TEST REPORT

Product	:	Artificial Intelligence Terminal Computer
Trade mark	:	N/A
Model/Type reference	:	PP23TQA
Serial Number	:	N/A
Report Number	:	EED32M00211504
FCC ID	:	2AWMI-PP23TQA
Date of Issue	:	Sep. 14, 2020
Test Standards	:	47 CFR Part 15 Subpart E
Test result	:	PASS

Prepared for:

Beijing Puppy Robotics Co., Ltd.
Room 103, building 1, Yard 33, Yanqi Road,
Huairou District, Beijing, China

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Compiled by:	Sunlight Sun	Reviewed by:	Jok Yang
Approved by:	Sam Chuang	Date:	Sep. 14, 2020

Check No.:3915617794

2 Version

Version No.	Date	Description
00	Sep. 14, 2020	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart E Section 15.407 (b)(6)	ANSI C63.10-2013	PASS
Conducted Output Power and transmit power control mechanism	47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(4)(h)(1)	ANSI C63.10-2013	PASS
26dB emission bandwidth	47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)	ANSI C63.10-2013	PASS
Peak Power Spectral Density	47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(5)	ANSI C63.10-2013	PASS
Peak power excursion	47 CFR Part 15 Subpart E Section 15.407 (a)(6)	ANSI C63.10-2013	N/A
Frequency stability	47 CFR Part 15 Subpart E Section 15.407 (g)	ANSI C63.10-2013	PASS
Operation in the absence of information to the transmit	47 CFR Part 15 Subpart E Section 15.407 (c)	47 CFR Part 15 Subpart E	PASS
Unwanted Emissions that fall Outside of the Restricted Bands	47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(5)	ANSI C63.10-2013	PASS
Unwanted Emissions in the Restricted Bands	47 CFR Part 15 Subpart E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radiated Frequency.
CH: In this whole report CH means channel.
Volt: In this whole report Volt means Voltage.
Temp: In this whole report Temp means Temperature.
Humid: In this whole report Humid means humidity.
Press: In this whole report Press means Pressure.
N/A: In this whole report not application

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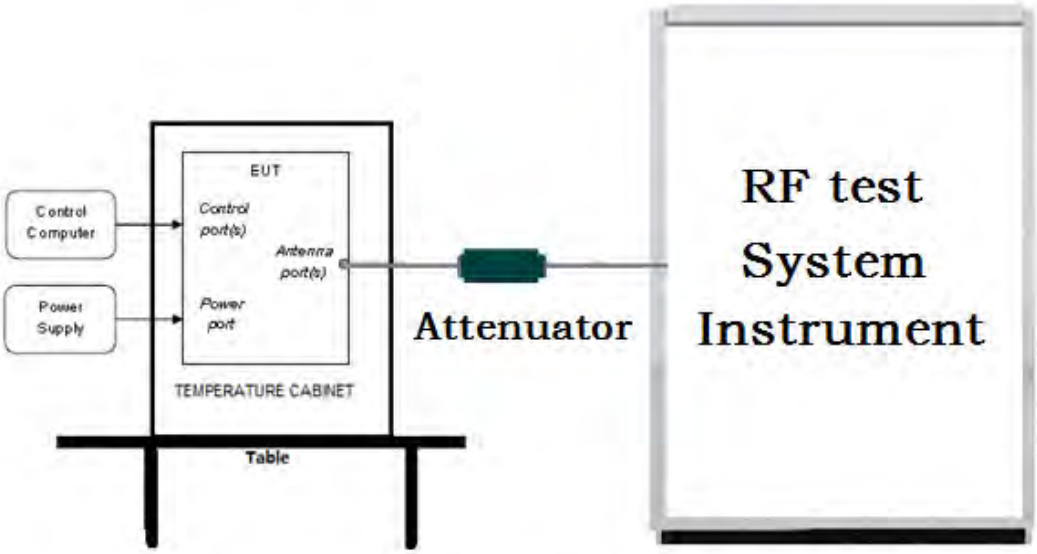
5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

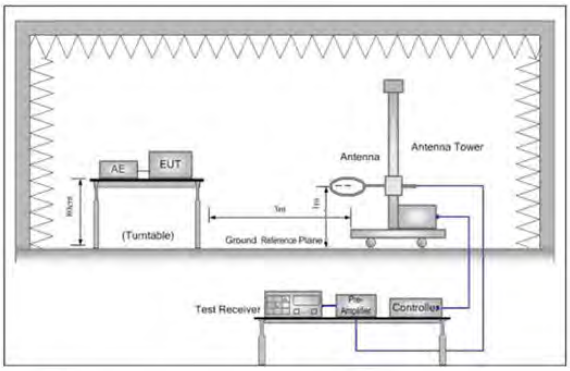


Figure 1. Below 30MHz

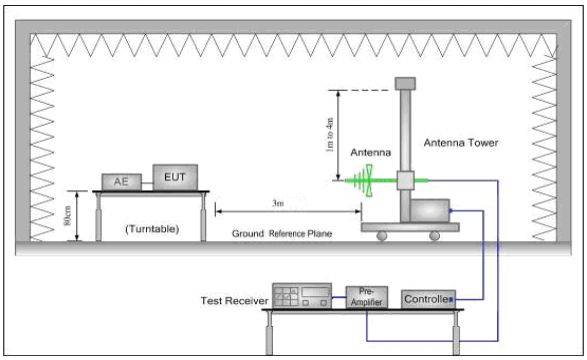


Figure 2. 30MHz to 1GHz

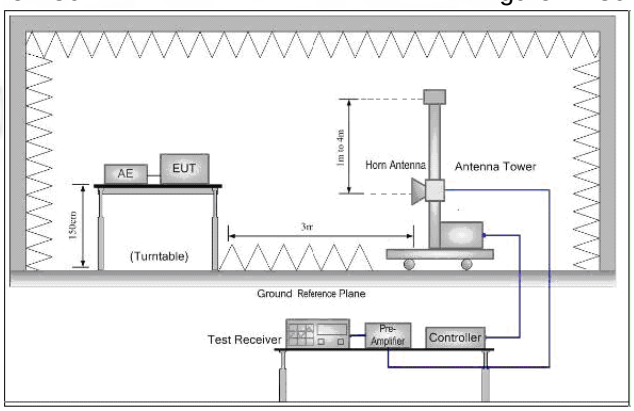
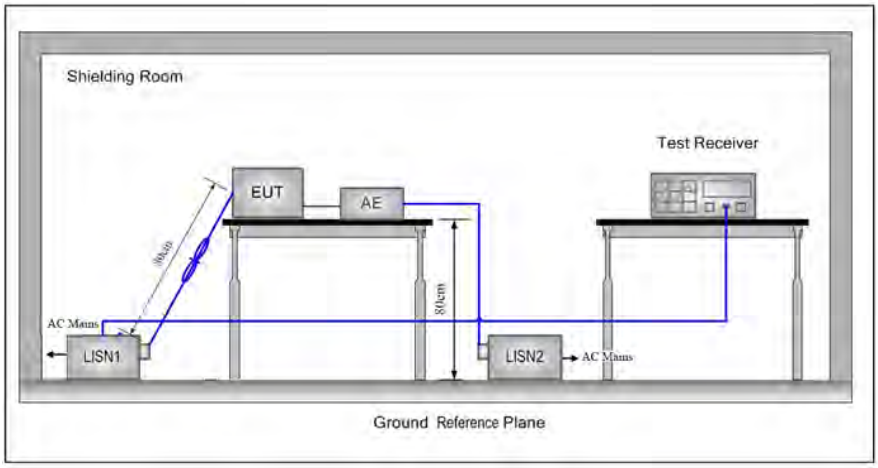


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

The worse case configurations, The worse case data was recorded in the report.

SISO

Band	802.11 Mode	Data rate (in Mb/s)
5180-5320MHz, 5500-5720MHz, 5745-5825MHz	a	6
	n(HT20)	6.5
	ac(VHT20)	6.5
	n(HT40)	13.5
	ac(VHT40)	13.5
	ac(HT80)	29.3

2x2 MIMO

Band	802.11 Mode	Data rate (in Mb/s)
5180-5320MHz, 5500-5720MHz, 5745-5825MHz	n(HT20)	13
	ac(VHT20)	13
	n(HT40)	27
	ac(VHT40)	27
	ac(HT80)	58.5

6 General Information

6.1 Client Information

Applicant:	Beijing Puppy Robotics Co., Ltd.
Address of Applicant:	Room 103, building 1, Yard 33, Yanqi Road, Huairou District, Beijing,China
Manufacturer:	Beijing Puppy Robotics Co., Ltd.
Address of Manufacturer:	Room 103, building 1, Yard 33, Yanqi Road, Huairou District, Beijing,China
Factory:	Zhangzhou Wanlida Technology Co., Ltd.
Address of Factory:	Wanlida Industrial Zone, Jingcheng Town, Nanjing, Zhangzhou, Fujian, China

6.2 General Description of EUT

Product Name:	Artificial Intelligence Terminal Computer	
Model No.(EUT):	PP23TQA	
Trade mark:	N/A	
Type of Modulation:	IEEE 802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11n(HT20/HT40): OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11ac(VHT20/VHT40/VHT80): OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)	
Operating Frequency	U-NII-1 & U-NII-2A: 5180-5320MHz U-NII-2C:5500-5720MHz U-NII-3:5745-5825MHz	
Test Power Grade:	Default	
Test Software of EUT:	QRCT	
Antenna Type:	PIFA antenna	
Antenna Gain:	Antenna gain:4.1dBi	
Function	☒ SISO ☒ 2x2 MIMO	
Power Supply:	AC Adapter	MODEL:AP065G-19300 INPUT:100-240V~50/60Hz1.5AMax OUTPUT:19V⎓3A
Test voltage:	AC120V/60Hz	

Operation Frequency each of channel

802.11a/802.11n/802.11ac(20MHz) Frequency/Channel Operations:

U-NII-1		U-NII-2A		U-NII-2C		U-NII-3	
Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	52	5260	100	5500	149	5745
40	5200	56	5280	104	5520	153	5765
44	5220	60	5300	108	5540	157	5785
48	5240	64	5320	112	5560	161	5805
-	-	-	-	116	5580	165	5825
-	-	-	-	120	5600	-	-
-	-	-	-	124	5620	-	-
-	-	-	-	128	5640	-	-
-	-	-	-	132	5660	-	-
-	-	-	-	136	5680	-	-
-	-	-	-	140	5700	-	-
-	-	-	-	144	5720	-	-

802.11n/802.11ac(40MHz) Frequency/Channel Operations:

U-NII-1		U-NII-2A		U-NII-2C		U-NII-3	
Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
38	5190	54	5270	102	5510	151	5755
46	5230	62	5310	110	5550	159	5795
-	-	-	-	118	5590	-	-
-	-	-	-	126	5630	-	-
-	-	-	-	134	5670	-	-
-	-	-	-	142	5710	-	-

802.11ac 80MHz) Frequency/Channel Operations:

U-NII-1		U-NII-2A		U-NII-2C		U-NII-3	
Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
42	5210	58	5290	106	5530	155	5775
-	-	-	-	122	5610	-	-
-	-	-	-	138	5690	-	-

802.11ac(160MHz) Frequency/Channel Operations:

U-NII-1&U-NII-2A		U-NII-2C	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
50	5250	114	5570

6.3 Description of Support Units

The EUT has been tested with associated equipment below.

Associated equipment name		Manufacture	model	S/N serial number	Supplied by	Certification
AE1	Notebook	DELL	DELL 3490	D245DX2	DELL	CE&FCC

6.4 Test Location

All tests were performed at:
Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.

FCC Designation No.: CN1164

6.5 Deviation from Standards

None.

6.6 Abnormalities from Standard Conditions

None.

6.7 Other Information Requested by the Customer

None.

6.8 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

7 Equipment List

RF test system					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Spectrum Analyzer	Keysight	N9010A	MY54510339	02-17-2020	02-16-2021
Signal Generator	Keysight	N5182B	MY53051549	02-17-2020	02-16-2021
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	07-26-2019 06-29-2020	07-25-2020 06-28-2021
High-pass filter	Sinoscite	FL3CX03WG18N M12-0398-002	---	---	---
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	---	---
DC Power	Keysight	E3642A	MY56376072	02-17-2020	02-16-2021
PC-1	Lenovo	R4960d	---	---	---
BT&WI-FI Automatic control	R&S	OSP120	101374	02-17-2020	02-16-2021
RF control unit	JS Tonscend	JS0806-2	158060006	02-17-2020	02-16-2021
BT&WI-FI Automatic test software	JS Tonscend	JS1120-3	---	---	---

Conducted disturbance Test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Receiver	R&S	ESCI	100435	04-28-2020	04-27-2021
Temperature/ Humidity Indicator	Defu	TH128	/	---	---
LISN	R&S	ENV216	100098	03-05-2020	03-04-2021
Barometer	changchun	DYM3	1188	---	---

3M Semi/full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019	05-23-2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-26-2019 05-16-2020	07-25-2020 05-15-2021
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-24-2021
Receiver	R&S	ESCI7	100938-003	10-21-2019	10-20-2020
Multi device Controller	maturo	NCD/070/107 11112	---	---	---
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	07-26-2019 06-29-2020	07-25-2020 06-28-2021
Cable line	Fulai(7M)	SF106	5219/6A	---	---
Cable line	Fulai(6M)	SF106	5220/6A	---	---
Cable line	Fulai(3M)	SF106	5216/6A	---	---
Cable line	Fulai(3M)	SF106	5217/6A	---	---

3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	---	---
Receiver	Keysight	N9038A	MY57290136	03-05-2020	03-04-2021
Spectrum Analyzer	Keysight	N9020B	MY57111112	03-05-2020	03-04-2021
Spectrum Analyzer	Keysight	N9030B	MY57140871	03-05-2020	03-04-2021
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-25-2018	04-24-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-25-2018	04-24-2021
Horn Antenna	ETS-LINDGREN	3117	00057407	07-10-2018	07-09-2021
Preamplifier	EMCI	EMC184055SE	980596	05-20-2020	05-19-2021
Preamplifier	EMCI	EMC001330	980563	04-22-2020	04-21-2021
Preamplifier	JS Tonscend	980380	EMC051845 SE	01-09-2020	01-08-2021
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	04-27-2020	04-26-2021
Fully Anechoic Chamber	TDK	FAC-3	---	01-17-2018	01-16-2021
Filter bank	JS Tonscend	JS0806-F	188060094	04-10-2018	04-09-2021
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	---	---
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	---	---
Cable line	Times	EMC104-NMNM-1000	SN160710	---	---
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	---	---
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	---	---
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	---	---
Cable line	Times	HF160-KMKM-3.00M	393493-0001	---	---

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15E (2015)	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicesed Wireless Devices
3	KDB789033 D02 General UNII Test Procedures New Rules v01	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15 subpart E

Test Results List:

Test Requirement	Test method	Test item	Verdict	Note
Part15E Section 15.407 (a)(1)(2)	KDB789033 D02v01	26dB Occupied Bandwidth	PASS	Appendix A
Part15E Section 15.407 (a)(1)(2)(4)(h)(1)	KDB789033 D02v01	Conducted Output Power and transmit power control mechanism	PASS	Appendix B)
Part15E Section 15.407 (a)(1)(2)(5)	KDB789033 D02v01	Power Spectral Density	PASS	Appendix C)
Part15E Section 15.407 (a)(6)	KDB789033 D02v01	Peak power excursion	PASS	N/A
47 CFR Part 15 Subpart E Section 15.407(b)(1)to(6)	ANSI C63.10-2013	Conducted Band-edge Measurements	PASS	Appendix D)
47 CFR Part 15 Subpart E Section 15.407(b)	ANSI C63.10-2013	Conducted Spurious Emission	PASS	Appendix E)
Part15E Section 15.407 (g)	KDB789033 D02v01	Frequency stability	PASS	Appendix F)
Part15C Section 15.203	ANSI C63.10	Antenna Requirement	PASS	Appendix G)
Part15E Section 15.407 (c)	Section 15.407	Operation in the absence of information to the transmit	PASS	Appendix H)
Part15E Section 15.407 (b)(6)	ANSI C63.10	AC Power Line Conducted Emission	PASS	Appendix I)
Part15E Section 15.407 (b)(6)(7)(8)	KDB789033 D02v01	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix J)
Part15E Section 15.407 (b)(6)(7)(8)	KDB789033 D02v01	Unwanted Emissions in the Restricted Bands	PASS	Appendix K)
Part15E Section 15.407 (b)(1)(2)(3)(5)	KDB789033 D02v01	Unwanted Emissions that fall Outside of the Restricted Bands	PASS	Appendix L)

Duty Cycle

Test Result

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11A	Ant1	5180	2.06	2.10	98.19	---	PASS
	Ant2	5180	2.06	2.10	98.13	---	PASS
	Ant1	5200	2.06	2.10	98.19	---	PASS
	Ant2	5200	2.06	2.10	98.19	---	PASS
	Ant1	5240	2.06	2.10	98.19	---	PASS
	Ant2	5240	2.06	2.10	98.19	---	PASS
	Ant1	5260	2.06	2.10	98.19	---	PASS
	Ant2	5260	2.06	2.10	98.19	---	PASS
	Ant1	5280	2.06	2.10	98.19	---	PASS
	Ant2	5280	2.06	2.10	98.13	---	PASS
	Ant1	5320	2.06	2.10	98.19	---	PASS
	Ant2	5320	2.06	2.10	98.19	---	PASS
	Ant1	5500	2.06	2.10	98.19	---	PASS
	Ant2	5500	2.06	2.10	98.13	---	PASS
	Ant1	5580	2.06	2.10	98.19	---	PASS
	Ant2	5580	2.06	2.10	98.13	---	PASS
	Ant1	5700	2.06	2.10	98.19	---	PASS
	Ant2	5700	2.06	2.10	98.19	---	PASS
	Ant1	5745	2.06	2.10	98.19	---	PASS
	Ant2	5745	2.06	2.10	98.19	---	PASS
	Ant1	5785	2.06	2.10	98.19	---	PASS
	Ant2	5785	2.06	2.10	98.19	---	PASS
	Ant1	5825	2.06	2.10	98.19	---	PASS
	Ant2	5825	2.06	2.10	98.19	---	PASS

11N20SISO	Ant1	5180	1.92	1.96	98.06	---	PASS
	Ant2	5180	1.92	1.96	98.06	---	PASS
	Ant1	5200	1.92	1.96	98.06	---	PASS
	Ant2	5200	1.92	1.96	98.06	---	PASS
	Ant1	5240	1.92	1.96	98.06	---	PASS
	Ant2	5240	1.92	1.96	98.06	---	PASS
	Ant1	5260	1.92	1.96	98.06	---	PASS
	Ant2	5260	1.92	1.96	98.06	---	PASS
	Ant1	5280	1.92	1.96	98.06	---	PASS
	Ant2	5280	1.92	1.96	98.06	---	PASS
	Ant1	5320	1.92	1.96	98.06	---	PASS
	Ant2	5320	1.92	1.96	98.06	---	PASS
	Ant1	5500	1.92	1.96	98.06	---	PASS
	Ant2	5500	1.92	1.96	98.00	---	PASS
	Ant1	5580	1.92	1.96	98.06	---	PASS
	Ant2	5580	1.92	1.96	98.00	---	PASS
	Ant1	5700	1.92	1.96	98.06	---	PASS
	Ant2	5700	1.92	1.96	98.06	---	PASS
	Ant1	5745	1.92	1.96	98.06	---	PASS
	Ant2	5745	1.92	1.96	98.06	---	PASS
	Ant1	5785	1.92	1.96	98.06	---	PASS
	Ant2	5785	1.92	1.96	98.06	---	PASS
	Ant1	5825	1.92	1.96	98.06	---	PASS
	Ant2	5825	1.92	1.96	98.06	---	PASS
11N40SISO	Ant1	5190	0.95	0.98	96.14	---	PASS
	Ant2	5190	0.95	0.98	96.14	---	PASS
	Ant1	5230	0.95	0.98	96.27	---	PASS
	Ant2	5230	0.95	0.98	96.26	---	PASS
	Ant1	5270	0.95	0.98	96.14	---	PASS
	Ant2	5270	0.95	0.98	96.14	---	PASS
	Ant1	5310	0.95	0.98	96.26	---	PASS
	Ant2	5310	0.95	0.98	96.27	---	PASS
	Ant1	5510	0.95	0.98	96.26	---	PASS
	Ant2	5510	0.95	0.98	96.14	---	PASS
	Ant1	5550	0.95	0.98	96.26	---	PASS

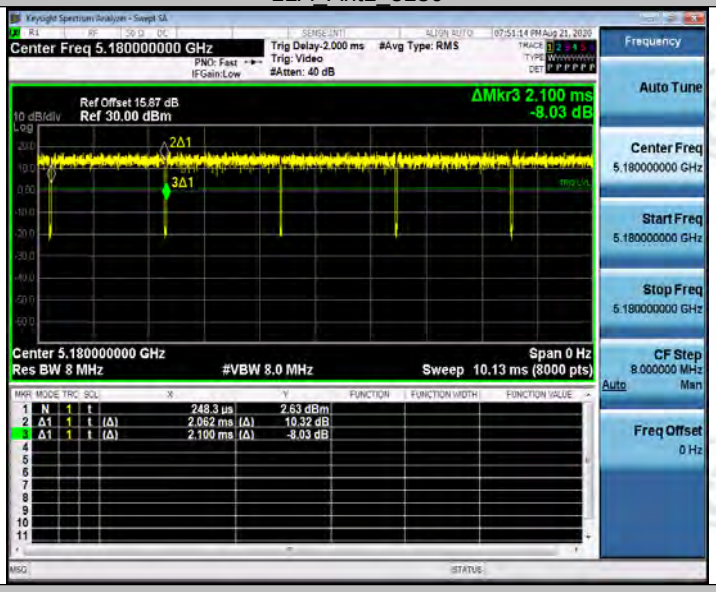
	Ant2	5550	0.95	0.98	96.14	---	PASS
	Ant1	5670	0.95	0.98	96.26	---	PASS
	Ant2	5670	0.95	0.98	96.14	---	PASS
	Ant1	5755	0.95	0.98	96.27	---	PASS
	Ant2	5755	0.95	0.98	96.14	---	PASS
	Ant1	5795	0.95	0.98	96.27	---	PASS
	Ant2	5795	0.95	0.98	96.27	---	PASS
11AC20SISO	Ant1	5180	1.93	1.97	98.07	---	PASS
	Ant2	5180	1.93	1.97	98.07	---	PASS
	Ant1	5200	1.93	1.97	98.07	---	PASS
	Ant2	5200	1.93	1.97	98.07	---	PASS
	Ant1	5240	1.93	1.97	98.07	---	PASS
	Ant2	5240	1.93	1.97	98.07	---	PASS
	Ant1	5260	1.93	1.97	98.07	---	PASS
	Ant2	5260	1.93	1.97	98.07	---	PASS
	Ant1	5280	1.93	1.97	98.07	---	PASS
	Ant2	5280	1.93	1.97	98.07	---	PASS
	Ant1	5320	1.93	1.97	98.07	---	PASS
	Ant2	5320	1.93	1.97	98.07	---	PASS
	Ant1	5500	1.93	1.97	98.01	---	PASS
	Ant2	5500	1.93	1.97	98.01	---	PASS
	Ant1	5580	1.93	1.97	98.07	---	PASS
	Ant2	5580	1.93	1.97	98.01	---	PASS
	Ant1	5700	1.93	1.97	98.01	---	PASS
	Ant2	5700	1.93	1.97	98.07	---	PASS
	Ant1	5745	1.93	1.97	98.07	---	PASS
	Ant2	5745	1.93	1.97	98.01	---	PASS
	Ant1	5785	1.93	1.97	98.07	---	PASS
	Ant2	5785	1.93	1.97	98.07	---	PASS
	Ant1	5825	1.93	1.97	98.07	---	PASS
	Ant2	5825	1.93	1.97	98.07	---	PASS
11AC40SISO	Ant1	5190	0.95	0.99	96.15	---	PASS
	Ant2	5190	0.95	0.99	96.15	---	PASS
	Ant1	5230	0.95	0.99	96.15	---	PASS
	Ant2	5230	0.95	0.99	96.15	---	PASS
	Ant1	5270	0.95	0.99	96.15	---	PASS

	Ant2	5270	0.95	0.99	96.15	---	PASS
	Ant1	5310	0.95	0.99	96.15	---	PASS
	Ant2	5310	0.95	0.99	96.28	---	PASS
	Ant1	5510	0.95	0.99	96.15	---	PASS
	Ant2	5510	0.95	0.99	96.15	---	PASS
	Ant1	5550	0.95	0.99	96.28	---	PASS
	Ant2	5550	0.95	0.99	96.28	---	PASS
	Ant1	5670	0.95	0.99	96.28	---	PASS
	Ant2	5670	0.95	0.99	96.28	---	PASS
	Ant1	5755	0.95	0.99	96.28	---	PASS
	Ant2	5755	0.95	0.99	96.28	---	PASS
	Ant1	5795	0.95	0.99	96.28	---	PASS
	Ant2	5795	0.95	0.99	96.28	---	PASS
11AC80SISO	Ant1	5210	0.46	0.50	92.41	---	PASS
	Ant2	5210	0.46	0.50	92.41	---	PASS
	Ant1	5290	0.46	0.50	92.66	---	PASS
	Ant2	5290	0.46	0.50	92.41	---	PASS
	Ant1	5530	0.46	0.50	92.64	---	PASS
	Ant2	5530	0.46	0.50	92.39	---	PASS
	Ant1	5610	0.46	0.50	92.41	---	PASS
	Ant2	5610	0.46	0.50	92.39	---	PASS
	Ant1	5775	0.46	0.50	92.41	---	PASS
	Ant2	5775	0.46	0.50	92.41	---	PASS
11N20MIMO	Ant1	5180	0.98	1.02	96.28	---	PASS
	Ant2	5180	0.98	1.02	96.15	---	PASS
	Ant1	5200	0.98	1.02	96.28	---	PASS
	Ant2	5200	0.98	1.02	96.28	---	PASS
	Ant1	5745	0.98	1.02	96.28	---	PASS
	Ant2	5745	0.98	1.02	96.28	---	PASS
	Ant1	5785	0.98	1.02	96.28	---	PASS
	Ant2	5785	0.98	1.02	96.15	---	PASS
	Ant1	5825	0.98	1.02	96.28	---	PASS
	Ant2	5825	0.98	1.02	96.28	---	PASS
11N40MIMO	Ant1	5190	0.50	0.53	93.10	---	PASS
	Ant2	5190	0.50	0.53	93.10	---	PASS
	Ant1	5230	0.50	0.53	93.10	---	PASS

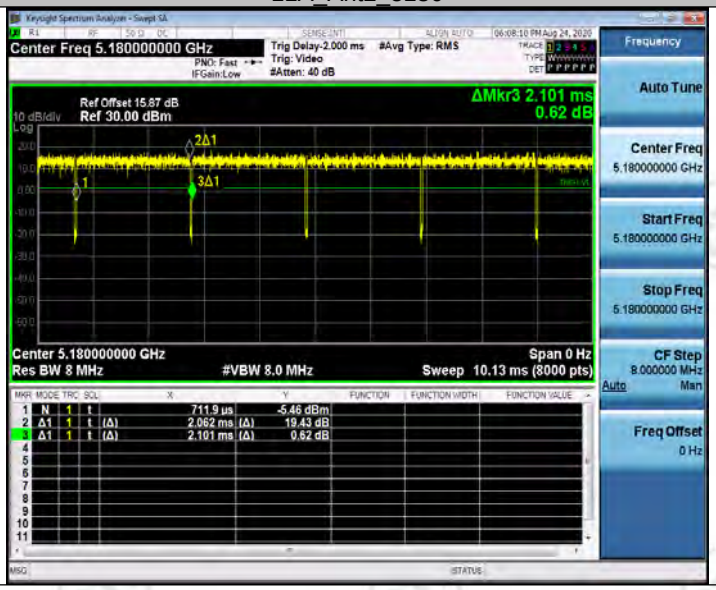
	Ant2	5230	0.50	0.53	93.10	---	PASS
	Ant1	5270	0.50	0.53	93.10	---	PASS
	Ant2	5270	0.50	0.53	93.10	---	PASS
	Ant1	5310	0.50	0.53	93.10	---	PASS
	Ant2	5310	0.50	0.53	93.10	---	PASS
	Ant1	5510	0.50	0.53	93.10	---	PASS
	Ant2	5510	0.49	0.53	92.86	---	PASS
	Ant1	5550	0.50	0.53	93.10	---	PASS
	Ant2	5550	0.50	0.53	93.10	---	PASS
	Ant1	5670	0.49	0.53	92.86	---	PASS
	Ant2	5670	0.50	0.53	93.10	---	PASS
	Ant1	5755	0.49	0.53	92.86	---	PASS
	Ant2	5755	0.49	0.53	92.86	---	PASS
	Ant1	5795	0.00	0.03	-10.00	---	PASS
	Ant2	5795	0.50	0.53	93.10	---	PASS
11AC20MIMO	Ant1	5180	1.93	1.97	98.01	---	PASS
	Ant2	5180	1.93	1.97	98.07	---	PASS
	Ant1	5580	1.93	1.97	98.07	---	PASS
	Ant2	5580	1.93	1.97	98.07	---	PASS
	Ant1	5745	1.93	1.97	98.07	---	PASS
	Ant2	5745	1.93	1.97	98.01	---	PASS
	Ant1	5785	1.93	1.97	98.07	---	PASS
	Ant2	5785	1.93	1.97	98.07	---	PASS
	Ant1	5825	1.93	1.97	98.07	---	PASS
	Ant2	5825	1.93	1.97	98.07	---	PASS
11AC40MIMO	Ant1	5755	0.95	0.99	96.15	---	PASS
	Ant2	5755	0.95	0.99	96.15	---	PASS
	Ant1	5795	0.95	0.96	98.95	---	PASS
	Ant2	5795	0.95	0.99	96.16	---	PASS

