







# A.6. Contention Based Protocol

## Measurement Limit and Method:

Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band must employ a contention-based protocol.

Unlicensed low-power indoor devices must detect co-channel radio frequency power that is at least -62dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel (in which incumbent signal is transmitted) and stay off the incumbent channel as long as detected radio frequency power is equal to or greater than the threshold (-62 dBm)1. 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.

The measurement is made according to KDB 987594.

EUT does not use channel puncturing for incumbent avoidance. The EUT use bandwidth reduction for incumbent avoidance. Following figure illustrates an example scenarios of an 160MHz channel centered at 6185 MHz.

For the lower edge:

A 10 MHz AWGN signal (center frequency is 6110MHz) is injected, the signal reduces to 40 MHz centered around 6165MHz.





MultiView	Spectrum								•
Ref Level 20	0.00 dBm	RBW	10 MHz						SGL
Att	30 dB . SWT	15 s • VBW	10 MHz Mode #	uto Sweep					Count 1/1
Frequency S	Sweep								IPk Cirw
								M2[1]	~41.27 dBn
									10 000 00 GH
									-41.02 dBn
								6.1	65 000 00 GH
				Children and the					
				4					
					1				
					1				
30 dêm									
	ter a dal paga ta petha à sta		M2	<b>21</b>	and a second second	Concernantal same	and the state of the second	- the second as a second second	a de sur de state de state
40 Gem		A SHOW MICHAEL SHAP	and the second second	<b>v</b>	<b>AND TO THE PROPERTY OF</b>			and the second states of the s	and the second second second

## For the center frequency

A 10 MHz AWGN signal (center frequency is 6185MHz) is injected, the signal completely ceases operation.

Type Ref M1 M2	Trc 1	X-Value 6.185 GHz 6.135 GHz 6.26 GHz	-	Y-Value 41.64 dBm 41.29 dBm		Function		Functio	n Result
F 6.185 GHz Marker Table			100001 p	its	50	0.0 MHz/			Span 500.0 Mi
SG: dBm									
titatin e dittati	antional designed as a	to see aloth laterations	and to be been supported	2 A data data data data d		N3 Antonio	nit a caratiza di tarina fital	a alter area	and a string of the store
									6.135 000 00 0
								12[1]	6.185 000 00 0 -41.29 d
Frequency Sw	/eep							41[1]	-41.64 df
		15s • VBW 10	MHz Mode A	uto Sweep					• 1Pk Cln
Ref Level 20.0	0 dBm	RBW 10	MHz						SGL

For the upper edge:

A 10 MHz AWGN signal (center frequency is 6260MHz) is injected, the signal reduces to 40 MHz centered around 6125MHz.





10 MHz Mode Aut	to Sweep					SGL Count 1/
						O1Pk Cirw
					M2[1]	-41.25 dB
						260 000 00 GI
						-41.55 dB
					6.1	25 000 00 G
	-					
	<u> </u>					
M3	history	Superior and the local data	on desta Secondide	a hope a list one will be	date in soul indeed it out	allefore the best state
						a state of the second

#### **Measurement Results:**

#### UNII Band 5:20M-6175MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
	-73.71	1.2	-74.91	-62	Ceased
6175	-74.71	1.2	-75.91	-62	Minimal
	-80.00	1.2	-81.20	-62	Normal

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with reference to 0dBi antenna gain.

#### **Conclusion: PASS**

#### UNII Band 5:160M-6185MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
6110	-71.71	1.2	-72.91	-62	Ceased
6110 (Lower	-72.71	1.2	-73.91	-62	Minimal
Edge)	-80.00	1.2	-81.20	-62	Normal
6185	-67.71	1.2	-68.91	-62	Ceased





(Center	-68.71	1.2	-69.91	-62	Minimal
Frequency)	-80.00	1.2	-81.20	-62	Normal
6260	-72.71	1.2	-73.91	-62	Ceased
6260 (Upper	-73.71	1.2	-74.91	-62	Minimal
Edge)	-80.00	1.2	-81.20	-62	Normal

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with reference to 0dBi antenna gain. EUT support bandwidth reduction mechanism.

