

Appendix A

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

Product Name: TRUE WIRELESS EARBUDS

Trade Mark: SOUNDMATES

Test Model: RT27

FCC ID: 2ATOY-RT27

Environmental Conditions

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

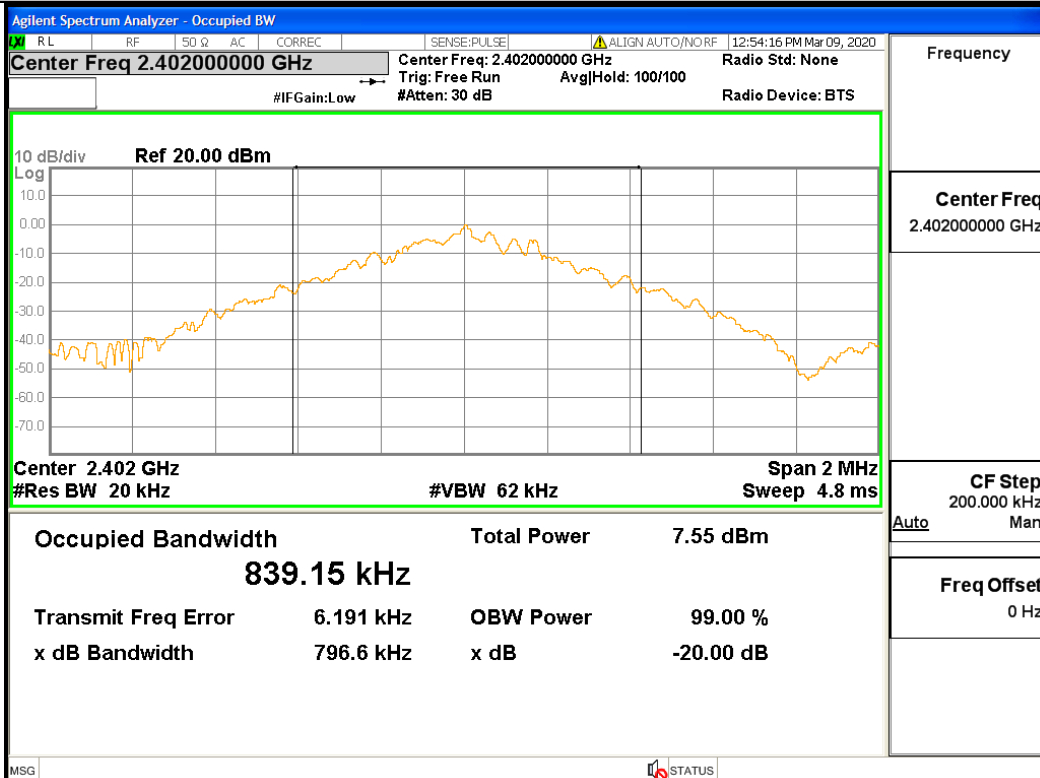
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.797	Not Specified	PASS
GFSK	MCH	0.857	Not Specified	PASS
GFSK	HCH	0.797	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.195	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.182	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.282	Not Specified	PASS

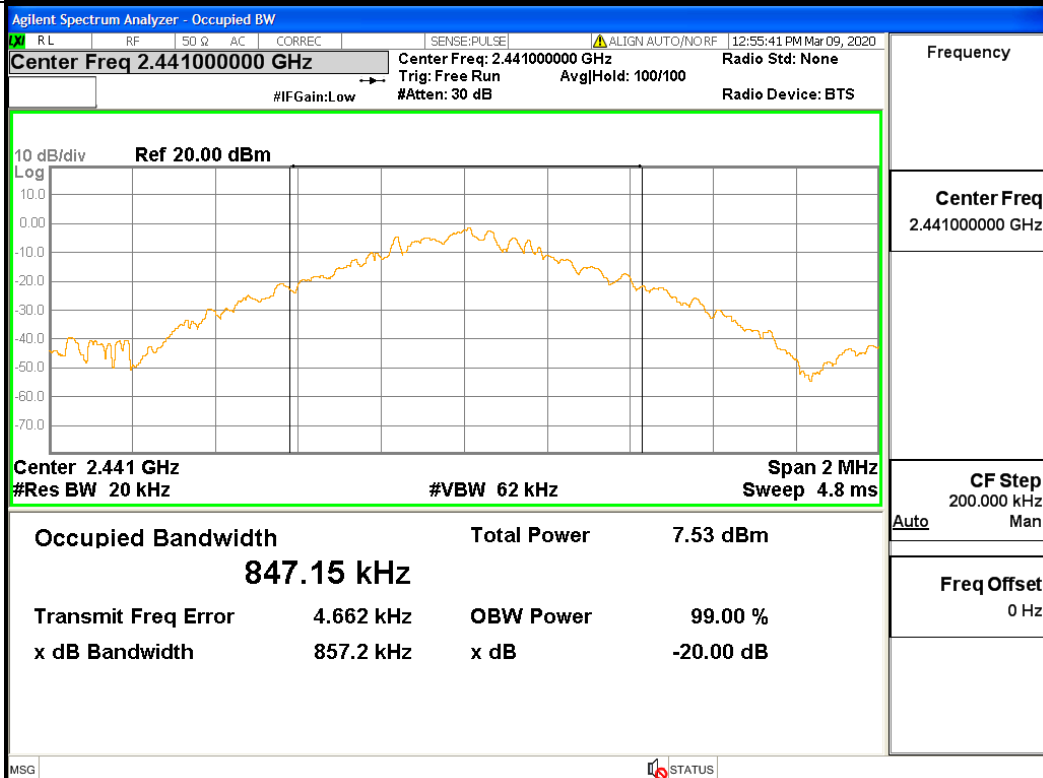
Test Graph

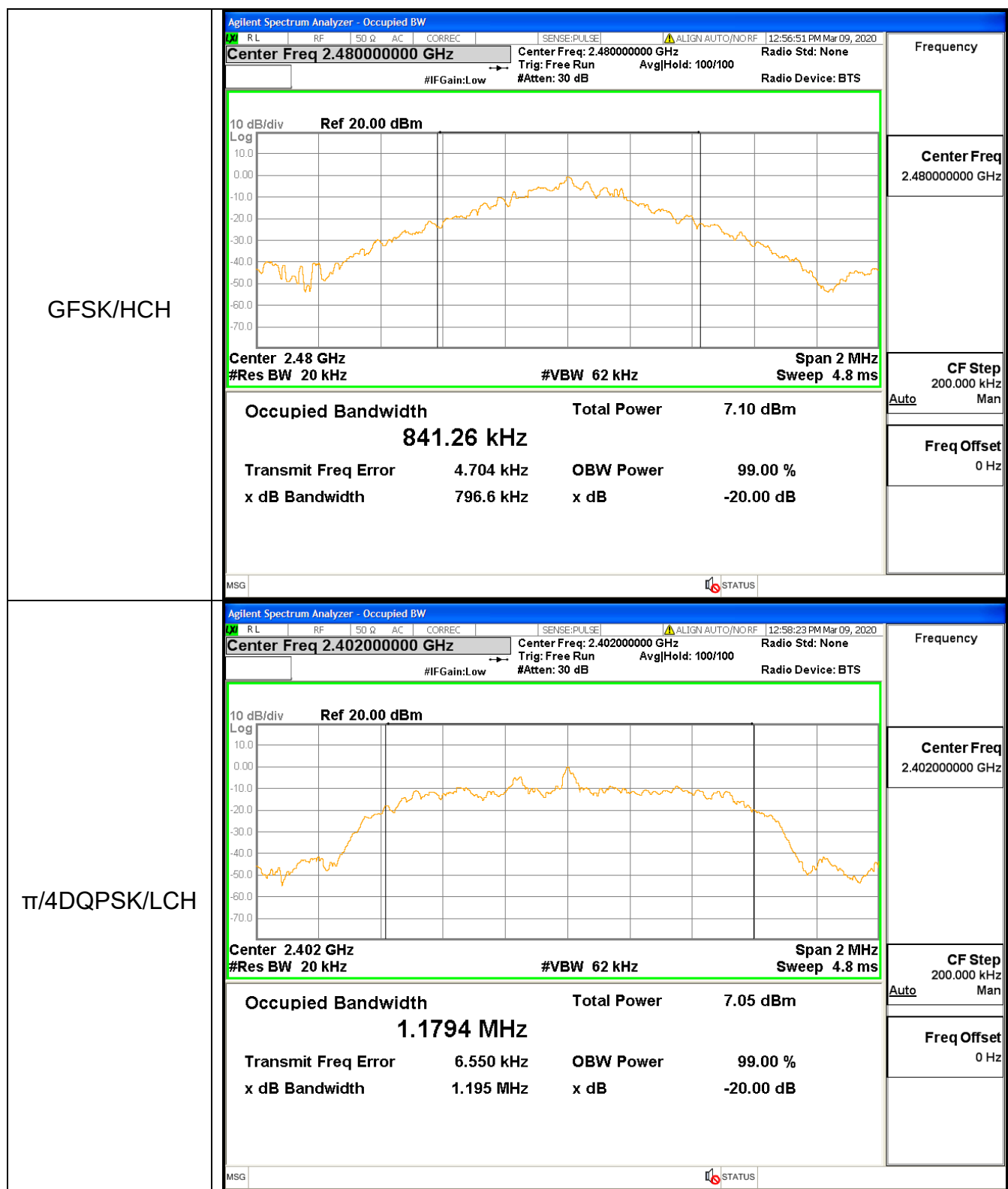
Graphs

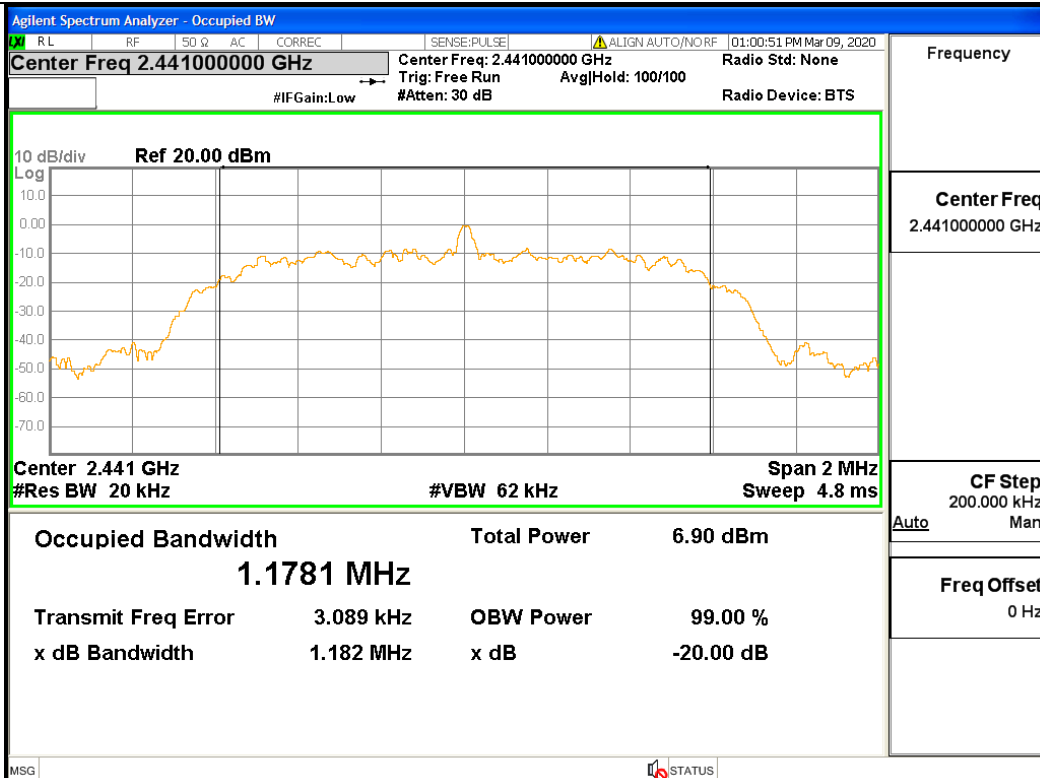
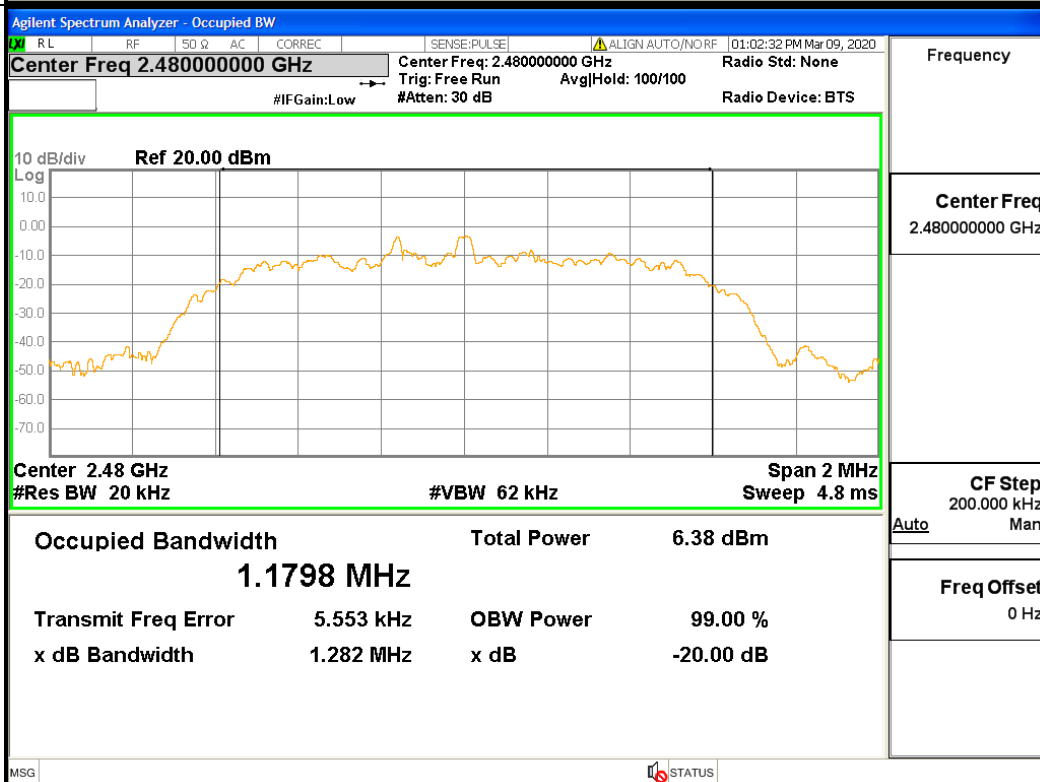
GFSK/LCH