Test Graphs

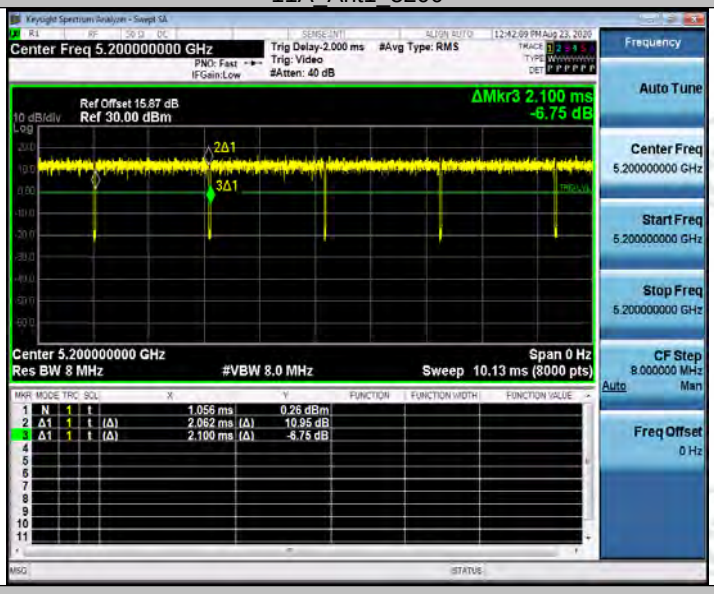
11A_Ant1_5180



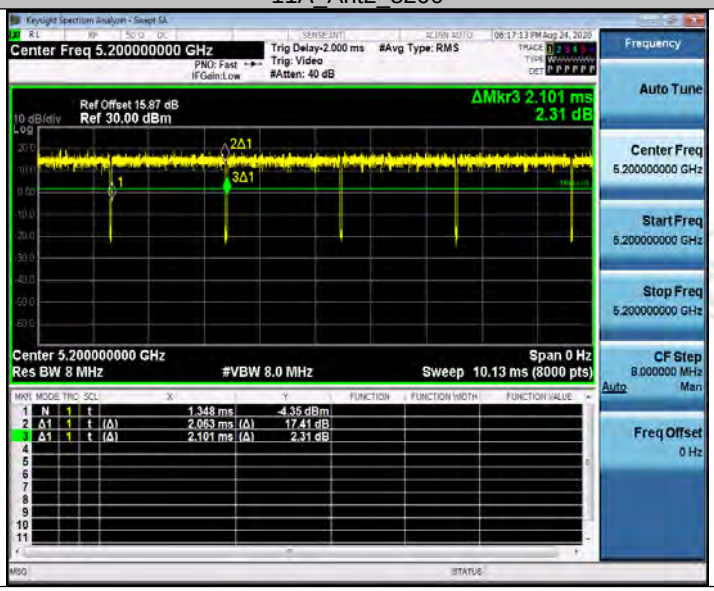
11A_Ant2_5180



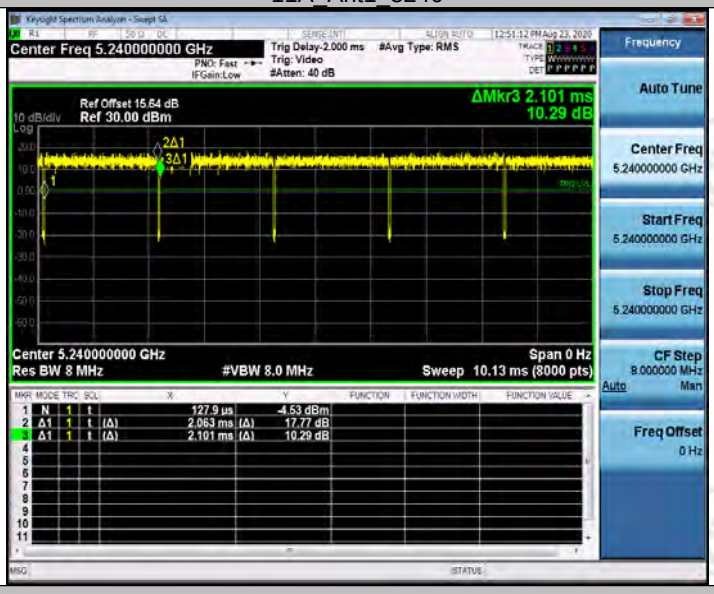
11A_Ant1_5200



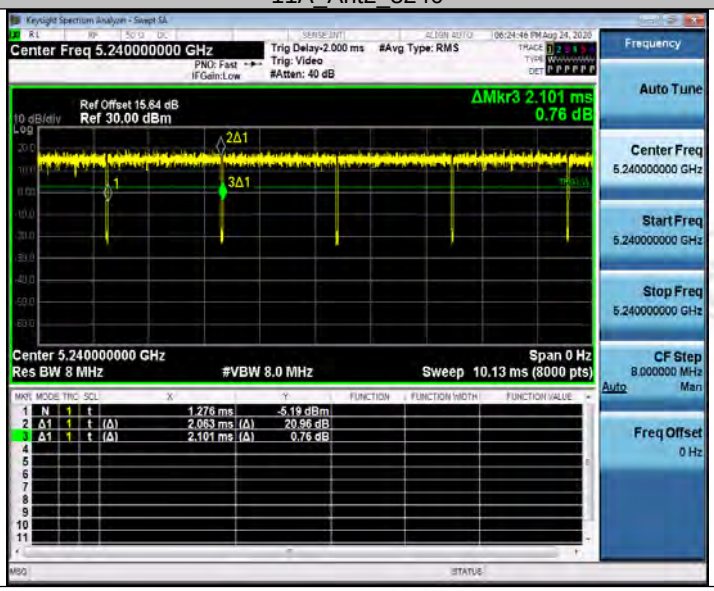
11A_Ant2_5200



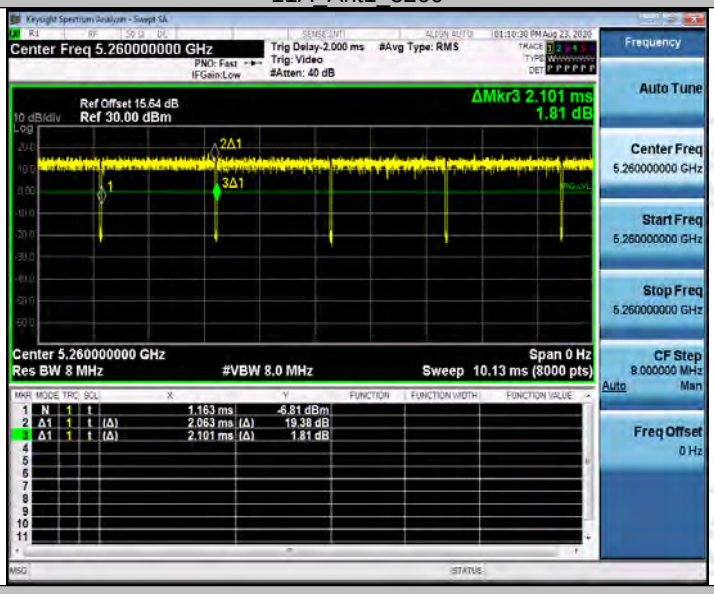
11A_Ant1_5240



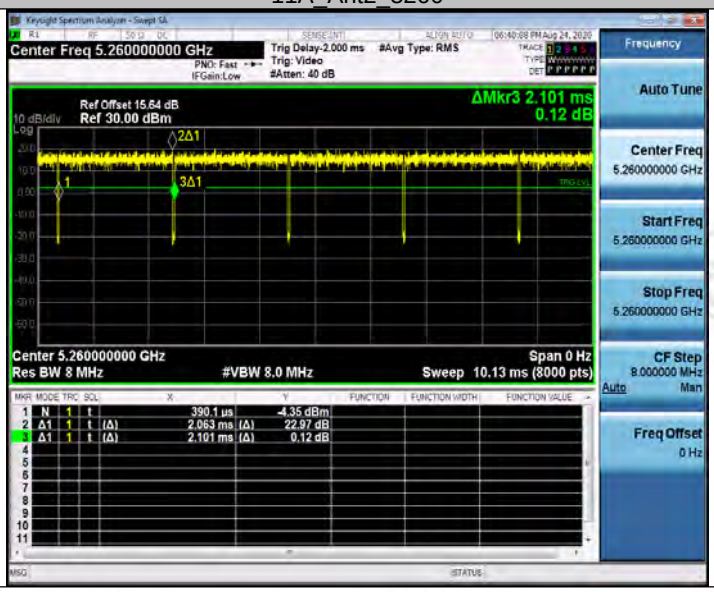
11A_Ant2_5240



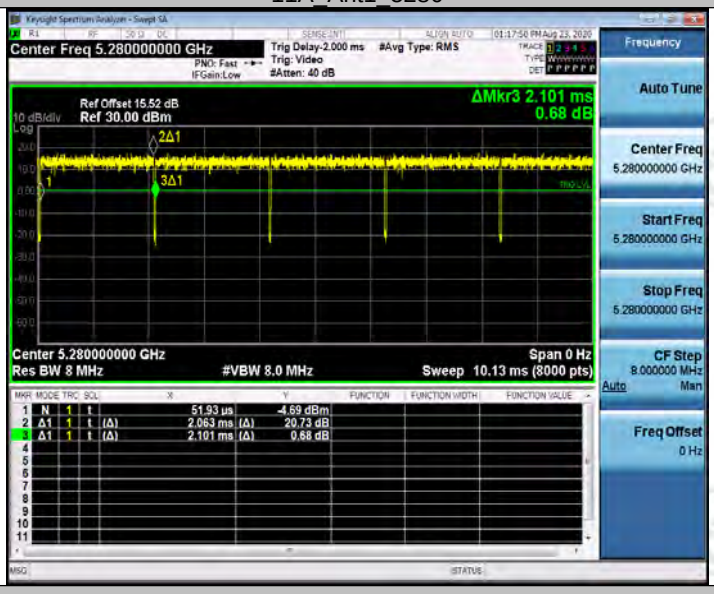
11A_Ant1_5260



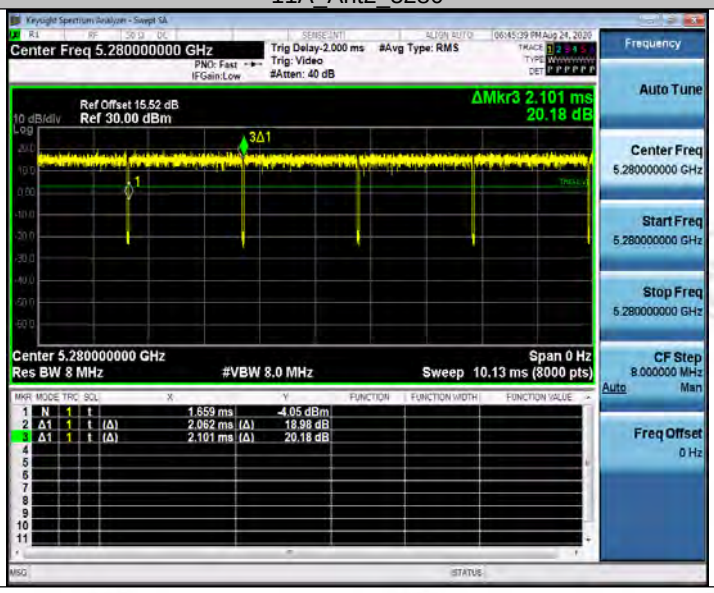
11A_Ant2_5260



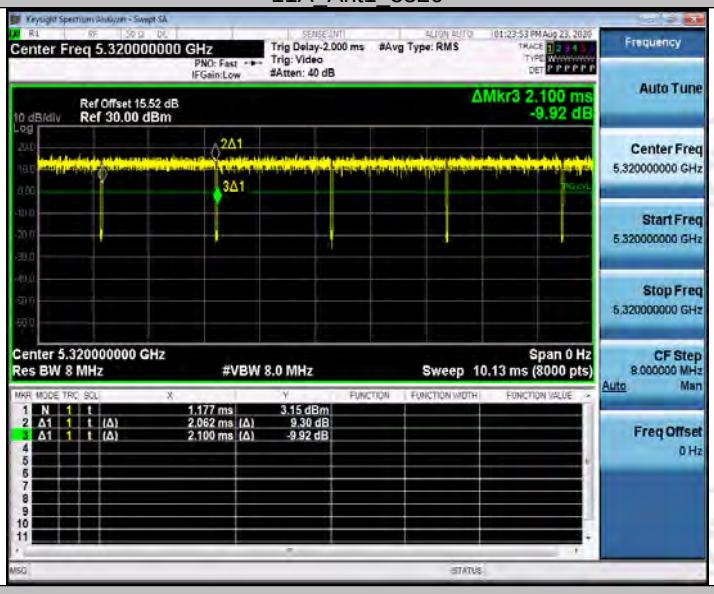
11A_Ant1_5280



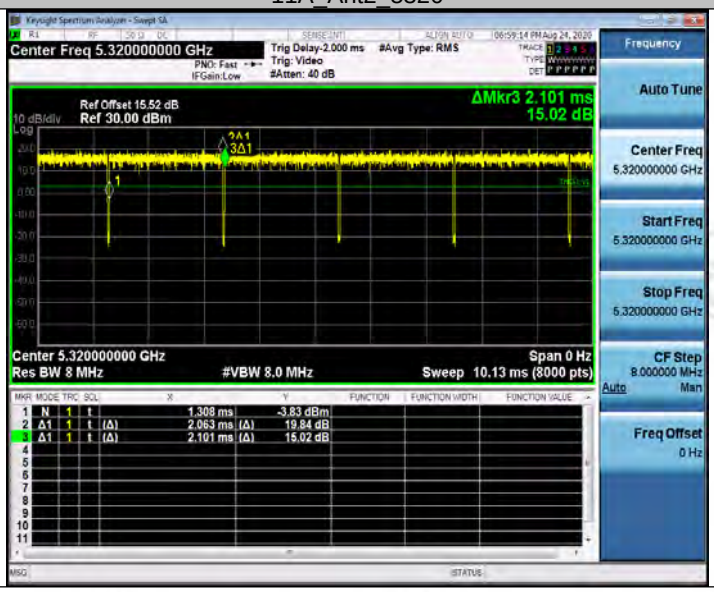
11A_Ant2_5280



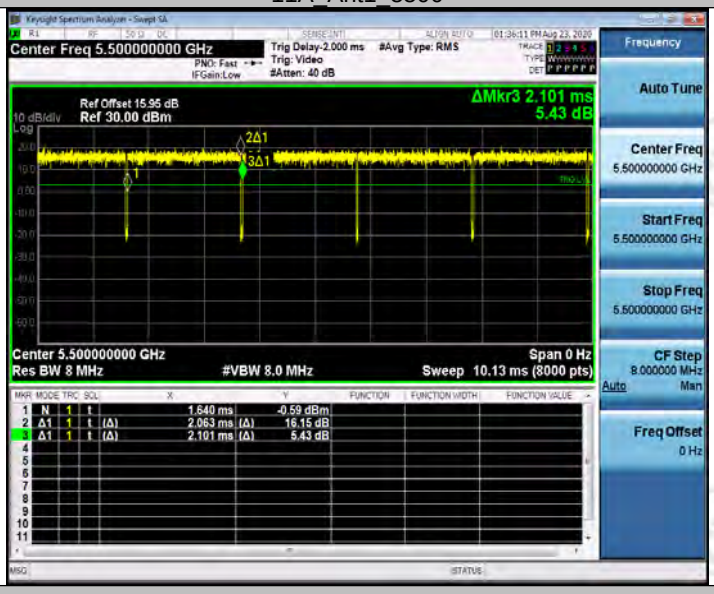
11A_Ant1_5320



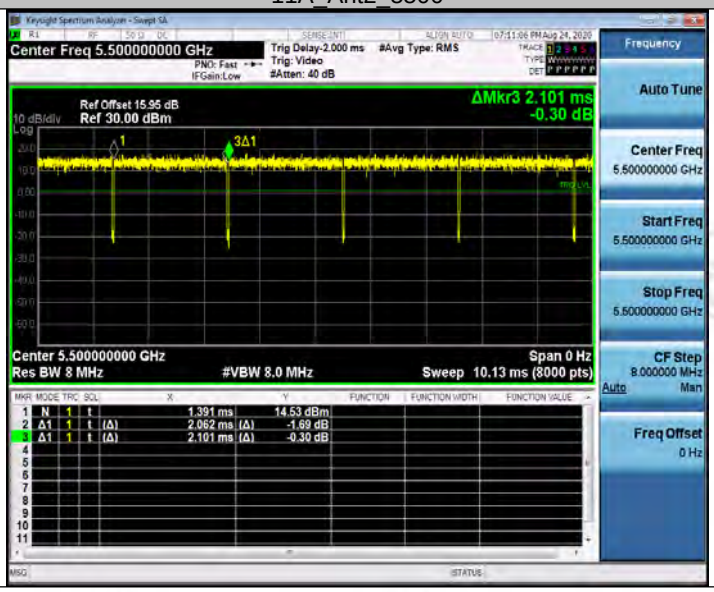
11A_Ant2_5320



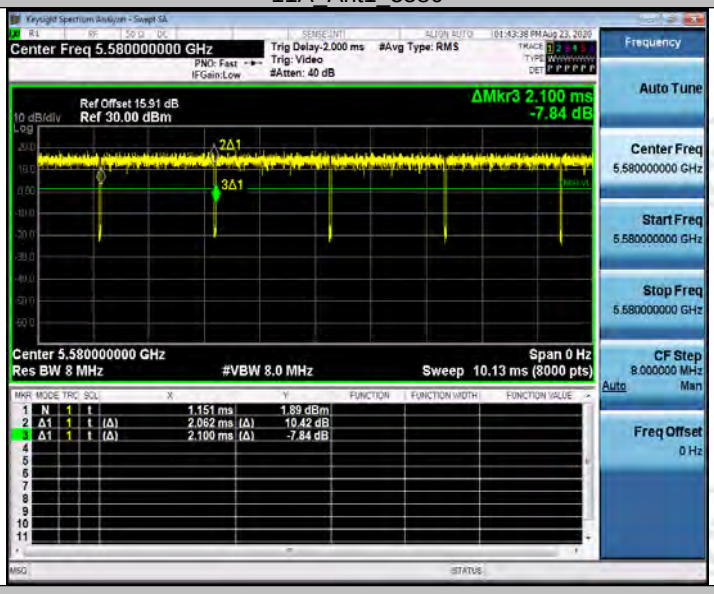
11A_Ant1_5500



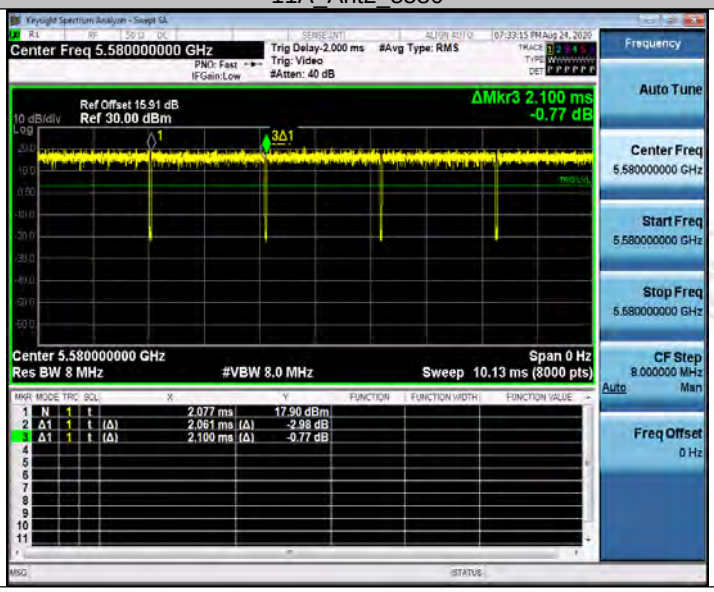
11A_Ant2_5500



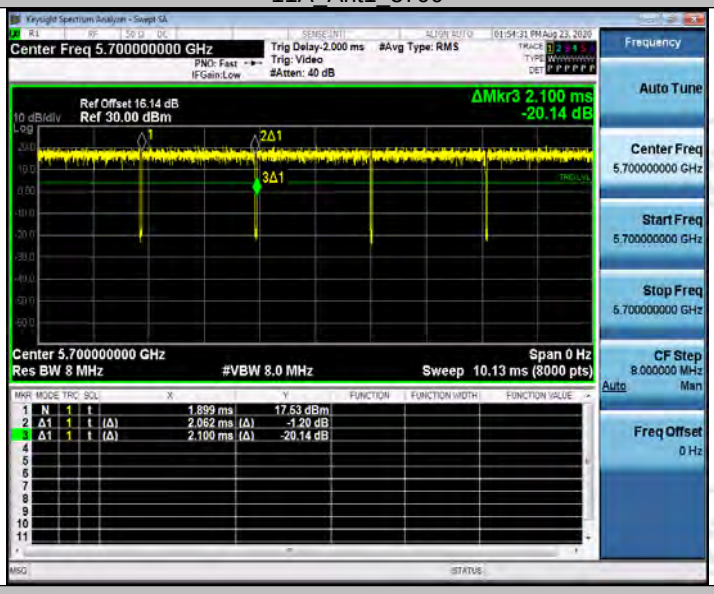
11A_Ant1_5580



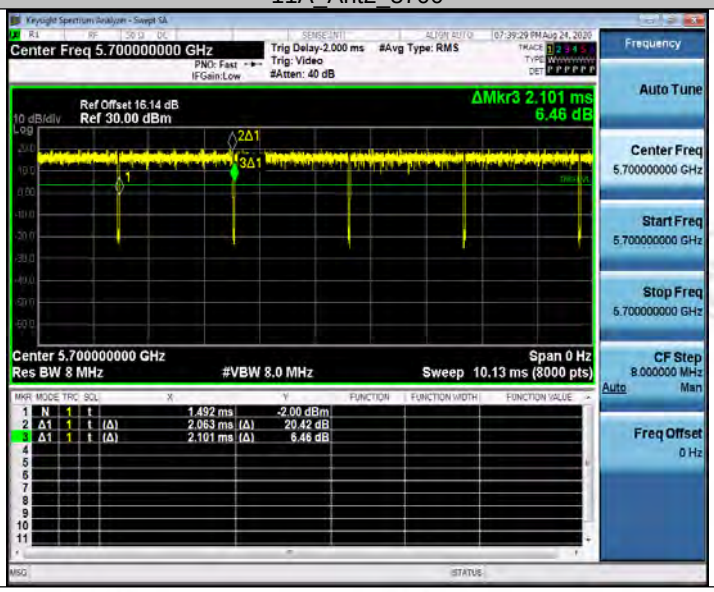
11A_Ant2_5580



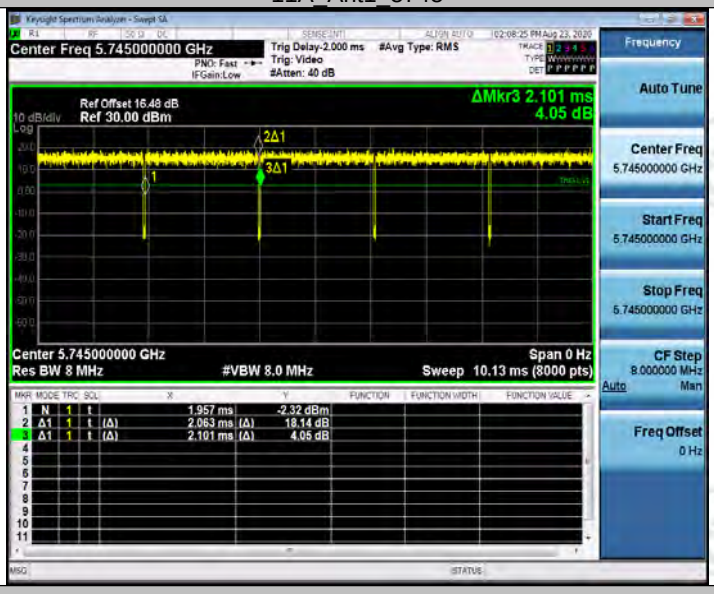
11A_Ant1_5700



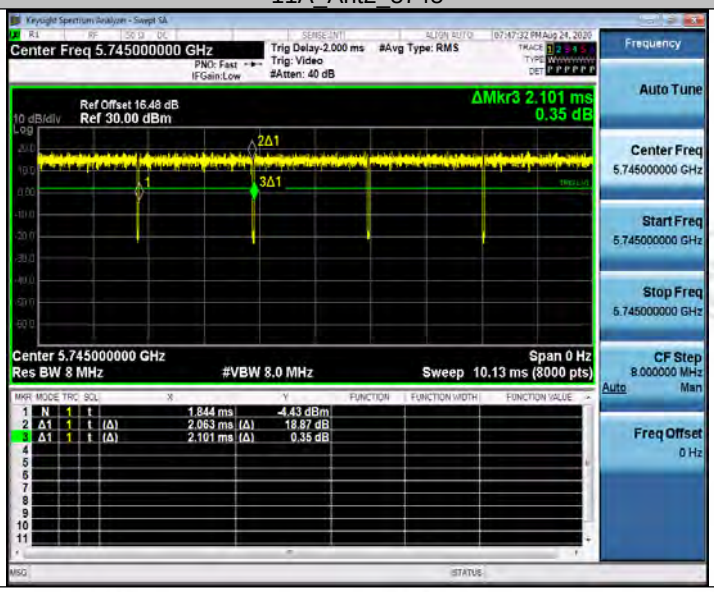
11A_Ant2_5700



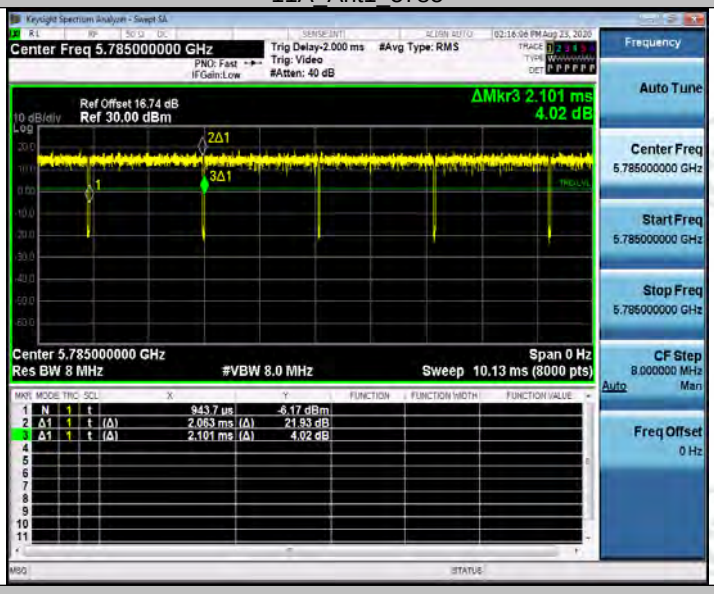
11A_Ant1_5745



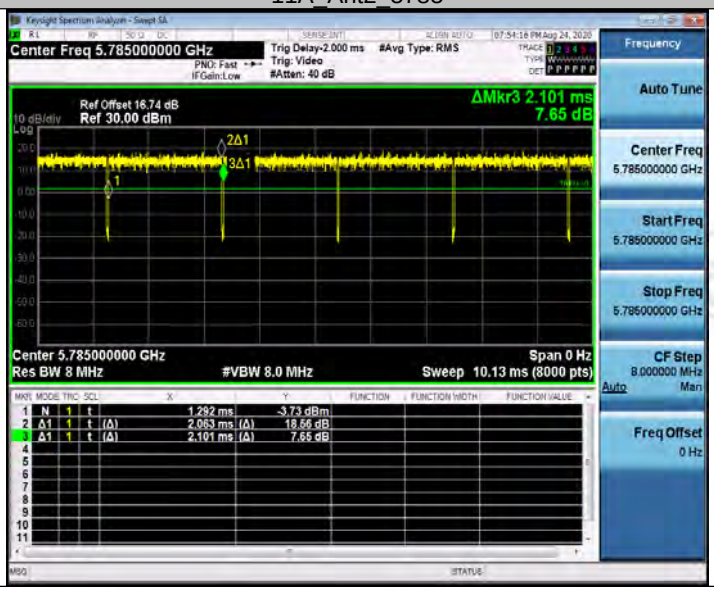
11A_Ant2_5745



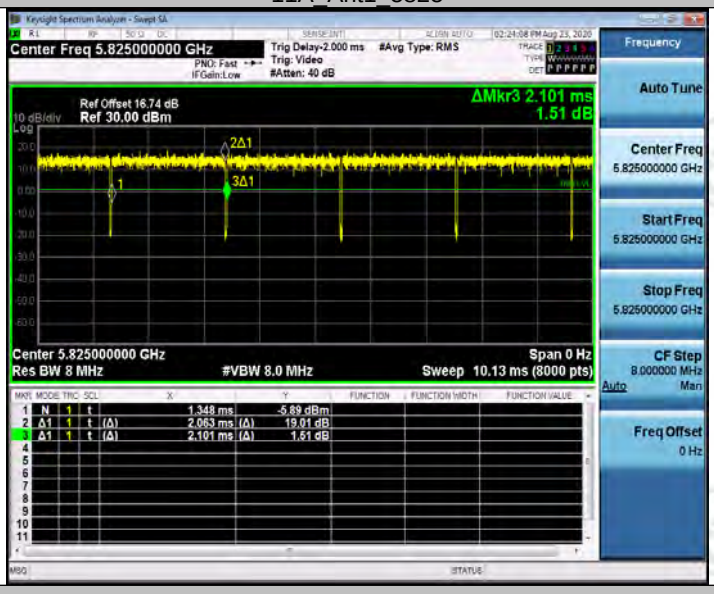
11A_Ant1_5785



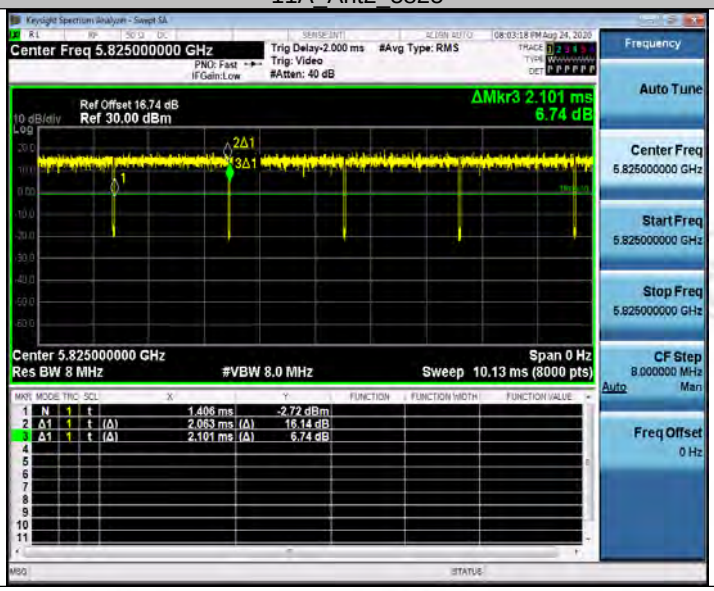
11A_Ant2_5785



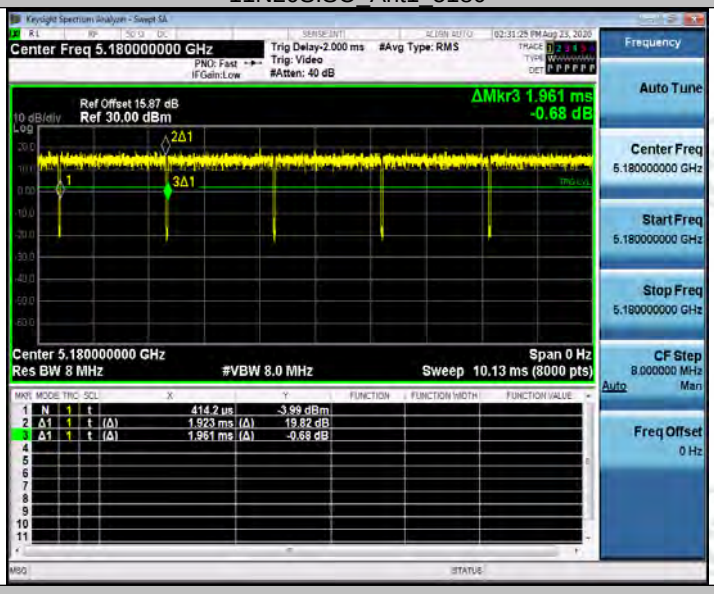
11A_Ant1_5825



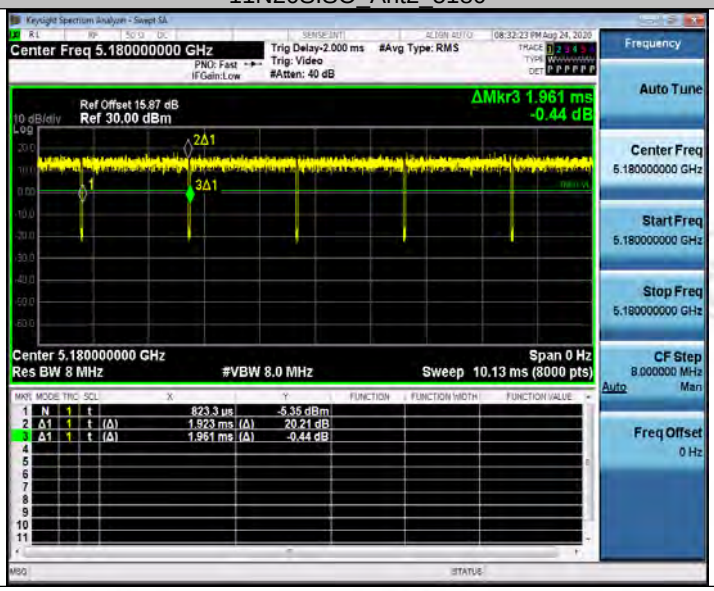
11A_Ant2_5825



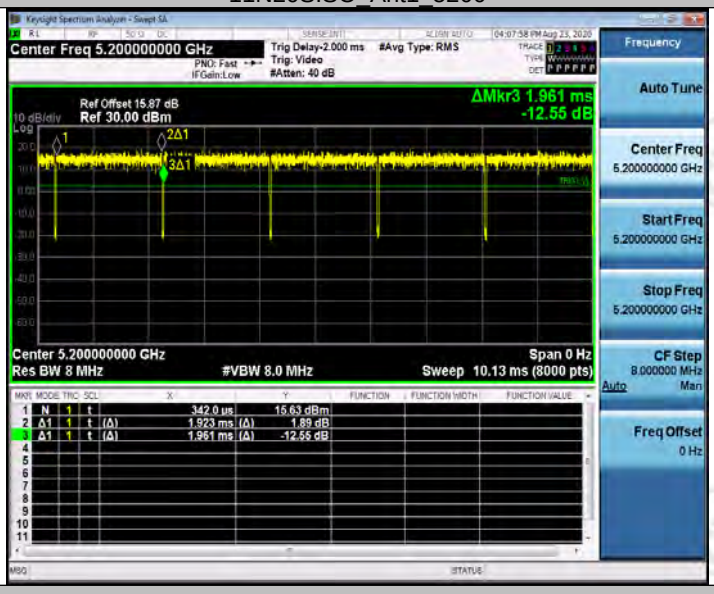
11N20SISO_Ant1_5180



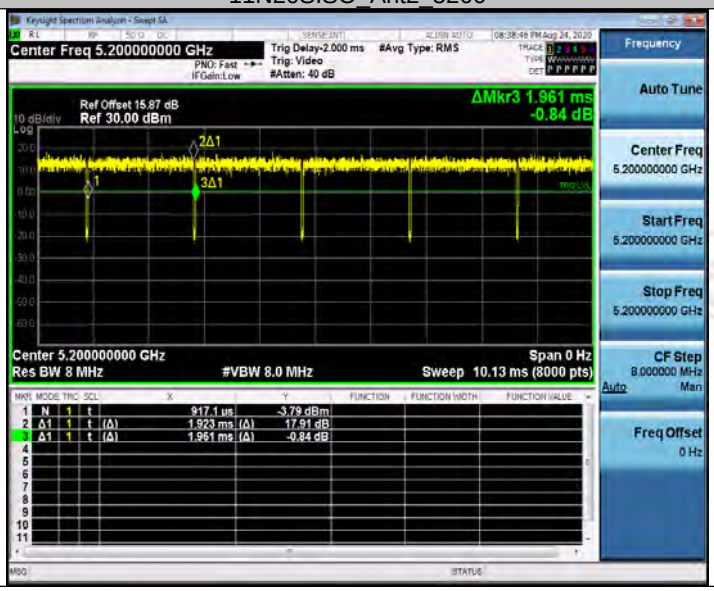
11N20SISO_Ant2_5180



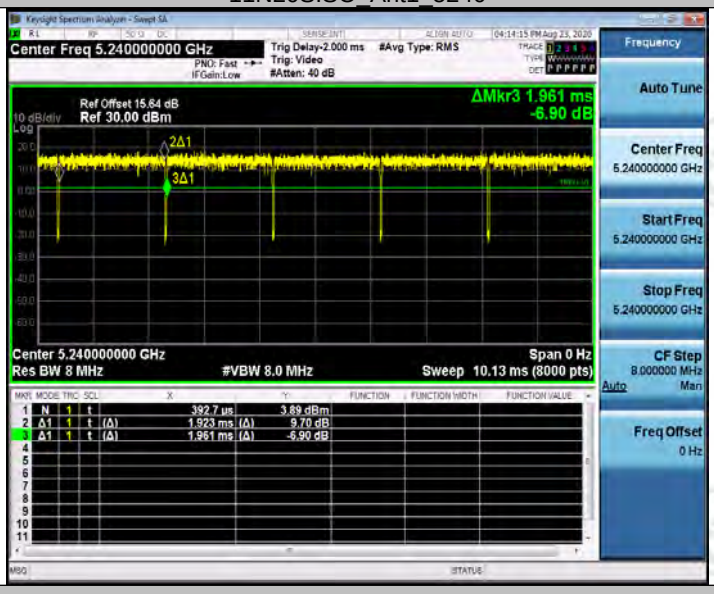
11N20SISO_Ant1_5200



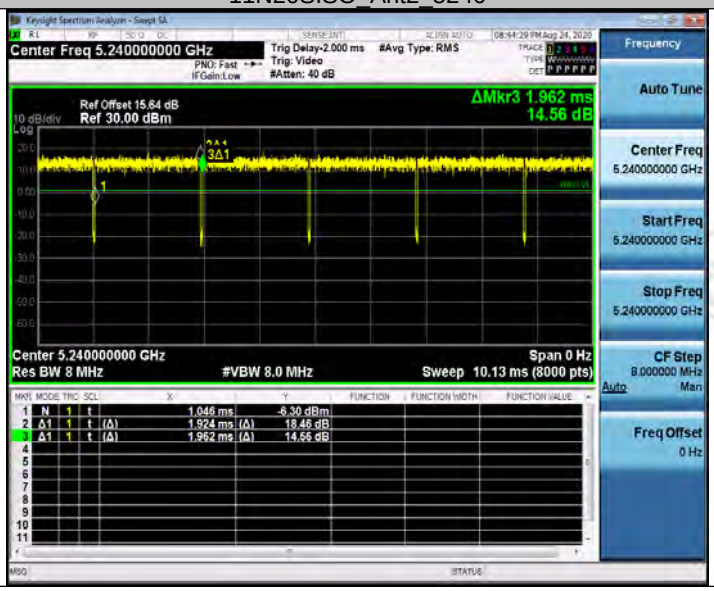
11N20SISO_Ant2_5200



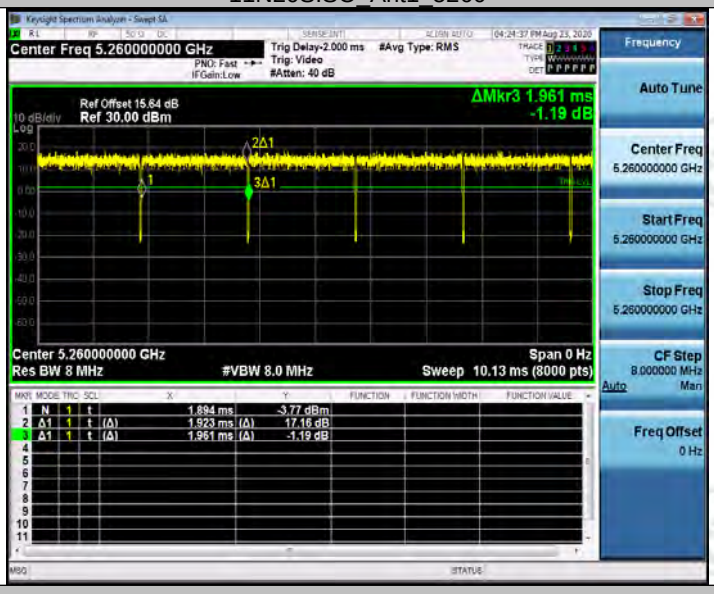
11N20SISO_Ant1_5240



