

3.5 Transmit Power Control (TPC)

3.5.1 Limit of Transmit Power Control (TPC)

<FCC 14-30 CFR 15.407>

(d)(10) Very low power devices operating in the 5.925-6.425 and 6.525-6.875 GHz bands shall employ a transmit power control (TPC) mechanism. A very low power device is required to have the capability to operate at least 6 dB below the maximum EIRP power spectral density (PSD) value of -5 dBm/MHz.

3.5.2 Measuring Instruments

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

3.5.3 Test Procedure:

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

Section F) Maximum power spectral density.

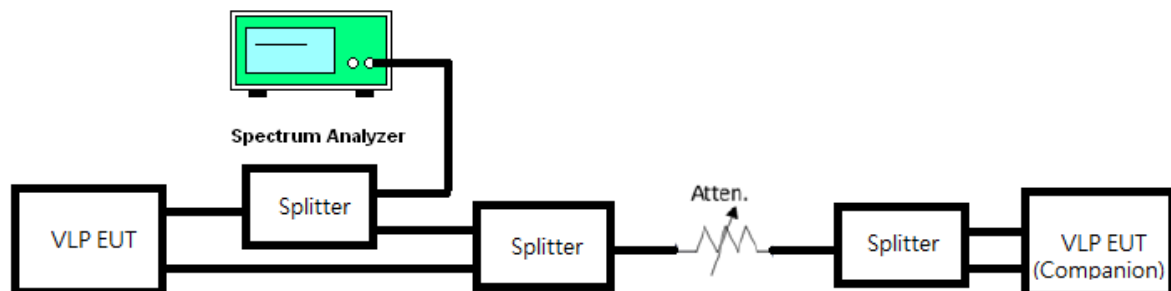
Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW $\geq$ 3 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

Measure the PPSD and record it.

3.5.4 Test Setup



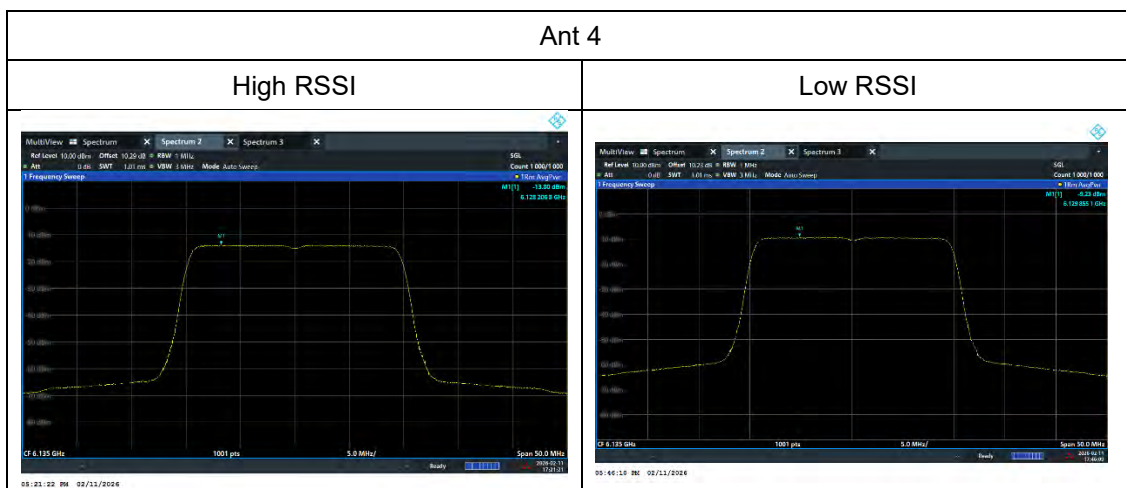
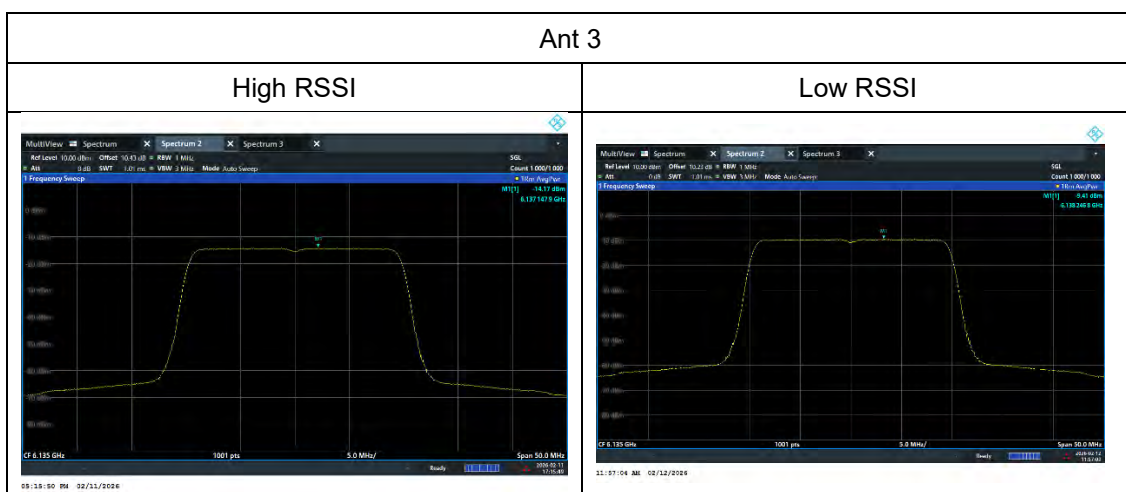


