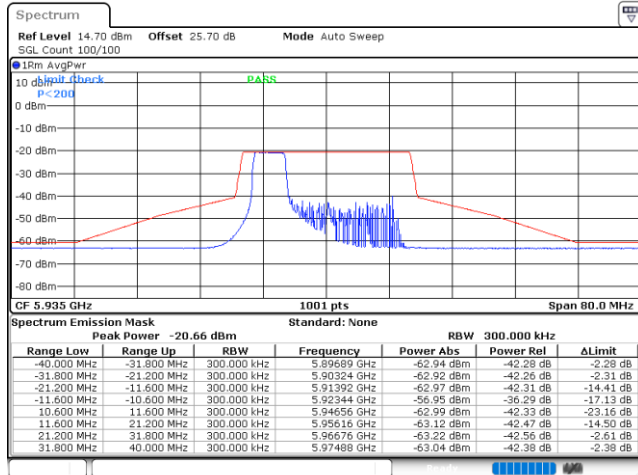




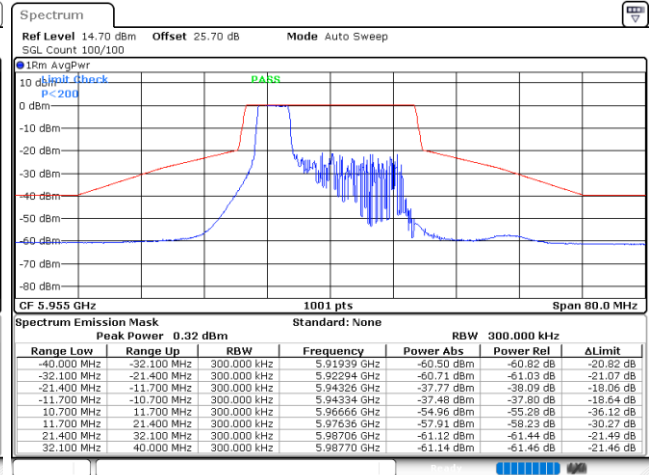
EUT Mode : 802.11ax HE20 52RU

Plot on Channel 5935MHz



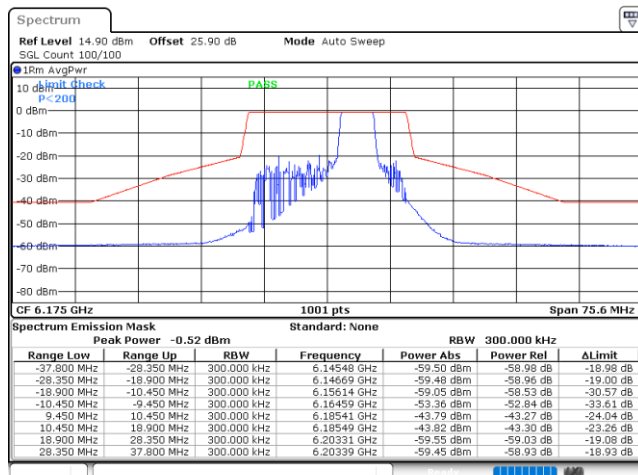
Date: 20.SEP.2022 00:53:54

Plot on Channel 5955MHz



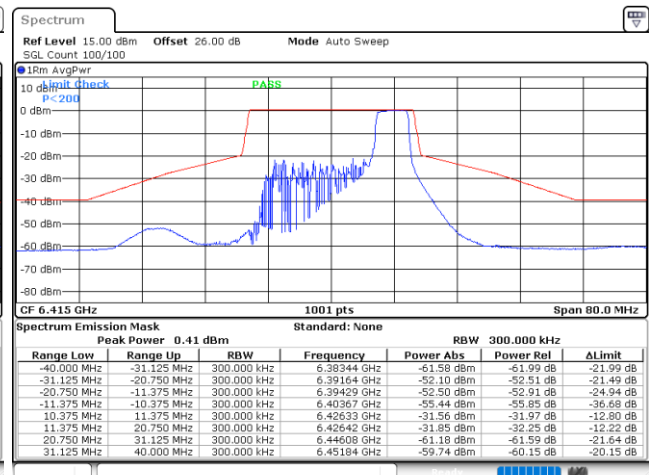
Date: 20.SEP.2022 19:50:58

Plot on Channel 6175MHz



Date: 20.SEP.2022 21:54:18

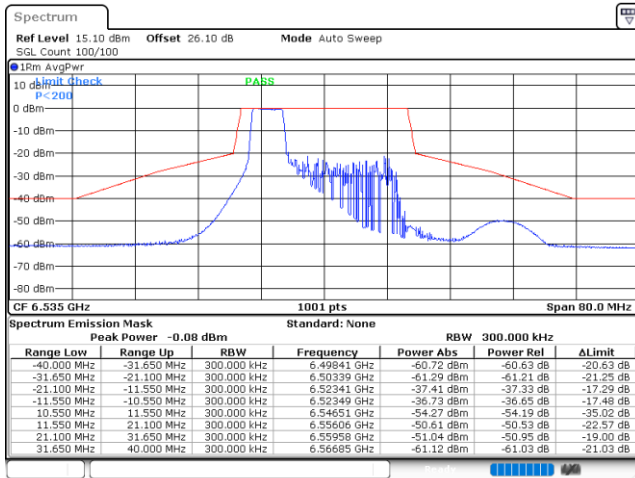
Plot on Channel 6415MHz



Date: 20.SEP.2022 23:24:17

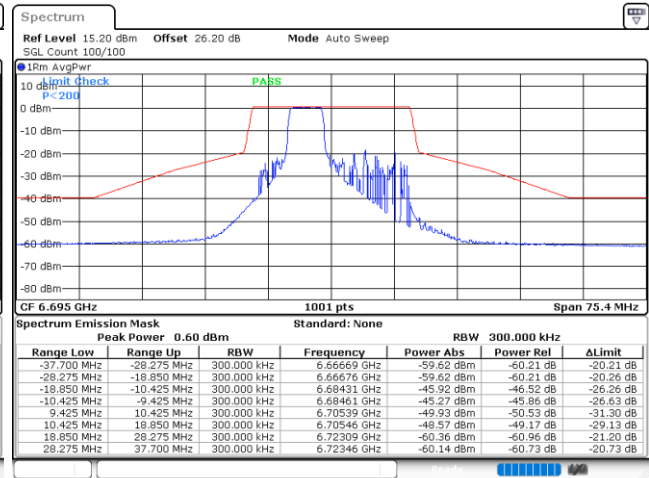


Plot on Channel 6535MHz



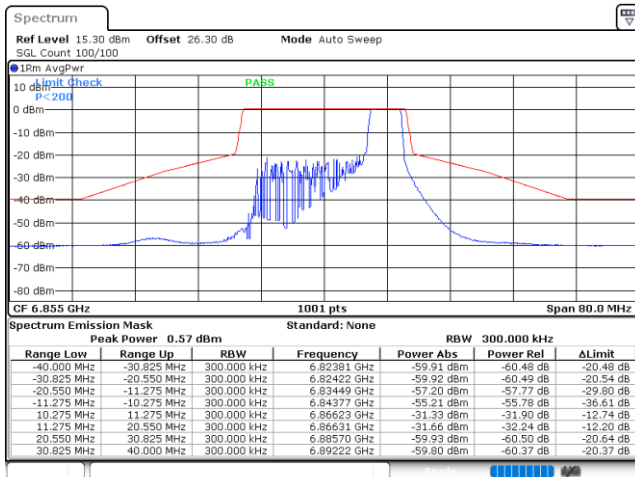
Date: 21.SEP.2022 00:06:55

Plot on Channel 6695MHz



Date: 21.SEP.2022 00:53:29

Plot on Channel 6855MHz

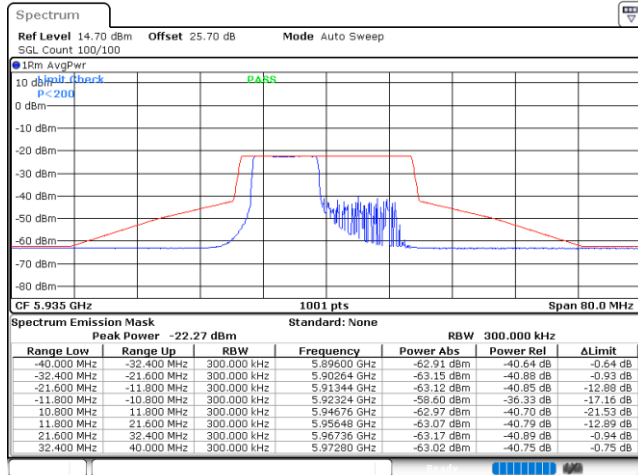


Date: 21.SEP.2022 19:23:42



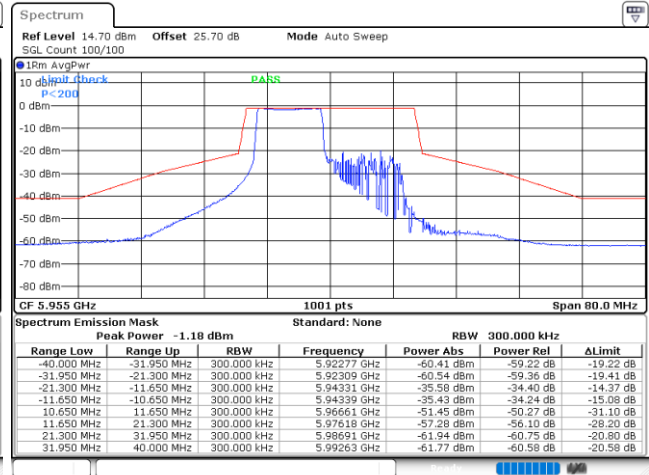
EUT Mode : 802.11ax HE20 106RU

Plot on Channel 5935MHz



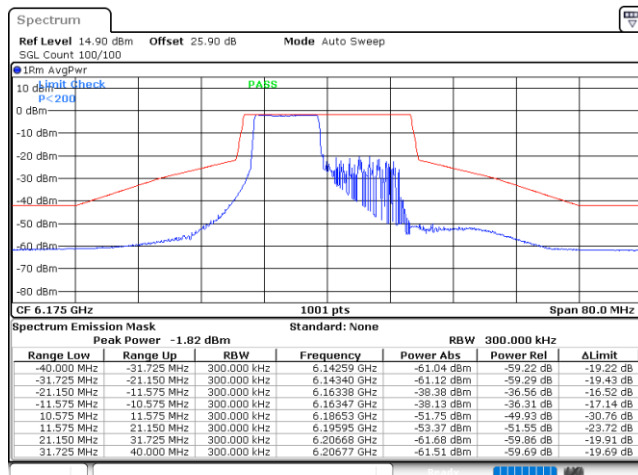
Date: 20.SEP.2022 01:07:40

Plot on Channel 5955MHz



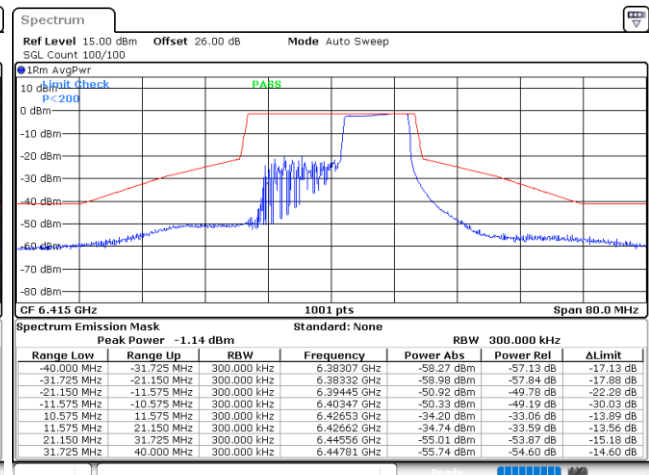
Date: 20.SEP.2022 20:27:44

Plot on Channel 6175MHz



Date: 20.SEP.2022 22:39:24

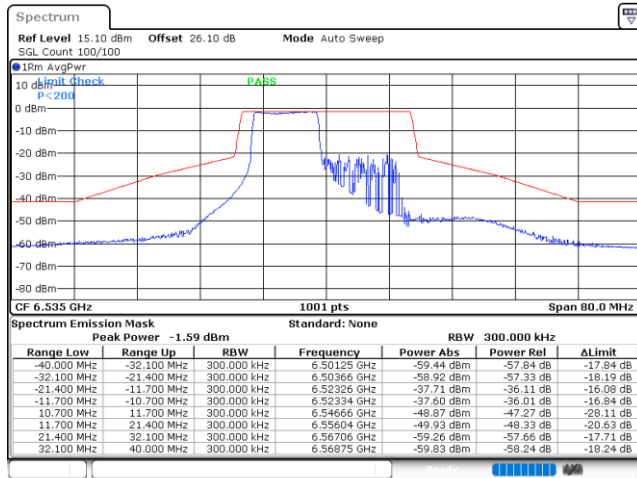
Plot on Channel 6415MHz



Date: 20.SEP.2022 23:32:42

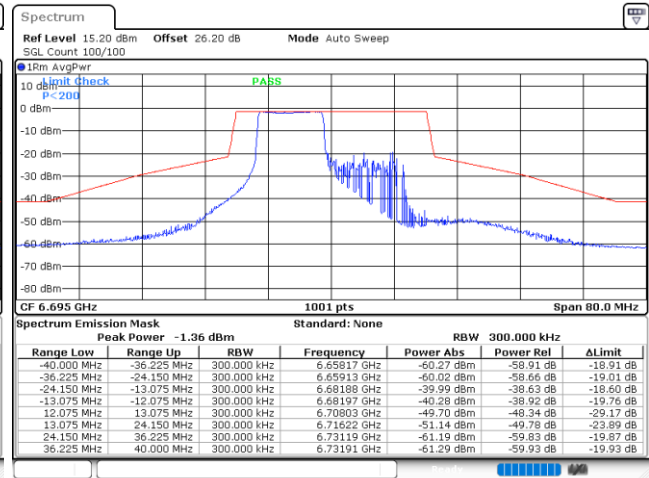


Plot on Channel 6535MHz



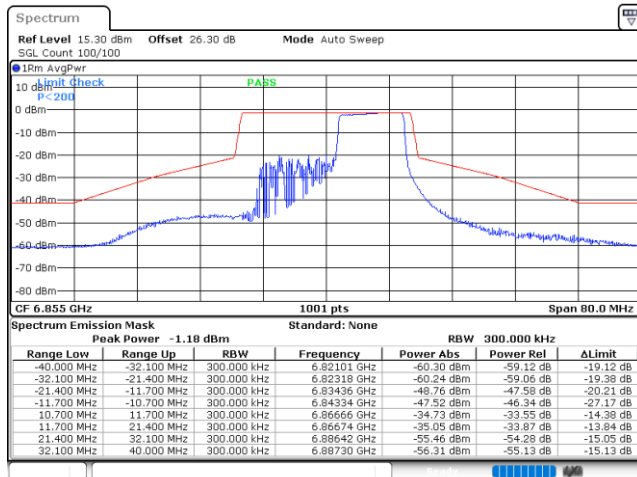
Date: 21.SEP.2022 00:16:29

Plot on Channel 6695MHz



Date: 21.SEP.2022 01:00:25

Plot on Channel 6855MHz

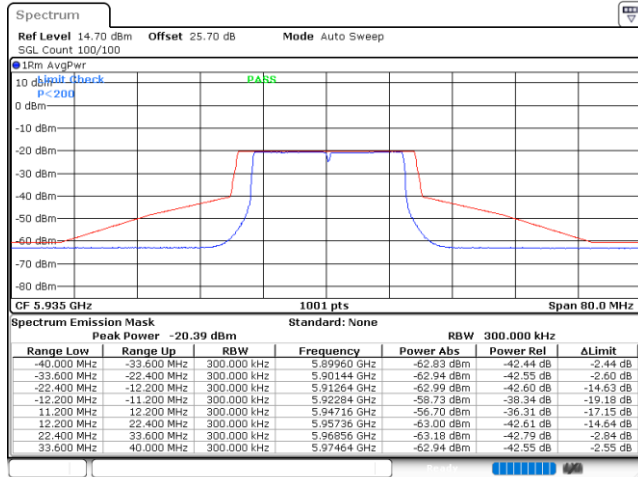


Date: 21.SEP.2022 19:47:25



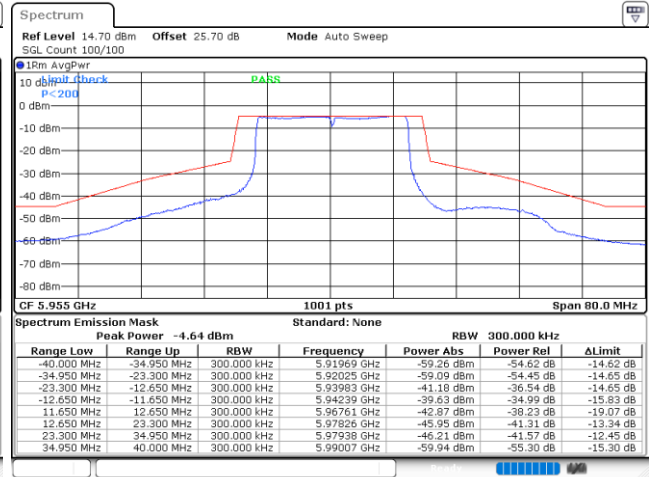
EUT Mode : 802.11ax HE20 242RU

Plot on Channel 5935MHz



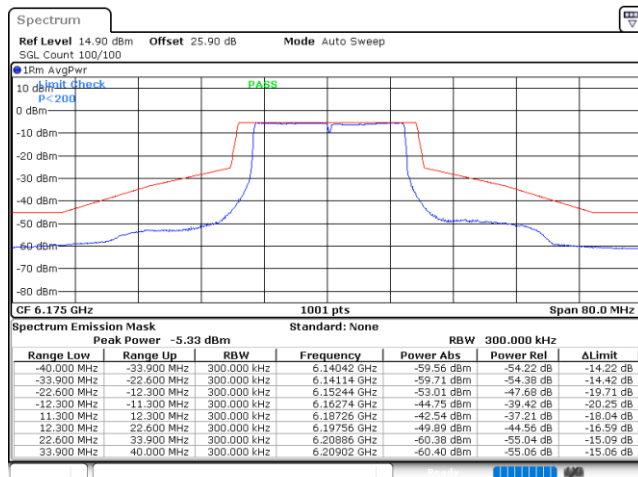
Date: 20.SEP.2022 01:17:10

Plot on Channel 5955MHz



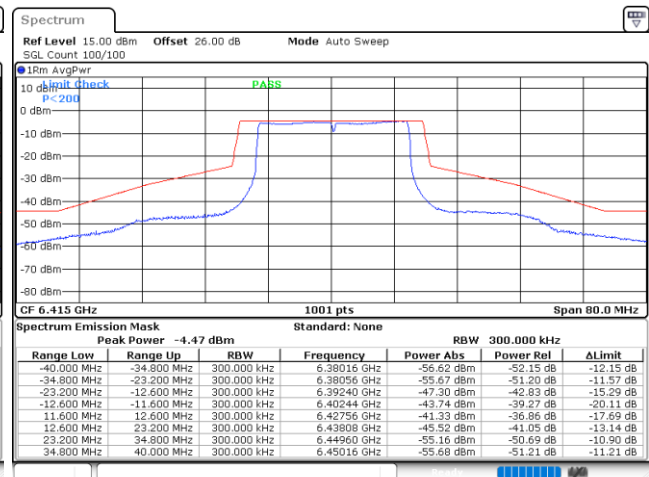
Date: 20.SEP.2022 21:05:19

Plot on Channel 6175MHz



Date: 20.SEP.2022 22:49:29

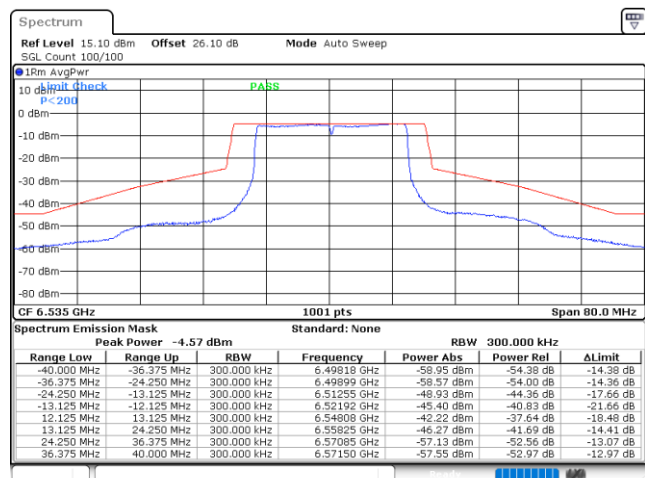
Plot on Channel 6415MHz



Date: 20.SEP.2022 23:41:31

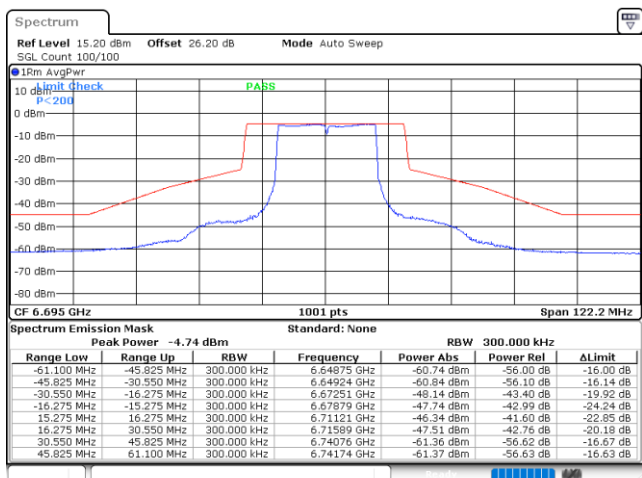


Plot on Channel 6535MHz



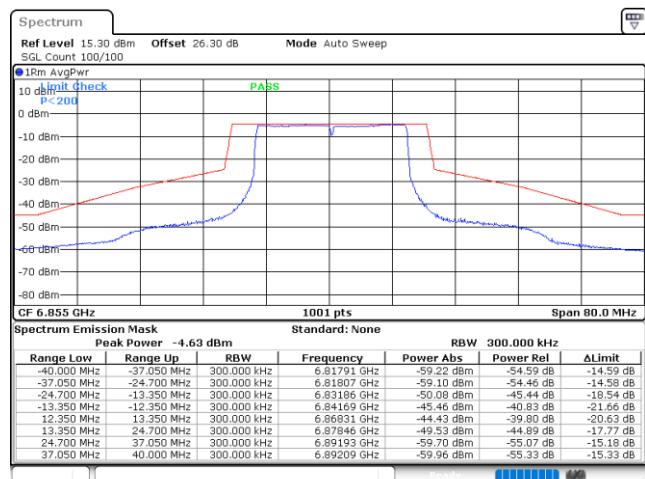
Date: 21.SEP.2022 00:26:58

Plot on Channel 6695MHz



Date: 21.SEP.2022 01:37:12

Plot on Channel 6855MHz

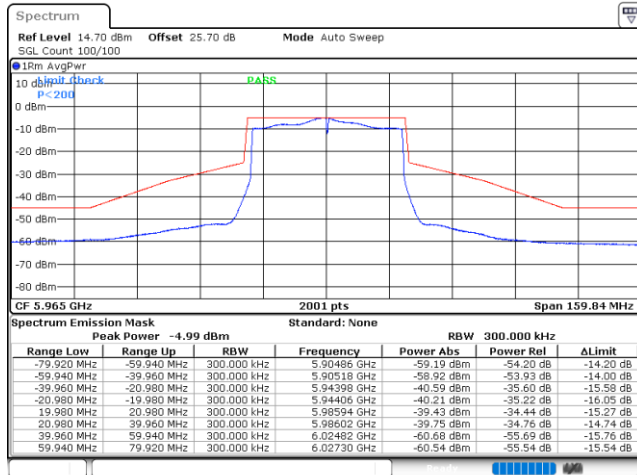


Date: 21.SEP.2022 20:08:48



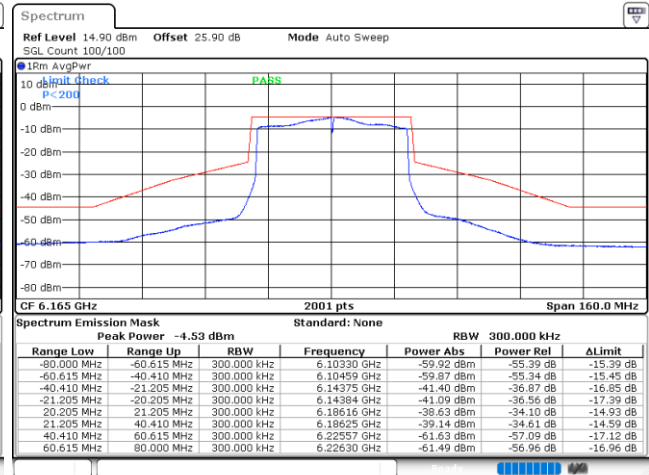
EUT Mode : 802.11ax HE40 Full RU

Plot on Channel 5965MHz



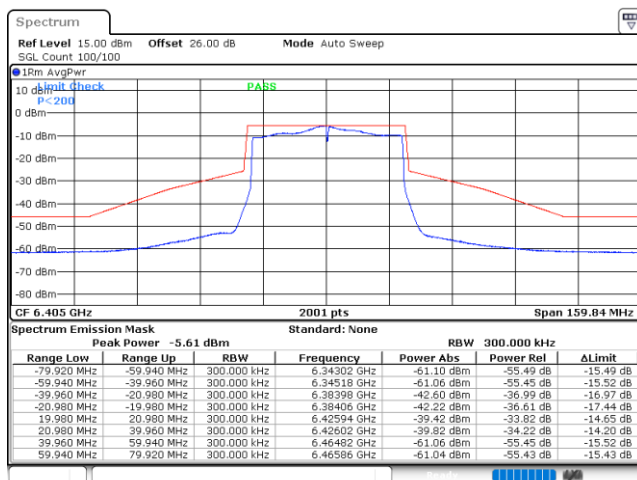
Date: 21.SEP.2022 23:19:28

Plot on Channel 6165MHz



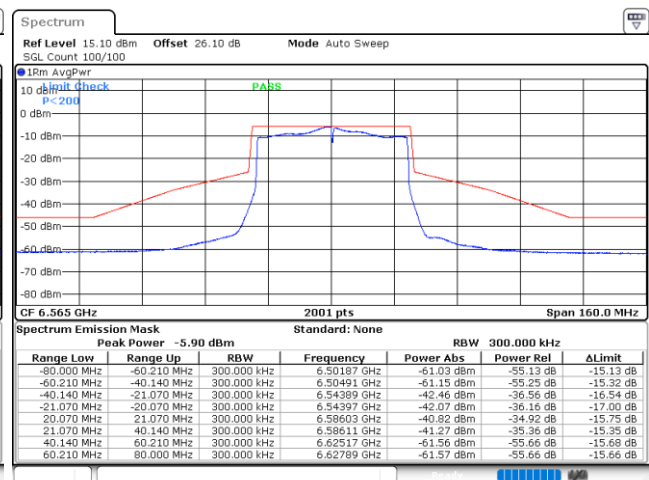
Date: 21.SEP.2022 23:23:42

Plot on Channel 6405MHz



Date: 21.SEP.2022 23:28:55

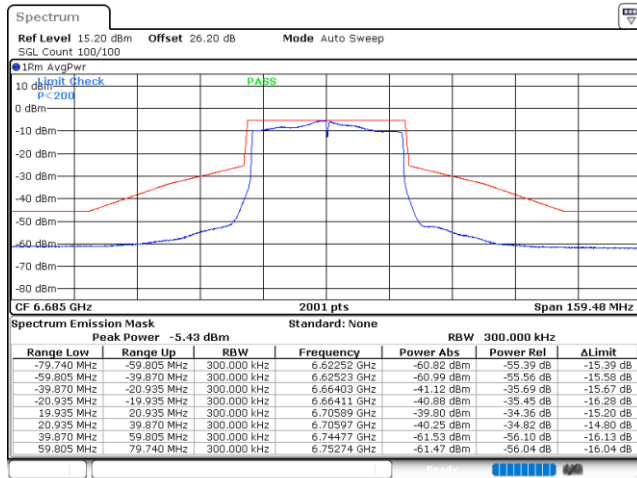
Plot on Channel 6565MHz



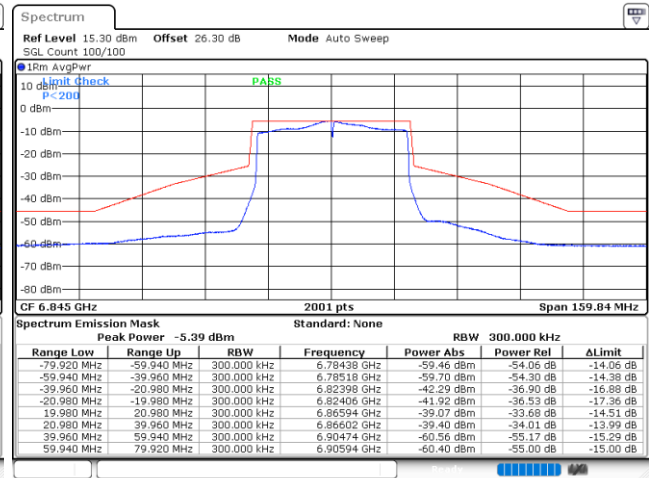
Date: 21.SEP.2022 23:46:41



Plot on Channel 6685MHz



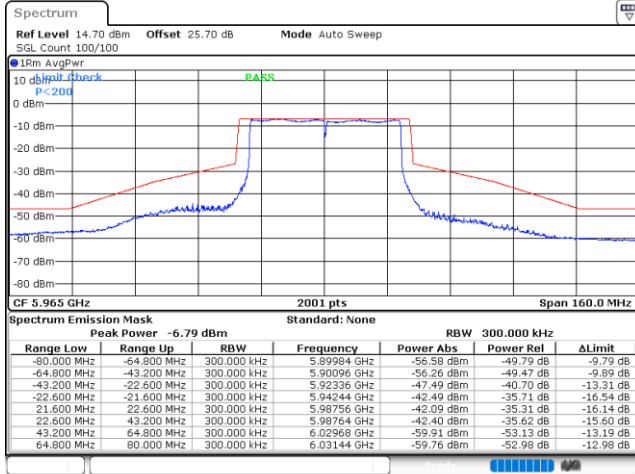
Plot on Channel 6845MHz





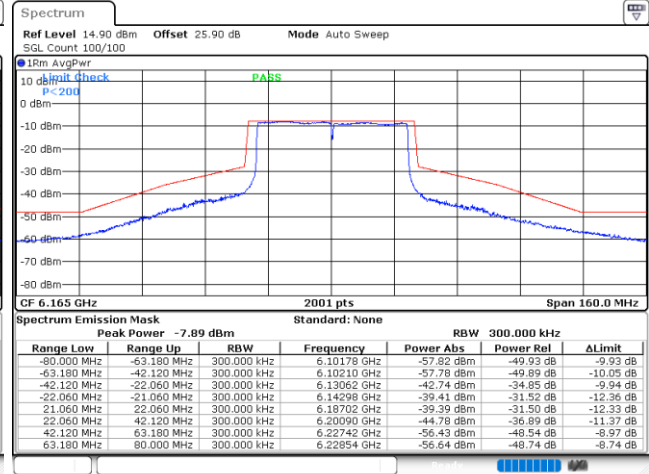
EUT Mode : 802.11ax HE40 484RU

Plot on Channel 5965MHz



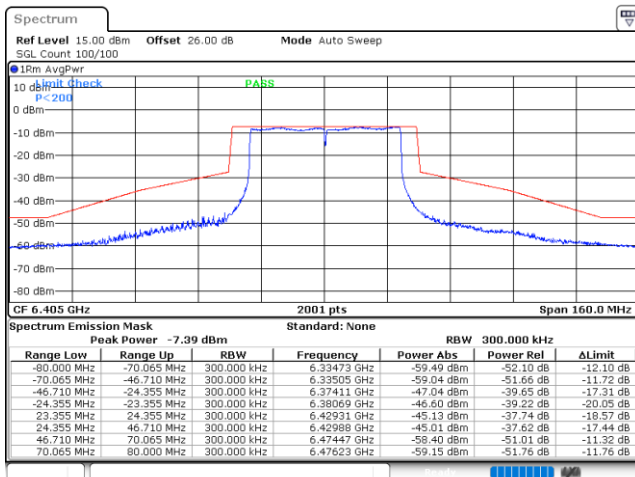
Date: 21.SEP.2022 21:53:58

Plot on Channel 6165MHz



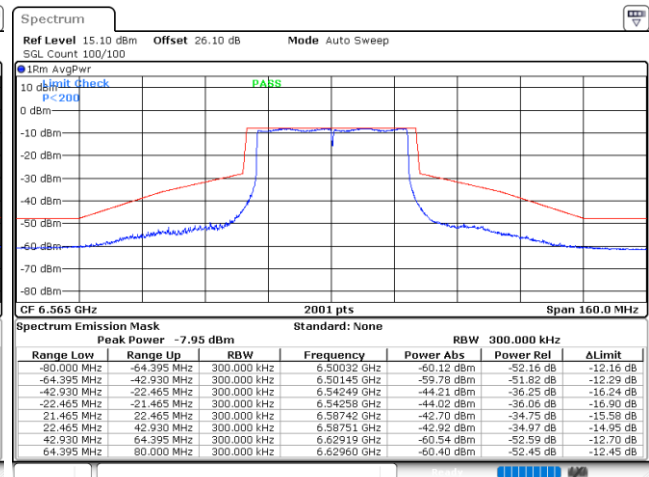
Date: 21.SEP.2022 22:36:10

Plot on Channel 6405MHz



Date: 21.SEP.2022 22:02:25

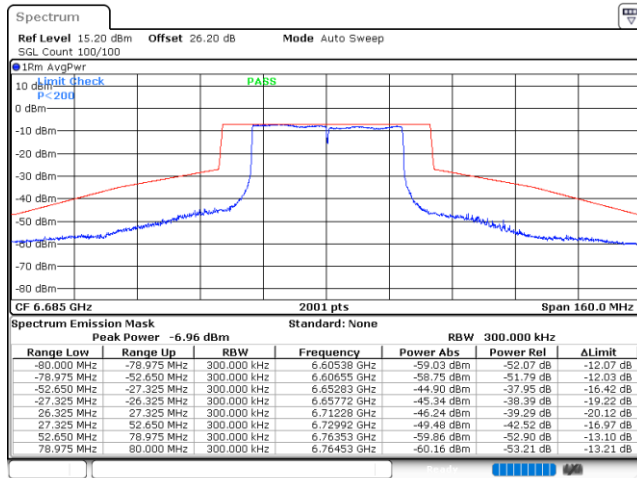
Plot on Channel 6565MHz



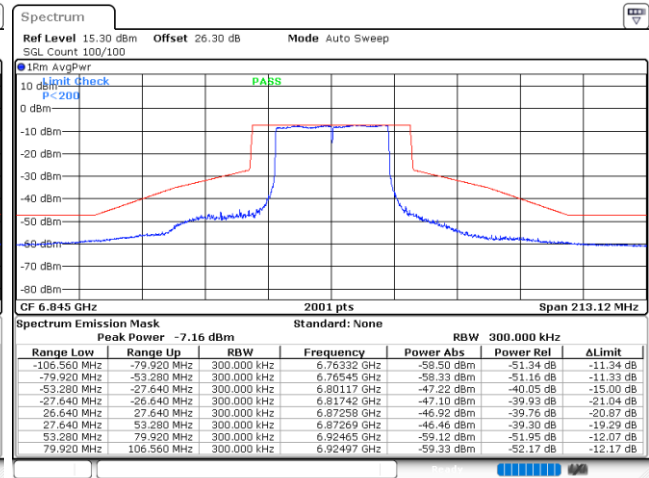
Date: 21.SEP.2022 21:36:19



Plot on Channel 6685MHz



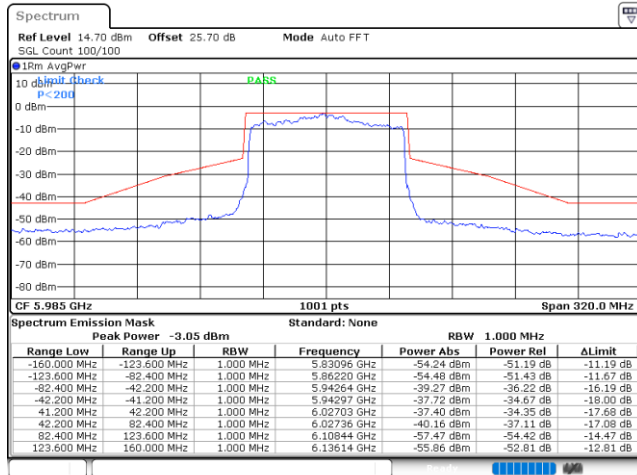
Plot on Channel 6845MHz





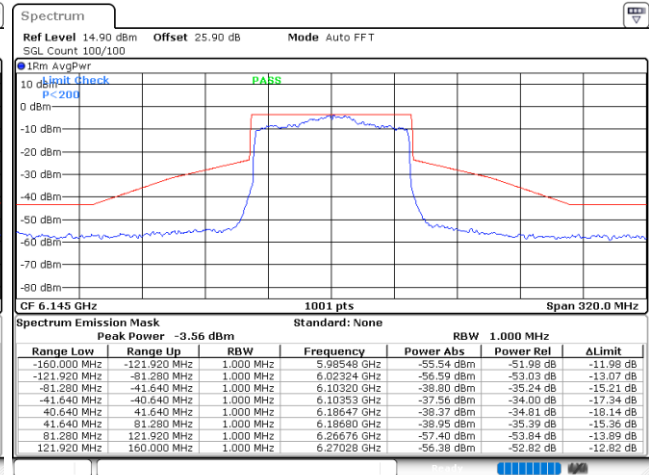
EUT Mode : 802.11ax HE80 Full RU

Plot on Channel 5985MHz



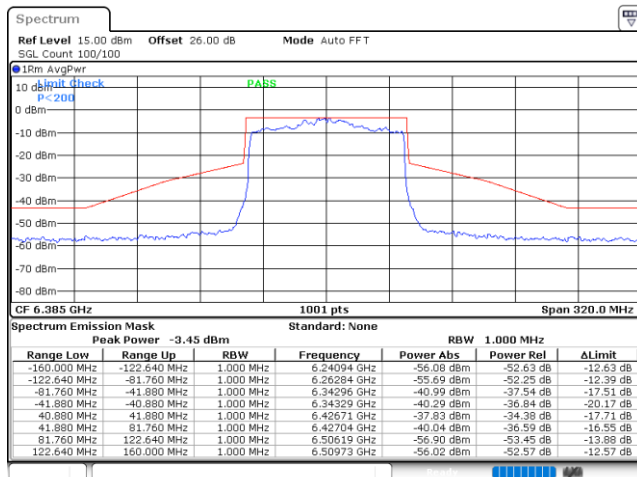
Date: 17.SEP.2022 23:30:47

Plot on Channel 6145MHz



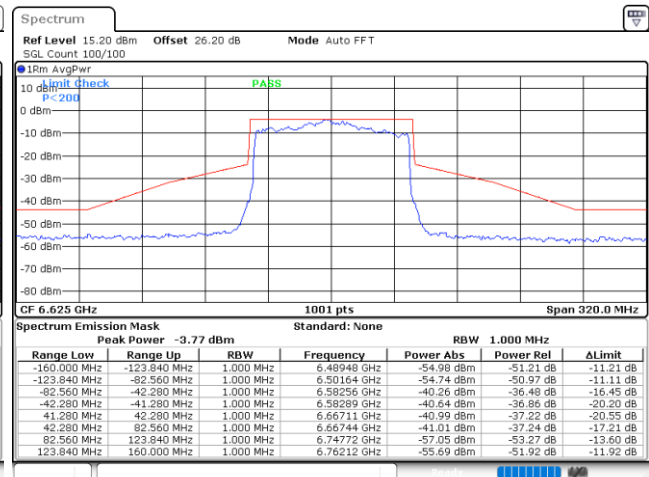
Date: 17.SEP.2022 23:39:25

Plot on Channel 6385MHz



Date: 17.SEP.2022 23:44:59

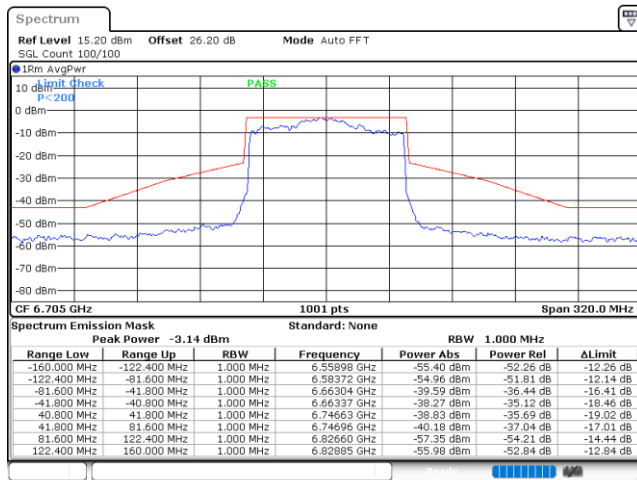
Plot on Channel 6625MHz



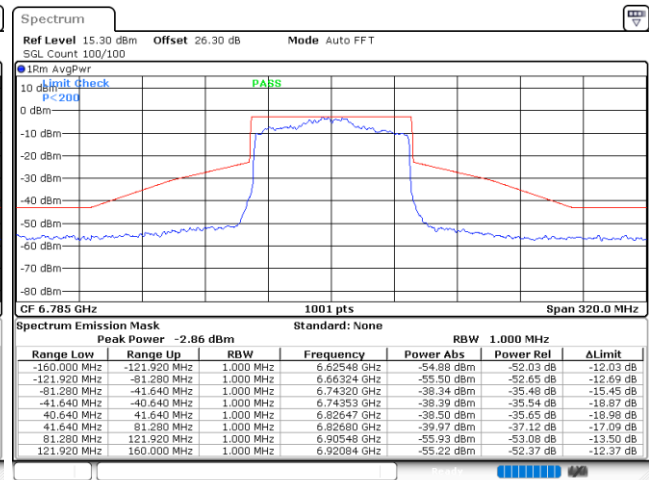
Date: 19.SEP.2022 19:04:47



Plot on Channel 6705MHz



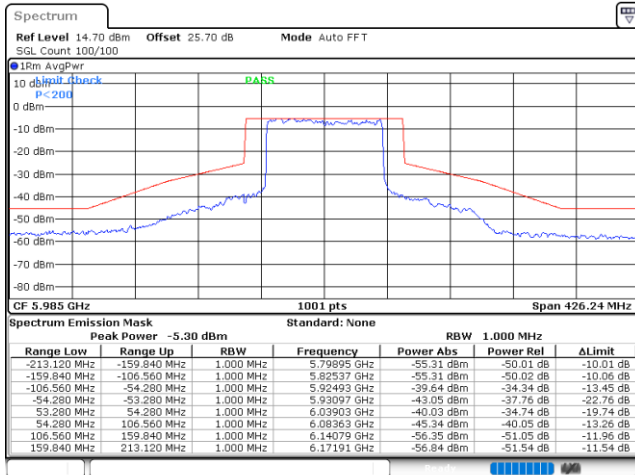
Plot on Channel 6785MHz





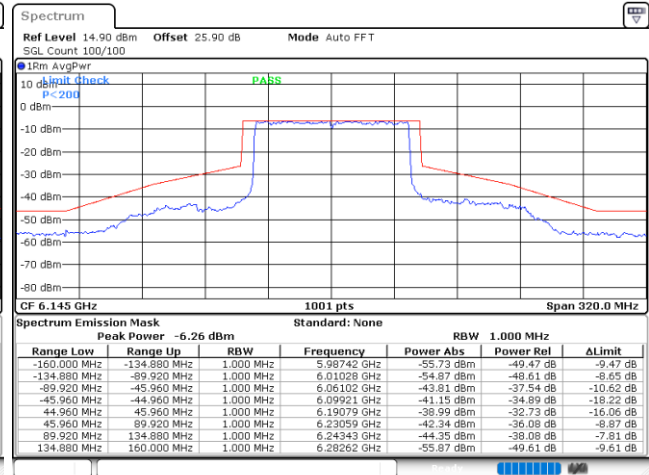
EUT Mode : 802.11ax HE80 996RU

Plot on Channel 5985MHz



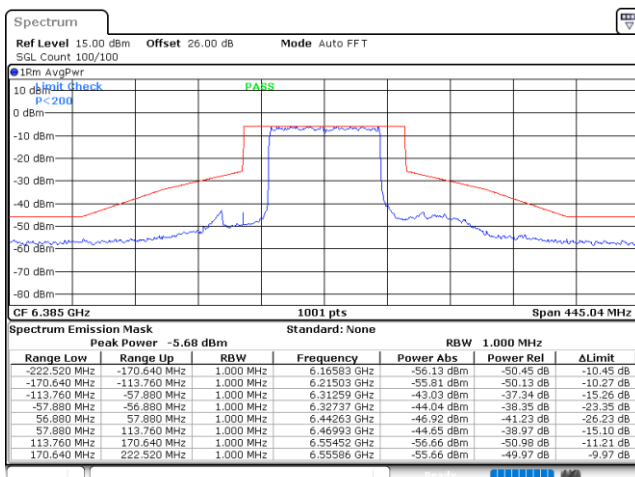
Date: 22.SEP.2022 00:23:06

Plot on Channel 6145MHz



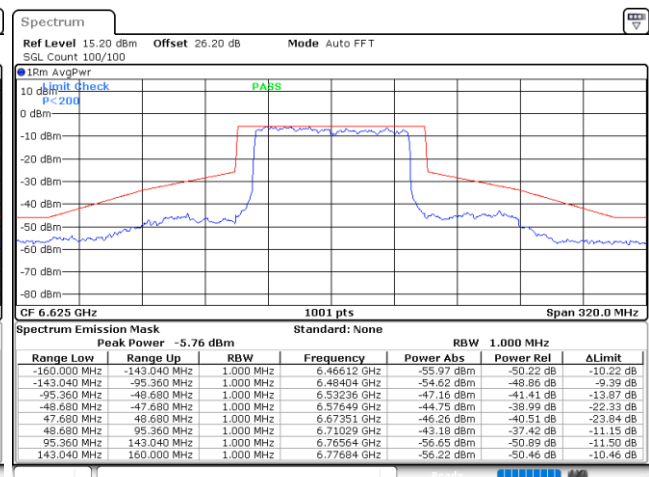
Date: 22.SEP.2022 00:46:16

Plot on Channel 6385MHz



Date: 22.SEP.2022 01:00:25

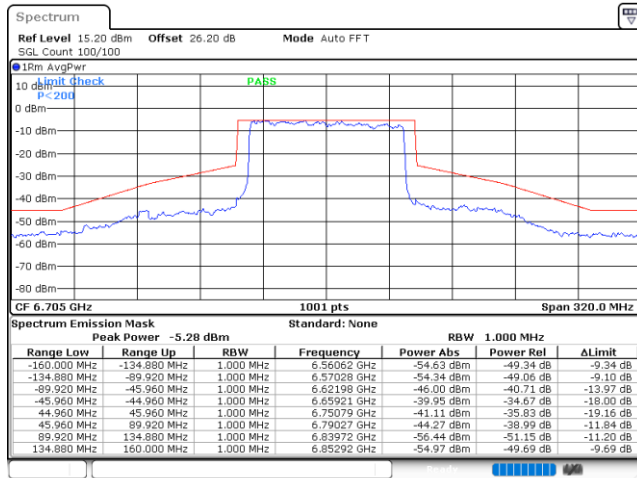
Plot on Channel 6625MHz



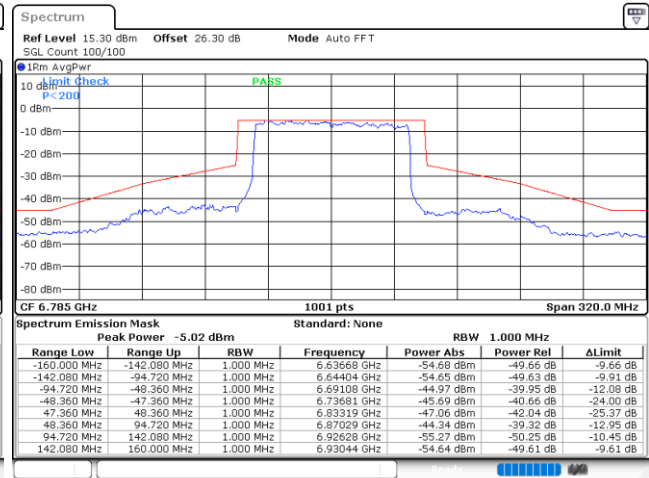
Date: 22.SEP.2022 19:31:33



Plot on Channel 6705MHz



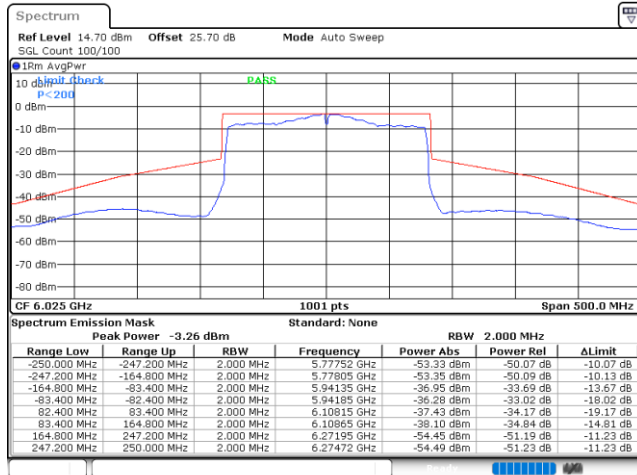
Plot on Channel 6785MHz





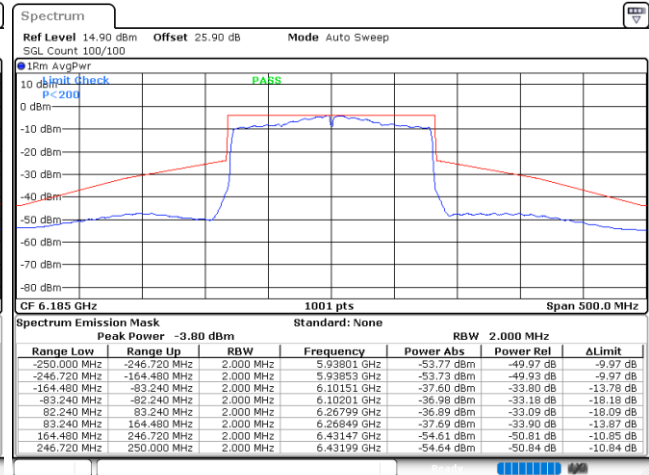
EUT Mode : 802.11ax HE160 Full RU

Plot on Channel 6025MHz



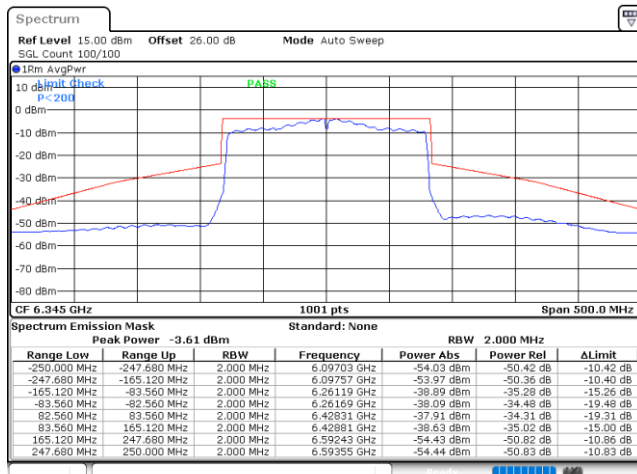
Date: 19.SEP.2022 20:03:16

Plot on Channel 6185MHz



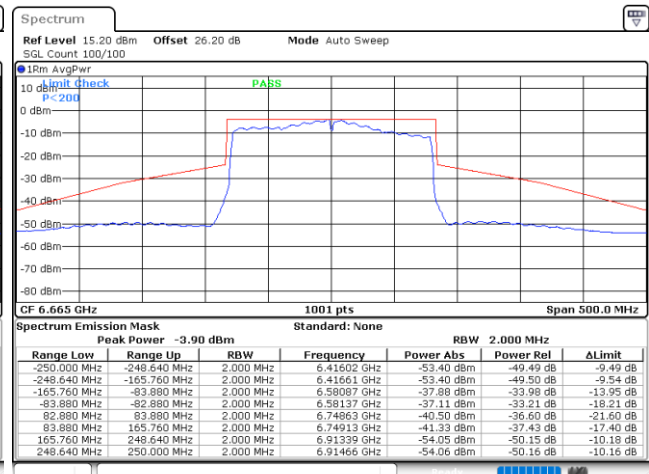
Date: 19.SEP.2022 21:32:43

Plot on Channel 6345MHz



Date: 19.SEP.2022 20:42:52

Plot on Channel 6665MHz

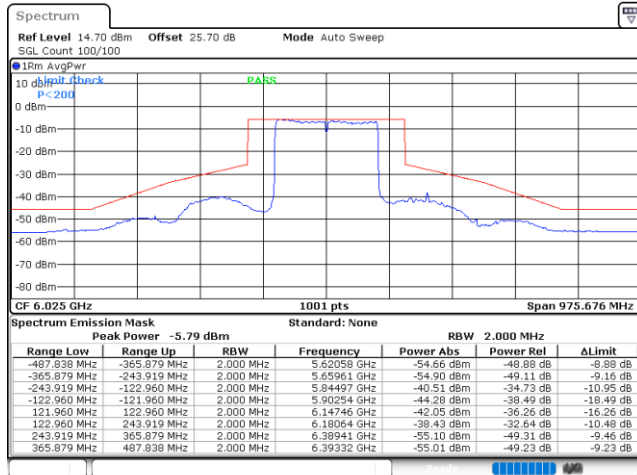


Date: 19.SEP.2022 20:58:49



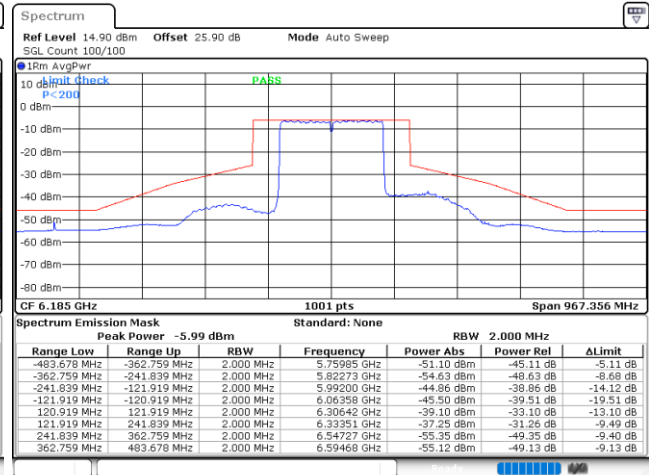
EUT Mode : 802.11ax HE160 1992RU

Plot on Channel 6025MHz



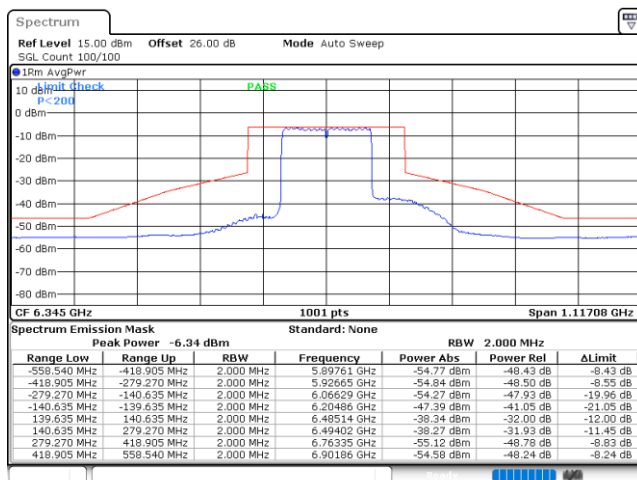
Date: 22.SEP.2022 20:42:52

Plot on Channel 6185MHz



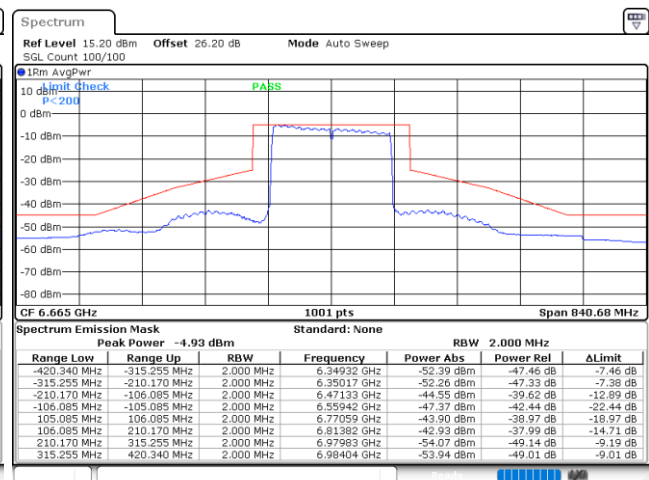
Date: 22.SEP.2022 20:57:26

Plot on Channel 6345MHz



Date: 22.SEP.2022 21:17:37

Plot on Channel 6665MHz



Date: 22.SEP.2022 22:04:57

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

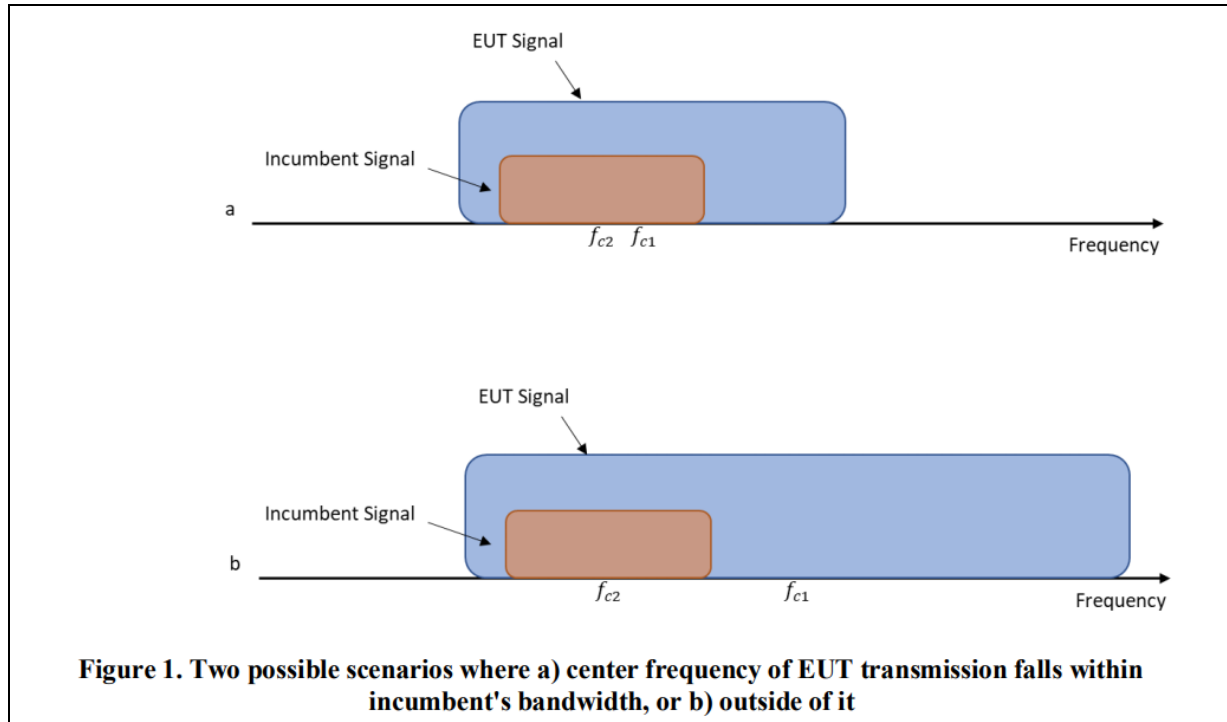
where:

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

Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

The testing follows FCC KDB 987594 D02 U-NII 6GHz EMC Measurement v01.

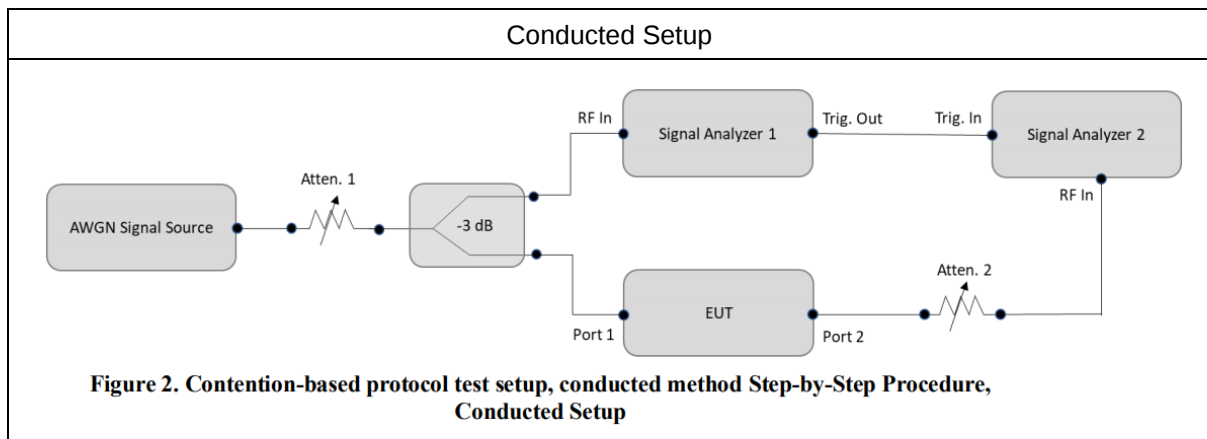
Section I) Contention Based Protocol

Conducted method Step-by-Step Procedure, Conducted Setup

1. Configure the EUT to transmit with a constant duty cycle.
2. Set the operating parameters of the EUT including power level, operating frequency, modulation and bandwidth.
3. 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.
4. Connect the output port of the EUT to the signal analyzer 2, as shown in test setup Figure 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
5. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.
6. 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.
7. 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 as shown in test setup Figure 2.
8. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.

9. 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.
10. (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.
11. 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 5, choose a different center frequency for the AWGN signal and repeat the process.
12. For the contention-based protocol test where only one channel in each supported sub-band needs to be tested. The narrowest and widest bandwidth in each channel shall be measured EUT was driven in MIMO mode, the interferer level was injected to both chains to monitor the performance, while the interferer level is determined according the lowest antenna gain among both antennas (i.e, lower interferer level).

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

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 5	6135	20	6135	-70.57	100	-62	-75.32	13.32
					Result: Stop Transmission			
				-74.57	< 90	-62	-79.32	17.32
					Result: Minimal Operation			
				-75.57	0	-62	-80.32	18.32
					Result: Normal Operation			
	6185	160	6110	-69.83	100	-62	-74.58	12.58
					Result: Stop Transmission			
				-72.83	< 90	-62	-77.58	15.58
					Result: Minimal Operation			
				-73.83	0	-62	-78.58	16.58
					Result: Normal Operation			
			6185	-70.67	100	-62	-75.42	13.42
					Result: Stop Transmission			
				-71.67	< 90	-62	-76.42	14.42
					Result: Minimal Operation			
				-72.67	0	-62	-77.42	15.42
					Result: Normal Operation			
			6260	-76.22	100	-62	-80.97	18.97
					Result: Stop Transmission			
				-78.22	< 90	-62	-82.97	20.97
					Result: Minimal Operation			
				-79.22	0	-62	-83.97	21.97
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (4.75 dBi).

Note 2: Path Loss is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power.



Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 6	6455	20	6455	-70.21	100	-62	-74.50	12.50
					Result: Stop Transmission			
				-72.21	< 90	-62	-76.50	14.50
					Result: Minimal Operation			
				-73.21	0	-62	-77.50	15.50
					Result: Normal Operation			
	6505	160	6430	-67.79	100	-62	-72.08	10.08
					Result: Stop Transmission			
				-72.79	< 90	-62	-77.08	15.08
					Result: Minimal Operation			
				-73.79	0	-62	-78.08	16.08
					Result: Normal Operation			
			6505	-69.89	100	-62	-74.18	12.18
					Result: Stop Transmission			
				-70.89	< 90	-62	-75.18	13.18
					Result: Minimal Operation			
				-71.89	0	-62	-76.18	14.18
					Result: Normal Operation			
			6580	-74.61	100	-62	-78.90	16.90
					Result: Stop Transmission			
				-78.61	< 90	-62	-82.90	20.90
					Result: Minimal Operation			
				-79.61	0	-62	-83.90	21.90
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (4.29 dBi).

Note 2: Path Loss is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power.



Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 7	6695	20	6695	-71.52	100	-62	-76.33	14.33
					Result: Stop Transmission			
				-73.52	< 90	-62	-78.33	16.33
					Result: Minimal Operation			
				-74.52	0	-62	-79.33	17.33
					Result: Normal Operation			
	6665	160	6590	-74.22	100	-62	-79.03	17.03
					Result: Stop Transmission			
				-76.22	< 90	-62	-81.03	19.03
					Result: Minimal Operation			
				-77.22	0	-62	-82.03	20.03
					Result: Normal Operation			
			6665	-70.27	100	-62	-75.08	13.08
					Result: Stop Transmission			
				-71.27	< 90	-62	-76.08	14.08
					Result: Minimal Operation			
				-72.27	0	-62	-77.08	15.08
					Result: Normal Operation			
			6740	-73.31	100	-62	-78.12	16.12
					Result: Stop Transmission			
				-77.31	< 90	-62	-82.12	20.12
					Result: Minimal Operation			
				-78.31	0	-62	-83.12	21.12
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (4.81 dBi).

Note 2: Path Loss is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power.



Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 8	7015	20	7015	-72.44	100	-62	-77.18	15.18
					Result: Stop Transmission			
				-74.44	< 90	-62	-79.18	17.18
					Result: Minimal Operation			
				-75.44	0	-62	-80.18	18.18
					Result: Normal Operation			
	6985	160	6910	-75.23	100	-62	-79.97	17.97
					Result: Stop Transmission			
				-78.23	< 90	-62	-82.97	20.97
					Result: Minimal Operation			
				-79.23	0	-62	-83.97	21.97
					Result: Normal Operation			
			6985	-70.40	100	-62	-75.14	13.14
					Result: Stop Transmission			
				-71.40	< 90	-62	-76.14	14.14
					Result: Minimal Operation			
				-72.40	0	-62	-77.14	15.14
					Result: Normal Operation			
			7060	-73.33	100	-62	-78.07	16.07
					Result: Stop Transmission			
				-75.33	< 90	-62	-80.07	18.07
					Result: Minimal Operation			
				-76.33	0	-62	-81.07	19.07
					Result: Normal Operation			

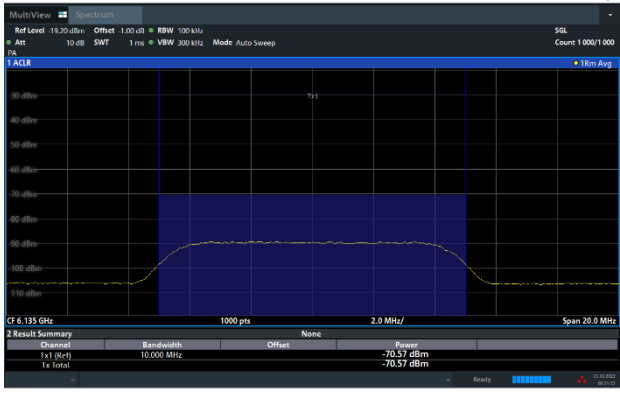
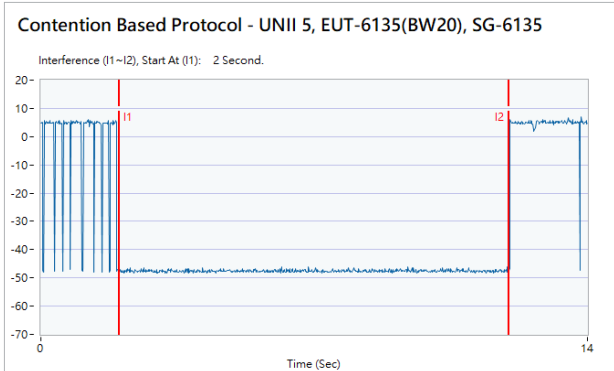
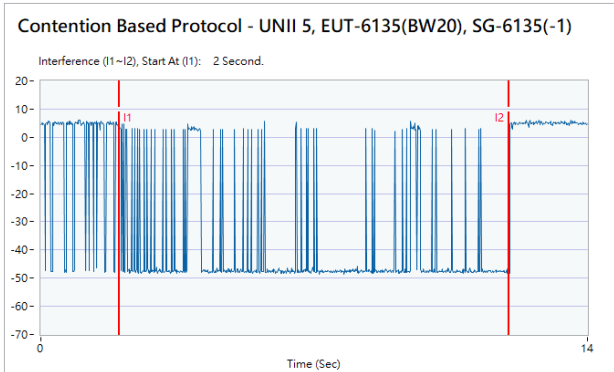
Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (4.74 dBi).

Note 2: Path Loss is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power.



3.5.7 Test Plots of Contention Based Protocol Test

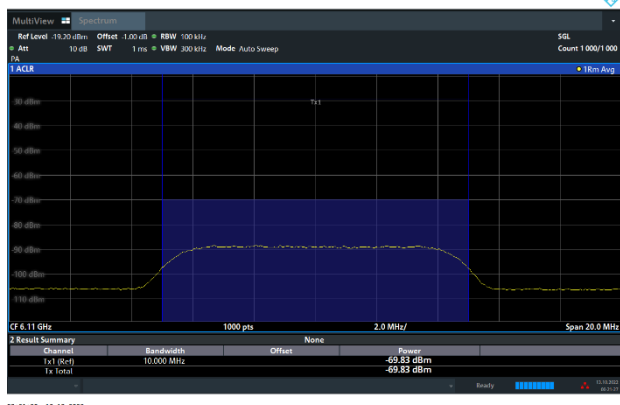
Contention Based Protocol Result Plots on U-NII 5 (AWGN Interference)	
802.11ax (HE20) / 6135MHz Threshold Level (TL) = -70.57dBm	802.11ax (HE20) / CH37 Test result is pass due to no transmission occur.
	
802.11ax (HE20) / 6135MHz Threshold Level (TL) = -71.57dBm	802.11ax (HE20) / CH37 Transmit when the interferer is 1dB lower.
	



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

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

Threshold Level (TL) = -69.83dBm

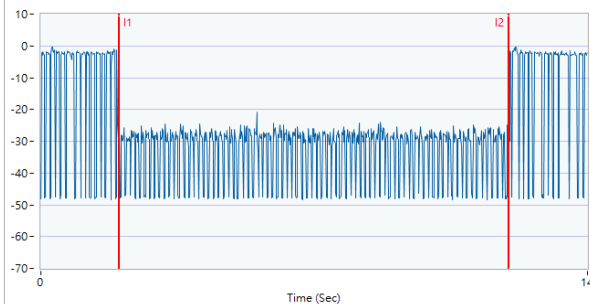


802.11ax (HE160) / CH47 (Lower edge)

Test result is pass due to no transmission occur.

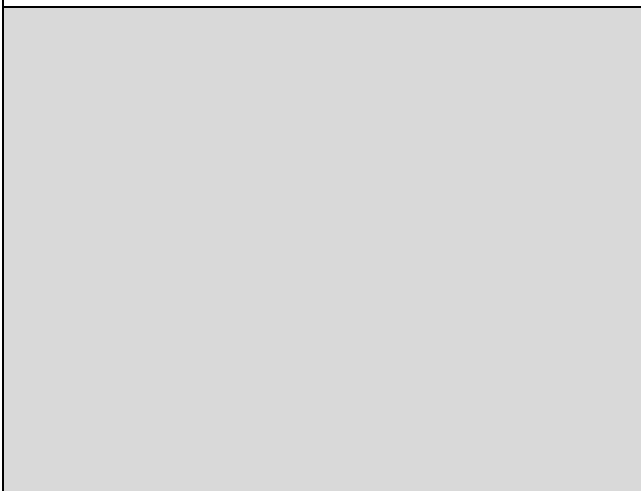
Contention Based Protocol - UNII 5, EUT-6185(BW160), SG-6110

Interference (I1~I2), Start At (I1): 2 Second.



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

Threshold Level (TL) = -70.83dBm

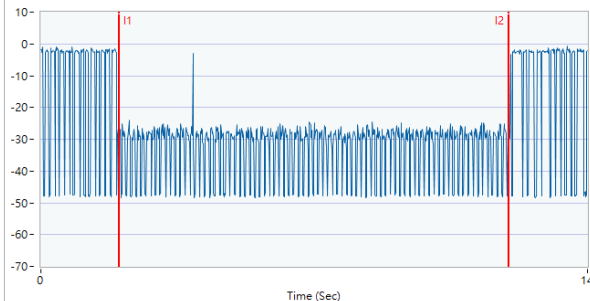


802.11ax (HE160) / CH47 (Lower edge)

Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 5, EUT-6185(BW160), SG-6110(-1)

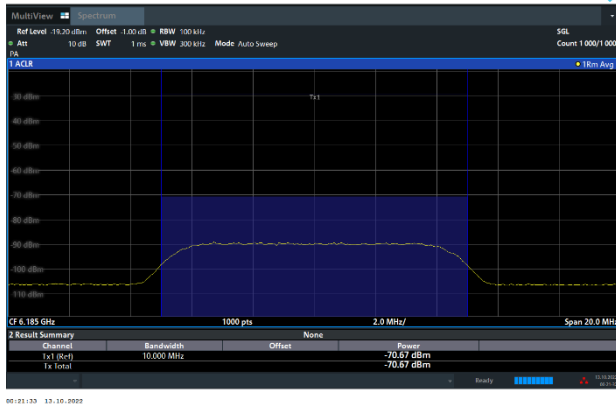
Interference (I1~I2), Start At (I1): 2 Second.





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

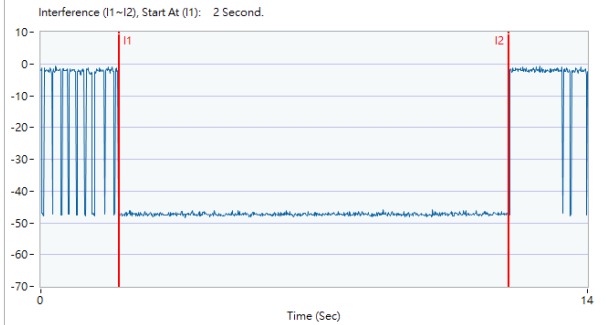
802.11ax (HE160) / 6185MHz (Middle)
Threshold Level (TL) = -70.67dBm



802.11ax (HE160) / CH47 (Middle)

Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 5, EUT-6185(BW160), SG-6185

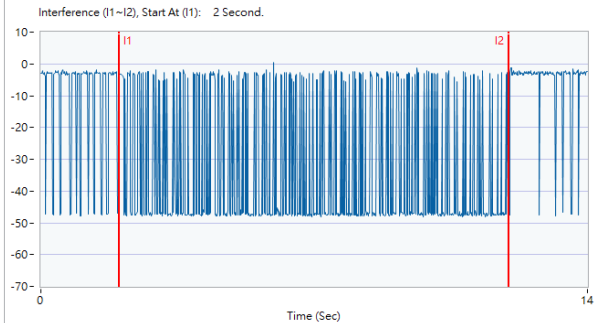


802.11ax (HE160) / 6185MHz (Middle)
Threshold Level (TL) = -71.67dBm

802.11ax (HE160) / CH47 (Middle)

Transmit when the interferer is 1dB lower.

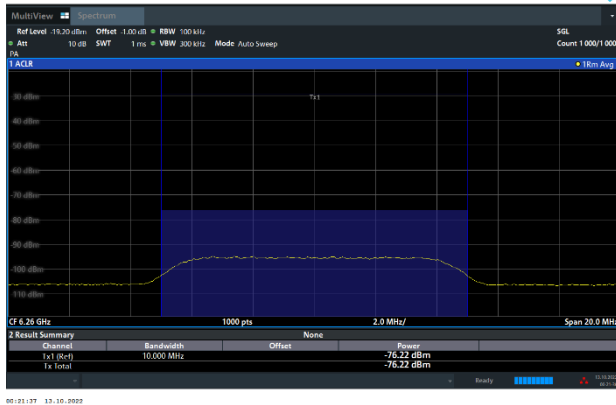
Contention Based Protocol - UNII 5, EUT-6185(BW160), SG-6185(-1)



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

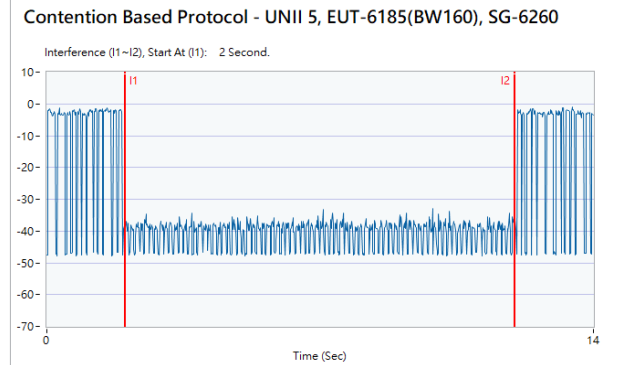
802.11ax (HE160) / 6260MHz (Upper edge)

Threshold Level (TL) = -76.22dBm



802.11ax (HE160) / CH47 (Upper edge)

Test result is pass due to no transmission occur.

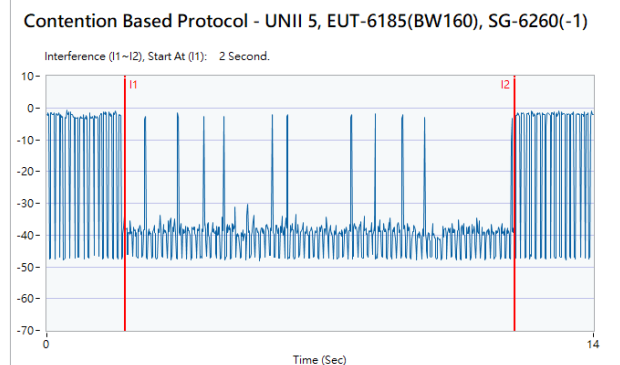


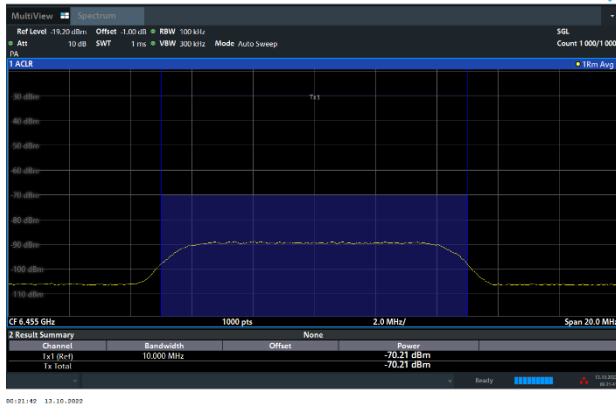
802.11ax (HE160) / 6260MHz (Upper edge)

Threshold Level (TL) = -77.22dBm

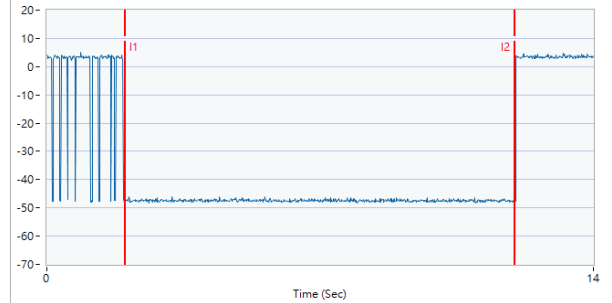
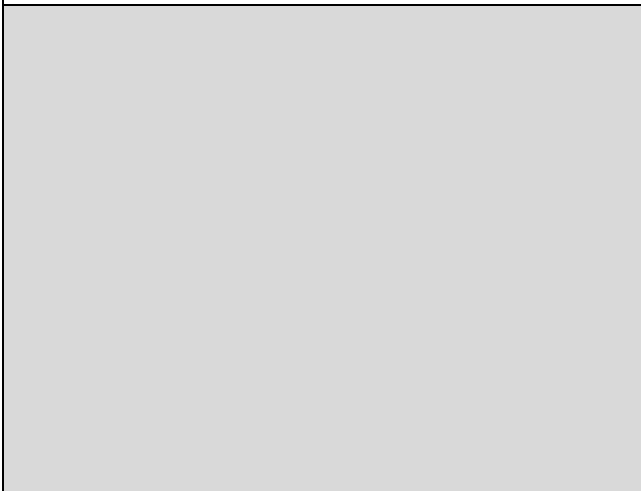
802.11ax (HE160) / CH47 (Upper edge)

Transmit when the interferer is 1dB lower.

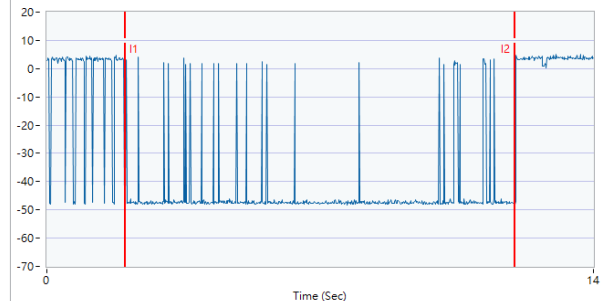


Contention Based Protocol Result Plots on U-NII 6 (AWGN Interference)
802.11ax (HE20) / 6455MHz
Threshold Level (TL) = -70.21dBm

802.11ax (HE20) / CH101
Test result is pass due to no transmission occur.
Contention Based Protocol - UNII 6, EUT-6455(BW20), SG-6455

Interference (I1~I2), Start At (I1): 2 Second.


802.11ax (HE20) / 6455MHz
Threshold Level (TL) = -71.21dBm

802.11ax (HE20) / CH101
Transmit when the interferer is 1dB lower.
Contention Based Protocol - UNII 6, EUT-6455(BW20), SG-6455(-1)

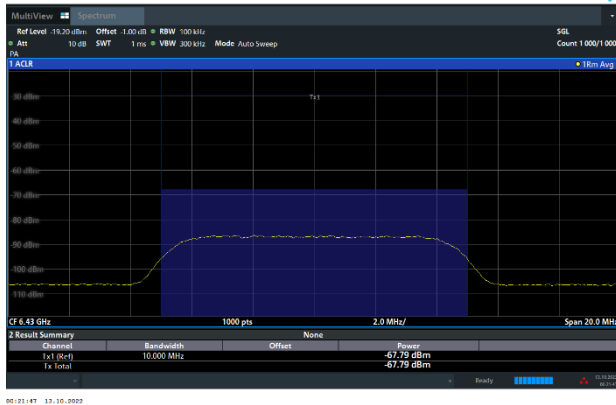
Interference (I1~I2), Start At (I1): 2 Second.





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

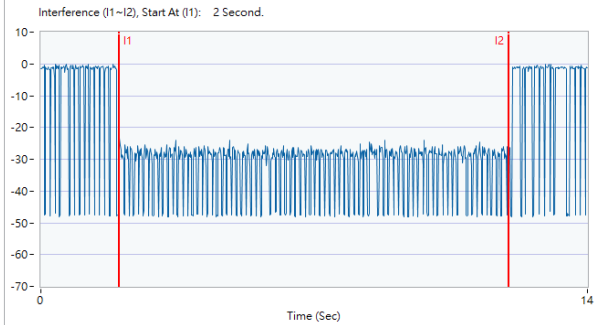
802.11ax (HE160) / 6430MHz (Lower edge)
Threshold Level (TL) = -67.79dBm



802.11ax (HE160) / CH111 (Lower edge)

Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 6, EUT-6505(BW160), SG-6430

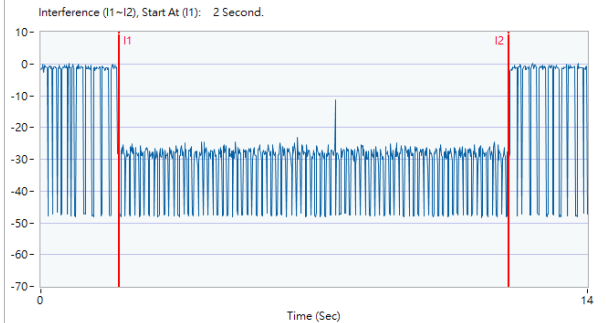


802.11ax (HE160) / 6430MHz (Lower edge)
Threshold Level (TL) = -68.79dBm

802.11ax (HE160) / CH111 (Lower edge)

Transmit when the interferer is 1dB lower.

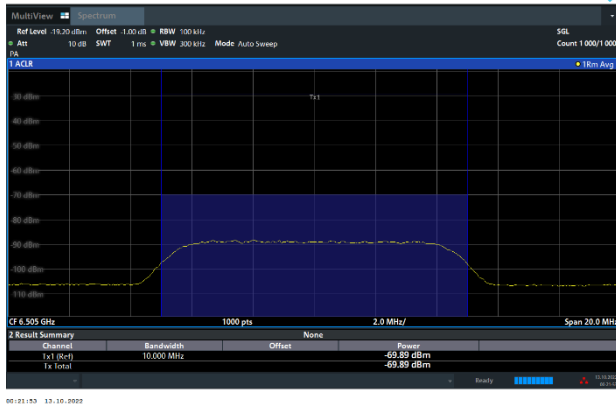
Contention Based Protocol - UNII 6, EUT-6505(BW160), SG-6430(-1)





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

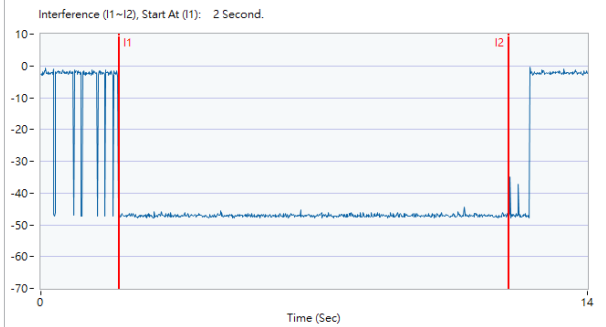
802.11ax (HE160) / 6505MHz (Middle)
Threshold Level (TL) = -69.89dBm



802.11ax (HE160) / CH111 (Middle)

Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 6, EUT-6505(BW160), SG-6505

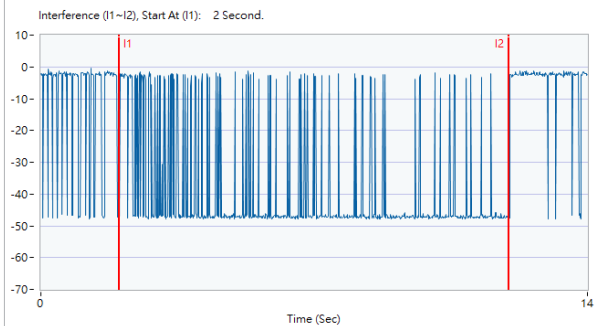


802.11ax (HE160) / 6505MHz (Middle)
Threshold Level (TL) = -70.89dBm

802.11ax (HE160) / CH111 (Middle)

Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 6, EUT-6505(BW160), SG-6505(-1)

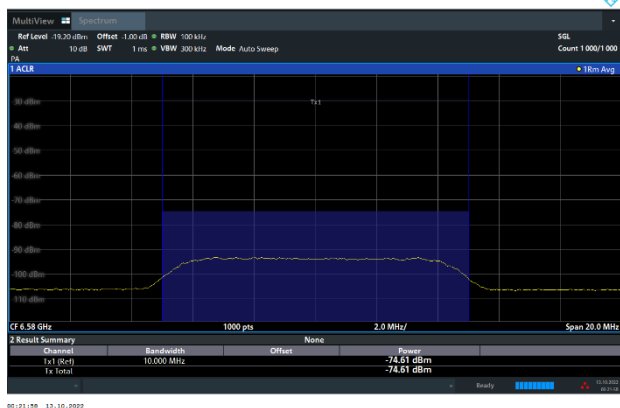




Contention Based Protocol Result Plots on U-NII 6 (AWGN Interference)

802.11ax (HE160) / 6580MHz (Upper edge)

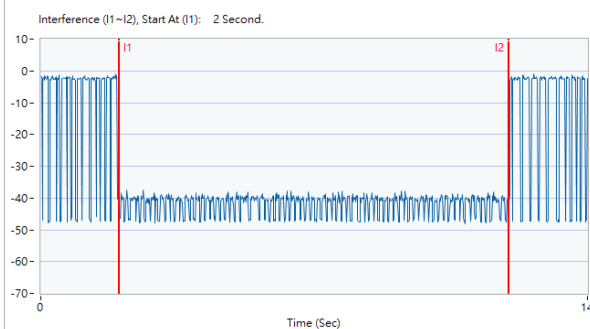
Threshold Level (TL) = -74.61dBm



802.11ax (HE160) / CH111 (Upper edge)

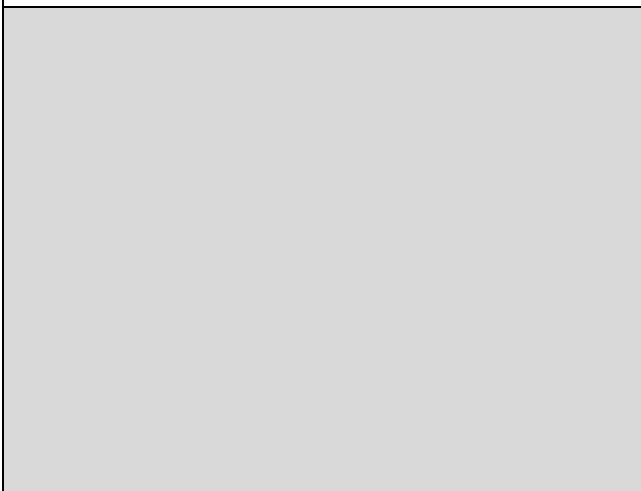
Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 6, EUT-6505(BW160), SG-6580



802.11ax (HE160) / 6580MHz (Upper edge)

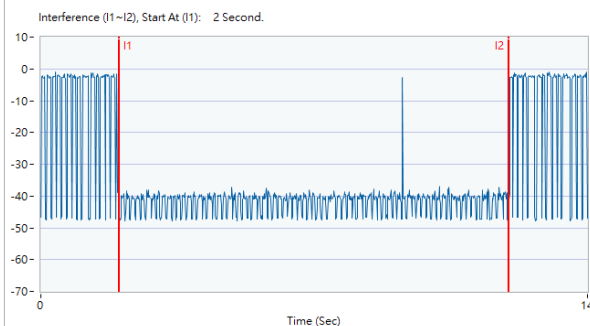
Threshold Level (TL) = -75.61dBm



802.11ax (HE160) / CH111 (Upper edge)

Transmit when the interferer is 1dB lower.

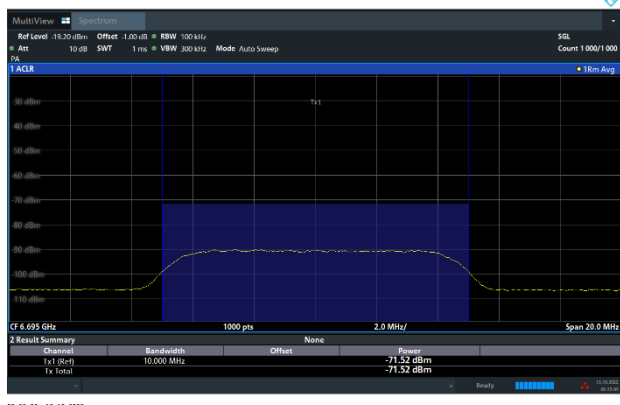
Contention Based Protocol - UNII 6, EUT-6505(BW160), SG-6580(-1)





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

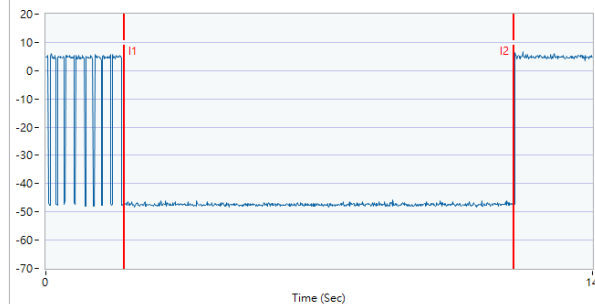
802.11ax (HE20) / 6695MHz
Threshold Level (TL) = -71.52dBm



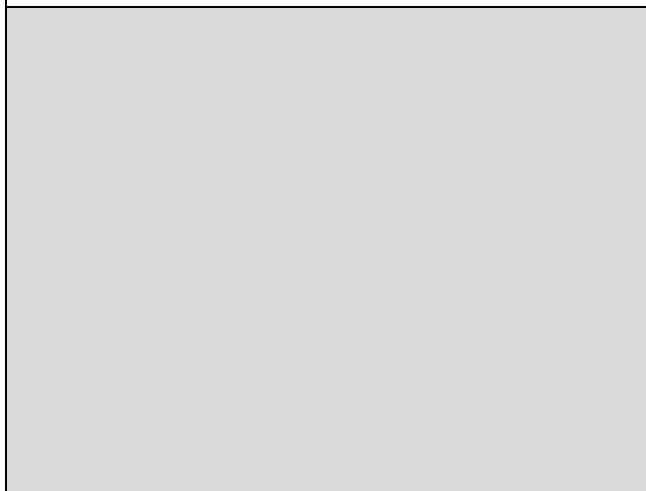
802.11ax (HE20) / CH149
Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 7, EUT-6695(BW20), SG-6695

Interference (I1~I2), Start At (I1): 2 Second.



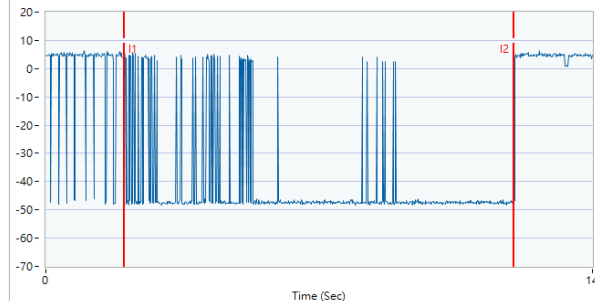
802.11ax (HE20) / 6695MHz
Threshold Level (TL) = -72.52dBm



802.11ax (HE20) / CH149
Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 7, EUT-6695(BW20), SG-6695(-1)

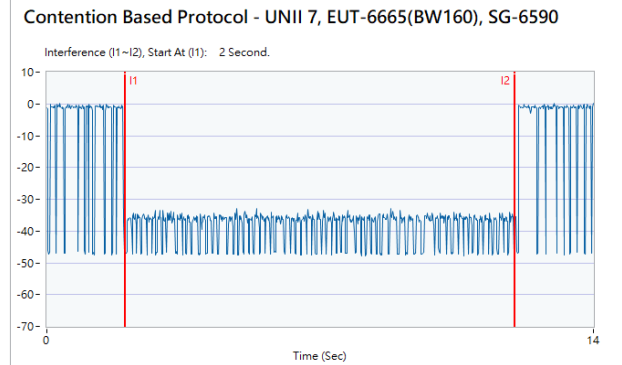
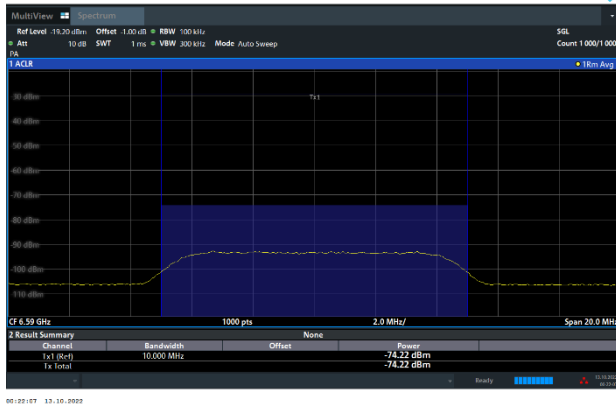
Interference (I1~I2), Start At (I1): 2 Second.



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

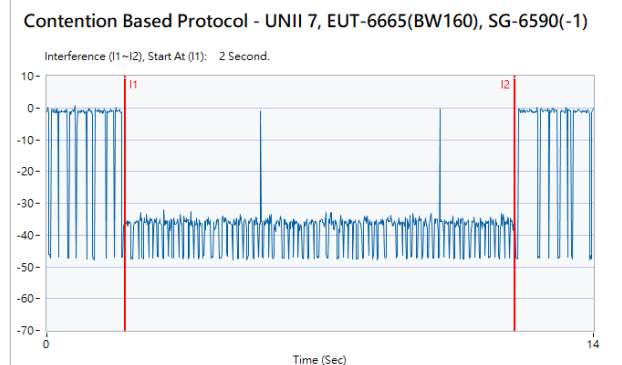
802.11ax (HE160) / 6590MHz (Lower edge)
Threshold Level (TL) = -74.22dBm

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



802.11ax (HE160) / 6590MHz (Lower edge)
Threshold Level (TL) = -75.22dBm

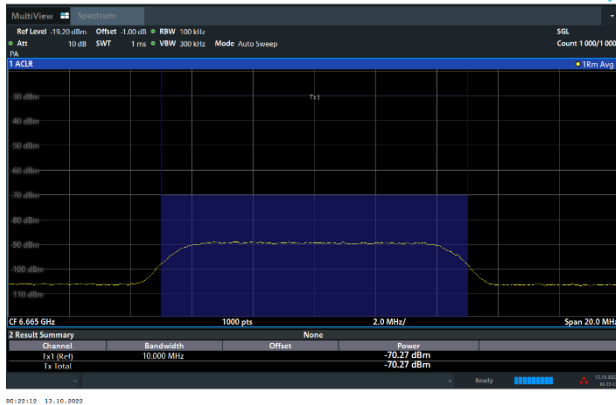
802.11ax (HE160) / CH143 (Lower edge)
Transmit when the interferer is 1dB lower.





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

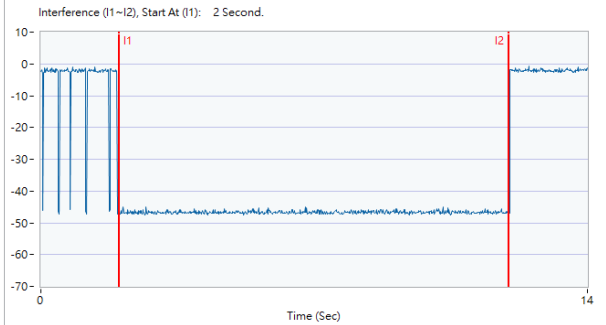
802.11ax (HE160) / 6665MHz (Middle)
Threshold Level (TL) = -70.27dBm



802.11ax (HE160) / CH143 (Middle)

Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 7, EUT-6665(BW160), SG-6665

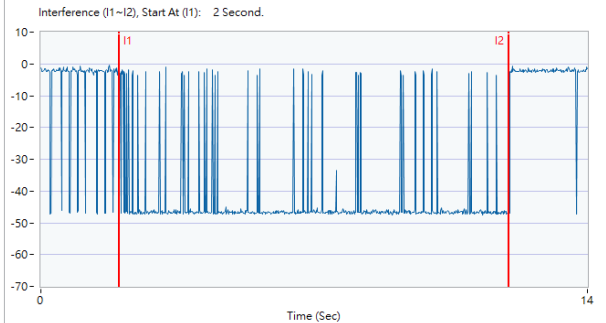


802.11ax (HE160) / 6665MHz (Middle)
Threshold Level (TL) = -71.27dBm

802.11ax (HE160) / CH143 (Middle)

Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 7, EUT-6665(BW160), SG-6665(-1)

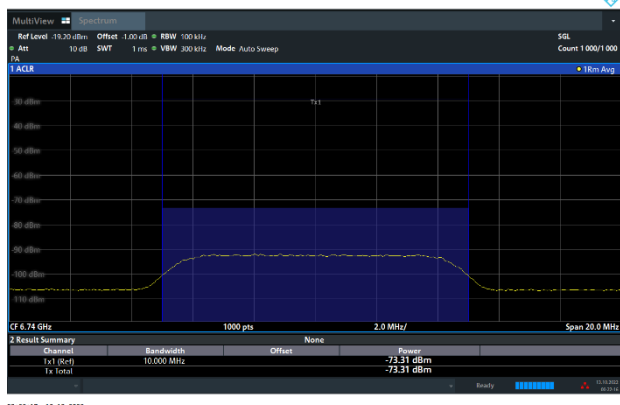




Contention Based Protocol Result Plots on U-NII 7 (AWGN Interference)

802.11ax (HE160) / 6740MHz (Upper edge)

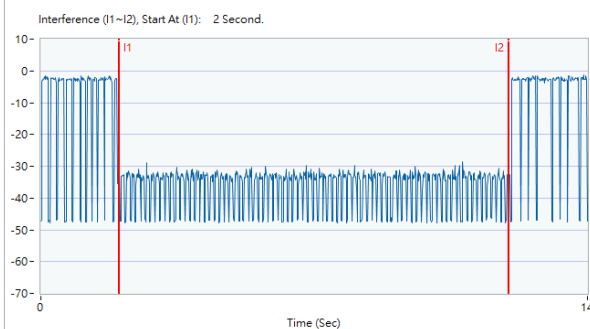
Threshold Level (TL) = -73.31dBm



802.11ax (HE160) / CH143 (Upper edge)

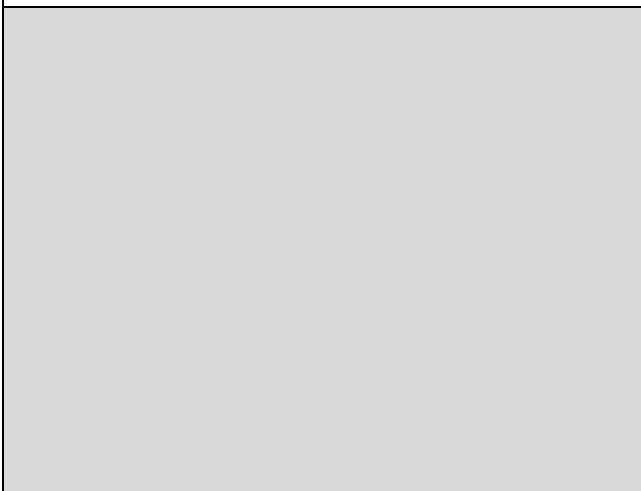
Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 7, EUT-6665(BW160), SG-6740



802.11ax (HE160) / 6740MHz (Upper edge)

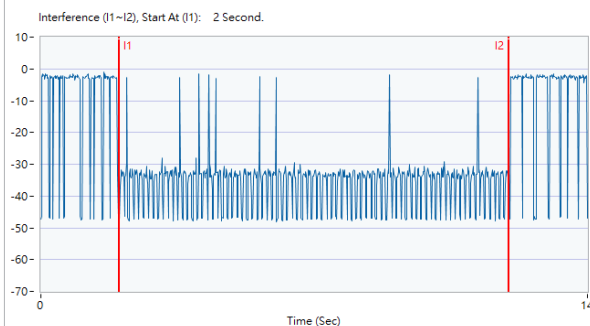
Threshold Level (TL) = -74.31dBm



802.11ax (HE160) / CH143 (Upper edge)

Transmit when the interferer is 1dB lower.

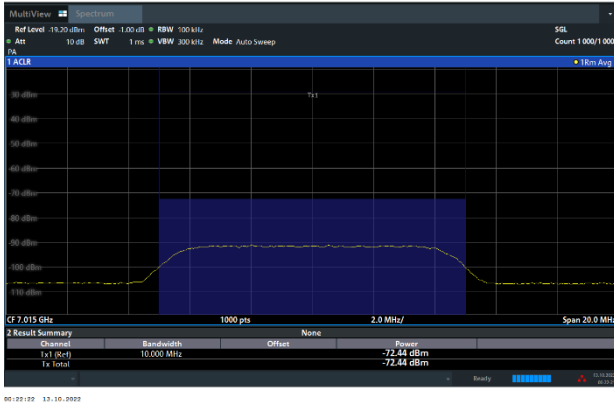
Contention Based Protocol - UNII 7, EUT-6665(BW160), SG-6740(-1)





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

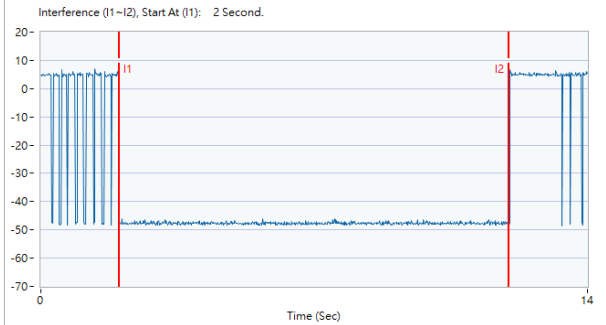
802.11ax (HE20) / 7015MHz
Threshold Level (TL) = -72.44dBm



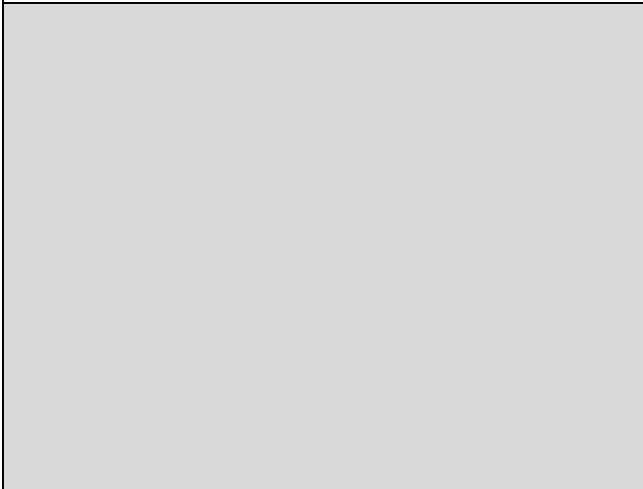
802.11ax (HE20) / CH213

Test result is pass due to no transmission occur.

Contention Based Protocol - UNII 8, EUT-7015(BW20), SG-7015



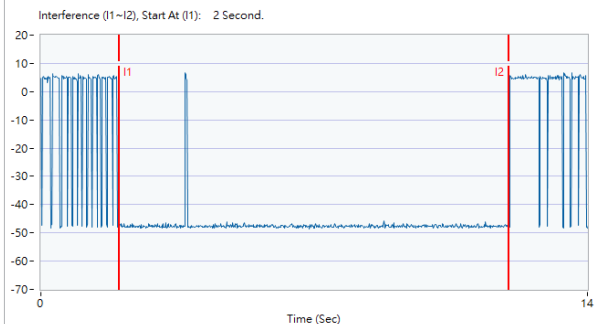
802.11ax (HE20) / 7015MHz
Threshold Level (TL) = -73.44dBm



802.11ax (HE20) / CH213

Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 8, EUT-7015(BW20), SG-7015(-1)

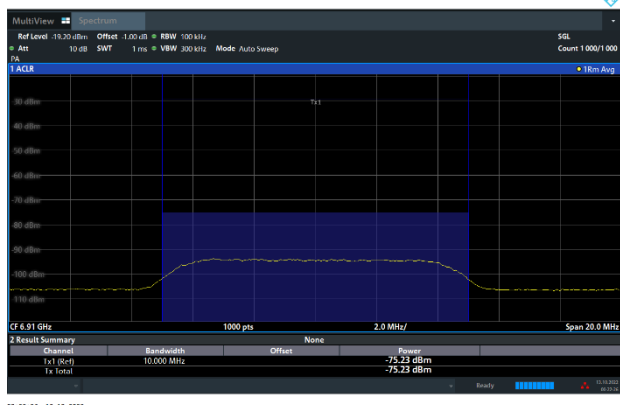




Contention Based Protocol Result Plots on U-NII 8 (AWGN Interference)

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

Threshold Level (TL) = -75.23dBm

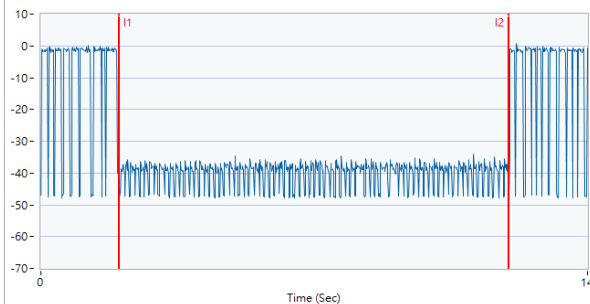


802.11ax (HE160) / CH207 (Lower edge)

Test result is pass due to no transmission occur.

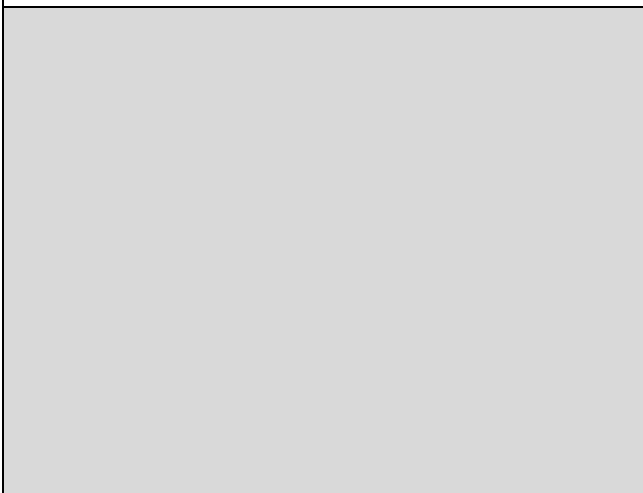
Contention Based Protocol - UNII 8, EUT-6985(BW160), SG-6910

Interference (I1~I2), Start At (I1): 2 Second.



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

Threshold Level (TL) = -76.23dBm

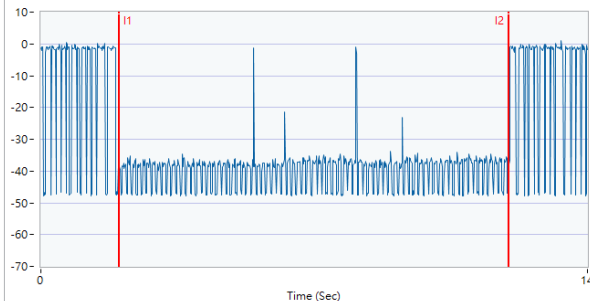


802.11ax (HE160) / CH207 (Lower edge)

Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 8, EUT-6985(BW160), SG-6910(-1)

Interference (I1~I2), Start At (I1): 2 Second.



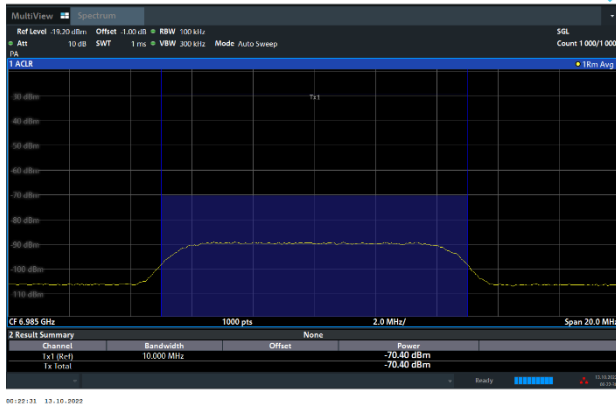


Contention Based Protocol Result Plots on U-NII 8 (AWGN Interference)

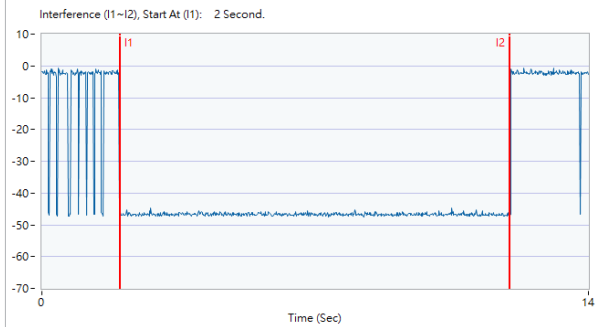
802.11ax (HE160) / 6985MHz (Middle)
Threshold Level (TL) = -70.40dBm

802.11ax (HE160) / CH207 (Middle)

Test result is pass due to no transmission occur.



Contention Based Protocol - UNII 8, EUT-6985(BW160), SG-6985

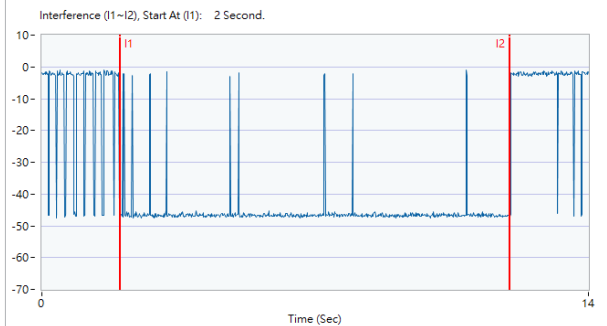


802.11ax (HE160) / 6985MHz (Middle)
Threshold Level (TL) = -71.40dBm

802.11ax (HE160) / CH207 (Middle)

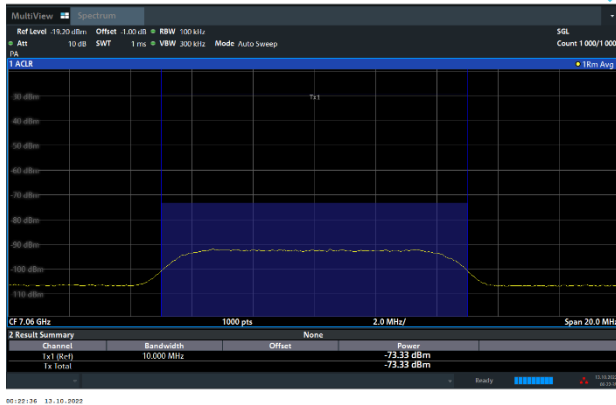
Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 8, EUT-6985(BW160), SG-6985(-1)

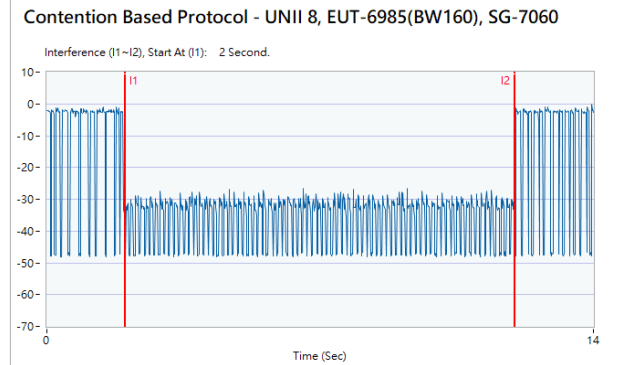


Contention Based Protocol Result Plots on U-NII 8 (AWGN Interference)

802.11ax (HE160) / 7060MHz (Upper edge)
Threshold Level (TL) = -73.33dBm

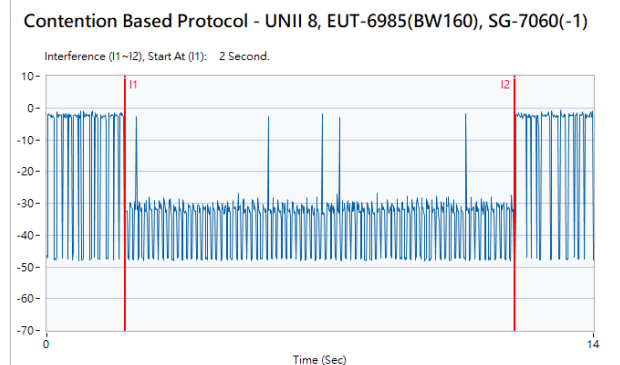


802.11ax (HE160) / CH207 (Upper edge)
Test result is pass due to no transmission occur.



802.11ax (HE160) / 7060MHz (Upper edge)
Threshold Level (TL) = -74.33dBm

802.11ax (HE160) / CH207 (Upper edge)
Transmit when the interferer is 1dB lower.



3.6 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.6.1 Limit of Unwanted Emissions

- (1) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of -27 dBm/MHz.

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27 (RMS)	68.3
- 7 (Peak)	88.3

According 987594 D02 U-NII 6GHz EMC Measurement v01 section G:

Unwanted emissions outside of restricted bands are measured with a RMS detector.

In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table:

Frequency (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

Note: The following formula is used to convert the EIRP to field strength.

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

3.6.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.



3.6.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.12.2 Antenna-port conducted measurements.
2. Measure the conducted output power (in dBm) using the peak detector.
3. Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP.
4. Add the appropriate maximum ground reflection factor to the EIRP (6 dB for frequencies ≤ 30 MHz; 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and 0 dB for frequencies > 1000 MHz).
5. Convert the resultant EIRP to an equivalent electric field strength using the following relationship:
$$E = \text{EIRP} - 20 \log d + 104.8,$$

where

E is the electric field strength in dB μ V/m

EIRP is the equivalent isotropically radiated power in dBm

d is the specified measurement distance in 3m
6. Compare the resultant electric field strength level with the applicable regulatory limit.
7. Corrected Reading for conducted spurious emission: Antenna Gain + Path Loss + MIMO Factor + Read Level = Level
8. Perform the cabinet radiated spurious emission test and verify radiated spurious emission with Antenna B and C



9. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq$ $1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

(4) Procedures for Average Unwanted Emissions Measurements within 2 MHz of the band edge

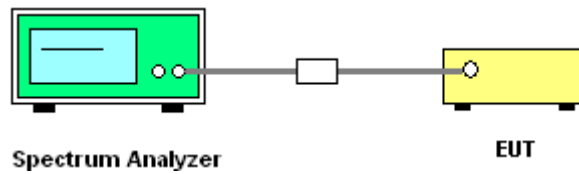
- RBW = 100 kHz
- Perform band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.



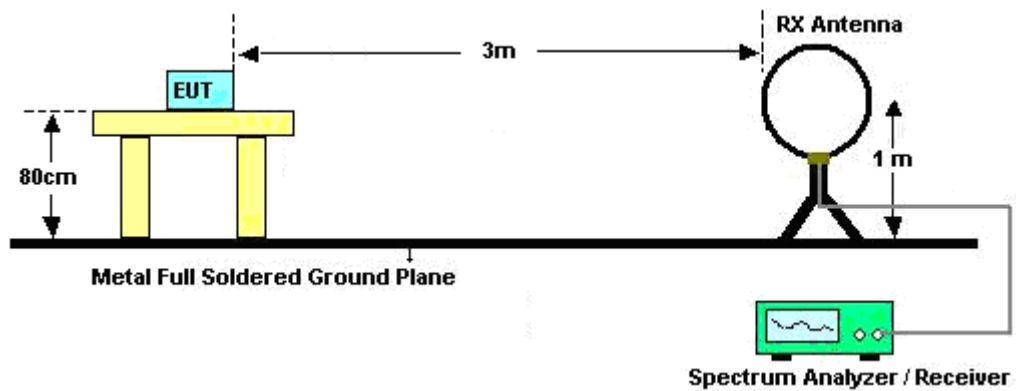
10. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
11. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
12. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
13. For each suspected emission, the EUT is arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
14. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-”.
15. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-”.

3.6.4 Test Setup

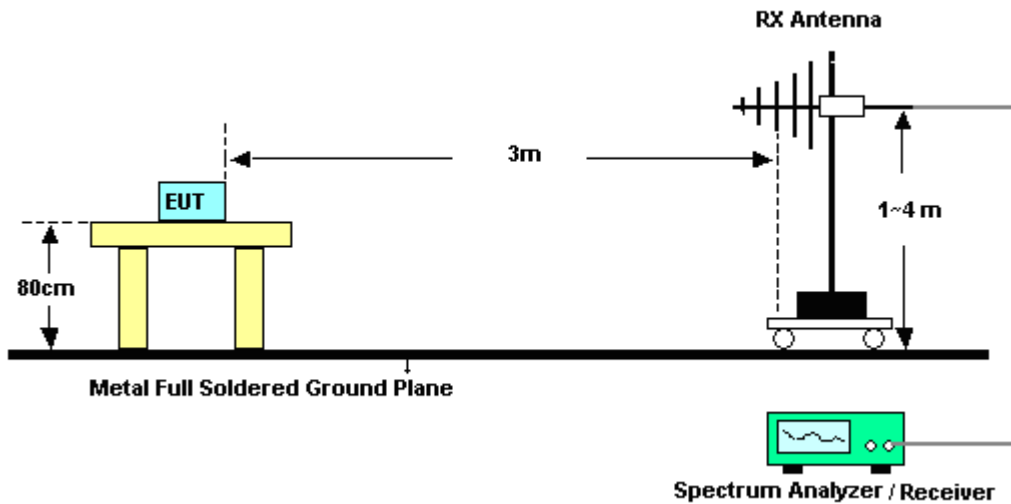
For Conducted Measurement Setup:



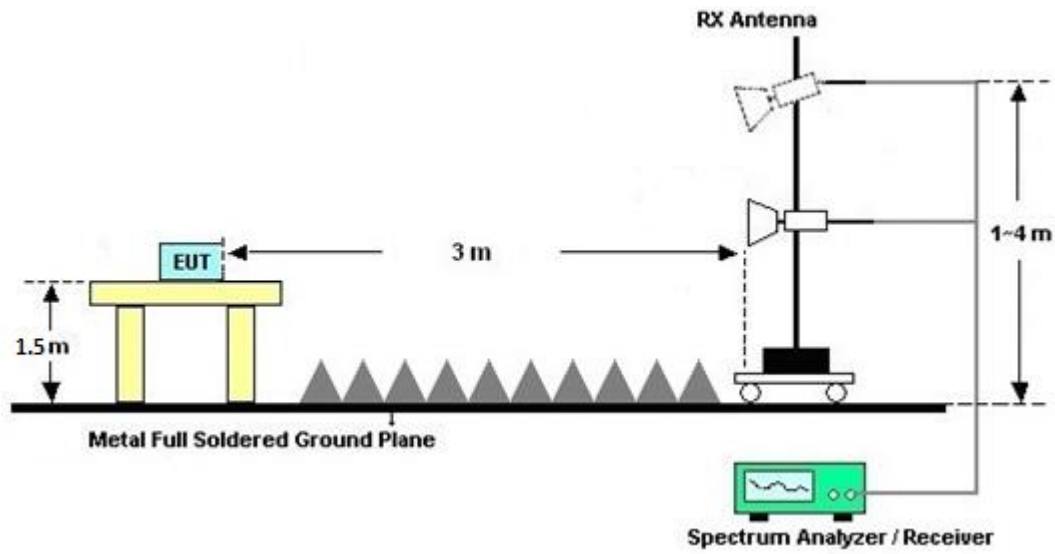
For radiated emissions below 30MHz



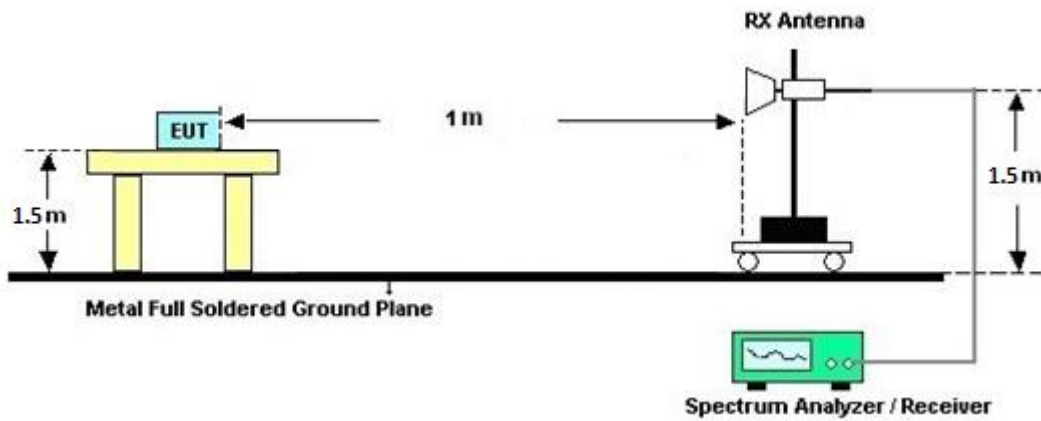
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



**3.6.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)**

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.6.6 Test Result of Conduced Spurious at Band Edges in the Restricted Band

Please refer to Appendix B and C.

3.6.7 Test Result of Conduced Spurious Emission in the Restricted Band

Please refer to Appendix B and C.

3.6.8 Test Result of Cabinet Radiated Spurious at Band Edges

Please refer to Appendix D and E.

3.6.9 Test Result of Cabinet Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix D and E.

3.6.10 Test Result of Radiated Spurious Emissions in the Restricted Band

Please refer to Appendix F and G.

3.6.11 Duty Cycle

Please refer to Appendix H.



3.7 Antenna Requirements

3.7.1 Standard Applicable

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 09, 2021	Aug. 24, 2022~ Aug. 31, 2022	Sep. 08, 2022	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	41912 & 05	30MHz~1GHz	Feb. 06, 2022	Aug. 24, 2022~ Aug. 31, 2022	Feb. 05, 2023	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 27, 2021	Aug. 24, 2022~ Aug. 31, 2022	Dec. 26, 2022	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-02294	1GHz~18GHz	Jun. 23, 2022	Aug. 24, 2022~ Aug. 31, 2022	Jun. 22, 2023	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	00993	18GHz~40GHz	Nov. 30, 2021	Aug. 24, 2022~ Aug. 31, 2022	Nov. 29, 2022	Radiation (03CH15-HY)
Amplifier	EMEC	EM1G18G	060837	1GHz~18GHz	Sep. 02, 2021	Aug. 24, 2022~ Aug. 31, 2022	Sep. 01, 2022	Radiation (03CH15-HY)
Preamplifier	EM Electronics	EM01G18G	060803	1GHz-18GHz	Dec. 16, 2021	Aug. 24, 2022~ Aug. 31, 2022	Dec. 15, 2022	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060802	18-40GHz	Mar. 08, 2022	Aug. 24, 2022~ Aug. 31, 2022	Mar. 07, 2023	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 21, 2021	Aug. 24, 2022~ Aug. 31, 2022	Oct. 20, 2022	Radiation (03CH15-HY)
Spectrum Analyzer	Keysight	N9010	MY54200485	10Hz~44GHz	May 07, 2022	Aug. 24, 2022~ Aug. 31, 2022	May 06, 2023	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Aug. 24, 2022~ Aug. 31, 2022	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Aug. 24, 2022~ Aug. 31, 2022	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24 (k5)	RK-000451	N/A	N/A	Aug. 24, 2022~ Aug. 31, 2022	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4PE, 508405/2E	30MHz~18G	Nov. 15, 2021	Aug. 24, 2022~ Aug. 31, 2022	Nov. 14, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	30MHz-40GHz	Jan. 04, 2022	Aug. 24, 2022~ Aug. 31, 2022	Jan. 03, 2023	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Aug. 24, 2022~ Aug. 31, 2022	Mar. 09, 2023	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	30MHz-40GHz	Jan. 04, 2022	Aug. 24, 2022~ Aug. 31, 2022	Jan. 03, 2023	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Aug. 24, 2022~ Aug. 31, 2022	Mar. 09, 2023	Radiation (03CH15-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16. 2021	Aug. 23. 2022~ Oct. 26, 2022	Nov. 15. 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W #010	RPR6W-2101 002(NO:123)	10MHz~8GHz	Jan. 13, 2022	Aug. 23. 2022~ Oct. 26, 2022	Jan. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz	Aug. 03, 2022	Aug. 23. 2022~ Oct. 26, 2022	Aug. 02, 2023	Conducted (TH05-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Signal Generator (Interferer)	Rohde & Schwarz	SMW200A	109425	100kHz~7.5GHz	Jan. 13, 2022	Oct. 12, 2022~ Oct. 13, 2022	Jan. 12, 2023	DFS (DF02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV3044	101104	10Hz~44GHz	Feb. 16, 2022	Oct. 12, 2022~ Oct. 13, 2022	Feb. 15, 2023	DFS (DF02-HY)
Power Divider	Woken	2Way Divider	DCMB1KW7A1	0.5GHz~18GHz	Calibration from System	Oct. 12, 2022~ Oct. 13, 2022	Calibration from System	DFS (DF02-HY)
Power Divider	Woken	2Way Divider	DCMB1KW7A2	0.5GHz~18GHz	Calibration from System	Oct. 12, 2022~ Oct. 13, 2022	Calibration from System	DFS (DF02-HY)
Coupler	MVE	MVE4816	A400014	0.5-18GHz	Calibration from System	Oct. 12, 2022~ Oct. 13, 2022	Calibration from System	DFS (DF02-HY)
Power Divider	Woken	3Way SMA Power Divider Rated to 20W	STI08-0010 (#2)	2GHz~8GHz	Calibration from System	Oct. 12, 2022~ Oct. 13, 2022	Calibration from System	DFS (DF02-HY)
Spectrum Analyzer	ROHDE & SCHWARZ	FSV40	101565	10Hz~40GHz	Dec. 29, 2021	Aug. 24, 2022~ Nov. 03, 2022	Dec. 28, 2022	CSE (TH05-HY)
Spectrum Analyzer	ROHDE & SCHWARZ	FSV40	101906	10Hz~40GHz	Aug. 09, 2022	Aug. 24, 2022~ Nov. 03, 2022	Aug. 08, 2023	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Aug. 24, 2022~ Nov. 03, 2022	Mar. 09, 2023	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 10, 2021	Aug. 24, 2022~ Nov. 03, 2022	Dec. 09, 2022	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30MHz~18GHz	Feb. 09, 2022	Aug. 24, 2022~ Nov. 03, 2022	Feb. 08, 2023	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	Aug. 24, 2022~ Nov. 03, 2022	Feb. 20, 2023	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 21, 2022	Aug. 24, 2022~ Nov. 03, 2022	Feb. 20, 2023	CSE (TH05-HY)
Filter	Wainwright	WLKS1200-1 2SS	SN2	1.2GHz Low Pass Filter	Mar. 15, 2022	Aug. 24, 2022~ Nov. 03, 2022	Mar. 14, 2023	CSE (TH05-HY)
Filter	Wainwright	7GHz High Pass Filter	SN96	7GHz High Pass Filter	Nov. 04, 2021	Aug. 24, 2022~ Nov. 02, 2022	Nov. 03, 2022	CSE (TH05-HY)
Filter	Wainwright	7GHz High Pass Filter	SN97	7GHz High Pass Filter	Nov. 04, 2021	Aug. 24, 2022~ Nov. 02, 2022	Nov. 03, 2022	CSE (TH05-HY)
Filter	Wainwright	7GHz High Pass Filter	SN98	7GHz High Pass Filter	Nov. 03, 2022	Nov. 03, 2022	Nov. 02, 2023	CSE (TH05-HY)
Filter	Wainwright	WHKX8-5872 .5-6750-1800 0-40ST	SN24	6.75GHz High Pass Filter	Aug. 05, 2022	Aug. 24, 2022~ Nov. 03, 2022	Aug. 04, 2023	CSE (TH05-HY)
Filter	Wainwright	WHKX8-5872 .5-6750-1800 0-40ST	SN17	6.75GHz High Pass Filter	May 23, 2022	Aug. 24, 2022~ Nov. 03, 2022	May 22, 2023	CSE (TH05-HY)



5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.80 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.30 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.60 dB
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Appendix A. Test Result of Conducted Test Items

<Indoor Client>

Test Engineer:	Derek Hsu	Temperature:	21~25	°C
Test Date:	2022/08/23~2022/10/25	Relative Humidity:	51~54	%