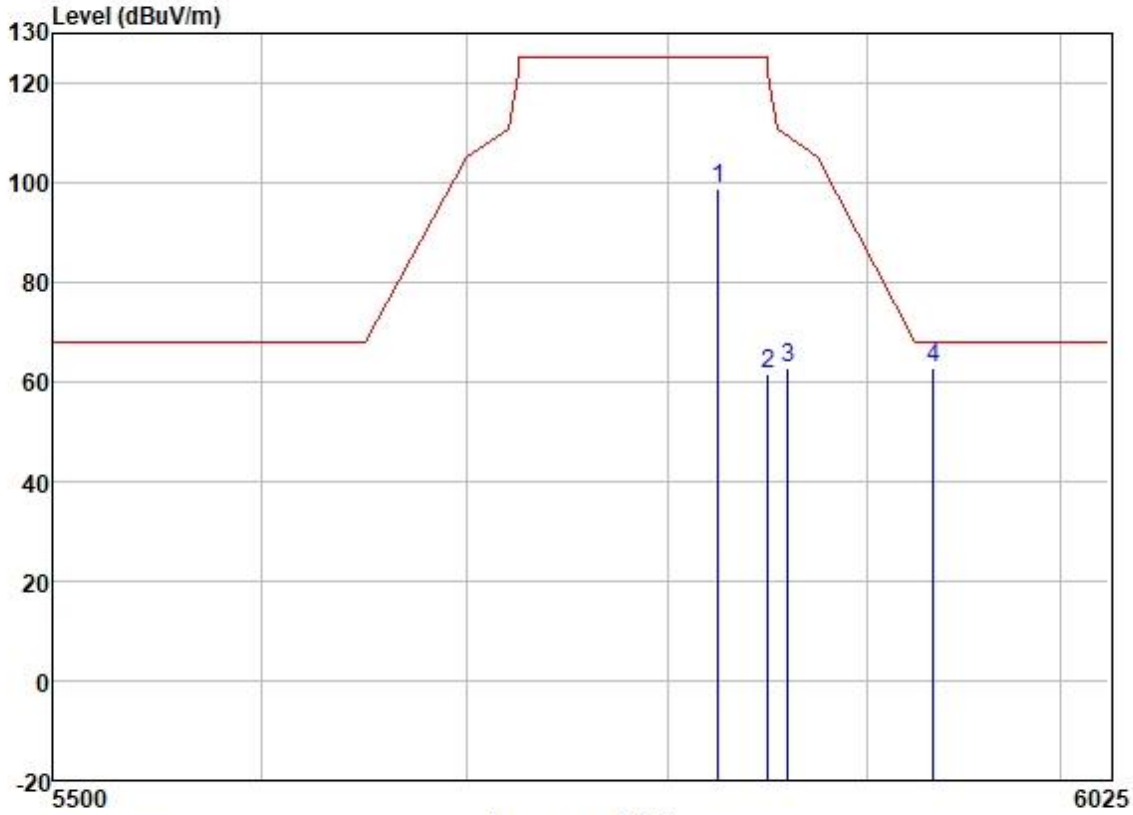
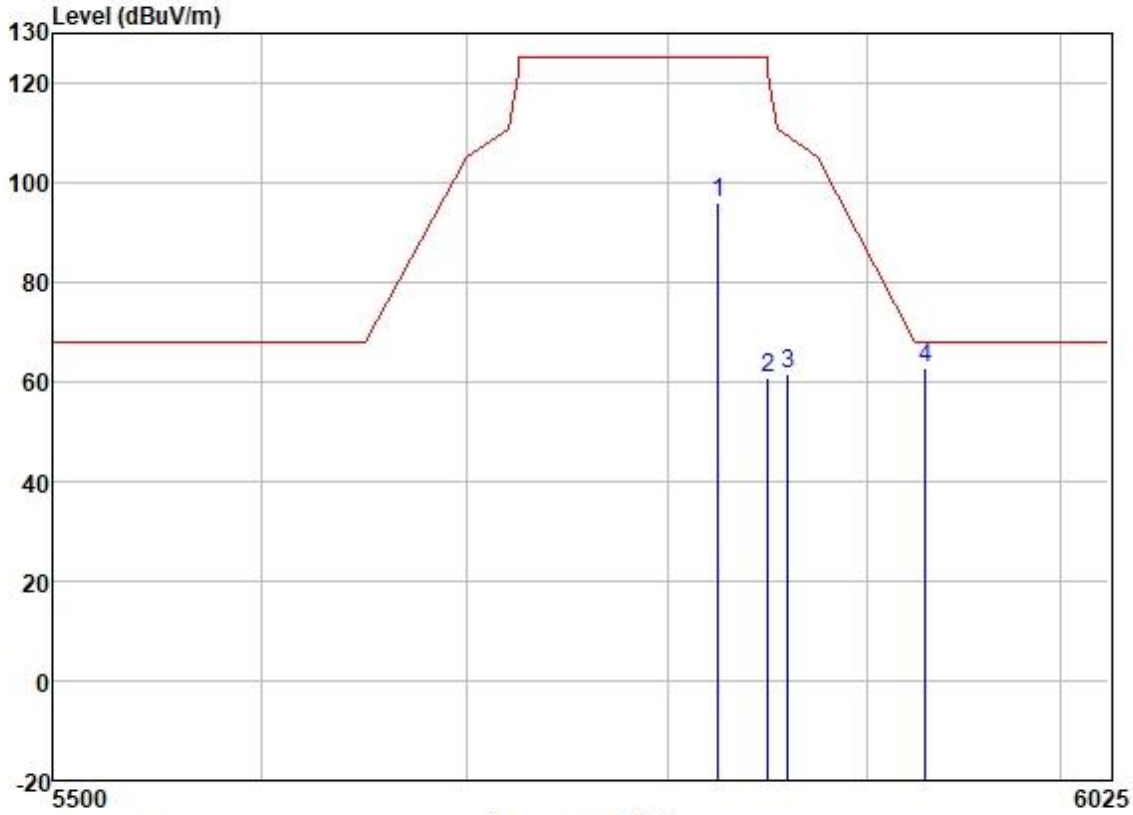
Test Mode: 07; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



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	5825.000	97.53	32.23	6.04	36.90	98.90	125.20	-26.30	HORIZONTAL	Peak
2	5850.000	60.38	32.25	6.00	36.90	61.73	122.20	-60.47	HORIZONTAL	Peak
3	5860.000	61.59	32.27	5.96	36.90	62.92	109.40	-46.48	HORIZONTAL	Peak
4	5934.330	61.30	32.34	6.00	36.90	62.74	68.20	-5.46	HORIZONTAL	Peak

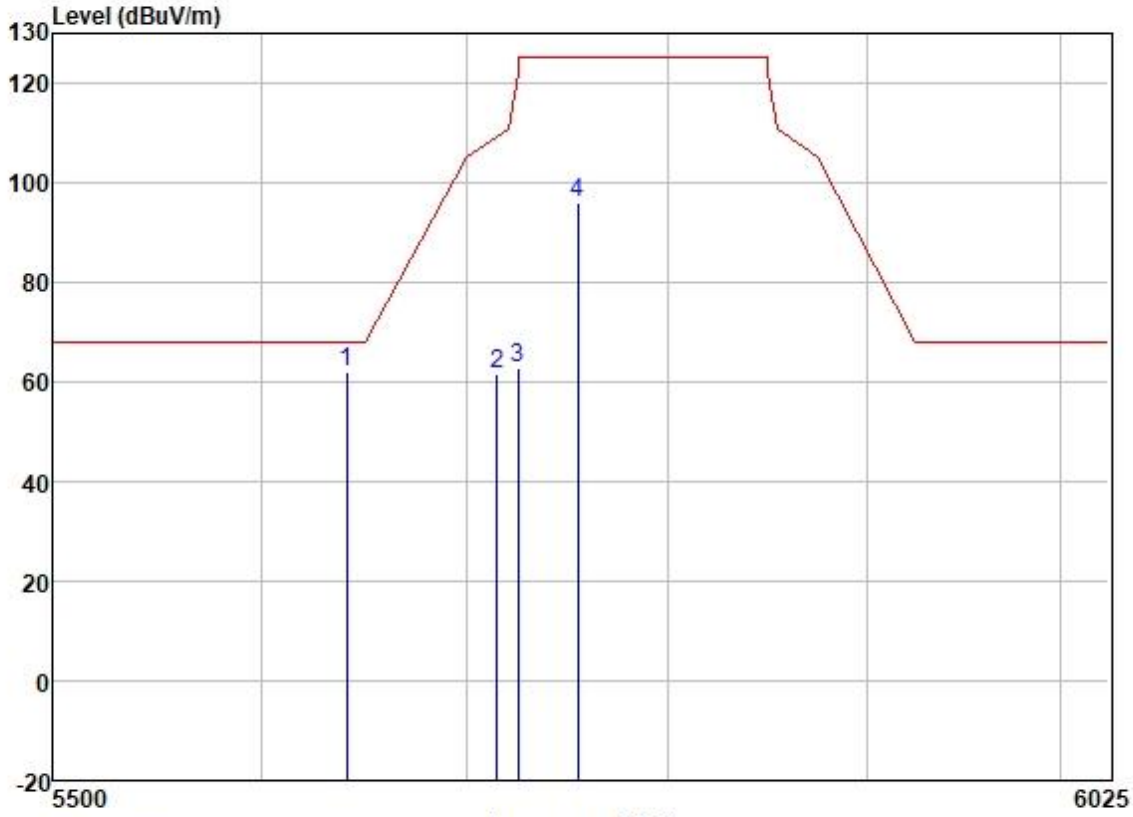
Test Mode: 07; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



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	5825.000	94.43	32.23	6.04	36.90	95.80	125.20	-29.40	VERTICAL	Peak
2	5850.000	59.64	32.25	6.00	36.90	60.99	122.20	-61.21	VERTICAL	Peak
3	5860.000	60.46	32.27	5.96	36.90	61.79	109.40	-47.61	VERTICAL	Peak
4	5930.412	61.35	32.34	6.00	36.90	62.79	68.20	-5.41	VERTICAL	Peak

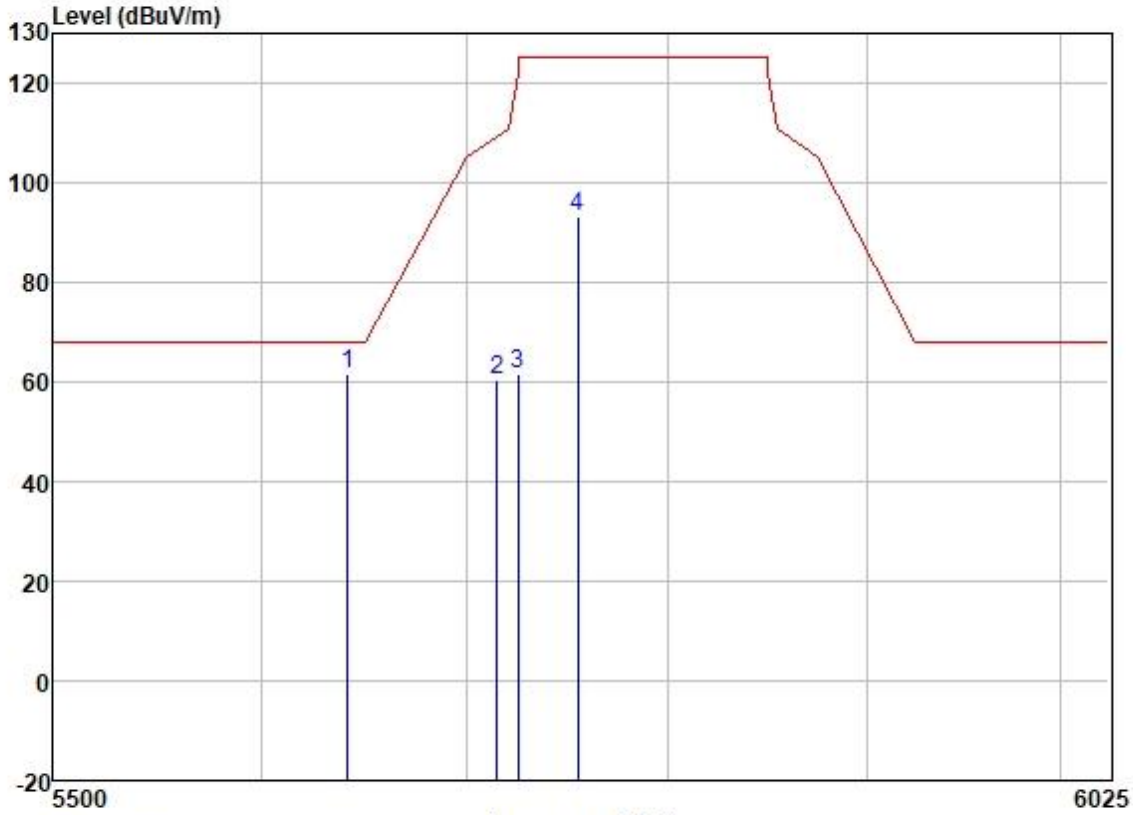
Test Mode: 07; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



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	5640.917	60.42	31.95	6.35	36.89	61.83	68.20	-6.37	HORIZONTAL	Peak
2	5715.000	60.23	32.04	6.33	36.89	61.71	109.40	-47.69	HORIZONTAL	Peak
3	5725.000	61.19	32.07	6.25	36.89	62.62	122.20	-59.58	HORIZONTAL	Peak
4	5755.000	94.70	32.10	6.20	36.89	96.11	125.20	-29.09	HORIZONTAL	Peak

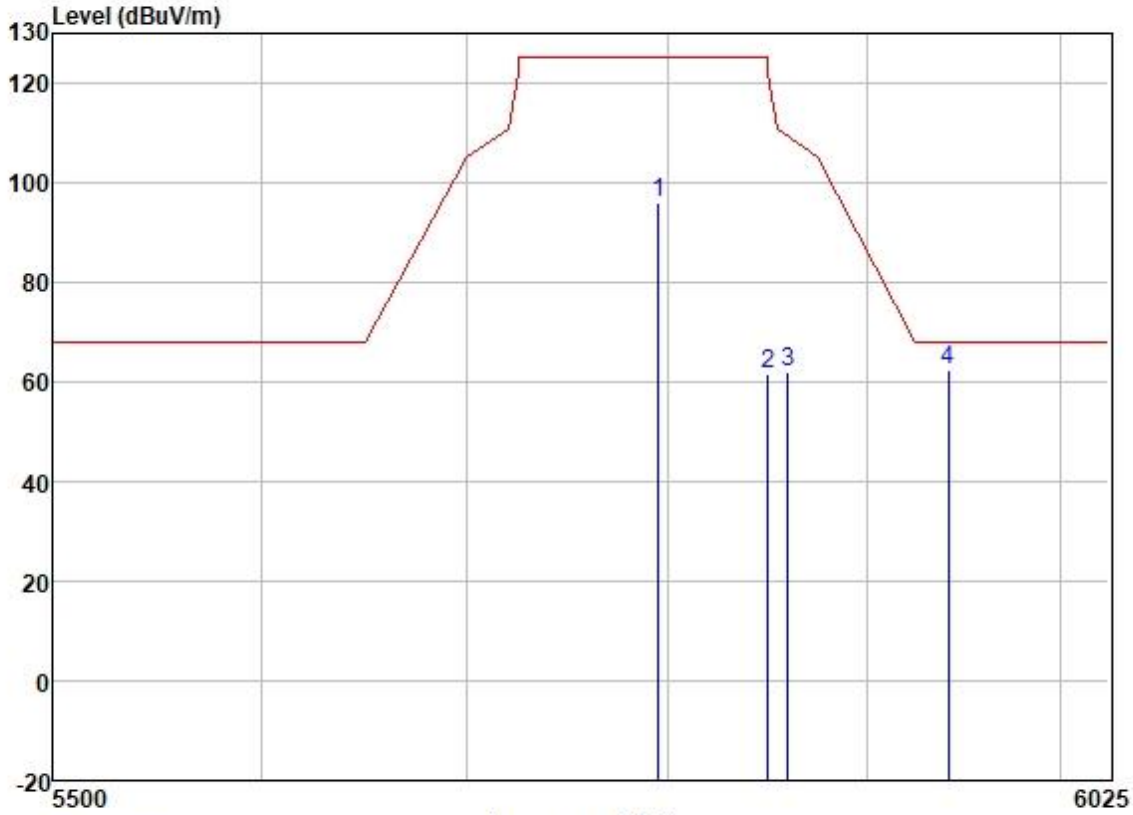
Test Mode: 07; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



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	5641.529	60.00	31.95	6.35	36.89	61.41	68.20	-6.79	VERTICAL	Peak
2	5715.000	59.04	32.04	6.33	36.89	60.52	109.40	-48.88	VERTICAL	Peak
3	5725.000	60.07	32.07	6.25	36.89	61.50	122.20	-60.70	VERTICAL	Peak
4	5755.000	91.71	32.10	6.20	36.89	93.12	125.20	-32.08	VERTICAL	Peak

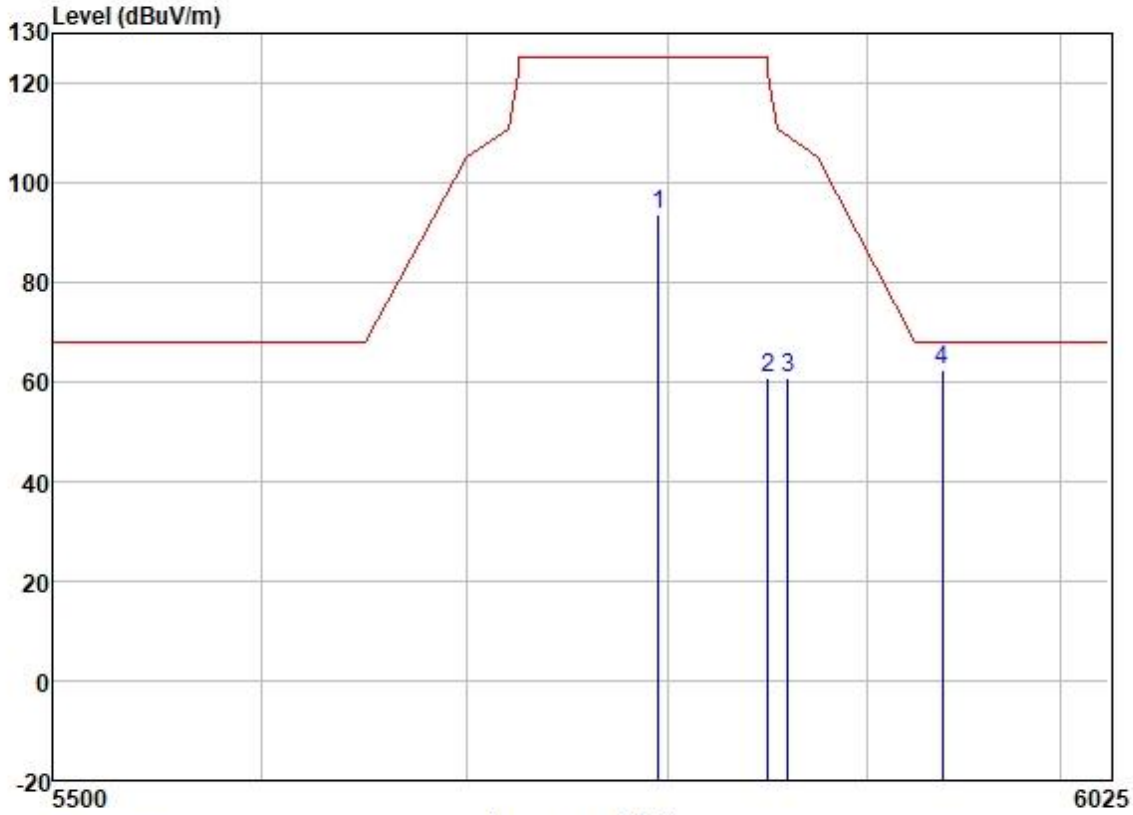
Test Mode: 07; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



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	5795.000	94.67	32.19	6.10	36.89	96.07	125.20	-29.13	HORIZONTAL	Peak
2	5850.000	60.27	32.25	6.00	36.90	61.62	122.20	-60.58	HORIZONTAL	Peak
3	5860.000	60.59	32.27	5.96	36.90	61.92	109.40	-47.48	HORIZONTAL	Peak
4	5942.152	60.77	32.36	6.05	36.90	62.28	68.20	-5.92	HORIZONTAL	Peak

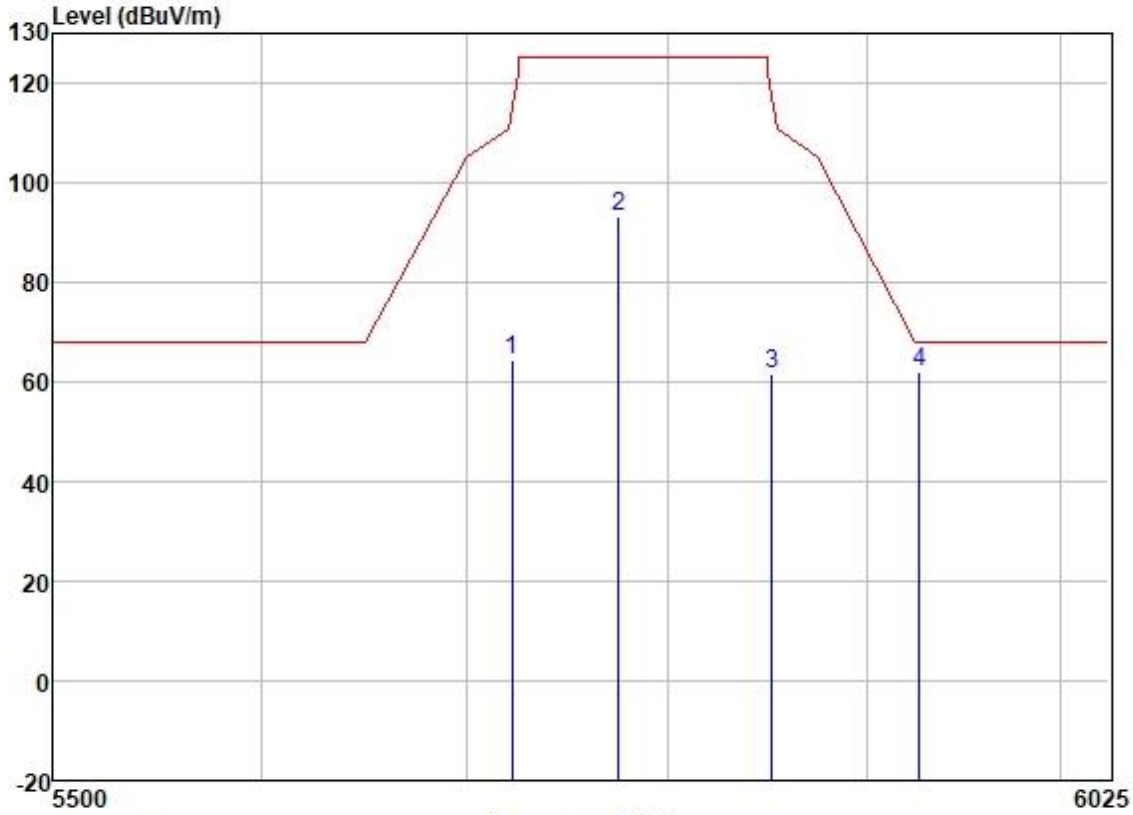
Test Mode: 07; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



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	5795.000	92.19	32.19	6.10	36.89	93.59	125.20	-31.61	VERTICAL	Peak
2	5850.000	59.48	32.25	6.00	36.90	60.83	122.20	-61.37	VERTICAL	Peak
3	5860.000	59.47	32.27	5.96	36.90	60.80	109.40	-48.60	VERTICAL	Peak
4	5938.697	61.13	32.34	6.00	36.90	62.57	68.20	-5.63	VERTICAL	Peak

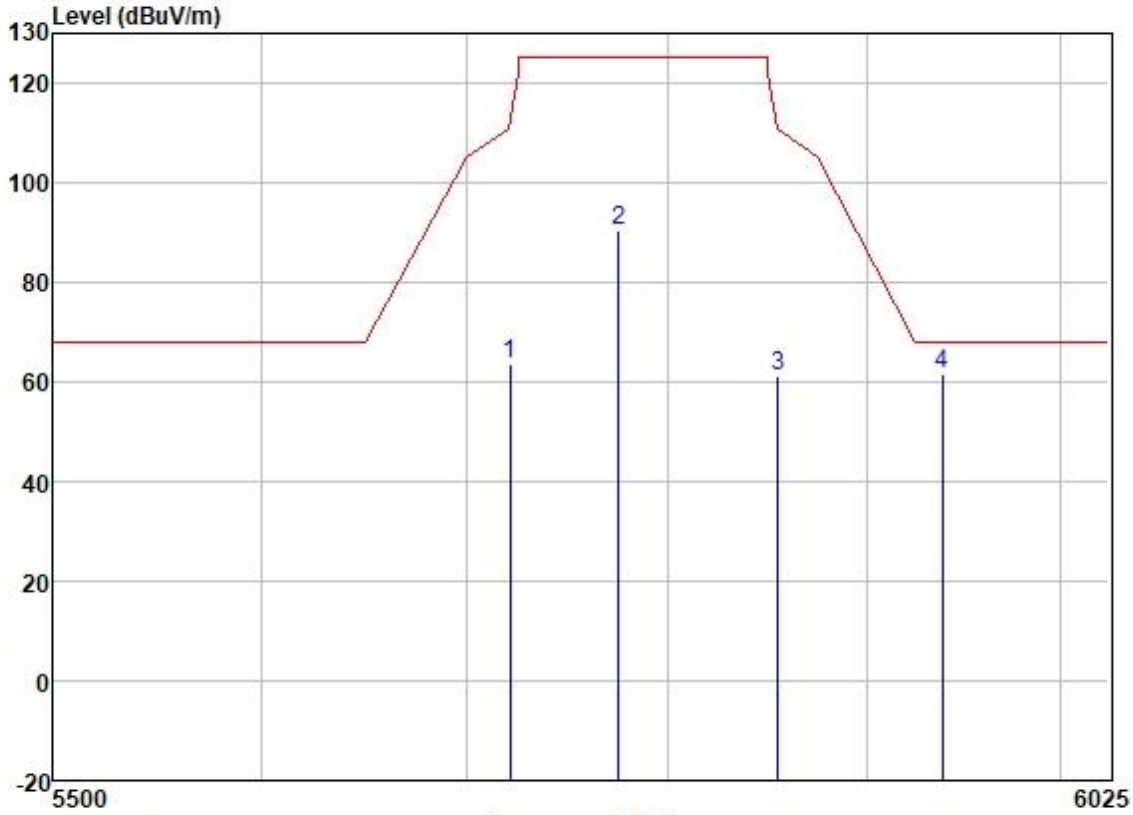
Test Mode: 07; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



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	5721.979	62.84	32.04	6.33	36.89	64.32	115.31	-50.99	HORIZONTAL	Peak
2	5775.000	91.79	32.16	6.10	36.89	93.16	125.20	-32.04	HORIZONTAL	Peak
3	5852.116	60.17	32.25	6.00	36.90	61.52	117.37	-55.85	HORIZONTAL	Peak
4	5926.868	60.67	32.34	6.00	36.90	62.11	68.20	-6.09	HORIZONTAL	Peak

Test Mode: 07; 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	5721.075	61.99	32.04	6.33	36.89	63.47	113.25	-49.78	VERTICAL	Peak
2	5775.000	89.19	32.16	6.10	36.89	90.56	125.20	-34.64	VERTICAL	Peak
3	5855.199	59.91	32.25	6.00	36.90	61.26	110.74	-49.48	VERTICAL	Peak
4	5938.741	60.17	32.34	6.00	36.90	61.61	68.20	-6.59	VERTICAL	Peak

7.10 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.

7.10.1 E.U.T. Operation

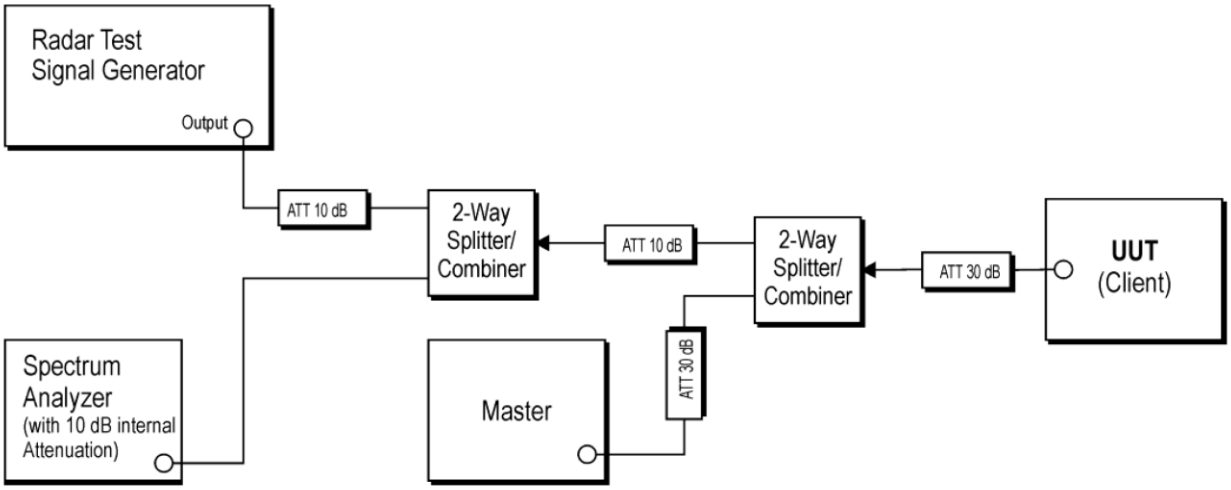
Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1008 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Noraml operating_Keep the EUT communication with the companion device.

7.10.3 Test Setup Diagram



7.10.4 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

7.11 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.

7.11.1 E.U.T. Operation

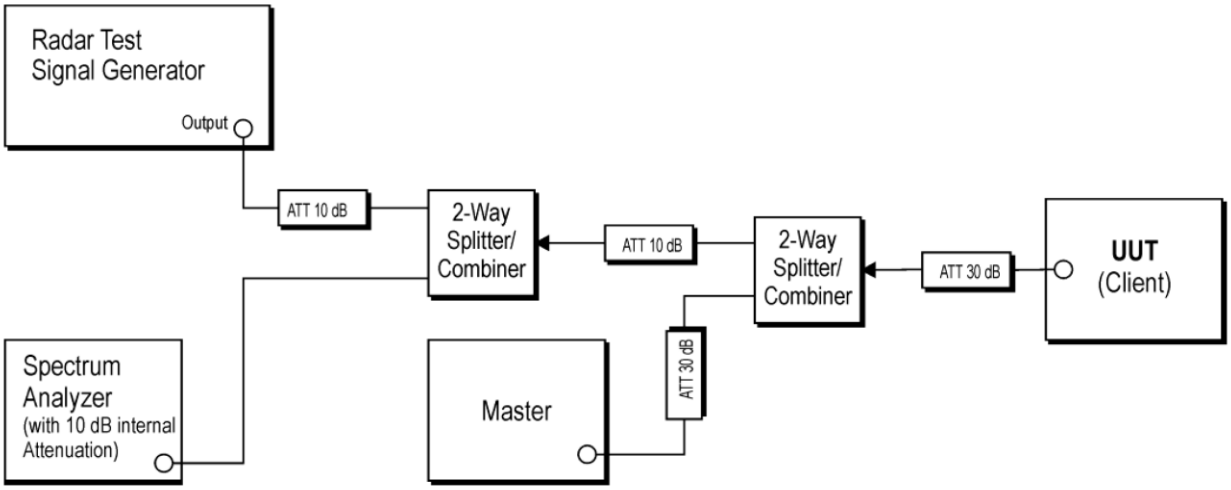
Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1008 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Noraml operating_Keep the EUT communication with the companion device.

7.11.3 Test Setup Diagram



7.11.4 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 Photo for GZCR2109021038AT

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center, EEC Laboratory.
No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

9 EUT Constructional Details (EUT Photos)

Refer to Appendix _ Photographs of EUT Constructional Details for GZCR2109021038AT

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10 Appendix

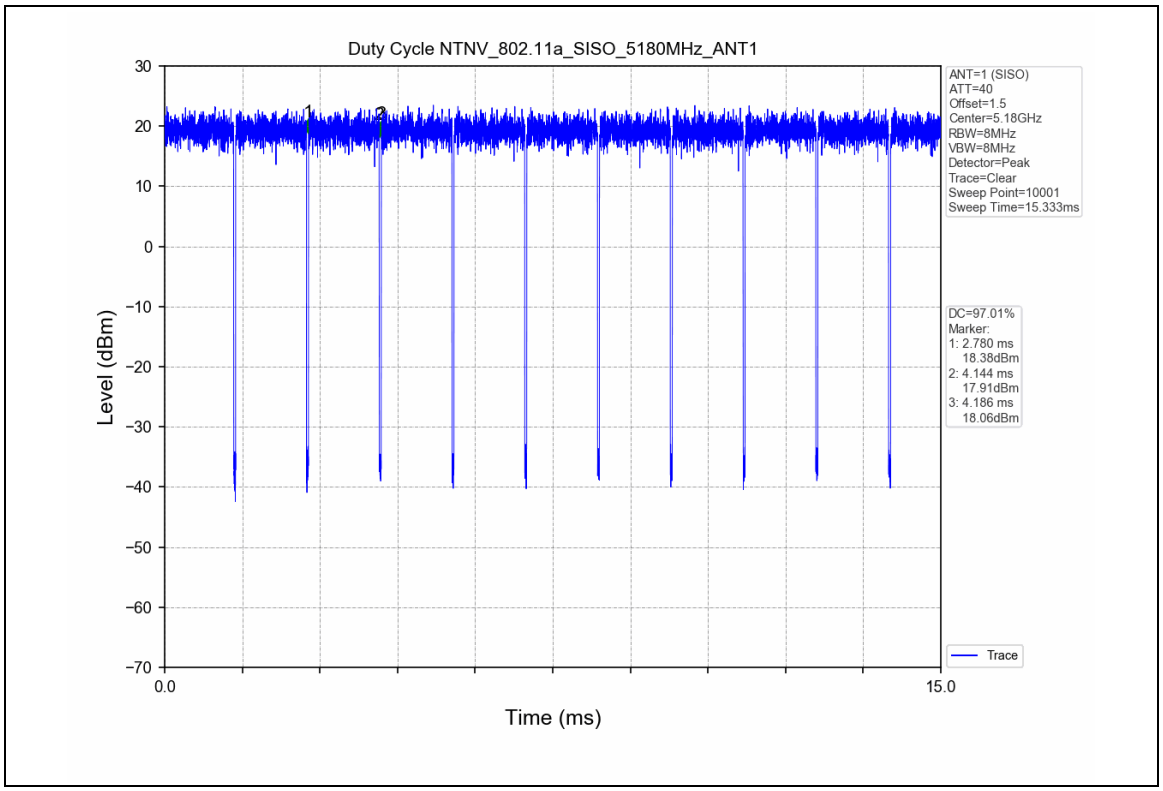
1. Duty Cycle

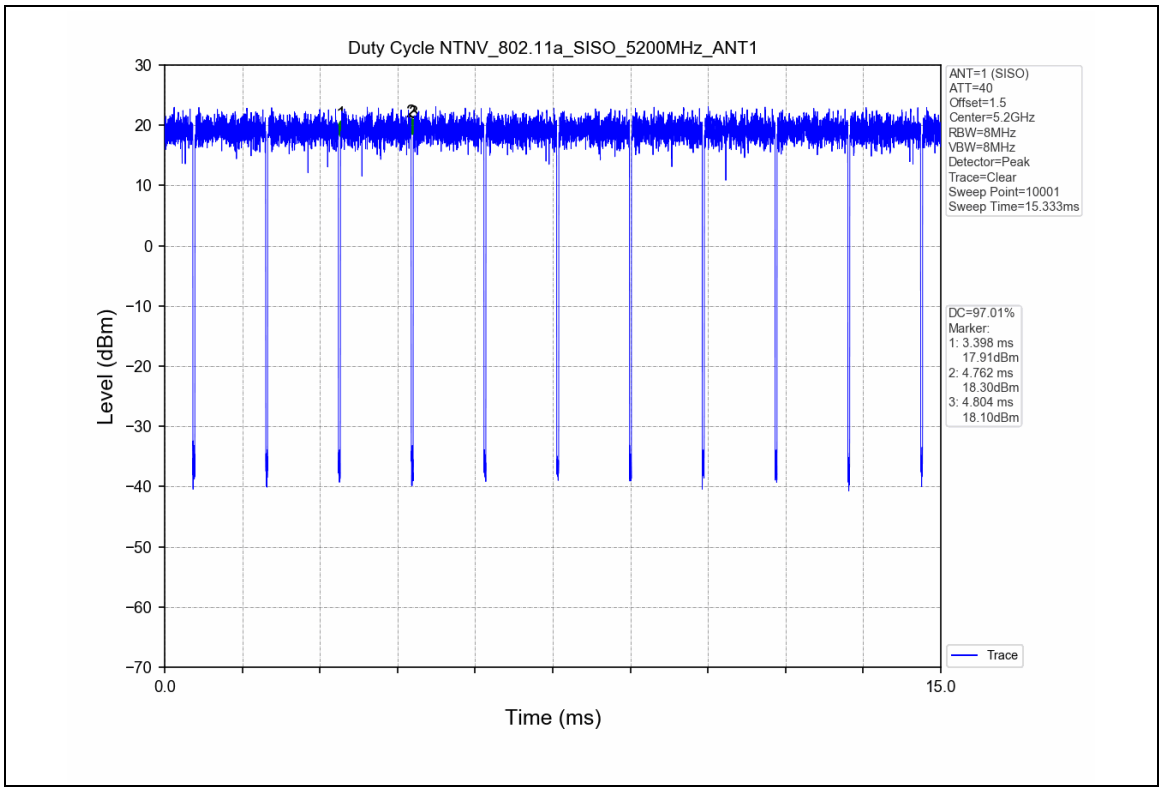
1.1 Test Result

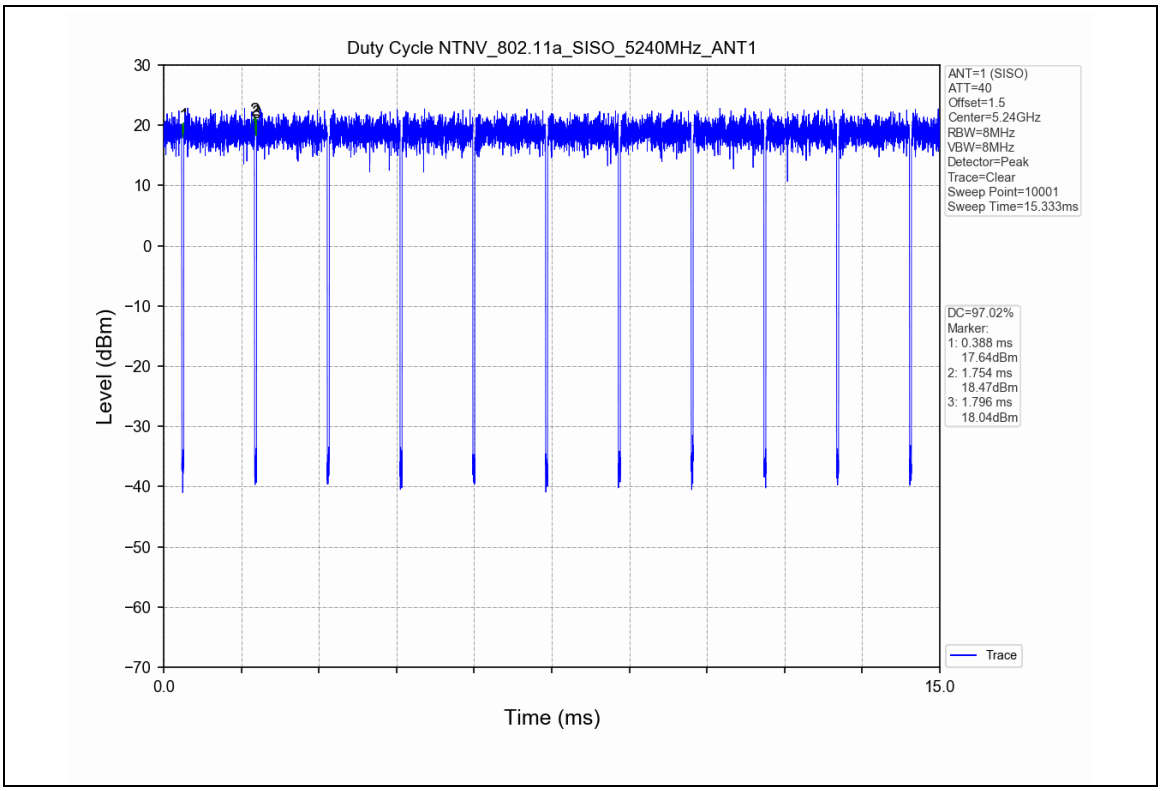
Test Mode	Channel Frequency (MHz)	TX Type	ANT No.	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11a	5180	SISO	1	1.364	1.406	97.01	0.13
	5200	SISO	1	1.364	1.406	97.01	0.13
	5240	SISO	1	1.366	1.408	97.02	0.13
	5260	SISO	1	1.365	1.407	97.01	0.13
	5300	SISO	1	1.365	1.407	97.01	0.13
	5320	SISO	1	1.365	1.407	97.01	0.13
	5500	SISO	1	1.365	1.407	97.01	0.13
	5580	SISO	1	1.366	1.408	97.02	0.13
	5600	SISO	1	1.365	1.407	97.01	0.13
	5700	SISO	1	1.365	1.407	97.01	0.13
	5745	SISO	1	1.364	1.406	97.01	0.13
	5785	SISO	1	1.364	1.406	97.01	0.13
	5825	SISO	1	1.365	1.407	97.01	0.13
802.11n(HT20)	5180	SISO	1	1.307	1.349	96.89	0.14
	5200	SISO	1	1.308	1.350	96.89	0.14
	5240	SISO	1	1.308	1.350	96.89	0.14
	5260	SISO	1	1.308	1.350	96.89	0.14
	5300	SISO	1	1.307	1.349	96.89	0.14
	5320	SISO	1	1.308	1.350	96.89	0.14
	5500	SISO	1	1.307	1.349	96.89	0.14
	5580	SISO	1	1.308	1.350	96.89	0.14
	5600	SISO	1	1.307	1.349	96.89	0.14
	5700	SISO	1	1.307	1.349	96.89	0.14
	5745	SISO	1	1.308	1.350	96.89	0.14
	5785	SISO	1	1.307	1.349	96.89	0.14
	5825	SISO	1	1.307	1.349	96.89	0.14
802.11n(HT40)	5190	SISO	1	0.619	0.658	94.07	0.27
	5230	SISO	1	0.618	0.658	93.92	0.27
	5270	SISO	1	0.618	0.658	93.92	0.27
	5310	SISO	1	0.618	0.658	93.92	0.27
	5510	SISO	1	0.618	0.658	93.92	0.27
	5550	SISO	1	0.618	0.658	93.92	0.27
	5590	SISO	1	0.618	0.658	93.92	0.27

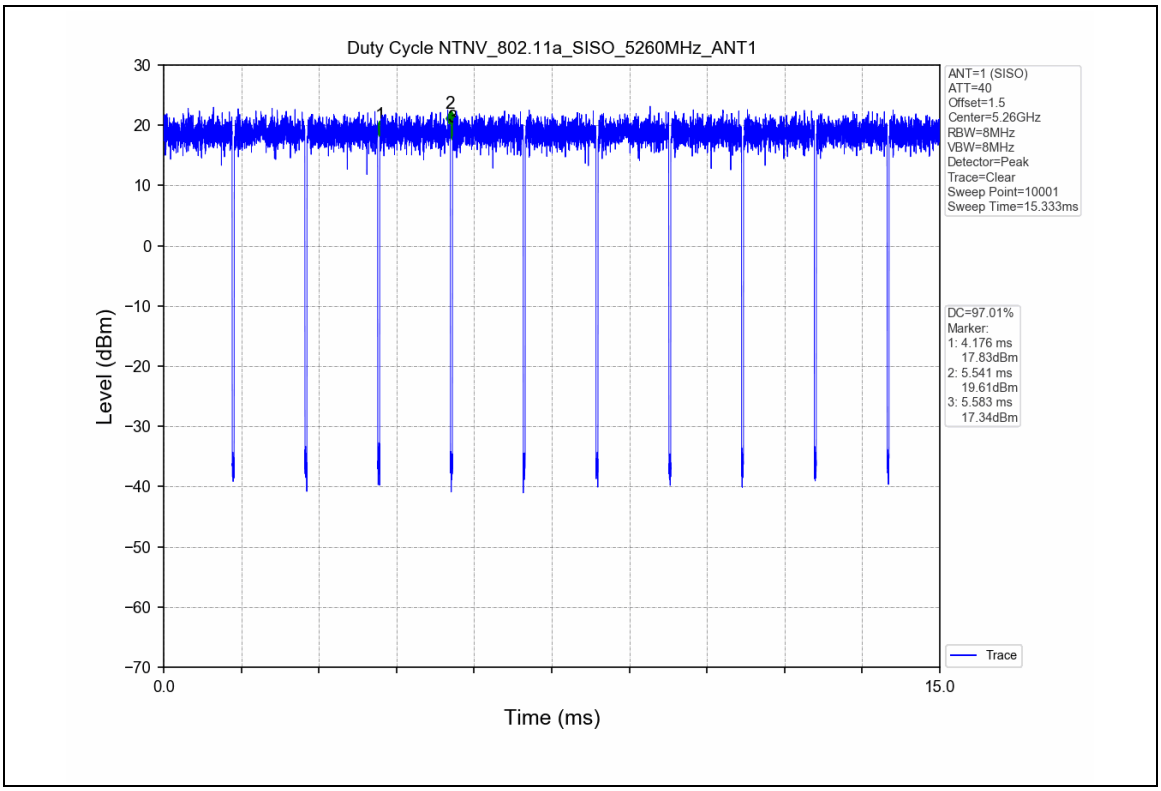
	5670	SISO	1	0.618	0.658	93.92	0.27
	5755	SISO	1	0.618	0.658	93.92	0.27
	5795	SISO	1	0.618	0.658	93.92	0.27
802.11ac(VHT20)	5180	SISO	1	1.315	1.357	96.90	0.14
	5200	SISO	1	1.316	1.358	96.91	0.14
	5240	SISO	1	1.316	1.358	96.91	0.14
	5260	SISO	1	1.316	1.358	96.91	0.14
	5300	SISO	1	1.316	1.358	96.91	0.14
	5320	SISO	1	1.316	1.358	96.91	0.14
	5500	SISO	1	1.315	1.357	96.90	0.14
	5580	SISO	1	1.315	1.357	96.90	0.14
	5600	SISO	1	1.316	1.358	96.91	0.14
	5700	SISO	1	1.315	1.357	96.90	0.14
	5745	SISO	1	1.314	1.356	96.90	0.14
	5785	SISO	1	1.315	1.357	96.90	0.14
	5825	SISO	1	1.315	1.357	96.90	0.14
802.11ac(VHT40)	5190	SISO	1	0.626	0.666	93.99	0.27
	5230	SISO	1	0.625	0.665	93.98	0.27
	5270	SISO	1	0.626	0.666	93.99	0.27
	5310	SISO	1	0.626	0.666	93.99	0.27
	5510	SISO	1	0.626	0.666	93.99	0.27
	5550	SISO	1	0.626	0.666	93.99	0.27
	5590	SISO	1	0.626	0.665	94.14	0.26
	5670	SISO	1	0.626	0.666	93.99	0.27
	5755	SISO	1	0.626	0.665	94.14	0.26
	5795	SISO	1	0.625	0.665	93.98	0.27
802.11ac(VHT80)	5210	SISO	1	0.324	0.365	88.77	0.52
	5290	SISO	1	0.324	0.366	88.52	0.53
	5530	SISO	1	0.324	0.366	88.52	0.53
	5610	SISO	1	0.324	0.366	88.52	0.53
	5775	SISO	1	0.324	0.366	88.52	0.53

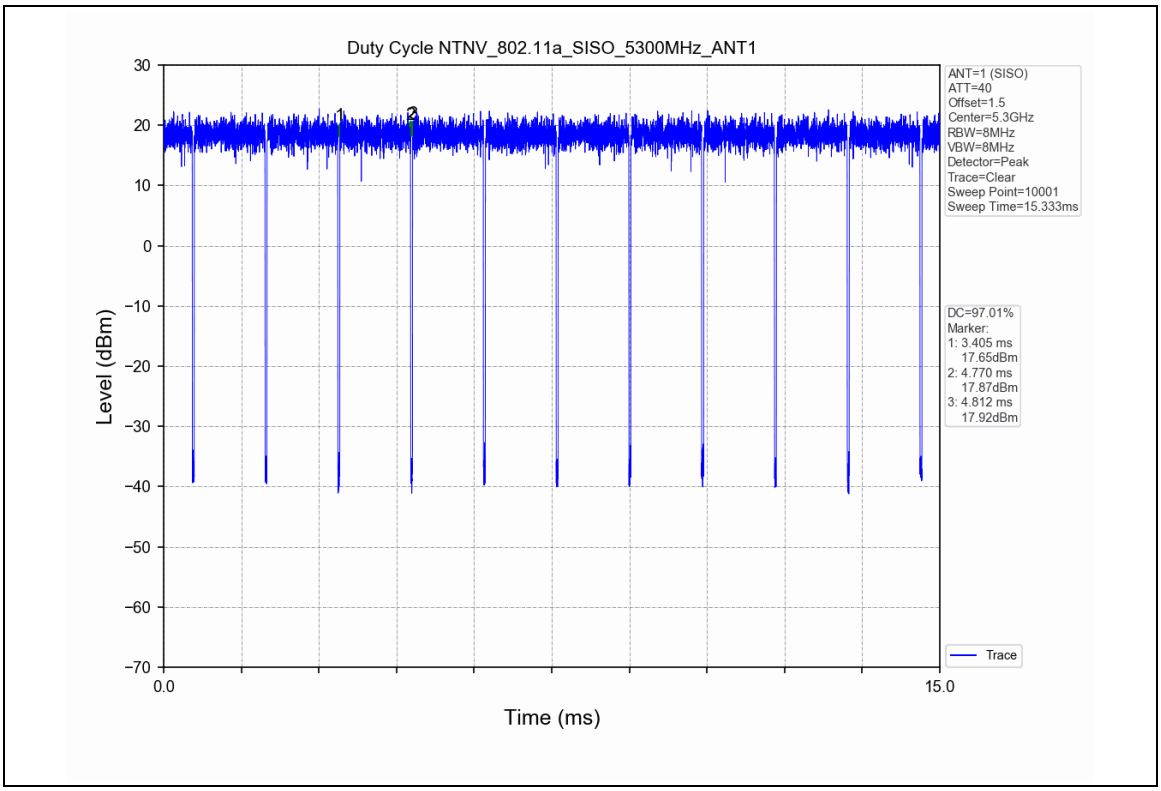
1.2 Test Graph

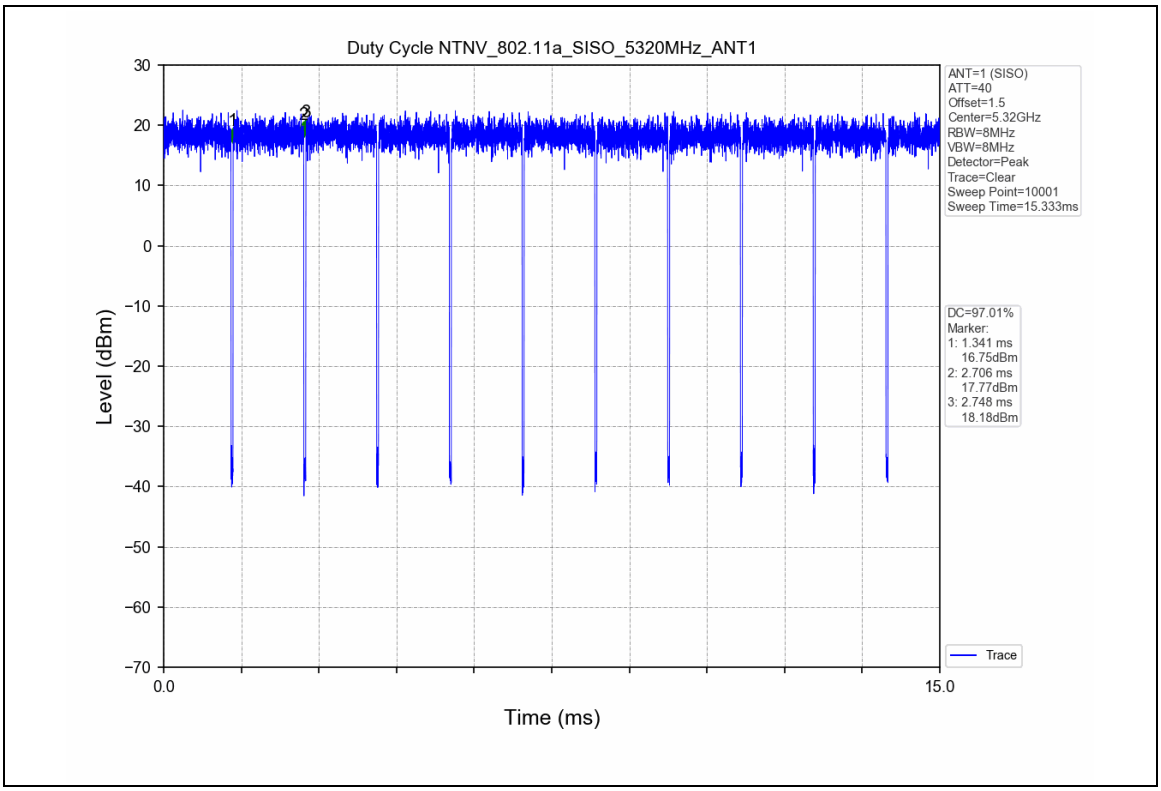


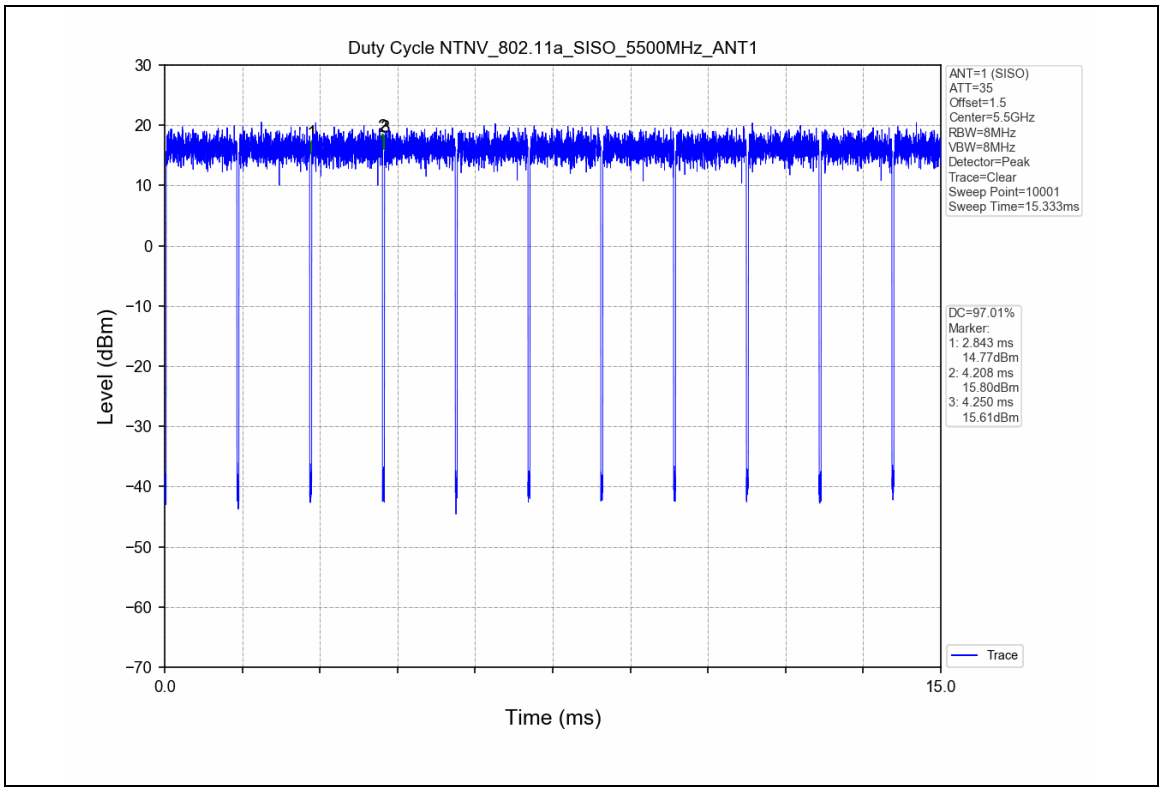


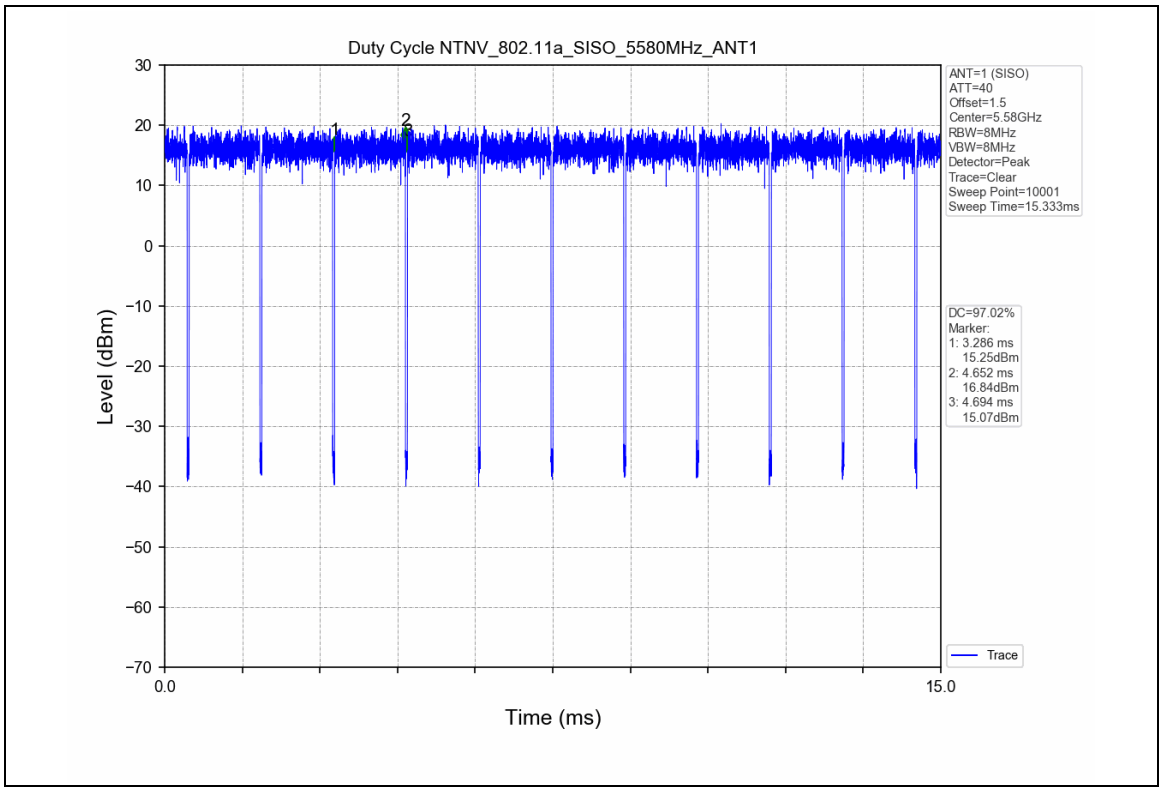


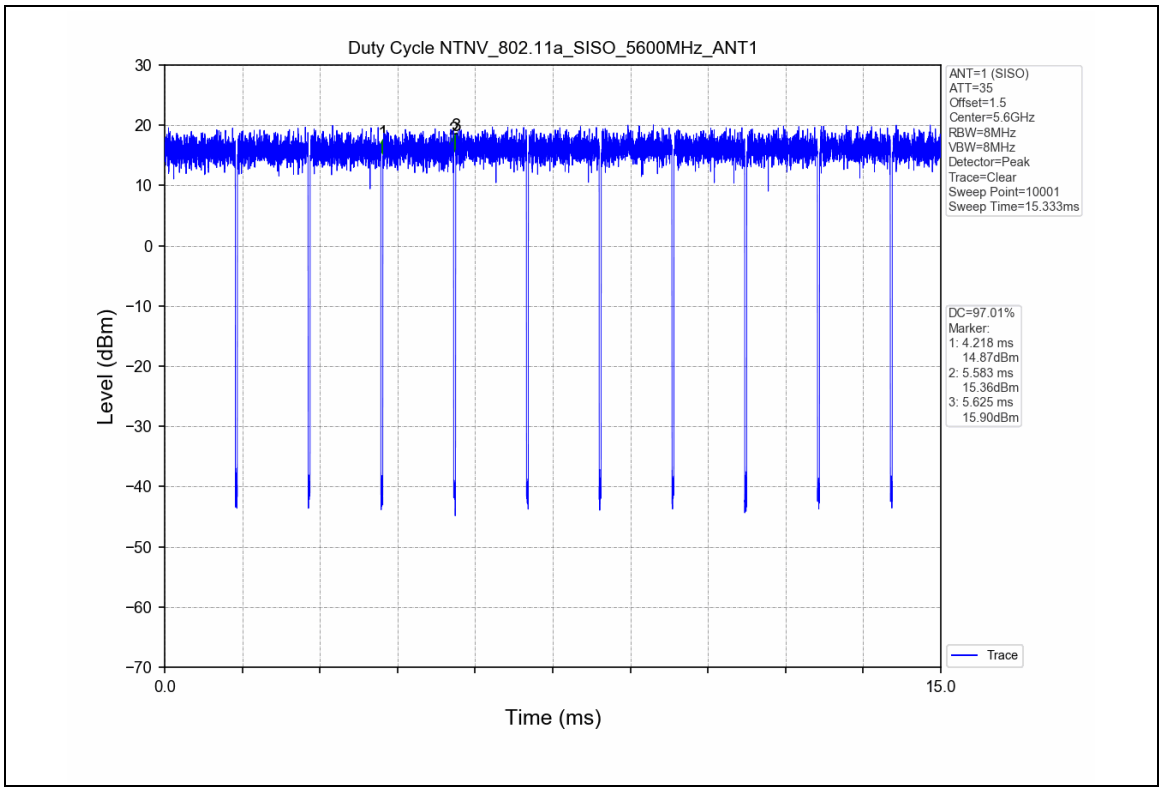


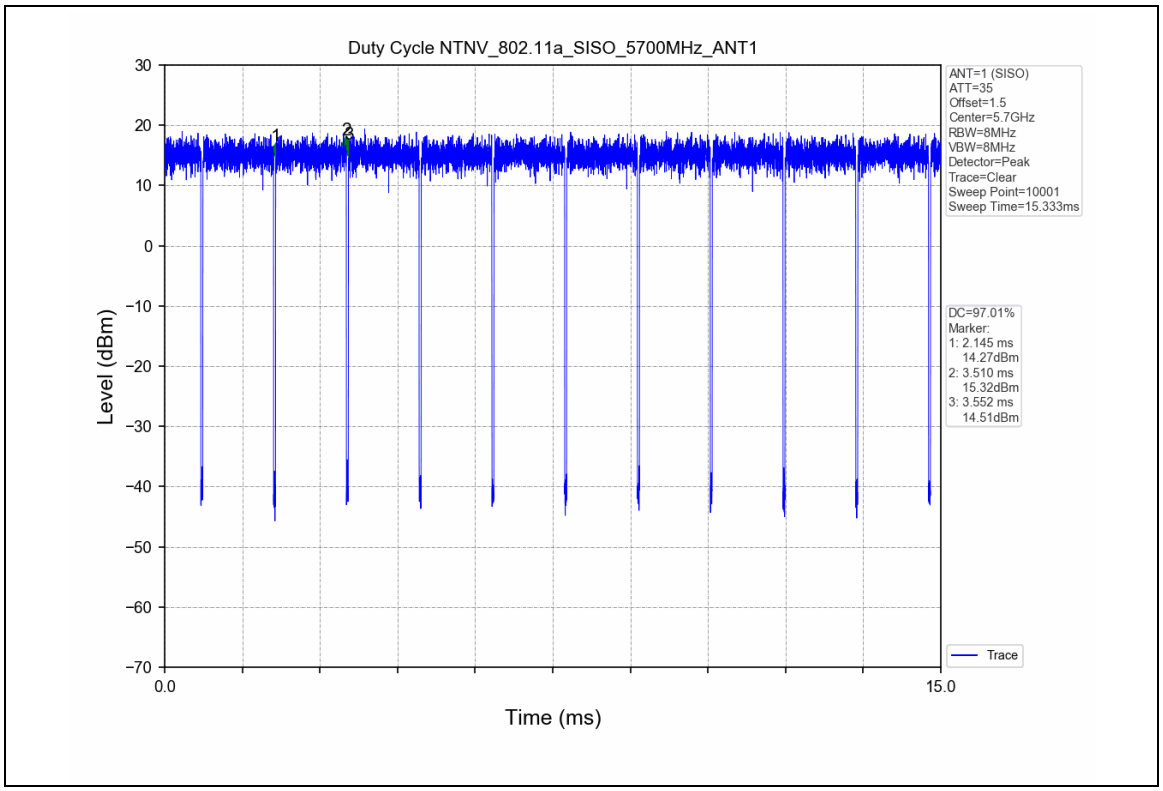


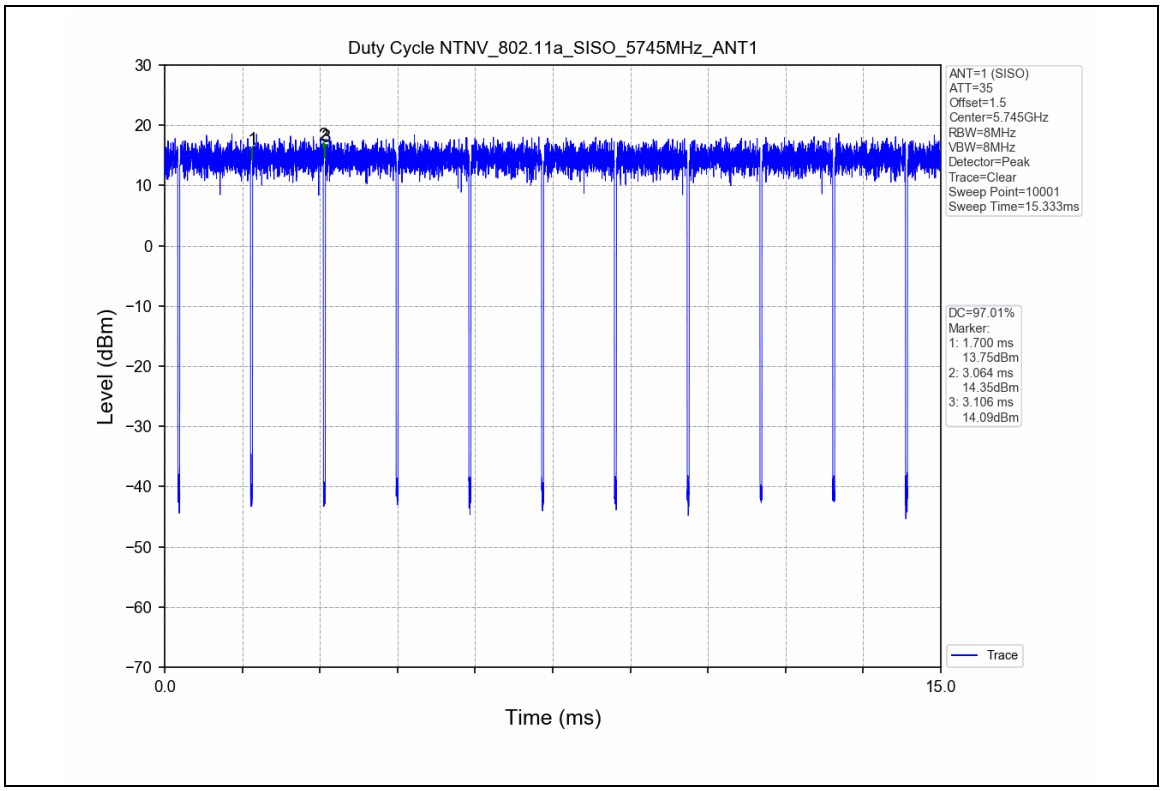


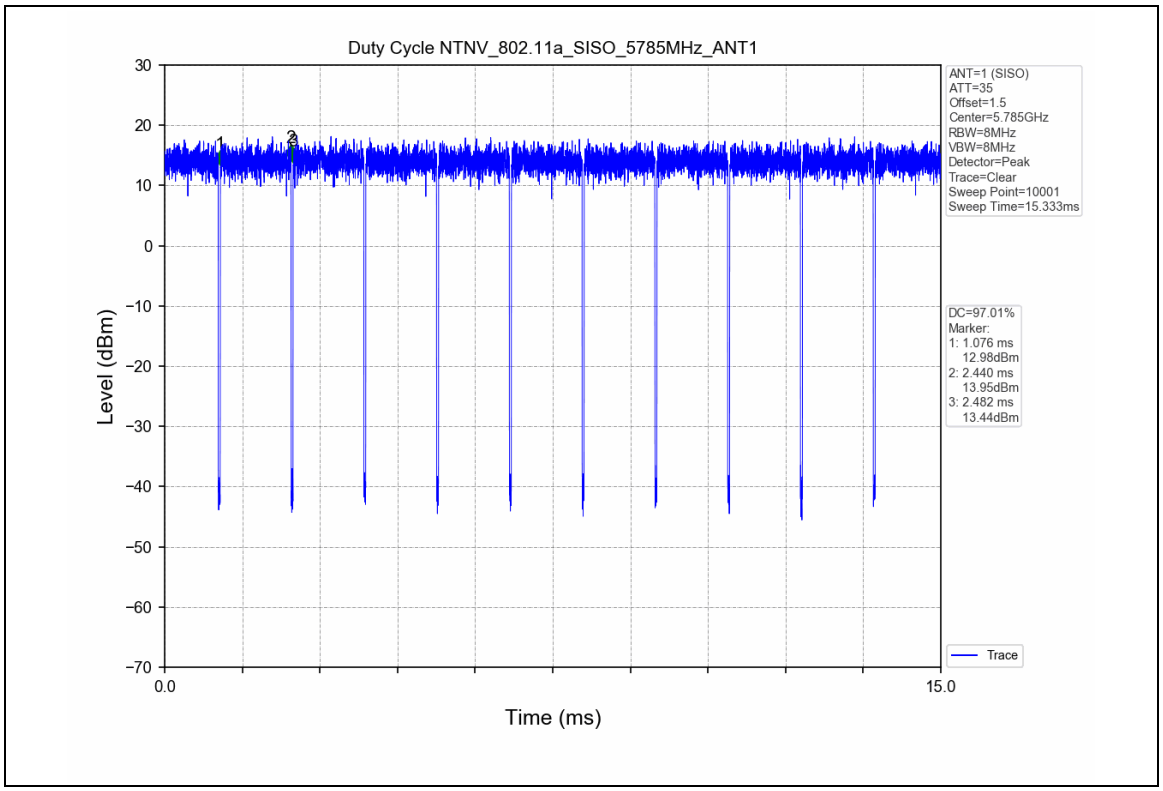


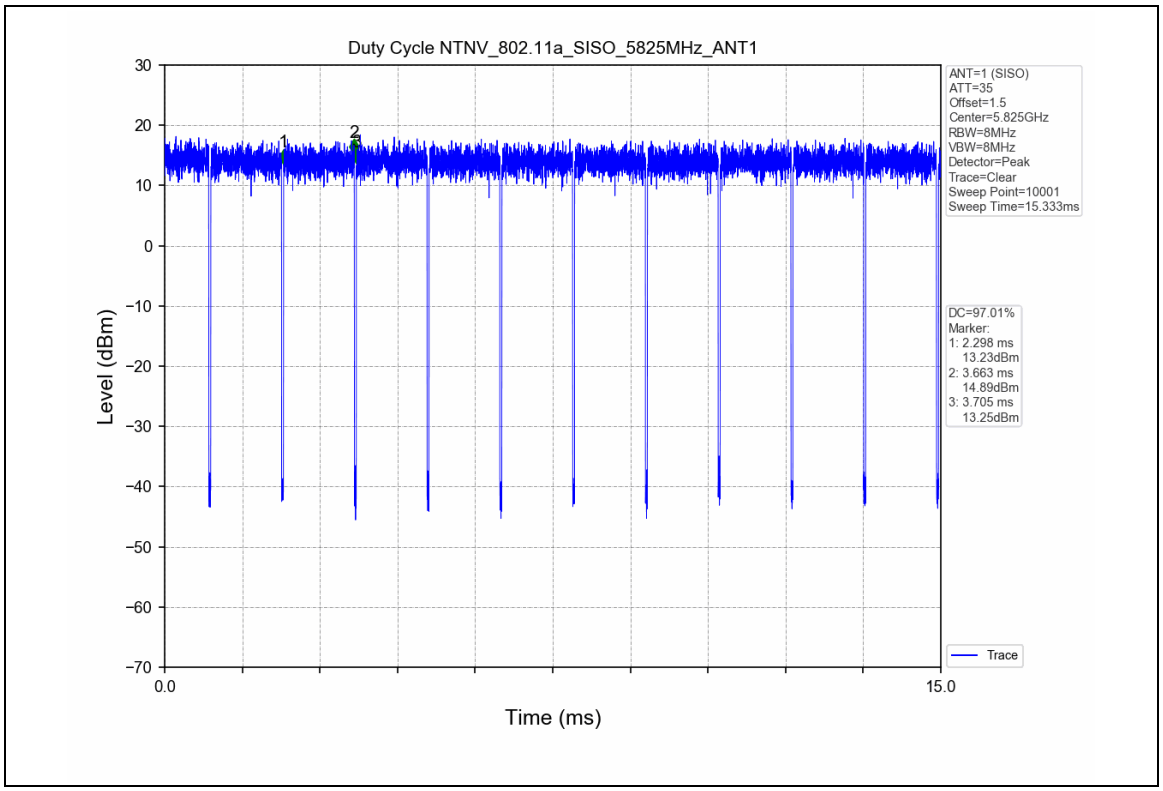


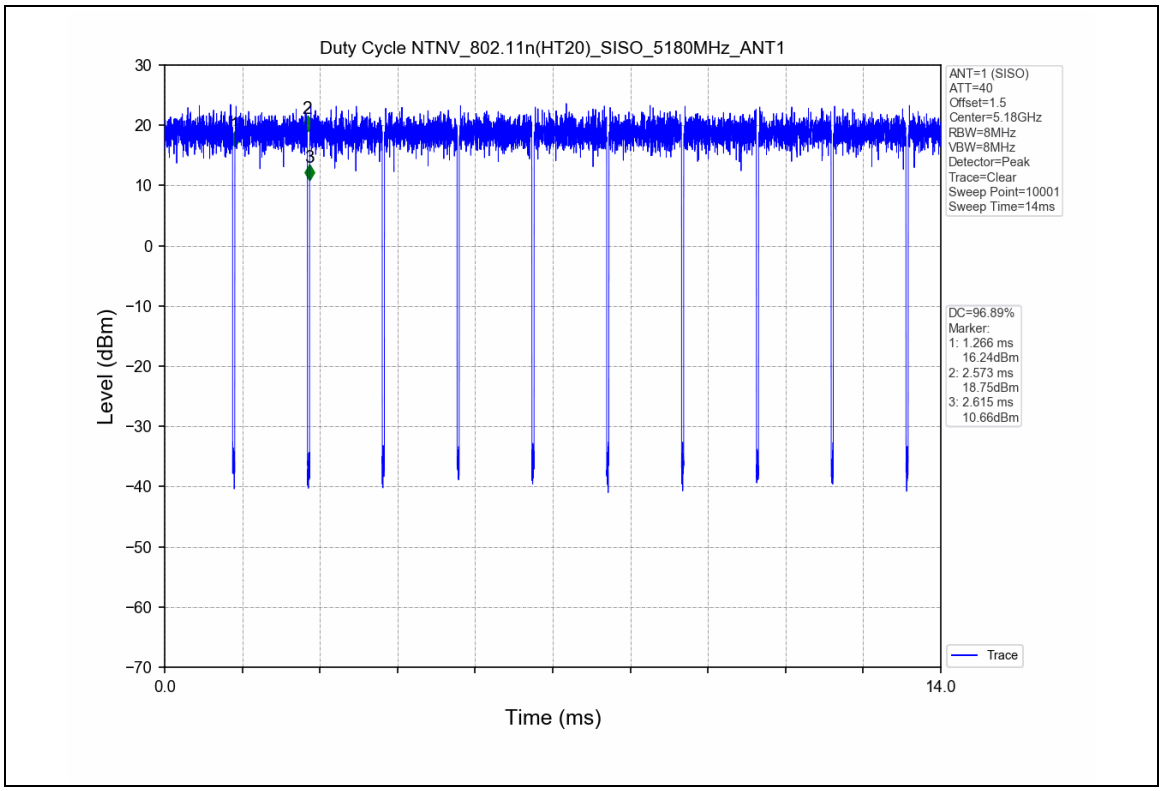


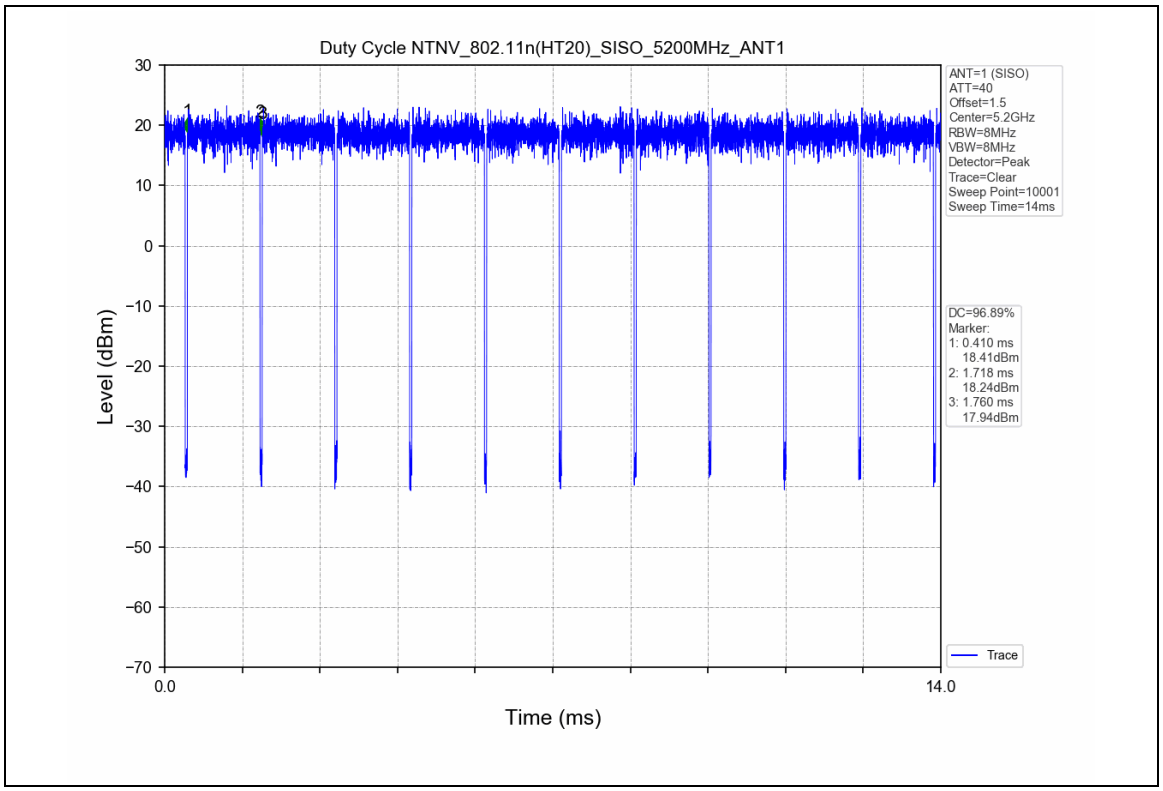


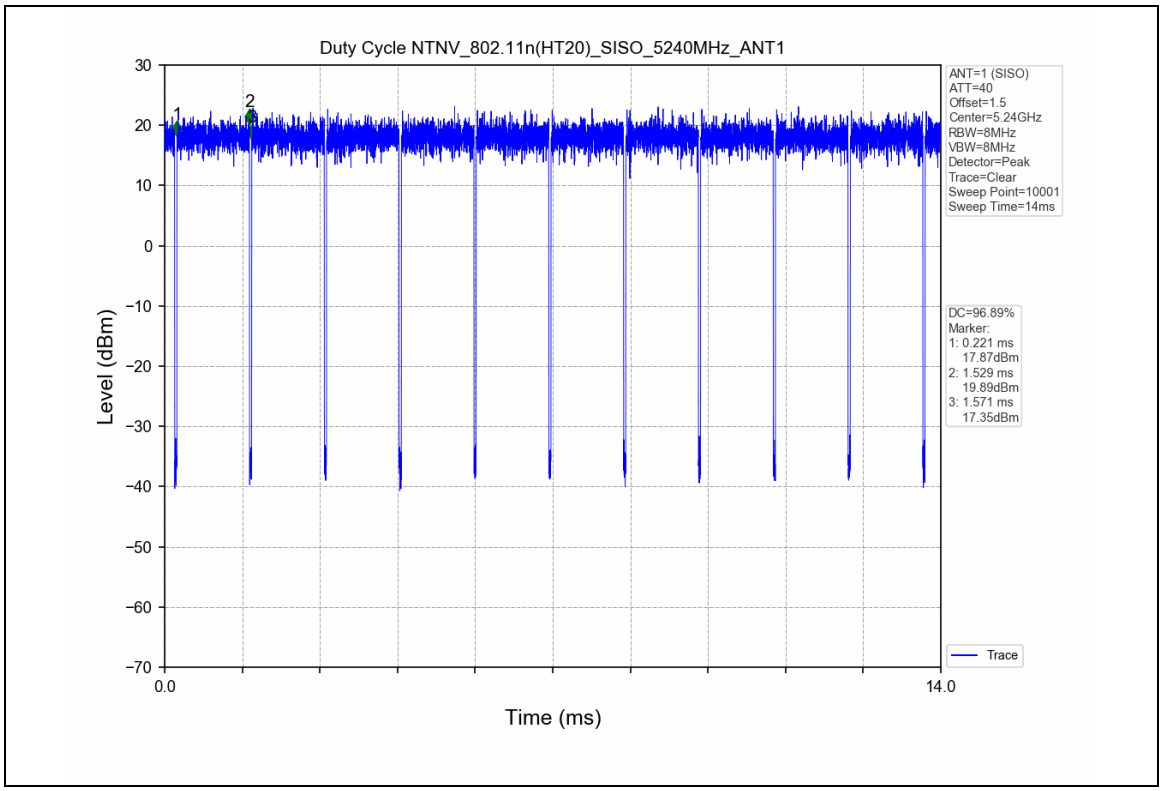


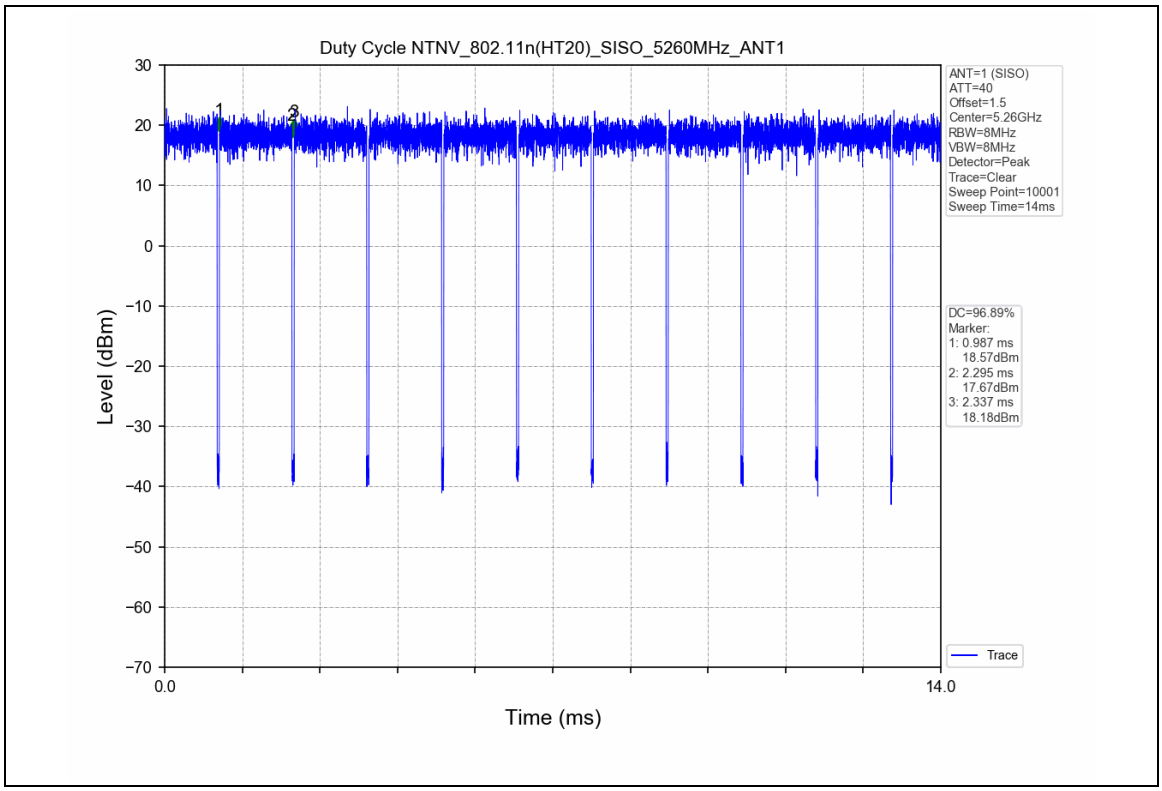


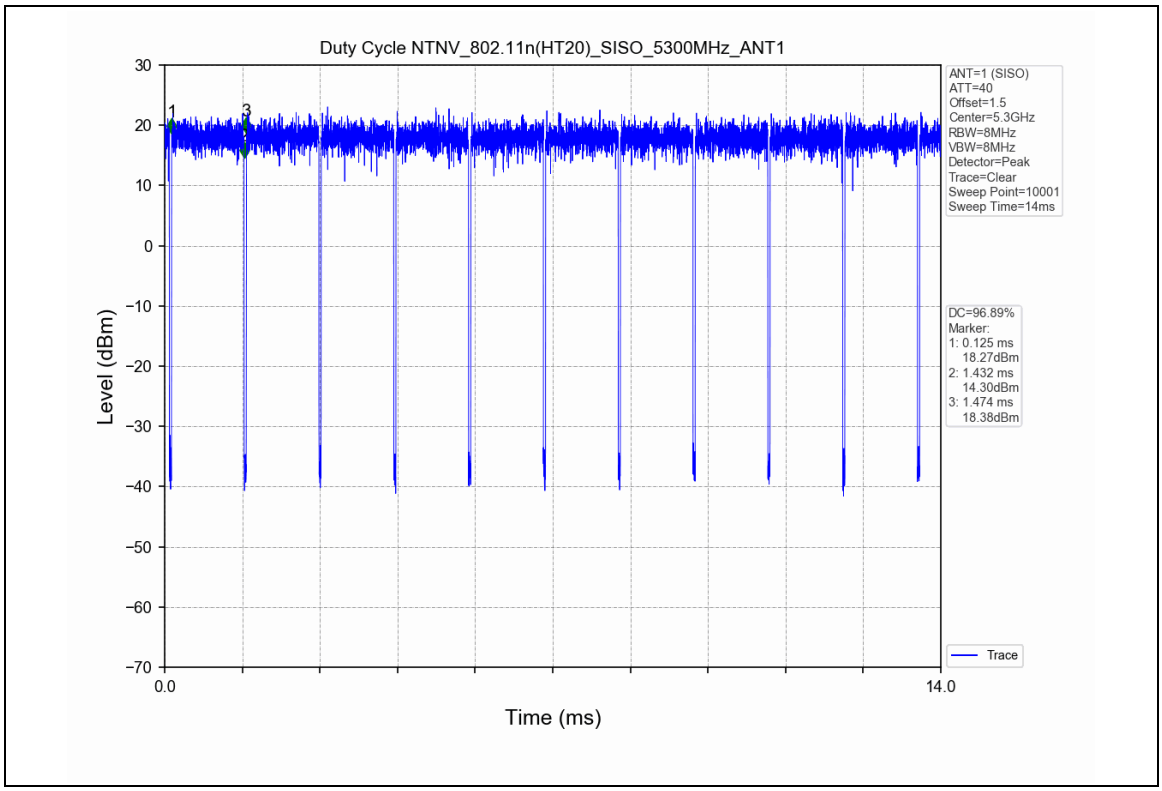


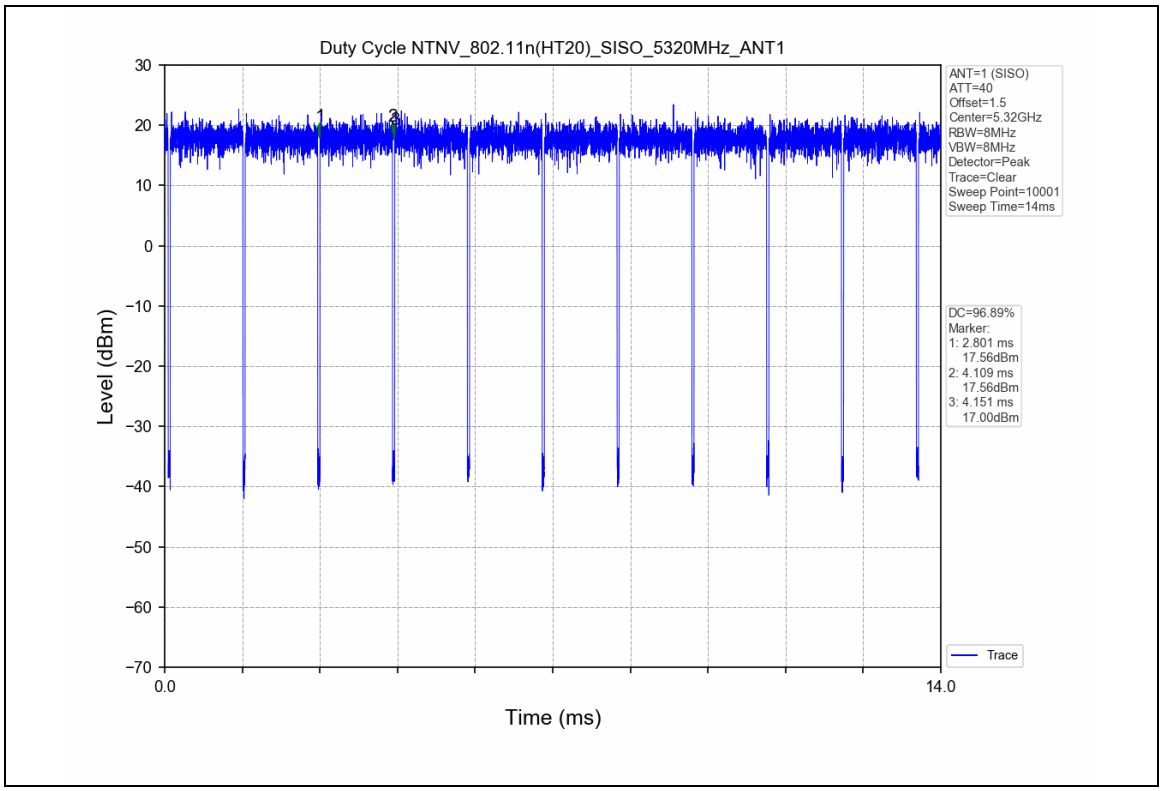


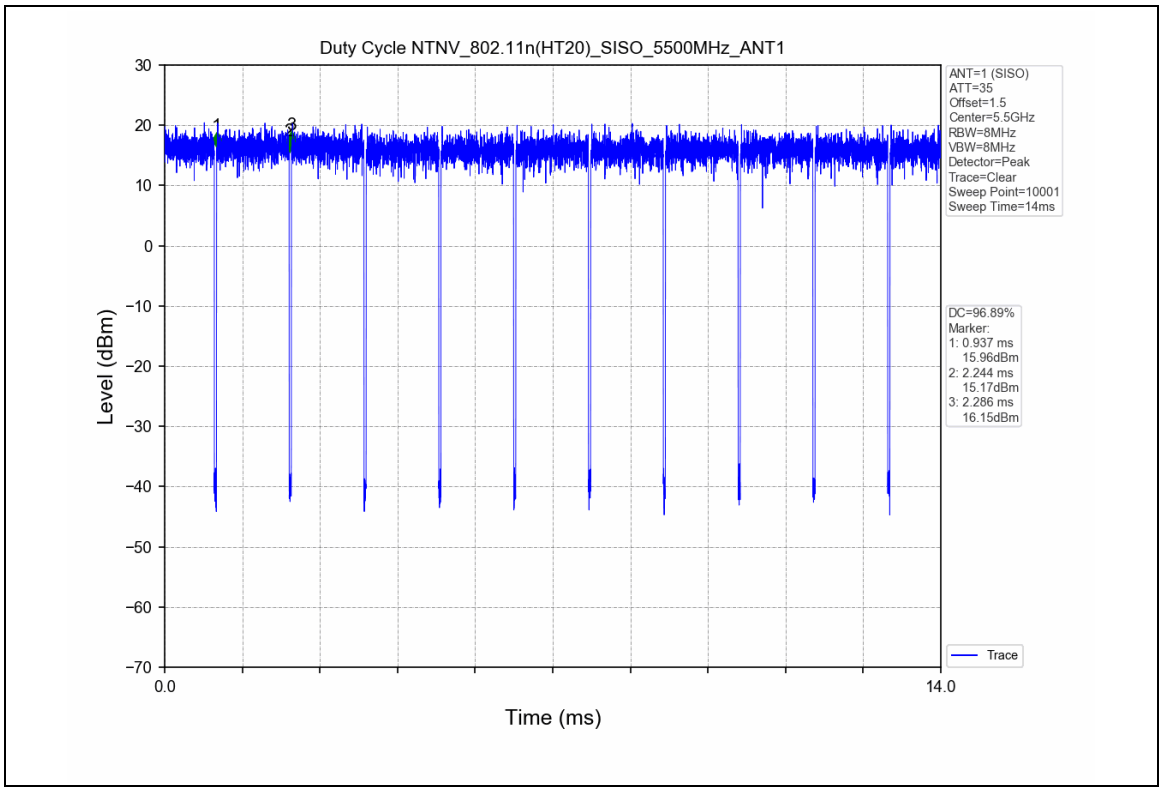


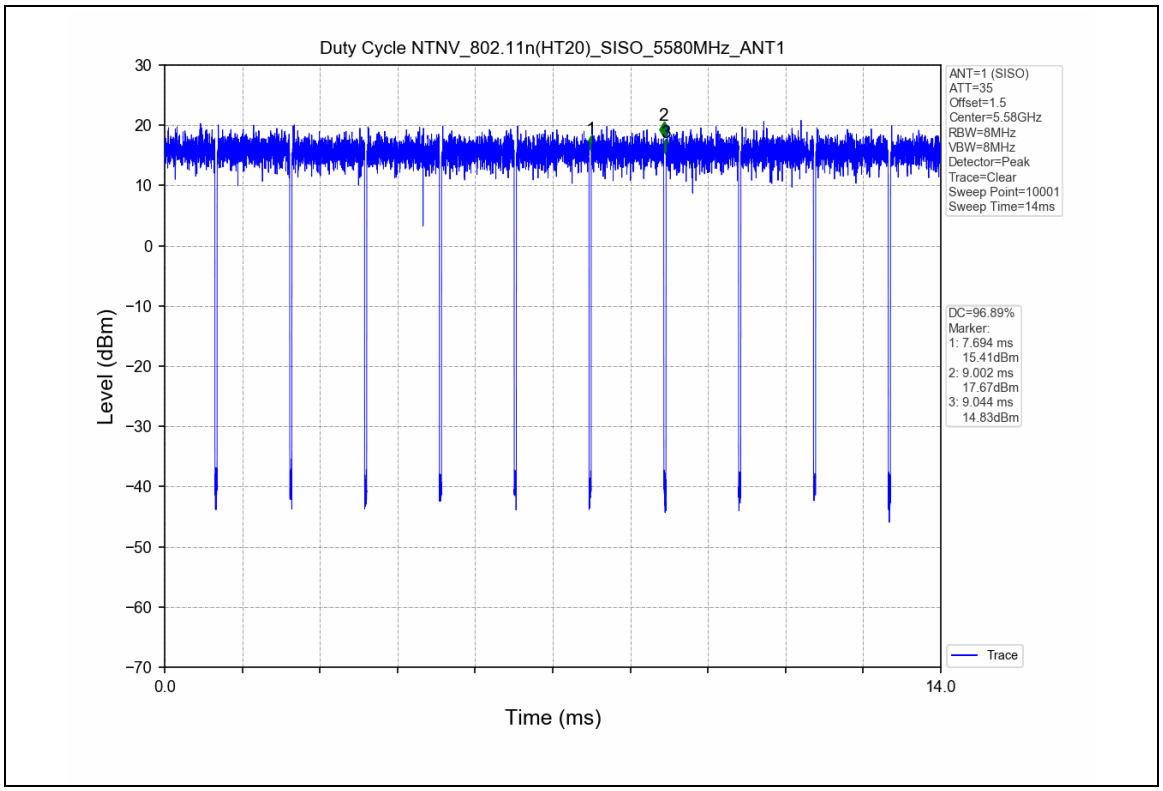


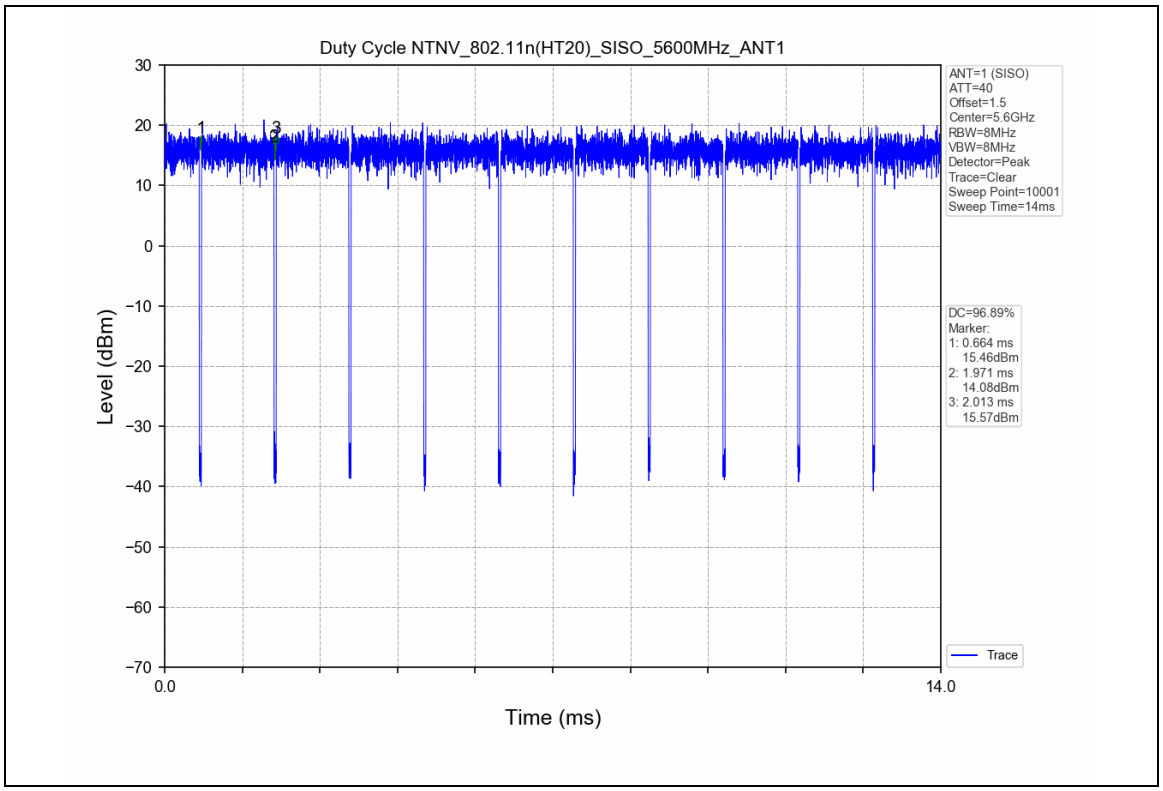


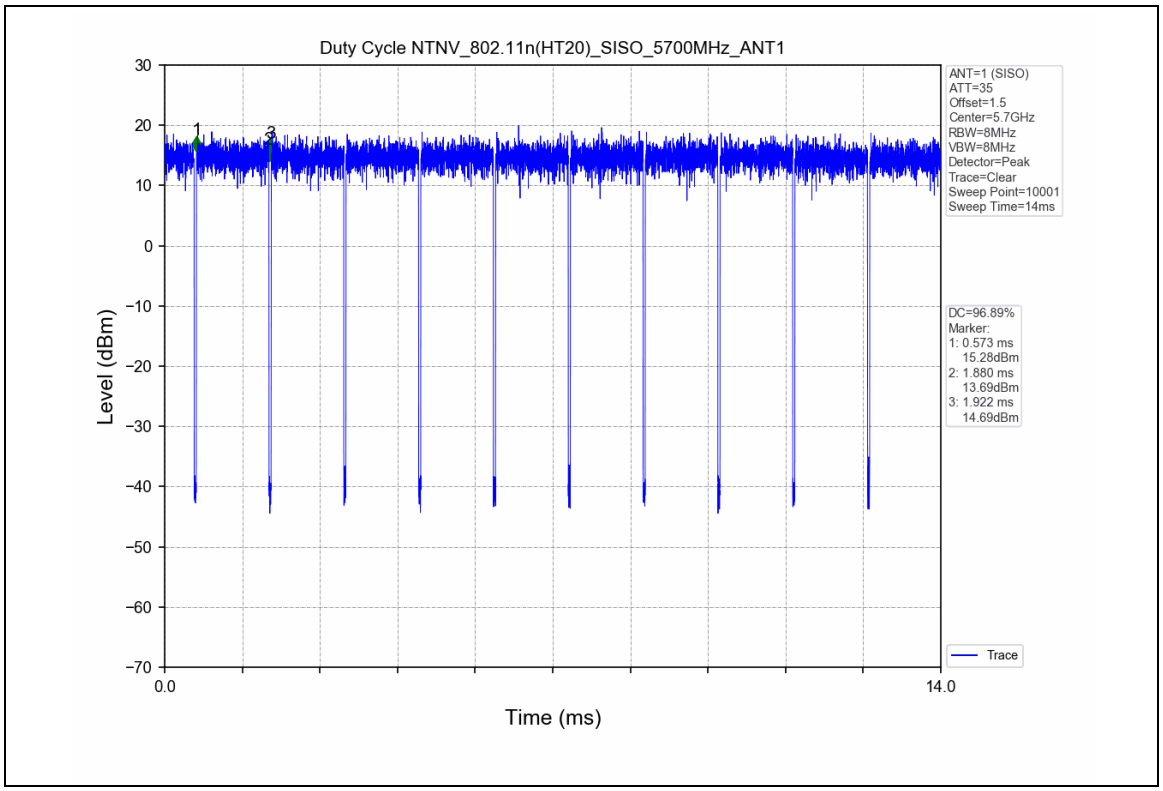


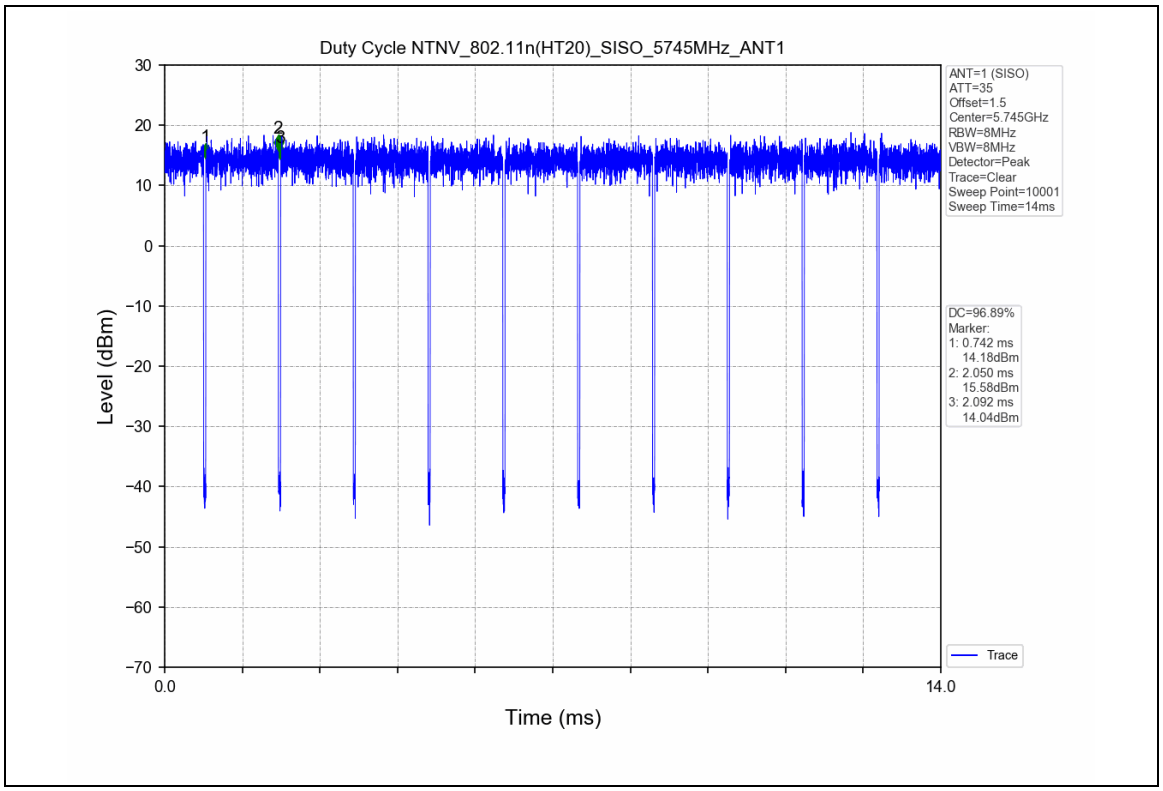


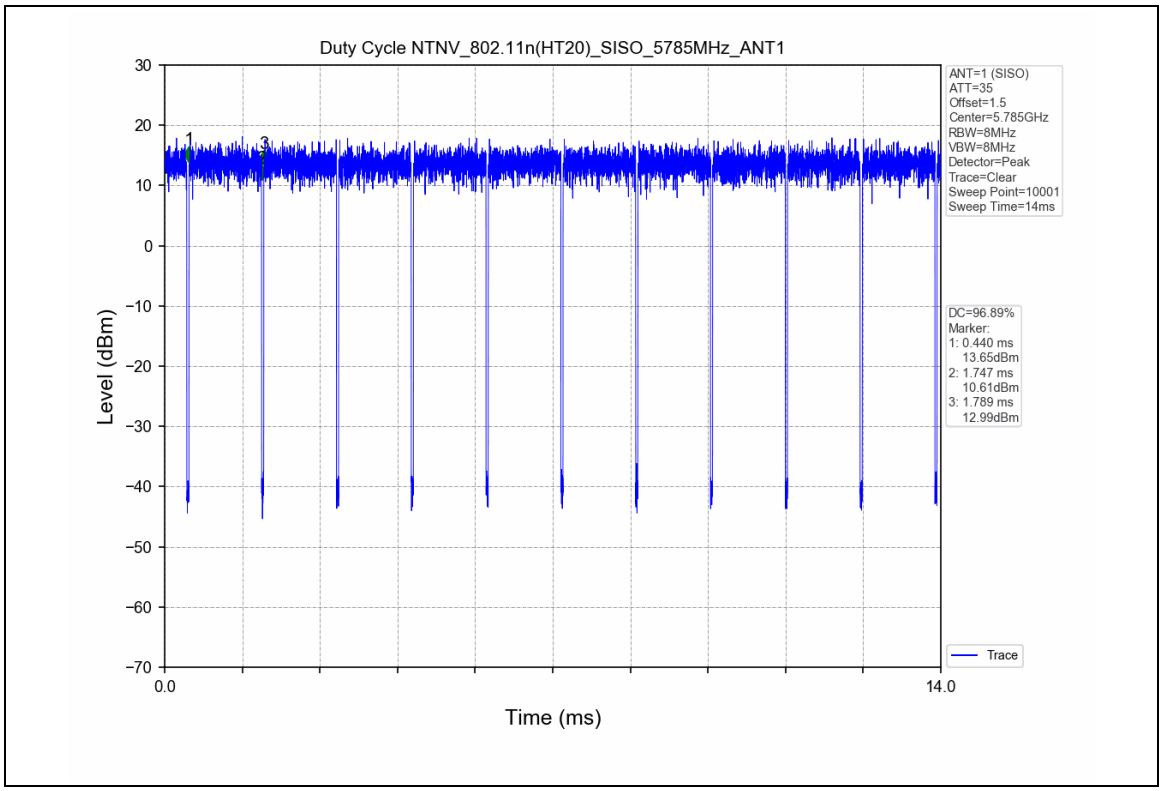


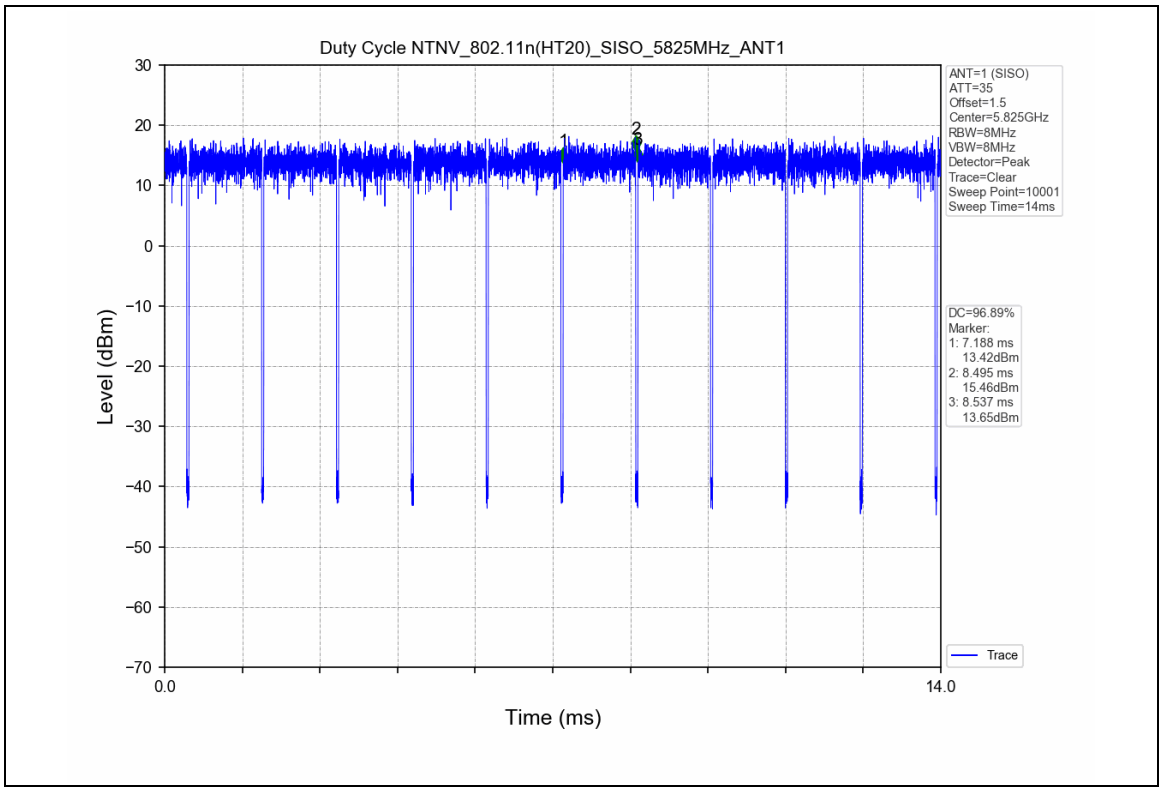


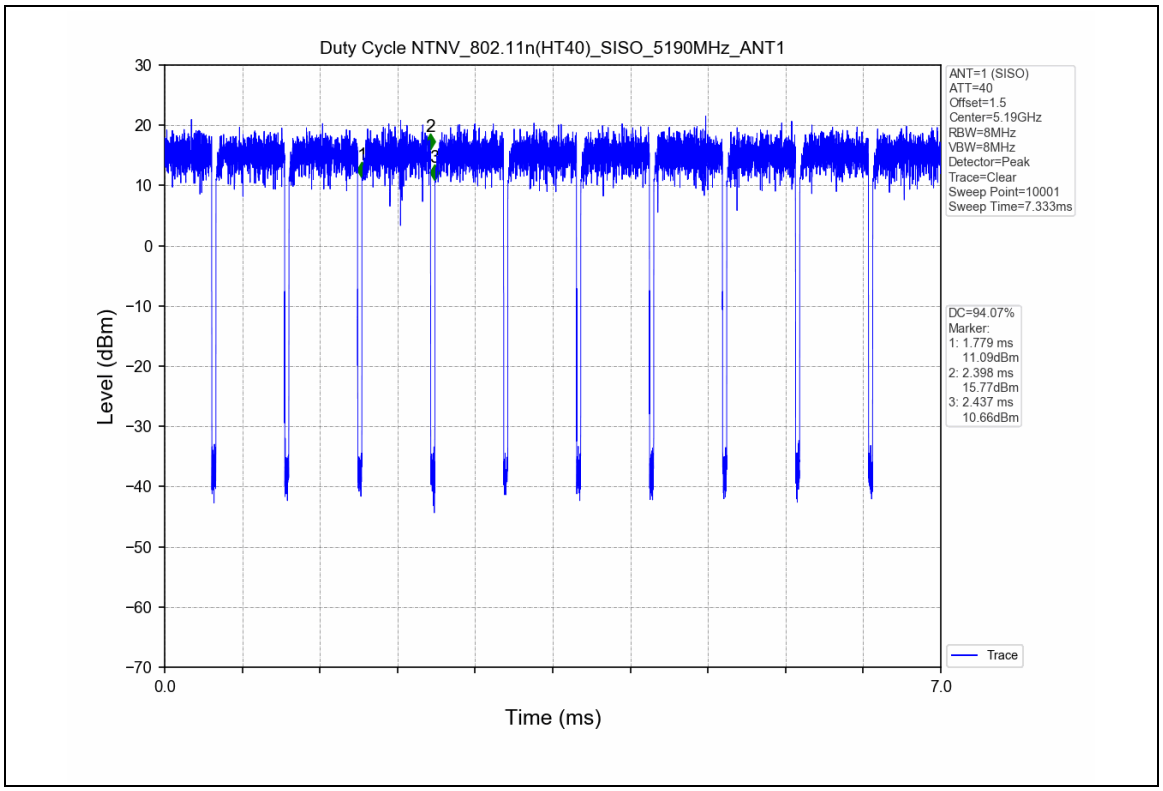


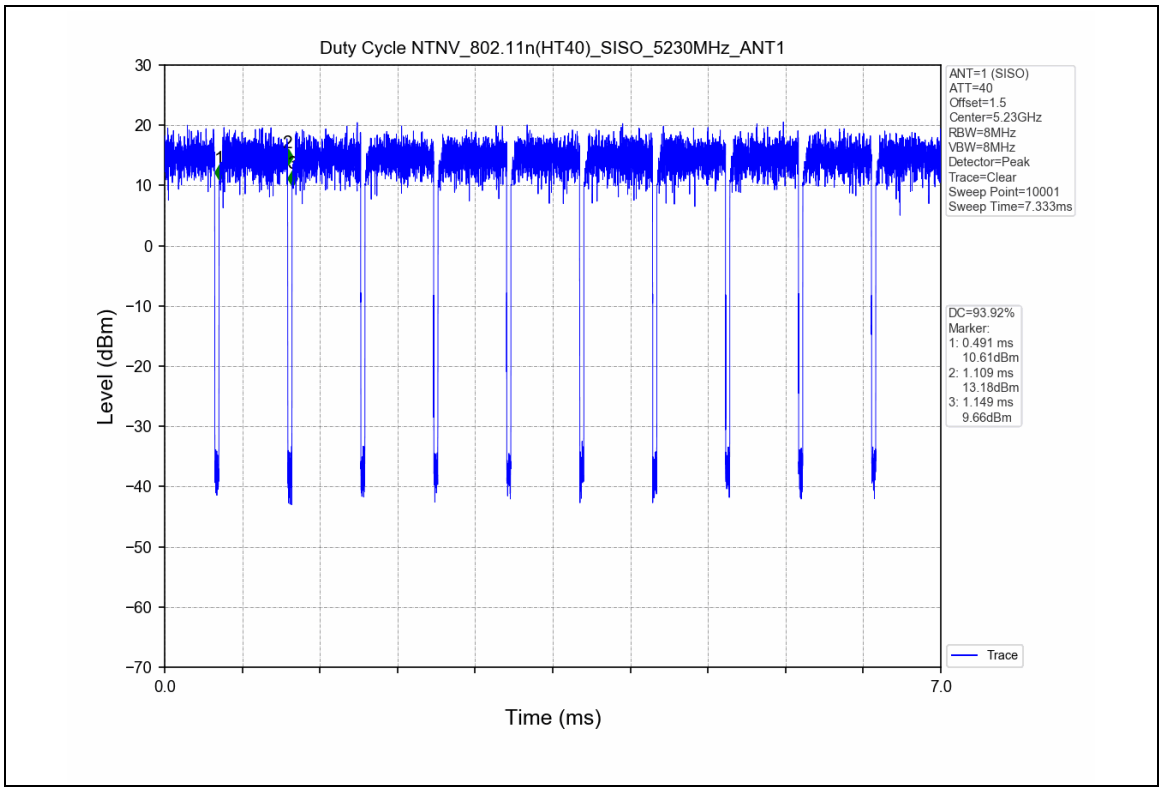


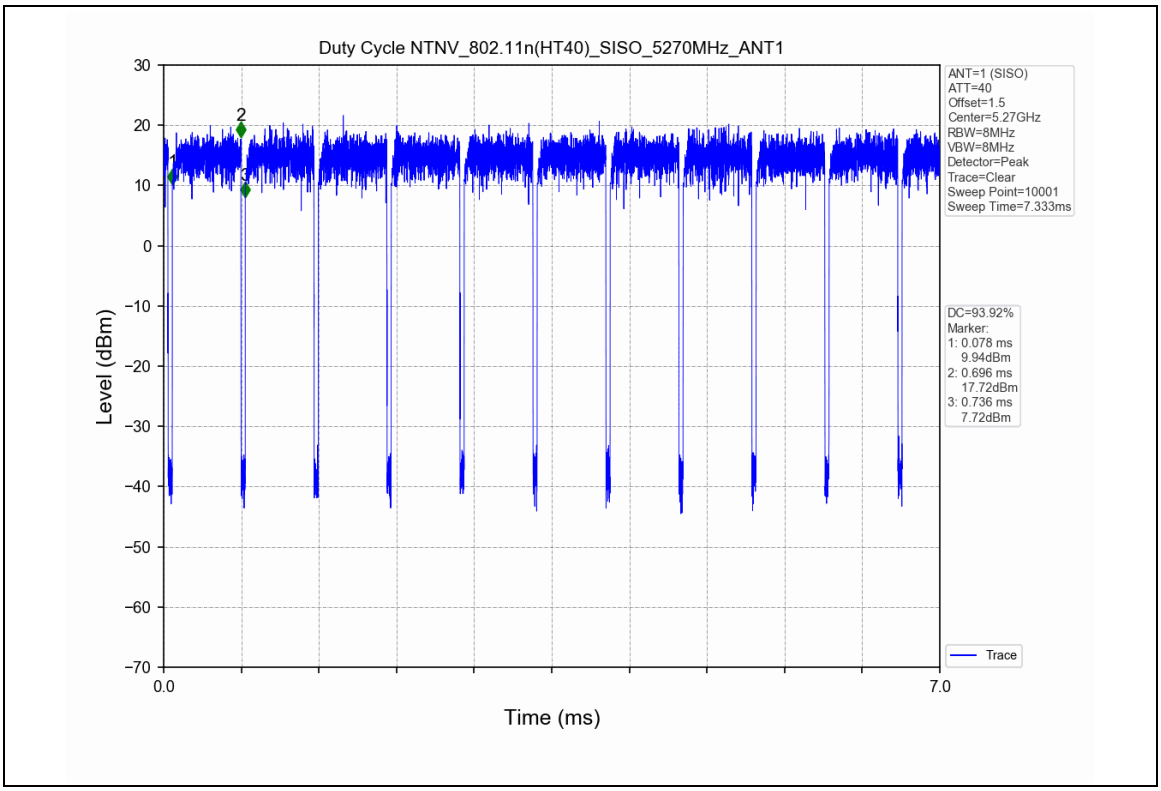


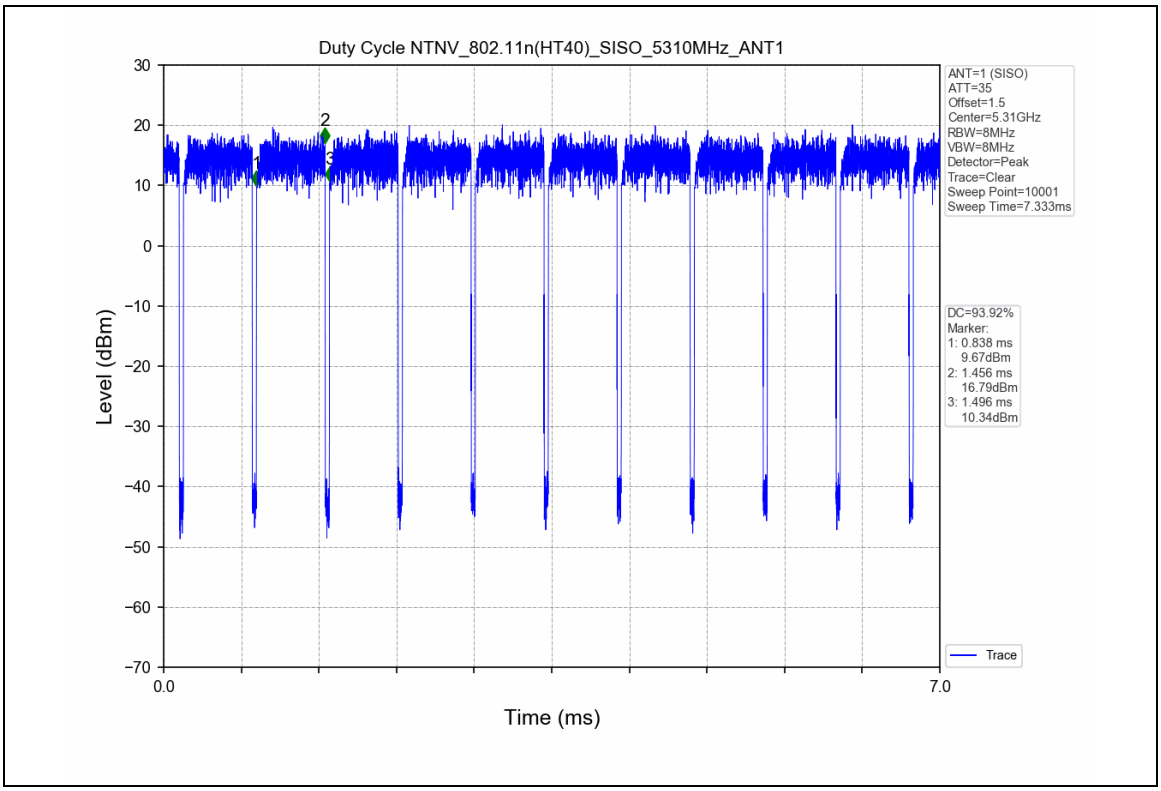


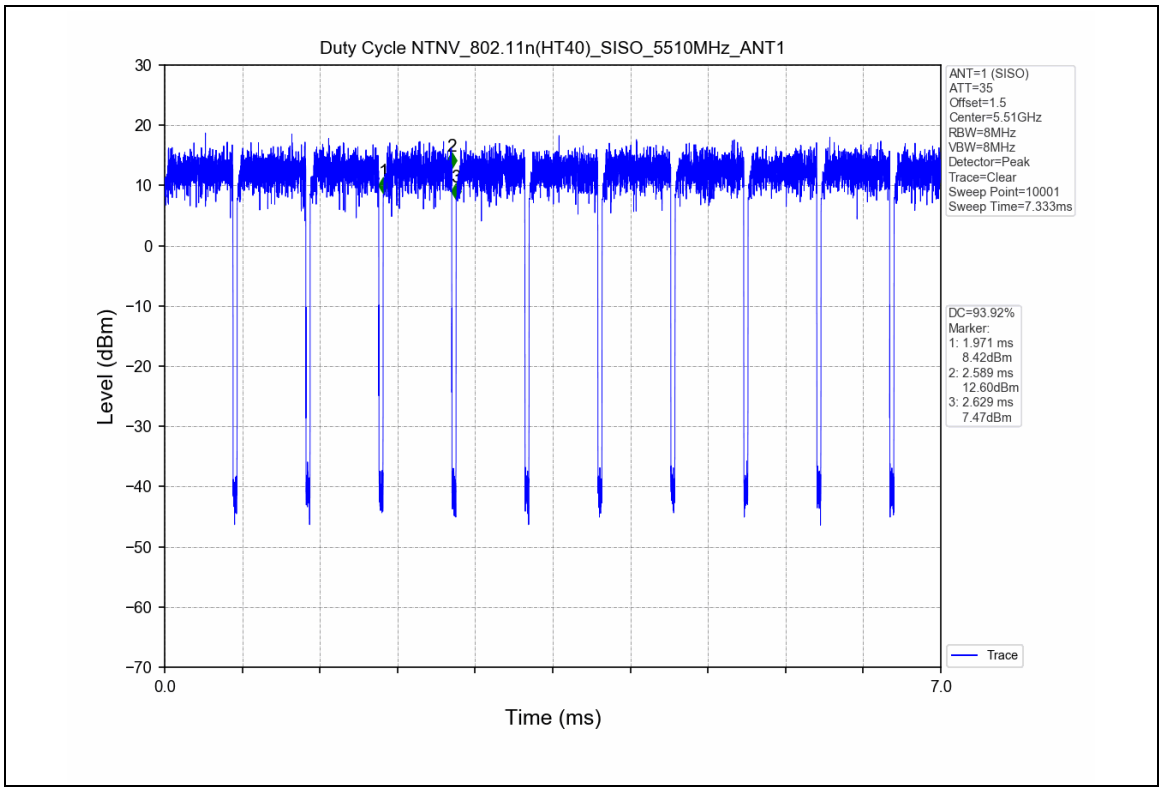


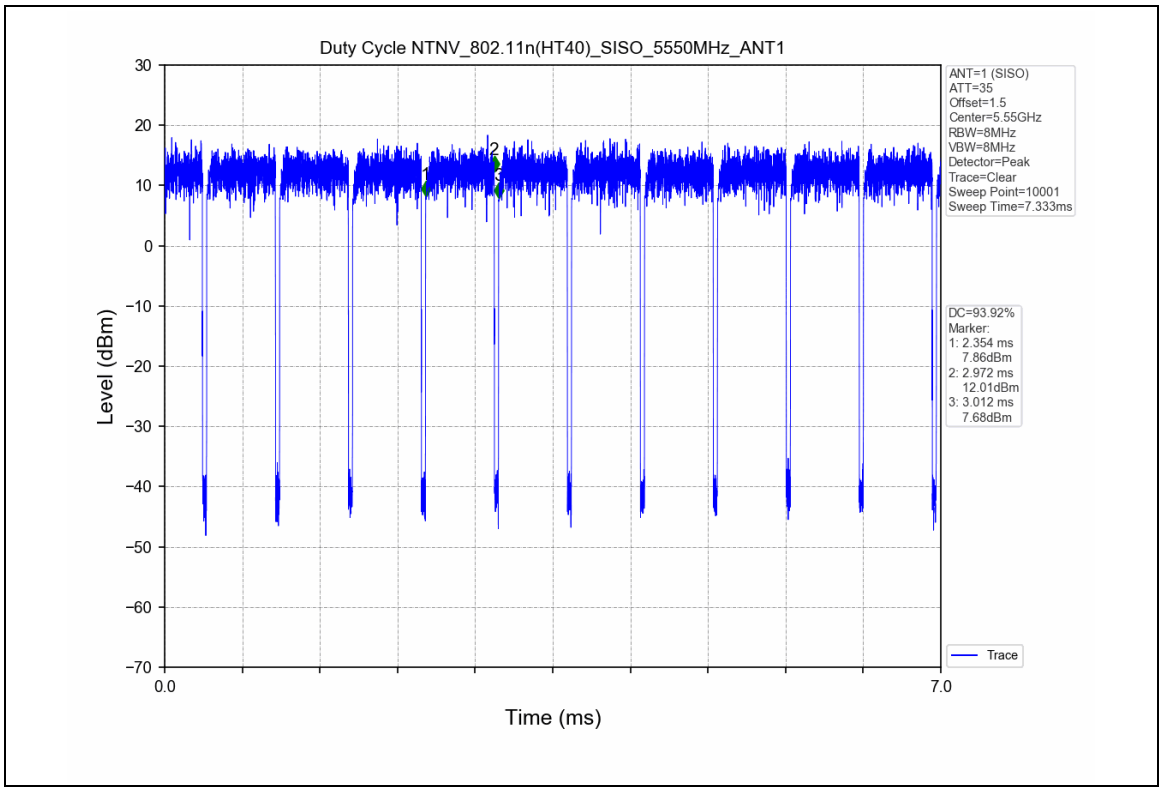


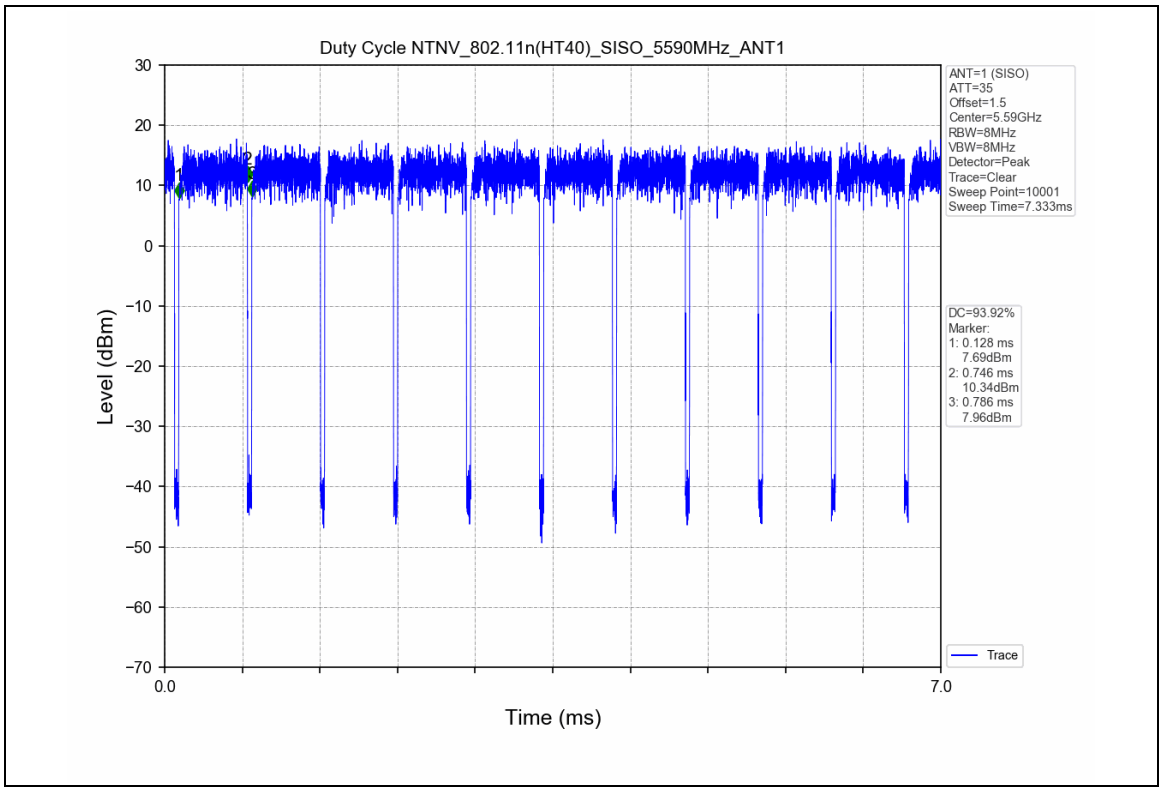


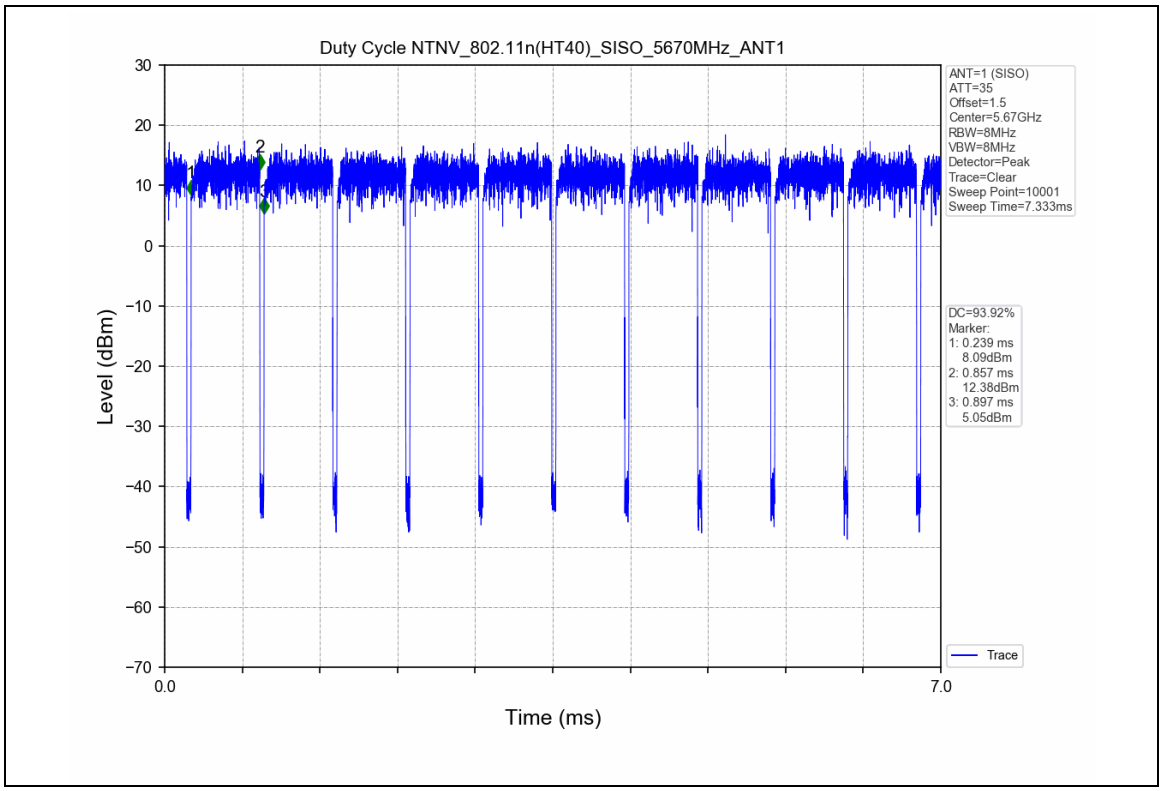


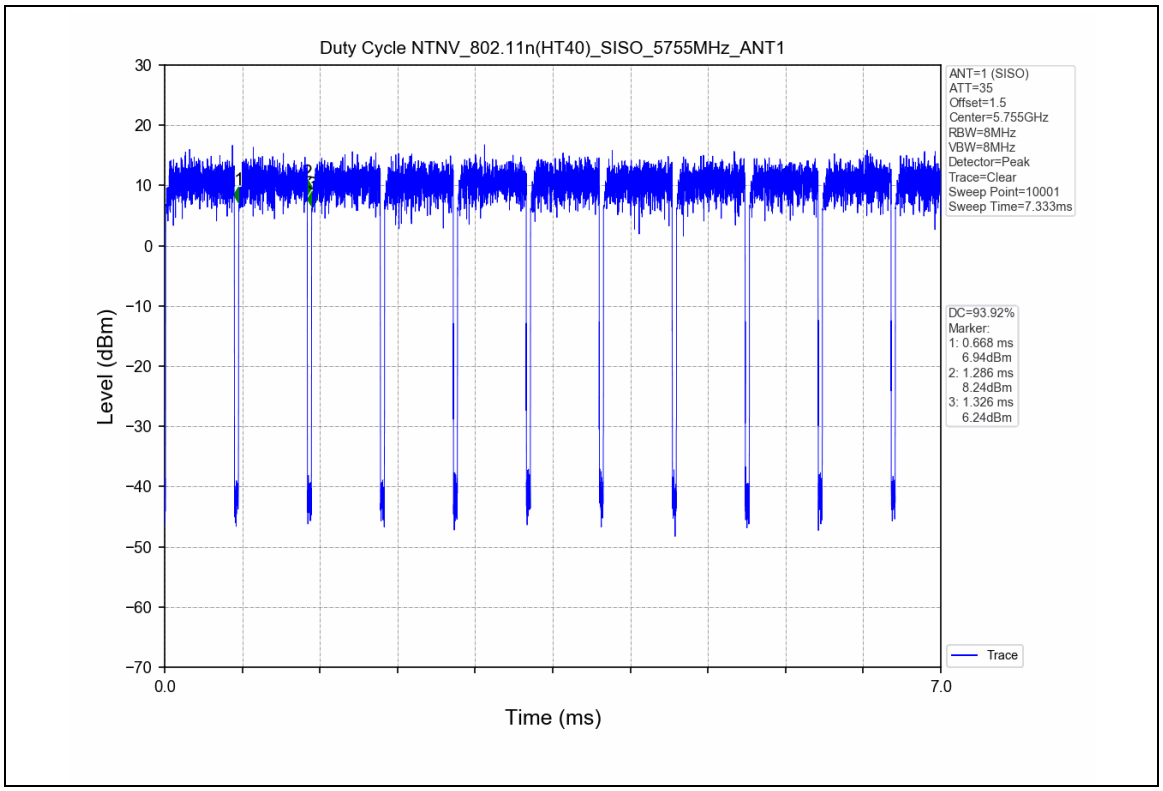


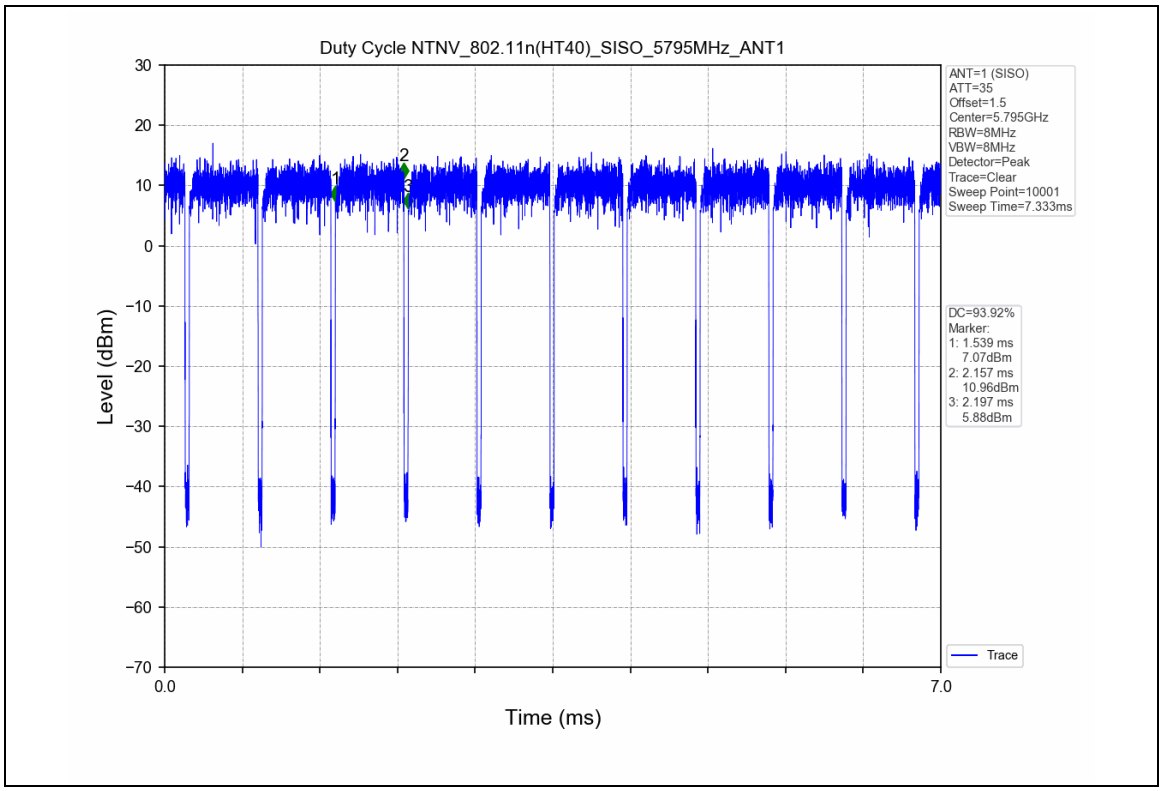


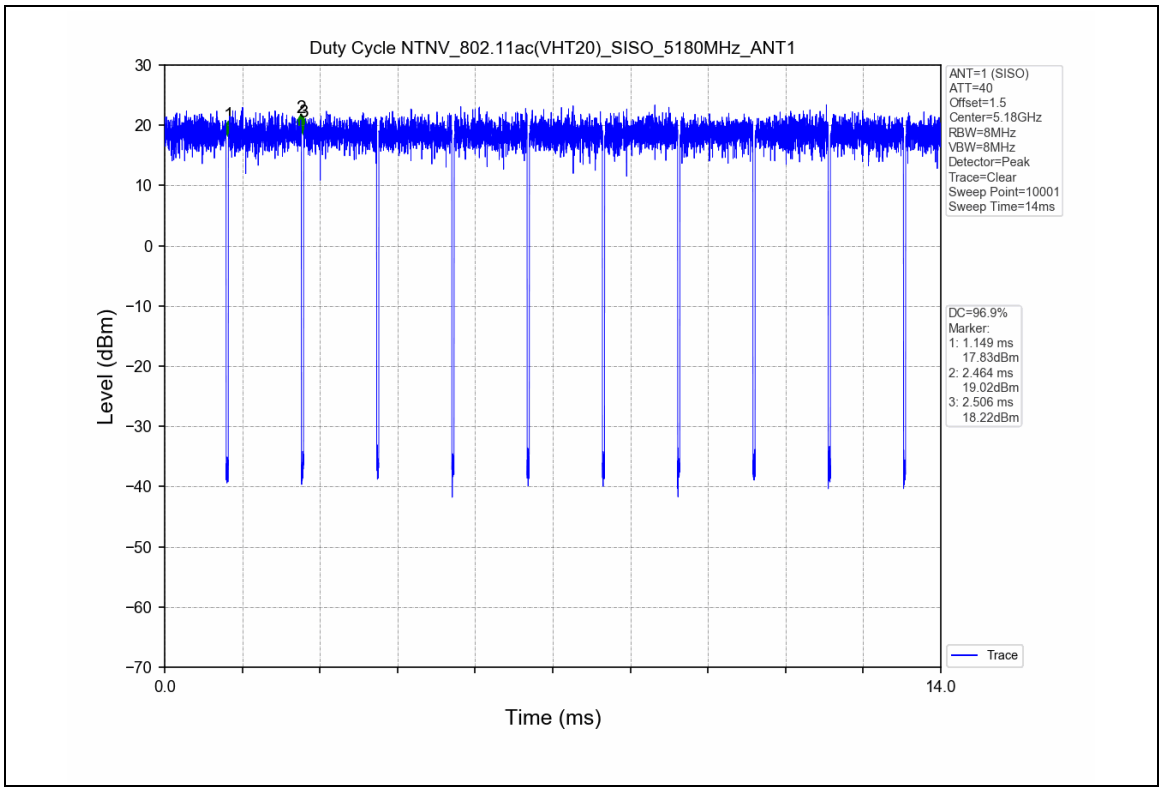


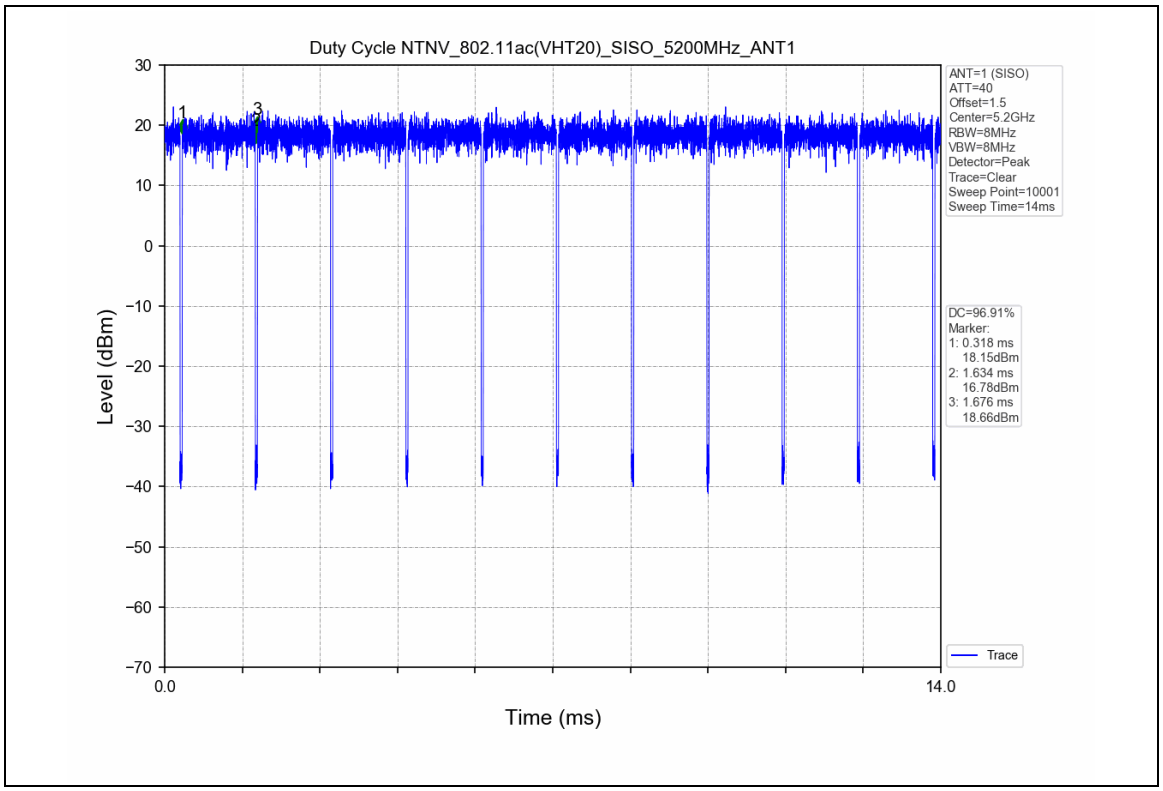


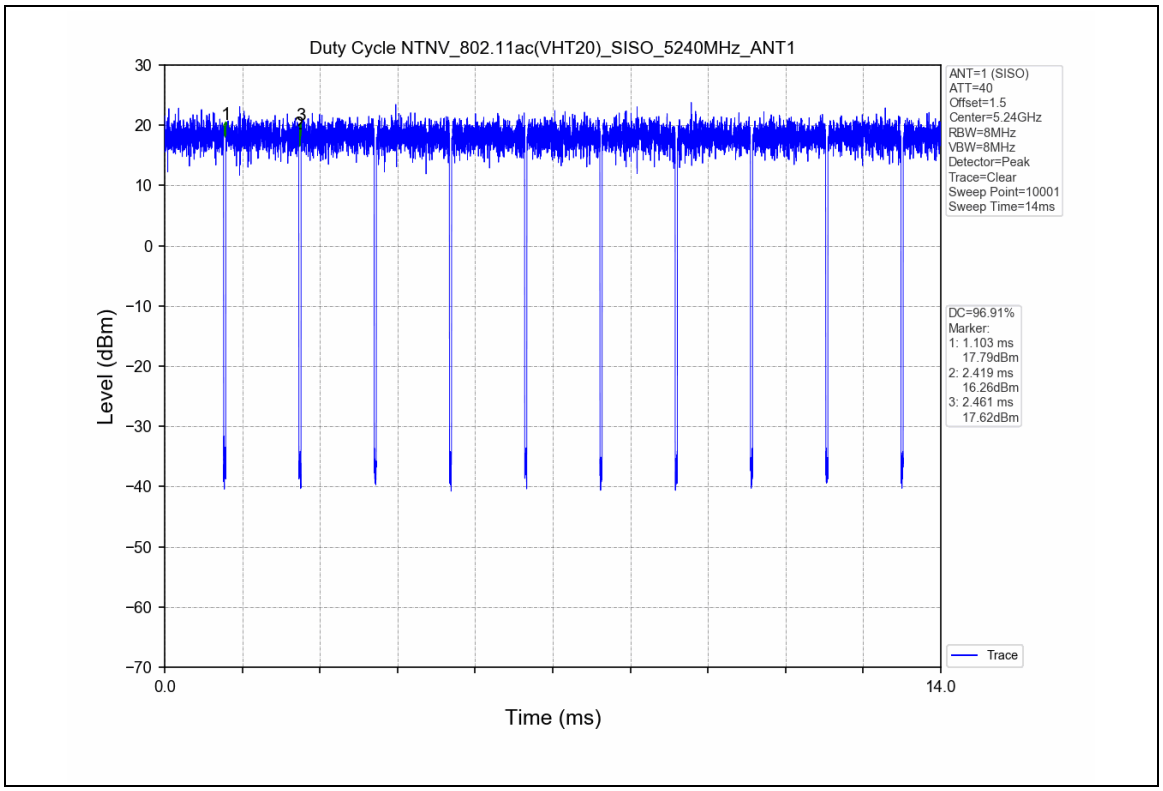


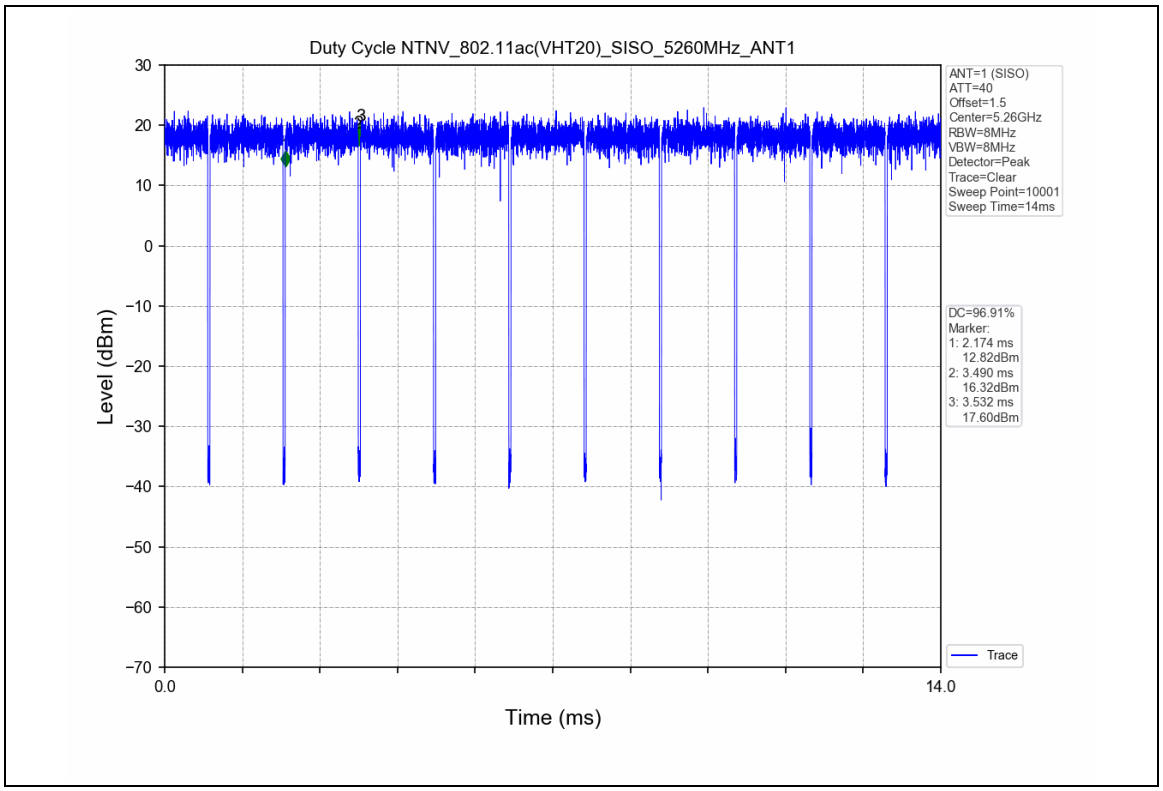


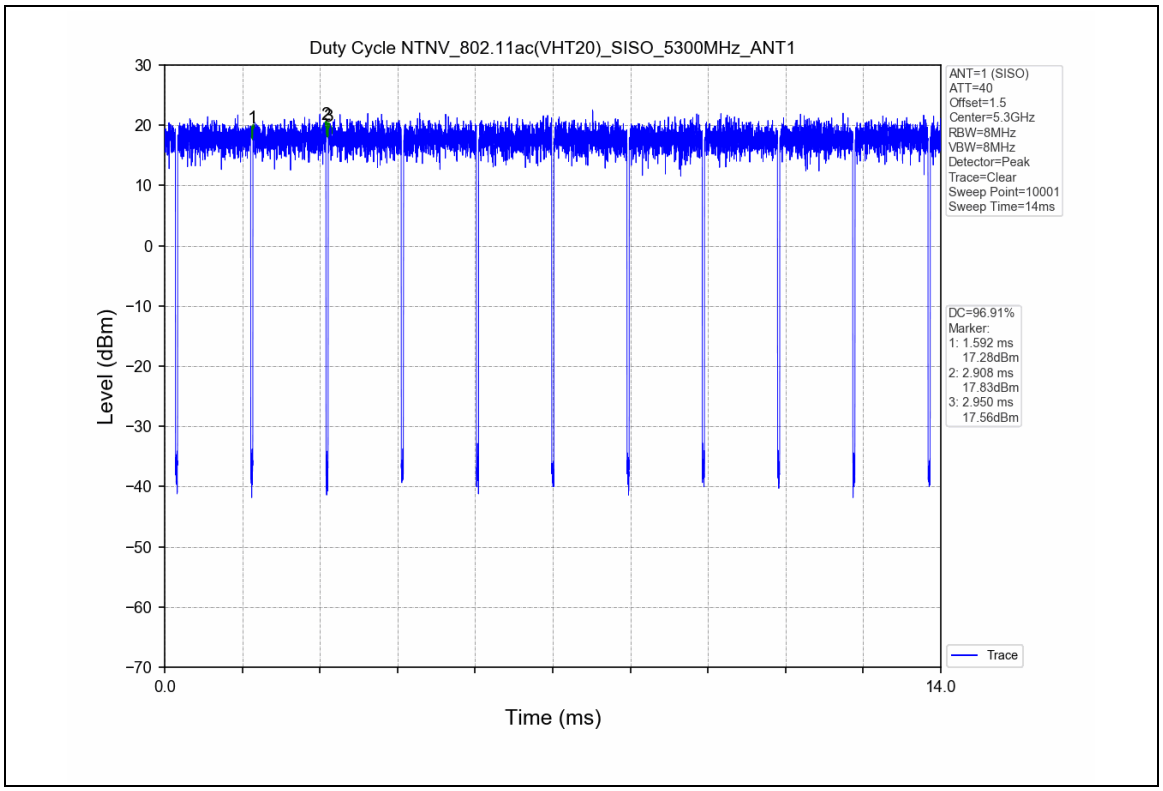


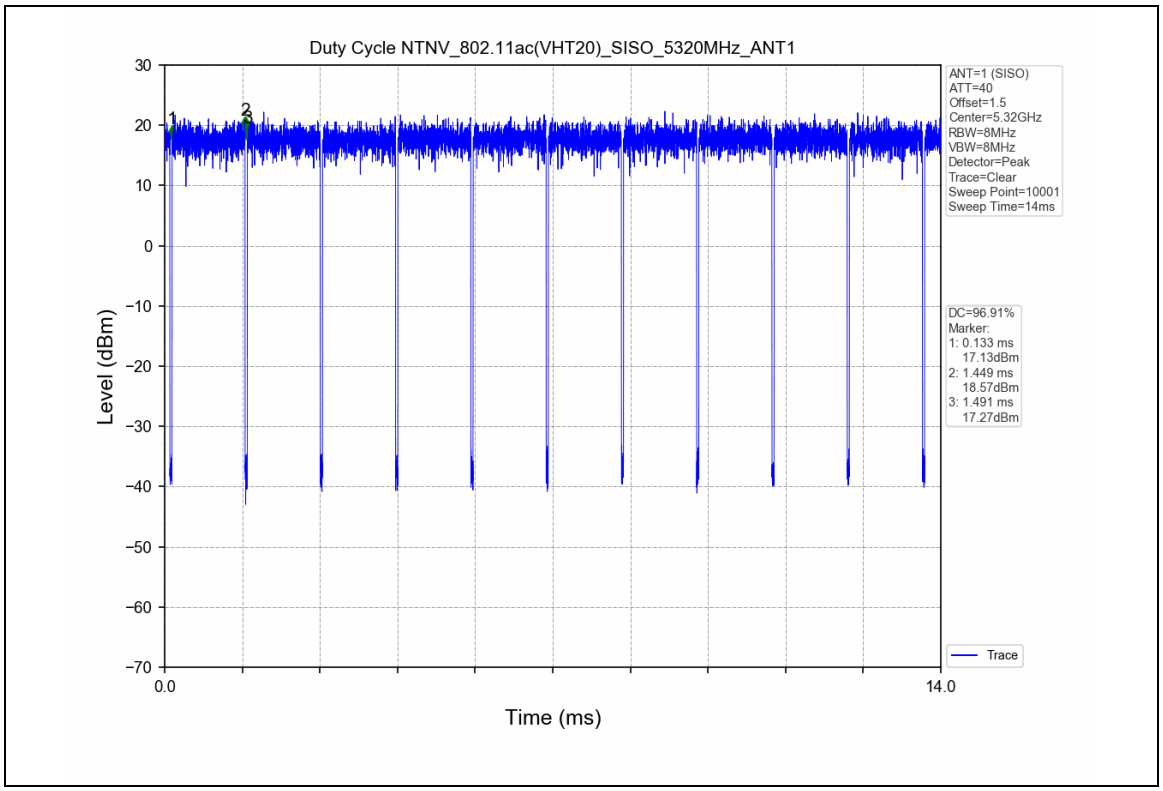


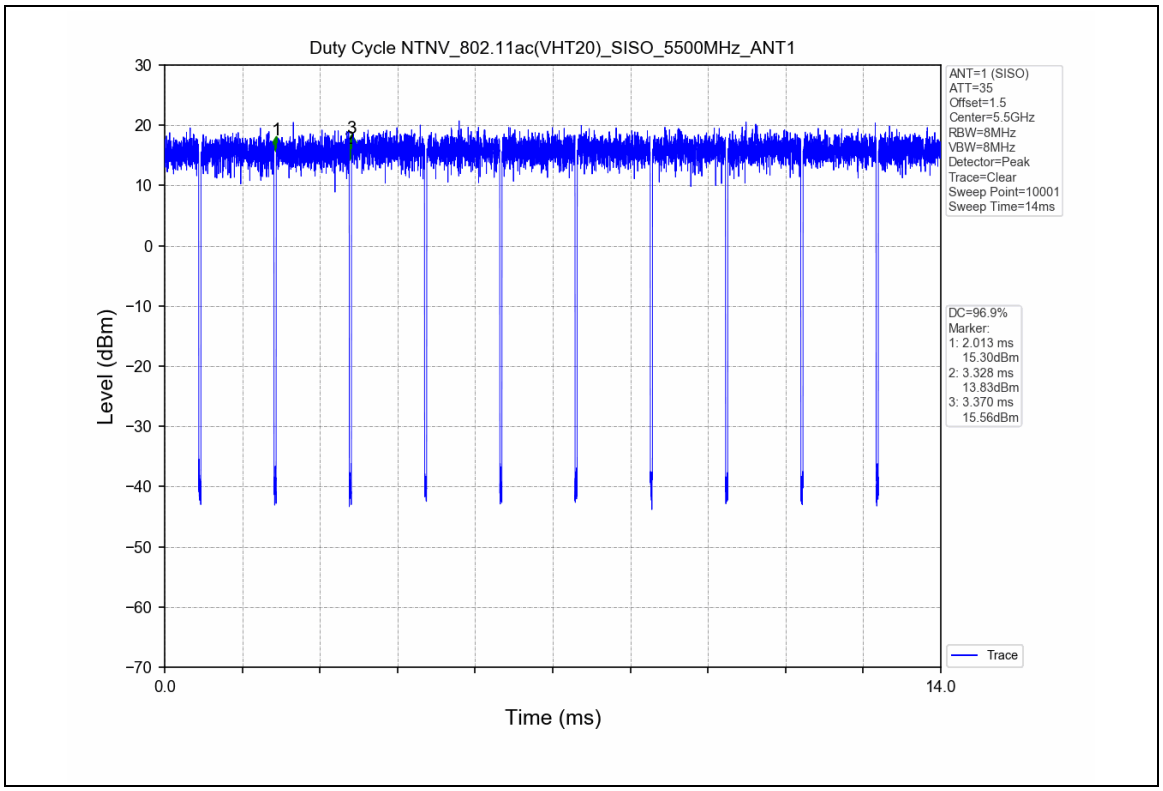


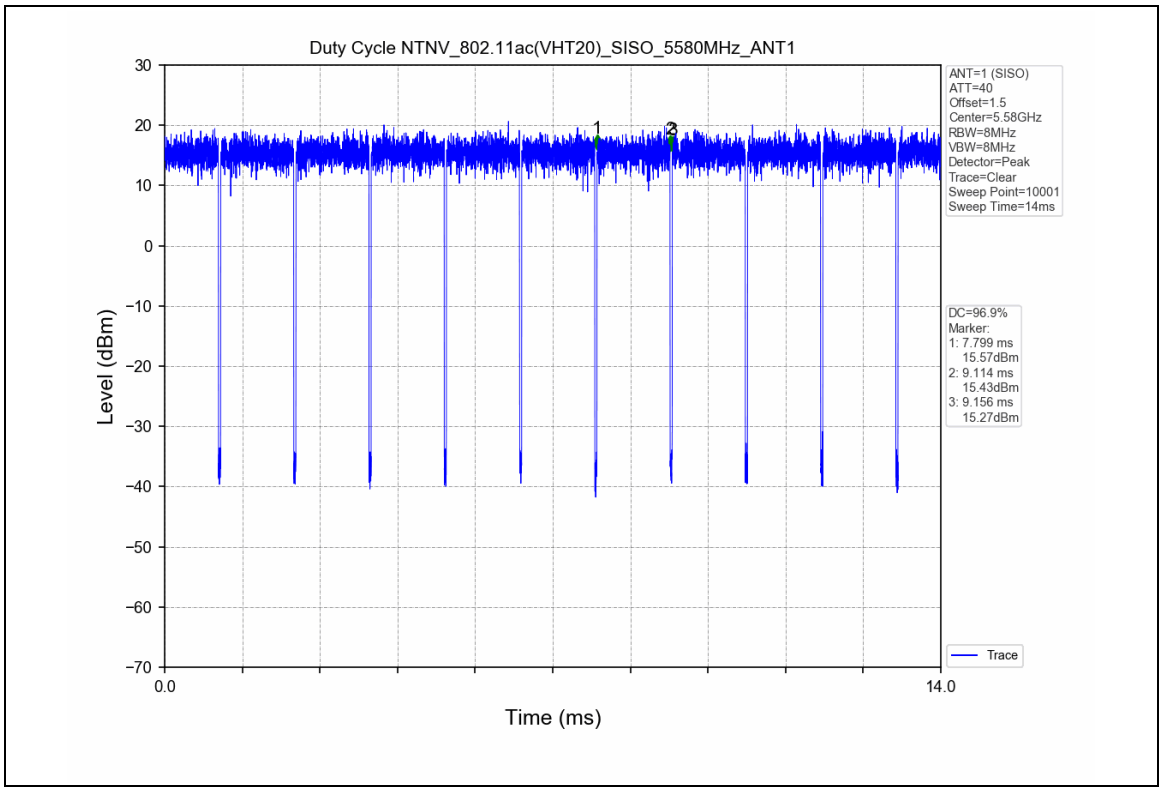


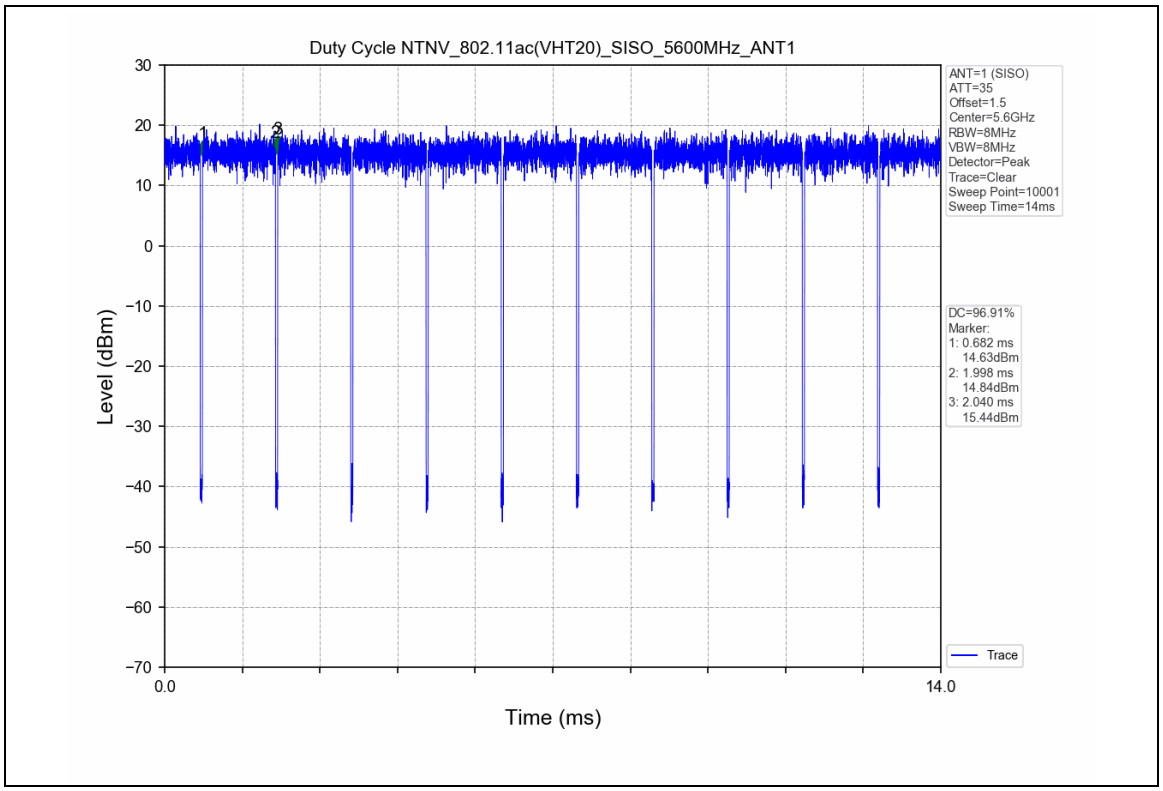


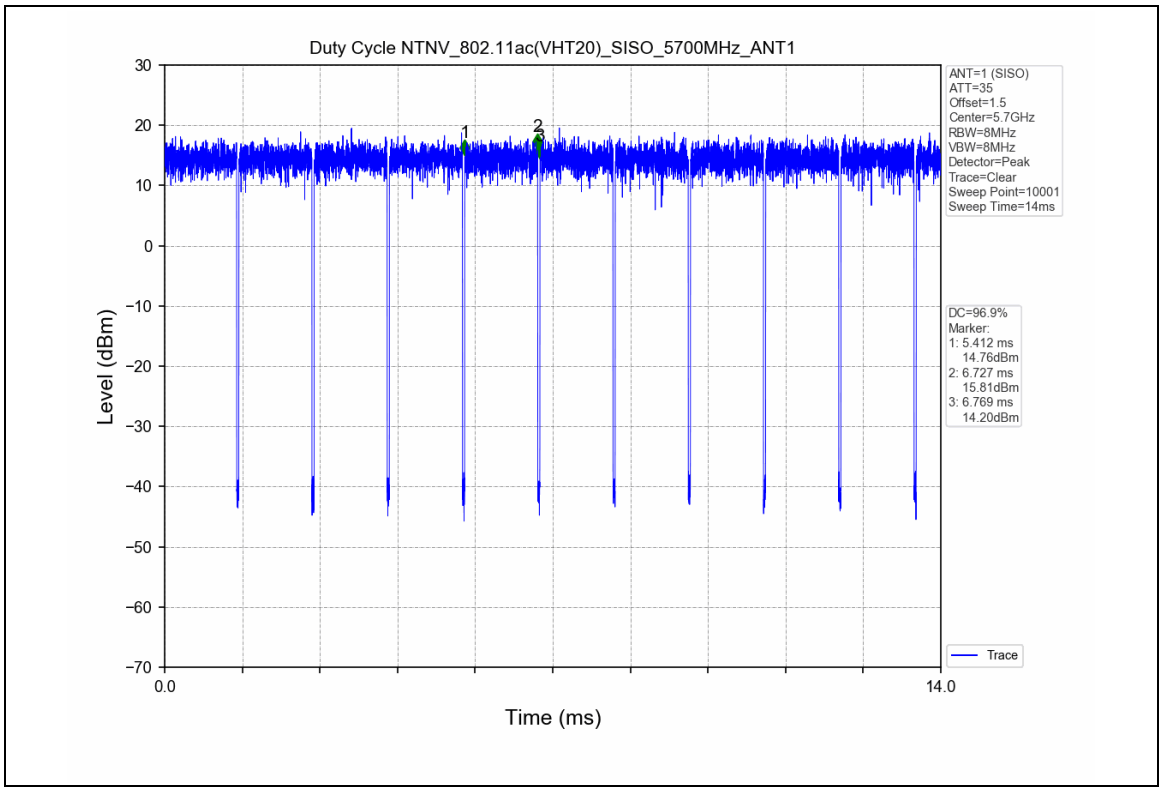


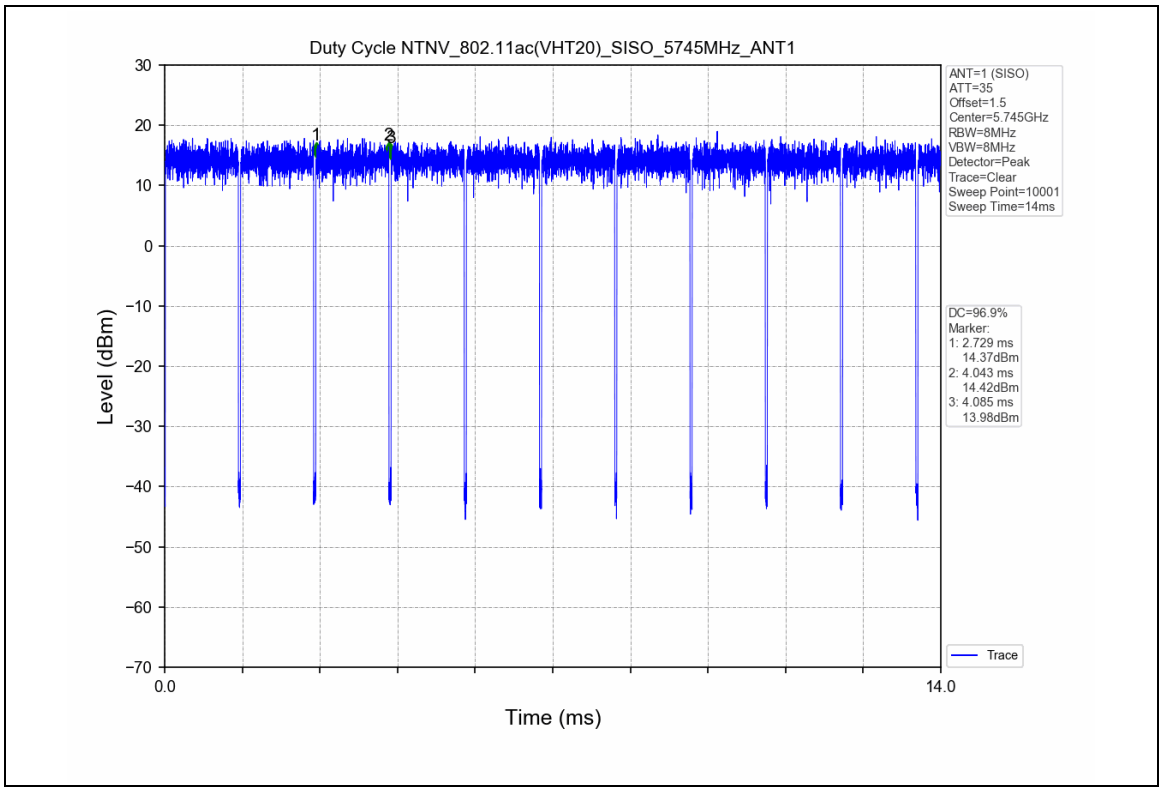


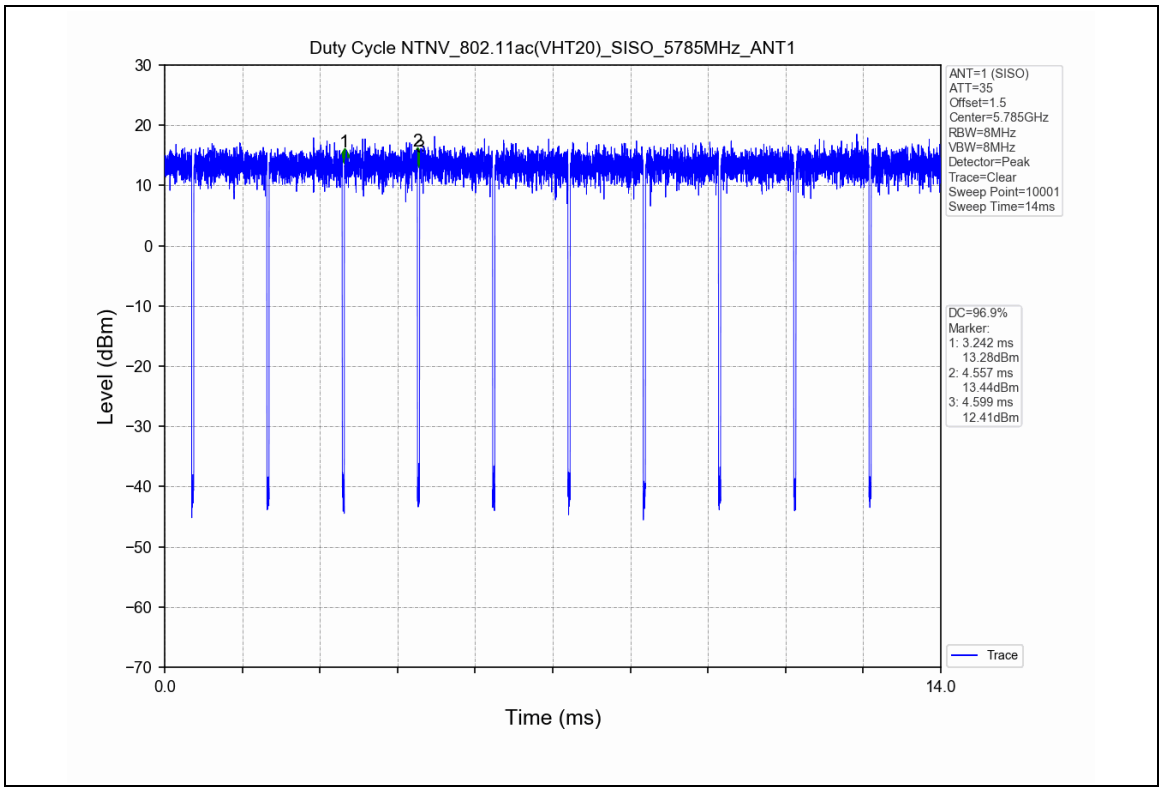


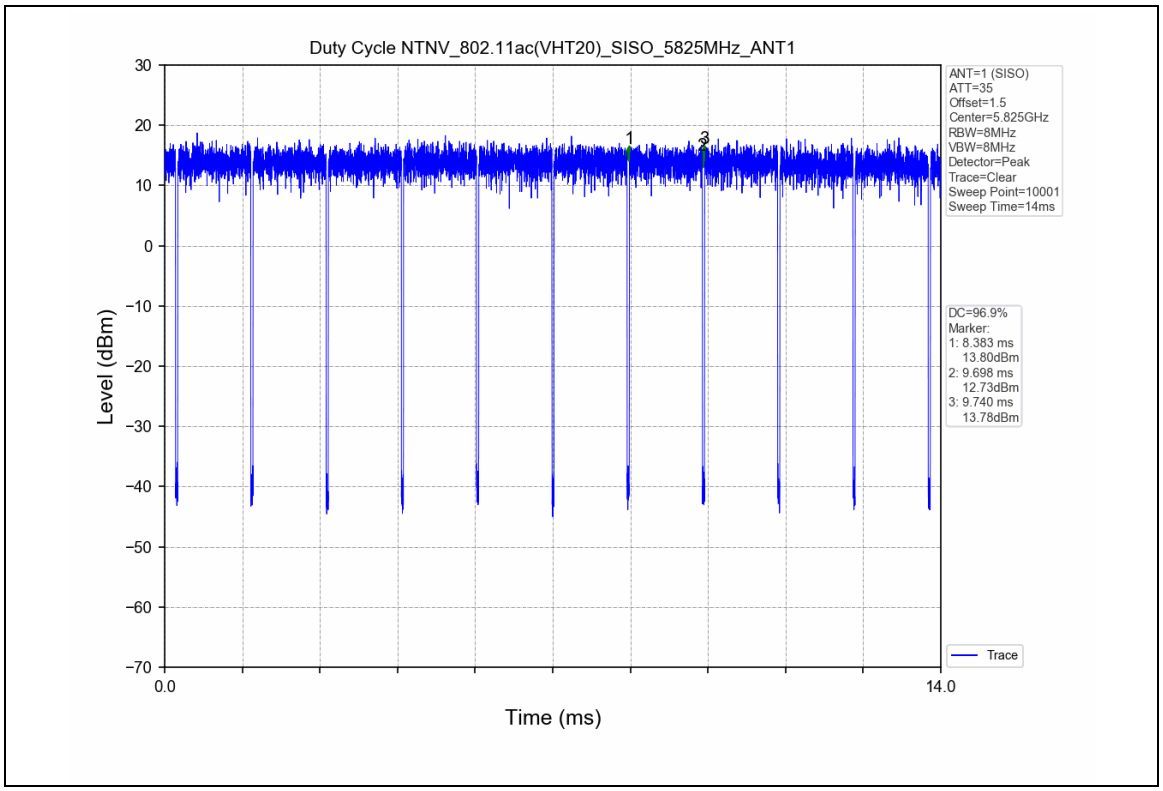


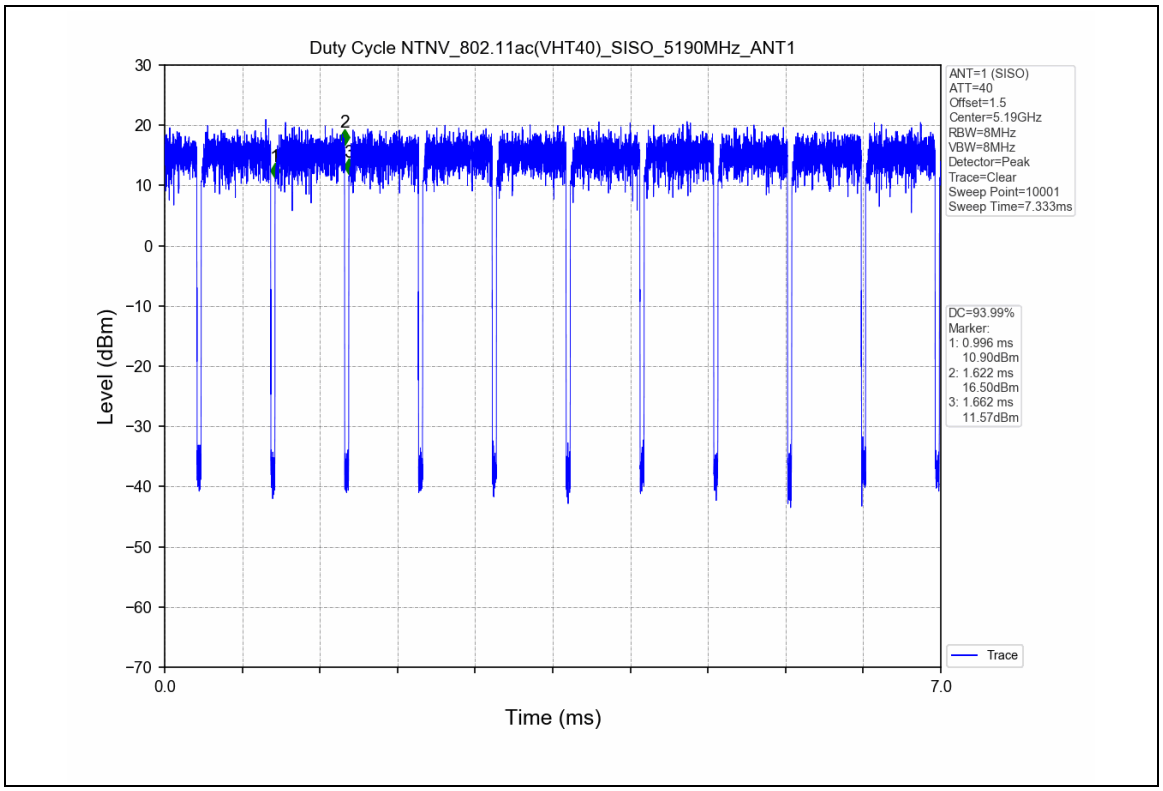


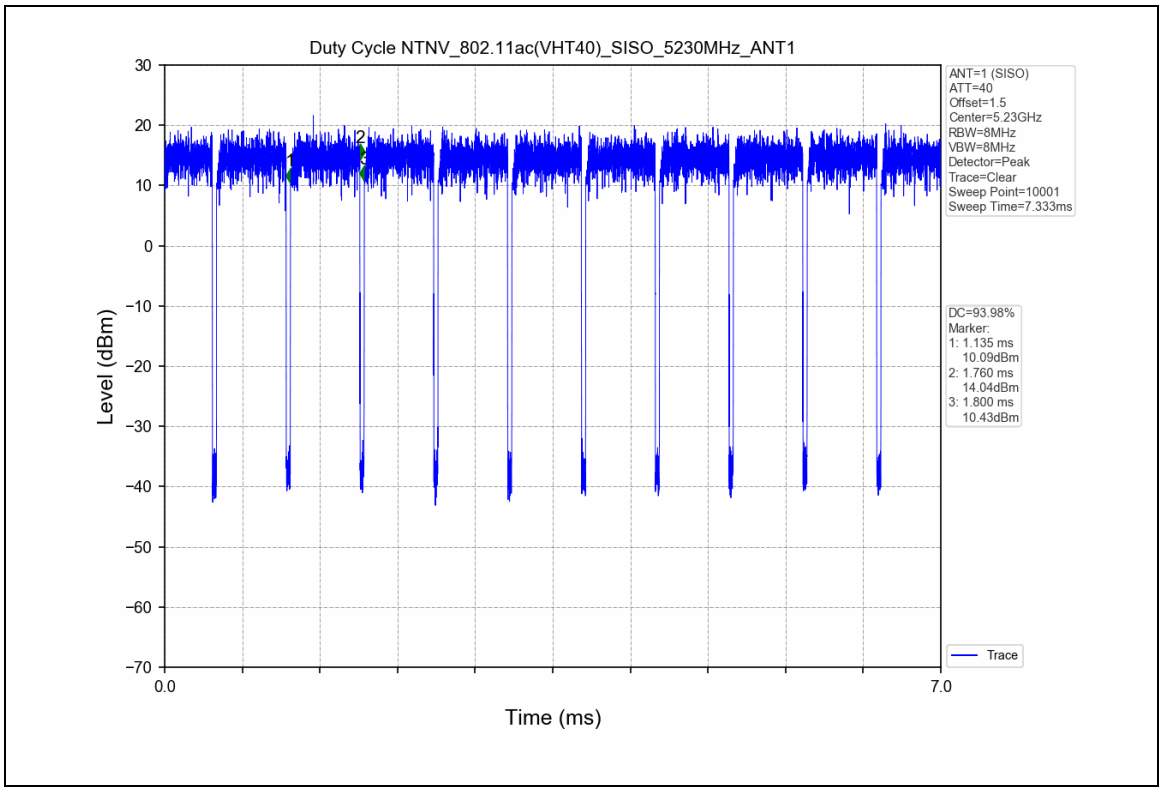


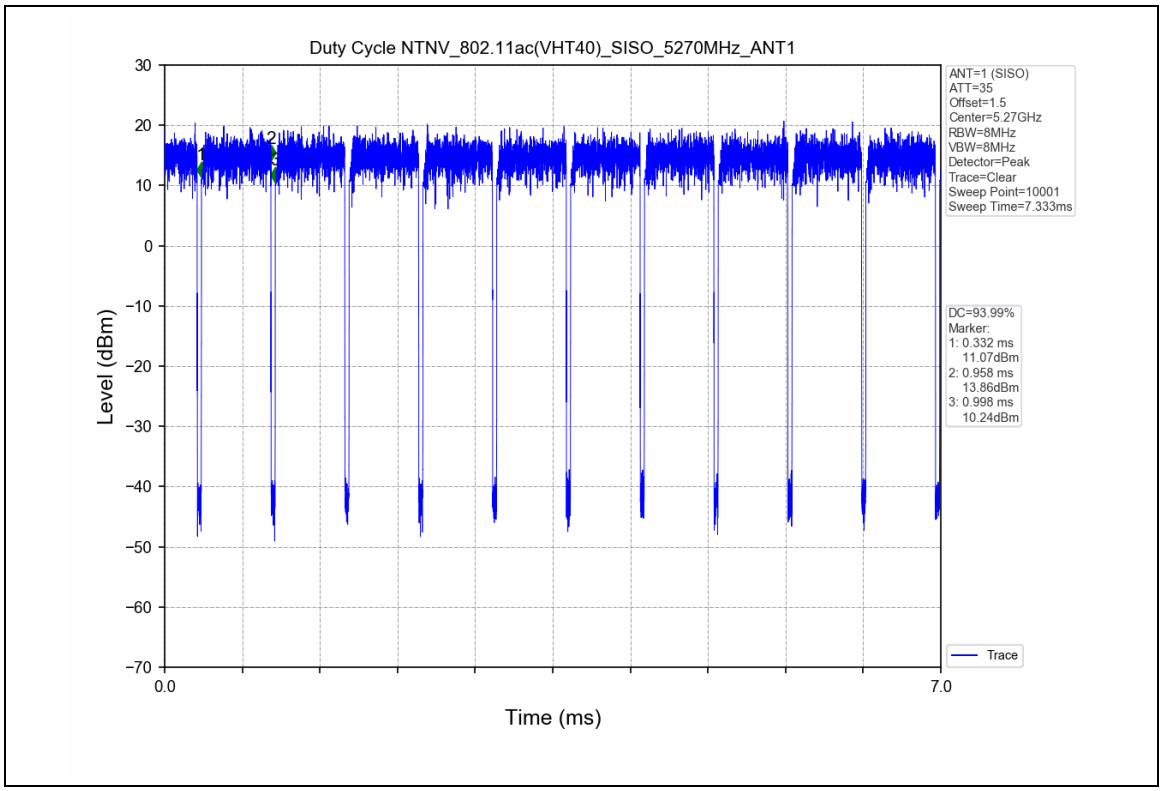


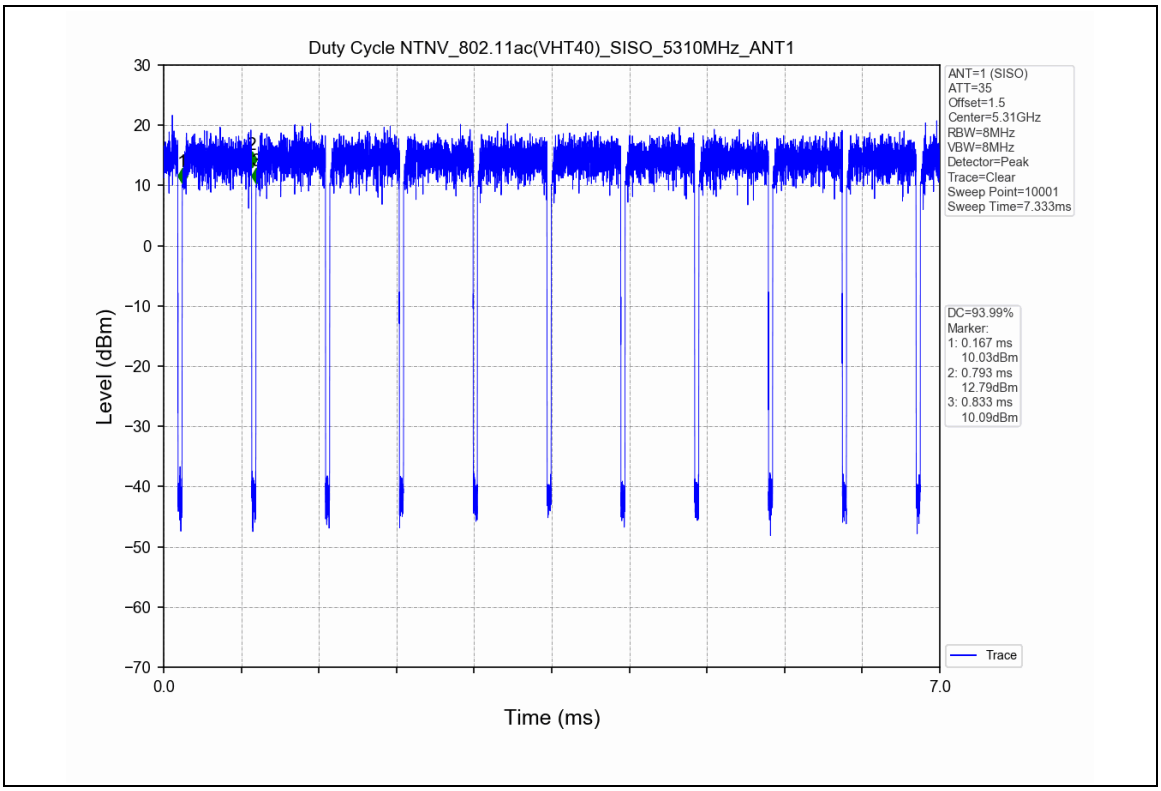


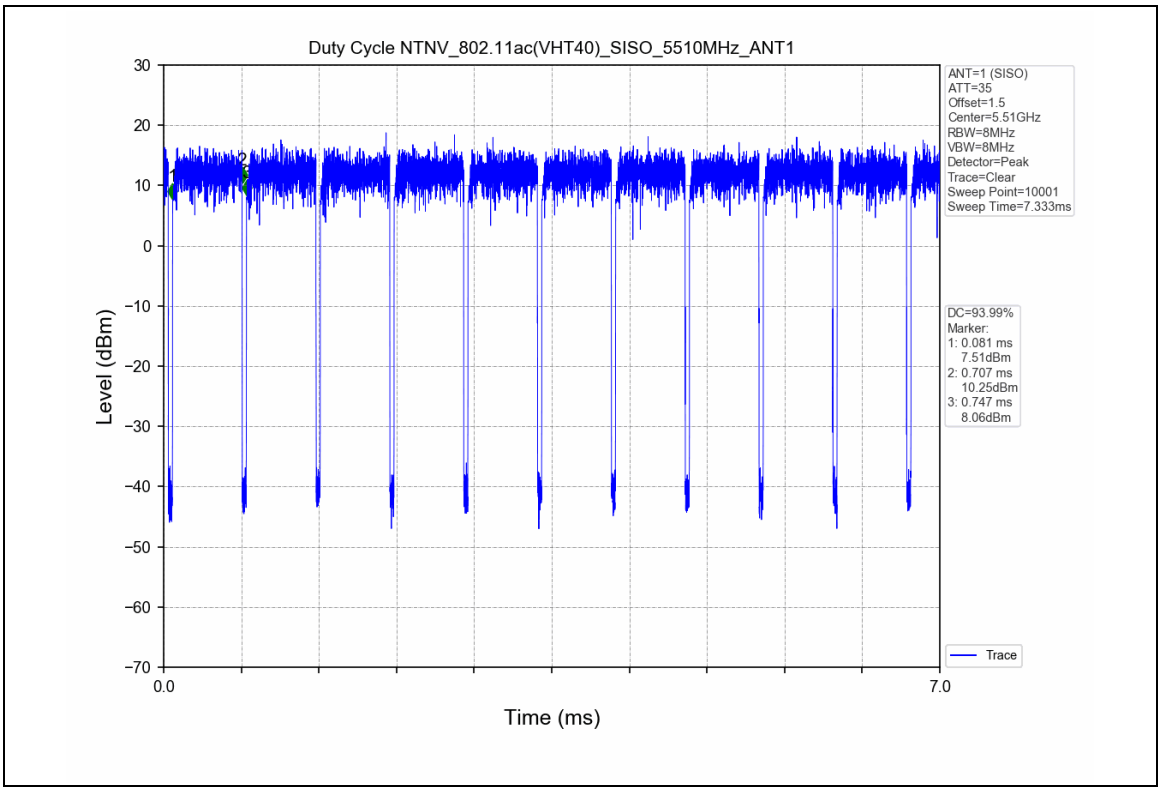