3.5.5 Test Result

The purpose of this test is to verify the relative power drop as the RSSI is increased.

If the conducted PSD delta is greater than 6dB then it ensures the EIRP PSD is at least 6 dB below the maximum EIRP power spectral density (PSD) value of -5 dBm/MHz.

UNII-5 MIMO 2TX	EHT20 6135MHz	Conducted PSD Ant 3 (3+4) (dBm/MHz)	Conducted PSD Ant 4 (3+4) (dBm/MHz)	Conducted PSD Ant 3+4 (dBm/MHz)	Antenna Gain Ant 3+4 (dBi)	EIRP PSD Ant 3+4 (dBm/MHz)
Low RSSI		-9.41	-9.23	-6.31	-3.22	-14.19
High RSSI		-14.17	-13.80	-10.97		
Verdict [EIRP PSD < -11dBm/MHz]						Pass



3.6 AC Conducted Emission Measurement

3.6.1 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.

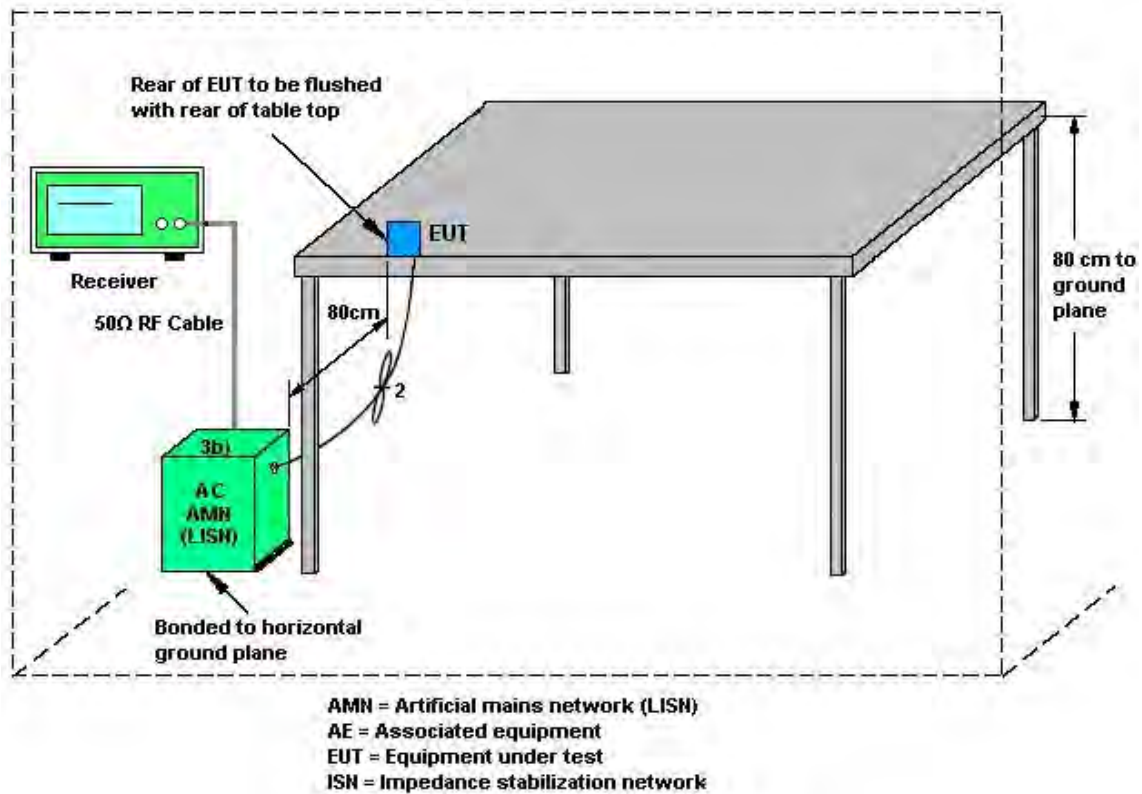
3.6.2 Measuring Instruments

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

3.6.3 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.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



3.7 Antenna Requirements

3.7.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

3.7.2 Antenna Anti-Replacement Construction

b) Unique (non-standard) antenna connector.

