



Appendix A: Average Output Power Data

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	23.01	PASS
		1	2	23.07	PASS
		1	5	22.95	PASS
		3	0	22.82	PASS
		3	1	22.99	PASS
		3	3	22.86	PASS
		6	0	21.92	PASS
	MCH	1	0	22.71	PASS
		1	2	22.82	PASS
		1	5	22.75	PASS
		3	0	22.7	PASS
		3	1	22.79	PASS
		3	3	22.67	PASS
		6	0	21.62	PASS
	HCH	1	0	22.82	PASS
		1	2	22.82	PASS
		1	5	22.73	PASS
		3	0	22.71	PASS
		3	1	22.79	PASS
		3	3	22.71	PASS
		6	0	21.68	PASS
16QAM	LCH	1	0	22.18	PASS
		1	2	22.34	PASS
		1	5	22.32	PASS
		3	0	21.98	PASS
		3	1	22.11	PASS
		3	3	22.05	PASS
		6	0	20.98	PASS
	MCH	1	0	21.96	PASS
		1	2	22.04	PASS
		1	5	21.98	PASS



		3	0	21.81	PASS
		3	1	21.84	PASS
		3	3	21.79	PASS
		6	0	20.66	PASS
	HCH	1	0	22.01	PASS
		1	2	22.05	PASS
		1	5	22.15	PASS
		3	0	21.85	PASS
		3	1	21.87	PASS
		3	3	21.88	PASS
		6	0	20.74	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	22.94	PASS
		1	7	23.08	PASS
		1	14	22.99	PASS
		8	0	21.95	PASS
		8	3	21.94	PASS
		8	7	21.97	PASS
		15	0	22.04	PASS
	MCH	1	0	22.85	PASS
		1	7	22.78	PASS
		1	14	22.69	PASS
		8	0	21.77	PASS
		8	3	21.69	PASS
		8	7	21.67	PASS
		15	0	21.68	PASS
	HCH	1	0	22.76	PASS
		1	7	22.82	PASS
		1	14	22.8	PASS
		8	0	21.75	PASS
		8	3	21.77	PASS
		8	7	21.73	PASS
		15	0	21.77	PASS
16QAM	LCH	1	0	22.27	PASS



		1	7	22.49	PASS
		1	14	22.28	PASS
		8	0	20.97	PASS
		8	3	20.93	PASS
		8	7	20.96	PASS
		15	0	20.93	PASS
	MCH	1	0	22.01	PASS
		1	7	22.26	PASS
		1	14	21.96	PASS
		8	0	20.8	PASS
		8	3	20.7	PASS
		8	7	20.68	PASS
		15	0	20.63	PASS
	HCH	1	0	22.03	PASS
		1	7	22.28	PASS
		1	14	21.93	PASS
		8	0	20.73	PASS
		8	3	20.76	PASS
		8	7	20.74	PASS
		15	0	20.72	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	23.03	PASS
		1	12	22.85	PASS
		1	24	23.01	PASS
		12	0	21.87	PASS
		12	6	21.91	PASS
		12	13	21.84	PASS
		25	0	21.89	PASS
	MCH	1	0	22.79	PASS
		1	12	22.64	PASS
		1	24	22.71	PASS
		12	0	21.66	PASS
		12	6	21.67	PASS
		12	13	21.66	PASS
		25	0	21.65	PASS



	HCH	1	0	22.85	PASS
		1	12	22.77	PASS
		1	24	22.84	PASS
		12	0	21.87	PASS
		12	6	21.83	PASS
		12	13	21.8	PASS
		25	0	21.84	PASS
16QAM	LCH	1	0	22.18	PASS
		1	12	22.3	PASS
		1	24	22.22	PASS
		12	0	20.86	PASS
		12	6	20.89	PASS
		12	13	20.88	PASS
		25	0	20.86	PASS
	MCH	1	0	22.02	PASS
		1	12	22.16	PASS
		1	24	21.91	PASS
		12	0	20.69	PASS
		12	6	20.65	PASS
		12	13	20.7	PASS
		25	0	20.67	PASS
	HCH	1	0	22.04	PASS
		1	12	22.39	PASS
		1	24	21.98	PASS
		12	0	20.84	PASS
		12	6	20.81	PASS
		12	13	20.77	PASS
		25	0	20.8	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	23.09	PASS
		1	24	23.11	PASS
		1	49	22.98	PASS
		25	0	22	PASS
		25	12	21.95	PASS
		25	25	21.83	PASS



	MCH	50	0	21.94	PASS
		1	0	22.85	PASS
		1	24	22.85	PASS
		1	49	22.67	PASS
		25	0	21.71	PASS
		25	12	21.75	PASS
		25	25	21.65	PASS
		50	0	21.66	PASS
	HCH	1	0	23	PASS
		1	24	22.9	PASS
		1	49	22.67	PASS
		25	0	21.7	PASS
		25	12	21.76	PASS
		25	25	21.72	PASS
		50	0	21.67	PASS
16QAM	LCH	1	0	22.18	PASS
		1	24	22.11	PASS
		1	49	22.03	PASS
		25	0	20.94	PASS
		25	12	20.91	PASS
		25	25	20.86	PASS
		50	0	20.87	PASS
	MCH	1	0	21.98	PASS
		1	24	21.93	PASS
		1	49	21.79	PASS
		25	0	20.7	PASS
		25	12	20.77	PASS
		25	25	20.68	PASS
		50	0	20.67	PASS
	HCH	1	0	21.99	PASS
		1	24	21.89	PASS
		1	49	21.83	PASS
		25	0	20.67	PASS
		25	12	20.72	PASS
		25	25	20.72	PASS
		50	0	20.66	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz



Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	22.91	PASS
		1	37	22.7	PASS
		1	74	22.66	PASS
		36	0	21.93	PASS
		36	19	21.9	PASS
		36	39	21.91	PASS
		75	0	21.87	PASS
	MCH	1	0	22.86	PASS
		1	37	22.76	PASS
		1	74	22.48	PASS
		36	0	21.74	PASS
		36	19	21.79	PASS
		36	39	21.65	PASS
		75	0	21.74	PASS
	HCH	1	0	22.76	PASS
		1	37	22.76	PASS
		1	74	22.49	PASS
		36	0	21.78	PASS
		36	19	21.76	PASS
		36	39	21.66	PASS
		75	0	21.77	PASS
16QAM	LCH	1	0	22.23	PASS
		1	37	22.14	PASS
		1	74	21.92	PASS
		36	0	20.89	PASS
		36	19	20.87	PASS
		36	39	20.86	PASS
		75	0	20.87	PASS
	MCH	1	0	22.05	PASS
		1	37	21.88	PASS
		1	74	21.7	PASS
		36	0	20.7	PASS
		36	19	20.76	PASS
		36	39	20.63	PASS
		75	0	20.68	PASS
	HCH	1	0	22.01	PASS
		1	37	21.9	PASS
		1	74	21.78	PASS



		36	0	20.72	PASS
		36	19	20.75	PASS
		36	39	20.6	PASS
		75	0	20.73	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	22.86	PASS
		1	49	22.89	PASS
		1	99	22.5	PASS
		50	0	21.85	PASS
		50	25	21.99	PASS
		50	50	21.81	PASS
		100	0	21.87	PASS
	MCH	1	0	22.72	PASS
		1	49	22.76	PASS
		1	99	22.39	PASS
		50	0	21.81	PASS
		50	25	21.72	PASS
		50	50	21.64	PASS
		100	0	21.75	PASS
	HCH	1	0	22.72	PASS
		1	49	22.79	PASS
		1	99	22.39	PASS
		50	0	21.8	PASS
		50	25	21.75	PASS
		50	50	21.68	PASS
		100	0	21.72	PASS
16QAM	LCH	1	0	22.08	PASS
		1	49	22.1	PASS
		1	99	21.62	PASS
		50	0	20.79	PASS
		50	25	20.96	PASS
		50	50	20.75	PASS
		100	0	20.91	PASS
	MCH	1	0	21.86	PASS
		1	49	21.94	PASS



		1	99	21.54	PASS
		50	0	20.76	PASS
		50	25	20.7	PASS
		50	50	20.64	PASS
		100	0	20.74	PASS
	HCH	1	0	21.9	PASS
		1	49	21.98	PASS
		1	99	21.6	PASS
		50	0	20.8	PASS
		50	25	20.73	PASS
		50	50	20.64	PASS
		100	0	20.69	PASS



Appendix B: Peak-to-Average Ratio

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio (dB)	Limit (dB)	Verdict
		Size	Offset			
QPSK	MCH	1	0	4.89	<13	PASS
16QAM	MCH	1	0	5.79	<13	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	MCH	1	0	4.78	<13	PASS
16QAM	MCH	1	0	5.65	<13	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	MCH	1	0	4.75	<13	PASS
16QAM	MCH	1	0	5.5	<13	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	MCH	1	0	4.65	<13	PASS
16QAM	MCH	1	0	5.55	<13	PASS



Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	MCH	1	0	3.87	<13	PASS
16QAM	MCH	1	0	4.74	<13	PASS

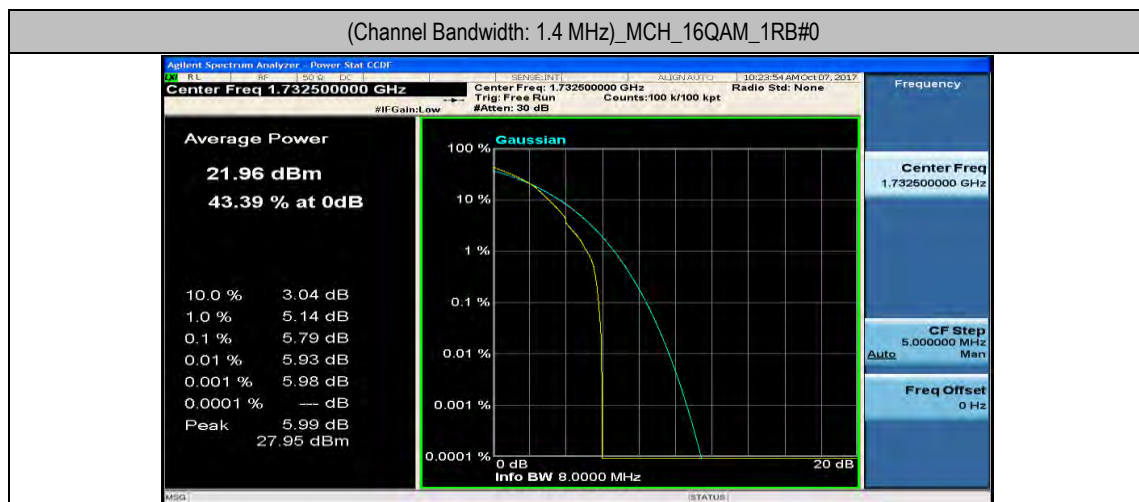
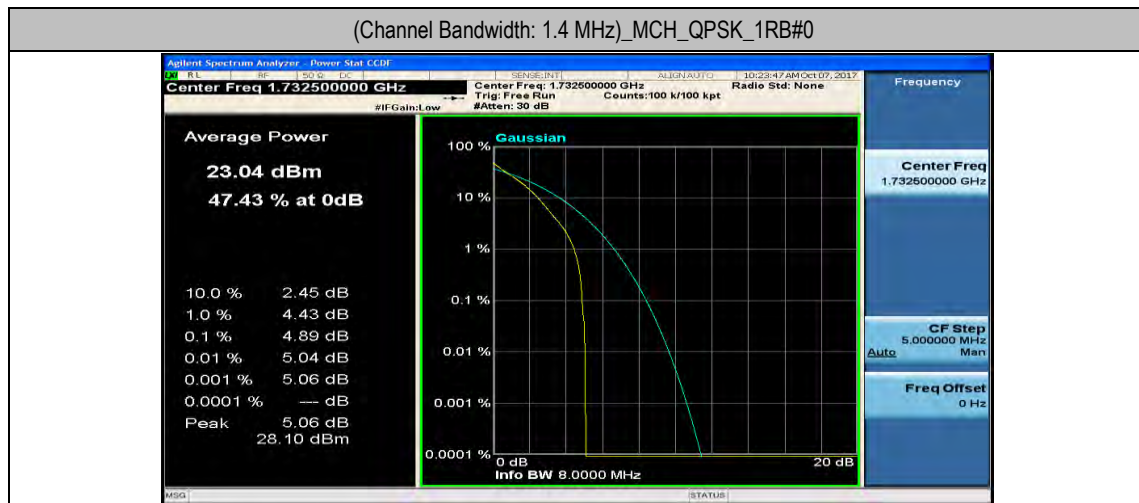
Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	MCH	1	0	3.91	<13	PASS
16QAM	MCH	1	0	4.93	<13	PASS

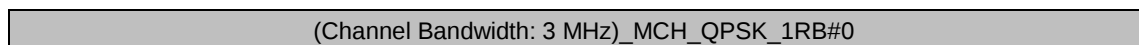


Test Graphs

Channel Bandwidth: 1.4 MHz



Channel Bandwidth: 3 MHz



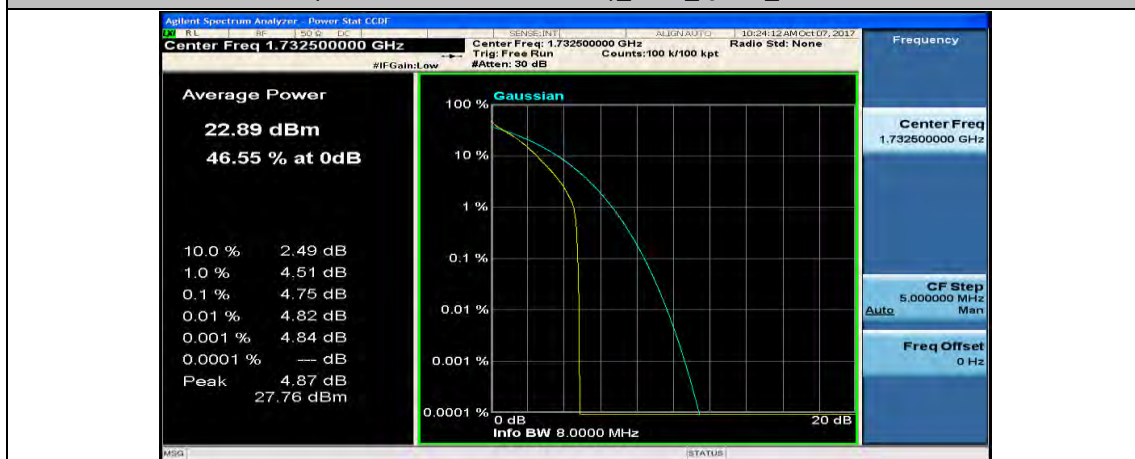


(Channel Bandwidth: 3 MHz)_MCH_16QAM_1RB#0



Channel Bandwidth: 5 MHz

(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#0





(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#0

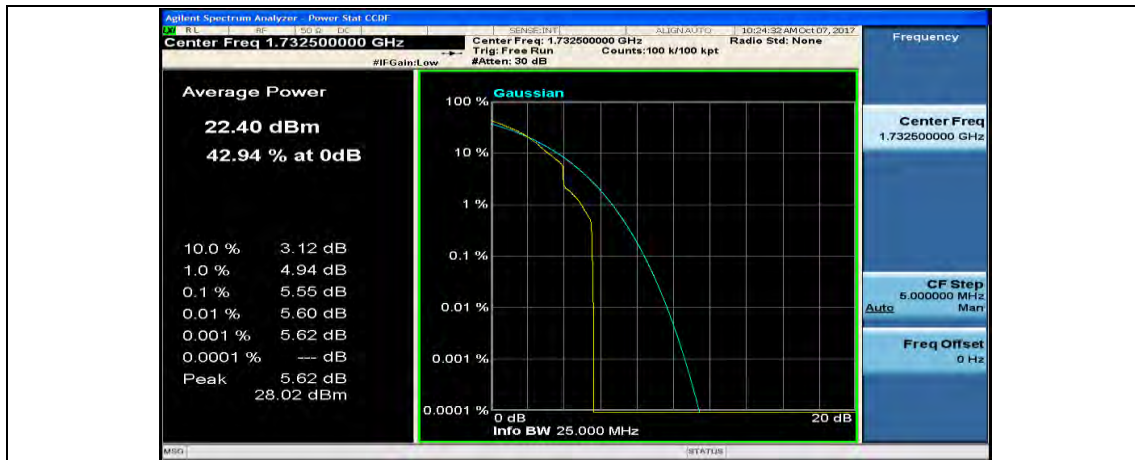


Channel Bandwidth: 10 MHz

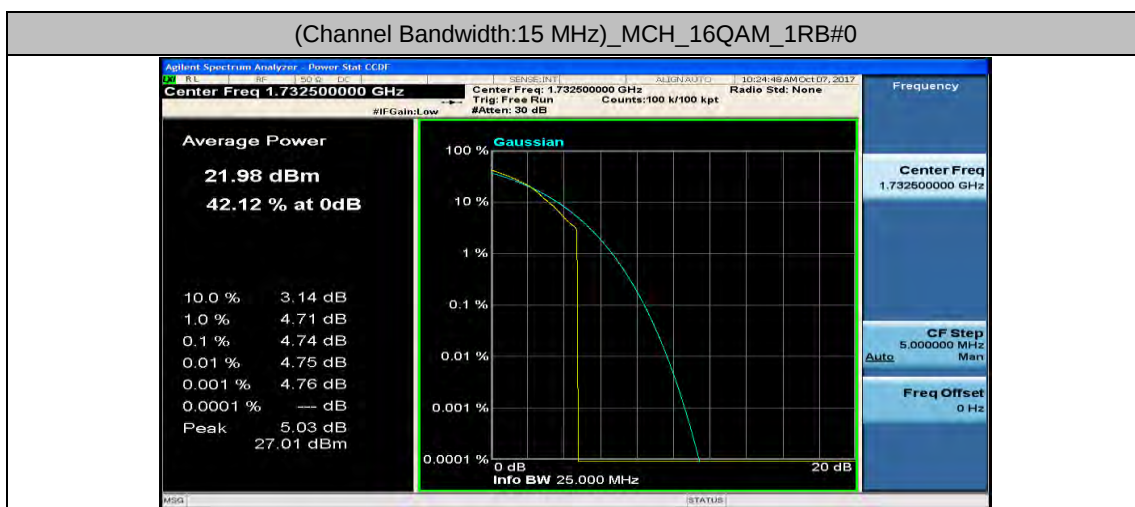
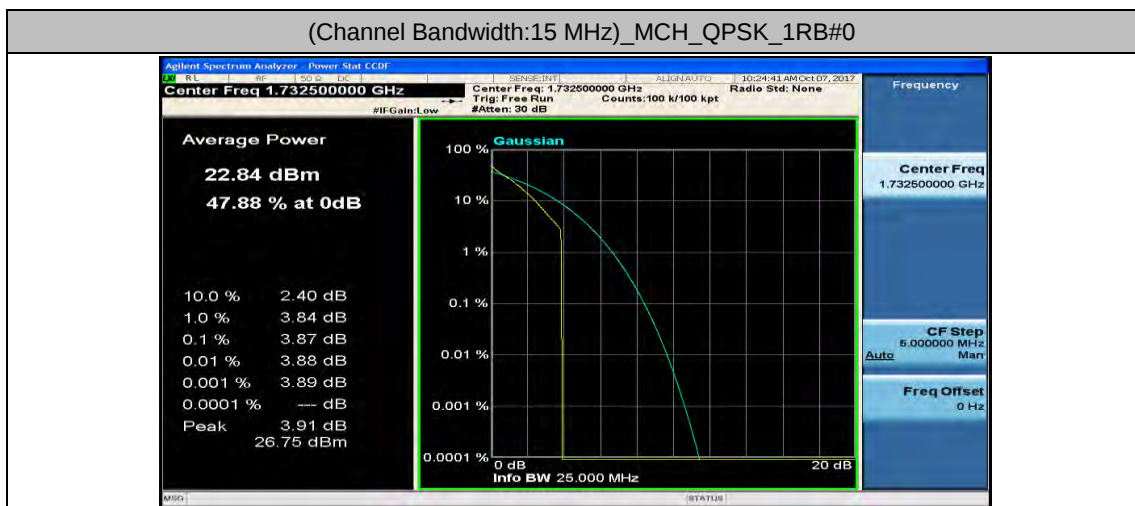
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Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#0



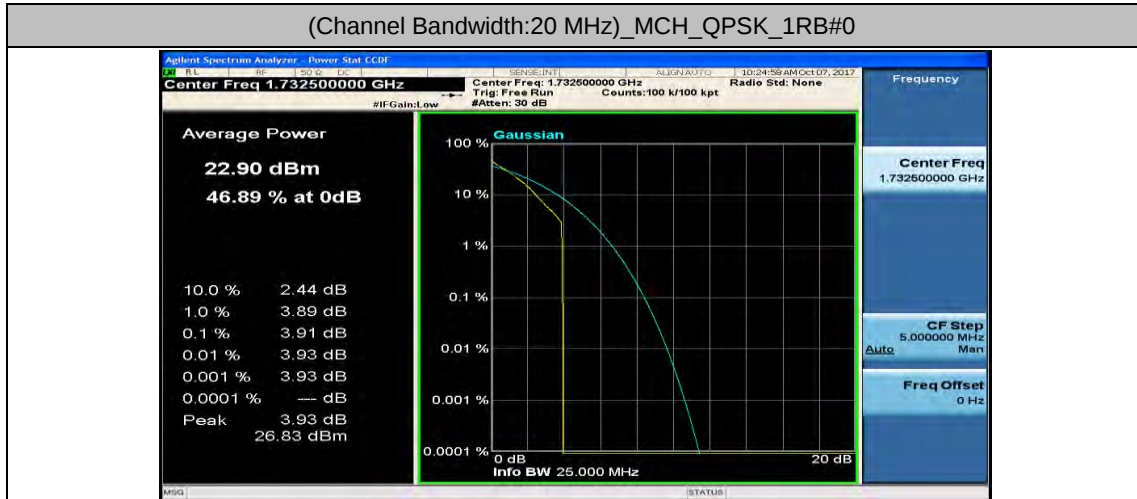
Channel Bandwidth: 15 MHz



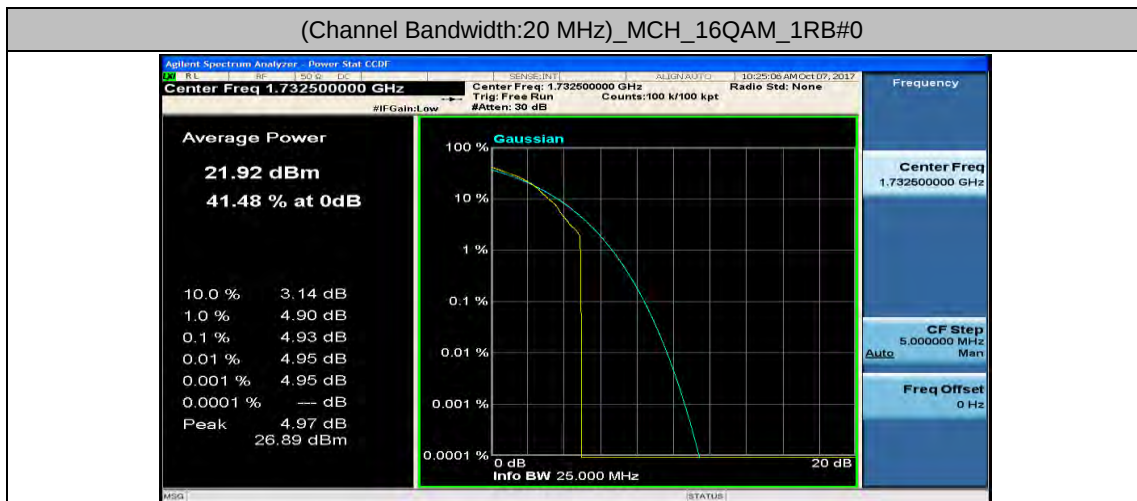


Channel Bandwidth: 20 MHz

(Channel Bandwidth:20 MHz)_MCH_QPSK_1RB#0



(Channel Bandwidth:20 MHz)_MCH_16QAM_1RB#0





Appendix C: 26dB Bandwidth and Occupied Bandwidth

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	6	0	1.0766	1.206	PASS
	MCH	6	0	1.0743	1.208	PASS
	HCH	6	0	1.0777	1.209	PASS
16QAM	LCH	6	0	1.0805	1.218	PASS
	MCH	6	0	1.0785	1.206	PASS
	HCH	6	0	1.0754	1.199	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	15	0	2.6825	2.888	PASS
	MCH	15	0	2.6833	2.901	PASS
	HCH	15	0	2.6775	2.877	PASS
16QAM	LCH	15	0	2.6845	2.902	PASS
	MCH	15	0	2.6883	2.902	PASS
	HCH	15	0	2.6814	2.906	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	25	0	4.4732	4.835	PASS



16QAM	MCH	25	0	4.4690	4.828	PASS
	HCH	25	0	4.4755	4.777	PASS
	LCH	25	0	4.4747	4.806	PASS
16QAM	MCH	25	0	4.4790	4.722	PASS
	HCH	25	0	4.4711	4.773	PASS
	LCH	25	0	4.4747	4.806	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	50	0	8.9431	9.488	PASS
	MCH	50	0	8.9242	9.452	PASS
	HCH	50	0	8.9455	9.431	PASS
16QAM	LCH	50	0	8.9369	9.448	PASS
	MCH	50	0	8.9370	9.382	PASS
	HCH	50	0	8.9264	9.456	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	75	0	13.431	14.22	PASS
	MCH	75	0	13.391	14.07	PASS
	HCH	75	0	13.423	14.08	PASS
16QAM	LCH	75	0	13.397	14.04	PASS
	MCH	75	0	13.392	14.04	PASS
	HCH	75	0	13.422	14.09	PASS

Channel Bandwidth: 20 MHz

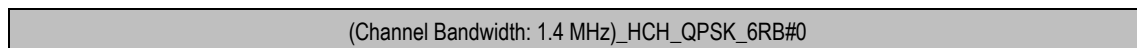
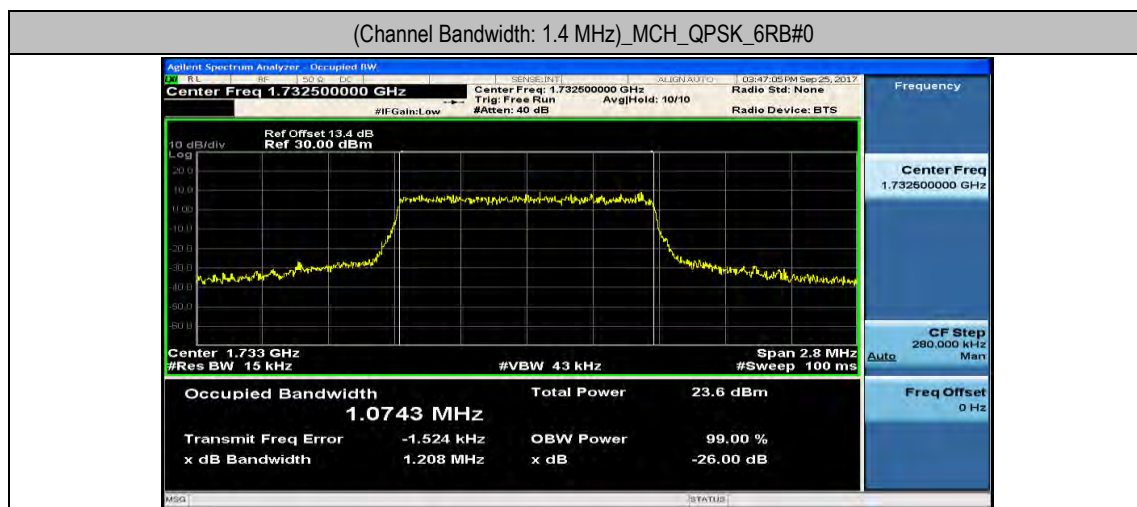
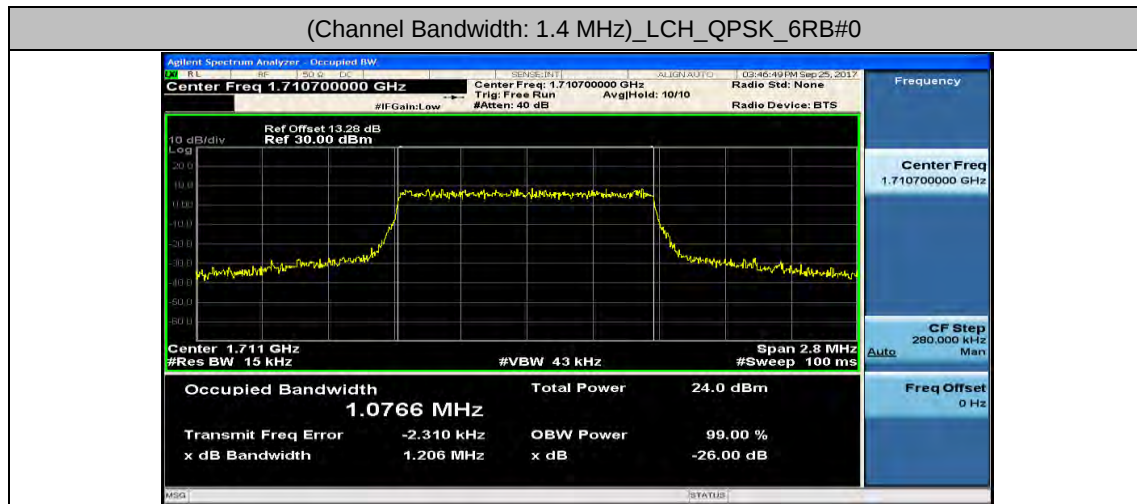


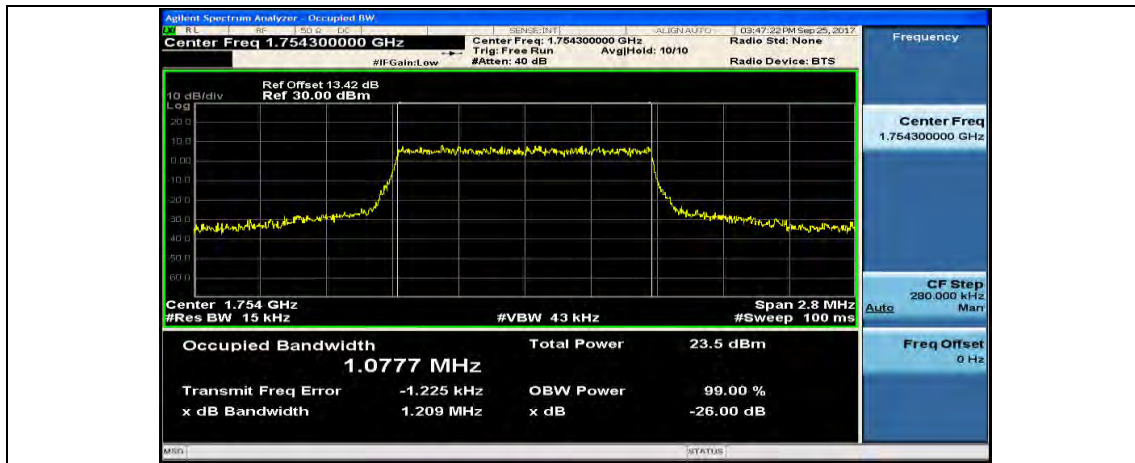
Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	100	0	17.884	18.69	PASS
	MCH	100	0	17.830	18.62	PASS
	HCH	100	0	17.889	18.77	PASS
16QAM	LCH	100	0	17.874	18.69	PASS
	MCH	100	0	17.831	18.70	PASS
	HCH	100	0	17.875	18.65	PASS



Test Graphs

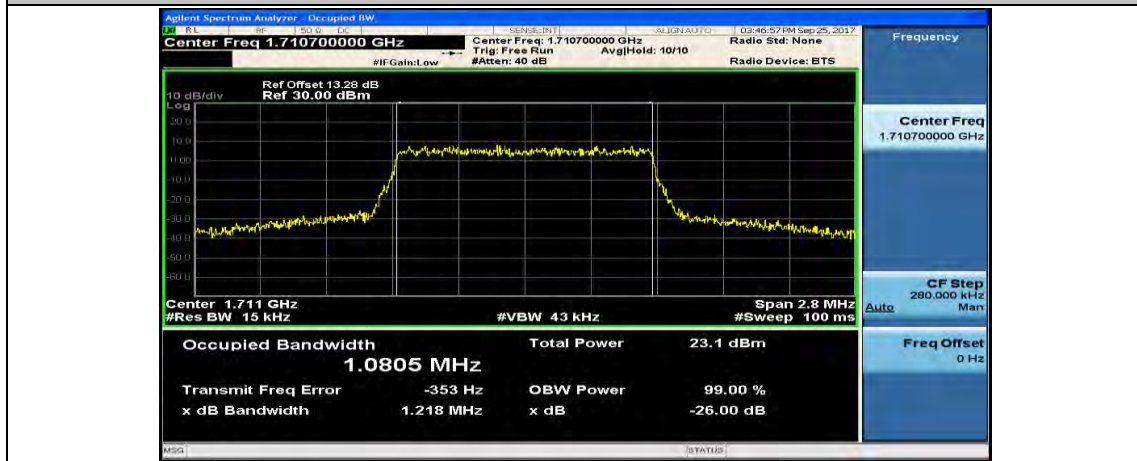
Channel Bandwidth: 1.4 MHz



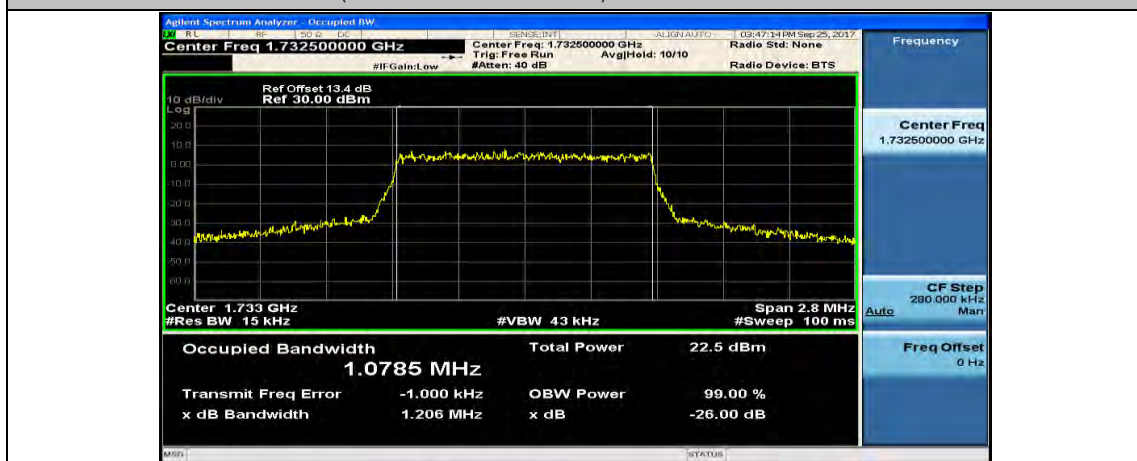




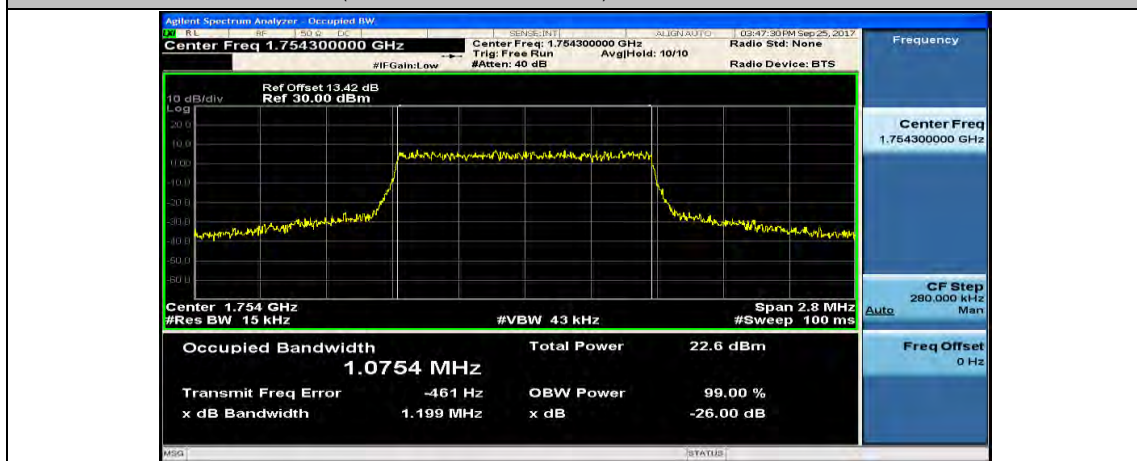
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_6RB#0



(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_6RB#0



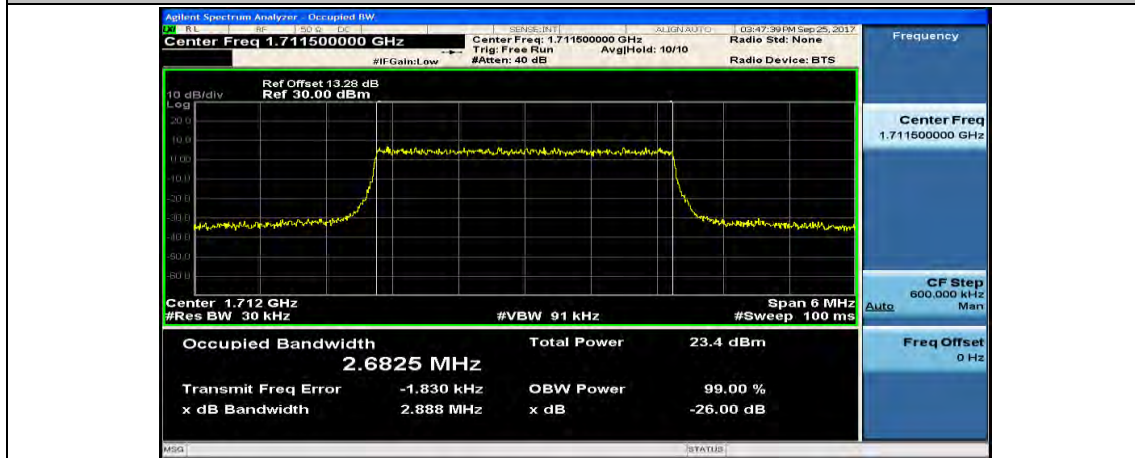
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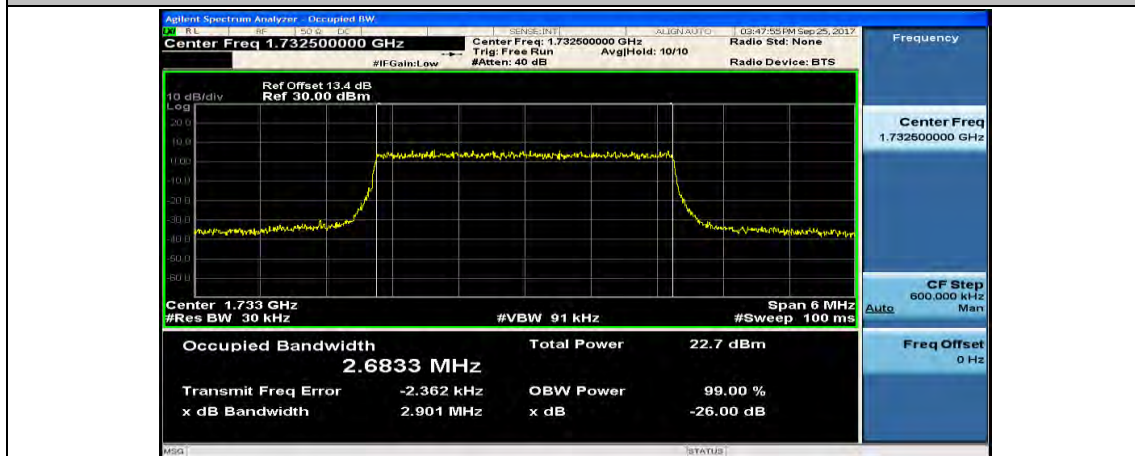


Channel Bandwidth: 3 MHz

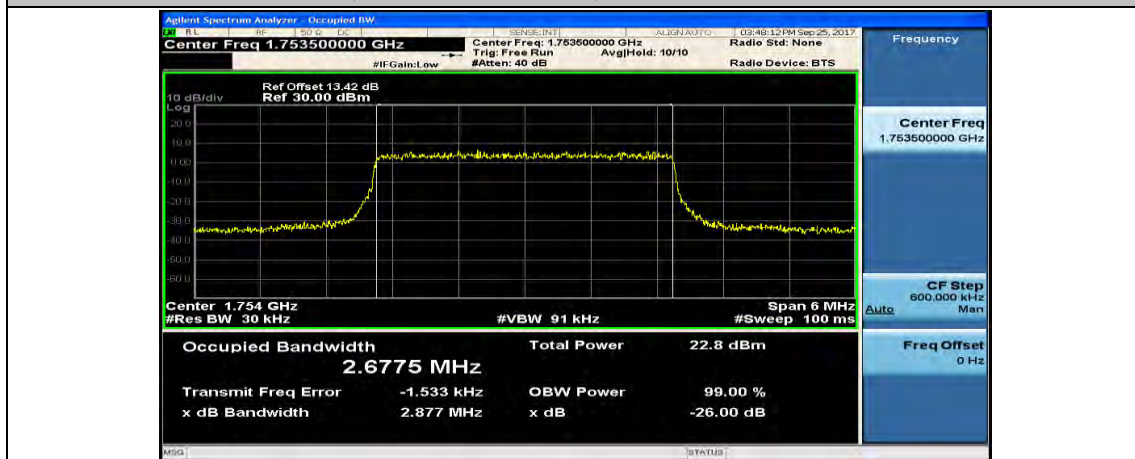
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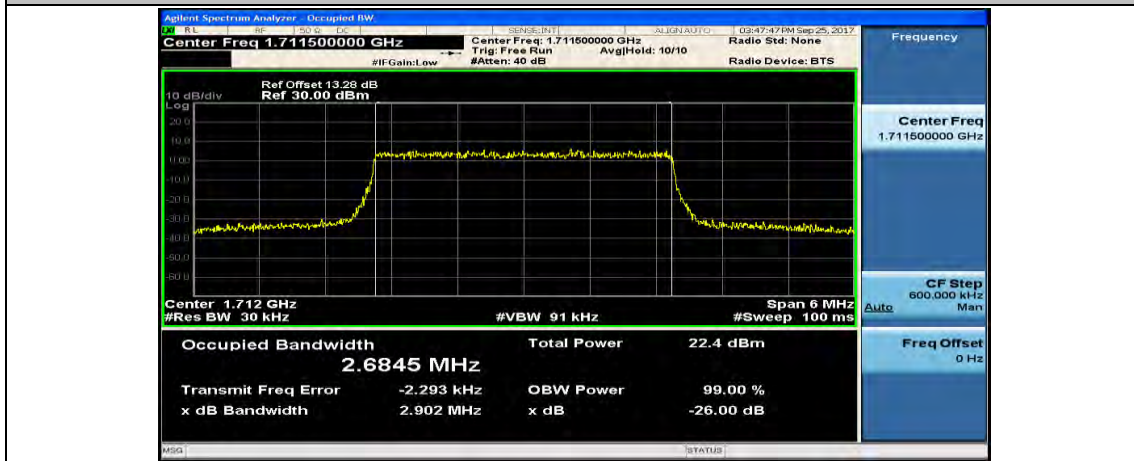


(Channel Bandwidth: 3 MHz)_HCH_QPSK_15RB#0

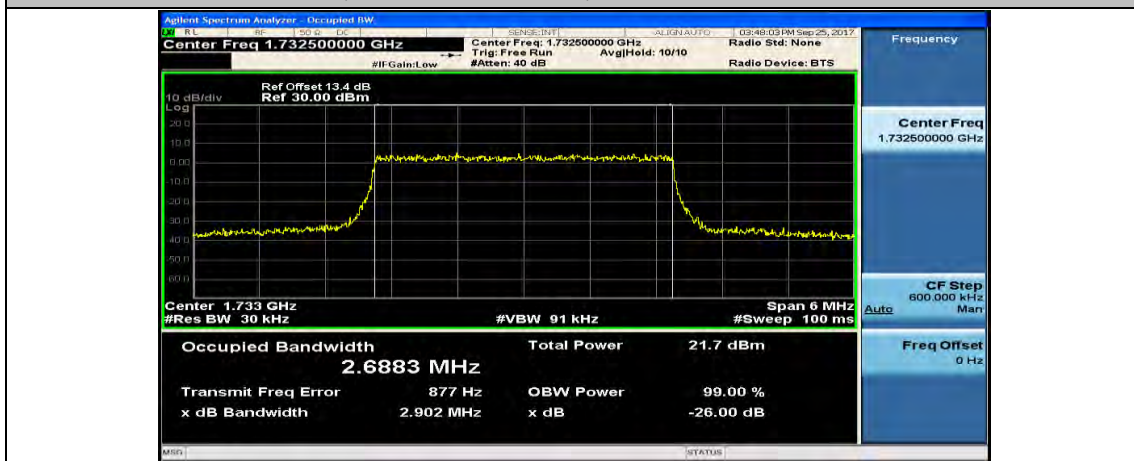




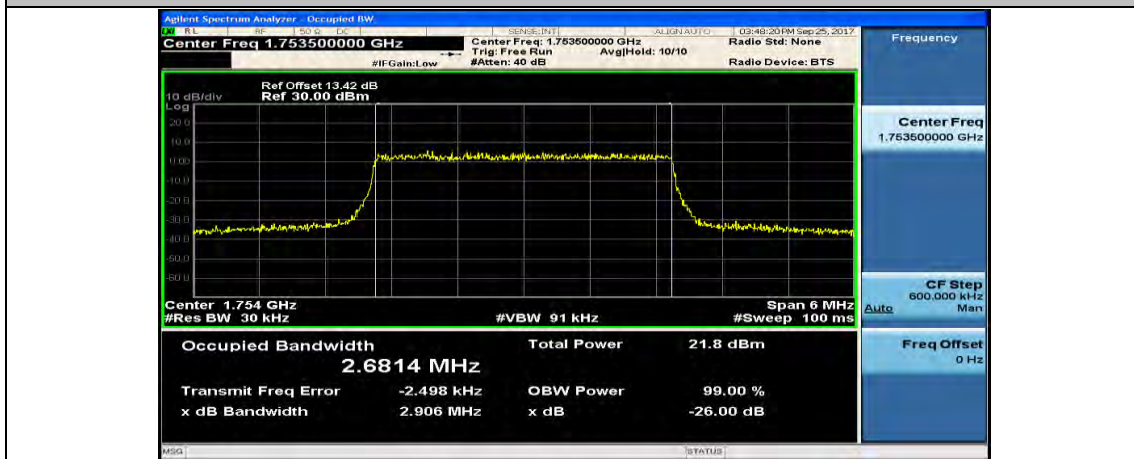
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(Channel Bandwidth: 3 MHz)_MCH_16QAM_15RB#0



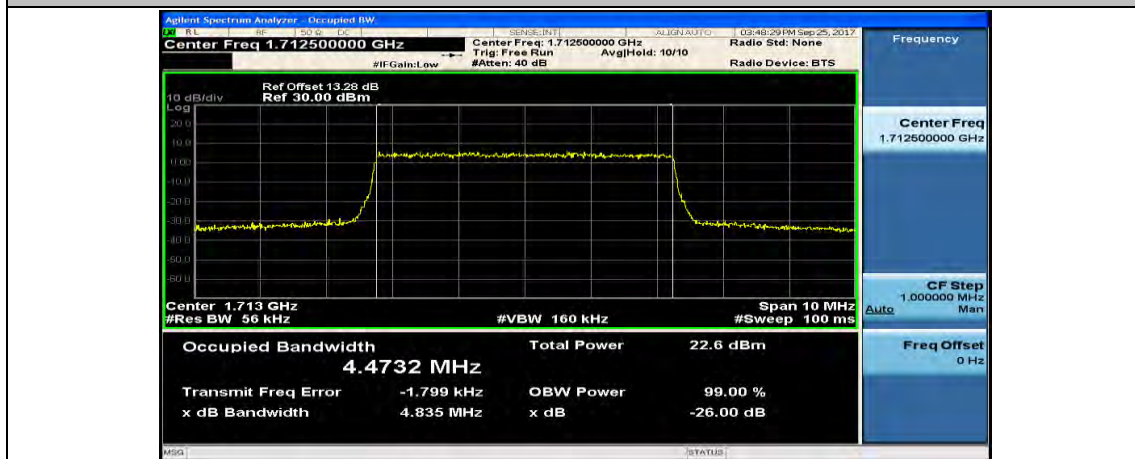
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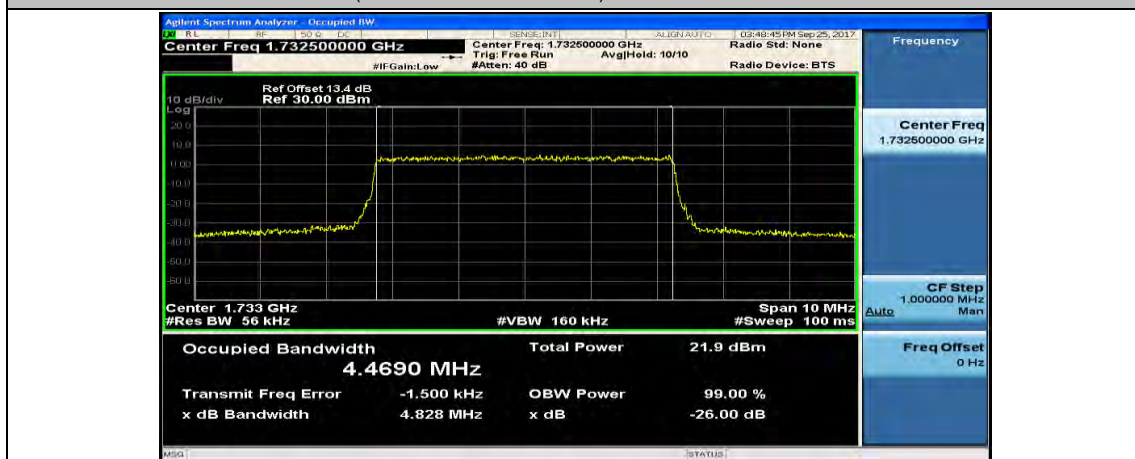


Channel Bandwidth: 5 MHz

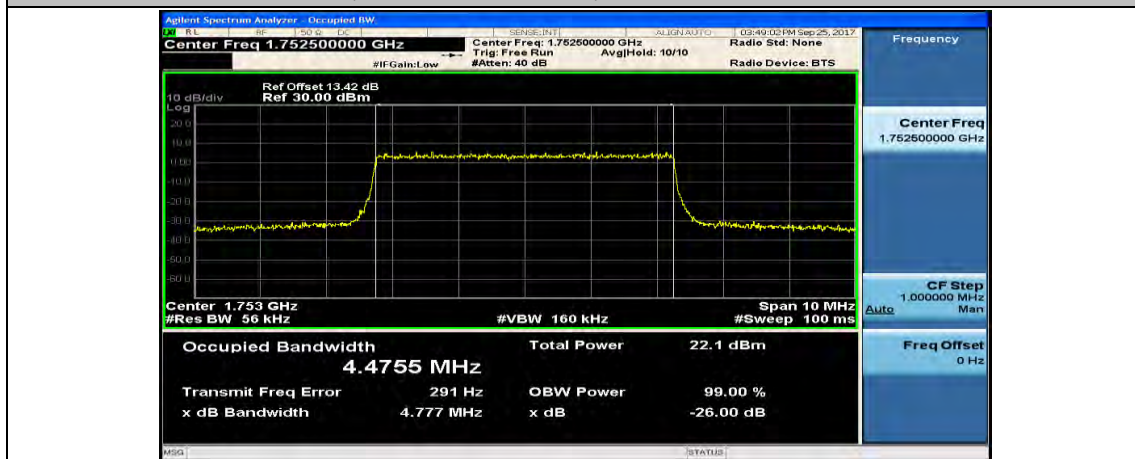
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(Channel Bandwidth: 5 MHz)_MCH_QPSK_25RB#0

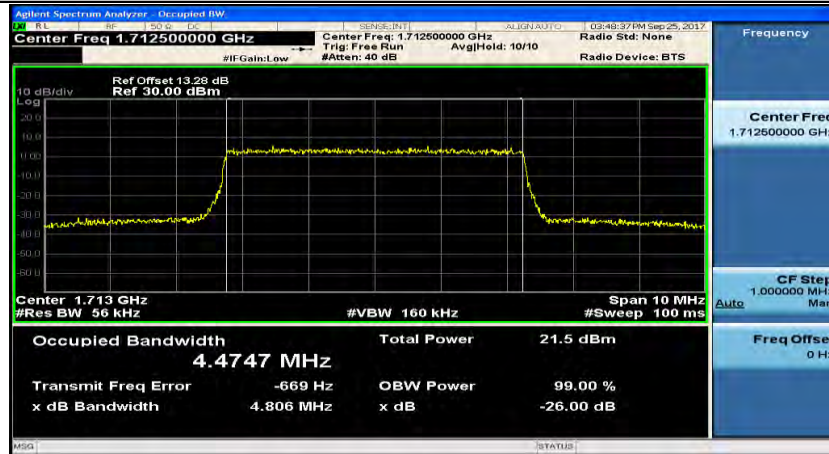


(Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0

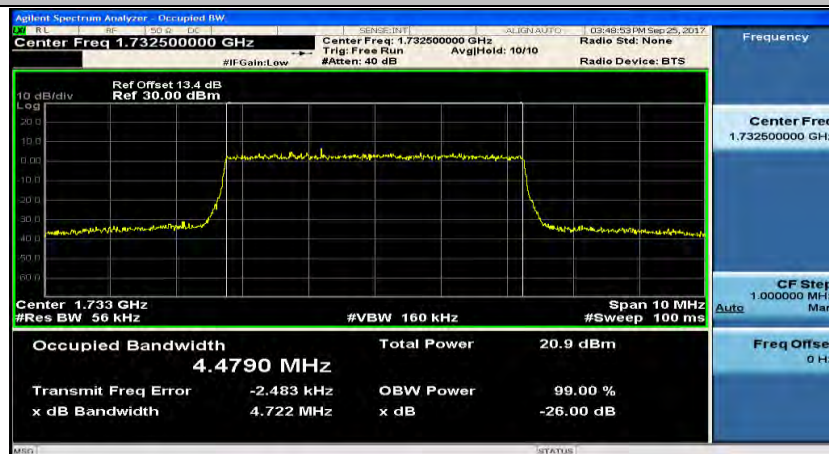




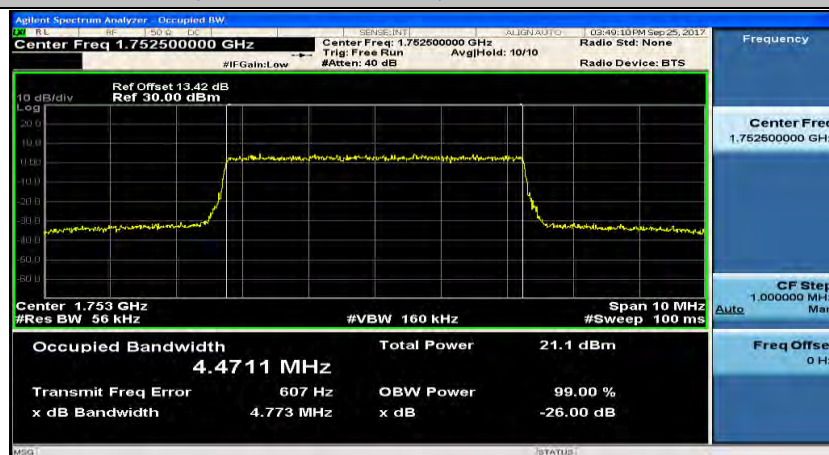
(Channel Bandwidth: 5 MHz)_LCH_16QAM_25RB#0



(Channel Bandwidth: 5 MHz)_MCH_16QAM_25RB#0



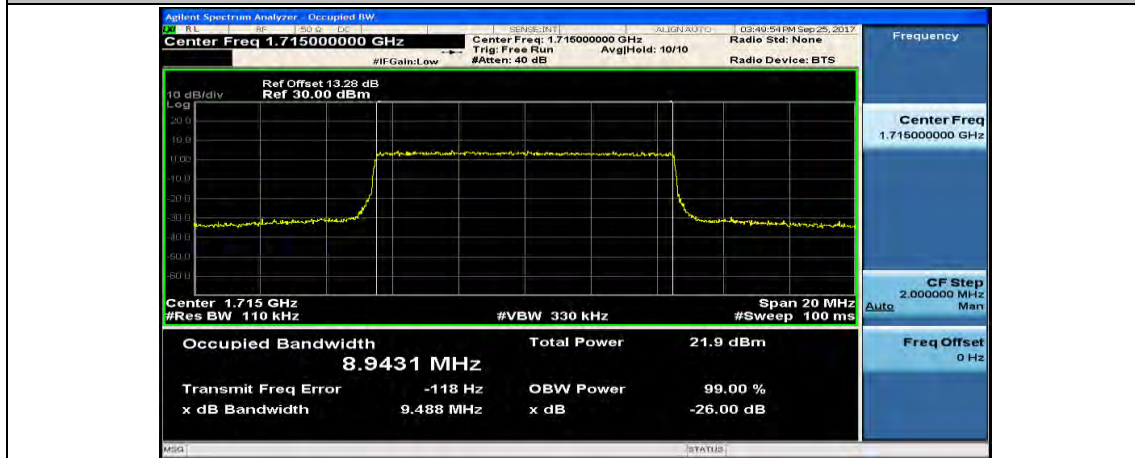
(Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0



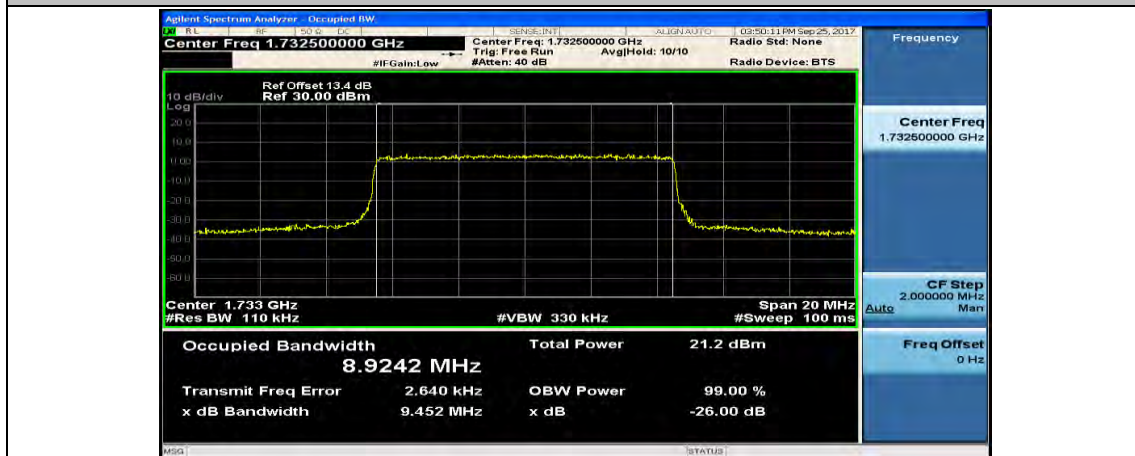


Channel Bandwidth: 10 MHz

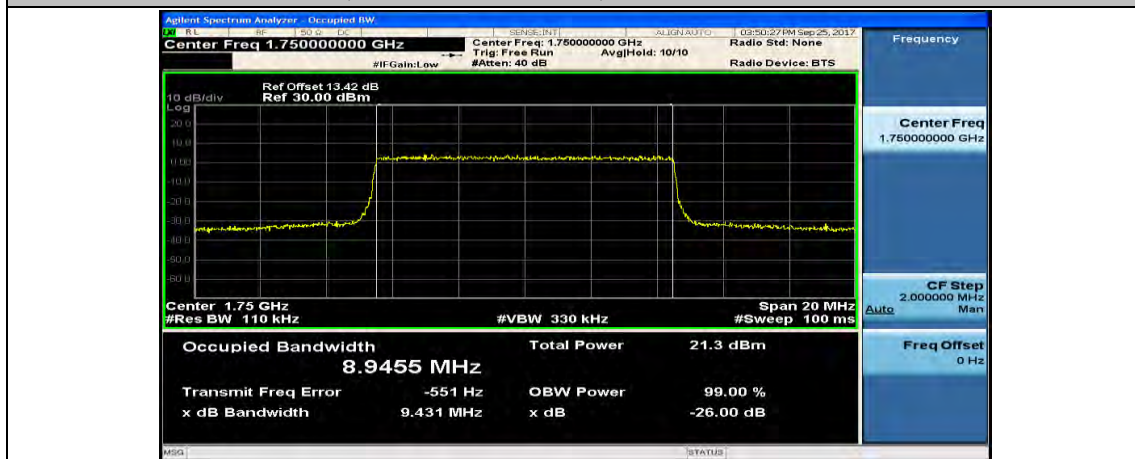
(Channel Bandwidth: 10 MHz)_LCH_QPSK_50RB#0



(Channel Bandwidth: 10 MHz)_MCH_QPSK_50RB#0

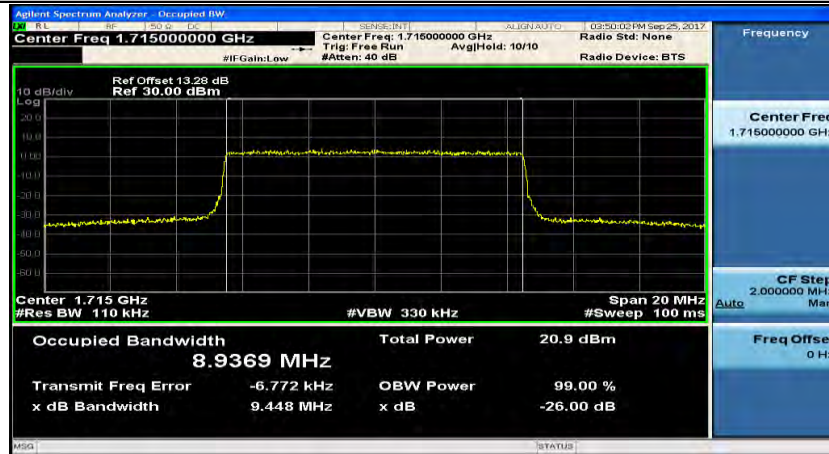


(Channel Bandwidth: 10 MHz)_HCH_QPSK_50RB#0

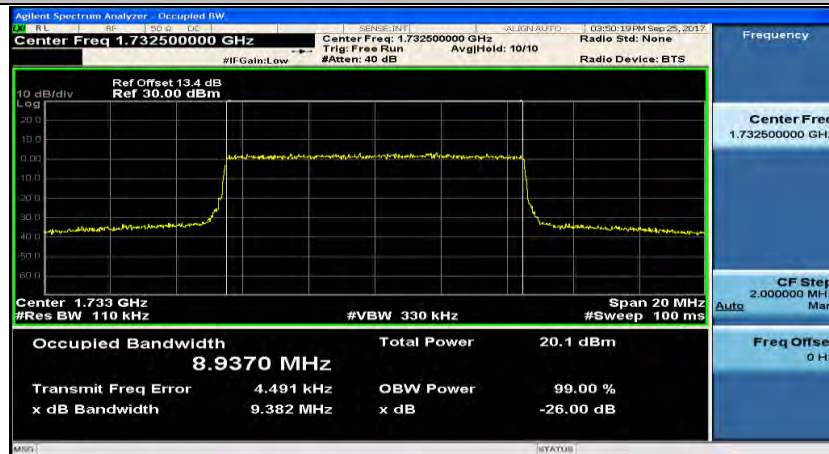




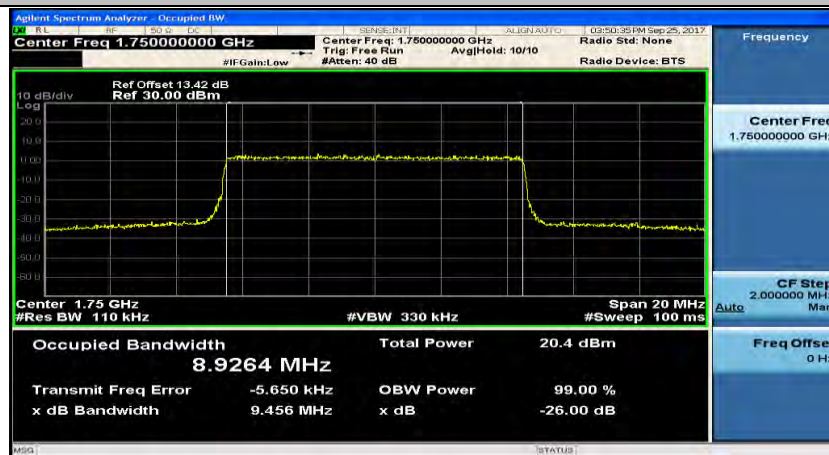
(Channel Bandwidth: 10 MHz)_LCH_16QAM_50RB#0



(Channel Bandwidth: 10 MHz)_MCH_16QAM_50RB#0



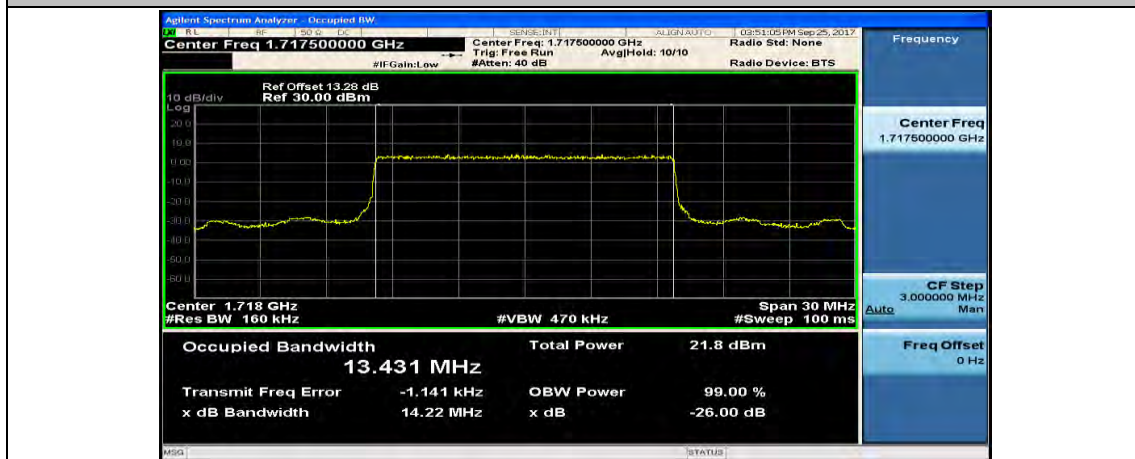
(Channel Bandwidth: 10 MHz)_HCH_16QAM_50RB#0



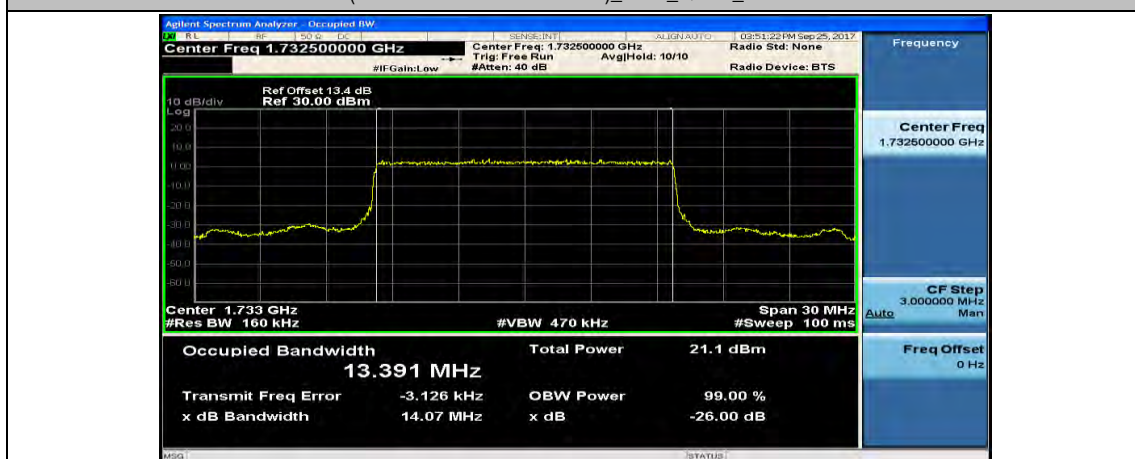


Channel Bandwidth: 15 MHz

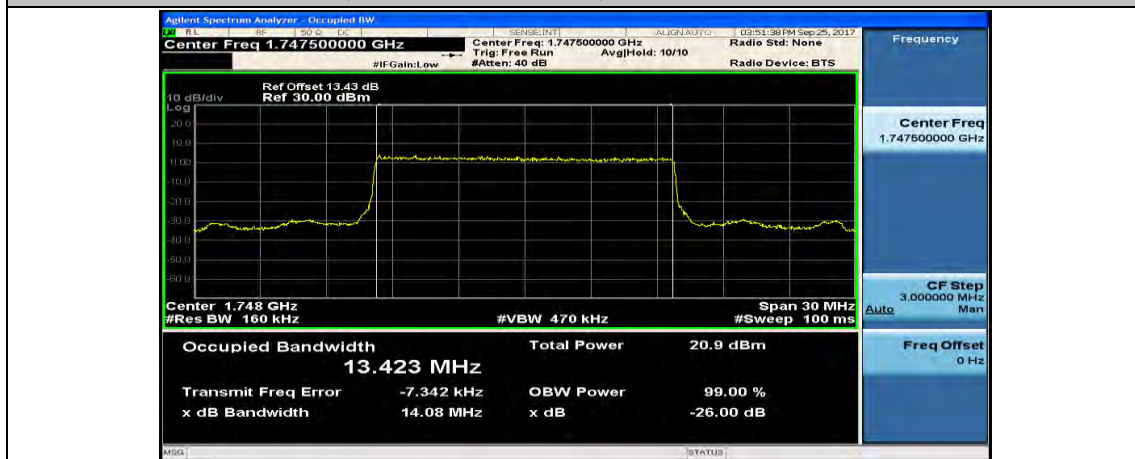
(Channel Bandwidth: 15 MHz)_LCH_QPSK_75RB#0



(Channel Bandwidth: 15 MHz)_MCH_QPSK_75RB#0

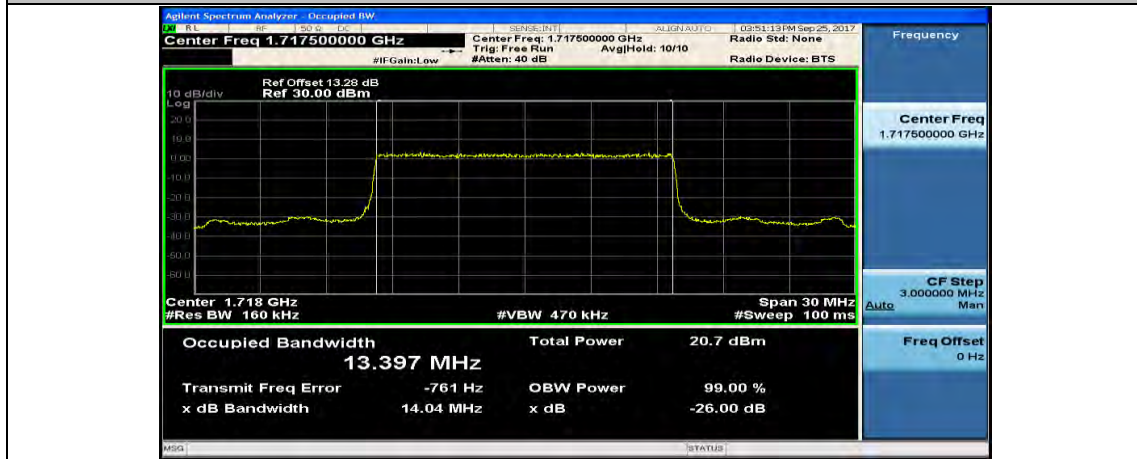


(Channel Bandwidth: 15 MHz)_HCH_QPSK_75RB#0

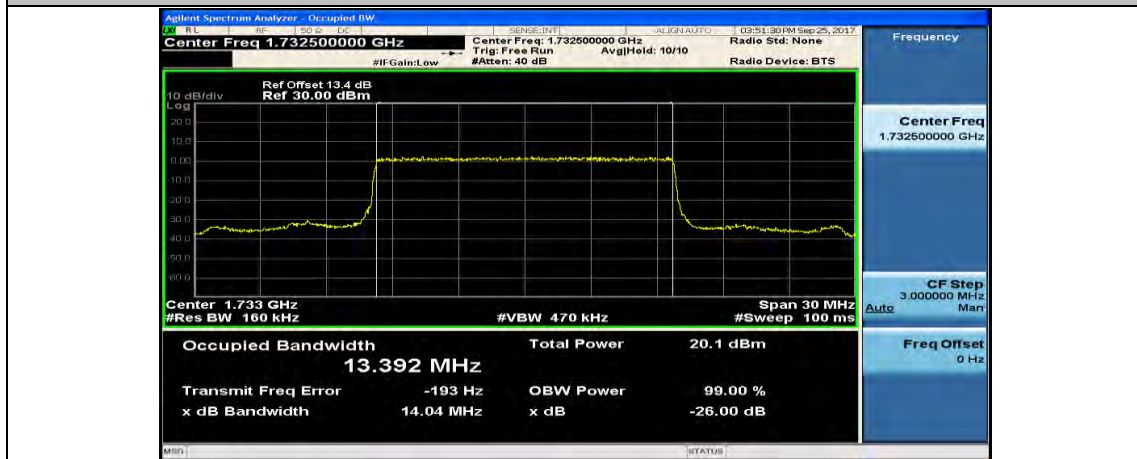




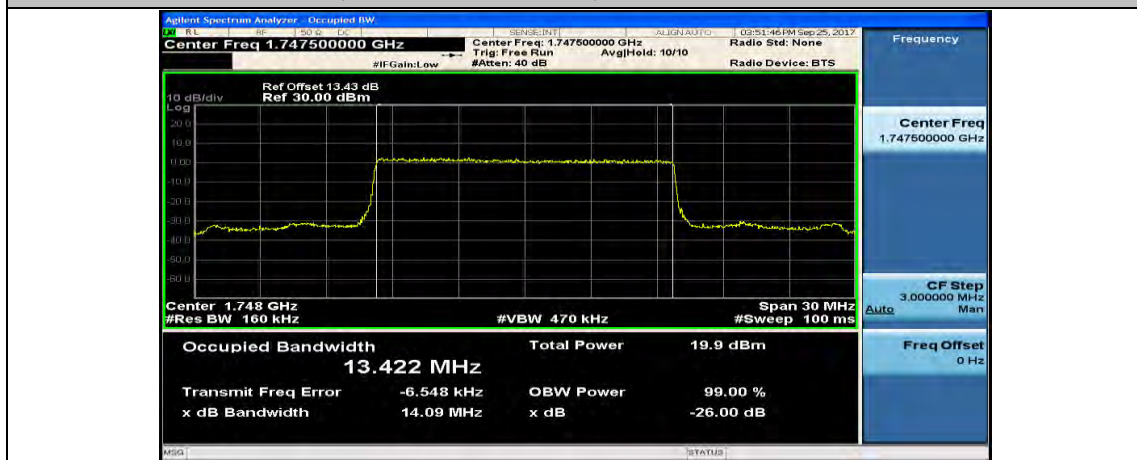
(Channel Bandwidth: 15 MHz)_LCH_16QAM_75RB#0



(Channel Bandwidth: 15 MHz)_MCH_16QAM_75RB#0



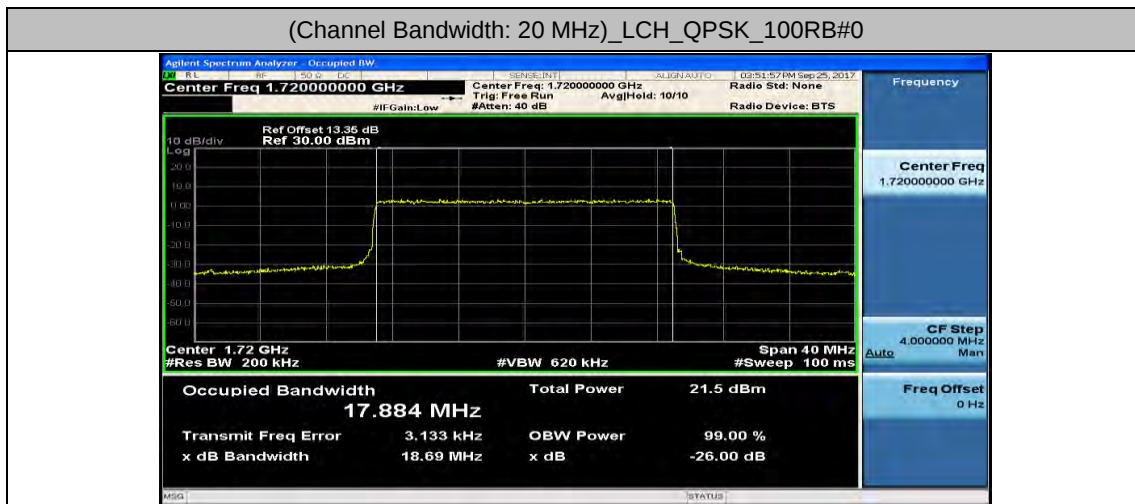
(Channel Bandwidth: 15 MHz)_HCH_16QAM_75RB#0



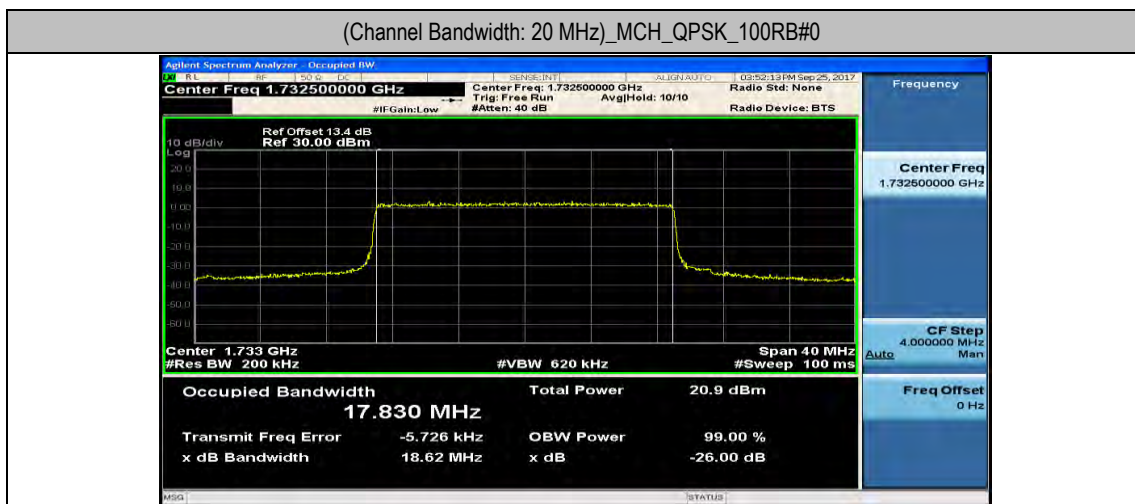


Channel Bandwidth: 20 MHz

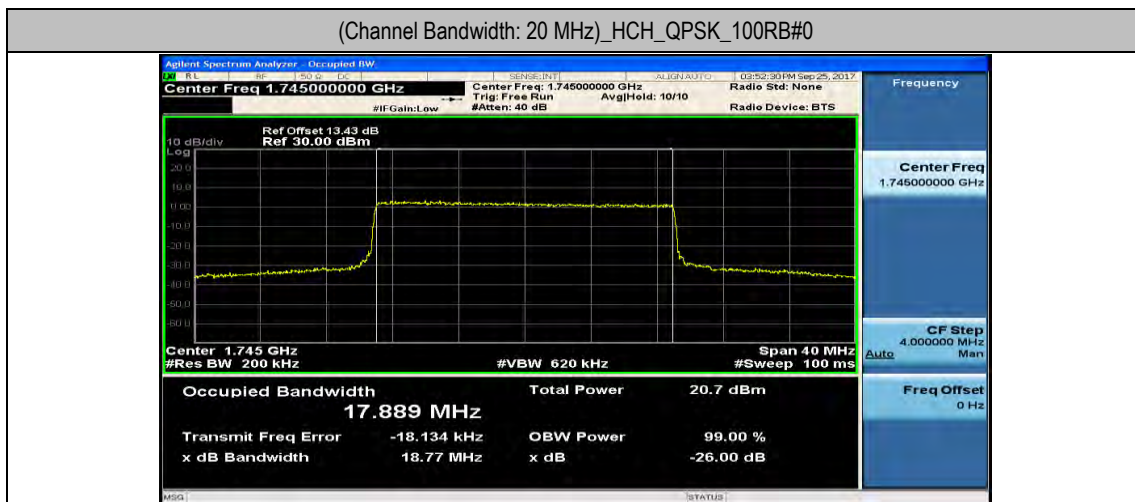
(Channel Bandwidth: 20 MHz)_LCH_QPSK_100RB#0



(Channel Bandwidth: 20 MHz)_MCH_QPSK_100RB#0

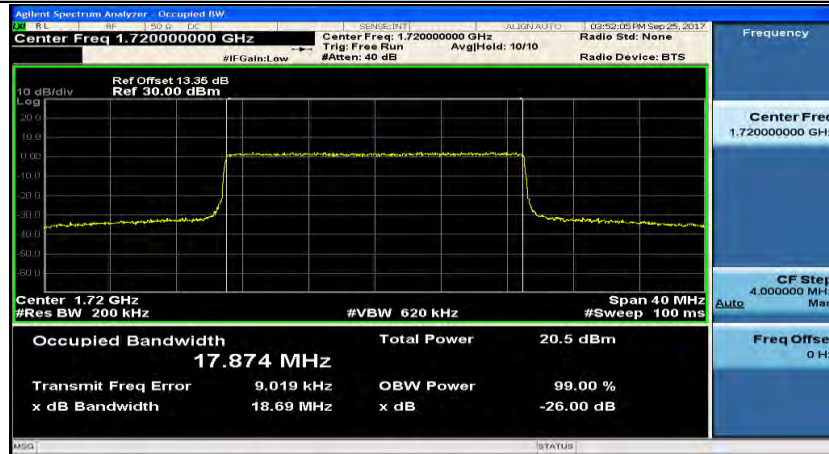


(Channel Bandwidth: 20 MHz)_HCH_QPSK_100RB#0

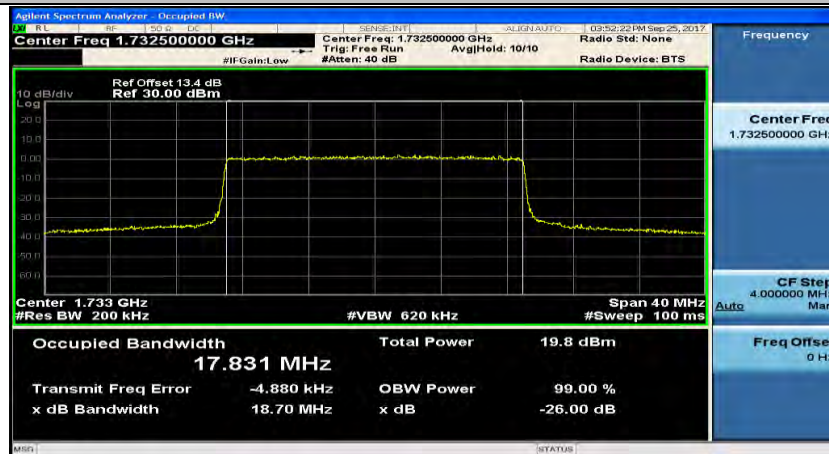




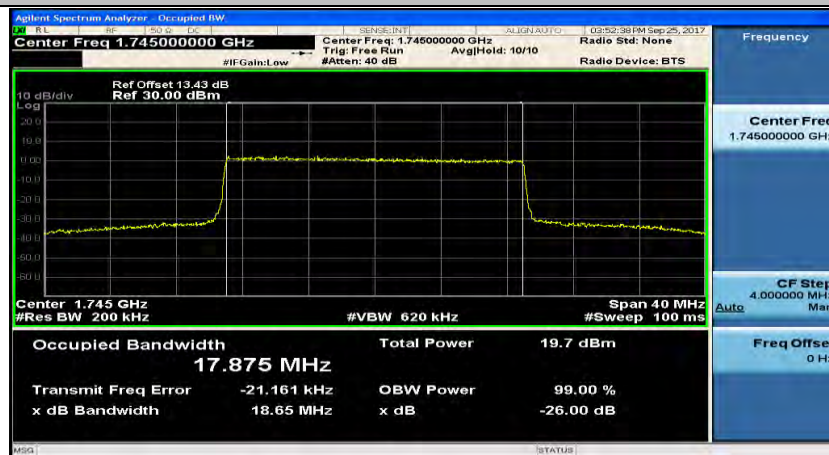
(Channel Bandwidth: 20 MHz)_LCH_16QAM_100RB#0



(Channel Bandwidth: 20 MHz)_MCH_16QAM_100RB#0



(Channel Bandwidth: 20 MHz)_HCH_16QAM_100RB#0



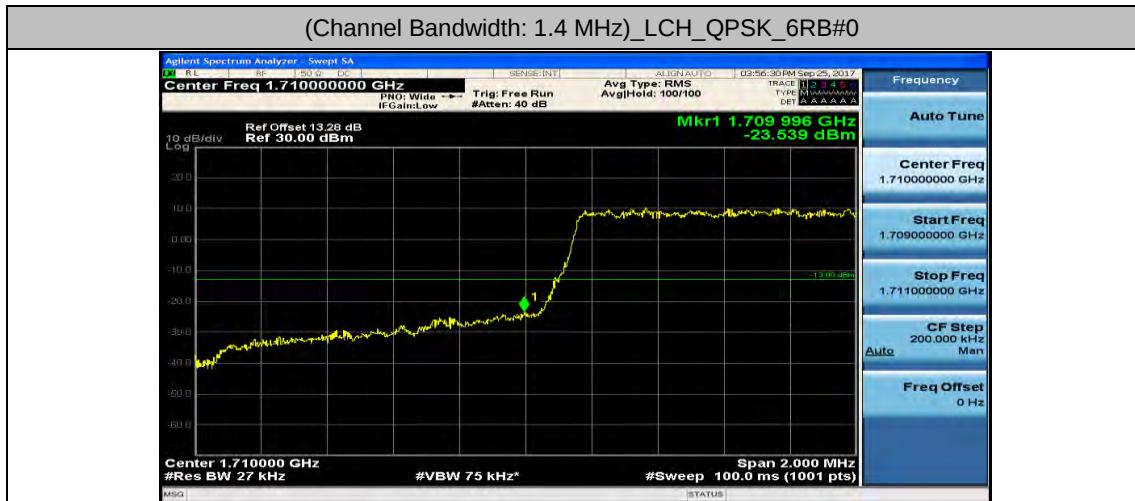


Appendix D: Band Edge

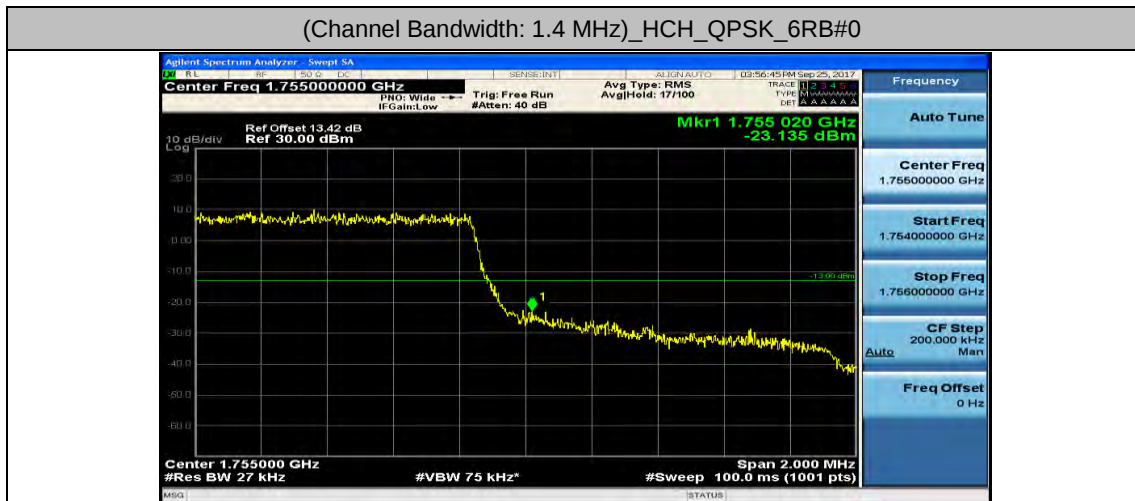
Test Graphs

Channel Bandwidth: 1.4 MHz

(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_6RB#0

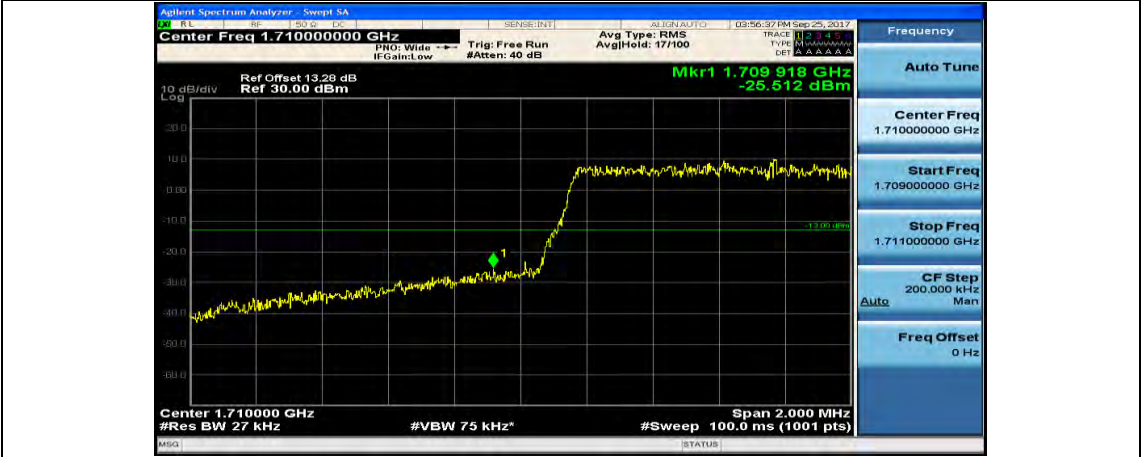


(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_6RB#0





(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_6RB#0

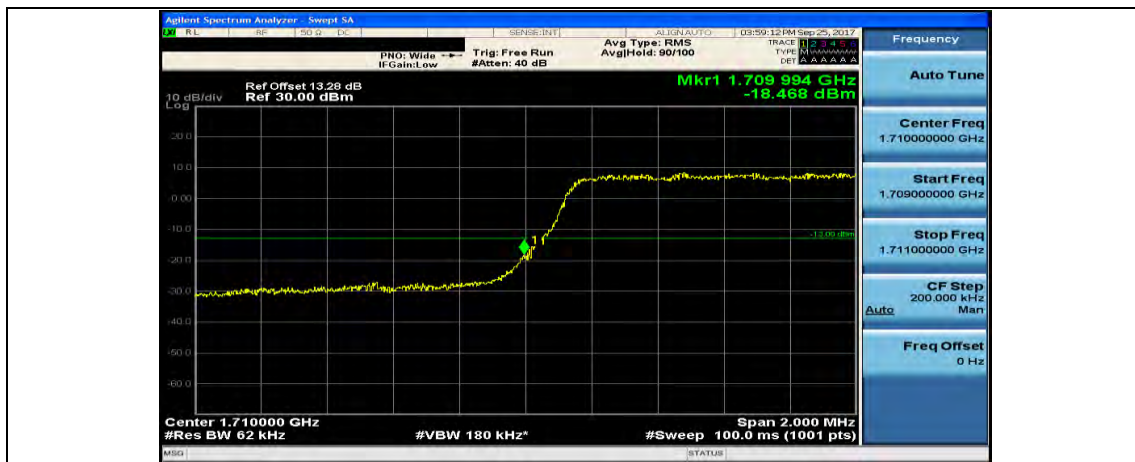


(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_6RB#0



Channel Bandwidth: 3 MHz

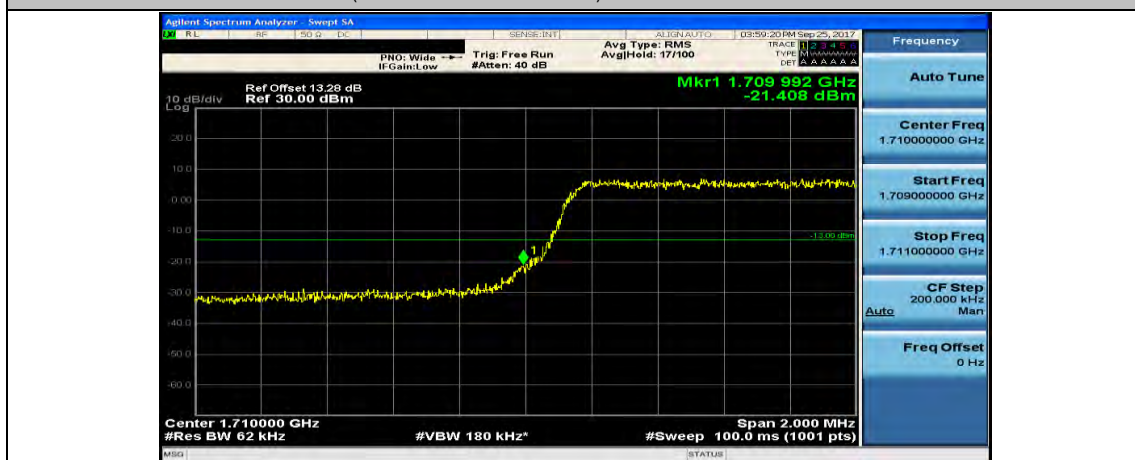
(Channel Bandwidth: 3 MHz)_LCH_QPSK_15RB#0



(Channel Bandwidth: 3 MHz)_HCH_QPSK_15RB#0



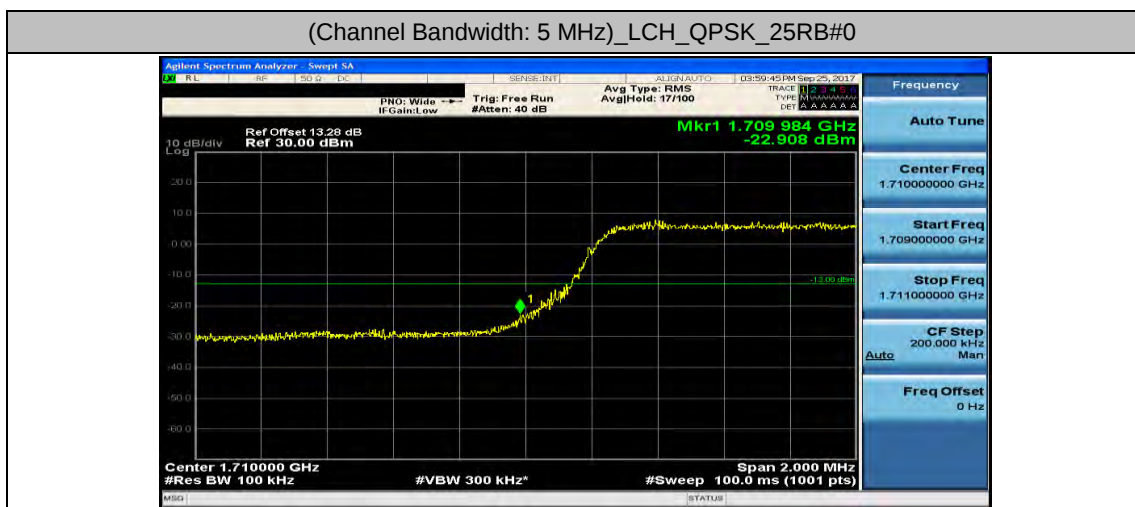
(Channel Bandwidth: 3 MHz)_LCH_16QAM_15RB#0



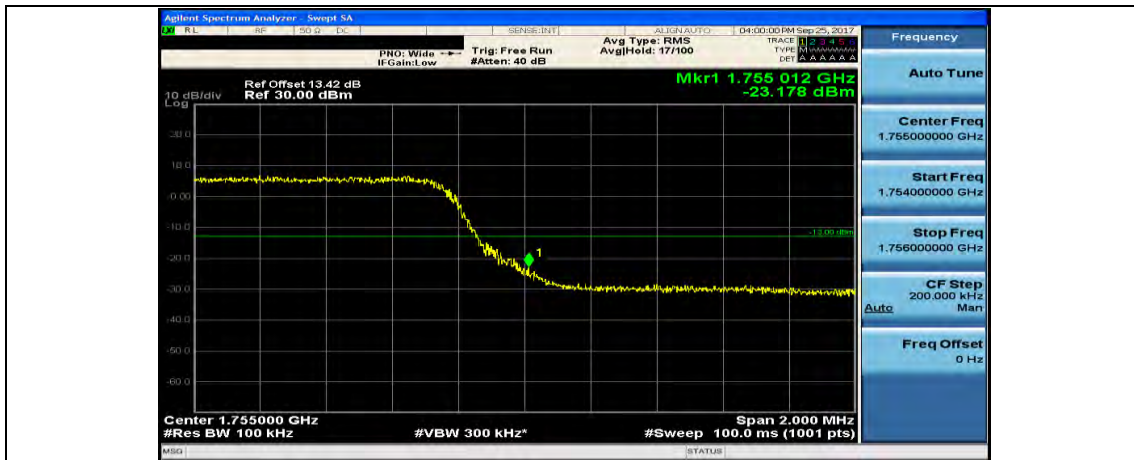
(Channel Bandwidth: 3 MHz)_HCH_16QAM_15RB#0



Channel Bandwidth: 5 MHz



(Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0



(Channel Bandwidth: 5 MHz)_LCH_16QAM_25RB#0

Agilent Spectrum Analyzer - Swept SA

File Edit View Settings Help

PRN: Wide Trig: Free Run Avg Type: RMS

IF Gain: Low #Atten: 40 dB Avg Hold: 18/100

Trace 1 1.709986 GHz -24.013 dBm

10 dB/div Log

Ref Offset 13.28 dB Ref 30.00 dBm

Center 1.710000 GHz Span 2.000 MHz

#Res BW 100 kHz #VBW 300 kHz #Sweep 100.0 ms (1001 pts)

Auto Tune

Center Freq 1.710000000 GHz

Start Freq 1.709000000 GHz

Stop Freq 1.711000000 GHz

CF Step 200.000 kHz

Auto Man

Freq Offset 0 Hz

(Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0

Agilent Spectrum Analyzer - Swept SA

MODE: FREQ: FREQ: Done SENSE: IN1 ALY: ANALYZE: 04:00:08 PM Sep 25, 2017

PN0: Wide Trig: Free Run Avg Type: RMS TrACe: 0 2 3 4 5 6
IF Gain: Low #Assen: 40 dB Avg/Hold: 18/100 TYPE: MCHOWAAAAA
REF: AAAAAA

Ref Offset 13.42 dB
Ref 30.00 dBm

Mkr1 1.755 002 GHz
-25.327 dBm

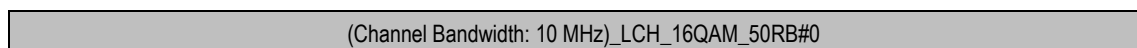
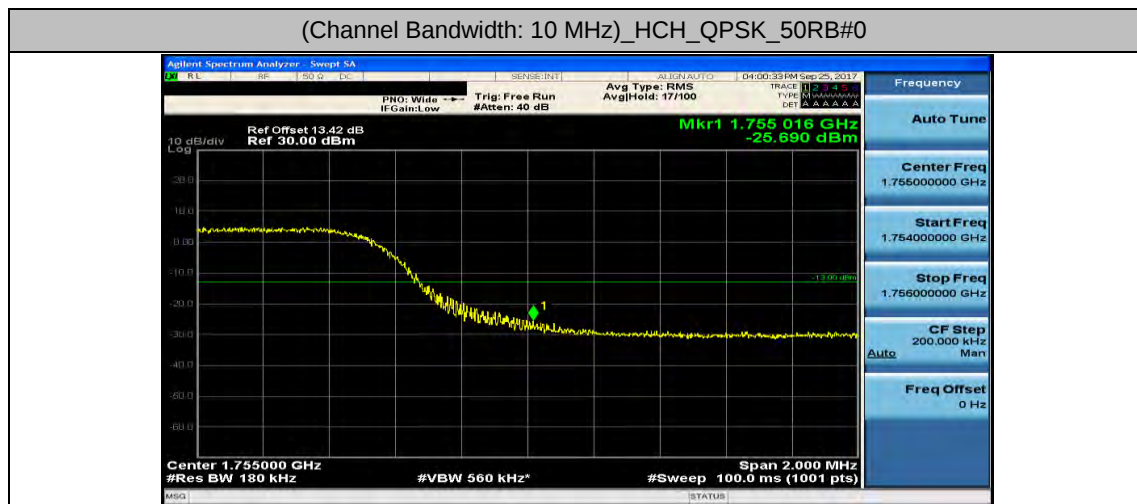
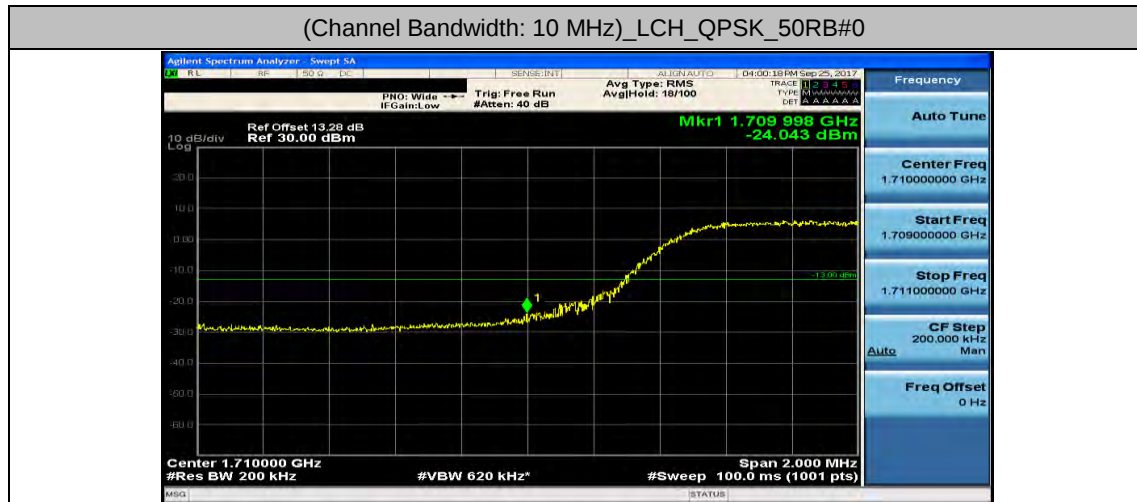
10 dB/div
Log

Center 1.755000 GHz
#Res BW 100 kHz
#VBW 300 kHz
#Sweep 100.0 ms (1001 pts)
Span 2.000 MHz

Auto Tune
Center Freq
1.755000000 GHz
Start Freq
1.754000000 GHz
Stop Freq
1.756000000 GHz
CF Step
200.000 kHz
Man
Auto
Freq Offset
0 Hz



Channel Bandwidth: 10 MHz





(Channel Bandwidth: 10 MHz)_HCH_16QAM_50RB#0



Channel Bandwidth: 15 MHz

(Channel Bandwidth: 15 MHz)_LCH_QPSK_75RB#0





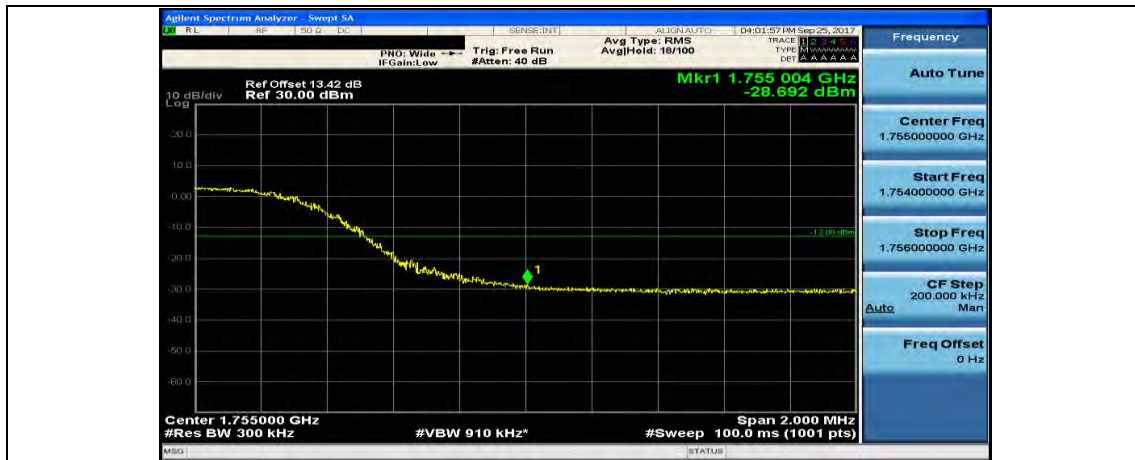
(Channel Bandwidth: 15 MHz)_HCH_QPSK_75RB#0



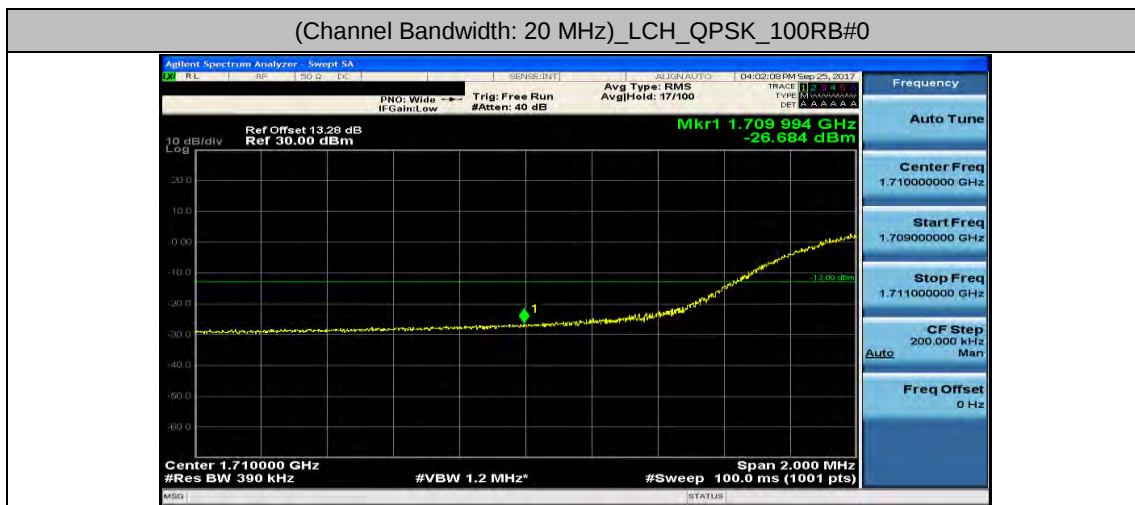
(Channel Bandwidth: 15 MHz)_LCH_16QAM_75RB#0



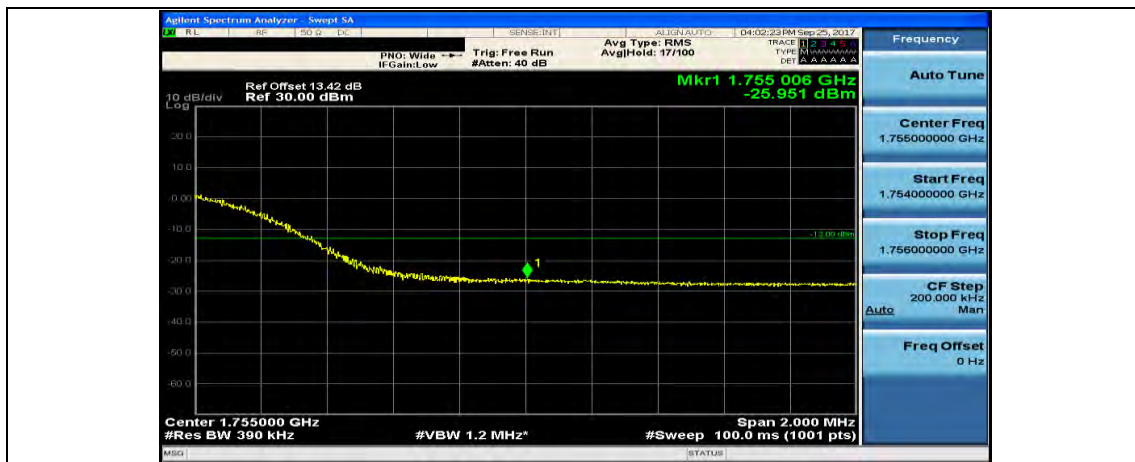
(Channel Bandwidth: 15 MHz)_HCH_16QAM_75RB#0



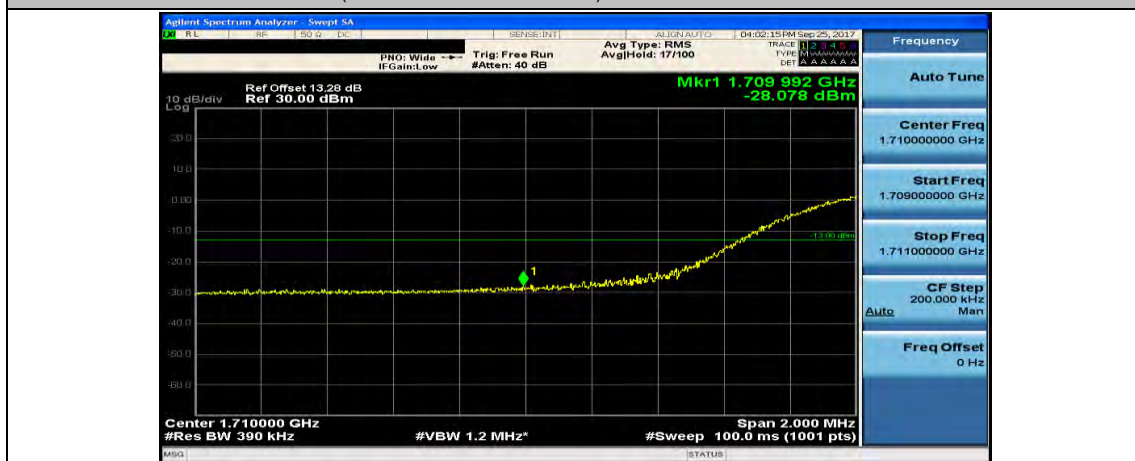
Channel Bandwidth: 20 MHz



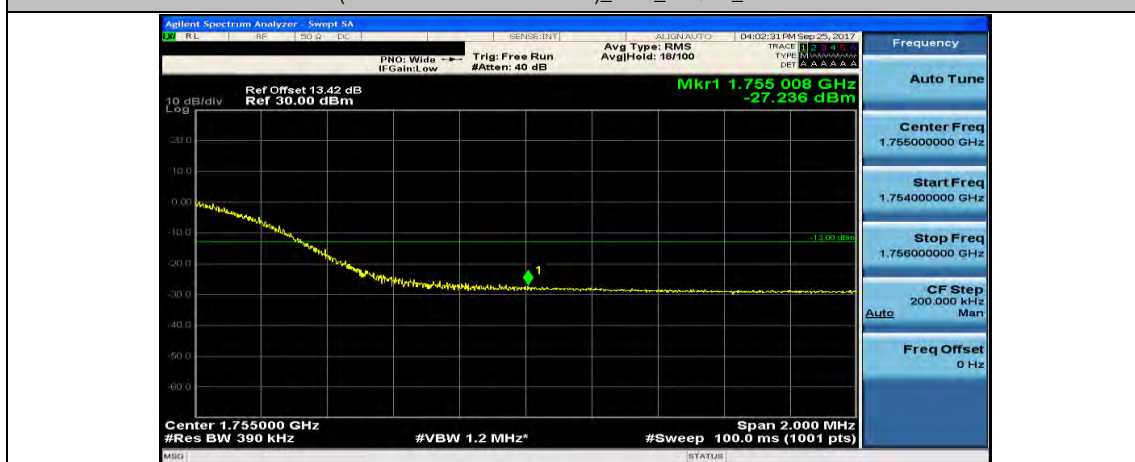
(Channel Bandwidth: 20 MHz)_HCH_QPSK_100RB#0



(Channel Bandwidth: 20 MHz)_LCH_16QAM_100RB#0



(Channel Bandwidth: 20 MHz)_HCH_16QAM_100RB#0

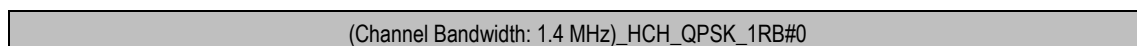
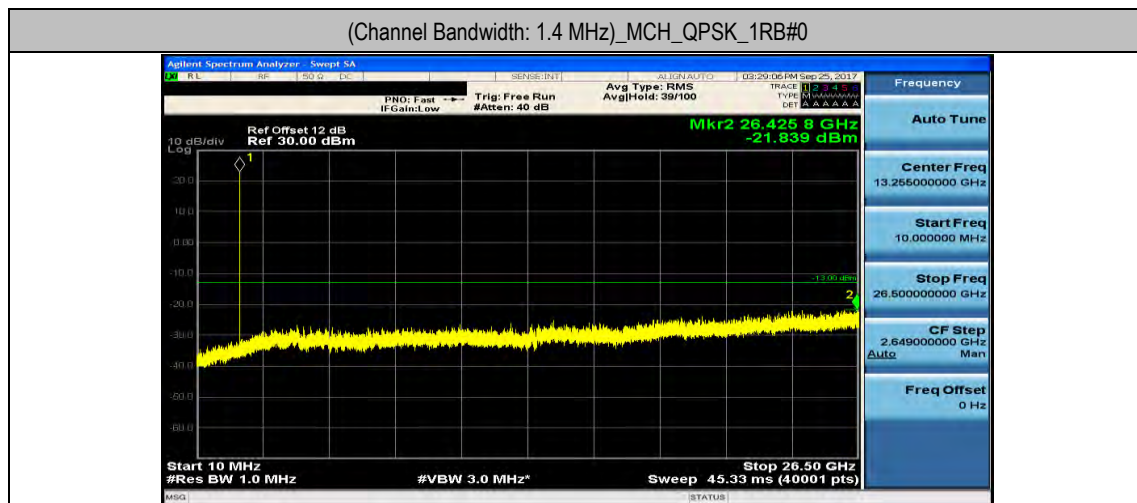
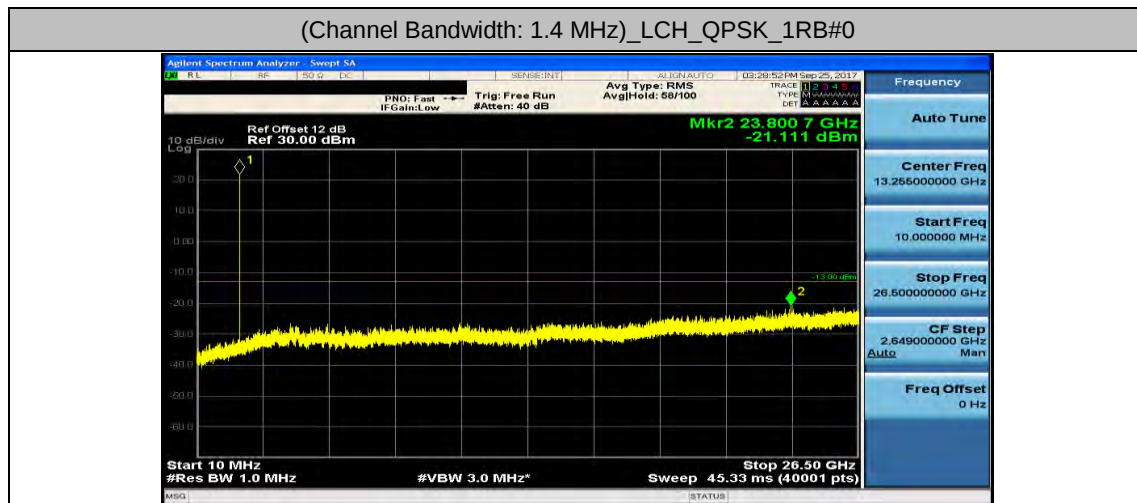


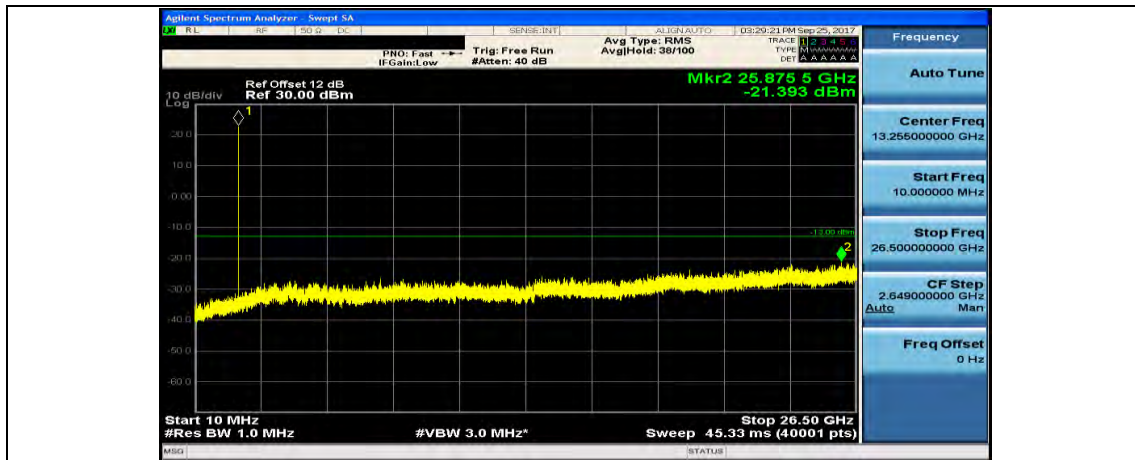


Appendix E: Conducted Spurious Emission

Test Graphs

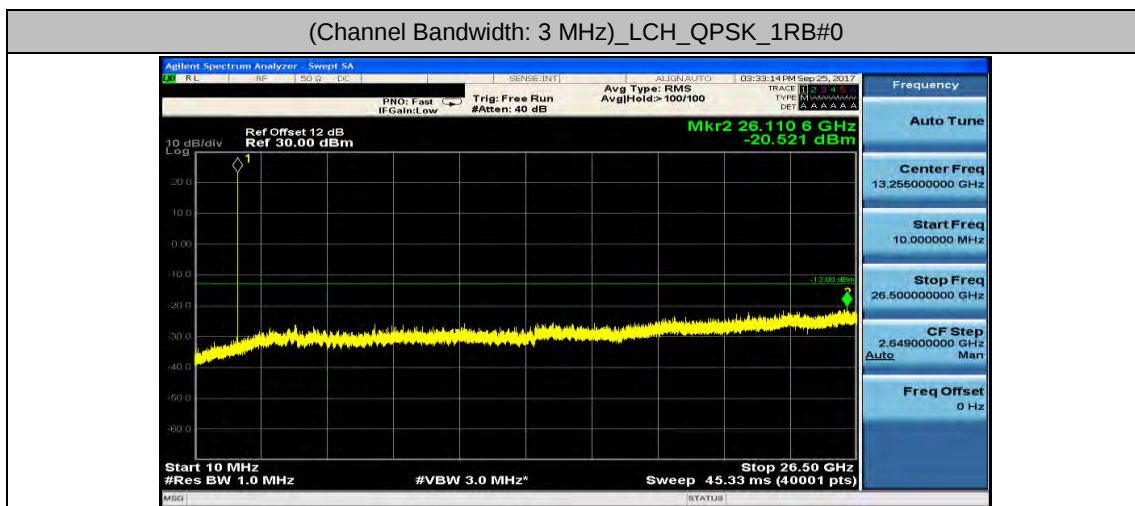
Channel Bandwidth: 1.4 MHz



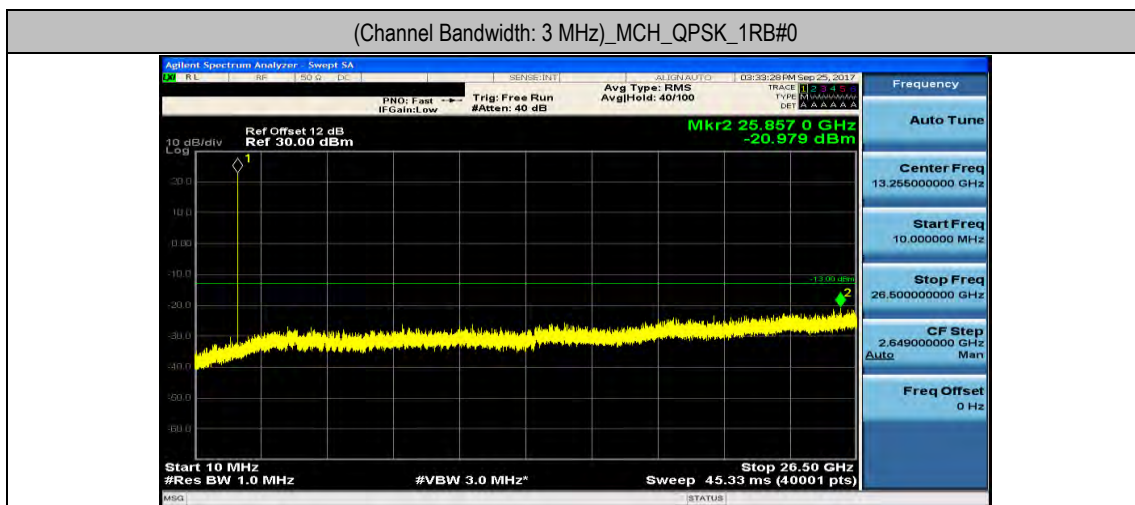


Channel Bandwidth: 3 MHz

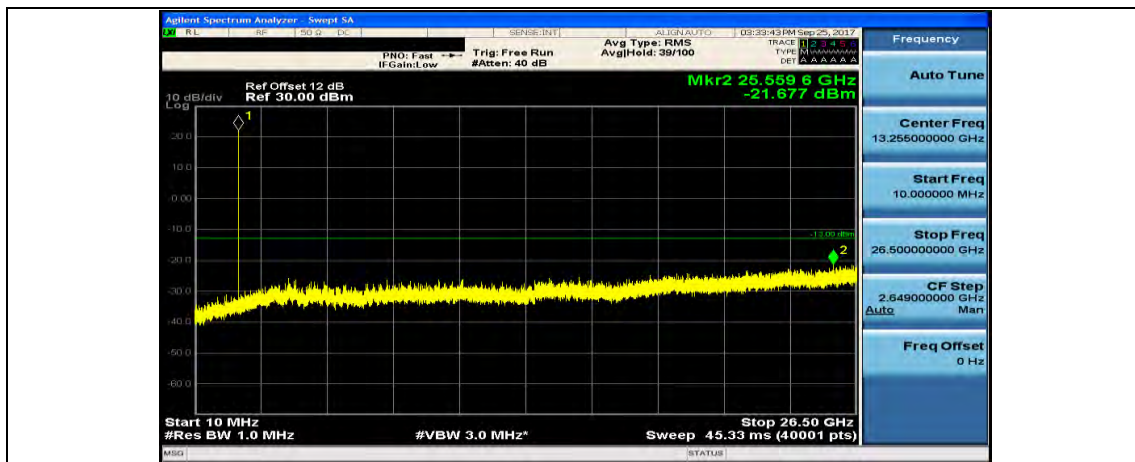
(Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#0



(Channel Bandwidth: 3 MHz)_MCH_QPSK_1RB#0

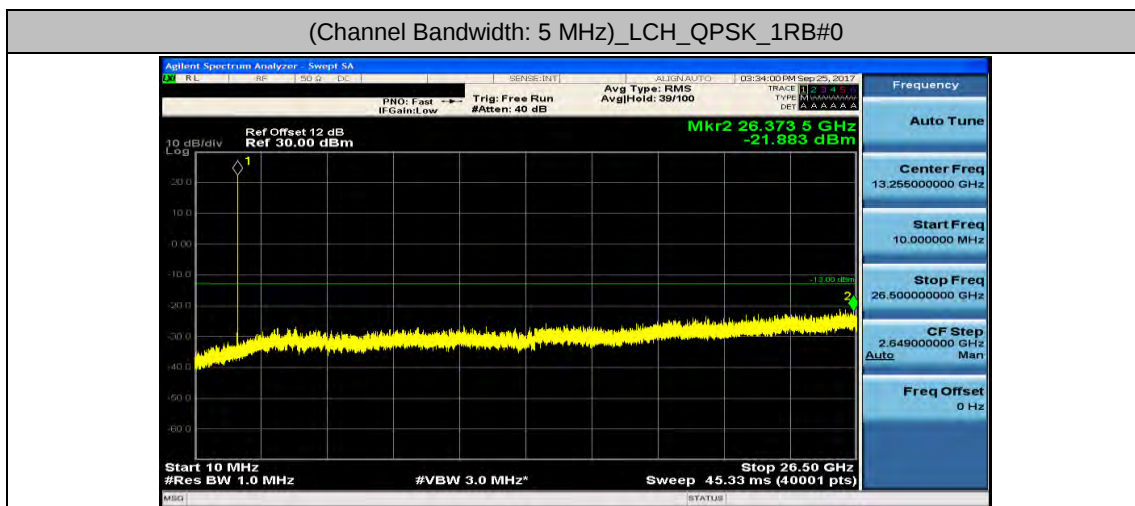


(Channel Bandwidth: 3 MHz)_HCH_QPSK_1RB#0

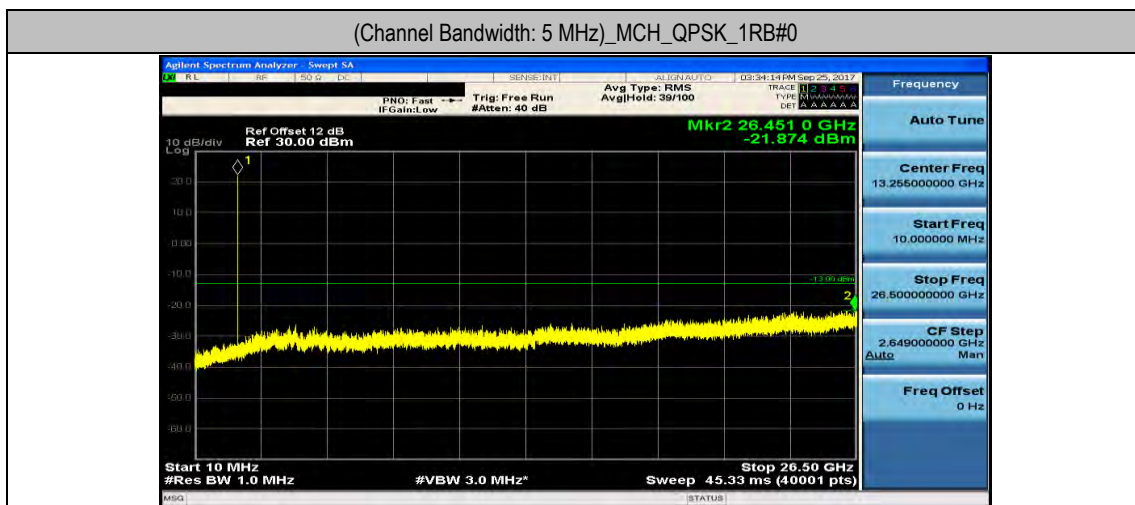


Channel Bandwidth: 5 MHz

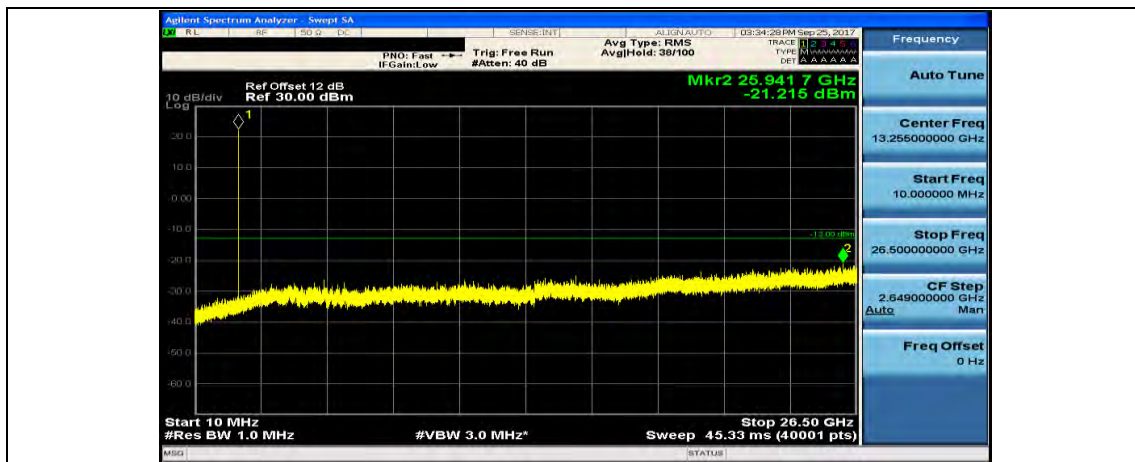
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#0



(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#0



(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#0

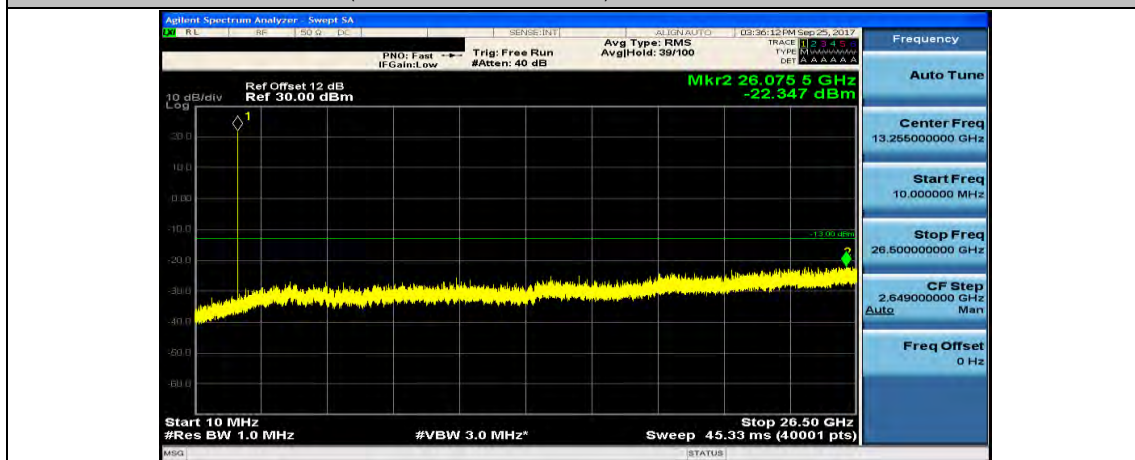


Channel Bandwidth: 10 MHz

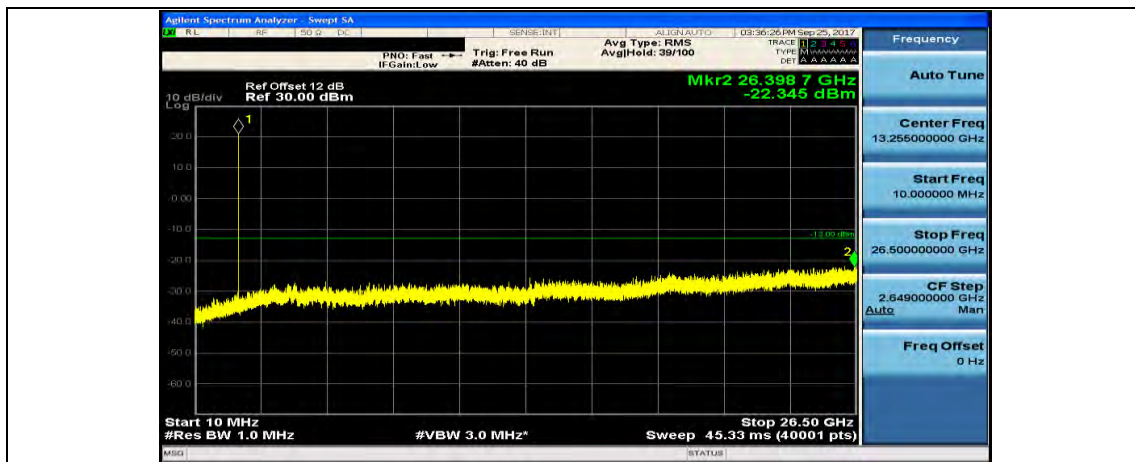
(Channel Bandwidth: 10 MHz)_LCH_QPSK_1RB#0



(Channel Bandwidth: 10 MHz)_MCH_QPSK_1RB#0



(Channel Bandwidth: 10 MHz)_HCH_QPSK_1RB#0



(Channel Bandwidth: 15 MHz)_LCH_QPSK_1RB#0

The screenshot shows an Agilent Spectrum Analyzer interface. The title bar reads "Agilent Spectrum Analyzer - Sweep SA". The top status bar displays "REL", "RF", "50.0", "LO", "SEPERATED", "ALC/AUTOC", and a date/time stamp "08:30:27 PM Sep 25, 2017". The main plot area shows a noisy yellow trace on a black background. A green horizontal line is at -12.00 dBm. The right-hand control panel has a "Frequency" section with "Auto Tune", "Center Freq 13.25600000 GHz", "Start Freq 10.000000 MHz", "Stop Freq 26.50000000 GHz", "CF Step 2.649000000 GHz", and "Freq Offset 0 Hz". The bottom status bar shows "Start 10 MHz", "Stop 26.50 GHz", "#Res BW 1.0 MHz", "#VBW 3.0 MHz", and "Sweep 45.33 ms (40001 pts)".

Agilent Spectrum Analyzer - Swept SA

File Edit View Settings Help

SENSE:INT

ALPHA: AUTO

09:50:41 PM Sep 25, 2017

PNO: Fast Trig: Free Run Avg Type: RMS

IF Gain: Low #Atten: 40 dB Avg/Hold: 39/100

TRACE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

TYPE: MAX HOLD

REF: 0.000000

Frequency

Auto Tune

Center Freq 13.256000000 GHz

Start Freq 10.000000 MHz

Stop Freq 26.500000000 GHz

CF Step 2.649000000 GHz

Auto Man

Freq Offset 0 Hz

10 dB/div

Ref Offset 12 dB

Ref 30.00 dBm

Start 10 MHz

#Res BW 1.0 MHz

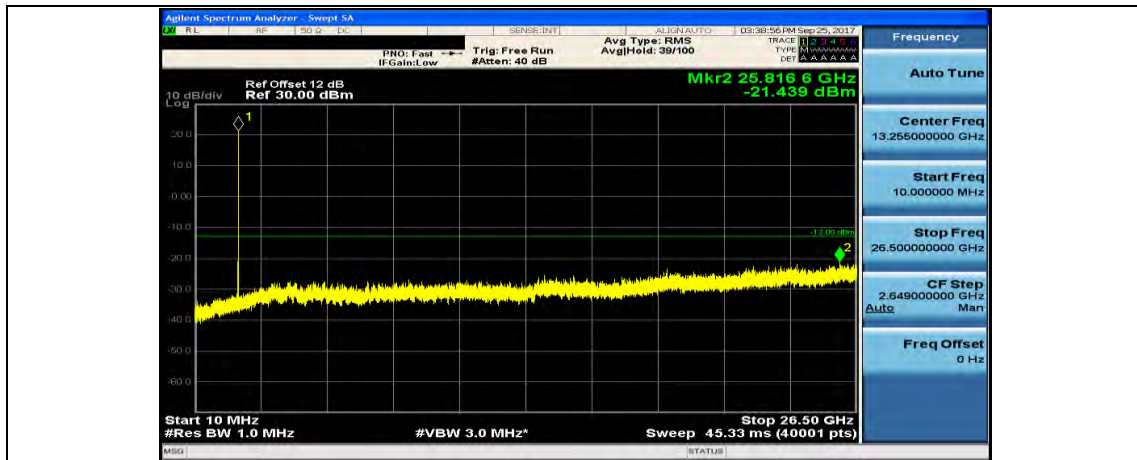
#VBW 3.0 MHz

Stop 26.50 GHz

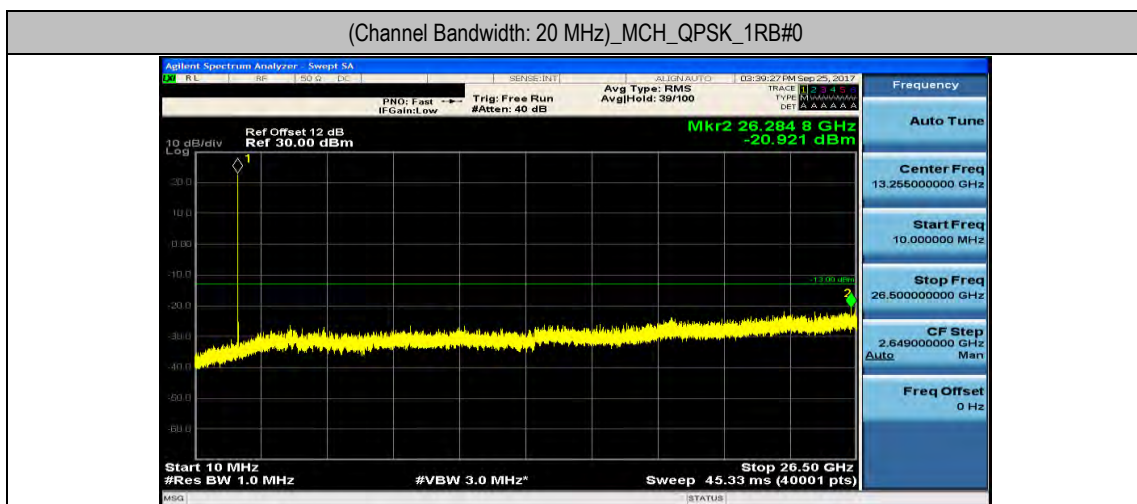
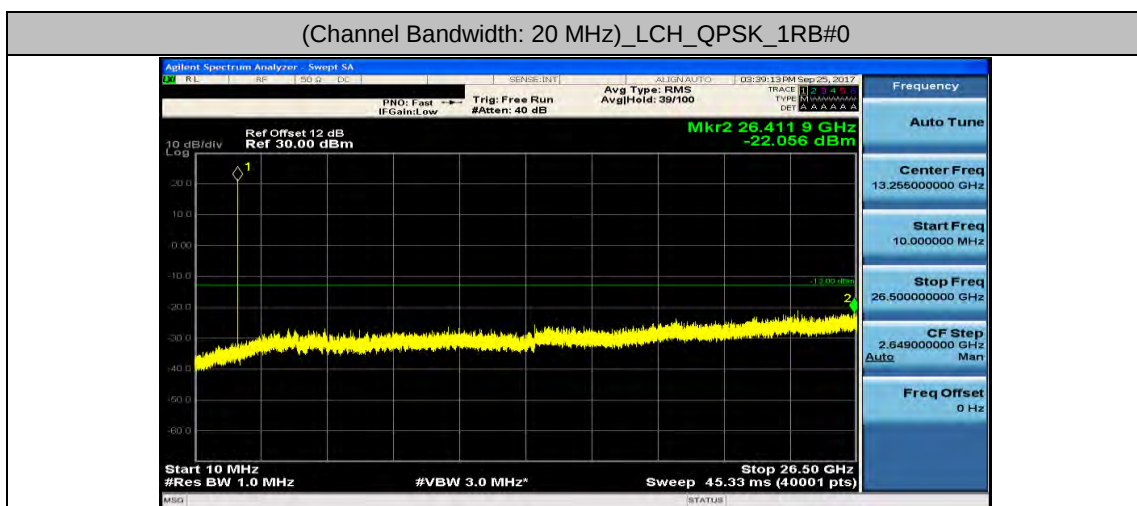
Sweep 45.33 ms (40001 pts)

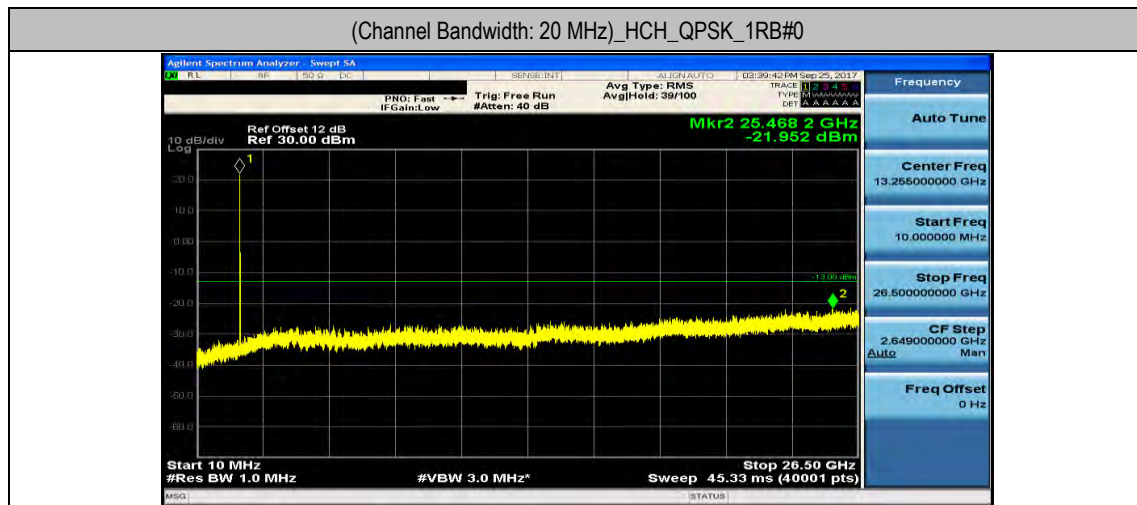
Msg STATUS

(Channel Bandwidth: 15 MHz)_HCH_QPSK_1RB#0



Channel Bandwidth: 20 MHz





Appendix F: Frequency Stability

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	1.42	0.000828	± 2.5	PASS
		VN	TN	-0.03	-0.000017	± 2.5	PASS
		VH	TN	1.53	0.000895	± 2.5	PASS
	MCH	VL	TN	2.37	0.001371	± 2.5	PASS
		VN	TN	1.26	0.000727	± 2.5	PASS
		VH	TN	-0.33	-0.000190	± 2.5	PASS
	HCH	VL	TN	-3.85	-0.002194	± 2.5	PASS
		VN	TN	-4.71	-0.002683	± 2.5	PASS
		VH	TN	-5.68	-0.003237	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	0.94	0.000552	± 2.5	PASS
		VN	-20	2.36	0.001380	± 2.5	PASS
		VN	-10	0.67	0.000393	± 2.5	PASS
		VN	0	0.86	0.000502	± 2.5	PASS
		VN	10	1.99	0.001162	± 2.5	PASS
		VN	20	0.74	0.000435	± 2.5	PASS
		VN	30	3.91	0.002283	± 2.5	PASS
		VN	40	2.82	0.001647	± 2.5	PASS
		VN	50	3.18	0.001856	± 2.5	PASS



	MCH	VN	-30	0.33	0.000190	± 2.5	PASS
		VN	-20	0.83	0.000479	± 2.5	PASS
		VN	-10	2.09	0.001206	± 2.5	PASS
		VN	0	-0.86	-0.000495	± 2.5	PASS
		VN	10	-0.07	-0.000041	± 2.5	PASS
		VN	20	-0.14	-0.000083	± 2.5	PASS
		VN	30	0.13	0.000074	± 2.5	PASS
		VN	40	0.33	0.000190	± 2.5	PASS
		VN	50	-0.26	-0.000149	± 2.5	PASS
	HCH	VN	-30	-3.66	-0.002088	± 2.5	PASS
		VN	-20	-2.89	-0.001647	± 2.5	PASS
		VN	-10	-3.09	-0.001761	± 2.5	PASS
		VN	0	-4.13	-0.002357	± 2.5	PASS
		VN	10	-3.65	-0.002079	± 2.5	PASS
		VN	20	-4.39	-0.002503	± 2.5	PASS
		VN	30	-3.35	-0.001908	± 2.5	PASS
		VN	40	-3.09	-0.001761	± 2.5	PASS
		VN	50	-4.52	-0.002577	± 2.5	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz+							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	1.02	0.000593	± 2.5	PASS
		VN	TN	-0.54	-0.000318	± 2.5	PASS
		VH	TN	0.11	0.000067	± 2.5	PASS
	MCH	VL	TN	1.99	0.001148	± 2.5	PASS
		VN	TN	0.49	0.000281	± 2.5	PASS
		VH	TN	2.69	0.001552	± 2.5	PASS
	HCH	VL	TN	-0.17	-0.000098	± 2.5	PASS
		VN	TN	0.36	0.000204	± 2.5	PASS
		VH	TN	0.89	0.000506	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	0.62	0.000359	± 2.5	PASS
		VN	-20	-0.60	-0.000351	± 2.5	PASS
		VN	-10	-1.30	-0.000761	± 2.5	PASS
		VN	0	-0.14	-0.000084	± 2.5	PASS
		VN	10	-0.29	-0.000167	± 2.5	PASS
		VN	20	-0.43	-0.000251	± 2.5	PASS
		VN	30	-0.21	-0.000125	± 2.5	PASS
		VN	40	-0.79	-0.000460	± 2.5	PASS
		VN	50	-0.21	-0.000125	± 2.5	PASS

	MCH	VN	-30	2.40	0.001387	± 2.5	PASS
		VN	-20	0.53	0.000306	± 2.5	PASS
		VN	-10	0.26	0.000149	± 2.5	PASS
		VN	0	2.62	0.001511	± 2.5	PASS
		VN	10	0.14	0.000083	± 2.5	PASS
		VN	20	0.67	0.000388	± 2.5	PASS
		VN	30	-0.24	-0.000140	± 2.5	PASS
		VN	40	1.80	0.001040	± 2.5	PASS
		VN	50	-0.24	-0.000140	± 2.5	PASS
	HCH	VN	-30	1.47	0.000840	± 2.5	PASS
		VN	-20	0.16	0.000090	± 2.5	PASS
		VN	-10	-0.86	-0.000489	± 2.5	PASS
		VN	0	0.24	0.000139	± 2.5	PASS
		VN	10	1.29	0.000734	± 2.5	PASS
		VN	20	0.13	0.000073	± 2.5	PASS
		VN	30	-1.09	-0.000620	± 2.5	PASS
		VN	40	0.86	0.000489	± 2.5	PASS
		VN	50	-1.09	-0.000620	± 2.5	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	1.65	0.000961	± 2.5	PASS
		VN	TN	3.05	0.001779	± 2.5	PASS
		VH	TN	-0.21	-0.000125	± 2.5	PASS
	MCH	VL	TN	1.20	0.000694	± 2.5	PASS
		VN	TN	-2.02	-0.001164	± 2.5	PASS
		VH	TN	0.79	0.000454	± 2.5	PASS
	HCH	VL	TN	-0.29	-0.000163	± 2.5	PASS
		VN	TN	-3.05	-0.001739	± 2.5	PASS
		VH	TN	-4.01	-0.002286	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.82	0.001061	± 2.5	PASS
		VN	-20	1.56	0.000911	± 2.5	PASS
		VN	-10	2.20	0.001286	± 2.5	PASS
		VN	0	2.22	0.001295	± 2.5	PASS
		VN	10	1.16	0.000677	± 2.5	PASS
		VN	20	0.39	0.000226	± 2.5	PASS
		VN	30	2.75	0.001604	± 2.5	PASS
		VN	40	2.17	0.001270	± 2.5	PASS
		VN	50	2.99	0.001746	± 2.5	PASS

	MCH	VN	-30	-0.62	-0.000355	± 2.5	PASS
		VN	-20	-1.37	-0.000793	± 2.5	PASS
		VN	-10	1.39	0.000801	± 2.5	PASS
		VN	0	0.41	0.000239	± 2.5	PASS
		VN	10	-1.37	-0.000793	± 2.5	PASS
		VN	20	0.43	0.000248	± 2.5	PASS
		VN	30	0.97	0.000561	± 2.5	PASS
		VN	40	-1.60	-0.000925	± 2.5	PASS
		VN	50	-0.72	-0.000413	± 2.5	PASS
	HCH	VN	-30	-2.49	-0.001420	± 2.5	PASS
		VN	-20	-2.42	-0.001379	± 2.5	PASS
		VN	-10	-4.33	-0.002473	± 2.5	PASS
		VN	0	-2.55	-0.001453	± 2.5	PASS
		VN	10	-1.69	-0.000963	± 2.5	PASS
		VN	20	-2.78	-0.001584	± 2.5	PASS
		VN	30	-1.33	-0.000759	± 2.5	PASS
		VN	40	-2.89	-0.001649	± 2.5	PASS
		VN	50	-3.48	-0.001984	± 2.5	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	-4.19	-0.002444	± 2.5	PASS
		VN	TN	-2.40	-0.001401	± 2.5	PASS
		VH	TN	-2.07	-0.001209	± 2.5	PASS
	MCH	VL	TN	1.39	0.000801	± 2.5	PASS
		VN	TN	1.63	0.000941	± 2.5	PASS
		VH	TN	1.09	0.000628	± 2.5	PASS
	HCH	VL	TN	2.53	0.001447	± 2.5	PASS
		VN	TN	0.34	0.000196	± 2.5	PASS
		VH	TN	2.33	0.001332	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	-4.38	-0.002552	± 2.5	PASS
		VN	-20	-0.67	-0.000392	± 2.5	PASS
		VN	-10	-4.62	-0.002694	± 2.5	PASS
		VN	0	-3.40	-0.001985	± 2.5	PASS
		VN	10	-2.19	-0.001276	± 2.5	PASS
		VN	20	-3.91	-0.002277	± 2.5	PASS
		VN	30	-2.43	-0.001418	± 2.5	PASS
		VN	40	-3.22	-0.001877	± 2.5	PASS
		VN	50	-4.35	-0.002536	± 2.5	PASS

	MCH	VN	-30	1.33	0.000768	± 2.5	PASS
		VN	-20	0.07	0.000041	± 2.5	PASS
		VN	-10	2.37	0.001371	± 2.5	PASS
		VN	0	1.16	0.000669	± 2.5	PASS
		VN	10	0.86	0.000495	± 2.5	PASS
		VN	20	1.95	0.001123	± 2.5	PASS
		VN	30	0.01	0.000008	± 2.5	PASS
		VN	40	0.57	0.000330	± 2.5	PASS
		VN	50	0.66	0.000380	± 2.5	PASS
	HCH	VN	-30	0.94	0.000540	± 2.5	PASS
		VN	-20	0.79	0.000450	± 2.5	PASS
		VN	-10	2.20	0.001259	± 2.5	PASS
		VN	0	2.49	0.001422	± 2.5	PASS
		VN	10	1.37	0.000785	± 2.5	PASS
		VN	20	1.06	0.000605	± 2.5	PASS
		VN	30	1.82	0.001038	± 2.5	PASS
		VN	40	0.59	0.000335	± 2.5	PASS
		VN	50	2.65	0.001512	± 2.5	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	1.09	0.000633	± 2.5	PASS
		VN	TN	1.70	0.000991	± 2.5	PASS
		VH	TN	-0.29	-0.000167	± 2.5	PASS
	MCH	VL	TN	-1.03	-0.000594	± 2.5	PASS
		VN	TN	-0.70	-0.000405	± 2.5	PASS
		VH	TN	-1.42	-0.000817	± 2.5	PASS
	HCH	VL	TN	0.20	0.000115	± 2.5	PASS
		VN	TN	2.12	0.001212	± 2.5	PASS
		VH	TN	0.27	0.000156	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	0.63	0.000366	± 2.5	PASS
		VN	-20	-0.49	-0.000283	± 2.5	PASS
		VN	-10	1.19	0.000691	± 2.5	PASS
		VN	0	0.87	0.000508	± 2.5	PASS
		VN	10	1.03	0.000600	± 2.5	PASS
		VN	20	0.44	0.000258	± 2.5	PASS
		VN	30	0.56	0.000325	± 2.5	PASS
		VN	40	-0.17	-0.000100	± 2.5	PASS
		VN	50	-1.39	-0.000808	± 2.5	PASS

	MCH	VN	-30	-0.53	-0.000306	± 2.5	PASS
		VN	-20	0.40	0.000231	± 2.5	PASS
		VN	-10	-0.87	-0.000504	± 2.5	PASS
		VN	0	1.23	0.000710	± 2.5	PASS
		VN	10	1.53	0.000883	± 2.5	PASS
		VN	20	1.19	0.000685	± 2.5	PASS
		VN	30	1.54	0.000892	± 2.5	PASS
		VN	40	-0.11	-0.000066	± 2.5	PASS
		VN	50	0.04	0.000025	± 2.5	PASS
	HCH	VN	-30	-0.21	-0.000123	± 2.5	PASS
		VN	-20	2.17	0.001244	± 2.5	PASS
		VN	-10	0.69	0.000393	± 2.5	PASS
		VN	0	-0.53	-0.000303	± 2.5	PASS
		VN	10	-0.19	-0.000106	± 2.5	PASS
		VN	20	-0.53	-0.000303	± 2.5	PASS
		VN	30	0.13	0.000074	± 2.5	PASS
		VN	40	0.20	0.000115	± 2.5	PASS
		VN	50	0.23	0.000131	± 2.5	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	1.65	0.000956	± 2.5	PASS
		VN	TN	1.19	0.000690	± 2.5	PASS
		VH	TN	0.97	0.000566	± 2.5	PASS
	MCH	VL	TN	-0.06	-0.000033	± 2.5	PASS
		VN	TN	0.16	0.000091	± 2.5	PASS
		VH	TN	1.72	0.000991	± 2.5	PASS
	HCH	VL	TN	-2.05	-0.001172	± 2.5	PASS
		VN	TN	-3.76	-0.002156	± 2.5	PASS
		VH	TN	-4.16	-0.002386	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.12	0.000649	± 2.5	PASS
		VN	-20	1.72	0.000998	± 2.5	PASS
		VN	-10	0.24	0.000141	± 2.5	PASS
		VN	0	1.30	0.000757	± 2.5	PASS
		VN	10	0.57	0.000333	± 2.5	PASS
		VN	20	1.33	0.000773	± 2.5	PASS
		VN	30	2.62	0.001522	± 2.5	PASS
		VN	40	0.26	0.000150	± 2.5	PASS
		VN	50	0.87	0.000507	± 2.5	PASS



	MCH	VN	-30	0.00	0.000000	± 2.5	PASS
		VN	-20	0.20	0.000116	± 2.5	PASS
		VN	-10	1.42	0.000817	± 2.5	PASS
		VN	0	1.27	0.000735	± 2.5	PASS
		VN	10	0.47	0.000272	± 2.5	PASS
		VN	20	0.29	0.000165	± 2.5	PASS
		VN	30	0.04	0.000025	± 2.5	PASS
		VN	40	-0.33	-0.000190	± 2.5	PASS
		VN	50	2.00	0.001156	± 2.5	PASS
	HCH	VN	-30	-4.61	-0.002640	± 2.5	PASS
		VN	-20	-3.56	-0.002041	± 2.5	PASS
		VN	-10	-2.53	-0.001451	± 2.5	PASS
		VN	0	-2.78	-0.001590	± 2.5	PASS
		VN	10	-3.86	-0.002213	± 2.5	PASS
		VN	20	-1.43	-0.000820	± 2.5	PASS
		VN	30	-2.37	-0.001361	± 2.5	PASS
		VN	40	-3.32	-0.001902	± 2.5	PASS
		VN	50	-3.93	-0.002254	± 2.5	PASS