

Appendix A

RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

Product Name: Ture wireless earbuds ANC

Trade Mark: Happy Plugs

Test Model: Air 1 ANC

Environmental Conditions

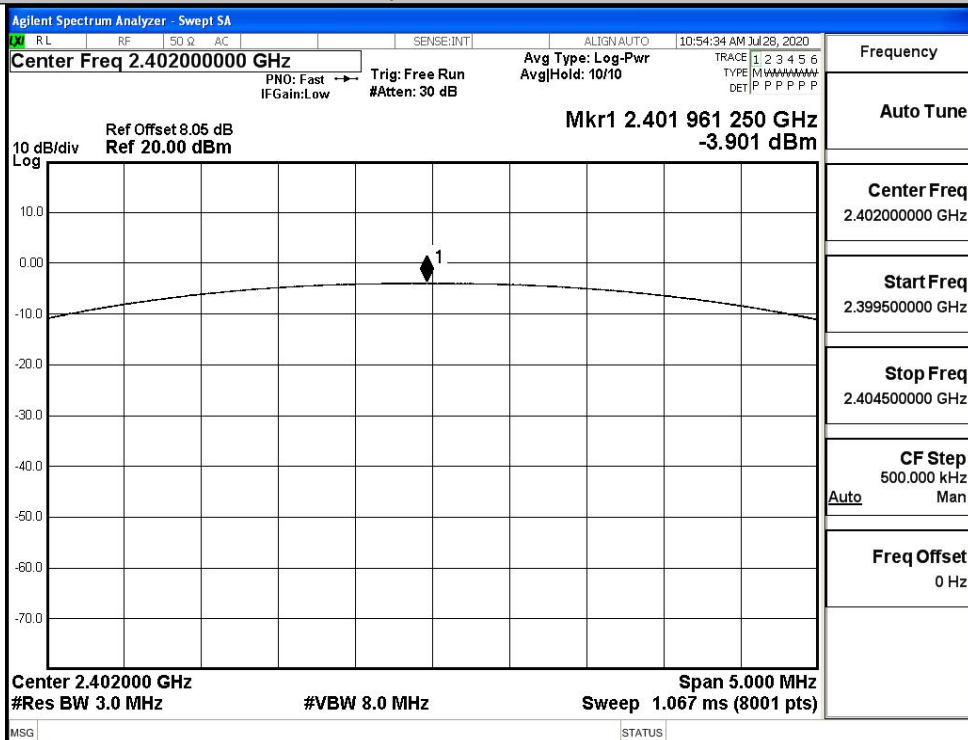
Temperature:	23.1 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

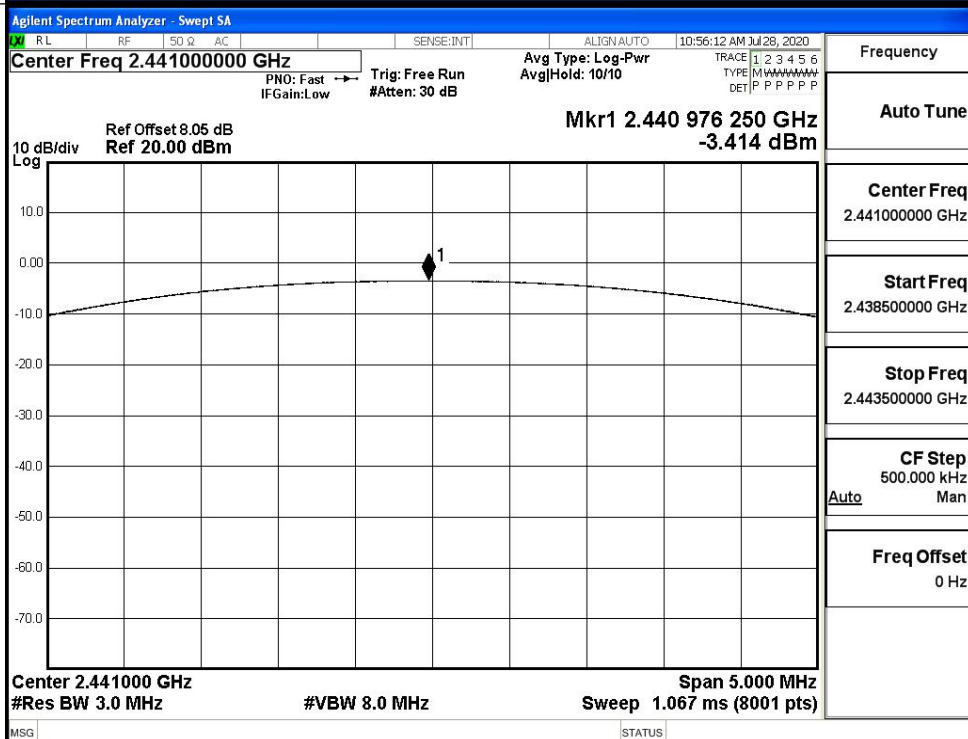
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.901	21	PASS
	MCH	-3.414	21	PASS
	HCH	-3.745	21	PASS
$\pi/4$ DQPSK	LCH	-1.406	21	PASS
	MCH	-0.896	21	PASS
	HCH	-1.310	21	PASS
8DPSK	LCH	-0.739	21	PASS
	MCH	-0.272	21	PASS
	HCH	-0.709	21	PASS

Test Graphs

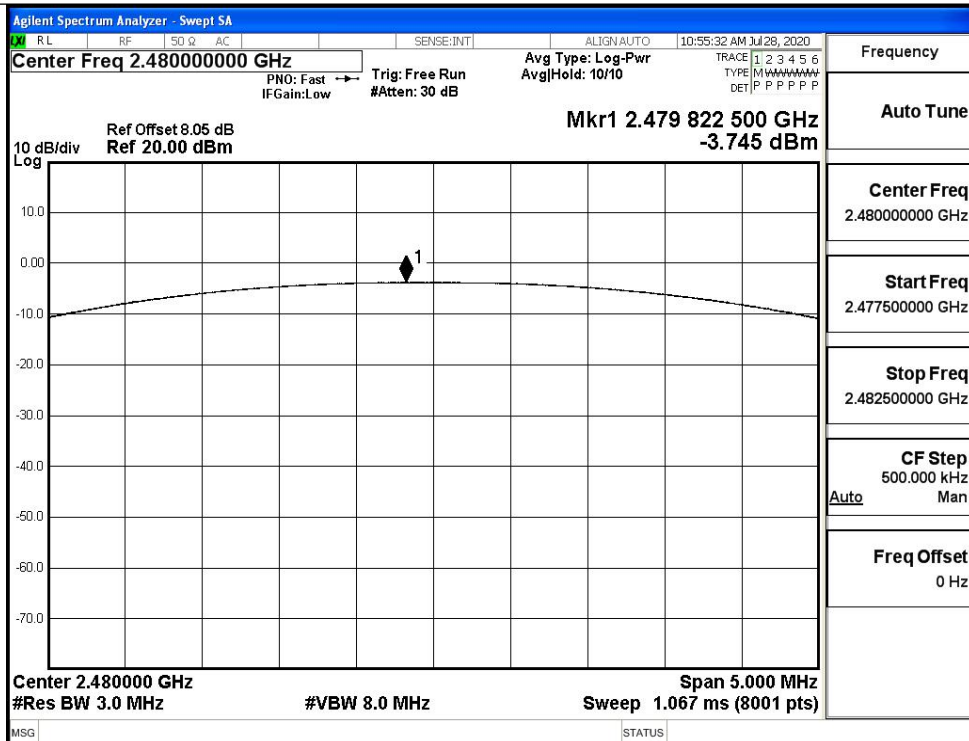
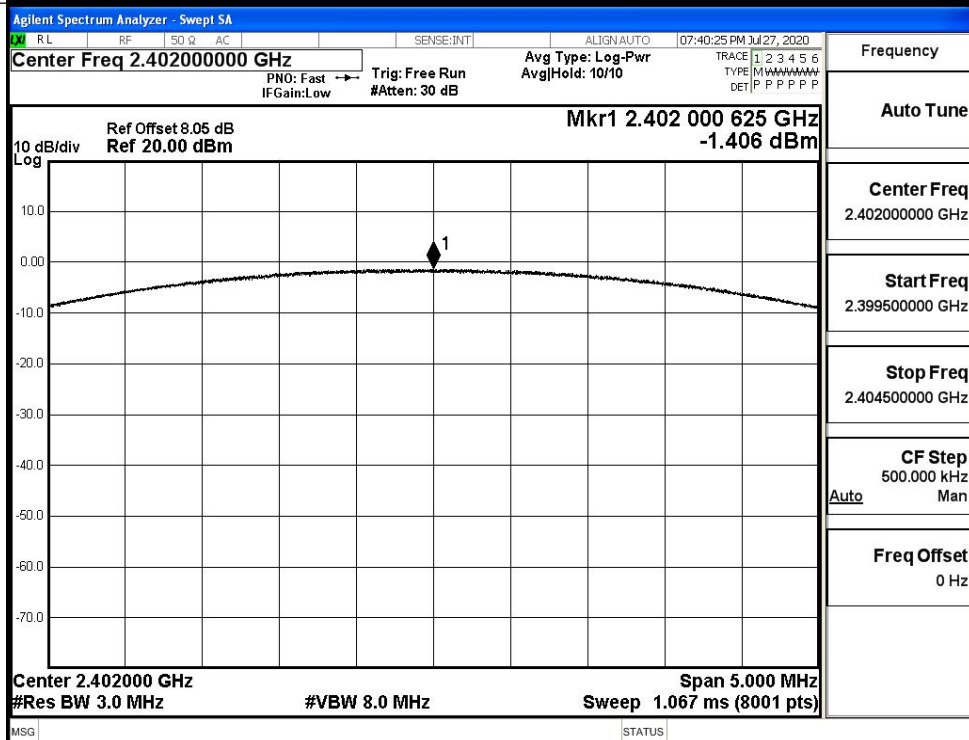
GFSK/LCH

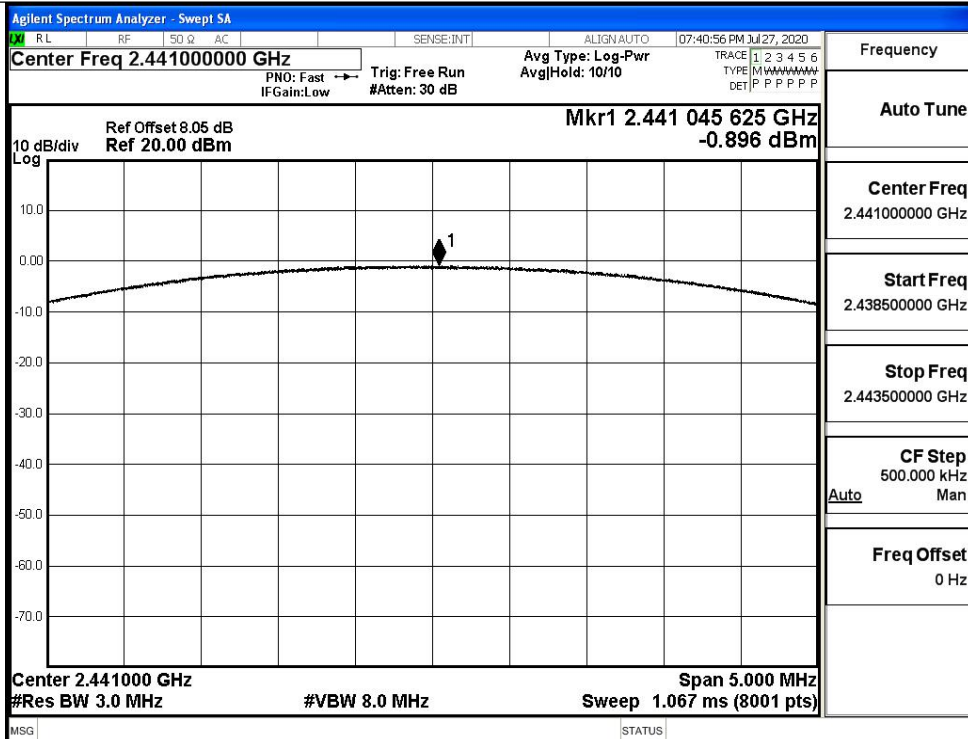
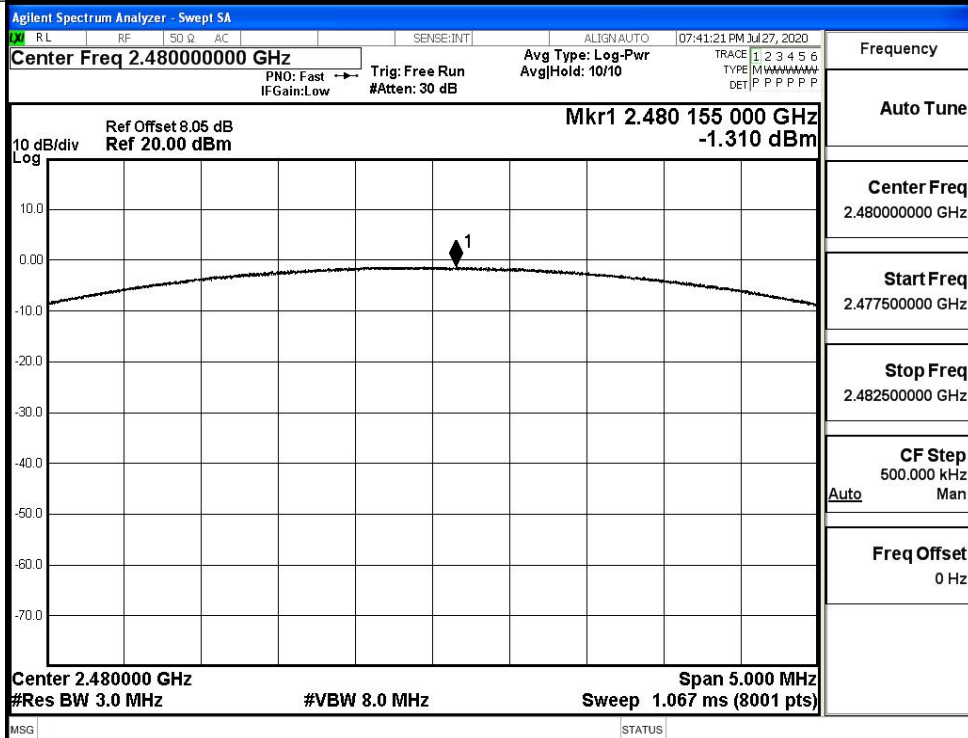


GFSK/MCH

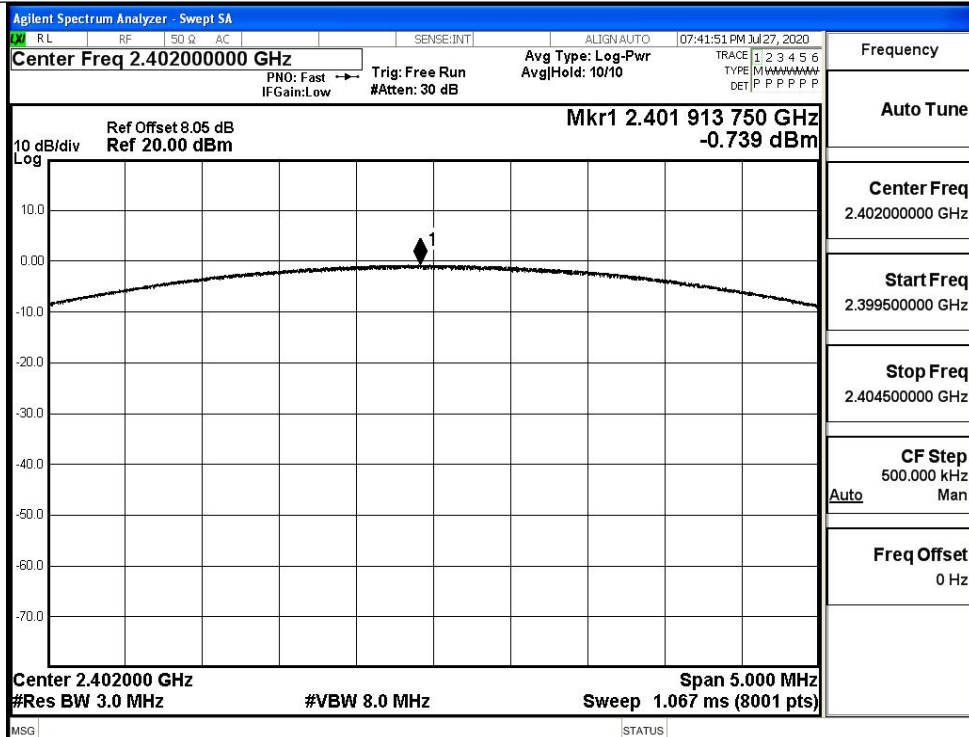


GFSK/HCH

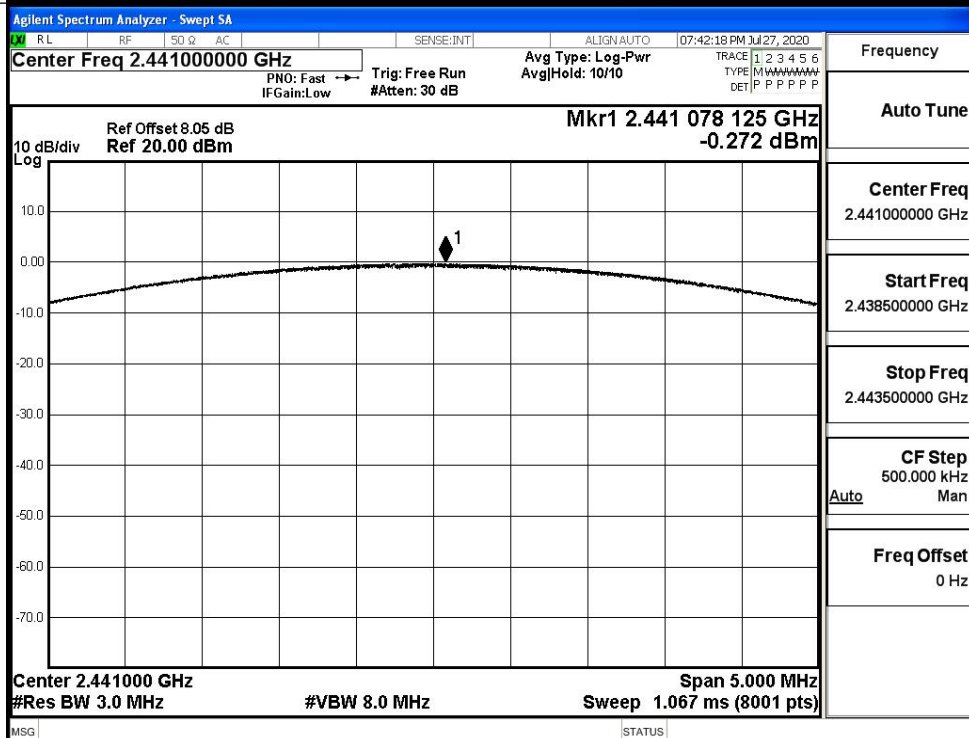
 π /4DQPSK/LCH

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

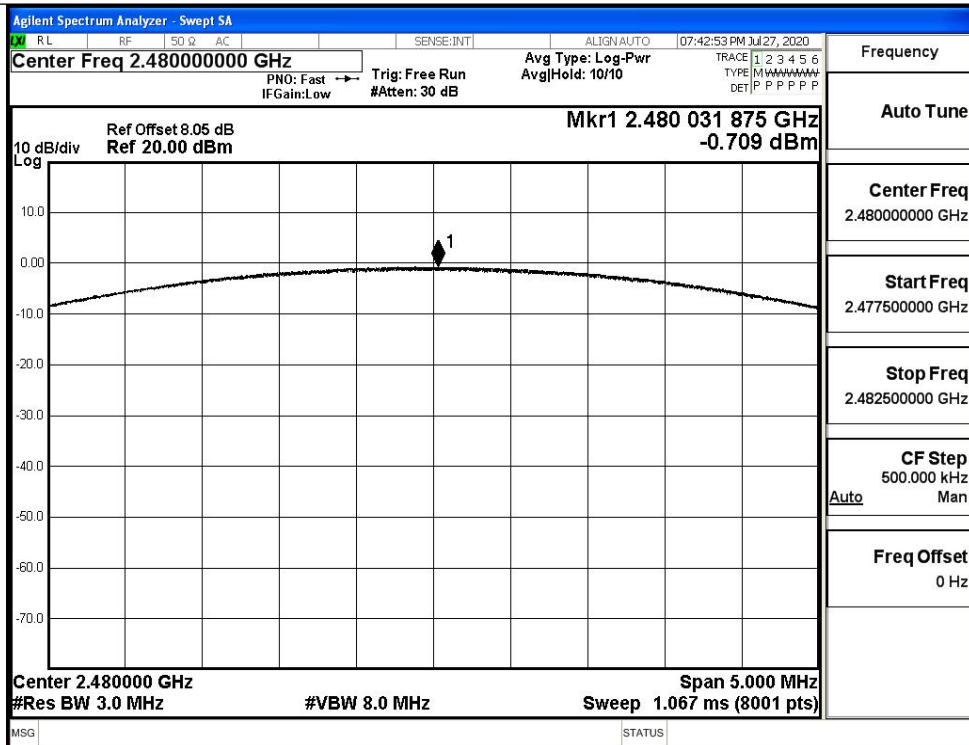
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