(3) Use of a standard connector is also allowed if the connector is within the transmitter enclosure and can only be accessed by disassembly of the transmitter, where such disassembly is not normally required. The user manual must not show that user has access to the connector.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECEPIL	DTM-303A	TP201996	N/A	Nov. 04, 2025	Dec. 30, 2025~ Feb. 25, 2026	Nov. 03, 2026	Conducted (TH05-HY)
USB Power Sensor	DARE	RPR3008W	RPR8W-2301 0013 (NO:100)	10MHz~8GHz	Jul. 18, 2025	Dec. 30, 2025~ Feb. 25, 2026	Jul. 17, 2026	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 29, 2025	Dec. 30, 2025~ Feb. 25, 2026	Aug. 28, 2026	Conducted (TH05-HY)
Switch Control Mainframe	E-Instument	ETF-1405-0	EC1900067 (BOX7)	N/A	Jul. 02, 2025	Dec. 30, 2025~ Feb. 25, 2026	Jul. 01, 2026	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_ version_24051 3	N/A	Conducted Other Test Item	N/A	Dec. 30, 2025~ Feb. 25, 2026	N/A	Conducted (TH05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 20, 2025	Feb. 10, 2026	Oct. 19, 2026	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 03, 2025	Feb. 10, 2026	Mar. 02, 2026	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 24, 2025	Feb. 10, 2026	Mar. 23, 2026	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 26, 2025	Feb. 10, 2026	Mar. 25, 2026	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Oct. 21, 2025	Feb. 10, 2026	Oct. 20, 2026	Conduction (CO07-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Feb. 10, 2026	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Feb. 10, 2026	N/A	Conduction (CO07-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSV3013	101550	10Hz~13.6GHz	Dec. 26, 2025	Feb. 11, 2026~ Feb. 12, 2026	Dec. 25, 2026	TPC (DF02-HY)
Power Divider	MTJ	SMA 2Way Power Divider	MD10003	0.5GHz~6GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
Power Divider	MTJ	SMA 2Way Power Divider	MD10007	0.5GHz~6GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
Power Divider	MTJ	SMA 2Way Power Divider	MD10011	0.5GHz~6GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
Power Divider	MTJ	SMA 2Way Power Divider	MD10016	0.5GHz~6GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
Software 1	Sporton	DFS & Adaptivity Tools	N/A	Ver 1.0	N/A	Feb. 11, 2026~ Feb. 12, 2026	N/A	TPC (DF02-HY)
RF Cable	MTJ	SBF405	30cm-01	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	MTJ	SBF405	30cm-09	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	EC	SS405	100cm-01	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	EC	SS405	100cm-03	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	EC	SS405	100cm-05	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	EC	SS405	100cm-10	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	EC	SS405	100cm-11	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	EC	SS405	150cm-#11	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)
RF Cable	EC	SS405	150cm-#15	30kHz~18GHz	Calibration from System	Feb. 11, 2026~ Feb. 12, 2026	Calibration from System	TPC (DF02-HY)