11N20SISO_Ant2_5240



11N20SISO_Ant1_5260



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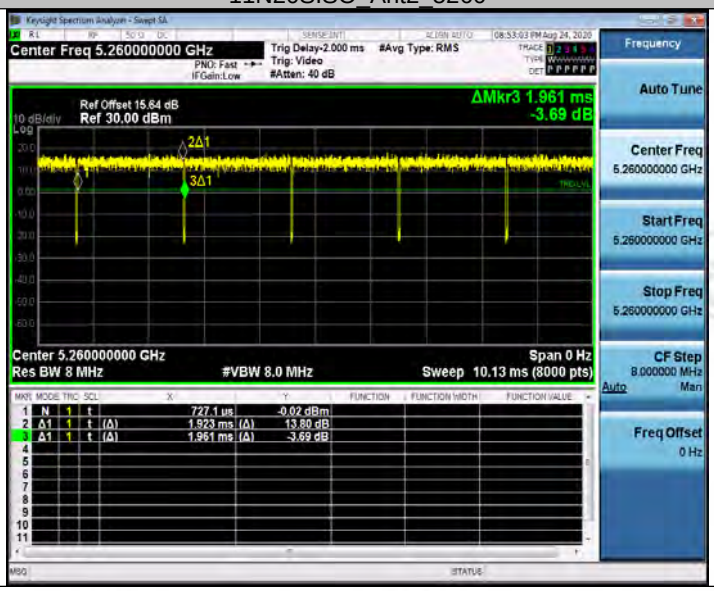
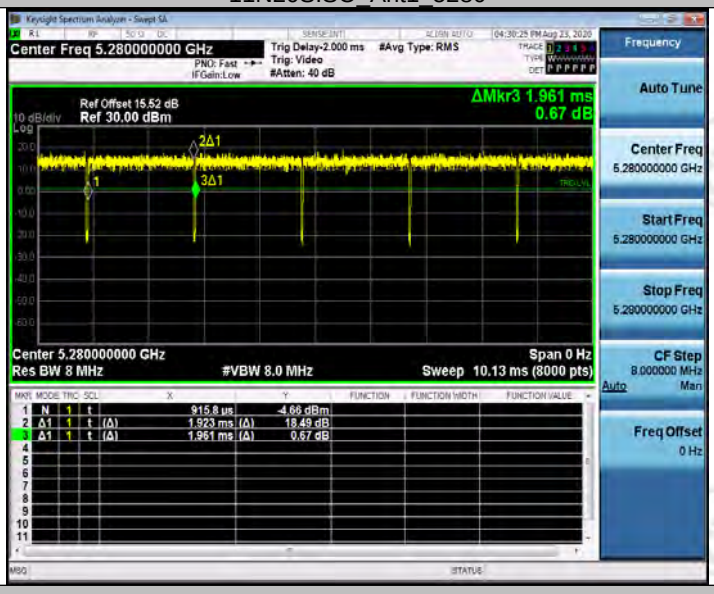
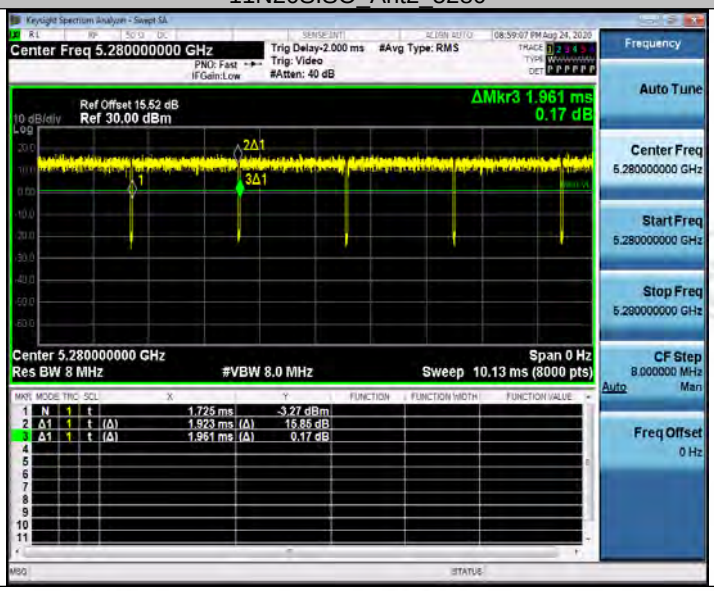


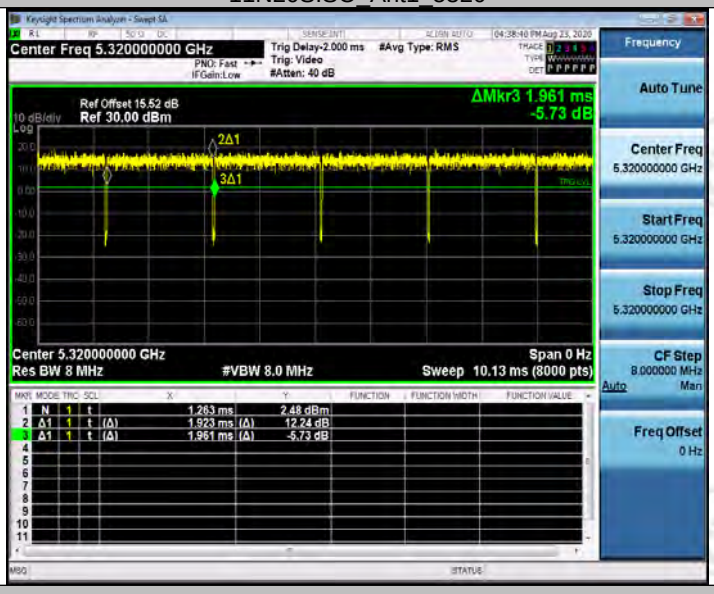
11N20SISO_Ant1_5280



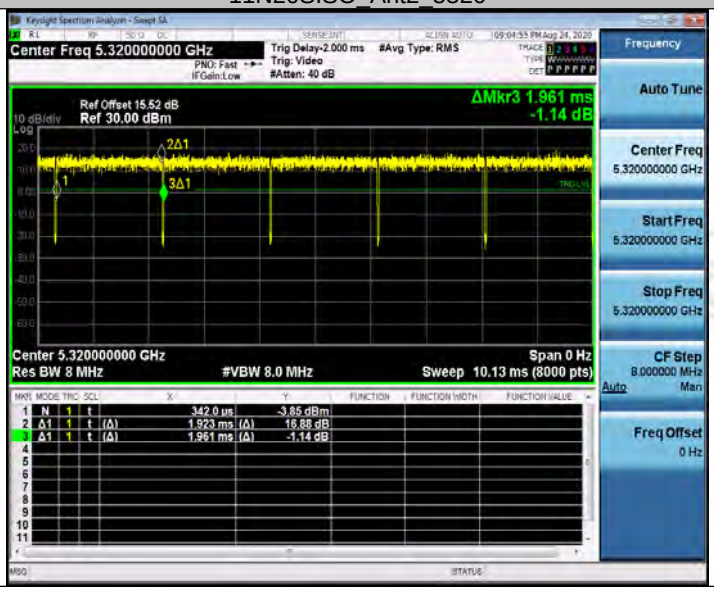
11N20SISO_Ant2_5280



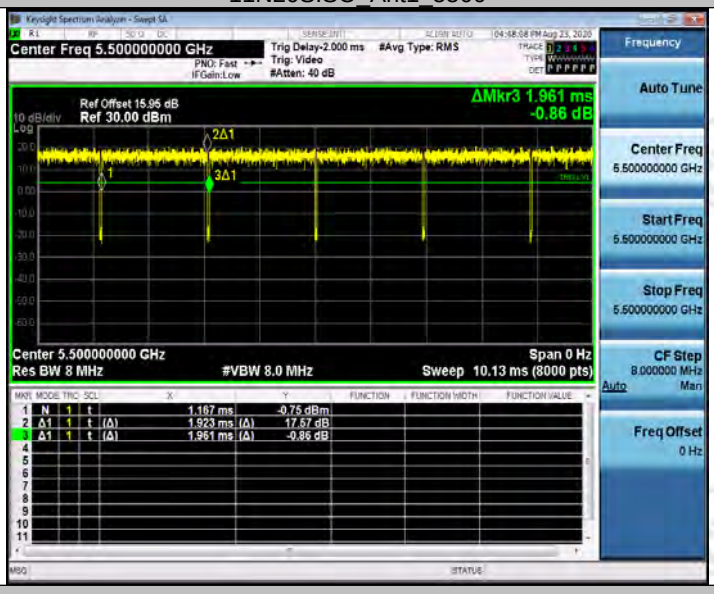
11N20SISO_Ant1_5320



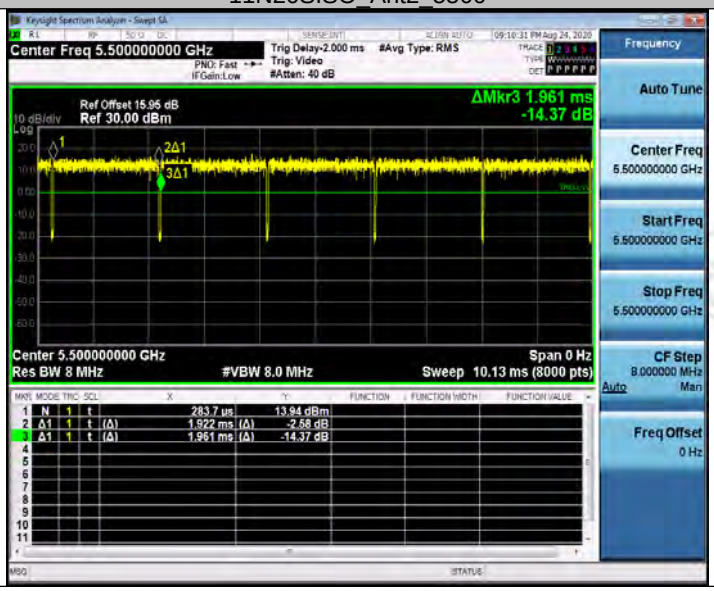
11N20SISO_Ant2_5320



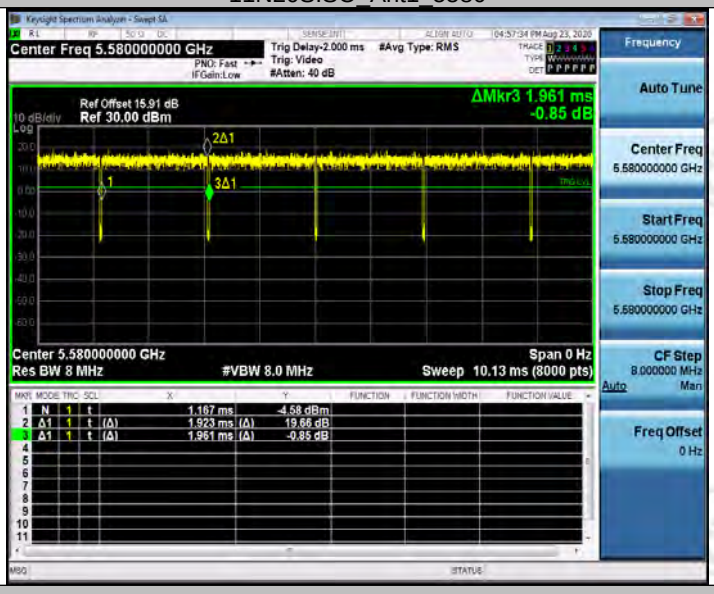
11N20SISO_Ant1_5500



11N20SISO_Ant2_5500



11N20SISO_Ant1_5580



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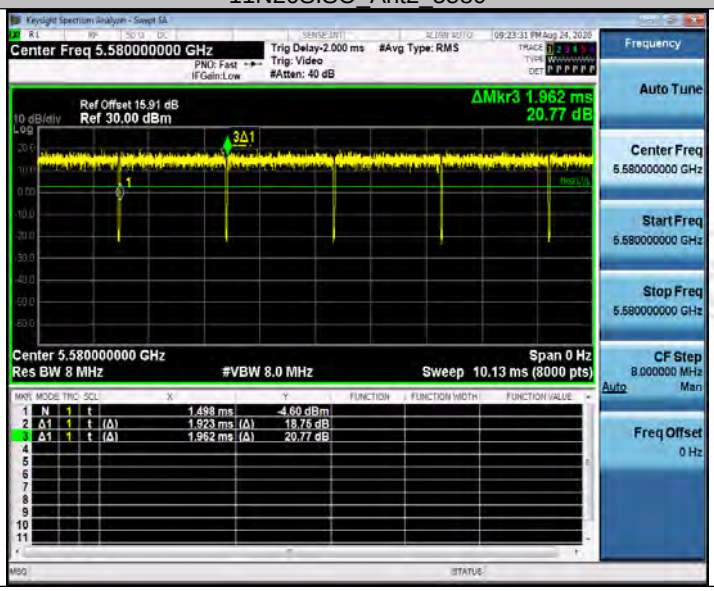

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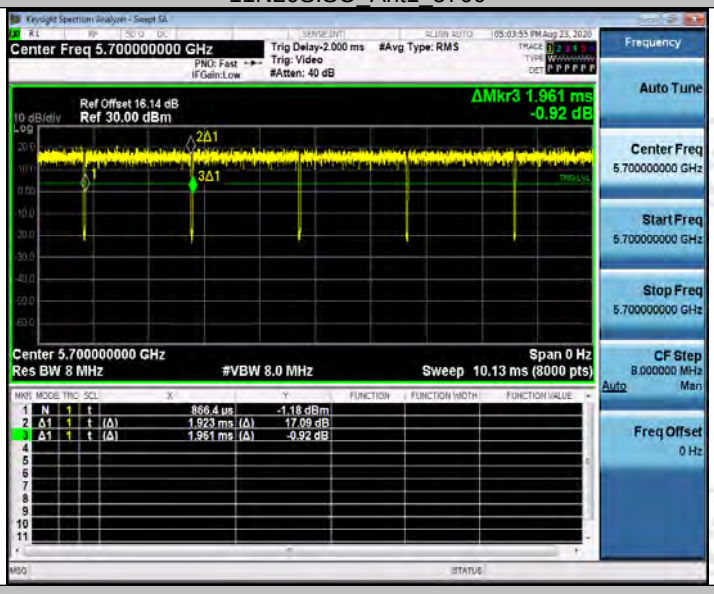

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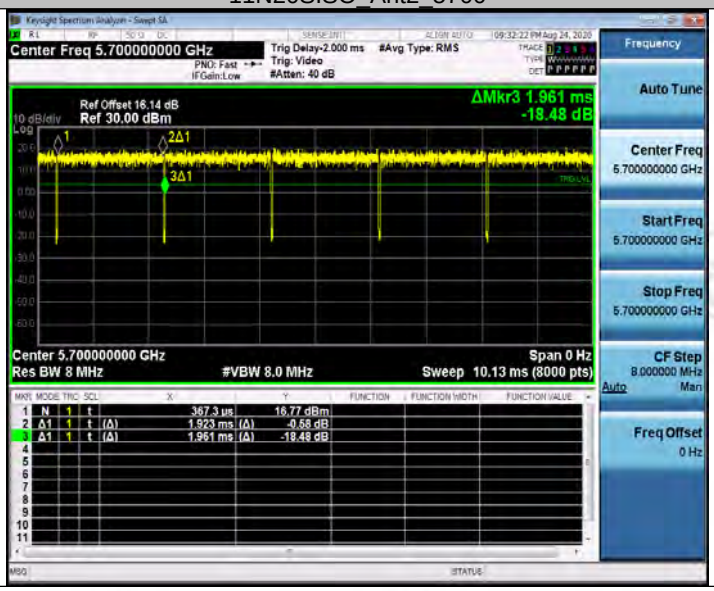

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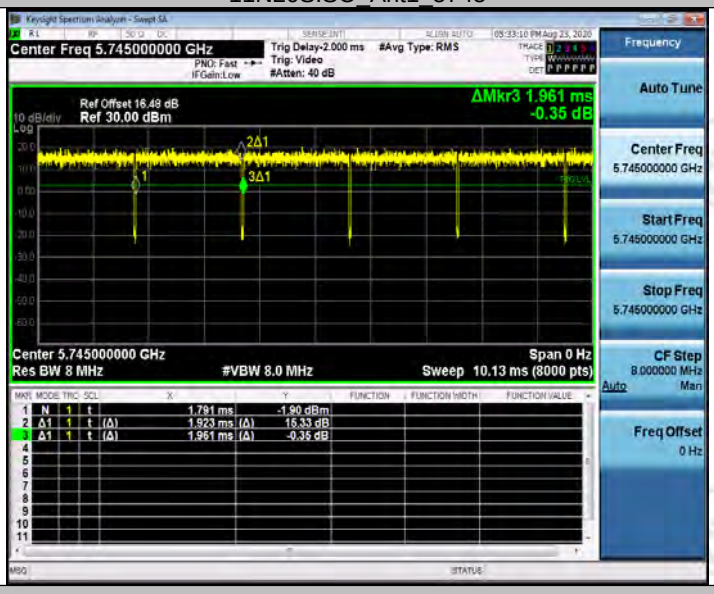

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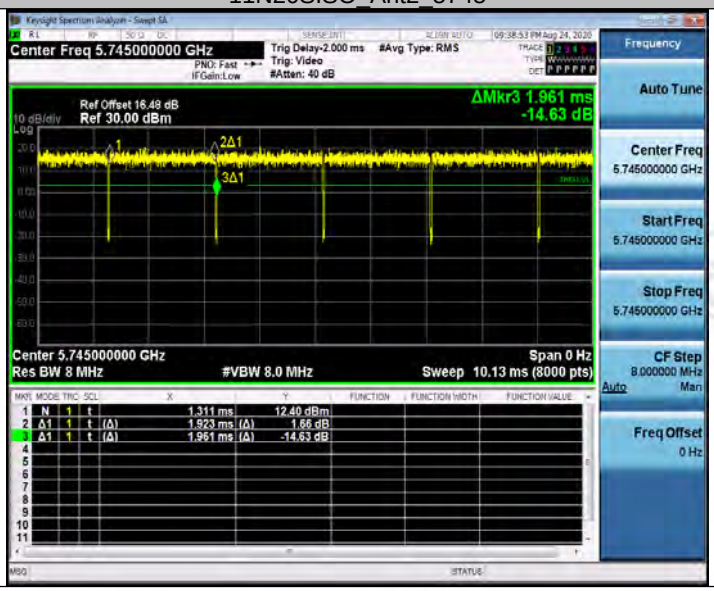

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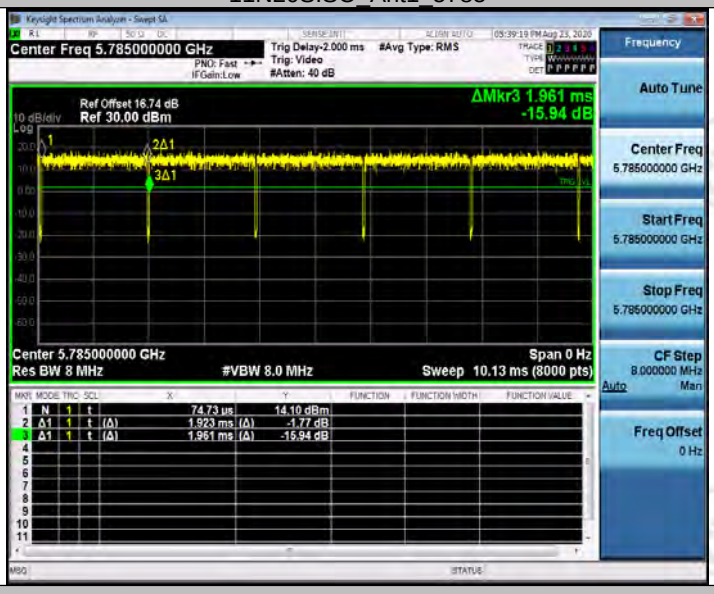

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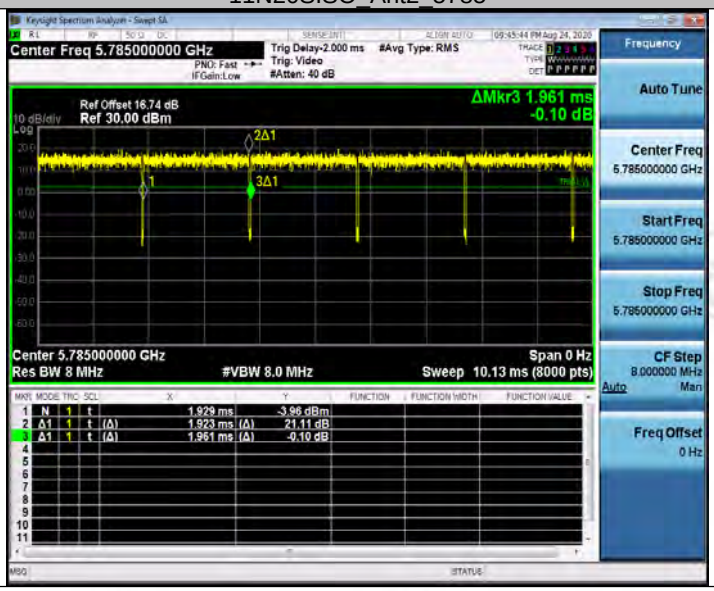

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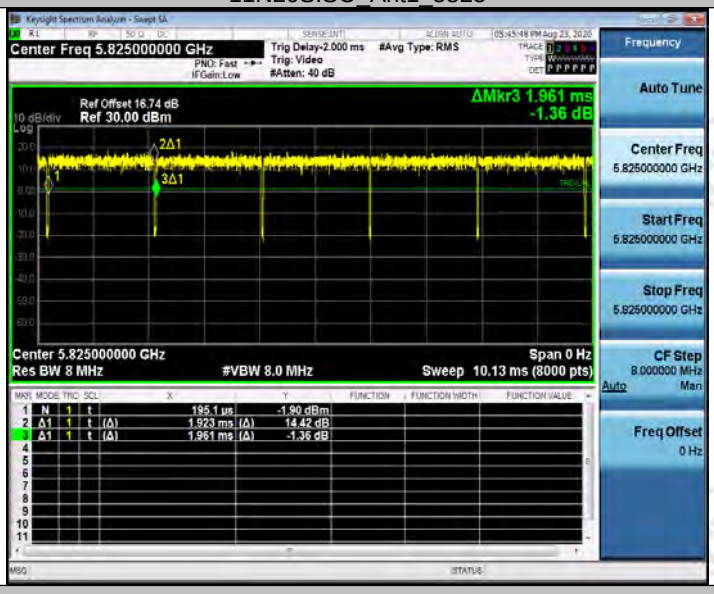

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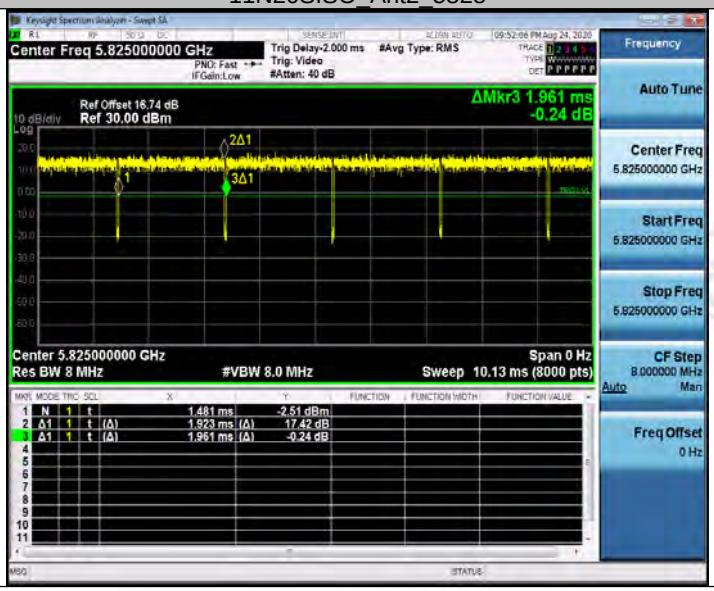

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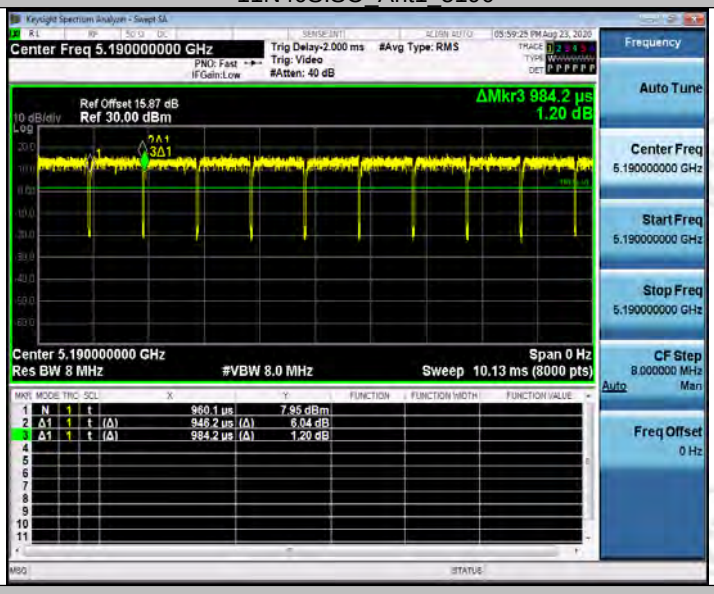

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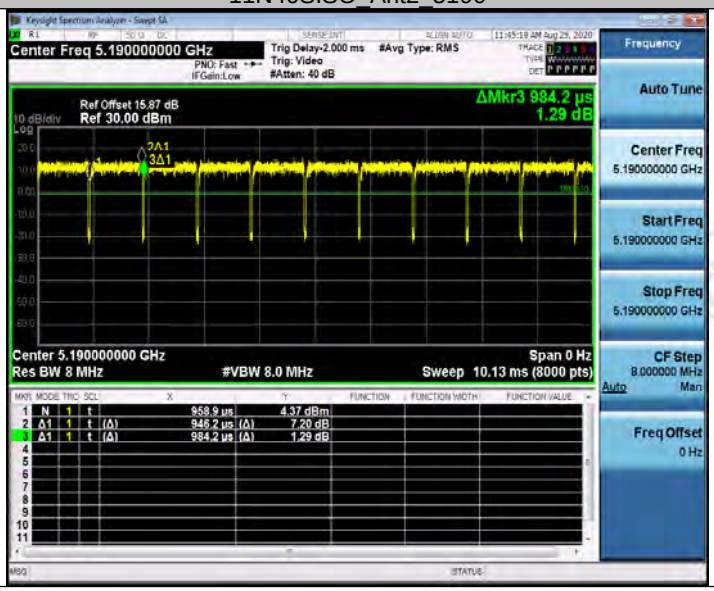

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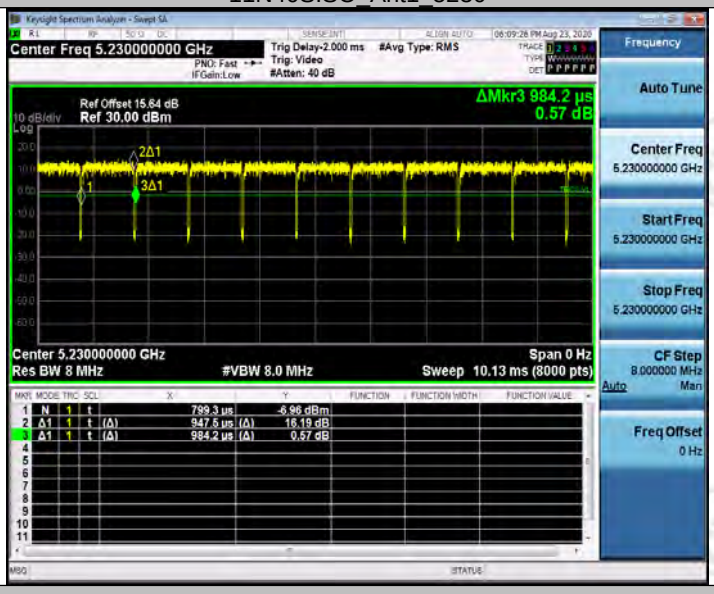

