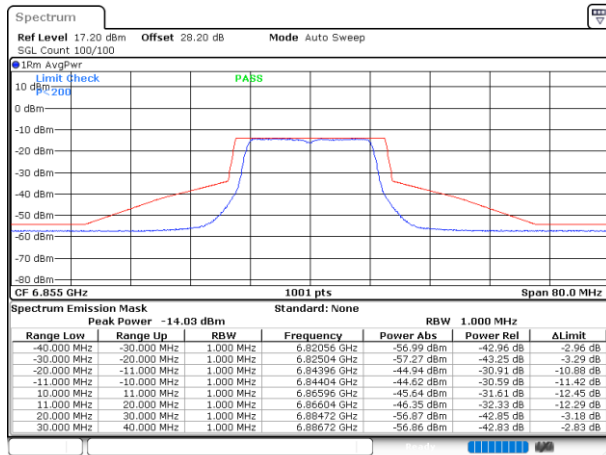
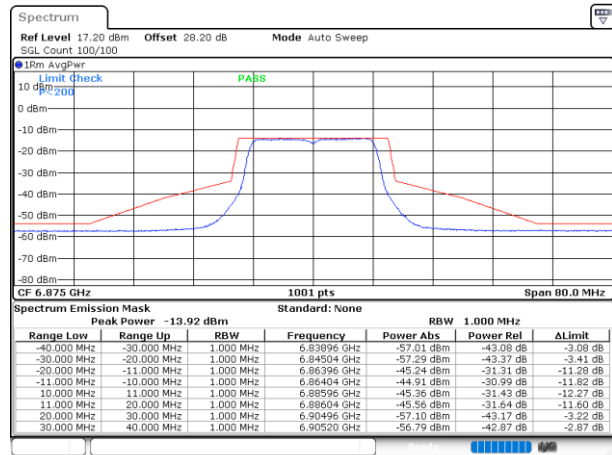