## Conclusion: PASS

## UNII Band 6:20M-6435MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
	-73.71	1.2	-74.91	-62	Ceased
6435	-74.71	1.2	-75.91	-62	Minimal
	-80.00	1.2	-81.20	-62	Normal

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with reference to 0dBi antenna gain.

## Conclusion: PASS

#### UNII Band 6:160M-6505MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
6430	-71.71	1.2	-72.91	-62	Ceased
(Lower	-72.71	1.2	-73.91	-62	Minimal
Edge)	-80.00	1.2	-81.20	-62	Normal
6505	-67.71	1.2	-68.91	-62	Ceased
(Center	-68.71	1.2	-69.91	-62	Minimal
Frequency)	-80.00	1.2	-81.20	-62	Normal





6580	-72.71	1.2	-73.91	-62	Ceased
(Upper	-73.71	1.2	-74.91	-62	Minimal
Edge)	-80.00	1.2	-81.20	-62	Normal

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with reference to 0dBi antenna gain. EUT support bandwidth reduction mechanism.

## Conclusion: PASS

#### UNII Band 7:20M-6855MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
	-74.71	1.2	-75.91	-62	Ceased
6855	-75.71	1.2	-76.91	-62	Minimal
	-80.00	1.2	-81.20	-62	Normal

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with reference to 0dBi antenna gain.

## Conclusion: PASS

## UNII Band 7:160M-6665MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
6590	-72.71	1.2	-73.91	-62	Ceased
(Lower	-73.71	1.2	-74.91	-62	Minimal
Edge)	-80.00	1.2	-81.20	-62	Normal
6665	-68.71	1.2	-69.91	-62	Ceased
(Center	-69.71	1.2	-70.91	-62	Minimal
Frequency)	-80.00	1.2	-81.20	-62	Normal
6740	-72.71	1.2	-73.91	-62	Ceased
(Upper	-73.71	1.2	-74.91	-62	Minimal





Edge)	-80.00	1.2	-81.20	-62	Normal
-------	--------	-----	--------	-----	--------

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with reference to 0dBi antenna gain. EUT support bandwidth reduction mechanism.

#### Conclusion: PASS

### UNII Band 8:20M-6995MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
	-72.71	1.2	-73.91	-62	Ceased
6995	-73.71	1.2	-74.91	-62	Minimal
	-80.00	1.2	-81.20	-62	Normal

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with reference to 0dBi antenna gain.

### Conclusion: PASS

#### UNII Band 8:160M-6985MHz

Incumbent Frequency (MHz)	Injected (AWGN) Power (dBm)	Antenna Gain (dBi)	Adjusted Power (dBm)	Detection Limit (dBm)	EUT TX Status
6910	-70.71	1.2	-71.91	-62	Ceased
(Lower	-71.71	1.2	-72.91	-62	Minimal
Edge)	-80.00	1.2	-81.20	-62	Normal
6985	-68.71	1.2	-69.91	-62	Ceased
(Center	-69.71	1.2	-70.91	-62	Minimal
Frequency)	-80.00	1.2	-81.20	-62	Normal
7060	-72.71	1.2	-73.91	-62	Ceased
(Upper	-73.71	1.2	-74.91	-62	Minimal
Edge)	-80.00	1.2	-81.20	-62	Normal

Note: Adjusted Power(dBm)=Injected (AWGN) Power(dBm)-Antenna Gain(dBi)+Path loss(dB). Path loss is negligible (0dB). The adjusted power level is less than or equal to the detection threshold (-62dBm) with





reference to 0dBi antenna gain. EUT support bandwidth reduction mechanism.

