note: 1. Method 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. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi

3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi

4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi

5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi

6. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (RU52)

RU Configuration	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)	Pass / Fail
			Chain 0	Chain 1						
52/37	1	5955	-12.06	-12.53	0.12	-9.16	7.77	-1.39	-1.00	Pass
52/40	93	6415	-12.28	-12.53	0.12	-9.27	7.77	-1.50	-1.00	Pass
52/37	97	6435	-11.61	-12.05	0.12	-8.69	7.30	-1.39	-1.00	Pass
52/37	117	6535	-12.10	-12.48	0.12	-9.15	7.62	-1.53	-1.00	Pass
52/40	181	6855	-12.10	-12.17	0.12	-9.00	7.62	-1.38	-1.00	Pass
52/40	213	7015	-11.30	-13.45	0.12	-9.11	7.10	-2.01	-1.00	Pass

Note: 1. Method 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. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi

3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi

4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi

5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi

6. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (RU106)

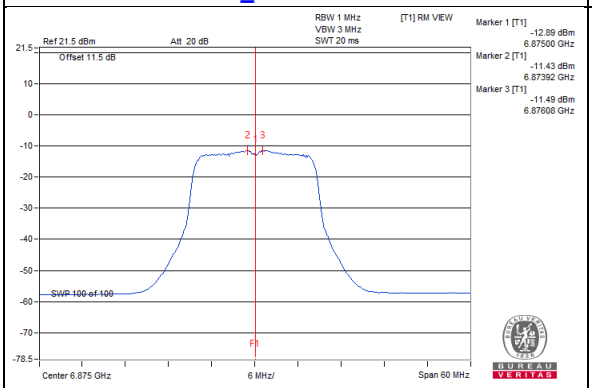
RU Configuration	Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Pass / Fail
			Chain 0	Chain 1						
106/53	1	5955	-12.14	-12.22	0.12	-9.05	7.77	-1.28	-1.00	Pass
106/54	93	6415	-12.42	-11.99	0.12	-9.07	7.77	-1.30	-1.00	Pass
106/53	97	6435	-11.67	-11.62	0.12	-8.51	7.30	-1.21	-1.00	Pass
106/53	117	6535	-11.54	-12.69	0.12	-8.95	7.62	-1.33	-1.00	Pass
106/54	181	6855	-11.99	-12.13	0.12	-8.93	7.62	-1.31	-1.00	Pass
106/54	213	7015	-12.57	-12.70	0.12	-9.50	7.10	-2.40	-1.00	Pass

Note: 1. Method 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.

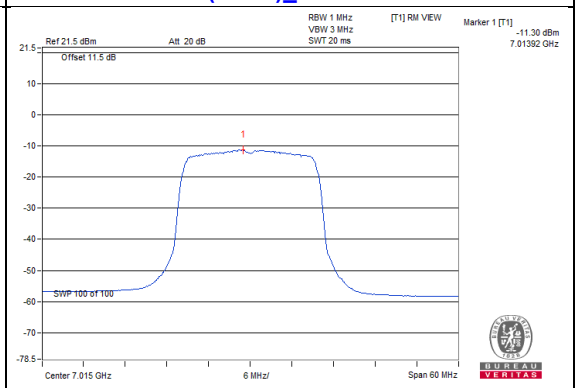
2. U-NII-5: Directional gain = 4.76dBi + 10log(2) = 7.77dBi
3. U-NII-6: Directional gain = 4.29dBi + 10log(2) = 7.30dBi
4. U-NII-7: Directional gain = 4.61dBi + 10log(2) = 7.62dBi
5. U-NII-8: Directional gain = 4.09dBi + 10log(2) = 7.10dBi
6. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

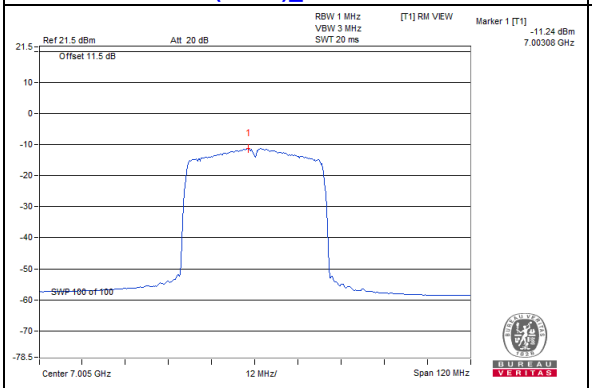
802.11a_Chain 0 / CH185



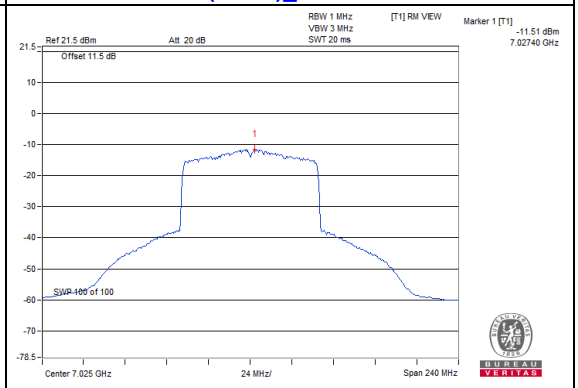
802.11ax (HE20)_Chain 0 / CH213



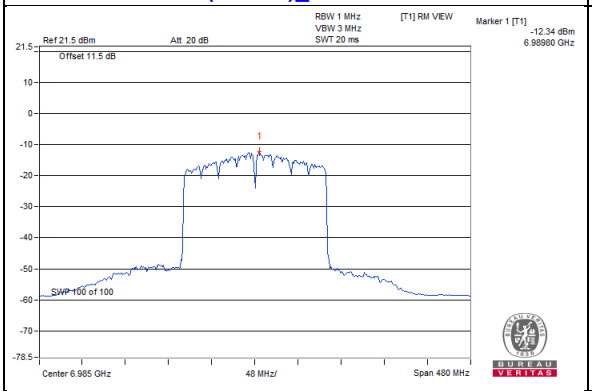
802.11ax (HE40)_Chain 0 / CH211



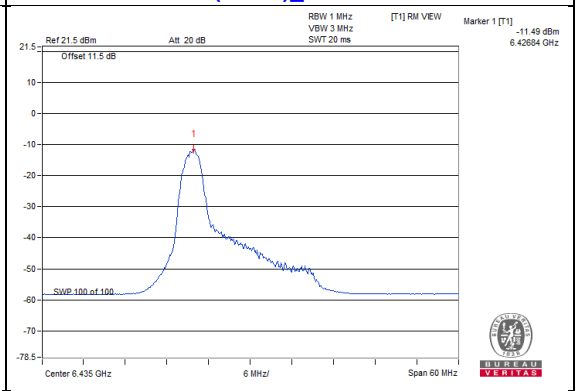
802.11ax (HE80)_Chain 1 / CH215



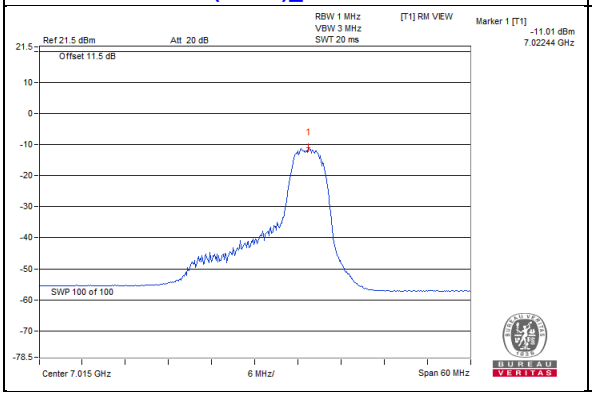
802.11ax (HE160)_Chain 1 / CH207



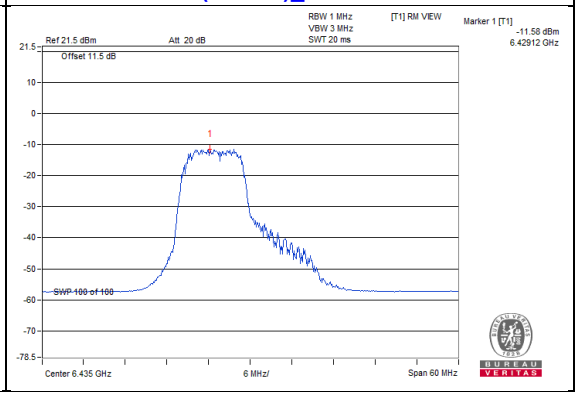
802.11ax (RU26)_Chain 0 / CH97



802.11ax (RU52)_Chain 0 / CH213



802.11ax (RU106)_Chain 0 / CH117



Test Mode B

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

1TX

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	Antenna Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
1	5955	12.04	4.76	16.8	17	Pass
45	6175	12.09	4.76	16.85	17	Pass
93	6415	12.15	4.76	16.91	17	Pass
117	6535	12.27	4.61	16.88	17	Pass
153	6715	12.30	4.61	16.91	17	Pass
181	6855	12.11	4.61	16.72	17	Pass

Notes:

1. For U-NII-5, The antenna gain is 4.76 dBi
2. For U-NII-7, The antenna gain is 4.61 dBi

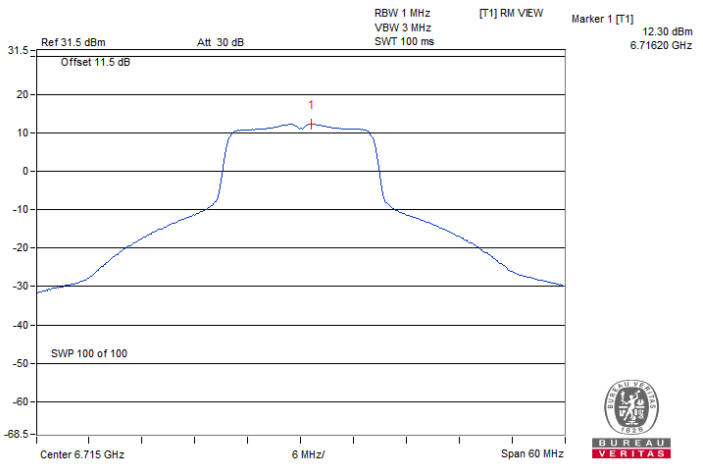
802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD (dBm/MHz)	Antenna Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
15	6025	0.02	0.16	0.18	4.76	4.94	17	Pass
47	6185	1.50	0.16	1.66	4.76	6.42	17	Pass
79	6345	0.01	0.16	0.17	4.76	4.93	17	Pass
143	6665	0.03	0.16	0.19	4.61	4.80	17	Pass

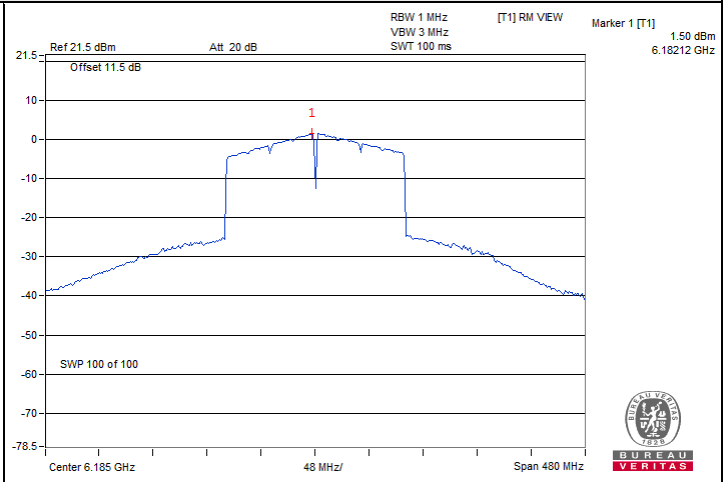
Notes:

1. For U-NII-5, The antenna gain is 4.76 dBi
2. For U-NII-7, The antenna gain is 4.61 dBi

Spectrum Plot of Maximum Value



802.11a : CH 153



802.11ax (HE160) : CH 47

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
1	5955	5.88	6.00	8.95	7.77	16.72	17	Pass
45	6175	6.14	6.21	9.19	7.77	16.96	17	Pass
93	6415	6.17	6.24	9.22	7.77	16.99	17	Pass
117	6535	6.04	6.27	9.17	7.62	16.79	17	Pass
153	6715	6.27	6.40	9.35	7.62	16.97	17	Pass
181	6855	5.92	6.29	9.12	7.62	16.74	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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
1	5955	5.85	6.20	9.04	7.77	16.81	17	Pass
45	6175	5.58	6.41	9.03	7.77	16.8	17	Pass
93	6415	6.15	6.24	9.21	7.77	16.98	17	Pass
117	6535	5.96	6.48	9.24	7.62	16.86	17	Pass
153	6715	5.95	6.38	9.18	7.62	16.8	17	Pass
181	6855	5.99	6.30	9.16	7.62	16.78	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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
3	5965	5.34	5.74	8.55	7.77	16.32	17	Pass
43	6165	5.87	5.90	8.90	7.77	16.67	17	Pass
91	6405	6.00	6.27	9.15	7.77	16.92	17	Pass
123	6565	6.08	6.41	9.26	7.62	16.88	17	Pass
155	6725	5.88	6.32	9.12	7.62	16.74	17	Pass
179	6845	5.97	6.00	9.00	7.62	16.62	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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
7	5985	1.10	1.37	4.25	7.77	12.02	17	Pass
39	6145	3.30	3.31	6.32	7.77	14.09	17	Pass
87	6385	2.94	3.10	6.03	7.77	13.8	17	Pass
135	6625	3.36	3.39	6.39	7.62	14.01	17	Pass
151	6705	2.97	3.03	6.01	7.62	13.63	17	Pass
167	6785	3.07	3.22	6.16	7.62	13.78	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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

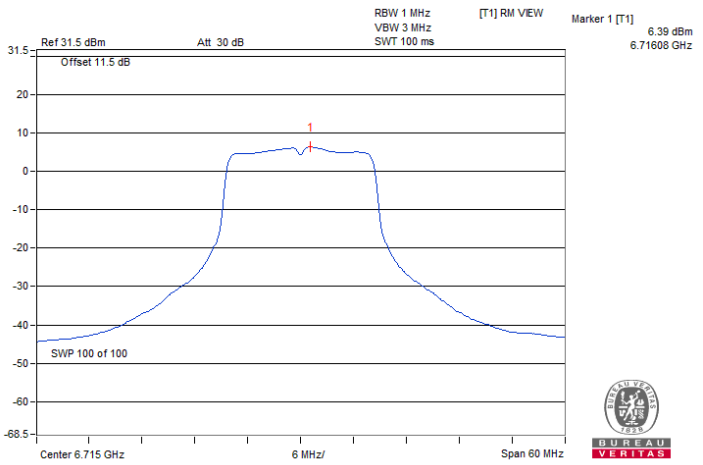
802.11ax (HE160)

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	-2.35	-1.91	0.16	1.05	7.77	8.82	17	Pass
47	6185	-0.09	0.03	0.16	3.14	7.77	10.91	17	Pass
79	6345	-1.80	-1.58	0.16	1.48	7.77	9.25	17	Pass
143	6665	-2.12	-2.03	0.16	1.10	7.62	8.72	17	Pass

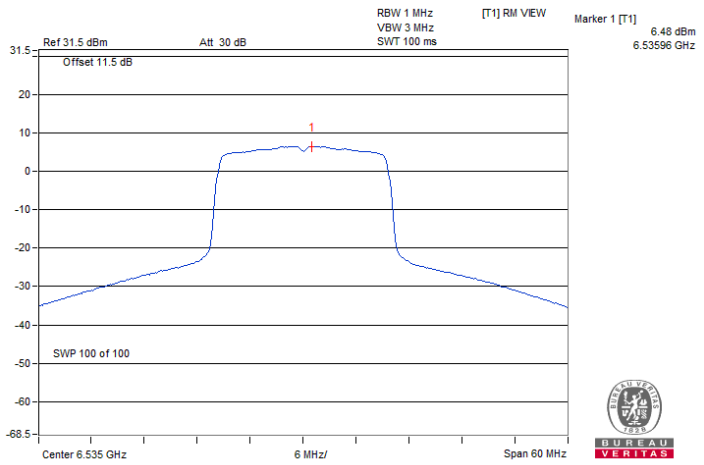
Notes:

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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

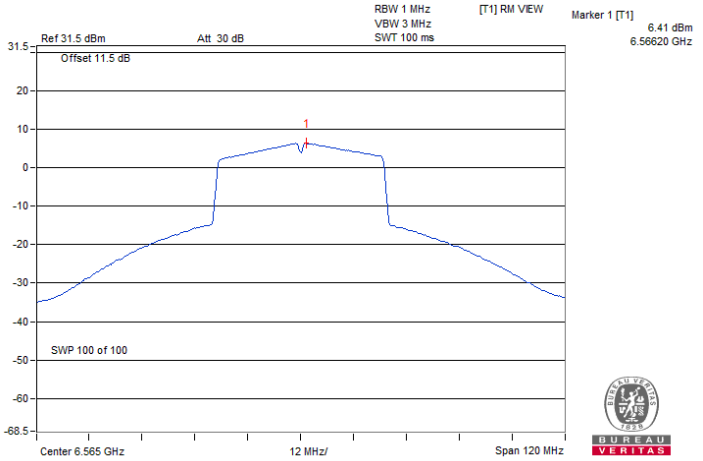
Spectrum Plot of Maximum Value



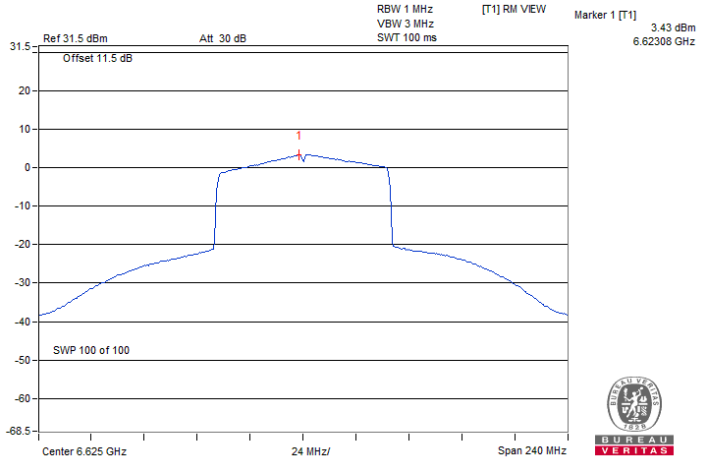
802.11a / Chain 1 : CH 153



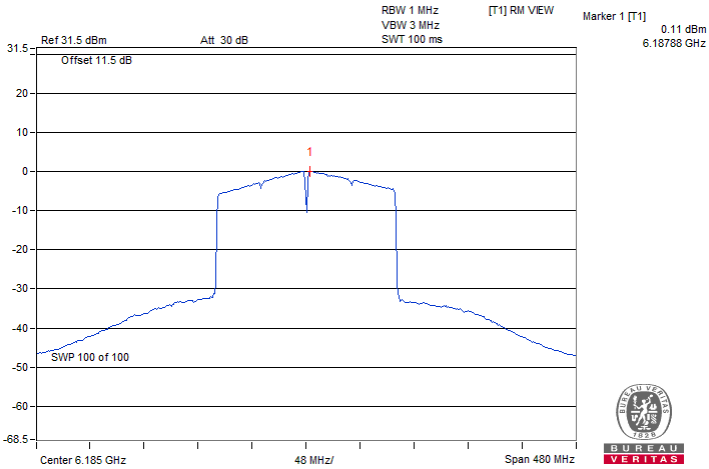
802.11ax (HE20) / Chain 1 : CH 117



802.11ax (HE40) / Chain 1 : CH 123



802.11ax (HE80) / Chain 1 : CH 135



802.11ax (HE160) / Chain 1 : CH 47

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

802.11ax (HE20) 26-tone RU

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
1	5955	5.92	6.13	9.04	7.77	16.81	17	Pass
93	6415	5.91	6.06	9.00	7.77	16.77	17	Pass
117	6535	5.97	6.13	9.06	7.62	16.68	17	Pass
181	6855	6.13	6.30	9.23	7.62	16.85	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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

802.11ax (HE20) 52-tone RU

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
1	5955	5.89	6.15	9.03	7.77	16.8	17	Pass
93	6415	5.85	6.22	9.05	7.77	16.82	17	Pass
117	6535	6.06	6.27	9.18	7.62	16.8	17	Pass
181	6855	5.94	6.17	9.07	7.62	16.69	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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

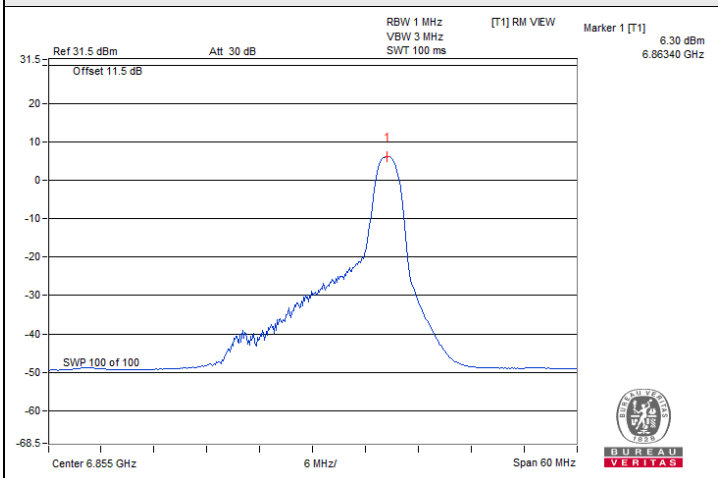
802.11ax (HE20) 106-tone RU

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
1	5955	6.07	5.99	9.04	7.77	16.81	17	Pass
93	6415	6.08	6.16	9.13	7.77	16.9	17	Pass
117	6535	6.17	6.35	9.27	7.62	16.89	17	Pass
181	6855	6.23	6.41	9.33	7.62	16.95	17	Pass

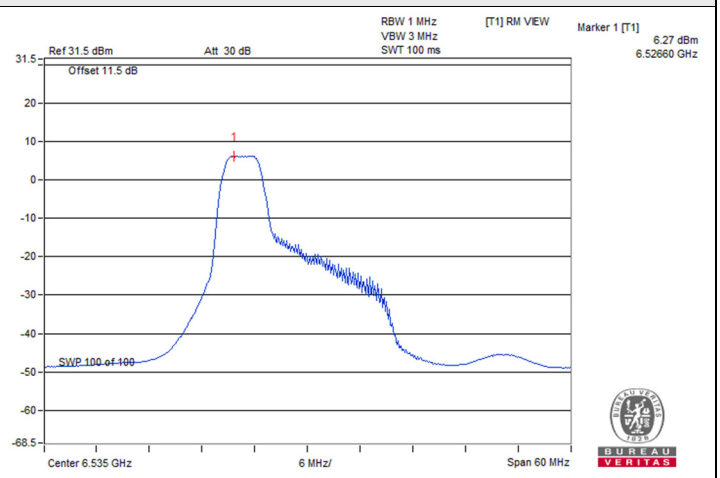
Notes:

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 7.77 dBi
4. For U-NII-7, The directional gain is 7.62 dBi

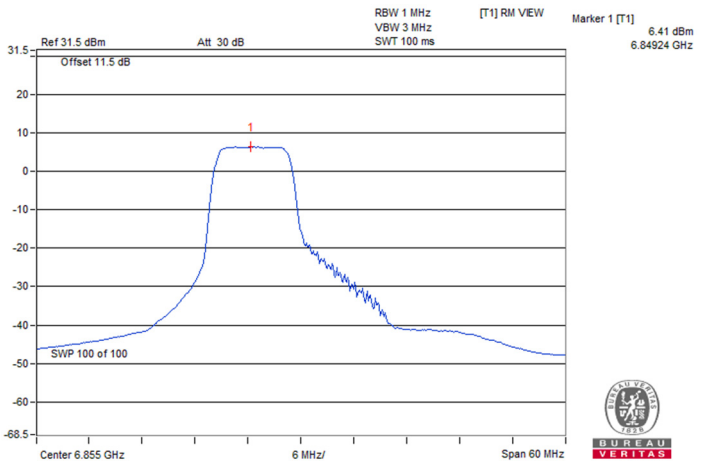
Spectrum Plot of Maximum Value



802.11ax (HE20) 26-tone RU / Chain 1 : CH 181@8



802.11ax (HE20) 52-tone RU / Chain 1 : CH 117@37



802.11ax (HE20) 106-tone RU / Chain 1 : CH 181@54

7.3 Emission Bandwidth

Test Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Ivan Tseng/ Chun Wu

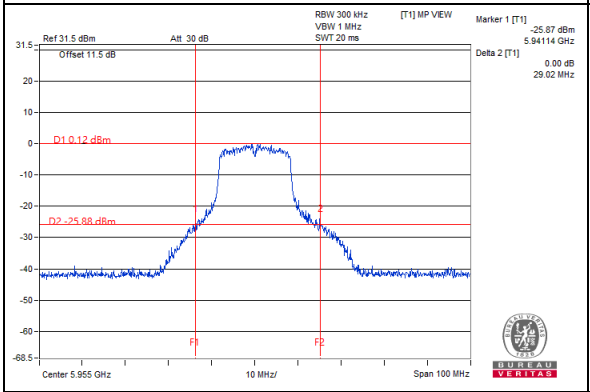
1TX

802.11a

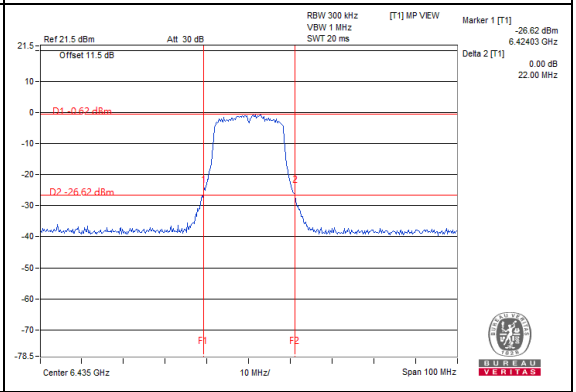
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Limit (MHz)
1	5955	29.02	320
45	6175	21.79	320
93	6415	21.76	320
97	6435	22.00	320
105	6475	21.33	320
113	6515	21.81	320
117	6535	21.66	320
153	6715	21.89	320
181	6855	21.51	320
185	6875	21.66	320
213	7015	21.58	320
233	7115	22.46	320

Spectrum Plot of Max. Value

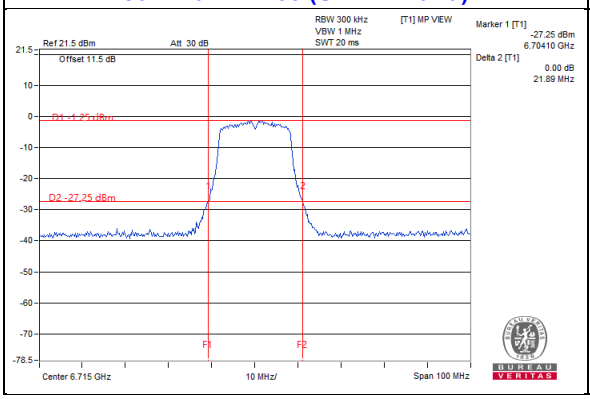
802.11a / CH1 (U-NII-5 Band)



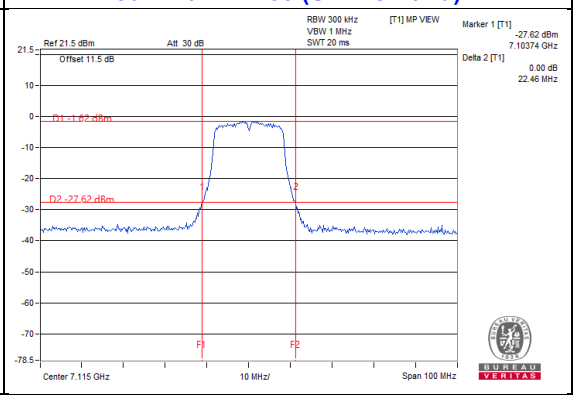
802.11a / CH97 (U-NII-6 Band)



802.11a / CH153 (U-NII-7 Band)



802.11a / CH233 (U-NII-8 Band)

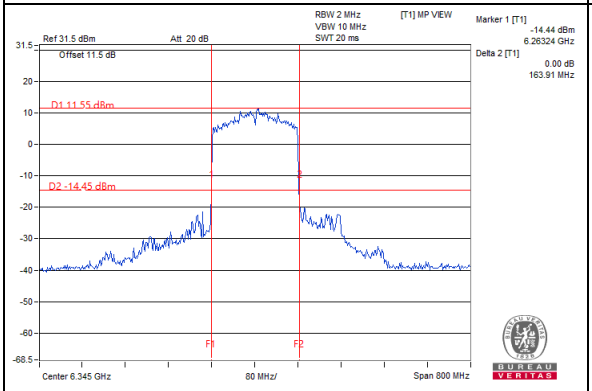


802.11ax (HE160)

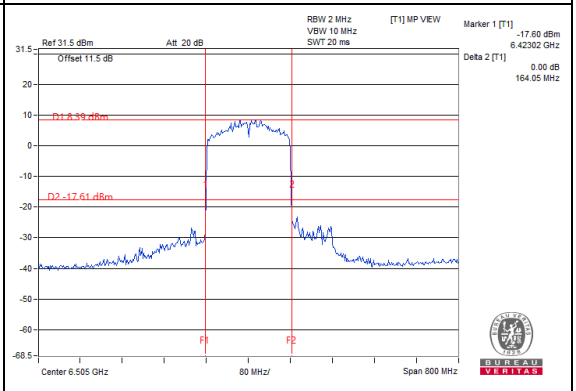
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Limit (MHz)
15	6025	162.57	320
47	6185	162.67	320
79	6345	163.91	320
111	6505	164.05	320
143	6665	163.91	320
175	6825	164.31	320
207	6985	164.44	320

Spectrum Plot of Max. Value

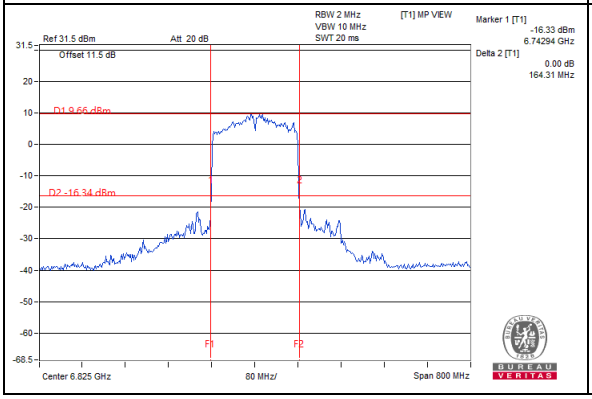
CH79 (U-NII-5 Band)



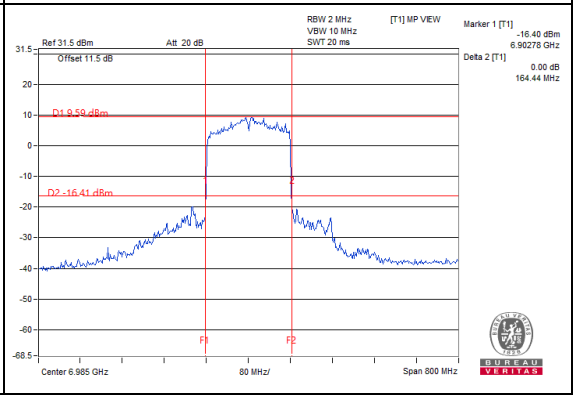
CH111 (U-NII-6 Band)



CH175 (U-NII-7 Band)



CH207 (U-NII-8 Band)



Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

2TX

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
1	5955	33.10	34.46	320
45	6175	21.73	21.95	320
93	6415	21.89	21.57	320
97	6435	21.67	21.80	320
105	6475	21.60	21.79	320
113	6515	21.74	21.63	320
117	6535	21.72	21.59	320
153	6715	21.56	21.75	320
181	6855	21.73	21.72	320
185	6875	21.50	21.35	320
213	7015	21.47	21.92	320
233	7115	21.44	21.90	320

802.11ax (HE20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
1	5955	29.83	34.25	320
45	6175	22.31	22.67	320
93	6415	22.84	22.65	320
97	6435	22.54	22.44	320
105	6475	23.09	22.84	320
113	6515	22.71	22.56	320
117	6535	23.01	22.58	320
153	6715	22.81	22.63	320
181	6855	22.80	22.86	320
185	6875	22.63	22.76	320
213	7015	22.52	22.57	320
233	7115	22.81	22.51	320

802.11ax (HE40)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
3	5965	54.99	51.30	320
43	6165	40.15	40.01	320
91	6405	40.01	40.08	320
99	6445	40.05	40.13	320
107	6485	40.02	40.07	320
115	6525	40.15	40.05	320
123	6565	40.04	40.08	320
155	6725	40.12	40.17	320
179	6845	40.05	39.98	320
187	6885	40.02	40.04	320
211	7005	40.08	40.13	320
227	7085	55.63	51.57	320

802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
7	5985	96.26	97.51	320
39	6145	81.02	81.29	320
87	6385	81.13	81.23	320
103	6465	81.19	81.17	320
119	6545	81.35	81.54	320
135	6625	81.12	81.26	320
151	6705	81.09	81.36	320
167	6785	81.23	81.04	320
183	6865	81.14	81.21	320
199	6945	81.12	81.10	320
215	7025	108.49	112.55	320

802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
15	6025	162.59	162.68	320
47	6185	163.87	163.57	320
79	6345	163.66	163.79	320
111	6505	163.96	163.78	320
143	6665	163.99	163.89	320
175	6825	163.78	163.82	320
207	6985	164.03	163.77	320

20MHz Preamble

802.11ax (RU26)

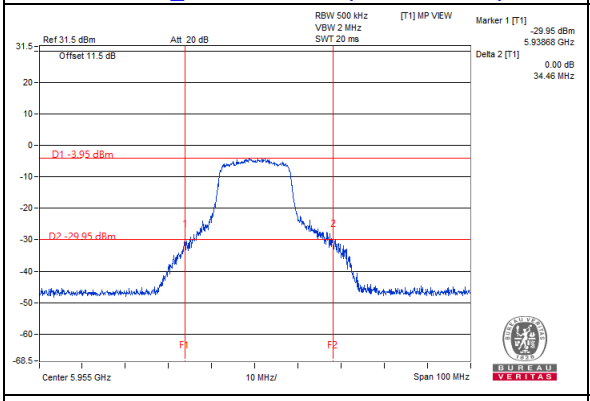
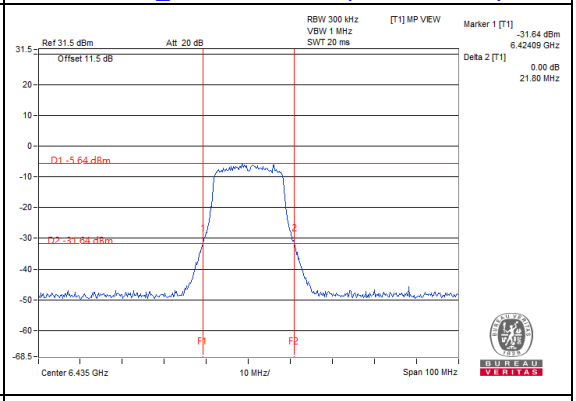
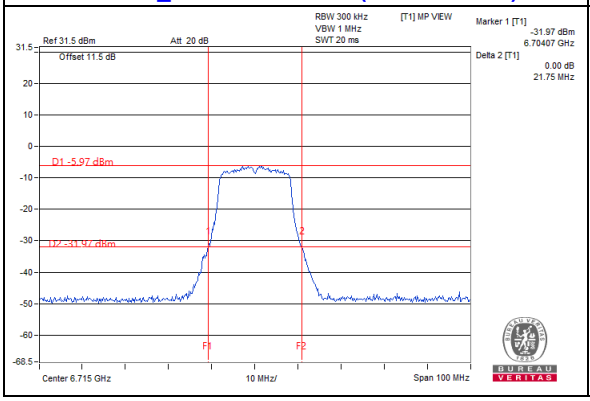
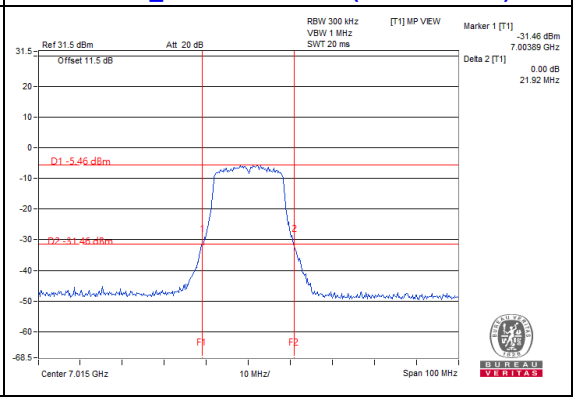
RU Configuration	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
			Chain 0	Chain 1	Limit (MHz)
26/0	1	5955	20.46	20.48	320
26/8	93	6415	20.88	20.78	320
26/0	97	6435	20.52	20.61	320
26/0	117	6535	20.61	20.49	320
26/8	181	6855	20.86	20.88	320
26/8	213	7015	21.22	20.98	320

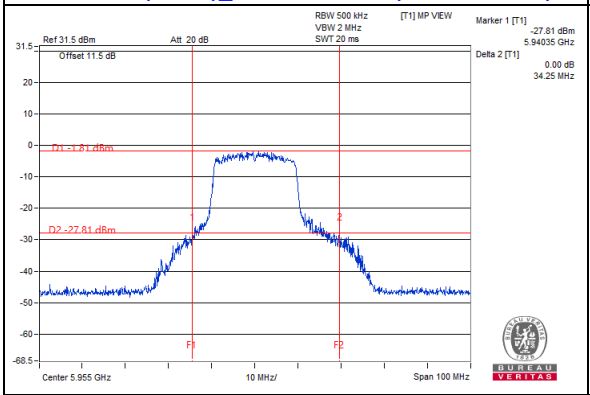
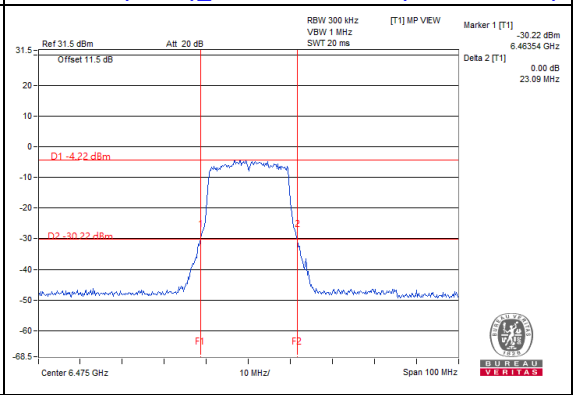
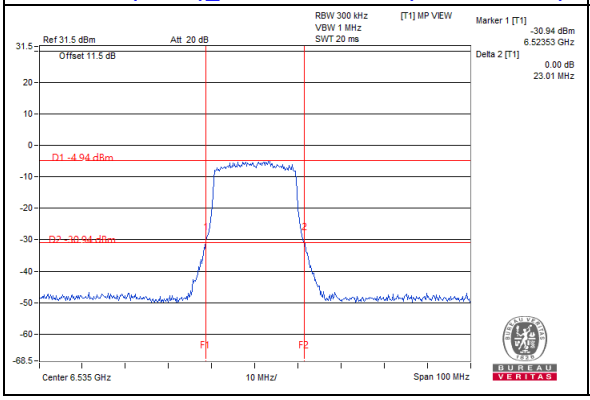
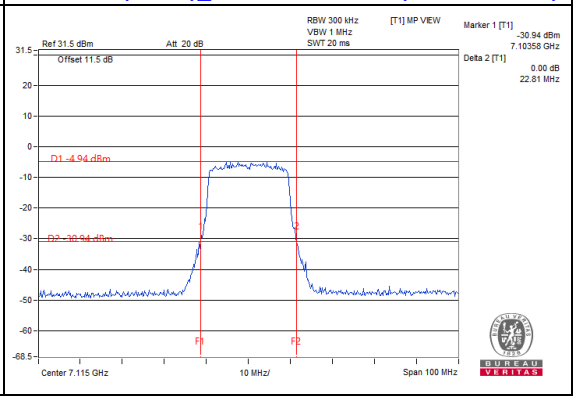
802.11ax (RU52)

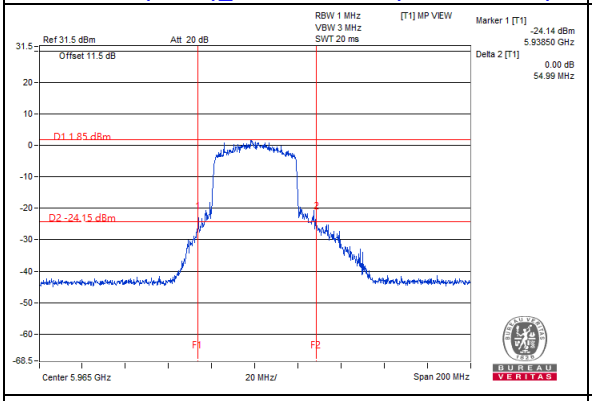
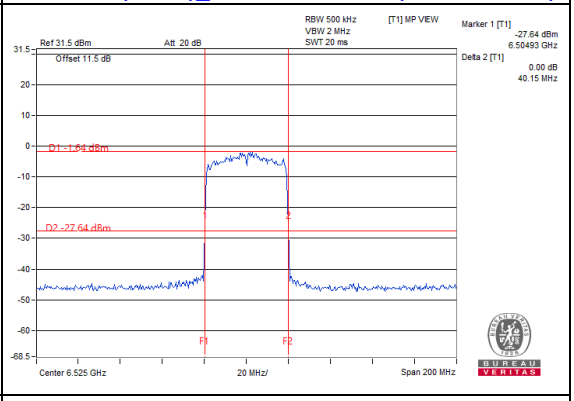
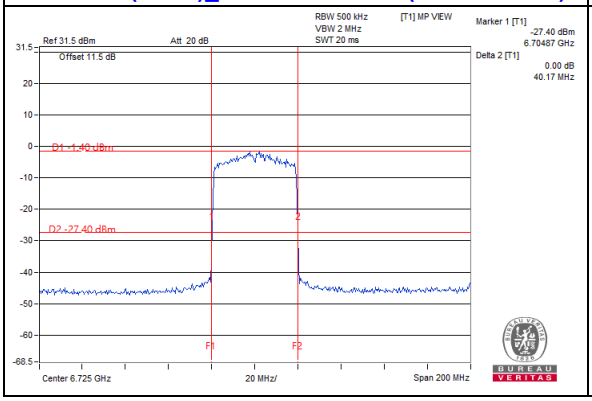
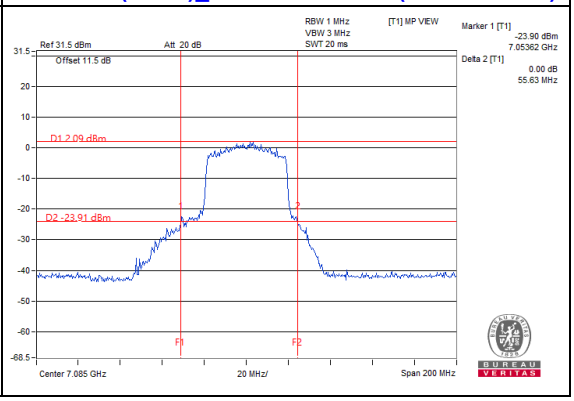
RU Configuration	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
			Chain 0	Chain 1	Limit (MHz)
52/37	1	5955	21.24	21.31	320
52/40	93	6415	21.60	21.42	320
52/37	97	6435	20.95	21.29	320
52/37	117	6535	21.22	21.21	320
52/40	181	6855	21.16	21.24	320
52/40	213	7015	21.41	21.10	320