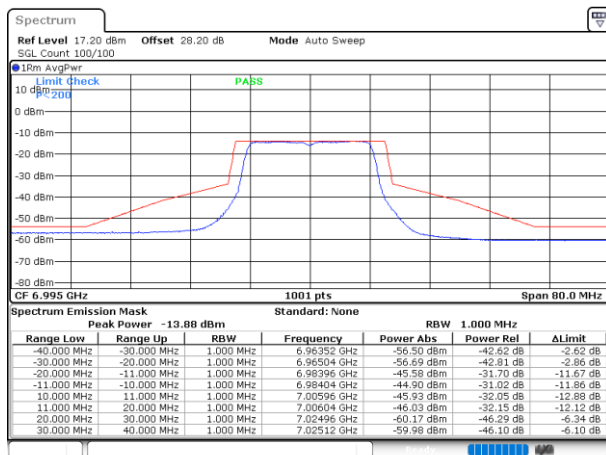
Plot on Channel 6855MHz



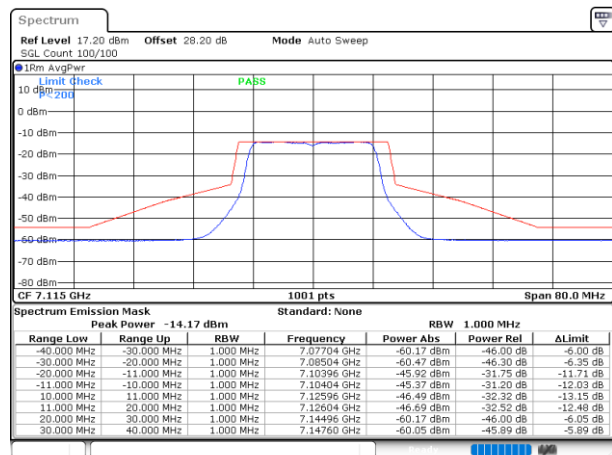
Plot on Channel 6875MHz



Plot on Channel 6995MHz



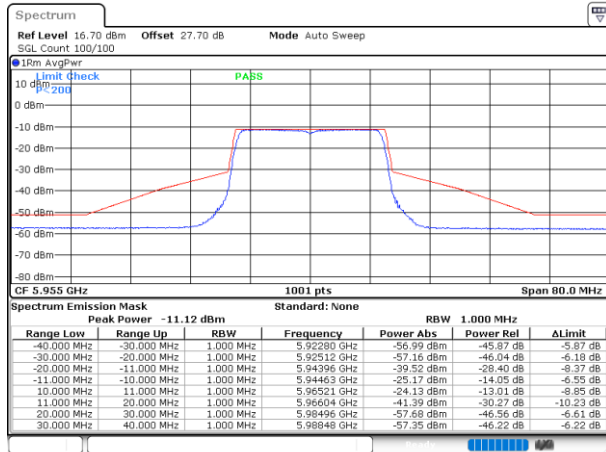
Plot on Channel 7115MHz



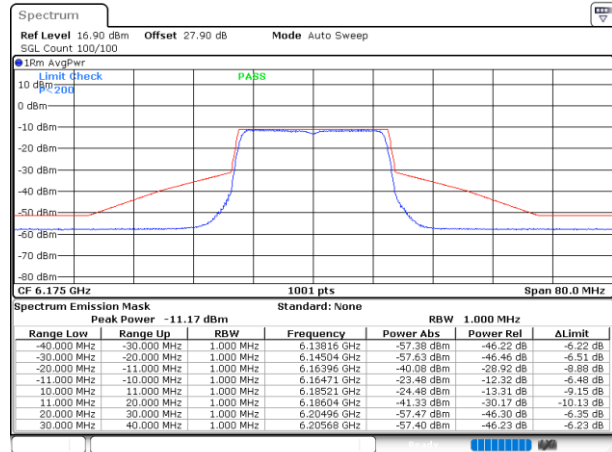


EUT Mode : 802.11ax HE20

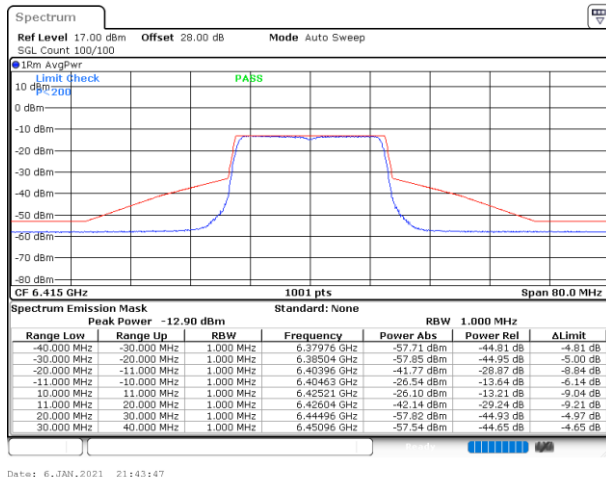
Plot on Channel 5955MHz



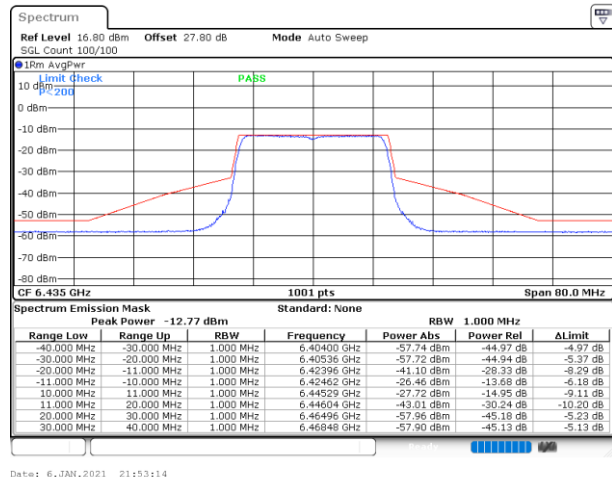
Plot on Channel 6175MHz



Plot on Channel 6415MHz

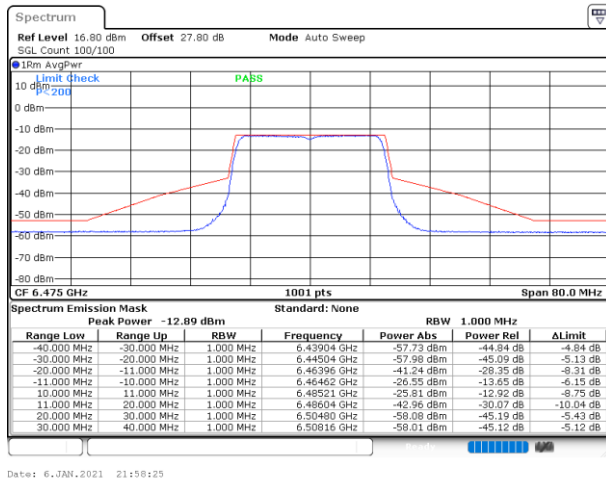


Plot on Channel 6435MHz

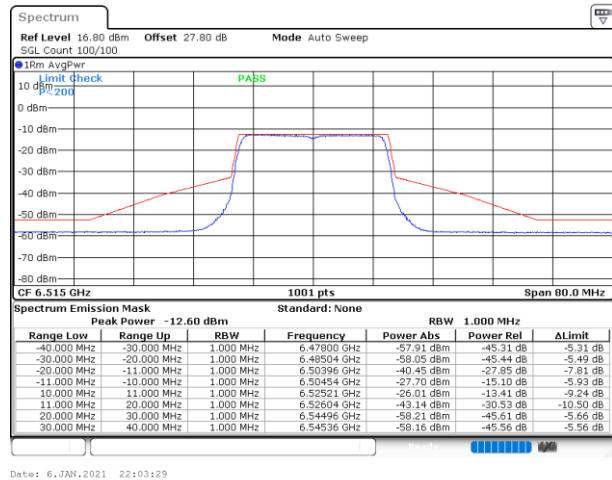




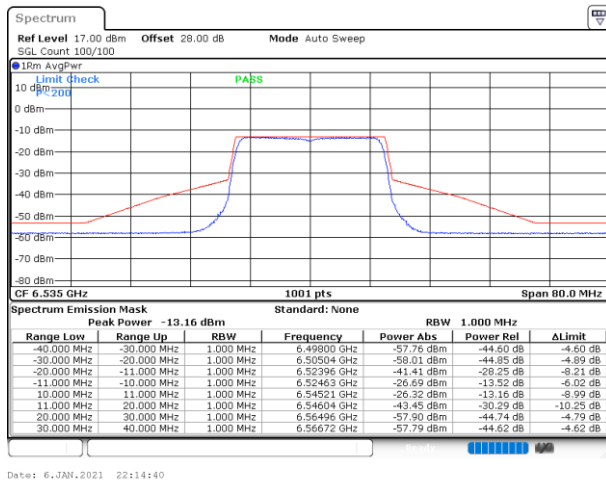
Plot on Channel 6475MHz



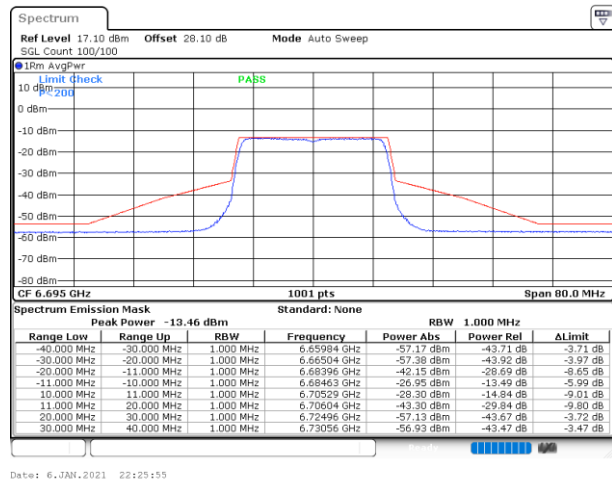
Plot on Channel 6515MHz



Plot on Channel 6535MHz

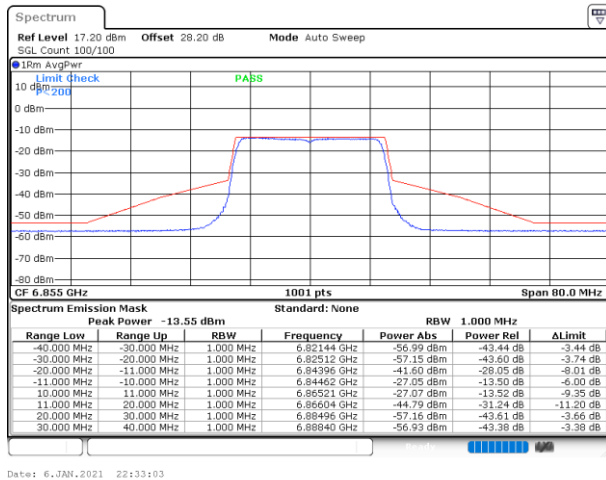


Plot on Channel 6695MHz

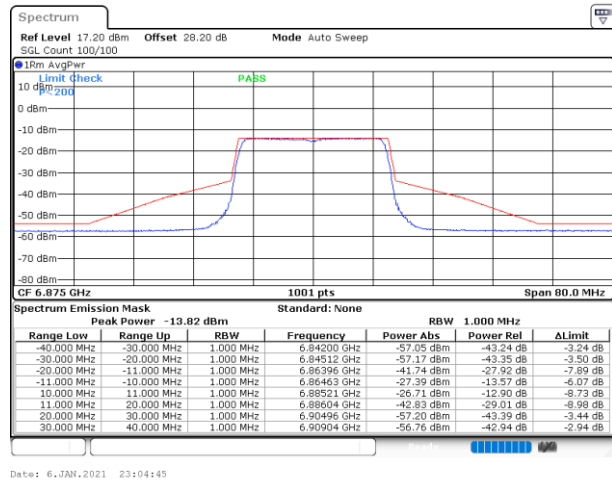




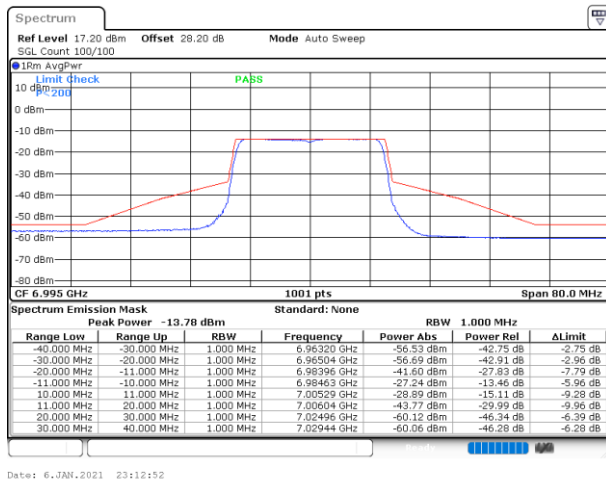
Plot on Channel 6855MHz



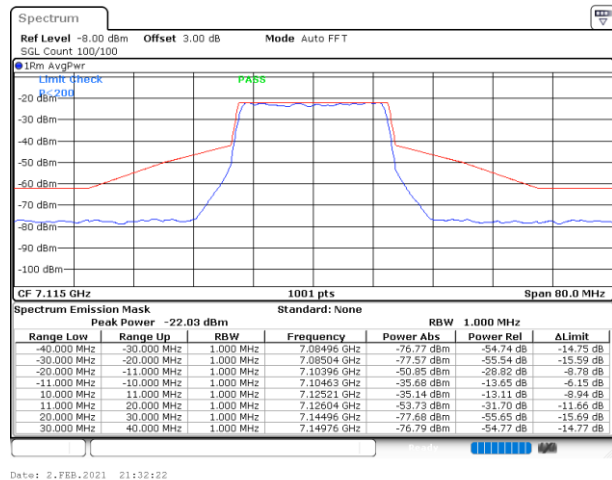
Plot on Channel 6875MHz

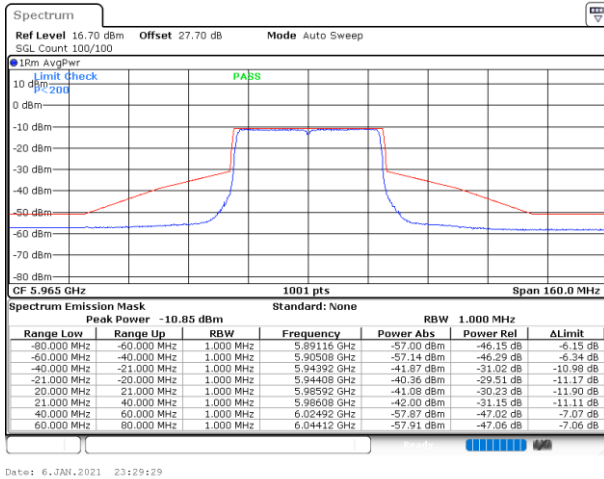
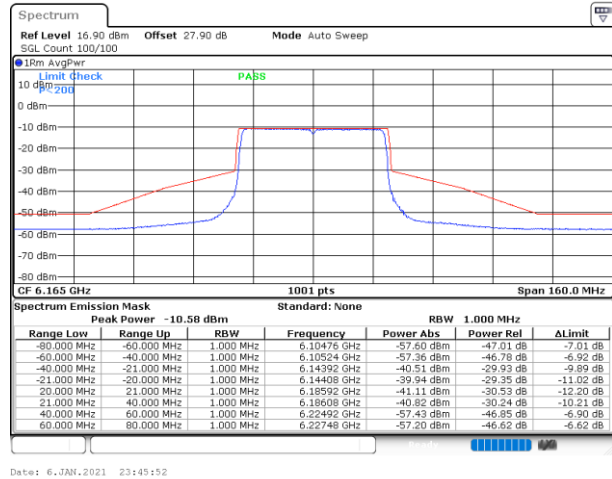
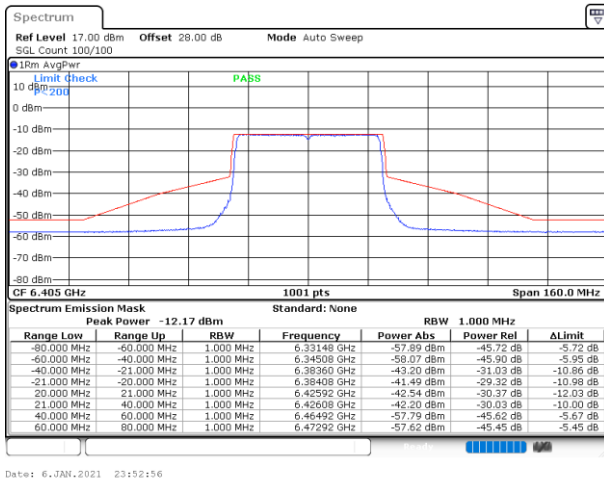
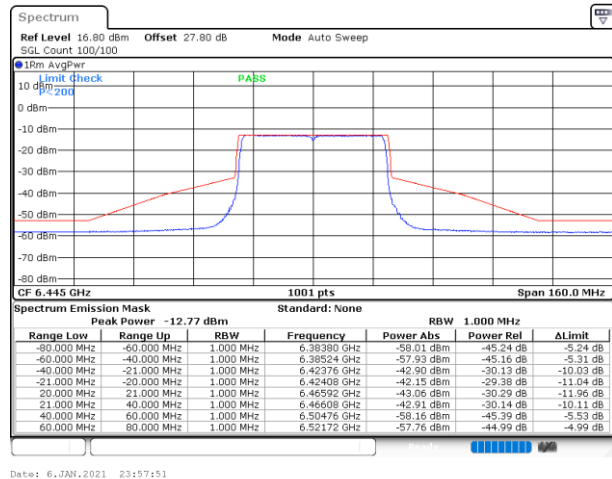


Plot on Channel 6995MHz



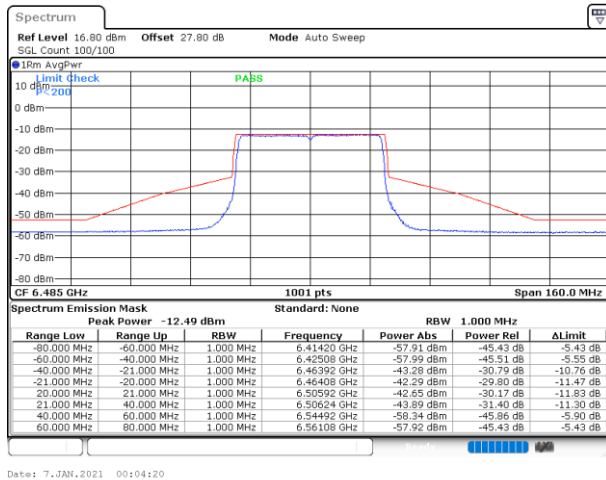
Plot on Channel 7115MHz



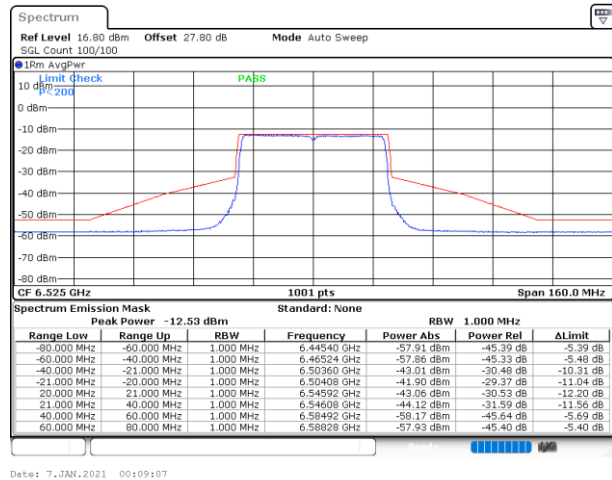
**EUT Mode :** 802.11ax HE40**Plot on Channel 5965MHz****Plot on Channel 6165MHz****Plot on Channel 6405MHz****Plot on Channel 6445MHz**



