

Appendix A

RF Test Data for BT(BLE) (Conducted Measurement)

Product Name: 4K Set top box**Trade Mark: eSTREAM4K****Test Model: IPA1114HDW-02****FCC ID: 2AOVU-SN6BBAX****IC: 25669-IPA1114HDW**

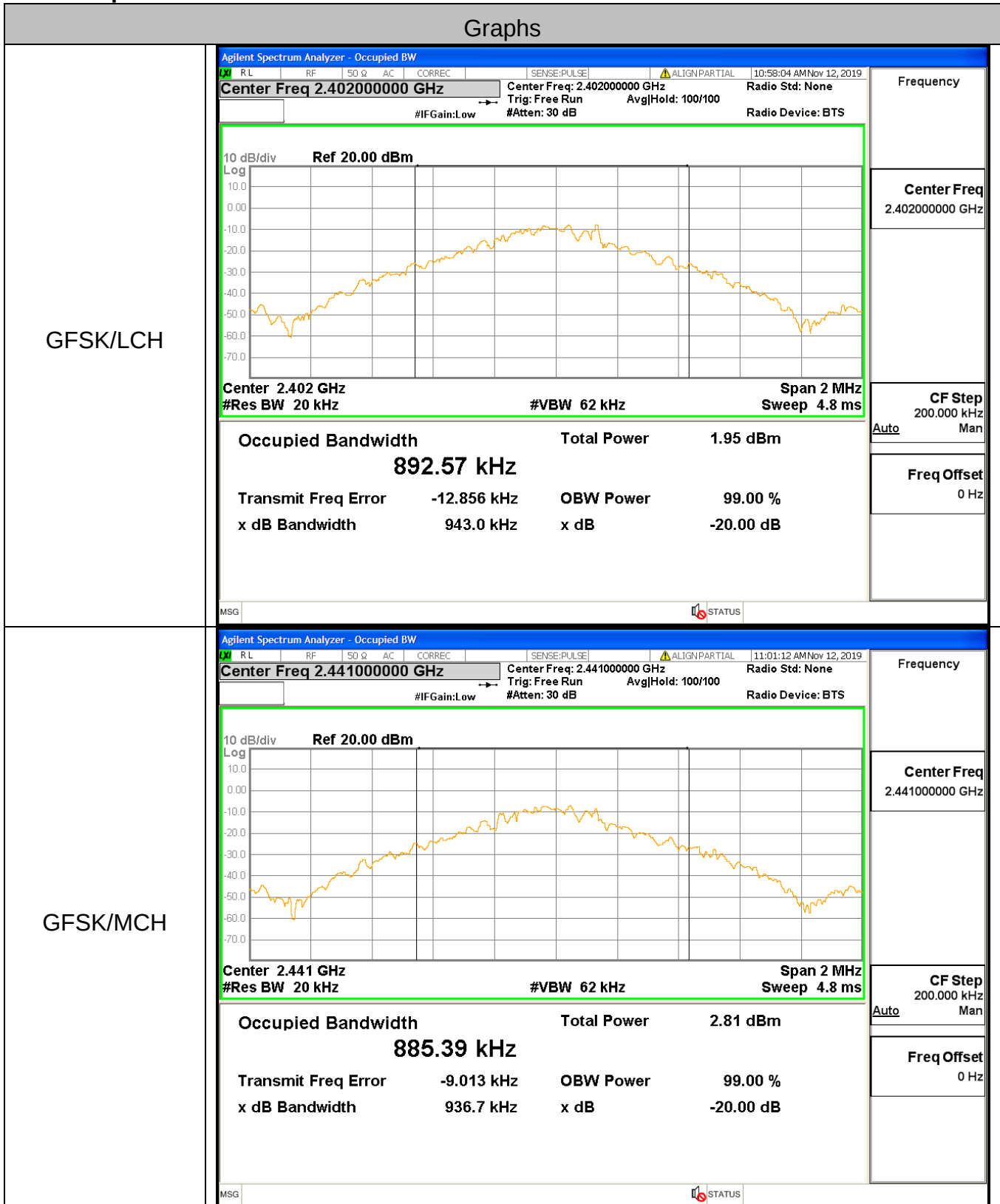
Environmental Conditions

Temperature:	24.2° C
Relative Humidity:	52%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

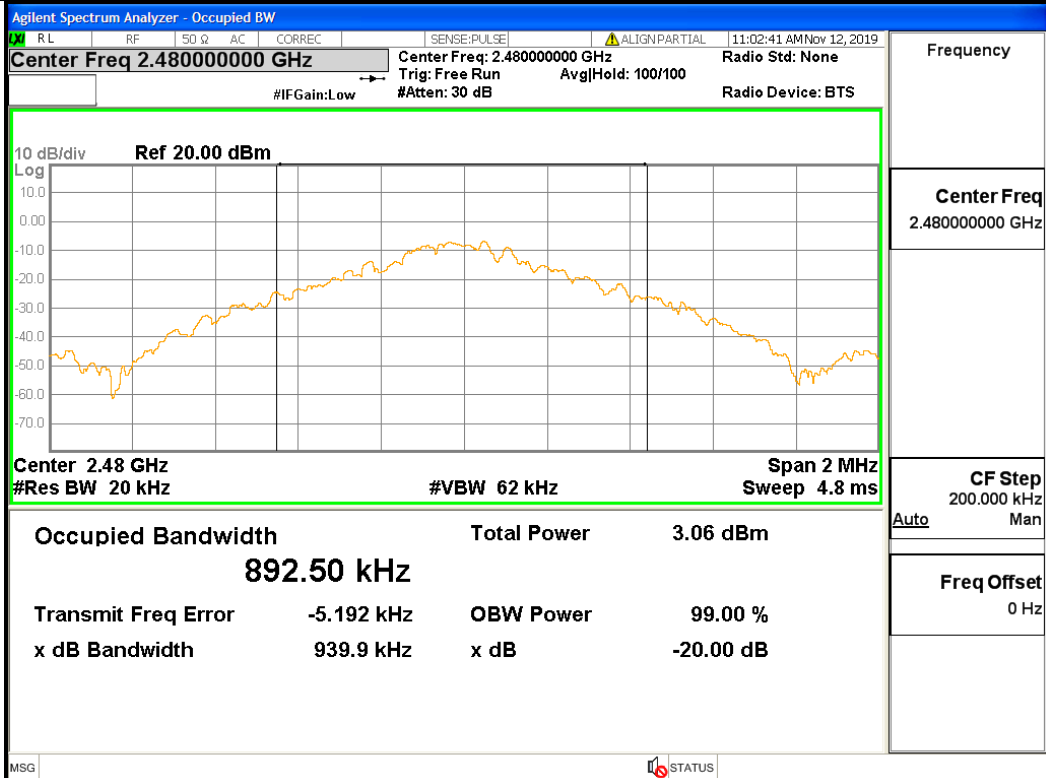
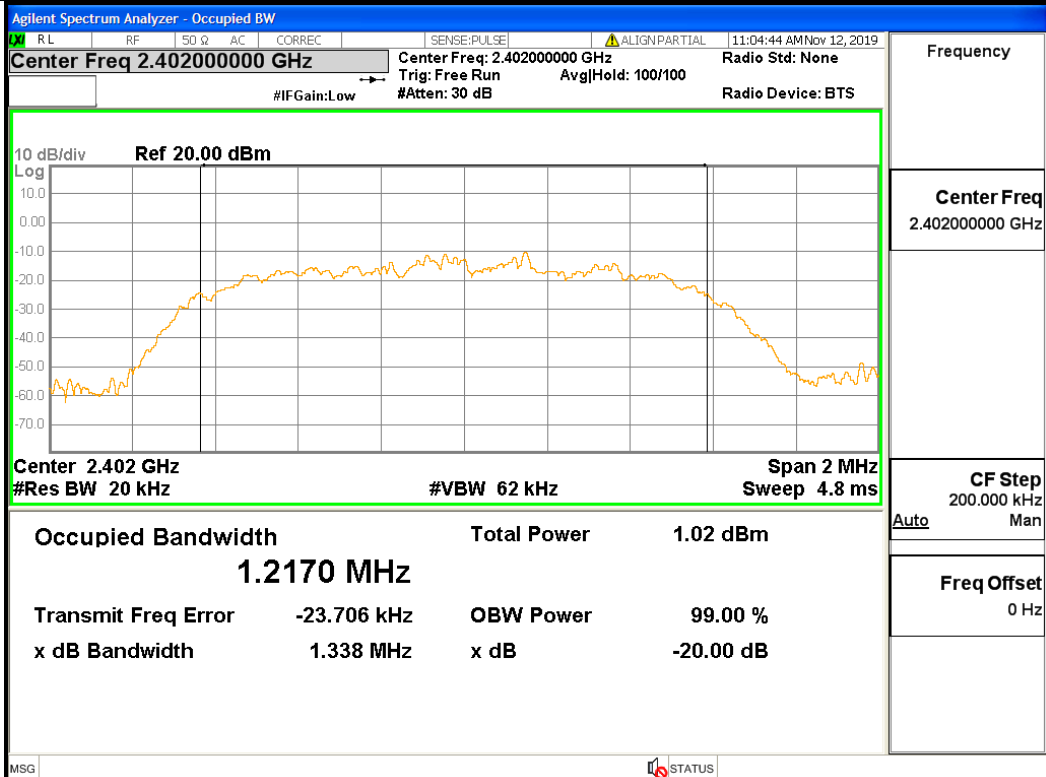
A.1 20 dB Bandwidth

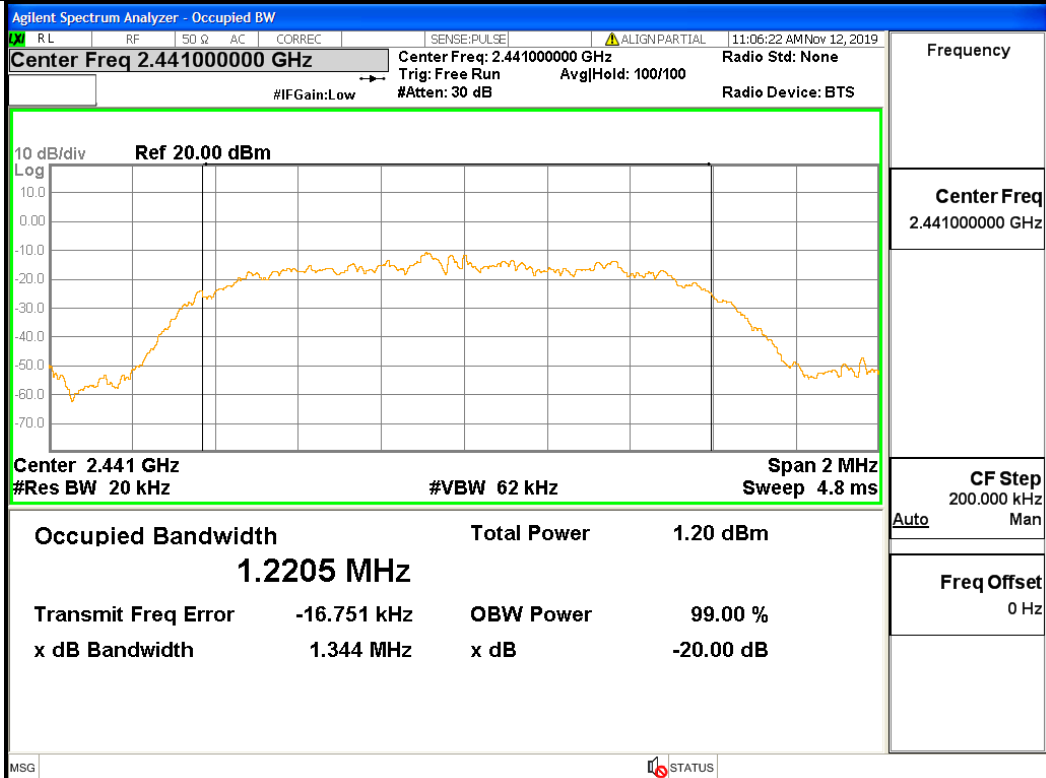
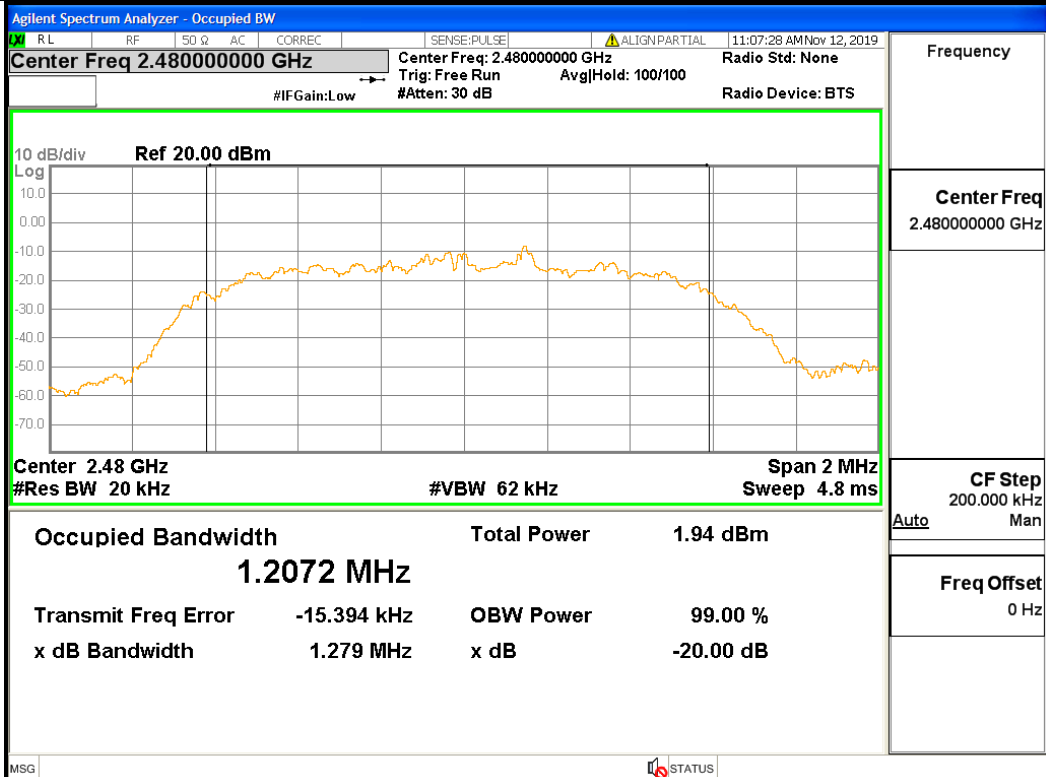
Mode	Channel.	Occupied Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.892	0.943	Not Specified	PASS
GFSK	MCH	0.885	0.937	Not Specified	PASS
GFSK	HCH	0.892	0.940	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.217	1.338	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.220	1.344	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.207	1.279	Not Specified	PASS
8DPSK	LCH	1.209	1.316	Not Specified	PASS
8DPSK	MCH	1.216	1.304	Not Specified	PASS
8DPSK	HCH	1.220	1.341	Not Specified	PASS

