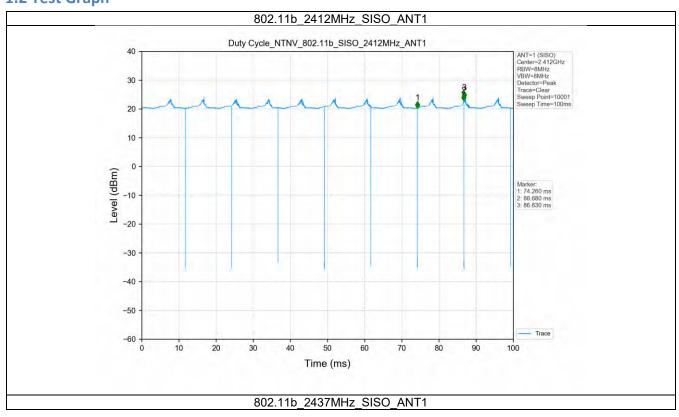
Appendix A for SHEM191201999501

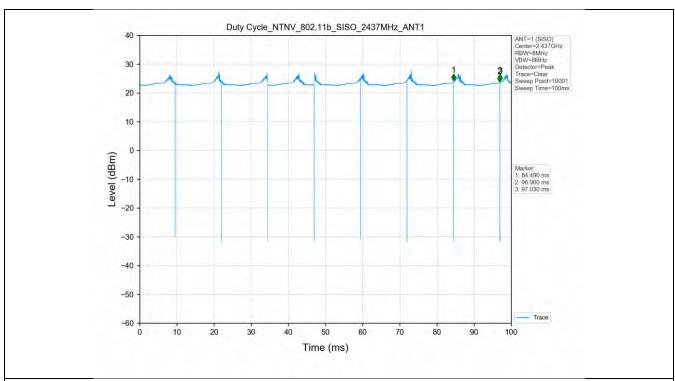
1. Duty Cycle

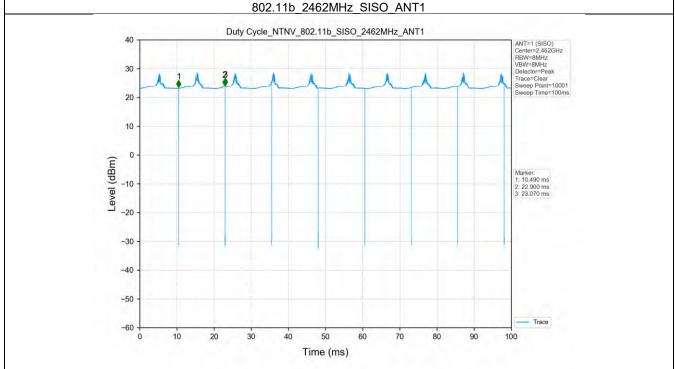
1.1 Test Result

Test Mode	Channel Frequency(MHz)	ТХ Туре	ANT No.	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
	2412	SISO	1	12.420	12.570	98.81	0.05
802.11b	2437	SISO	1	12.410	12.540	98.96	0.05
	2462	SISO	1	12.410	12.580	98.65	0.06
	2412	SISO	1	2.063	2.235	92.30	0.35
802.11g	2437	SISO	1	2.064	2.215	93.18	0.31
	2462	SISO	1	2.063	2.235	92.30	0.35
	2412	SISO	1	1.890	2.058	91.84	0.37
802.11n(HT20)	2437	SISO	1	1.890	2.041	92.60	0.33
, , ,	2462	SISO	1	1.890	2.050	92.20	0.35
802.11n(HT40)	2422	SISO	1	0.916	1.073	85.37	0.69
	2437	SISO	1	0.916	1.082	84.66	0.72
	2452	SISO	1	0.916	1.073	85.37	0.69