5 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.7 dB
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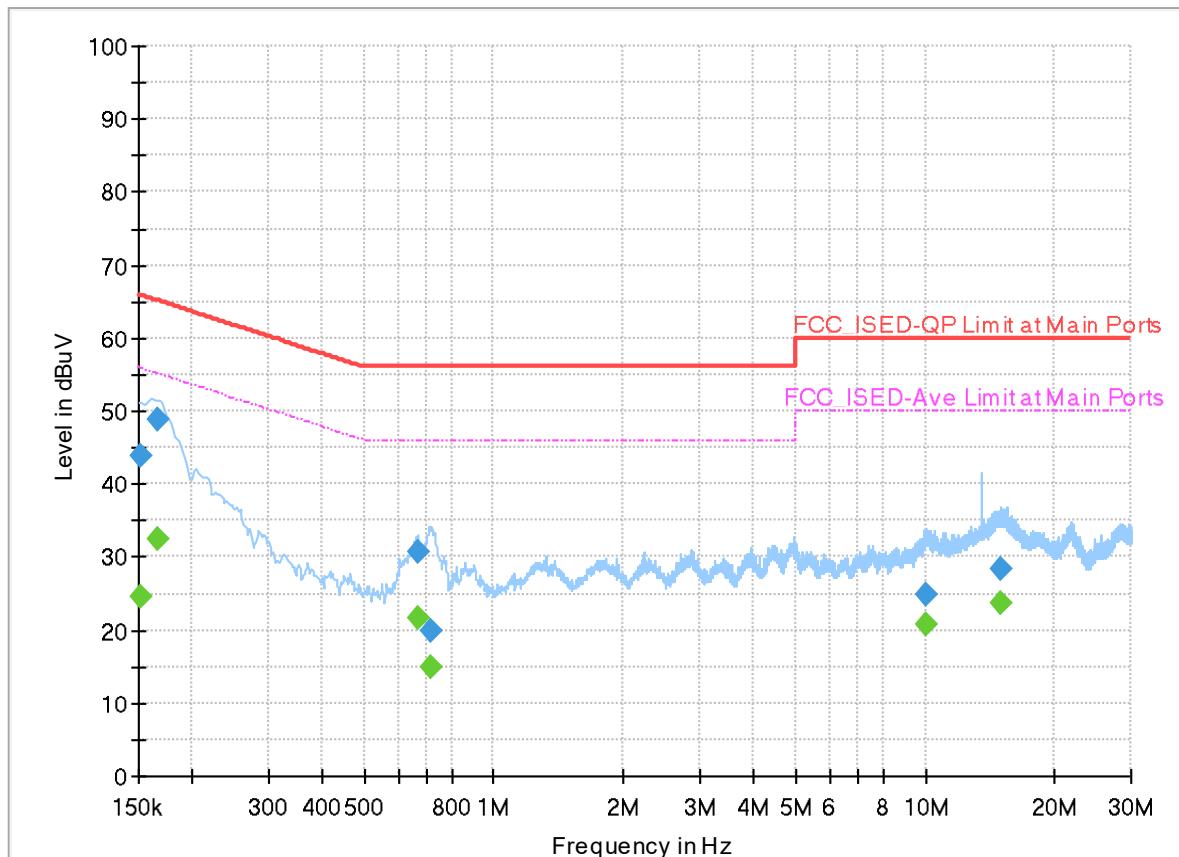
Appendix A. AC Conducted Emission Test Results

Test Engineer :	Brian Chen	Temperature :	23~26℃
		Relative Humidity :	45~55%

EUT Information

Test Mode : Mode 2
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



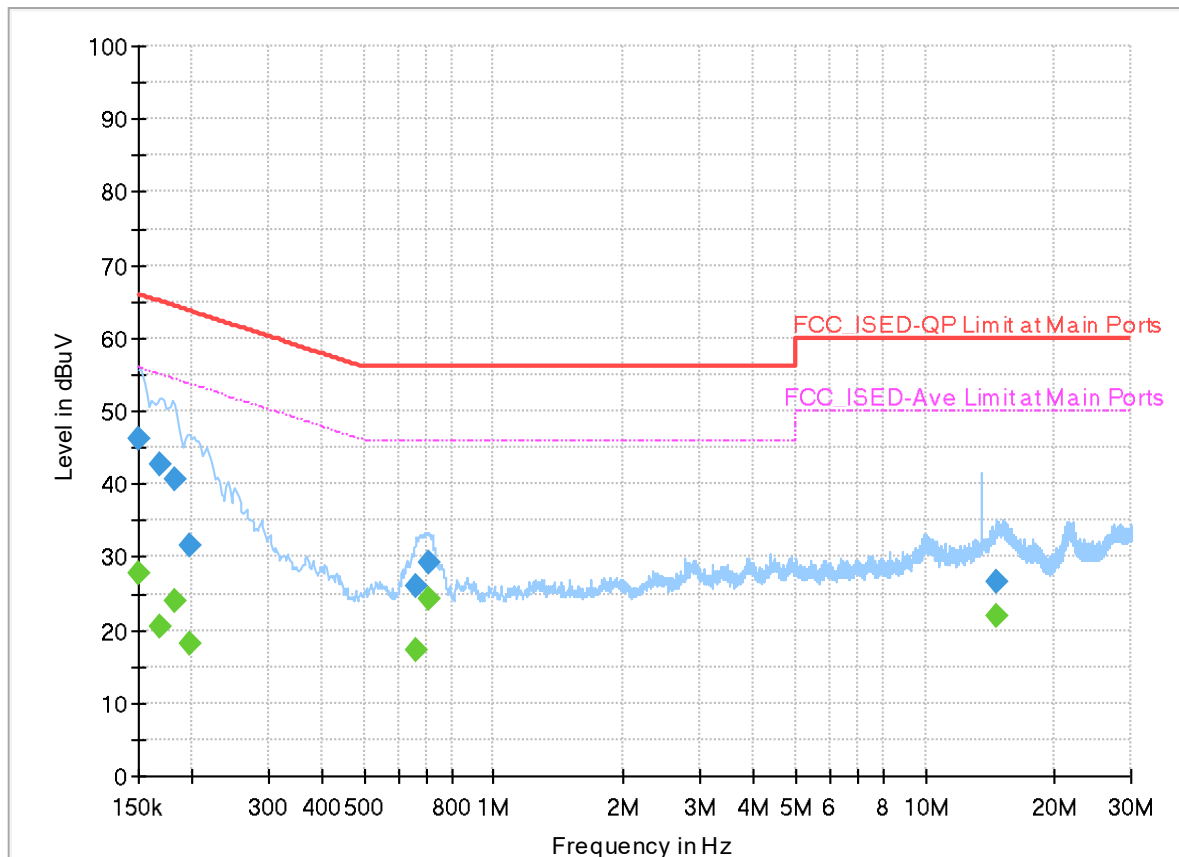
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	24.55	55.88	31.33	L1	ON	20.1
0.152250	43.77	---	65.88	22.11	L1	ON	20.1
0.165750	---	32.58	55.17	22.59	L1	ON	20.1
0.165750	48.75	---	65.17	16.42	L1	ON	20.1
0.665250	---	21.71	46.00	24.29	L1	ON	20.0
0.665250	30.73	---	56.00	25.27	L1	ON	20.0
0.717000	---	14.88	46.00	31.12	L1	ON	20.0
0.717000	19.88	---	56.00	36.12	L1	ON	20.0
10.086000	---	20.82	50.00	29.18	L1	ON	20.4
10.086000	24.83	---	60.00	35.17	L1	ON	20.4
14.995500	---	23.56	50.00	26.44	L1	ON	20.6
14.995500	28.29	---	60.00	31.71	L1	ON	20.6