Test Graph

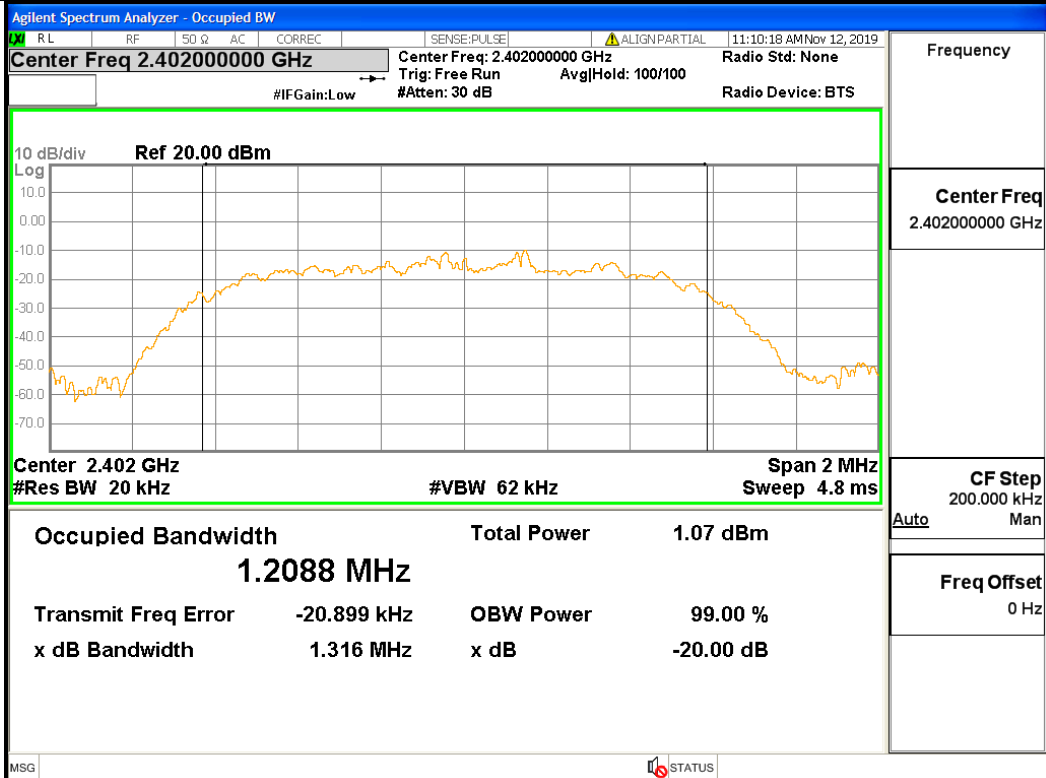


GFSK/HCH

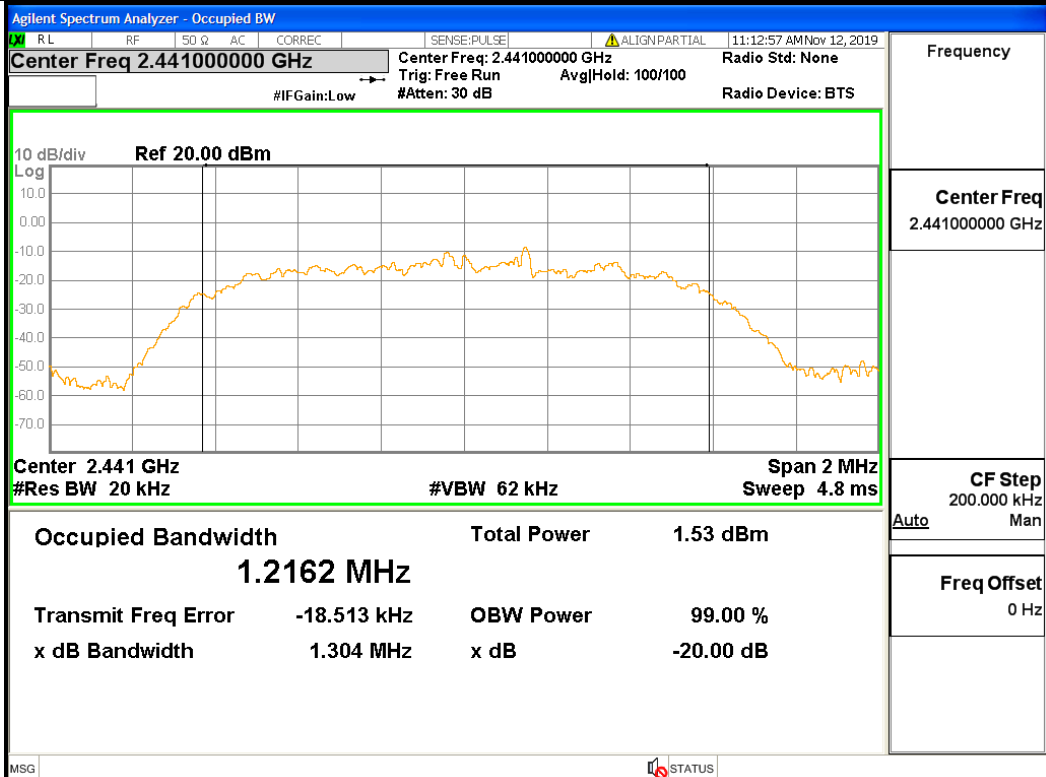
 $\pi/4$ DQPSK/LCH

$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

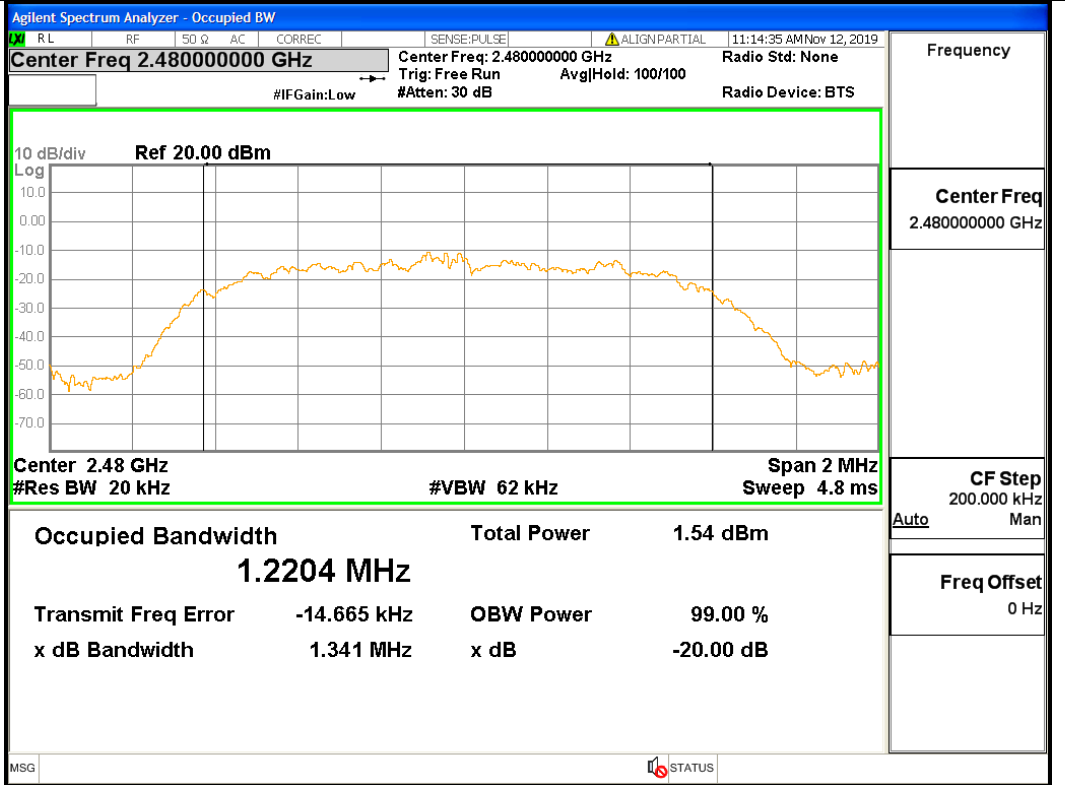
8DPSK/LCH



8DPSK/MCH



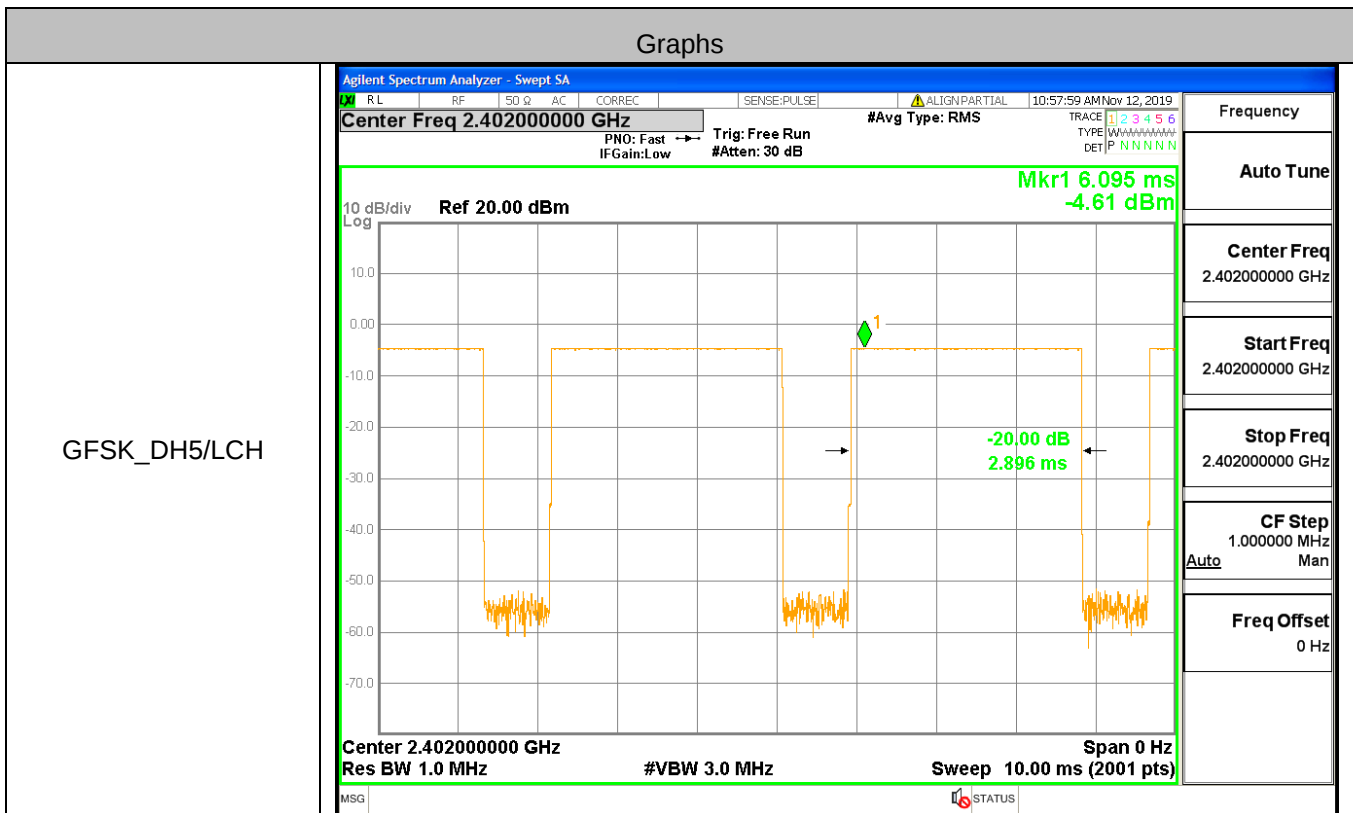
8DPSK/HCH



A.2 Dwell Time

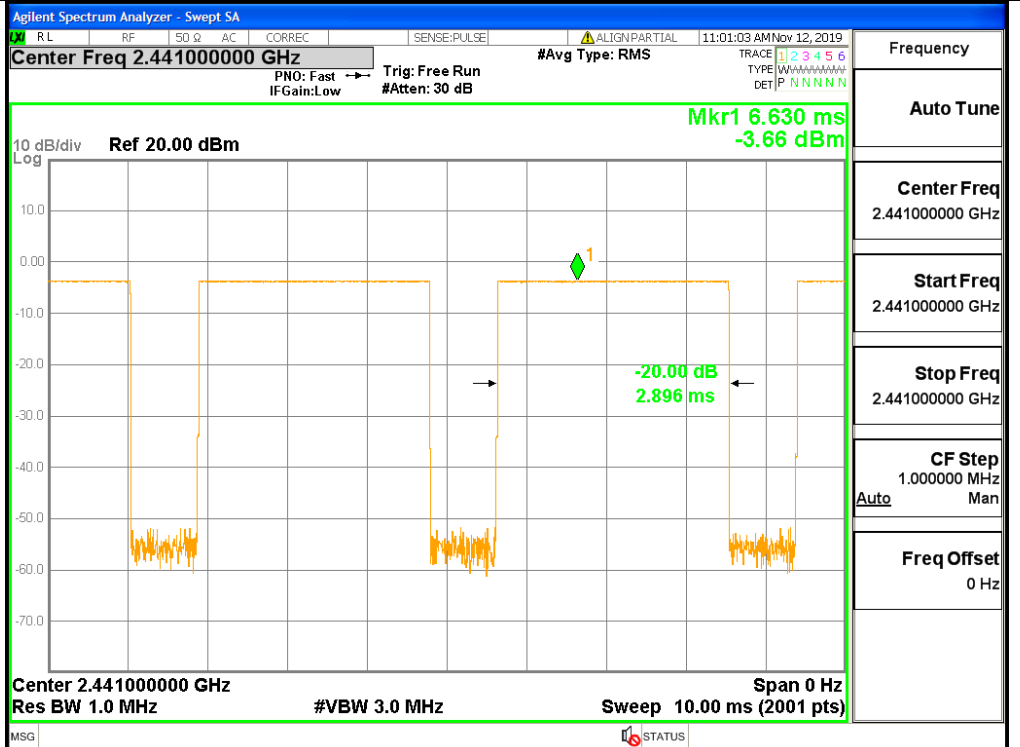
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002896	106.7	0.308953	0.4	PASS
GFSK	DH5	MCH	0.002896	106.7	0.309026	0.4	PASS
GFSK	DH5	HCH	0.002895	106.7	0.308932	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002892	106.7	0.308591	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002889	106.7	0.308303	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002889	106.7	0.30829	0.4	PASS
8DPSK	3DH5	LCH	0.002897	106.7	0.309093	0.4	PASS
8DPSK	3DH5	MCH	0.002895	106.7	0.308926	0.4	PASS
8DPSK	3DH5	HCH	0.002896	106.7	0.308954	0.4	PASS

Test Graph

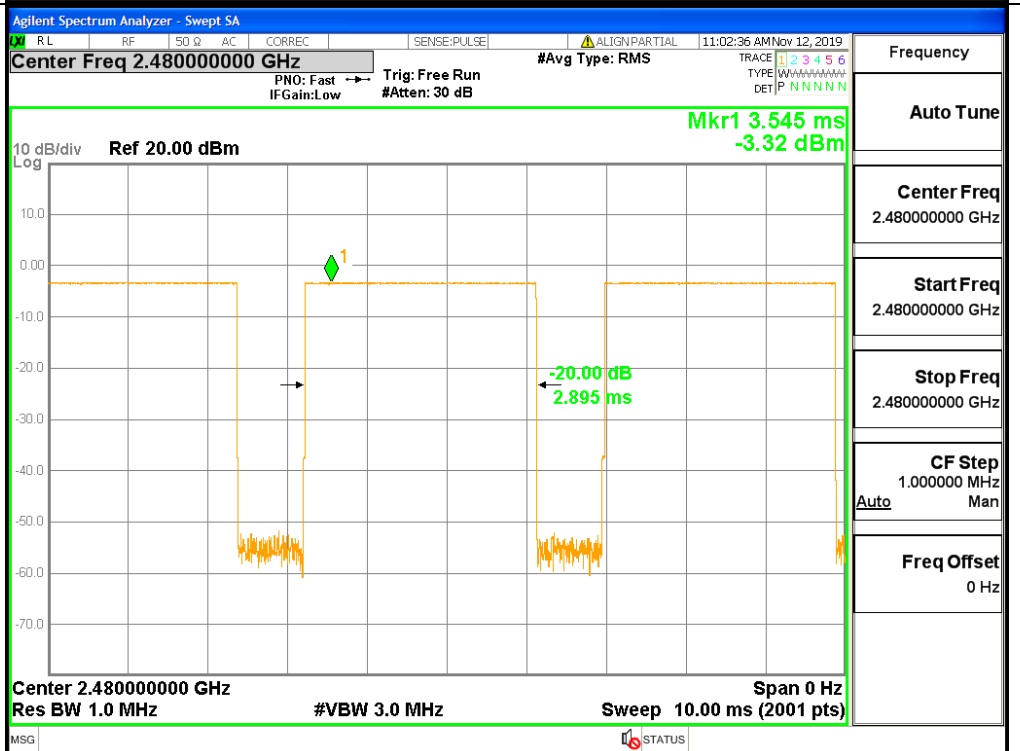


IC: 25669-IPA1114HDW

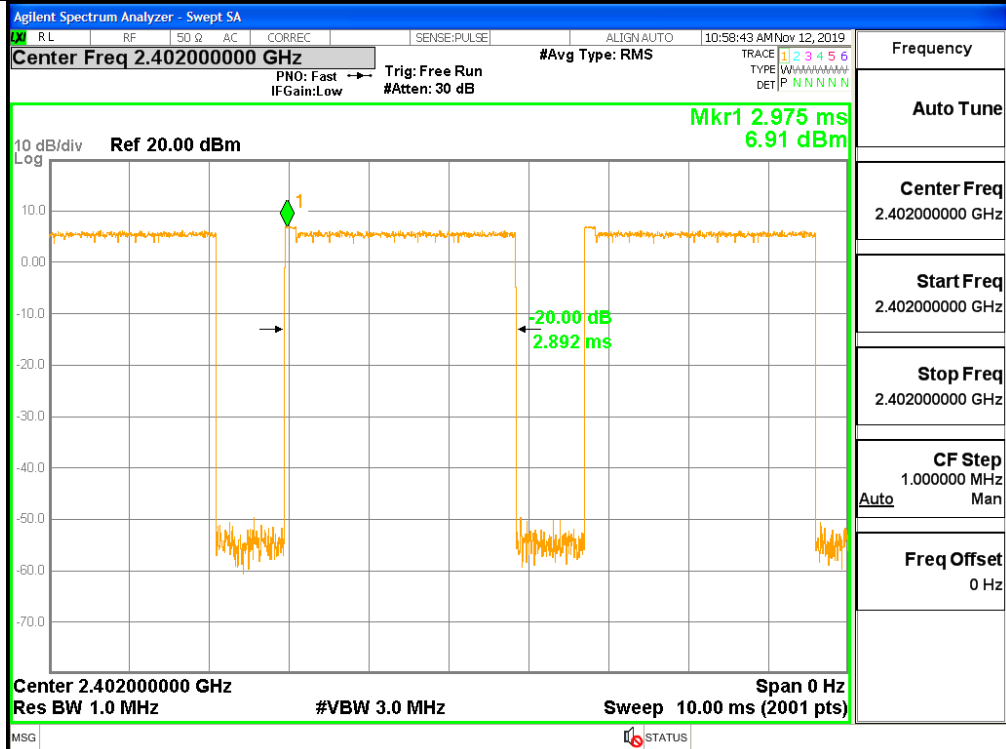
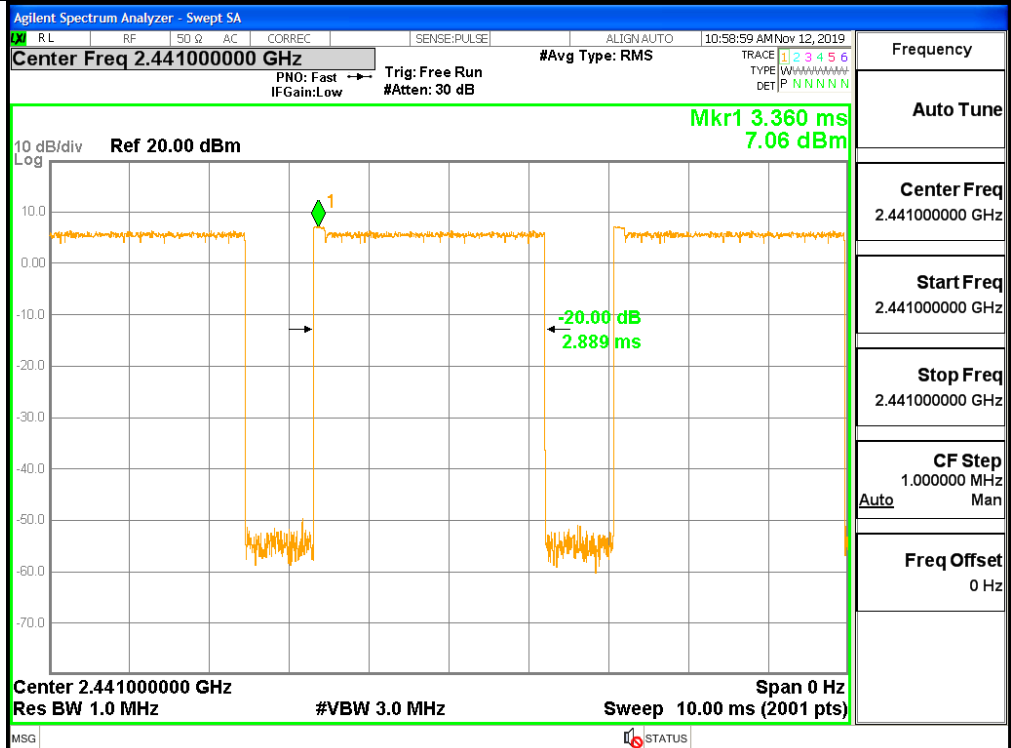
GFSK_DH5/MCH



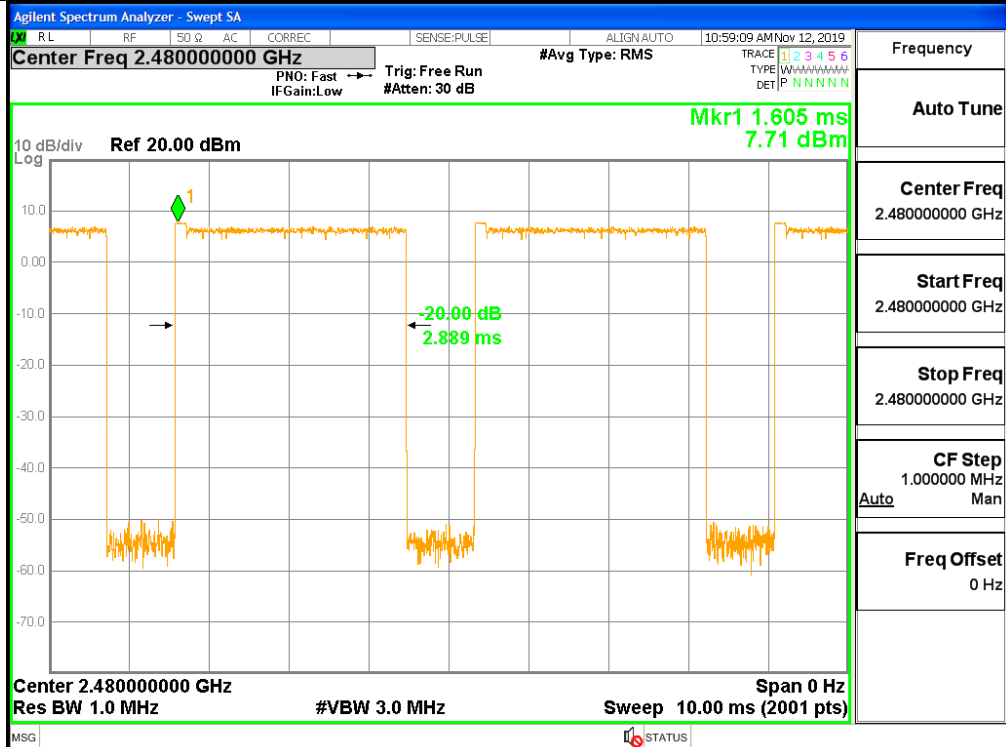
GFSK_DH5/HCH



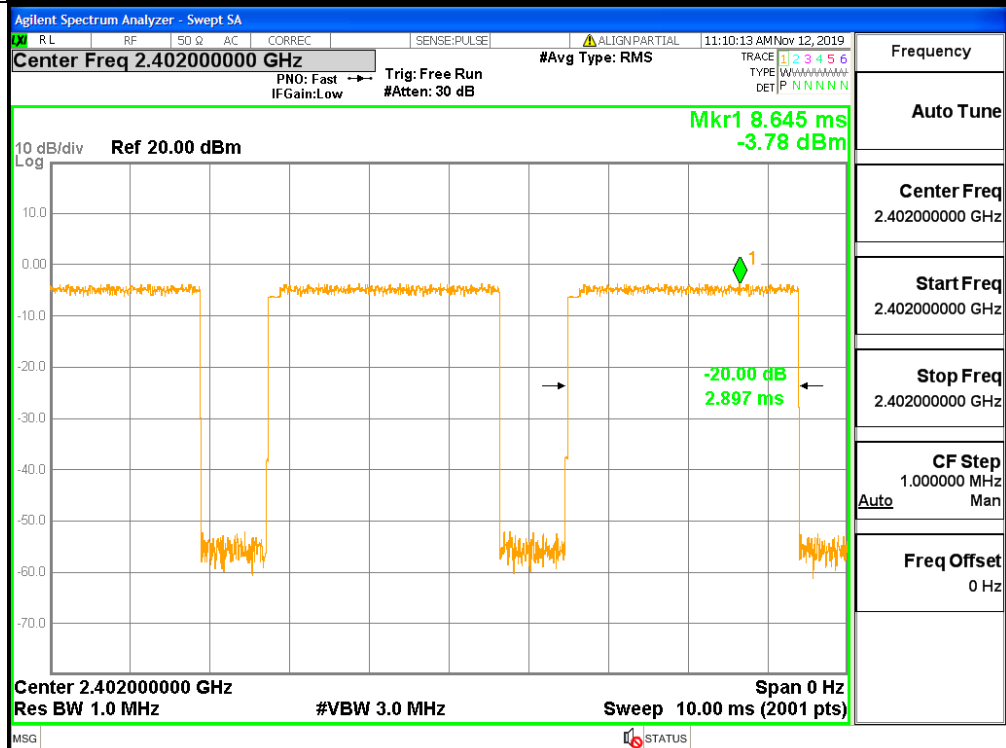
IC: 25669-IPA1114HDW

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

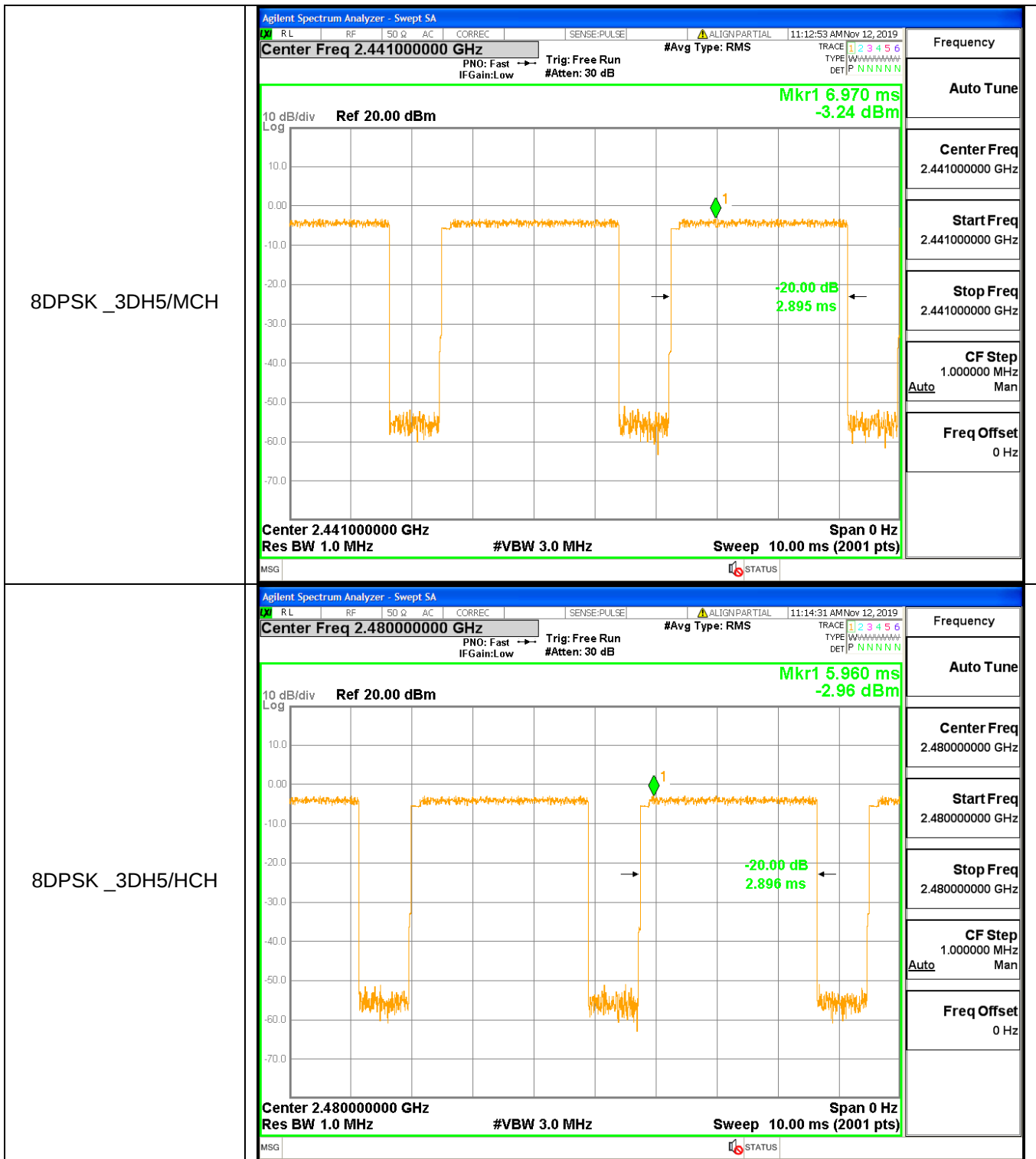
IC: 25669-IPA1114HDW

 $\pi/4$ DQPSK
_2DH5/HCH

8DPSK_3DH5/LCH



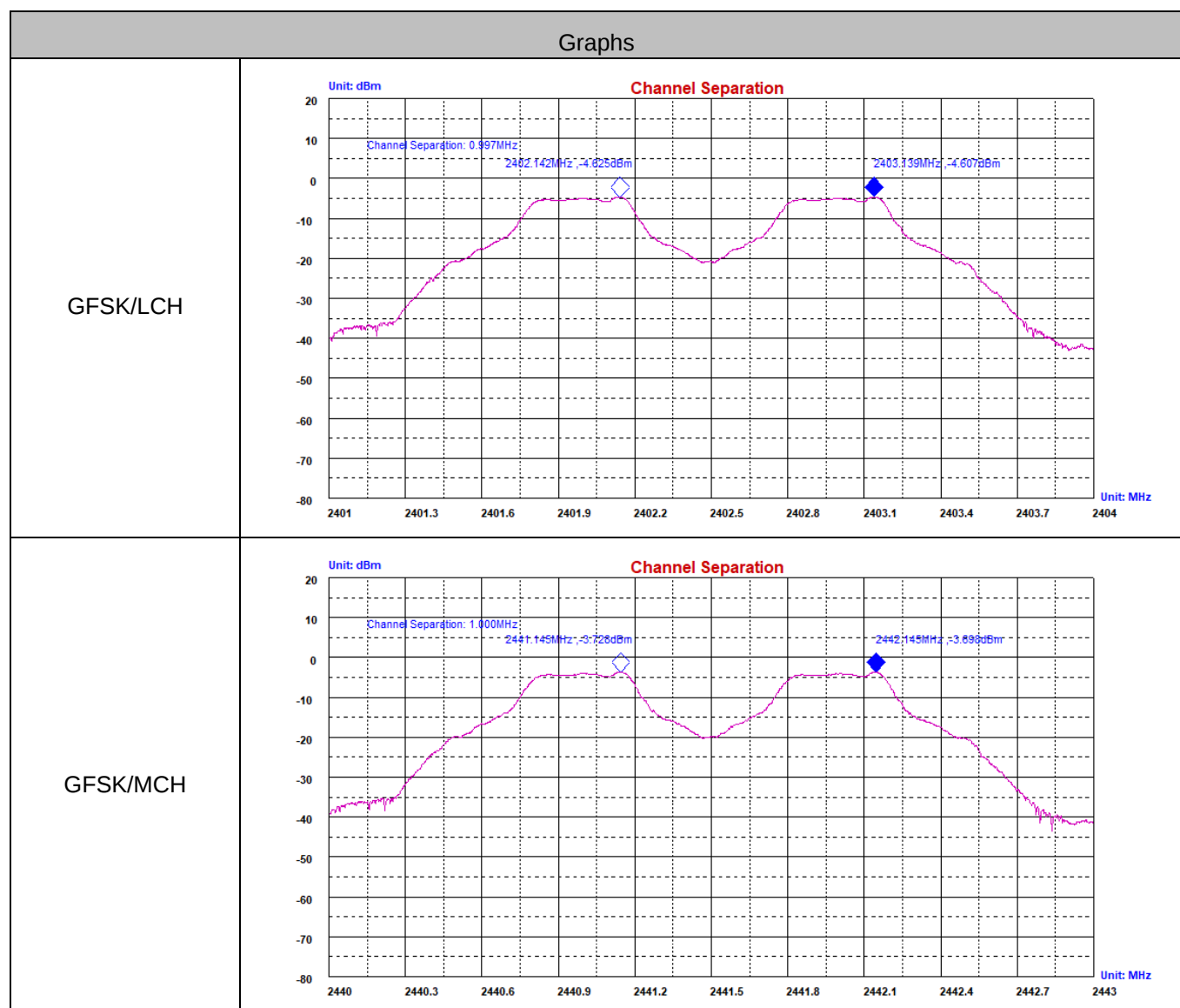
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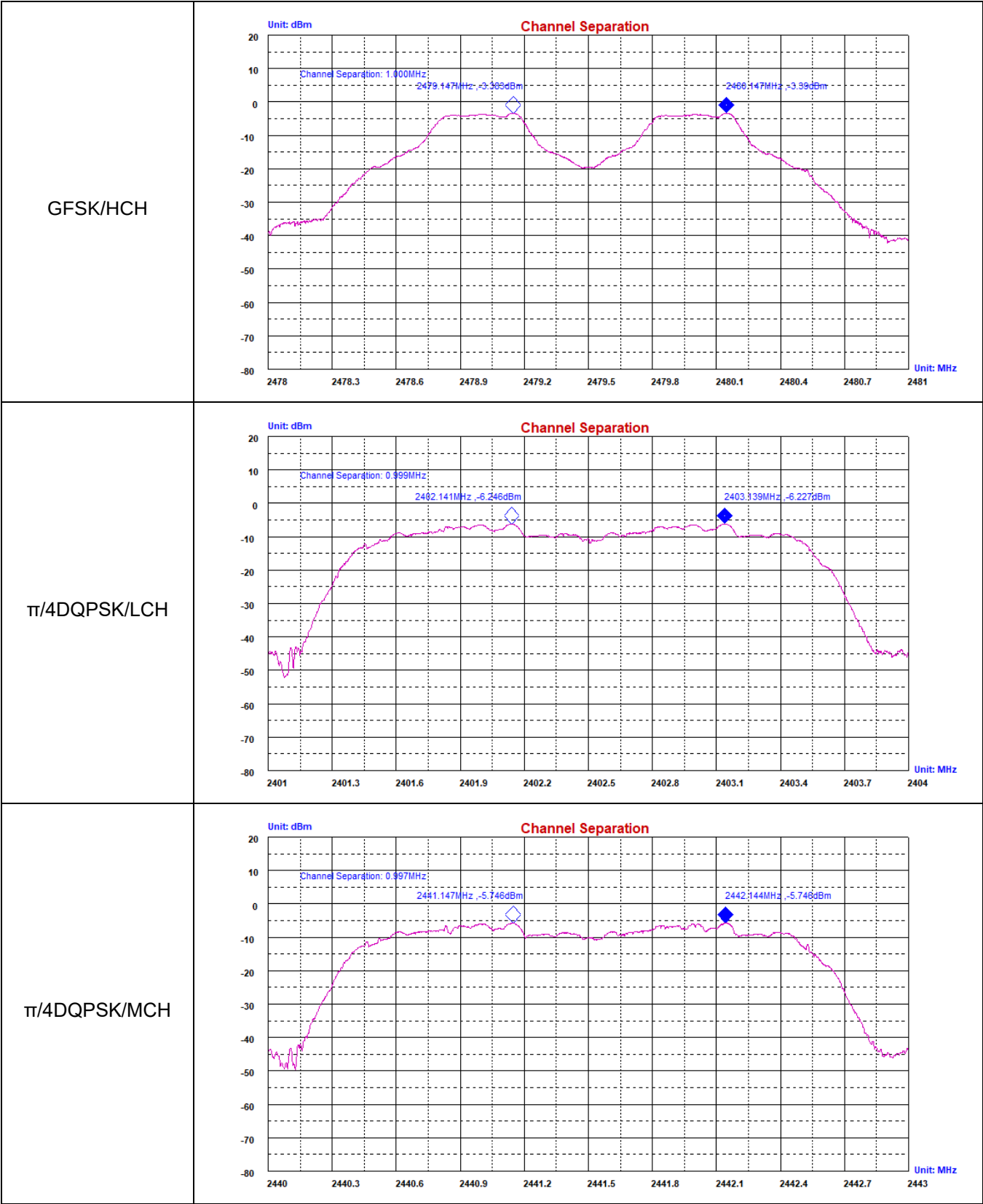


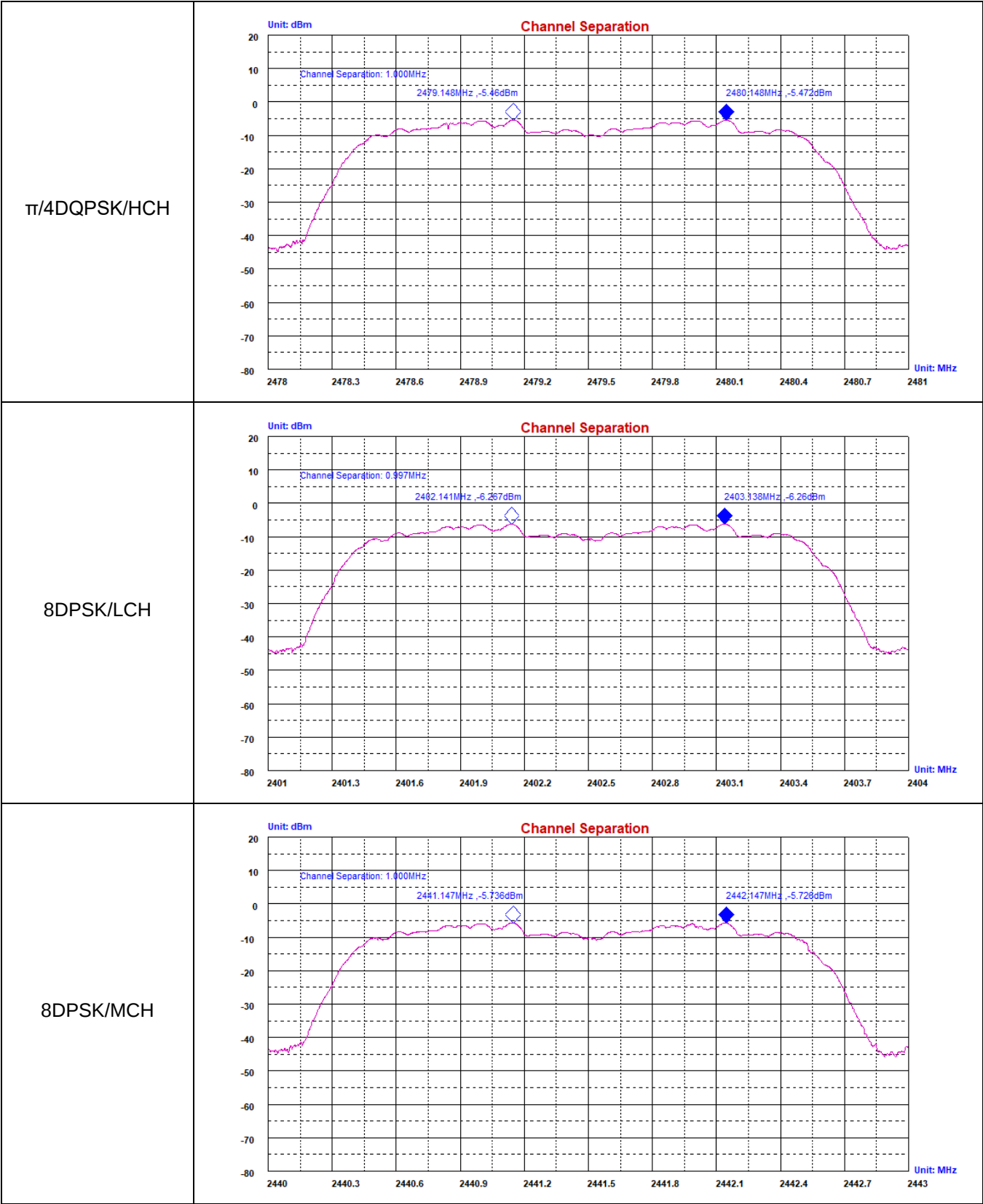
A.3 Carrier Frequency Separation

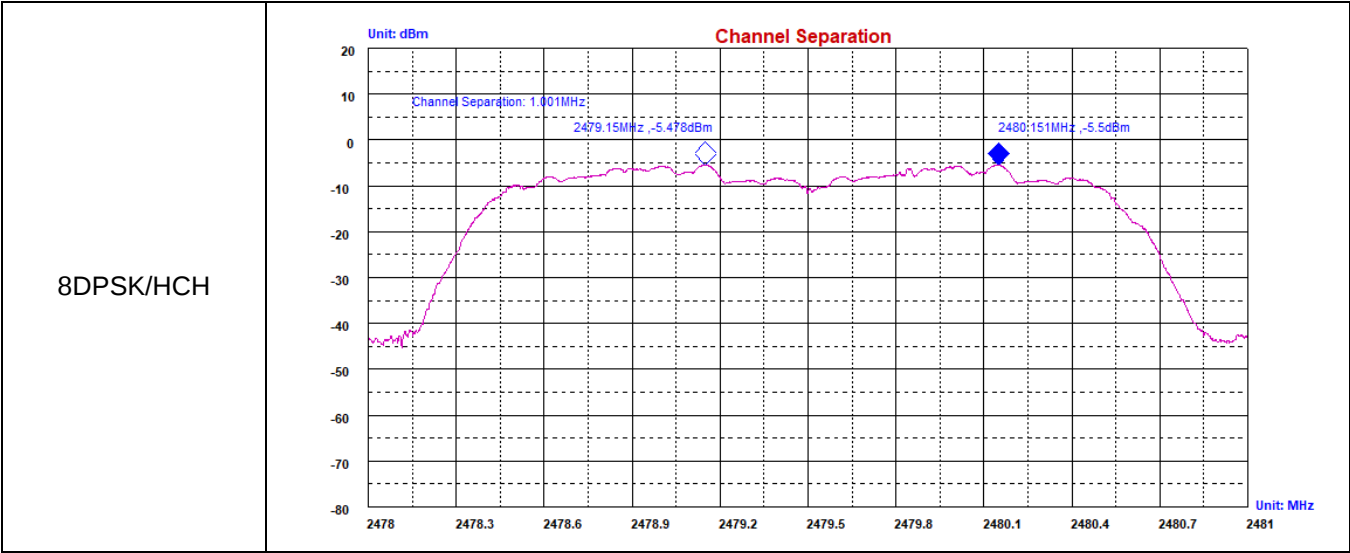
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.997	0.629	PASS
GFSK	MCH	1.000	0.625	PASS
GFSK	HCH	1.000	0.627	PASS
$\pi/4$ DQPSK	LCH	0.999	0.892	PASS
$\pi/4$ DQPSK	MCH	0.997	0.896	PASS
$\pi/4$ DQPSK	HCH	1.000	0.853	PASS
8DPSK	LCH	0.997	0.877	PASS
8DPSK	MCH	1.000	0.869	PASS
8DPSK	HCH	1.001	0.894	PASS

Test Graph





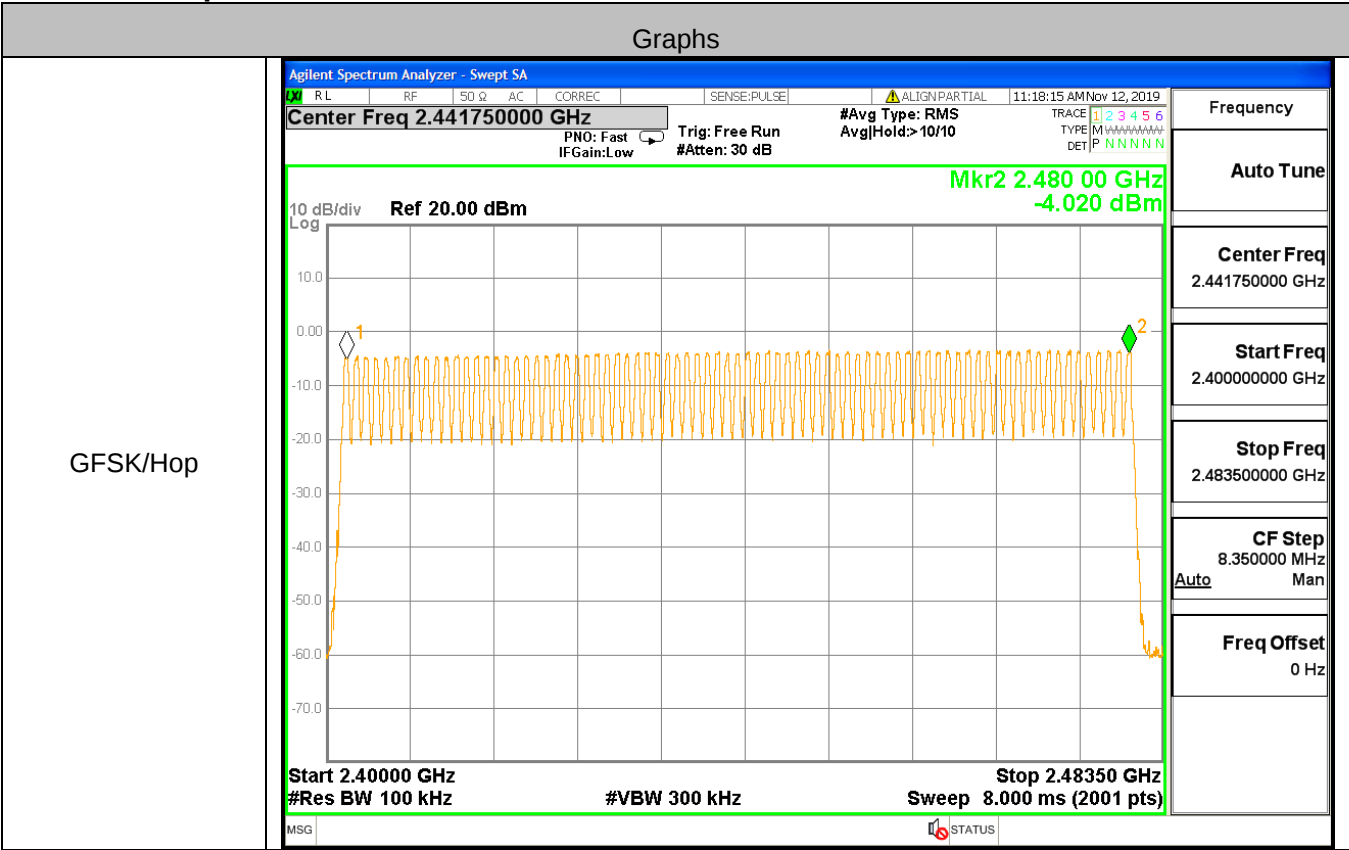


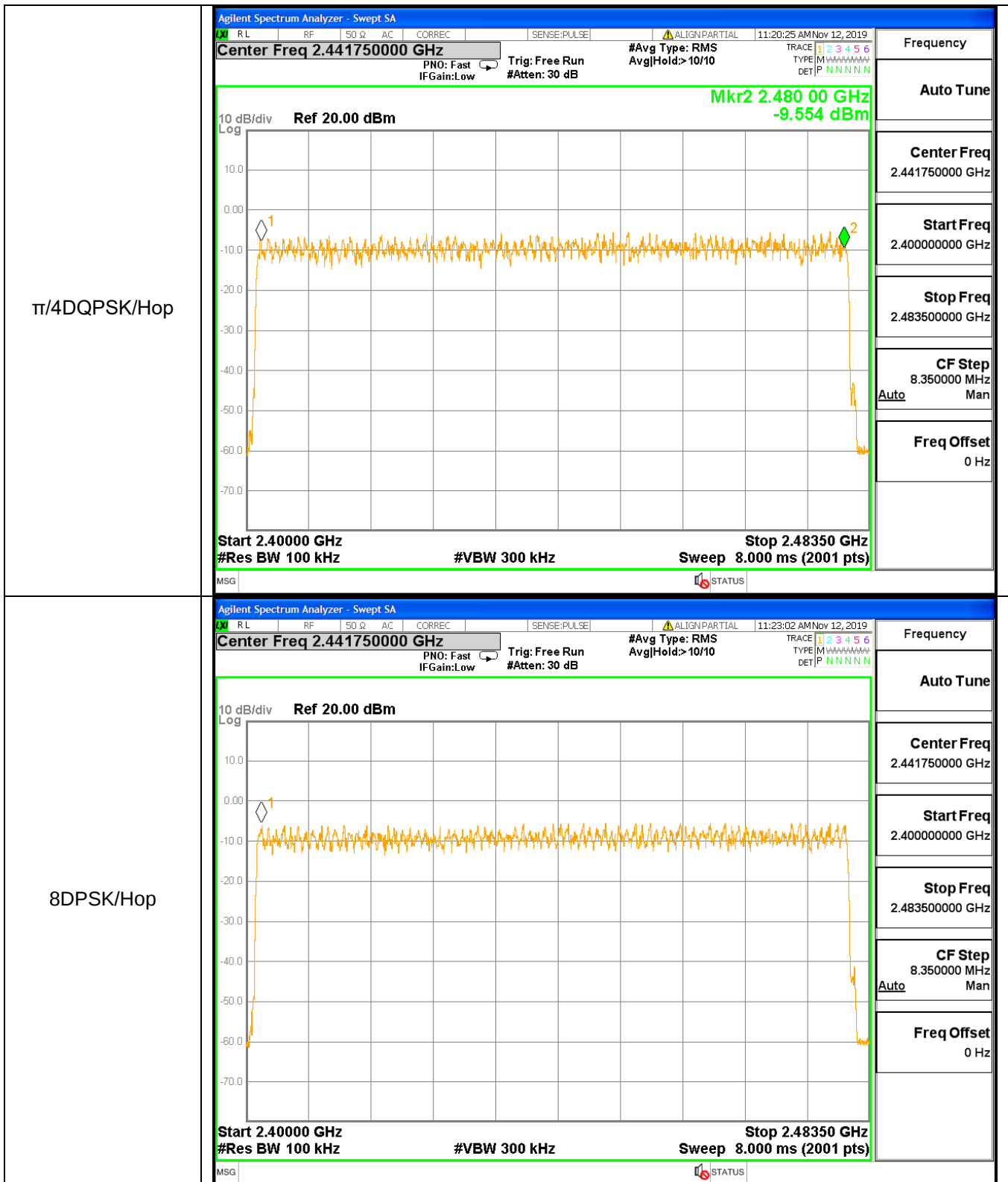


A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel[N]	Limit[N]	Verdict
GFSK	Hop	79	>=15	PASS
π /4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

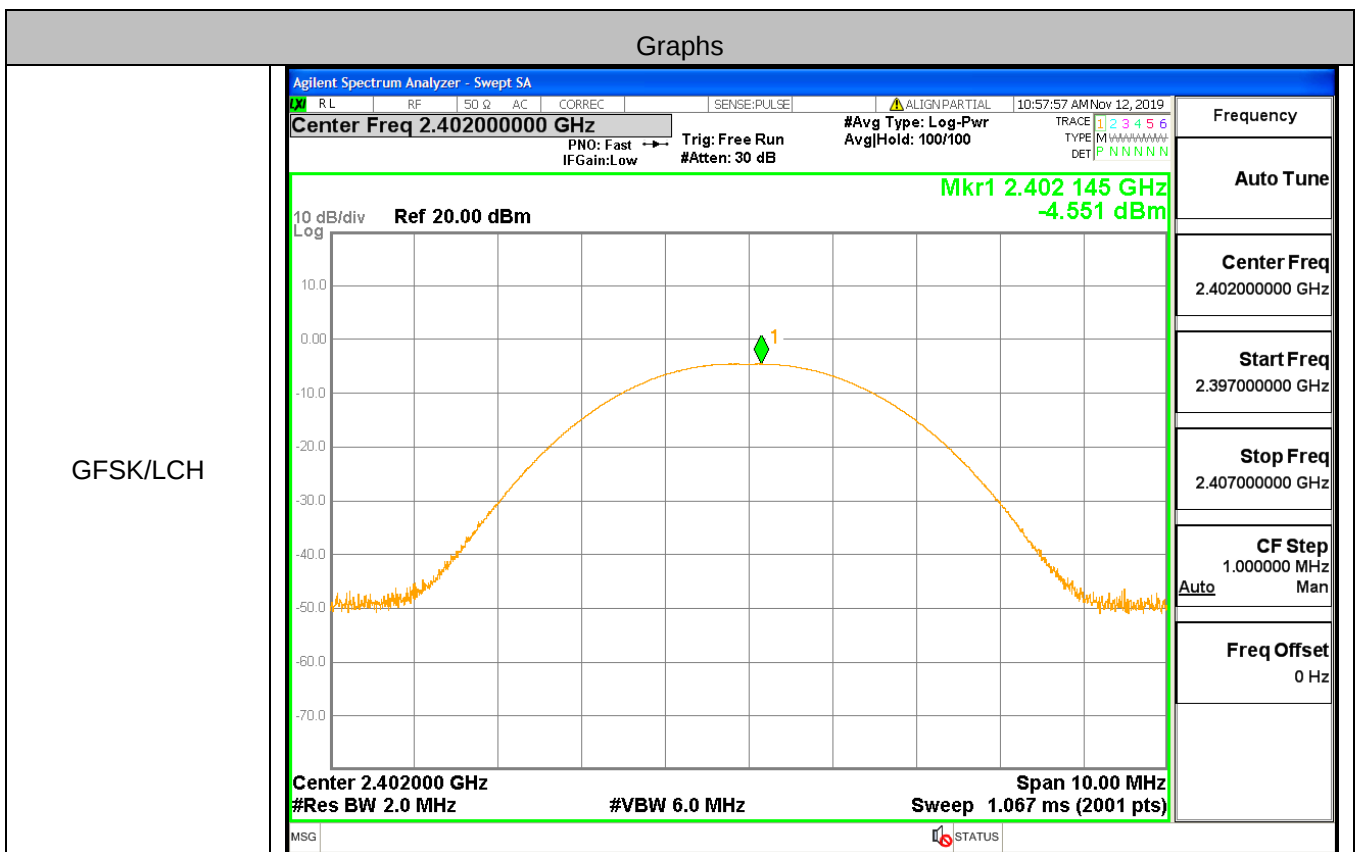
Test Graph



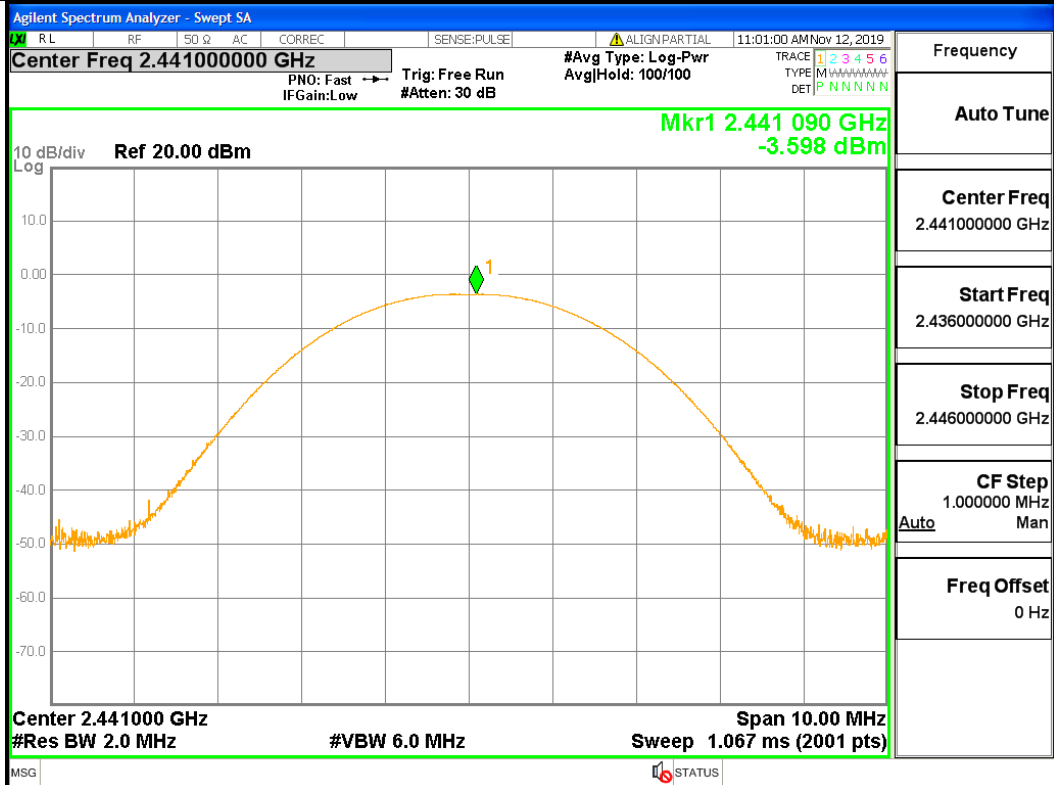


A.5 Conducted Peak Output Power

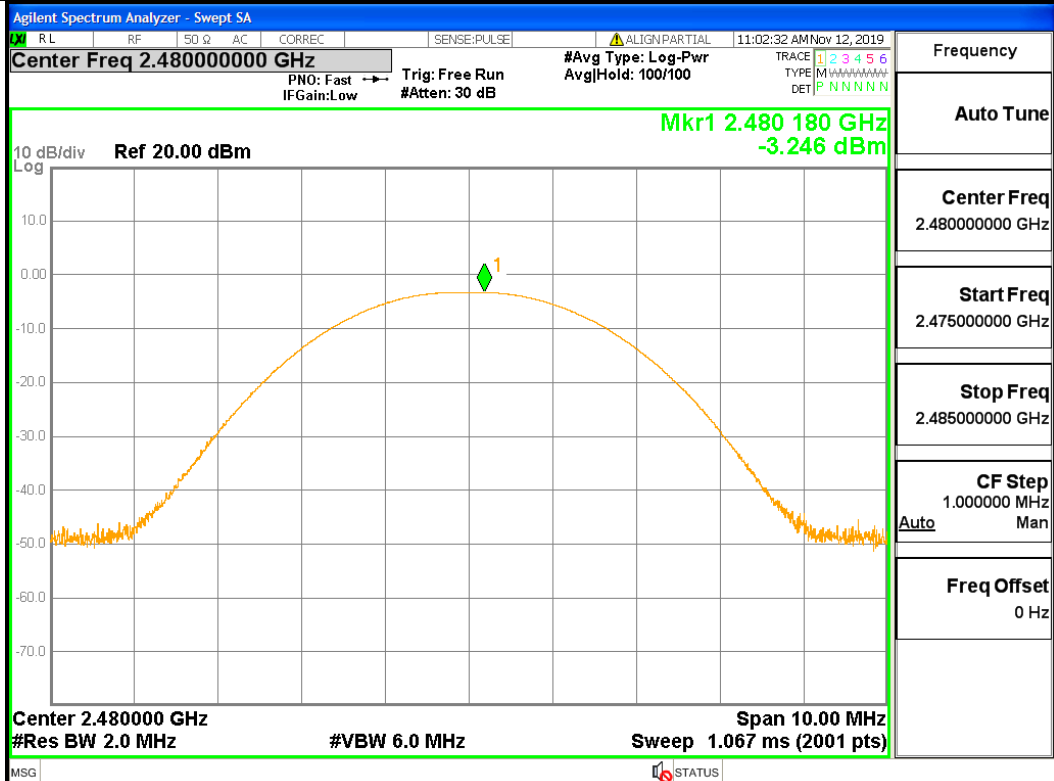
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.551	21	PASS
GFSK	MCH	-3.598	21	PASS
GFSK	HCH	-3.246	21	PASS
$\pi/4$ DQPSK	LCH	-3.424	21	PASS
$\pi/4$ DQPSK	MCH	-2.838	21	PASS
$\pi/4$ DQPSK	HCH	-2.549	21	PASS
8DPSK	LCH	-3.366	21	PASS
8DPSK	MCH	-2.888	21	PASS
8DPSK	HCH	-2.586	21	PASS

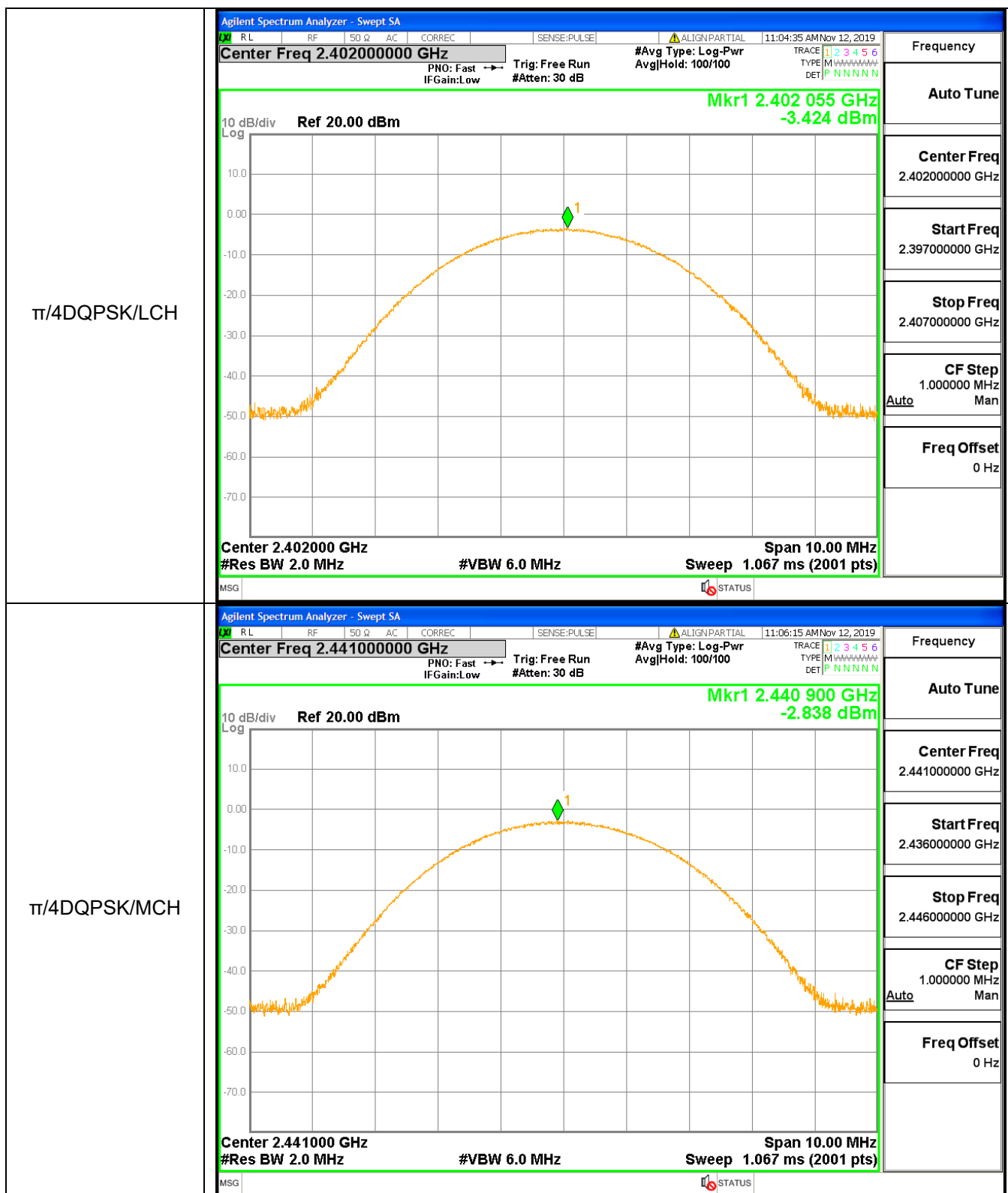
Test Graph

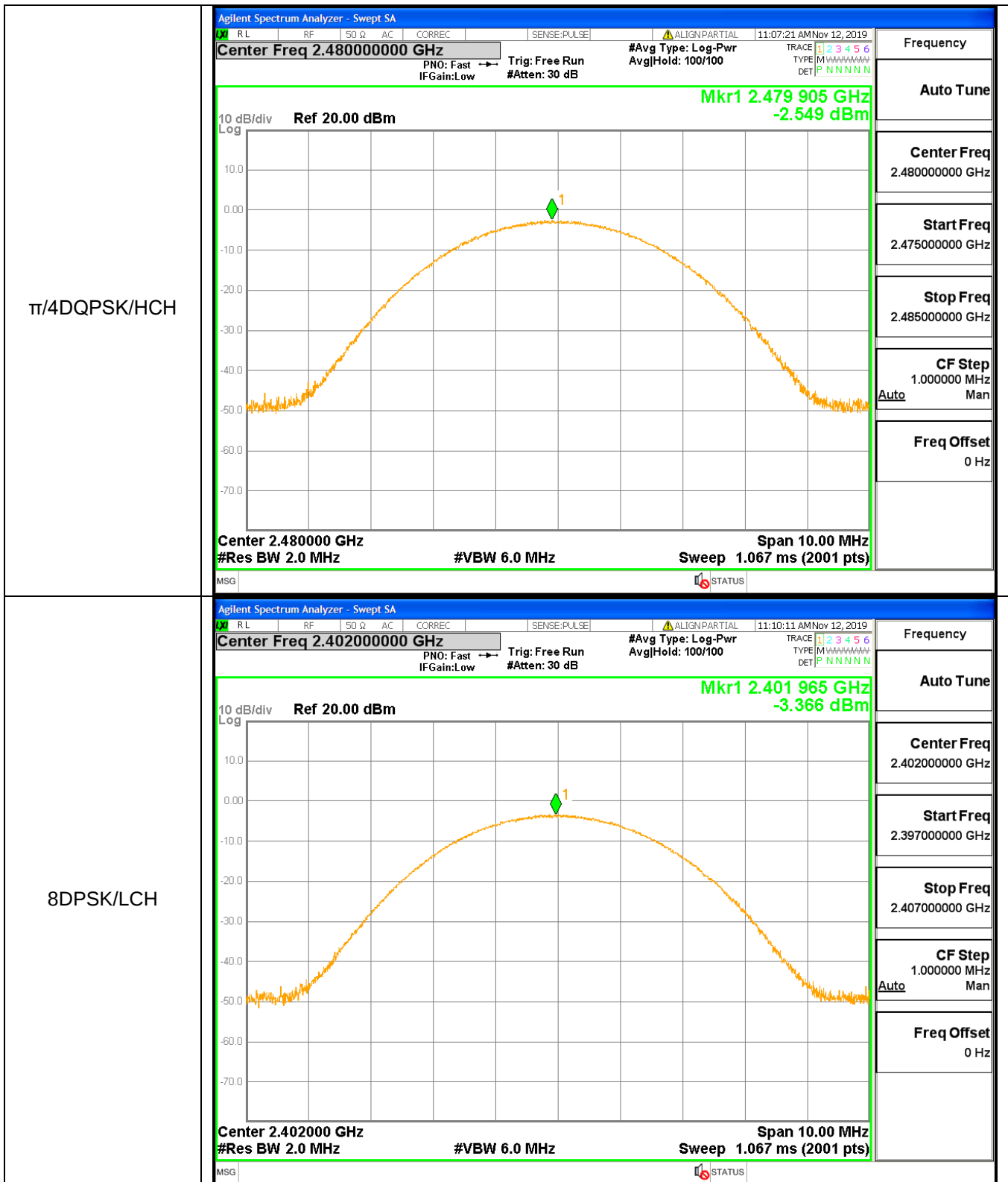
GFSK/MCH



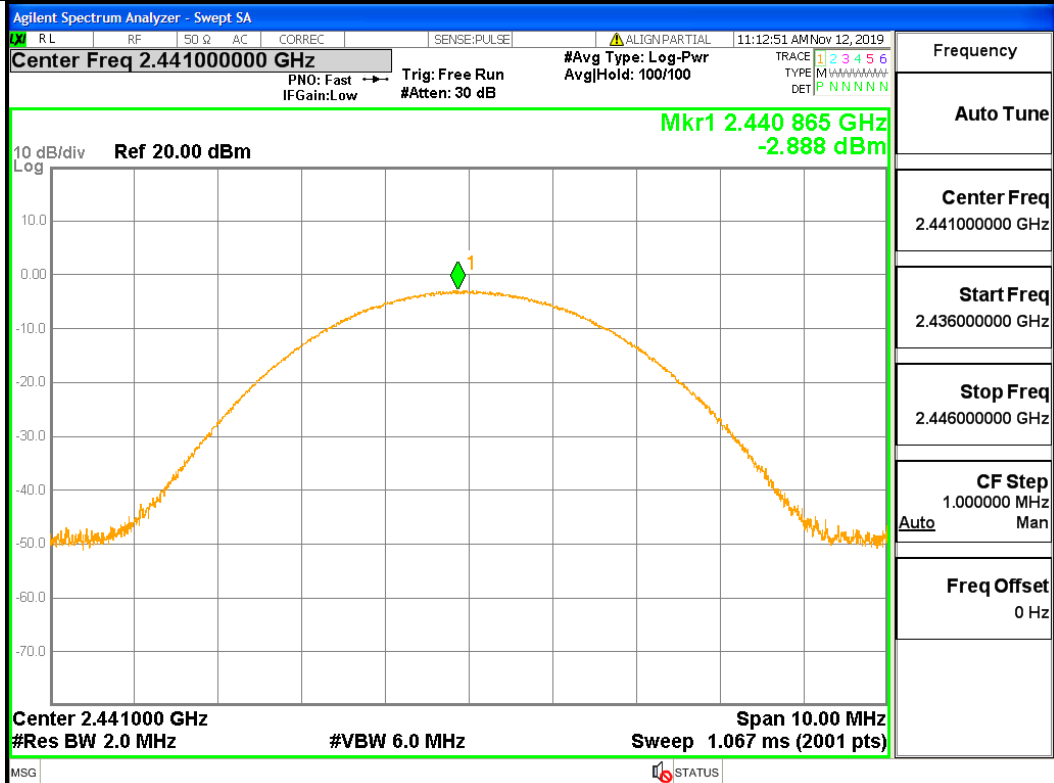
GFSK/HCH



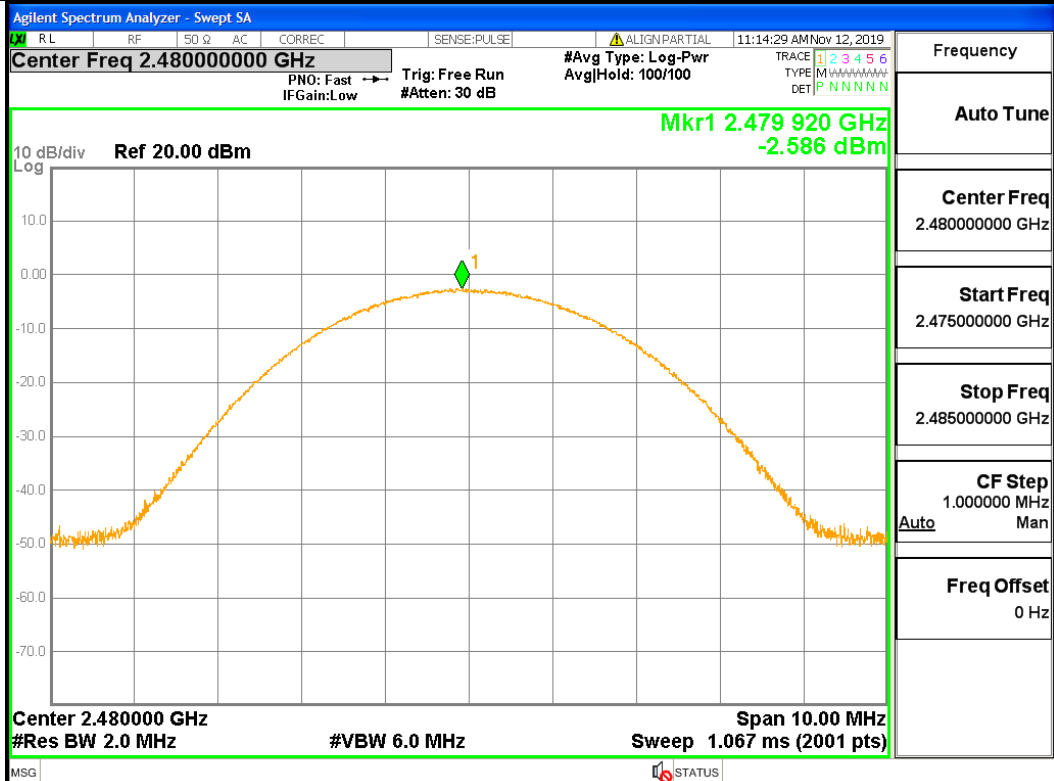




8DPSK/MCH



8DPSK/HCH



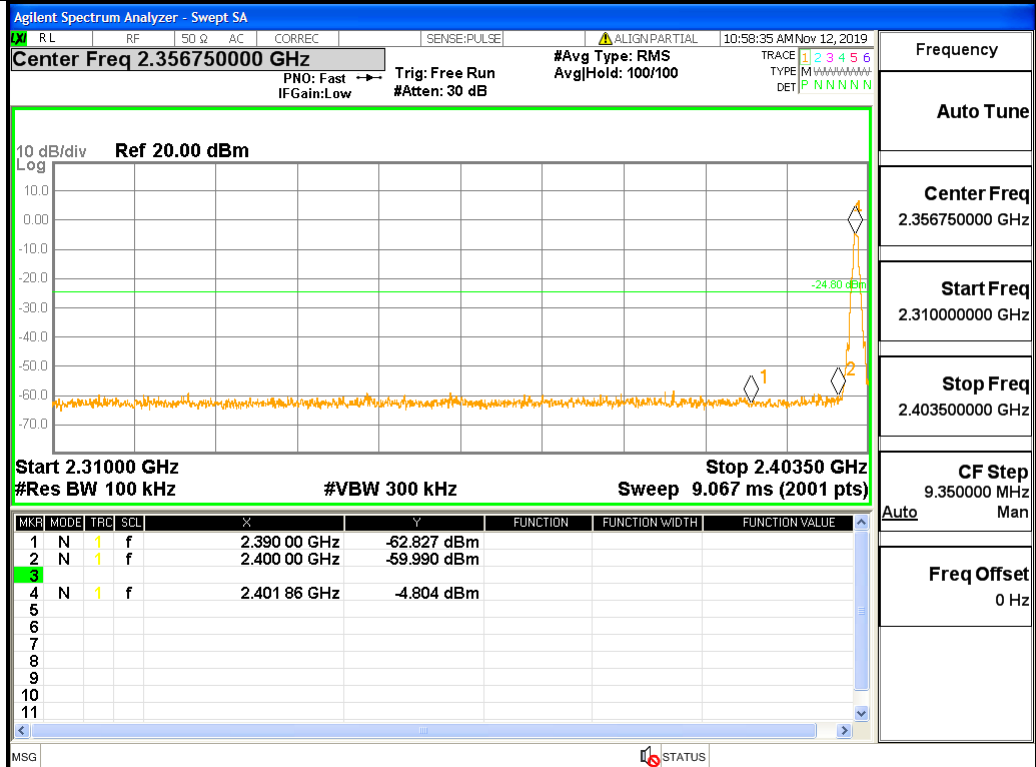
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2400	-4.804	-59.99	-24.804	Pass
1DH5	2480	2483.5	-3.467	-62.36	-23.467	Pass
2DH5	2402	2390	-7.33	-62.19	-27.33	Pass
2DH5	2480	2500	-6.043	-60.27	-26.043	Pass
3DH5	2402	2400	-6.723	-61	-26.723	Pass
3DH5	2480	2487.67	-6.73	-58.225	-26.73	Pass
1DH5-Hopping	2402	2400	-4.065	-59.7	-24.065	Pass
1DH5-Hopping	2480	2500	-3.419	-59.98	-23.419	Pass
2DH5-Hopping	2402	2400	-5.91	-60.12	-25.91	Pass
2DH5-Hopping	2480	2500	-5.43	-60.24	-25.43	Pass
3DH5-Hopping	2402	2390	-6.468	-61.41	-26.468	Pass
3DH5-Hopping	2480	2500	-5.476	-59.74	-25.476	Pass

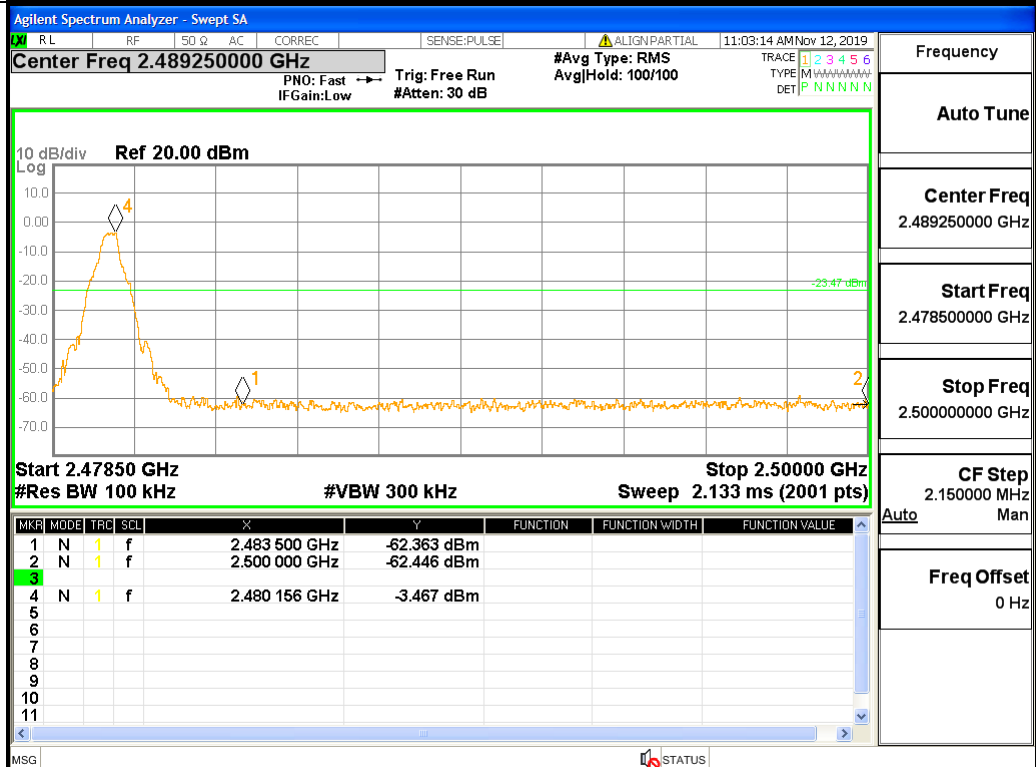
Test Graph

Graphs

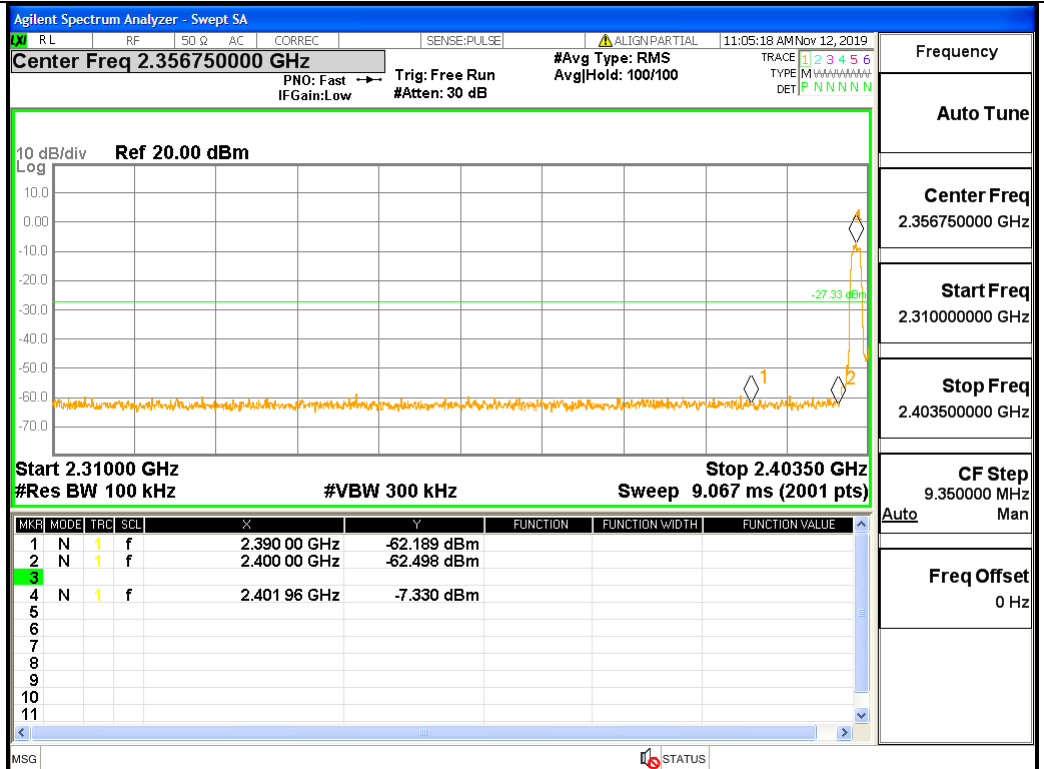
GFSK/LCH/No Hop



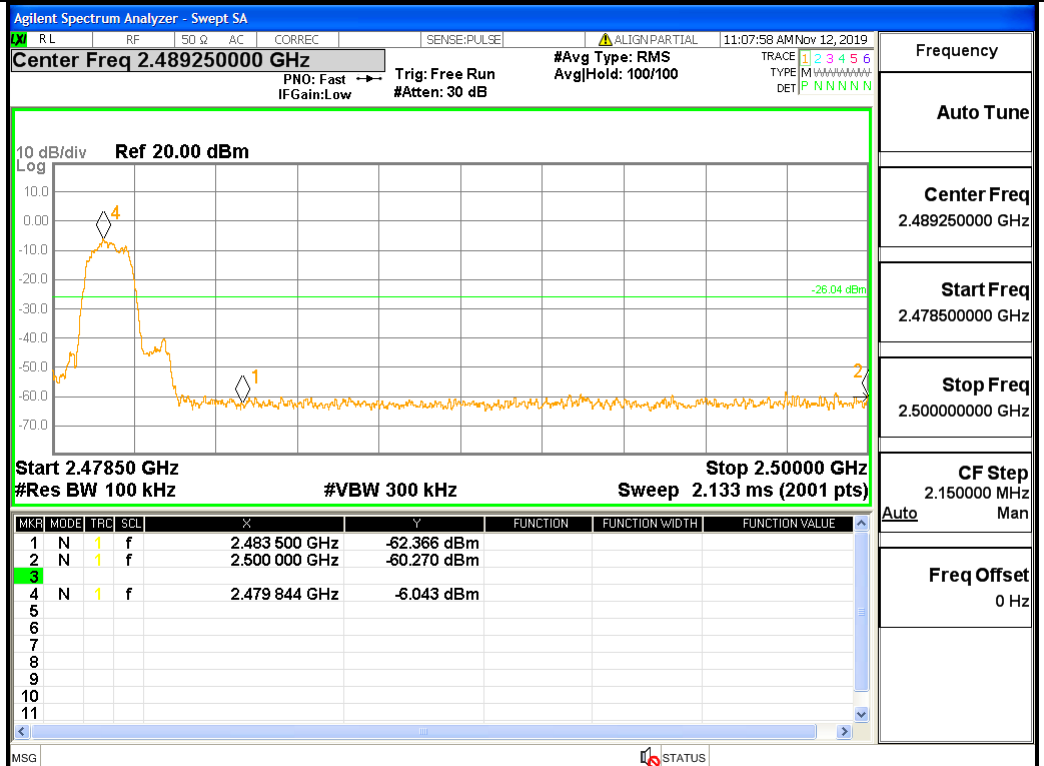
GFSK/HCH/ No Hop



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

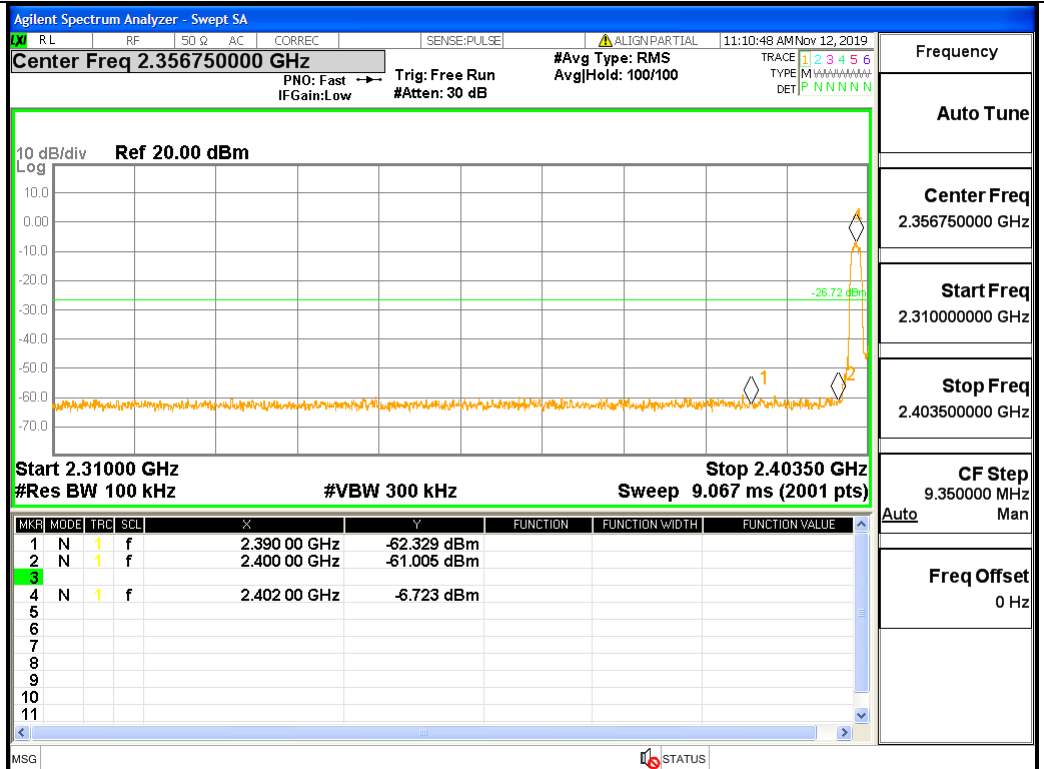


$\pi/4$ DQPSK/HCH/No
Hop

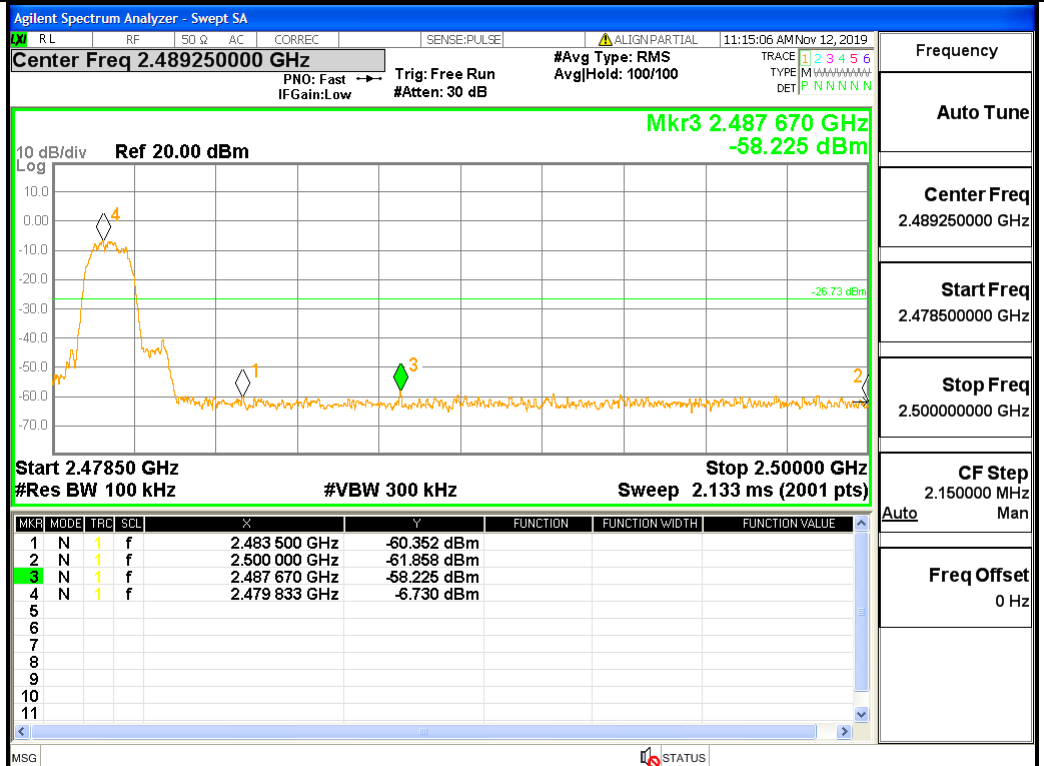


IC: 25669-IPA1114HDW

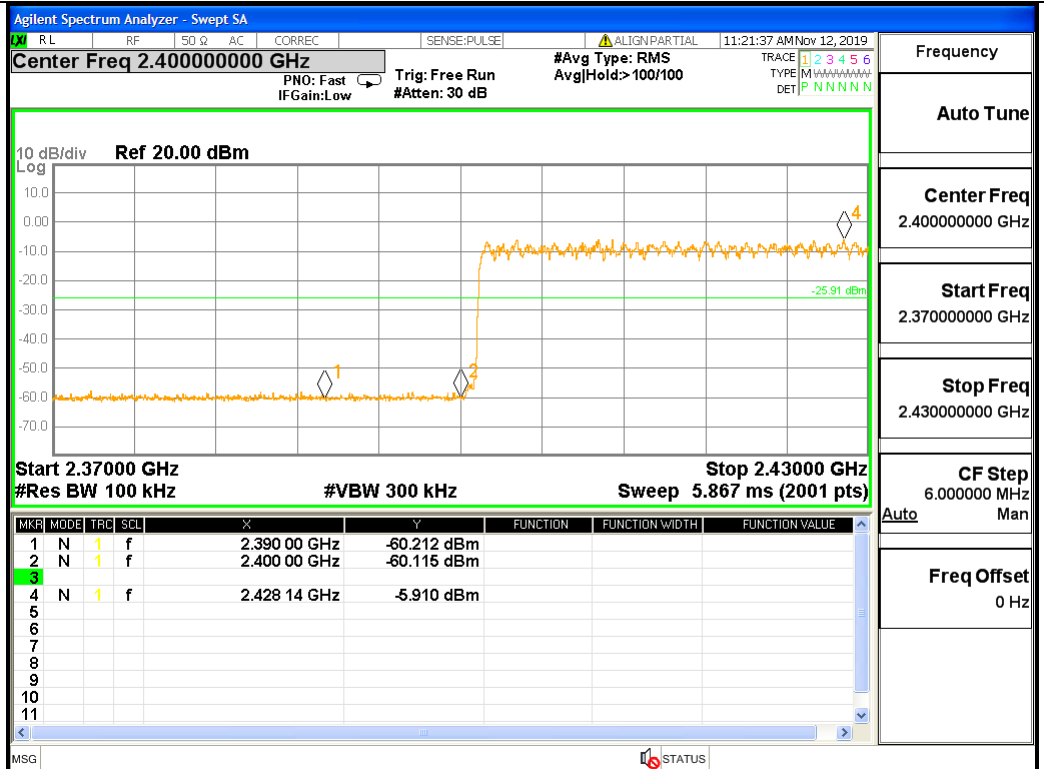
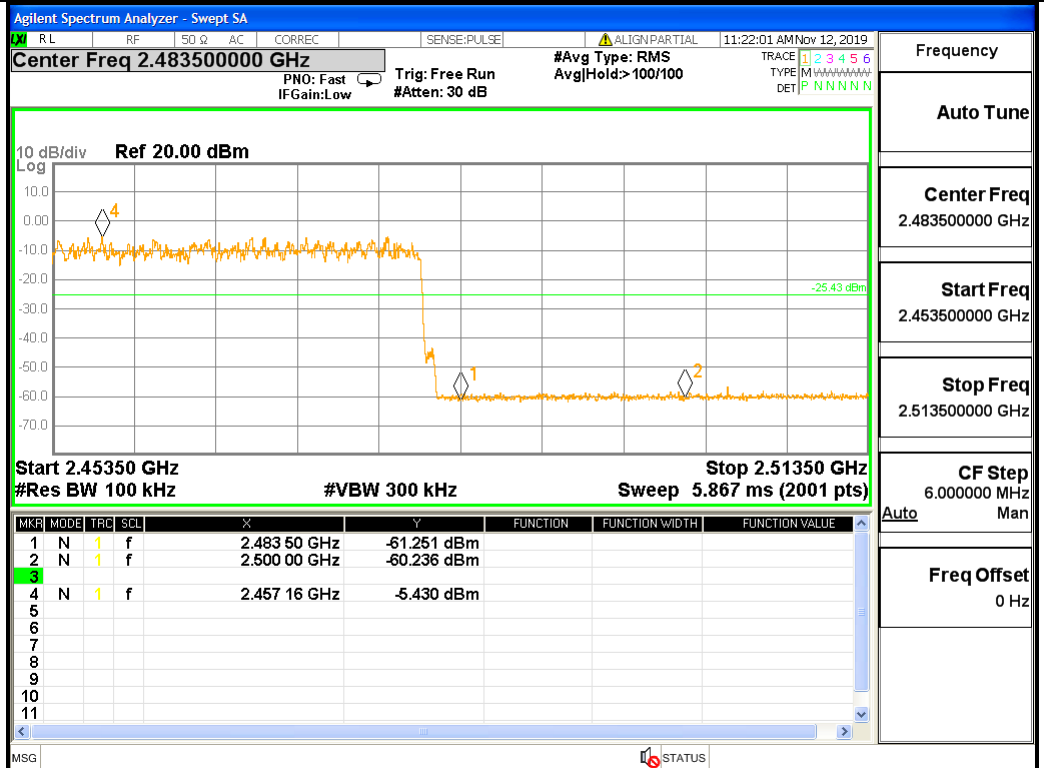
8DPSK/LCH/No Hop



8DPSK/HCH/ No Hop

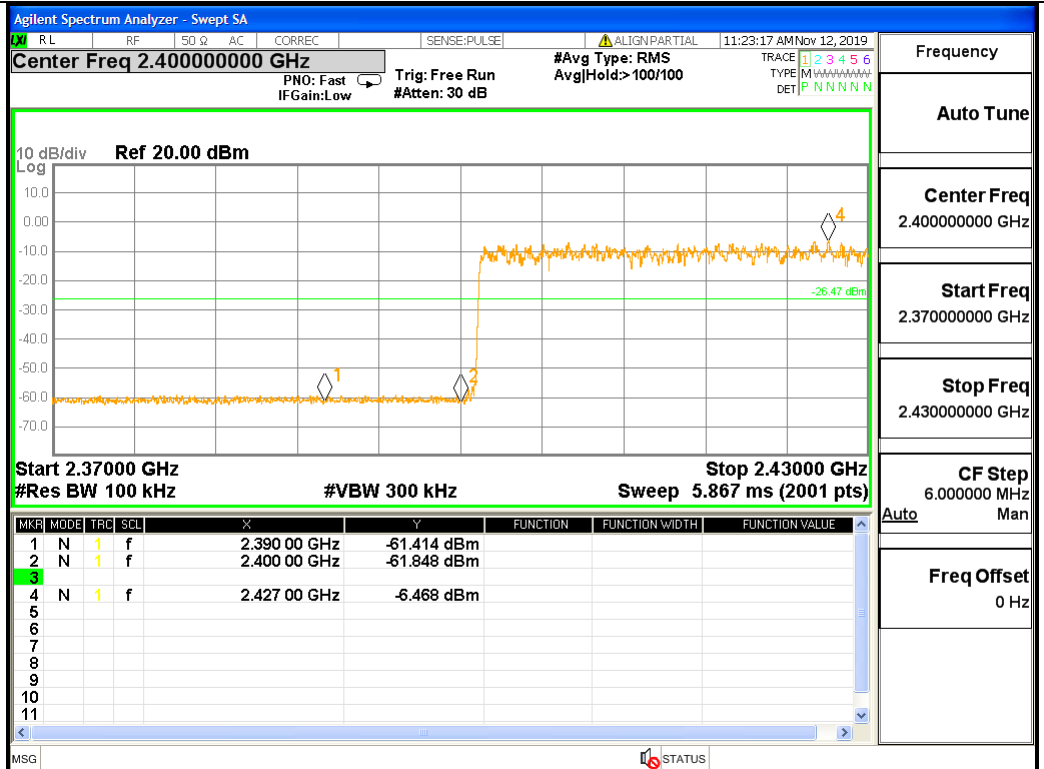


IC: 25669-IPA1114HDW

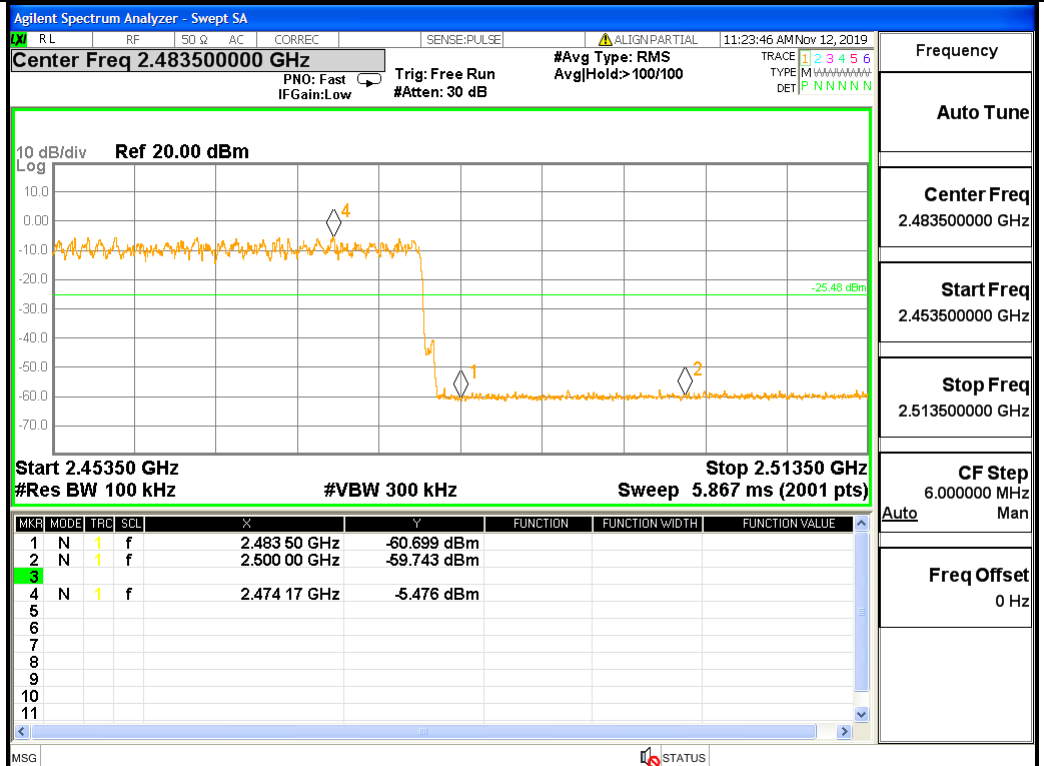
 $\pi/4$ DQPSK/LCH/Hop $\pi/4$ DQPSK/HCH/ Hop

