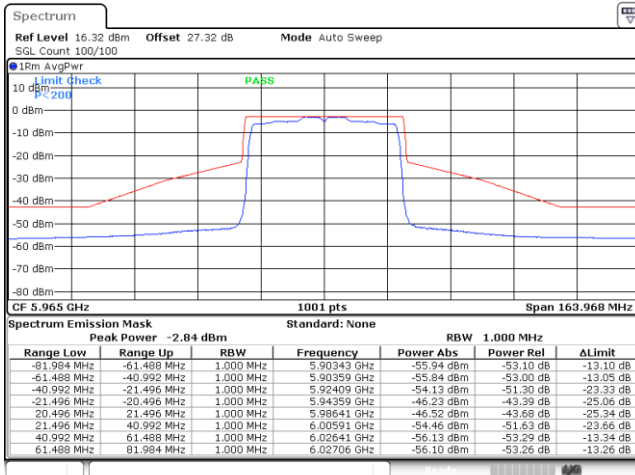




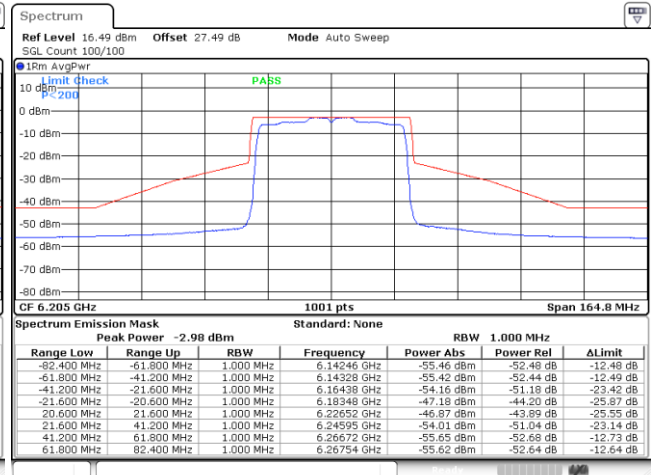
EUT Mode : 802.11be EHT40 Full RU

Plot on Channel 5965 MHz



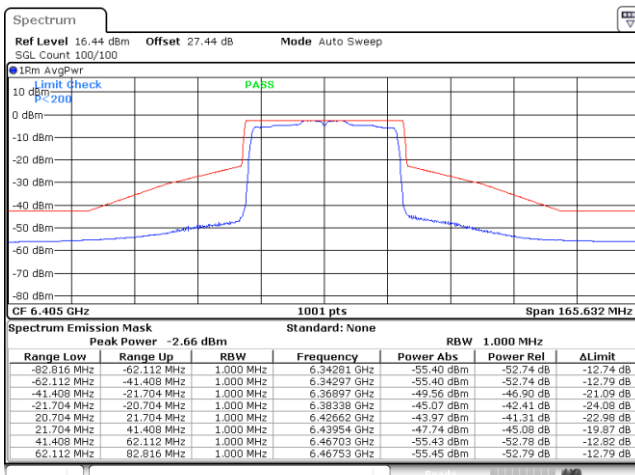
Date: 15.FEB.2024 17:19:02

Plot on Channel 6205 MHz



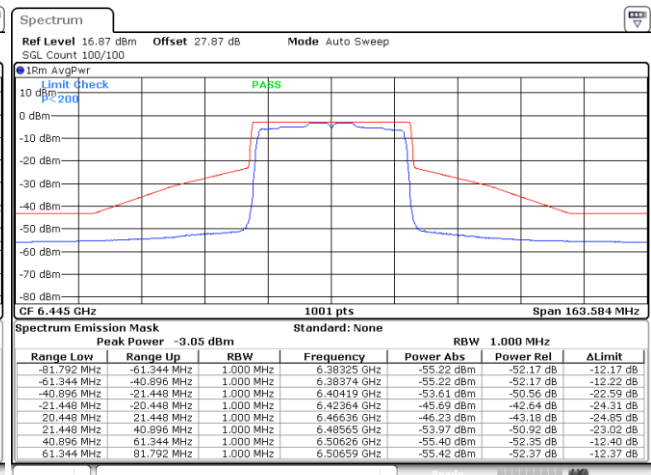
Date: 15.FEB.2024 17:27:38

Plot on Channel 6405 MHz



Date: 15.FEB.2024 17:38:21

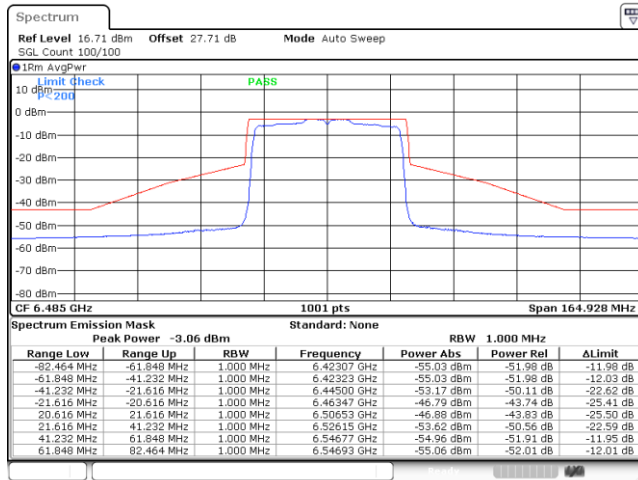
Plot on Channel 6445 MHz



Date: 15.FEB.2024 17:45:26

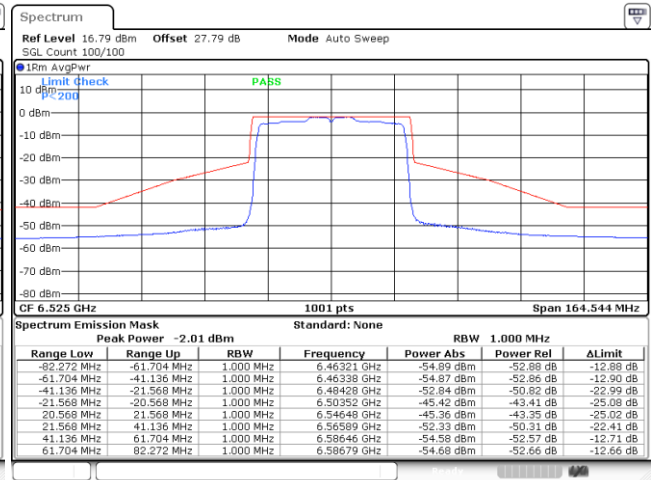


Plot on Channel 6485 MHz



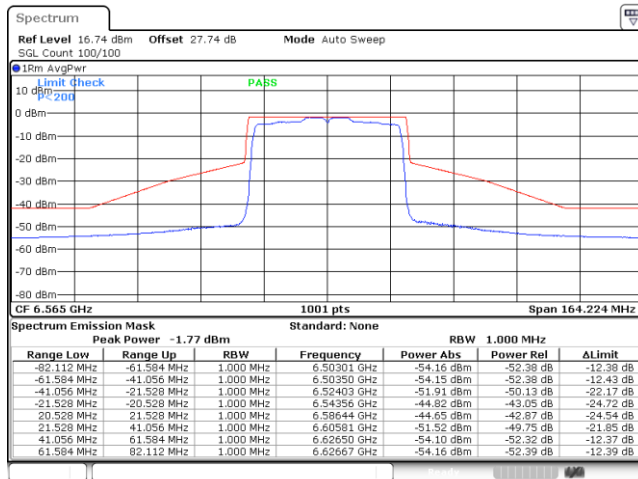
Date: 15.FEB.2024 17:53:36

Plot on Channel 6525 MHz



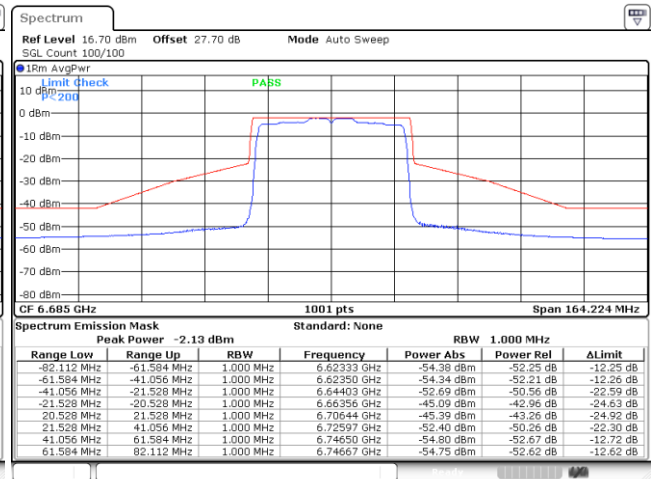
Date: 12.MAR.2024 14:53:50

Plot on Channel 6565 MHz



Date: 12.MAR.2024 14:56:09

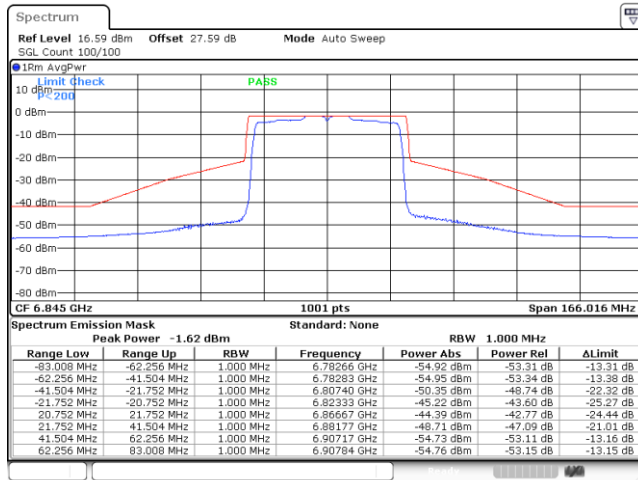
Plot on Channel 6685 MHz



Date: 12.MAR.2024 15:00:09

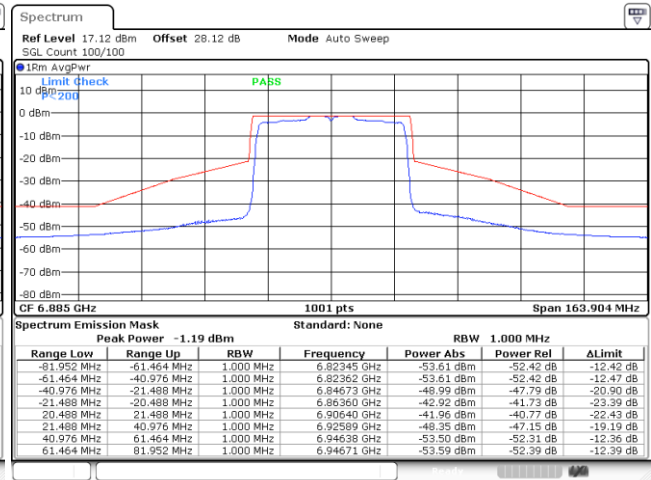


Plot on Channel 6845 MHz



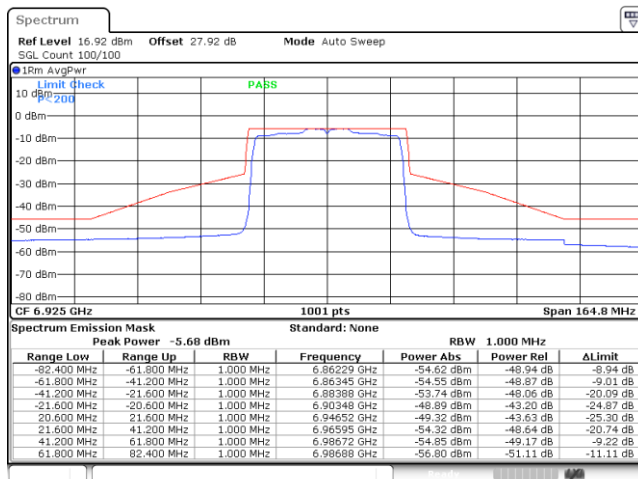
Date: 12.MAR.2024 15:04:43

Plot on Channel 6885 MHz



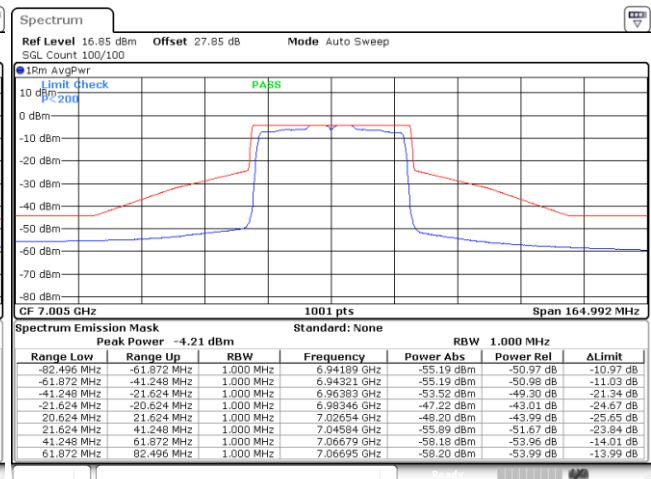
Date: 12.MAR.2024 15:07:20

Plot on Channel 6925 MHz



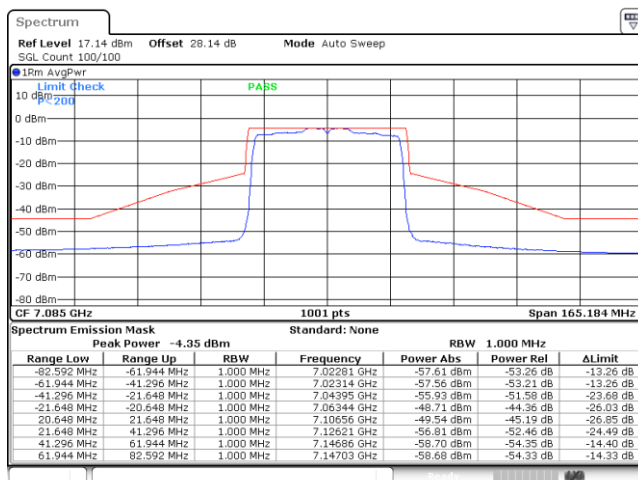
Date: 19.FEB.2024 13:44:55

Plot on Channel 7005 MHz



Date: 12.MAR.2024 15:12:12

Plot on Channel 7085 MHz

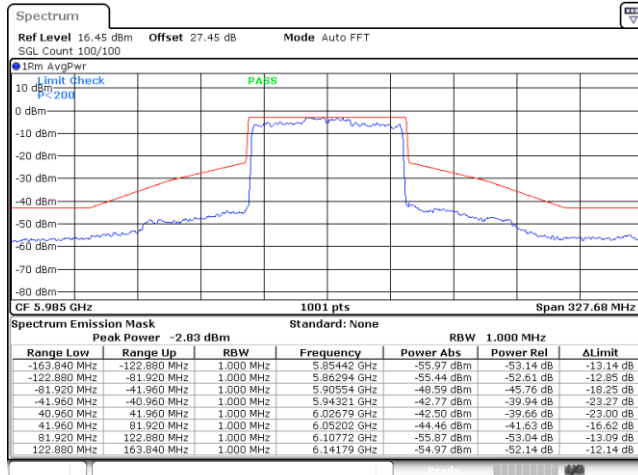


Date: 12.MAR.2024 15:16:42



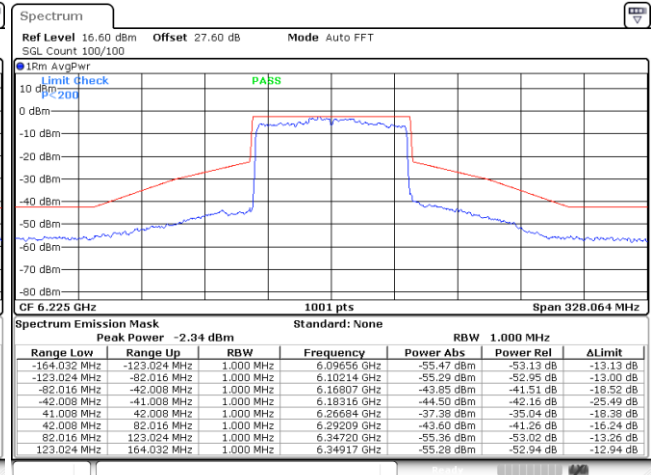
EUT Mode : 802.11be EHT80 Full RU

Plot on Channel 5985 MHz



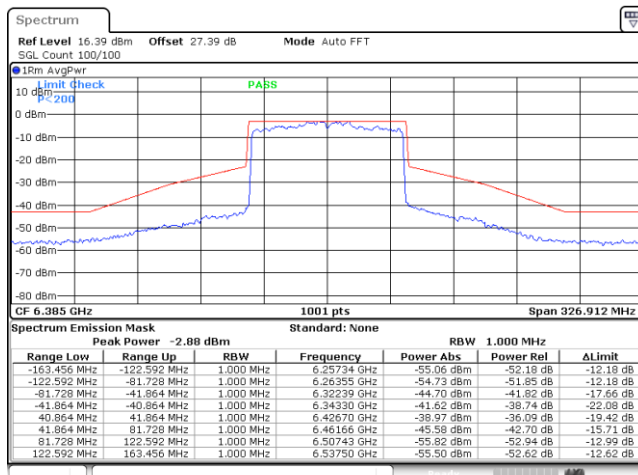
Date: 15.FEB.2024 11:45:46

Plot on Channel 6225 MHz



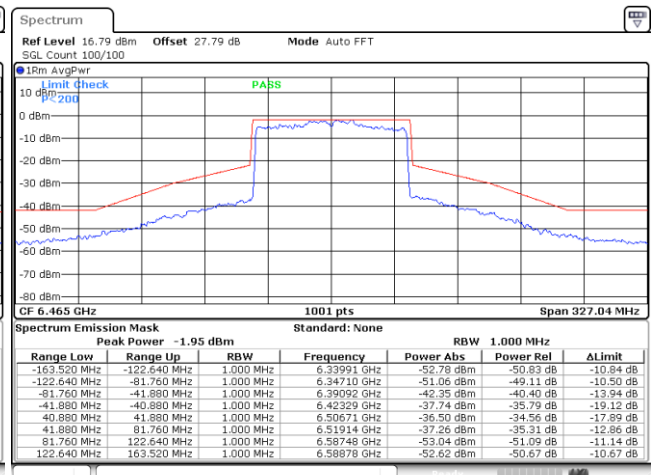
Date: 15.FEB.2024 11:52:27

Plot on Channel 6385 MHz



Date: 15.FEB.2024 12:01:40

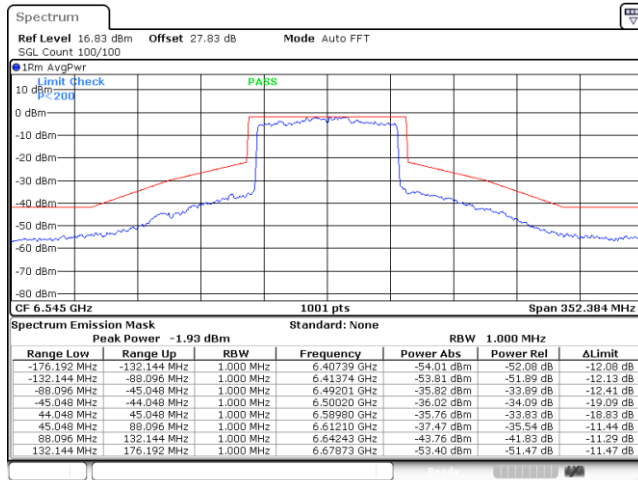
Plot on Channel 6465 MHz



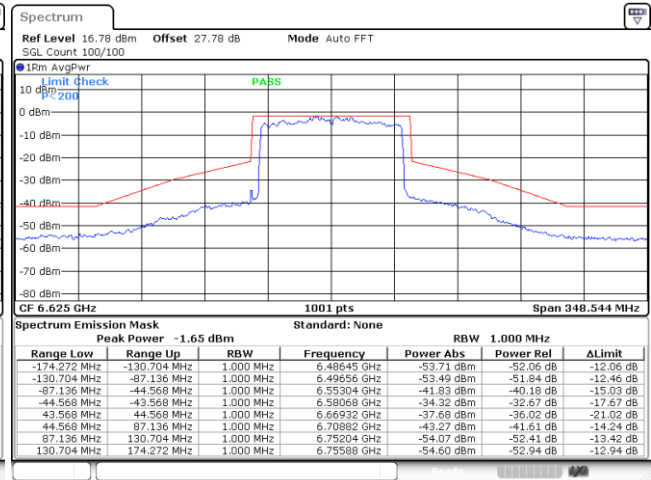
Date: 15.FEB.2024 14:00:23



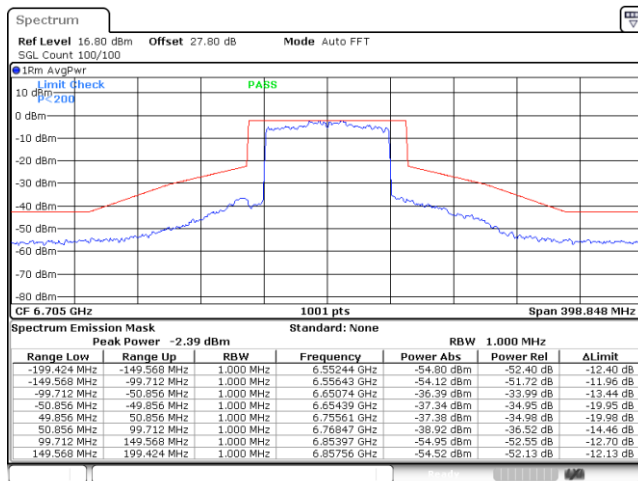
Plot on Channel 6545 MHz



