



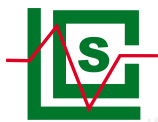
Appendix H for 5.2G WIFI RF Test Data

Product Name: Smartphone

Test Model: KINGKONG ES PRO

Environmental Conditions

Temperature:	23.0° C
Relative Humidity:	53.0%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng



H.1 Centre Frequencies

Condition	Mode	Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	a	5180	5179.97	-5.79	20	Pass
	ac20	5180	5179.99	-1.93	20	Pass
	ac40	5190	5189.99	-1.93	20	Pass
	ac80	5210	5209.99	-1.92	20	Pass
	n20	5180	5179.99	-1.93	20	Pass
	n40	5190	5190.03	5.78	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	5180.04	7.72	20	Pass
	ac40	5190	5190.01	1.93	20	Pass
	ac80	5210	5210.00	0.00	20	Pass
	n20	5180	5180.00	0.00	20	Pass
	n40	5190	5190.01	1.93	20	Pass

Condition	Mode	Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Verdict
NVHT	a	5180	5180.00	0.00	20	Pass
	ac20	5180	5180.01	1.93	20	Pass
	ac40	5190	5189.99	-1.93	20	Pass
	ac80	5210	5210.03	5.76	20	Pass
	n20	5180	5179.99	-1.93	20	Pass
	n40	5190	5190.02	3.85	20	Pass

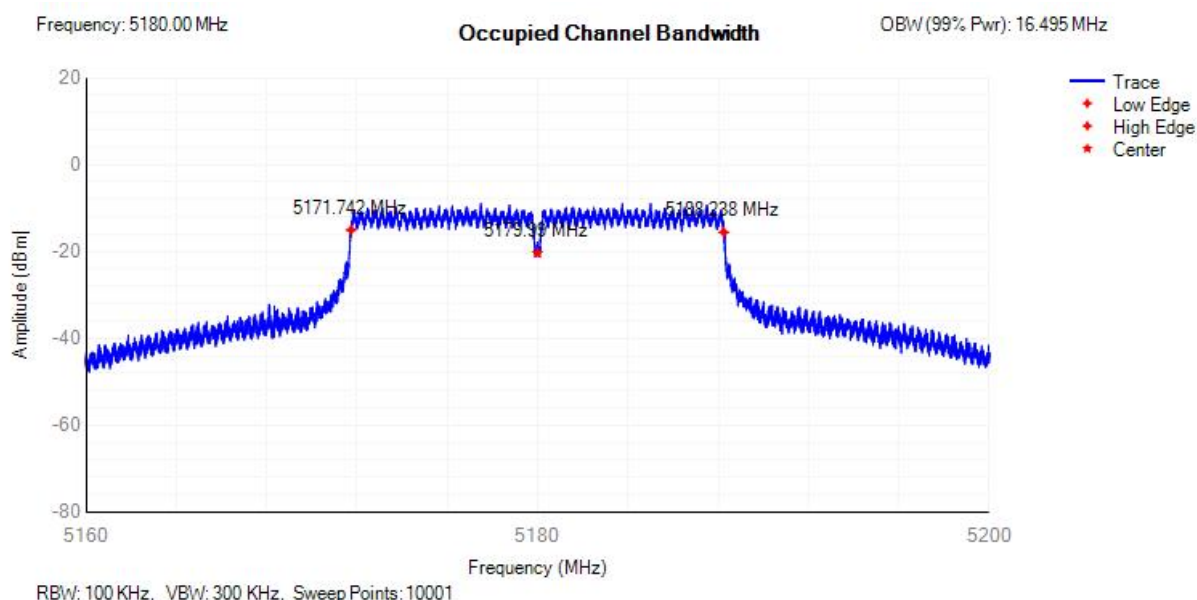


H.2 Nominal Channel Bandwidth and Occupied Channel

Bandwidth

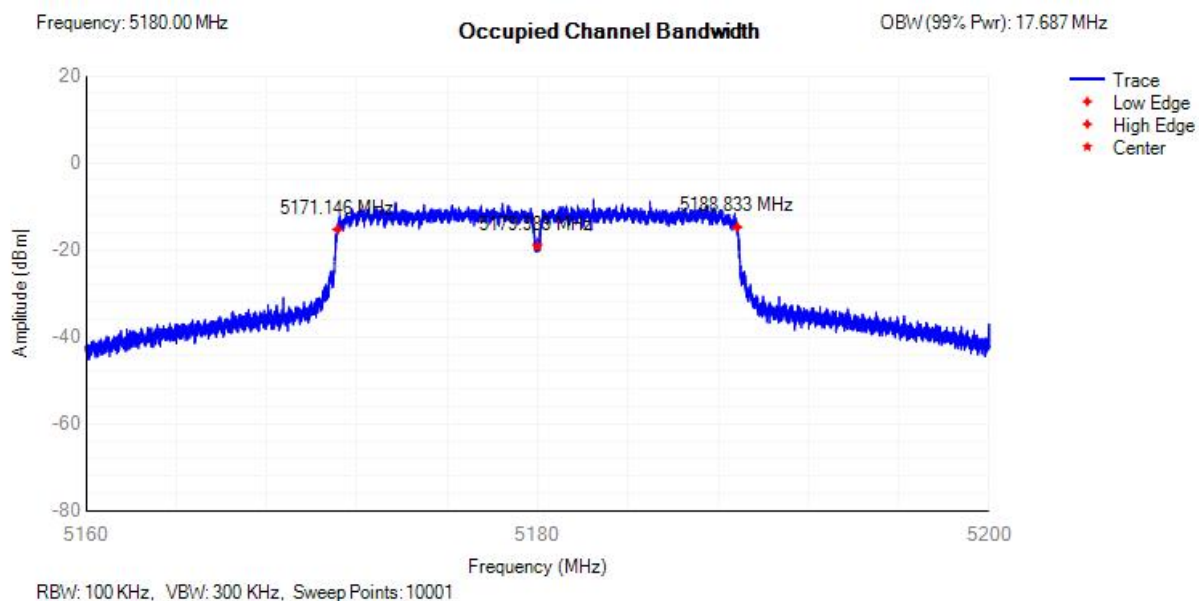
Condition	Mode	Frequency (MHz)	Center Frequency (MHz)	OBW (MHz)	Lower Limit (MHz)	Upper Limit(MHz)	Verdict
NVNT	a	5180	5179.99	16.495	16	20	Pass
NVNT	ac20	5180	5179.989	17.687	16	20	Pass
NVNT	ac40	5190	5189.996	36.254	32	40	Pass
NVNT	ac80	5210	5210.039	75.762	64	80	Pass
NVNT	n20	5180	5179.989	17.683	16	20	Pass
NVNT	n40	5190	5189.997	36.251	32	40	Pass