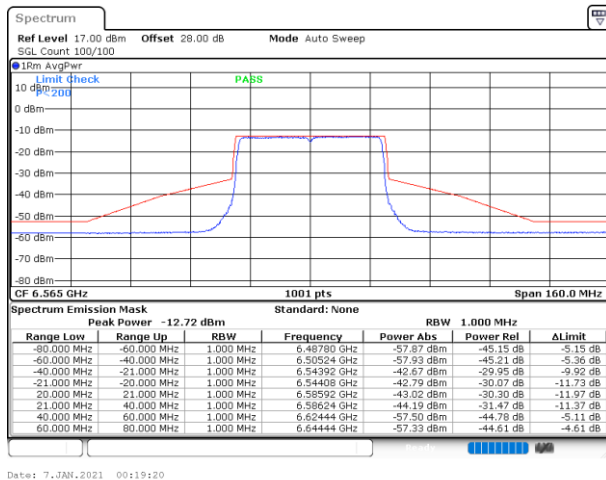
Plot on Channel 6485MHz



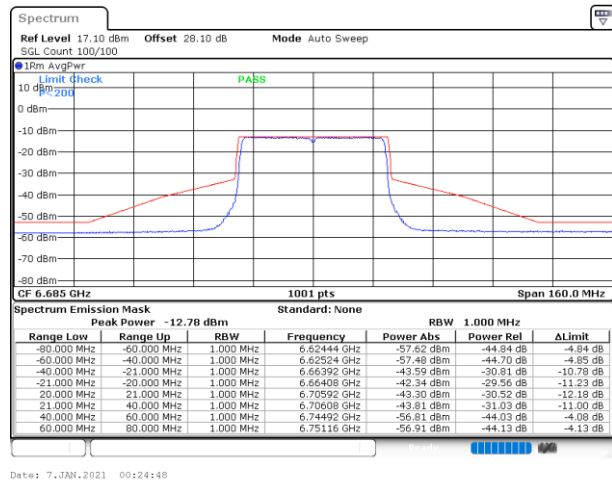
Plot on Channel 6525MHz



Plot on Channel 6565MHz

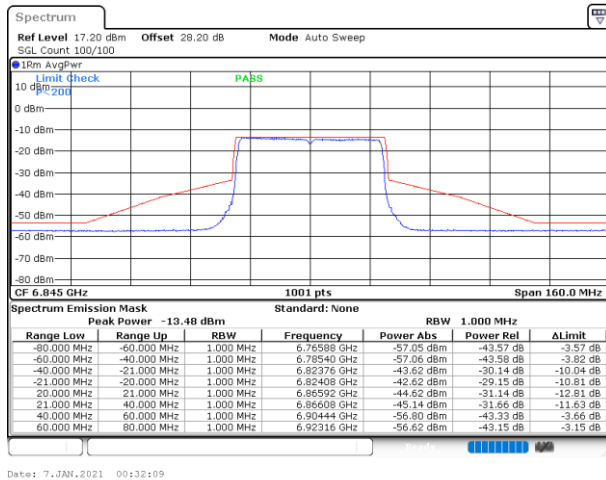


Plot on Channel 6685MHz

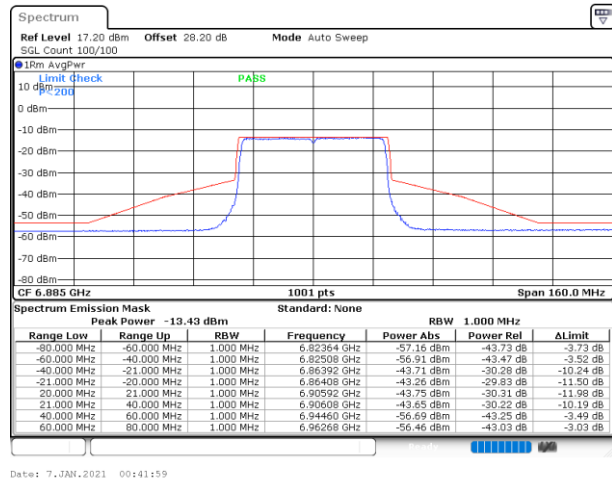




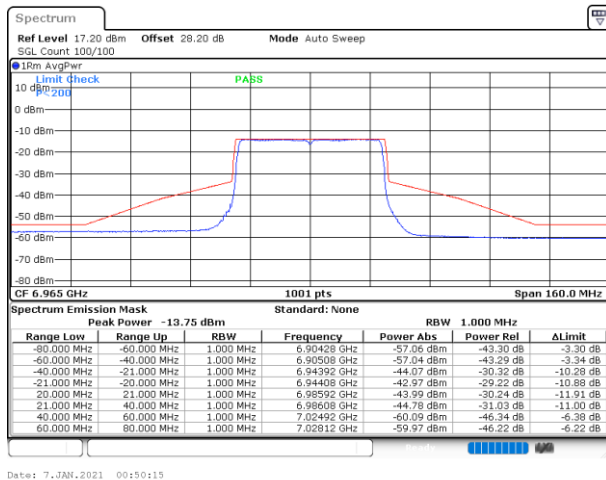
Plot on Channel 6845MHz



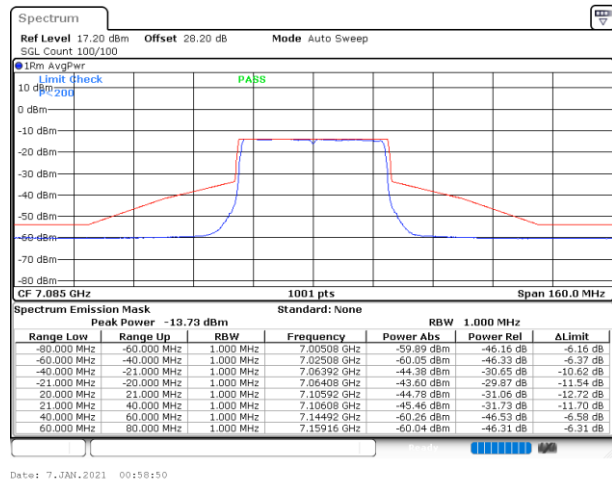
Plot on Channel 6885MHz



Plot on Channel 6965MHz



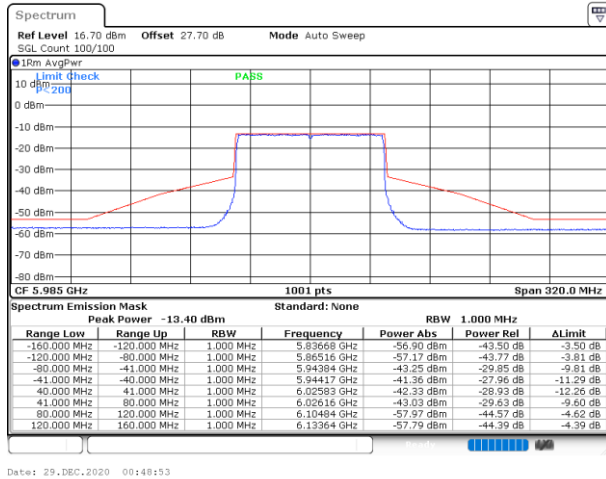
Plot on Channel 7085MHz



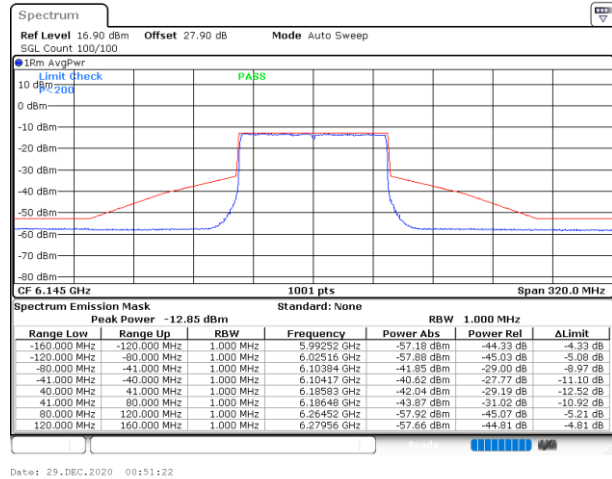


EUT Mode : 802.11ax HE80

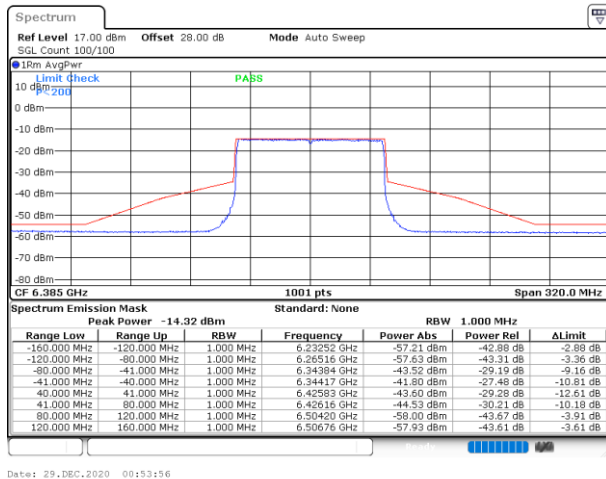
Plot on Channel 5985MHz



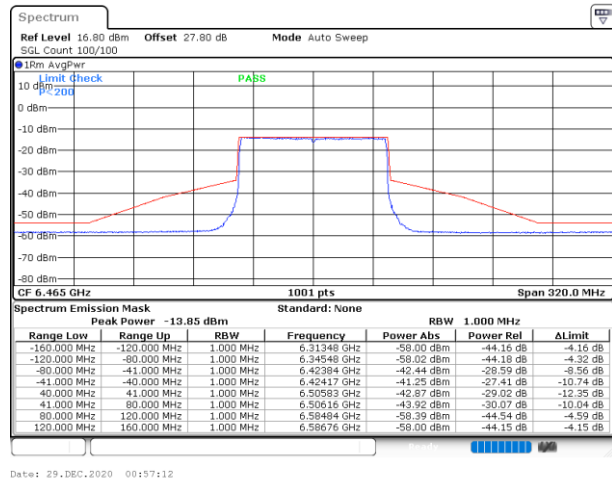
Plot on Channel 6145MHz



Plot on Channel 6385MHz

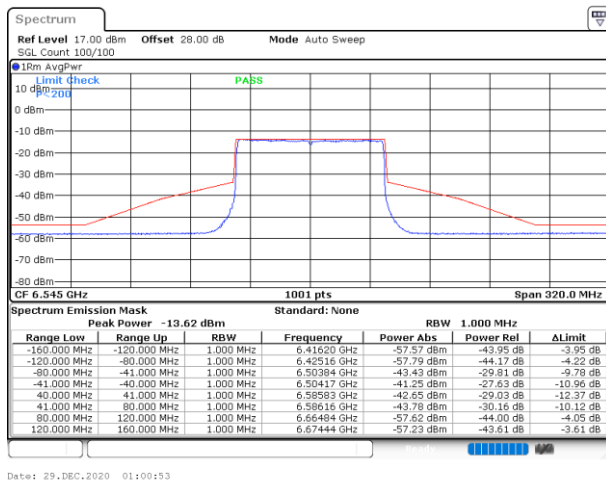


Plot on Channel 6465MHz

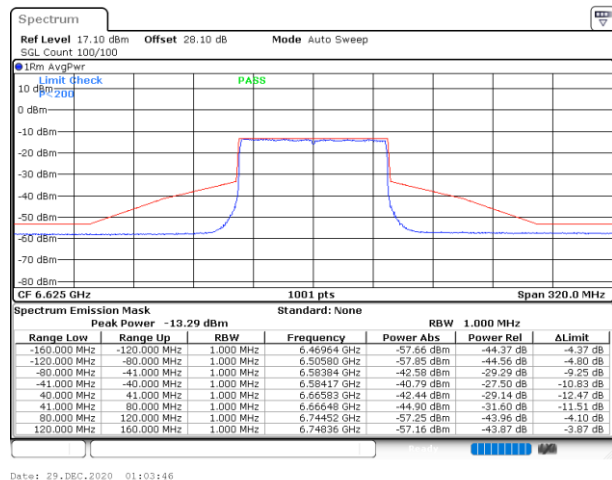




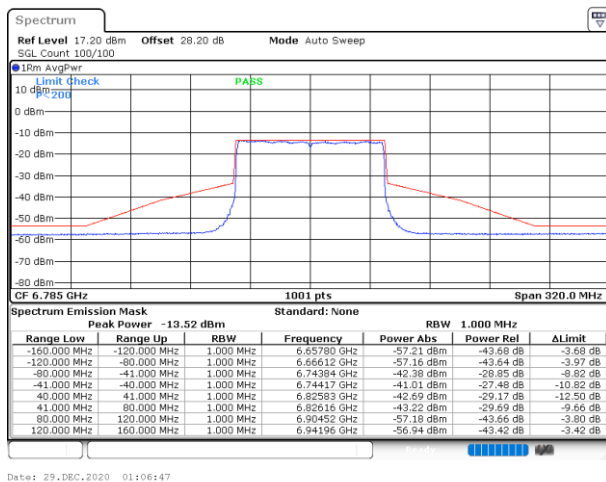
Plot on Channel 6545MHz



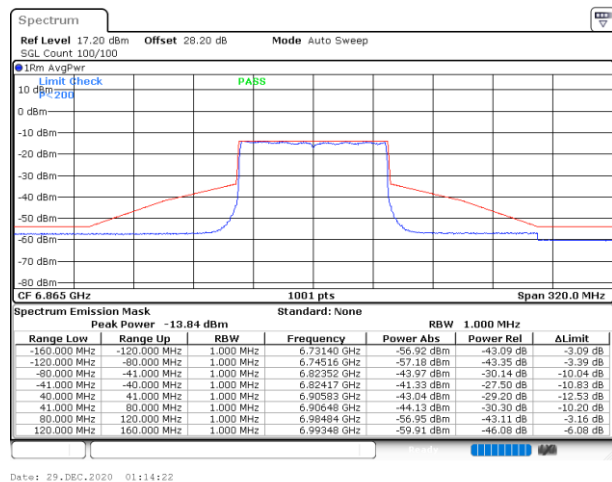
Plot on Channel 6625MHz



Plot on Channel 6785MHz

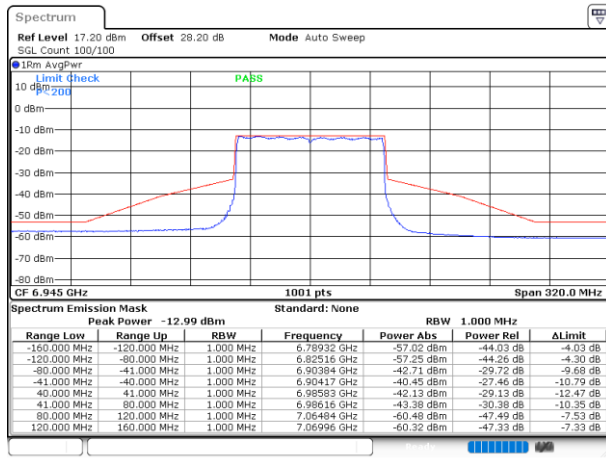


Plot on Channel 6865MHz

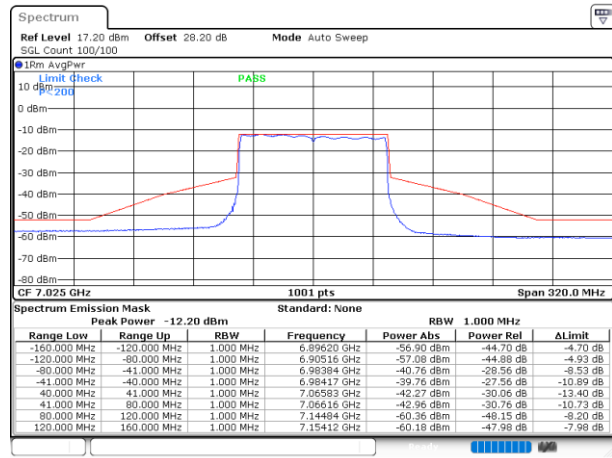




Plot on Channel 6945MHz



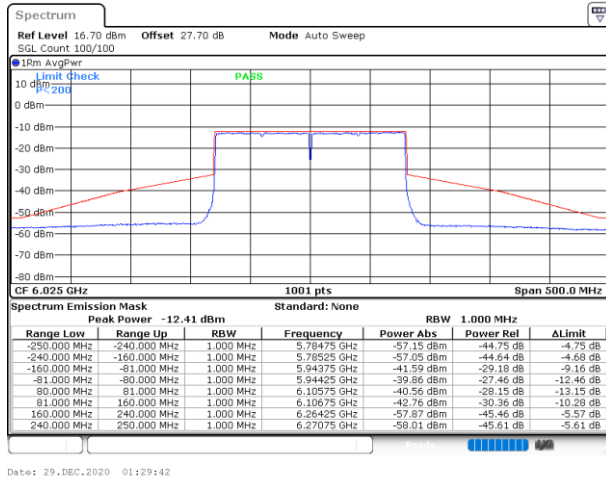
Plot on Channel 7025MHz



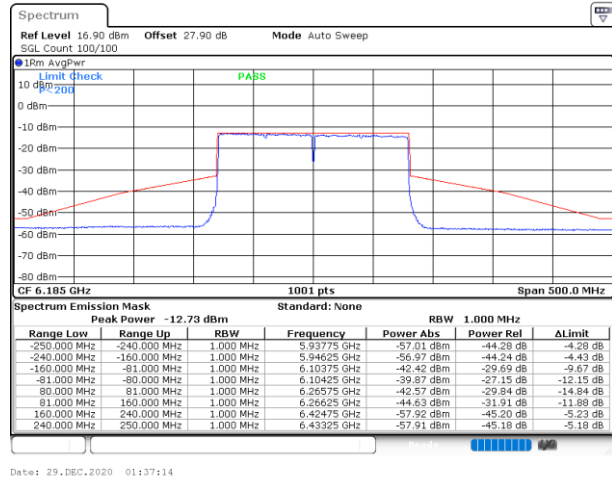


EUT Mode : 802.11ax HE160

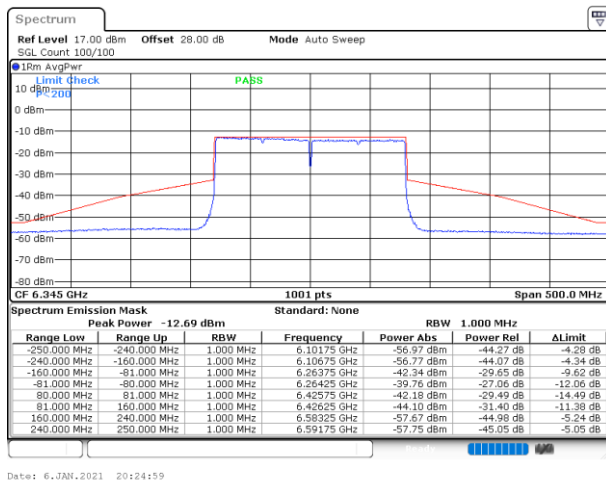
Plot on Channel 6025MHz



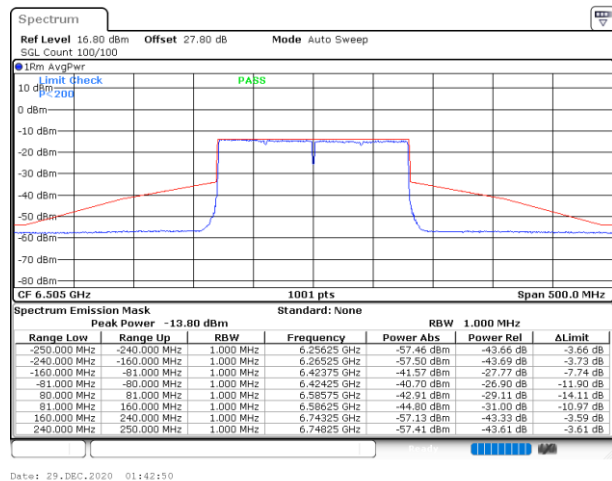
Plot on Channel 6185MHz



Plot on Channel 6345MHz

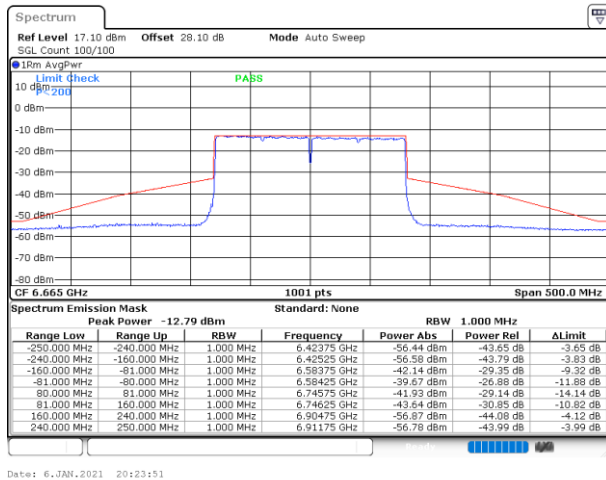


Plot on Channel 6505MHz

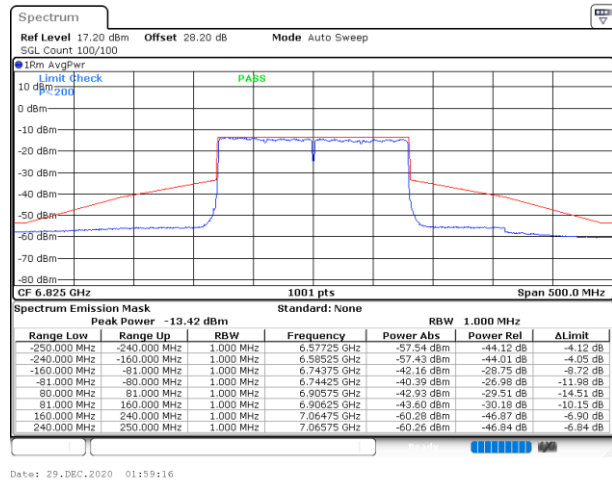




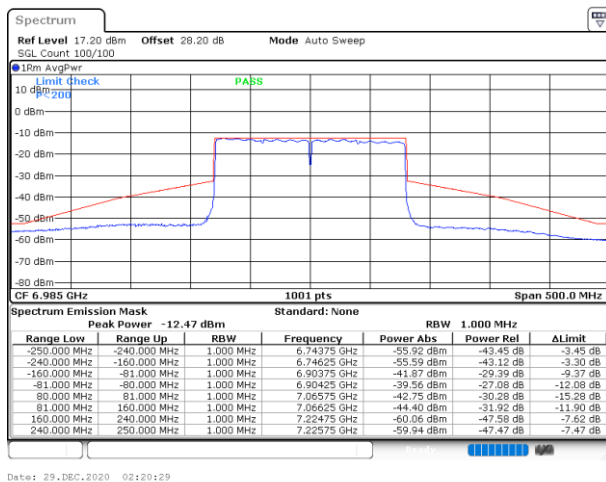
Plot on Channel 6665MHz



Plot on Channel 6825MHz



Plot on Channel 6985MHz



3.5 Contention Based Protocol

3.5.1 Limit of Contention Based Protocol

<FCC 14-30 CFR 15.407>

(d)(6) Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band must employ a contention-based protocol.

FCC KDB 987594 D02 U-NII 6GHz EMC Measurement v01

Unlicensed low-power indoor devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel and stay off the channel as long as detected radio frequency power is equal to or greater than the threshold (-62 dBm). The -62 dBm (or lower) threshold is referenced to a 0 dBi antenna gain. To ensure incumbent operations are reliably detected in the band, low power indoor devices must detect RF energy throughout their intended operating channel. For example, an 802.11 device that plans to transmit a 40 MHz- wide signal (on a primary 20 MHz channel and a secondary 20 MHz channel) must detect energy throughout the entire 40 MHz channel. Additionally, low-power indoor devices must detect co-channel energy with 90% or greater certainty.

Table 1. Criteria to determine number of times detection threshold test may be performed

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leq BW_{Inc}$	Once	Tune incumbent and EUT transmissions ($f_{c1} = f_{c2}$)