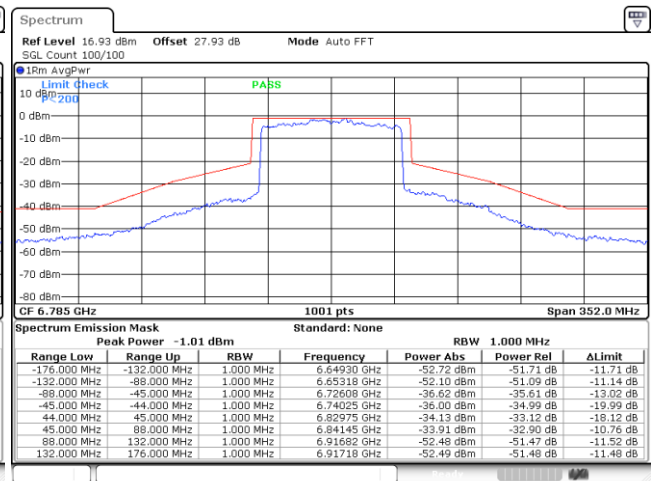
Plot on Channel 6625 MHz



Plot on Channel 6705 MHz

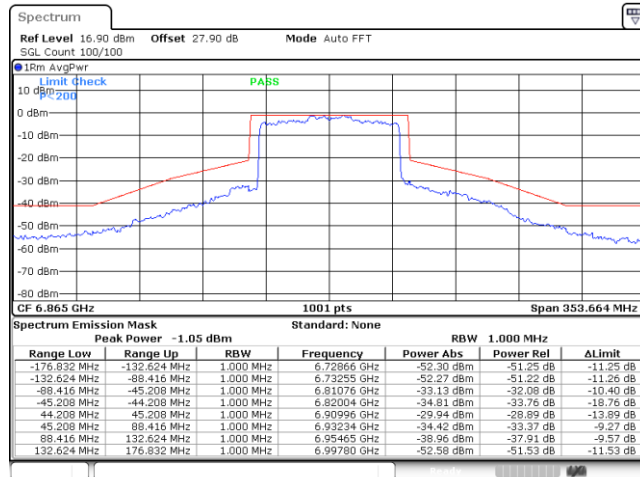


Plot on Channel 6785 MHz



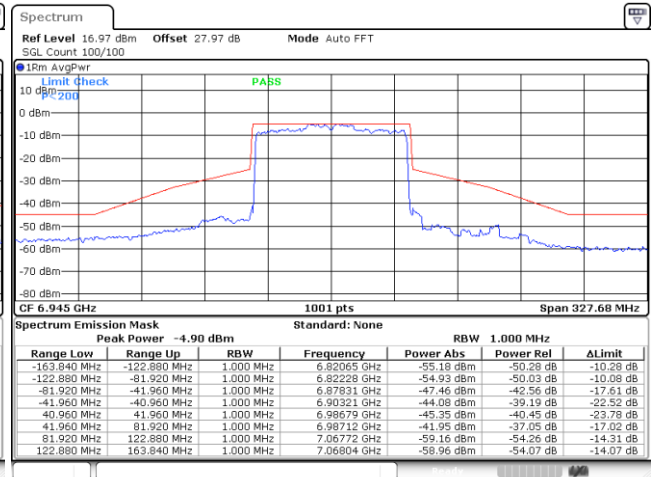


Plot on Channel 6865 MHz



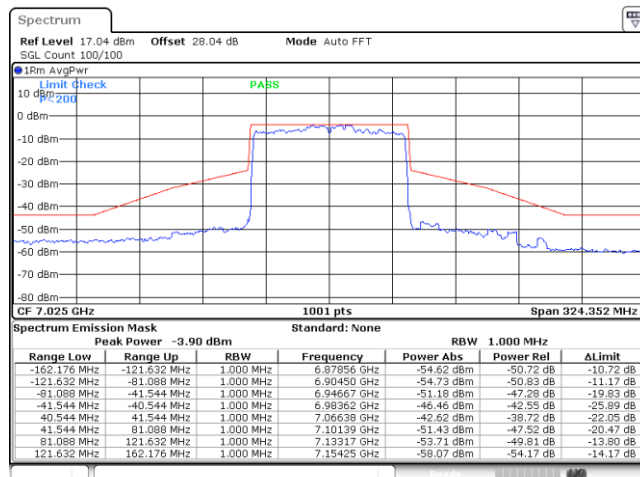
Date: 15.FEB.2024 15:09:41

Plot on Channel 6945 MHz



Date: 15.FEB.2024 15:30:15

Plot on Channel 7025 MHz



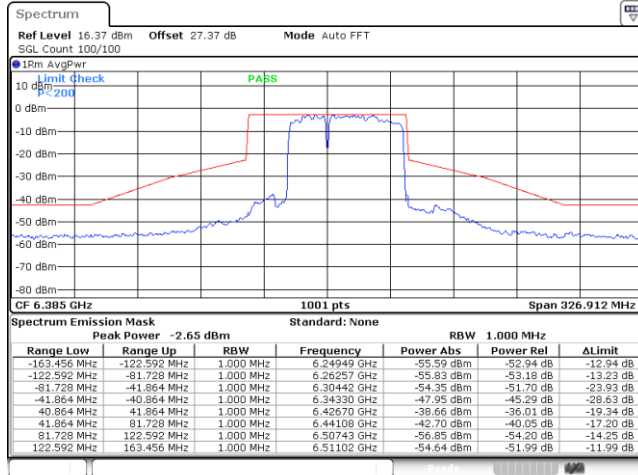
Date: 19.FEB.2024 13:54:23



EUT Mode

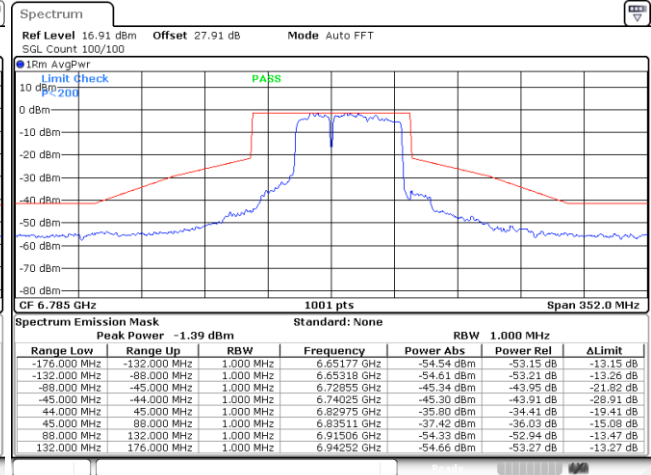
802.11be EHT80 Puncture 20RU1

Plot on Channel 6385 MHz



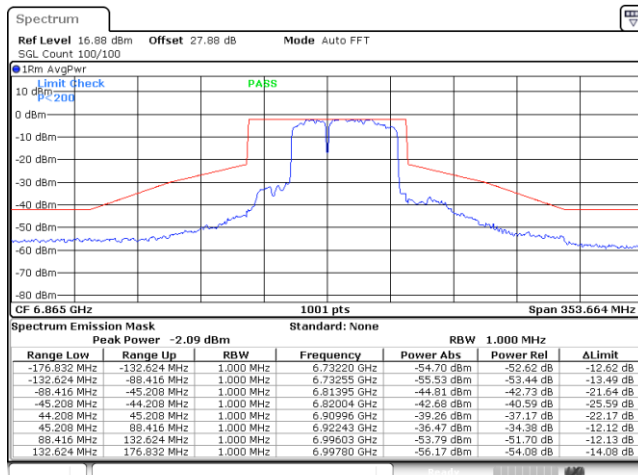
Date: 26.FEB.2024 13:50:05

Plot on Channel 6785 MHz



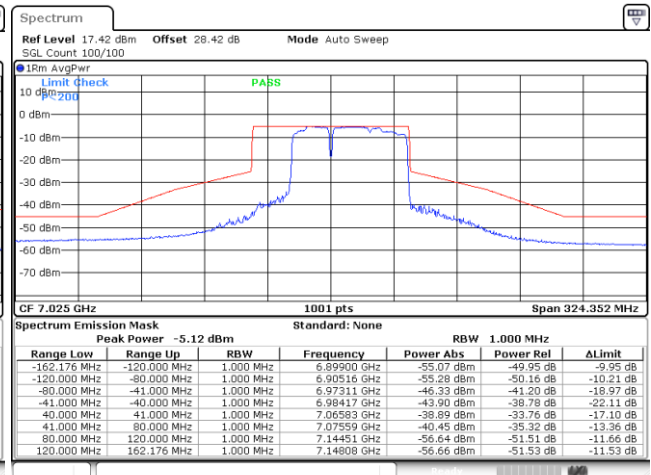
Date: 26.FEB.2024 14:41:18

Plot on Channel 6865 MHz



Date: 26.FEB.2024 14:46:35

Plot on Channel 7025 MHz

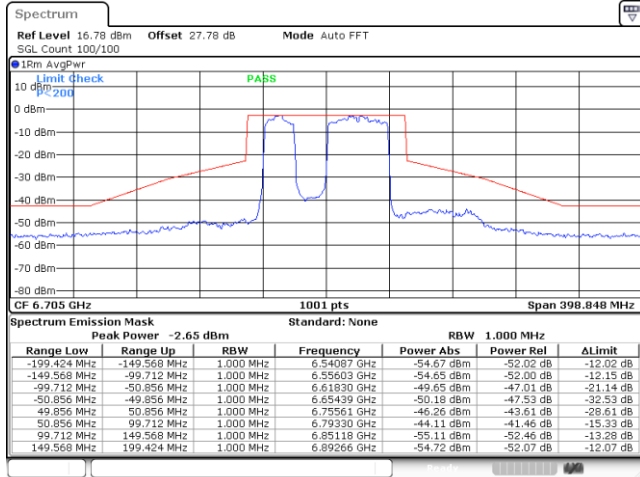


Date: 24.MAY.2024 15:03:20



EUT Mode 802.11be EHT80 Puncture 20RU2

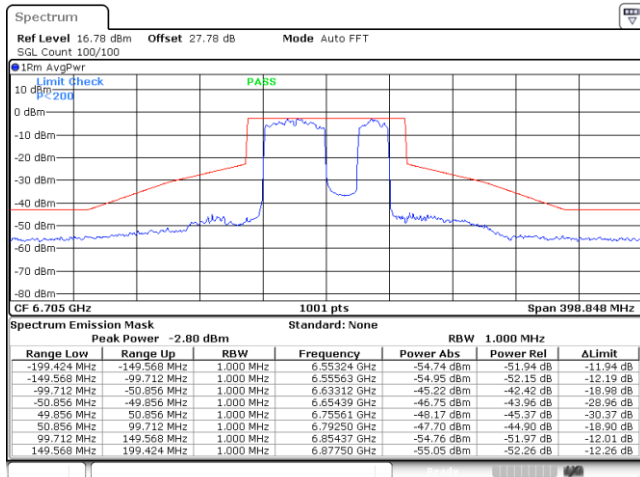
Plot on Channel 6705 MHz



Date: 26.FEB.2024 14:25:02

EUT Mode 802.11be EHT80 Puncture 20RU4

Plot on Channel 6705 MHz



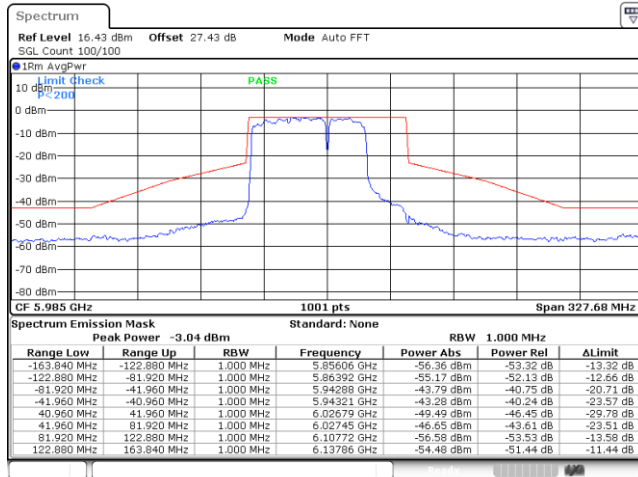
Date: 26.FEB.2024 14:17:42



EUT Mode

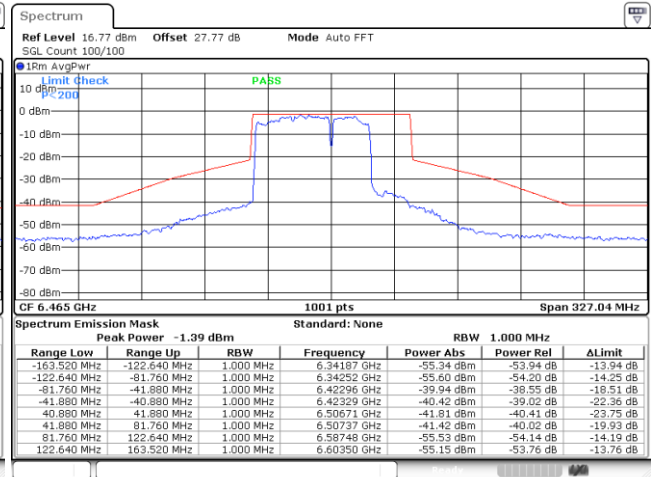
802.11be EHT80 Puncture 20RU8

Plot on Channel 5985 MHz



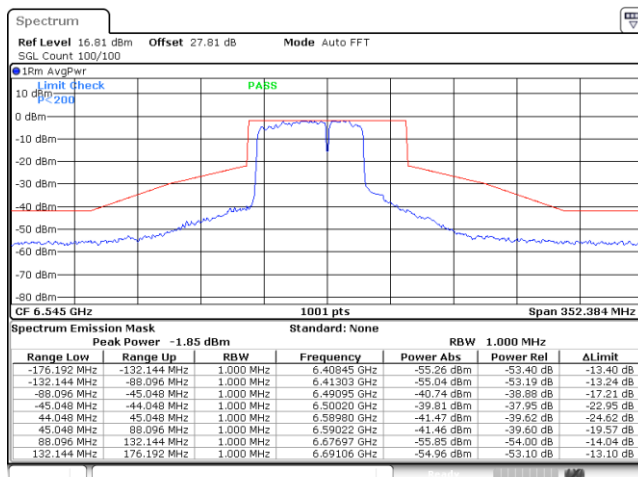
Date: 26.FEB.2024 11:50:30

Plot on Channel 6465 MHz



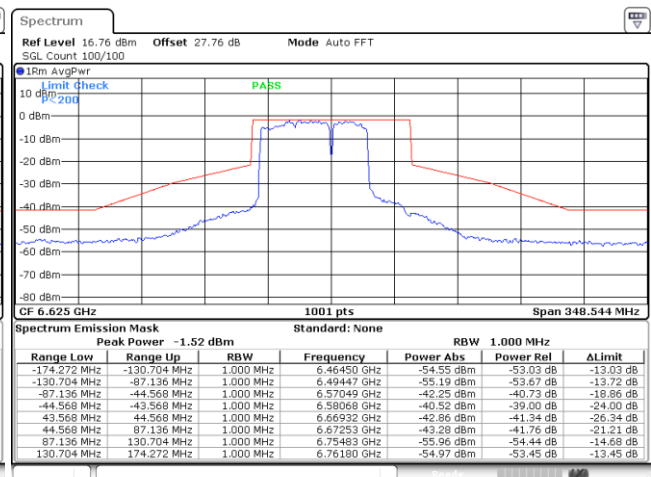
Date: 26.FEB.2024 13:58:28

Plot on Channel 6545 MHz



Date: 26.FEB.2024 14:04:14

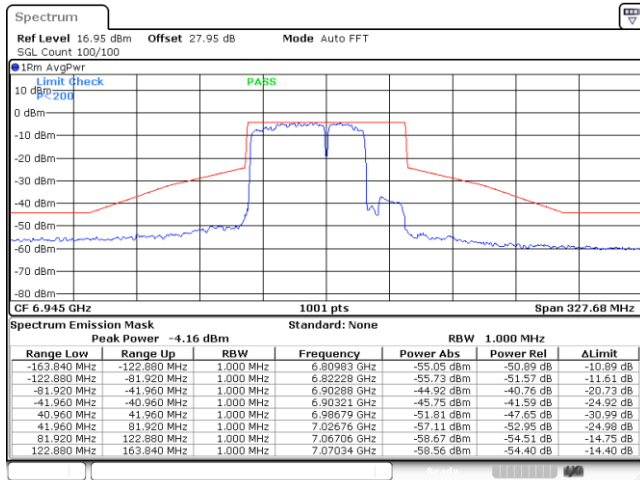
Plot on Channel 6625 MHz



Date: 26.FEB.2024 14:10:30



Plot on Channel 6945 MHz



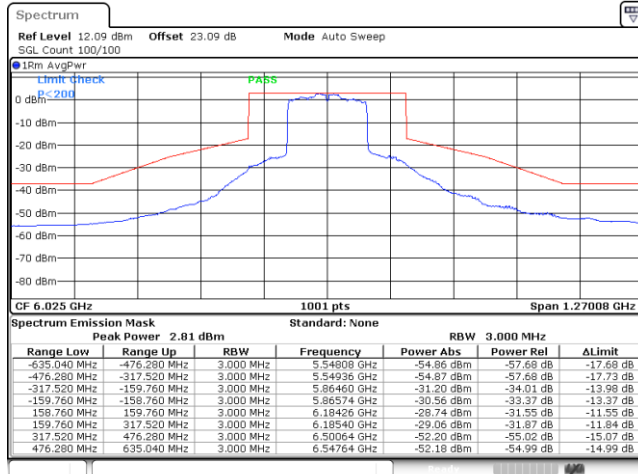
Date: 26.FEB.2024 14:54:59



EUT Mode

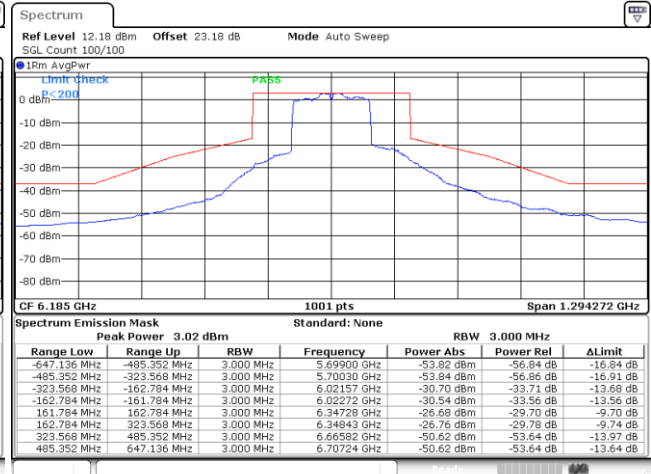
802.11be EHT160 Full RU

Plot on Channel 6025 MHz



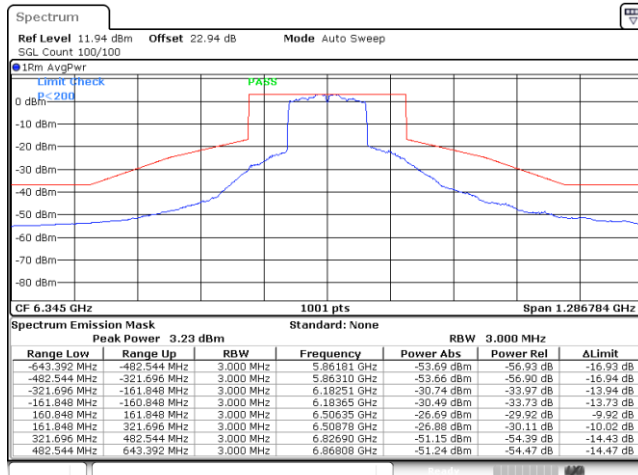
Date: 5.JUN.2024 16:22:54

Plot on Channel 6185 MHz



