

[ANT. 2]

Test Plots

802.11a UNII 2C Band



802.11a UNII 3 Band



802.11n(HT20) UNII 2C Band



802.11n(HT20) UNII 3 Band



802.11ac(VHT20) UNII 2C Band



802.11ac(VHT20) UNII 3 Band



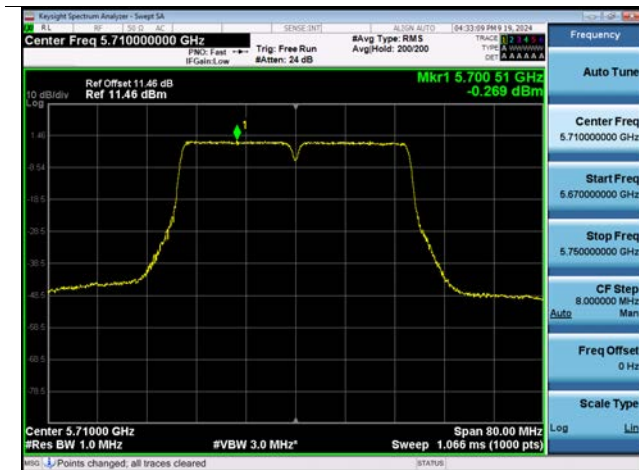
802.11n(HT40) UNII 2C Band



802.11n(HT40) UNII 3 Band



802.11ac(VHT40) UNII 2C Band



802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band



802.11ac(VHT80) UNII 3 Band



10.8 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/m]	[dB]

No Critical peaks found

Note:

1. The Measured Value of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = $40\log(\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dB μ V) + Distance extrapolation factor

Frequency Range : Below 1 GHz

Frequency	Measured Value	A.F+C.L	ANT. POL	Total	Limit	Margin
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/m]	[dB]

No Critical peaks found

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode

Frequency Range : Above 1 GHz

[MIMO_CDD(Ant1+Ant2)]

Band : UNII 1			Operation Mode : 802.11a_HT20 6 Mbps				
CH.36 5180 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10360	55.50	3.02	V	58.52	68.20	9.68	PK
15540	47.59	4.51	V	52.10	73.98	21.88	PK
15540	34.49	4.51	V	39.00	53.98	14.98	AV
10360	55.36	3.02	H	58.38	68.20	9.82	PK
15540	47.93	4.51	H	52.44	73.98	21.54	PK
15540	34.66	4.51	H	39.17	53.98	14.81	AV

Band : UNII 1			Operation Mode : 802.11a_HT20 6 Mbps				
CH.40 5200 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10400	55.97	3.32	V	59.29	68.20	8.91	PK
15600	48.42	4.40	V	52.82	73.98	21.16	PK
15600	35.30	4.40	V	39.70	53.98	14.28	AV
10400	56.38	3.32	H	59.70	68.20	8.50	PK
15600	48.59	4.40	H	52.99	73.98	20.99	PK
15600	35.44	4.40	H	39.84	53.98	14.14	AV

Band : UNII 1			Operation Mode : 802.11a_HT20 6 Mbps				
CH.48 5240 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10480	56.30	3.82	V	60.12	68.20	8.08	PK
15720	48.17	3.66	V	51.83	73.98	22.15	PK
15720	35.76	3.66	V	39.42	53.98	14.56	AV
10480	54.78	3.82	H	58.60	68.20	9.60	PK
15720	48.42	3.66	H	52.08	73.98	21.90	PK
15720	35.74	3.66	H	39.40	53.98	14.58	AV

Band : UNII 2A			Operation Mode : 802.11a_HT20 6 Mbps				
CH.52 5260 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10520	53.54	3.74	V	57.28	68.20	10.92	PK
15780	46.76	4.08	V	50.84	73.98	23.14	PK
15780	34.94	4.08	V	39.02	53.98	14.96	AV
10520	52.29	3.74	H	56.03	68.20	12.17	PK
15780	46.97	4.08	H	51.05	73.98	22.93	PK
15780	34.90	4.08	H	38.98	53.98	15.00	AV

Band : UNII 2A			Operation Mode : 802.11a_HT20 6 Mbps				
CH.60 5300 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10600	53.22	3.51	V	56.73	73.98	17.25	PK
10600	41.01	3.51	V	44.52	53.98	9.46	AV
15900	47.36	4.44	V	51.80	73.98	22.18	PK
15900	34.91	4.44	V	39.35	53.98	14.63	AV
10600	53.75	3.51	H	57.26	73.98	16.72	PK
10600	40.10	3.51	H	43.61	53.98	10.37	AV
15900	47.20	4.44	H	51.64	73.98	22.34	PK
15900	34.74	4.44	H	39.18	53.98	14.80	AV

Band : UNII 2A			Operation Mode : 802.11a_HT20 6 Mbps				
CH.64 5320 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10640	52.95	3.66	V	56.61	73.98	17.37	PK
10640	40.43	3.66	V	44.09	53.98	9.89	AV
15960	46.84	4.06	V	50.90	73.98	23.08	PK
15960	34.74	4.06	V	38.80	53.98	15.18	AV
10640	51.54	3.66	H	55.20	73.98	18.78	PK
10640	39.47	3.66	H	43.13	53.98	10.85	AV
15960	47.01	4.06	H	51.07	73.98	22.91	PK
15960	34.70	4.06	H	38.76	53.98	15.22	AV

Band : UNII 2C			Operation Mode : 802.11a_HT20 6 Mbps				
CH.100 5500 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11000	49.80	4.06	V	53.86	73.98	20.12	PK
11000	37.31	4.06	V	41.37	53.98	12.61	AV
16500	47.61	5.29	V	52.90	68.20	15.30	PK
11000	49.08	4.06	H	53.14	73.98	20.84	PK
11000	36.93	4.06	H	40.99	53.98	12.99	AV
16500	47.88	5.29	H	53.17	68.20	15.03	PK

Band : UNII 2C			Operation Mode : 802.11a_HT20 6 Mbps				
CH.120 5600 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11200	50.25	3.40	V	53.65	73.98	20.33	PK
11200	36.99	3.40	V	40.39	53.98	13.59	AV
16800	48.36	6.18	V	54.54	68.20	13.66	PK
11200	50.14	3.40	H	53.54	73.98	20.44	PK
11200	37.01	3.40	H	40.41	53.98	13.57	AV
16800	48.42	6.18	H	54.60	68.20	13.60	PK

Band : UNII 2C			Operation Mode : 802.11a_HT20 6 Mbps				
CH.144 5720 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11440	48.59	3.94	V	52.53	73.98	21.45	PK
11440	36.55	3.94	V	40.49	53.98	13.49	AV
17160	47.29	5.86	V	53.15	68.20	15.05	PK
11440	49.32	3.94	H	53.26	73.98	20.72	PK
11440	36.36	3.94	H	40.30	53.98	13.68	AV
17160	46.69	5.86	H	52.55	68.20	15.65	PK

Band : UNII 3			Operation Mode : 802.11a_HT20 6 Mbps				
CH.149 5745 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11490	48.56	4.26	V	52.82	73.98	21.16	PK
11490	35.98	4.26	V	40.24	53.98	13.74	AV
17235	47.85	5.45	V	53.30	68.20	14.90	PK
11490	49.53	4.26	H	53.79	73.98	20.19	PK
11490	36.04	4.26	H	40.30	53.98	13.68	AV
17235	48.15	5.45	H	53.60	68.20	14.60	PK

Band : UNII 3			Operation Mode : 802.11a_HT20 6 Mbps				
CH.157 5785 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11570	48.19	4.18	V	52.37	73.98	21.61	PK
11570	35.85	4.18	V	40.03	53.98	13.95	AV
17355	48.60	6.88	V	55.48	68.20	12.72	PK
11570	48.85	4.18	H	53.03	73.98	20.95	PK
11570	35.98	4.18	H	40.16	53.98	13.82	AV
17355	48.26	6.88	H	55.14	68.20	13.06	PK

Band : UNII 3			Operation Mode : 802.11a_HT20 6 Mbps				
CH.165 5825 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11650	48.24	4.01	V	52.25	73.98	21.73	PK
11650	35.70	4.01	V	39.71	53.98	14.27	AV
17475	48.51	7.56	V	56.07	68.20	12.13	PK
11650	48.95	4.01	H	52.96	73.98	21.02	PK
11650	35.95	4.01	H	39.96	53.98	14.02	AV
17475	48.67	7.56	H	56.23	68.20	11.97	PK

Band : UNII 4			Operation Mode : 802.11a_HT20 6 Mbps				
CH.169 5845 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11690	48.76	3.75	V	52.51	73.98	21.47	PK
11690	36.19	3.75	V	39.94	53.98	14.04	AV
17535	48.33	7.71	V	56.04	68.20	12.16	PK
11690	48.97	3.75	H	52.72	73.98	21.26	PK
11690	36.31	3.75	H	40.06	53.98	13.92	AV
17535	48.66	7.71	H	56.37	68.20	11.83	PK

Band : UNII 4			Operation Mode : 802.11a_HT20 6 Mbps				
CH.173 5865 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11730	48.68	3.55	V	52.23	73.98	21.75	PK
11730	36.28	3.55	V	39.83	53.98	14.15	AV
17595	48.07	8.06	V	56.13	68.20	12.07	PK
11730	50.50	3.55	H	54.05	73.98	19.93	PK
11730	36.56	3.55	H	40.11	53.98	13.87	AV
17595	48.81	8.06	H	56.87	68.20	11.33	PK

Band : UNII 4			Operation Mode : 802.11a_HT20 6 Mbps				
CH.177 5885 MHz			Transfer Rate : 6 Mbps				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11770	48.32	3.30	V	51.62	73.98	22.36	PK
11770	36.17	3.30	V	39.47	53.98	14.51	AV
17655	48.20	8.76	V	56.96	68.20	11.24	PK
11770	48.88	3.30	H	52.18	73.98	21.80	PK
11770	36.19	3.30	H	39.49	53.98	14.49	AV
17655	48.55	8.76	H	57.31	68.20	10.89	PK

[RSDB]

Scenario 1

Dual Bluetooth DH5_Ch.39 + Ant All(MIMO) 5 GHz 802.11a_Ch.48_6 Mbps

Frequency	Measured value	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
10480	55.24	3.82	V	59.06	68.20	9.14	PK
15720	47.58	3.66	V	51.24	73.98	22.74	PK
15720	34.52	3.66	V	38.18	53.98	15.80	AV
10480	53.79	3.82	H	57.61	68.20	10.59	PK
15720	47.38	3.66	H	51.04	73.98	22.94	PK
15720	34.50	3.66	H	38.16	53.98	15.82	AV

Scenario 2

Ant All(MIMO)_2.4 GHz 802.11b_1 Mbps Ch.11 + Ant All(MIMO) 5 GHz 802.11a_6 Mbps Ch.48

Frequency	Measured value	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
10480	54.79	3.82	V	58.61	68.20	9.59	PK
15720	47.37	3.66	V	51.03	73.98	22.95	PK
15720	34.44	3.66	V	38.10	53.98	15.88	AV
10480	53.44	3.82	H	57.26	68.20	10.94	PK
15720	47.40	3.66	H	51.06	73.98	22.92	PK
15720	34.45	3.66	H	38.11	53.98	15.87	AV

Scenario 3

Ant.1_Bluetooth DH5_Ch.0 + Ant.2_2.4 GHz 802.11b_1 Mbps Ch.11 + Ant All(MIMO) 5 GHz 802.11a_6 Mbps Ch.48