EUT Information

Test Mode : Mode 2
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	27.87	56.00	28.13	N	ON	20.2
0.150000	46.20	---	66.00	19.80	N	ON	20.2
0.168000	---	20.46	55.06	34.60	N	ON	20.1
0.168000	42.77	---	65.06	22.29	N	ON	20.1
0.181500	---	24.02	54.42	30.40	N	ON	20.1
0.181500	40.65	---	64.42	23.77	N	ON	20.1
0.197250	---	18.16	53.73	35.57	N	ON	20.1
0.197250	31.48	---	63.73	32.25	N	ON	20.1
0.663000	---	17.11	46.00	28.89	N	ON	20.0
0.663000	26.08	---	56.00	29.92	N	ON	20.0
0.708000	---	24.40	46.00	21.60	N	ON	20.0
0.708000	29.37	---	56.00	26.63	N	ON	20.0
14.644500	---	22.05	50.00	27.95	N	ON	20.6
14.644500	26.47	---	60.00	33.53	N	ON	20.6

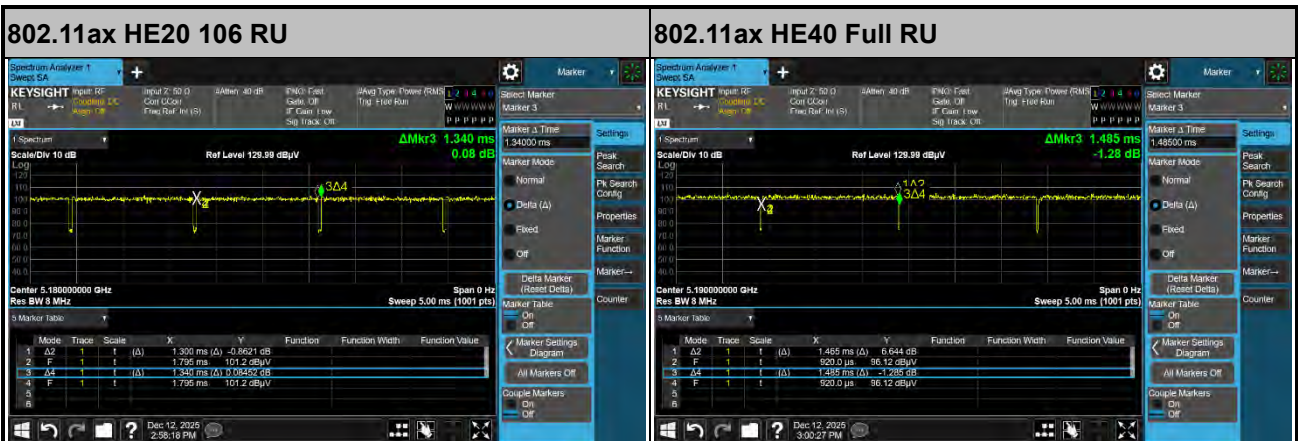
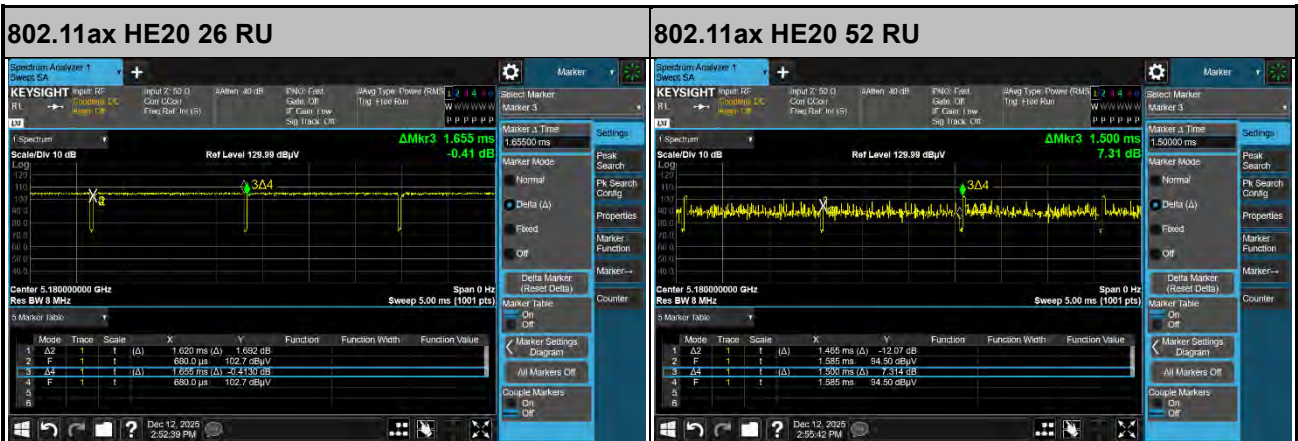
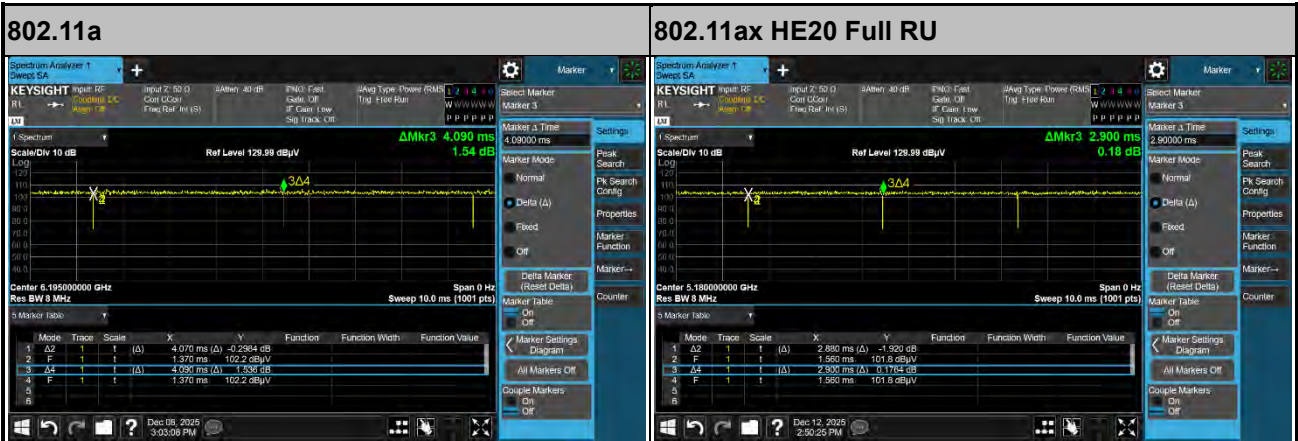


Appendix B. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
3+4	802.11a	99.51	-	-	10Hz	0.02
3+4	802.11ax HE20 Full RU	99.31	-	-	10Hz	0.03
3+4	802.11ax HE20 26 RU	97.89	1620	0.62	680Hz	0.09
3+4	802.11ax HE20 52 RU	97.67	1465	0.68	750Hz	0.10
3+4	802.11ax HE20 106 RU	97.01	1300	0.77	820Hz	0.13
3+4	802.11ax HE40 Full RU	98.65	-	-	10Hz	0.06
3+4	802.11ax HE80 Full RU	97.22	735	1.36	1.5kHz	0.12
3+4	802.11ax HE160 Full RU	95.24	400	2.50	2.7kHz	0.21
3+4	802.11be EHT20 Full RU	99.31	-	-	10Hz	0.03
3+4	802.11be EHT20 26 RU	97.77	1620	0.62	680Hz	0.10
3+4	802.11be EHT20 52 RU	97.33	1460	0.68	750Hz	0.12
3+4	802.11be EHT20 106 RU	97.01	1300	0.77	820Hz	0.13
3+4	802.11be EHT20 52T+26T	98.85	-	-	10Hz	0.05
3+4	802.11be EHT20 106T+26T	98.04	-	-	10Hz	0.09
3+4	802.11be EHT40 Full RU	98.67	-	-	10Hz	0.06
3+4	802.11be EHT80 Full RU	97.24	741	1.35	1.5kHz	0.12
3+4	802.11be EHT80 Puncture 20	98.04	-	-	10Hz	0.09
3+4	802.11be EHT160 Full RU	95.24	400	2.50	2.7kHz	0.21
3+4	802.11be EHT160 Puncture 20	95.88	465	2.15	2.2kHz	0.18
3+4	802.11be EHT160 Puncture 40	96.33	525	1.90	2kHz	0.16

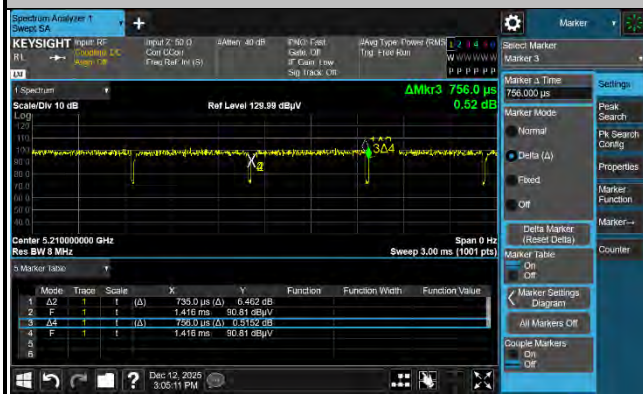


MIMO <Ant. 3+4>





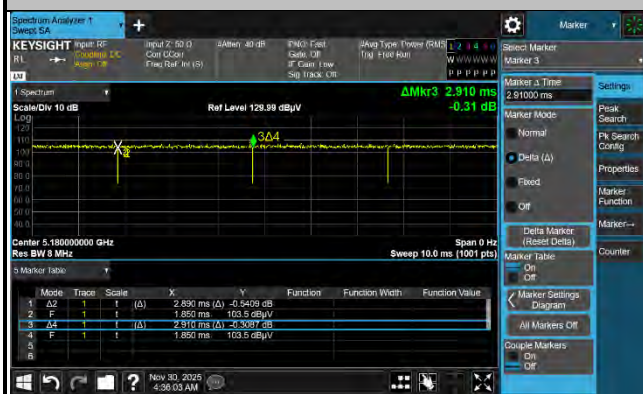
802.11ax HE80 Full RU



802.11ax HE160 Full RU



802.11be EHT20 Full RU



802.11be EHT20 26 RU



802.11be EHT20 52 RU

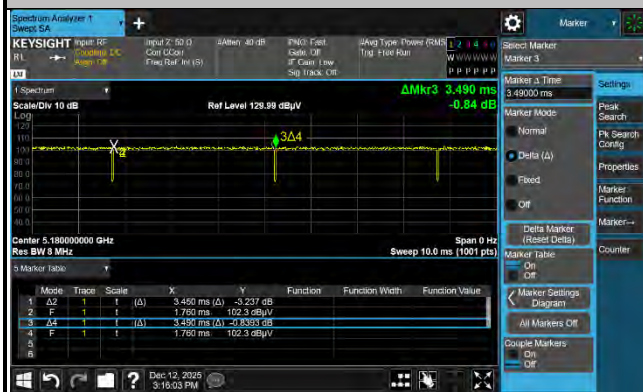


802.11be EHT20 106 RU

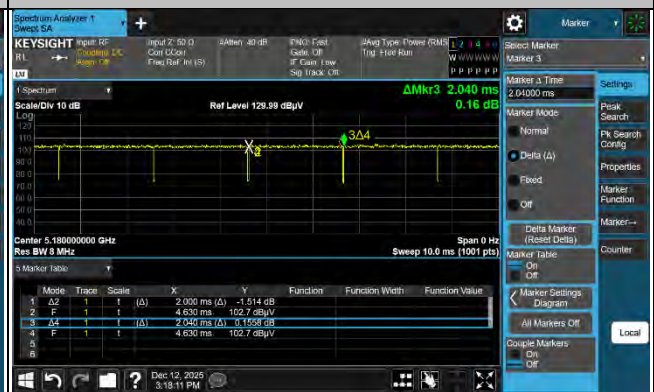