OBW NVNT a 5180MHz

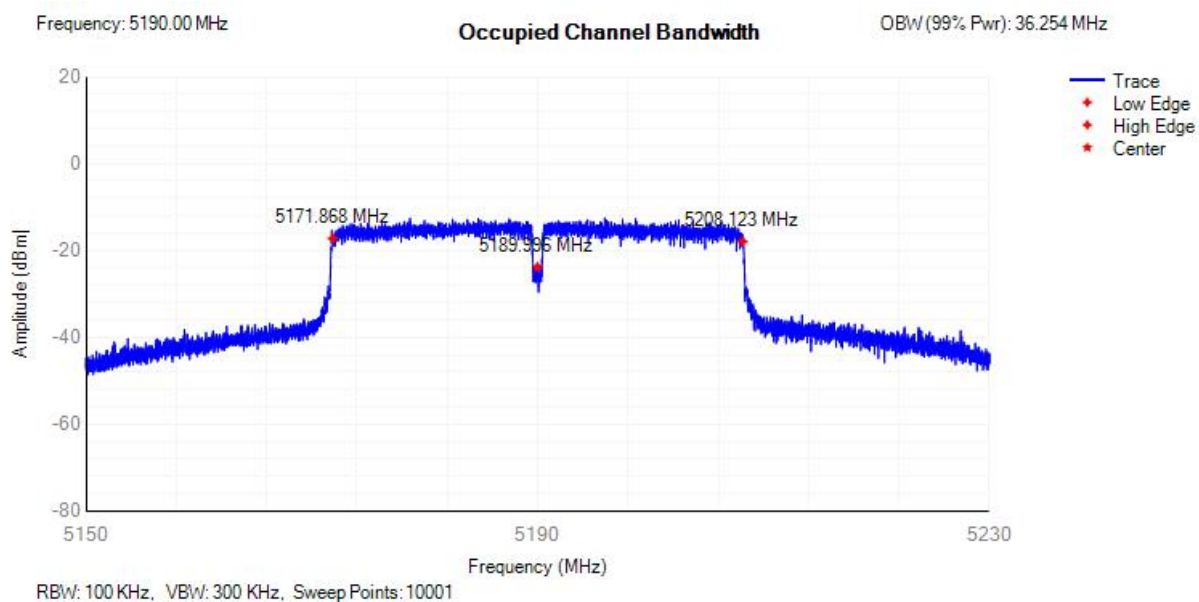




OBW NVNT ac20 5180MHz

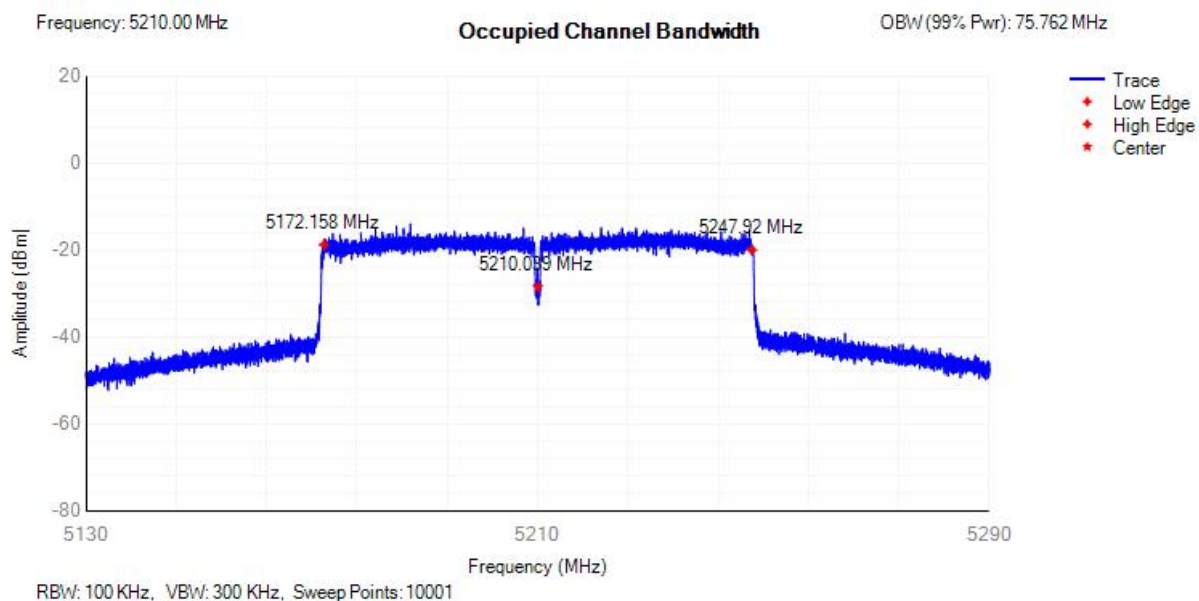


OBW NVNT ac40 5190MHz

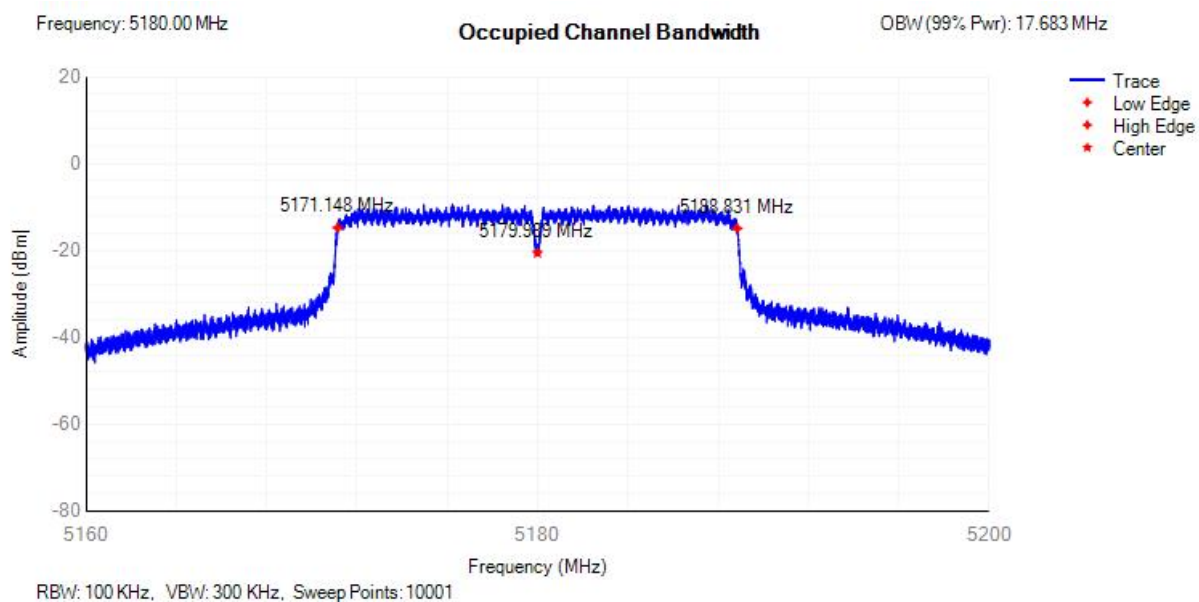




OBW NVNT ac80 5210MHz

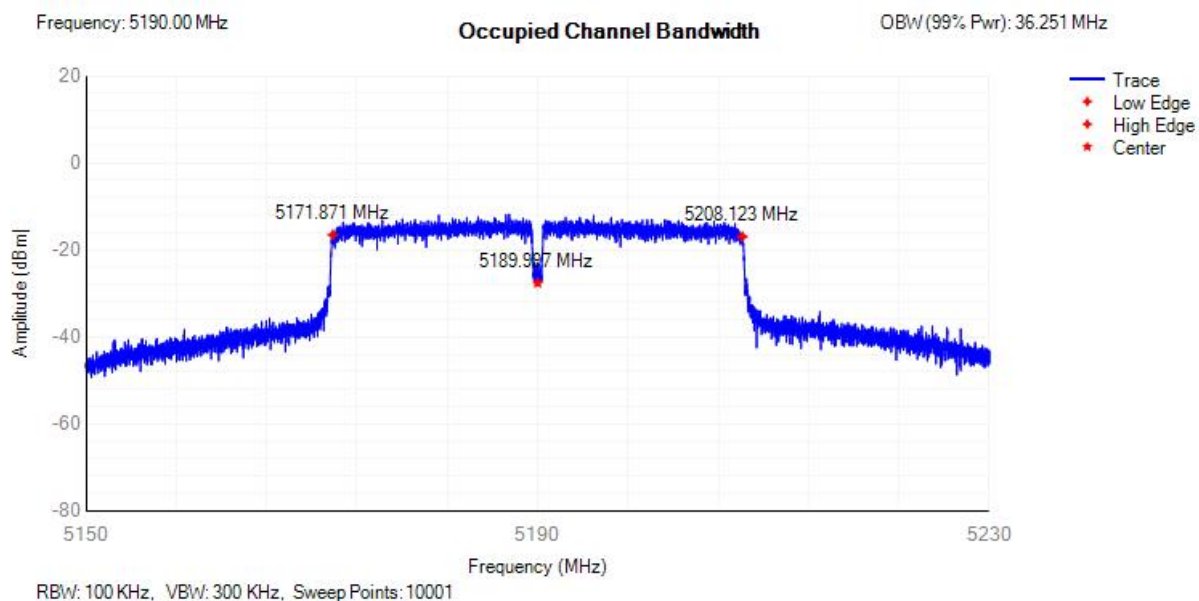


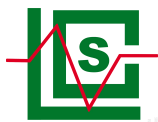
OBW NVNT n20 5180MHz





OBW NVNT n40 5190MHz





H.3 RF Output Power

Condition	Mode	Frequency (MHz)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	12.06	23	Pass
NVNT	ac20	5180	12.28	23	Pass
NVNT	ac40	5190	12.34	23	Pass
NVNT	ac80	5210	12.72	23	Pass
NVNT	n20	5180	12.32	23	Pass
NVNT	n40	5190	12.70	23	Pass

Condition	Mode	Frequency (MHz)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVLT	a	5180	11.99	23	Pass
NVLT	ac20	5180	12.24	23	Pass
NVLT	ac40	5190	12.25	23	Pass
NVLT	ac80	5210	12.65	23	Pass
NVLT	n20	5180	12.26	23	Pass
NVLT	n40	5190	12.59	23	Pass

Condition	Mode	Frequency (MHz)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVHT	a	5180	11.88	23	Pass
NVHT	ac20	5180	12.07	23	Pass
NVHT	ac40	5190	12.13	23	Pass
NVHT	ac80	5210	12.50	23	Pass
NVHT	n20	5180	12.14	23	Pass
NVHT	n40	5190	12.50	23	Pass

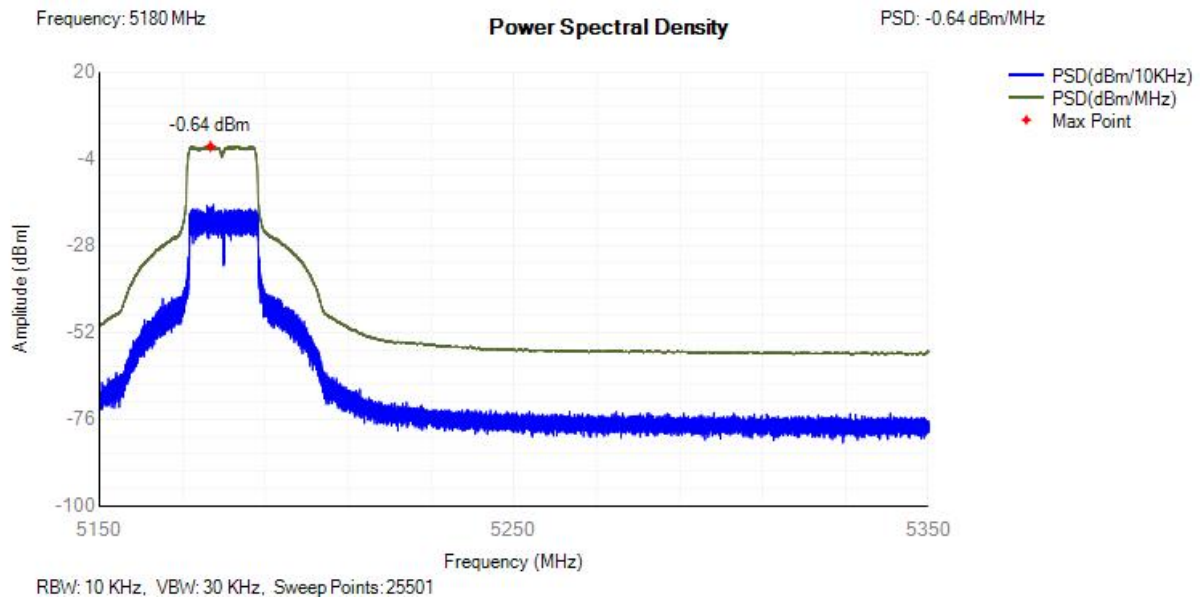
***Note: 20 bursts had been captured for power measurement.



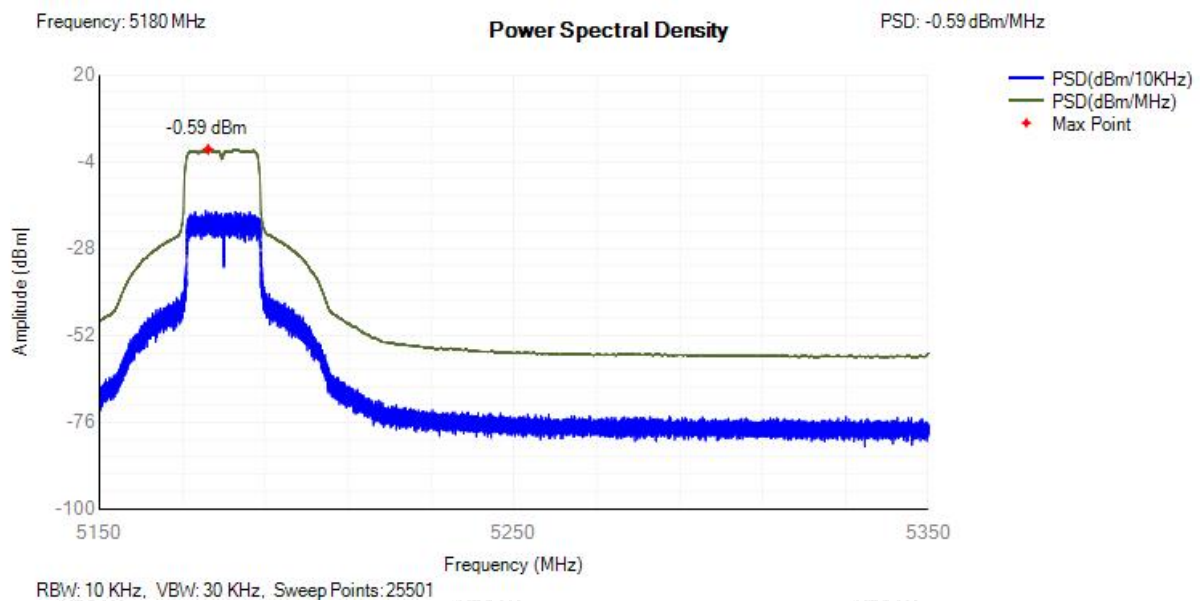
H.4 Power Spectral Density

Condition	Mode	Frequency (MHz)	Max PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	-0.64	10	Pass
NVNT	ac20	5180	-0.59	10	Pass
NVNT	ac40	5190	-3.39	10	Pass
NVNT	ac80	5210	-6.04	10	Pass
NVNT	n20	5180	-0.45	10	Pass
NVNT	n40	5190	-3.12	10	Pass

