Appendix A

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

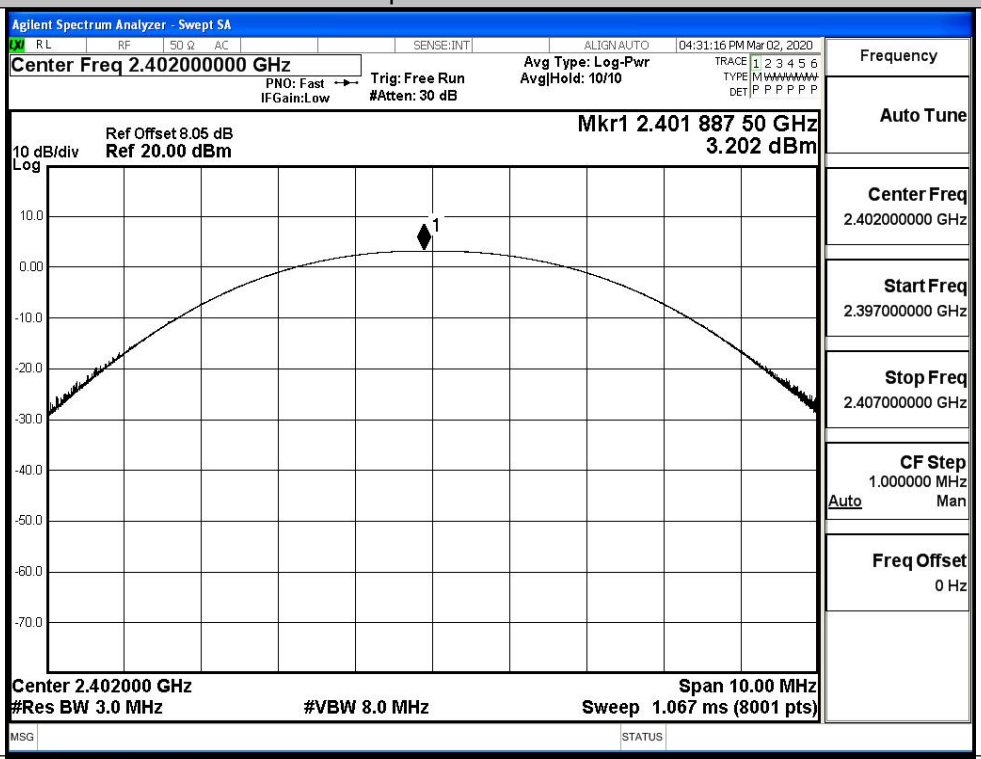
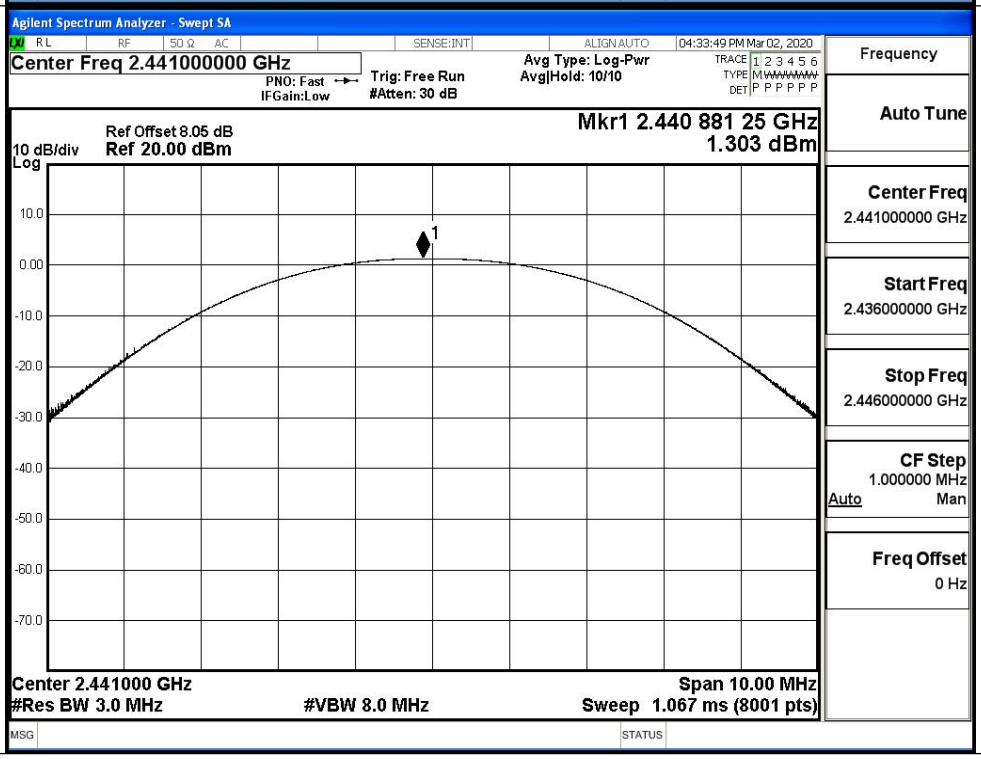
Product Name: Wireless Bluetooth Earphone with Tragus Massager
Trade Mark: DB
Test Model: Drowse Buster-P

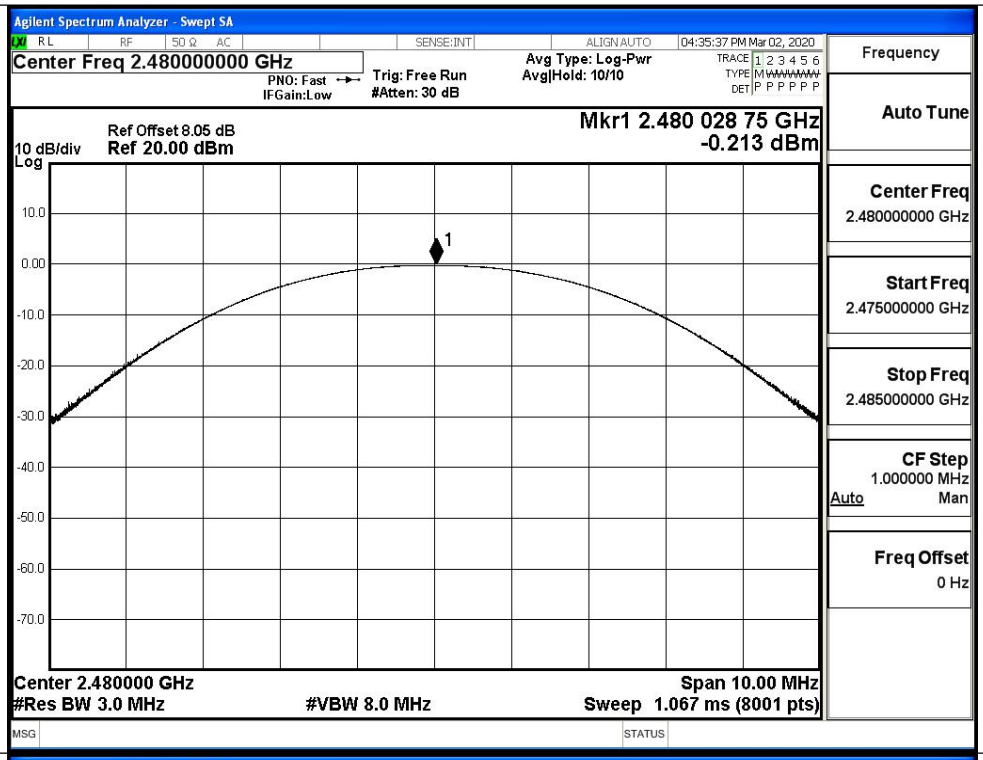
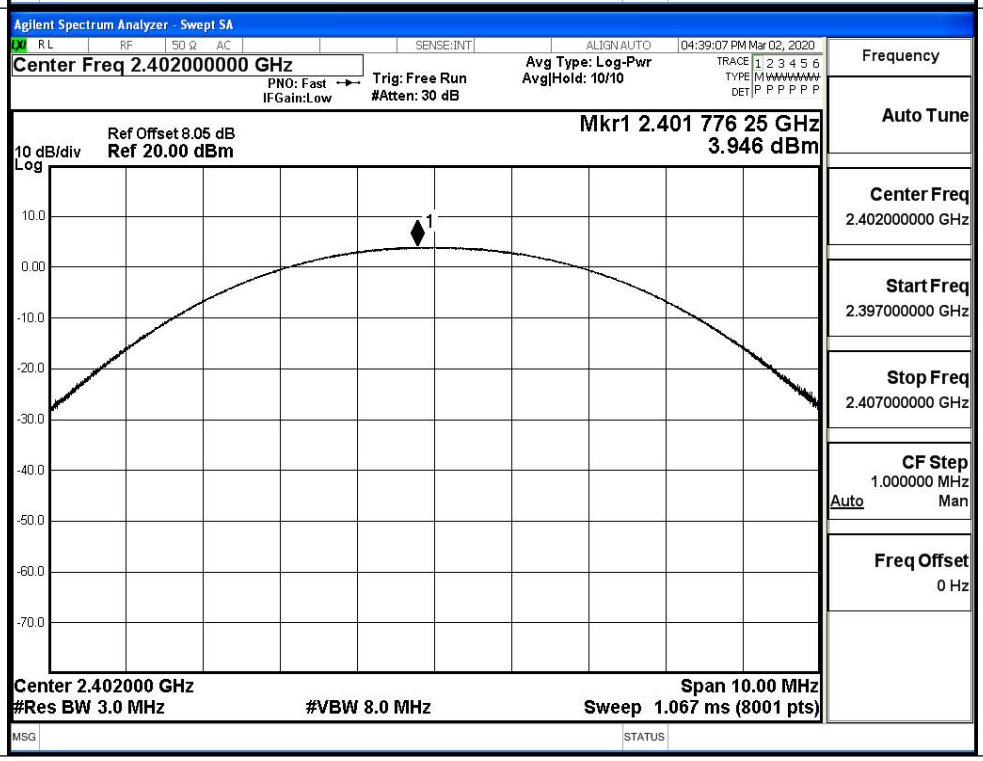
Environmental Conditions

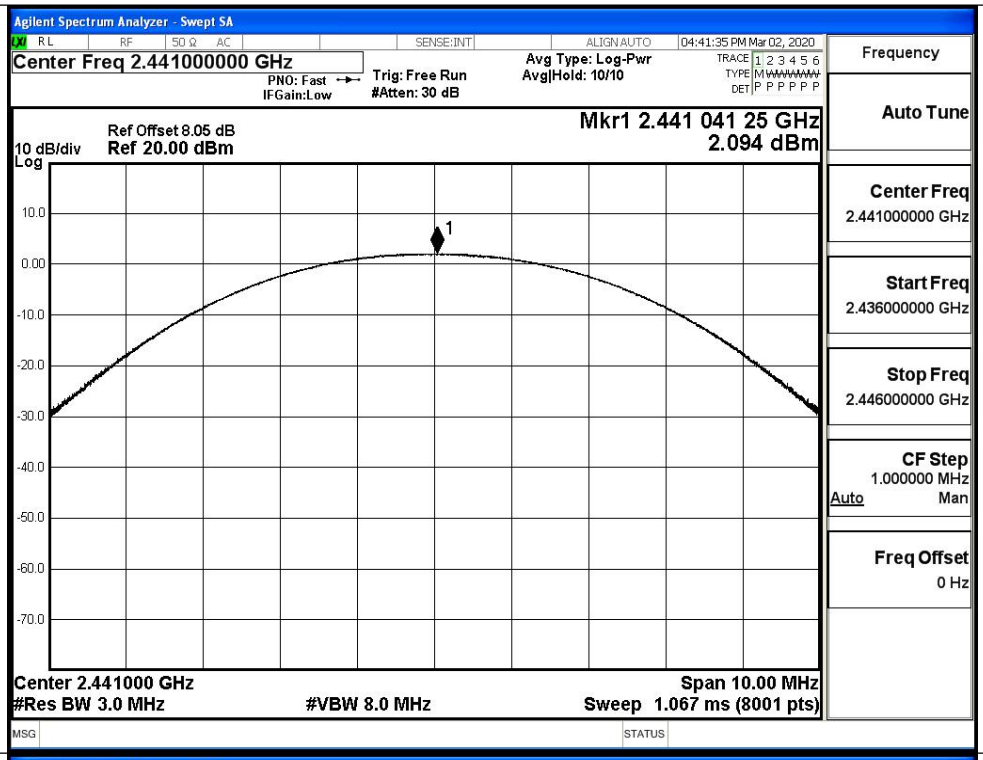
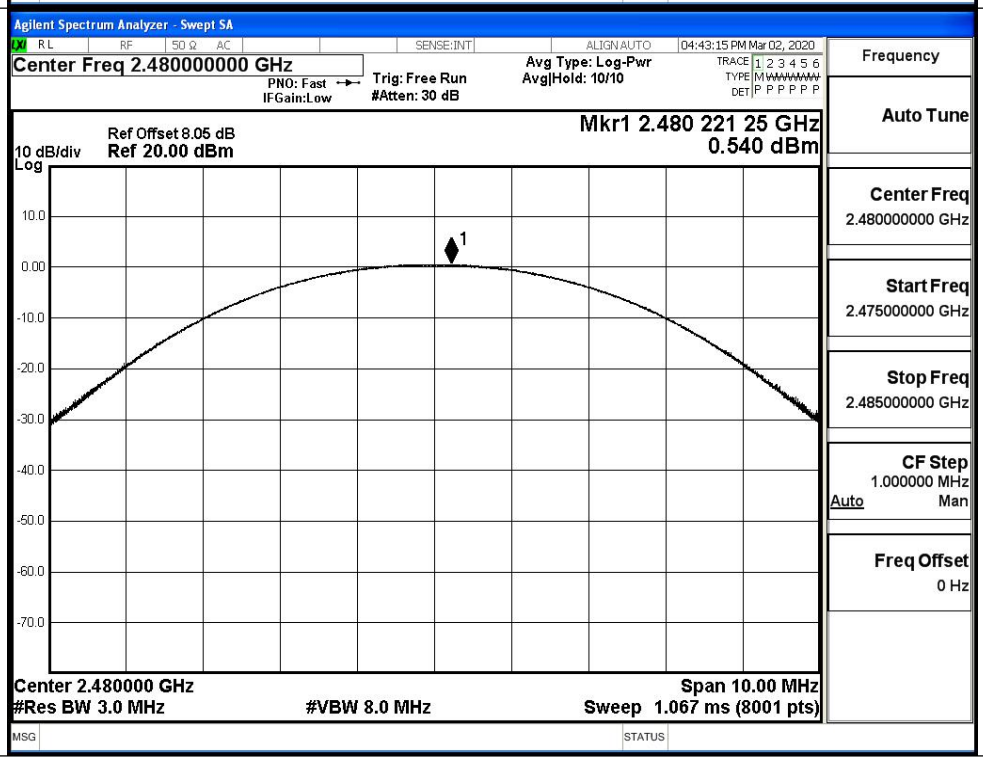
Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Qu Xin
Supervised by:	Tom.Liu