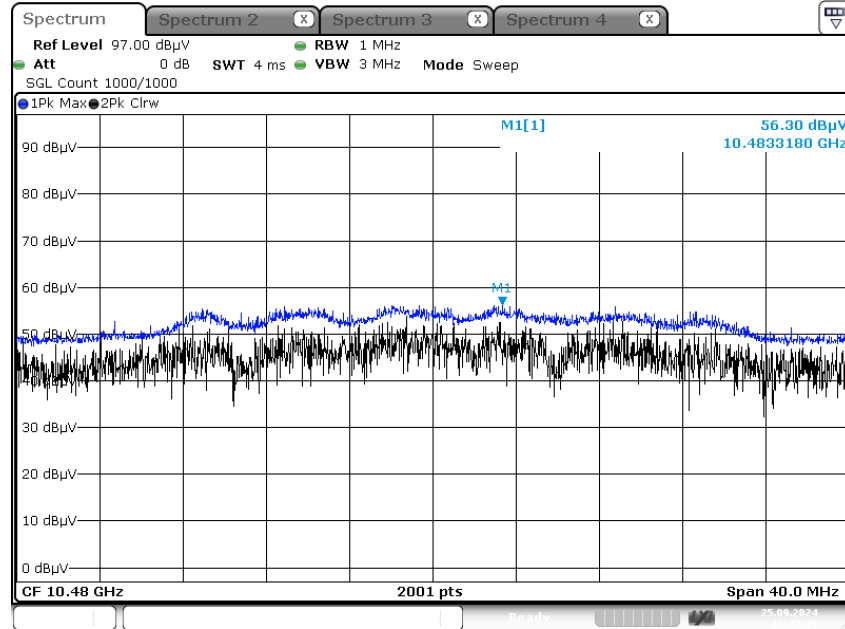
Frequency	Measured value	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
10480	53.87	3.82	V	57.69	68.20	10.51	PK
15720	51.74	3.66	V	55.40	73.98	18.58	PK
15720	37.80	3.66	V	41.46	53.98	12.52	AV
10480	53.97	3.82	H	57.79	68.20	10.41	PK
15720	51.67	3.66	H	55.33	73.98	18.65	PK
15720	37.72	3.66	H	41.38	53.98	12.60	AV

Test Plots

Note: Only the worst case plots for Radiated Spurious Emissions.

[MIMO_CDD(Ant1+Ant2)]

Radiated Spurious Emissions plot – Peak Result (802.11a, Ch.48 Spurious Emissions, Y-V)



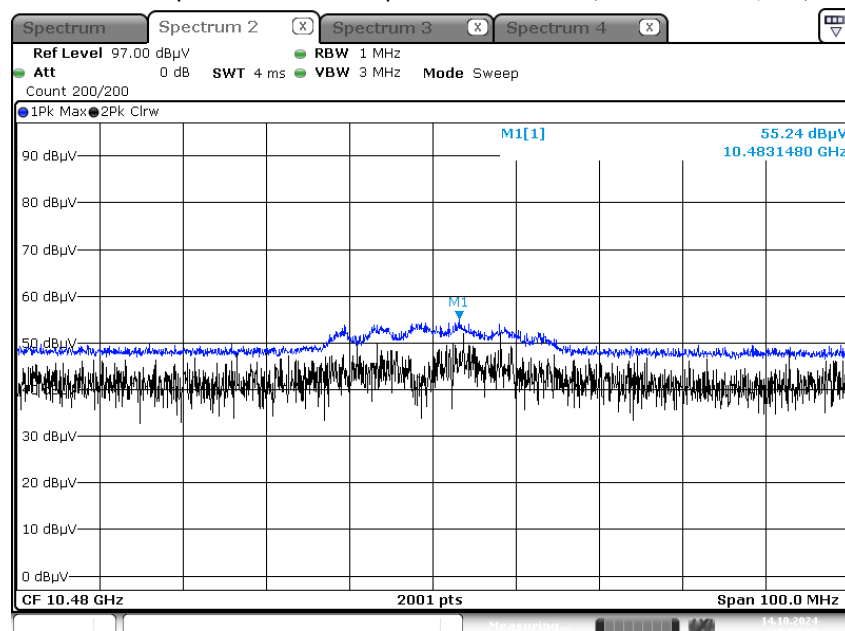
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[RSDB]

Scenario 1

Dual Bluetooth DH5_Ch.39 + Ant All(MIMO) 5 GHz 802.11a_Ch.48_6 Mbps

Radiated Spurious Emissions plot – Peak Result (2nd Harmonic, Y-V)

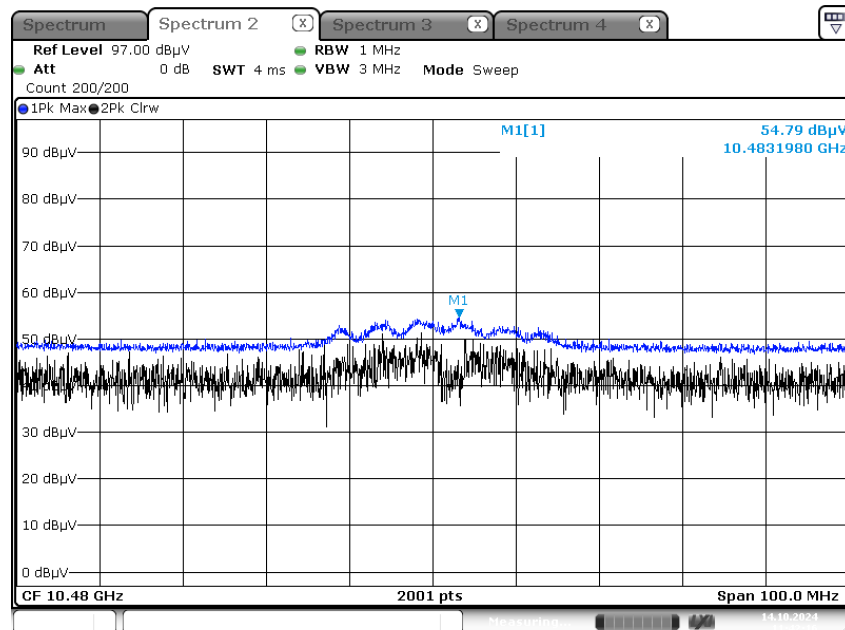


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Scenario 2

Ant All(MIMO)_2.4 GHz 802.11b _1 Mbps Ch.11 + Ant All(MIMO) 5 GHz 802.11a_6 Mbps Ch.48

Radiated Spurious Emissions plot – Peak Result (2nd Harmonic, Y-V)

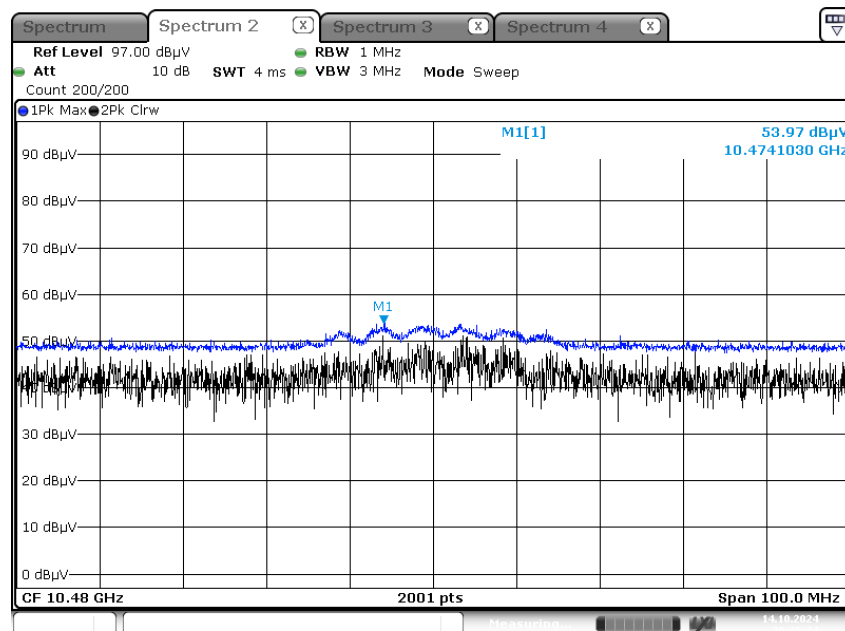


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Scenario 3

Ant.1_Bluetooth DH5_Ch.0 + Ant.2_2.4 GHz 802.11b _1 Mbps Ch.11 + Ant All(MIMO) 5 GHz 802.11a_6 Mbps Ch.48

Radiated Spurious Emissions plot – Peak Result (2nd Harmonic, Z-H)



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10.9 RADIATED RESTRICTED BAND EDGE

[MIMO_CDD(Ant1+Ant2)]

802.11 a		6 Mbps					
Channel	Ch.36	5180 MHz	UNII 1				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5150	67.75	-	H	67.75	73.98	6.23	PK
5150	51.42	-	H	51.42	53.98	2.56	AV

802.11 a		6 Mbps					
Channel	Ch. 64	5320 MHz	UNII 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5350	65.17	-	H	65.17	73.98	8.81	PK
5350	47.72	-	H	47.72	53.98	6.26	AV

802.11 a		6 Mbps					
Channel	Ch. 100	5500 MHz	UNII 2C				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5460	58.58	-	H	58.58	73.98	15.40	PK
5460	44.77	-	H	44.77	53.98	9.21	AV
5470	64.65	-	H	64.65	68.20	3.55	PK

802.11 n_HT20		MCS 0					
Channel	Ch. 36	5180 MHz	UNII 1				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5150	66.88	-	H	66.88	73.98	7.10	PK
5150	51.53	-	H	51.53	53.98	2.45	AV

802.11 n_HT20		MCS 0					
Channel	Ch. 64	5320 MHz	UNII 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5350	65.77	-	H	65.77	73.98	8.21	PK
5350	48.38	-	H	48.38	53.98	5.60	AV

802.11 n_HT20		MCS 0					
Channel	Ch. 100	5500 MHz	UNII 2C				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5460	61.31	-	H	61.31	73.98	12.67	PK
5460	44.81	-	H	44.81	53.98	9.17	AV
5470	62.32	-	H	62.32	68.20	5.88	PK

802.11 ac_VHT20		MCS 0					
Channel	Ch. 36	5180 MHz	UNII 1				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5150	64.21	-	H	64.21	73.98	9.77	PK
5150	51.36	-	H	51.36	53.98	2.62	AV

802.11 ac_VHT20		MCS 0					
Channel	Ch. 64	5320 MHz	UNII 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5350	64.35	-	H	64.35	73.98	9.63	PK
5350	49.01	-	H	49.01	53.98	4.97	AV

802.11 ac_VHT20		MCS 0					
Channel	Ch. 100	5500 MHz	UNII 2C				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5460	59.04	-	H	59.04	73.98	14.94	PK
5460	45.10	-	H	45.10	53.98	8.88	AV
5470	65.00	-	H	65.00	68.20	3.20	PK

802.11 n_HT40		MCS 0					
Channel	Ch. 38	5190 MHz	UNII 1				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5150	64.21	-	H	64.21	73.98	9.77	PK
5150	51.34	-	H	51.34	53.98	2.64	AV

802.11 n_HT40		MCS 0					
Channel	Ch. 62	5310 MHz	UNII 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5350	65.12	-	H	65.12	73.98	8.86	PK
5350	50.61	-	H	50.61	53.98	3.37	AV

802.11 n_HT40		MCS 0					
Channel	Ch. 102	5510 MHz	UNII 2C				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5460	57.73	-	H	57.73	73.98	16.25	PK
5460	45.20	-	H	45.20	53.98	8.78	AV
5470	65.09	-	H	65.09	68.20	3.11	PK

802.11 ac_VHT40		MCS 0					
Channel	Ch. 38	5190 MHz	UNII 1				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5150	65.41	-	H	65.41	73.98	8.57	PK
5150	51.87	-	H	51.87	53.98	2.11	AV

802.11 ac_VHT40		MCS 0					
Channel	Ch. 62	5310 MHz	UNII 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5350	63.52	-	H	63.52	73.98	10.46	PK
5350	50.02	-	H	50.02	53.98	3.96	AV

802.11 ac_VHT40		MCS 0					
Channel	Ch. 102	5510 MHz	UNII 2C				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5460	59.22	-	H	59.22	73.98	14.76	PK
5460	45.89	-	H	45.89	53.98	8.09	AV
5470	64.81	-	H	64.81	68.20	3.39	PK

802.11 ac_VHT80		MCS 0					
Channel	Ch. 42	5210 MHz	UNII 1				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5150	62.65	-	H	62.65	73.98	11.33	PK
5150	51.43	-	H	51.43	53.98	2.55	AV

802.11 ac_VHT80		MCS 0					
Channel	Ch. 58	5290 MHz	UNII 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5350	62.69	-	H	62.69	73.98	11.29	PK
5350	51.07	-	H	51.07	53.98	2.91	AV

802.11 ac_VHT80		MCS 0					
Channel	Ch. 106	5530 MHz	UNII 2C				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5460	64.07	-	H	64.07	73.98	9.91	PK
5460	51.91	-	H	51.91	53.98	2.07	AV
5470	63.85	-	H	63.85	68.20	4.35	PK

802.11 ac_VHT160(Lower)		MCS 0					
Channel	Ch. 50	5250 MHz	UNII 1 & 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5150	68.55	-	H	68.55	73.98	5.43	PK
5150	50.81	-	H	50.81	53.98	3.17	AV

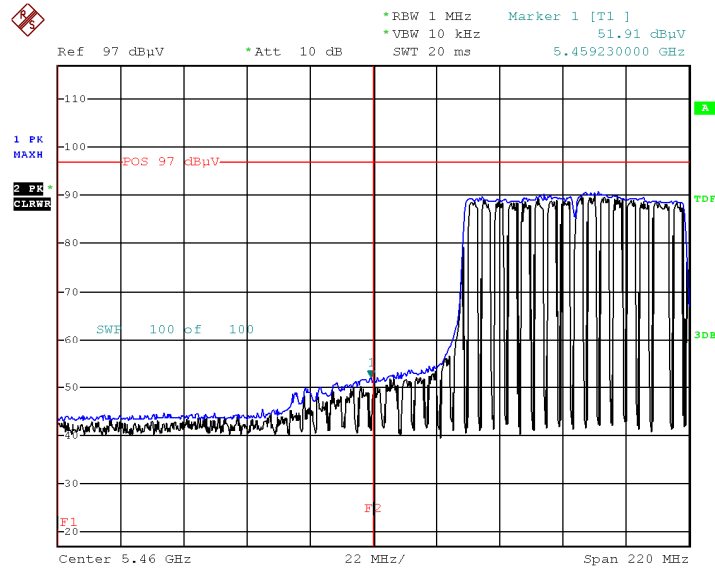
802.11 ac_VHT160(Upper)		MCS 0					
Channel	Ch. 50	5250 MHz	UNII 1 & 2A				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5350	68.70	-	H	68.70	73.98	5.28	PK
5350	51.56	-	H	51.56	53.98	2.42	AV

802.11 ac_VHT160		MCS 0					
Channel	Ch. 114	5570 MHz	UNII 2C				
Frequency	Measured Value	C.L+A.F+D.F-A.G+ATT	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
5460	67.17	-	H	67.17	73.98	6.81	PK
5460	50.94	-	H	50.94	53.98	3.04	AV
5470	61.49	-	H	61.49	68.20	6.71	PK

[MIMO_CDD(Ant1+Ant2)]

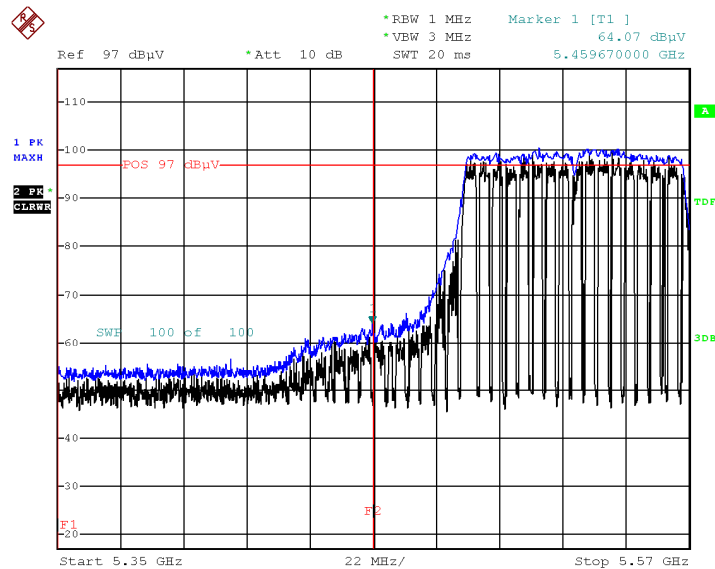
▣ Test Plots(UNII 1, 2A, 2C)

Average Result (802.11 ac_VHT80_ MCS0, Ch.106, X-H)



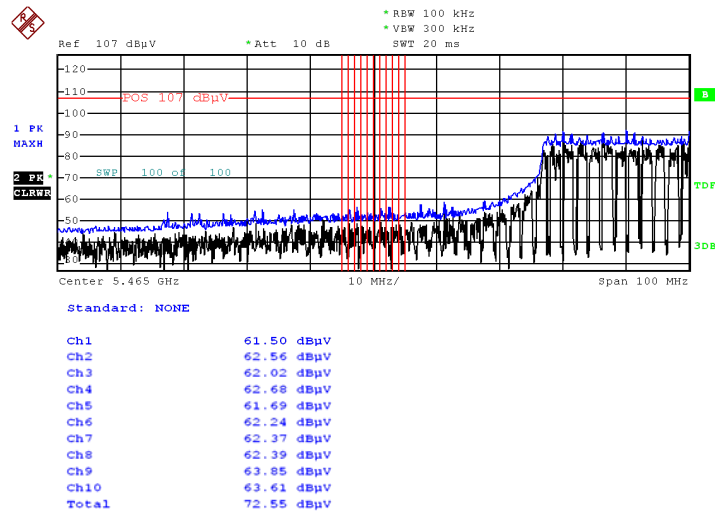
Date: 4.SEP.2024 11:10:00

Peak Result (802.11 ac_VHT80_ MCS0, Ch.106, X-H)



Date: 4.SEP.2024 11:20:35

Peak Result (802.11 ac_VHT80_ MCS0, Ch.106, X-H)



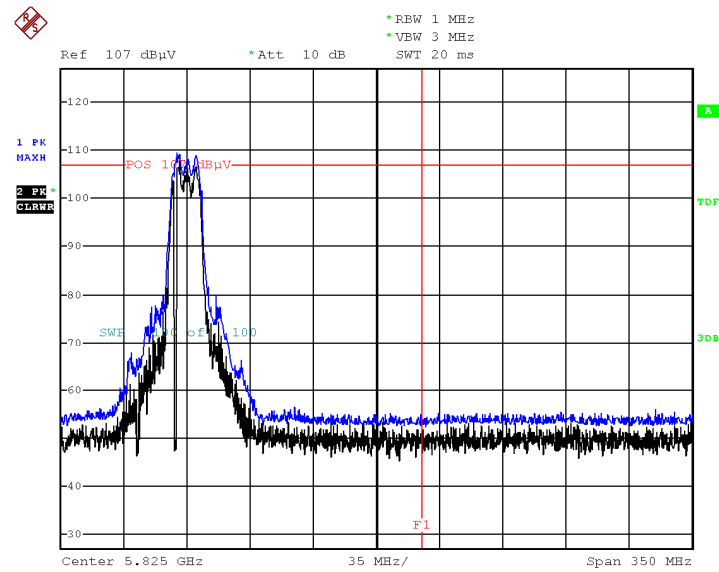
Date: 4.SEP.2024 11:08:58

Note:

Only the worst case plots for Radiated Restricted Band Edge.

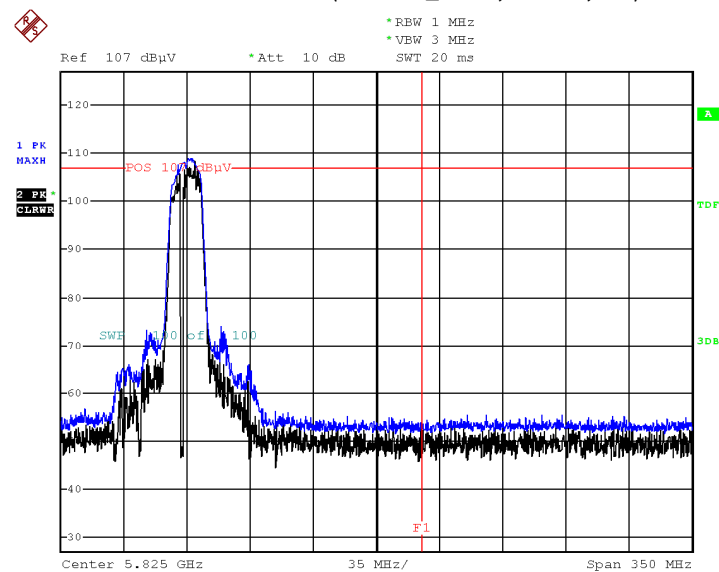
Test Plots(Straddle Channel)

Peak Result (802.11a, Ch.144, Y-V)



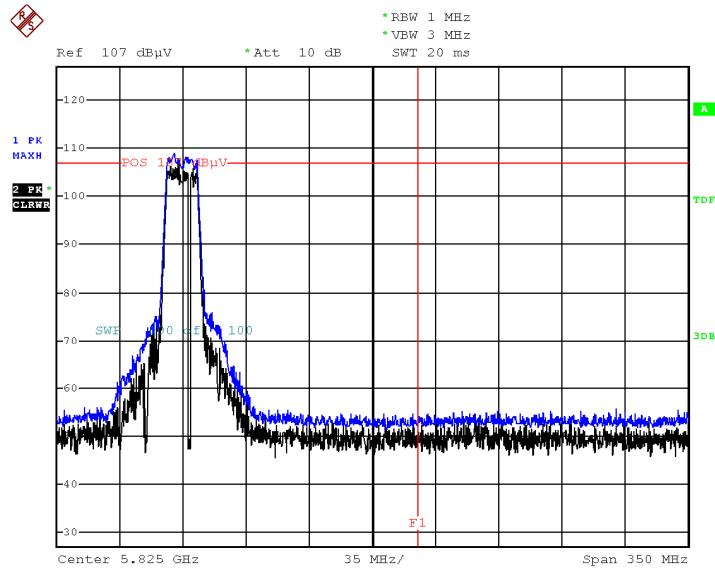
Date: 4.SEP.2024 14:24:43

Peak Result (802.11n_HT20, Ch.144, Y-V)



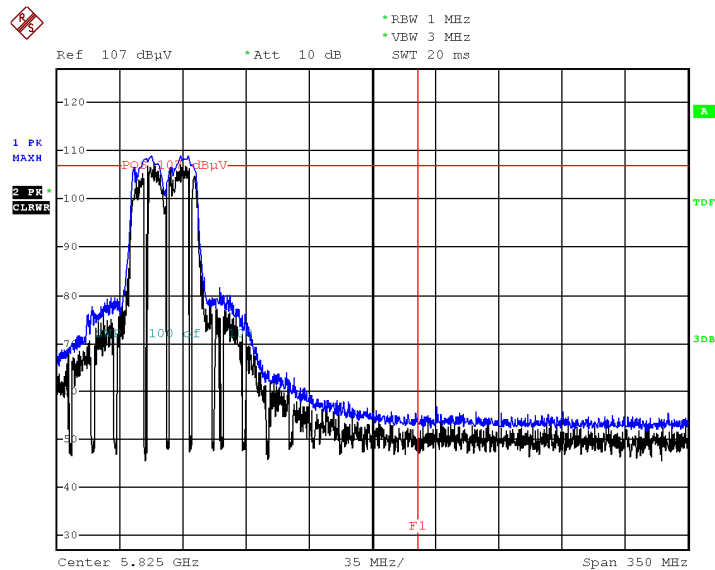
Date: 4.SEP.2024 14:25:18

Peak Result (802.11ac_VHT20, Ch.144, Y-V)



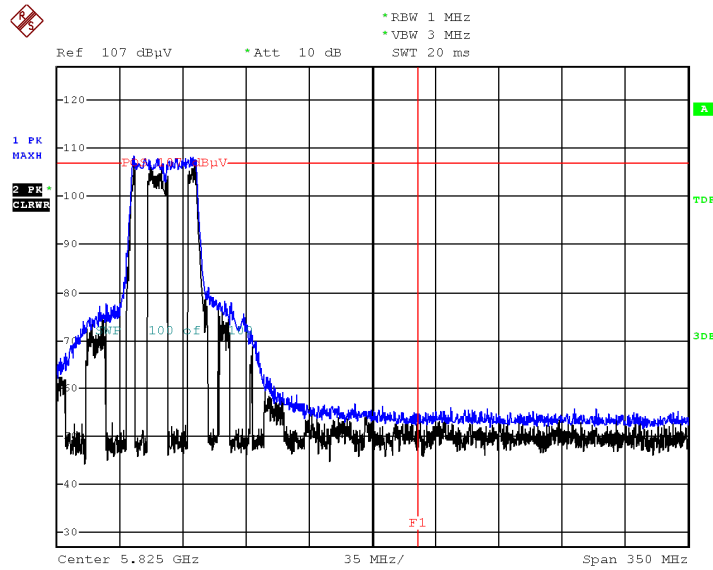
Date: 4.SEP.2024 14:25:53

Peak Result (802.11n_HT40, Ch.142, Y-V)



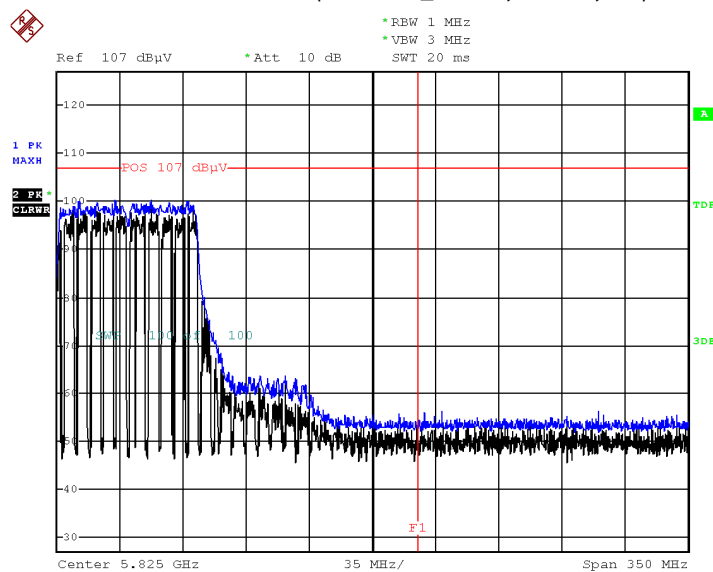
Date: 6.SEP.2024 09:35:43

Peak Result (802.11ac_VHT40, Ch.142, Y-V)



Date: 6.SEP.2024 09:36:42

Peak Result (802.11ac_VHT80, Ch.138, Y-V)



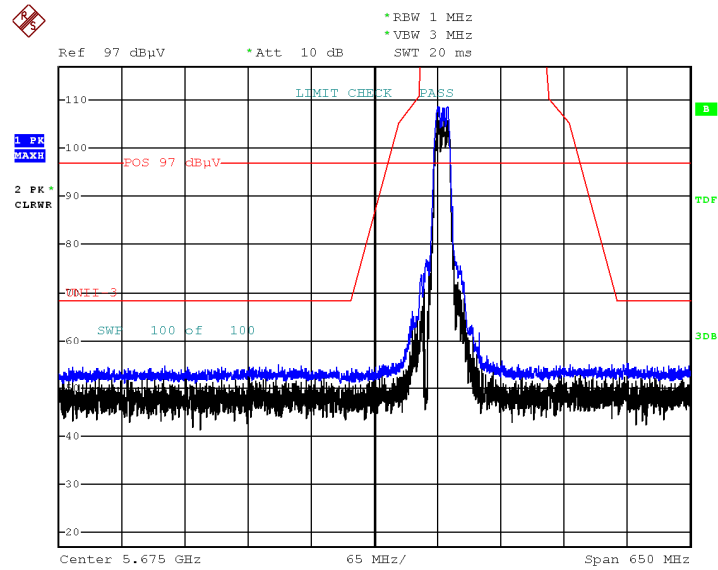
Date: 6.SEP.2024 12:57:54

Note :

1. Only the worst case plots for Radiated Restricted Band Edge.
2. Red line : 5 850 MHz
3. Ambient Noise (Because of ambient noise, We attached only the worst plot without a data table)

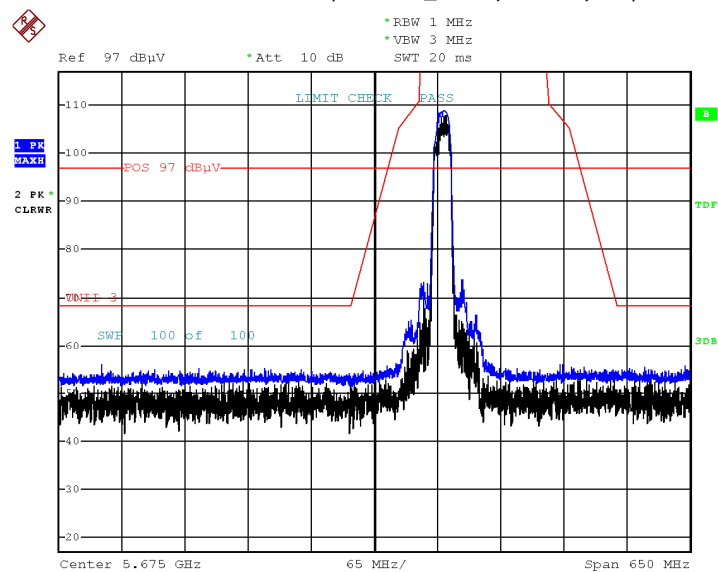
Test Plots(UNII 3)

Peak Result (802.11a, Ch.149, Y-V)



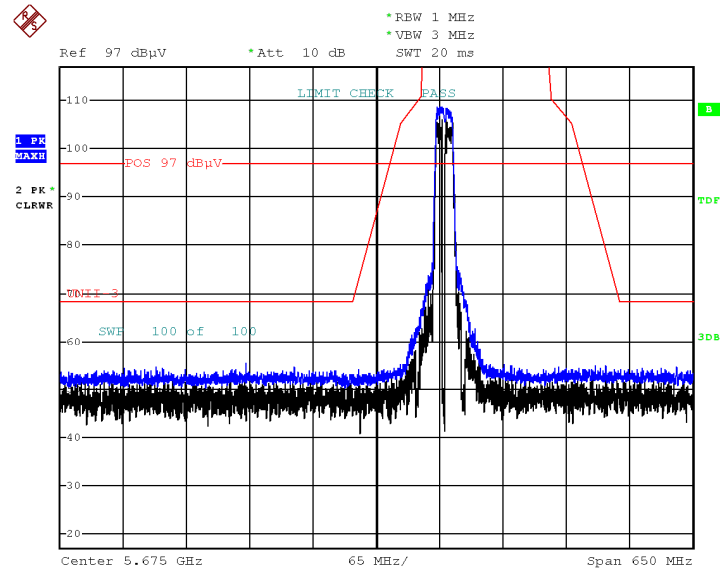
Date: 4.SEP.2024 15:17:50

Peak Result (802.11n_HT20, Ch.149, Y-V)



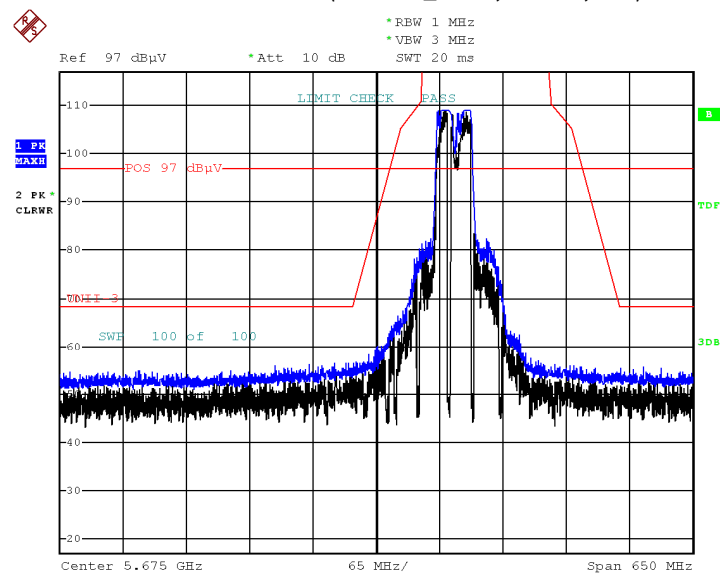
Date: 4.SEP.2024 15:21:33

Peak Result (802.11ac_VHT20, Ch.149, Y-V)



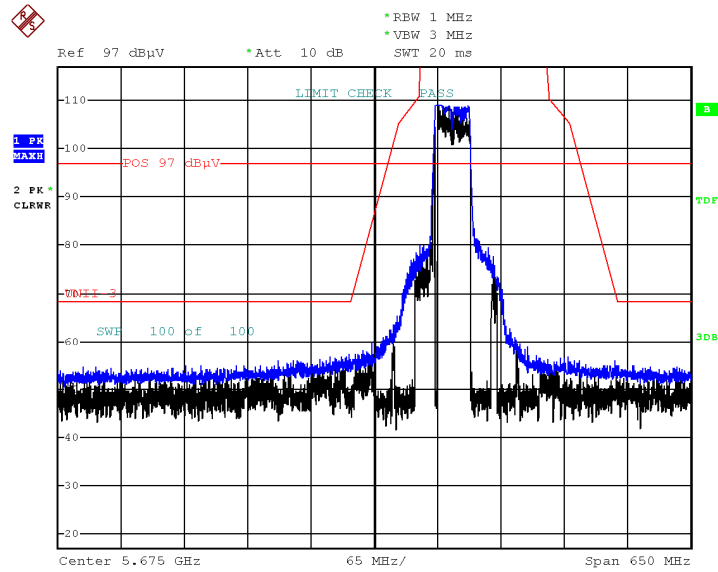
Date: 4.SEP.2024 15:22:32

Peak Result (802.11n_HT40, Ch.151, X-H)