PSD NVNT a 5180MHz

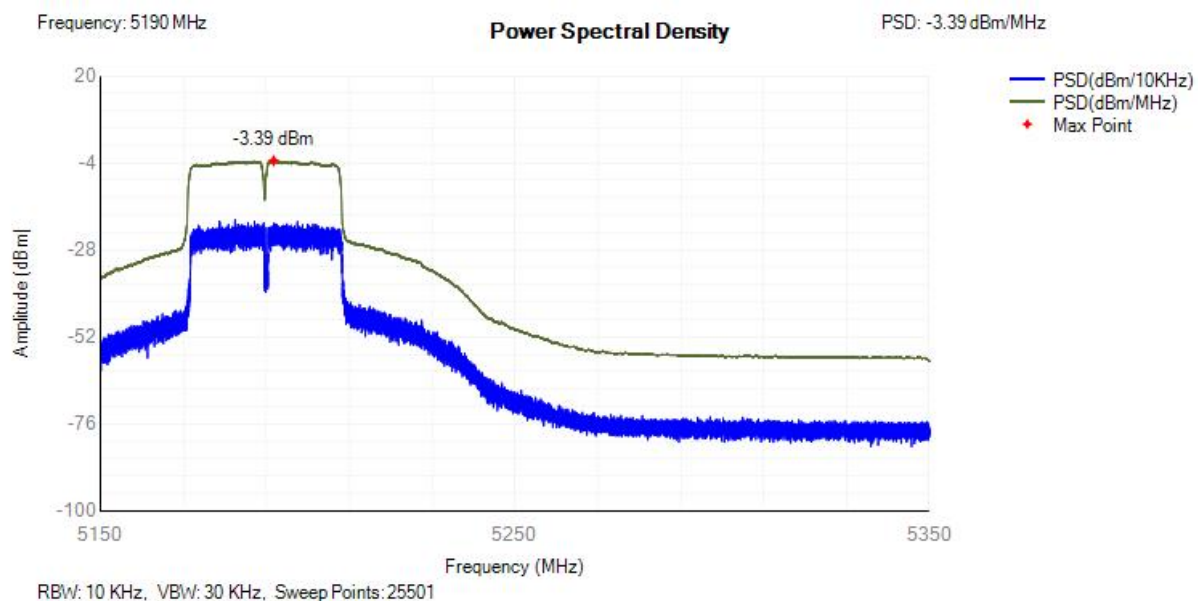


PSD NVNT ac20 5180MHz

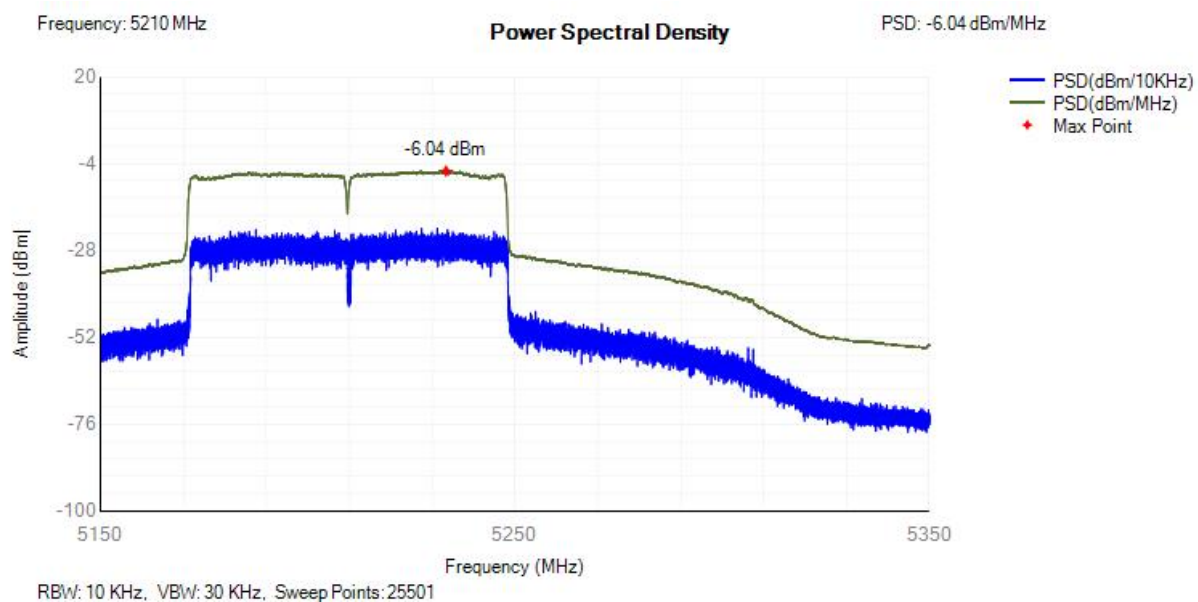




PSD NVNT ac40 5190MHz

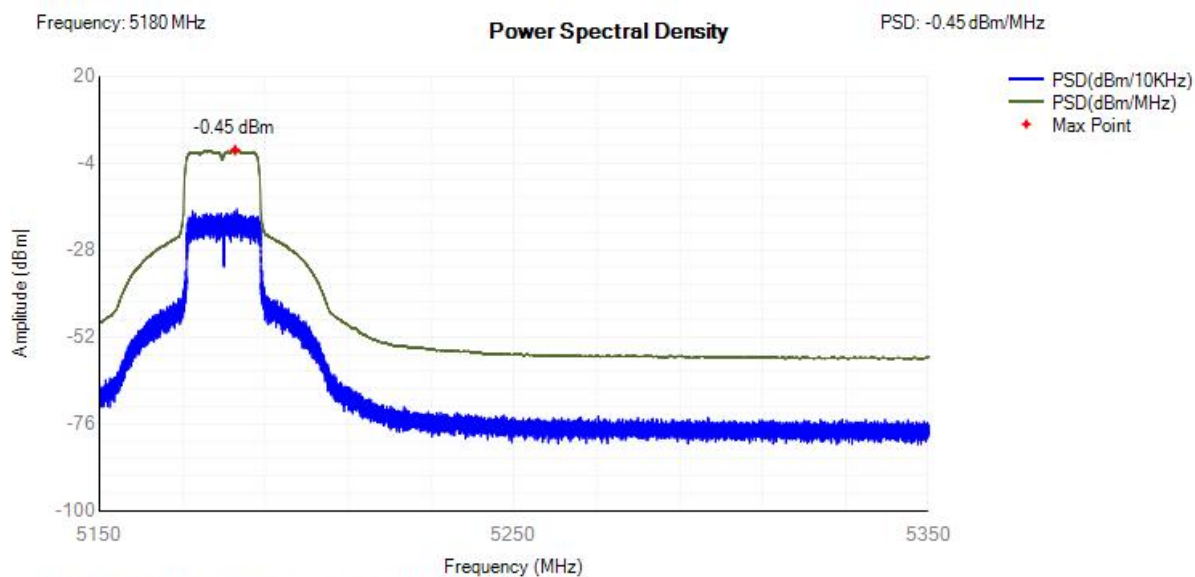


PSD NVNT ac80 5210MHz

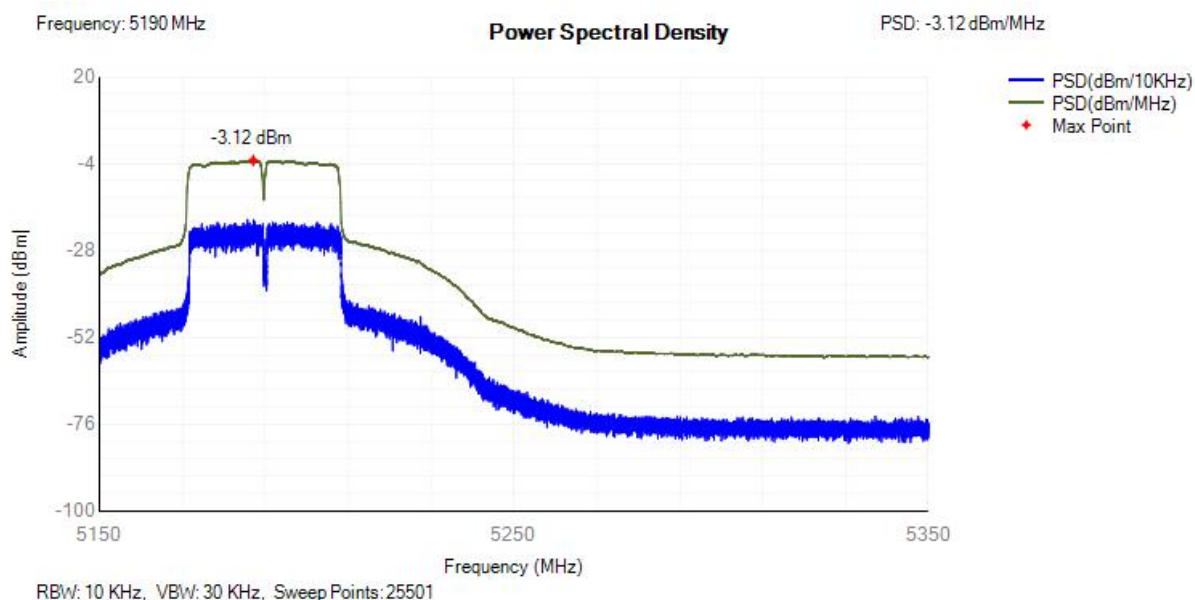




PSD NVNT n20 5180MHz



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)					
59.05	H	-84.41	-54.00	-30.41	PK
64.18	V	-74.94	-54.00	-20.94	PK
808.60	H	-77.73	-54.00	-23.73	PK
924.02	V	-76.51	-36.00	-40.51	PK
3468.48	H	-51.31	-30.00	-21.31	PK
3477.21	V	-61.61	-30.00	-31.61	PK
10360.02	H	-55.51	-30.00	-25.51	PK
10360.00	V	-52.09	-30.00	-22.09	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)					
60.42	H	-81.59	-54.00	-27.59	PK
65.82	V	-74.22	-54.00	-20.22	PK
809.49	H	-75.91	-54.00	-21.91	PK
923.74	V	-74.52	-36.00	-38.52	PK
3482.49	H	-49.60	-30.00	-19.60	PK
3475.51	V	-60.80	-30.00	-30.80	PK
10360.02	H	-52.46	-30.00	-22.46	PK
10360.01	V	-50.90	-30.00	-20.90	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)					
60.03	H	-81.35	-54.00	-27.35	PK
65.88	V	-74.13	-54.00	-20.13	PK
809.67	H	-75.91	-54.00	-21.91	PK
926.14	V	-74.41	-36.00	-38.41	PK
3454.61	H	-49.52	-30.00	-19.52	PK
3476.59	V	-61.44	-30.00	-31.44	PK
10360.04	H	-53.05	-30.00	-23.05	PK
10360.01	V	-50.37	-30.00	-20.37	PK

