Appendix A: Test Result of Conducted Test

20dB Occupied Bandwidth

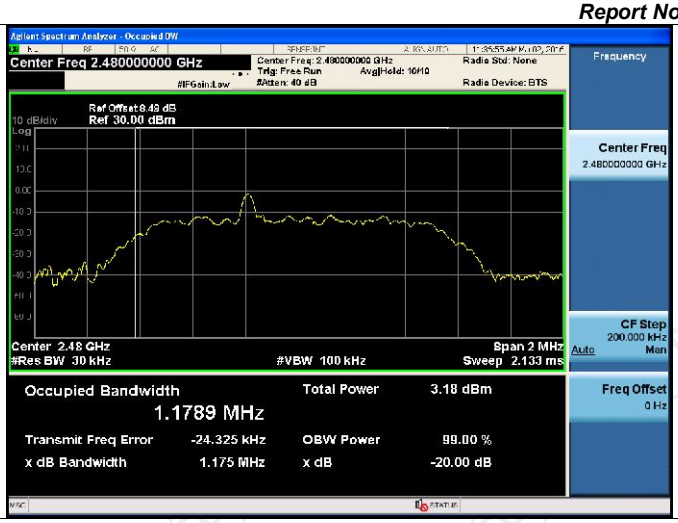
Test Result

Mode	Channel.	20dB Bandwidth [MHz]	99% OBW [MHz]	Verdict
GFSK	LCH	0.9413	0.90774	PASS
GFSK	MCH	0.9433	0.90819	PASS
GFSK	HCH	0.9430	0.90565	PASS
π/4DQPSK	LCH	1.174	1.1791	PASS
π/4DQPSK	MCH	1.173	1.1820	PASS
π/4DQPSK	HCH	1.175	1.1789	PASS

Test Graph

Graphs		
GFSK/LCH		
GFSK/MCH		

GFSK/HCH		
π/4DQPSK/LCH		
π/4DQPSK/MCH		

π/4DQPSK/HCH		

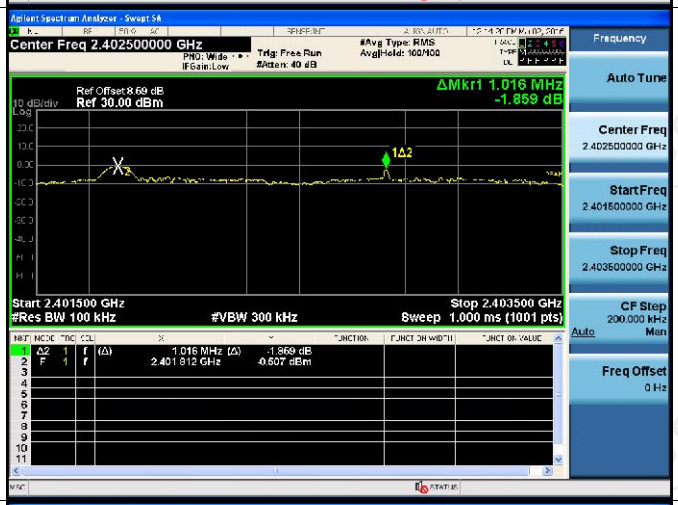
Carrier Frequency Separation

Result Table

Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	LCH	1.054	PASS
GFSK	MCH	0.880	PASS
GFSK	HCH	1.022	PASS
π/4DQPSK	LCH	1.016	PASS
π/4DQPSK	MCH	1.000	PASS
π/4DQPSK	HCH	0.998	PASS

Test Graph

Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH		
π/4DQPSK/LCH		
π/4DQPSK/MCH		

π/4DQPSK/HCH			

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.479500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
Ref Offset 8.49 dB
10 dB/div Ref 30.00 dBm
ΔMkr1 998 kHz
-0.005 dB
1Δ2
Start 2.478500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.480500 GHz
Sweep 1.000 ms (1001 pts)
1 Δ2 1 f (Δ) 998 kHz (Δ) -0.005 dB
2 F 1 f 2.479 810 GHz -1.300 dBm
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

