



## Appendix H for 5.2G WIFI RF Test Data

**Product Name:** Smartphone

**Test Model:** NOTE 60

### Environmental Conditions

Temperature:	24.5° C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng



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## H.1 Centre Frequencies

Condition	Mode	Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	a	5180	5180.03	5.79	20	Pass
	ac20	5180	5179.98	-3.86	20	Pass
	ac40	5190	5190.04	7.71	20	Pass
	ac80	5210	5210.04	7.68	20	Pass
	n20	5180	5179.98	-3.86	20	Pass
	n40	5190	5190.02	3.85	20	Pass

Condition	Mode	Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Verdict
NVLT	a	5180	5179.96	-7.72	20	Pass
	ac20	5180	5180.00	0.00	20	Pass
	ac40	5190	5189.96	-7.71	20	Pass
	ac80	5210	5210.03	5.76	20	Pass
	n20	5180	5180.04	7.72	20	Pass
	n40	5190	5190.00	0.00	20	Pass

Condition	Mode	Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Verdict
NVHT	a	5180	5180.03	5.79	20	Pass
	ac20	5180	5180.03	5.79	20	Pass
	ac40	5190	5190.01	1.93	20	Pass
	ac80	5210	5210.00	0.00	20	Pass
	n20	5180	5179.99	-1.93	20	Pass
	n40	5190	5190.03	5.78	20	Pass

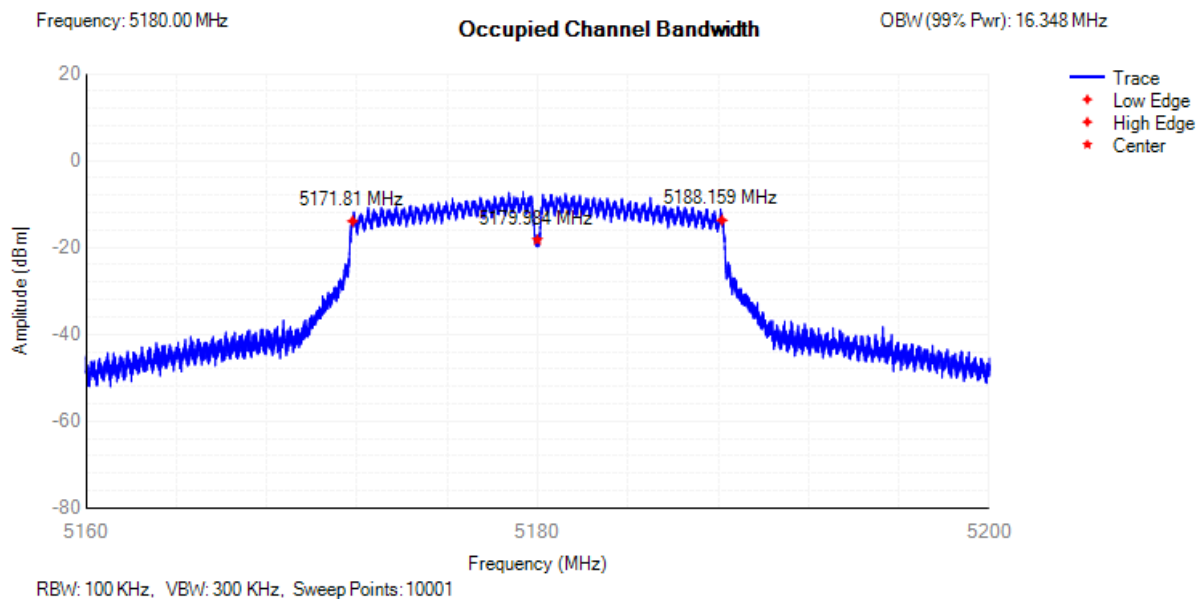




## H.2 Nominal Channel Bandwidth and Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Center Frequency (MHz)	OBW (MHz)	Lower Limit (MHz)	Upper Limit(MHz)	Verdict
NVNT	a	5180	5179.984	16.348	16	20	Pass
NVNT	ac20	5180	5179.979	17.554	16	20	Pass
NVNT	ac40	5190	5189.961	35.954	32	40	Pass
NVNT	ac80	5210	5209.96	75.505	64	80	Pass
NVNT	n20	5180	5179.976	17.558	16	20	Pass
NVNT	n40	5190	5189.952	35.963	32	40	Pass

OBW NVNT a 5180MHz



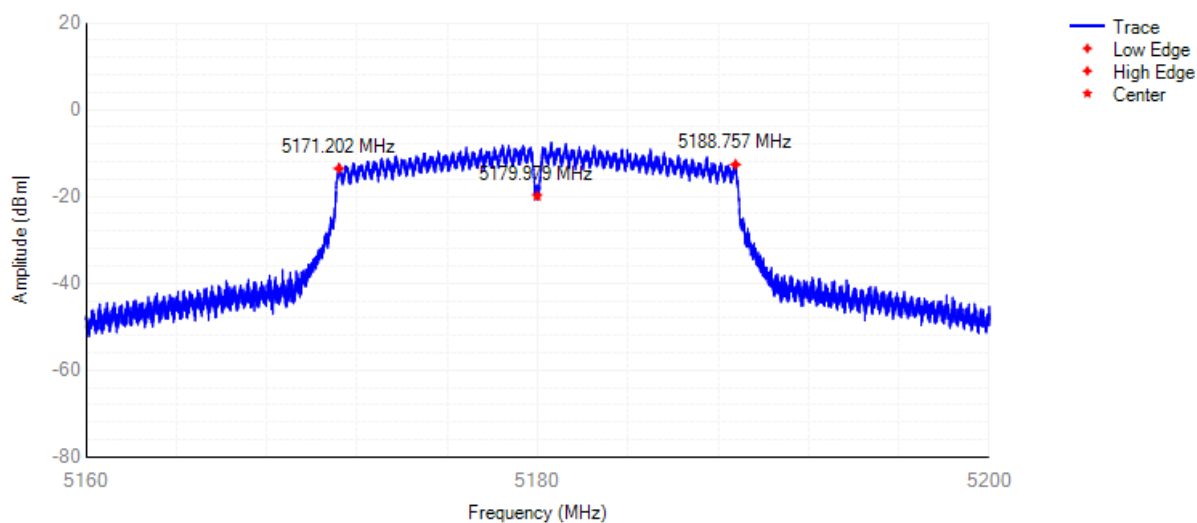


## OBW NVNT ac20 5180MHz

Frequency: 5180.00 MHz

Occupied Channel Bandwidth

OBW(99% Pwr): 17.554 MHz



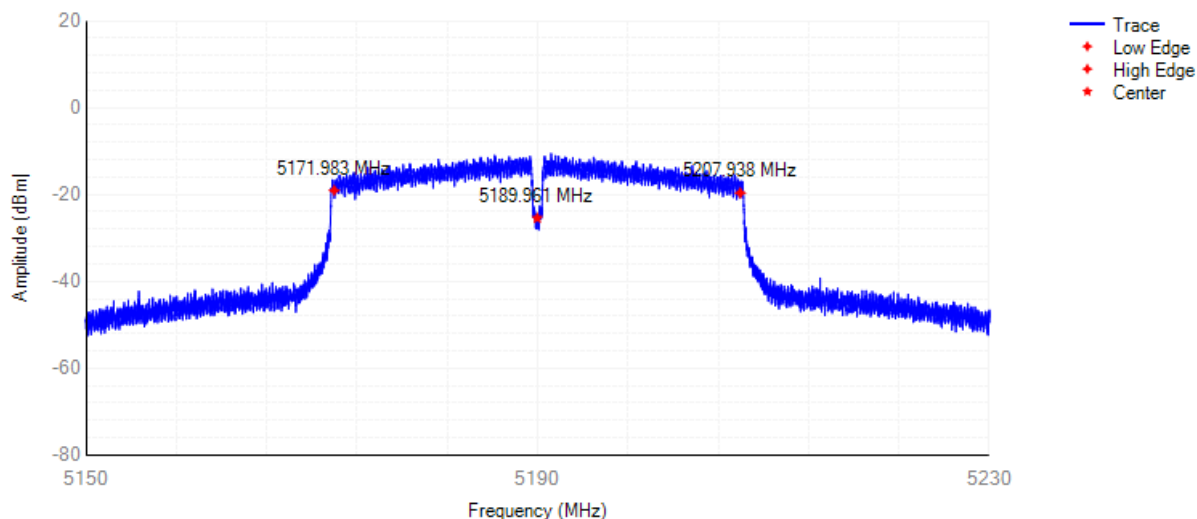
RBW: 100 KHz, VBW: 300 KHz, Sweep Points: 10001

## OBW NVNT ac40 5190MHz

Frequency: 5190.00 MHz

Occupied Channel Bandwidth

OBW(99% Pwr): 35.954 MHz



RBW: 100 KHz, VBW: 300 KHz, Sweep Points: 10001



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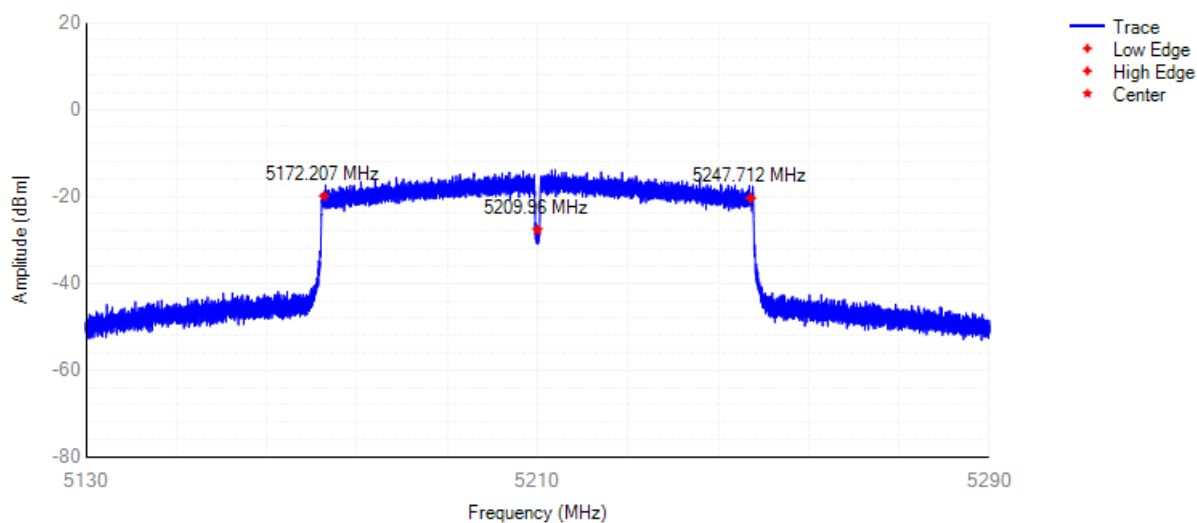


## OBW NVNT ac80 5210MHz

Frequency: 5210.00 MHz

Occupied Channel Bandwidth

OBW(99% Pwr): 75.505 MHz

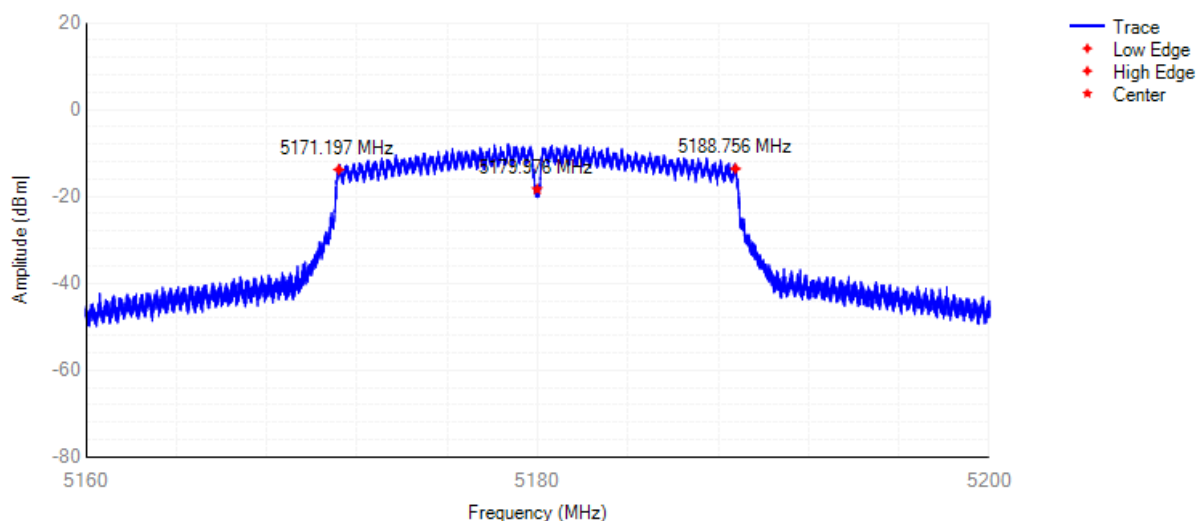


## OBW NVNT n20 5180MHz

Frequency: 5180.00 MHz

Occupied Channel Bandwidth

OBW(99% Pwr): 17.558 MHz



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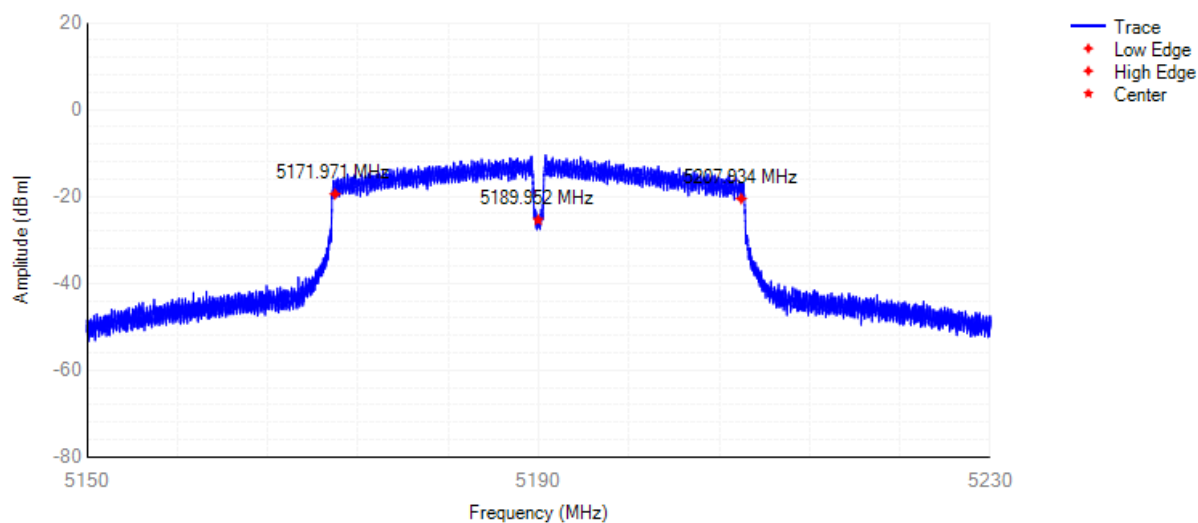


## OBW NVNT n40 5190MHz

Frequency: 5190.00 MHz

Occupied Channel Bandwidth

OBW(99% Pwr): 35.963 MHz





### H.3 RF Output Power

Condition	Mode	Frequency (MHz)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	12.16	23	Pass
NVNT	ac20	5180	12.21	23	Pass
NVNT	ac40	5190	11.99	23	Pass
NVNT	ac80	5210	12.31	23	Pass
NVNT	n20	5180	11.89	23	Pass
NVNT	n40	5190	12.09	23	Pass

Condition	Mode	Frequency (MHz)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVLT	a	5180	12.03	23	Pass
NVLT	ac20	5180	12.10	23	Pass
NVLT	ac40	5190	11.90	23	Pass
NVLT	ac80	5210	12.23	23	Pass
NVLT	n20	5180	11.80	23	Pass
NVLT	n40	5190	12.04	23	Pass

Condition	Mode	Frequency (MHz)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVHT	a	5180	11.97	23	Pass
NVHT	ac20	5180	12.03	23	Pass
NVHT	ac40	5190	11.79	23	Pass
NVHT	ac80	5210	12.14	23	Pass
NVHT	n20	5180	11.69	23	Pass
NVHT	n40	5190	11.90	23	Pass

Note: 20 bursts had been captured for power measurement.



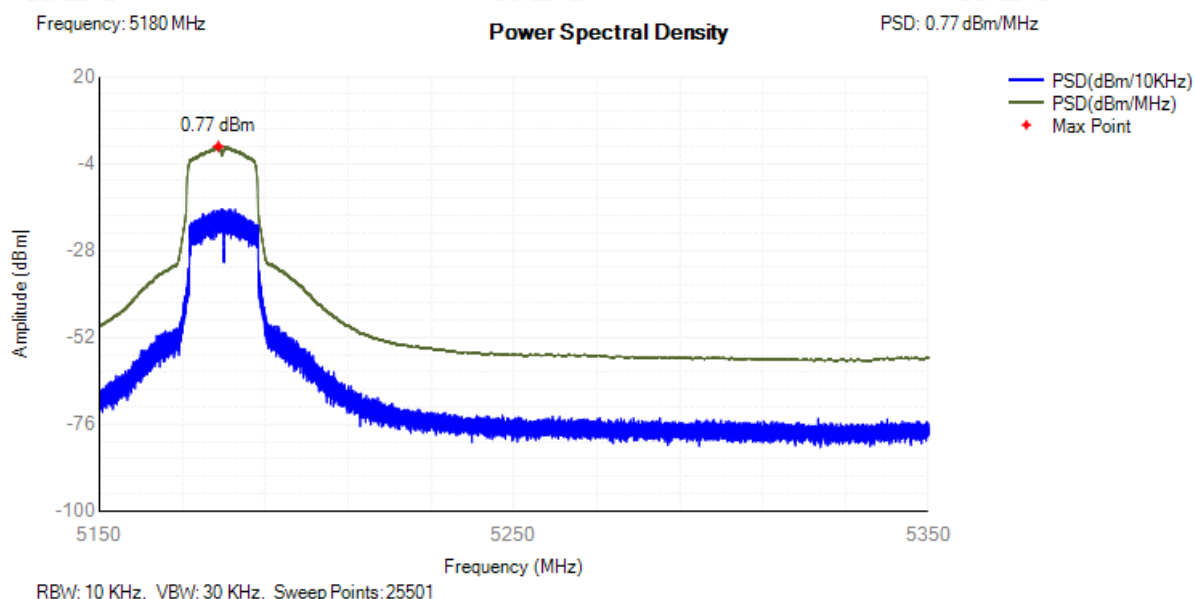




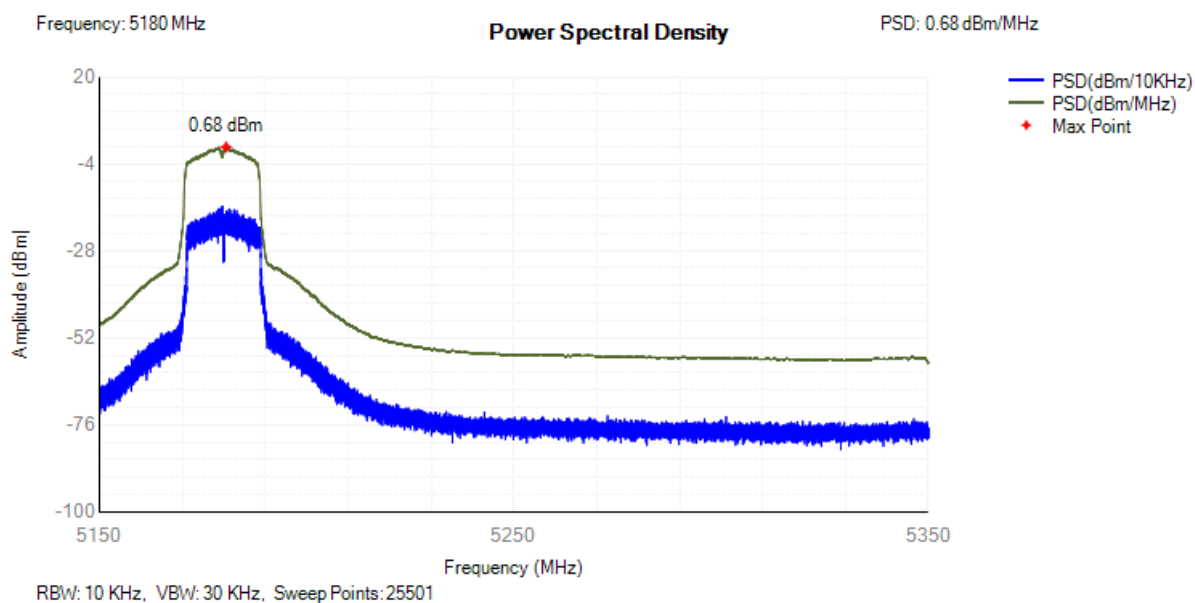
## H.4 Power Spectral Density

Condition	Mode	Frequency (MHz)	Max PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	0.77	10	Pass
NVNT	ac20	5180	0.68	10	Pass
NVNT	ac40	5190	-2.46	10	Pass
NVNT	ac80	5210	-5.66	10	Pass
NVNT	n20	5180	0.33	10	Pass
NVNT	n40	5190	-2.38	10	Pass

PSD NVNT a 5180MHz



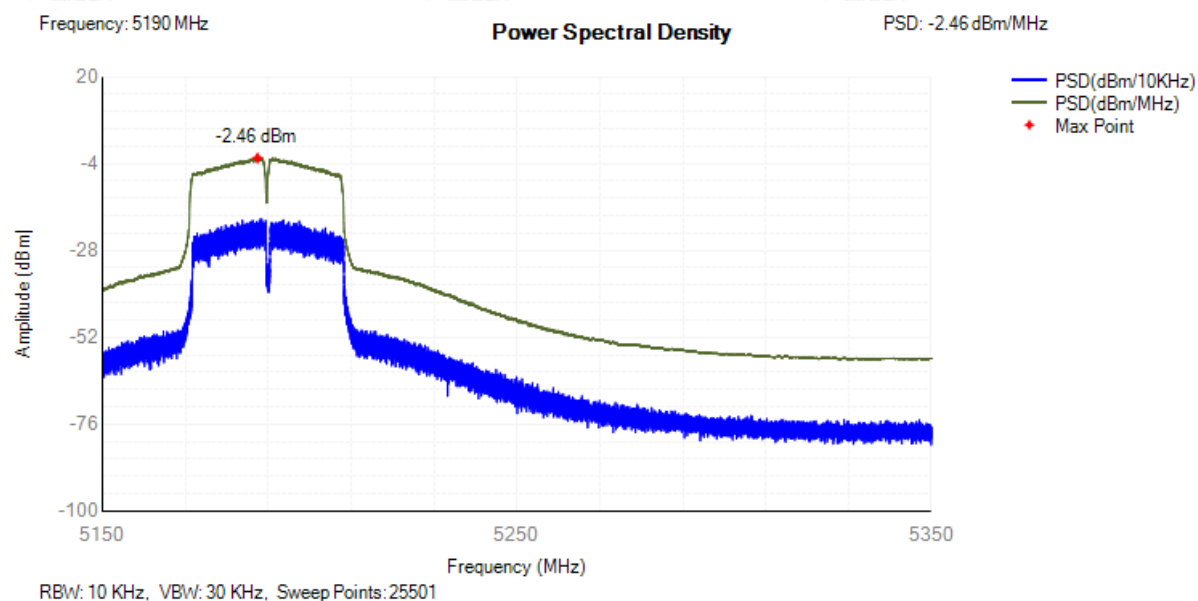
PSD NVNT ac20 5180MHz



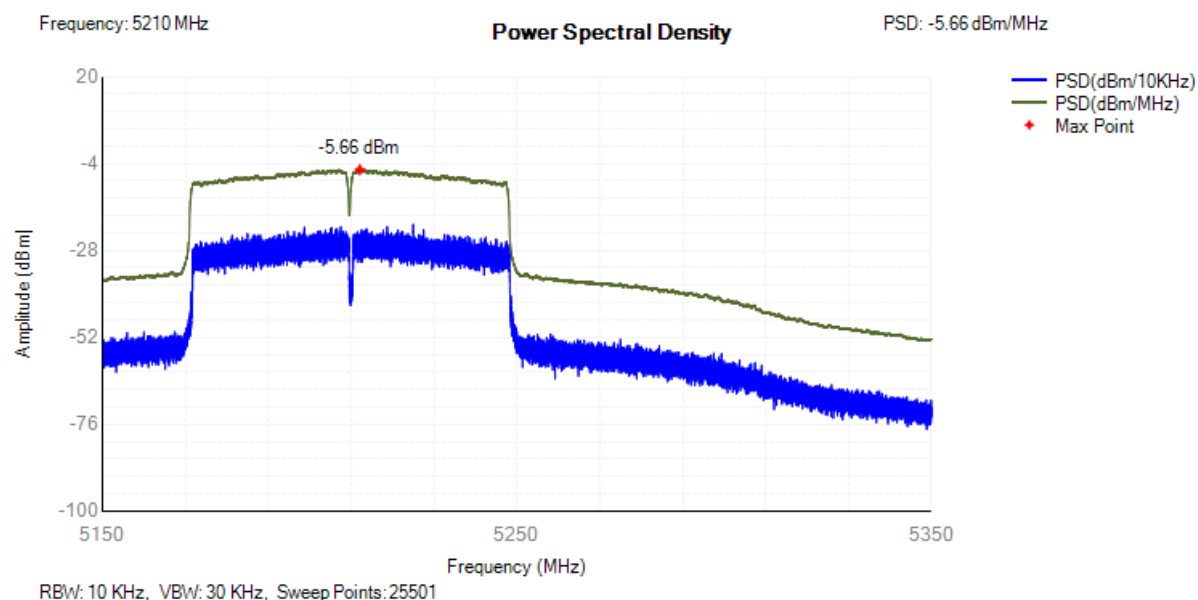




## PSD NVNT ac40 5190MHz

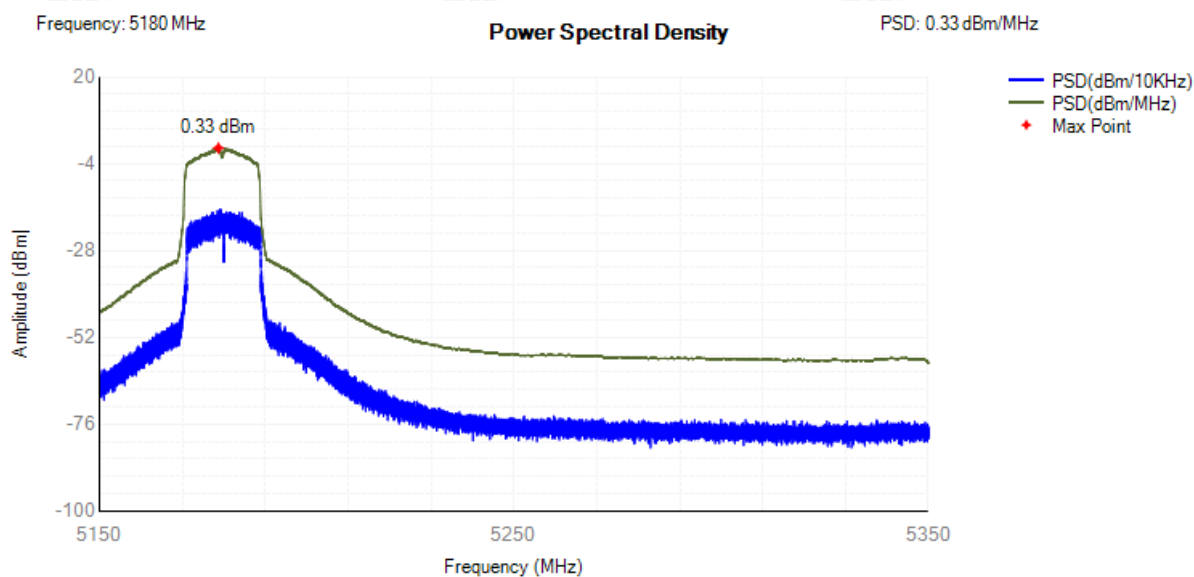


## PSD NVNT ac80 5210MHz

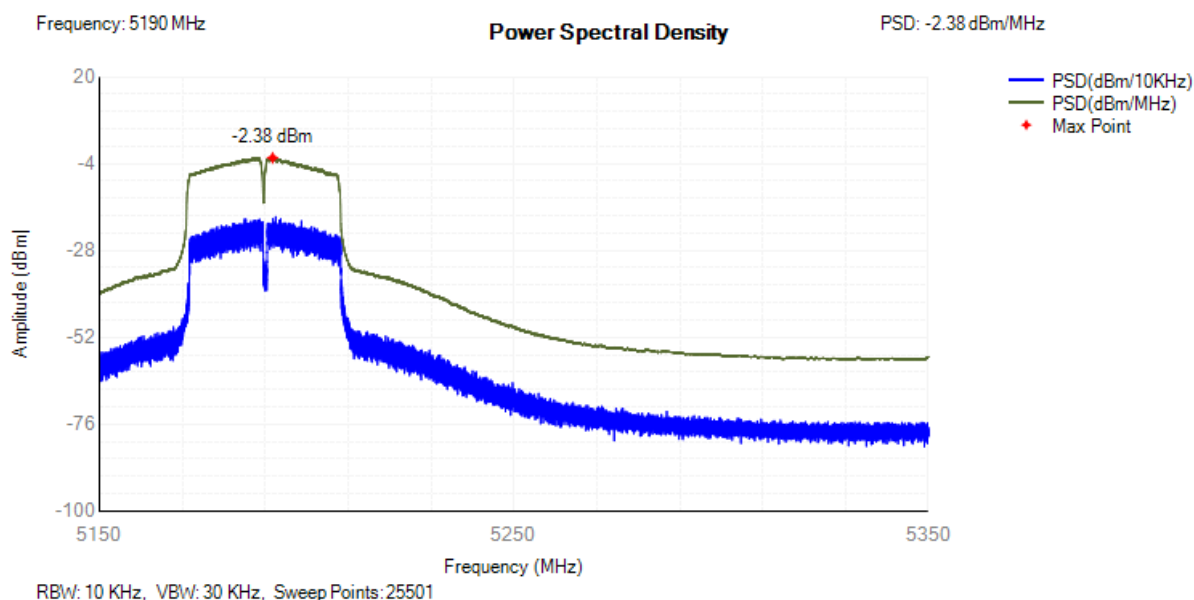




## PSD NVNT n20 5180MHz



## PSD NVNT n40 5190MHz





## H.5 Transmitter unwanted emissions in the spurious domain

The Worst Test Result For 802.11a					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
57.61	H	-84.95	-54.00	-30.95	PK
66.03	V	-74.37	-54.00	-20.37	PK
807.59	H	-77.18	-54.00	-23.18	PK
924.22	V	-76.16	-36.00	-40.16	PK
3485.70	H	-51.26	-30.00	-21.26	PK
3488.17	V	-61.25	-30.00	-31.25	PK
10360.10	H	-55.69	-30.00	-25.69	PK
10360.07	V	-51.63	-30.00	-21.63	PK

The Worst Test Result For 802.11n(20MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
60.40	H	-81.43	-54.00	-27.43	PK
64.69	V	-73.94	-54.00	-19.94	PK
807.39	H	-76.02	-54.00	-22.02	PK
922.72	V	-74.42	-36.00	-38.42	PK
3462.86	H	-49.54	-30.00	-19.54	PK
3483.15	V	-61.20	-30.00	-31.20	PK
10360.02	H	-53.08	-30.00	-23.08	PK
10360.05	V	-51.05	-30.00	-21.05	PK





The Worst Test Result For 802.11ac(20MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
57.96	H	-81.01	-54.00	-27.01	PK
65.06	V	-73.68	-54.00	-19.68	PK
808.05	H	-75.90	-54.00	-21.90	PK
923.46	V	-74.65	-36.00	-38.65	PK
3494.22	H	-49.22	-30.00	-19.22	PK
3473.78	V	-60.82	-30.00	-30.82	PK
10360.03	H	-53.01	-30.00	-23.01	PK
10360.08	V	-50.27	-30.00	-20.27	PK

The Worst Test Result For 802.11n(40MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
60.61	H	-83.20	-54.00	-29.20	PK
68.77	V	-73.39	-54.00	-19.39	PK
807.40	H	-75.86	-54.00	-21.86	PK
925.46	V	-74.10	-36.00	-38.10	PK
3498.76	H	-49.22	-30.00	-19.22	PK
3491.97	V	-60.02	-30.00	-30.02	PK
10380.02	H	-53.12	-30.00	-23.12	PK
10380.09	V	-50.54	-30.00	-20.54	PK





The Worst Test Result For 802.11ac(40MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
59.55	H	-83.29	-54.00	-29.29	PK
68.27	V	-73.49	-54.00	-19.49	PK
811.77	H	-75.98	-54.00	-21.98	PK
922.83	V	-73.89	-36.00	-37.89	PK
3500.33	H	-48.82	-30.00	-18.82	PK
3496.95	V	-59.66	-30.00	-29.66	PK
10380.06	H	-54.09	-30.00	-24.09	PK
10380.05	V	-50.27	-30.00	-20.27	PK

The Worst Test Result For 802.11ac(80MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 42(5210MHz)					
56.18	H	-83.26	-54.00	-29.26	PK
64.39	V	-73.52	-54.00	-19.52	PK
809.92	H	-76.50	-54.00	-22.50	PK
925.05	V	-74.06	-36.00	-38.06	PK
3511.12	H	-49.59	-30.00	-19.59	PK
3480.39	V	-60.83	-30.00	-30.83	PK
10420.07	H	-54.24	-30.00	-24.24	PK
10420.04	V	-50.30	-30.00	-20.30	PK

Note: All test modes were tested, but we only recorded the worst (Low Channel) case in this report.

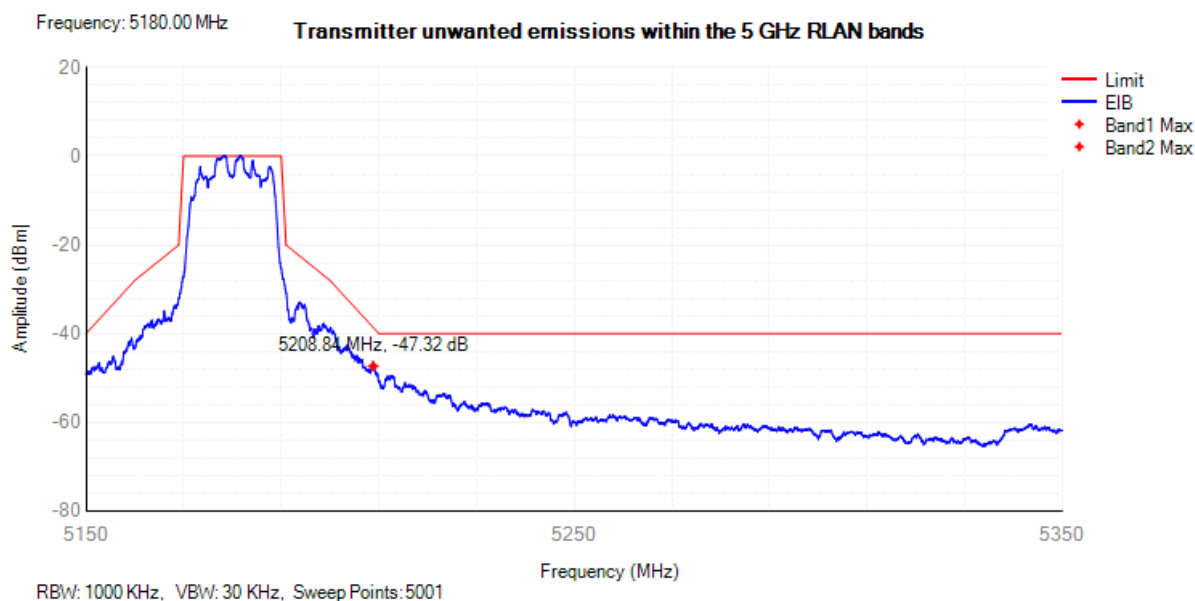




## H.6 Transmitter unwanted emissions within the 5 GHz RLAN bands

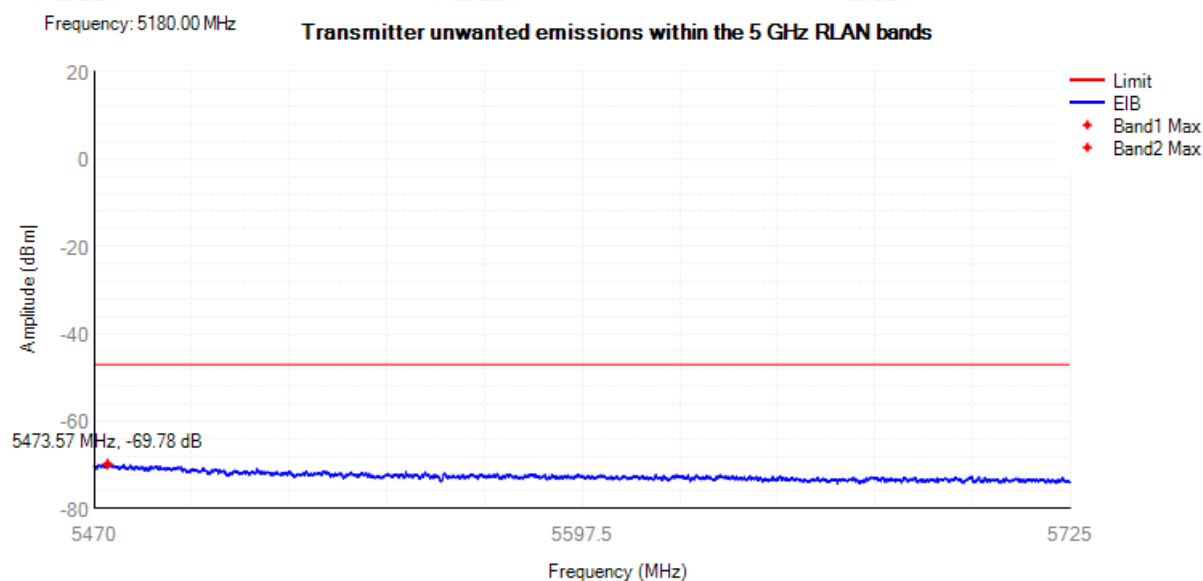
Condition	Mode	Frequency (MHz)	Sub Band	Worst EIB Frequency (MHz)	Level (dB)	Limit (dB)	Verdict
NVNT	a	5180	Band1	5208.84	-47.32	-38.6	Pass
NVNT	a	5180	Band2	5473.57	-69.78	-47	Pass
NVNT	ac20	5180	Band1	5151.55	-45.97	-38.12	Pass
NVNT	ac20	5180	Band2	5477.54	-69.59	-47	Pass
NVNT	ac40	5190	Band1	5250.75	-43.75	-40	Pass
NVNT	ac40	5190	Band2	5642.58	-70.9	-47	Pass
NVNT	ac80	5210	Band1	5332.64	-44.18	-40	Pass
NVNT	ac80	5210	Band2	5479.53	-63.73	-40	Pass
NVNT	n20	5180	Band1	5210	-43.35	-40	Pass
NVNT	n20	5180	Band2	5483.61	-69.33	-47	Pass
NVNT	n40	5190	Band1	5249.16	-44.98	-39.49	Pass
NVNT	n40	5190	Band2	5627.38	-70.28	-47	Pass

Tx. Emissions EIB NVNT a 5180MHz Sub Band1

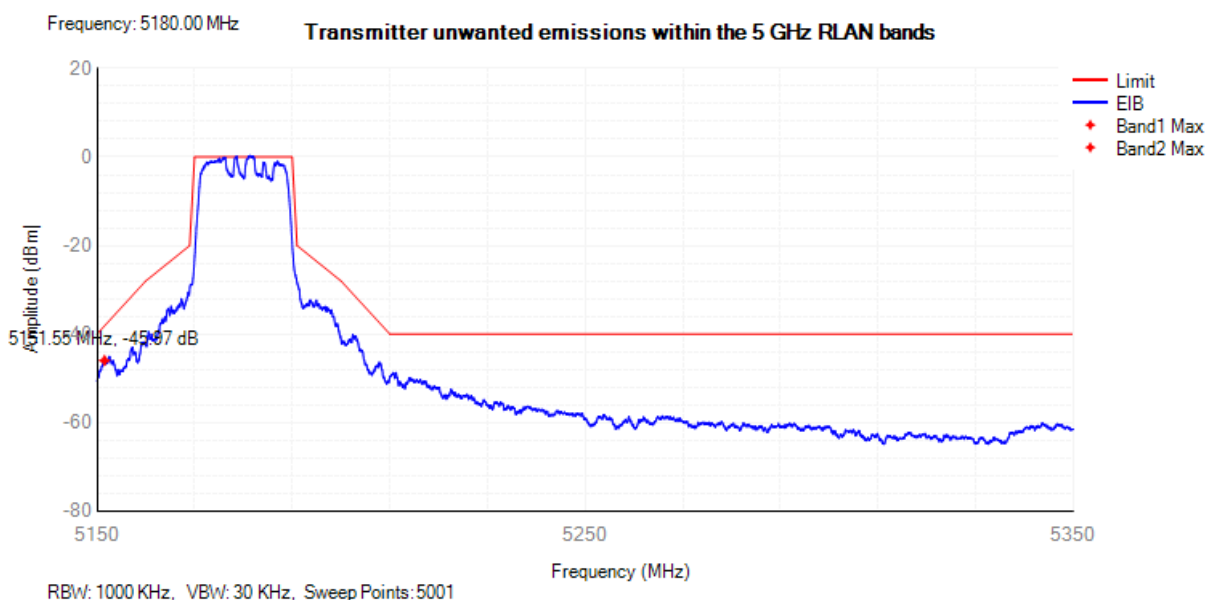




## Tx. Emissions EIB NVNT a 5180MHz Sub Band2



## Tx. Emissions EIB NVNT ac20 5180MHz Sub Band1



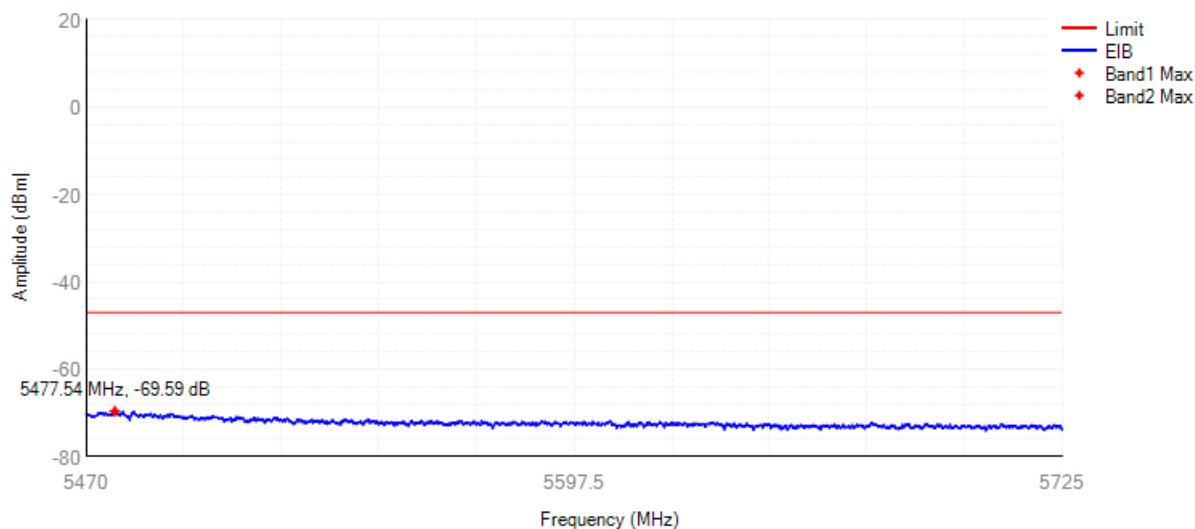




## Tx. Emissions EIB NVNT ac20 5180MHz Sub Band2

Frequency: 5180.00 MHz

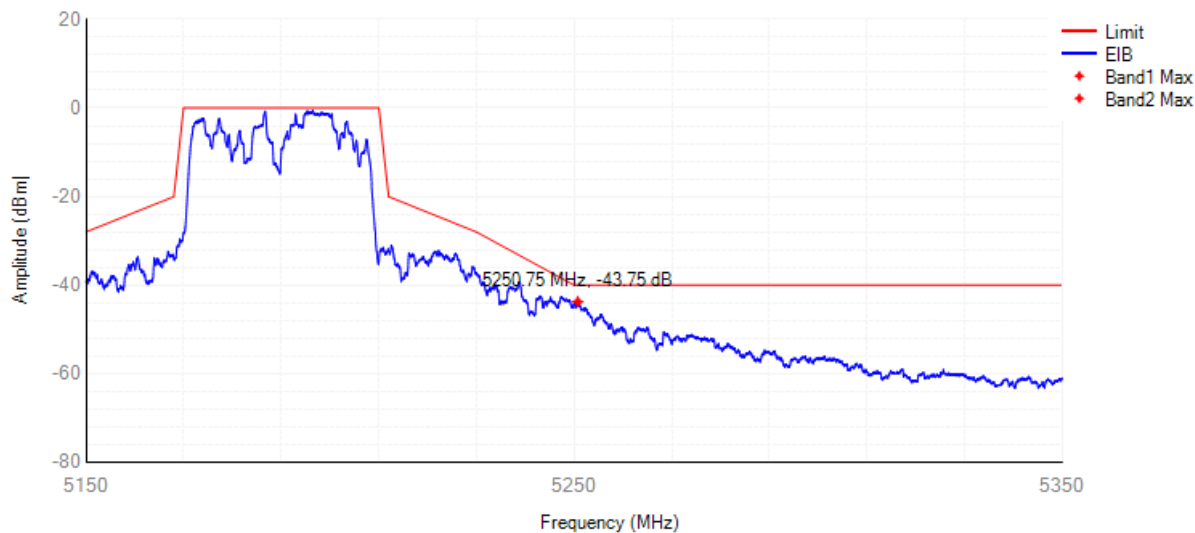
## Transmitter unwanted emissions within the 5 GHz RLAN bands



## Tx. Emissions EIB NVNT ac40 5190MHz Sub Band1

Frequency: 5190.00 MHz

## Transmitter unwanted emissions within the 5 GHz RLAN bands



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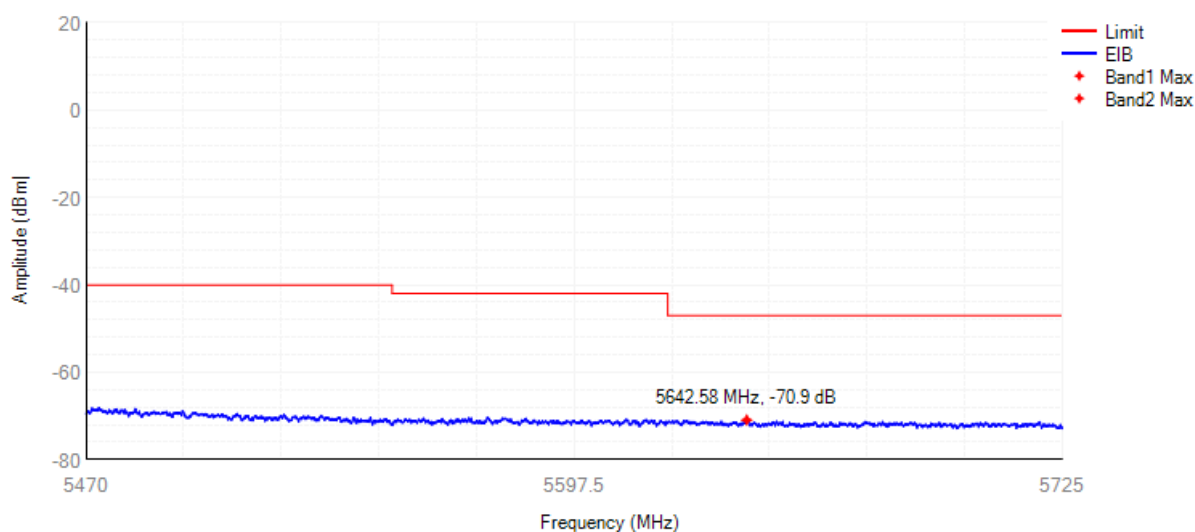
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## Tx. Emissions EIB NVNT ac40 5190MHz Sub Band2

Frequency: 5190.00 MHz

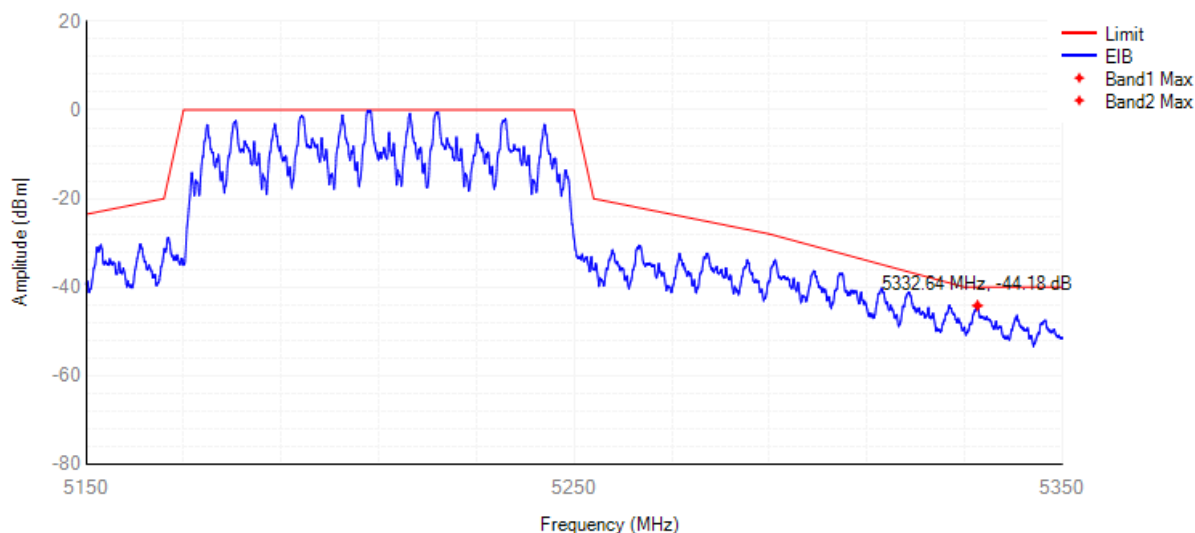
## Transmitter unwanted emissions within the 5 GHz RLAN bands



## Tx. Emissions EIB NVNT ac80 5210MHz Sub Band1

Frequency: 5210.00 MHz

## Transmitter unwanted emissions within the 5 GHz RLAN bands

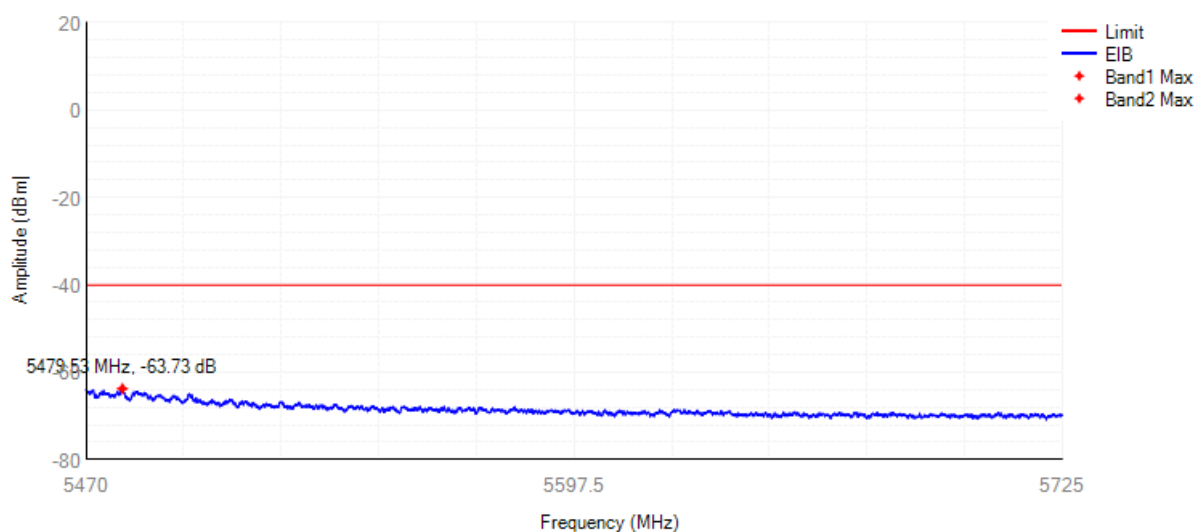




## Tx. Emissions EIB NVNT ac80 5210MHz Sub Band2

Frequency: 5210.00 MHz

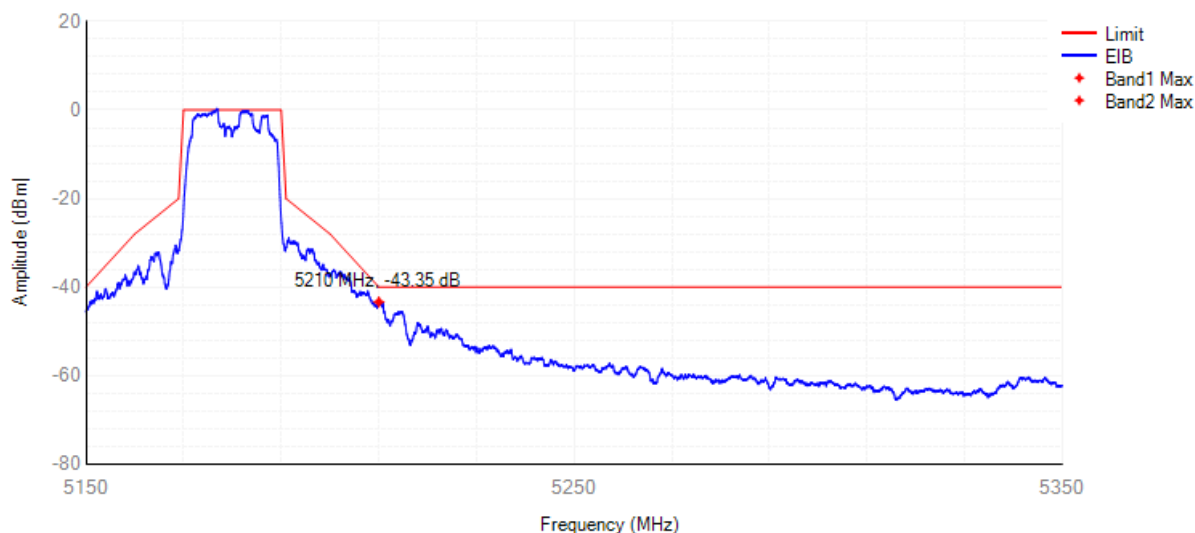
## Transmitter unwanted emissions within the 5 GHz RLAN bands



## Tx. Emissions EIB NVNT n20 5180MHz Sub Band1

Frequency: 5180.00 MHz

## Transmitter unwanted emissions within the 5 GHz RLAN bands

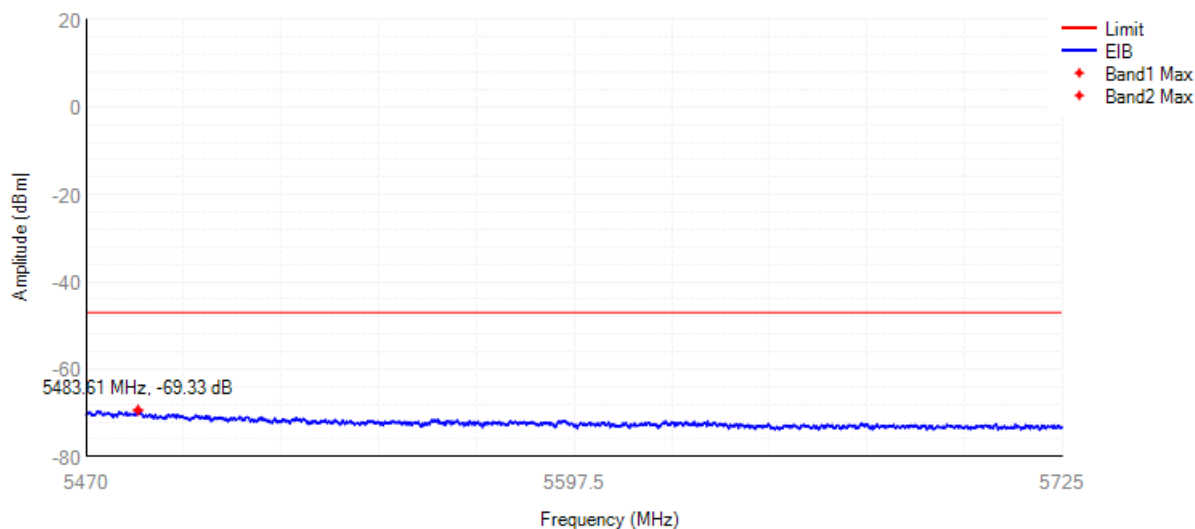




## Tx. Emissions EIB NVNT n20 5180MHz Sub Band2

Frequency: 5180.00 MHz

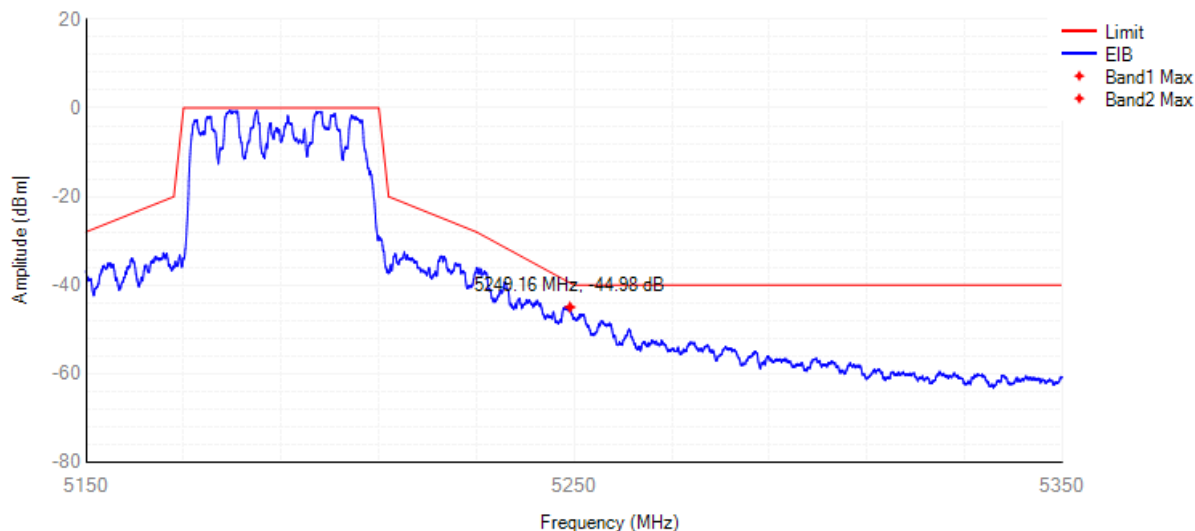
## Transmitter unwanted emissions within the 5 GHz RLAN bands



## Tx. Emissions EIB NVNT n40 5190MHz Sub Band1

Frequency: 5190.00 MHz

## Transmitter unwanted emissions within the 5 GHz RLAN bands



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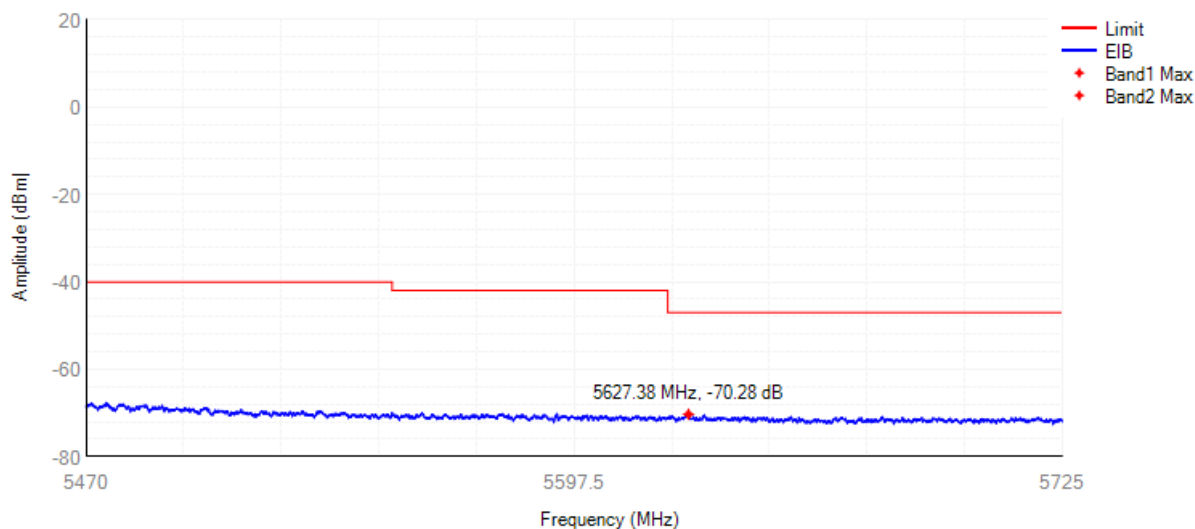
Scan code to check authenticity



## Tx. Emissions EIB NVNT n40 5190MHz Sub Band2

Frequency: 5190.00 MHz

## Transmitter unwanted emissions within the 5 GHz WLAN bands





## H.7 Receiver Spurious Emissions

The Worst Test Result For 802.11a					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
62.44	H	-81.79	-57.00	-24.79	PK
69.75	V	-73.31	-57.00	-16.31	PK
809.24	H	-72.30	-57.00	-15.30	PK
925.45	V	-72.60	-57.00	-15.60	PK
3484.75	H	-61.02	-47.00	-14.02	PK
3497.58	V	-62.92	-47.00	-15.92	PK
10360.09	H	-57.68	-47.00	-10.68	PK
10360.02	V	-57.83	-47.00	-10.83	PK

The Worst Test Result For 802.11n(20MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
58.42	H	-82.14	-57.00	-25.14	PK
68.63	V	-74.47	-57.00	-17.47	PK
809.25	H	-74.87	-57.00	-17.87	PK
923.17	V	-74.65	-57.00	-17.65	PK
3482.22	H	-63.54	-47.00	-16.54	PK
3477.42	V	-64.03	-47.00	-17.03	PK
10360.06	H	-58.38	-47.00	-11.38	PK
10360.03	V	-59.49	-47.00	-12.49	PK





The Worst Test Result For 802.11ac(20MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 36 (5180MHz)					
57.65	H	-82.80	-57.00	-25.80	PK
64.81	V	-74.02	-57.00	-17.02	PK
811.62	H	-74.15	-57.00	-17.15	PK
923.56	V	-74.43	-57.00	-17.43	PK
3482.41	H	-63.66	-47.00	-16.66	PK
3482.48	V	-64.22	-47.00	-17.22	PK
10360.10	H	-58.55	-47.00	-11.55	PK
10360.03	V	-59.60	-47.00	-12.60	PK

The Worst Test Result For 802.11n(40MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
60.89	H	-82.61	-57.00	-25.61	PK
64.96	V	-75.04	-57.00	-18.04	PK
812.40	H	-74.65	-57.00	-17.65	PK
924.43	V	-73.77	-57.00	-16.77	PK
3464.04	H	-63.22	-47.00	-16.22	PK
3487.49	V	-63.37	-47.00	-16.37	PK
10380.03	H	-58.55	-47.00	-11.55	PK
10380.01	V	-59.78	-47.00	-12.78	PK







The Worst Test Result For 802.11ac(40MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
59.14	H	-82.07	-57.00	-25.07	PK
64.68	V	-75.09	-57.00	-18.09	PK
808.45	H	-74.87	-57.00	-17.87	PK
921.66	V	-73.33	-57.00	-16.33	PK
3470.28	H	-63.32	-47.00	-16.32	PK
3468.93	V	-63.53	-47.00	-16.53	PK
10380.01	H	-59.03	-47.00	-12.03	PK
10380.04	V	-59.34	-47.00	-12.34	PK

The Worst Test Result For 802.11ac(80MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 42 (5210MHz)					
59.84	H	-83.17	-57.00	-26.17	PK
63.73	V	-74.95	-57.00	-17.95	PK
809.15	H	-73.92	-57.00	-16.92	PK
922.89	V	-73.95	-57.00	-16.95	PK
3479.10	H	-63.85	-47.00	-16.85	PK
3512.52	V	-63.63	-47.00	-16.63	PK
10420.09	H	-58.46	-47.00	-11.46	PK
10420.03	V	-60.95	-47.00	-13.95	PK

Note: All test modes were tested, but we only recorded the worst case (Low Channel) in this report.

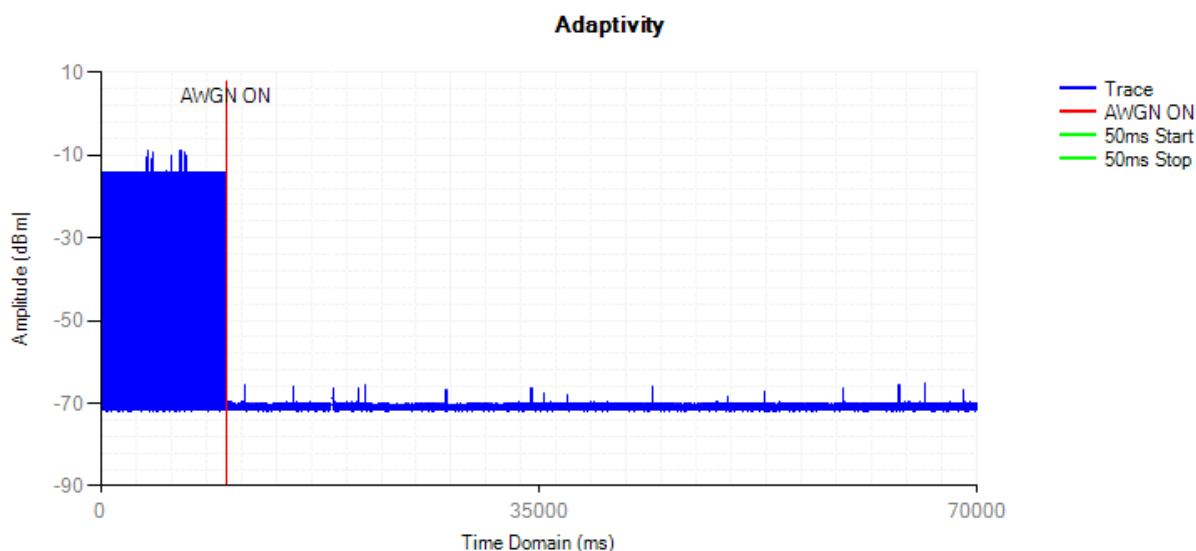




## H.8 Adaptivity (Channel Access Mechanism)

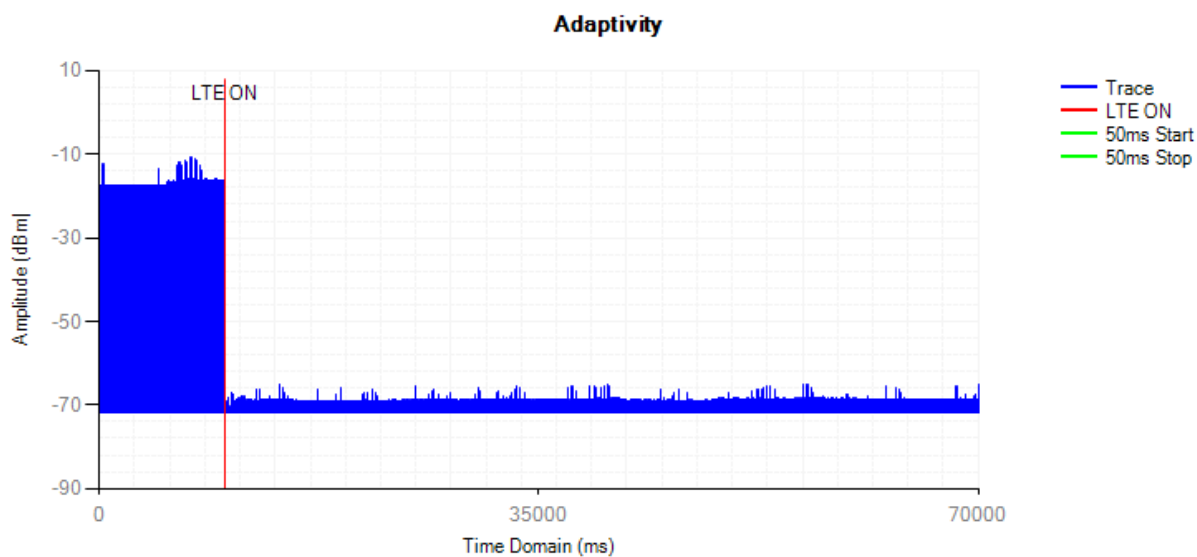
Condition	Mode	Frequency (MHz)	Interfer Type	Short Control (ms)	Limit (ms)	Short Control (n)	Limit (n)	Verdict
NVNT	ac20	5180	AWGN	0.43	$\leq 2.5$	9	$\leq 50$	Pass
NVNT	ac20	5180	LTE	0.30	$\leq 2.5$	6	$\leq 50$	Pass
NVNT	ac20	5180	OFDM	0.68	$\leq 2.5$	3	$\leq 50$	Pass
NVNT	ac40	5190	AWGN	0.24	$\leq 2.5$	8	$\leq 50$	Pass
NVNT	ac40	5190	LTE	0.74	$\leq 2.5$	5	$\leq 50$	Pass
NVNT	ac40	5190	OFDM	0.68	$\leq 2.5$	14	$\leq 50$	Pass
NVNT	ac80	5210	AWGN	0.55	$\leq 2.5$	7	$\leq 50$	Pass
NVNT	ac80	5210	LTE	0.41	$\leq 2.5$	13	$\leq 50$	Pass
NVNT	ac80	5210	OFDM	0.40	$\leq 2.5$	12	$\leq 50$	Pass

Adaptivity NVNT ac20 5180MHz AWGN

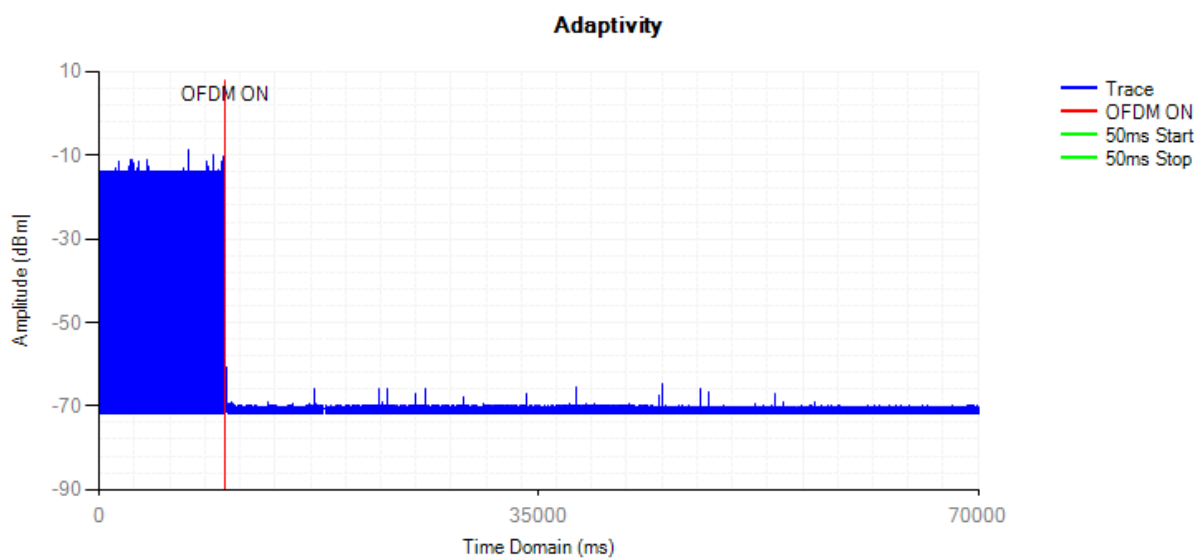




## Adaptivity NVNT ac20 5180MHz LTE

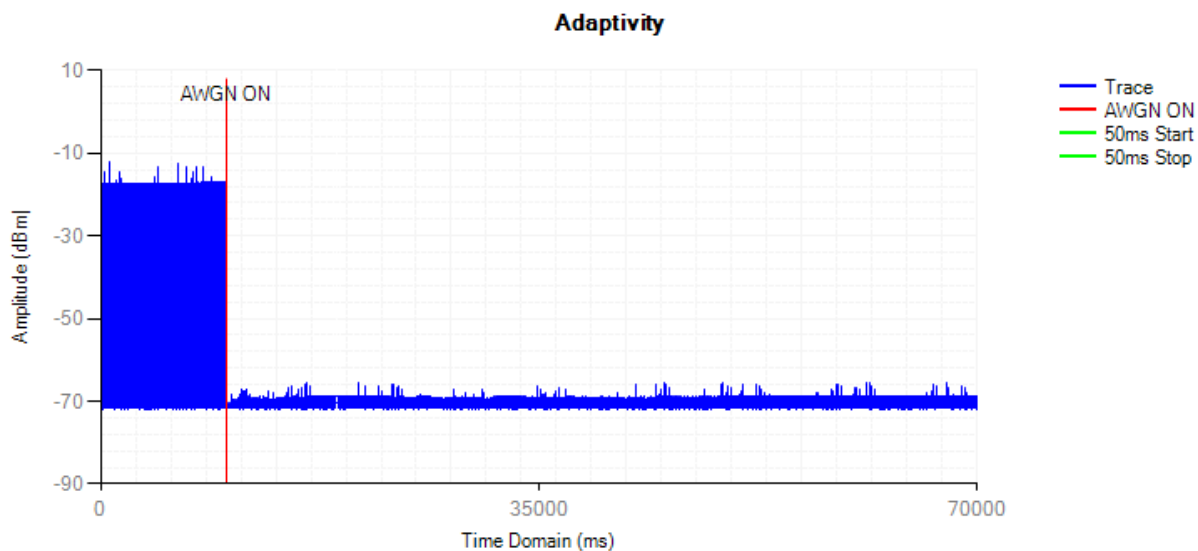


## Adaptivity NVNT ac20 5180MHz OFDM

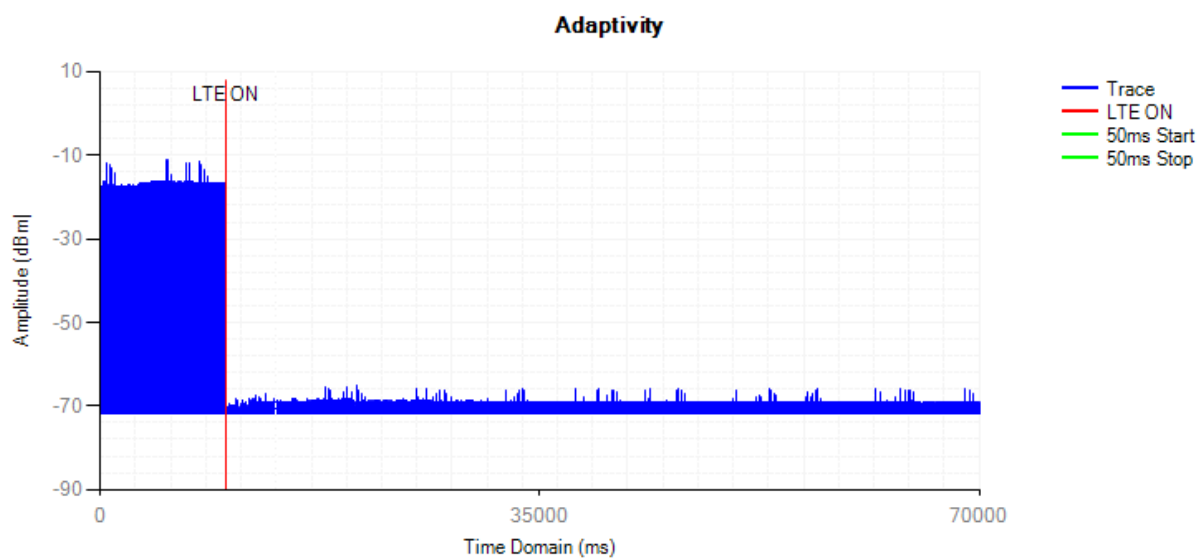




## Adaptivity NVNT ac40 5190MHz AWGN

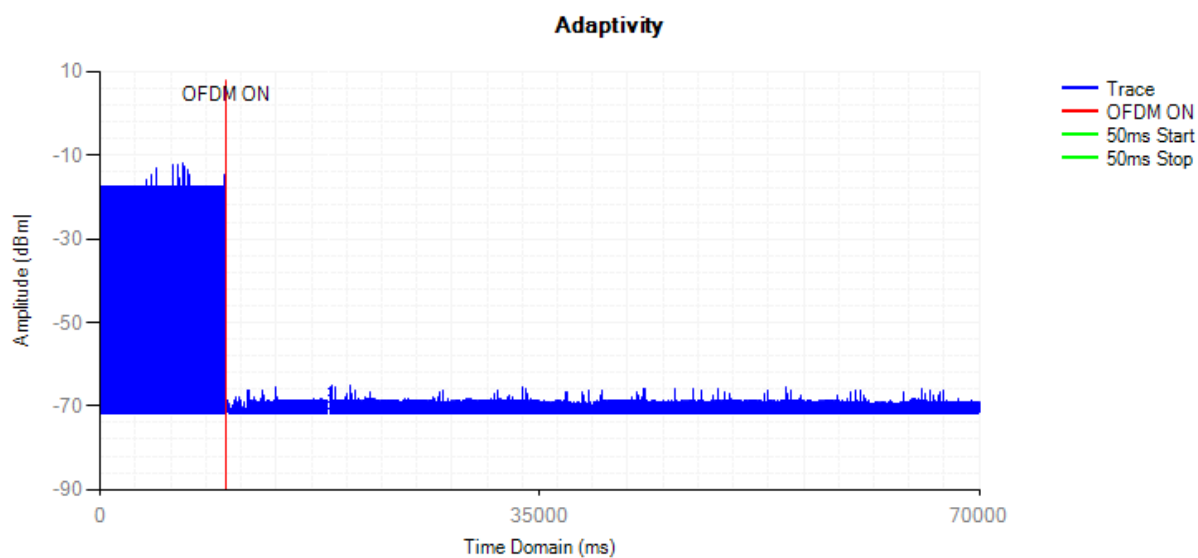


## Adaptivity NVNT ac40 5190MHz LTE

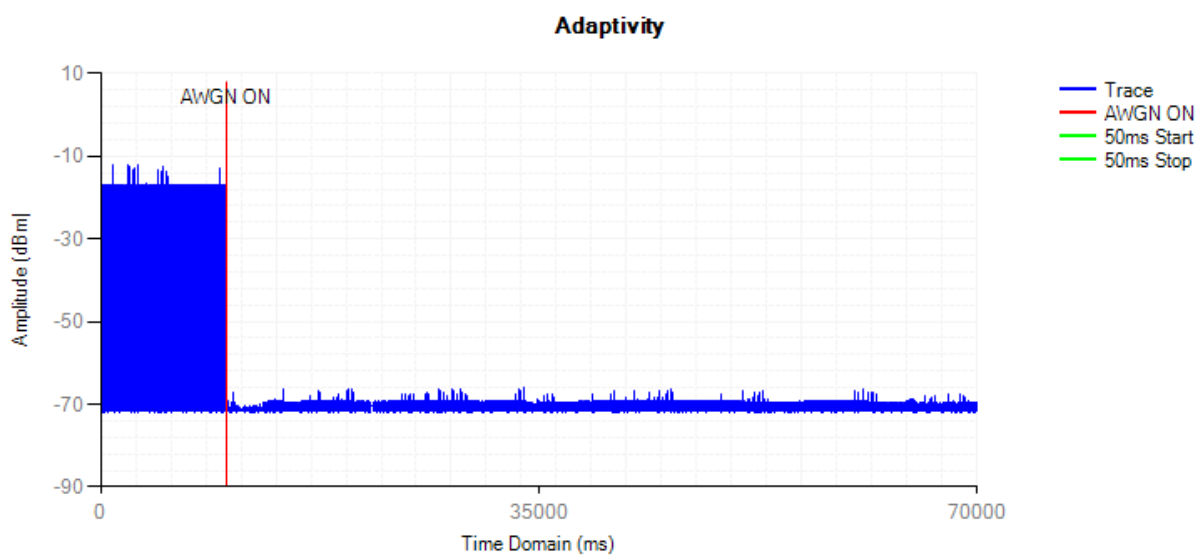




## Adaptivity NVNT ac40 5190MHz OFDM

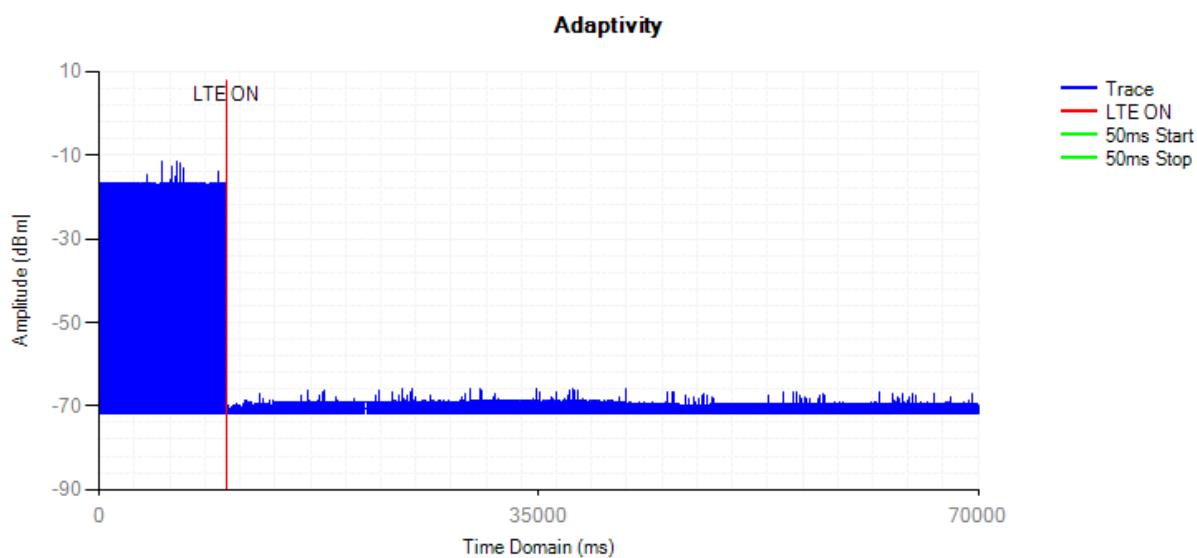


## Adaptivity NVNT ac80 5210MHz AWGN

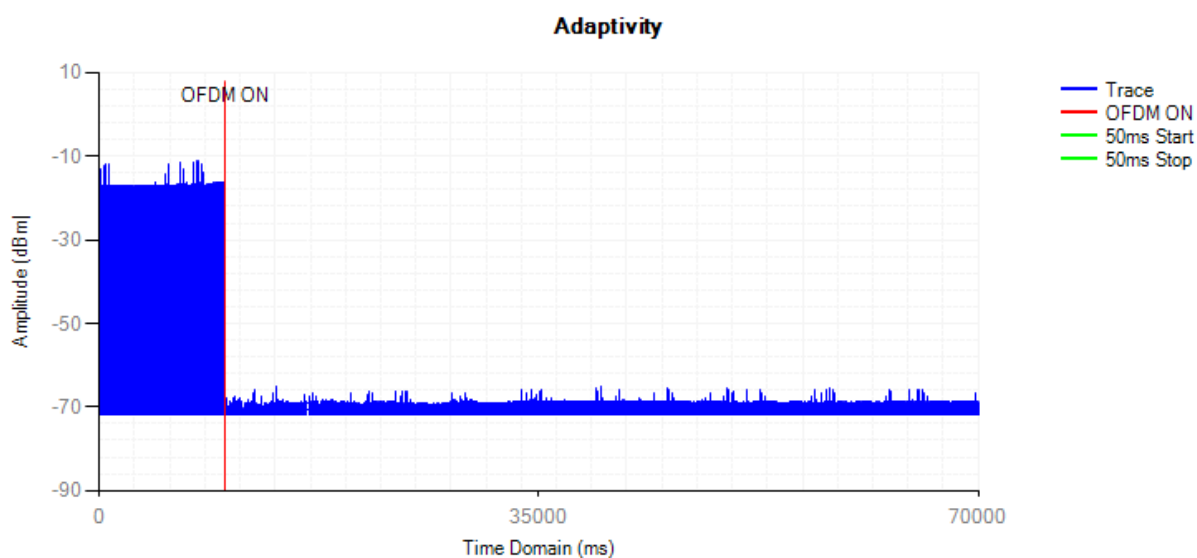




## Adaptivity NVNT ac80 5210MHz LTE



## Adaptivity NVNT ac80 5210MHz OFDM





## H.9 Receiver Blocking

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm)		Type of blocking signal	PER(%)		Test Result
		Test Value	Limit		Test Value	Limit	
Pmin + 6 dB	5100	-49	≥-59	CW	2.14	10	Pass
	4900	-48	≥-53	CW	3.23	10	Pass
	5000	-45	≥-53	CW	1.17	10	Pass
	5975	-40	≥-53	CW	1.13	10	Pass