#### **Conclusion: PASS**

Detection Probability Evaluation

Mode	UNII Band	Center Frequency (MHz)	Incumbent Frequency (MHz)	Injected AWGN (dBm)	1	2	3	4	5	6	7	8	9	1 0	Detection Probability (%)	Limit (%)				
	5	6175	6175	-73.71				$\checkmark$	$\checkmark$						100	90				
802.11ax	6	6435	6435	-73.71			x	$\checkmark$	$\checkmark$						90	90				
-HE20	7	6855	6855	-74.71				$\checkmark$	$\checkmark$						100	90				
	8	6995	6995	-72.71				$\checkmark$	$\checkmark$						100	90				
			6110	-71.71	$\checkmark$			$\checkmark$	$\checkmark$						100	90				
	5	6185	6185	-67.71	$\checkmark$			$\checkmark$	$\checkmark$	x		$\checkmark$	$\checkmark$		90	90				
			6260	-72.71	$\checkmark$			$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$		100	90				
		6505					6430	-71.71	x			$\checkmark$	$\checkmark$			$\checkmark$			90	90
	6		6505	-67.71	$\checkmark$		x	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$		90	90				
802.11ax			6580	-72.71	$\checkmark$			$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$		100	90				
-HE160			6590	-72.71	$\checkmark$			$\checkmark$							100	90				
	7	6665	6665	-68.71	$\checkmark$			$\checkmark$	$\checkmark$			x			90	90				
			6740	-72.71	$\checkmark$			$\checkmark$	$\checkmark$						100	90				
		8 6985	6910	-70.71				$\checkmark$							100	90				
	8		6985	-68.71				$\checkmark$			x				90	90				
			7060	-72.71		x		$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$		90	90				

.Conclusion: PASS





#### Test graphs as below:

Mode	Frequency(MHz)	AWGN Signal Level	cease transmission
802.11ax20	6995	See test graph	See test graph
802.11ax160	6185	See test graph	See test graph



20:02:03 05.07.2023

#### AWGN Signal Level 802.11ax HE20 6995MHz (at Antenna Port)



19:55:57 05.07.2023



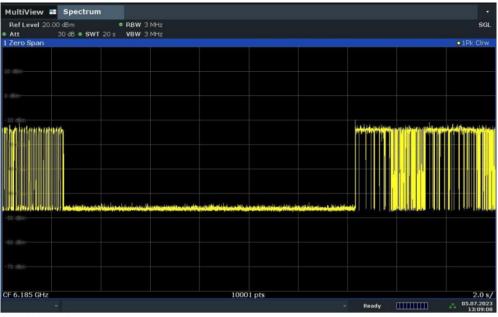






16:28:44 05.07.2023





13:09:09 05.07.2023







## A.7. In-Band Emissions

#### Measurement Limit and Method:

1. Take nominal bandwidth as reference channel bandwidth provided that 26 dB emission bandwidth is always larger than nominal bandwidth

2. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:

- a) Set the span to encompass the entire 26 dB EBW of the signal.
- b) Set RBW = same RBW used for 26 dB EBW measurement.
- c) Set VBW  $\geq$  3 X RBW
- d) Number of points in sweep  $\geq$  [2 X span / RBW].
- e) Sweep time = auto.
- f) Detector = RMS (i.e., power averaging)
- g) Trace average at least 100 traces in power averaging (rms) mode.

h) Use the peak search function on the instrument to find the peak of the spectrum.

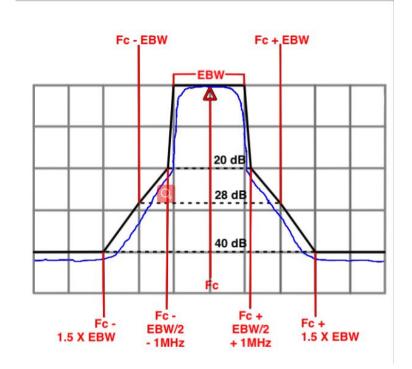
3. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:

a. Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)

- b. Suppressed by 28 dB at one channel bandwidth from the channel center.
- c. Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
- 4. Adjust the span to encompass the entire mask as necessary.
- 5. Clear trace.
- 6. Trace average at least 100 traces in power averaging (rms) mode.
- 7. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.







#### Generic Emission Mask

The measurement is made according to KDB 987594.