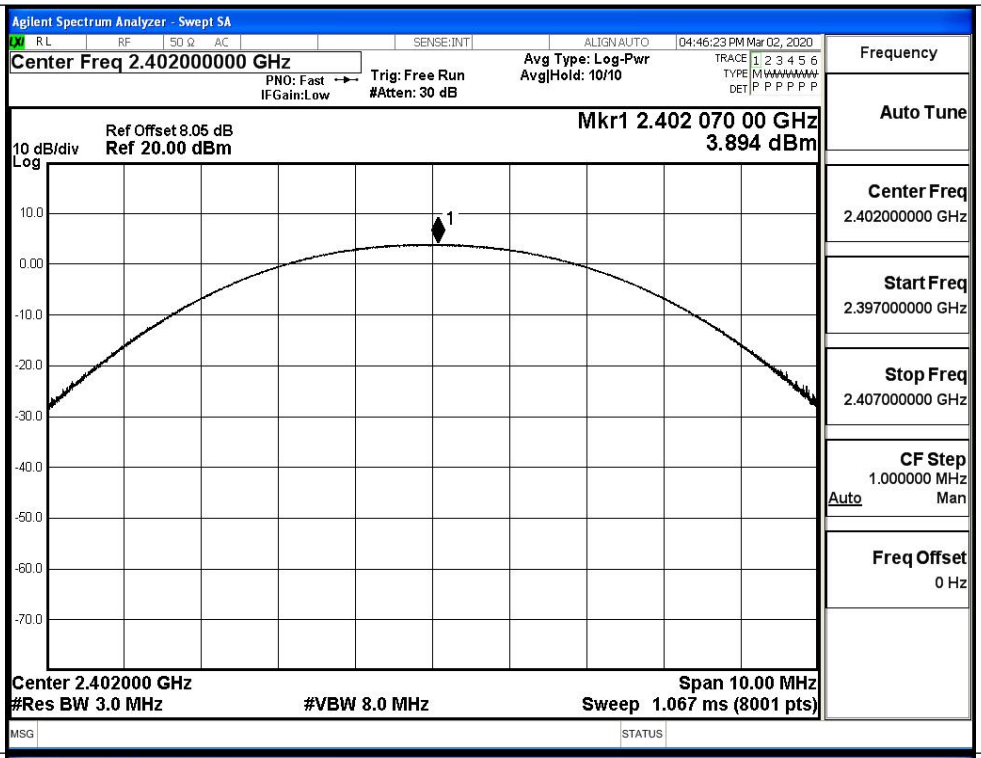
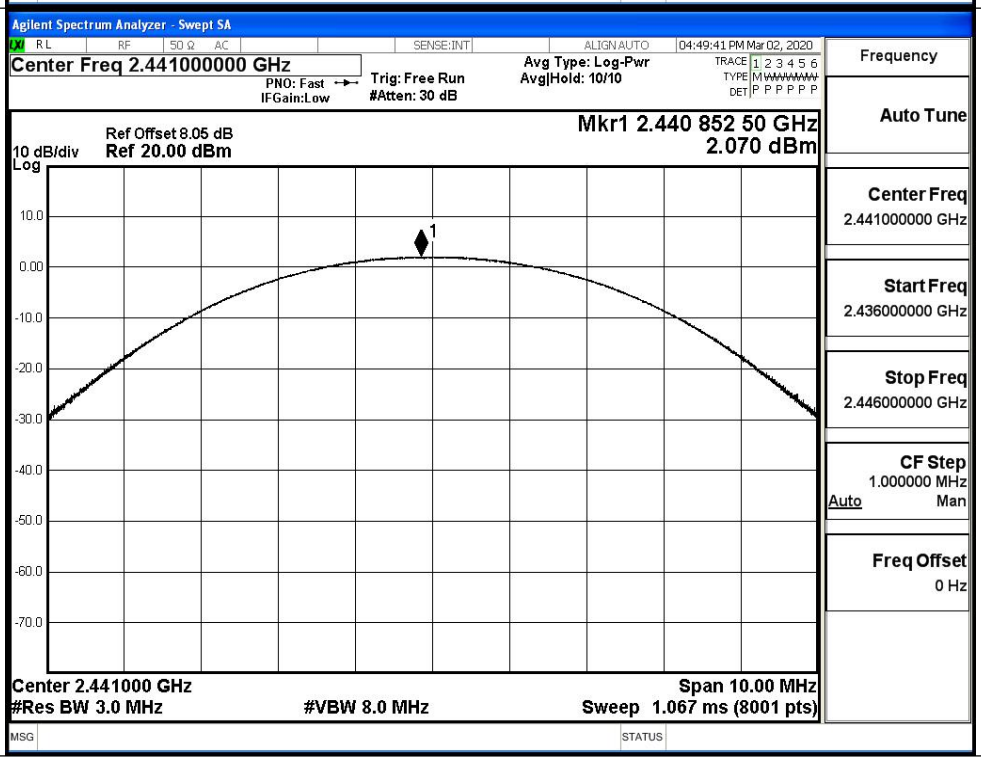
A.1 Maxmum Conducted Peak Output Power

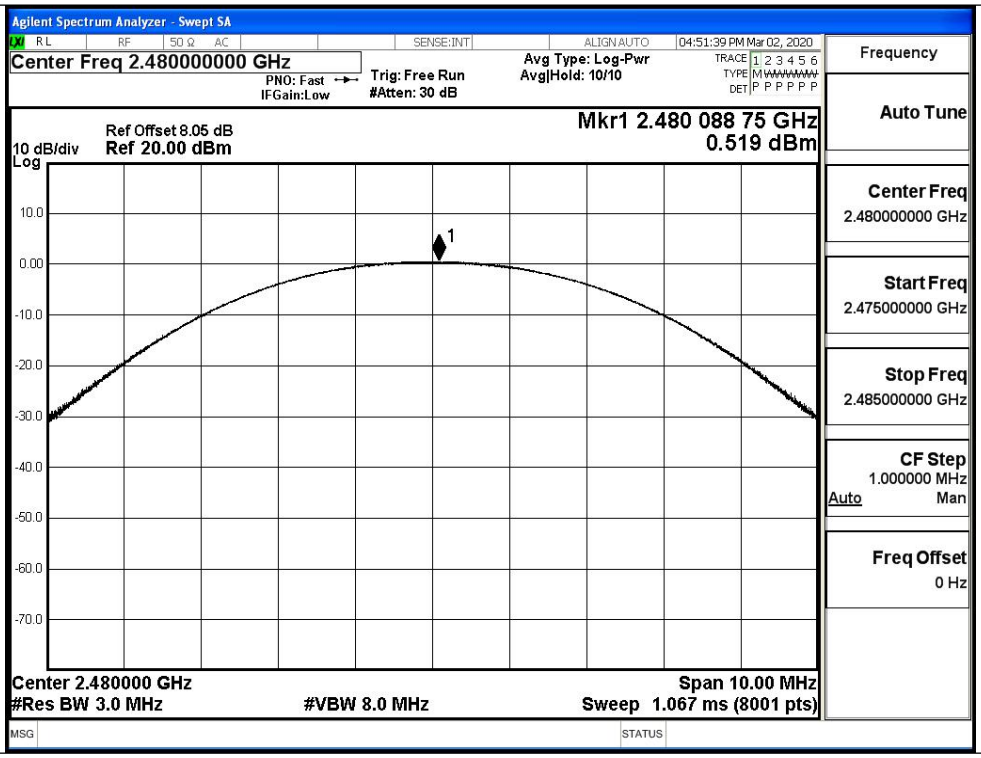
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.202	21	PASS
	MCH	1.303	21	PASS
	HCH	-0.213	21	PASS
π/4DQPSK	LCH	3.946	21	PASS
	MCH	2.094	21	PASS
	HCH	0.540	21	PASS
8DPSK	LCH	3.894	21	PASS
	MCH	2.070	21	PASS
	HCH	0.519	21	PASS

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

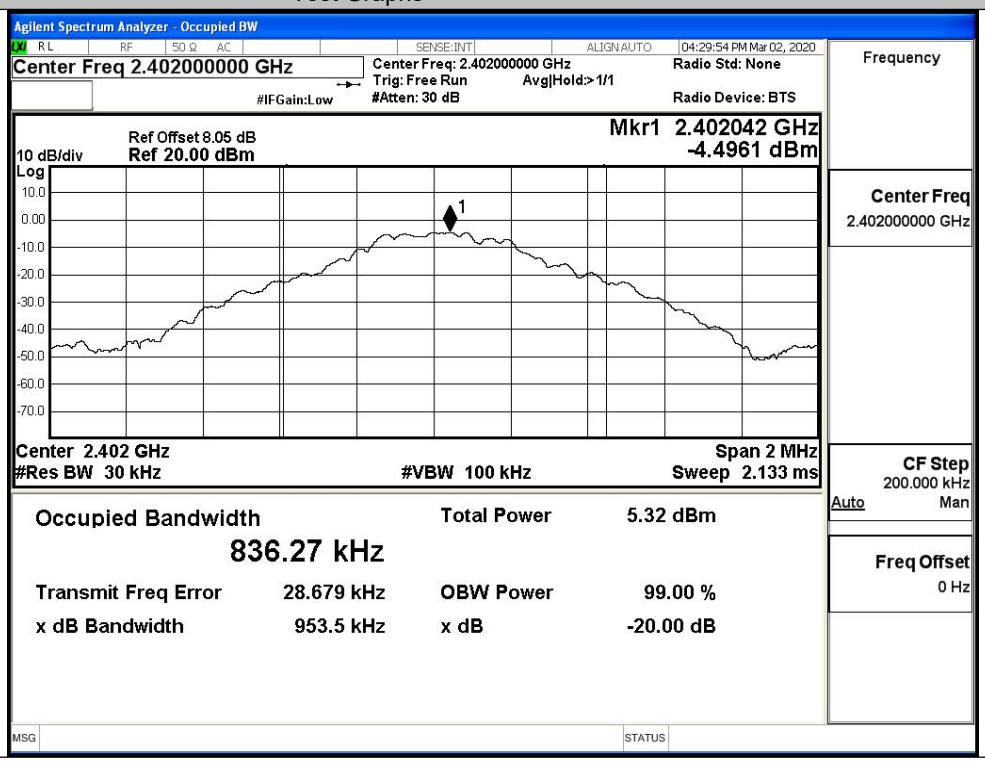
8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH		