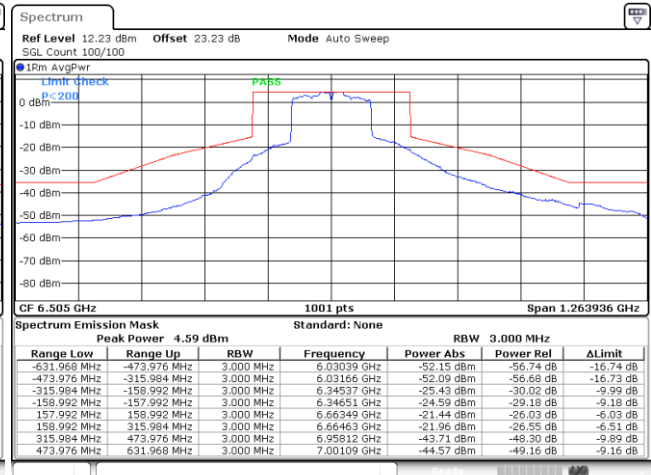
Date: 5.JUN.2024 16:28:08

Plot on Channel 6345 MHz



Date: 5.JUN.2024 16:44:07

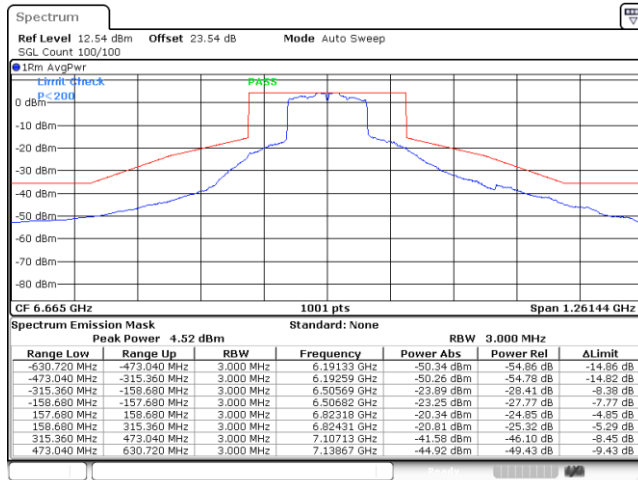
Plot on Channel 6505 MHz



Date: 5.JUN.2024 17:03:17

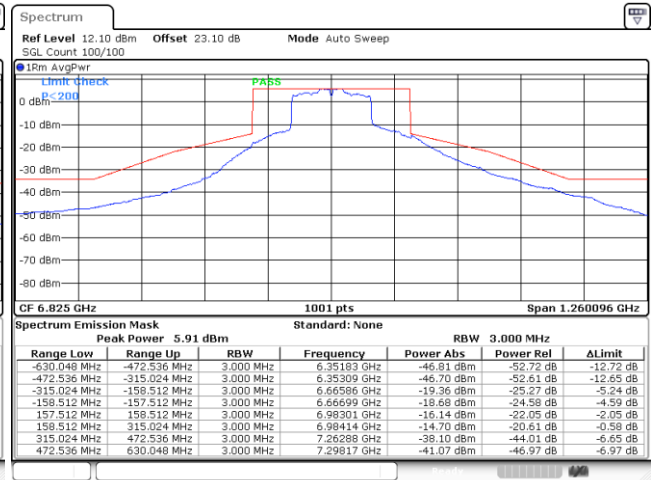


Plot on Channel 6665 MHz



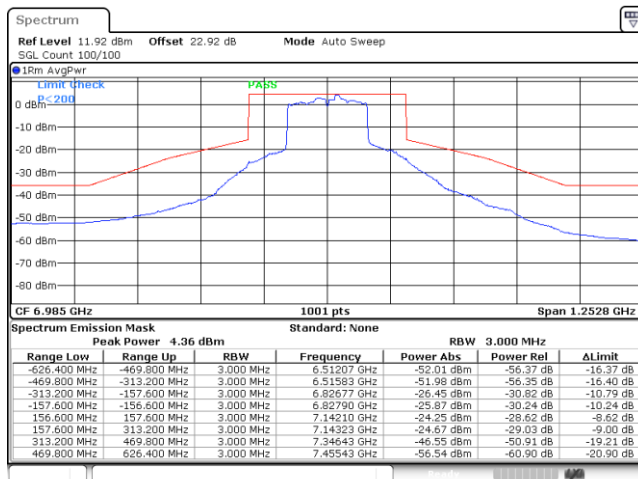
Date: 5.JUN.2024 17:18:48

Plot on Channel 6825 MHz



Date: 5.JUN.2024 17:31:51

Plot on Channel 6985 MHz



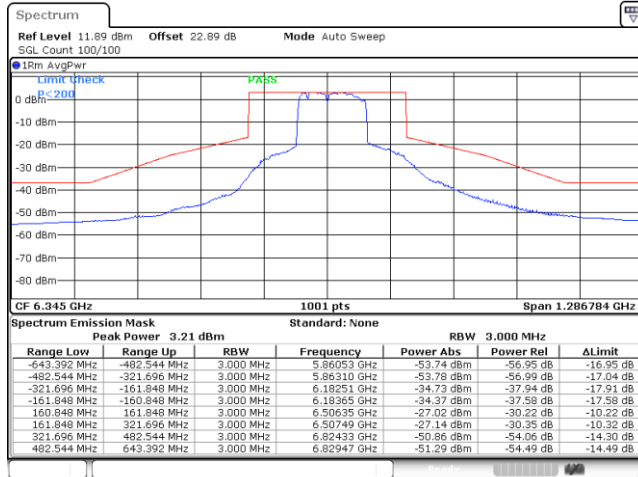
Date: 5.JUN.2024 17:46:31



EUT Mode

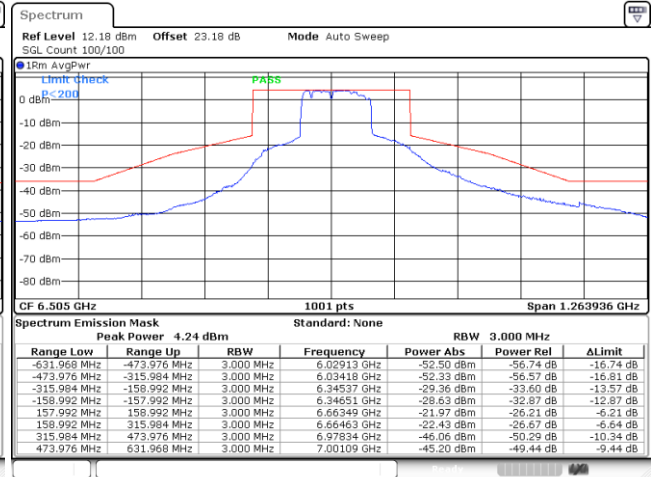
802.11be EHT160 Puncture 20RU1

Plot on Channel 6345 MHz



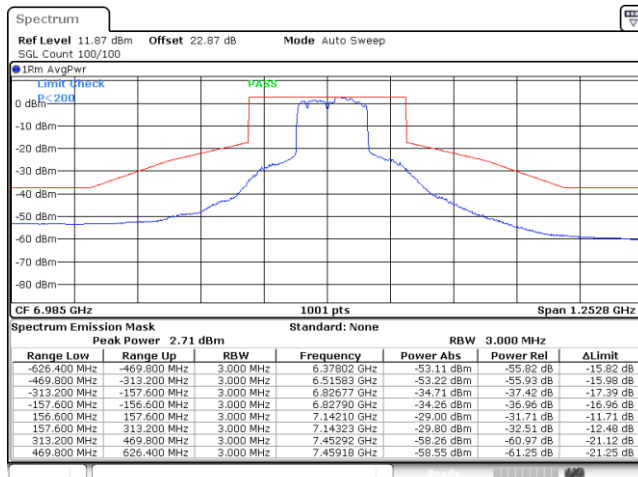
Date: 5.JUN.2024 16:49:52

Plot on Channel 6505 MHz



Date: 5.JUN.2024 17:09:34

Plot on Channel 6985 MHz



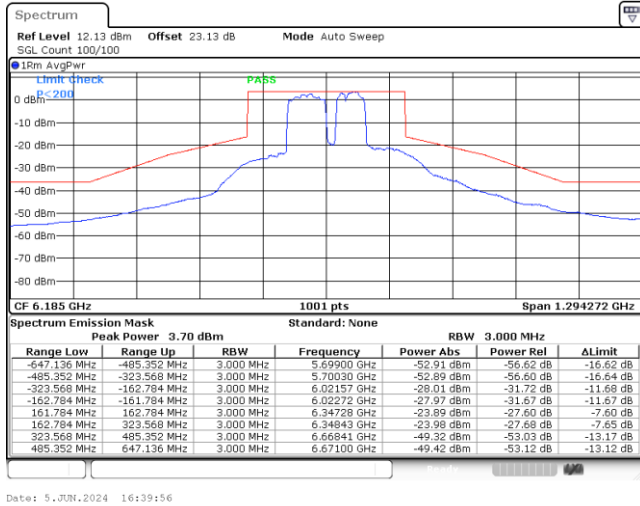
Date: 5.JUN.2024 17:56:20



EUT Mode

802.11be EHT160 Puncture 20RU16

Plot on Channel 6185 MHz

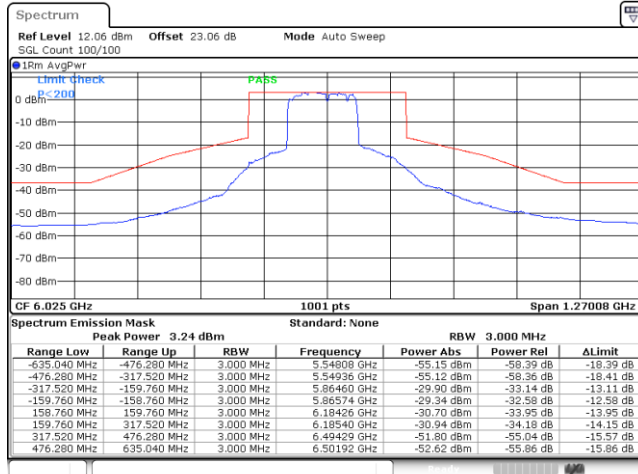




EUT Mode

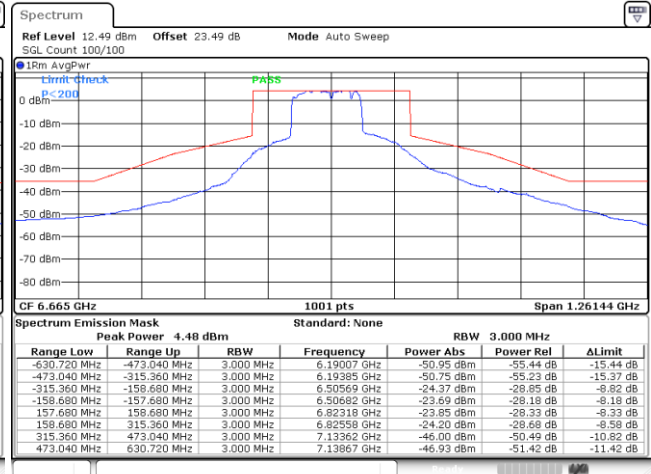
802.11be EHT160 Puncture 20RU128

Plot on Channel 6025 MHz



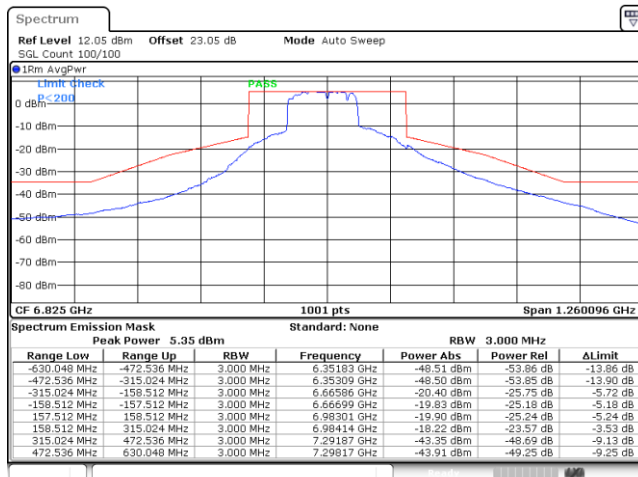
Date: 5 JUN 2024 16:20:28

Plot on Channel 6665 MHz



Date: 5 JUN 2024 17:23:36

Plot on Channel 6825 MHz

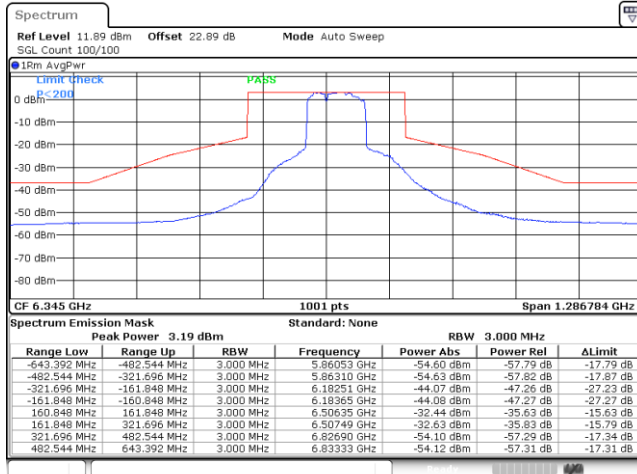


Date: 5 JUN 2024 17:37:51



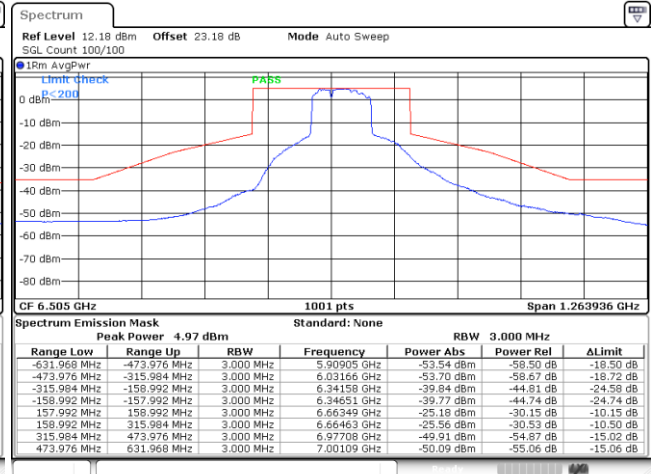
EUT Mode 802.11be EHT160 Puncture 40RU3

Plot on Channel 6345 MHz



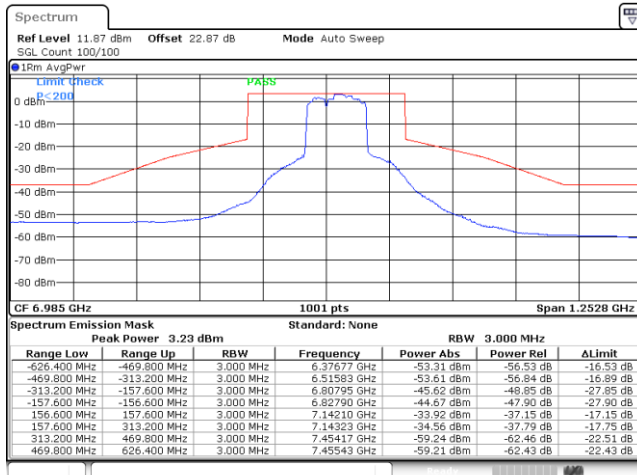
Date: 5.JUN.2024 16:46:36

Plot on Channel 6505 MHz

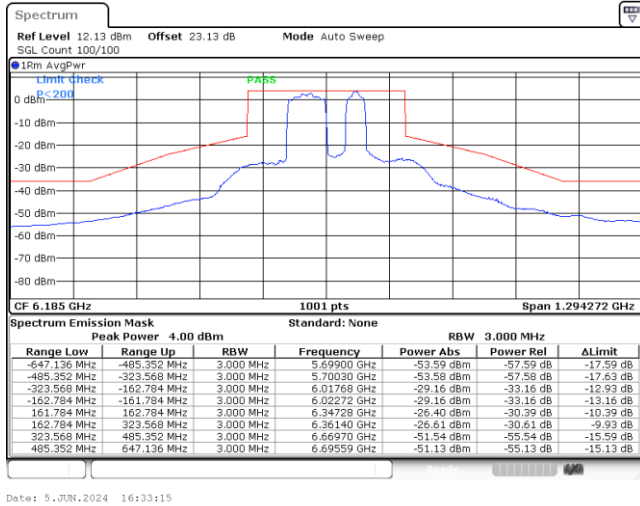


Date: 5.JUN.2024 17:05:04

Plot on Channel 6985 MHz



Date: 5.JUN.2024 17:48:19

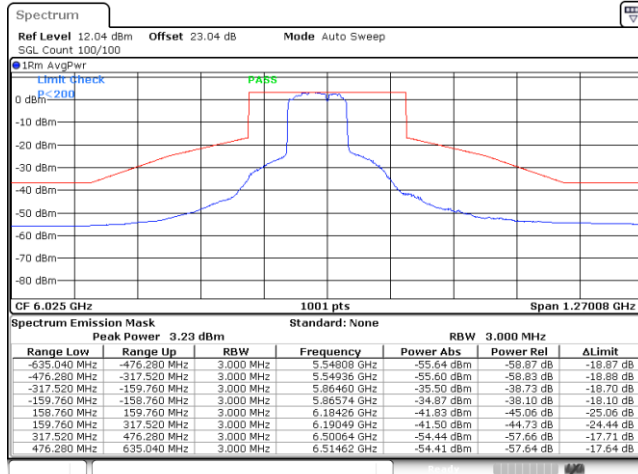
**EUT Mode** 802.11be EHT160 Puncture 40RU48**Plot on Channel 6185 MHz**



EUT Mode

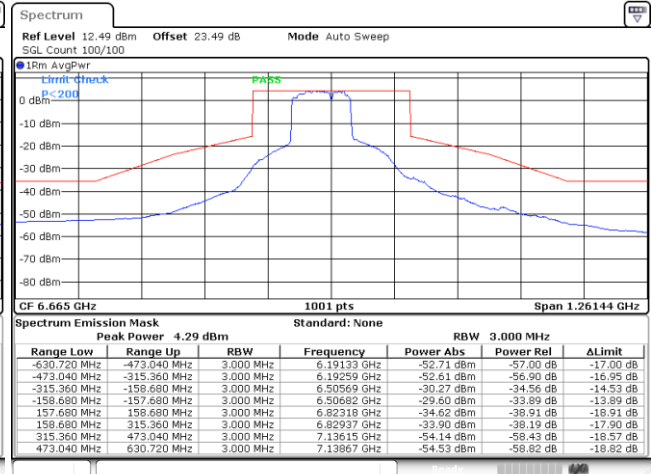
802.11be EHT160 Puncture 40RU192

Plot on Channel 6025 MHz



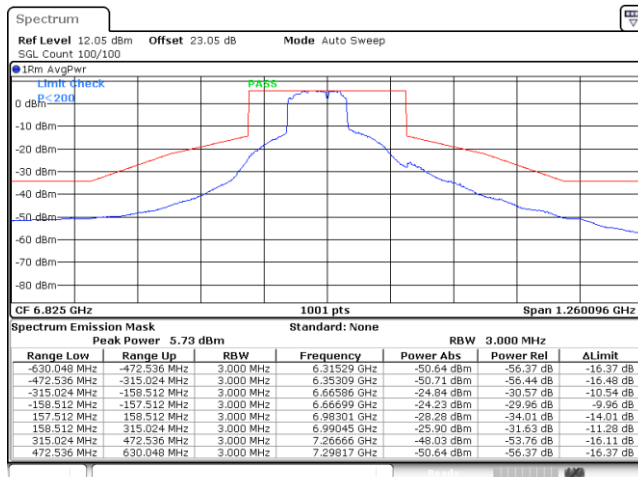
