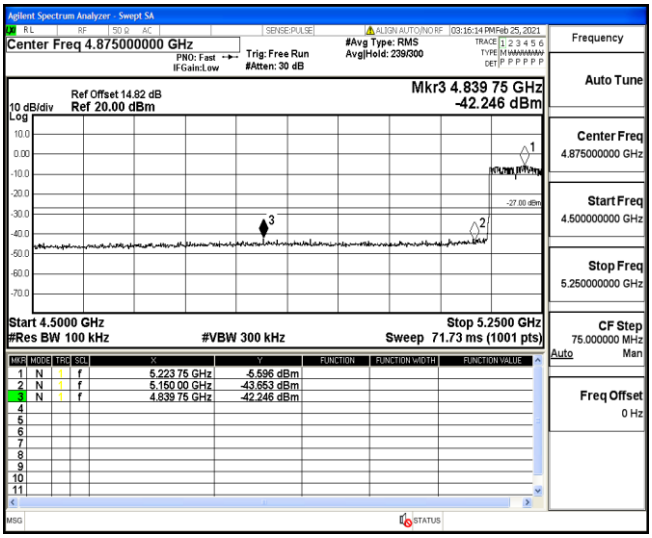

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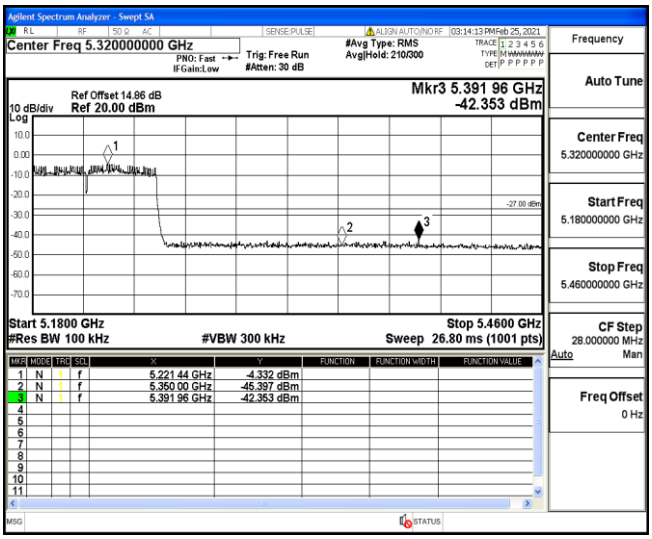

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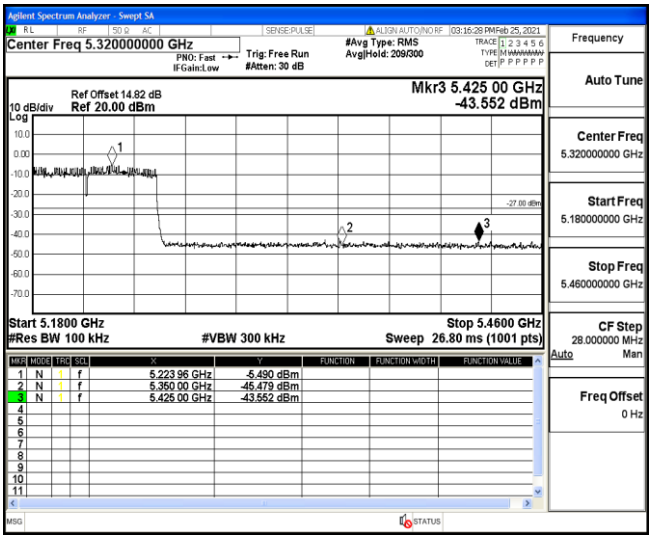


Appendix G: Frequency Stability

Test Result

Ant 1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5180	20	132	5180.082410	5150 – 5250	PASS
5180	20	108	5179.906268	5150 – 5250	PASS
5180	50	120	5180.014191	5150 – 5250	PASS
5180	40	120	5179.981671	5150 – 5250	PASS
5180	30	120	5180.098664	5150 – 5250	PASS
5180	20	120	5179.960696	5150 – 5250	PASS
5180	10	120	5179.962466	5150 – 5250	PASS
5180	0	120	5179.978370	5150 – 5250	PASS
5180	-10	120	5179.969188	5150 – 5250	PASS
5180	-20	120	5179.942486	5150 – 5250	PASS
5180	-30	120	5180.073693	5150 – 5250	PASS

Ant 2

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5180	20	132	5180.083457	5150 – 5250	PASS
5180	20	108	5179.962138	5150 – 5250	PASS
5180	50	120	5180.002125	5150 – 5250	PASS
5180	40	120	5180.020671	5150 – 5250	PASS
5180	30	120	5179.932549	5150 – 5250	PASS
5180	20	120	5180.087001	5150 – 5250	PASS
5180	10	120	5180.088861	5150 – 5250	PASS
5180	0	120	5180.020431	5150 – 5250	PASS
5180	-10	120	5179.956842	5150 – 5250	PASS
5180	-20	120	5180.051278	5150 – 5250	PASS
5180	-30	120	5179.992235	5150 – 5250	PASS

Ant 1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5200	20	132	5199.951908	5150 – 5250	PASS
5200	20	108	5199.981681	5150 – 5250	PASS
5200	50	120	5199.945886	5150 – 5250	PASS
5200	40	120	5199.952969	5150 – 5250	PASS
5200	30	120	5199.951195	5150 – 5250	PASS
5200	20	120	5200.057020	5150 – 5250	PASS
5200	10	120	5200.001297	5150 – 5250	PASS
5200	0	120	5200.028579	5150 – 5250	PASS
5200	-10	120	5199.992078	5150 – 5250	PASS
5200	-20	120	5200.099674	5150 – 5250	PASS
5200	-30	120	5199.958394	5150 – 5250	PASS

Ant 2

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5200	20	132	5200.018193	5150 – 5250	PASS
5200	20	108	5199.919734	5150 – 5250	PASS
5200	50	120	5200.096661	5150 – 5250	PASS
5200	40	120	5199.917271	5150 – 5250	PASS
5200	30	120	5199.950810	5150 – 5250	PASS
5200	20	120	5200.072454	5150 – 5250	PASS
5200	10	120	5200.012151	5150 – 5250	PASS
5200	0	120	5199.952471	5150 – 5250	PASS
5200	-10	120	5200.030445	5150 – 5250	PASS
5200	-20	120	5200.045956	5150 – 5250	PASS
5200	-30	120	5199.963356	5150 – 5250	PASS

Ant 1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5240	20	132	5239.947510	5150 – 5250	PASS
5240	20	108	5240.000835	5150 – 5250	PASS
5240	50	120	5240.002797	5150 – 5250	PASS
5240	40	120	5240.013280	5150 – 5250	PASS
5240	30	120	5239.954533	5150 – 5250	PASS
5240	20	120	5239.936292	5150 – 5250	PASS
5240	10	120	5240.096182	5150 – 5250	PASS
5240	0	120	5240.074790	5150 – 5250	PASS
5240	-10	120	5239.969506	5150 – 5250	PASS
5240	-20	120	5240.046332	5150 – 5250	PASS
5240	-30	120	5239.979140	5150 – 5250	PASS

Ant 2

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5240	20	132	5240.076569	5150 – 5250	PASS
5240	20	108	5239.931036	5150 – 5250	PASS
5240	50	120	5240.095043	5150 – 5250	PASS
5240	40	120	5239.981502	5150 – 5250	PASS
5240	30	120	5240.041004	5150 – 5250	PASS
5240	20	120	5239.982491	5150 – 5250	PASS
5240	10	120	5240.066962	5150 – 5250	PASS
5240	0	120	5239.973252	5150 – 5250	PASS
5240	-10	120	5240.008772	5150 – 5250	PASS
5240	-20	120	5240.030204	5150 – 5250	PASS
5240	-30	120	5240.030529	5150 – 5250	PASS

Ant 1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5190	20	132	5190.007254	5150 – 5250	PASS
5190	20	108	5189.962810	5150 – 5250	PASS
5190	50	120	5189.946363	5150 – 5250	PASS
5190	40	120	5189.966371	5150 – 5250	PASS
5190	30	120	5189.925660	5150 – 5250	PASS
5190	20	120	5189.927312	5150 – 5250	PASS
5190	10	120	5190.086667	5150 – 5250	PASS
5190	0	120	5190.085589	5150 – 5250	PASS
5190	-10	120	5189.981158	5150 – 5250	PASS
5190	-20	120	5190.029272	5150 – 5250	PASS
5190	-30	120	5190.059455	5150 – 5250	PASS

Ant 2

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5190	20	132	5190.067543	5150 – 5250	PASS
5190	20	108	5189.922221	5150 – 5250	PASS
5190	50	120	5190.025557	5150 – 5250	PASS
5190	40	120	5190.068443	5150 – 5250	PASS
5190	30	120	5190.026227	5150 – 5250	PASS
5190	20	120	5190.059730	5150 – 5250	PASS
5190	10	120	5190.000362	5150 – 5250	PASS
5190	0	120	5190.027357	5150 – 5250	PASS
5190	-10	120	5190.043106	5150 – 5250	PASS
5190	-20	120	5190.018416	5150 – 5250	PASS
5190	-30	120	5189.977979	5150 – 5250	PASS

Ant 1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5230	20	132	5229.960985	5150 – 5250	PASS
5230	20	108	5230.020303	5150 – 5250	PASS
5230	50	120	5229.924695	5150 – 5250	PASS
5230	40	120	5229.959935	5150 – 5250	PASS
5230	30	120	5230.018756	5150 – 5250	PASS
5230	20	120	5229.940174	5150 – 5250	PASS
5230	10	120	5229.935841	5150 – 5250	PASS
5230	0	120	5229.931309	5150 – 5250	PASS
5230	-10	120	5230.065246	5150 – 5250	PASS
5230	-20	120	5230.022306	5150 – 5250	PASS
5230	-30	120	5229.907601	5150 – 5250	PASS

Ant 2

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5230	20	132	5229.933761	5150 – 5250	PASS
5230	20	108	5229.953460	5150 – 5250	PASS
5230	50	120	5230.071316	5150 – 5250	PASS
5230	40	120	5229.957143	5150 – 5250	PASS
5230	30	120	5229.921893	5150 – 5250	PASS
5230	20	120	5229.925122	5150 – 5250	PASS
5230	10	120	5229.948472	5150 – 5250	PASS
5230	0	120	5230.021504	5150 – 5250	PASS
5230	-10	120	5229.939769	5150 – 5250	PASS
5230	-20	120	5229.978047	5150 – 5250	PASS
5230	-30	120	5229.929199	5150 – 5250	PASS