$BW_{Inc} < BW_{EUT} \leq 2BW_{Inc}$	Once	Incumbent transmission is contained within BW_{EUT}
$2BW_{Inc} < BW_{EUT} \leq 4BW_{Inc}$	Twice. Incumbent transmission is contained within BW_{EUT}	Incumbent transmission is located as closely as possible to the lower edge and upper edge, respectively, of the EUT channel
$BW_{EUT} > 4BW_{Inc}$	Three times	Incumbent transmission is located as closely as possible to the lower edge of the EUT channel, in the middle of EUT channel, and as closely as possible to the upper edge of the EUT channel

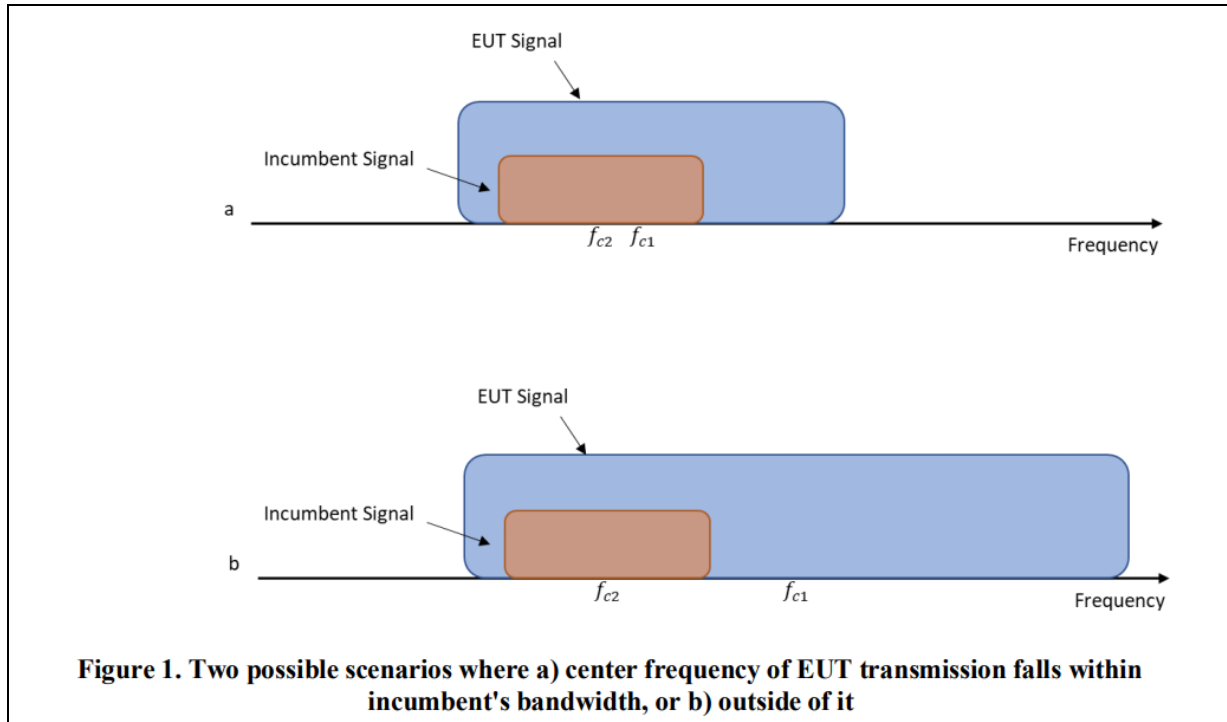
where:

BW_{EUT} : Transmission bandwidth of EUT signal

BW_{Inc} : Transmission bandwidth of the simulated incumbent signal (10 MHz wide AWGN signal)

f_{c1} : Center frequency of EUT transmission

f_{c2} : Center frequency of simulated incumbent signal



3.5.2 Measuring Instruments

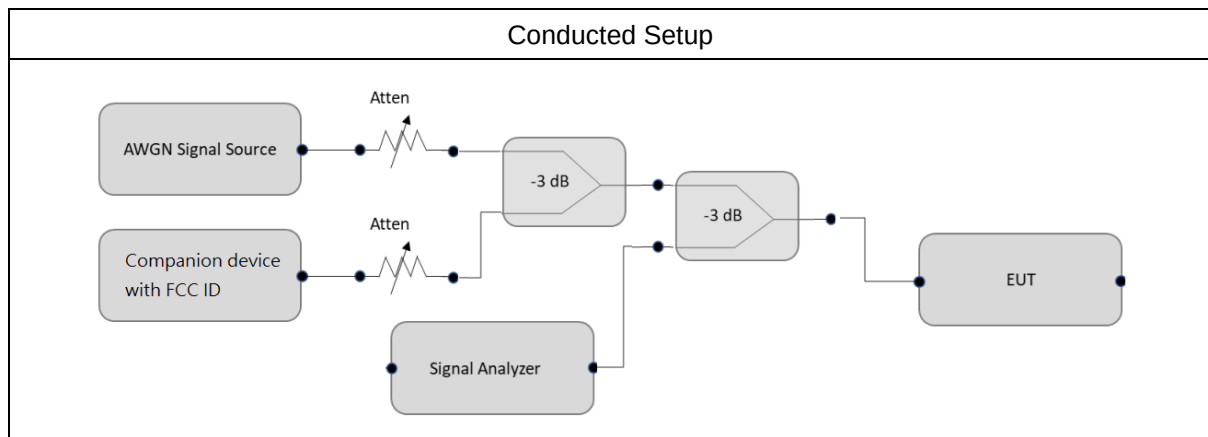
See list of measuring equipment of this test report.

3.5.3 Test Procedures

Refer to KDB 987594 D02 v01v01.

1. To ensure EUT reliably detects an incumbent signal in both scenarios shown in Figure 1, the detection threshold test may be repeated more than once with the incumbent signal (having center frequency f_{c2}) tuned to different center frequencies within the UT transmission bandwidth. The criteria specified in Table 1 determines how many times the detection threshold test must be performed
2. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
3. Monitor the signal analyzer 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.
4. (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.
5. Refer to Table 1 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 2, choose a different center frequency for the AWGN signal and repeat the process.

3.5.4 Test Setup



3.5.5 Support Unit used in test configuration and system

Instrument	Brand Name	Model No.	Characteristics
WLAN AP	ASUS	GT-AXE11000	Dual Band AP
Notebook	Acer	N15C1	LAN

3.5.6 Test Summary of Contention Based Protocol Test

<Normal mode – WLAN Ant. 4+5>

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Measured Detection level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Margin (dB)
UNII Band 5	6135	20	6135	-77.66	100	-61.7	15.96
	6185	160	6110	-75.68	100	-61.7	13.98
			6185	-67.67	100	-61.7	5.97
			6260	-73.71	100	-61.7	12.01
UNII Band 6	6455	20	6455	-73.65	100	-61.7	11.95
	6505	160	6430	-73.65	100	-61.7	11.95
			6505	-70.72	100	-61.7	9.02
			6580	-75.71	100	-61.7	14.01
UNII Band 7	6695	20	6695	-71.68	100	-61.7	9.98
	6665	160	6590	-70.72	100	-61.7	9.02
			6665	-67.67	100	-61.7	5.97
			6740	-73.71	100	-61.7	12.01
UNII Band 8	7015	20	7015	-71.71	100	-61.7	10.01
	6985	160	6910	-68.70	100	-61.7	7.00
			6985	-66.72	100	-61.7	5.02
			7060	-72.67	100	-61.7	10.97

Note: Threshold Level (TL) = -62dBm + minimum antenna gain

= -62dBm + (0.3dBi) = -61.7 dBm.

