

2.4 功率頻譜密度

2.4.1 限制值

1. For frequency Band 5150~5250MHz:
 - (1) Outdoor access point : 17 dBm / MHz
 - (2) Indoor access point : 17 dBm / MHz
 - (3) Fixed point-to-point access point : 17 dBm / MHz
 - (4) Mobile and portable client device : 11 dBm / MHz
2. For frequency Band 5250~5350MHz:
11 dBm / MHz
3. For frequency Band 5470~5725MHz:
11 dBm / MHz
4. For frequency Band 5725~5850MHz:
30 dBm / 500kHz
5. 使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

2.4.2 測試架構



2.4.3 測試流程

1. For frequency band 5150~5250, 5250~5350, 5470~5725MHz

Method SA-2:

- (1) Measure the duty cycle D of the transmitter output signal.
- (2) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal
- (3) Spectrum analyzer set:
 - a) RBW = 1 MHz
 - b) VBW = 3 MHz
 - c) Sweep time = auto
 - d) Detector= RMS
 - e) Number of points in sweep $\geq [2 \text{ span} / \text{RBW}]$.
(This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
 - f) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.

2. For frequency band 5725~5850 MHz

Method SA-2:

- (1) Measure the duty cycle D of the transmitter output signal.
- (2) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal
- (3) Spectrum analyzer set:
 - a) RBW= 100 kHz
 - b) VBW = 300 kHz
 - c) Sweep time = auto
 - d) Detector= RMS
 - e) Number of points in sweep $\geq [2 \text{ span} / \text{RBW}]$.
(This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
 - f) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.

2.4.4 測試結果

For 5150 MHz ~ 5250 MHz

802.11a

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5180	7.94	8.83	11.42	< 16.01	Pass
5220	8.37	8.90	11.65	< 16.01	Pass
5240	8.26	8.83	11.56	< 16.01	Pass

Remark:

1. PSD = Reading value on a spectrum analyzer + cable loss + duty factor
2. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

802.11ac VHT20

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5180	7.27	7.51	10.40	< 13.38	Pass
5220	7.32	7.77	10.56	< 13.38	Pass
5240	7.51	7.69	10.61	< 13.38	Pass

Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.
3. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

802.11ac VHT40

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5190	-0.88	-1.03	2.05	< 13.38	Pass
5230	-1.03	-1.20	1.89	< 13.38	Pass

Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.
3. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