GFSK/MCH



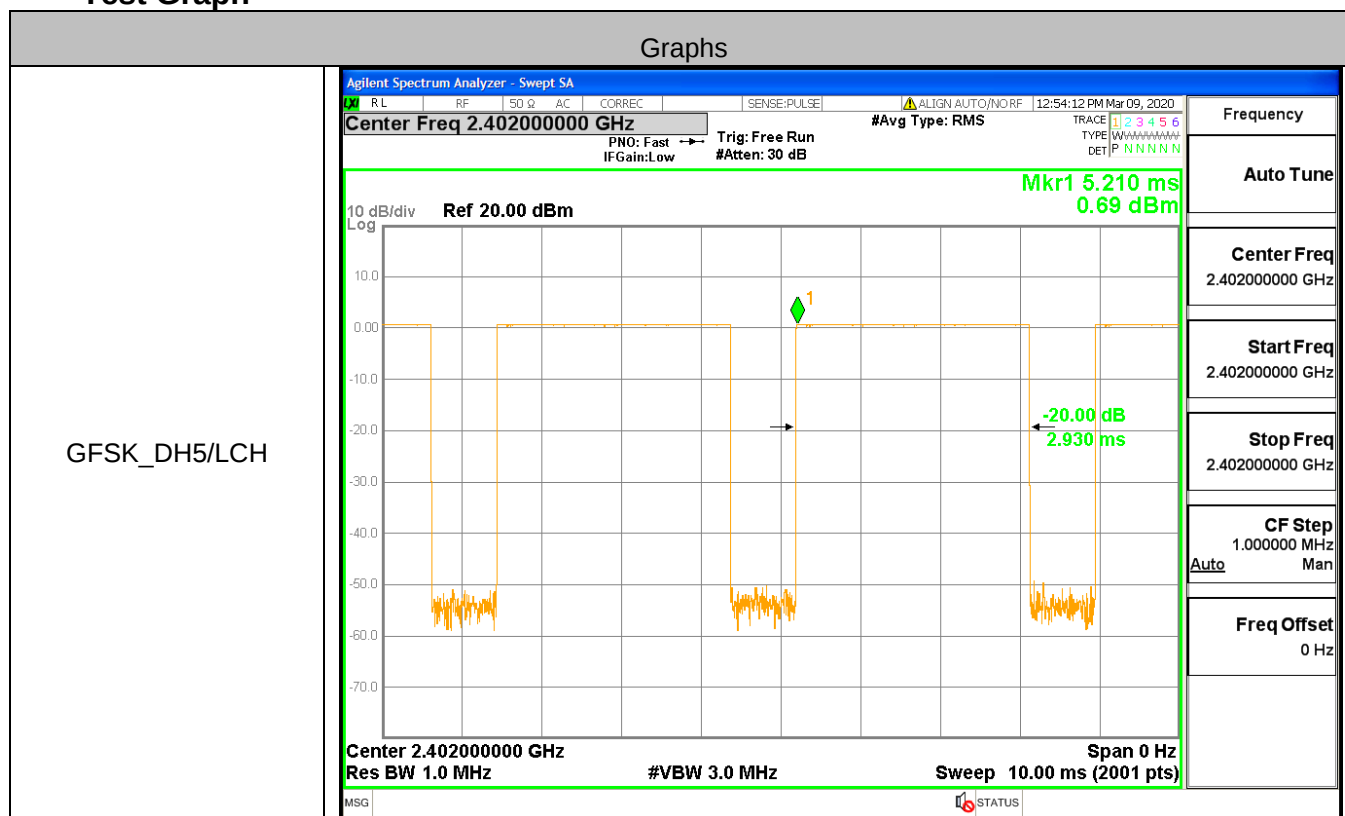


π /4DQPSK/MCH π /4DQPSK/HCH

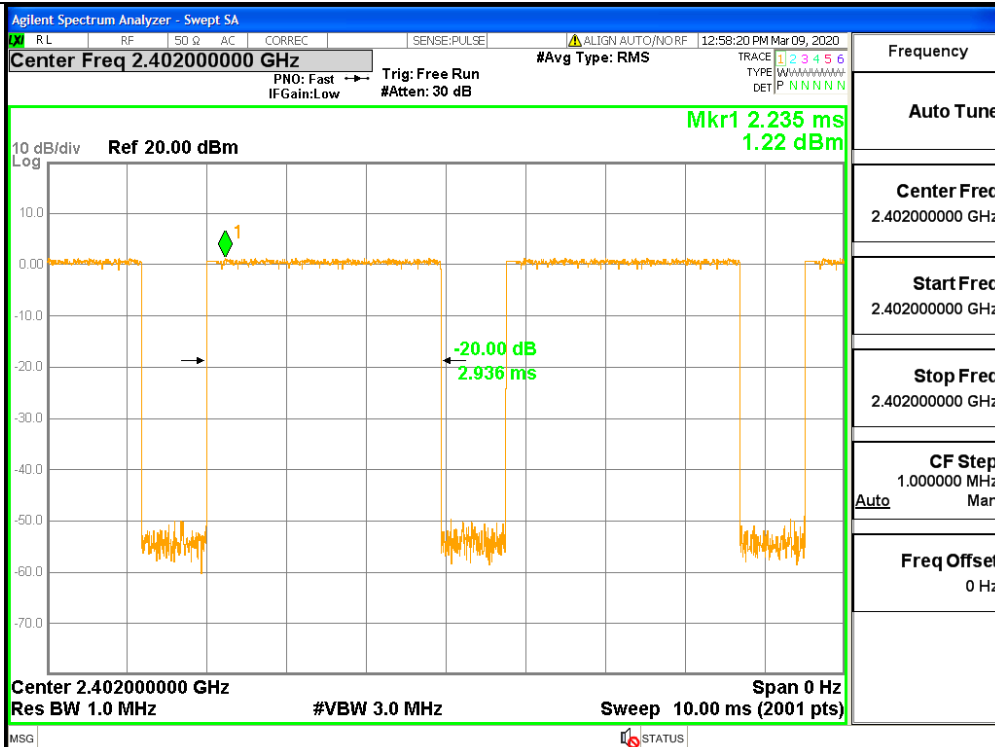
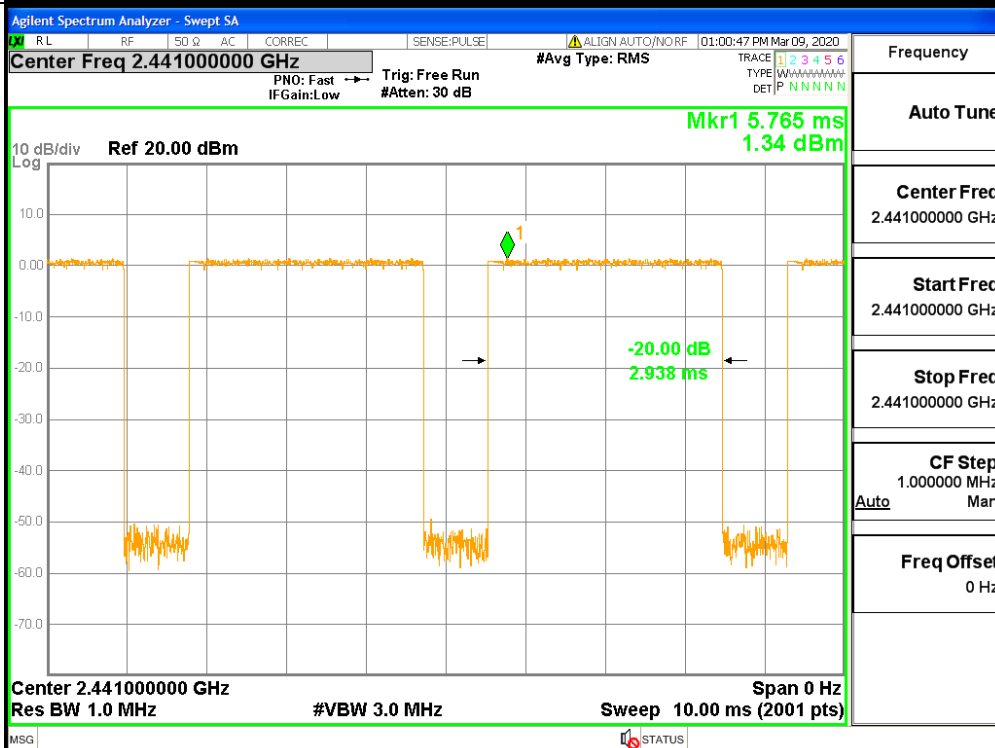
A.2 Dwell Time

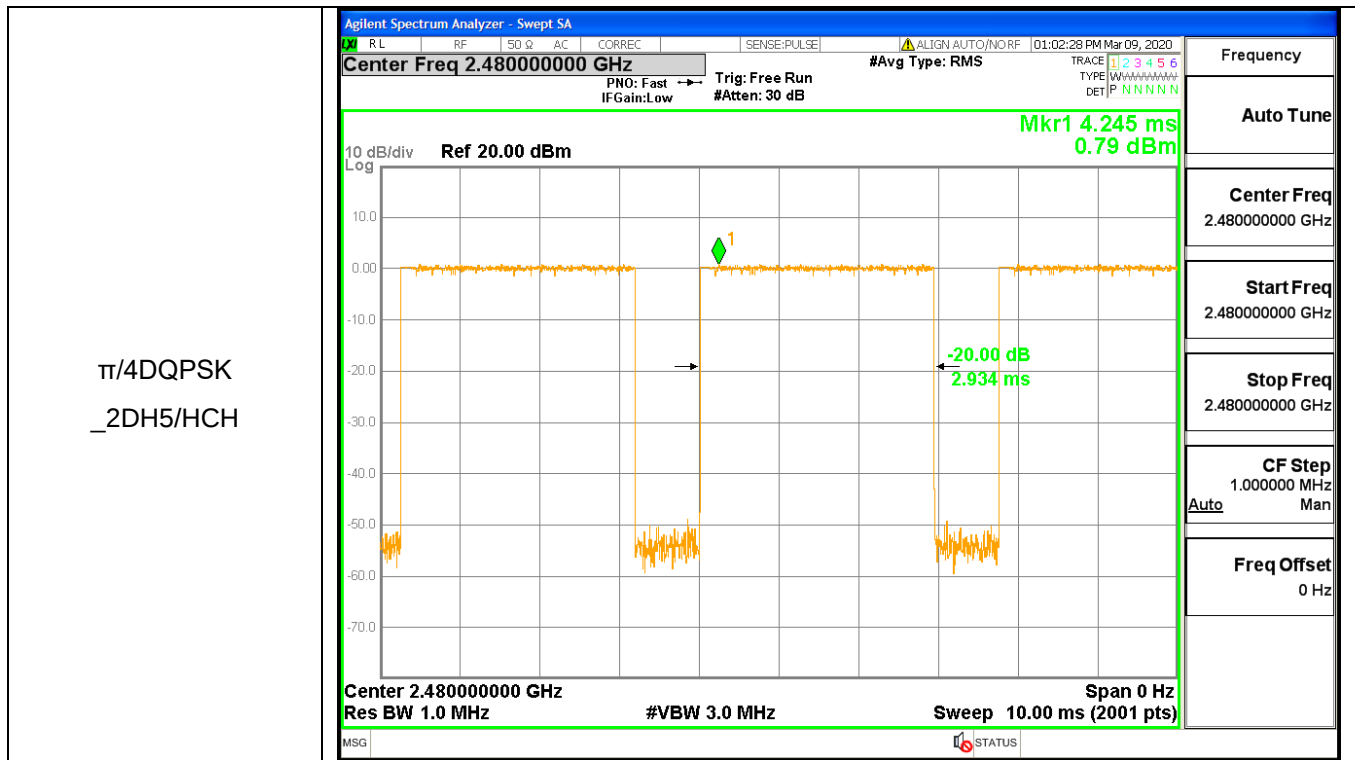
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.930	106.7	0.313	0.4	PASS
GFSK	DH5	MCH	2.931	106.7	0.313	0.4	PASS
GFSK	DH5	HCH	2.933	106.7	0.313	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.936	106.7	0.313	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	2.938	106.7	0.313	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	2.934	106.7	0.313	0.4	PASS

Test Graph



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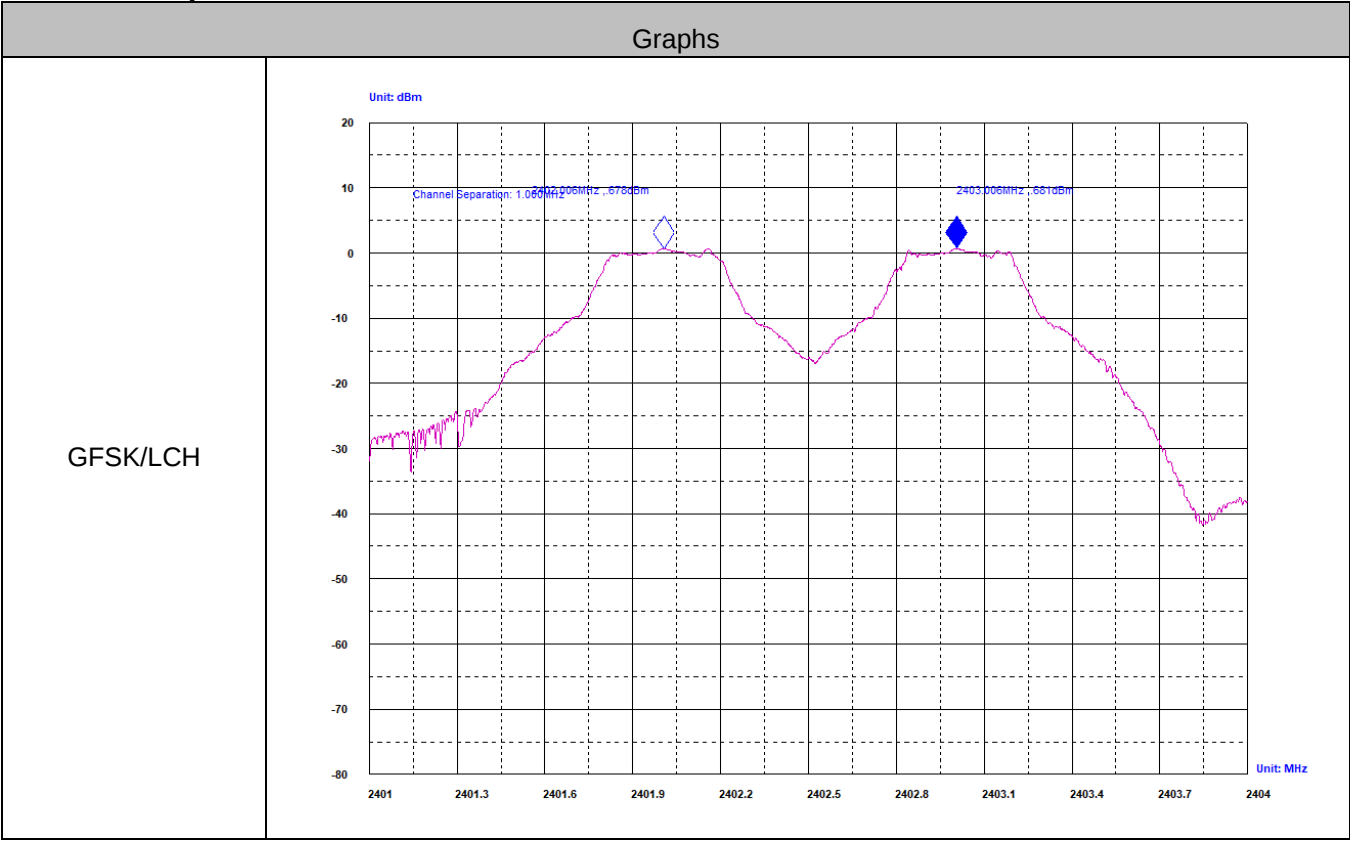
$\pi/4$ DQPSK
_2DH5/LCH $\pi/4$ DQPSK
_2DH5/MCH

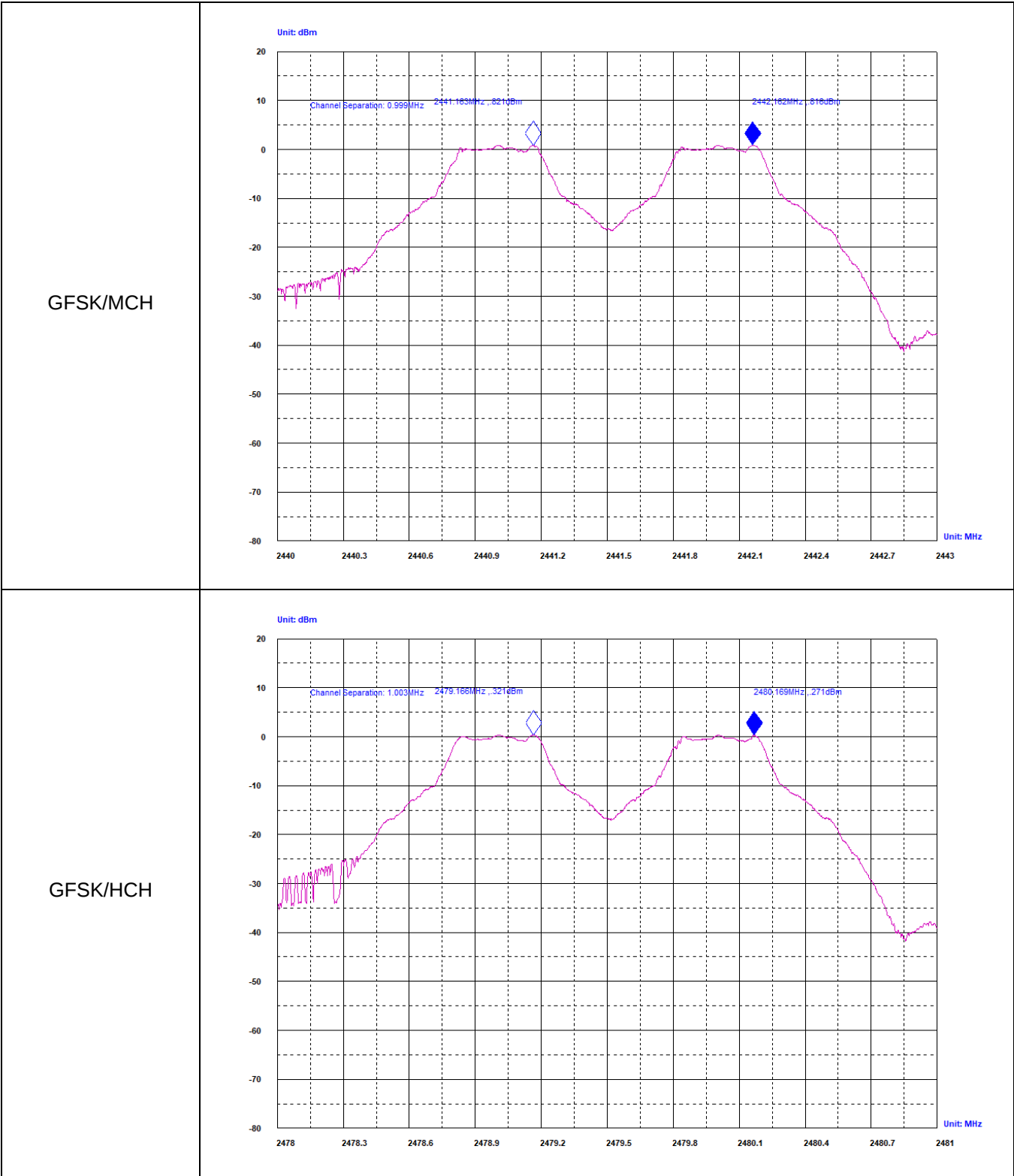


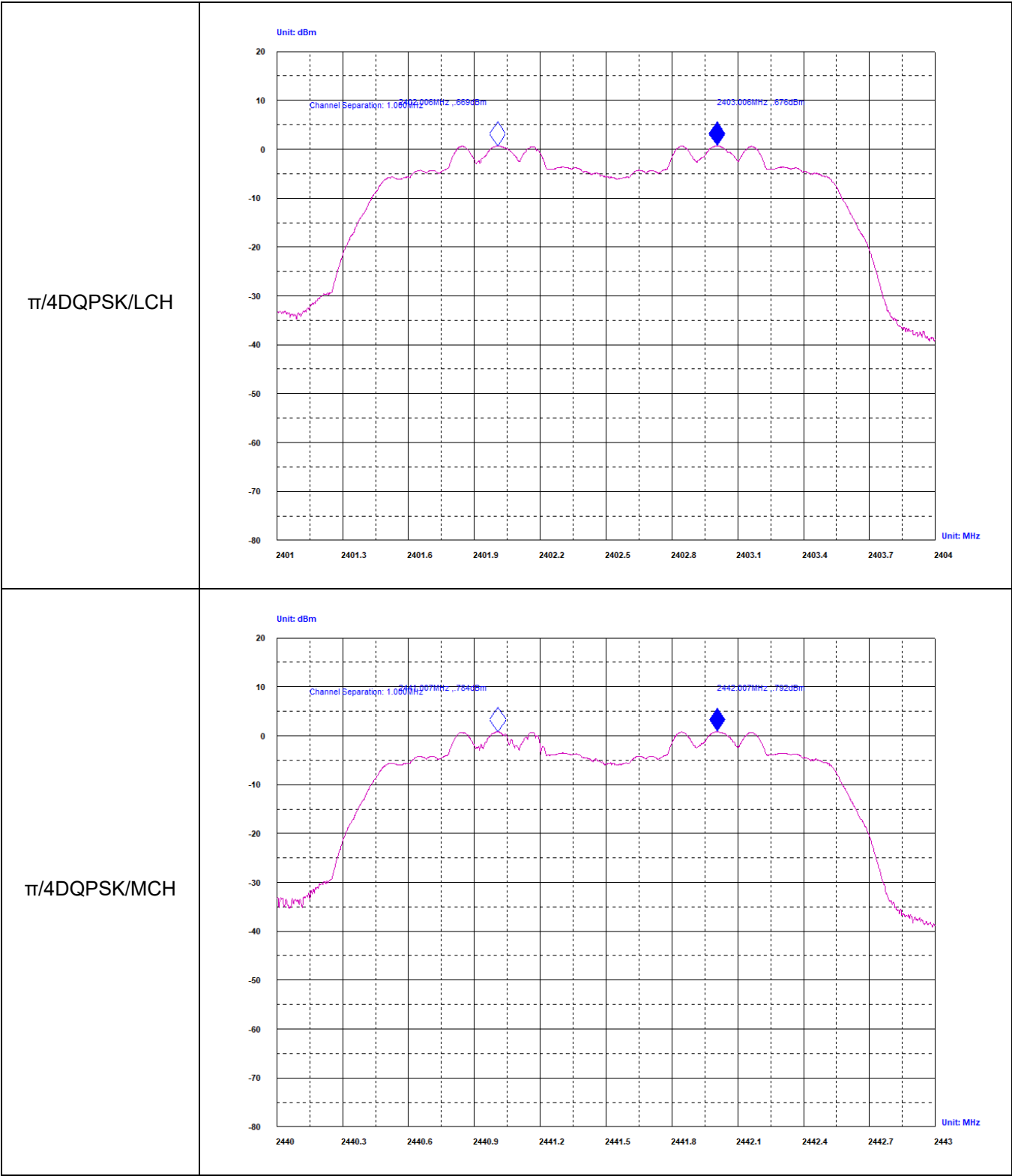
A.3 Carrier Frequency Separation

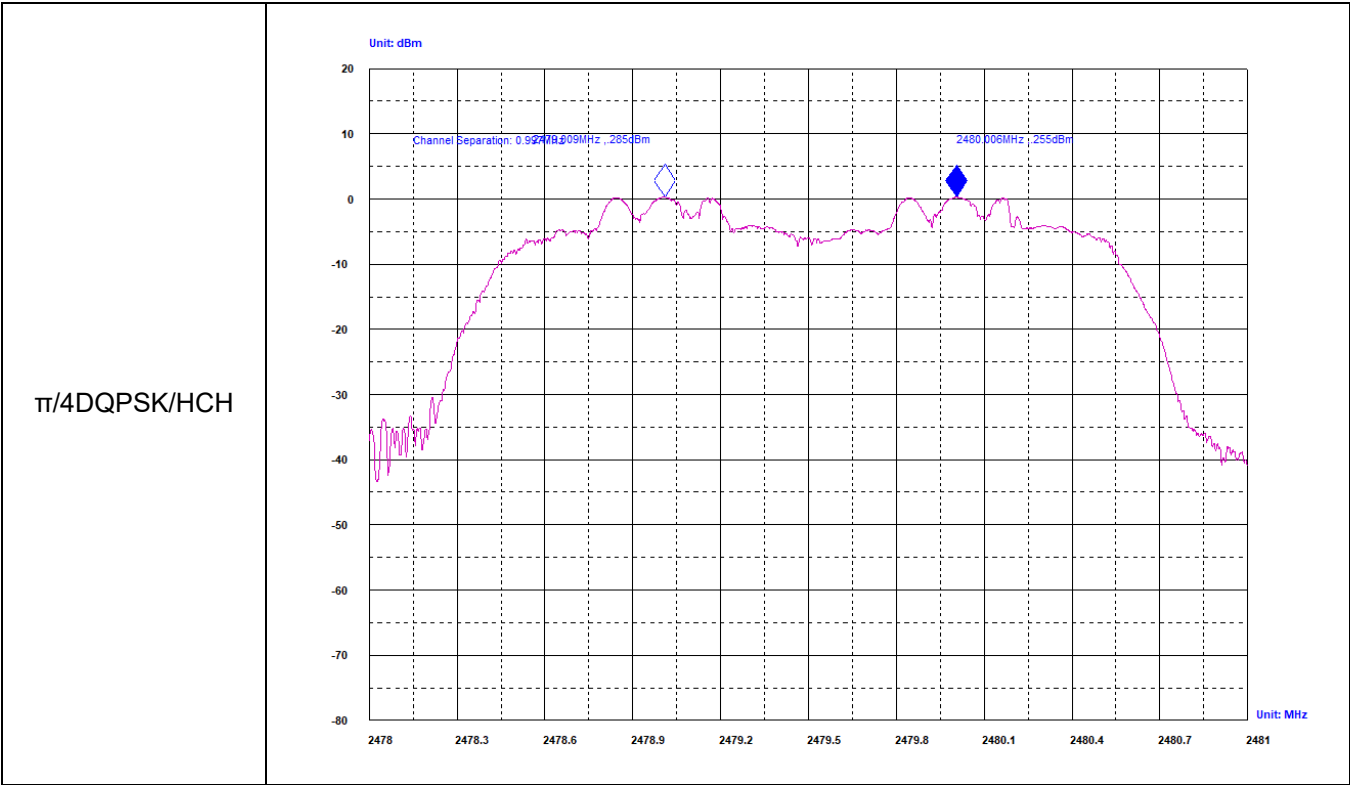
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.531	PASS
GFSK	MCH	0.999	0.571	PASS
GFSK	HCH	1.003	0.531	PASS
$\pi/4$ DQPSK	LCH	1.000	0.797	PASS
$\pi/4$ DQPSK	MCH	1.000	0.788	PASS
$\pi/4$ DQPSK	HCH	0.997	0.855	PASS