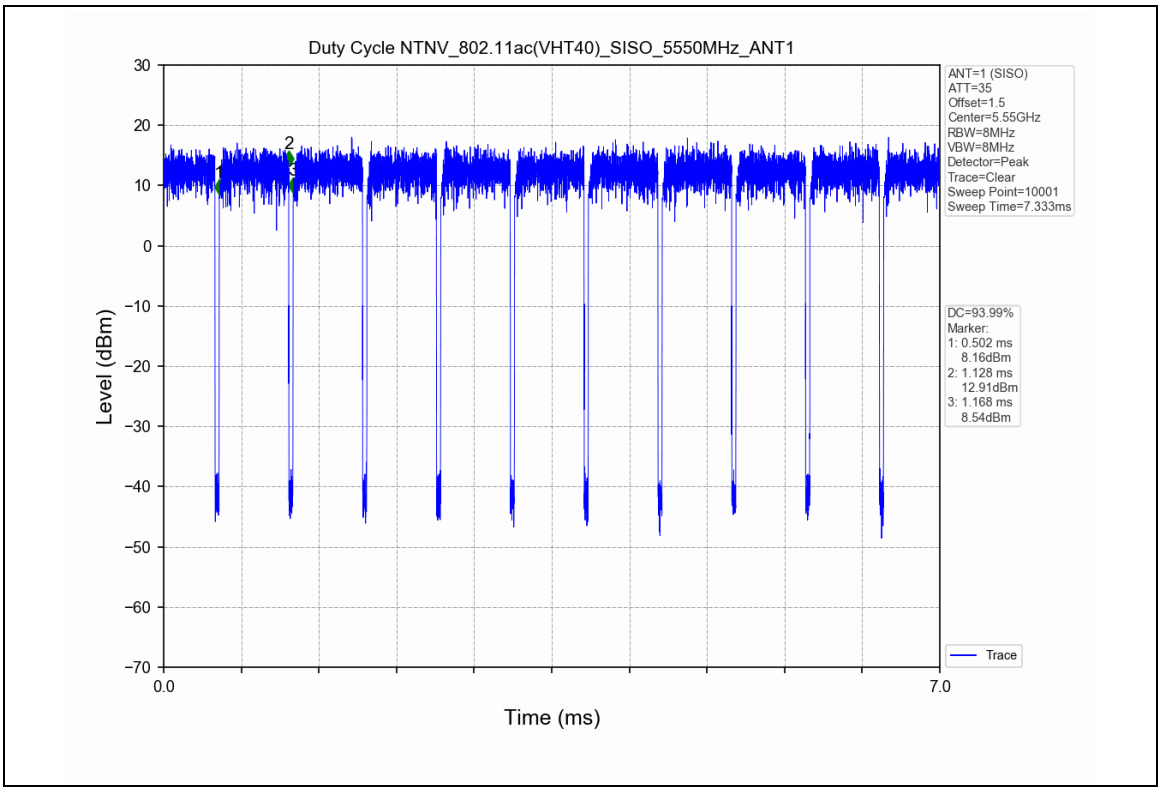


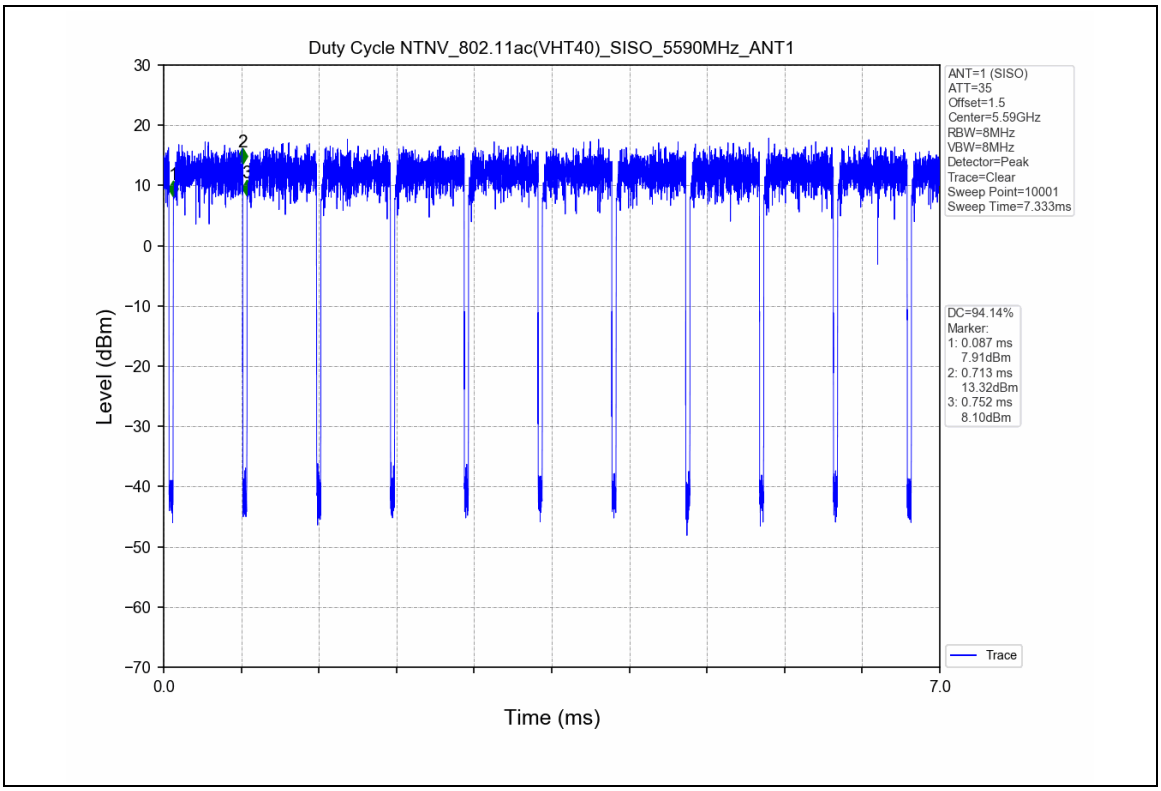


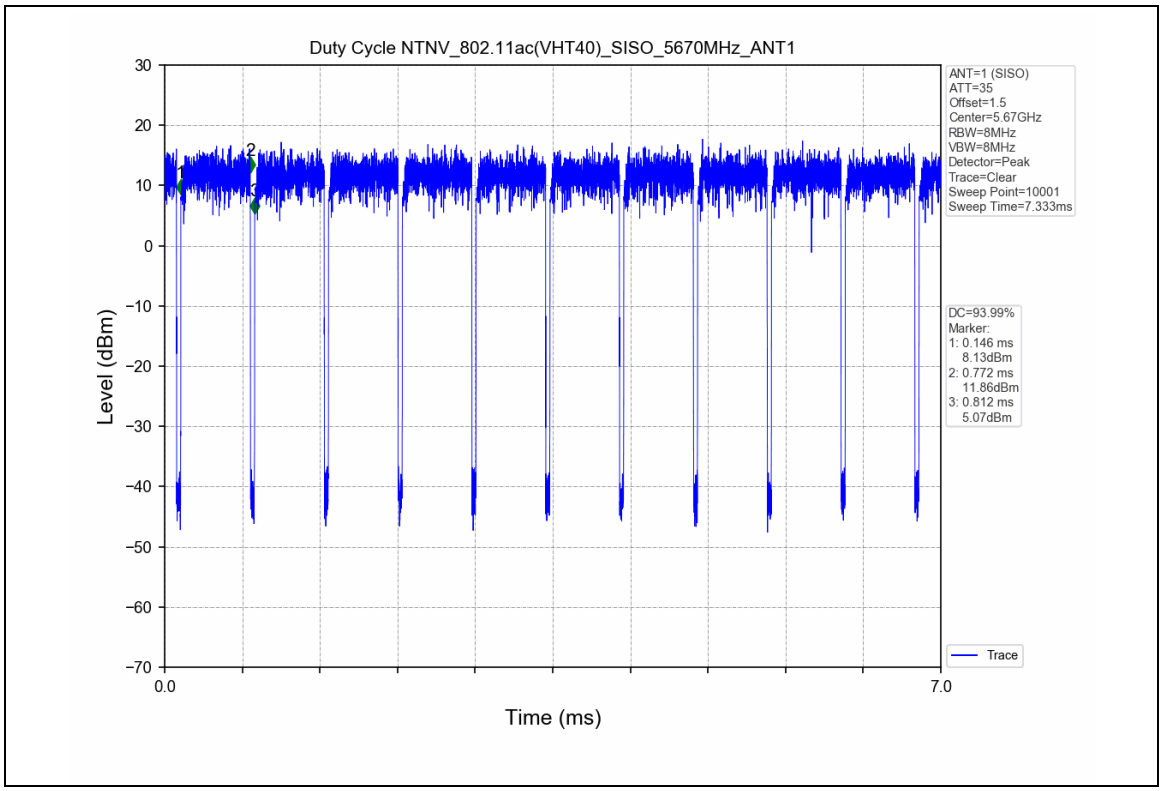


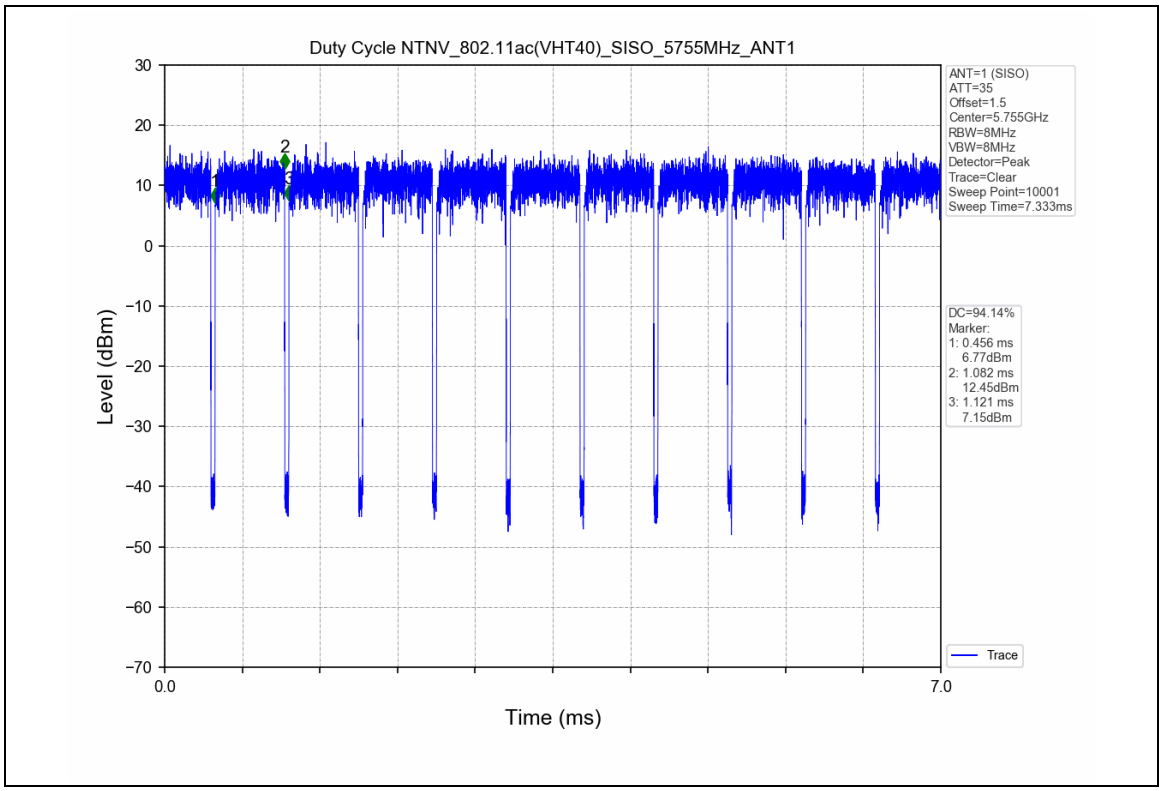


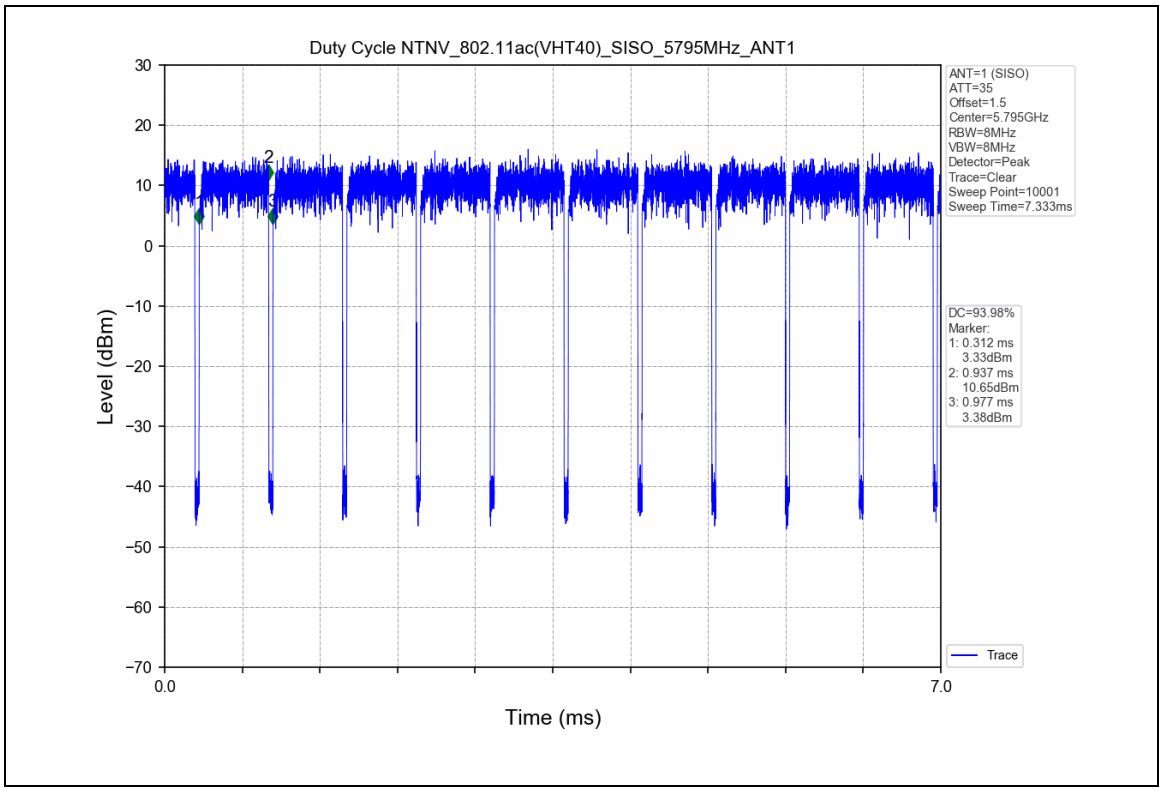


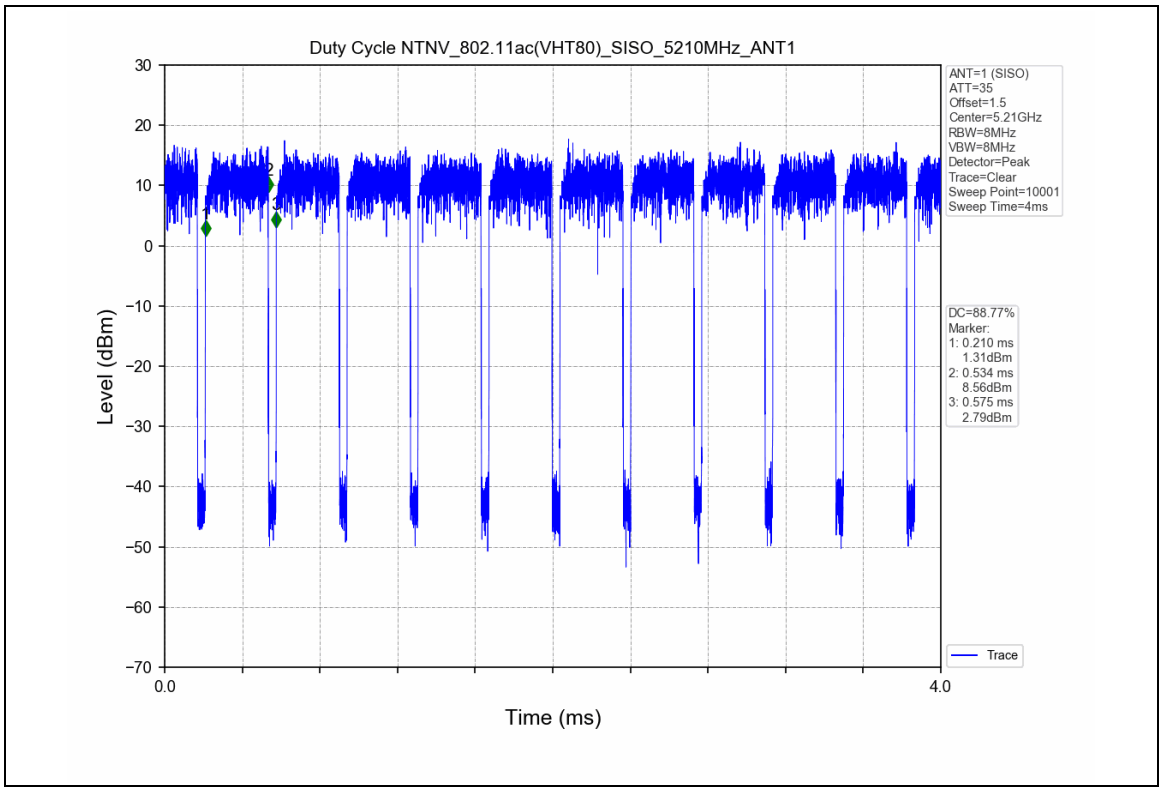


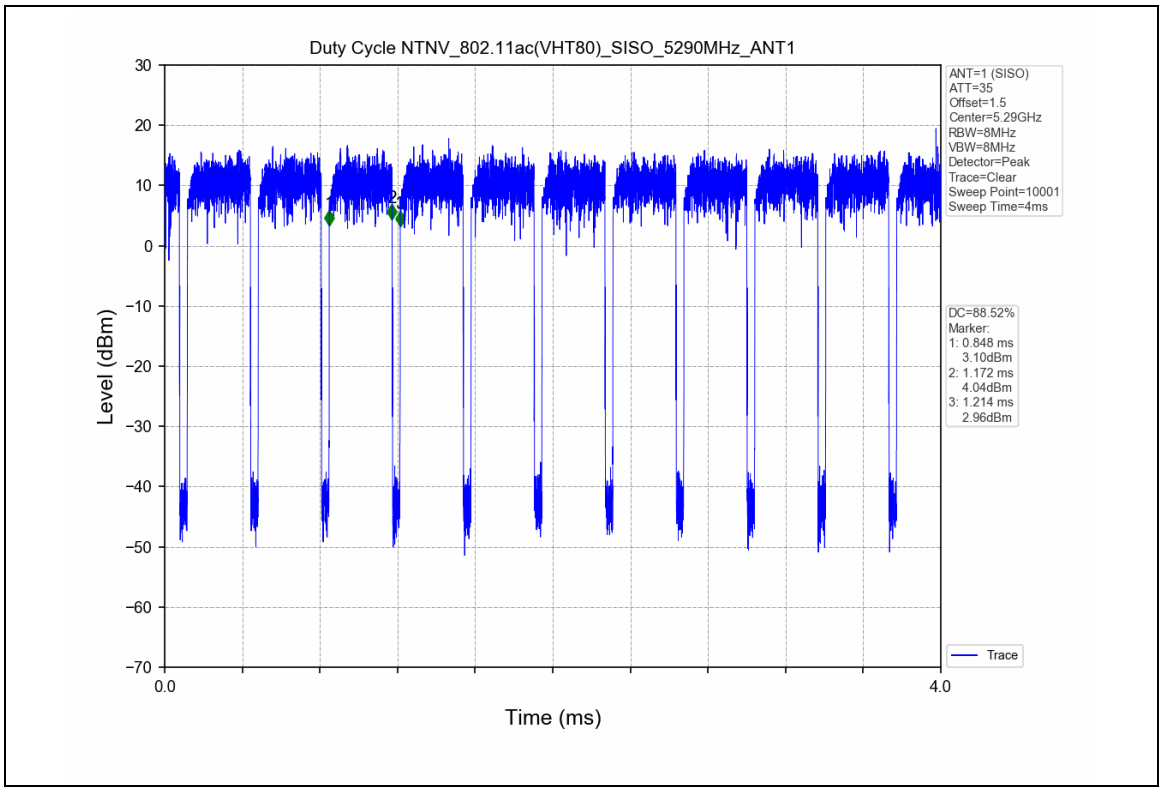


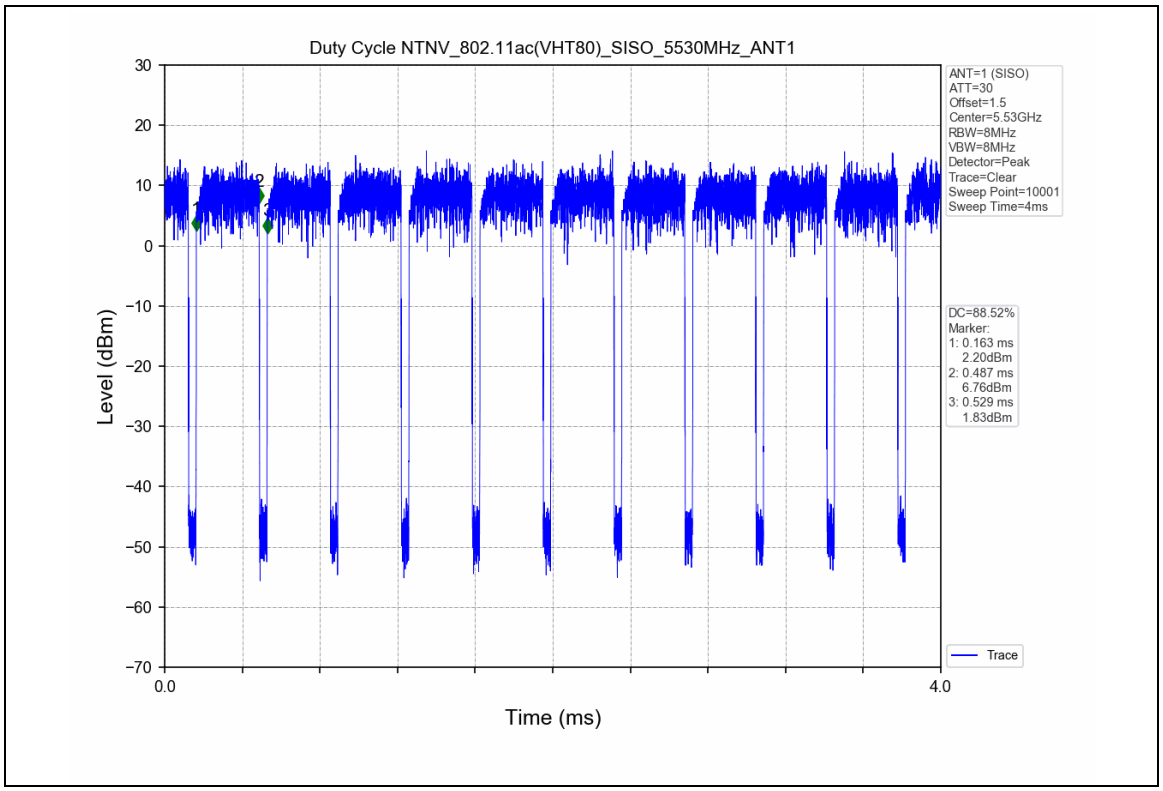


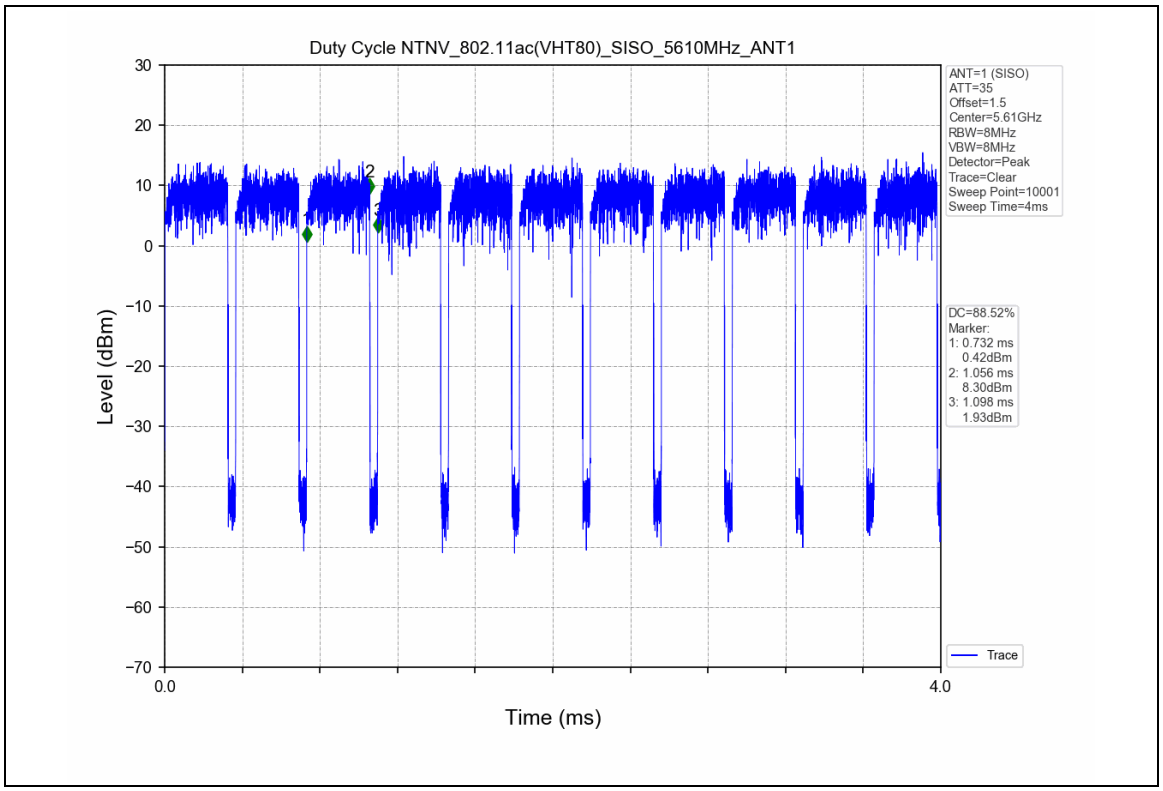


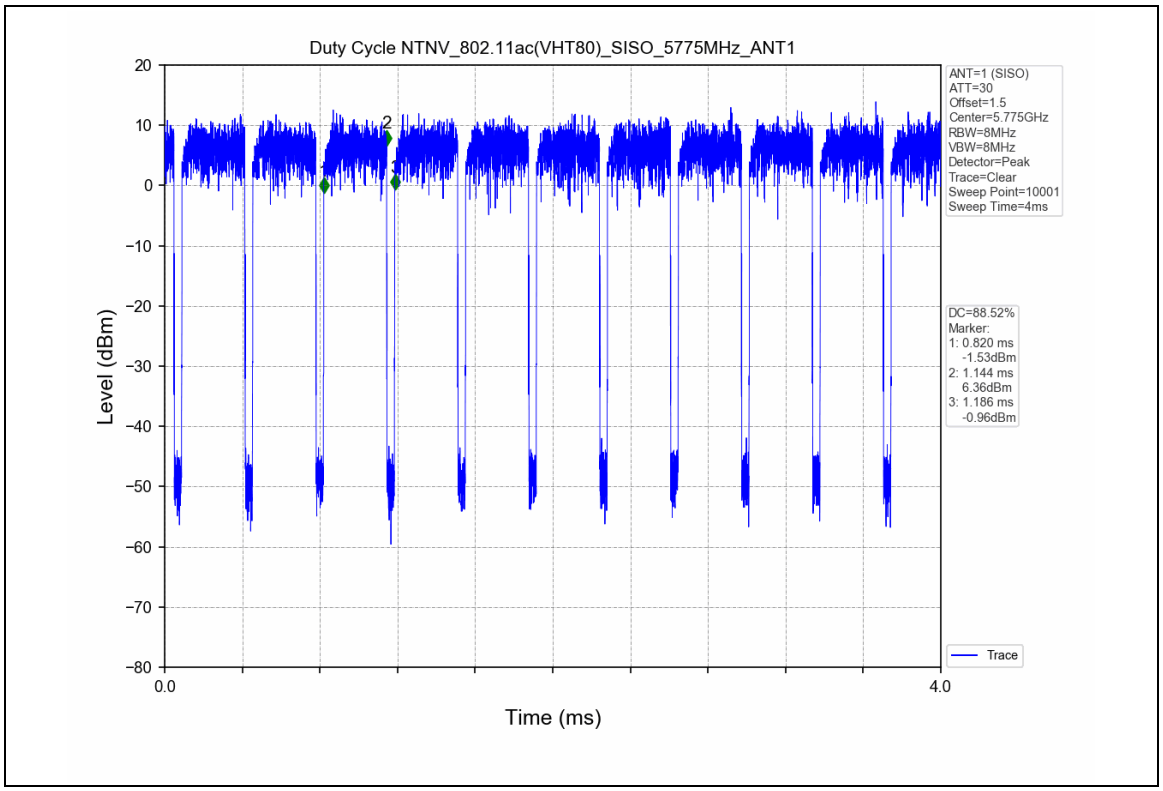












2. Bandwidth