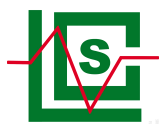
The Worst Test Result For 802.11n(40MHz)					
Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 38 (5190MHz)					
59.02	H	-83.30	-54.00	-29.30	PK
66.09	V	-73.55	-54.00	-19.55	PK
808.11	H	-76.44	-54.00	-22.44	PK
921.62	V	-74.51	-36.00	-38.51	PK
3456.23	H	-48.55	-30.00	-18.55	PK
3465.24	V	-60.33	-30.00	-30.33	PK
10380.10	H	-53.27	-30.00	-23.27	PK
10380.03	V	-50.26	-30.00	-20.26	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)					
58.40	H	-82.93	-54.00	-28.93	PK
67.94	V	-73.22	-54.00	-19.22	PK
808.14	H	-75.91	-54.00	-21.91	PK
921.68	V	-73.88	-36.00	-37.88	PK
3475.41	H	-49.39	-30.00	-19.39	PK
3460.96	V	-60.10	-30.00	-30.10	PK
10380.02	H	-53.72	-30.00	-23.72	PK
10380.03	V	-51.05	-30.00	-21.05	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)					
58.26	H	-82.52	-54.00	-28.52	PK
64.46	V	-72.95	-54.00	-18.95	PK
808.28	H	-76.20	-54.00	-22.20	PK
924.72	V	-74.32	-36.00	-38.32	PK
3503.26	H	-49.55	-30.00	-19.55	PK
3500.12	V	-60.95	-30.00	-30.95	PK
10420.09	H	-54.27	-30.00	-24.27	PK
10420.09	V	-51.04	-30.00	-21.04	PK

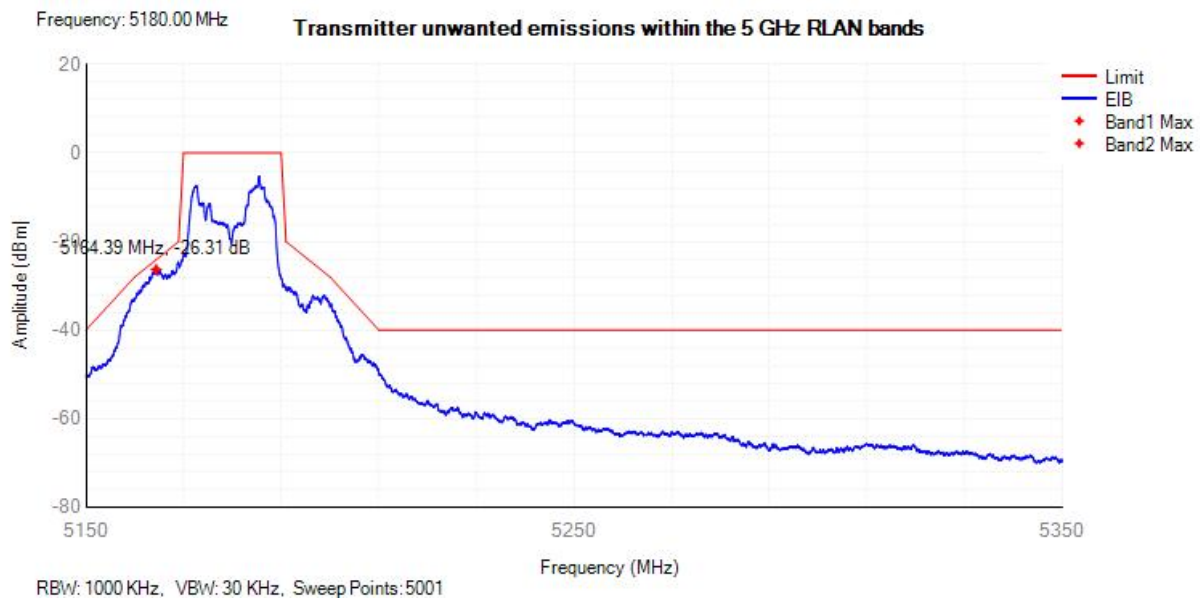
Note: All test modes were tested, but we only recorded the worst (Low Channel) case in this report.



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

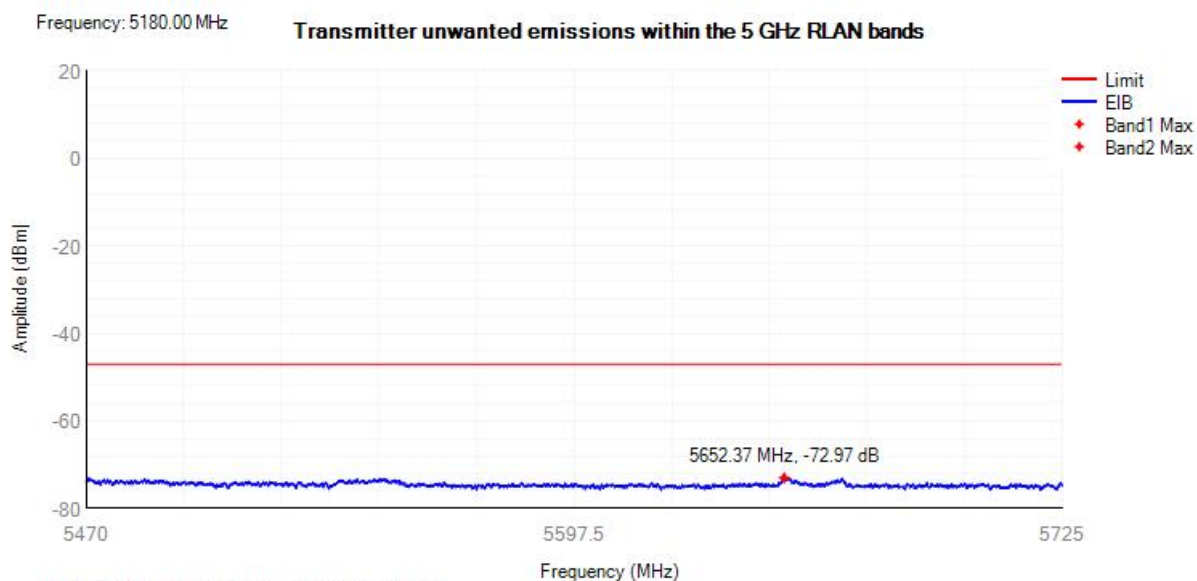
Condition	Mode	Frequency (MHz)	Sub Band	Worst EIB Frequency (MHz)	Level (dB)	Limit (dB)	Verdict
NVNT	a	5180	Band1	5164.39	-26.31	-24.08	Pass
NVNT	a	5180	Band2	5652.37	-72.97	-47	Pass
NVNT	ac20	5180	Band1	5197.35	-29.79	-25.65	Pass
NVNT	ac20	5180	Band2	5651.91	-72.38	-47	Pass
NVNT	ac40	5190	Band1	5229.67	-30.85	-27.85	Pass
NVNT	ac40	5190	Band2	5653.54	-69.09	-47	Pass
NVNT	ac80	5210	Band1	5307.92	-41.09	-33.37	Pass
NVNT	ac80	5210	Band2	5470.76	-63.12	-40	Pass
NVNT	n20	5180	Band1	5202.88	-36.72	-31.45	Pass
NVNT	n20	5180	Band2	5652.17	-71.77	-47	Pass
NVNT	n40	5190	Band1	5227.96	-29.1	-27.09	Pass
NVNT	n40	5190	Band2	5652.93	-65.55	-47	Pass