Test Graph





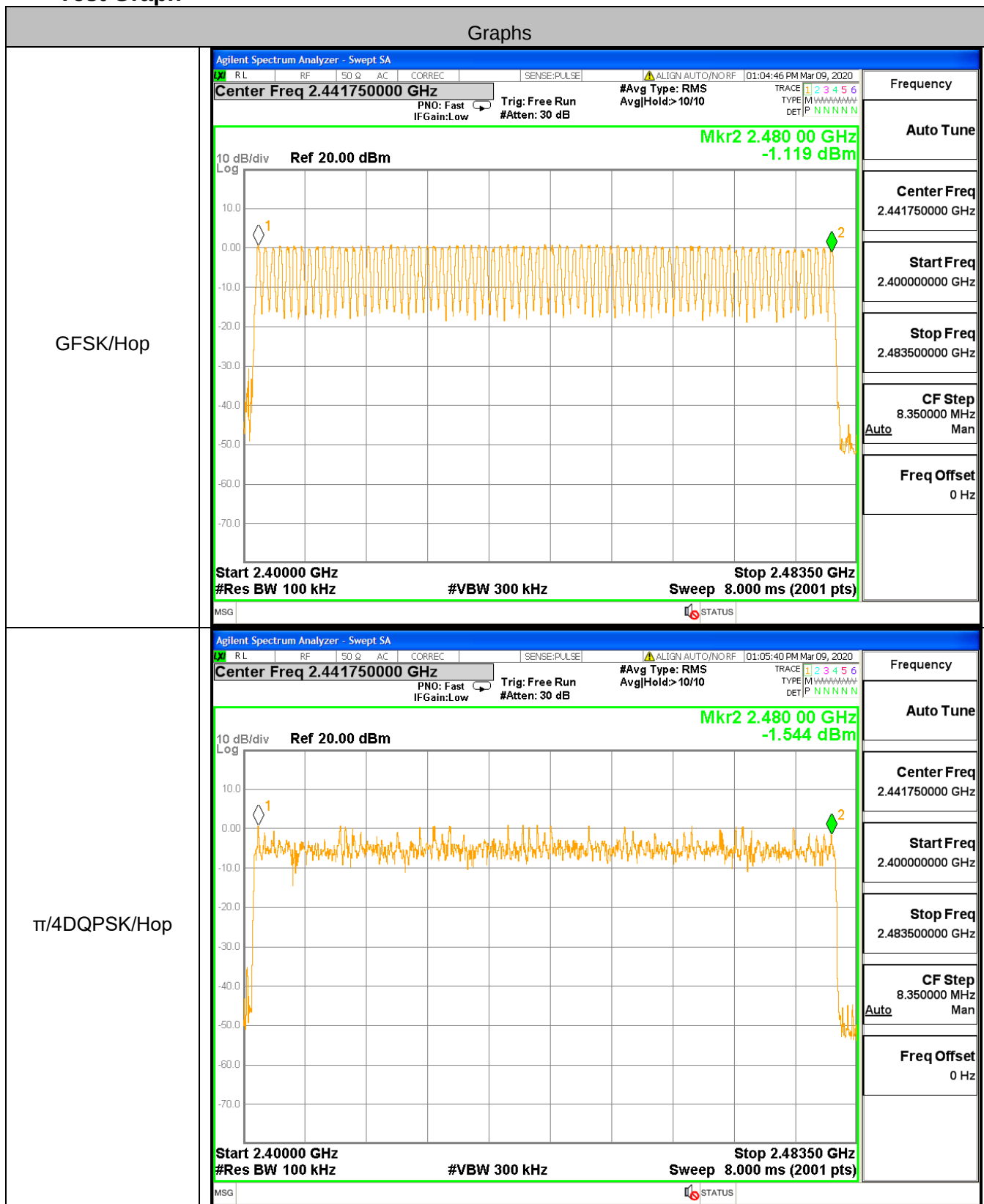




A.4 Hopping Channel Number

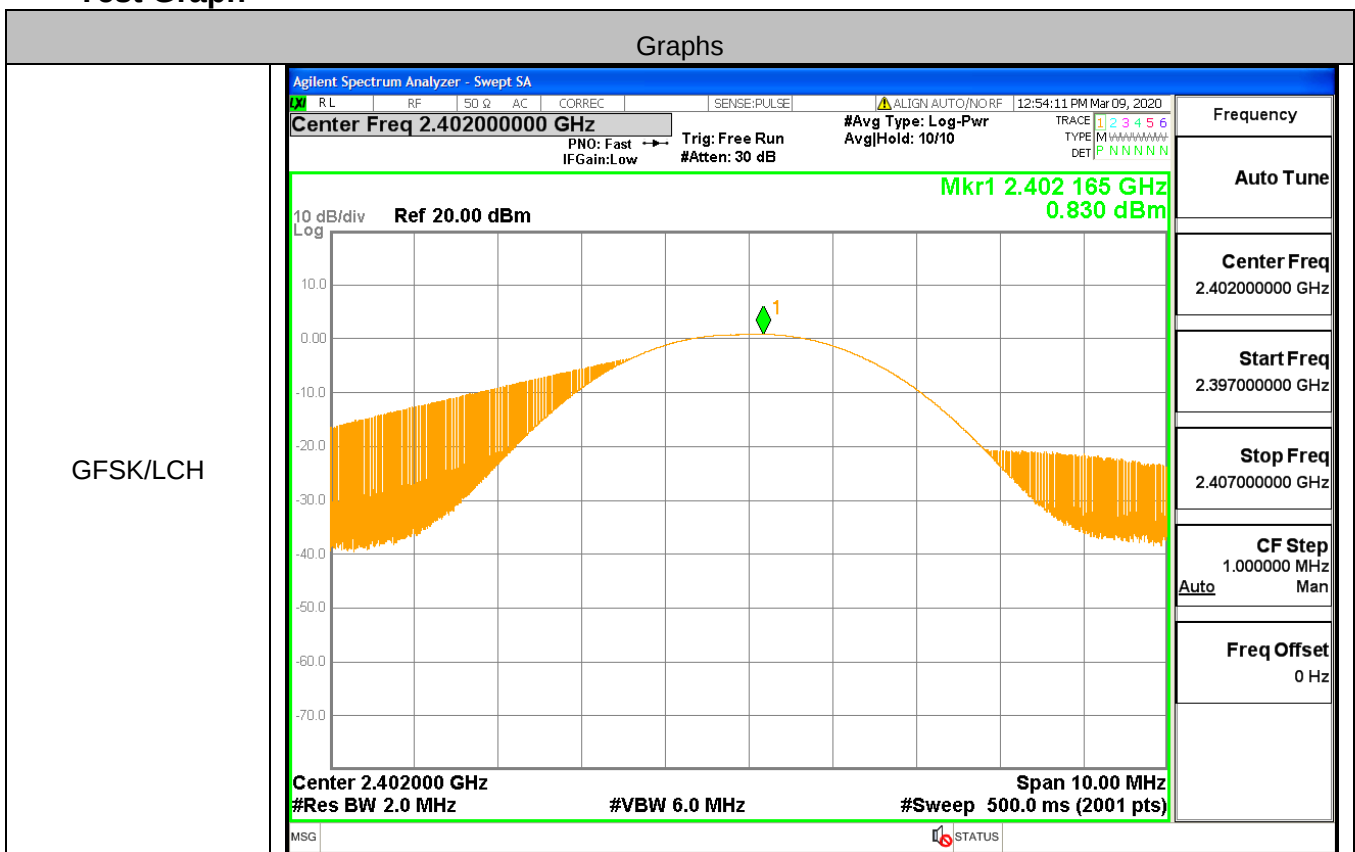
Mode	Channel.	Number of Hopping Channel[N]	Limit[N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS

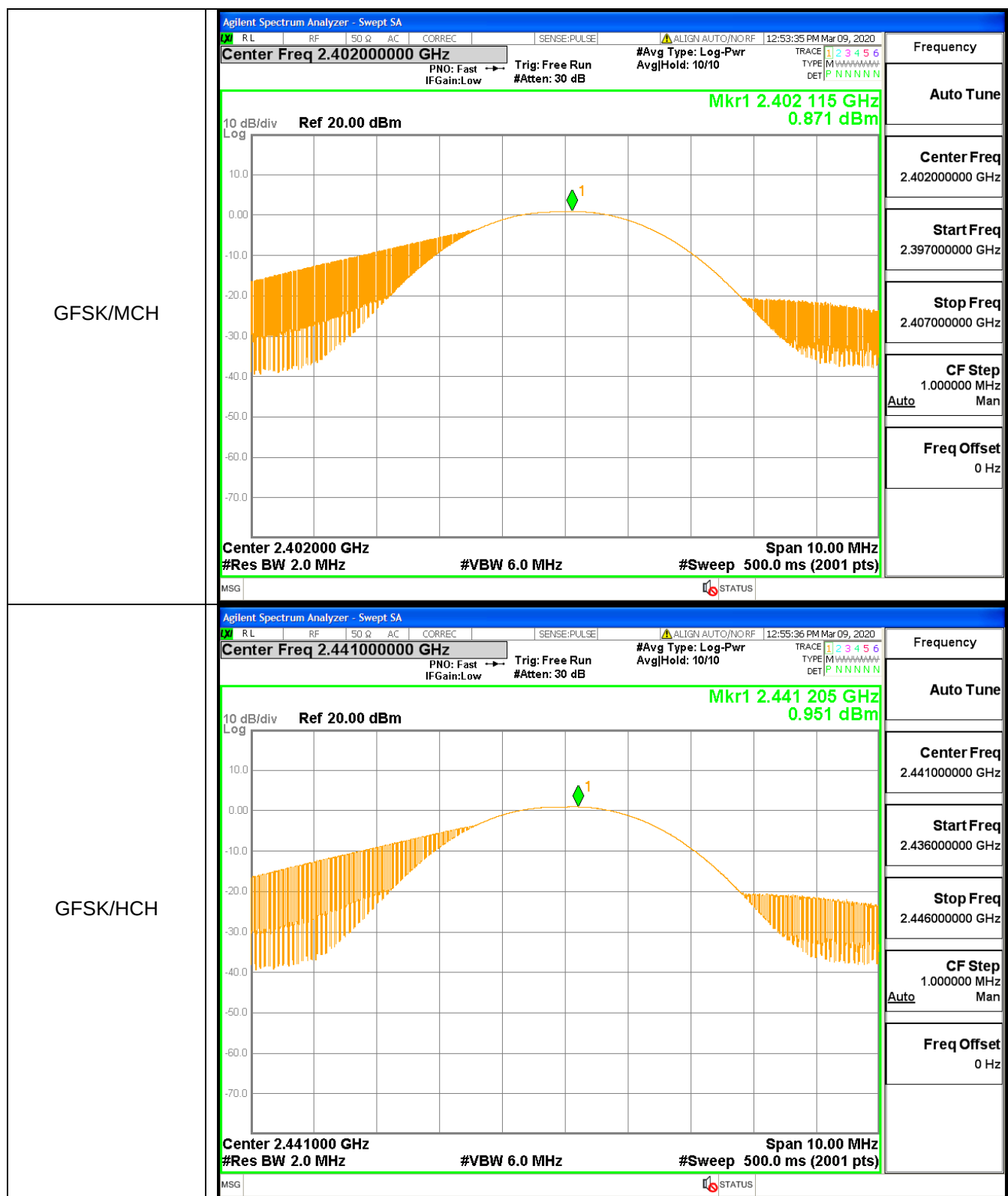
Test Graph

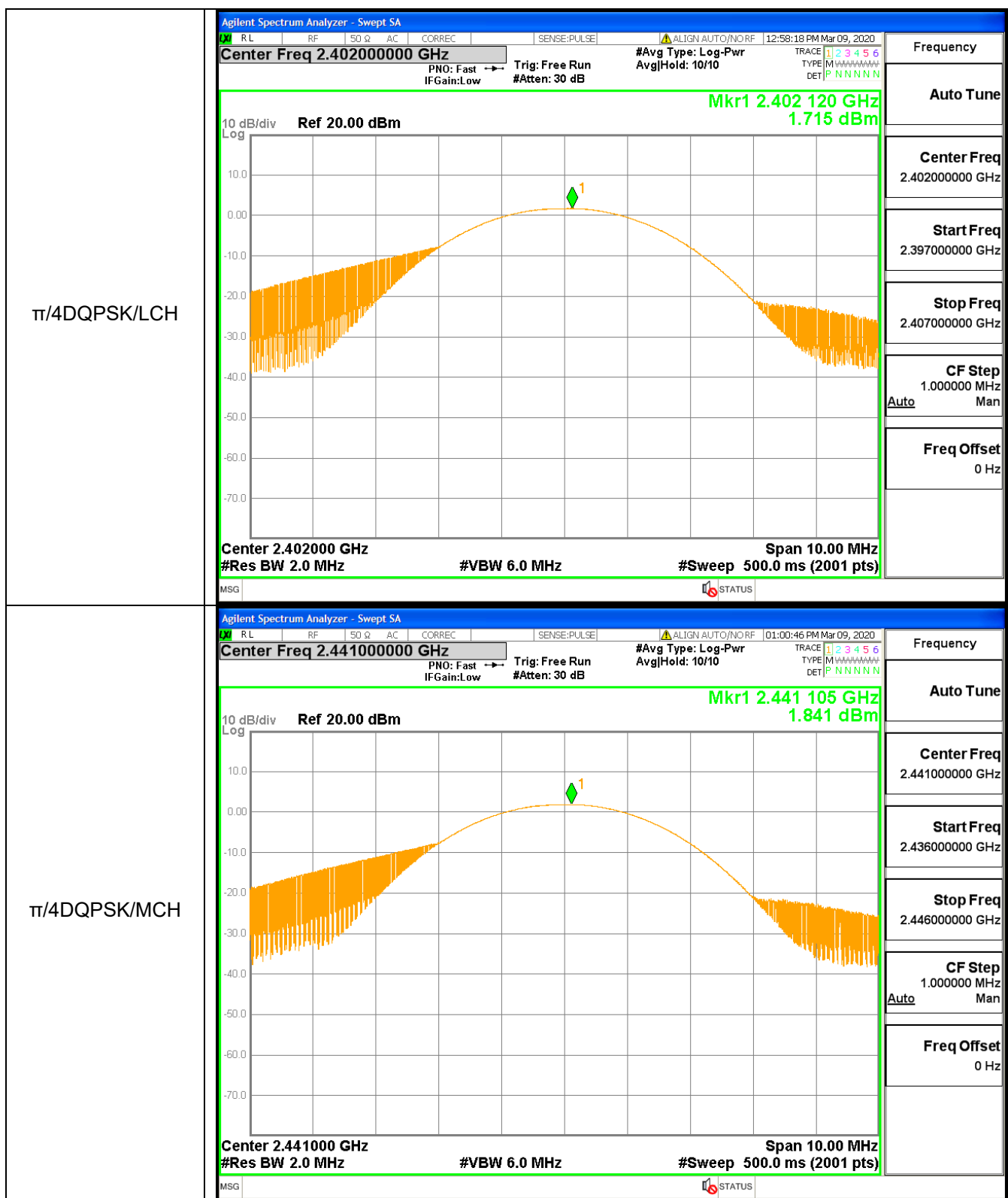


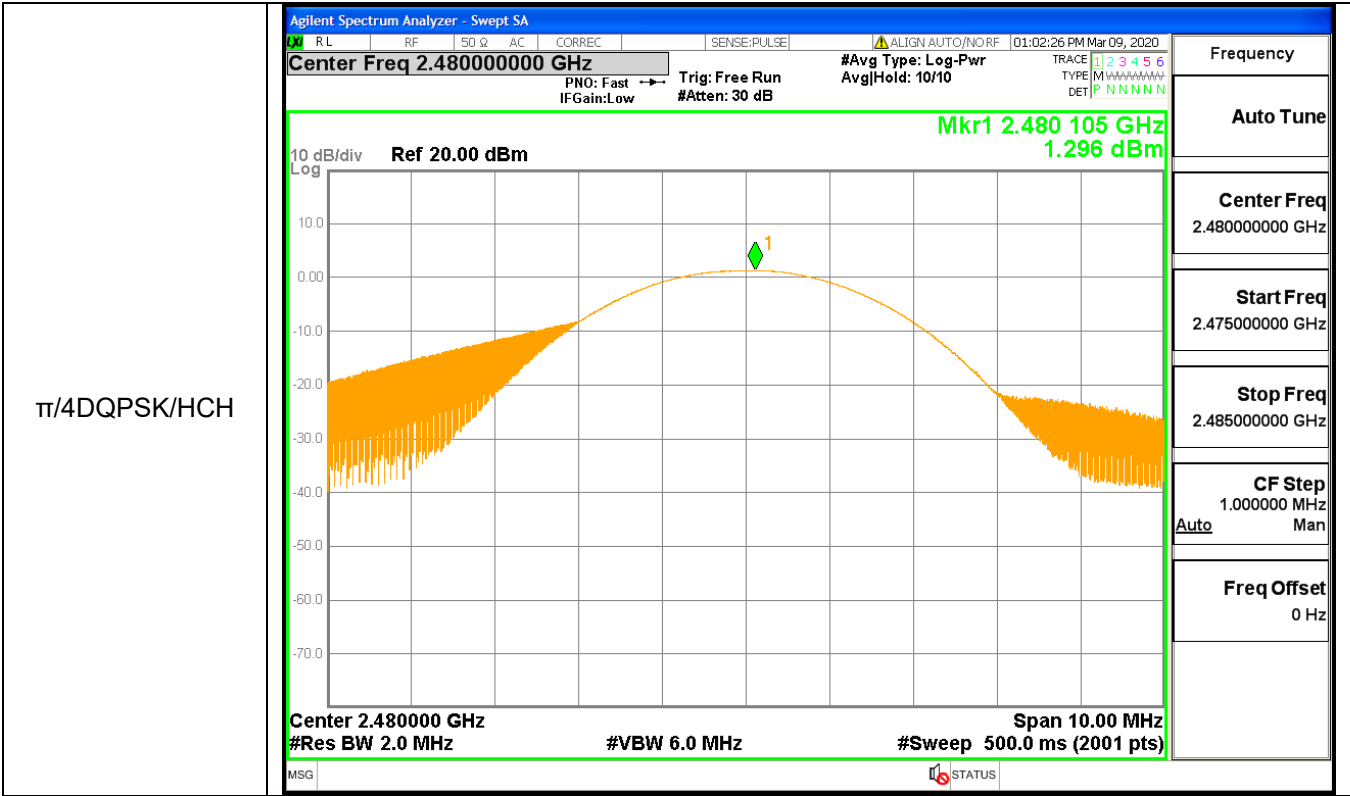
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.830	21	PASS
GFSK	MCH	0.951	21	PASS
GFSK	HCH	0.391	21	PASS
$\pi/4$ DQPSK	LCH	1.715	21	PASS
$\pi/4$ DQPSK	MCH	1.841	21	PASS
$\pi/4$ DQPSK	HCH	1.296	21	PASS

Test Graph







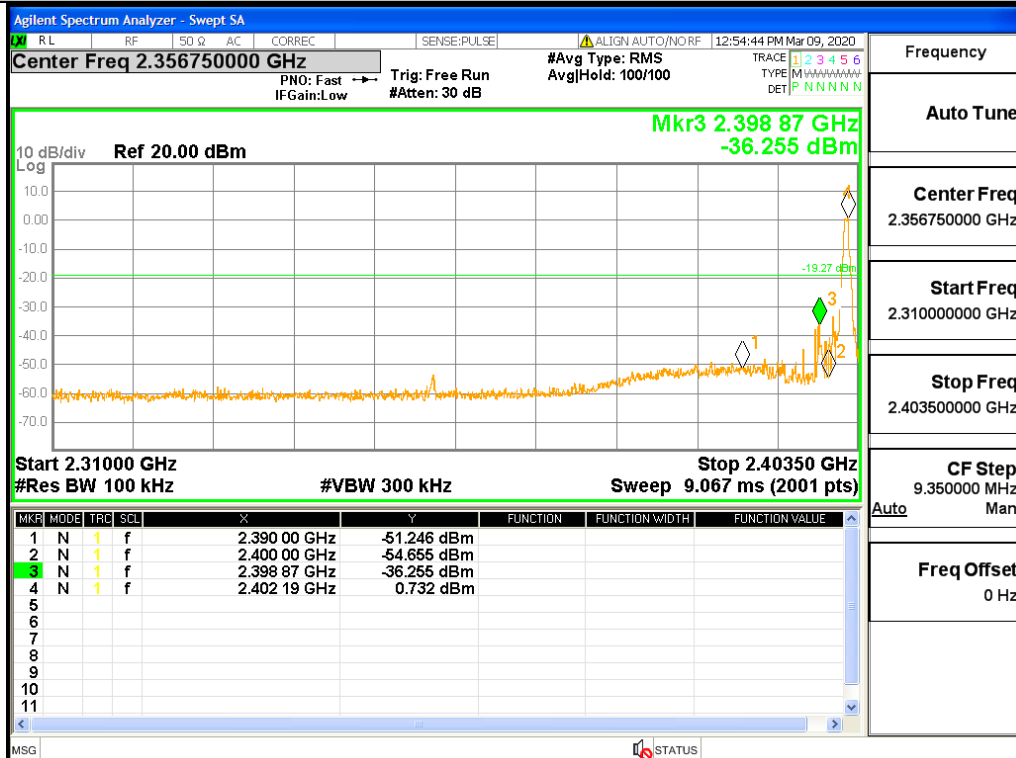
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2398.872	0.732	-36.255	-19.268	Pass
1DH5	2480	2483.746	0.259	-46.9	-19.741	Pass
2DH5	2402	2399.713	-1.639	-35.347	-21.639	Pass
2DH5	2480	2486.272	0.08	-49.009	-19.92	Pass
1DH5-Hopping	2402	2398.08	0.754	-39.022	-19.246	Pass
1DH5-Hopping	2480	2483.62	0.624	-46.74	-19.376	Pass
2DH5-Hopping	2402	2398.35	0.576	-40.915	-19.424	Pass
2DH5-Hopping	2480	2483.5	0.54	-53.47	-19.46	Pass

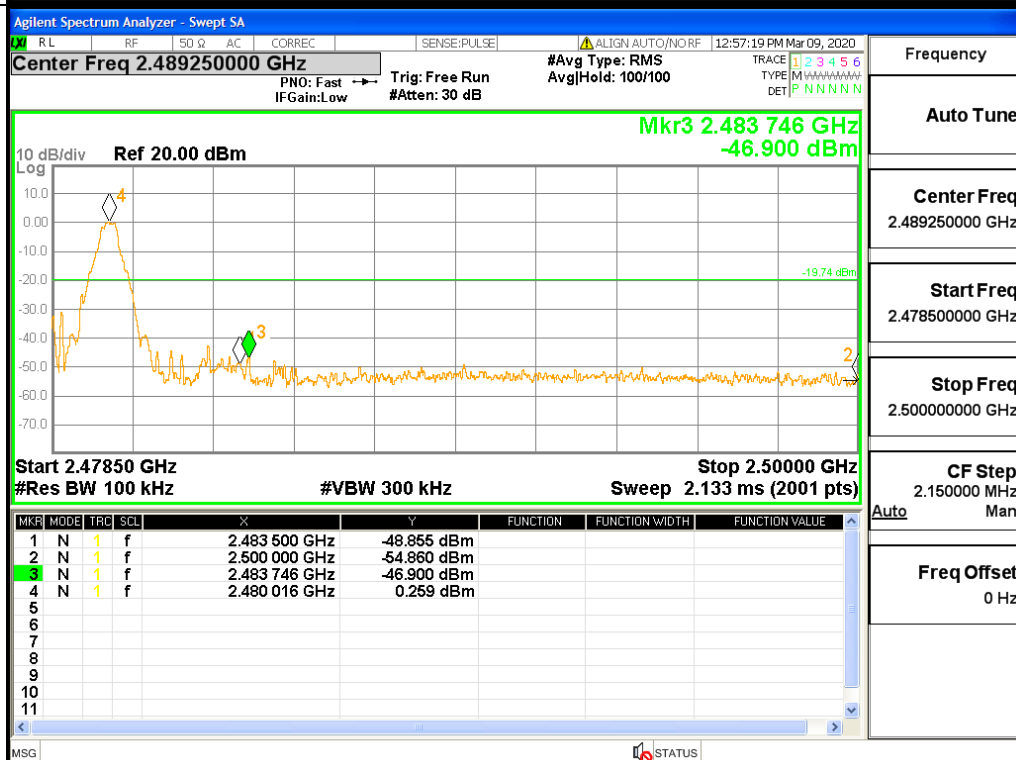
Test Graph

Graphs

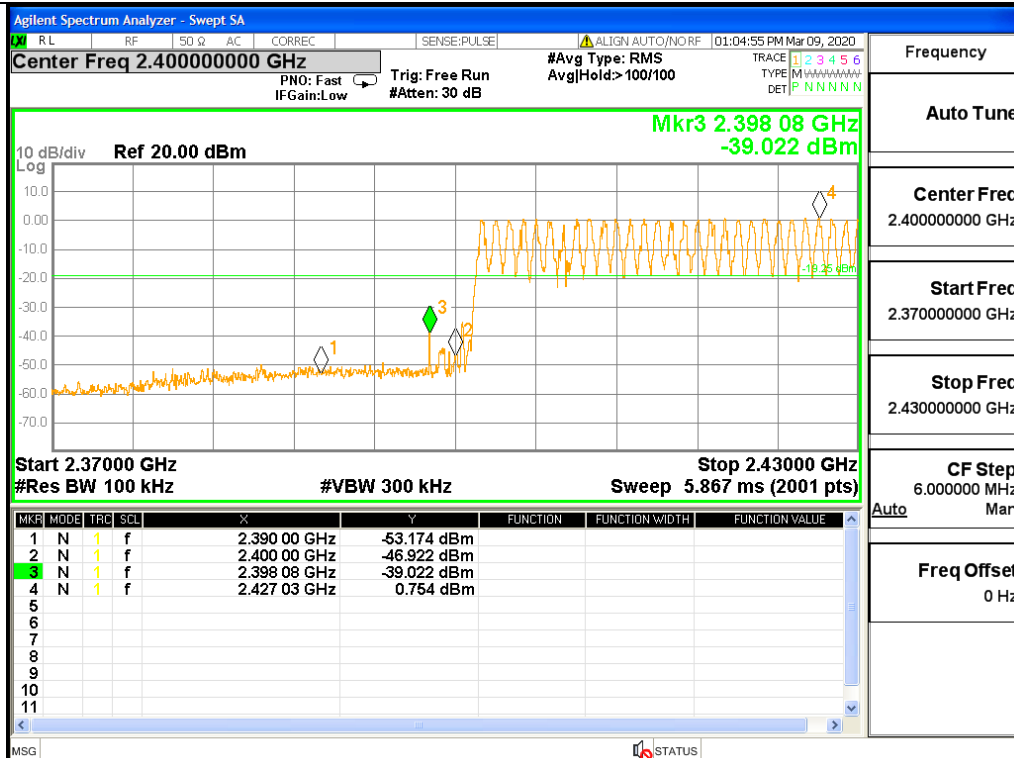
GFSK/LCH/No Hop



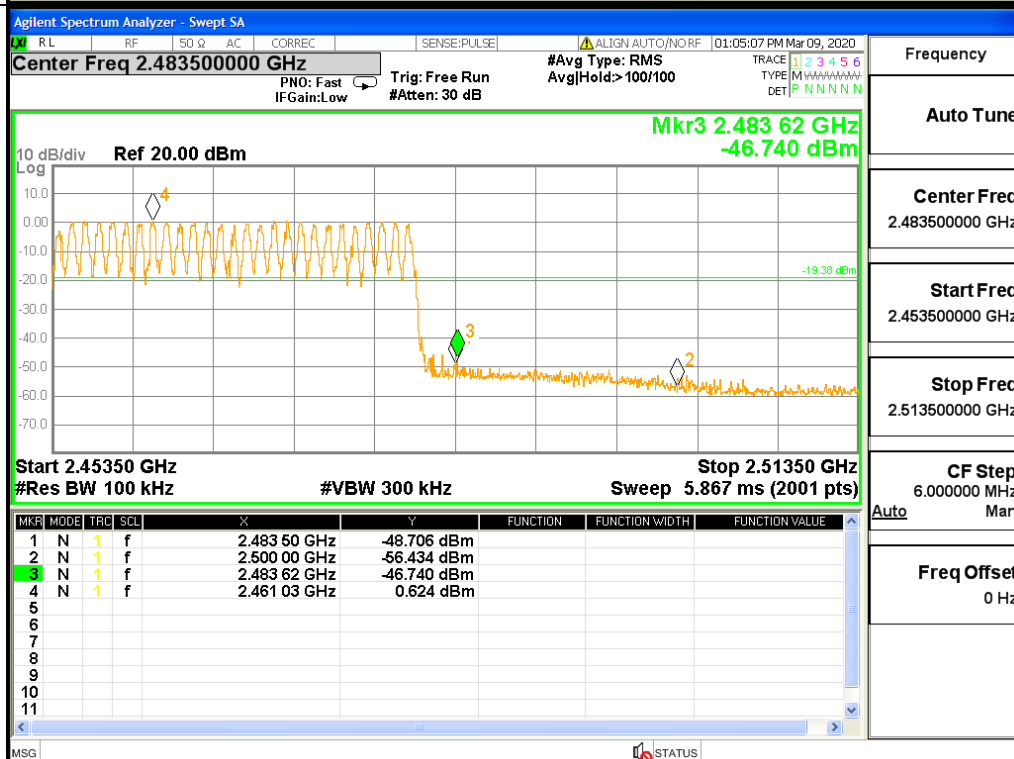
GFSK/HCH/No Hop



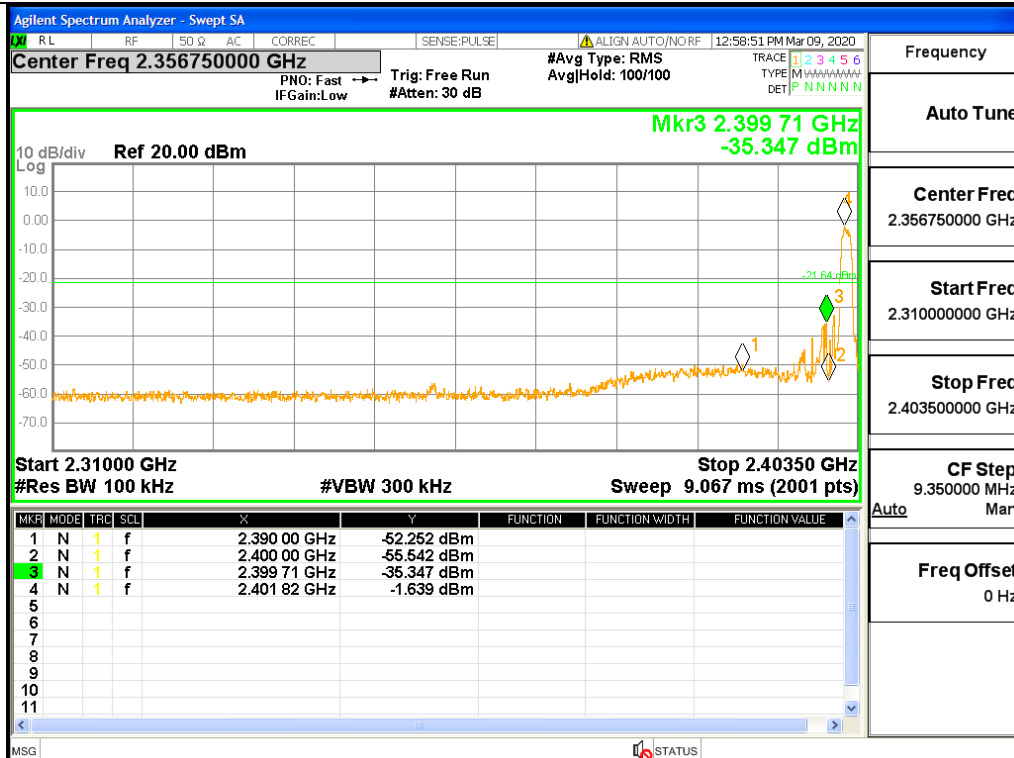
$\pi/4$ DQPSK/LCH/No
Hop



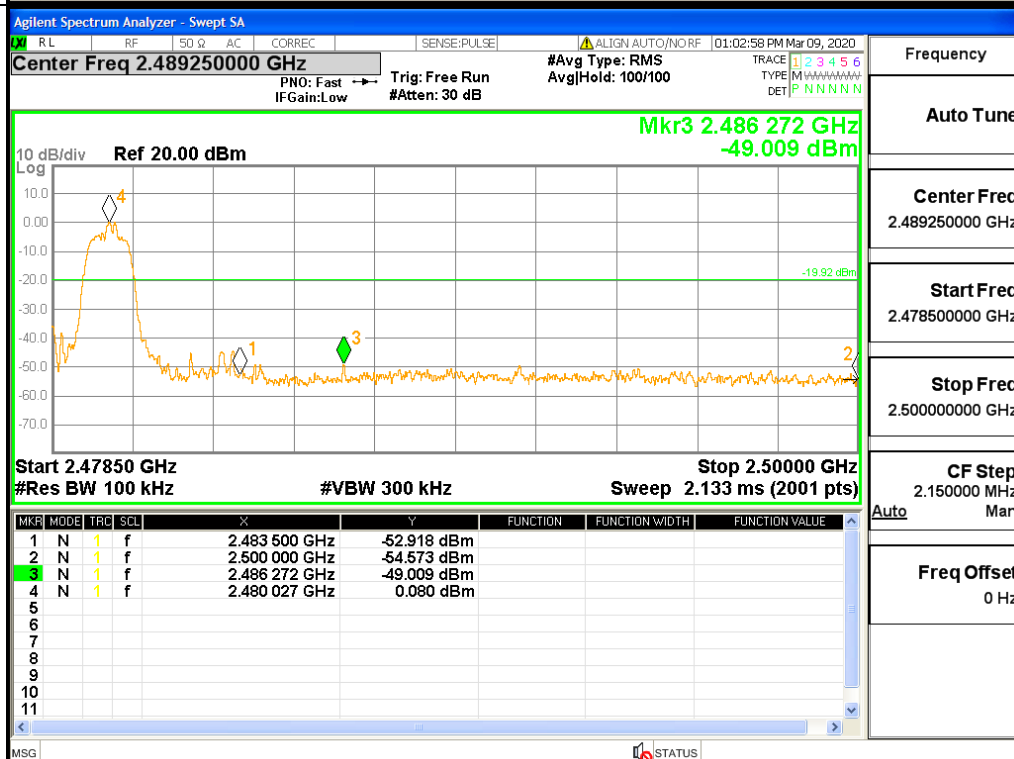
$\pi/4$ DQPSK/HCH/No
Hop



GFSK/LCH/Hop



GFSK/HCH/Hop



Agilent Spectrum Analyzer - Swept SA

R/L RF SD Q AC CORREC SENSE:PULSE ALIGN AUTO/NO RF 01:05:48 PM Mar 09, 2020

Center Freq 2.40000000 GHz

PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB
#Avg Type: RMS AvgHold>100/100
TRACE [1] 2 3 4 5 6 TYPE M WWWWWWH DET P NNNN N

Mkr3 2.398 35 GHz
-40.915 dBm

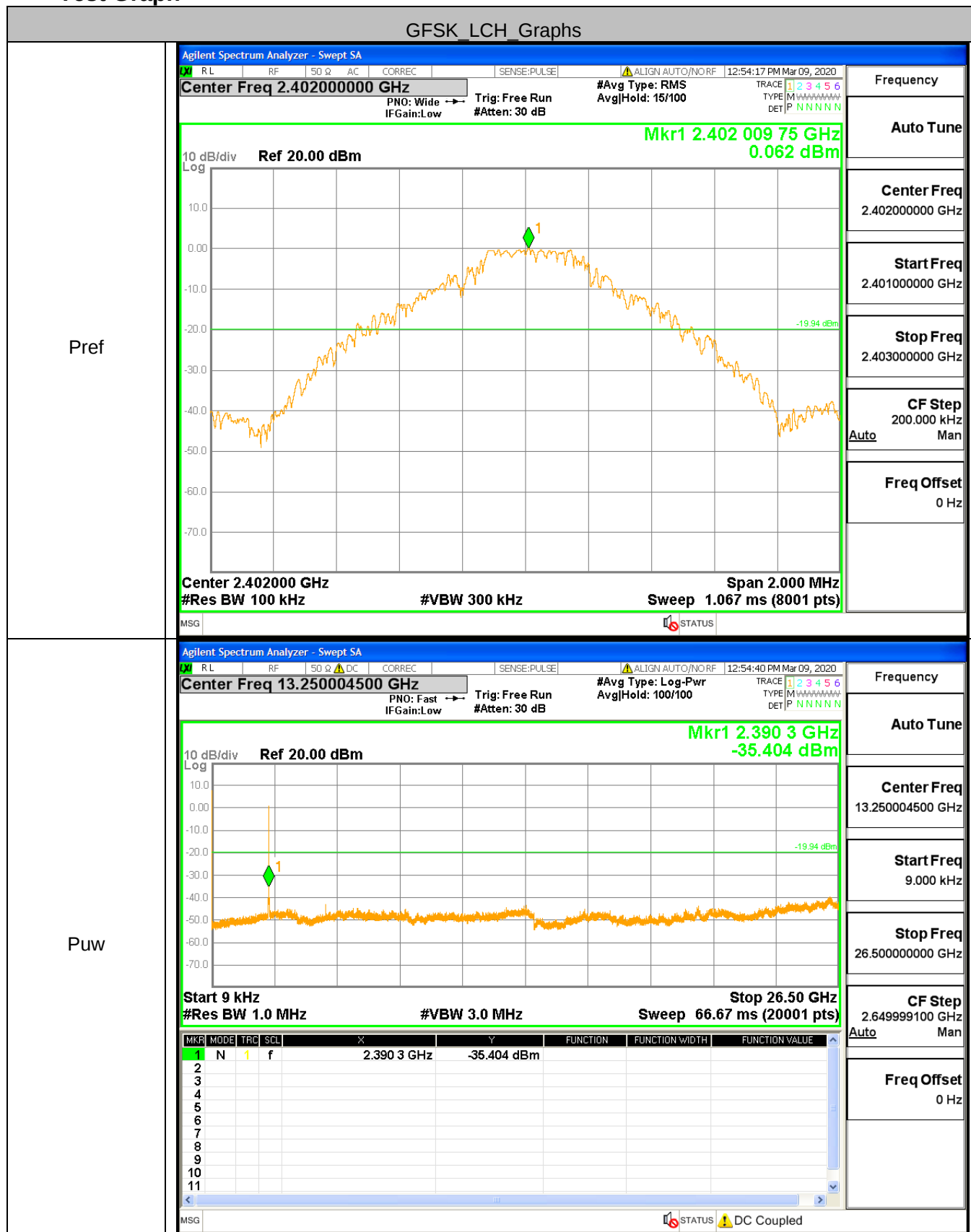
MkP	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f	f	2.390 00 GHz	-53.689 dBm			
2	N	f	f	2.400 00 GHz	-49.740 dBm			
3	N	f	f	2.398 35 GHz	-40.915 dBm			
4	N	f	f	2.403 03 GHz	0.576 dBm			

Start 2.37000 GHz Stop 2.43000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 5.867 ms (2001 pts)

Auto Tune Center Freq 2.40000000 GHz Start Freq 2.370000000 GHz Stop Freq 2.430000000 GHz CF Step 6.000000 MHz Auto Man Freq Offset 0 Hz

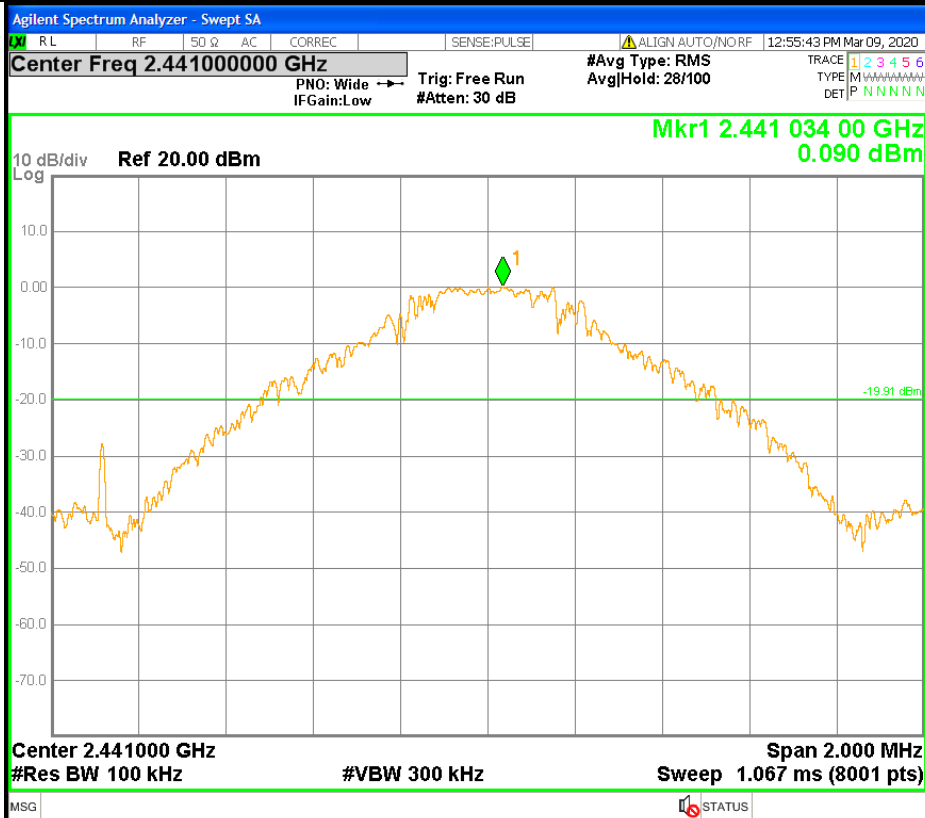
[illegible]