<Camera mode – WLAN Ant. 6+5>

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Measured Detection level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Margin (dB)
UNII Band 5	6135	20	6135	-82.2	100	-58.4	23.8
	6185	160	6110	-76.48	100	-58.4	18.08
			6185	-70.47	100	-58.4	12.07
			6260	-73.5	100	-58.4	15.1
UNII Band 6	6455	20	6455	-82.3	100	-58.4	23.9
	6505	160	6430	-75.68	100	-58.4	17.28
			6505	-71.62	100	-58.4	13.22
			6580	-75.64	100	-58.4	17.24
UNII Band 7	6695	20	6695	-80.47	100	-58.4	22.07
	6665	160	6590	-70.52	100	-58.4	12.12
			6665	-68.58	100	-58.4	10.18
			6740	-72.48	100	-58.4	14.08
UNII Band 8	7015	20	7015	-78.52	100	-58.4	20.12
	6985	160	6910	-75.42	100	-58.4	17.02
			6985	-67.52	100	-58.4	9.12
			7060	-71.39	100	-58.4	12.99

Note: Threshold Level (TL) = -62dBm + minimum antenna gain

= -62dBm + (3.6dBi) = -58.4dBm.



3.5.7 Test Plots of Contention Based Protocol

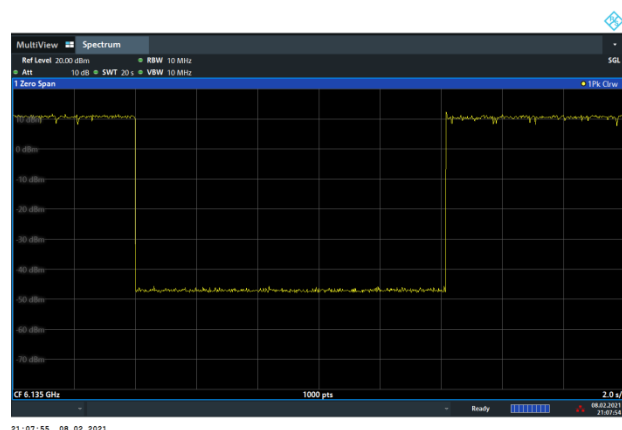
<Normal mode – WLAN Ant. 4+5>

Contention Based Protocol Result Plots on U-NII 5 (AWGN Interference)

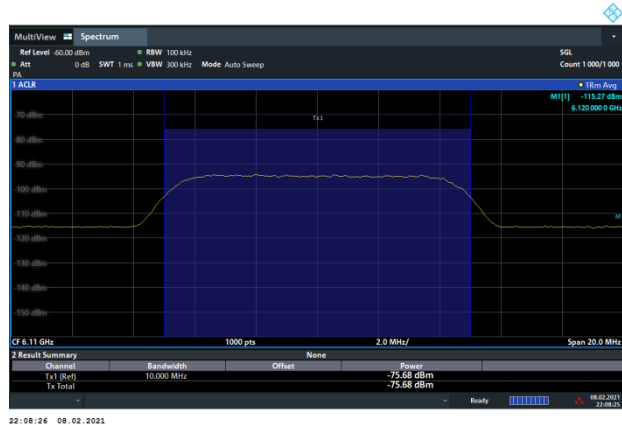
802.11ax (HE20) / 6135MHz
Threshold Level (TL) = -77.66dBm/MHz



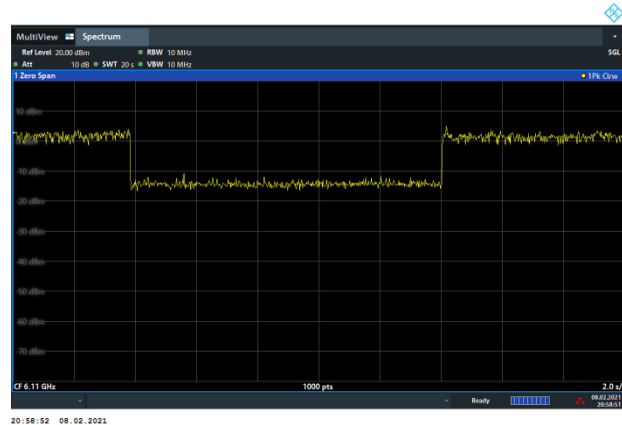
802.11ax (HE20) / CH37
Test result is pass due to no transmission occur.



802.11ax (HE160) / 6110MHz (Lower edge)
Threshold Level (TL) = -75.68dBm/MHz

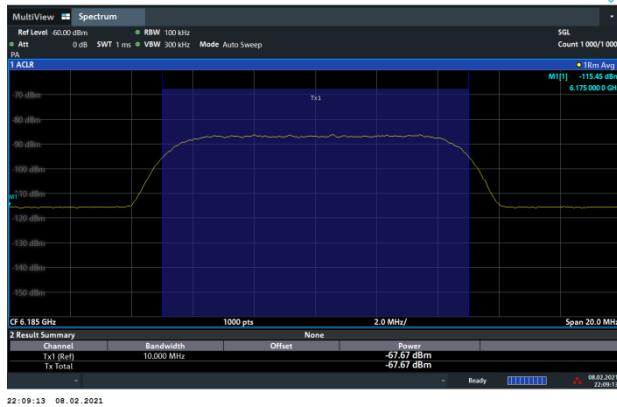


802.11ax (HE160) / CH47 (Lower edge)
Test result is pass due to no transmission occur.

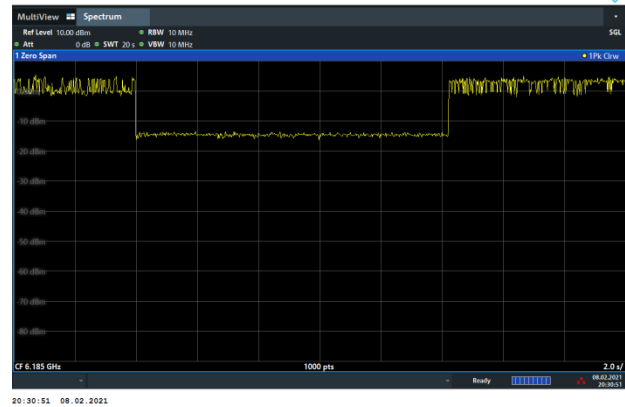




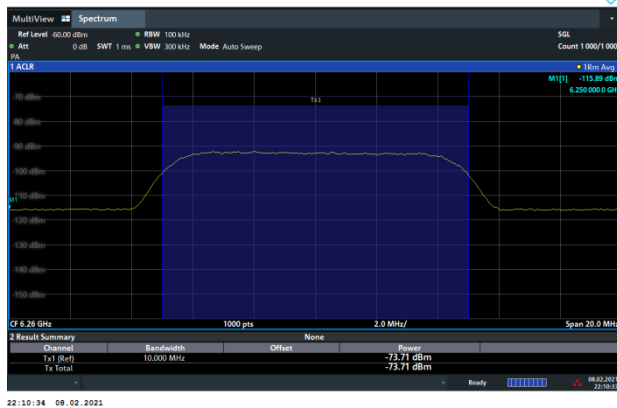
802.11ax (HE160) / 6185MHz (Middle)
Threshold Level (TL) = -67.67dBm/MHz



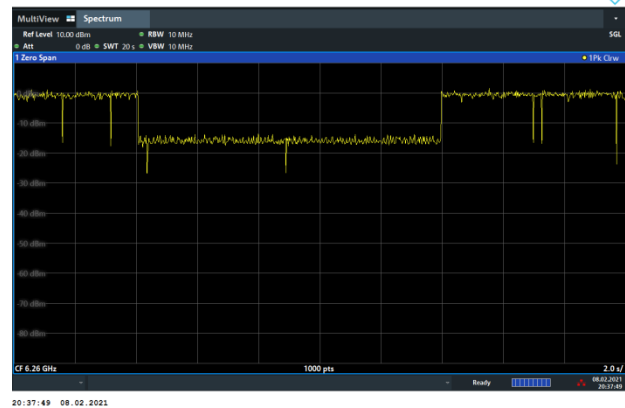
802.11ax (HE160) / CH47 (Middle)
Test result is pass due to no transmission occur.

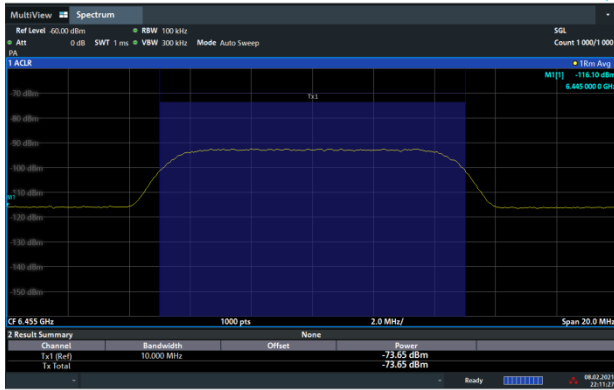
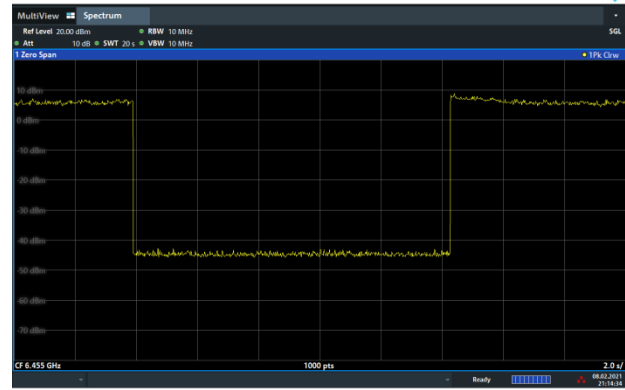
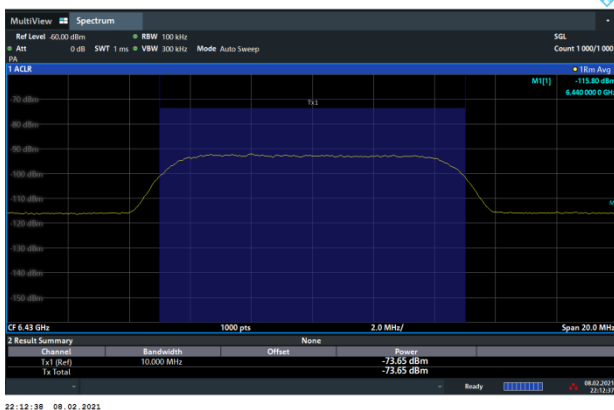
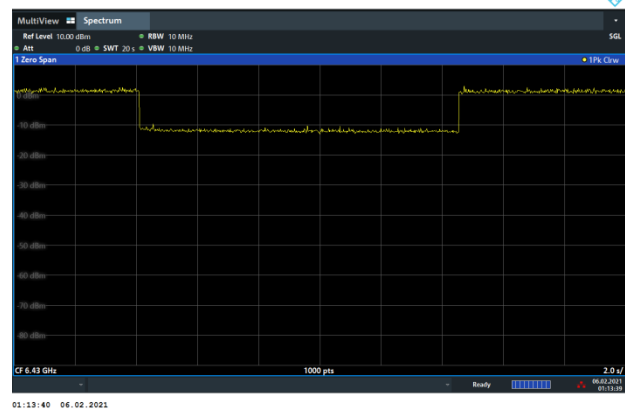


802.11ax (HE160) / 6260MHz (Upper edge)
Threshold Level (TL) = -73.71dBm/MHz



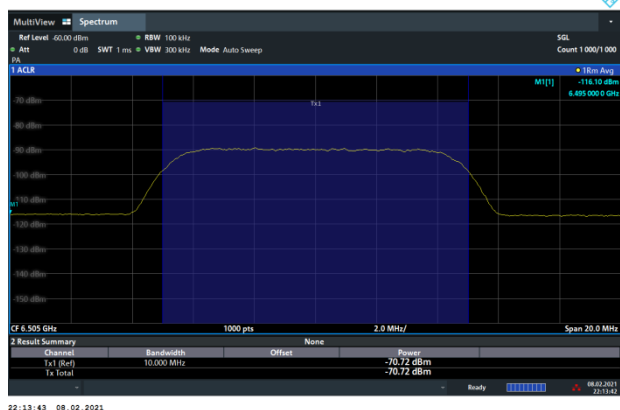
802.11ax (HE160) / CH47 (Upper edge)
Test result is pass due to no transmission occur.



