



Report No.: WSCT-A2LA-R&E240300009A-Wi-Fi3

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7.8 AUTOMATICALLY DISCONTINUE TRANSMISSION

7.8.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

7.8.2 MEASURING INSTRUMENTS

See list of measuring equipment of this test report.

7.8.3 TEST RESULT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.





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7.9 DUTY CYCLE





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Duty Cycle NVNT ax20 6415MHz



Duty Cycle NVNT ax20 6435MHz





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Duty Cycle NVNT ax20 6475MHz



Duty Cycle NVNT ax20 6515MHz





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Duty Cycle NVNT ax20 6535MHz



Duty Cycle NVNT ax20 6695MHz





Duty Cycle NVNT ax20 6875MHz



Duty Cycle NVNT ax20 6895MHz





Duty Cycle NVNT ax20 6995MHz



Duty Cycle NVNT ax20 7095MHz





Duty Cycle NVNT ax40 5965MHz



Duty Cycle NVNT ax40 6165MHz





Duty Cycle NVNT ax40 6405MHz



Duty Cycle NVNT ax40 6445MHz





Duty Cycle NVNT ax40 6485MHz



Duty Cycle NVNT ax40 6525MHz





Duty Cycle NVNT ax40 6565MHz



Duty Cycle NVNT ax40 6685MHz





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Duty Cycle NVNT ax40 6845MHz



Duty Cycle NVNT ax40 6885MHz





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Duty Cycle NVNT ax40 6965MHz



Duty Cycle NVNT ax40 7085MHz





Duty Cycle NVNT ax80 5985MHz



Duty Cycle NVNT ax80 6145MHz





Duty Cycle NVNT ax80 6385MHz



Duty Cycle NVNT ax80 6465MHz





Duty Cycle NVNT ax80 6545MHz



Duty Cycle NVNT ax80 6625MHz





Duty Cycle NVNT ax80 6705MHz



Duty Cycle NVNT ax80 6865MHz





Duty Cycle NVNT ax80 6945MHz



Duty Cycle NVNT ax80 7025MHz





Duty Cycle NVNT ax160 6025MHz



Duty Cycle NVNT ax160 6185MHz





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Duty Cycle NVNT ax160 6345MHz



Duty Cycle NVNT ax160 6505MHz





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Duty Cycle NVNT ax160 6665MHz



Duty Cycle NVNT ax160 6825MHz



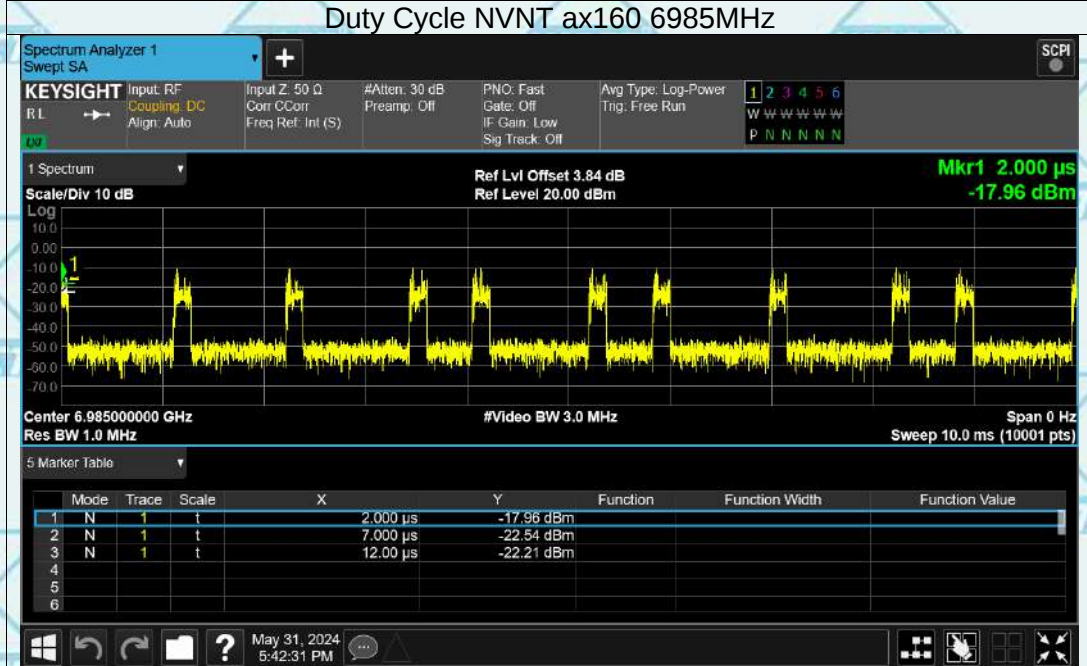


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Duty Cycle NVNT ax160 6985MHz