Date: 5 JUN. 2024 16:21:59

Plot on Channel 6665 MHz



Date: 5 JUN. 2024 17:20:04

Plot on Channel 6825 MHz



Date: 5 JUN. 2024 17:35:38

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

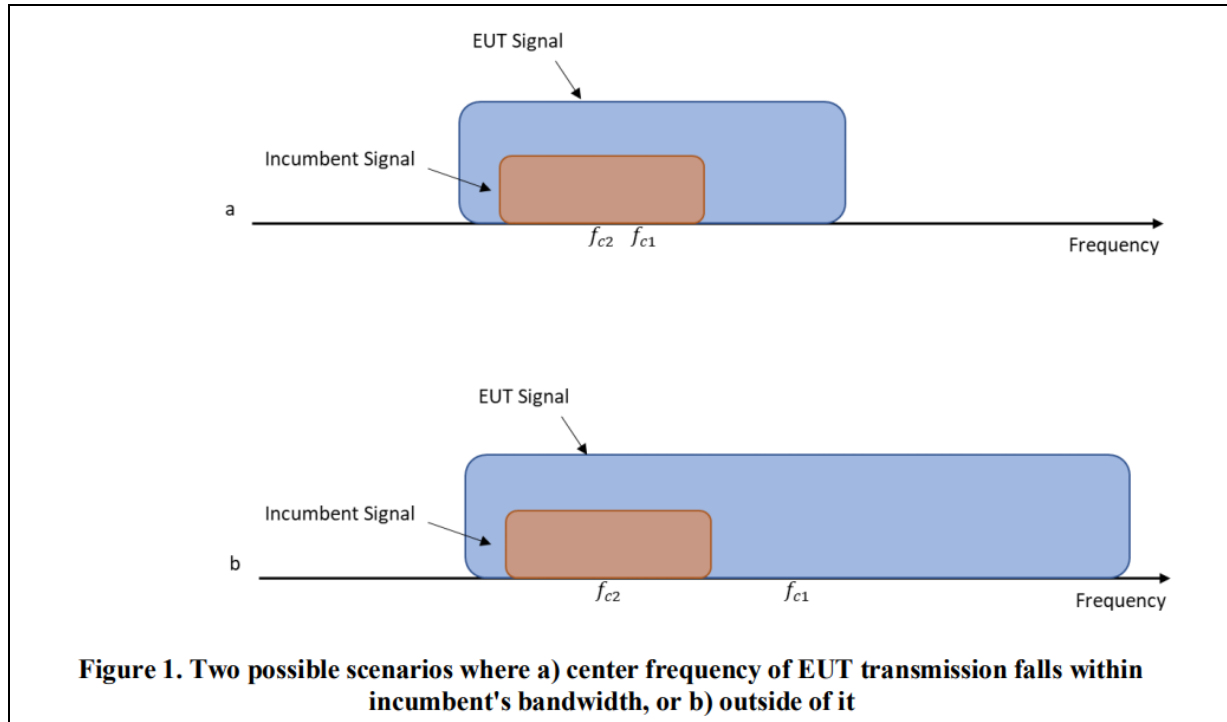
where:

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.

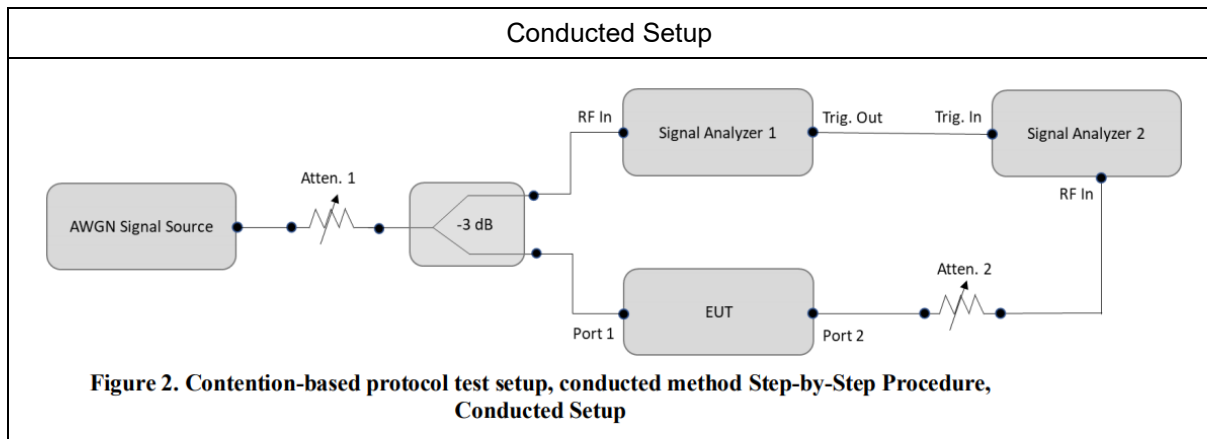
Section I) Contention Based Protocol

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
WLAN AP	TP-LINK	Archer BE800	Tri-Band Wi-Fi 7 Router
Notebook	DELL	Latitude 3400	LAN

3.5.6 Minimum Antenna gain for Contention Based Protocol Test

Antenna Gain	<UNII-5>: -7.6 dBi <UNII-6>: -12.4 dBi <UNII-7>: -9.6 dBi <UNII-8>: -5.5 dBi
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Note: The CBP antenna gain is considering the minimum gain from closed mode as worse case.



3.5.7 Test Summary of Contention Based Protocol Test

Test Engineer :	Kai Liao	Temperature :	22.6~26.1°C
		Relative Humidity :	45.5~54.6%

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	-75.96	100	-62	-68.36	6.36
				Result: Stop Transmission				
				-78.96	< 90	-62	-71.36	9.36
				Result: Minimal Operation				
				-79.96	0	-62	-72.36	10.36
				Result: Normal Operation				
	6185	160	6110	-81.01	100	-62	-73.41	11.41
				Result: Stop Transmission				
				-83.01	< 90	-62	-75.41	13.41
				Result: Minimal Operation				
				-84.01	0	-62	-76.41	14.41
				Result: Normal Operation				
			6185	-75.26	100	-62	-67.66	5.66
				Result: Stop Transmission				
				-78.26	< 90	-62	-70.66	8.66
				Result: Minimal Operation				
				-79.26	0	-62	-71.66	9.66
				Result: Normal Operation				
			6260	-81.02	100	-62	-73.42	11.42
				Result: Stop Transmission				
				-82.02	< 90	-62	-74.42	12.42
				Result: Minimal Operation				
				-83.02	0	-62	-75.42	13.42
				Result: Normal Operation				

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (-7.60 dBi).

