

Appendix A

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

Product Name: Bluetooth Transmitter Receiver with Bypass function 3-in-1

Trade Mark: ZIOCOM

Test Model: ZM005808

FCC ID: RCT-ZM005808

Environmental Conditions

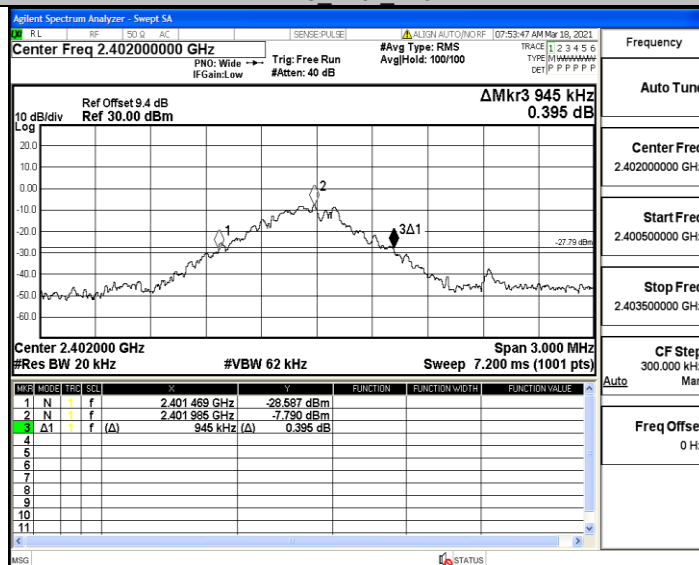
Temperature:	22.8° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa
Test Engineer:	Nancy Li
Supervised by:	Hugo Chen

A.1 20 dB Bandwidth

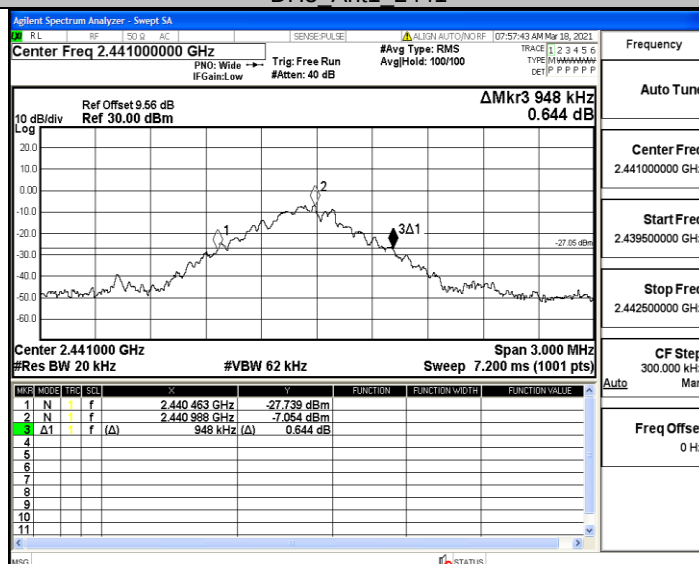
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.945	2401.469	2402.414	---	PASS
		2441	0.948	2440.463	2441.411	---	PASS
		2480	0.939	2479.466	2480.405	---	PASS
2DH5	Ant1	2402	1.257	2401.298	2402.555	---	PASS
		2441	1.257	2440.295	2441.552	---	PASS
		2480	1.239	2479.295	2480.534	---	PASS
3DH5	Ant1	2402	1.257	2401.283	2402.540	---	PASS
		2441	1.299	2440.277	2441.576	---	PASS
		2480	1.263	2479.280	2480.543	---	PASS

Test Graph

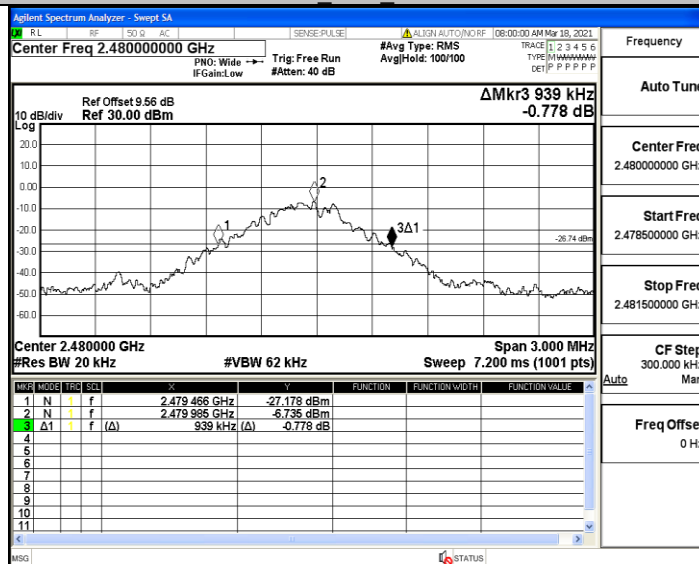
DH5_Ant1_2402



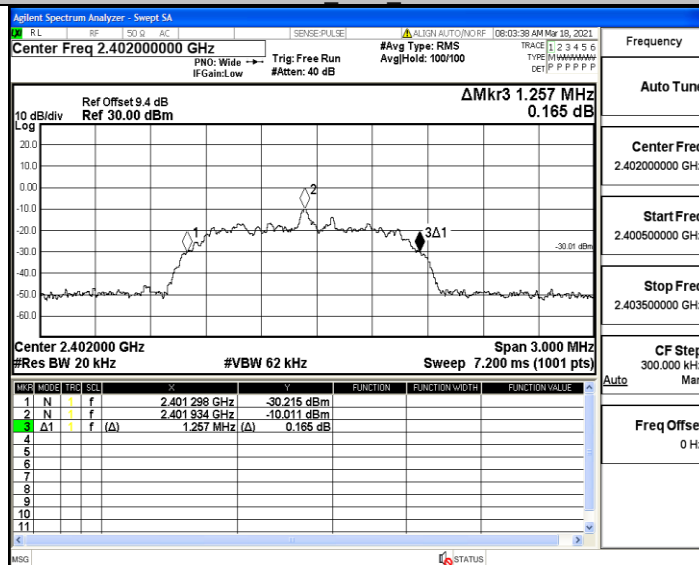
DH5_Ant1_2441



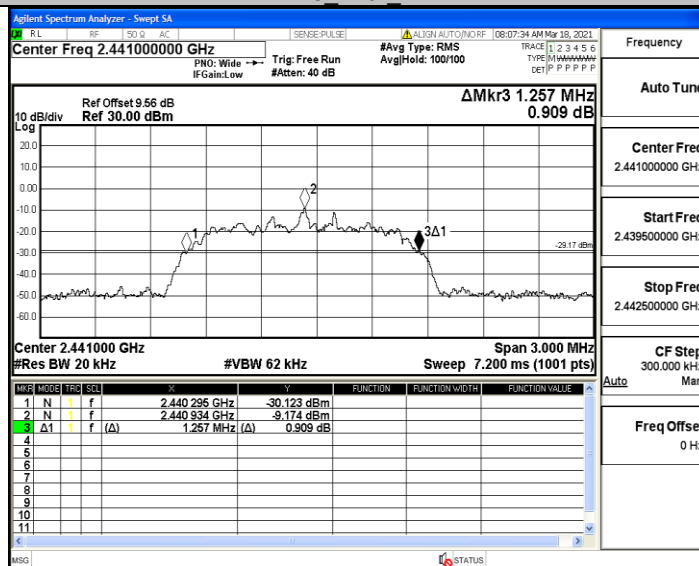
DH5_Ant1_2480



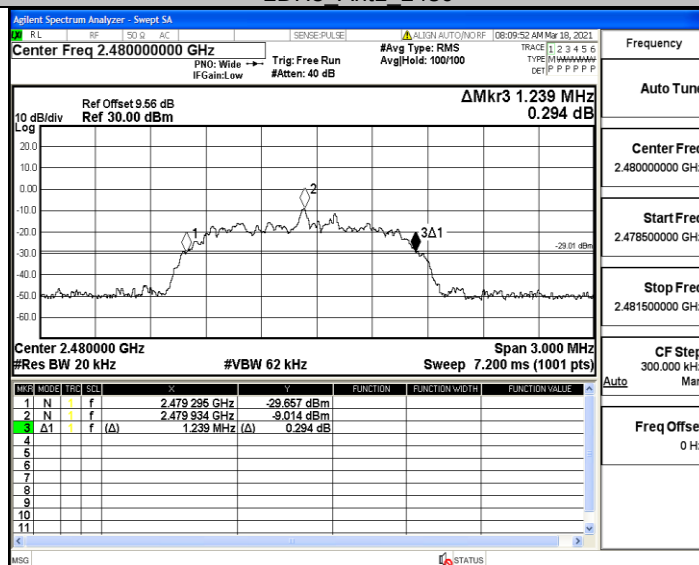
2DH5_Ant1_2402



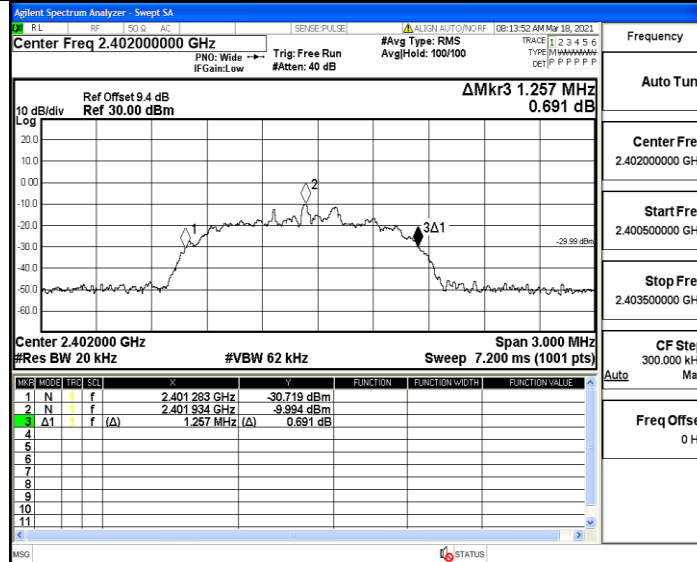
2DH5_Ant1_2441



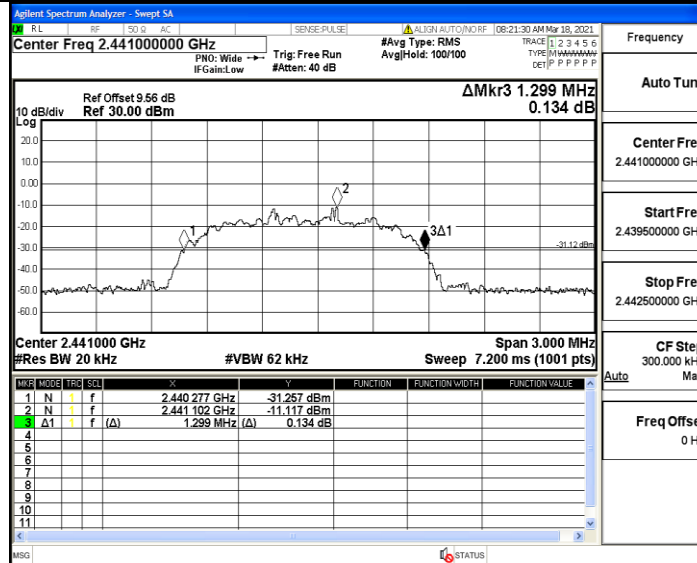
2DH5_Ant1_2480



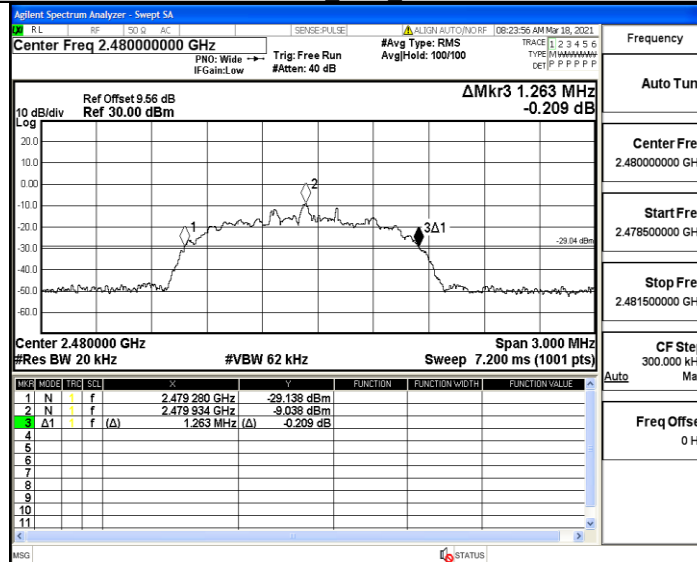
3DH5_Ant1_2402



3DH5_Ant1_2441



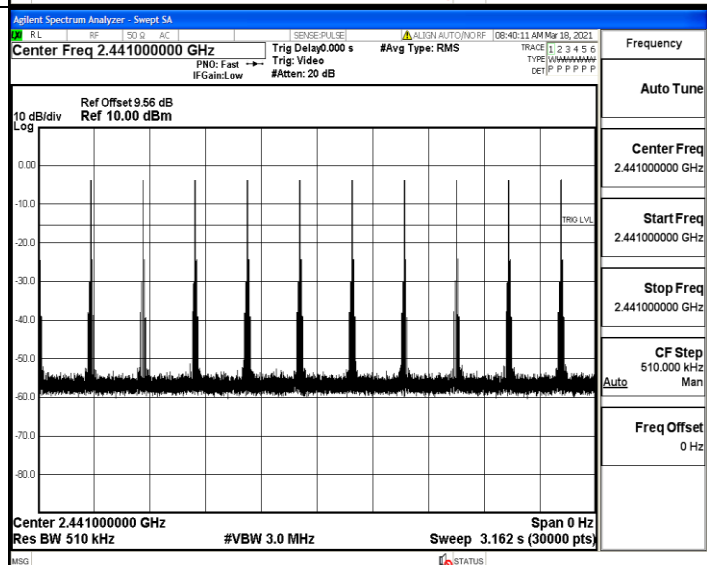
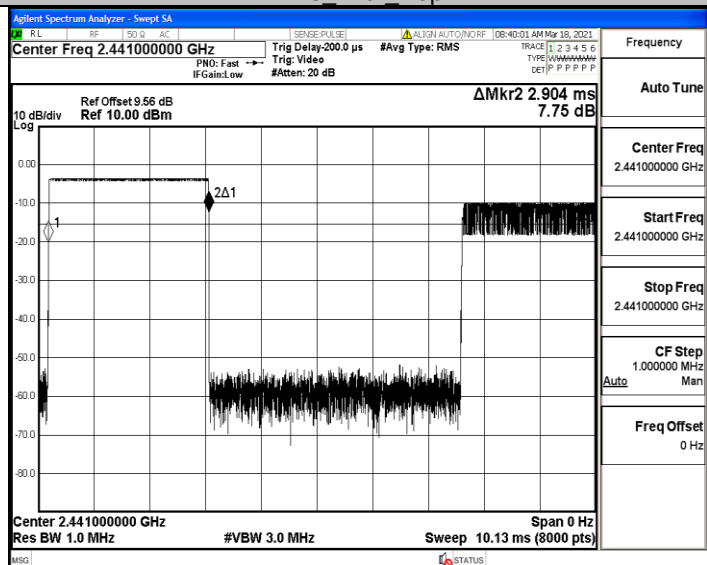
3DH5_Ant1_2480

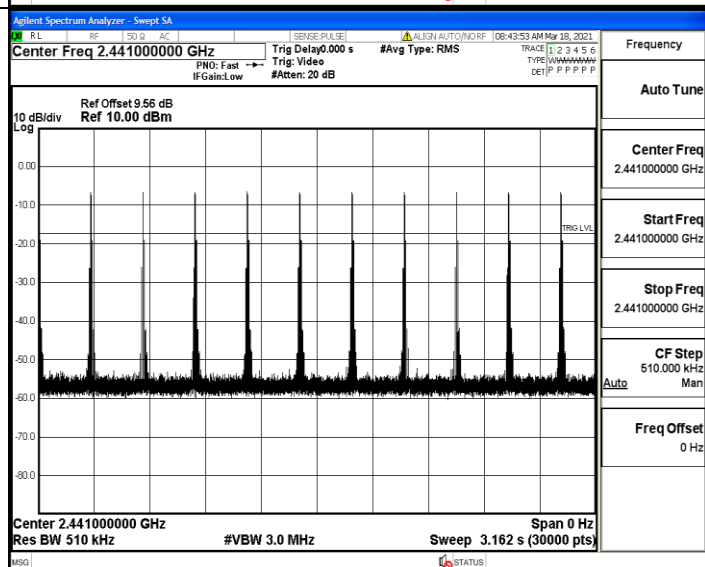


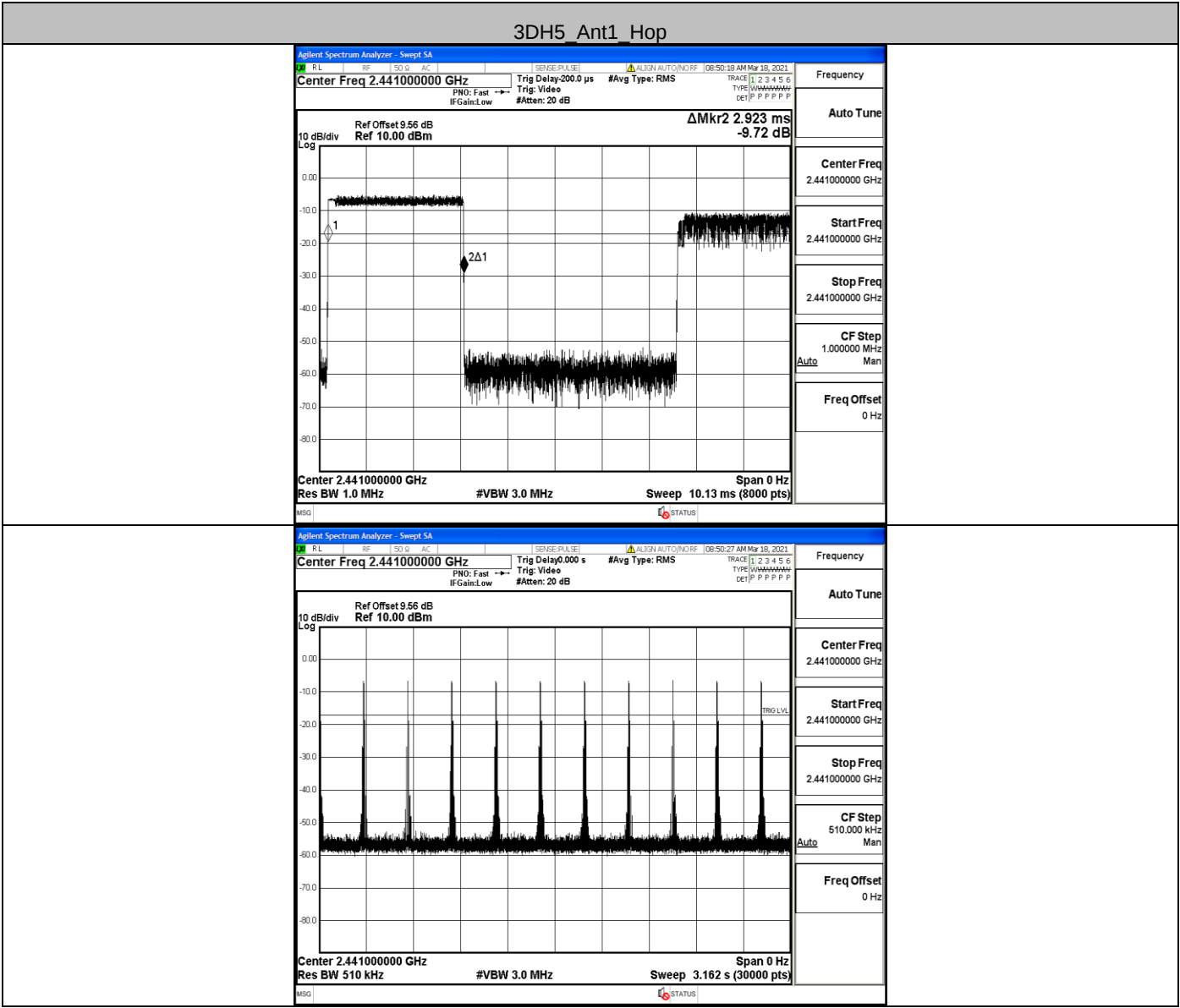
A.2 Dwell Time

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	2.92	110	0.321	<=0.4	PASS
3DH5	Ant1	Hop	2.92	110	0.322	<=0.4	PASS

DH5_Ant1_Hop





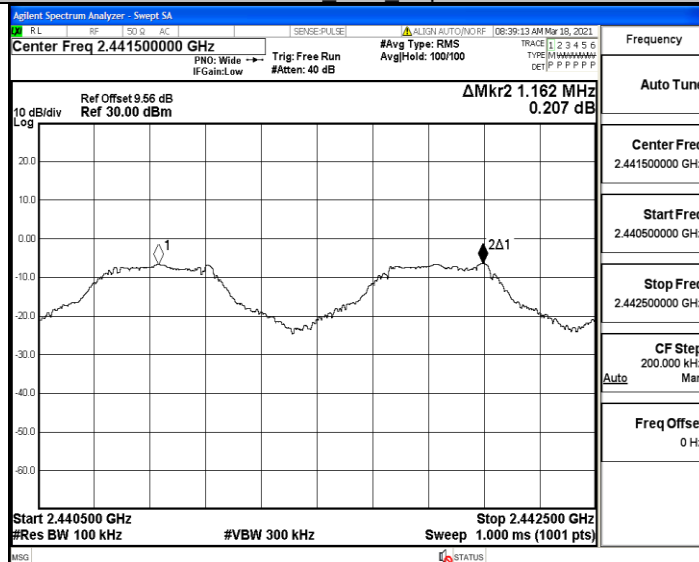


A.3 Carrier Frequency Separation

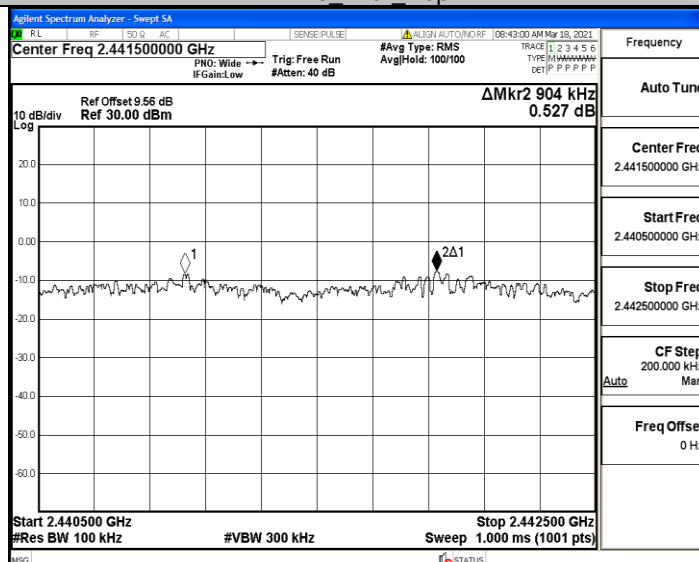
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.162	≥ 0.948	PASS
2DH5	Ant1	Hop	0.904	≥ 0.838	PASS
3DH5	Ant1	Hop	1.002	≥ 0.866	PASS

Test Graph

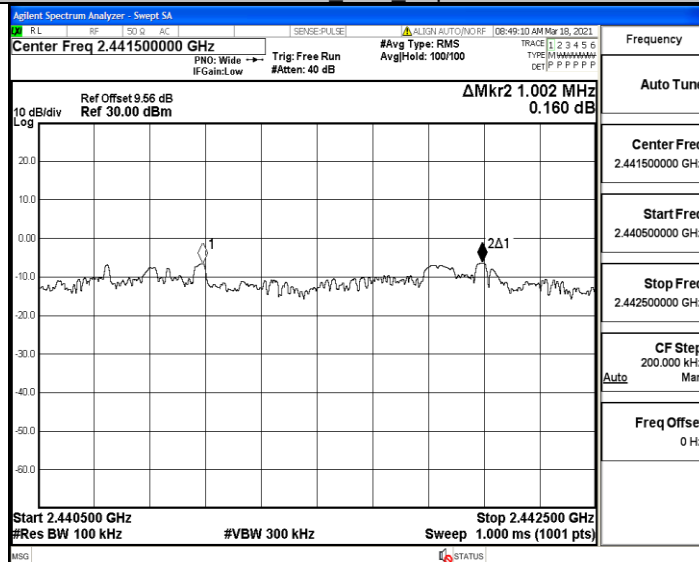
DH5_Ant1_Hop



2DH5_Ant1_Hop



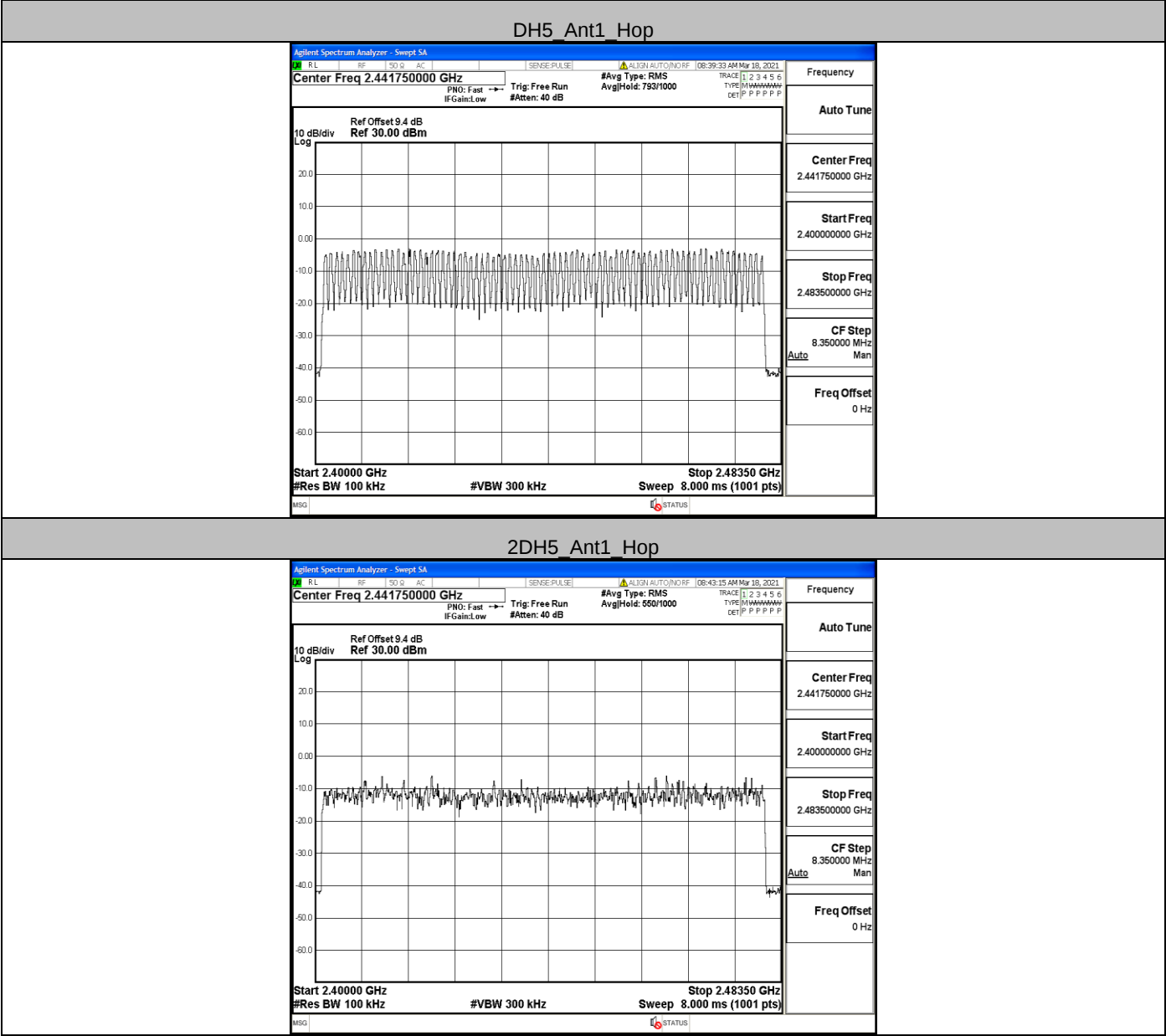
3DH5_Ant1_Hop

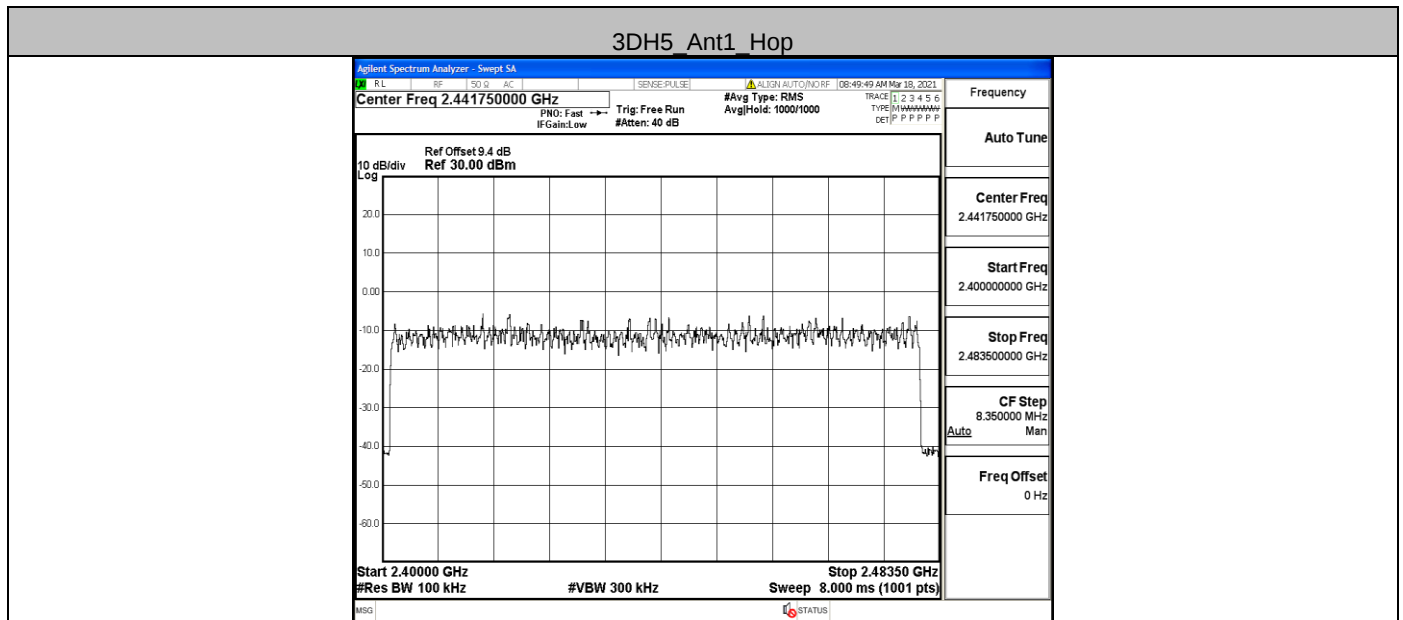


A.4 Hopping Channel Number

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



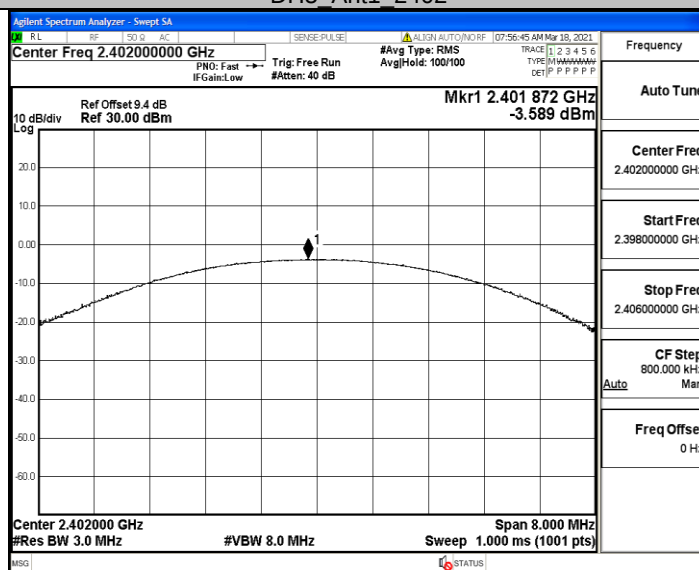


A.5 Conducted Peak Output Power

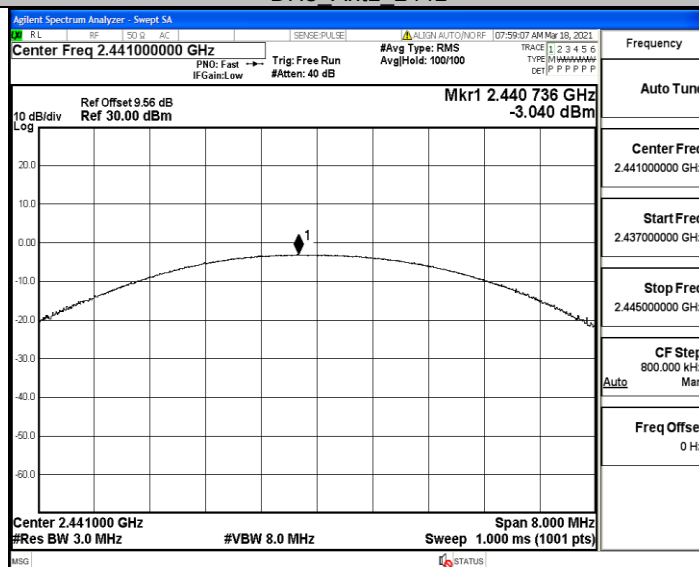
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-3.59	<=20.97	PASS
		2441	-3.04	<=20.97	PASS
		2480	-2.92	<=20.97	PASS
2DH5	Ant1	2402	-5.71	<=20.97	PASS
		2441	-4.82	<=20.97	PASS
		2480	-4.38	<=20.97	PASS
3DH5	Ant1	2402	-5.24	<=20.97	PASS
		2441	-4.42	<=20.97	PASS
		2480	-4.15	<=20.97	PASS

Test Graph

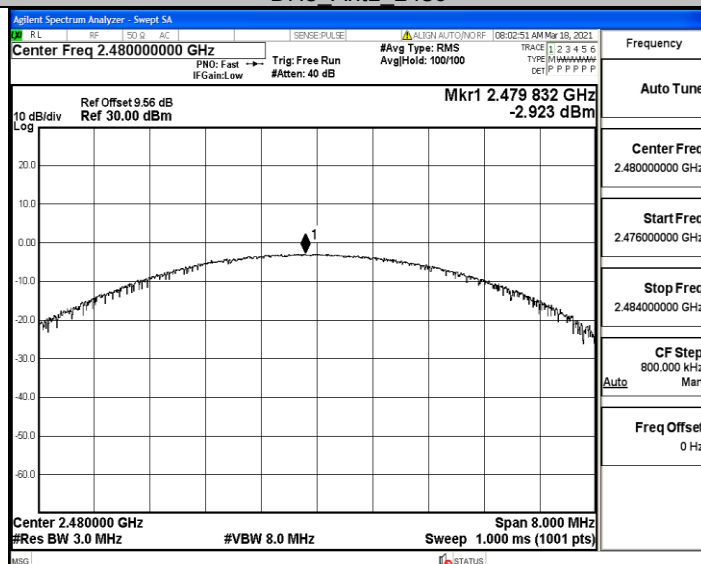
DH5_Ant1_2402



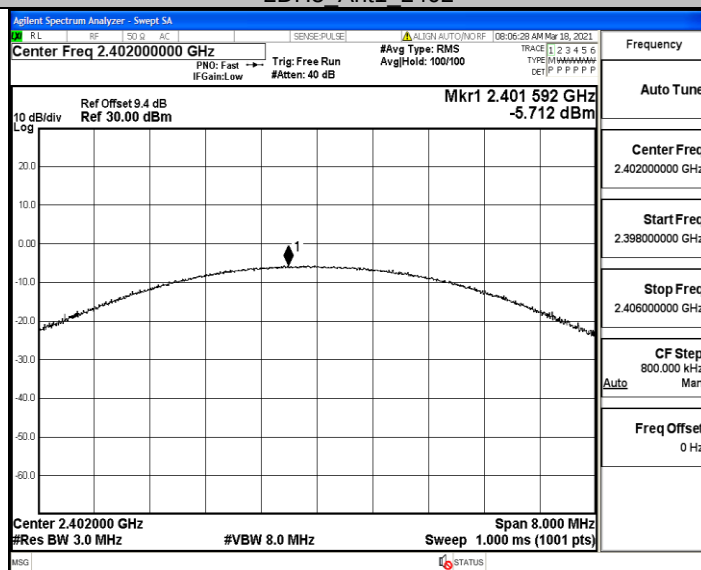
DH5_Ant1_2441



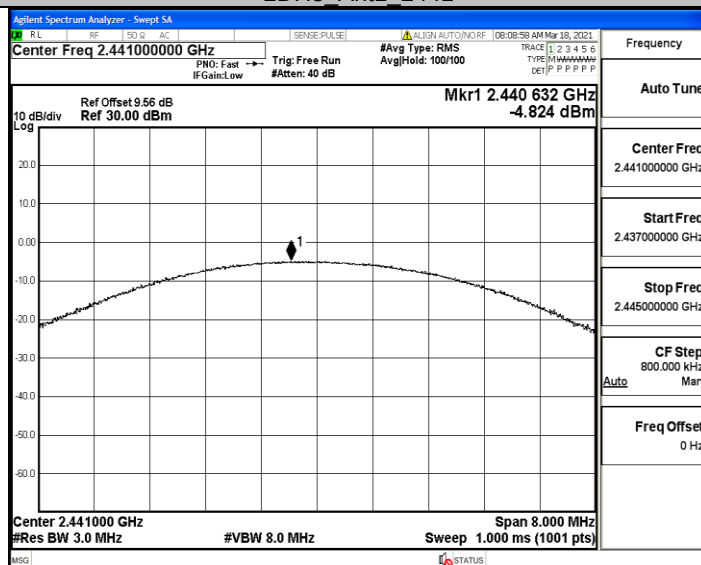
DH5 Ant1_2480



2DH5 Ant1_2402



2DH5 Ant1_2441



Agilent Spectrum Analyzer - Sweep SA

RL IF SO G AC SENSE:PUSE

Center Freq 2.480000000 GHz

RF Offset 9.56 dB
Ref 30.00 dBm

Trig: Free Run
#Atten: 40 dB

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

Time: 12:34:56
Type: WWWWWWWW
Det: P P P P P

Frequency

Auto Tun

Center Freq 2.480000000 GHz

Start Freq 2.476000000 GHz

Stop Freq 2.484000000 GHz

CF Step 800.000 kHz
Manual

Freq Offset 0 Hz

Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz

Span 8.000 MHz
Sweep 1.000 ms (1001 pts)

Agilent Spectrum Analyzer - Sweep SA

RL RF SO G AC SENSE/USE

ALIGN AUTO INORF 08:18:09 AM Mar 18, 2021

Center Freq 2.402000000 GHz

#Avg Type: RMS
AvgHold: 100/100

Trace 1 2 3 4 5 6
Type IN W W W W W W
Det P P P P P P

Ref Offset 9.4 dB
Ref 30.00 dBm

Trig: Free Run
#Atten: 40 dB

Mkr1 2.401 920 GHz
-5.235 dBm

10 dB/div
Log

Center Freq 2.402000000 GHz

Start Freq 2.398000000 GHz

Stop Freq 2.406000000 GHz

CF Step 800.000 kHz
Auto

Freq Offset 0 Hz

Center 2.402000 GHz
#Res BW 3.0 MHz

#VBW 8.0 MHz

Span 8.000 MHz
Sweep 1.000 ms (1001 pts)

use1

STATUS

Agilent Spectrum Analyzer - Sweep SA

RL RF SO G AC SENSE:PLUSE

ALIGN AUTO (NO RF) 08:22:53 AM Mar 18, 2021

Center Freq 2.441000000 GHz

PNG: Fast → IF Gain: Low

Trig: Free Run #Atten: 40 dB

#Avg Type: RMS AvgHold: 100/100

TRACE 1 2 3 4 5 6
TYPE: HAWAIIAN
DET: P P P P P P

Frequency

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.437000000 GHz

Stop Freq 2.445000000 GHz

CF Step 800.000 kHz

Auto

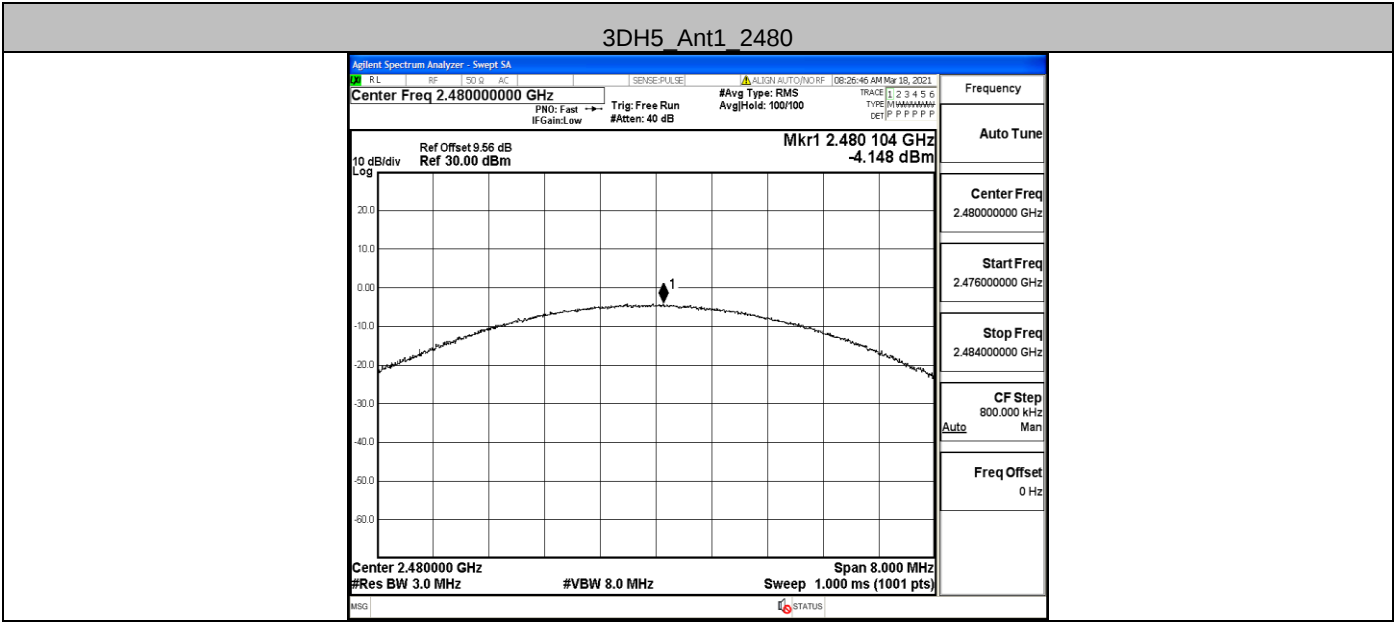
Freq Offset 0 Hz

10 dB/div Ref Offset 9.56 dB Mkr1 2.441 168 GHz
Log Ref 30.00 dBm -4.21 dBm

Center 2.441000 GHz Span 8.000 MHz

#Res BW 3.0 MHz #VBW 8.0 MHz Sweep 1.000 ms (1001 pts)

Agilent

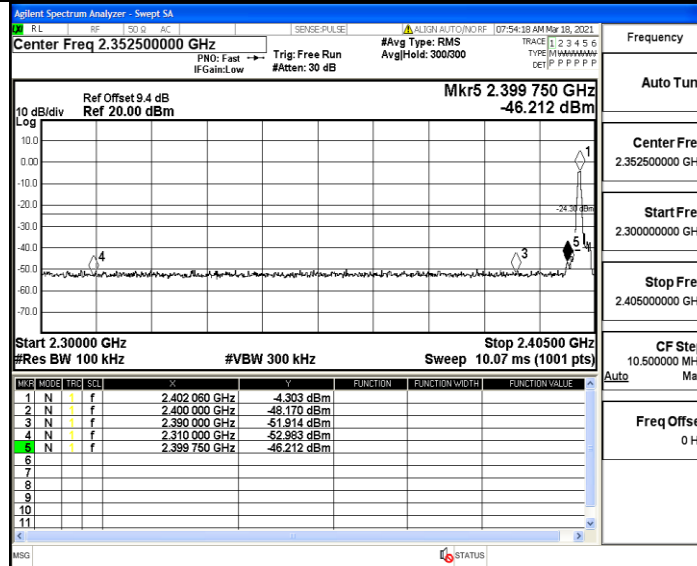


A.6 Band-edge for RF Conducted Emissions

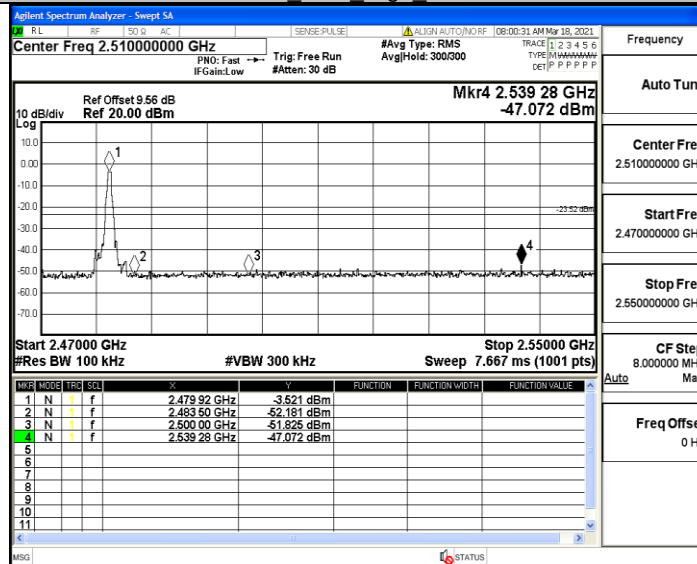
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-4.30	-46.21	<=-24.3	PASS
		High	2480	-3.52	-47.07	<=-23.52	PASS
		Low	Hop_2402	-7.32	-49.05	<=-27.32	PASS
		High	Hop_2480	-2.98	-48.98	<=-22.98	PASS
2DH5	Ant1	Low	2402	-7.40	-46.03	<=-27.4	PASS
		High	2480	-6.36	-49.15	<=-26.36	PASS
		Low	Hop_2402	-7.93	-50.14	<=-27.93	PASS
		High	Hop_2480	-6.32	-49.03	<=-26.32	PASS
3DH5	Ant1	Low	2402	-7.29	-44.61	<=-27.29	PASS
		High	2480	-7.47	-48.48	<=-27.47	PASS
		Low	Hop_2402	-10.29	-50.42	<=-30.29	PASS
		High	Hop_2480	-7.29	-48.75	<=-27.29	PASS

Test Graph

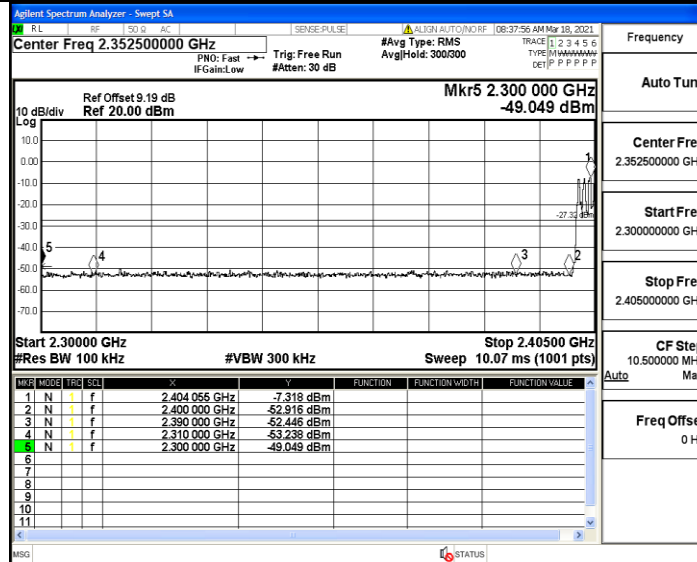
DH5_Ant1_Low_2402



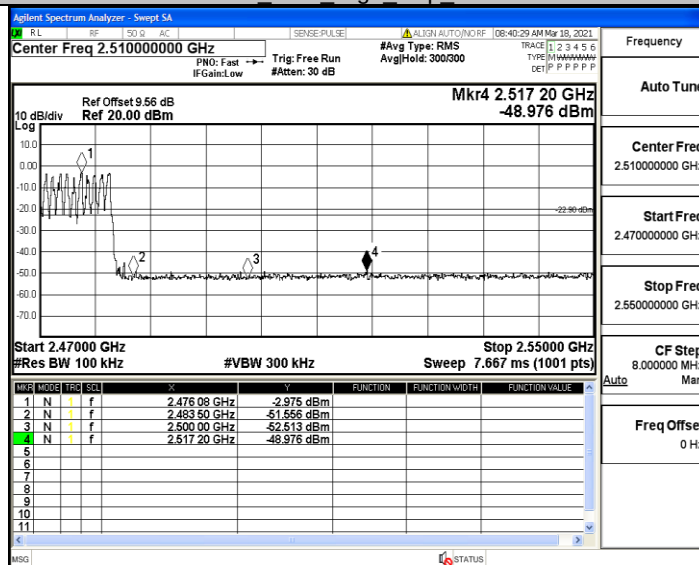
DH5_Ant1_High_2480



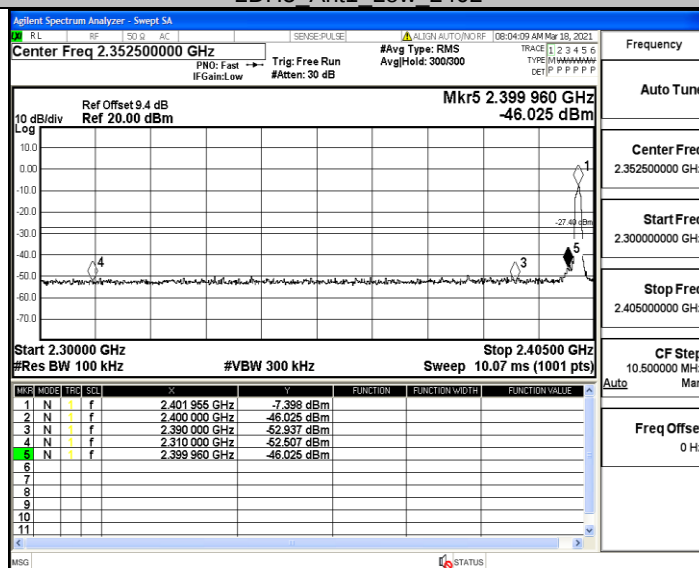
DH5_Ant1_Low_Hop_2402



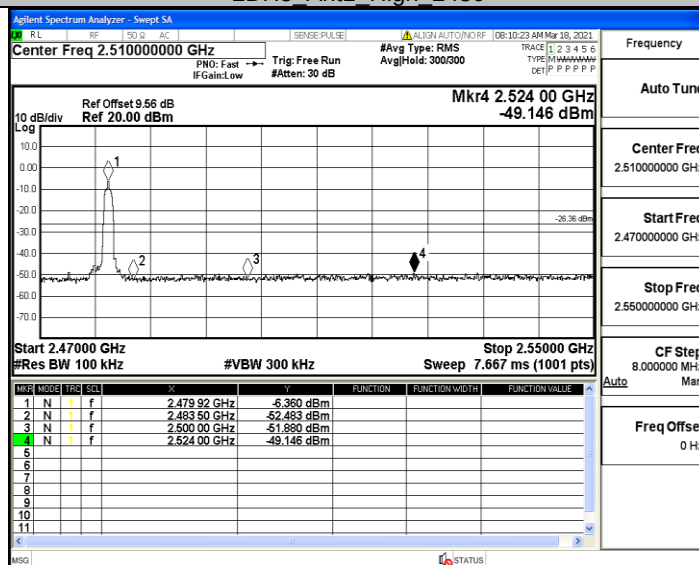
DH5 Ant1 High Hop 2480



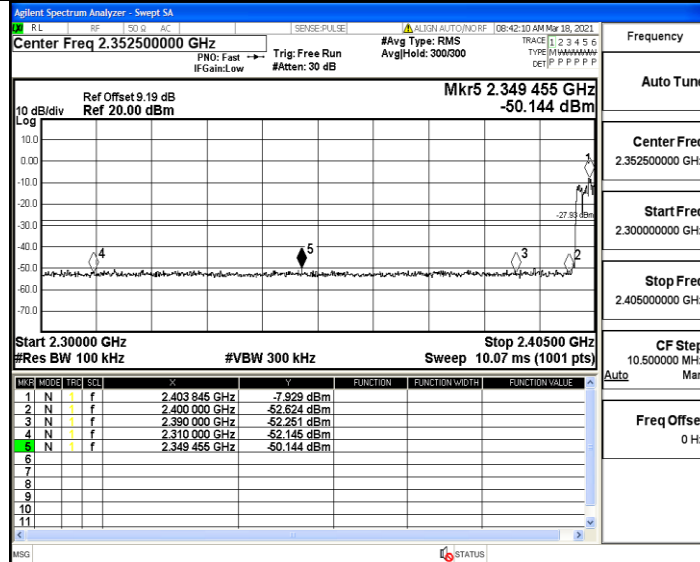
2DH5 Ant1 Low 2402



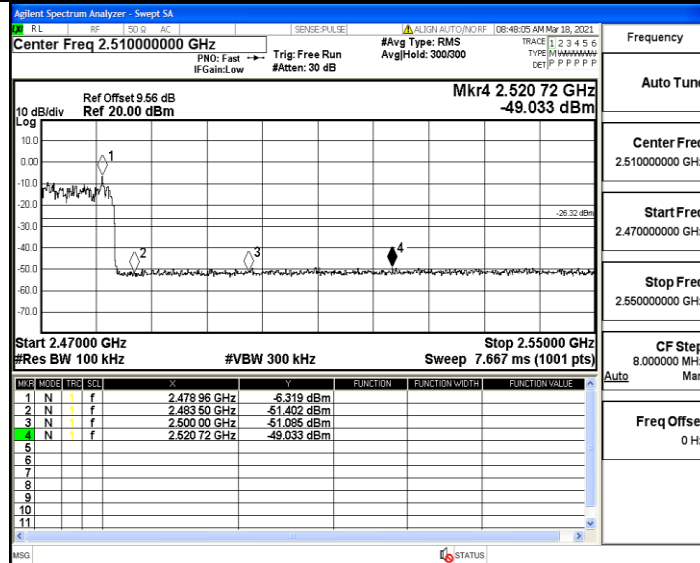
2DH5 Ant1 High 2480



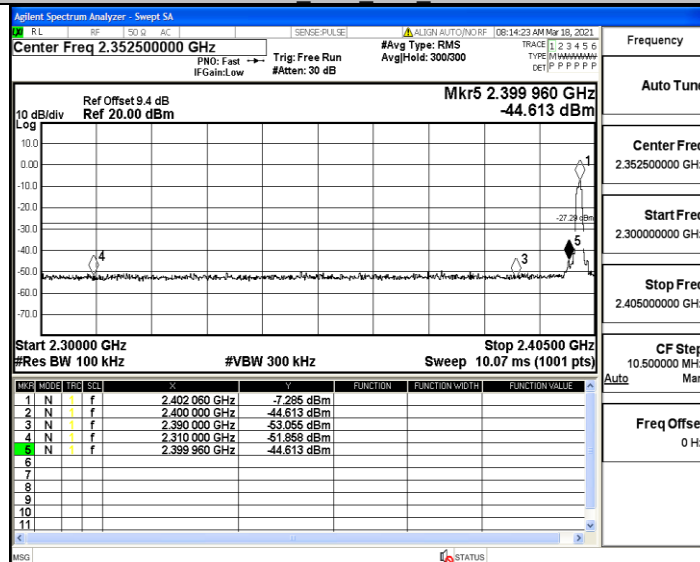
2DH5 Ant1 Low Hop 2402



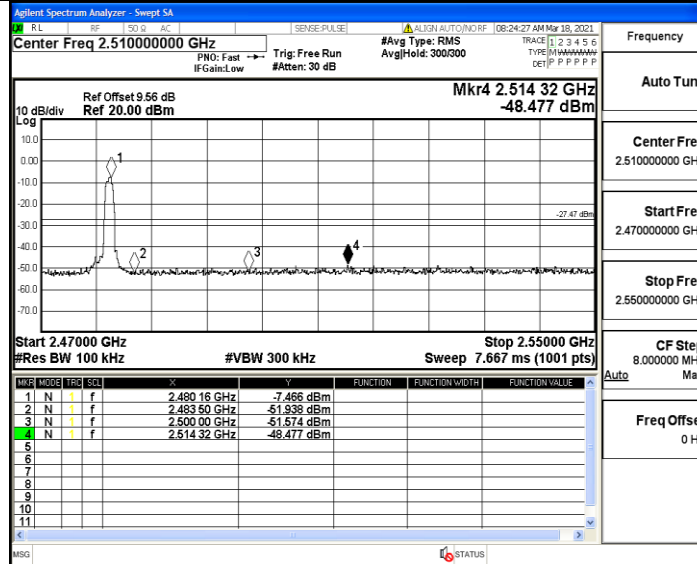
2DH5 Ant1 High Hop 2480



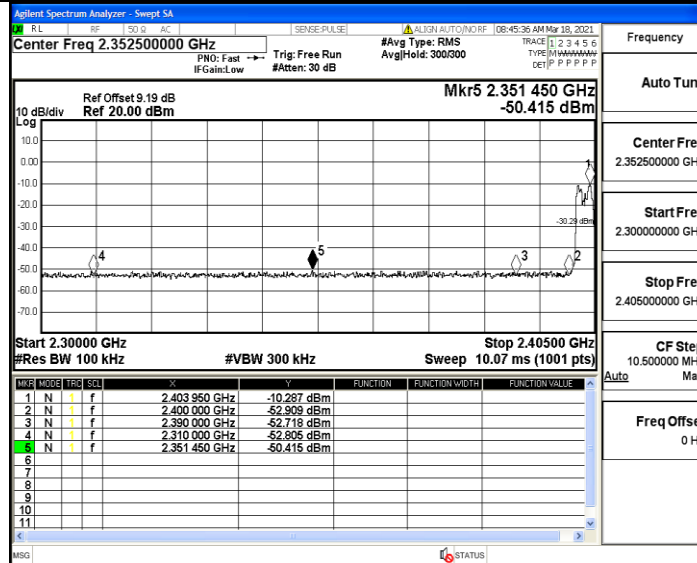
3DH5 Ant1 Low 2402



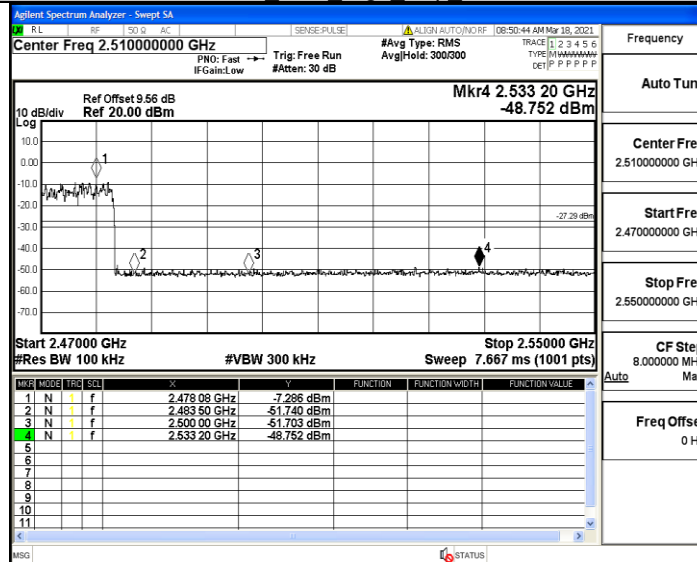
3DH5 Ant1_High 2480



3DH5 Ant1_Low Hop 2402

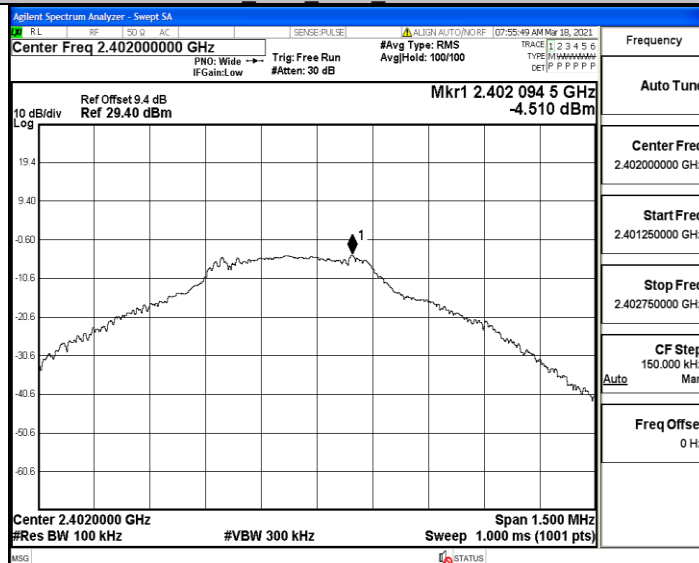


3DH5 Ant1_High Hop 2480

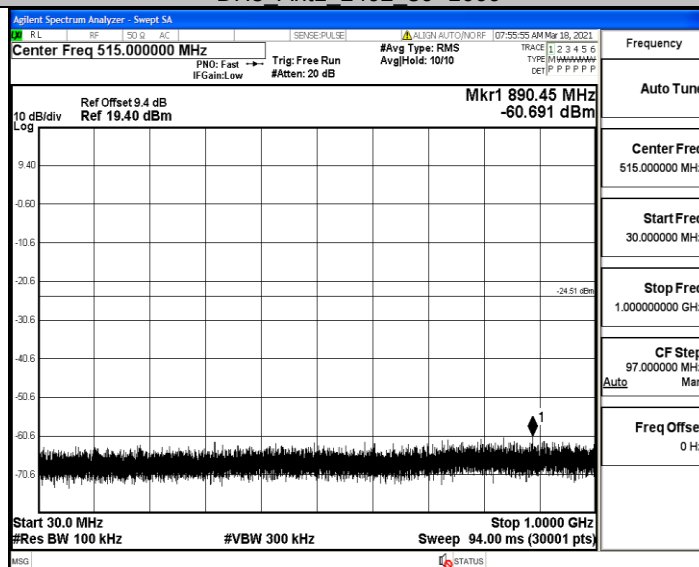


A.7 RF Conducted Spurious Emissions Test Graph

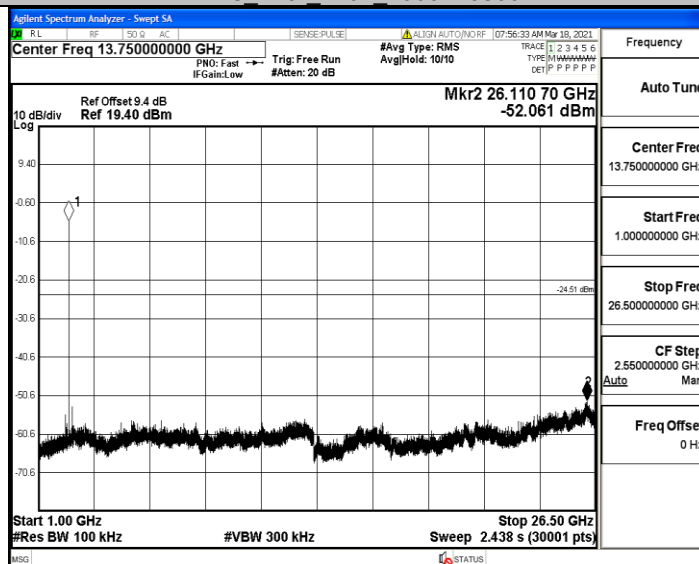
DH5_Ant1_2402_0-Reference