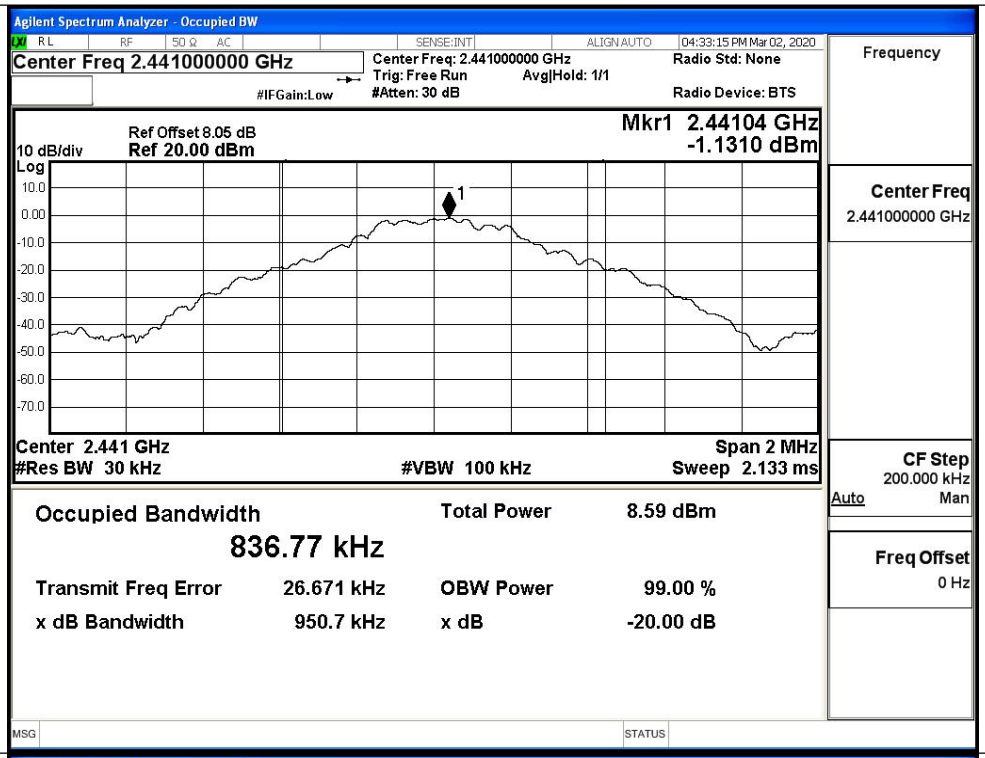
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
04:51:39 PM Mar 02, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480 088 75 GHz
0.519 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.475000000 GHz
Stop Freq
2.485000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

A.2 20dB Bandwidth

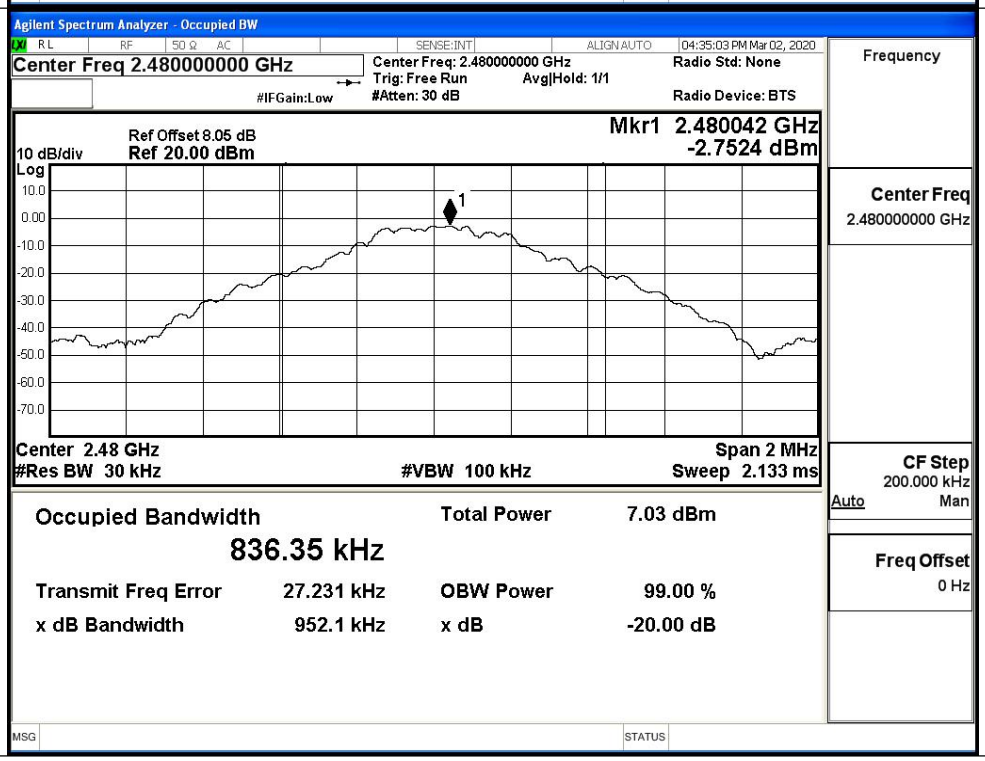
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9535	Not Specified	PASS
	MCH	0.9507	Not Specified	PASS
	HCH	0.9521	Not Specified	PASS
π/4DQPSK	LCH	1.284	Not Specified	PASS
	MCH	1.282	Not Specified	PASS
	HCH	1.283	Not Specified	PASS
8DPSK	LCH	1.283	Not Specified	PASS
	MCH	1.283	Not Specified	PASS
	HCH	1.283	Not Specified	PASS

Test Graphs	
GFSK/LCH	

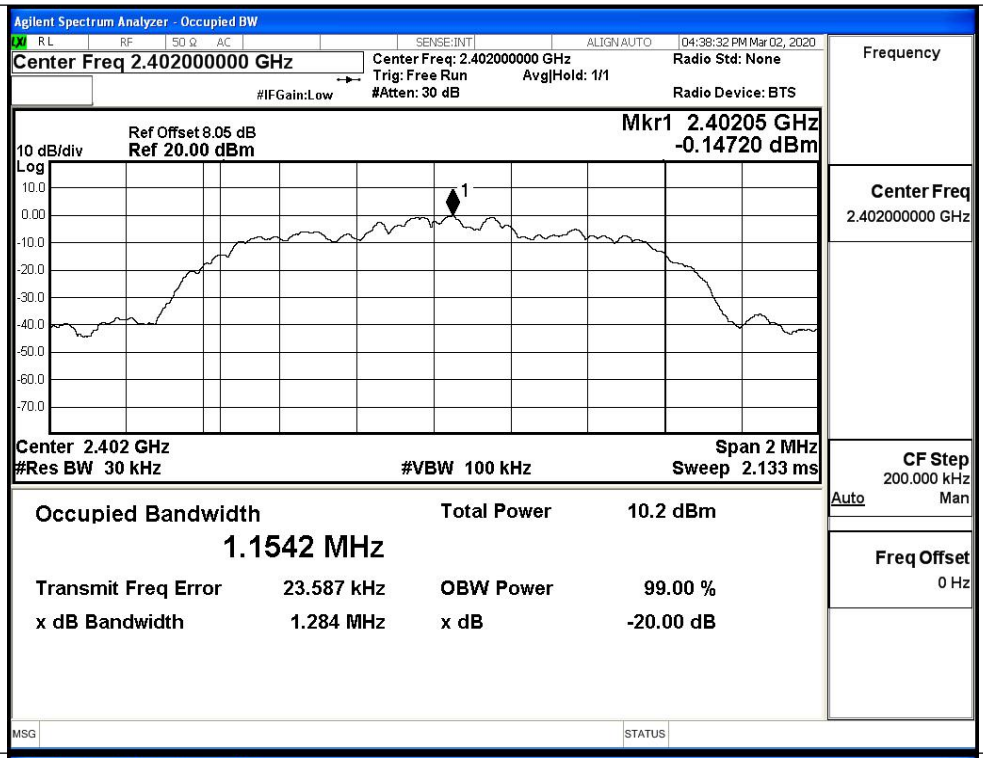
GFSK/MCH



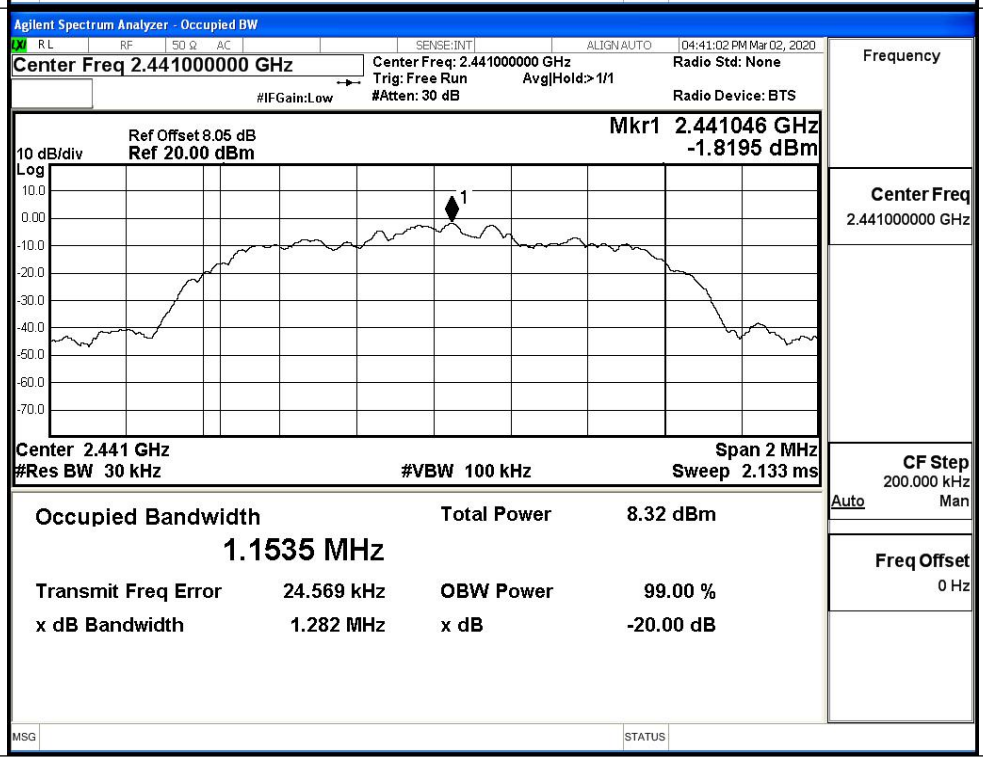
GFSK/HCH



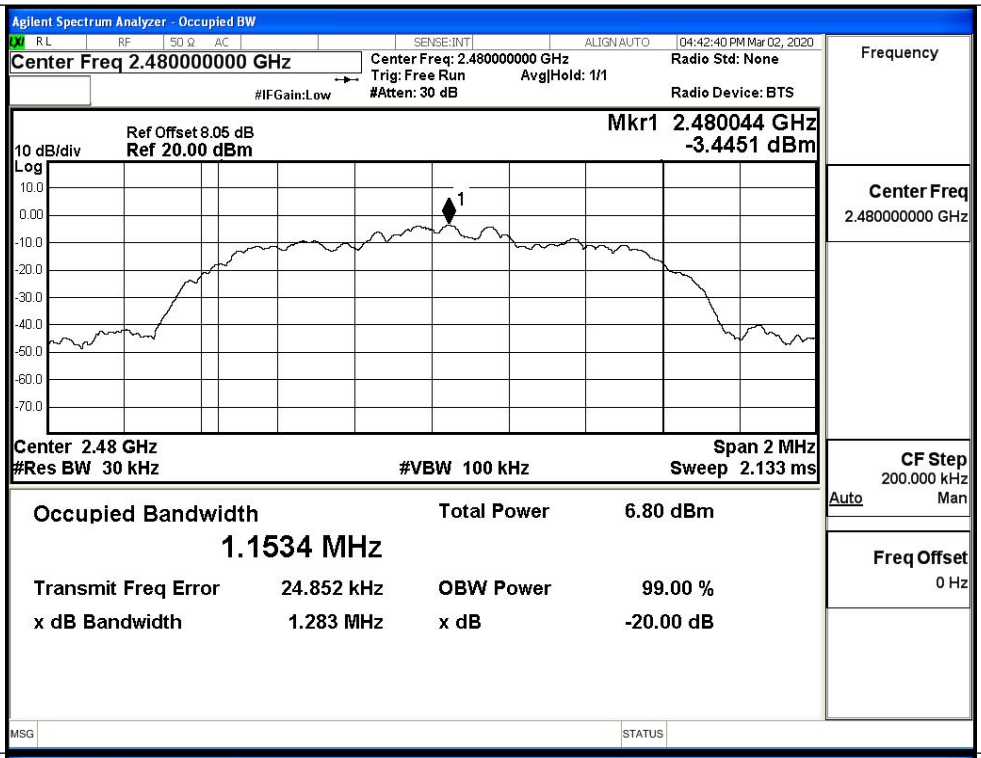
π/4DQPSK/LCH



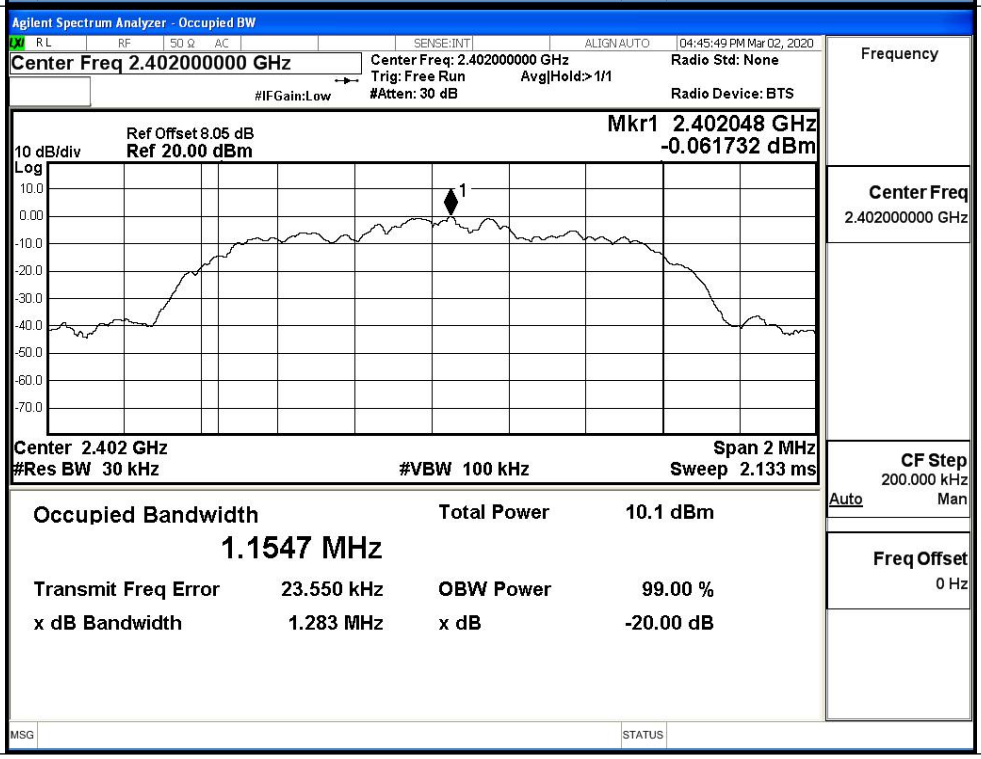
π/4DQPSK/MCH



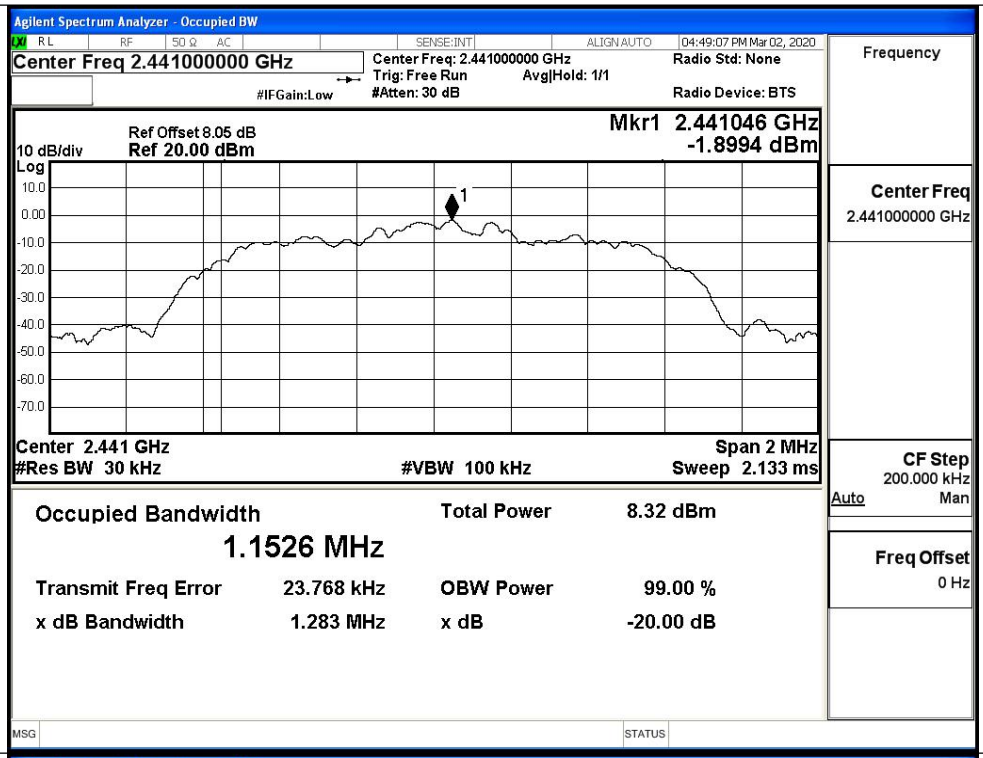
π/4DQPSK/HCH



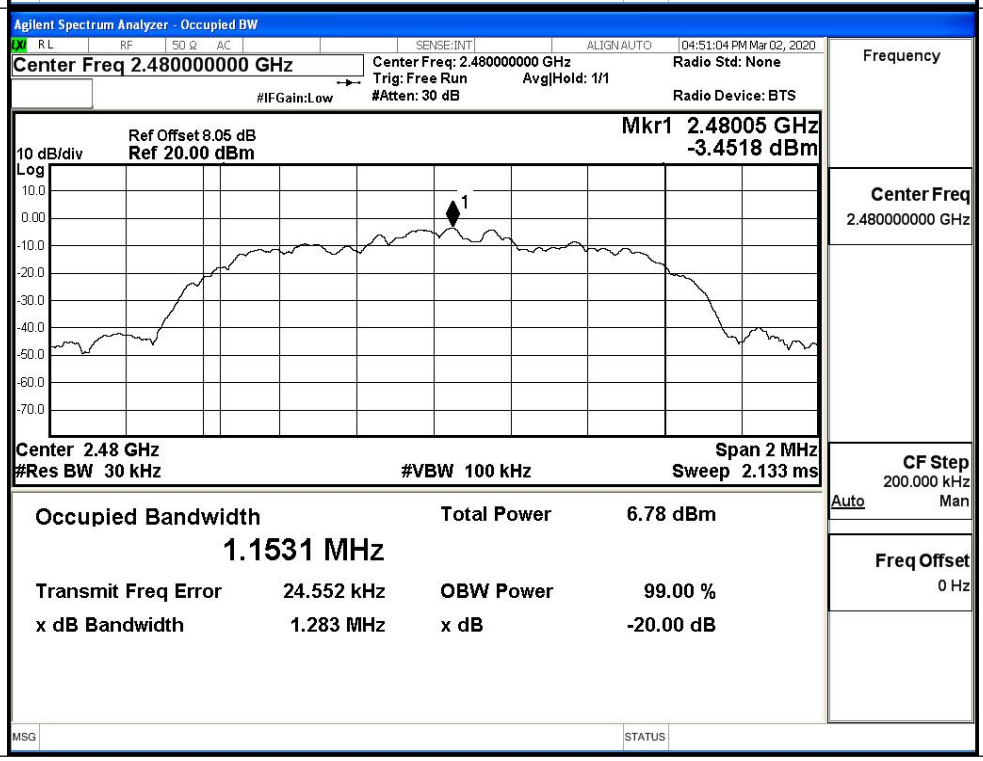
8DPSK/LCH



8DPSK/MCH

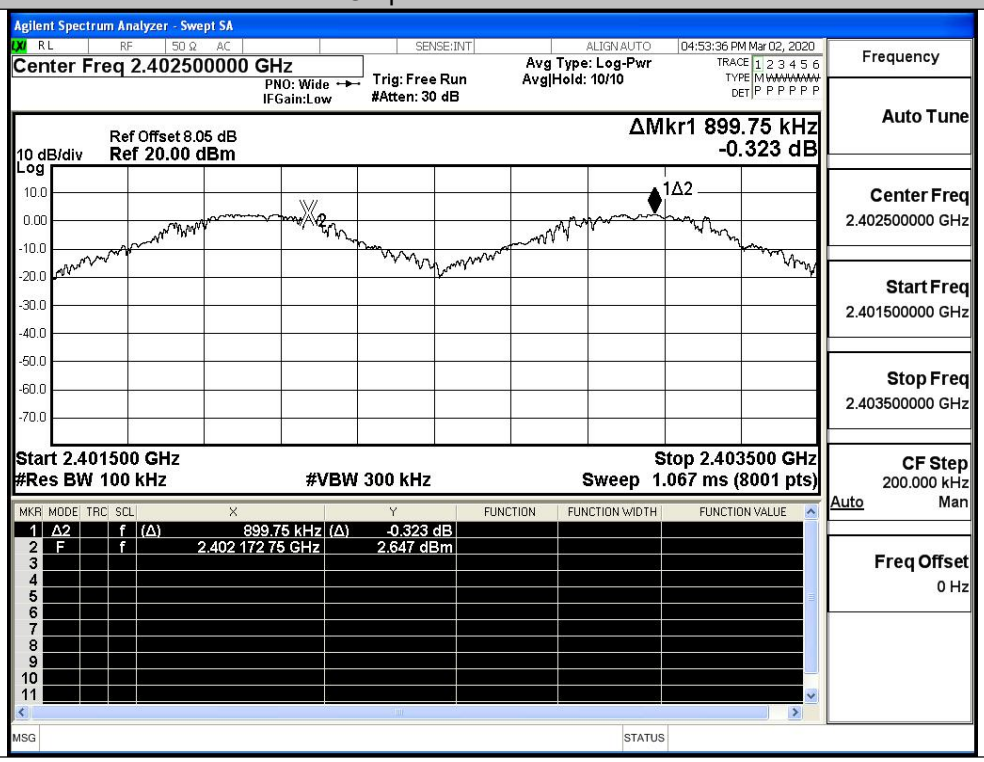


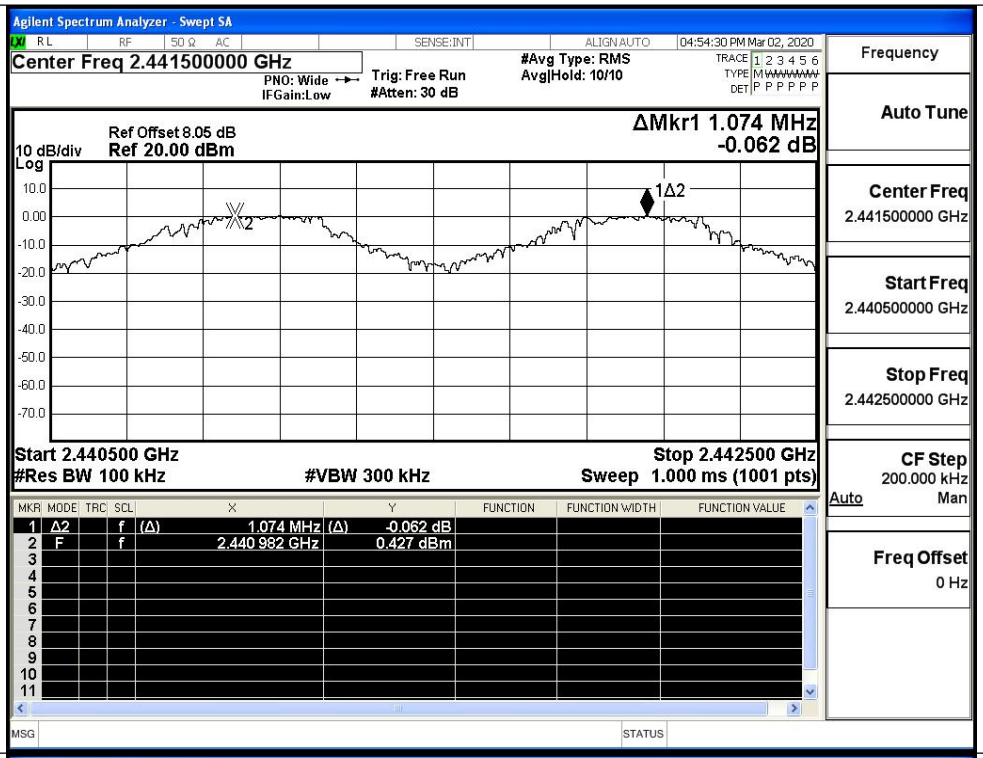
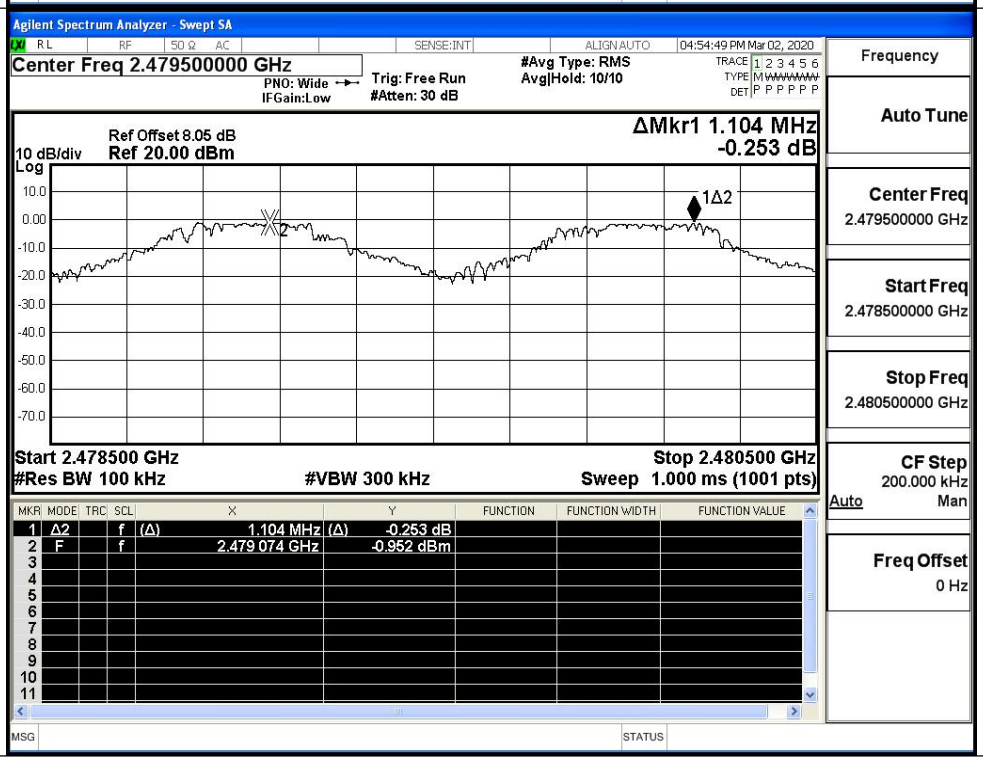
8DPSK/HCH



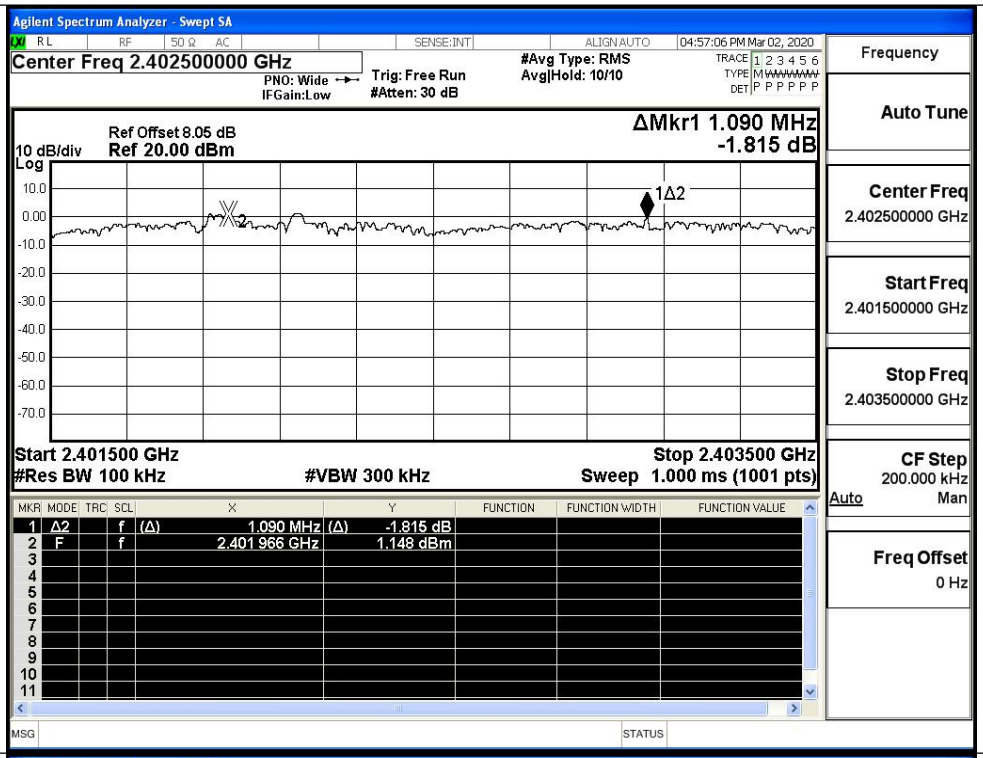
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.900	0.636	PASS
	MCH	1.074	0.636	PASS
	HCH	1.104	0.636	PASS
π/4DQPSK	LCH	1.090	0.856	PASS
	MCH	1.014	0.856	PASS
	HCH	1.084	0.856	PASS
8DPSK	LCH	0.858	0.855	PASS
	MCH	1.000	0.855	PASS
	HCH	1.236	0.855	PASS

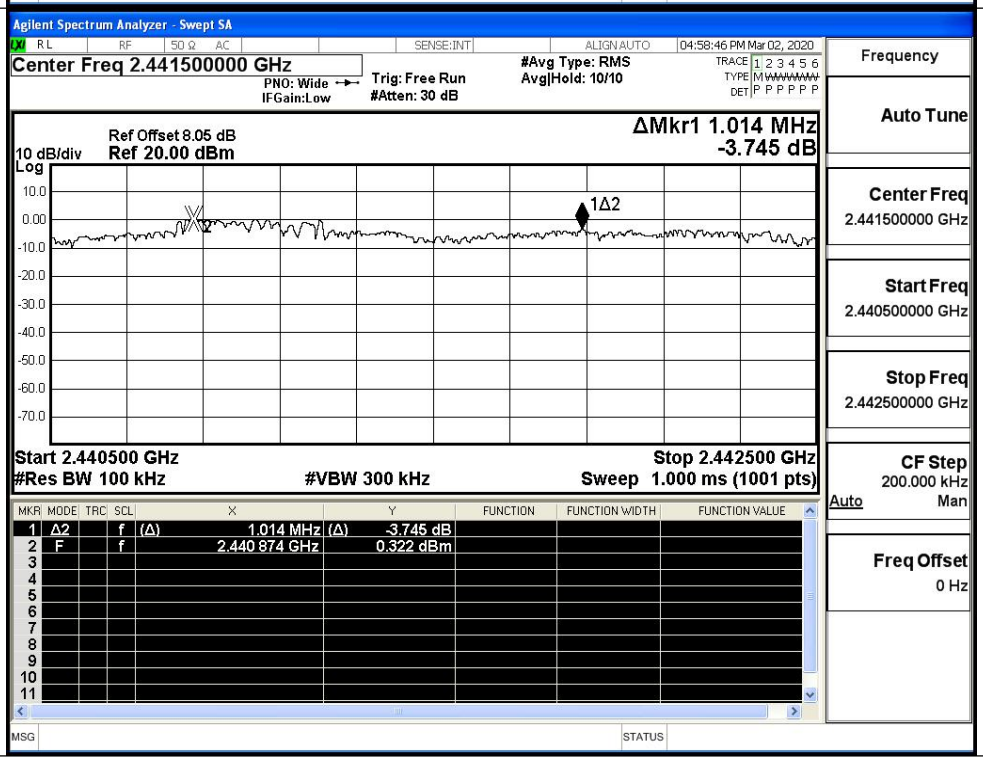
Test Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		

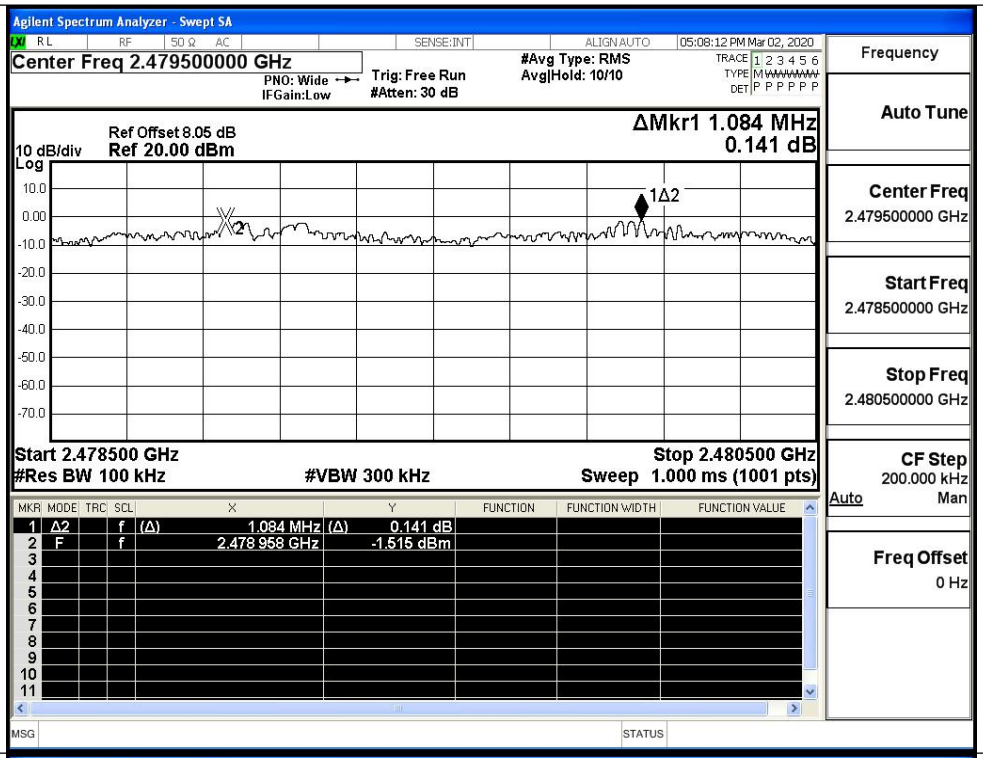
π/4DQPSK/LCH



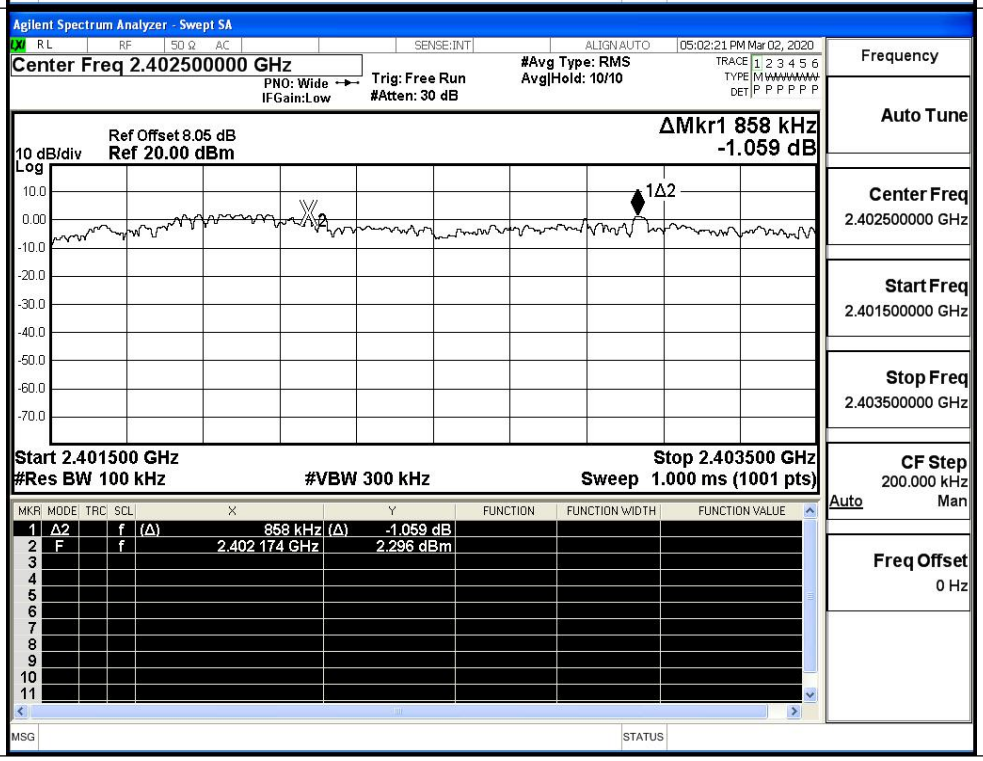
π/4DQPSK/MCH



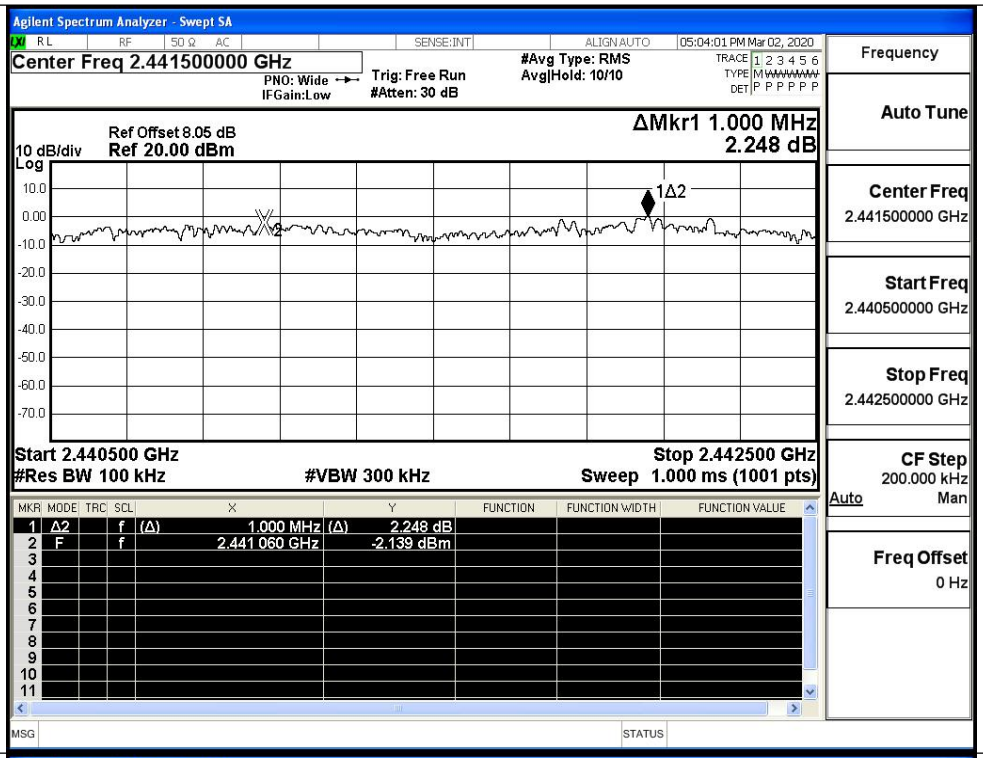
π/4DQPSK/HCH



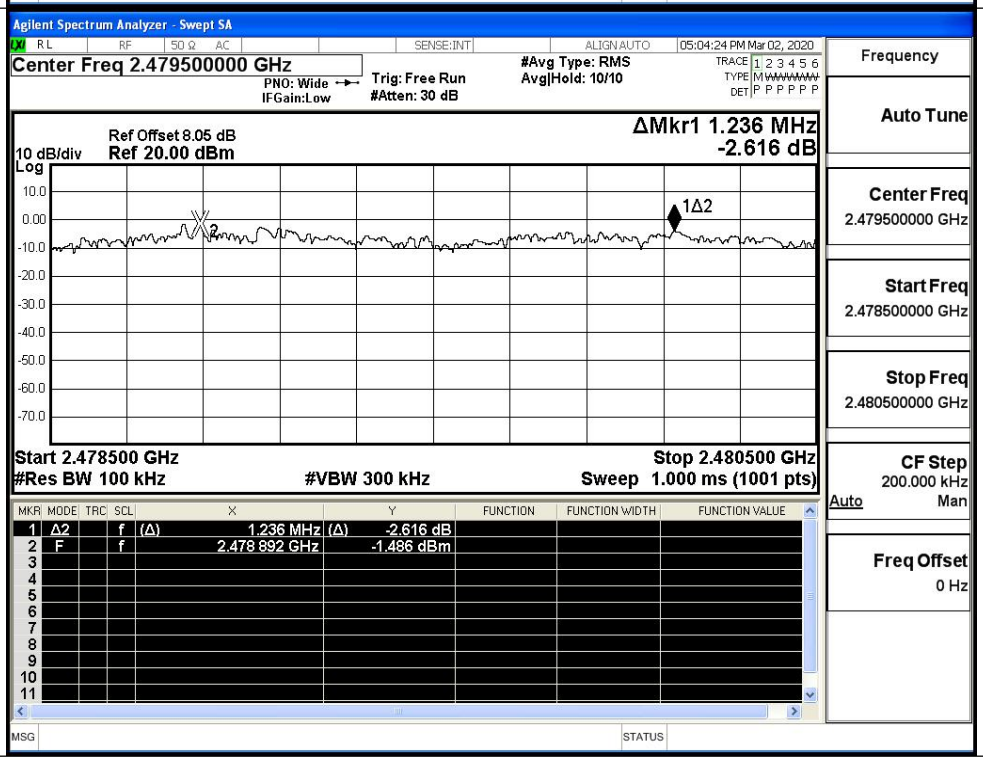
8DPSK/LCH



8DPSK/MCH

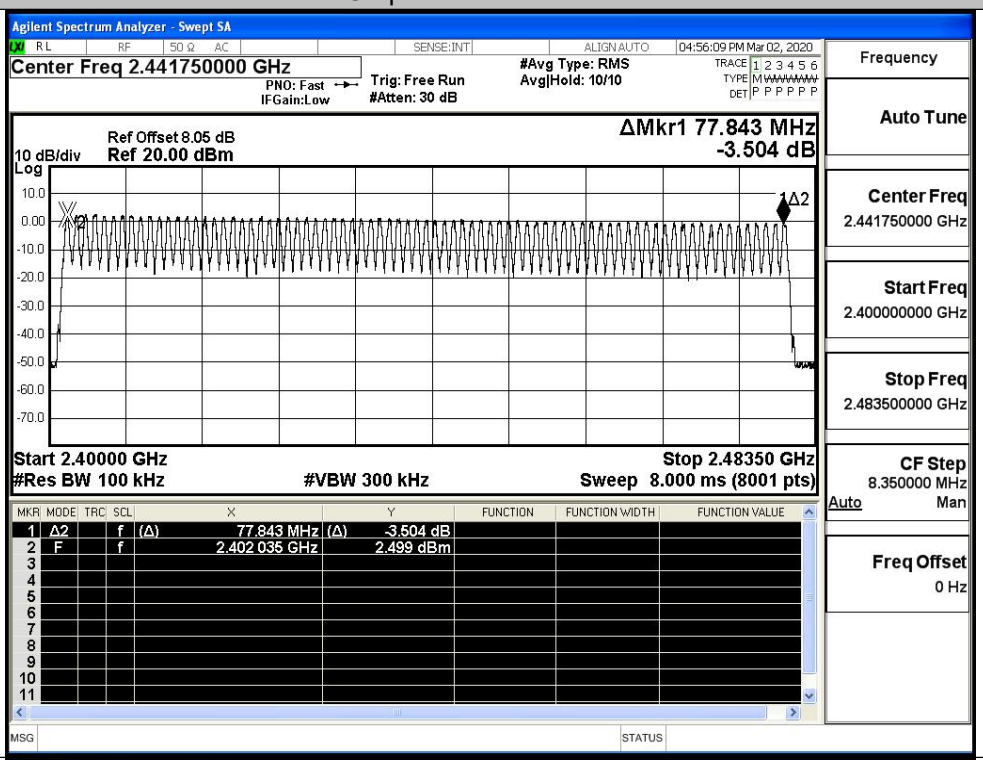
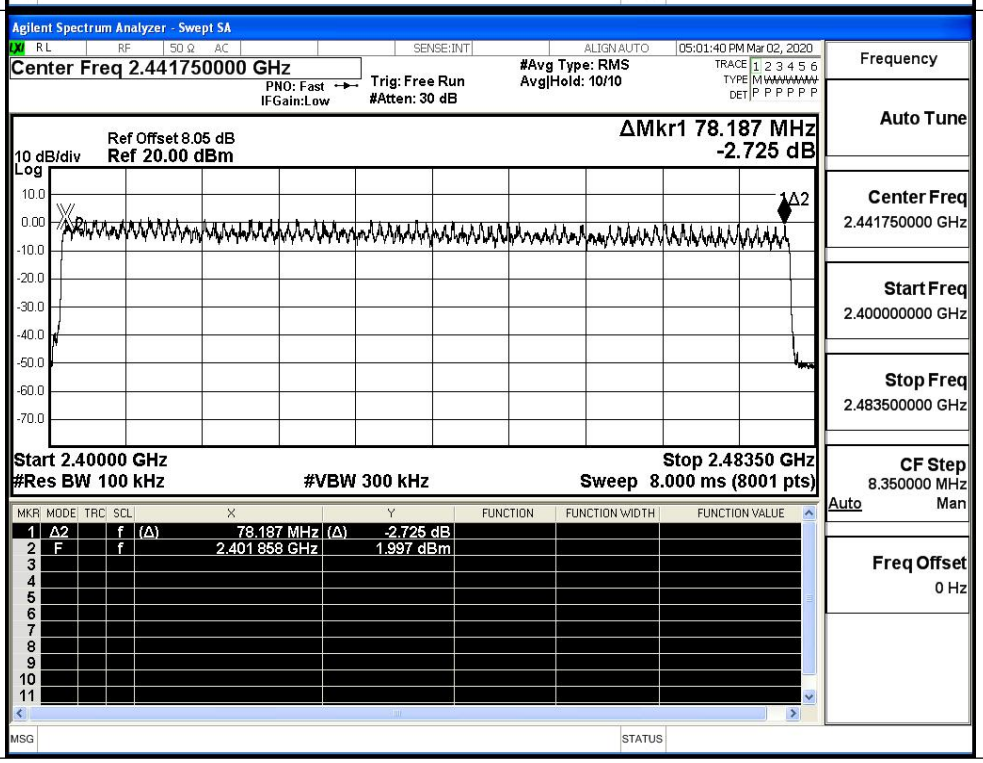


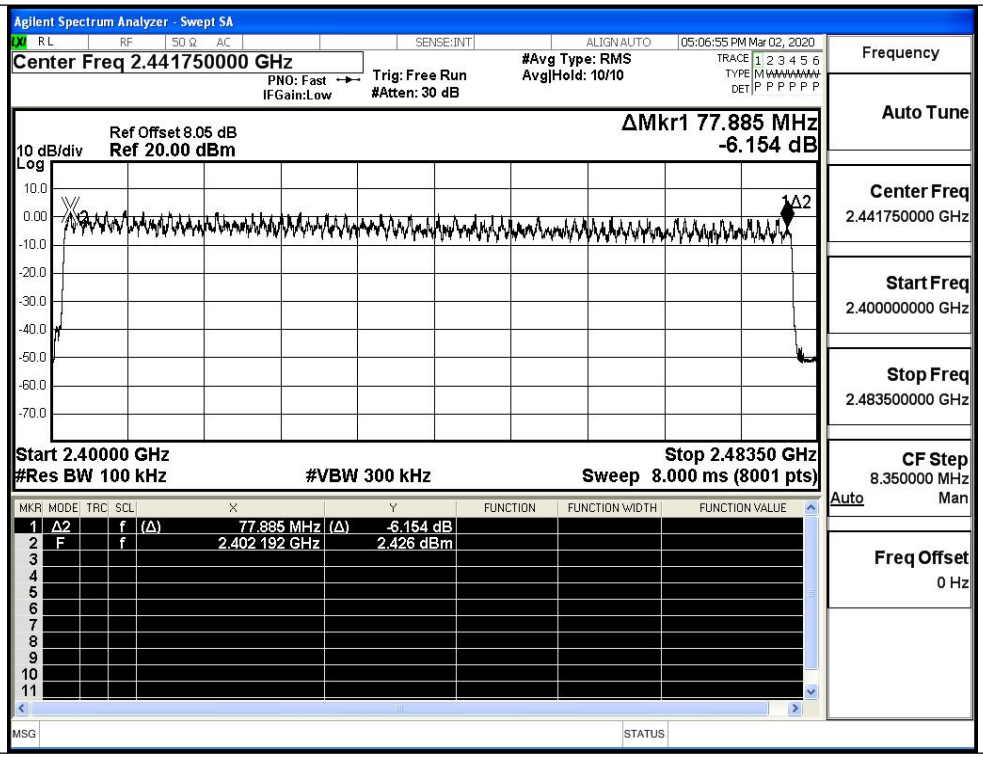
8DPSK/HCH



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

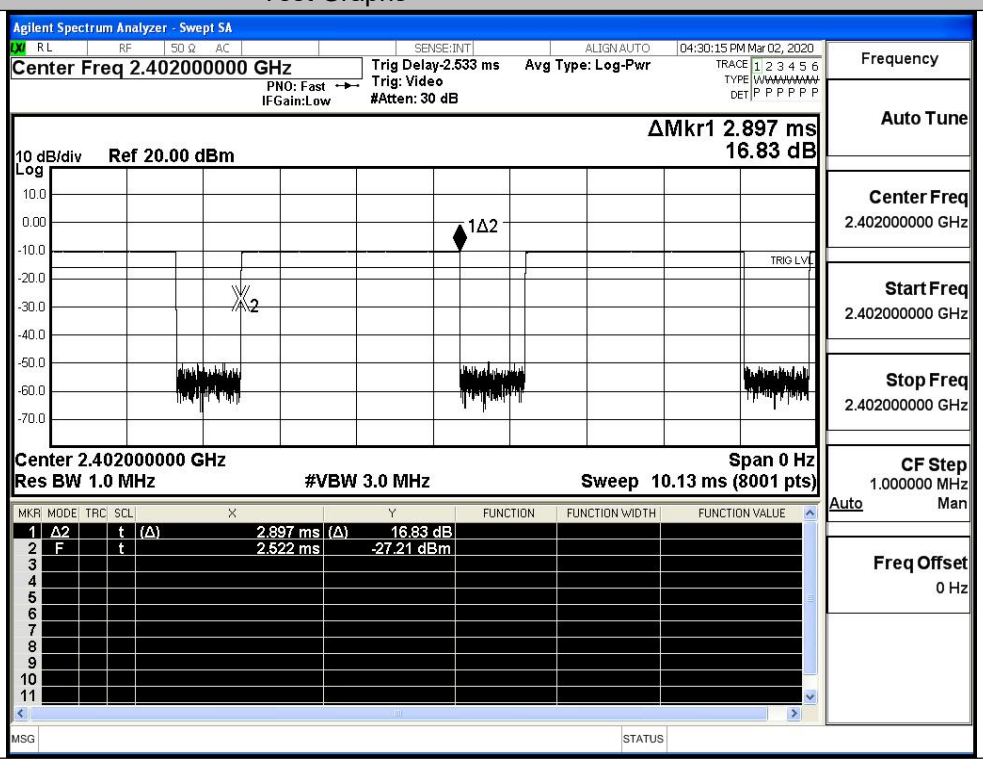
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

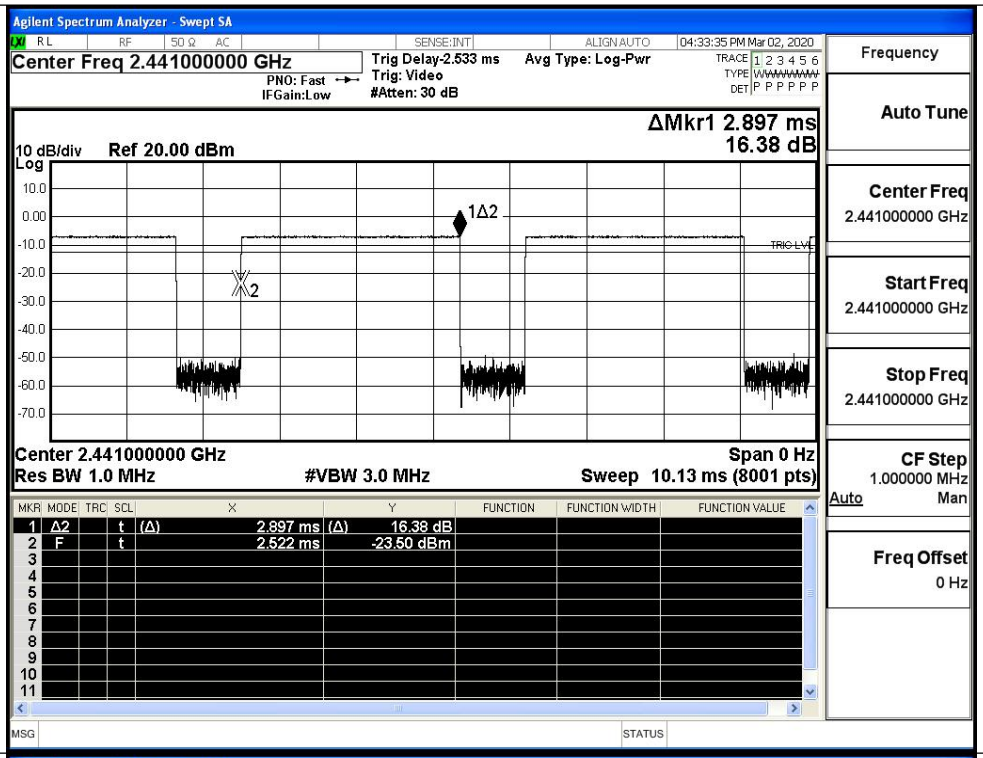
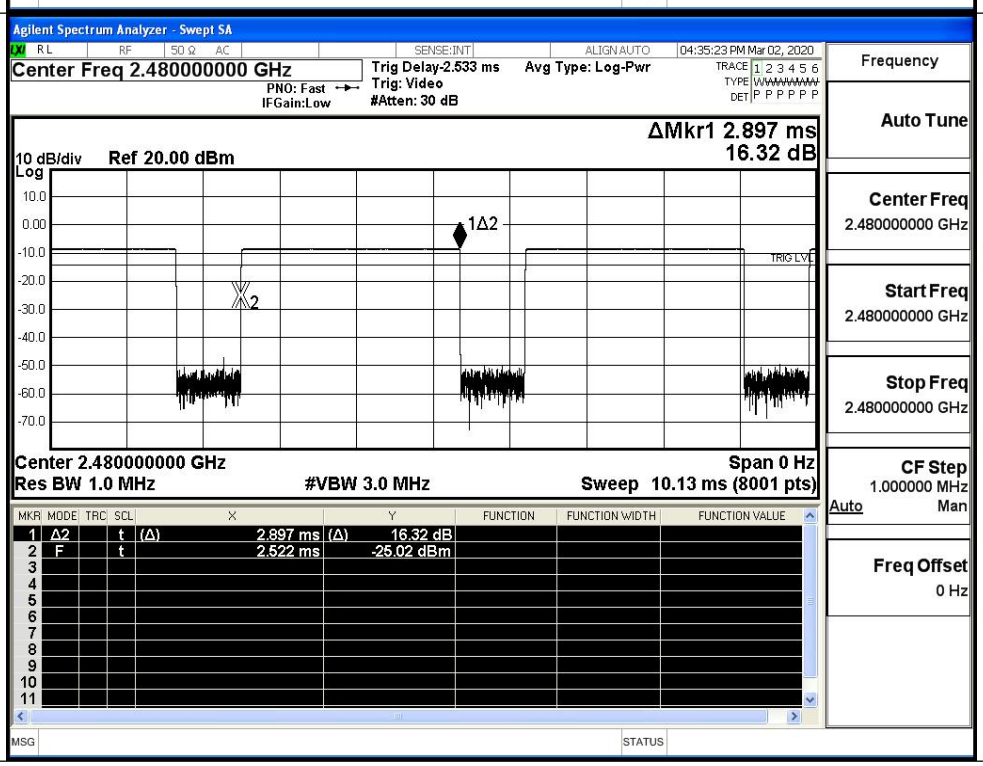
8DPSK/Hop		

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:06:55 PM Mar 02, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 77.885 MHz
-6.154 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
1 Δ2 f (Δ) 77.885 MHz (Δ) -6.154 dB
2 F f 2.402 192 GHz 2.426 dBm
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto Man
Freq Offset
0 Hz

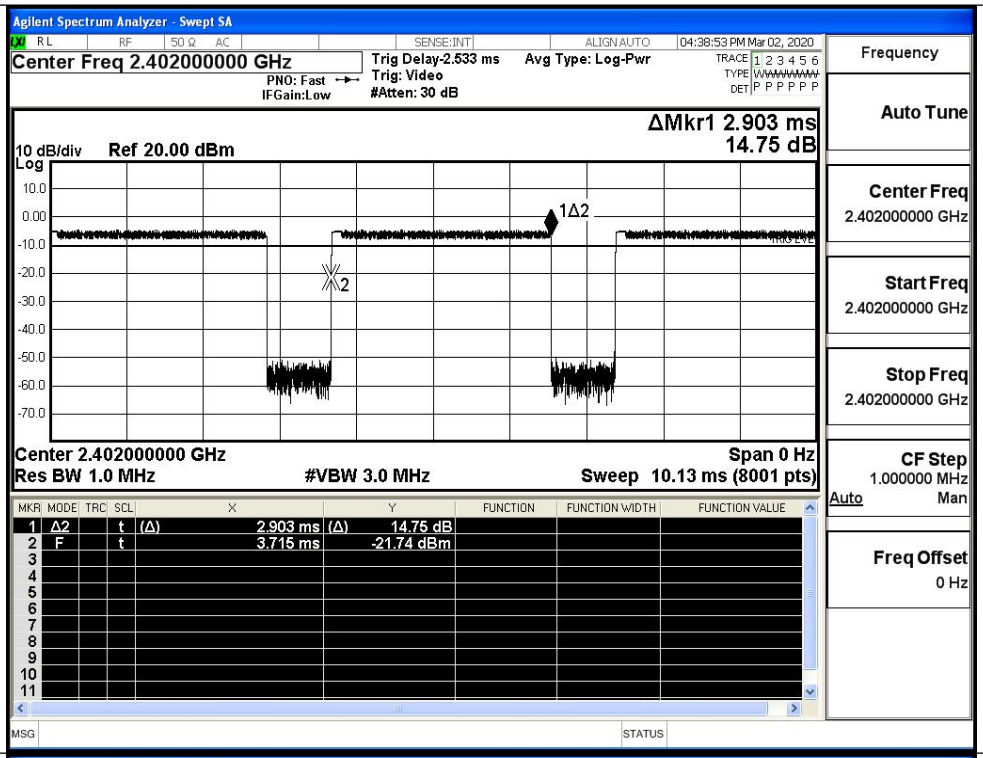
A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.309	0.4	PASS
	3DH5	MCH	2.9	106.7	0.309	0.4	PASS
	3DH5	HCH	2.9	106.7	0.309	0.4	PASS

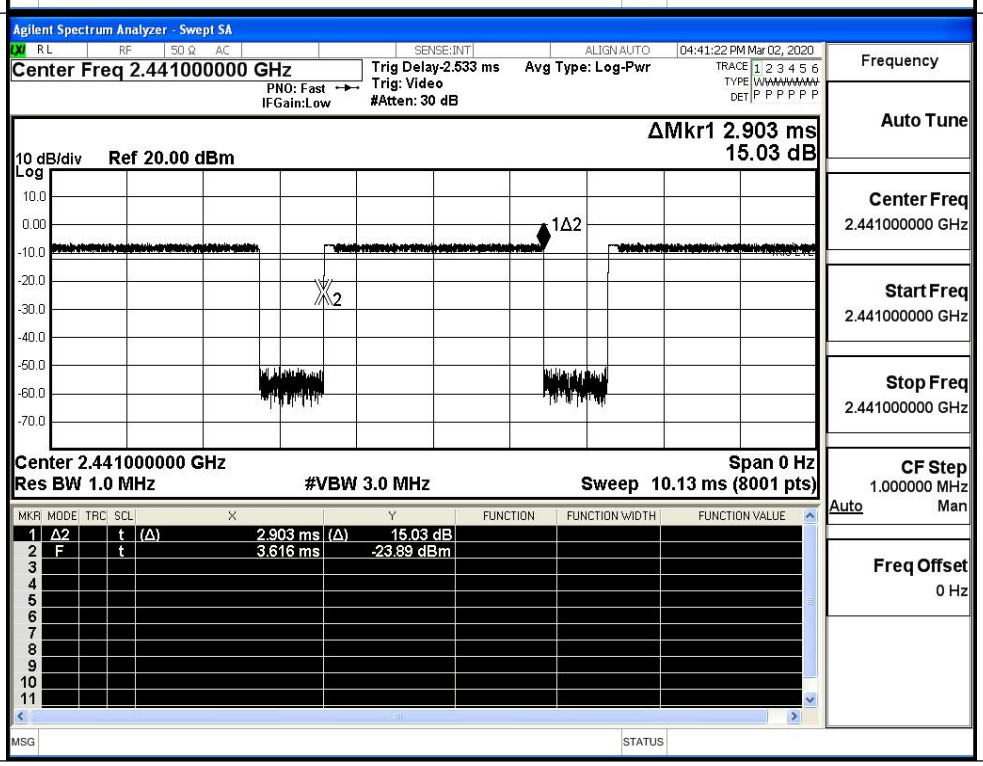
Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

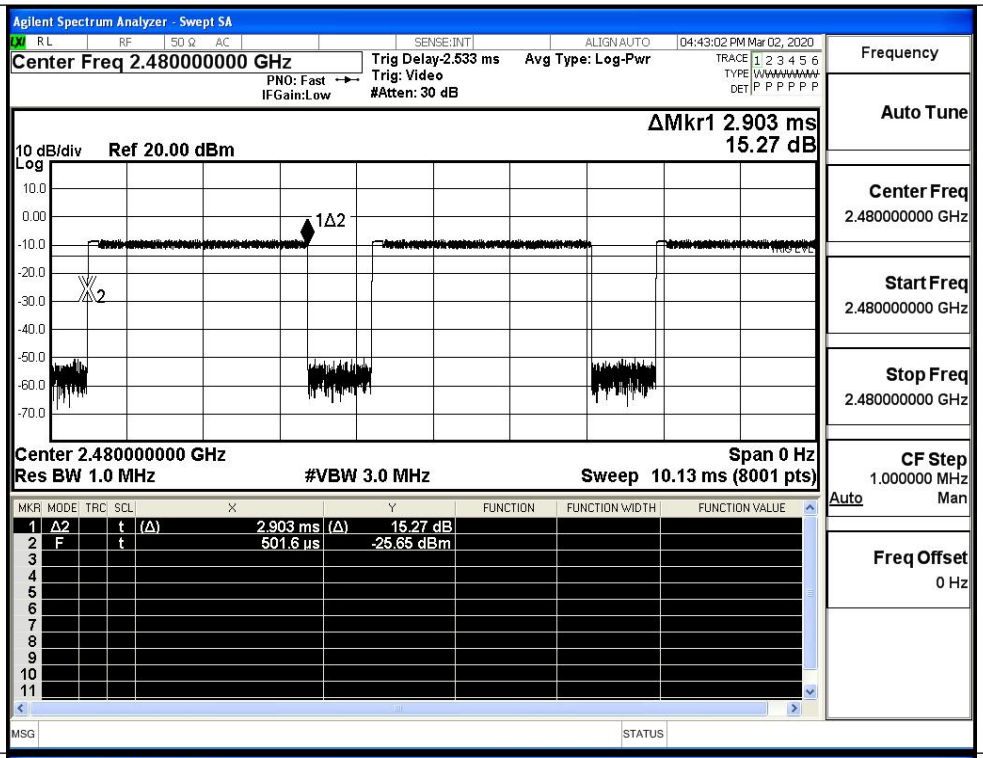
π/4DQPSK
_2DH5/LCH



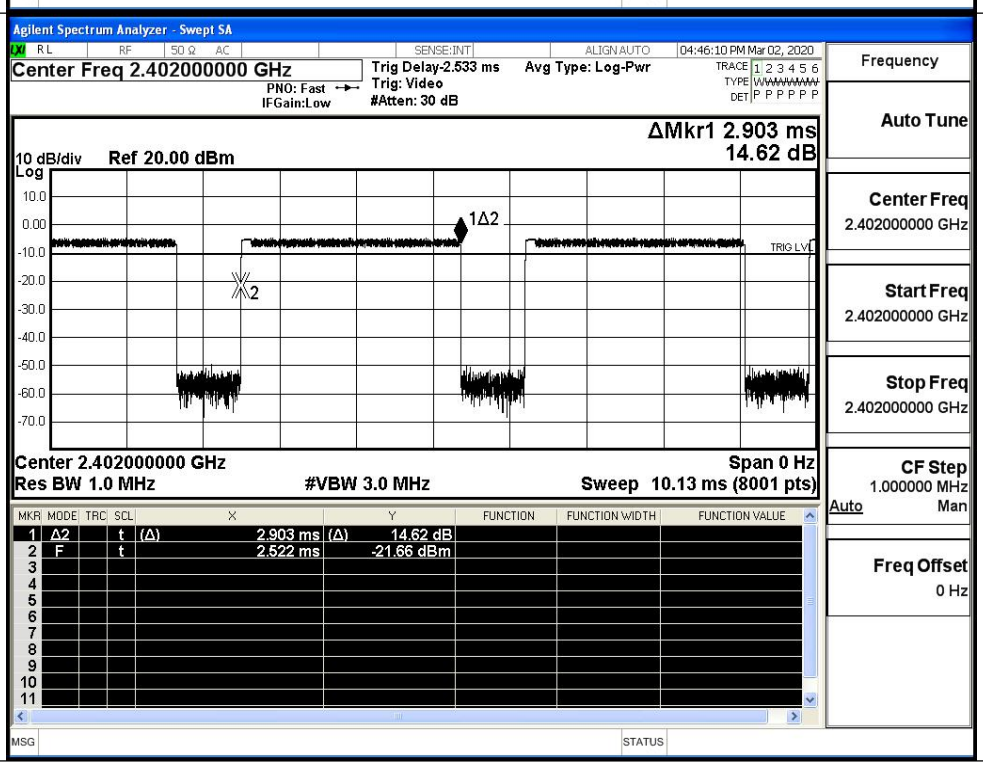
π/4DQPSK
_2DH5/MCH



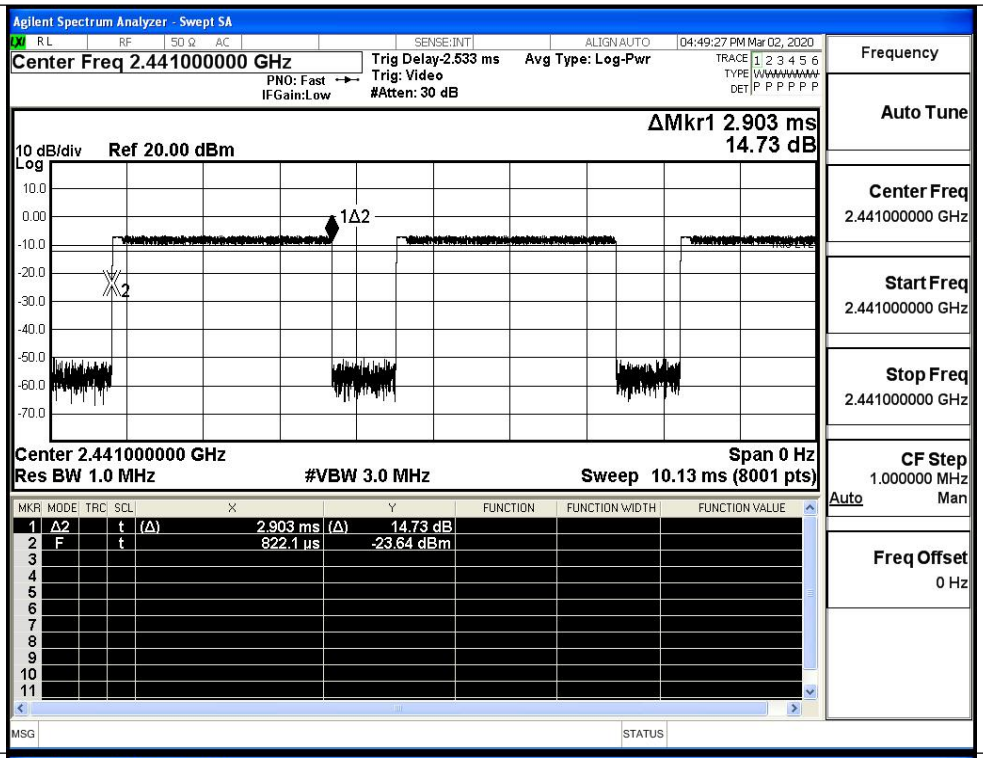
π/4DQPSK _2DH5/HCH



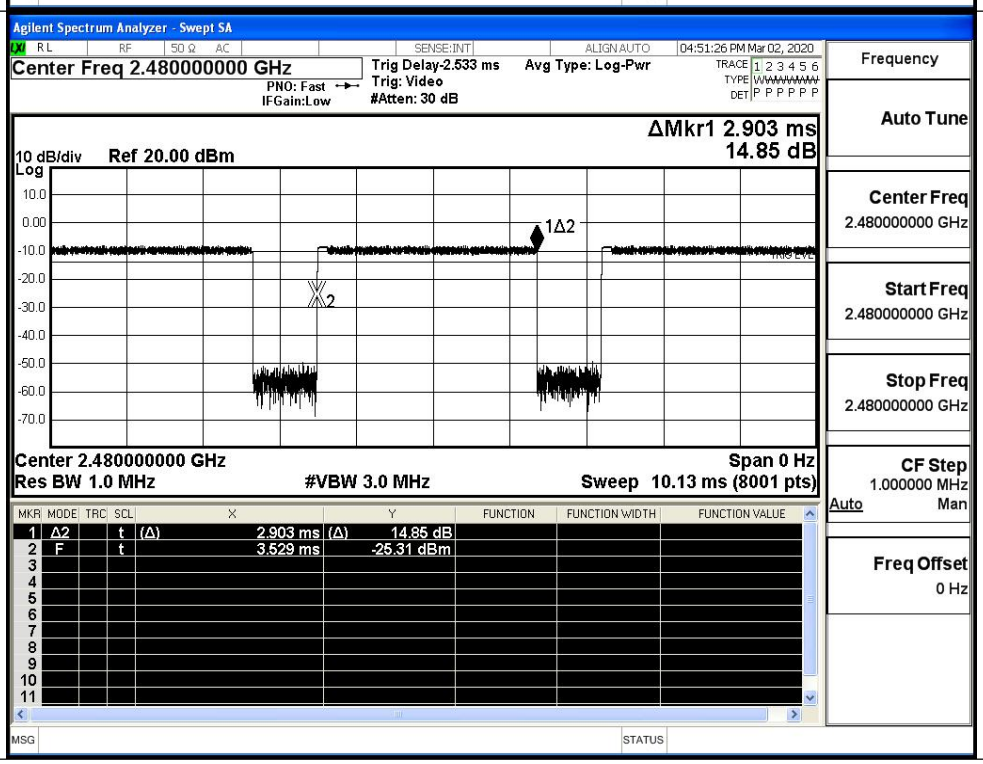
8DPSK _3DH5/LCH



8DPSK _3DH5/MCH

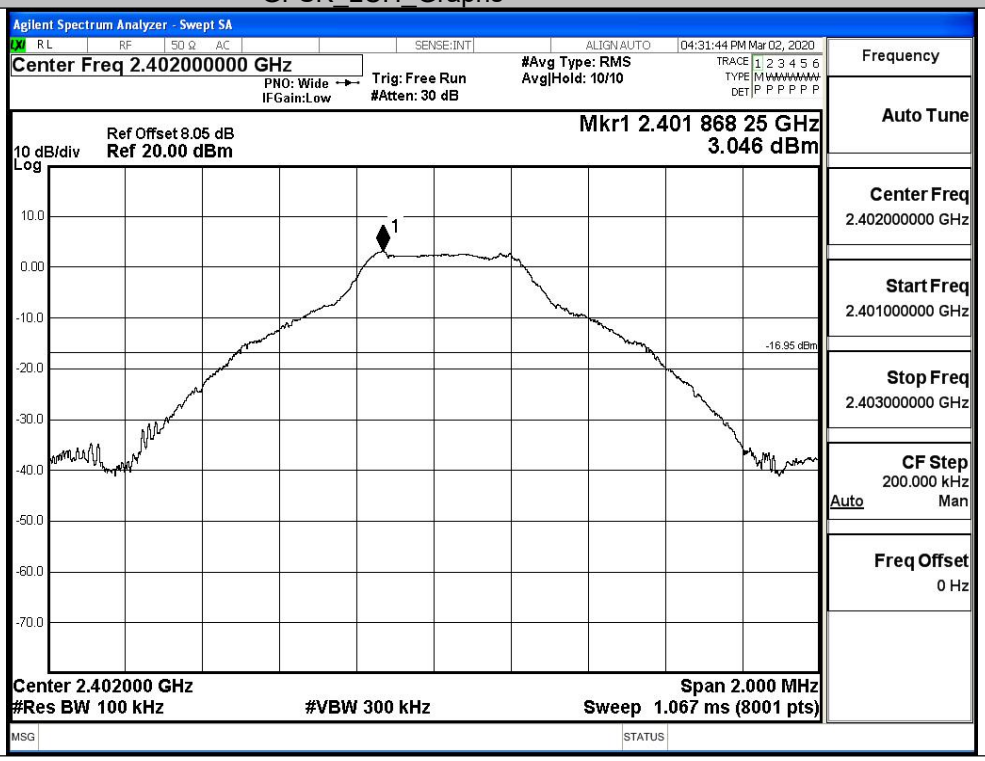


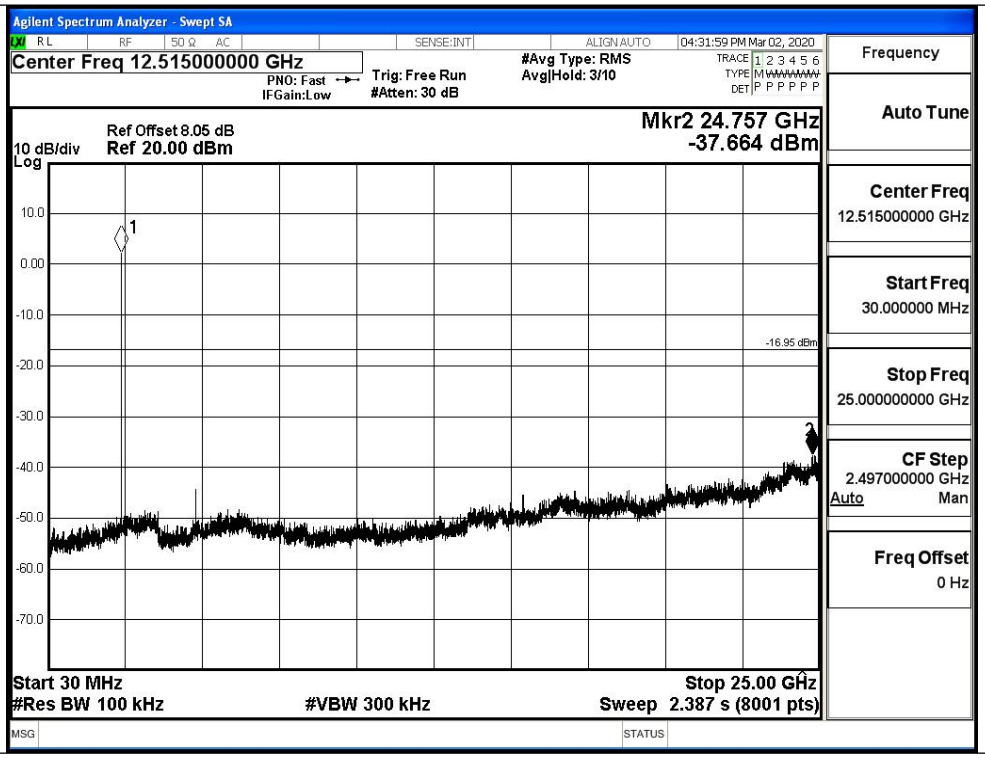
8DPSK _3DH5/HCH



A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.046	-37.664	-16.954	PASS
	MCH	1.105	-37.905	-18.895	PASS
	HCH	-0.9	-38.006	-20.900	PASS
π/4DQPSK	LCH	2.264	-37.393	-17.736	PASS
	MCH	0.304	-38.150	-19.696	PASS
	HCH	-1.195	-38.289	-21.195	PASS
8DPSK	LCH	2.19	-37.978	-17.810	PASS
	MCH	0.359	-37.327	-19.641	PASS
	HCH	-1.243	-37.968	-21.243	PASS

GFSK_LCH_Graphs		
Pref		

Puw		

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 3/10
04:31:59 PM Mar 02, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Mkr2 24.757 GHz
-37.664 dBm
-16.95 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz