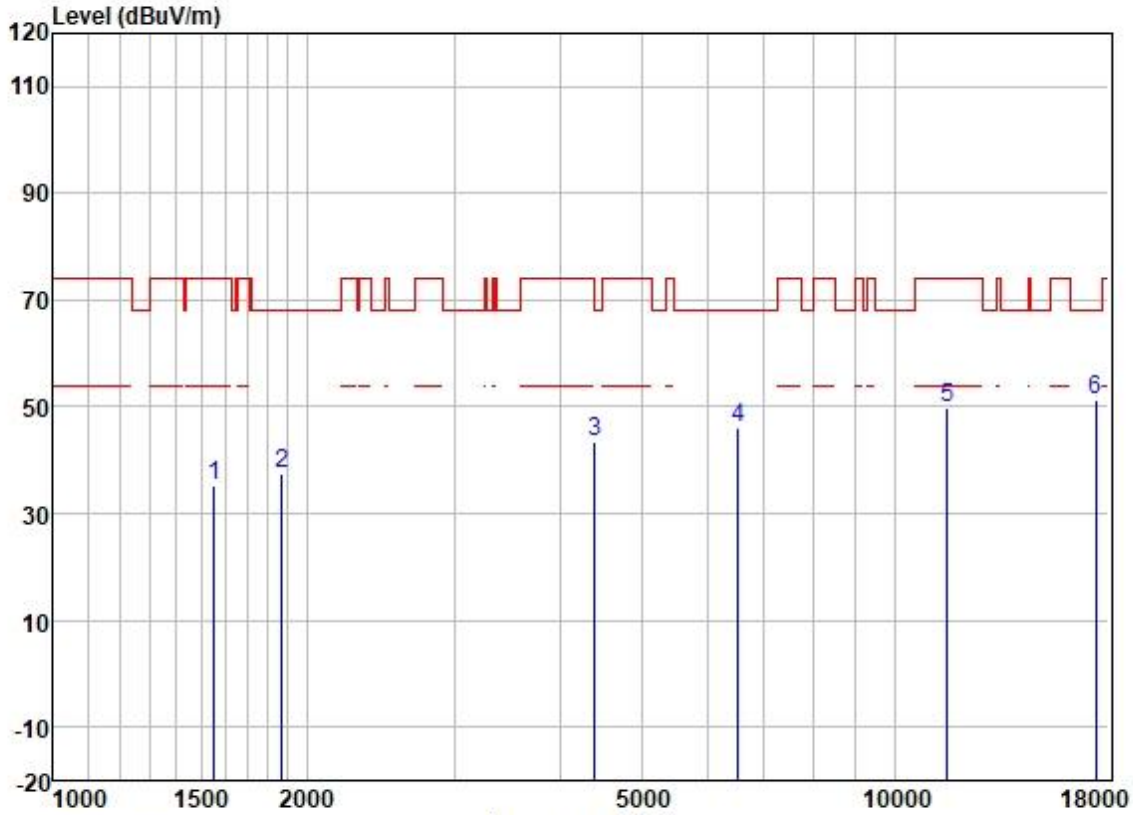
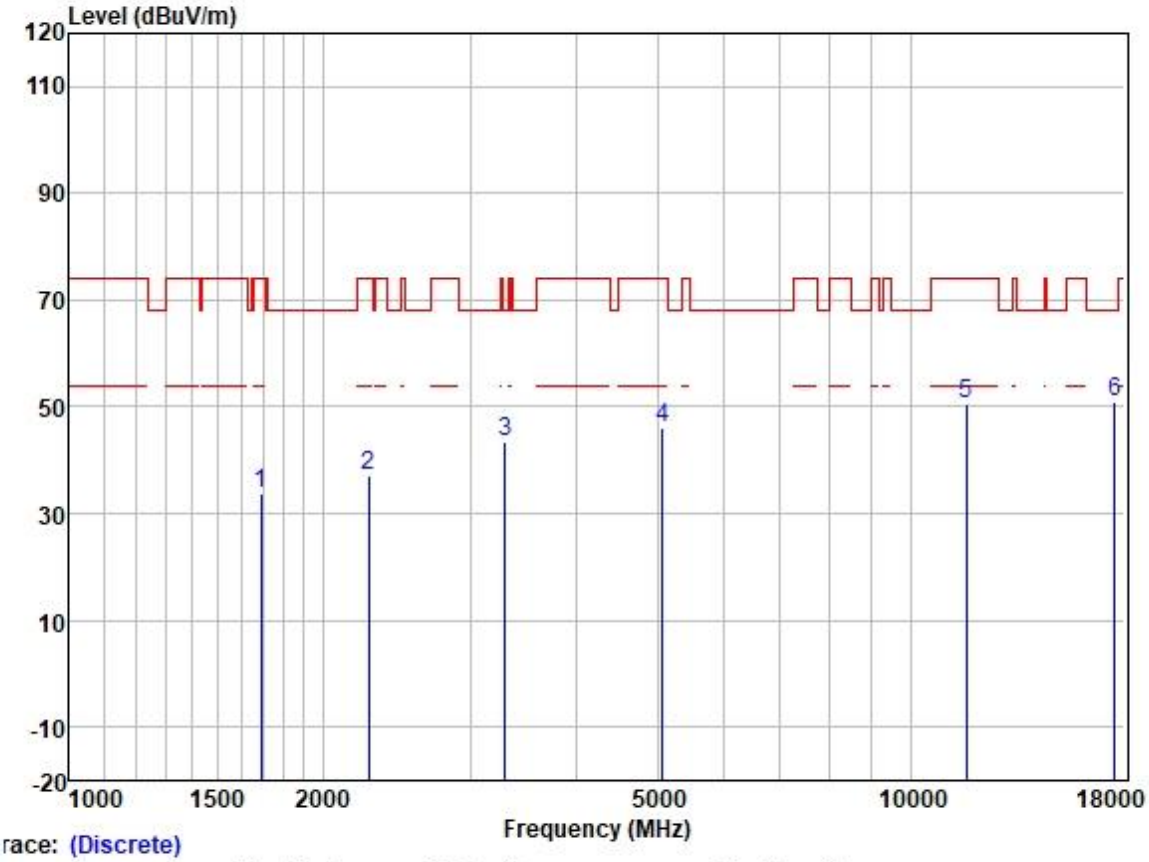
Test Mode: 40; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1552.315	44.84	25.54	2.80	38.03	35.15	74.00	-38.85	VERTICAL	Peak
2	1869.062	46.44	26.01	2.93	37.77	37.61	68.20	-30.59	VERTICAL	Peak
3	4404.437	44.91	30.68	4.70	36.81	43.48	68.20	-24.72	VERTICAL	Peak
4	6516.256	43.24	34.00	5.84	37.02	46.06	68.20	-22.14	VERTICAL	Peak
5	11570.000	38.64	39.78	8.38	37.14	49.66	74.00	-24.34	VERTICAL	Peak
6	17355.000	32.82	43.40	10.39	35.32	51.29	68.20	-16.91	VERTICAL	Peak

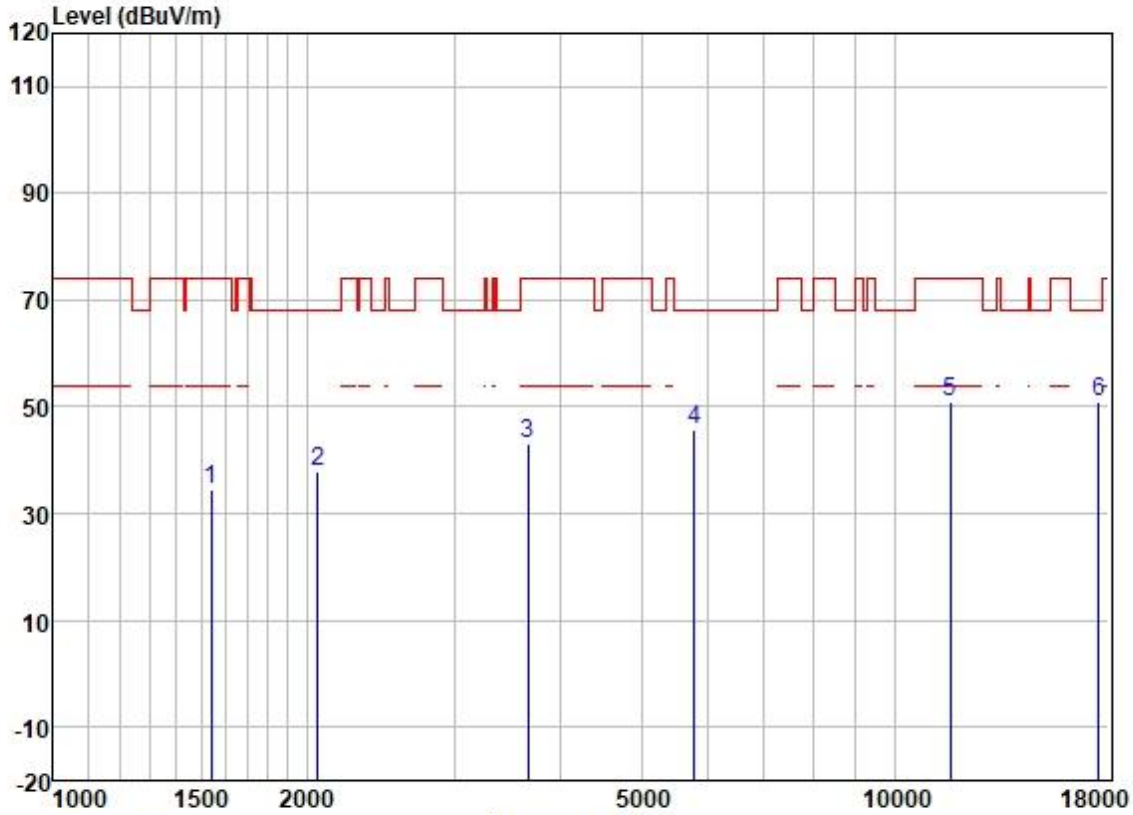
Test Mode: 40; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1690.376	43.27	25.70	2.80	37.89	33.88	74.00	-40.12	HORIZONTAL	Peak
2	2267.760	44.66	26.98	3.27	37.63	37.28	74.00	-36.72	HORIZONTAL	Peak
3	3293.562	47.53	28.74	4.05	37.03	43.29	68.20	-24.91	HORIZONTAL	Peak
4	5073.777	45.69	31.71	5.67	36.86	46.21	74.00	-27.79	HORIZONTAL	Peak
5	11650.000	39.61	39.65	8.35	37.13	50.48	74.00	-23.52	HORIZONTAL	Peak
6	17475.000	31.54	43.90	10.77	35.32	50.89	68.20	-17.31	HORIZONTAL	Peak

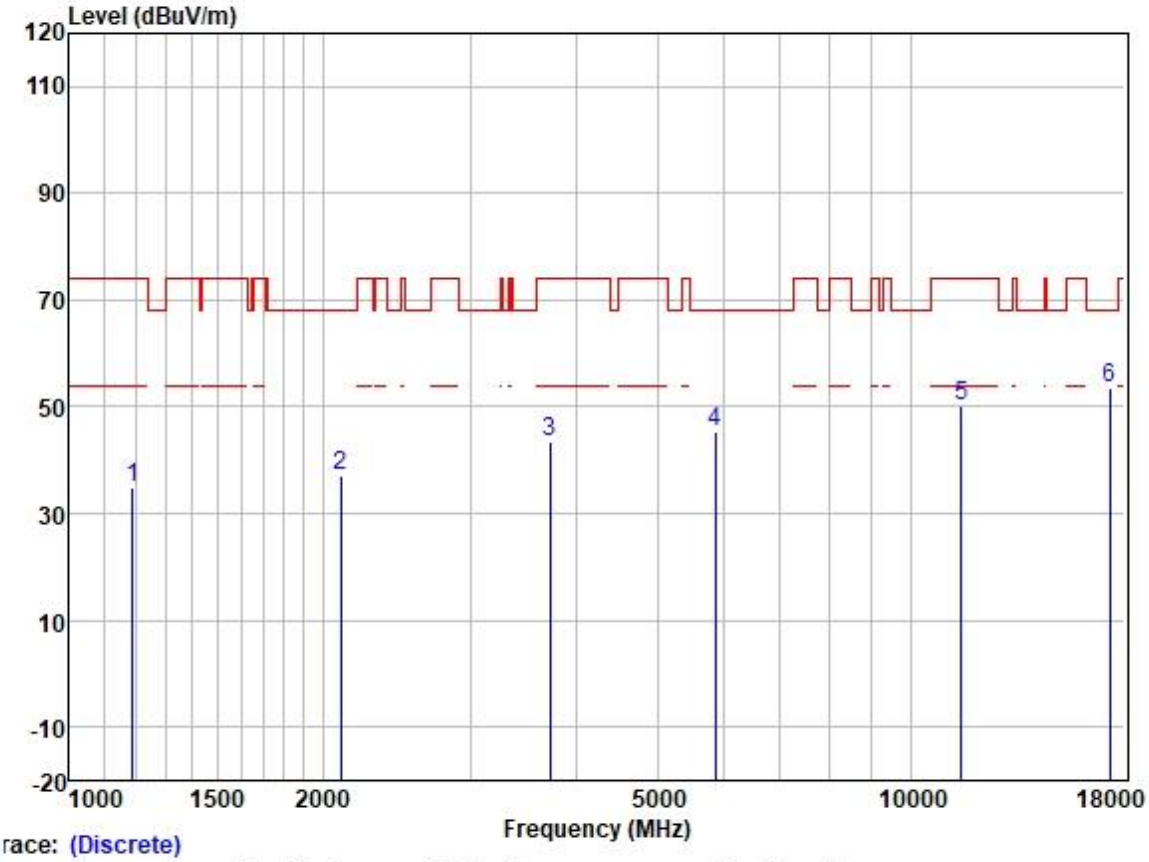
Test Mode: 40; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1538.535	44.16	25.53	2.80	38.03	34.46	74.00	-39.54	VERTICAL	Peak
2	2063.822	46.09	26.22	3.13	37.68	37.76	68.20	-30.44	VERTICAL	Peak
3	3668.738	46.39	29.17	4.54	36.88	43.22	74.00	-30.78	VERTICAL	Peak
4	5785.618	44.25	32.16	6.10	36.89	45.62	68.20	-22.58	VERTICAL	Peak
5	11650.000	40.10	39.65	8.35	37.13	50.97	74.00	-23.03	VERTICAL	Peak
6	17475.000	31.41	43.90	10.77	35.32	50.76	68.20	-17.44	VERTICAL	Peak

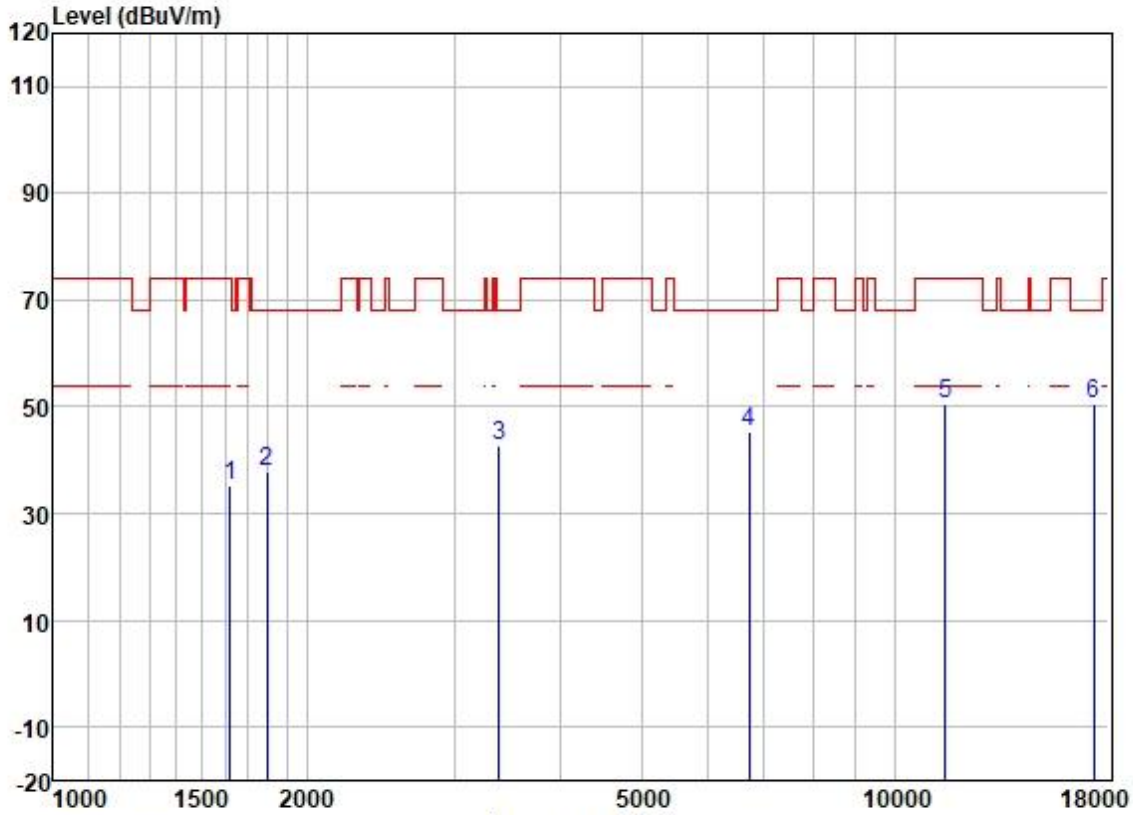
Test Mode: 40; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1190.103	46.18	24.63	2.36	38.39	34.78	74.00	-39.22	HORIZONTAL	Peak
2	2104.705	45.36	26.30	3.15	37.68	37.13	68.20	-31.07	HORIZONTAL	Peak
3	3725.726	46.43	29.31	4.57	36.87	43.44	74.00	-30.56	HORIZONTAL	Peak
4	5864.822	43.89	32.27	5.96	36.90	45.22	68.20	-22.98	HORIZONTAL	Peak
5	11510.000	39.01	39.90	8.41	37.15	50.17	74.00	-23.83	HORIZONTAL	Peak
6	17265.000	35.40	43.21	10.24	35.33	53.52	68.20	-14.68	HORIZONTAL	Peak

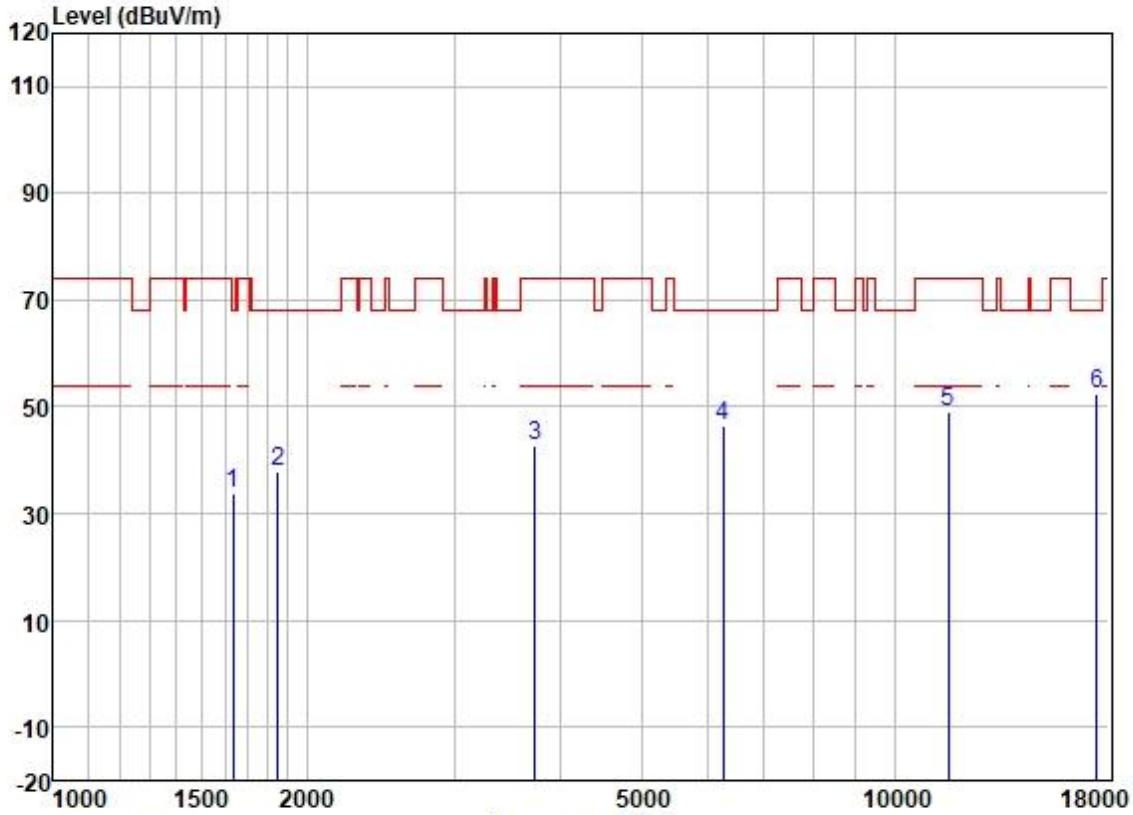
Test Mode: 40; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1624.020	44.86	25.61	2.80	37.95	35.32	74.00	-38.68	VERTICAL	Peak
2	1796.728	46.83	25.94	3.00	37.81	37.96	68.20	-30.24	VERTICAL	Peak
3	3387.434	46.86	28.83	4.10	36.99	42.80	68.20	-25.40	VERTICAL	Peak
4	6719.887	42.24	34.44	5.83	37.09	45.42	68.20	-22.78	VERTICAL	Peak
5	11510.000	39.26	39.90	8.41	37.15	50.42	74.00	-23.58	VERTICAL	Peak
6	17265.000	32.60	43.21	10.24	35.33	50.72	68.20	-17.48	VERTICAL	Peak

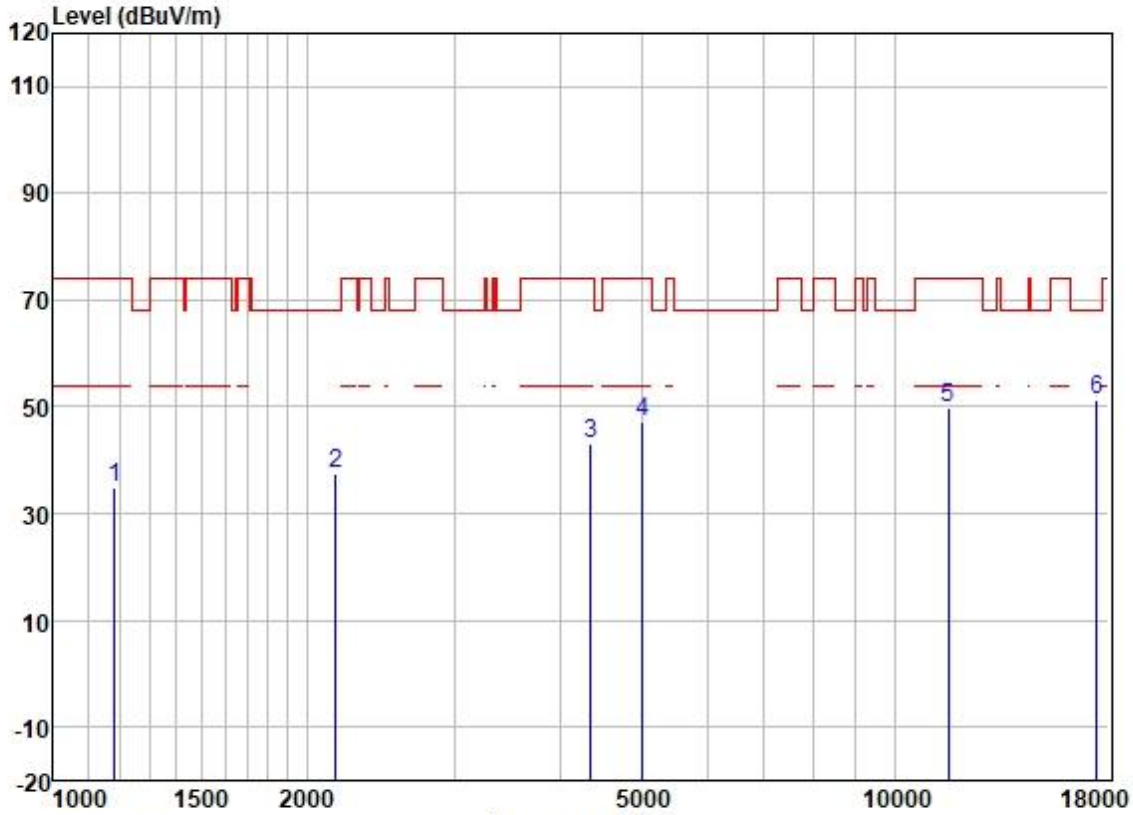
Test Mode: 40; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1637.281	43.30	25.62	2.80	37.95	33.77	68.20	-34.43	HORIZONTAL	Peak
2	1848.187	46.83	26.00	2.94	37.78	37.99	68.20	-30.21	HORIZONTAL	Peak
3	3737.079	45.67	29.35	4.57	36.87	42.72	74.00	-31.28	HORIZONTAL	Peak
4	6256.323	44.32	33.20	6.02	36.95	46.59	68.20	-21.61	HORIZONTAL	Peak
5	11590.000	38.27	39.72	8.37	37.14	49.22	74.00	-24.78	HORIZONTAL	Peak
6	17385.000	33.72	43.57	10.53	35.32	52.50	68.20	-15.70	HORIZONTAL	Peak

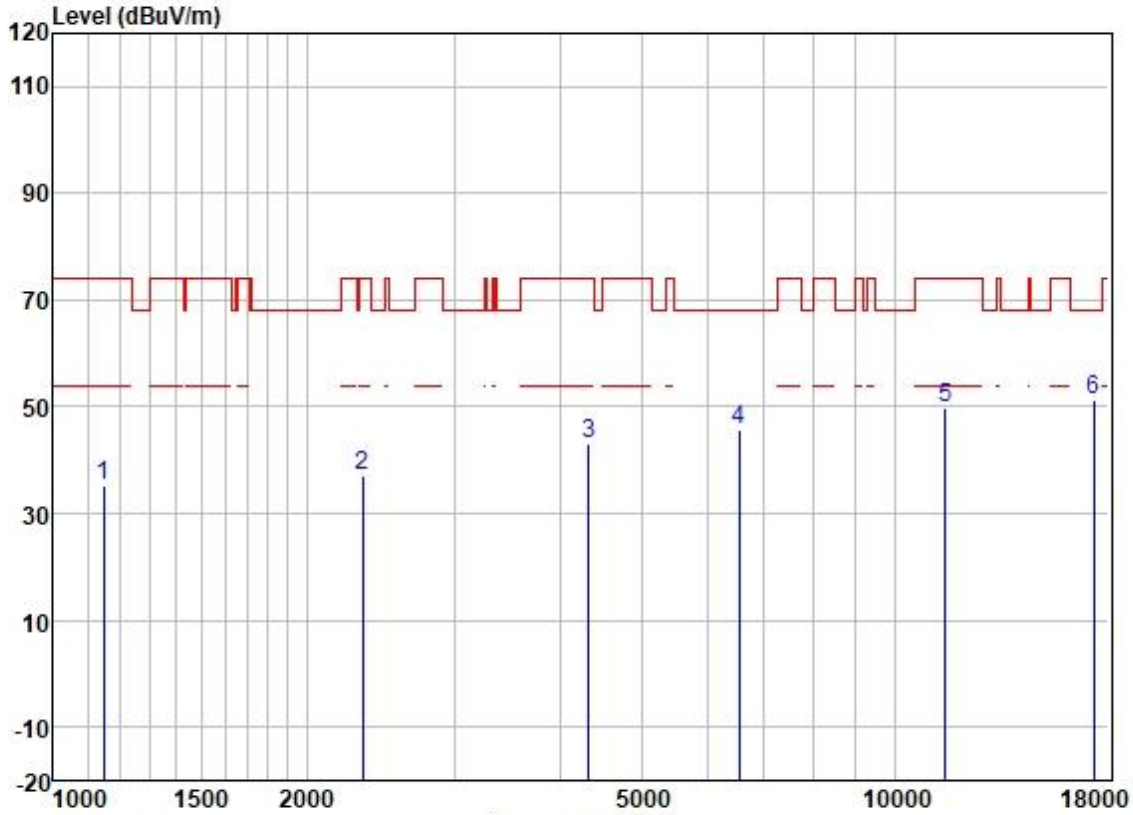
Test Mode: 40; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1181.522	46.46	24.60	2.37	38.40	35.03	74.00	-38.97	VERTICAL	Peak
2	2166.434	45.38	26.47	3.19	37.66	37.38	68.20	-30.82	VERTICAL	Peak
3	4351.687	44.52	30.59	4.68	36.81	42.98	74.00	-31.02	VERTICAL	Peak
4	5015.739	46.50	31.70	5.69	36.85	47.04	74.00	-26.96	VERTICAL	Peak
5	11590.000	38.94	39.72	8.37	37.14	49.89	74.00	-24.11	VERTICAL	Peak
6	17385.000	32.68	43.57	10.53	35.32	51.46	68.20	-16.74	VERTICAL	Peak

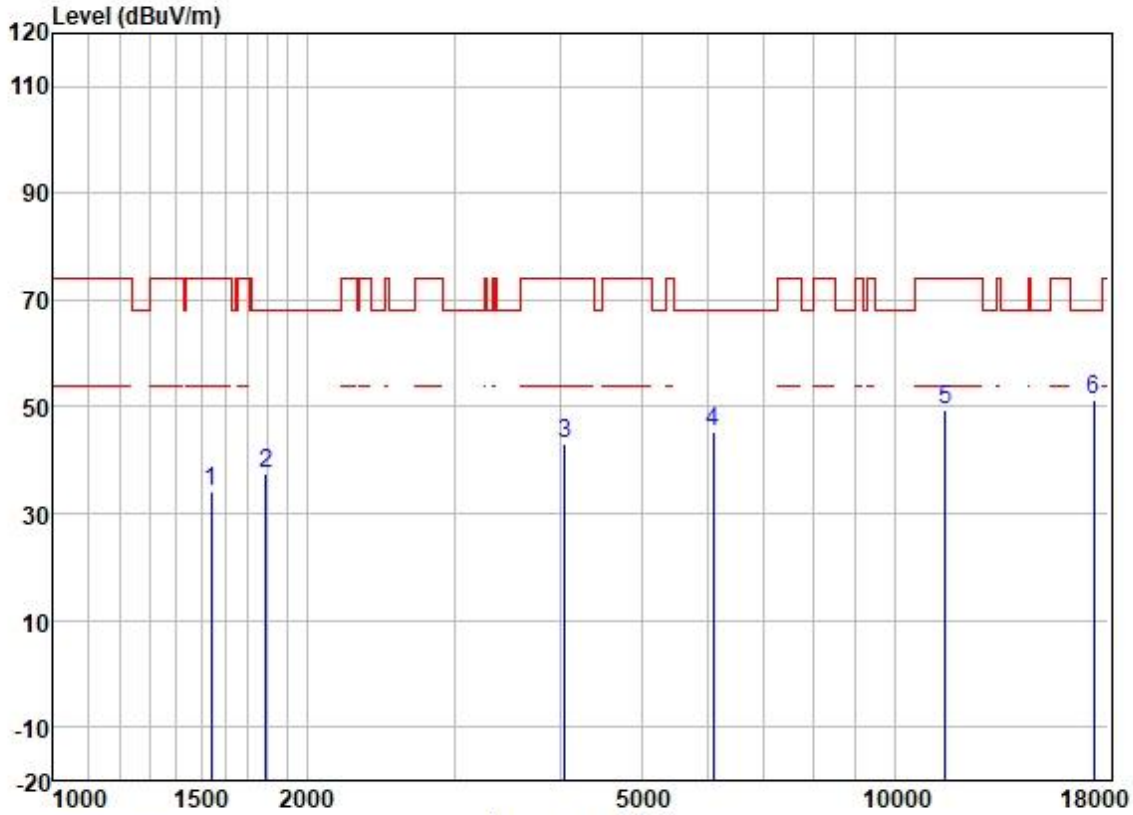
Test Mode: 40; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1148.501	46.78	24.49	2.34	38.42	35.19	74.00	-38.81	HORIZONTAL	Peak
2	2330.249	44.03	27.20	3.36	37.62	36.97	74.00	-37.03	HORIZONTAL	Peak
3	4329.502	44.68	30.54	4.67	36.81	43.08	74.00	-30.92	HORIZONTAL	Peak
4	6529.931	42.75	34.03	5.84	37.02	45.60	68.20	-22.60	HORIZONTAL	Peak
5	11490.000	38.66	39.90	8.41	37.15	49.82	74.00	-24.18	HORIZONTAL	Peak
6	17235.000	33.57	43.01	10.08	35.33	51.33	68.20	-16.87	HORIZONTAL	Peak

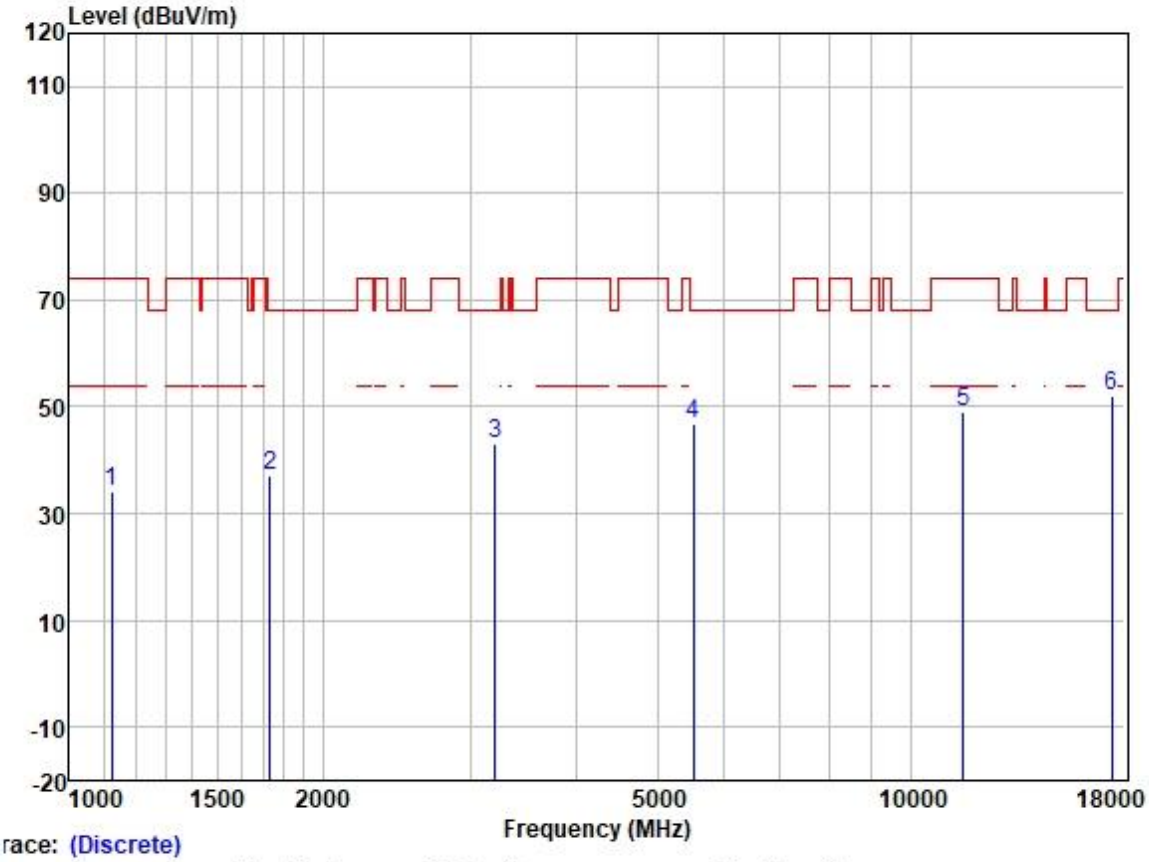
Test Mode: 40; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1542.327	43.90	25.53	2.80	38.03	34.20	74.00	-39.80	VERTICAL	Peak
2	1791.453	46.51	25.93	2.99	37.81	37.62	68.20	-30.58	VERTICAL	Peak
3	4054.139	45.48	29.87	4.60	36.80	43.15	74.00	-30.85	VERTICAL	Peak
4	6090.434	43.64	32.61	6.15	36.92	45.48	68.20	-22.72	VERTICAL	Peak
5	11490.000	38.13	39.90	8.41	37.15	49.29	74.00	-24.71	VERTICAL	Peak
6	17235.000	33.71	43.01	10.08	35.33	51.47	68.20	-16.73	VERTICAL	Peak

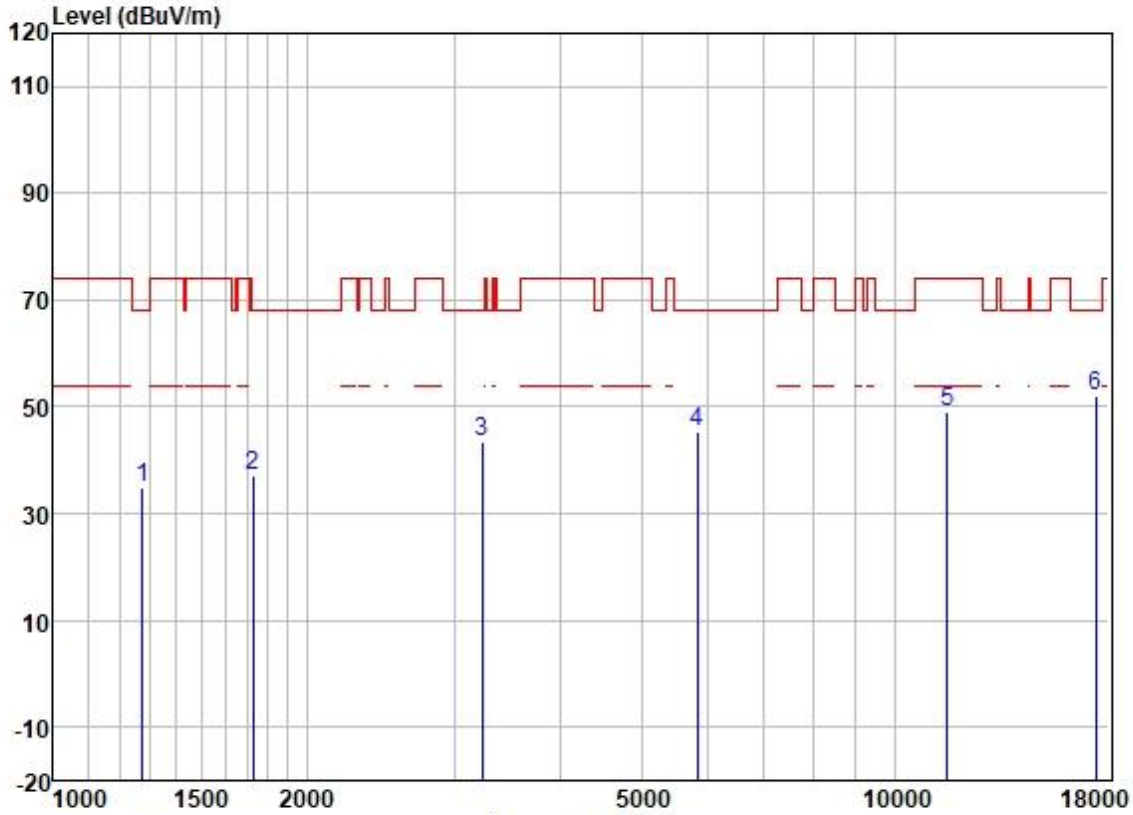
Test Mode: 40; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:middle



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1123.611	46.07	24.42	2.22	38.43	34.28	74.00	-39.72	HORIZONTAL	Peak
2	1729.895	46.44	25.80	2.85	37.87	37.22	68.20	-30.98	HORIZONTAL	Peak
3	3207.379	47.67	28.60	4.00	37.09	43.18	68.20	-25.02	HORIZONTAL	Peak
4	5518.493	45.64	31.81	6.38	36.89	46.94	68.20	-21.26	HORIZONTAL	Peak
5	11570.000	37.97	39.78	8.38	37.14	48.99	74.00	-25.01	HORIZONTAL	Peak
6	17355.000	33.67	43.40	10.39	35.32	52.14	68.20	-16.06	HORIZONTAL	Peak

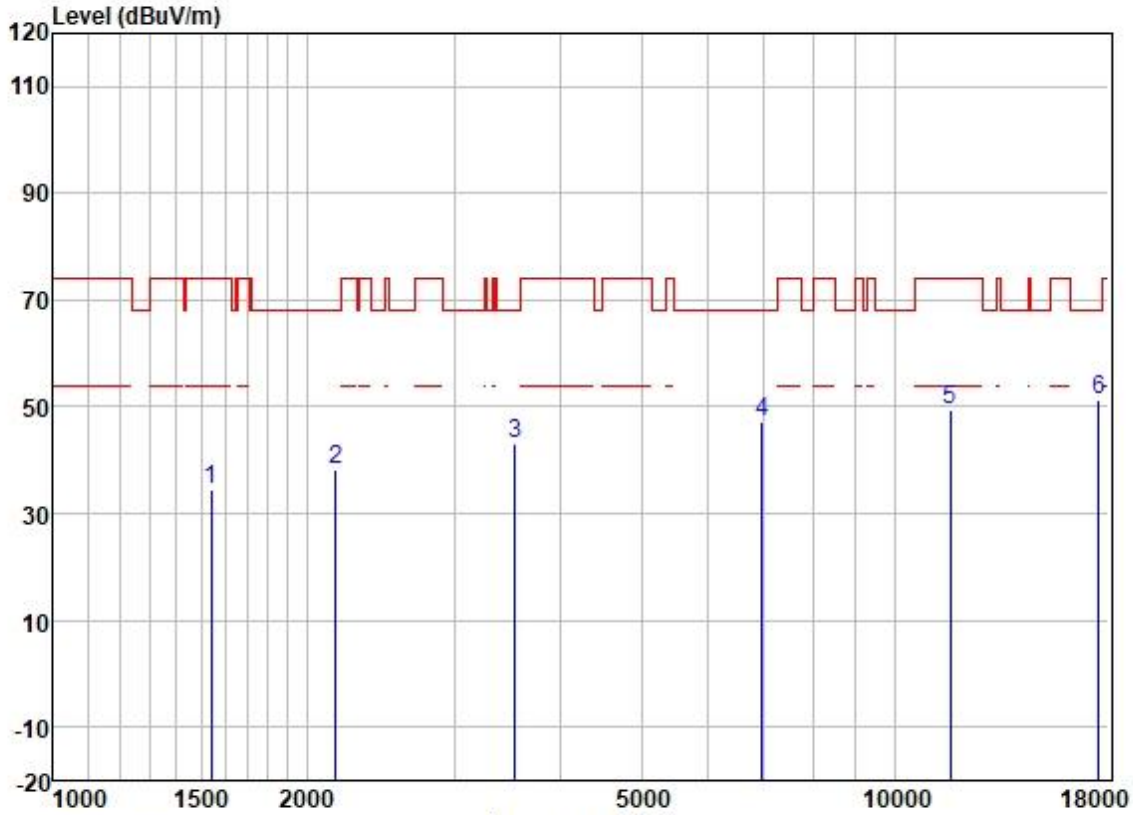
Test Mode: 40; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:middle



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1277.540	45.74	25.14	2.50	38.33	35.05	68.20	-33.15	VERTICAL	Peak
2	1728.822	46.41	25.78	2.84	37.87	37.16	68.20	-31.04	VERTICAL	Peak
3	3236.929	47.82	28.65	4.02	37.07	43.42	68.20	-24.78	VERTICAL	Peak
4	5822.920	44.03	32.23	6.04	36.90	45.40	68.20	-22.80	VERTICAL	Peak
5	11570.000	38.09	39.78	8.38	37.14	49.11	74.00	-24.89	VERTICAL	Peak
6	17355.000	33.48	43.40	10.39	35.32	51.95	68.20	-16.25	VERTICAL	Peak

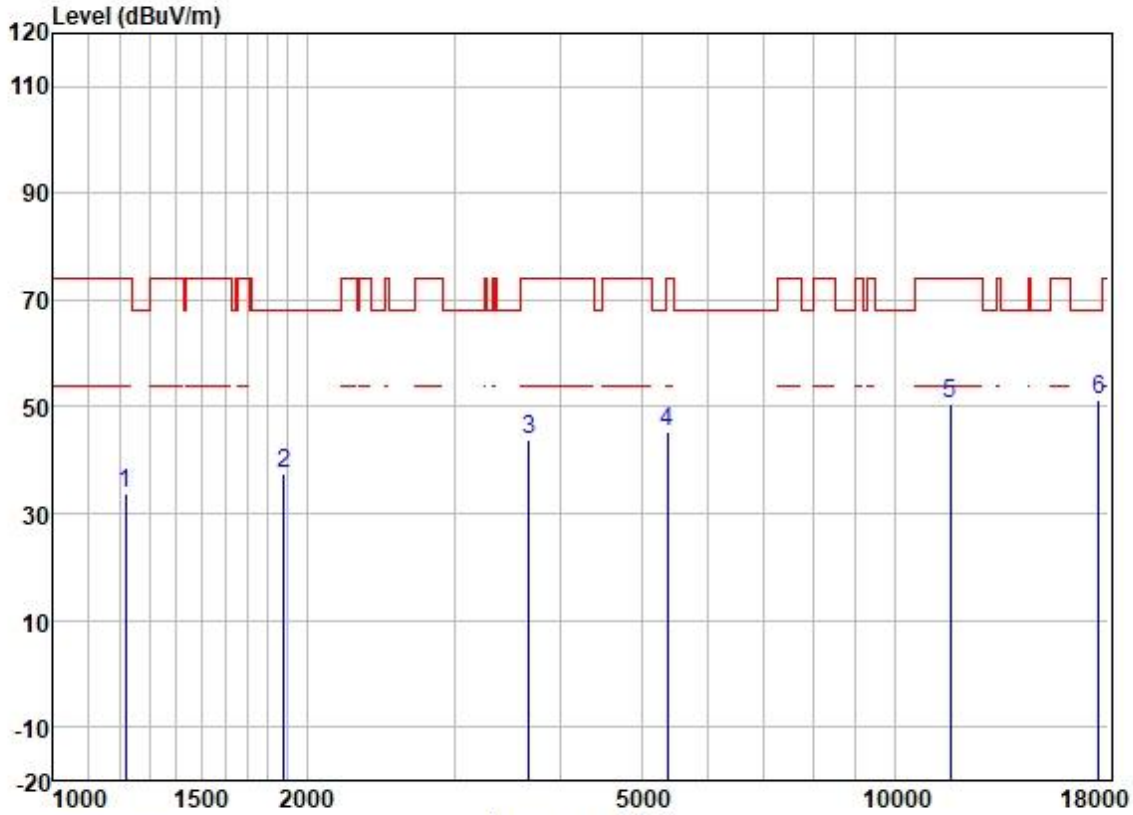
Test Mode: 40; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1538.836	44.31	25.53	2.80	38.03	34.61	74.00	-39.39	HORIZONTAL	Peak
2	2164.292	46.26	26.47	3.19	37.66	38.26	68.20	-29.94	HORIZONTAL	Peak
3	3536.446	46.52	28.95	4.40	36.93	42.94	68.20	-25.26	HORIZONTAL	Peak
4	6965.792	43.65	34.97	5.81	37.23	47.20	68.20	-21.00	HORIZONTAL	Peak
5	11650.000	38.68	39.65	8.35	37.13	49.55	74.00	-24.45	HORIZONTAL	Peak
6	17475.000	32.14	43.90	10.77	35.32	51.49	68.20	-16.71	HORIZONTAL	Peak

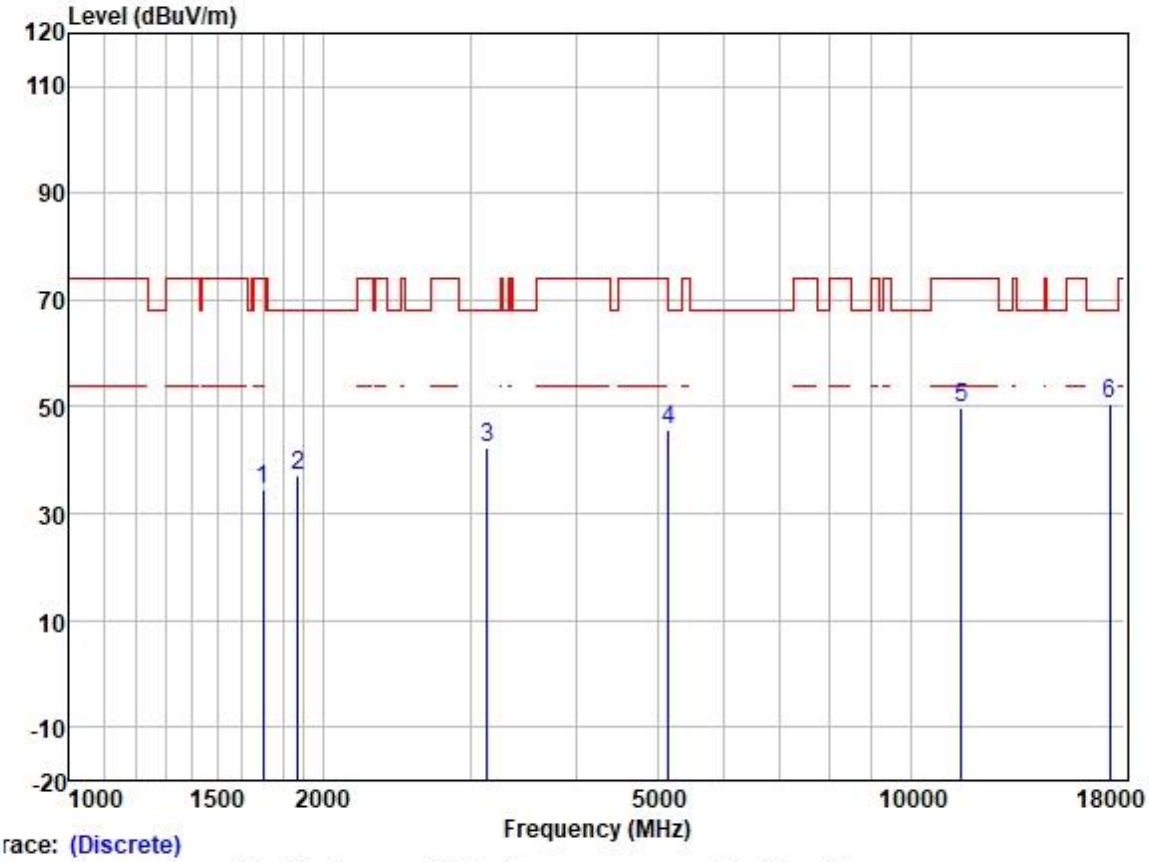
Test Mode: 40; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1218.124	45.17	24.79	2.32	38.37	33.91	74.00	-40.09	VERTICAL	Peak
2	1879.665	46.19	26.02	2.92	37.77	37.36	68.20	-30.84	VERTICAL	Peak
3	3673.936	46.94	29.17	4.54	36.88	43.77	74.00	-30.23	VERTICAL	Peak
4	5369.475	44.46	31.78	6.03	36.88	45.39	74.00	-28.61	VERTICAL	Peak
5	11650.000	39.52	39.65	8.35	37.13	50.39	74.00	-23.61	VERTICAL	Peak
6	17475.000	32.09	43.90	10.77	35.32	51.44	68.20	-16.76	VERTICAL	Peak

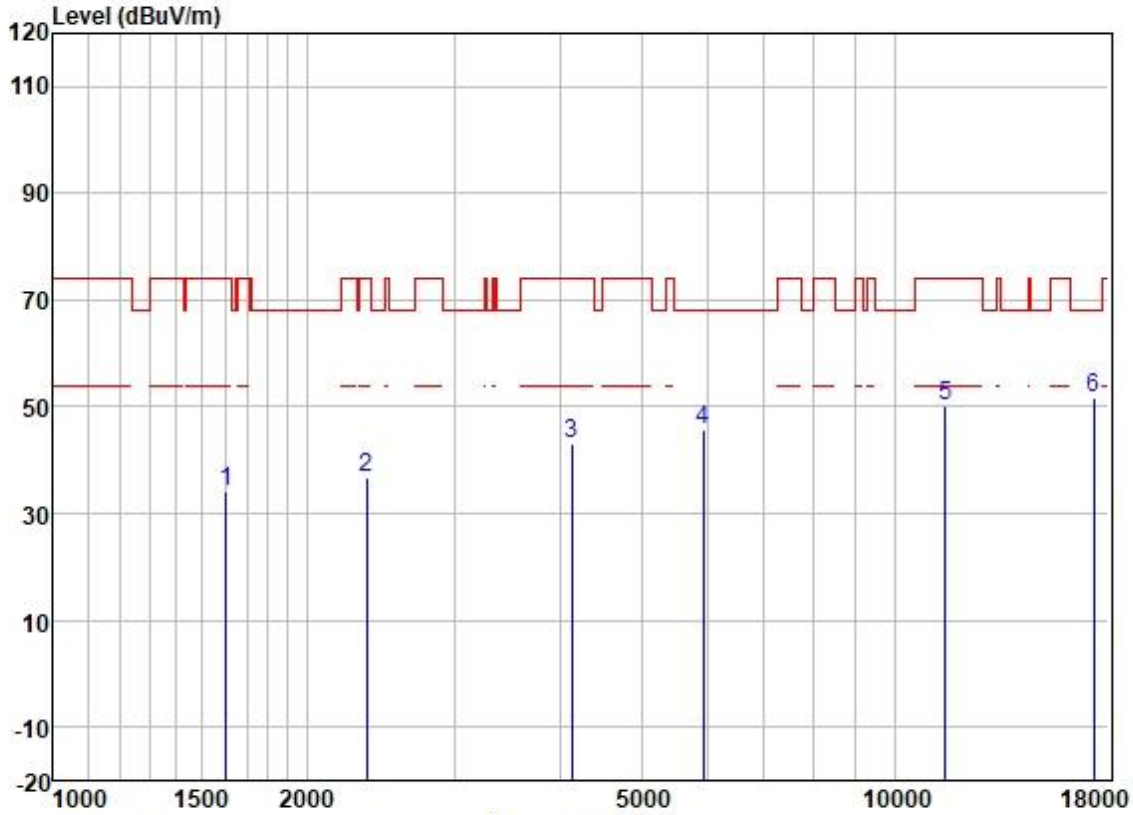
Test Mode: 40; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1698.176	43.96	25.71	2.80	37.89	34.58	74.00	-39.42	HORIZONTAL	Peak
2	1869.714	46.12	26.02	2.92	37.77	37.29	68.20	-30.91	HORIZONTAL	Peak
3	3141.607	47.14	28.51	3.95	37.12	42.48	68.20	-25.72	HORIZONTAL	Peak
4	5157.331	45.11	31.73	5.61	36.86	45.59	68.20	-22.61	HORIZONTAL	Peak
5	11510.000	38.56	39.90	8.41	37.15	49.72	74.00	-24.28	HORIZONTAL	Peak
6	17265.000	32.50	43.21	10.24	35.33	50.62	68.20	-17.58	HORIZONTAL	Peak

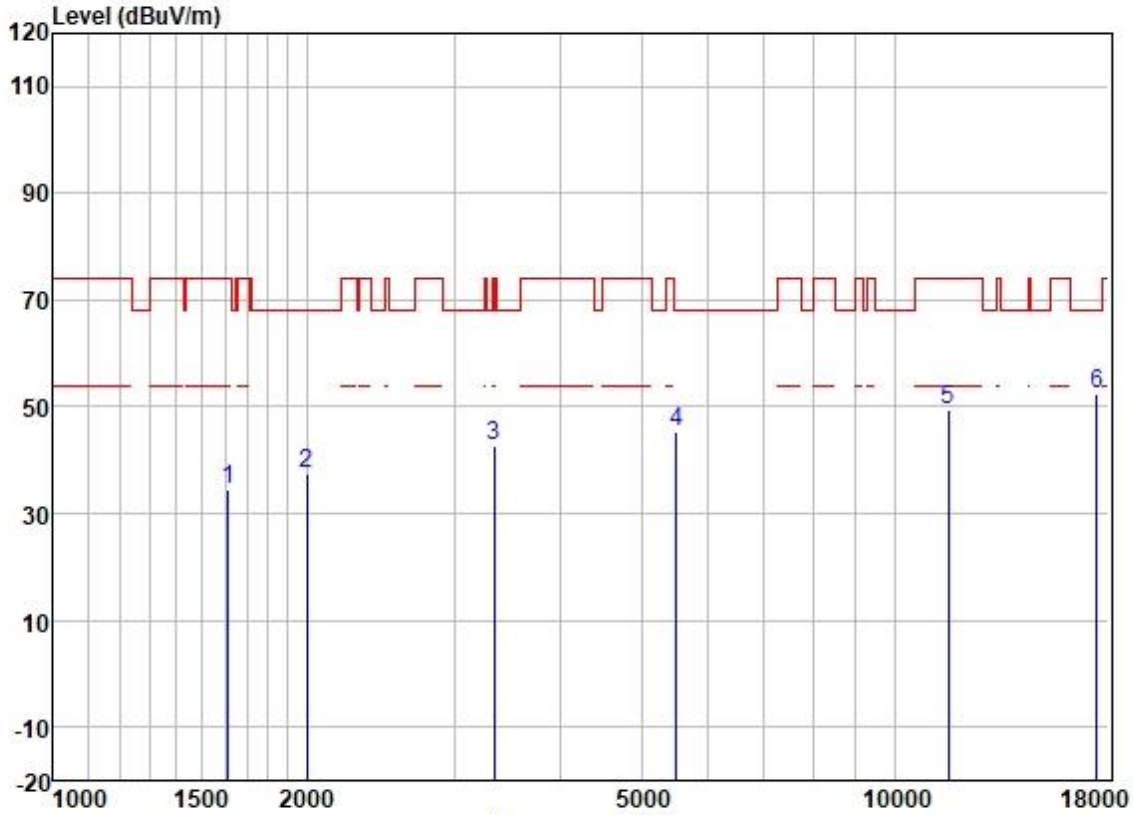
Test Mode: 40; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1602.687	43.80	25.58	2.80	37.98	34.20	74.00	-39.80	VERTICAL	Peak
2	2359.875	43.84	27.27	3.42	37.61	36.92	74.00	-37.08	VERTICAL	Peak
3	4129.106	45.38	30.01	4.60	36.80	43.19	74.00	-30.81	VERTICAL	Peak
4	5933.464	44.27	32.34	6.00	36.90	45.71	68.20	-22.49	VERTICAL	Peak
5	11510.000	38.91	39.90	8.41	37.15	50.07	74.00	-23.93	VERTICAL	Peak
6	17265.000	33.63	43.21	10.24	35.33	51.75	68.20	-16.45	VERTICAL	Peak

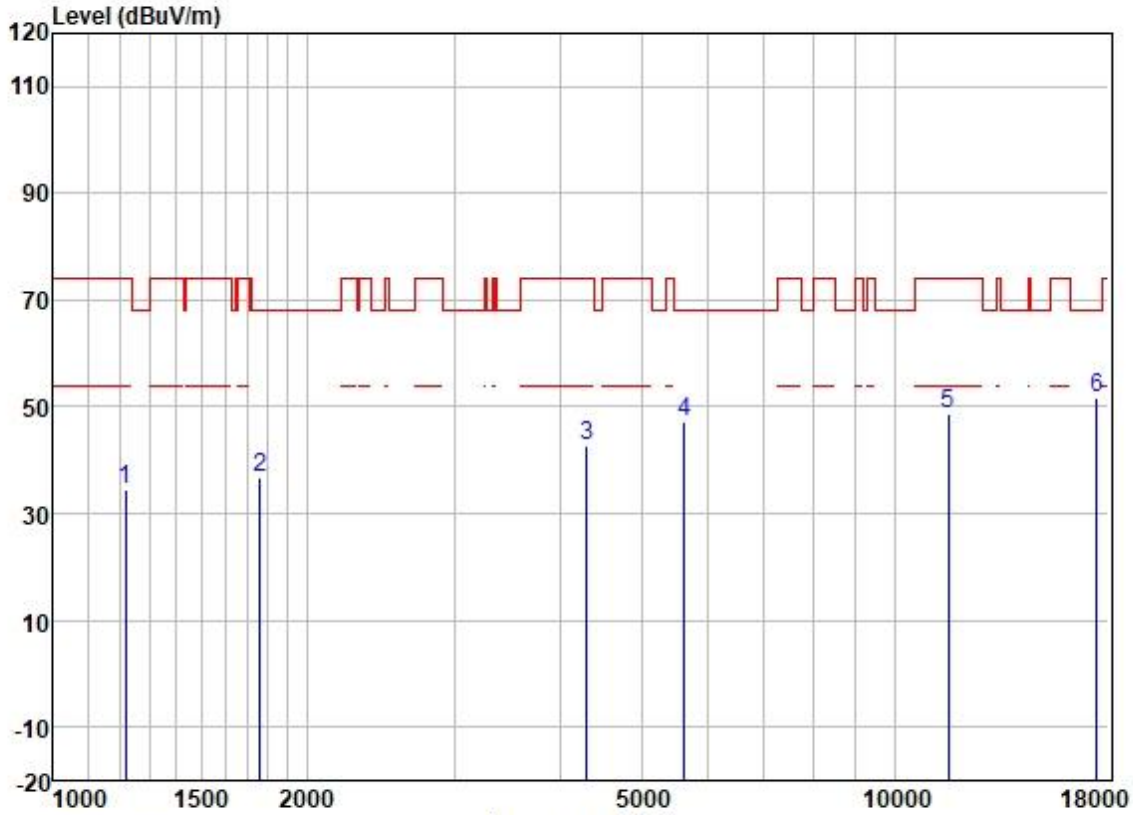
Test Mode: 40; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1615.248	44.23	25.60	2.80	37.95	34.68	74.00	-39.32	HORIZONTAL	Peak
2	2001.576	45.88	26.10	3.10	37.70	37.38	68.20	-30.82	HORIZONTAL	Peak
3	3342.773	47.01	28.80	4.08	37.01	42.88	68.20	-25.32	HORIZONTAL	Peak
4	5500.464	44.09	31.80	6.40	36.88	45.41	68.20	-22.79	HORIZONTAL	Peak
5	11590.000	38.40	39.72	8.37	37.14	49.35	74.00	-24.65	HORIZONTAL	Peak
6	17385.000	33.69	43.57	10.53	35.32	52.47	68.20	-15.73	HORIZONTAL	Peak

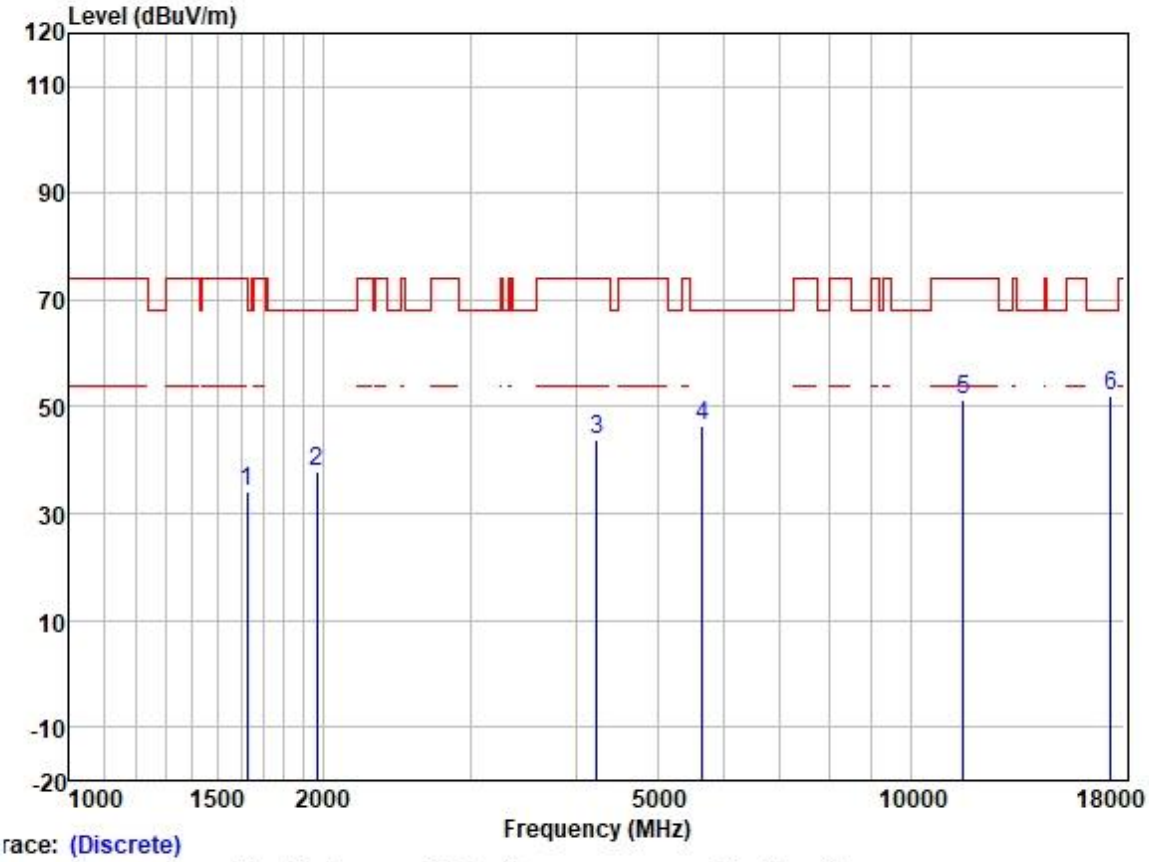
Test Mode: 40; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1219.171	45.91	24.82	2.32	38.37	34.68	74.00	-39.32	VERTICAL	Peak
2	1760.515	45.81	25.88	2.93	37.85	36.77	68.20	-31.43	VERTICAL	Peak
3	4309.614	44.44	30.48	4.65	36.81	42.76	74.00	-31.24	VERTICAL	Peak
4	5633.362	45.69	31.93	6.33	36.89	47.06	68.20	-21.14	VERTICAL	Peak
5	11590.000	37.85	39.72	8.37	37.14	48.80	74.00	-25.20	VERTICAL	Peak
6	17385.000	32.96	43.57	10.53	35.32	51.74	68.20	-16.46	VERTICAL	Peak

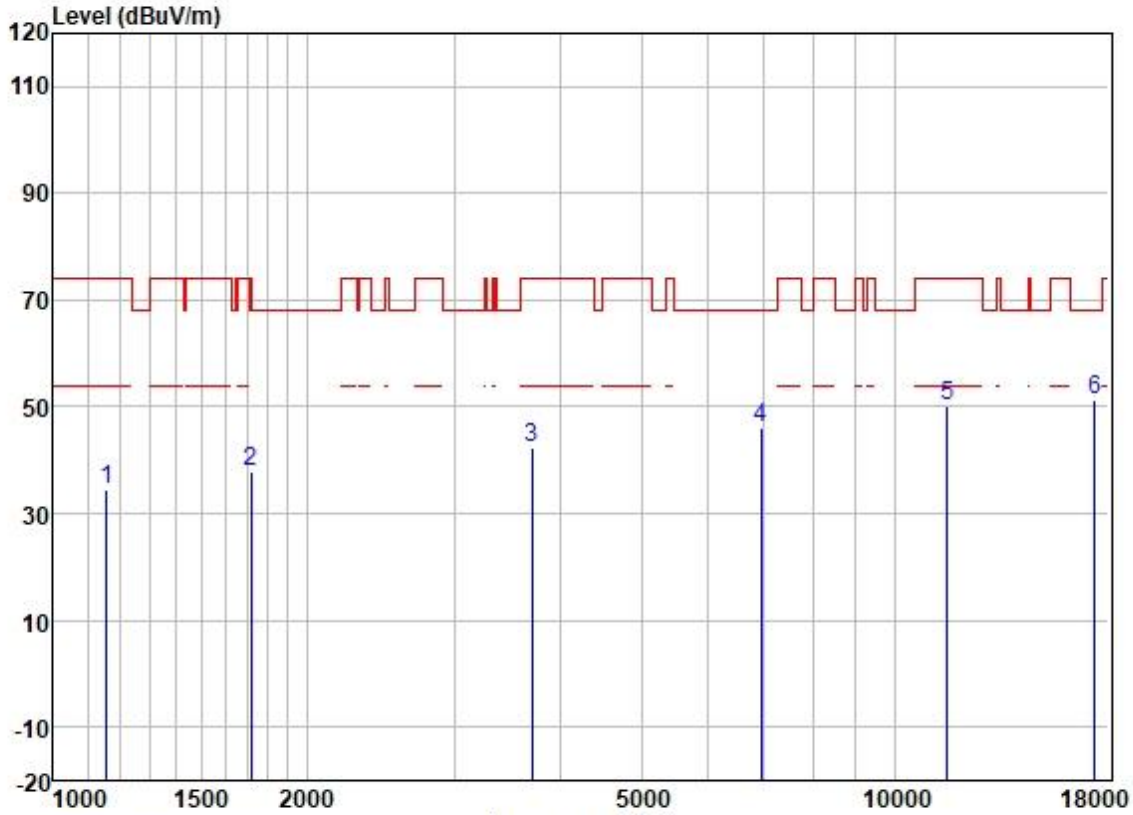
Test Mode: 40; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1626.207	43.82	25.61	2.80	37.95	34.28	74.00	-39.72	HORIZONTAL	Peak
2	1968.421	46.32	26.08	3.04	37.71	37.73	68.20	-30.47	HORIZONTAL	Peak
3	4238.730	45.64	30.30	4.62	36.81	43.75	74.00	-30.25	HORIZONTAL	Peak
4	5657.431	44.85	31.97	6.37	36.89	46.30	68.20	-21.90	HORIZONTAL	Peak
5	11550.000	40.28	39.84	8.40	37.14	51.38	74.00	-22.62	HORIZONTAL	Peak
6	17325.000	33.66	43.40	10.39	35.32	52.13	68.20	-16.07	HORIZONTAL	Peak

Test Mode: 40; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1157.135	46.04	24.51	2.38	38.42	34.51	74.00	-39.49	VERTICAL	Peak
2	1719.299	47.06	25.76	2.82	37.87	37.77	74.00	-36.23	VERTICAL	Peak
3	3703.102	45.52	29.25	4.56	36.88	42.45	74.00	-31.55	VERTICAL	Peak
4	6947.887	42.53	34.95	5.81	37.21	46.08	68.20	-22.12	VERTICAL	Peak
5	11550.000	38.93	39.84	8.40	37.14	50.03	74.00	-23.97	VERTICAL	Peak
6	17325.000	32.94	43.40	10.39	35.32	51.41	68.20	-16.79	VERTICAL	Peak

7.11 Frequency Stability

Test Requirement 47 CFR Part 15, Subpart C 15.407 (g)

Test Method: ANSI C63.10 (2013) Section 6.8

7.11.1 E.U.T. Operation

Operating Environment:

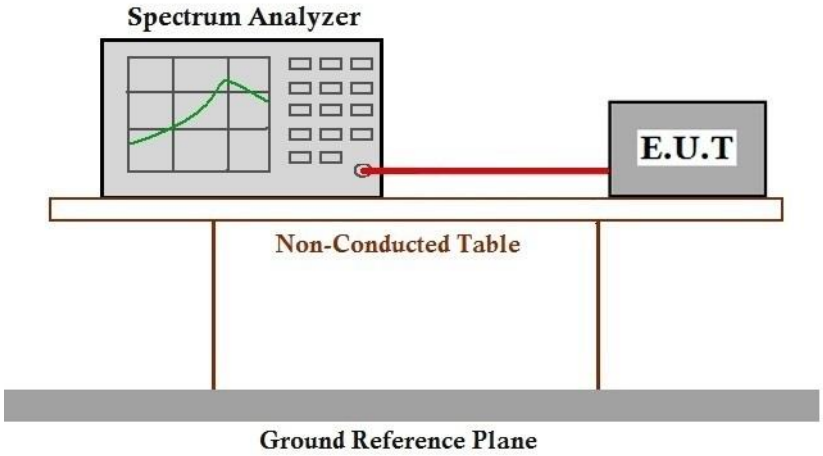
Temperature: 20.5 °C Humidity: 50.0 % RH Atmospheric Pressure: 1010 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	33	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Final test	34	Charge + TX mode (U-NII-1)_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Pre-scan	35	TX mode (U-NII-2A)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Final test	36	Charge + TX mode (U-NII-2A)_Keep the EUT in charging and continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Pre-scan	37	TX mode (U-NII-2C)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the

		worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Final test	38	Charge + TX mode (U-NII-2C)_Keep the EUT in charging and continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Pre-scan	39	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Final test	40	Charge + TX mode (U-NII-3)_Keep the EUT in charging and continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.

7.11.3 Test Setup Diagram



7.11.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.12 Non-occupancy period

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

7.12.1 E.U.T. Operation

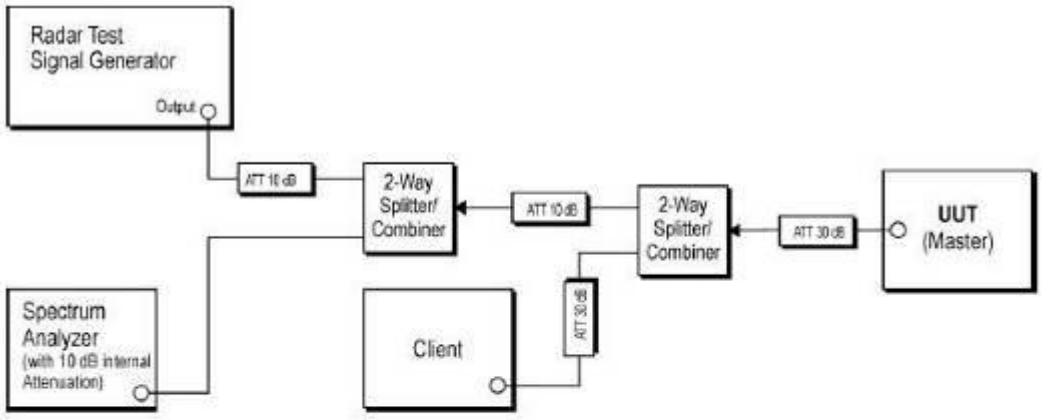
Operating Environment:

Temperature: 20.5 °C Humidity: 50.0 % RH Atmospheric Pressure: 1010 mbar

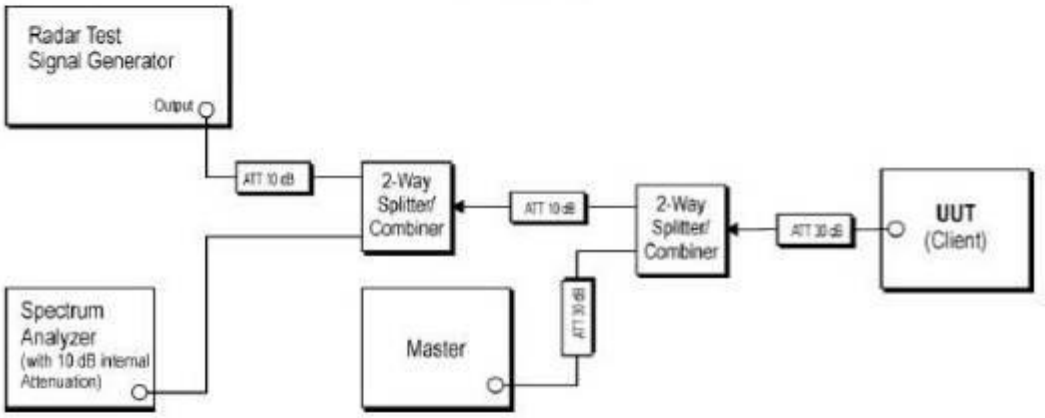
7.12.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	41	Normal operating_Keep the EUT communication with the companion device.

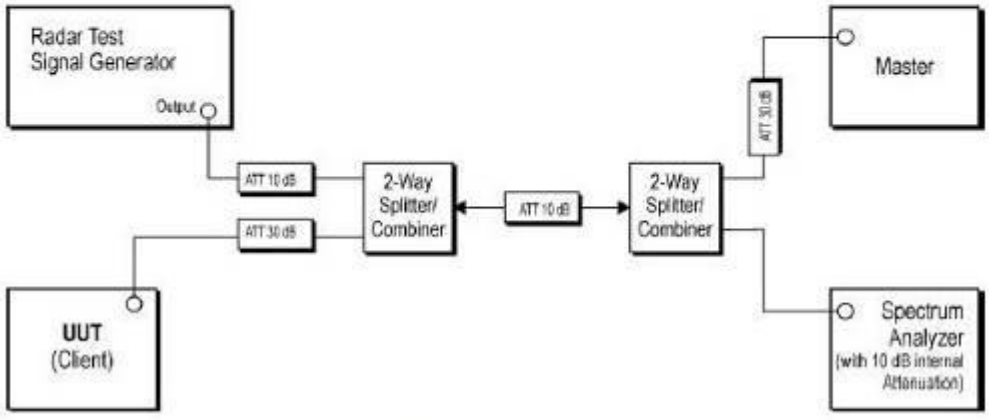
7.12.3 Test Setup Diagram



DFS master



DFS slave with radar detection



DFS slave without radar detection

7.12.4 Measurement Procedure and Data

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details

7.13 Channel Move Time

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

7.13.1 E.U.T. Operation

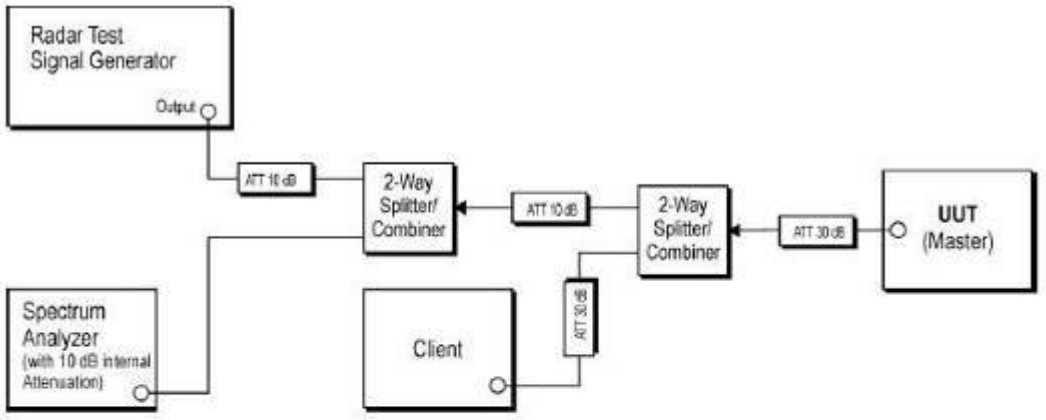
Operating Environment:

Temperature: 20.5 °C Humidity: 50.0 % RH Atmospheric Pressure: 1010 mbar

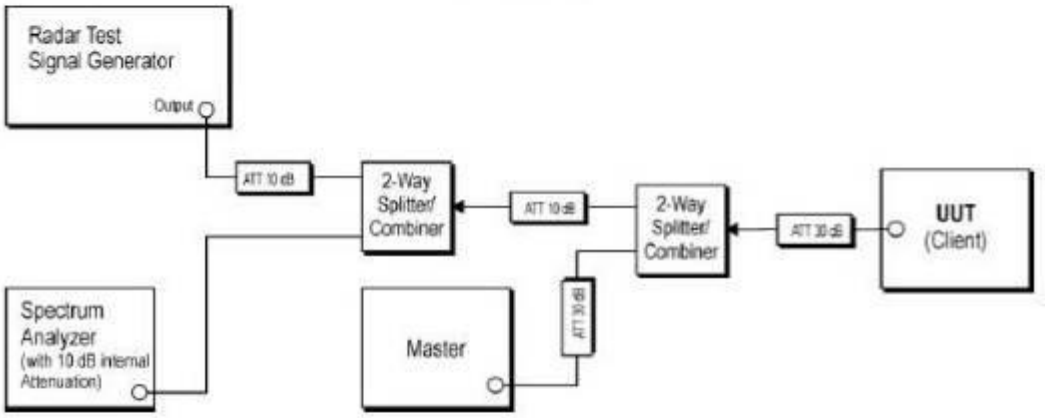
7.13.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	41	Normal operating_Keep the EUT communication with the companion device.

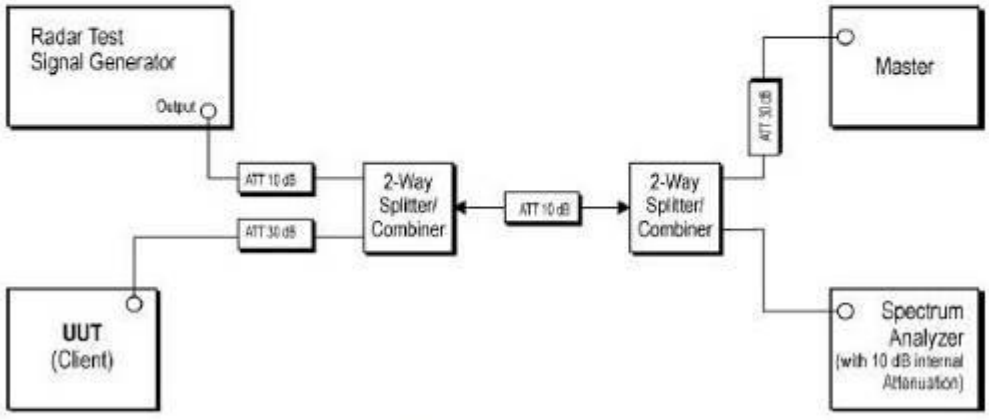
7.13.3 Test Setup Diagram



DFS master



DFS slave with radar detection



DFS slave without radar detection

7.13.4 Measurement Procedure and Data

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details

7.14 Channel Closing Transmission Time

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.			

7.14.1 E.U.T. Operation

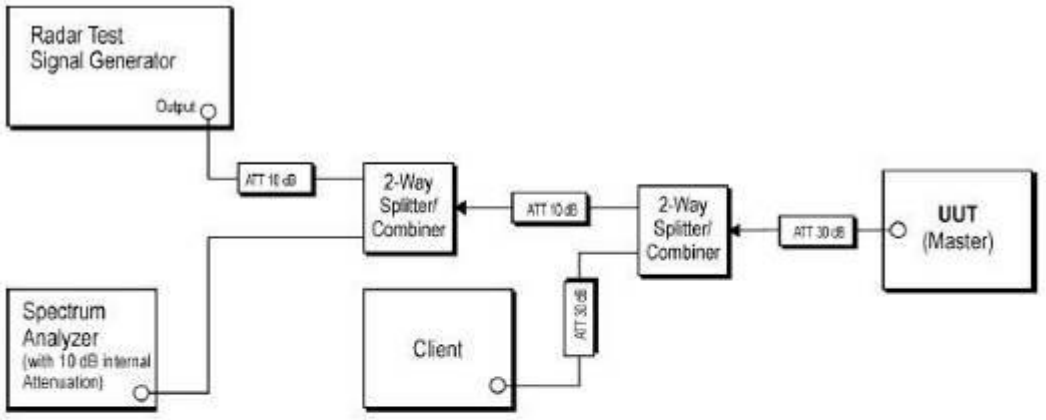
Operating Environment:

Temperature: 20.5 °C Humidity: 50.0 % RH Atmospheric Pressure: 1010 mbar

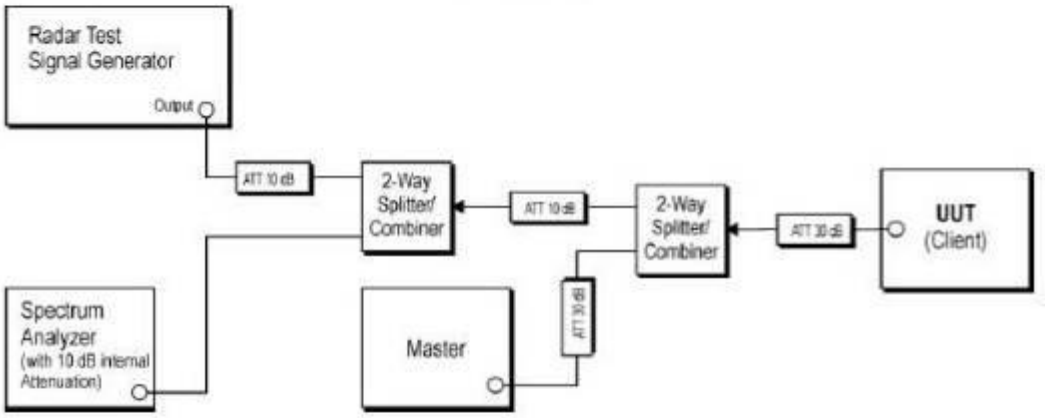
7.14.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	41	Normal operating_Keep the EUT communication with the companion device.

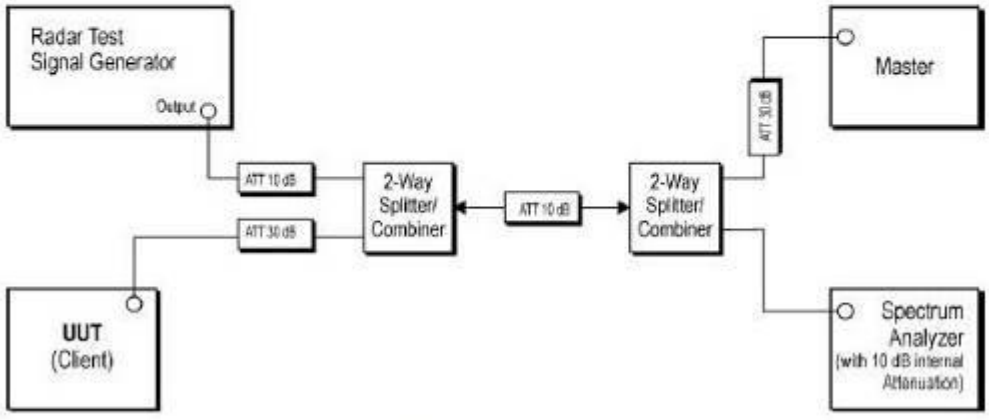
7.14.3 Test Setup Diagram



DFS master



DFS slave with radar detection



DFS slave without radar detection

7.14.4 Measurement Procedure and Data

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to appendix – Test Setup Photos for GZCR2108020805AT

9 EUT Constructional Details (EUT Photos)

Refer to appendix - External and Internal Photos for GZCR2108020805AT

10 Appendix

1. Duty Cycle

1.1 Ant1

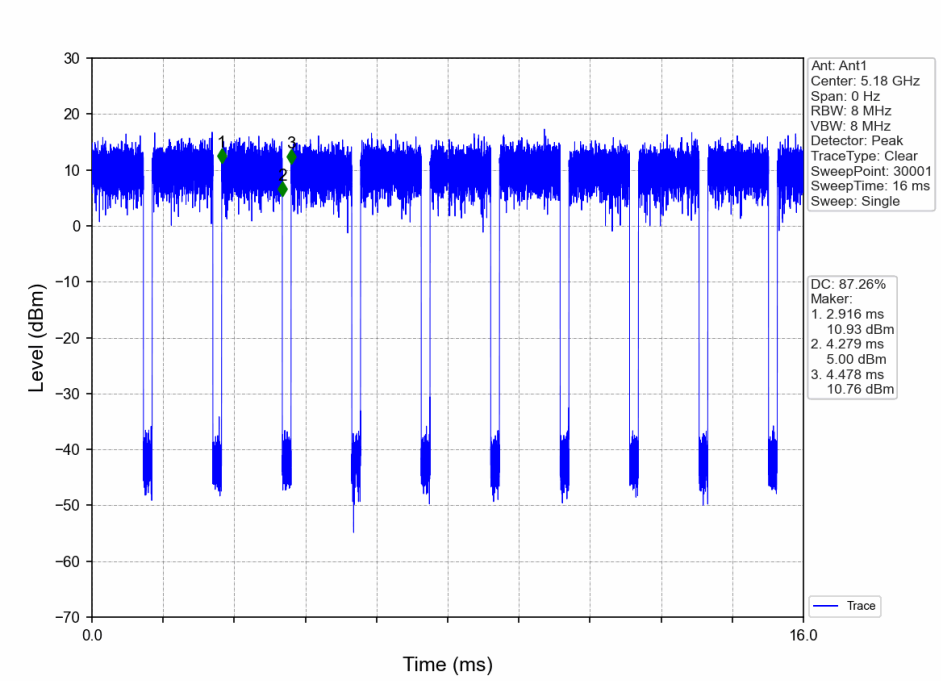
1.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5180	1.363	1.562	87.26	0.59	0.03
		5200	1.363	1.562	87.26	0.59	0.03
		5240	1.364	1.562	87.32	0.59	0.03
		5260	1.363	1.562	87.26	0.59	0.03
		5300	1.364	1.562	87.32	0.59	0.03
		5320	1.364	1.562	87.32	0.59	0.03
		5500	1.364	1.562	87.32	0.59	0.03
		5580	1.354	1.562	86.68	0.62	0.00
		5700	1.364	1.562	87.32	0.59	0.03
		5745	1.363	1.562	87.26	0.59	0.03
		5785	1.364	1.562	87.32	0.59	0.03
		5825	1.364	1.562	87.32	0.59	0.03
802.11n (HT20)	SISO	5180	1.276	1.475	86.51	0.63	0.03
		5200	1.265	1.475	85.76	0.67	0.03
		5240	1.265	1.474	85.82	0.66	0.00
		5260	1.267	1.474	85.96	0.66	0.03
		5300	1.276	1.474	86.57	0.63	0.03
		5320	1.276	1.474	86.57	0.63	0.03
		5500	1.265	1.474	85.82	0.66	0.03
		5580	1.266	1.475	85.83	0.66	0.03
		5700	1.264	1.474	85.75	0.67	0.03
		5745	1.277	1.475	86.58	0.63	0.03
		5785	1.267	1.474	85.96	0.66	0.04
		5825	1.265	1.473	85.88	0.66	0.03
802.11n (HT40)	SISO	5190	0.636	0.836	76.08	1.19	0.06
		5230	0.636	0.835	76.17	1.18	0.03
		5270	0.627	0.835	75.09	1.24	0.03
		5310	0.636	0.835	76.17	1.18	0.01
		5510	0.624	0.835	74.73	1.27	0.03
		5550	0.636	0.835	76.17	1.18	0.03
		5670	0.624	0.835	74.73	1.27	0.06

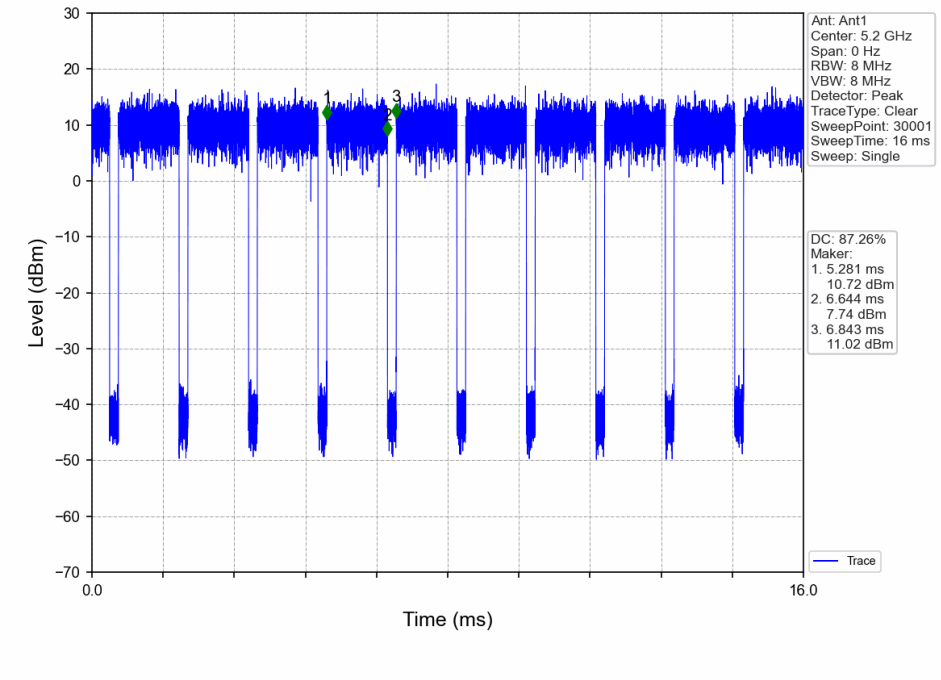
		5755	0.636	0.836	76.08	1.19	0.03
		5795	0.636	0.836	76.08	1.19	0.03
802.11ac (VHT20)	SISO	5180	0.976	1.174	83.13	0.80	0.00
		5200	0.965	1.174	82.20	0.85	0.01
		5240	0.966	1.175	82.21	0.85	0.06
		5260	0.965	1.174	82.20	0.85	0.01
		5300	0.966	1.175	82.21	0.85	0.03
		5320	0.964	1.174	82.11	0.86	0.04
		5500	0.966	1.174	82.28	0.85	0.03
		5580	0.964	1.174	82.11	0.86	0.03
		5700	0.965	1.174	82.20	0.85	0.03
		5745	0.966	1.174	82.28	0.85	0.00
		5785	0.965	1.174	82.20	0.85	0.03
		5825	0.965	1.174	82.20	0.85	0.03
802.11ac (VHT40)	SISO	5190	0.480	0.691	69.46	1.58	0.04
		5230	0.480	0.691	69.46	1.58	0.06
		5270	0.258	0.468	55.13	2.59	0.07
		5310	0.492	0.691	71.20	1.48	0.03
		5510	0.492	0.691	71.20	1.48	0.02
		5550	0.480	0.691	69.46	1.58	0.04
		5670	0.492	0.691	71.20	1.48	0.03
		5755	0.482	0.692	69.65	1.57	0.03
		5795	0.482	0.691	69.75	1.56	0.08
802.11ac (VHT80)	SISO	5210	0.248	0.448	55.36	2.57	0.03
		5290	0.241	0.448	53.79	2.69	0.07
		5530	0.236	0.448	52.68	2.78	0.09
		5775	0.236	0.448	52.68	2.78	0.17

1.1.2 Test Graph

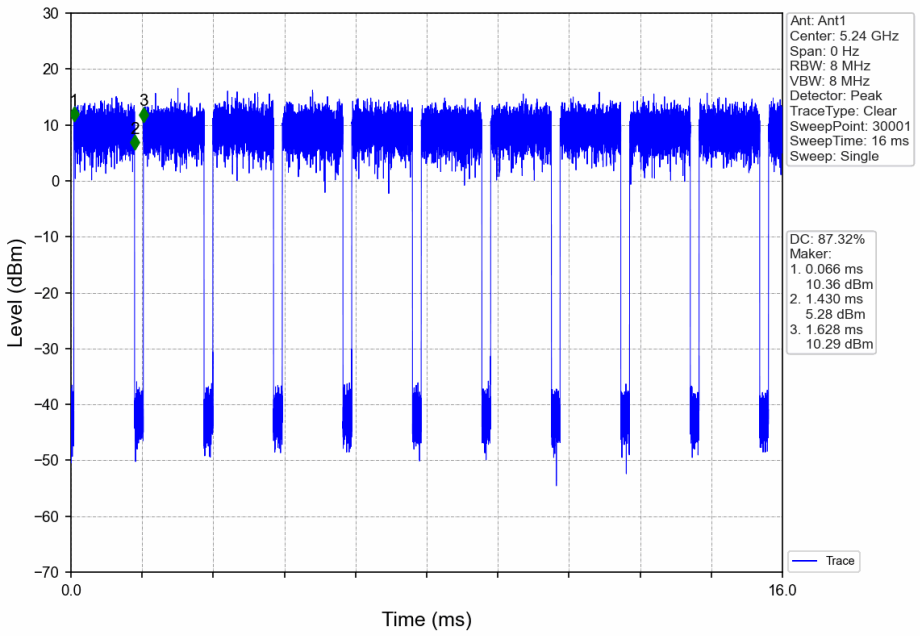
802.11a_LCH_5180MHz_Ant1_NTNV



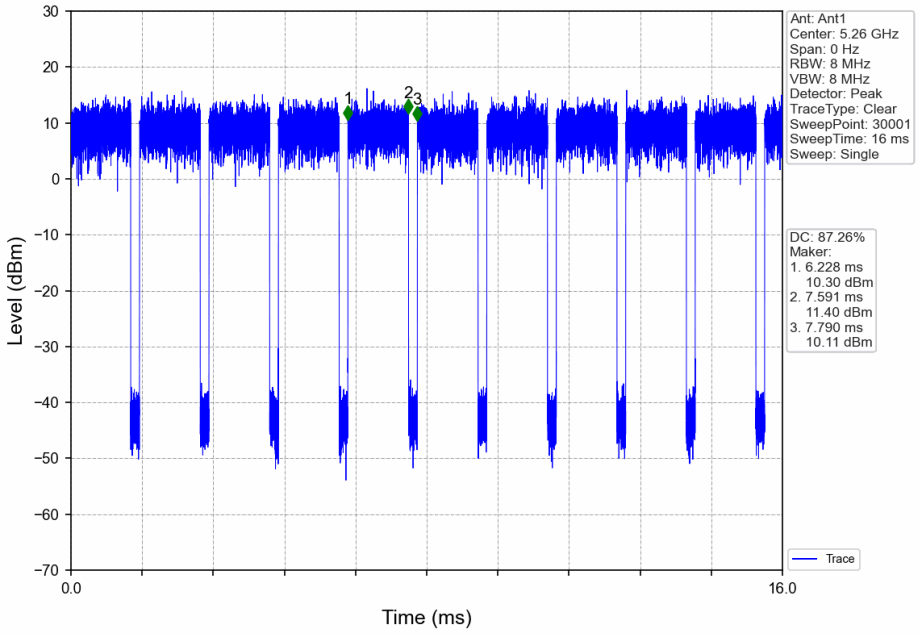
802.11a_MCH_5200MHz_Ant1_NTNV



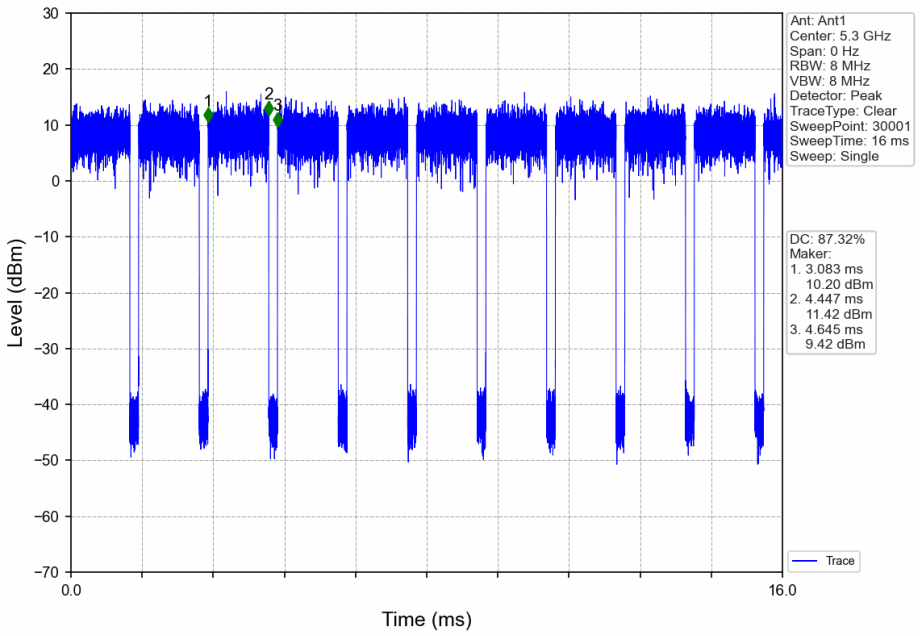
802.11a_HCH_5240MHz_Ant1_NTNV



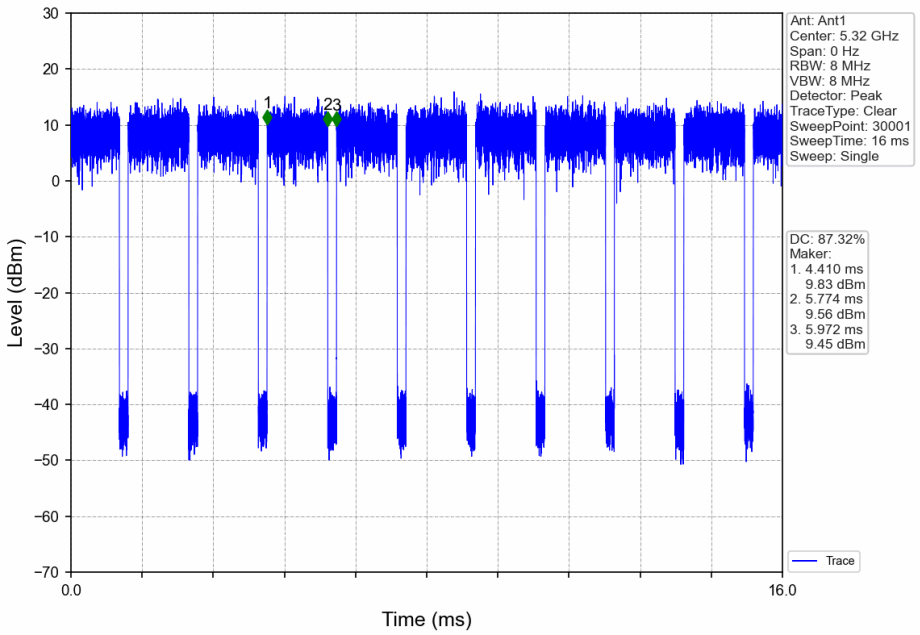
802.11a_LCH_5260MHz_Ant1_NTNV



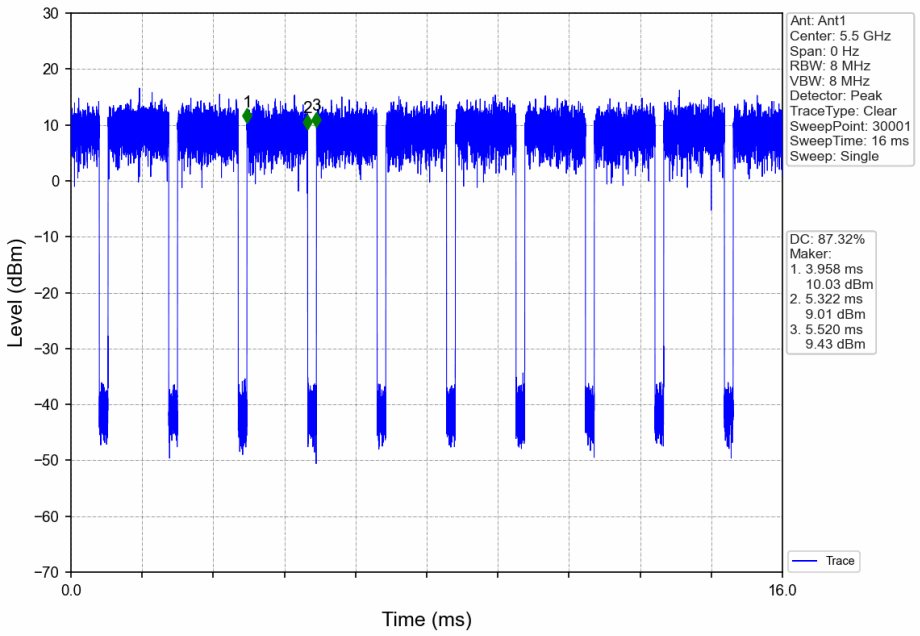
802.11a_MCH_5300MHz_Ant1_NTNV



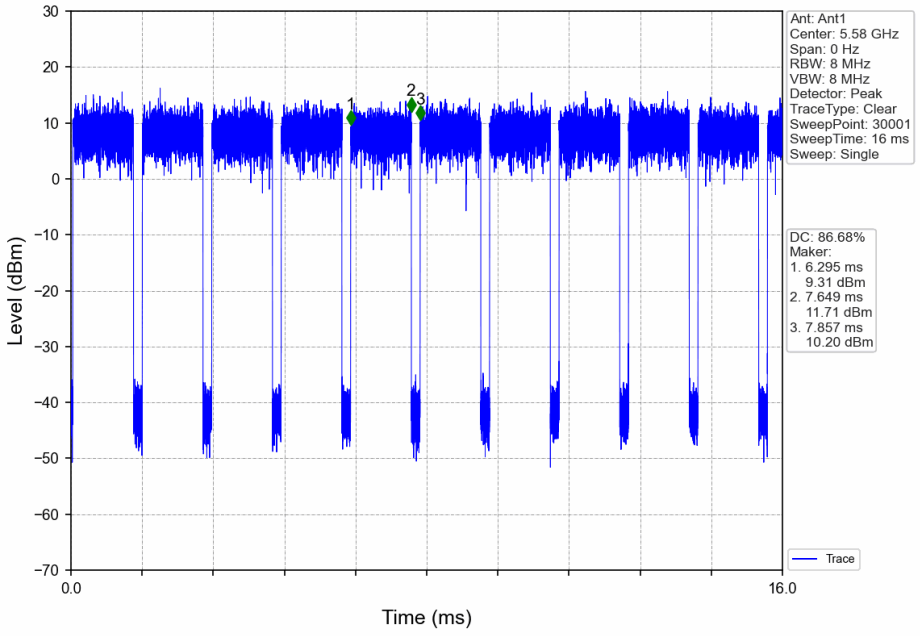
802.11a_HCH_5320MHz_Ant1_NTNV



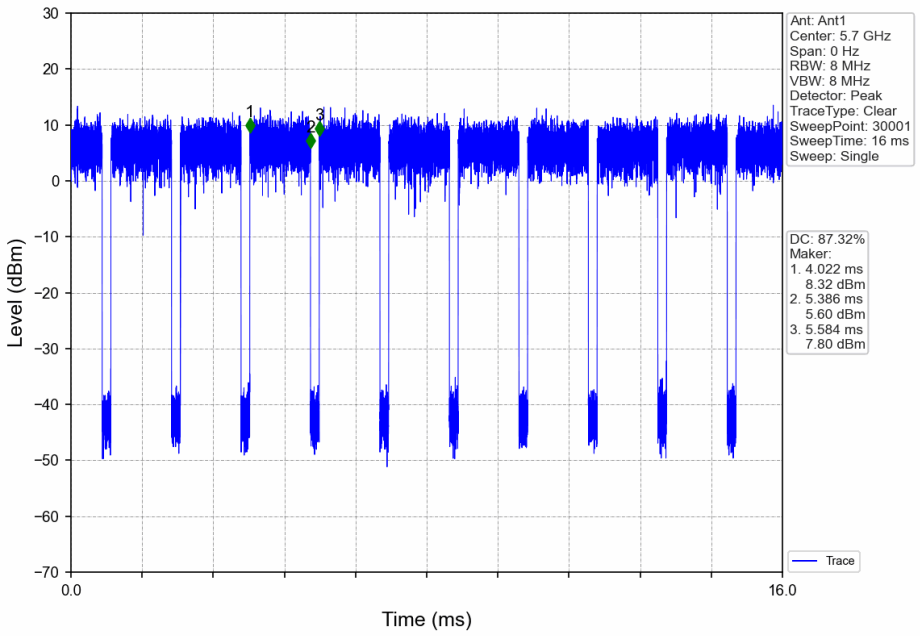
802.11a_LCH_5500MHz_Ant1_NTNV



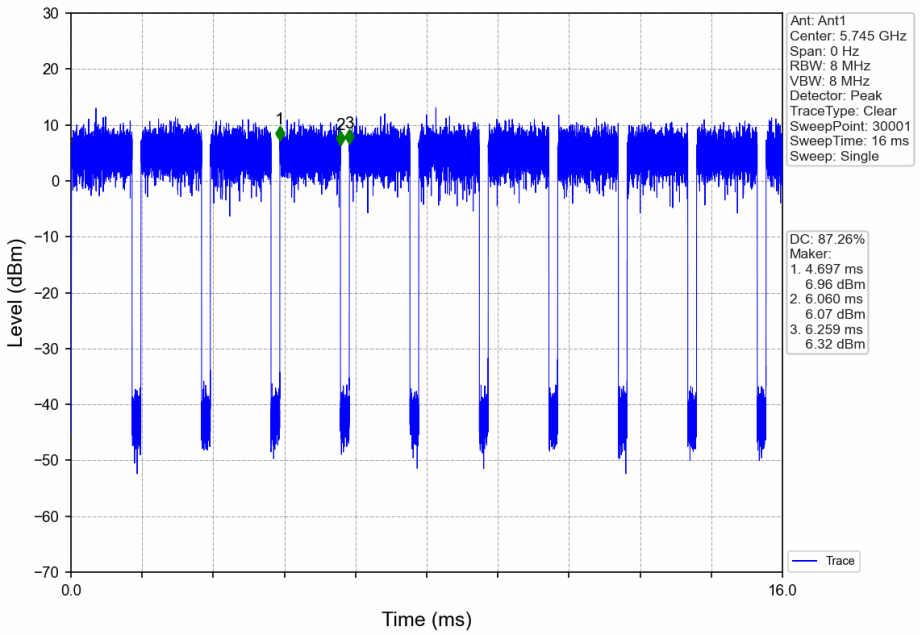
802.11a_MCH_5580MHz_Ant1_NTNV



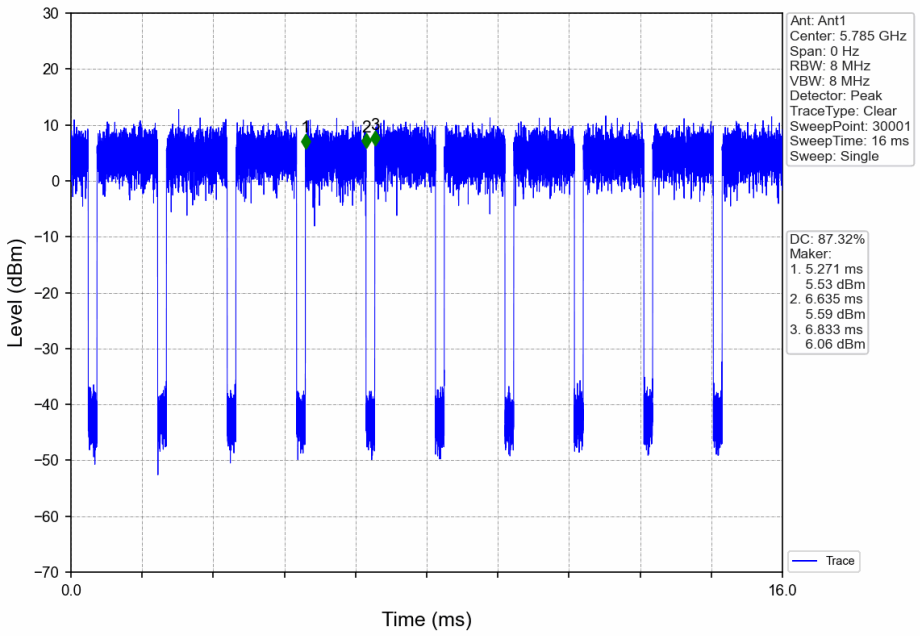
802.11a_HCH_5700MHz_Ant1_NTNV



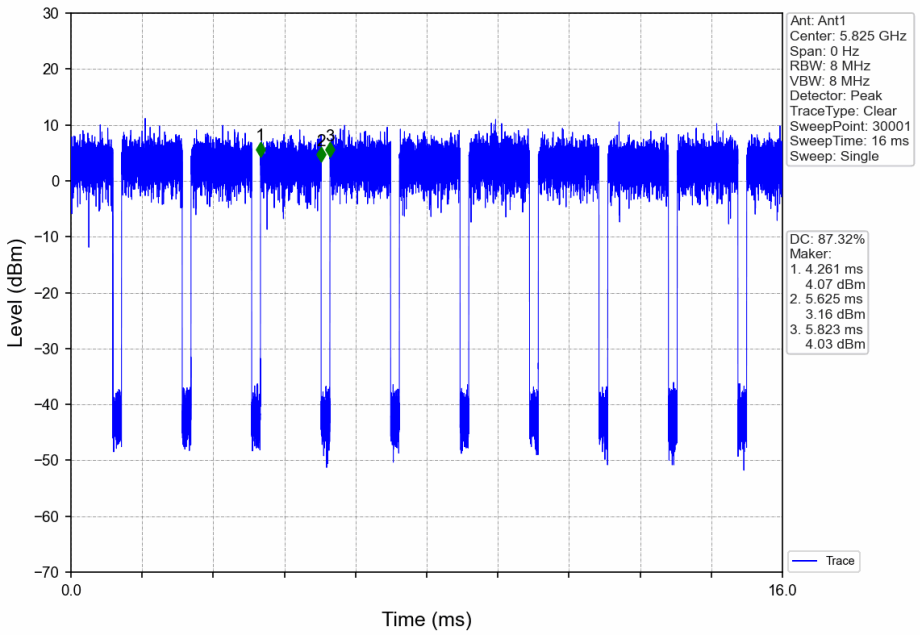
802.11a_LCH_5745MHz_Ant1_NTNV



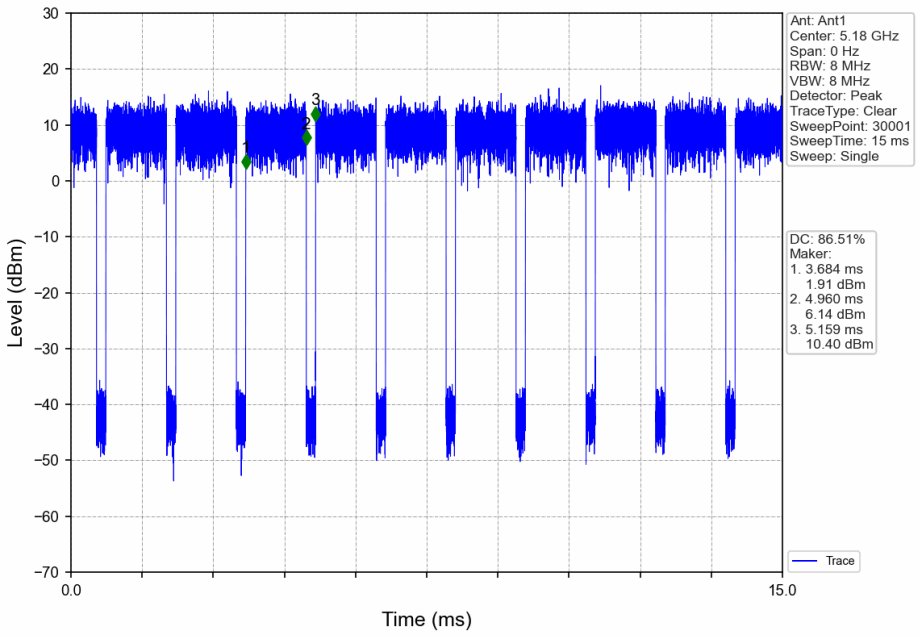
802.11a_MCH_5785MHz_Ant1_NTNV



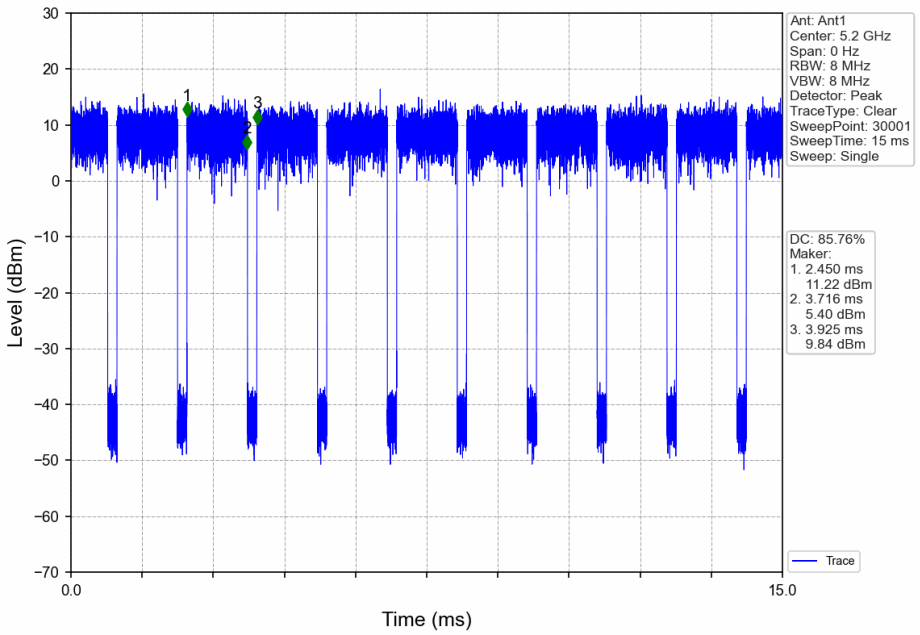
802.11a_HCH_5825MHz_Ant1_NTNV



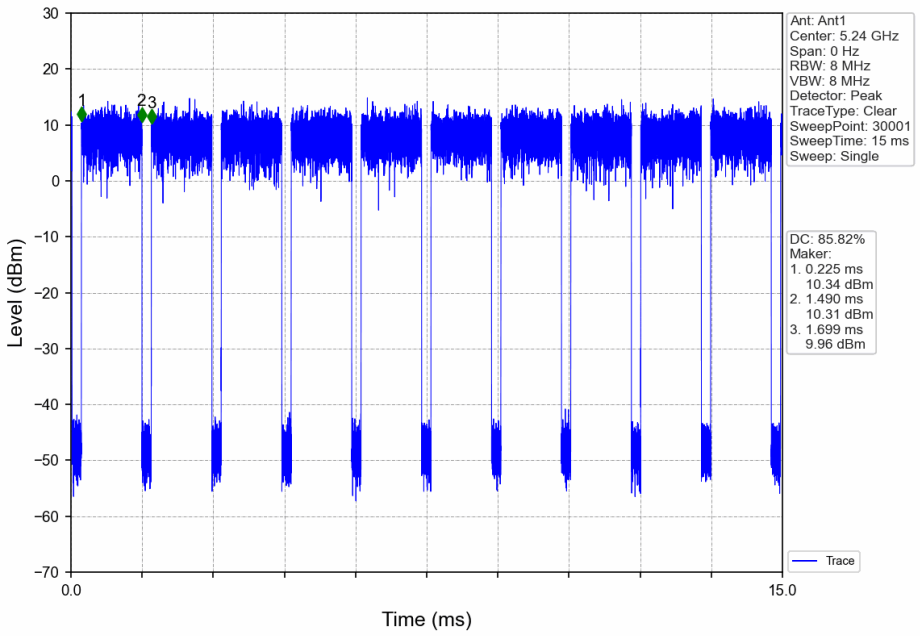
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



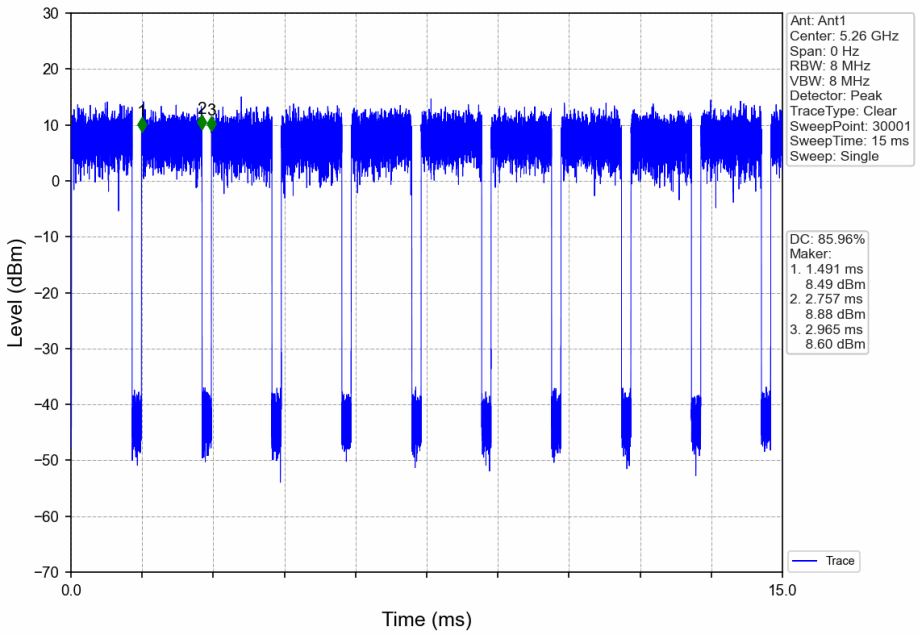
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



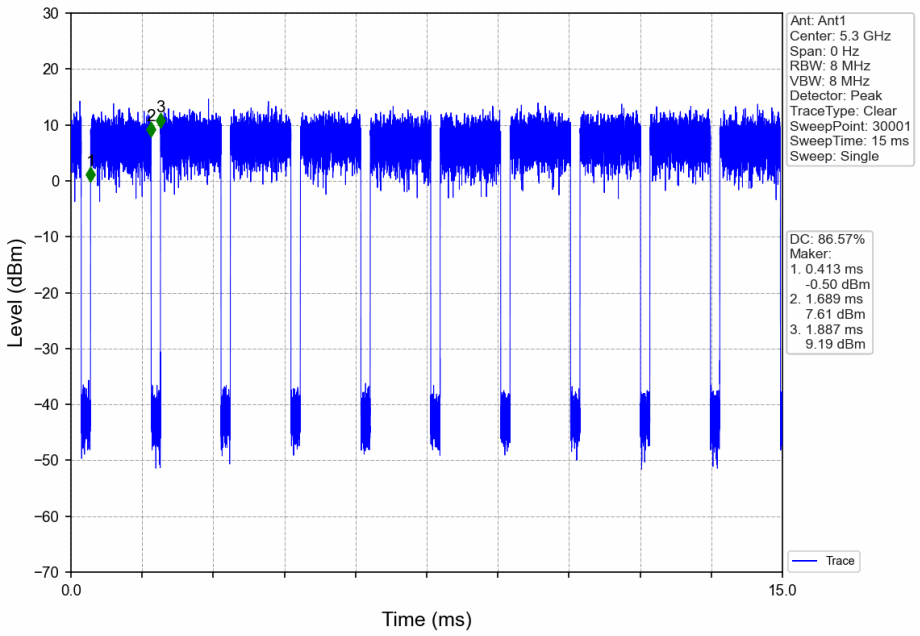
802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



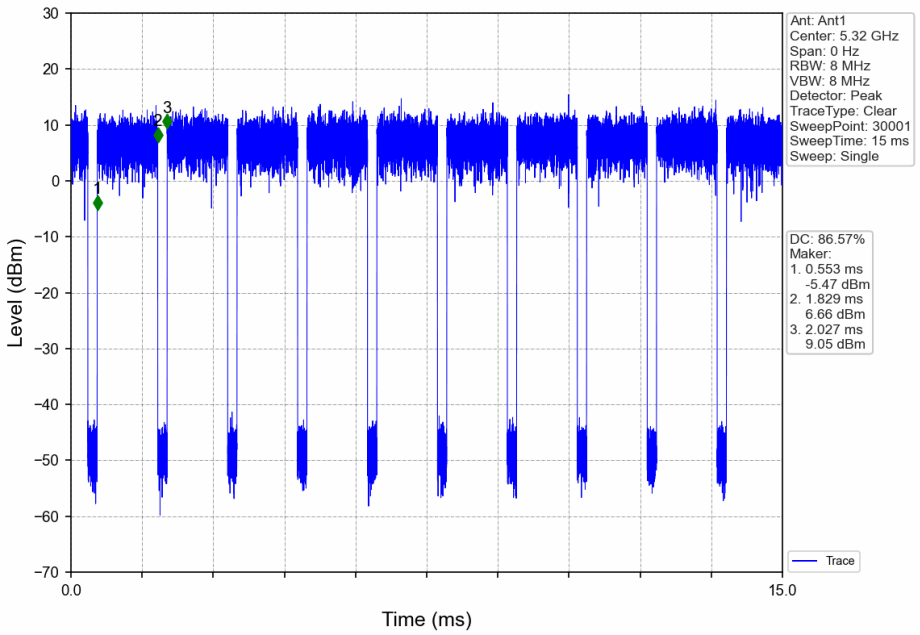
802.11n(HT20)_LCH_5260MHz_Ant1_NTNV



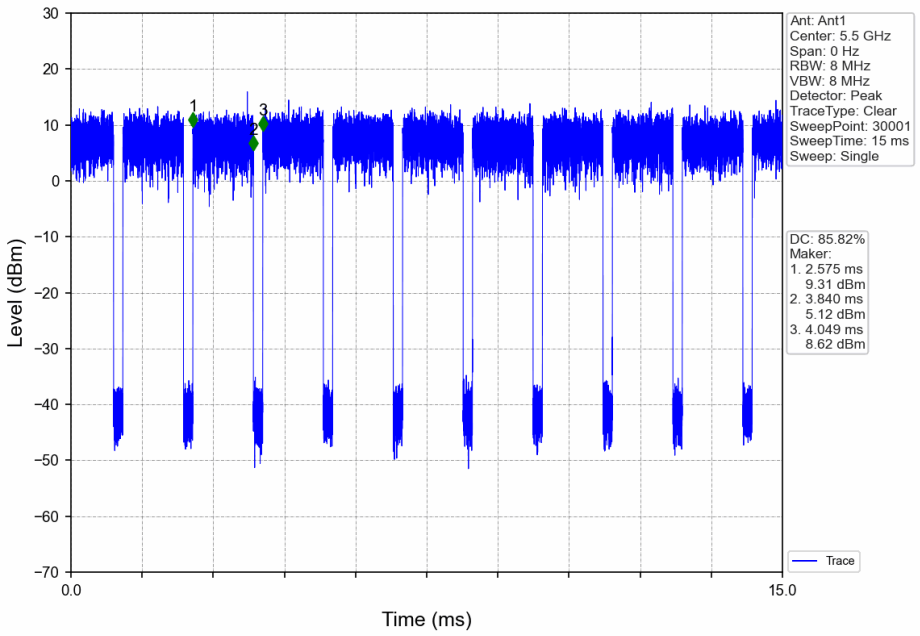
802.11n(HT20)_MCH_5300MHz_Ant1_NTNV



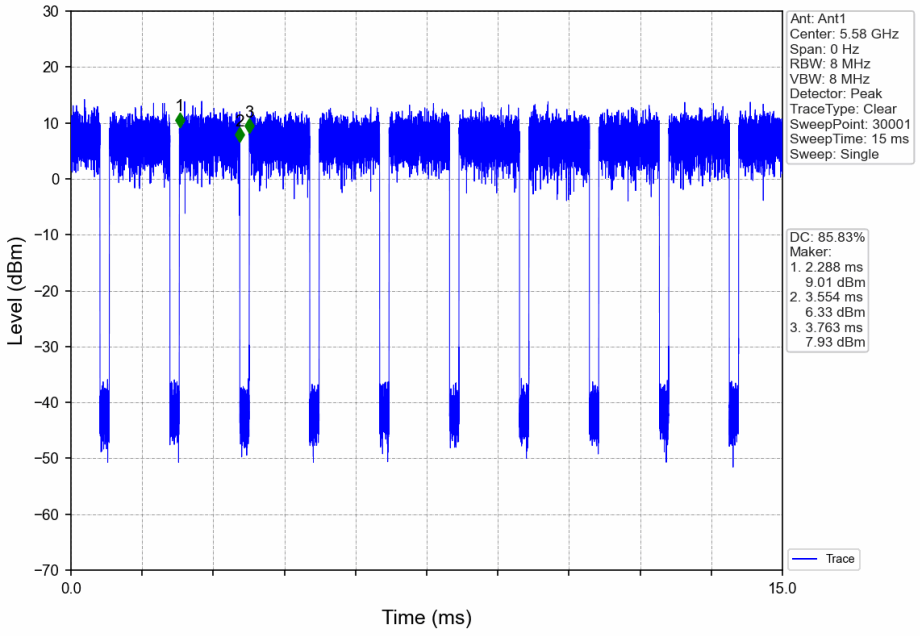
802.11n(HT20)_HCH_5320MHz_Ant1_NTNV



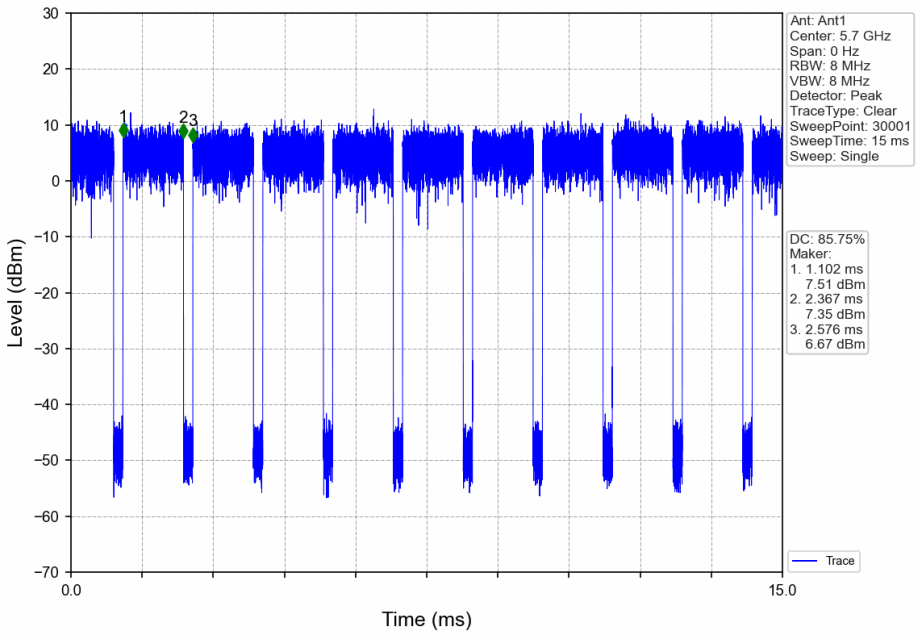
802.11n(HT20)_LCH_5500MHz_Ant1_NTNV



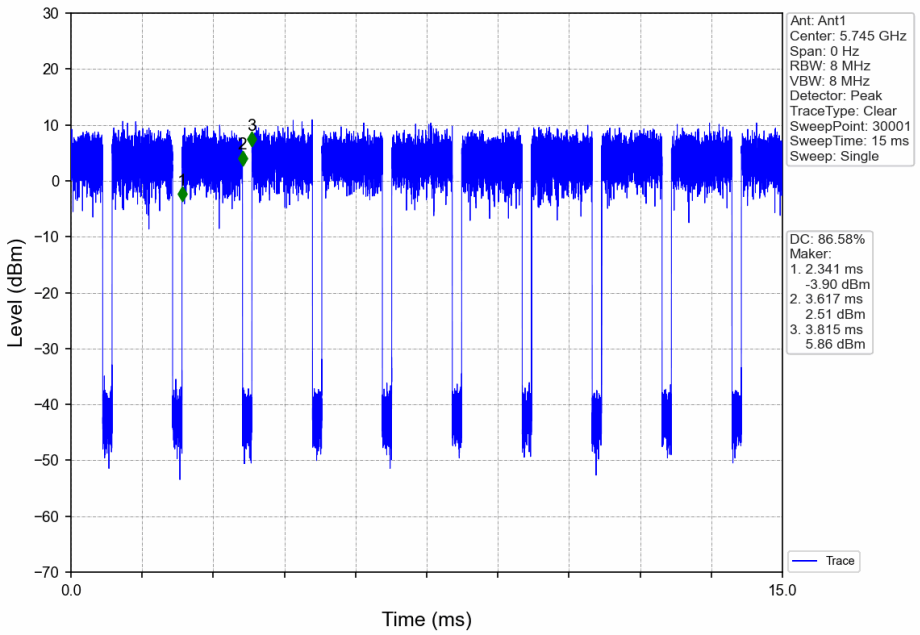
802.11n(HT20)_MCH_5580MHz_Ant1_NTNV



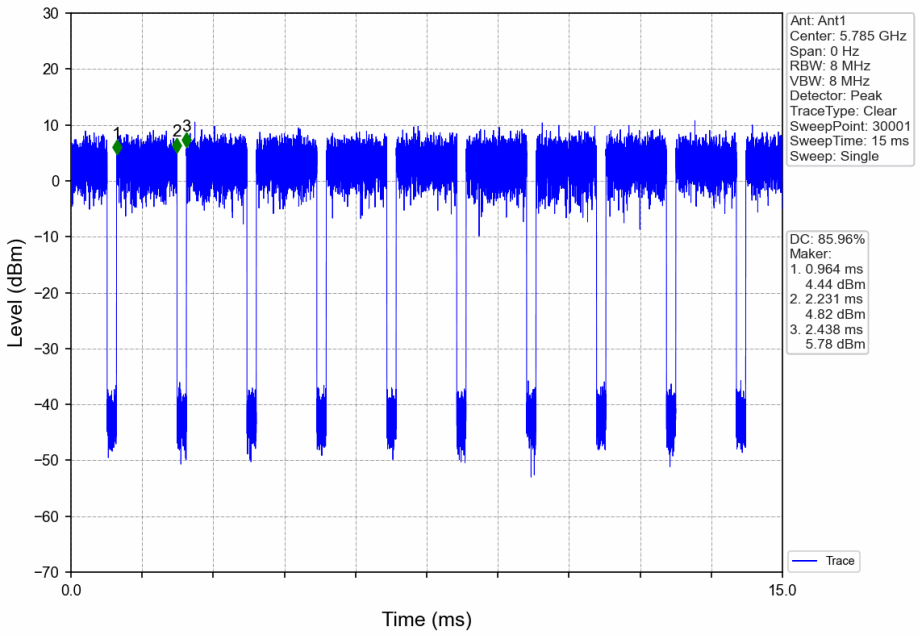
802.11n(HT20)_HCH_5700MHz_Ant1_NTNV



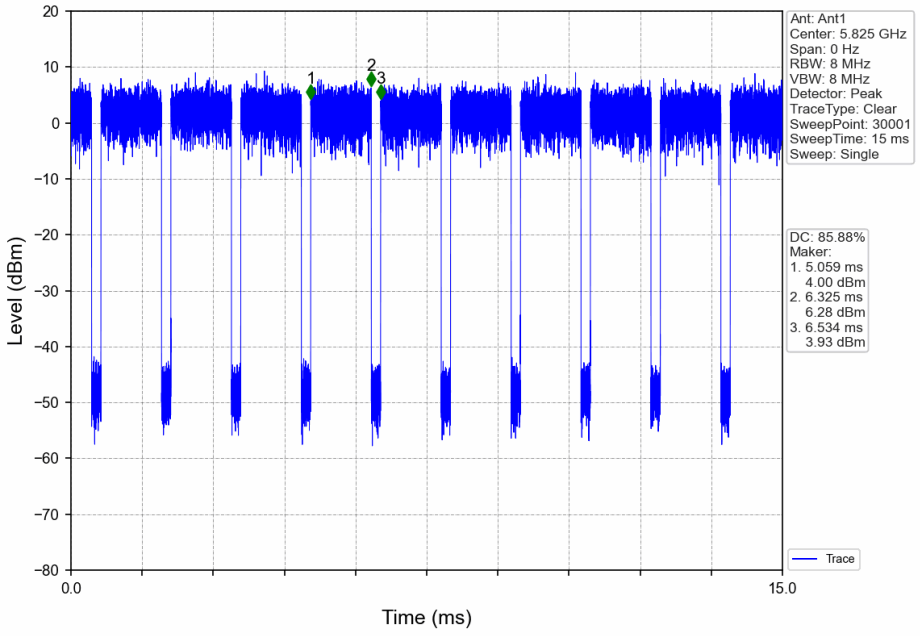
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



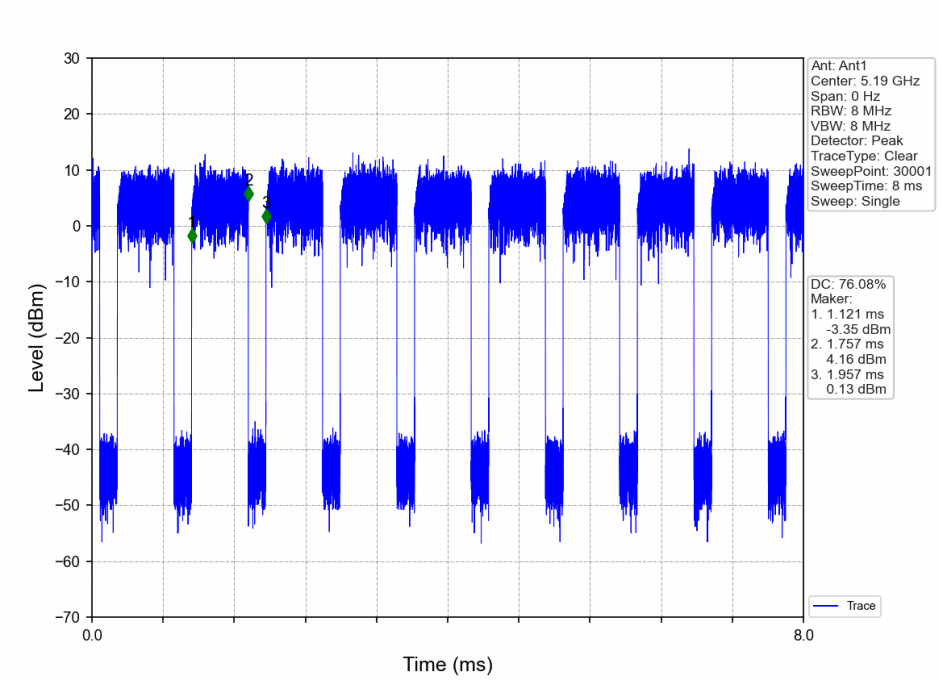
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



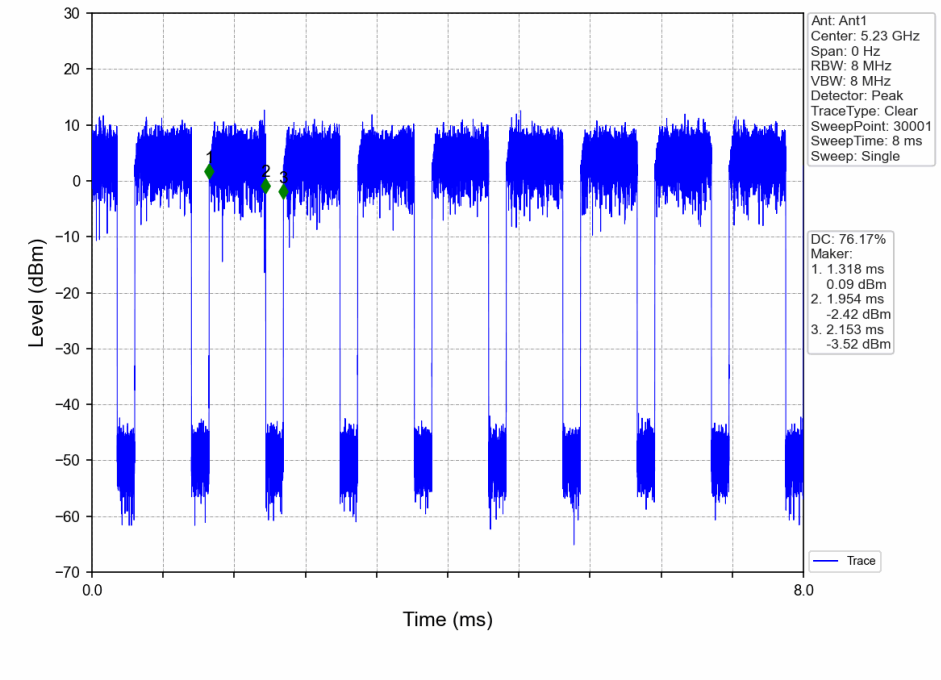
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



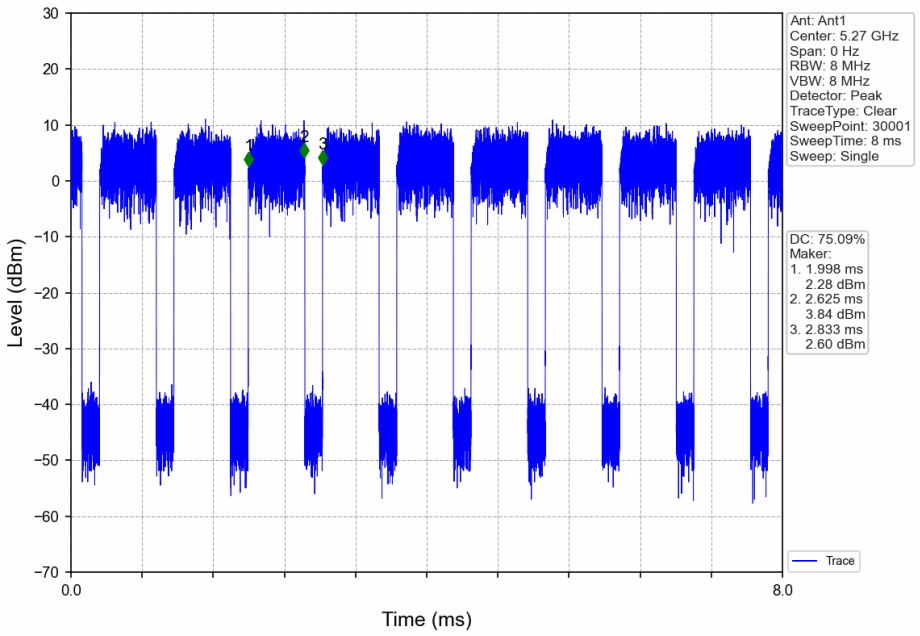
802.11n(HT40)_LCH_5190MHz_Ant1_NTNV



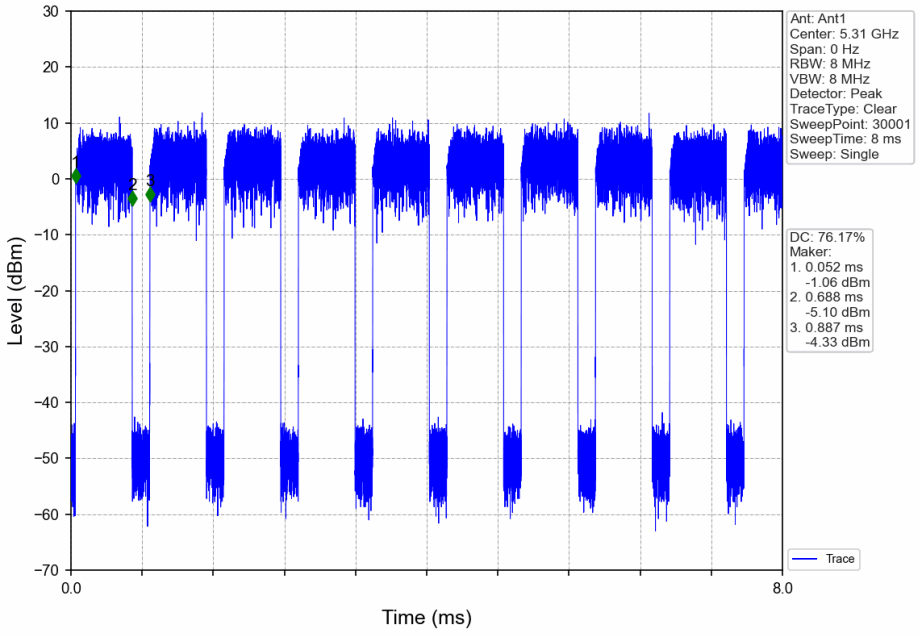
802.11n(HT40)_HCH_5230MHz_Ant1_NTNV



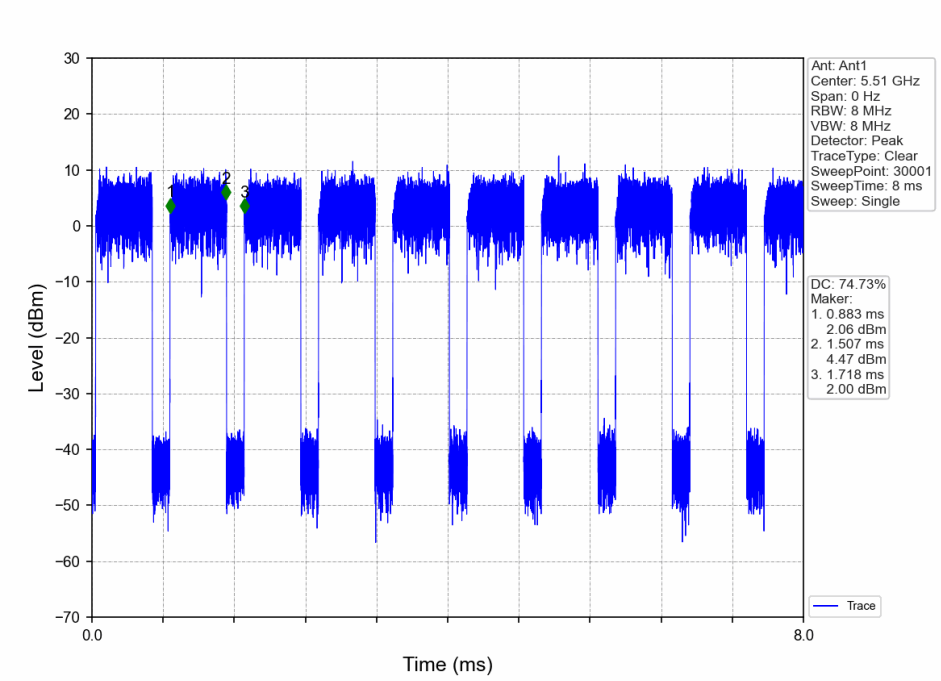
802.11n(HT40)_LCH_5270MHz_Ant1_NTNV



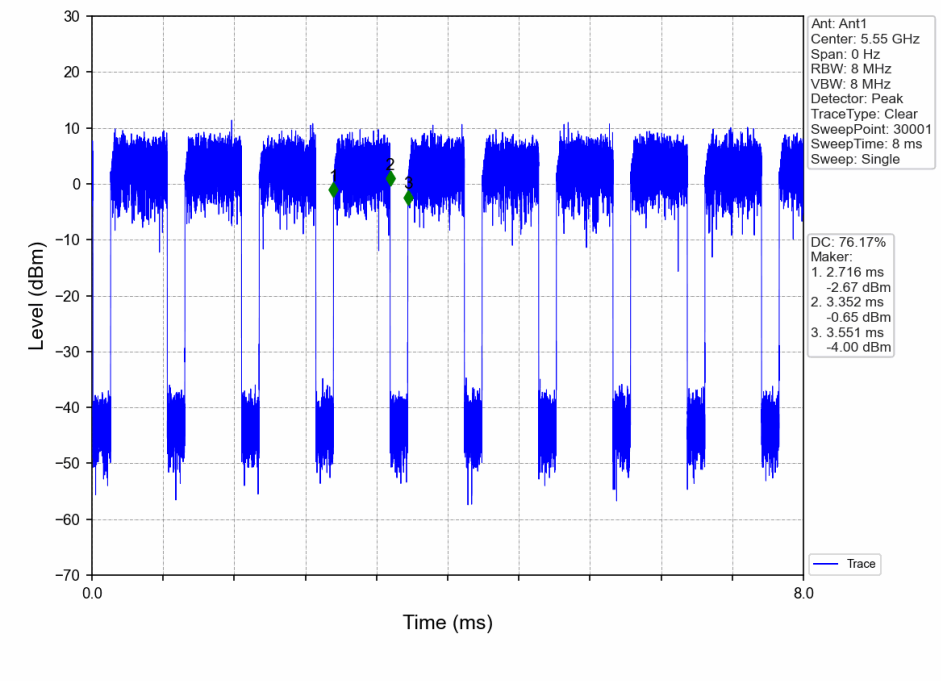
802.11n(HT40)_HCH_5310MHz_Ant1_NTNV



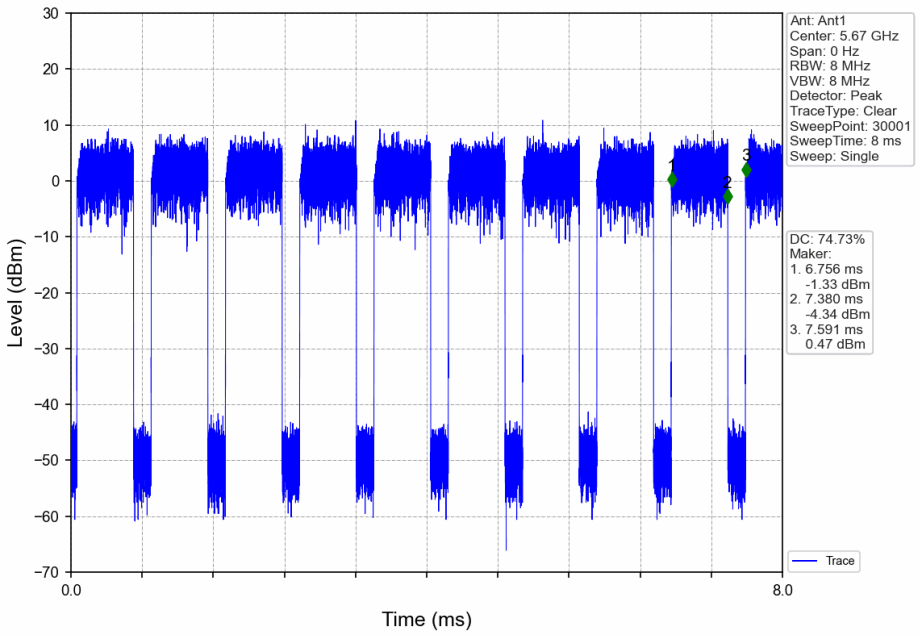
802.11n(HT40)_LCH_5510MHz_Ant1_NTNV



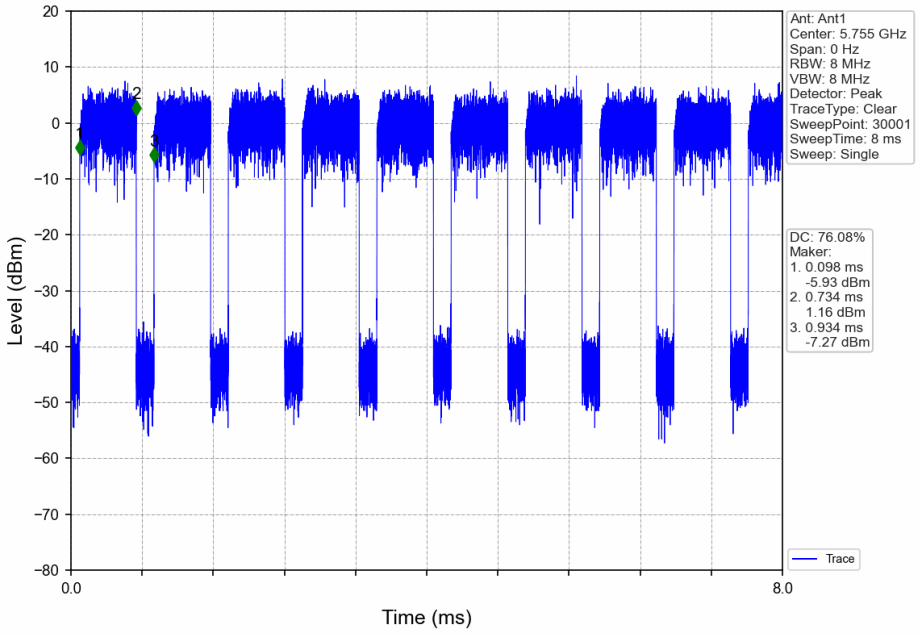
802.11n(HT40)_MCH_5550MHz_Ant1_NTNV



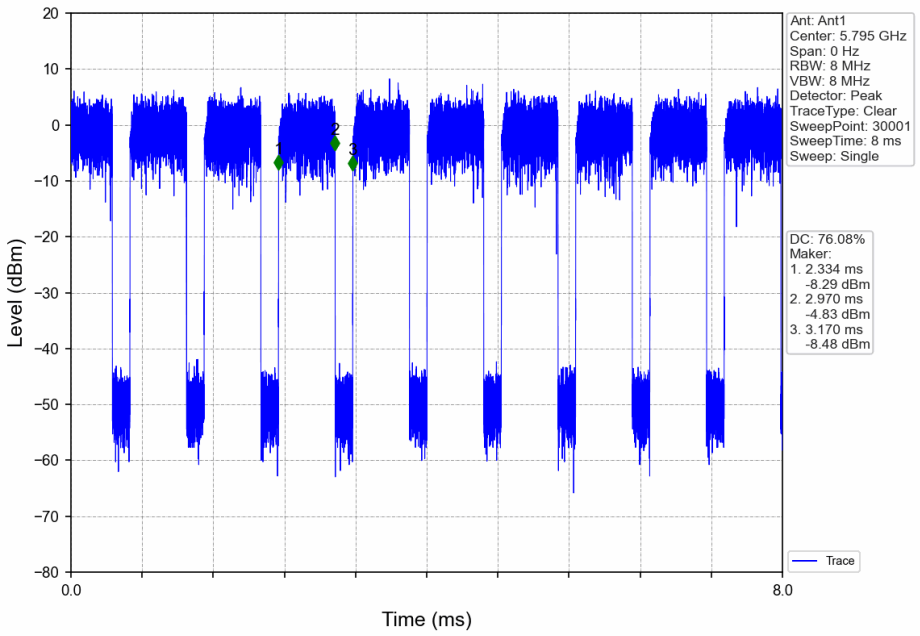
802.11n(HT40)_HCH_5670MHz_Ant1_NTNV



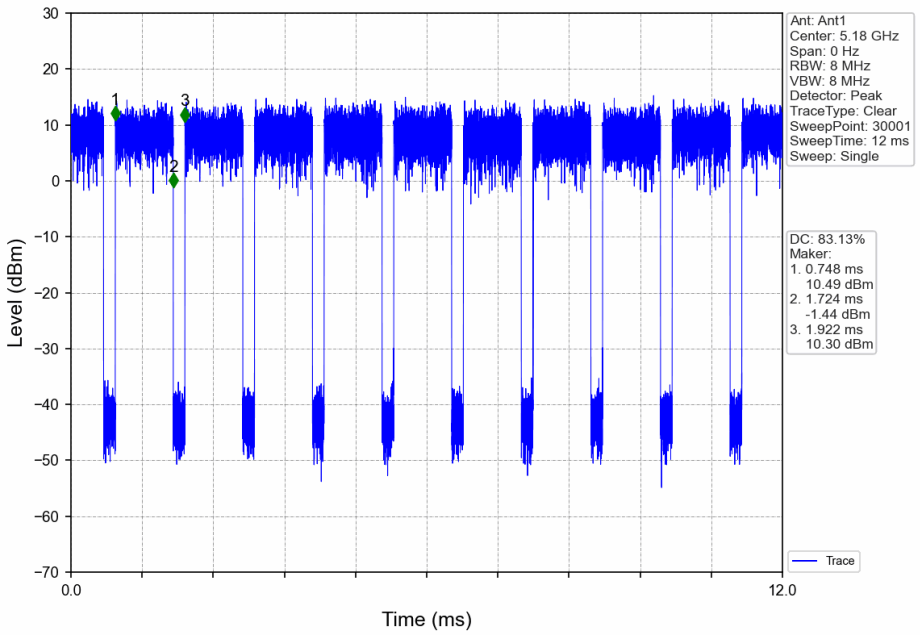
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



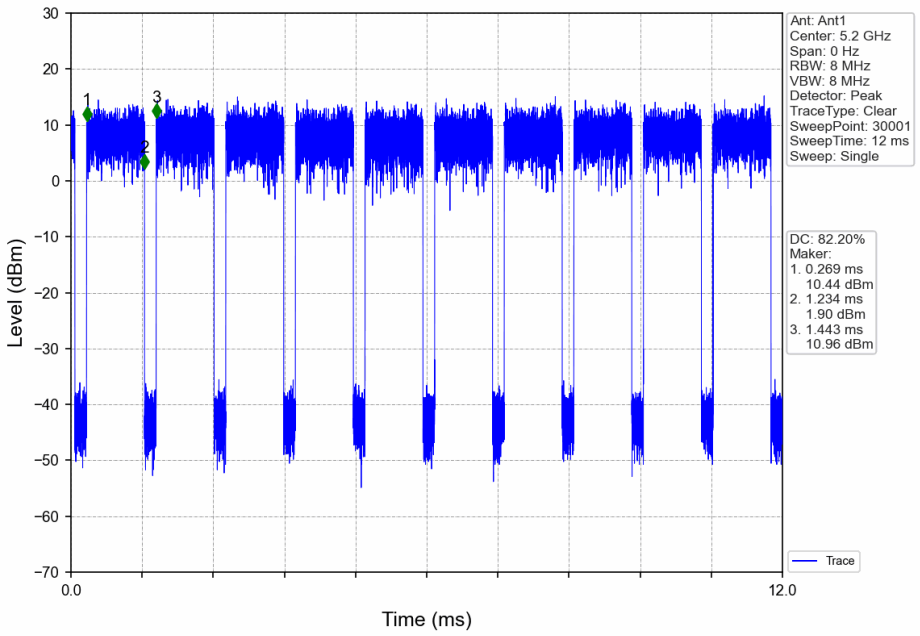
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



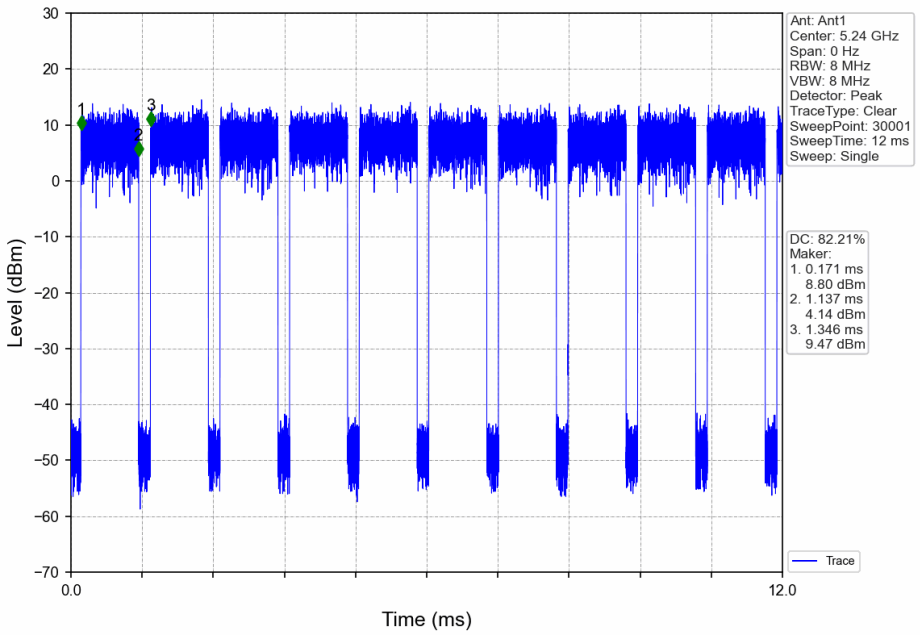
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



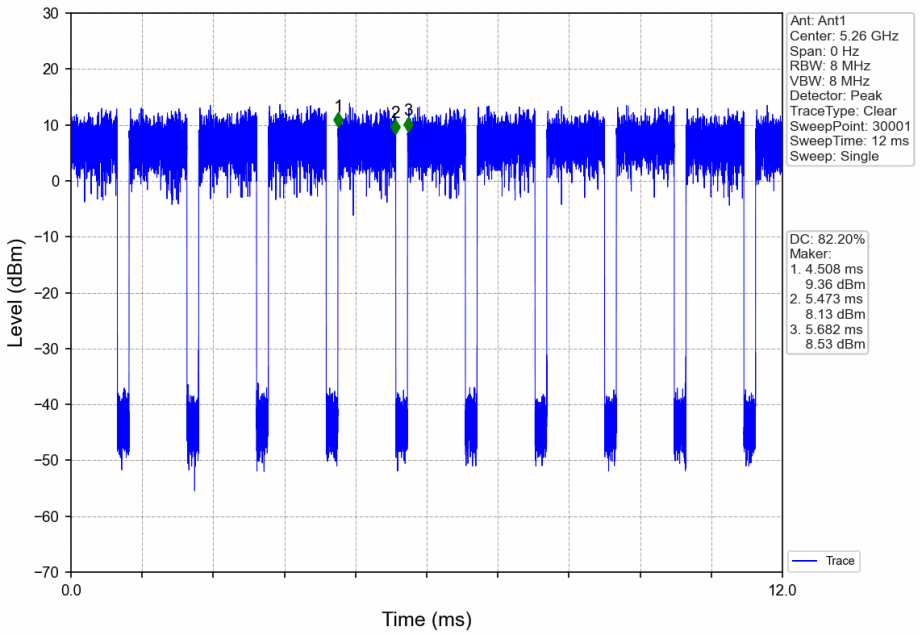
802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



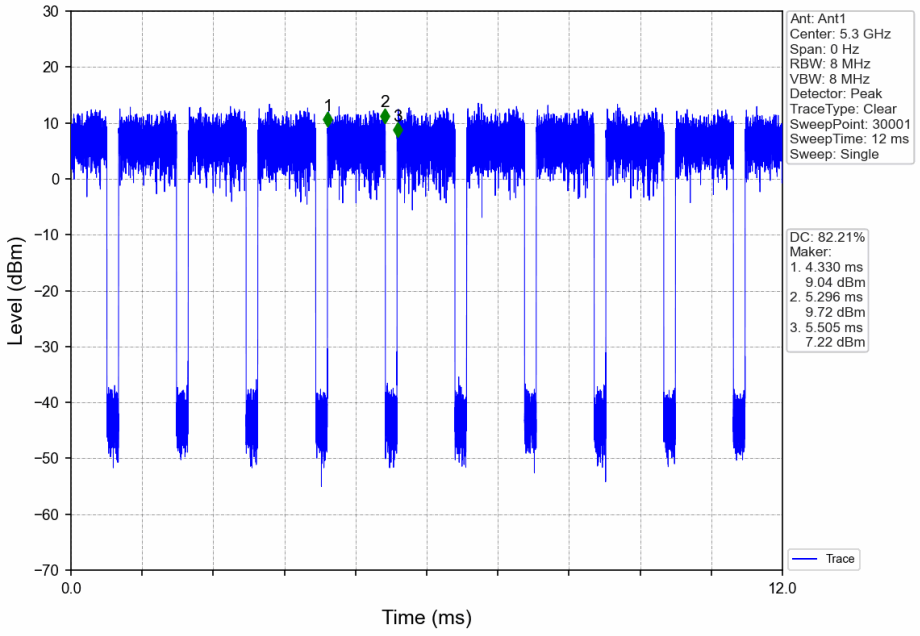
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



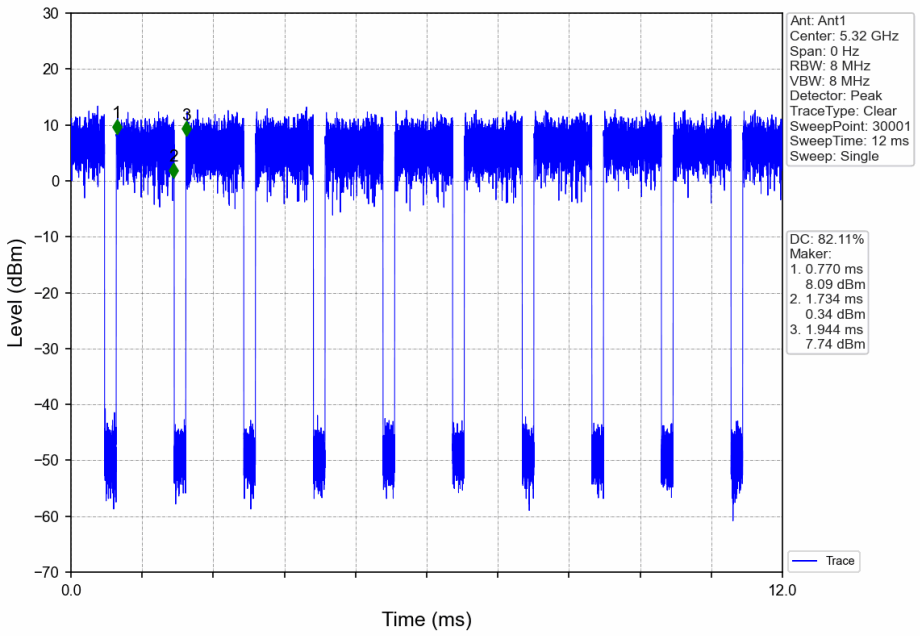
802.11ac(VHT20)_LCH_5260MHz_Ant1_NTNV



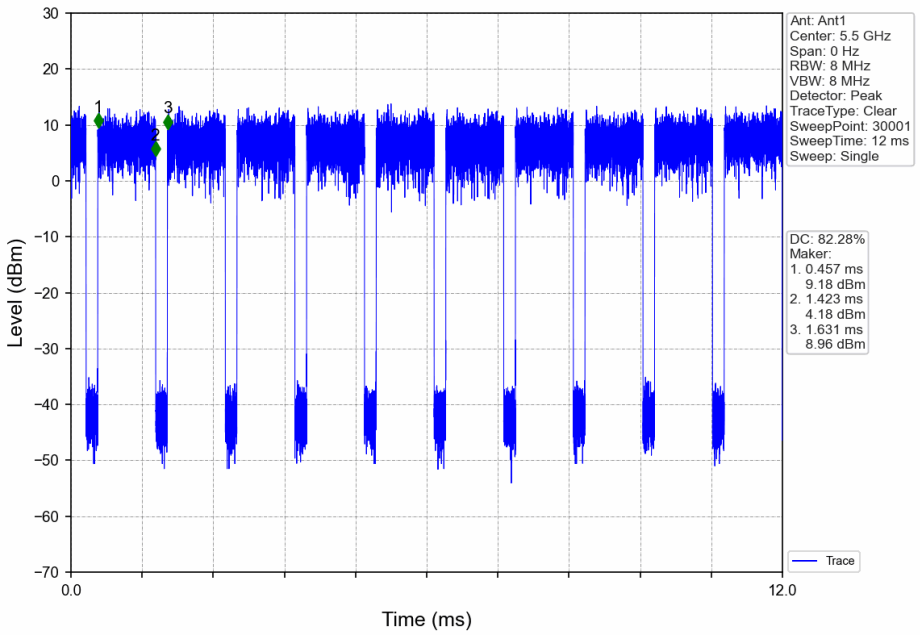
802.11ac(VHT20)_MCH_5300MHz_Ant1_NTNV



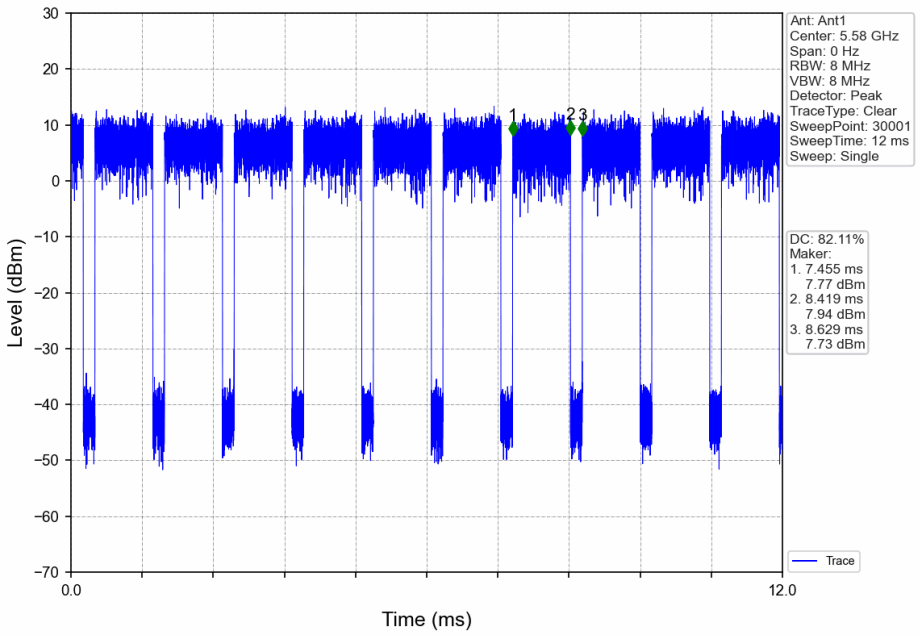
802.11ac(VHT20)_HCH_5320MHz_Ant1_NTNV



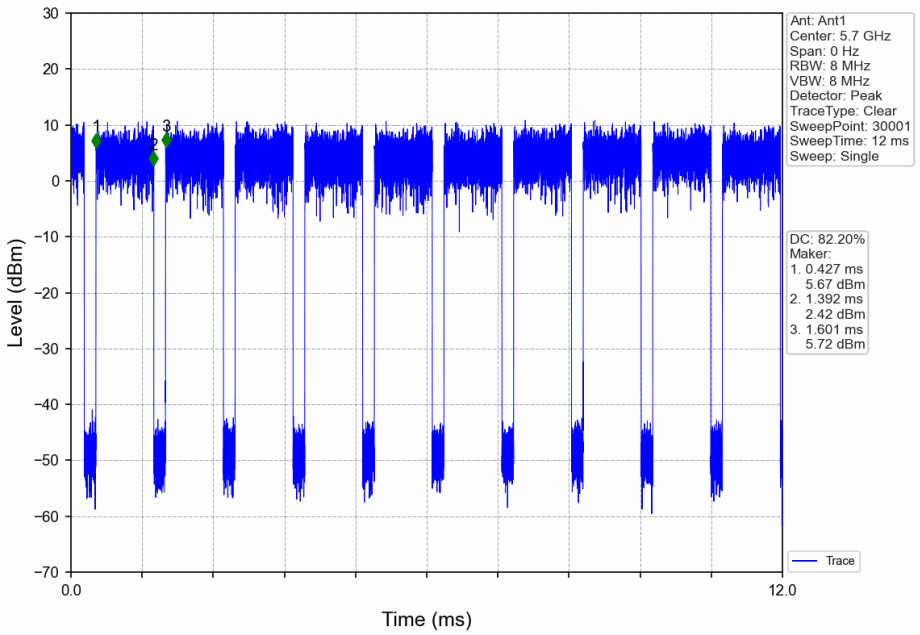
802.11ac(VHT20)_LCH_5500MHz_Ant1_NTNV



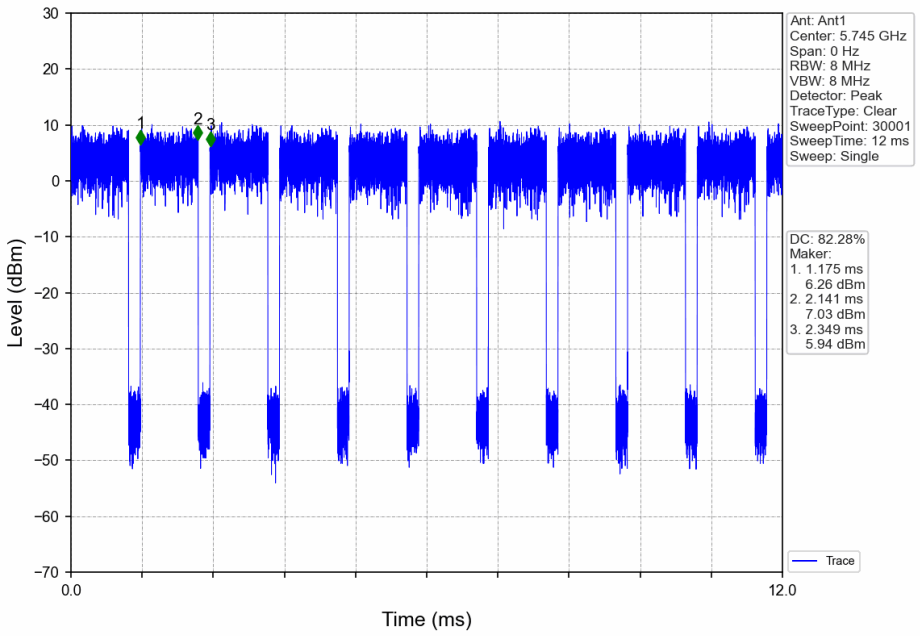
802.11ac(VHT20)_MCH_5580MHz_Ant1_NTNV



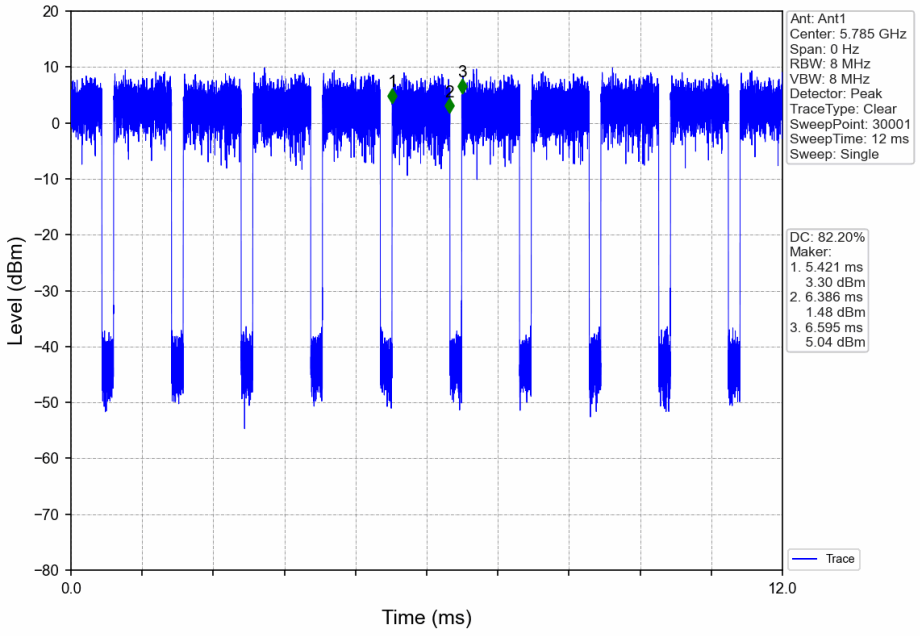
802.11ac(VHT20)_HCH_5700MHz_Ant1_NTNV



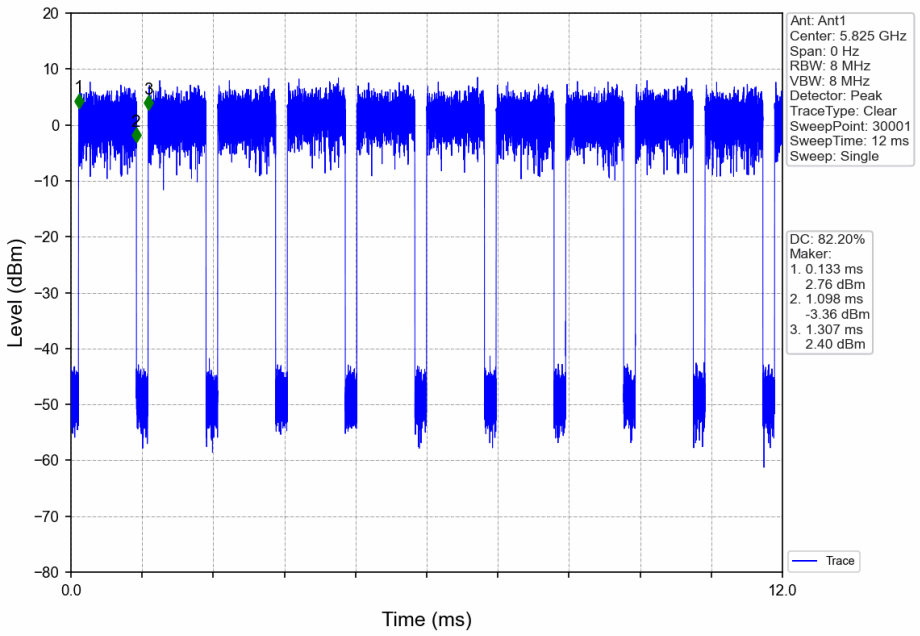
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



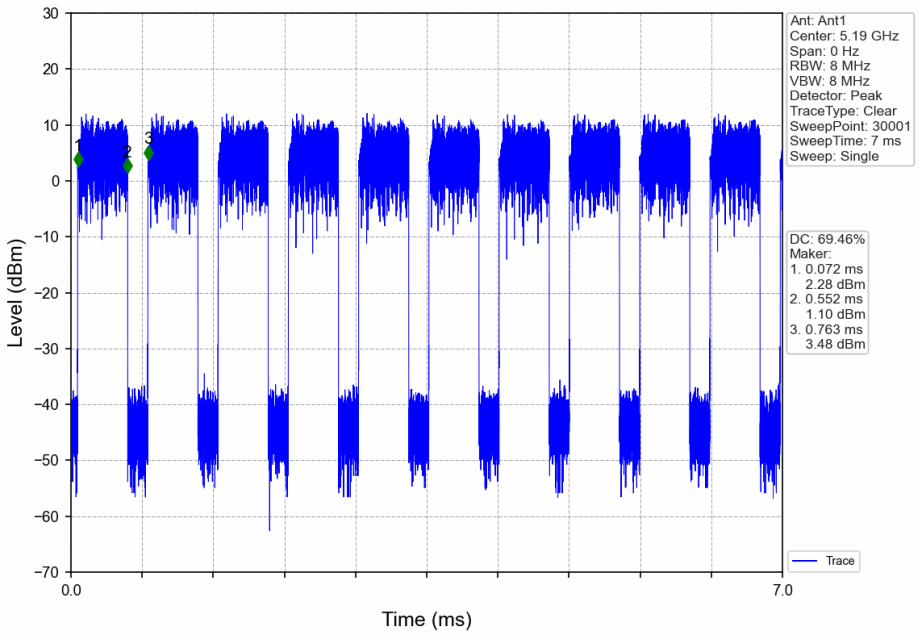
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



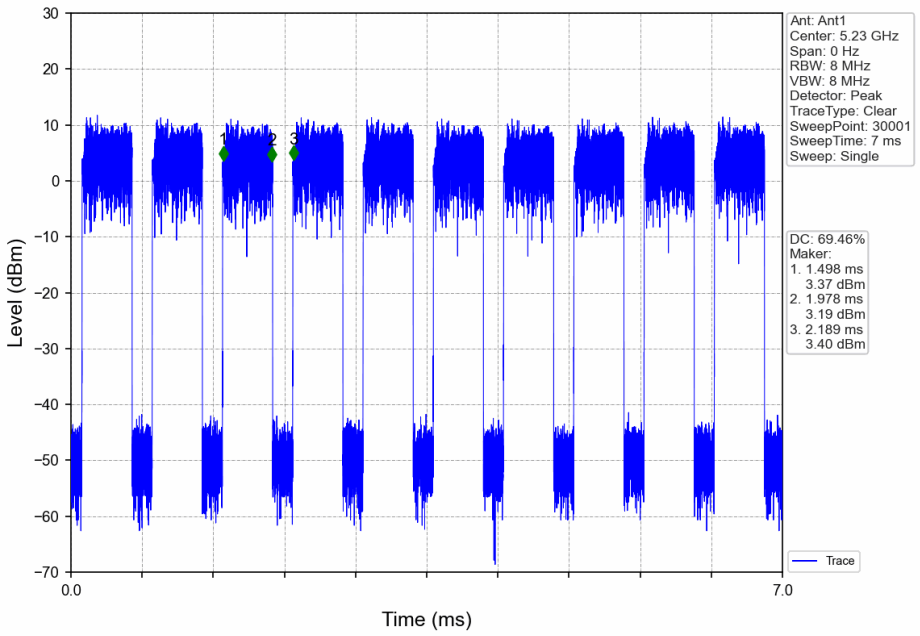
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



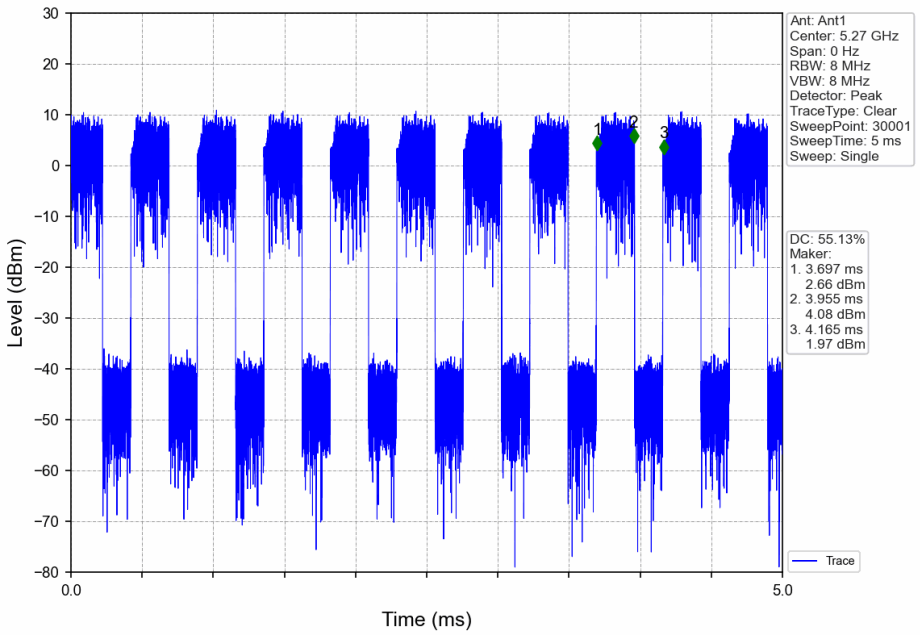
802.11ac(VHT40)_LCH_5190MHz_Ant1_NTNV



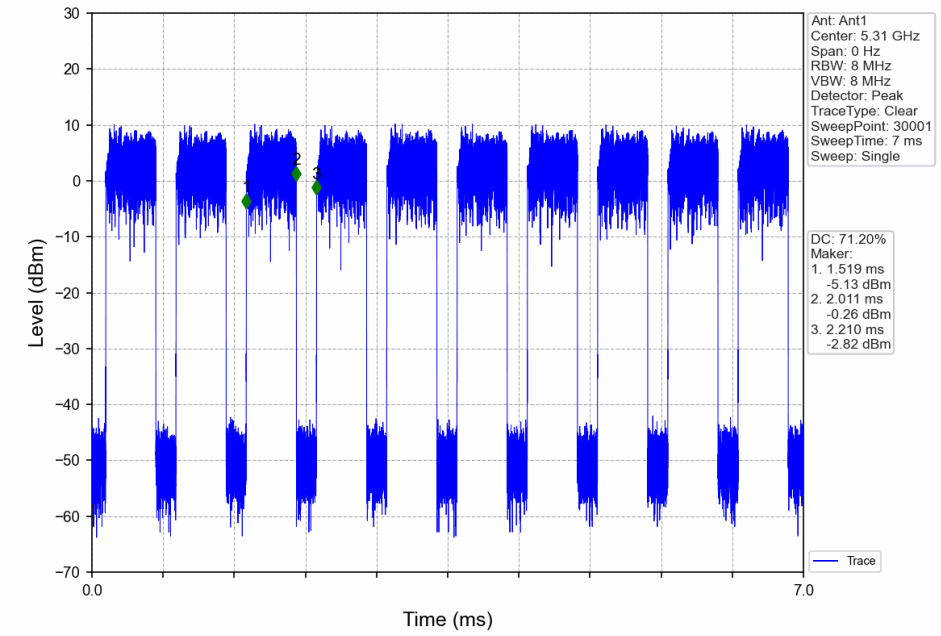
802.11ac(VHT40)_HCH_5230MHz_Ant1_NTNV



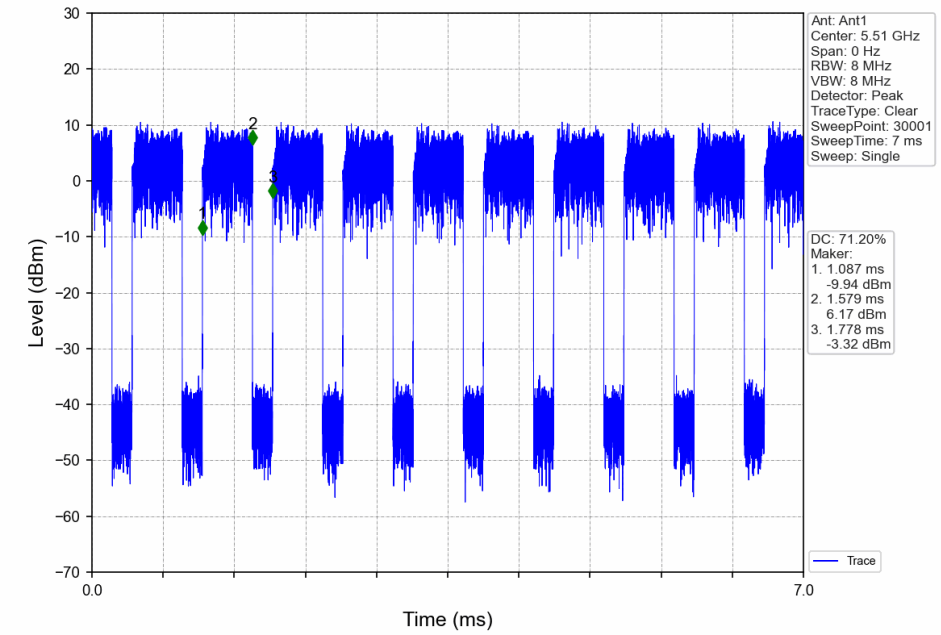
802.11ac(VHT40)_LCH_5270MHz_Ant1_NTNV



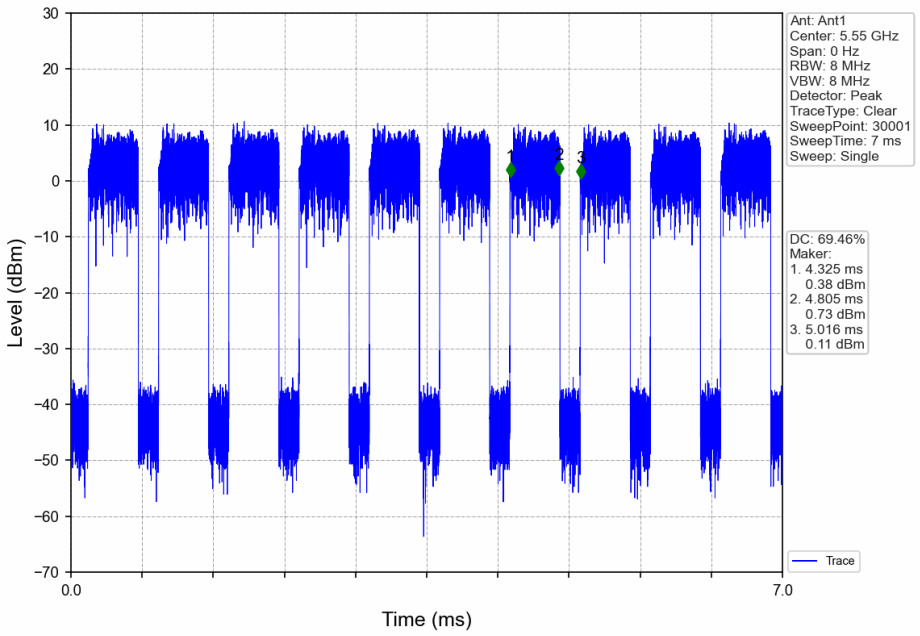
802.11ac(VHT40)_HCH_5310MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5510MHz_Ant1_NTNV



802.11ac(VHT40)_MCH_5550MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5670MHz_Ant1_NTNV