Tx. Emissions EIB NVNT a 5180MHz Sub Band1

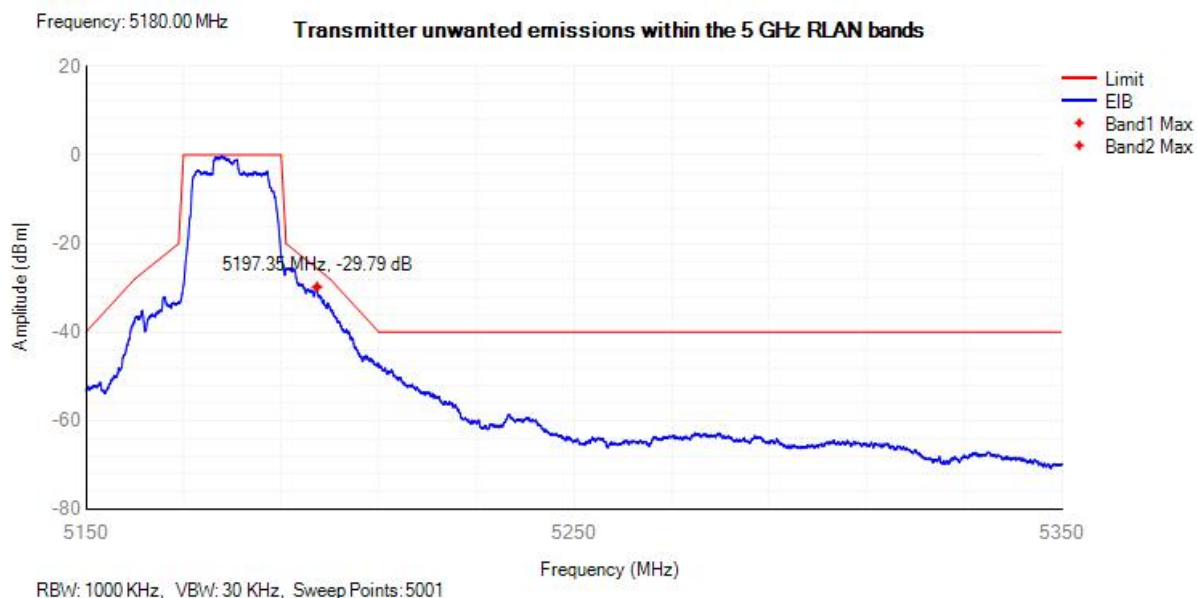




Tx. Emissions EIB NVNT a 5180MHz Sub Band2



Tx. Emissions EIB NVNT ac20 5180MHz Sub Band1

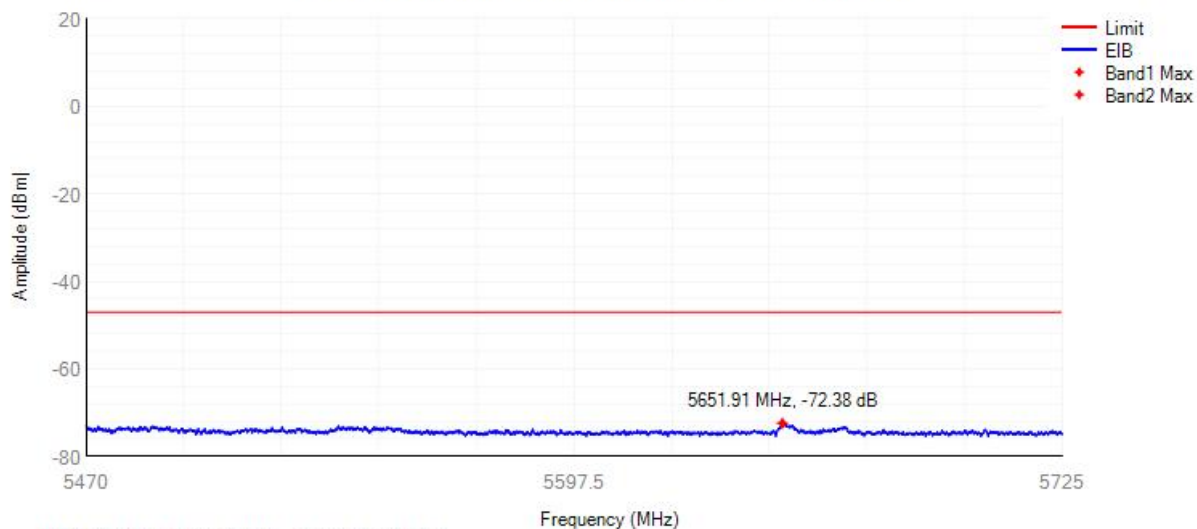




Tx. Emissions EIB NVNT ac20 5180MHz Sub Band2

Frequency: 5180.00 MHz

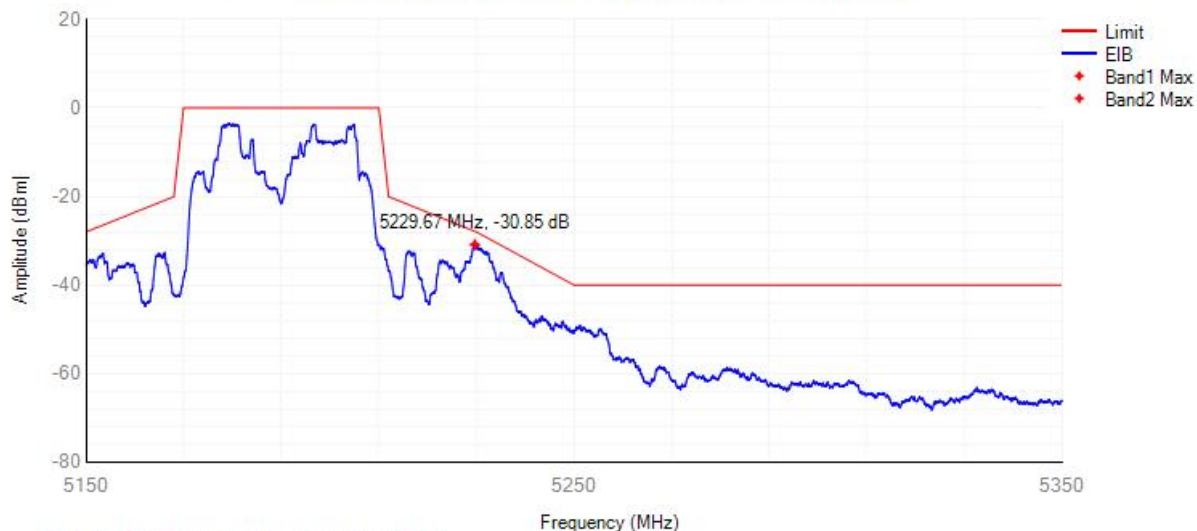
Transmitter unwanted emissions within the 5 GHz RLAN bands



Tx. Emissions EIB NVNT ac40 5190MHz Sub Band1

Frequency: 5190.00 MHz

Transmitter unwanted emissions within the 5 GHz RLAN bands

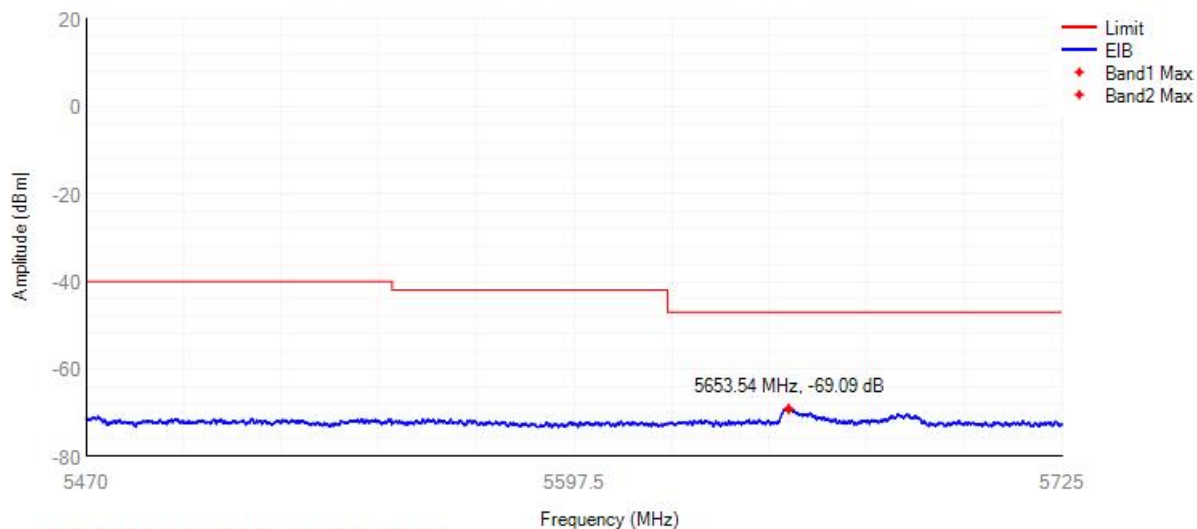




Tx. Emissions EIB NVNT ac40 5190MHz Sub Band2

Frequency: 5190.00 MHz

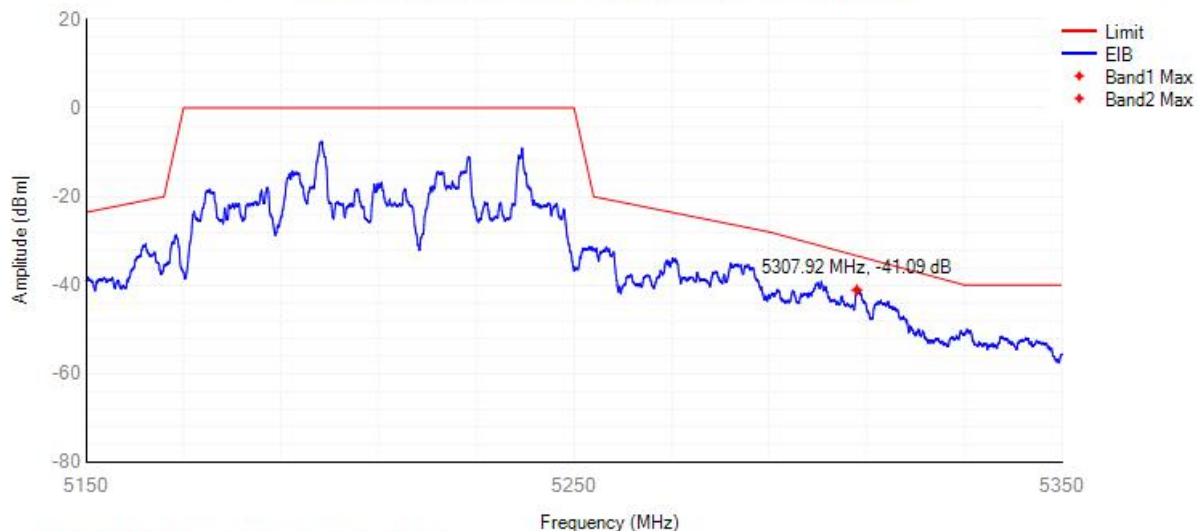
Transmitter unwanted emissions within the 5 GHz RLAN bands



Tx. Emissions EIB NVNT ac80 5210MHz Sub Band1

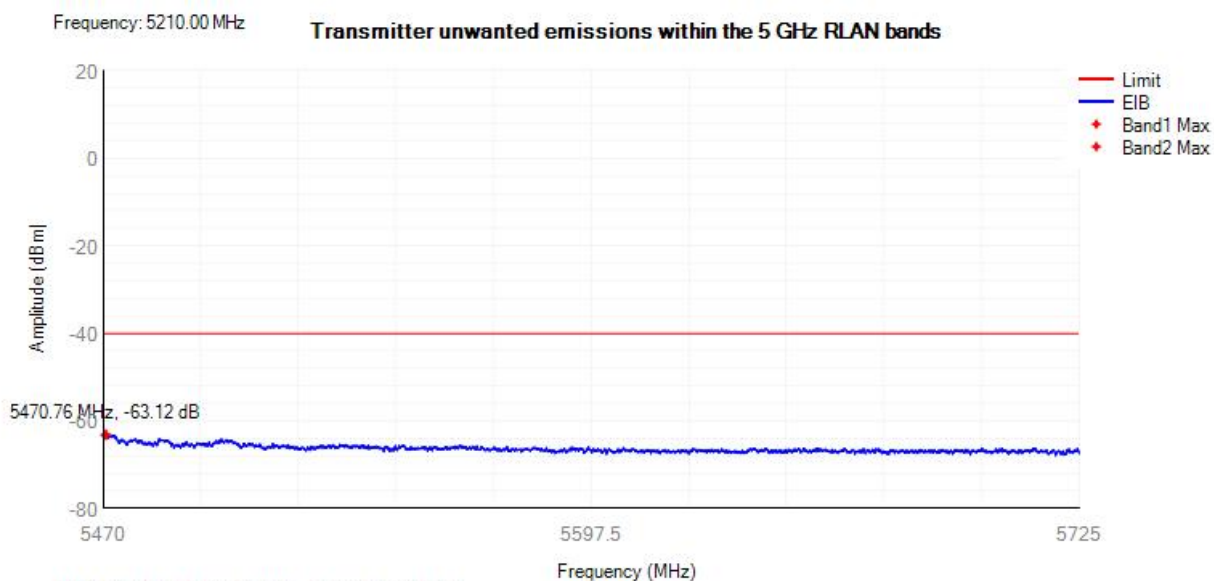
Frequency: 5210.00 MHz

Transmitter unwanted emissions within the 5 GHz RLAN bands

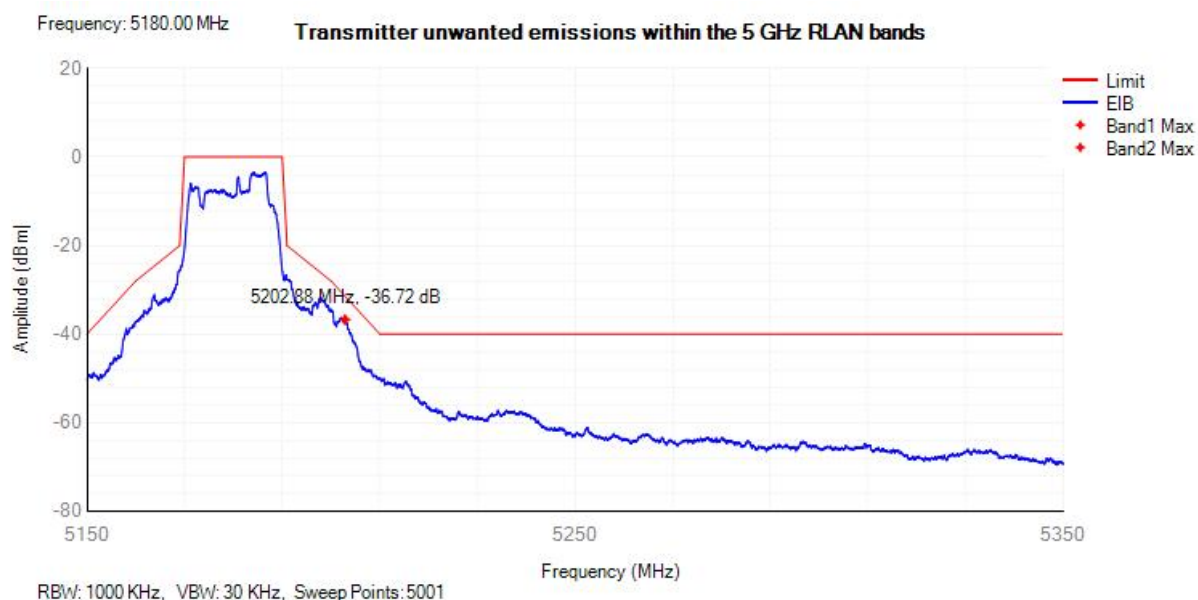




Tx. Emissions EIB NVNT ac80 5210MHz Sub Band2

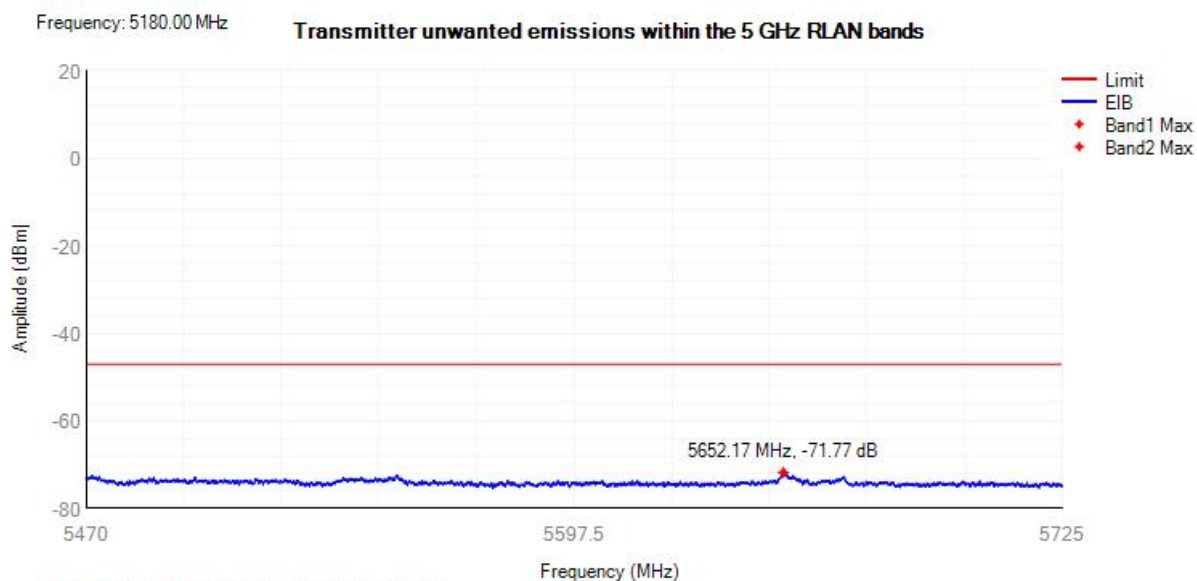


Tx. Emissions EIB NVNT n20 5180MHz Sub Band1

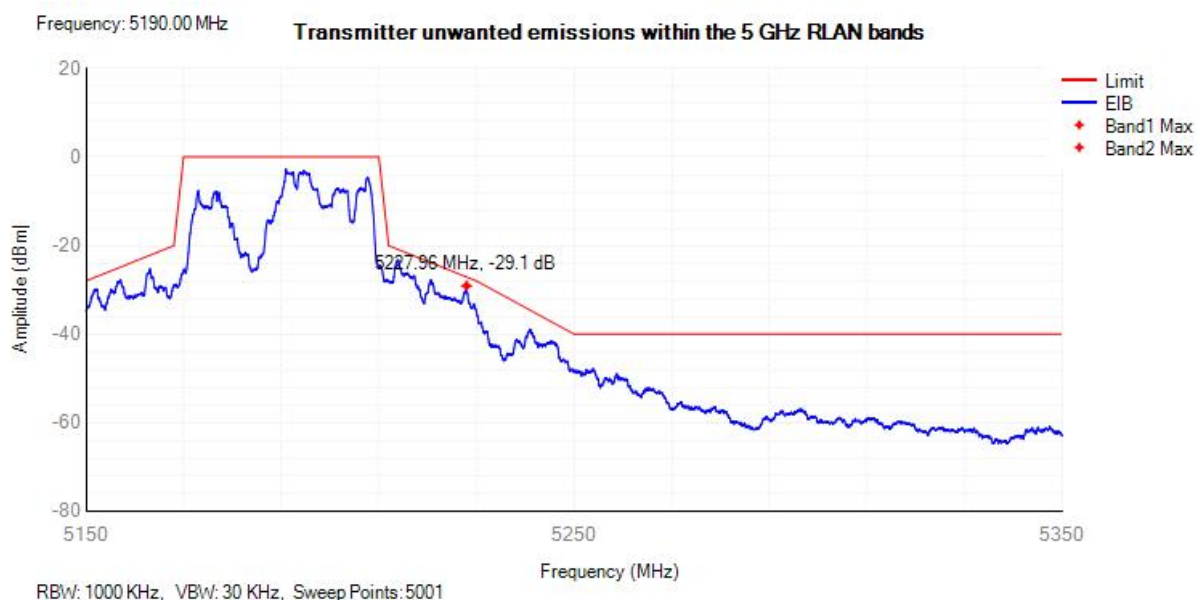




Tx. Emissions EIB NVNT n20 5180MHz Sub Band2

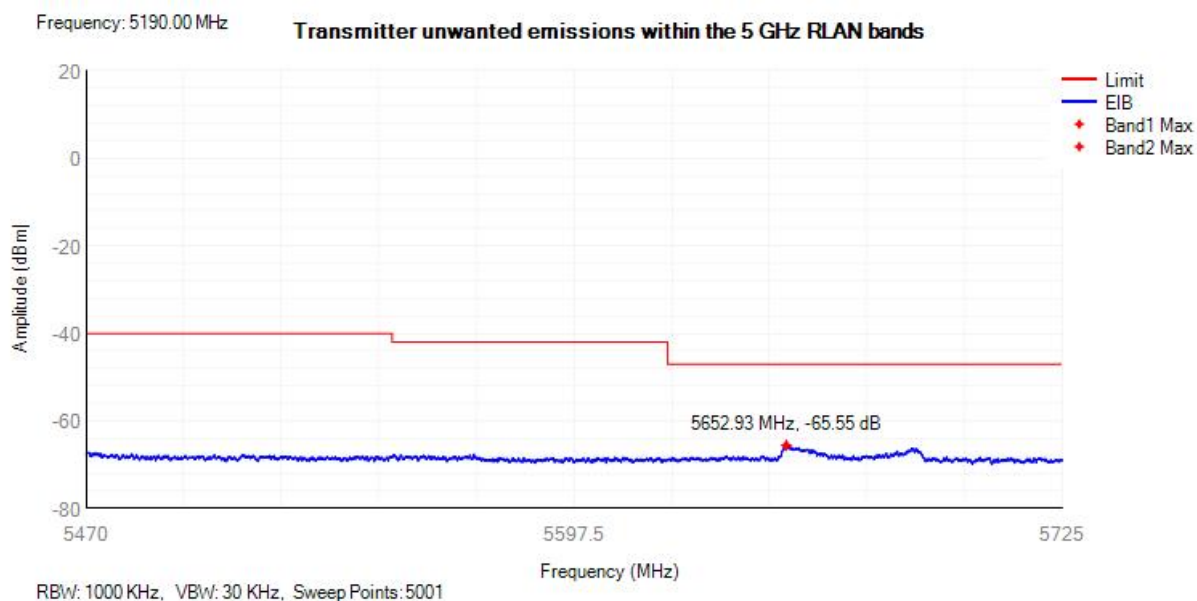


Tx. Emissions EIB NVNT n40 5190MHz Sub Band1





Tx. Emissions EIB NVNT n40 5190MHz Sub Band2





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)					
62.78	H	-81.50	-57.00	-24.50	PK
70.29	V	-73.12	-57.00	-16.12	PK
809.40	H	-72.82	-57.00	-15.82	PK
925.83	V	-72.99	-57.00	-15.99	PK
3483.97	H	-61.66	-47.00	-14.66	PK
3500.04	V	-63.33	-47.00	-16.33	PK
10360.07	H	-57.01	-47.00	-10.01	PK
10360.10	V	-57.90	-47.00	-10.90	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)					
60.84	H	-82.69	-57.00	-25.69	PK
67.31	V	-73.69	-57.00	-16.69	PK
808.05	H	-74.88	-57.00	-17.88	PK
924.65	V	-74.37	-57.00	-17.37	PK
3454.52	H	-62.94	-47.00	-15.94	PK
3499.97	V	-63.67	-47.00	-16.67	PK
10360.09	H	-58.08	-47.00	-11.08	PK
10360.02	V	-59.67	-47.00	-12.67	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)					
60.03	H	-82.30	-57.00	-25.30	PK
68.20	V	-73.77	-57.00	-16.77	PK
809.38	H	-74.85	-57.00	-17.85	PK
921.41	V	-73.80	-57.00	-16.80	PK
3484.60	H	-63.58	-47.00	-16.58	PK
3456.87	V	-64.14	-47.00	-17.14	PK
10360.01	H	-58.49	-47.00	-11.49	PK
10360.06	V	-59.94	-47.00	-12.94	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)					
59.01	H	-82.18	-57.00	-25.18	PK
67.63	V	-74.89	-57.00	-17.89	PK
808.97	H	-75.28	-57.00	-18.28	PK
922.30	V	-73.67	-57.00	-16.67	PK
3479.75	H	-62.98	-47.00	-15.98	PK
3456.81	V	-63.95	-47.00	-16.95	PK
10380.04	H	-58.93	-47.00	-11.93	PK
10380.00	V	-60.22	-47.00	-13.22	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)					
58.13	H	-82.19	-57.00	-25.19	PK
68.66	V	-74.45	-57.00	-17.45	PK
809.69	H	-74.64	-57.00	-17.64	PK
923.73	V	-73.38	-57.00	-16.38	PK
3481.13	H	-63.19	-47.00	-16.19	PK
3456.38	V	-63.76	-47.00	-16.76	PK
10380.08	H	-58.47	-47.00	-11.47	PK
10380.00	V	-59.93	-47.00	-12.93	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)					
61.03	H	-82.78	-57.00	-25.78	PK
65.88	V	-74.19	-57.00	-17.19	PK
807.78	H	-74.63	-57.00	-17.63	PK
927.00	V	-74.57	-57.00	-17.57	PK
3493.88	H	-64.02	-47.00	-17.02	PK
3514.25	V	-63.83	-47.00	-16.83	PK
10420.10	H	-58.68	-47.00	-11.68	PK
10420.02	V	-60.93	-47.00	-13.93	PK

