

Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Mishiko Collar

Trade Mark: MISHIKO

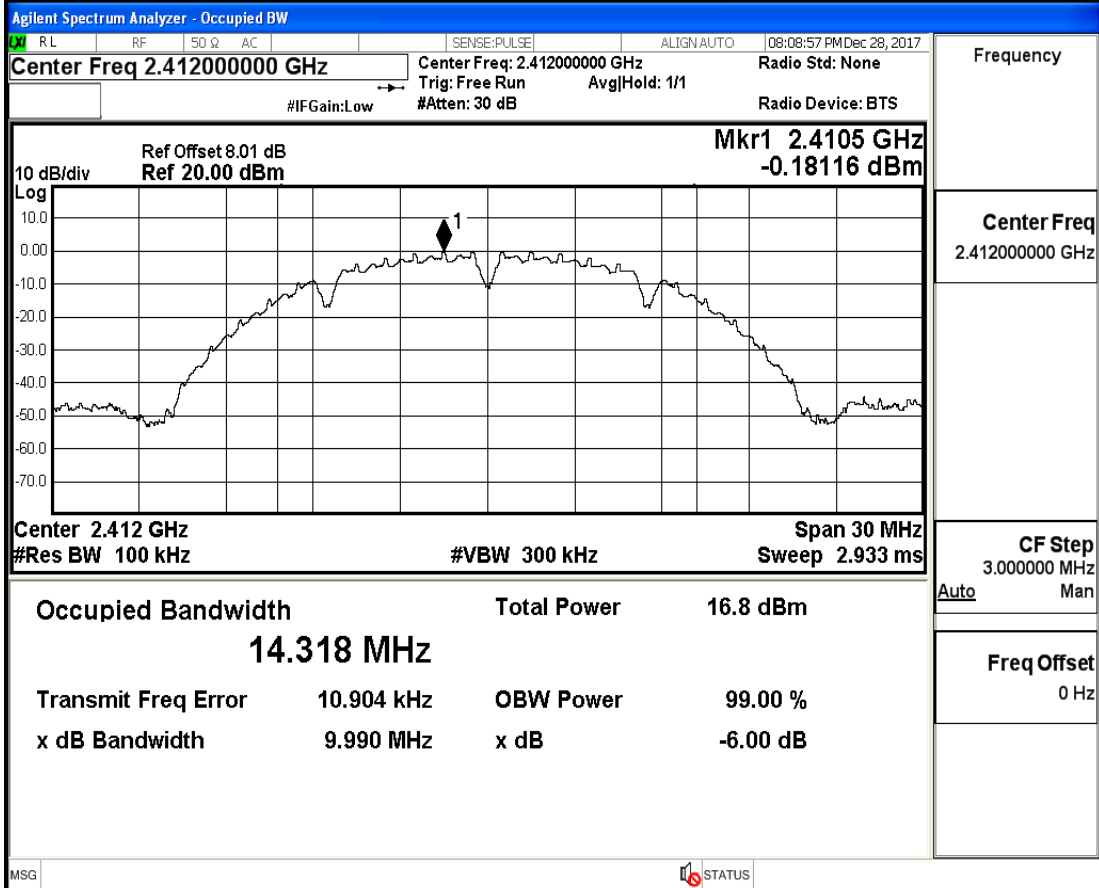
Test Model: M103

FCC ID: 2AID9M103

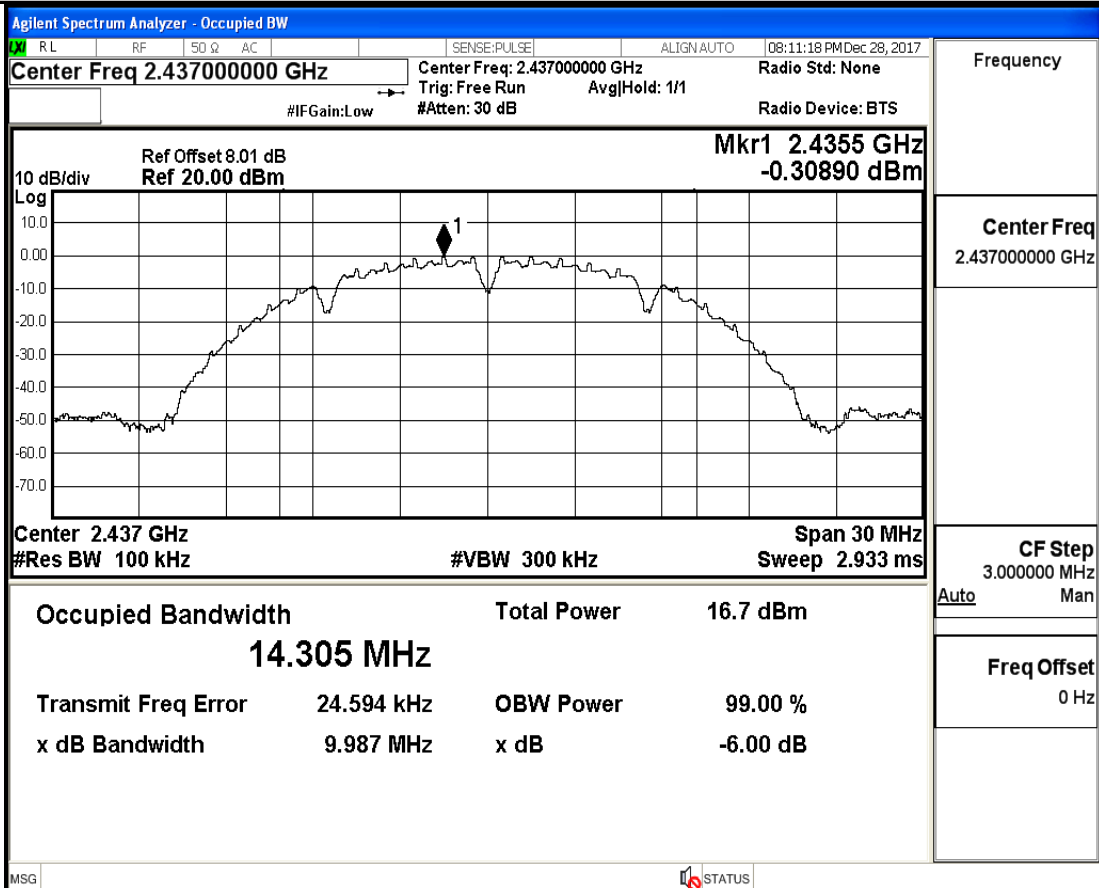
C.1 6dB Bandwidth

Test Mode	Test Channel	Ant	EBW[MHz]	Limit	Verdict
11B	2412	Ant1	9.990	0.5	PASS
11B	2437	Ant1	9.987	0.5	PASS
11B	2462	Ant1	9.986	0.5	PASS
11G	2412	Ant1	16.60	0.5	PASS
11G	2437	Ant1	16.62	0.5	PASS
11G	2462	Ant1	16.62	0.5	PASS
11N20SISO	2412	Ant1	17.83	0.5	PASS
11N20SISO	2437	Ant1	17.81	0.5	PASS
11N20SISO	2462	Ant1	17.82	0.5	PASS
11N40SISO	2422	Ant1	36.49	0.5	PASS
11N40SISO	2437	Ant1	36.49	0.5	PASS
11N40SISO	2452	Ant1	36.49	0.5	PASS

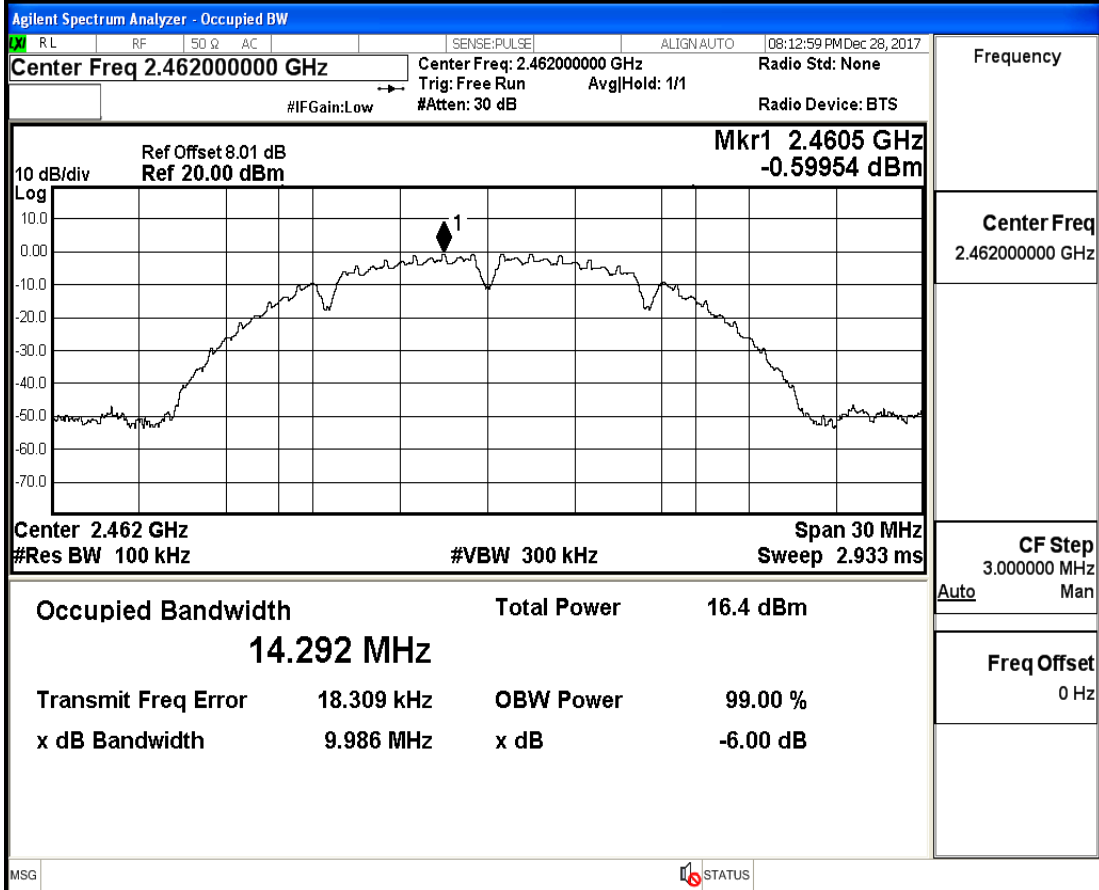
6dB Bandwidth_11B_2412_Ant1



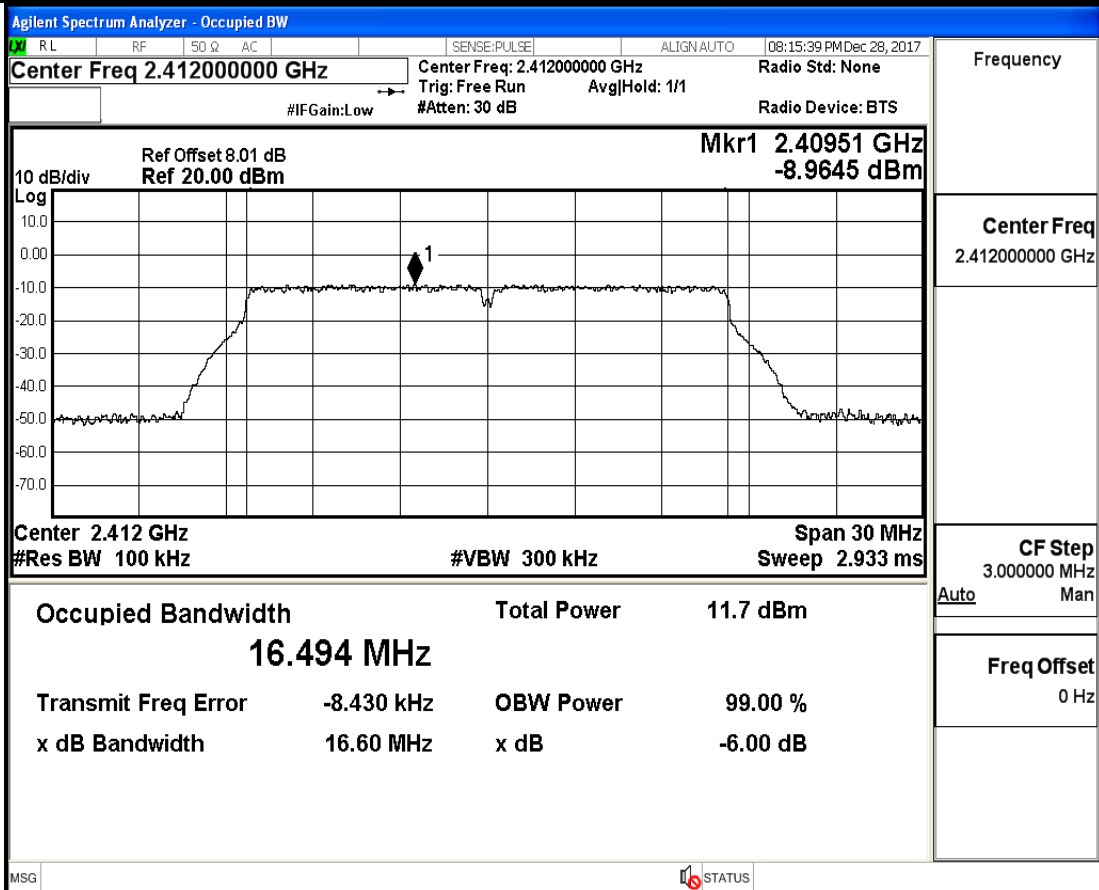
6dB Bandwidth_11B_2437_Ant1



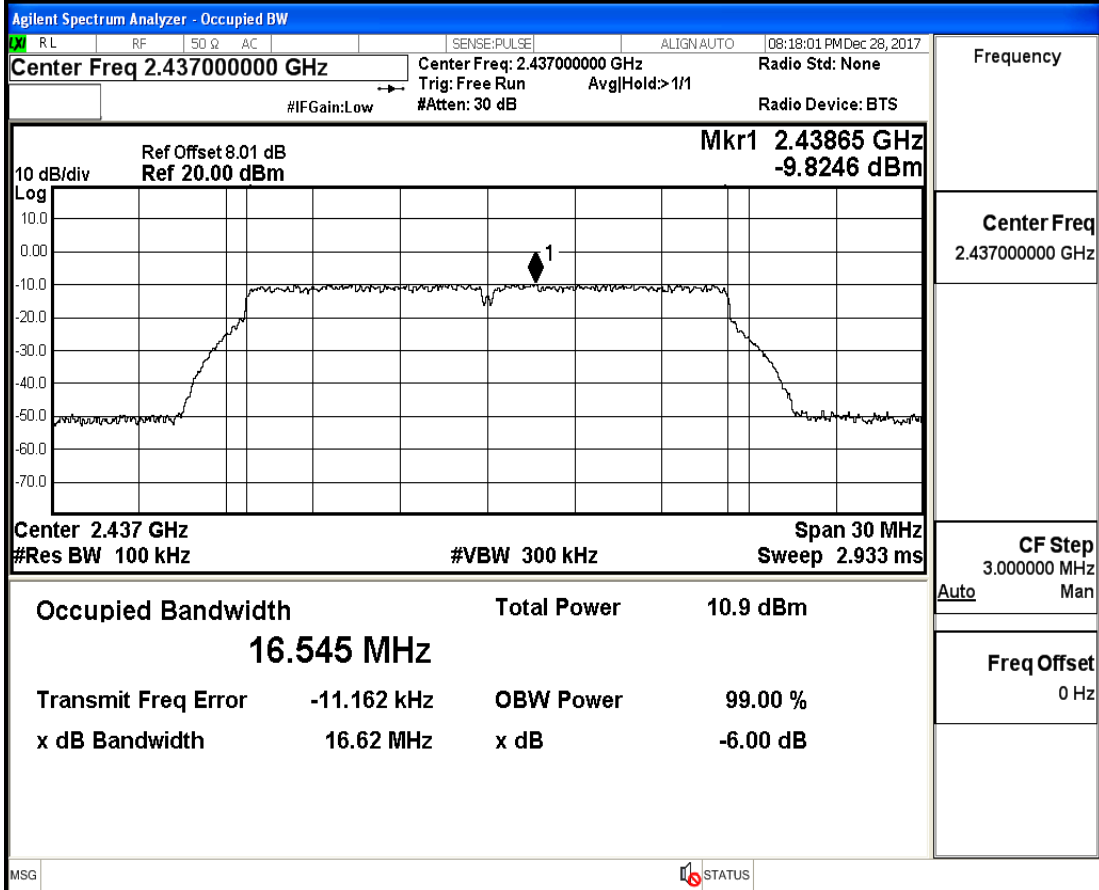
6dB Bandwidth_11B_2462_Ant1



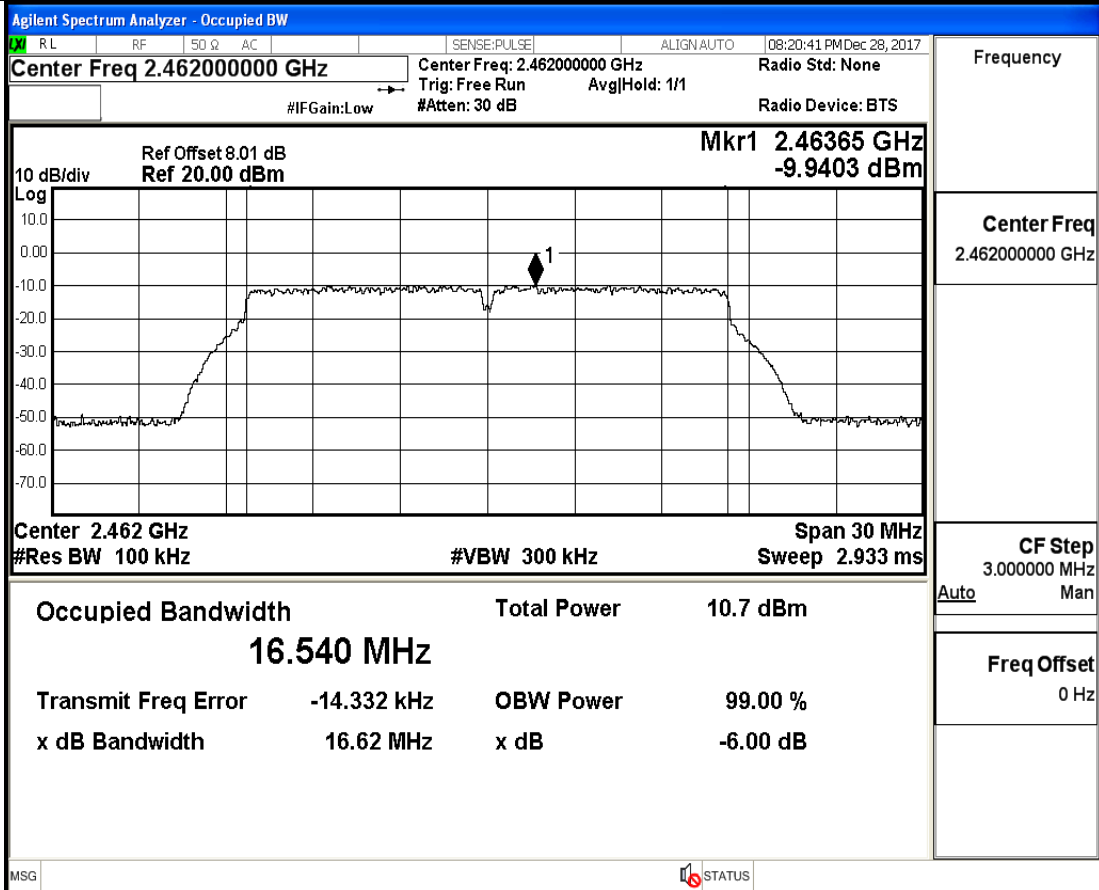
6dB Bandwidth_11G_2412_Ant1



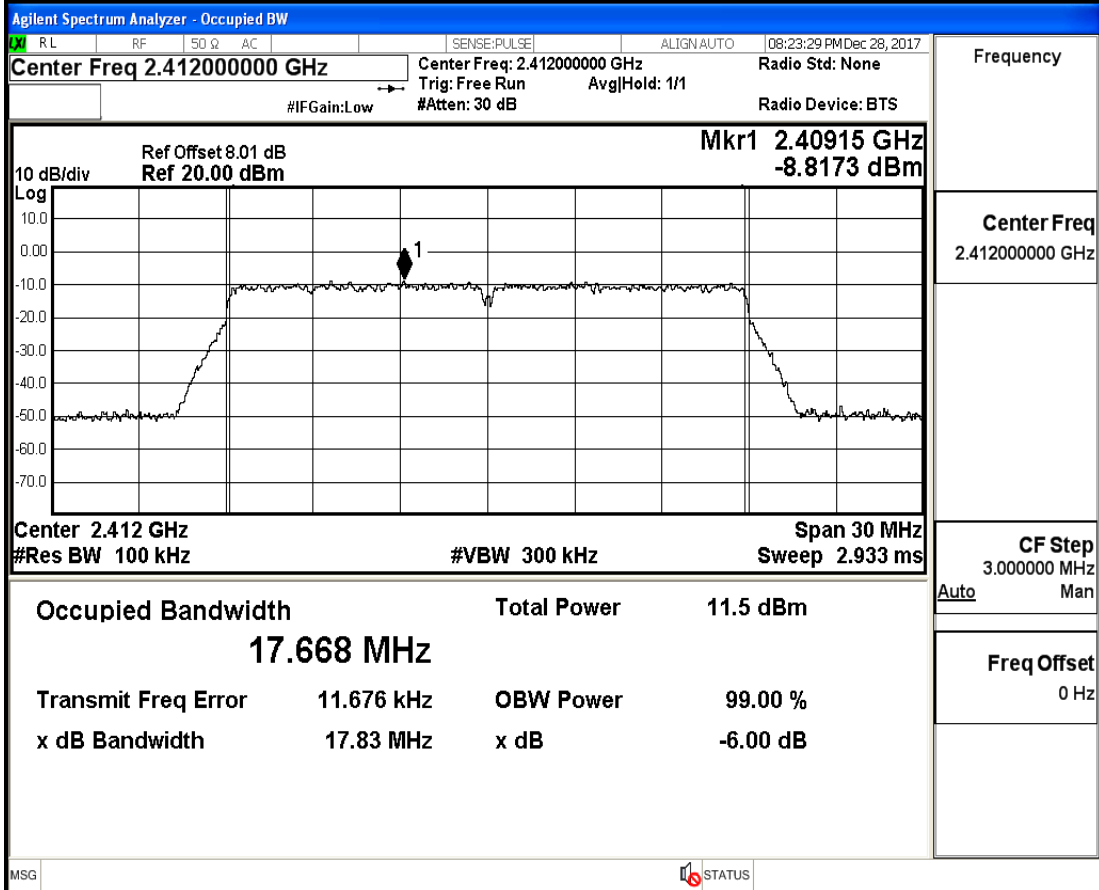
6dB Bandwidth_11G_2437_Ant1



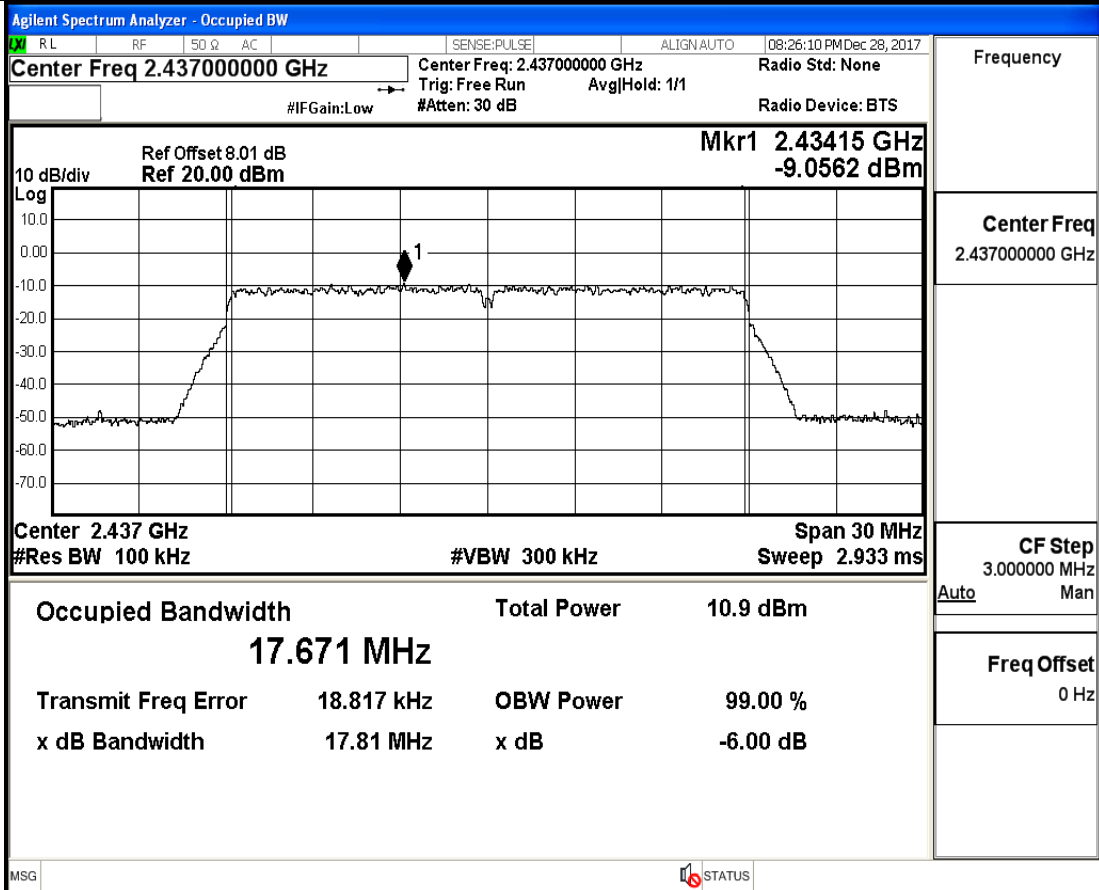
6dB Bandwidth_11G_2462_Ant1



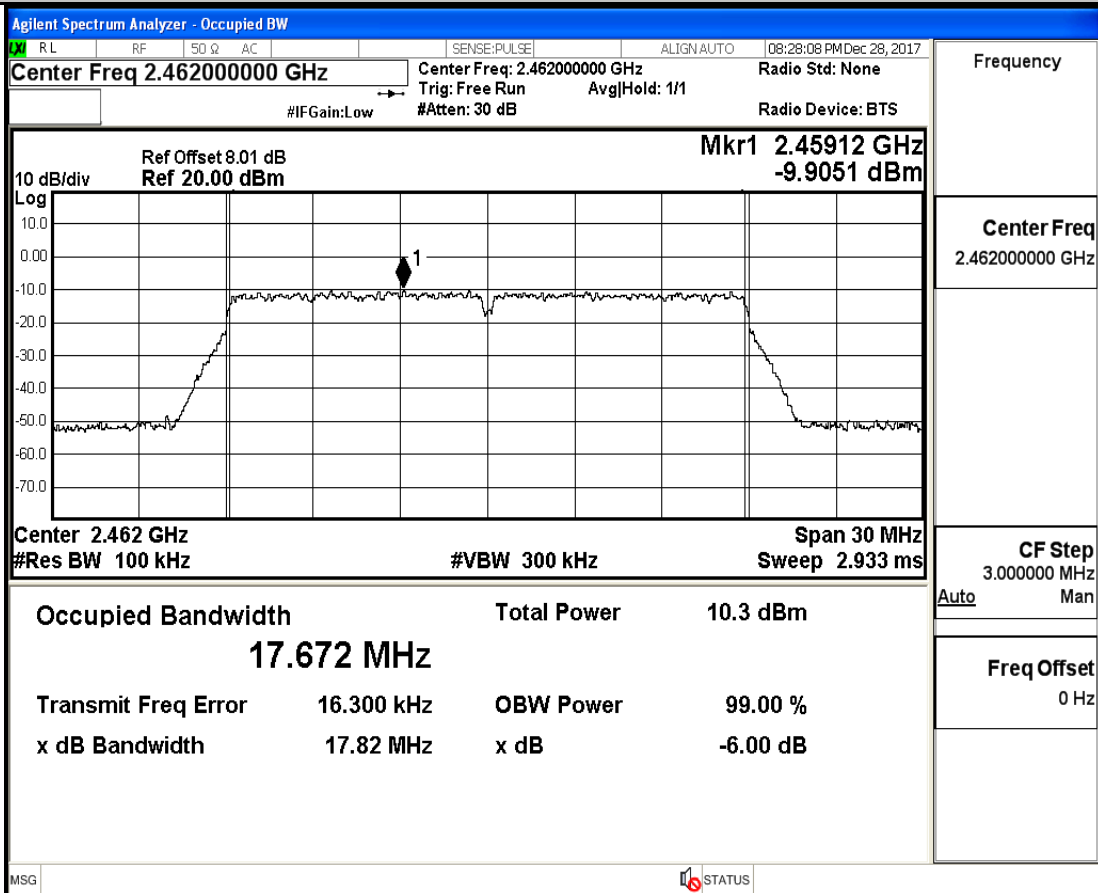
6dB Bandwidth_11N20SISO_2412_Ant1



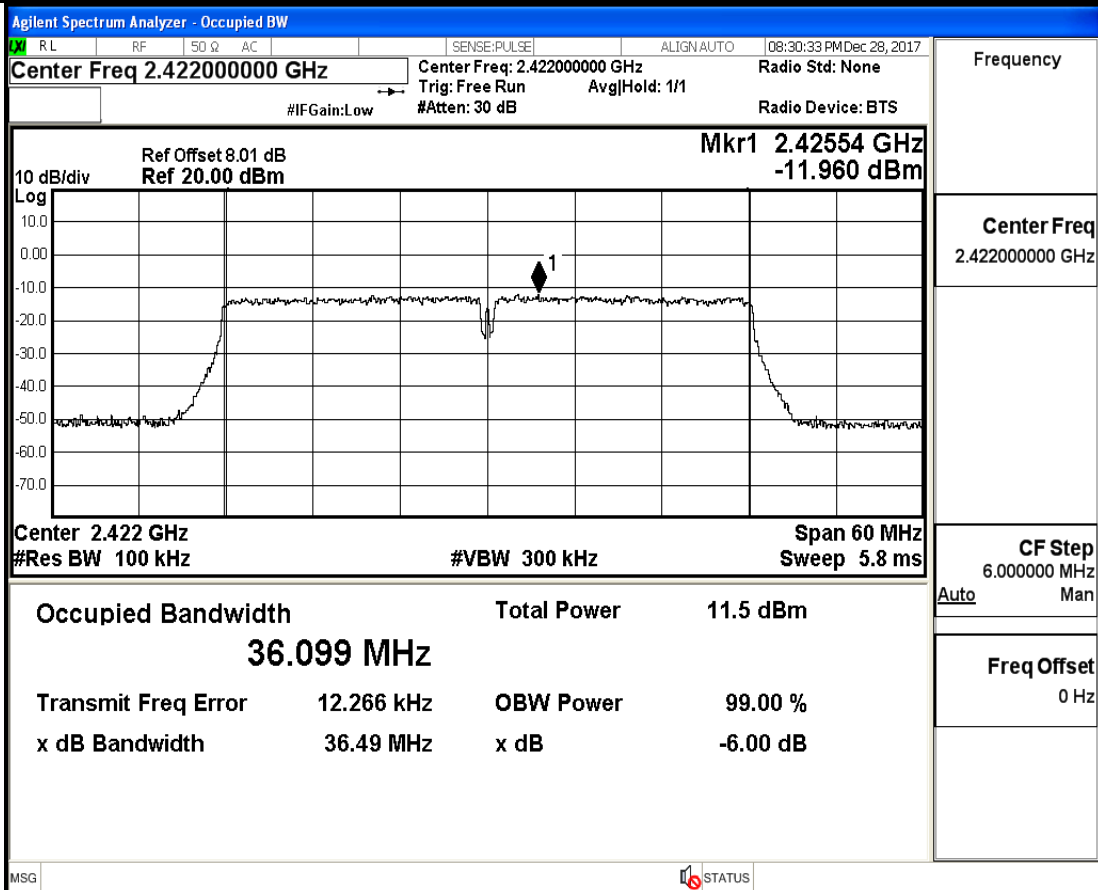
6dB Bandwidth_11N20SISO_2437_Ant1



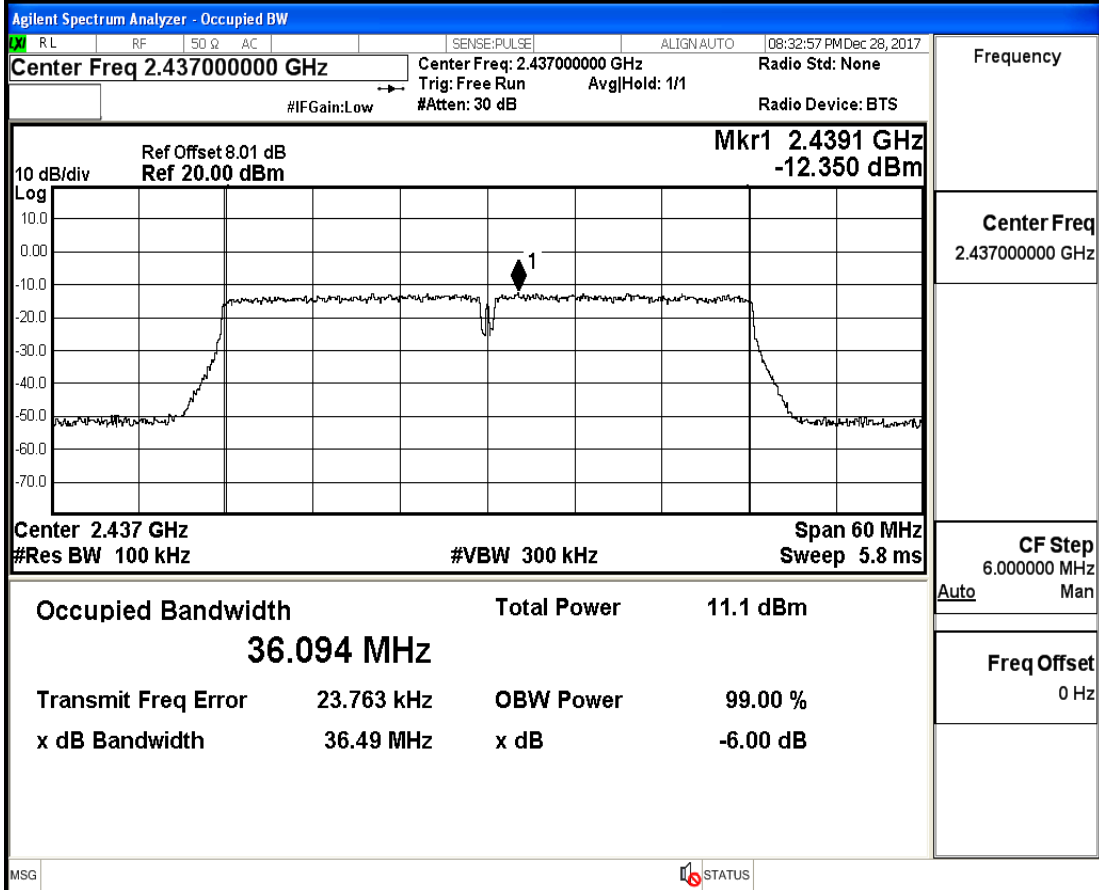
6dB Bandwidth_11N20SISO_2462_Ant1



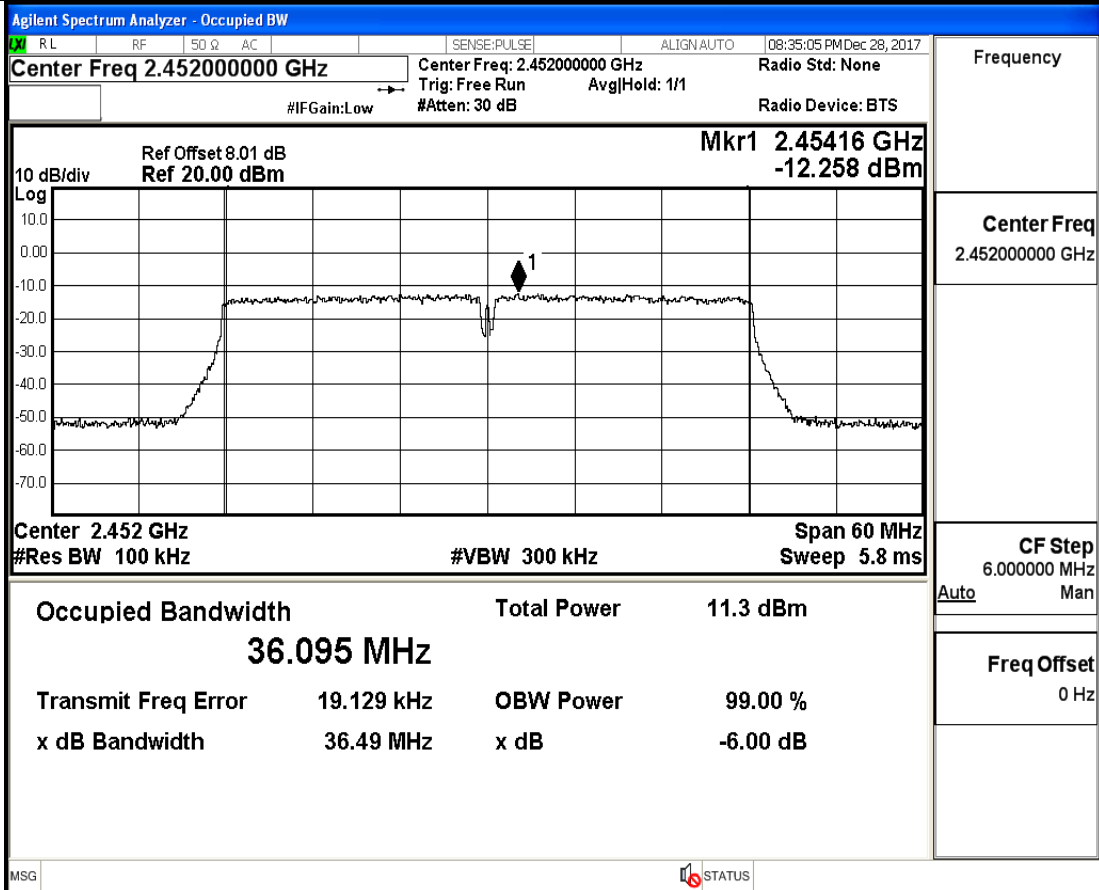
6dB Bandwidth_11N40SISO_2422_Ant1



6dB Bandwidth_11N40SISO_2437_Ant1



6dB Bandwidth_11N40SISO_2452_Ant1



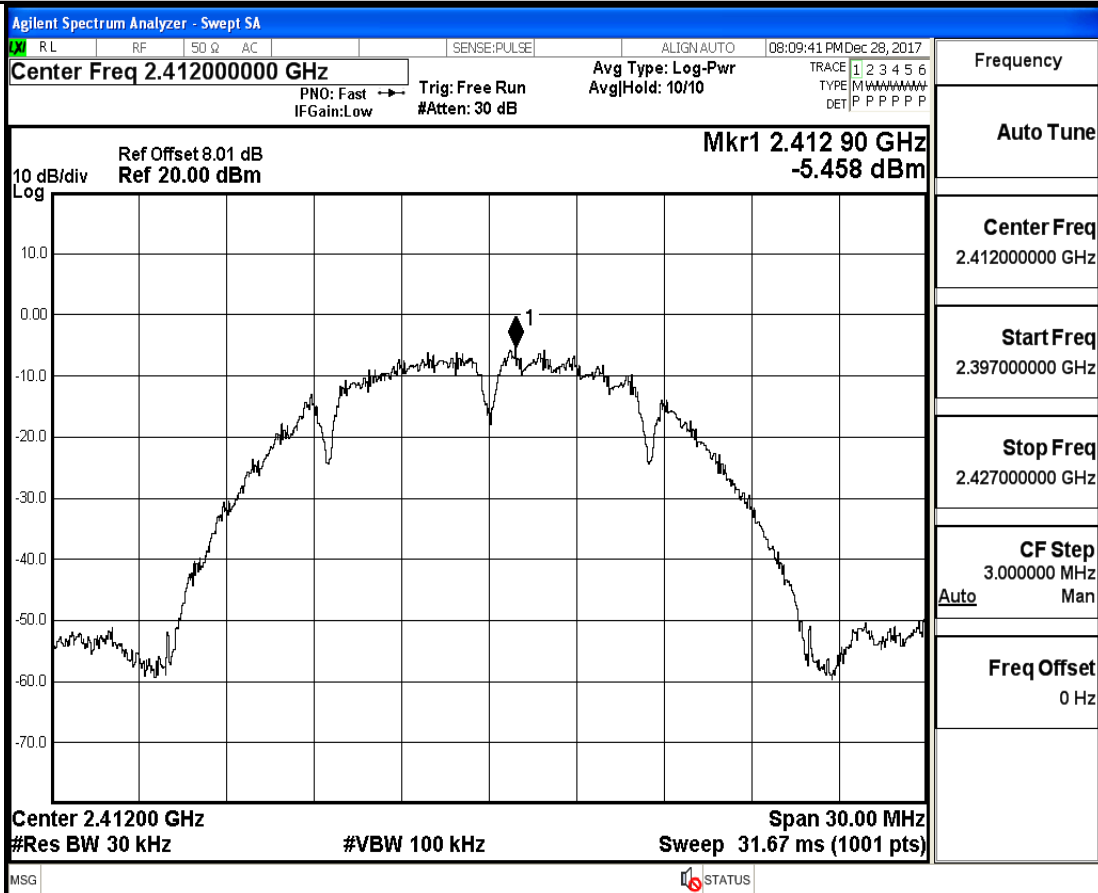
C.2 Maximum peak conducted output power

Test Mode	Test Channel	Ant	Peak Power[dBm]	Limit[dBm]	Verdict
11B	2412	Ant1	14.81	30	PASS
11B	2437	Ant1	14.73	30	PASS
11B	2462	Ant1	14.42	30	PASS
11G	2412	Ant1	16.10	30	PASS
11G	2437	Ant1	16.33	30	PASS
11G	2462	Ant1	16.03	30	PASS
11N20SISO	2412	Ant1	17.03	30	PASS
11N20SISO	2437	Ant1	16.46	30	PASS
11N20SISO	2462	Ant1	16.87	30	PASS
11N40SISO	2422	Ant1	18.91	30	PASS
11N40SISO	2437	Ant1	18.53	30	PASS
11N40SISO	2452	Ant1	18.67	30	PASS

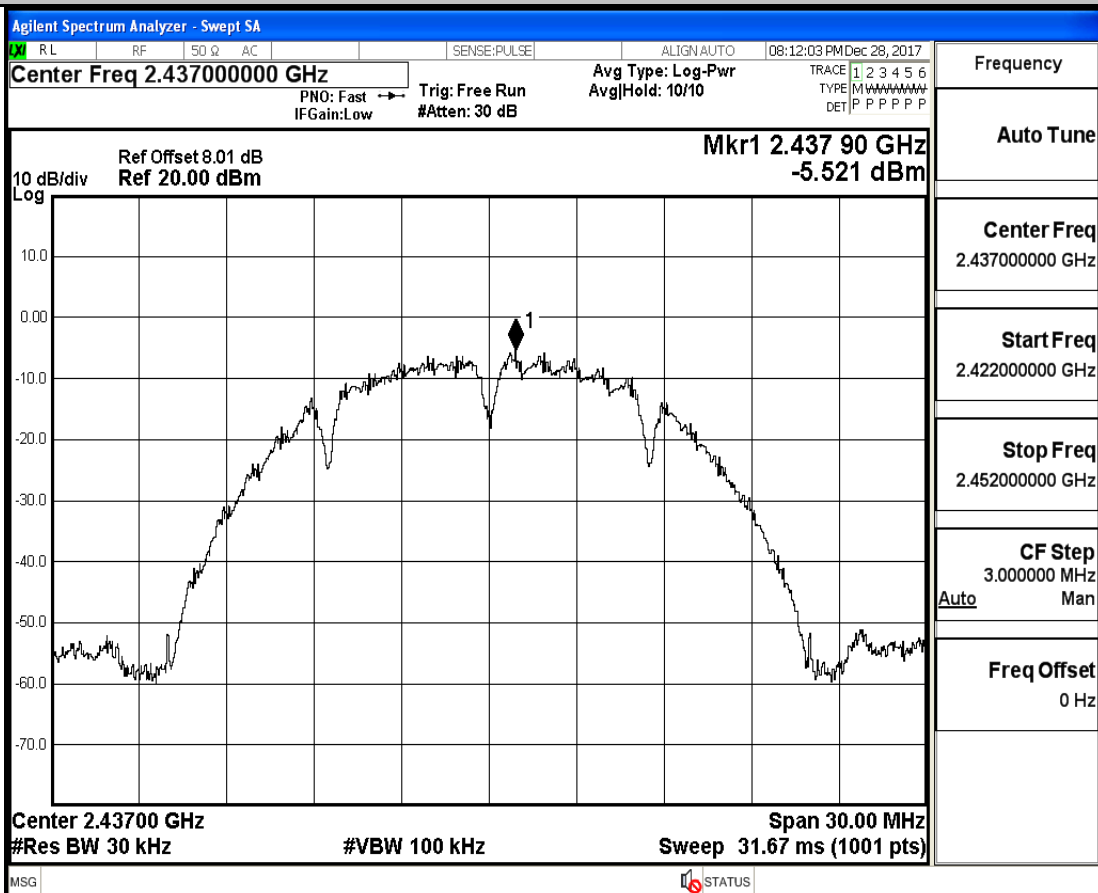
C.3 Maximum Peak power spectral density

Test Mode	Test Channel	Ant	PSD[dBm/30KHz]	Limit[dBm/3KHz]	Verdict
11B	2412	Ant1	-5.458	8.00	PASS
11B	2437	Ant1	-5.521	8.00	PASS
11B	2462	Ant1	-5.861	8.00	PASS
11G	2412	Ant1	-11.615	8.00	PASS
11G	2437	Ant1	-12.441	8.00	PASS
11G	2462	Ant1	-12.647	8.00	PASS
11N20SISO	2412	Ant1	-11.377	8.00	PASS
11N20SISO	2437	Ant1	-12.154	8.00	PASS
11N20SISO	2462	Ant1	-12.794	8.00	PASS
11N40SISO	2422	Ant1	-15.226	8.00	PASS
11N40SISO	2437	Ant1	-15.684	8.00	PASS
11N40SISO	2452	Ant1	-15.379	8.00	PASS

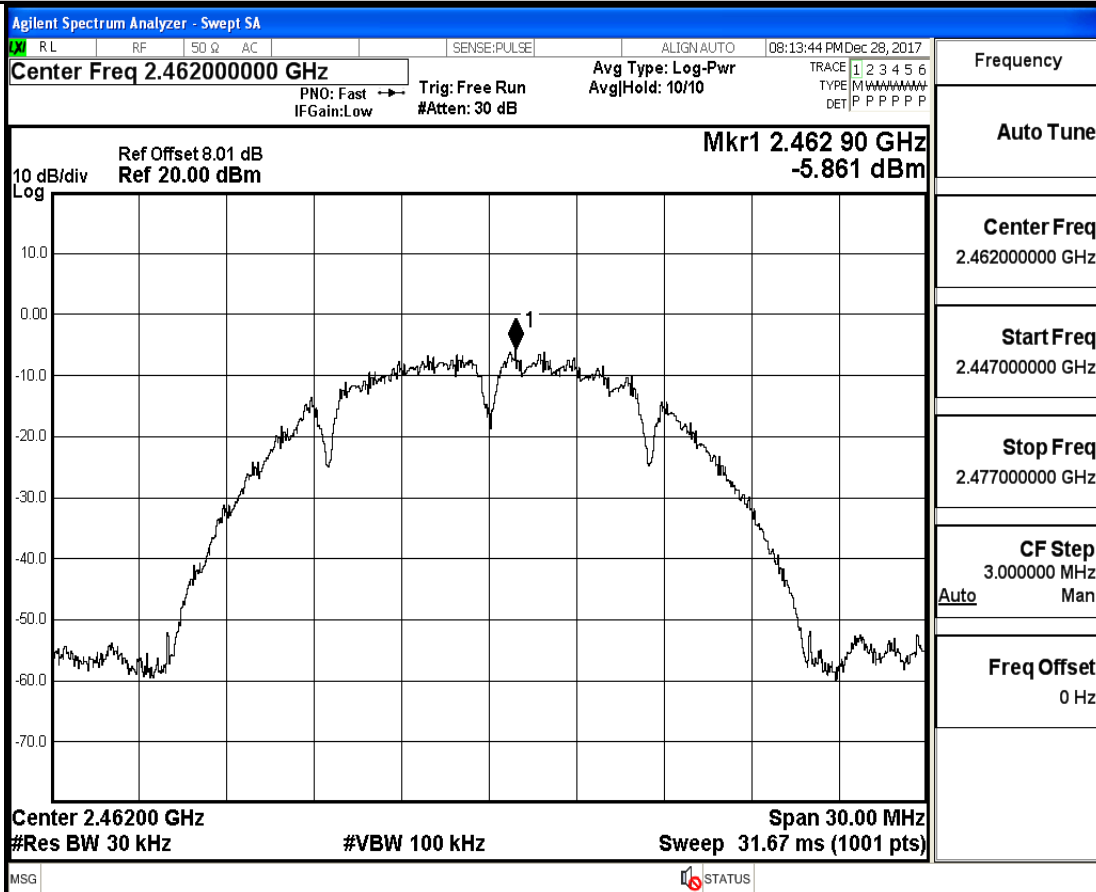
Maximum Peak power spectral density_11B_2412_Ant1



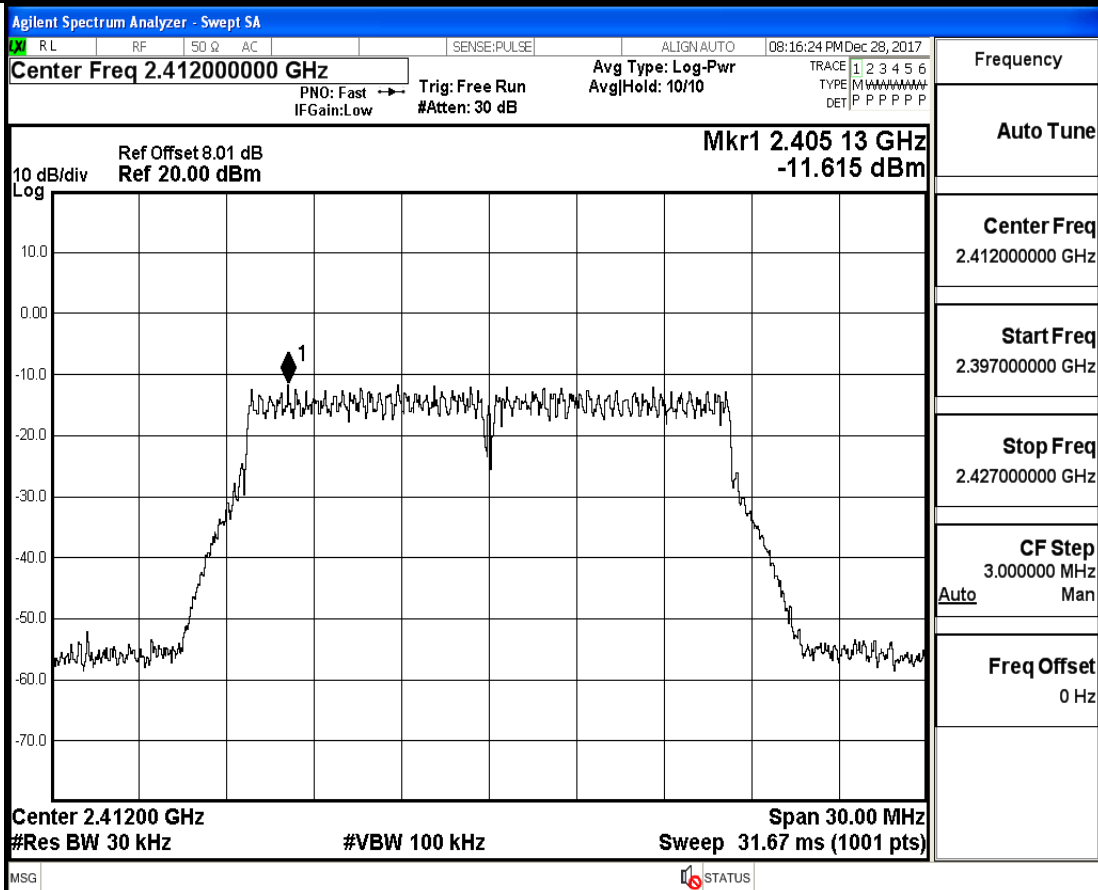
Maximum Peak power spectral density_11B_2437_Ant1



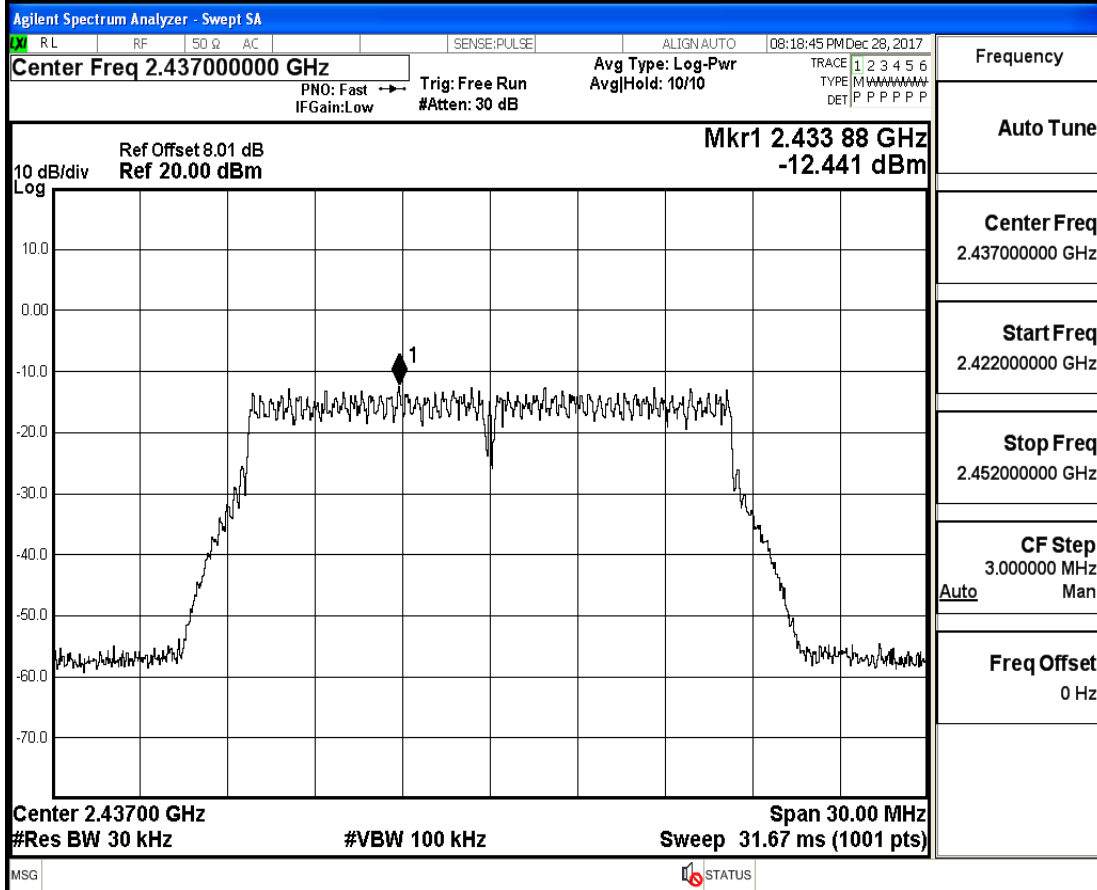
Maximum Peak power spectral density_11B_2462_Ant1



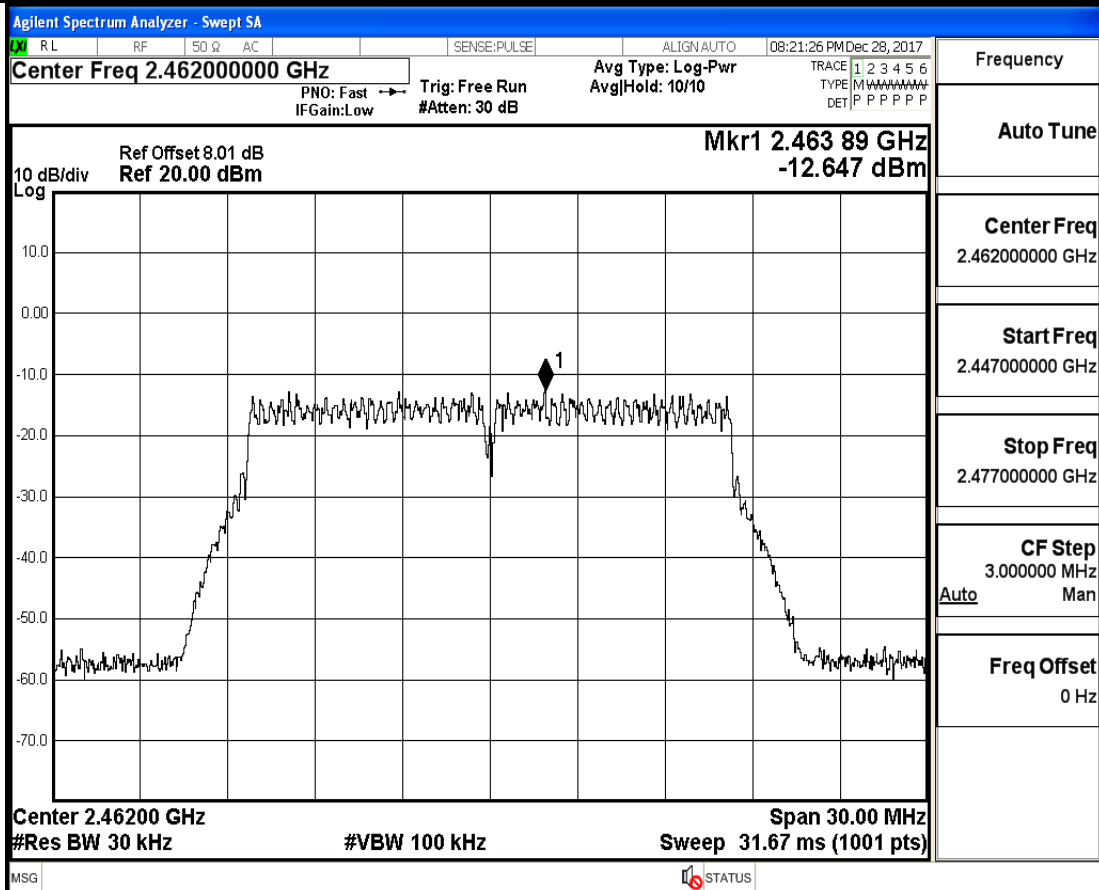
Maximum Peak power spectral density_11G_2412_Ant1



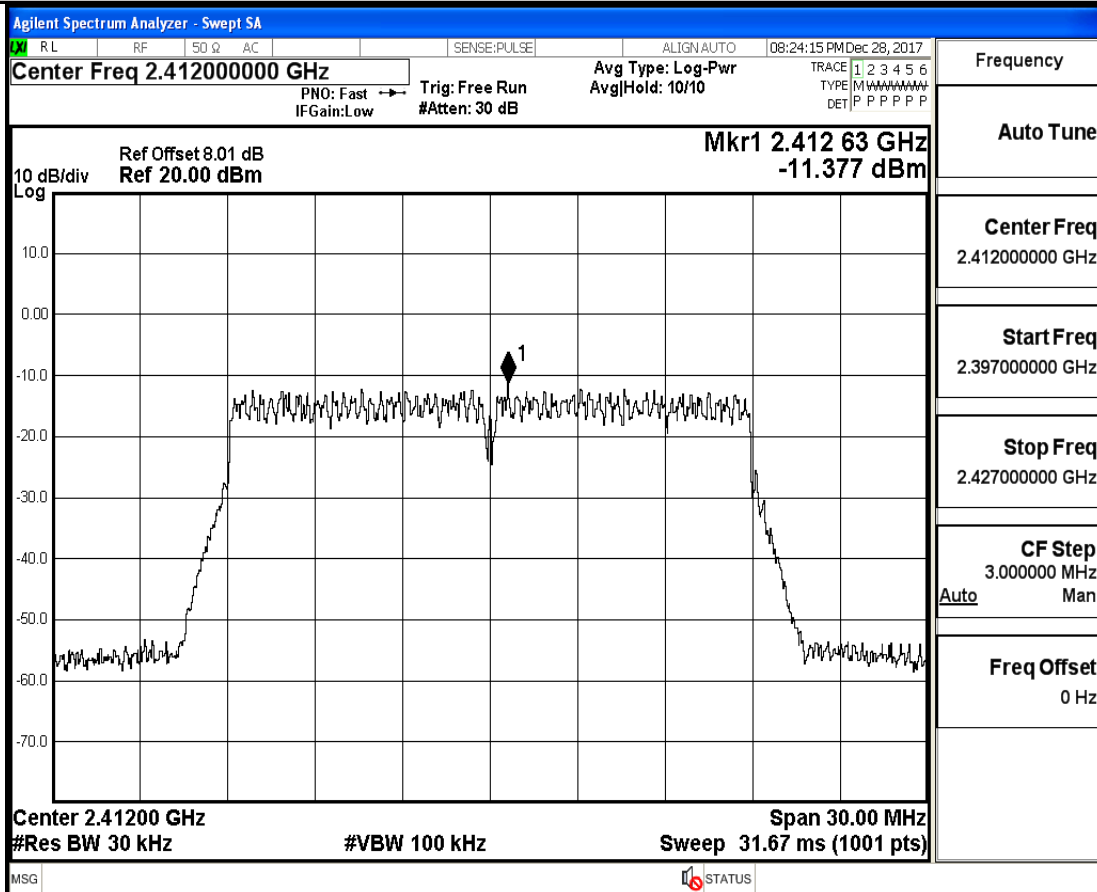
Maximum Peak power spectral density_11G_2437_Ant1



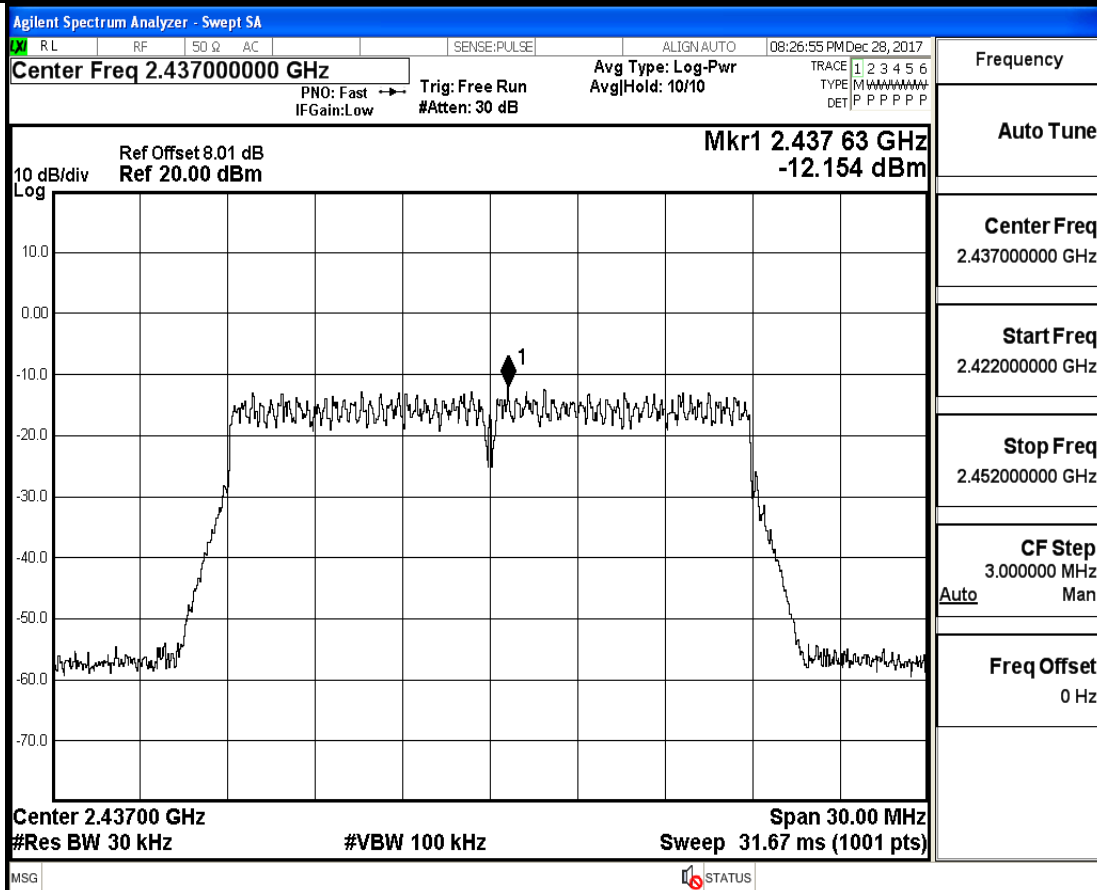
Maximum Peak power spectral density_11G_2462_Ant1



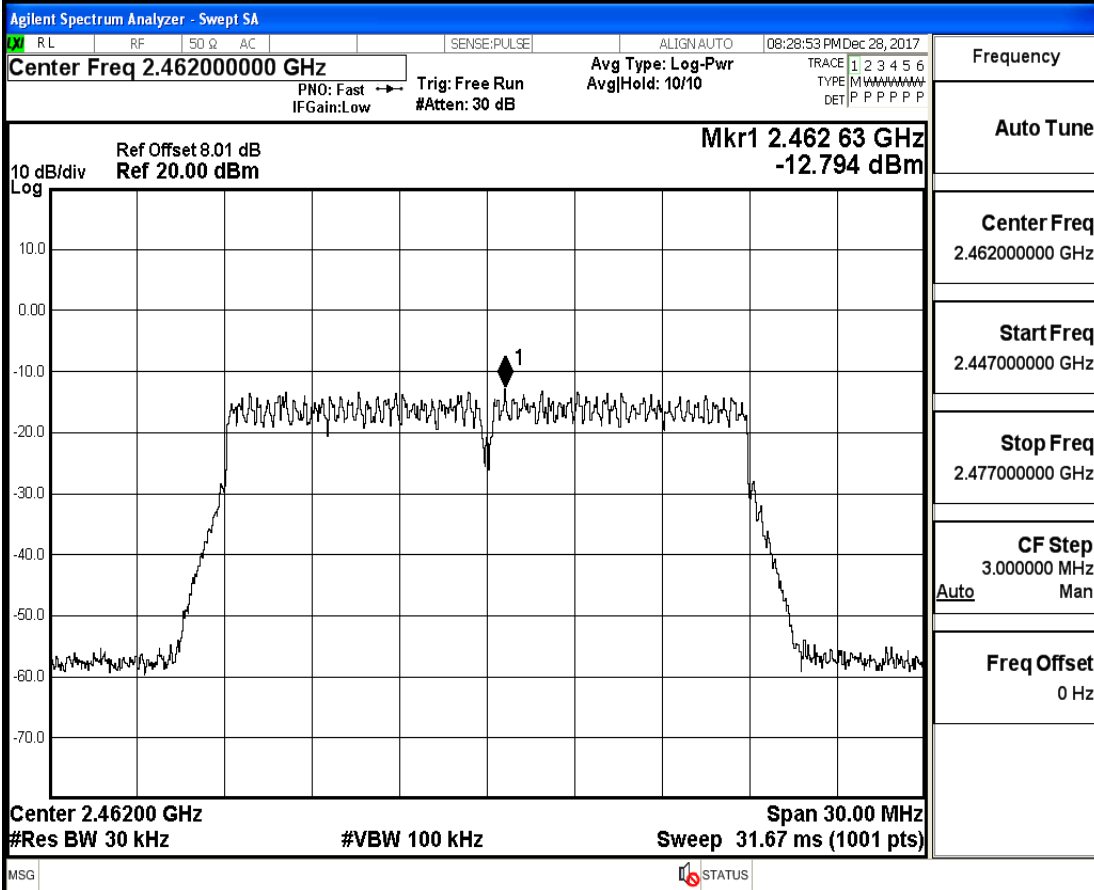
Maximum Peak power spectral density_11N20SISO_2412_Ant1



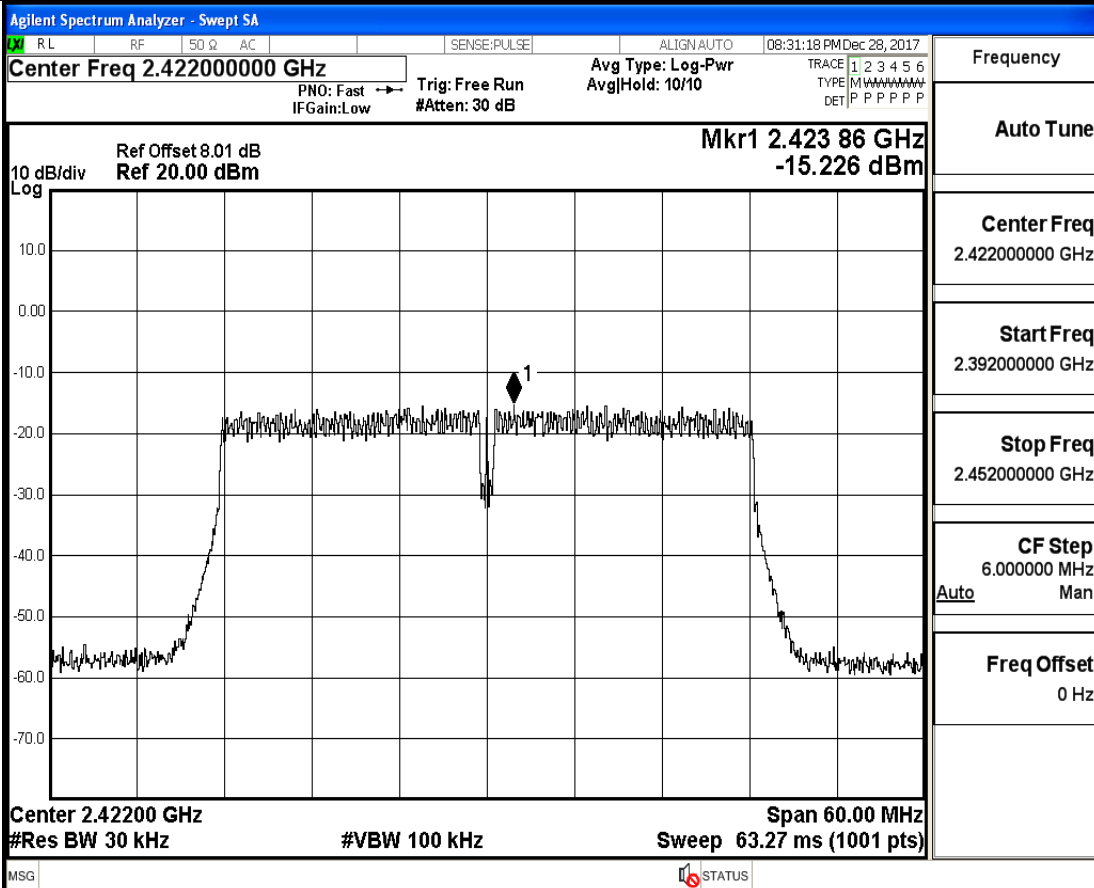
Maximum Peak power spectral density_11N20SISO_2437_Ant1



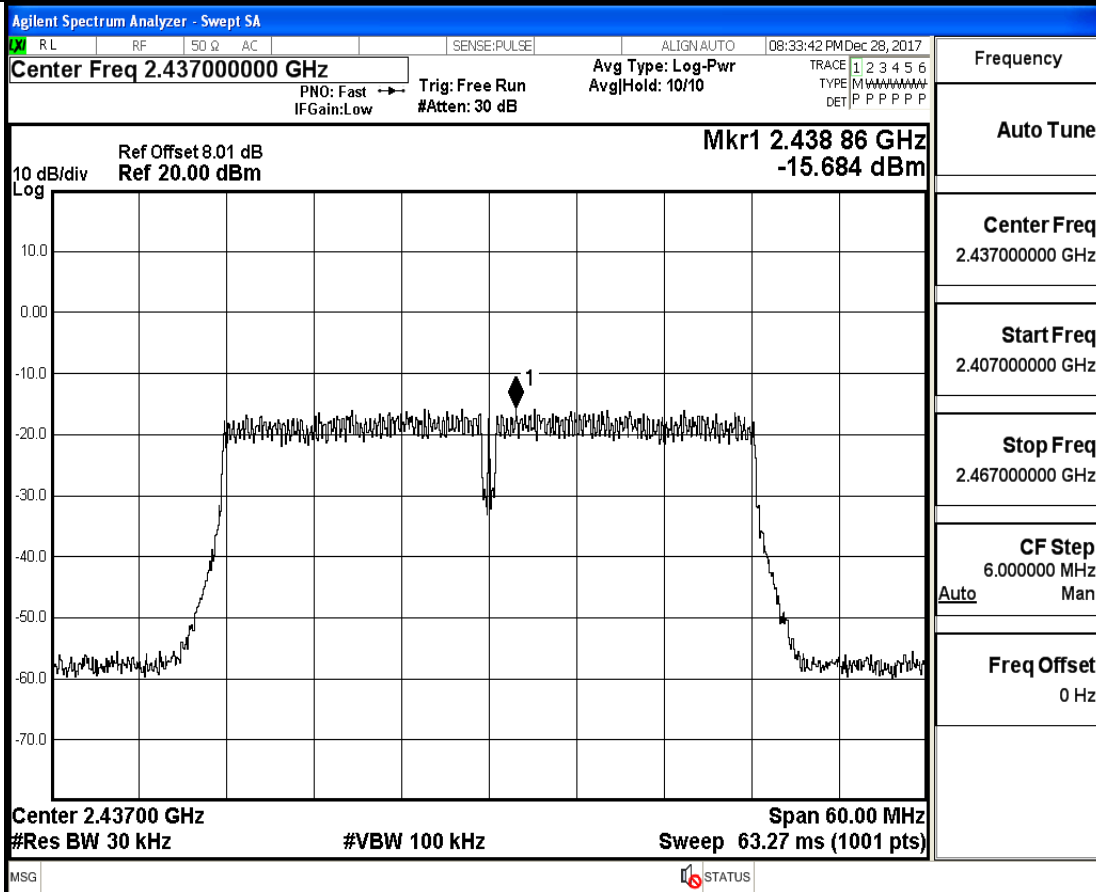
Maximum Peak power spectral density_11N20SISO_2462_Ant1



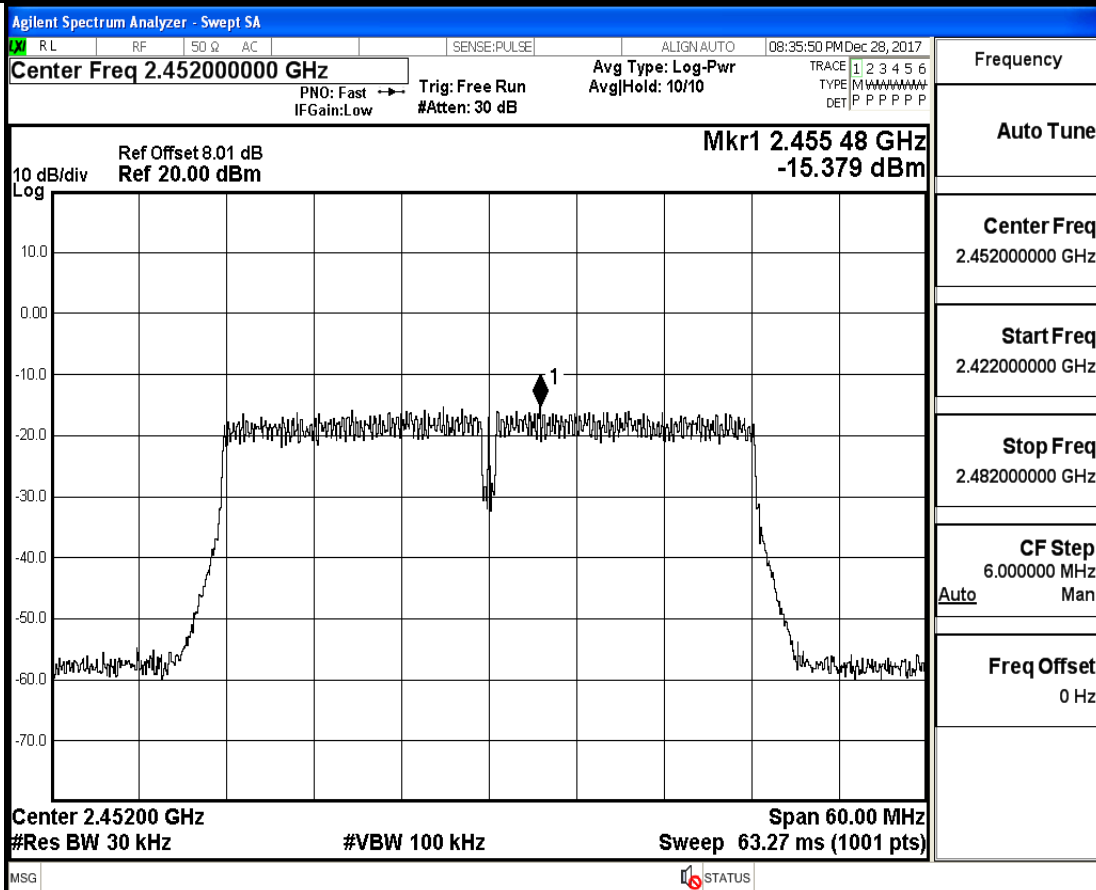
Maximum Peak power spectral density_11N40SISO_2422_Ant1



Maximum Peak power spectral density_11N40SISO_2437_Ant1



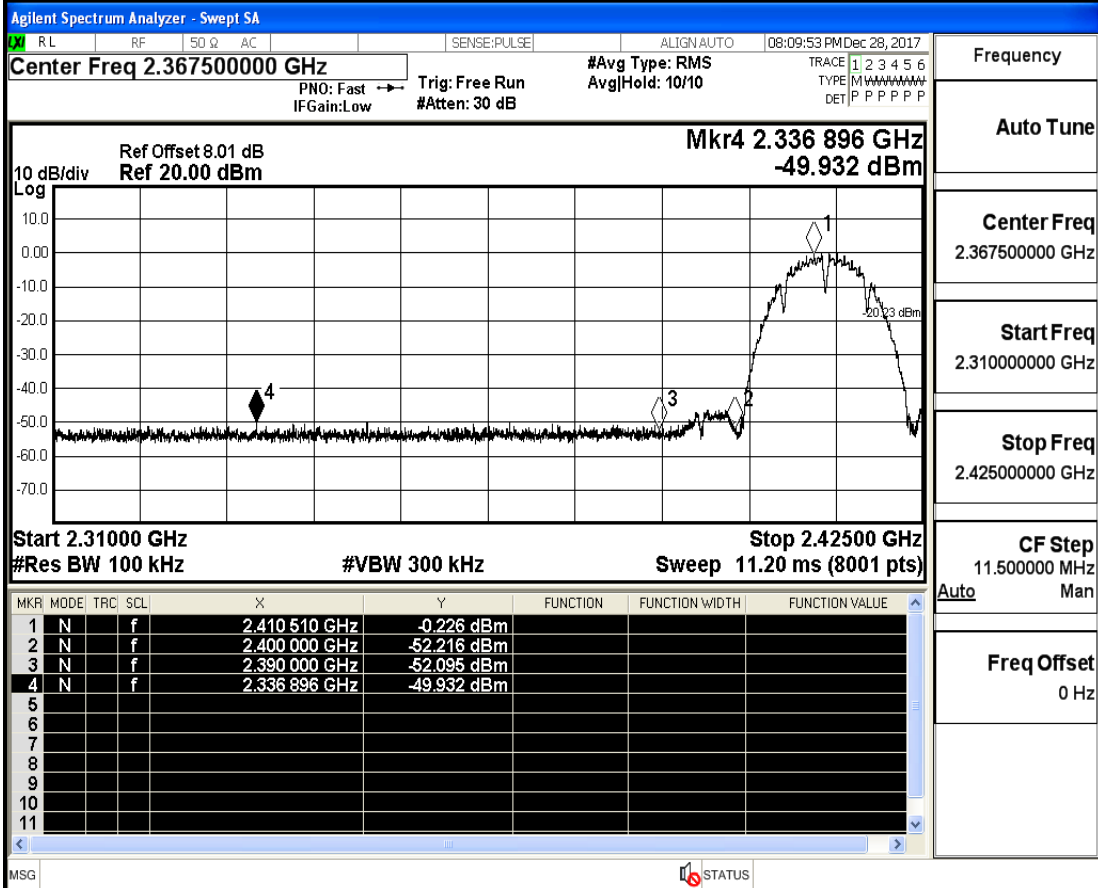
Maximum Peak power spectral density_11N40SISO_2452_Ant1



C.4 Band-edge for RF Conducted Emissions

Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
11B	2412	Ant1	-0.226	-49.932	-20.23	PASS
11B	2462	Ant1	-0.597	-49.680	-20.6	PASS
11G	2412	Ant1	-9.114	-50.228	-29.11	PASS
11G	2462	Ant1	-9.964	-49.615	-29.96	PASS
11N20SISO	2412	Ant1	-8.649	-50.002	-28.65	PASS
11N20SISO	2462	Ant1	-10.191	-49.851	-30.19	PASS
11N40SISO	2422	Ant1	-12.335	-50.256	-32.34	PASS
11N40SISO	2452	Ant1	-12.359	-50.056	-32.36	PASS

Band-edge for RF Conducted Emissions_11B_2412_Ant1



Frequency

Auto Tune

Center Freq
2.367500000 GHz

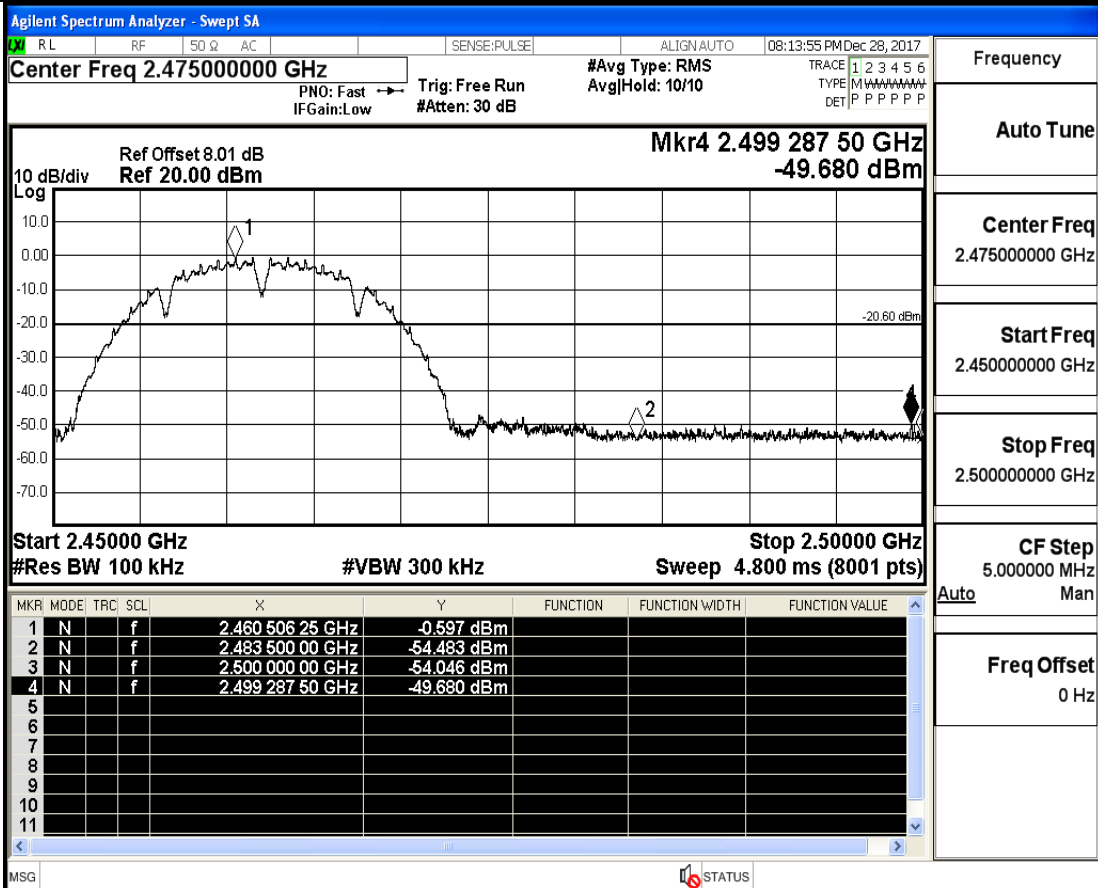
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz
Auto Man

Freq Offset
0 Hz

Band-edge for RF Conducted Emissions_11B_2462_Ant1



Frequency

Auto Tune

Center Freq
2.475000000 GHz

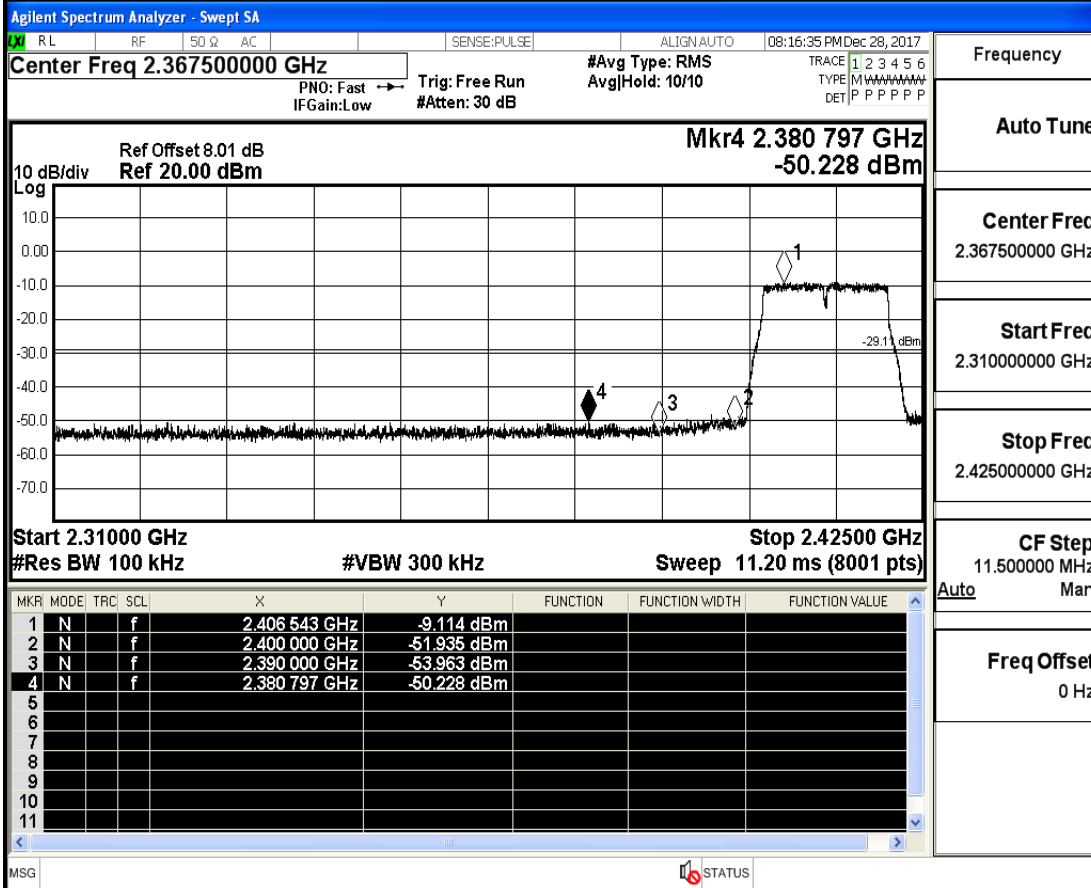
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz
Auto Man

Freq Offset
0 Hz

Band-edge for RF Conducted Emissions_11G_2412_Ant1



Frequency

Auto Tune

Center Freq
2.367500000 GHz

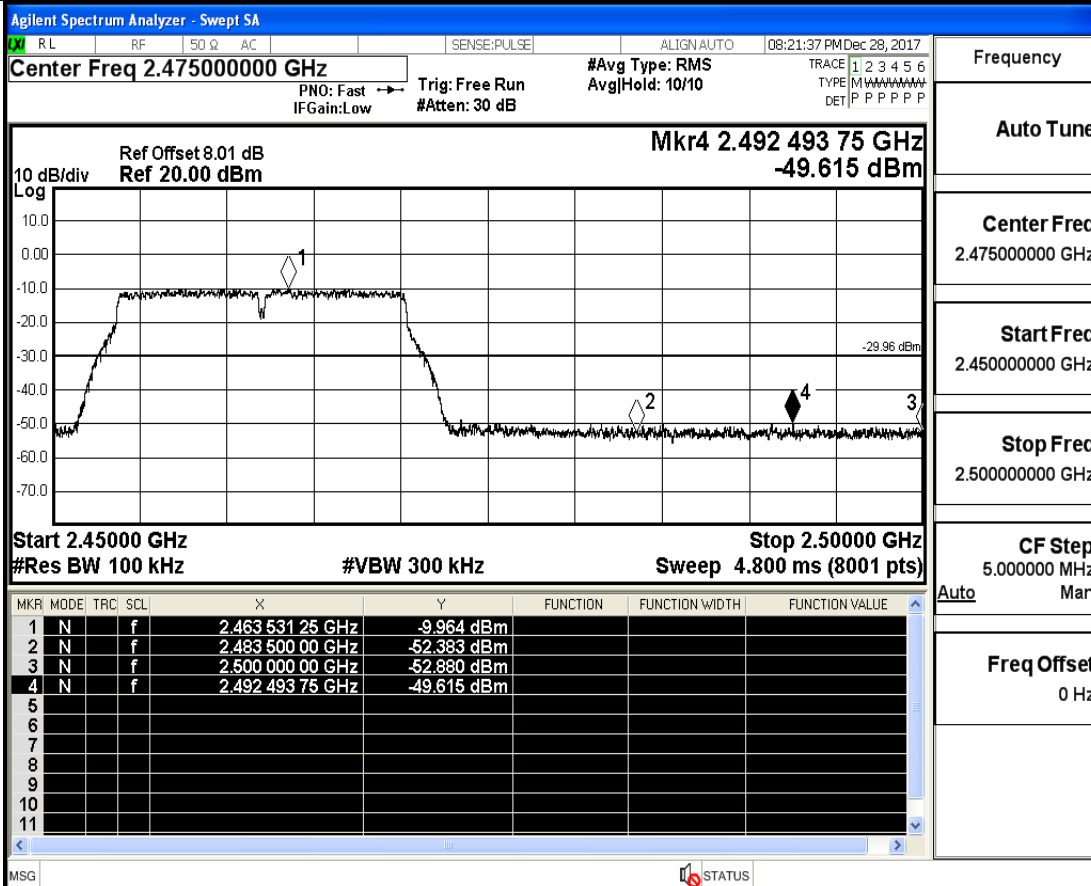
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz
Auto Man

Freq Offset
0 Hz

Band-edge for RF Conducted Emissions_11G_2462_Ant1



Frequency

Auto Tune

Center Freq
2.475000000 GHz

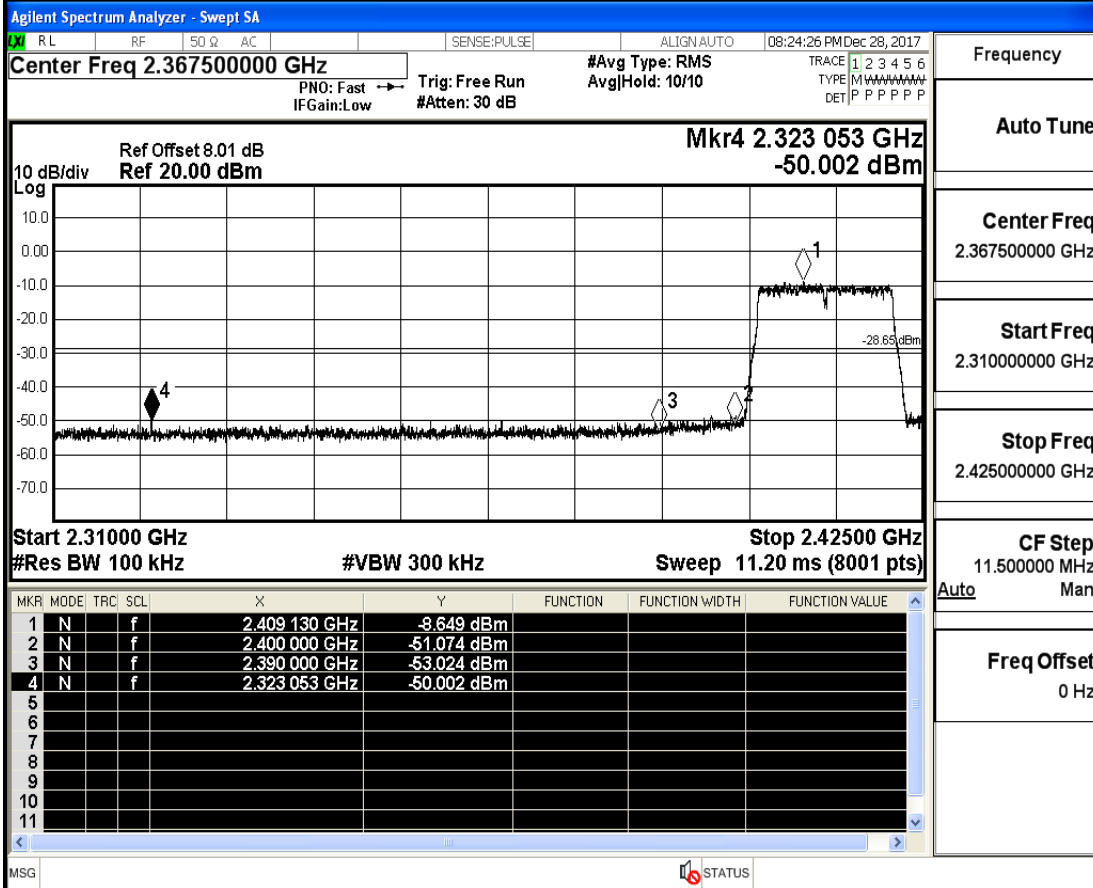
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz
Auto Man

Freq Offset
0 Hz

Band-edge for RF Conducted Emissions_11N20SISO_2412_Ant1



Frequency

Auto Tune

Center Freq
2.367500000 GHz

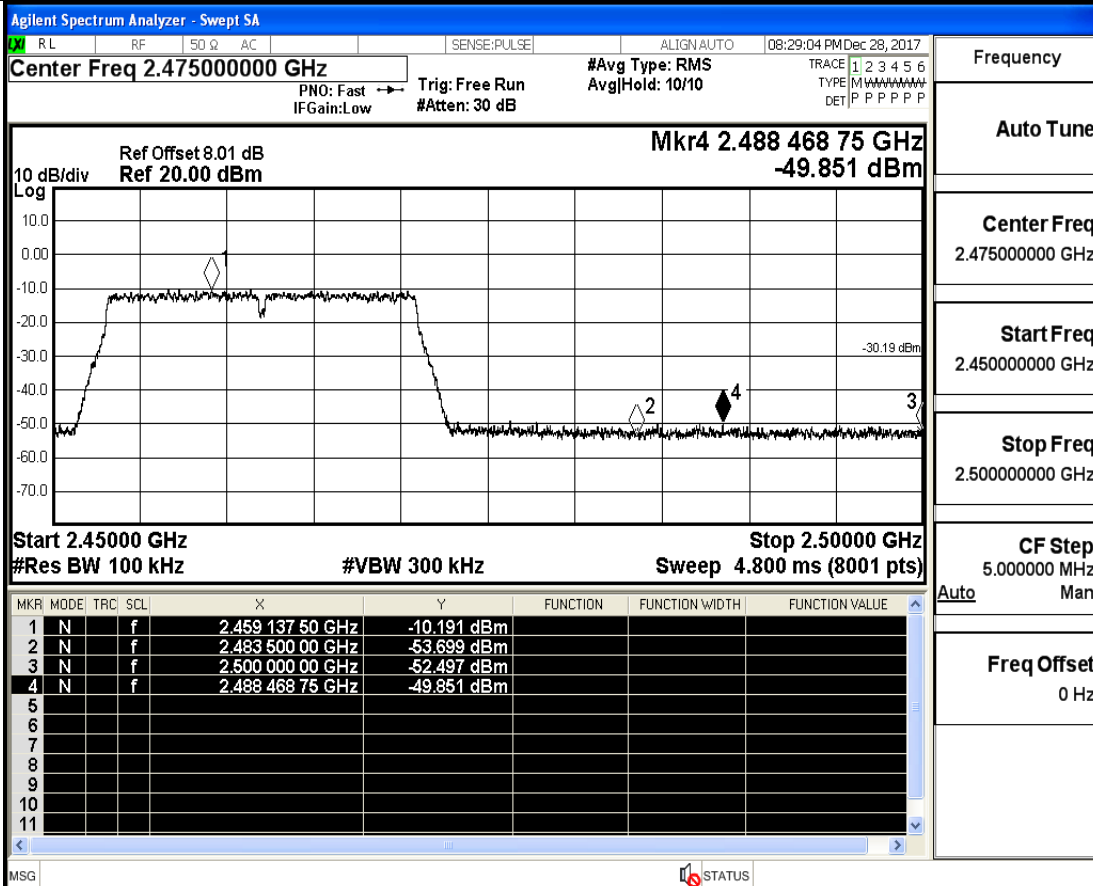
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz
Auto Man

Freq Offset
0 Hz

Band-edge for RF Conducted Emissions_11N20SISO_2462_Ant1



Frequency

Auto Tune

Center Freq
2.475000000 GHz

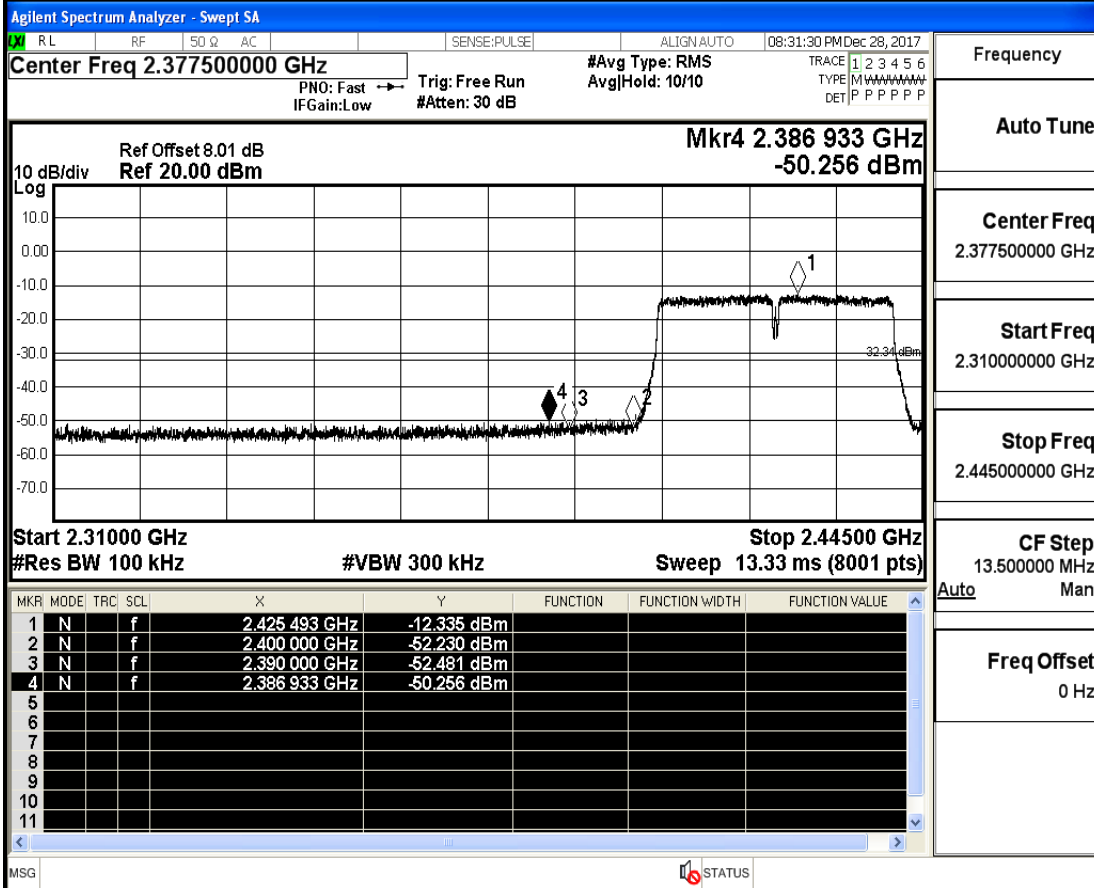
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz
Auto Man

Freq Offset
0 Hz

Band-edge for RF Conducted Emissions_11N40SISO_2422_Ant1



Frequency

Auto Tune

Center Freq
2.377500000 GHz

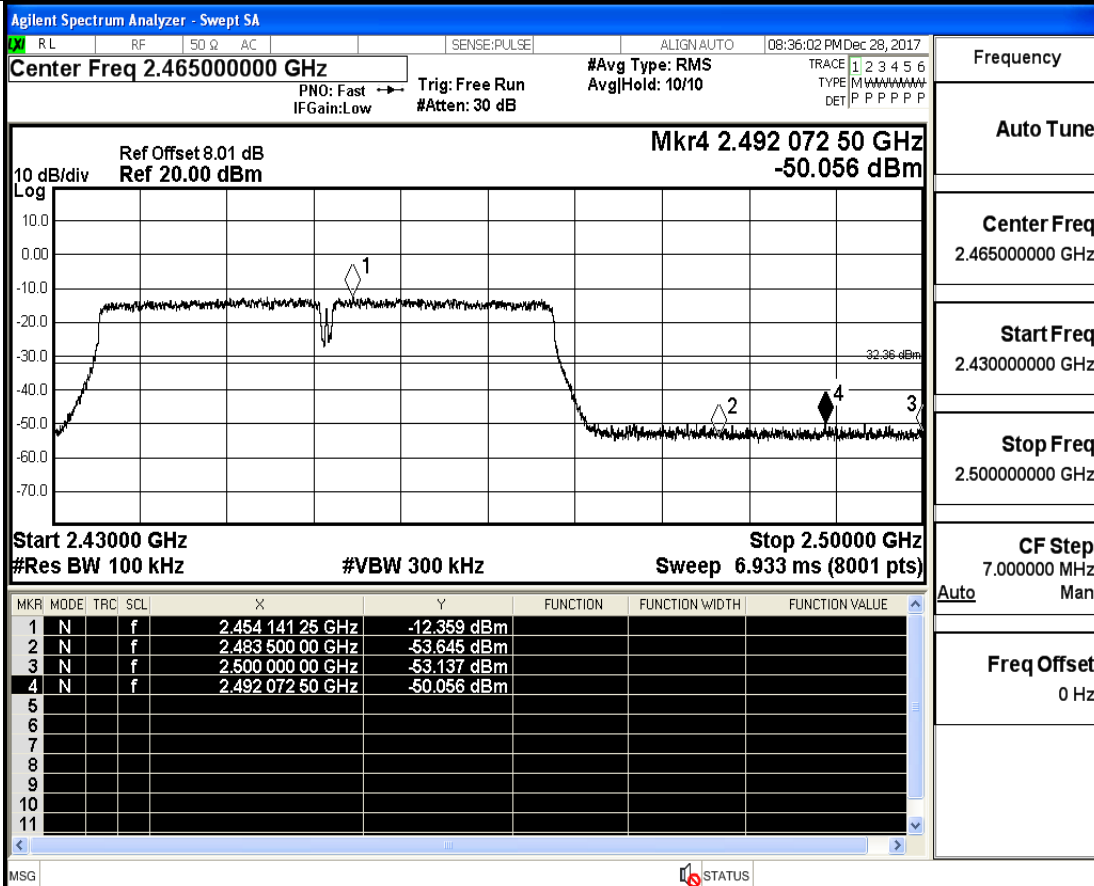
Start Freq
2.310000000 GHz

Stop Freq
2.445000000 GHz

CF Step
13.500000 MHz
Auto Man

Freq Offset
0 Hz

Band-edge for RF Conducted Emissions_11N40SISO_2452_Ant1



Frequency

Auto Tune

Center Freq
2.465000000 GHz

Start Freq
2.430000000 GHz

Stop Freq
2.500000000 GHz

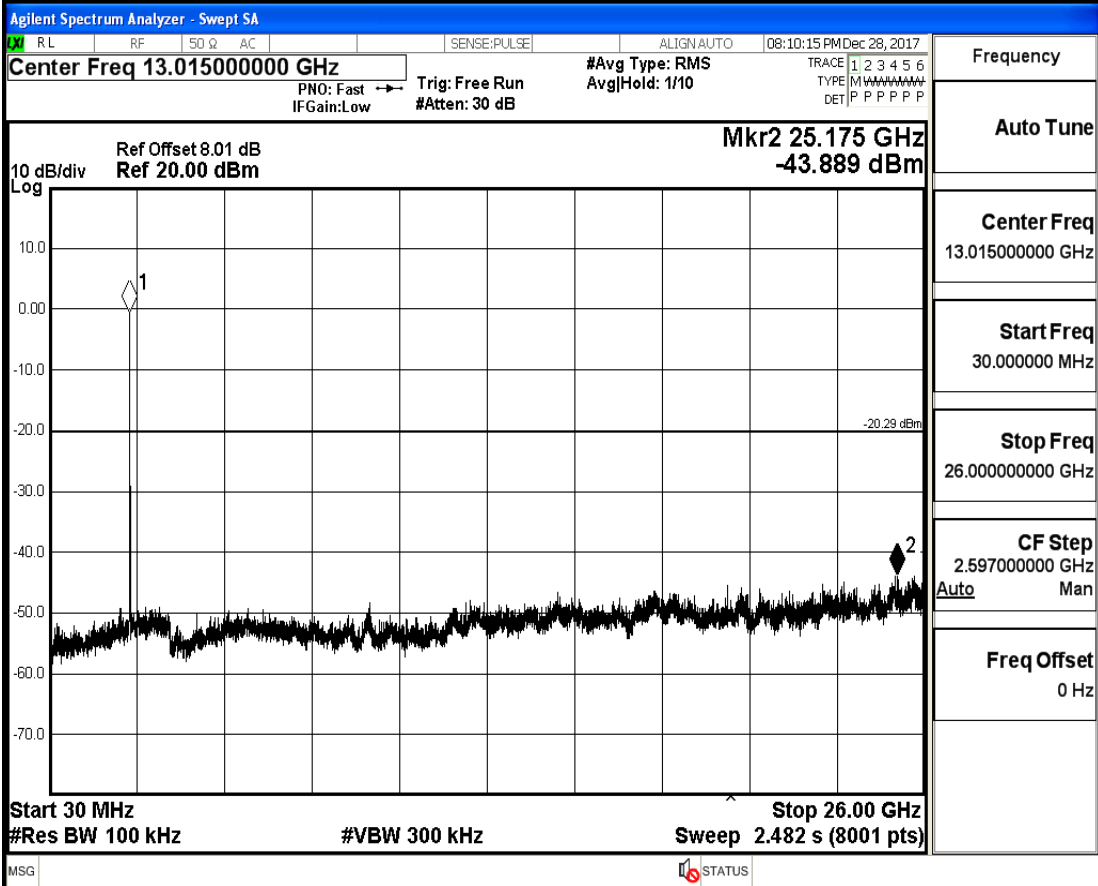
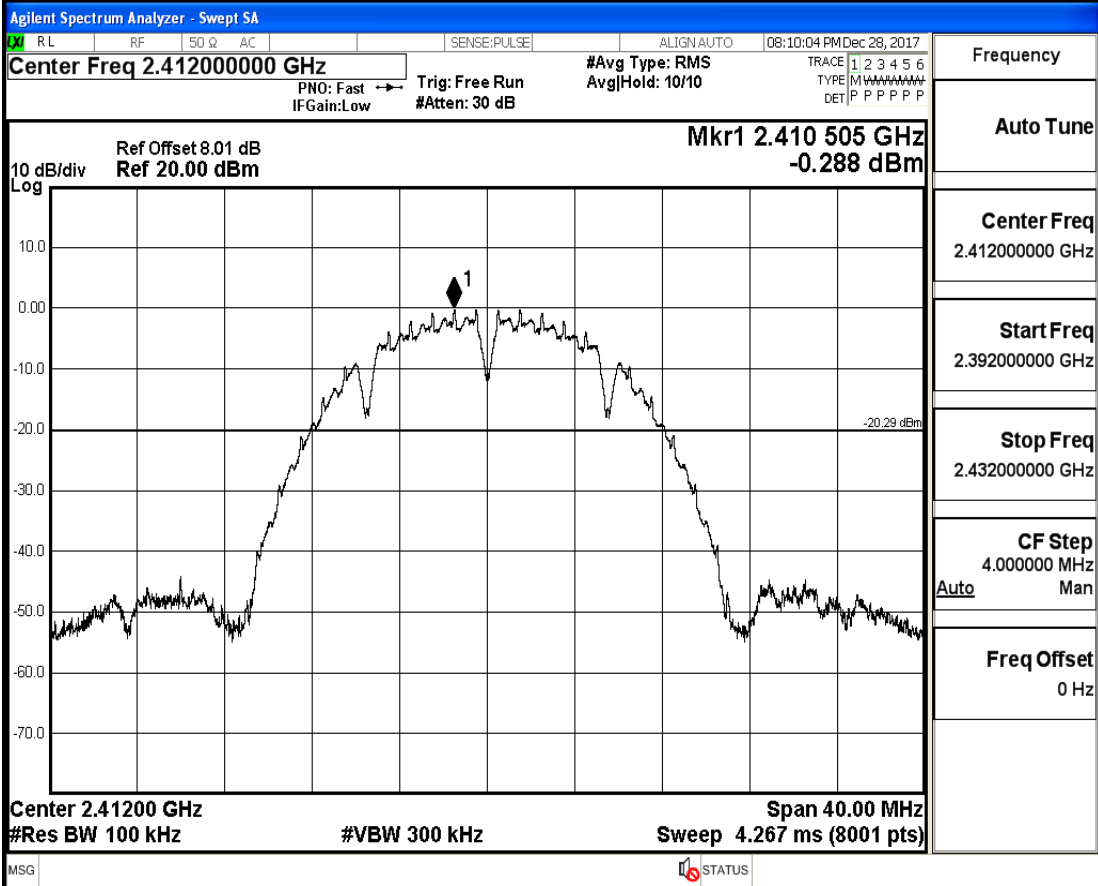
CF Step
7.000000 MHz
Auto Man

Freq Offset
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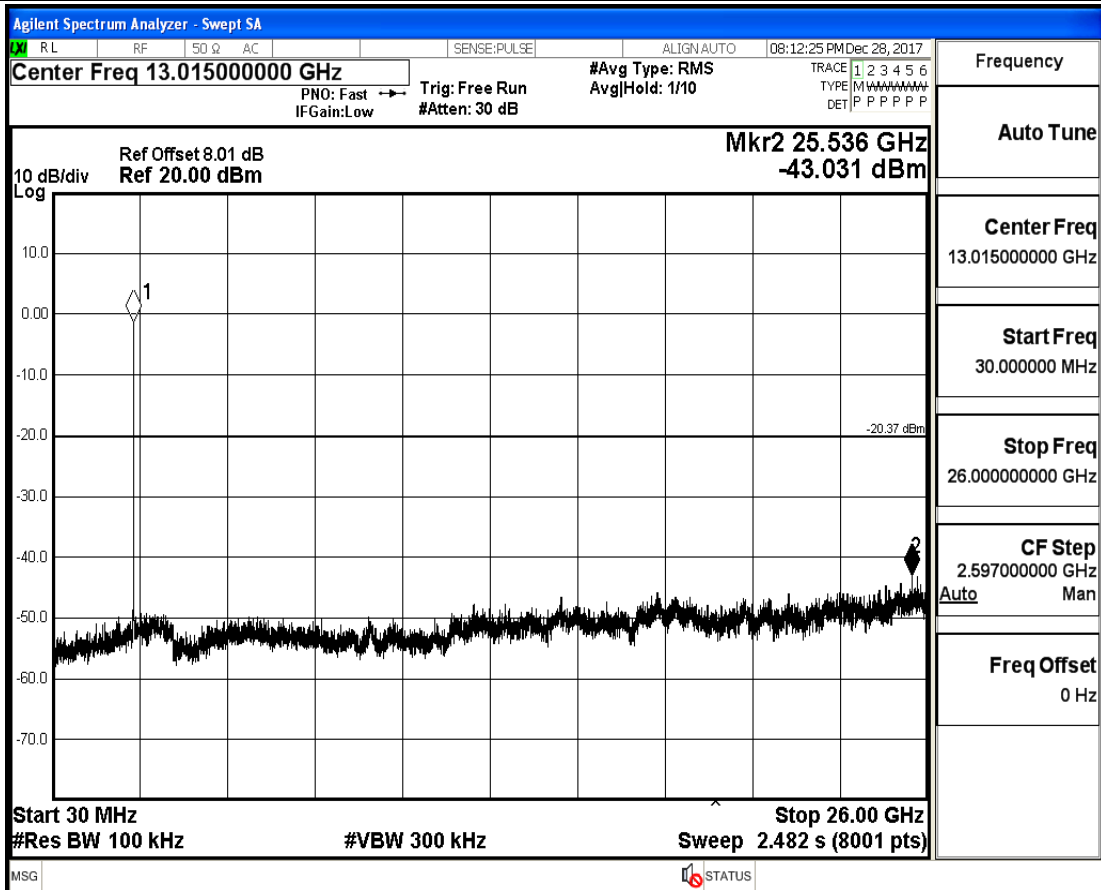
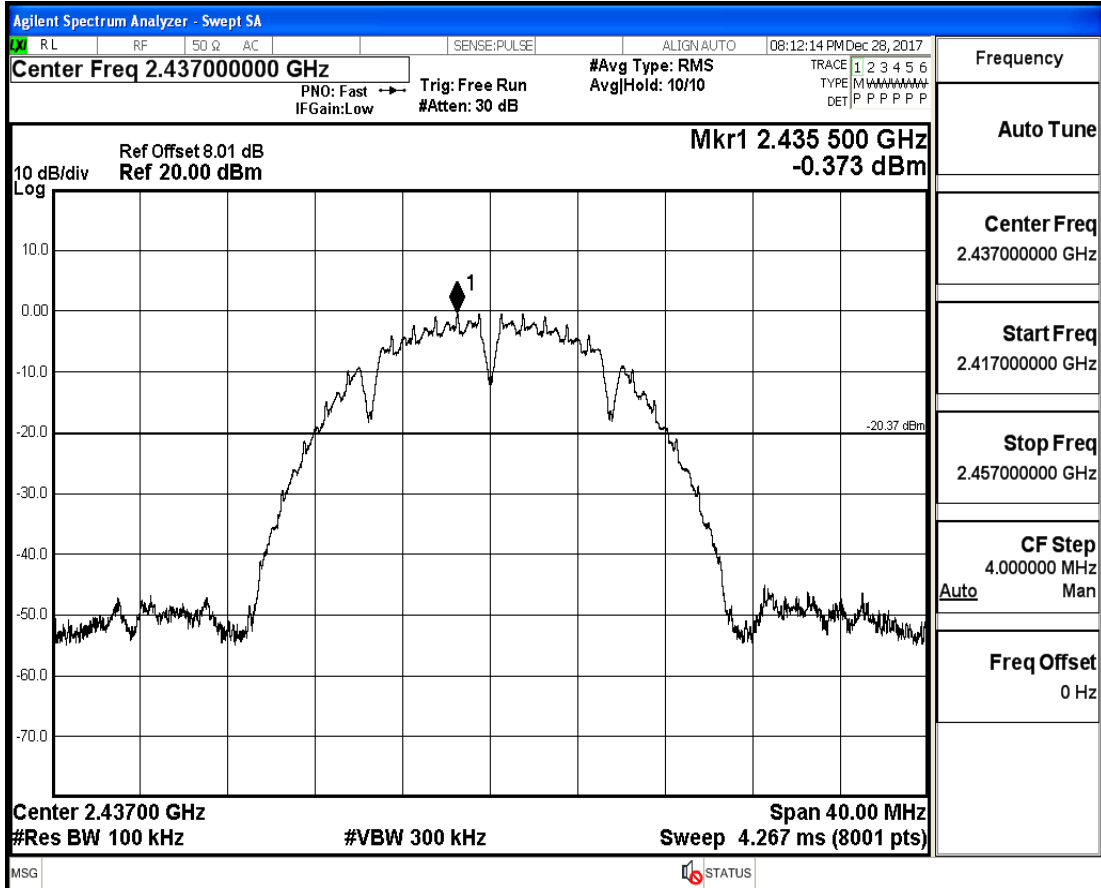
C.5 RF Conducted Spurious Emissions

Test Mode	Test Channel	Ant	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	2412	Ant1	30	26000	100	300	-0.288	-43.889	<- 20.288	PASS
11B	2437	Ant1	30	26000	100	300	-0.373	-43.031	<- 20.373	PASS
11B	2462	Ant1	30	26000	100	300	-0.686	-43.248	<- 20.686	PASS
11G	2412	Ant1	30	26000	100	300	-8.887	-43.910	<- 28.887	PASS
11G	2437	Ant1	30	26000	100	300	-9.949	-43.033	<- 29.949	PASS
11G	2462	Ant1	30	26000	100	300	-10.07	-42.471	<-30.07	PASS
11N20SISO	2412	Ant1	30	26000	100	300	-8.783	-43.114	<- 28.783	PASS
11N20SISO	2437	Ant1	30	26000	100	300	-9.131	-43.344	<- 29.131	PASS
11N20SISO	2462	Ant1	30	26000	100	300	-9.883	-43.811	<- 29.883	PASS
11N40SISO	2422	Ant1	30	26000	100	300	-12.214	-43.314	<- 32.214	PASS
11N40SISO	2437	Ant1	30	26000	100	300	-12.76	-43.165	<-32.76	PASS
11N40SISO	2452	Ant1	30	26000	100	300	-12.167	-43.686	<- 32.167	PASS

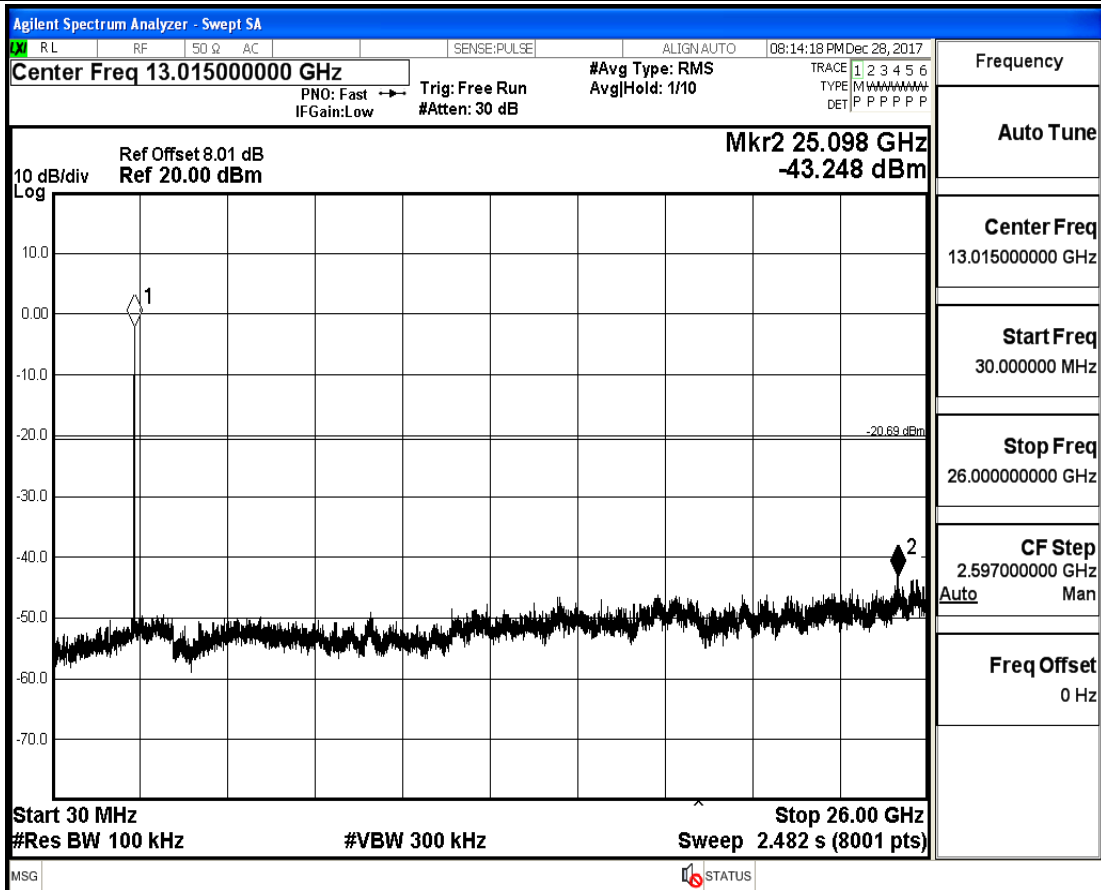
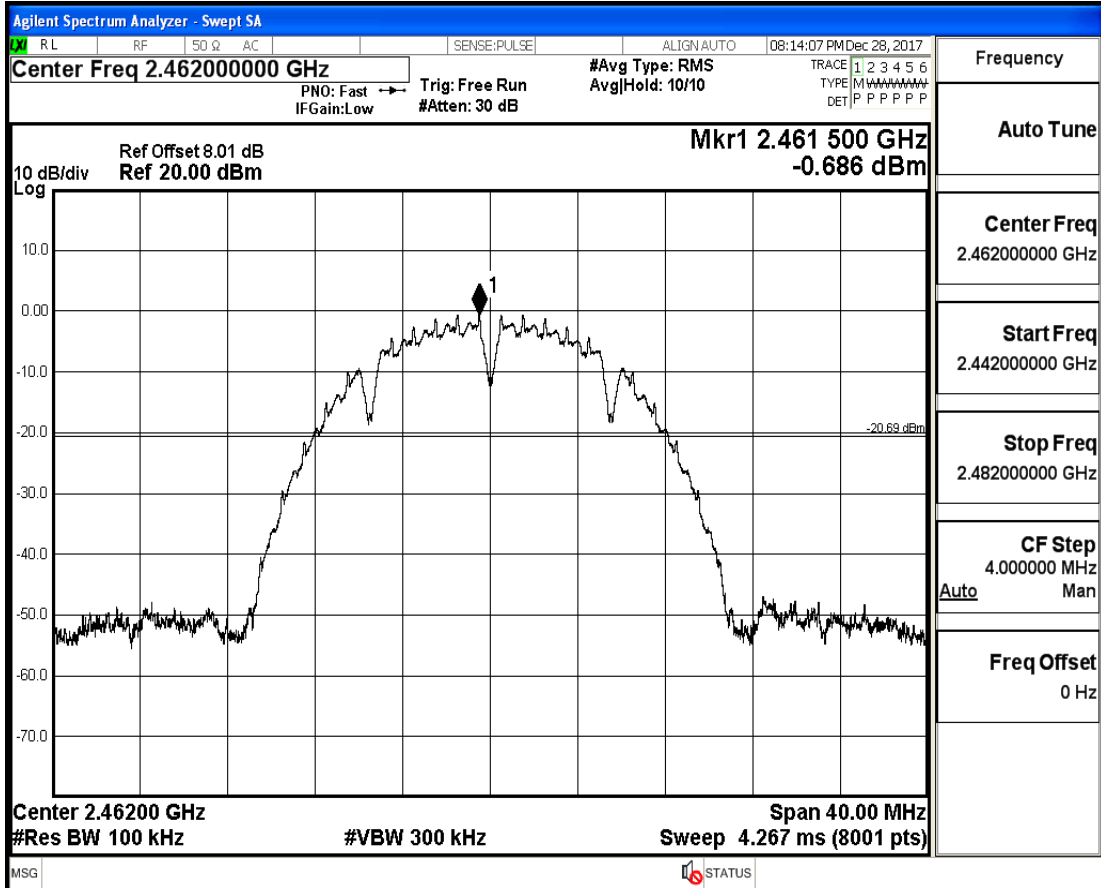
RF Conducted Spurious Emissions_11B_2412_Ant1



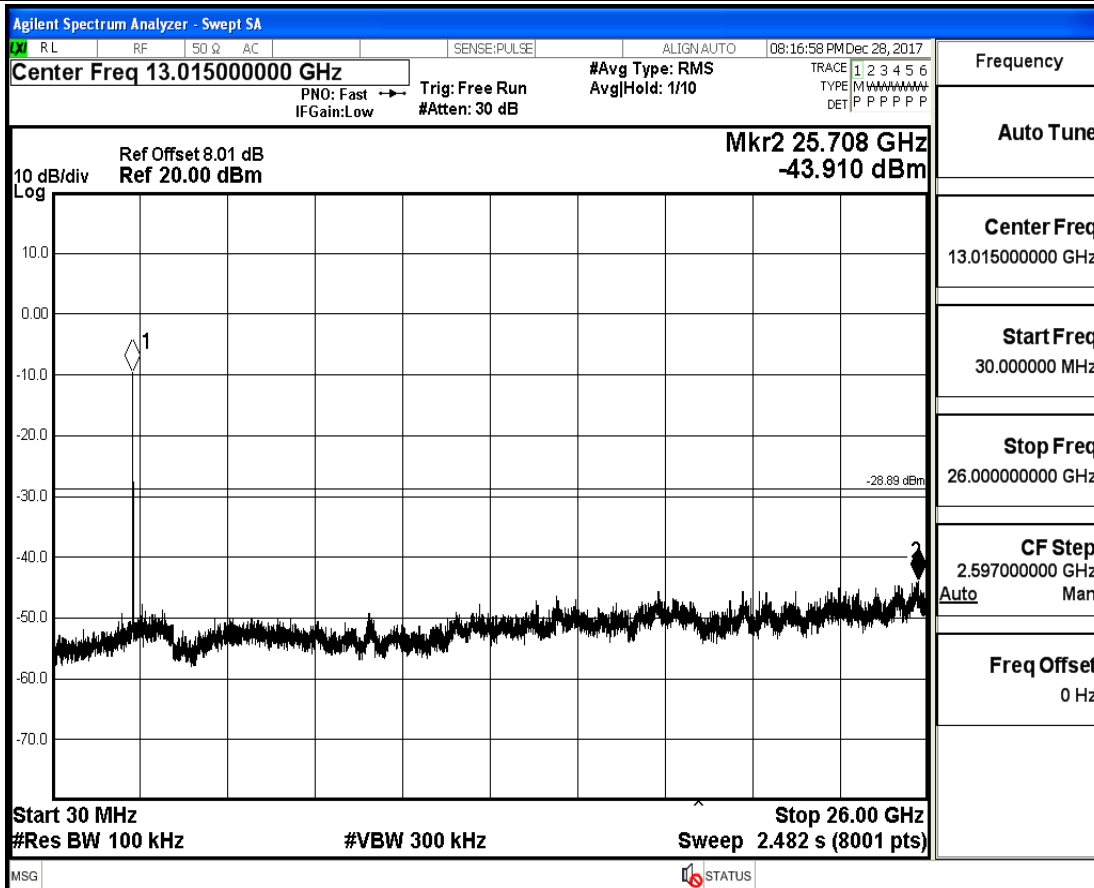
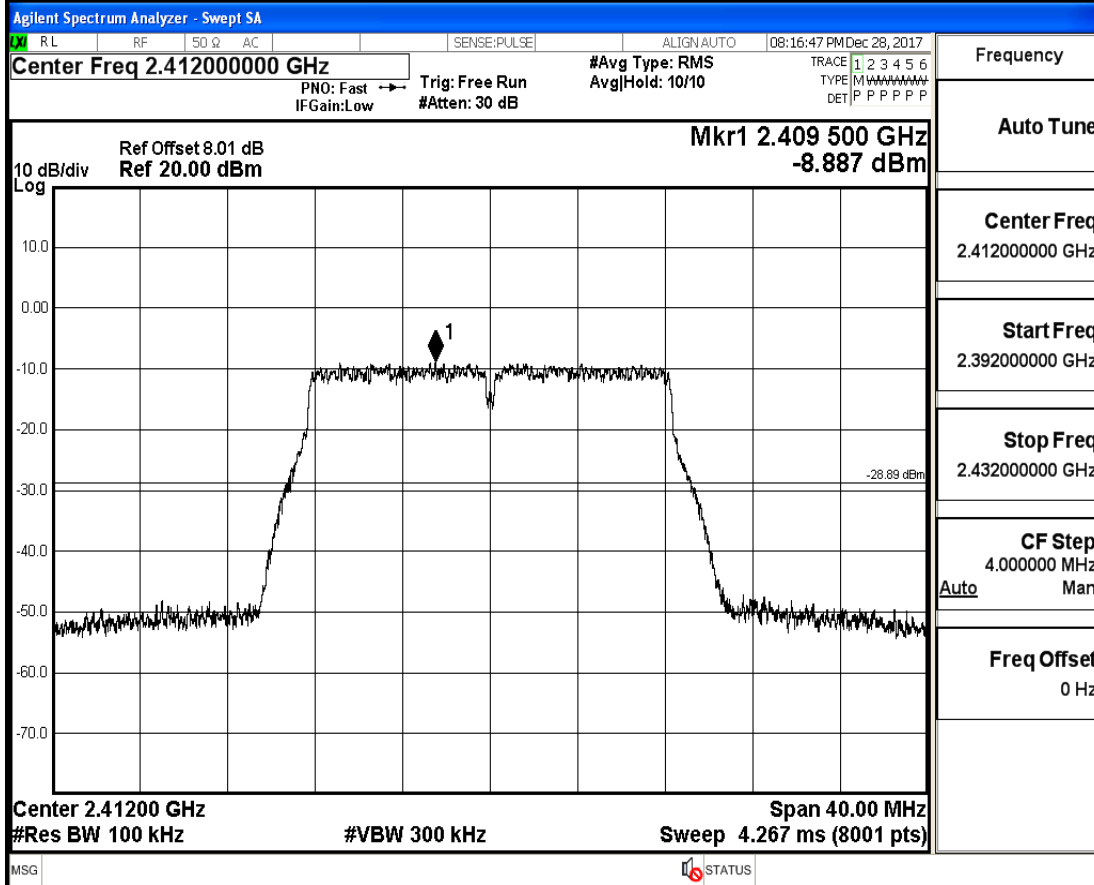
RF Conducted Spurious Emissions_11B_2437_Ant1



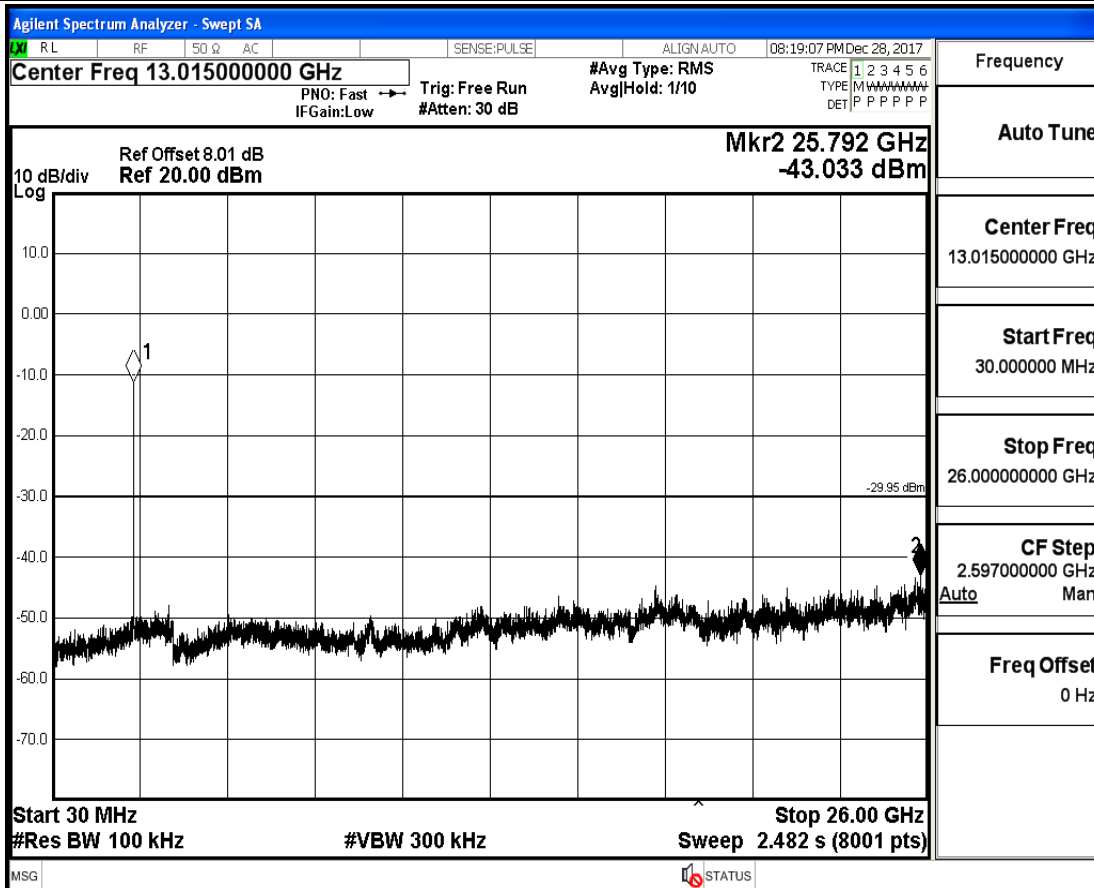
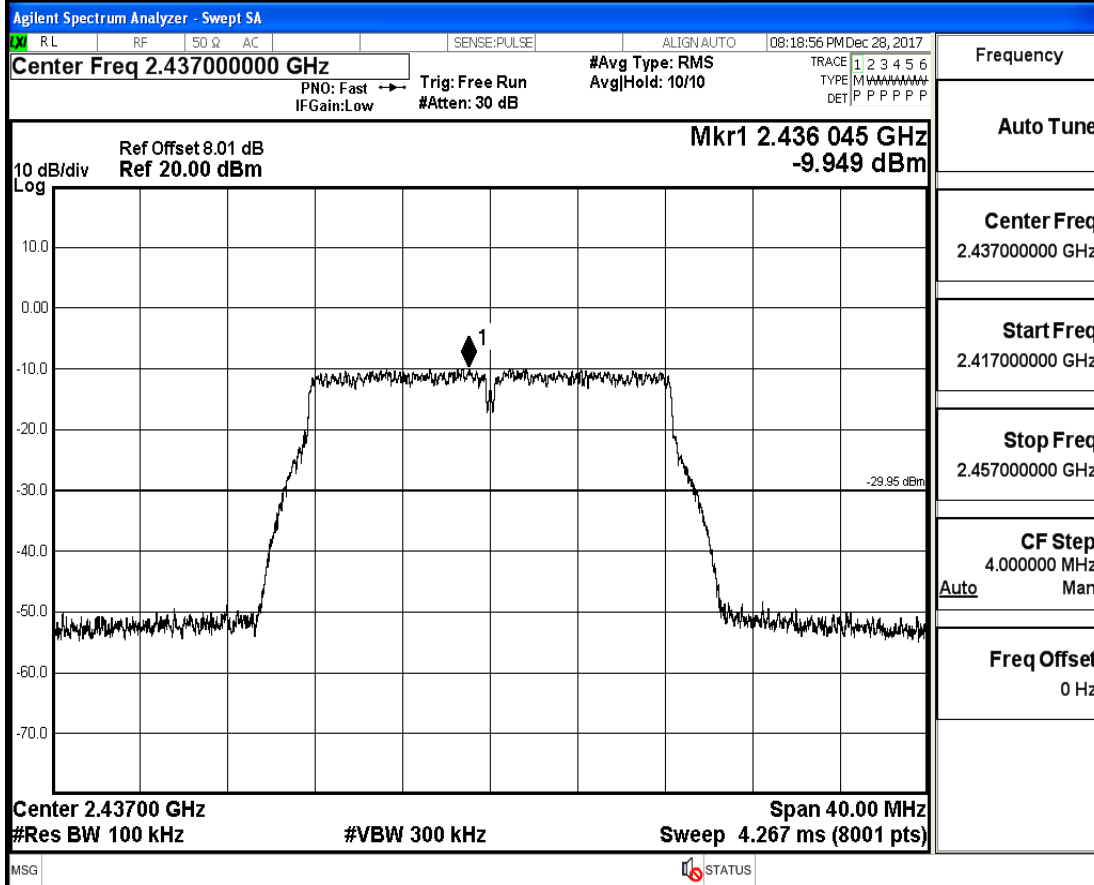
RF Conducted Spurious Emissions_11B_2462_Ant1



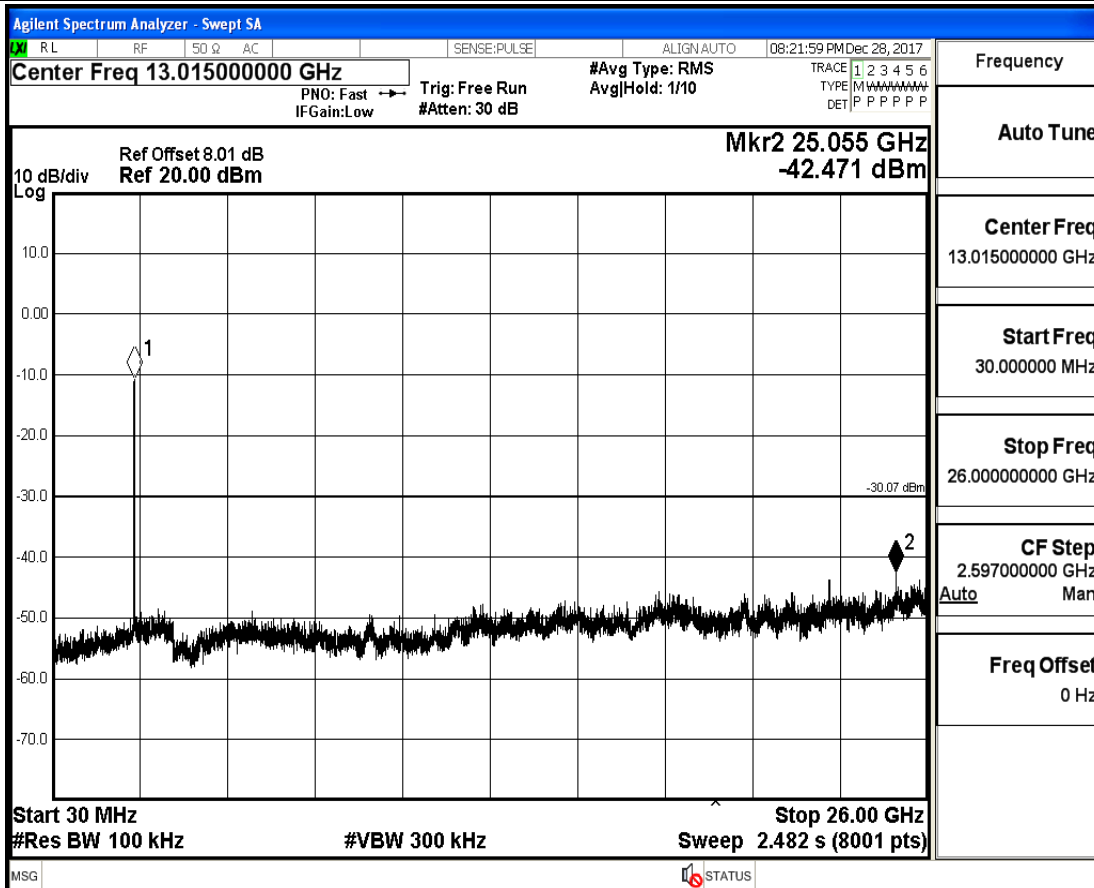
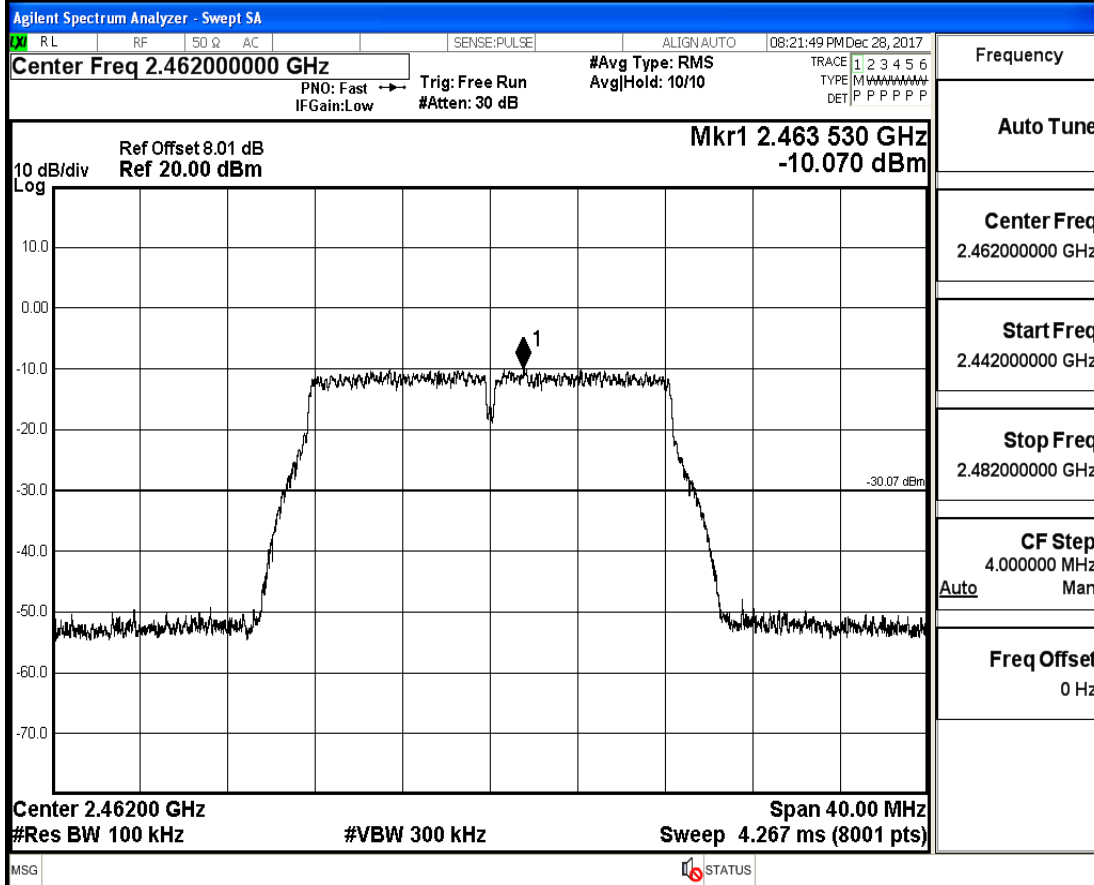
RF Conducted Spurious Emissions_11G_2412_Ant1



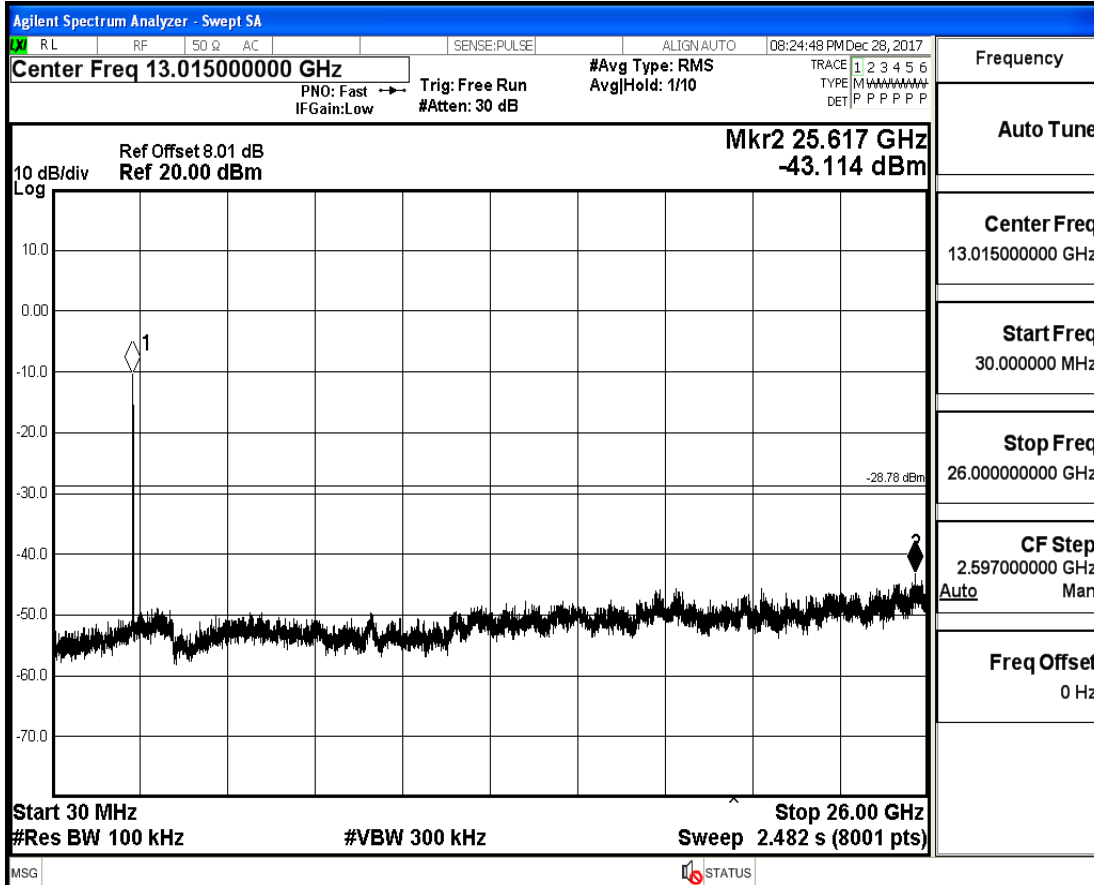
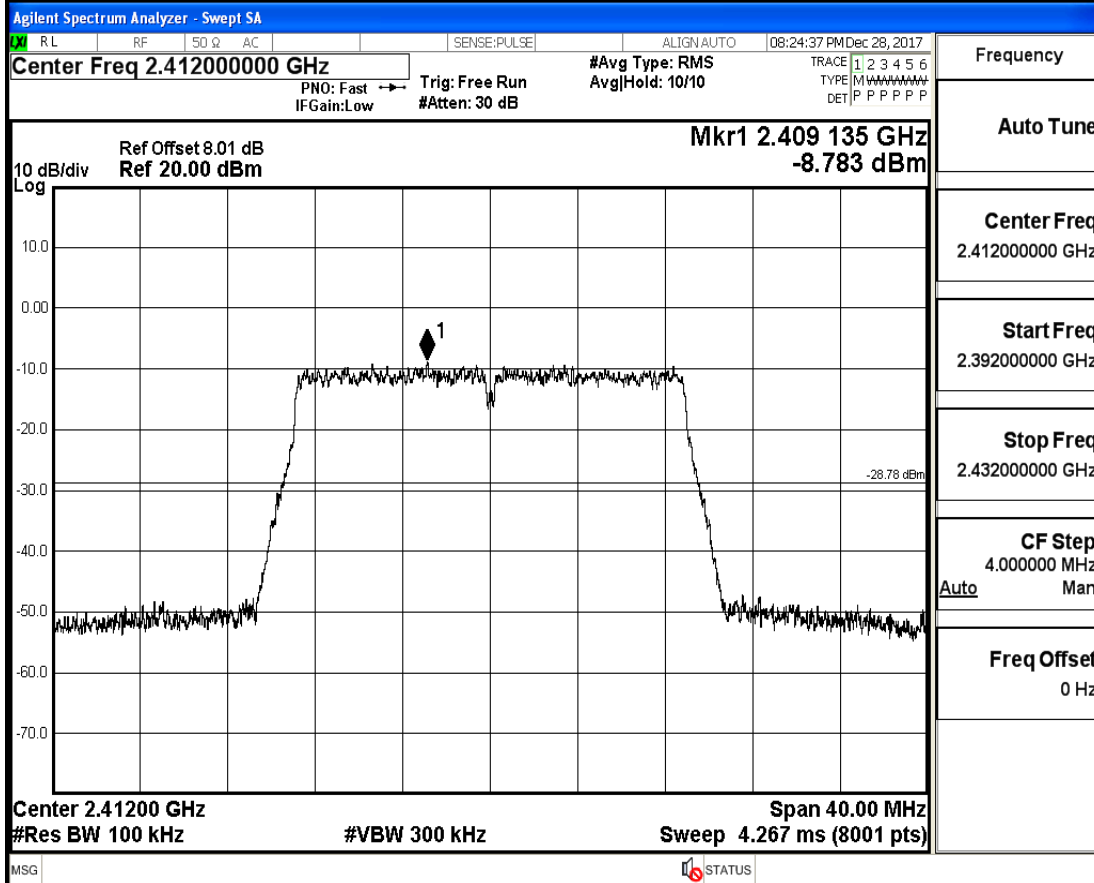
RF Conducted Spurious Emissions_11G_2437_Ant1



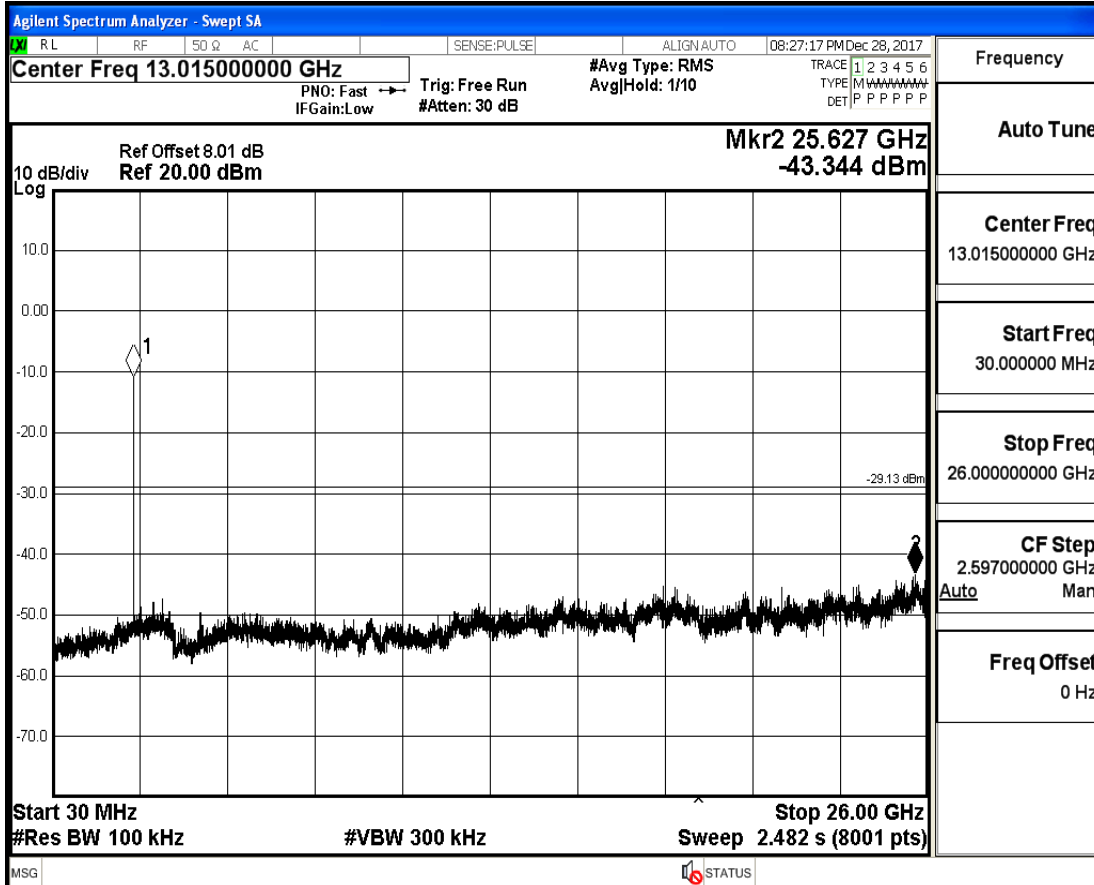
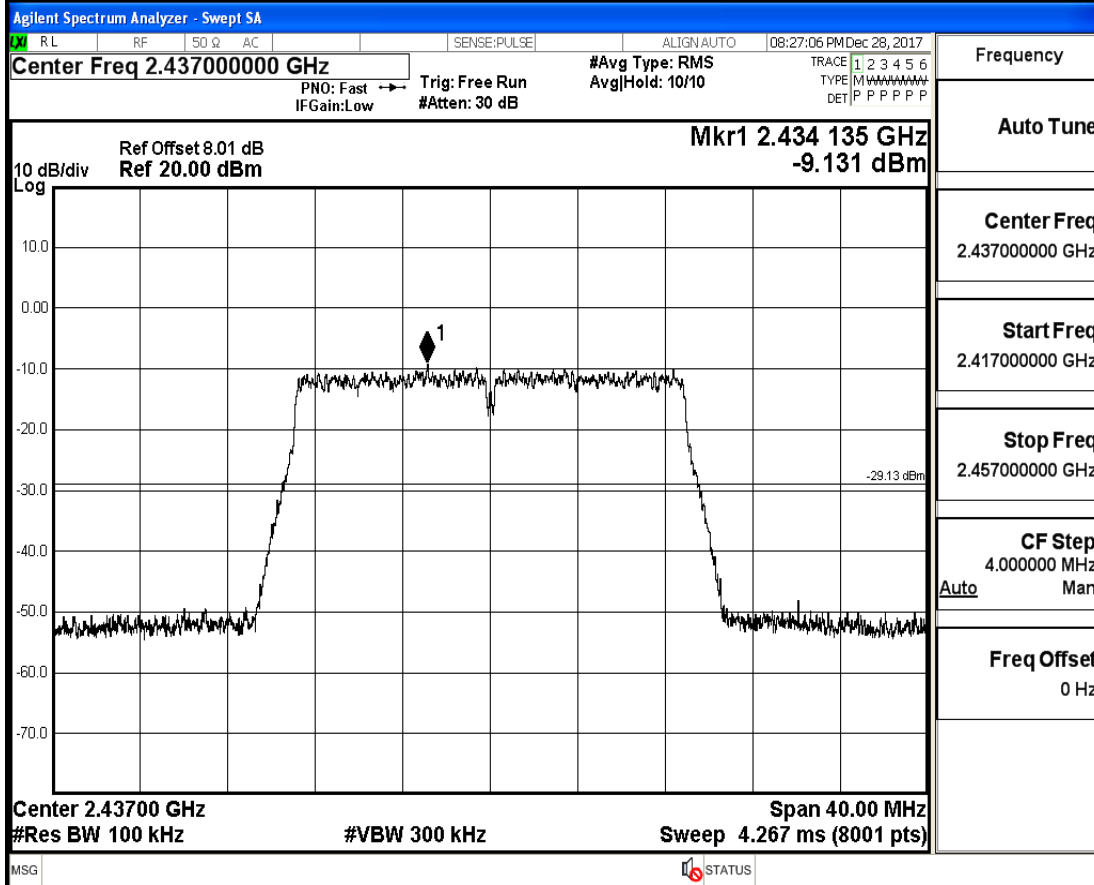
RF Conducted Spurious Emissions_11G_2462_Ant1



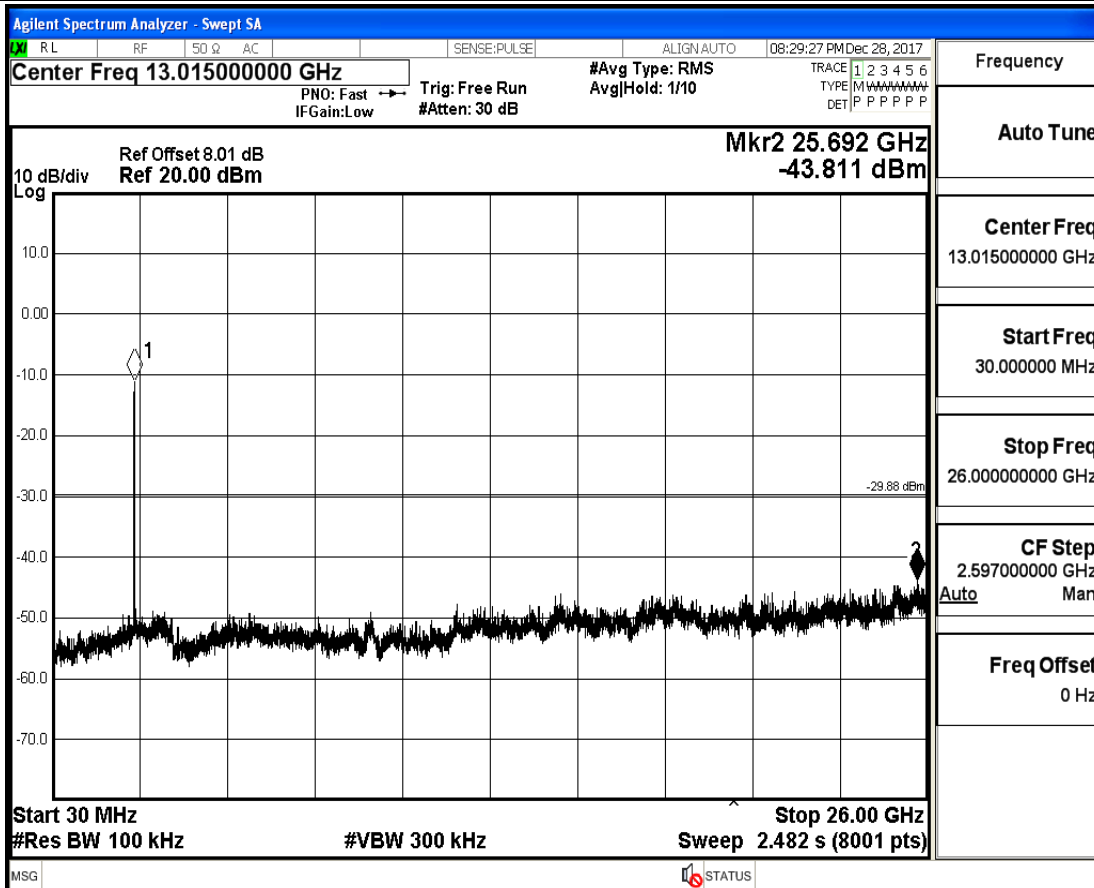
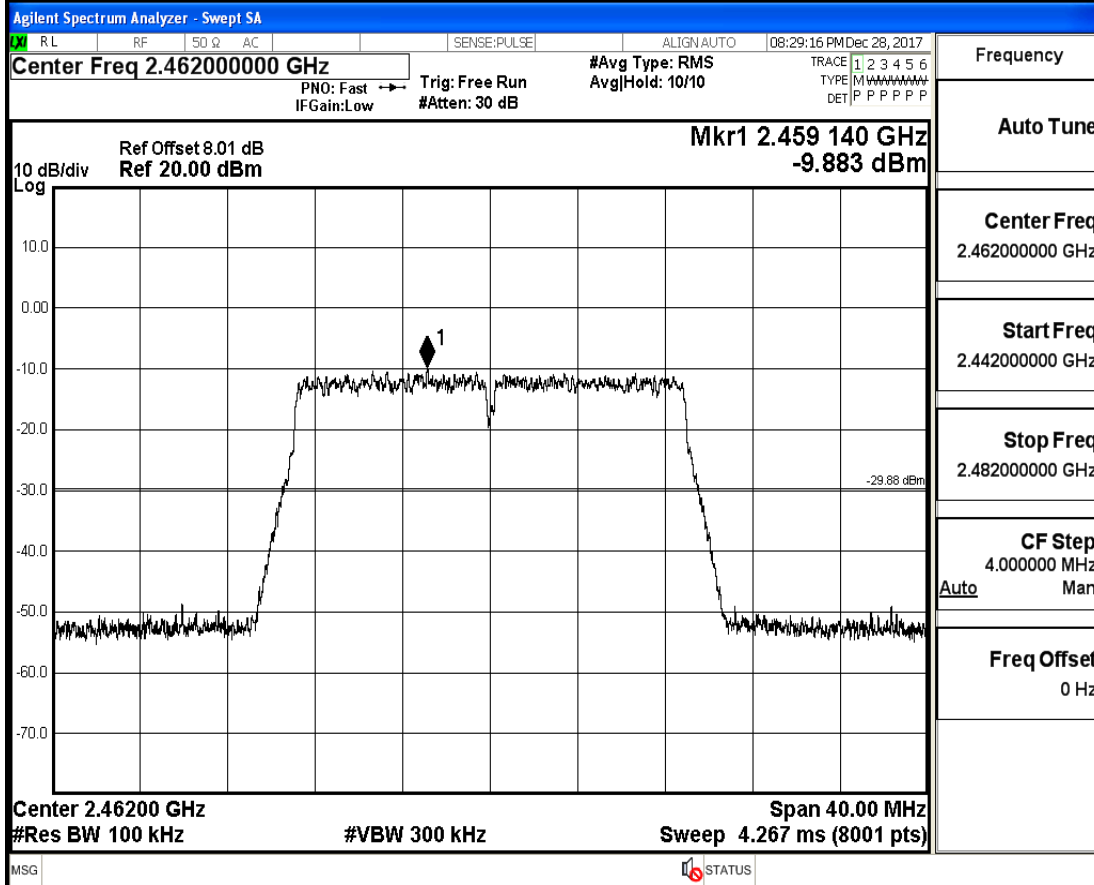
RF Conducted Spurious Emissions_11N20SISO_2412_Ant1



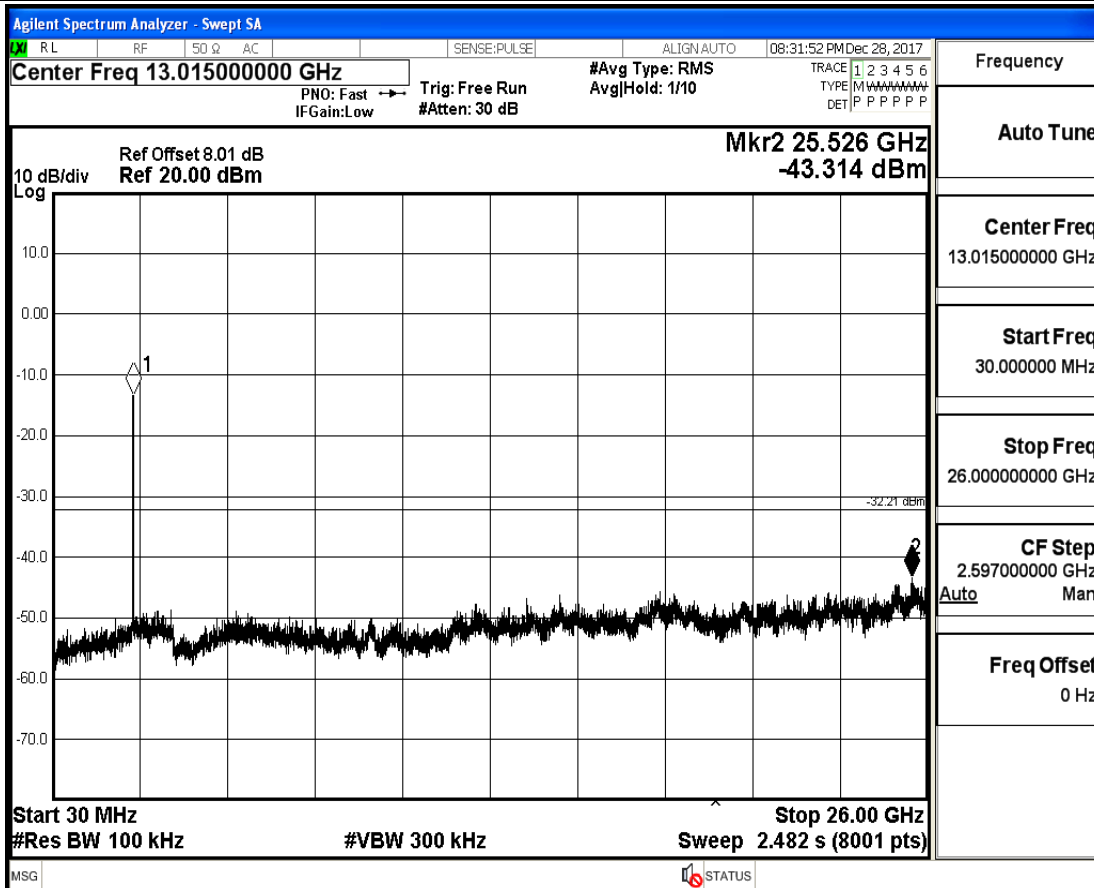
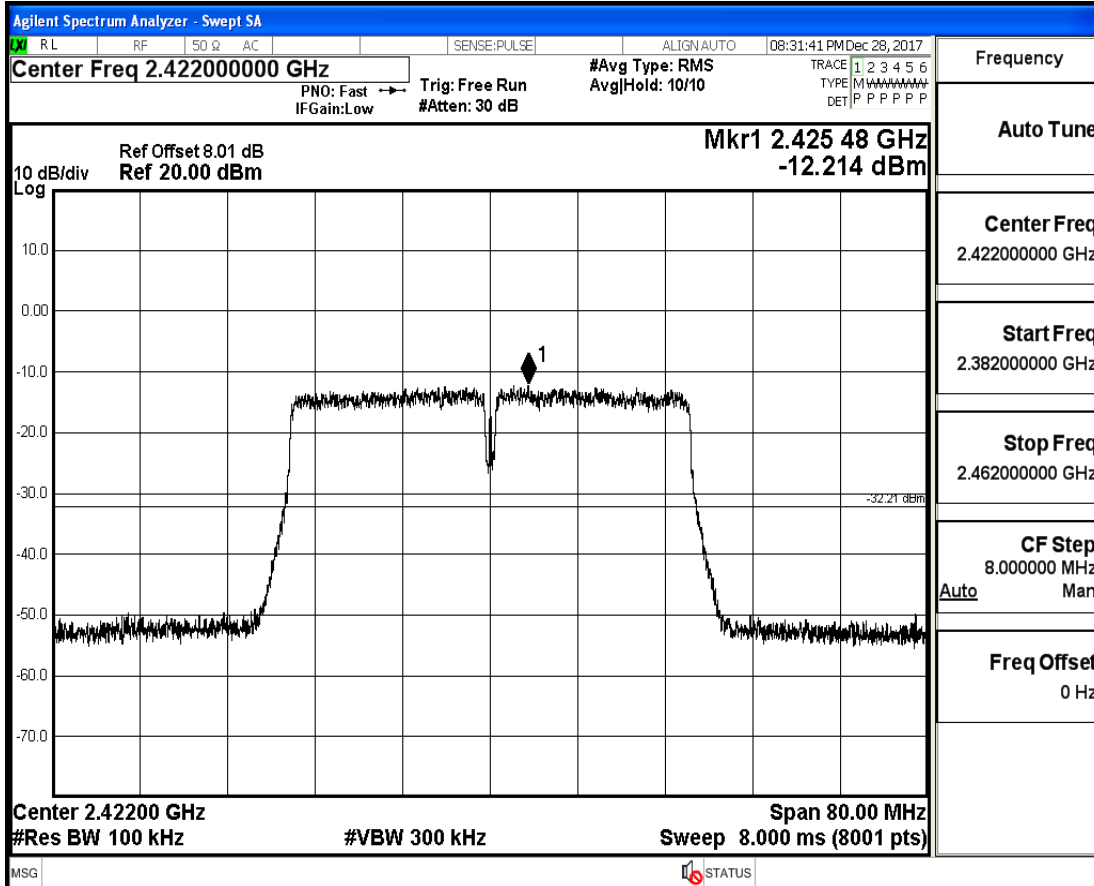
RF Conducted Spurious Emissions_11N20SISO_2437_Ant1



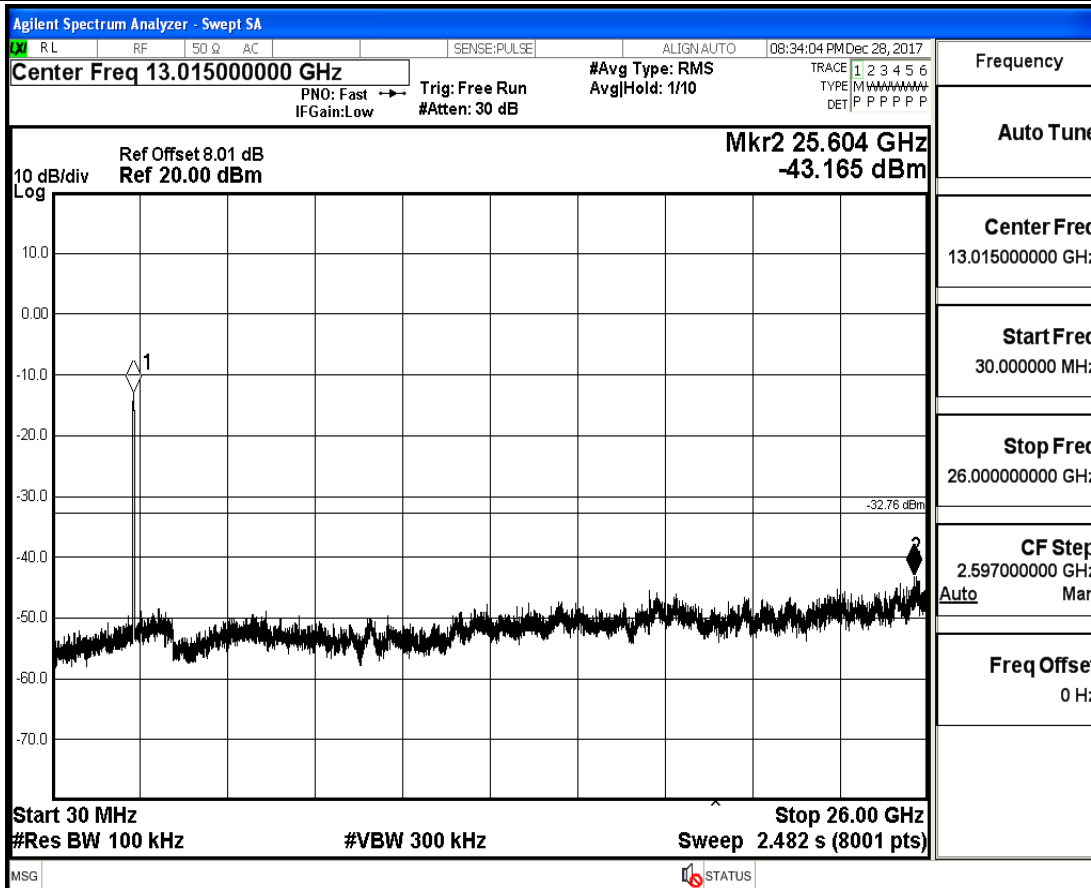
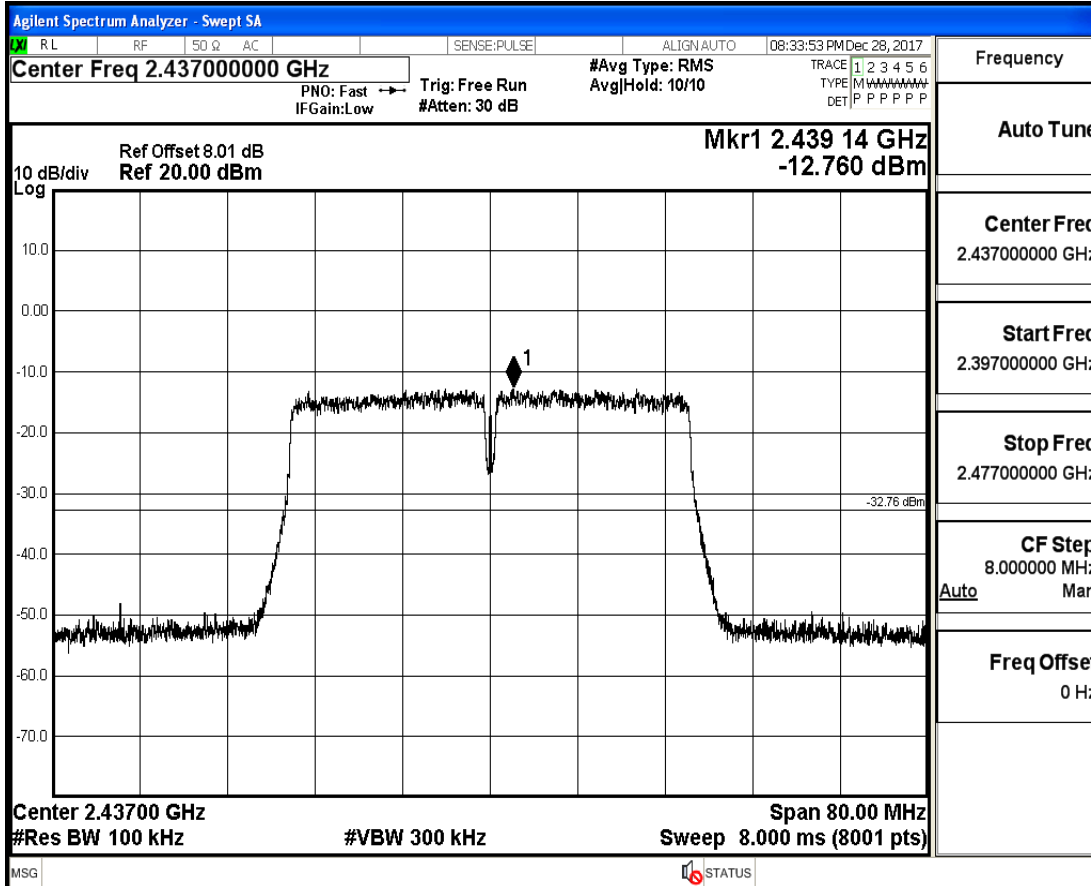
RF Conducted Spurious Emissions_11N20SISO_2462_Ant1



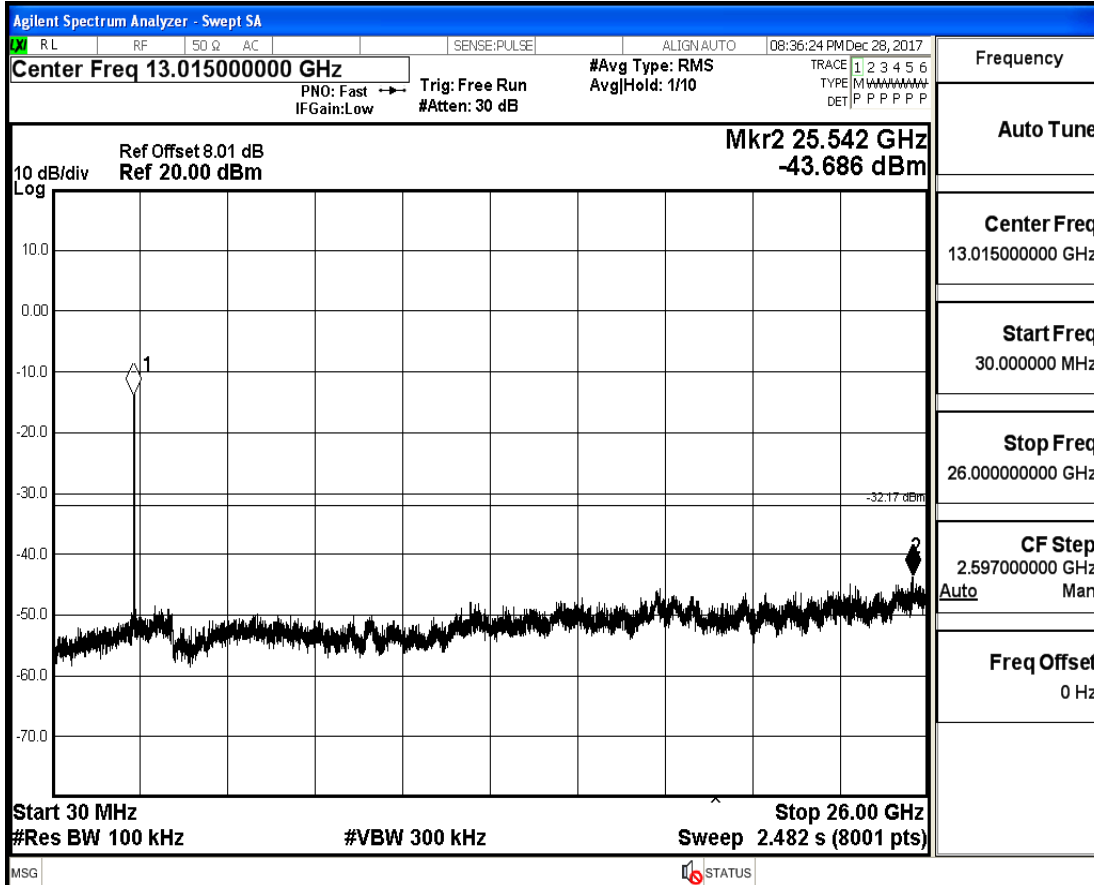
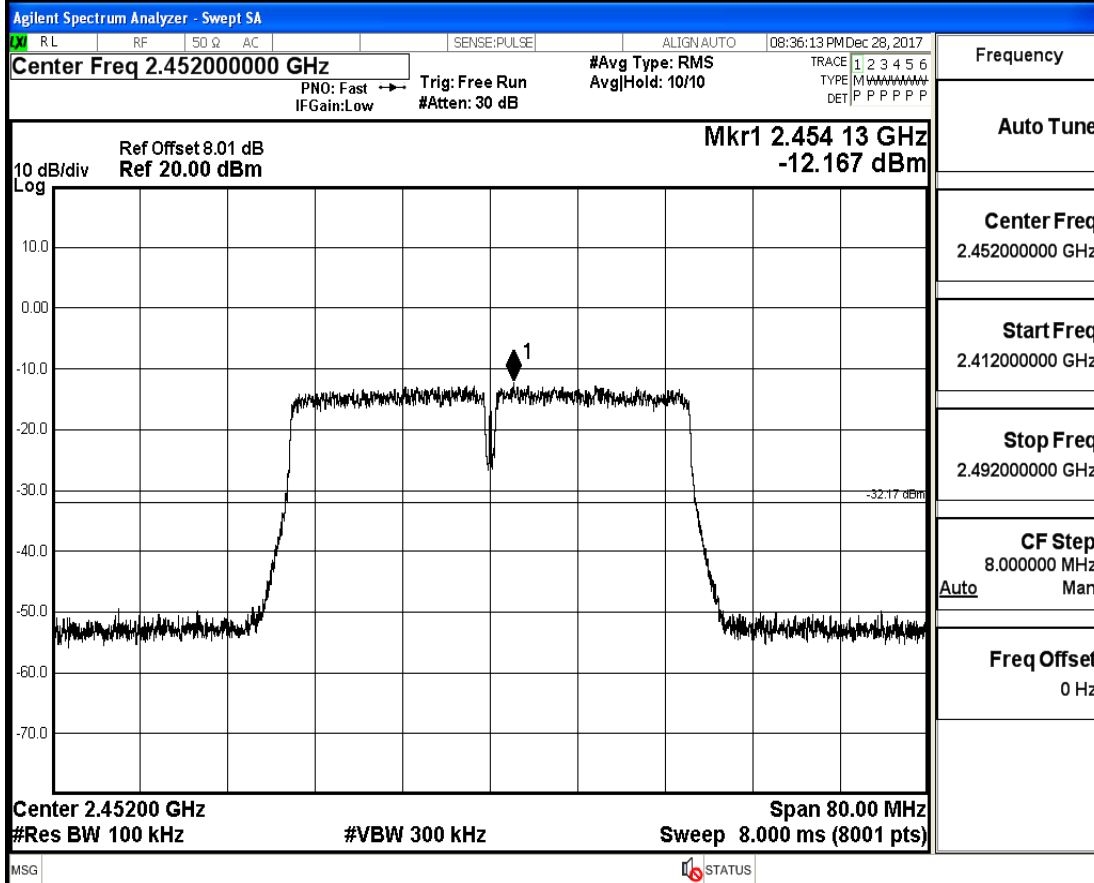
RF Conducted Spurious Emissions_11N40SISO_2422_Ant1



RF Conducted Spurious Emissions_11N40SISO_2437_Ant1



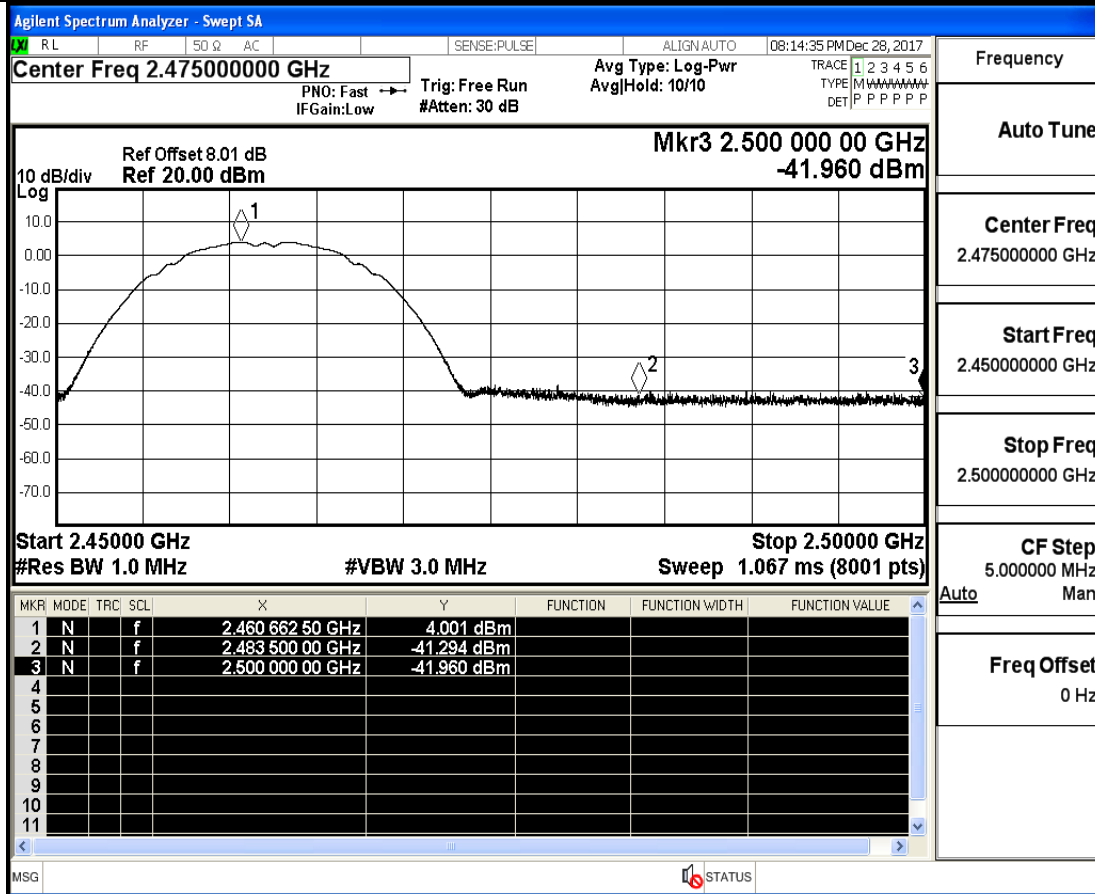
RF Conducted Spurious Emissions_11N40SISO_2452_Ant1



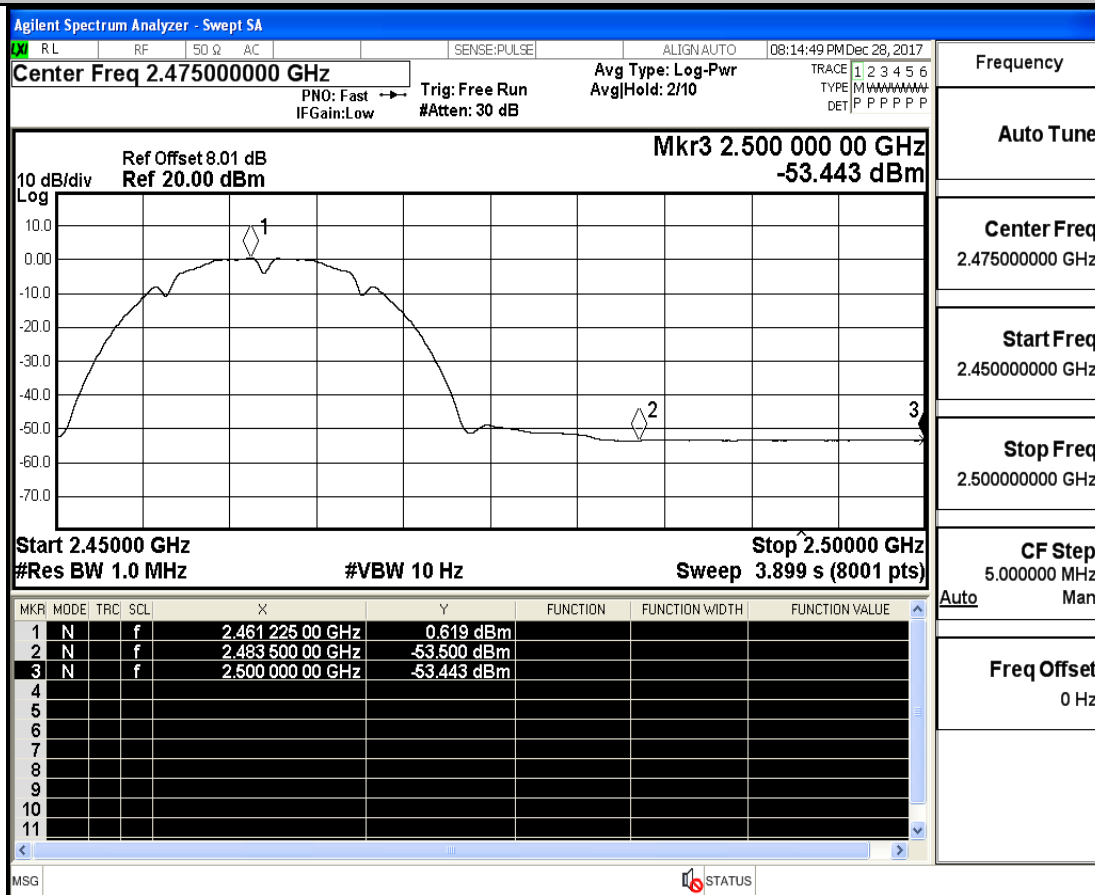
C.6 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-42.94	2	0	54.32	PEAK	74	PASS
11B	2412	Ant1	2310.0	-54.14	2	0	43.11	AV	54	PASS
11B	2412	Ant1	2390.0	-42.27	2	0	54.99	PEAK	74	PASS
11B	2412	Ant1	2390.0	-53.67	2	0	43.59	AV	54	PASS
11B	2462	Ant1	2483.5	-41.29	2	0	55.96	PEAK	74	PASS
11B	2462	Ant1	2483.5	-53.50	2	0	43.76	AV	54	PASS
11B	2462	Ant1	2500.0	-41.96	2	0	55.30	PEAK	74	PASS
11B	2462	Ant1	2500.0	-53.44	2	0	43.81	AV	54	PASS
11G	2412	Ant1	2310.0	-42.60	2	0	54.66	PEAK	74	PASS
11G	2412	Ant1	2310.0	-54.10	2	0	43.15	AV	54	PASS
11G	2412	Ant1	2390.0	-43.23	2	0	54.03	PEAK	74	PASS
11G	2412	Ant1	2390.0	-53.18	2	0	44.08	AV	54	PASS
11G	2462	Ant1	2483.5	-43.33	2	0	53.93	PEAK	74	PASS
11G	2462	Ant1	2483.5	-53.18	2	0	44.08	AV	54	PASS
11G	2462	Ant1	2500.0	-43.58	2	0	53.68	PEAK	74	PASS
11G	2462	Ant1	2500.0	-53.19	2	0	44.07	AV	54	PASS
11N20SISO	2412	Ant1	2310.0	-44.33	2	0	52.93	PEAK	74	PASS
11N20SISO	2412	Ant1	2310.0	-54.12	2	0	43.14	AV	54	PASS
11N20SISO	2412	Ant1	2390.0	-42.17	2	0	55.09	PEAK	74	PASS
11N20SISO	2412	Ant1	2390.0	-52.95	2	0	44.30	AV	54	PASS
11N20SISO	2462	Ant1	2483.5	-42.55	2	0	54.70	PEAK	74	PASS
11N20SISO	2462	Ant1	2483.5	-53.12	2	0	44.14	AV	54	PASS
11N20SISO	2462	Ant1	2500.0	-42.00	2	0	55.26	PEAK	74	PASS
11N20SISO	2462	Ant1	2500.0	-53.21	2	0	44.05	AV	54	PASS
11N40SISO	2422	Ant1	2310.0	-43.49	2	0	53.77	PEAK	74	PASS
11N40SISO	2422	Ant1	2310.0	-54.14	2	0	43.11	AV	54	PASS
11N40SISO	2422	Ant1	2390.0	-41.49	2	0	55.77	PEAK	74	PASS
11N40SISO	2422	Ant1	2390.0	-52.55	2	0	44.71	AV	54	PASS
11N40SISO	2452	Ant1	2483.5	-42.26	2	0	55.00	PEAK	74	PASS
11N40SISO	2452	Ant1	2483.5	-53.03	2	0	44.23	AV	54	PASS
11N40SISO	2452	Ant1	2500.0	-43.03	2	0	54.23	PEAK	74	PASS
11N40SISO	2452	Ant1	2500.0	-53.30	2	0	43.96	AV	54	PASS

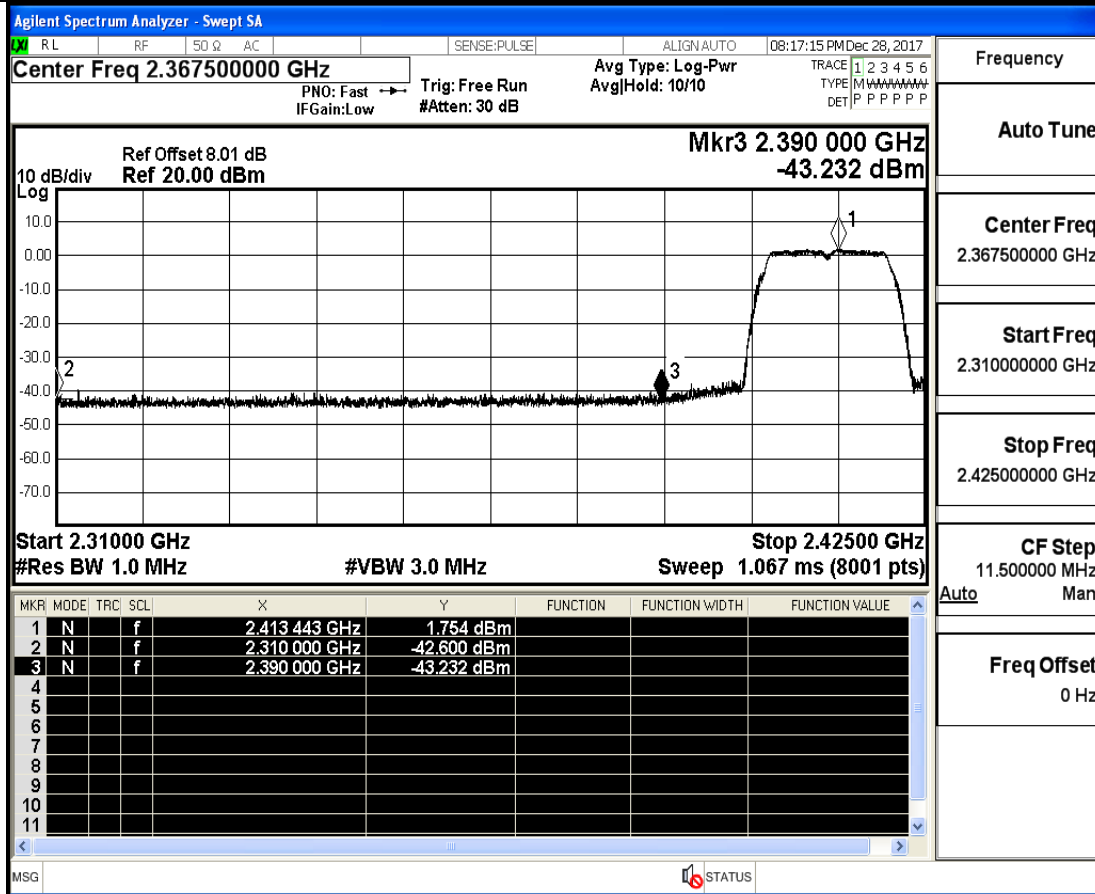
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



Restrict-band band-edge measurements_11B_2462_Ant1_AV



Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



Frequency

Auto Tune

Center Freq
2.367500000 GHz

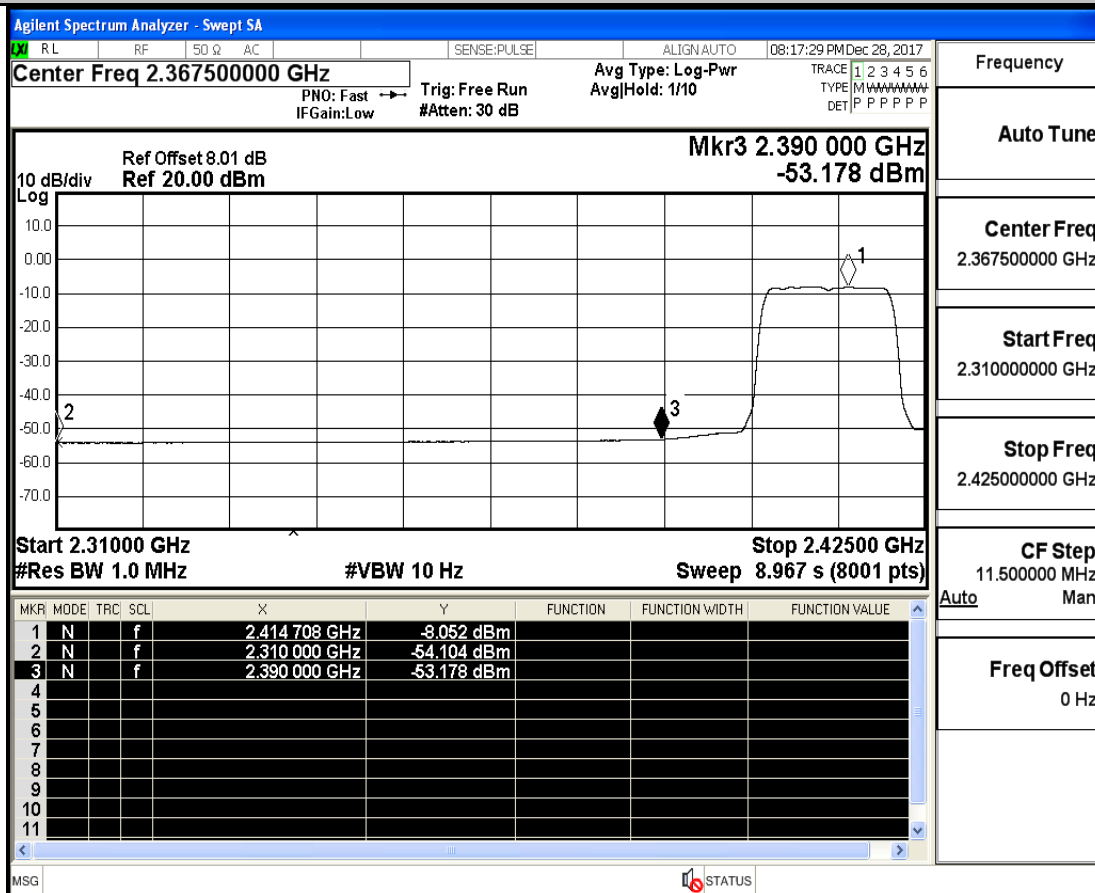
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz
Auto Man

Freq Offset
0 Hz

Restrict-band band-edge measurements_11G_2412_Ant1_AV



Frequency

Auto Tune

Center Freq
2.367500000 GHz

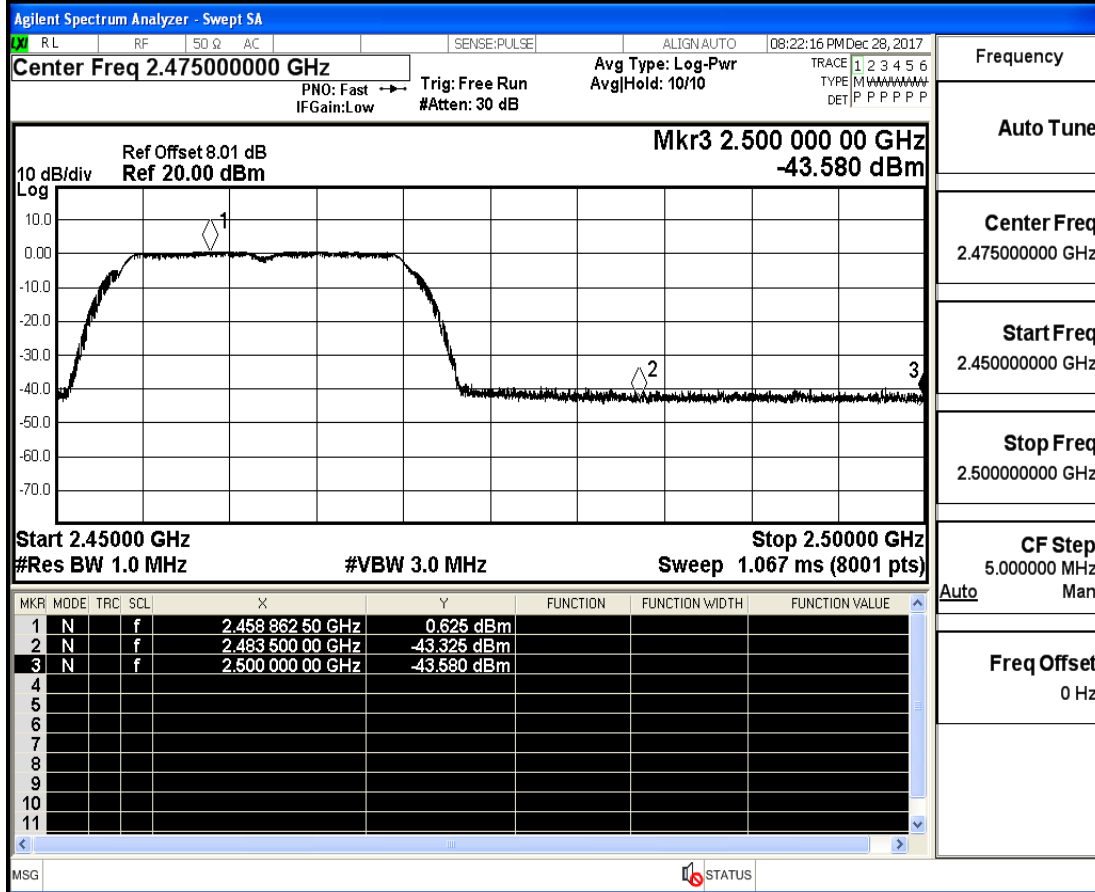
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz
Auto Man

Freq Offset
0 Hz

Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



Frequency

Auto Tune

Center Freq
2.475000000 GHz

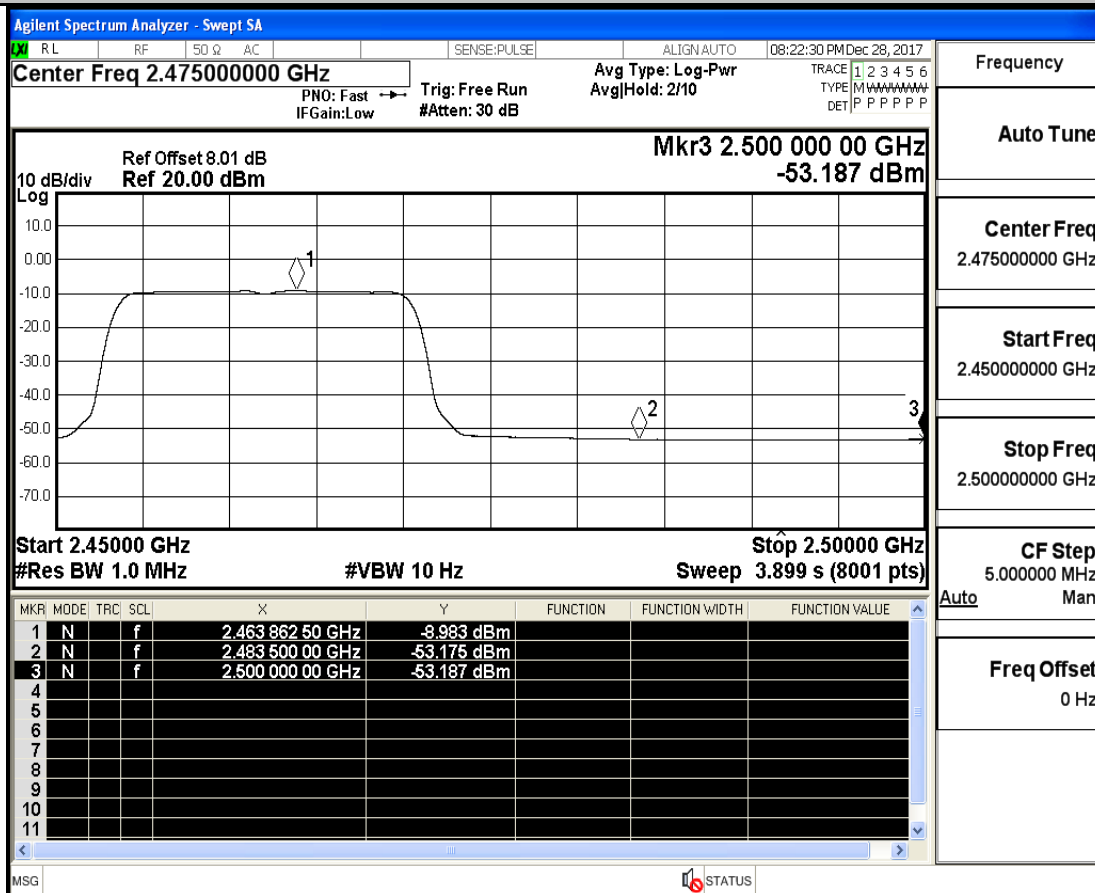
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz
Auto Man

Freq Offset
0 Hz

Restrict-band band-edge measurements_11G_2462_Ant1_AV



Frequency

Auto Tune

Center Freq
2.475000000 GHz

Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz
Auto Man

Freq Offset
0 Hz

Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.367500000 GHz

Ref Offset 8.01 dB
Ref 20.00 dBm

Mkr3 2.390 000 GHz
-42.172 dBm

Start 2.31000 GHz
#Res BW 1.0 MHz

Stop 2.42500 GHz
Sweep 1.067 ms (8001 pts)

#VBW 3.0 MHz

Trig: Free Run
#Atten: 30 dB

PNO: Fast
IFGain: Low

Avg Type: Log-Pwr
AvgHold: 10/10

ALIGN AUTO

08:25:05 PM Dec 28, 2017

Frequency

Auto Tune

Center Freq
2.367500000 GHz

Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz
Man

Freq Offset
0 Hz

MRK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.410 798 GHz	1.137 dBm			
2	N	f		2.310 000 GHz	-44.328 dBm			
3	N	f		2.390 000 GHz	-42.172 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS

Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.367500000 GHz

Ref Offset 8.01 dB
Ref 20.00 dBm

Mkr3 2.390 000 GHz
-52.954 dBm

Start 2.31000 GHz
#Res BW 1.0 MHz

Stop 2.42500 GHz
Sweep 8.967 s (8001 pts)

#VBW 10 Hz

Trig: Free Run
#Atten: 30 dB

PNO: Fast
IFGain: Low

Avg Type: Log-Pwr
AvgHold: 1/10

ALIGN AUTO

08:25:19 PM Dec 28, 2017

Frequency

Auto Tune

Center Freq
2.367500000 GHz

Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz
Man

Freq Offset
0 Hz

MRK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.415 110 GHz	-8.707 dBm			
2	N	f		2.310 000 GHz	-54.122 dBm			
3	N	f		2.390 000 GHz	-52.954 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS

Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV

Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 08:25:19 PM Dec 28, 2017

Center Freq 2.367500000 GHz Avg Type: Log-Pwr TRACE 1 2 3 4 5 6
 PNO: Fast IF Gain: Low Trig: Free Run Avg Hold: 1/10 TYPE: M W W W W W W W
 #Atten: 30 dB DET: P P P P P P

Ref Offset 8.01 dB Mkr3 2.390 000 GHz
 Ref 20.00 dBm -52.954 dBm

10 dB/div Log

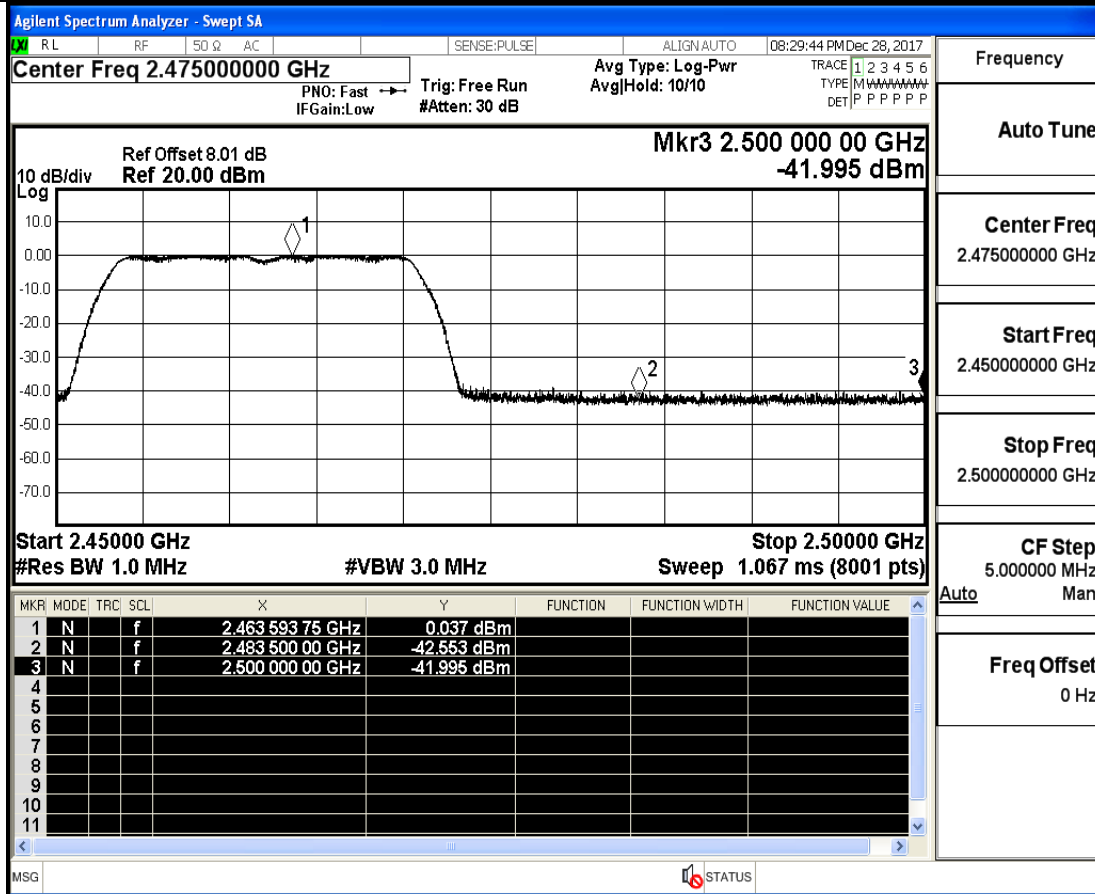
Start 2.31000 GHz Stop 2.42500 GHz
 #Res BW 1.0 MHz #VBW 10 Hz Sweep 8.967 s (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.415 110 GHz	-8.707 dBm			
2	N		f	2.310 000 GHz	-54.122 dBm			
3	N		f	2.390 000 GHz	-52.954 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

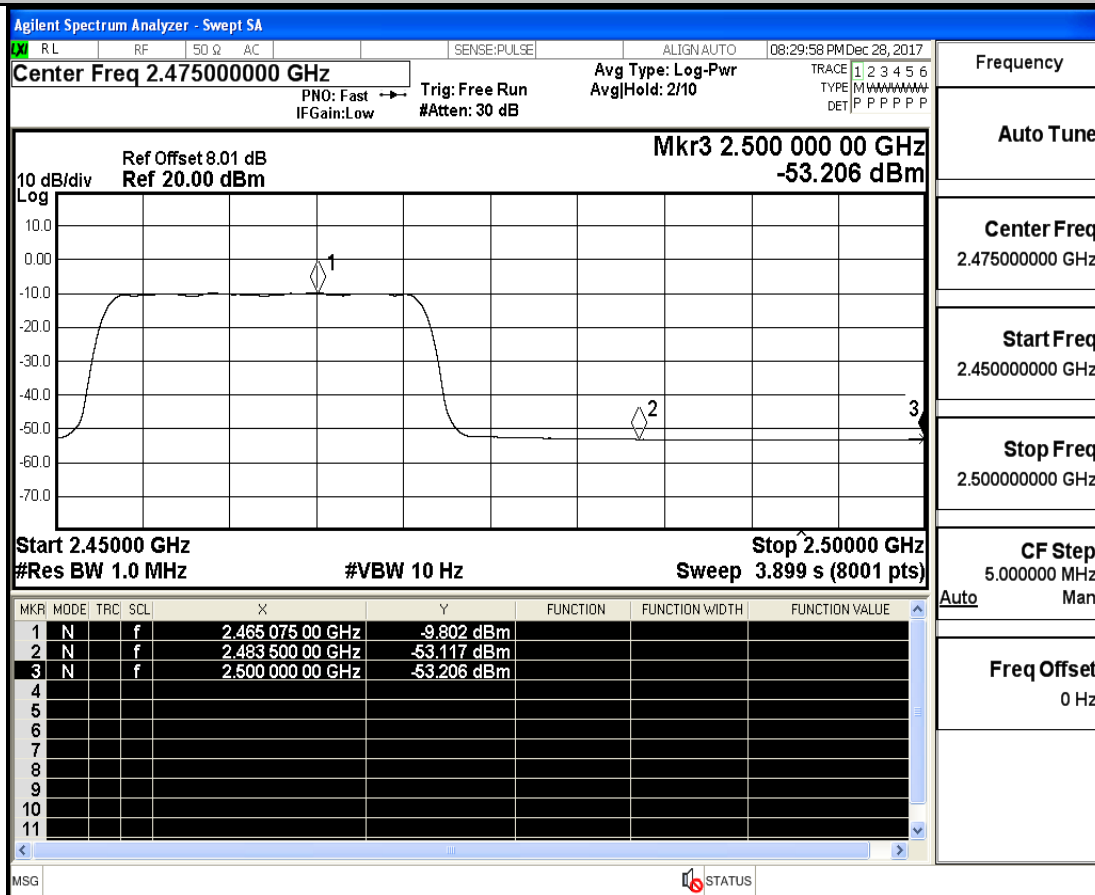
MSG STATUS

Frequency
 Auto Tune
 Center Freq
 2.367500000 GHz
 Start Freq
 2.310000000 GHz
 Stop Freq
 2.425000000 GHz
 CF Step
 11.500000 MHz
 Auto Man
 Freq Offset
 0 Hz

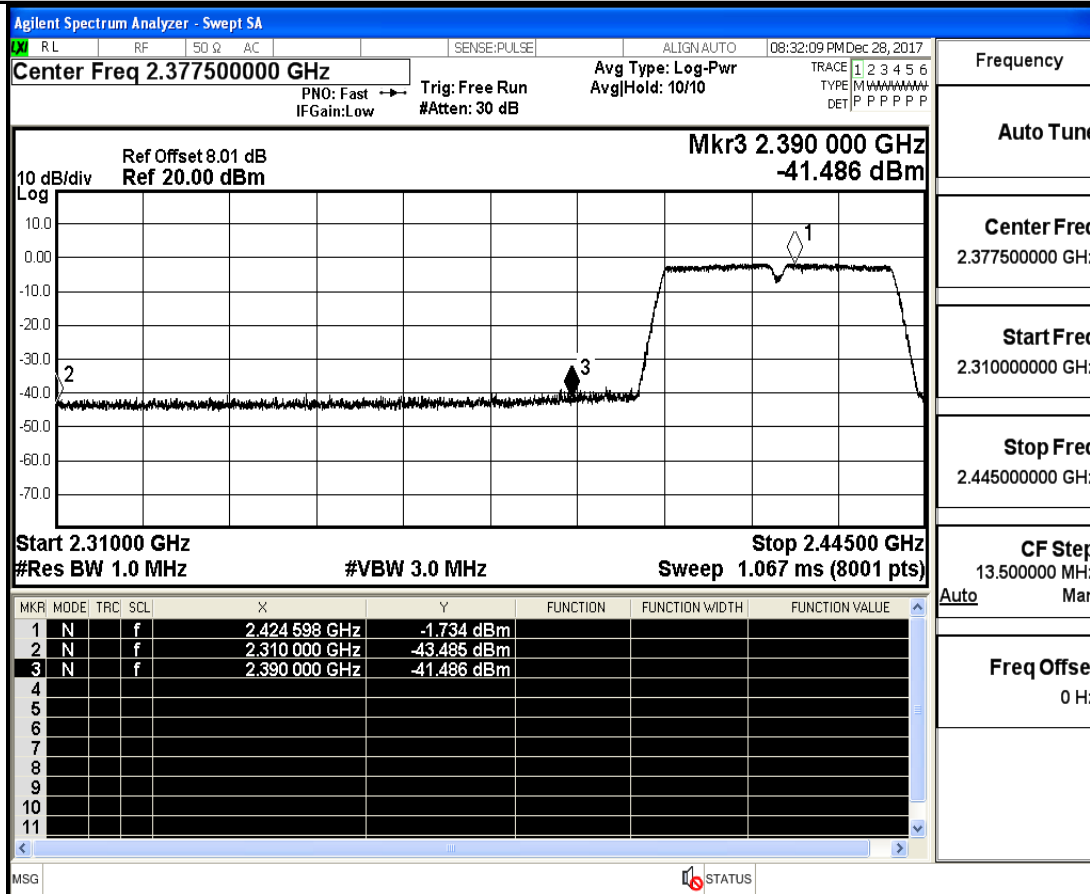
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



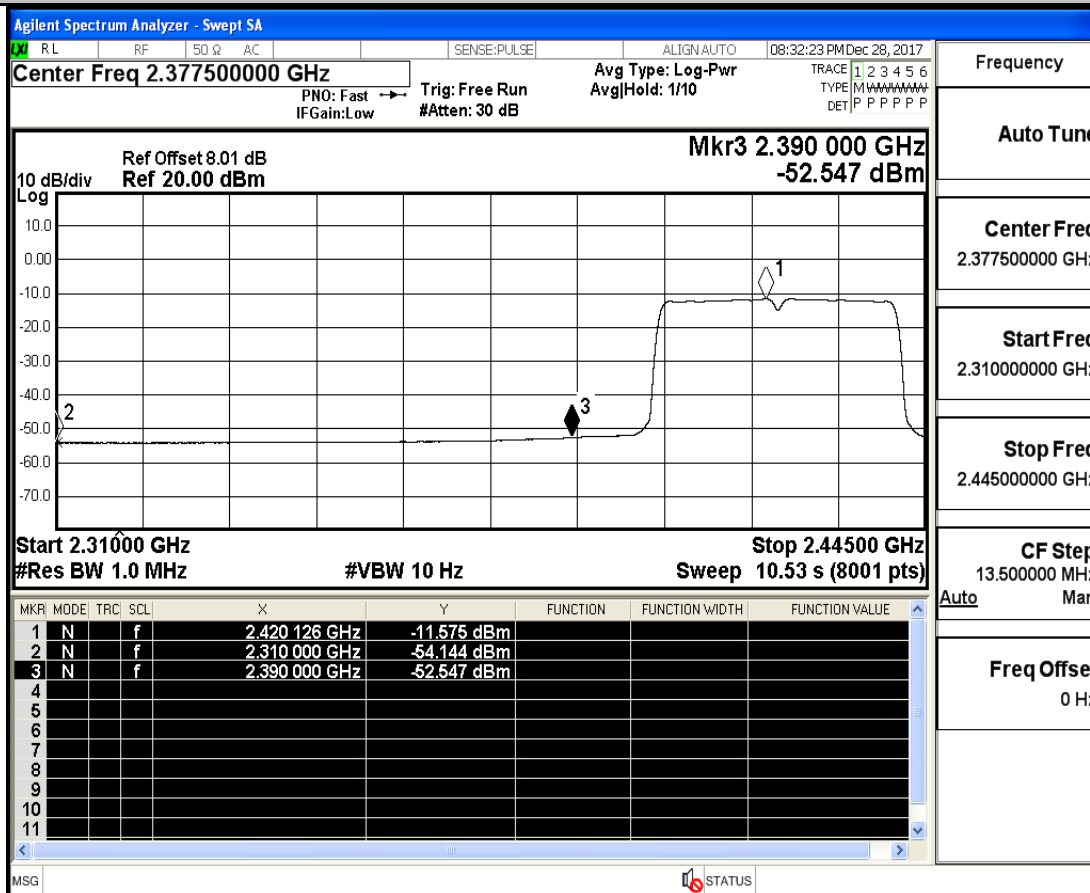
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV



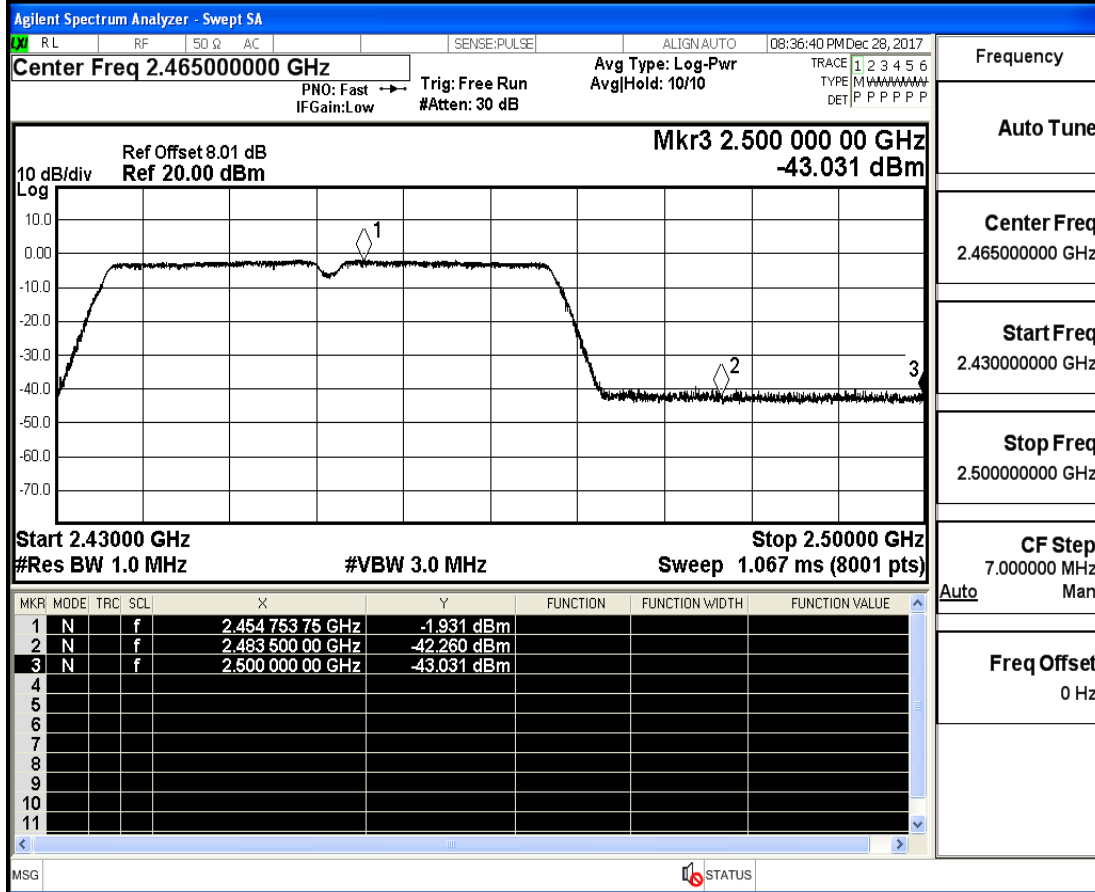
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



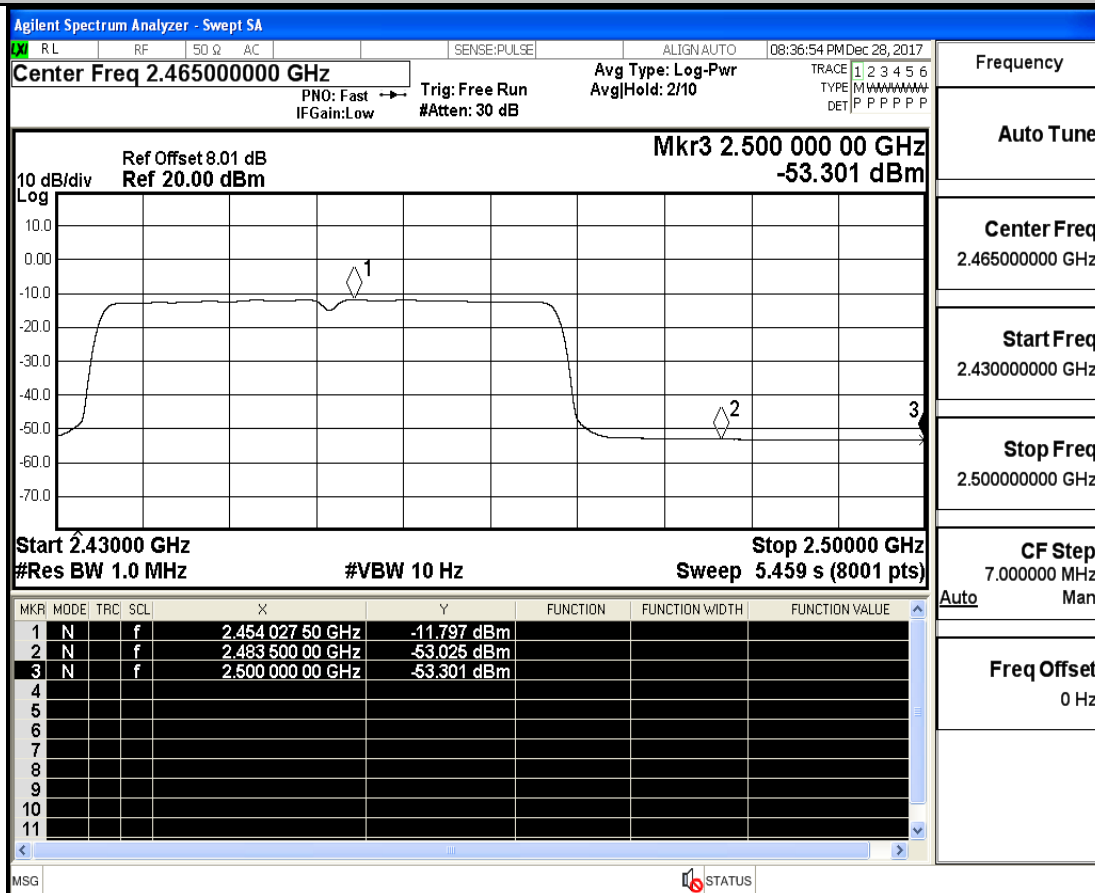
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_AV



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_PEAK



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_AV



C.7 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant1	100	PASS
11G	2437	Ant1	100	PASS
11N20SISO	2437	Ant1	100	PASS
11N40SISO	2437	Ant1	100	PASS

Duty Cycle_11B_2437_Ant1

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.437000000 GHz

Ref 30.00 dBm

10 dB/div

Log

Center 2.437000000 GHz

Res BW 8 MHz

#VBW 50 MHz

Span 0 Hz

Sweep 20.27 ms (8001 pts)

Frequency

Auto Tune

Center Freq 2.437000000 GHz

Start Freq 2.437000000 GHz

Stop Freq 2.437000000 GHz

CF Step 8.000000 MHz

Freq Offset 0 Hz

MSG STATUS

Duty Cycle_11G_2437_Ant1

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.437000000 GHz

Ref 30.00 dBm

10 dB/div

Log

Center 2.437000000 GHz

Res BW 8 MHz

#VBW 50 MHz

Span 0 Hz

Sweep 20.27 ms (8001 pts)

Frequency

Auto Tune

Center Freq 2.437000000 GHz

Start Freq 2.437000000 GHz

Stop Freq 2.437000000 GHz

CF Step 8.000000 MHz

Freq Offset 0 Hz

MSG STATUS

Duty Cycle_11G_2437_Ant1

Agilent Spectrum Analyzer - Swept SA

☒ R L RF 50 Ω AC SENSE:PULSE ALIGN: AUTO 08:38:21 PM Dec 28, 2017
Center Freq 2.437000000 GHz Avg Type: Log-Pwr TRACE 1 2 3 4 5 6
 PNO: Fast Trig: Free Run TYPE W W W W W W W W
 IF Gain: Low #Atten: 40 dB DET P P P P P P

10 dB/div Ref 30.00 dBm

Log

Center 2.437000000 GHz Span 0 Hz
 Res BW 8 MHz #VBW 50 MHz Sweep 20.27 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.437000000 GHz

Start Freq
2.437000000 GHz

Stop Freq
2.437000000 GHz

CF Step
8.000000 MHz
Auto Man

Freq Offset
0 Hz

[illegible]

Duty Cycle_11N40SISO_2437_Ant1

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.43700000 GHz

Auto Tune

Center Freq 2.43700000 GHz

Start Freq 2.43700000 GHz

Stop Freq 2.43700000 GHz

Center Freq 2.43700000 GHz

Res BW 8 MHz

#VBW 50 MHz

Sweep 20.27 ms (8001 pts)

Span 0 Hz

CF Step 8.000000 MHz

Freq Offset 0 Hz

10 dB/div Ref 30.00 dBm

Log

Trig: Free Run

#Atten: 40 dB

Msg

Status