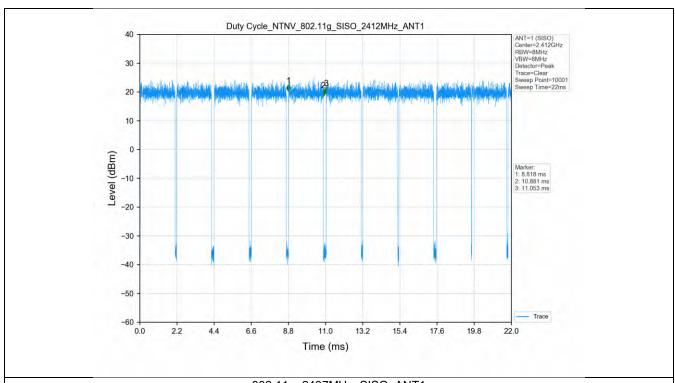
1.2 Test Graph

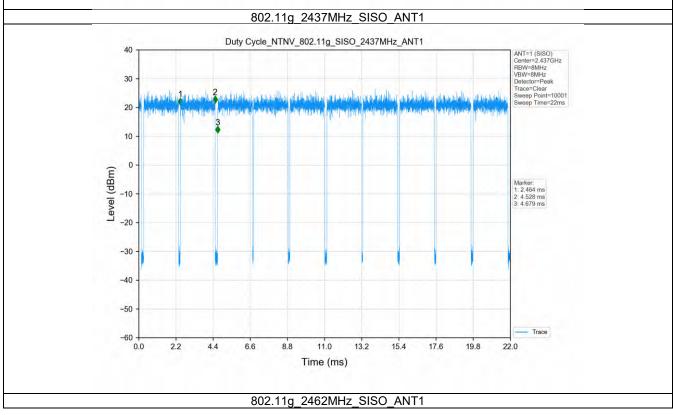


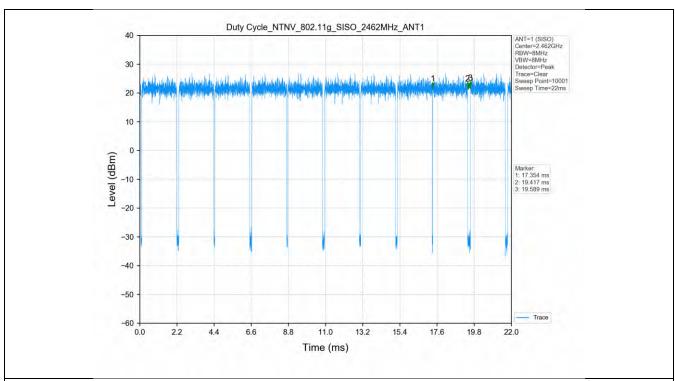


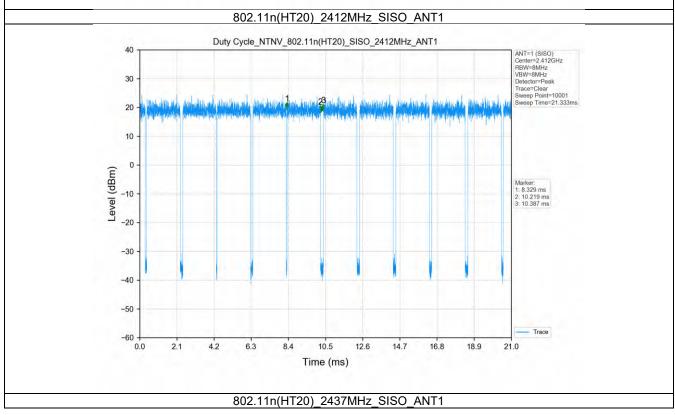


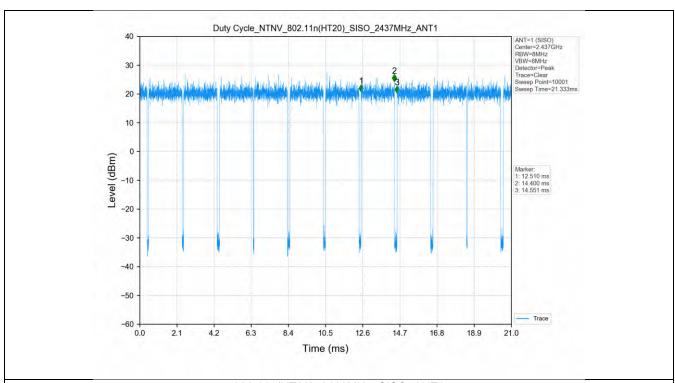
802.11g_2412MHz_SISO_ANT1

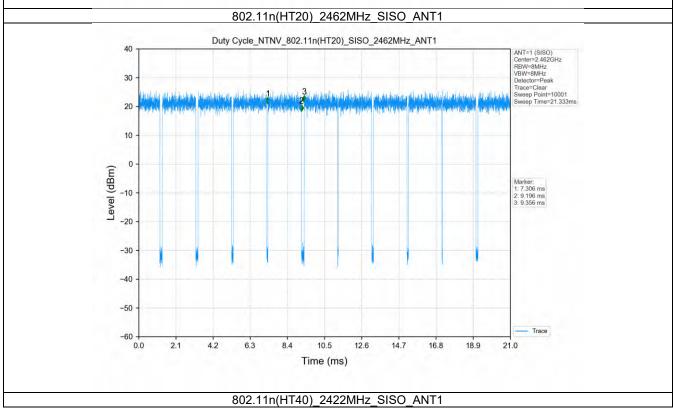


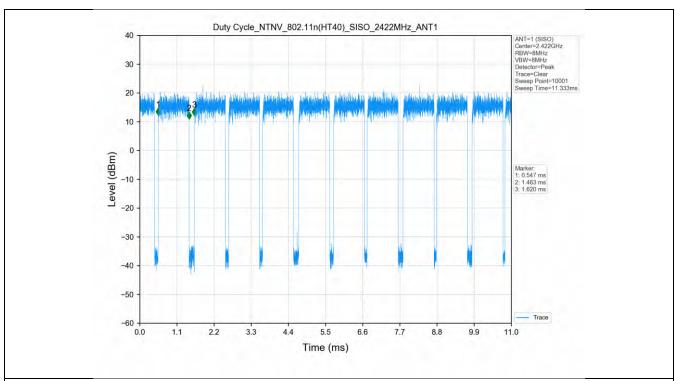


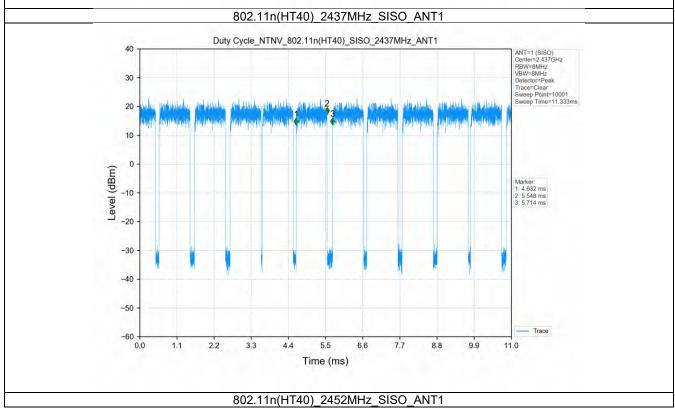


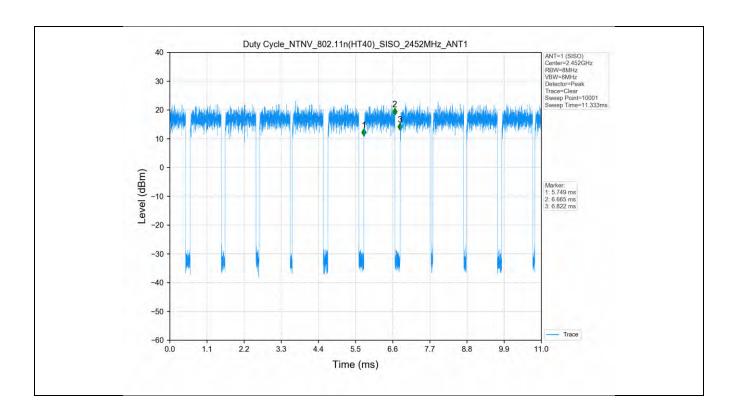












2. Bandwidth

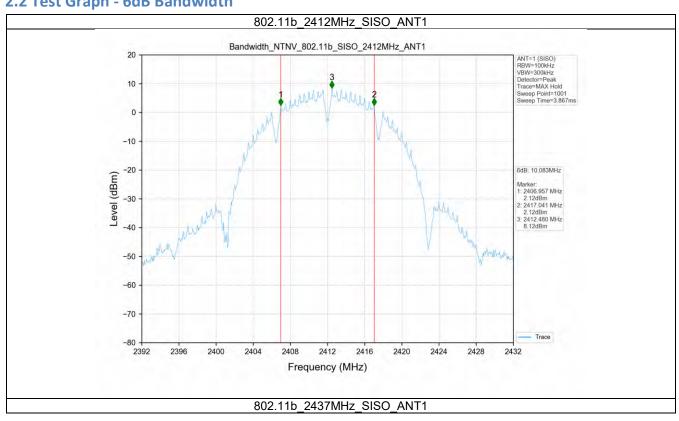
2.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT No.	6dB Bai	Verdict	
i est iviode		1 × 1 ype	AINT INO.	Test Result (MHz)	Limits (MHz)	Verdict
	2412	SISO	1	10.083	≥0.5	PASS
802.11b	2437	SISO	1	10.042	≥0.5	PASS
	2462	SISO	1	10.004	≥0.5	PASS
	2412	SISO	1	16.398	≥0.5	PASS
802.11g	2437	SISO	1	16.413	≥0.5	PASS
	2462	SISO	1	16.402	≥0.5	PASS
	2412	SISO	1	17.582	≥0.5	PASS
802.11n(HT20)	2437	SISO	1	17.399	≥0.5	PASS
, ,	2462	SISO	1	17.607	≥0.5	PASS
802.11n(HT40)	2422	SISO	1	34.209	≥0.5	PASS
	2437	SISO	1	35.191	≥0.5	PASS
	2452	SISO	1	35.251	≥0.5	PASS

Test Mode	Frequency (MHz)	TX Type	ANT No.	99% Occupied Bandwidth Test Result (MHz)		
	2412	SISO	1	15.019	Only for Report Use	
802.11b	2437	SISO	1	14.981	Only for Report Use	
	2462	SISO	1	14.978	Only for Report Use	
	2412	SISO	1	16.898	Only for Report Use	
802.11g	2437	SISO	1	16.945	Only for Report Use	
	2462	SISO	1	16.932	Only for Report Use	

802.11n(HT20)	2412	SISO	1	17.924	Only for Report Use
	2437	SISO	1	18.032	Only for Report Use
	2462	SISO	1	18.087	Only for Report Use
802.11n(HT40)	2422	SISO	1	36.717	Only for Report Use
	2437	SISO	1	36.505	Only for Report Use
	2452	SISO	1	36.367	Only for Report Use

2.2 Test Graph - 6dB Bandwidth



-50

-60

-70 | 2442

2446

2450

2454

2458

2462

Frequency (MHz)

802.11g_2412MHz_SISO_ANT1

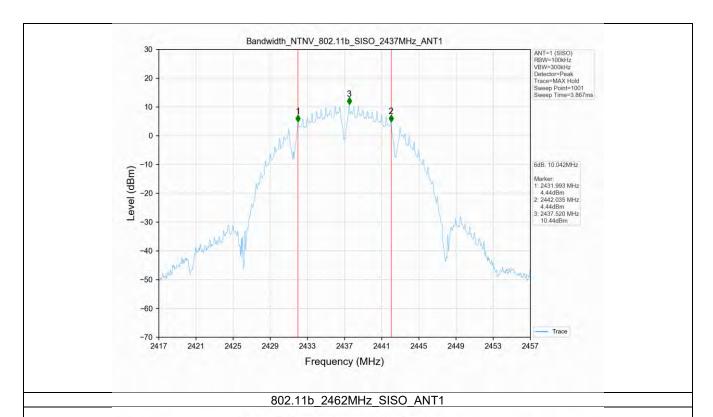
2466

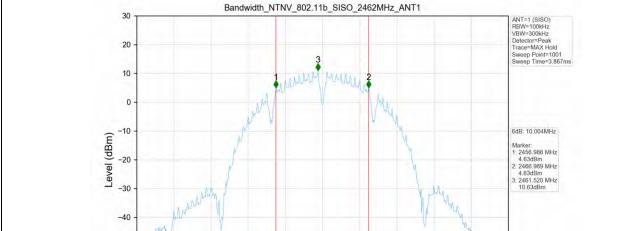
2470

2474

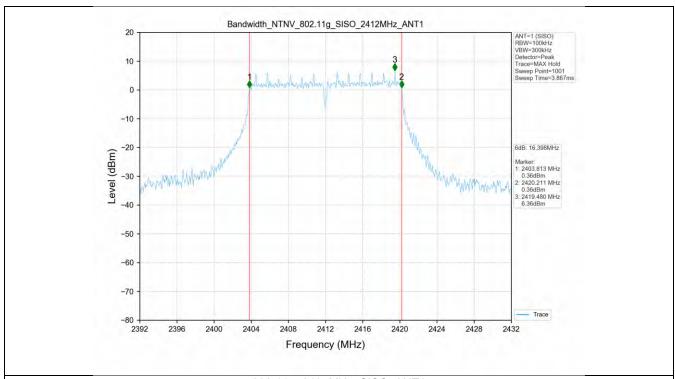
2478

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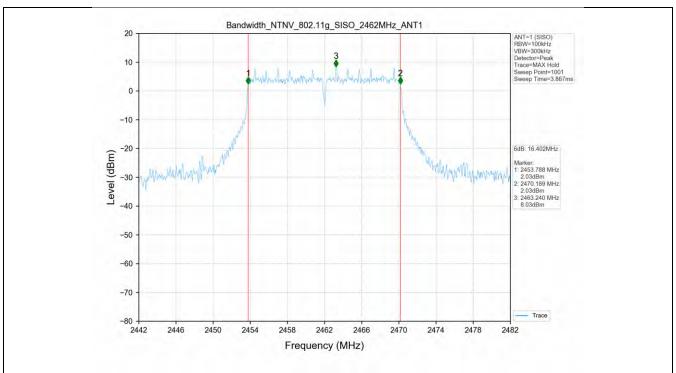


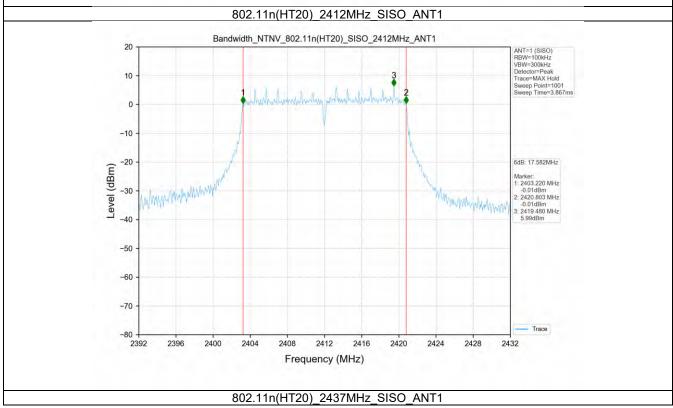


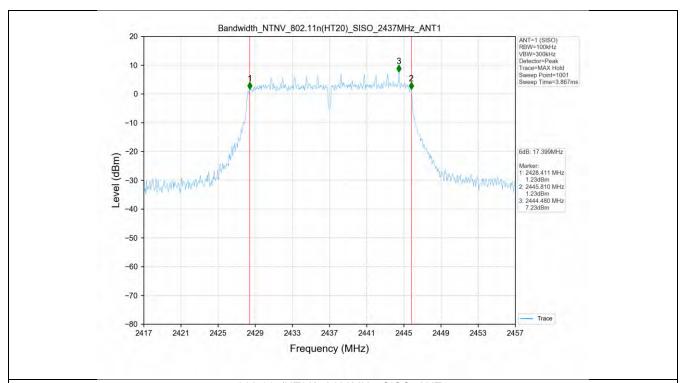
Trace

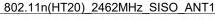


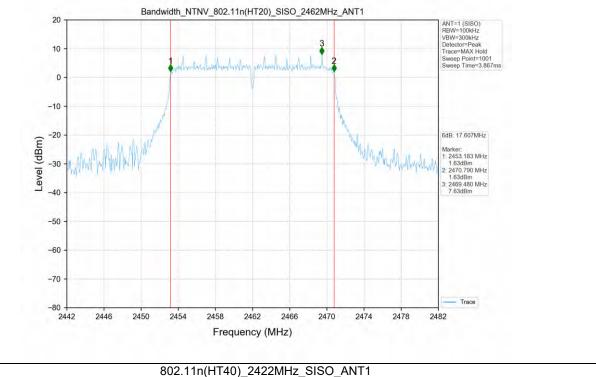
802.11g 2437MHz SISO ANT1 Bandwidth_NTNV_802.11g_SISO_2437MHz_ANT1 20 ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=1001 Sweep Time=3.867ms 10 0 -10 6dB: 16.413MHz -20 Level (dBm) Marker: 1: 2428.806 MHz 0.82dBm 2: 2445.219 MHz 0.82dBm 3: 2443.240 MHz 6.82dBm programmy highway hard -30 -40 -50 -60 -70 Trace -80 2425 2429 2433 2437 2441 2445 2449 2453 2421 Frequency (MHz) 802.11g_2462MHz_SISO_ANT1

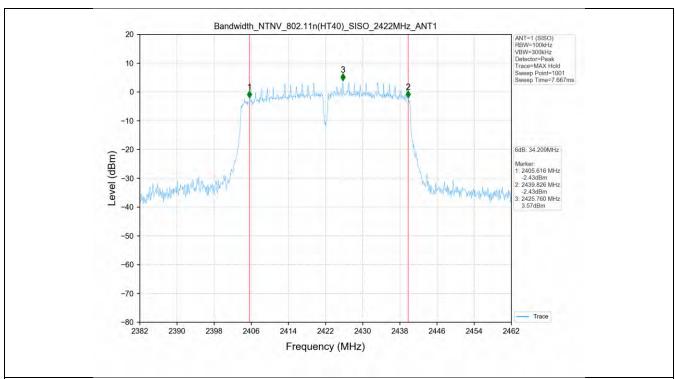




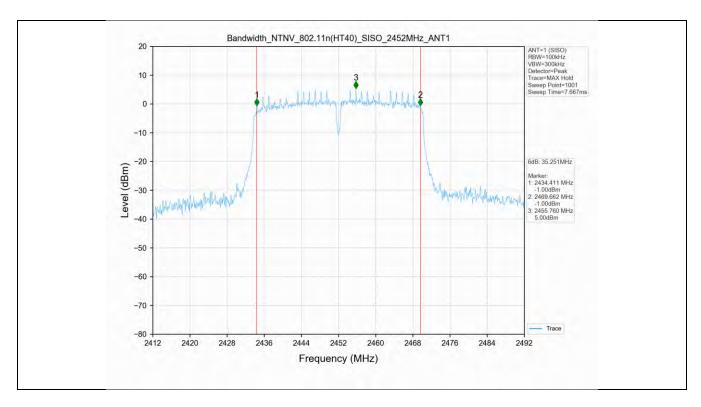




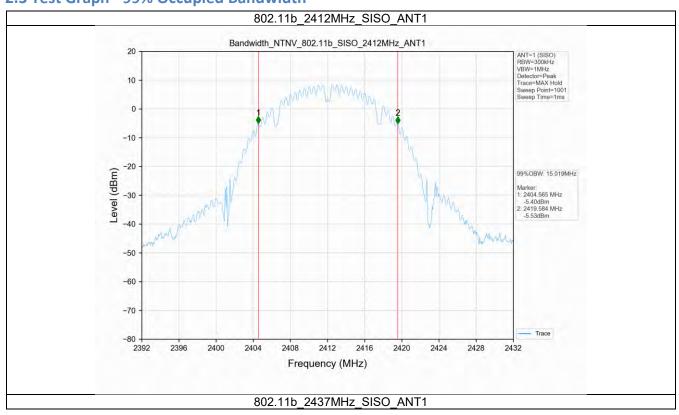




802.11n(HT40)_2437MHz_SISO_ANT1 Bandwidth_NTNV_802.11n(HT40)_SISO_2437MHz_ANT1 20 RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold 10 Sweep Point=1001 Sweep Time=7.667ms 0 -10 6dB: 35.191MHz -20 Level (dBm) Marker: 1: 2419.436 MHz -0.47dBm 2: 2454.628 MHz -0.47dBm 3: 2440.760 MHz 5.53dBm while the state and property was able -30 -40 -50 -60 -70 Trace -80 -2405 2413 2421 2429 2437 2445 2453 2461 2469 Frequency (MHz) 802.11n(HT40)_2452MHz_SISO_ANT1



2.3 Test Graph - 99% Occupied Bandwidth



-70 | 2442

2446

2450

2454

2458

2462

Frequency (MHz)

802.11g_2412MHz_SISO_ANT1

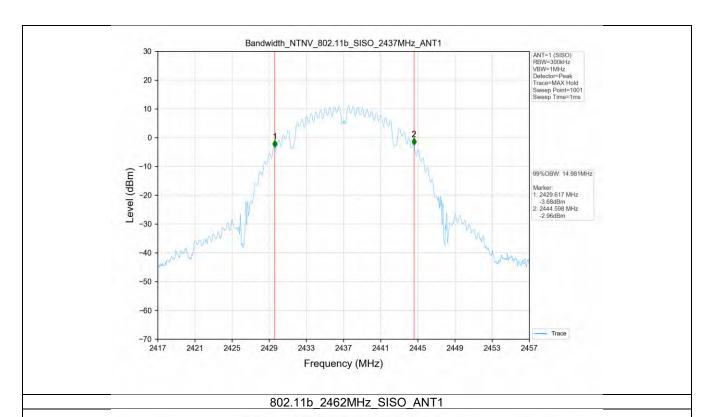
2466

2470

2474

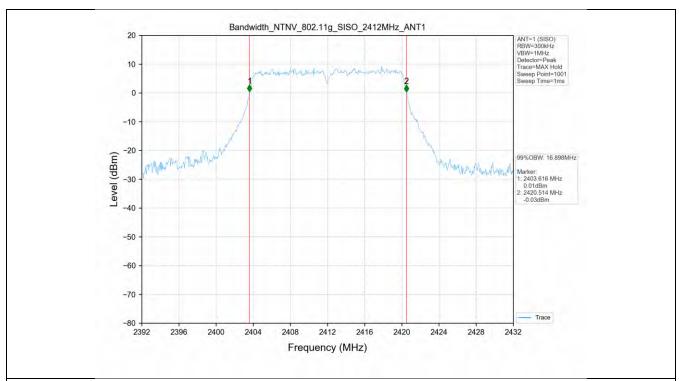
2478

SGS-CSTC Standards Technical Services Co., Ltd. Shanghai Branch

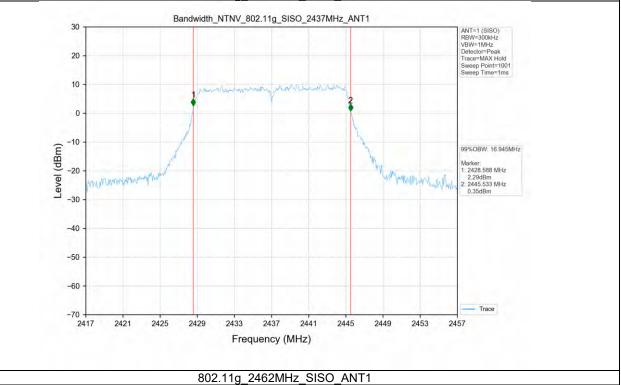


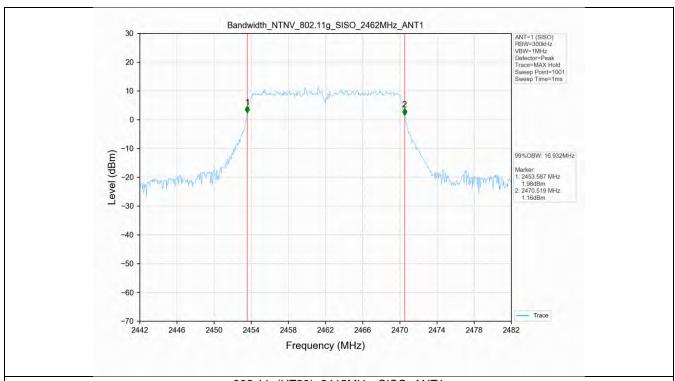
Bandwidth_NTNV_802.11b_SISO_2462MHz_ANT1 ANT=1 (SISO) RBW-30064z V9W-1MHz LDetector-Peak Trace-MAX Hold Sweep Point=1001 Sweep Point=1001 Sweep Time=1ms 99%OBW: 14 978MHz Marker: 12 23/28m 2 23/28m 2 23/28m 2 23/28m 2 183/38m 2 183/38m

Trace

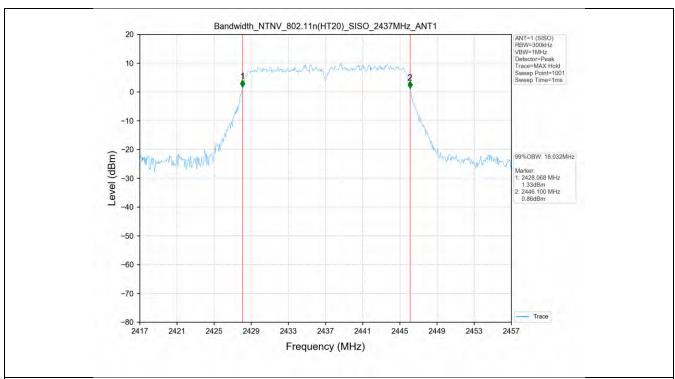




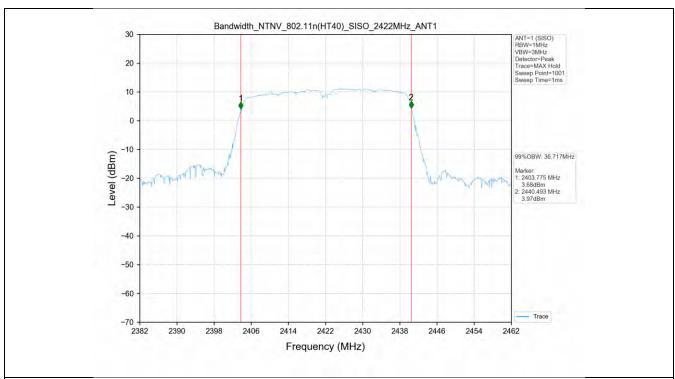




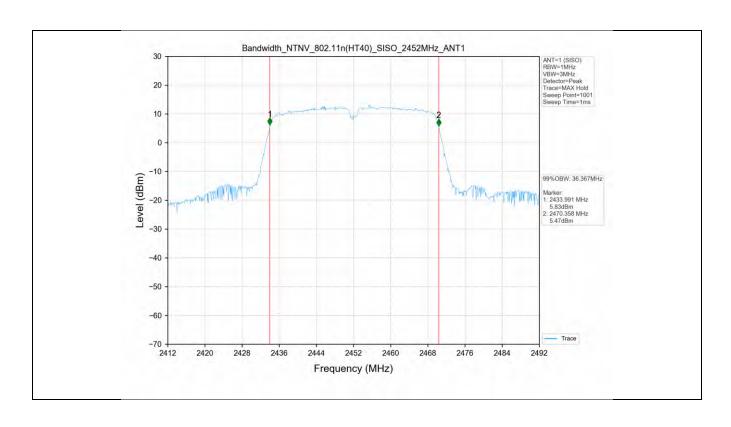
802.11n(HT20)_2412MHz_SISO_ANT1 Bandwidth_NTNV_802.11n(HT20)_SISO_2412MHz_ANT1 20 ANT=1 (SISO) ANT=1 (SISO) RBW=300kHz VBW=1MHz Detector=Peak Trace=MAX Hold Sweep Point=1001 Sweep Time=1ms 10 0 -10 -20 Level (dBm) 99%OBW: 17.924MHz Marker: 1: 2403.077 MHz 0.79dBm 2: 2421.000 MHz 0.49dBm -30 -40 -50 -60 -70 Trace -80 -2392 2396 2400 2404 2408 2412 2416 2420 2424 2428 Frequency (MHz) 802.11n(HT20)_2437MHz_SISO_ANT1



802.11n(HT20)_2462MHz_SISO_ANT1 Bandwidth_NTNV_802.11n(HT20)_SISO_2462MHz_ANT1 30 ANT=1 (SISO) ANT=1 (SISO) RBW=300kHz VBW=1MHz Detector=Peak Trace=MAX Hold Sweep Point=1001 Sweep Time=1ms 20 10 Level (dBm) 99%OBW: 18.087MHz -20 -30 -40 -50 -60 Trace -70 -2442 2446 2450 2454 2458 2462 2466 2470 2474 2478 Frequency (MHz) 802.11n(HT40)_2422MHz_SISO_ANT1



802.11n(HT40)_2437MHz_SISO_ANT1 Bandwidth_NTNV_802.11n(HT40)_SISO_2437MHz_ANT1 30 ANT=1 (SISO) ANT=1 (SISO) RBW=1MHz VBW=3MHz Detector=Peak Trace=MAX Hold Sweep Point=1001 Sweep Time=1ms 20 10 0 Level (dBm) 99%OBW: 36.505MHz -20 -30 -40 -50 -60 Trace -70 -2397 2405 2413 2421 2429 2437 2445 2453 2461 2469 Frequency (MHz) 802.11n(HT40)_2452MHz_SISO_ANT1



3. Maximum Conducted Output Power

3.1 Test Result

Test Mode	Frequency (MHz)	Тх Туре	Measured Output Power (dBm) Ant 1	Limits (dBm)	Verdict
	2412	SISO	16.60	30	PASS
802.11b	2437	SISO	18.96	30	PASS
	2462	SISO	19.59	30	PASS
	2412	SISO	17.26	30	PASS
802.11g	2437	SISO	18.40	30	PASS
	2462	SISO	19.15	30	PASS
	2412	SISO	16.93	30	PASS
802.11n(HT20)	2437	SISO	18.24	30	PASS
	2462	SISO	19.06	30	PASS
802.11n(HT40)	2422	SISO	16.95	30	PASS
	2437	SISO	18.77	30	PASS
	2452	SISO	18.49	30	PASS

4. Maximum Power Spectral Density (PSD)

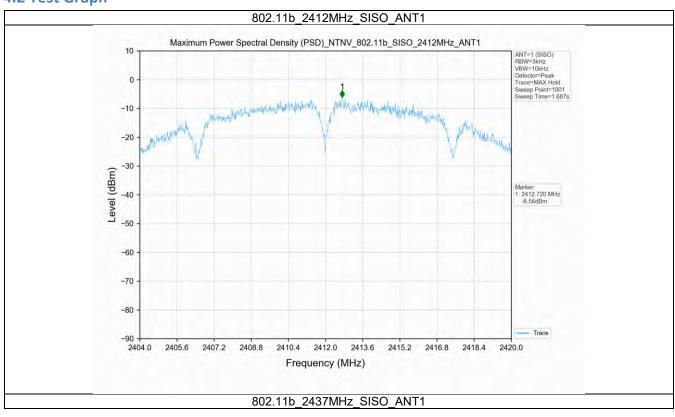
4.1 Test Result

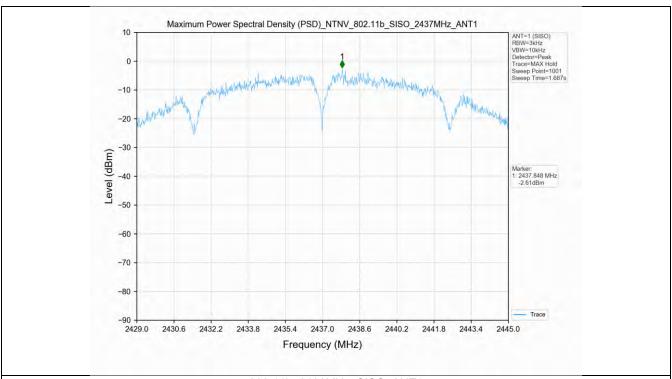
Test Mode	Frequency (MHz)	Тх Туре	Maximum Power Spectral Density (dBm/3KHz) Ant 1	Limits (dBm/3kHz)	Verdict
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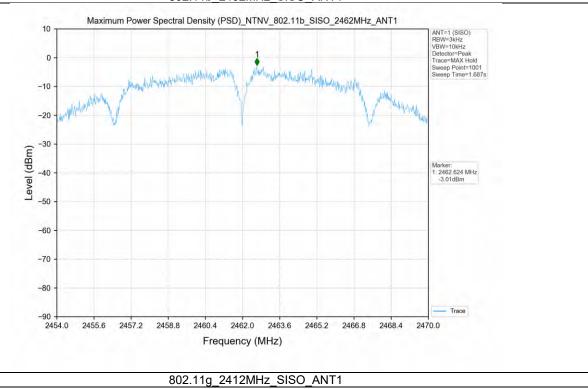
	2412	SISO	-6.56	≤8	PASS
802.11b	2437	SISO	-2.61	≤8	PASS
	2462	SISO	-3.01	≤8	PASS
	2412	SISO	-8.47	≤8	PASS
802.11g	2437	SISO	-6.42	≤8	PASS
	2462	SISO	-5.64	≤8	PASS
	2412	SISO	-8.13	≤8	PASS
802.11n(HT20)	2437	SISO	-6.89	≤8	PASS
	2462	SISO	-6.36	≤8	PASS
	2422	SISO	-11.06	≤8	PASS
802.11n(HT40)	2437	SISO	-9.25	≤8	PASS
	2452	SISO	-10.07	≤8	PASS

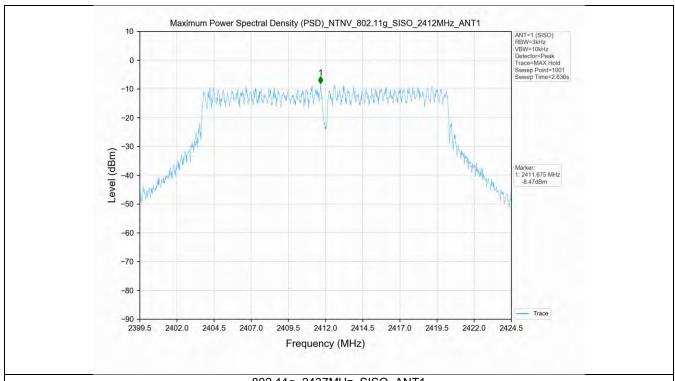
4.2 Test Graph

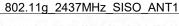


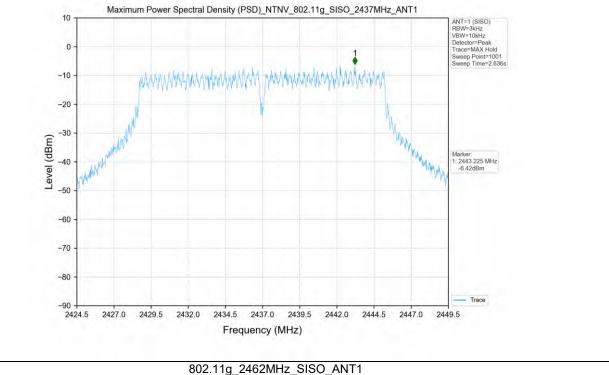


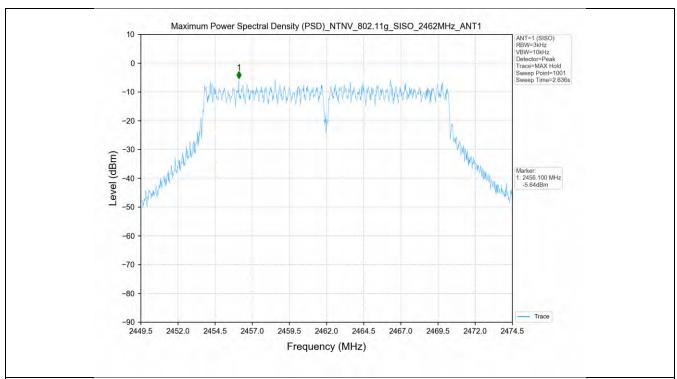
802.11b 2462MHz SISO ANT1



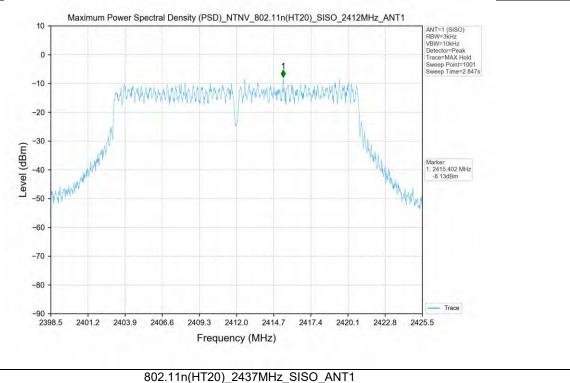


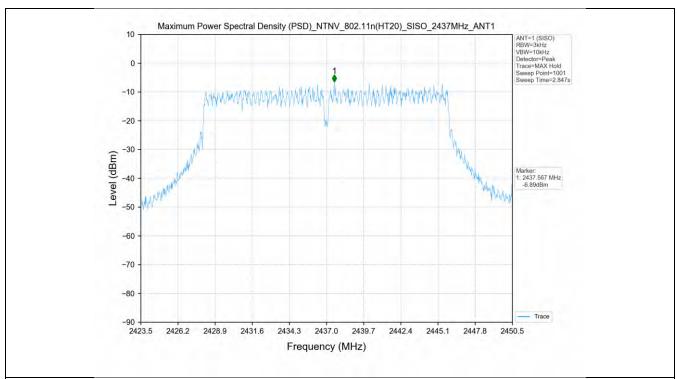




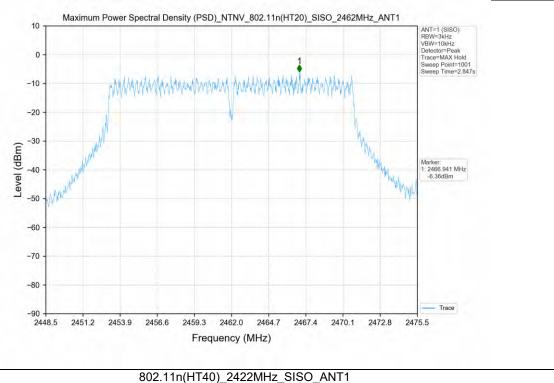


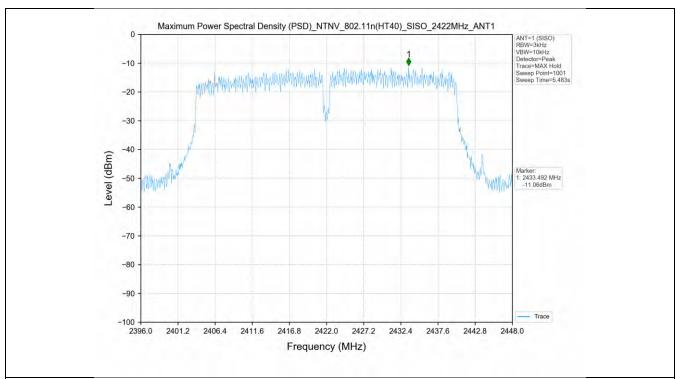
802.11n(HT20)_2412MHz_SISO_ANT1



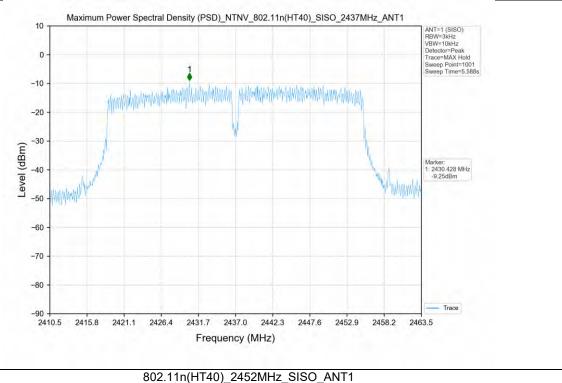


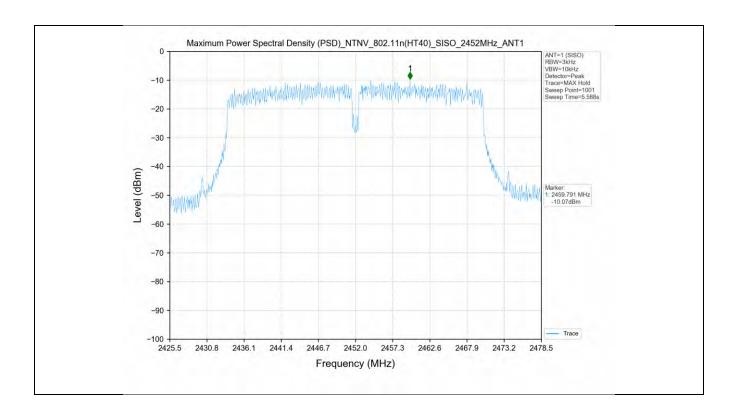
802.11n(HT20)_2462MHz_SISO_ANT1





802.11n(HT40)_2437MHz_SISO_ANT1





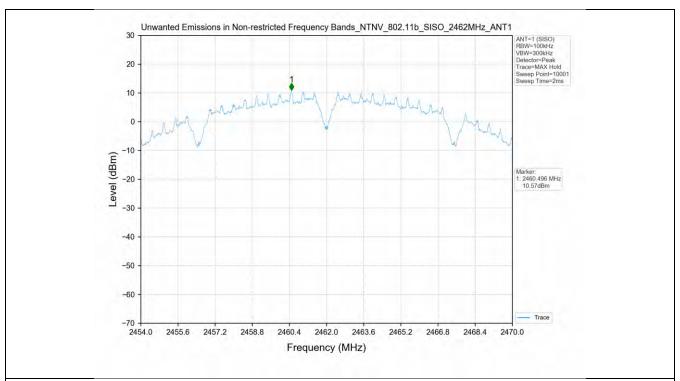
5. Unwanted Emissions in Non-restricted Frequency Bands

5.1 Test Result

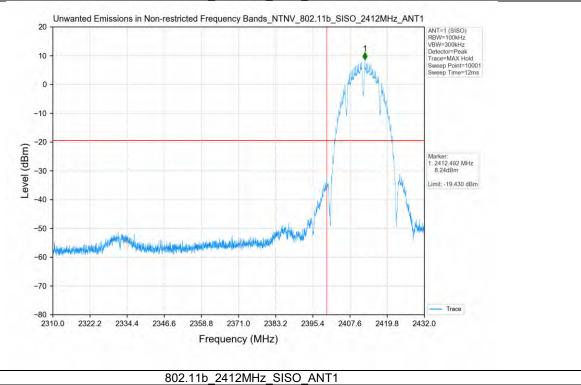
Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
	2412	SISO	1	Refer to test graph	-19.43	PASS
802.11b	2437	SISO	1	Refer to test graph	-19.43	PASS
	2462	SISO	1	Refer to test graph	-19.43	PASS
	2412	SISO	1	Refer to test graph	-22.08	PASS
802.11g	2437	SISO	1	Refer to test graph	-22.08	PASS
	2462	SISO	1	Refer to test graph	-22.08	PASS
	2412	SISO	1	Refer to test graph	-22.08	PASS
802.11n(HT20)	2437	SISO	1	Refer to test graph	-22.08	PASS
	2462	SISO	1	Refer to test graph	-22.08	PASS
802.11n(HT40)	2422	SISO	1	Refer to test graph	-26.83	PASS
	2437	SISO	1	Refer to test graph	-26.83	PASS
	2452	SISO	1	Refer to test graph	-26.83	PASS

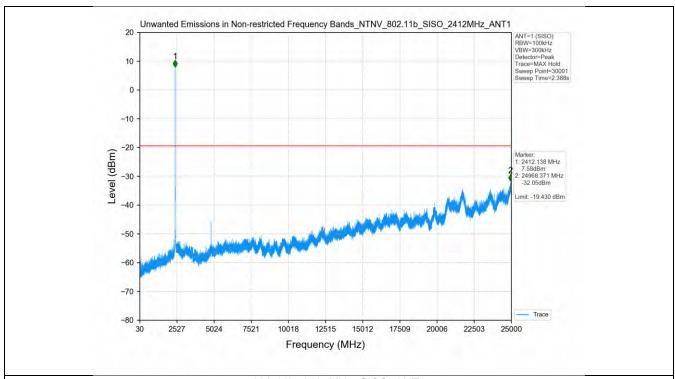
5.2 Test Graph

802.11b_SISO_ANT1_REF

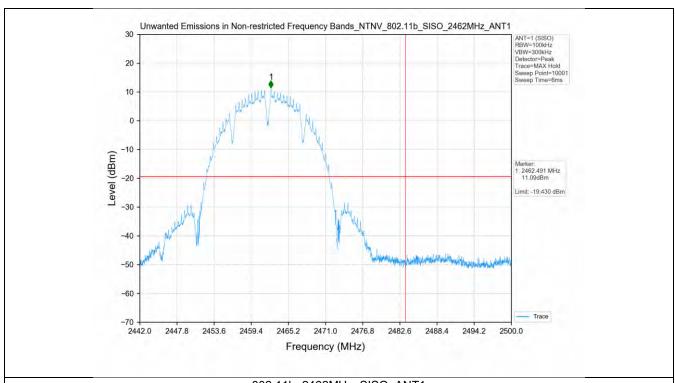


802.11b_2412MHz_SISO_ANT1

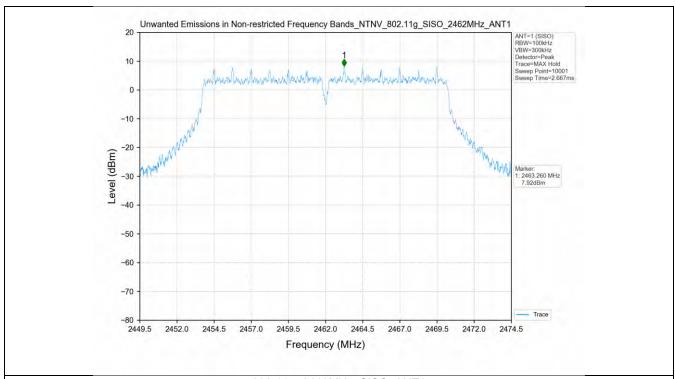




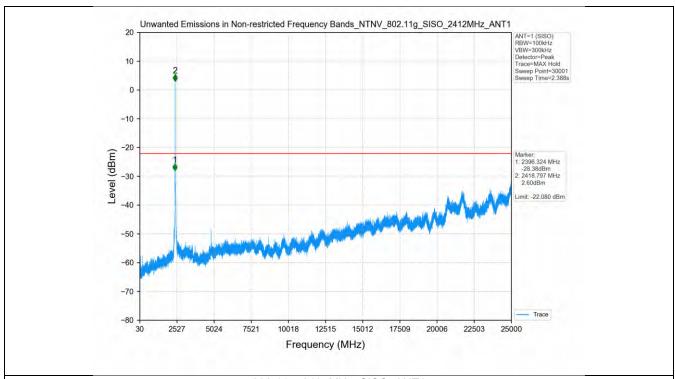
802.11b_2437MHz_SISO_ANT1 Unwanted Emissions in Non-restricted Frequency Bands_NTNV_802.11b_SISO_2437MHz_ANT1 ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=30001 Sweep Time=2.388s 10 0 -20 Marker: 1: 2438.773 MHz 8.46dBm 2: 24955.886 MHz -25.93dBm Level (dBm) -30 -40 -50 -60 -70 Trace -80 -2527 5024 7521 10018 12515 15012 17509 20006 22503 25000 Frequency (MHz) 802.11b_2462MHz_SISO_ANT1



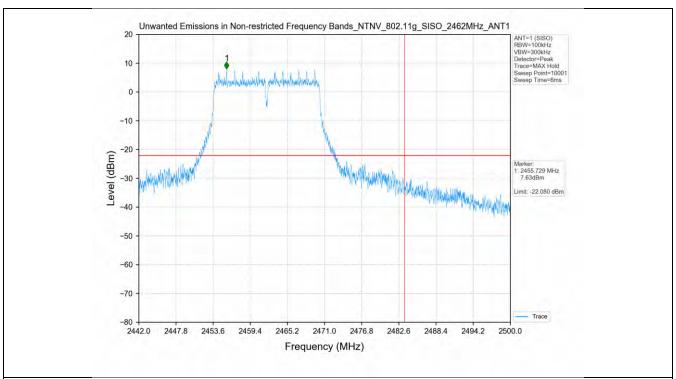
802.11b 2462MHz SISO ANT1 Unwanted Emissions in Non-restricted Frequency Bands_NTNV_802.11b_SISO_2462MHz_ANT1 ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=30001 Sweep Time=2.388s 10 0 -20 Level (dBm) Marker: 1: 2462.910 MHz 9.66dBm 2: 24997.503 MHz -25.45dBm -30 -40 -50 -60 -70 Trace -80 -2527 5024 7521 10018 12515 15012 17509 20006 22503 25000 Frequency (MHz) 802.11g_SISO_ANT1_REF

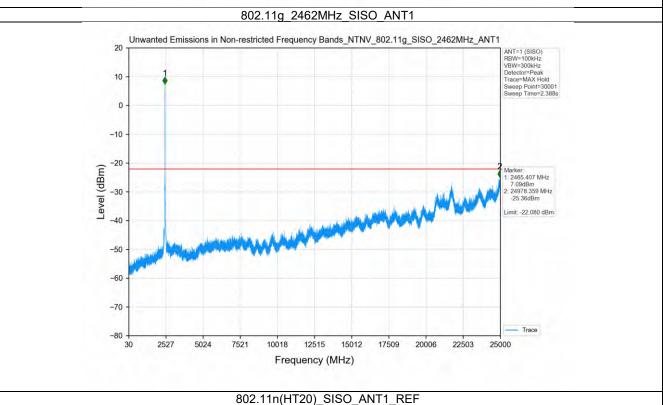


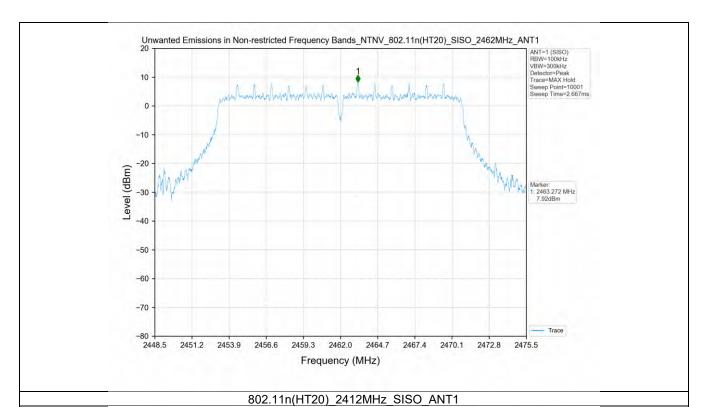
802.11g 2412MHz SISO ANT1 Unwanted Emissions in Non-restricted Frequency Bands_NTNV_802.11g_SISO_2412MHz_ANT1 ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=10001 Sweep Time=12ms 10 0 -10 -20 Level (dBm) Marker: 1: 2419.495 MHz 6.15dBm -30 -40 -50 -60 -70 Trace -80 2322.2 2334.4 2346.6 2371.0 2383.2 2395.4 2407.6 2358.8 Frequency (MHz) 802.11g_2412MHz_SISO_ANT1



802.11g 2437MHz SISO ANT1 Unwanted Emissions in Non-restricted Frequency Bands_NTNV_802.11g_SISO_2437MHz_ANT1 ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=30001 Sweep Time=2.388s 10 0 -20 Level (dBm) Marker: 1: 2443.767 MHz 3.67dBm 2: 24962.545 MHz -26.01dBm -30 -40 -50 -60 -70 Trace -80 -2527 5024 7521 10018 12515 15012 17509 20006 22503 25000 Frequency (MHz) 802.11g_2462MHz_SISO_ANT1

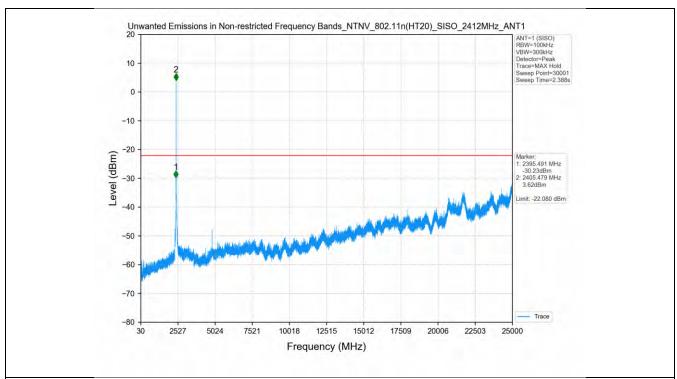


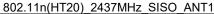


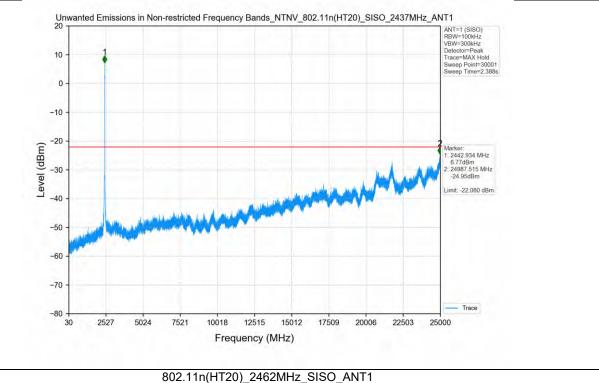


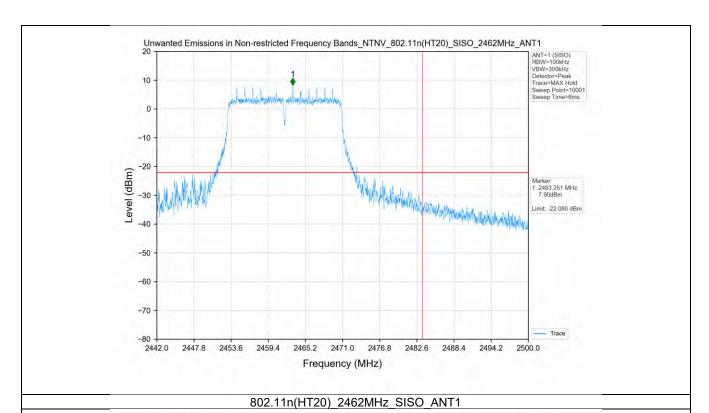
ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=10001 Sweep Time=12ms 10 0 -20 Level (dBm) Marker: 1: 2416.982 MHz 5.59dBm -30 -40 -50 -60 -70 Trace -80 2322.2 2334.4 2346.6 2371.0 2383.2 2395.4 2407.6 2358.8 Frequency (MHz)

802.11n(HT20)_2412MHz_SISO_ANT1





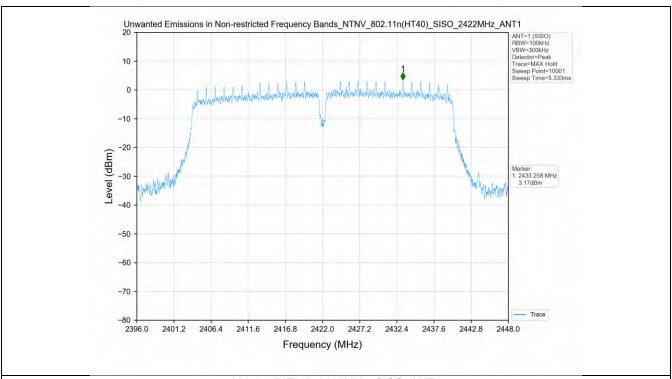




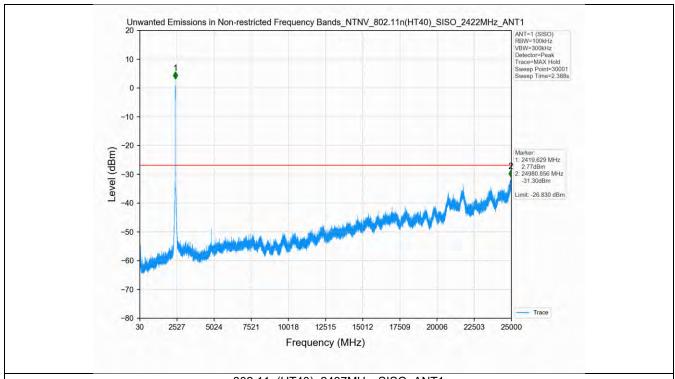
ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=30001 Sweep Time=2.388s 10 0 -20 Level (dBm) -30 -40 -50 -60 -70 Trace -80 -20006 12515 15012 17509 2527 5024 7521 10018 22503 25000

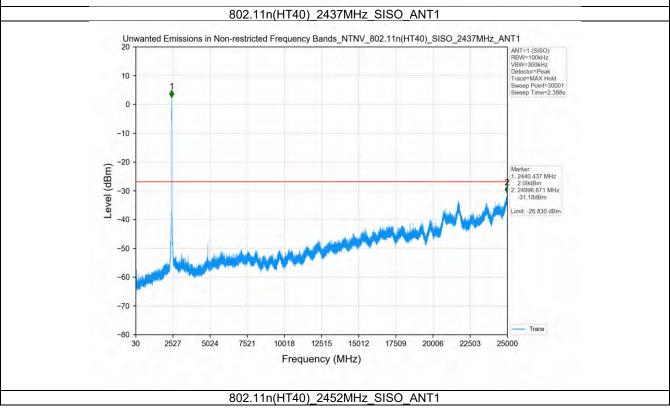
Frequency (MHz)

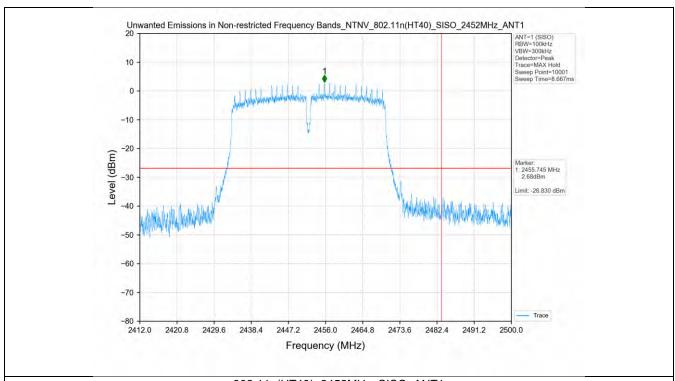
802.11n(HT40)_SISO_ANT1_REF



802.11n(HT40)_2422MHz_SISO_ANT1 Unwanted Emissions in Non-restricted Frequency Bands_NTNV_802.11n(HT40)_SISO_2422MHz_ANT1 RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=10001 Sweep Time=14.667ms 10 0 -20 Level (dBm) Marker: 1: 2425.733 MHz 3.28dBm -30 Limit: -26.830 dBm -40 -50 -60 -70 Trace -80 2340.4 2355.6 2386.0 2416.4 2431.6 2325.2 2370.8 2401.2 2446.8 Frequency (MHz) 802.11n(HT40)_2422MHz_SISO_ANT1







802.11n(HT40)_2452MHz_SISO_ANT1 ANT=1 (SISO) RBW=100kHz VBW=300kHz Detector=Peak Trace=MAX Hold Sweep Point=30001 Sweep Time=2.388s 10 0 -20 Level (dBm) Marker: 1: 2464.575 MHz 1:83dBm 2: 24997.503 MHz -31,38dBm -30 -40 -50 -60 -70 Trace -80 -12515 15012 17509 20006 2527 5024 7521 10018 22503 25000 Frequency (MHz)