Note 2: The antenna gain has included the path loss between RF connector and antenna.

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	-75.75	100	-62	-63.35	1.35
					Result: Stop Transmission			
				-77.75	< 90	-62	-65.35	3.35
					Result: Minimal Operation			
				-78.75	0	-62	-66.35	4.35
					Result: Normal Operation			
	6505	160	6430	-79.7	100	-62	-67.30	5.3
					Result: Stop Transmission			
				-82.70	< 90	-62	-70.30	8.30
					Result: Minimal Operation			
				-83.70	0	-62	-71.30	9.30
					Result: Normal Operation			
			6505	-75.86	100	-62	-63.46	1.46
					Result: Stop Transmission			
				-77.86	< 90	-62	-65.46	3.46
					Result: Minimal Operation			
				-78.86	0	-62	-66.46	4.46
					Result: Normal Operation			
			6580	-80.68	100	-62	-68.28	6.28
					Result: Stop Transmission			
				-82.68	< 90	-62	-70.28	8.28
					Result: Minimal Operation			
				-83.68	0	-62	-71.28	9.28
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (-12.40 dBi).

Note 2: The antenna gain has included the path loss between RF connector and antenna.

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	-76.16	100	-62	-66.56	4.56
					Result: Stop Transmission			
				-79.16	< 90	-62	-69.56	7.56
					Result: Minimal Operation			
				-80.16	0	-62	-70.56	8.56
					Result: Normal Operation			
	6665	160	6590	-81.77	100	-62	-72.17	10.17
					Result: Stop Transmission			
				-83.77	< 90	-62	-74.17	12.17
					Result: Minimal Operation			
				-84.77	0	-62	-75.17	13.17
					Result: Normal Operation			
			6665	-76.84	100	-62	-67.24	5.24
					Result: Stop Transmission			
				-78.84	< 90	-62	-69.24	7.24
					Result: Minimal Operation			
				-79.84	0	-62	-70.24	8.24
					Result: Normal Operation			
			6740	-81.89	100	-62	-72.29	10.29
					Result: Stop Transmission			
				-83.89	< 90	-62	-74.29	12.29
					Result: Minimal Operation			
				-84.89	0	-62	-75.29	13.29
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (-9.60 dBi).

Note 2: The antenna gain has included the path loss between RF connector and antenna.

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	-75.93	100	-62	-70.43	8.45
					Result: Stop Transmission			
				-78.93	< 90	-62	-73.43	11.45
					Result: Minimal Operation			
				-79.93	0	-62	-74.43	12.45
					Result: Normal Operation			
	6985	160	6910	-82.83	100	-62	-77.33	15.35
					Result: Stop Transmission			
				-83.83	< 90	-62	-78.33	16.35
					Result: Minimal Operation			
				-84.83	0	-62	-79.33	17.35
					Result: Normal Operation			
			6985	-77	100	-62	-71.5	9.52
					Result: Stop Transmission			
				-79.00	< 90	-62	-73.5	11.52
					Result: Minimal Operation			
				-80.00	0	-62	-74.5	12.52
					Result: Normal Operation			
			7060	-82.81	100	-62	-77.31	15.33
					Result: Stop Transmission			
				-83.81	< 90	-62	-78.31	16.33
					Result: Minimal Operation			
				-84.81	0	-62	-79.31	17.33
					Result: Normal Operation			

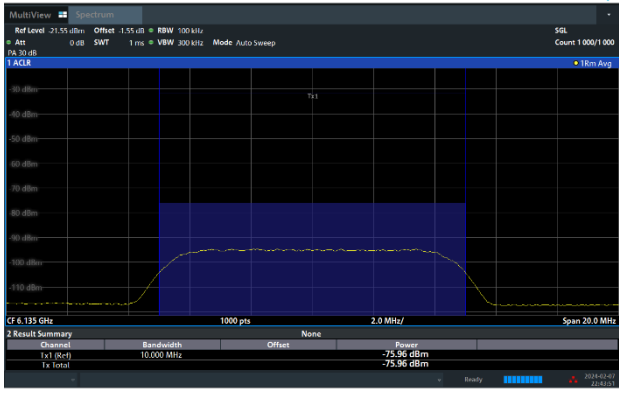
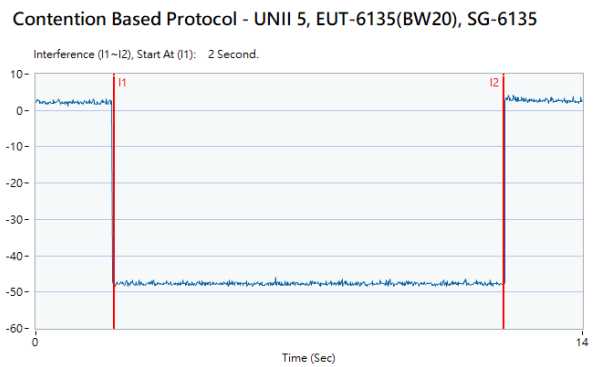
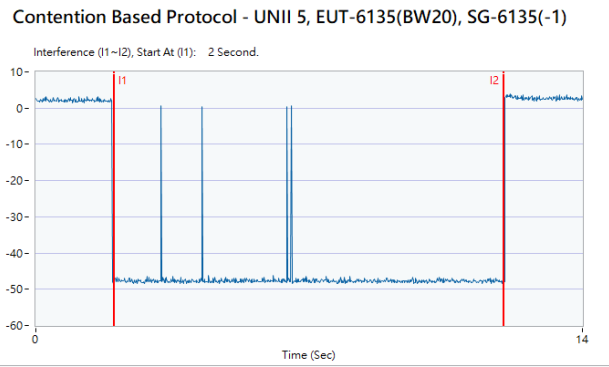
Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (-5.5 dBi).

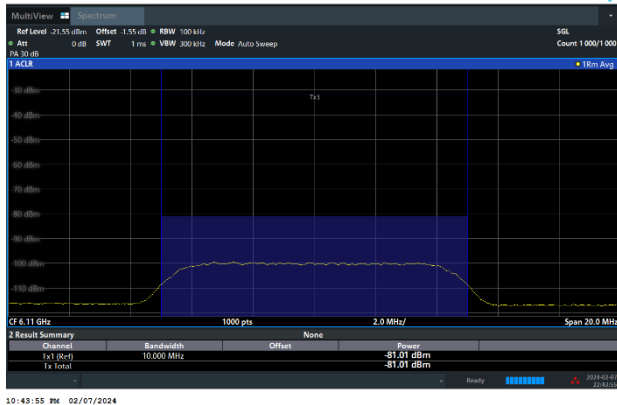
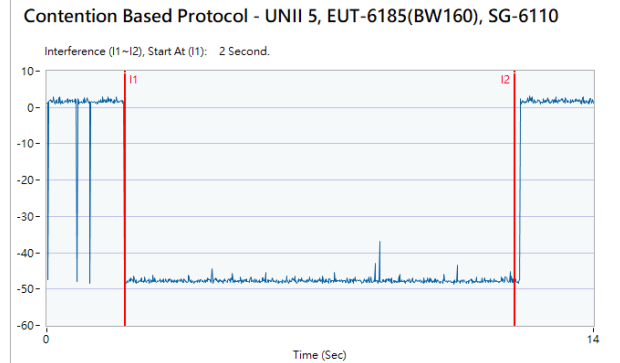
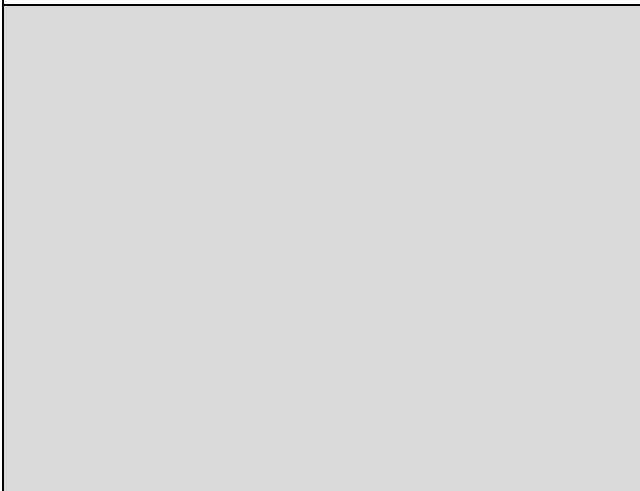
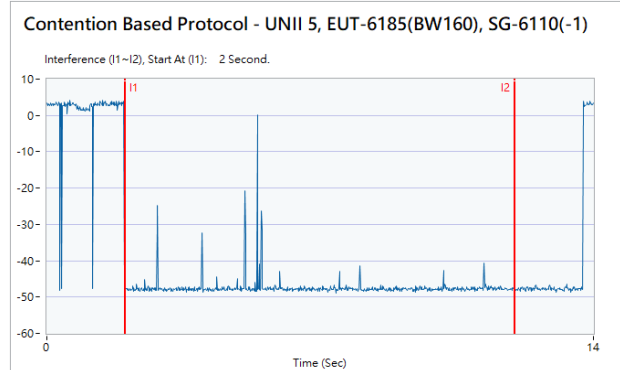
Note 2: The antenna gain has included the path loss between RF connector and antenna.

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



3.5.8 Test Plots of Contention Based Protocol Test

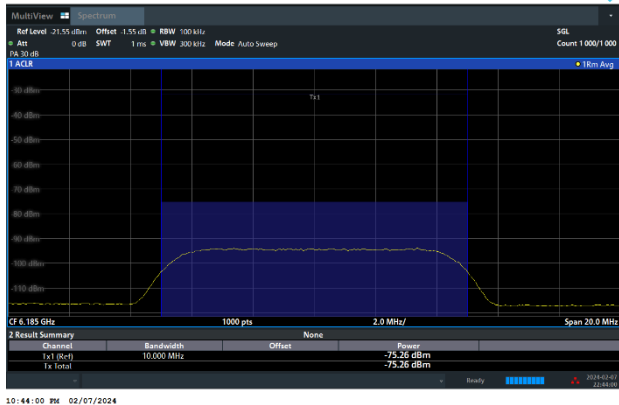
Contention Based Protocol Result Plots on U-NII 5 (AWGN Interference)	
802.11ax (HE20) / 6135MHz Threshold Level (TL) = -75.96dBm	802.11ax (HE20) / CH37 Test result is pass due to no transmission occur.
	 [CBP6135]
802.11ax (HE20) / 6135MHz Threshold Level (TL) = -76.96dBm	802.11ax (HE20) / CH37 Transmit when the interferer is 1dB lower.
	 [CBP6135_1]

Contention Based Protocol Result Plots on U-NII 5 (AWGN Interference)
802.11ax (HE160) / 6110MHz (Lower edge)
Threshold Level (TL) = -81.01dBm

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

[CBP6110]
802.11ax (HE160) / 6110MHz (Lower edge)
Threshold Level (TL) = -82.01dBm

802.11ax (HE160) / CH47 (Lower edge)
Transmit when the interferer is 1dB lower.

[CBP6110_1]

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

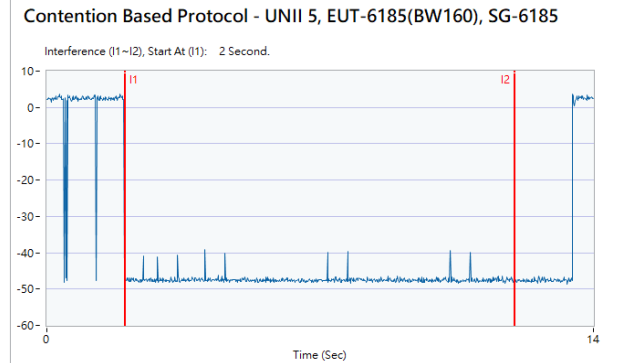
802.11ax (HE160) / 6185MHz (Middle)

Threshold Level (TL) = -75.26dBm



802.11ax (HE160) / CH47 (Middle)

Test result is pass due to no transmission occur.



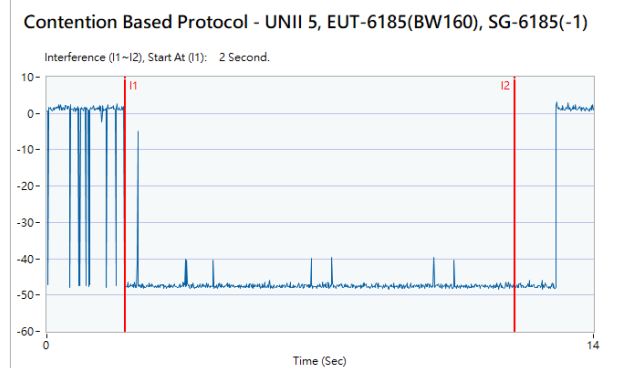
[CBP6185]

802.11ax (HE160) / 6185MHz (Middle)

Threshold Level (TL) = -76.26dBm

802.11ax (HE160) / CH47 (Middle)

Transmit when the interferer is 1dB lower.



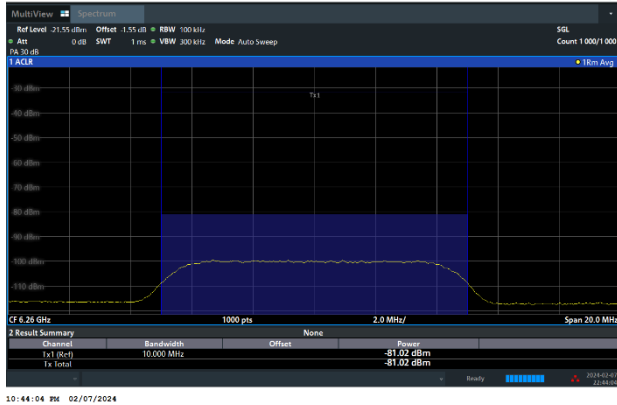
[CBP6185_1]

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

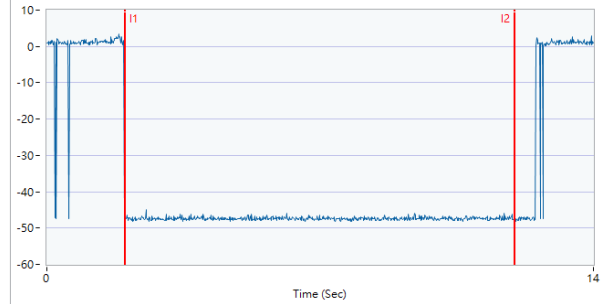
802.11ax (HE160) / 6260MHz (Upper edge)
Threshold Level (TL) = -81.02dBm

802.11ax (HE160) / CH47 (Upper edge)

Test result is pass due to no transmission occur.


Contention Based Protocol - UNII 5, EUT-6185(BW160), SG-6260

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



[CBP6260]

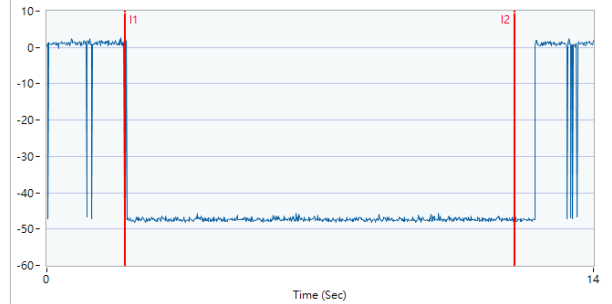
802.11ax (HE160) / 6260MHz (Upper edge)
Threshold Level (TL) = -82.02dBm

802.11ax (HE160) / CH47 (Upper edge)

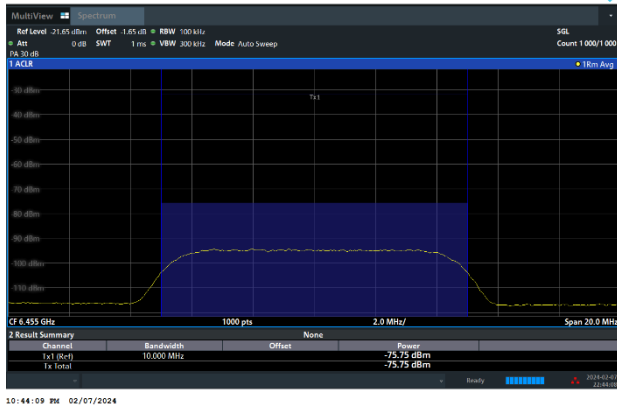
Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 5, EUT-6185(BW160), SG-6260(-1)

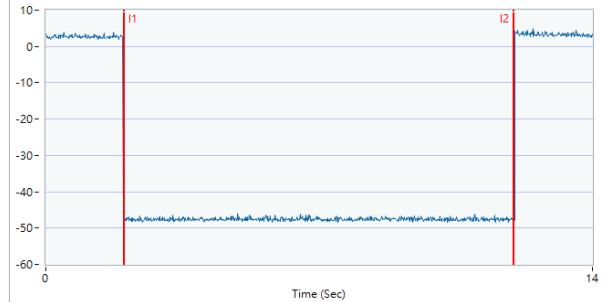
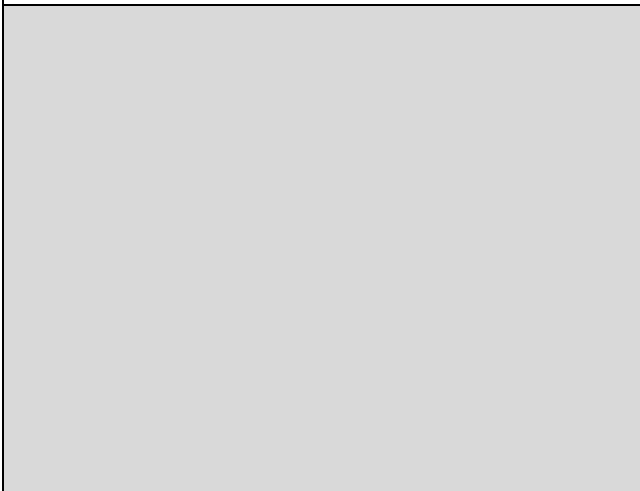
Interference (I1~I2), Start At (I1): 2 Second.