#### **Measurement Results:**

#### MIMO

Test Mode	Antenna	Channel	Result	Limit	Verdict
	Ant2	5955	See test graph	See test graph	PASS
	Ant3	5955	See test graph	See test graph	PASS
	Ant2	6175	See test graph	See test graph	PASS
	Ant3	6175	See test graph	See test graph	PASS
	Ant2	6415	See test graph	See test graph	PASS
	Ant3	6415	See test graph	See test graph	PASS
	Ant2	6435	See test graph	See test graph	PASS
	Ant3	6435	See test graph	See test graph	PASS
	Ant2	6475	See test graph	See test graph	PASS
11A CDD	Ant3	6475	See test graph	See test graph	PASS
	Ant2	6515	See test graph	See test graph	PASS
	Ant3	6515	See test graph	See test graph	PASS
	Ant2	6535	See test graph	See test graph	PASS
	Ant3	6535	See test graph	See test graph	PASS
	Ant2	6695	See test graph	See test graph	PASS
	Ant3	6695	See test graph	See test graph	PASS
	Ant2	6855	See test graph	See test graph	PASS
	Ant3	6855	See test graph	See test graph	PASS
	Ant2	6875	See test graph	See test graph	PASS

©Copyright. All rights reserved by CTTL.

Page 164 of 265





			1		1
	Ant3	6875	See test graph	See test graph	PASS
	Ant2	6895	See test graph	See test graph	PASS
	Ant3	6895	See test graph	See test graph	PASS
	Ant2	6995	See test graph	See test graph	PASS
	Ant3	6995	See test graph	See test graph	PASS
	Ant2	7115	See test graph	See test graph	PASS
	Ant3	7115	See test graph	See test graph	PASS
	Ant2	5955	See test graph	See test graph	PASS
	Ant3	5955	See test graph	See test graph	PASS
	Ant2	6175	See test graph	See test graph	PASS
	Ant3	6175	See test graph	See test graph	PASS
	Ant2	6415	See test graph	See test graph	PASS
	Ant3	6415	See test graph	See test graph	PASS
	Ant2	6435	See test graph	See test graph	PASS
	Ant3	6435	See test graph	See test graph	PASS
	Ant2	6475	See test graph	See test graph	PASS
	Ant3	6475	See test graph	See test graph	PASS
	Ant2	6515	See test graph	See test graph	PASS
	Ant3	6515	See test graph	See test graph	PASS
	Ant2	6535	See test graph See test graph		PASS
11AX20 MIMO	Ant3	6535	See test graph	See test graph	PASS
	Ant2	6695	See test graph	See test graph	PASS
	Ant3	6695	See test graph	See test graph	PASS
	Ant2	6855	See test graph	See test graph	PASS
	Ant3	6855	See test graph	See test graph	PASS
	Ant2	6875	See test graph	See test graph	PASS
	Ant3	6875	See test graph	See test graph	PASS
	Ant2	6895	See test graph	See test graph	PASS
	Ant3	6895	See test graph	See test graph	PASS
	Ant2	6995	See test graph	See test graph	PASS
	Ant3	6995	See test graph	See test graph	PASS
	Ant2	7115	See test graph	See test graph	PASS
	Ant3	7115	See test graph	See test graph	PASS
	Ant2	5965	See test graph	See test graph	PASS
	Ant3	5965	See test graph	See test graph	PASS
	Ant2	6165	See test graph	See test graph	PASS
	Ant3	6165	See test graph	See test graph	PASS
11AX40 MIMO	Ant2	6405	See test graph	See test graph	PASS
	Ant3	6405	See test graph	See test graph	PASS
	Ant2	6445	See test graph	See test graph	PASS
	Ant3	6445	See test graph	See test graph	PASS
	Ant2	6485	See test graph	See test graph	PASS