7.10 CONTENTION BASED PROTOCOL

7.10.1 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

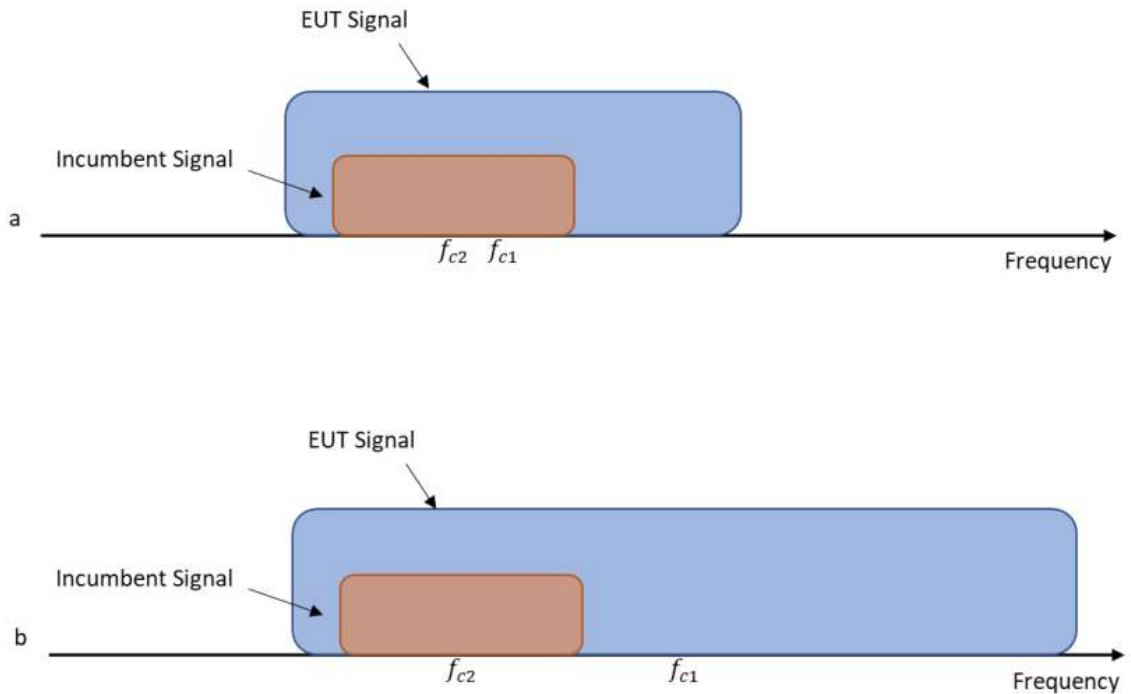


Figure 1. Two possible scenarios where a) center frequency of EUT transmission falls within incumbent's bandwidth, or b) outside of it

7.10.2 MEASURING INSTRUMENTS

See list of measuring equipment of this test report.

7.10.3 TEST PROCEDURES

Refer to KDB 987594 D02 v01v01.

1. To ensure EUT reliably detects an incumbent signal in both scenarios shown in Figure 1, the detection threshold test may be repeated more than once with the incumbent signal (having center frequency f_{c2}) tuned to different center frequencies within the UT transmission bandwidth. The criteria specified in Table 1 determines how many times the detection threshold test must be performed
2. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
3. Monitor the signal analyzer to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
4. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.



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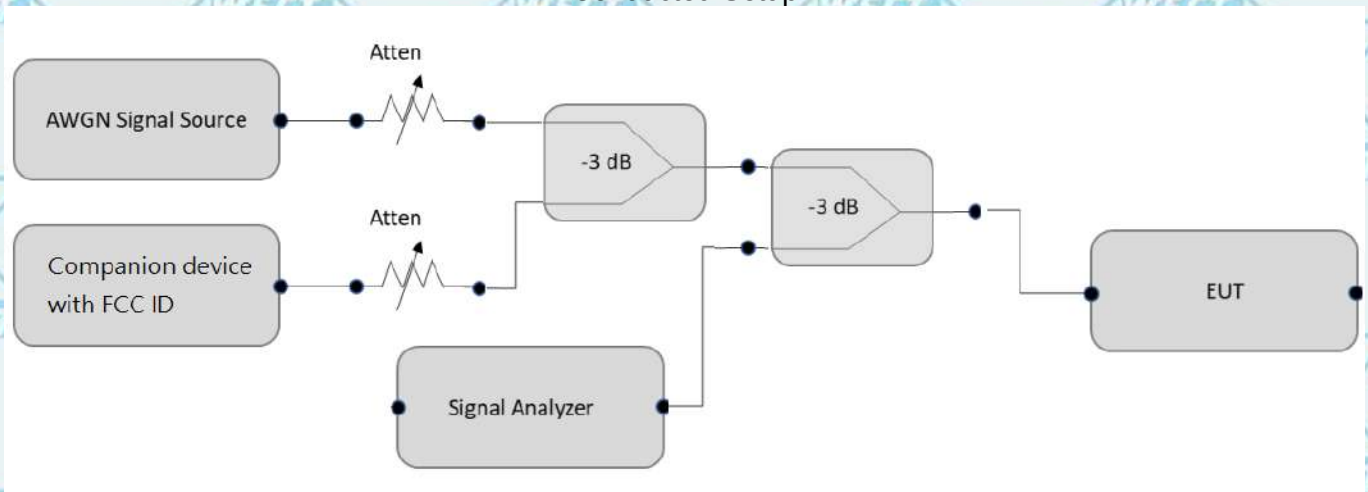
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5. Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 2, choose a different center frequency for the AWGN signal and repeat the process.

7.10.4 TEST SETUP

Conducted Setup





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7.10.5 TEST RESULT

Test Mode	Antenna	Frequency [MHz]	Interference Frequency [MHz]		Test Number [n]	Number Detected [n]	Result [%]	Limit [%]	Verdict
11BE20MIMO	Ant1	6115	Center	6115	10	10	100	90	PASS
		6755	Center	6755	10	10	100	90	PASS
		6895	Center	6895	10	10	100	90	PASS
11BE160MIMO	Ant1	6185	Center	6185	10	10	100	90	PASS
		6505	Center	6505	10	10	100	90	PASS
		6665	Center	6665	10	10	100	90	PASS
		6985	Center	6985	10	10	100	90	PASS

Mode	Frequency (MHz)	AWGN Location	AWGN Frequency (MHz)	Test Time	Is Detected	Verdict
ax20	6115	Center	6115	1	Yes	Pass
ax20	6115	Center	6115	2	Yes	Pass
ax20	6115	Center	6115	3	Yes	Pass
ax20	6115	Center	6115	4	Yes	Pass
ax20	6115	Center	6115	5	Yes	Pass
ax20	6115	Center	6115	6	Yes	Pass
ax20	6115	Center	6115	7	Yes	Pass
ax20	6115	Center	6115	8	Yes	Pass
ax20	6115	Center	6115	9	Yes	Pass
ax20	6115	Center	6115	10	Yes	Pass
ax20	6755	Center	6755	1	Yes	Pass
ax20	6755	Center	6755	2	Yes	Pass
ax20	6755	Center	6755	3	Yes	Pass
ax20	6755	Center	6755	4	Yes	Pass
ax20	6755	Center	6755	5	Yes	Pass
ax20	6755	Center	6755	6	Yes	Pass
ax20	6755	Center	6755	7	Yes	Pass
ax20	6755	Center	6755	8	Yes	Pass
ax20	6755	Center	6755	9	Yes	Pass
ax20	6755	Center	6755	10	Yes	Pass
ax20	6895	Center	6895	1	Yes	Pass
ax20	6895	Center	6895	2	Yes	Pass
ax20	6895	Center	6895	3	Yes	Pass
ax20	6895	Center	6895	4	Yes	Pass
ax20	6895	Center	6895	5	Yes	Pass
ax20	6895	Center	6895	6	Yes	Pass
ax20	6895	Center	6895	7	Yes	Pass
ax20	6895	Center	6895	8	Yes	Pass
ax20	6895	Center	6895	9	Yes	Pass
ax20	6895	Center	6895	10	Yes	Pass
ax160	6185	Center	6110	1	Yes	Pass
ax160	6185	Center	6110	2	Yes	Pass
ax160	6185	Center	6110	3	Yes	Pass
ax160	6185	Center	6110	4	Yes	Pass
ax160	6185	Center	6110	5	Yes	Pass
ax160	6185	Center	6110	6	Yes	Pass
ax160	6185	Center	6110	7	Yes	Pass
ax160	6185	Center	6110	8	Yes	Pass
ax160	6185	Center	6110	9	Yes	Pass
ax160	6185	Center	6110	10	Yes	Pass
ax160	6505	Center	6430	1	Yes	Pass
ax160	6505	Center	6430	2	Yes	Pass
ax160	6505	Center	6430	3	Yes	Pass
ax160	6505	Center	6430	4	Yes	Pass
ax160	6505	Center	6430	5	Yes	Pass
ax160	6505	Center	6430	6	Yes	Pass
ax160	6505	Center	6430	7	Yes	Pass
ax160	6505	Center	6430	8	Yes	Pass
ax160	6505	Center	6430	9	Yes	Pass





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ax160	6505	Center	6430	10	Yes	Pass
ax160	6665	Center	6590	1	Yes	Pass
ax160	6665	Center	6590	2	Yes	Pass
ax160	6665	Center	6590	3	Yes	Pass
ax160	6665	Center	6590	4	Yes	Pass
ax160	6665	Center	6590	5	Yes	Pass
ax160	6665	Center	6590	6	Yes	Pass
ax160	6665	Center	6590	7	Yes	Pass
ax160	6665	Center	6590	8	Yes	Pass
ax160	6665	Center	6590	9	Yes	Pass
ax160	6665	Center	6590	10	Yes	Pass
ax160	6985	Center	6910	1	Yes	Pass
ax160	6985	Center	6910	2	Yes	Pass
ax160	6985	Center	6910	3	Yes	Pass
ax160	6985	Center	6910	4	Yes	Pass
ax160	6985	Center	6910	5	Yes	Pass
ax160	6985	Center	6910	6	Yes	Pass
ax160	6985	Center	6910	7	Yes	Pass
ax160	6985	Center	6910	8	Yes	Pass
ax160	6985	Center	6910	9	Yes	Pass
ax160	6985	Center	6910	10	Yes	Pass

Note: All modes and antennas had been tested, but only the worst data was recorded in the report.





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Mode	Antenna	Frequency (MHz)	AWGN Frequency (MHz)	Injected AWGN Power (dBm)	Minimum Antenna Gain (dBi)	Path Loss (dB)	Adjusted Power Result (dBm)	Limit (dBm)	UT Tx Status (Note1)
ax20	Ant1	6115	6115	-70.00	-0.9	2	-70.00	-62	ON
				-65.54	-0.9	2	-65.54	-62	Minimal
				-62.10	-0.9	2	-62.10	-62	OFF
ax20		6755	6115	-70.95	-0.9	2	-70.95	-62	ON
				-65.60	-0.9	2	-65.60	-62	Minimal
				-63.16	-0.9	2	-63.16	-62	OFF
ax20		6895	6895	-70.00	-0.9	2	-70.00	-62	ON
				-65.07	-0.9	2	-65.07	-62	Minimal
				-62.61	-0.9	2	-62.61	-62	OFF
ax160	Ant1	6185	6185	-70.00	-0.9	2	-70.00	-62	ON
				-65.31	-0.9	2	-65.31	-62	Minimal
				-62.76	-0.9	2	-62.76	-62	OFF
ax160		6505	6505	-70.00	-0.9	2	-70.00	-62	ON
				-65.37	-0.9	2	-65.37	-62	Minimal
				-62.12	-0.9	2	-62.12	-62	OFF
ax160		6665	6665	-70.00	-0.9	2	-70.00	-62	ON
				-65.98	-0.9	2	-65.88	-62	Minimal
				-64.74	-0.9	2	-64.74	-62	OFF
ax160		6985	6985	-70.00	-0.9	2	-70.00	-62	ON
				-65.31	-0.9	2	-65.31	-62	Minimal
				-62.80	-0.9	2	-62.80	-62	OFF

Note 1: The AWGN level is reported for the following conditions:

- OFF = AWGN level at which no transmission is detected, consistently for a minimum period of 10 seconds.
- Minimal: AWGN level at which the system begins to trigger the transmission switch-off, albeit not being kept off consistently.
- ON = AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 10 seconds.

Note 2: Detection Level/Adjusted Power Result = Injected AWGN Power (dBm) – Antenna Gain (dBi) + Path Loss (dB)





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Mesh Mode Test Graphs

Test Graphs

02.11ax (HE20) 6115MHz_1



02.11ax (HE20) 6115MHz_2





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02.11ax (HE20) 6115MHz 3



02.11ax (HE20) 6115MHz 4





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02.11ax (HE20) 6115MHz 5



02.11ax (HE20) 6115MHz 6





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02.11ax (HE20) 6115MHz 7



02.11ax (HE20) 6115MHz 8





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02.11ax (HE20) 6115MHz 9



02.11ax (HE20) 6115MHz 10





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02.11ax (HE20) 6755MHz 1



02.11ax (HE20) 6755MHz 2





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02.11ax (HE20) 6755MHz 3



02.11ax (HE20) 6755MHz 4





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02.11ax (HE20) 6755MHz 7



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02.11ax (HE20) 6755MHz 9



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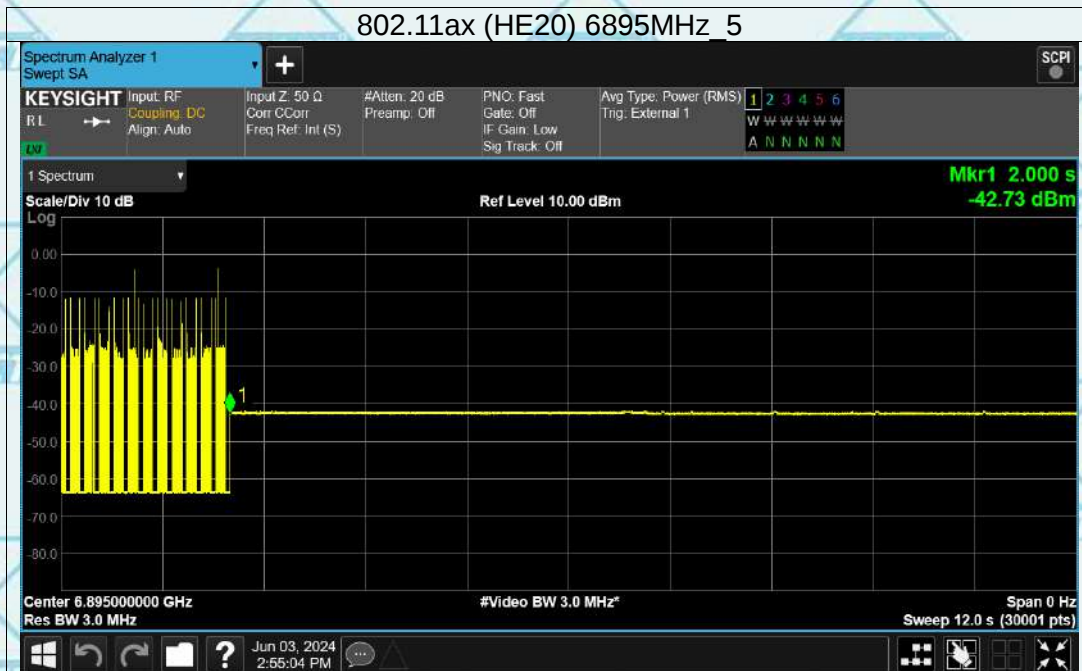