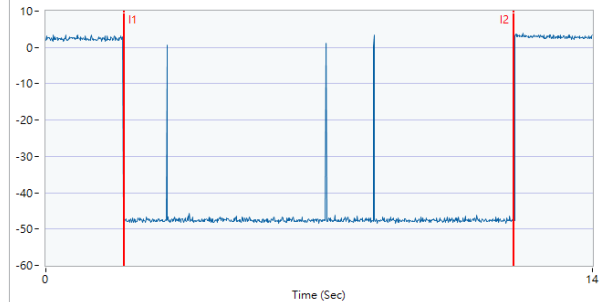
[CBP6260_1]

Contention Based Protocol Result Plots on U-NII 6 (AWGN Interference)
802.11ax (HE20) / 6455MHz
Threshold Level (TL) = -75.75dBm

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.


[CBP6455]
802.11ax (HE20) / 6455MHz
Threshold Level (TL) = -76.75dBm

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

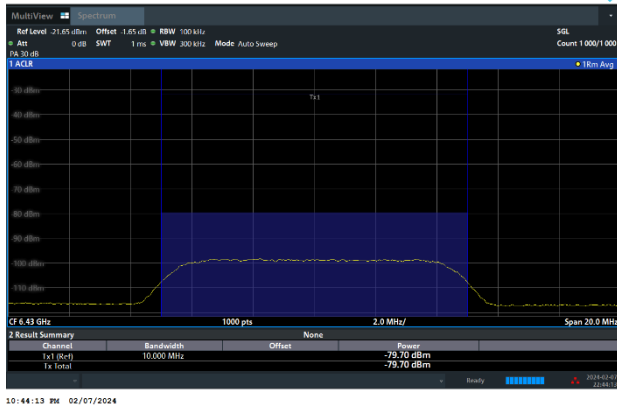
Interference (I1~I2), Start At (I1): 2 Second.


[CBP6455_1]

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

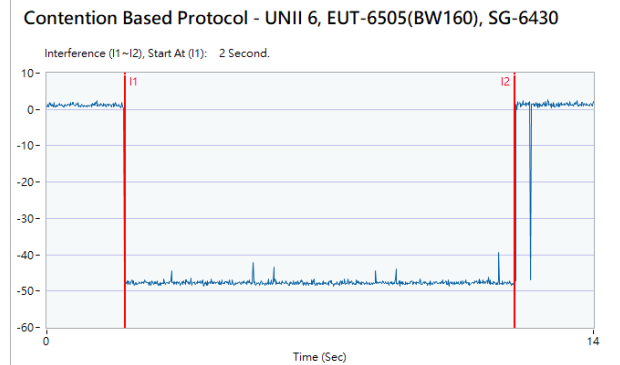
802.11ax (HE160) / 6430MHz (Lower edge)

Threshold Level (TL) = -79.7dBm



802.11ax (HE160) / CH111 (Lower edge)

Test result is pass due to no transmission occur.



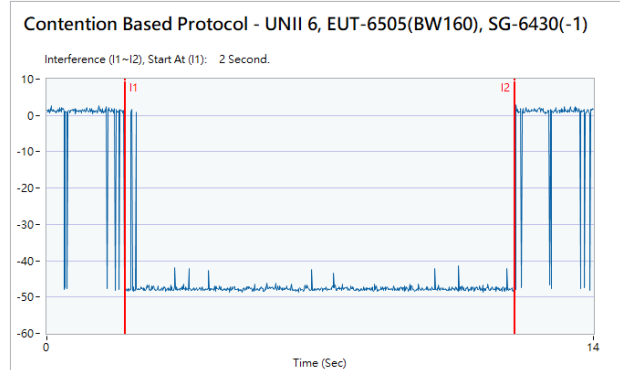
[CBP6430]

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

Threshold Level (TL) = -80.70dBm

802.11ax (HE160) / CH111 (Lower edge)

Transmit when the interferer is 1dB lower.



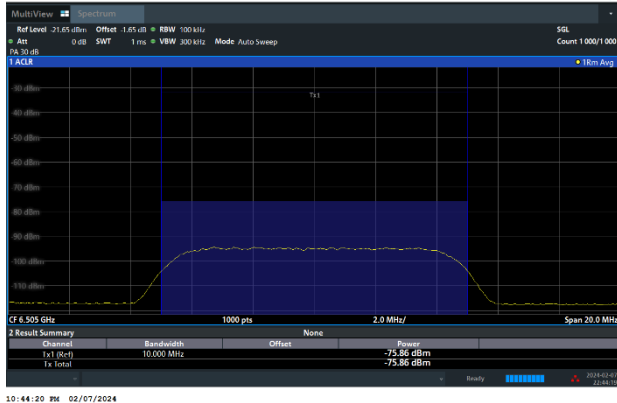
[CBP6430_1]

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

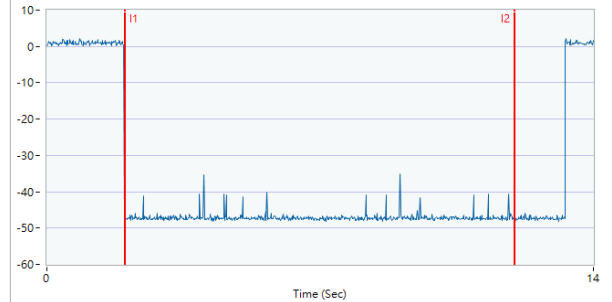
802.11ax (HE160) / 6505MHz (Middle)
Threshold Level (TL) = -75.86dBm

802.11ax (HE160) / CH111 (Middle)

Test result is pass due to no transmission occur.


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

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



[CBP6505]

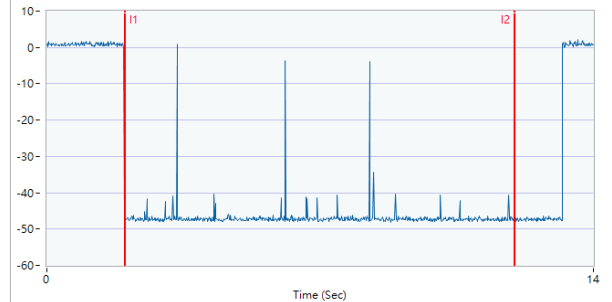
802.11ax (HE160) / 6505MHz (Middle)
Threshold Level (TL) = -76.86dBm

802.11ax (HE160) / CH111 (Middle)

Transmit when the interferer is 1dB lower.

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

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



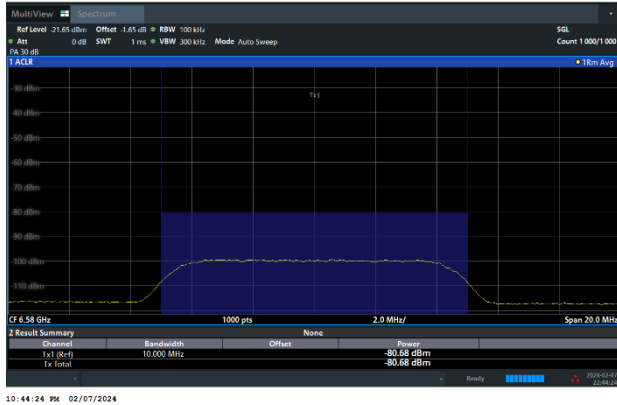
[CBP6505_1]

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

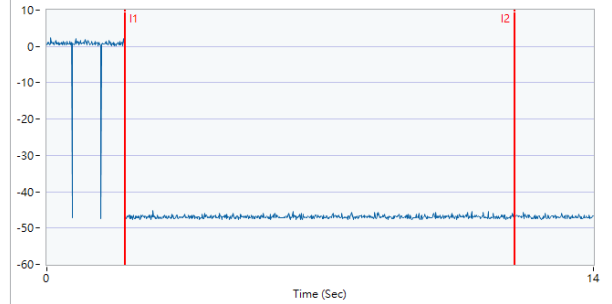
802.11ax (HE160) / 6580MHz (Upper edge)
Threshold Level (TL) = -80.68dBm

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

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



[CBP6580]

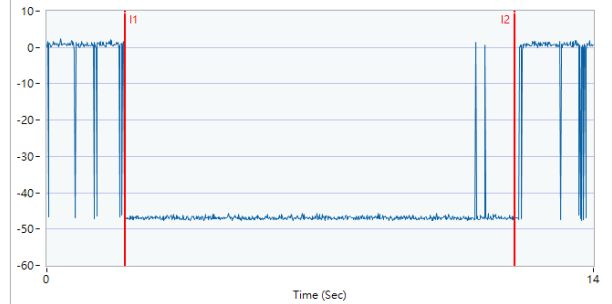
802.11ax (HE160) / 6580MHz (Upper edge)
Threshold Level (TL) = -81.68dBm

802.11ax (HE160) / CH111 (Upper edge)

Transmit when the interferer is 1dB lower.

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

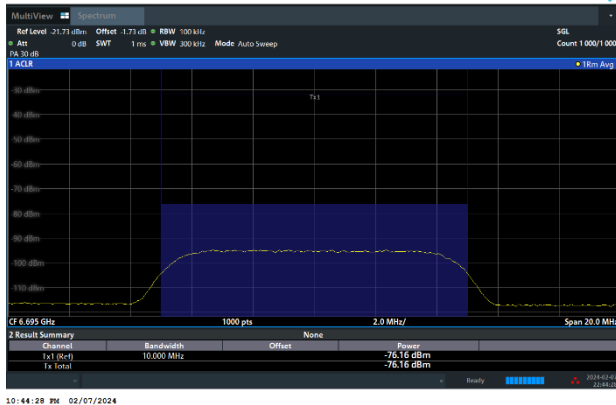
Interference (I1~I2), Start At (I1): 2 Second.



[CBP6580_1]

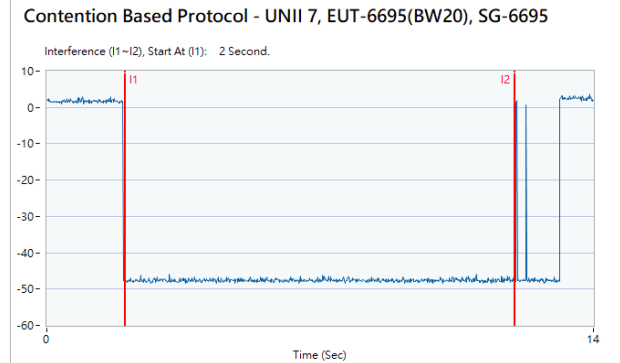
Contention Based Protocol Result Plots on U-NII 7 (AWGN Interference)

802.11ax (HE20) / 6695MHz
Threshold Level (TL) = -76.16dBm



802.11ax (HE20) / CH149

Test result is pass due to no transmission occur.

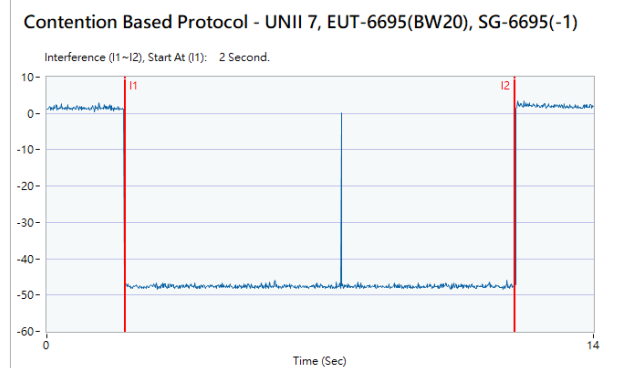


[CBP6695]

802.11ax (HE20) / 6695MHz
Threshold Level (TL) = -77.16dBm

802.11ax (HE20) / CH149

Transmit when the interferer is 1dB lower.



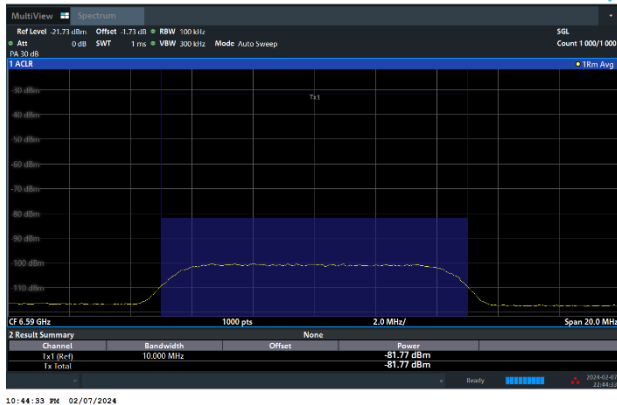
[CBP6695_1]

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

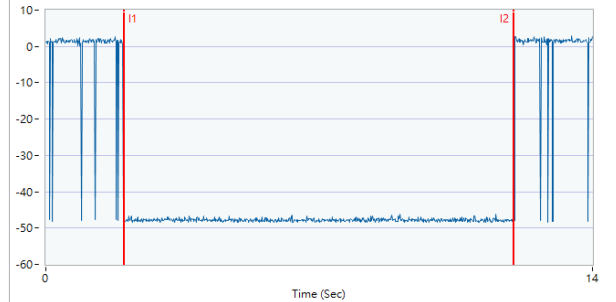
802.11ax (HE160) / 6590MHz (Lower edge)
Threshold Level (TL) = -81.77dBm

802.11ax (HE160) / CH143 (Lower edge)

Test result is pass due to no transmission occur.


Contention Based Protocol - UNII 7, EUT-6665(BW160), SG-6590

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



[CBP6590]

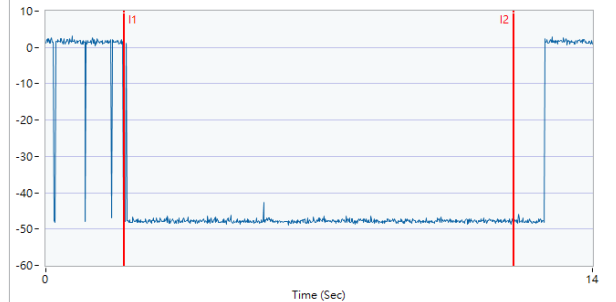
802.11ax (HE160) / 6590MHz (Lower edge)
Threshold Level (TL) = -82.77dBm

802.11ax (HE160) / CH143 (Lower edge)

Transmit when the interferer is 1dB lower.

Contention Based Protocol - UNII 7, EUT-6665(BW160), SG-6590(-1)

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

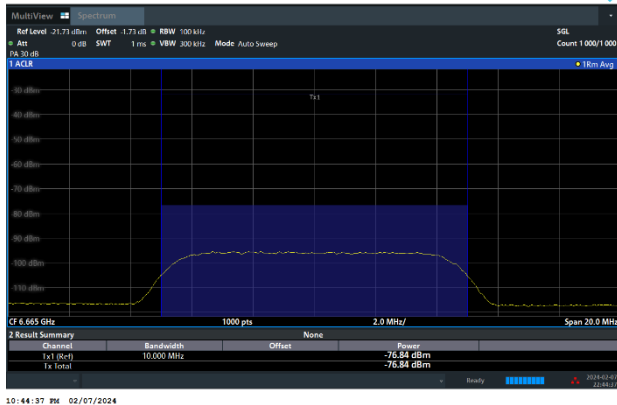


[CBP6590_1]

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

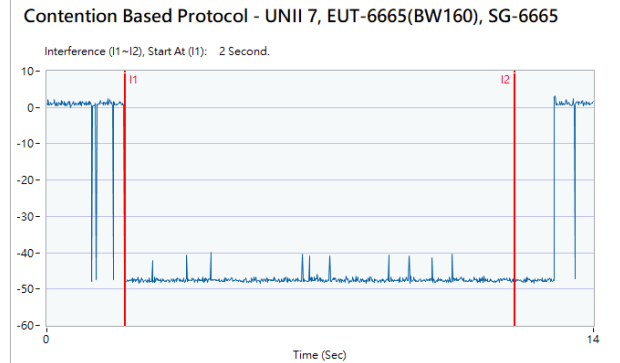
802.11ax (HE160) / 6665MHz (Middle)

Threshold Level (TL) = -76.84dBm



802.11ax (HE160) / CH143 (Middle)

Test result is pass due to no transmission occur.