Dwell Time

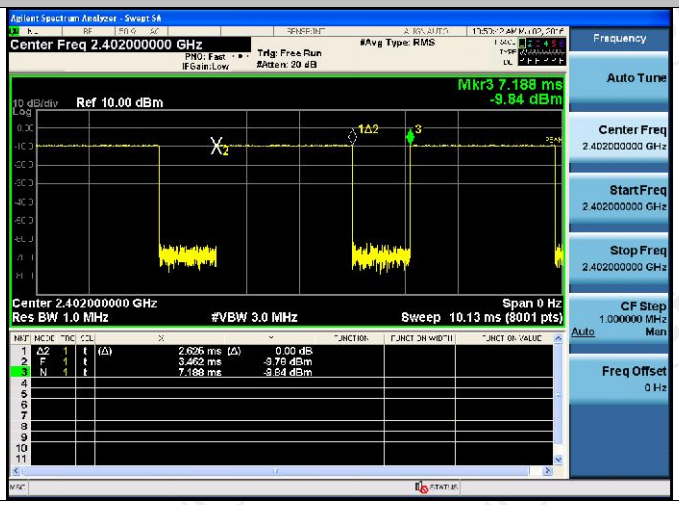
Result Table

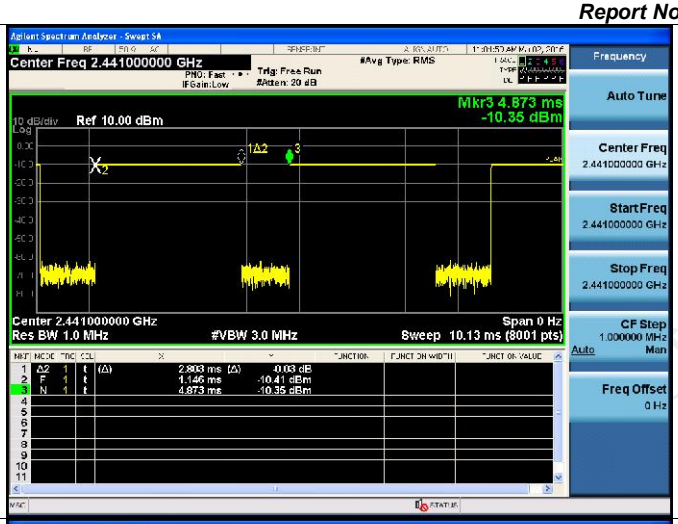
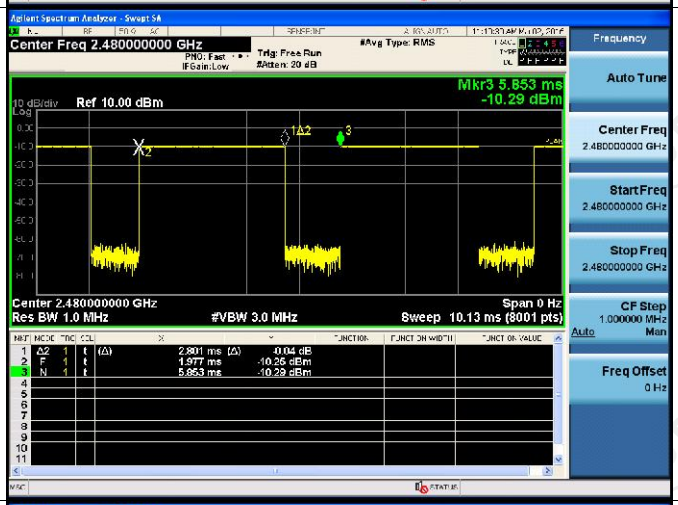
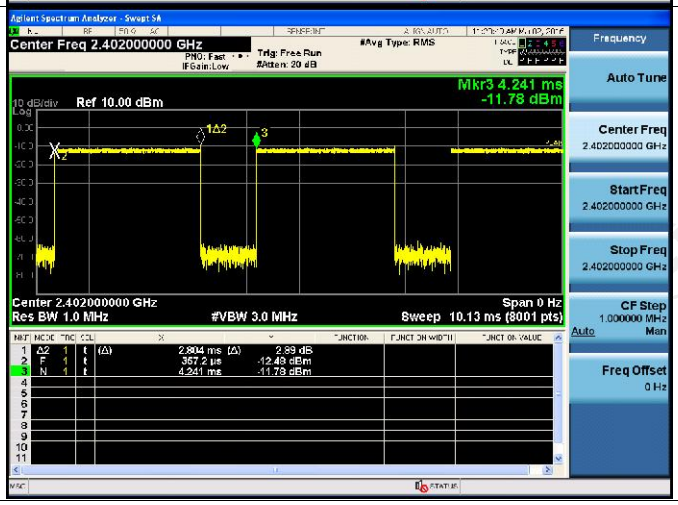
The Dwell Time=Burst Width*Total Hops. The detailed calculations are showed as follows:

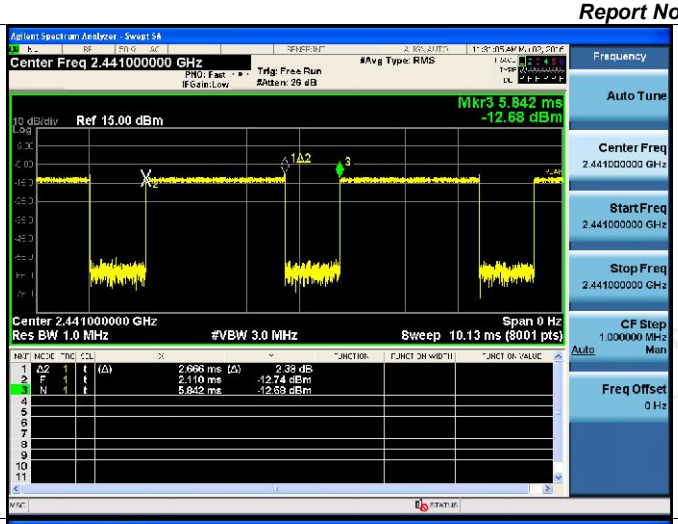
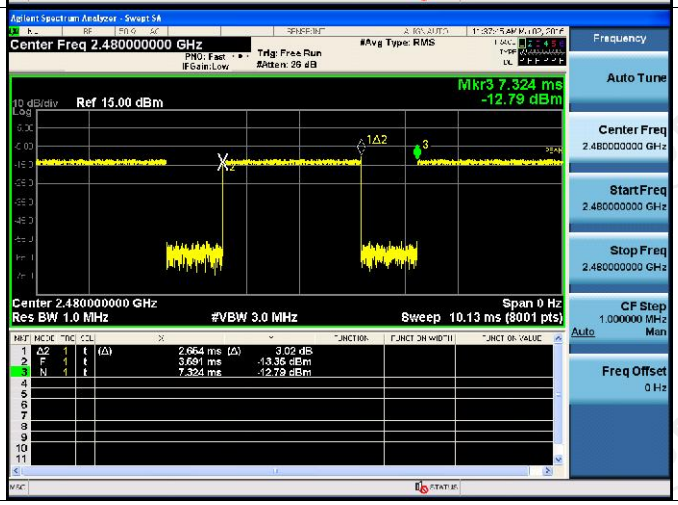
- The duration for dwell time calculation:0.4[s]*hopping number=0.4[s]*79[ch]=31.6[s*ch];
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate of 1600 [ch*hop/s] for all channels. So the final hopping rate for all channels is 1600/6=266.67 [ch*hop/s]
- The hops per second on one channel: 266.67 [ch*hops/s]/79 [ch]=3.38 [hop/s];
- The total hops for all channels within the dwell time calculation duration:3.38 [hop/s]*31.6[s*ch]=106.67 [hop*ch];
- The dwell time for all channels hopping: 106.67 [hop*ch]*Burst Width [ms/hop/ch].

Mode	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Duty Cycle [%]	Verdict
GFSK	LCH	2.625	106.7	0.280	70.43	PASS
GFSK	MCH	2.803	106.7	0.299	75.22	PASS
GFSK	HCH	2.801	106.7	0.299	72.25	PASS
π/4DQPSK	LCH	2.804	106.7	0.299	72.21	PASS
π/4DQPSK	MCH	2.666	106.7	0.284	71.45	PASS
π/4DQPSK	HCH	2.654	106.7	0.283	71.09	PASS