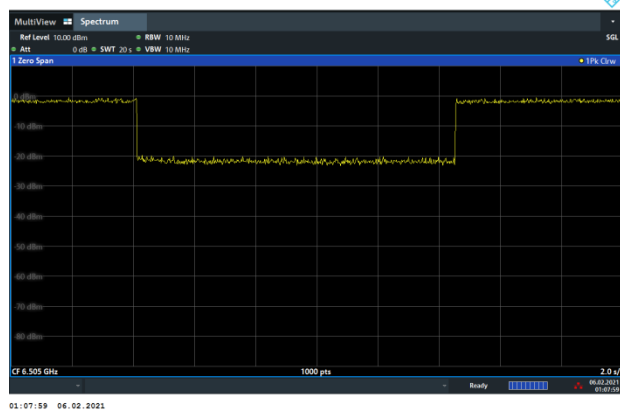
**Contention Based Protocol Result Plots on U-NII 6 (AWGN Interference)****802.11ax (HE20) / 6455MHz****Threshold Level (TL) = -73.65dBm/MHz****802.11ax (HE20) / CH101****Test result is pass due to no transmission occur.****802.11ax (HE160) / 6430MHz (Lower edge)****Threshold Level (TL) = -73.65dBm/MHz****802.11ax (HE160) / CH111 (Lower edge)****Test result is pass due to no transmission occur.**



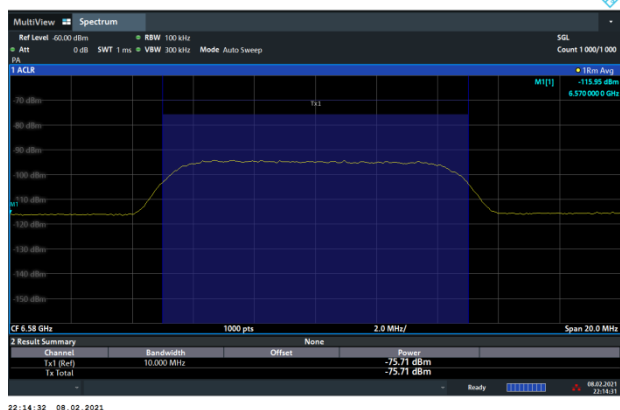
802.11ax (HE160) / 6505MHz (Middle)
Threshold Level (TL) = -70.72dBm/MHz



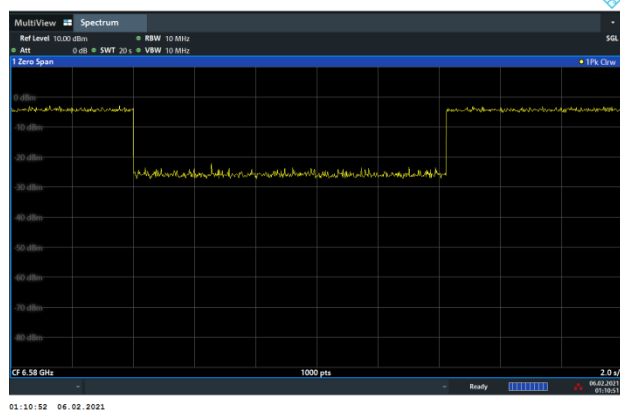
802.11ax (HE160) / CH111 (Middle)
Test result is pass due to no transmission occur.



802.11ax (HE160) / 6580MHz (Upper edge)
Threshold Level (TL) = -75.71dBm/MHz



802.11ax (HE160) / CH111 (Upper edge)
Test result is pass due to no transmission occur.

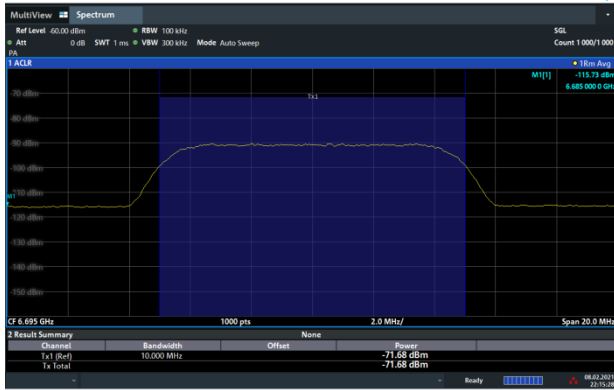




Contention Based Protocol Result Plots on U-NII 7 (AWGN Interference)

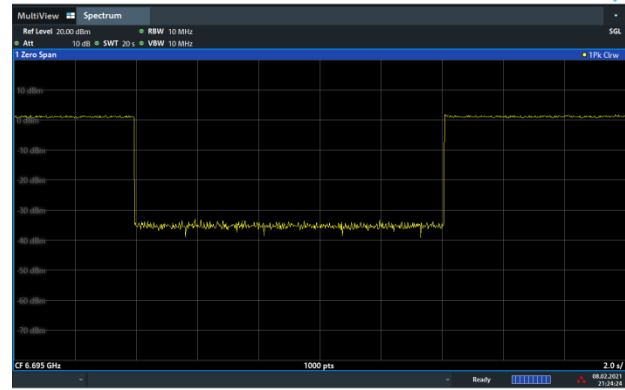
802.11ax (HE20) / 6695MHz

Threshold Level (TL) = -71.68dBm/MHz



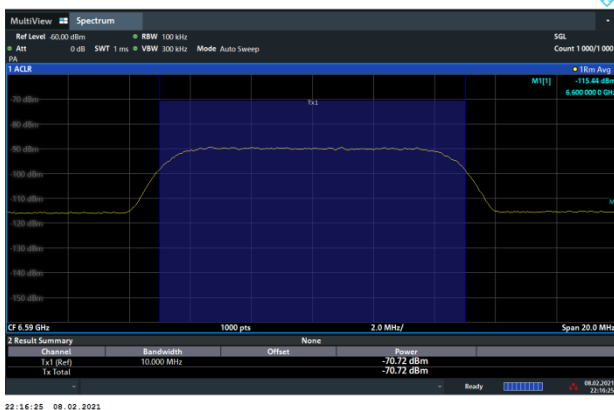
802.11ax (HE20) / CH149

Test result is pass due to no transmission occur.



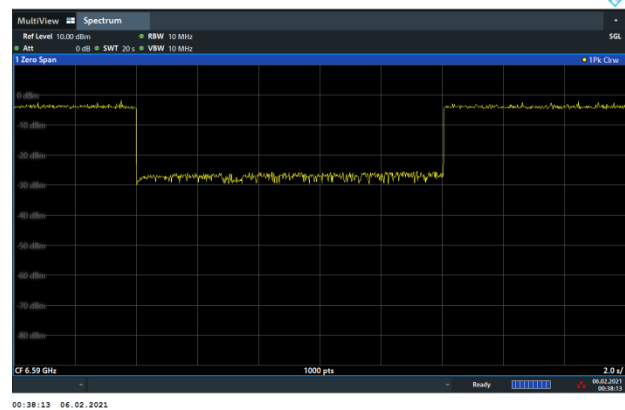
802.11ax (HE160) / 6590MHz (Lower edge)

Threshold Level (TL) = -70.72dBm/MHz



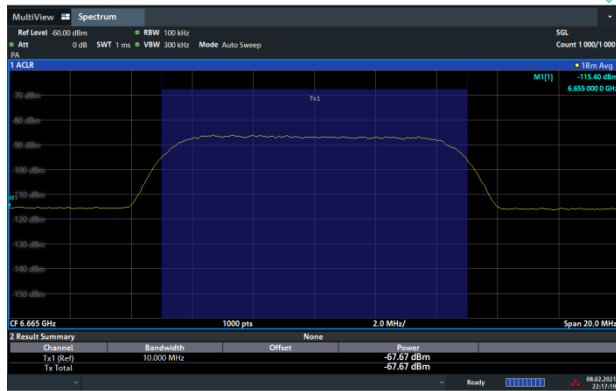
802.11ax (HE160) / CH143 (Lower edge)

Test result is pass due to no transmission occur.



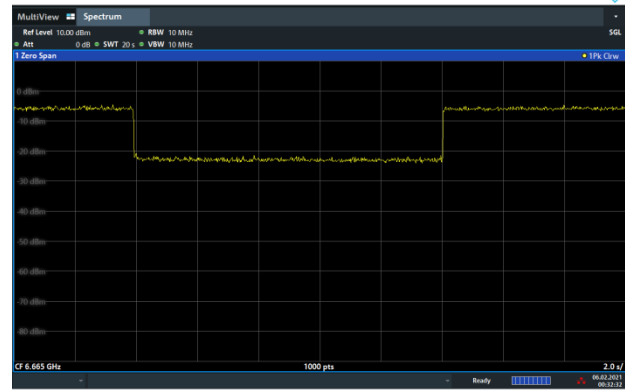


802.11ax (HE160) / 6665MHz (Middle)
Threshold Level (TL) = -67.67dBm/MHz



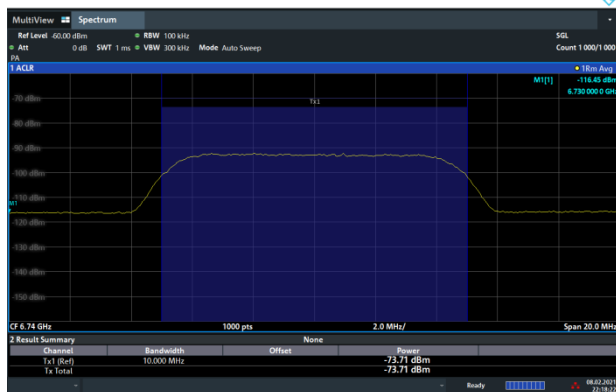
22:17:19 08.02.2021

802.11ax (HE160) / CH143 (Middle)
Test result is pass due to no transmission occur.



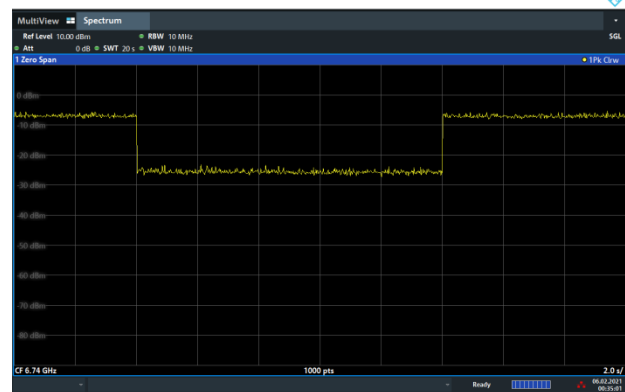
00:32:32 08.02.2021

802.11ax (HE160) / 6740MHz (Upper edge)
Threshold Level (TL) = -73.71dBm/MHz



22:18:22 08.02.2021

802.11ax (HE160) / CH143 (Upper edge)
Test result is pass due to no transmission occur.



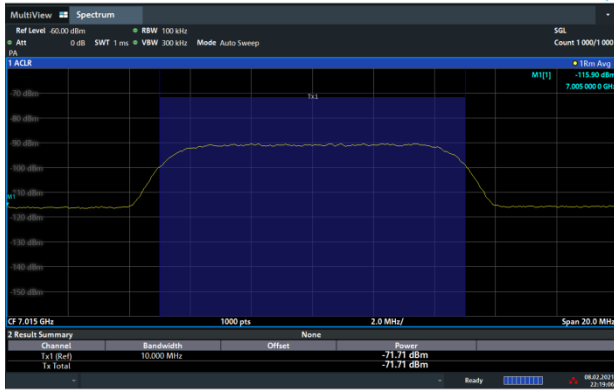
00:35:02 08.02.2021



Contention Based Protocol Result Plots on U-NII 8 (AWGN Interference)

802.11ax (HE20) / 7015MHz

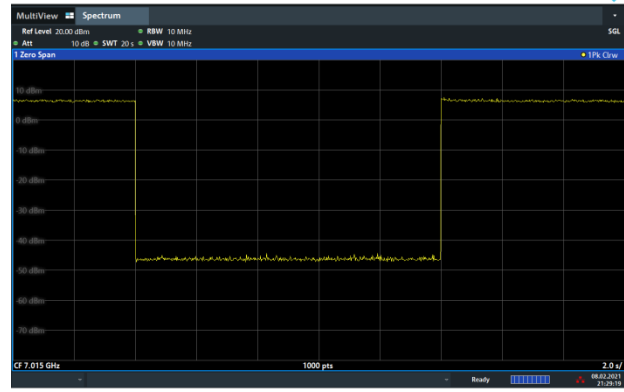
Threshold Level (TL) = -71.71dBm/MHz



22:19:06 08.02.2021

802.11ax (HE20) / CH213

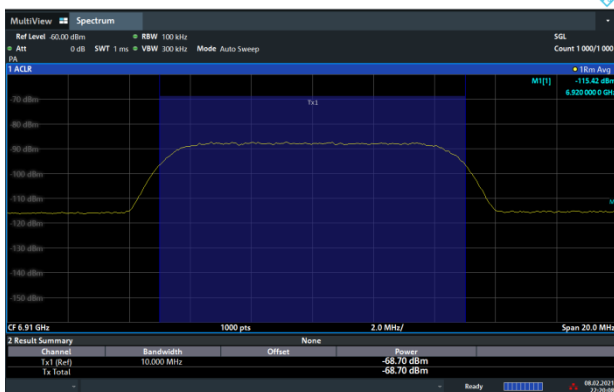
Test result is pass due to no transmission occur.



21:29:19 08.02.2021

802.11ax (HE160) / 6910MHz (Lower edge)

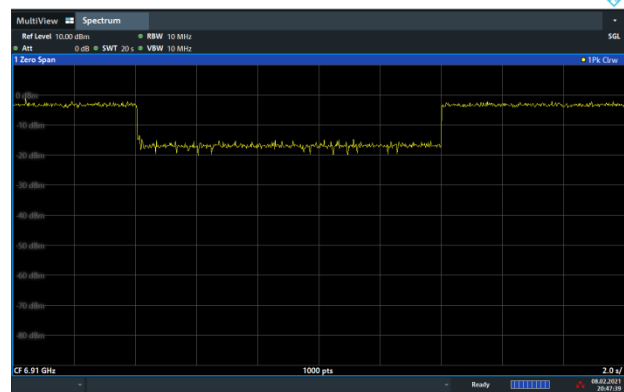
Threshold Level (TL) = -68.70dBm/MHz



22:20:09 08.02.2021

802.11ax (HE160) / CH207 (Lower edge)

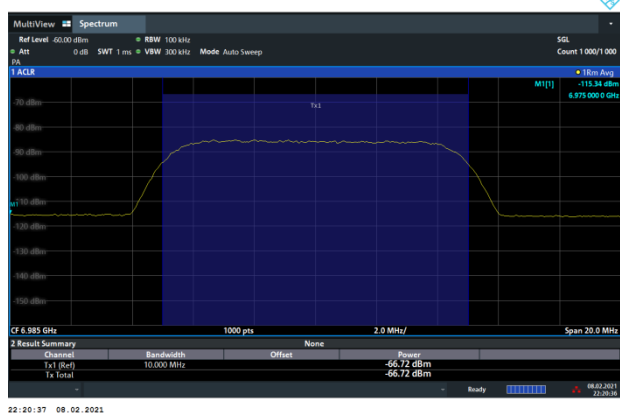
Test result is pass due to no transmission occur.



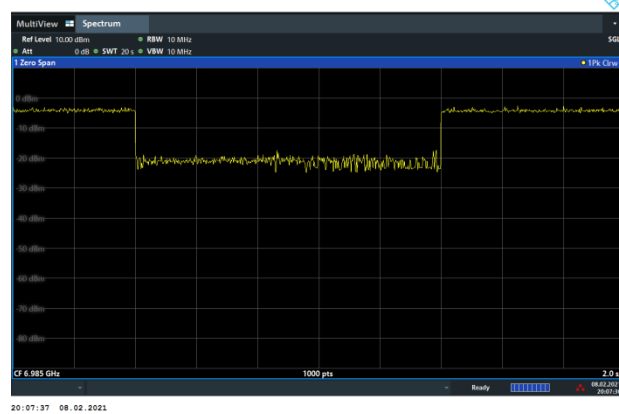
20:47:40 08.02.2021



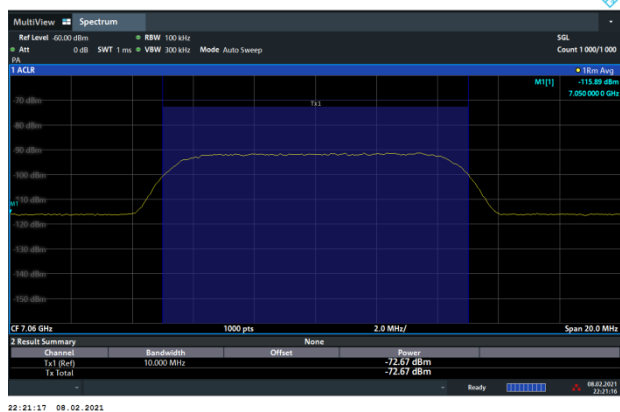
802.11ax (HE160) / 6985MHz (Middle)
Threshold Level (TL) = -66.72dBm/MHz



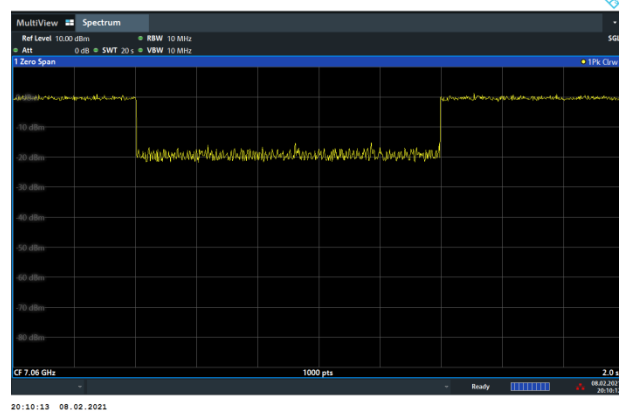
802.11ax (HE160) / CH207 (Middle)
Test result is pass due to no transmission occur.



802.11ax (HE160) / 7060MHz (Upper edge)
Threshold Level (TL) = -72.67dBm/MHz



802.11ax (HE160) / CH207 (Upper edge)
Test result is pass due to no transmission occur.



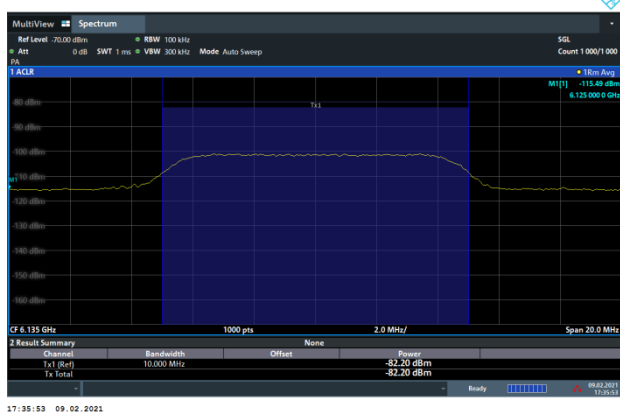


< Camera mode – WLAN Ant. 6+5>

Contention Based Protocol Result Plots on U-NII 5 (AWGN Interference)

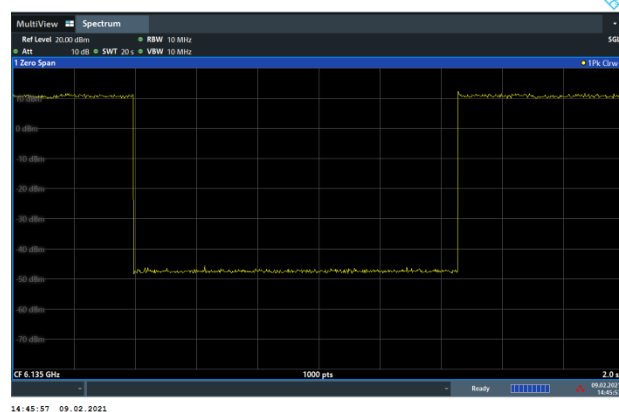
802.11ax (HE20) / 6135MHz

Threshold Level (TL) = -82.2dBm/MHz



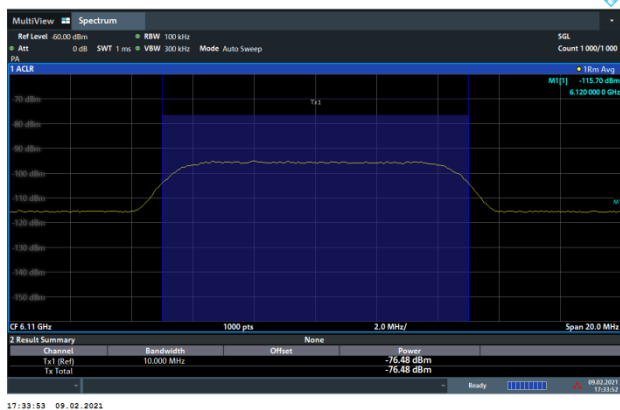
802.11ax (HE20) / CH37

Test result is pass due to no transmission occur.



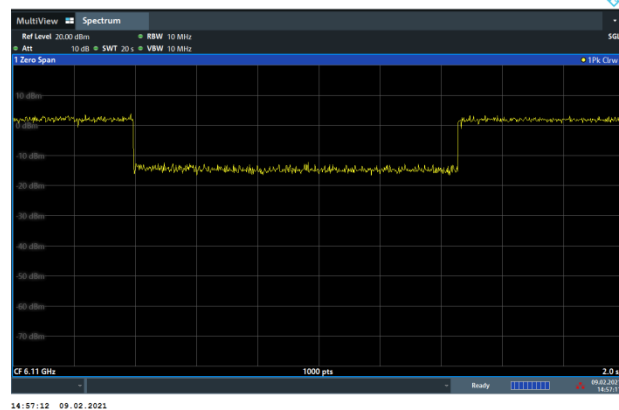
802.11ax (HE160) / 6110MHz (Lower edge)

Threshold Level (TL) = -76.48dBm/MHz



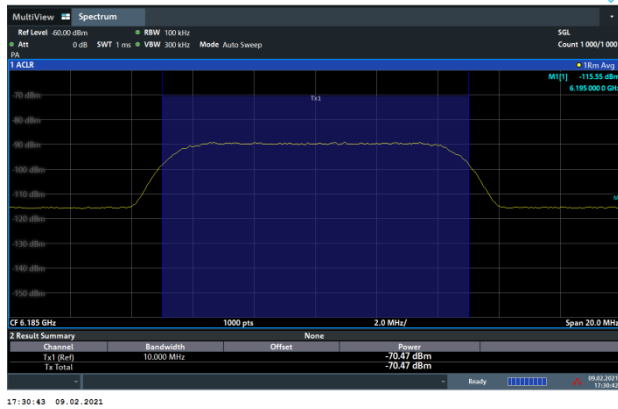
802.11ax (HE160) / CH47 (Lower edge)

Test result is pass due to no transmission occur.

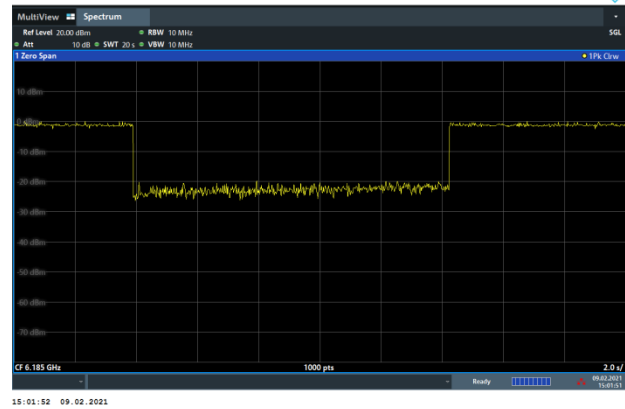




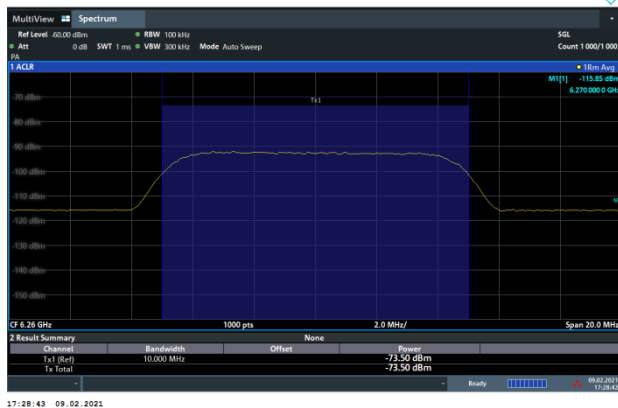
802.11ax (HE160) / 6185MHz (Middle)
Threshold Level (TL) = -70.47dBm/MHz



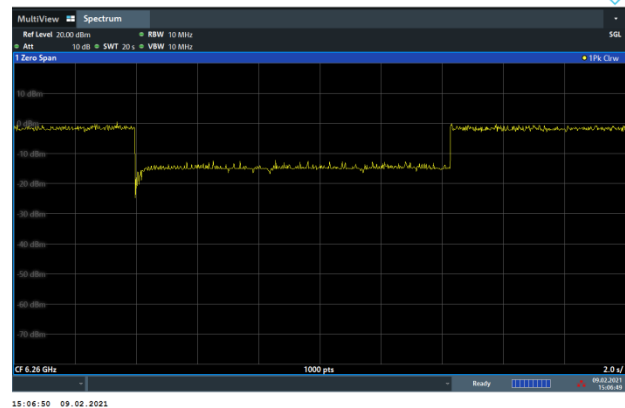
802.11ax (HE160) / CH47 (Middle)
Test result is pass due to no transmission occur.



802.11ax (HE160) / 6260MHz (Upper edge)
Threshold Level (TL) = -73.50dBm/MHz



802.11ax (HE160) / CH47 (Upper edge)
Test result is pass due to no transmission occur.

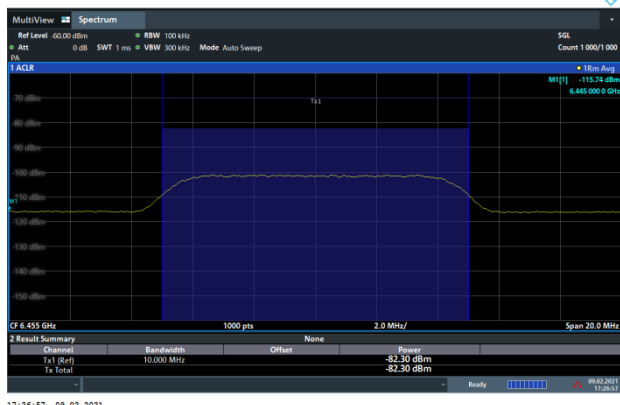




Contention Based Protocol Result Plots on U-NII 6 (AWGN Interference)

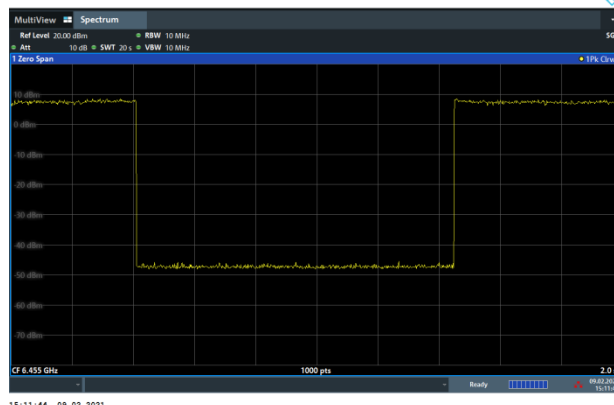
802.11ax (HE20) / 6455MHz

Threshold Level (TL) = -82.3dBm/MHz



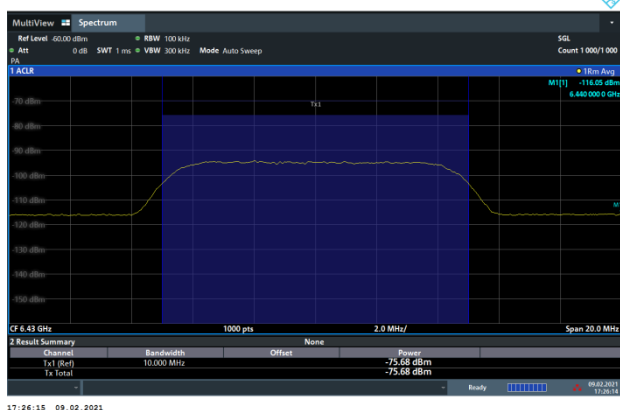
802.11ax (HE20) / CH101

Test result is pass due to no transmission occur.



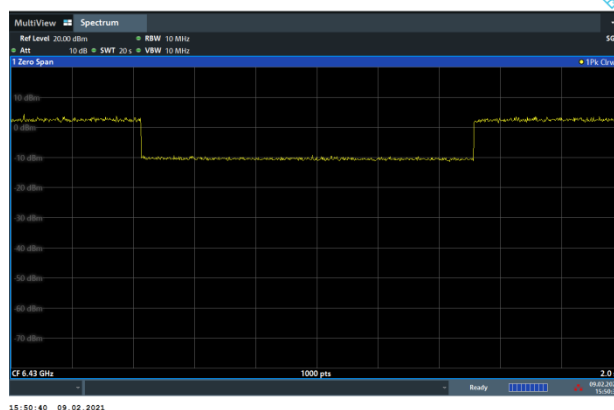
802.11ax (HE160) / 6430MHz (Lower edge)

Threshold Level (TL) = -75.68dBm/MHz



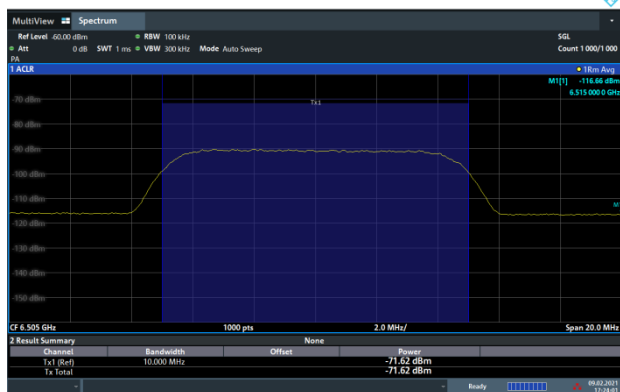
802.11ax (HE160) / CH111 (Lower edge)

Test result is pass due to no transmission occur.

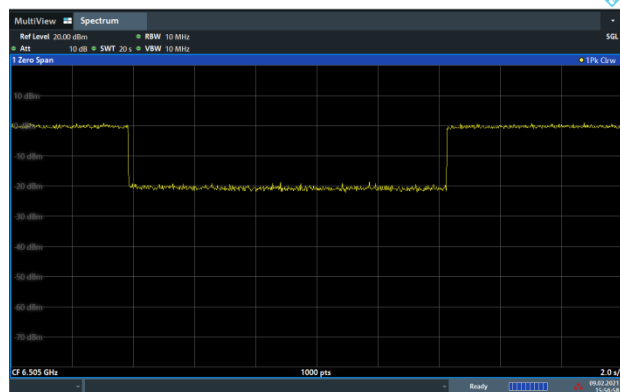




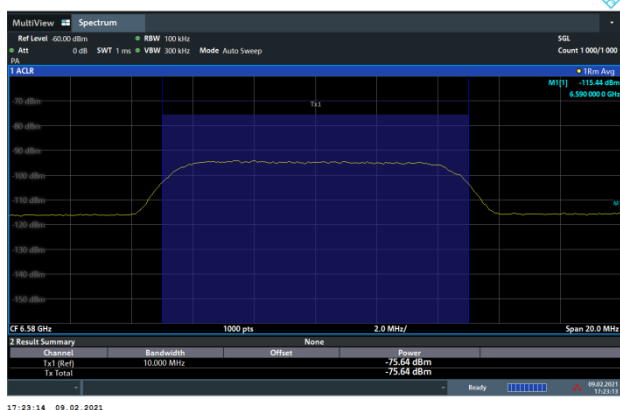
802.11ax (HE160) / 6505MHz (Middle)
Threshold Level (TL) = -71.62dBm/MHz



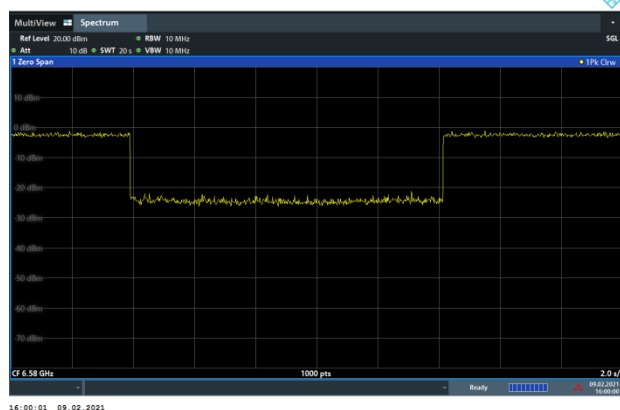
802.11ax (HE160) / CH111 (Middle)
Test result is pass due to no transmission occur.



802.11ax (HE160) / 6580MHz (Upper edge)
Threshold Level (TL) = -75.64dBm/MHz



802.11ax (HE160) / CH111 (Upper edge)
Test result is pass due to no transmission occur.

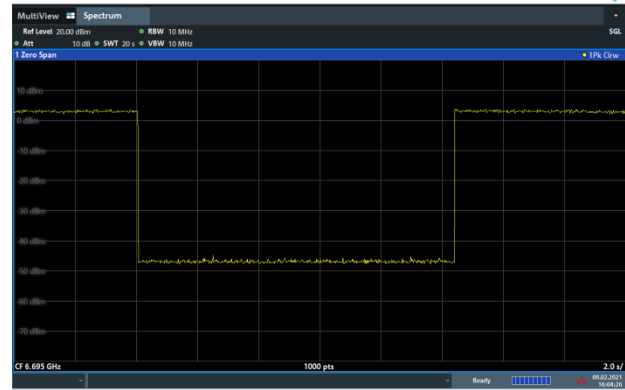
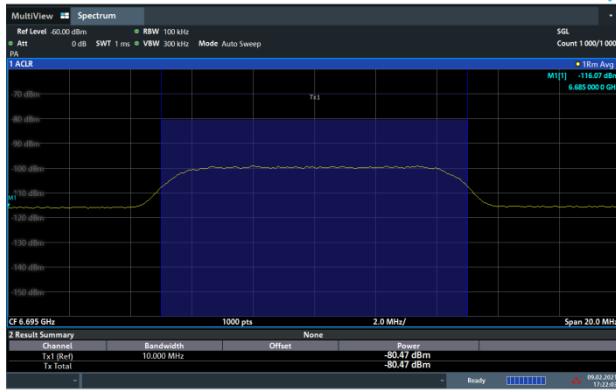




Contention Based Protocol Result Plots on U-NII 7 (AWGN Interference)

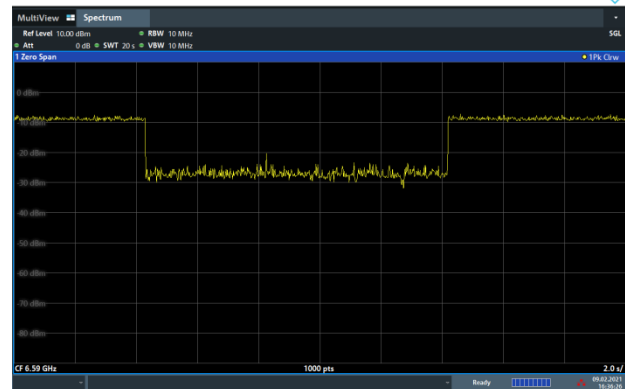
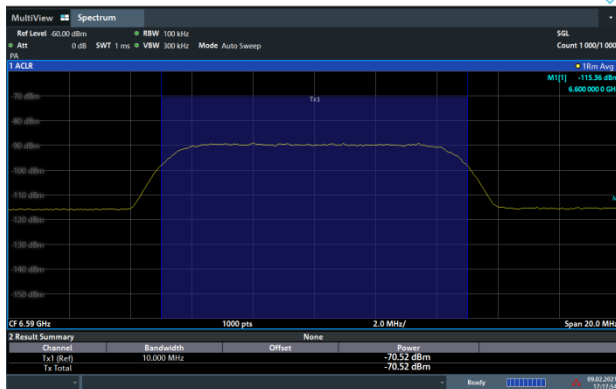
802.11ax (HE20) / 6695MHz
Threshold Level (TL) = -80.47dBm/MHz

802.11ax (HE20) / CH149
Test result is pass due to no transmission occur.



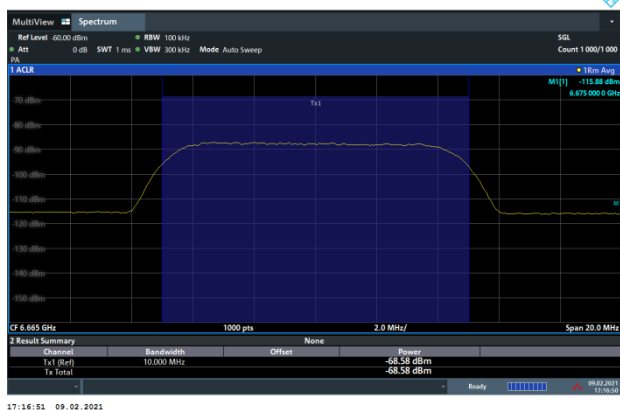
802.11ax (HE160) / 6590MHz (Lower edge)
Threshold Level (TL) = -70.52dBm/MHz

802.11ax (HE160) / CH143 (Lower edge)
Test result is pass due to no transmission occur.

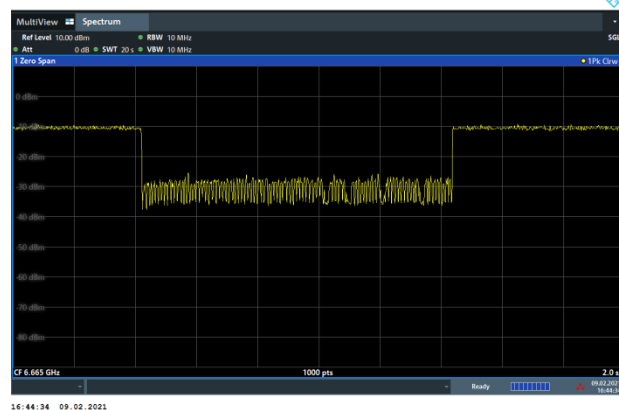




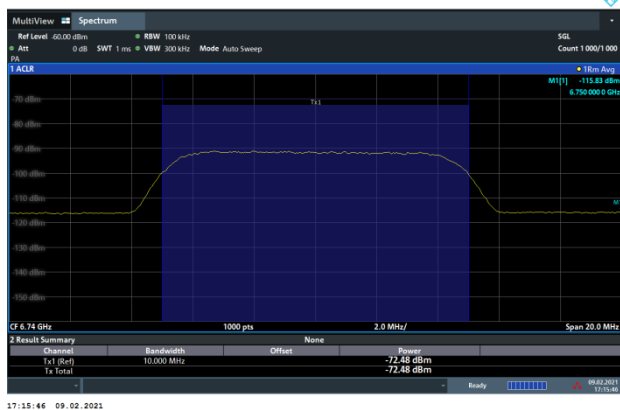
802.11ax (HE160) / 6665MHz (Middle)
Threshold Level (TL) = -68.58dBm/MHz



802.11ax (HE160) / CH143 (Middle)
Test result is pass due to no transmission occur.



802.11ax (HE160) / 6740MHz (Upper edge)
Threshold Level (TL) = -72.48dBm/MHz



802.11ax (HE160) / CH143 (Upper edge)
Test result is pass due to no transmission occur.