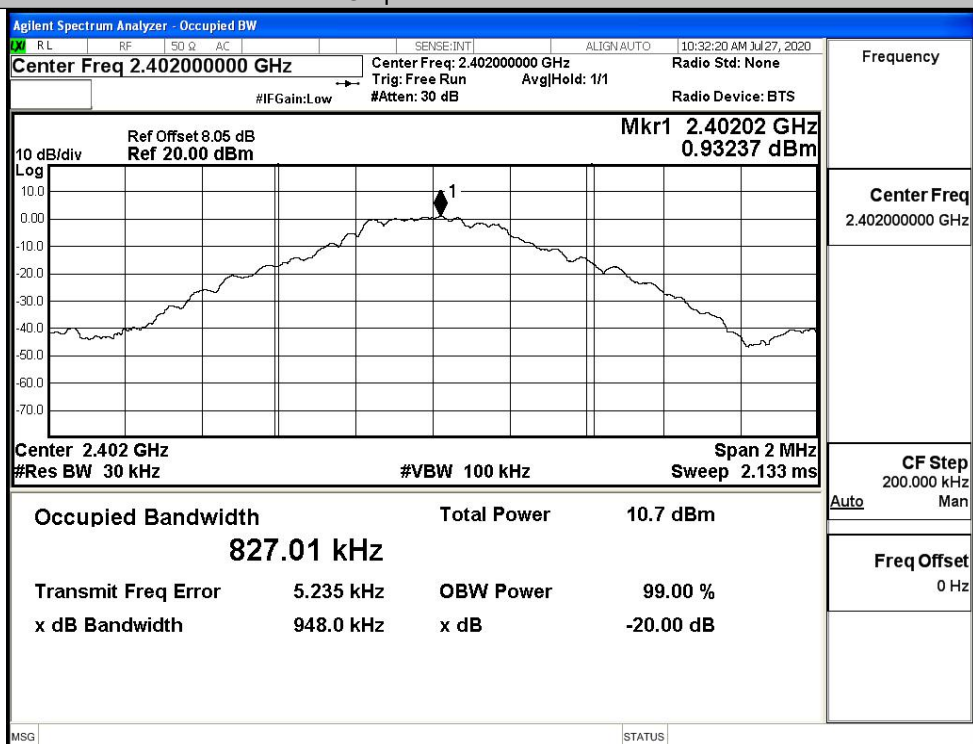


A.2 20dB Bandwidth

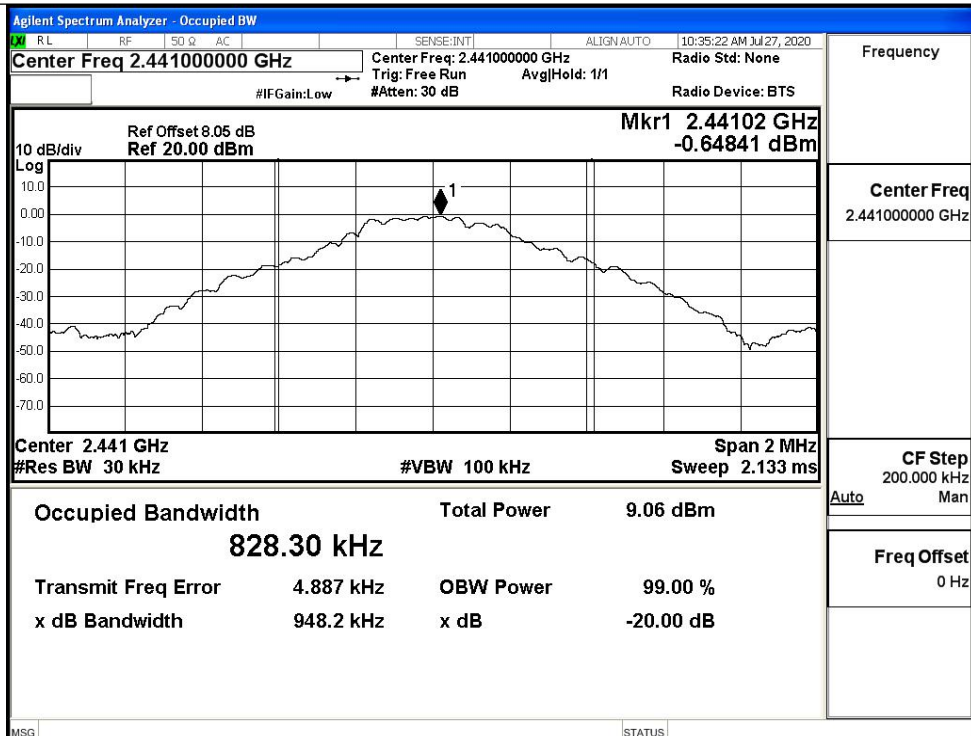
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9480	Not Specified	PASS
	MCH	0.9482	Not Specified	PASS
	HCH	0.9490	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.322	Not Specified	PASS
	MCH	1.324	Not Specified	PASS
	HCH	1.324	Not Specified	PASS
8DPSK	LCH	1.301	Not Specified	PASS
	MCH	1.305	Not Specified	PASS
	HCH	1.306	Not Specified	PASS

Test Graphs

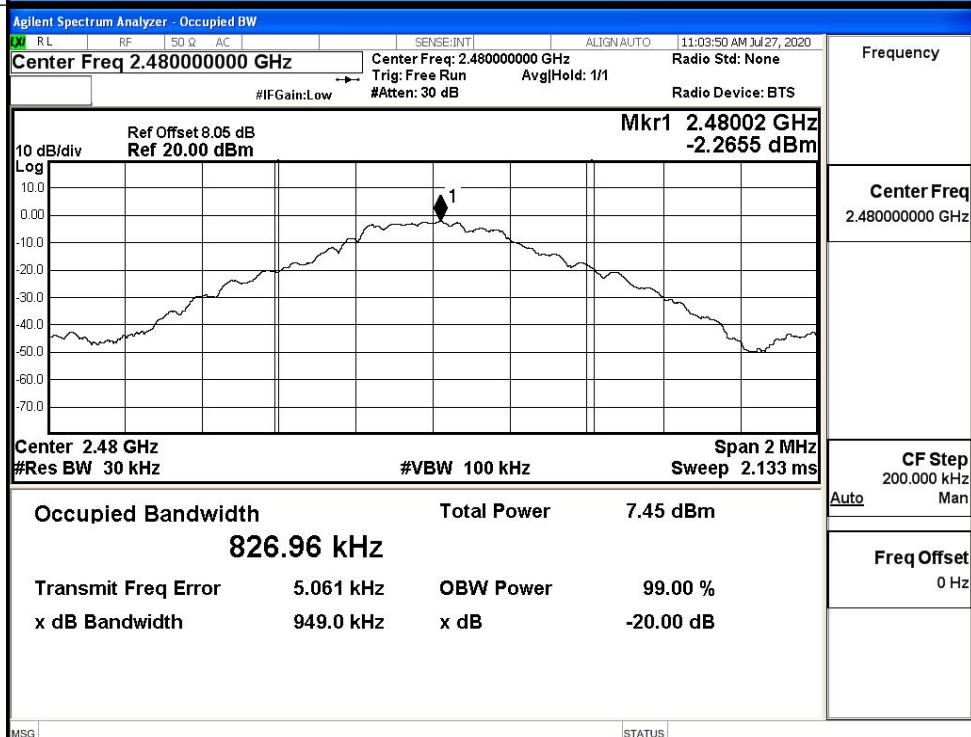
GFSK/LCH

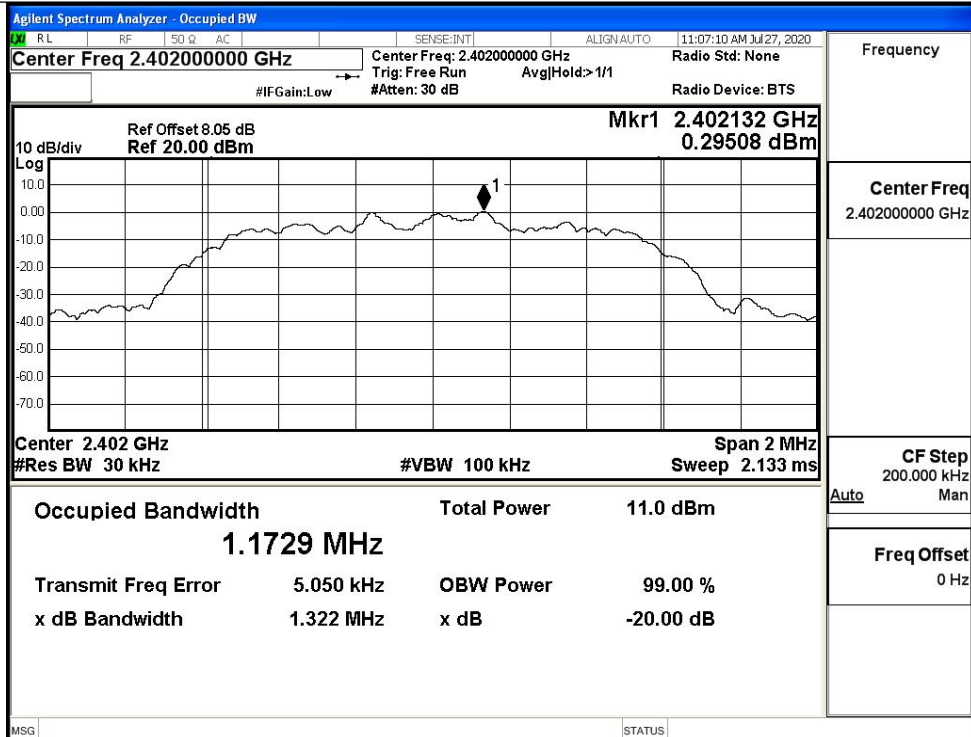
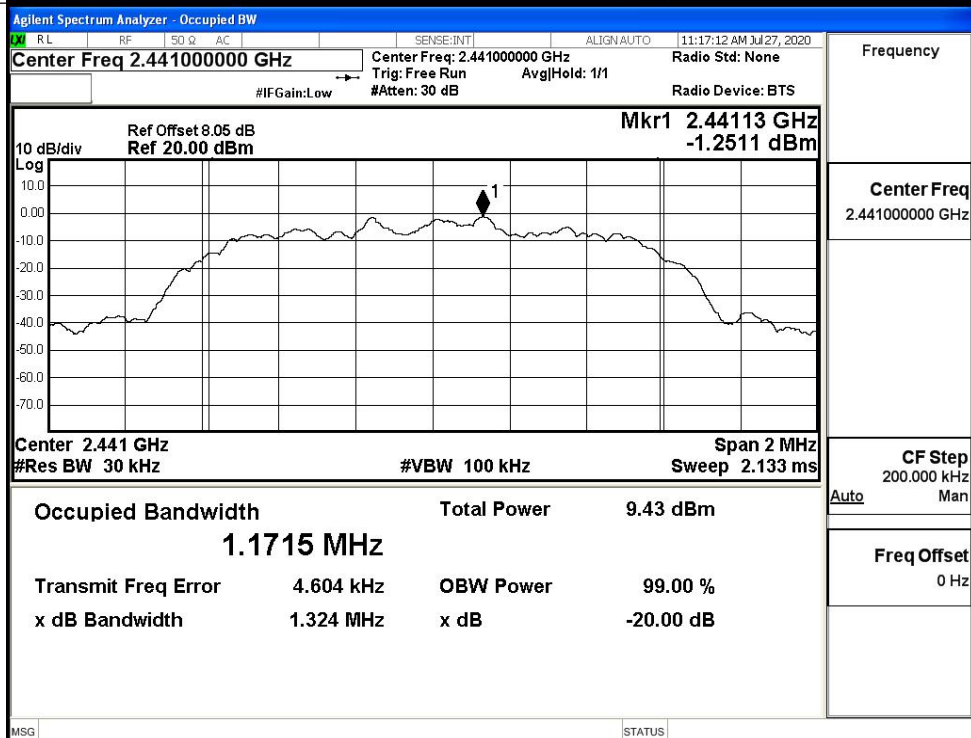