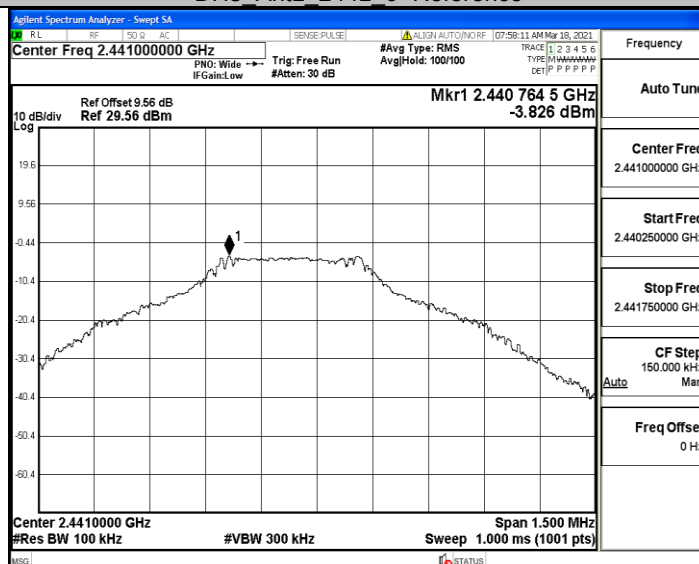
DH5_Ant1_2402_30~1000



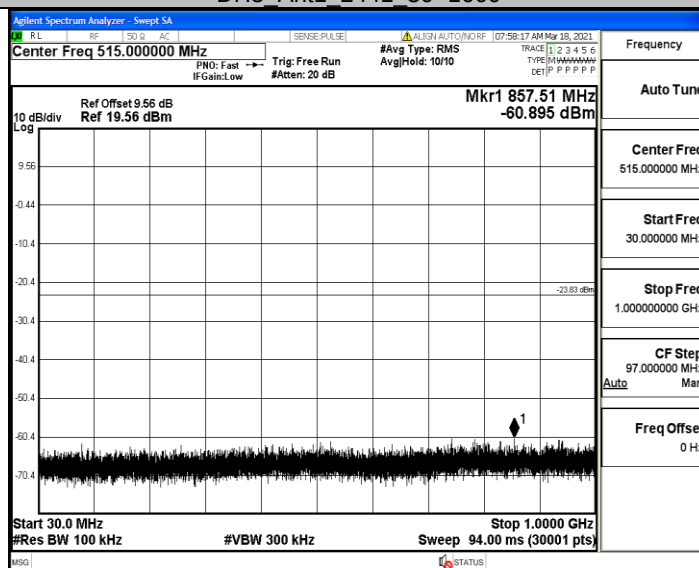
DH5_Ant1_2402_1000~26500



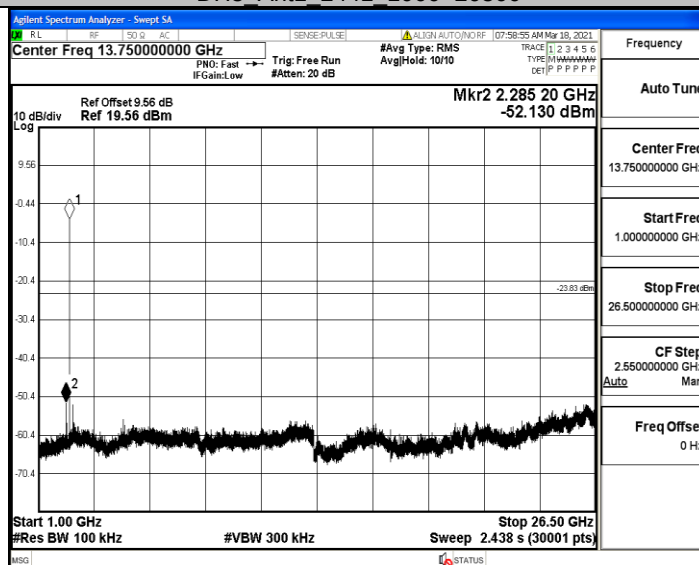
DH5_Ant1_2441_0-Reference



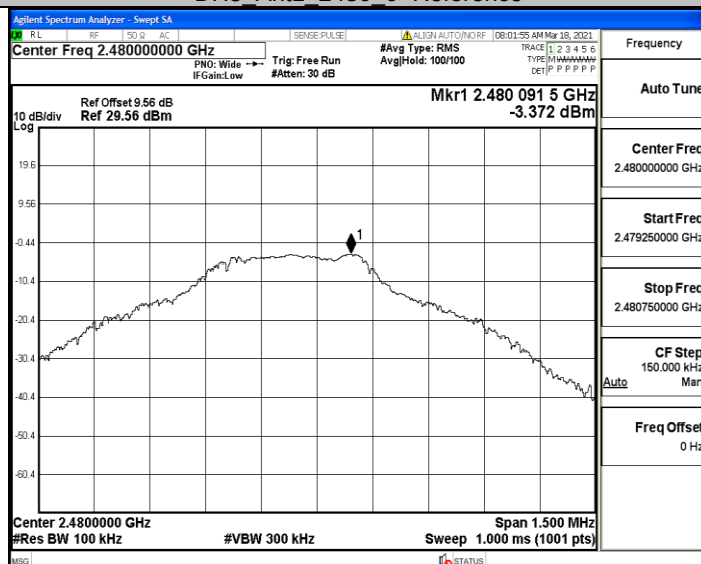
DH5_Ant1_2441_30~1000



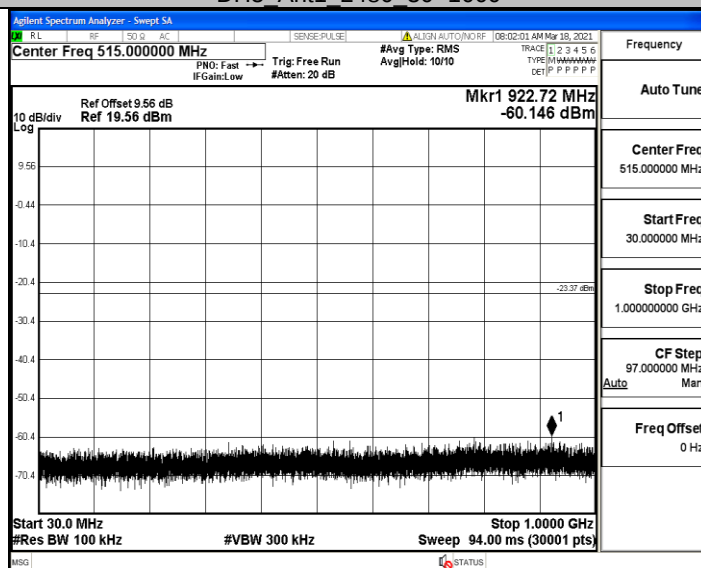
DH5_Ant1_2441_1000~26500



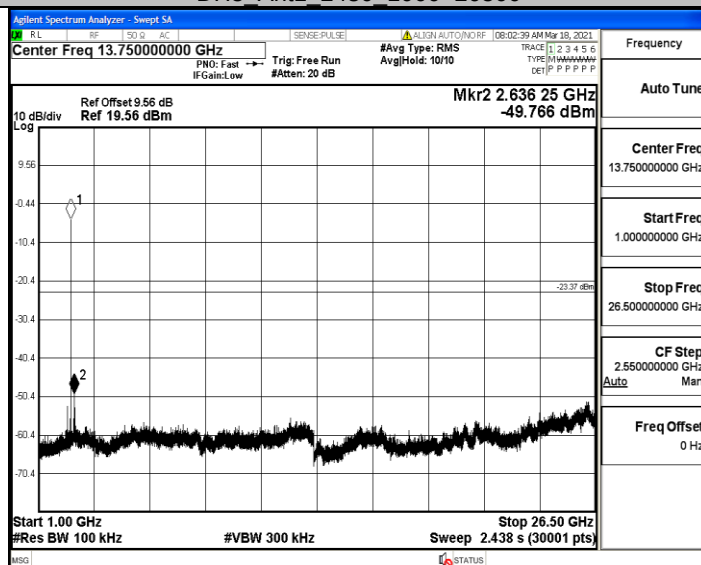
DH5_Ant1_2480_0-Reference



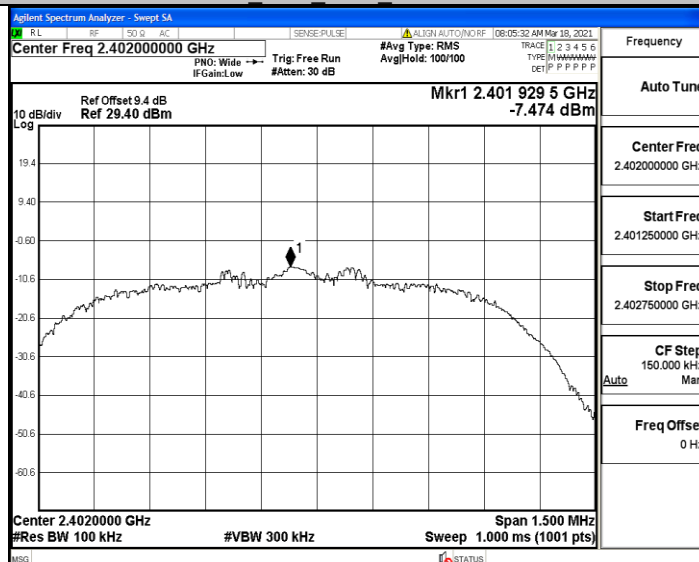
DH5_Ant1_2480_30-1000



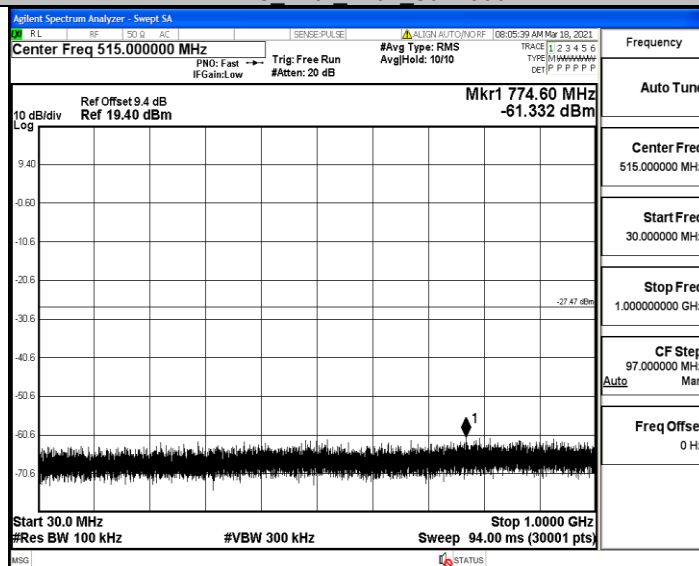
DH5_Ant1_2480_1000-26500



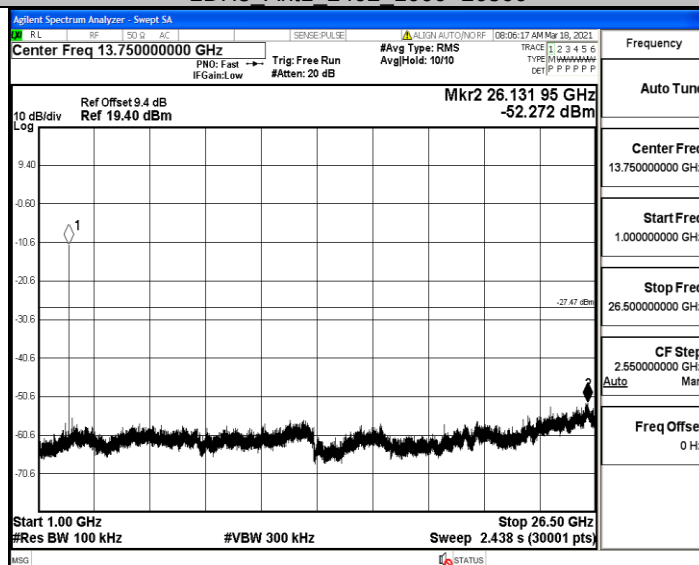
2DH5_Ant1_2402_0~Reference



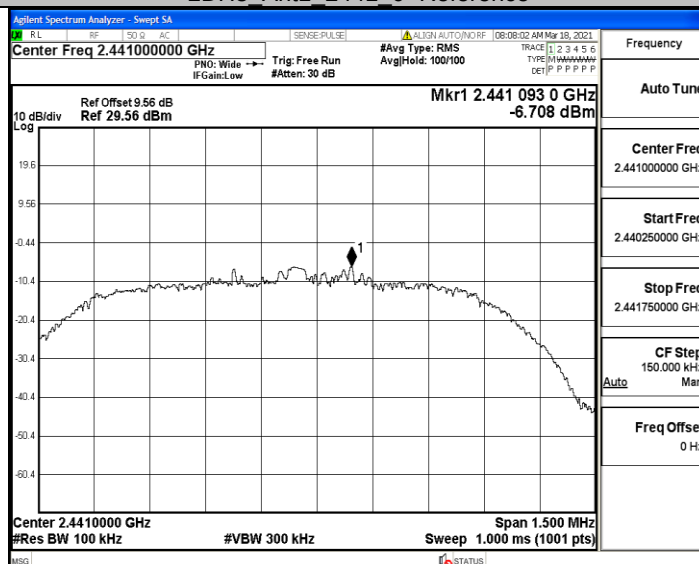
2DH5_Ant1_2402_30~1000



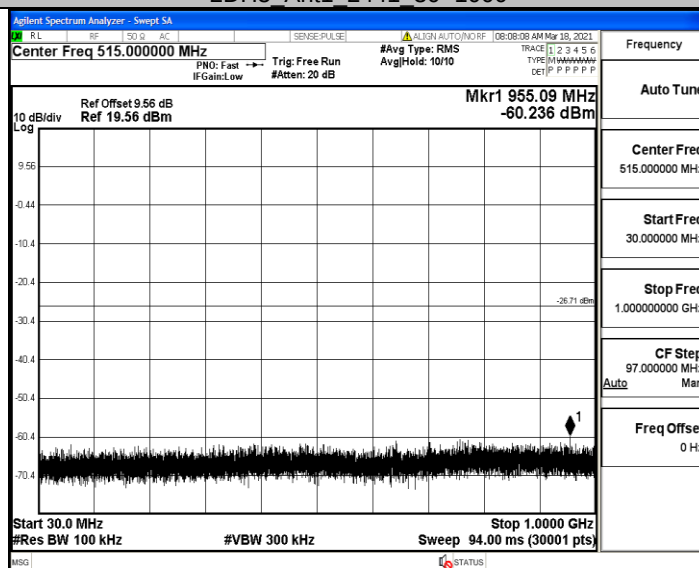
2DH5_Ant1_2402_1000~26500



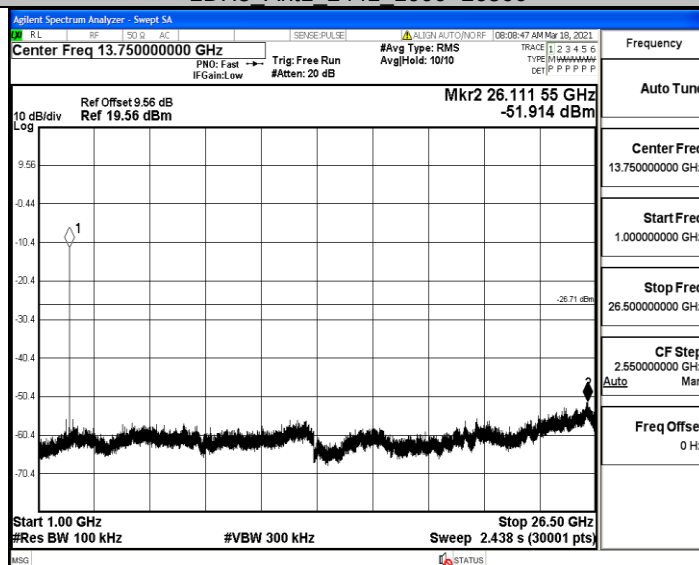
2DH5 Ant1 2441 0~Reference



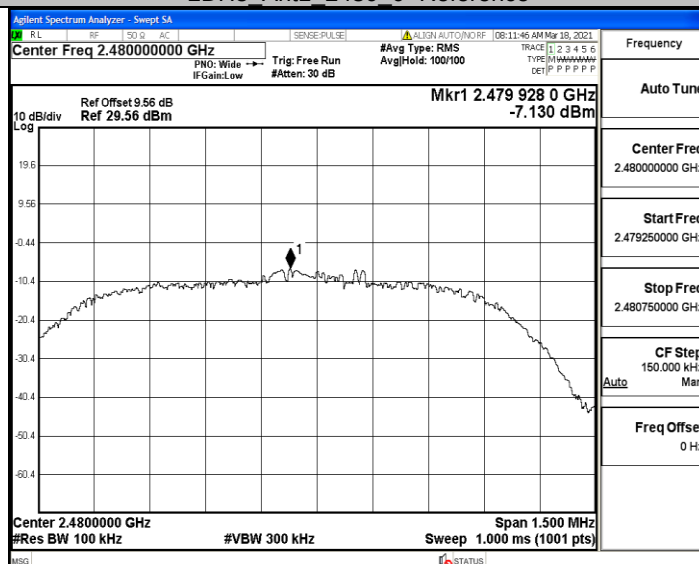
2DH5 Ant1 2441 30~1000



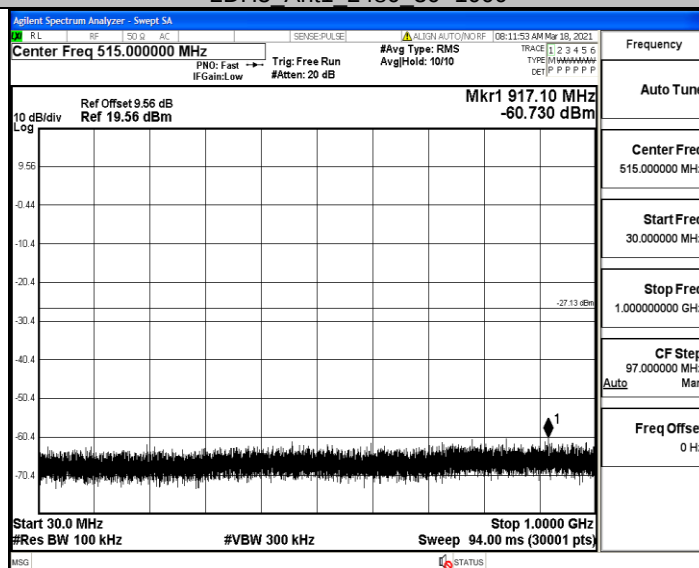
2DH5 Ant1 2441 1000~26500



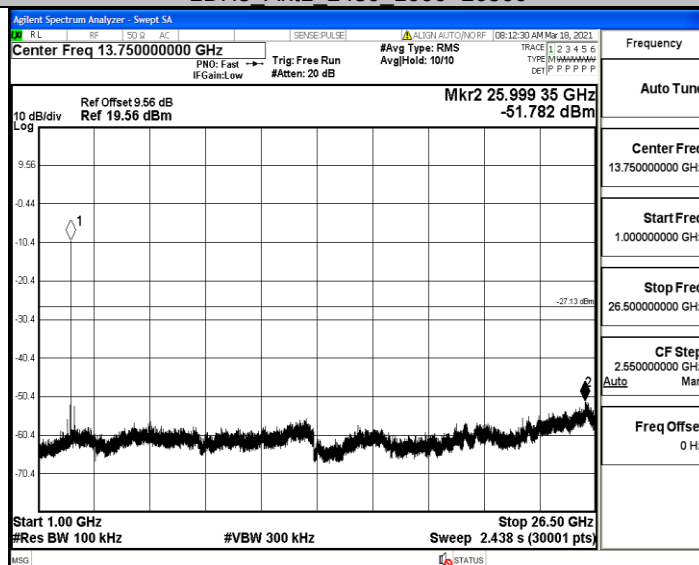
2DH5 Ant1 2480 0~Reference



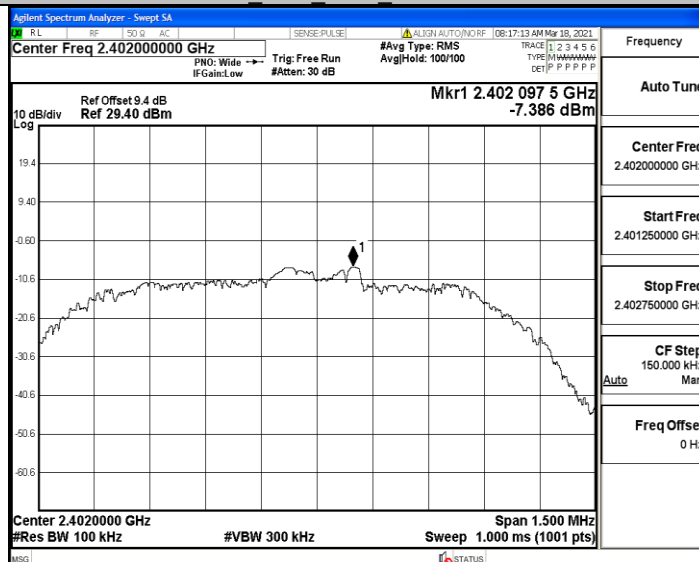
2DH5 Ant1 2480 30~1000



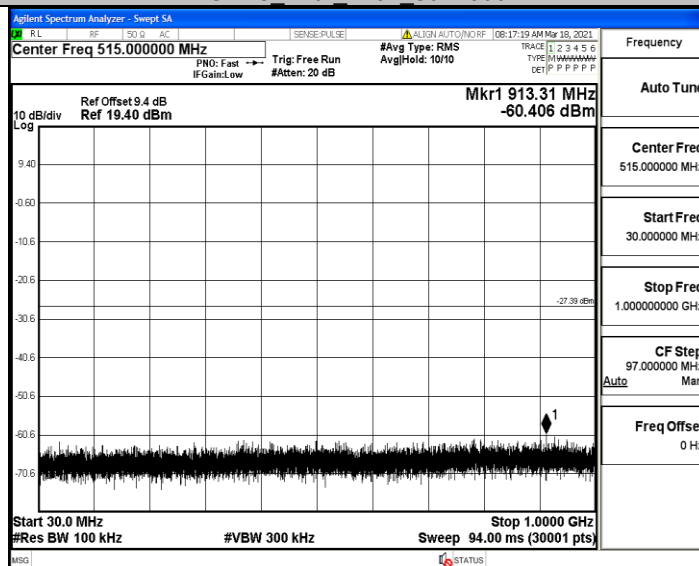
2DH5 Ant1 2480 1000~26500



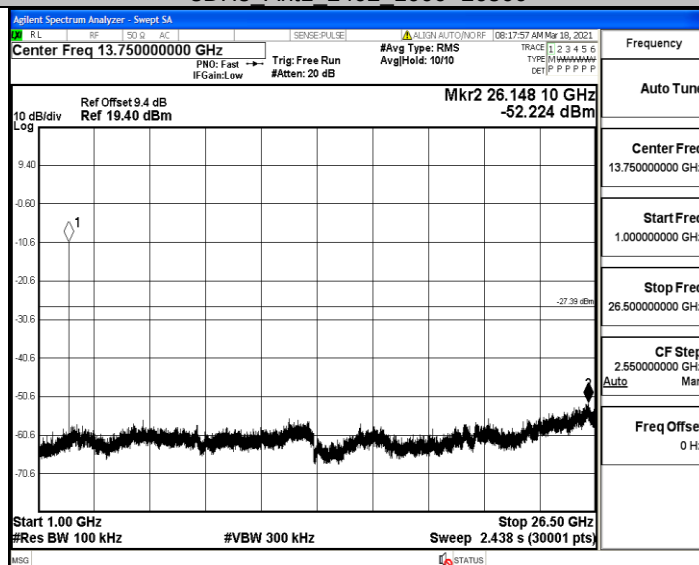
3DH5_Ant1_2402_0~Reference



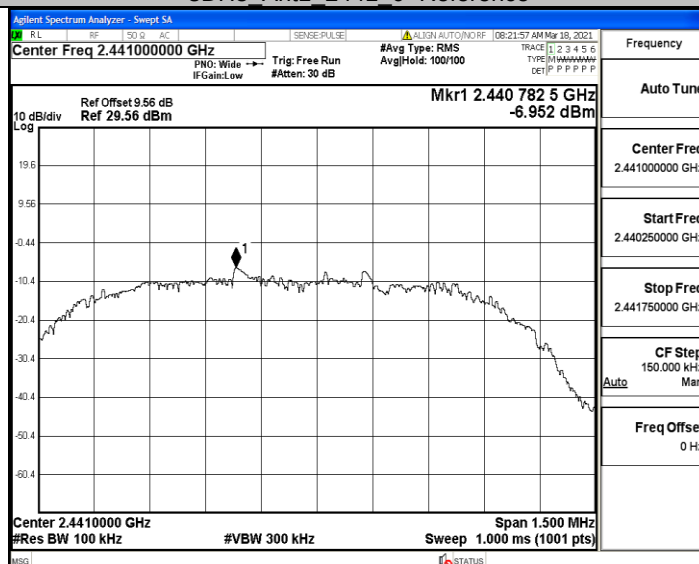
3DH5_Ant1_2402_30~1000



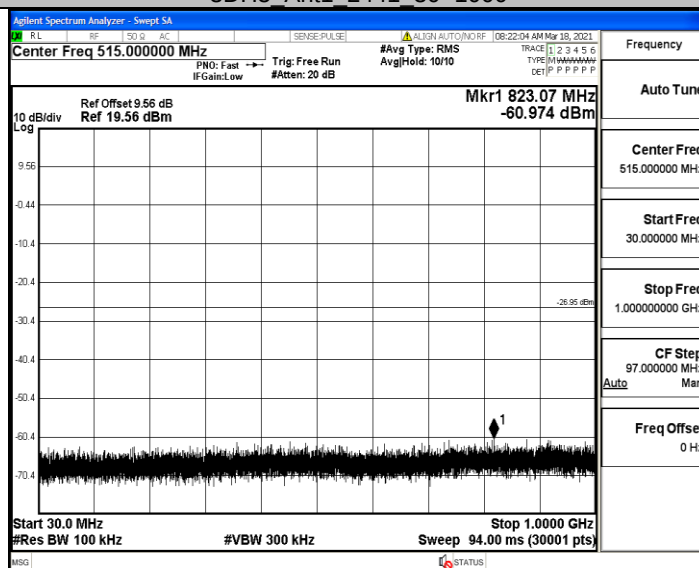
3DH5_Ant1_2402_1000~26500



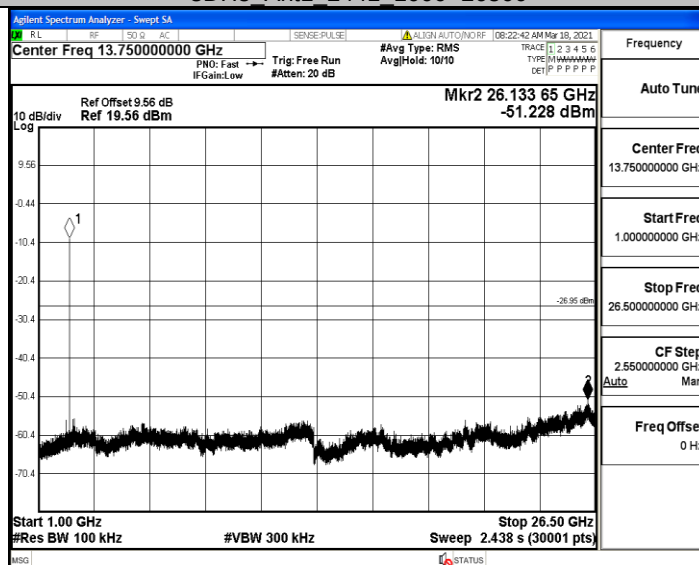
3DH5_Ant1_2441_0~Reference



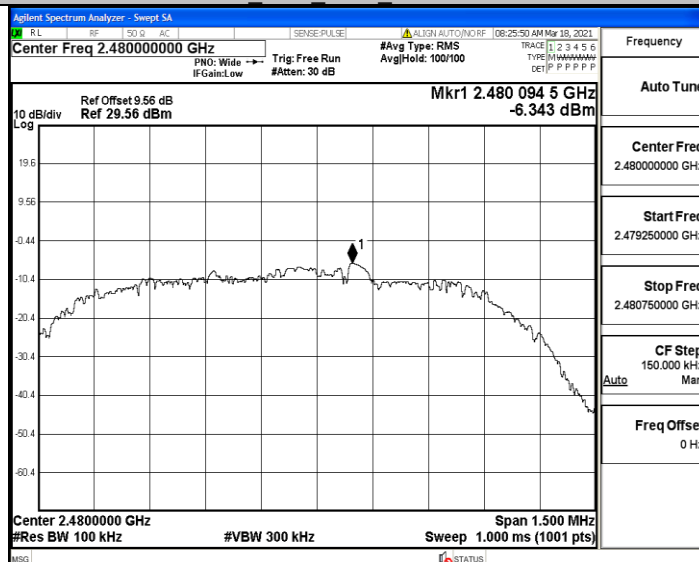
3DH5_Ant1_2441_30~1000



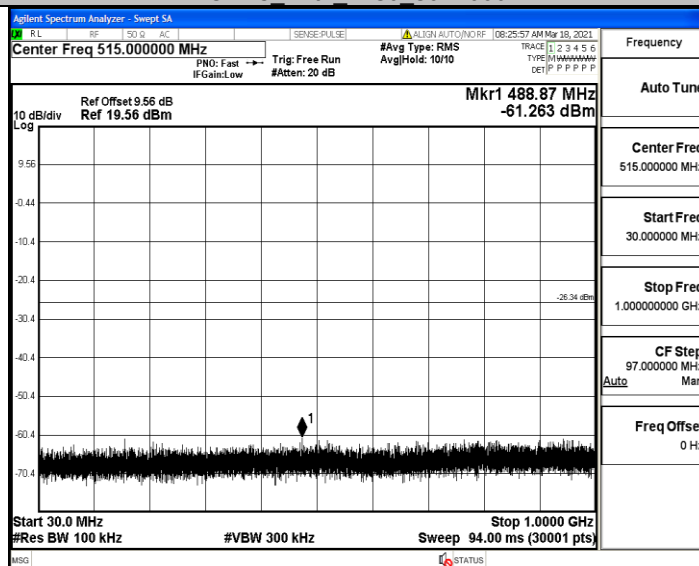
3DH5_Ant1_2441_1000~26500



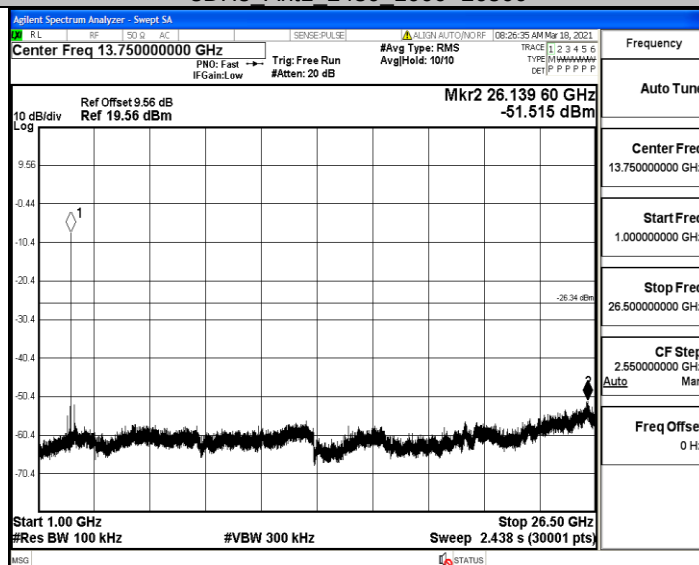
3DH5 Ant1 2480 0~Reference



3DH5 Ant1 2480 30~1000



3DH5 Ant1 2480 1000~26500



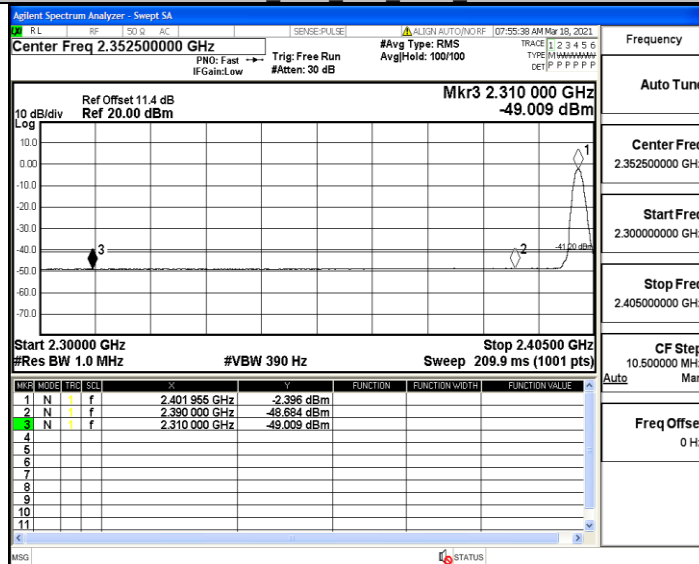
A.8 Restrict-band band-edge measurements

TestMode	Antenna	ChName	Channel	Detector	Freq(MHz)	Result(dBm)	Limit(dBm)	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-49.01	<=-41.20	PASS
				AV	2390.000	-48.68	<=-41.20	PASS
				Peak	2310.000	-43.58	<=-21.20	PASS
				Peak	2390.000	-43.01	<=-21.20	PASS
		High	2480	AV	2483.500	-47.86	<=-41.20	PASS
				AV	2500.000	-47.99	<=-41.20	PASS
				Peak	2483.500	-40.46	<=-21.20	PASS
				Peak	2500.000	-41.71	<=-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-49.23	<=-41.20	PASS
				AV	2390.000	-48.87	<=-41.20	PASS
				Peak	2310.000	-45.78	<=-21.20	PASS
				Peak	2390.000	-43.90	<=-21.20	PASS
		High	2480	AV	2483.500	-48.19	<=-41.20	PASS
				AV	2500.000	-48.08	<=-41.20	PASS
				Peak	2483.500	-43.43	<=-21.20	PASS
				Peak	2500.000	-42.68	<=-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-49.37	<=-41.20	PASS
				AV	2390.000	-49.12	<=-41.20	PASS
				Peak	2310.000	-42.87	<=-21.20	PASS
				Peak	2390.000	-44.36	<=-21.20	PASS
		High	2480	AV	2483.500	-48.13	<=-41.20	PASS
				AV	2500.000	-48.13	<=-41.20	PASS
				Peak	2483.500	-41.29	<=-21.20	PASS
				Peak	2500.000	-40.97	<=-21.20	PASS

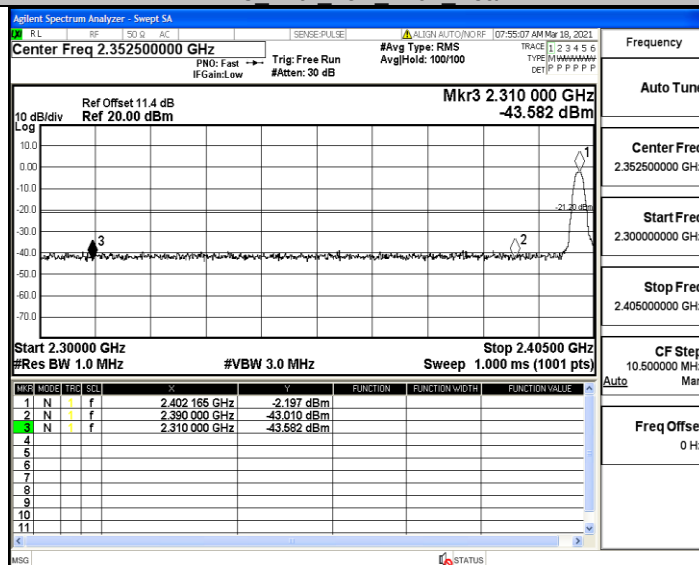
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

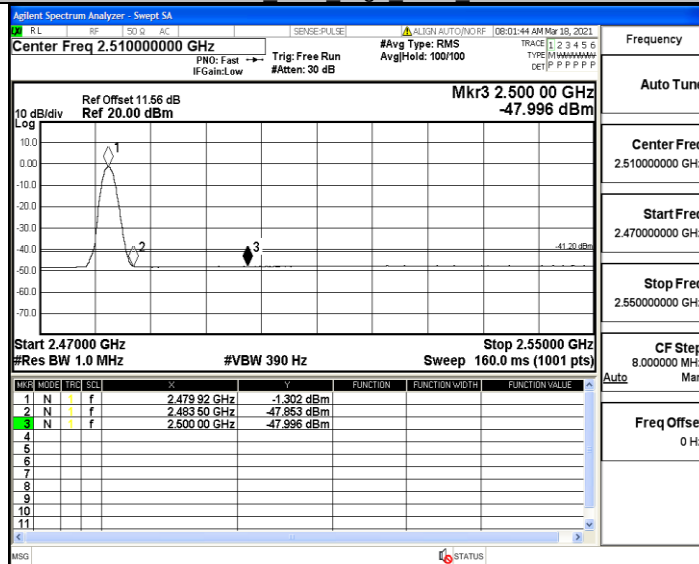
DH5 Ant1 Low 2402 AV



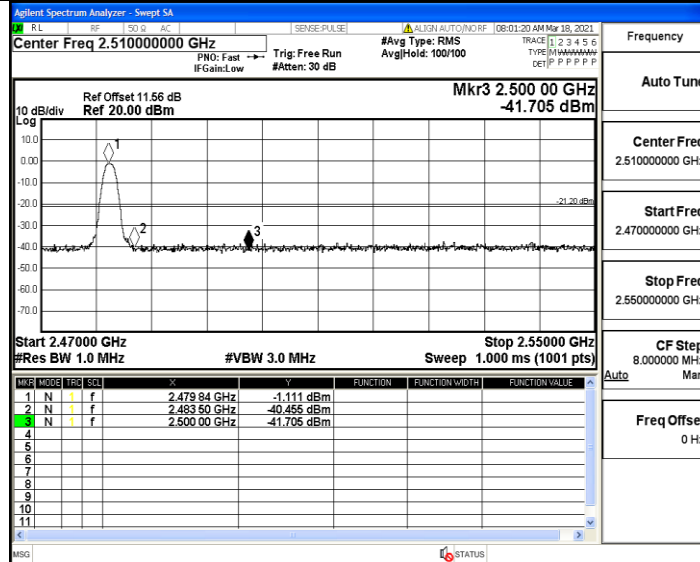
DH5 Ant1 Low 2402 Peak



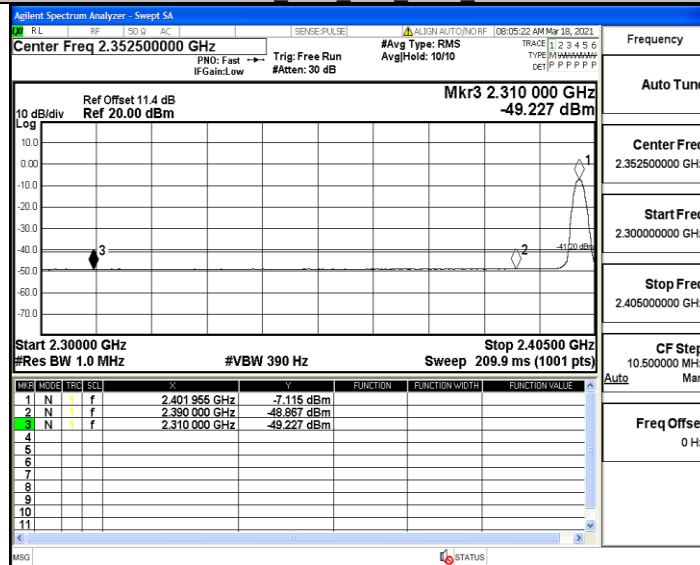
DH5 Ant1 High 2480 AV



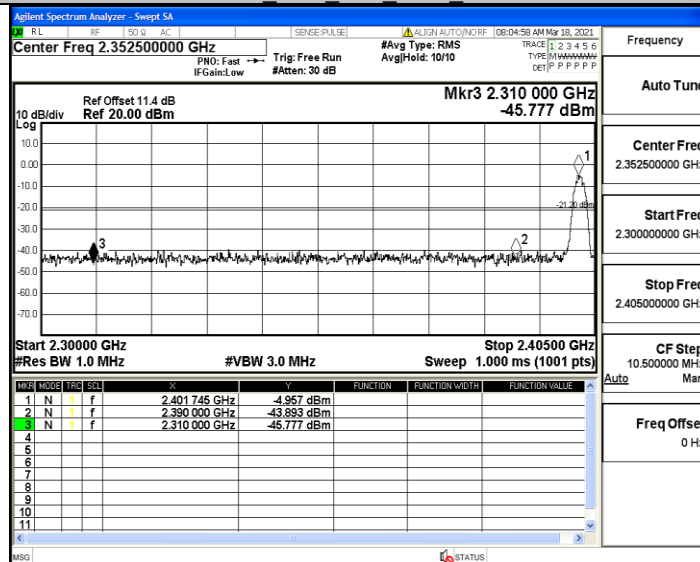
DH5 Ant1 High 2480 Peak



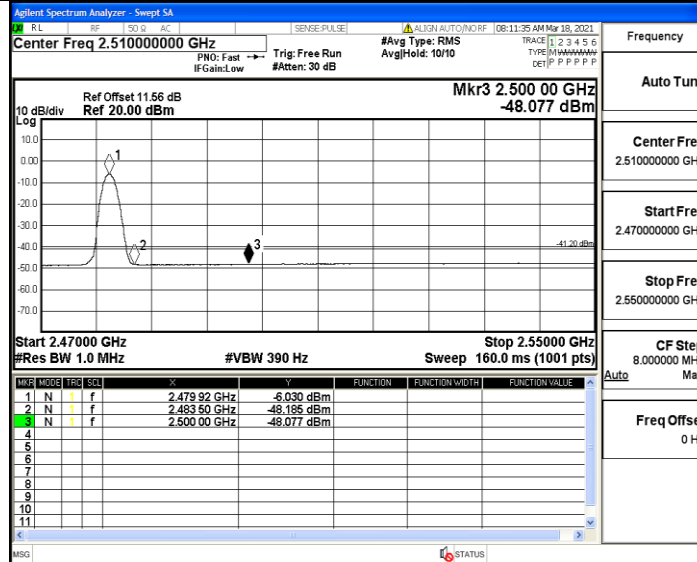
2DH5 Ant1 Low 2402 AV



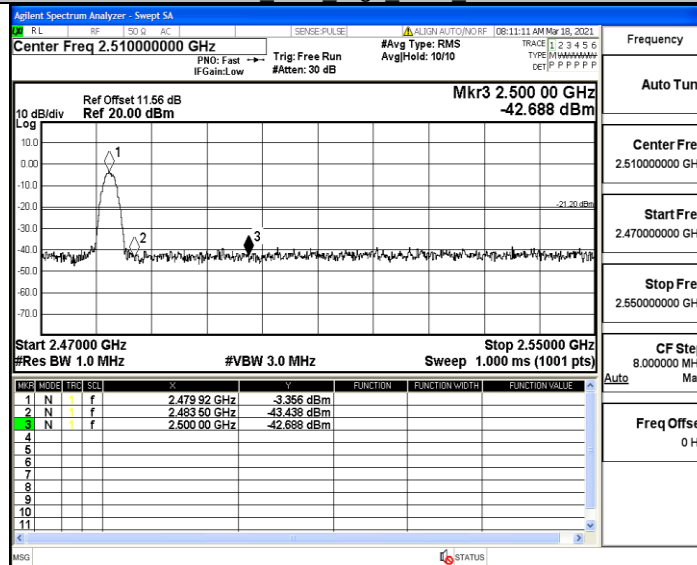
2DH5 Ant1 Low 2402 Peak



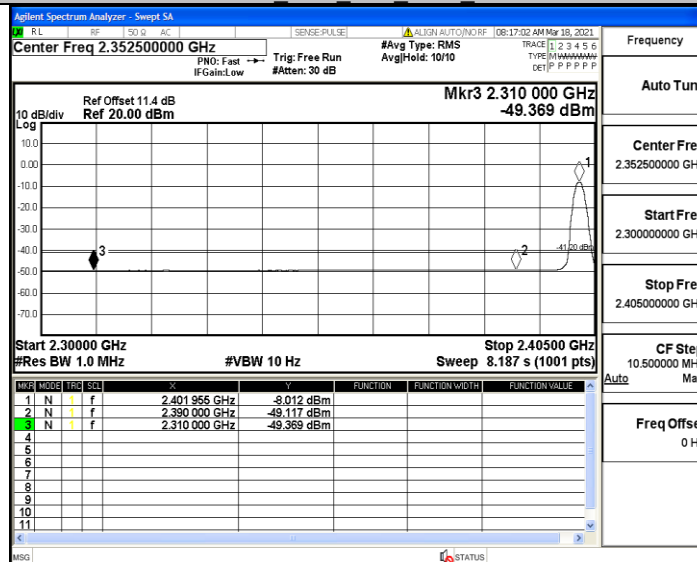
2DH5 Ant1 High 2480 AV



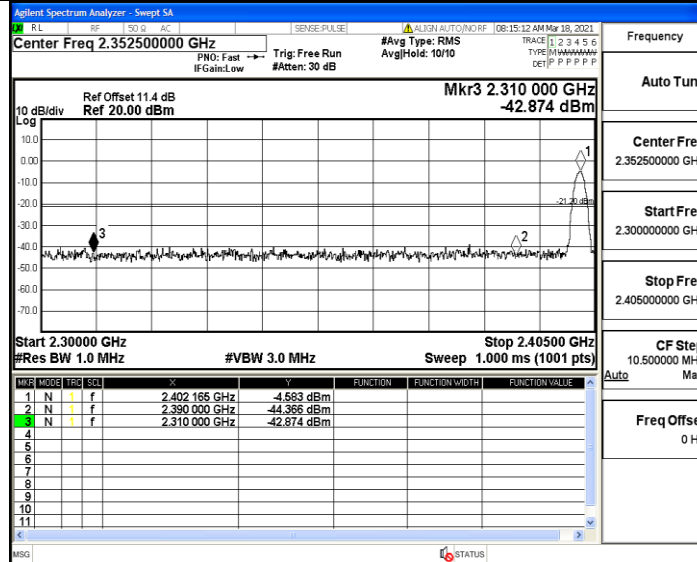
2DH5 Ant1 High 2480 Peak



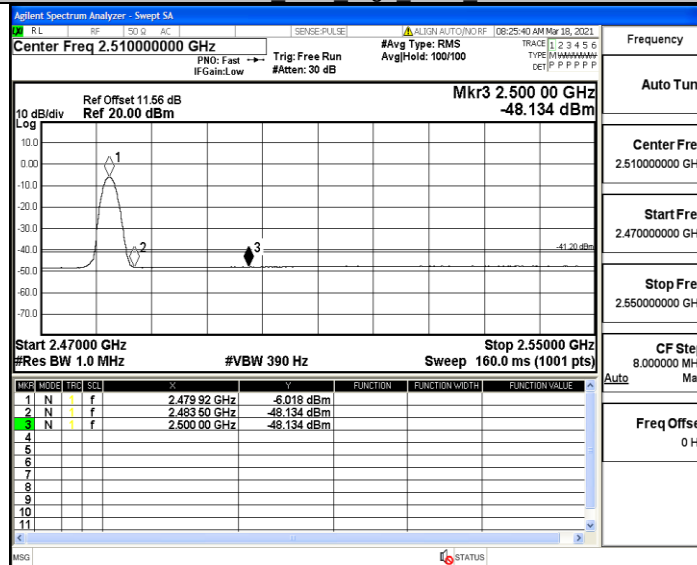
3DH5 Ant1 Low 2402 AV



3DH5 Ant1 Low 2402 Peak



3DH5 Ant1 High 2480 AV



3DH5 Ant1 High 2480 Peak