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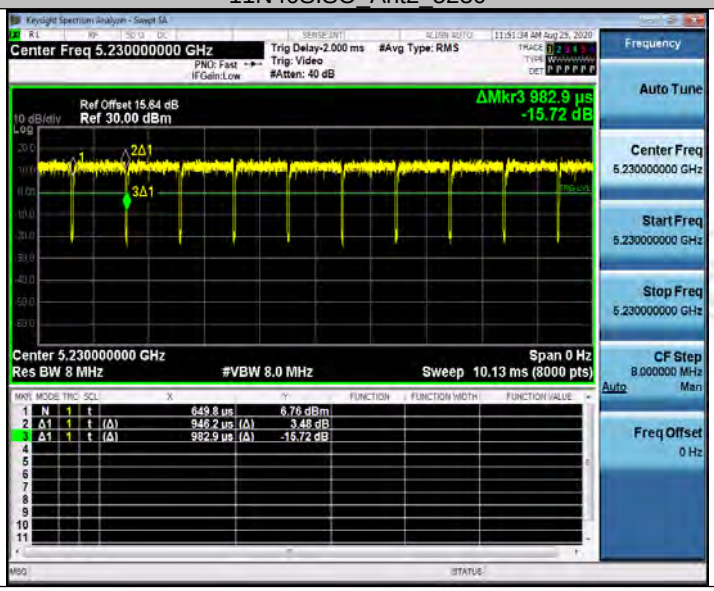

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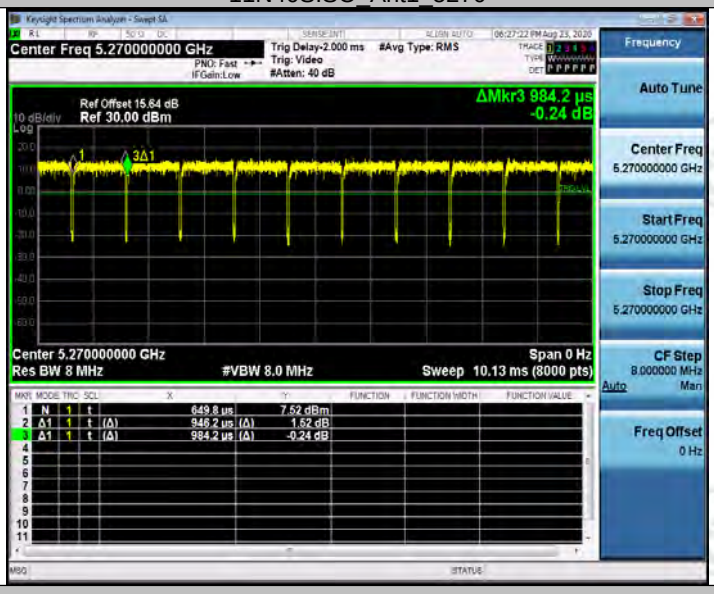

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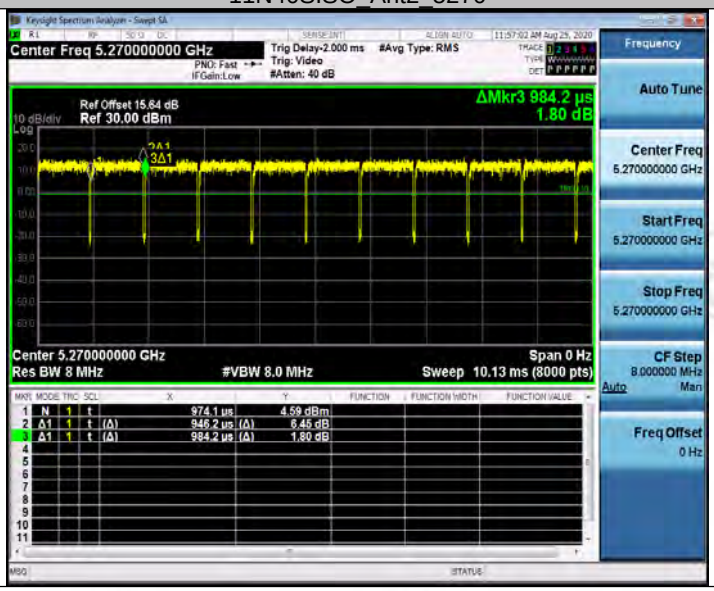

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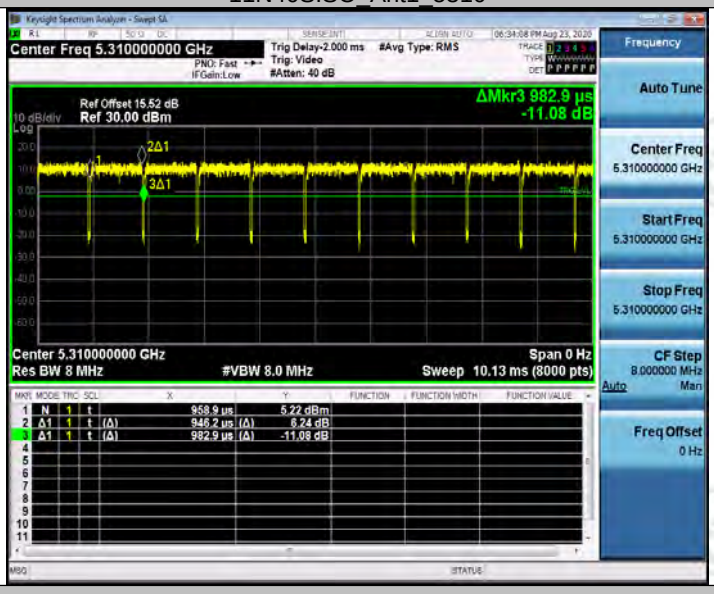

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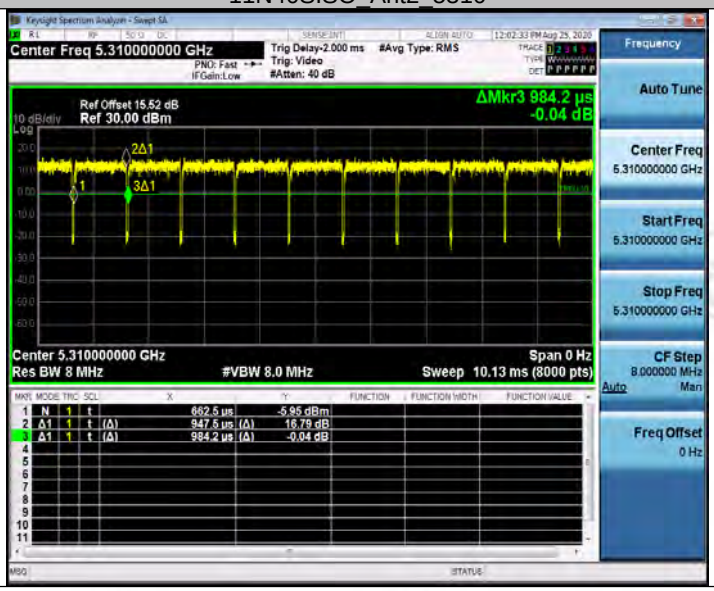

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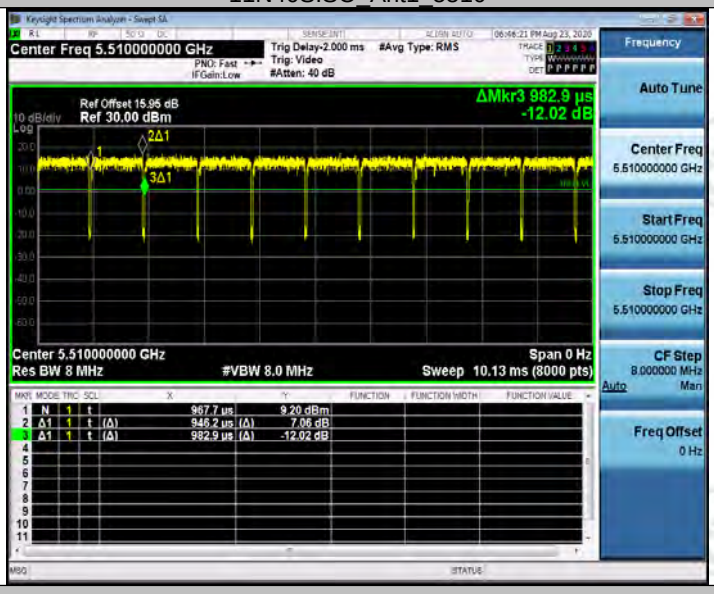

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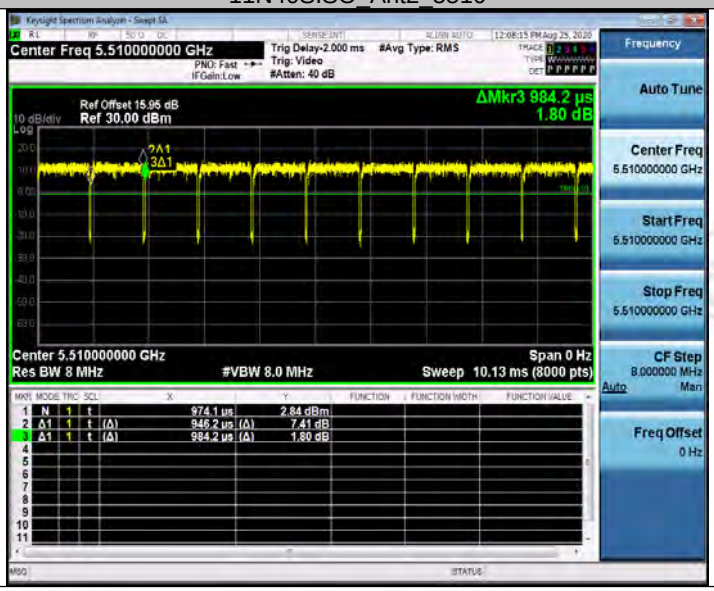

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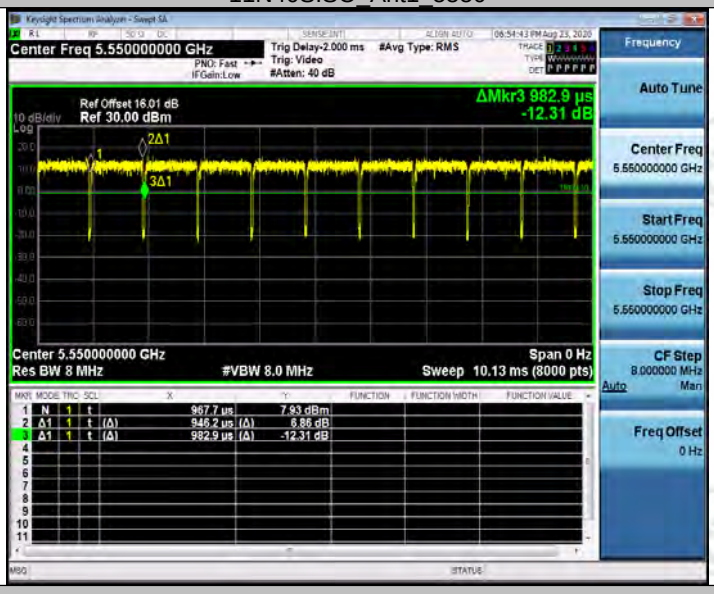

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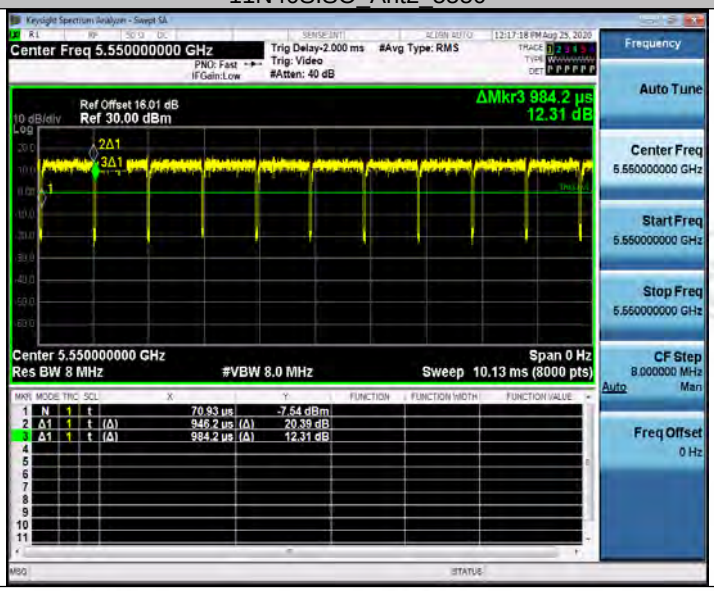

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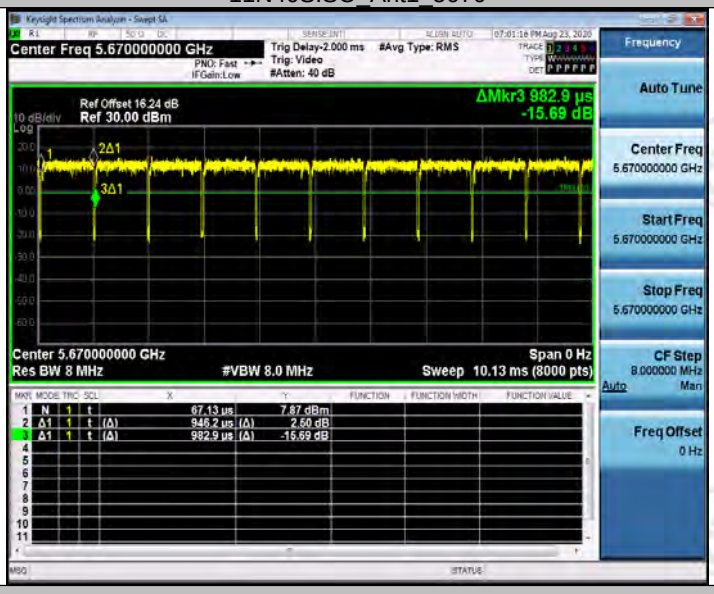

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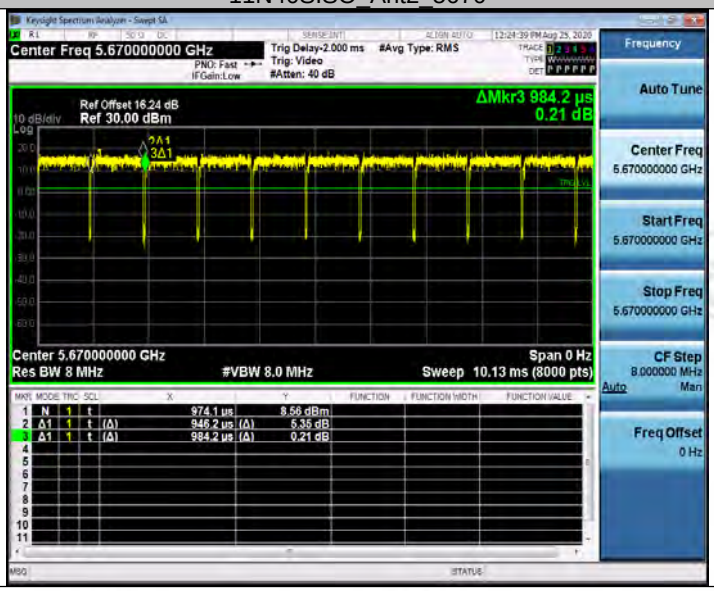

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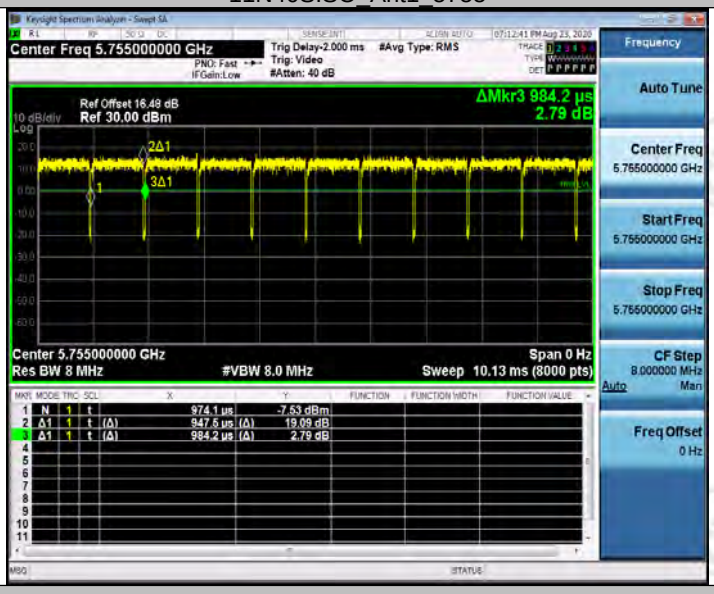

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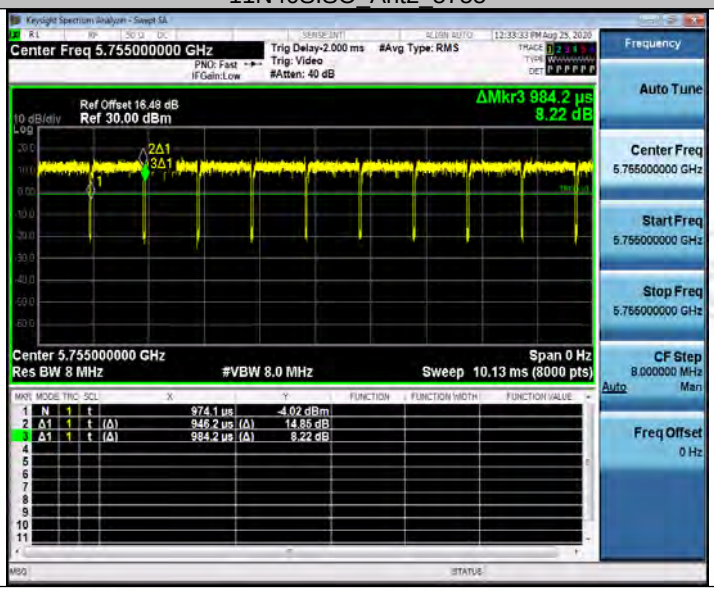

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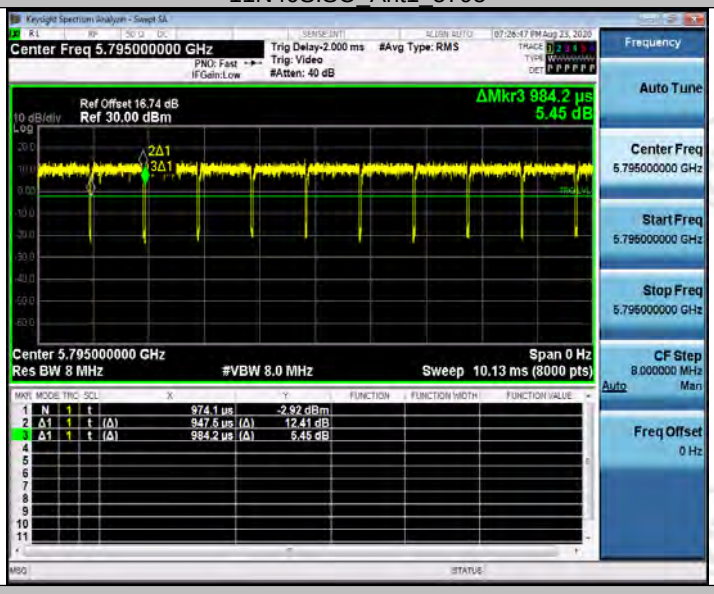

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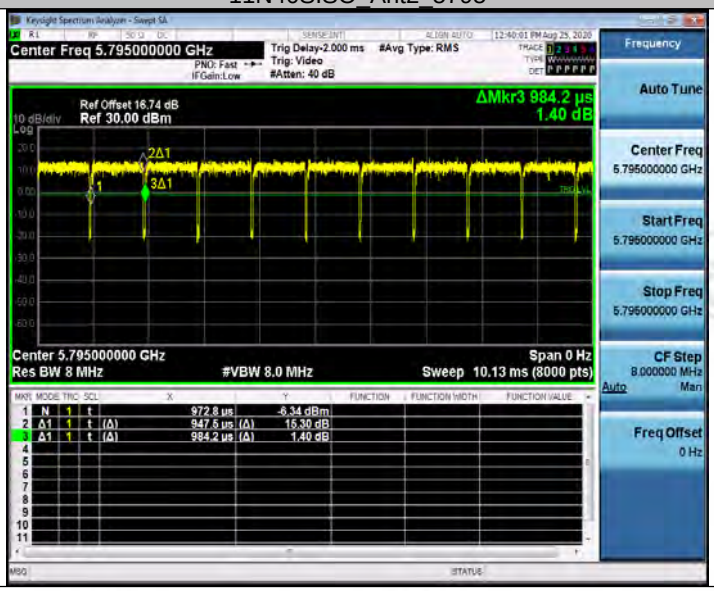

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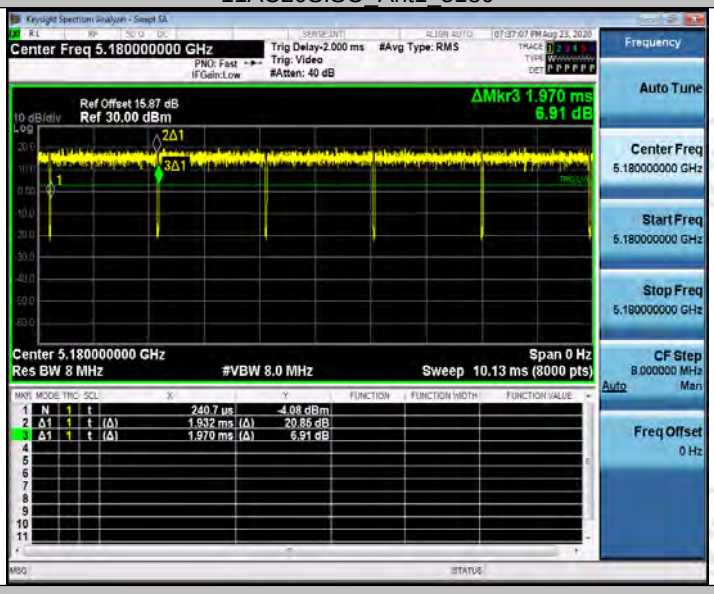

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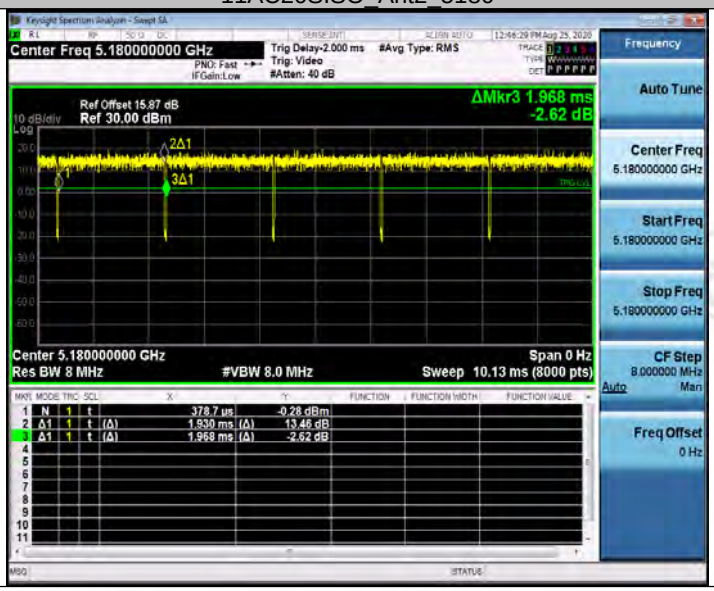

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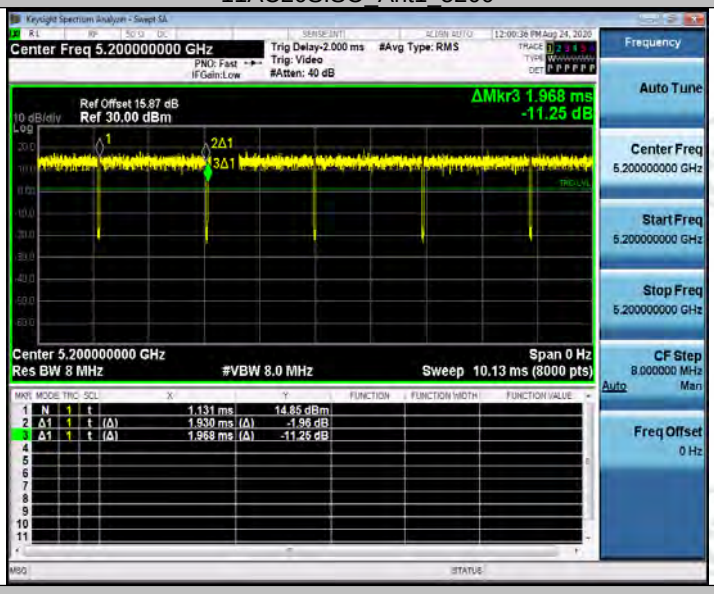

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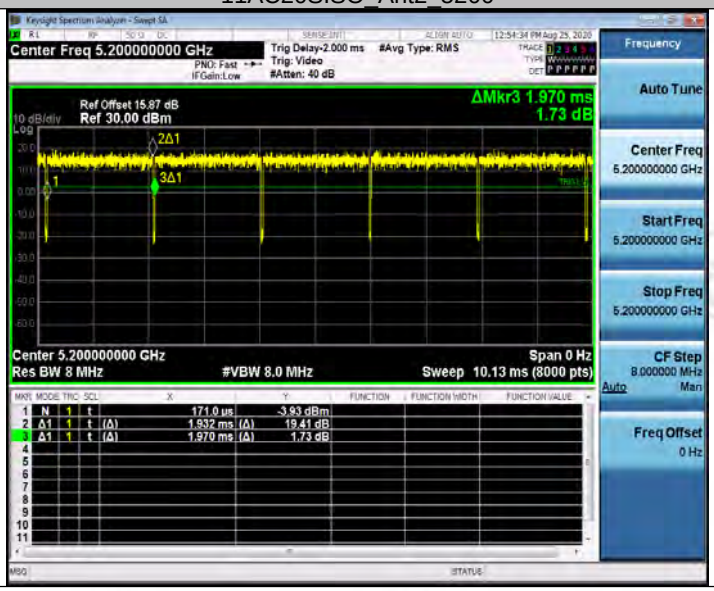

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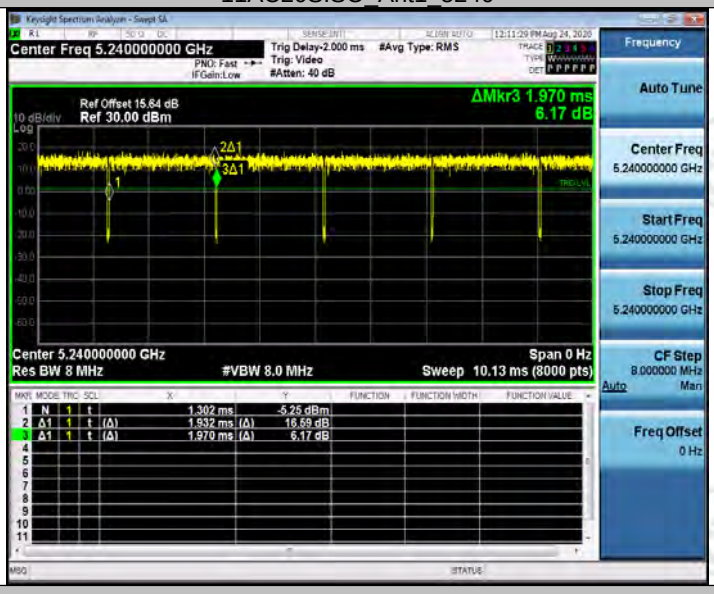

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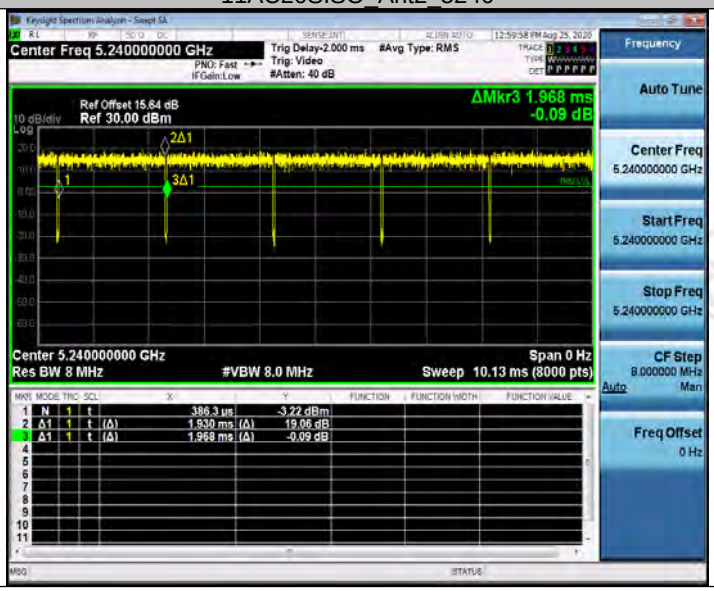

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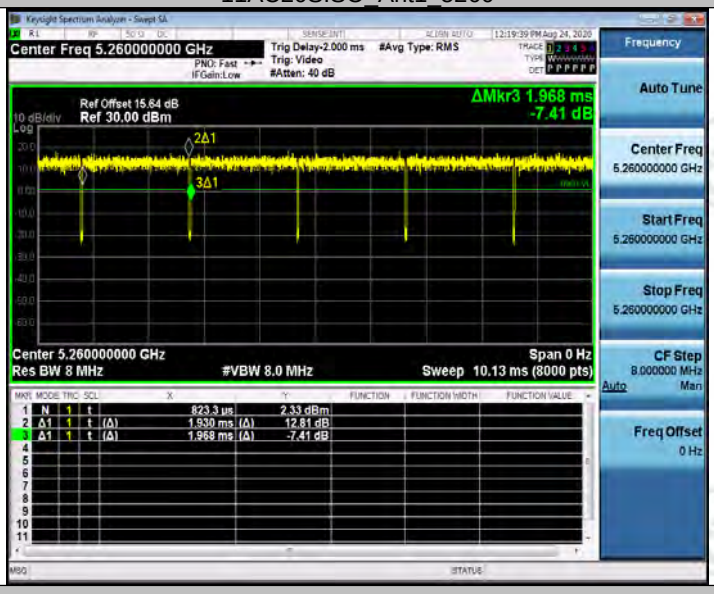

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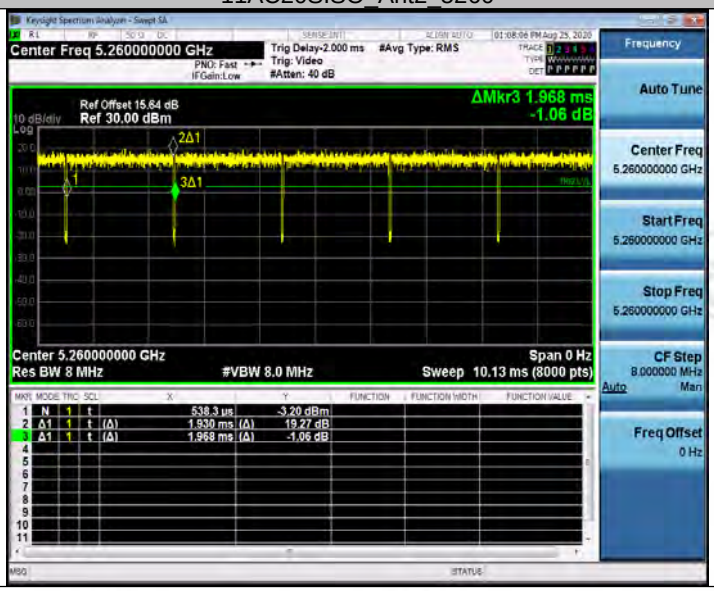