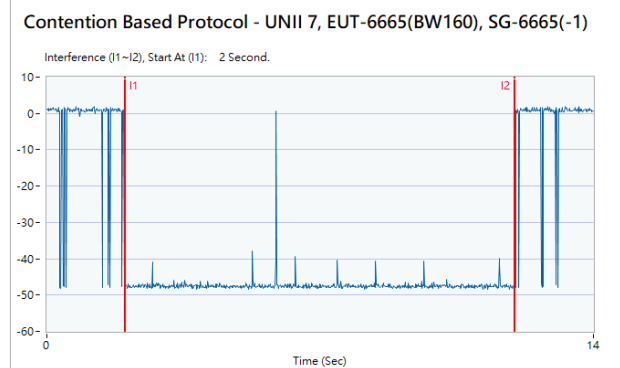
[CBP6665]

802.11ax (HE160) / 6665MHz (Middle)

Threshold Level (TL) = -77.84dBm

802.11ax (HE160) / CH143 (Middle)

Transmit when the interferer is 1dB lower.

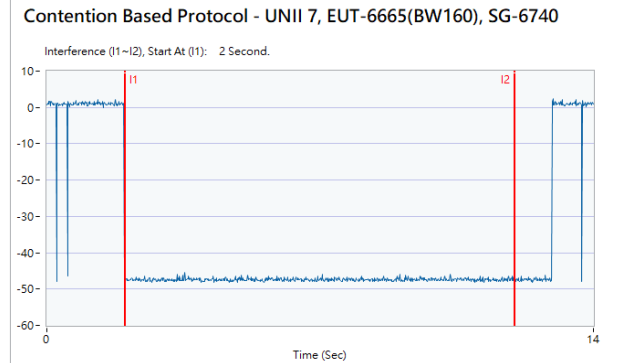
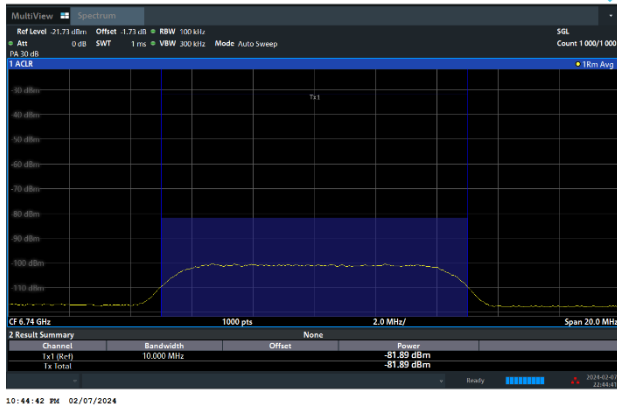


[CBP6665_1]

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

802.11ax (HE160) / 6740MHz (Upper edge)
Threshold Level (TL) = -81.89dBm

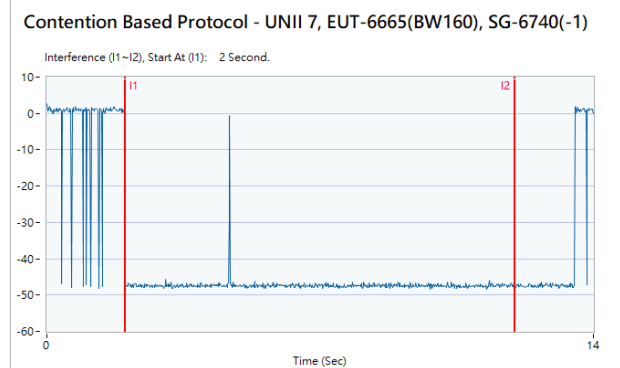
802.11ax (HE160) / CH143 (Upper edge)
Test result is pass due to no transmission occur.



[CBP6740]

802.11ax (HE160) / 6740MHz (Upper edge)
Threshold Level (TL) = -82.89dBm

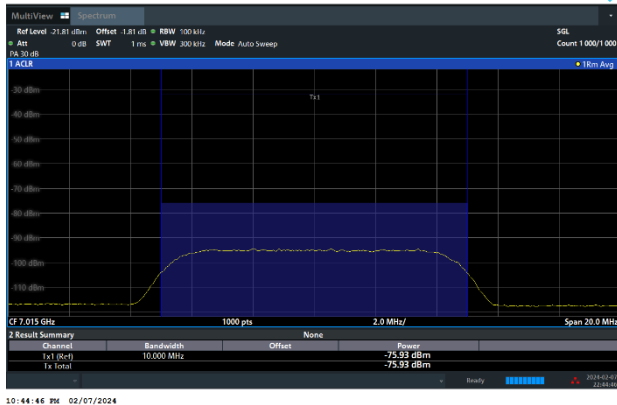
802.11ax (HE160) / CH143 (Upper edge)
Transmit when the interferer is 1dB lower.



[CBP6740_1]

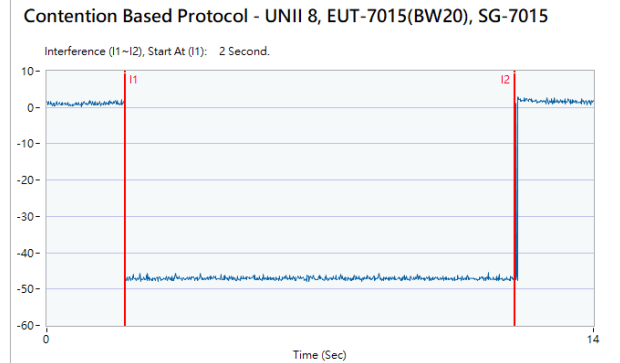
Contention Based Protocol Result Plots on U-NII 8 (AWGN Interference)

802.11ax (HE20) / 7015MHz
Threshold Level (TL) = -75.93dBm



802.11ax (HE20) / CH213

Test result is pass due to no transmission occur.

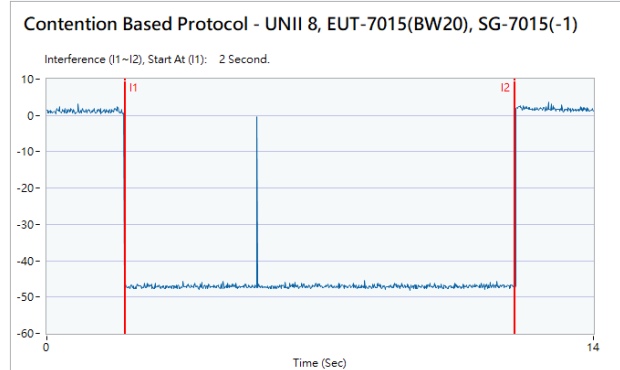


[CBP7015]

802.11ax (HE20) / 7015MHz
Threshold Level (TL) = -76.93dBm

802.11ax (HE20) / CH213

Transmit when the interferer is 1dB lower.



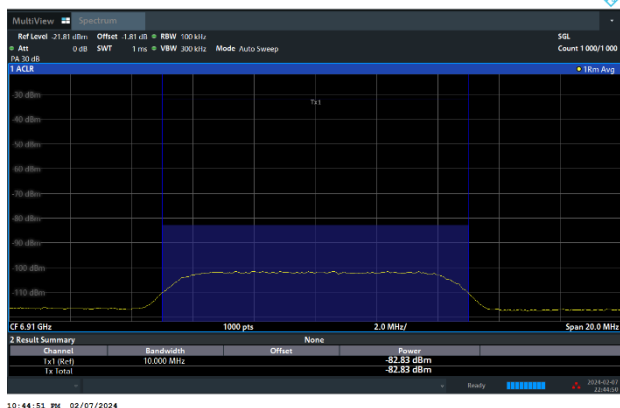
[CBP7015_1]



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

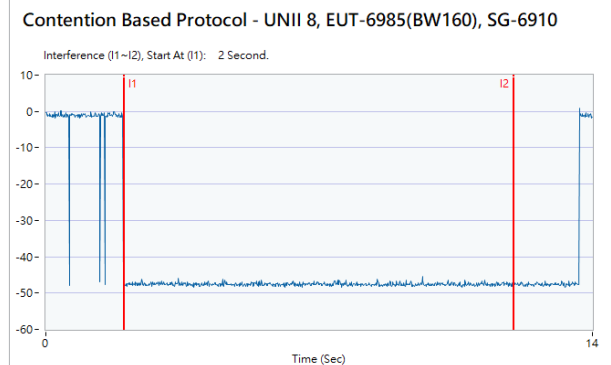
802.11ax (HE160) / 6910MHz (Lower edge)

Threshold Level (TL) = -82.83dBm



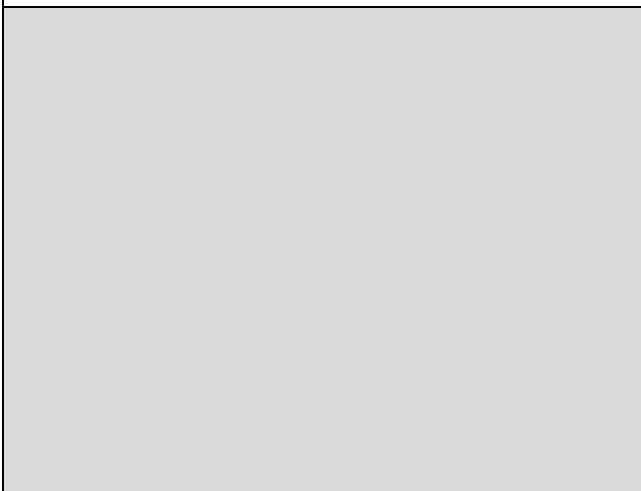
802.11ax (HE160) / CH207 (Lower edge)

Test result is pass due to no transmission occur.



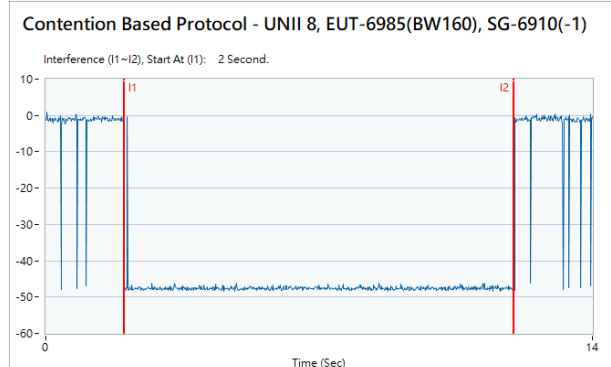
802.11ax (HE160) / 6910MHz (Lower edge)

Threshold Level (TL) = -83.83dBm



802.11ax (HE160) / CH207 (Lower edge)

Transmit when the interferer is 1dB lower.

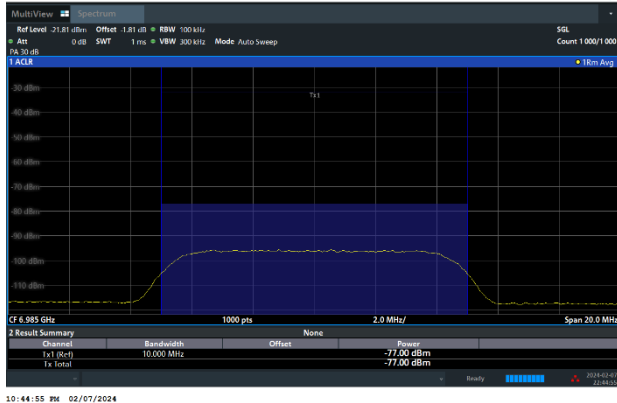




Contention Based Protocol Result Plots on U-NII 8 (AWGN Interference)

802.11ax (HE160) / 6985MHz (Middle)

Threshold Level (TL) = -77dBm

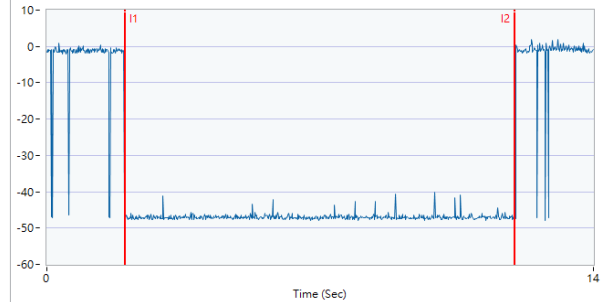


802.11ax (HE160) / CH207 (Middle)

Test result is pass due to no transmission occur.

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

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



[CBP6985]

802.11ax (HE160) / 6985MHz (Middle)

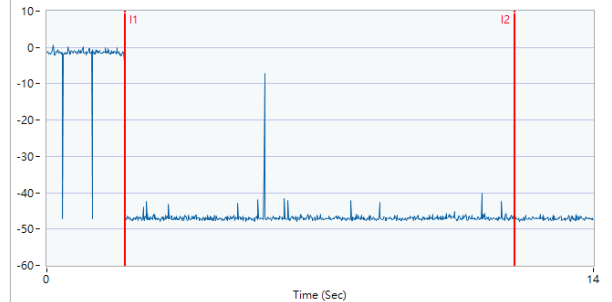
Threshold Level (TL) = -78.00dBm

802.11ax (HE160) / CH207 (Middle)

Transmit when the interferer is 1dB lower.

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

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

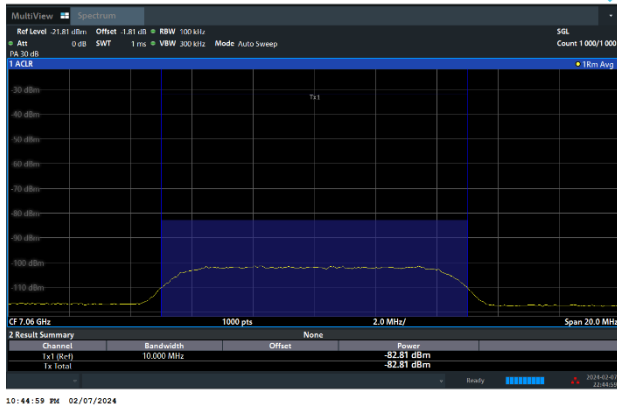


[CBP6985_1]



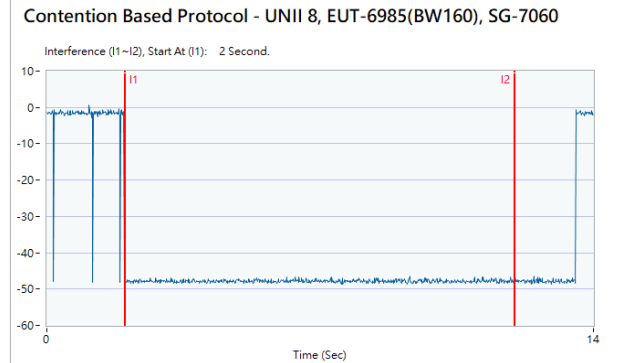
Contention Based Protocol Result Plots on U-NII 8 (AWGN Interference)

802.11ax (HE160) / 7060MHz (Upper edge)
Threshold Level (TL) = -82.81dBm



802.11ax (HE160) / CH207 (Upper edge)

Test result is pass due to no transmission occur.

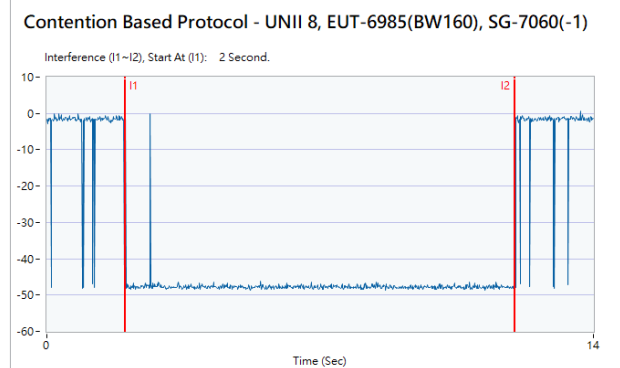


[CBP7060]

802.11ax (HE160) / 7060MHz (Upper edge)
Threshold Level (TL) = -83.81dBm

802.11ax (HE160) / CH207 (Upper edge)

Transmit when the interferer is 1dB lower.