Ant 1

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5210	20	132	5209.984632	5150 – 5250	PASS
5210	20	108	5210.008668	5150 – 5250	PASS
5210	50	120	5209.948924	5150 – 5250	PASS
5210	40	120	5209.971537	5150 – 5250	PASS
5210	30	120	5210.038910	5150 – 5250	PASS
5210	20	120	5209.912739	5150 – 5250	PASS
5210	10	120	5209.954369	5150 – 5250	PASS
5210	0	120	5209.984377	5150 – 5250	PASS
5210	-10	120	5209.971075	5150 – 5250	PASS
5210	-20	120	5210.043237	5150 – 5250	PASS
5210	-30	120	5210.009782	5150 – 5250	PASS

Ant 2

Frequency (MHz)	Enviroment Temperature (Dregree)	Voltage (VAC)	Measured Frequency (MHz)	Limit Range (MHz)	Test Results
5210	20	132	5210.035281	5150 – 5250	PASS
5210	20	108	5210.054976	5150 – 5250	PASS
5210	50	120	5210.087773	5150 – 5250	PASS
5210	40	120	5209.935805	5150 – 5250	PASS
5210	30	120	5210.016827	5150 – 5250	PASS
5210	20	120	5209.990231	5150 – 5250	PASS
5210	10	120	5210.017201	5150 – 5250	PASS
5210	0	120	5210.065534	5150 – 5250	PASS
5210	-10	120	5209.928403	5150 – 5250	PASS
5210	-20	120	5209.966567	5150 – 5250	PASS
5210	-30	120	5209.994468	5150 – 5250	PASS

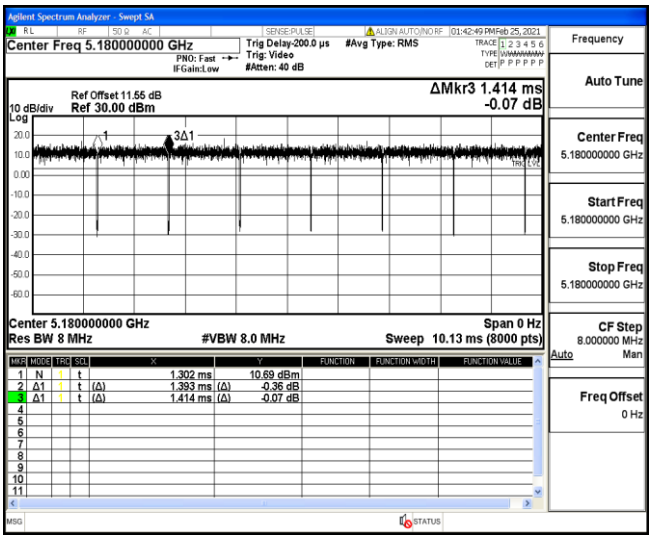
Appendix F: Duty Cycle

Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5180	1.39	1.41	98.58
	Ant2	5180	1.39	1.41	98.58
	Ant1	5200	1.39	1.41	98.58
	Ant2	5200	1.39	1.41	98.58
	Ant1	5240	1.39	1.41	98.58
	Ant2	5240	1.39	1.41	98.58
11N20MIMO	Ant1	5180	0.16	0.18	88.89
	Ant2	5180	0.16	0.18	88.89
	Ant1	5200	0.16	0.18	88.89
	Ant2	5200	0.16	0.18	88.89
	Ant1	5240	0.16	0.18	88.89
	Ant2	5240	0.16	0.18	88.89
11N40MIMO	Ant1	5190	0.10	0.12	83.33
	Ant2	5190	0.10	0.10	100.00
	Ant1	5230	0.10	0.12	83.33
	Ant2	5230	0.10	0.12	83.33
11AC20MIMO	Ant1	5180	0.36	0.38	94.74
	Ant2	5180	0.36	0.38	94.74
	Ant1	5200	0.36	0.38	94.74
	Ant2	5200	0.36	0.38	94.74
	Ant1	5240	0.36	0.38	94.74
	Ant2	5240	0.36	0.38	94.74
11AC40MIMO	Ant1	5190	0.08	0.09	88.89
	Ant2	5190	0.08	0.09	88.89
	Ant1	5230	0.08	0.09	88.89
	Ant2	5230	0.09	0.11	81.82
11AC80MIMO	Ant1	5210	0.06	0.08	75.00
	Ant2	5210	0.06	0.08	75.00

Test Graphs

11A_Ant1_5180



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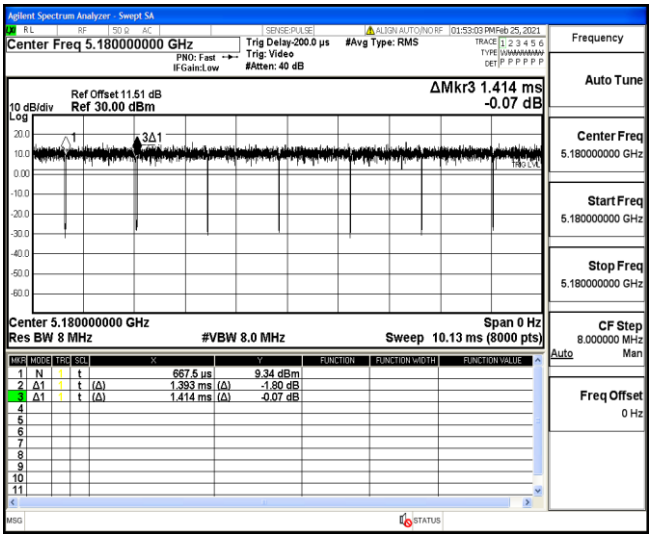

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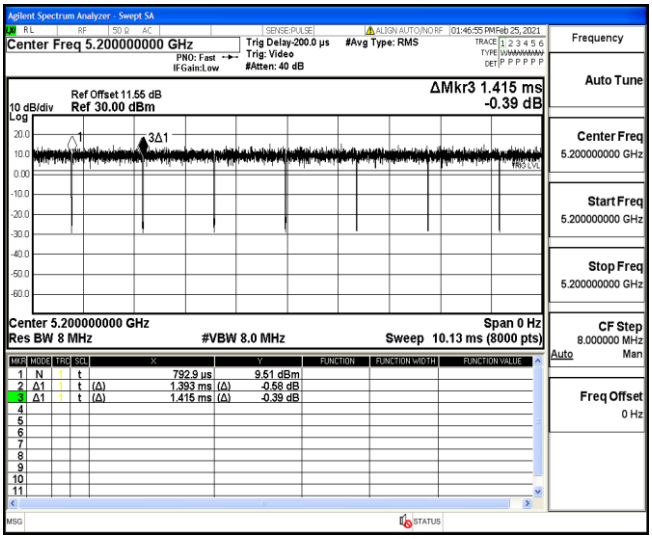

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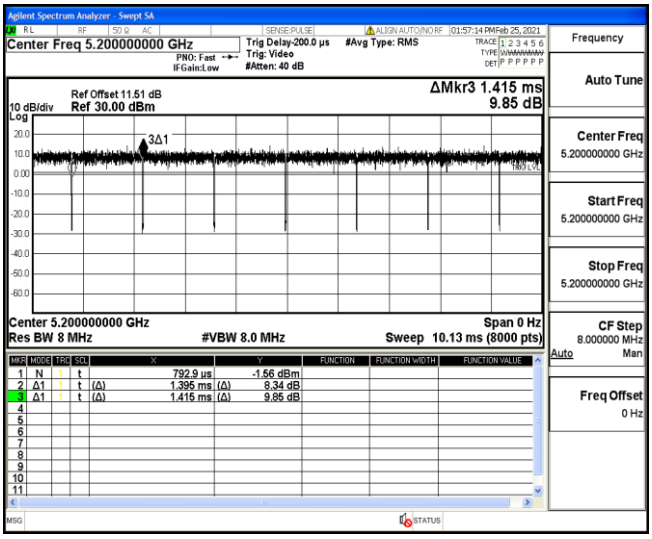

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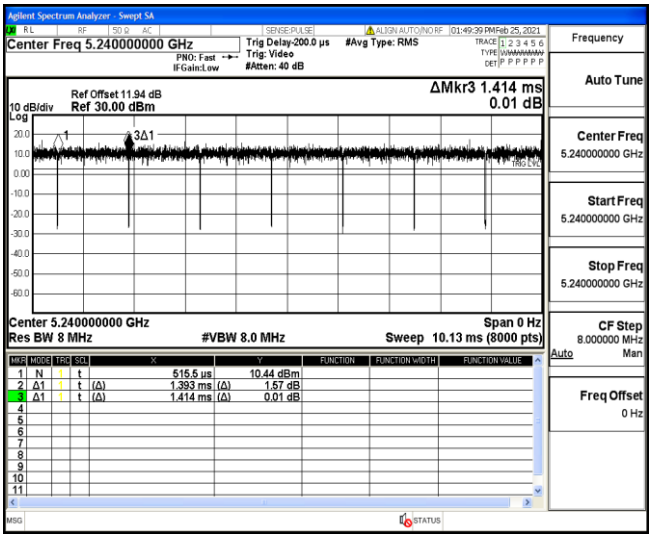

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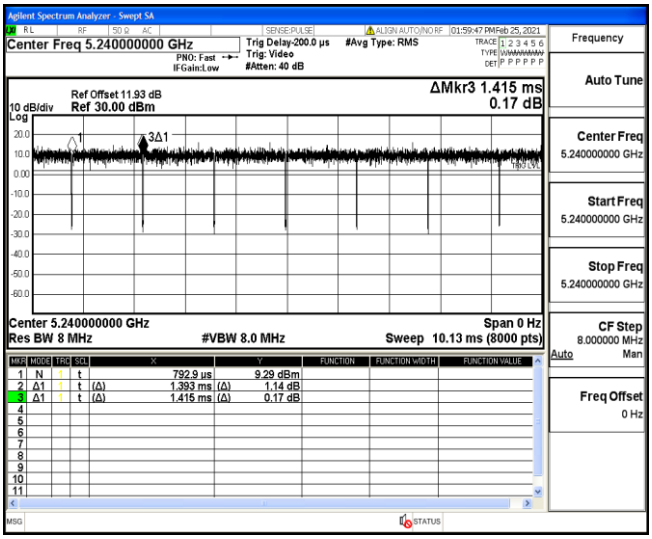