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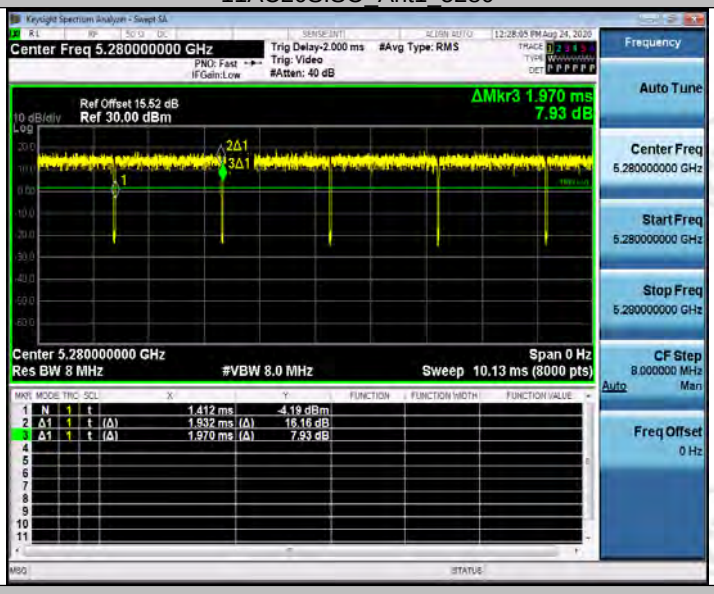

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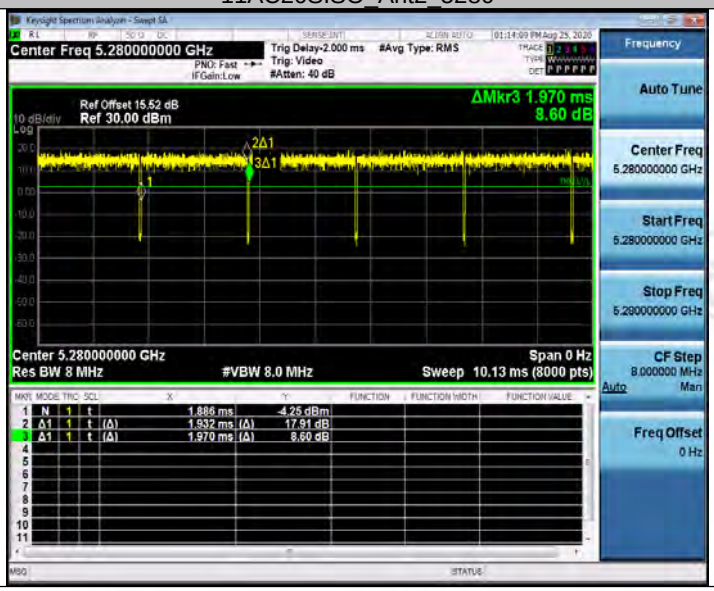

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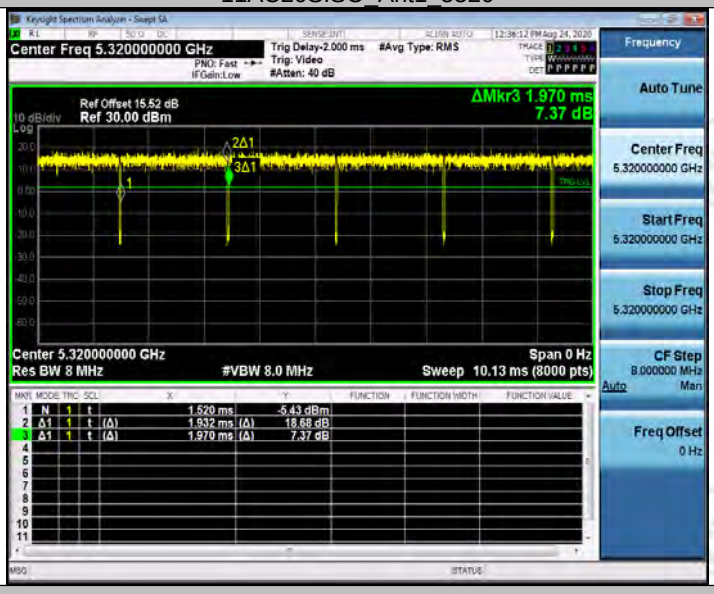

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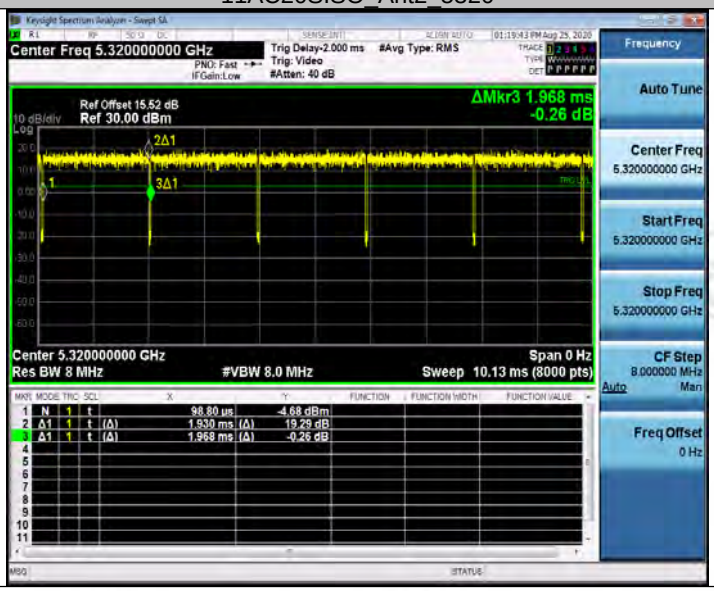

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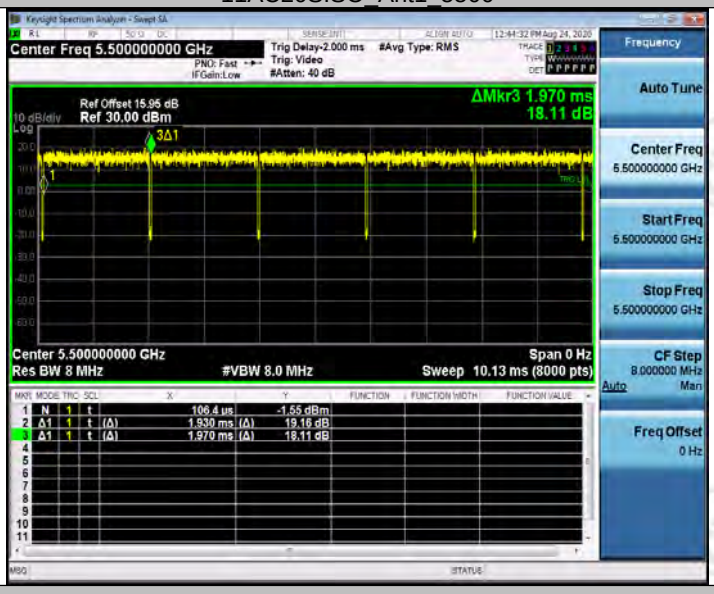

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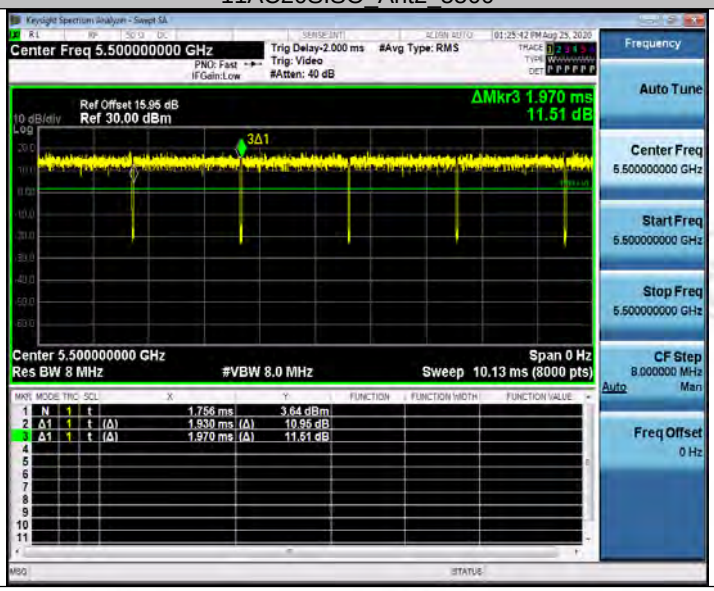

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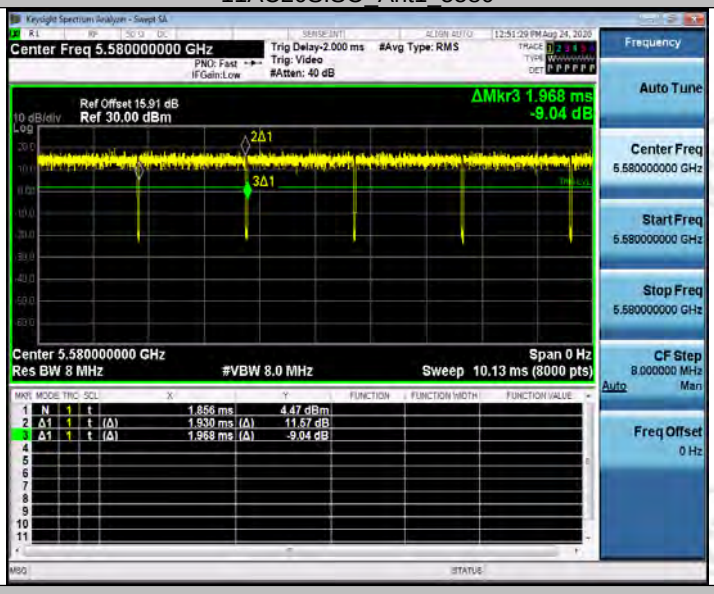

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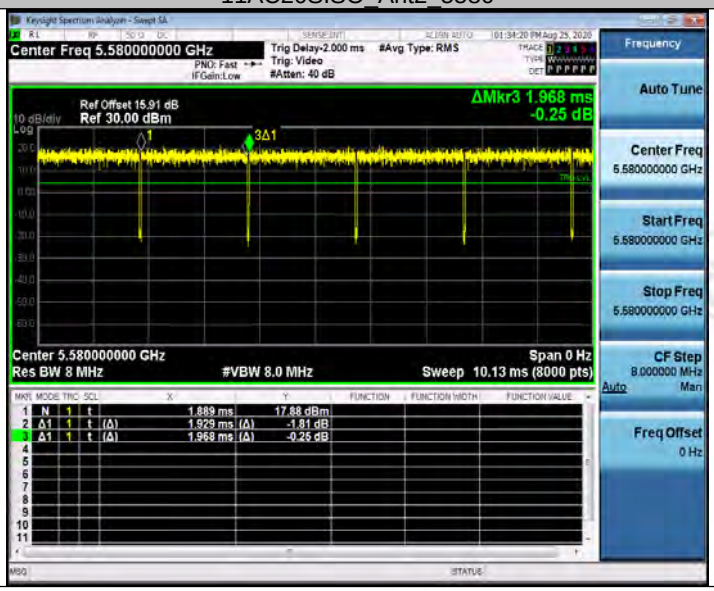

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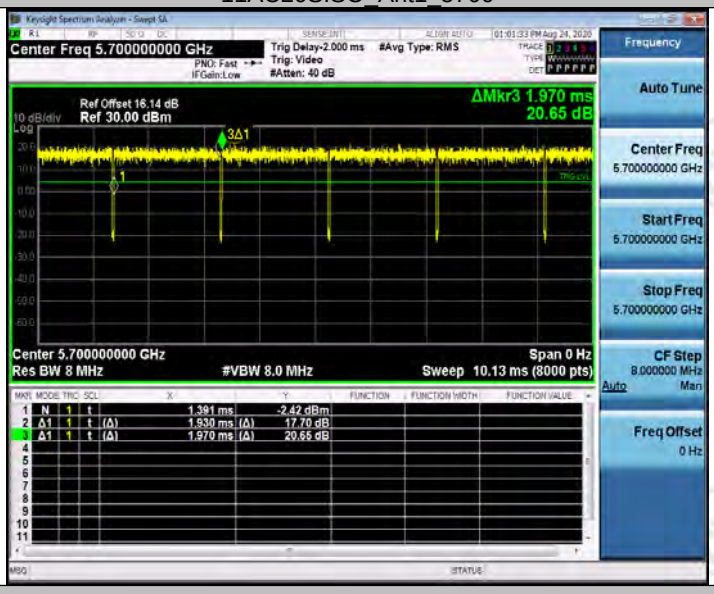

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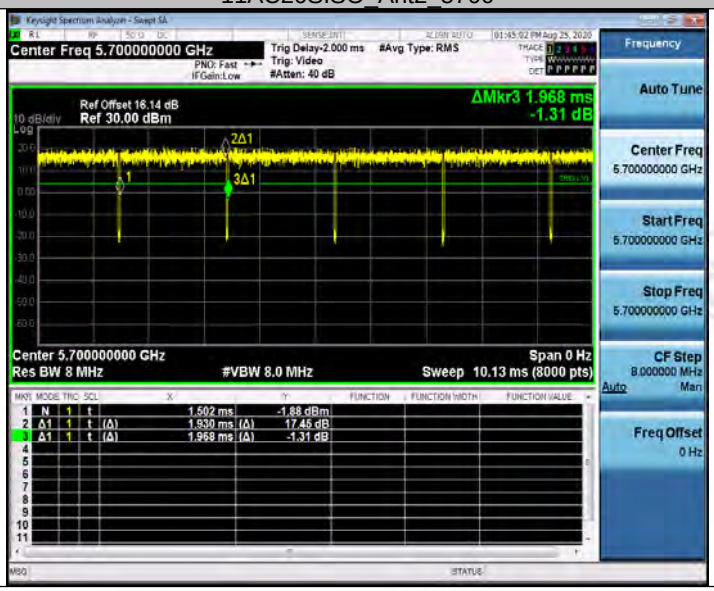

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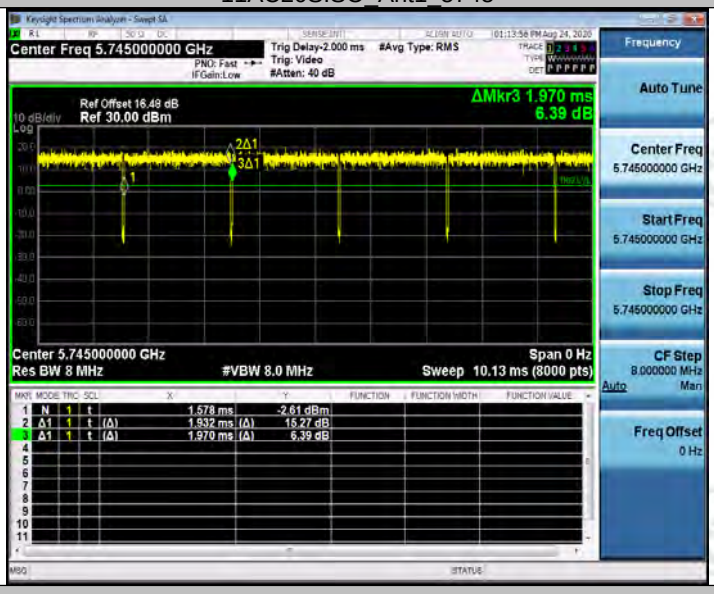

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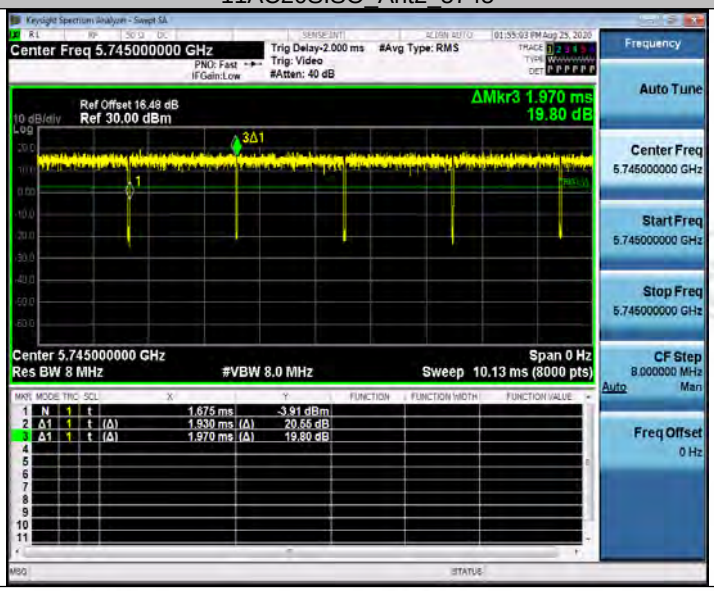

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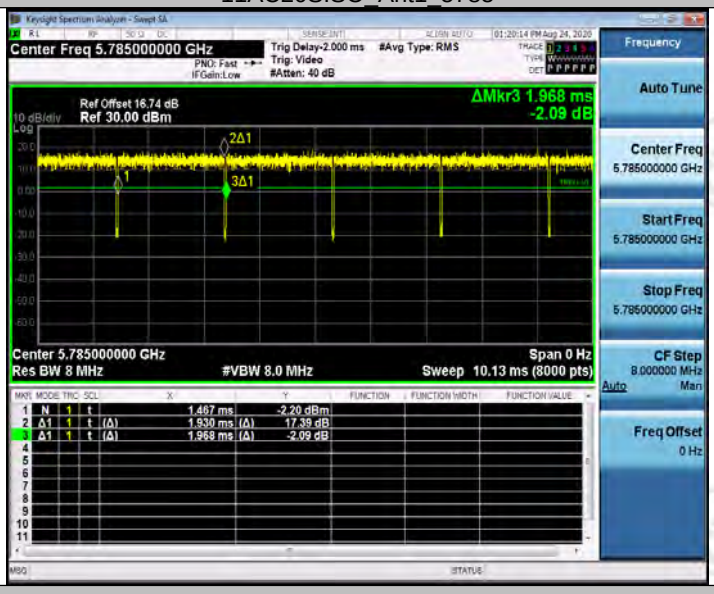

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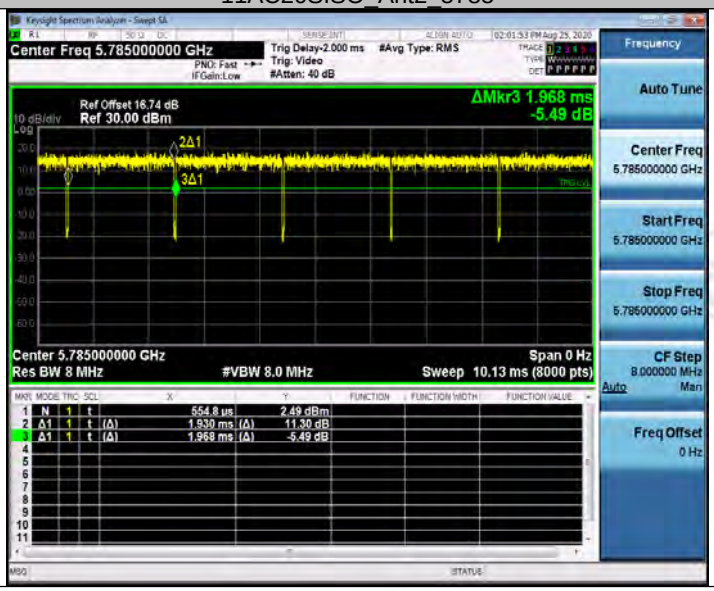

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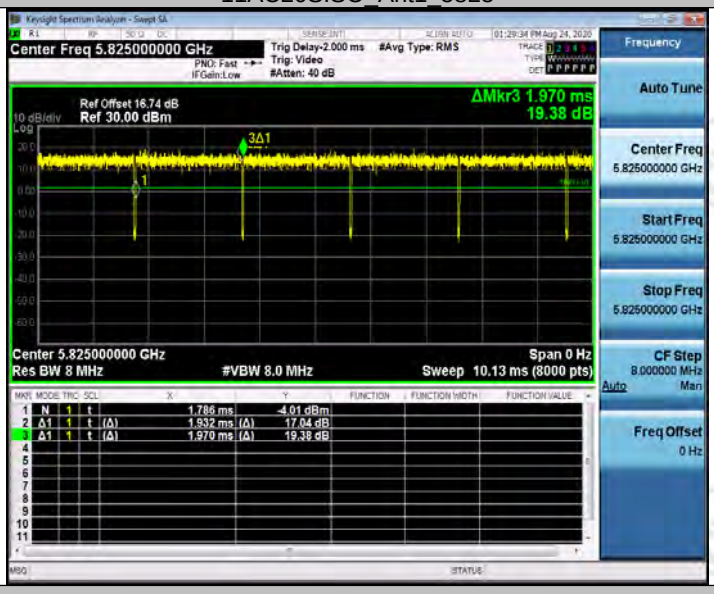

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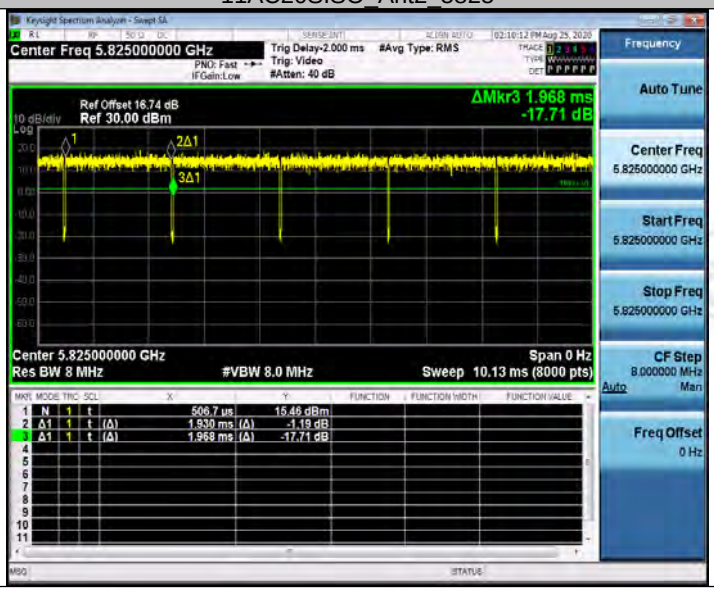
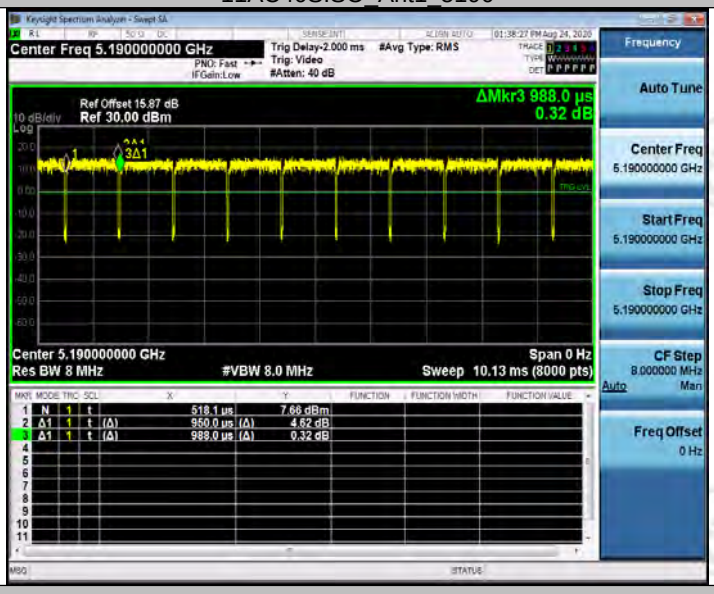


11AC40SISO_Ant1_5190



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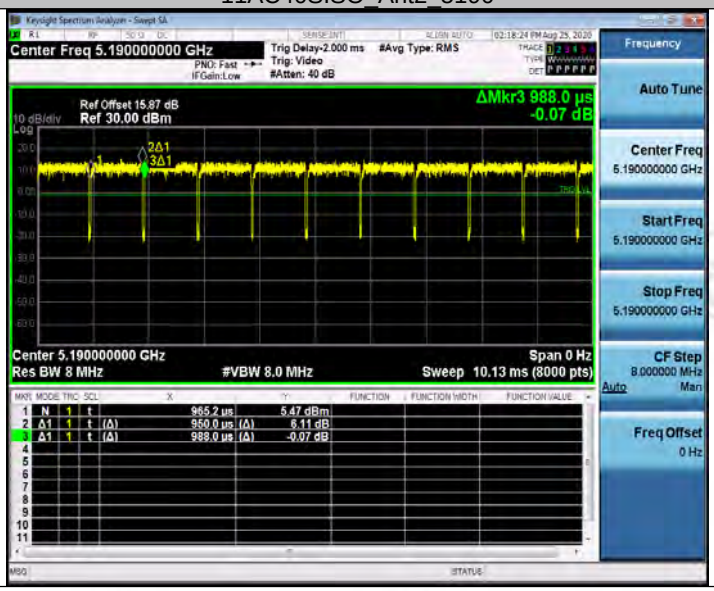
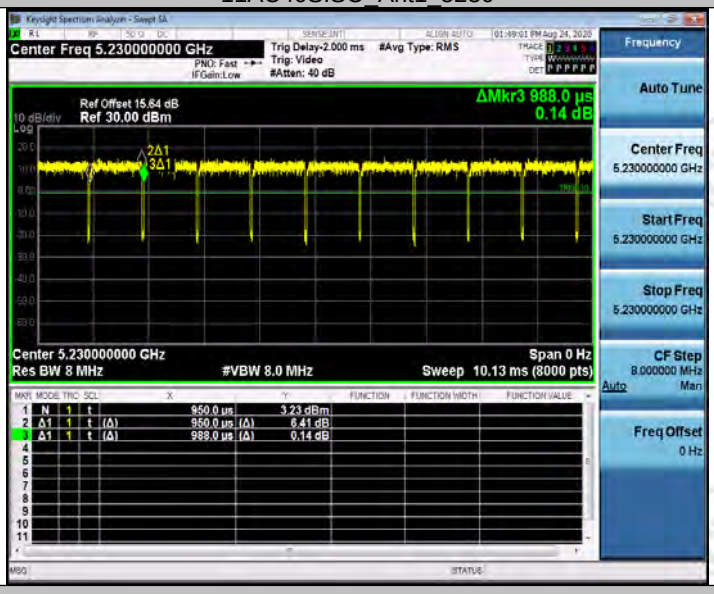


11AC40SISO_Ant1_5230



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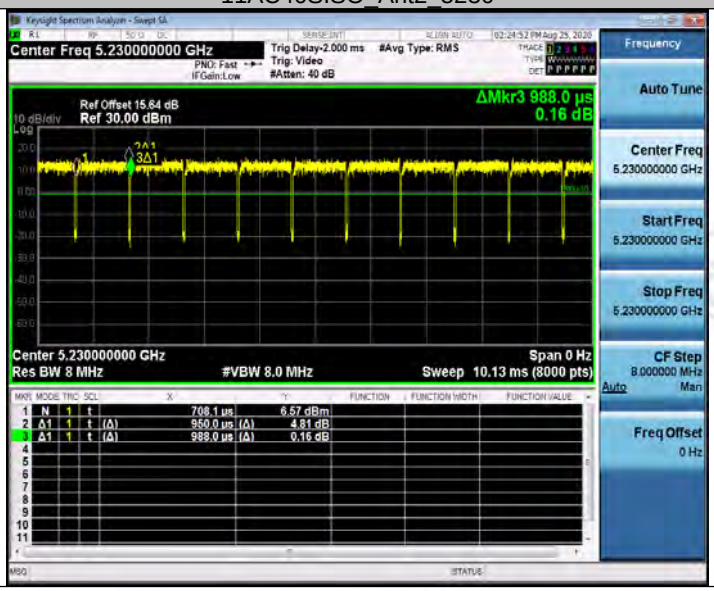

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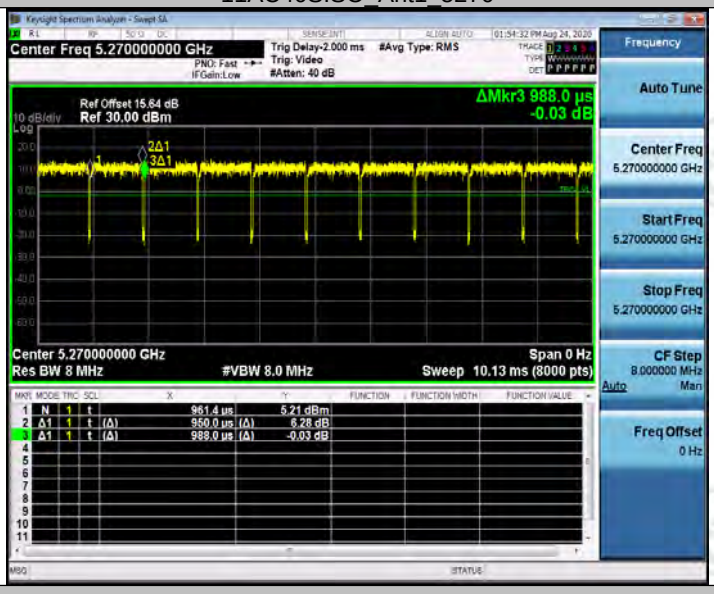

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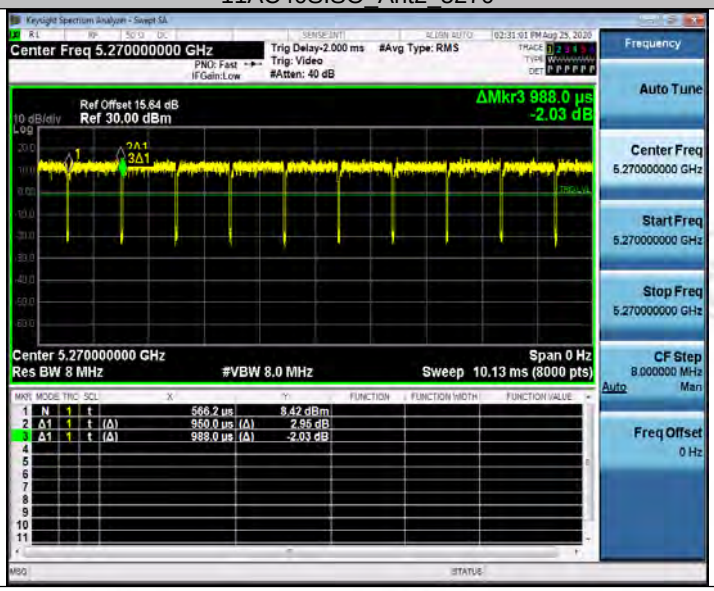

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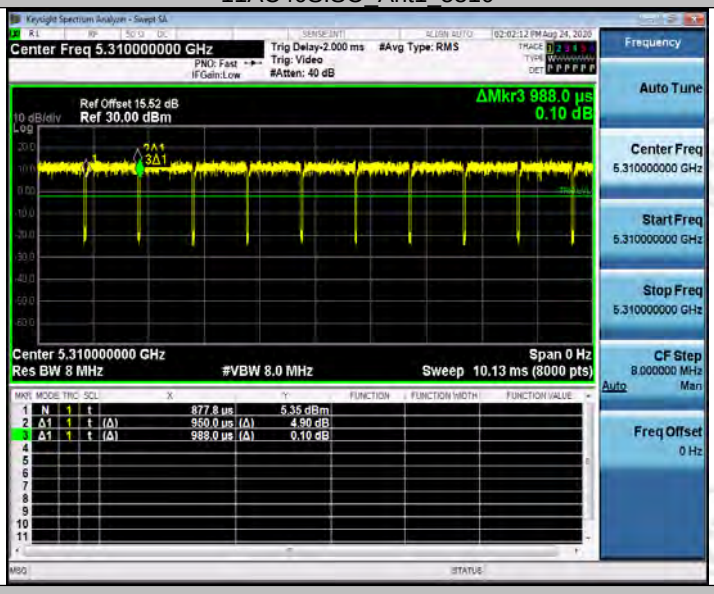

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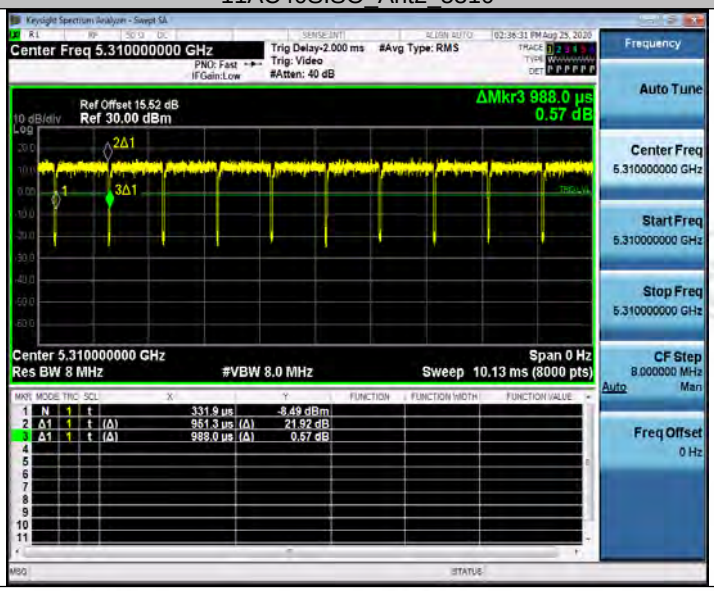
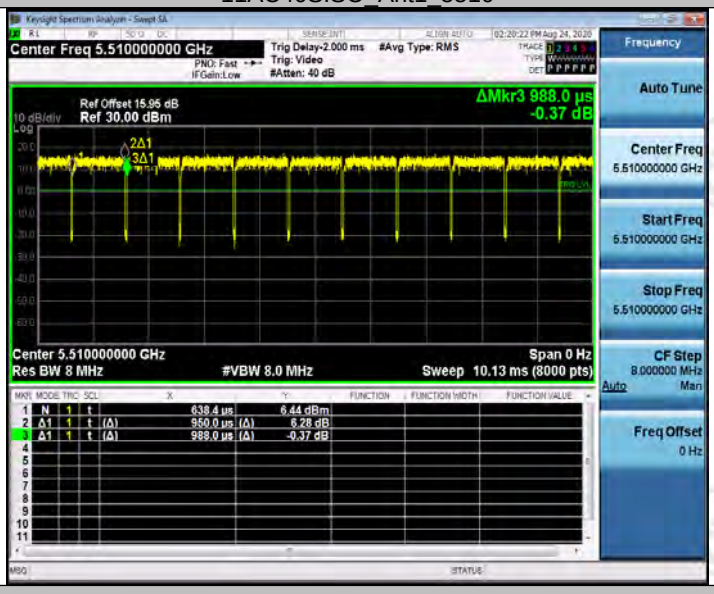


11AC40SISO_Ant1_5510



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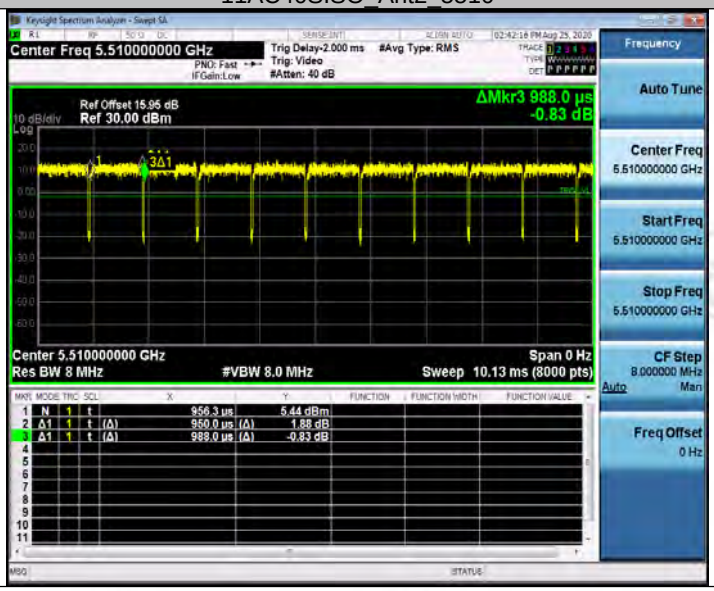
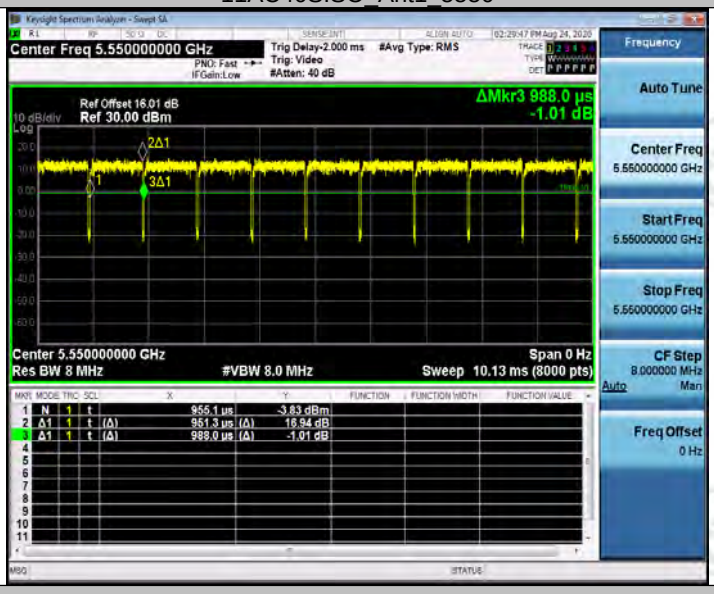


11AC40SISO_Ant1_5550



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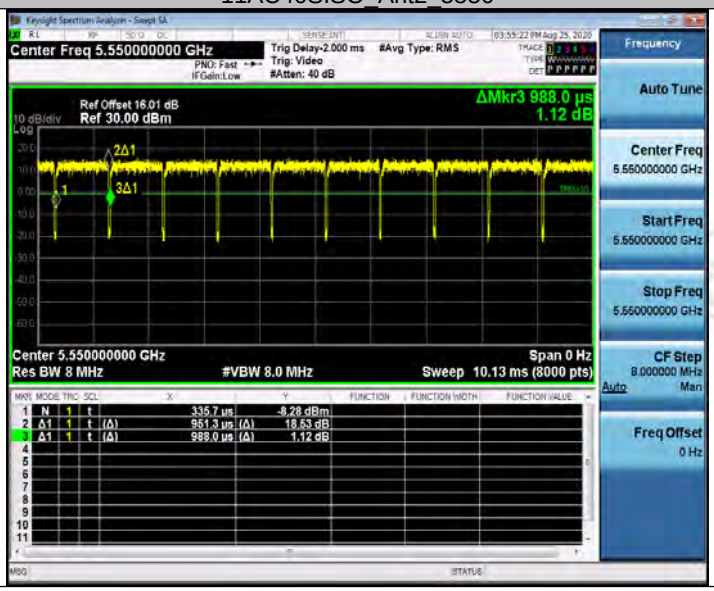
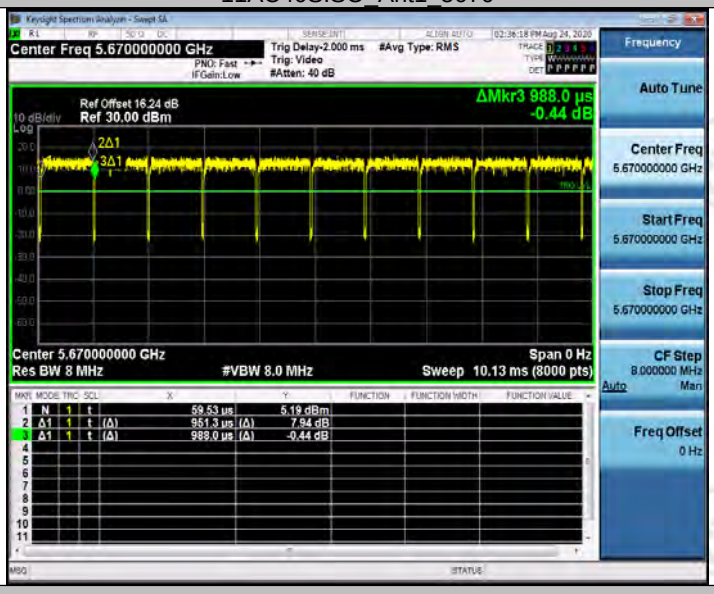


11AC40SISO_Ant1_5670



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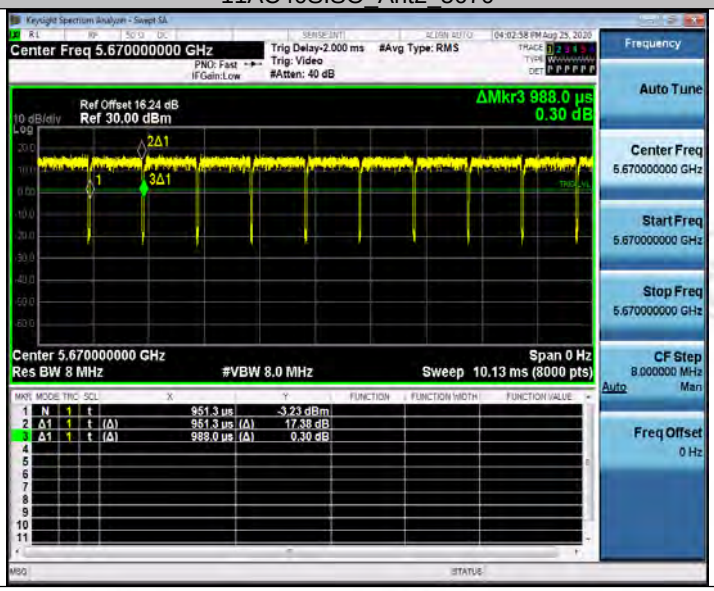

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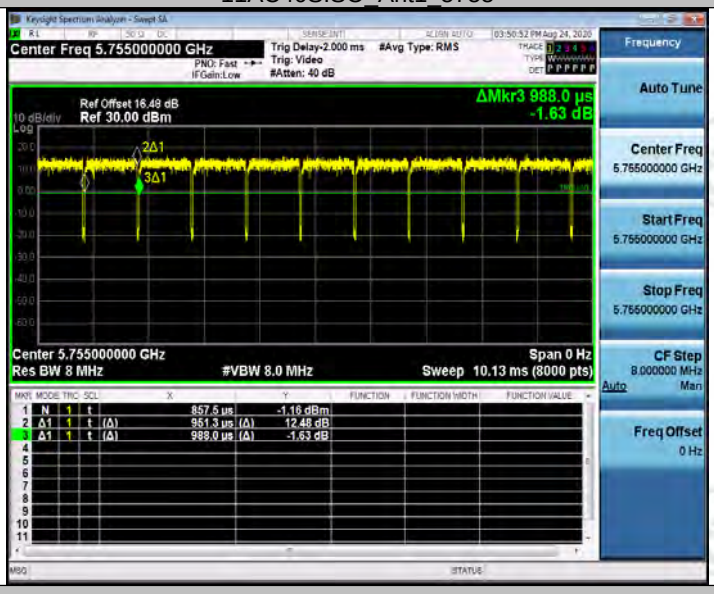

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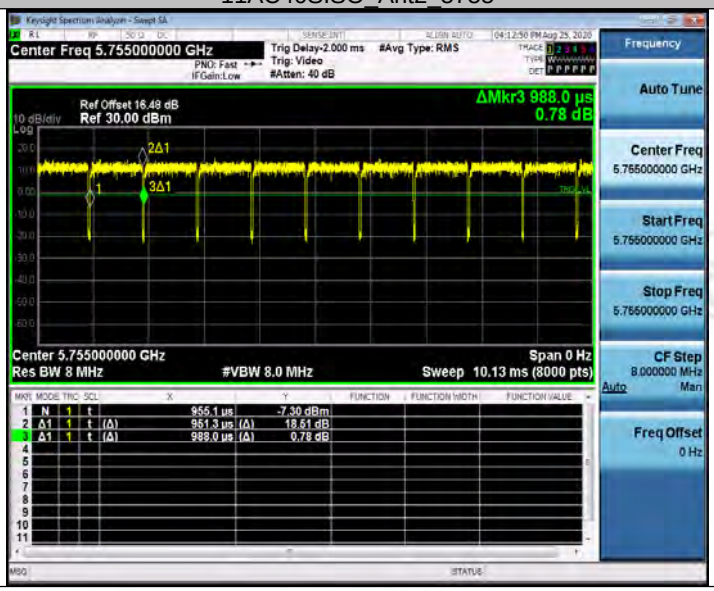

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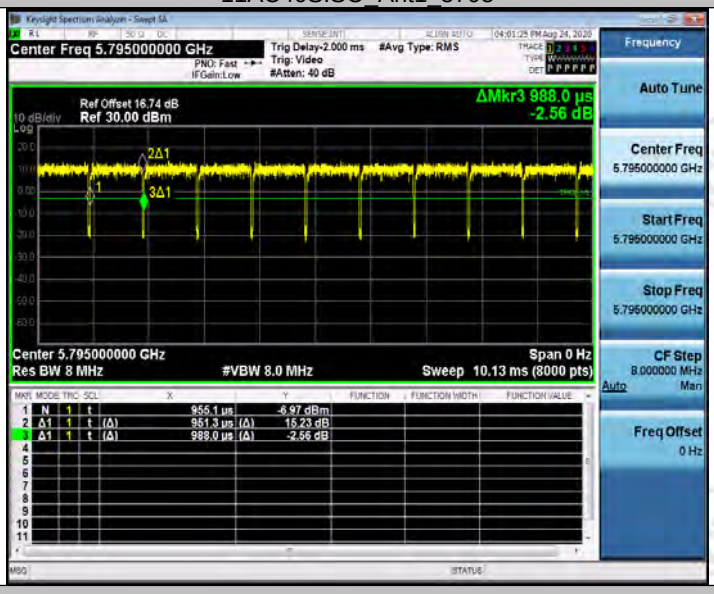

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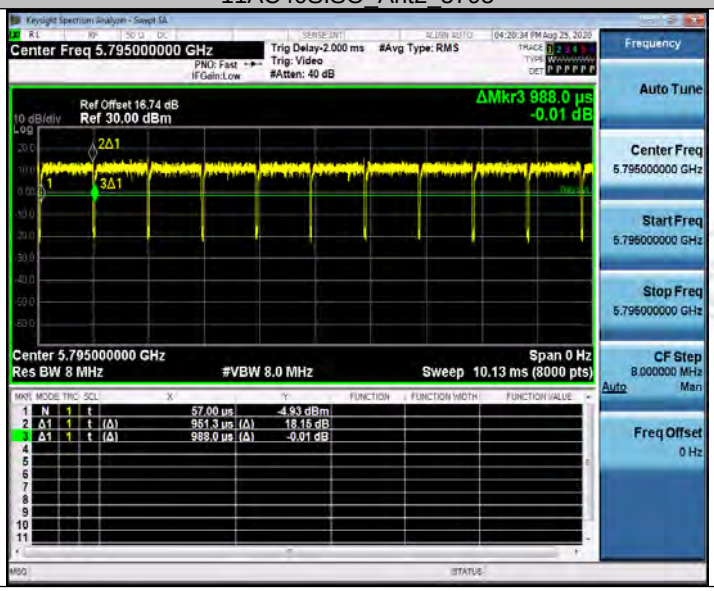

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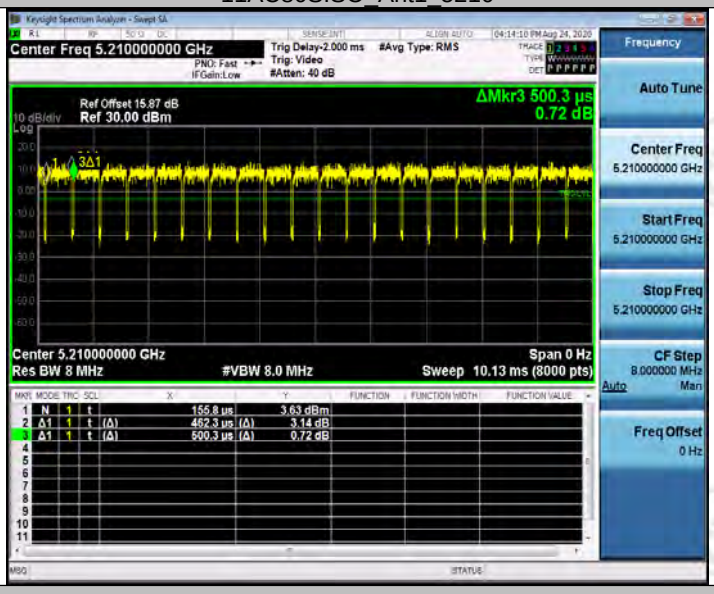

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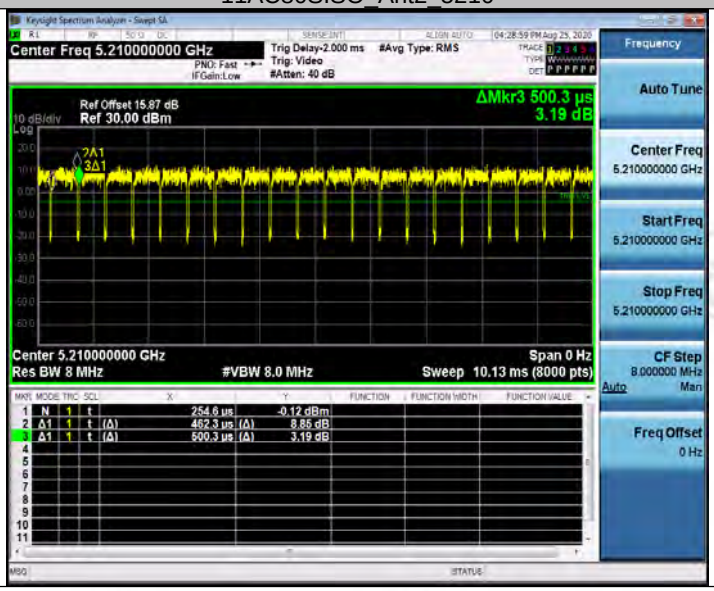

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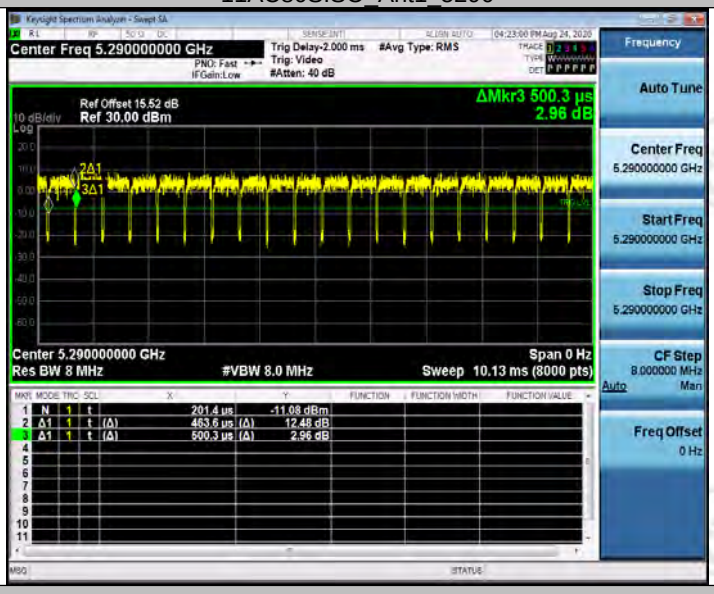

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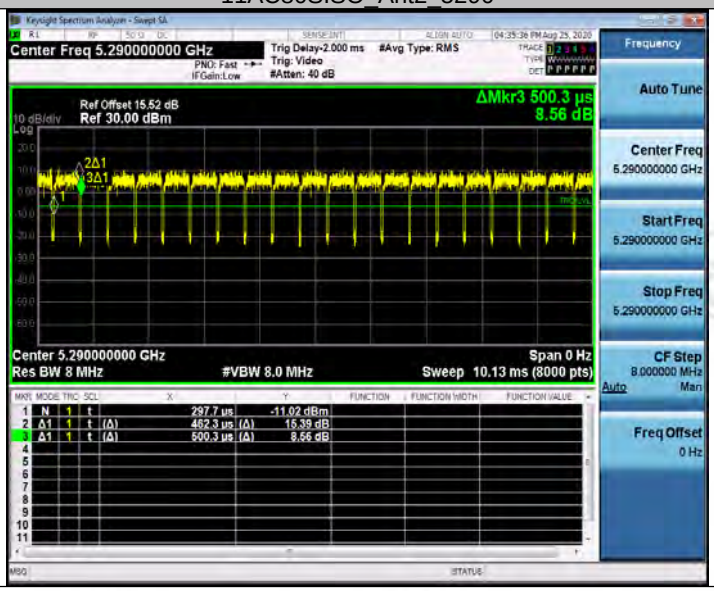

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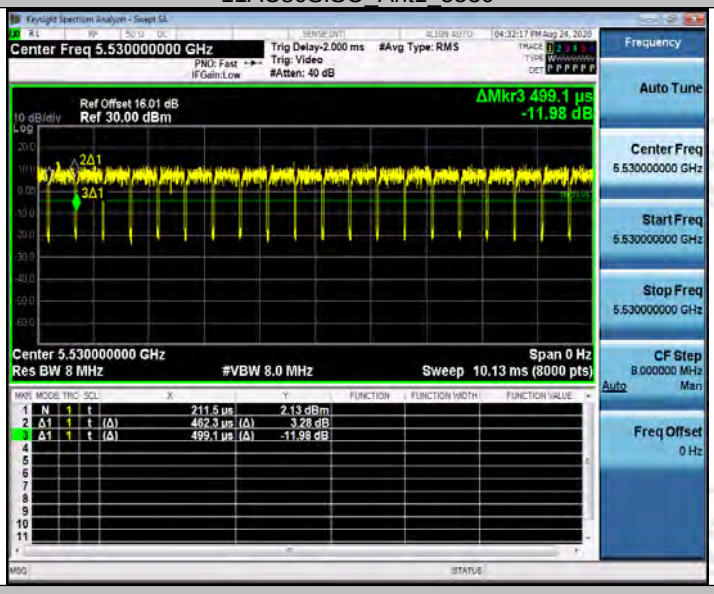

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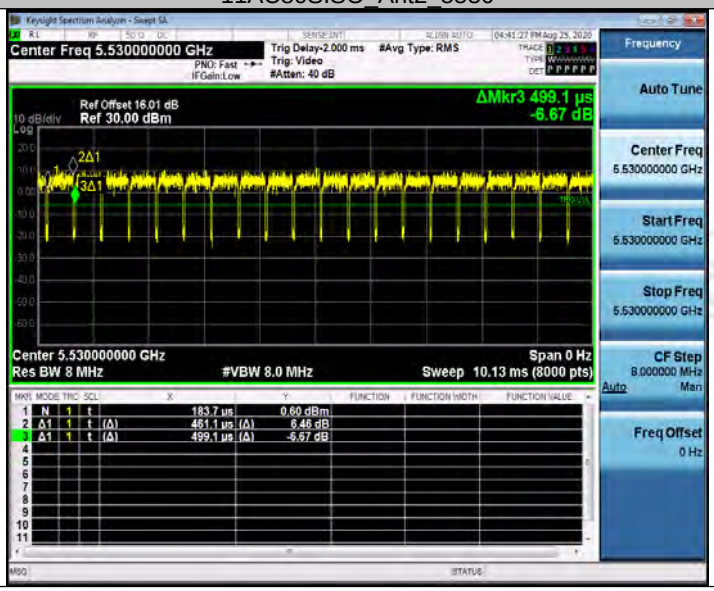

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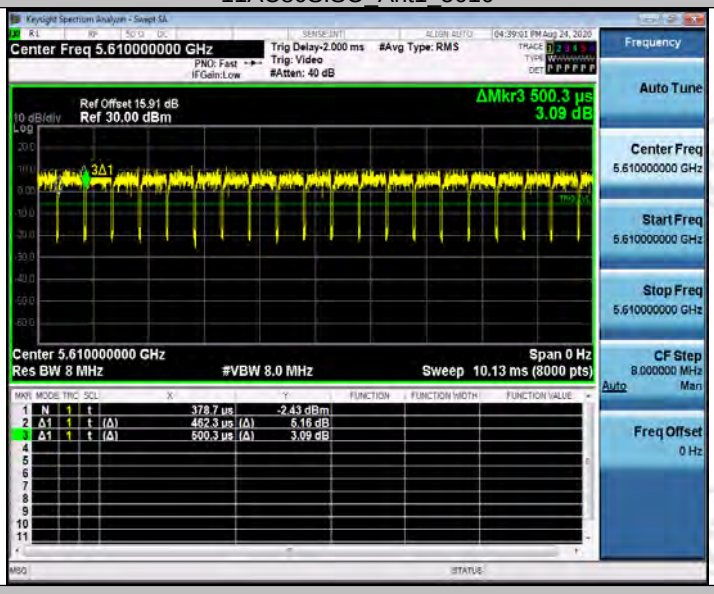

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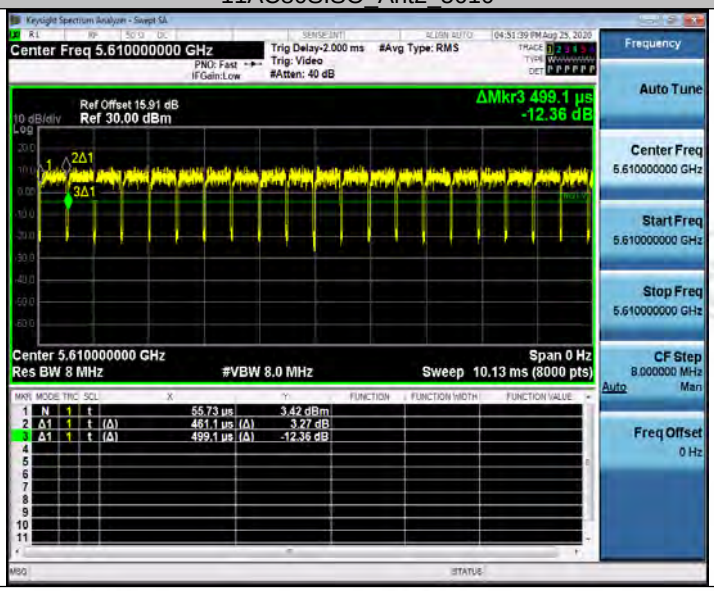

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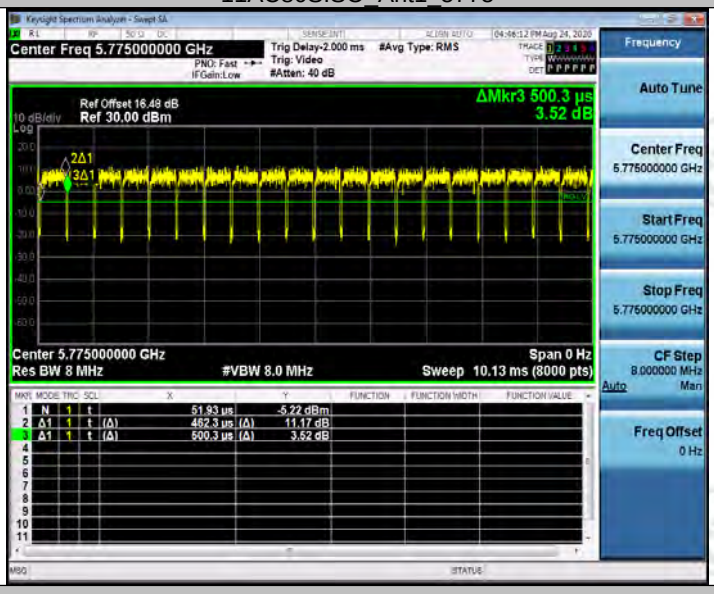

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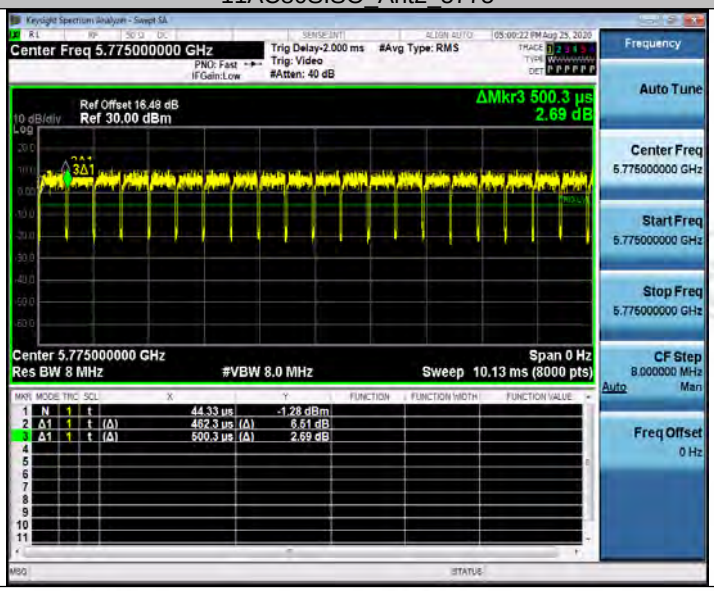

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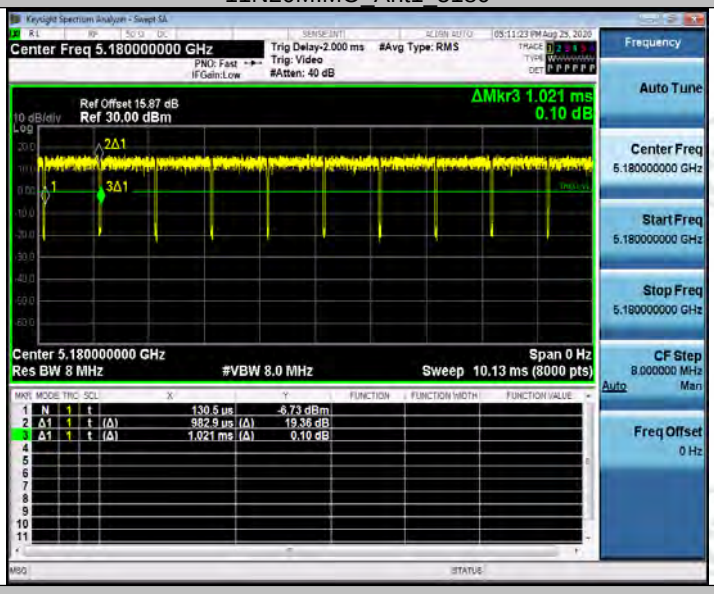

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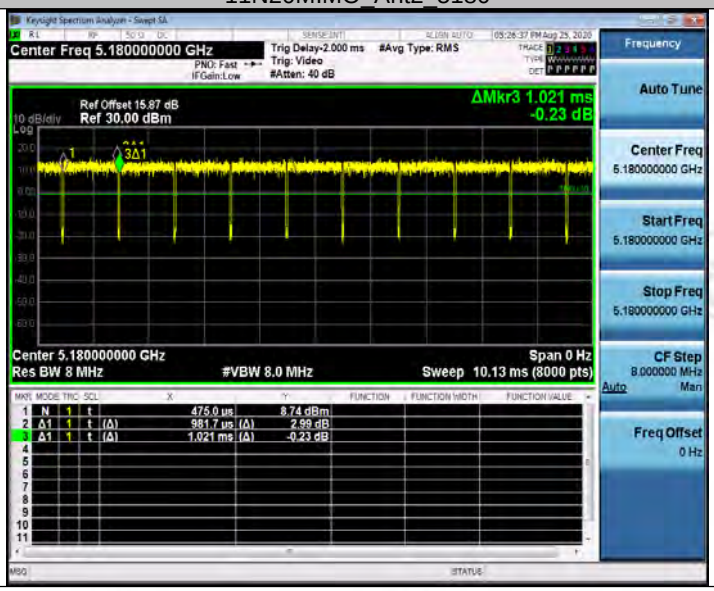

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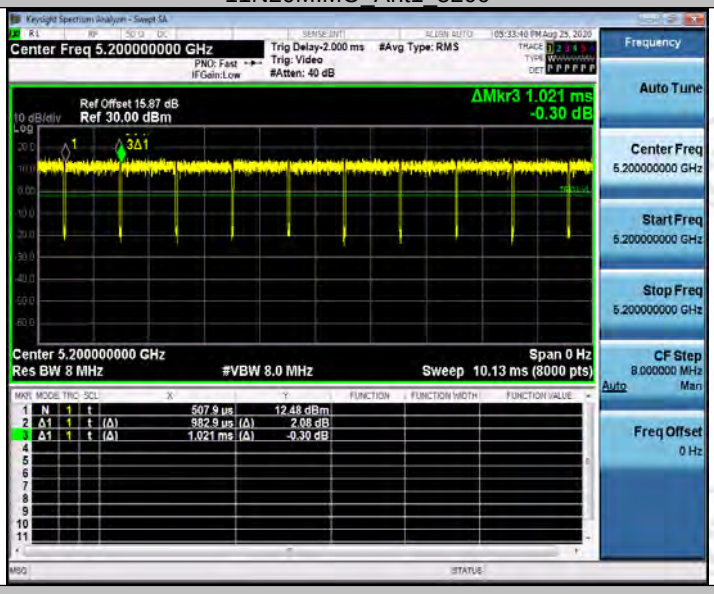

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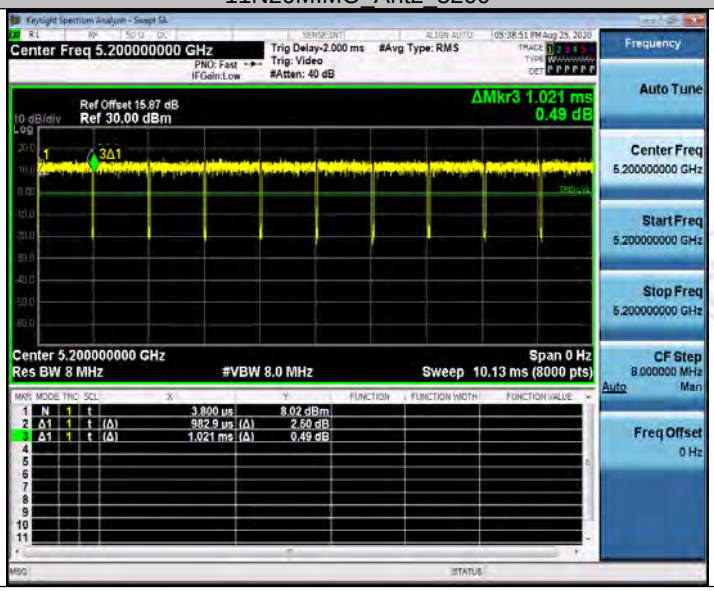

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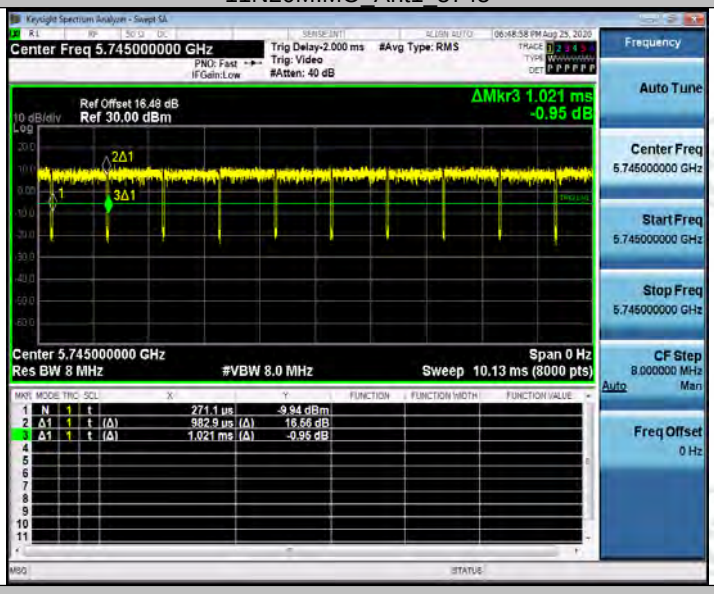

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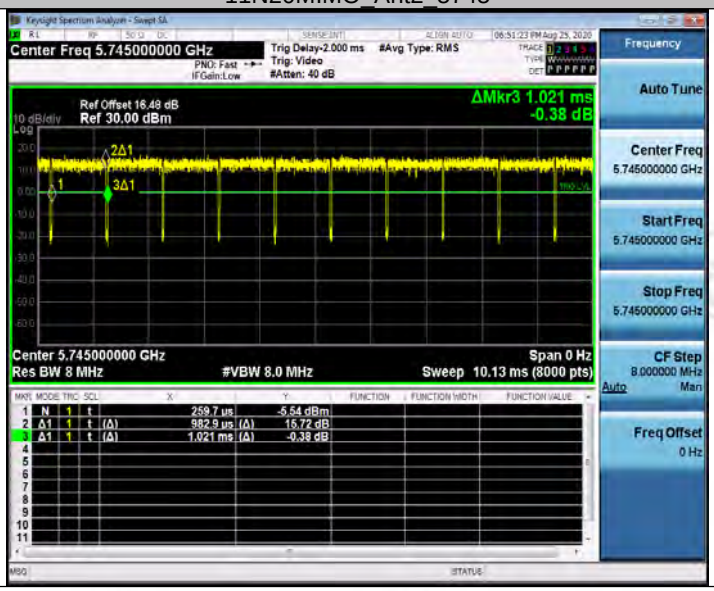

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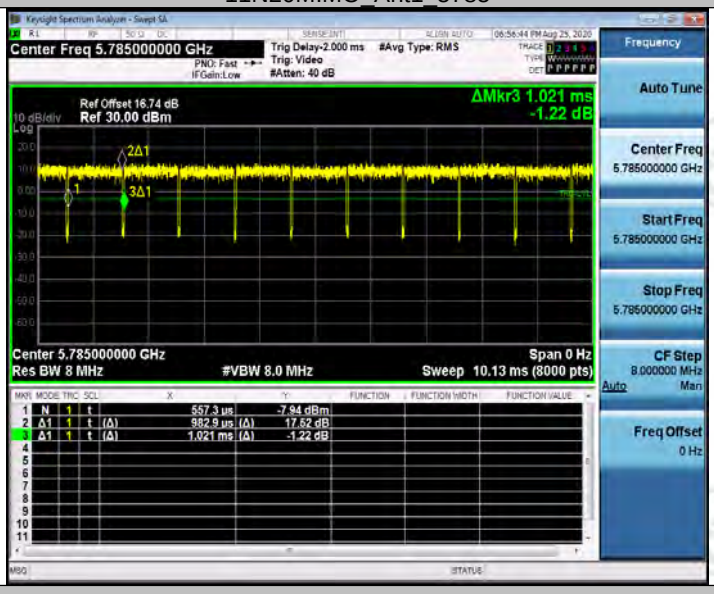

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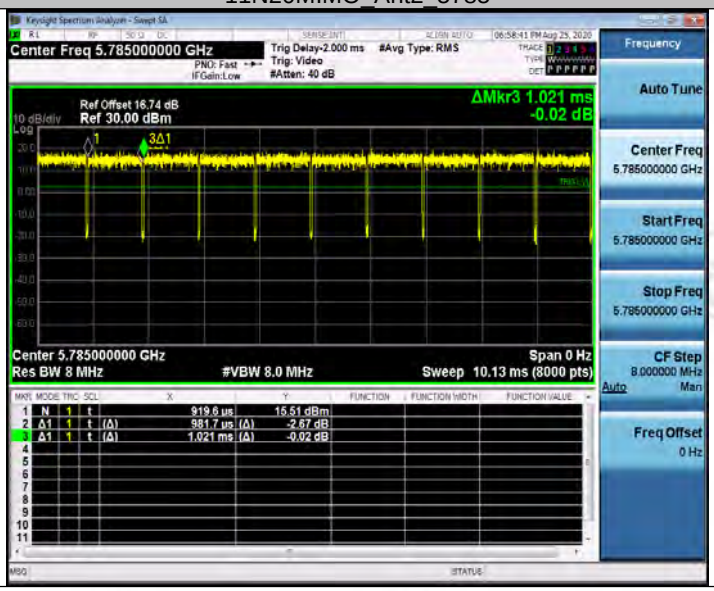

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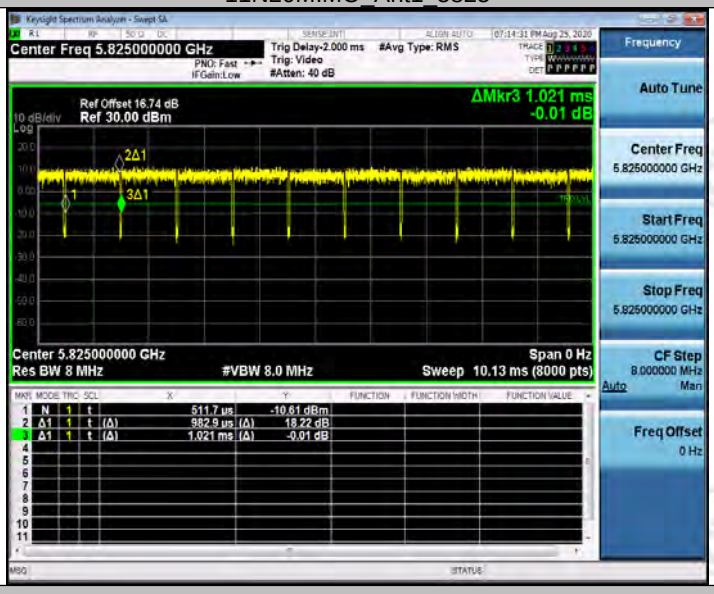

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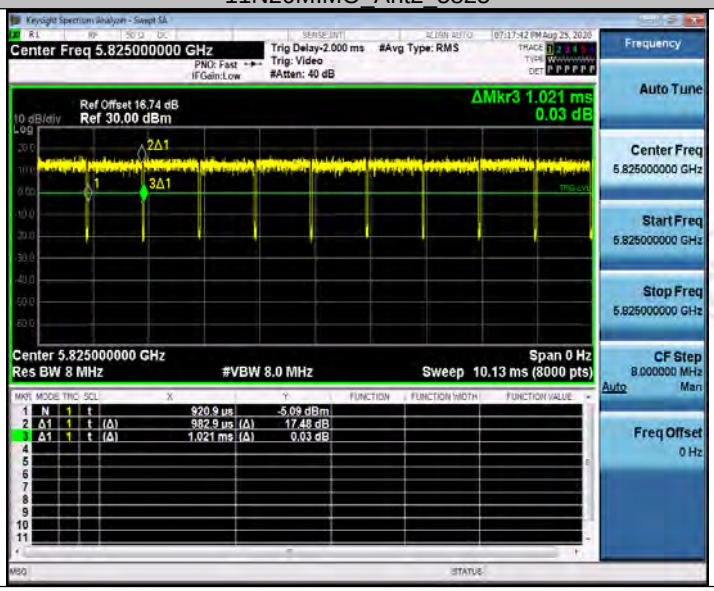

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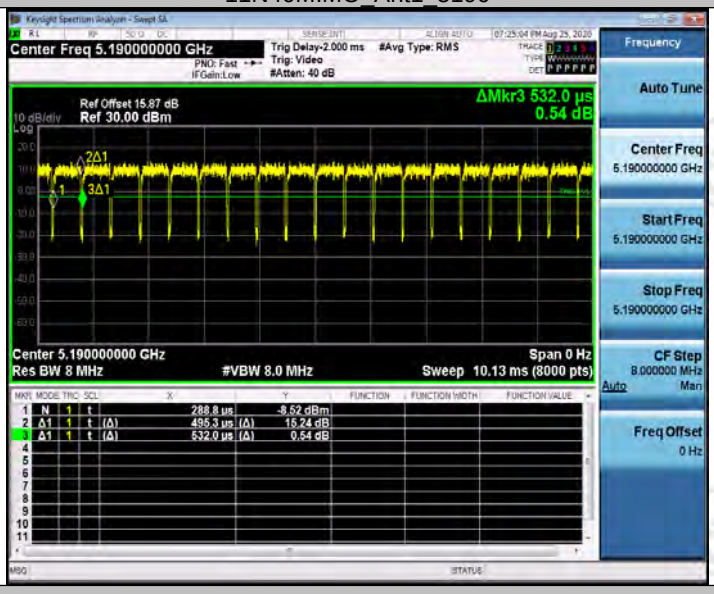

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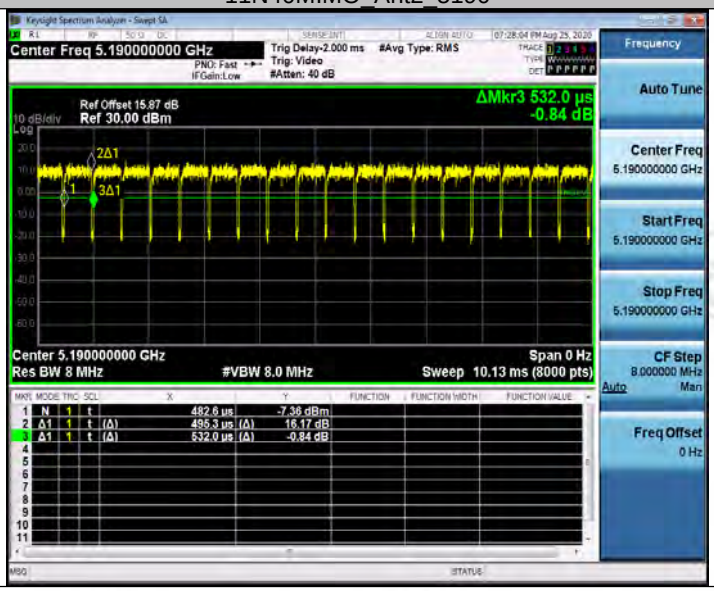

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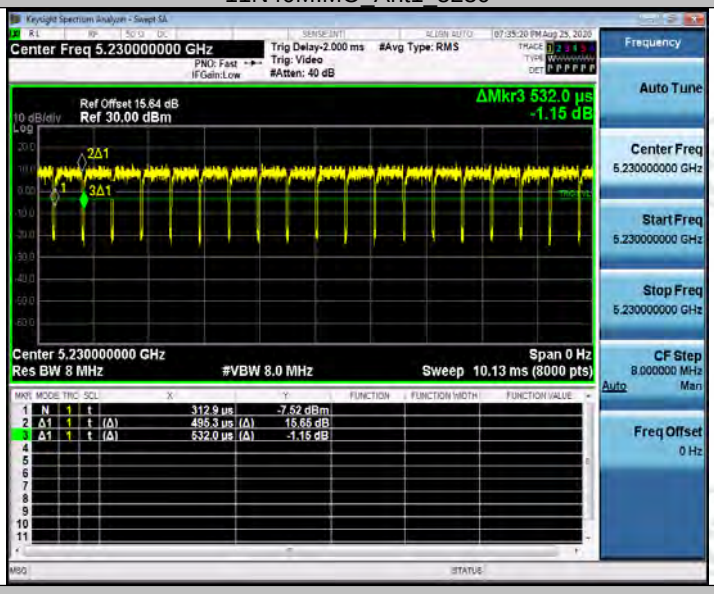

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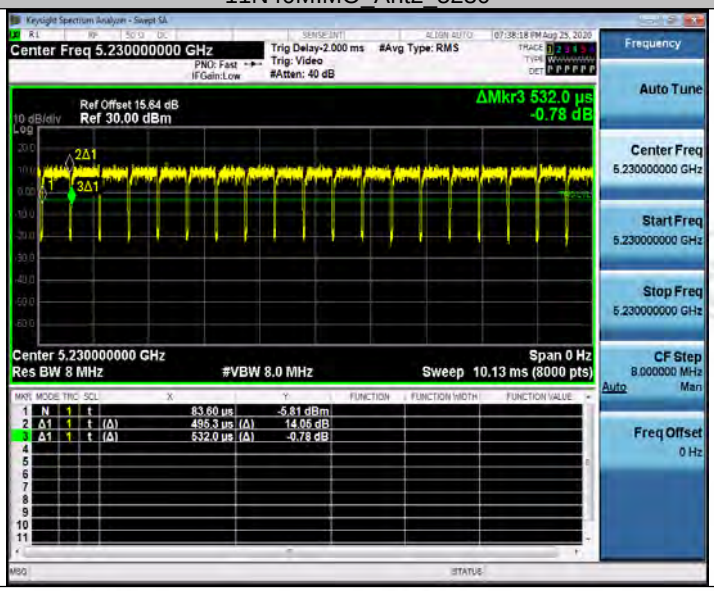

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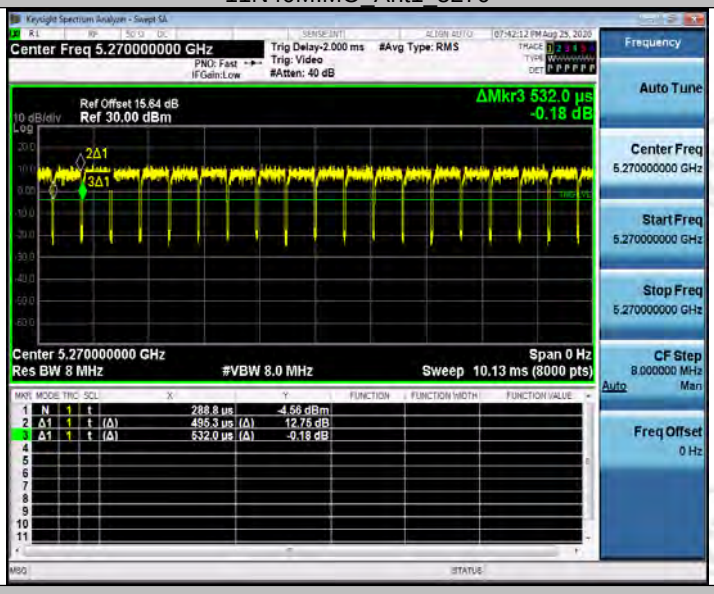

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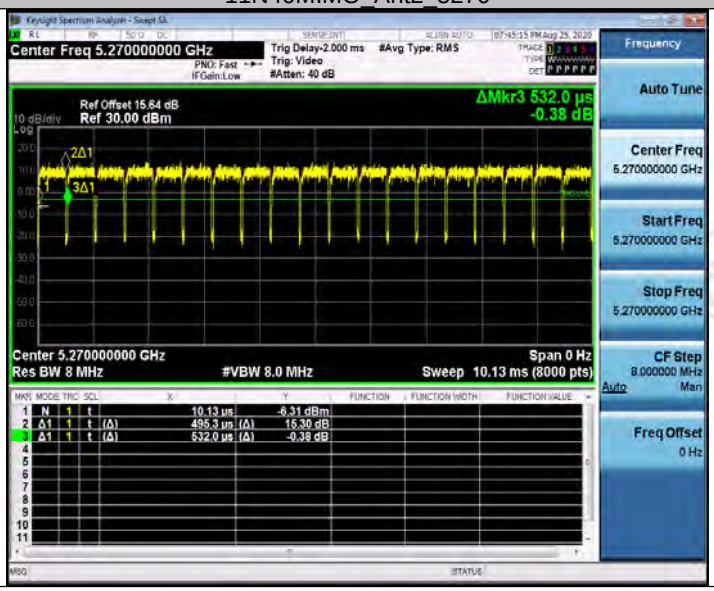

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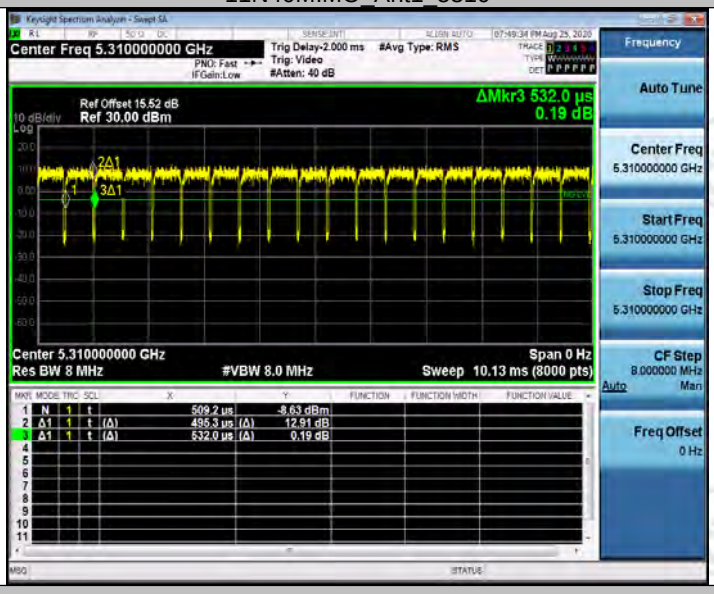

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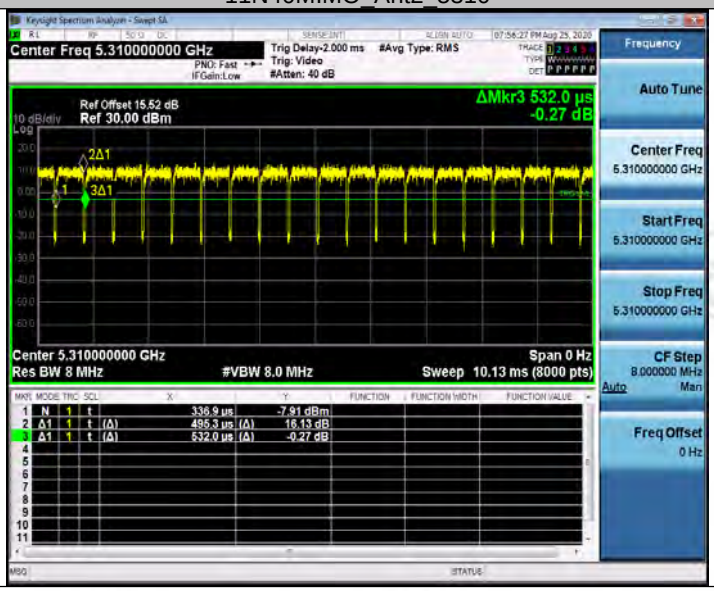

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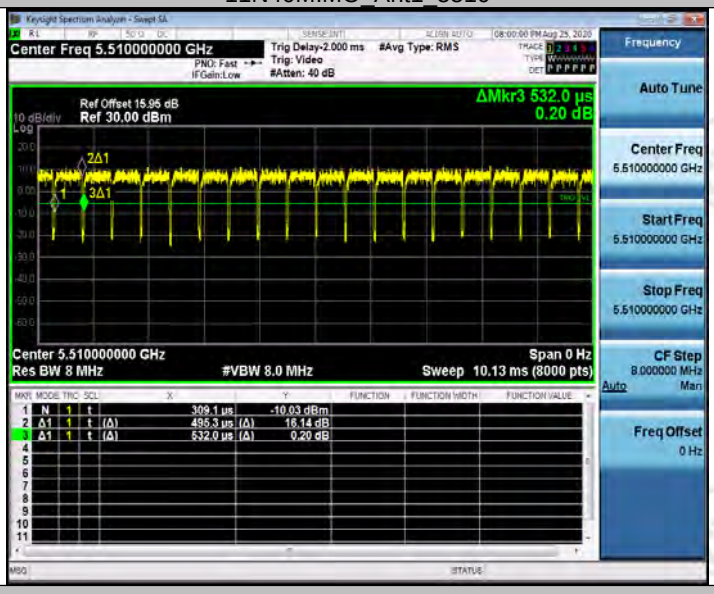

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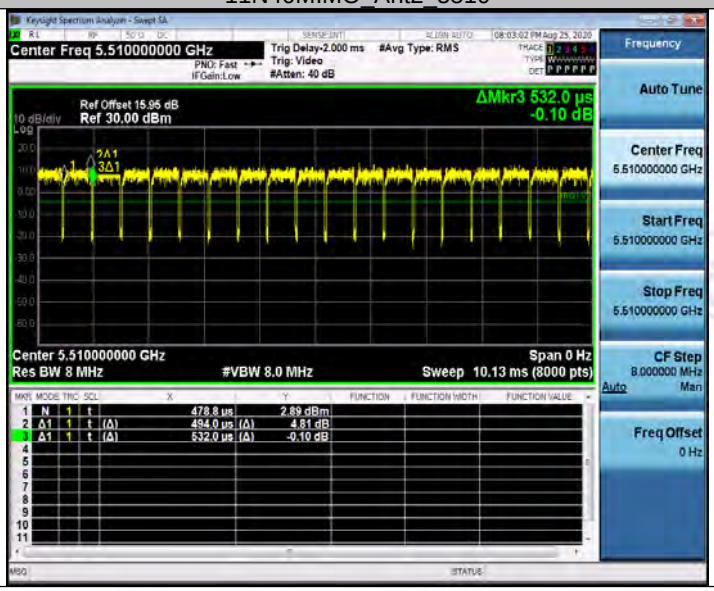

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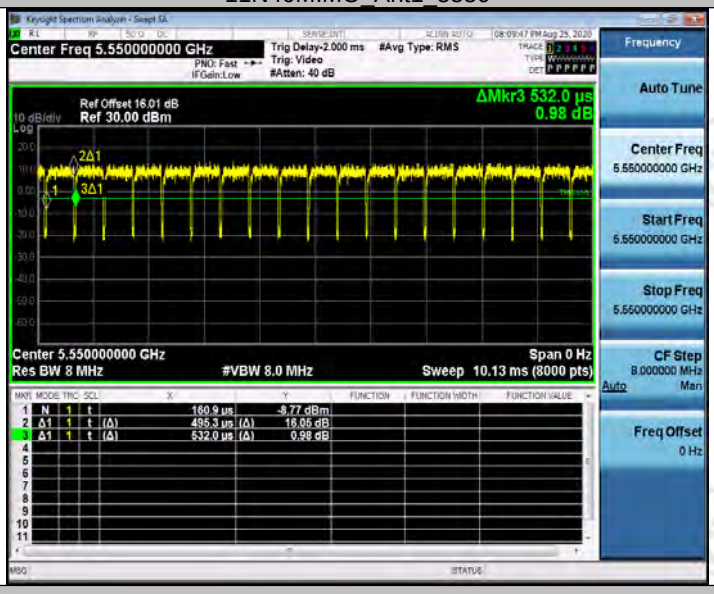

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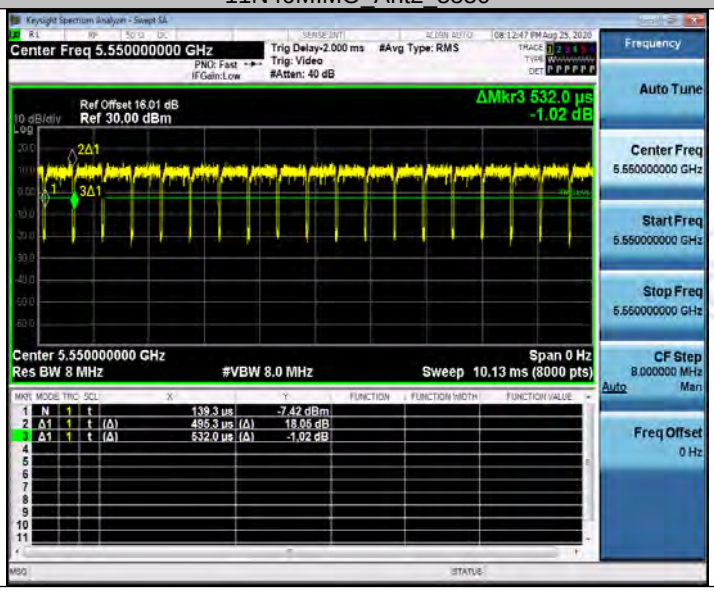

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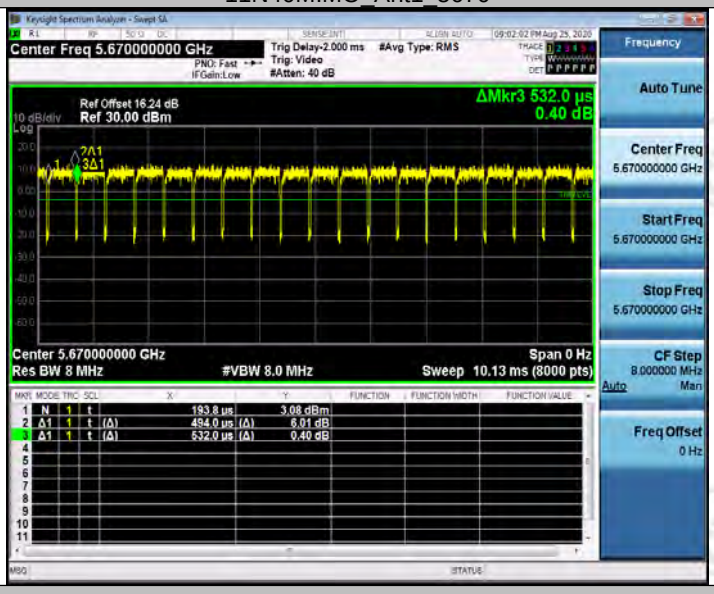

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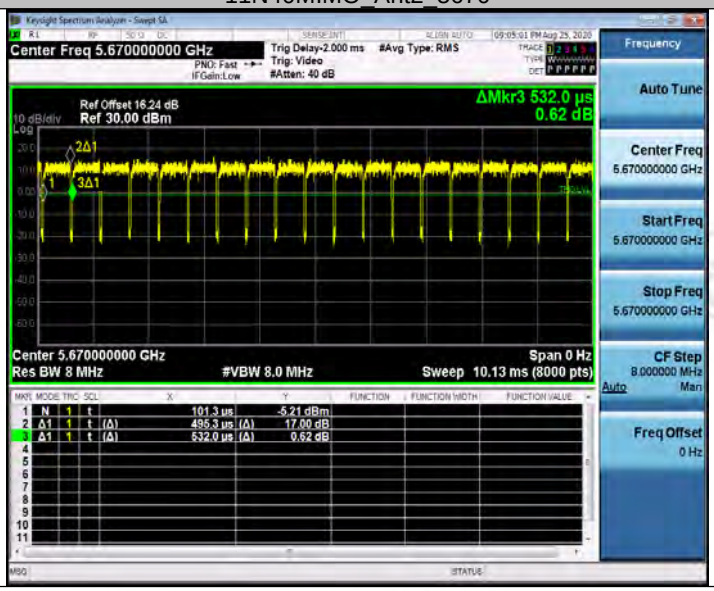
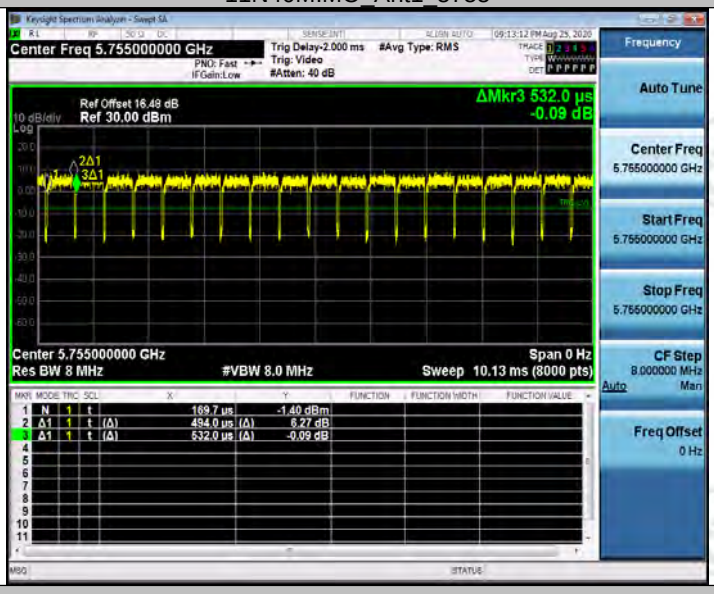
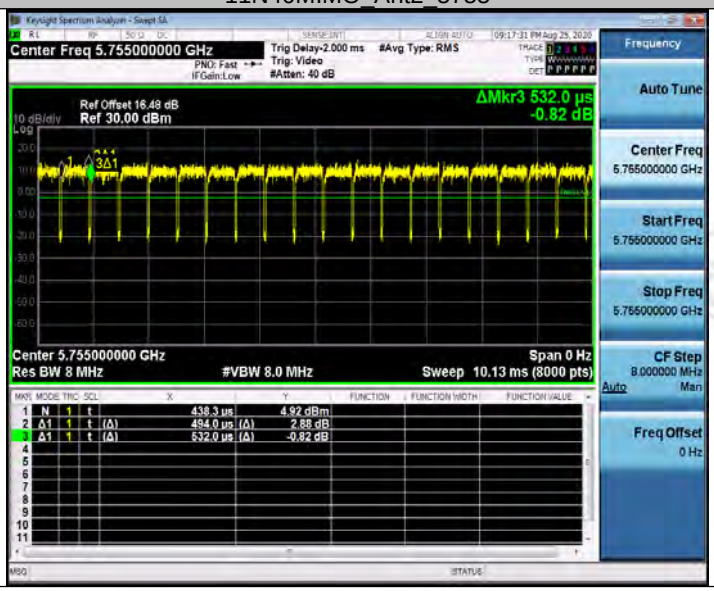


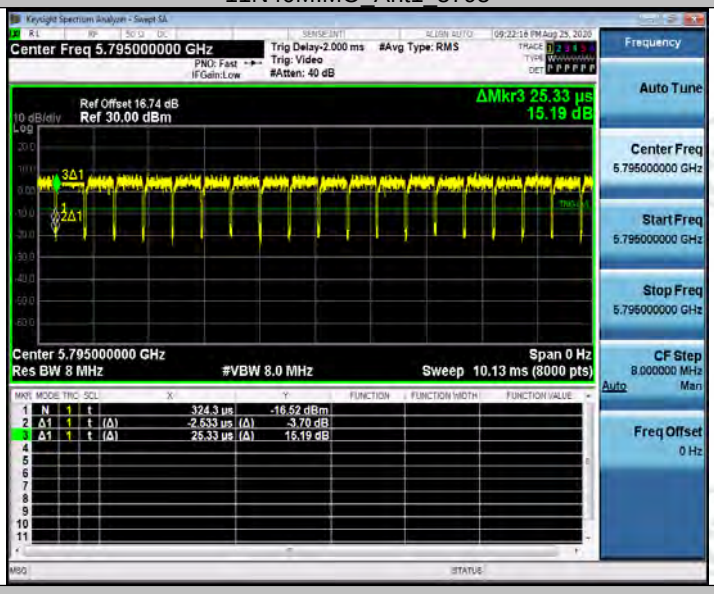
11N40MIMO_Ant1_5755



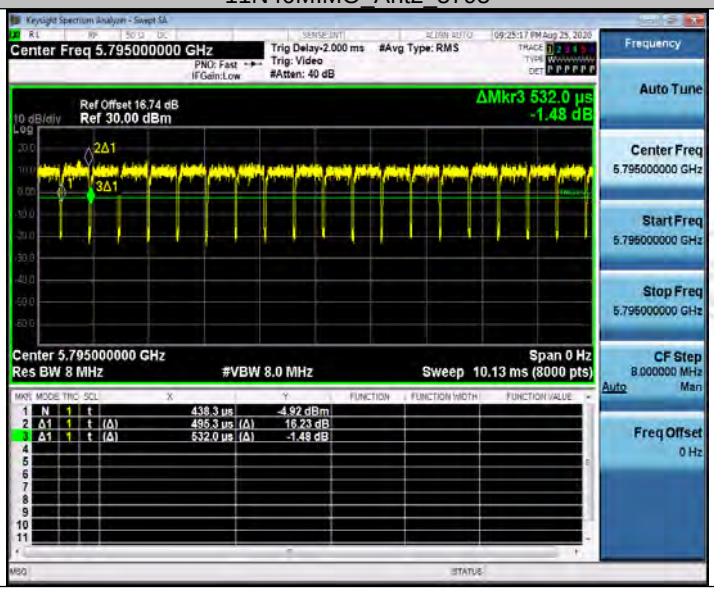
11N40MIMO_Ant2_5755



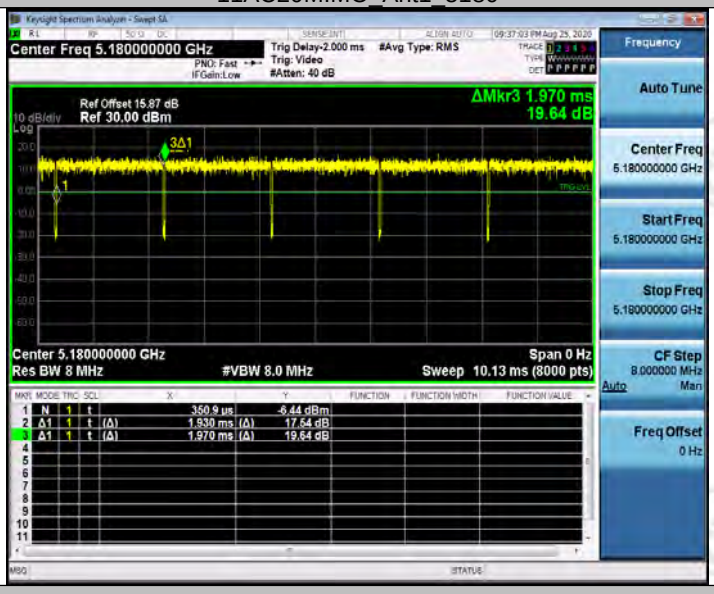
11N40MIMO_Ant1_5795



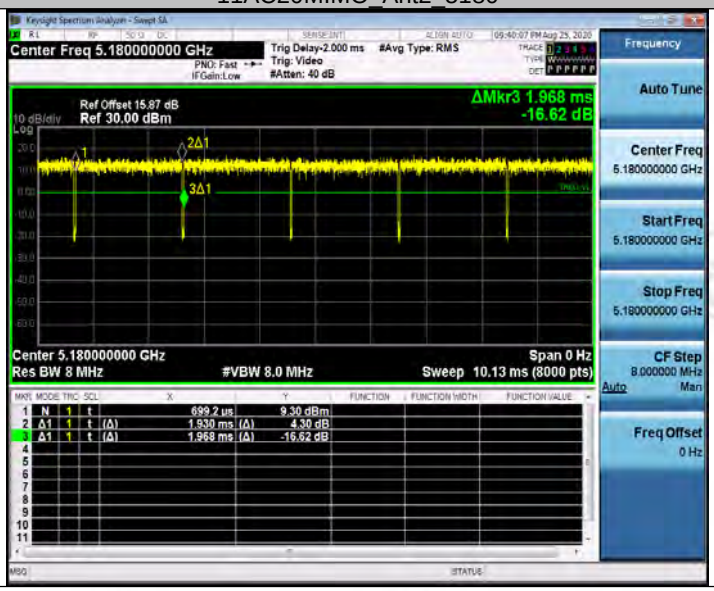
11N40MIMO_Ant2_5795



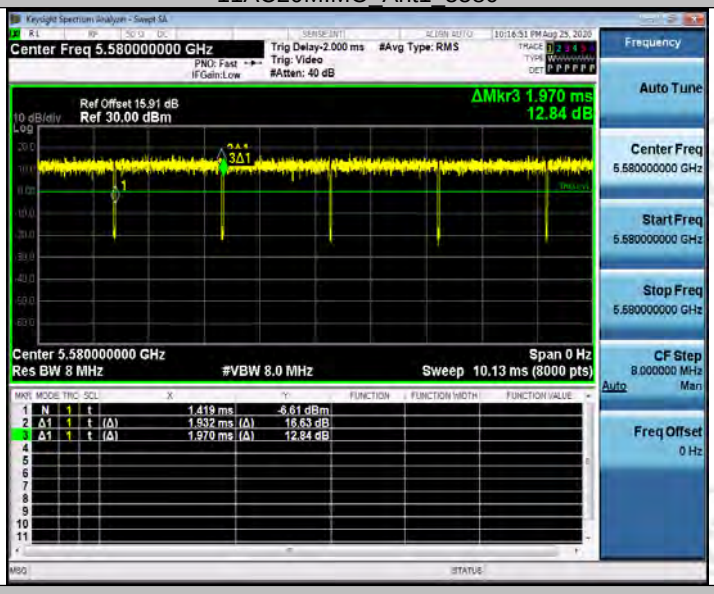
11AC20MIMO_Ant1_5180



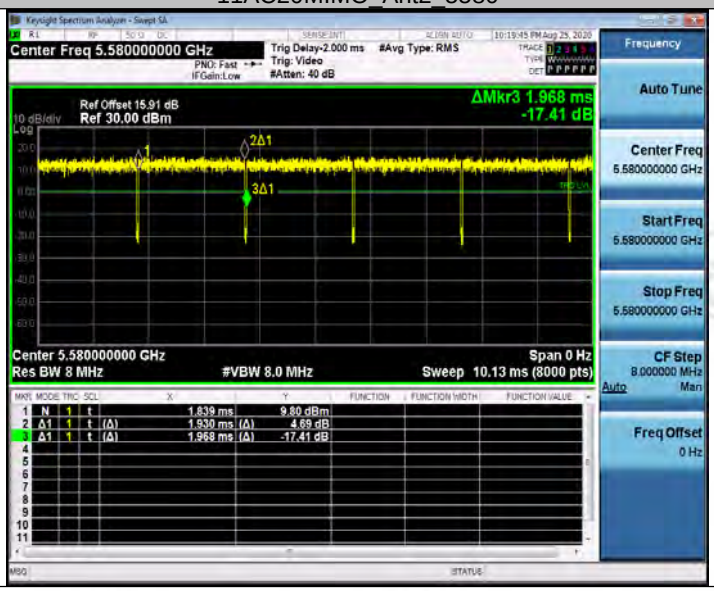
11AC20MIMO_Ant2_5180



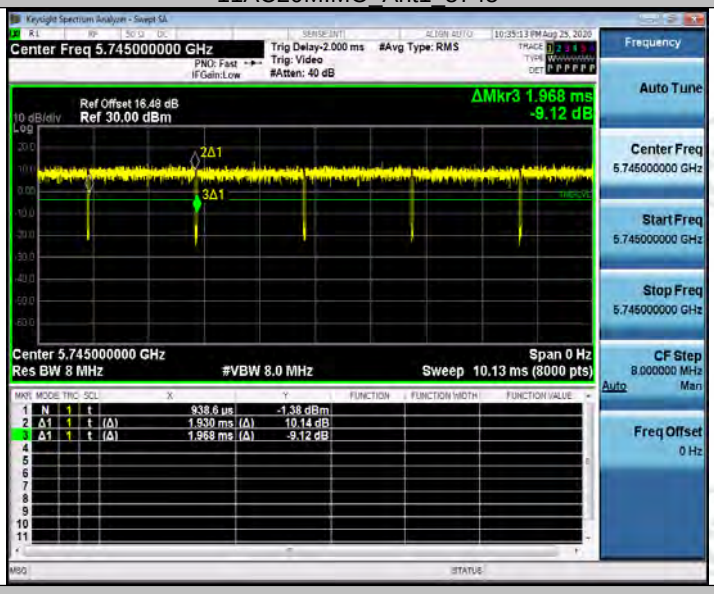
11AC20MIMO_Ant1_5580



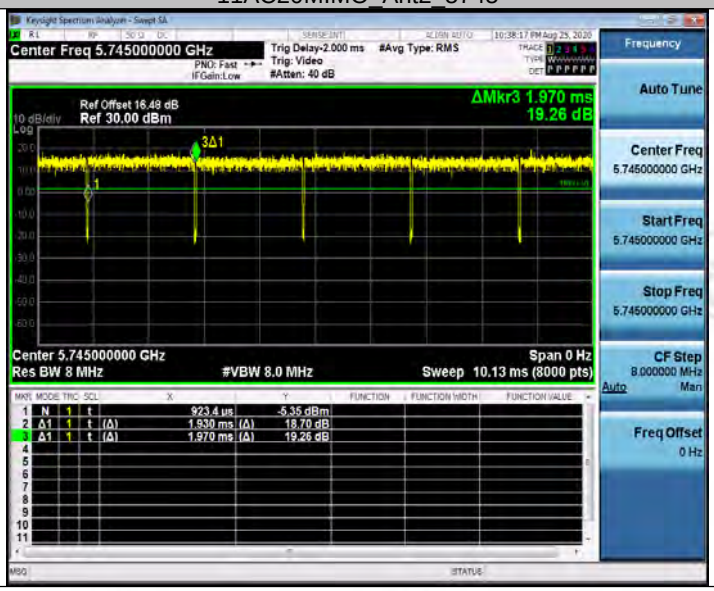
11AC20MIMO_Ant2_5580

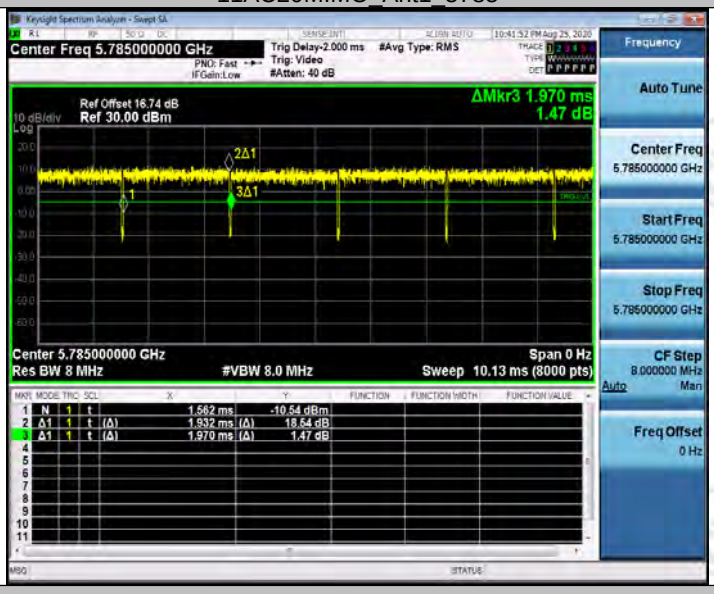


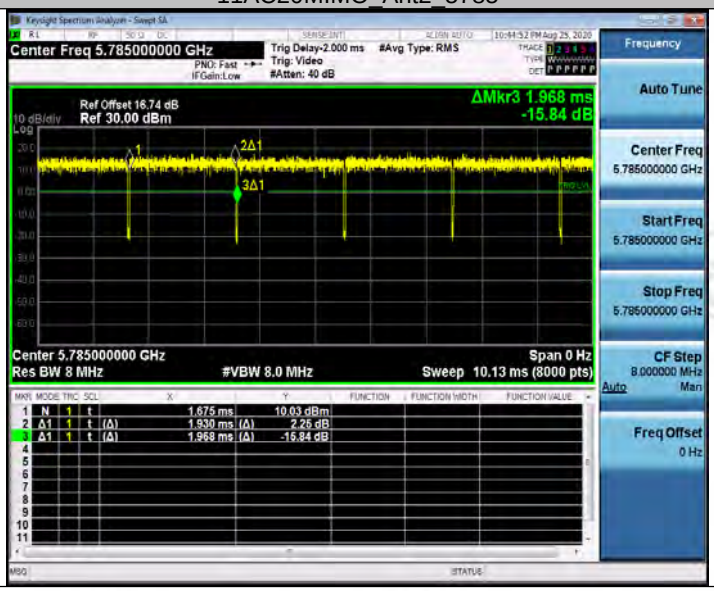
11AC20MIMO_Ant1_5745



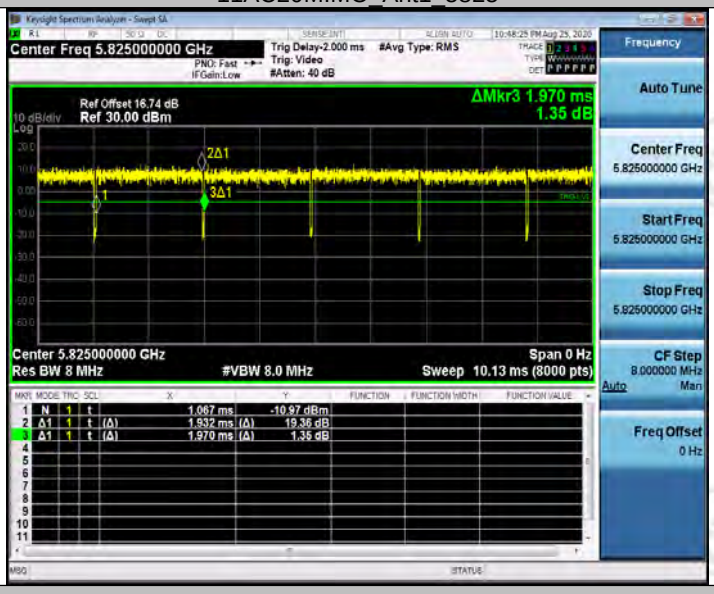
11AC20MIMO_Ant2_5745



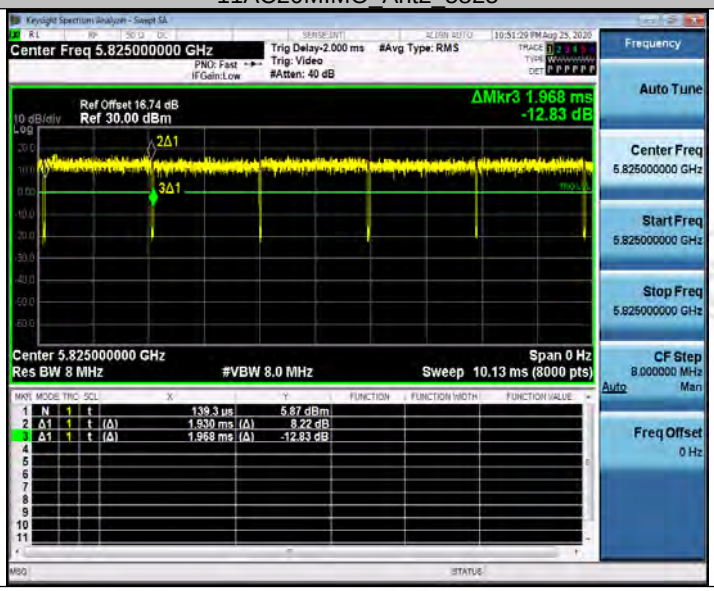
11AC20MIMO_Ant1_5785


11AC20MIMO_Ant2_5785


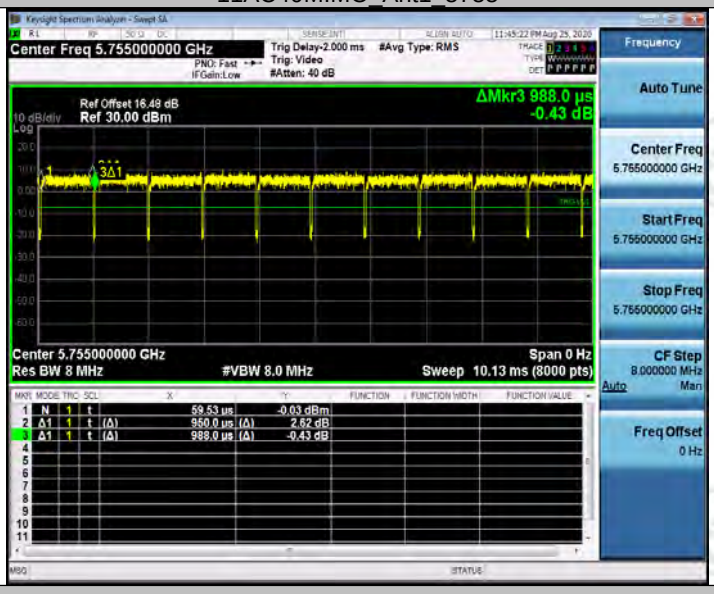
11AC20MIMO_Ant1_5825



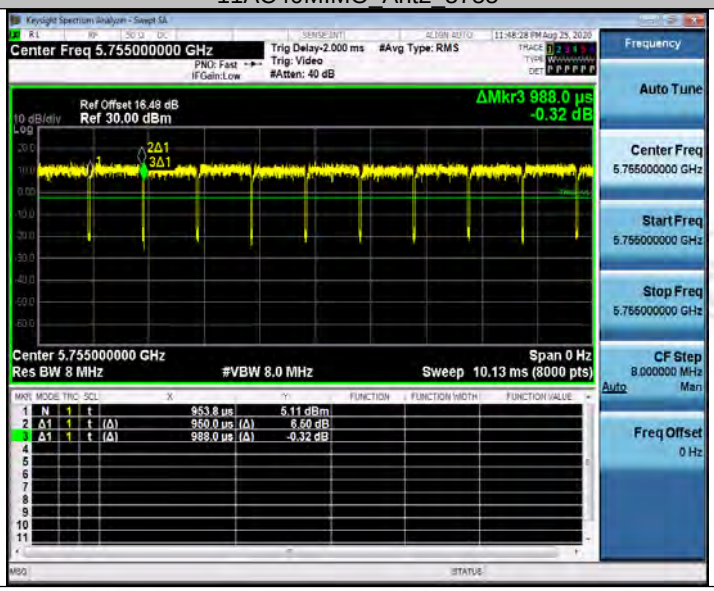
11AC20MIMO_Ant2_5825



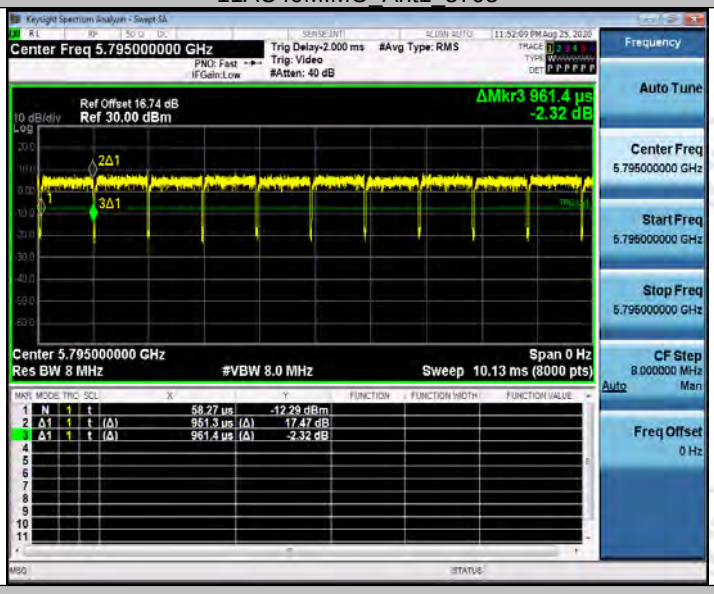
11AC40MIMO_Ant1_5755



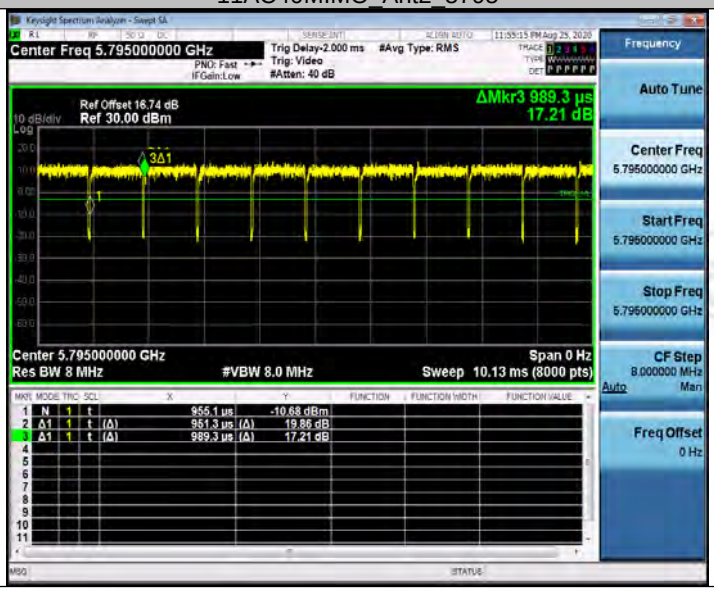
11AC40MIMO_Ant2_5755



11AC40MIMO_Ant1_5795



11AC40MIMO_Ant2_5795



Appendix A) :Emission Bandwidth

Test Result

Test Mode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	21.840	---	PASS
	Ant2	5180	22.160	---	PASS
	Ant1	5200	21.800	---	PASS
	Ant2	5200	22.040	---	PASS
	Ant1	5240	21.560	---	PASS
	Ant2	5240	22.840	---	PASS
	Ant1	5260	21.440	---	PASS
	Ant2	5260	21.160	---	PASS
	Ant1	5280	21.480	---	PASS
	Ant2	5280	21.200	---	PASS
	Ant1	5320	22.120	---	PASS
	Ant2	5320	21.520	---	PASS
	Ant1	5500	21.000	---	PASS
	Ant2	5500	21.640	---	PASS
	Ant1	5580	21.000	---	PASS
	Ant2	5580	21.880	---	PASS
	Ant1	5700	21.520	---	PASS
	Ant2	5700	21.240	---	PASS
	Ant1	5745	21.320	---	PASS
	Ant2	5745	21.760	---	PASS
	Ant1	5785	21.360	---	PASS
	Ant2	5785	21.200	---	PASS
	Ant1	5825	21.840	---	PASS
	Ant2	5825	21.560	---	PASS
11N20SISO	Ant1	5180	21.760	---	PASS
	Ant2	5180	22.080	---	PASS
	Ant1	5200	21.840	---	PASS
	Ant2	5200	21.640	---	PASS
	Ant1	5240	24.320	---	PASS
	Ant2	5240	21.240	---	PASS
	Ant1	5260	22.480	---	PASS
	Ant2	5260	21.760	---	PASS
	Ant1	5280	22.240	---	PASS
	Ant2	5280	23.040	---	PASS
	Ant1	5320	21.160	---	PASS
	Ant2	5320	21.400	---	PASS
	Ant1	5500	22.000	---	PASS
	Ant2	5500	21.920	---	PASS
	Ant1	5580	21.600	---	PASS
	Ant2	5580	21.320	---	PASS
	Ant1	5700	21.440	---	PASS
	Ant2	5700	21.760	---	PASS
	Ant1	5745	21.560	---	PASS
	Ant2	5745	22.200	---	PASS
	Ant1	5785	21.720	---	PASS
	Ant2	5785	21.640	---	PASS
	Ant1	5825	22.440	---	PASS
	Ant2	5825	21.920	---	PASS
11N40SISO	Ant1	5190	40.880	---	PASS
	Ant2	5190	41.920	---	PASS
	Ant1	5230	41.360	---	PASS
	Ant2	5230	41.040	---	PASS
	Ant1	5270	42.000	---	PASS
	Ant2	5270	41.040	---	PASS
	Ant1	5310	41.760	---	PASS
	Ant2	5310	40.640	---	PASS

	Ant1	5510	41.040	---	PASS
	Ant2	5510	41.440	---	PASS
	Ant1	5550	41.120	---	PASS
	Ant2	5550	41.680	---	PASS
	Ant1	5670	41.360	---	PASS
	Ant2	5670	40.640	---	PASS
	Ant1	5755	41.280	---	PASS
	Ant2	5755	40.960	---	PASS
	Ant1	5795	41.440	---	PASS
	Ant2	5795	40.400	---	PASS
11AC20SISO	Ant1	5180	22.360	---	PASS
	Ant2	5180	22.240	---	PASS
	Ant1	5200	22.400	---	PASS
	Ant2	5200	23.720	---	PASS
	Ant1	5240	21.960	---	PASS
	Ant2	5240	22.040	---	PASS
	Ant1	5260	22.040	---	PASS
	Ant2	5260	22.080	---	PASS
	Ant1	5280	21.560	---	PASS
	Ant2	5280	22.360	---	PASS
	Ant1	5320	22.840	---	PASS
	Ant2	5320	22.920	---	PASS
	Ant1	5500	22.200	---	PASS
	Ant2	5500	21.280	---	PASS
	Ant1	5580	21.680	---	PASS
	Ant2	5580	20.960	---	PASS
	Ant1	5700	22.320	---	PASS
	Ant2	5700	20.920	---	PASS
	Ant1	5745	21.840	---	PASS
	Ant2	5745	22.080	---	PASS
	Ant1	5785	21.960	---	PASS
	Ant2	5785	22.200	---	PASS
	Ant1	5825	21.400	---	PASS
	Ant2	5825	21.320	---	PASS
11AC40SISO	Ant1	5190	41.280	---	PASS
	Ant2	5190	41.360	---	PASS
	Ant1	5230	41.600	---	PASS
	Ant2	5230	41.360	---	PASS
	Ant1	5270	41.600	---	PASS
	Ant2	5270	40.880	---	PASS
	Ant1	5310	41.680	---	PASS
	Ant2	5310	40.960	---	PASS
	Ant1	5510	41.120	---	PASS
	Ant2	5510	41.200	---	PASS
	Ant1	5550	41.600	---	PASS
	Ant2	5550	41.520	---	PASS
	Ant1	5670	40.880	---	PASS
	Ant2	5670	41.120	---	PASS
	Ant1	5755	41.120	---	PASS
	Ant2	5755	40.240	---	PASS
	Ant1	5795	40.800	---	PASS
	Ant2	5795	41.040	---	PASS
11AC80SISO	Ant1	5210	82.880	---	PASS
	Ant2	5210	82.240	---	PASS
	Ant1	5290	84.000	---	PASS
	Ant2	5290	83.520	---	PASS
	Ant1	5530	83.840	---	PASS
	Ant2	5530	84.320	---	PASS
	Ant1	5610	83.520	---	PASS
	Ant2	5610	82.880	---	PASS
	Ant1	5775	83.680	---	PASS

	Ant2	5775	82.560	---	PASS
11N20MIMO	Ant1	5180	22.440	---	PASS
	Ant2	5180	23.120	---	PASS
	Ant1	5200	22.960	---	PASS
	Ant2	5200	23.200	---	PASS
	Ant1	5240	23.480	---	PASS
	Ant2	5240	23.920	---	PASS
	Ant1	5260	22.080	---	PASS
	Ant2	5260	21.680	---	PASS
	Ant1	5280	22.840	---	PASS
	Ant2	5280	21.520	---	PASS
	Ant1	5320	21.240	---	PASS
	Ant2	5320	21.720	---	PASS
	Ant1	5500	21.800	---	PASS
	Ant2	5500	21.800	---	PASS
	Ant1	5580	22.000	---	PASS
	Ant2	5580	21.000	---	PASS
	Ant1	5700	21.960	---	PASS
	Ant2	5700	21.600	---	PASS
	Ant1	5745	21.320	---	PASS
	Ant2	5745	21.640	---	PASS
	Ant1	5785	21.960	---	PASS
	Ant2	5785	21.680	---	PASS
	Ant1	5825	22.480	---	PASS
	Ant2	5825	21.880	---	PASS
11N40MIMO	Ant1	5190	40.560	---	PASS
	Ant2	5190	40.880	---	PASS
	Ant1	5230	40.640	---	PASS
	Ant2	5230	40.800	---	PASS
	Ant1	5270	40.240	---	PASS
	Ant2	5270	40.320	---	PASS
	Ant1	5310	40.720	---	PASS
	Ant2	5310	40.400	---	PASS
	Ant1	5510	41.040	---	PASS
	Ant2	5510	40.080	---	PASS
	Ant1	5550	40.880	---	PASS
	Ant2	5550	41.280	---	PASS
	Ant1	5670	41.200	---	PASS
	Ant2	5670	40.640	---	PASS
	Ant1	5755	40.880	---	PASS
	Ant2	5755	40.640	---	PASS
	Ant1	5795	40.640	---	PASS
	Ant2	5795	39.920	---	PASS
11AC20MIMO	Ant1	5180	22.200	---	PASS
	Ant2	5180	22.280	---	PASS
	Ant1	5200	22.640	---	PASS
	Ant2	5200	22.520	---	PASS
	Ant1	5240	21.480	---	PASS
	Ant2	5240	22.160	---	PASS
	Ant1	5260	22.720	---	PASS
	Ant2	5260	21.120	---	PASS
	Ant1	5280	21.760	---	PASS
	Ant2	5280	22.840	---	PASS
	Ant1	5320	22.440	---	PASS
	Ant2	5320	23.280	---	PASS
	Ant1	5500	21.920	---	PASS
	Ant2	5500	21.480	---	PASS
	Ant1	5580	21.360	---	PASS
	Ant2	5580	22.680	---	PASS
	Ant1	5700	22.160	---	PASS
	Ant2	5700	22.200	---	PASS

	Ant1	5745	22.120	---	PASS
	Ant2	5745	21.800	---	PASS
	Ant1	5785	21.920	---	PASS
	Ant2	5785	21.480	---	PASS
	Ant1	5825	21.920	---	PASS
	Ant2	5825	21.680	---	PASS
11AC40MIMO	Ant1	5190	40.880	---	PASS
	Ant2	5190	41.200	---	PASS
	Ant1	5230	40.880	---	PASS
	Ant2	5230	41.280	---	PASS
	Ant1	5270	40.400	---	PASS
	Ant2	5270	41.040	---	PASS
	Ant1	5310	41.360	---	PASS
	Ant2	5310	41.040	---	PASS
	Ant1	5510	41.360	---	PASS
	Ant2	5510	41.520	---	PASS
	Ant1	5550	41.520	---	PASS
	Ant2	5550	41.120	---	PASS
	Ant1	5670	40.880	---	PASS
	Ant2	5670	40.960	---	PASS
	Ant1	5755	41.440	---	PASS
	Ant2	5755	40.720	---	PASS
	Ant1	5795	40.960	---	PASS
	Ant2	5795	40.640	---	PASS
11AC80MIMO	Ant1	5210	83.520	---	PASS
	Ant2	5210	83.360	---	PASS
	Ant1	5290	82.880	---	PASS
	Ant2	5290	83.840	---	PASS
	Ant1	5530	83.680	---	PASS
	Ant2	5530	84.160	---	PASS
	Ant1	5610	83.840	---	PASS
	Ant2	5610	83.360	---	PASS
	Ant1	5775	86.880	---	PASS
	Ant2	5775	82.880	---	PASS

Test Graphs

11A_Ant1_5180

11A_Ant2_5180

11A_Ant1_5200

11A_Ant2_5200

11A_Ant1_5240

11A_Ant2_5240

11A_Ant1_5260

11A_Ant2_5260

11A_Ant1_5280

11A_Ant2_5280

11A_Ant1_5320

11A_Ant2_5320

11A_Ant1_5500

11A_Ant2_5500

11A_Ant1_5580

11A_Ant2_5580

11A_Ant1_5700

11A_Ant2_5700

11A_Ant1_5745

11A_Ant2_5745

11A_Ant1_5785

11A_Ant2_5785

11A_Ant1_5825

11A_Ant2_5825

11N20SISO_Ant1_5180

11N20SISO_Ant2_5180

11N20SISO_Ant1_5200

11N20SISO_Ant2_5200

11N20SISO_Ant1_5240

11N20SISO_Ant2_5240

11N20SISO_Ant1_5260

11N20SISO_Ant2_5260

11N20SISO_Ant1_5280

11N20SISO_Ant2_5280

11N20SISO_Ant1_5320

11N20SISO_Ant2_5320

11N20SISO_Ant1_5500

11N20SISO_Ant2_5500

11N20SISO_Ant1_5580

11N20SISO_Ant2_5580

11N20SISO_Ant1_5700

11N20SISO_Ant2_5700

11N20SISO_Ant1_5745

11N20SISO_Ant2_5745

11N20SISO_Ant1_5785

11N20SISO_Ant2_5785

11N20SISO_Ant1_5825

11N20SISO_Ant2_5825

11N40SISO_Ant1_5190

11N40SISO_Ant2_5190

11N40SISO_Ant1_5230

11N40SISO_Ant2_5230

11N40SISO_Ant1_5270

11N40SISO_Ant2_5270