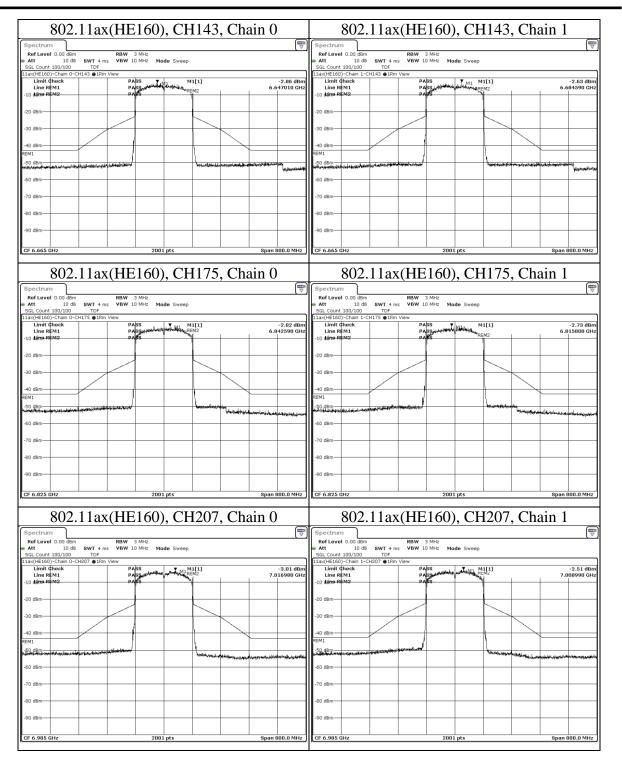


802.11ax(HE160), CH47, Chain 0	802.11ax(HE160), CH47, Chain 1
Spectrum 🕎	Spectrum
RefLevel 0.00 dBm RBW 3 MHz Att 10 dB SWT 2 ms VBW 10 MHz Mode Sweep	Ref Level 0.00 dBm RBW 3 MHz Att 10 dB SWT 2 ms VBW 10 MHz
SGL Count 100/100 TDF 11ax(HE160)-Chain 0-CH47 ●1Rm View	SGL Count 100/100 TDF 11ax/HE160)-Chain 1-CH47 ●1Rm View
Limit Check PABS M1 [1] -1.62 dBm Line REM1 PABS	Limit Check PASS // ///////////////////////////////
-10 dim-REM2 PASS	-10 dán9 REM2 PASS
-20 dBm	-20 dBm
-30 dBm	-30 dBm
-40 dBm	-40. dBm
REM1	REM1
niällestiällestykindustantaillanskollestantinestikkäitt	estille (ditter en
-60 dBm	-60 dBm
-70 dBm	-70 dBm
-yo dan	*/0 UBII:-
-80 dBm	-80 dBm
-90 dBm	-90 dBm
CF 6.185 GHz 2001 pts Span 800.0 MHz	CF 6.185 GHz 2001 pts Span 800.0 MHz
802.11ax(HE160), CH79, Chain 0	802.11ax(HE160), CH79, Chain 1
Spectrum 🕎	
RefLevel 0.00 dBm RBW 3 MHz	RefLevel 0.00 BW 3 MHz Att 10 dB SWT 2 ms VBW 10 MHz Mode Sweep
SGL Count 100/100 TDF	SGL Count 100/100 TDF
11ac/HE160)-Chain C-CH79 @1Rm View Limit Chock PABS Line REM1 PABS AU	11av(HE160)-Chain 1-CH79 ●1Pm View PABS PABS Ministry M1[1] -1.38 dBm Line R≹M1 PAge 6.333410 GH2 6.333410 GH2
Line REM1 PA 10 400 00 00 00 00 00 00 00 00 00 00 00 0	Line REM1 PAIstern PA
-20 dBm	-20 dBm
-30 dBm	-30 dBm
140 d8m	-40 dBm
an and a first second and a second	windowe with a second with a s
-60 dBm-	-60 dBm
-70 dBm	-70 dBm
-80 dBm	-80 dBm
-90 dBm	-90 dBm
CF 6.345 GHz 2001 pts Span 800.0 MHz	CF 6.345 GHz 2001 pts Span 800.0 MHz
Ren over o enz span 800.0 MHZ ,	Los controlaria 2001 pts Span 800.0 MHZ
802.11ax(HE160), CH111, Chain 0	802.11ax(HE160), CH111, Chain 1
Ref Level 0.00 dBm RBW 3 MHz	Ref Level 0.00 dBm RBW 3 MHz
Att 10 dB SWT 2 ms VBW 10 MHz Mode Sweep SGL Count 100/100 TDF	Att 10 dB SWT 2 ms VBW 10 MHz Mode Sweep SGL Count 100/100 TDF
11ax(HE160)-Chain 0-CH111 1Rm View	11ax(HE160)-Chain 1-CH111 @1Rm View Limit Check PABS 1.25 dBm
Line REM1 PASSIMUM REM2 6.506580 GHz	Line REM1 PAGet AND
-10 dám9-RÉM2 PAËS 1	-10 dáme REM2 PAŠS V
-20 dBm	-20 dBm
-30 dBm	-30 dBm
-40 dBm	-40 dBm
KSQ (Billion Julian to the monomial standard and the	un Selection and an
-60 dBm	-60 dBm
	-70 dBm
-70 dBm	
	20 dPm
-70 dBm	-80 d8m-
	-80 d8m
-80 dBm-	