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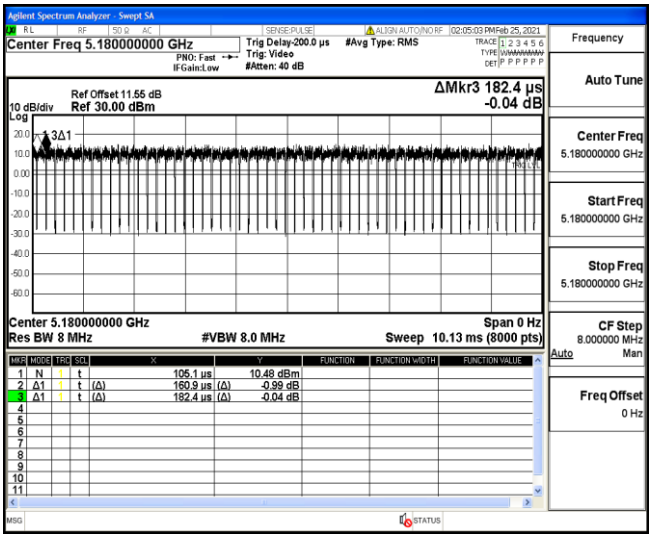

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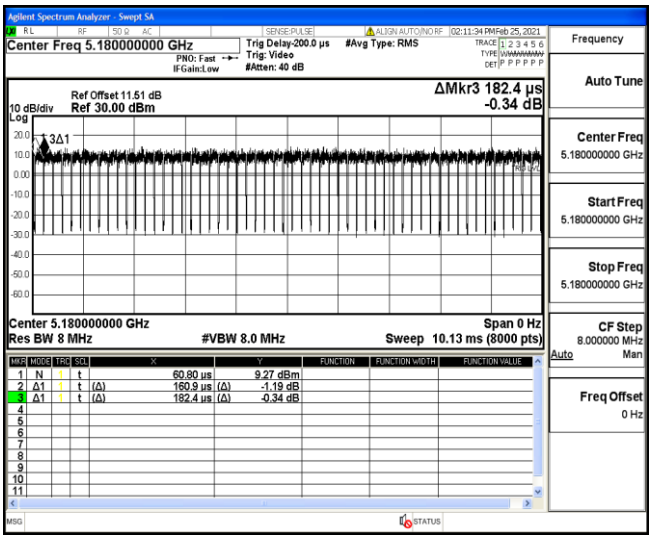

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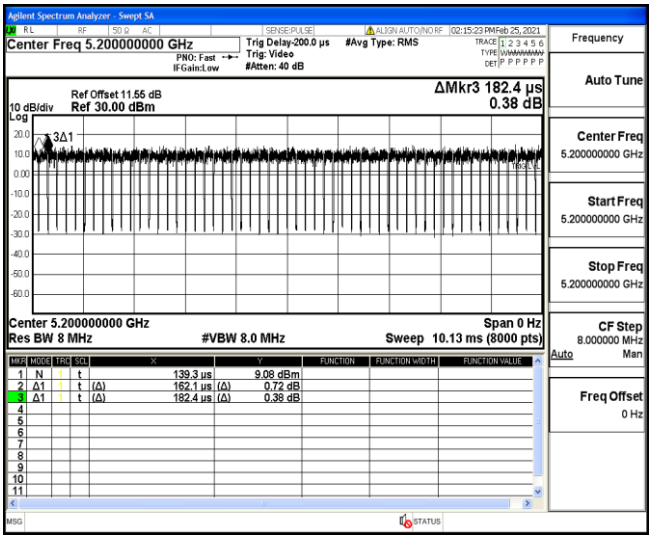

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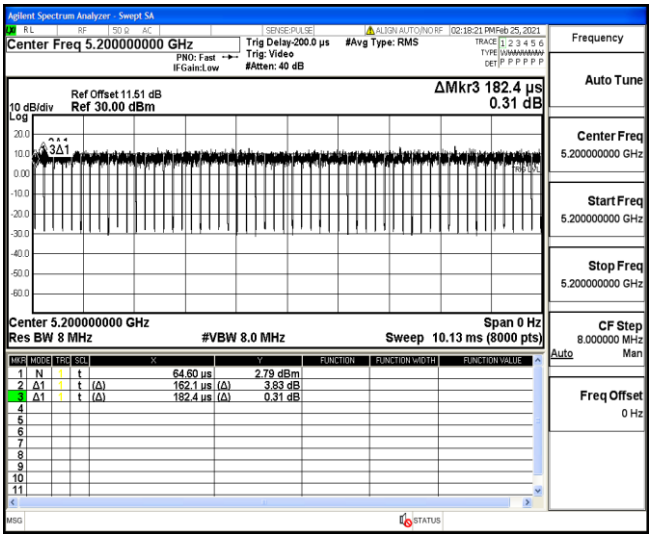

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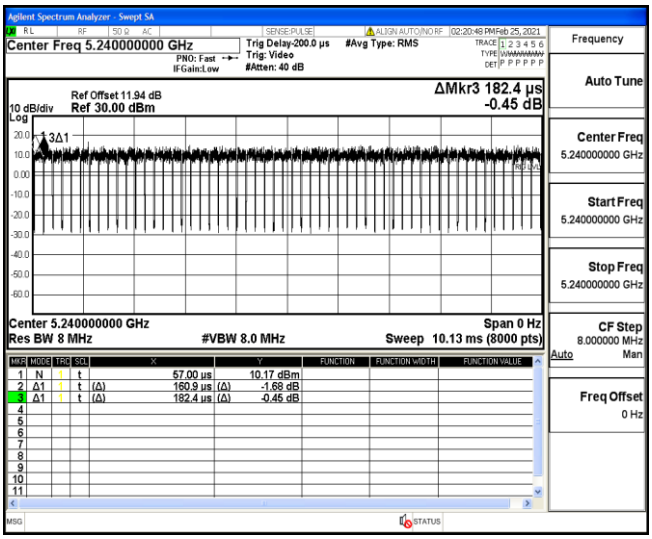

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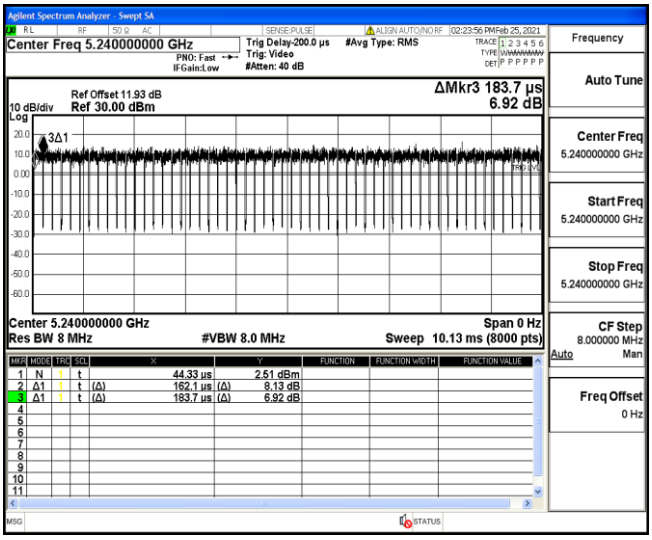

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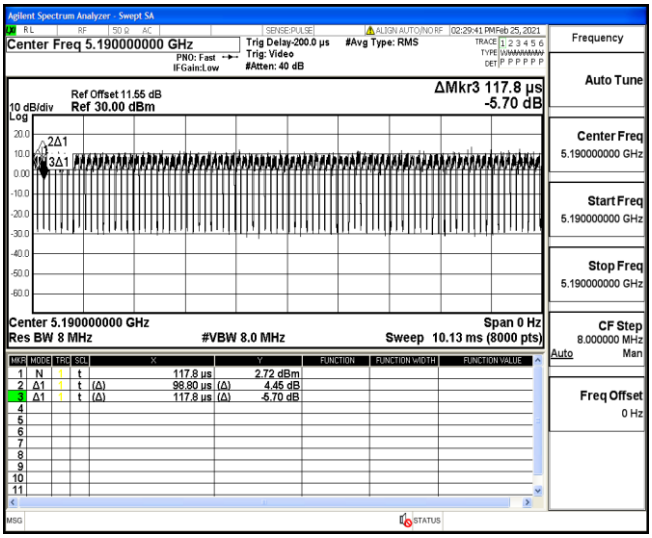

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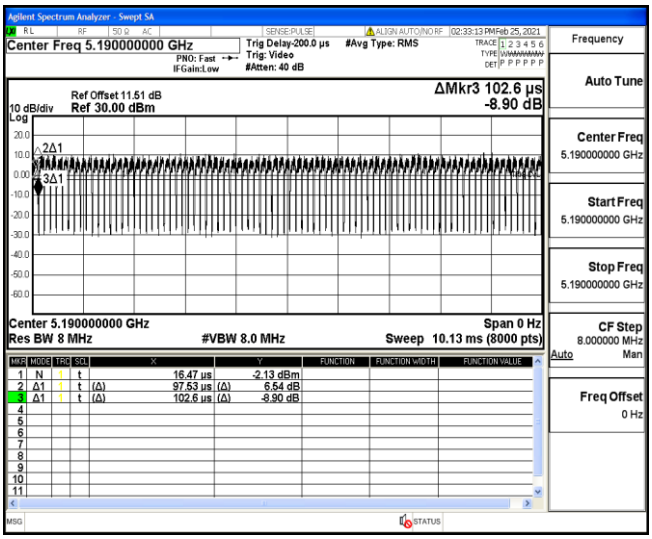

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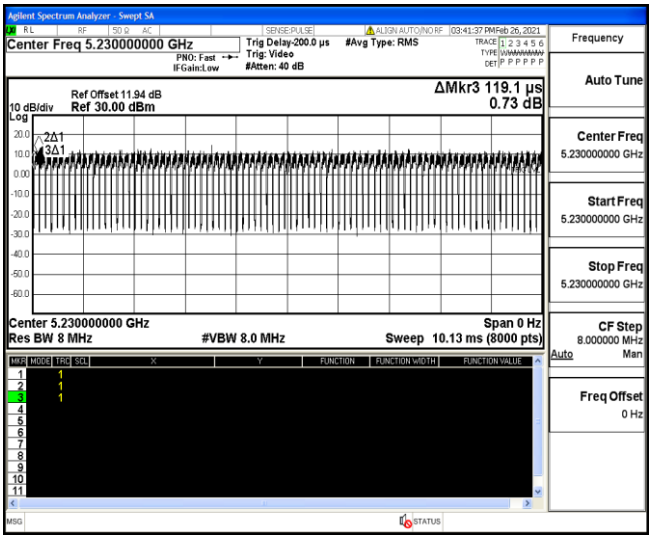