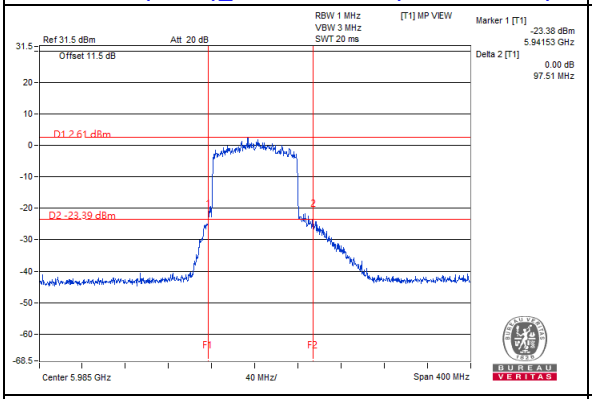
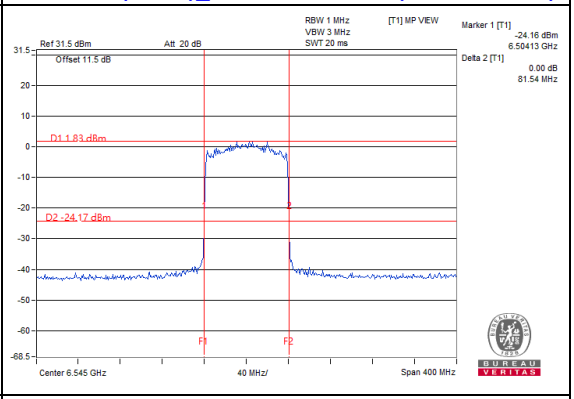
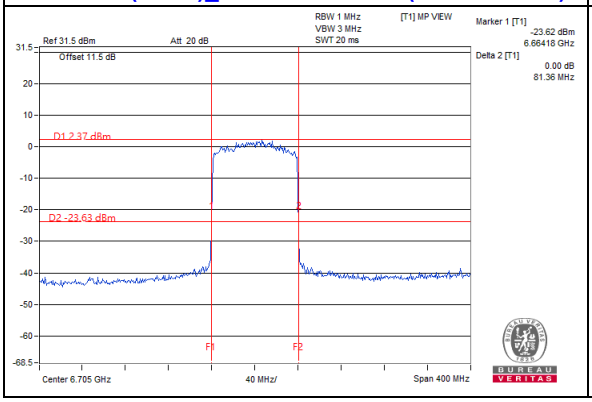
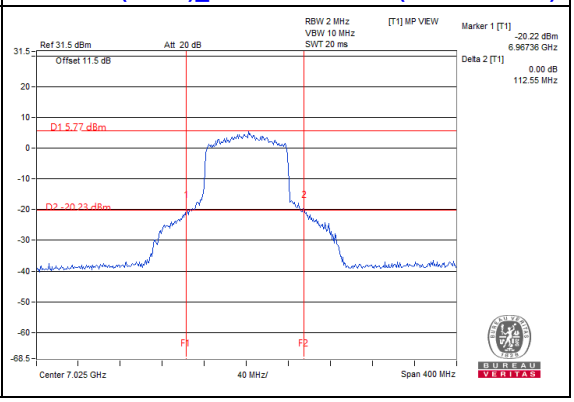
802.11ax (RU106)

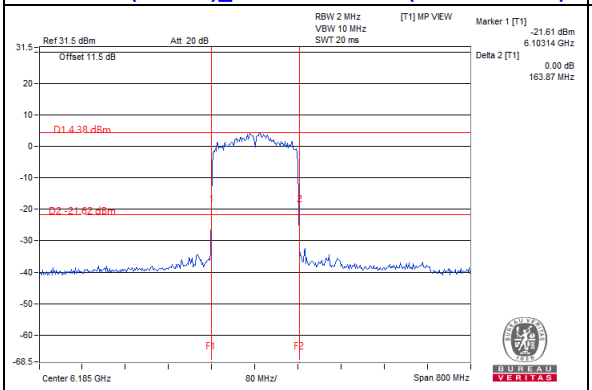
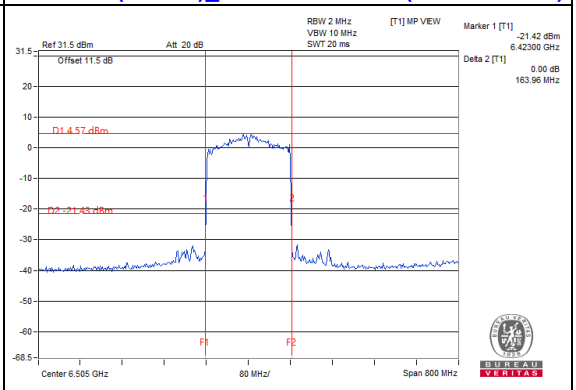
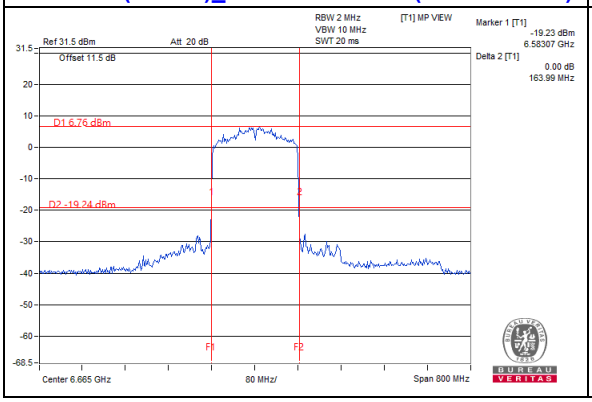
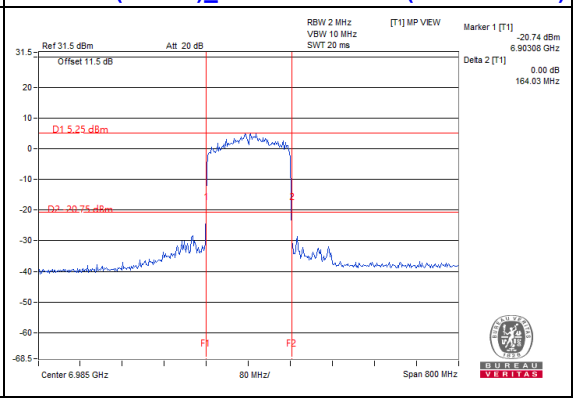
RU Configuration	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
			Chain 0	Chain 1	Limit (MHz)
106/53	1	5955	20.77	21.10	320
106/54	93	6415	21.67	21.95	320
106/53	97	6435	21.00	21.31	320
106/53	117	6535	20.91	20.88	320
106/54	181	6855	21.80	21.78	320
106/54	213	7015	21.85	21.97	320

Spectrum Plot of Max. Value	
802.11a_Chain 1 / CH1 (U-NII-5 Band)	**802.11a_Chain 1 / CH97 (U-NII-6 Band)**
	
802.11a_Chain 1 / CH153 (U-NII-7 Band)	**802.11a_Chain 1 / CH213 (U-NII-8 Band)**
	

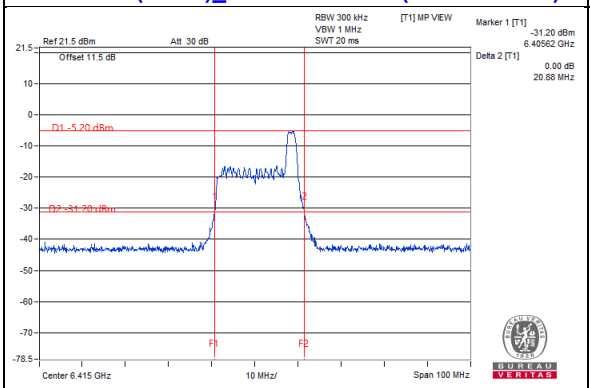
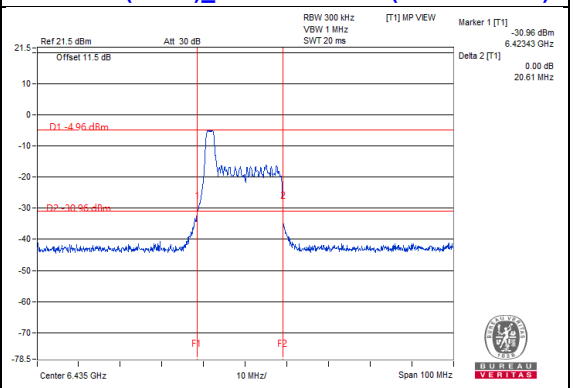
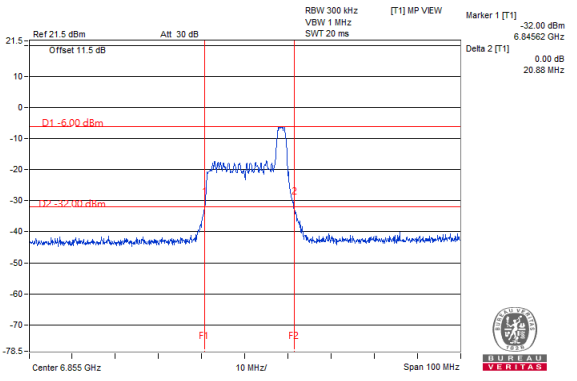
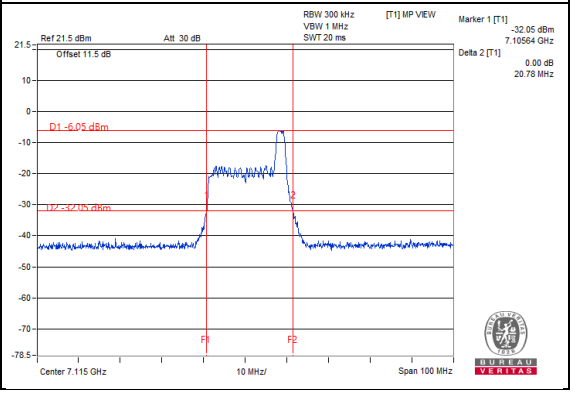
Spectrum Plot of Max. Value	
802.11ax (HE20)_Chain 1 / CH1 (U-NII-5 Band)	**802.11ax (HE20)_Chain 0 / CH105 (U-NII-6 Band)**
	
802.11ax (HE20)_Chain 0 / CH117 (U-NII-7 Band)	**802.11ax (HE20)_Chain 0 / CH233 (U-NII-8 Band)**
	

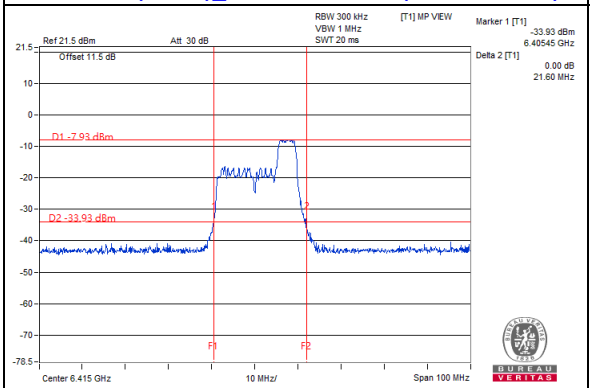
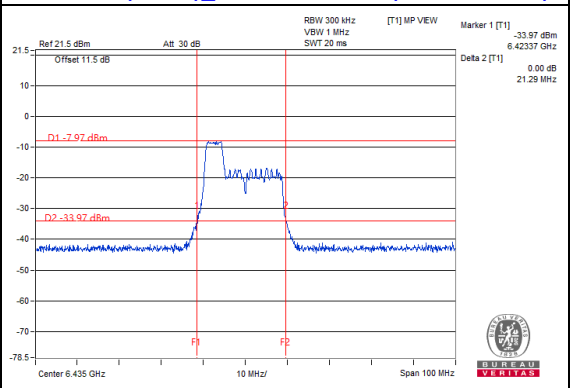
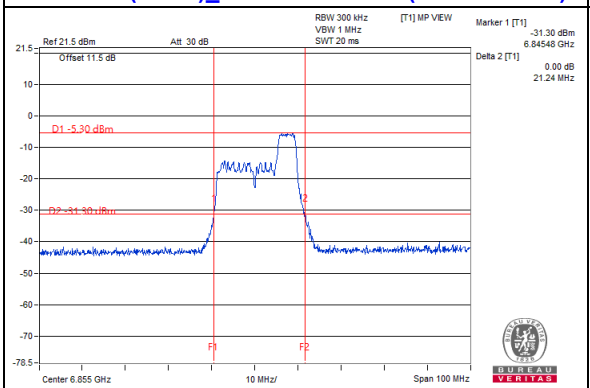
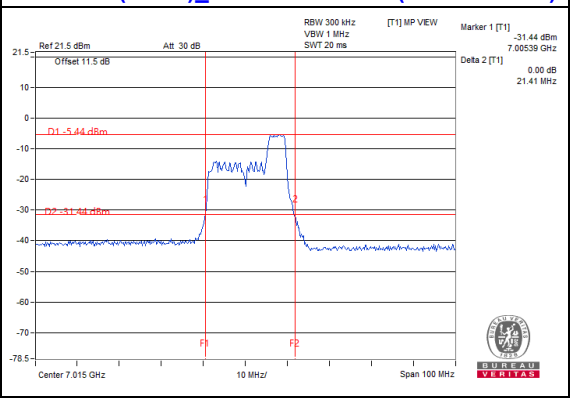
Spectrum Plot of Max. Value	
802.11ax (HE40)_Chain 0 / CH3 (U-NII-5 Band)	**802.11ax (HE40)_Chain 0 / CH115 (U-NII-6 Band)**
	
802.11ax (HE40)_Chain 1 / CH155 (U-NII-7 Band)	**802.11ax (HE40)_Chain 0 / CH227 (U-NII-8 Band)**
	

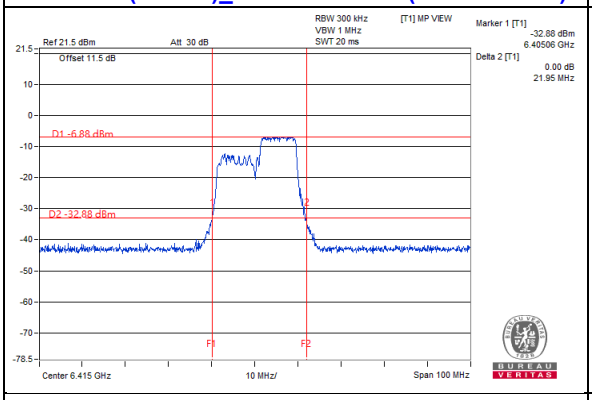
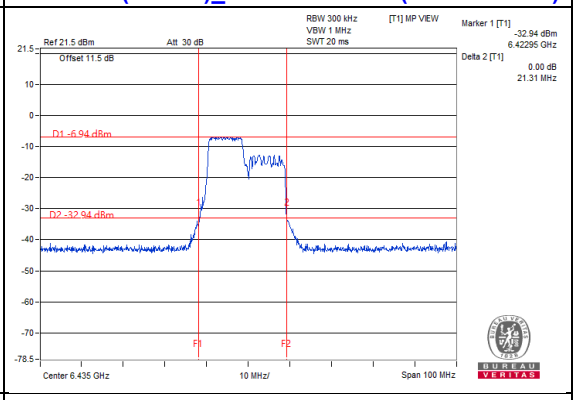
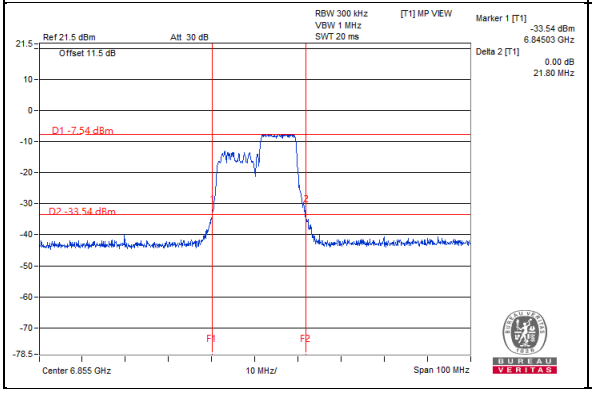
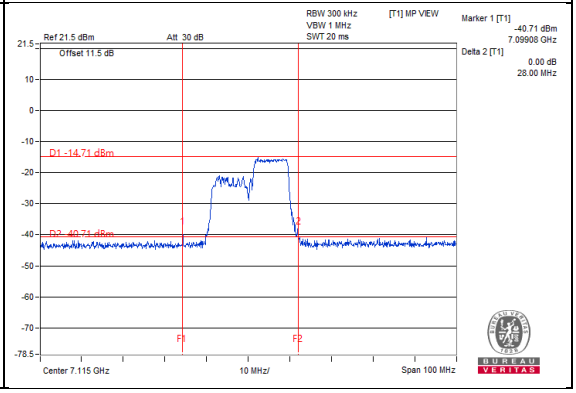
Spectrum Plot of Max. Value	
802.11ax (HE80)_Chain 1 / CH7 (U-NII-5 Band)	**802.11ax (HE80)_Chain 1 / CH119 (U-NII-6 Band)**
	
802.11ax (HE80)_Chain 1 / CH151 (U-NII-7 Band)	**802.11ax (HE80)_Chain 1 / CH215 (U-NII-8 Band)**
	

Spectrum Plot of Max. Value	
802.11ax (HE160)_Chain 0 / CH47 (U-NII-5 Band)	**802.11ax (HE160)_Chain 0 / CH111 (U-NII-6 Band)**
	
802.11ax (HE160)_Chain 0 / CH143 (U-NII-7 Band)	**802.11ax (HE160)_Chain 0 / CH207 (U-NII-8 Band)**
	

20MHz Preamble

Spectrum Plot of Max. Value	
802.11ax (RU26)_Chain 0 / CH93 (U-NII-5 Band)	**802.11ax (RU26)_Chain 1 / CH97 (U-NII-6 Band)**
	
802.11ax (RU26)_Chain 1 / CH181 (U-NII-7 Band)	**802.11ax (RU26)_Chain 0 / CH213 (U-NII-8 Band)**
	

Spectrum Plot of Max. Value	
802.11ax (RU52)_Chain 0 / CH93 (U-NII-5 Band)	**802.11ax (RU52)_Chain 1 / CH97 (U-NII-6 Band)**
	
802.11ax (RU52)_Chain 1 / CH181 (U-NII-7 Band)	**802.11ax (RU52)_Chain 0 / CH213 (U-NII-8 Band)**
	

Spectrum Plot of Max. Value	
802.11ax (RU106)_Chain 1 / CH93 (U-NII-5 Band)	**802.11ax (RU106)_Chain 1 / CH97 (U-NII-6 Band)**
	
802.11ax (RU106)_Chain 0 / CH181 (U-NII-7 Band)	**802.11ax (RU106)_Chain 1 / CH213 (U-NII-8 Band)**
	

Test Mode B

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

1TX

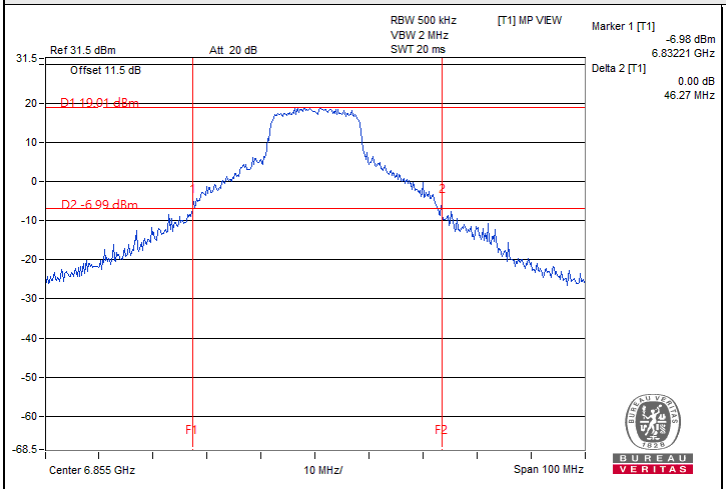
802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Limit (MHz)
1	5955	44.35	320
45	6175	42.03	320
93	6415	45.03	320
117	6535	44.78	320
153	6715	43.52	320
181	6855	46.27	320

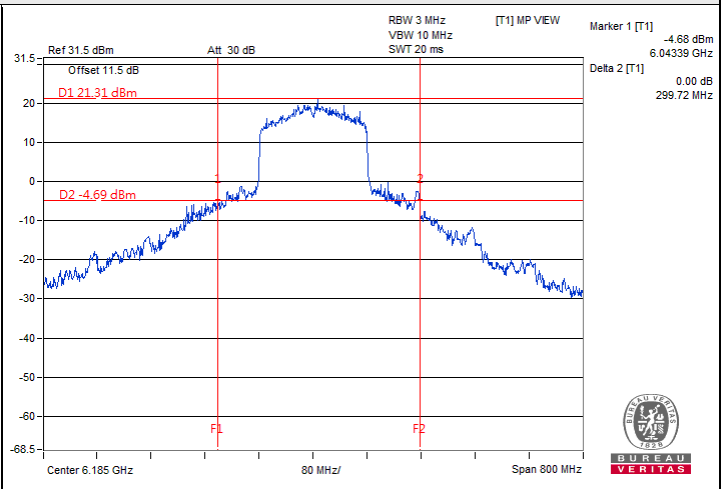
802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Limit (MHz)
15	6025	287.12	320
47	6185	299.72	320
79	6345	287.54	320
143	6665	297.14	320

Spectrum Plot of Maximum Value



802.11a : CH 181



802.11ax (HE160) : CH 47

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
1	5955	36.25	36.15	320
45	6175	22.85	22.90	320
93	6415	24.75	24.96	320
117	6535	26.34	24.56	320
153	6715	21.68	21.85	320
181	6855	26.30	26.53	320

802.11ax (HE20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
1	5955	37.76	33.14	320
45	6175	22.49	22.67	320
93	6415	22.89	23.07	320
117	6535	22.18	27.39	320
153	6715	31.70	25.16	320
181	6855	23.03	23.06	320

802.11ax (HE40)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
3	5965	61.47	53.51	320
43	6165	85.40	57.69	320
91	6405	97.76	69.28	320
123	6565	89.04	64.38	320
155	6725	72.54	63.27	320
179	6845	87.22	57.45	320

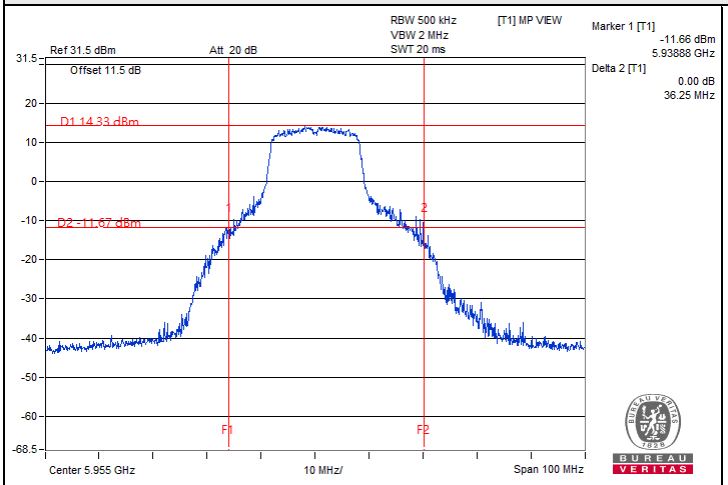
802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
7	5985	82.73	88.46	320
39	6145	145.56	138.19	320
87	6385	157.24	156.60	320
135	6625	165.99	175.28	320
151	6705	185.76	198.29	320
167	6785	168.33	169.26	320

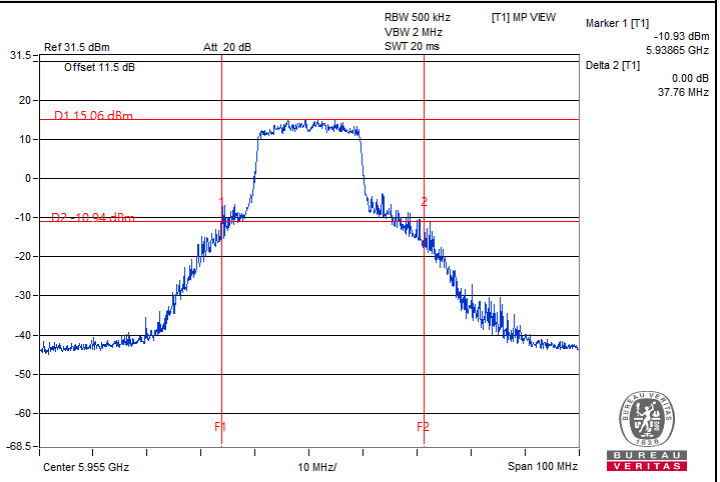
802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
15	6025	263.15	193.01	320
47	6185	291.66	288.10	320
79	6345	292.29	284.36	320
143	6665	291.23	282.43	320

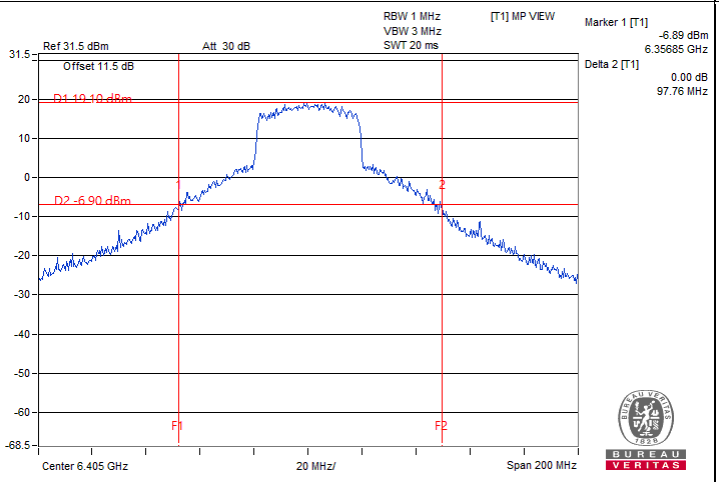
Spectrum Plot of Maximum Value



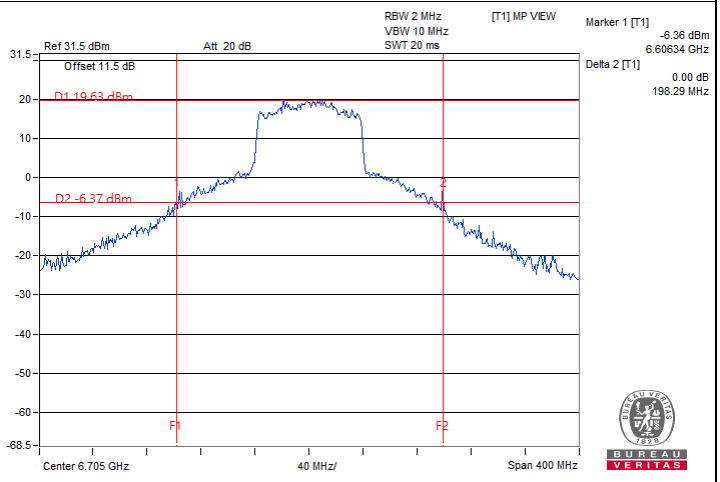
802.11a / Chain 0 : CH 1



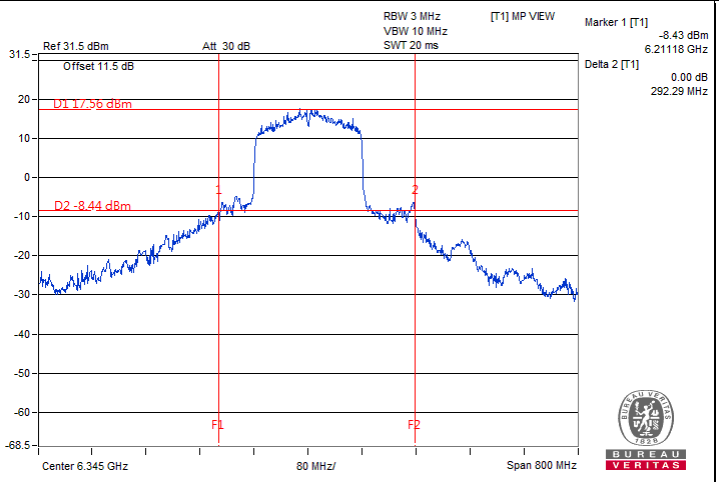
802.11ax (HE20) / Chain 0 : CH 1



802.11ax (HE40) / Chain 0 : CH 91



802.11ax (HE80) / Chain 1 : CH 151



802.11ax (HE160) / Chain 0 : CH 79

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

802.11ax (HE20) 26-tone RU

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
1	5955	20.74	20.43	320
93	6415	20.70	20.79	320
117	6535	20.72	20.52	320
181	6855	20.72	20.79	320

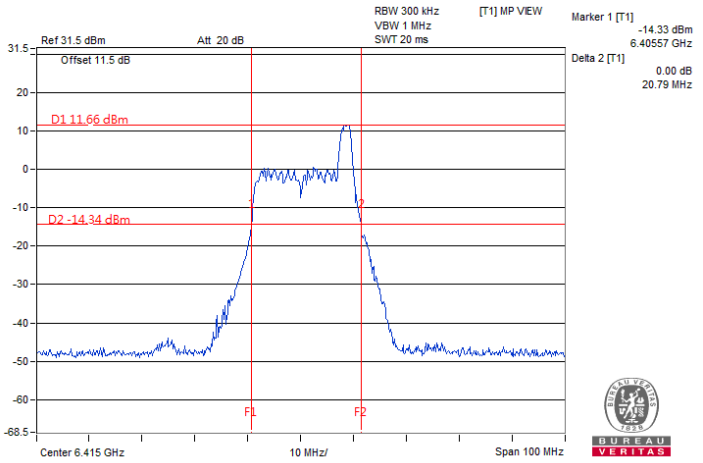
802.11ax (HE20) 52-tone RU

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
1	5955	20.91	21.15	320
93	6415	21.18	21.52	320
117	6535	21.08	21.07	320
181	6855	20.82	21.29	320

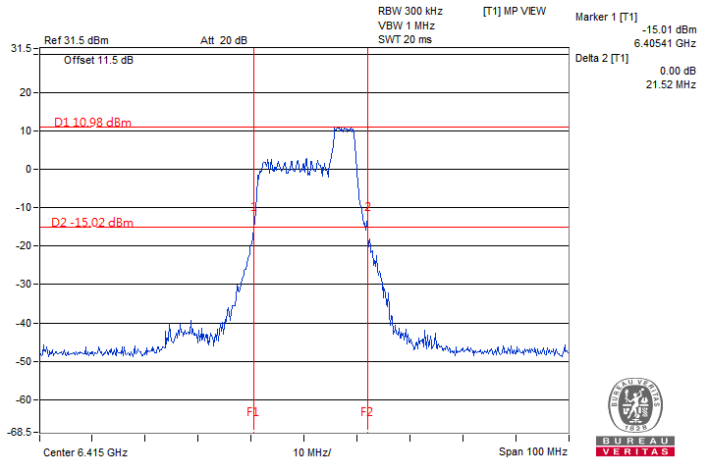
802.11ax (HE20) 106-tone RU

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		Chain0	Chain1	Limit (MHz)
1	5955	21.10	21.05	320
93	6415	21.42	21.45	320
117	6535	21.75	21.21	320
181	6855	21.79	21.98	320

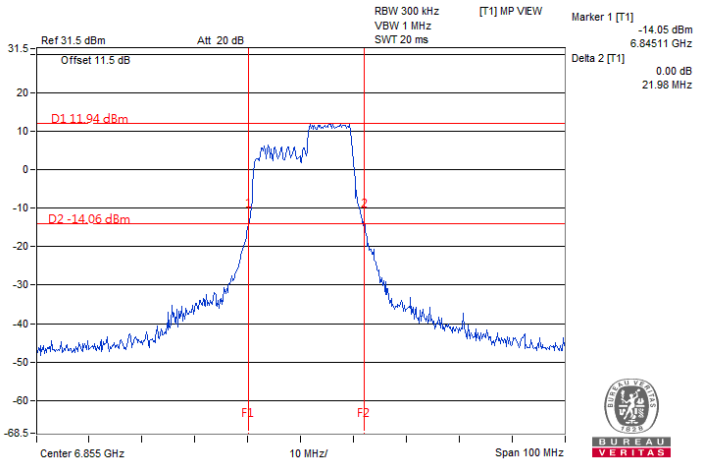
Spectrum Plot of Maximum Value



802.11ax (HE20) 26-tone RU / Chain 1 : CH 93@8



802.11ax (HE20) 52-tone RU / Chain 1 : CH 93@40



802.11ax (HE20) 106-tone RU / Chain 1 : CH 181@54

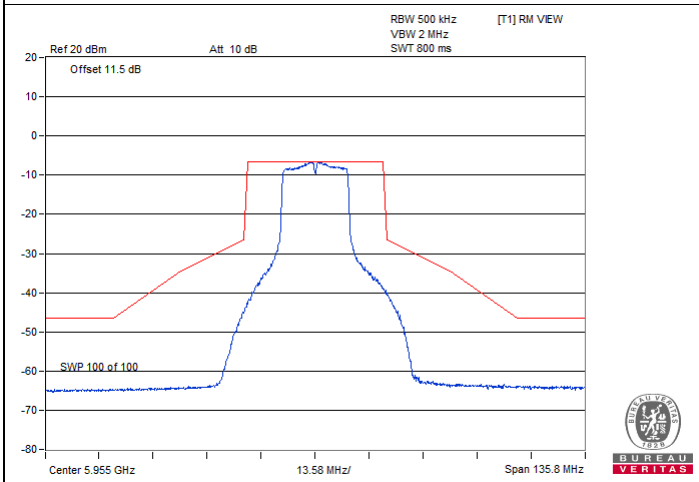
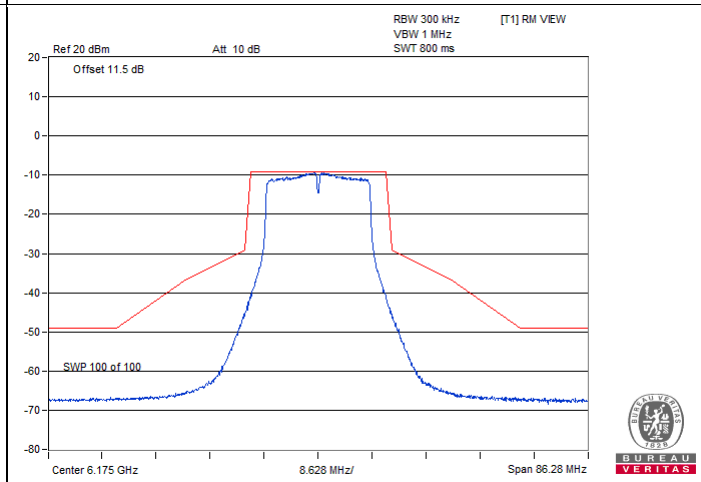
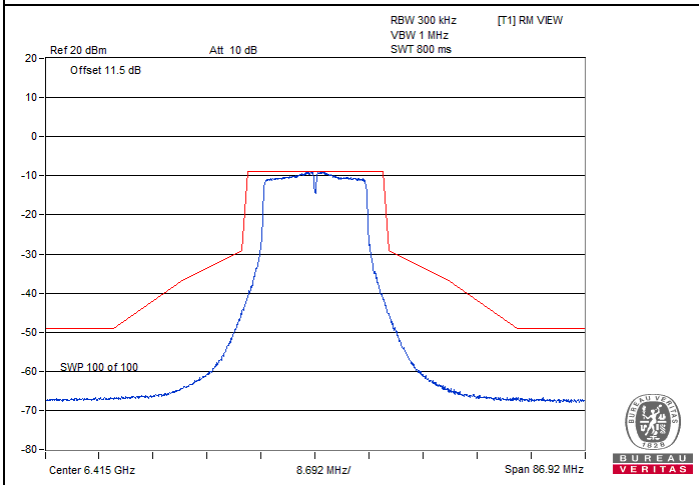
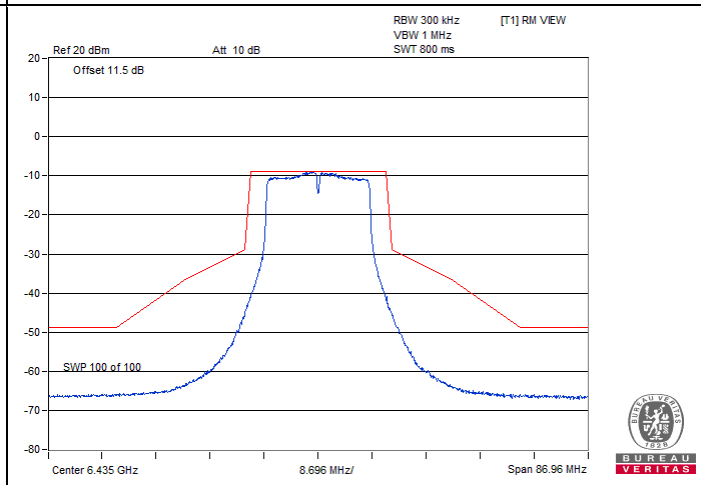
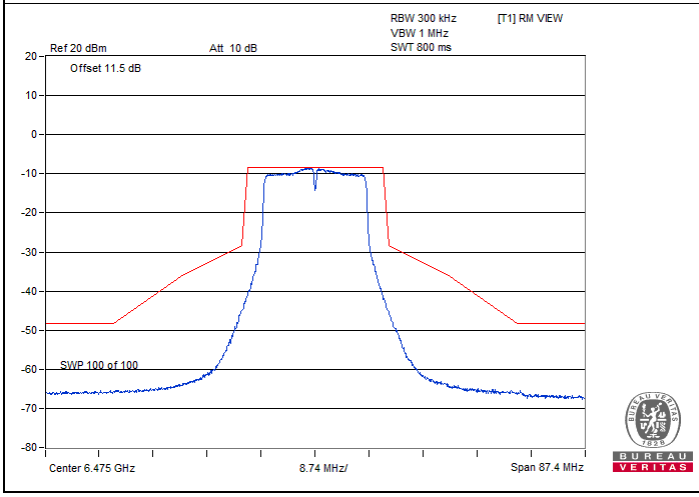
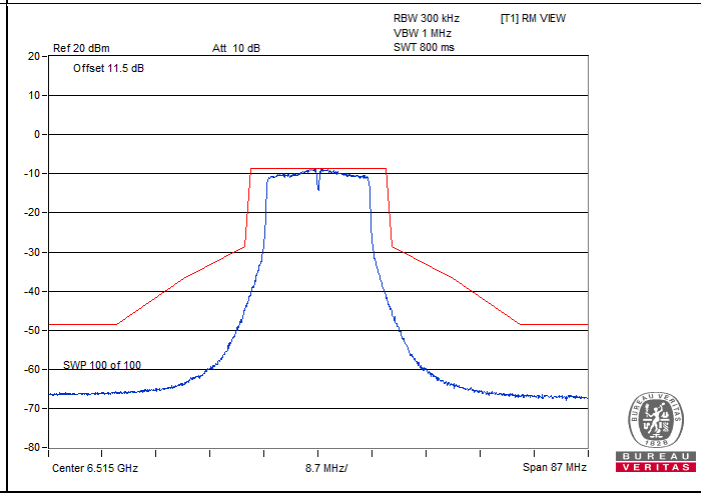
7.4 In-Band Emission Mask

Test Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Ivan Tseng/ Chun Wu

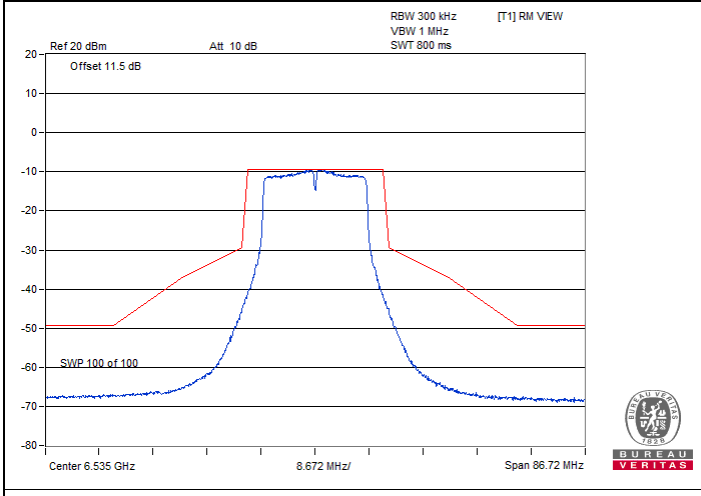
1TX

802.11a

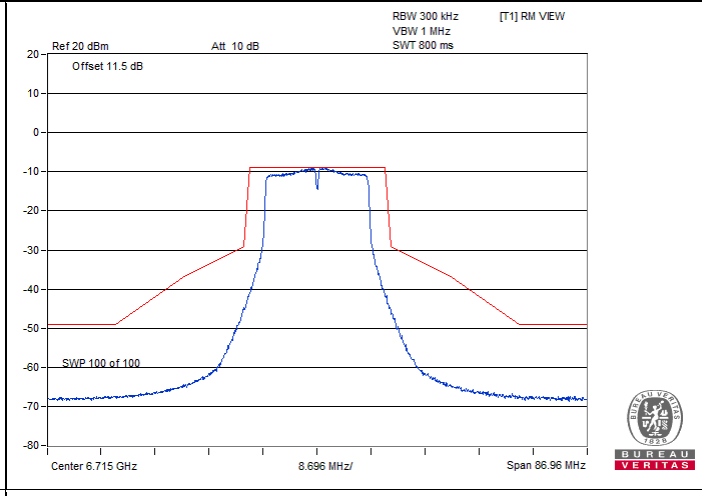
Spectrum Plot	
CH1	**CH45**
	
CH93	**CH97**
	
CH105	**CH113**
	

Spectrum Plot

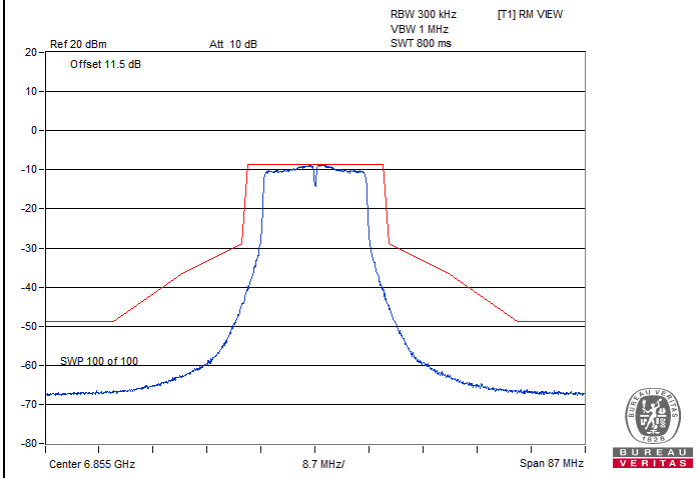
CH117



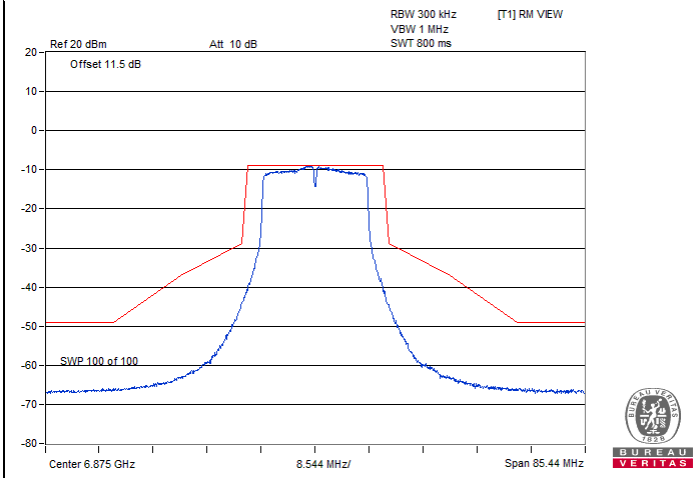
CH153



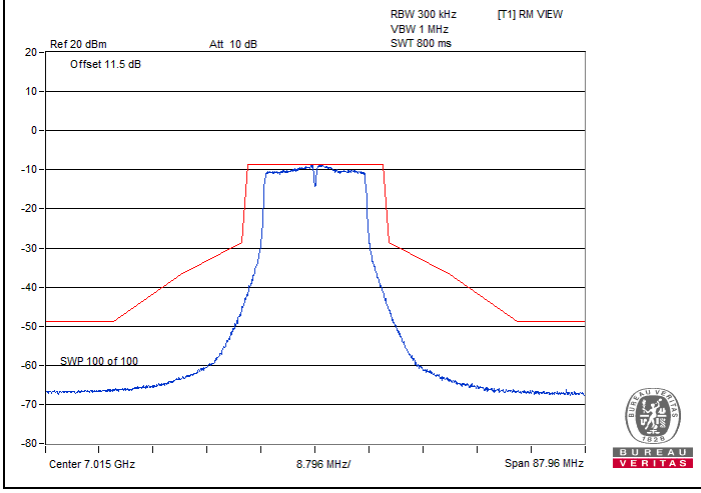
CH181



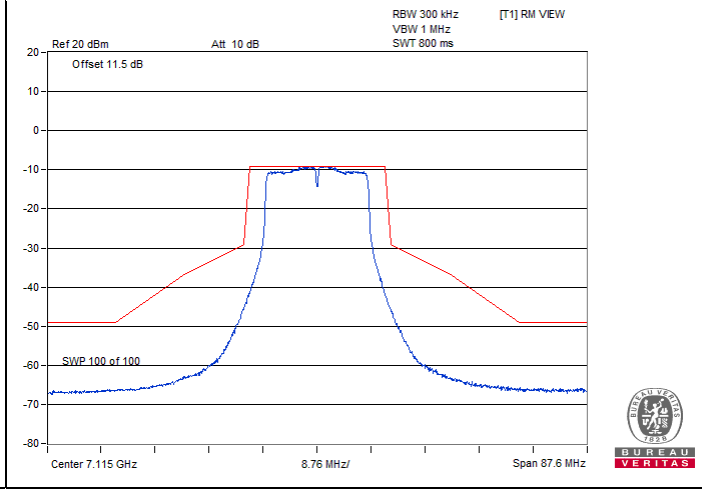
CH185



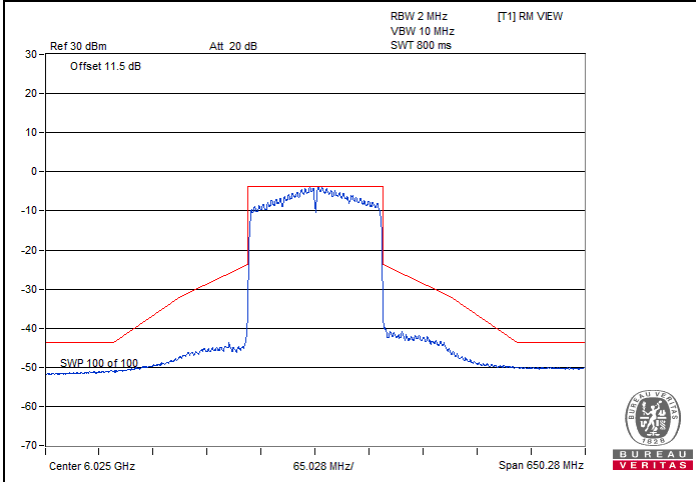
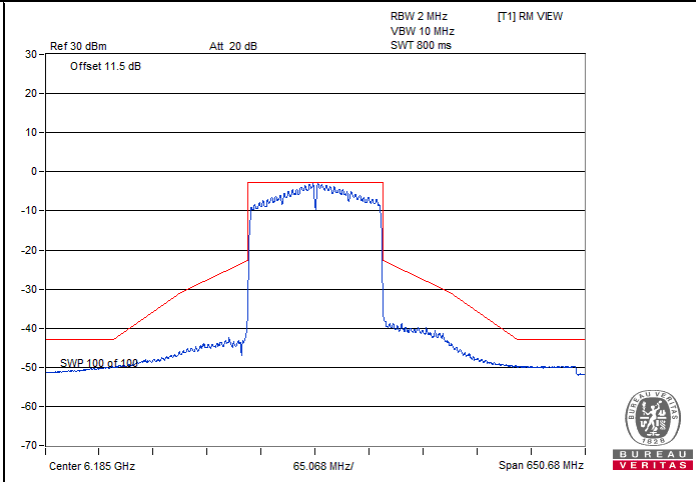
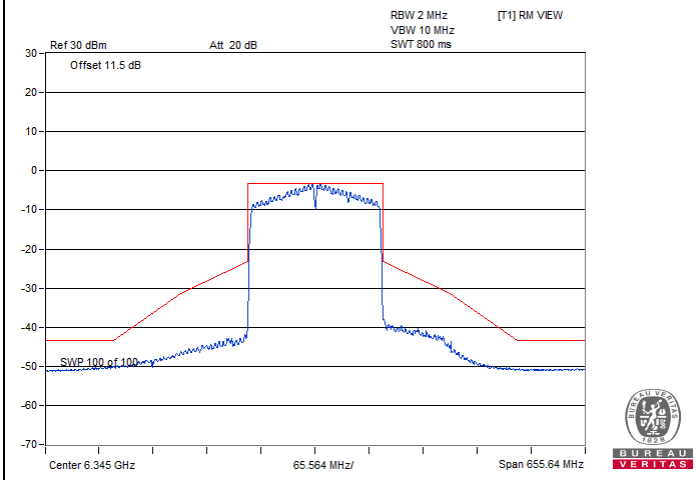
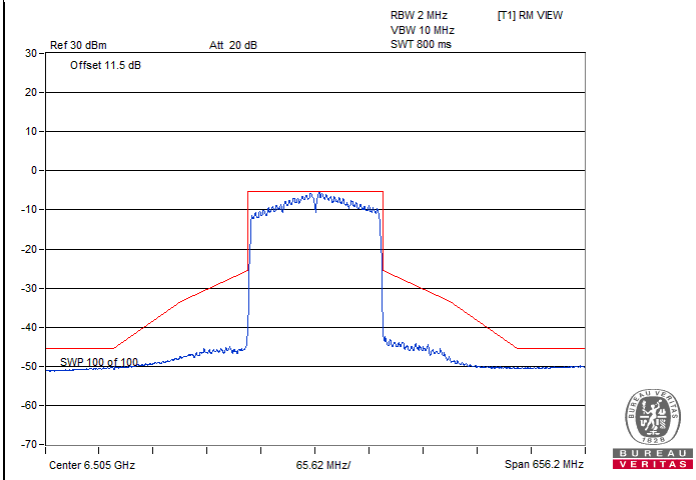
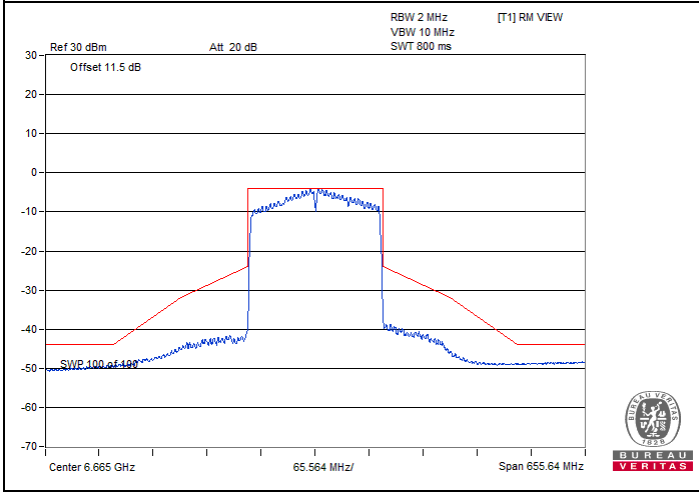
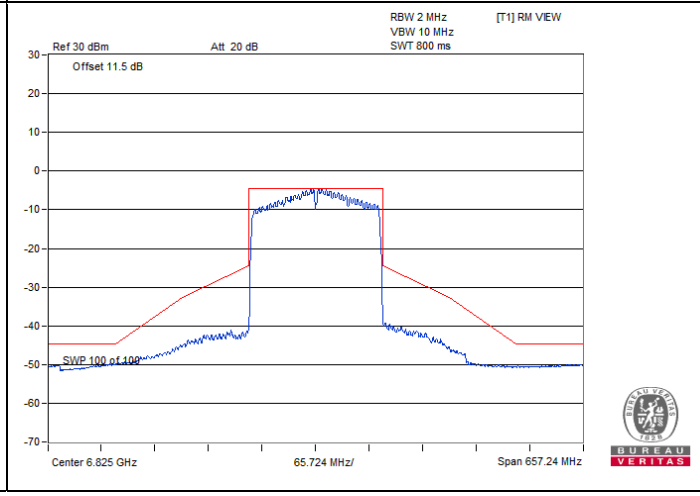
CH213

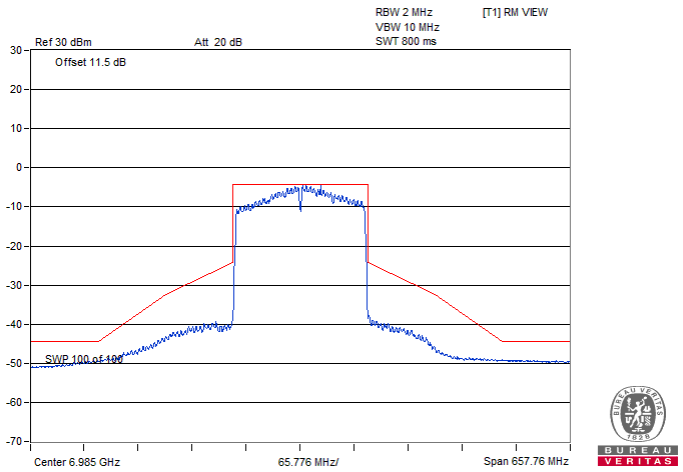


CH233



802.11ax (HE160)

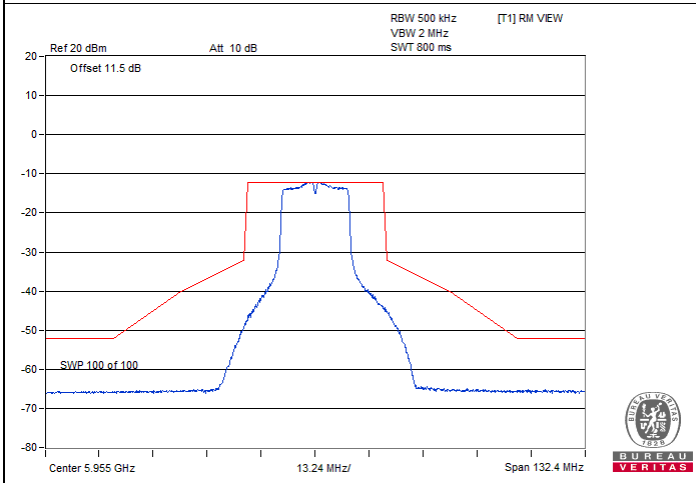
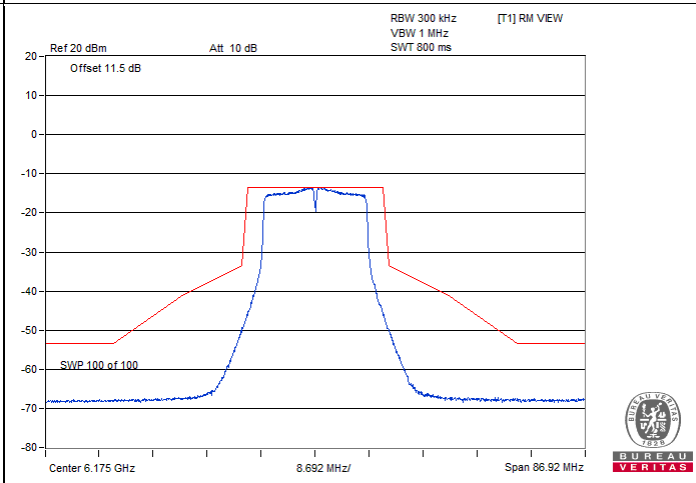
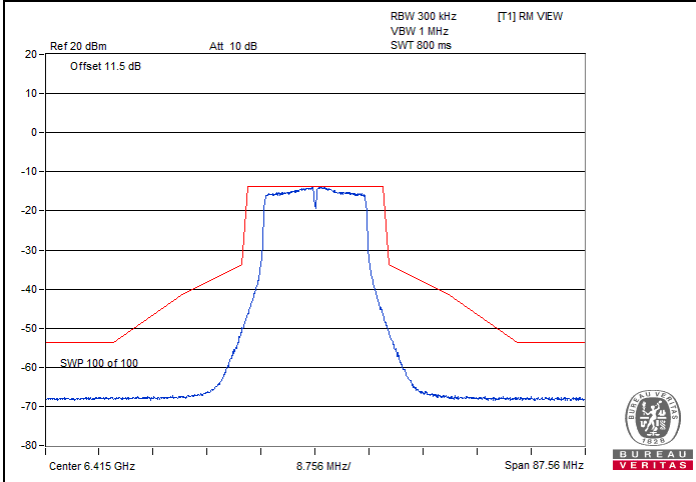
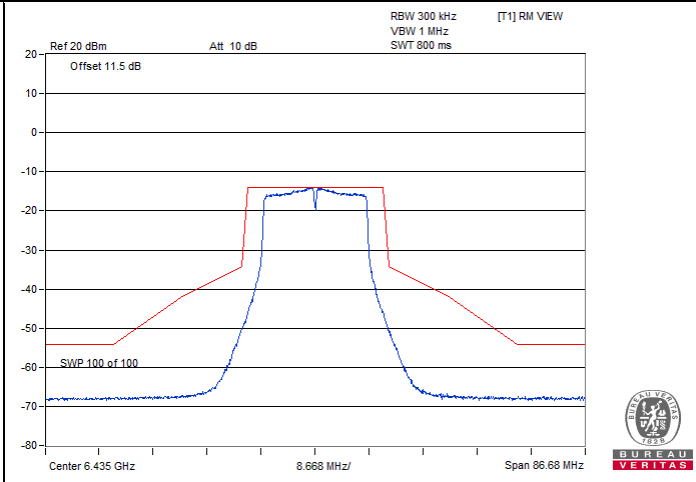
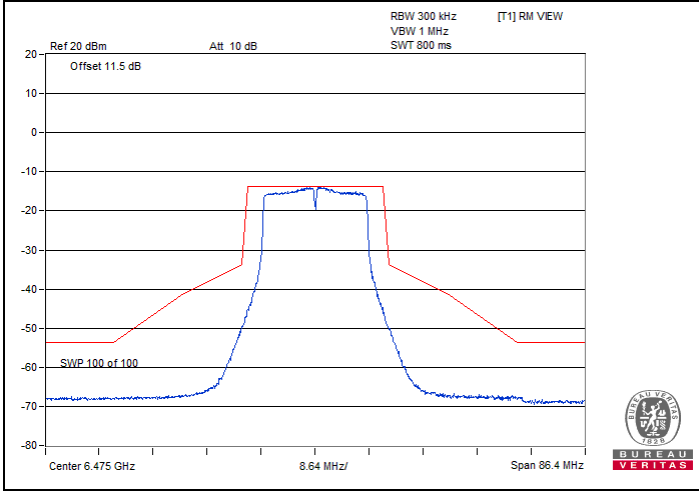
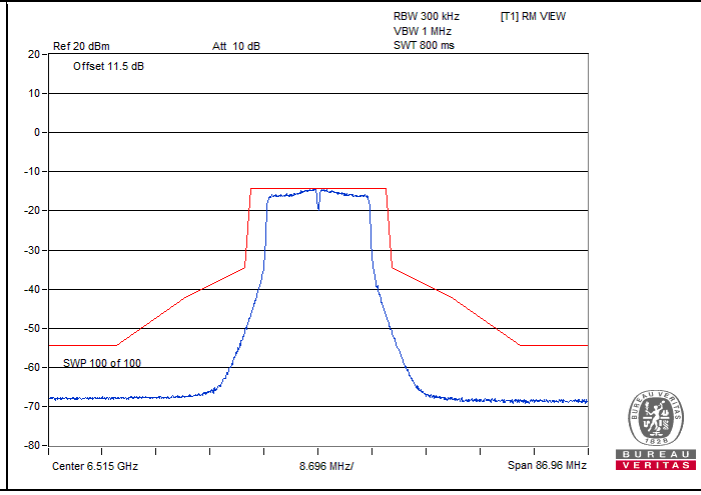
Spectrum Plot	
CH15	**CH47**
	
CH79	**CH111**
	
CH143	**CH175**
	

Spectrum Plot	
CH207	
	

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

2TX

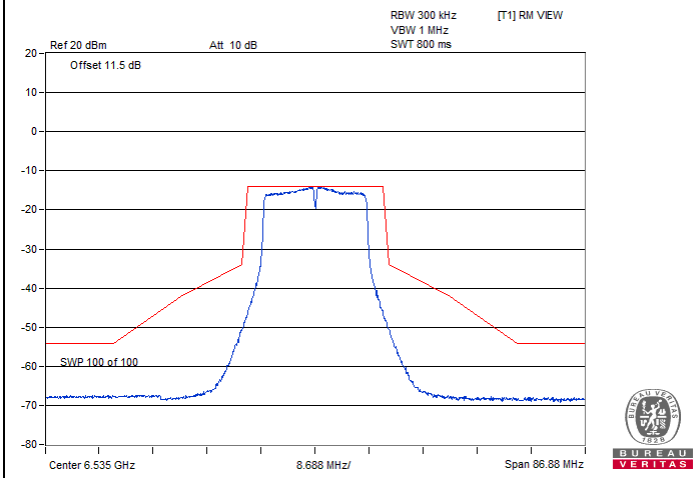
802.11a

Spectrum Plot	
Chain 0	
CH1	**CH45**
	
CH93	**CH97**
	
CH105	**CH113**
	

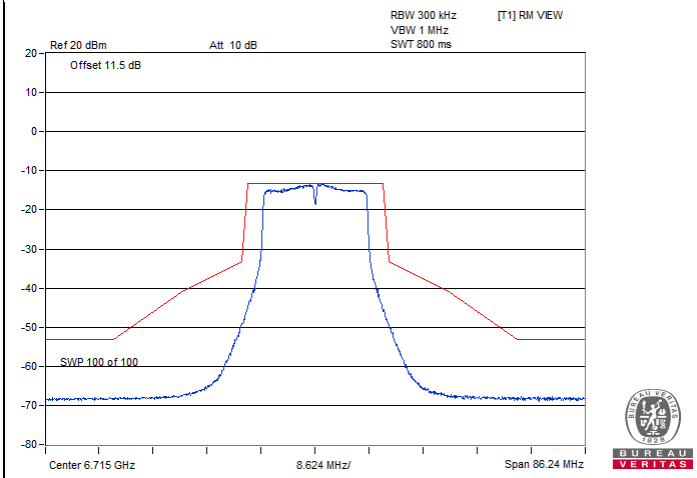
Spectrum Plot

Chain 0

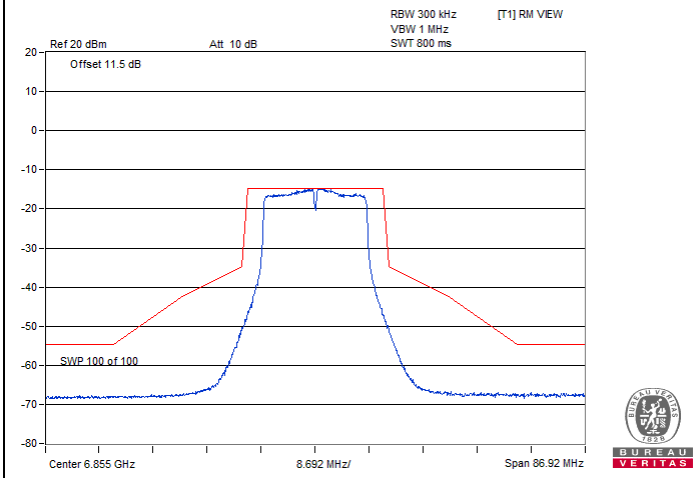
CH117



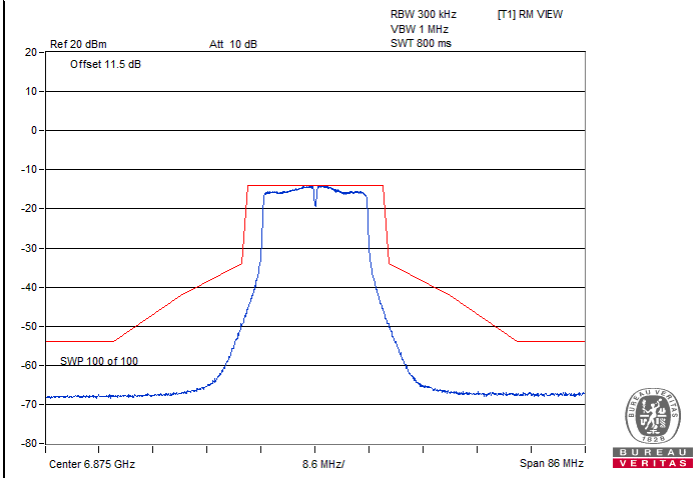
CH153



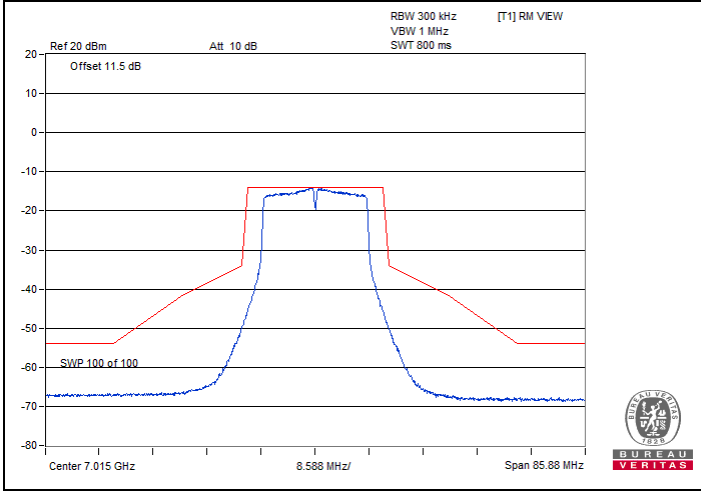
CH181



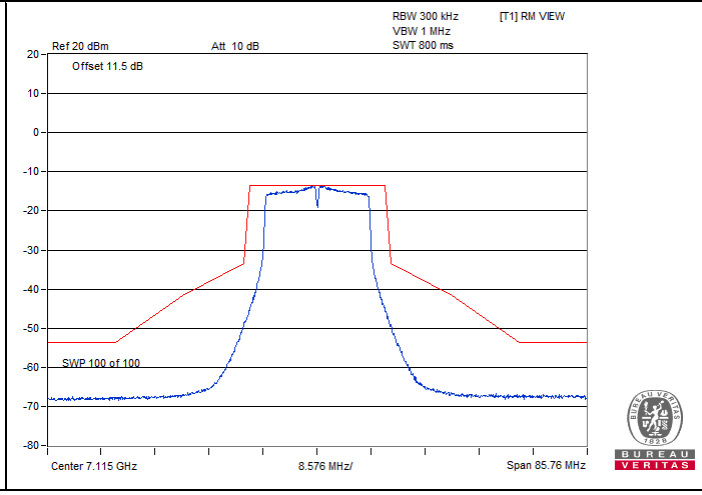
CH185

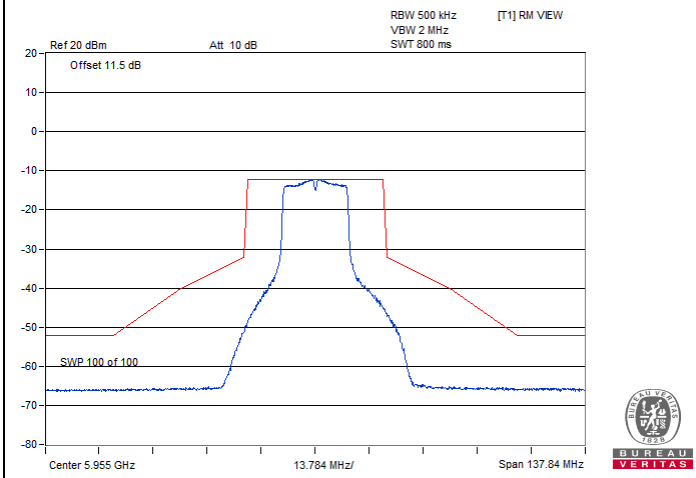
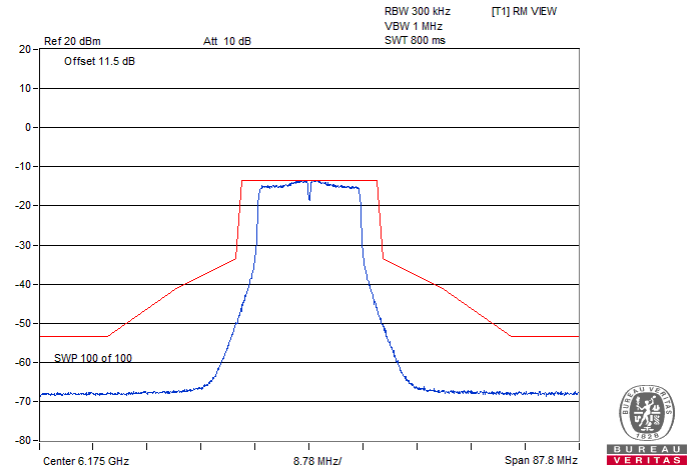
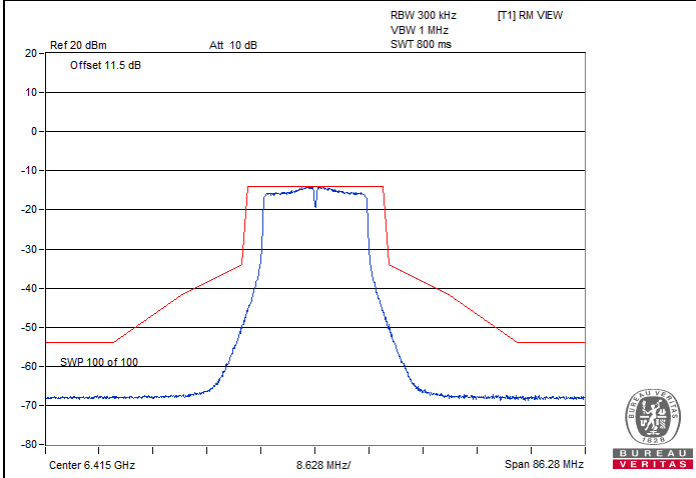
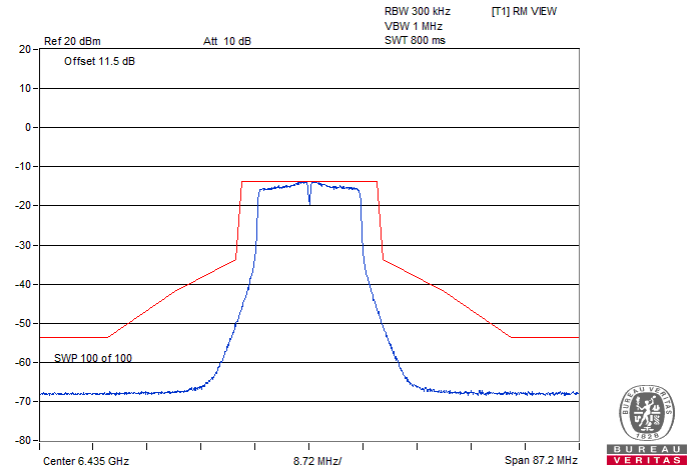
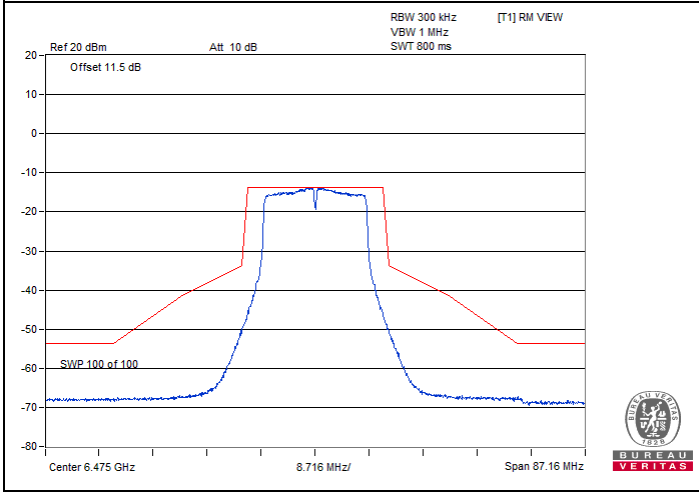
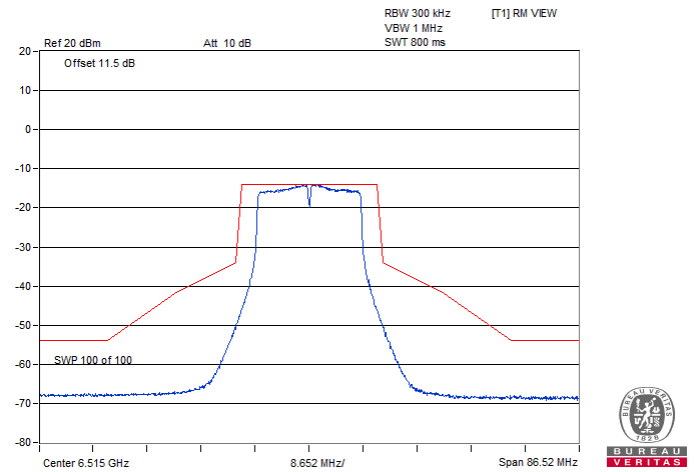


CH213



CH233

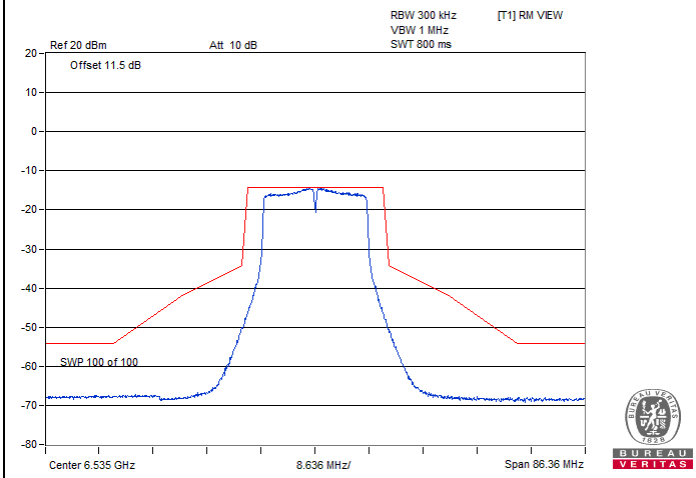


Spectrum Plot	
Chain 1	
CH1	**CH45**
	
CH93	**CH97**
	
CH105	**CH113**
	

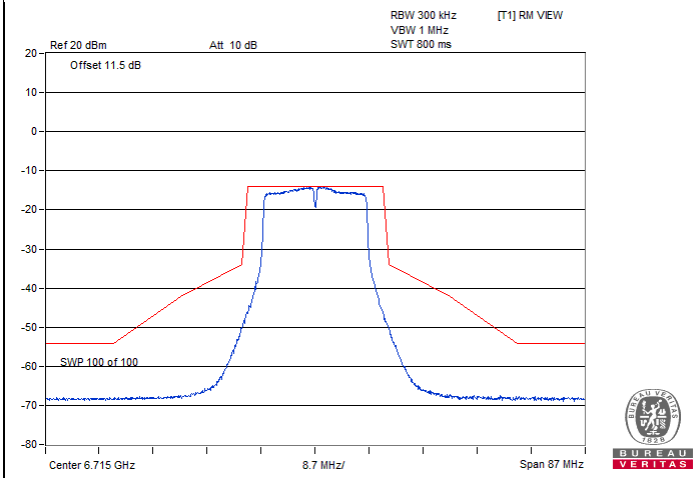
Spectrum Plot

Chain 1

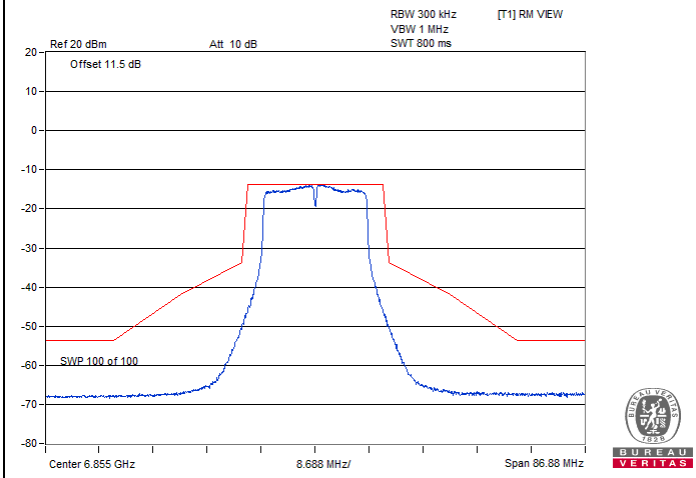
CH117



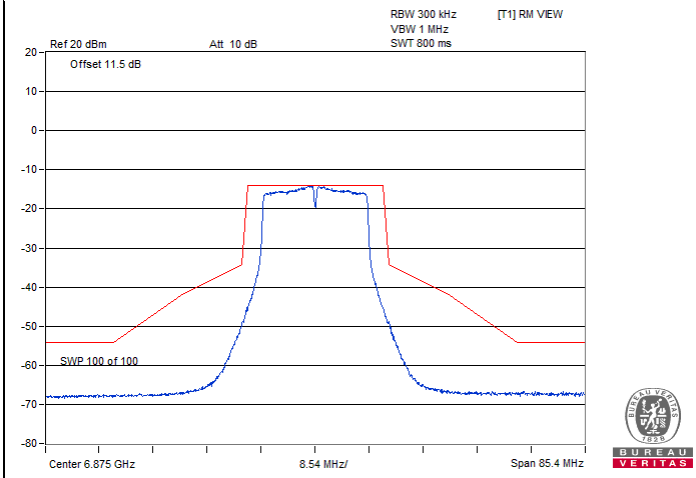
CH153



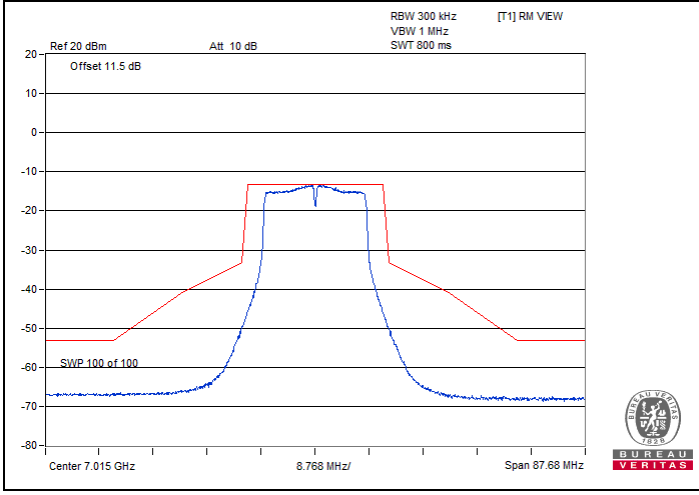
CH181



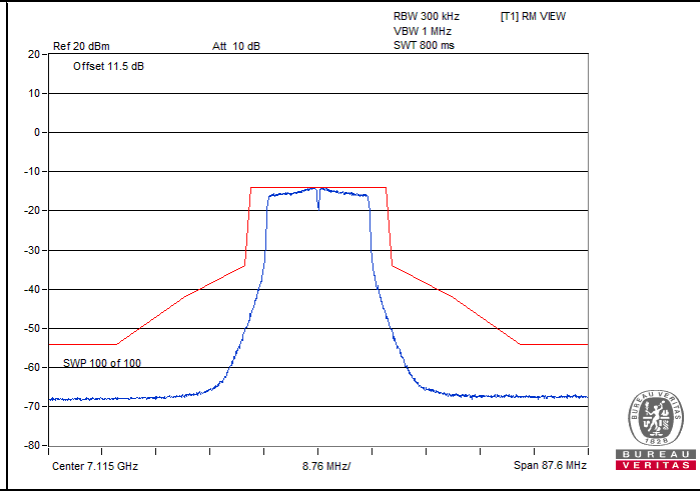
CH185



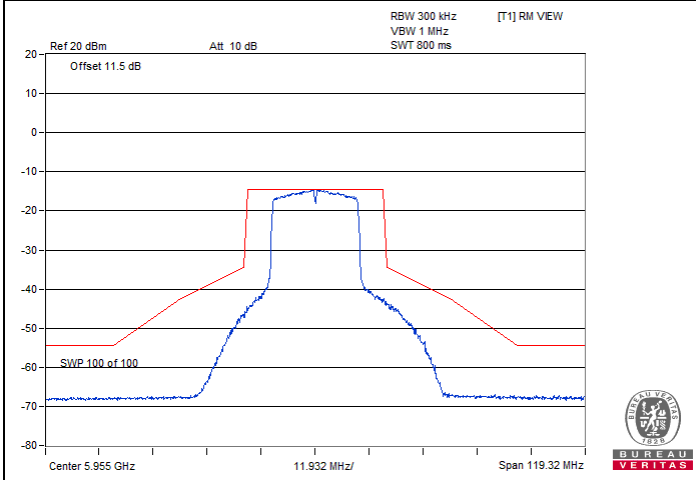
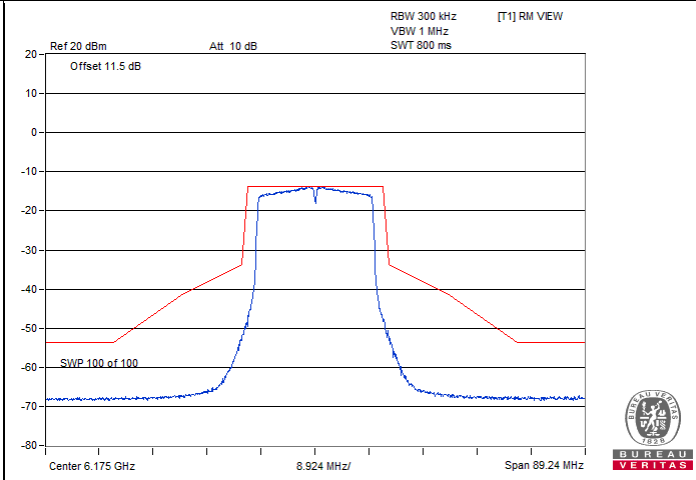
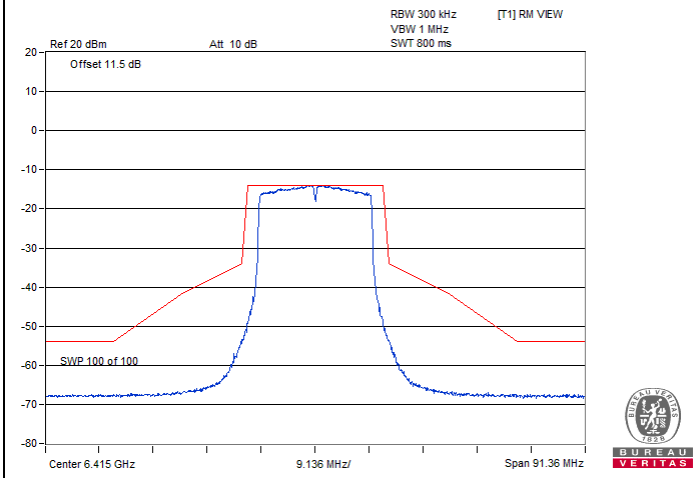
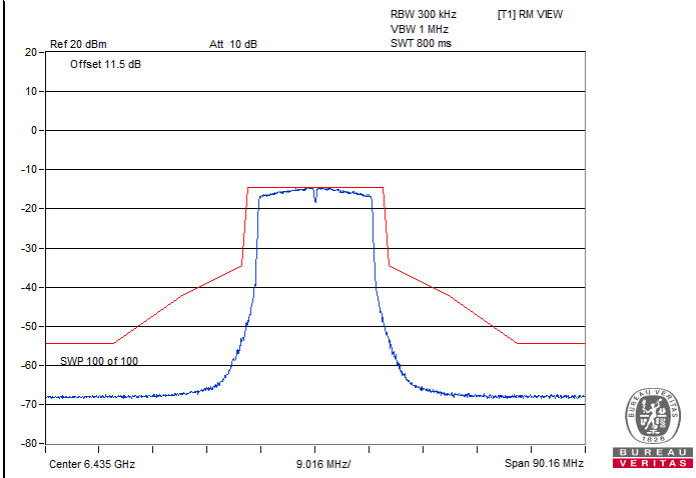
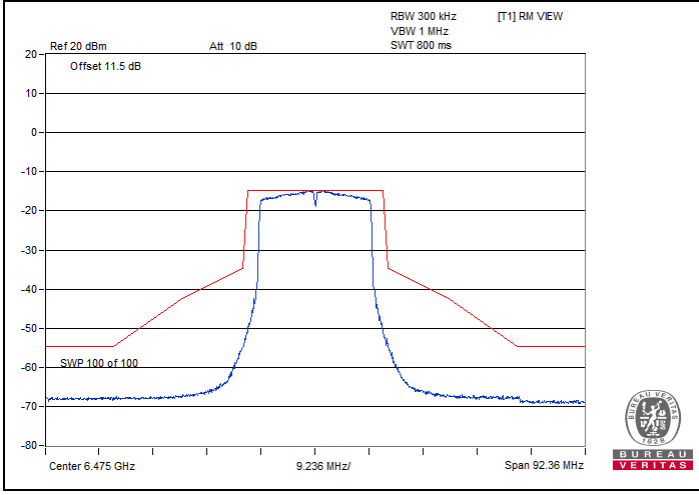
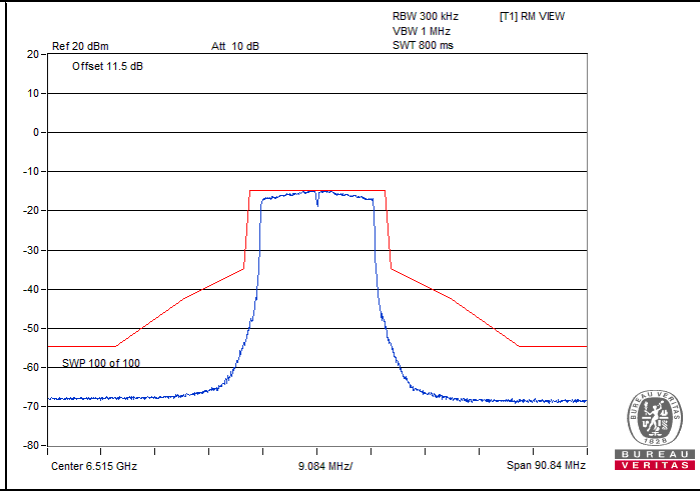
CH213



CH233



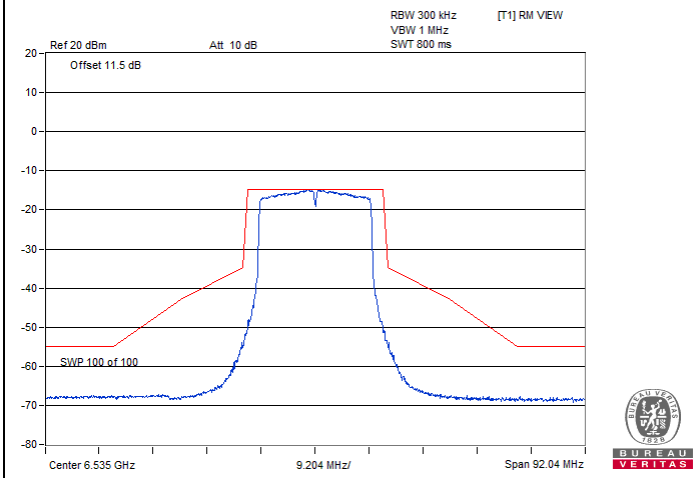
802.11ax (HE20)

Spectrum Plot	
Chain 0	
CH1	**CH45**
	
CH93	**CH97**
	
CH105	**CH113**
	

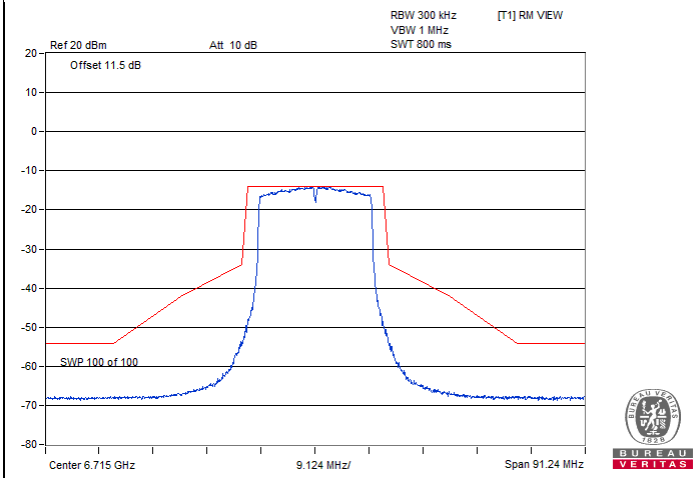
Spectrum Plot

Chain 0

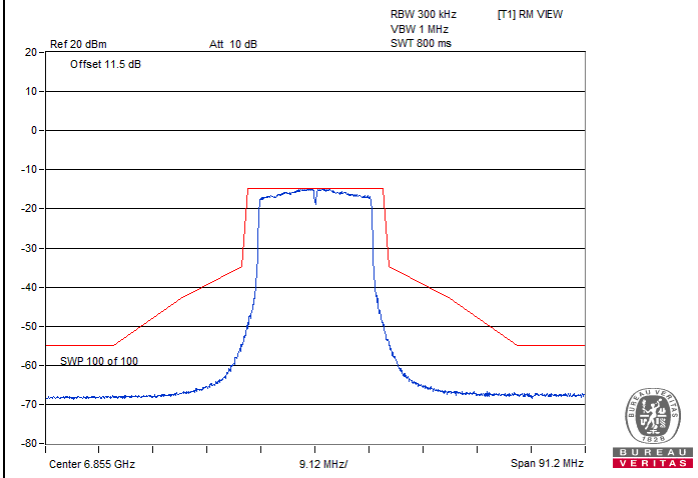
CH117



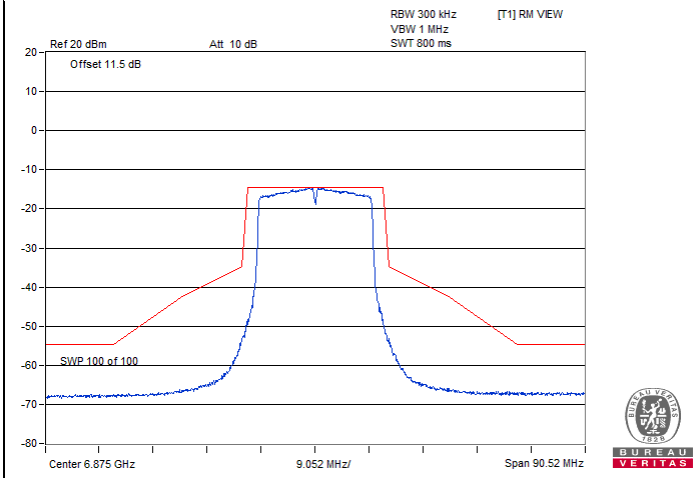
CH153



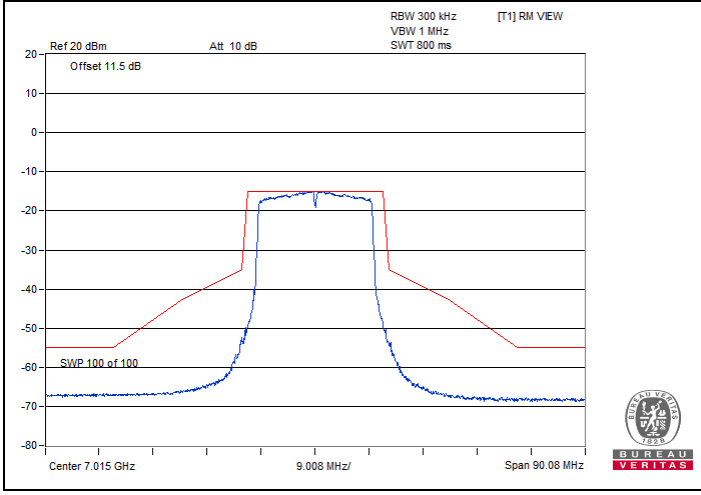
CH181



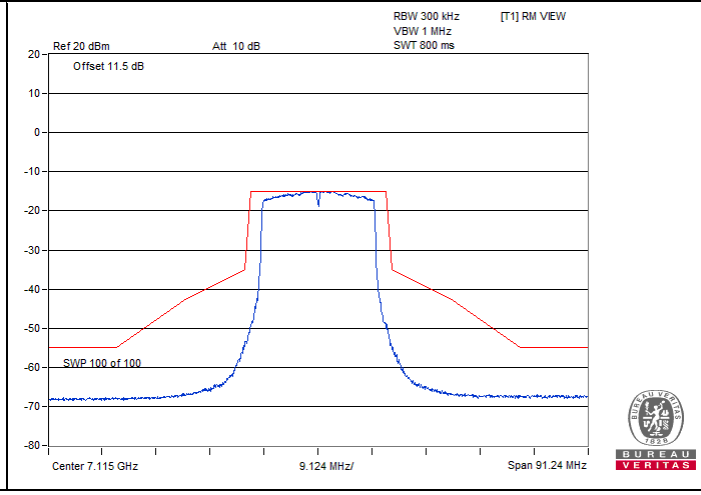
CH185

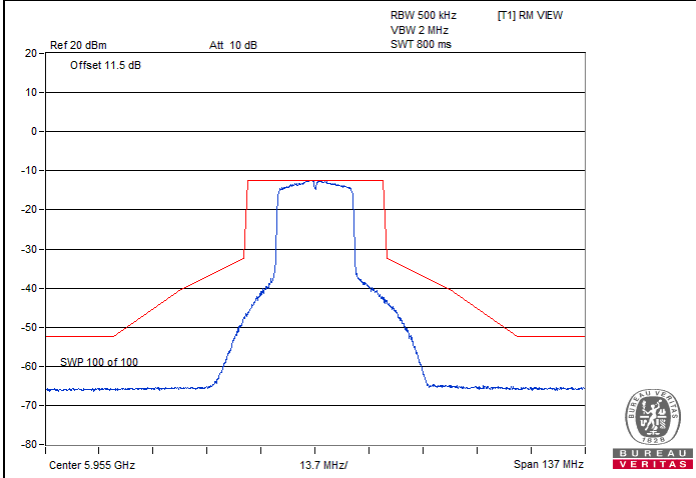
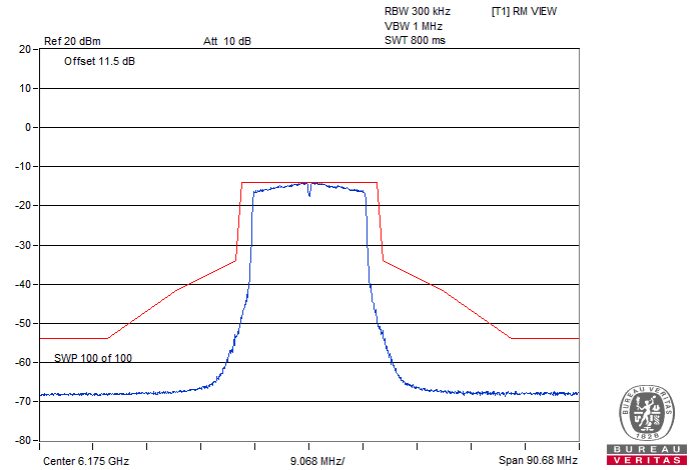
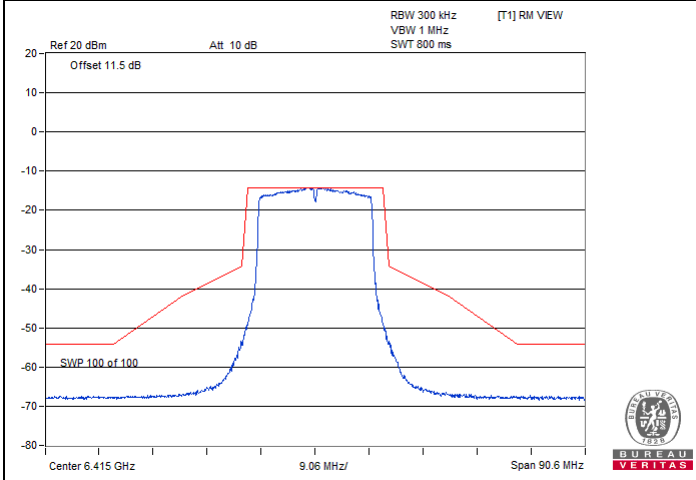
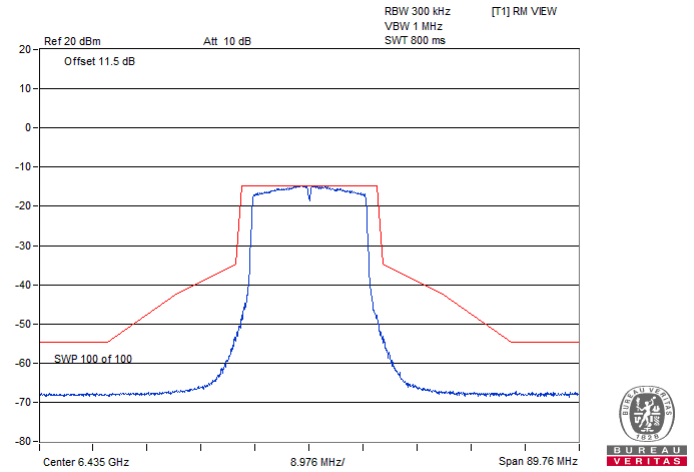
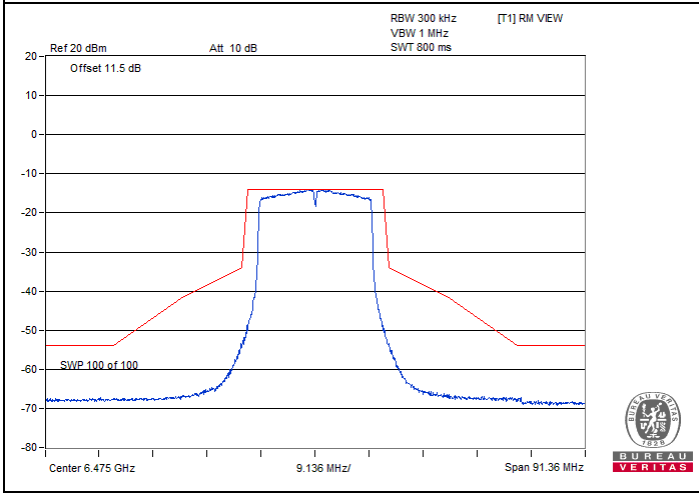
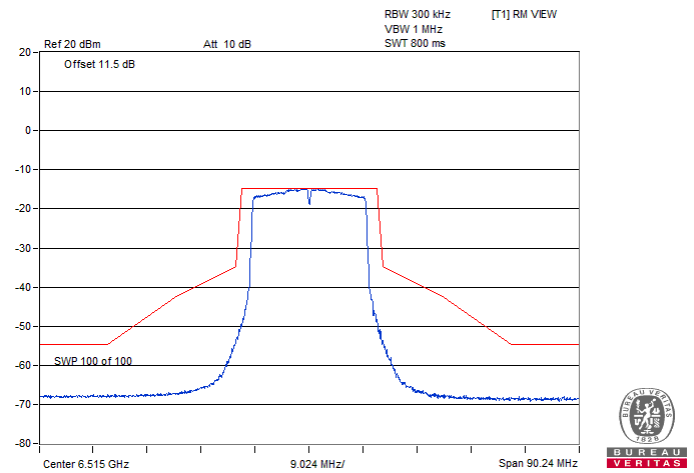


CH213



CH233

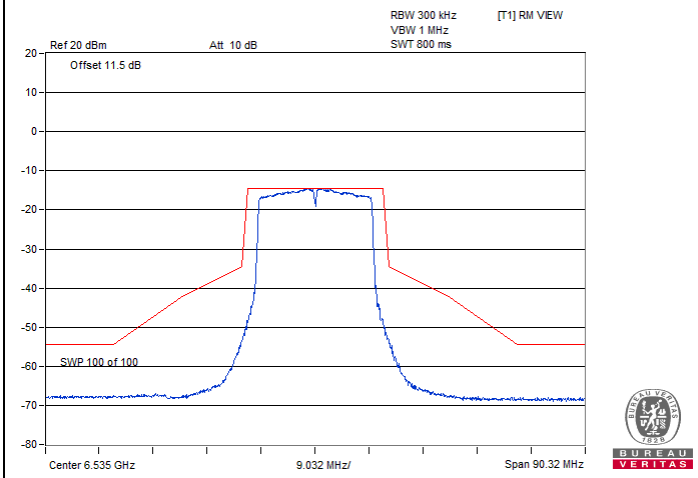


Spectrum Plot	
Chain 1	
CH1	**CH45**
	
CH93	**CH97**
	
CH105	**CH113**
	

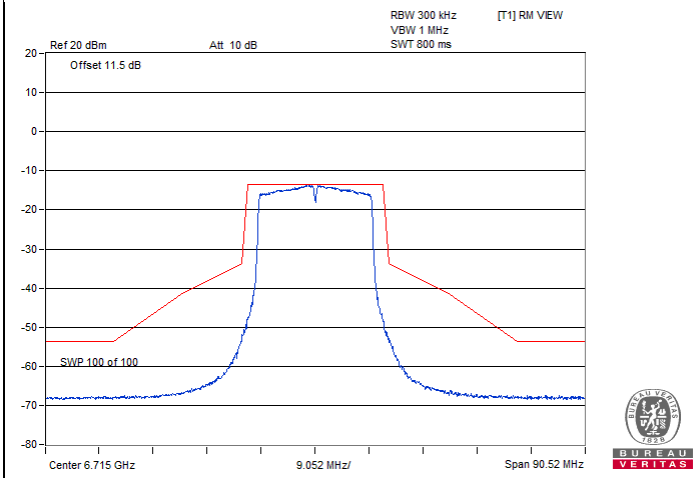
Spectrum Plot

Chain 1

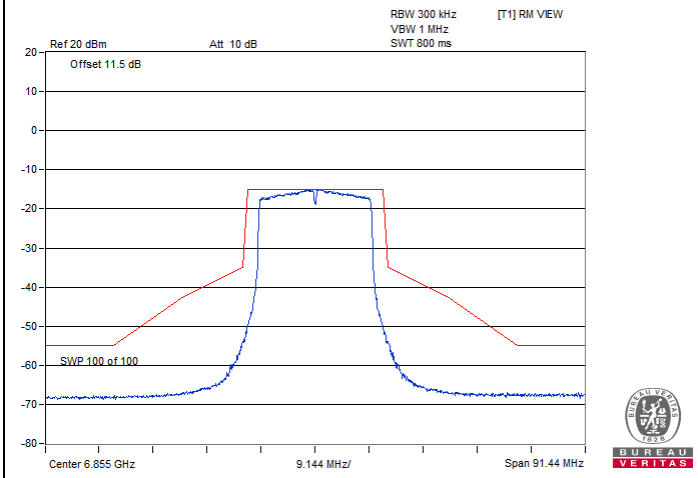
CH117



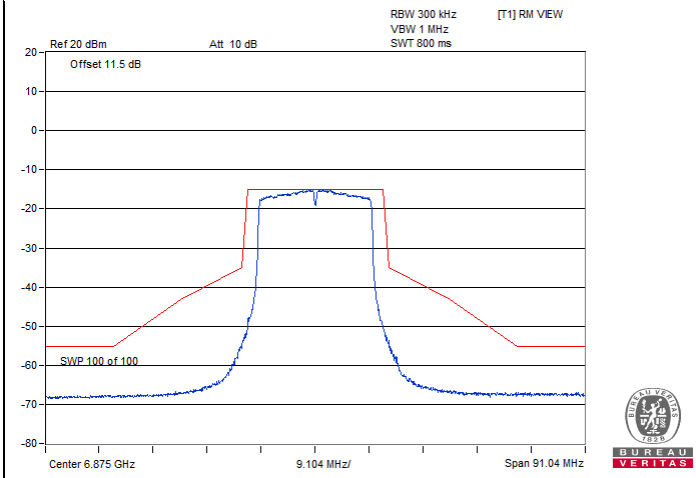
CH153



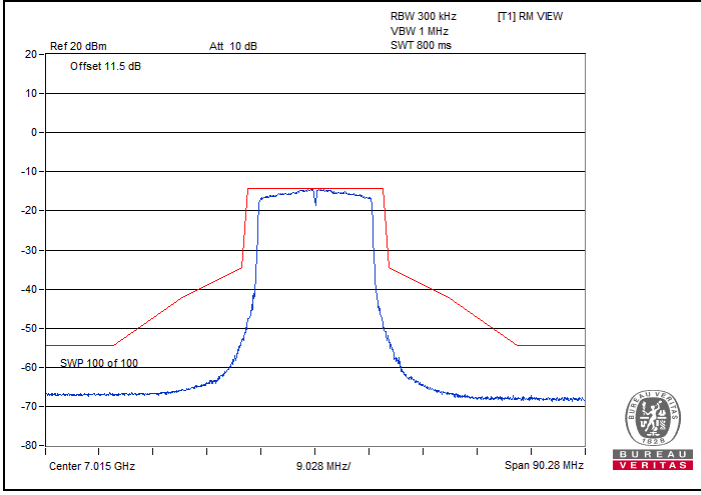
CH181



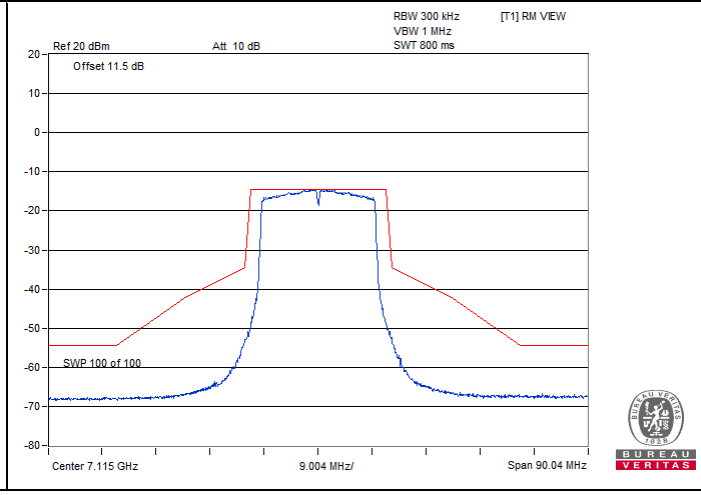
CH185



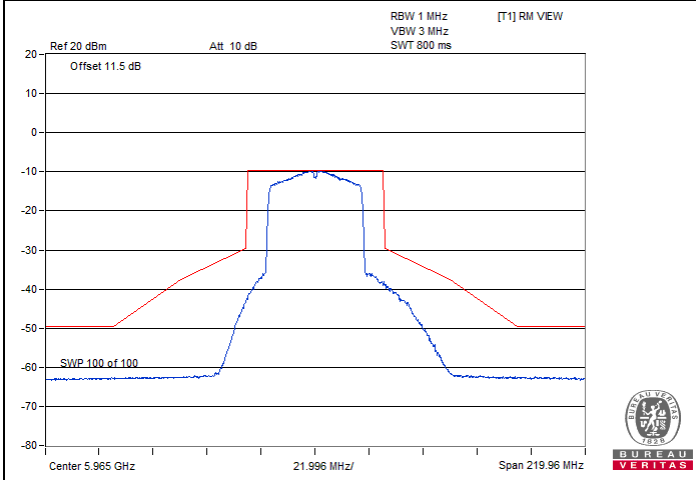
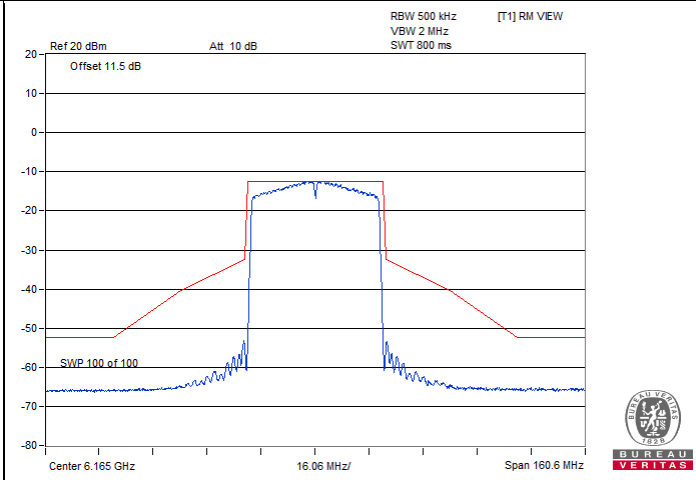
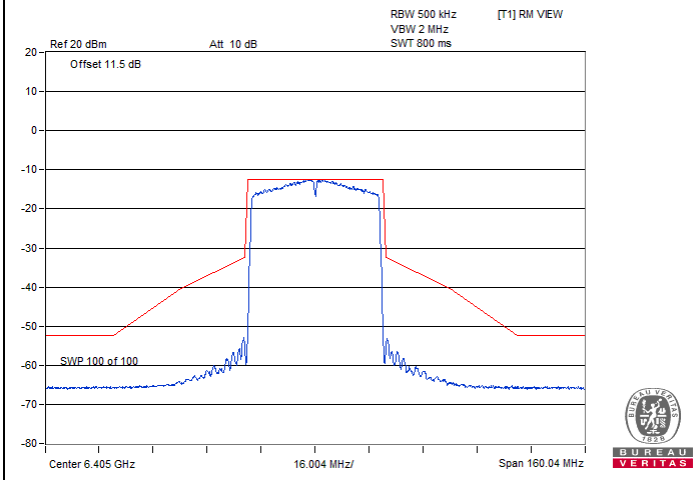
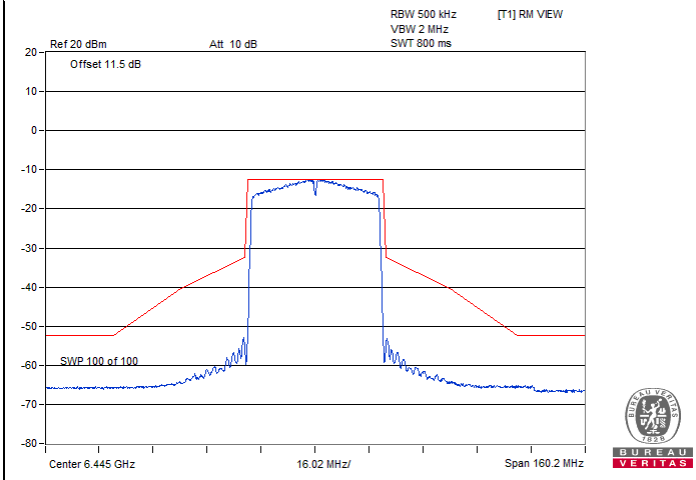
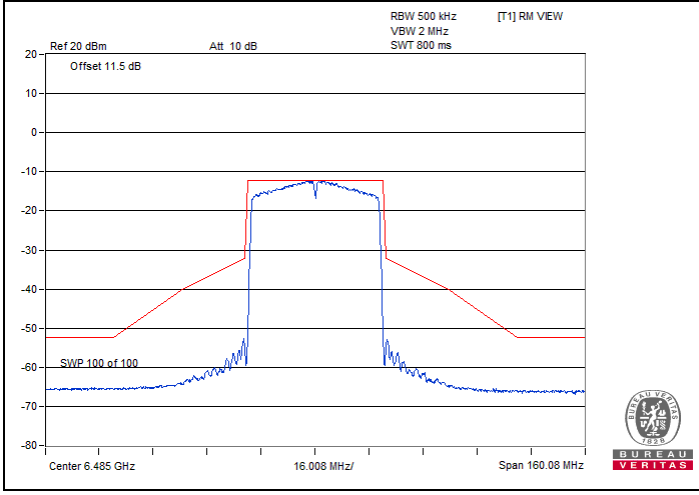
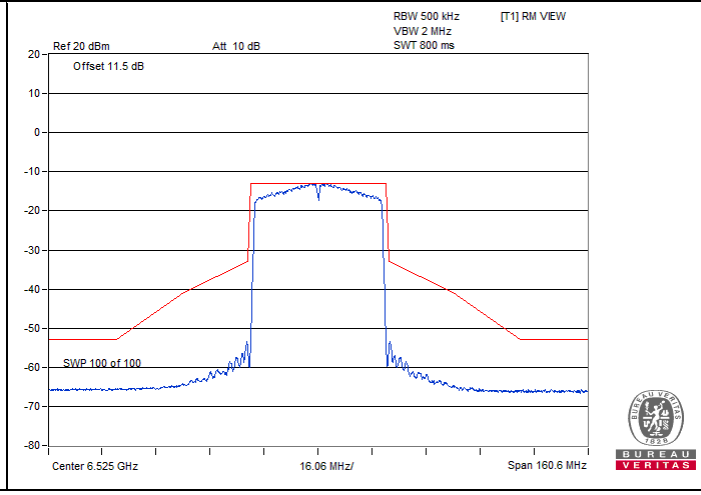
CH213



CH233



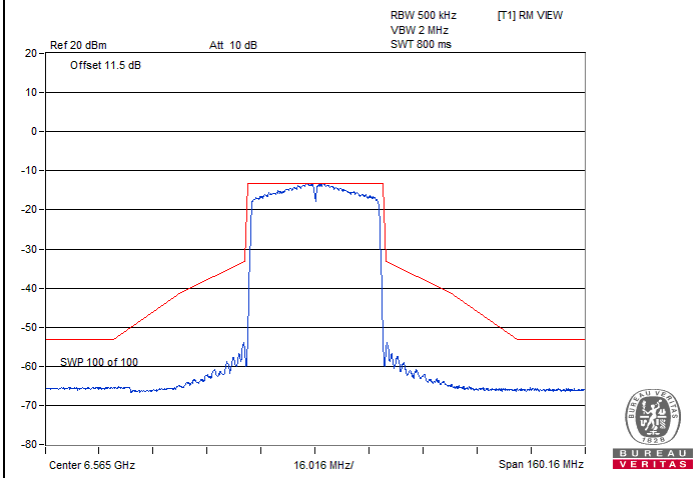
802.11ax (HE40)

Spectrum Plot	
Chain 0	
CH3	**CH43**
	
CH91	**CH99**
	
CH107	**CH115**
	

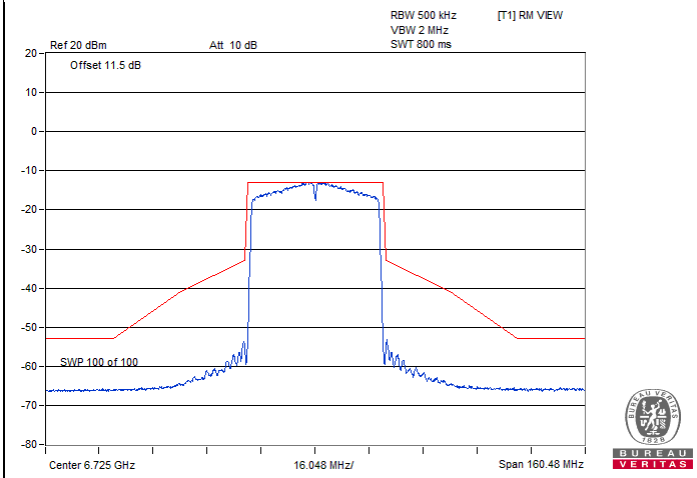
Spectrum Plot

Chain 0

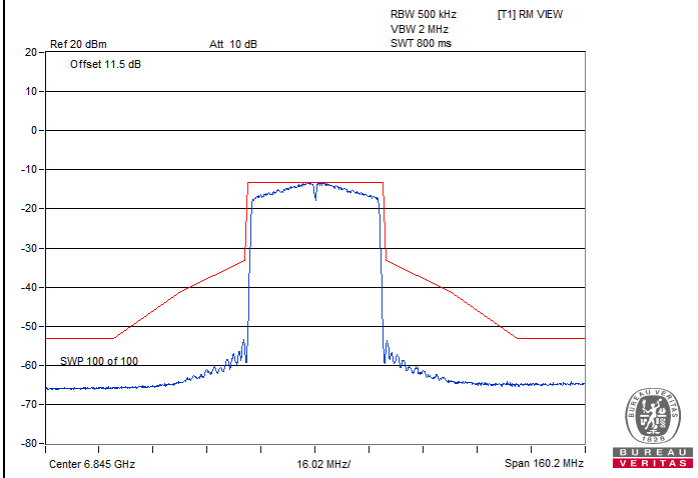
CH123



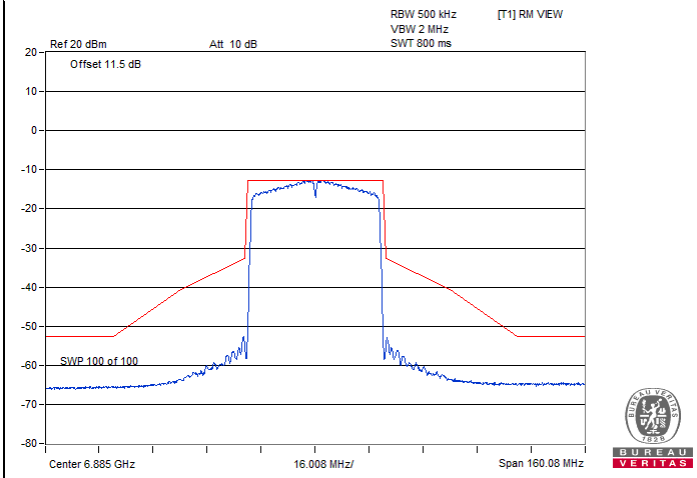
CH155



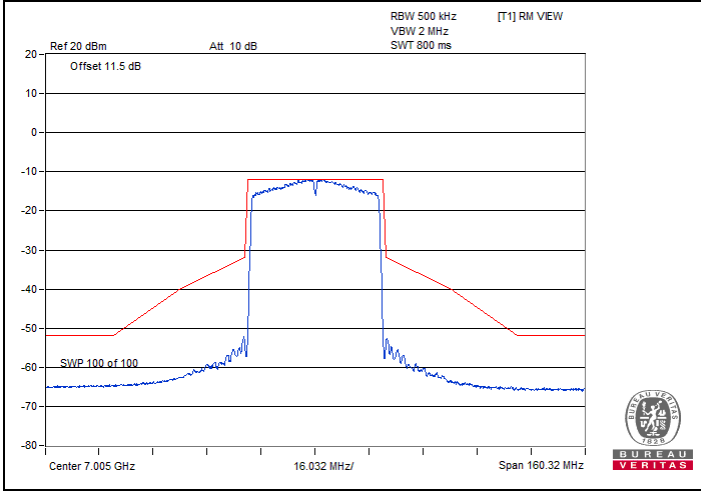
CH179



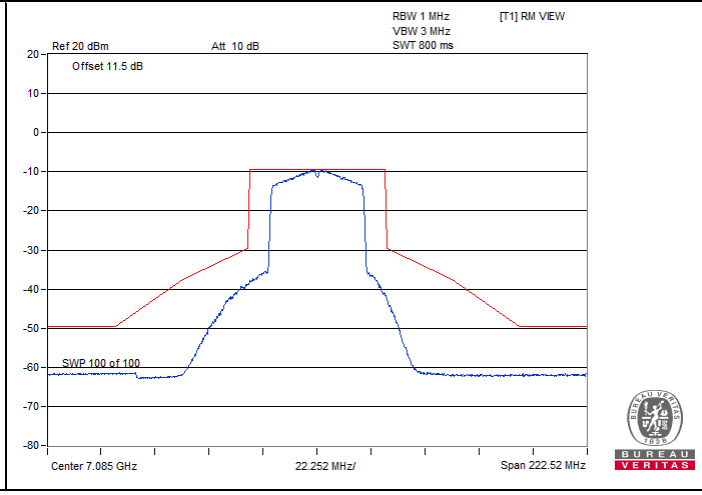
CH187



CH211



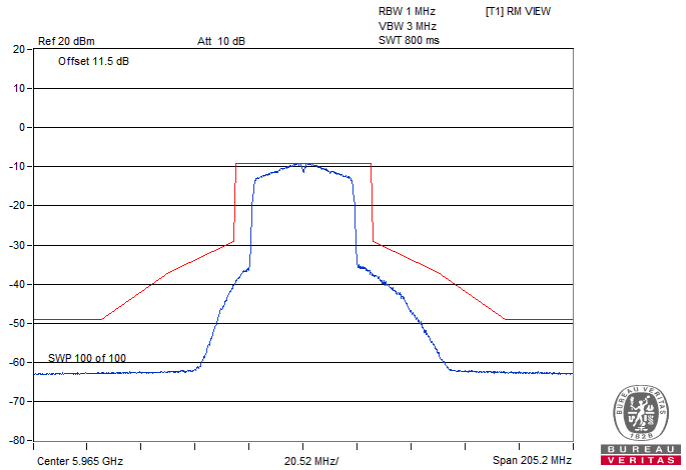
CH227



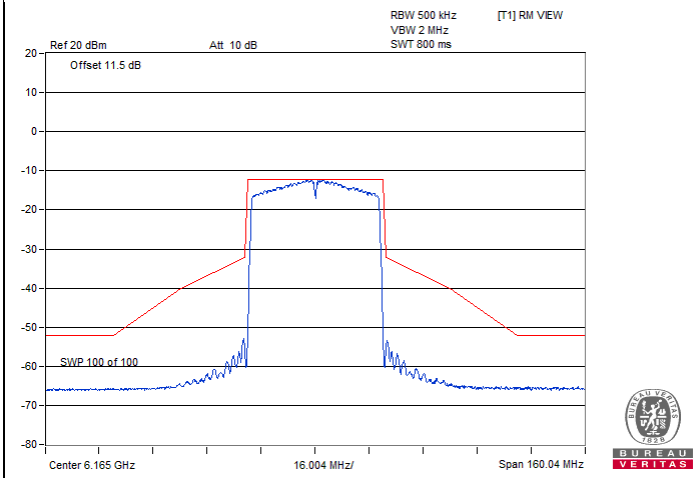
Spectrum Plot

Chain 1

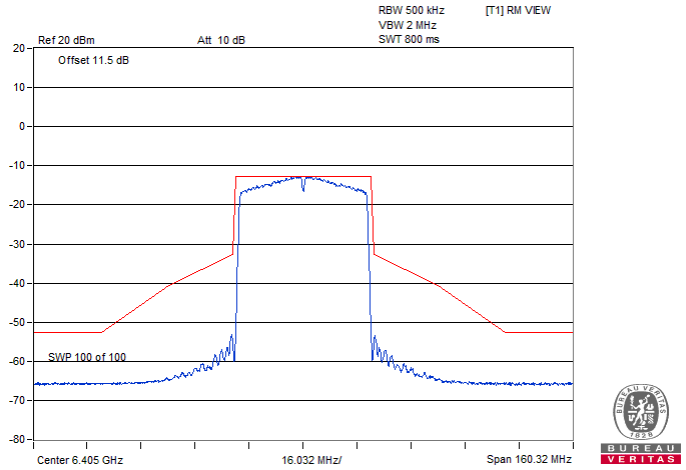
CH3



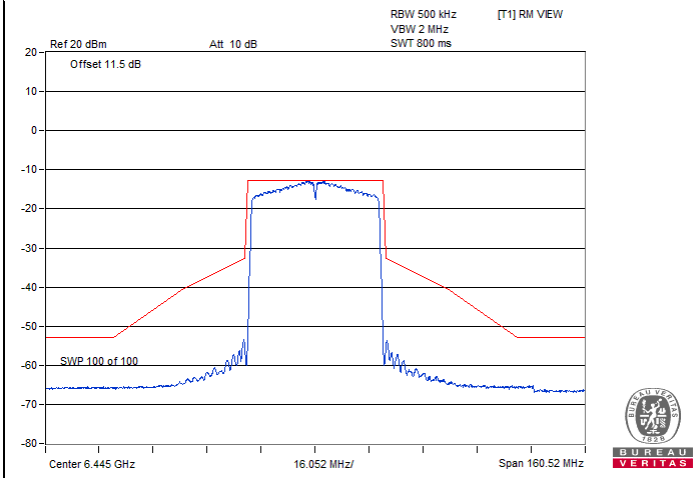
CH43



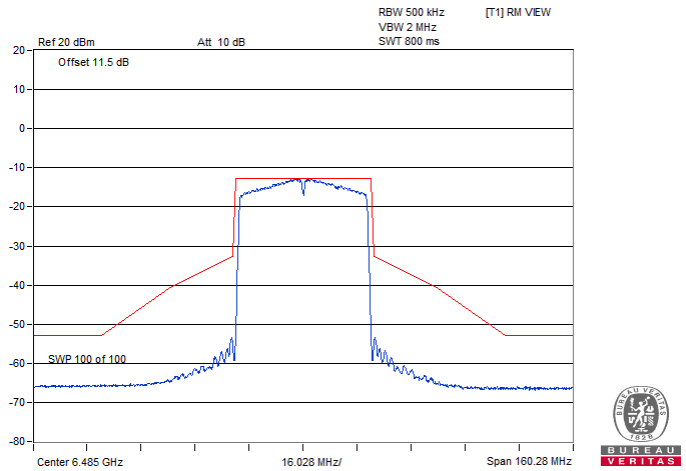
CH91



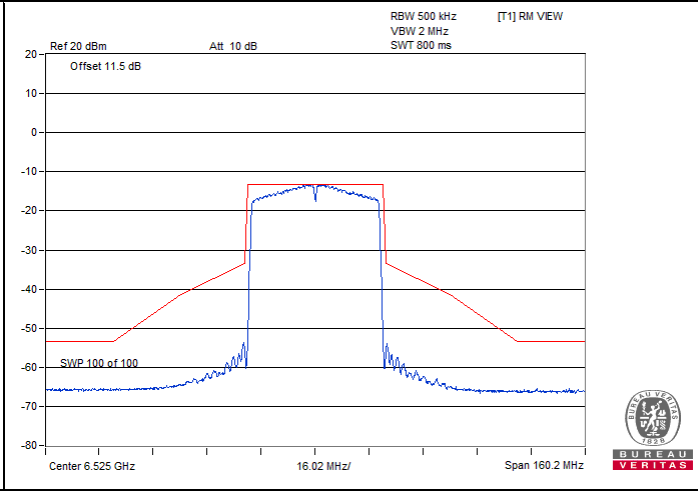
CH99



CH107



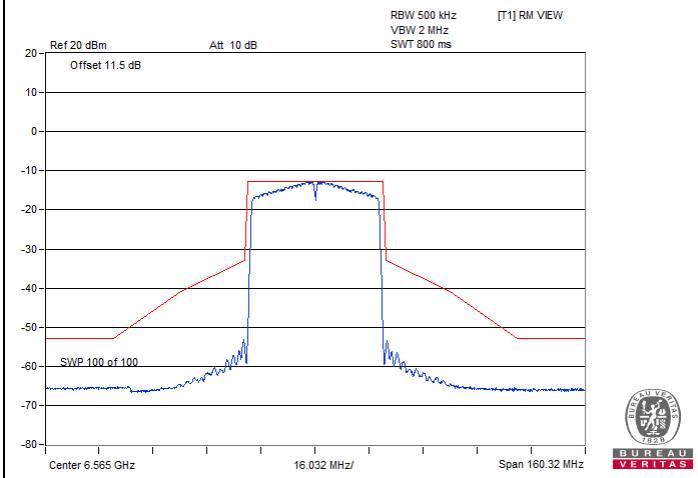
CH115



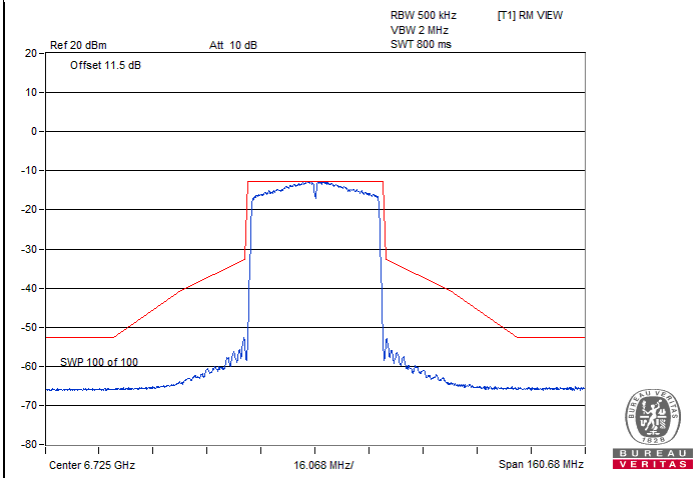
Spectrum Plot

Chain 1

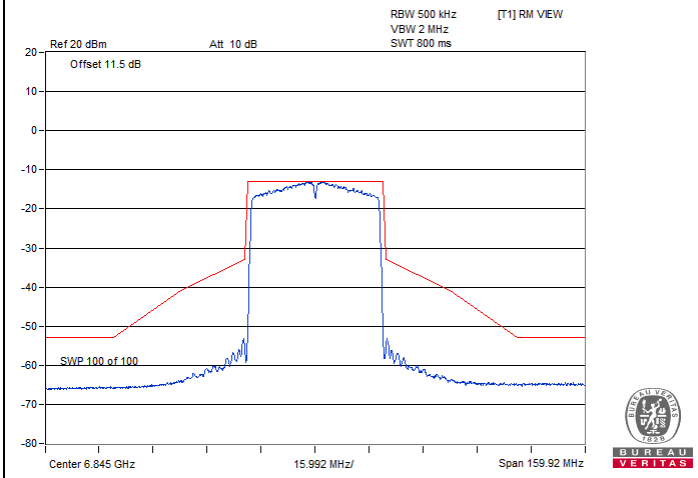
CH123



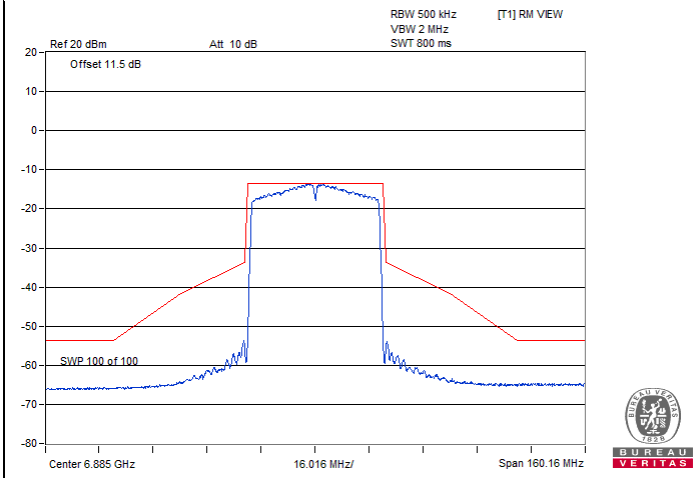
CH155



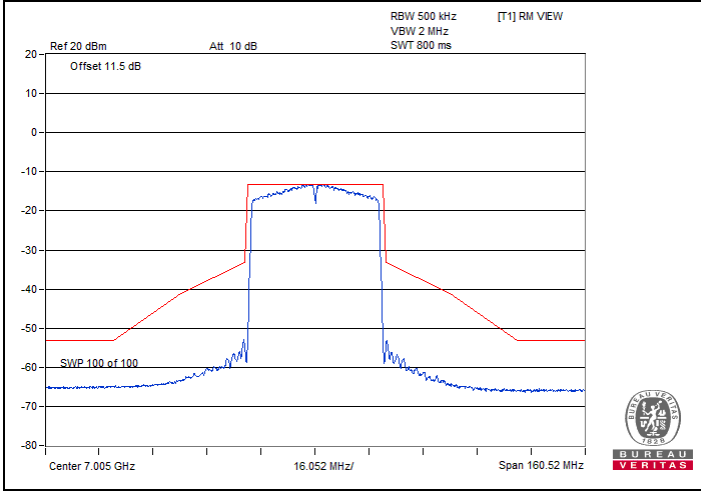
CH179



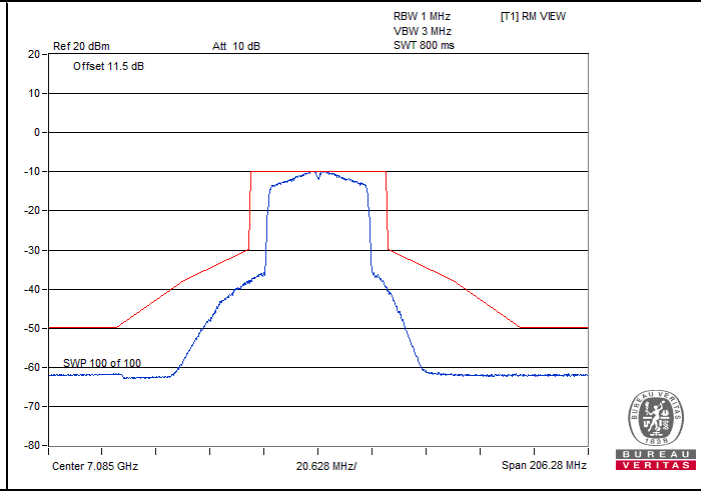
CH187



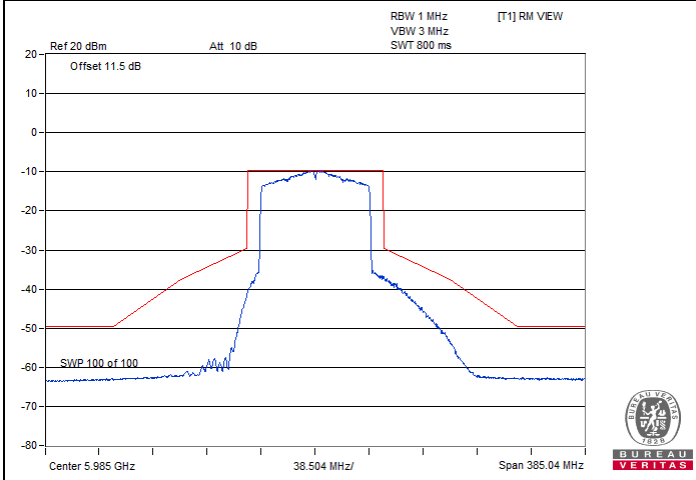
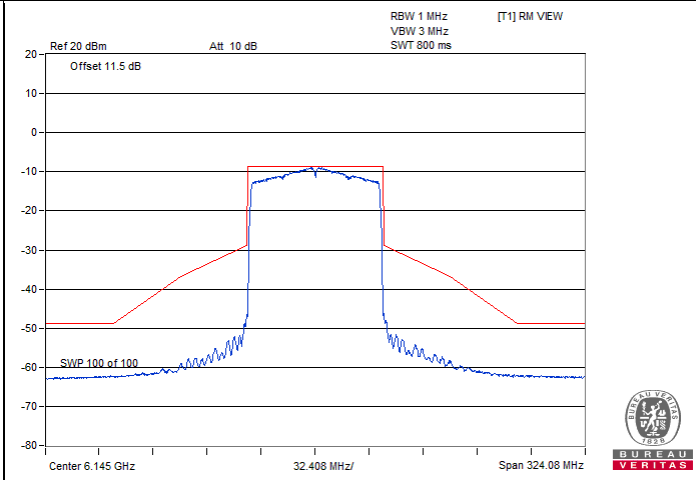
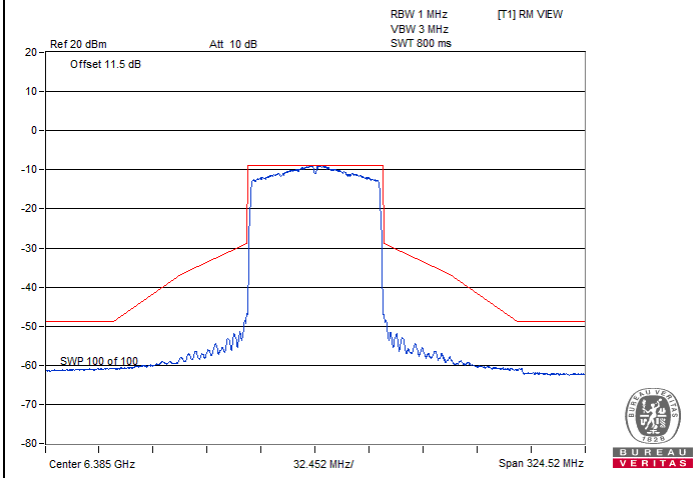
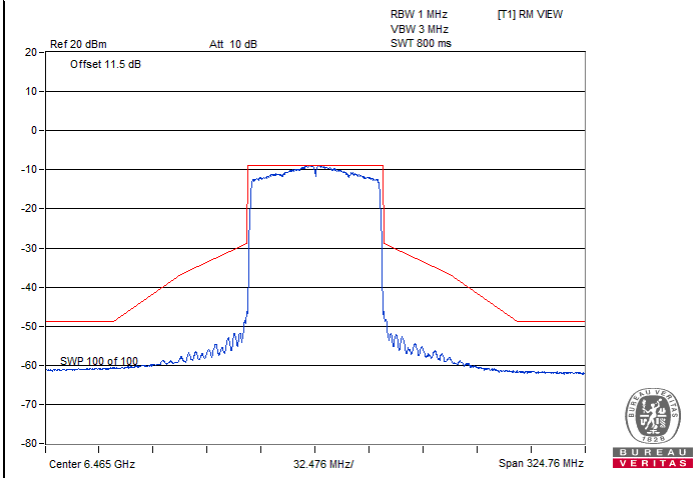
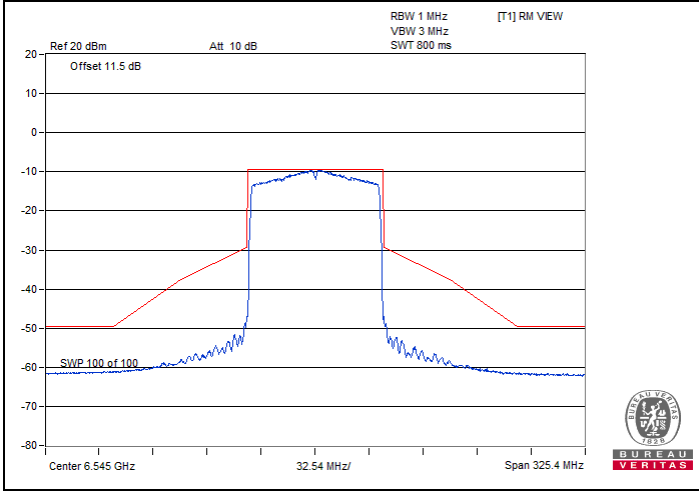
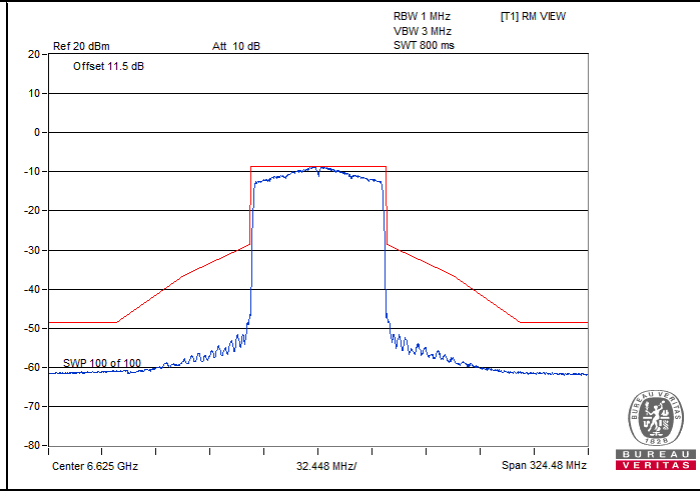
CH211



CH227



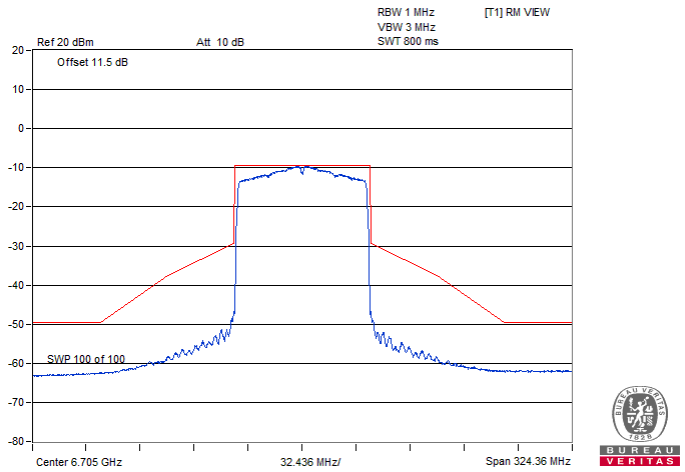
802.11ax (HE80)

Spectrum Plot	
Chain 0	
CH7	**CH39**
	
CH87	**CH103**
	
CH119	**CH135**
	

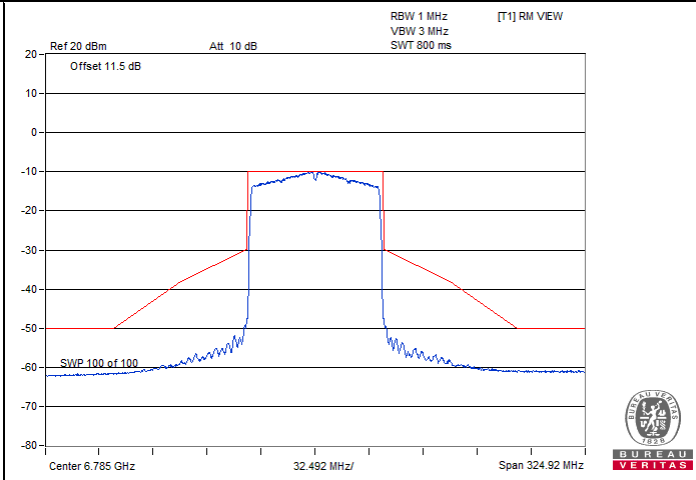
Spectrum Plot

Chain 0

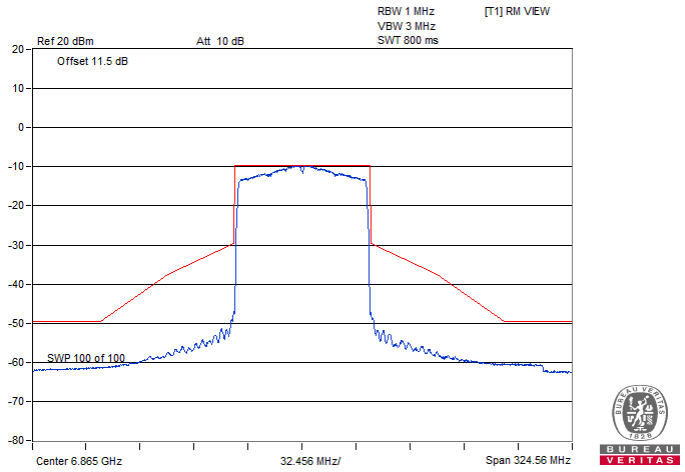
CH151



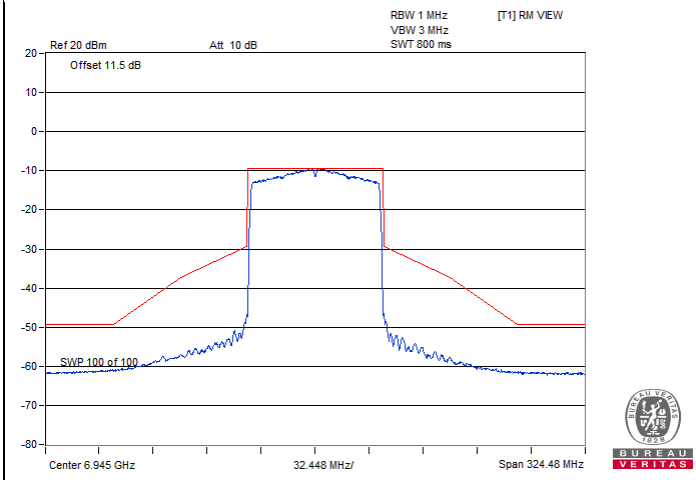
CH167



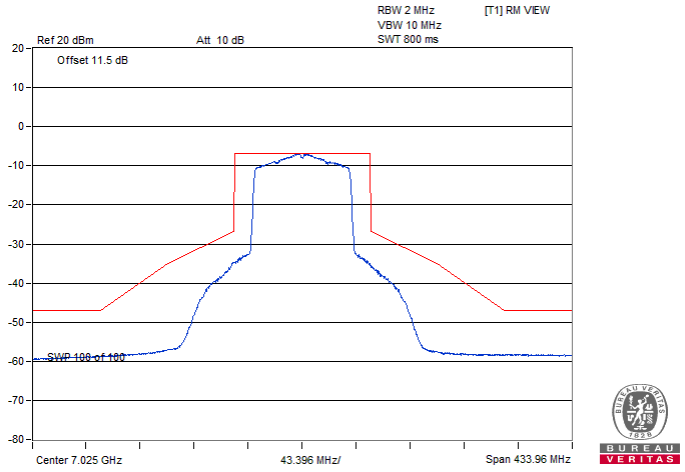
CH183



CH199



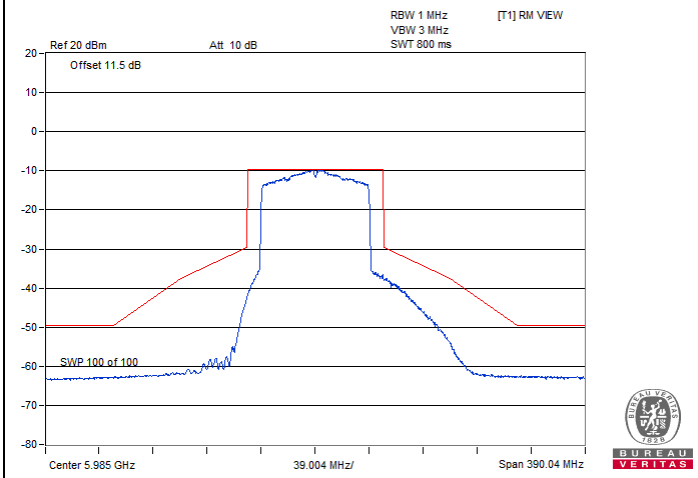
CH215



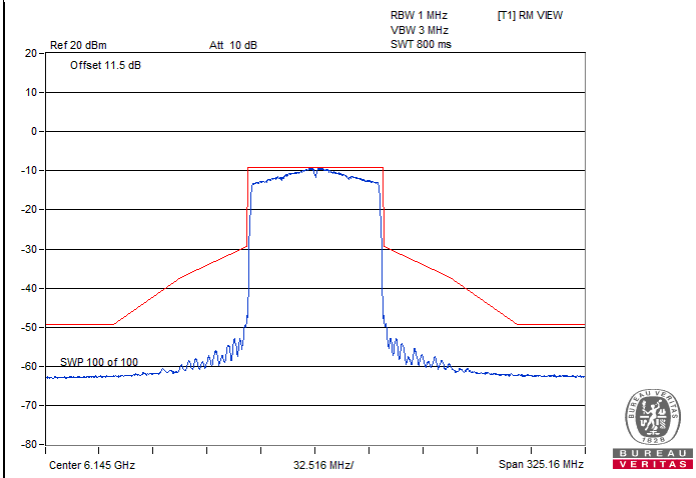
Spectrum Plot

Chain 1

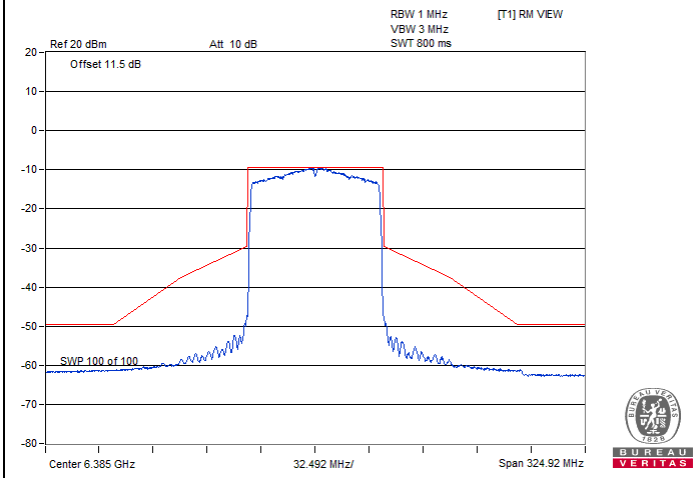
CH7



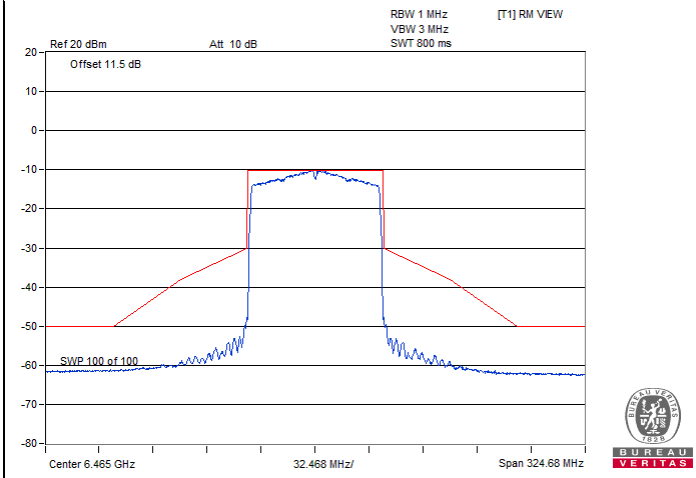
CH39



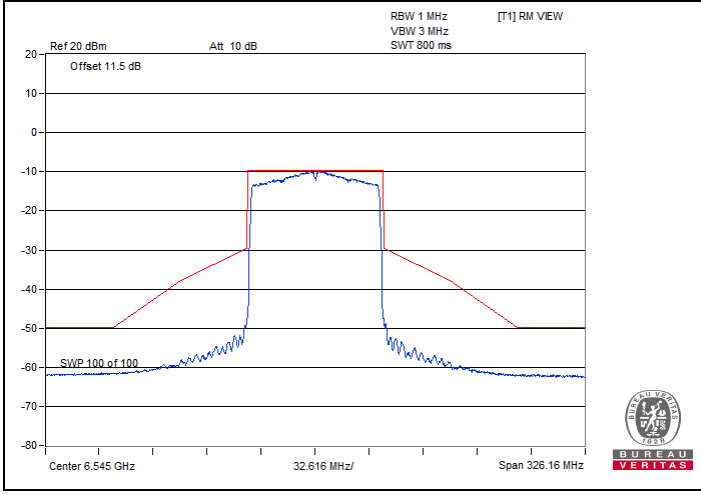
CH87



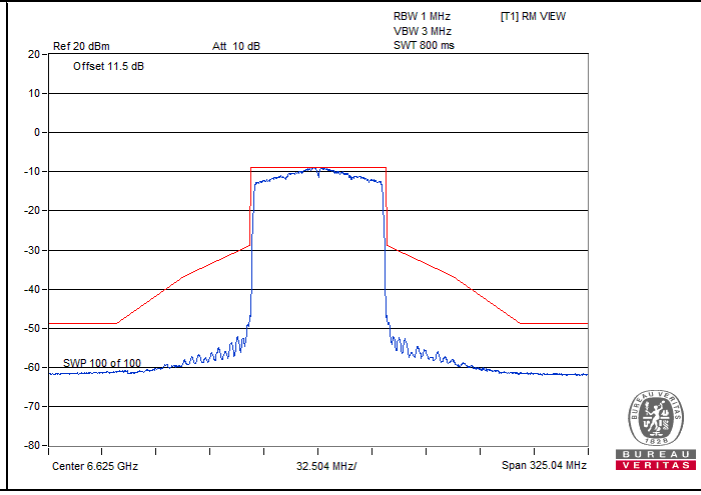
CH103



CH119



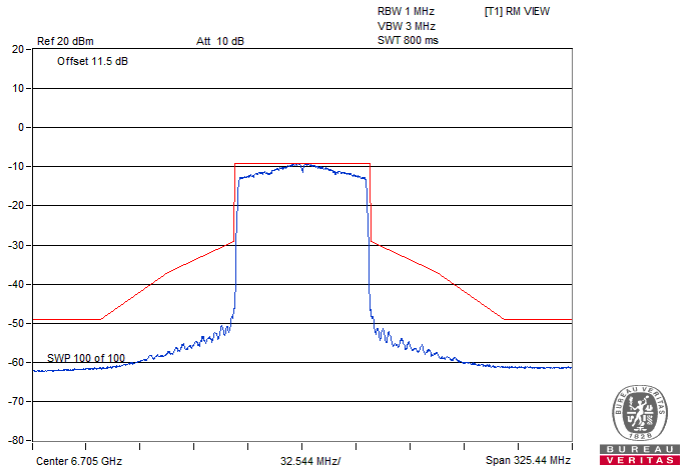
CH135



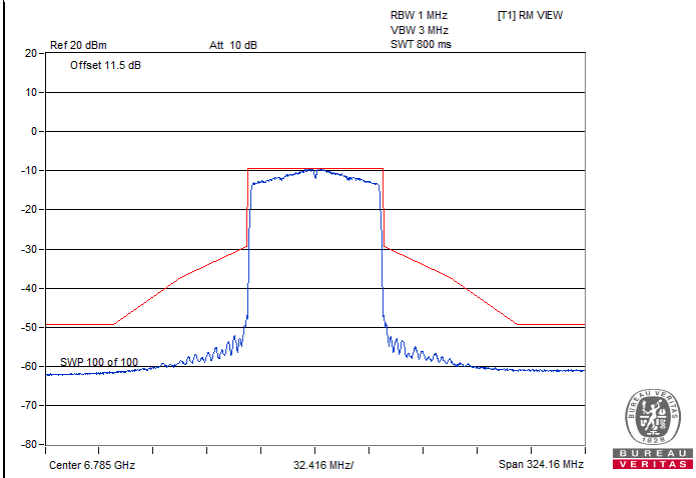
Spectrum Plot

Chain 1

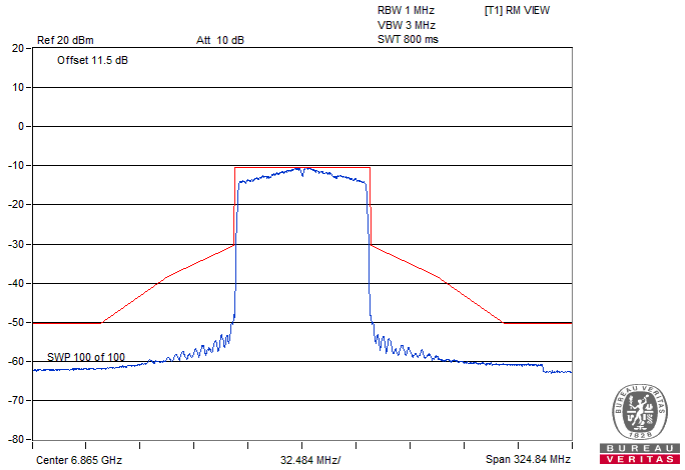
CH151



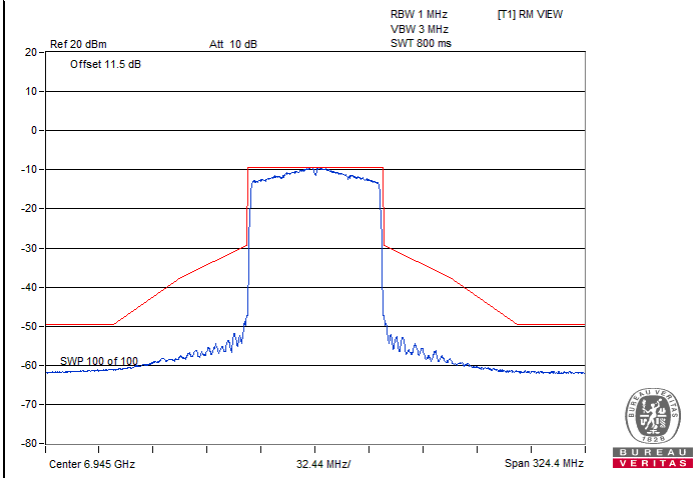
CH167



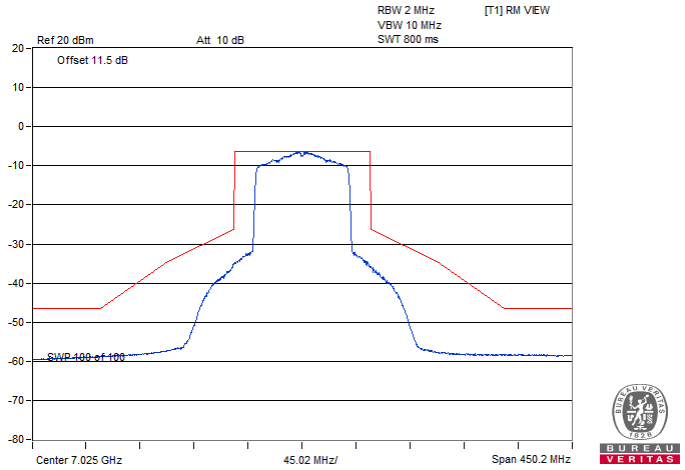
CH183



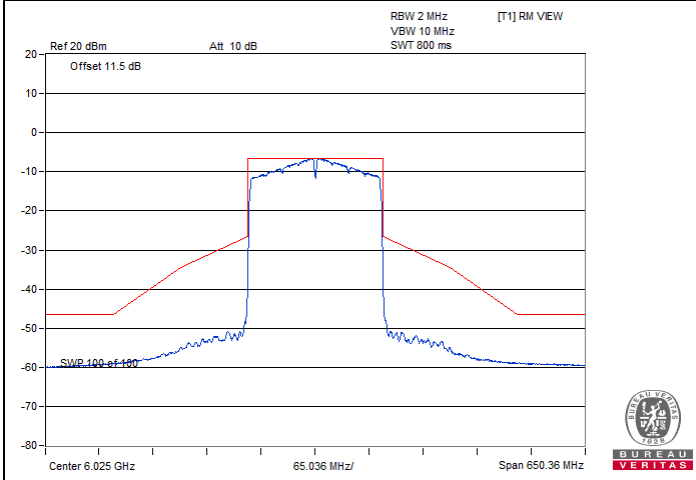
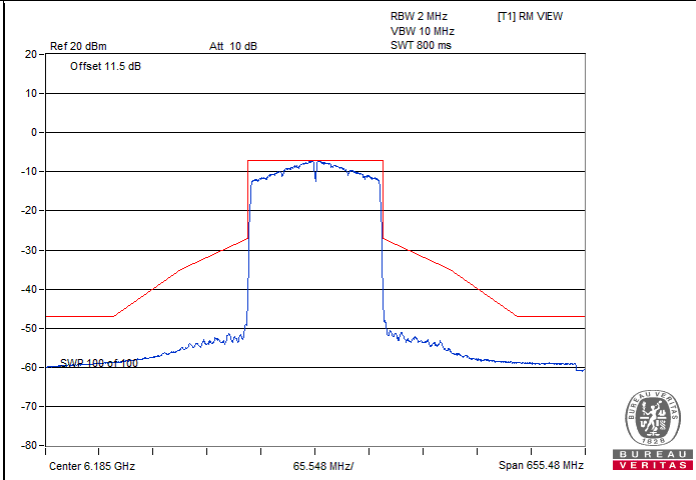
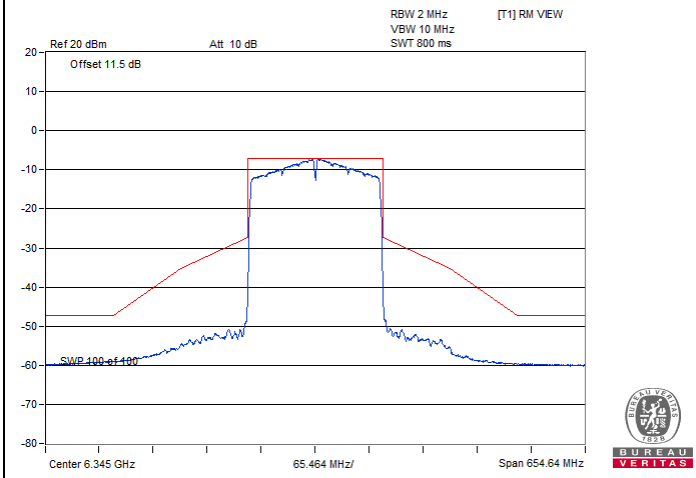
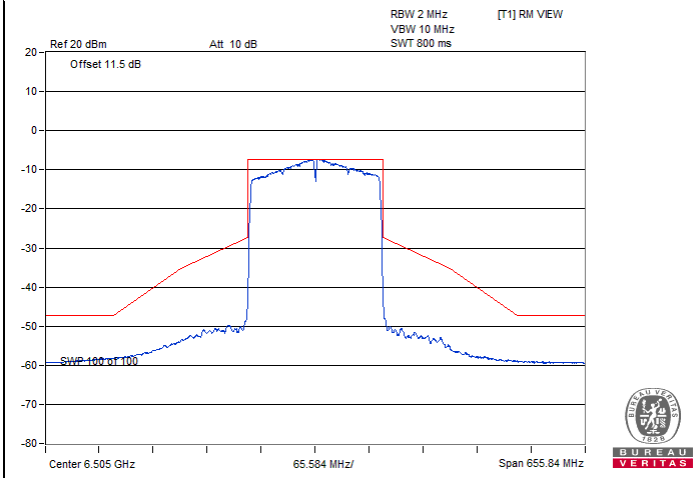
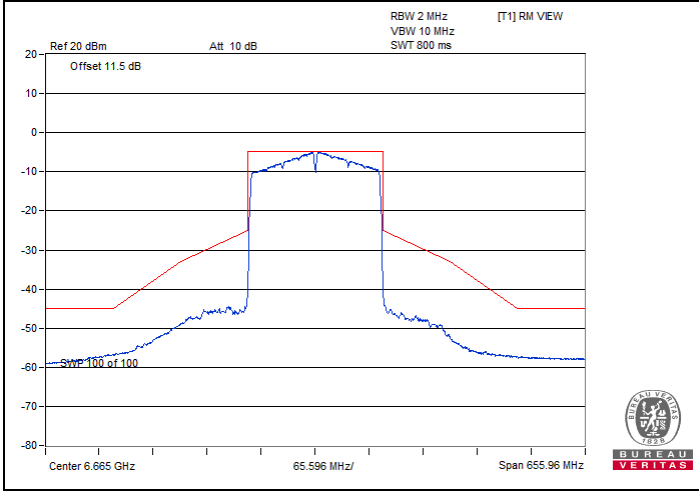
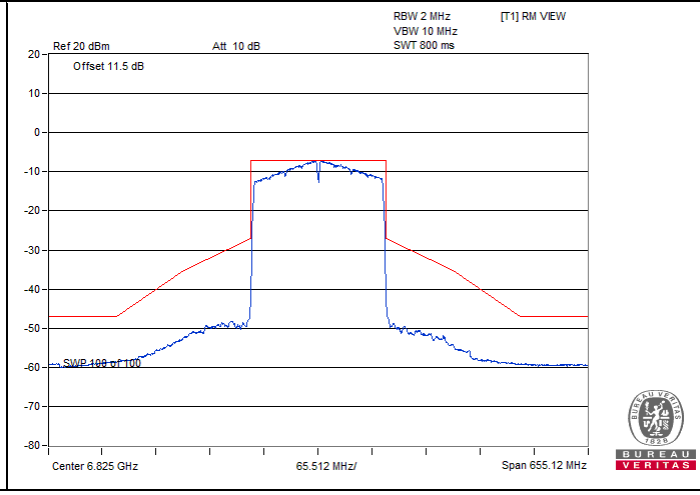
CH199

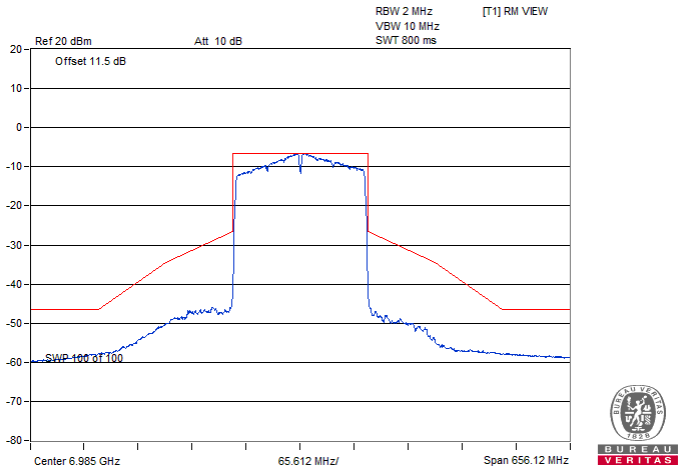


CH215



802.11ax (HE160)

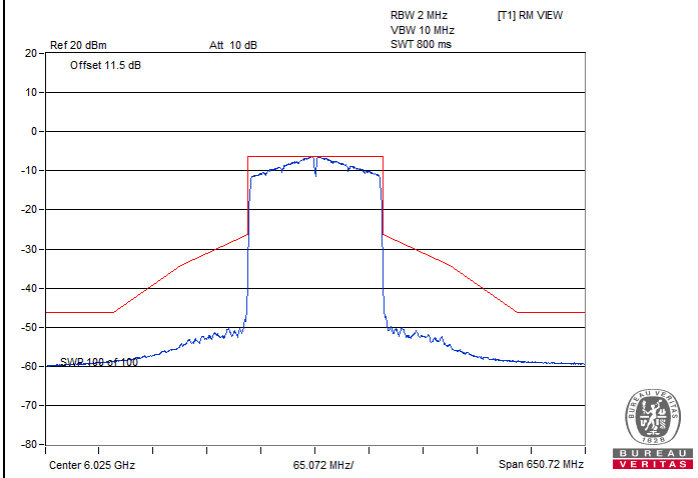
Spectrum Plot	
Chain 0	
CH15	**CH47**
	
CH79	**CH111**
	
CH143	**CH175**
	

Spectrum Plot	
Chain 0	
CH207	
	

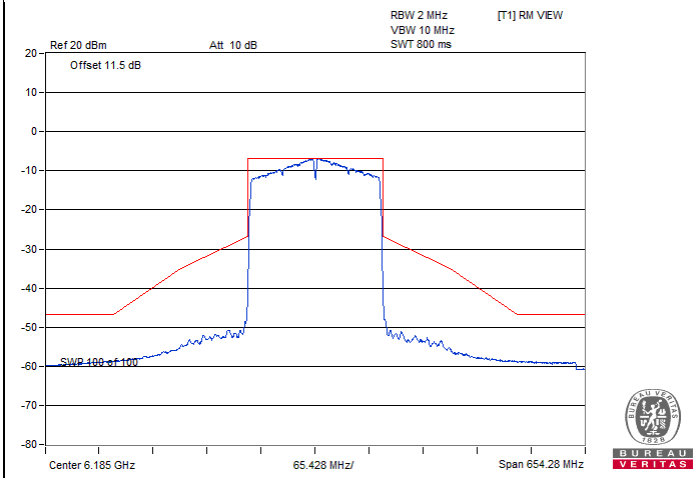
Spectrum Plot

Chain 1

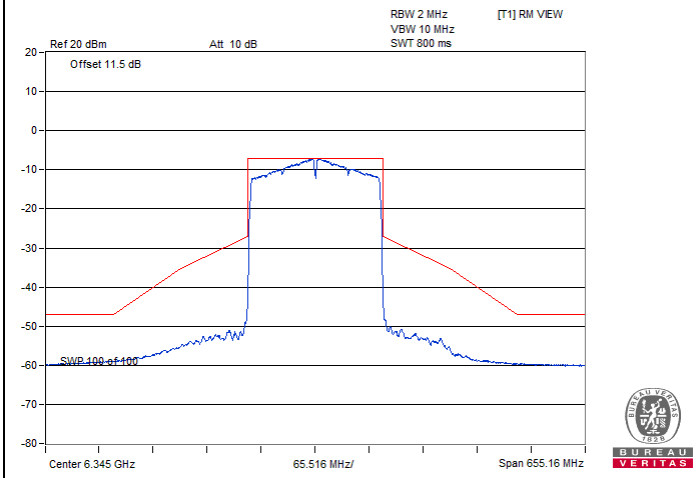
CH15



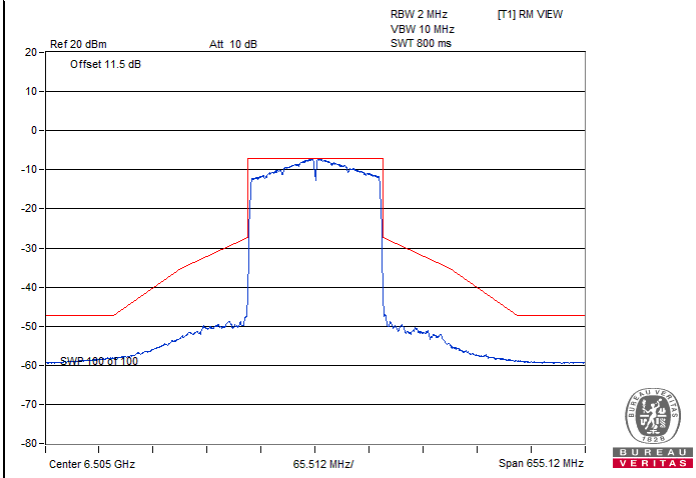
CH47



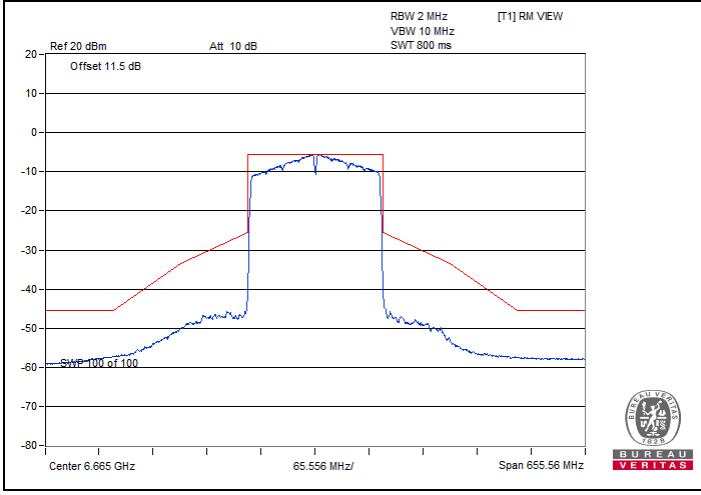
CH79



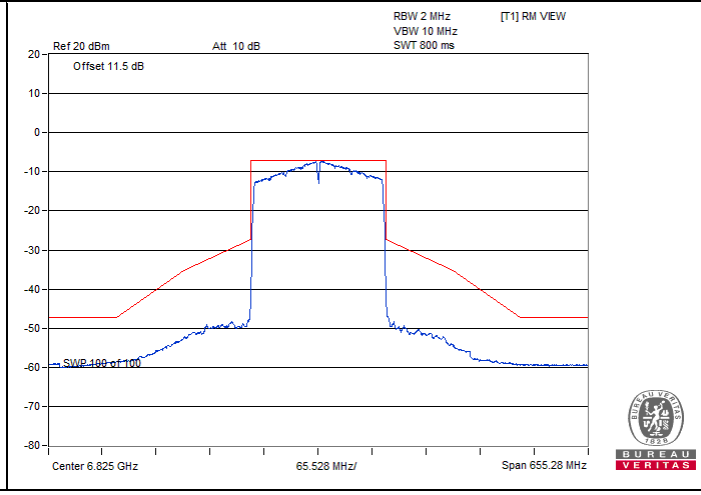
CH111

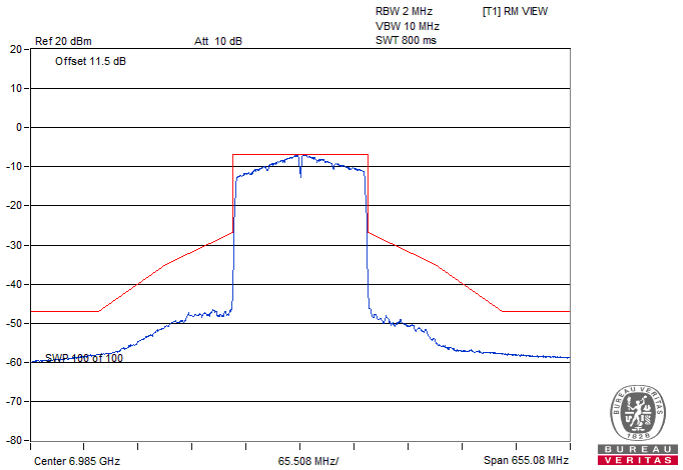


CH143



CH175



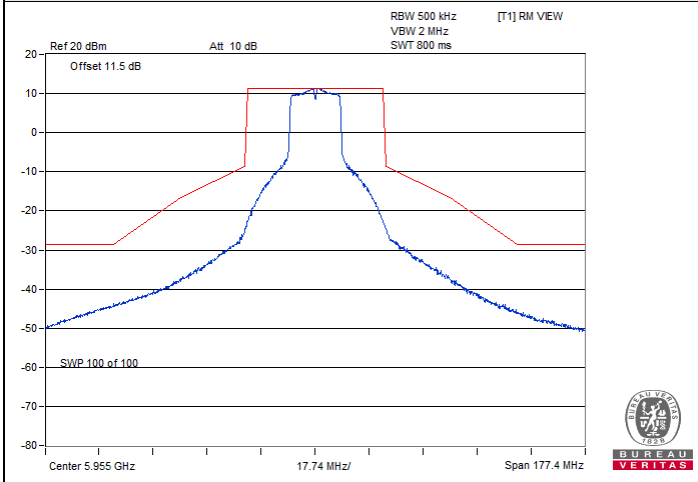
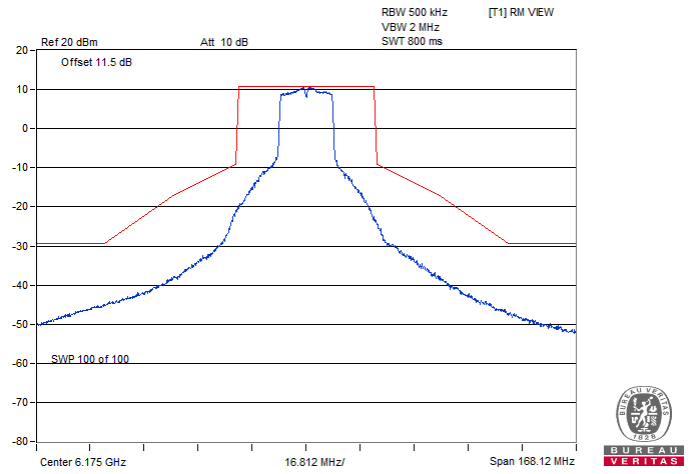
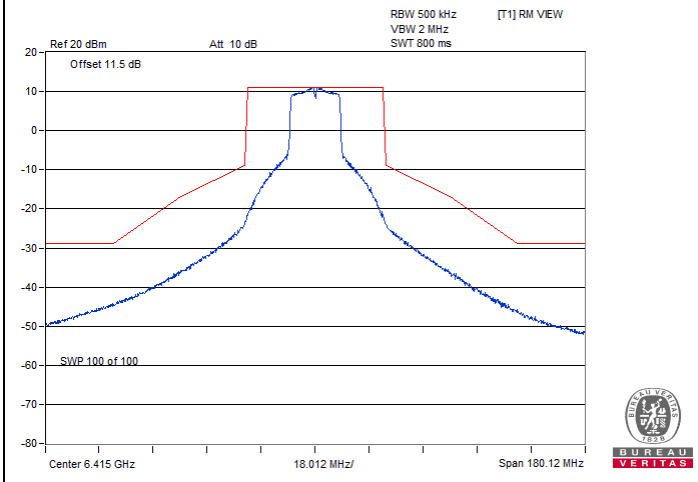
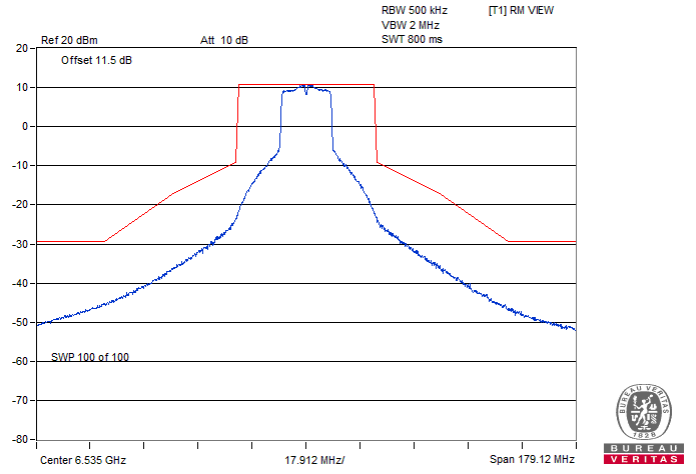
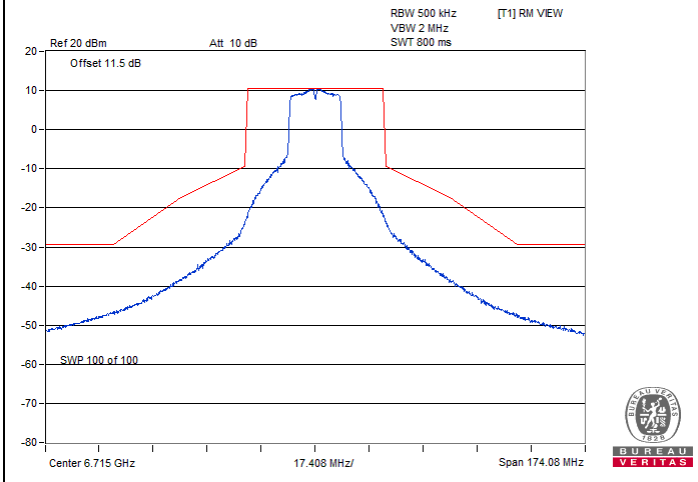
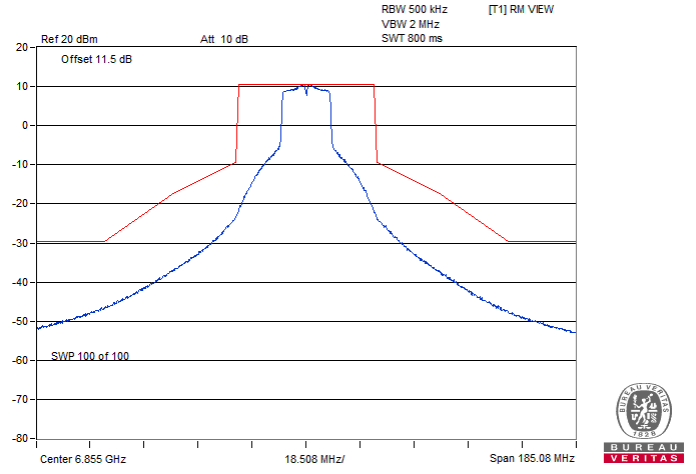
Spectrum Plot	
Chain 1	
CH207	
	

Test Mode B

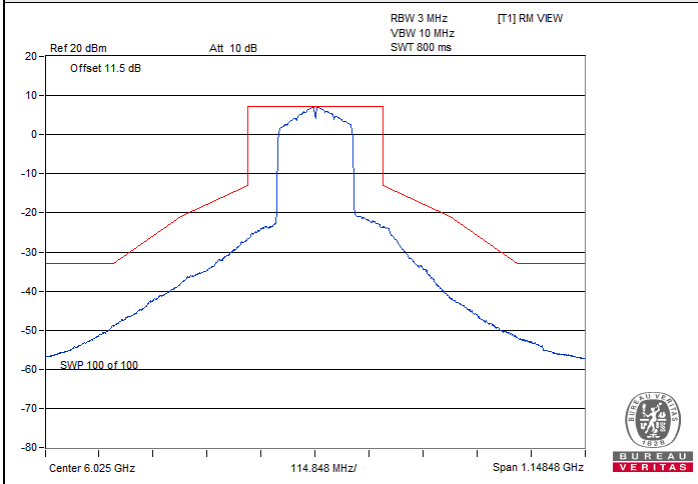
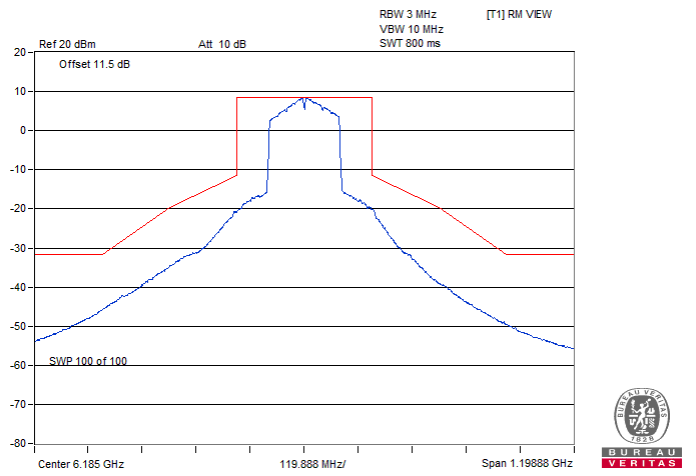
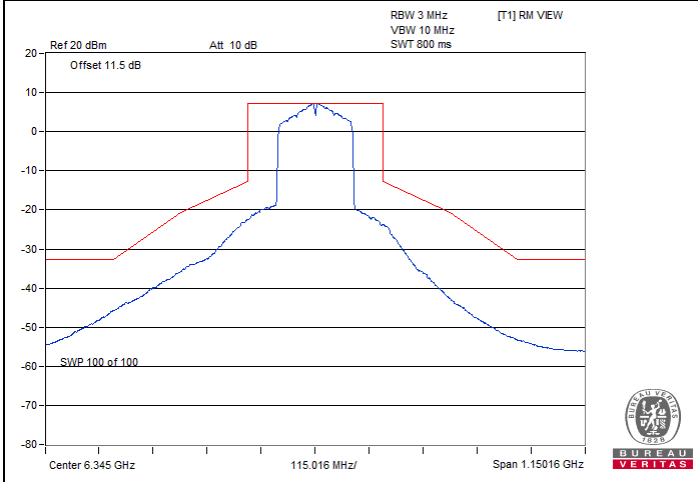
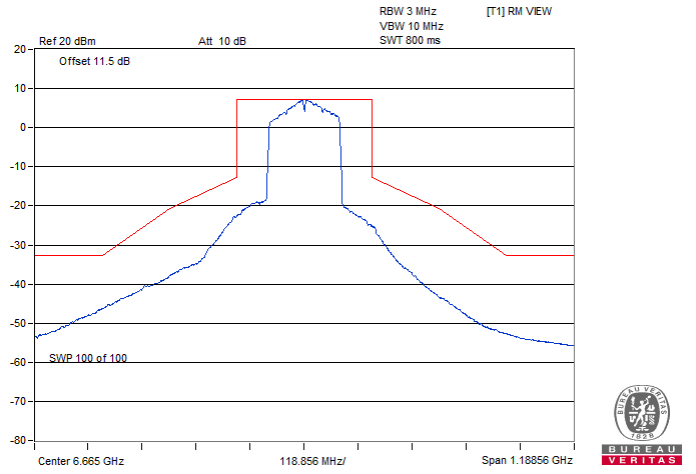
Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

1TX

802.11a

Spectrum Plot	
 802.11a : CH 1	 802.11a : CH 45
 802.11a : CH 93	 802.11a : CH 117
 802.11a : CH 153	 802.11a : CH 181

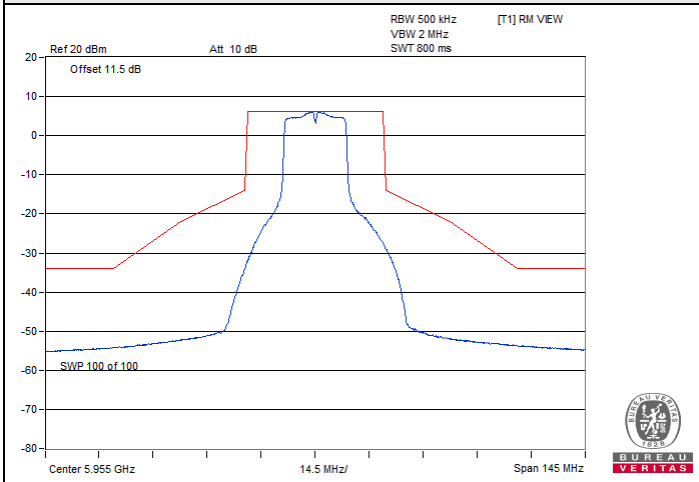
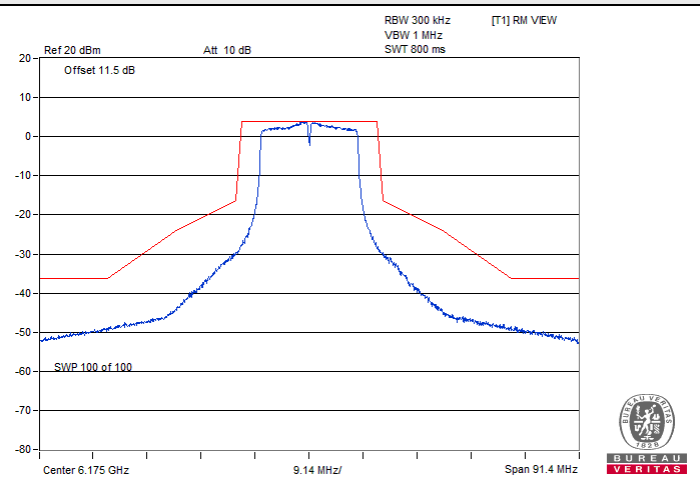
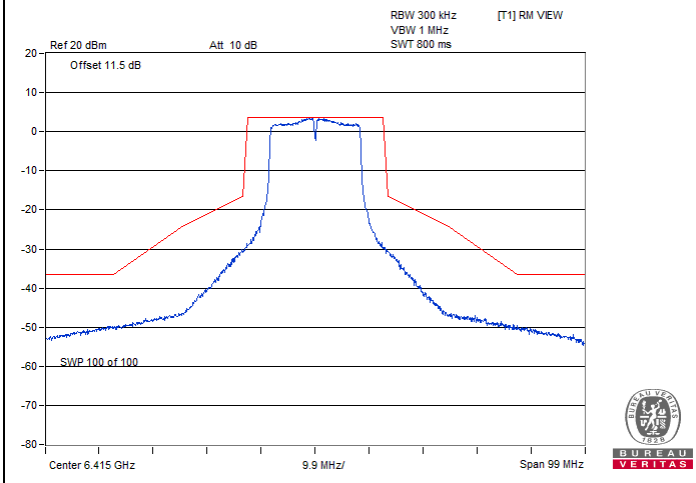
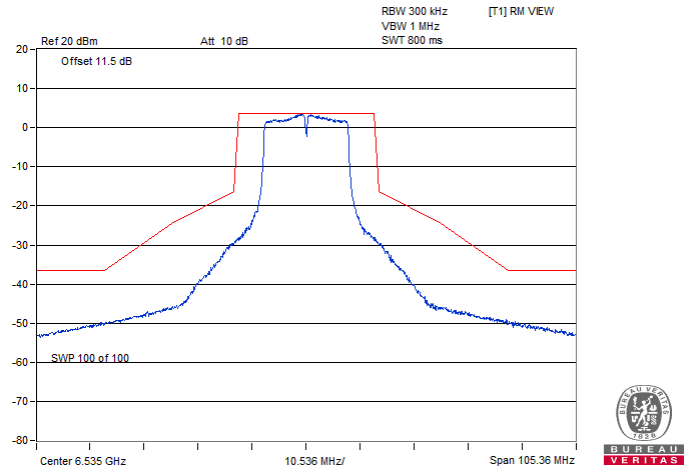
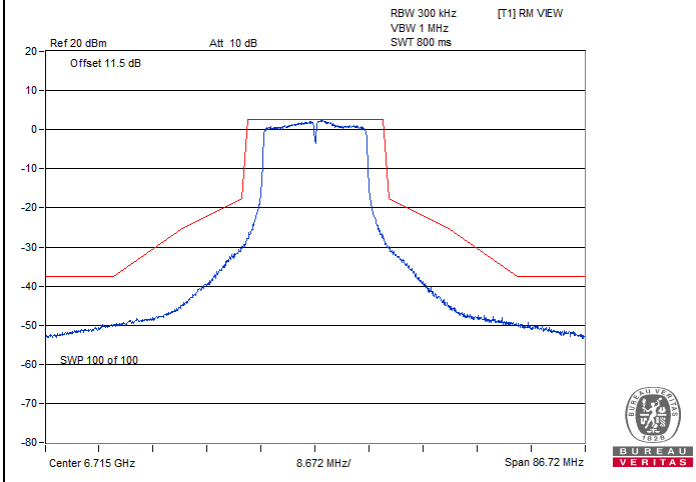
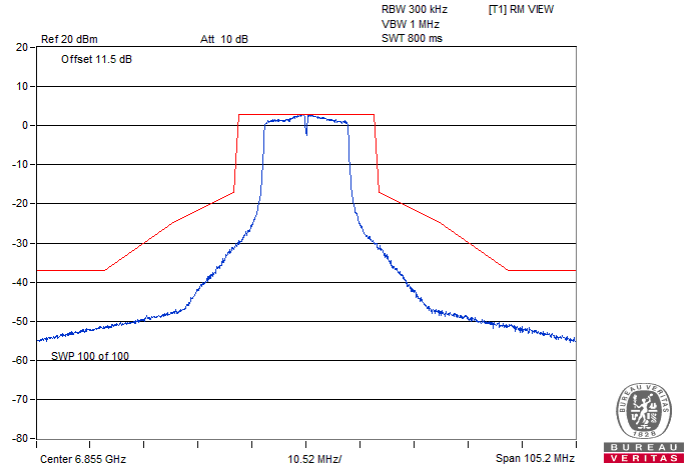
802.11ax (HE160)

Spectrum Plot	
	
802.11ax (HE160) : CH 15	802.11ax (HE160) : CH 47
	
802.11ax (HE160) : CH 79	802.11ax (HE160) : CH 143

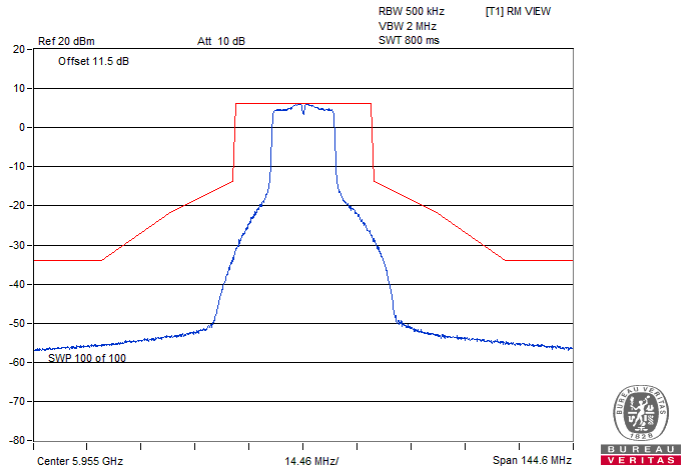
Input Power:	120 Vac, 60 Hz	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

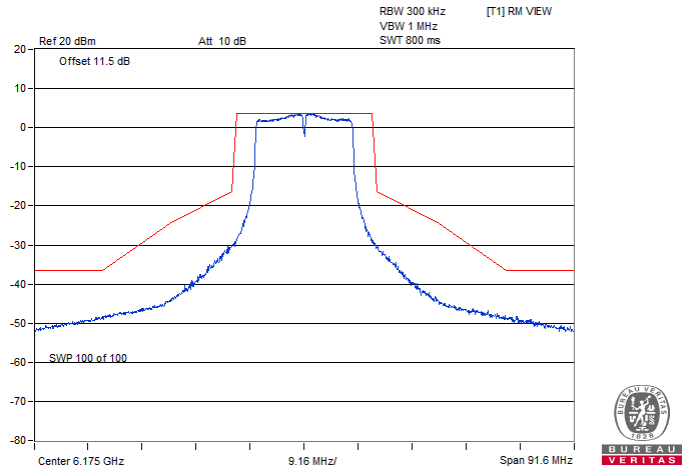
802.11a

Spectrum Plot	
	
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 153	802.11a / Chain 0 : CH 181

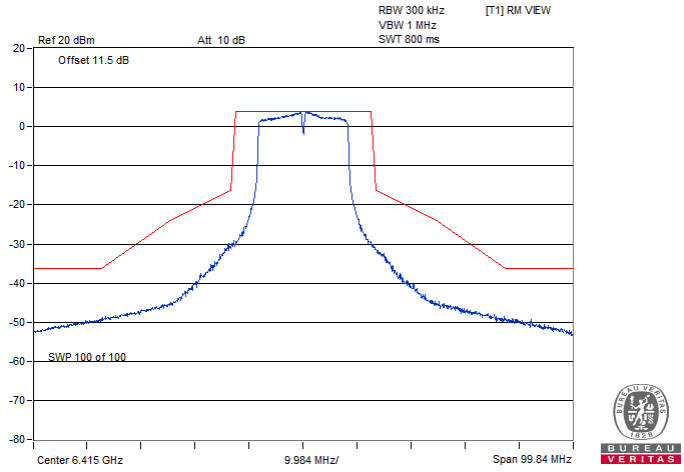
Spectrum Plot



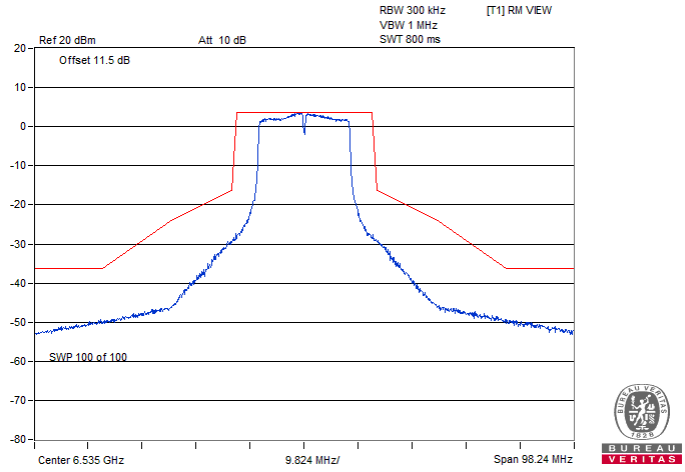
802.11a / Chain 1 : CH 1



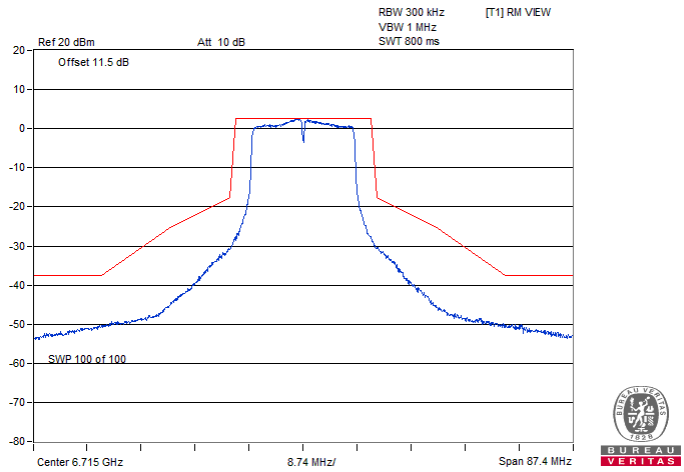
802.11a / Chain 1 : CH 45



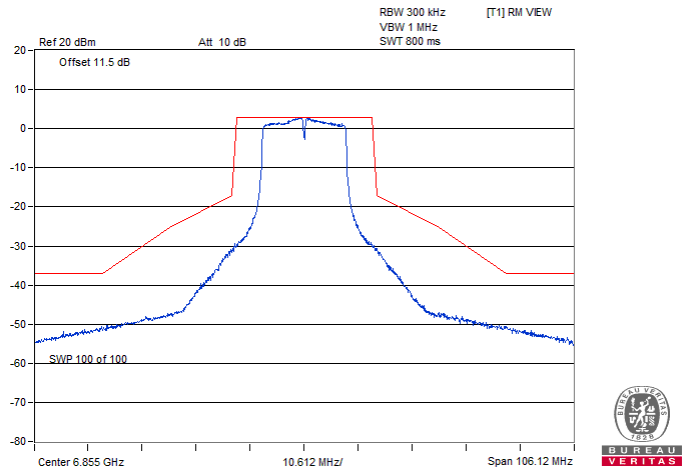
802.11a / Chain 1 : CH 93



802.11a / Chain 1 : CH 117

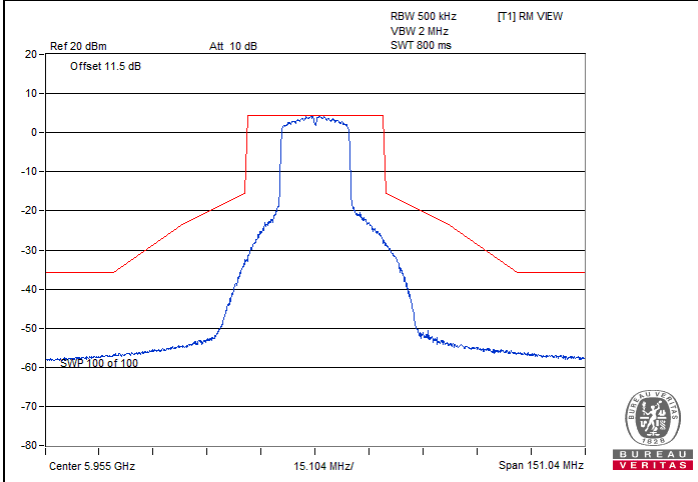
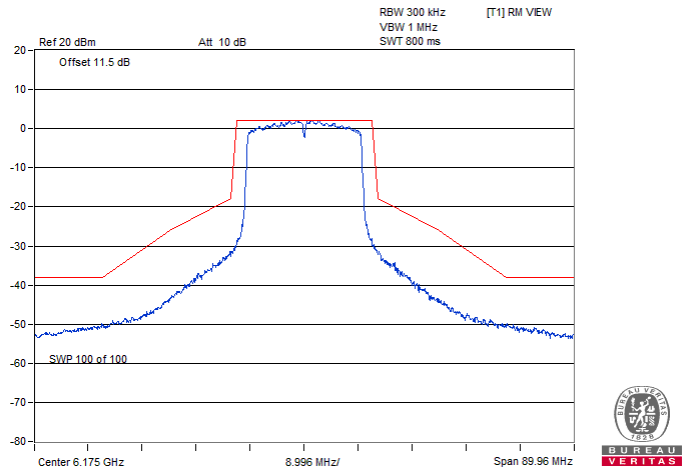
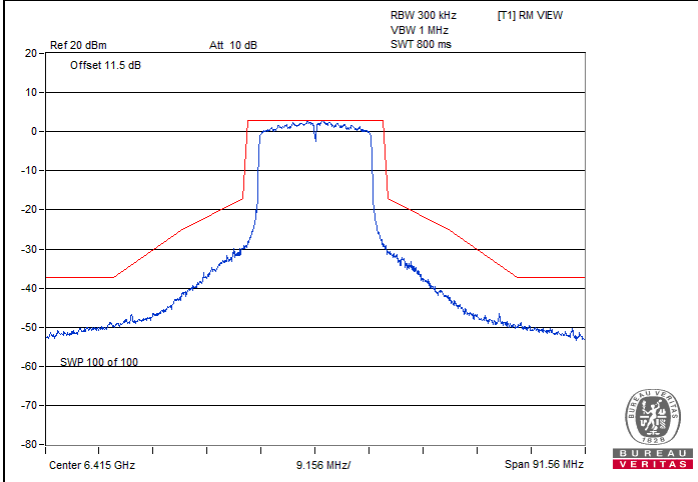
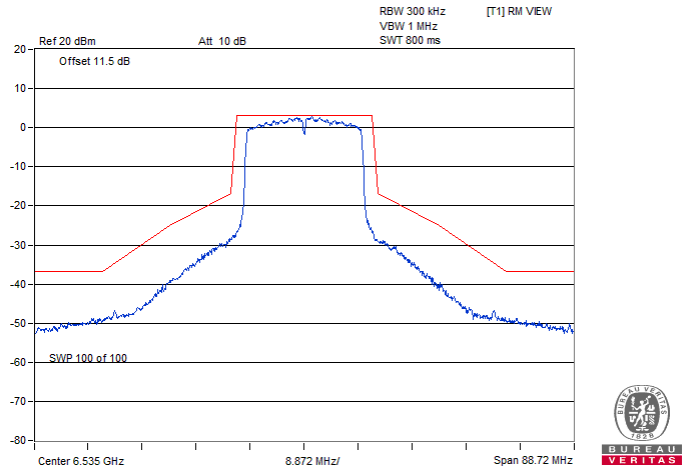
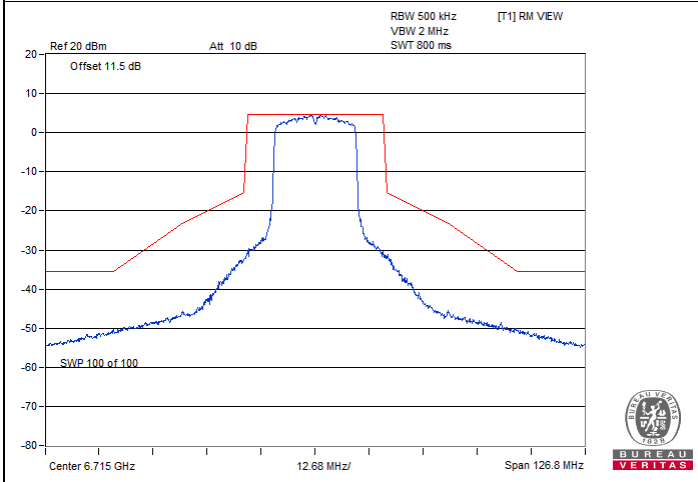
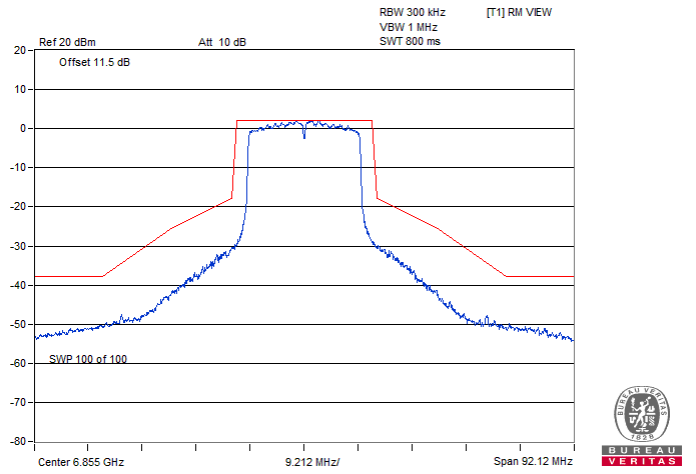


802.11a / Chain 1 : CH 153

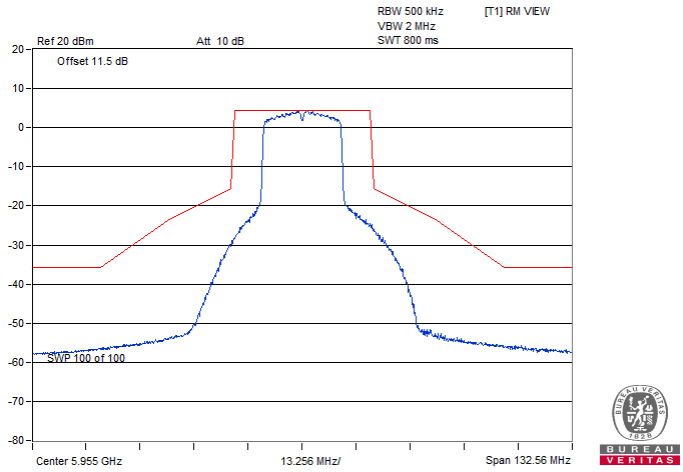


802.11a / Chain 1 : CH 181

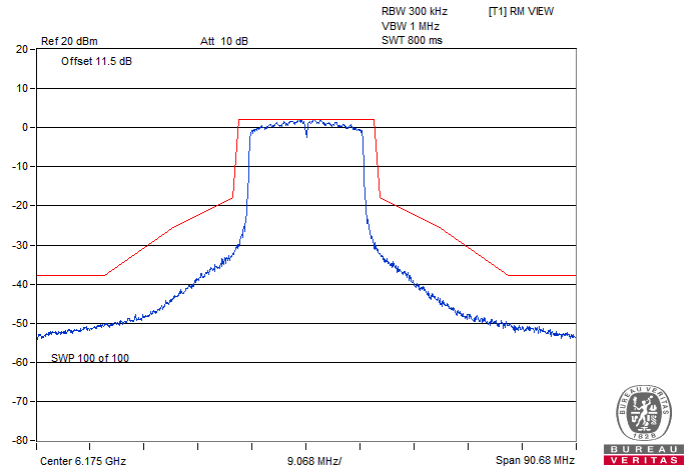
802.11ax (HE20)

Spectrum Plot	
	
802.11ax (HE20) / Chain 0 : CH 1	802.11ax (HE20) / Chain 0 : CH 45
	
802.11ax (HE20) / Chain 0 : CH 93	802.11ax (HE20) / Chain 0 : CH 117
	
802.11ax (HE20) / Chain 0 : CH 153	802.11ax (HE20) / Chain 0 : CH 181

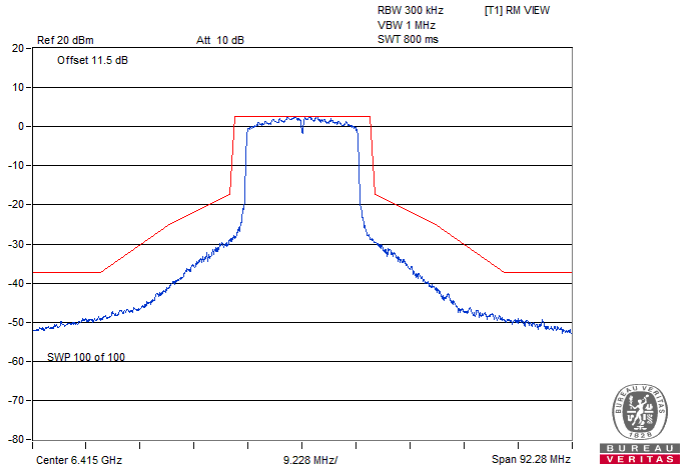
Spectrum Plot



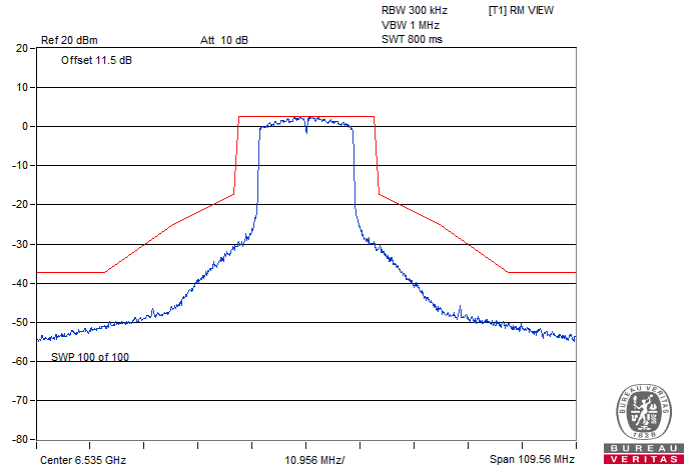
802.11ax (HE20) / Chain 1 : CH 1



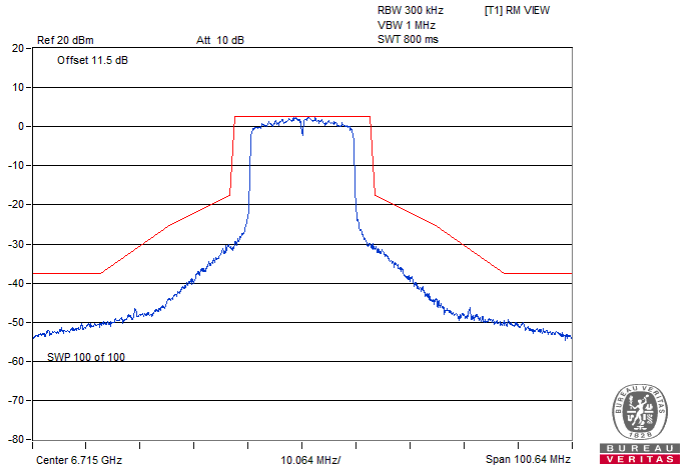
802.11ax (HE20) / Chain 1 : CH 45



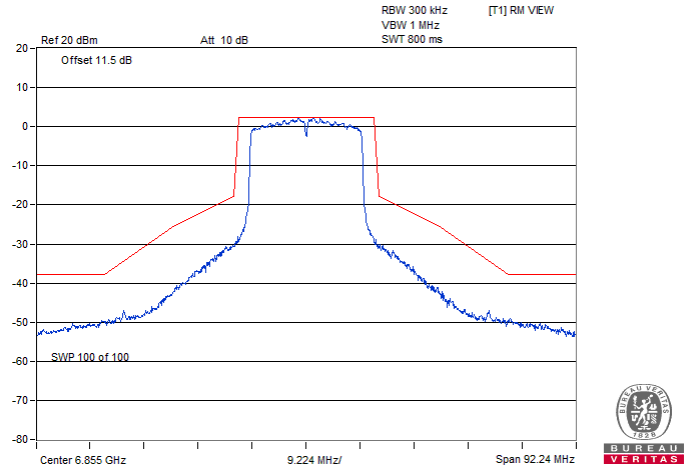
802.11ax (HE20) / Chain 1 : CH 93



802.11ax (HE20) / Chain 1 : CH 117



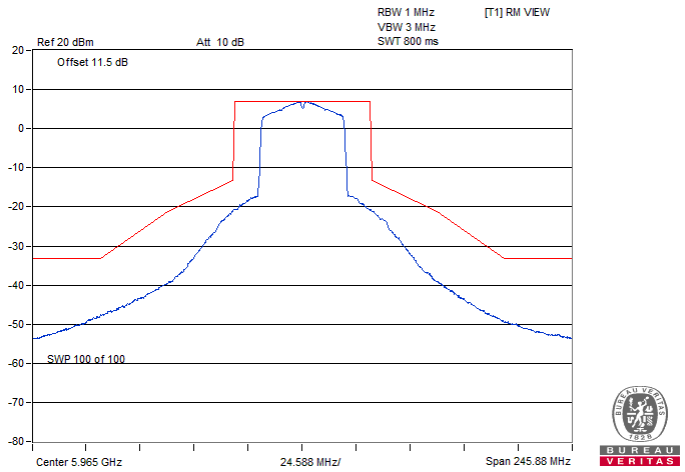
802.11ax (HE20) / Chain 1 : CH 153



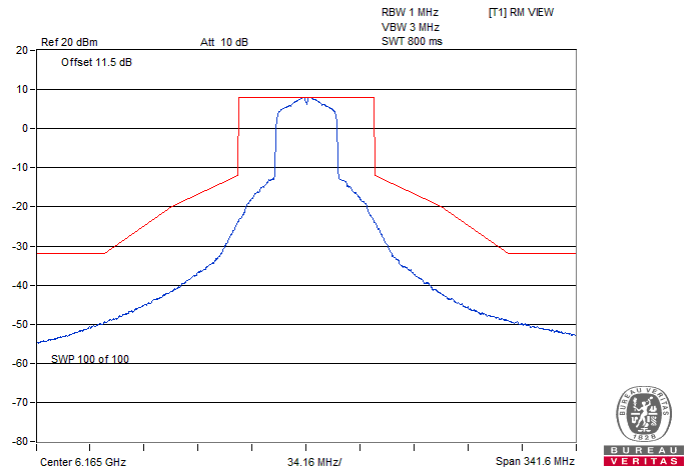
802.11ax (HE20) / Chain 1 : CH 181

802.11ax (HE40)

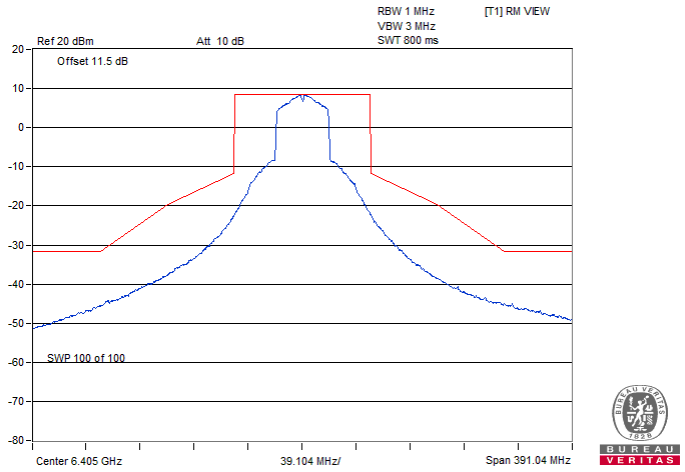
Spectrum Plot



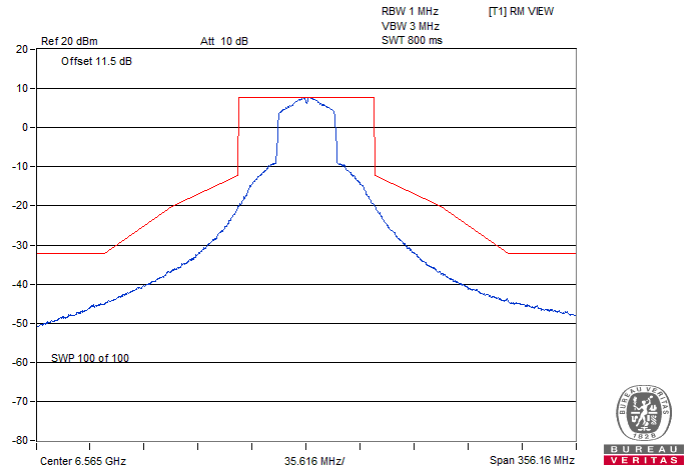
802.11ax (HE40) / Chain 0 : CH 3



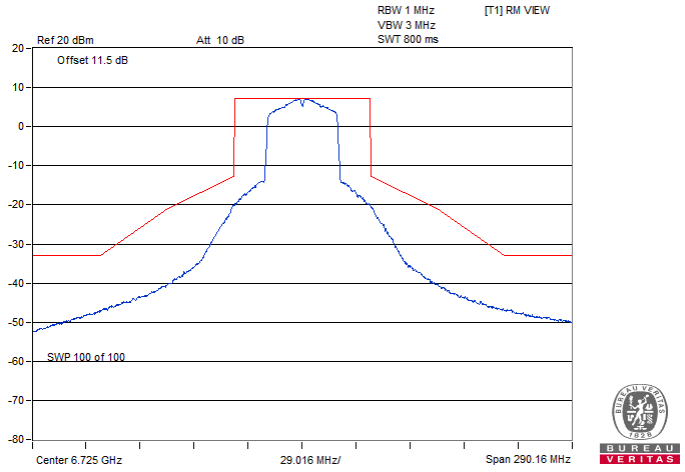
802.11ax (HE40) / Chain 0 : CH 43



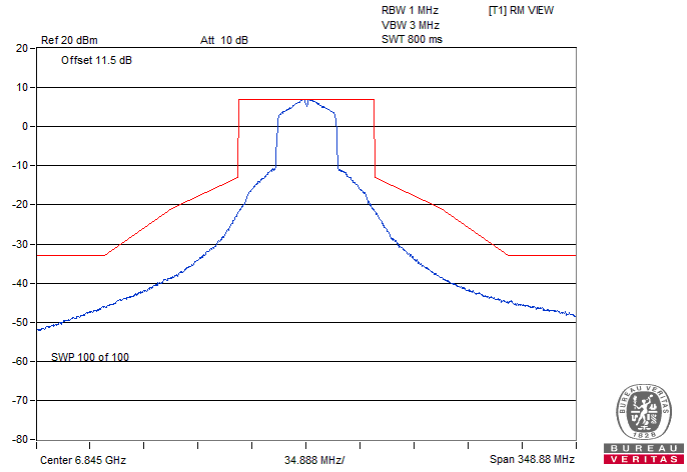
802.11ax (HE40) / Chain 0 : CH 91



802.11ax (HE40) / Chain 0 : CH 123

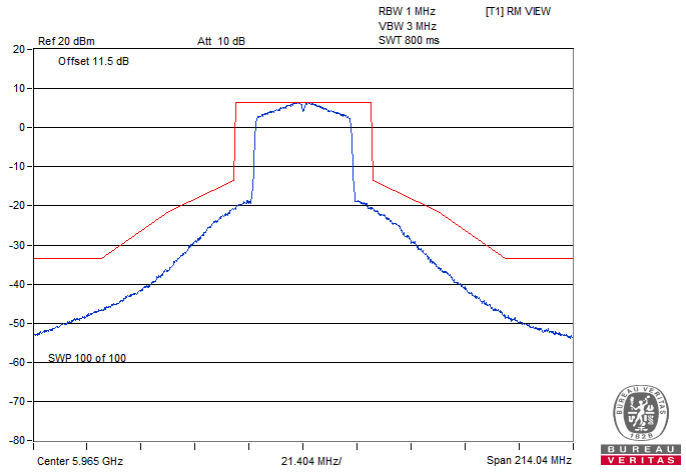


802.11ax (HE40) / Chain 0 : CH 155

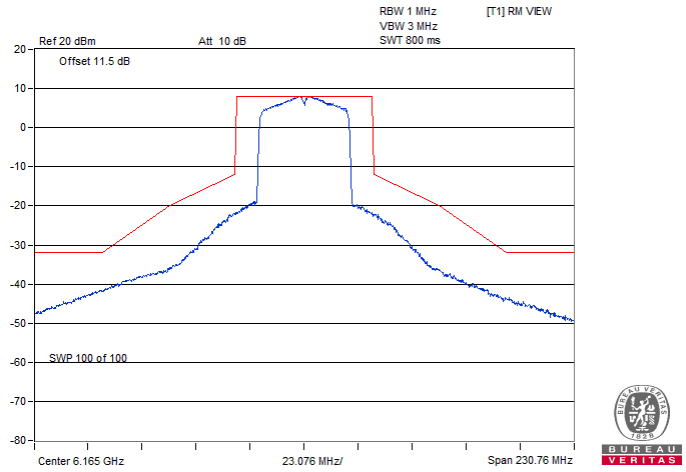


802.11ax (HE40) / Chain 0 : CH 179

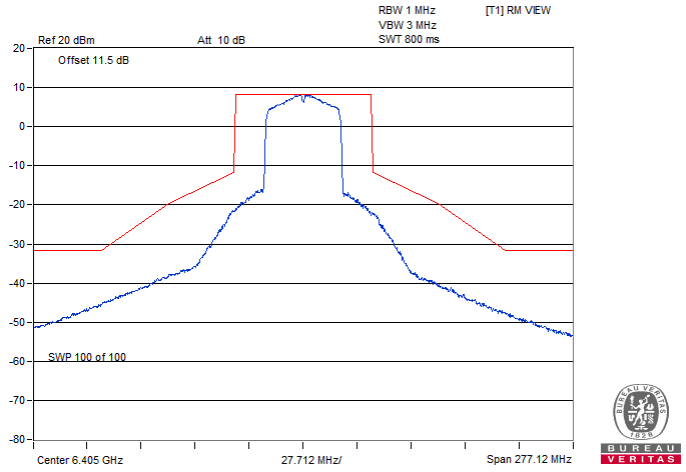
Spectrum Plot



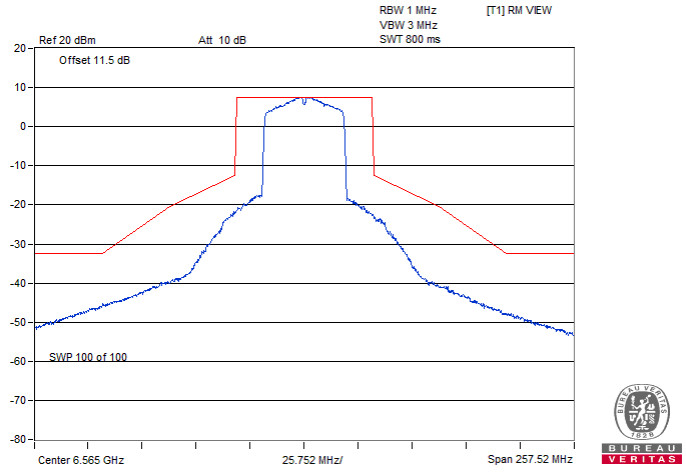
802.11ax (HE40) / Chain 1 : CH 3



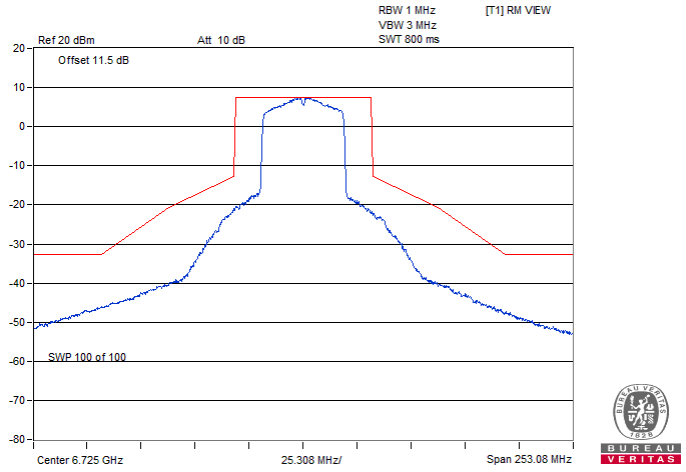
802.11ax (HE40) / Chain 1 : CH 43



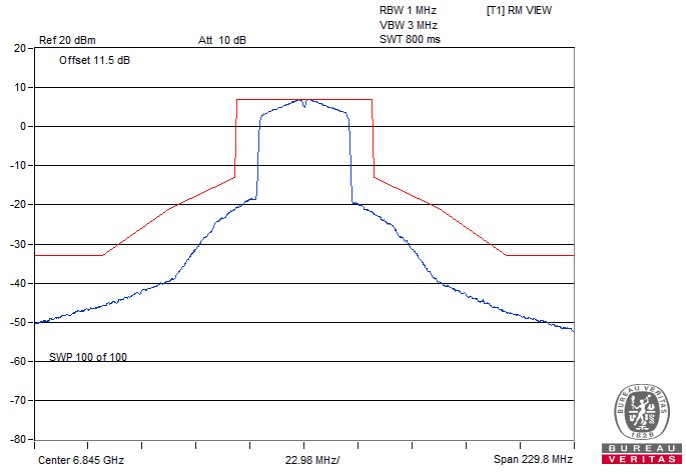
802.11ax (HE40) / Chain 1 : CH 91



802.11ax (HE40) / Chain 1 : CH 123



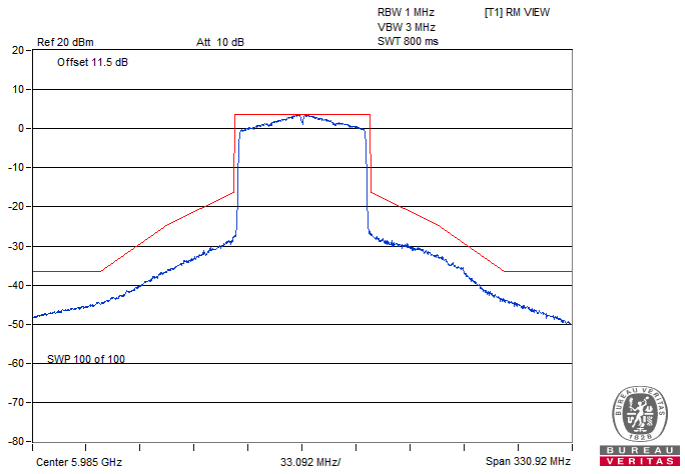
802.11ax (HE40) / Chain 1 : CH 155



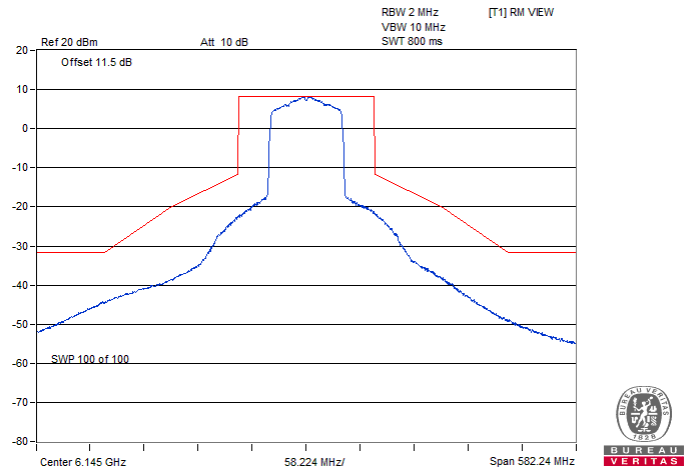
802.11ax (HE40) / Chain 1 : CH 179

802.11ax (HE80)

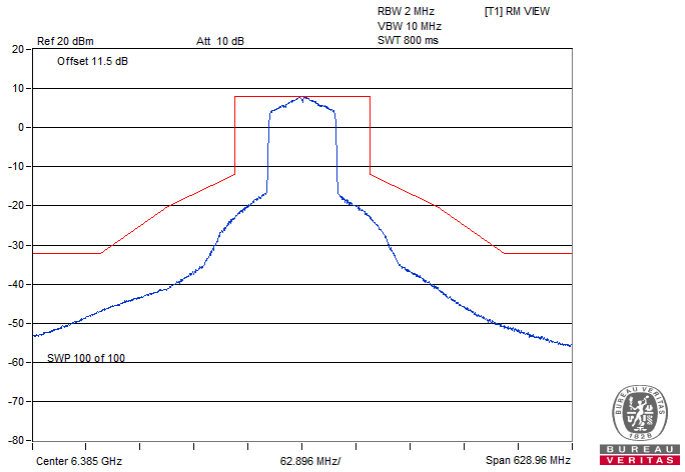
Spectrum Plot



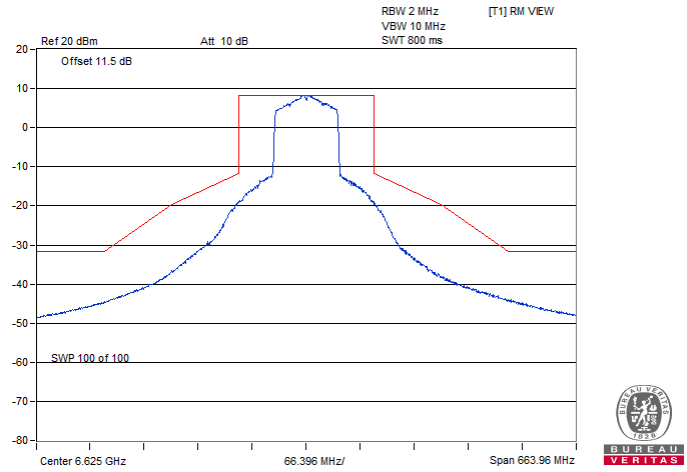
802.11ax (HE80) / Chain 0 : CH 7



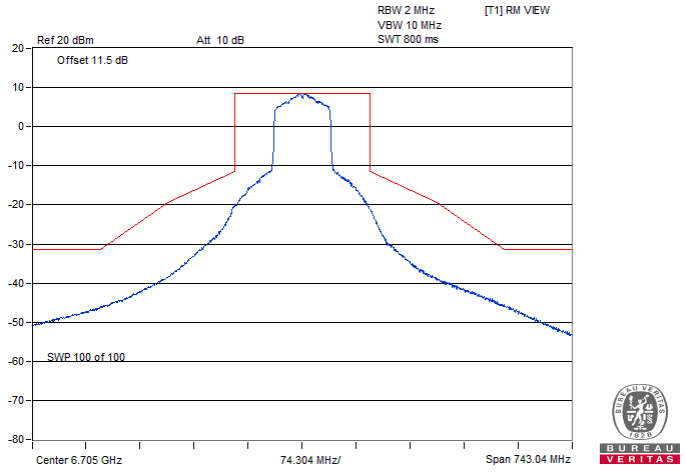
802.11ax (HE80) / Chain 0 : CH 39



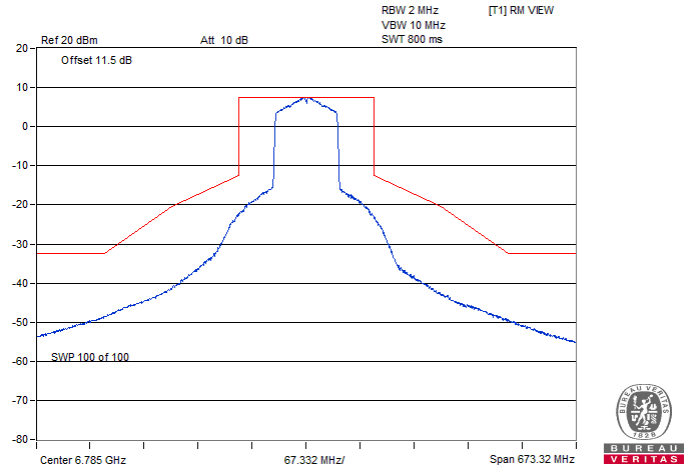
802.11ax (HE80) / Chain 0 : CH 87



802.11ax (HE80) / Chain 0 : CH 135

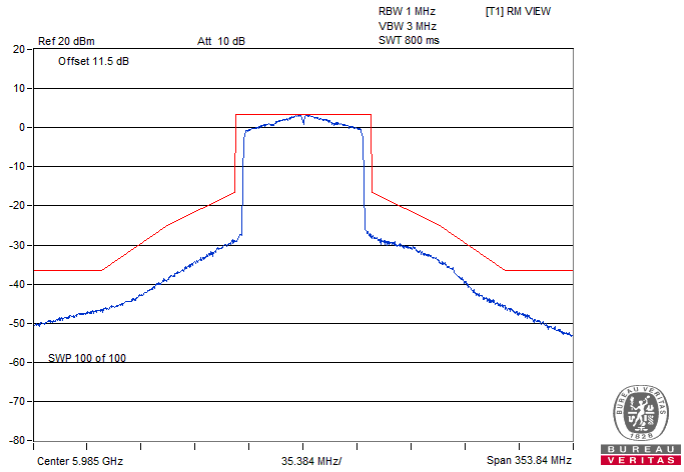


802.11ax (HE80) / Chain 0 : CH 151

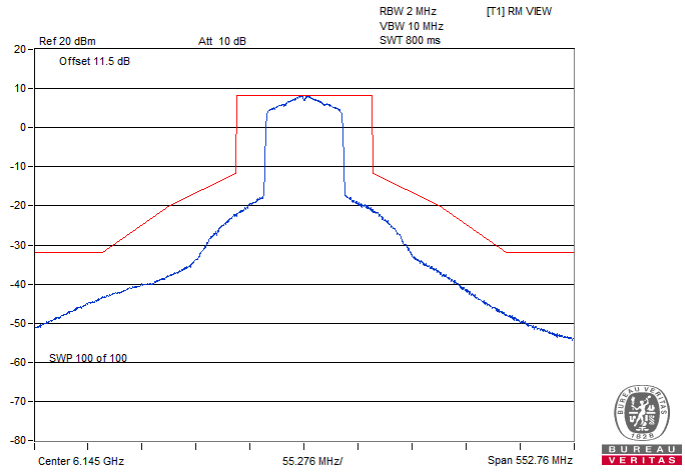


802.11ax (HE80) / Chain 0 : CH 167

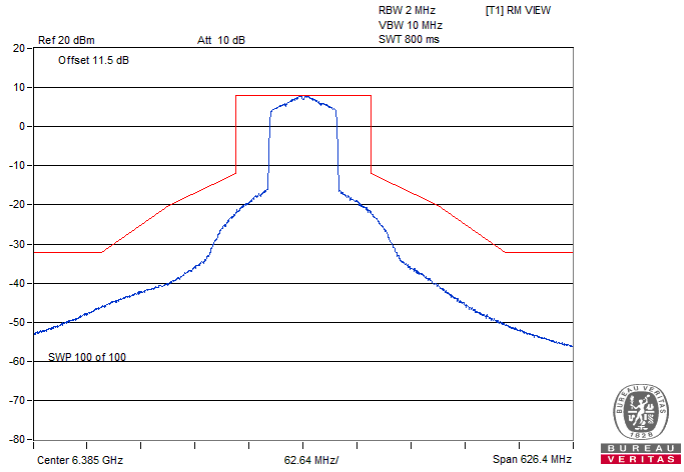
Spectrum Plot



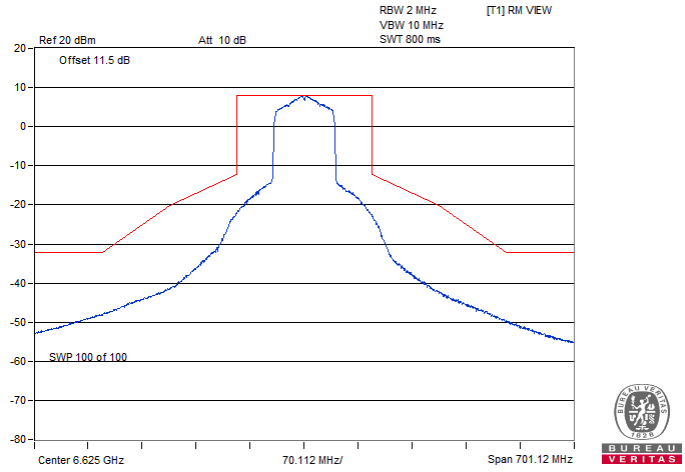
802.11ax (HE80) / Chain 1 : CH 7



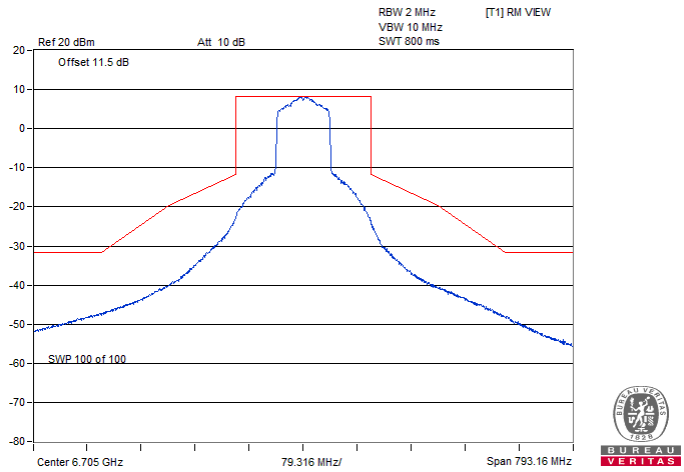
802.11ax (HE80) / Chain 1 : CH 39



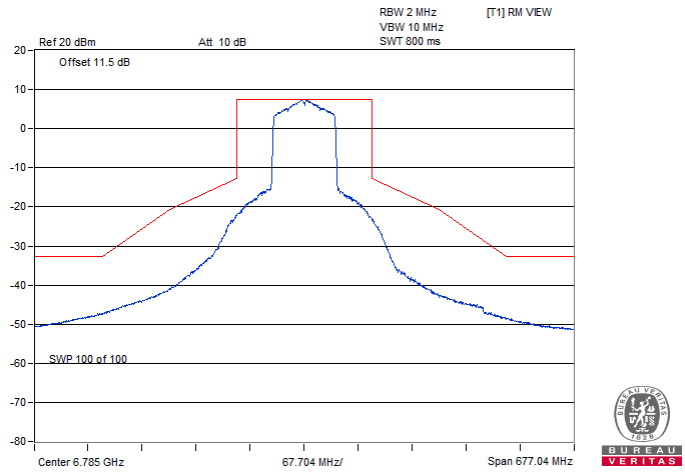
802.11ax (HE80) / Chain 1 : CH 87



802.11ax (HE80) / Chain 1 : CH 135



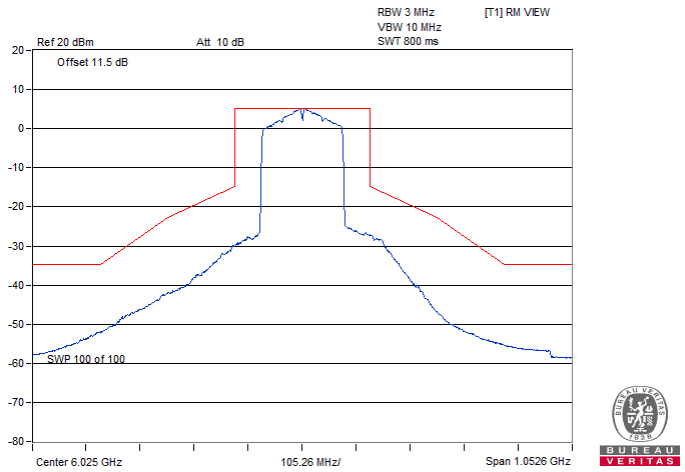
802.11ax (HE80) / Chain 1 : CH 151



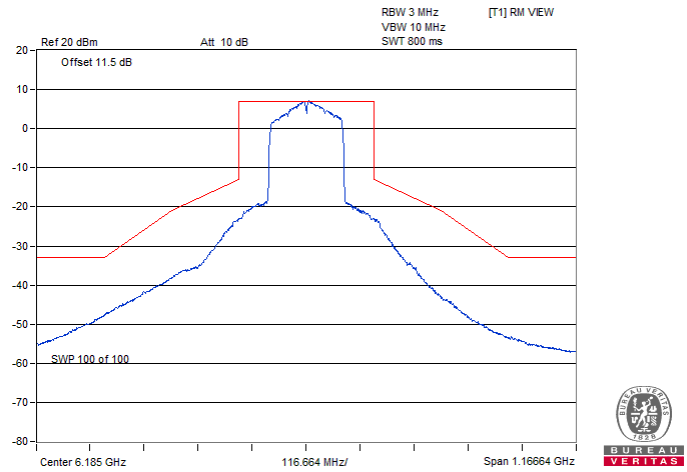
802.11ax (HE80) / Chain 1 : CH 167

802.11ax (HE160)

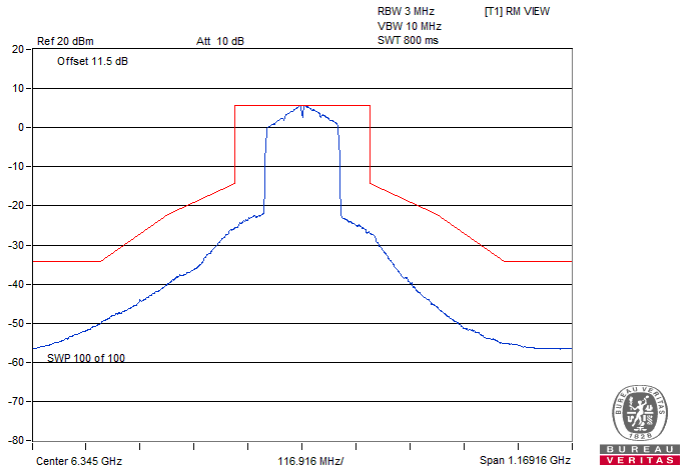
Spectrum Plot



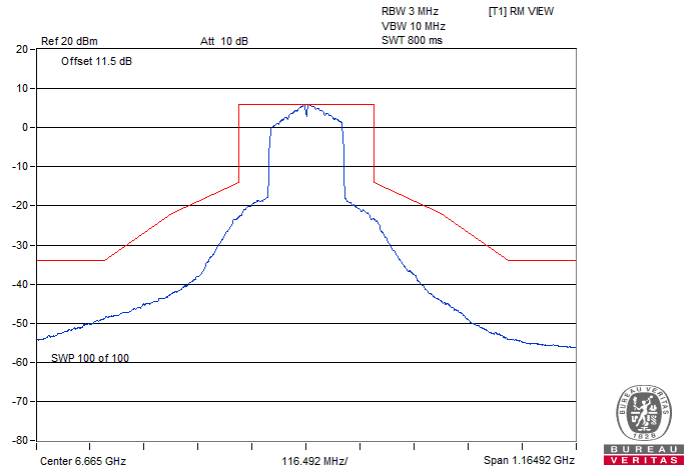
802.11ax (HE160) / Chain 0 : CH 15



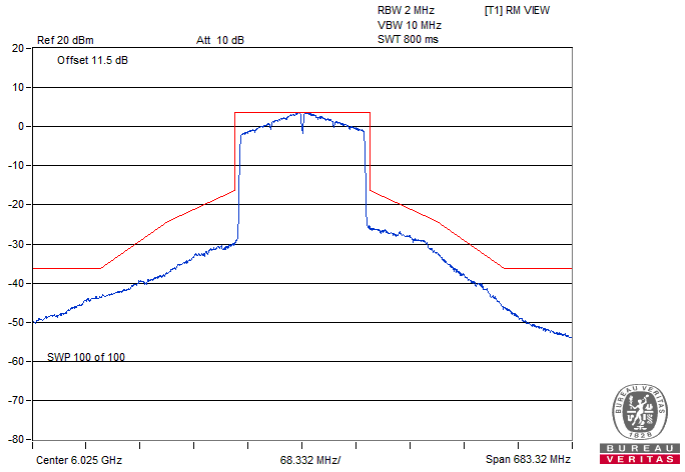
802.11ax (HE160) / Chain 0 : CH 47



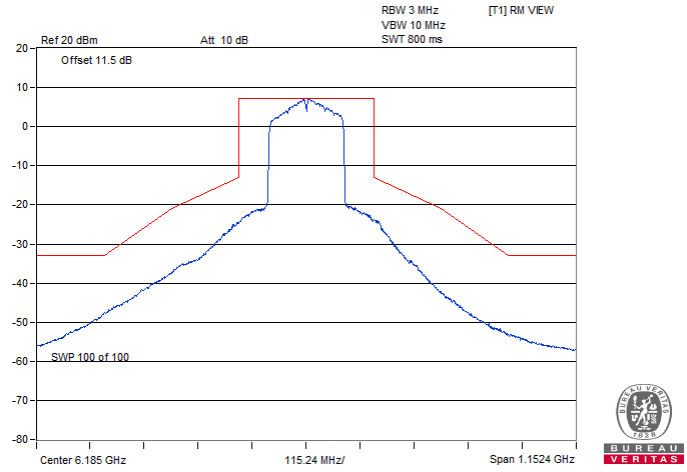
802.11ax (HE160) / Chain 0 : CH 79



802.11ax (HE160) / Chain 0 : CH 143

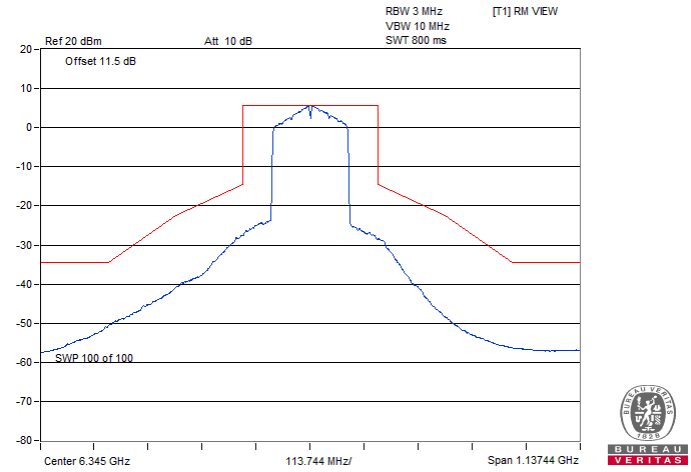


802.11ax (HE160) / Chain 1 : CH 15

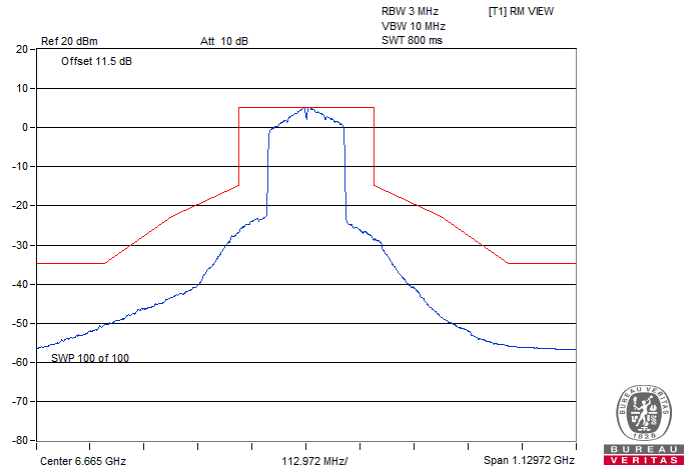


802.11ax (HE160) / Chain 1 : CH 47

Spectrum Plot



802.11ax (HE160) / Chain 1 : CH 79



802.11ax (HE160) / Chain 1 : CH 143

7.5 Occupied Bandwidth

Test Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Ivan Tseng/ Chun Wu

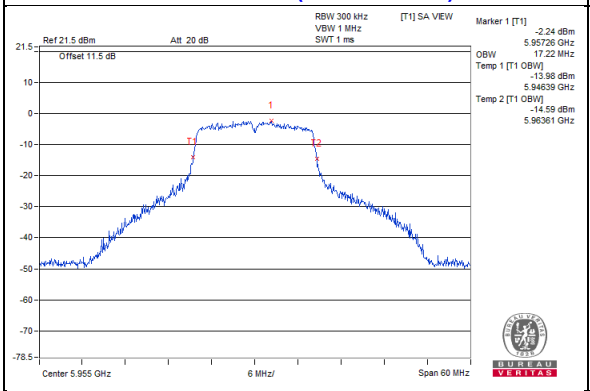
1TX

802.11a

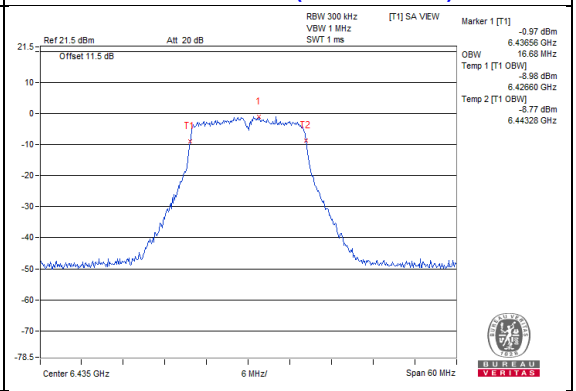
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	5955	17.22
45	6175	16.68
93	6415	16.68
97	6435	16.68
105	6475	16.68
113	6515	16.68
117	6535	16.68
153	6715	16.80
181	6855	16.80
185	6875	16.68
213	7015	16.68
233	7115	16.68

Spectrum Plot of Max. Value

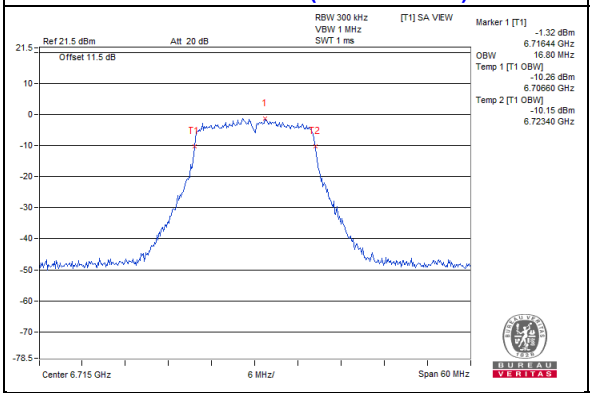
802.11a / CH1 (U-NII-5 Band)



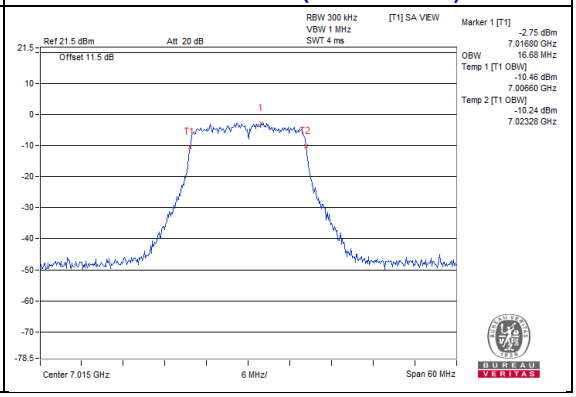
802.11a / CH97 (U-NII-6 Band)



802.11a / CH153 (U-NII-7 Band)



802.11a / CH213 (U-NII-8 Band)

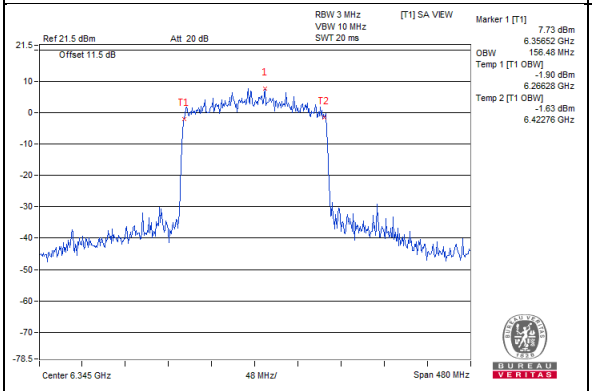


802.11ax (HE160)

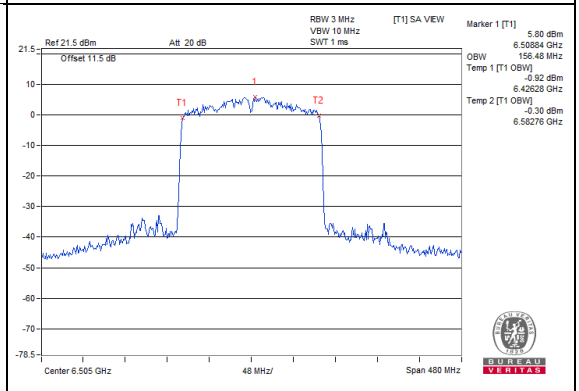
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
15	6025	156.48
47	6185	154.56
79	6345	156.48
111	6505	156.48
143	6665	156.48
175	6825	156.48
207	6985	156.48

Spectrum Plot of Max. Value

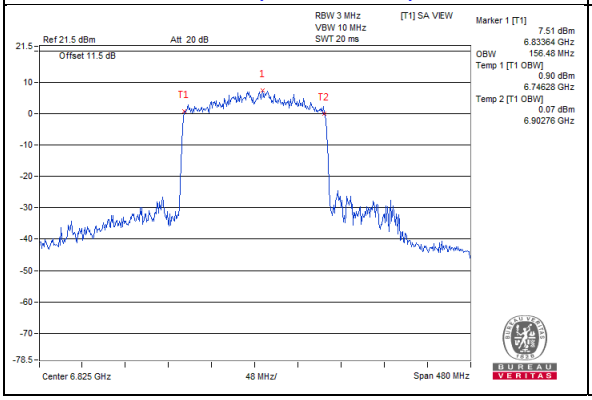
CH79 (U-NII-5 Band)



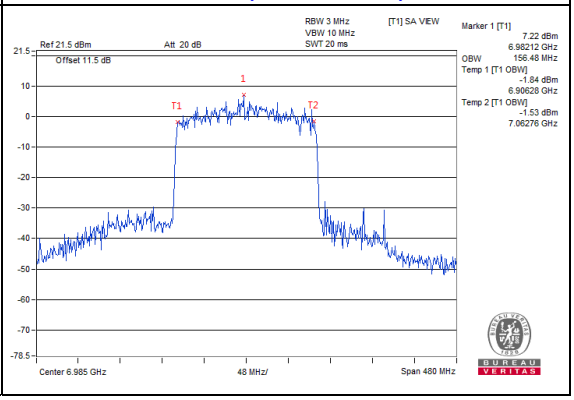
CH111 (U-NII-6 Band)



CH175 (U-NII-7 Band)



CH207 (U-NII-8 Band)



Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

2TX

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	5955	17.16	17.10
45	6175	17.16	17.16
93	6415	17.28	17.16
97	6435	17.16	17.04
105	6475	17.16	17.16
113	6515	16.68	16.68
117	6535	17.16	17.04
153	6715	16.68	16.80
181	6855	17.16	17.16
185	6875	17.16	17.28
213	7015	16.68	16.68
233	7115	16.80	17.28

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	5955	19.20	19.20
45	6175	19.32	19.20
93	6415	19.20	19.32
97	6435	19.20	19.32
105	6475	19.08	19.08
113	6515	19.08	19.08
117	6535	19.32	19.20
153	6715	19.02	19.02
181	6855	19.20	19.20
185	6875	19.32	19.20
213	7015	19.02	19.02
233	7115	19.08	19.08

802.11ax (HE40)

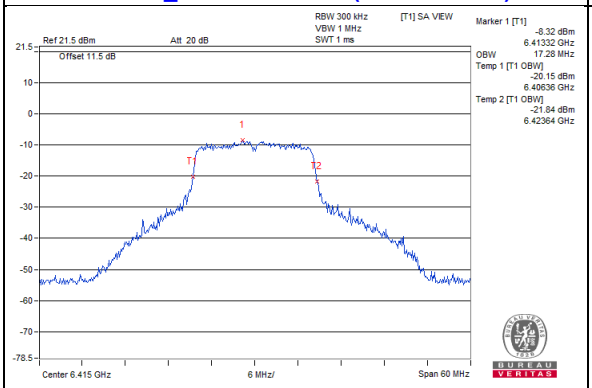
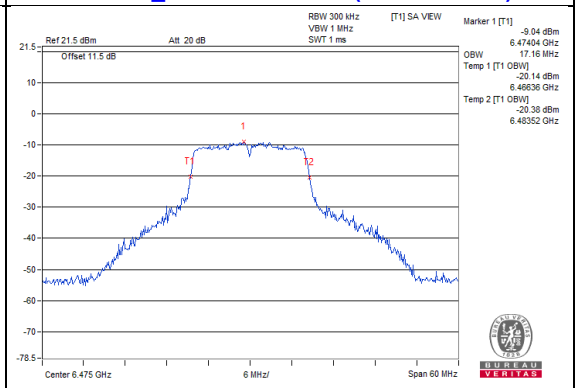
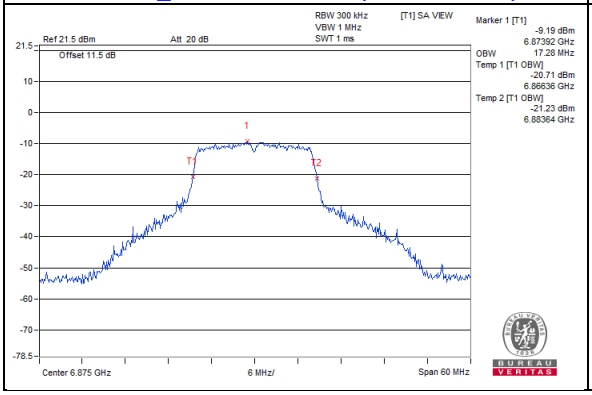
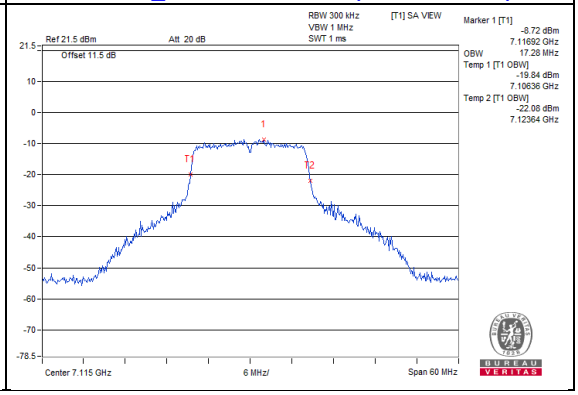
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	5965	38.04	38.16
43	6165	37.68	37.68
91	6405	37.68	37.68
99	6445	37.68	37.68
107	6485	37.68	37.68
115	6525	37.68	37.92
123	6565	37.68	37.68
155	6725	37.92	37.68
179	6845	37.68	37.68
187	6885	37.68	37.68
211	7005	37.68	37.80
227	7085	38.16	38.16

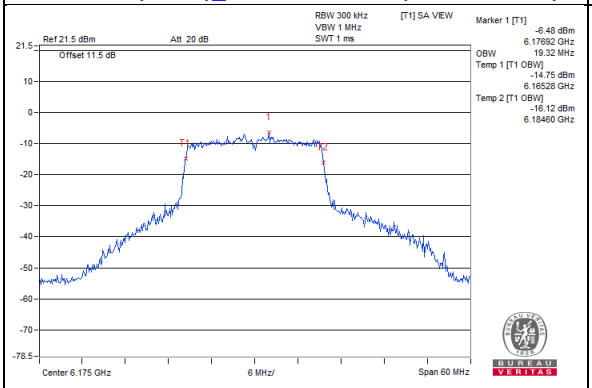
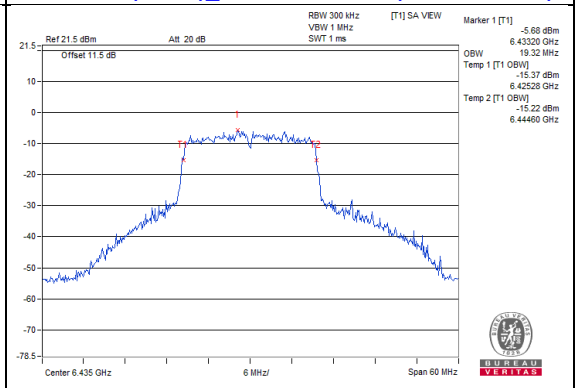
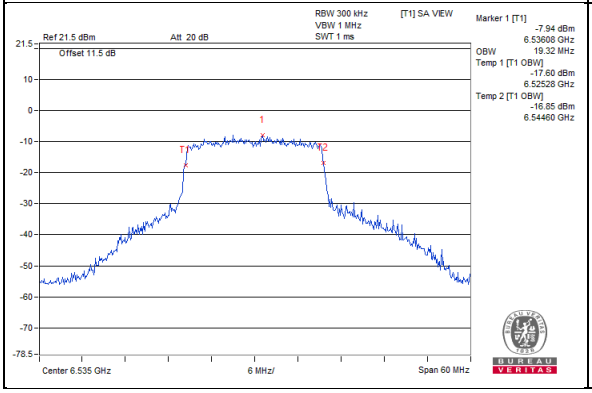
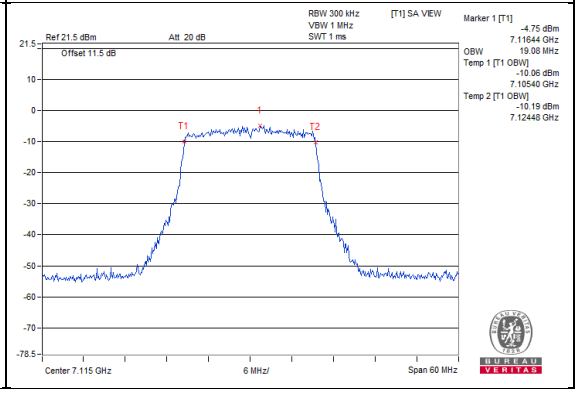
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
7	5985	77.28	77.28
39	6145	77.28	77.28
87	6385	76.80	77.28
103	6465	77.28	77.28
119	6545	76.80	77.28
135	6625	77.04	76.80
151	6705	77.28	77.32
167	6785	76.80	77.04
183	6865	77.28	76.32
199	6945	77.28	77.28
215	7025	77.28	77.28

802.11ax (HE160)

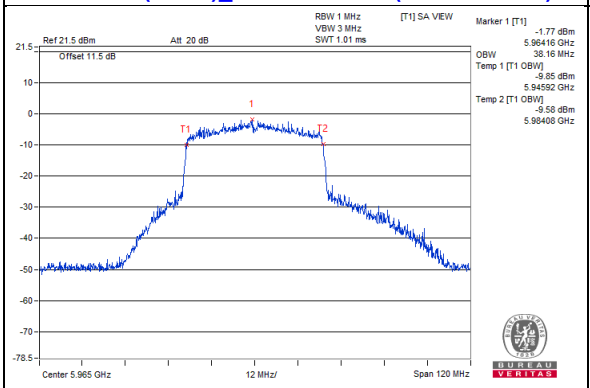
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
15	6025	156.00	155.52
47	6185	155.52	155.52
79	6345	156.48	154.56
111	6505	155.52	155.52
143	6665	156.48	156.48
175	6825	155.52	155.52
207	6985	155.52	155.52

Spectrum Plot of Max. Value	
802.11a_Chain 0 / CH93 (U-NII-5 Band)	**802.11a_Chain 1 / CH105 (U-NII-6 Band)**
	
802.11a_Chain 1 / CH185 (U-NII-7 Band)	**802.11a_Chain 1 / CH233 (U-NII-8 Band)**
	

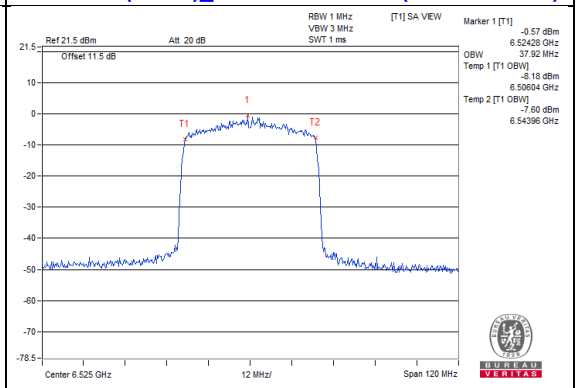
Spectrum Plot of Max. Value	
802.11ax (HE20)_Chain 0 / CH45 (U-NII-5 Band)	**802.11ax (HE20)_Chain 1 / CH97 (U-NII-6 Band)**
	
802.11ax (HE20)_Chain 0 / CH117 (U-NII-7 Band)	**802.11ax (HE20)_Chain 0 / CH233 (U-NII-8 Band)**
	

Spectrum Plot of Max. Value

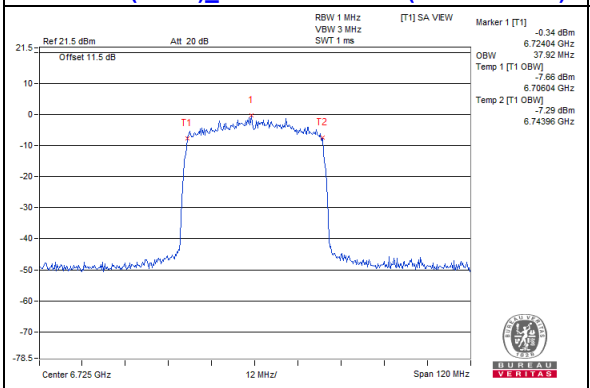
802.11ax (HE40)_Chain 1 / CH3 (U-NII-5 Band)



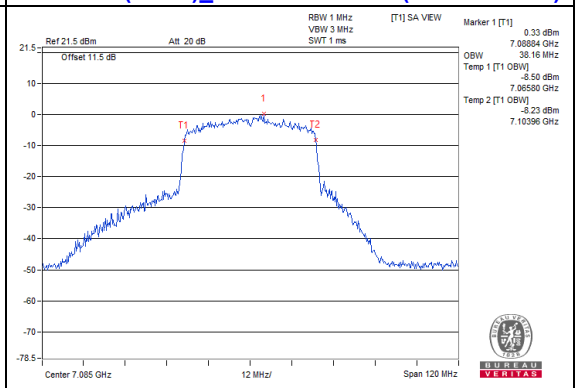
802.11ax (HE40)_Chain 1 / CH115 (U-NII-6 Band)



802.11ax (HE40)_Chain 0 / CH155 (U-NII-7 Band)

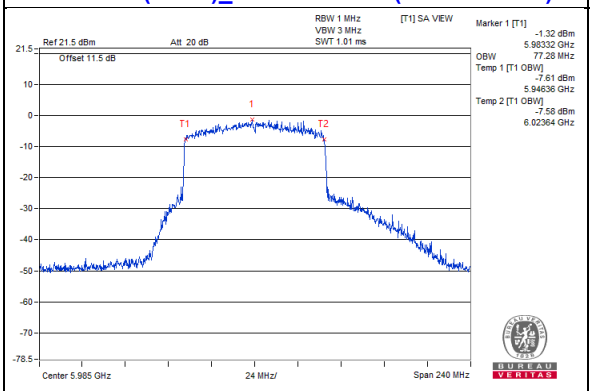


802.11ax (HE40)_Chain 0 / CH227 (U-NII-8 Band)

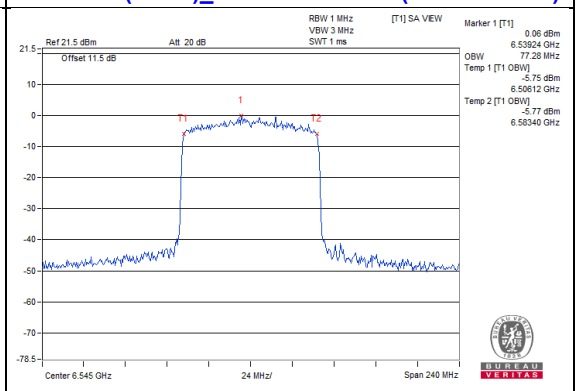


Spectrum Plot of Max. Value

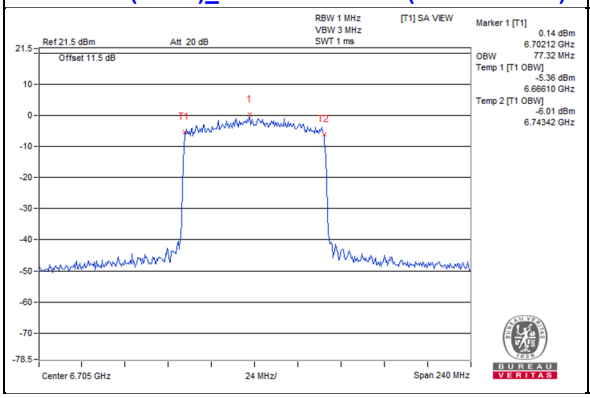
802.11ax (HE80)_Chain 1 / CH7 (U-NII-5 Band)



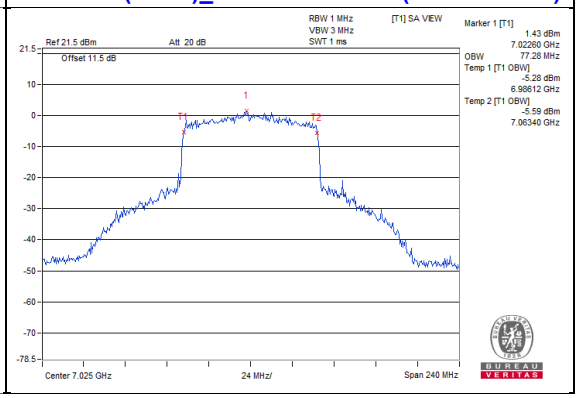
802.11ax (HE80)_Chain 1 / CH119 (U-NII-6 Band)

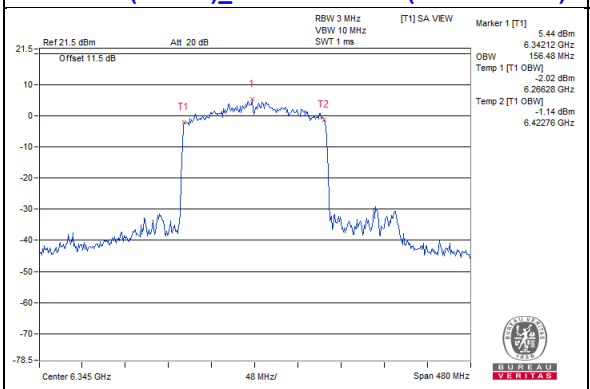
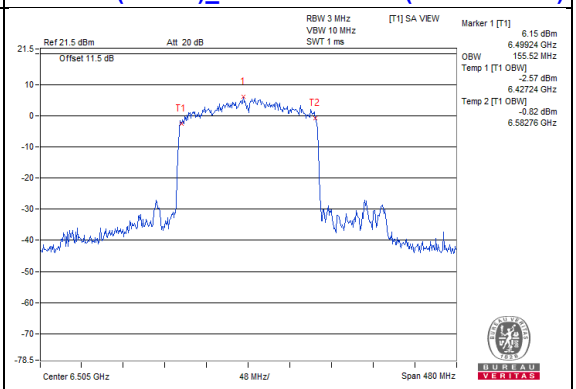
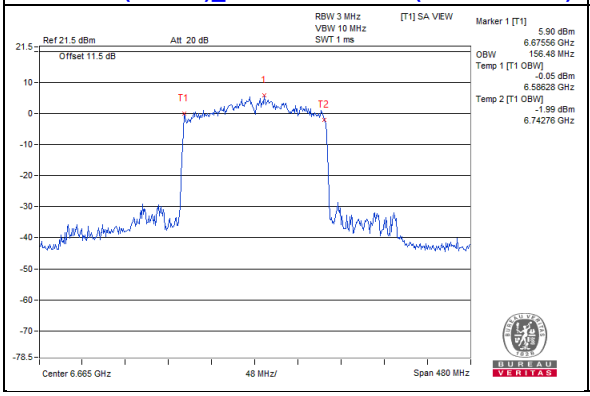
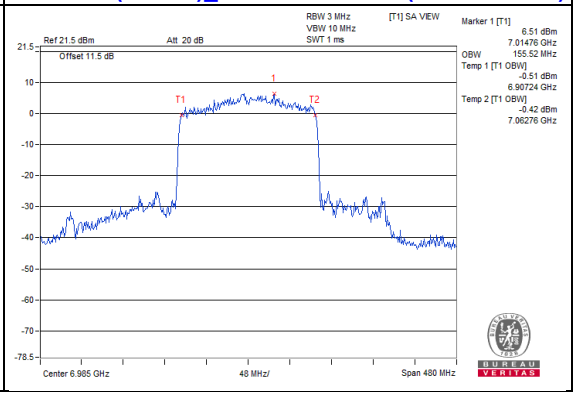


802.11ax (HE80)_Chain 1 / CH151 (U-NII-7 Band)



802.11ax (HE80)_Chain 1 / CH215 (U-NII-8 Band)



Spectrum Plot of Max. Value	
802.11ax (HE160)_Chain 0 / CH79 (U-NII-5 Band)	**802.11ax (HE160)_Chain 0 / CH111 (U-NII-6 Band)**
	
802.11ax (HE160)_Chain 0 / CH143 (U-NII-7 Band)	**802.11ax (HE160)_Chain 0 / CH207 (U-NII-8 Band)**
	

Test Mode B

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

1TX

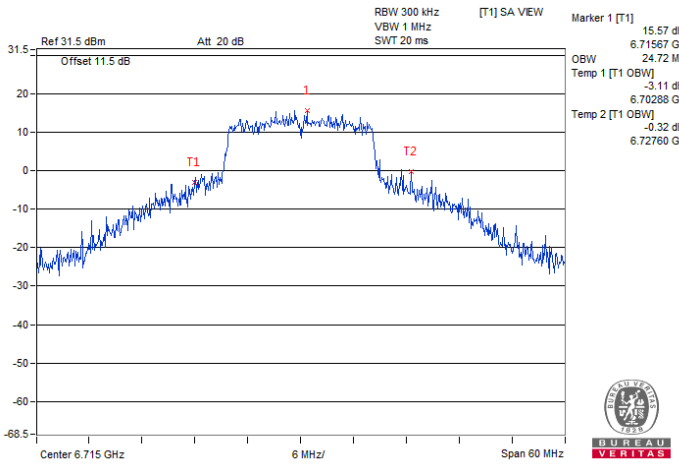
802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	5955	19.42
45	6175	18.75
93	6415	20.67
117	6535	23.07
153	6715	24.72
181	6855	23.56

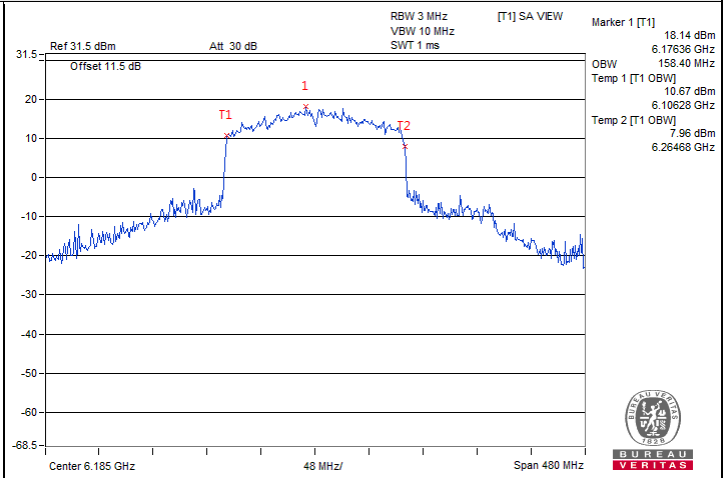
802.11ax (HE160)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
15	6025	156.92
47	6185	158.40
79	6345	157.44
143	6665	157.44

Spectrum Plot of Maximum Value



802.11a : CH 153



802.11ax (HE160) : CH 47

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	5955	16.92	16.92
45	6175	17.02	16.64
93	6415	17.21	16.64
117	6535	17.21	16.83
153	6715	18.95	16.74
181	6855	17.70	16.74

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	5955	19.14	19.04
45	6175	19.14	19.04
93	6415	19.33	19.14
117	6535	19.23	19.14
153	6715	19.24	19.04
181	6855	19.14	19.14

802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	5965	37.89	37.70
43	6165	38.08	38.08
91	6405	38.08	38.08
123	6565	38.27	37.89
155	6725	38.27	37.89
179	6845	37.89	37.89

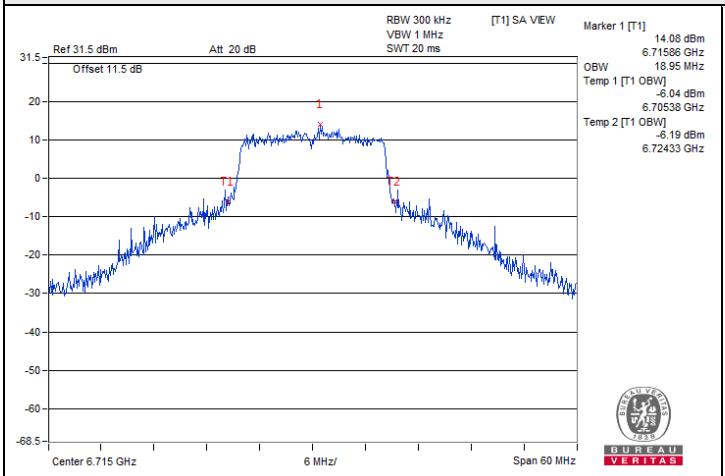
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
7	5985	77.31	76.54
39	6145	77.31	77.70
87	6385	77.31	77.31
135	6625	78.08	77.31
151	6705	78.08	78.08
167	6785	77.70	77.31

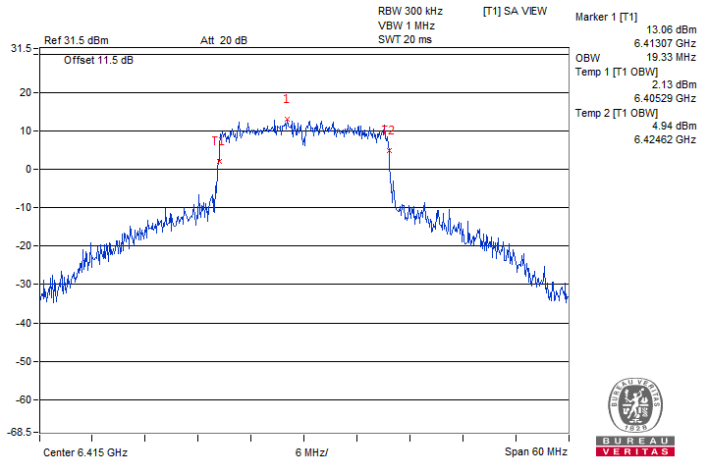
802.11ax (HE160)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
15	6025	154.61	155.38
47	6185	156.92	156.15
79	6345	157.44	156.48
143	6665	176.64	158.40

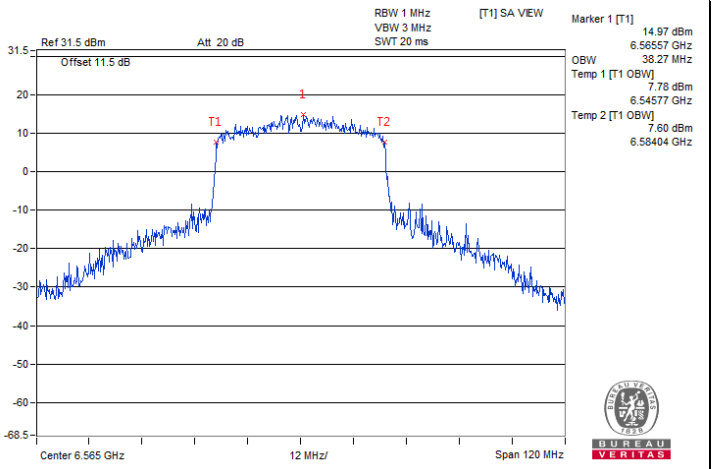
Spectrum Plot of Maximum Value



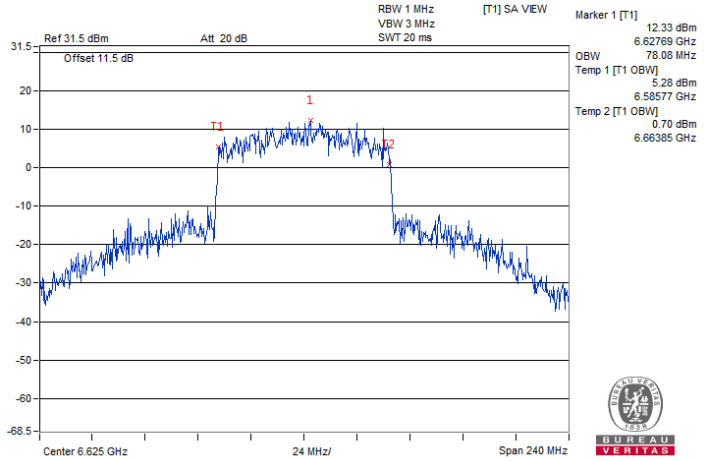
802.11a / Chain 0 : CH 153



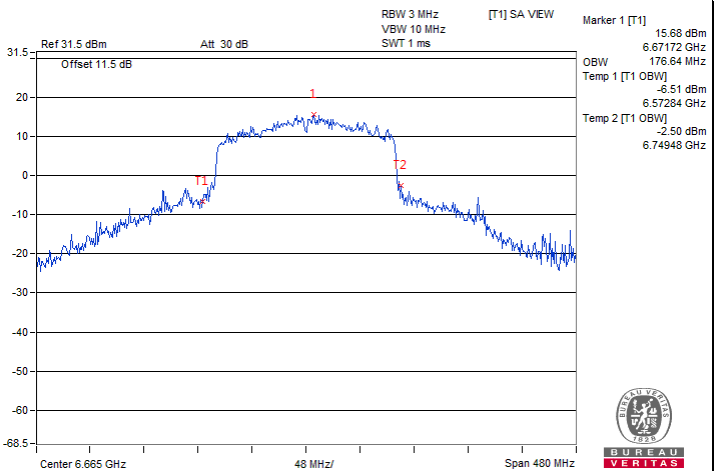
802.11ax (HE20) / Chain 0 : CH 93



802.11ax (HE40) / Chain 0 : CH 123



802.11ax (HE80) / Chain 0 : CH 135



802.11ax (HE160) / Chain 0 : CH 143

7.6 Frequency Stability

Test Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

2TX

802.11a

Frequency Stability Versus Temp.									
Operating Frequency: 5955MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
70	3.3	5954.9845	Pass	5954.9843	Pass	5954.9853	Pass	5954.9857	Pass
60	3.3	5955.0044	Pass	5955.0086	Pass	5955.0063	Pass	5955.0058	Pass
50	3.3	5955.0106	Pass	5955.0094	Pass	5955.0070	Pass	5955.0100	Pass
40	3.3	5955.0087	Pass	5955.0049	Pass	5955.0068	Pass	5955.0086	Pass
30	3.3	5955.0068	Pass	5955.0092	Pass	5955.0114	Pass	5955.0105	Pass
20	3.3	5954.9908	Pass	5954.9909	Pass	5954.9913	Pass	5954.9932	Pass
10	3.3	5954.9936	Pass	5954.9921	Pass	5954.9929	Pass	5954.9908	Pass
0	3.3	5954.9935	Pass	5954.9939	Pass	5954.9930	Pass	5954.9972	Pass
-10	3.3	5955.0046	Pass	5955.0050	Pass	5955.0013	Pass	5955.0066	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5955MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	3.795	5954.9901	Pass	5954.9906	Pass	5954.9906	Pass	5954.9926	Pass
	3.3	5954.9908	Pass	5954.9909	Pass	5954.9913	Pass	5954.9932	Pass
	2.805	5954.9897	Pass	5954.9907	Pass	5954.9906	Pass	5954.9938	Pass

Test Mode B

Input Power:	3.3 Vdc	Environmental Conditions:	23°C, 67% RH	Tested By:	Adair Peng/Alan Wu

2TX

802.11a

Frequency Stability Versus Temperature									
Operating Frequency: 5955 MHz									
Temp. (℃)	Power Supply (Vdc)	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
70	3.3	5954.9915	Pass	5954.9931	Pass	5954.996	Pass	5954.996	Pass
60	3.3	5954.9906	Pass	5954.9921	Pass	5954.9893	Pass	5954.9916	Pass
50	3.3	5954.9876	Pass	5954.9837	Pass	5954.9866	Pass	5954.9837	Pass
40	3.3	5954.986	Pass	5954.9881	Pass	5954.9862	Pass	5954.9888	Pass
30	3.3	5954.9902	Pass	5954.9909	Pass	5954.9905	Pass	5954.9918	Pass
20	3.3	5954.9774	Pass	5954.9783	Pass	5954.9784	Pass	5954.9795	Pass
10	3.3	5954.9815	Pass	5954.9848	Pass	5954.9851	Pass	5954.9828	Pass
0	3.3	5955.0006	Pass	5954.9955	Pass	5955.0003	Pass	5954.9979	Pass
-10	3.3	5954.988	Pass	5954.9878	Pass	5954.9883	Pass	5954.9878	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5955 MHz									
Temp. (℃)	Power Supply (Vdc)	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	3.795	5954.9763	Pass	5954.9782	Pass	5954.9753	Pass	5954.9753	Pass
	3.3	5954.9774	Pass	5954.9783	Pass	5954.9784	Pass	5954.9795	Pass
	2.805	5954.9822	Pass	5954.9826	Pass	5954.9816	Pass	5954.9845	Pass

7.7 Contention-based Protocol

Test Mode A

For U-NII-5

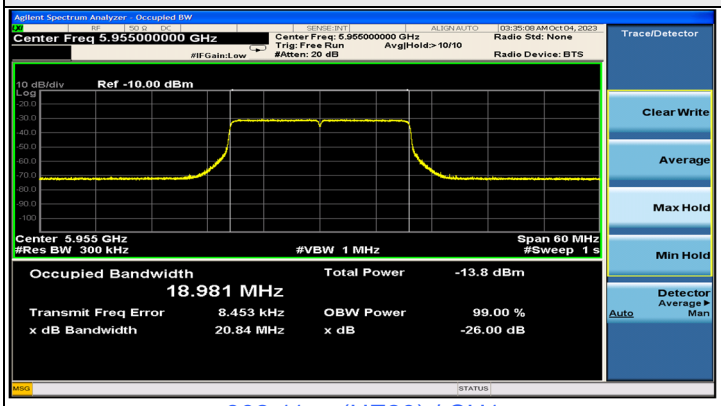
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 3)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	1	5955	5955	-75.92	-13.92	0	-62	-62	OFF
					-83	-13.92	0	-69.08	-62	Minimal
					-95.92	-13.92	0	-82	-62	ON
	160	15	6025	5950	-75.92	-13.92	0	-62	-62	OFF
					-83	-13.92	0	-69.08	-62	Minimal
					-95.92	-13.92	0	-82	-62	ON
				6025	-75.92	-13.92	0	-62	-62	OFF
					-83	-13.92	0	-69.08	-62	Minimal
					-95.92	-13.92	0	-82	-62	ON
				6100	-75.92	-13.92	0	-62	-62	OFF
					-83	-13.92	0	-69.08	-62	Minimal
					-95.92	-13.92	0	-82	-62	ON

Notes:

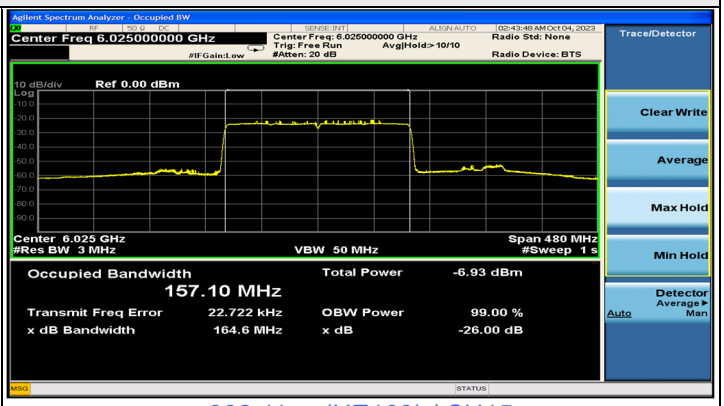
1. After investigation (consider antenna gain and path loss), the one representative port (Chain 0) was measured and presented in the report.
2. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
3. Antenna gain values include all the applicable path losses.

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	5955	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	5950	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6025	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6100	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

Plots of EUT Tx waveform

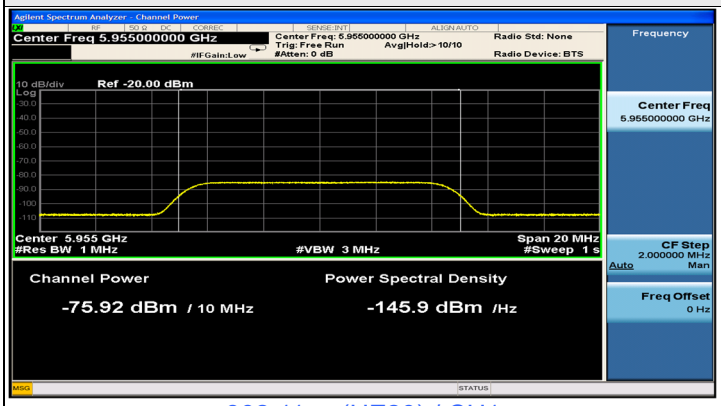


802.11ax (HE20) / CH1

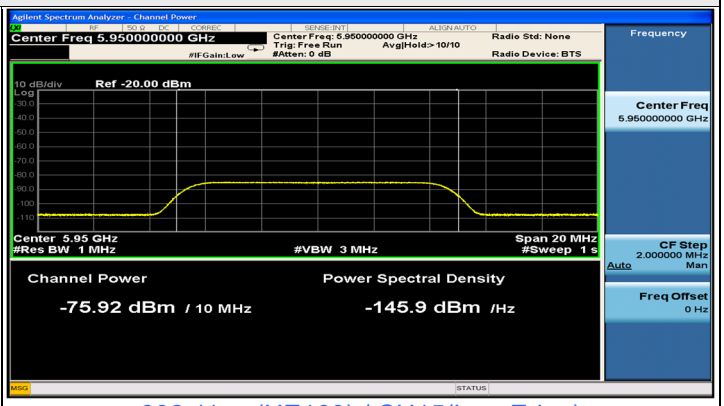


802.11ax (HE160) / CH15

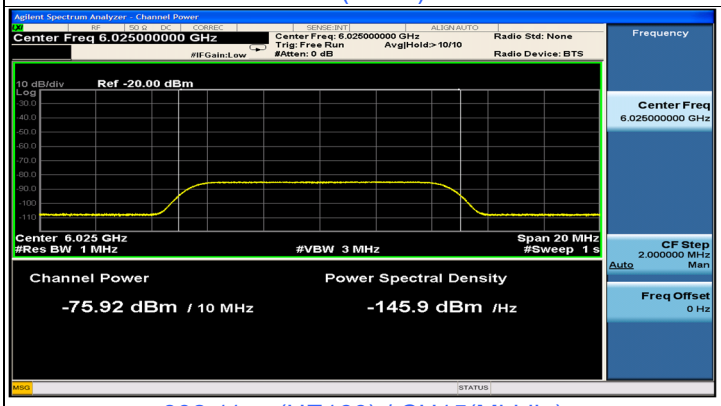
Plots of Injected signal (AWGN) level



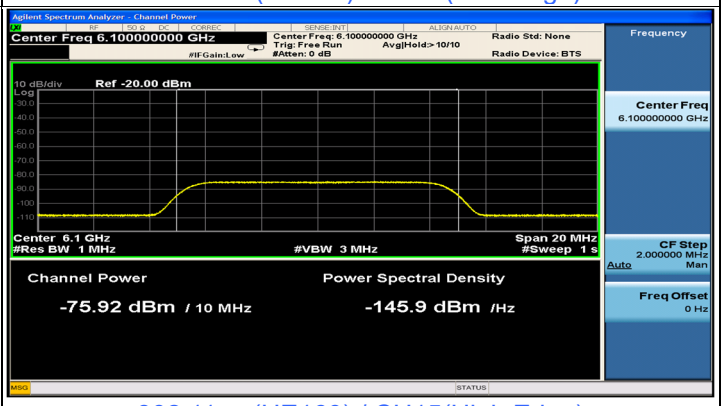
802.11ax (HE20) / CH1



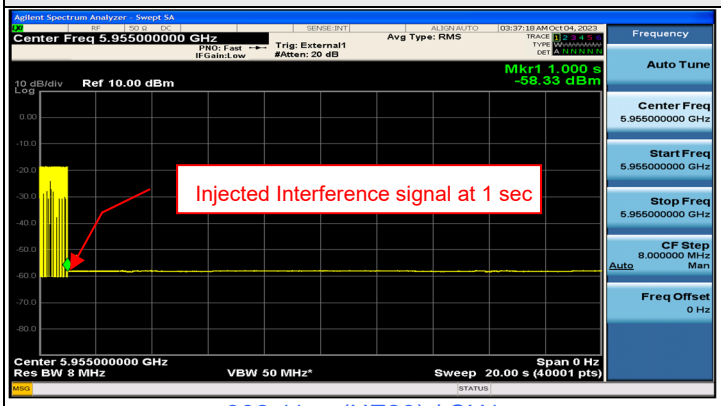
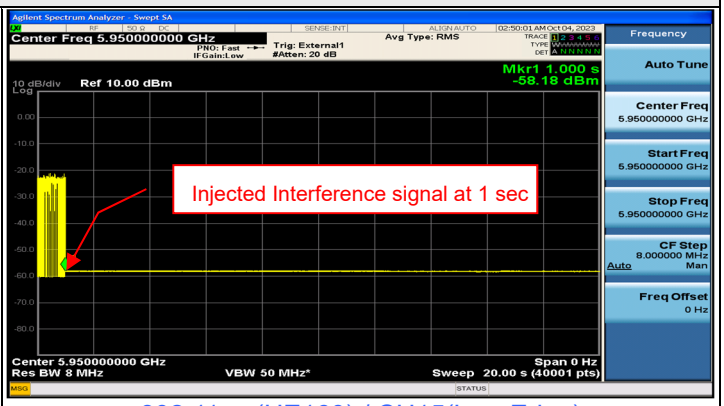
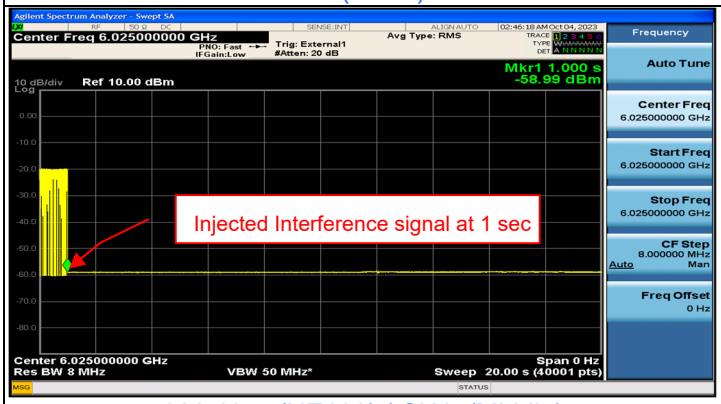
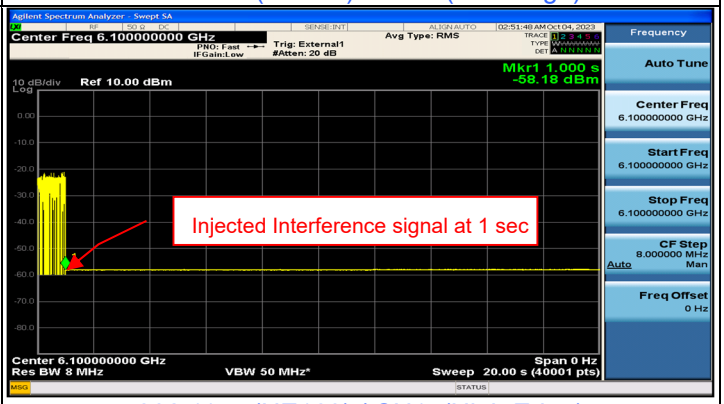
802.11ax (HE160) / CH15(Low Edge)



802.11ax (HE160) / CH15(Middle)



802.11ax (HE160) / CH15(High Edge)

Plots of EUT ceased transmission in the time domain	
	
802.11ax (HE20) / CH1	802.11ax (HE160) / CH15(Low Edge)
	
802.11ax (HE160) / CH15(Middle)	802.11ax (HE160) / CH15(High Edge)