

Appendix A

RF Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: Wireless Audio Transmitter Receiver Adapter

Trade Mark: ZIOCOM

Test Model: ZM005809

FCC ID: RCT-ZM005809

Environmental Conditions

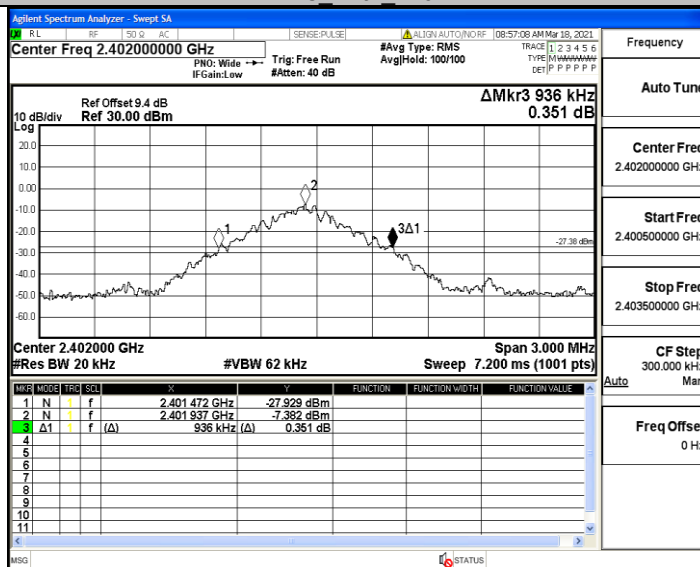
Temperature:	22.8° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa
Test Engineer:	Nancy Li
Supervised by:	Hugo Chen

A.1 20 dB Bandwidth

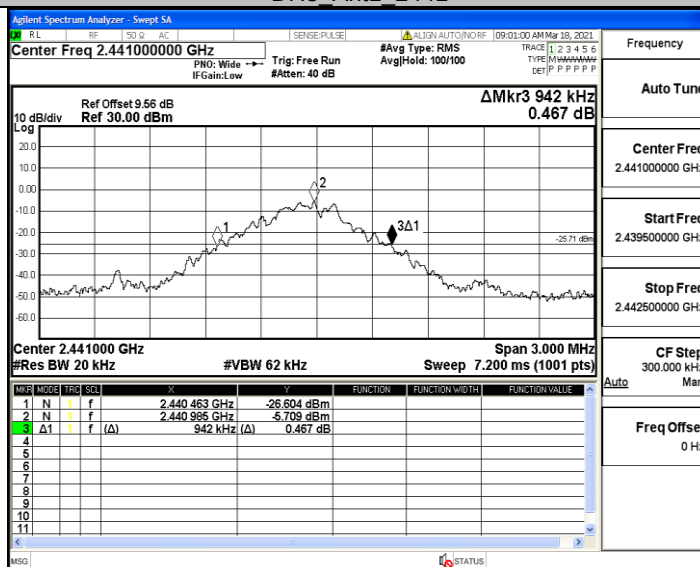
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.936	2401.472	2402.408	---	PASS
		2441	0.942	2440.463	2441.405	---	PASS
		2480	0.945	2479.463	2480.408	---	PASS
2DH5	Ant1	2402	1.356	2401.259	2402.615	---	PASS
		2441	1.359	2440.256	2441.615	---	PASS
		2480	1.341	2479.262	2480.603	---	PASS
3DH5	Ant1	2402	1.326	2401.262	2402.588	---	PASS
		2441	1.341	2440.256	2441.597	---	PASS
		2480	1.332	2479.259	2480.591	---	PASS

Test Graph

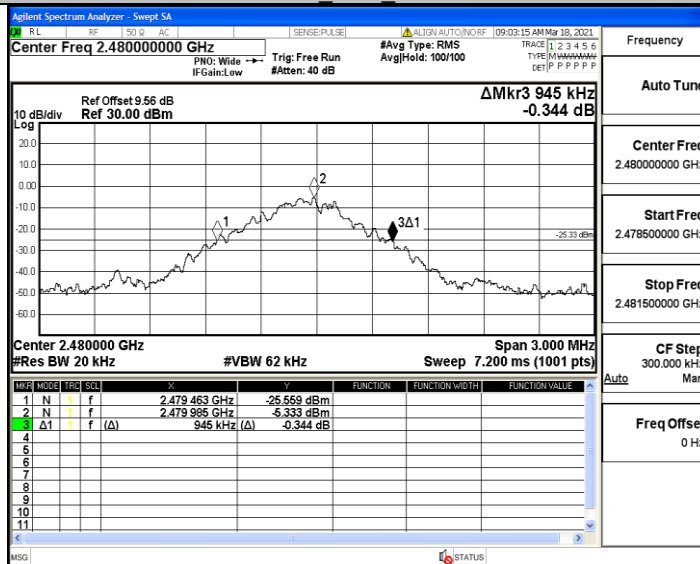
DH5_Ant1_2402



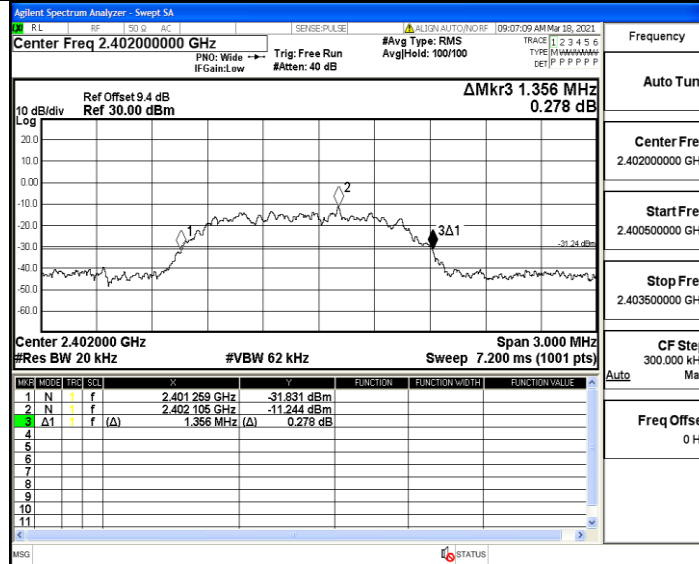
DH5_Ant1_2441



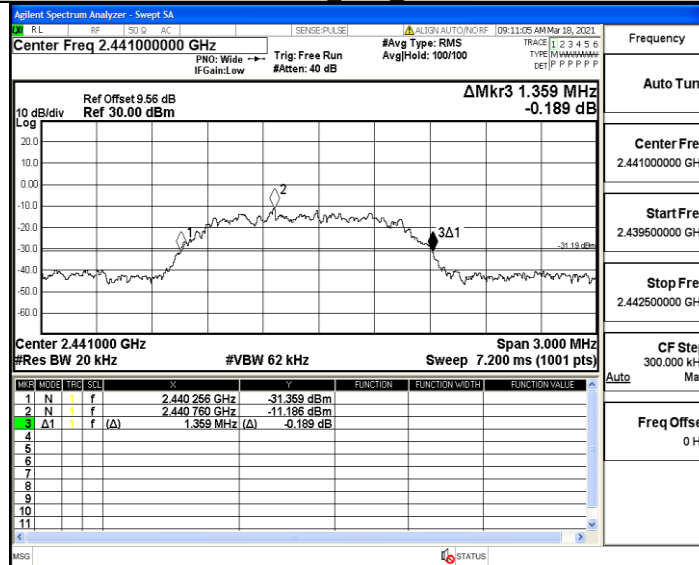
DH5_Ant1_2480



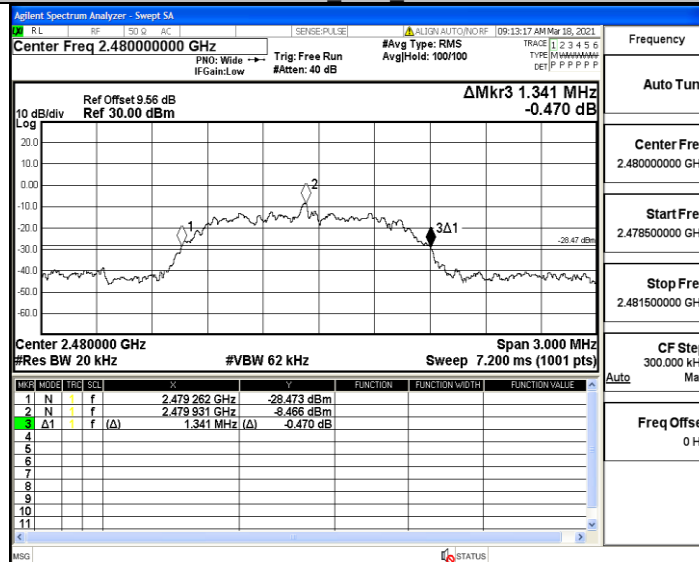
2DH5_Ant1_2402



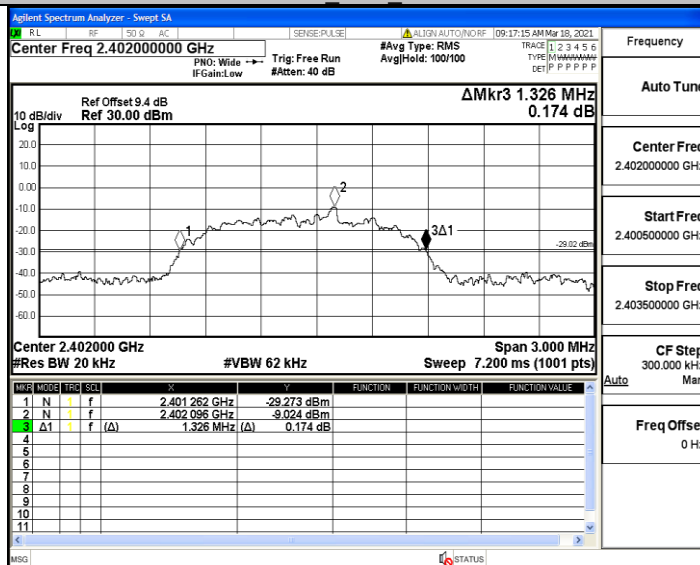
2DH5_Ant1_2441



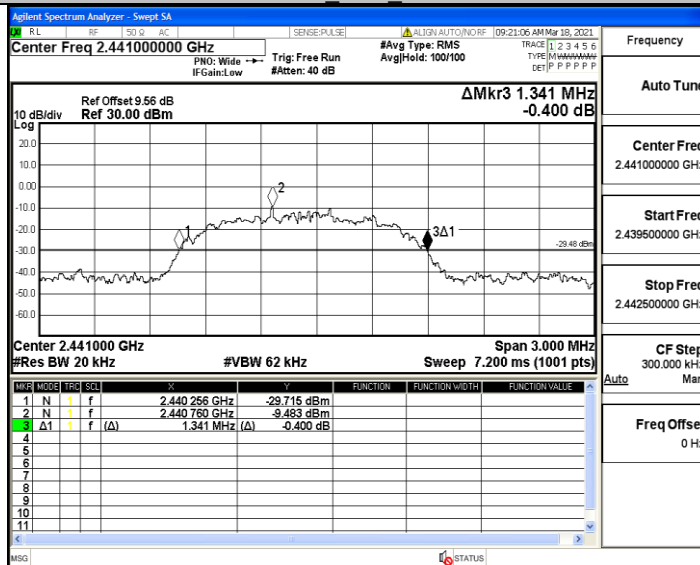
2DH5_Ant1_2480



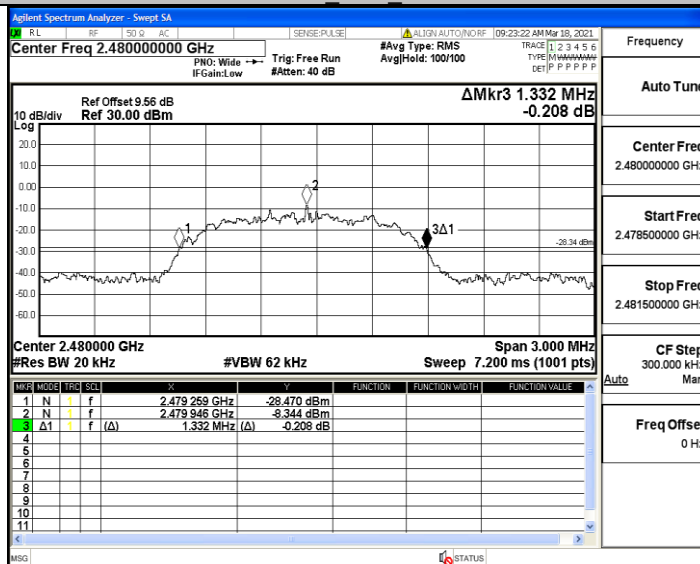
3DH5_Ant1_2402



3DH5_Ant1_2441



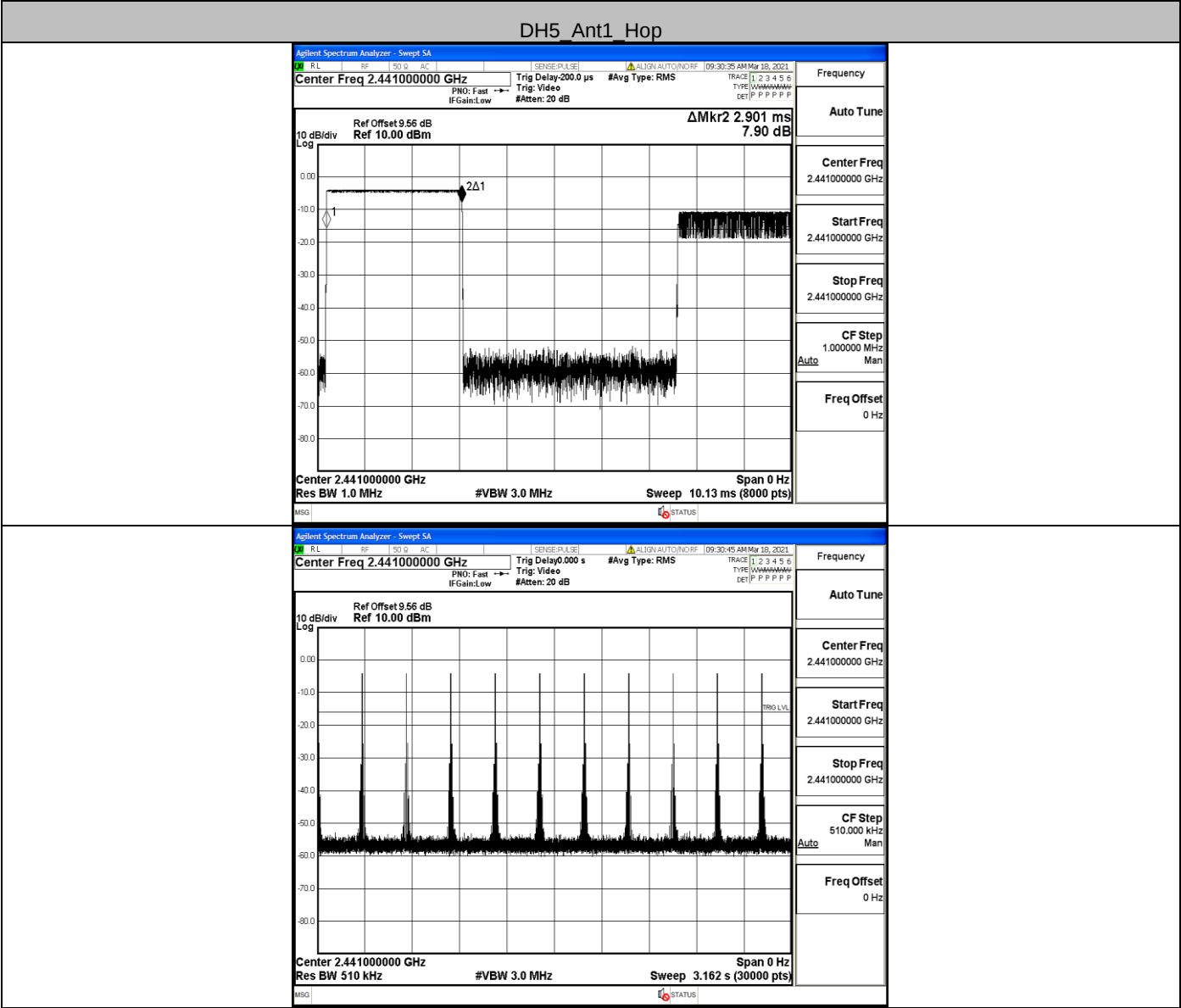
3DH5_Ant1_2480



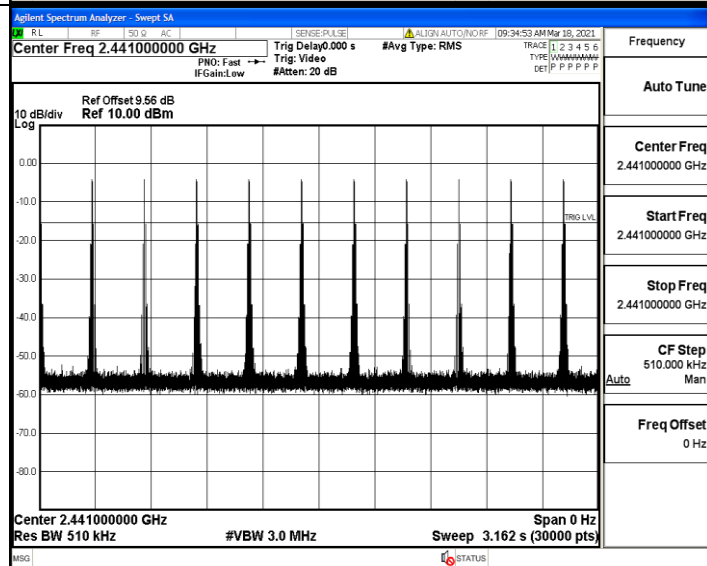
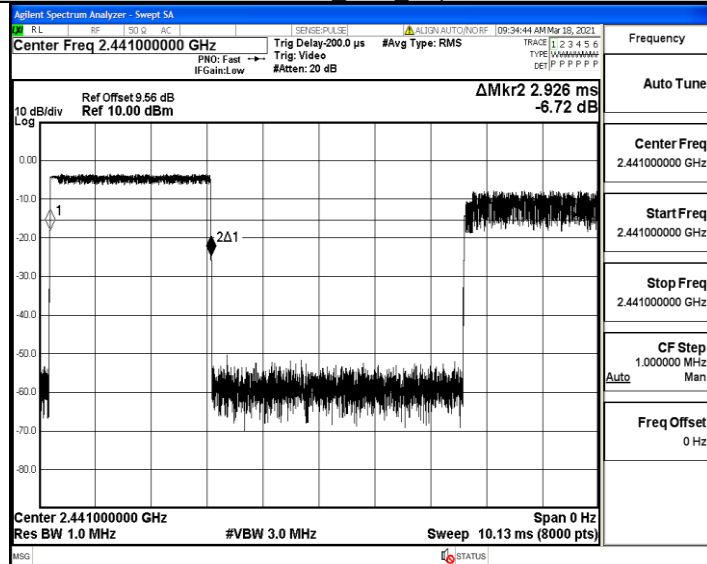
A.2 Dwell Time

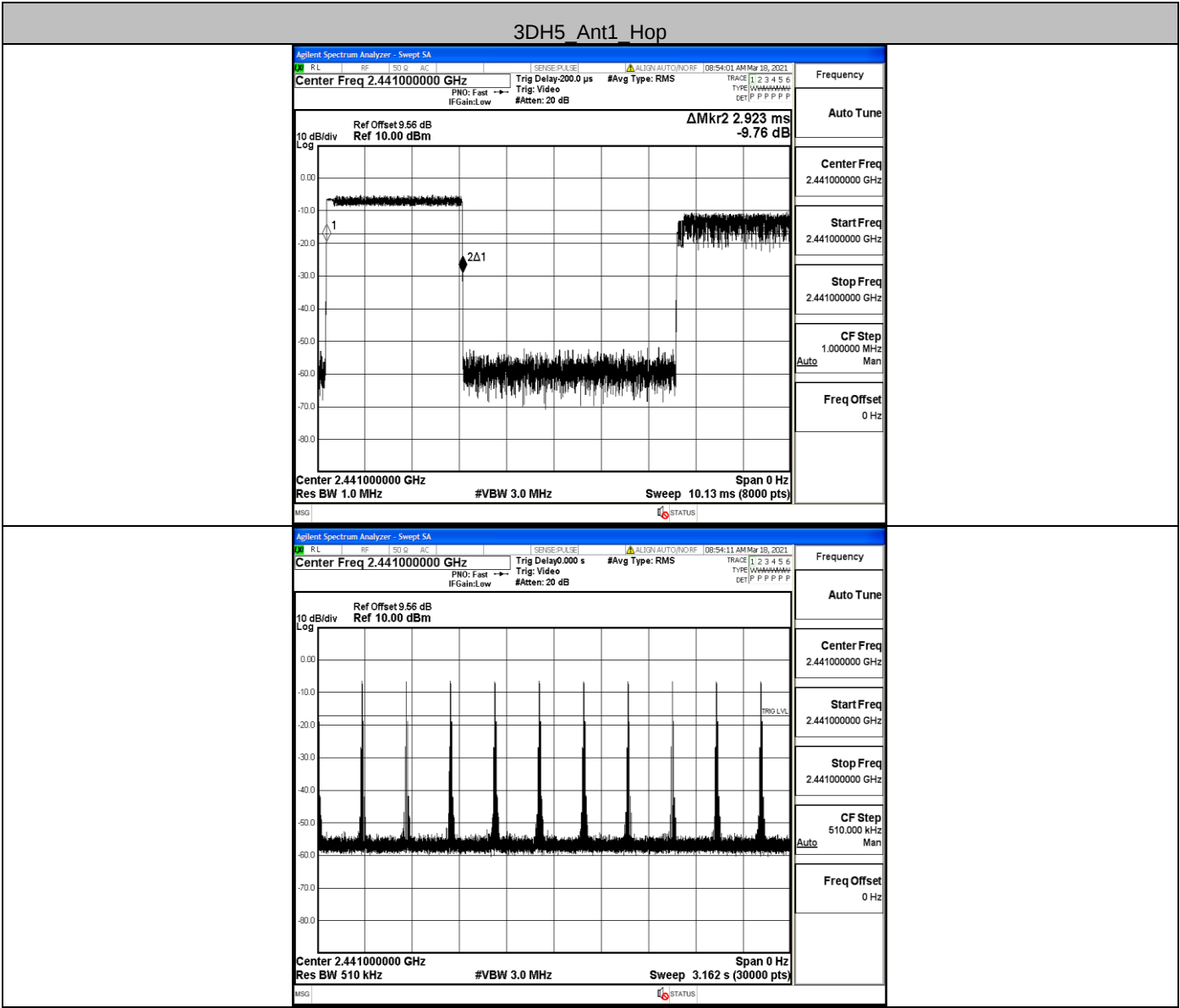
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.90	110	0.319	<=0.4	PASS
2DH5	Ant1	Hop	2.93	110	0.322	<=0.4	PASS
3DH5	Ant1	Hop	2.92	110	0.322	<=0.4	PASS

Test Graph



2DH5_Ant1_Hop





Agilent Spectrum Analyzer - Sweep SA

RL

RF

SD

AC

SENSE: PULSE

ALIGN: AUTO/NO REF

08:54:11 AM Mar 18, 2021

Center Freq 2.441000000 GHz

Trig Delay: 0.000 s

#Avg Type: RMS

TRACE 1 2 3 4 5 6

TYPE: WWWWWWWW

DET: P P P P P P

PNO: Fast

IF Gain: Low

Trig: Video

#Atten: 20 dB

Ref Offset 9.56 dB

Ref 10.00 dBm

10 dB/div

Log

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

-80.0

Center 2.441000000 GHz

Res BW 510 kHz

#VBW 3.0 MHz

Sweep 3.162 s (30000 pts)

Span 0 Hz

MSG

STATUS

Frequency

Auto Tune

Center Freq
2.441000000 GHz

Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
510.000 kHz
Auto Man

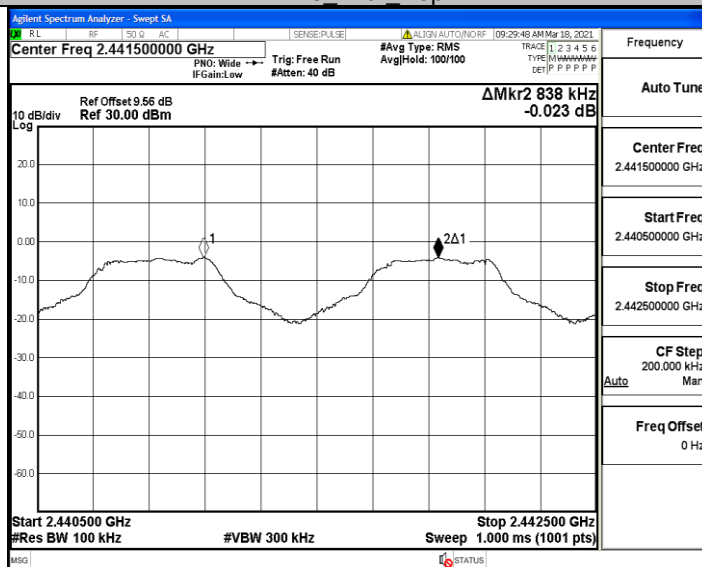
Freq Offset
0 Hz

A.3 Carrier Frequency Separation

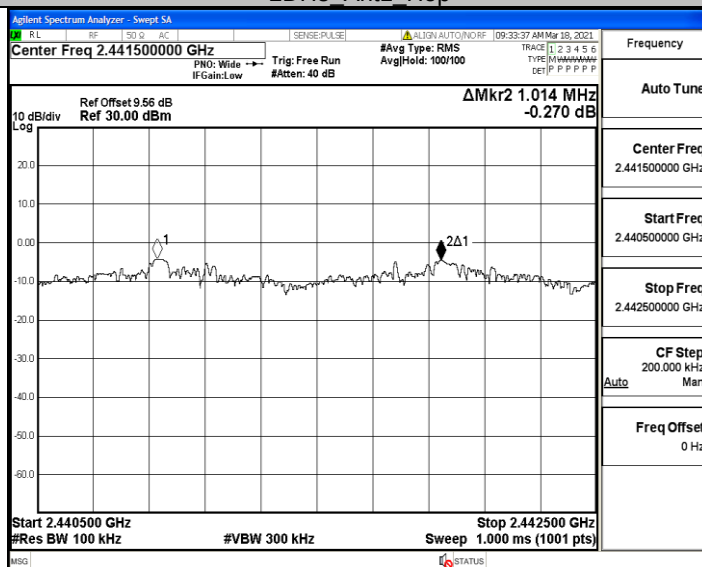
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.838	≥ 0.630	PASS
2DH5	Ant1	Hop	1.014	≥ 0.906	PASS
3DH5	Ant1	Hop	1.000	≥ 0.872	PASS

Test Graph

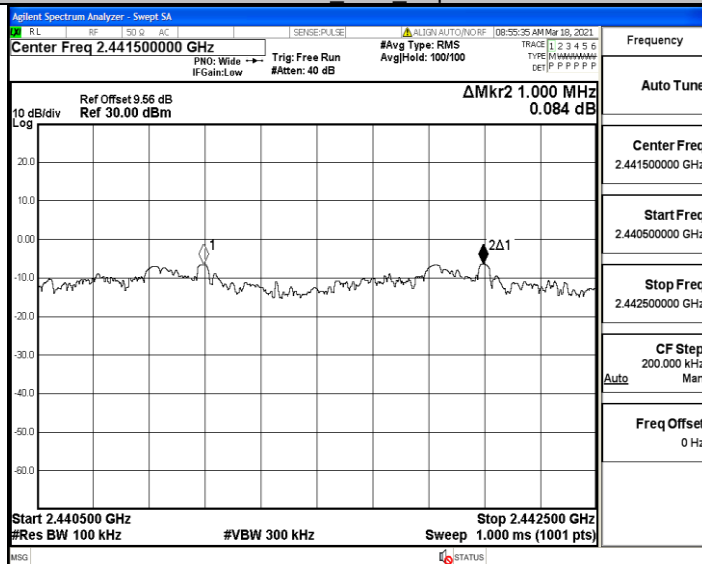
DH5_Ant1_Hop



2DH5_Ant1_Hop



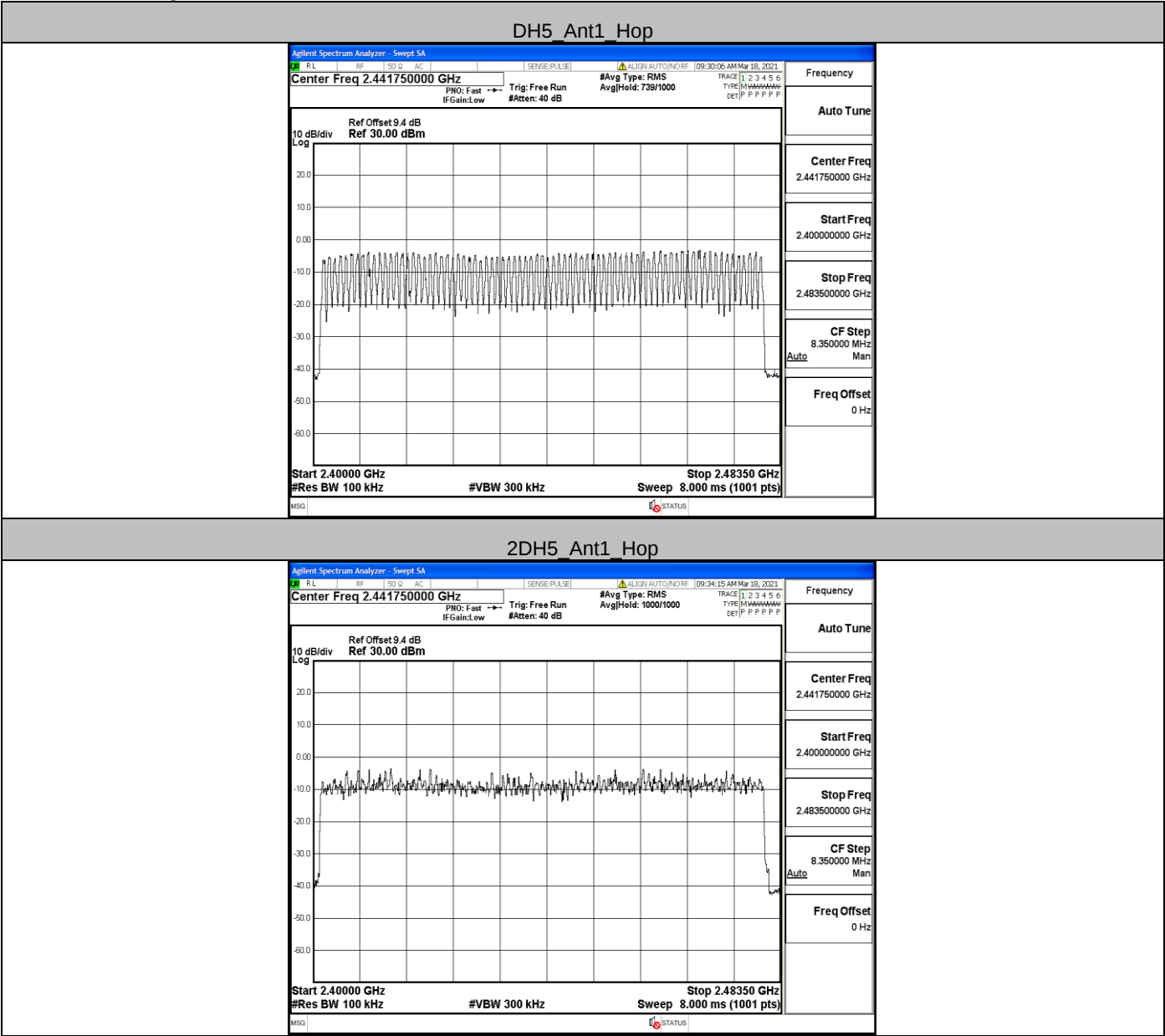
3DH5_Ant1_Hop

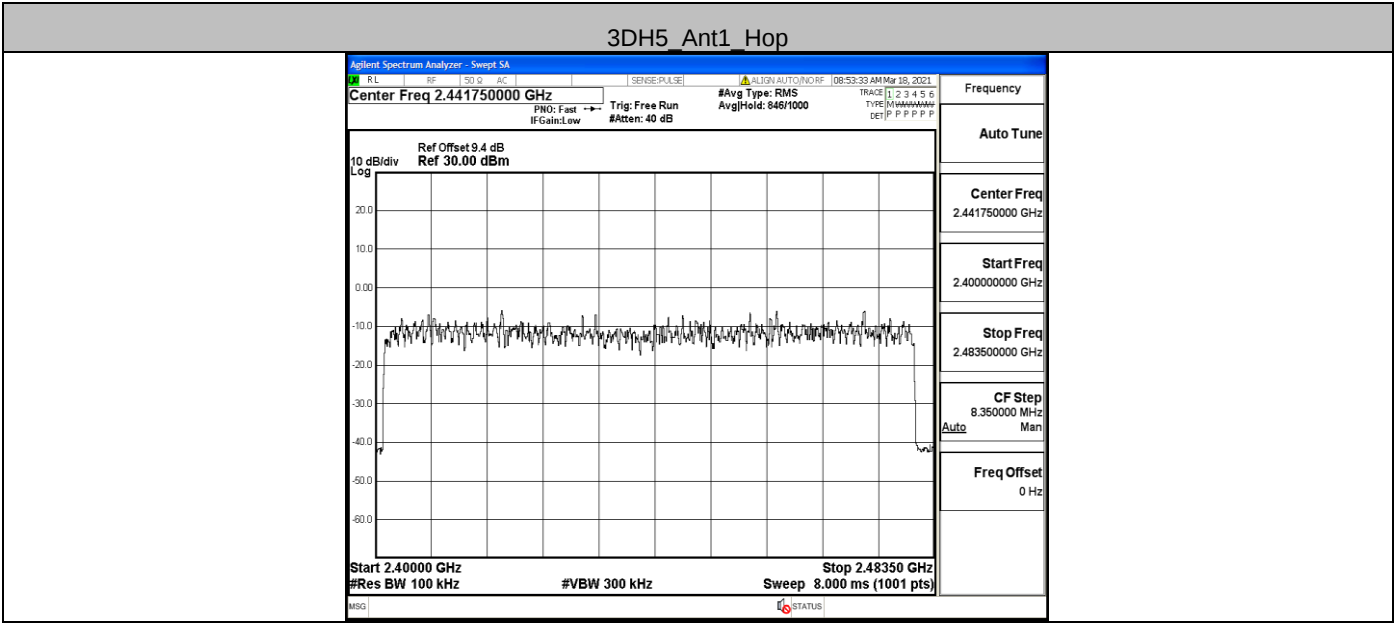


A.4 Hopping Channel Number

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	>=15	PASS
2DH5	Ant1	Hop	79	>=15	PASS
3DH5	Ant1	Hop	79	>=15	PASS

Test Graph



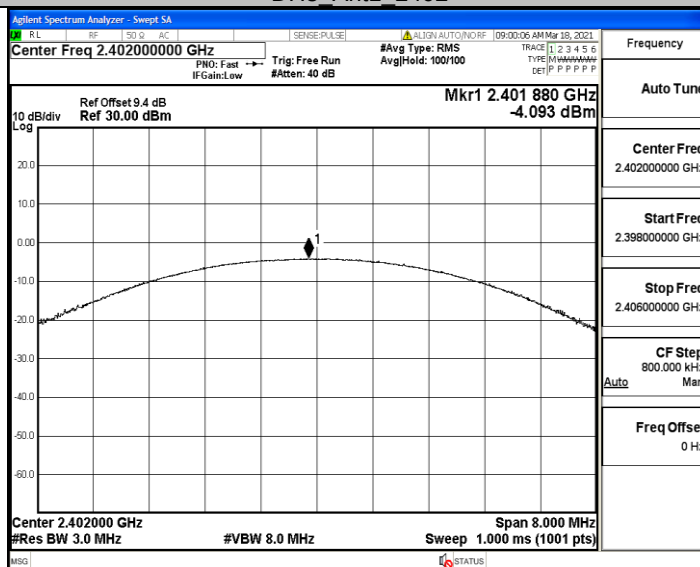


A.5 Conducted Peak Output Power

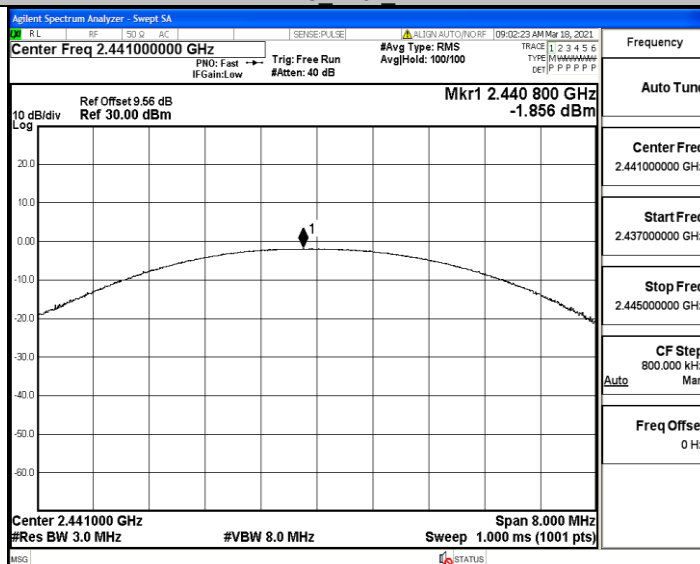
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-4.09	<=30	PASS
		2441	-1.86	<=30	PASS
		2480	-1.46	<=30	PASS
2DH5	Ant1	2402	-3.64	<=20.97	PASS
		2441	-2.98	<=20.97	PASS
		2480	-2.57	<=20.97	PASS
3DH5	Ant1	2402	-3.41	<=20.97	PASS
		2441	-2.79	<=20.97	PASS
		2480	-2.36	<=20.97	PASS

Test Graph

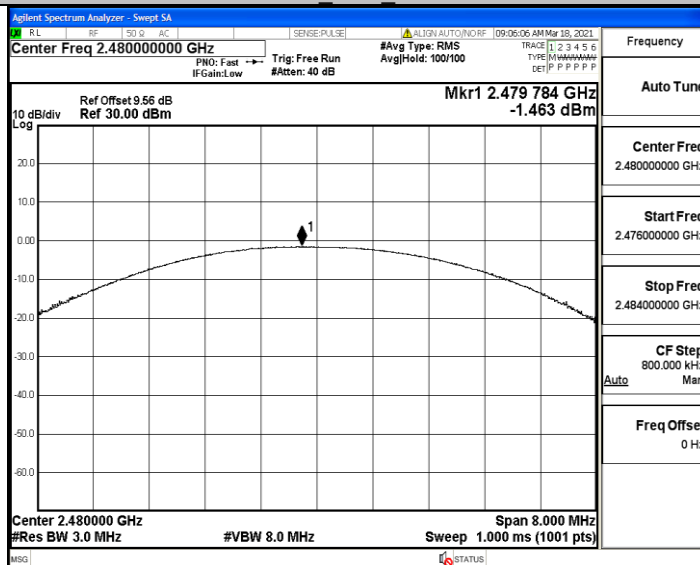
DH5 Ant1 2402



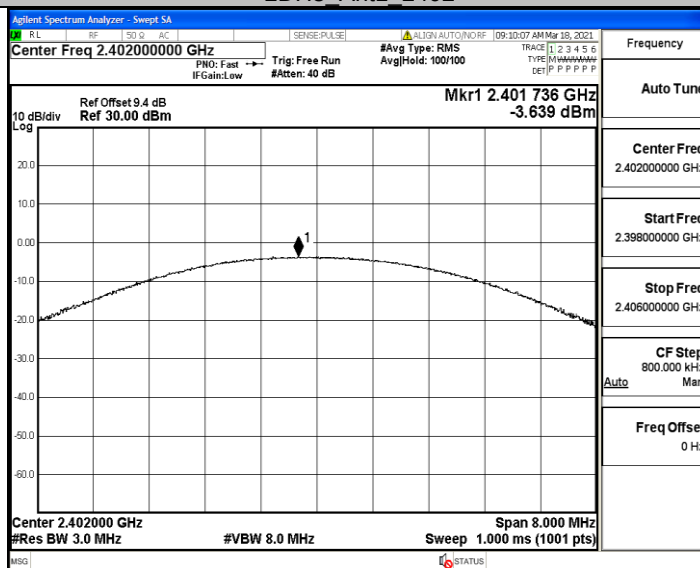
DH5 Ant1 2441



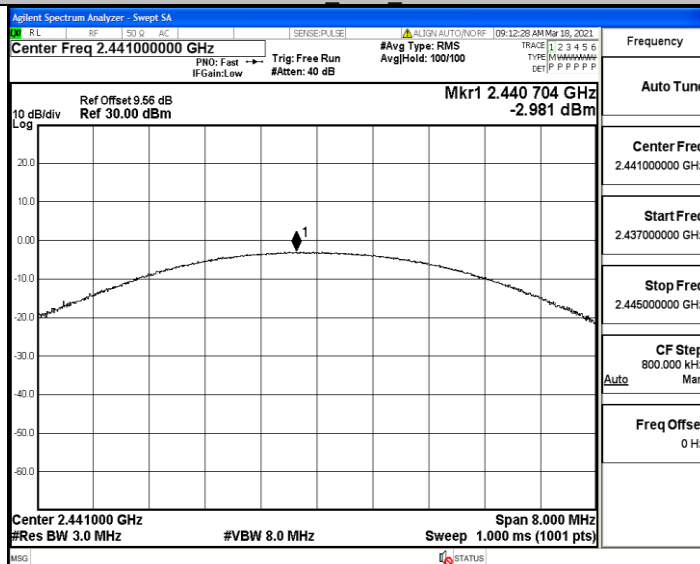
DH5_Ant1_2480

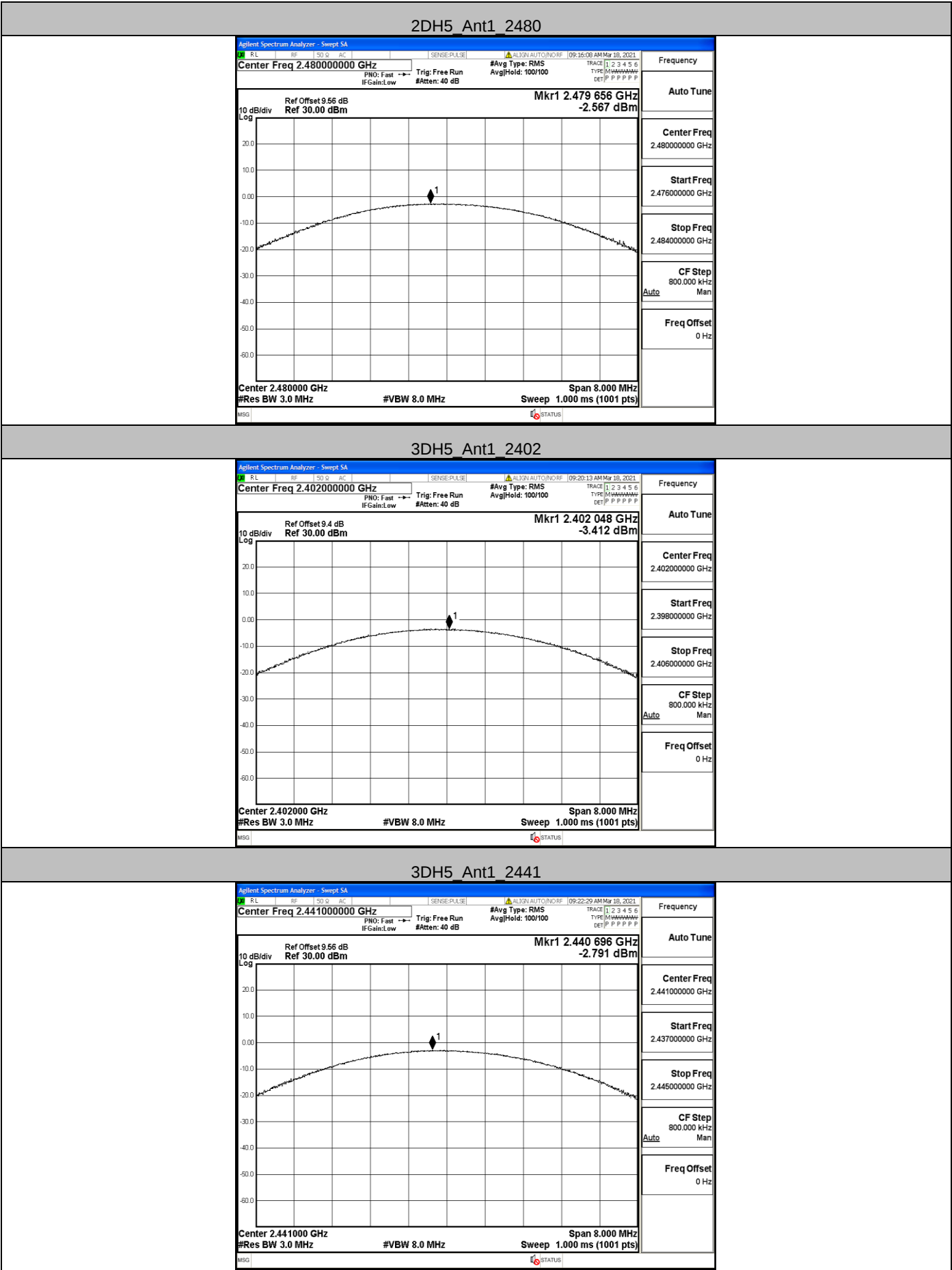


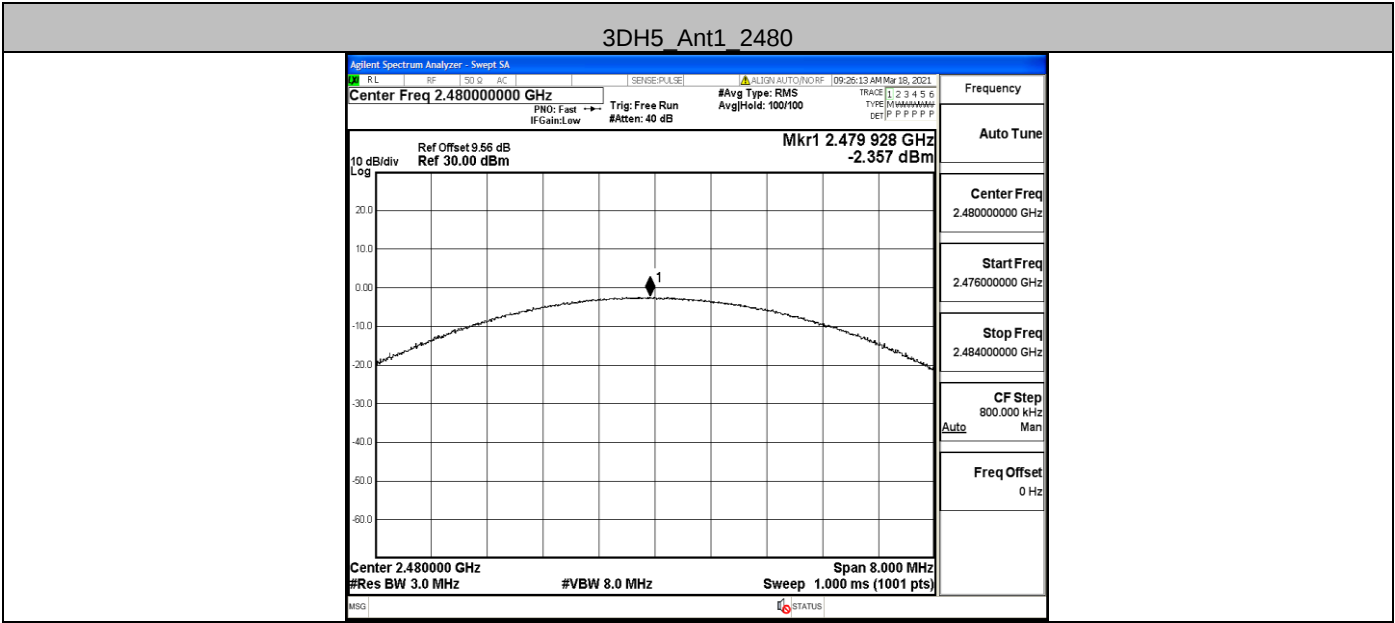
2DH5_Ant1_2402



2DH5_Ant1_2441





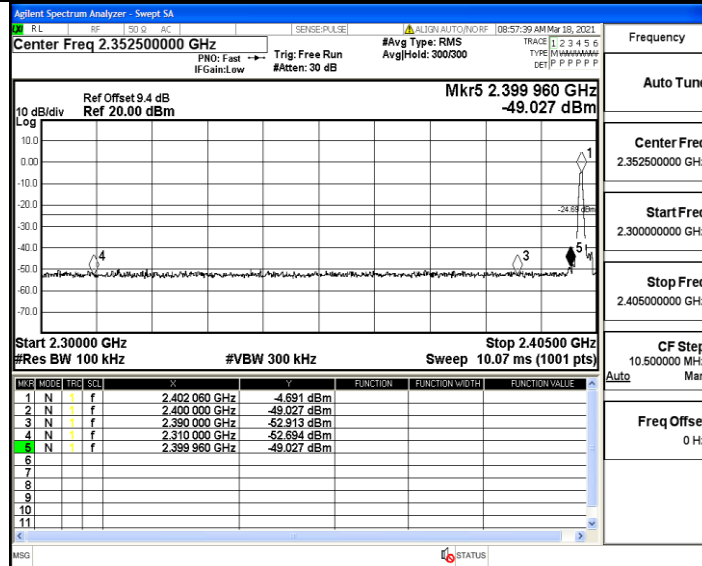


A.6 Band-edge for RF Conducted Emissions

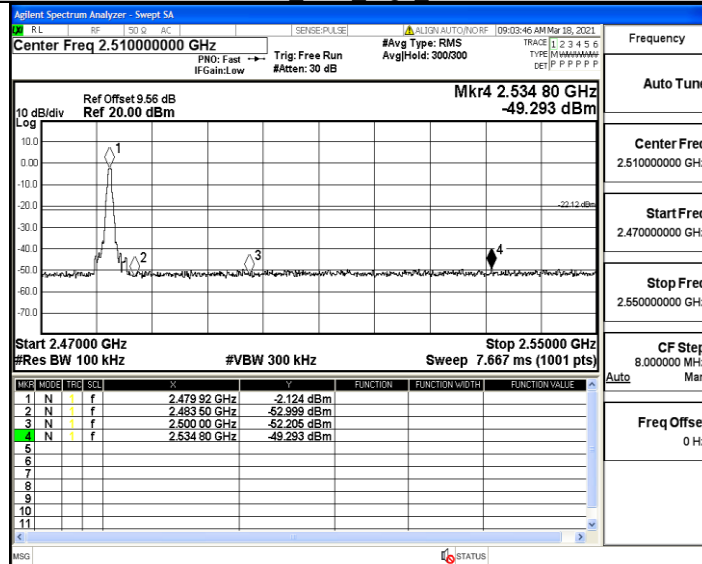
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-4.69	-49.03	<=-24.69	PASS
		High	2480	-2.12	-49.29	<=-22.12	PASS
		Low	Hop_2402	-5.08	-49.75	<=-25.08	PASS
		High	Hop_2480	-3.45	-49.23	<=-23.45	PASS
2DH5	Ant1	Low	2402	-5.14	-45.7	<=-25.14	PASS
		High	2480	-3.81	-48.12	<=-23.81	PASS
		Low	Hop_2402	-5.64	-49.64	<=-25.64	PASS
		High	Hop_2480	-3.92	-49.03	<=-23.92	PASS
3DH5	Ant1	Low	2402	-4.65	-43.5	<=-24.65	PASS
		High	2480	-3.58	-48.55	<=-23.58	PASS
		Low	Hop_2402	-7.27	-49.9	<=-27.27	PASS
		High	Hop_2480	-7.91	-49.08	<=-27.91	PASS

Test Graph

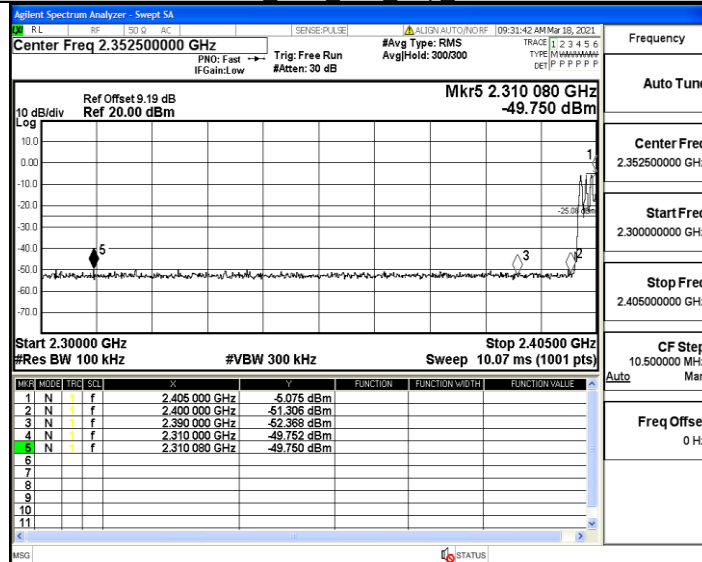
DH5_Ant1_Low_2402



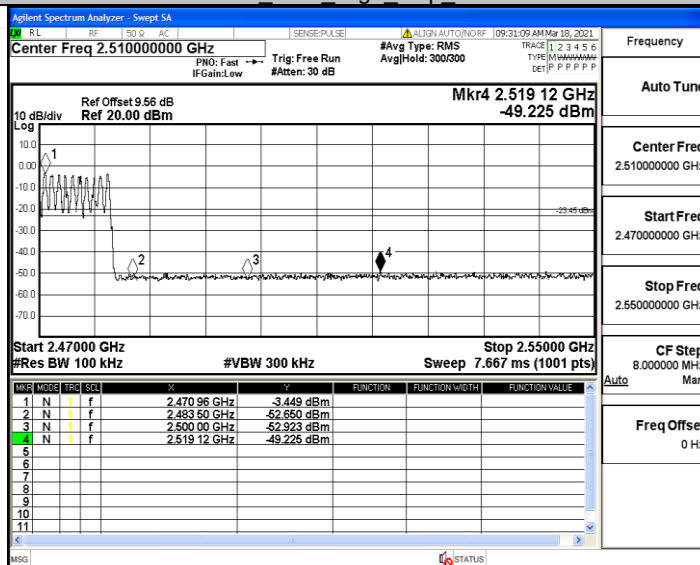
DH5_Ant1_High_2480



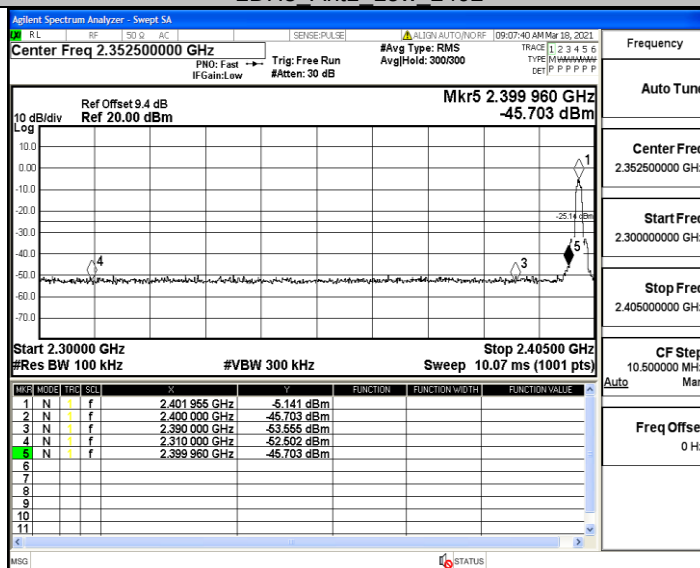
DH5_Ant1_Low_Hop_2402



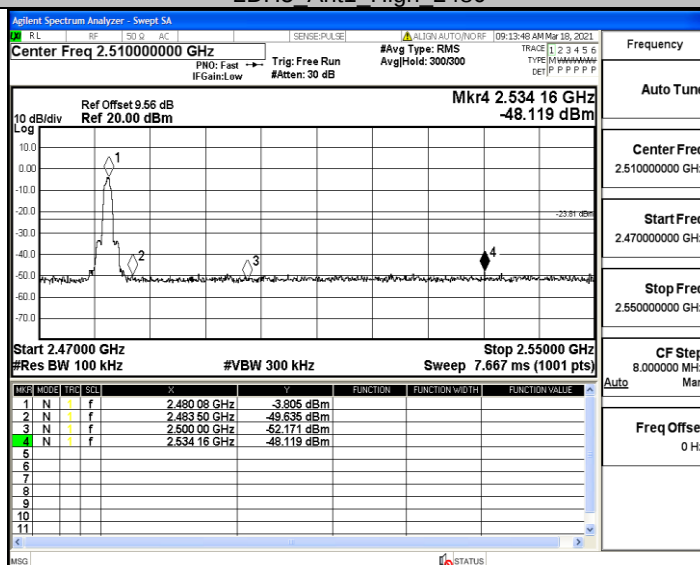
DH5_Ant1_High_Hop_2480



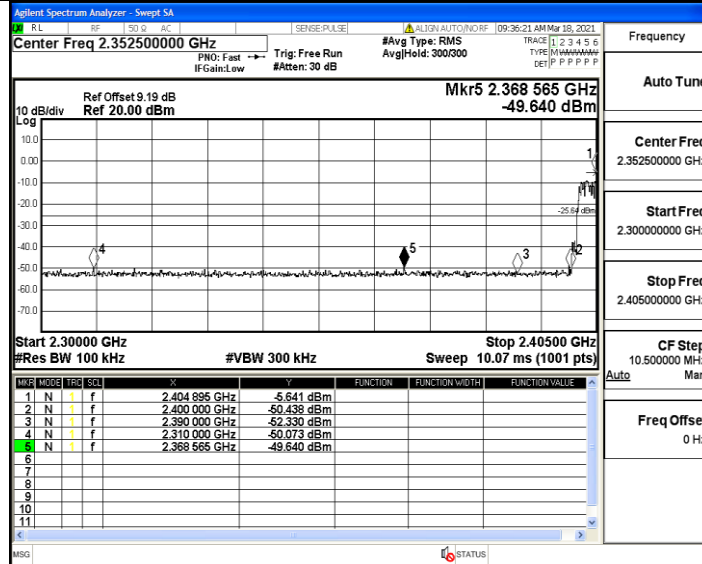
2DH5_Ant1_Low_2402



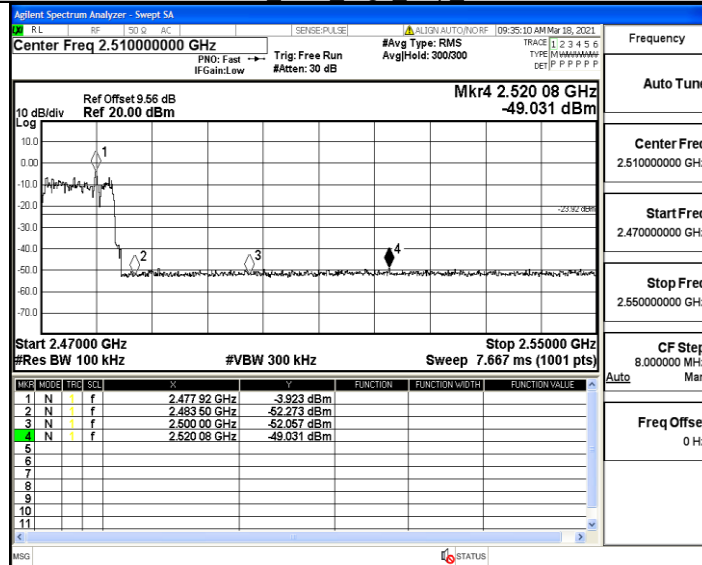
2DH5_Ant1_High_2480



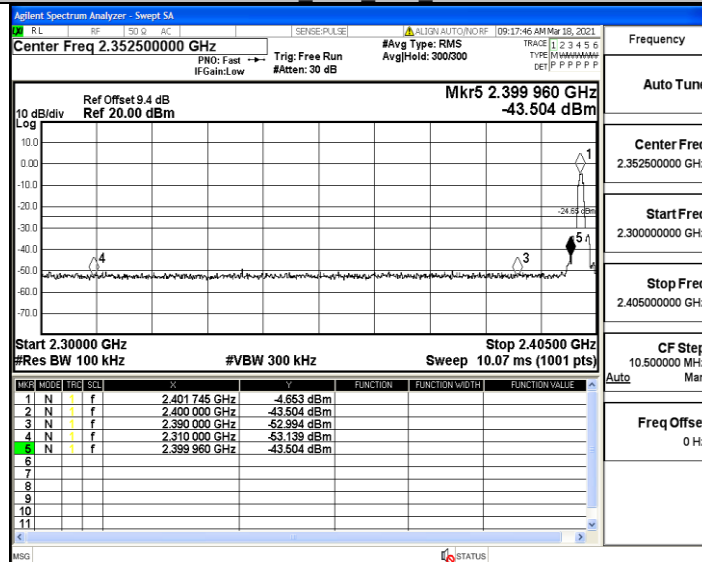
2DH5 Ant1 Low Hop 2402



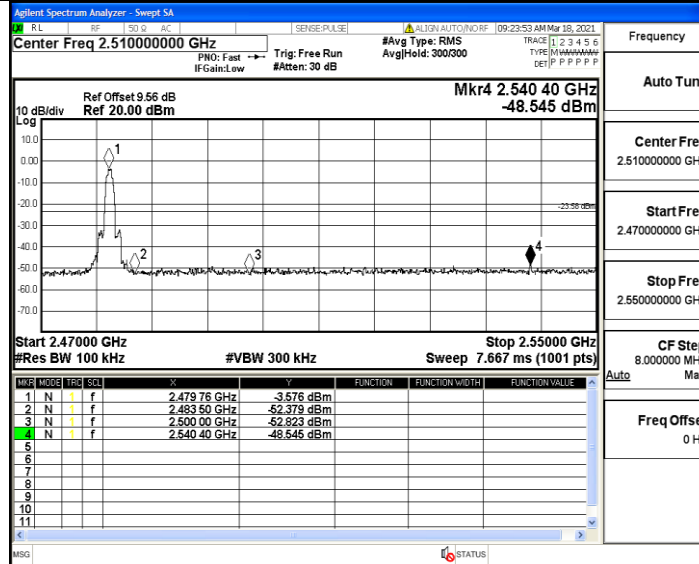
2DH5 Ant1 High Hop 2480



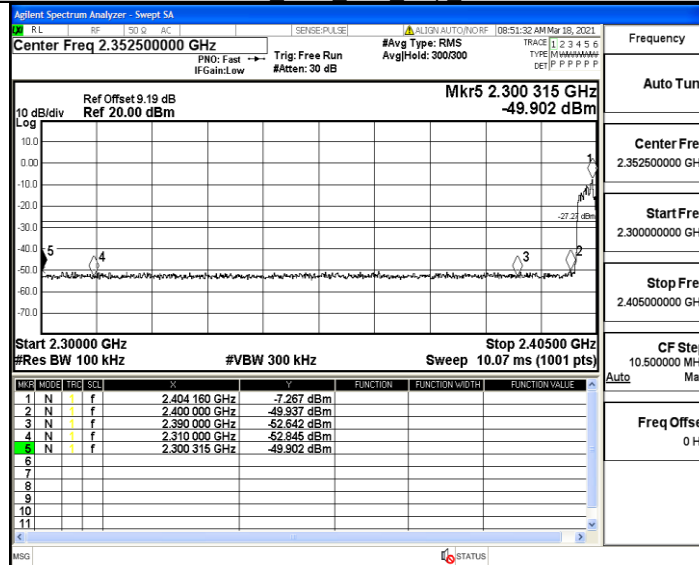
3DH5 Ant1 Low 2402



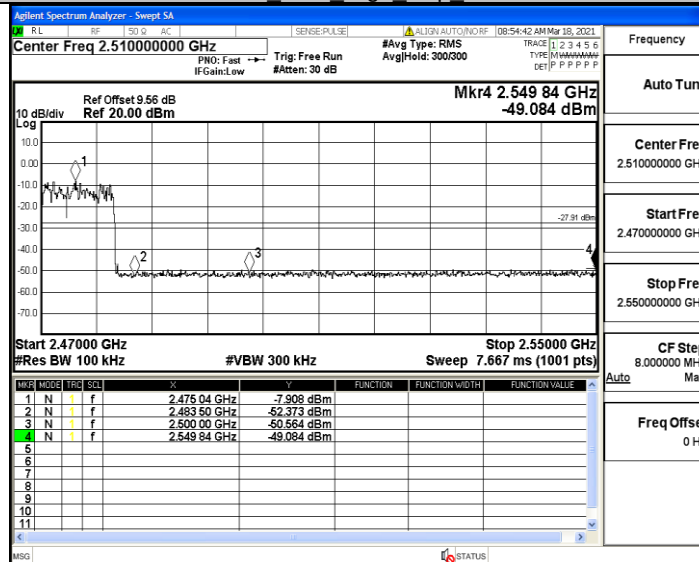
3DH5 Ant1_High 2480



3DH5 Ant1_Low Hop 2402

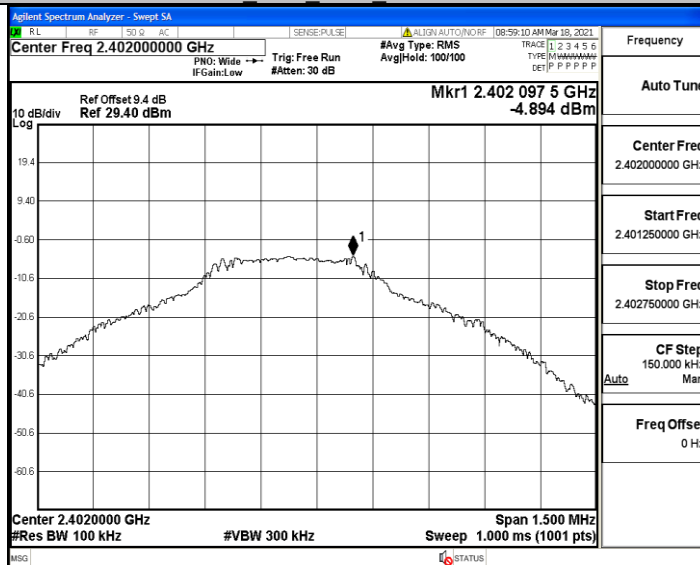


3DH5 Ant1_High Hop 2480

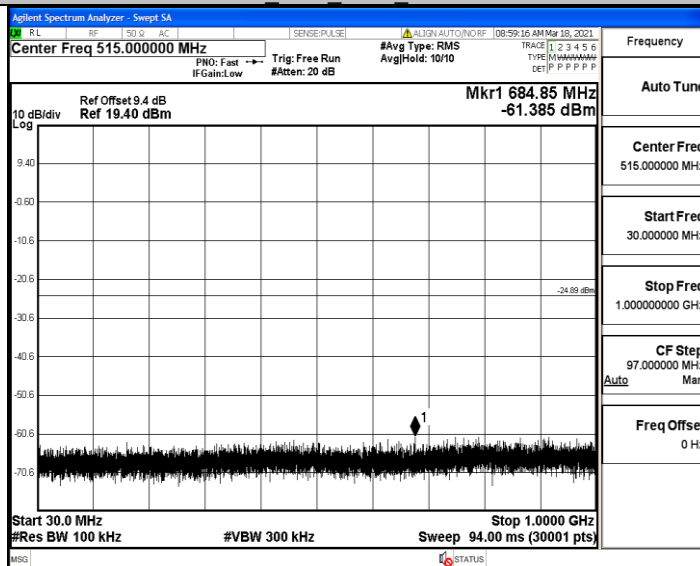


A.7 RF Conducted Spurious Emissions Test Graph

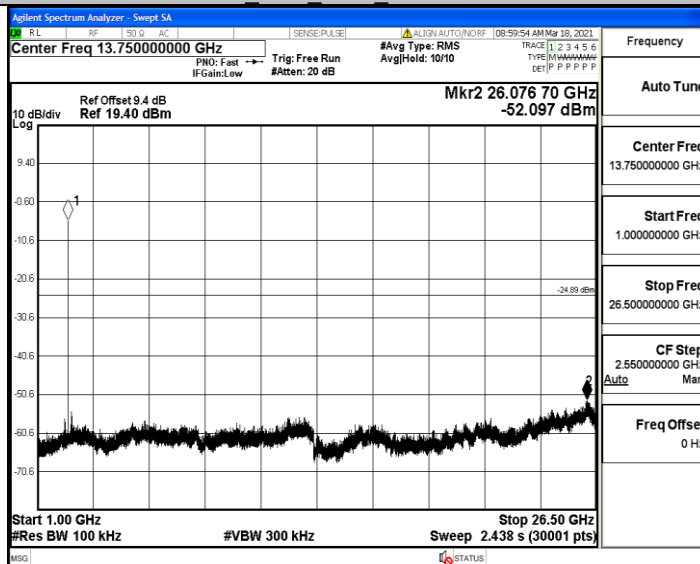
DH5_Ant1_2402_0-Reference



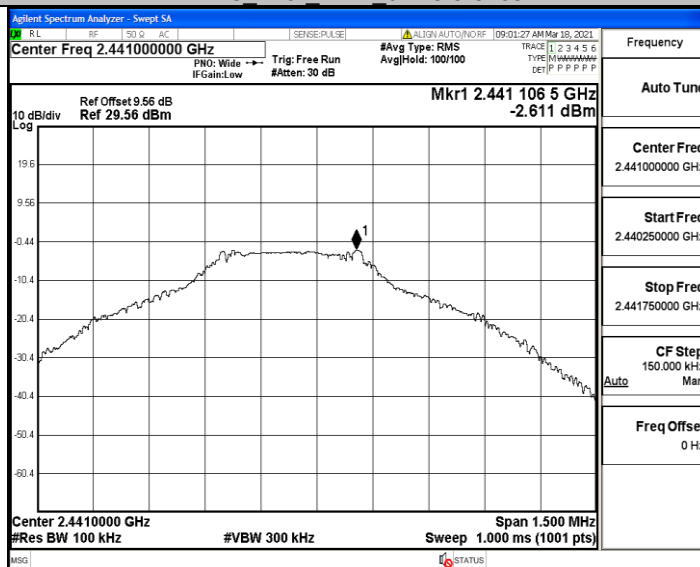
DH5_Ant1_2402_30~1000



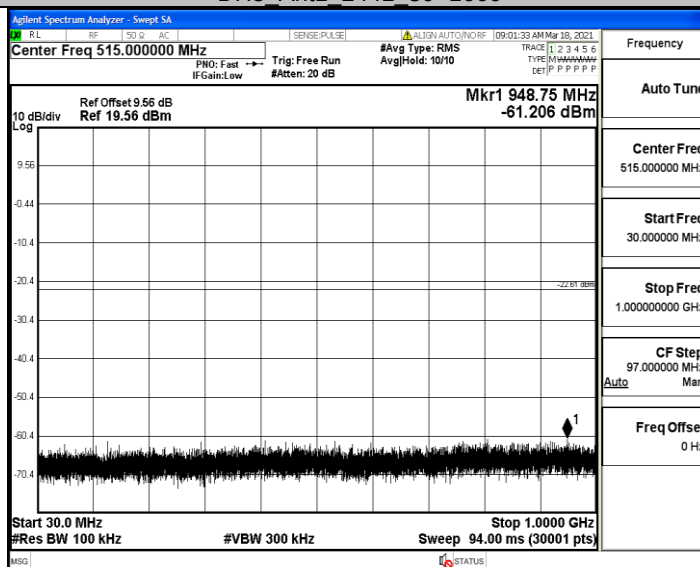
DH5_Ant1_2402_1000~26500



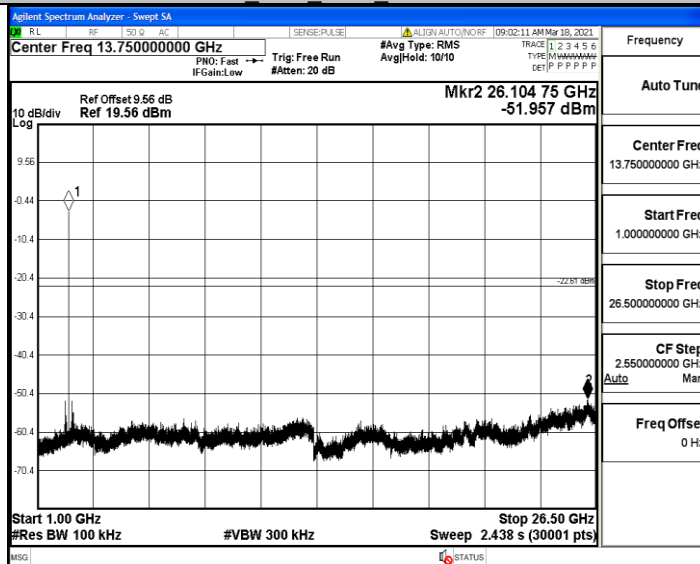
DH5_Ant1_2441_0-Reference



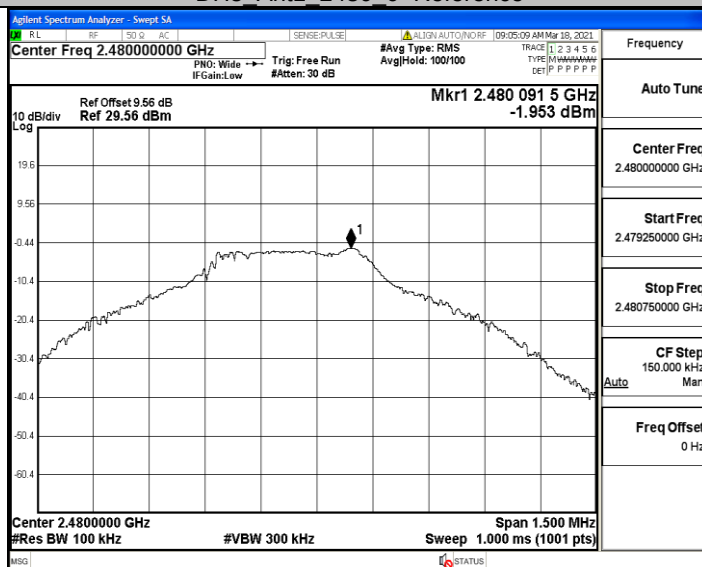
DH5_Ant1_2441_30-1000



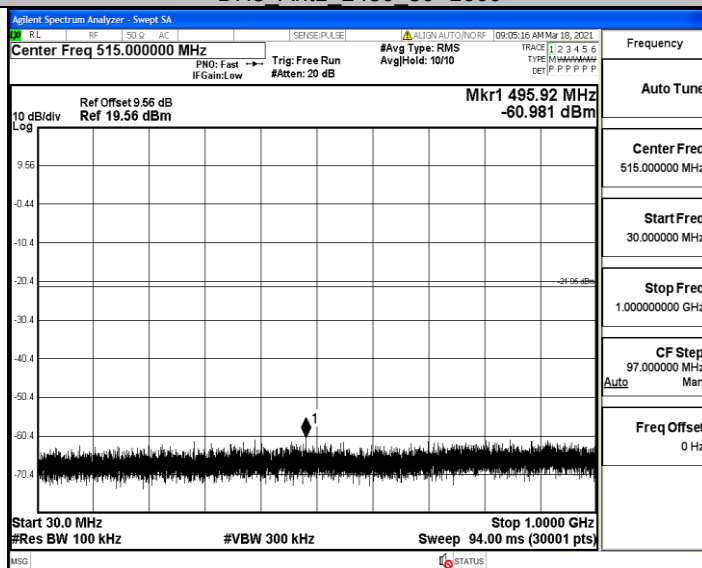
DH5_Ant1_2441_1000-26500



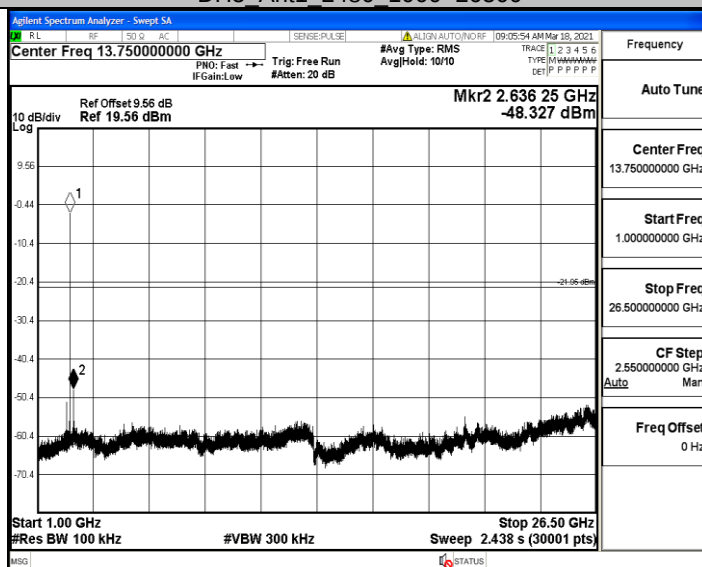
DH5_Ant1_2480_0-Reference



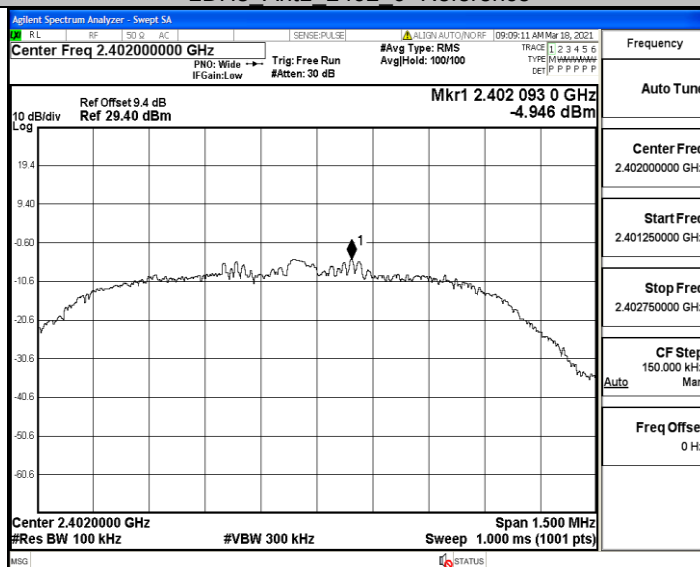
DH5_Ant1_2480_30~1000



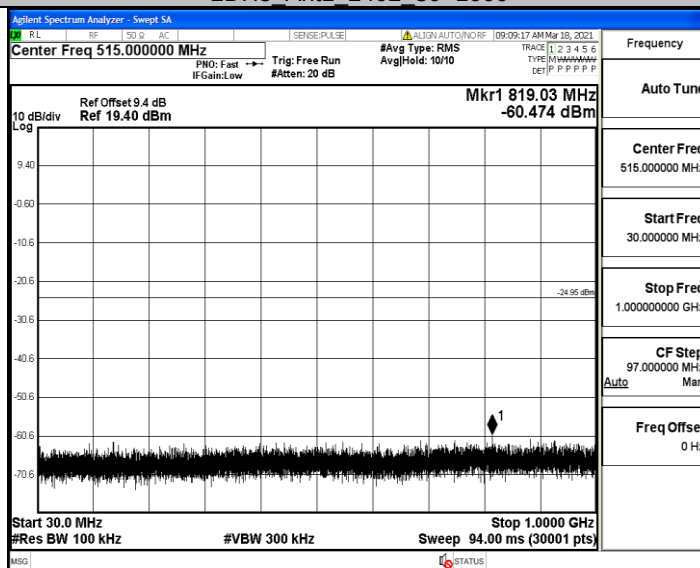
DH5_Ant1_2480_1000~26500



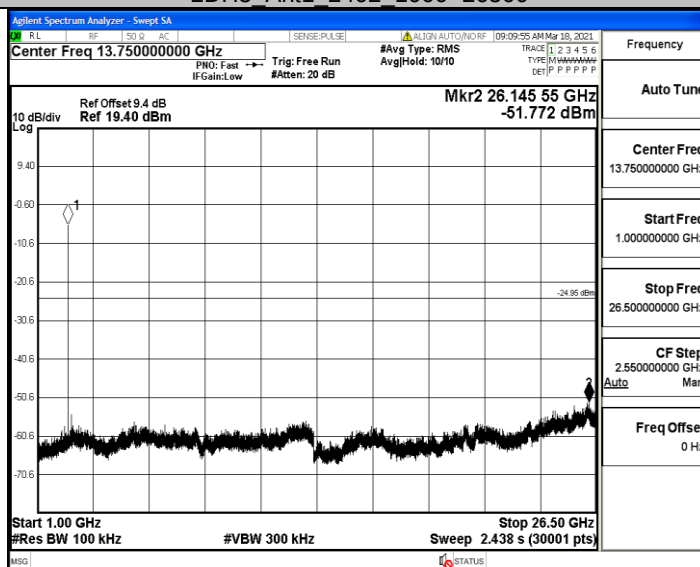
2DH5_Ant1_2402_0~Reference



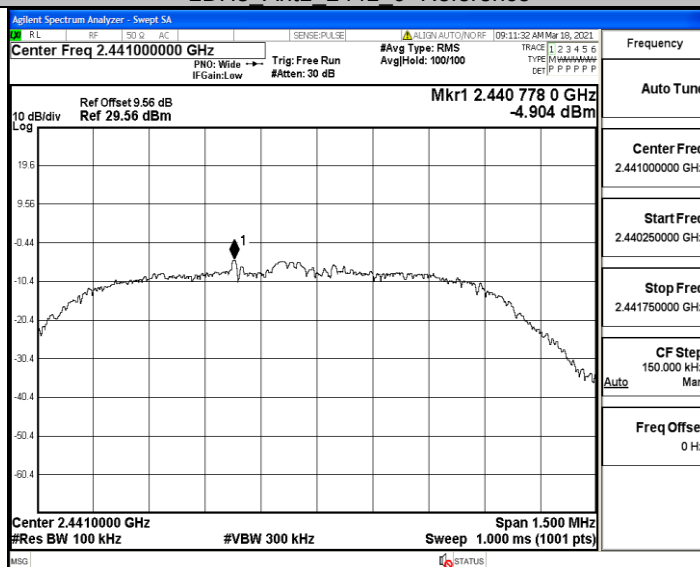
2DH5_Ant1_2402_30~1000



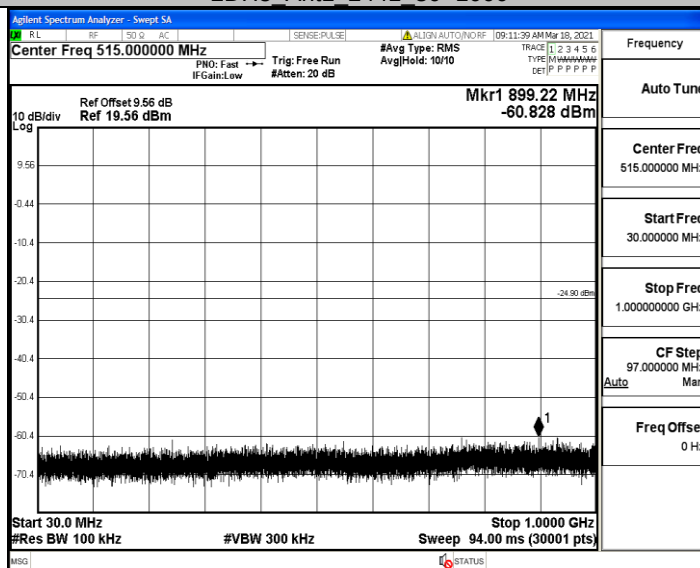
2DH5_Ant1_2402_1000~26500



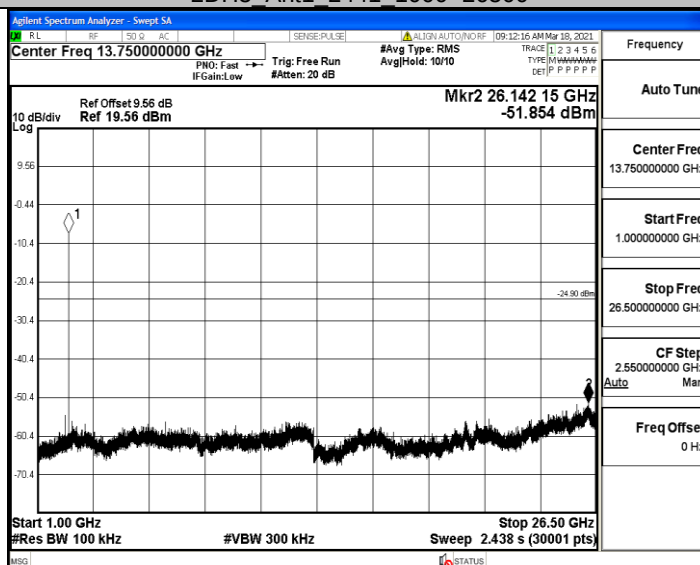
2DH5_Ant1_2441_0~Reference



2DH5_Ant1_2441_30~1000



2DH5_Ant1_2441_1000~26500



Agilent Spectrum Analyzer - Swept SA

RL RF SO D AC SENSE-PAUSE

Center Freq 2.480000000 GHz

Ref Offset 9.56 dB
Ref 29.56 dBm

Trig: Free Run
#Atten: 40 dB

#Avg Type: RMS
Avg/Hold: 100/100

ALIGN AUTO/NO RF 09:15:12 AM Mar 18, 2021

Trace 1: 2 3 4 5 6
Type: MAAAAAAW
Det: P P P P P P

Frequency

Auto Tun

Center Freq 2.480000000 GHz

Start Freq 2.479250000 GHz

Stop Freq 2.480750000 GHz

CF Stop 150.000 kHz
Ma

Auto

Freq Offset 0 Hz

10 dB/div
Log

Ref Offset 9.56 dB
Ref 29.56 dBm

Mkr1 2.479763 0 GHz
-4.225 dBm

Center 2.4800000 GHz
#Res BW 100 kHz
#VBW 300 kHz

Span 1.500 MHz
Sweep 1.000 ms (1001 pts)

#SC#

STATUS

Agilent Spectrum Analyzer - Sweep SA

Center Freq 515.000000 MHz

Ref Offset 9.56 dB
Ref 19.56 dBm

Trig: Free Run
#Atten: 20 dB

#Avg Type: RMS
AvgHold: 10/10

Trace 1: 2 3 4 5 6
Type: WARMWARM
Det: P P P P P P

Frequency

Auto Tun

Mkr1 917.42 MHz
-61.053 dBm

10 dB/div
Log

9.56
-0.44
-10.4
-20.4
-30.4
-40.4
-50.4
-60.4
-70.4

-24.43 dBm

Start 30.0 MHz
#Res BW 100 kHz

#VBW 300 kHz

Sweep 94.00 ms (30001 pts)

Stop 1.0000 GHz

CF Ste
97.000000 MHz
Ma

Auto

Freq Offs
0 Hz

MSG

STATUS

Agilent Spectrum Analyzer - Sweep SA

RL RF 50 Q AC [SENSE]ULP

Align AUTO/NOFF 09:15:56 AM Mar 18, 2021

Center Freq 13.75000000 GHz PNO: Fast Trig: Free Run #Avg Type: RMS AvgHeld: 10/10 TYPED IN HAWAIIAN DET P P P P P

IF Gain: Low #Atten: 20 dB

10 dB/div Ref Offset 9.56 dB Mkr2 26.054 60 GHz
Log Ref 19.56 dBm -50.999 dBm

Start 1.00 GHz Stop 26.50 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.438 s (30001 pts)

Frequency Auto Tun

Center Freq 13.75000000 GHz

Start Freq 1.00000000 GHz

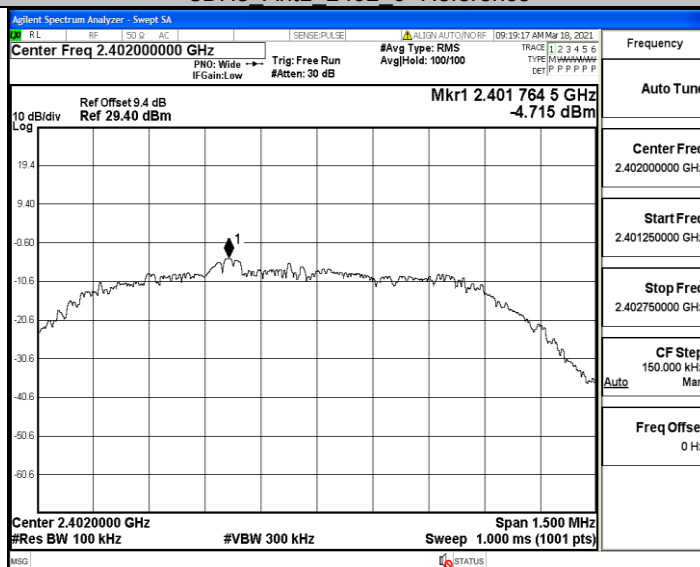
Stop Freq 26.50000000 GHz

CF Stop 2.550000000 GHz

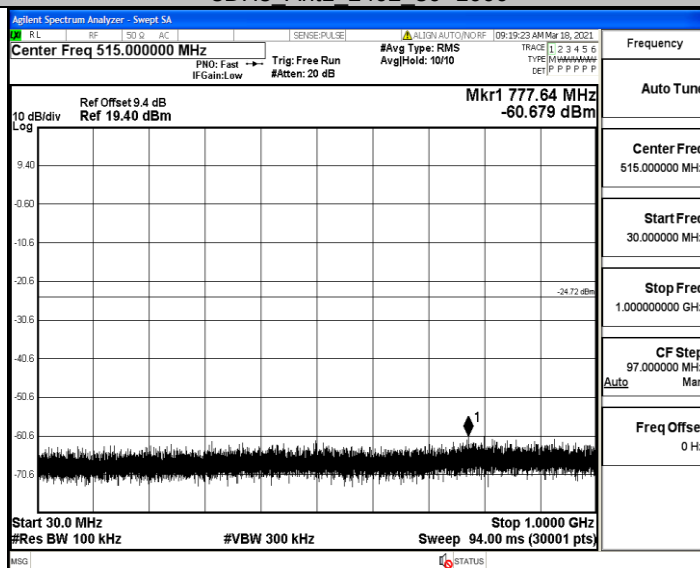
Auto Ma

Freq Offset 0 Hz

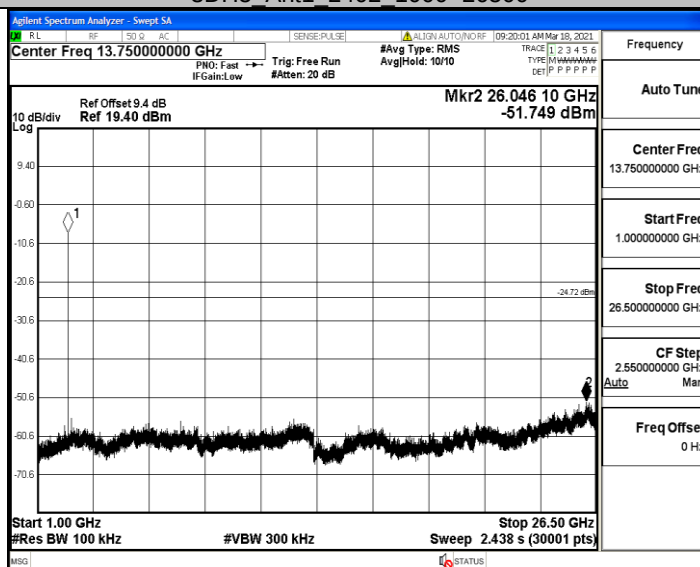
3DH5_Ant1_2402_0~Reference



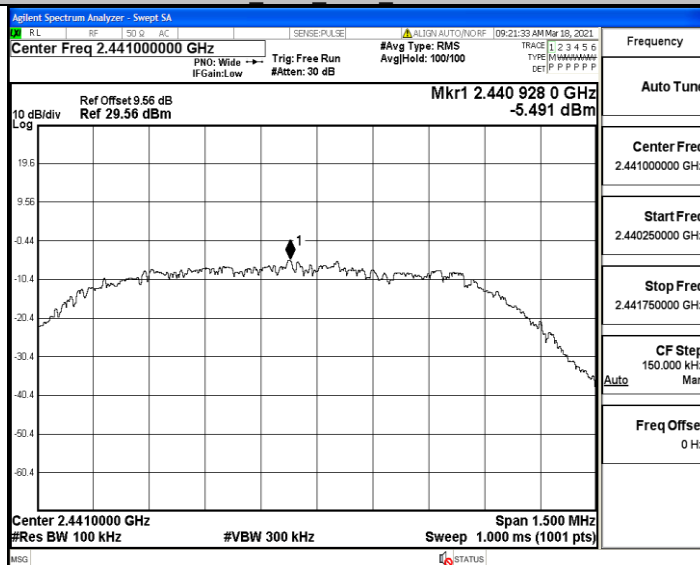
3DH5_Ant1_2402_30~1000



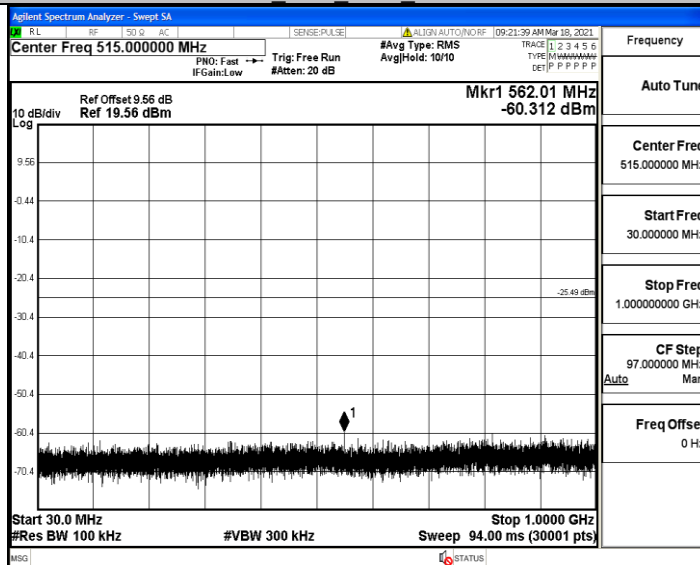
3DH5_Ant1_2402_1000~26500



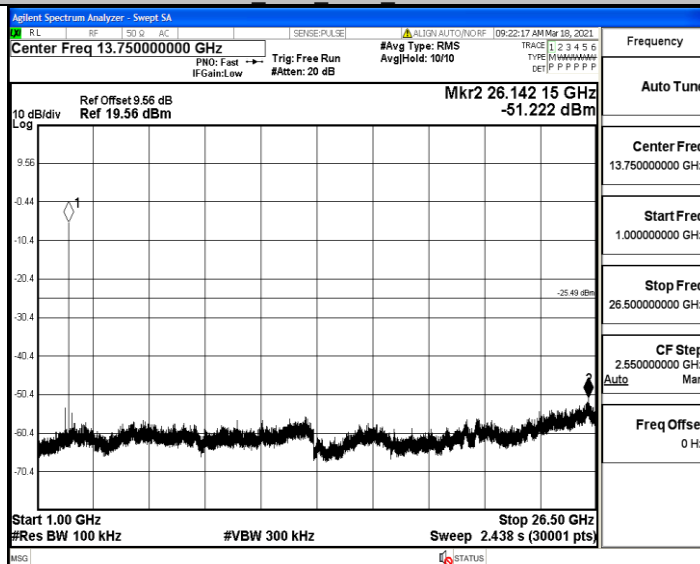
3DH5_Ant1_2441_0~Reference



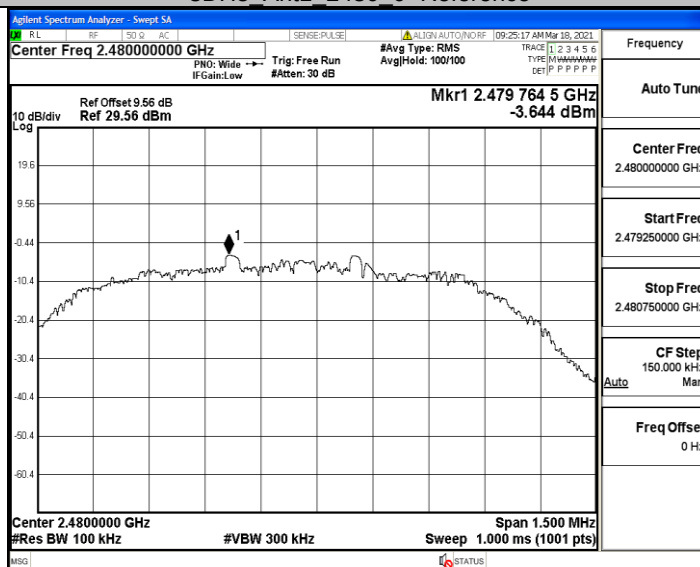
3DH5_Ant1_2441_30~1000



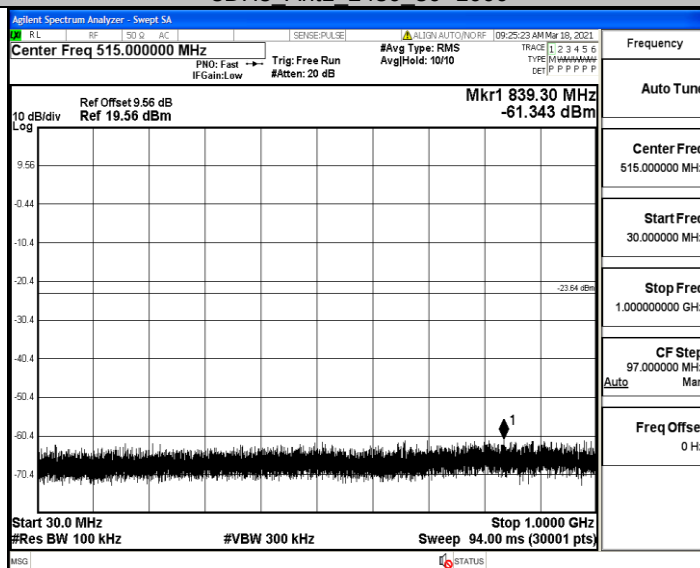
3DH5_Ant1_2441_1000~26500



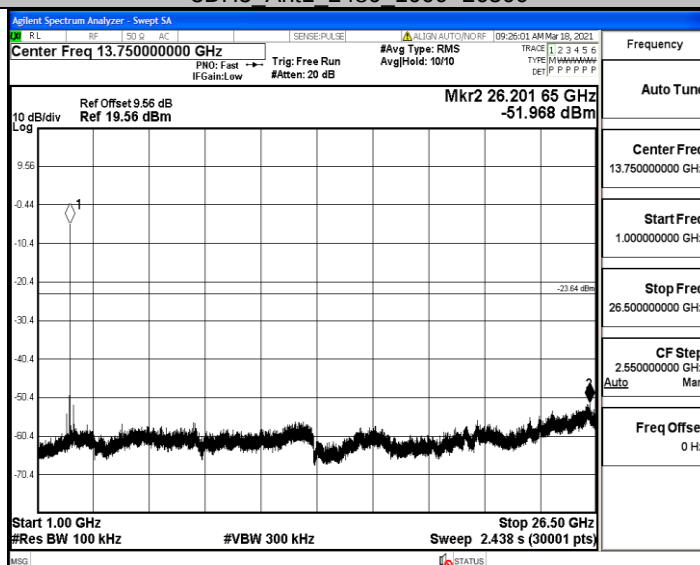
3DH5_Ant1_2480_0~Reference



3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500



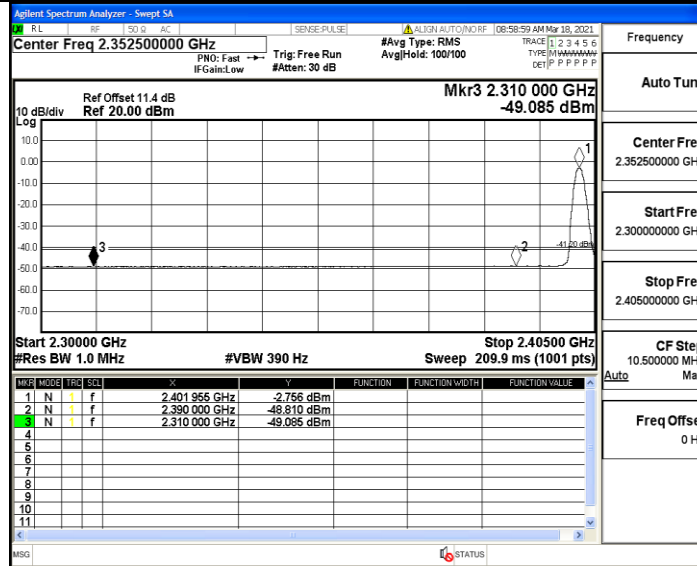
A.8 Restrict-band band-edge measurements

TestMode	Antenna	ChName	Channel	Detector	Freq(MHz)	Result(dBm)	Limit(dBm)	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-49.09	<=-41.20	PASS
				AV	2390.000	-48.81	<=-41.20	PASS
				Peak	2310.000	-42.26	<=-21.20	PASS
				Peak	2390.000	-41.88	<=-21.20	PASS
		High	2480	AV	2483.500	-47.84	<=-41.20	PASS
				AV	2500.000	-48.03	<=-41.20	PASS
				Peak	2483.500	-40.79	<=-21.20	PASS
				Peak	2500.000	-41.49	<=-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.04	<=-41.20	PASS
				AV	2390.000	-48.61	<=-41.20	PASS
				Peak	2310.000	-41.34	<=-21.20	PASS
				Peak	2390.000	-40.87	<=-21.20	PASS
		High	2480	AV	2483.500	-47.86	<=-41.20	PASS
				AV	2500.000	-48.03	<=-41.20	PASS
				Peak	2483.500	-41.67	<=-21.20	PASS
				Peak	2500.000	-41.77	<=-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-48.99	<=-41.20	PASS
				AV	2390.000	-48.65	<=-41.20	PASS
				Peak	2310.000	-39.44	<=-21.20	PASS
				Peak	2390.000	-41.21	<=-21.20	PASS
		High	2480	AV	2483.500	-47.82	<=-41.20	PASS
				AV	2500.000	-48.08	<=-41.20	PASS
				Peak	2483.500	-41.23	<=-21.20	PASS
				Peak	2500.000	-41.59	<=-21.20	PASS

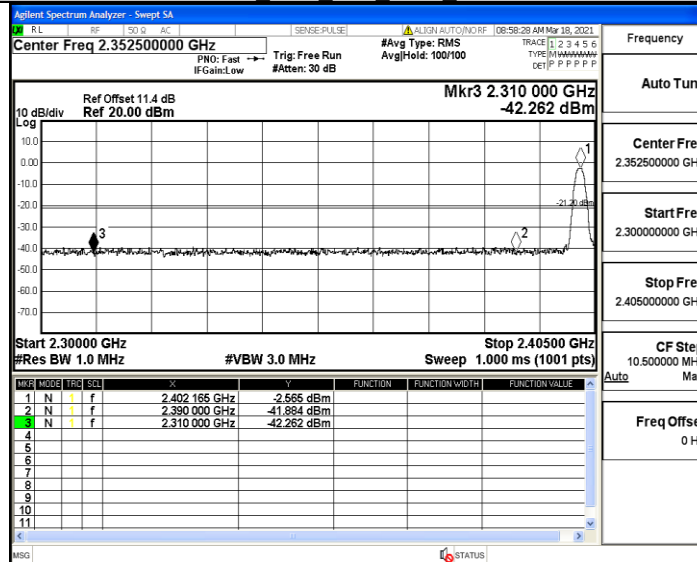
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

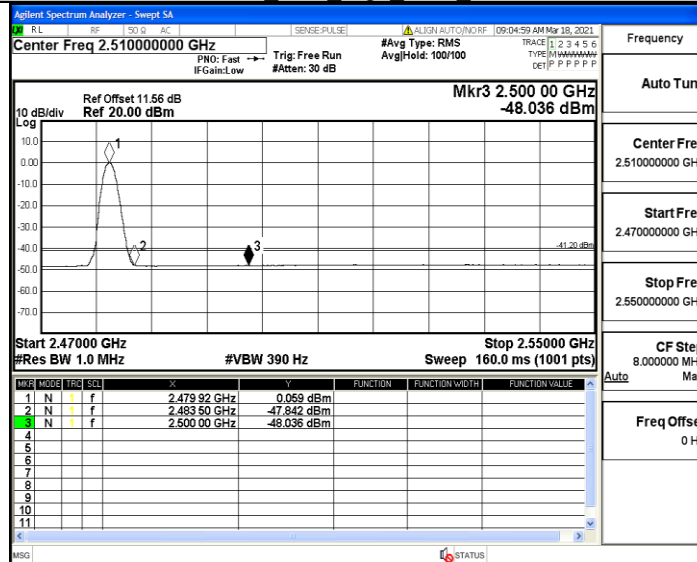
DH5 Ant1 Low 2402 AV



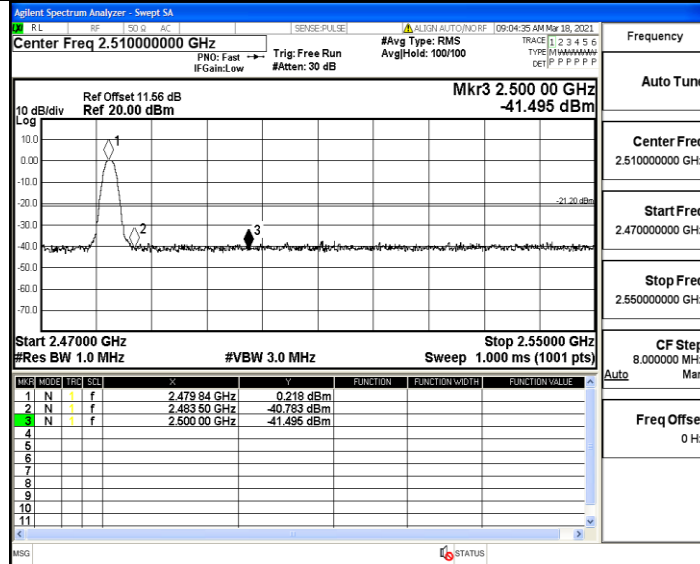
DH5 Ant1 Low 2402 Peak



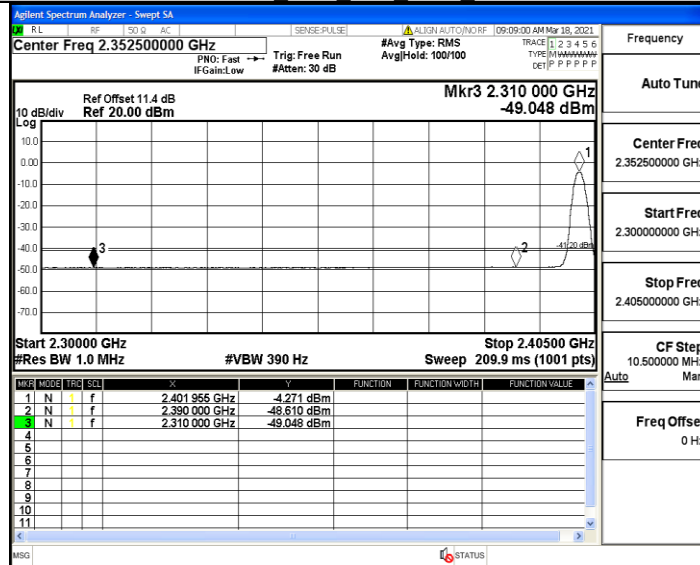
DH5 Ant1 High 2480 AV



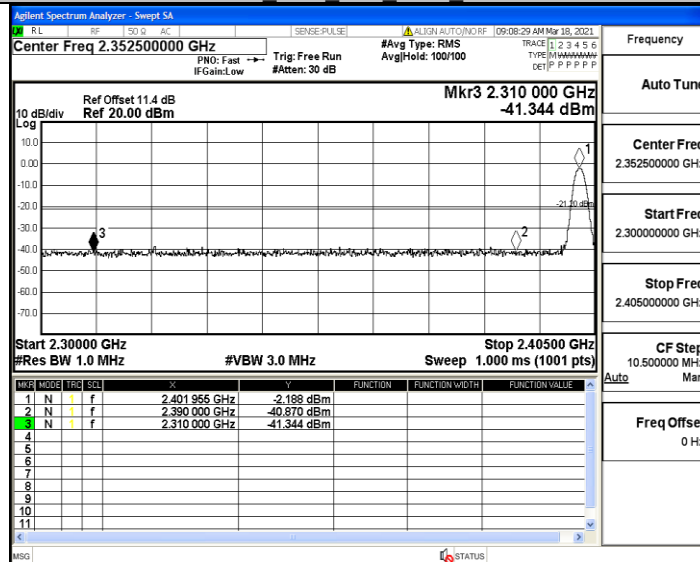
DH5 Ant1 High 2480 Peak



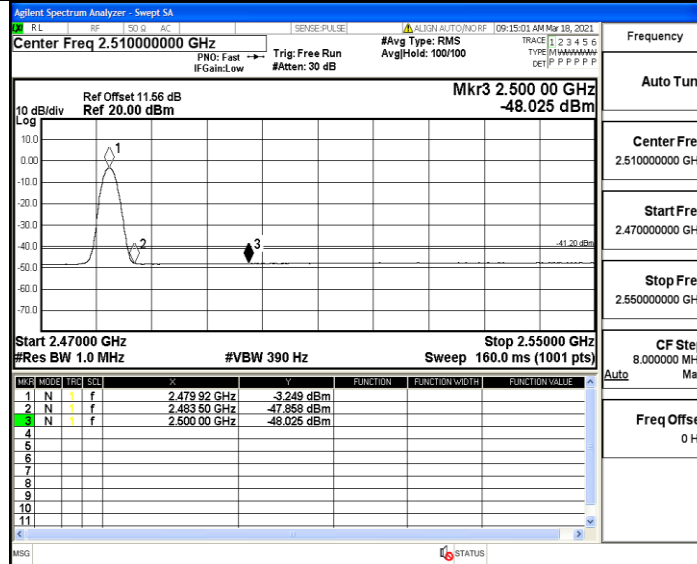
2DH5 Ant1 Low 2402 AV



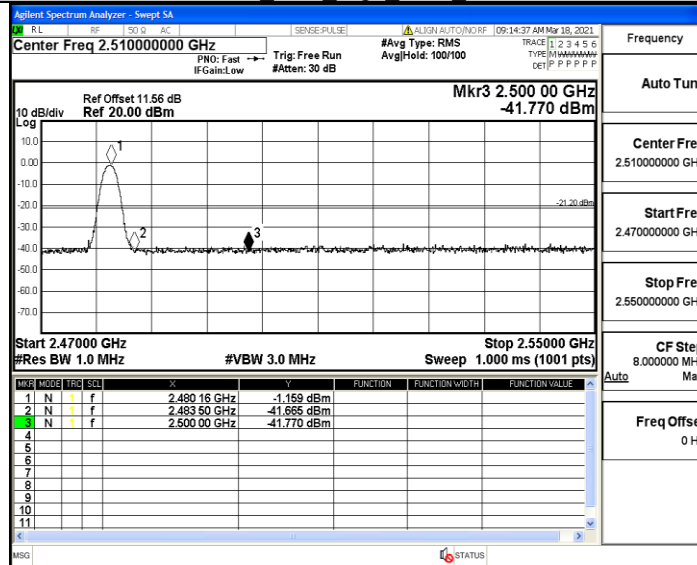
2DH5 Ant1 Low 2402 Peak



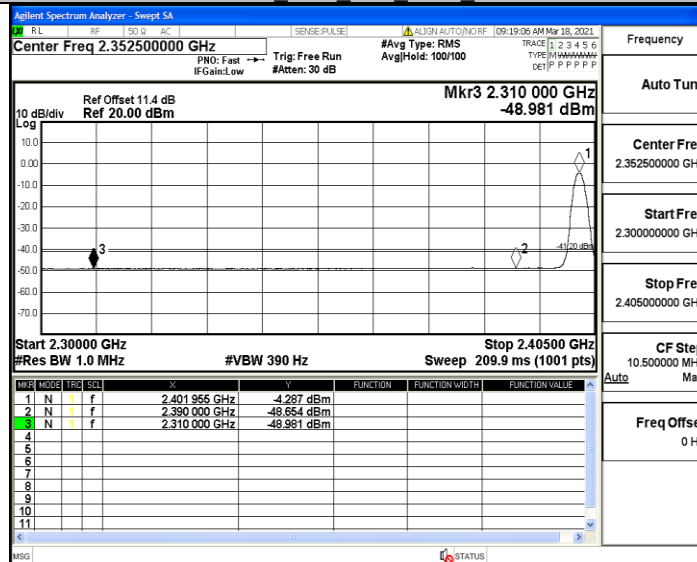
2DH5 Ant1 High 2480 AV



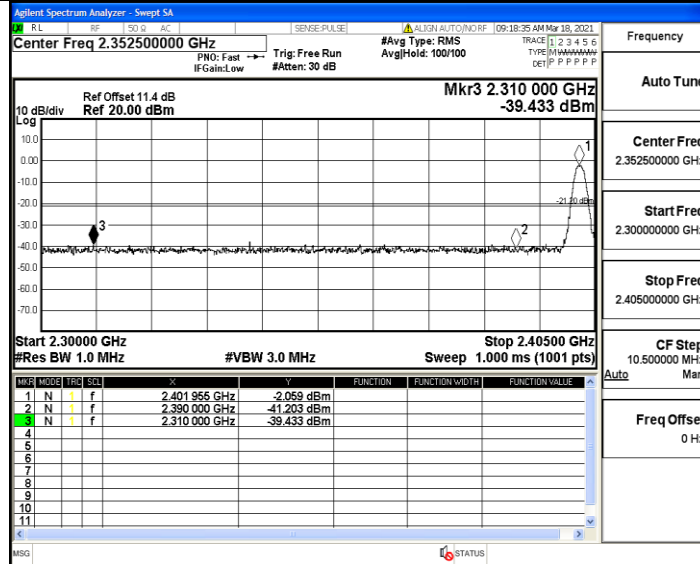
2DH5 Ant1 High 2480 Peak



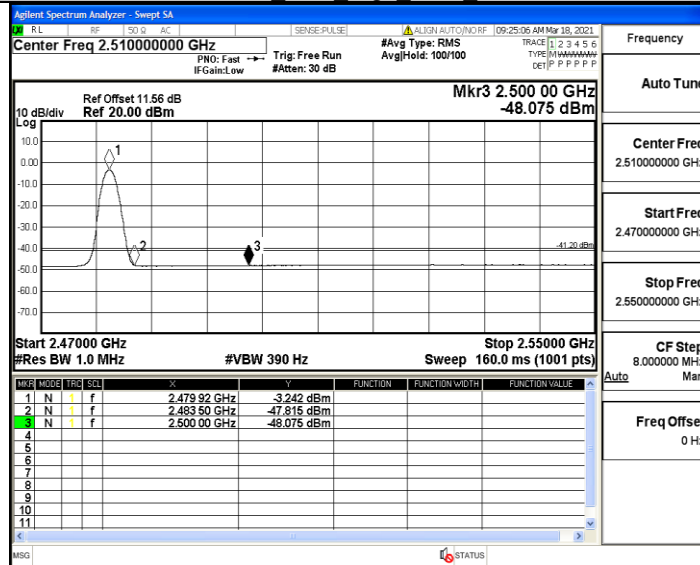
3DH5 Ant1 Low 2402 AV



3DH5 Ant1 Low 2402 Peak



3DH5 Ant1 High 2480 AV



3DH5 Ant1 High 2480 Peak