A.7 RF Conducted Spurious Emissions Test Graph

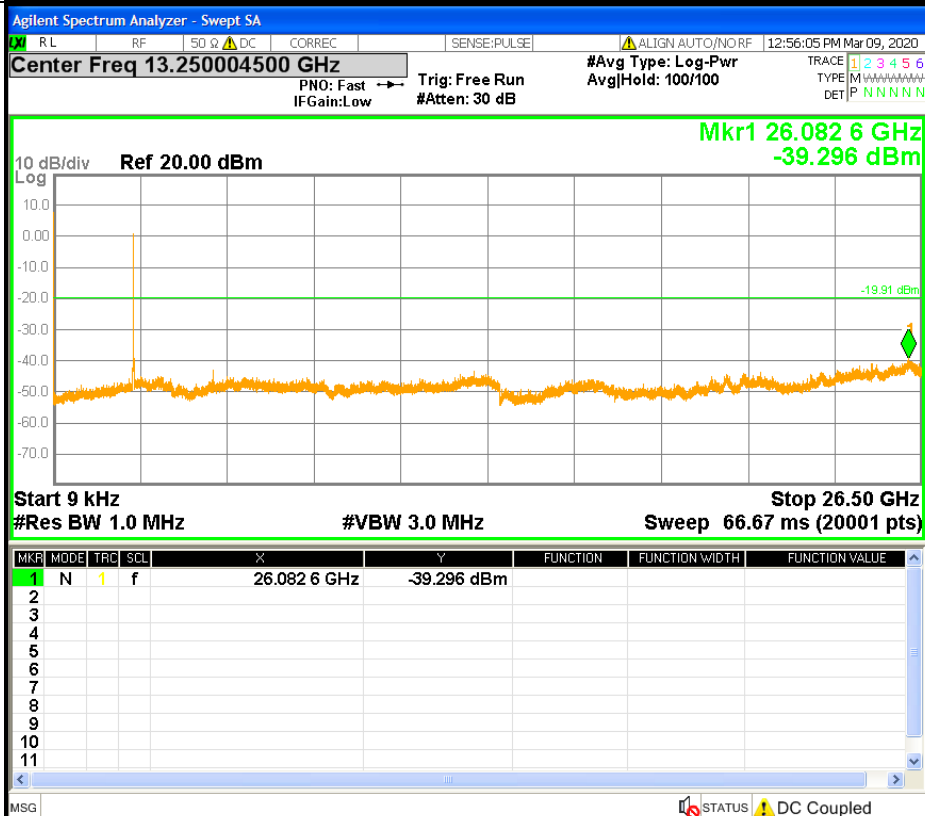


GFSK MCH Graphs

Pref

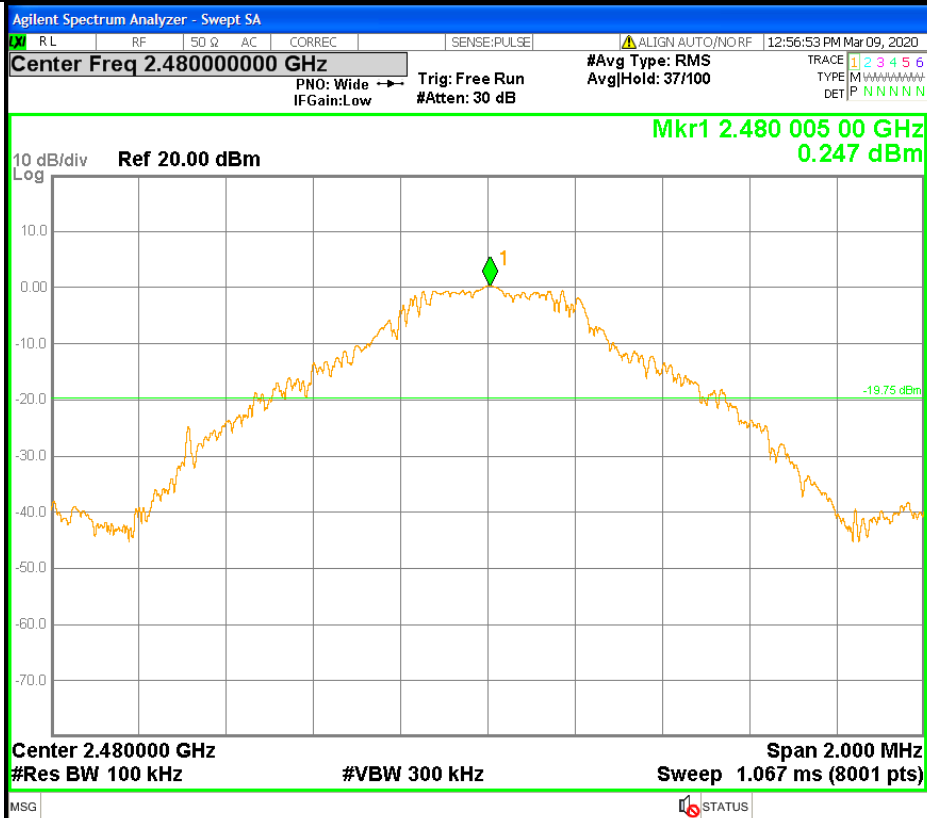


Puw

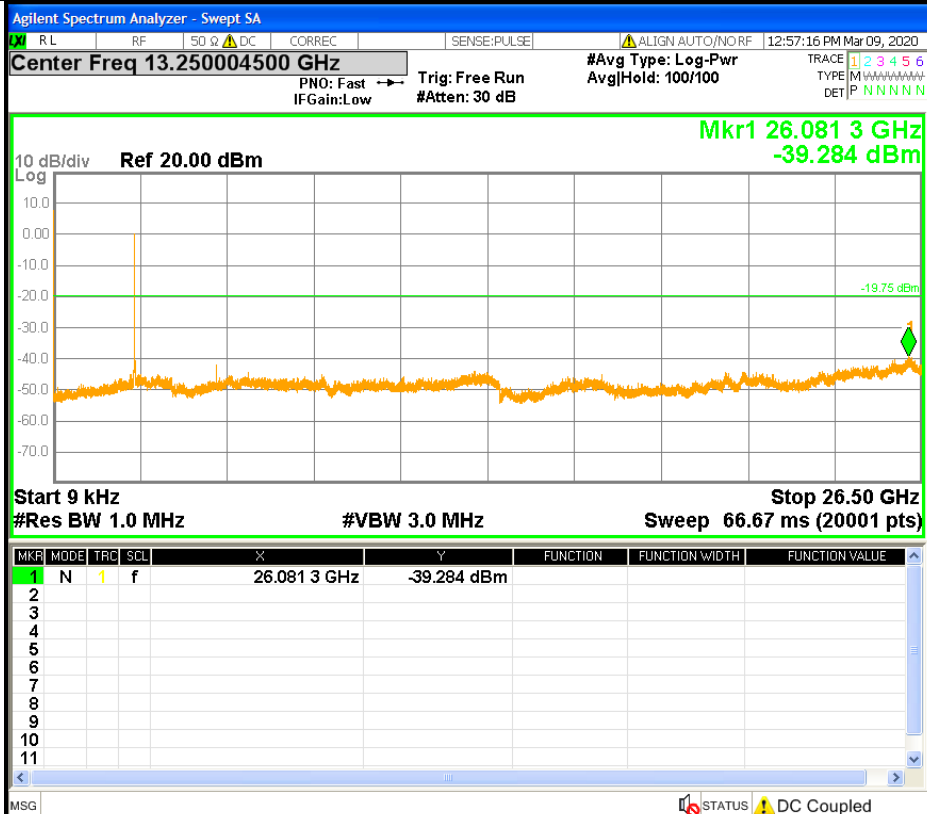


GFSK HCH Graphs

Pref

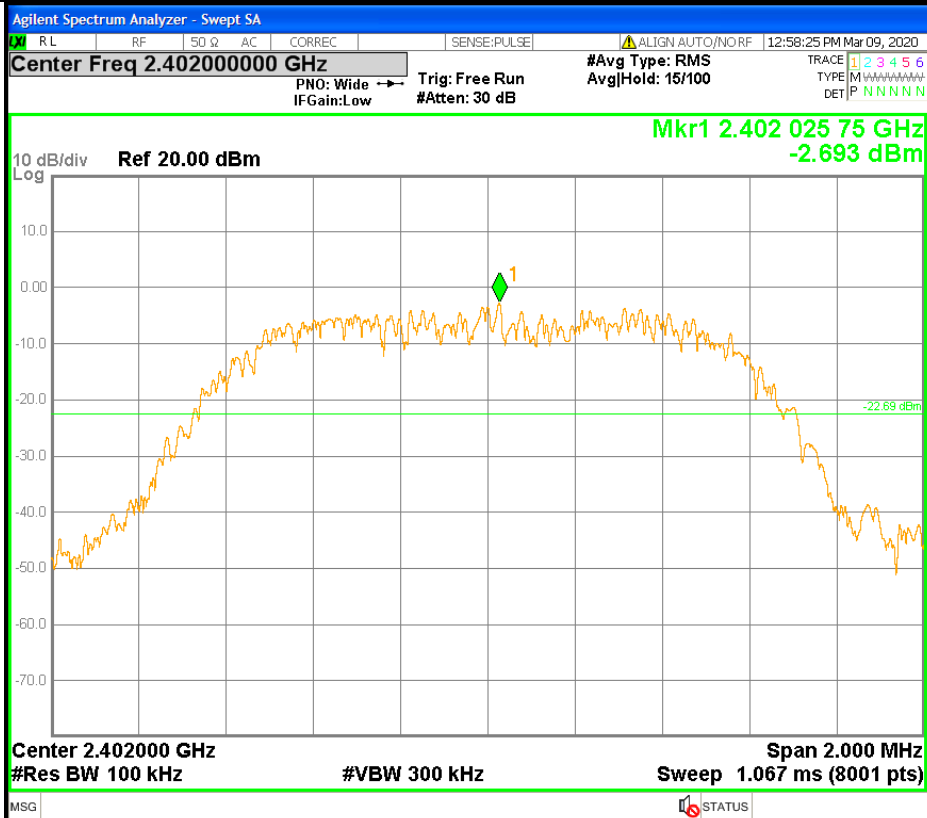


Puw

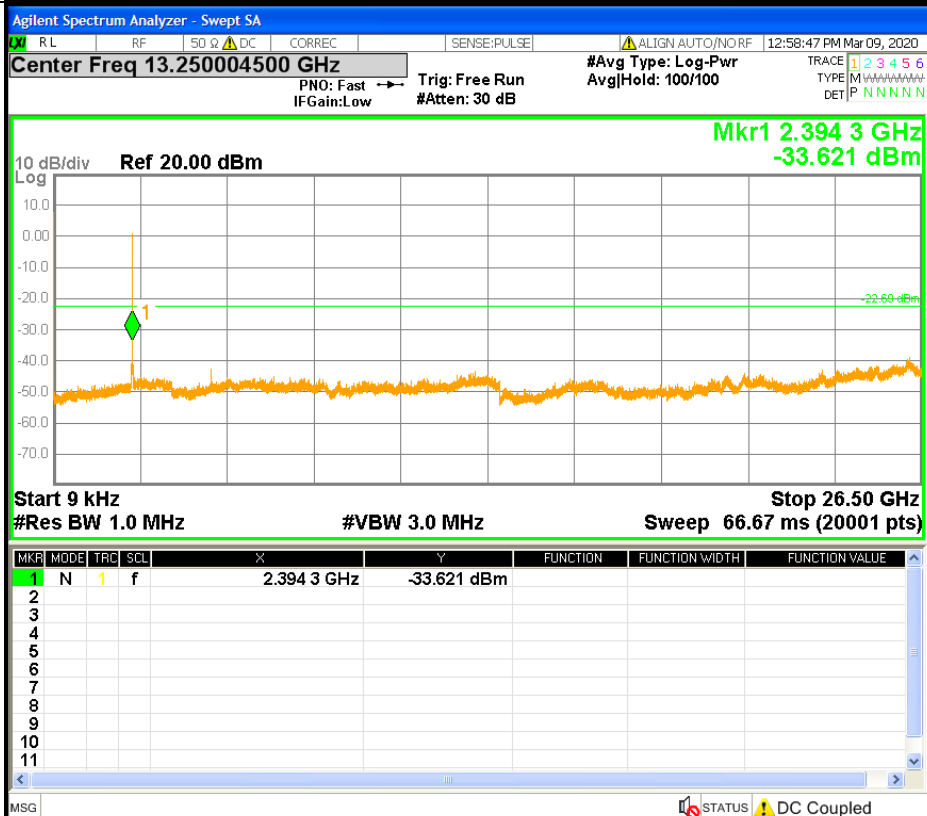


$\pi/4$ DQPSK LCH_Graphs

Pref

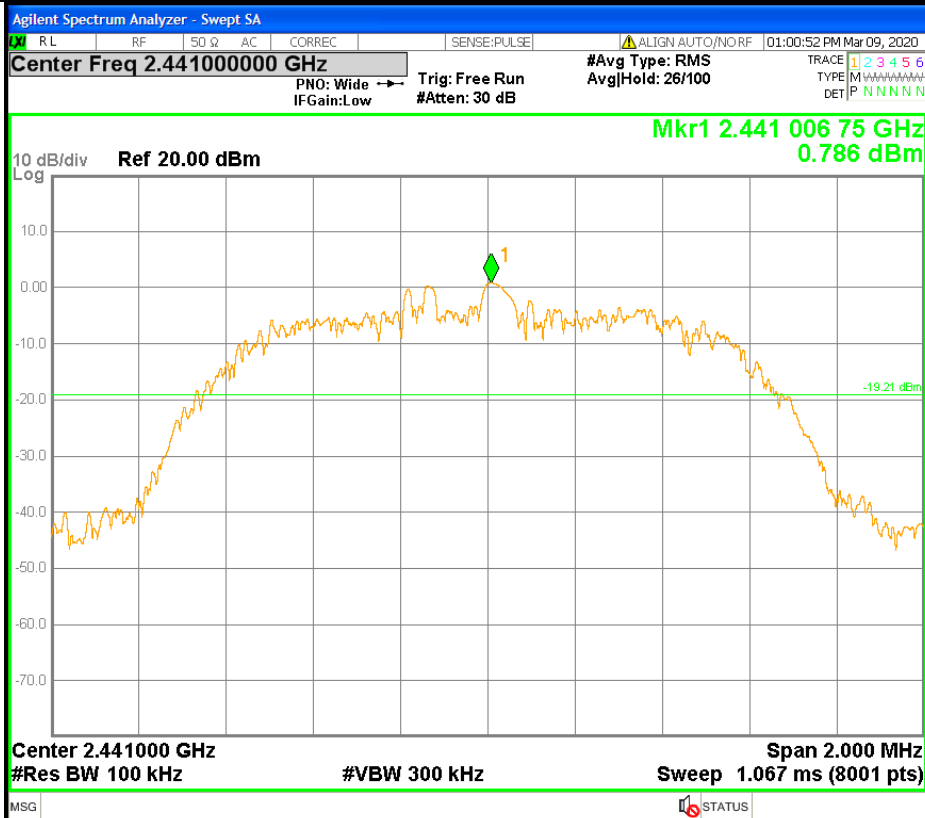


Puw

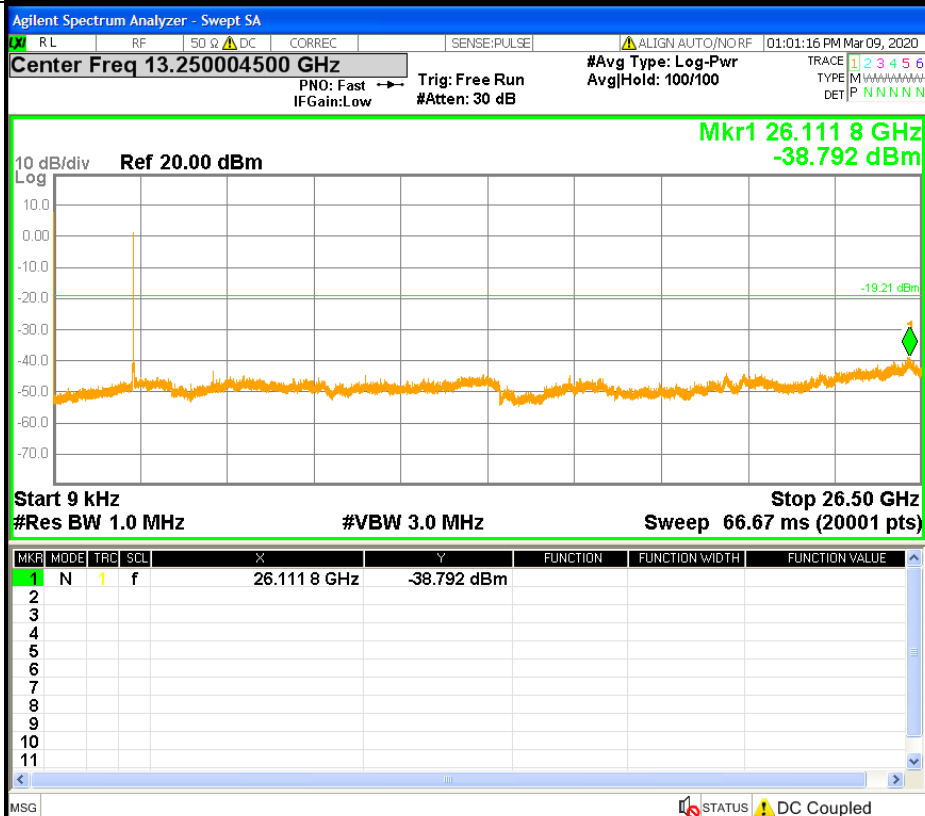


$\pi/4$ DQPSK MCH Graphs

Pref

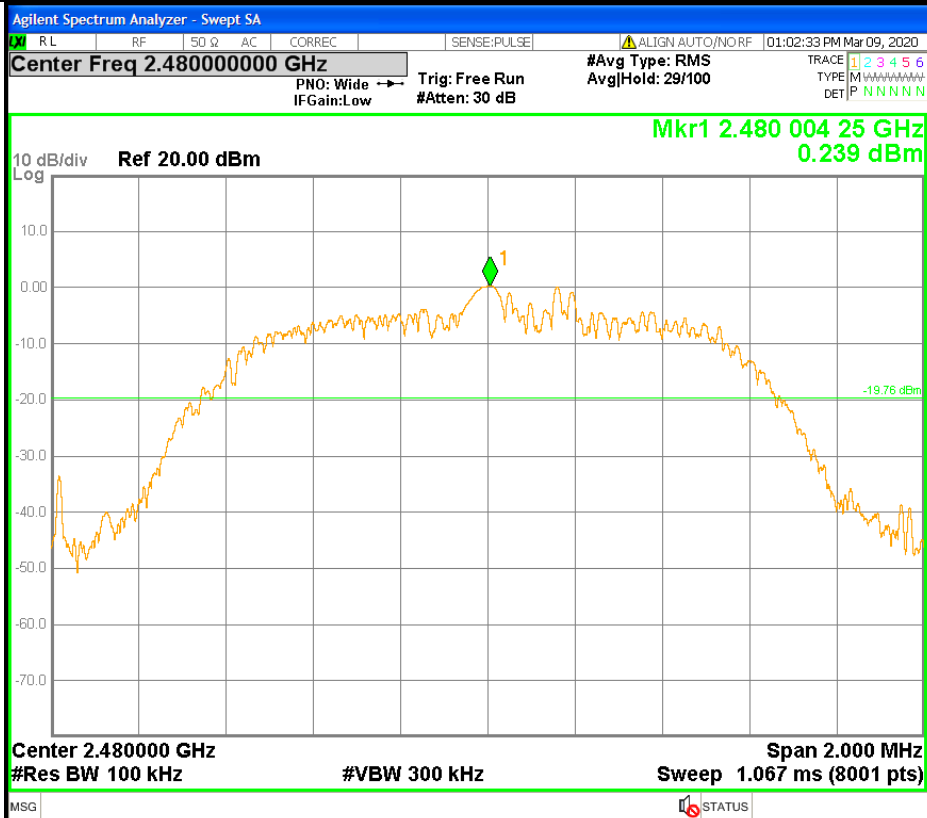


Puw

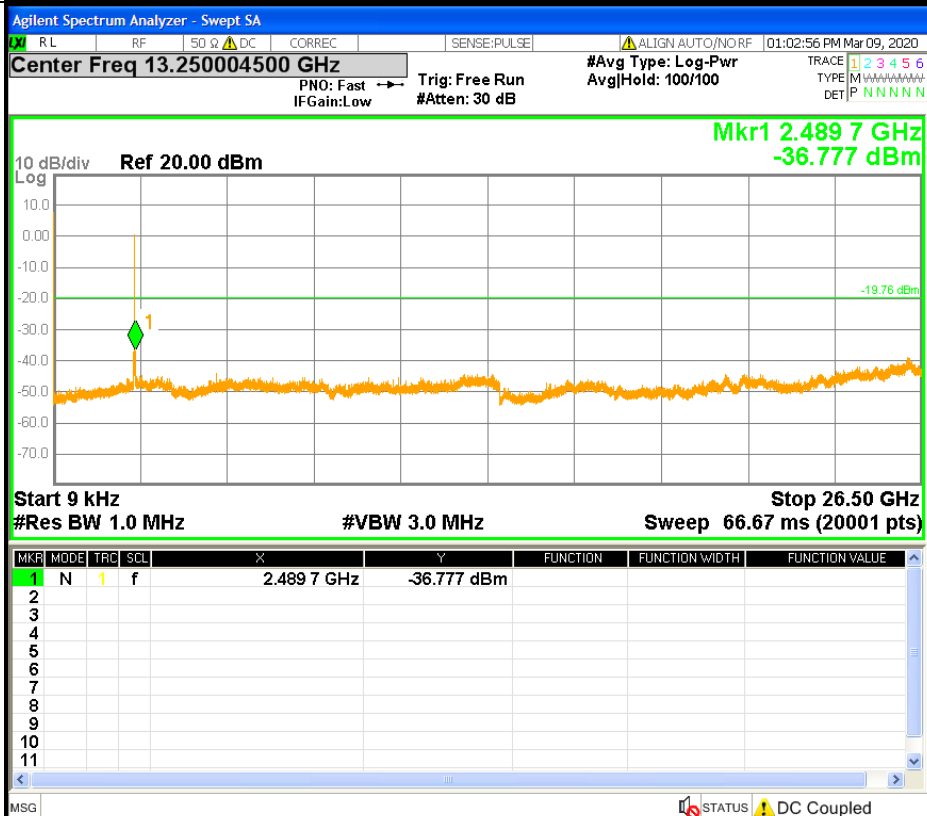


$\pi/4$ DQPSK HCH Graphs

Pref



PuW

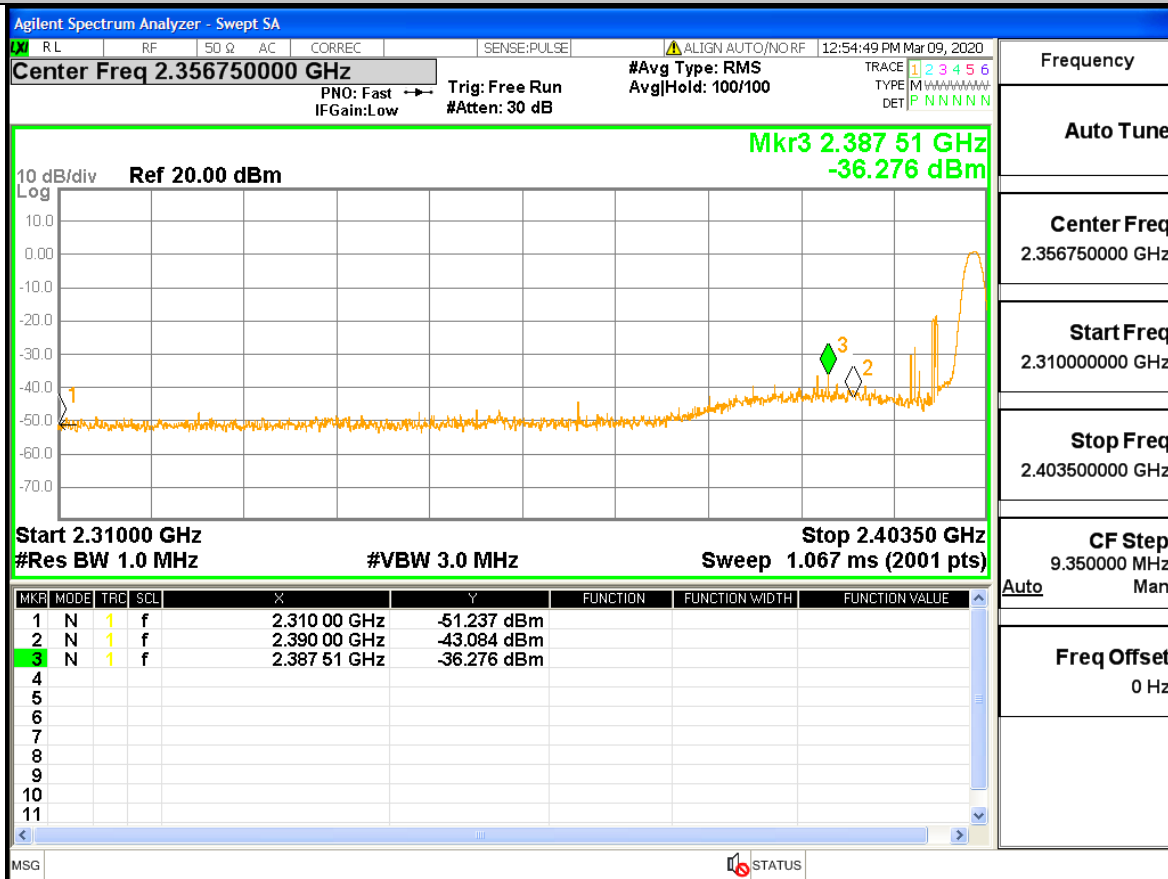


A.8 Restrict-band band-edge measurements

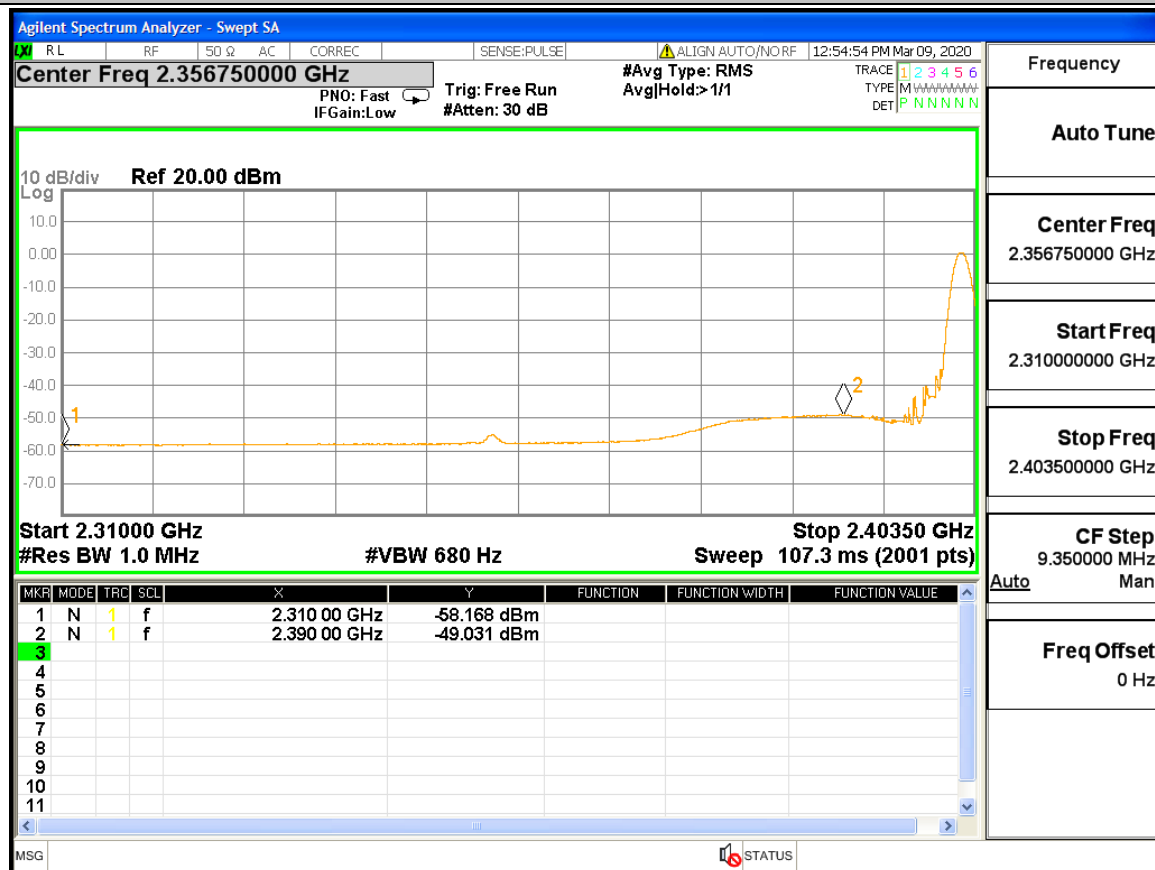