Test Graph

Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		
π/4DQPSK/LCH		

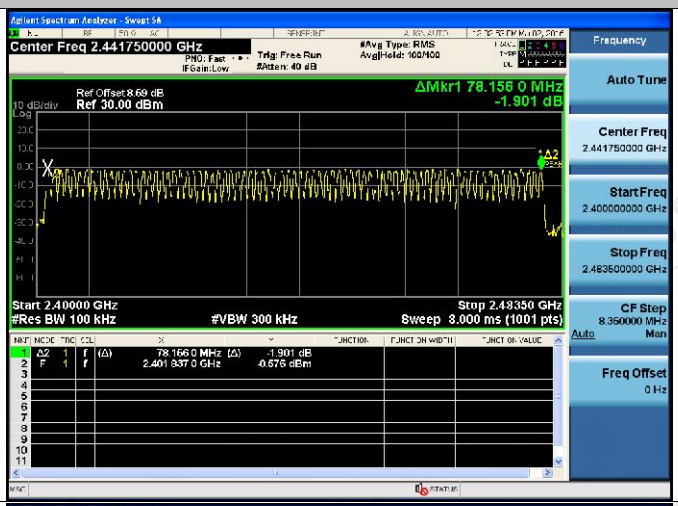
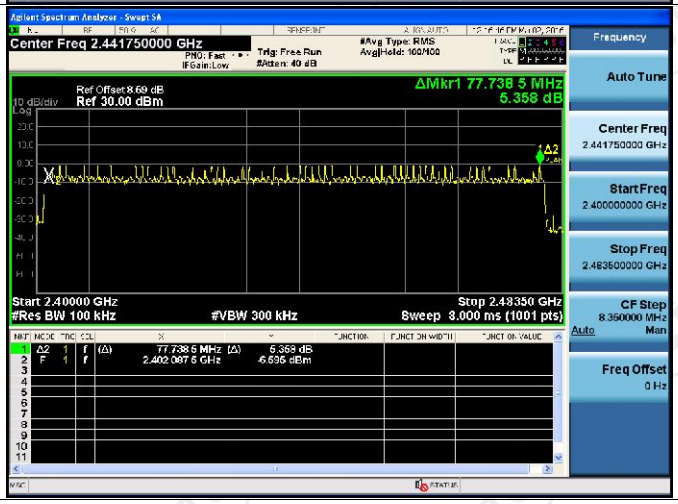
π/4DQPSK/MCH		
π/4DQPSK/HCH		

Hopping Channel Number

Result Table

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS
π/4DQPSK	Hop	79	PASS

Test Graph

Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

Conducted Peak Output Power

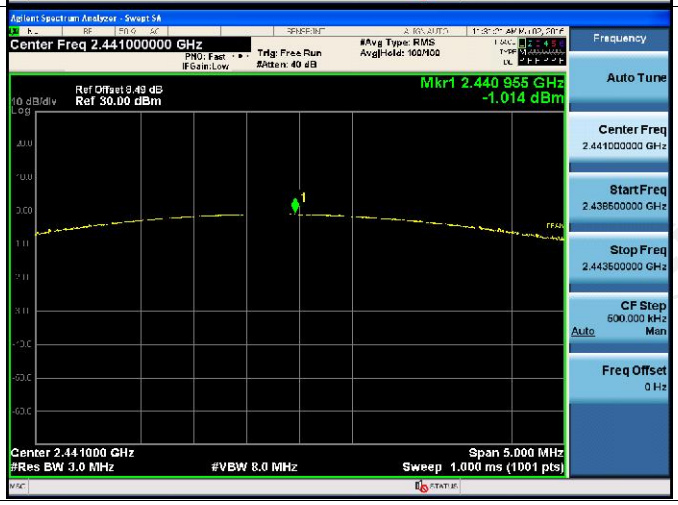
Result Table

Mode	Channel.	Maximum Peak Output Power [dBm]	Verdict
GFSK	LCH	-0.260	PASS
GFSK	MCH	-0.895	PASS
GFSK	HCH	-0.895	PASS
π/4DQPSK	LCH	-0.174	PASS
π/4DQPSK	MCH	-1.014	PASS
π/4DQPSK	HCH	-1.024	PASS

Test Graph

Graphs	
GFSK/LCH	
GFSK/MCH	

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

GFSK/HCH		
π/4DQPSK/LCH		
π/4DQPSK/MCH		

π/4DQPSK/HCH		

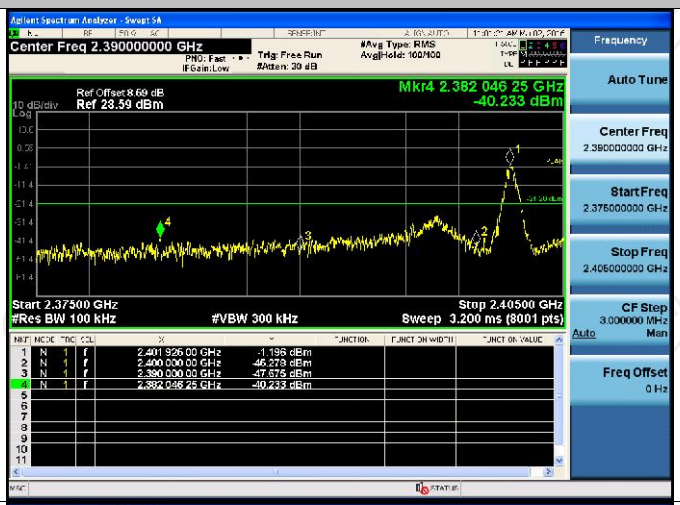
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
Ref Offset 9.49 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.479 655 GHz
-1.024 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 5.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz

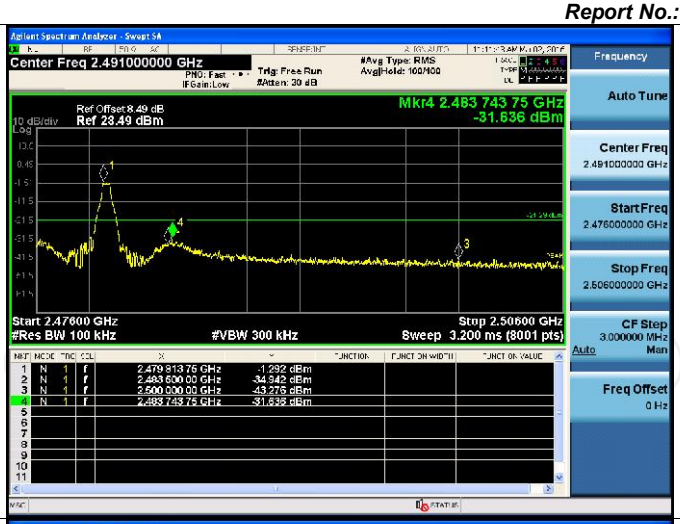
Band-edge for RF Conducted Emissions

Result Table

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.196	Off	-40.233	-21.2	PASS
			-0.750	On	-30.475	-20.75	PASS
GFSK	HCH	2480	-1.292	Off	-31.636	-21.29	PASS
			5.135	On	-23.980	-14.87	PASS
π/4DQPSK	LCH	2402	-6.601	Off	-39.019	-26.6	PASS
			-0.704	On	-33.066	-20.7	PASS
π/4DQPSK	HCH	2480	-1.353	Off	-33.402	-21.35	PASS
			-7.508	On	-39.232	-27.51	PASS

Test Graph

Graphs		
GFSK/LCH/No Hop		
GFSK/LCH/Hop		

GFSK/HCH/No Hop		
GFSK/HCH/Hop		
π/4DQPSK/LCH/No Hop		

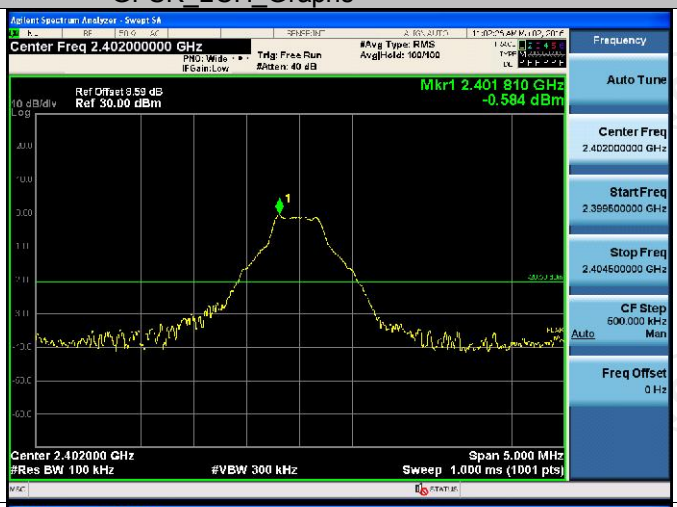
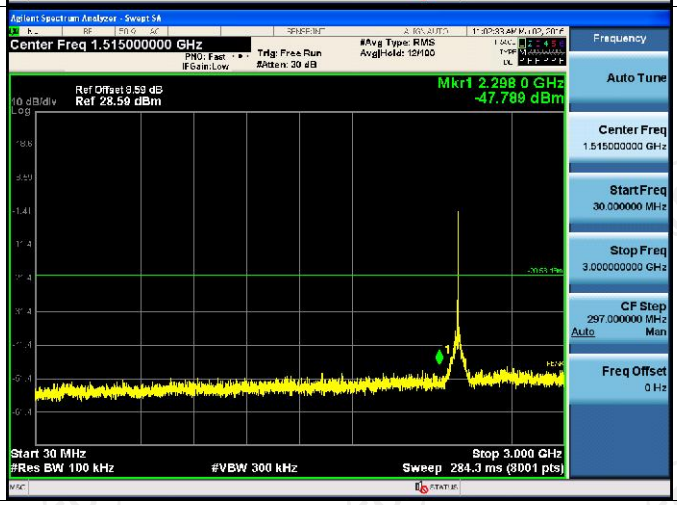
π/4DQPSK/LCH/Hop		
π/4DQPSK/HCH/No Hop		
π/4DQPSK/HCH/Hop		

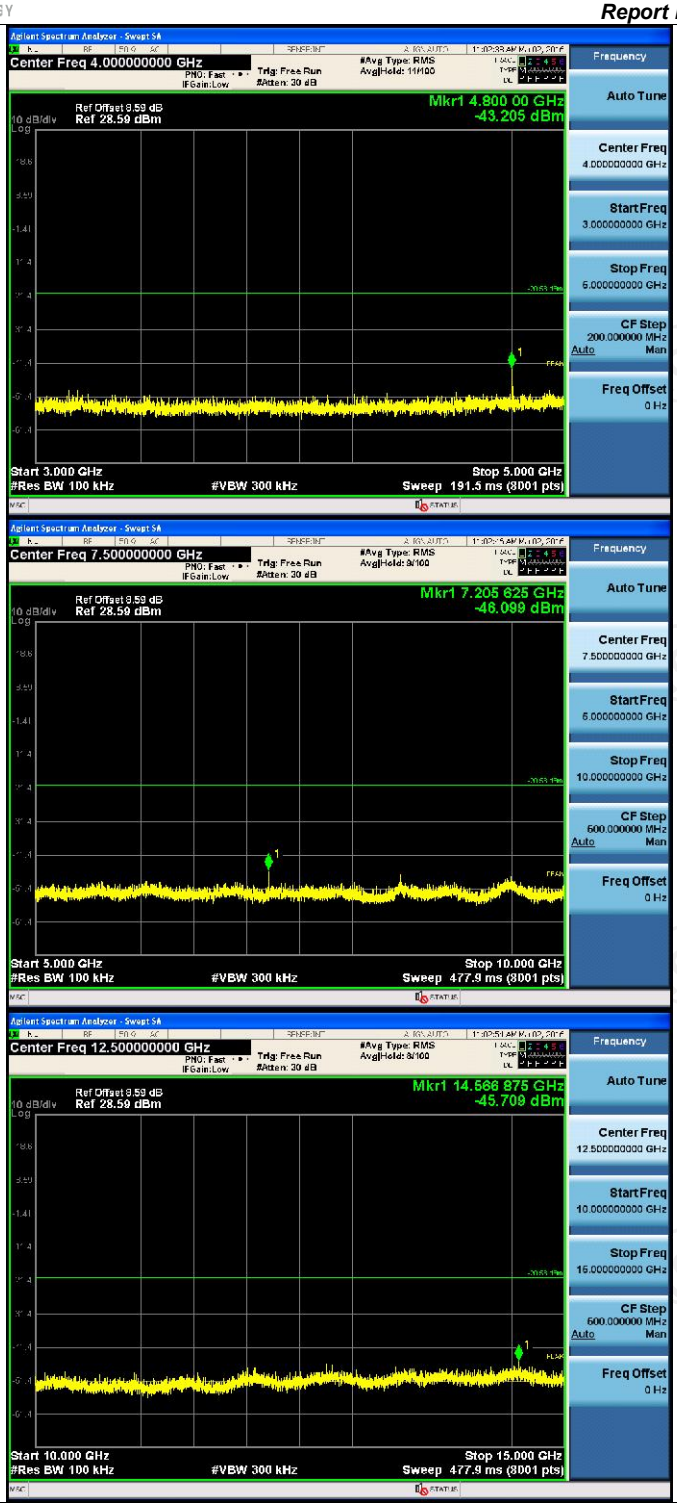
RF Conducted Spurious Emissions

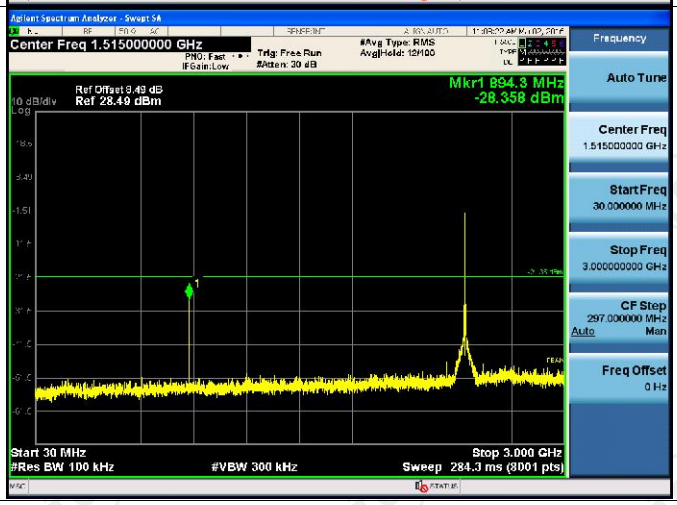
Result Table

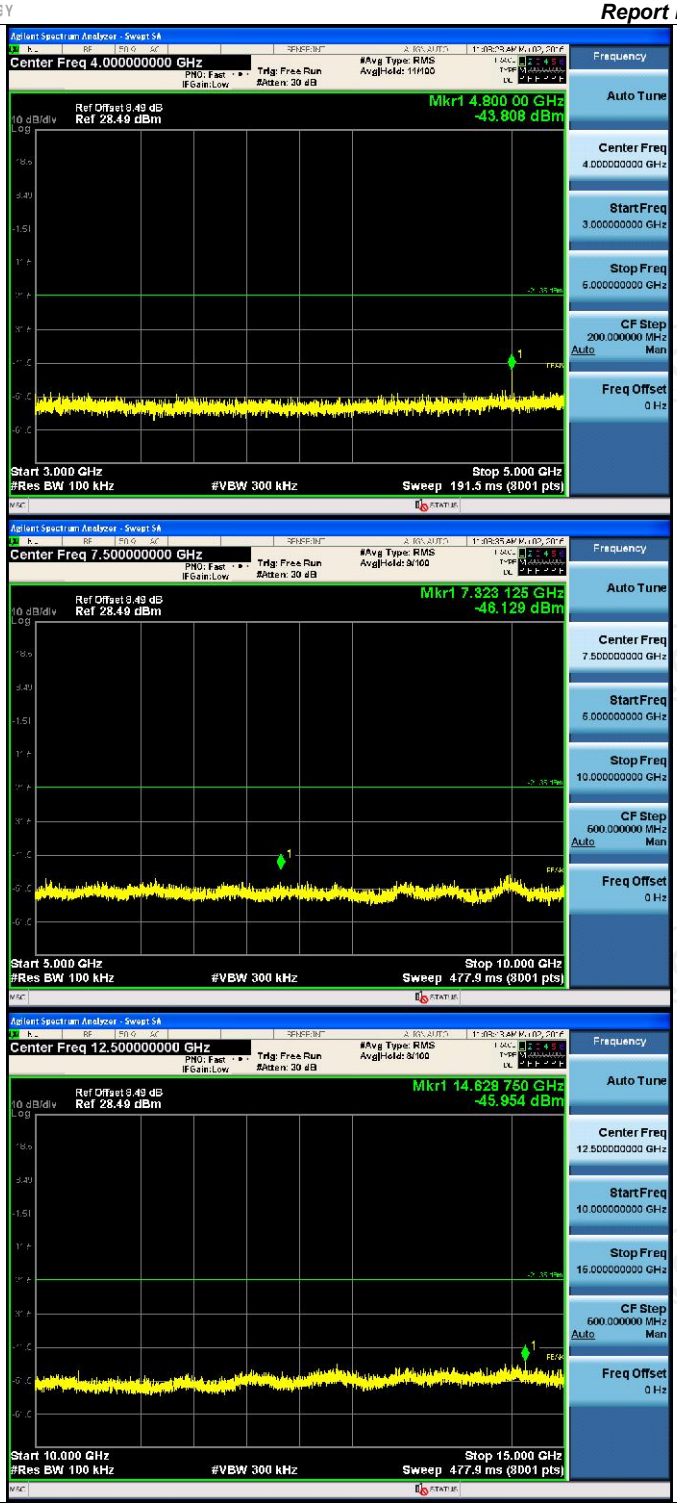
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	-0.584	<Limit	PASS
GFSK	MCH	-1.353	<Limit	PASS
GFSK	HCH	-1.221	<Limit	PASS
GFSK	LCH	-2.158	<Limit	PASS
π/4DQPSK	MCH	-1.34	<Limit	PASS
π/4DQPSK	HCH	-1.309	<Limit	PASS

Test Graph

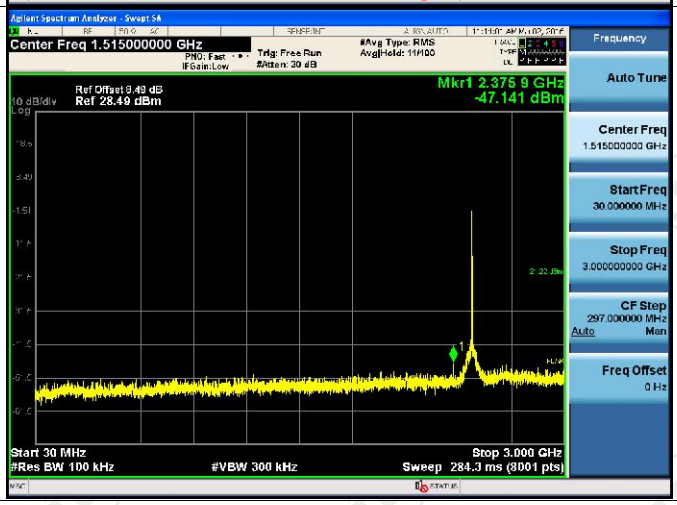
GFSK_LCH_Graphs	
Pref	
Puw	

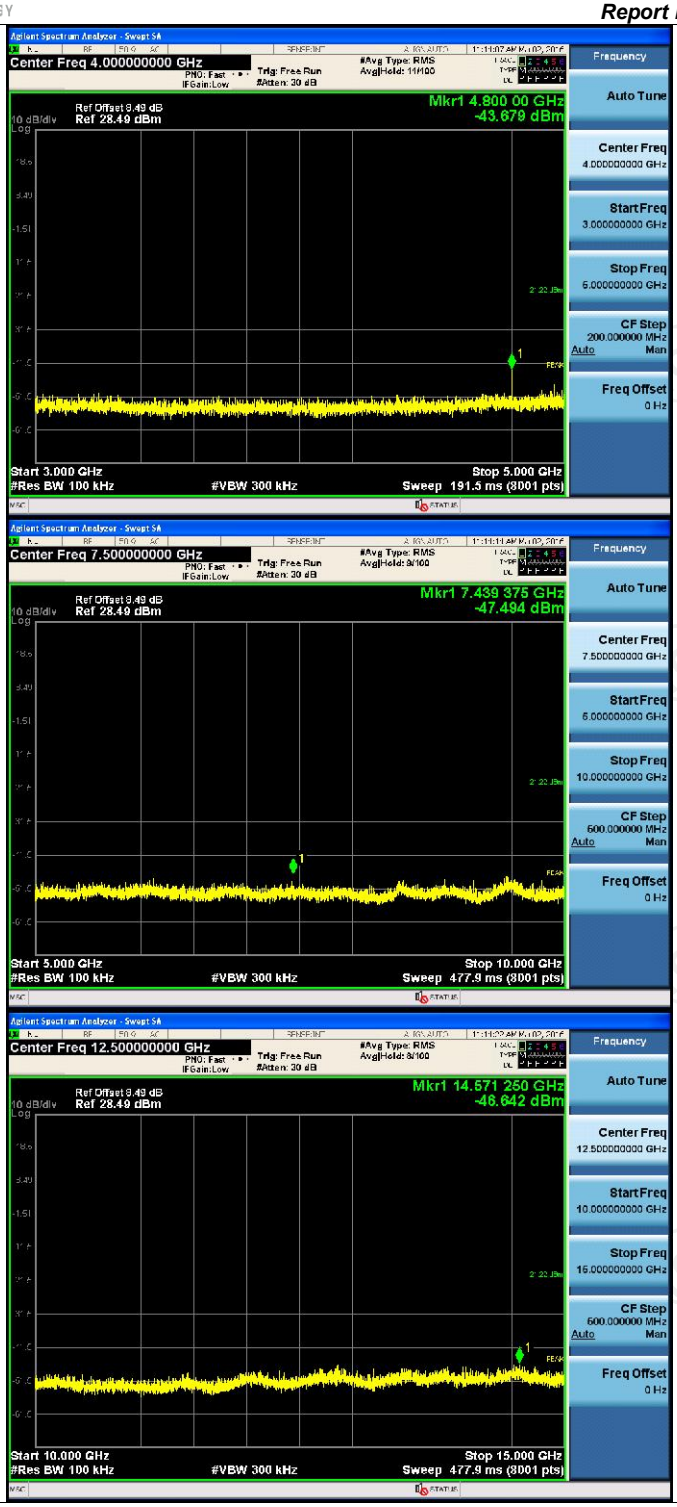

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.59 dB
10 dB/div
Ref 28.59 dBm
Log
Mkr1 4.800 00 GHz
-43.205 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.59 dB
10 dB/div
Ref 28.59 dBm
Log
Mkr1 7.205 625 GHz
-46.099 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.59 dB
10 dB/div
Ref 28.59 dBm
Log
Mkr1 14.566 875 GHz
-45.709 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

GFSK_MCH_Graphs		
Pref		
Puw		

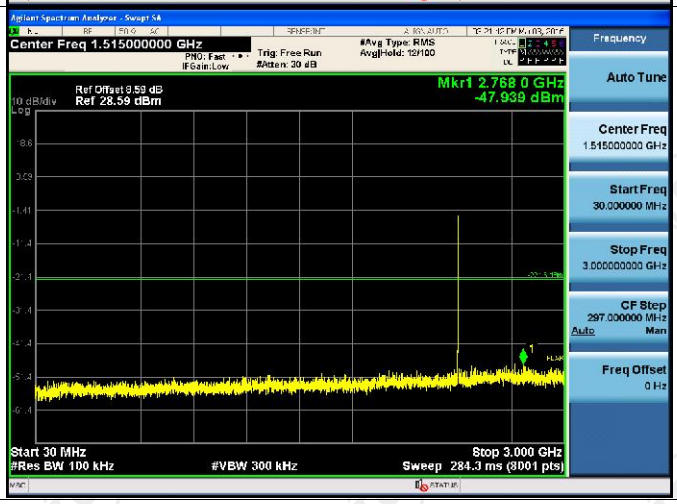

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 4.800 00 GHz
-43.808 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 7.323 125 GHz
-46.129 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 14.628 750 GHz
-45.954 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

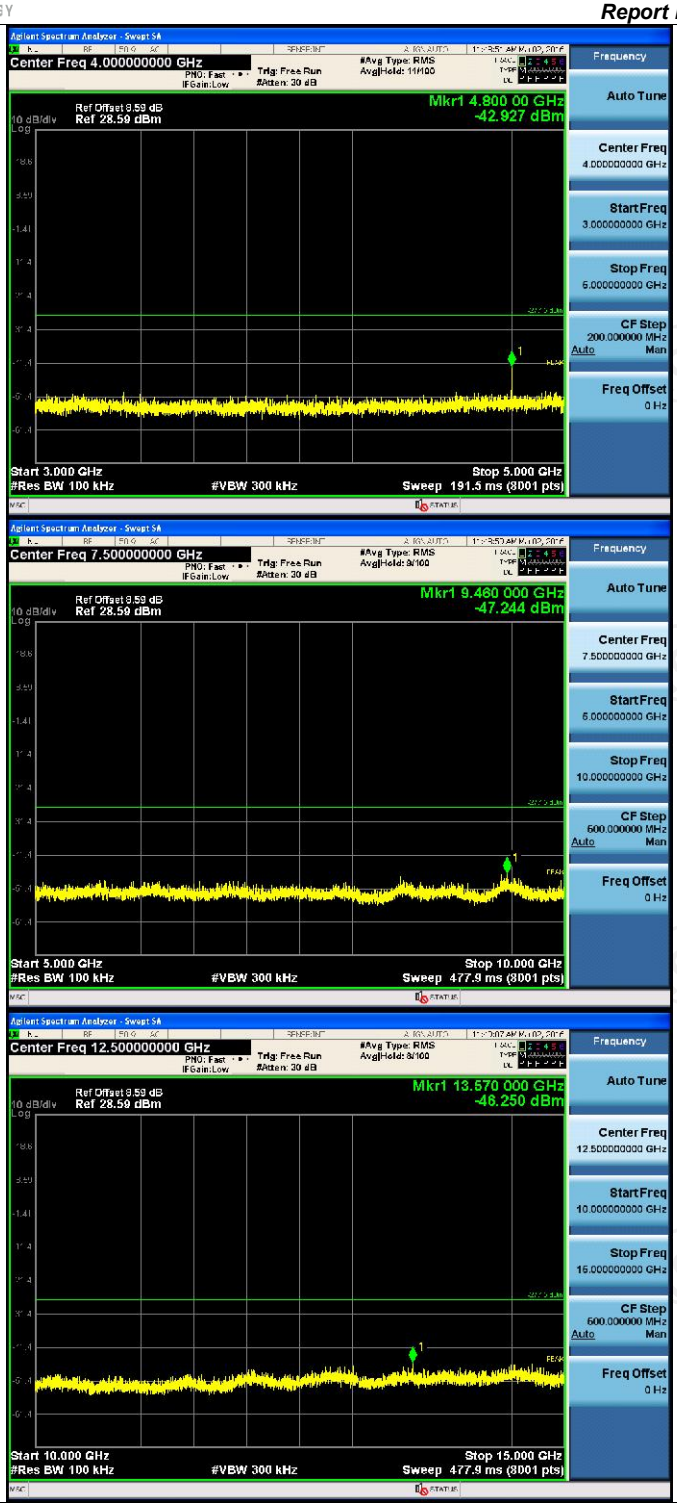
		

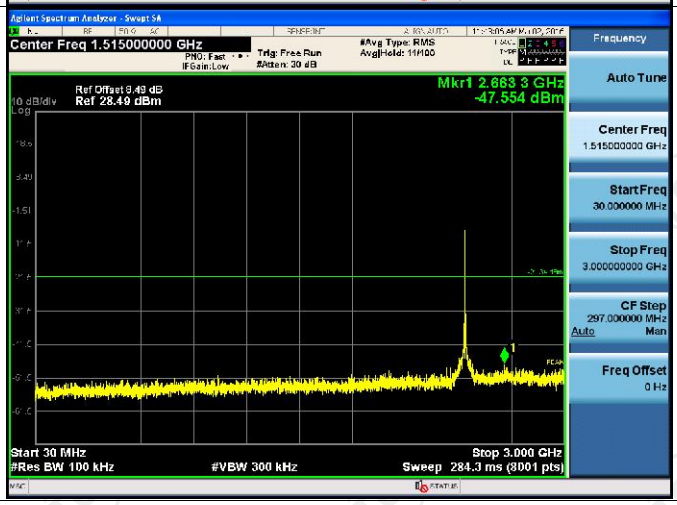
GFSK_HCH_Graphs		
Pref		
Puw		

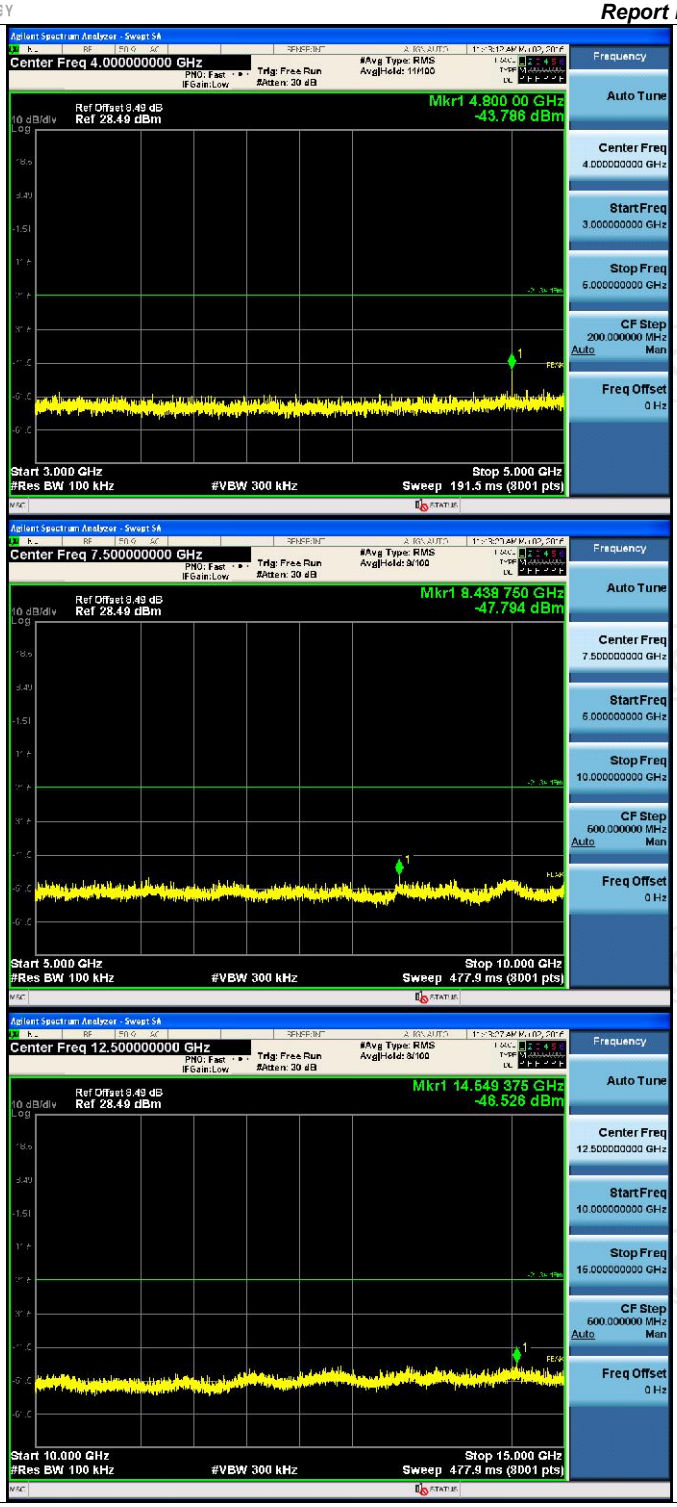

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 4.800 00 GHz
-43.679 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 7.439 375 GHz
-47.494 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 14.571 250 GHz
-46.642 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

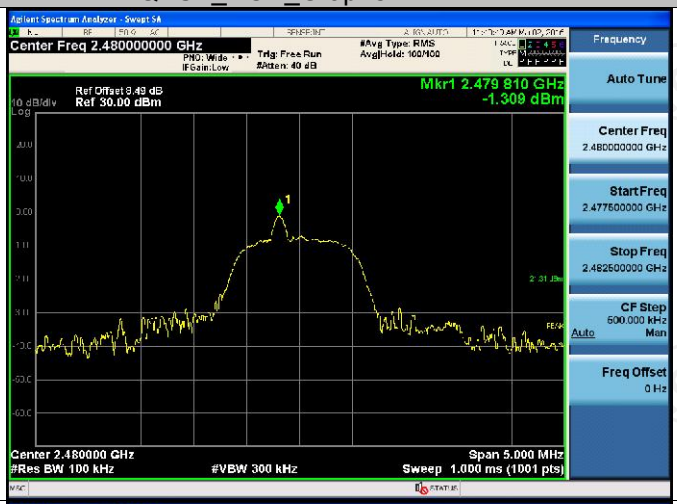
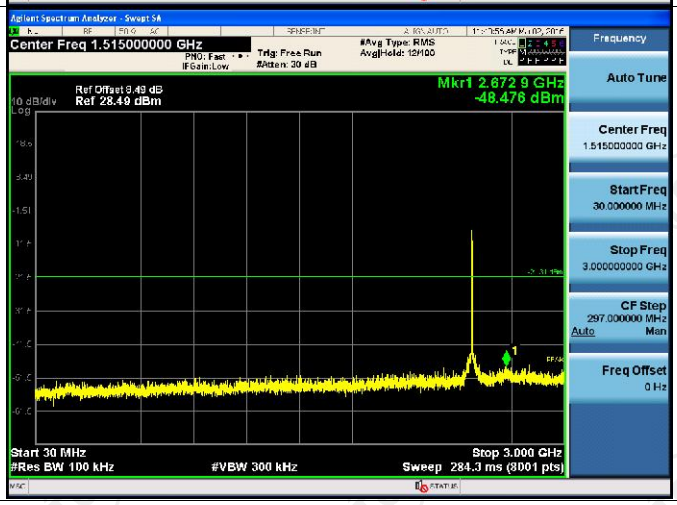
		

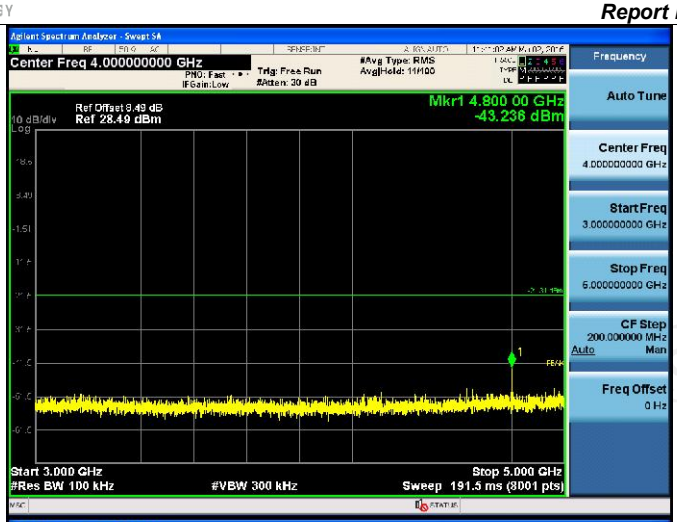
π/4DQPSK_LCH_Graphs		
Pref		
Puw		

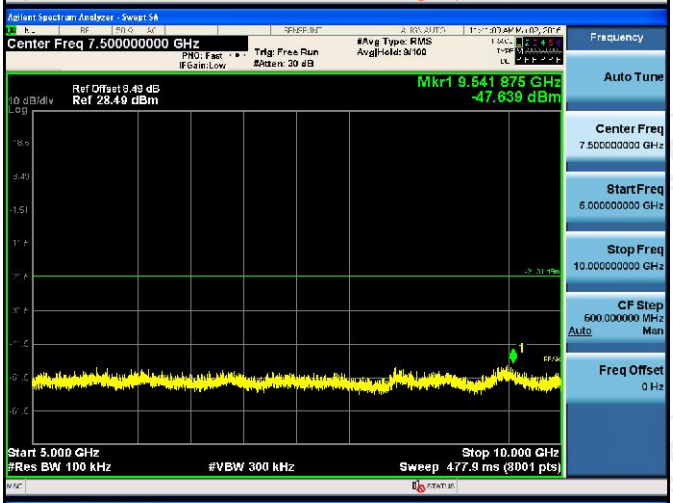

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.59 dB
10 dB/div
Ref 28.59 dBm
Log
Mkr1 4.800 00 GHz
-42.927 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.59 dB
10 dB/div
Ref 28.59 dBm
Log
Mkr1 9.460 000 GHz
-47.244 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.59 dB
10 dB/div
Ref 28.59 dBm
Log
Mkr1 13.570 000 GHz
-46.250 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

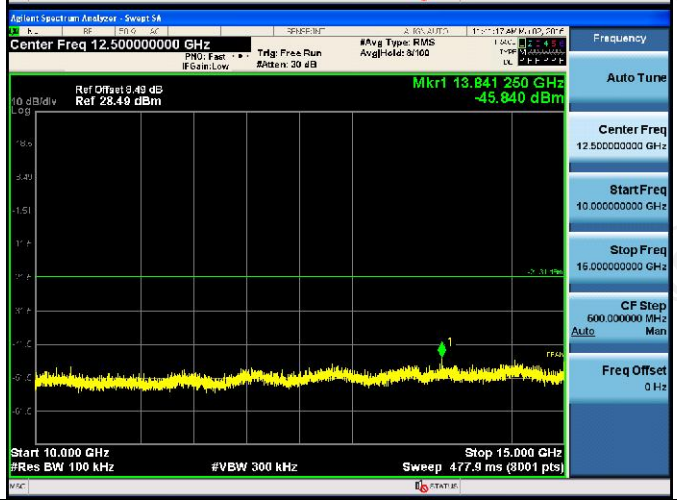
π/4DQPSK_MCH_Graphs		
Pref		
Puw		


Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 4.800 00 GHz
-43.786 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 8.439 750 GHz
-47.794 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 14.549 375 GHz
-46.526 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz

π/4DQPSK_HCH_Graphs		
Pref		
Puw		


Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 4.800 00 GHz
-43.236 dBm
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)


Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 9.541 875 GHz
-47.639 dBm
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)


Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 13.841 250 GHz
-45.840 dBm
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
600.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)

*****END OF REPORT*****