IC: 25669-IPA1114HDW

8DPSK/LCH/Hop

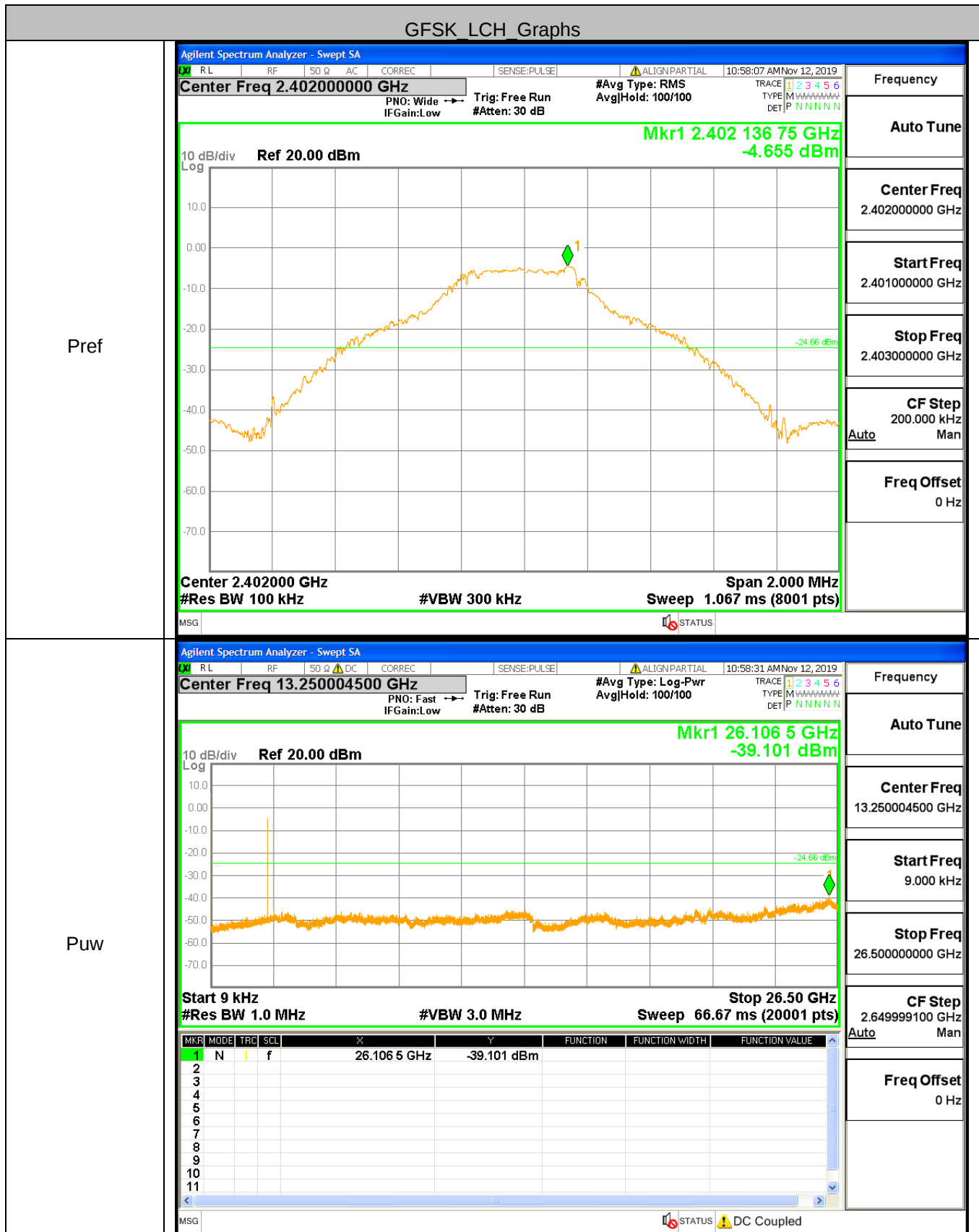


8DPSK/HCH/Hop

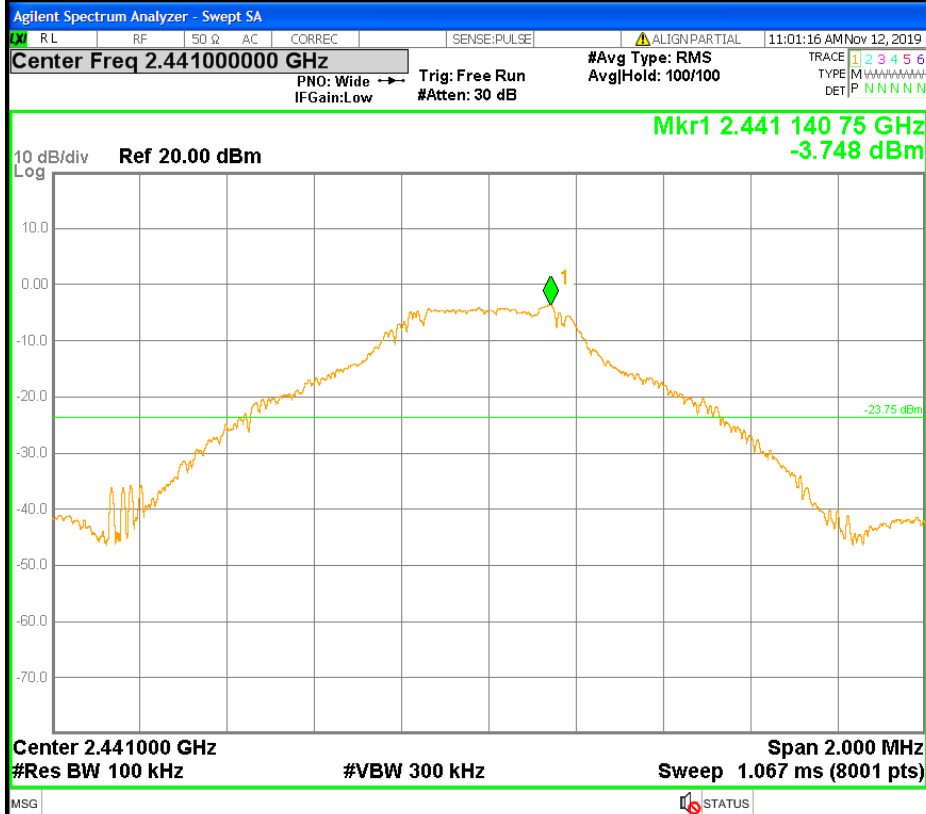


A.7 RF Conducted Spurious Emissions

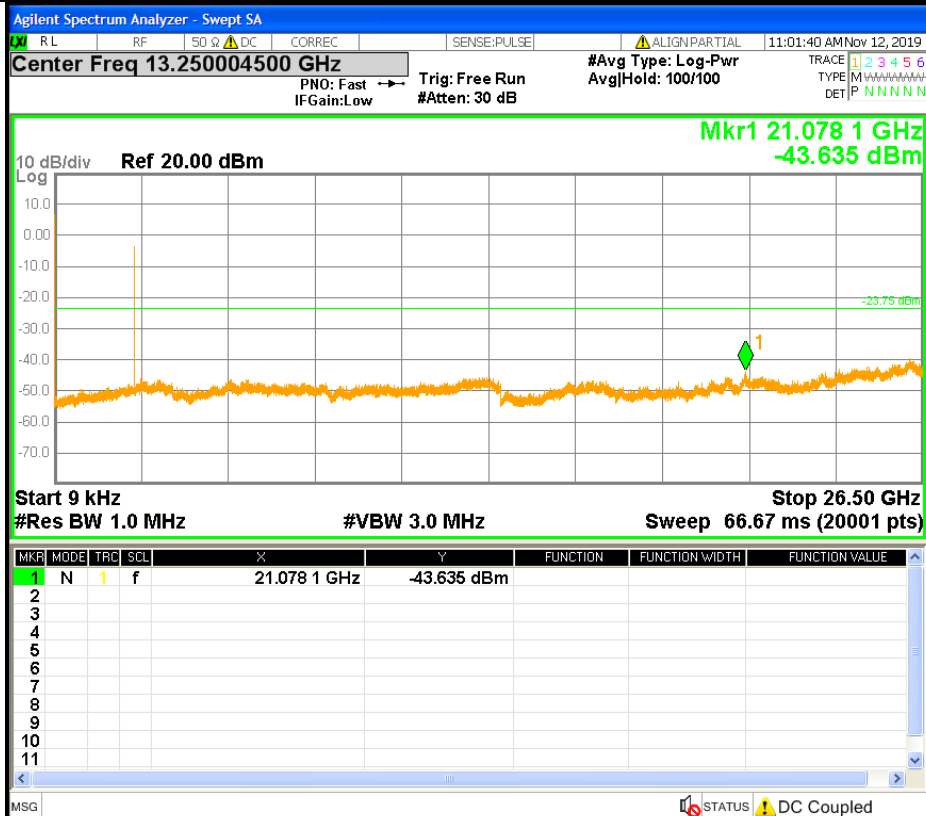
Test Graph



Pref

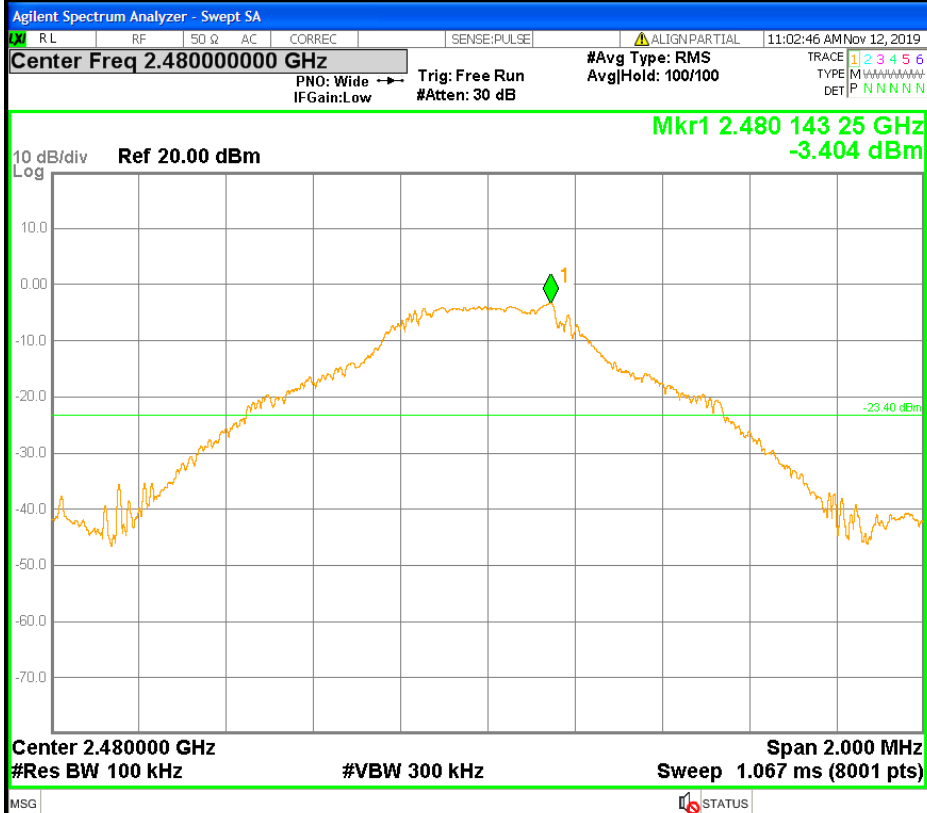


PuW

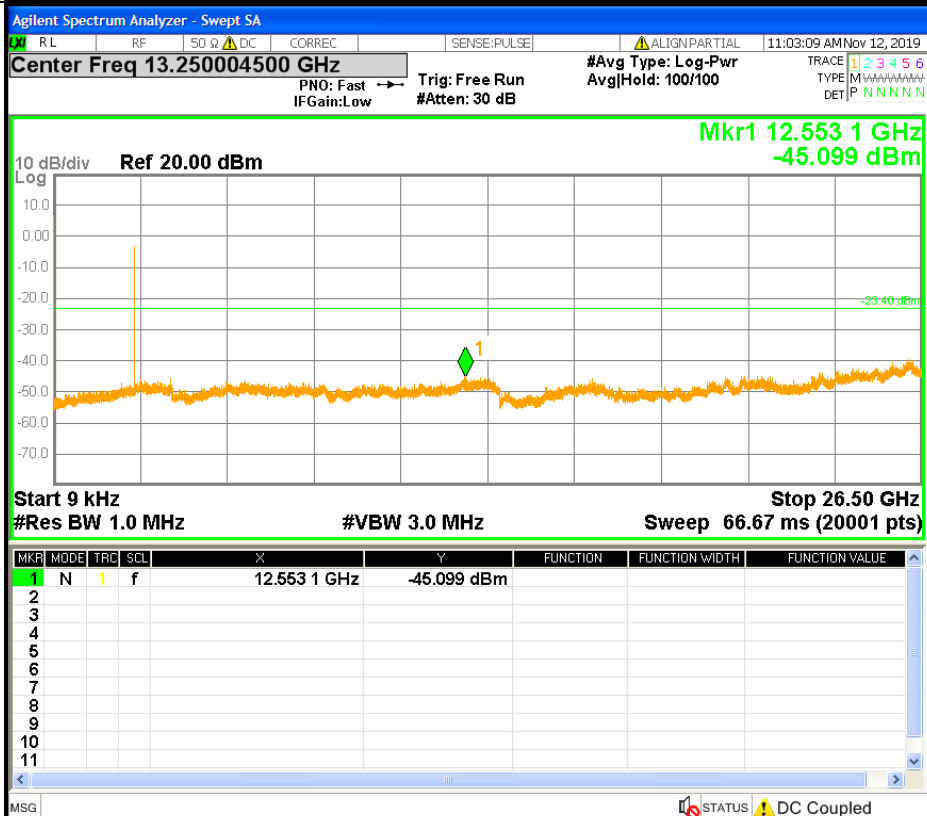


GFSK HCH Graphs

Pref

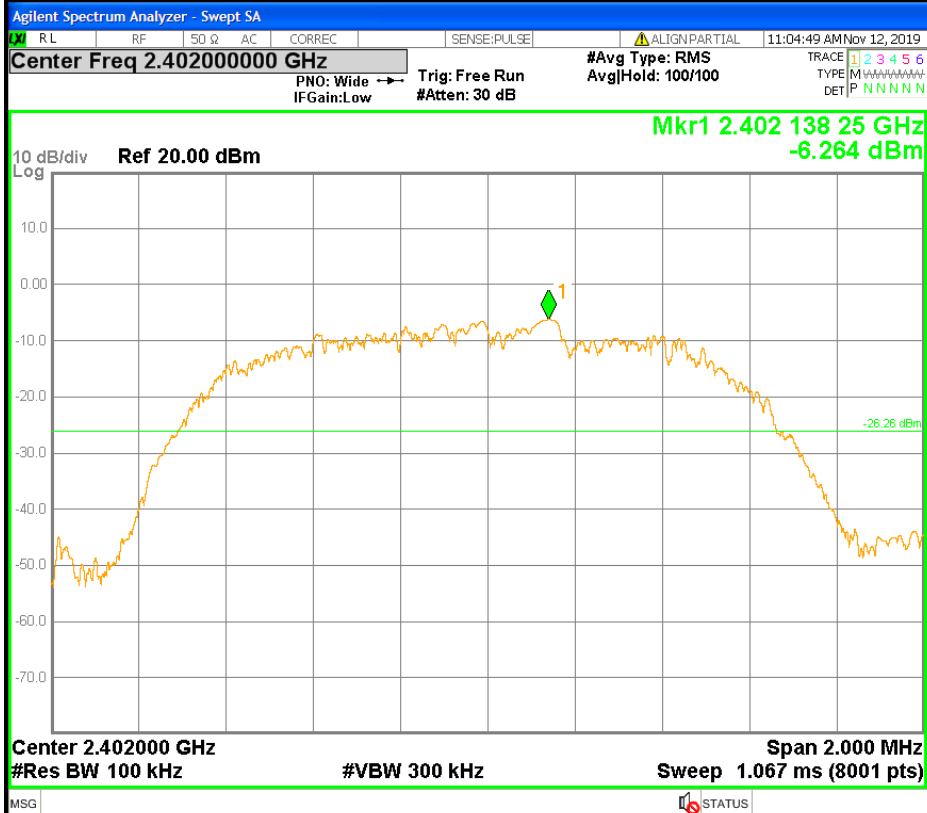


Puw

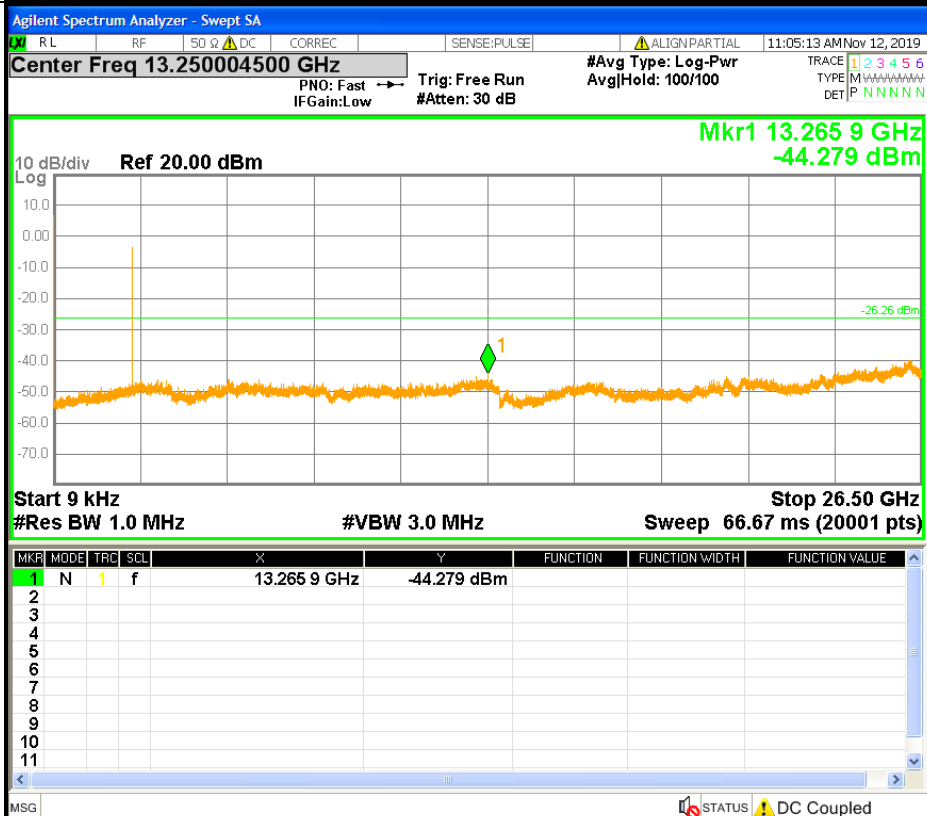


$\pi/4$ DQPSK LCH Graphs

Pref

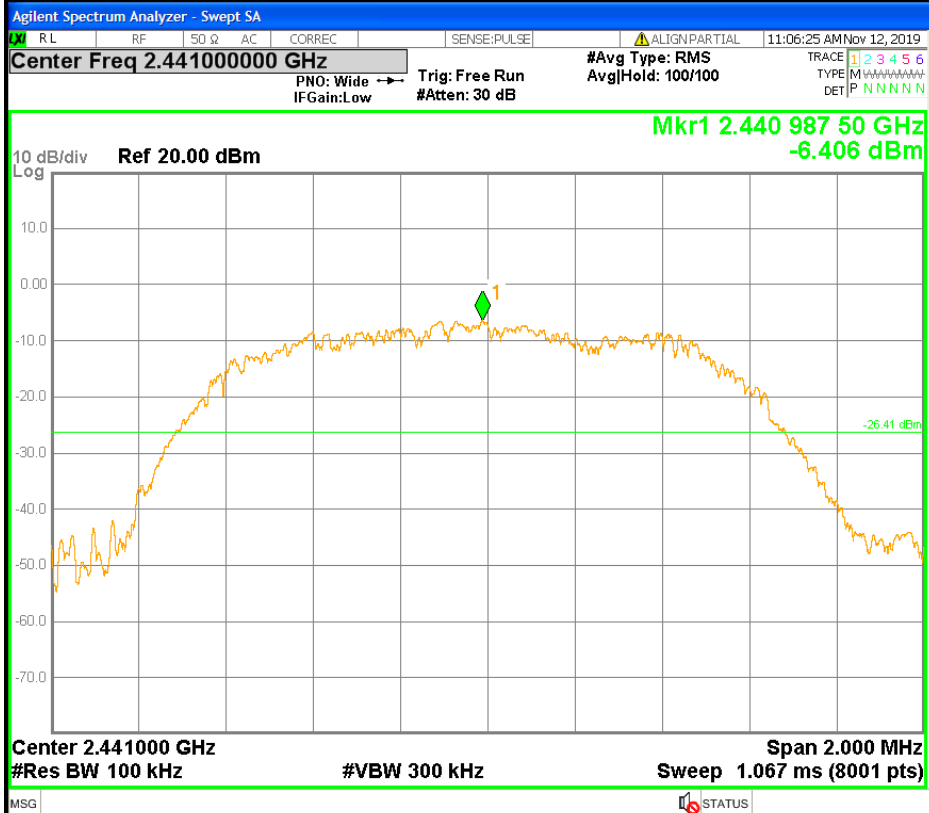


Puw

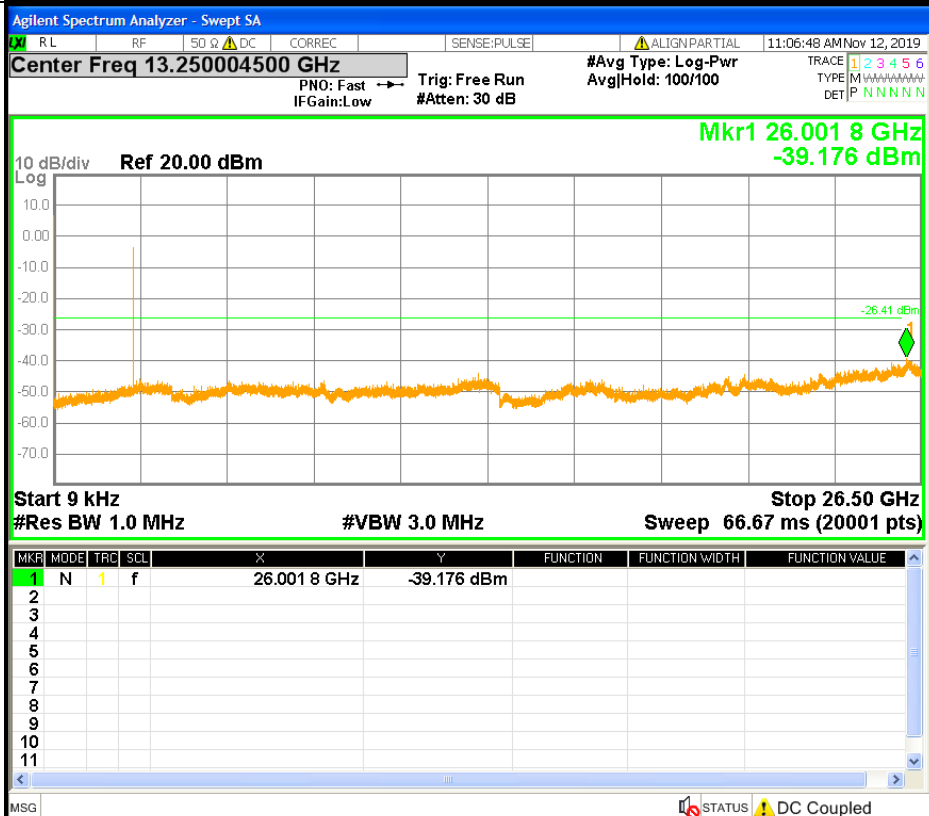


$\pi/4$ DQPSK MCH Graphs

Pref

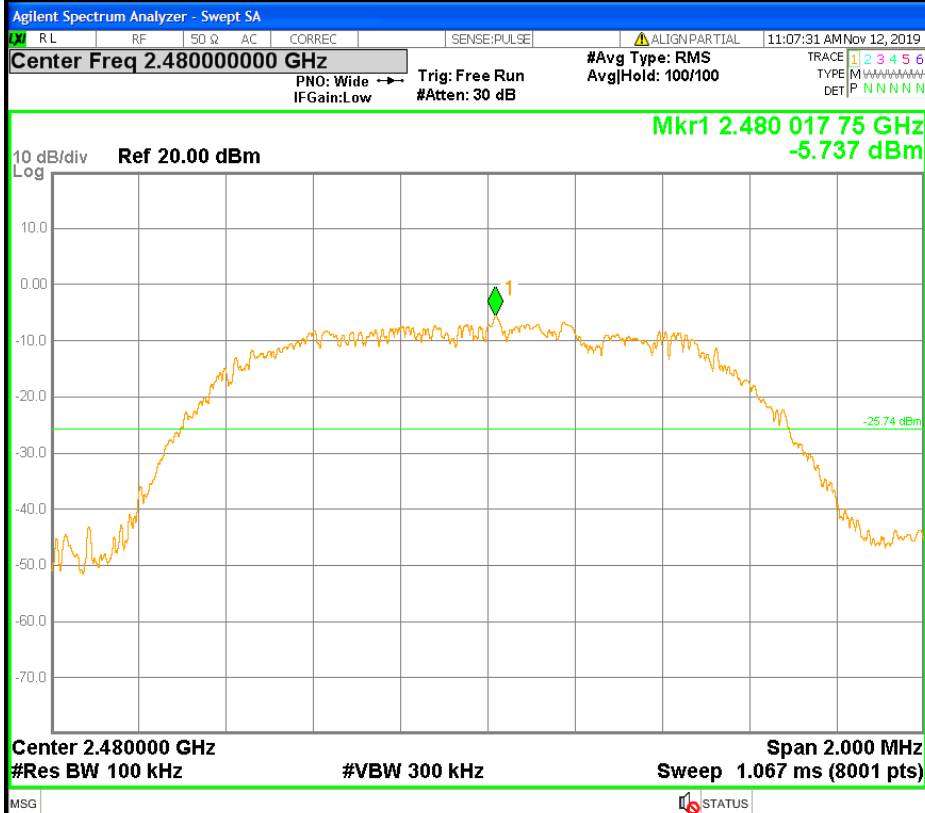


Puw

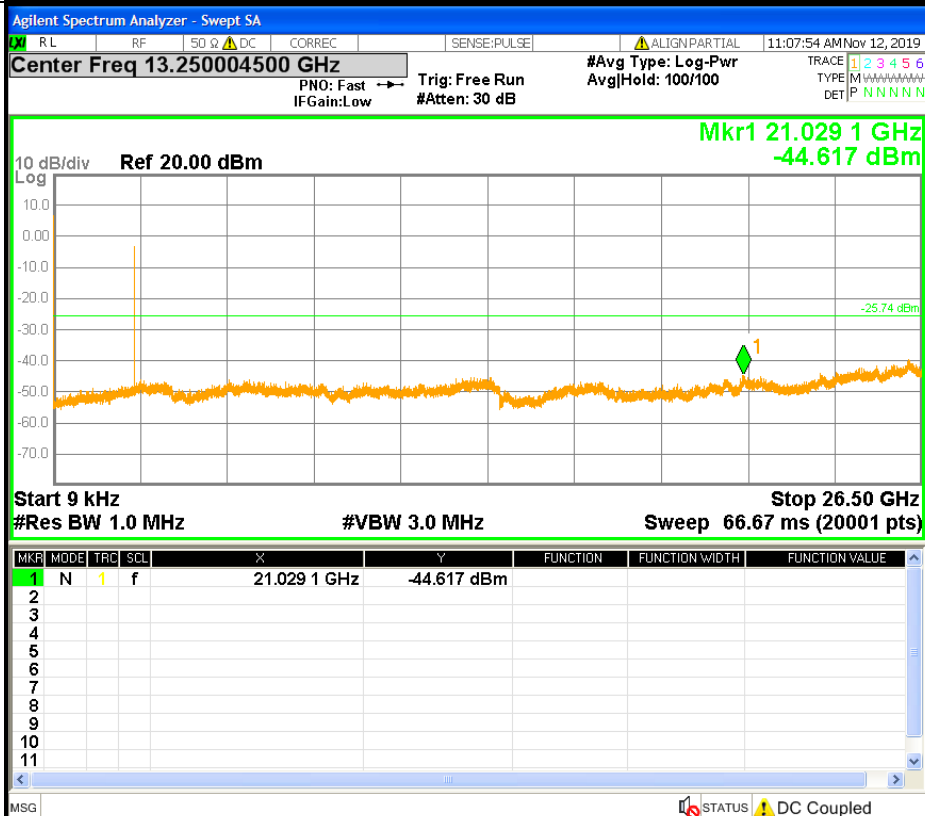


$\pi/4$ DQPSK HCH Graphs

Pref

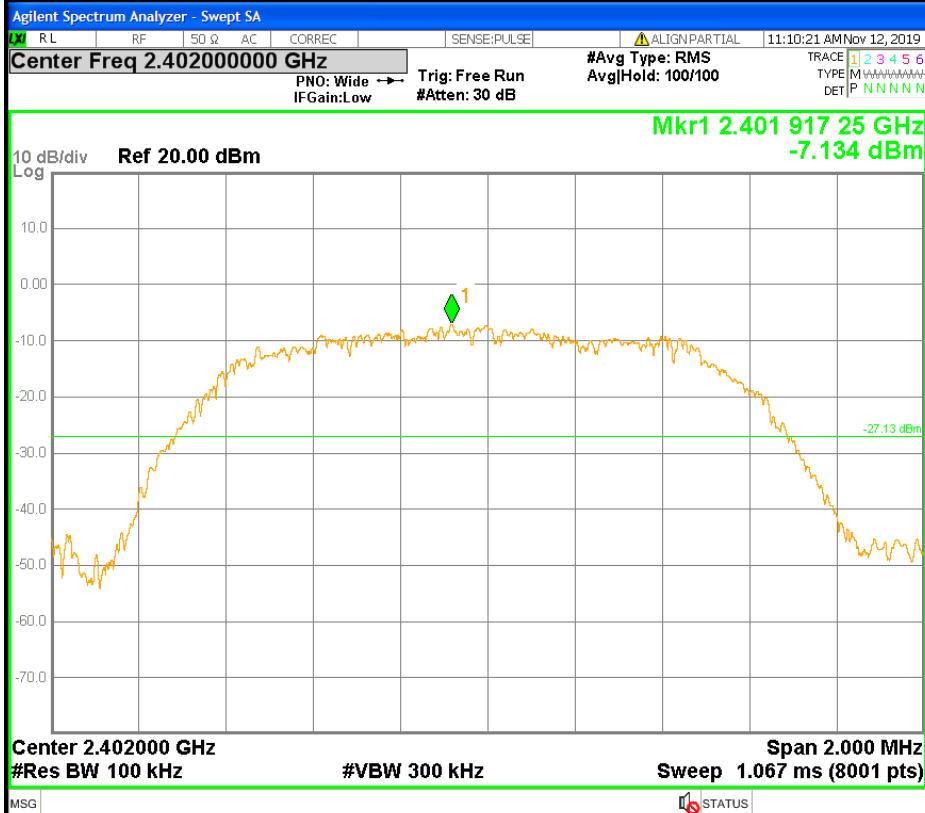


Puw

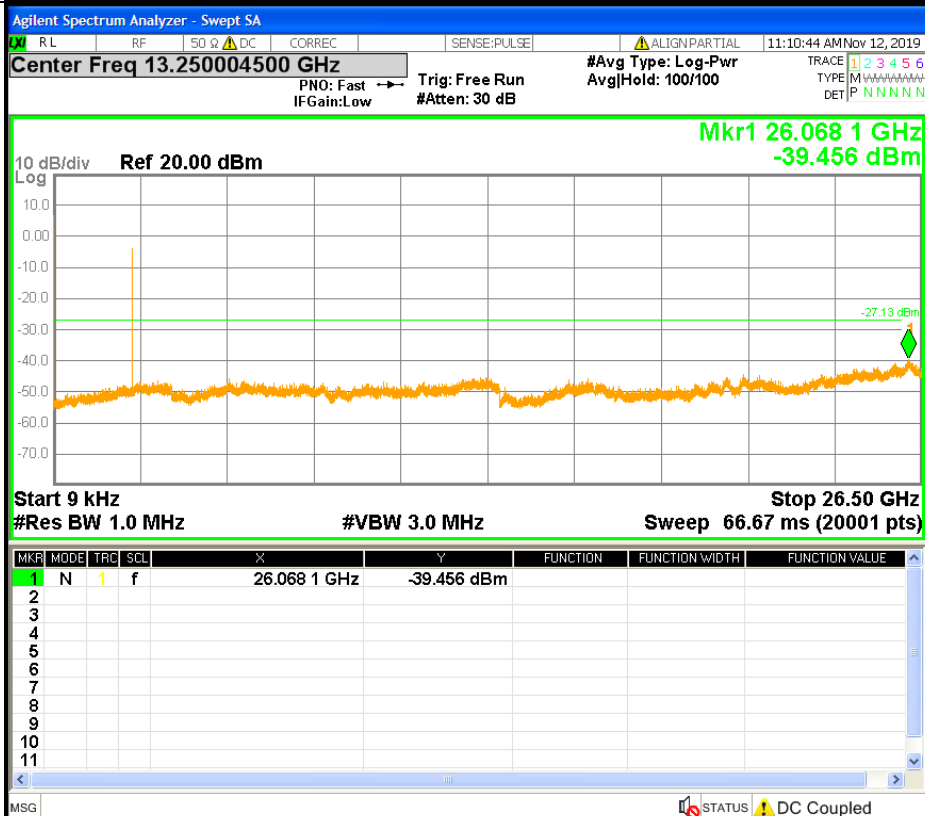


8DPSK LCH Graphs

Pref

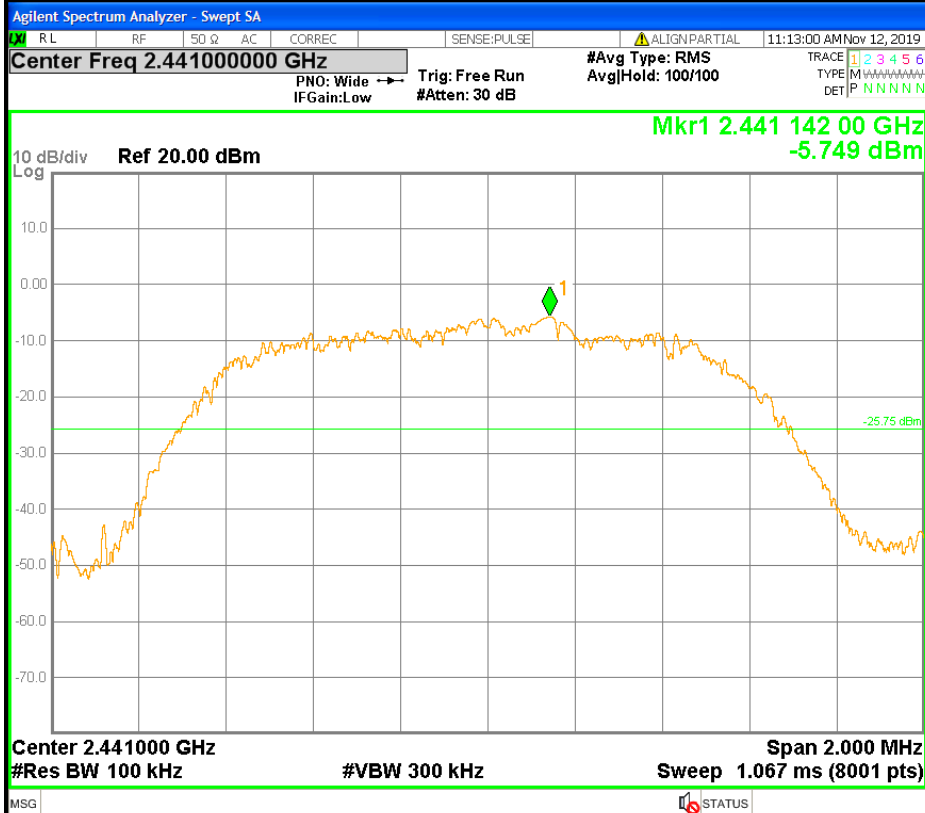


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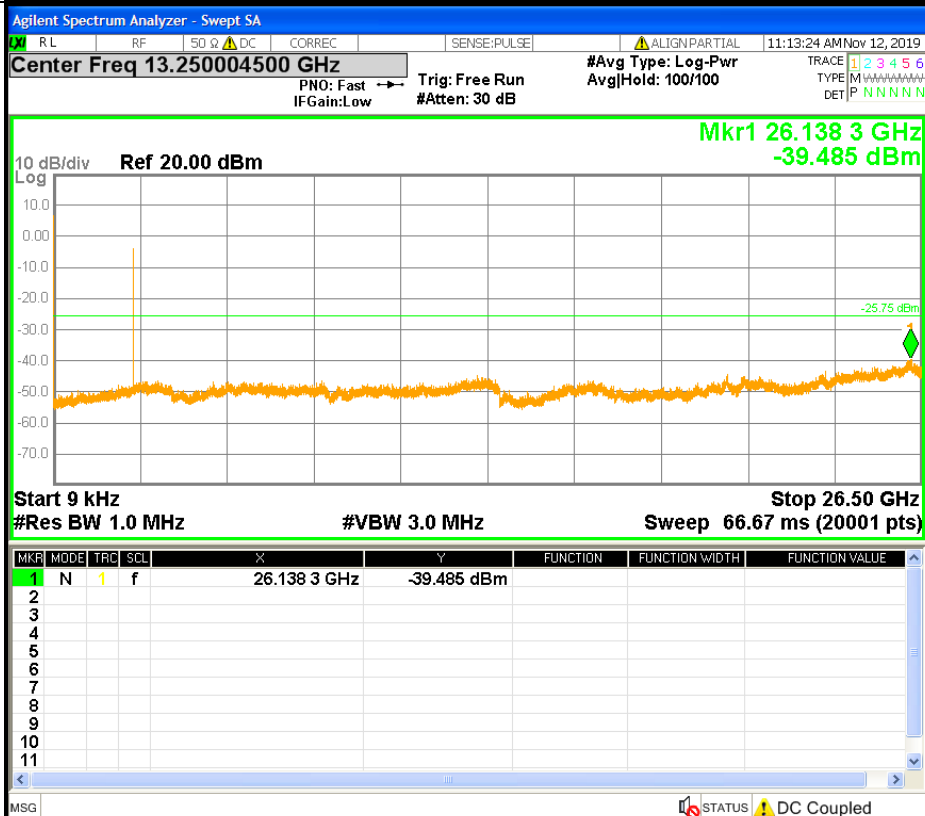


8DPSK MCH Graphs

Pref

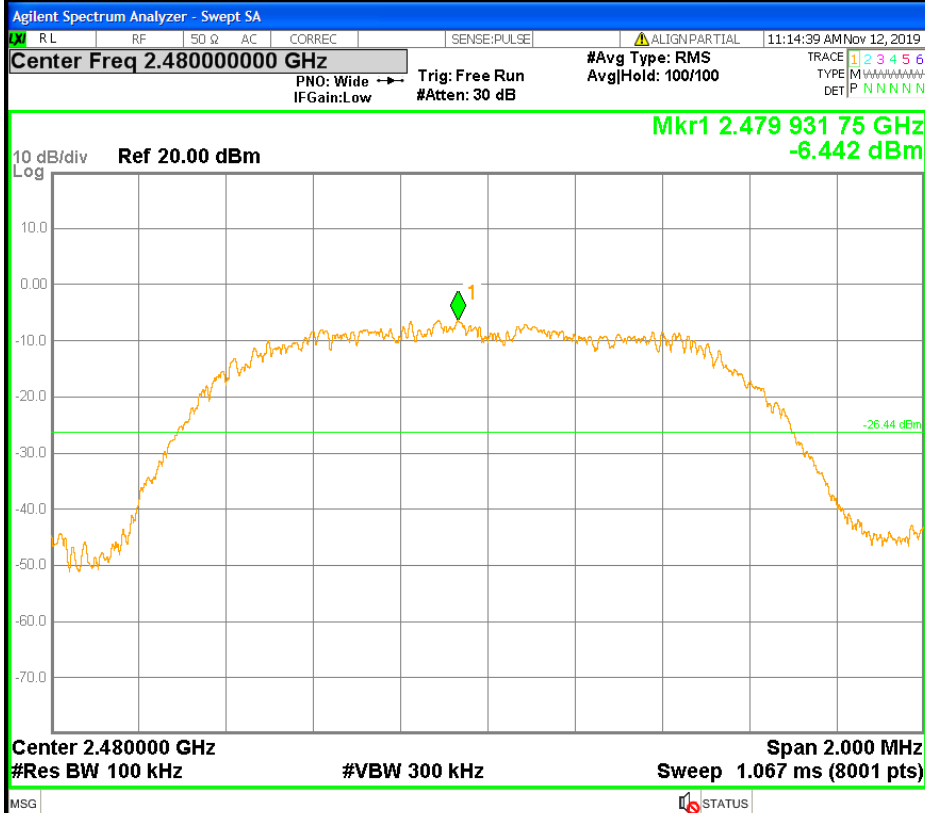


Puw

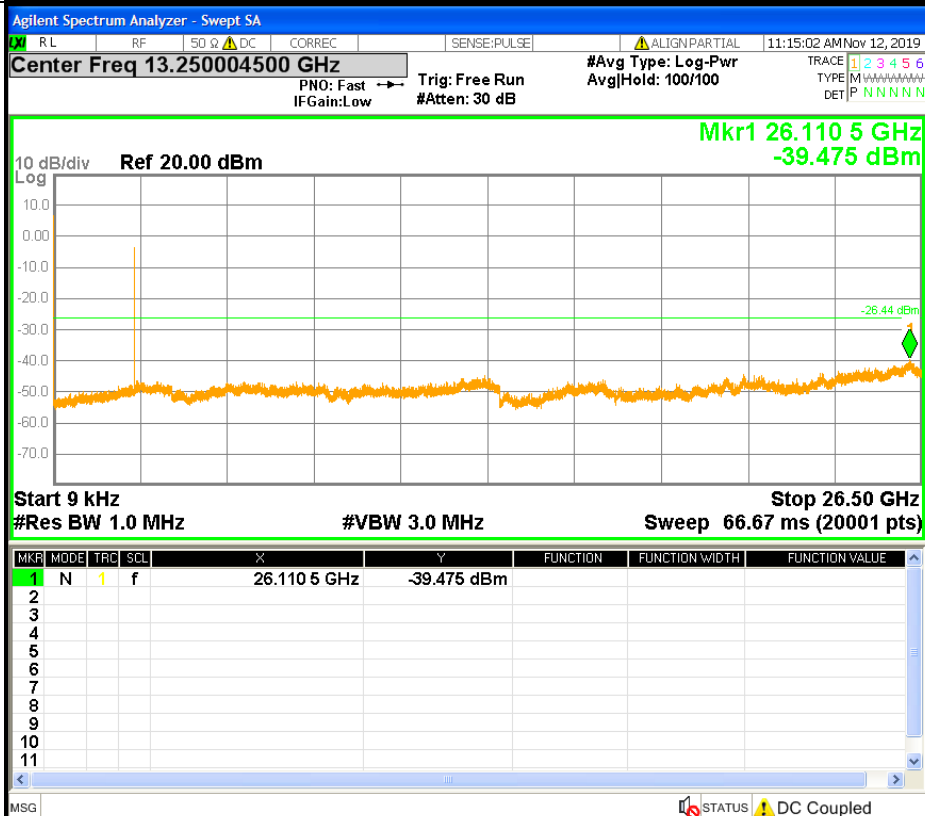


8DPSK HCH Graphs

Pref



Puw

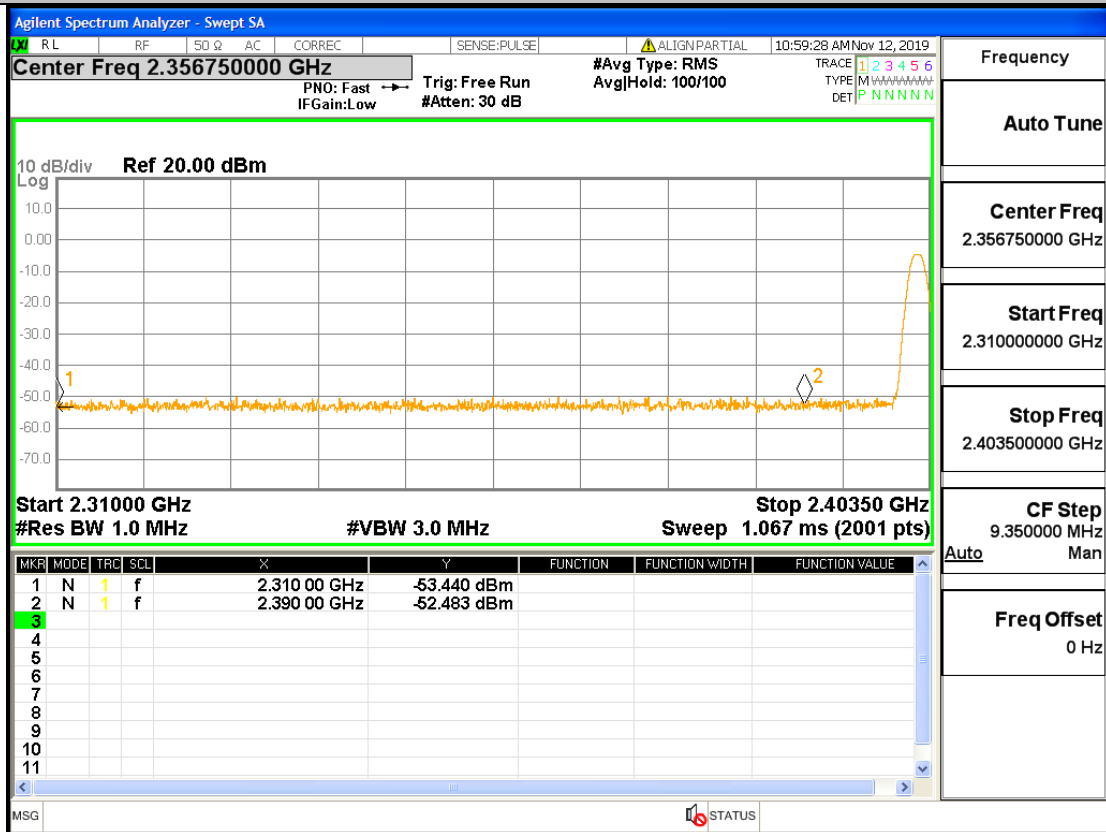


A.8 Restrict-band band-edge measurements

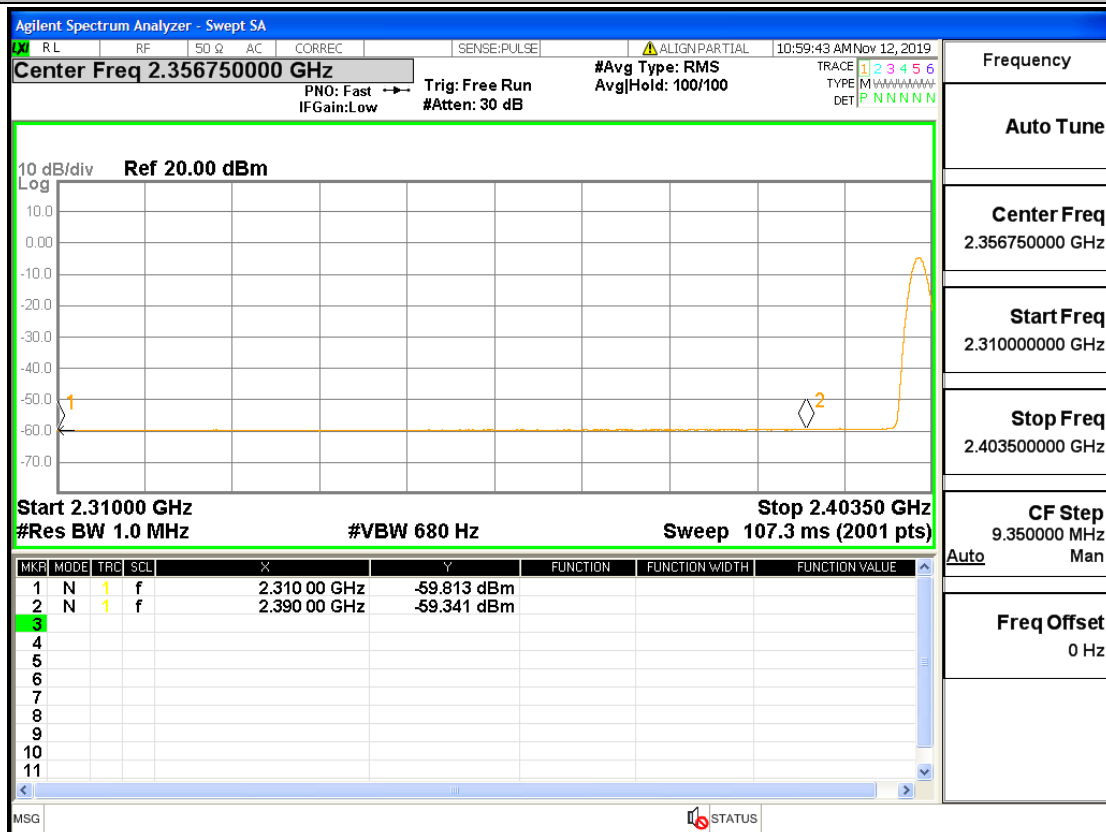
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390	2.0	0.00	-52.48	44.72	74	Pass
1DH5	2480	2483.5	2.0	0.00	-51.32	45.88	74	Pass
2DH5	2402	2390	2.0	0.00	-51.9	45.3	74	Pass
2DH5	2480	2500	2.0	0.00	-52.2	45	74	Pass
3DH5	2402	2390	2.0	0.00	-52.22	44.98	74	Pass
3DH5	2480	2483.5	2.0	0.00	-51.89	45.31	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390	2.0	0.00	-59.34	37.86	54	Pass
1DH5	2480	2483.5	2.0	0.00	-57.12	40.08	54	Pass
2DH5	2402	2390	2.0	0.00	-59.26	37.94	54	Pass
2DH5	2480	2500	2.0	0.00	-58.08	39.12	54	Pass
3DH5	2402	2390	2.0	0.00	-59.58	37.62	54	Pass
3DH5	2480	2483.5	2.0	0.00	-56.9	40.3	54	Pass

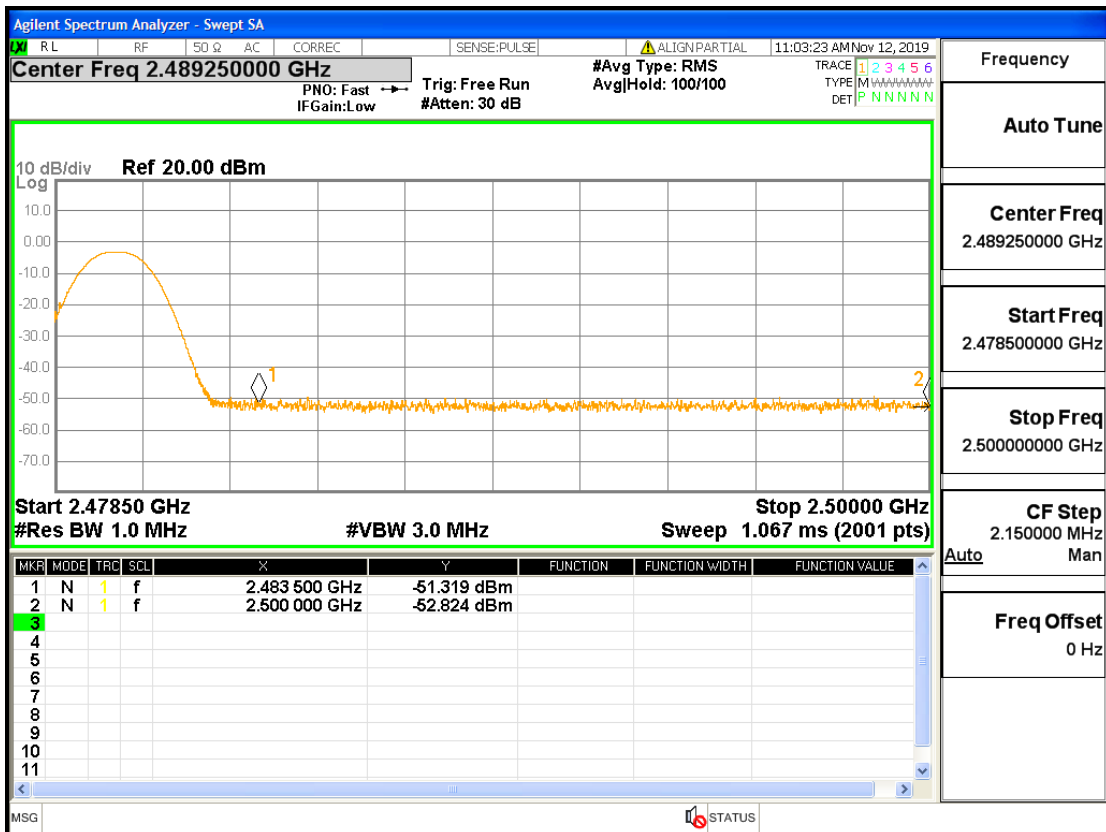
Restrict-band band-edge measurements_2402_PEAK_DH5



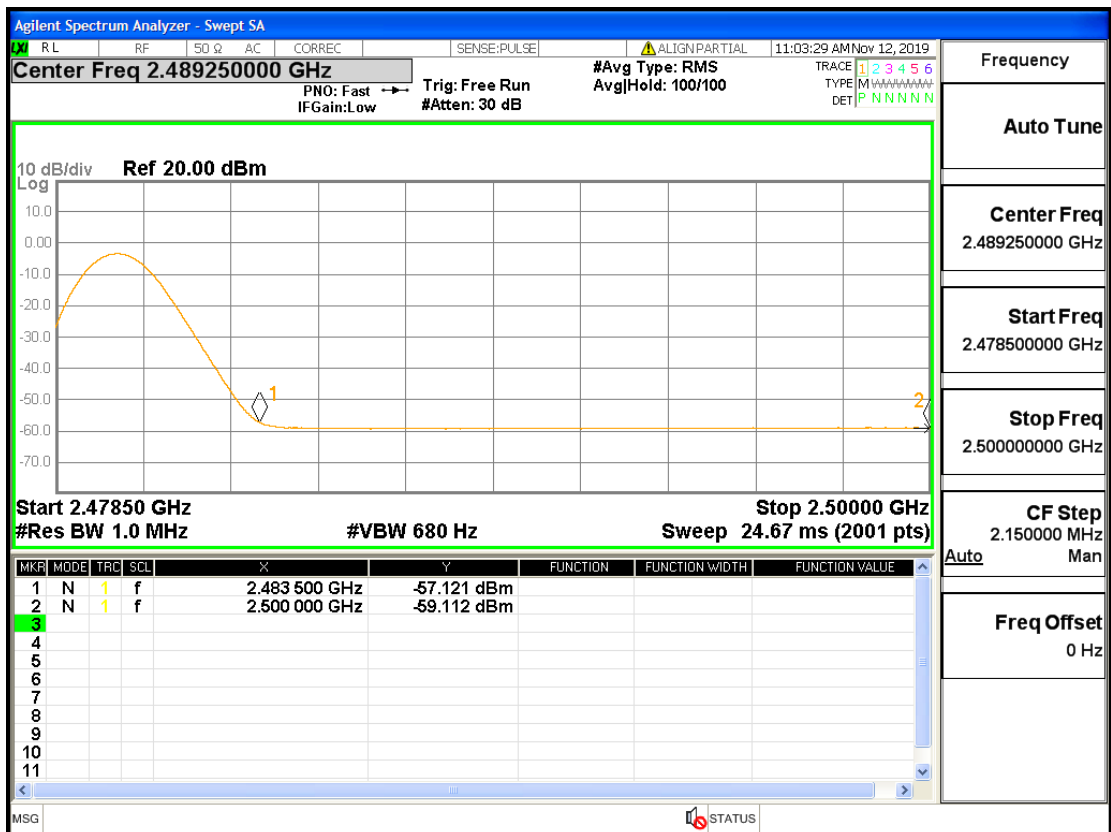
Restrict-band band-edge measurements_2402_AV_DH5



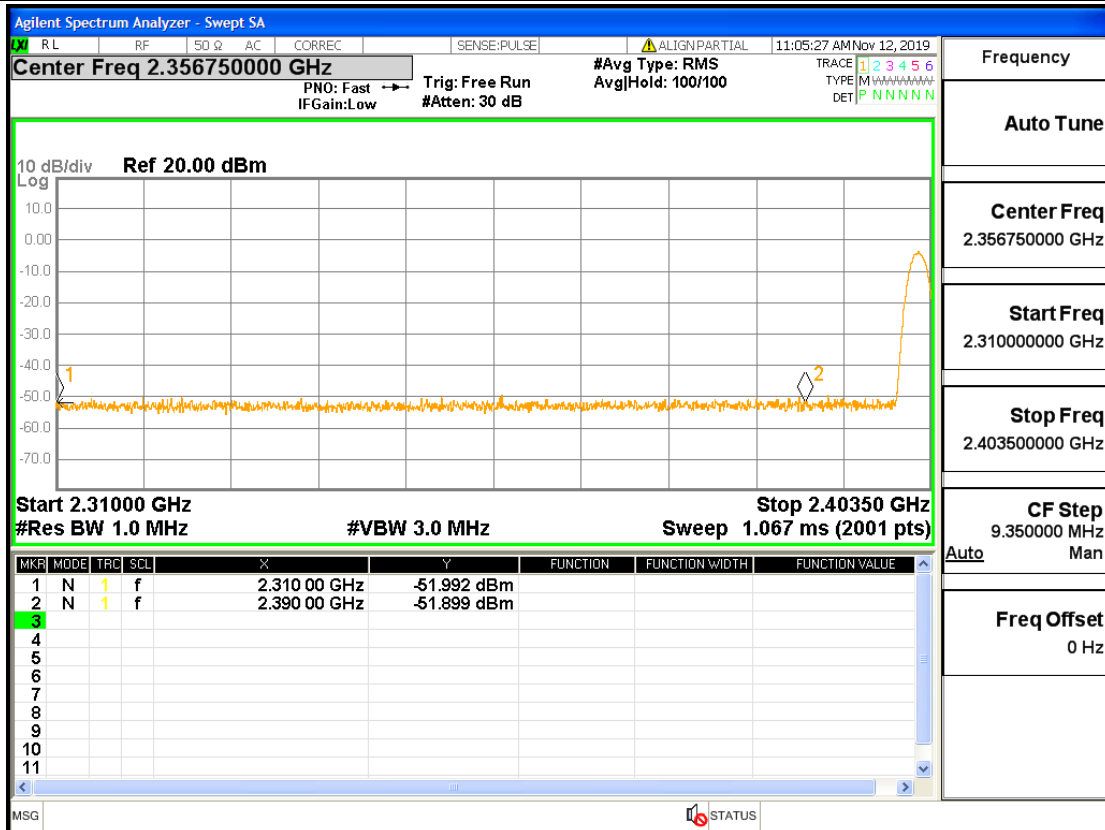
Restrict-band band-edge measurements_2480_PEAK_DH5



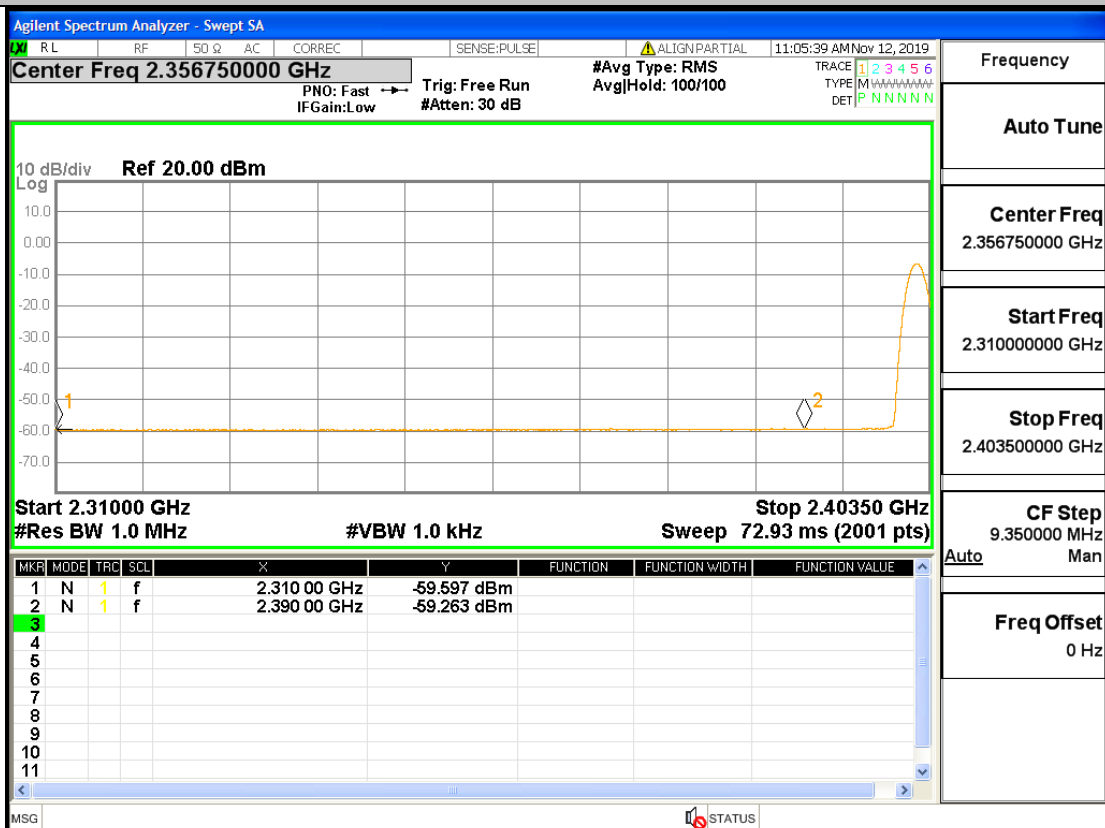
Restrict-band band-edge measurements_2480_AV_DH5



Restrict-band band-edge measurements_2402_PEAK_2DH5

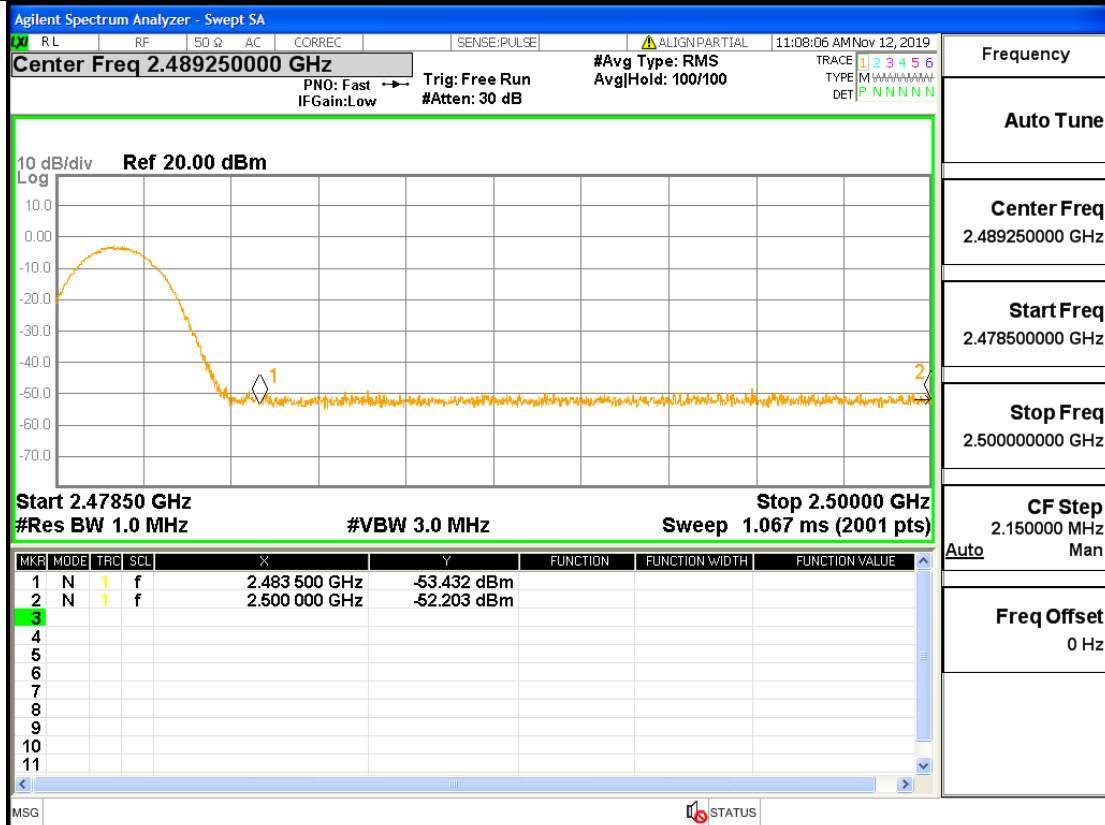


Restrict-band band-edge measurements_2402_AV_2DH5

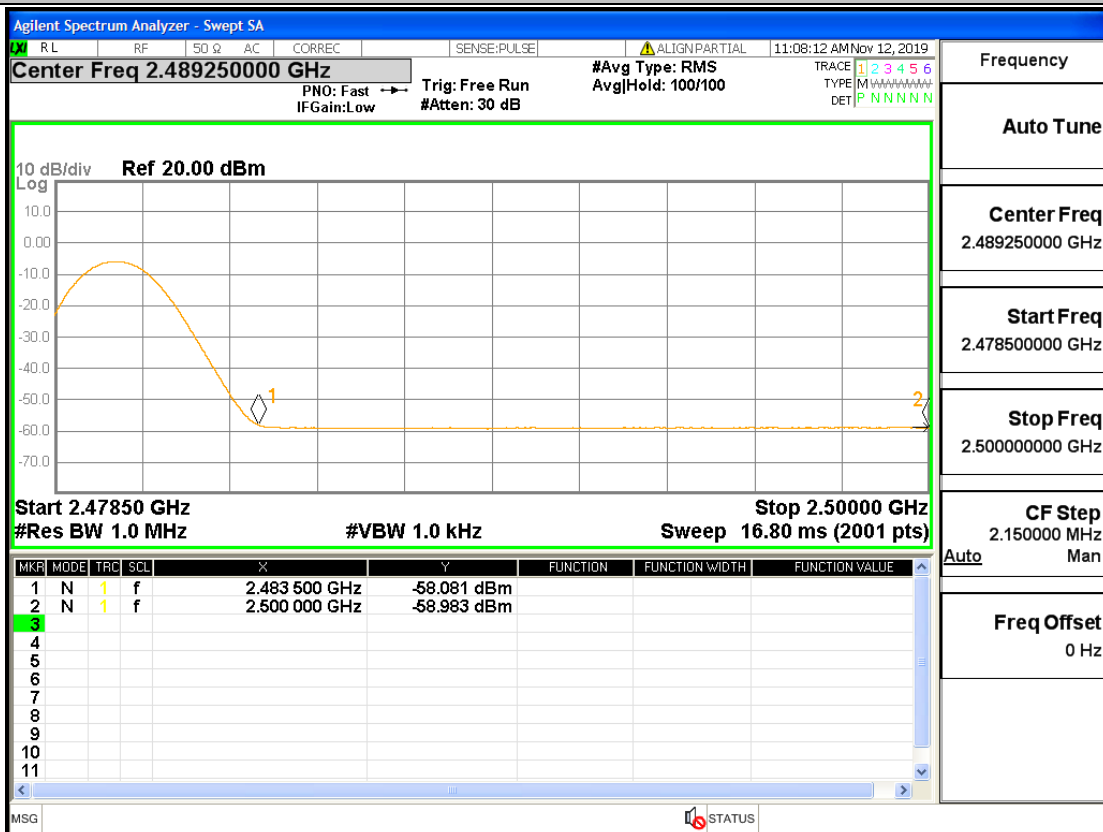


Restrict-band band-edge measurements_2480_PEAK_2DH5

IC: 25669-IPA1114HDW

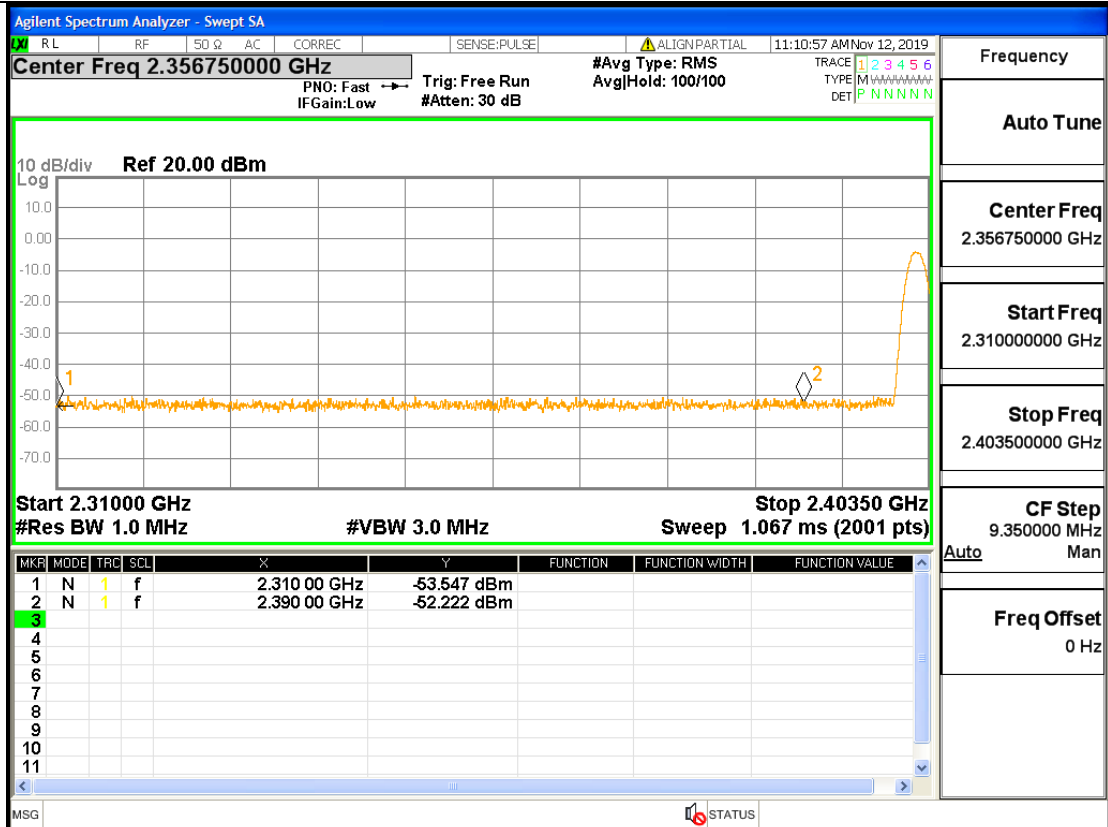


Restrict-band band-edge measurements_2480_AV_2DH5

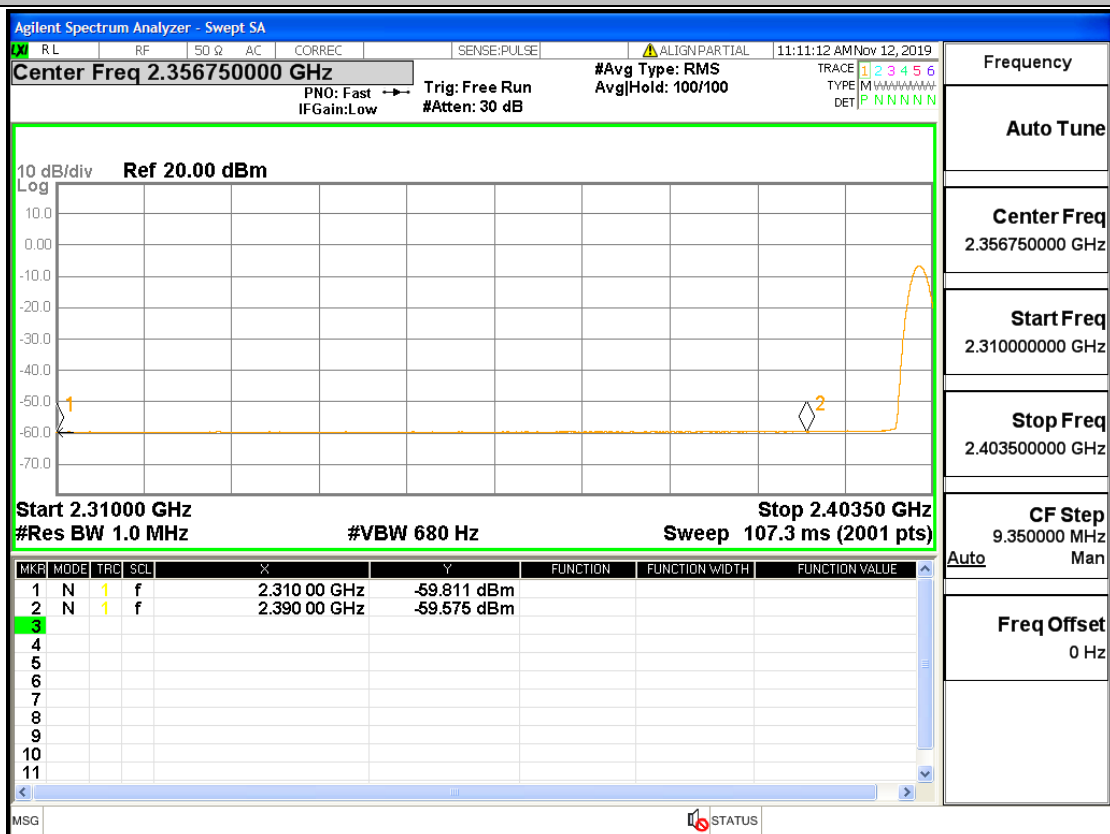


Restrict-band band-edge measurements_2402_PEAK_3DH5

IC: 25669-IPA1114HDW

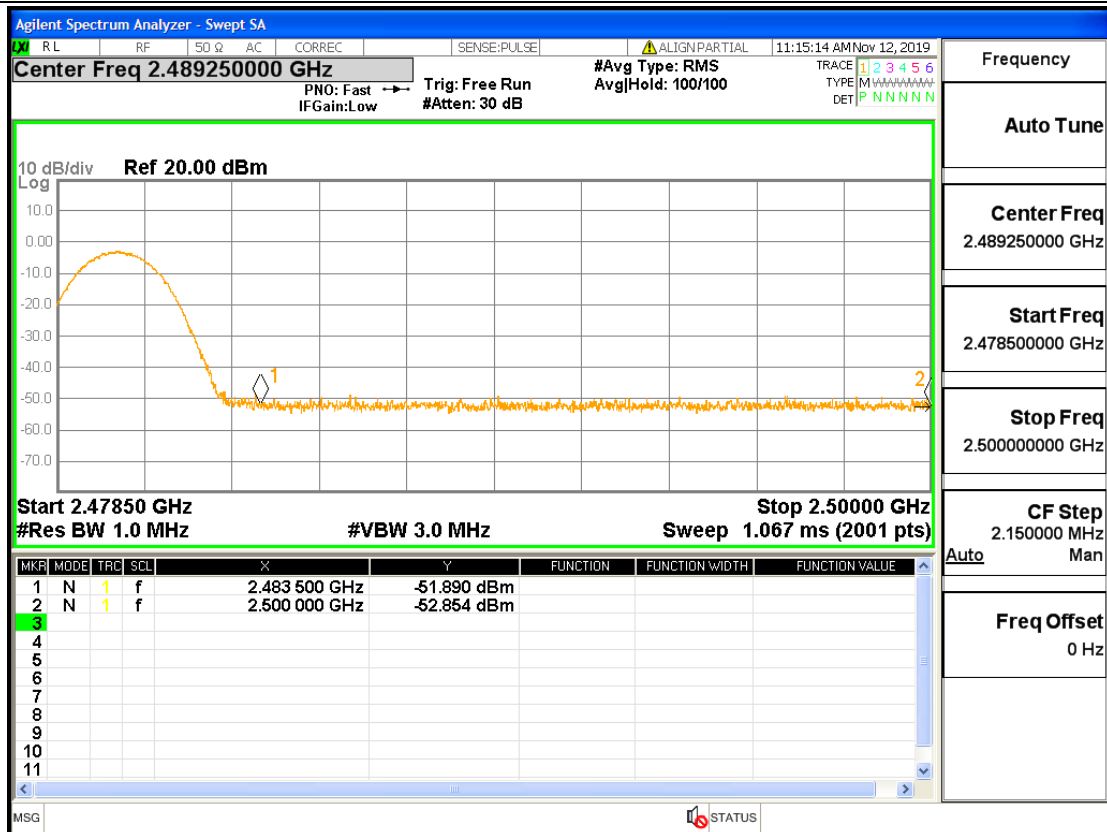


Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5

IC: 25669-IPA1114HDW



Restrict-band band-edge measurements_2480_AV_3DH5