[CBP7060_1]



CBP verify with frequency domain plots

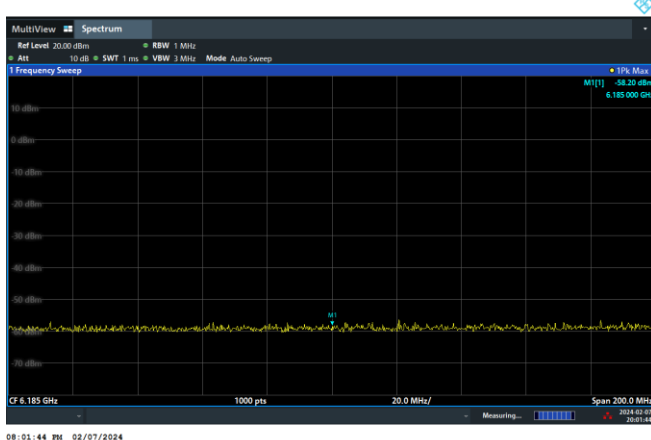
The device supports channel puncturing, but the device does not use channel puncturing as a means of incumbent avoidance. The entire bandwidth 160MHz stops transmission after the incumbent signal appears.

The device does not support bandwidth reduction with regards to Contention Based Protocol.

Before incumbent injected on 160MHz channel



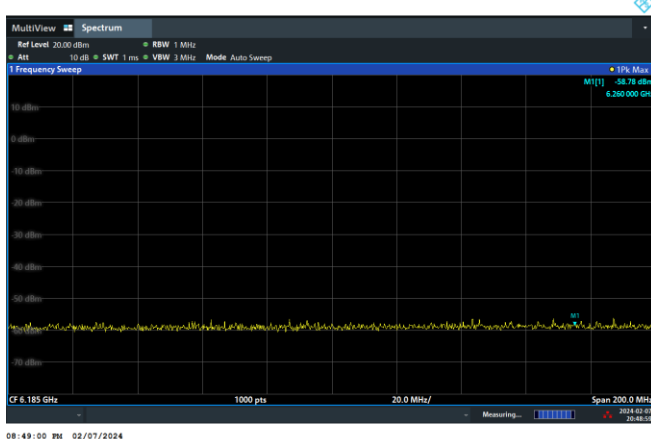
After 10MHz incumbent injected on center of channel, the entire 160MHz bandwidth stops transmission.



After 10MHz incumbent injected on bottom of channel, the entire 160MHz bandwidth stops transmission.



After 10MHz incumbent injected on top of channel, the entire 160MHz bandwidth stops transmission.



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

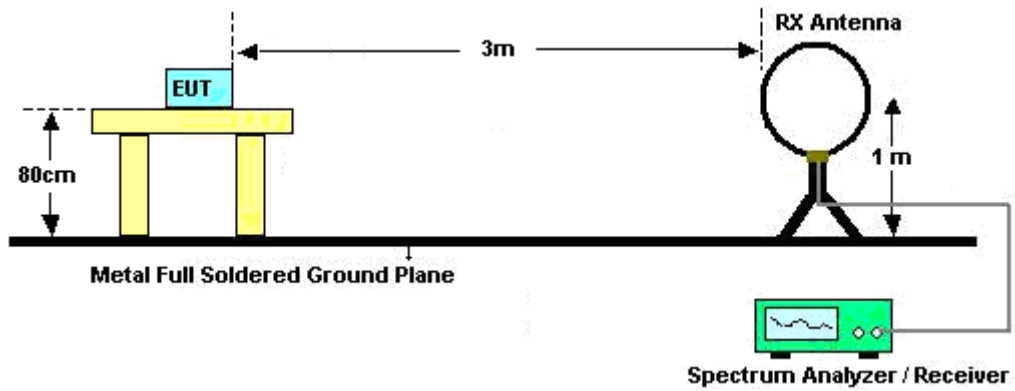
Please refer to the measuring equipment list in this test report.

3.6.3 Test Procedures

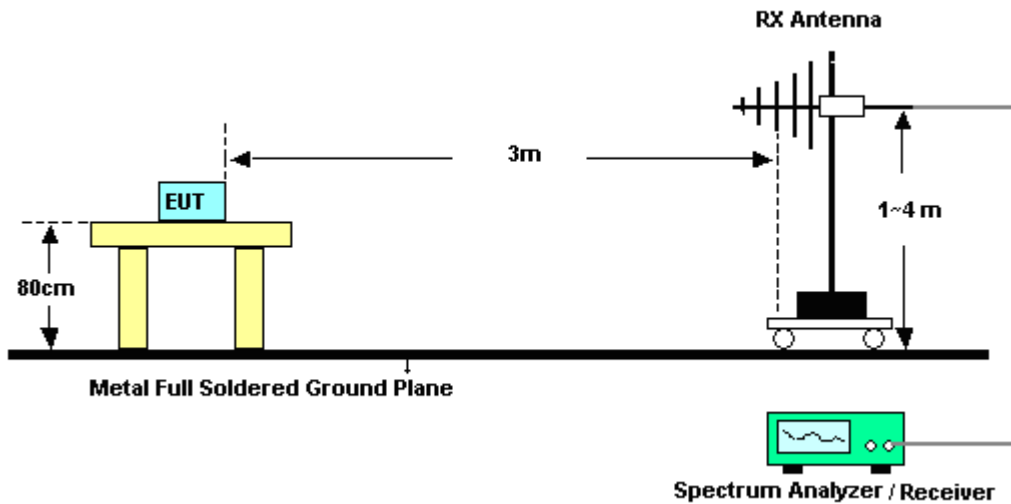
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak 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.
2. 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.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. 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.
5. 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.
6. 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 “-”.
7. 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

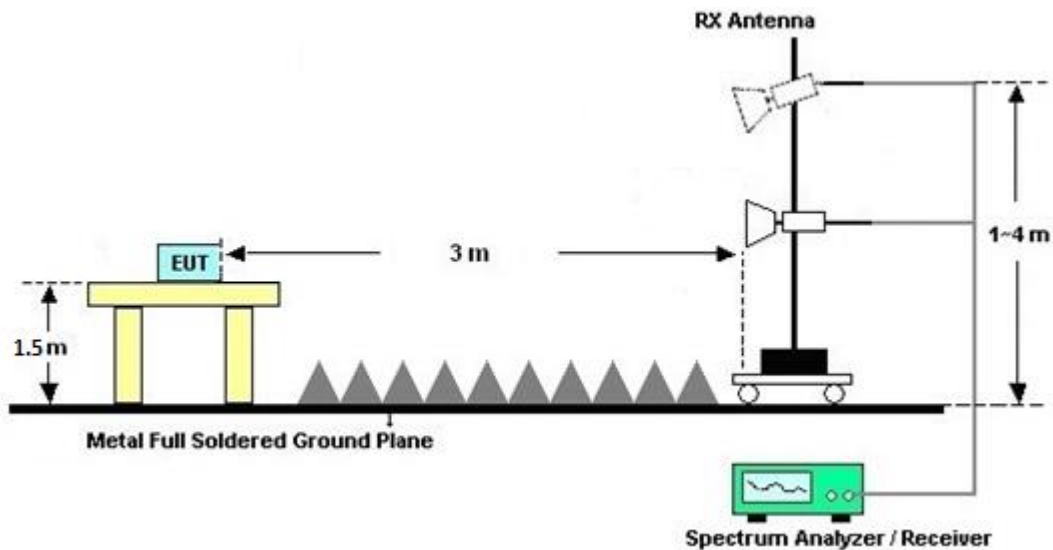
For radiated emissions below 30MHz



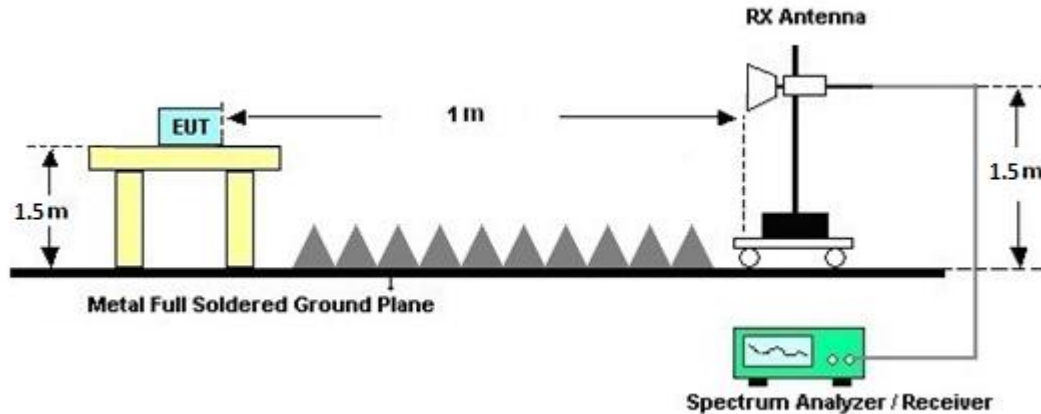
For radiated emissions from 30MHz to 1GHz



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 Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.6.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.7 AC Conducted Emission Measurement

3.7.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

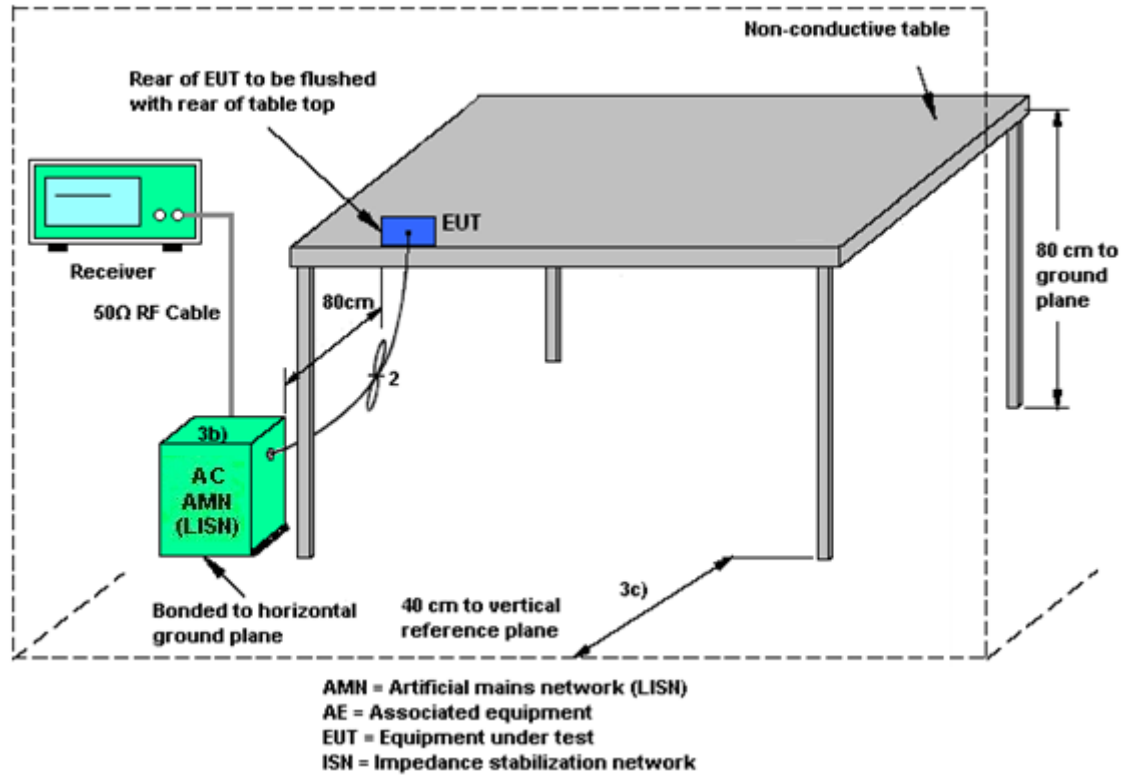
3.7.2 Measuring Instruments

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

3.7.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.7.4 Test Setup



3.7.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.8 Antenna Requirements

3.8.1 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.

3.8.2 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
Signal Generator (Interferer)	Rohde & Schwarz	SMW200A	109425	100kHz~7.5GHz	Dec. 20, 2023	Feb. 07, 2024~ Feb. 08, 2024	Dec. 19, 2024	CBP (DF02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV3013	101549	10Hz~44GHz	Jan. 30, 2024	Feb. 07, 2024~ Feb. 08, 2024	Jan. 29, 2025	CBP (DF02-HY))
Power Divider	Woken	2Way Divider	DCMB1KW7A2	0.5GHz~18GHz	Calibration from System	Feb. 07, 2024~ Feb. 08, 2024	Calibration from System	CBP (DF02-HY)
Power Divider	Woken	0120A0405180 1O	DCMB1CW3A7	0.5~18GHz	Calibration from System	Feb. 07, 2024~ Feb. 08, 2024	Calibration from System	CBP (DF02-HY))
Power Divider	Woken	3Way SMA Power Divider Rated to 20W	STI08-0010(#2)	2GHz~8GHz	Calibration from System	Feb. 07, 2024~ Feb. 08, 2024	Calibration from System	CBP (DF02-HY)
Coupler	Woken	10dB 30W SMA	DOM5CIW3A1	0.5~18GHz	Calibration from System	Feb. 07, 2024~ Feb. 08, 2024	Calibration from System	CBP (DF02-HY))
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Feb. 14, 2024~ Jun. 05, 2024	Nov. 06, 2024	Conducted (TH05-HY)
USB Power Sensor	DARE	RPR3008W	RPR8W-230100 13 (NO:100)	10MHz~8GHz	Jul. 26, 2023	Feb. 14, 2024~ Jun. 05, 2024	Jul. 25, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101564	10Hz ~ 40GHz	Sep. 12, 2023	Feb. 14, 2024~ Jun. 05, 2024	Sep. 11, 2024	Conducted (TH05-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Mar. 22, 2024	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Mar. 22, 2024	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz~200MHz	Oct. 20, 2023	Mar. 22, 2024	Oct. 19, 2024	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Mar. 22, 2024	Mar. 13, 2025	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 10, 2024	Mar. 22, 2024	Mar. 09, 2025	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 07, 2024	Mar. 22, 2024	Mar. 06, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 20, 2023	Mar. 22, 2024	Sep. 19, 2024	Conduction (CO07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 12, 2023	Feb. 14, 2024~ Mar. 18, 2024	Sep. 11, 2024	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz~40GHz	Nov. 24, 2023	Feb. 14, 2024~ Mar. 18, 2024	Nov. 23, 2024	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01N-06	47020 & 06	30MHz to 1GHz	Oct. 07, 2023	Feb. 14, 2024~ Mar. 18, 2024	Oct. 06, 2024	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Mar. 23, 2023	Feb. 14, 2024~ Mar. 18, 2024	Mar. 22, 2024	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1GHz	Jul. 03, 2023	Feb. 14, 2024~ Mar. 18, 2024	Jul. 02, 2024	Radiation (03CH16-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 07, 2023	Feb. 14, 2024~ Mar. 18, 2024	Dec. 06, 2024	Radiation (03CH16-HY)
Preamplifier	EMEC	EM1G18G	060812	1GHz~18GHz	Dec. 25, 2023	Feb. 14, 2024~ Mar. 18, 2024	Dec. 24, 2024	Radiation (03CH16-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 27, 2023	Feb. 14, 2024~ Mar. 18, 2024	Jun. 26, 2024	Radiation (03CH16-HY)
Notch Filter	Wainwright	WRCQV14-54 25-5825-6525- 6925-60SS	SN1	N/A	Jan. 05, 2024	Feb. 14, 2024~ Mar. 18, 2024	Jan. 04, 2025	Radiation (03CH16-HY)
Notch Filter	Wainwright	WRCQV14-60 25-6425-7125- 7525-60SS	SN2	N/A	Jan. 05, 2024	Feb. 14, 2024~ Mar. 18, 2024	Jan. 04, 2025	Radiation (03CH16-HY)
Filter	Wainwright	WHKX6-7268- 9200-26500-40 CD	SN4	9GHz High Pass Filter	May 23, 2023	Feb. 14, 2024~ Mar. 18, 2024	May 22, 2024	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 07, 2023	Feb. 14, 2024~ Mar. 05, 2024	Mar. 06, 2024	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 06, 2024	Mar. 06, 2024~ Mar. 18, 2024	Mar. 05, 2025	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102/SUCOFLE X 104	EC-A5-300-5 757,805935/4 ,802434/4	30MHz~18GHz	Aug. 08, 2023	Feb. 14, 2024~ Mar. 18, 2024	Aug. 07, 2024	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	18-40GHz	Jan. 02, 2024	Feb. 14, 2024~ Mar. 18, 2024	Jan. 01, 2025	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Feb. 14, 2024~ Mar. 18, 2024	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Feb. 14, 2024~ Mar. 18, 2024	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Feb. 14, 2024~ Mar. 18, 2024	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Feb. 14, 2024~ Mar. 18, 2024	N/A	Radiation (03CH16-HY)



5 Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.44 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.50 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50dB
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Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.50 dB
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