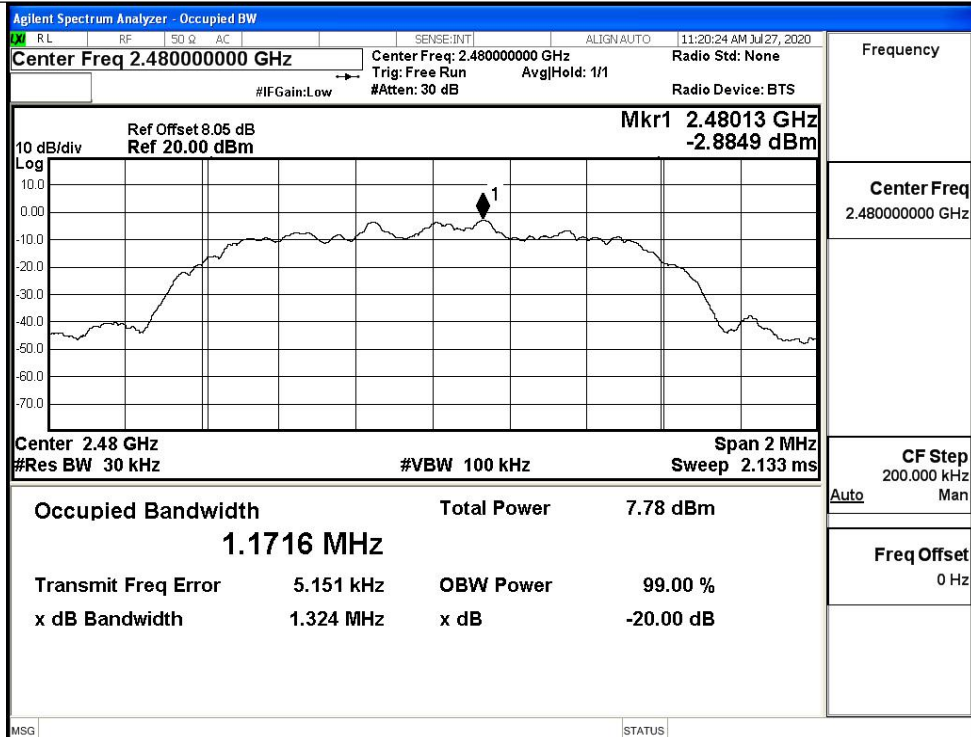
GFSK/MCH



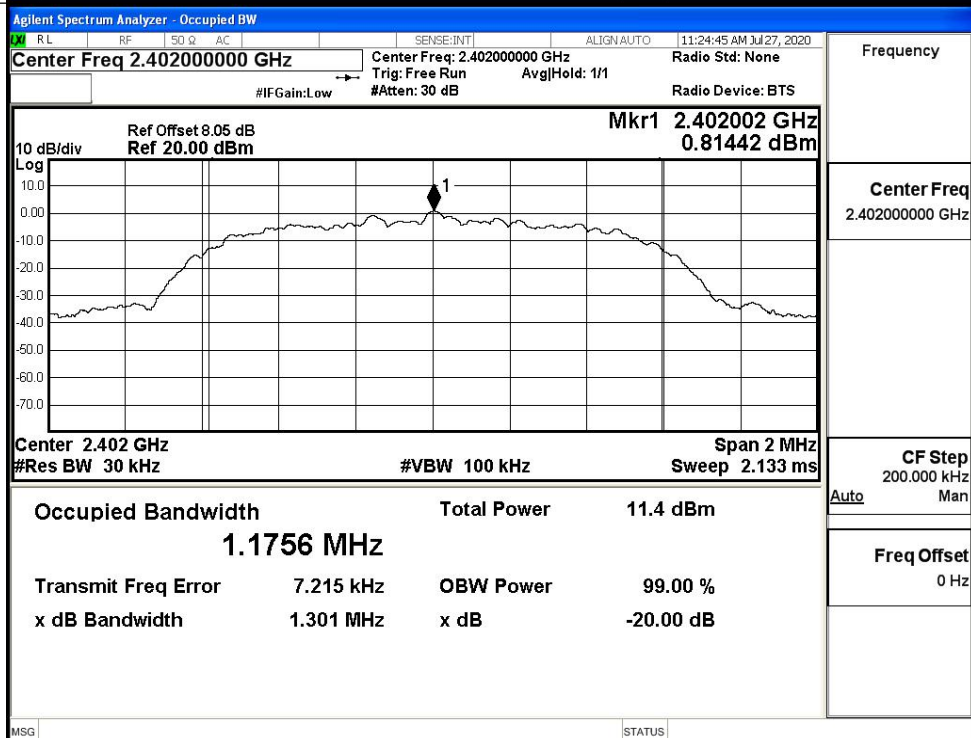
GFSK/HCH



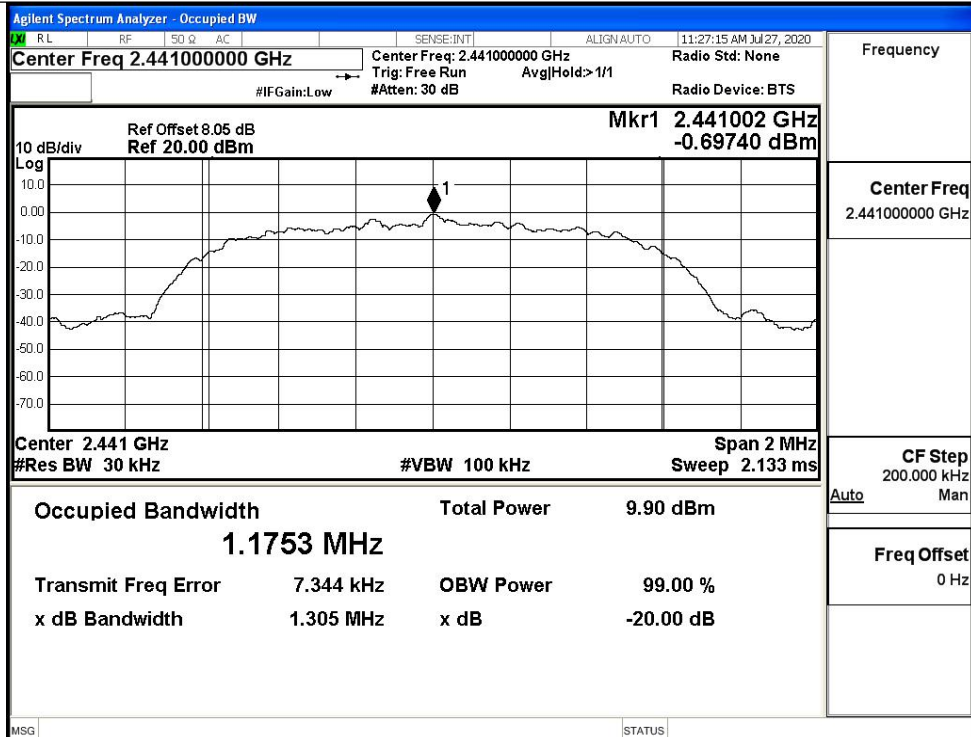
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

