TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBELJ-WTW-P22080819A-2
FCC ID:	VBNNW6EAI-E
Product:	Nokia DAC Wi-Fi 6E Indoor AP
Brand:	Nokia
Model No.:	NW6EAI-E
Received Date:	2022/9/13
Test Date:	2022/9/19 ~ 2022/11/11
Issued Date:	2023/3/21
Applicant:	Nokia Solutions and Networks
Address:	3201 Olympus Blvd Dallas, Texas 75019 United States.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Approved by: _____ , **Date:** 2023/3/21

May Chen / Manager

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Prepared by : Vivian Huang / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBELJ-WTW-P22080819A-2	Original release.	2023/3/21

1 Certificate

Product:	Nokia DAC Wi-Fi 6E Indoor AP
Brand:	Nokia
Test Model:	NW6EAI-E
Sample Status:	Engineering sample
Applicant:	Nokia Solutions and Networks
Test Date:	2022/9/19 ~ 2022/11/11
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 987594 D02 U-NII 6 GHz EMC Measurement 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)(5)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(5)	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 -6.62 dB at 0.47422 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -11.0 dB at 907.45 MHz
15.407(b)(6) 15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.2 dB at 5919.47 MHz
15.407(b)(7)	In-Band Emission Mask	Pass	Meet the requirement of limit.
15.407(d)(6)	Contention-based Protocol	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.407(d)	Operational restrictions for 6 GHz U-NII devices	Pass	Declaration by applicant.
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.
---	Emission Bandwidth	-	Reference only.

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

2.1 Measurement Uncertainty

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

Measurement	Specification	Expanded Uncertainty (k=2) (±)
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.5 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 dB

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

2.2 Supplementary Information

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

3 General Information

3.1 General Description of EUT

Product	Nokia DAC Wi-Fi 6E Indoor AP
Brand	Nokia
Test Model	NW6EAI-E
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc from AC adapter or 56 Vdc from POE adapter
Modulation Type	1024QAM for OFDMA in 11ax HE mode
Modulation Technology	OFDMA
Transfer Rate	802.11ax: up to 4083.9 Mbps
Operating Frequency	5.955 GHz ~ 6.415 GHz 6.435 GHz ~ 6.525 GHz 6.535 GHz ~ 6.865 GHz 6.875 GHz ~ 7.115 GHz
Number of Channel	802.11ax (HE20): 59 802.11ax (HE40): 29 802.11ax (HE80): 14 802.11ax (HE160): 7
Output Power	**CDD Mode:** 5.955 GHz ~ 6.415 GHz : EIRP: 168.267 mW (22.26 dBm) 6.435 GHz ~ 6.525 GHz : EIRP: 154.525 mW (21.89 dBm) 6.535 GHz ~ 6.865 GHz : EIRP: 158.489 mW (22 dBm) 6.875 GHz ~ 7.115 GHz : EIRP: 166.341 mW (22.21 dBm) **Beamforming Mode:** 5.955 GHz ~ 6.415 GHz : EIRP: 562.341 mW (27.5 dBm) 6.435 GHz ~ 6.525 GHz : EIRP: 516.416 mW (27.13 dBm) 6.535 GHz ~ 6.865 GHz : EIRP: 529.663 mW (27.24 dBm) 6.875 GHz ~ 7.115 GHz : EIRP: 555.904 mW (27.45 dBm)
EUT Category	Indoor AP

Note:

1. Simultaneously transmission condition.

Condition	Technology		
1	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna NO.	RF Chain NO.	Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
1	scan	3.9/5.8	2.4 to 2.49 /5.15 to 5.85	PIFA	ipex(MHF)
2	chain 1	3.1	2.4~2.4835	PIFA	ipex(MHF)
3	chain 2	4	2.4~2.4835	PIFA	ipex(MHF)
4	chain 3	4.1	2.4~2.4835	PIFA	ipex(MHF)
5	chain 0	5	2.4~2.4835	PIFA	ipex(MHF)
6	BLE	4.9	2.4~2.4835	PIFA	ipex(MHF)
7	chain 1	3.7	5.15~5.85	PIFA	ipex(MHF)
8	chain 3	4.8	5.15~5.85	PIFA	ipex(MHF)
9	chain 2	5.4	5.15~5.85	PIFA	ipex(MHF)
10	chain 0	5.4	5.15~5.85	PIFA	ipex(MHF)
11	chain 1	4.9	5.925~7.125	PIFA	ipex(MHF)
12	chain 3	6.8	5.925~7.125	PIFA	ipex(MHF)
13	chain 2	7.3	5.925~7.125	PIFA	ipex(MHF)
14	chain 0	6.9	5.925~7.125	PIFA	ipex(MHF)

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

2. The EUT incorporates a MIMO function:

6GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
802.11ax (HE80)	4TX	4RX
802.11ax (HE160)	4TX	4RX
802.11ax (RU242/484/996/2x996)	4TX	4RX

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

3.3 Channel List

U-NII-5:

24 channels are provided for 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	5955 MHz	5	5975 MHz	9	5955 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	6415MHz

12 channels are provided for 802.11ax (HE40):

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

6 channels are provided for 802.11ax (HE80):

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

3 channels are provided for 802.11ax (HE160):

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

U-NII-6:

5 channels are provided for 802.11ax (HE20):

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

3 channels are provided for 802.11ax (HE40):

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

1 channel is provided for 802.11ax (HE80):

Channel	Frequency
103	6465 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
*111	6505 MHz

U-NII-7:

17 channels are provided for 802.11ax (HE20):

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

8 channels are provided for 802.11ax (HE40):

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

5 channels are provided for 802.11ax (HE80):

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

2 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency
143	6665 MHz	175	*6825 MHz

U-NII-8:

13 channels are provided for 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
185	6875 MHz	189	6895 MHz	193	6915 MHz	197	6935 MHz
201	6955 MHz	205	6975 MHz	209	6995 MHz	213	7015 MHz
217	7035 MHz	221	7055 MHz	225	7075 MHz	229	7095 MHz
233	7115 MHz						

6 channels are provided for 802.11ax (HE40):

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

2 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
199	6945 MHz	215	7025 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
207	6985 MHz

Note: * mean these are straddle channels

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. The AC Adapter/POE Adapter has the following models: WA-30P12FU/ADP-36PR B. Pre-scan these models of AC Adapters/POE Adapter and find the worst case as a representative test condition. 2. EUT can be used in the following ways: Lying/ Wall Mount. Pre-scan these ways and find the worst case as a representative test condition. 3. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Worst Case:	1. Adapter Worst Condition: POE: ADP-36PR B 2. Lying/ Wall Mount Worst Condition: Wall Mount

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

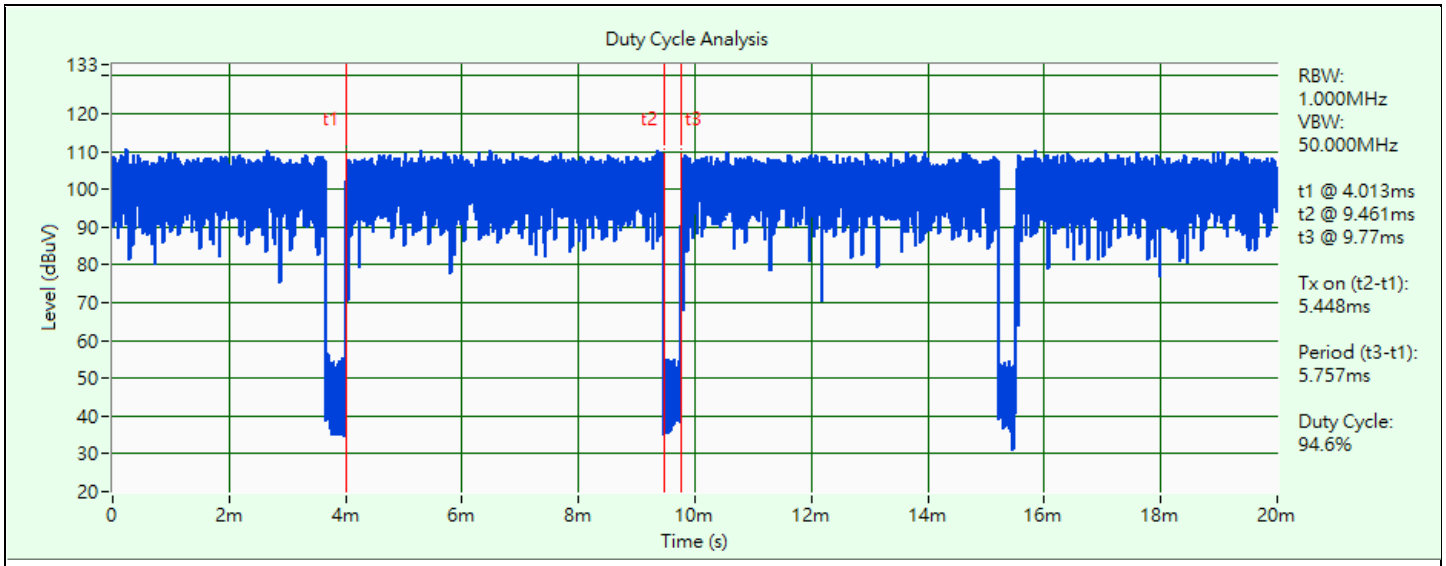
Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11ax (HE20)	CDD & Beamforming	1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	802.11ax (HE40)	CDD & Beamforming	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	802.11ax (HE80)	CDD & Beamforming	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	802.11ax (HE160)	CDD & Beamforming	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
	20 MHz Preamble 802.11ax (RU242)	CDD & Beamforming	1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	40 MHz Preamble 802.11ax (RU484)	CDD & Beamforming	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	80 MHz Preamble 802.11ax (RU996)	CDD & Beamforming	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	160 MHz Preamble 802.11ax (RU2x996)	CDD & Beamforming	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0

Power Spectral Density	802.11ax (HE20)	CDD	1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	802.11ax (HE40)	CDD	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	802.11ax (HE80)	CDD	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	802.11ax (HE160)	CDD	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
Emission Bandwidth	802.11ax (HE20)	CDD	1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	802.11ax (HE40)	CDD	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	802.11ax (HE80)	CDD	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	802.11ax (HE160)	CDD	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
In-Band Emission Mask	802.11ax (HE20)	CDD	1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	802.11ax (HE40)	CDD	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	802.11ax (HE80)	CDD	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	802.11ax (HE160)	CDD	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0

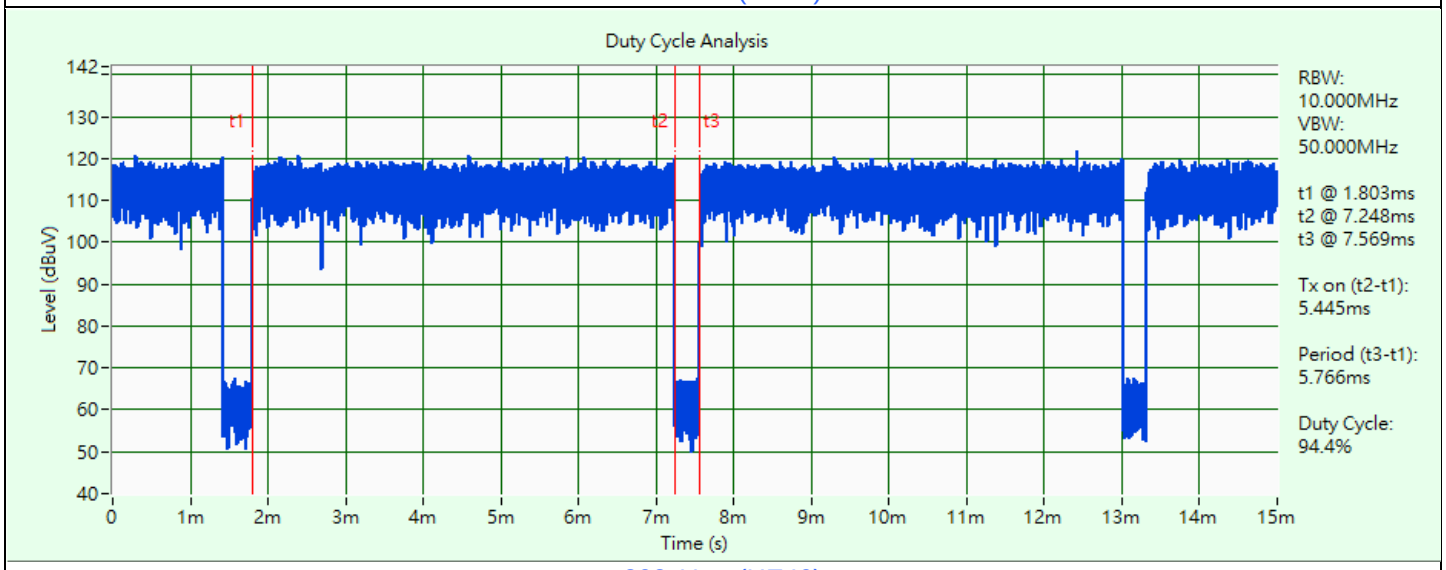
Occupied Bandwidth	802.11ax (HE20)	CDD	1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	802.11ax (HE40)	CDD	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	802.11ax (HE80)	CDD	7, 39, 87, 103, 119, 151, 183, 199, 215	BPSK	MCS0
	802.11ax (HE160)	CDD	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
Frequency Stability	802.11ax (HE20)	-	1	un-modulation	-
Contention-based Protocol	802.11ax (HE20)	Normal	1, 97, 129, 193	BPSK	MCS0
	802.11ax (HE160)	Normal	15, 111, 143, 207	BPSK	MCS0
AC Power Conducted Emissions	802.11ax (HE160)	CDD	79	BPSK	MCS0
Unwanted Emissions below 1 GHz	802.11ax (HE160)	CDD	79	BPSK	MCS0
Unwanted Emissions above 1 GHz	802.11ax (HE20)	CDD	1, 45, 93, 97, 105, 113, 117, 149, 181, 185, 209, 233	BPSK	MCS0
	802.11ax (HE40)	CDD	3, 43, 91, 99, 107, 115, 123, 155, 179, 187, 211, 227	BPSK	MCS0
	802.11ax (HE80)	CDD	7, 39, 87, 103, 119, 151, 167, 183, 199, 215	BPSK	MCS0
	802.11ax (HE160)	CDD	15, 47, 79, 111, 143, 175, 207	BPSK	MCS0
Note: Partially loaded channel configurations, channel puncturing and/or bandwidth reduction mechanisms are not supported by the EUT.					

3.5 Duty Cycle of Test Signal

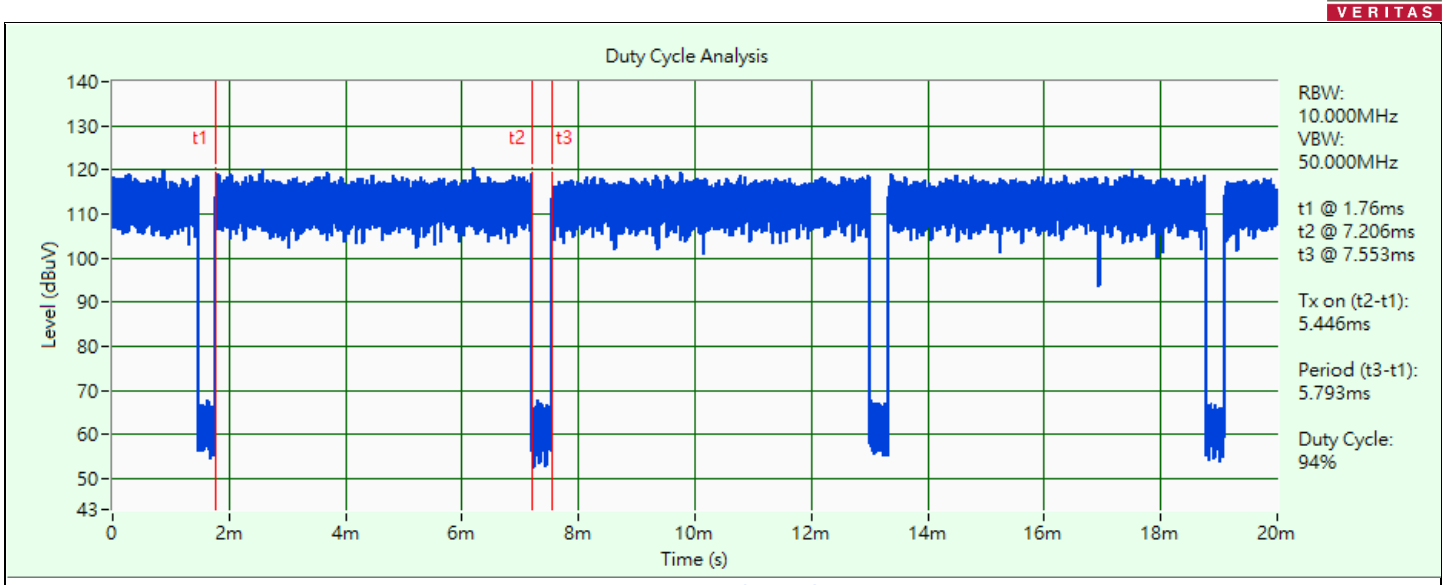
802.11ax (HE20): Duty cycle = 5.448 ms / 5.757 ms x 100% = 94.6%, duty factor = 10 * log (1/Duty cycle) = 0.24 dB
802.11ax (HE40): Duty cycle = 5.445 ms / 5.766 ms x 100% = 94.4%, duty factor = 10 * log (1/Duty cycle) = 0.25 dB
802.11ax (HE80): Duty cycle = 5.446 ms / 5.793 ms x 100% = 94.0%, duty factor = 10 * log (1/Duty cycle) = 0.27 dB
802.11ax (HE160): Duty cycle = 5.446 ms / 5.775 ms x 100% = 94.3%, duty factor = 10 * log (1/Duty cycle) = 0.25 dB



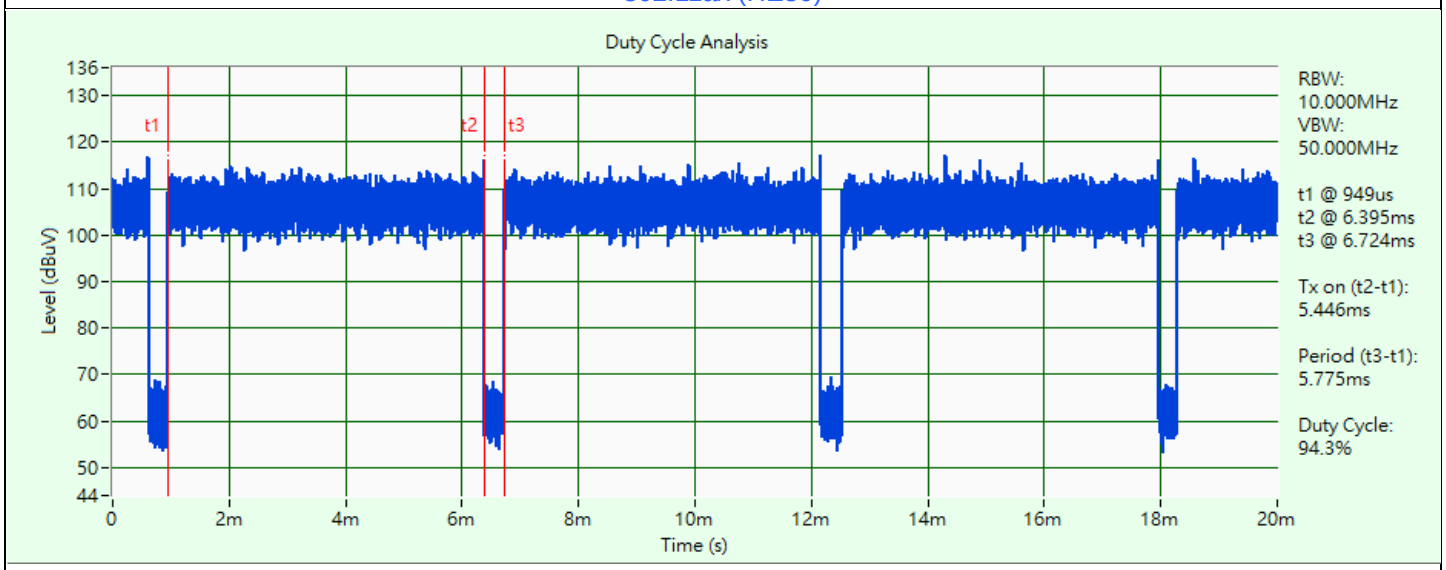
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



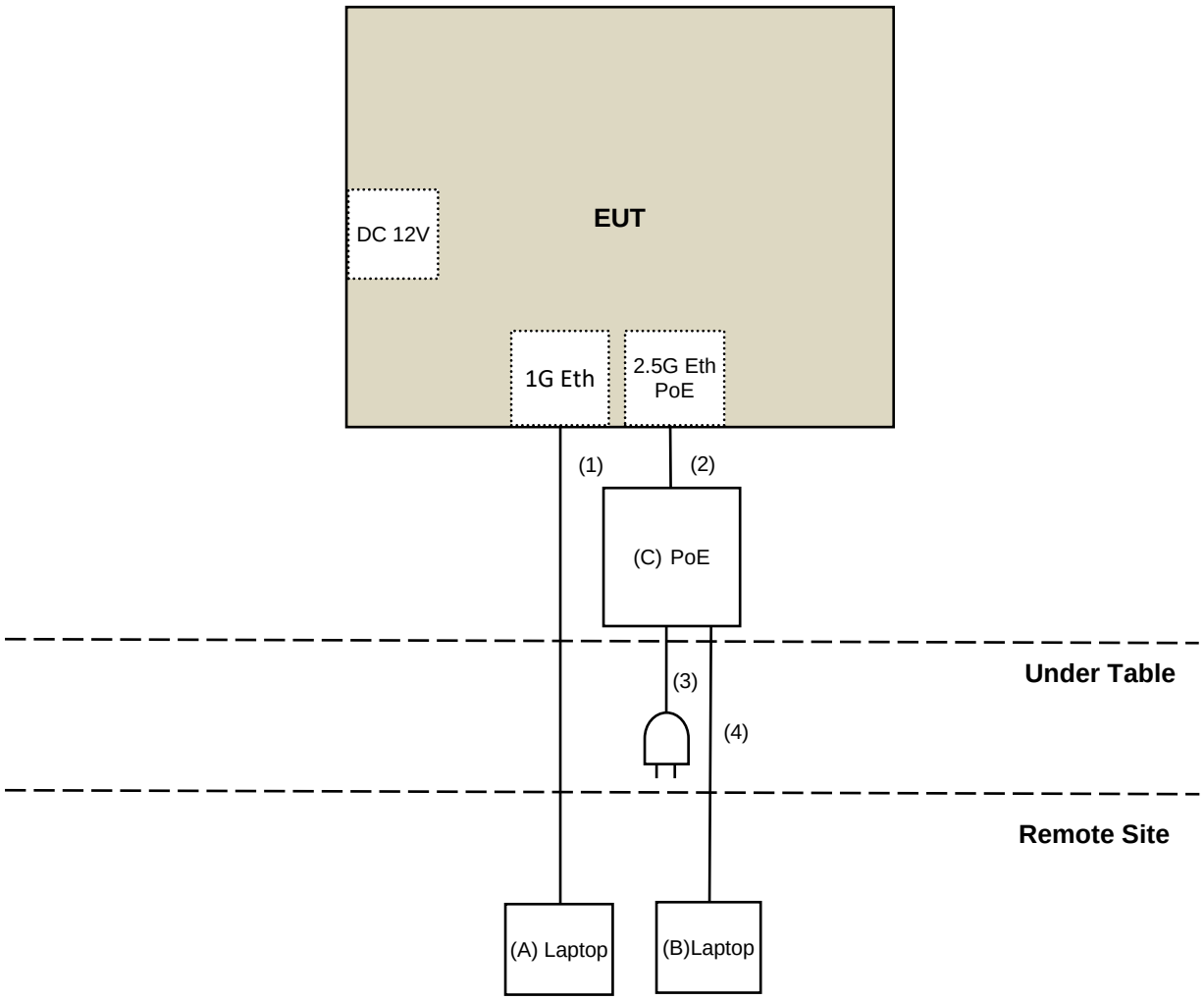
802.11ax (HE160)

3.6 Test Program Used and Operation Descriptions

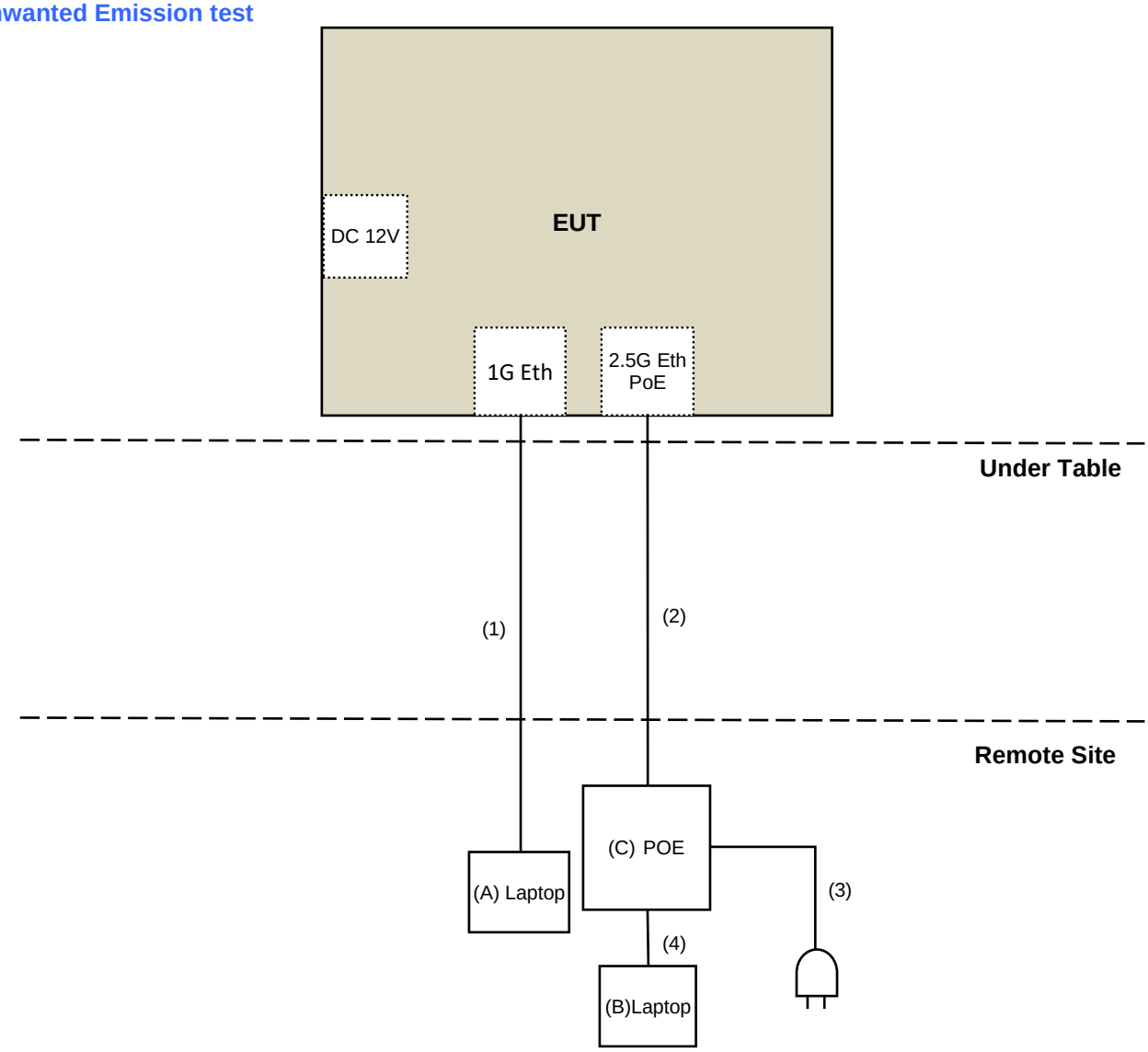
Controlling software (qdart_conn.win.1.0_installer_00082.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For AC Power Conducted Emission test



For Unwanted Emission test



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Supplied by applicant
B	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Supplied by applicant
C	POE Adapter	DELTA ELECTRONICS, INC.	ADP-36PR B	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	10	No	0	Provided by Lab
2	RJ-45 Cable	1	1.5	No	0	Provided by Lab
3	AC Cable	1	1.8	No	0	Provided by Lab
4	RJ-45 Cable	1	10	No	0	Provided by Lab

4 Test Instruments

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

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/10/19 ~ 2022/10/20

4.2 Power Spectral Density

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

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/10/19 ~ 2022/10/20

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
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
DC POWER SUPPLY Topward	6603D	795558	N/A	N/A
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2022/1/14	2023/1/13
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/10/19 ~ 2022/10/20

4.7 Contention-based Protocol

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Combiner Mini-Circuits	ZFRSC-123-S+	F698501347_01	2022/1/26	2023/1/25
		F698501347_02	2021/12/22	2022/12/21
Frequency Extender KEYSIGHT	N5182BX07	MY59360198	2022/10/14	2023/10/13
MXG X-Series RF Vector Signal Generator Keysight	N5182B	MY53052647	2022/11/8	2023/11/7
Spectrum Analyzer Keysight	N9030A	MY55410176	2022/6/21	2023/6/20
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6

Notes:

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

4.8 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
Fixed attenuator STI	STI02-2200-10	005	2022/8/24	2023/8/23
LISN R&S	ESH3-Z5	848773/004	2021/10/29	2022/10/28
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2022/8/24	2023/8/23
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2022/10/14	2023/10/13

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2022/10/27

4.9 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-03	2022/1/10	2023/1/9
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
Pre_Amplifier Agilent	8447D	2944A10636	2022/3/19	2023/3/18
Pre_Amplifier EMCI	EMC330N	980701	2022/3/8	2023/3/7
RF Coaxial Cable COMMATE/PEWC	8D	966-4-1	2022/3/8	2023/3/7
		966-4-2	2022/3/8	2023/3/7
		966-4-3	2022/3/8	2023/3/7
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6	2023/1/5
		LOOPCAB-002	2022/1/6	2023/1/5
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-406	2022/10/21	2023/10/20

Notes:

1. The test was performed in 966 Chamber No. 4.
2. Tested Date: 2022/10/27

4.10 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-783	2021/11/14	2022/11/13
	BBHA 9170	9170-739	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC12630SE	980688	2022/2/16	2023/2/15
	EMC184045SE	980387	2022/1/10	2023/1/9
RF Cable-Frequency Range : 1-26.5GHz EMCI	EMC104-SM-SM-1200	160922	2021/12/24	2022/12/23
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10	2023/1/9
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC104-SM-SM-2000	180502	2022/4/25	2023/4/24
	EMC104-SM-SM-6000	210704	2021/11/9	2022/11/8
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12

Notes:

1. The test was performed in 966 Chamber No. 4.
2. Tested Date: 2022/9/19 ~ 2022/10/14

5 Limits of Test Items

5.1 RF Output Power

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

5.3 Emission Bandwidth

The results are for reference only.

5.4 In-Band Emission Mask

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

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

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

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

5.5 Occupied Bandwidth

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

5.6 Frequency Stability

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

5.7 Contention-based Protocol

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

5.8 AC Power Conducted Emissions

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

Notes:

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

5.9 Unwanted Emissions below 1 GHz

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

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

Notes:

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

5.10 Unwanted Emissions above 1 GHz

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

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

Notes:

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

Limits of unwanted emission out of the restricted bands

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

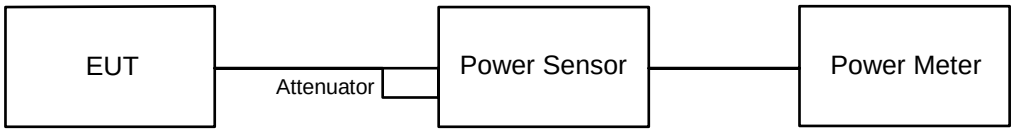
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

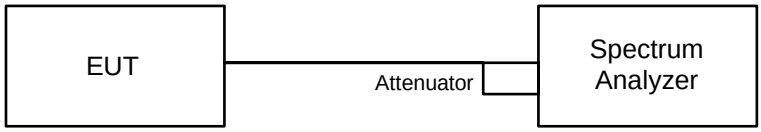


6.1.2 Test Procedure

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

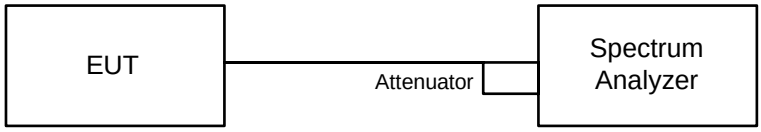
For specified measurement bandwidth 1 MHz:

Method SA-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

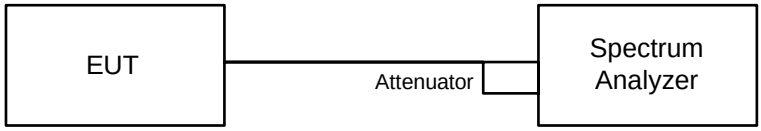


6.3.2 Test Procedure

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

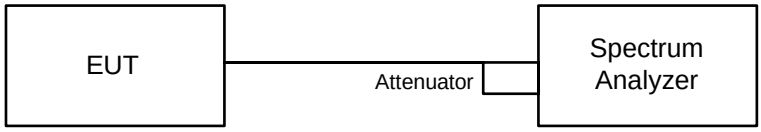


6.4.2 Test Procedure

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.
a. 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.
a. Adjust the span to encompass the entire mask as necessary and clear trace.
b. Trace average at least 100 traces in power averaging (rms) mode.
c. 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

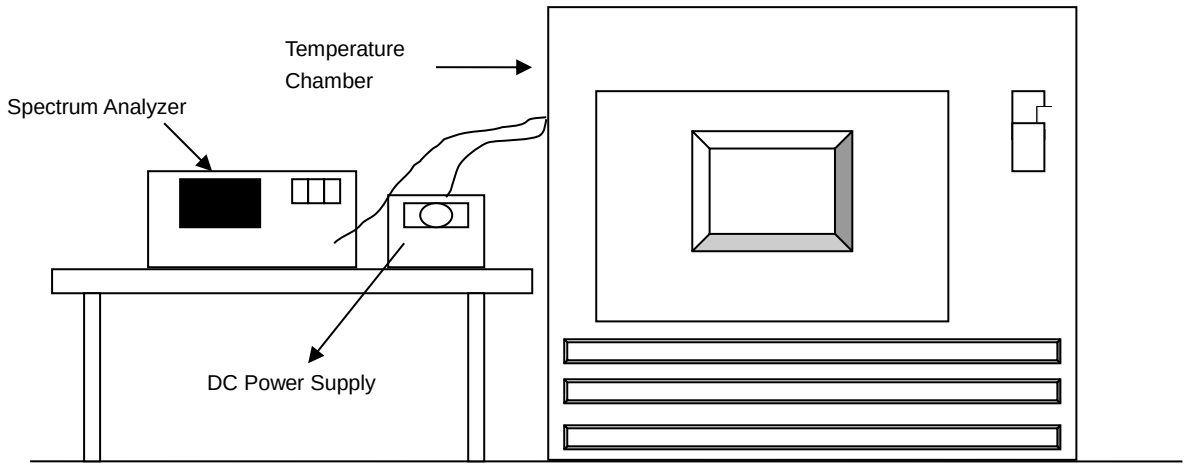


6.5.2 Test Procedure

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

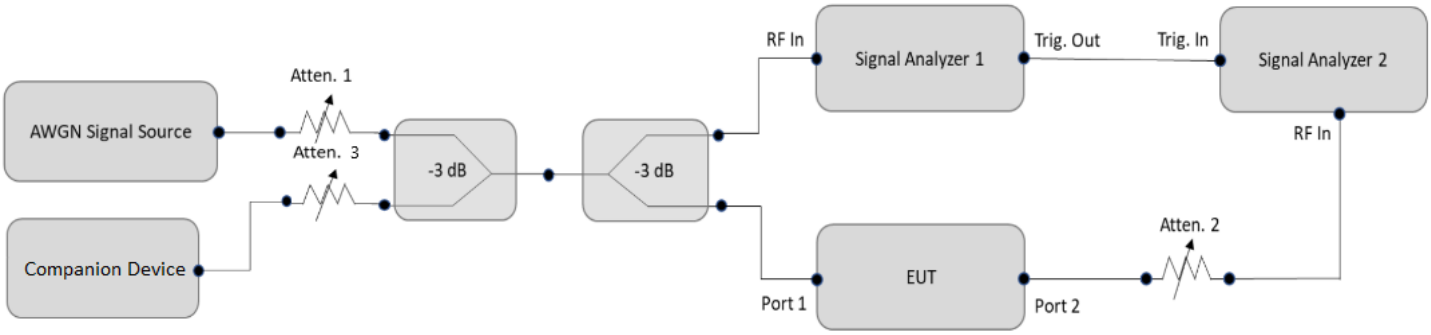


6.6.2 Test Procedure

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.

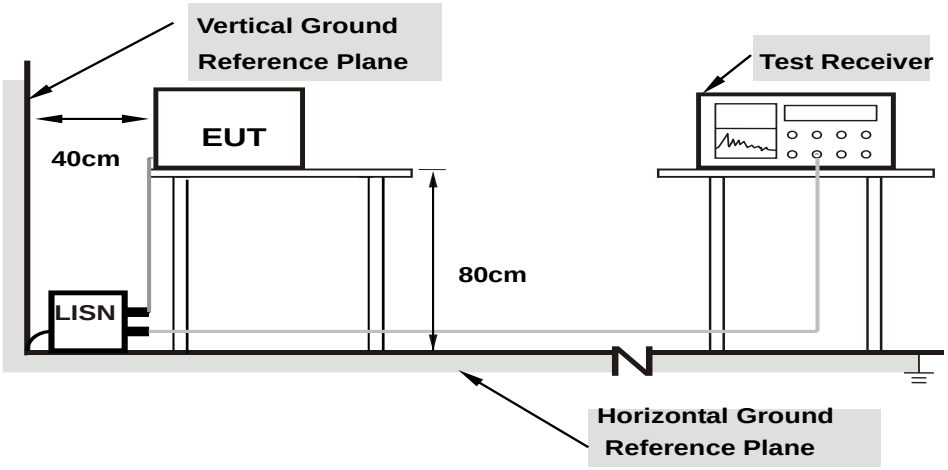
g. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.

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.

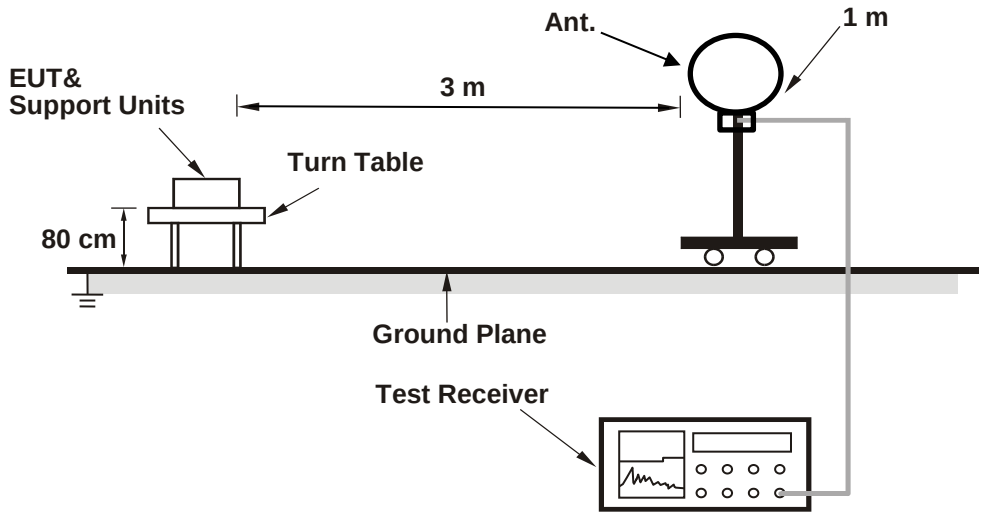
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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.

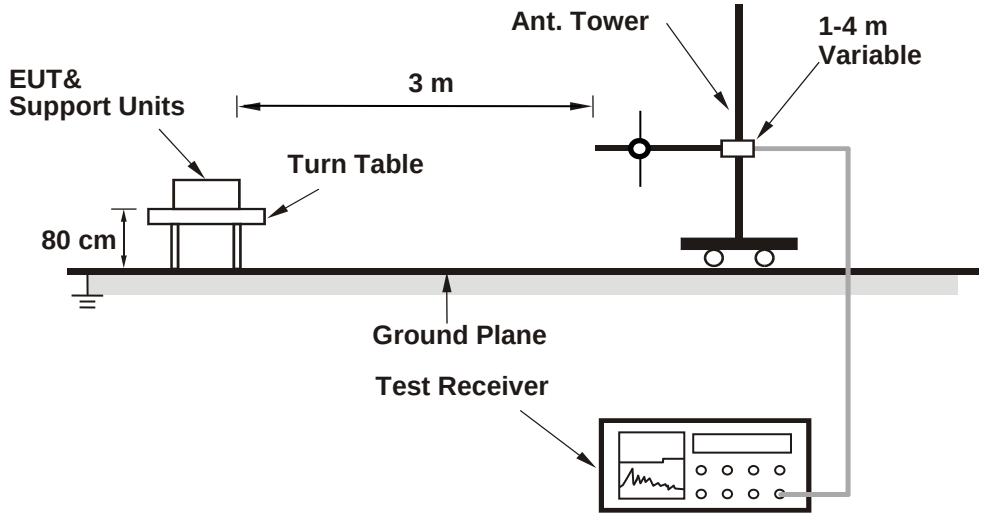
6.9 Unwanted Emissions below 1 GHz

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.

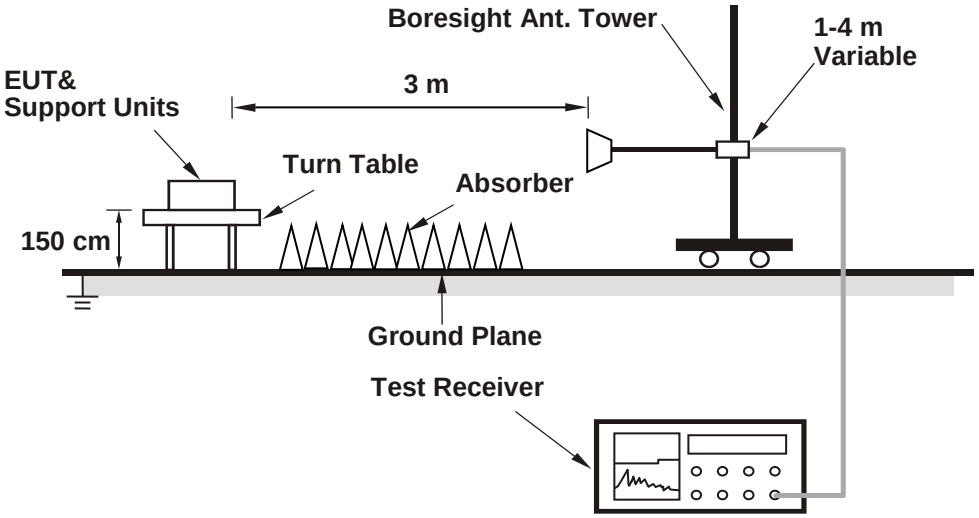
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng

802.11ax (HE20) CDD

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	Chain 2	Chain 3							
1	5955	-0.77	-0.07	-0.44	-0.17	3.6868	5.67	7.30	19.815	12.97	30	Pass
45	6175	-0.73	-0.34	-0.33	-0.08	3.6786	5.66	7.30	19.77	12.96	30	Pass
93	6415	-0.42	-0.04	-0.05	-0.07	3.8712	5.88	7.30	20.797	13.18	30	Pass
97	6435	-0.65	-0.57	-0.24	-0.26	3.6261	5.59	7.30	19.454	12.89	30	Pass
105	6475	-0.37	-0.33	0.13	-0.09	3.855	5.86	7.30	20.701	13.16	30	Pass
113	6515	-0.70	-0.73	-0.09	-0.05	3.6645	5.64	7.30	19.679	12.94	30	Pass
117	6535	-0.73	-0.54	0.03	-0.09	3.7148	5.70	7.30	19.953	13	30	Pass
149	6695	-0.70	-0.51	-0.02	-0.23	3.6842	5.66	7.30	19.77	12.96	30	Pass
181	6855	-0.56	-0.30	-0.25	-0.21	3.7091	5.69	7.30	19.907	12.99	30	Pass
185	6875	-0.62	-0.26	-0.14	-0.33	3.704	5.69	7.30	19.907	12.99	30	Pass
209	6995	-0.66	-0.53	-0.20	-0.53	3.5842	5.54	7.30	19.231	12.84	30	Pass
233	7115	-7.77	-7.35	-7.41	-7.46	0.7122	-1.47	7.30	3.828	5.83	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE40) CDD

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	Chain 2	Chain 3							
3	5965	2.40	2.97	2.97	3.25	7.814	8.93	7.30	41.976	16.23	30	Pass
43	6165	2.73	2.78	2.93	3.00	7.73	8.88	7.30	41.495	16.18	30	Pass
91	6405	2.61	2.70	2.78	2.76	7.471	8.73	7.30	40.087	16.03	30	Pass
99	6445	2.65	2.25	2.89	2.80	7.37	8.67	7.30	39.537	15.97	30	Pass
107	6485	2.91	2.42	3.12	2.96	7.728	8.88	7.30	41.495	16.18	30	Pass
115	6525	2.27	2.09	2.59	2.31	6.822	8.34	7.30	36.644	15.64	30	Pass
123	6565	2.91	2.46	3.21	3.01	7.81	8.93	7.30	41.976	16.23	30	Pass
155	6725	2.65	2.58	3.23	3.09	7.793	8.92	7.30	41.879	16.22	30	Pass
179	6845	2.79	2.81	2.58	2.75	7.506	8.75	7.30	40.272	16.05	30	Pass
187	6885	2.56	2.78	2.62	2.79	7.429	8.71	7.30	39.902	16.01	30	Pass
211	7005	2.98	2.71	3.19	2.71	7.803	8.92	7.30	41.879	16.22	30	Pass
227	7085	2.34	2.64	3.30	2.94	7.656	8.84	7.30	41.115	16.14	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE80) CDD

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	Chain 2	Chain 3							
7	5985	5.59	5.50	6.06	6.34	15.512	11.91	7.30	83.368	19.21	30	Pass
39	6145	5.76	5.79	5.94	6.03	15.495	11.90	7.30	83.176	19.2	30	Pass
87	6385	5.76	5.86	6.00	6.01	15.593	11.93	7.30	83.753	19.23	30	Pass
103	6465	5.79	5.76	6.06	5.99	15.569	11.92	7.30	83.56	19.22	30	Pass
119	6545	5.64	5.68	6.17	5.87	15.366	11.87	7.30	82.604	19.17	30	Pass
151	6705	5.77	5.76	6.12	5.97	15.589	11.93	7.30	83.753	19.23	30	Pass
183	6865	5.78	5.92	6.11	5.84	15.613	11.93	7.30	83.753	19.23	30	Pass
199	6945	5.96	5.72	5.90	5.97	15.521	11.91	7.30	83.368	19.21	30	Pass
215	7025	5.58	5.56	6.01	5.69	14.909	11.73	7.30	79.983	19.03	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE160) CDD

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	Chain 2	Chain 3							
15	6025	8.92	8.07	8.96	8.56	29.259	14.66	7.30	157.036	21.96	30	Pass
47	6185	8.58	8.91	8.72	8.90	30.201	14.80	7.30	162.181	22.1	30	Pass
79	6345	8.71	9.18	8.88	8.97	31.325	14.96	7.30	168.267	22.26	30	Pass
111	6505	8.05	9.01	8.35	8.80	28.769	14.59	7.30	154.525	21.89	30	Pass
143	6665	8.26	9.27	8.44	8.11	28.605	14.56	7.30	153.462	21.86	30	Pass
175	6825	8.63	8.78	8.41	8.90	29.542	14.70	7.30	158.489	22	30	Pass
207	6985	9.07	9.00	8.36	9.09	30.98	14.91	7.30	166.341	22.21	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE20) CDD RU242

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	Chain 2	Chain 3							
1	5955	-0.80	-0.17	-0.79	-0.40	3.5391	5.49	7.30	19.011	12.79	30	Pass
45	6175	-0.76	-0.87	-0.36	-0.22	3.529	5.48	7.30	18.967	12.78	30	Pass
93	6415	-0.44	-0.59	-0.11	-0.52	3.6388	5.61	7.30	19.543	12.91	30	Pass
97	6435	-1.23	-0.88	-0.84	-0.80	3.2258	5.09	7.30	17.338	12.39	30	Pass
105	6475	-0.56	-0.84	-0.41	-0.72	3.4603	5.39	7.30	18.578	12.69	30	Pass
113	6515	-0.90	-1.00	-0.46	-0.50	3.3979	5.31	7.30	18.239	12.61	30	Pass
117	6535	-0.77	-0.64	-0.60	-0.24	3.5177	5.46	7.30	18.88	12.76	30	Pass
149	6695	-0.73	-0.70	-0.07	-0.45	3.582	5.54	7.30	19.231	12.84	30	Pass
181	6855	-1.13	-0.49	-0.52	-0.38	3.4676	5.40	7.30	18.621	12.7	30	Pass
185	6875	-1.19	-0.62	-0.20	-0.96	3.384	5.29	7.30	18.155	12.59	30	Pass
209	6995	-0.98	-1.13	-0.30	-0.56	3.3812	5.29	7.30	18.155	12.59	30	Pass
233	7115	-8.22	-7.89	-7.48	-8.07	0.6478	-1.89	7.30	3.475	5.41	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE40) CDD RU484

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	Chain 2	Chain 3							
3	5965	2.35	2.56	2.39	2.74	7.134	8.53	7.30	38.282	15.83	30	Pass
43	6165	2.72	2.61	2.75	2.40	7.316	8.64	7.30	39.264	15.94	30	Pass
91	6405	2.01	2.59	2.60	2.34	6.938	8.41	7.30	37.239	15.71	30	Pass
99	6445	2.54	2.20	2.58	2.76	7.154	8.55	7.30	38.459	15.85	30	Pass
107	6485	2.33	2.20	3.09	3.10	7.448	8.72	7.30	39.994	16.02	30	Pass
115	6525	2.24	2.02	2.10	1.90	6.438	8.09	7.30	34.594	15.39	30	Pass
123	6565	2.82	1.99	2.87	2.37	7.158	8.55	7.30	38.459	15.85	30	Pass
155	6725	2.21	2.05	2.82	2.93	7.144	8.54	7.30	38.371	15.84	30	Pass
179	6845	2.70	2.43	2.08	2.41	6.968	8.43	7.30	37.411	15.73	30	Pass
187	6885	2.21	2.77	1.98	2.25	6.812	8.33	7.30	36.559	15.63	30	Pass
211	7005	2.34	2.61	3.00	2.69	7.391	8.69	7.30	39.719	15.99	30	Pass
227	7085	2.29	2.49	2.83	2.40	7.125	8.53	7.30	38.282	15.83	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE80) CDD RU996

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	Chain 2	Chain 3							
7	5985	5.51	5.45	6.03	5.96	15.017	11.77	7.30	80.724	19.07	30	Pass
39	6145	5.69	5.72	5.48	5.62	14.619	11.65	7.30	78.524	18.95	30	Pass
87	6385	5.15	5.80	5.56	5.71	14.397	11.58	7.30	77.268	18.88	30	Pass
103	6465	5.72	5.75	5.48	5.53	14.595	11.64	7.30	78.343	18.94	30	Pass
119	6545	5.59	5.60	5.62	5.35	14.328	11.56	7.30	76.913	18.86	30	Pass
151	6705	5.24	5.59	5.84	5.69	14.508	11.62	7.30	77.983	18.92	30	Pass
183	6865	5.76	5.49	5.28	5.59	14.302	11.55	7.30	76.736	18.85	30	Pass
199	6945	5.93	5.44	5.22	5.91	14.643	11.66	7.30	78.705	18.96	30	Pass
215	7025	5.37	4.87	5.93	4.84	13.478	11.30	7.30	72.444	18.6	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE160) CDD RU2x996

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	Chain 2	Chain 3							
15	6025	8.61	7.63	8.21	7.86	25.787	14.11	7.30	138.357	21.41	30	Pass
47	6185	8.50	8.14	8.21	8.70	27.631	14.41	7.30	148.252	21.71	30	Pass
79	6345	8.33	8.77	8.73	8.91	29.586	14.71	7.30	158.855	22.01	30	Pass
111	6505	8.00	8.23	8.30	8.35	26.562	14.24	7.30	142.561	21.54	30	Pass
143	6665	8.19	8.94	8.02	7.92	26.959	14.31	7.30	144.877	21.61	30	Pass
175	6825	8.53	8.67	7.54	8.42	27.116	14.33	7.30	145.546	21.63	30	Pass
207	6985	8.23	8.06	8.30	8.21	26.433	14.22	7.30	141.906	21.52	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-5, The maximum gain is 7.3 dBi
3. For U-NII-6, The maximum gain is 7.3 dBi
4. For U-NII-7, The maximum gain is 7.3 dBi
5. For U-NII-8, The maximum gain is 7.3 dBi

802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
1	5955	-0.77	-0.07	-0.44	-0.17	3.6868	5.67	12.54	66.222	18.21	30	Pass
45	6175	-0.73	-0.34	-0.33	-0.08	3.6786	5.66	12.54	66.069	18.2	30	Pass
93	6415	-0.42	-0.04	-0.05	-0.07	3.8712	5.88	12.54	69.502	18.42	30	Pass
97	6435	-0.65	-0.57	-0.24	-0.26	3.6261	5.59	12.54	65.013	18.13	30	Pass
105	6475	-0.37	-0.33	0.13	-0.09	3.855	5.86	12.54	69.183	18.4	30	Pass
113	6515	-0.70	-0.73	-0.09	-0.05	3.6645	5.64	12.54	65.766	18.18	30	Pass
117	6535	-0.73	-0.54	0.03	-0.09	3.7148	5.70	12.54	66.681	18.24	30	Pass
149	6695	-0.70	-0.51	-0.02	-0.23	3.6842	5.66	12.54	66.069	18.2	30	Pass
181	6855	-0.56	-0.30	-0.25	-0.21	3.7091	5.69	12.54	66.527	18.23	30	Pass
185	6875	-0.62	-0.26	-0.14	-0.33	3.704	5.69	12.54	66.527	18.23	30	Pass
209	6995	-0.66	-0.53	-0.20	-0.53	3.5842	5.54	12.54	64.269	18.08	30	Pass
233	7115	-7.77	-7.35	-7.41	-7.46	0.7122	-1.47	12.54	12.794	11.07	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
3	5965	2.40	2.97	2.97	3.25	7.814	8.93	12.54	140.281	21.47	30	Pass
43	6165	2.73	2.78	2.93	3.00	7.73	8.88	12.54	138.676	21.42	30	Pass
91	6405	2.61	2.70	2.78	2.76	7.471	8.73	12.54	133.968	21.27	30	Pass
99	6445	2.65	2.25	2.89	2.80	7.37	8.67	12.54	132.13	21.21	30	Pass
107	6485	2.91	2.42	3.12	2.96	7.728	8.88	12.54	138.676	21.42	30	Pass
115	6525	2.27	2.09	2.59	2.31	6.822	8.34	12.54	122.462	20.88	30	Pass
123	6565	2.91	2.46	3.21	3.01	7.81	8.93	12.54	140.281	21.47	30	Pass
155	6725	2.65	2.58	3.23	3.09	7.793	8.92	12.54	139.959	21.46	30	Pass
179	6845	2.79	2.81	2.58	2.75	7.506	8.75	12.54	134.586	21.29	30	Pass
187	6885	2.56	2.78	2.62	2.79	7.429	8.71	12.54	133.352	21.25	30	Pass
211	7005	2.98	2.71	3.19	2.71	7.803	8.92	12.54	139.959	21.46	30	Pass
227	7085	2.34	2.64	3.30	2.94	7.656	8.84	12.54	137.404	21.38	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
7	5985	5.59	5.50	6.06	6.34	15.512	11.91	12.54	278.612	24.45	30	Pass
39	6145	5.76	5.79	5.94	6.03	15.495	11.90	12.54	277.971	24.44	30	Pass
87	6385	5.76	5.86	6.00	6.01	15.593	11.93	12.54	279.898	24.47	30	Pass
103	6465	5.79	5.76	6.06	5.99	15.569	11.92	12.54	279.254	24.46	30	Pass
119	6545	5.64	5.68	6.17	5.87	15.366	11.87	12.54	276.058	24.41	30	Pass
151	6705	5.77	5.76	6.12	5.97	15.589	11.93	12.54	279.898	24.47	30	Pass
183	6865	5.78	5.92	6.11	5.84	15.613	11.93	12.54	279.898	24.47	30	Pass
199	6945	5.96	5.72	5.90	5.97	15.521	11.91	12.54	278.612	24.45	30	Pass
215	7025	5.58	5.56	6.01	5.69	14.909	11.73	12.54	267.301	24.27	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE160) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
15	6025	8.92	8.07	8.96	8.56	29.259	14.66	12.54	524.807	27.2	30	Pass
47	6185	8.58	8.91	8.72	8.90	30.201	14.80	12.54	542.001	27.34	30	Pass
79	6345	8.71	9.18	8.88	8.97	31.325	14.96	12.54	562.341	27.5	30	Pass
111	6505	8.05	9.01	8.35	8.80	28.769	14.59	12.54	516.416	27.13	30	Pass
143	6665	8.26	9.27	8.44	8.11	28.605	14.56	12.54	512.861	27.1	30	Pass
175	6825	8.63	8.78	8.41	8.90	29.542	14.70	12.54	529.663	27.24	30	Pass
207	6985	9.07	9.00	8.36	9.09	30.98	14.91	12.54	555.904	27.45	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE20) Beamforming RU242

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
1	5955	-0.80	-0.17	-0.79	-0.40	3.5391	5.49	12.54	63.533	18.03	30	Pass
45	6175	-0.76	-0.87	-0.36	-0.22	3.529	5.48	12.54	63.387	18.02	30	Pass
93	6415	-0.44	-0.59	-0.11	-0.52	3.6388	5.61	12.54	65.313	18.15	30	Pass
97	6435	-1.23	-0.88	-0.84	-0.80	3.2258	5.09	12.54	57.943	17.63	30	Pass
105	6475	-0.56	-0.84	-0.41	-0.72	3.4603	5.39	12.54	62.087	17.93	30	Pass
113	6515	-0.90	-1.00	-0.46	-0.50	3.3979	5.31	12.54	60.954	17.85	30	Pass
117	6535	-0.77	-0.64	-0.60	-0.24	3.5177	5.46	12.54	63.096	18	30	Pass
149	6695	-0.73	-0.70	-0.07	-0.45	3.582	5.54	12.54	64.269	18.08	30	Pass
181	6855	-1.13	-0.49	-0.52	-0.38	3.4676	5.40	12.54	62.23	17.94	30	Pass
185	6875	-1.19	-0.62	-0.20	-0.96	3.384	5.29	12.54	60.674	17.83	30	Pass
209	6995	-0.98	-1.13	-0.30	-0.56	3.3812	5.29	12.54	60.674	17.83	30	Pass
233	7115	-8.22	-7.89	-7.48	-8.07	0.6478	-1.89	12.54	11.614	10.65	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE40) Beamforming RU484

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
3	5965	2.35	2.56	2.39	2.74	7.134	8.53	12.54	127.938	21.07	30	Pass
43	6165	2.72	2.61	2.75	2.40	7.316	8.64	12.54	131.22	21.18	30	Pass
91	6405	2.01	2.59	2.60	2.34	6.938	8.41	12.54	124.451	20.95	30	Pass
99	6445	2.54	2.20	2.58	2.76	7.154	8.55	12.54	128.529	21.09	30	Pass
107	6485	2.33	2.20	3.09	3.10	7.448	8.72	12.54	133.66	21.26	30	Pass
115	6525	2.24	2.02	2.10	1.90	6.438	8.09	12.54	115.611	20.63	30	Pass
123	6565	2.82	1.99	2.87	2.37	7.158	8.55	12.54	128.529	21.09	30	Pass
155	6725	2.21	2.05	2.82	2.93	7.144	8.54	12.54	128.233	21.08	30	Pass
179	6845	2.70	2.43	2.08	2.41	6.968	8.43	12.54	125.026	20.97	30	Pass
187	6885	2.21	2.77	1.98	2.25	6.812	8.33	12.54	122.18	20.87	30	Pass
211	7005	2.34	2.61	3.00	2.69	7.391	8.69	12.54	132.739	21.23	30	Pass
227	7085	2.29	2.49	2.83	2.40	7.125	8.53	12.54	127.938	21.07	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE80) Beamforming RU996

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
7	5985	5.51	5.45	6.03	5.96	15.017	11.77	12.54	269.774	24.31	30	Pass
39	6145	5.69	5.72	5.48	5.62	14.619	11.65	12.54	262.422	24.19	30	Pass
87	6385	5.15	5.80	5.56	5.71	14.397	11.58	12.54	258.226	24.12	30	Pass
103	6465	5.72	5.75	5.48	5.53	14.595	11.64	12.54	261.818	24.18	30	Pass
119	6545	5.59	5.60	5.62	5.35	14.328	11.56	12.54	257.04	24.1	30	Pass
151	6705	5.24	5.59	5.84	5.69	14.508	11.62	12.54	260.615	24.16	30	Pass
183	6865	5.76	5.49	5.28	5.59	14.302	11.55	12.54	256.448	24.09	30	Pass
199	6945	5.93	5.44	5.22	5.91	14.643	11.66	12.54	263.027	24.2	30	Pass
215	7025	5.37	4.87	5.93	4.84	13.478	11.30	12.54	242.103	23.84	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE160) Beamforming RU2x996

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
15	6025	8.61	7.63	8.21	7.86	25.787	14.11	12.54	462.381	26.65	30	Pass
47	6185	8.50	8.14	8.21	8.70	27.631	14.41	12.54	495.45	26.95	30	Pass
79	6345	8.33	8.77	8.73	8.91	29.586	14.71	12.54	530.884	27.25	30	Pass
111	6505	8.00	8.23	8.30	8.35	26.562	14.24	12.54	476.431	26.78	30	Pass
143	6665	8.19	8.94	8.02	7.92	26.959	14.31	12.54	484.172	26.85	30	Pass
175	6825	8.53	8.67	7.54	8.42	27.116	14.33	12.54	486.407	26.87	30	Pass
207	6985	8.23	8.06	8.30	8.21	26.433	14.22	12.54	474.242	26.76	30	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-5, The directional gain is 12.54 dBi
3. For U-NII-6, The directional gain is 12.54 dBi
4. For U-NII-7, The directional gain is 12.54 dBi
5. For U-NII-8, The directional gain is 12.54 dBi

7.2 Power Spectral Density

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
1	5955	-13.92	-14.66	-14.17	-14.03	0.24	-7.93	12.54	4.61	5	Pass
45	6175	-14.09	-13.80	-14.43	-13.55	0.24	-7.69	12.54	4.85	5	Pass
93	6415	-14.11	-14.15	-14.04	-13.99	0.24	-7.81	12.54	4.73	5	Pass
97	6435	-14.40	-13.70	-13.59	-14.22	0.24	-7.70	12.54	4.84	5	Pass
105	6475	-13.98	-13.90	-13.71	-13.69	0.24	-7.56	12.54	4.98	5	Pass
113	6515	-13.99	-13.96	-13.78	-13.57	0.24	-7.56	12.54	4.98	5	Pass
117	6535	-13.89	-13.78	-13.72	-13.86	0.24	-7.55	12.54	4.99	5	Pass
149	6695	-13.98	-13.66	-14.10	-13.75	0.24	-7.61	12.54	4.93	5	Pass
181	6855	-13.64	-14.17	-13.74	-13.82	0.24	-7.58	12.54	4.96	5	Pass
185	6875	-13.79	-14.01	-13.78	-13.92	0.24	-7.61	12.54	4.93	5	Pass
209	6995	-13.77	-13.85	-13.58	-14.12	0.24	-7.57	12.54	4.97	5	Pass
233	7115	-21.29	-20.71	-20.93	-20.95	0.24	-14.70	12.54	-2.16	5	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. For U-NII-5, The directional gain is 12.54 dBi
4. For U-NII-6, The directional gain is 12.54 dBi
5. For U-NII-7, The directional gain is 12.54 dBi
6. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
3	5965	-14.11	-13.56	-13.96	-13.70	0.25	-7.56	12.54	4.98	5	Pass
43	6165	-14.24	-13.69	-13.96	-13.94	0.25	-7.68	12.54	4.86	5	Pass
91	6405	-14.54	-14.10	-14.14	-14.63	0.25	-8.08	12.54	4.46	5	Pass
99	6445	-13.91	-13.69	-14.46	-13.49	0.25	-7.60	12.54	4.94	5	Pass
107	6485	-14.10	-14.25	-14.00	-13.57	0.25	-7.70	12.54	4.84	5	Pass
115	6525	-14.05	-14.21	-13.44	-13.71	0.25	-7.57	12.54	4.97	5	Pass
123	6565	-13.80	-14.13	-13.87	-14.41	0.25	-7.78	12.54	4.76	5	Pass
155	6725	-13.86	-14.35	-14.03	-13.42	0.25	-7.63	12.54	4.91	5	Pass
179	6845	-14.52	-14.41	-13.89	-14.03	0.25	-7.93	12.54	4.61	5	Pass
187	6885	-14.08	-14.31	-14.17	-13.82	0.25	-7.82	12.54	4.72	5	Pass
211	7005	-13.98	-14.12	-13.87	-14.16	0.25	-7.76	12.54	4.78	5	Pass
227	7085	-14.02	-14.11	-13.49	-14.00	0.25	-7.63	12.54	4.91	5	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. For U-NII-5, The directional gain is 12.54 dBi
4. For U-NII-6, The directional gain is 12.54 dBi
5. For U-NII-7, The directional gain is 12.54 dBi
6. For U-NII-8, The directional gain is 12.54 dBi

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
7	5985	-13.85	-14.26	-13.72	-13.74	0.27	-7.60	12.54	4.94	5	Pass
39	6145	-14.09	-13.88	-13.84	-14.09	0.27	-7.68	12.54	4.86	5	Pass
87	6385	-14.07	-13.81	-13.80	-14.54	0.27	-7.75	12.54	4.79	5	Pass
103	6465	-14.01	-13.56	-14.20	-14.08	0.27	-7.67	12.54	4.87	5	Pass
119	6545	-13.94	-13.91	-13.87	-14.00	0.27	-7.64	12.54	4.9	5	Pass
151	6705	-14.11	-14.25	-13.90	-14.10	0.27	-7.80	12.54	4.74	5	Pass
183	6865	-14.72	-14.15	-14.36	-14.41	0.27	-8.11	12.54	4.43	5	Pass
199	6945	-14.33	-13.50	-14.23	-13.48	0.27	-7.58	12.54	4.96	5	Pass
215	7025	-14.14	-13.96	-13.64	-14.18	0.27	-7.68	12.54	4.86	5	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-5, The directional gain is 12.54 dBi
4. For U-NII-6, The directional gain is 12.54 dBi
5. For U-NII-7, The directional gain is 12.54 dBi
6. For U-NII-8, The directional gain is 12.54 dBi

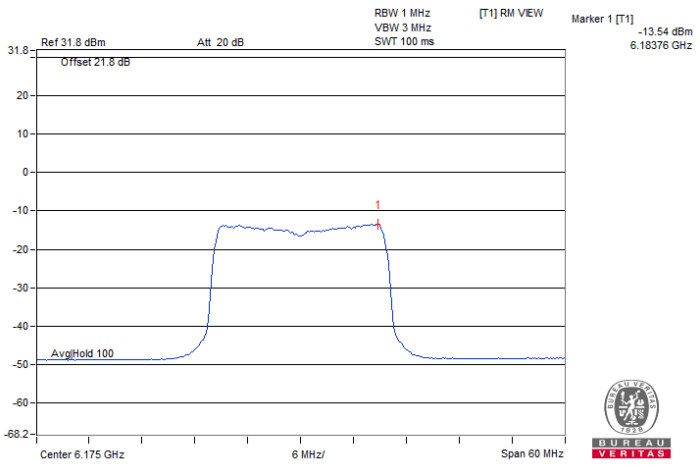
802.11ax (HE160)

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	Chain 2	Chain 3						
15	6025	-13.89	-13.81	-14.07	-13.56	0.25	-7.56	12.54	4.98	5	Pass
47	6185	-13.83	-13.77	-14.23	-13.56	0.25	-7.57	12.54	4.97	5	Pass
79	6345	-13.79	-13.60	-13.93	-14.02	0.25	-7.56	12.54	4.98	5	Pass
111	6505	-13.90	-14.16	-13.74	-14.11	0.25	-7.70	12.54	4.84	5	Pass
143	6665	-14.12	-14.02	-13.80	-14.08	0.25	-7.73	12.54	4.81	5	Pass
175	6825	-14.49	-13.64	-14.20	-14.06	0.25	-7.82	12.54	4.72	5	Pass
207	6985	-13.81	-14.28	-13.61	-13.96	0.25	-7.64	12.54	4.9	5	Pass

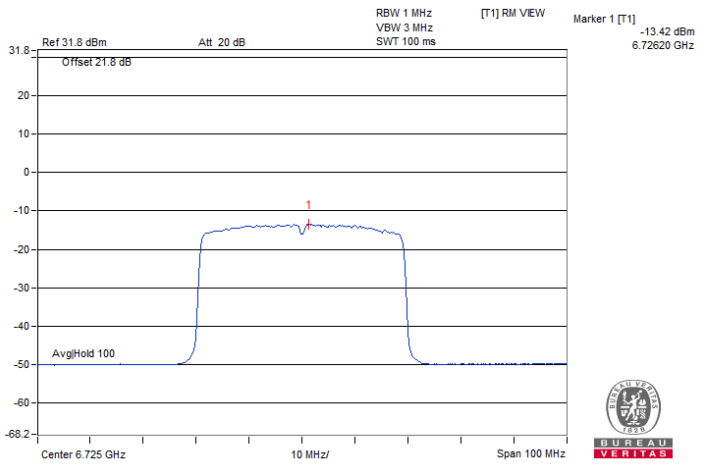
Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-5, The directional gain is 12.54 dBi
4. For U-NII-6, The directional gain is 12.54 dBi
5. For U-NII-7, The directional gain is 12.54 dBi
6. For U-NII-8, The directional gain is 12.54 dBi

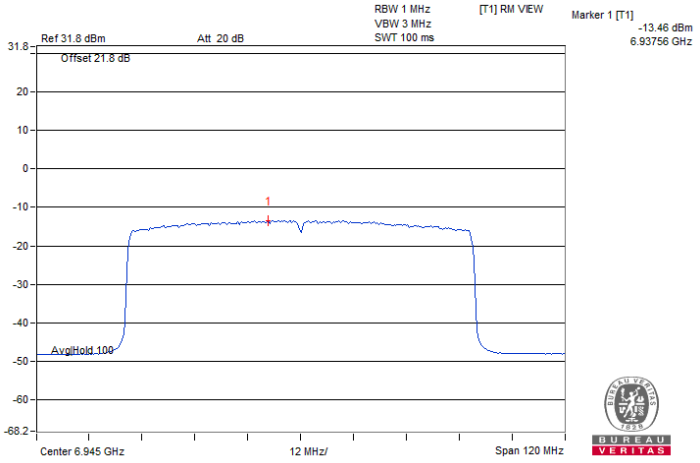
Spectrum Plot of Maximum Value



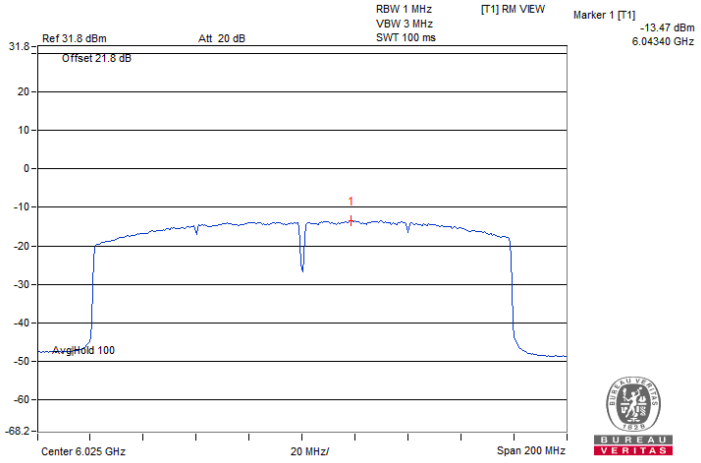
802.11ax (HE20) / Chain 3 : CH 45



802.11ax (HE40) / Chain 3 : CH 155



802.11ax (HE80) / Chain 3 : CH 199



802.11ax (HE160) / Chain 3 : CH 15

7.3 Emission Bandwidth

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng

802.11ax (HE20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
1	5955	21.56	21.85	22.02	21.83
45	6175	21.86	21.69	21.80	21.93
93	6415	21.96	21.53	22.29	21.76
97	6435	21.63	21.80	21.78	21.71
105	6475	21.96	21.76	22.01	21.78
113	6515	21.85	22.10	22.30	21.61
117	6535	21.87	21.67	21.81	21.67
149	6695	21.89	21.95	22.36	22.18
181	6855	22.16	21.97	21.52	21.82
185	6875	22.09	21.62	21.95	21.51
209	6995	22.11	22.02	22.01	21.85
233	7115	23.19	22.94	23.38	22.53

802.11ax (HE40)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
3	5965	41.28	41.31	41.40	41.30
43	6165	41.25	41.15	41.18	41.33
91	6405	41.34	41.27	41.59	41.36
99	6445	41.19	41.08	41.46	41.25
107	6485	41.40	41.16	41.52	41.18
115	6525	41.11	41.24	41.40	41.09
123	6565	41.12	41.53	41.15	41.55
155	6725	41.41	41.13	41.17	41.25
179	6845	41.28	41.14	41.38	41.26
187	6885	41.57	40.84	41.41	41.20
211	7005	41.04	41.38	41.49	41.06
227	7085	41.27	41.40	41.16	41.15

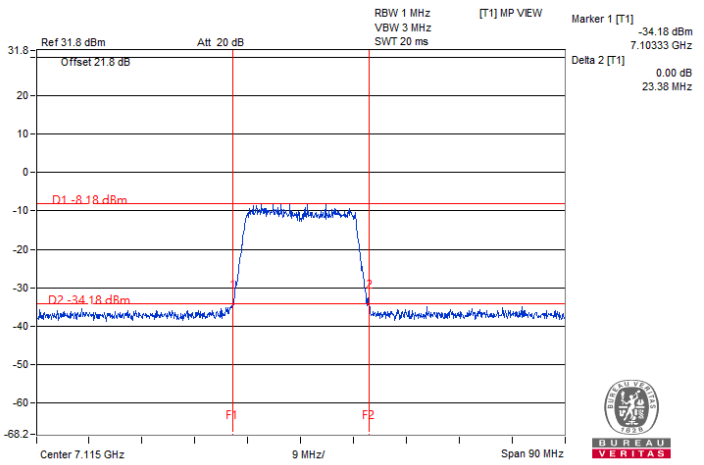
802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
7	5985	82.12	82.79	81.99	81.59
39	6145	82.24	82.50	82.26	82.87
87	6385	82.14	82.23	82.35	82.24
103	6465	82.46	82.05	82.14	82.24
119	6545	81.61	82.14	81.79	82.19
151	6705	82.35	81.81	82.11	82.23
183	6865	81.92	81.72	82.56	82.37
199	6945	82.42	82.13	82.07	82.35
215	7025	82.75	82.23	82.36	81.86

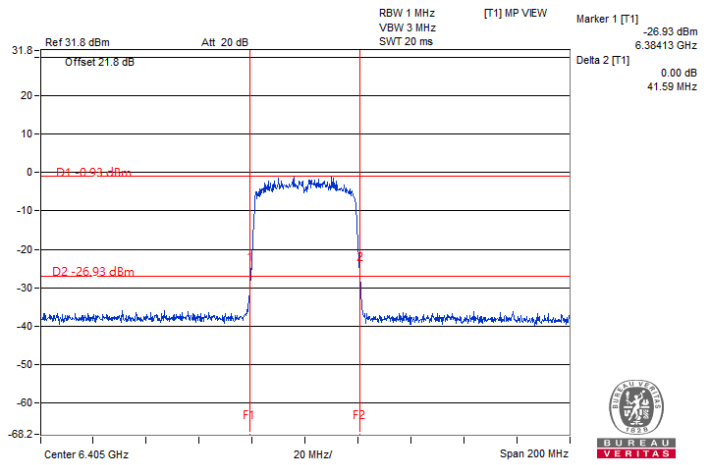
802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
15	6025	166.87	166.20	165.61	165.20
47	6185	166.39	166.03	166.92	166.10
79	6345	167.01	167.04	166.31	167.33
111	6505	165.59	166.94	167.88	170.93
143	6665	166.77	166.34	170.02	165.32
175	6825	166.26	167.52	170.32	165.89
207	6985	166.54	166.80	166.66	170.05

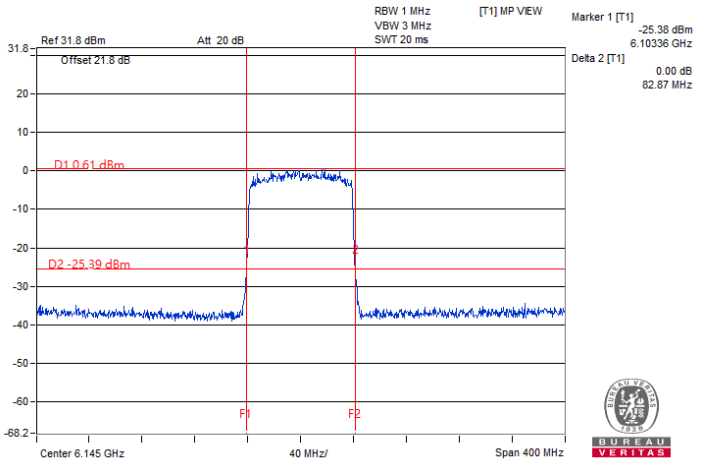
Spectrum Plot of Maximum Value



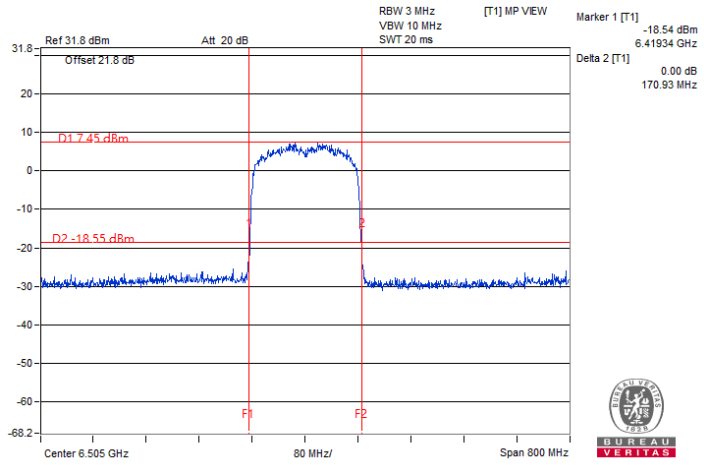
802.11ax (HE20) / Chain 2 : CH 233



802.11ax (HE40) / Chain 2 : CH 91



802.11ax (HE80) / Chain 3 : CH 39

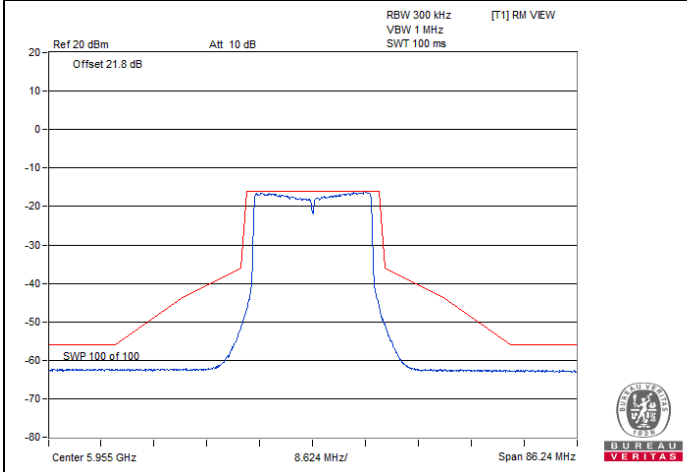
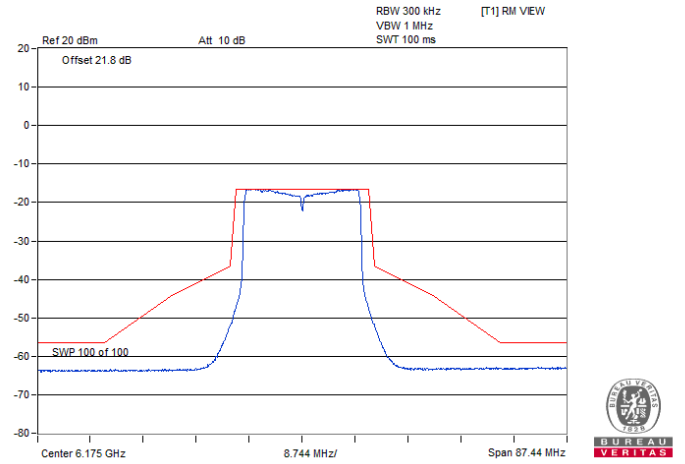
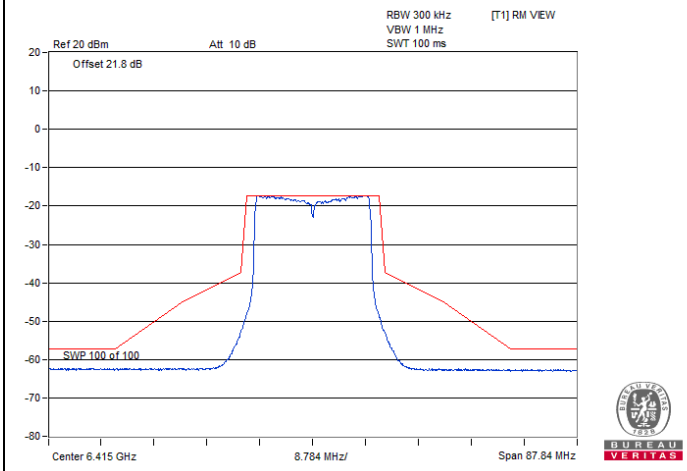
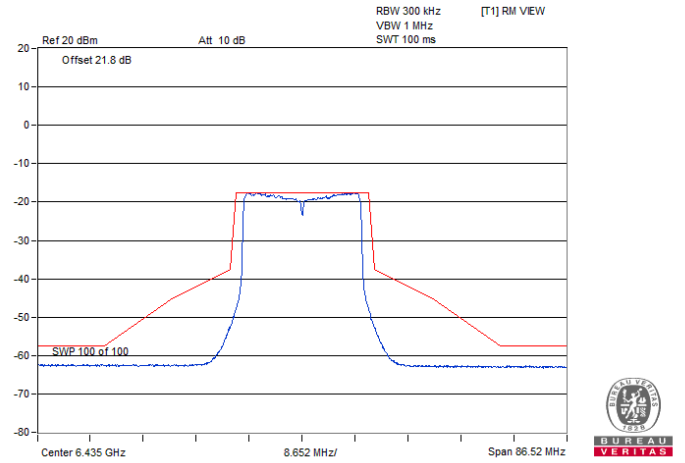
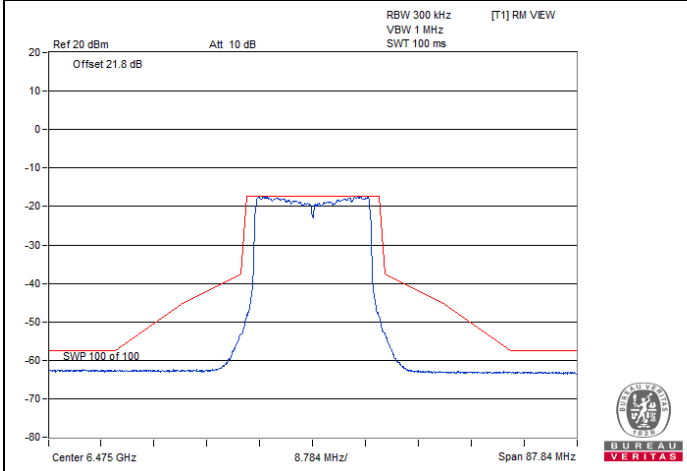
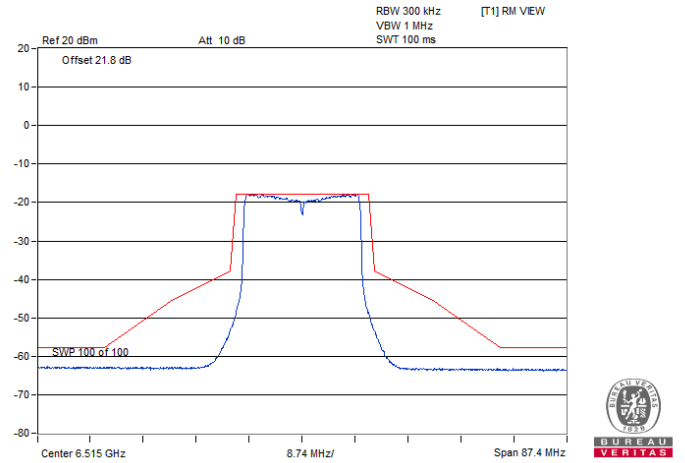


802.11ax (HE160) / Chain 3 : CH 111

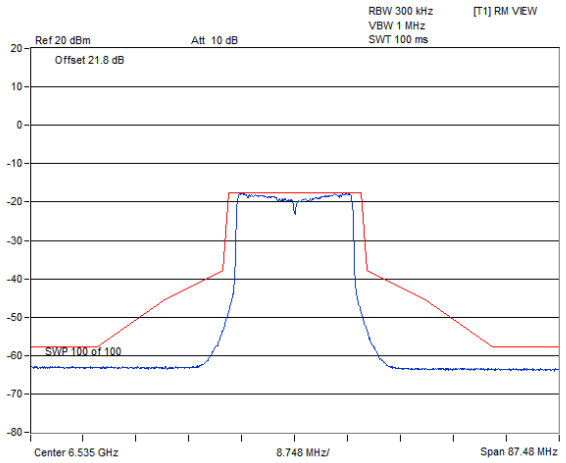
7.4 In-Band Emission Mask

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng

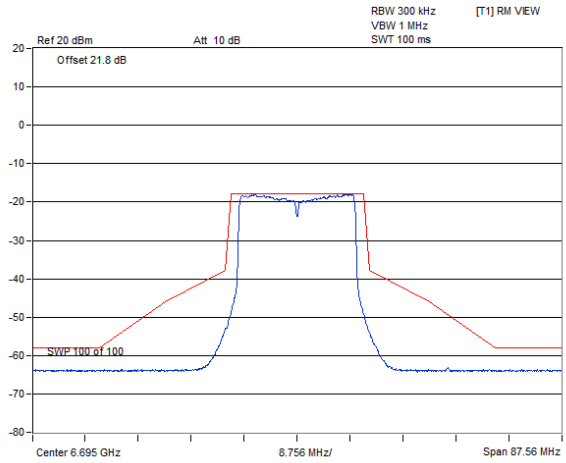
802.11ax (HE20)

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 97
	
802.11ax (HE20) / Chain 0 : CH 105	802.11ax (HE20) / Chain 0 : CH 113

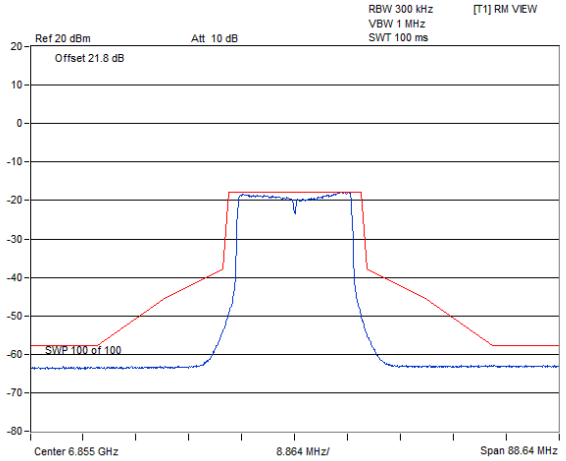
Spectrum Plot



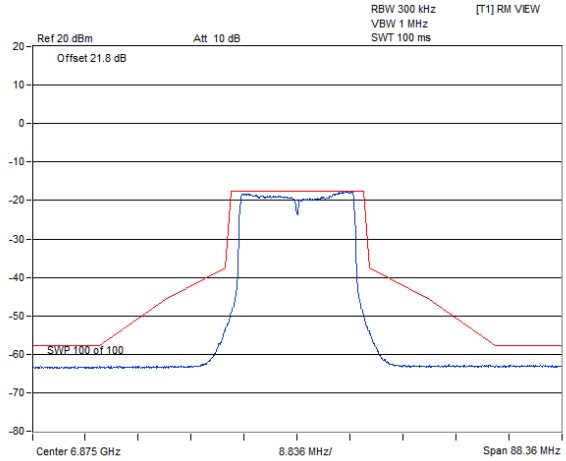
802.11ax (HE20) / Chain 0 : CH 117



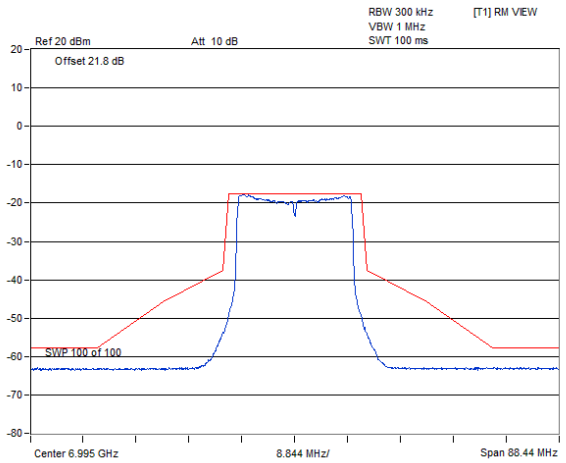
802.11ax (HE20) / Chain 0 : CH 149



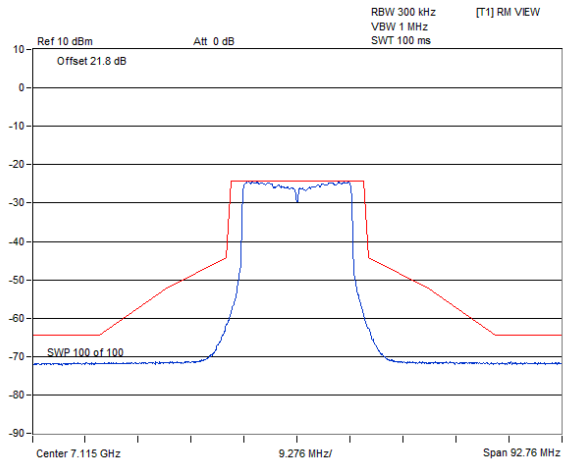
802.11ax (HE20) / Chain 0 : CH 181



802.11ax (HE20) / Chain 0 : CH 185

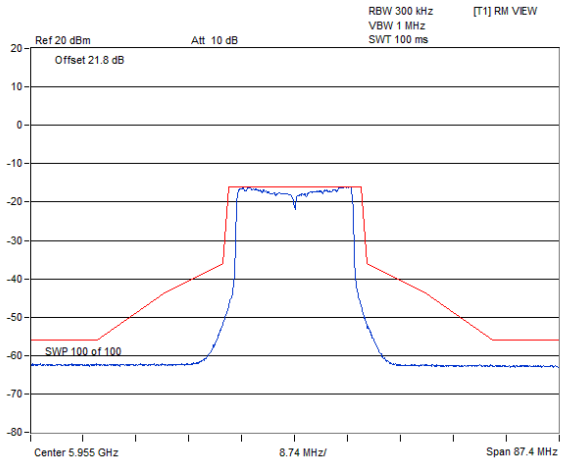


802.11ax (HE20) / Chain 0 : CH 209

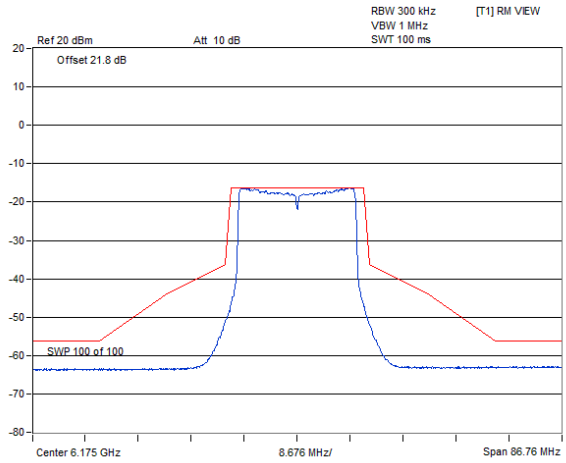


802.11ax (HE20) / Chain 0 : CH 233

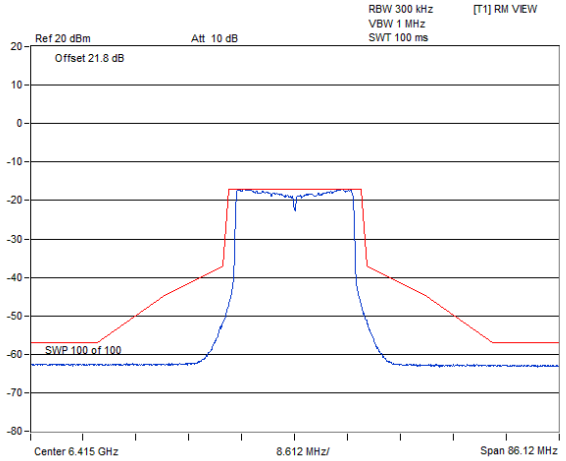
Spectrum Plot



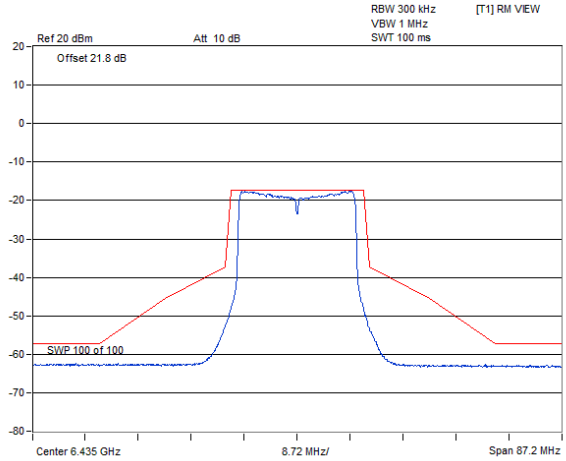
802.11ax (HE20) / Chain 1 : CH 1



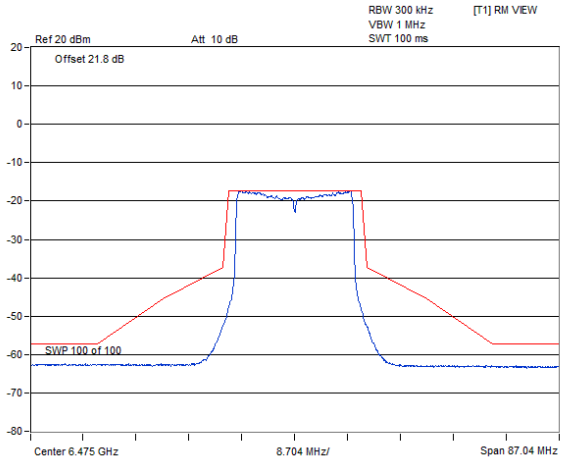
802.11ax (HE20) / Chain 1 : CH 45



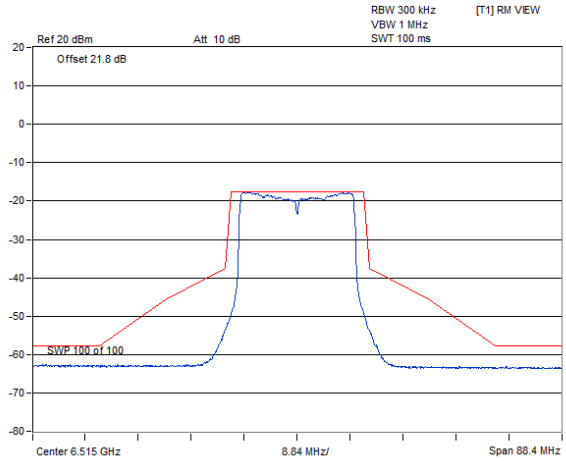
802.11ax (HE20) / Chain 1 : CH 93



802.11ax (HE20) / Chain 1 : CH 97

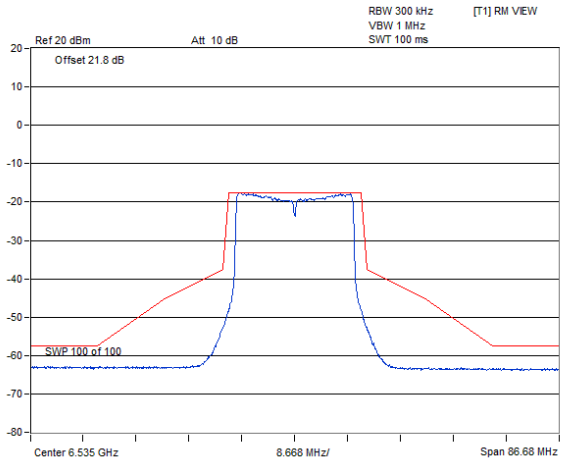


802.11ax (HE20) / Chain 1 : CH 105

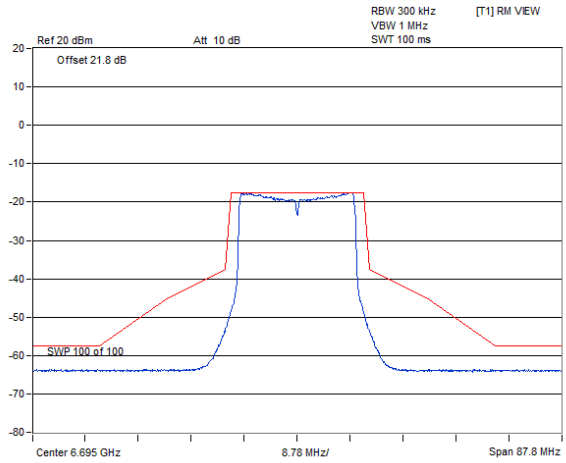


802.11ax (HE20) / Chain 1 : CH 113

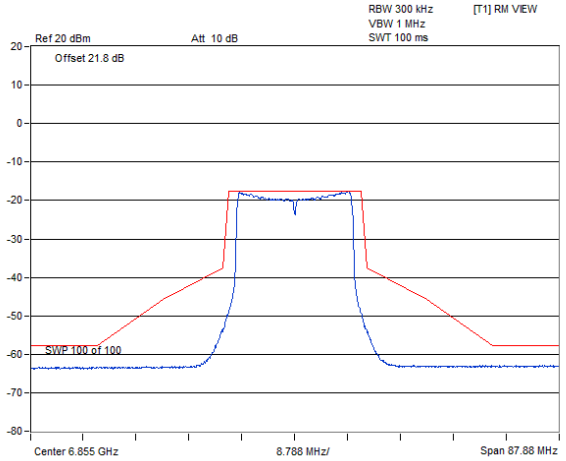
Spectrum Plot



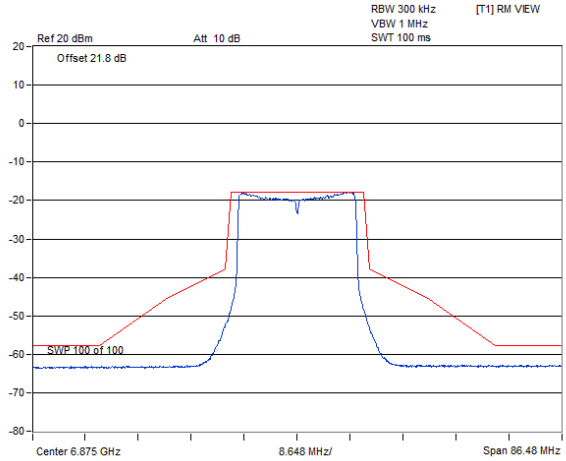
802.11ax (HE20) / Chain 1 : CH 117



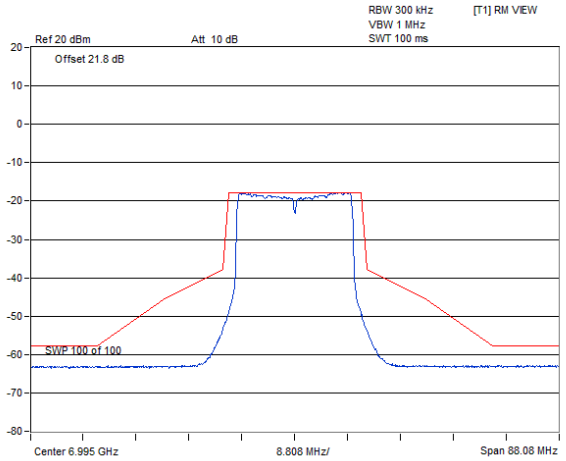
802.11ax (HE20) / Chain 1 : CH 149



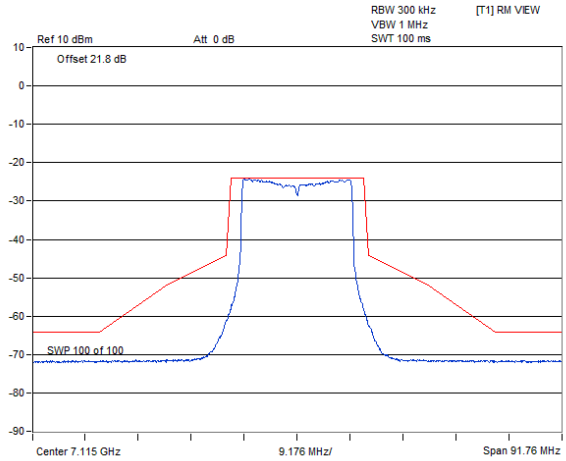
802.11ax (HE20) / Chain 1 : CH 181



802.11ax (HE20) / Chain 1 : CH 185

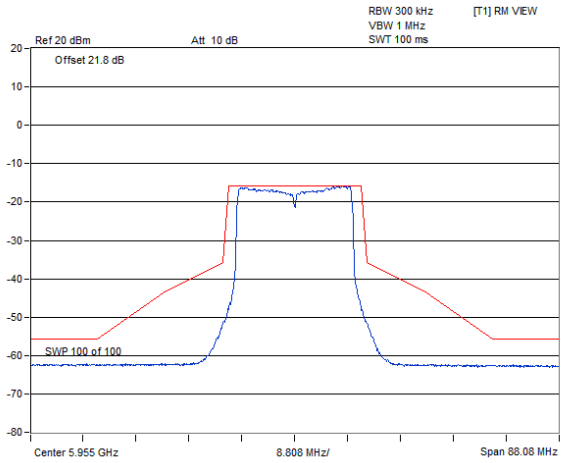


802.11ax (HE20) / Chain 1 : CH 209

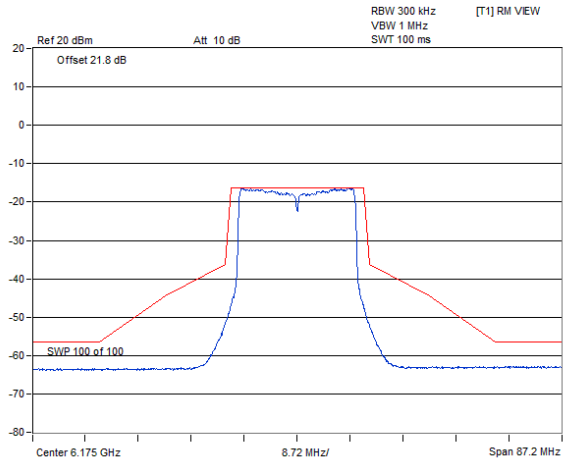


802.11ax (HE20) / Chain 1 : CH 233

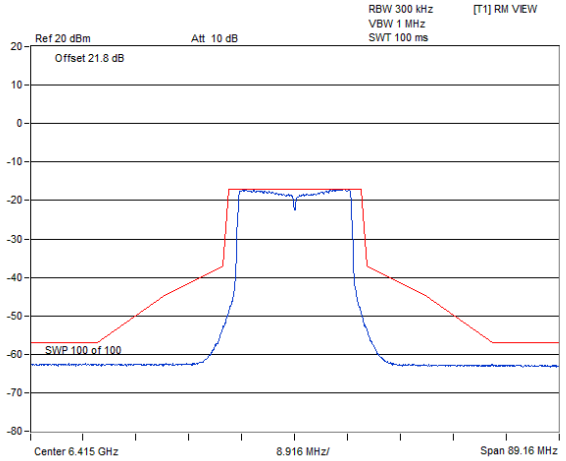
Spectrum Plot



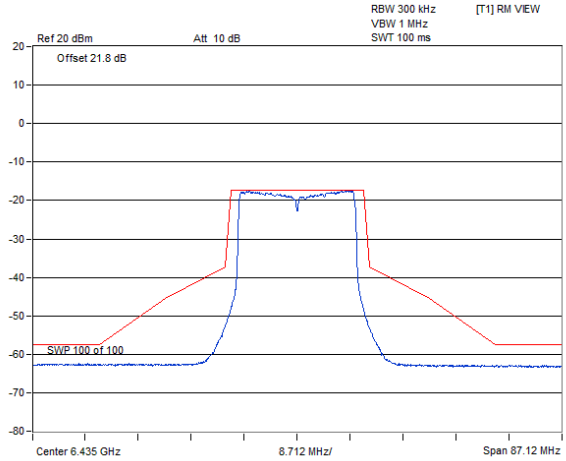
802.11ax (HE20) / Chain 2 : CH 1



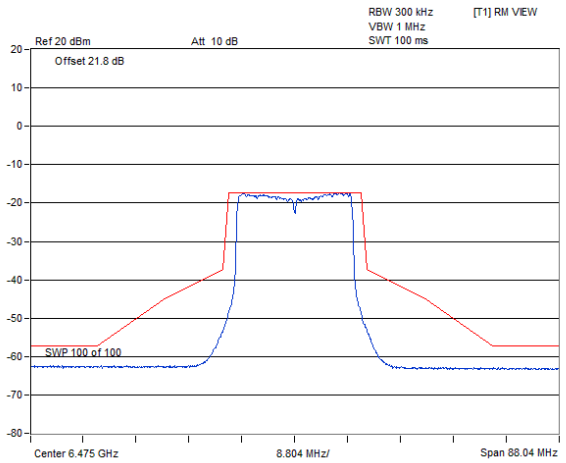
802.11ax (HE20) / Chain 2 : CH 45



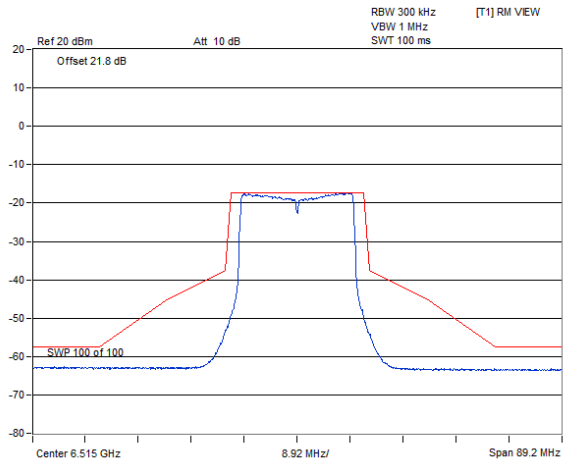
802.11ax (HE20) / Chain 2 : CH 93



802.11ax (HE20) / Chain 2 : CH 97

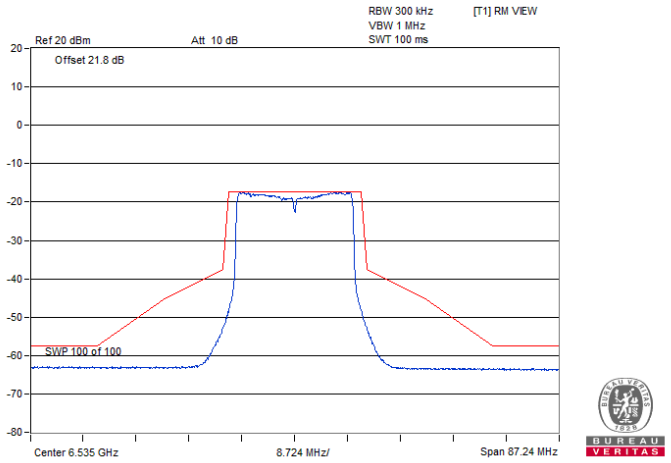


802.11ax (HE20) / Chain 2 : CH 105

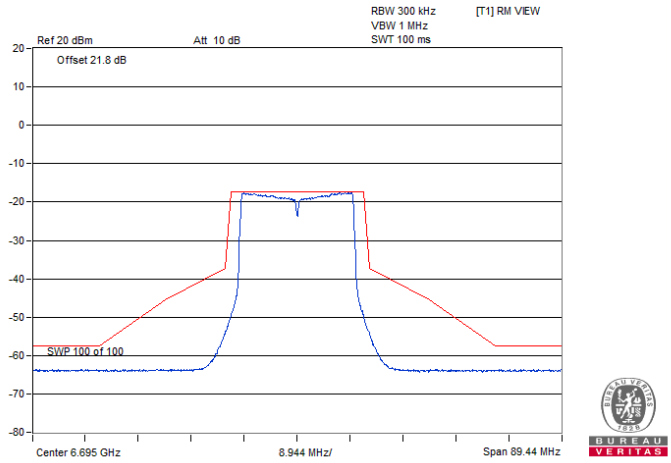


802.11ax (HE20) / Chain 2 : CH 113

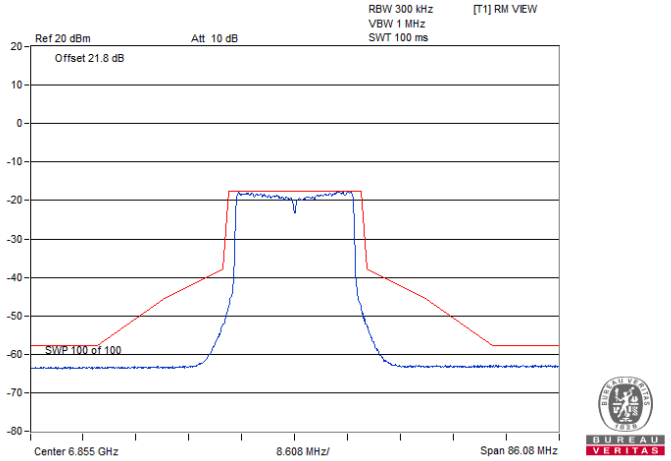
Spectrum Plot



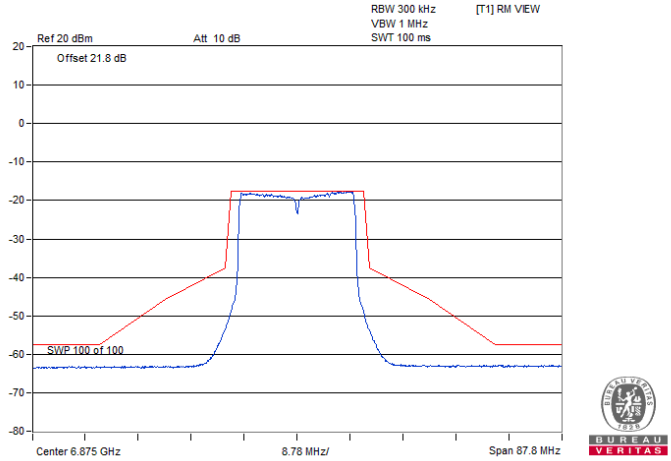
802.11ax (HE20) / Chain 2 : CH 117



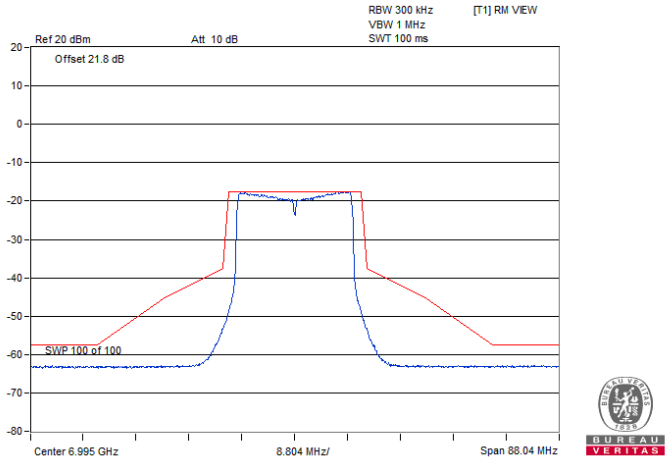
802.11ax (HE20) / Chain 2 : CH 149



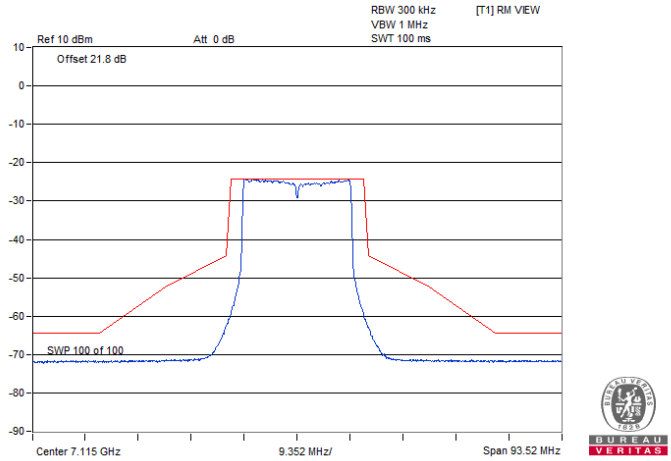
802.11ax (HE20) / Chain 2 : CH 181



802.11ax (HE20) / Chain 2 : CH 185

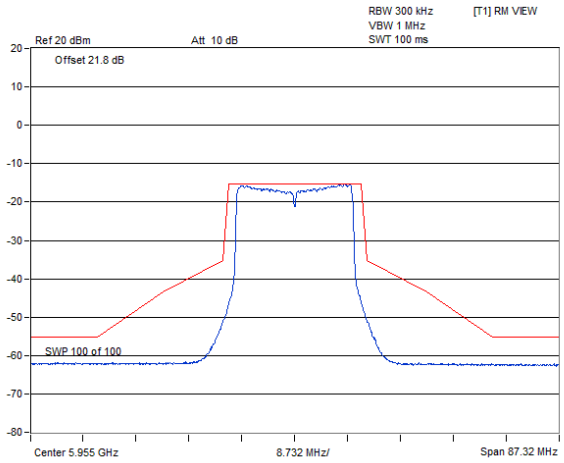


802.11ax (HE20) / Chain 2 : CH 209

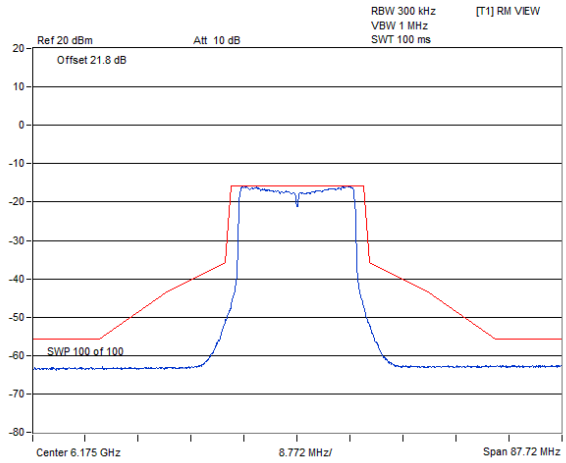


802.11ax (HE20) / Chain 2 : CH 233

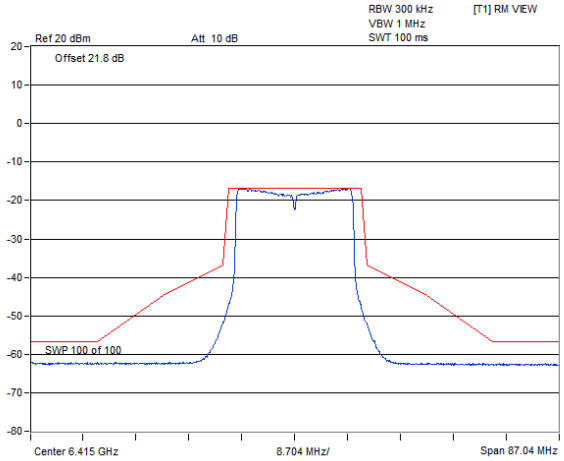
Spectrum Plot



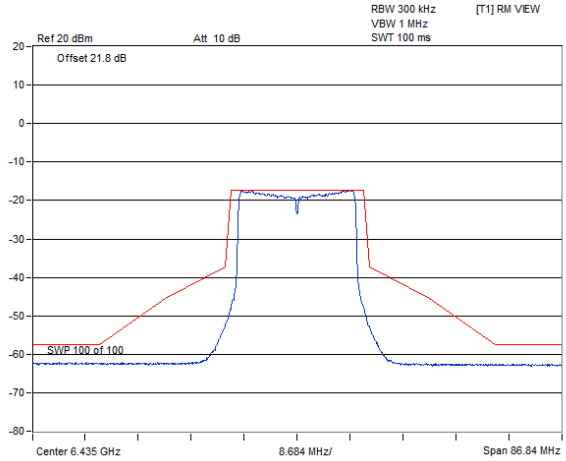
802.11ax (HE20) / Chain 3 : CH 1



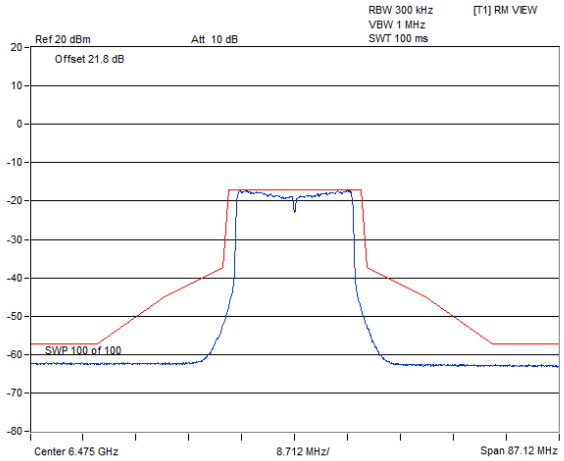
802.11ax (HE20) / Chain 3 : CH 45



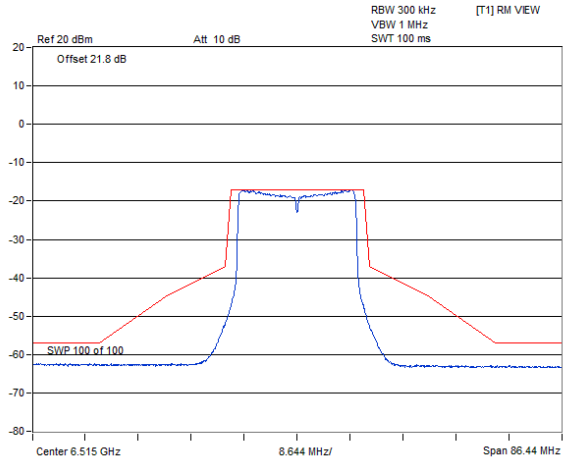
802.11ax (HE20) / Chain 3 : CH 93



802.11ax (HE20) / Chain 3 : CH 97

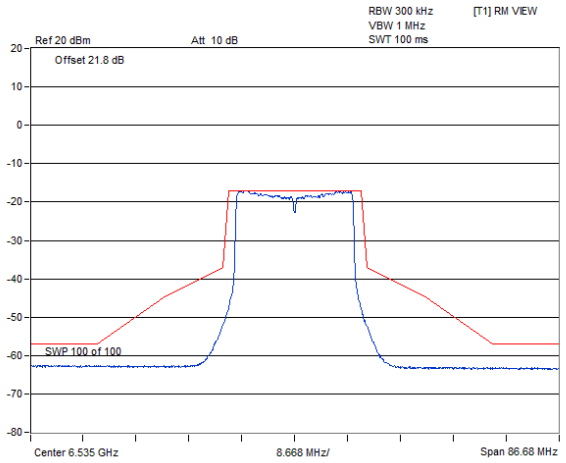


802.11ax (HE20) / Chain 3 : CH 105

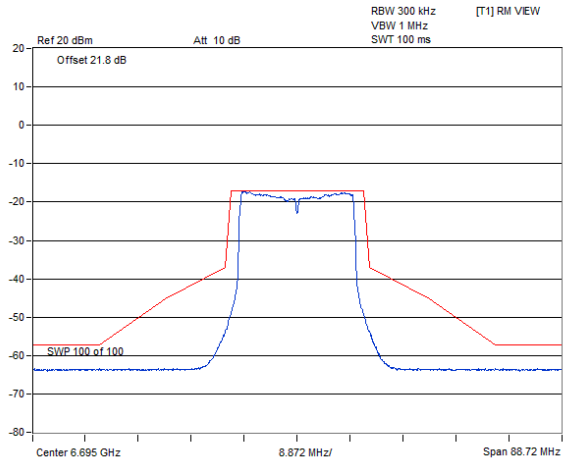


802.11ax (HE20) / Chain 3 : CH 113

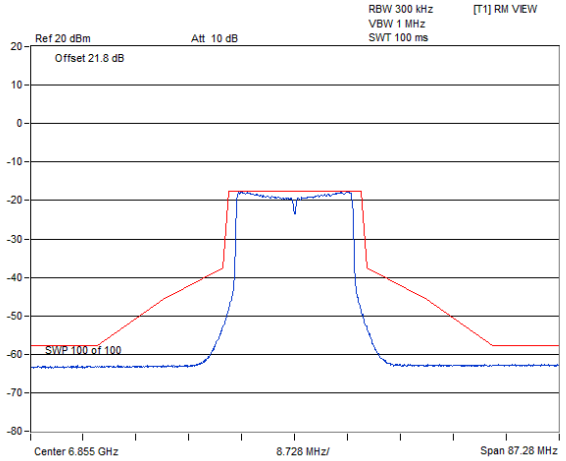
Spectrum Plot



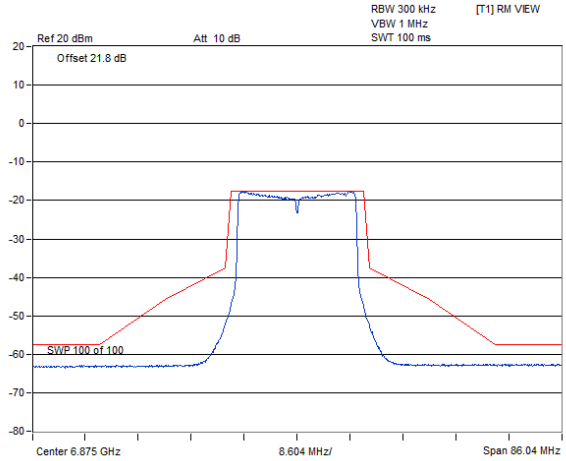
802.11ax (HE20) / Chain 3 : CH 117



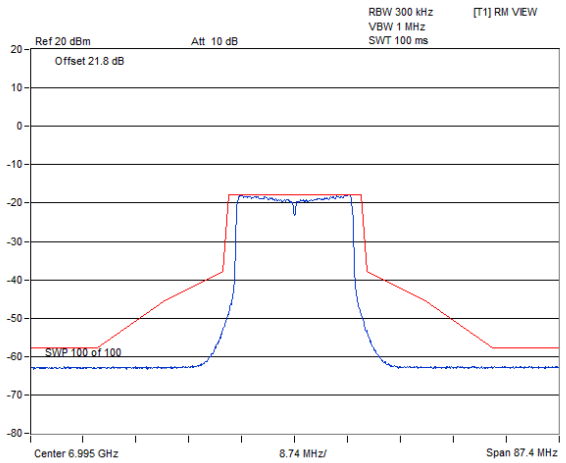
802.11ax (HE20) / Chain 3 : CH 149



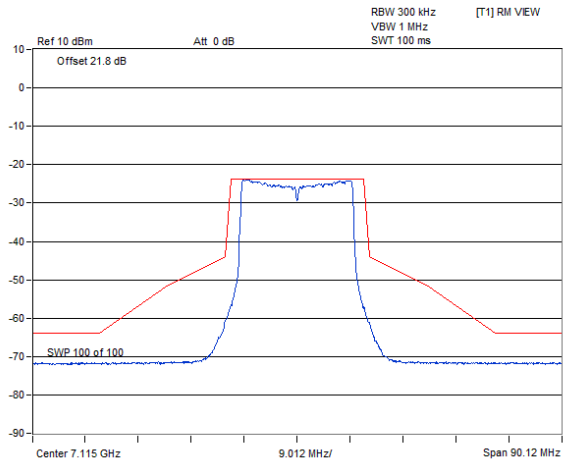
802.11ax (HE20) / Chain 3 : CH 181



802.11ax (HE20) / Chain 3 : CH 185

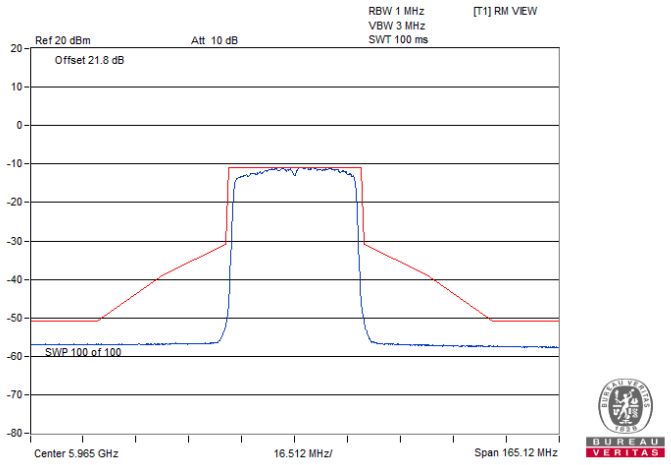
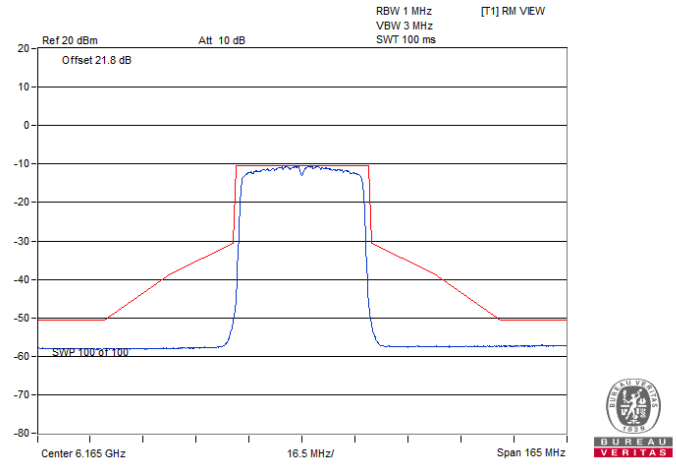
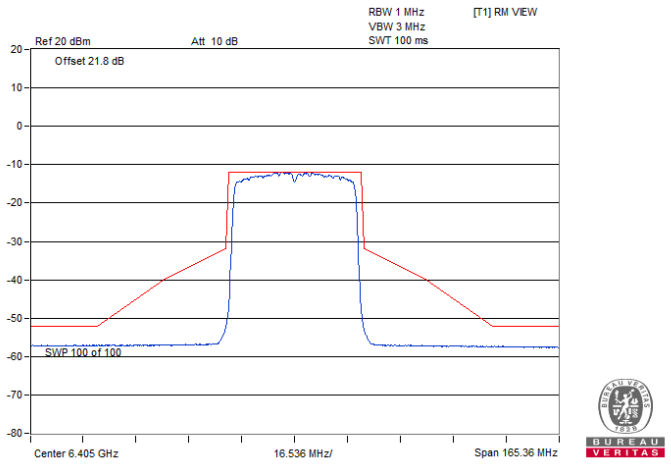
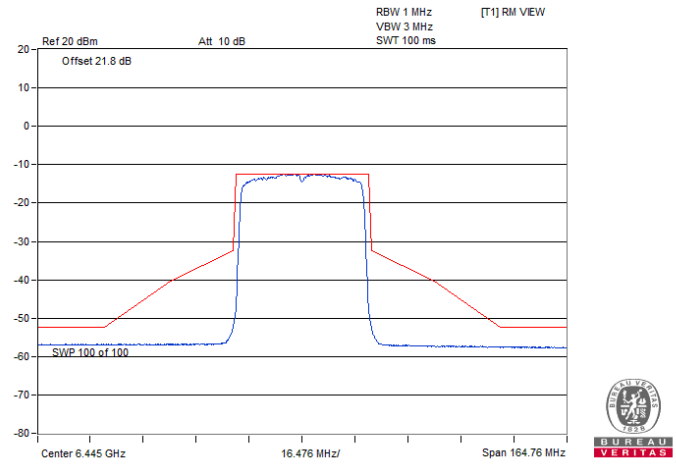
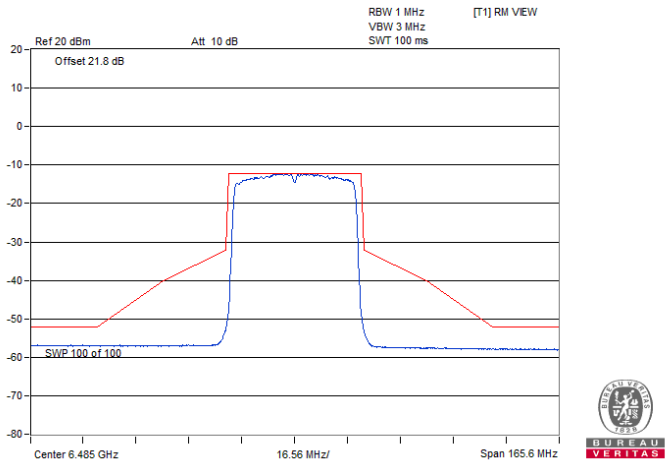
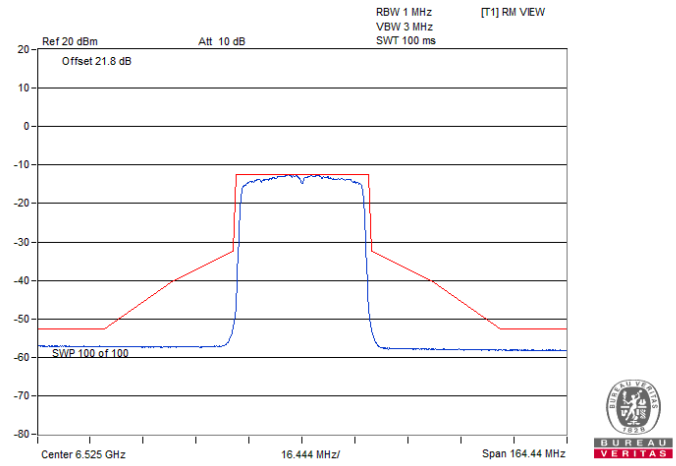


802.11ax (HE20) / Chain 3 : CH 209

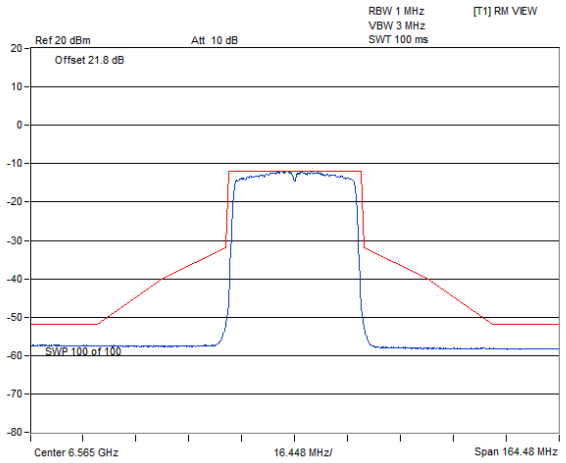


802.11ax (HE20) / Chain 3 : CH 233

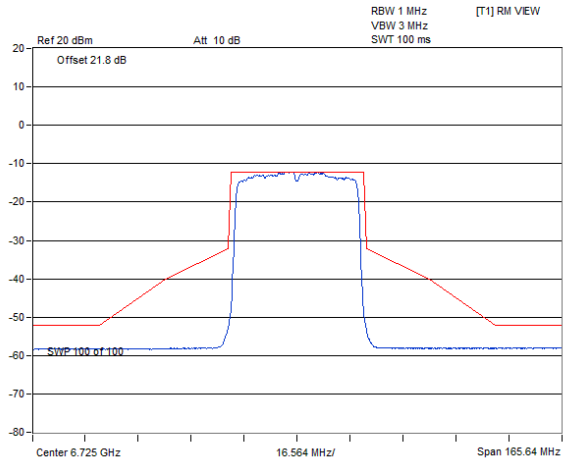
802.11ax (HE40)

Spectrum Plot	
	
802.11ax (HE40) / Chain 0 : CH 3	802.11ax (HE40) / Chain 0 : CH 43
	
802.11ax (HE40) / Chain 0 : CH 91	802.11ax (HE40) / Chain 0 : CH 99
	
802.11ax (HE40) / Chain 0 : CH 107	802.11ax (HE40) / Chain 0 : CH 115

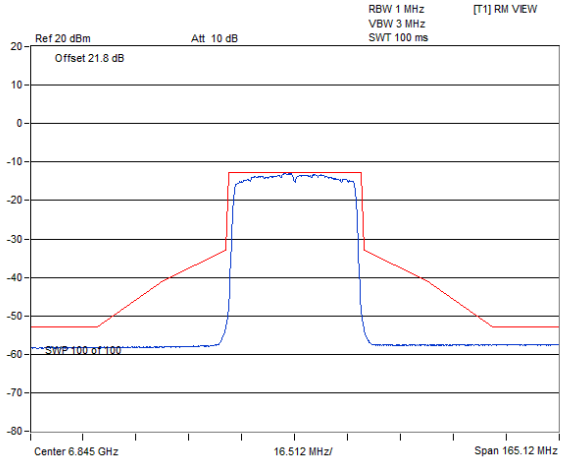
Spectrum Plot



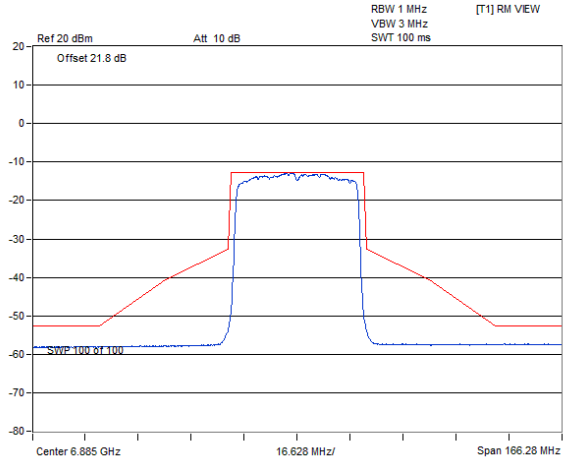
802.11ax (HE40) / Chain 0 : CH 123



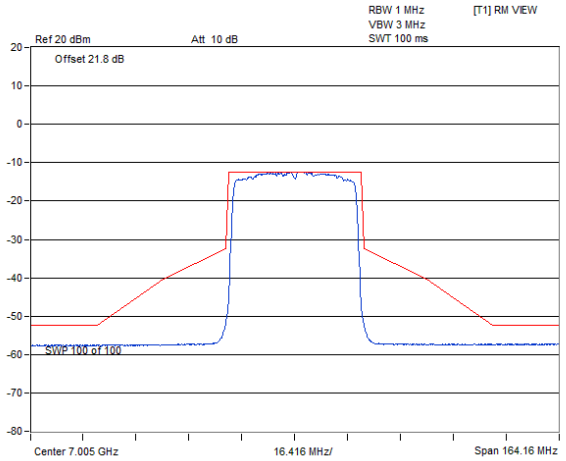
802.11ax (HE40) / Chain 0 : CH 155



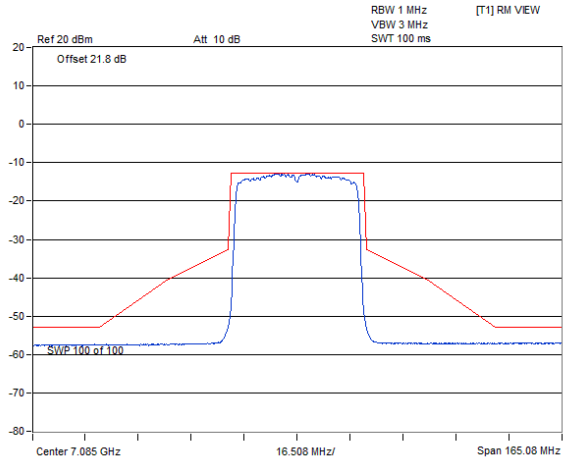
802.11ax (HE40) / Chain 0 : CH 179



802.11ax (HE40) / Chain 0 : CH 187

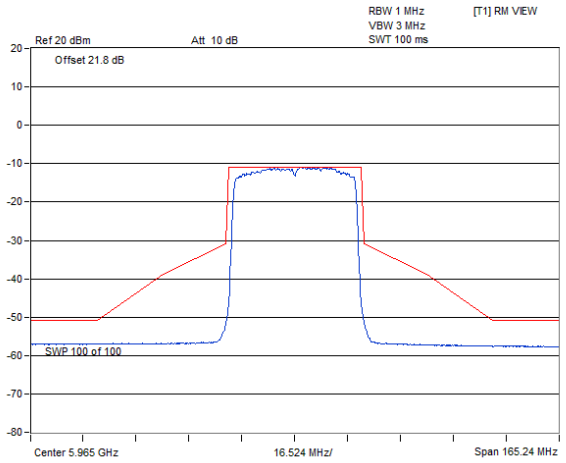


802.11ax (HE40) / Chain 0 : CH 211

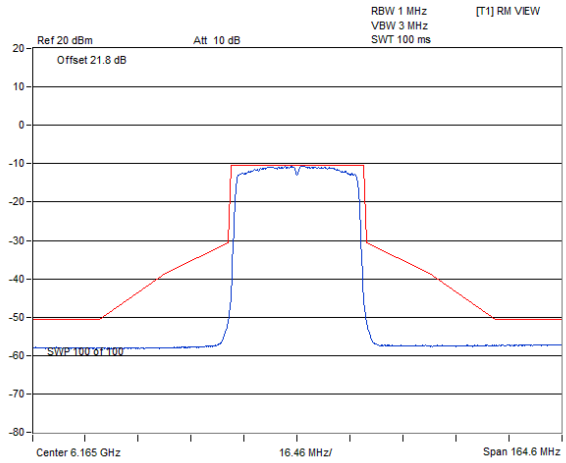


802.11ax (HE40) / Chain 0 : CH 227

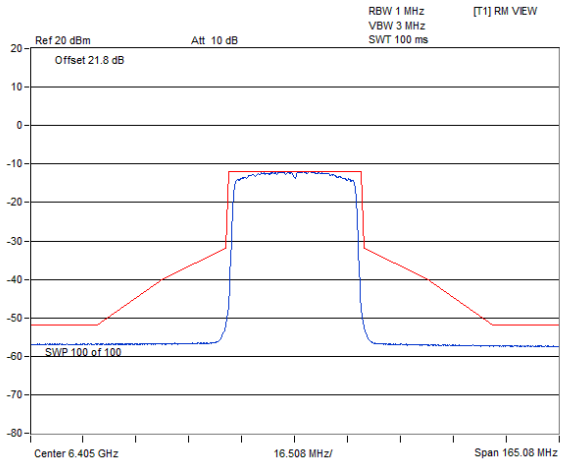
Spectrum Plot



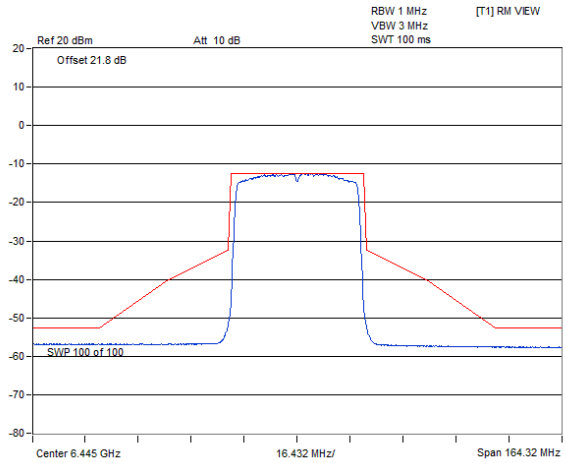
802.11ax (HE40) / Chain 1 : CH 3



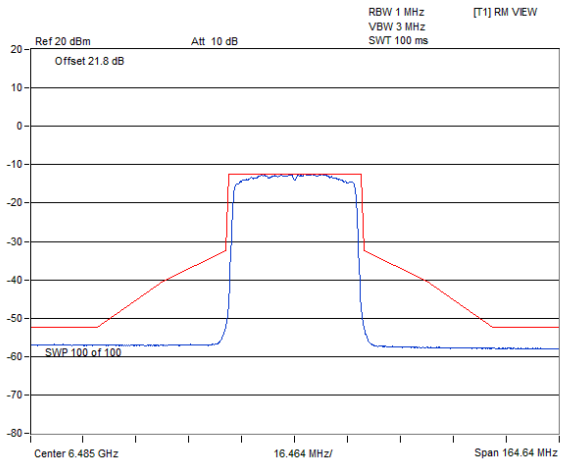
802.11ax (HE40) / Chain 1 : CH 43



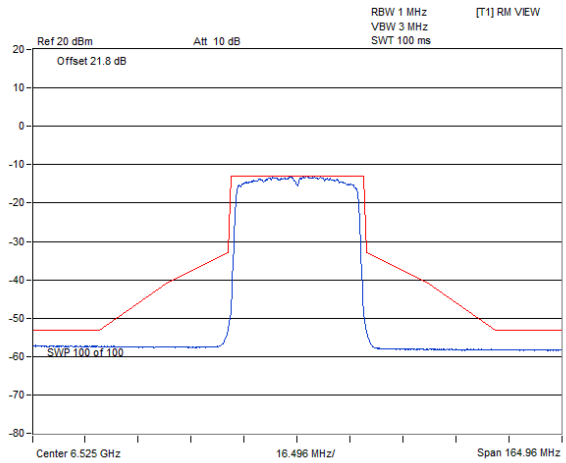
802.11ax (HE40) / Chain 1 : CH 91



802.11ax (HE40) / Chain 1 : CH 99

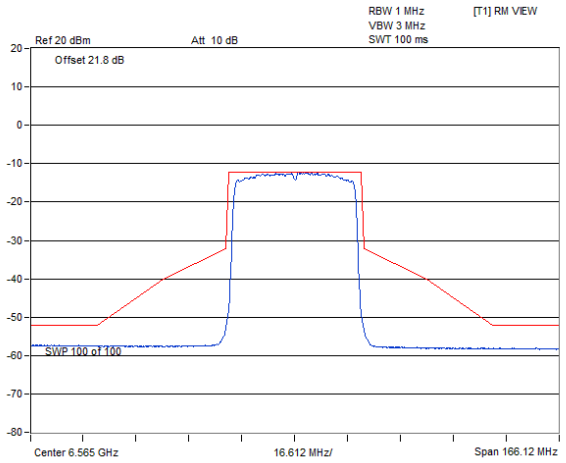


802.11ax (HE40) / Chain 1 : CH 107

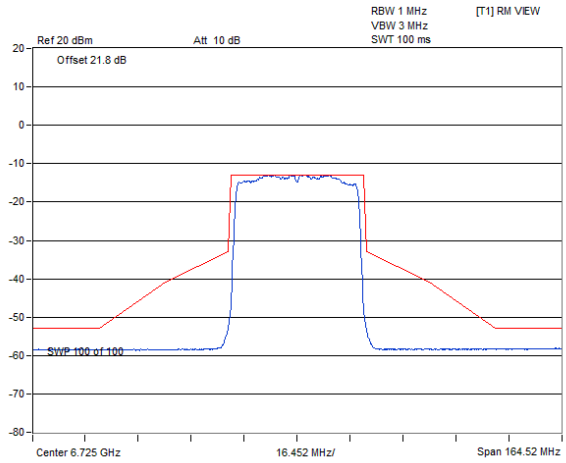


802.11ax (HE40) / Chain 1 : CH 115

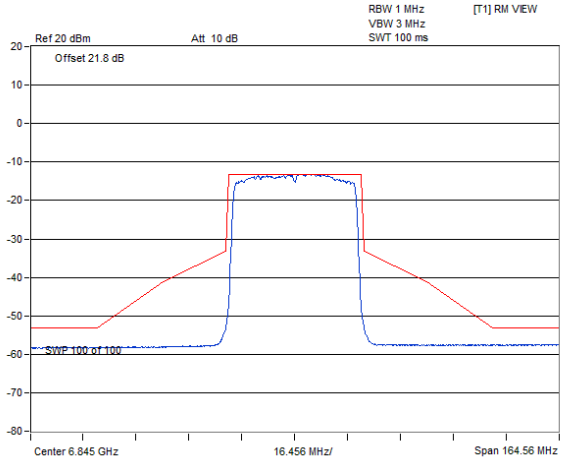
Spectrum Plot



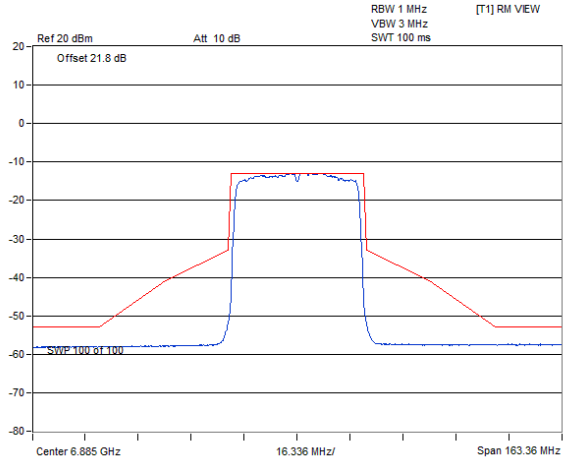
802.11ax (HE40) / Chain 1 : CH 123



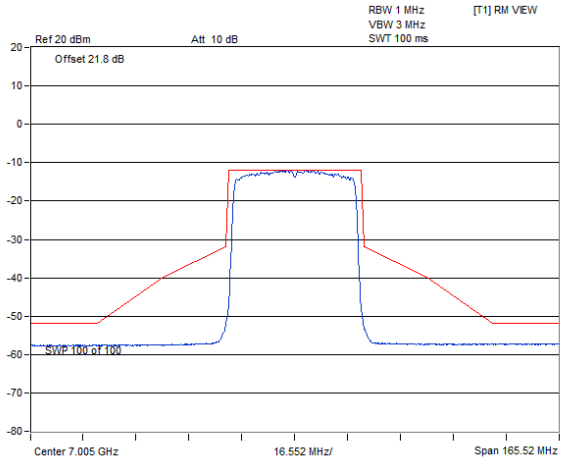
802.11ax (HE40) / Chain 1 : CH 155



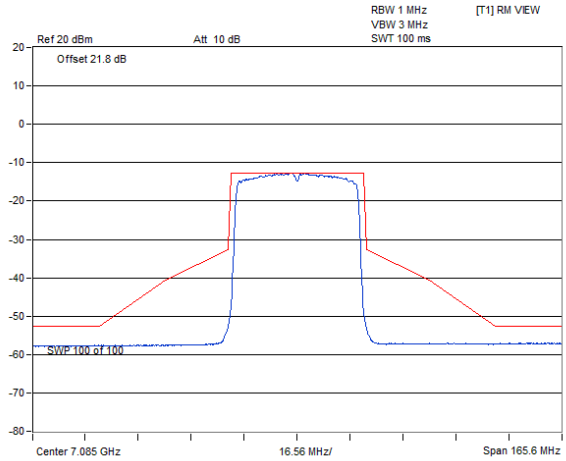
802.11ax (HE40) / Chain 1 : CH 179



802.11ax (HE40) / Chain 1 : CH 187

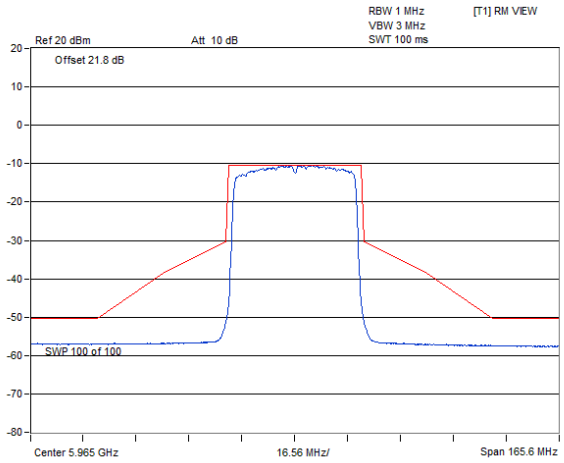


802.11ax (HE40) / Chain 1 : CH 211

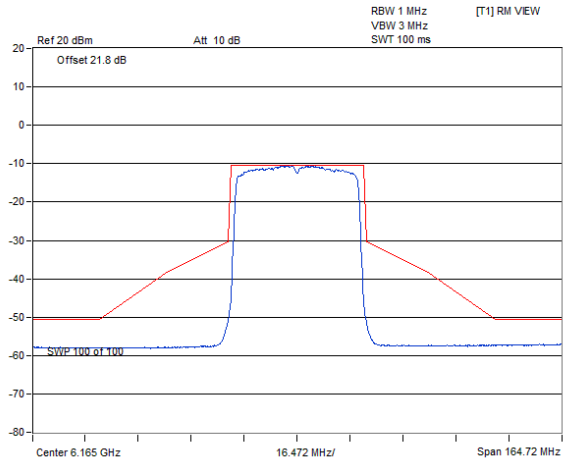


802.11ax (HE40) / Chain 1 : CH 227

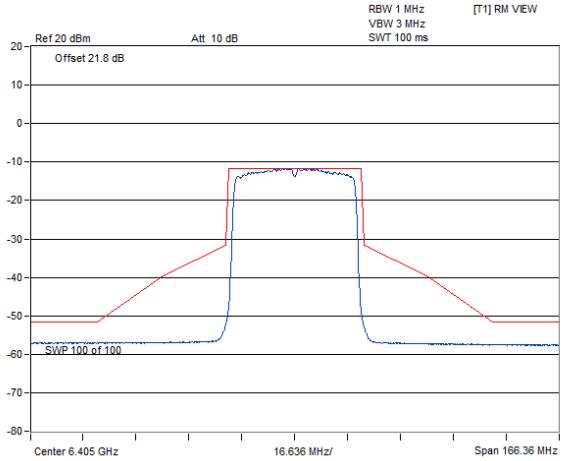
Spectrum Plot



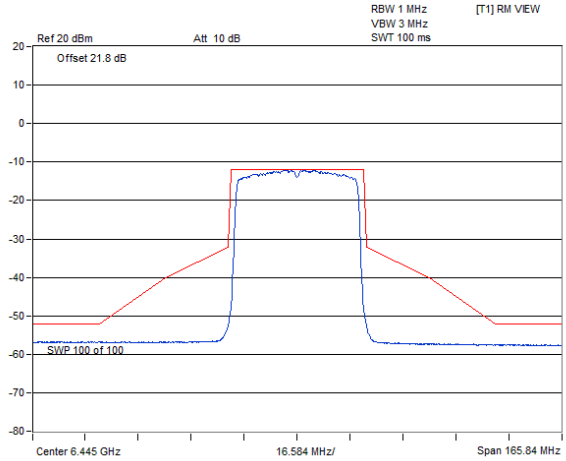
802.11ax (HE40) / Chain 2 : CH 3



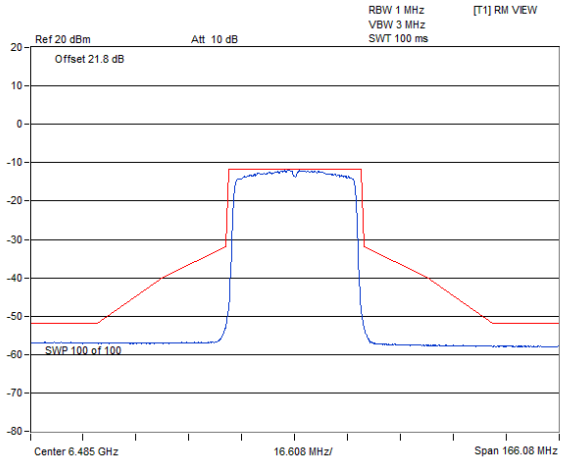
802.11ax (HE40) / Chain 2 : CH 43



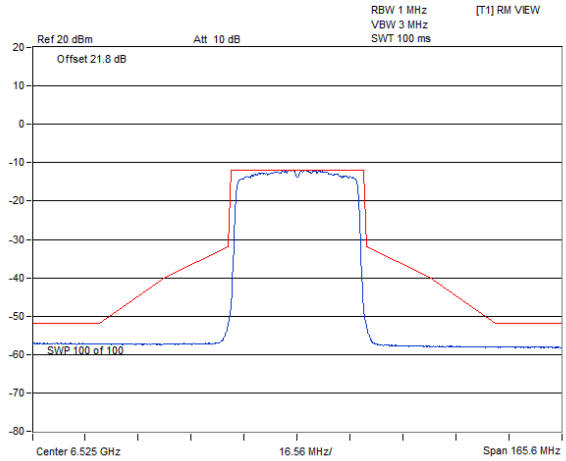
802.11ax (HE40) / Chain 2 : CH 91



802.11ax (HE40) / Chain 2 : CH 99

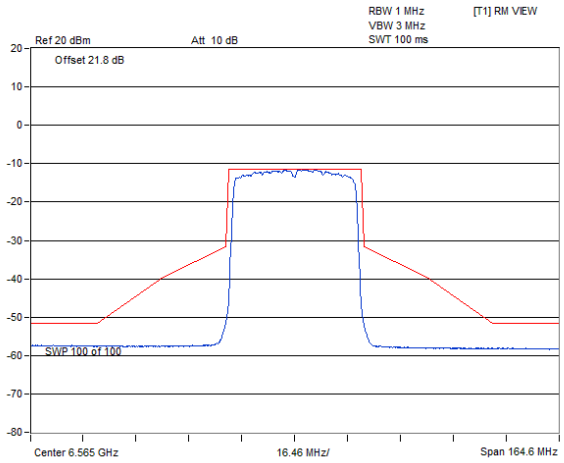


802.11ax (HE40) / Chain 2 : CH 107

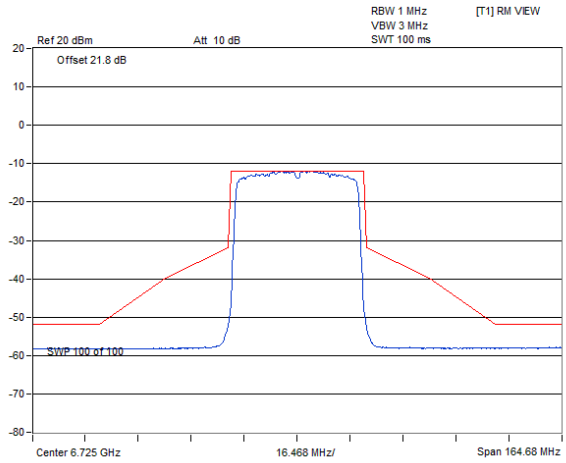


802.11ax (HE40) / Chain 2 : CH 115

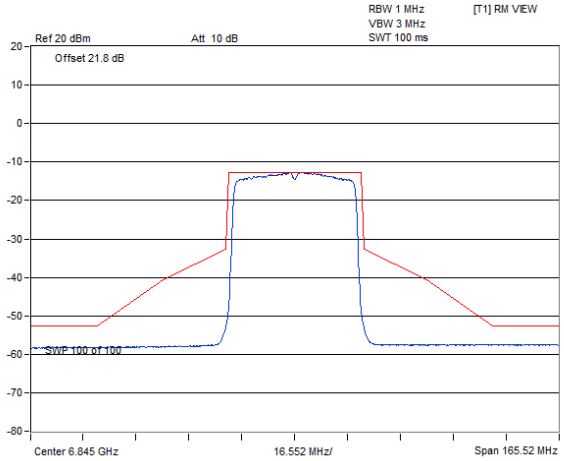
Spectrum Plot



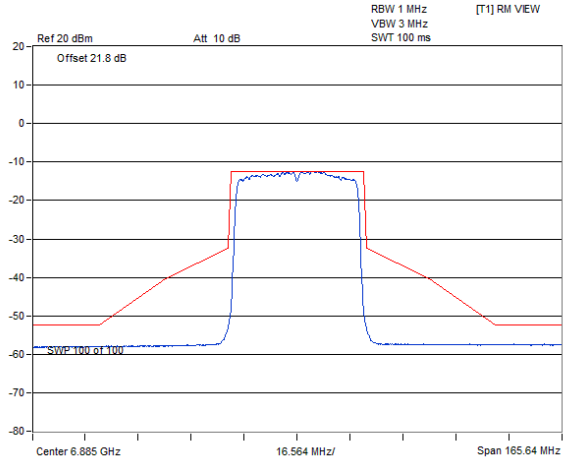
802.11ax (HE40) / Chain 2 : CH 123



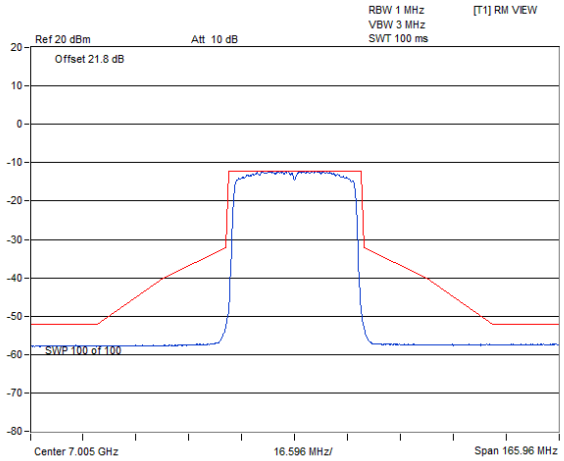
802.11ax (HE40) / Chain 2 : CH 155



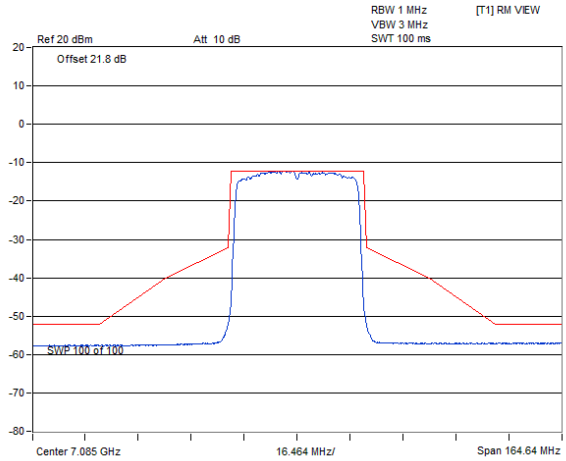
802.11ax (HE40) / Chain 2 : CH 179



802.11ax (HE40) / Chain 2 : CH 187

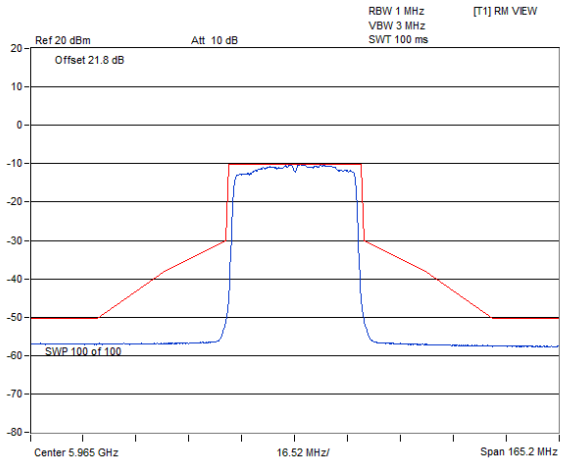


802.11ax (HE40) / Chain 2 : CH 211

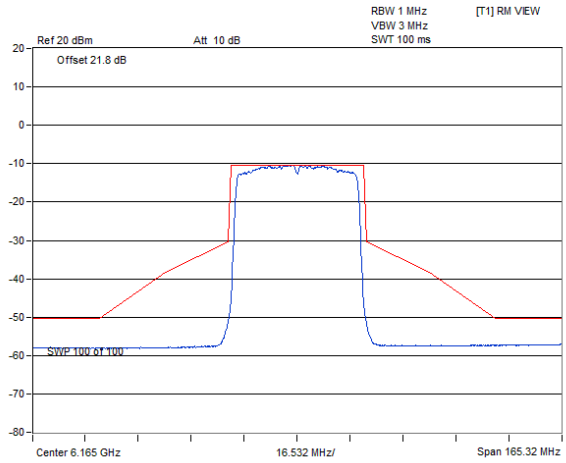


802.11ax (HE40) / Chain 2 : CH 227

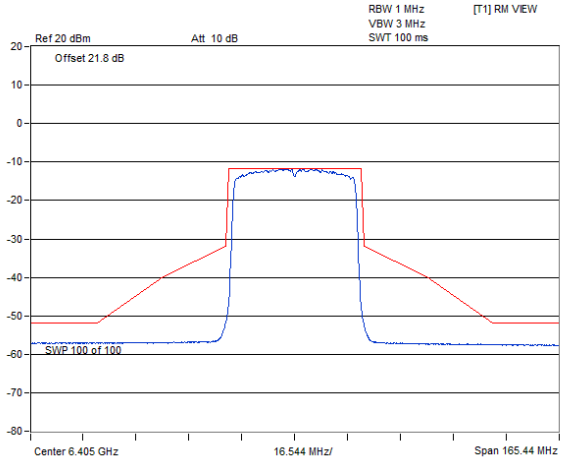
Spectrum Plot



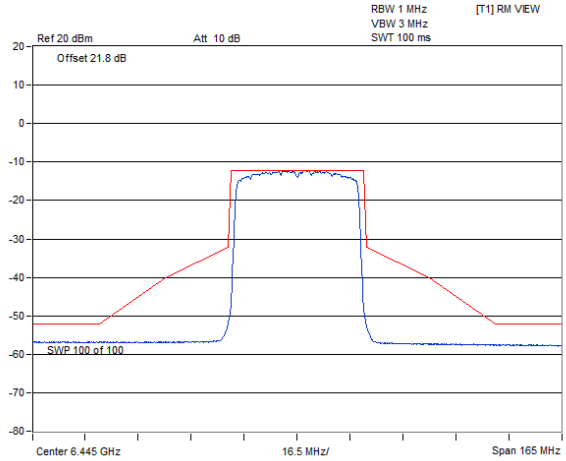
802.11ax (HE40) / Chain 3 : CH 3



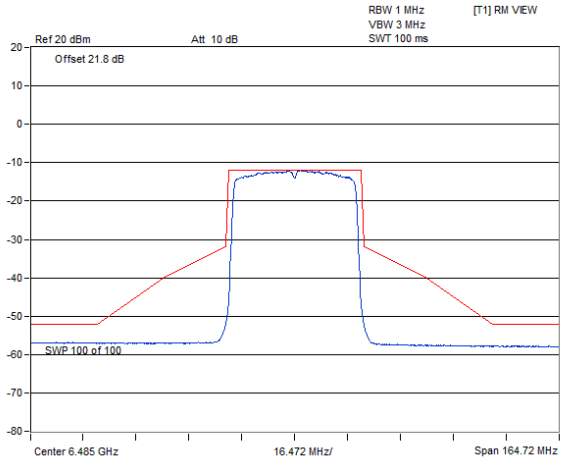
802.11ax (HE40) / Chain 3 : CH 43



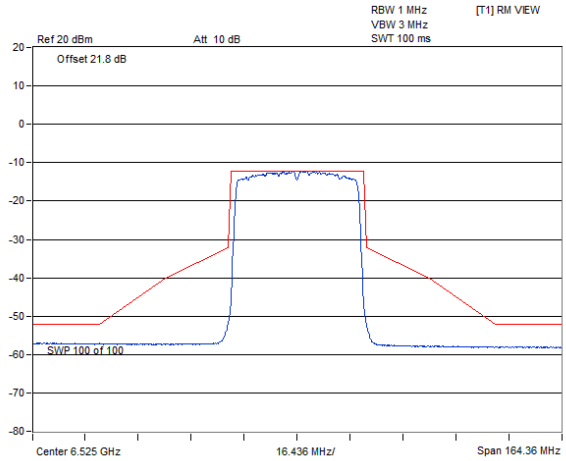
802.11ax (HE40) / Chain 3 : CH 91



802.11ax (HE40) / Chain 3 : CH 99

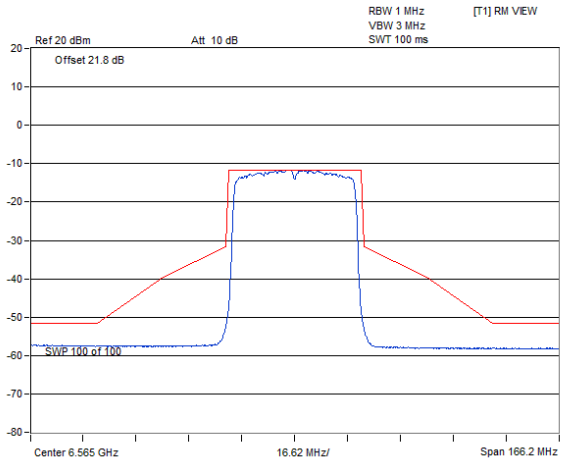


802.11ax (HE40) / Chain 3 : CH 107

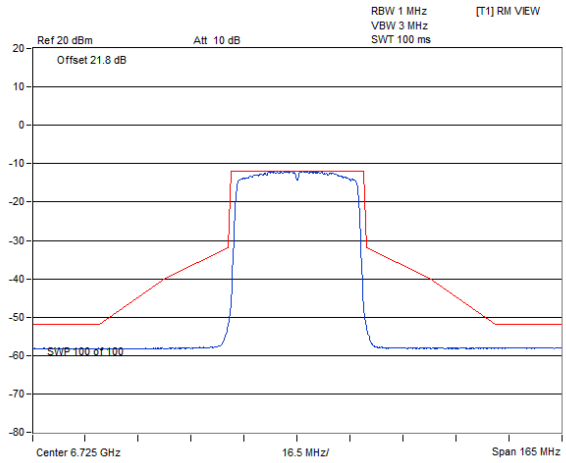


802.11ax (HE40) / Chain 3 : CH 115

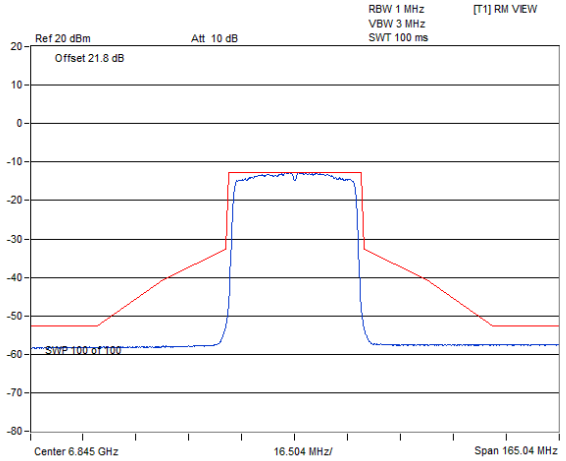
Spectrum Plot



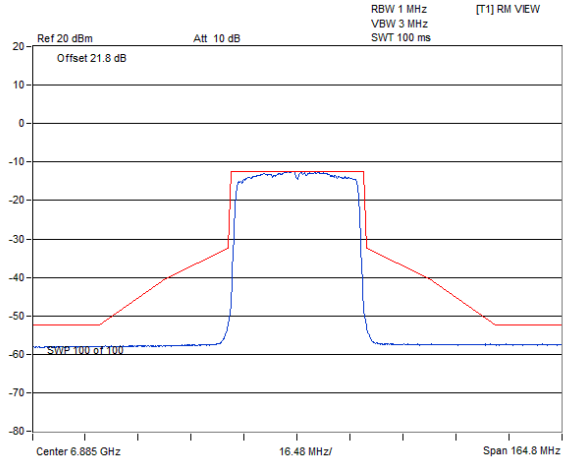
802.11ax (HE40) / Chain 3 : CH 123



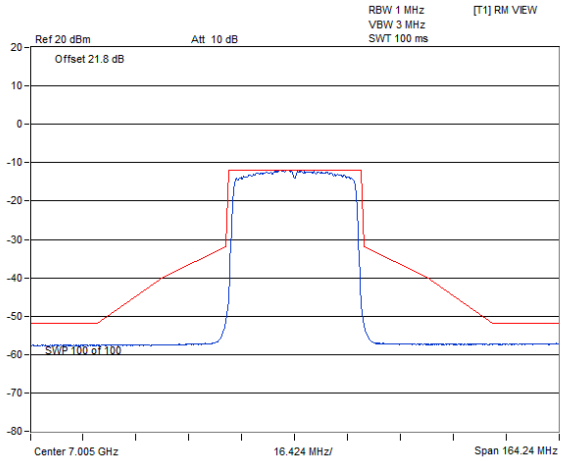
802.11ax (HE40) / Chain 3 : CH 155



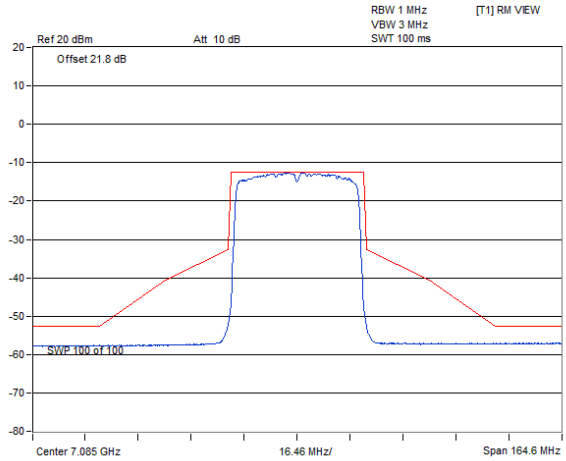
802.11ax (HE40) / Chain 3 : CH 179



802.11ax (HE40) / Chain 3 : CH 187

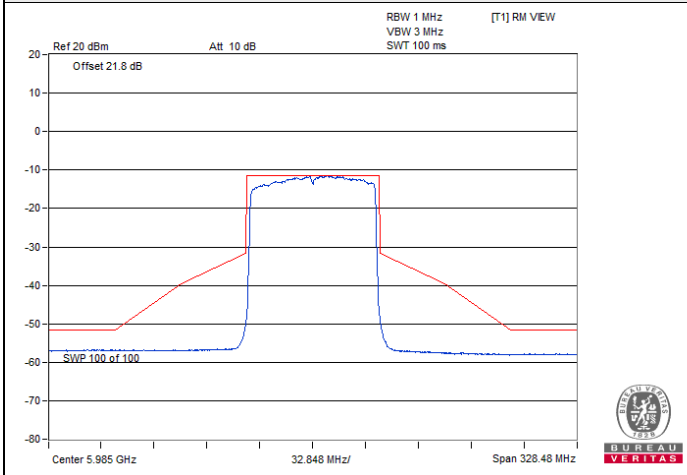
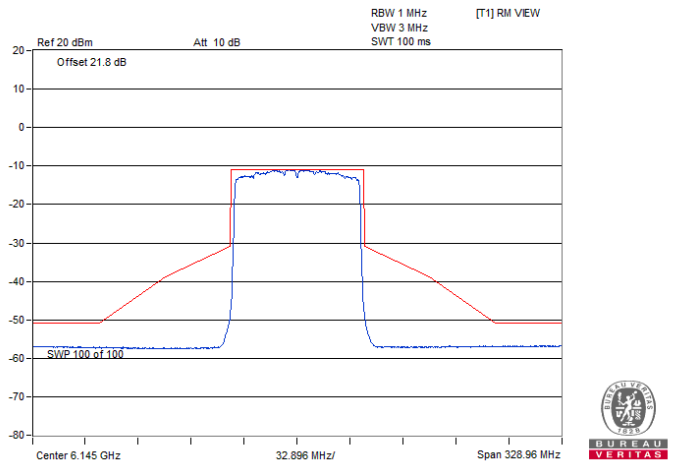
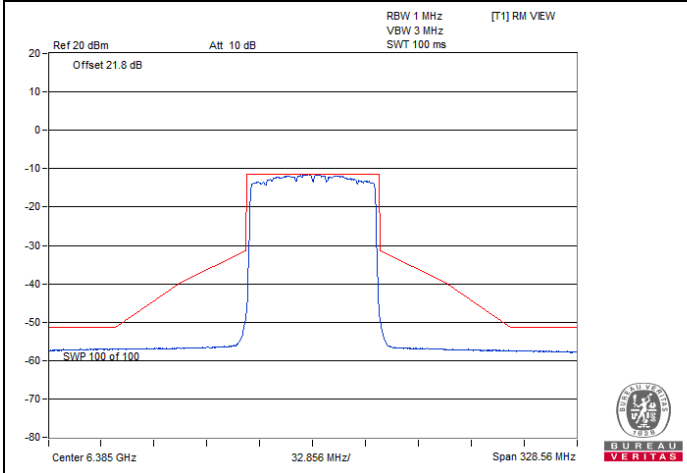
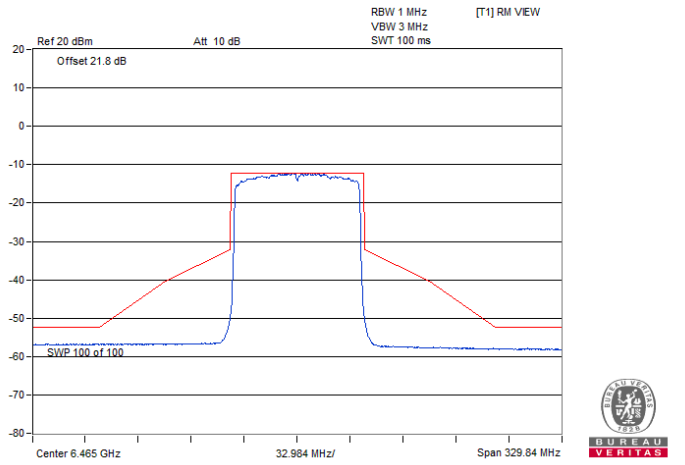
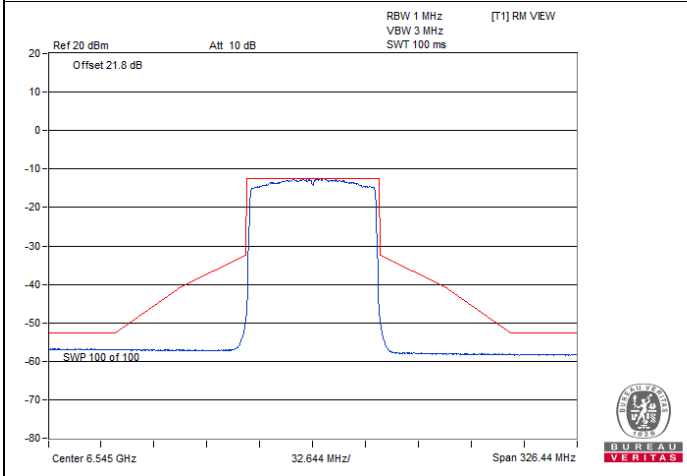
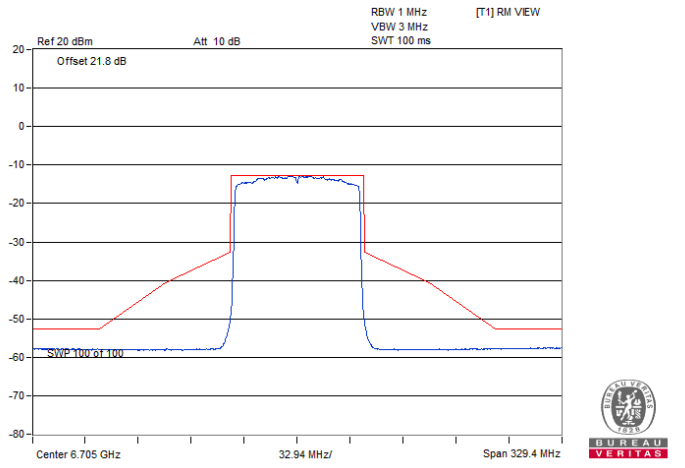


802.11ax (HE40) / Chain 3 : CH 211

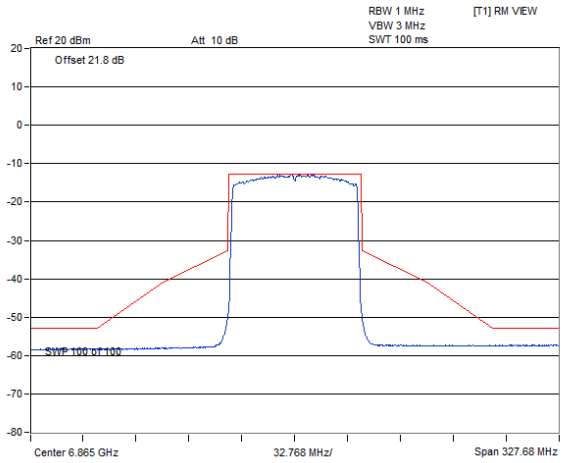


802.11ax (HE40) / Chain 3 : CH 227

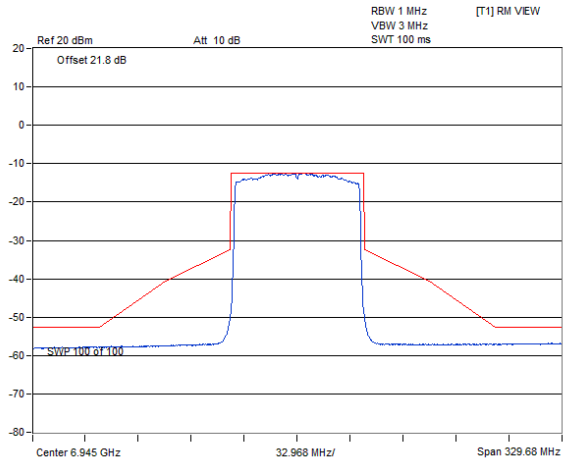
802.11ax (HE80)

Spectrum Plot	
	
802.11ax (HE80) / Chain 0 : CH 7	802.11ax (HE80) / Chain 0 : CH 39
	
802.11ax (HE80) / Chain 0 : CH 87	802.11ax (HE80) / Chain 0 : CH 103
	
802.11ax (HE80) / Chain 0 : CH 119	802.11ax (HE80) / Chain 0 : CH 151

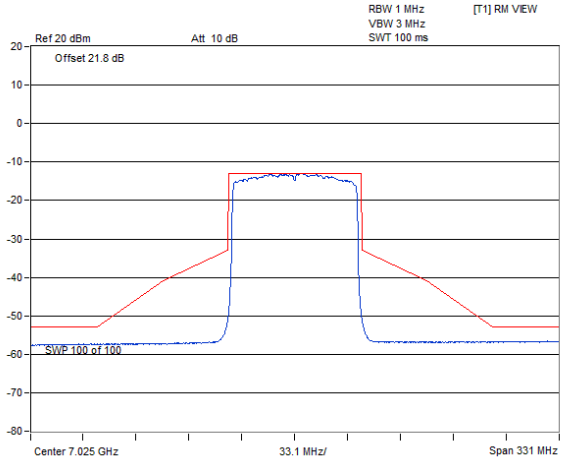
Spectrum Plot



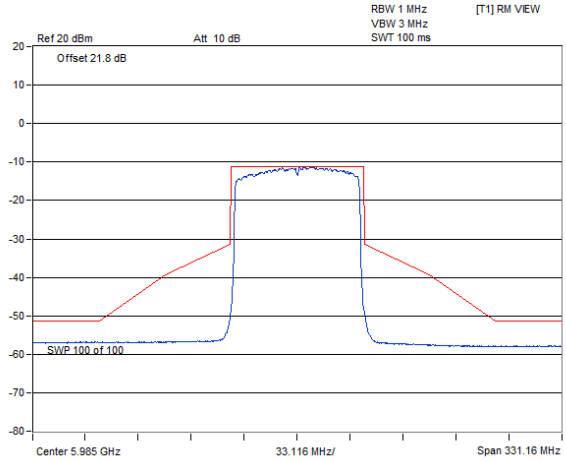
802.11ax (HE80) / Chain 0 : CH 183



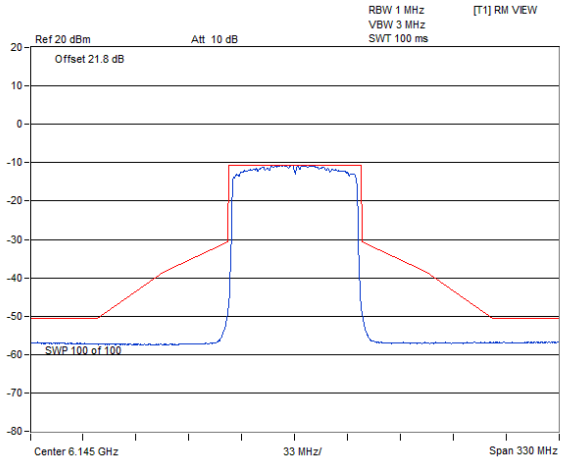
802.11ax (HE80) / Chain 0 : CH 199



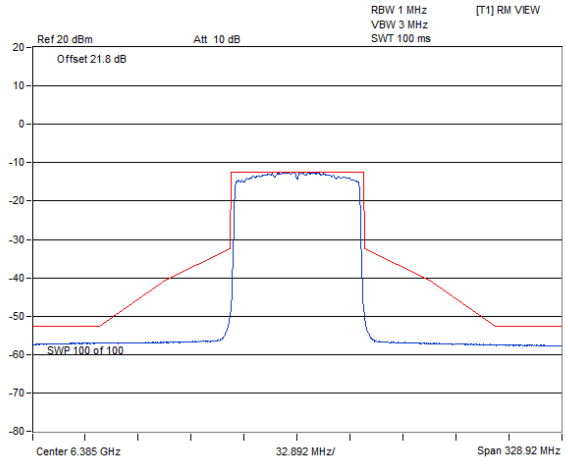
802.11ax (HE80) / Chain 0 : CH 215



802.11ax (HE80) / Chain 1 : CH 7

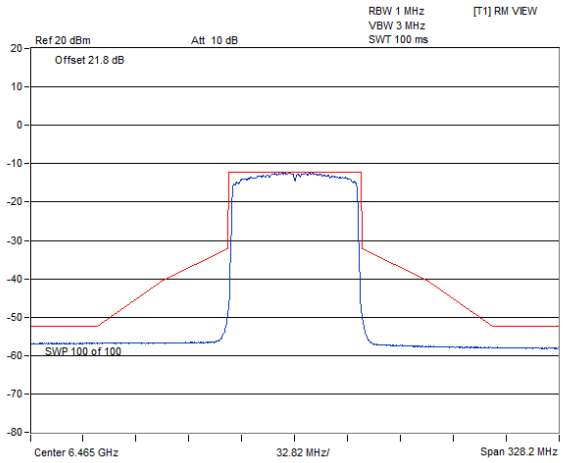


802.11ax (HE80) / Chain 1 : CH 39

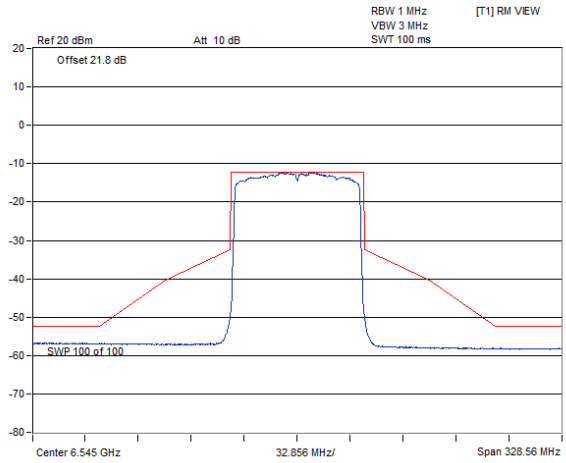


802.11ax (HE80) / Chain 1 : CH 87

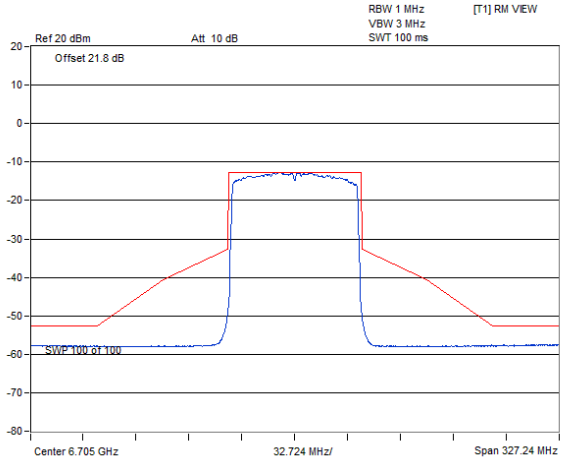
Spectrum Plot



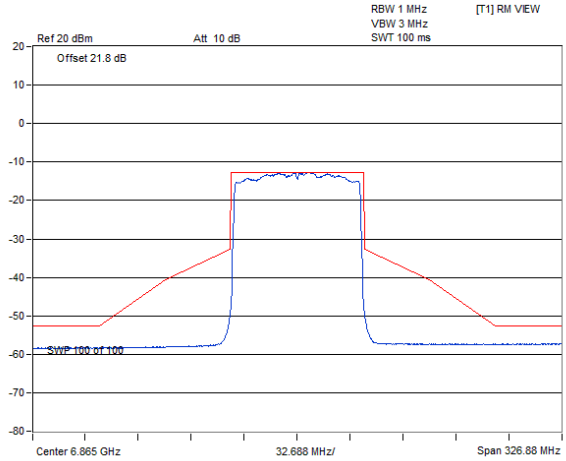
802.11ax (HE80) / Chain 1 : CH 103



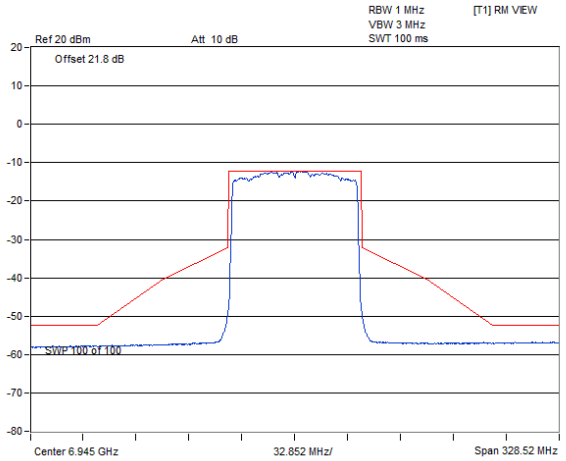
802.11ax (HE80) / Chain 1 : CH 119



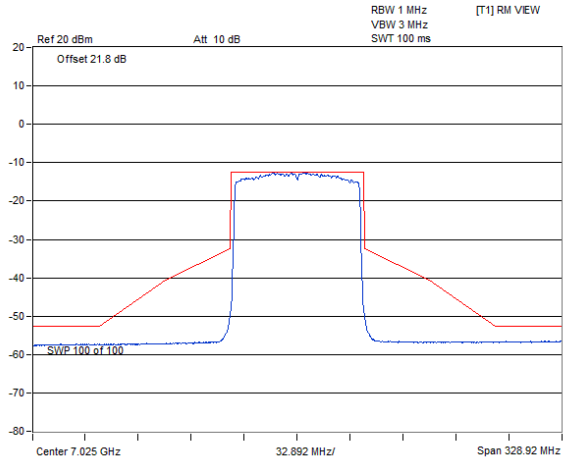
802.11ax (HE80) / Chain 1 : CH 151



802.11ax (HE80) / Chain 1 : CH 183

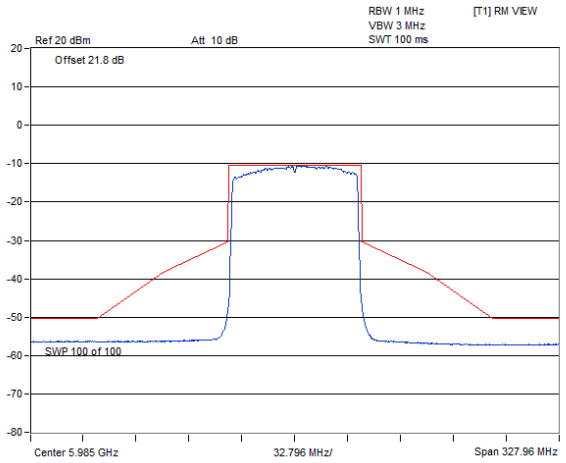


802.11ax (HE80) / Chain 1 : CH 199

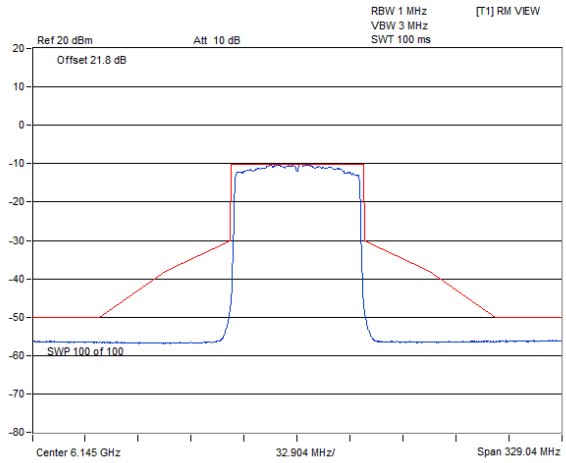


802.11ax (HE80) / Chain 1 : CH 215

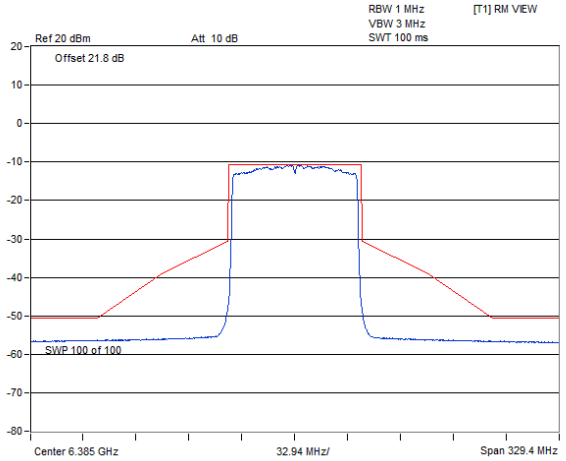
Spectrum Plot



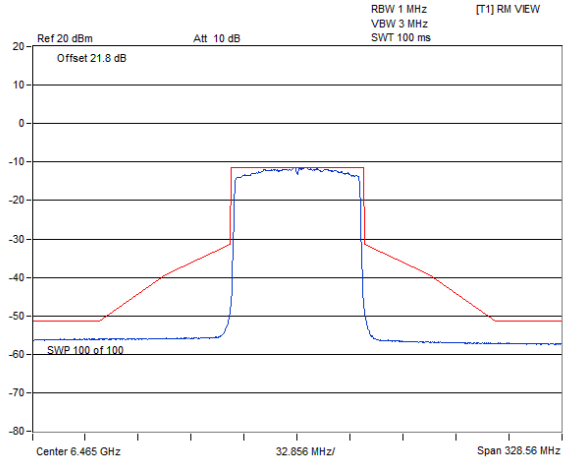
802.11ax (HE80) / Chain 2 : CH 7



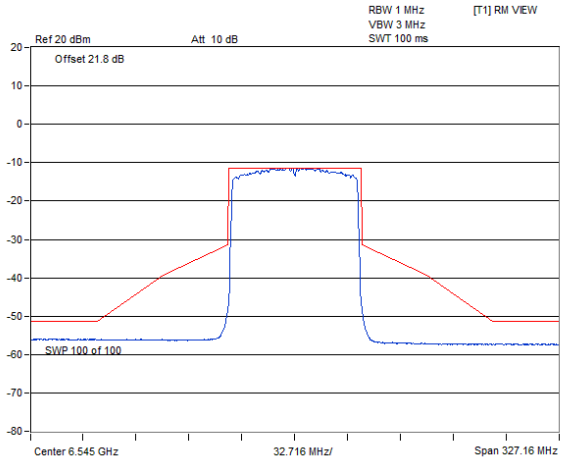
802.11ax (HE80) / Chain 2 : CH 39



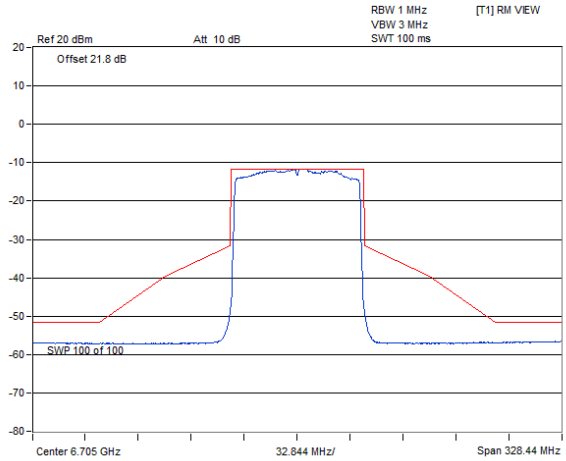
802.11ax (HE80) / Chain 2 : CH 87



802.11ax (HE80) / Chain 2 : CH 103

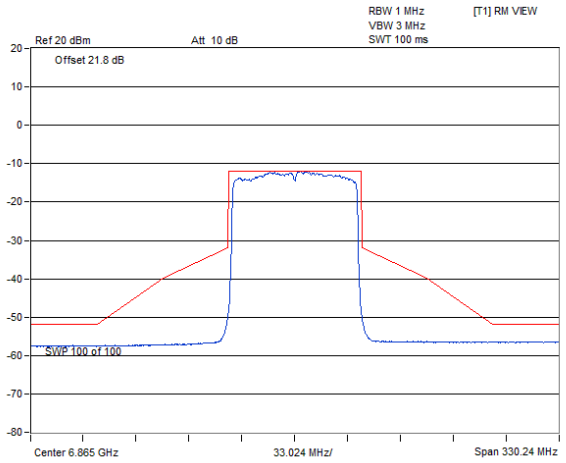


802.11ax (HE80) / Chain 2 : CH 119

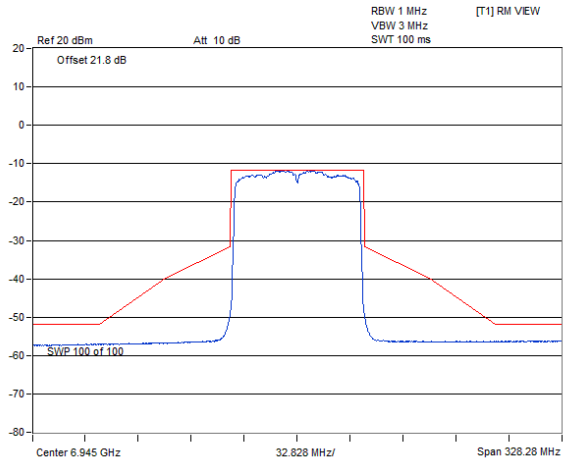


802.11ax (HE80) / Chain 2 : CH 151

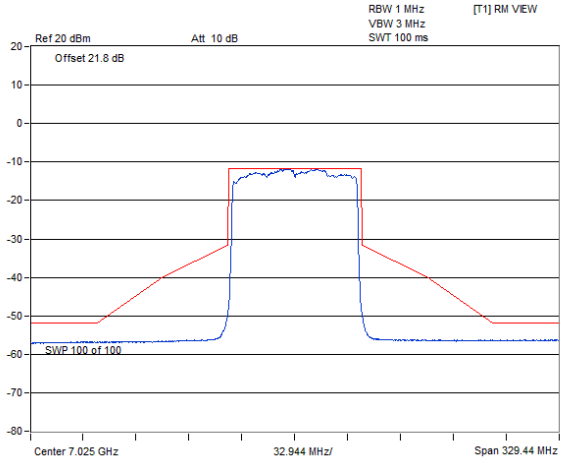
Spectrum Plot



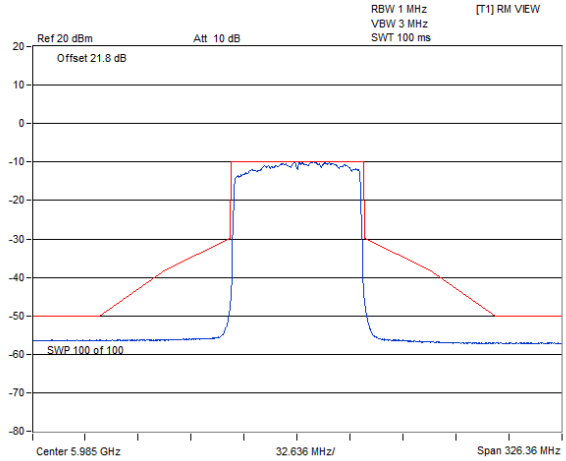
802.11ax (HE80) / Chain 2 : CH 183



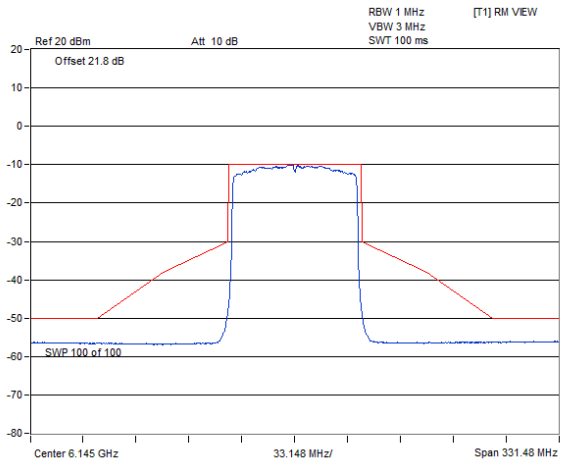
802.11ax (HE80) / Chain 2 : CH 199



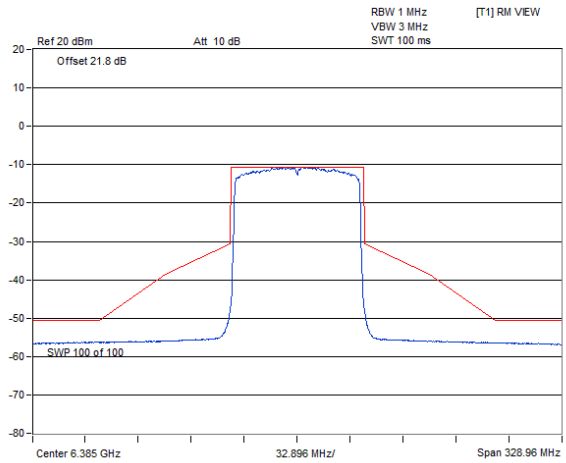
802.11ax (HE80) / Chain 2 : CH 215



802.11ax (HE80) / Chain 3 : CH 7

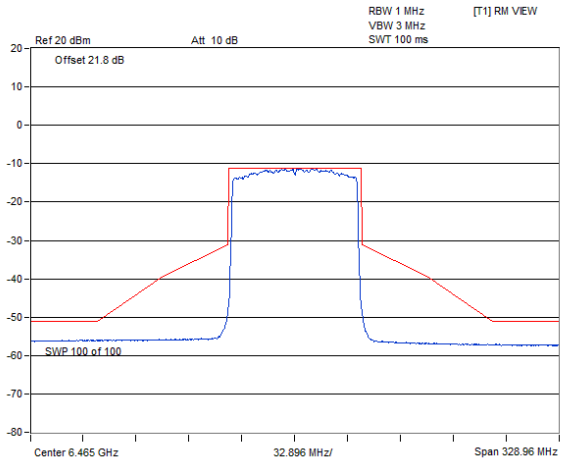


802.11ax (HE80) / Chain 3 : CH 39

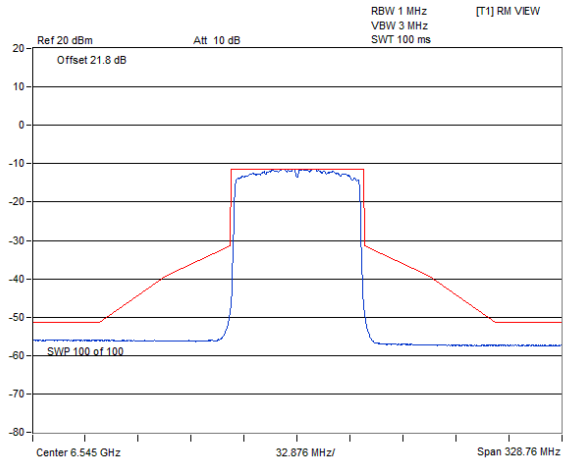


802.11ax (HE80) / Chain 3 : CH 87

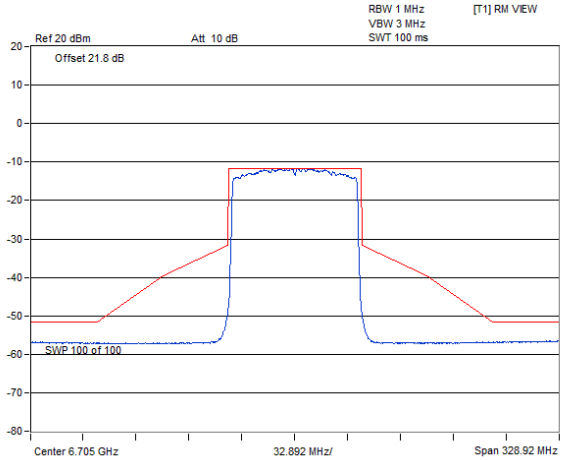
Spectrum Plot



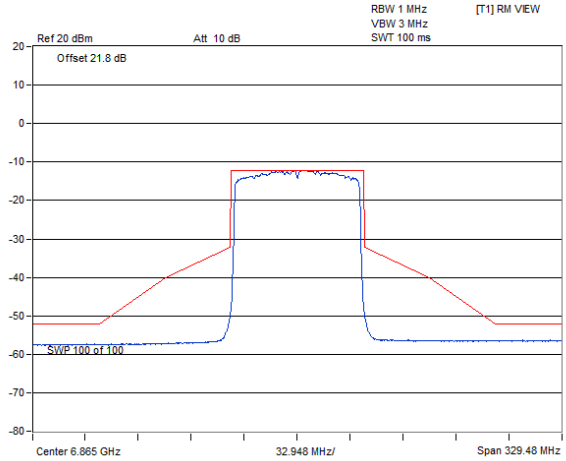
802.11ax (HE80) / Chain 3 : CH 103



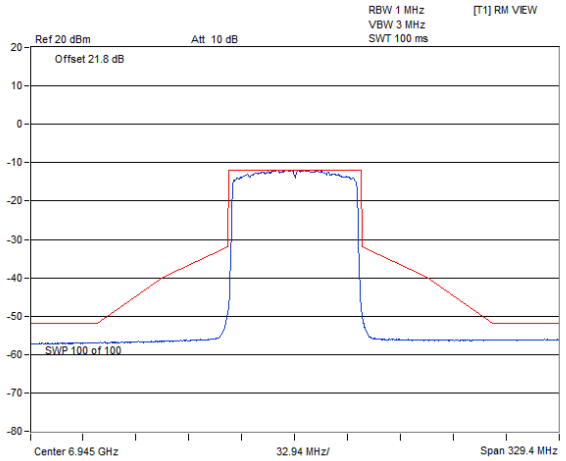
802.11ax (HE80) / Chain 3 : CH 119



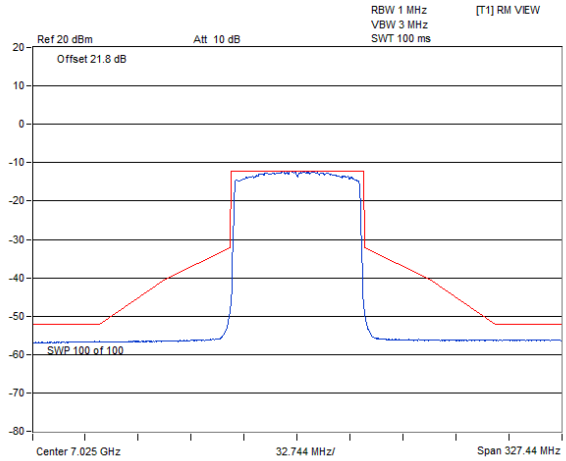
802.11ax (HE80) / Chain 3 : CH 151



802.11ax (HE80) / Chain 3 : CH 183

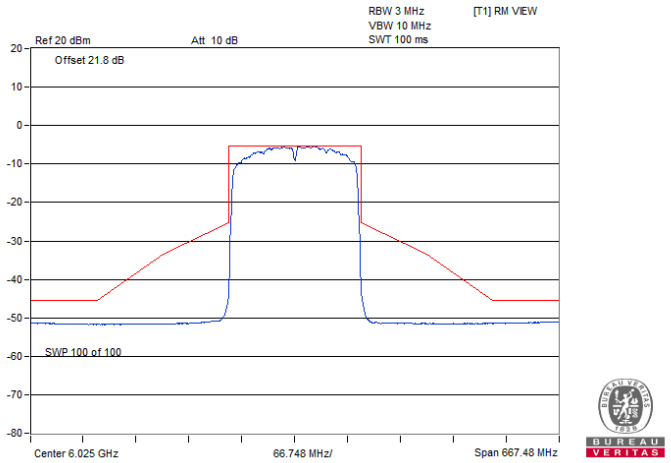
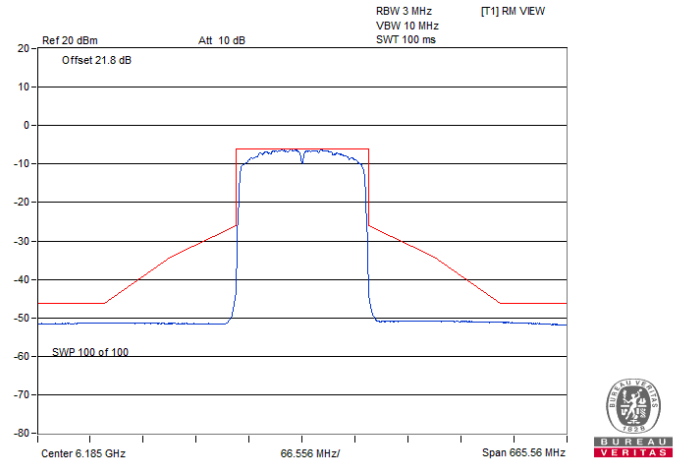
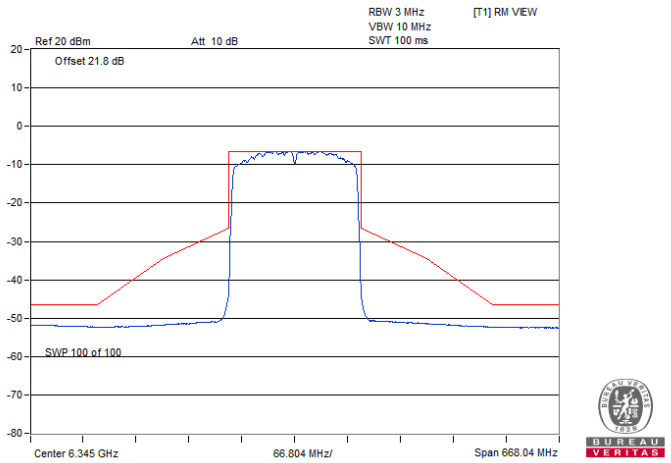
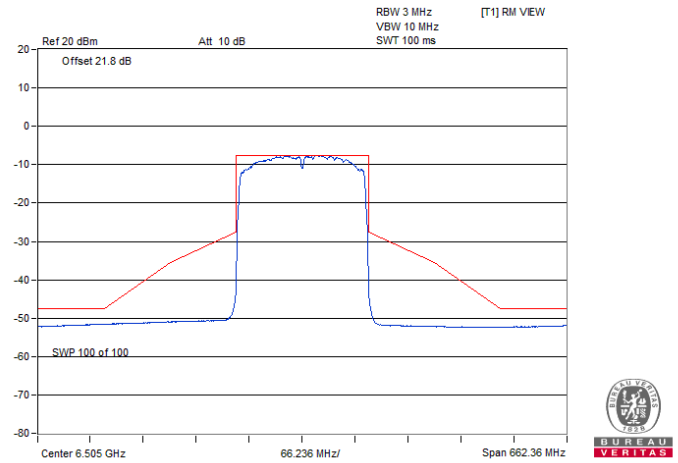
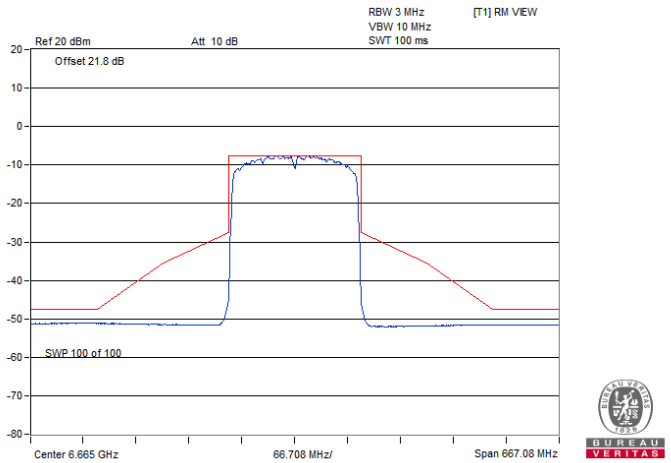
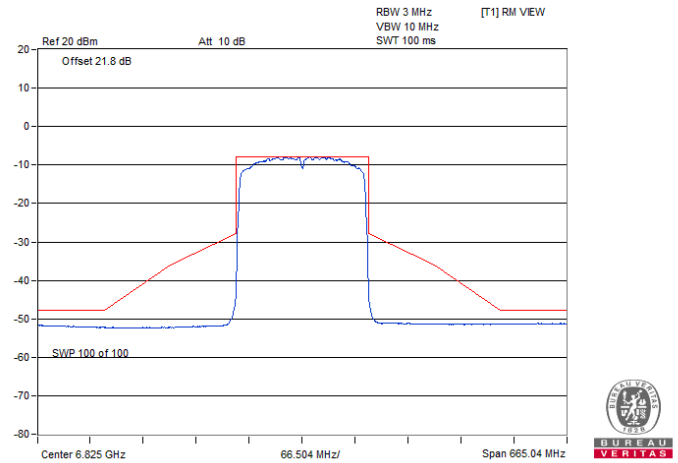


802.11ax (HE80) / Chain 3 : CH 199

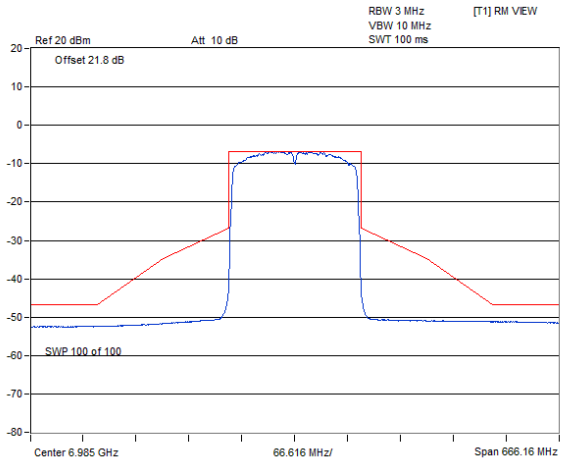


802.11ax (HE80) / Chain 3 : CH 215

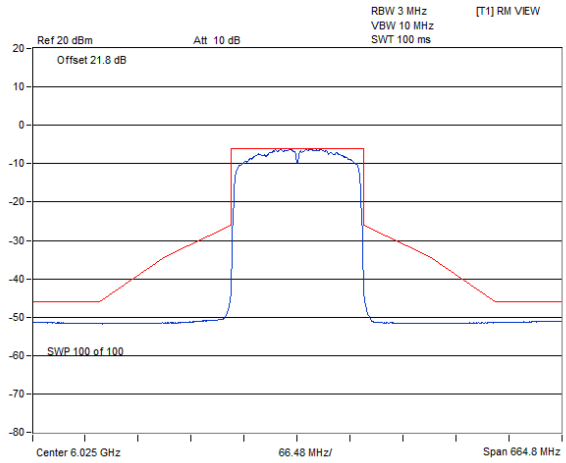
802.11ax (HE160)

Spectrum Plot	
	
802.11ax (HE160) / Chain 0 : CH 15	802.11ax (HE160) / Chain 0 : CH 47
	
802.11ax (HE160) / Chain 0 : CH 79	802.11ax (HE160) / Chain 0 : CH 111
	
802.11ax (HE160) / Chain 0 : CH 143	802.11ax (HE160) / Chain 0 : CH 175

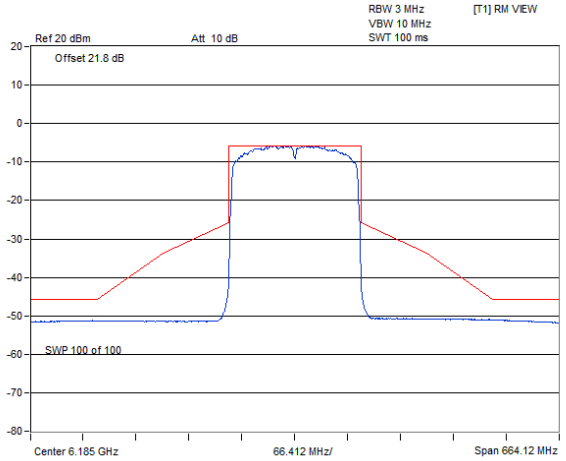
Spectrum Plot



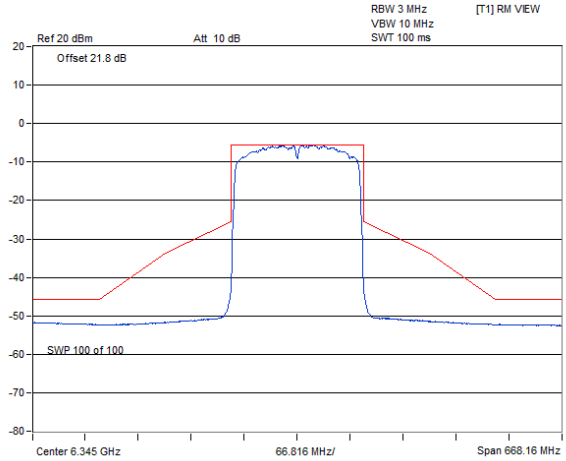
802.11ax (HE160) / Chain 0 : CH 207



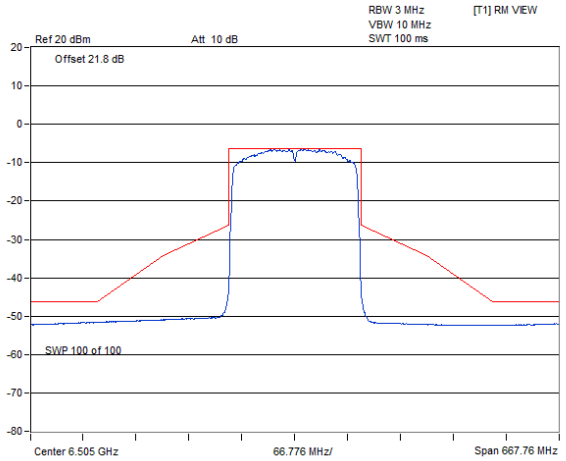
802.11ax (HE160) / Chain 1 : CH 15



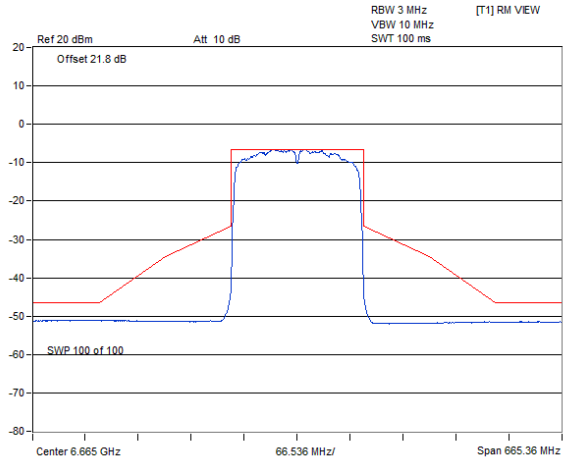
802.11ax (HE160) / Chain 1 : CH 47



802.11ax (HE160) / Chain 1 : CH 79

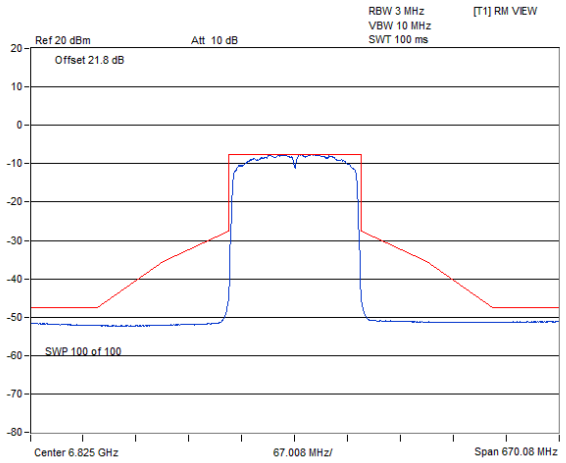


802.11ax (HE160) / Chain 1 : CH 111

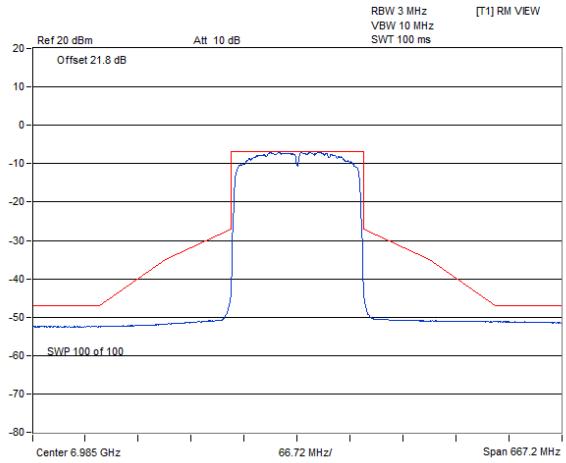


802.11ax (HE160) / Chain 1 : CH 143

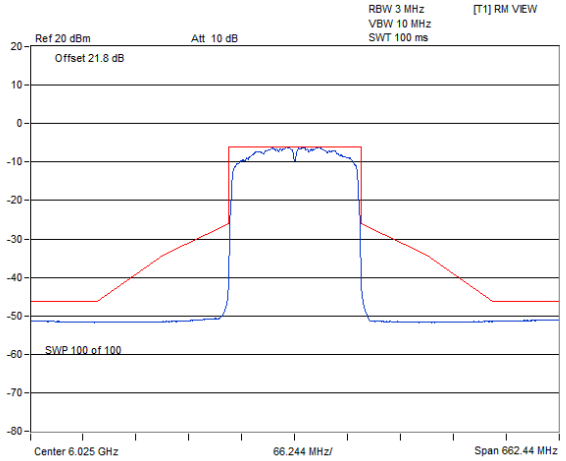
Spectrum Plot



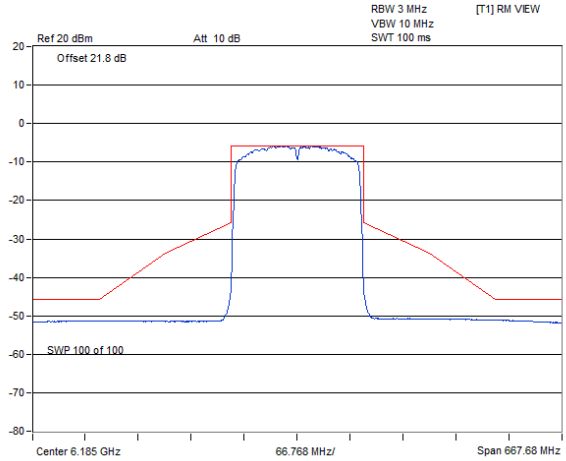
802.11ax (HE160) / Chain 1 : CH 175



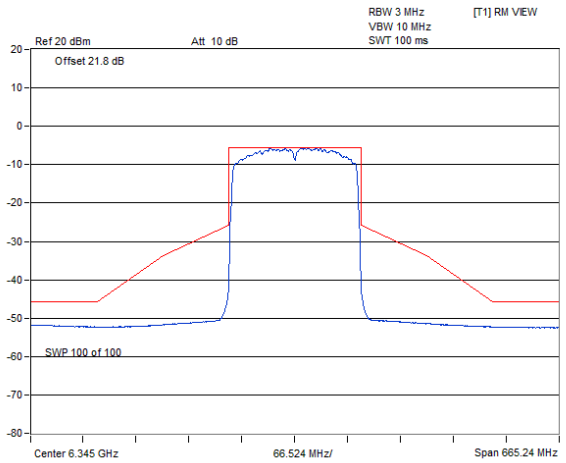
802.11ax (HE160) / Chain 1 : CH 207



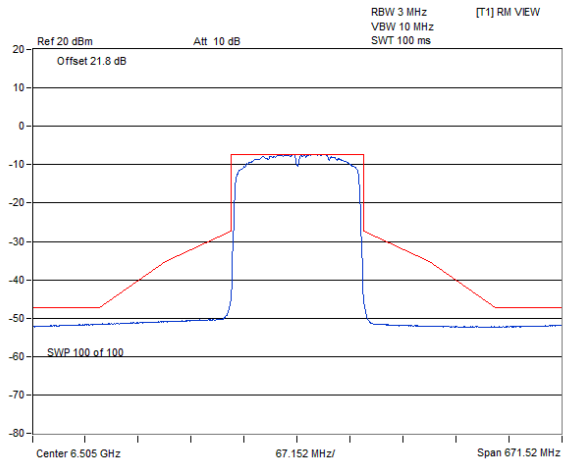
802.11ax (HE160) / Chain 2 : CH 15



802.11ax (HE160) / Chain 2 : CH 47

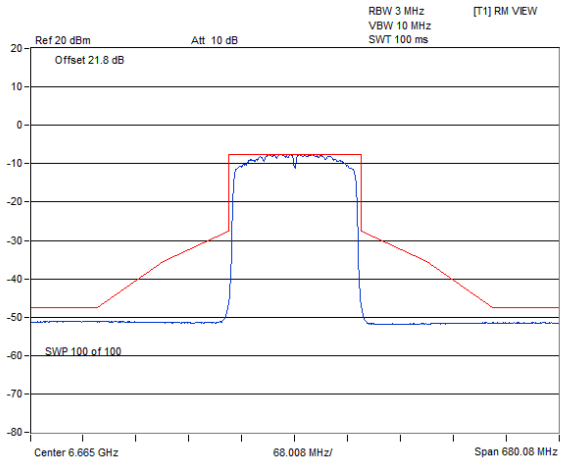


802.11ax (HE160) / Chain 2 : CH 79

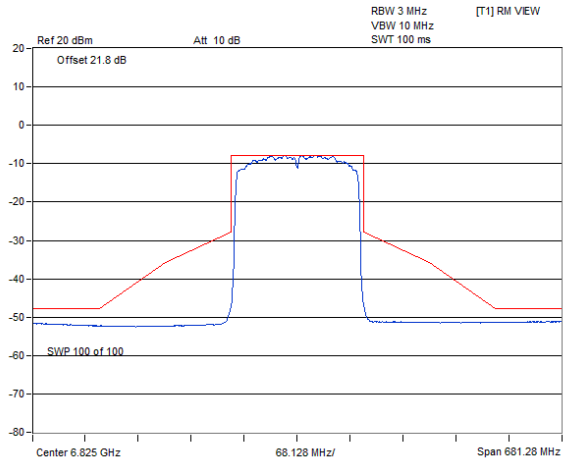


802.11ax (HE160) / Chain 2 : CH 111

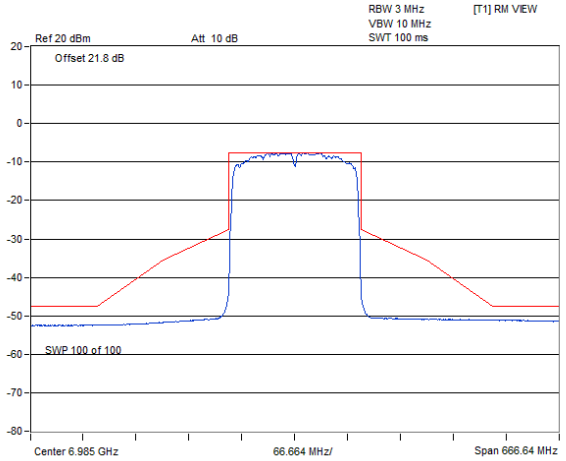
Spectrum Plot



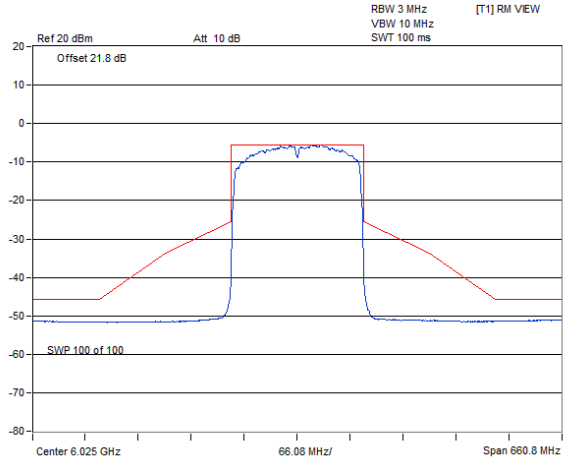
802.11ax (HE160) / Chain 2 : CH 143



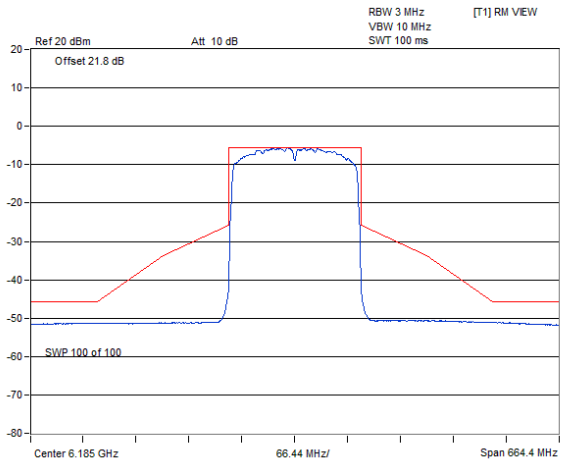
802.11ax (HE160) / Chain 2 : CH 175



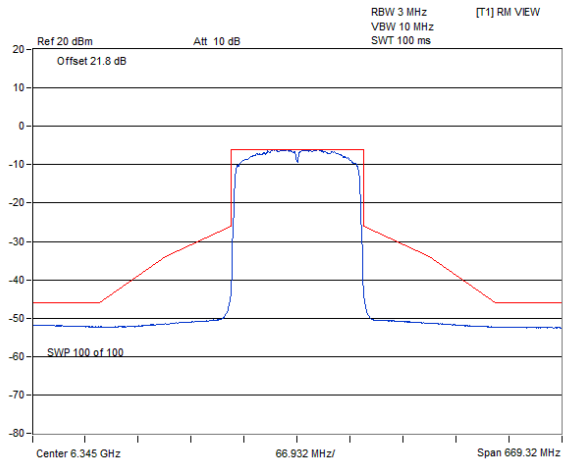
802.11ax (HE160) / Chain 2 : CH 207



802.11ax (HE160) / Chain 3 : CH 15

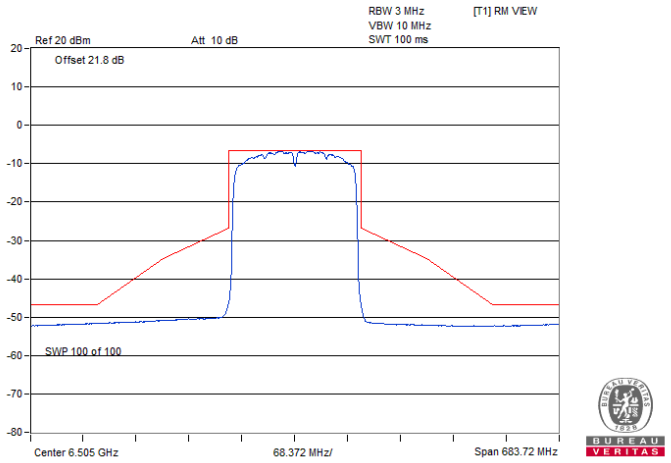


802.11ax (HE160) / Chain 3 : CH 47

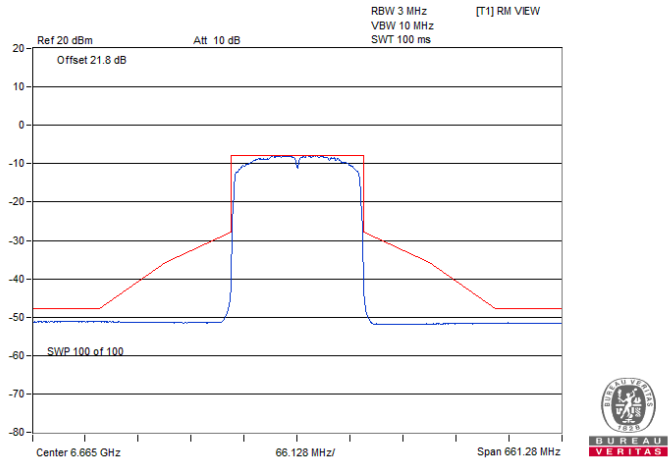


802.11ax (HE160) / Chain 3 : CH 79

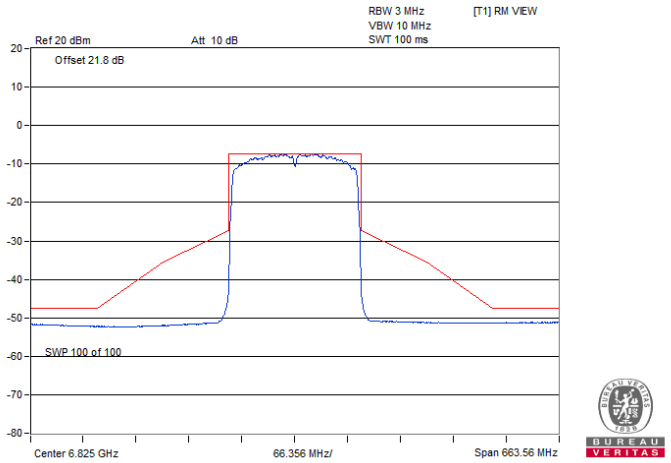
Spectrum Plot



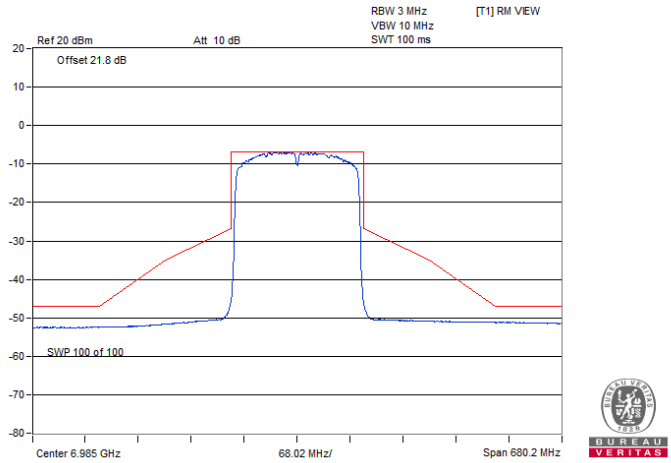
802.11ax (HE160) / Chain 3 : CH 111



802.11ax (HE160) / Chain 3 : CH 143



802.11ax (HE160) / Chain 3 : CH 175



802.11ax (HE160) / Chain 3 : CH 207

7.5 Occupied Bandwidth

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	5955	19.08	19.14	19.08	19.14	320	Pass
45	6175	19.08	19.08	19.02	19.02	320	Pass
93	6415	19.08	19.08	19.02	19.08	320	Pass
97	6435	19.14	19.08	19.08	19.08	320	Pass
105	6475	19.08	19.08	19.02	19.14	320	Pass
113	6515	19.08	19.08	19.08	19.14	320	Pass
117	6535	19.08	19.02	19.08	19.14	320	Pass
149	6695	19.08	19.14	19.02	19.08	320	Pass
181	6855	19.08	19.08	19.08	19.08	320	Pass
185	6875	19.08	19.08	19.02	19.02	320	Pass
209	6995	19.14	19.08	19.08	19.14	320	Pass
233	7115	19.20	19.20	19.20	19.14	320	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
3	5965	37.80	37.80	37.92	37.80	320	Pass
43	6165	37.80	37.92	37.80	37.80	320	Pass
91	6405	37.80	37.92	37.92	37.80	320	Pass
99	6445	37.80	37.92	37.92	37.80	320	Pass
107	6485	37.92	37.80	37.80	37.92	320	Pass
115	6525	37.80	37.80	38.04	37.92	320	Pass
123	6565	37.80	37.68	37.92	37.80	320	Pass
155	6725	37.92	37.80	37.68	37.80	320	Pass
179	6845	37.92	37.92	37.80	37.68	320	Pass
187	6885	37.80	37.92	37.92	38.04	320	Pass
211	7005	37.80	38.04	37.92	37.92	320	Pass
227	7085	37.80	37.80	37.92	38.04	320	Pass

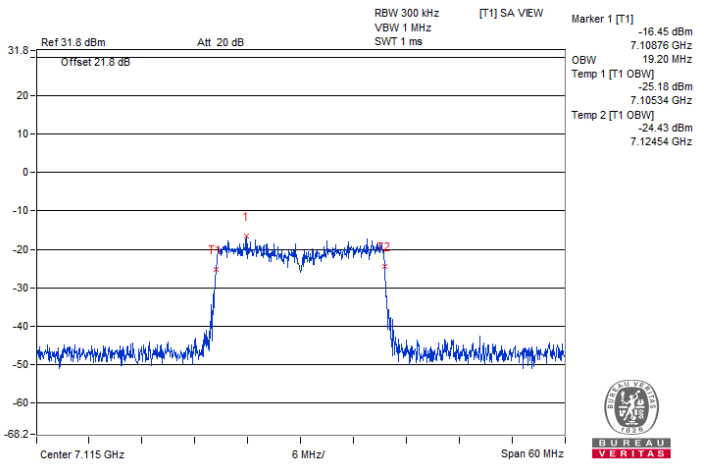
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
7	5985	77.28	77.28	77.04	77.28	320	Pass
39	6145	76.80	76.80	77.04	77.04	320	Pass
87	6385	76.80	77.28	77.04	77.28	320	Pass
103	6465	77.28	77.04	77.04	77.28	320	Pass
119	6545	77.04	77.04	77.04	77.28	320	Pass
151	6705	77.28	77.04	77.04	77.04	320	Pass
183	6865	77.04	77.28	77.04	77.04	320	Pass
199	6945	77.28	77.04	76.80	77.04	320	Pass
215	7025	76.80	77.28	77.28	77.28	320	Pass

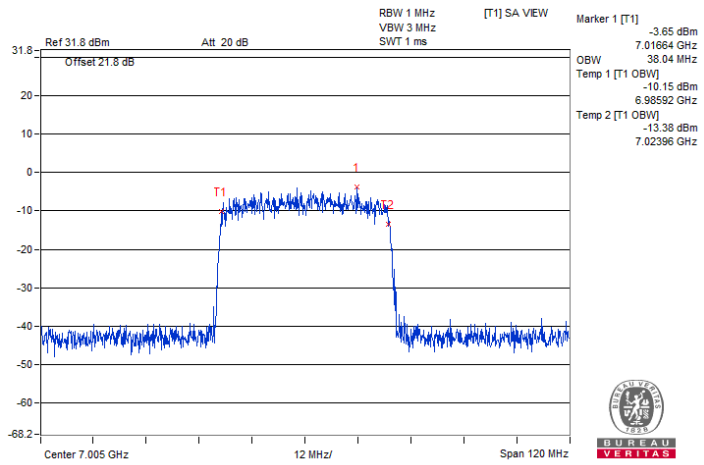
802.11ax (HE160)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
15	6025	154.08	155.04	155.04	155.04	320	Pass
47	6185	155.04	155.52	155.52	155.52	320	Pass
79	6345	155.04	155.52	154.56	155.04	320	Pass
111	6505	155.04	155.52	155.04	155.04	320	Pass
143	6665	155.52	154.56	155.52	155.04	320	Pass
175	6825	155.52	155.52	155.52	156.00	320	Pass
207	6985	155.52	154.08	155.52	154.56	320	Pass

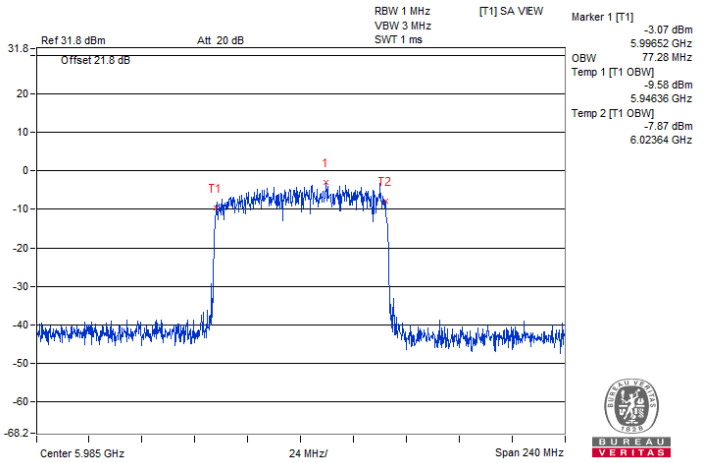
Spectrum Plot of Maximum Value



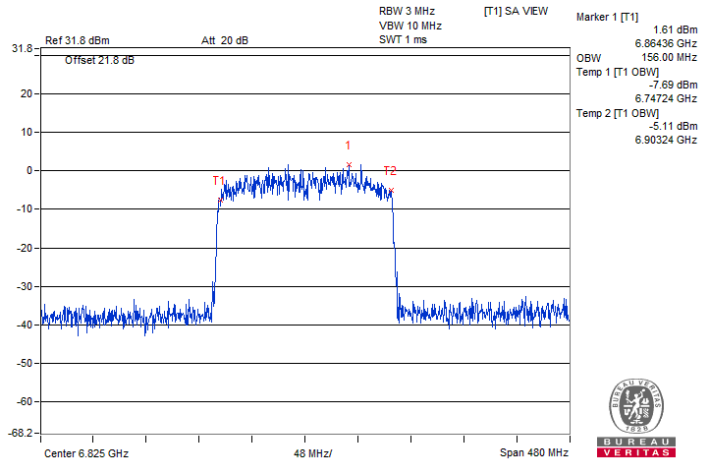
802.11ax (HE20) / Chain 0 : CH 233



802.11ax (HE40) / Chain 1 : CH 211



802.11ax (HE80) / Chain 0 : CH 7



802.11ax (HE160) / Chain 3 : CH 175

7.6 Frequency Stability

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng

802.11ax (HE20)

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
50	12	5954.9809	Pass	5954.9856	Pass	5954.982	Pass	5954.9809	Pass
40	12	5955.0248	Pass	5955.026	Pass	5955.024	Pass	5955.024	Pass
30	12	5955.0199	Pass	5955.017	Pass	5955.0212	Pass	5955.0167	Pass
20	12	5954.9907	Pass	5954.9868	Pass	5954.9852	Pass	5954.9856	Pass
10	12	5955.0041	Pass	5955.0054	Pass	5955.0047	Pass	5955.0068	Pass
0	12	5955.013	Pass	5955.0155	Pass	5955.0124	Pass	5955.0131	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	13.8	5954.9807	Pass	5954.981	Pass	5954.9827	Pass	5954.9792	Pass
	12	5954.9907	Pass	5954.9868	Pass	5954.9852	Pass	5954.9856	Pass
	10.2	5954.9887	Pass	5954.9898	Pass	5954.9892	Pass	5954.9866	Pass

7.7 Contention-based Protocol

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Tobey Chen

For Companion Device

Companion Device Information			
Product	**Brand**	**Model No.**	**Software/Firmware Version**
EAI2308P-E	ASKEY	EAI2308P-E	1.00.30

For U-NII-5

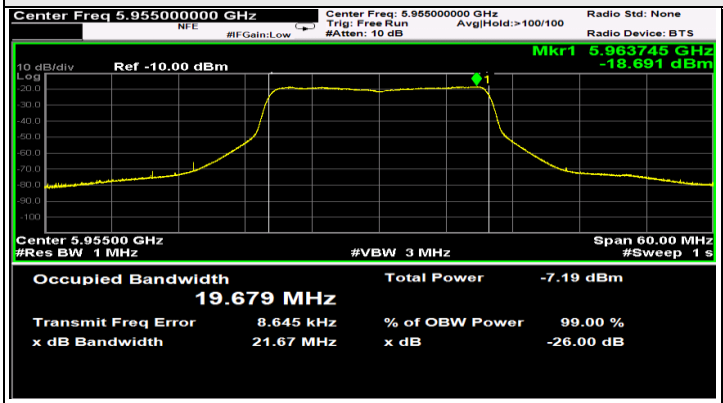
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 2)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	1	5955	5955	-70.97	4.5	0	-75.47	-62	OFF
					-71.47	4.5	0	-75.97	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
	160	15	6025	5950	-72.06	4.5	0	-76.56	-62	OFF
					-72.56	4.5	0	-77.06	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
				6025	-69.22	4.5	0	-73.72	-62	OFF
					-69.72	4.5	0	-74.22	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
				6100	-69.66	4.5	0	-74.16	-62	OFF
					-70.16	4.5	0	-74.66	-62	Minimal
					-77.5	4.5	0	-82	-62	ON

Notes:

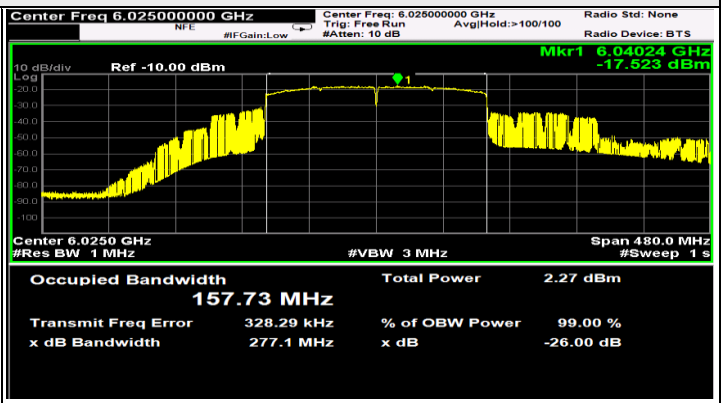
1. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
2. Antenna gain values include all the applicable path losses.
3. After evaluation, only the Chain1 was chosen for test and presented in the test report.

Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	5955	v	v	v	v	v	v	v	v	x	v	90%	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

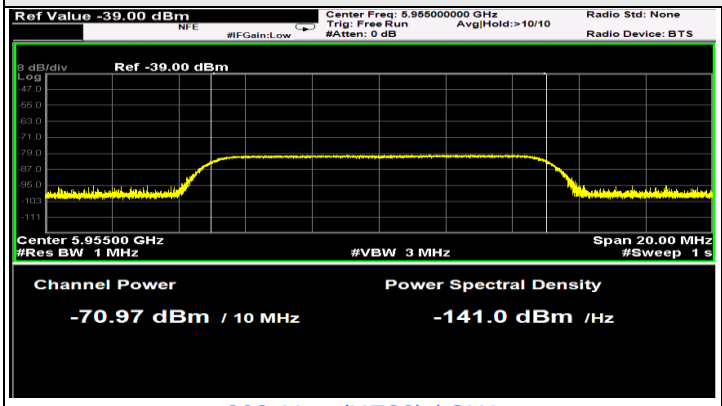


802.11ax (HE20) / CH1

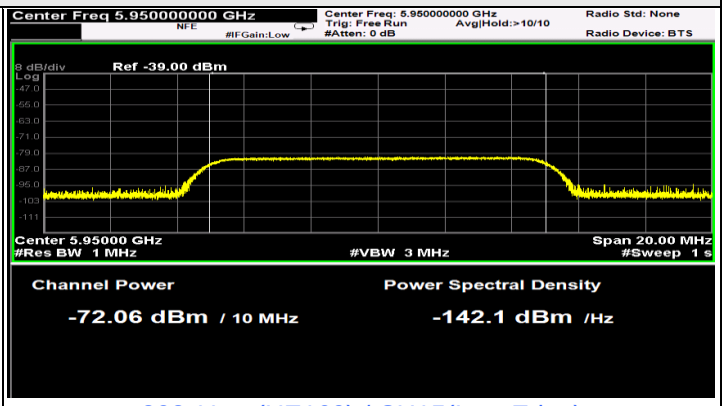


802.11ax (HE160) / CH15

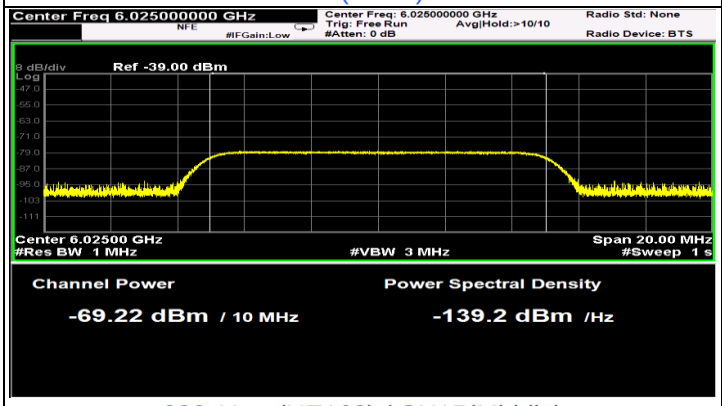
Plots of Injected signal (AWGN) level



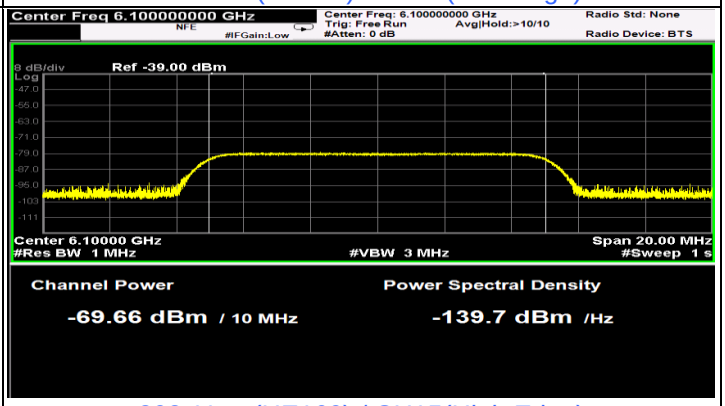
802.11ax (HE20) / CH1



802.11ax (HE160) / CH15(Low Edge)

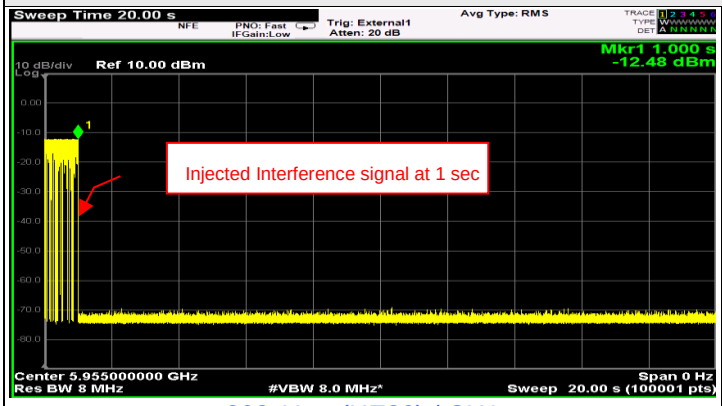


802.11ax (HE160) / CH15(Middle)

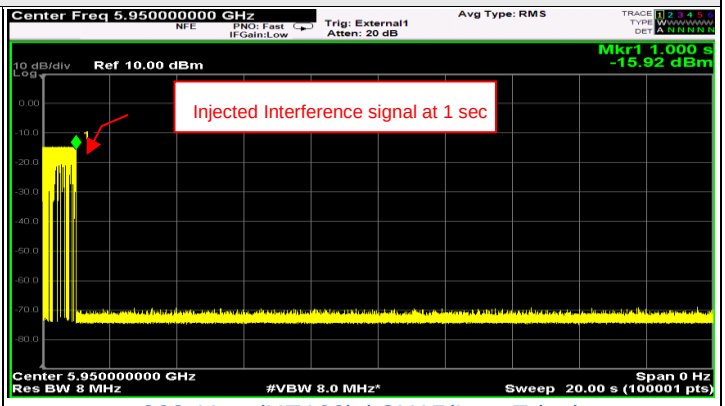


802.11ax (HE160) / CH15(High Edge)

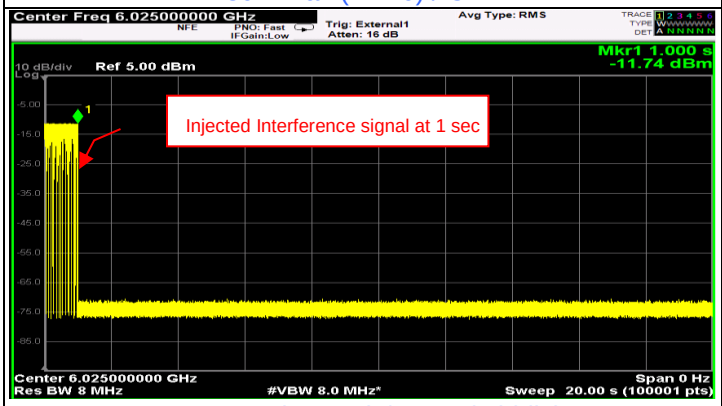
Plots of EUT ceased transmission in the time domain



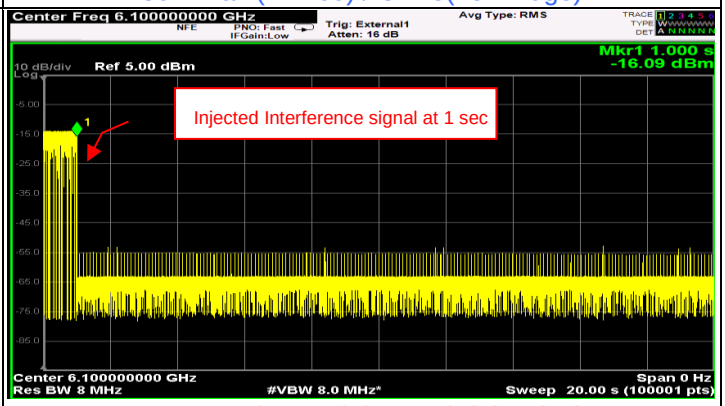
802.11ax (HE20) / CH1



802.11ax (HE160) / CH15(Low Edge)



802.11ax (HE160) / CH15(Middle)



802.11ax (HE160) / CH15(High Edge)

For U-NII-6

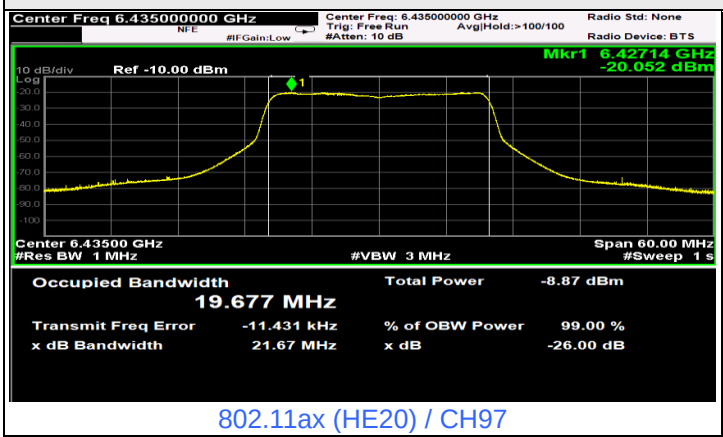
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 2)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	97	6435	6435	-76.06	4.5	0	-80.56	-62	OFF
					-76.56	4.5	0	-81.06	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
	160	111	6505	6430	-74.99	4.5	0	-79.49	-62	OFF
					-75.49	4.5	0	-79.99	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
				6505	-70.34	4.5	0	-74.84	-62	OFF
					-70.84	4.5	0	-75.34	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
				6580	-69.71	4.5	0	-74.21	-62	OFF
					-70.21	4.5	0	-74.71	-62	Minimal
					-77.5	4.5	0	-82	-62	ON

Notes:

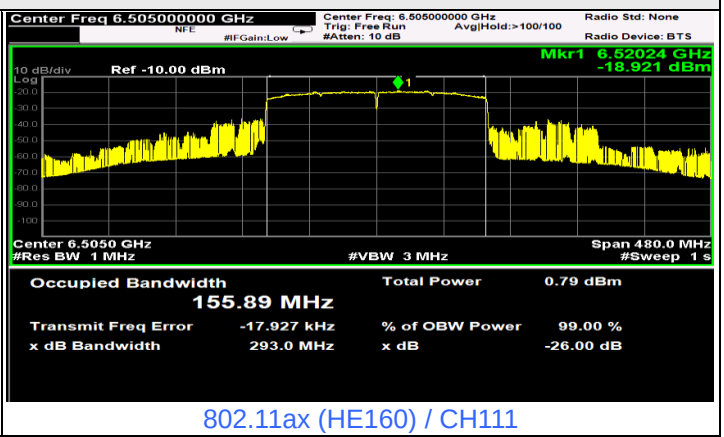
1. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
2. Antenna gain values include all the applicable path losses.
3. After evaluation, only the Chain1 was chosen for test and presented in the test report.

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

Plots of EUT Tx waveform

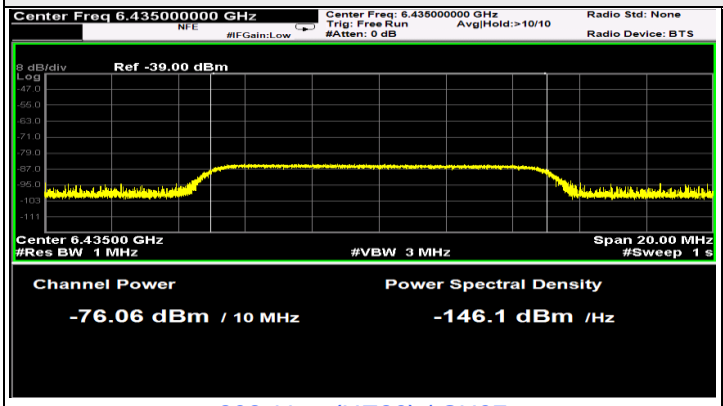


802.11ax (HE20) / CH97

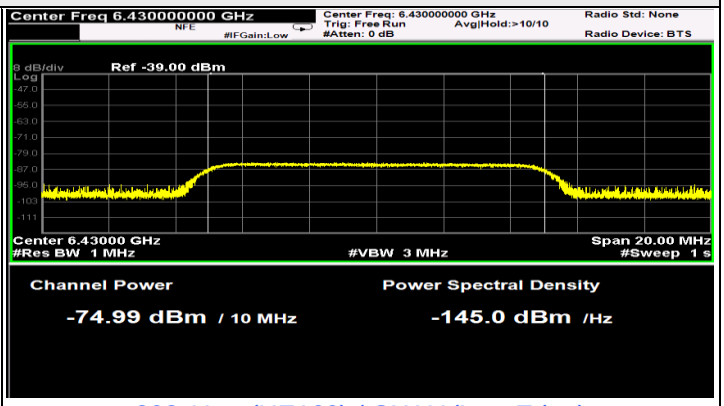


802.11ax (HE160) / CH111

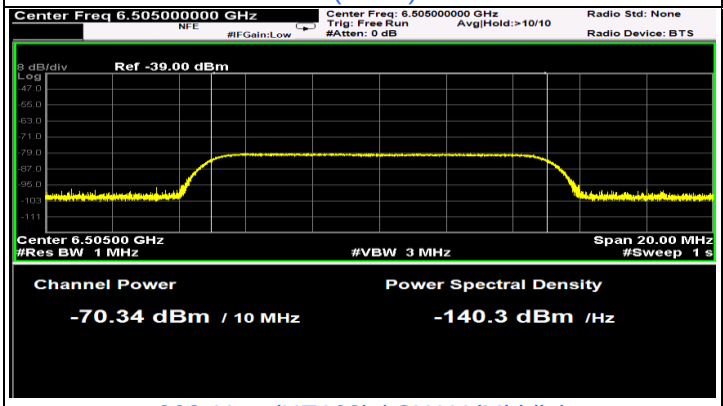
Plots of Injected signal (AWGN) level



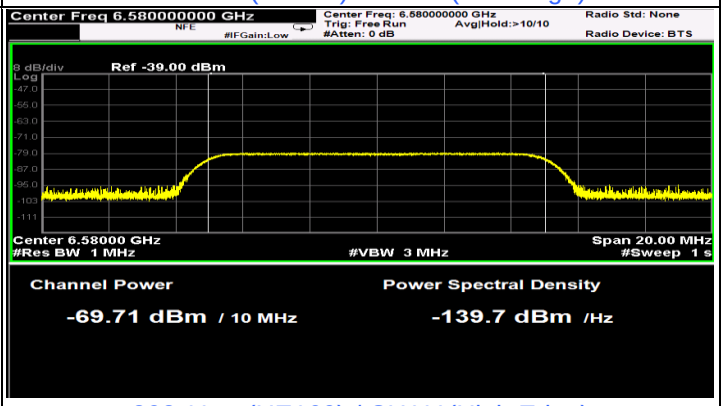
802.11ax (HE20) / CH97



802.11ax (HE160) / CH111(Low Edge)

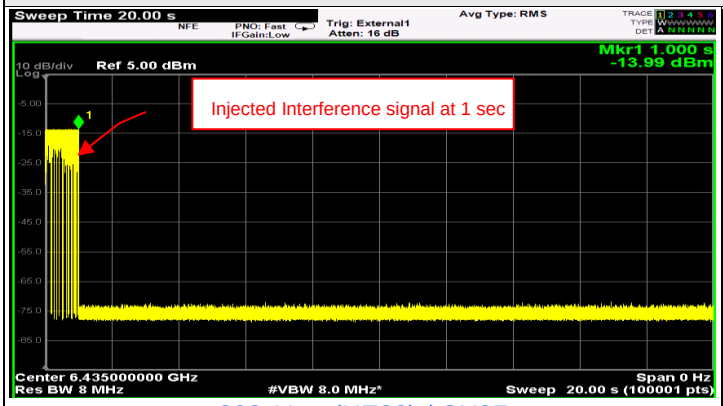


802.11ax (HE160) / CH111(Middle)

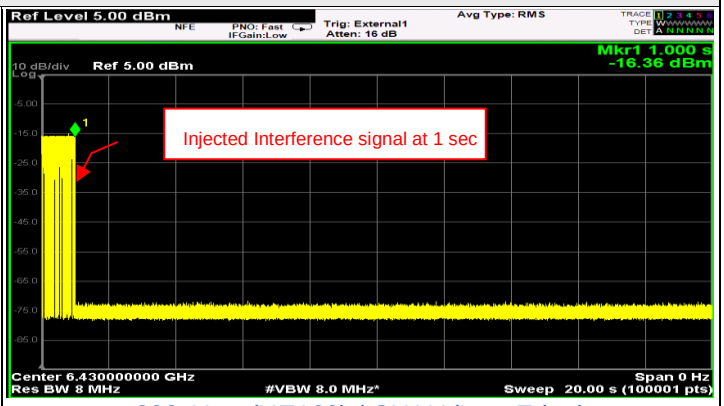


802.11ax (HE160) / CH111(High Edge)

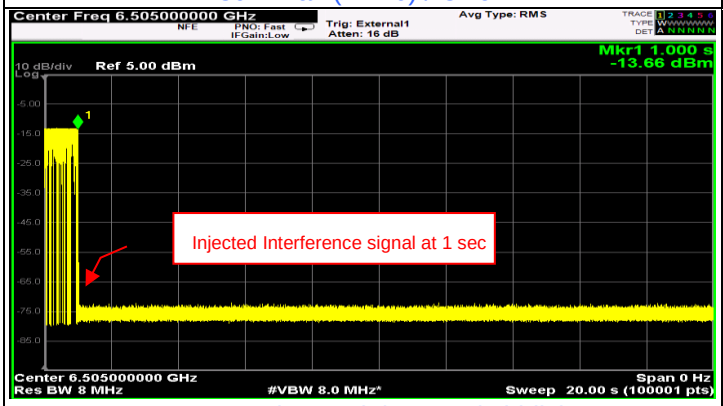
Plots of EUT ceased transmission in the time domain



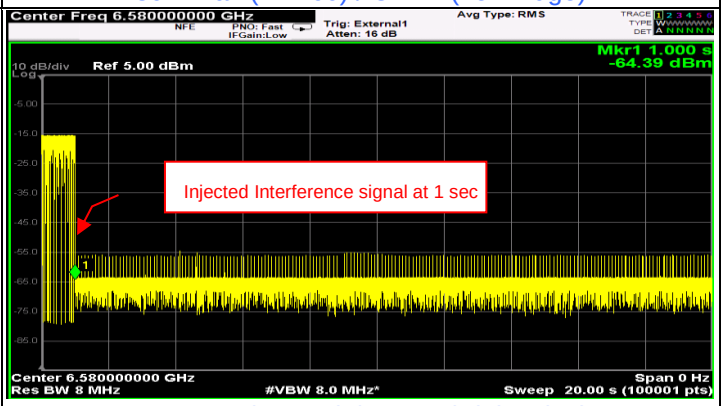
802.11ax (HE20) / CH97



802.11ax (HE160) / CH111(Low Edge)



802.11ax (HE160) / CH111(Middle)



802.11ax (HE160) / CH111(High Edge)

For U-NII-7

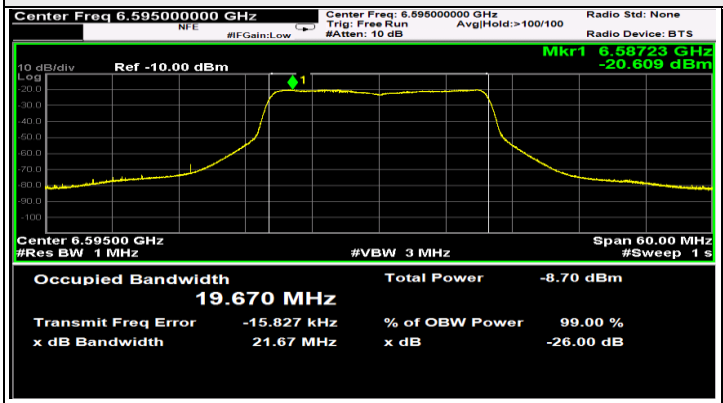
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 2)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	129	6595	6595	-73.51	4.5	0	-78.01	-62	OFF
					-74.01	4.5	0	-78.51	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
	160	143	6665	6590	-72.54	4.5	0	-77.04	-62	OFF
					-73.04	4.5	0	-77.54	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
				6665	-69.36	4.5	0	-73.86	-62	OFF
					-69.86	4.5	0	-74.36	-62	Minimal
					-77.5	4.5	0	-82	-62	ON
				6740	-68.92	4.5	0	-73.42	-62	OFF
					-69.42	4.5	0	-73.92	-62	Minimal
					-77.5	4.5	0	-82	-62	ON

Notes:

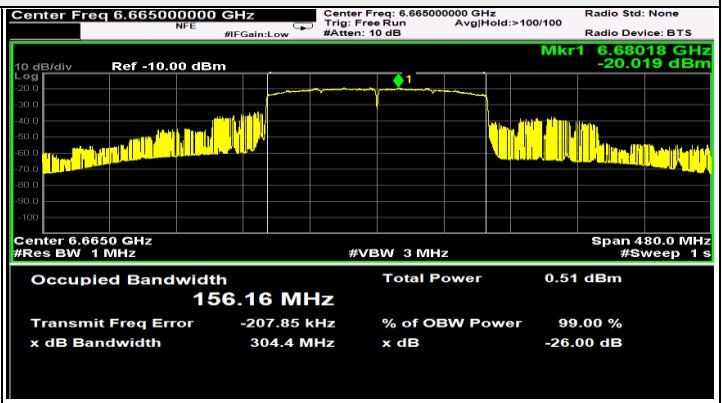
1. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
2. Antenna gain values include all the applicable path losses.
3. After evaluation, only the Chain1 was chosen for test and presented in the test report.

Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6595	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6590	v	v	v	v	v	v	x	v	v	v	90%	90%	Pass
		6665	v	v	v	v	x	v	v	v	v	v	90%	90%	Pass
		6740	v	v	v	x	v	v	v	v	v	v	90%	90%	Pass

Plots of EUT Tx waveform

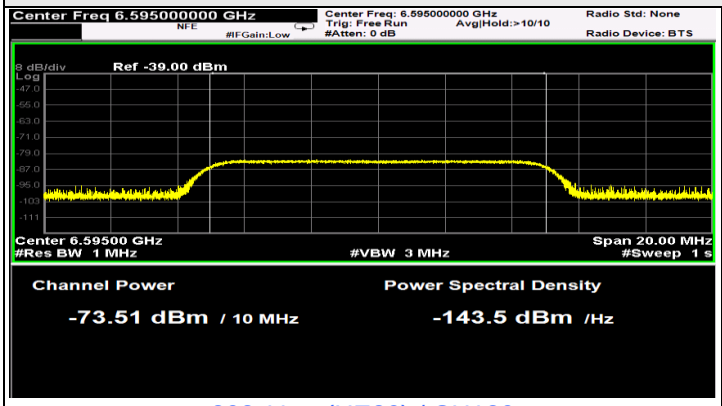


802.11ax (HE20) / CH129

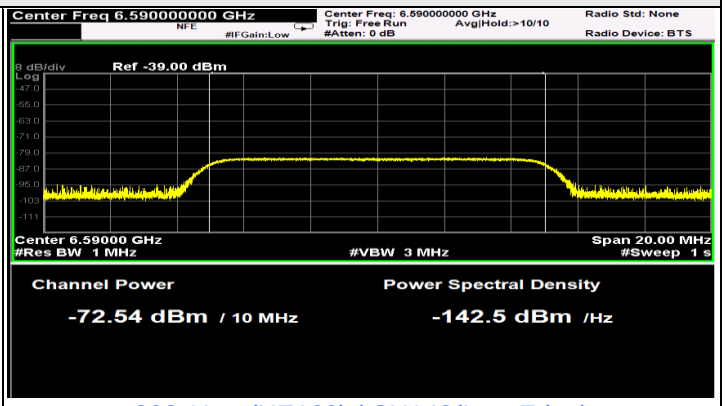


802.11ax (HE160) / CH143

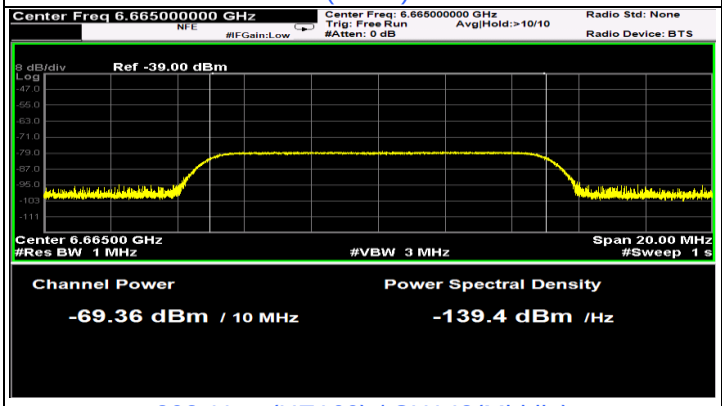
Plots of Injected signal (AWGN) level



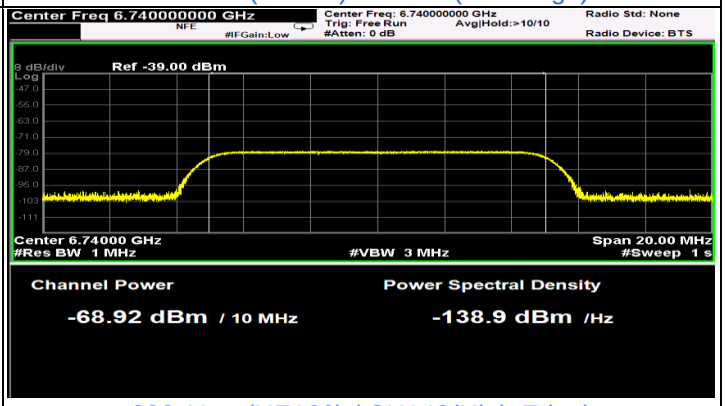
802.11ax (HE20) / CH129



802.11ax (HE160) / CH143(Low Edge)

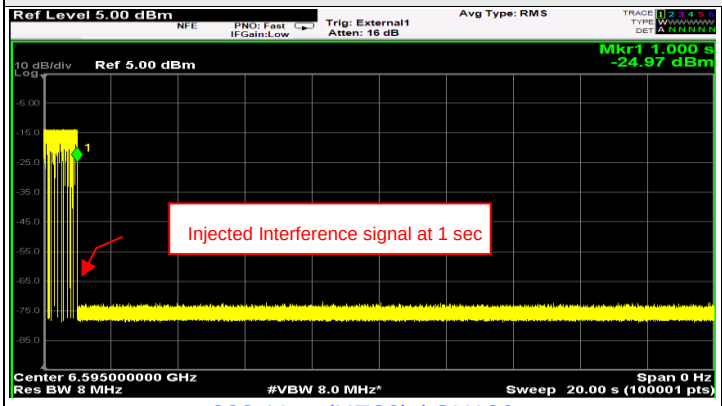


802.11ax (HE160) / CH143(Middle)

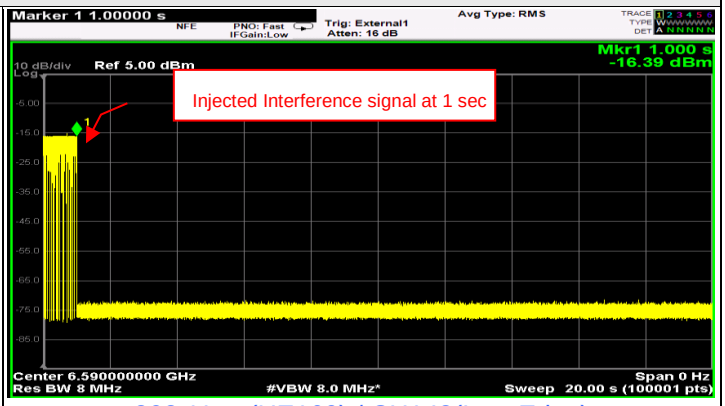


802.11ax (HE160) / CH143(High Edge)

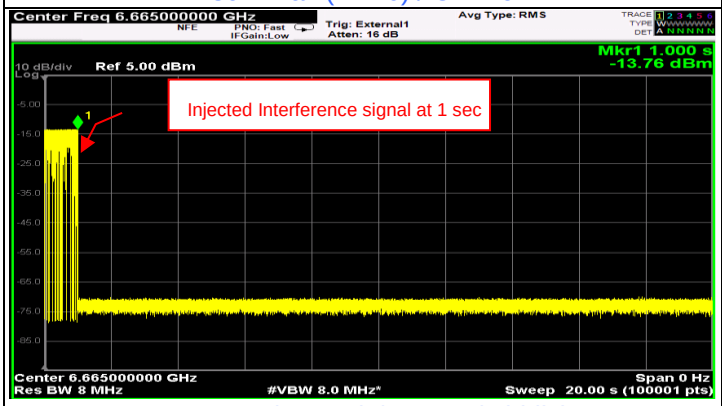
Plots of EUT ceased transmission in the time domain



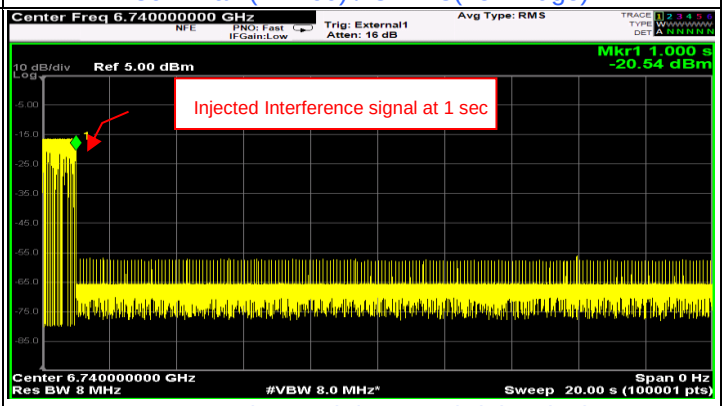
802.11ax (HE20) / CH129



802.11ax (HE160) / CH143(Low Edge)



802.11ax (HE160) / CH143(Middle)



802.11ax (HE160) / CH143(High Edge)