9.9. Contention Based Protocol Measurement

Requirements

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62 dBm (The threshold is referenced to a 0 dBi antenna gain.) or lower. Additionally, indoor low-power devices must detect co-channel energy with 90% or greater certainty.

Test procedure

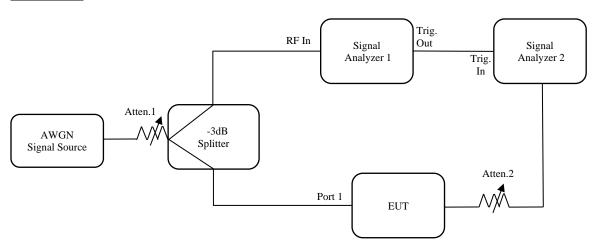
- a. Set the EUT to transmit with a constant duty cycle and relative operating parameters which including power level, operating frequency, modulation and bandwidth.
- b. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT. Triger out connect the output port of the EUT to signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
- c. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters.
- d. Determine number of times detection threshold test as following table:

If	Number of Tests	Placement of Incumbent Transmission			
$\mathrm{BW}_{\mathrm{EUT}}{\leq}~\mathrm{BW}_{\mathrm{Inc}}$	Once	Same as EUT transmission			
$BW_{Inc}\!<\!BW_{EUT} \leq 2*BW_{Inc}$	Once	Contained within BW _{EUT}			
$2 x B W_{Inc} \! < \! B W_{EUT} \! \leq 4 * B W_{Inc}$	Twice (Incumbent transmission is contained within BW _{EUT})	Closely to the lower edge and upper edge of the EUT Channel			
$BW_{EUT} > 4*BW_{Inc}$	Three times	Closely to the lower edge, in the middle and upper edge of the EUT Channel			

- e. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use step c table to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
- f. 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.
- g. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
- h. 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.
- i. (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.
- j. Refer to step c table 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 d, choose a different center frequency for the AWGN signal and repeat the process.

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Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



Test Data

Measurement Mode	Conducted measurement	Device Type	Indoor Client
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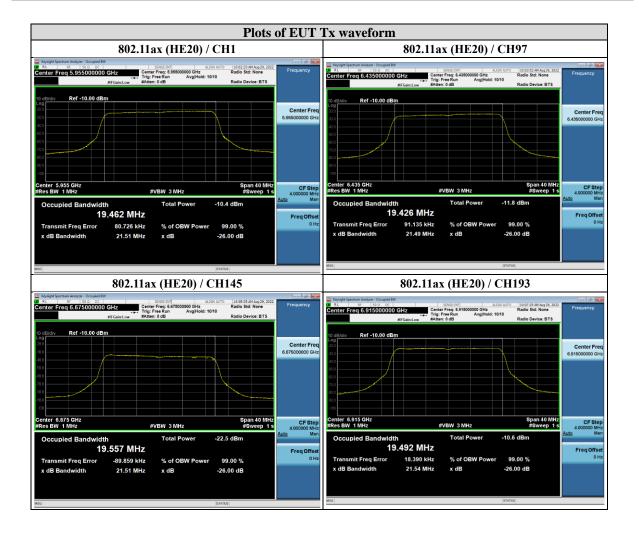
802.11ax (HE20)

				Test Result					Test Result					
Operation Band	Ch.	EUT Freq. (MHz)	Minimum Antenna Gain (dBi)	Test Signals Freq. (MHz)	The Incumbent (AWGN) Signal Level (dBm)	Number of Times	Number of Detected	Detection Rate (%)	I imit	PASS /FAIL	Status of EUT transmission			
					-62	10	10	100%	90%	PASS	Cased			
UNII-5	UNII-5 1 5955	5955	0	5955	-67	10	9	90%	90%	PASS	Minimal			
				-68	10	0	0%	90%	FAIL	Transmitting				
		6435	0	6435	-62	10	10	100%	90%	PASS	Cased			
UNII-6	97				-67	10	9	90%	90%	PASS	Minimal			
				-68	10	0	0%	90%	FAIL	Transmitting				
				6675	-62	10	10	100%	90%	PASS	Cased			
UNII-7	UNII-7 145 6675	6675	5 0		-67	10	9	90%	90%	PASS	Minimal			
					-68	10	0	0%	90%	FAIL	Transmitting			
UNII-8 19		93 6915						-62	10	10	100%	90%	PASS	Cased
	193		0	6915	-67	10	9	90%	90%	PASS	Minimal			
					-68	10	0	0%	90%	FAIL	Transmitting			

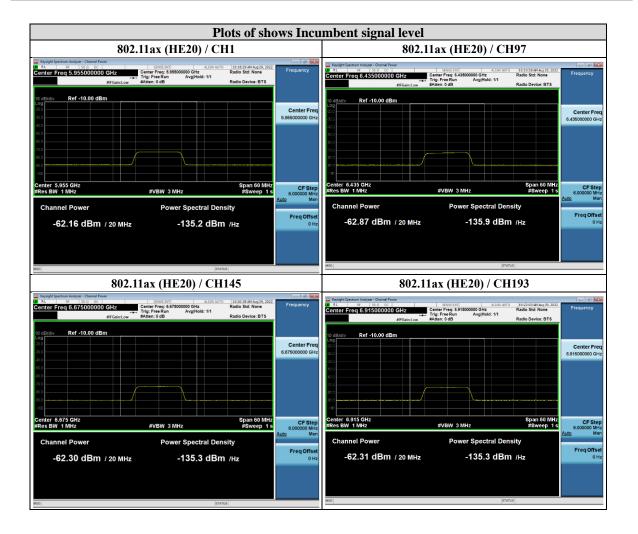
Note :

- 1. For UNII-5, The Incumbent (AWGN) Signal Level is considered 0 dBi (-62dBm) gain for path loss, it will be more strict than EUT gain.
- 2. For UNII-6, The Incumbent (AWGN) Signal Level is considered 0 dBi (-62dBm) gain for path loss, it will be more strict than EUT gain.
- 3. For UNII-7, The Incumbent (AWGN) Signal Level is considered 0 dBi (-62dBm) gain for path loss, it will be more strict than EUT gain.
- 4. For UNII-8, The Incumbent (AWGN) Signal Level is considered 0 dBi (-62dBm) gain for path loss, it will be more strict than EUT gain.
- 5. For status "Ceased" is mean this threshold where the device detects interference will stops transmitting level.
- 6. For status "Minimal" is mean this threshold where the device detects interference will stops transmitting minimum level.
- 7. For status "Transmitting" is mean this threshold where the detects interference will device re-starts transmitting level.

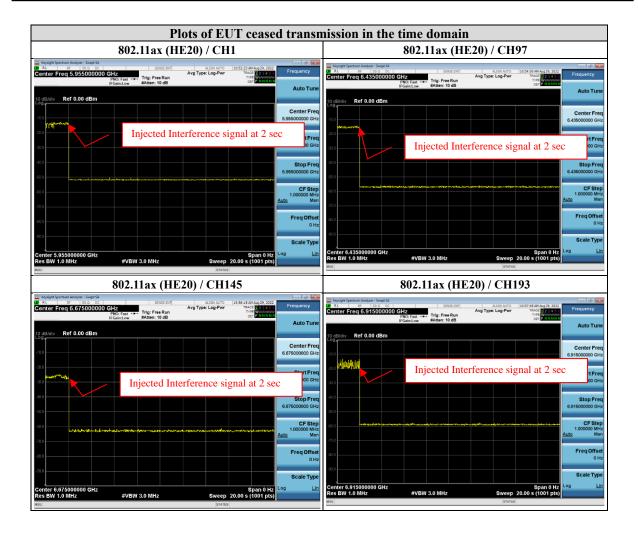














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802.11ax (HE160)

802.11ax	Ì		Minimum Antenna Gain (dBi)	Test Result							
Operation Band	Ch.	EUT Freq. (MHz)		Test Signals Freq. (MHz)	The Incumbent (AWGN) Signal Level (dBm)	Number of Times	Number of Detected	Detection Rate (%)	Limit	PASS /FAIL	Status of EUT transmission
					-62	10	10	100%	90%	PASS	Cased
				5950	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
					-62	10	10	100%	90%	PASS	Cased
UNII-5	15	6025	0	6025	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
					-62	10	10	100%	90%	PASS	Cased
				6100	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
					-62	10	10	100%	90%	PASS	Cased
				6430	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
					-62	10	10	100%	90%	PASS	Cased
UNII-6 11	111	6505	0	6505	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
				6580	-62	10	10	100%	90%	PASS	Cased
					-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
		3 6665			-62	10	10	100%	90%	PASS	Cased
				6590	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
			0	6665 6740	-62	10	10	100%	90%	PASS	Cased
UNII-7	143				-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
					-62	10	10	100%	90%	PASS	Cased
					-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
				6910	-62	10	10	100%	90%	PASS	Cased
					-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
UNII-8					-62	10	10	100%	90%	PASS	Cased
	207	6985	5 0	6985	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting
					-62	10	10	100%	90%	PASS	Cased
				7060	-67	10	9	90%	90%	PASS	Minimal
					-68	10	0	0%	90%	FAIL	Transmitting

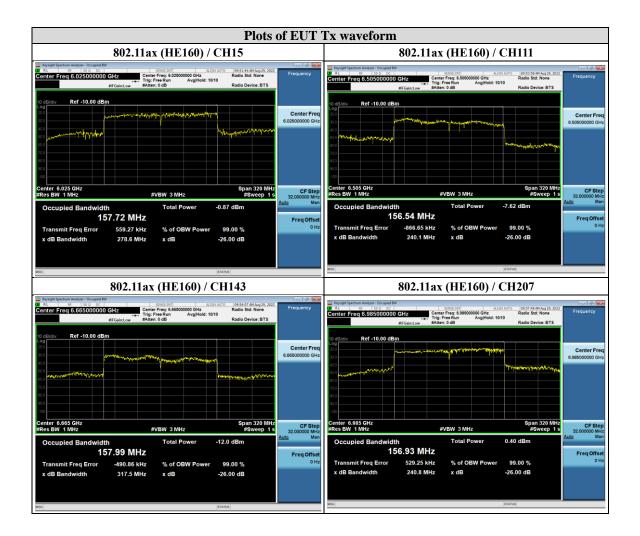
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Note :

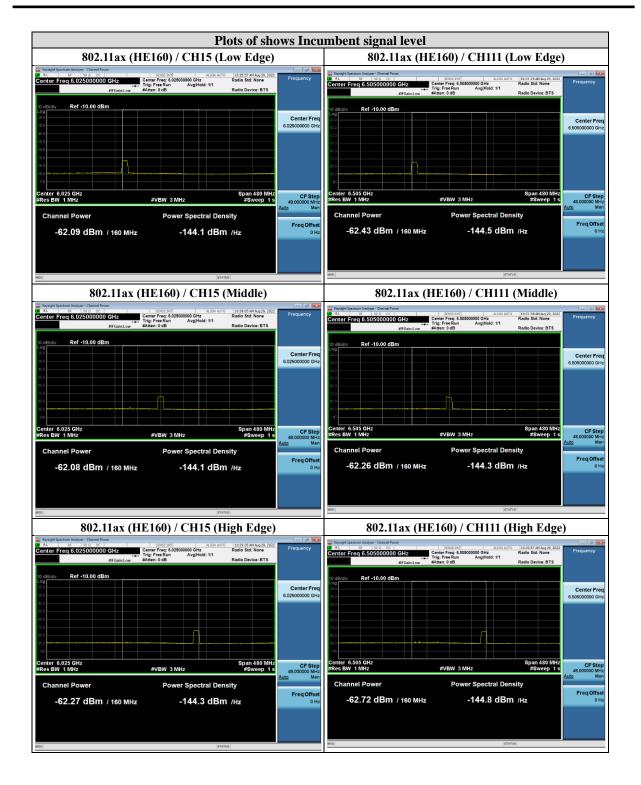
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- For UNII-6, The Incumbent (AWGN) Signal Level is considered 0 dBi (-62dBm) gain for path loss, it 2. will be more strict than EUT gain.
- For UNII-7, The Incumbent (AWGN) Signal Level is considered 0 dBi (-62dBm) gain for path loss, it 3. will be more strict than EUT gain.
- 4. For UNII-8, The Incumbent (AWGN) Signal Level is considered 0 dBi (-62dBm) gain for path loss, it will be more strict than EUT gain.
- 5. For status "Ceased" is mean this threshold where the device detects interference will stops transmitting level.
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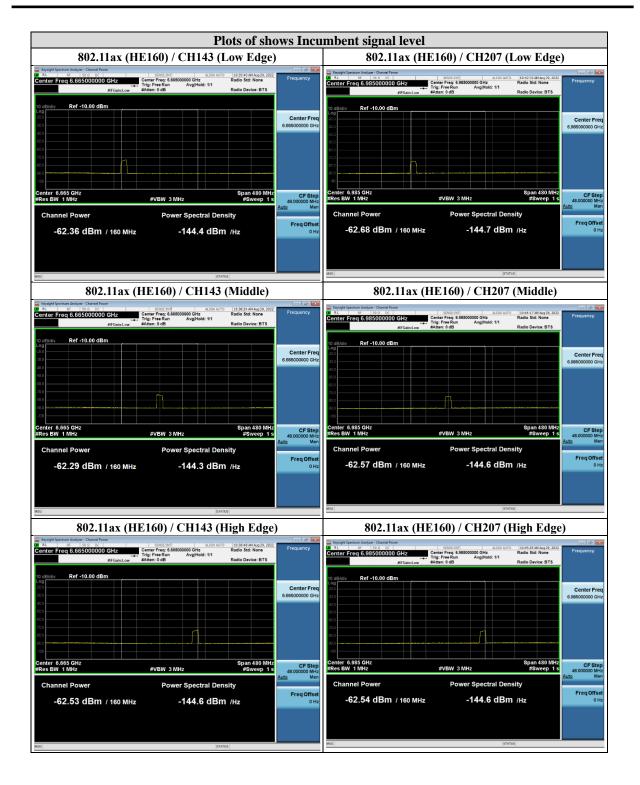
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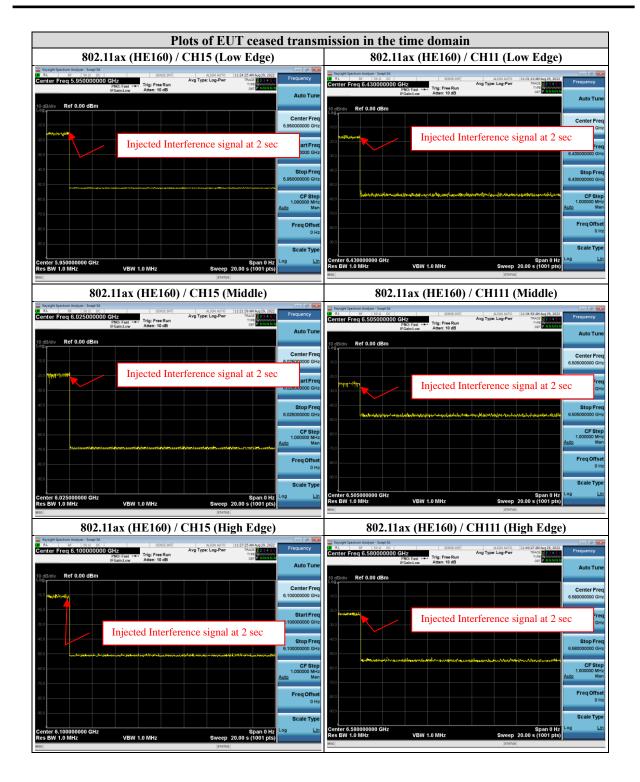




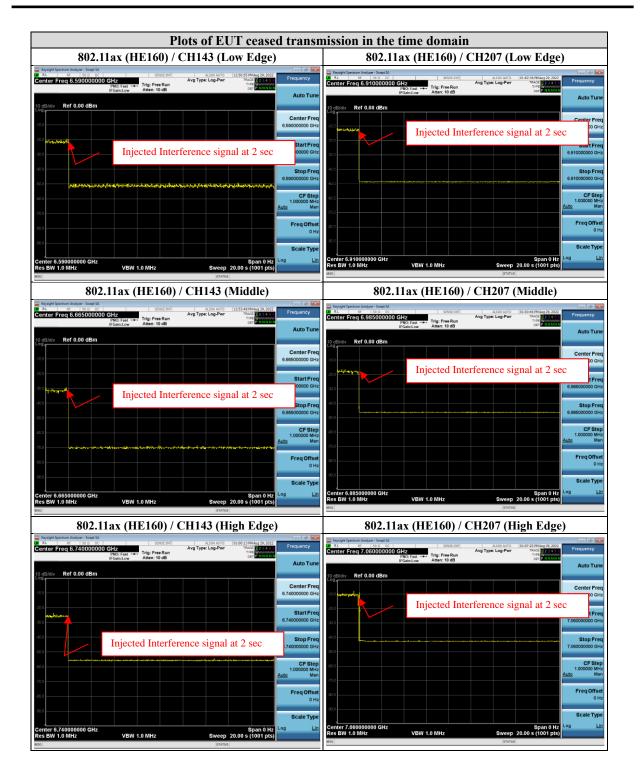












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