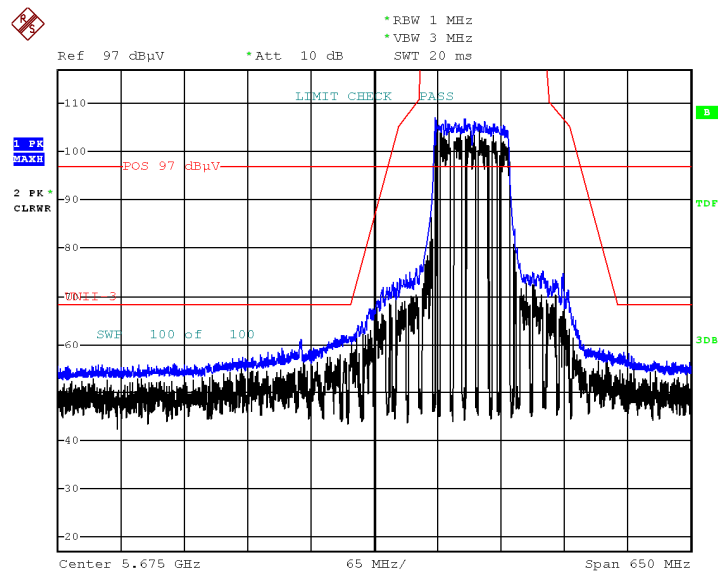
Date: 6.SEP.2024 09:38:00

Peak Result (802.11ac_VHT40, Ch.151, X-H)



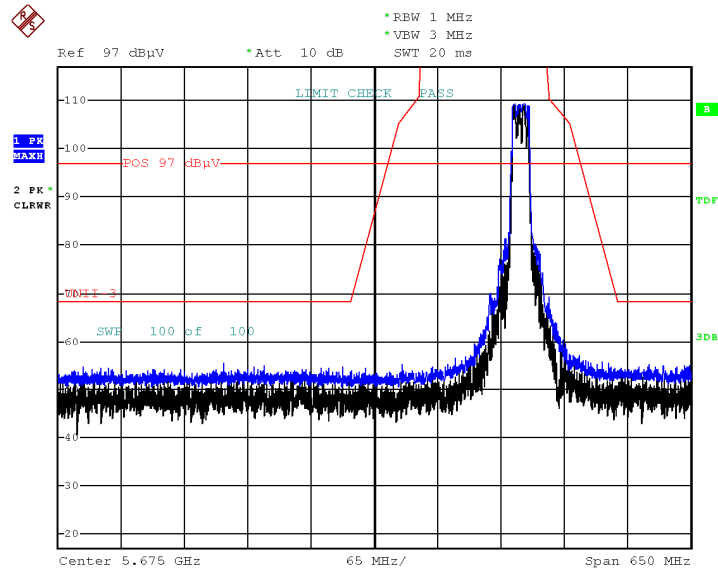
Date: 6.SEP.2024 09:39:12

Peak Result (802.11ac_VHT80, Ch.155, X-H)



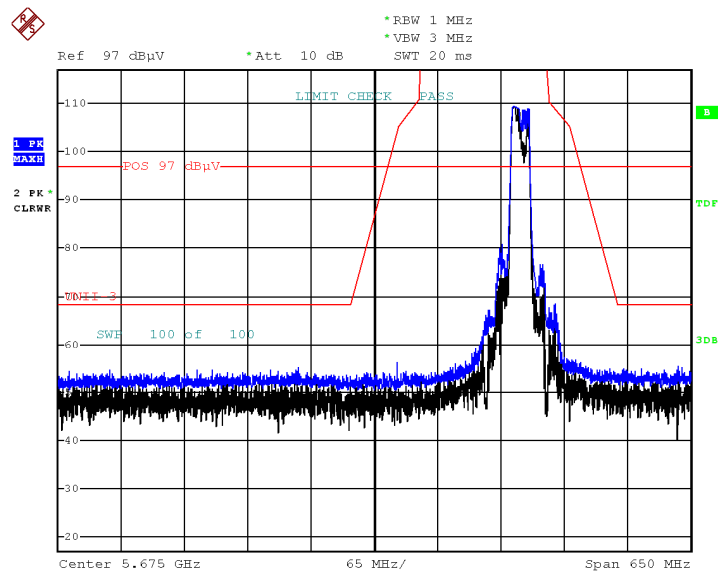
Date: 6.SEP.2024 13:39:44

Peak Result (802.11a, Ch.165, X-H)



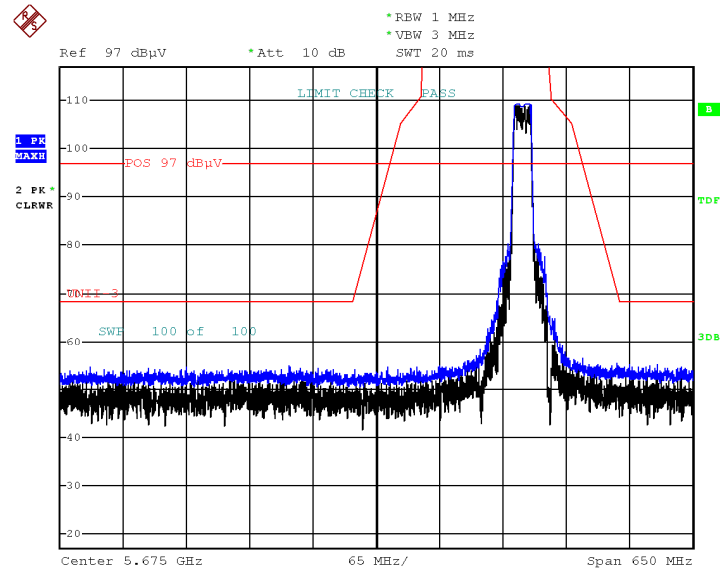
Date: 4.SEP.2024 16:09:19

Peak Result (802.11n_HT20, Ch.165, X-H)



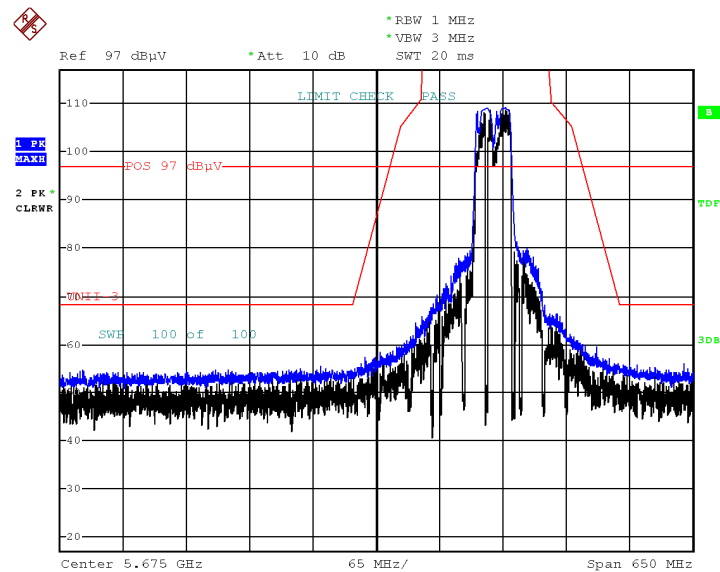
Date: 4.SEP.2024 16:10:12

Peak Result (802.11ac_VHT20, Ch.165, X-H)



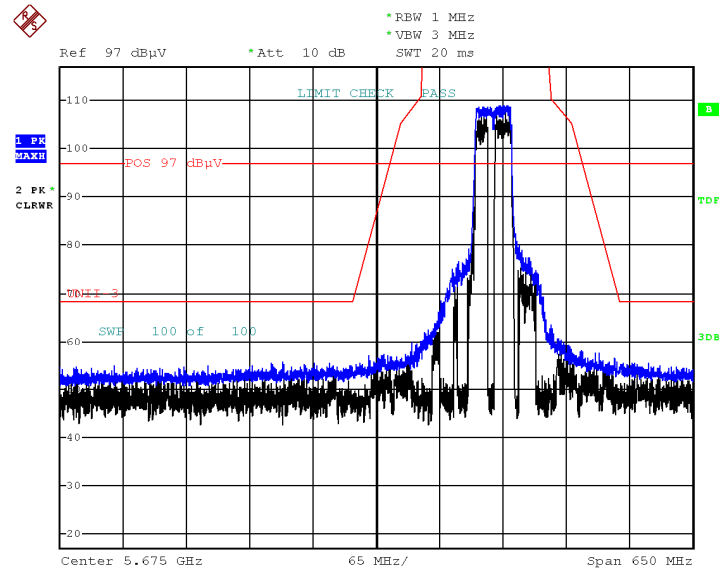
Date: 4.SEP.2024 16:10:56

Peak Result (802.11n_HT40, Ch.159, X-H)



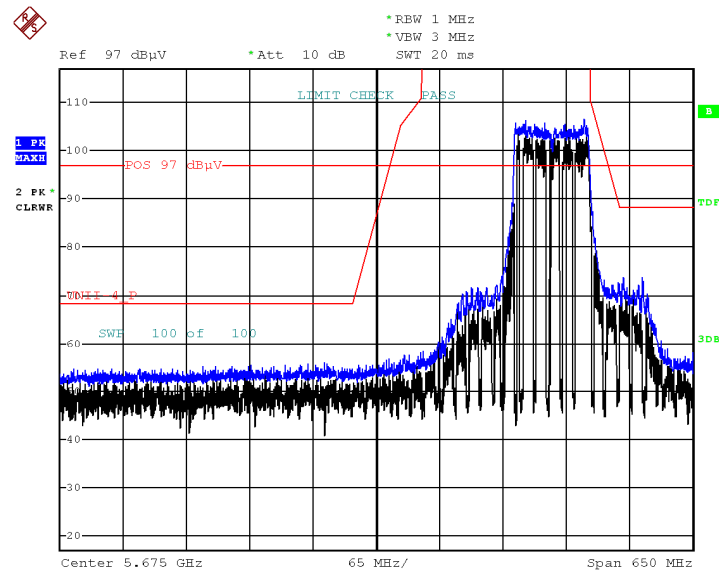
Date: 6.SEP.2024 08:55:28

Peak Result (802.11ac_VHT40, Ch.159, X-H)



Date: 6.SEP.2024 08:56:42

Peak Result (802.11ac_VHT80, Ch.155, X-H)



Date: 6.SEP.2024 13:34:56

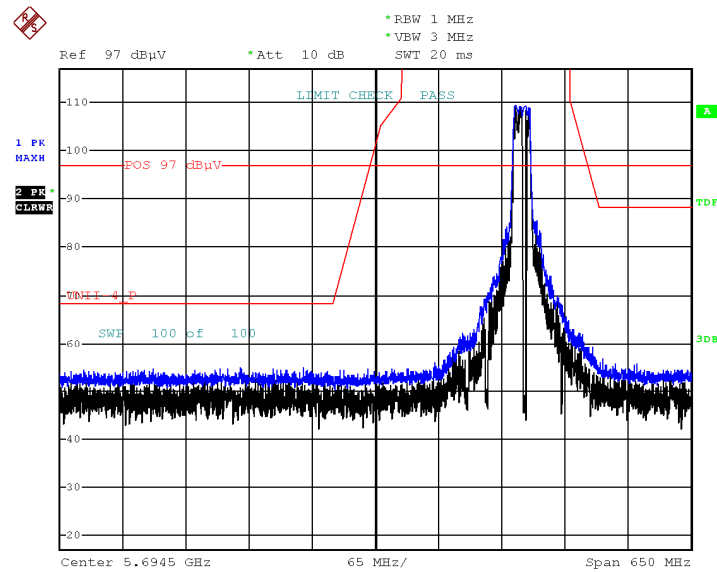
Note:

1. Only the worst case plots for U-NII-3 Out of Band e.i.r.p Emission.
2. U-NII-3 Low & High Band Edge RedLine is Final Test Limit about factor value compensation.

Test Plots(UNII 4) – O.O.B.E

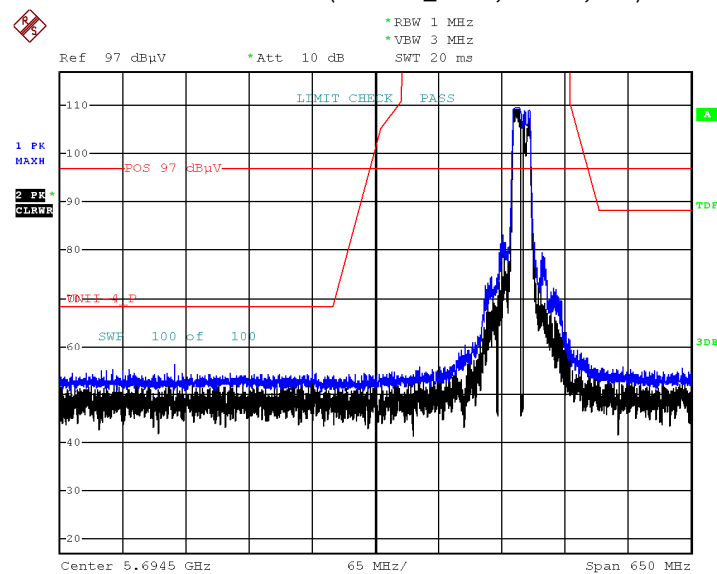
Peak Result

Peak Result (802.11a, Ch.169, X-H)



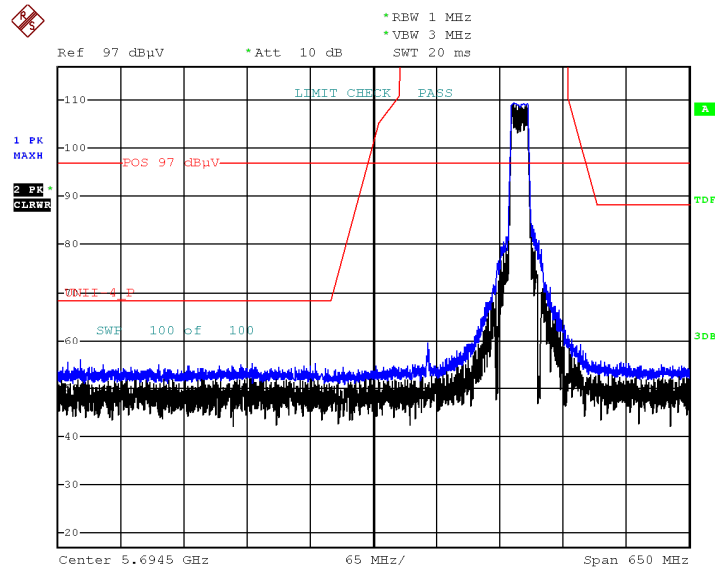
Date: 18.OCT.2024 11:02:31

Peak Result (802.11n_HT20, Ch.169, X-H)



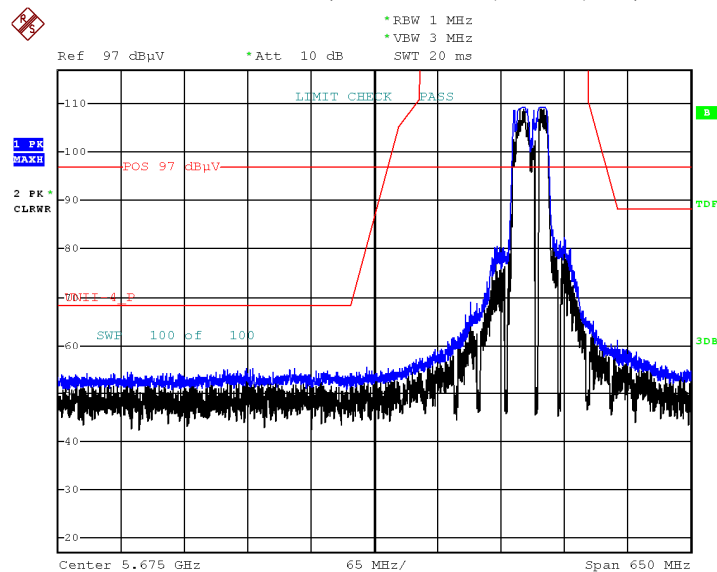
Date: 18.OCT.2024 11:01:39

Peak Result (802.11ac_VHT20, Ch.169, X-H)



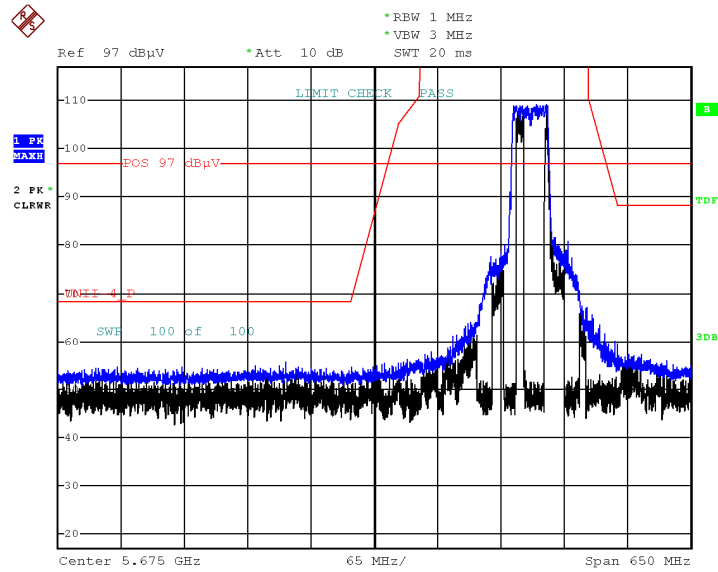
Date: 18.OCT.2024 11:00:38

Peak Result (802.11n_HT40, Ch.167, X-H)



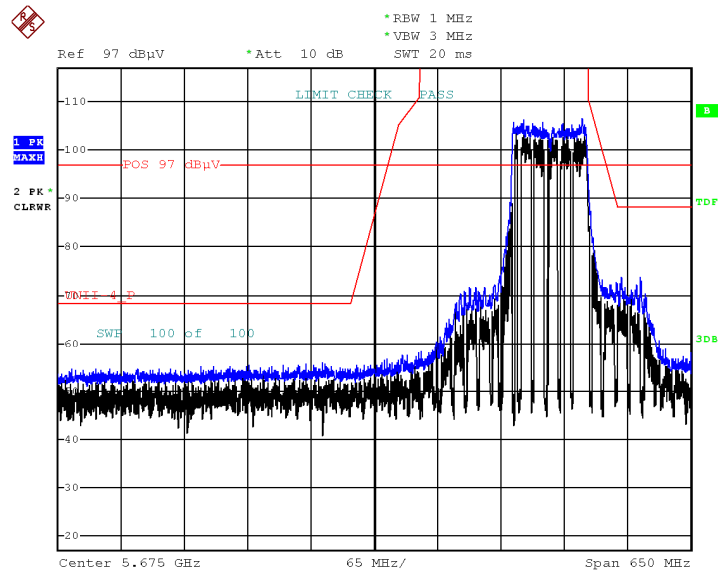
Date: 6.SEP.2024 10:06:54

Peak Result (802.11ac_VHT40, Ch.167, X-H)



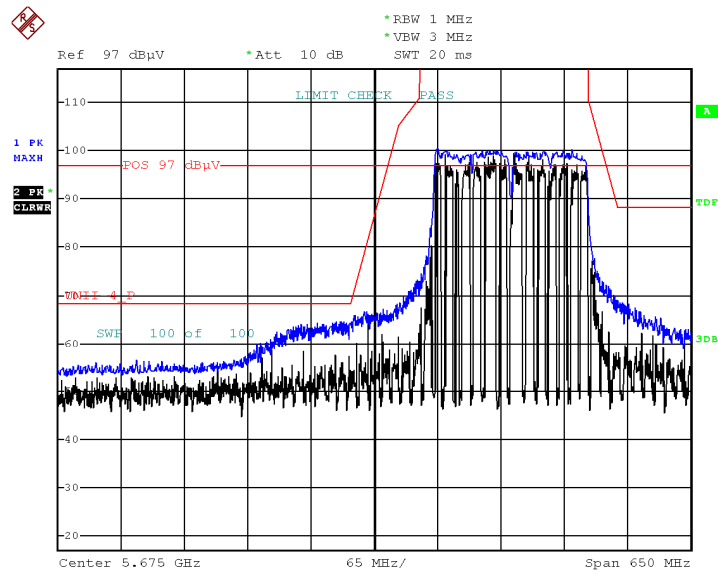
Date: 6.SEP.2024 10:05:54

Peak Result (802.11ac_VHT80, Ch.171, X-H)



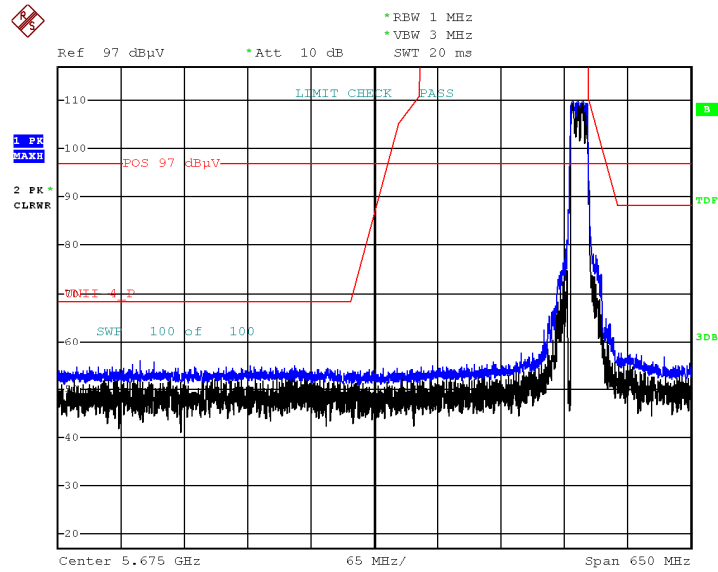
Date: 6.SEP.2024 13:34:56

Peak Result (802.11ac_VHT160, Ch.163, X-H)



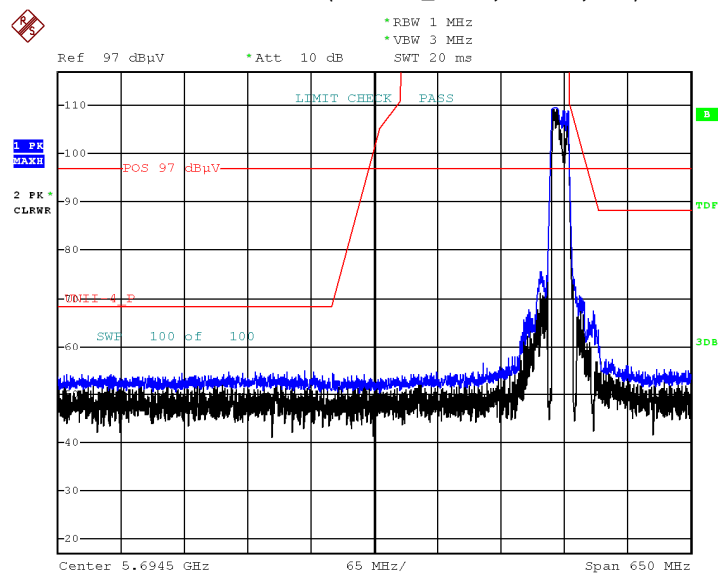
Date: 6.SEP.2024 15:20:09

Peak Result (802.11a, Ch.177, X-H)



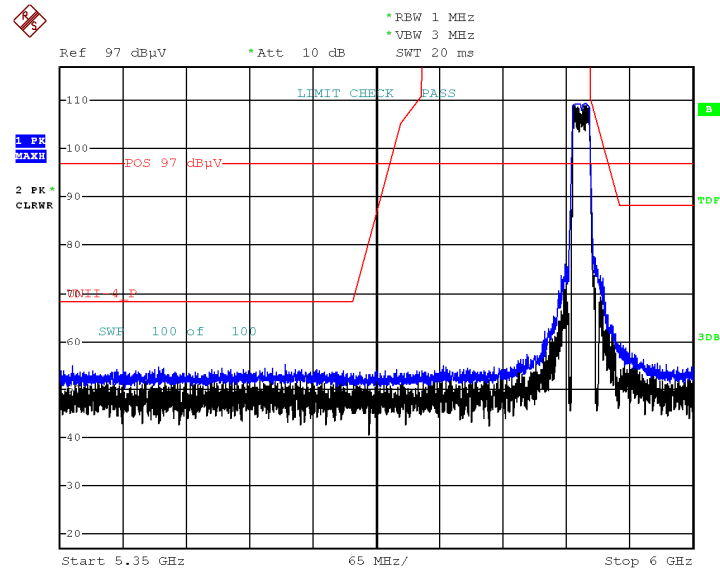
Date: 6.SEP.2024 10:08:02

Peak Result (802.11n_HT20, Ch.177, X-H)



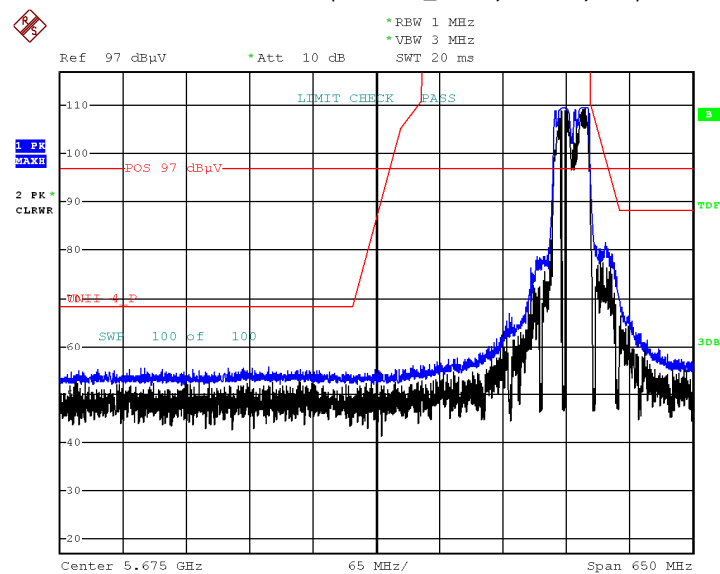
Date: 5.SEP.2024 16:49:08

Peak Result (802.11ac_VHT20, Ch.177, X-H)



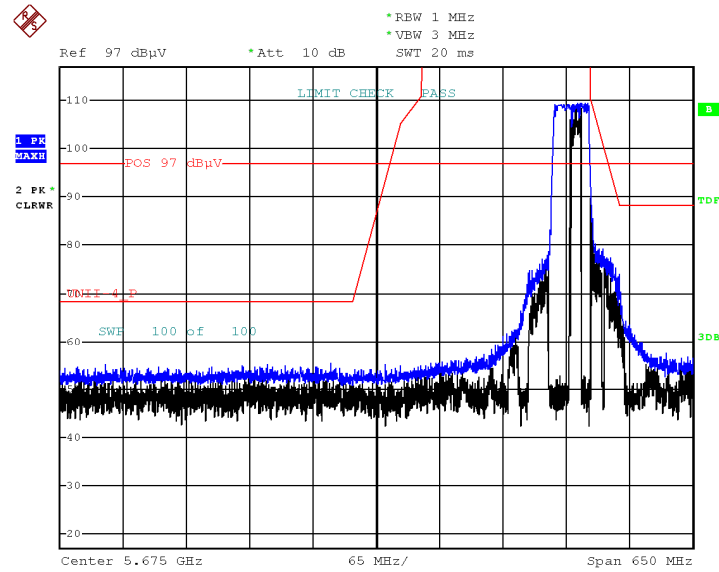
Date: 5.SEP.2024 16:51:26

Peak Result (802.11n_HT40, Ch.175, X-H)



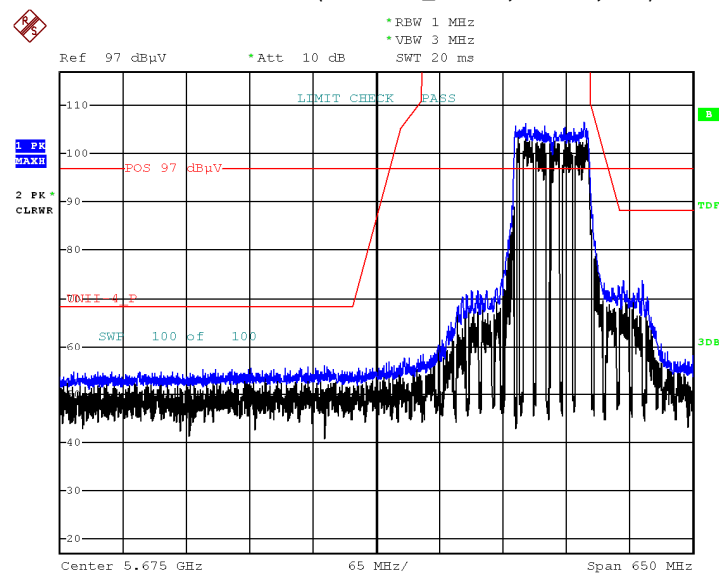
Date: 6.SEP.2024 10:00:37

Peak Result (802.11ac_VHT40, Ch.175, X-H)



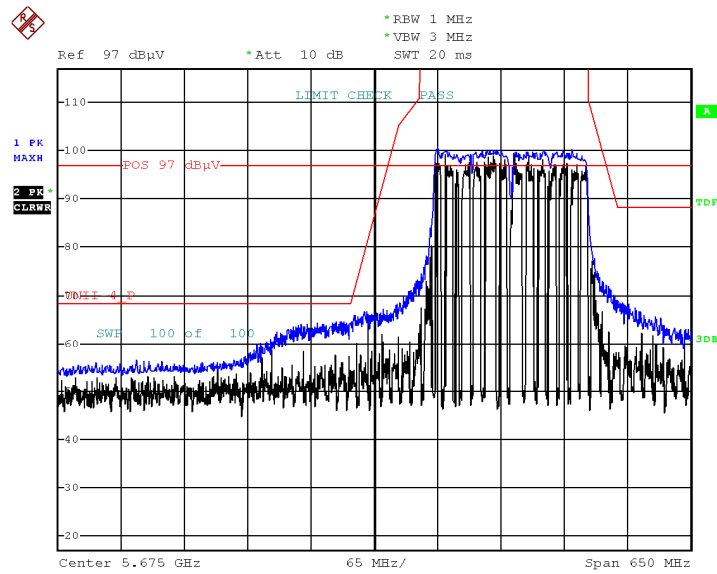
Date: 6.SEP.2024 10:04:45

Peak Result (802.11ac_VHT80, Ch.171, X-H)



Date: 6.SEP.2024 13:34:56

Peak Result (802.11ac_VHT160, Ch.163, X-H)



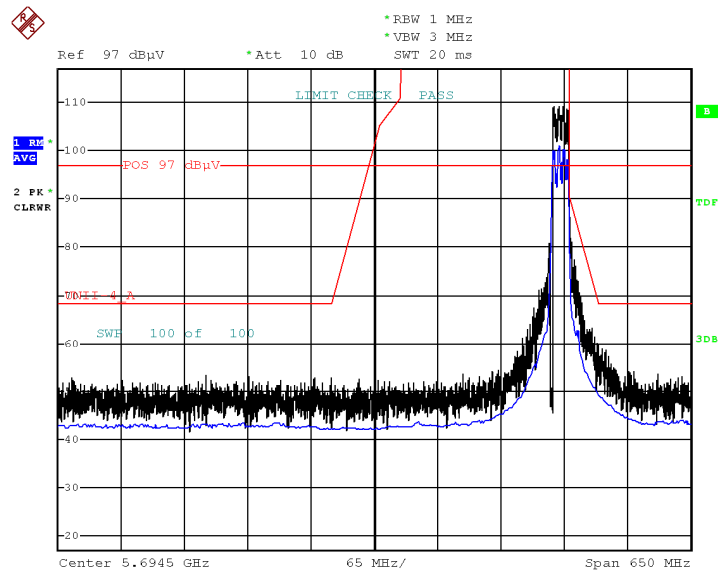
Date: 6.SEP.2024 15:20:09

Note:

1. Only the worst case plots for U-NII-4 O.O.B.E
2. U-NII-4 Low & High O.O.B.E RedLine is Final Test Limit(Peak) about factor value compensation.

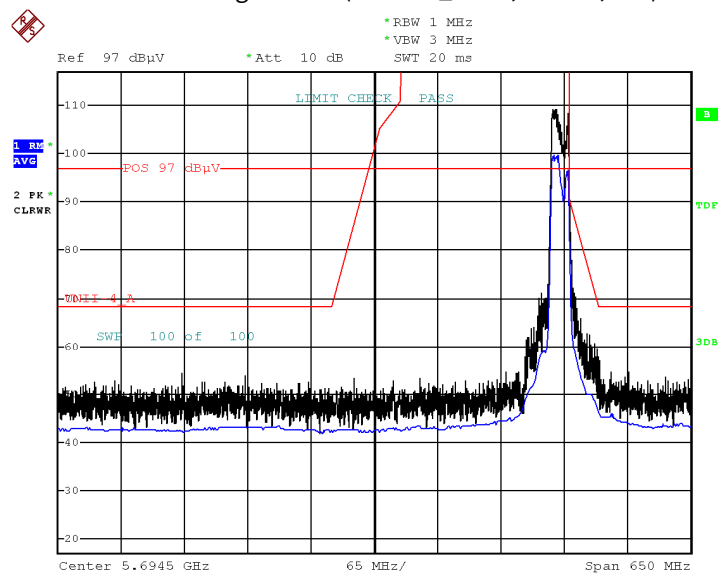
Average Result

Average Result (802.11a, Ch.177, X-H)



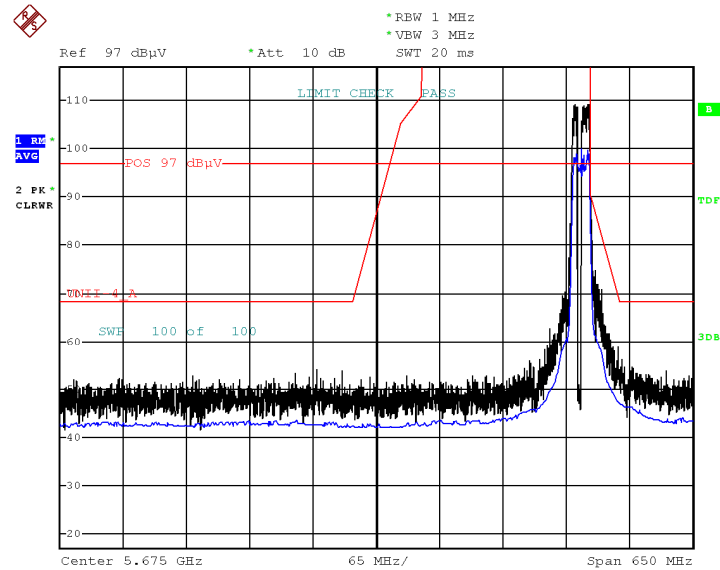
Date: 5.SEP.2024 16:45:32

Average Result (802.11n_HT20, Ch.177, X-H)