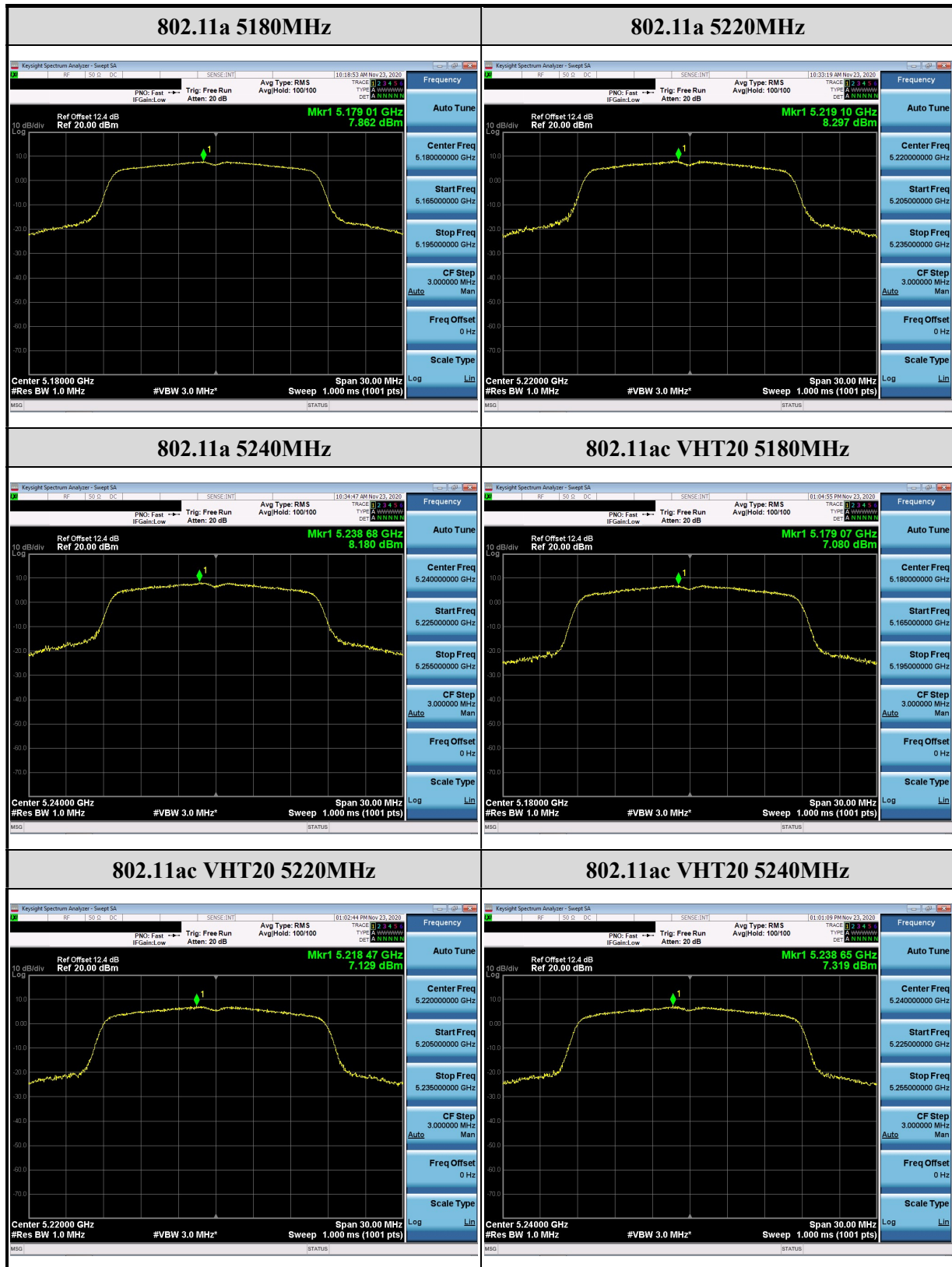
802.11ac VHT80

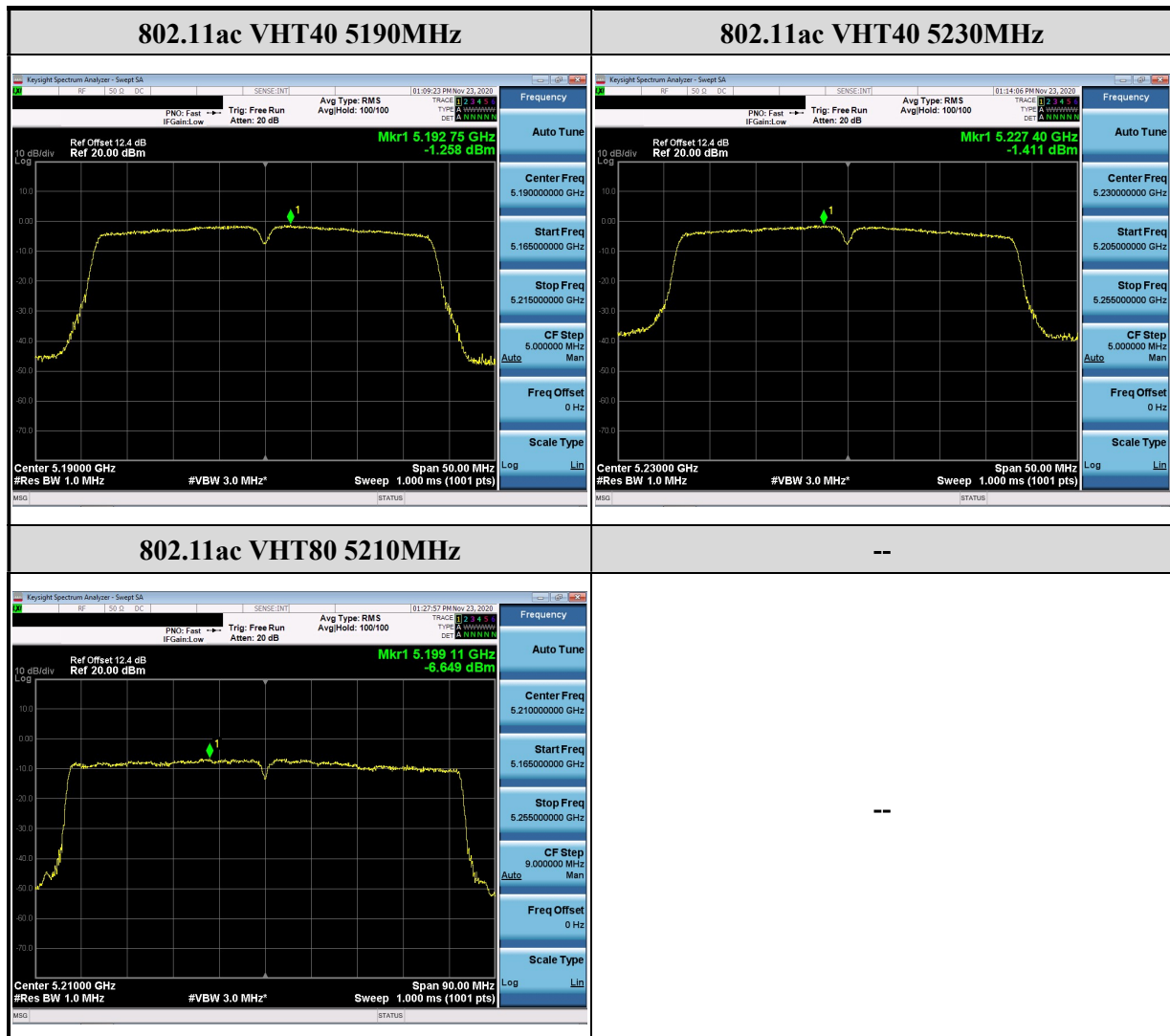
Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5210	-5.76	-5.32	-2.53	< 13.38	Pass

Remark:

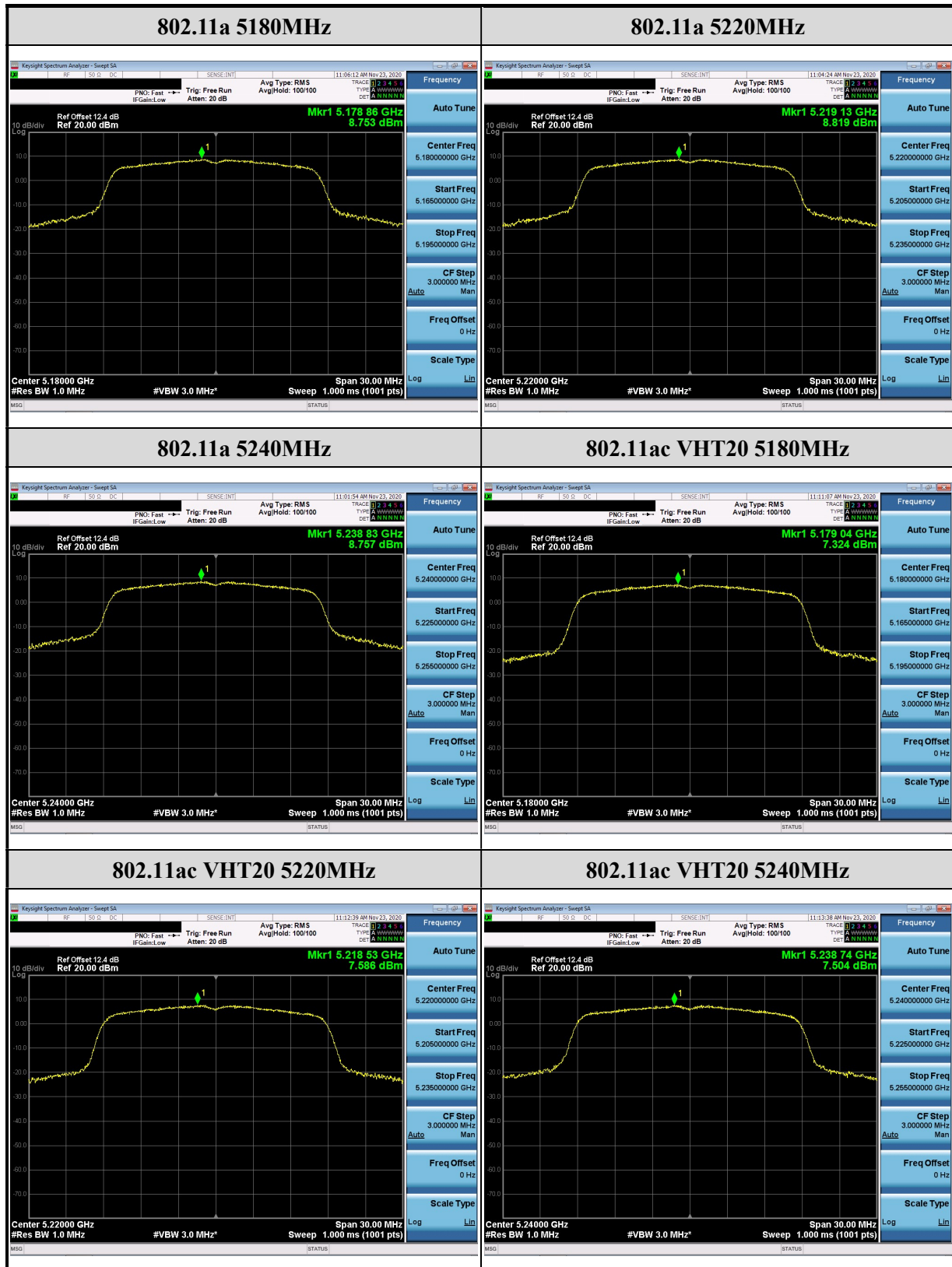
1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.
3. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

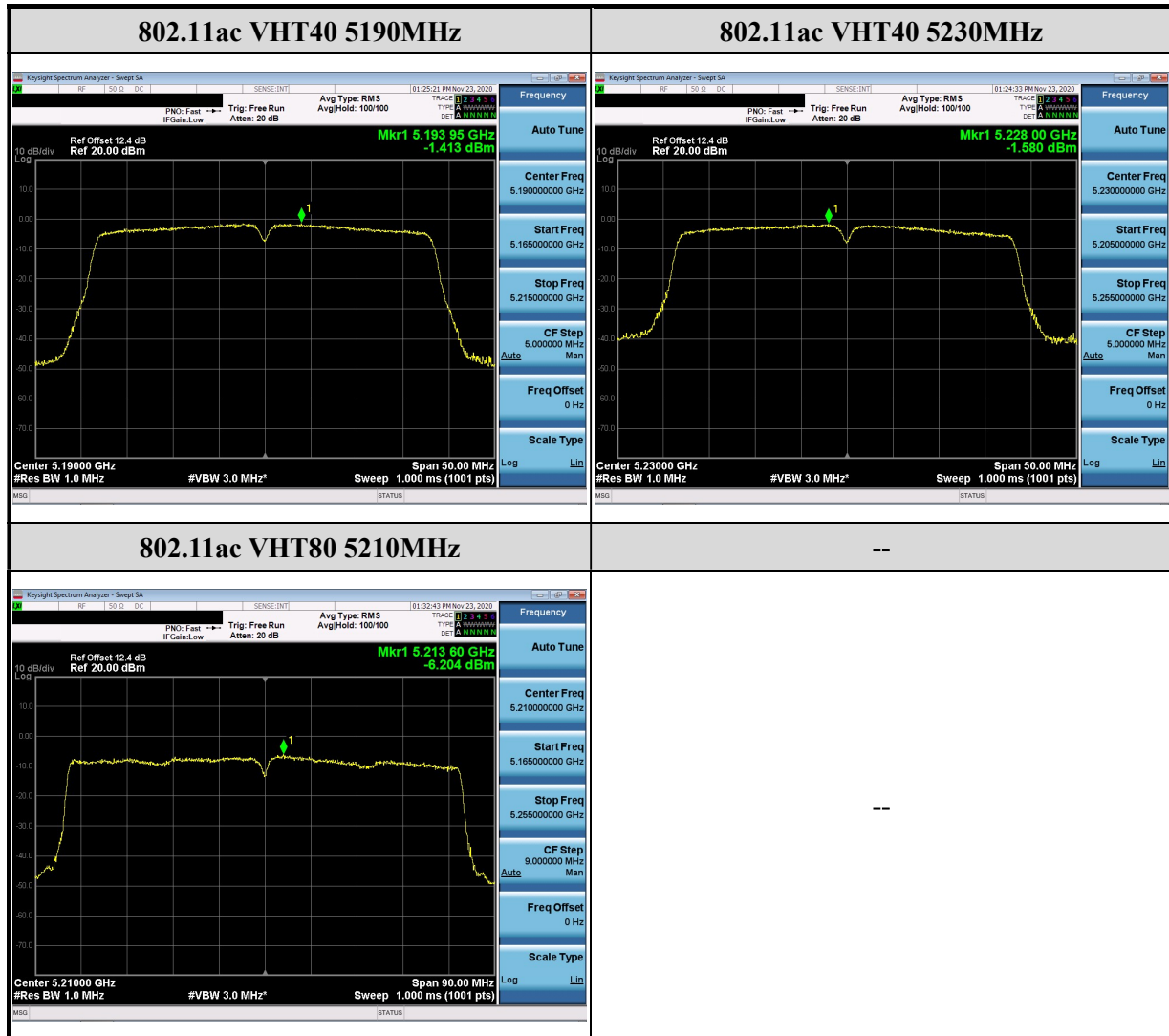
Power Spectral Density spectrum plot of Chain A value:





Power Spectral Density spectrum plot of Chain B value:





For 5745 MHz ~ 5825 MHz

802.11a

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
	Chain A	Chain B			
5745	1.58	2.26	4.94	< 29.01	Pass
5785	-0.25	0.31	3.05	< 29.01	Pass
5825	-0.03	0.12	3.06	< 29.01	Pass

Remark:

1. Measured value = Reading value on a spectrum analyzer + cable loss + duty factor
2. $\text{PSD(dBm/500kHz)} = \text{Measured value} + 10\log(500\text{kHz}/100\text{kHz})$
3. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

802.11ac VHT20

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
	Chain A	Chain B			
5745	0.57	1.35	3.99	< 26.38	Pass
5785	-1.55	-0.61	1.95	< 26.38	Pass
5825	-0.80	-0.77	2.23	< 26.38	Pass

Remark:

1. Measured value = Reading value on a spectrum analyzer + cable loss + duty factor
2. $\text{PSD(dBm/500kHz)} = \text{Measured value} + 10\log(500\text{kHz}/100\text{kHz})$
3. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.
4. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

802.11ac VHT40

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
	Chain A	Chain B			
5755	-2.16	-1.52	1.19	< 26.38	Pass
5795	-3.18	-2.38	0.25	< 26.38	Pass

Remark:

1. Measured value = Reading value on a spectrum analyzer + cable loss + duty factor
2. $\text{PSD(dBm/500kHz)} = \text{Measured value} + 10\log(500\text{kHz}/100\text{kHz})$
3. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.
4. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

802.11ac VHT80

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
	Chain A	Chain B			
5775	-5.25	-4.91	-2.07	< 26.38	Pass

Remark:

1. Measured value = Reading value on a spectrum analyzer + cable loss + duty factor
2. $\text{PSD(dBm/500kHz)} = \text{Measured value} + 10\log(500\text{kHz}/100\text{kHz})$
3. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.
4. Directional Gain > 6dB, Actual Limit = Original Limit - (Directional Gain - 6dB)

Power Spectral Density spectrum plot of Chain A value:

