RF Test Data for RLAN(5.2G) (Conducted Measurement)

Product Name: Wanbo Projector

Trade Mark: wanbo

Test Model: T4

FCC ID:2A7PIT4

Environmental Conditions

Temperature:	25.5°C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engneer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

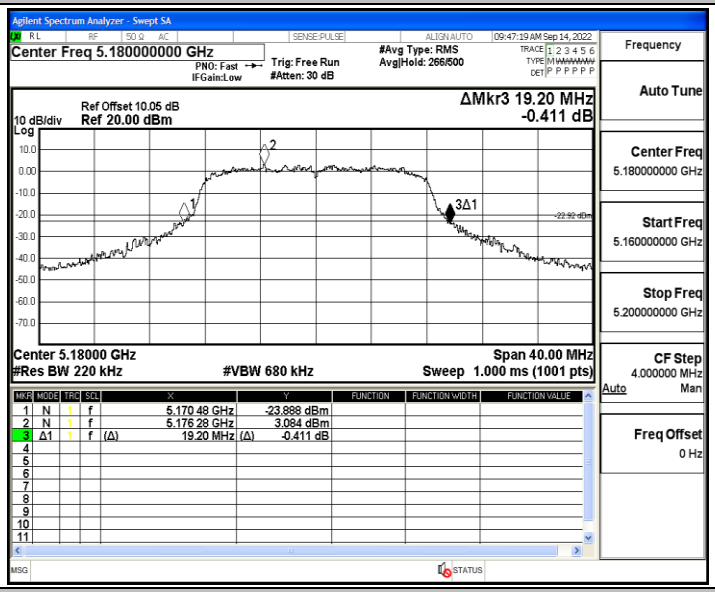
Appendix A1: Emission Bandwidth

Test Result

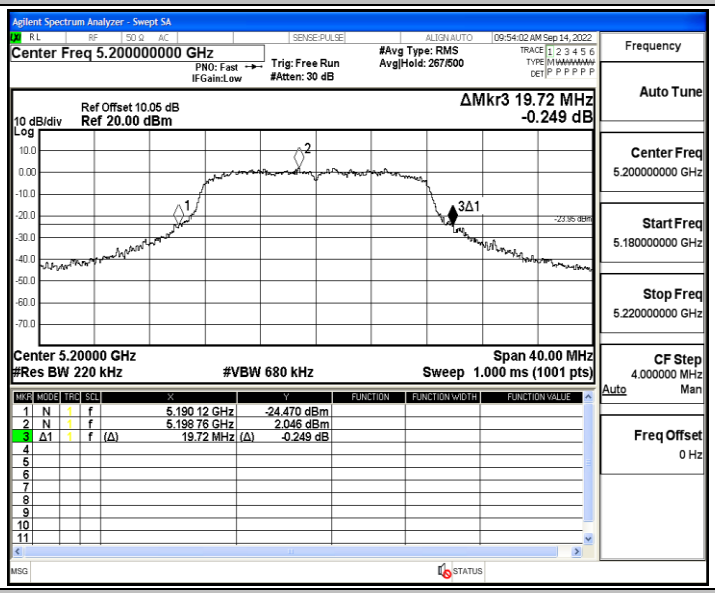
TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.200	5170.480	5189.680	---	---
		5200	19.720	5190.120	5209.840	---	---
		5240	19.920	5230.160	5250.080	---	---
11N20SISO	Ant1	5180	19.440	5170.360	5189.800	---	---
		5200	19.440	5190.160	5209.600	---	---
		5240	19.360	5230.200	5249.560	---	---
11N40SISO	Ant1	5190	40.240	5169.840	5210.080	---	---
		5230	39.920	5209.920	5249.840	---	---
11AC20SISO	Ant1	5180	19.520	5170.400	5189.920	---	---
		5200	19.920	5190.120	5210.040	---	---
		5240	19.680	5230.080	5249.760	---	---
11AC40SISO	Ant1	5190	40.480	5169.840	5210.320	---	---
		5230	40.400	5209.680	5250.080	---	---

Test Graphs

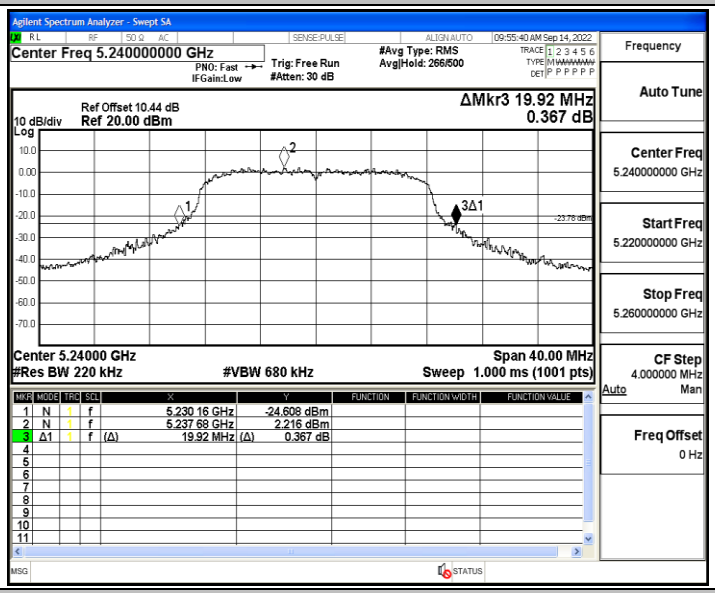
11A_Ant1_5180



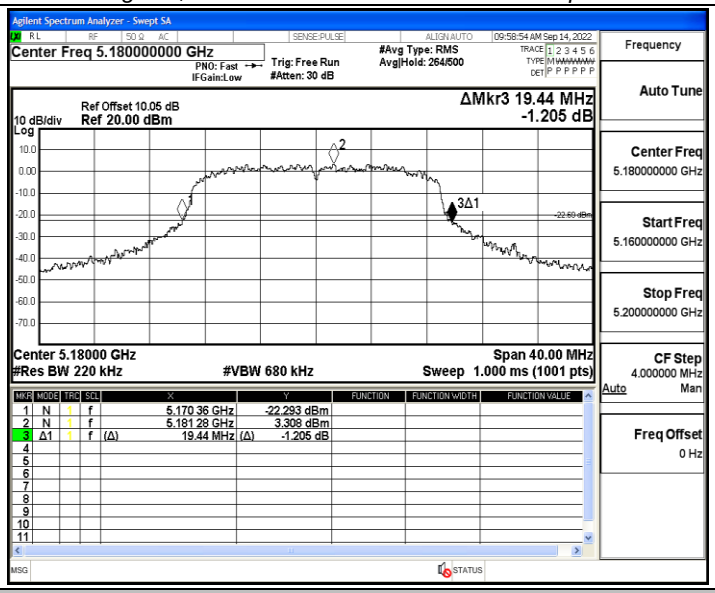
11A_Ant1_5200



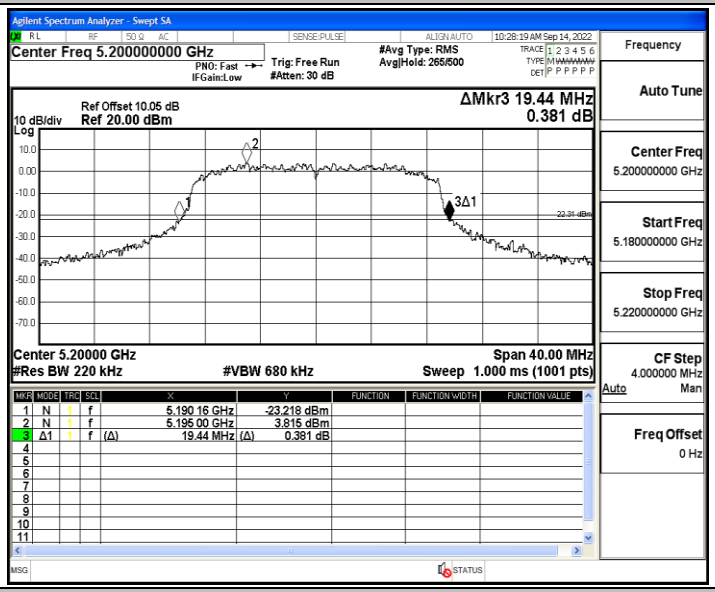
11A_Ant1_5240



11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



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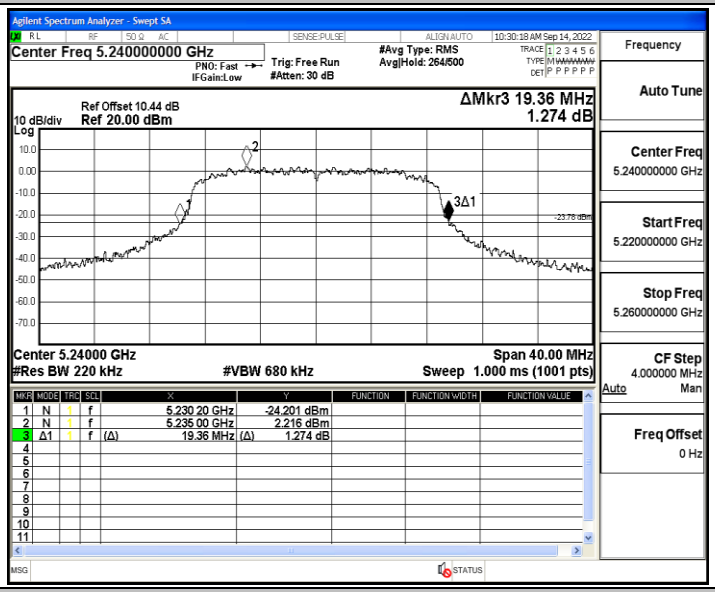

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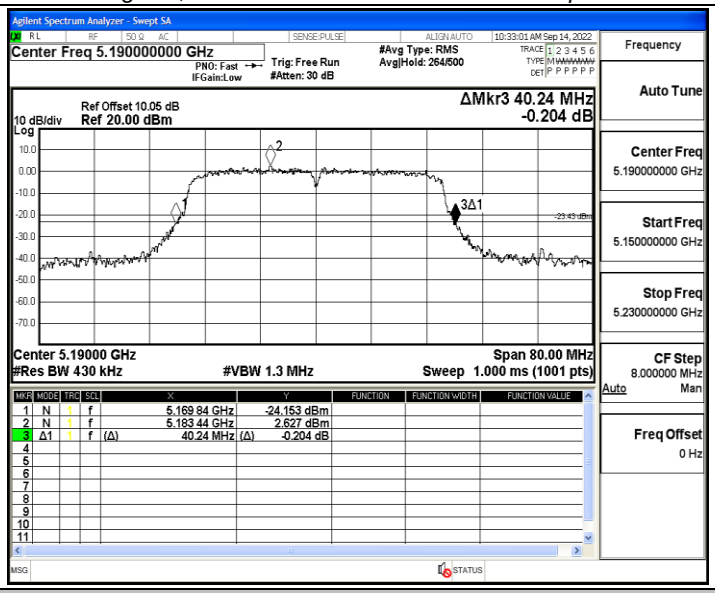

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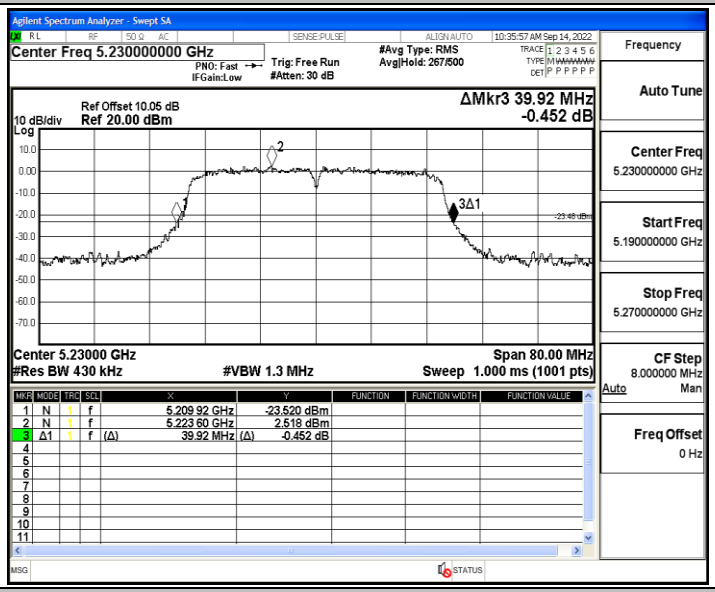

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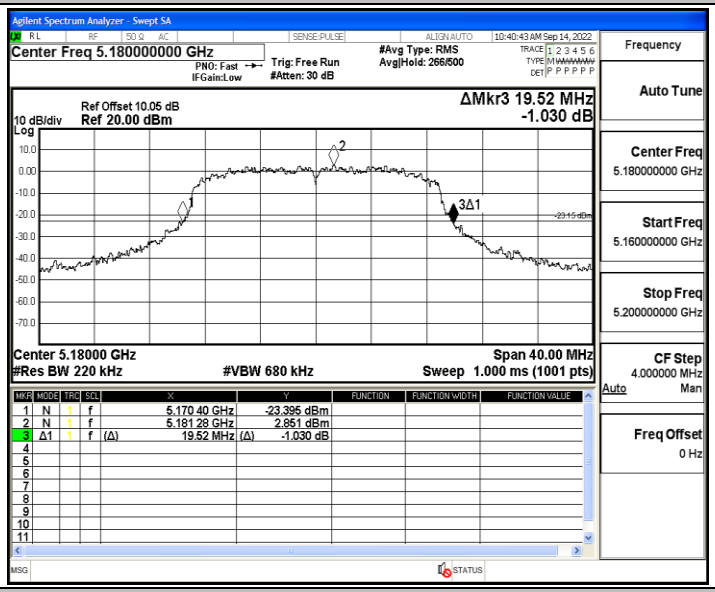

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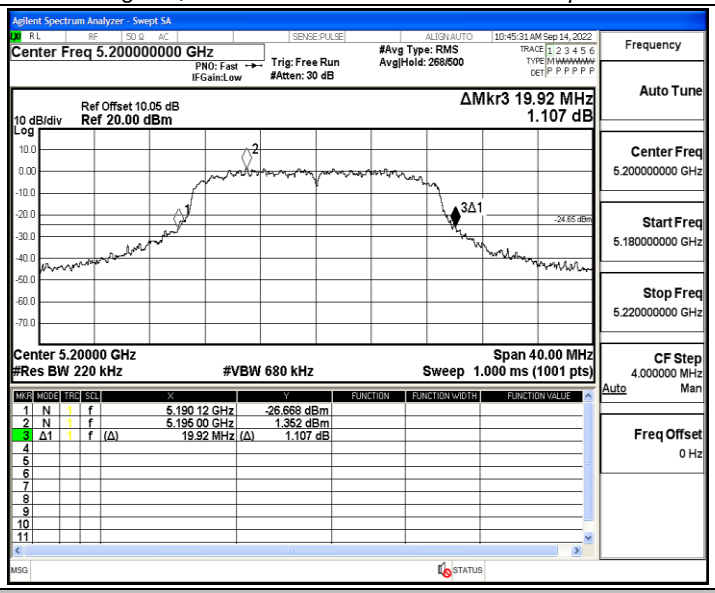

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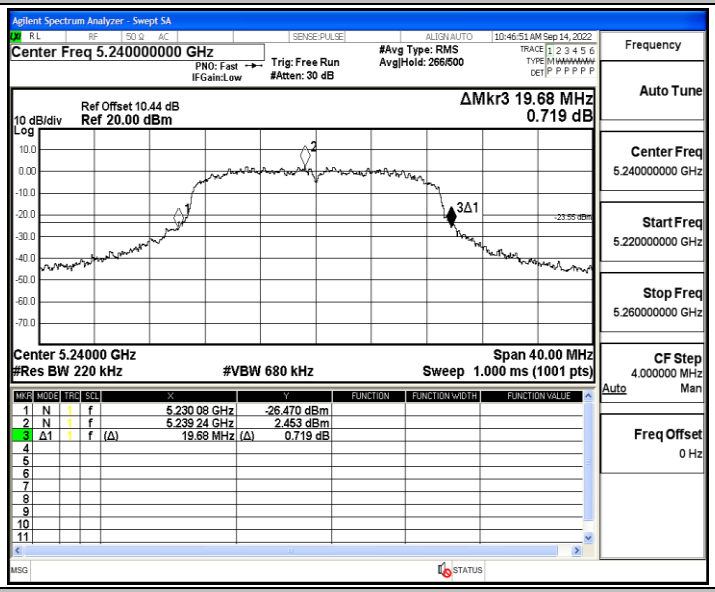

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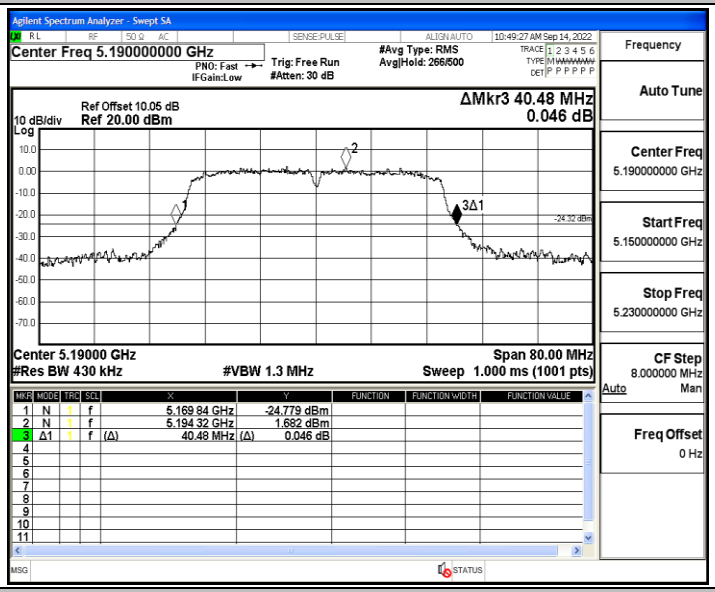
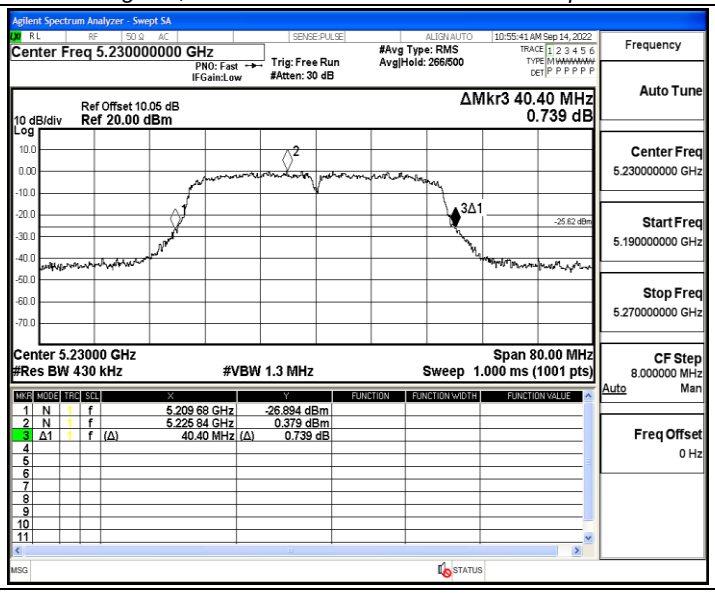


11AC40SISO_Ant1_5230


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 266/500
10:55:41 AM Sep 14, 2022
Ref Offset 10.05 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr3 40.40 MHz
0.739 dB
-25.82 dBm
Center 5.23000 GHz
#Res BW 430 kHz
#VBW 1.3 MHz
Span 80.00 MHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 5.209 68 GHz -26.894 dBm
2 N 1 f 5.225 84 GHz 0.379 dBm
3 Δ1 1 f (Δ) 40.40 MHz (Δ) 0.739 dB
Frequency
Auto Tune
Center Freq
5.230000000 GHz
Start Freq
5.190000000 GHz
Stop Freq
5.270000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz

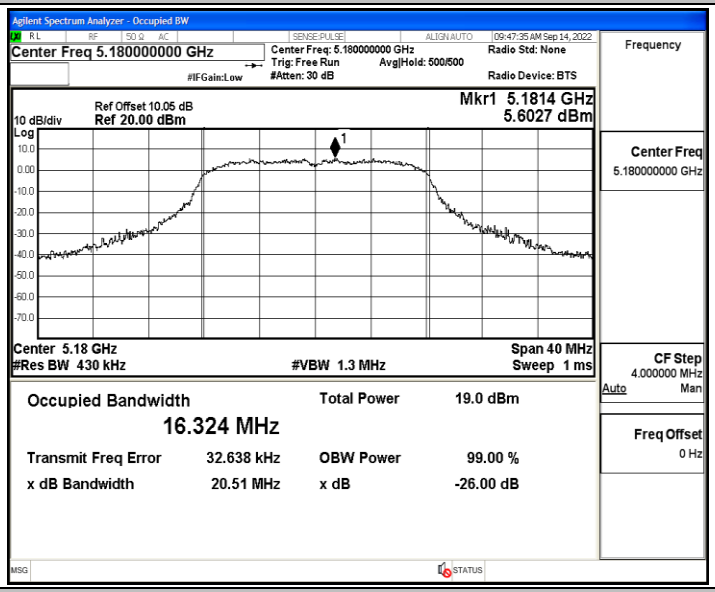
Appendix A2: Occupied channel bandwidth

Test Result

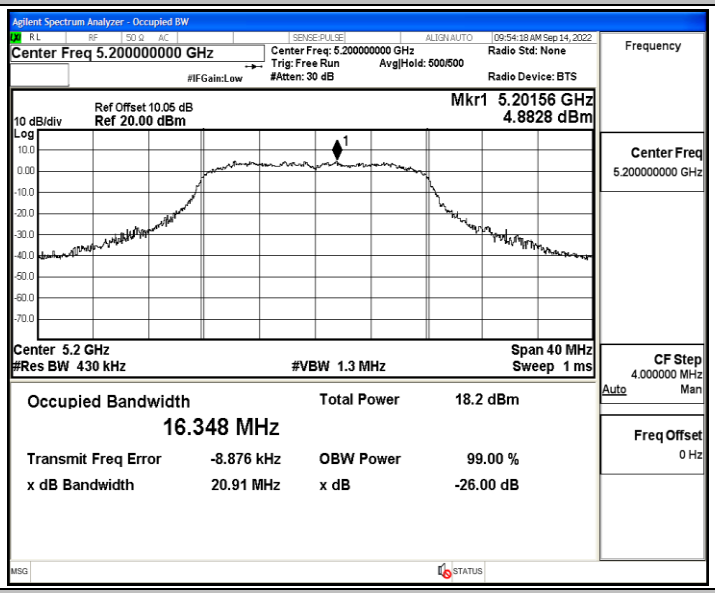
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.324	5171.871	5188.195	---	---
		5200	16.348	5191.817	5208.165	---	---
		5240	16.327	5231.815	5248.142	---	---
11N20SISO	Ant1	5180	17.314	5171.408	5188.722	---	---
		5200	17.397	5191.345	5208.742	---	---
		5240	17.337	5231.342	5248.679	---	---
11N40SISO	Ant1	5190	35.925	5172.107	5208.032	---	---
		5230	35.908	5212.084	5247.992	---	---
11AC20SISO	Ant1	5180	17.332	5171.405	5188.737	---	---
		5200	17.401	5191.354	5208.755	---	---
		5240	17.396	5231.332	5248.728	---	---
11AC40SISO	Ant1	5190	36.033	5172.044	5208.077	---	---
		5230	35.948	5212.045	5247.993	---	---

Test Graphs

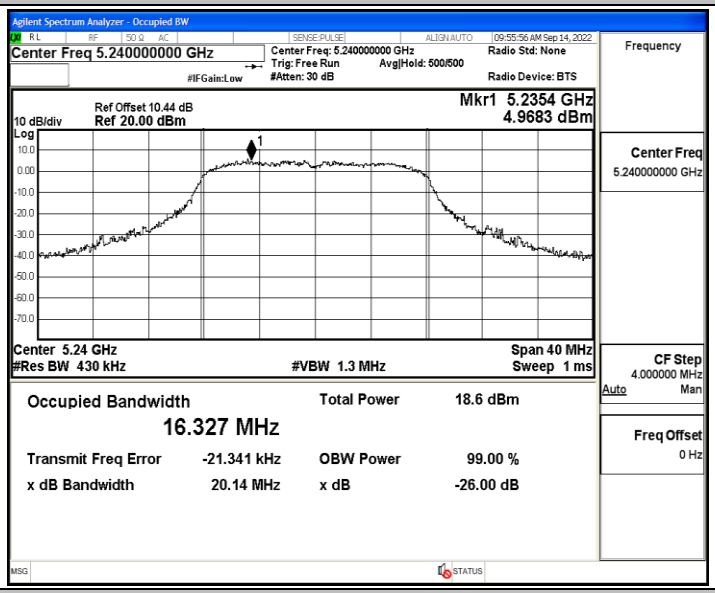
11A_Ant1_5180



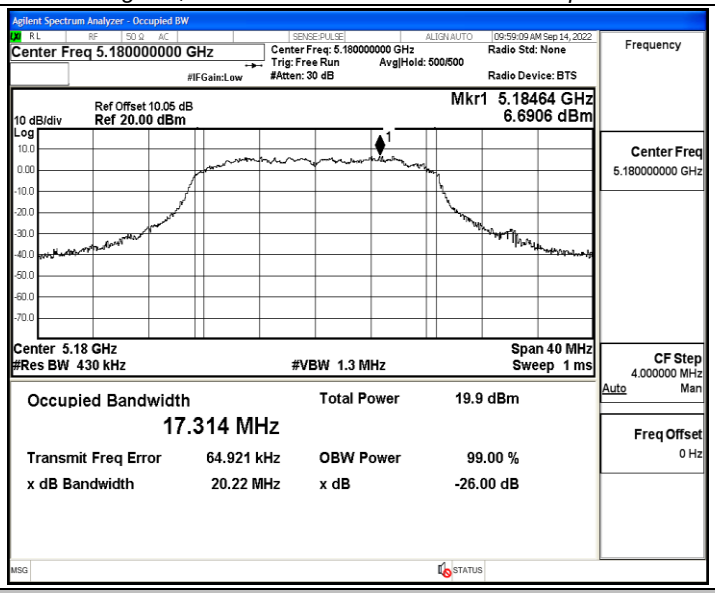
11A_Ant1_5200



11A_Ant1_5240



11N20SISO_Ant1_5180



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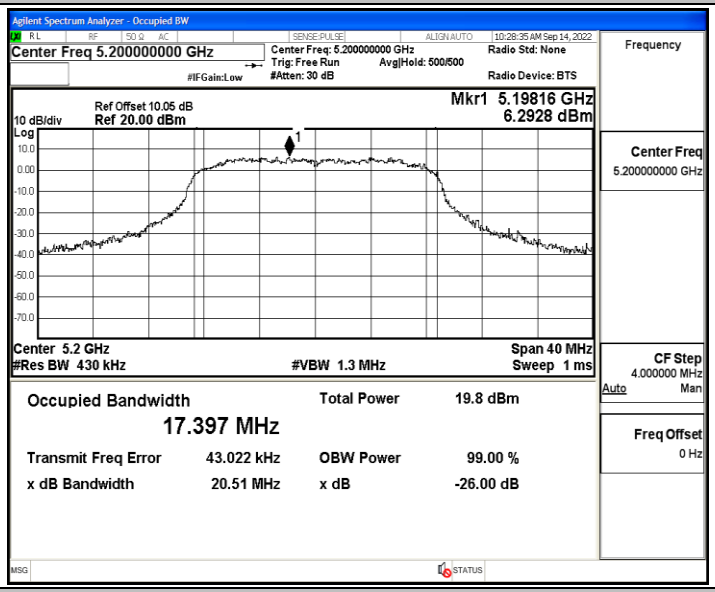

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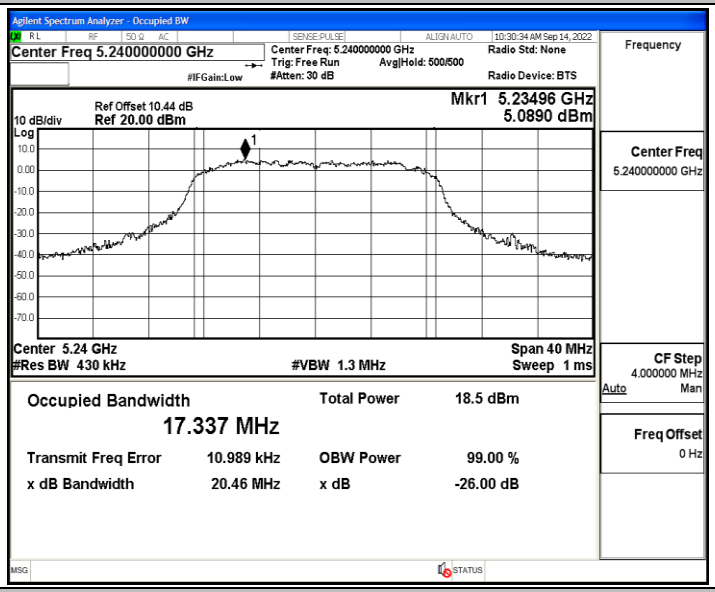

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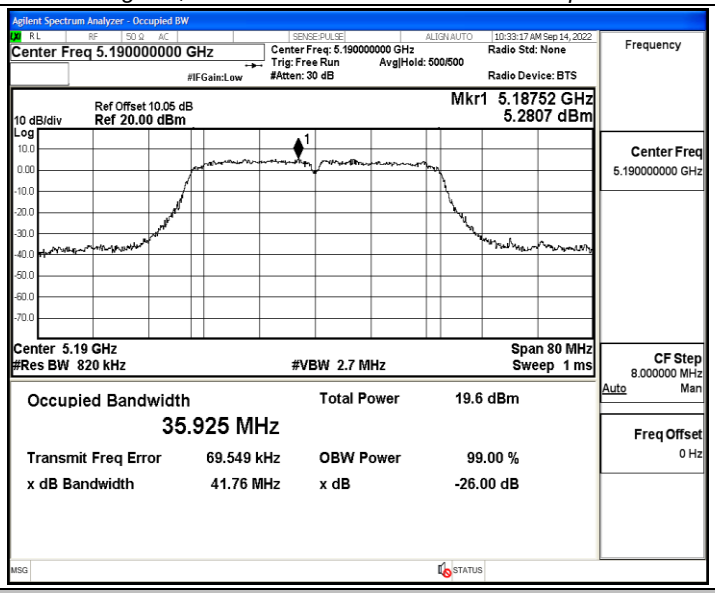
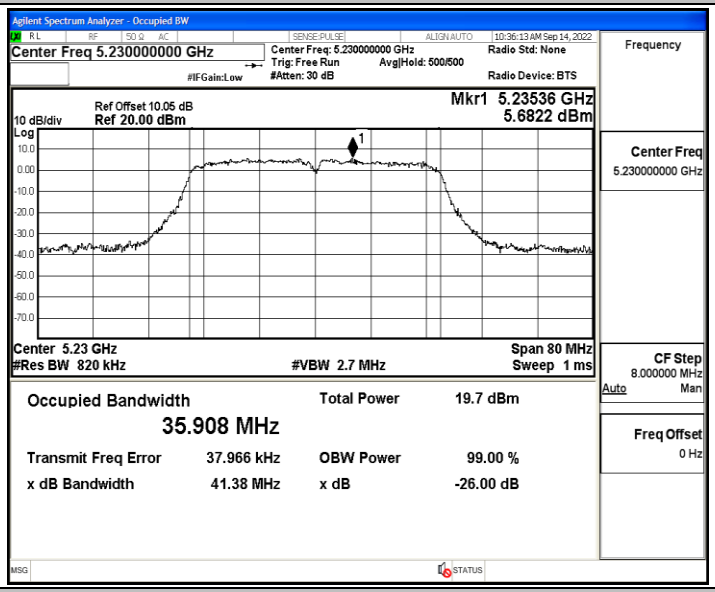
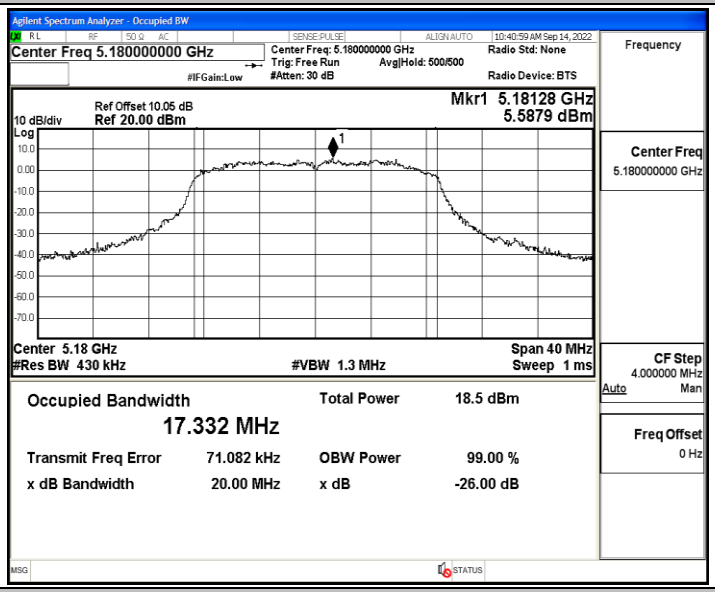


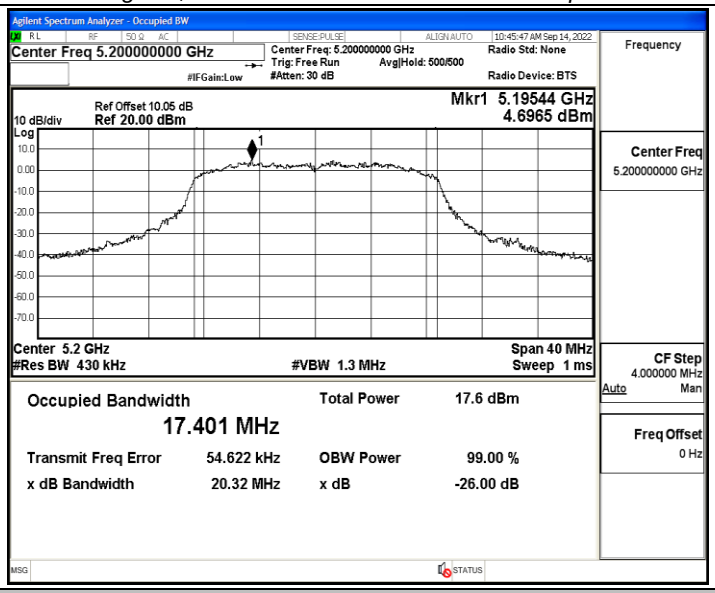
11N40SISO_Ant1_5230



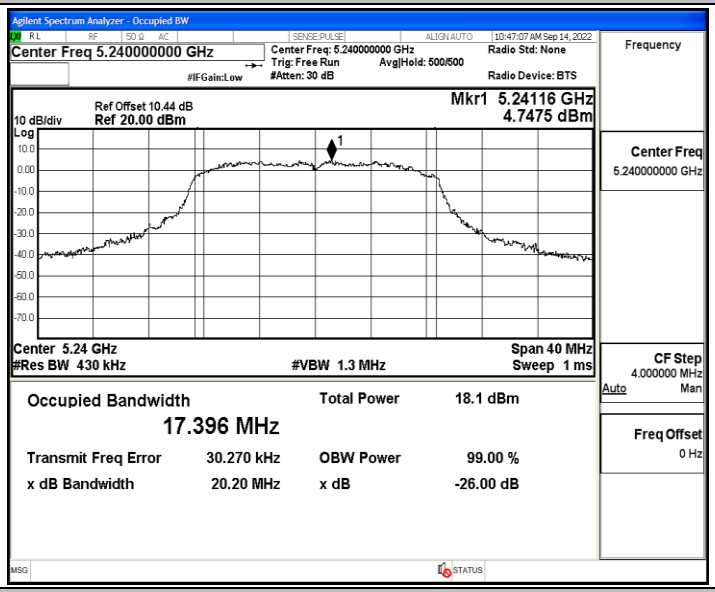
11AC20SISO_Ant1_5180



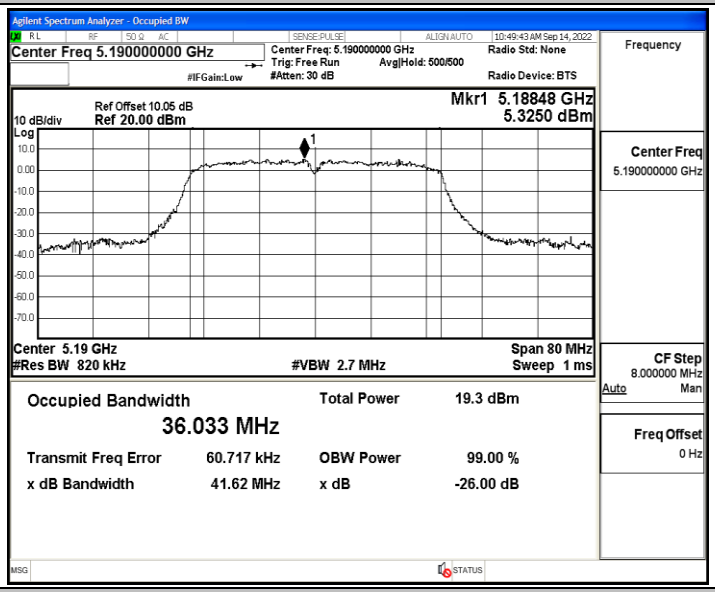
11AC20SISO_Ant1_5200



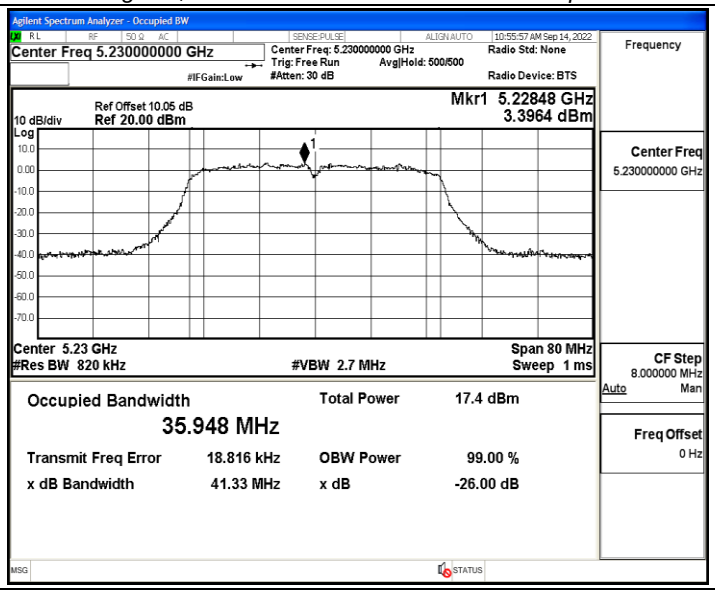
11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
10:55:57 AM Sep 14, 2022
Frequency
Ref Offset 10.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.22848 GHz
3.3964 dBm
Center Freq
5.230000000 GHz
Center 5.23 GHz
#Res BW 820 kHz
#VBW 2.7 MHz
Span 80 MHz
Sweep 1 ms
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
Occupied Bandwidth
35.948 MHz
Total Power 17.4 dBm
Transmit Freq Error 18.816 kHz
OBW Power 99.00 %
x dB Bandwidth 41.33 MHz
x dB -26.00 dB
MSG
STATUS

Appendix B: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	11.64	≤23.98	PASS
		5200	11.20	≤23.98	PASS
		5240	11.82	≤23.98	PASS
11N20SISO	Ant1	5180	11.72	≤23.98	PASS
		5200	12.30	≤23.98	PASS
		5240	12.27	≤23.98	PASS
11N40SISO	Ant1	5190	13.14	≤23.98	PASS
		5230	12.69	≤23.98	PASS
11AC20SISO	Ant1	5180	11.90	≤23.98	PASS
		5200	11.15	≤23.98	PASS
		5240	12.55	≤23.98	PASS
11AC40SISO	Ant1	5190	13.27	≤23.98	PASS
		5230	10.82	≤23.98	PASS

Note：The Duty Cycle Factor is compensated in the test result.

Appendix C: Maximum power spectral density

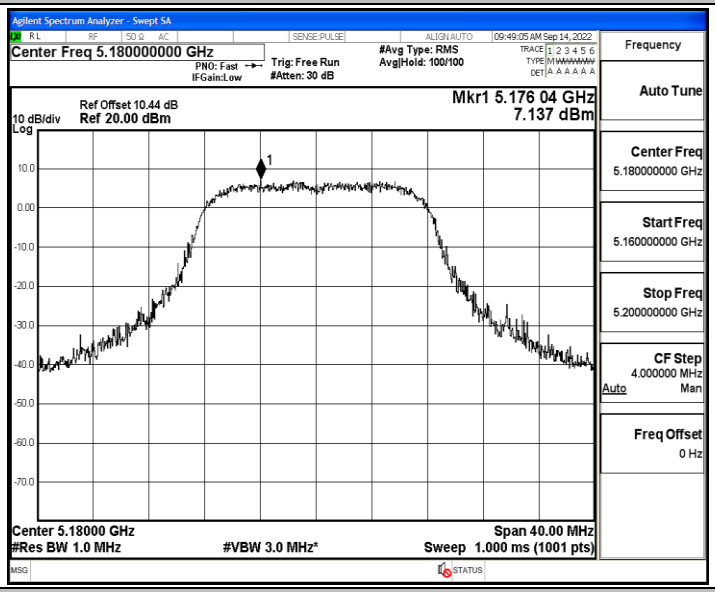
Test Result

TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	7.14	≤11.00	PASS
		5200	6.21	≤11.00	PASS
		5240	6.82	≤11.00	PASS
11N20SISO	Ant1	5180	8.62	≤11	PASS
		5200	9.72	≤11	PASS
		5240	9.77	≤11	PASS
11N40SISO	Ant1	5190	7.74	≤11	PASS
		5230	7.96	≤11	PASS
11AC20SISO	Ant1	5180	9.25	≤11	PASS
		5200	10.1	≤11	PASS
		5240	9.7	≤11	PASS
11AC40SISO	Ant1	5190	7.86	≤11	PASS
		5230	7.2	≤11	PASS

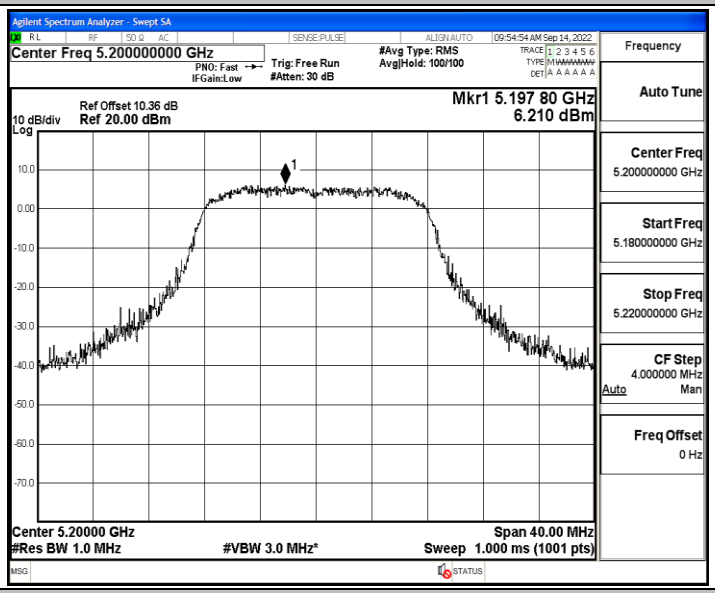
Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

Test Graphs

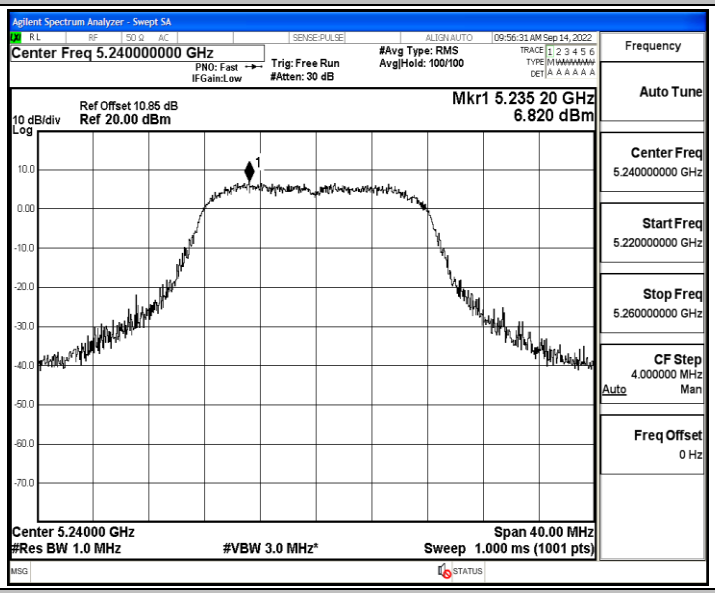
11A_Ant1_5180



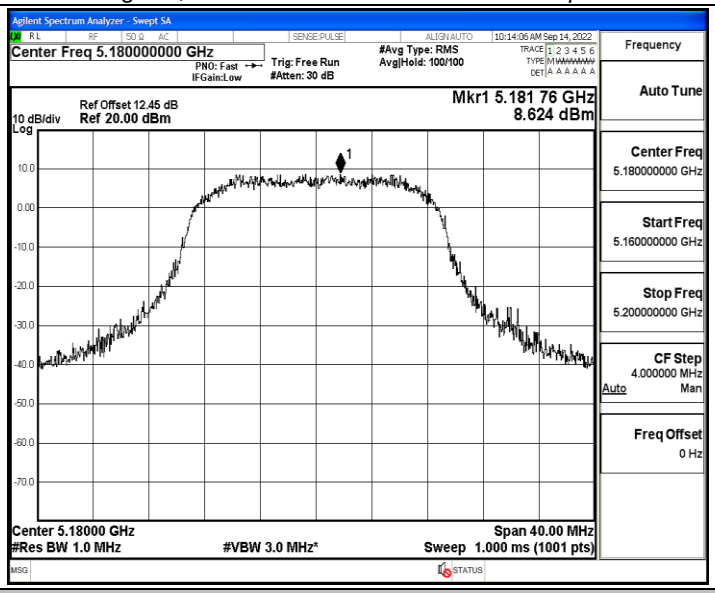
11A_Ant1_5200



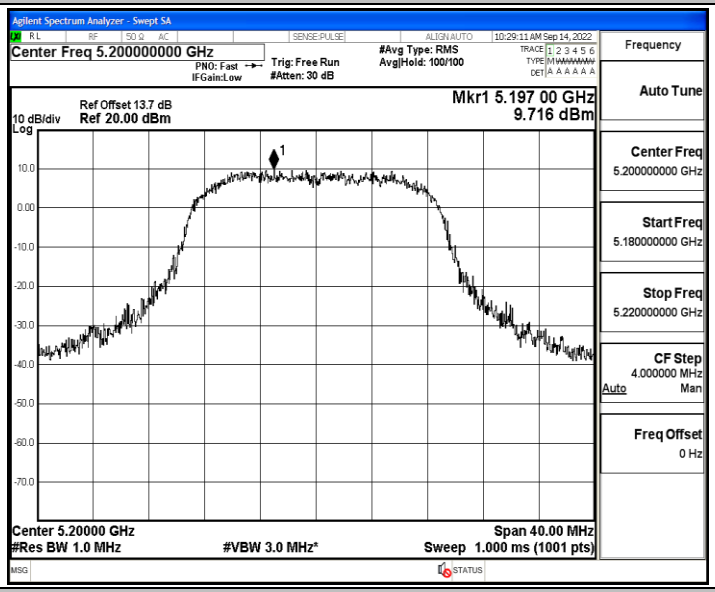
11A_Ant1_5240



11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



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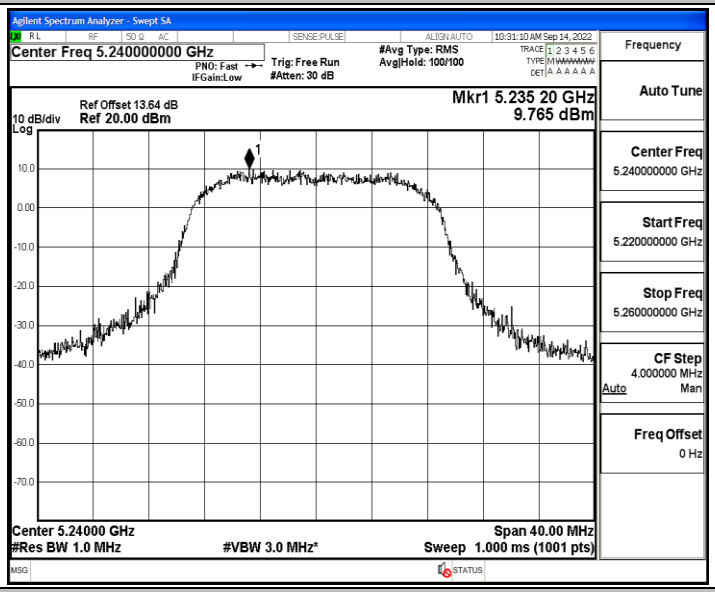
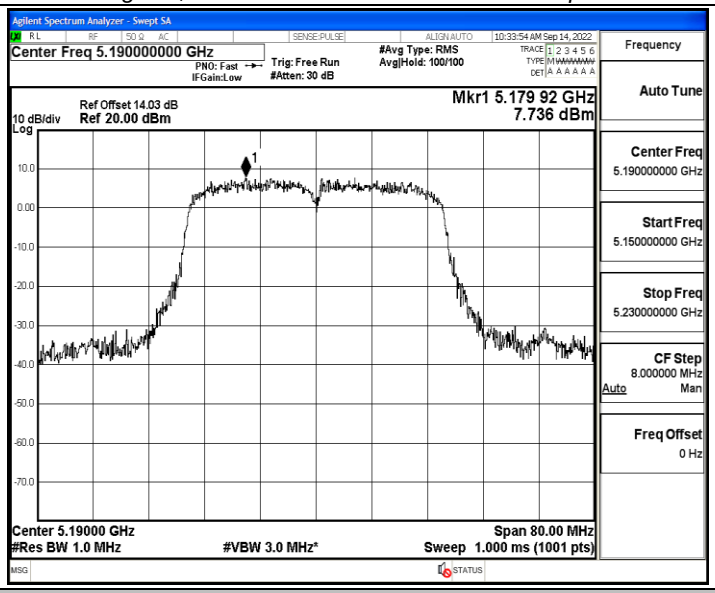
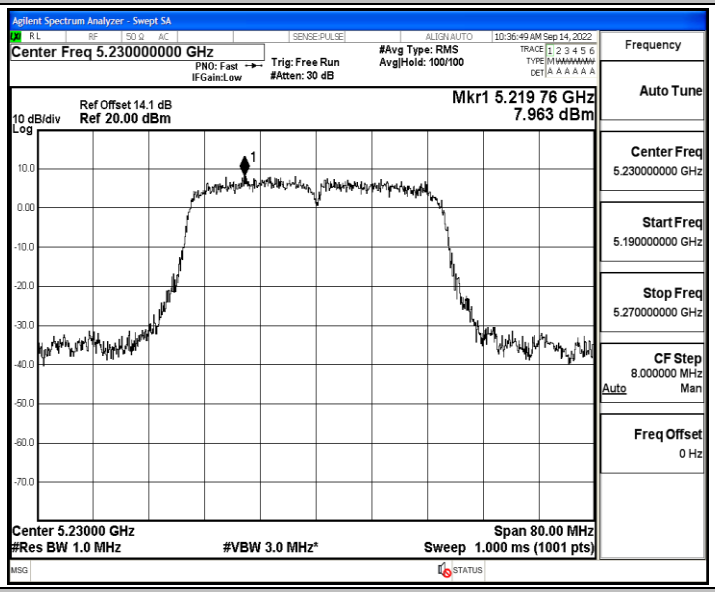


11N40SISO_Ant1_5190



11N40SISO_Ant1_5230



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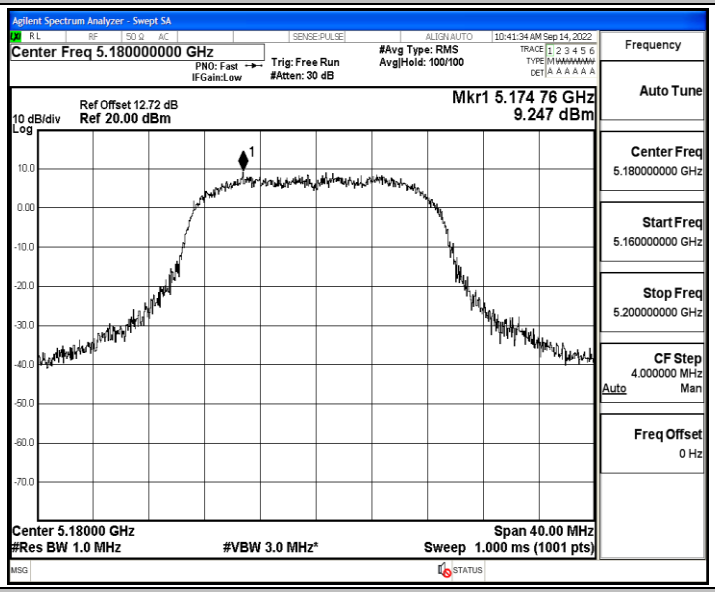
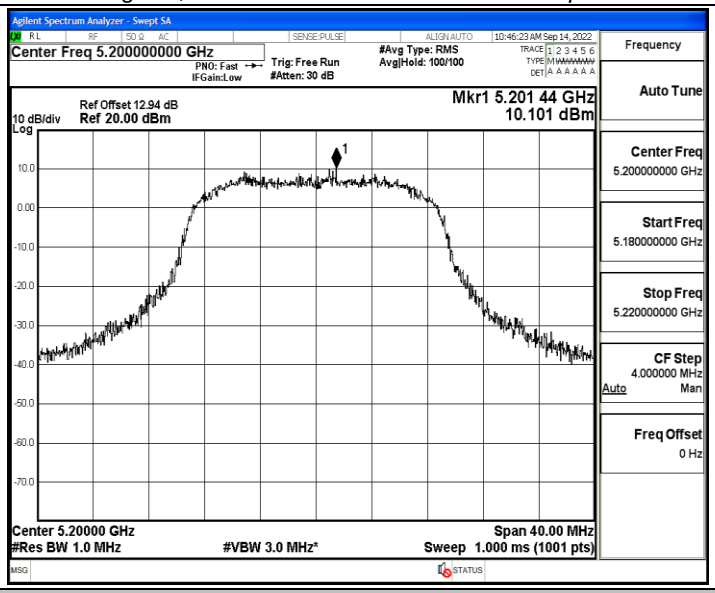
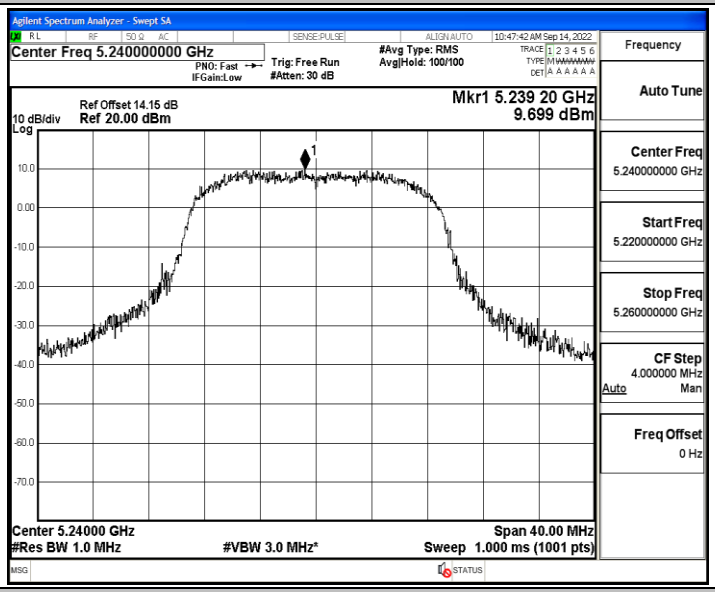


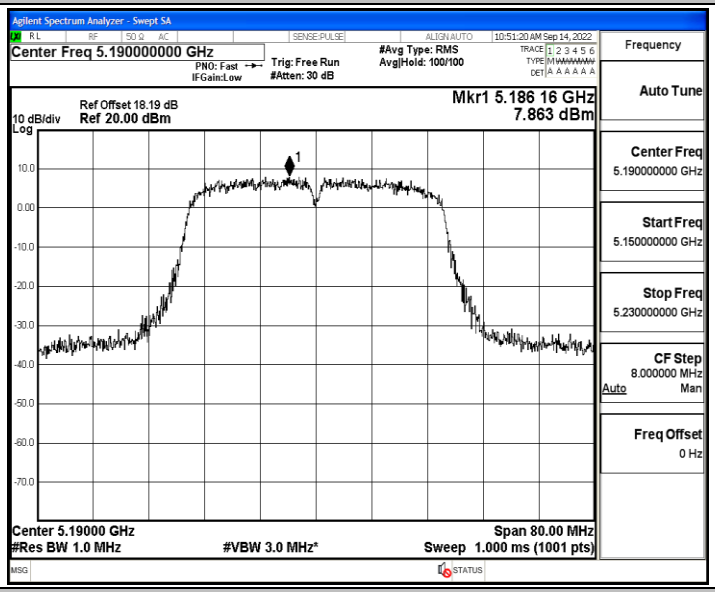
11AC20SISO_Ant1_5200



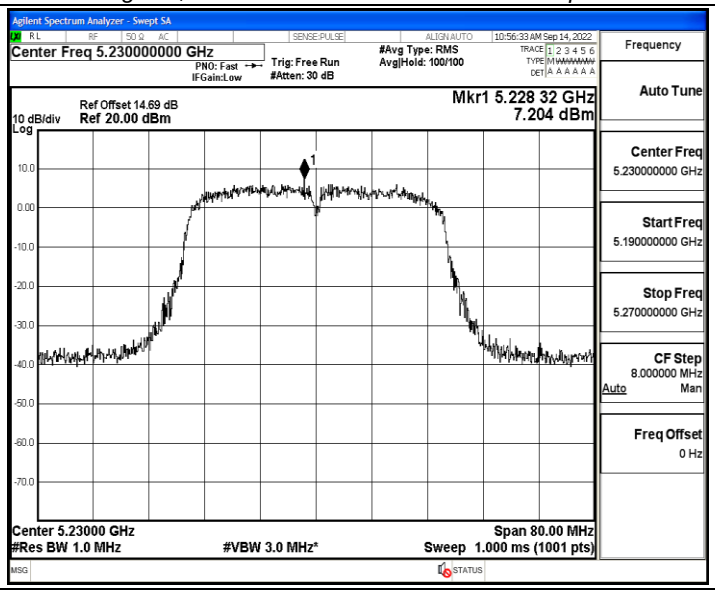
11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
10:56:33 AM Sep 14, 2022
Frequency
Auto Tune
Ref Offset 14.69 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.228 32 GHz
7.204 dBm
Center Freq
5.230000000 GHz
Start Freq
5.190000000 GHz
Stop Freq
5.270000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
Center 5.23000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Span 80.00 MHz
Sweep 1.000 ms (1001 pts)

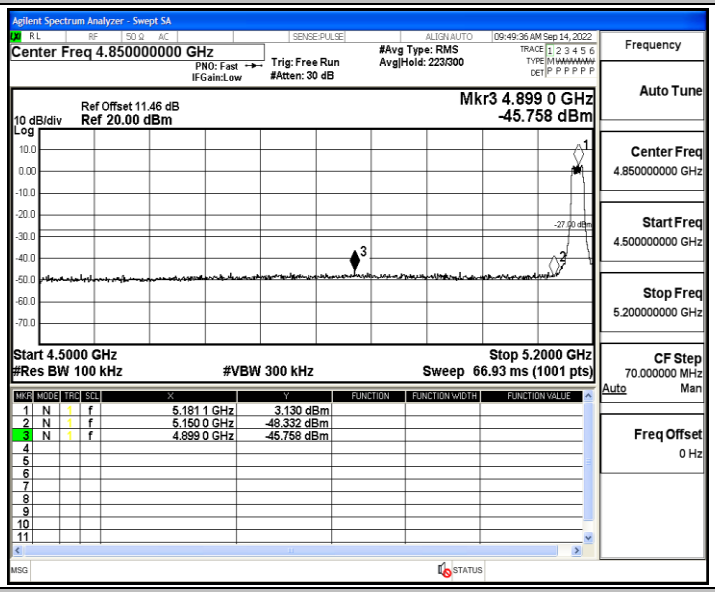
Appendix D: Band edge measurements

Test Result

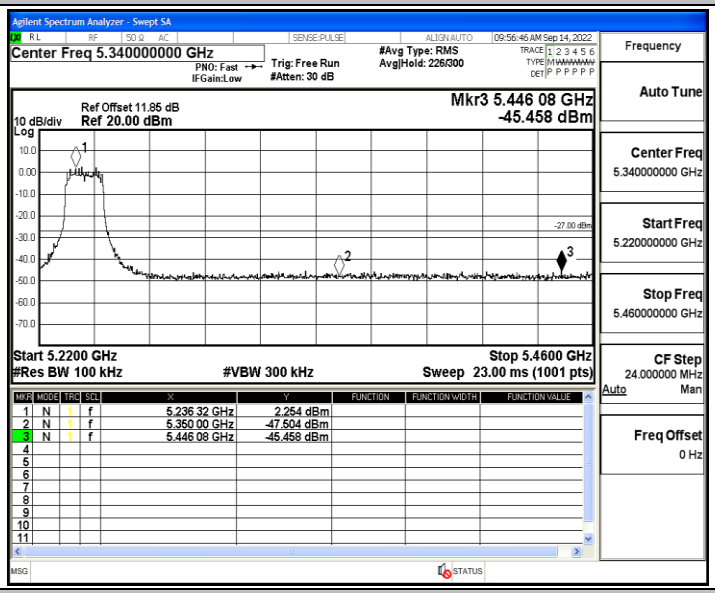
TestMode	Antenna	ChName	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	Low	5180	-45.76	≤-27	PASS
		High	5240	-45.46	≤-27	PASS
11N20SISO	Ant1	Low	5180	-46.2	≤-27	PASS
		High	5240	-45.3	≤-27	PASS
11N40SISO	Ant1	Low	5190	-42.89	≤-27	PASS
		High	5230	-46.05	≤-27	PASS
11AC20SISO	Ant1	Low	5180	-46.25	≤-27	PASS
		High	5240	-46.04	≤-27	PASS
11AC40SISO	Ant1	Low	5190	-46.43	≤-27	PASS
		High	5230	-45.53	≤-27	PASS

Test Graphs

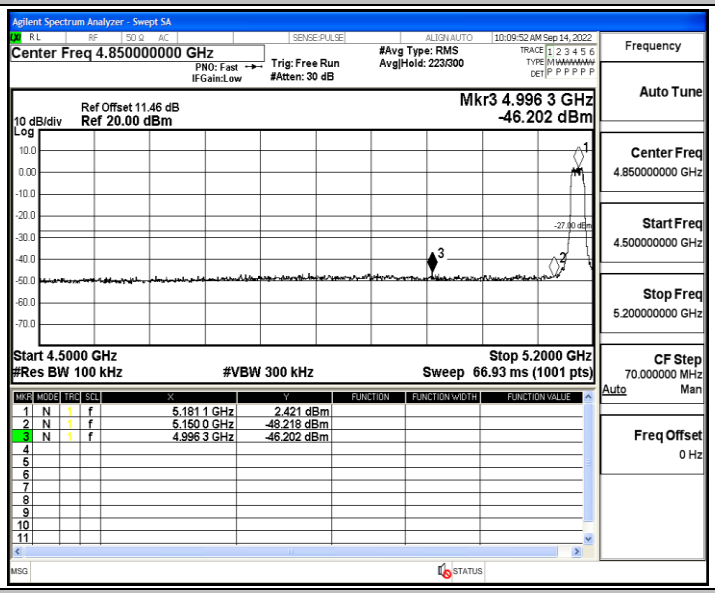
11A_Ant1_Low_5180



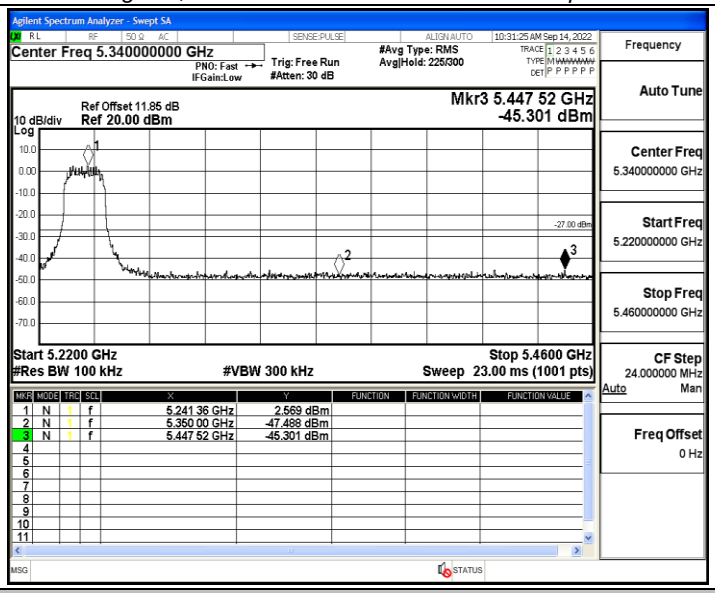
11A_Ant1_High_5240



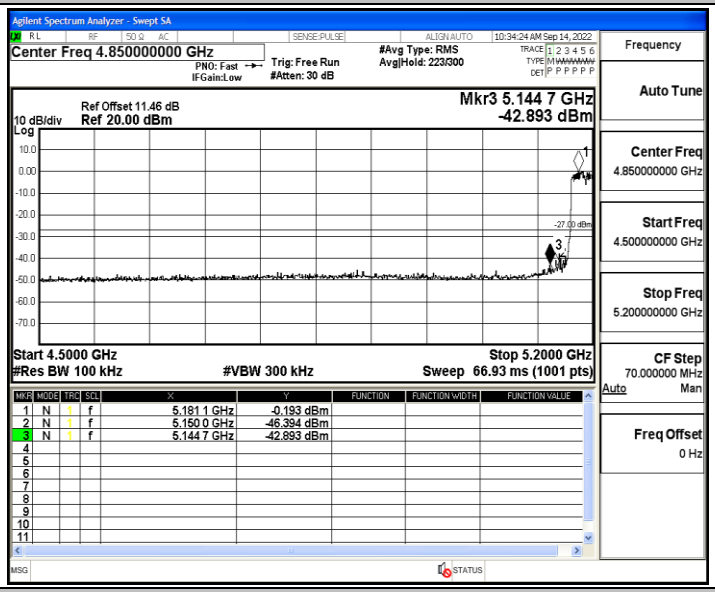
11N20SISO_Ant1_Low_5180



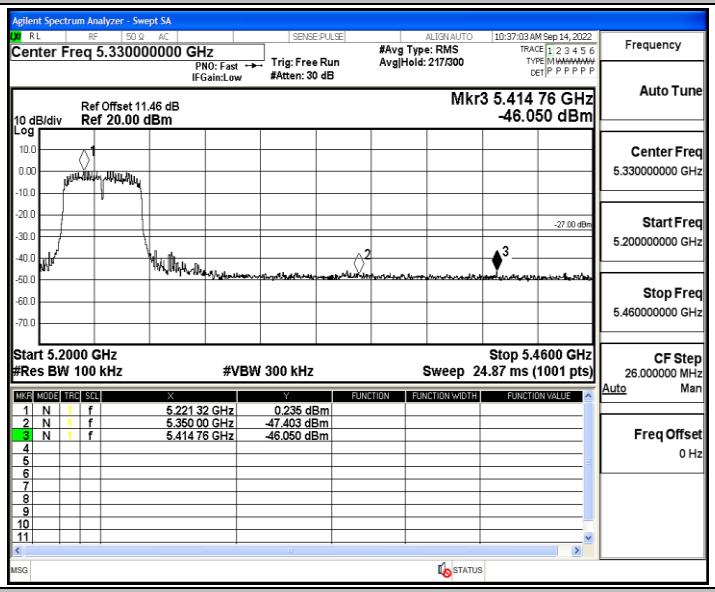
11N20SISO_Ant1_High_5240



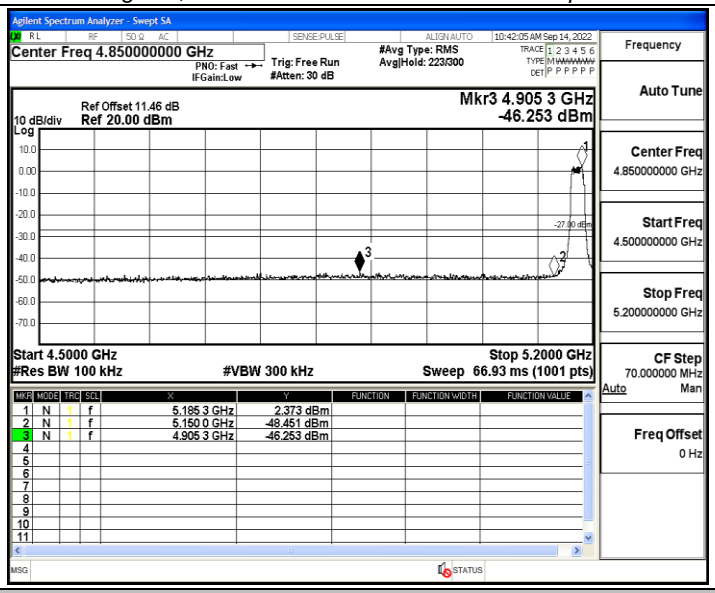
11N40SISO_Ant1_Low_5190



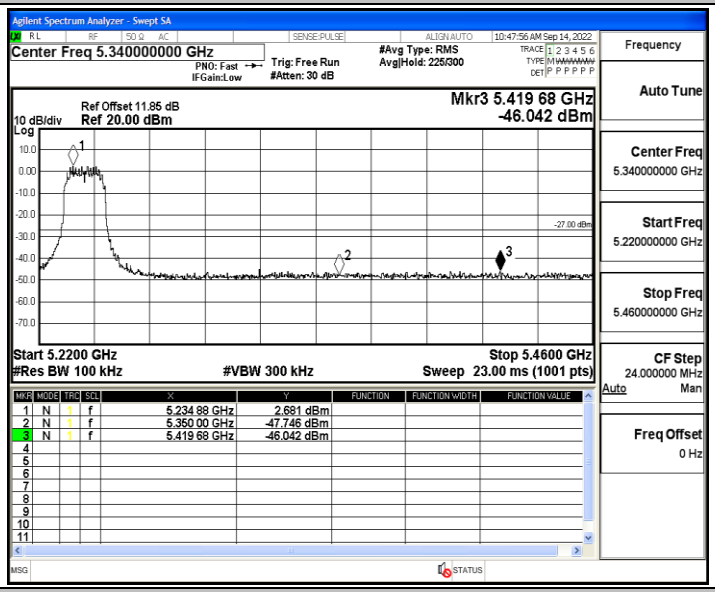
11N40SISO_Ant1_High_5230



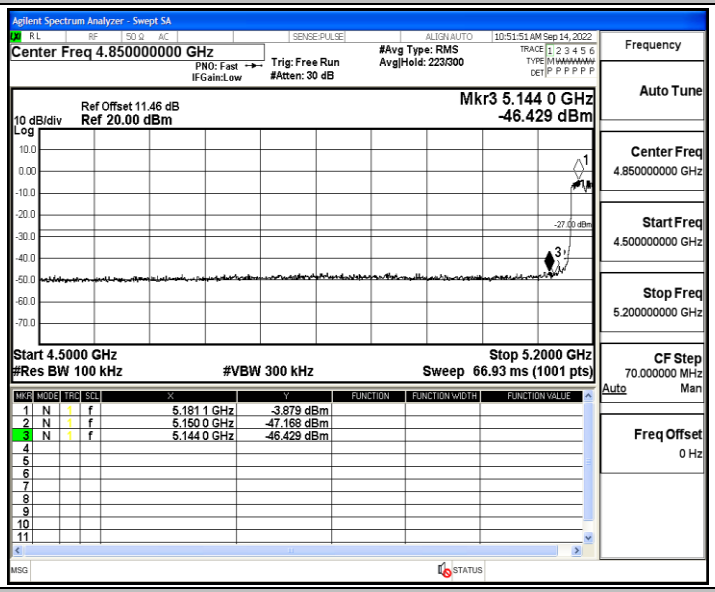
11AC20SISO_Ant1_Low_5180



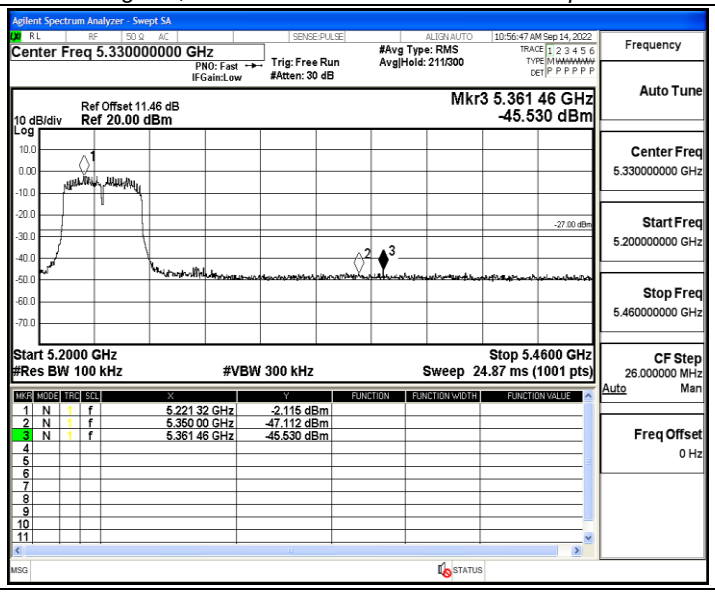
11AC20SISO_Ant1_High_5240



11AC40SISO_Ant1_Low_5190



11AC40SISO_Ant1_High_5230


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.330000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 211/300
10:56:47 AM Sep 14, 2022
Ref Offset 11.46 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr3 5.361 46 GHz
-45.530 dBm
-27.00 dBm
Start 5.2000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.4600 GHz
Sweep 24.87 ms (1001 pts)
1 N 1 f 5.221 32 GHz -2.115 dBm
2 N 1 f 5.350 00 GHz -47.112 dBm
3 N 1 f 5.361 46 GHz -45.530 dBm
Frequency
Auto Tune
Center Freq
5.330000000 GHz
Start Freq
5.200000000 GHz
Stop Freq
5.460000000 GHz
CF Step
26.000000 MHz
Auto
Man
Freq Offset
0 Hz

Appendix E: Frequency Stability

Test Result

Ant1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5180	20	132	5180.005129	5150 – 5250	PASS
5180	20	108	5179.969335	5150 – 5250	PASS
5180	50	120	5180.034933	5150 – 5250	PASS
5180	40	120	5179.961207	5150 – 5250	PASS
5180	30	120	5179.944016	5150 – 5250	PASS
5180	20	120	5179.953366	5150 – 5250	PASS
5180	10	120	5179.926704	5150 – 5250	PASS
5180	0	120	5179.968161	5150 – 5250	PASS
5180	-10	120	5180.093015	5150 – 5250	PASS
5180	-20	120	5179.977630	5150 – 5250	PASS
5180	-30	120	5179.939434	5150 – 5250	PASS

Ant1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5200	20	132	5199.946412	5150 – 5250	PASS
5200	20	108	5200.094176	5150 – 5250	PASS
5200	50	120	5200.039637	5150 – 5250	PASS
5200	40	120	5199.934464	5150 – 5250	PASS
5200	30	120	5200.037124	5150 – 5250	PASS
5200	20	120	5200.046432	5150 – 5250	PASS
5200	10	120	5199.944760	5150 – 5250	PASS
5200	0	120	5199.947695	5150 – 5250	PASS
5200	-10	120	5199.921535	5150 – 5250	PASS
5200	-20	120	5200.068697	5150 – 5250	PASS
5200	-30	120	5200.019136	5150 – 5250	PASS

Ant1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5240	20	132	5240.022422	5150 – 5250	PASS
5240	20	108	5239.979973	5150 – 5250	PASS
5240	50	120	5239.911140	5150 – 5250	PASS
5240	40	120	5240.011221	5150 – 5250	PASS
5240	30	120	5240.076001	5150 – 5250	PASS
5240	20	120	5240.097196	5150 – 5250	PASS
5240	10	120	5239.964981	5150 – 5250	PASS
5240	0	120	5239.934266	5150 – 5250	PASS
5240	-10	120	5239.964559	5150 – 5250	PASS
5240	-20	120	5240.005501	5150 – 5250	PASS
5240	-30	120	5239.949387	5150 – 5250	PASS

Ant1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5190	20	132	5190.087750	5150 – 5250	PASS
5190	20	108	5189.930950	5150 – 5250	PASS
5190	50	120	5189.928768	5150 – 5250	PASS
5190	40	120	5189.971984	5150 – 5250	PASS
5190	30	120	5189.981768	5150 – 5250	PASS
5190	20	120	5190.087799	5150 – 5250	PASS
5190	10	120	5190.093155	5150 – 5250	PASS
5190	0	120	5190.012565	5150 – 5250	PASS
5190	-10	120	5190.021701	5150 – 5250	PASS
5190	-20	120	5189.987662	5150 – 5250	PASS
5190	-30	120	5190.027504	5150 – 5250	PASS

Ant1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5230	20	132	5229.942115	5150 – 5250	PASS
5230	20	108	5229.909968	5150 – 5250	PASS
5230	50	120	5230.079754	5150 – 5250	PASS
5230	40	120	5230.049069	5150 – 5250	PASS
5230	30	120	5230.053682	5150 – 5250	PASS
5230	20	120	5229.996703	5150 – 5250	PASS
5230	10	120	5230.037926	5150 – 5250	PASS
5230	0	120	5230.058278	5150 – 5250	PASS
5230	-10	120	5230.070241	5150 – 5250	PASS
5230	-20	120	5229.960882	5150 – 5250	PASS
5230	-30	120	5229.926624	5150 – 5250	PASS

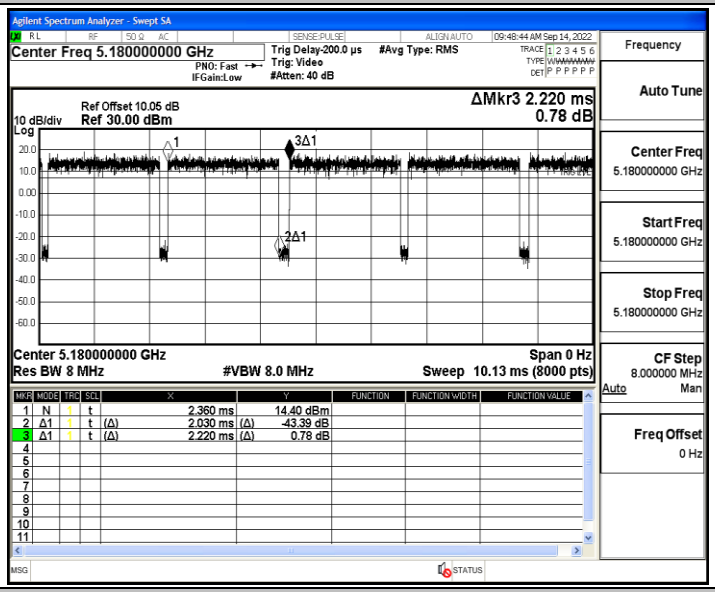
Appendix F: Duty Cycle

Test Result

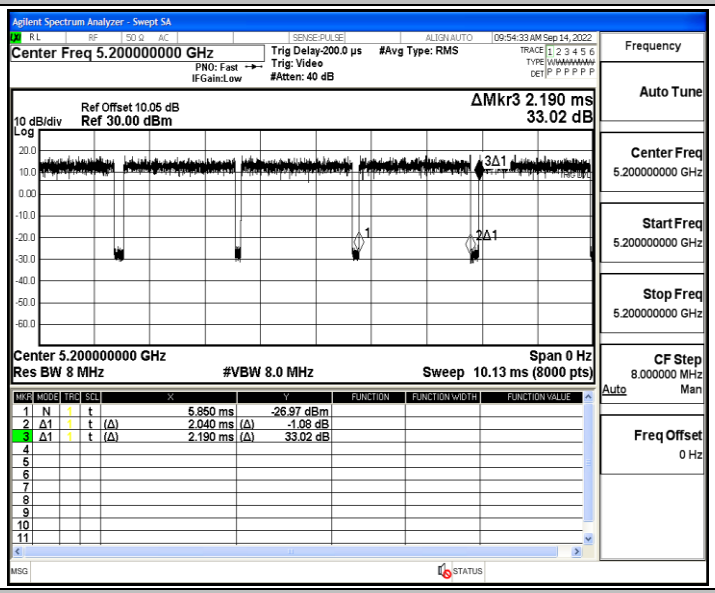
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T [kHz]
11A	Ant1	5180	2.03	2.22	91.44	0.49
		5200	2.04	2.19	93.15	0.49
		5240	2.03	2.23	91.03	0.49
11N20SISO	Ant1	5180	0.23	0.40	57.50	4.35
		5200	0.22	0.51	43.14	4.55
		5240	0.22	0.46	47.83	4.55
11N40SISO	Ant1	5190	0.12	0.30	40.00	8.33
		5230	0.13	0.33	39.39	7.69
11AC20SISO	Ant1	5180	0.20	0.37	54.05	5.00
		5200	0.19	0.37	51.35	5.26
		5240	0.20	0.47	42.55	5.00
11AC40SISO	Ant1	5190	0.43	2.80	15.36	2.33
		5230	0.11	0.32	34.38	9.09

Test Graphs

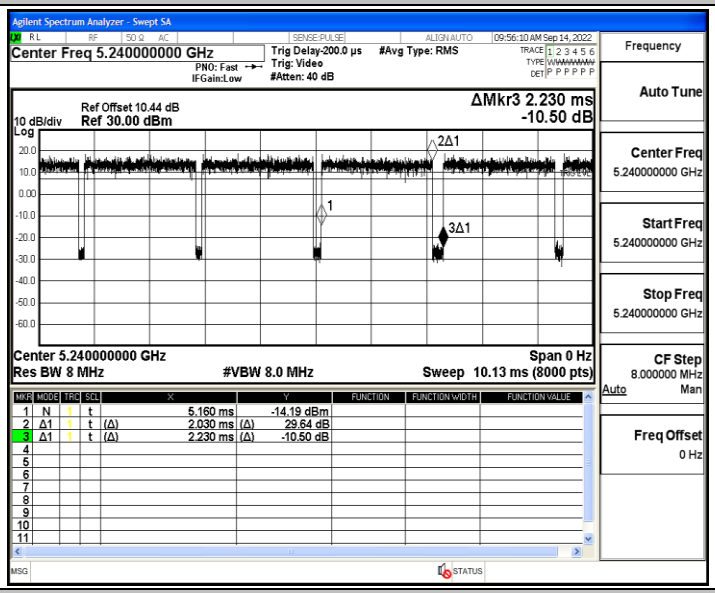
11A_Ant1_5180



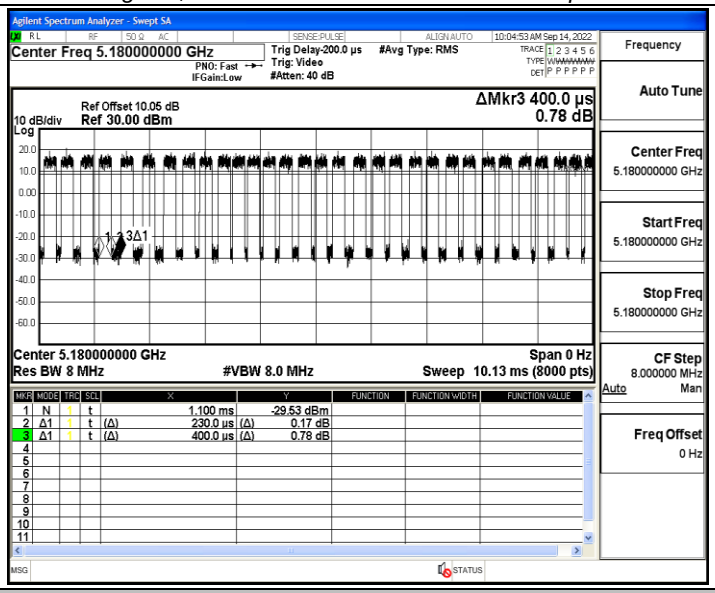
11A_Ant1_5200



11A_Ant1_5240



11N20SISO_Ant1_5180



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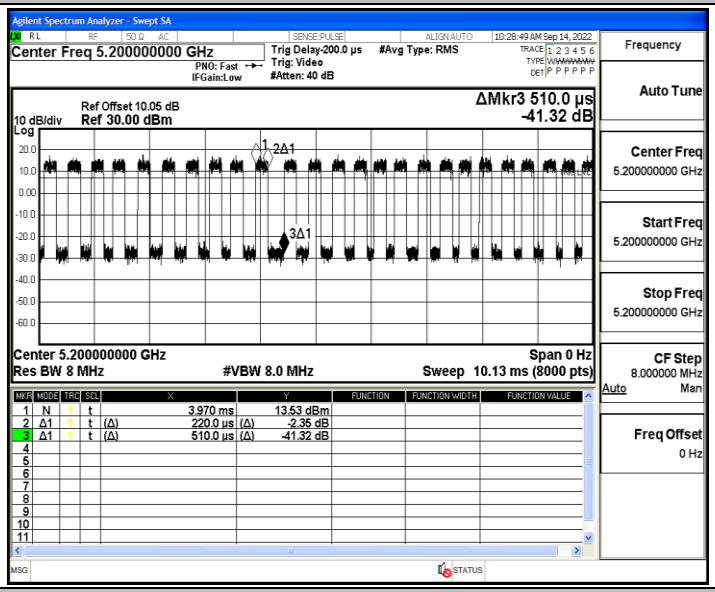
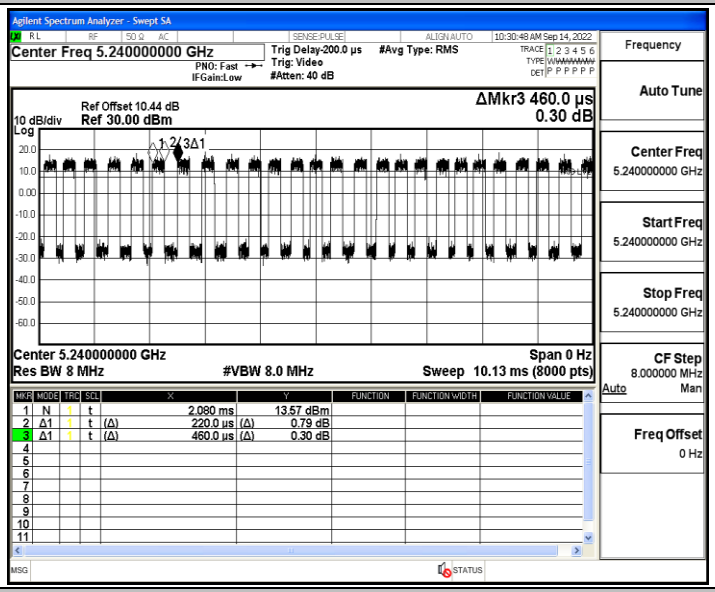
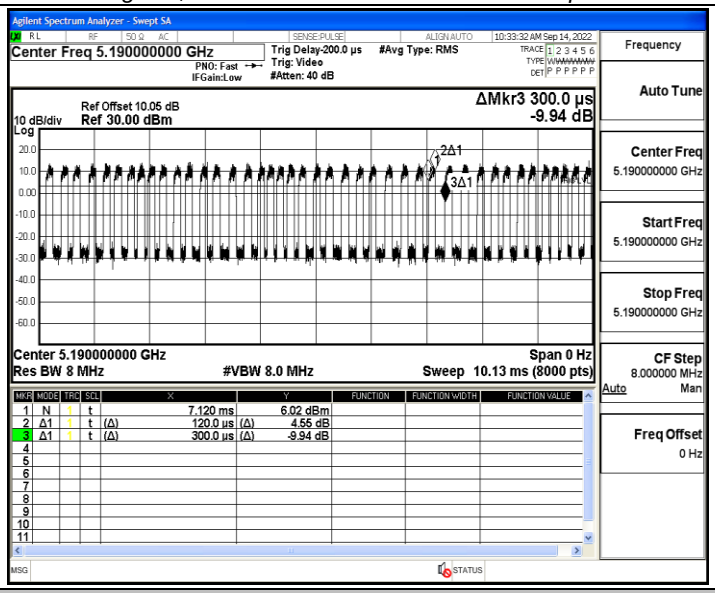


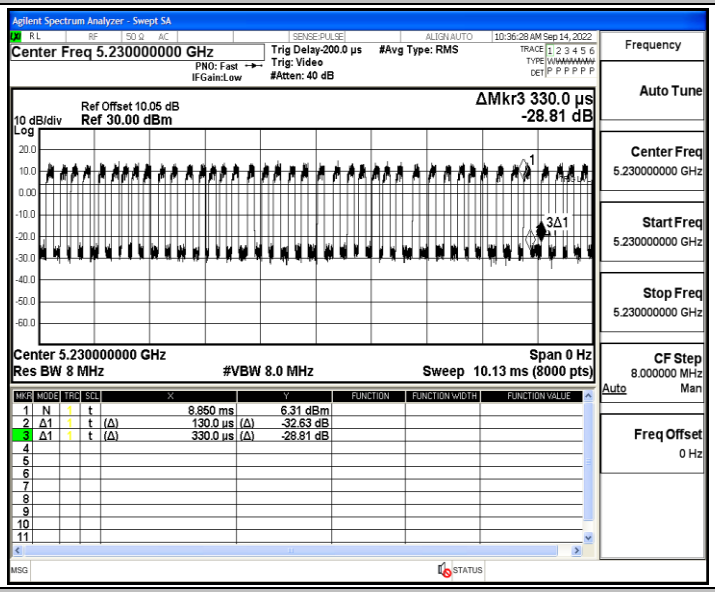
11N20SISO_Ant1_5240



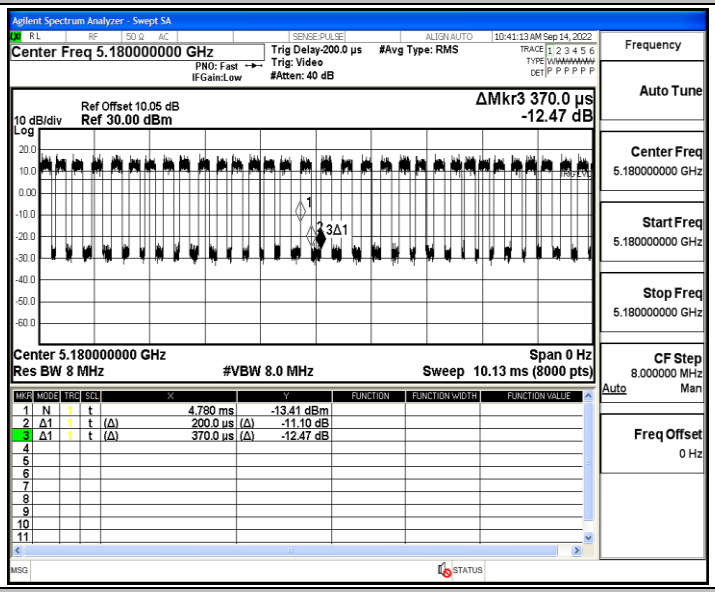
11N40SISO_Ant1_5190



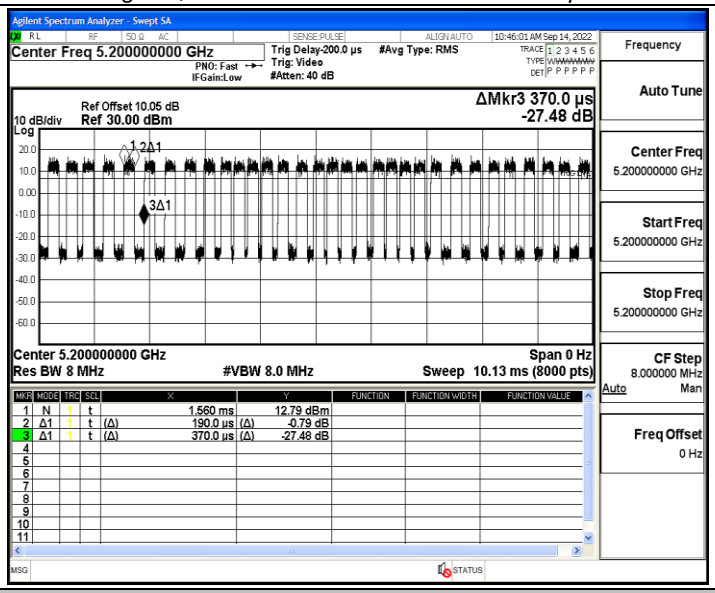
11N40SISO_Ant1_5230



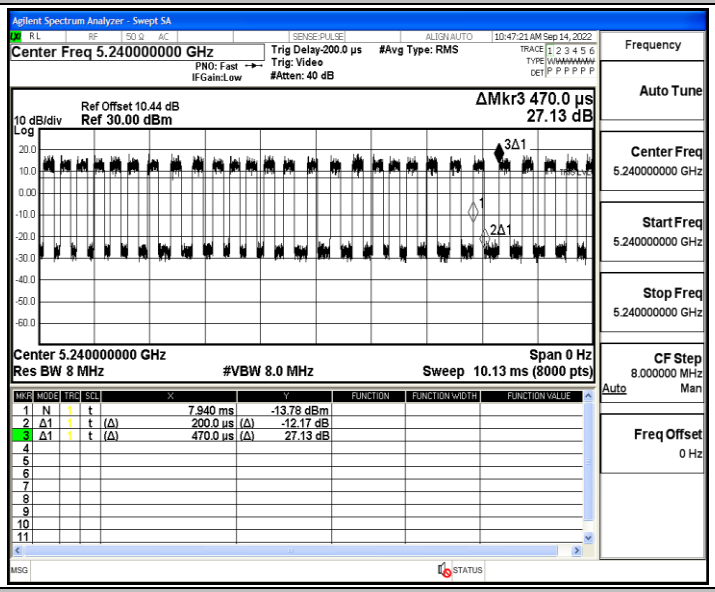
11AC20SISO_Ant1_5180



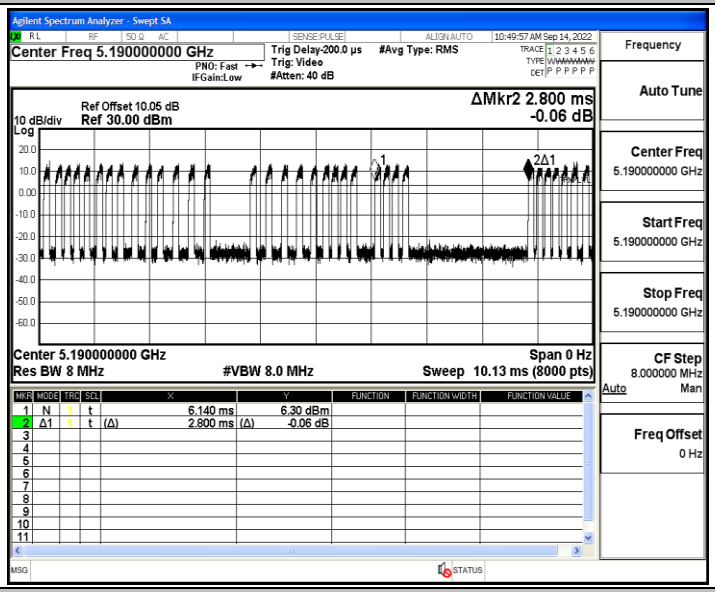
11AC20SISO_Ant1_5200



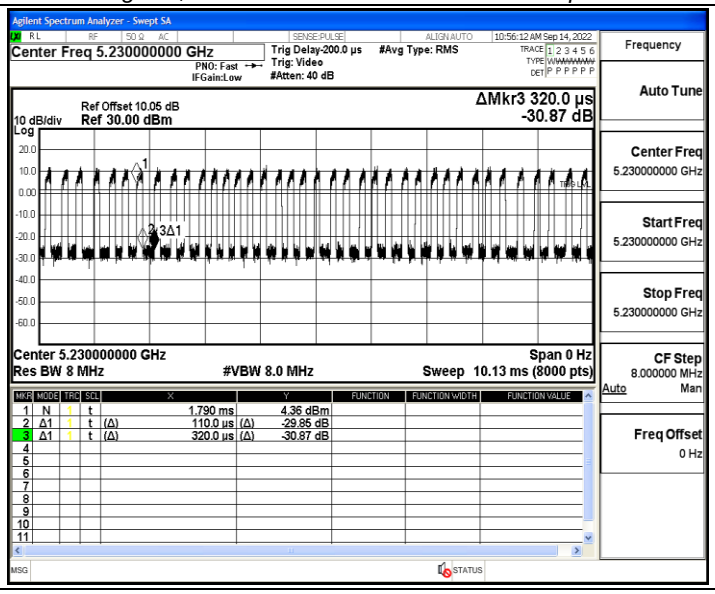
11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-200.0 µs
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
10:56:12 AM Sep 14, 2022
Ref Offset 10.05 dB
10 dB/div Ref 30.00 dBm
ΔMkr3 320.0 µs
-30.87 dB
Center 5.230000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
1 N 1 t 1.790 ms 4.36 dBm
2 Δ1 1 t (Δ) 110.0 µs (Δ) -29.85 dB
3 Δ1 1 t (Δ) 320.0 µs (Δ) -30.87 dB
Frequency
Auto Tune
Center Freq
5.230000000 GHz
Start Freq
5.230000000 GHz
Stop Freq
5.230000000 GHz
CF Step
8.000000 MHz
Auto Man
Freq Offset
0 Hz