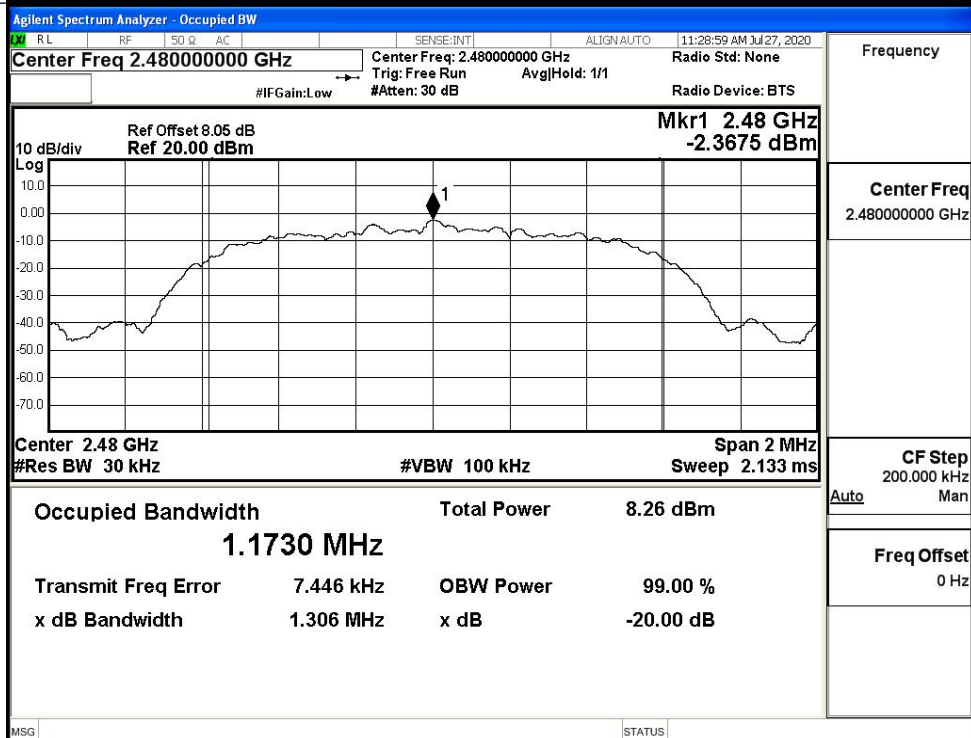
8DPSK/LCH



8DPSK/MCH



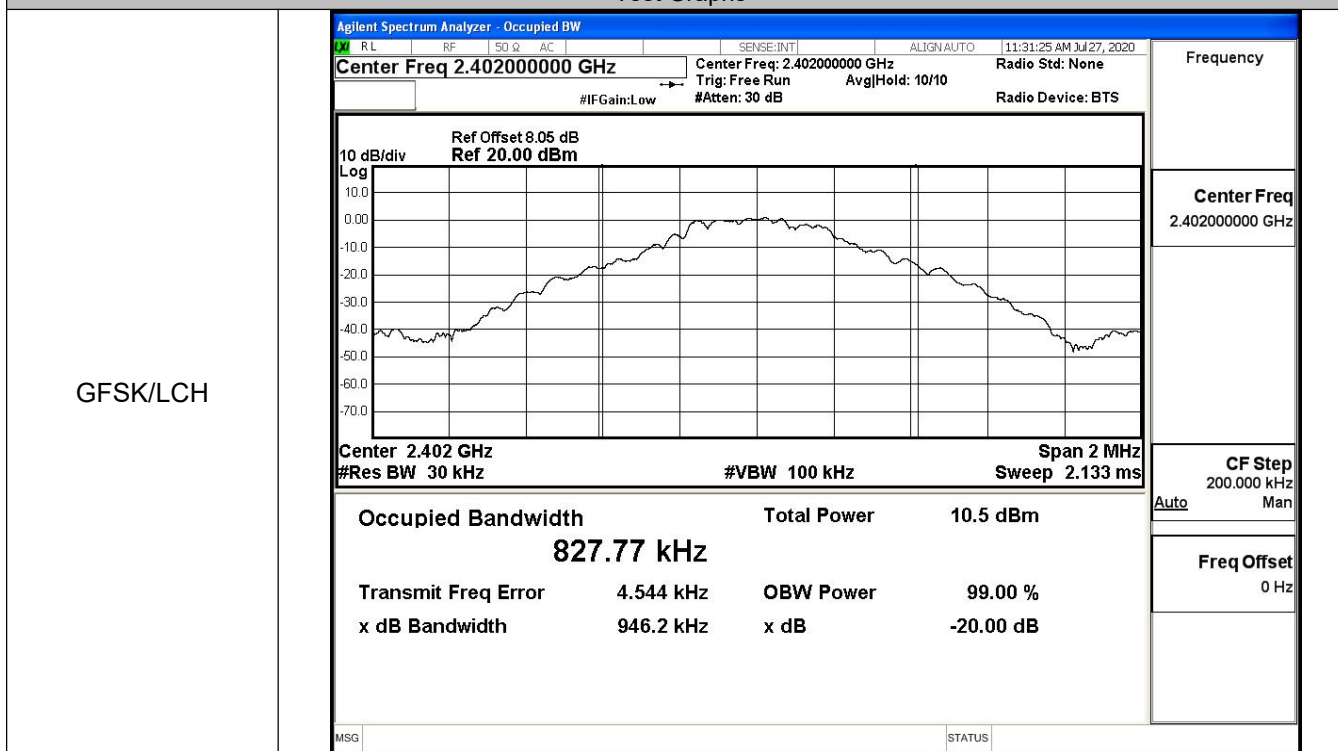
8DPSK/HCH



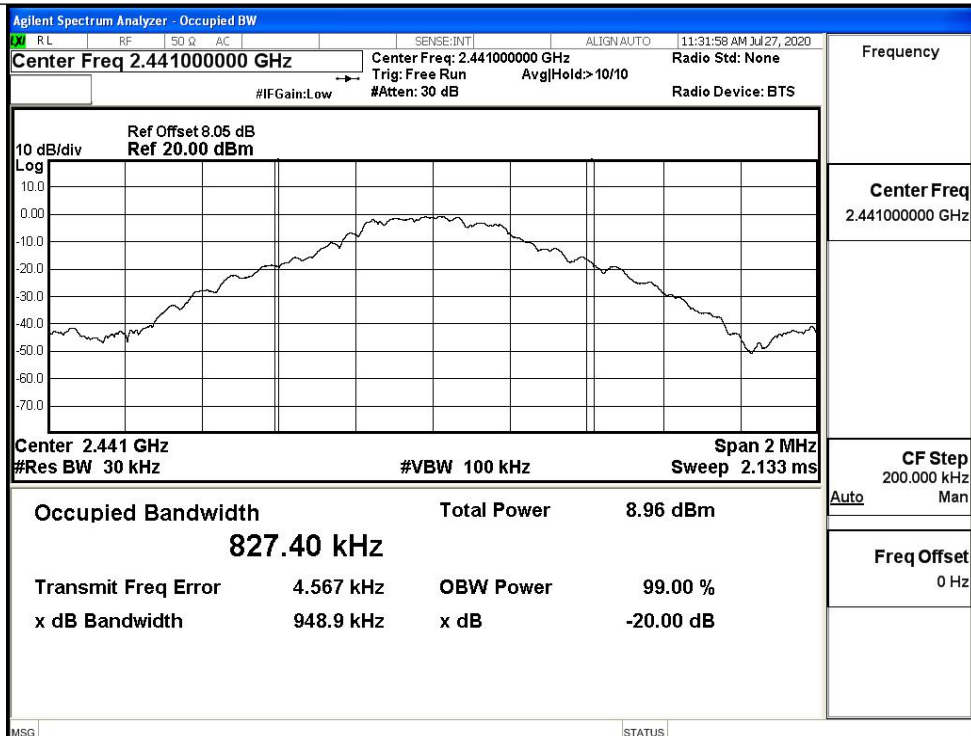
A.3 Occupied Bandwidth

Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.82777	Not Specified	PASS
	MCH	0.82740	Not Specified	PASS
	HCH	0.82627	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.1748	Not Specified	PASS
	MCH	1.1768	Not Specified	PASS
	HCH	1.1685	Not Specified	PASS
8DPSK	LCH	1.1746	Not Specified	PASS
	MCH	1.1750	Not Specified	PASS
	HCH	1.1764	Not Specified	PASS

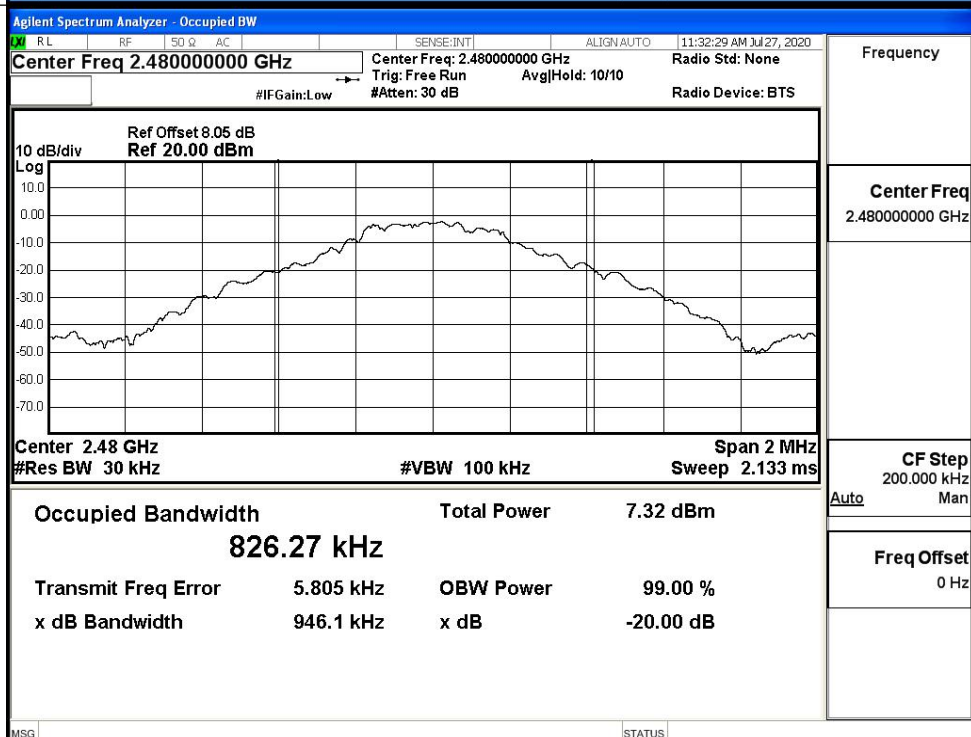
Test Graphs

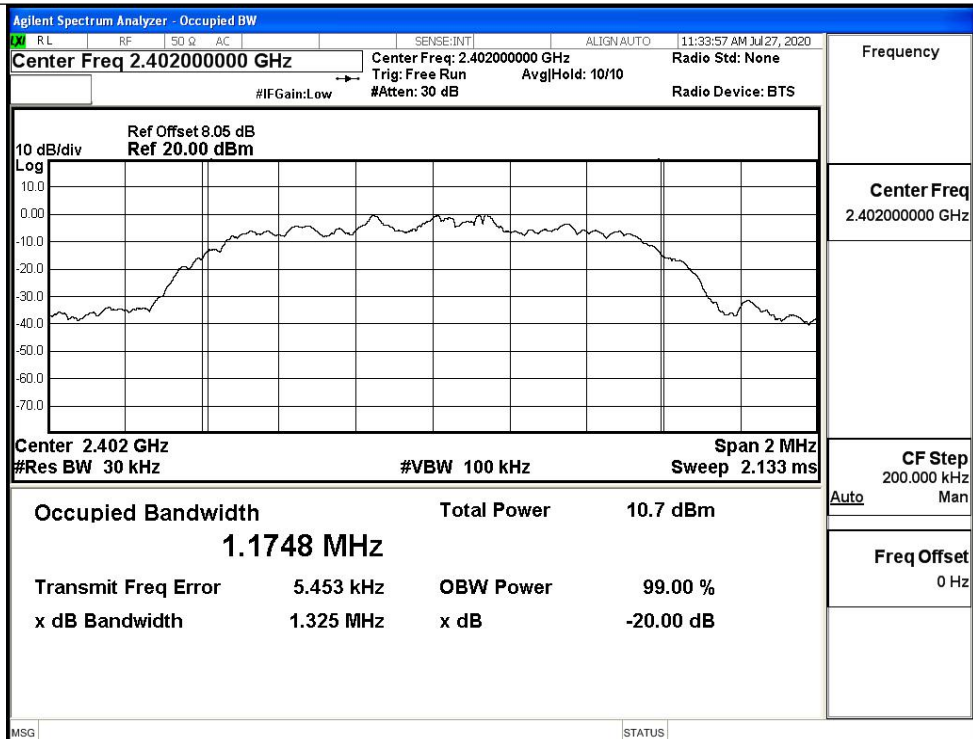
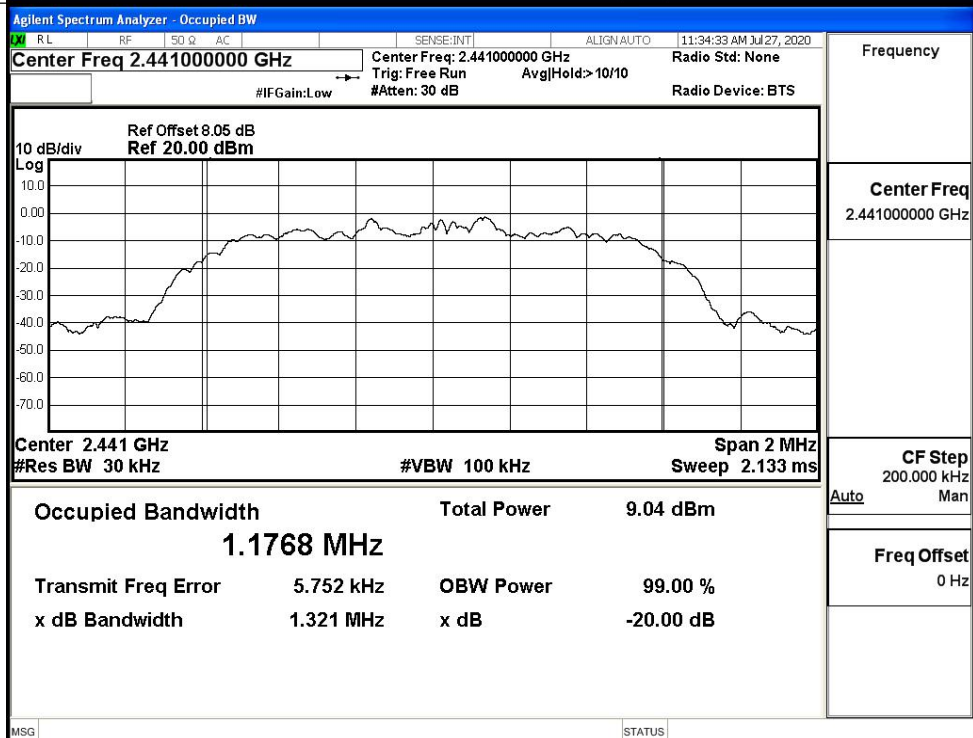