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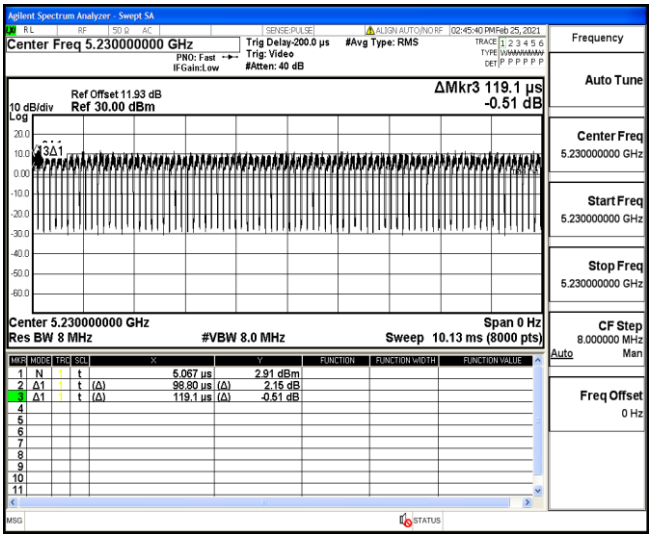

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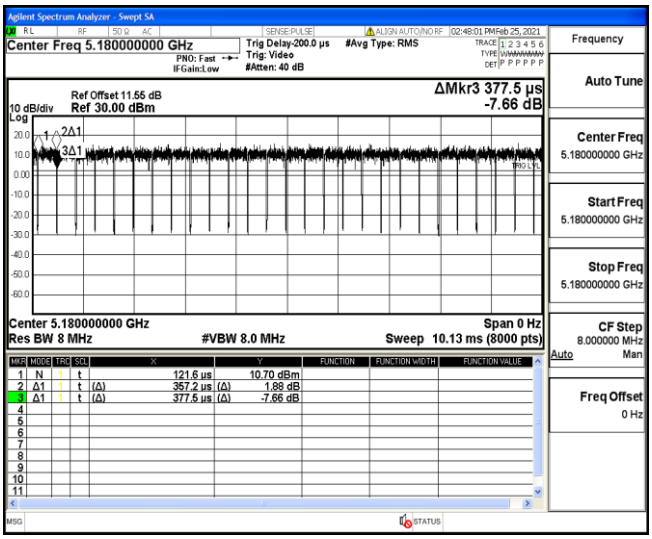

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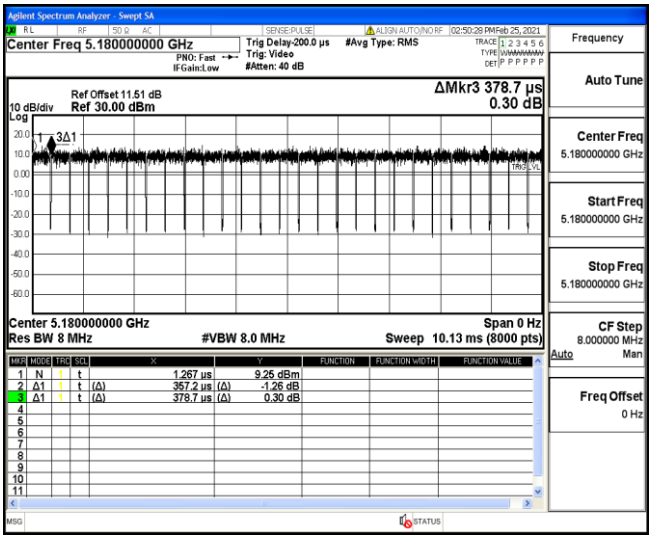

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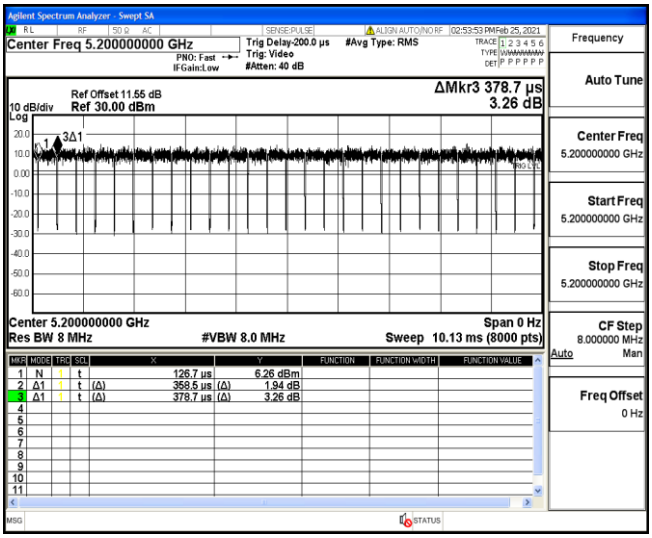

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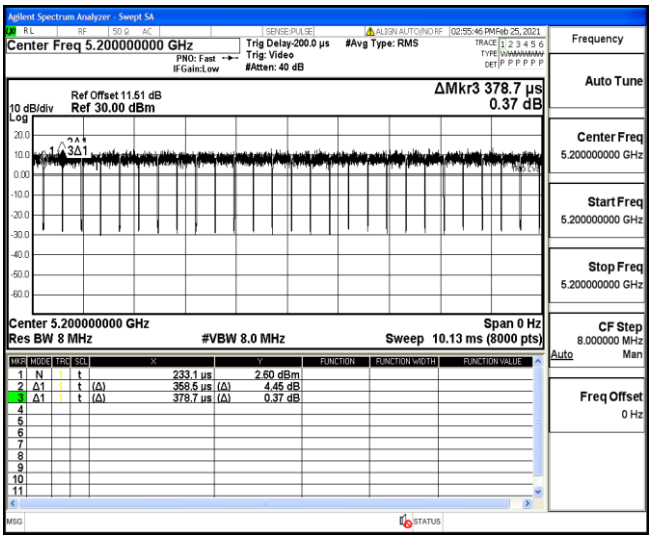

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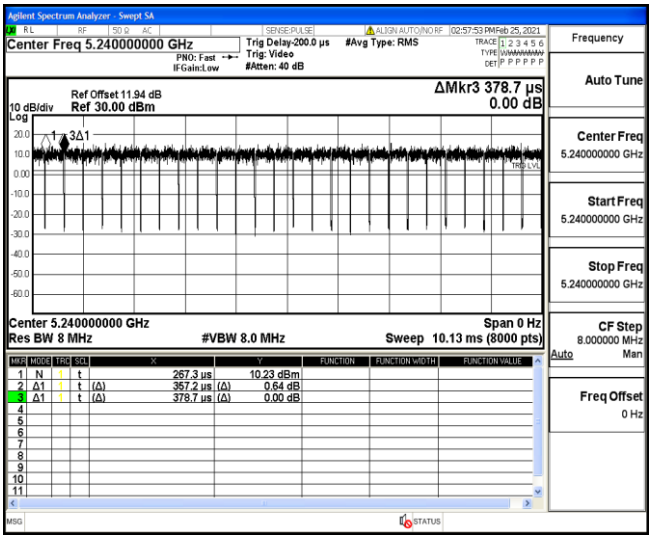

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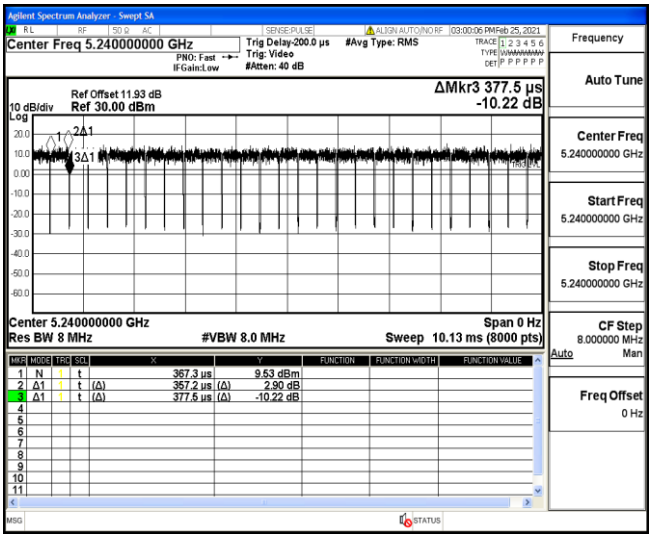

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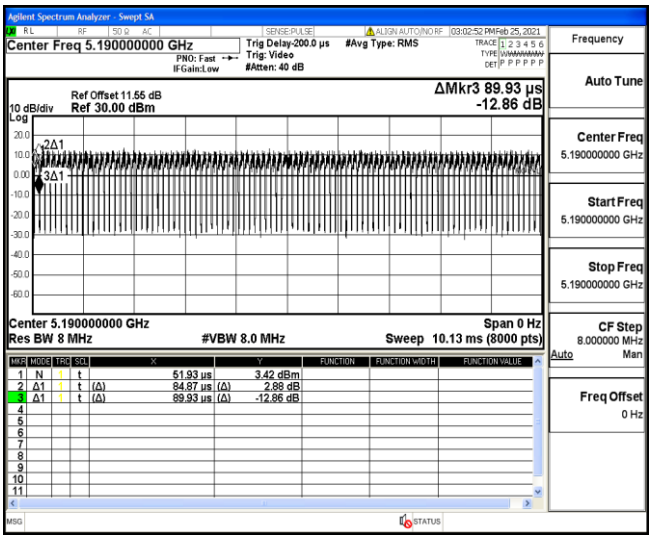

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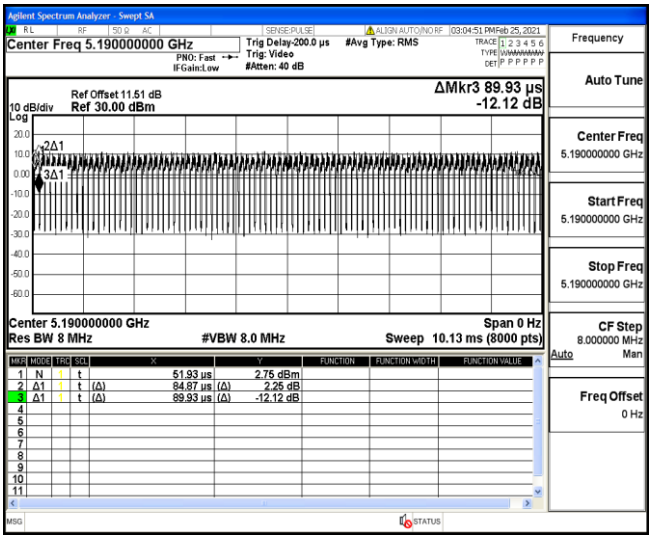

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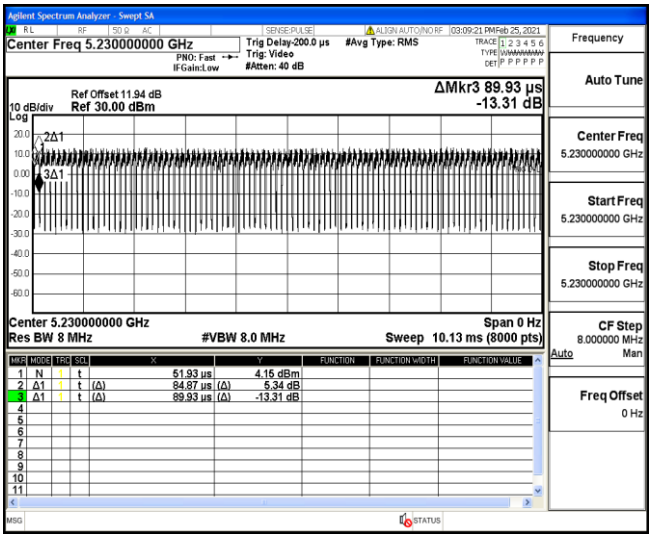

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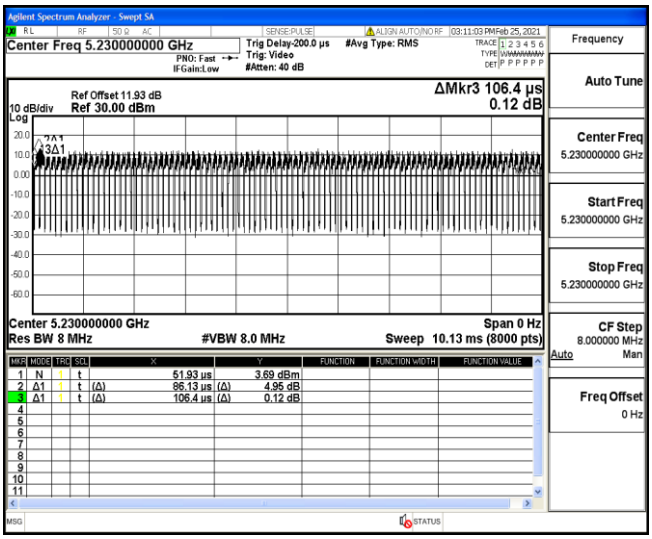

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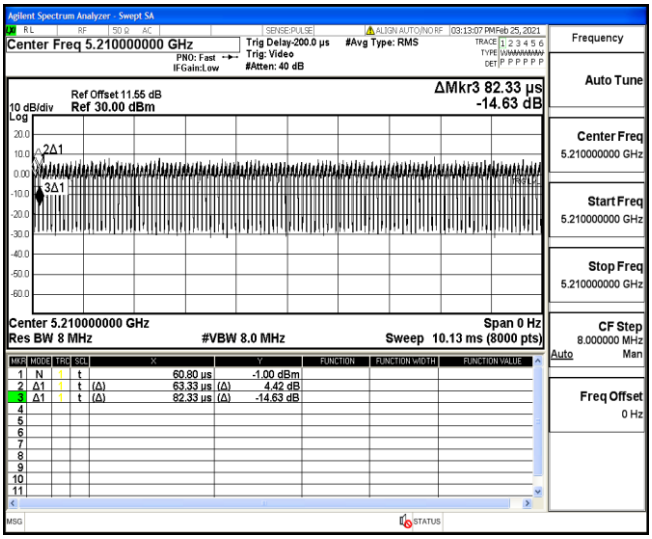

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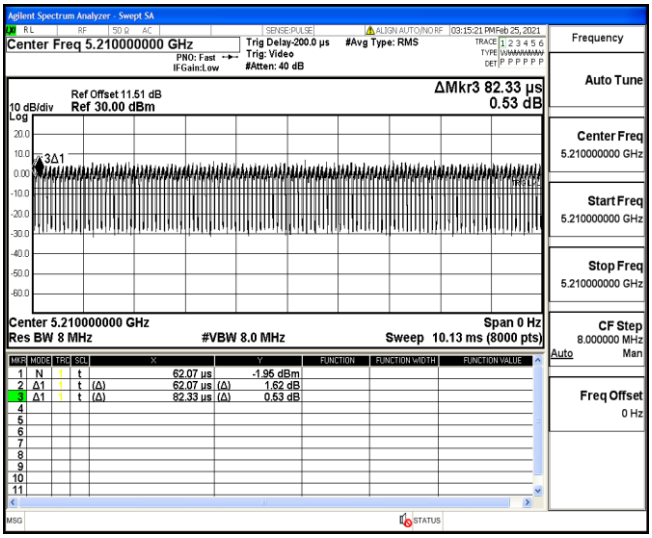

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.210000000 GHz
Trig Delay-200.0 µs
#Avg Type: RMS
PNO: Fast
Trig: Video
IFGain:Low
#Atten: 40 dB
Ref Offset 11.51 dB
10 dB/div Ref 30.00 dBm
Log
ΔMkr3 82.33 µs
0.53 dB
Center 5.210000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
1 N 1 t 62.07 µs -1.95 dBm
2 Δ1 1 t (Δ) 62.07 µs (Δ) 1.62 dB
3 Δ1 1 t (Δ) 82.33 µs (Δ) 0.53 dB
Frequency
Auto Tune
Center Freq
5.210000000 GHz
Start Freq
5.210000000 GHz
Stop Freq
5.210000000 GHz
CF Step
8.000000 MHz
Auto Man
Freq Offset
0 Hz

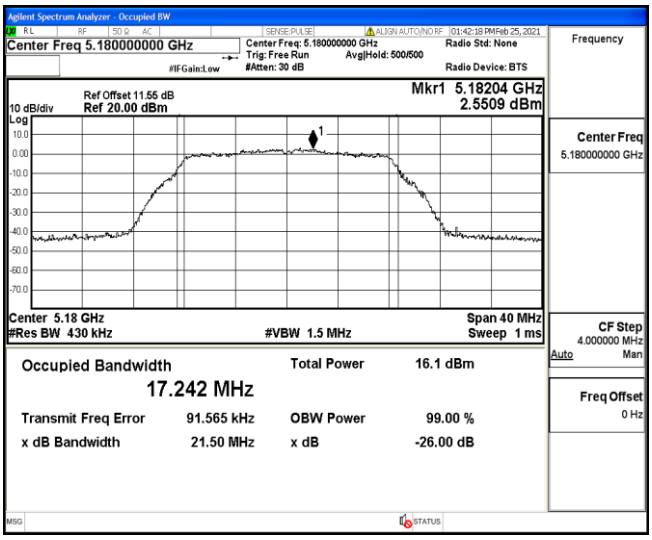
Appendix H: Occupied channel bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.242	5171.471	5188.713	---	PASS
	Ant2	5180	17.244	5171.461	5188.705	---	PASS
	Ant1	5200	17.528	5191.372	5208.900	---	PASS
	Ant2	5200	17.597	5191.302	5208.899	---	PASS
	Ant1	5240	17.528	5231.291	5248.819	---	PASS
	Ant2	5240	17.512	5231.297	5248.809	---	PASS
11N20MIMO	Ant1	5180	18.238	5171.005	5189.243	---	PASS
	Ant2	5180	18.202	5170.979	5189.181	---	PASS
	Ant1	5200	18.275	5190.969	5209.244	---	PASS
	Ant2	5200	18.322	5190.919	5209.241	---	PASS
	Ant1	5240	18.247	5230.959	5249.206	---	PASS
	Ant2	5240	18.293	5230.915	5249.208	---	PASS
11N40MIMO	Ant1	5190	36.525	5171.883	5208.408	---	PASS
	Ant2	5190	36.533	5171.804	5208.337	---	PASS
	Ant1	5230	36.379	5211.957	5248.336	---	PASS
	Ant2	5230	36.412	5211.926	5248.338	---	PASS
11AC20MIMO	Ant1	5180	18.253	5170.927	5189.180	---	PASS
	Ant2	5180	18.264	5170.931	5189.195	---	PASS
	Ant1	5200	18.363	5190.882	5209.245	---	PASS
	Ant2	5200	18.284	5190.940	5209.224	---	PASS
	Ant1	5240	18.309	5230.863	5249.172	---	PASS
	Ant2	5240	18.260	5230.941	5249.201	---	PASS
11AC40MIMO	Ant1	5190	36.758	5171.675	5208.433	---	PASS
	Ant2	5190	36.524	5171.802	5208.326	---	PASS
	Ant1	5230	36.622	5211.792	5248.414	---	PASS
	Ant2	5230	36.419	5211.886	5248.305	---	PASS
11AC80MIMO	Ant1	5210	75.938	5172.262	5248.200	---	PASS
	Ant2	5210	75.997	5172.223	5248.220	---	PASS

Test Graphs

11A_Ant1_5180



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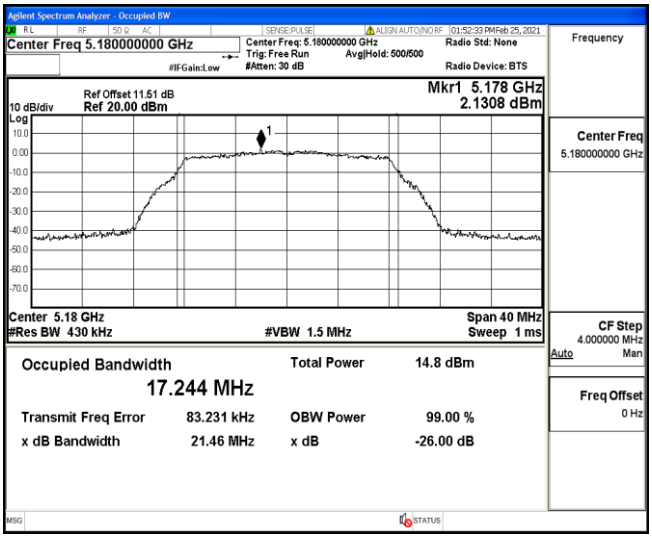

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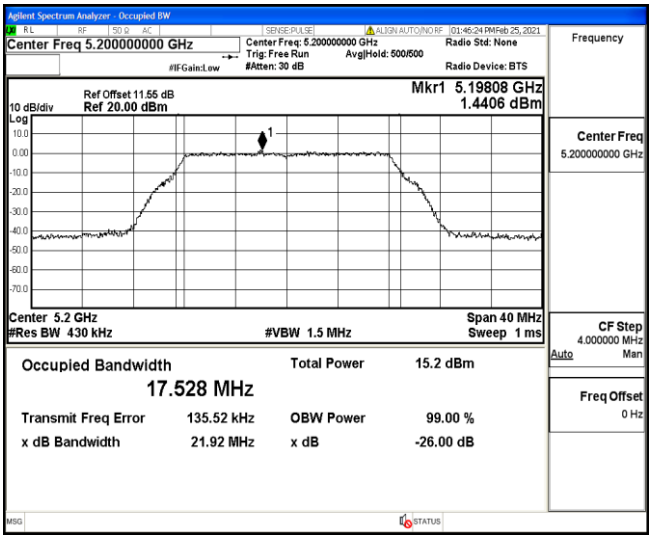

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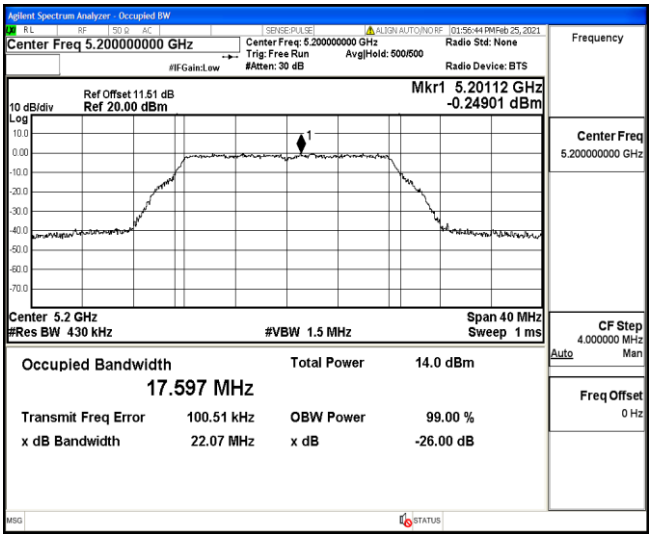

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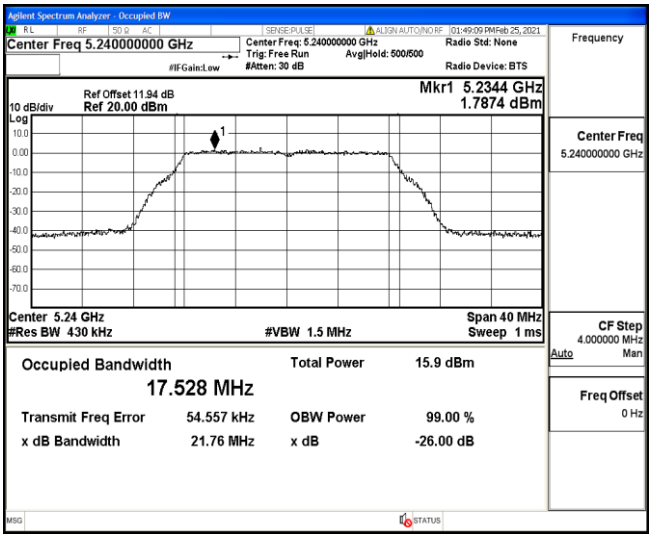

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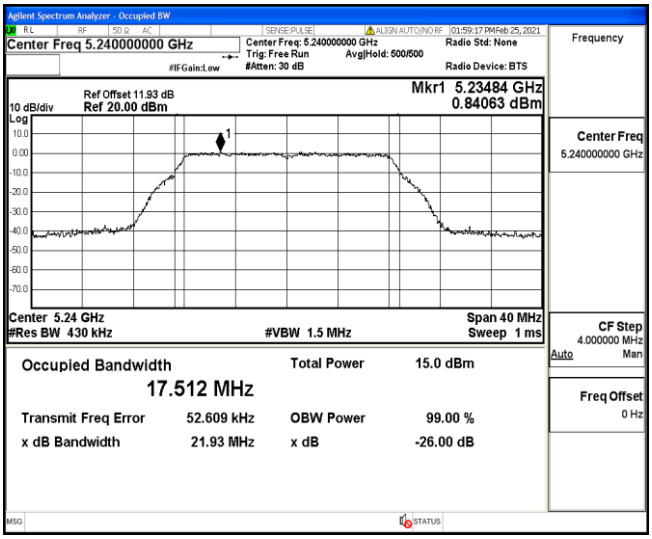

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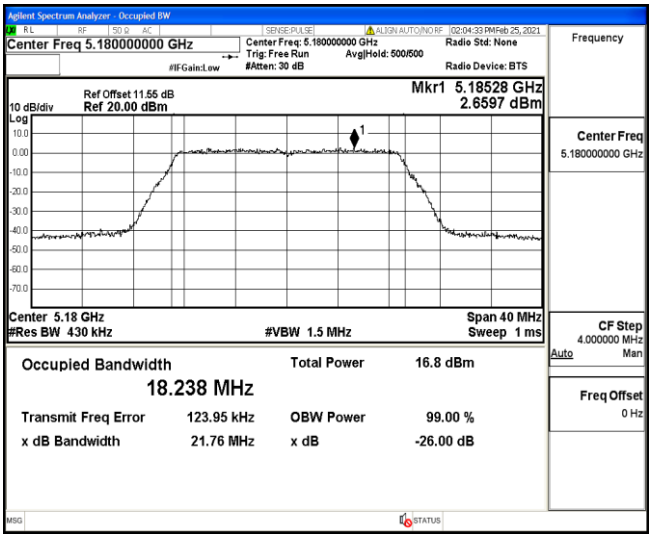

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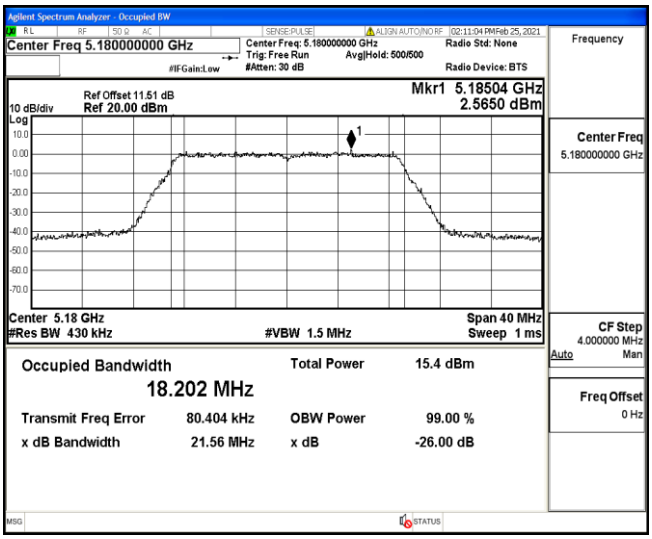

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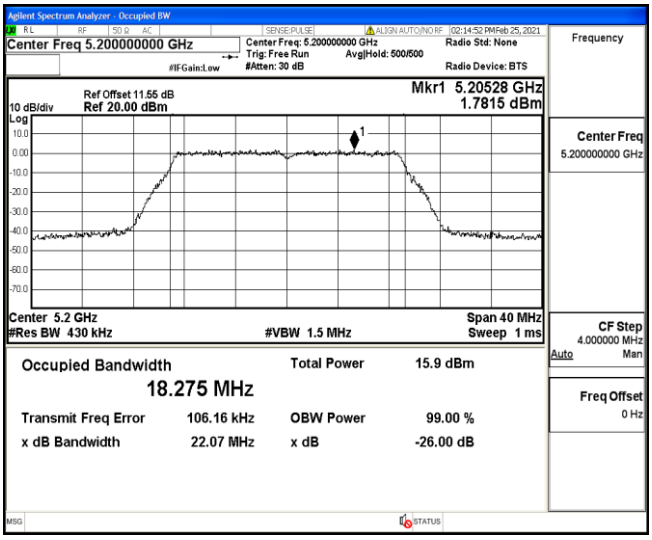

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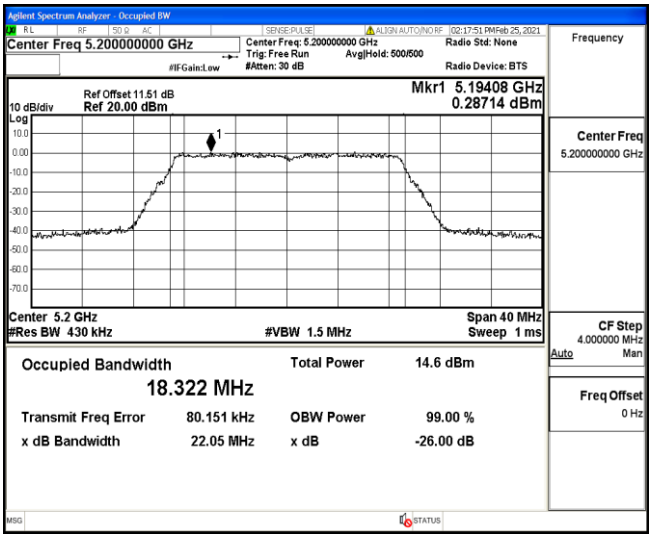

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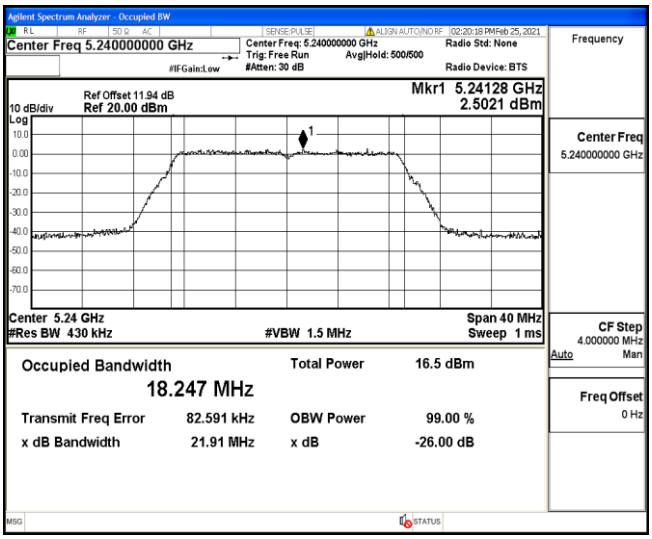

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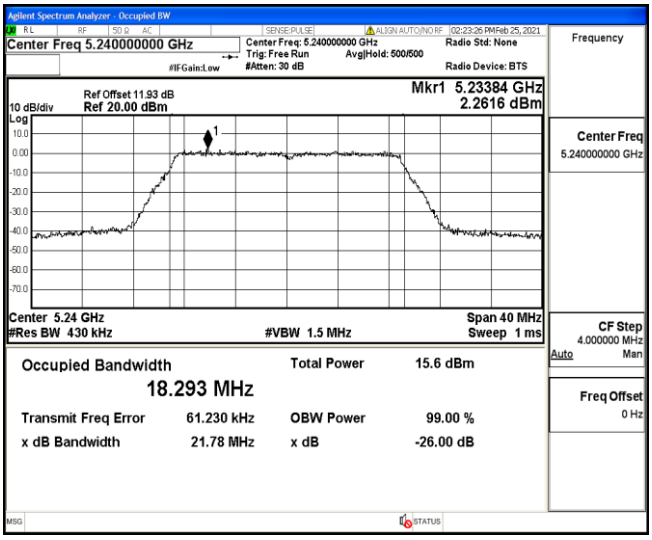

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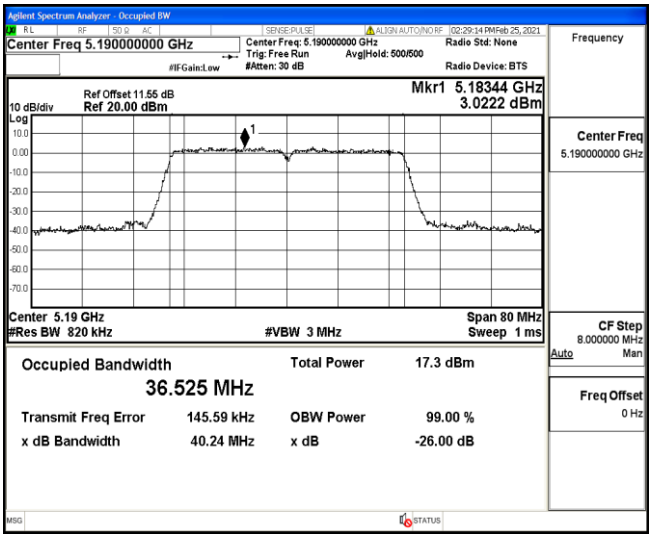

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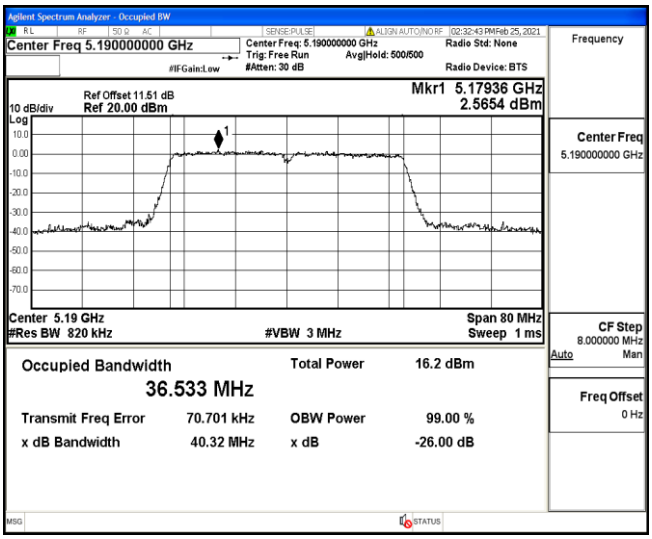

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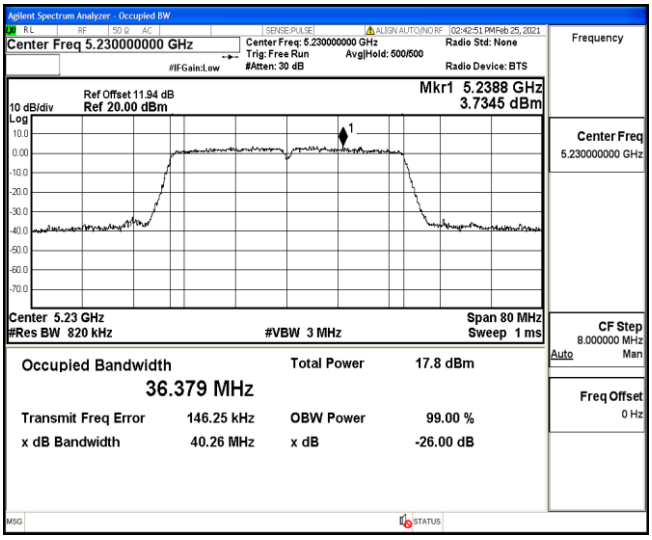

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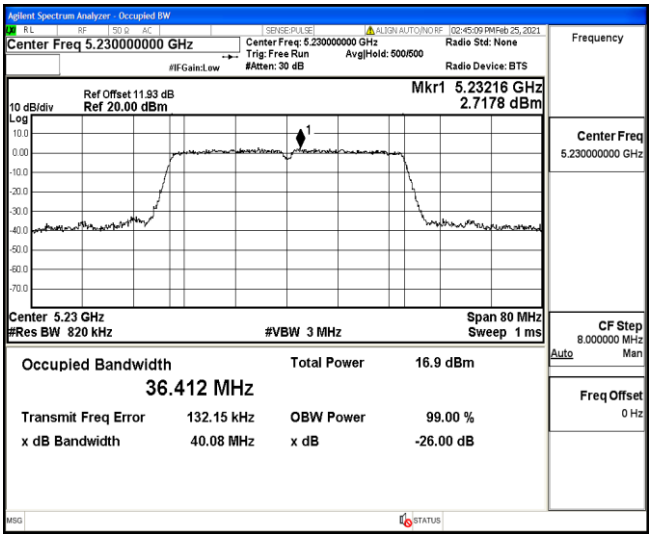

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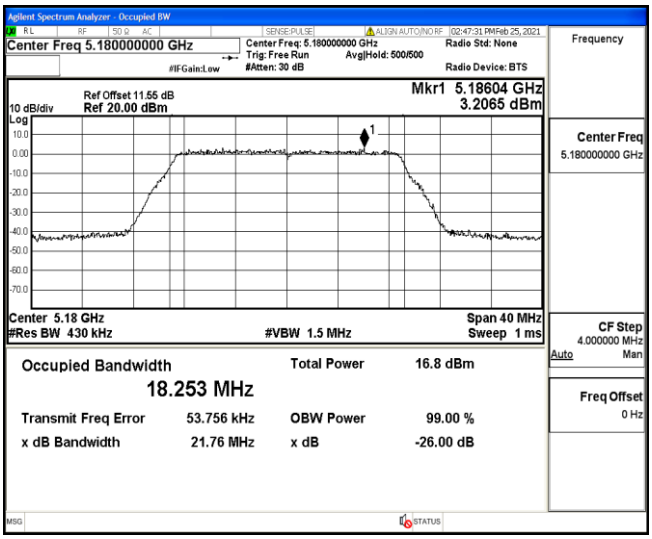

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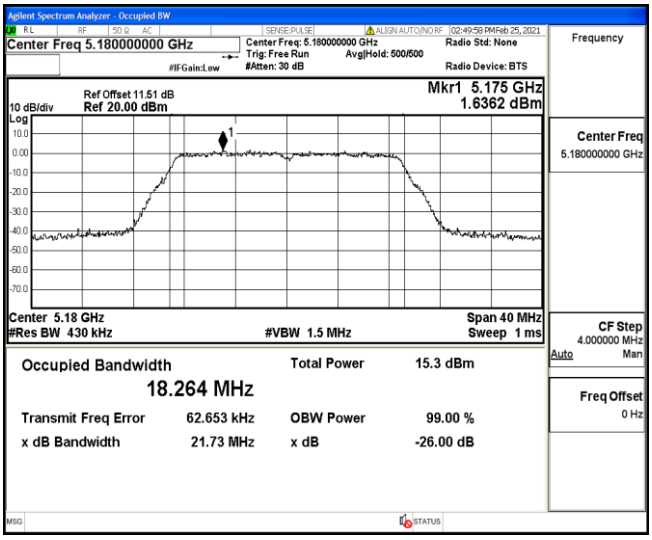

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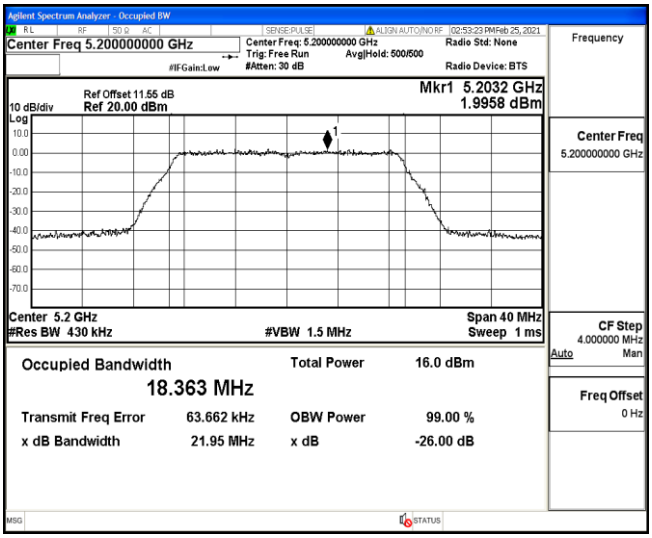

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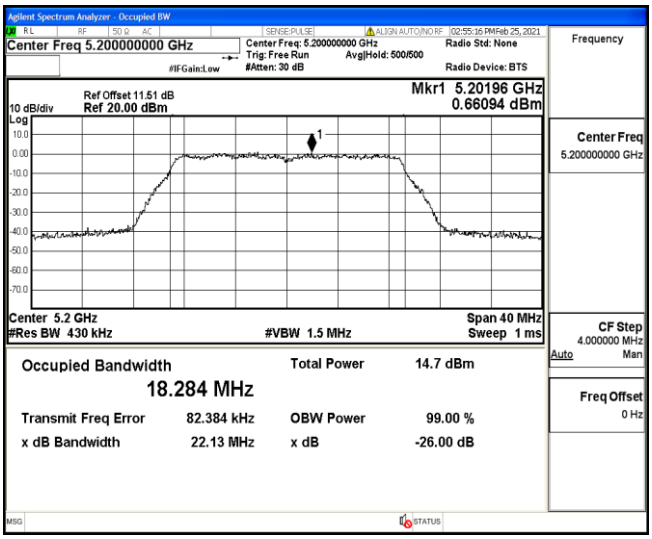

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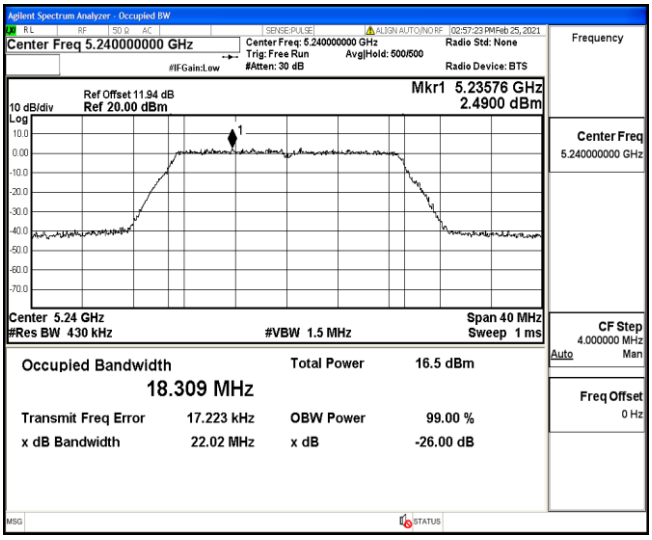

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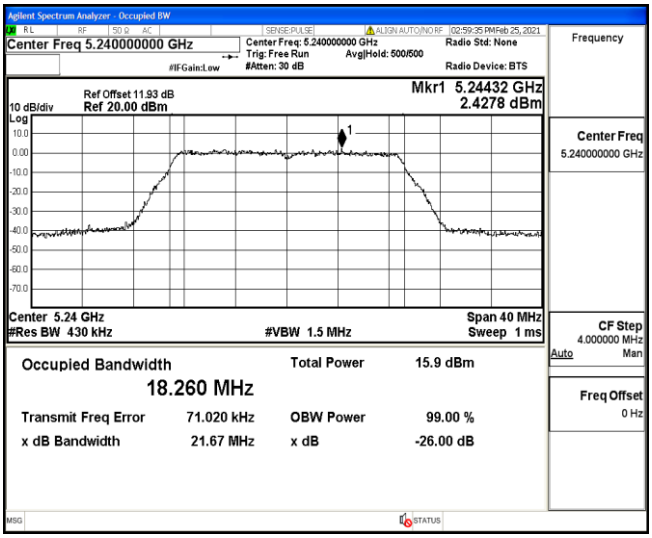

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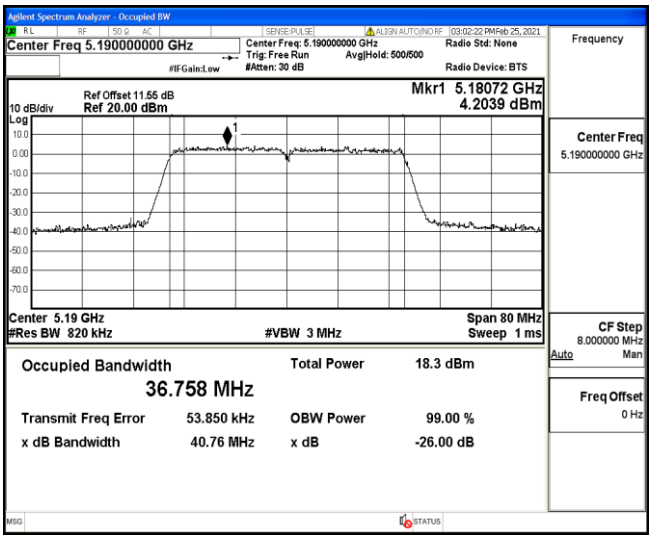

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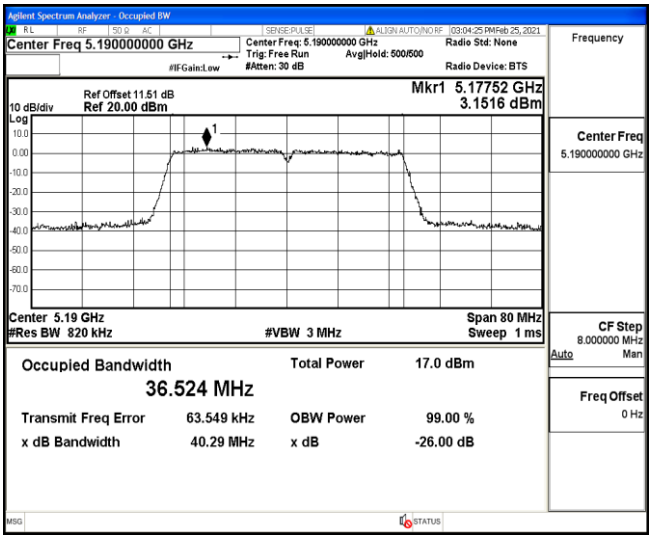

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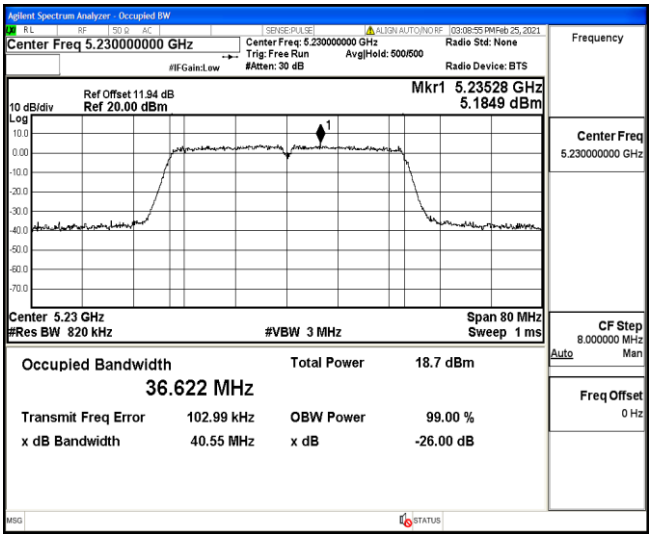

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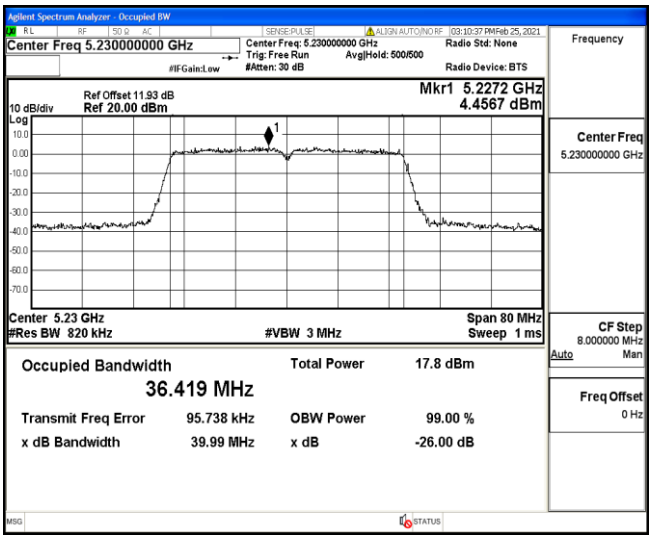

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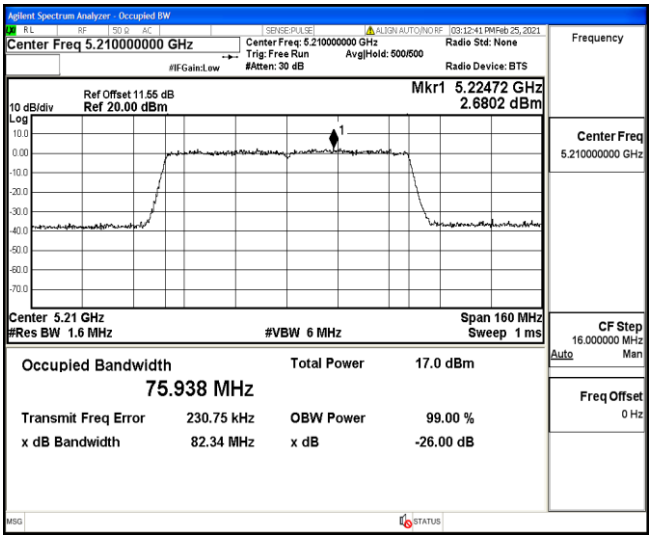

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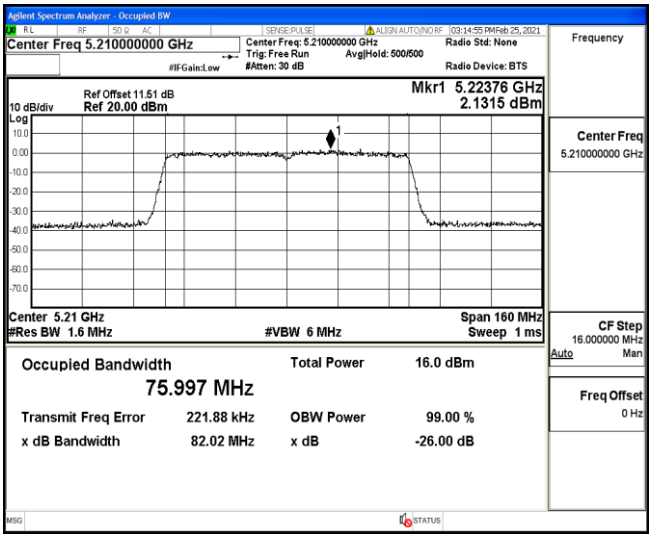
Agilent Spectrum Analyzer - Occupied BW
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Center Freq: 5.210000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
03:14:55 PM Feb 25, 2021
Frequency
Ref Offset 11.51 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.22376 GHz
2.1315 dBm
Center Freq
5.210000000 GHz
Center 5.21 GHz
#Res BW 1.6 MHz
#VBW 6 MHz
Span 160 MHz
Sweep 1 ms
CF Step
16.000000 MHz
Auto
Man
Occupied Bandwidth
75.997 MHz
Total Power 16.0 dBm
Transmit Freq Error 221.88 kHz
OBW Power 99.00 %
x dB Bandwidth 82.02 MHz
x dB -26.00 dB
Freq Offset
0 Hz
MSG
STATUS