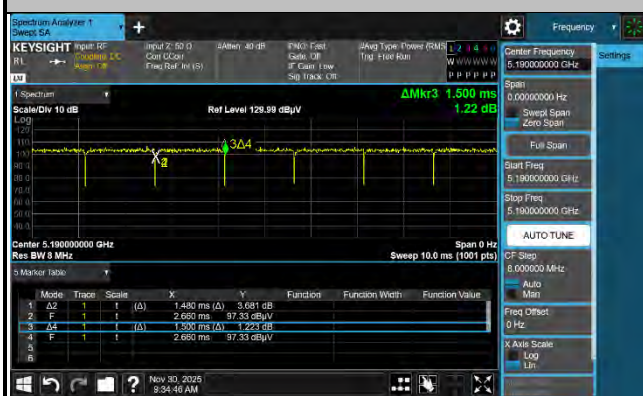
802.11be EHT20 52T+26T



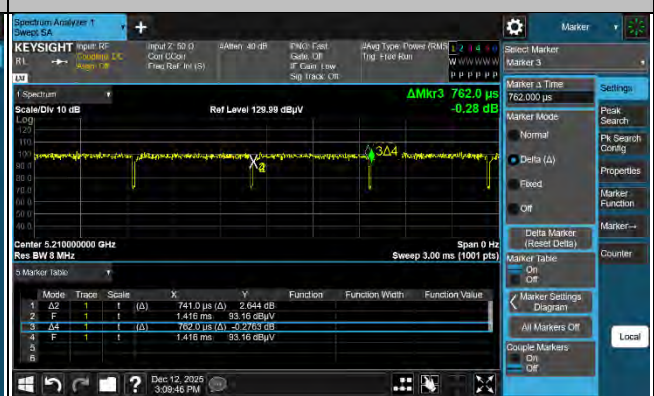
802.11be EHT20 106T+26T



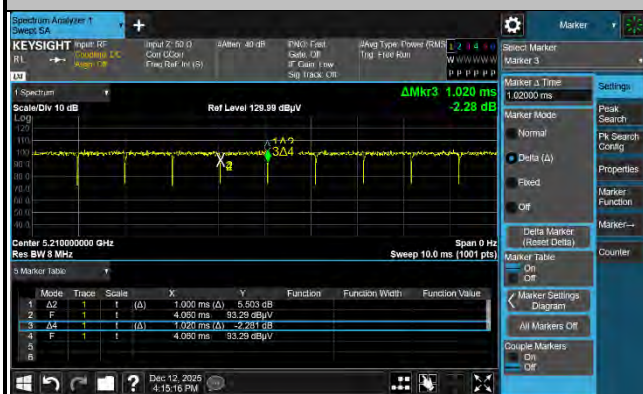
802.11be EHT40 Full RU



802.11be EHT80 Full RU

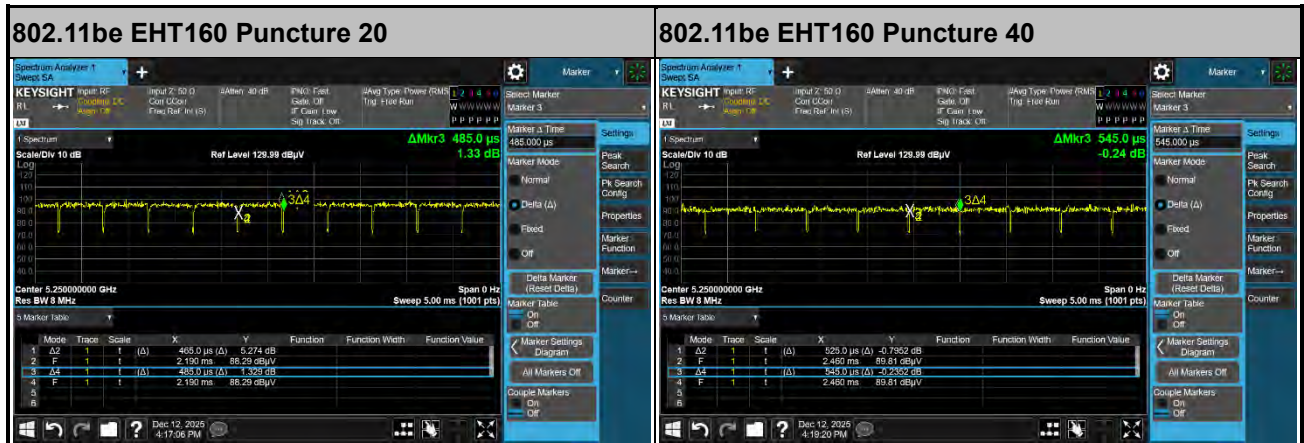


802.11be EHT80 Puncture 20



802.11be EHT160 Full RU





—THE END—