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802.11ax (HE20) 6895MHz 9



802.11ax (HE20) 6895MHz 10





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802.11ax (HE160) 6185MHz 1



802.11ax (HE160) 6185MHz 2





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802.11ax (HE160) 6185MHz 3



802.11ax (HE160) 6185MHz 4

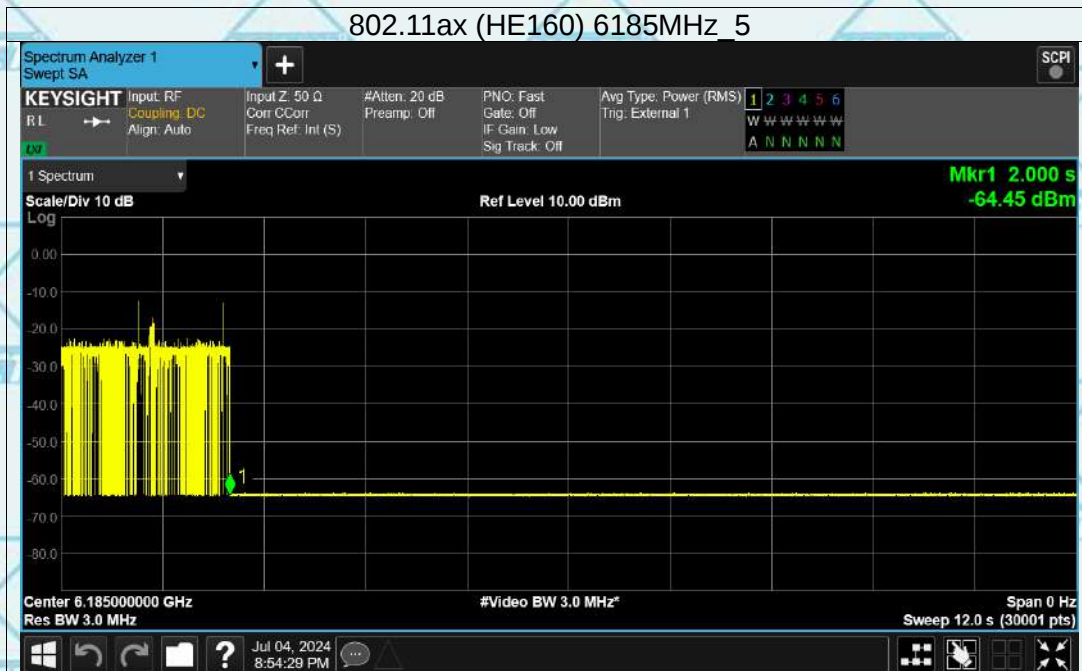




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802.11ax (HE160) 6185MHz 7



802.11ax (HE160) 6185MHz 8





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802.11ax (HE160) 6185MHz 9



802.11ax (HE160) 6185MHz 10





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802.11ax (HE160) 6505MHz 1



802.11ax (HE160) 6505MHz 2





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802.11ax (HE160) 6505MHz 3



802.11ax (HE160) 6505MHz 4

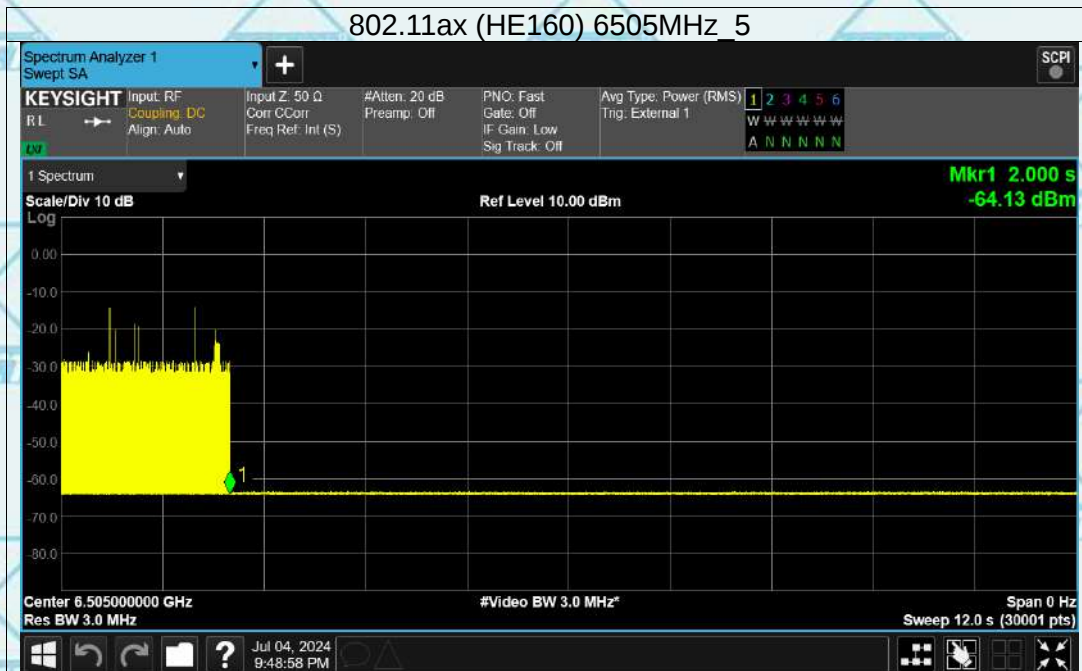




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802.11ax (HE160) 6505MHz 9



802.11ax (HE160) 6505MHz 10

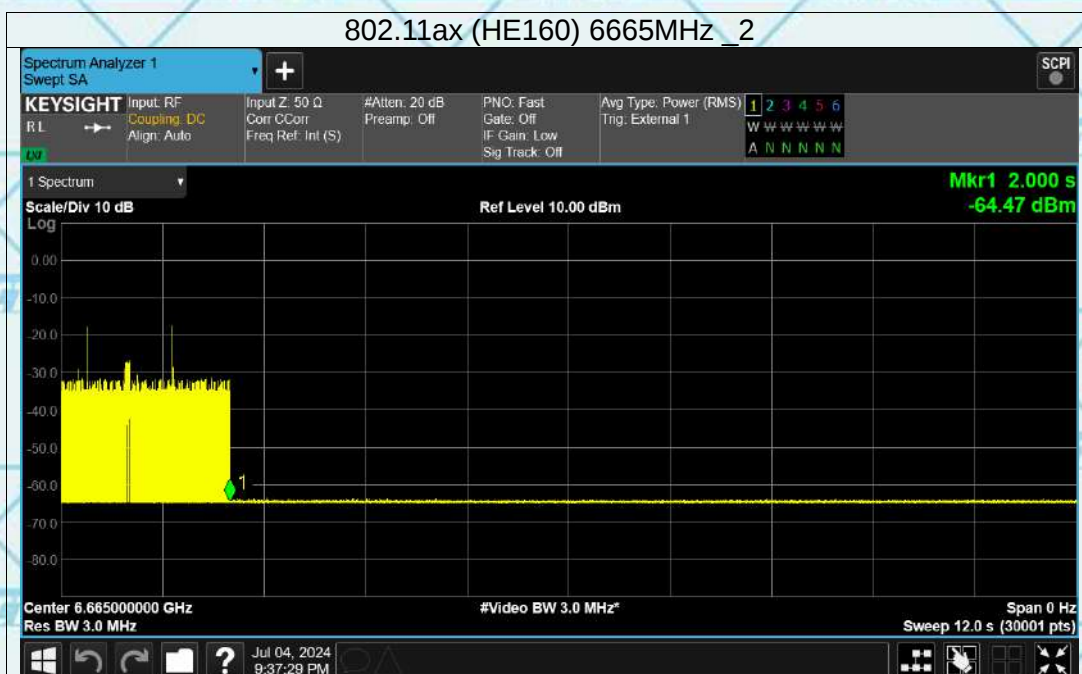
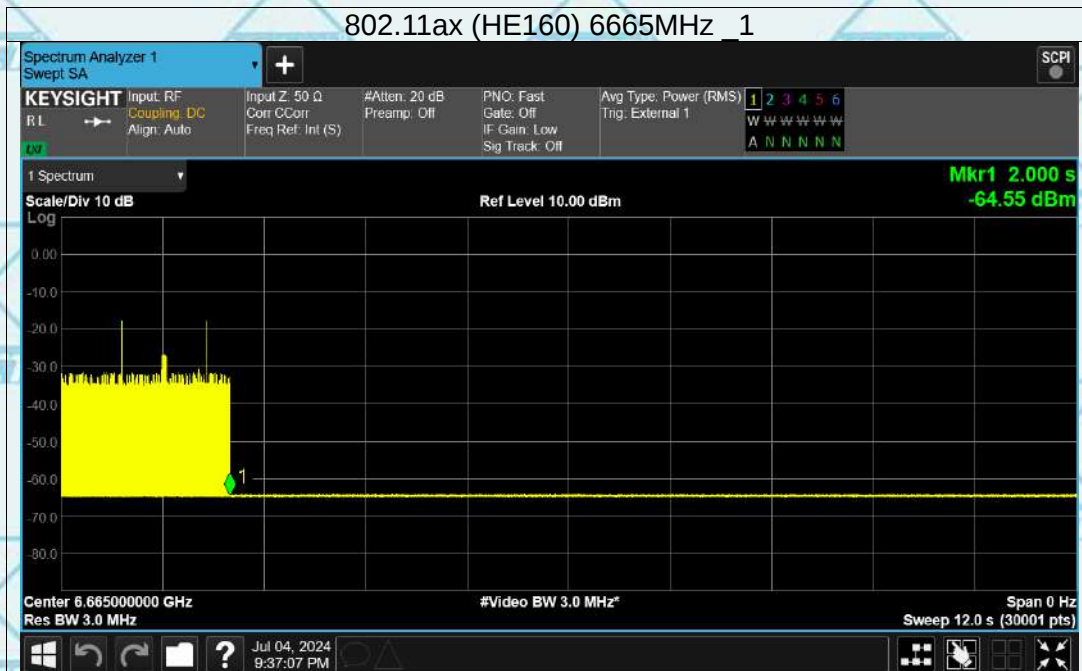




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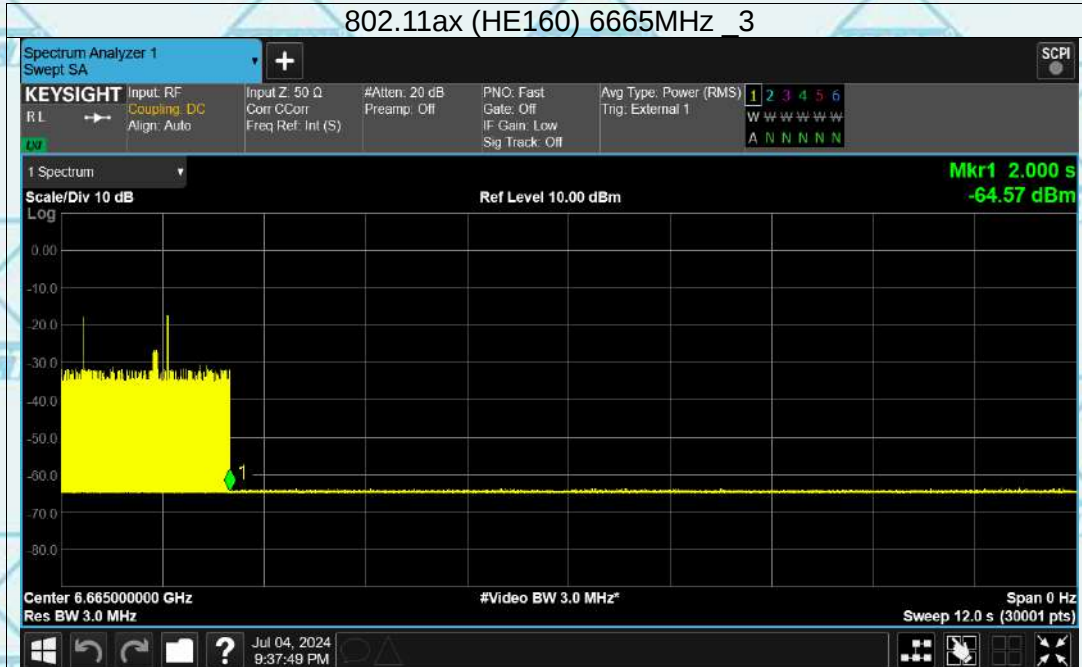


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802.11ax (HE160) 6665MHz _3



802.11ax (HE160) 6665MHz _4