Page 165 of 265





	Ant3 Ant2 Ant3 Ant2 Ant2 Ant3	6485 6525 6525	See test graph See test graph See test graph	See test graph See test graph	PASS PASS
	Ant3 Ant2	6525	• :		PASS
	Ant2		See test graph		
		0505	See lest graph	See test graph	PASS
	Ant3	6565	See test graph	See test graph	PASS
		6565	See test graph	See test graph	PASS
	Ant2	6685	See test graph	See test graph	PASS
	Ant3	6685	See test graph	See test graph	PASS
	Ant2	6845	See test graph	See test graph	PASS
	Ant3	6845	See test graph	See test graph	PASS
	Ant2	6885	See test graph	See test graph	PASS
	Ant3	6885	See test graph	See test graph	PASS
	Ant2	6925	See test graph	See test graph	PASS
	Ant3	6925	See test graph	See test graph	PASS
	Ant2	6965	See test graph	See test graph	PASS
	Ant3	6965	See test graph	See test graph	PASS
	Ant2	7085	See test graph	See test graph	PASS
	Ant3	7085	See test graph	See test graph	PASS
	Ant2	5985	See test graph	See test graph	PASS
	Ant3	5985	See test graph	See test graph	PASS
	Ant2	6145	See test graph	See test graph	PASS
	Ant3	6145	See test graph	See test graph	PASS
	Ant2	6385	See test graph	See test graph	PASS
	Ant3	6385	See test graph	See test graph	PASS
	Ant2	6465	See test graph	See test graph	PASS
	Ant3	6465	See test graph	See test graph	PASS
	Ant2	6545	See test graph	See test graph	PASS
	Ant3	6545	See test graph	See test graph	PASS
	Ant2	6625	See test graph	See test graph	PASS
11AX80 MIMO	Ant3	6625	See test graph	See test graph	PASS
	Ant2	6705	See test graph	See test graph	PASS
	Ant3	6705	See test graph	See test graph	PASS
	Ant2	6785	See test graph	See test graph	PASS
	Ant3	6785	See test graph	See test graph	PASS
	Ant2	6865	See test graph	See test graph	PASS
	Ant3	6865	See test graph	See test graph	PASS
	Ant2	6945	See test graph	See test graph	PASS
	Ant3	6945	See test graph	See test graph	PASS
	Ant2	7025	See test graph	See test graph	PASS
	Ant3	7025	See test graph	See test graph	PASS
	Ant2	6025	See test graph	See test graph	PASS
11AX160 MIMO	Ant3	6025	See test graph	See test graph	PASS
-	Ant2	6185	See test graph	See test graph	PASS

©Copyright. All rights reserved by CTTL.

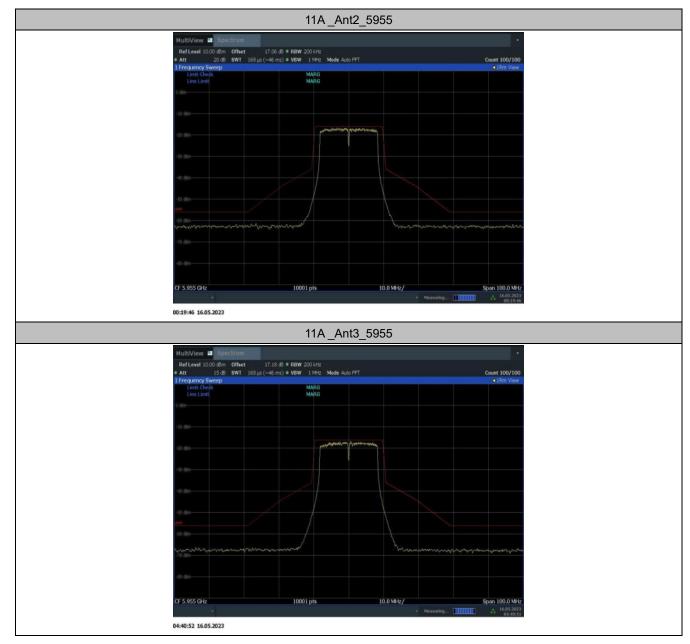
Page 166 of 265





Ant3	6185	See test graph	See test graph	PASS
Ant2	6345	See test graph	See test graph	PASS
Ant3	6345	See test graph	See test graph	PASS
Ant2	6505	See test graph	See test graph	PASS
Ant3	6505	See test graph	See test graph	PASS
Ant2	6665	See test graph	See test graph	PASS
Ant3	6665	See test graph	See test graph	PASS
Ant2	6825	See test graph	See test graph	PASS
Ant3	6825	See test graph	See test graph	PASS
Ant2	6985	See test graph	See test graph	PASS
Ant3	6985	See test graph	See test graph	PASS

# **Test Graphs**



Page 167 of 265