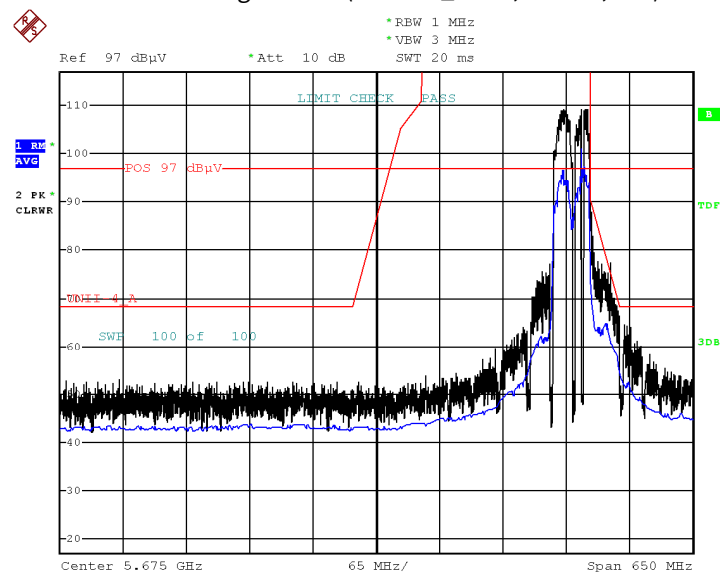
Date: 5.SEP.2024 16:48:16

Average Result (802.11ac_VHT20, Ch.177, X-H)



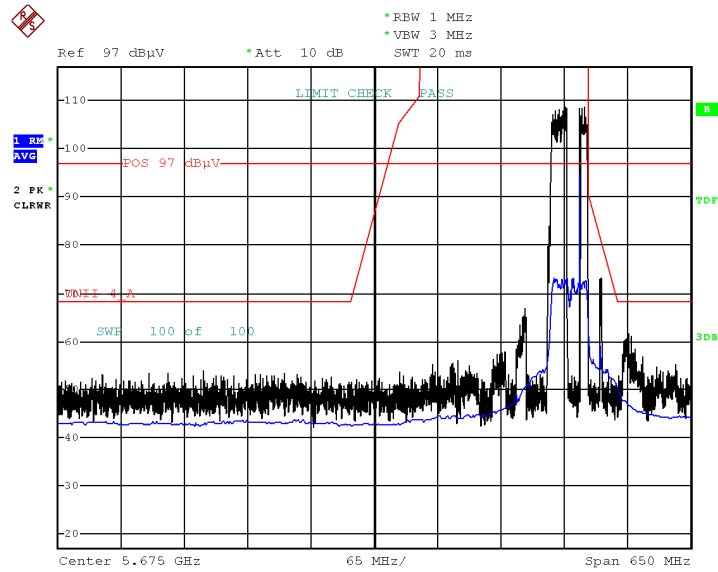
Date: 5.SEP.2024 16:52:09

Average Result (802.11n_HT40, Ch.175, X-H)



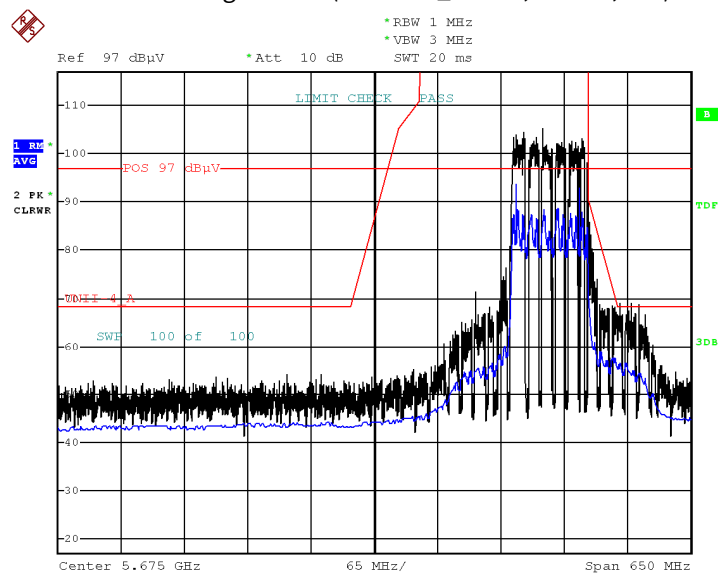
Date: 6.SEP.2024 10:01:26

Average Result (802.11ac_VHT40, Ch.175, X-H)



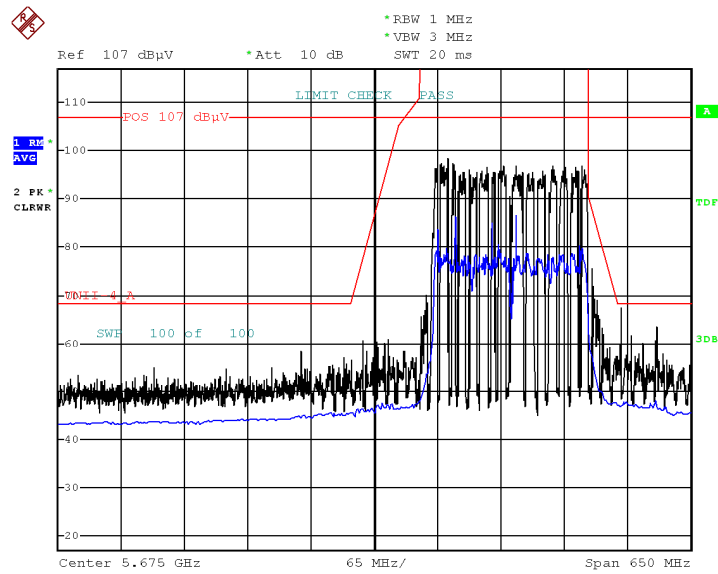
Date: 6.SEP.2024 10:03:55

Average Result (802.11ac_VHT80, Ch.171, X-H)



Date: 6.SEP.2024 13:35:43

Average Result (802.11ac_VHT160, Ch.163, X-H)



Date: 6.SEP.2024 17:20:37

Note :

1. Only the worst case plots for U-NII-4 O.O.B.E
2. U-NII-4 Low & High O.O.B.E RedLine is Final Test Limit(Average) about factor value compensation.

10.10 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions

Test

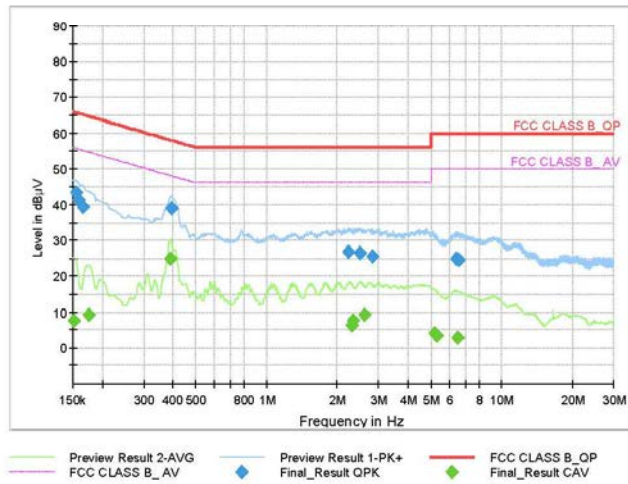
1 / 1

Test Report

Common Information

EUT : SM-S931U
Operating Conditions : 5G WLAN Mode
Comment :

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	43.48	65.75	22.28	9.000	L1	9.6
0.1590	41.34	65.52	24.18	9.000	L1	9.6
0.1658	39.47	65.17	25.70	9.000	L1	9.6
0.3953	39.15	57.95	18.80	9.000	L1	9.6
2.2370	26.71	56.00	29.29	9.000	L1	9.7
2.4935	26.55	56.00	29.45	9.000	L1	9.7
2.8198	25.57	56.00	30.43	9.000	L1	9.8
6.4333	24.96	60.00	35.04	9.000	L1	9.9
6.6043	24.47	60.00	35.53	9.000	L1	9.9

Final Result CAV

Frequency (MHz)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	7.74	55.88	48.14	9.000	N	9.6
0.1748	9.12	54.73	45.61	9.000	N	9.6
0.3885	25.06	48.10	23.04	9.000	N	9.6
2.3135	6.30	46.00	39.70	9.000	N	9.7
2.3383	7.70	46.00	38.30	9.000	N	9.7
2.5993	9.13	46.00	36.87	9.000	N	9.8
5.2070	4.23	50.00	45.77	9.000	N	9.9
5.3240	3.37	50.00	46.63	9.000	N	9.9
6.5188	2.73	50.00	47.27	9.000	N	9.9

2024-08-30

오전 11:17:37

11. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	07/17/2025	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	07/02/2025	Annual
Temperature Chamber	SU-642	ESPEC	93008124	02/19/2025	Annual
Signal Analyzer	N9030A	Keysight	MY55410508	08/23/2025	Annual
Power Meter	N1911A	Agilent	MY45100523	02/28/2025	Annual
Power Sensor	N1921A	Agilent	MY57820067	02/22/2025	Annual
Directional Coupler	87300B	Agilent	3116A03621	10/30/2024	Annual
Power Splitter	11667B	Hewlett Packard	10545	02/06/2025	Annual
DC Power Supply	E3632A	Agilent	KR01009150	04/18/2025	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C-010	Agilent	08285	05/28/2025	Annual
Attenuator(20 dB)	18N-20dB	Rohde & Schwarz	8	02/20/2025	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	HCT CO., LTD.	N/A	N/A	N/A
Bluetooth Tester	CBT	Rohde & Schwarz	100808	02/15/2025	Annual

Note:

- Equipment listed above that calibrated during the testing period was set for test after the calibration.
- Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

Radiated Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller (Antenna mast & Turn Table)	CO3000	Innco system	CO3000/ 15421/57580623/G	N/A	N/A
Antenna Position Tower	MA4640	Innco system	9320422	04/05/2025	Biennial
Turn Table	N/A	Innco system	5930623	N/A	N/A
Loop Antenna	FMZB 1513	Schwarzbeck	1513-175	01/16/2025	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-1135	08/19/2026	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-1151	07/14/2025	Biennial
Horn Antenna (15 GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Amp & Filter Bank Switch Controller	FBSM-01B	T&M system	TM2009001	N/A	N/A
Band Reject Filter	WRCJV2400/2483.5- 2370/2520-60/12SS	Wainwright Instruments	2	01/02/2025	Annual
Band Reject Filter	WRCJV12-4900-5100-5900- 6100-50SS	Wainwright Instruments	5	06/04/2025	Annual
Band Reject Filter	WRCJV12-4900-5100-5900- 6100-50SS	Wainwright Instruments	6	06/04/2025	Annual
Band Reject Filter	WRCJV5100/5850-40/50- 8EEK	Wainwright Instruments	1	02/14/2025	Annual
RF Switching System	FMSR-05B (HPF(3~18GHz) + LNA1(1~18GHz))	T&M system	S5L1	03/12/2025	Annual
RF Switching System	FMSR -05B (ATT(10dB) + LNA1(1~18GHz))	T&M system	S5L2	03/12/2025	Annual
RF Switching System	FMSR -05B (ATT(3dB) + LNA1(1~18GHz))	T&M system	S5L3	03/12/2025	Annual
RF Switching System	FMSR -05B (LNA1(1~18GHz))	T&M system	S5L4	03/12/2025	Annual
RF Switching System	FMSR -05B (HPF(7~18GHz) + LNA2(6~18GHz))	T&M system	S5L5	03/12/2025	Annual
RF Switching System	FMSR -05B (Thru(30MHz ~ 18GHz))	T&M system	S5L6	03/12/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/17/2024	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	Annual
Bluetooth Tester	TC-3000C	TESCOM	3000C000175	03/19/2025	Annual
Spectrum Analyzer	FSW (2 Hz ~ 67 GHz)	Rohde & Schwarz	101736	05/23/2025	Annual
Spectrum Analyzer	FSP40 (9 kHz ~ 40 GHz)	Rohde & Schwarz	100843	10/30/2024	Annual
Spectrum Analyzer	FSV40 (9 kHz ~ 40 GHz)	Rohde & Schwarz	101510	03/28/2025	Annual

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).

12. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2412-FC019-P