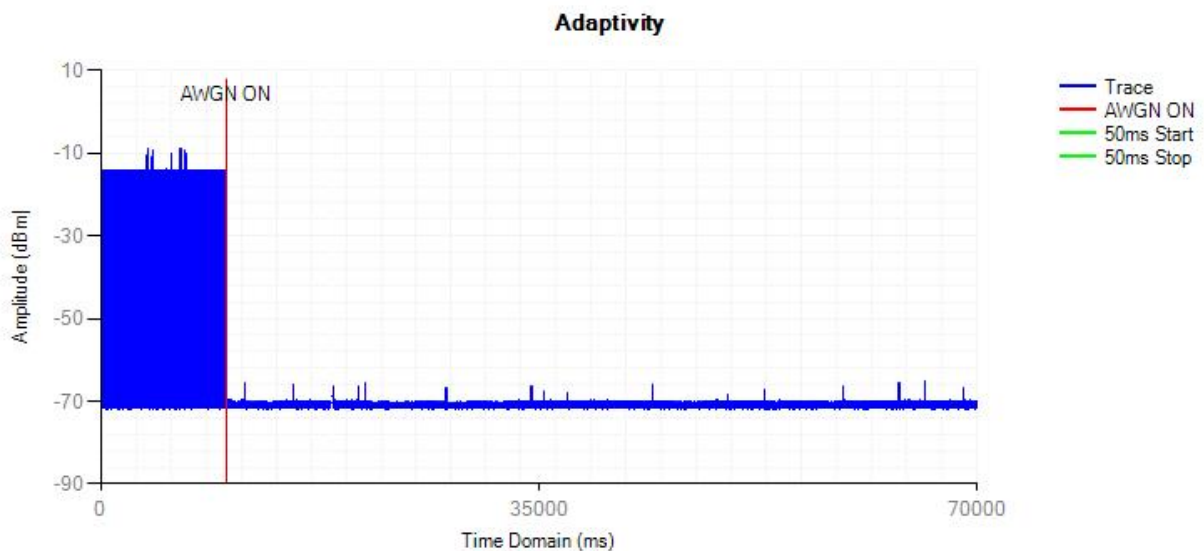
Note: All test modes were tested, but we only recorded the worst case (Low Channel) in this report.

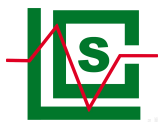


H.8 Adaptivity (Channel Access Mechanism)

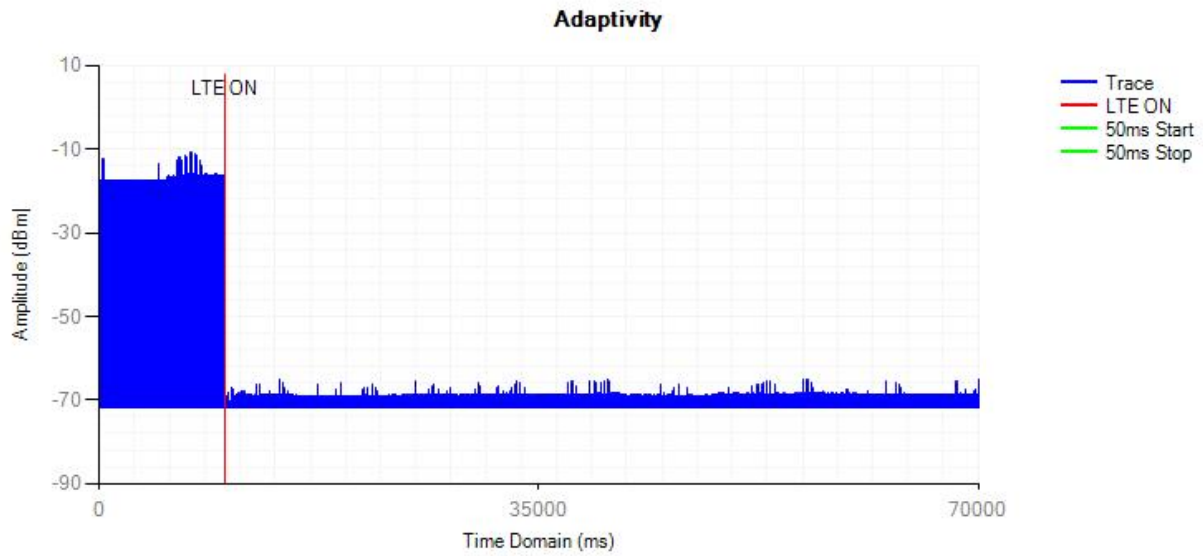
Condition	Mode	Frequency (MHz)	Interfer Type	Short Control (ms)	Limit (ms)	Short Control (n)	Limit (n)	Verdict
NVNT	ac20	5180	AWGN	0.35	≤ 2.5	9	≤ 50	Pass
NVNT	ac20	5180	LTE	0.32	≤ 2.5	6	≤ 50	Pass
NVNT	ac20	5180	OFDM	0.60	≤ 2.5	3	≤ 50	Pass
NVNT	ac40	5190	AWGN	0.31	≤ 2.5	8	≤ 50	Pass
NVNT	ac40	5190	LTE	0.76	≤ 2.5	5	≤ 50	Pass
NVNT	ac40	5190	OFDM	0.68	≤ 2.5	14	≤ 50	Pass
NVNT	ac80	5210	AWGN	0.48	≤ 2.5	7	≤ 50	Pass
NVNT	ac80	5210	LTE	0.53	≤ 2.5	13	≤ 50	Pass
NVNT	ac80	5210	OFDM	0.35	≤ 2.5	12	≤ 50	Pass

Adaptivity NVNT ac20 5180MHz AWGN

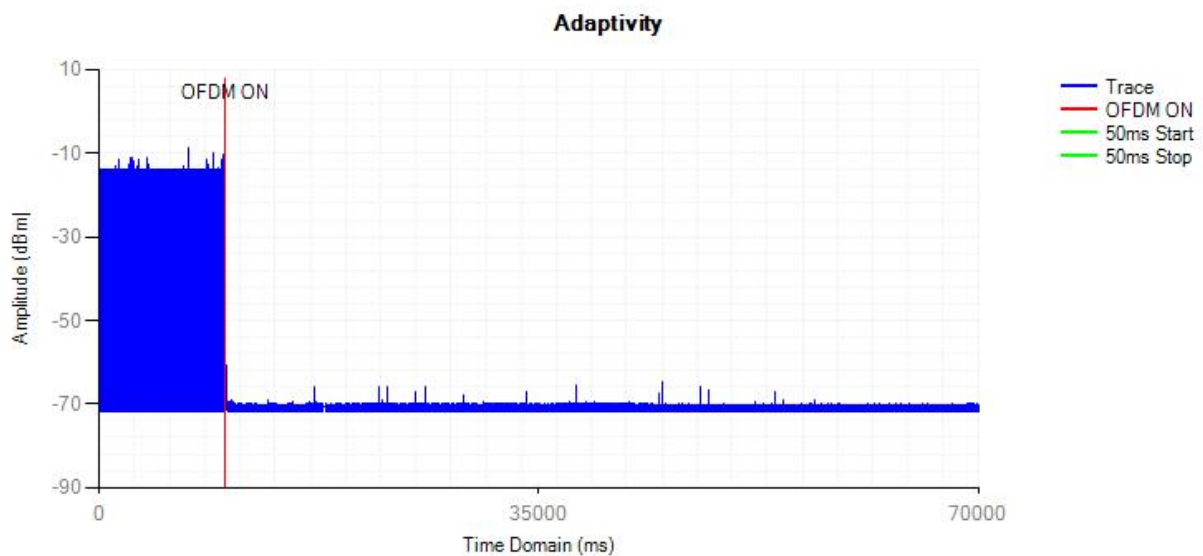




Adaptivity NVNT ac20 5180MHz LTE

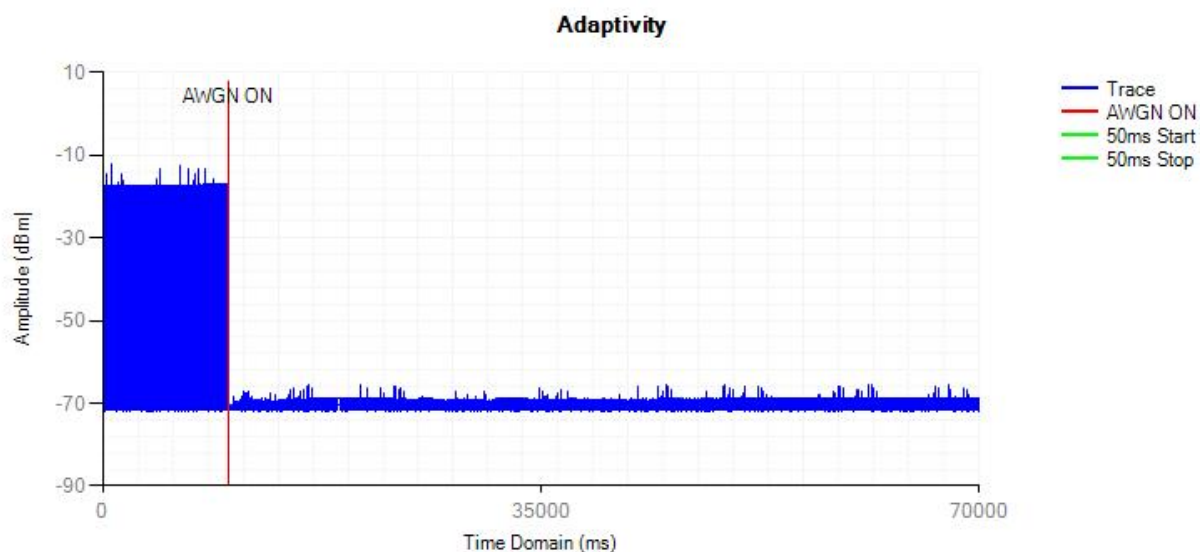


Adaptivity NVNT ac20 5180MHz OFDM

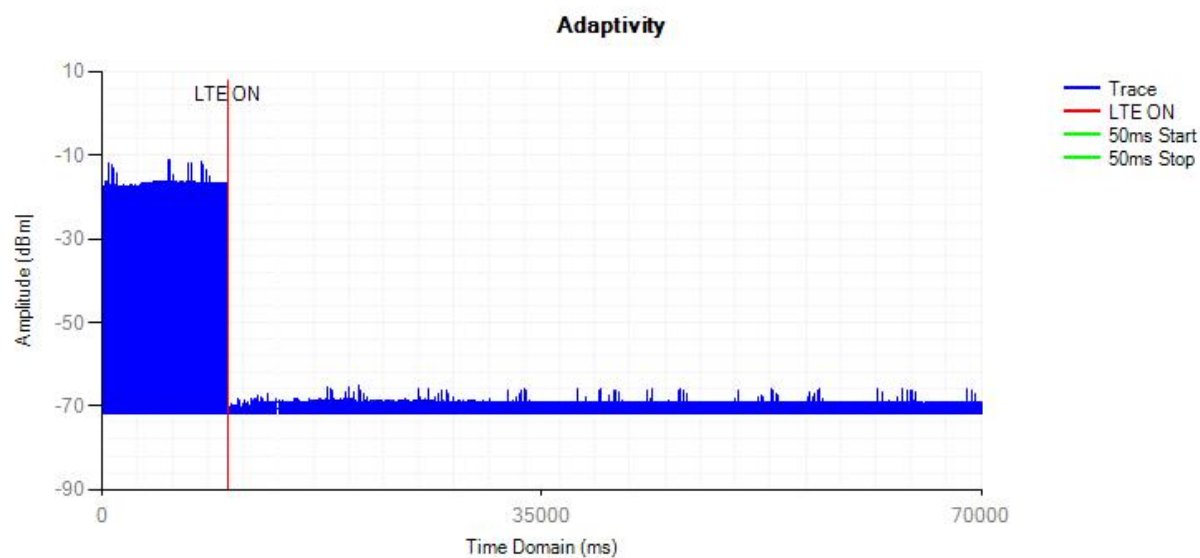




Adaptivity NVNT ac40 5190MHz AWGN

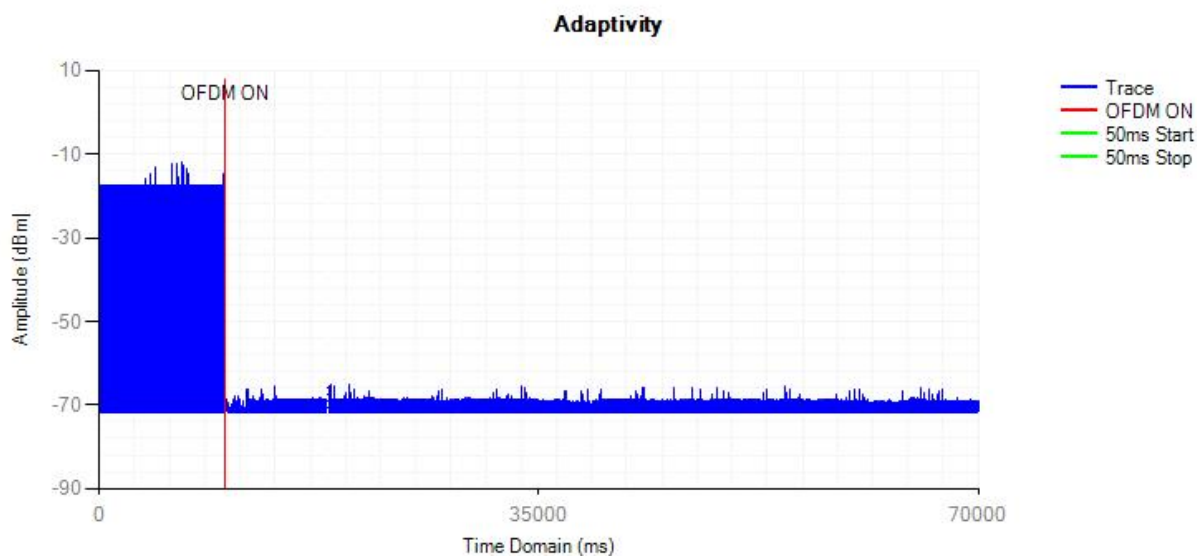


Adaptivity NVNT ac40 5190MHz LTE

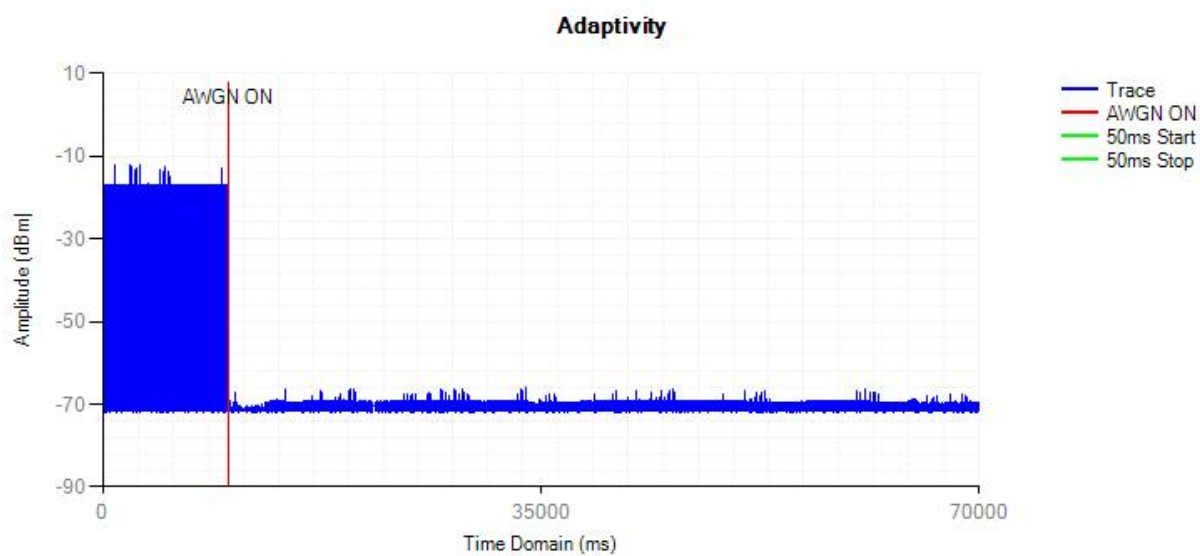




Adaptivity NVNT ac40 5190MHz OFDM

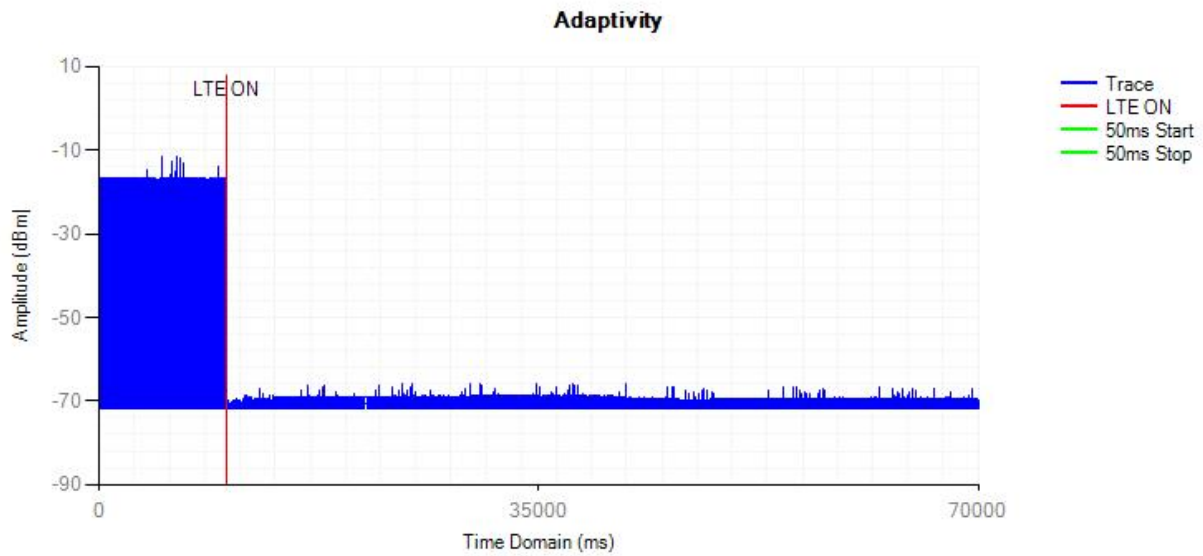


Adaptivity NVNT ac80 5210MHz AWGN

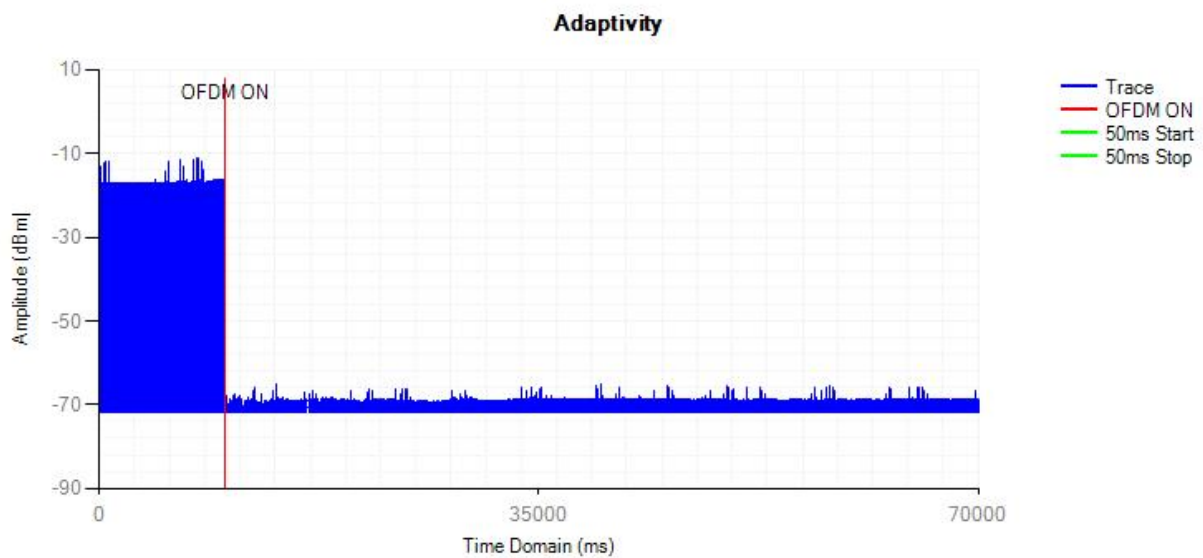




Adaptivity NVNT ac80 5210MHz LTE



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	-54	≥-59	CW	2.43	10	Pass
	4900	-46	≥-53	CW	1.96	10	Pass
	5000	-45	≥-53	CW	2.96	10	Pass
	5975	-47	≥-53	CW	1.50	10	Pass



H.10 Adjacent channel selectivity

Wanted signal mean power from companion device (dBm)	Interferer signal frequency offset range (MHz)	Interferer signal power (dBm)	PER(%)		Test Result
			Test Value	Limit	
$P_{\min} + 10 \text{ dB}$	$20 + 0.2$	$P_{\min} + 26 \text{ dB}$	3.10	10	Pass
	$20 - 0.2$	$P_{\min} + 26 \text{ dB}$	3.28	10	Pass

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