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2387.512	2.00	0.00	-36.276	60.924	74	Pass
1DH5	2480	2484.832	2.00	0.00	-30.167	67.033	74	Pass
2DH5	2402	2389.288	2.00	0.00	-37.532	59.668	74	Pass
2DH5	2480	2484.918	2.00	0.00	-33.412	63.788	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2387.512	2.00	0.00	-49.031	48.169	54	Pass
1DH5	2480	2484.832	2.00	0.00	-47.317	49.883	54	Pass
2DH5	2402	2389.288	2.00	0.00	-49.008	48.192	54	Pass
2DH5	2480	2484.918	2.00	0.00	-48.469	48.731	54	Pass

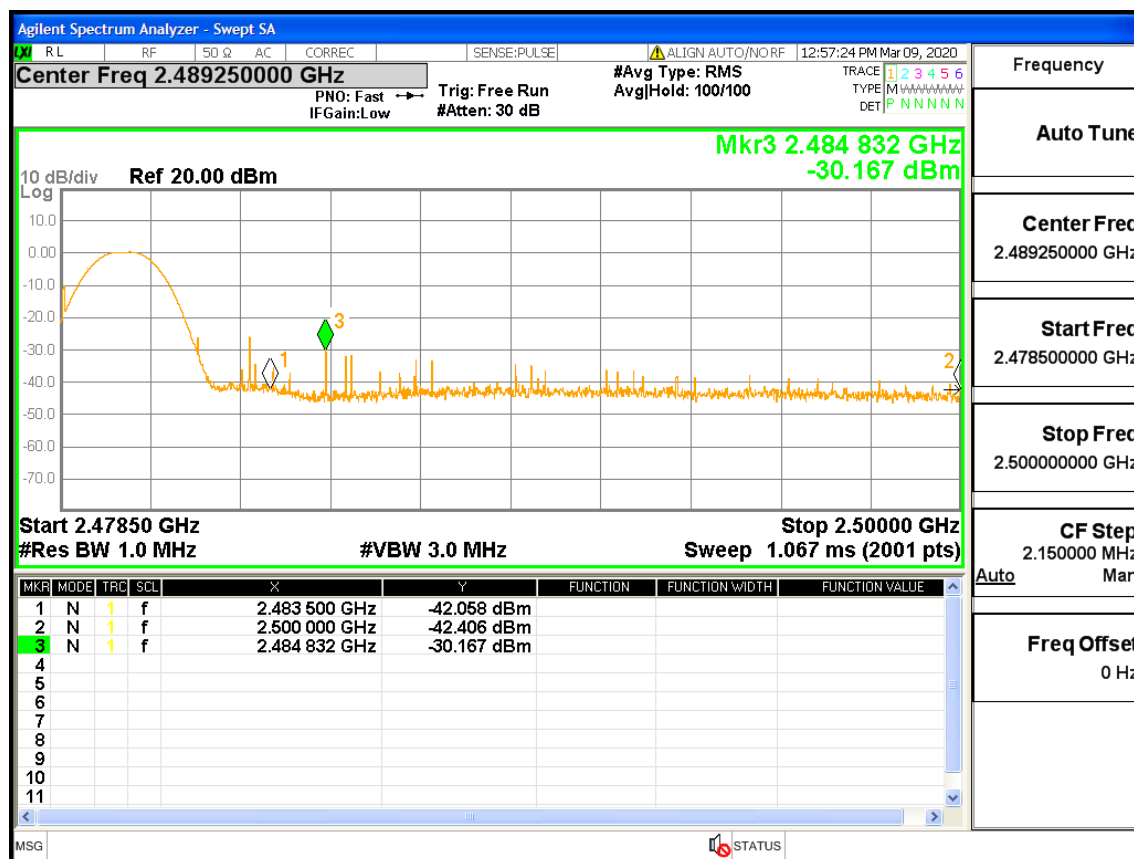
Restrict-band band-edge measurements_2402_PEAK_DH5



Restrict-band band-edge measurements_2402_AV_DH5



Restrict-band band-edge measurements_2480_PEAK_DH5



Restrict-band band-edge measurements_2480_AV_DH5