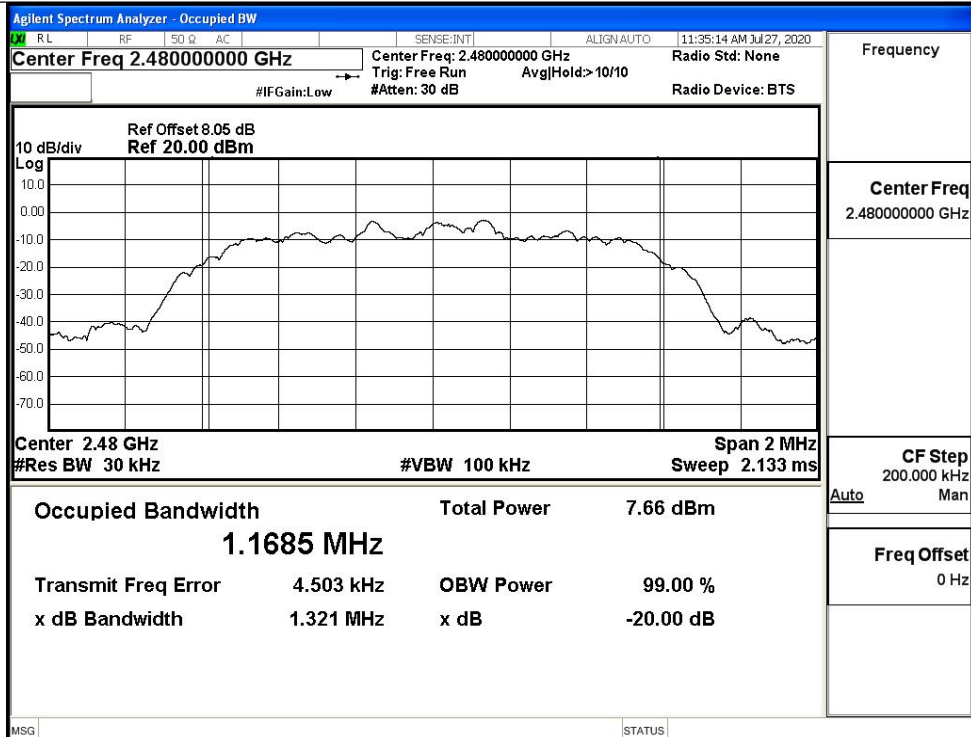
GFSK/MCH



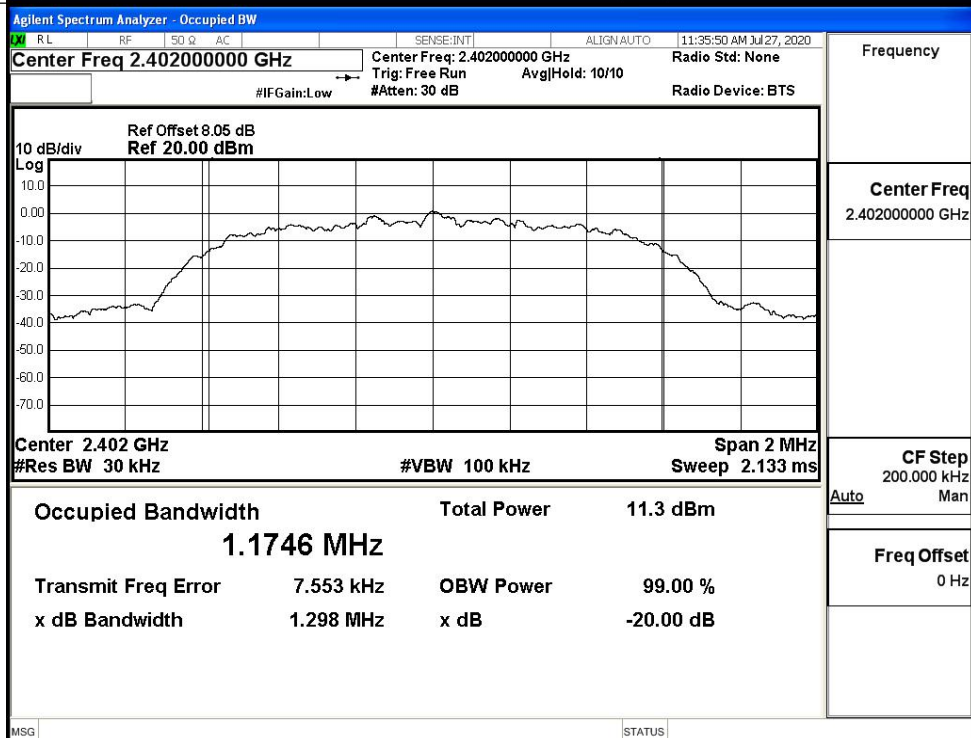
GFSK/HCH



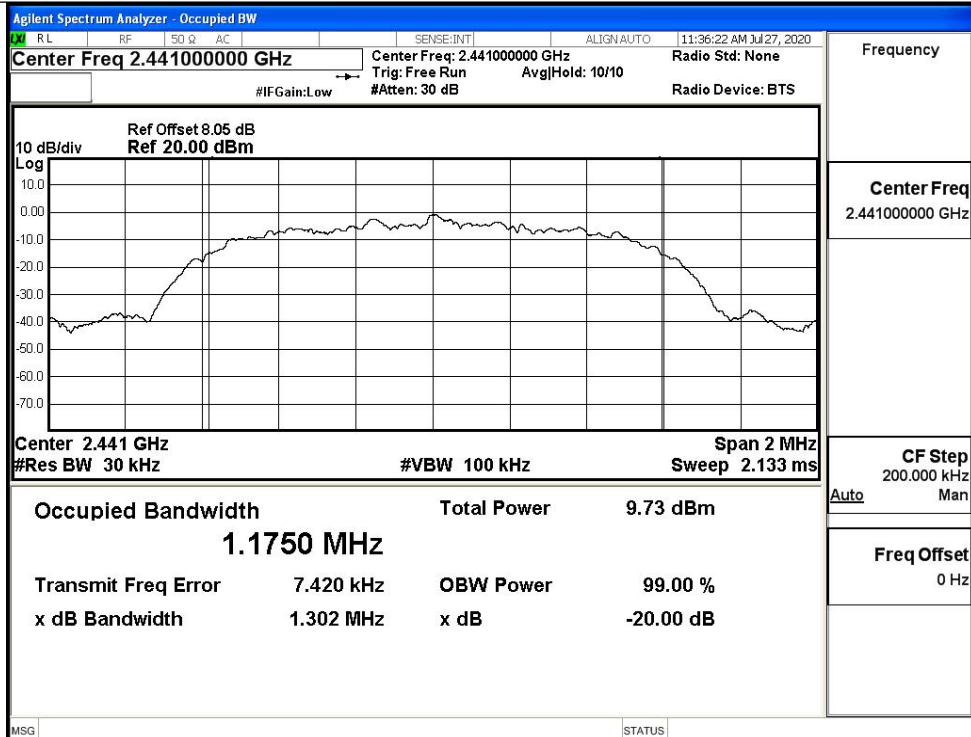
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

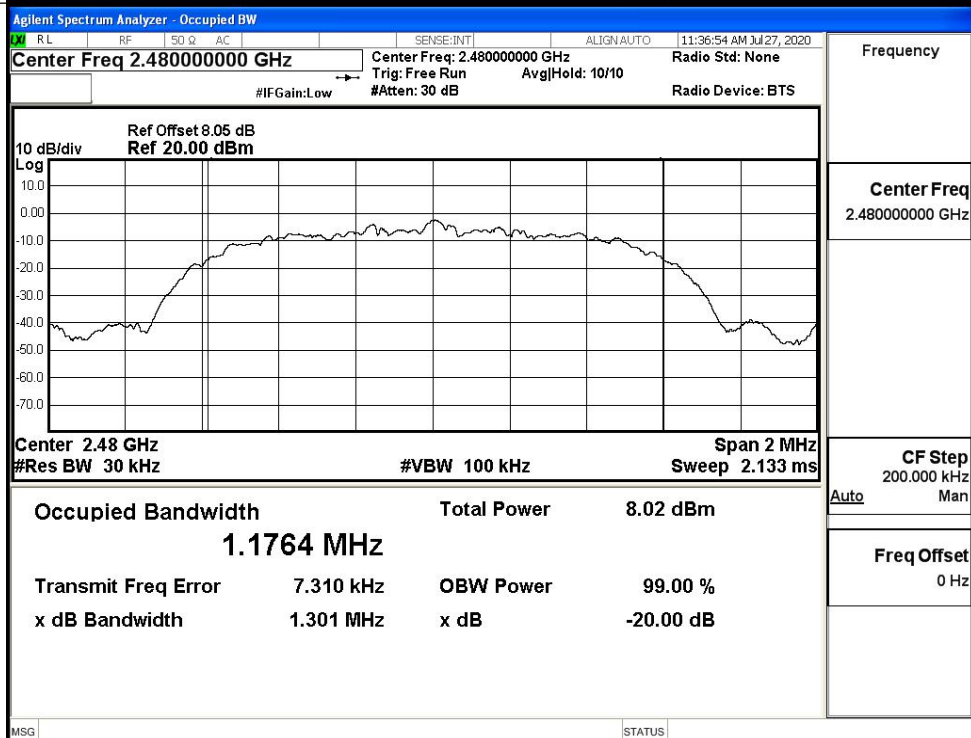
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

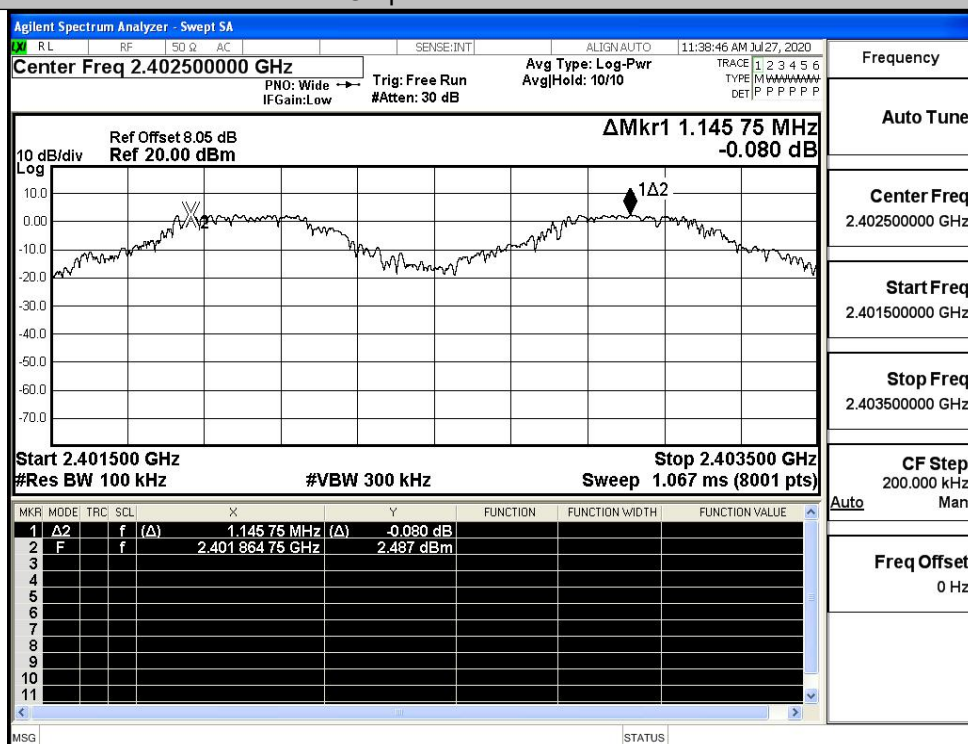


A.4 Carrier Frequency Separation

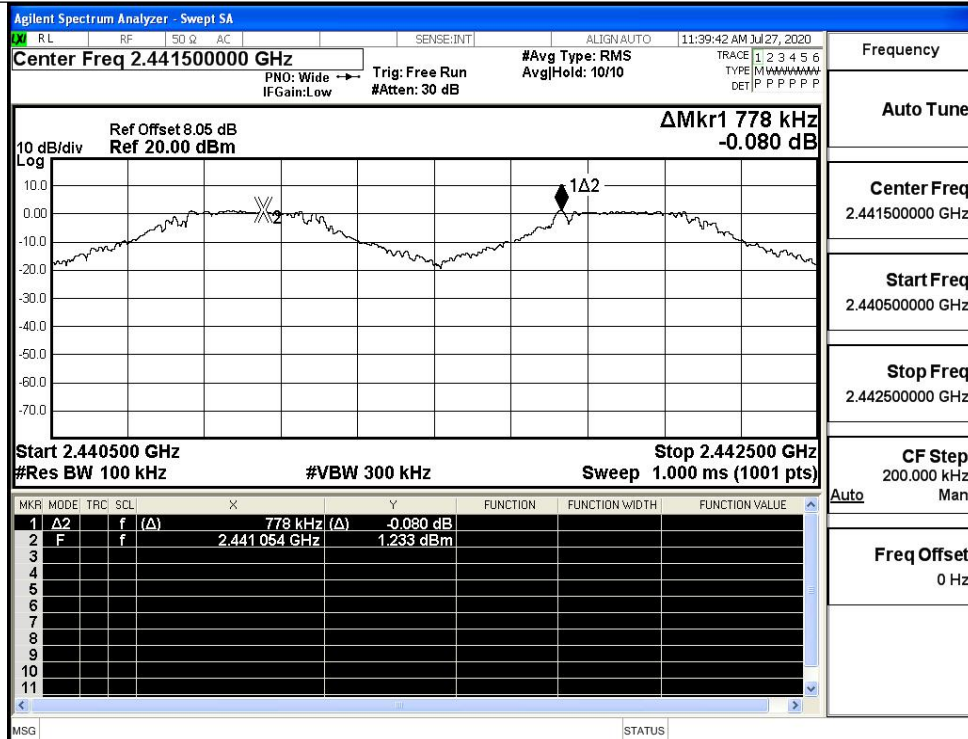
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.146	0.633	PASS
	MCH	0.778	0.633	PASS
	HCH	0.822	0.633	PASS
$\pi/4$ DQPSK	LCH	1.198	0.883	PASS
	MCH	1.006	0.883	PASS
	HCH	1.032	0.883	PASS
8DPSK	LCH	0.884	0.871	PASS
	MCH	1.356	0.871	PASS
	HCH	1.324	0.871	PASS

Test Graphs

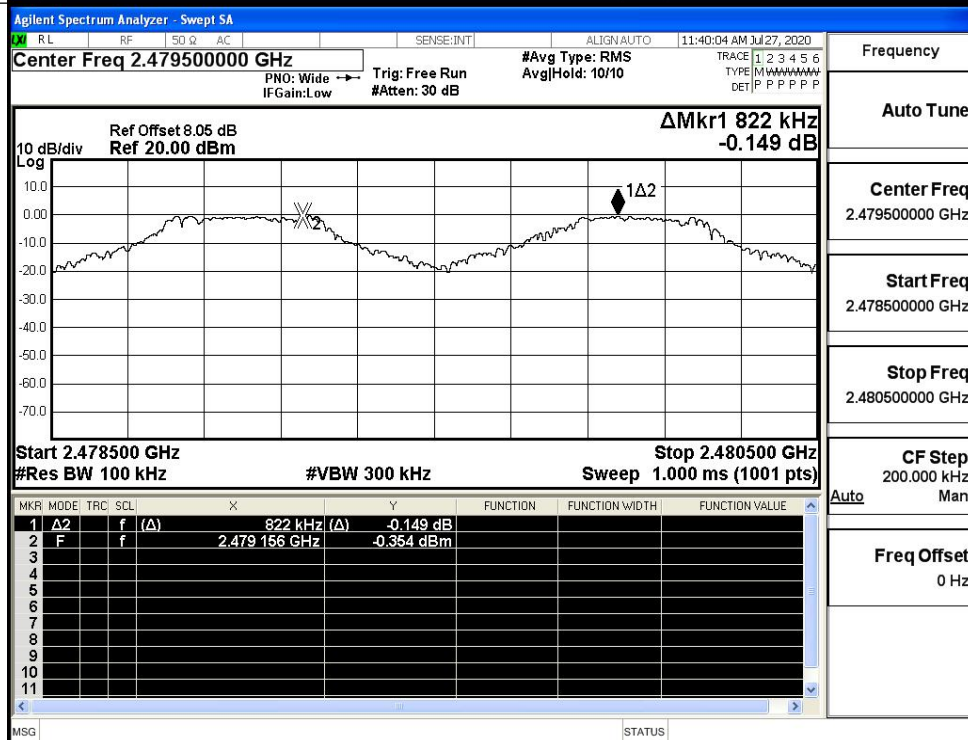
GFSK/LCH

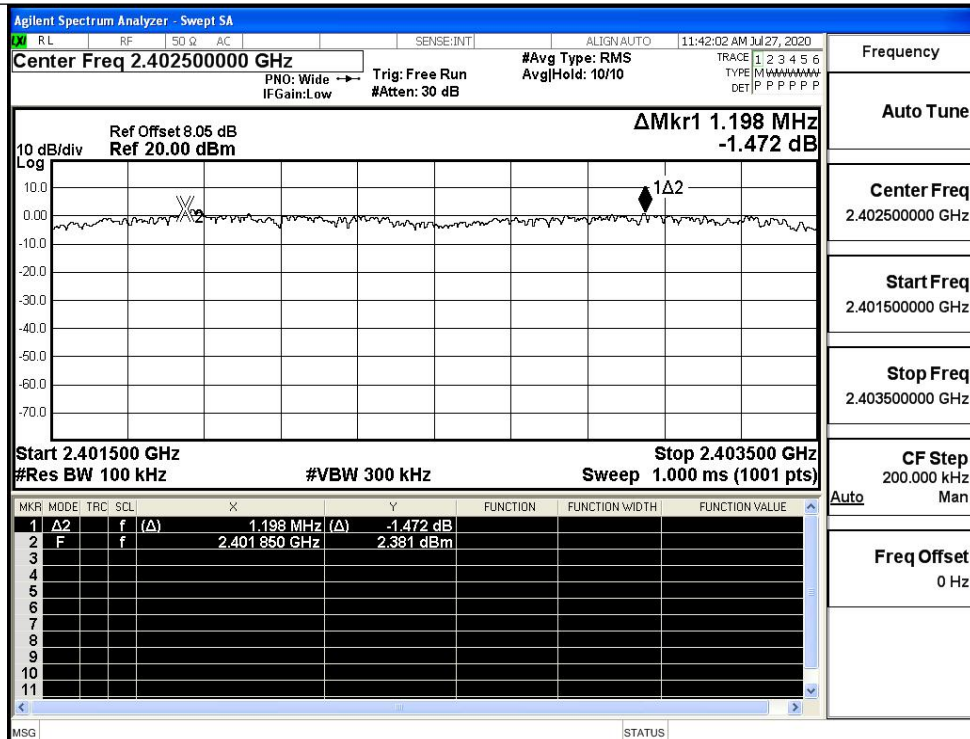
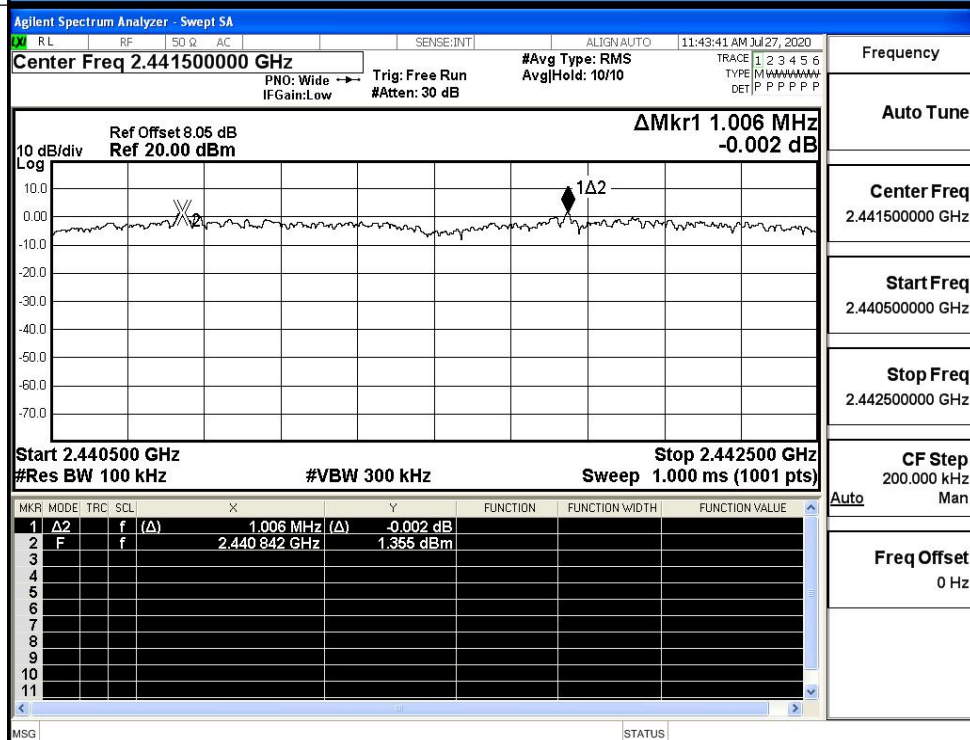


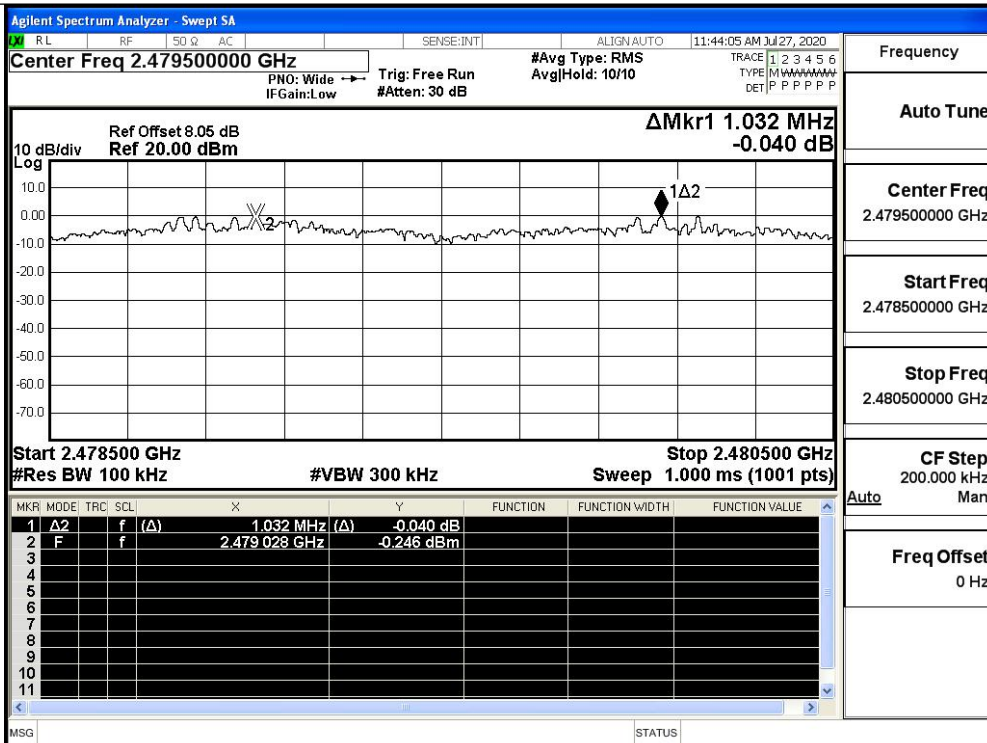
GFSK/MCH



GFSK/HCH



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

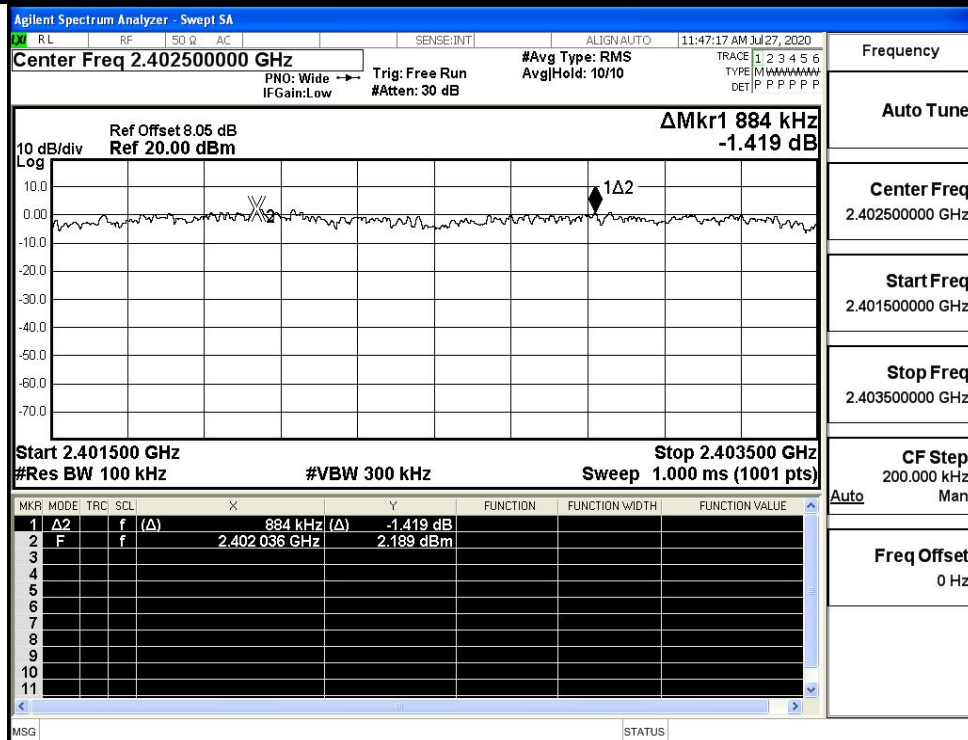
π /4DQPSK/HCH

Frequency

Auto Tune

Center Freq
2.479500000 GHzStart Freq
2.478500000 GHzStop Freq
2.480500000 GHzCF Step
200.000 kHz
Auto ManFreq Offset
0 Hz

8DPSK/LCH

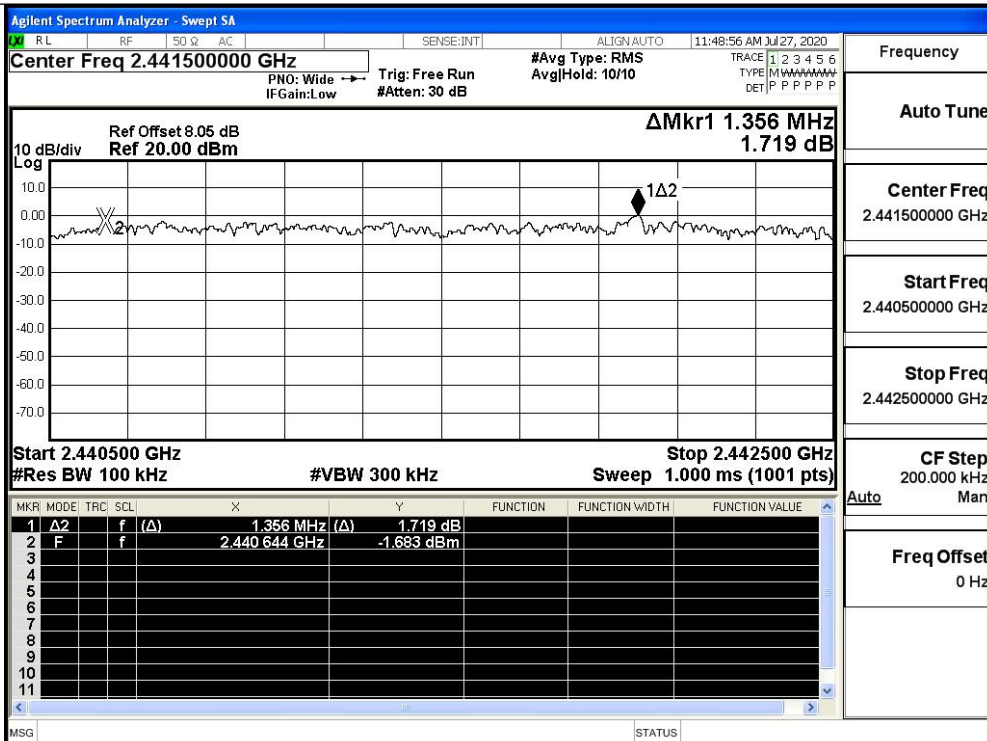


Frequency

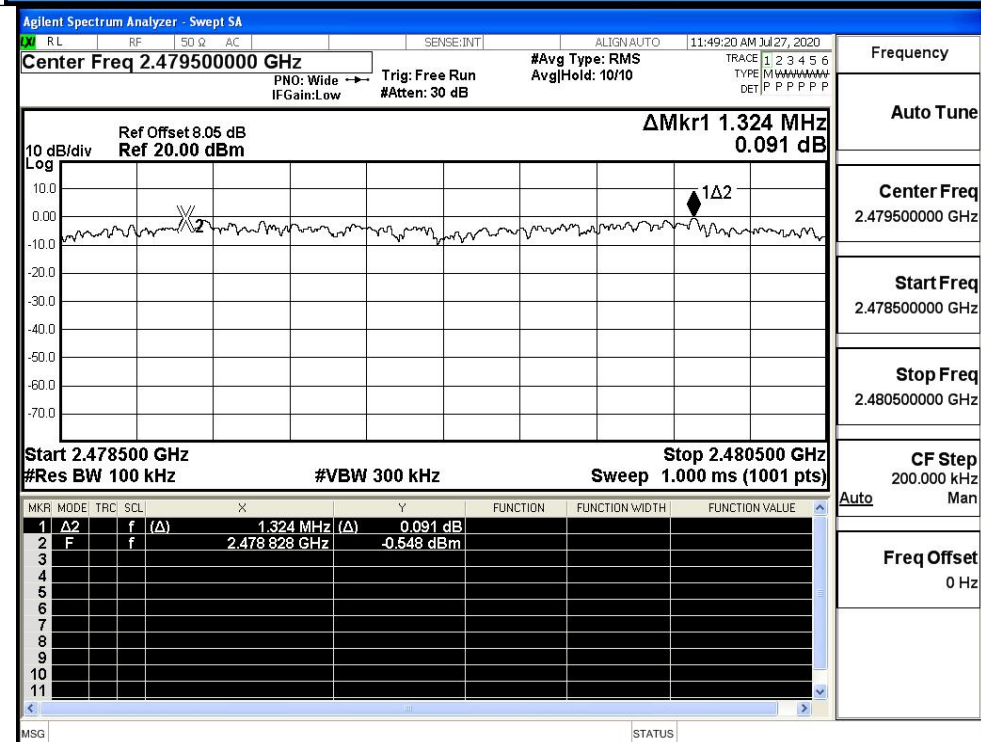
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
Auto ManFreq Offset
0 Hz

8DPSK/MCH



8DPSK/HCH

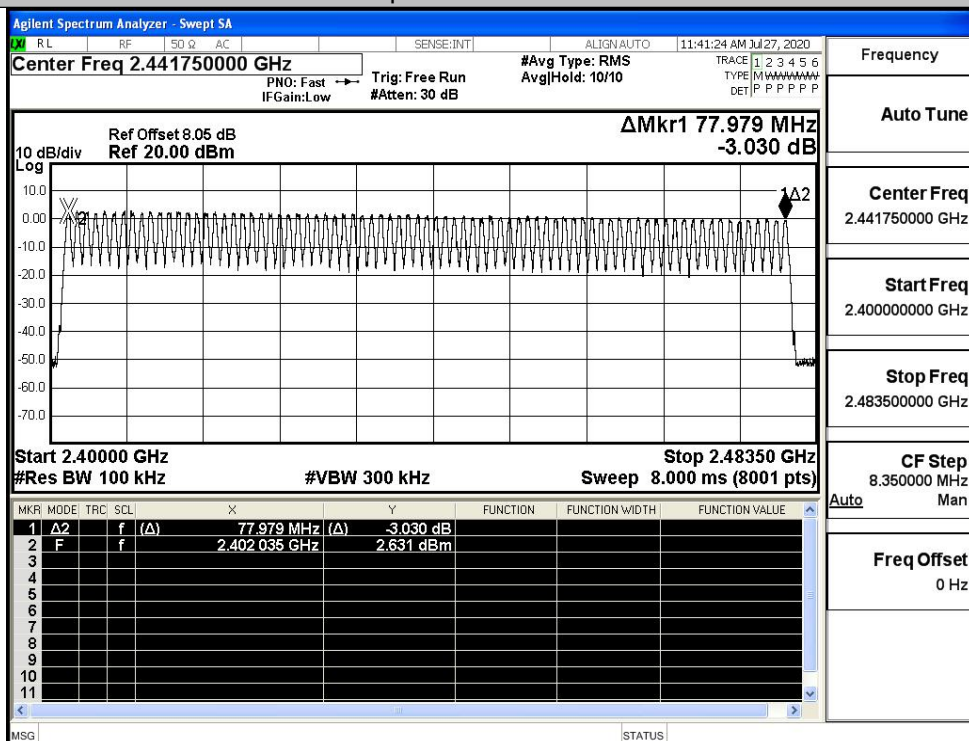


A.5 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

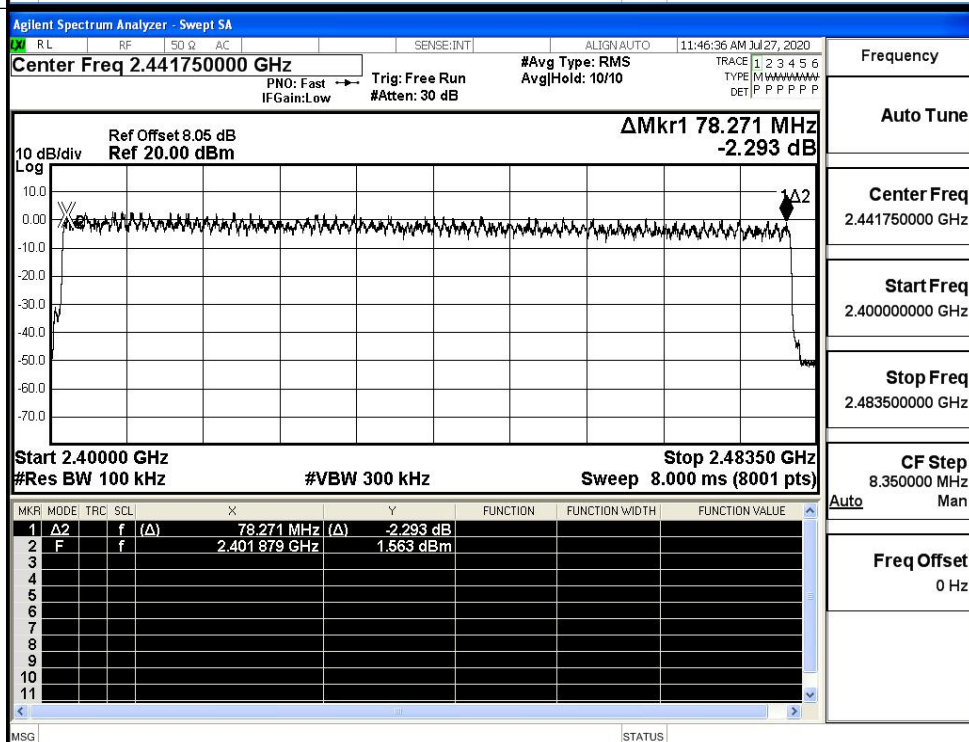
Test Graphs

GFSK/Hop



Frequency

Auto Tune

Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz