

## Appendix A: Test Data for E-UTRA Band X

Product Name: IOT Gateway

Trade Mark: N/A

Test Model: IOT-1110

### Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

### A.1 Conducted Output Power

Conducted Output Power Test Result (Channel Bandwidth: 1.4 MHz)						
Modulation	Channel	RB Configuration		Average Power [dBm]		Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	24.26	23.71	PASS
		1	3	24.09	23.31	PASS
		1	5	23.92	23.13	PASS
		3	0	23.65	22.88	PASS
		3	2	23.57	22.80	PASS
		3	3	23.69	22.74	PASS
		6	0	23.25	22.12	PASS
	MCH	1	0	24.28	23.61	PASS
		1	3	24.12	23.53	PASS
		1	5	24.36	23.55	PASS
		3	0	24.21	23.25	PASS
		3	2	24.18	23.31	PASS
		3	3	24.21	23.17	PASS
		6	0	23.22	22.24	PASS
	HCH	1	0	24.43	23.67	PASS
		1	3	24.53	23.91	PASS
		1	5	24.61	23.65	PASS
		3	0	24.42	23.69	PASS
		3	2	24.47	23.67	PASS
		3	3	24.47	23.60	PASS
		6	0	23.52	22.50	PASS

Conducted Output Power Test Result (Channel Bandwidth: 3 MHz)						
Modulation	Channel	RB Configuration		Average Power [dBm]	Average Power [dBm]	Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	24.21	23.73	PASS
		1	7	24.22	23.56	PASS
		1	14	24.23	23.65	PASS
		8	0	23.25	22.19	PASS
		8	4	23.30	22.18	PASS
		8	7	23.24	21.94	PASS
		15	0	23.22	22.17	PASS
	MCH	1	0	24.11	23.34	PASS
		1	7	24.46	23.48	PASS
		1	14	24.26	23.24	PASS
		8	0	23.26	22.19	PASS
		8	4	23.27	22.23	PASS
		8	7	23.31	22.22	PASS
		15	0	23.16	22.09	PASS
	HCH	1	0	24.42	23.78	PASS
		1	7	24.49	23.61	PASS
		1	14	24.39	23.50	PASS
		8	0	23.53	22.45	PASS
		8	4	23.61	22.37	PASS
		8	7	23.66	22.63	PASS
		15	0	23.61	22.50	PASS

Conducted Output Power Test Result (Channel Bandwidth: 5 MHz)						
Modulation	Channel	RB Configuration		Average Power [dBm]	Average Power [dBm]	Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	23.98	22.96	PASS
		1	12	24.23	23.06	PASS
		1	24	24.46	23.00	PASS
		12	0	23.19	22.14	PASS
		12	6	23.37	22.33	PASS
		12	13	23.21	22.33	PASS
		25	0	23.34	22.41	PASS
	MCH	1	0	24.10	22.88	PASS
		1	12	24.63	23.27	PASS
		1	24	24.43	23.08	PASS
		12	0	23.18	22.28	PASS
		12	6	23.25	22.16	PASS
		12	13	23.15	22.17	PASS
		25	0	23.18	22.26	PASS
	HCH	1	0	24.27	23.09	PASS
		1	12	24.55	23.35	PASS
		1	24	23.98	22.99	PASS
		12	0	23.31	22.27	PASS
		12	6	23.55	22.39	PASS
		12	13	23.55	22.56	PASS
		25	0	23.52	22.70	PASS

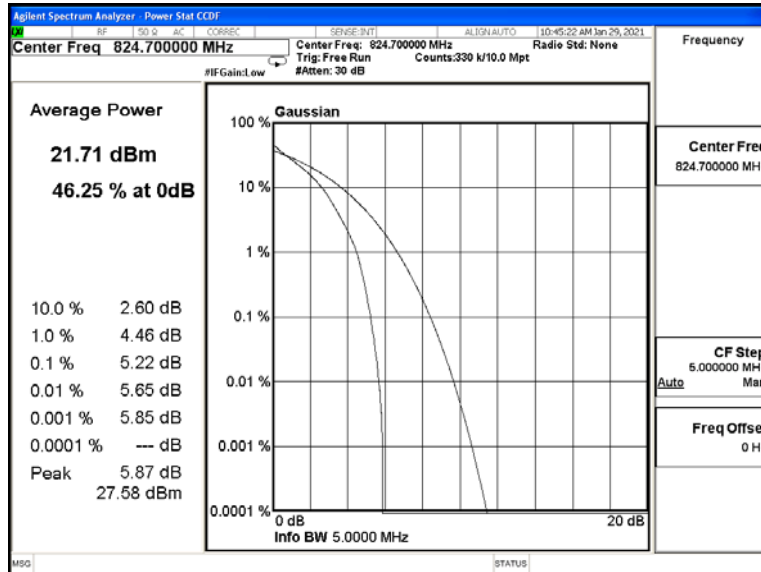
## Conducted Output Power Test Result (Channel Bandwidth: 10 MHz)

Modulation	Channel	RB Configuration		Average Power [dBm]	Average Power [dBm]	Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	23.51	23.95	PASS
		1	24	24.72	24.13	PASS
		1	49	23.85	23.31	PASS
		25	0	23.43	22.36	PASS
		25	12	23.42	22.31	PASS
		25	25	23.32	22.18	PASS
		50	0	23.39	22.36	PASS
	MCH	1	0	23.78	23.19	PASS
		1	24	24.10	23.42	PASS
		1	49	23.56	23.16	PASS
		25	0	22.92	21.85	PASS
		25	12	22.92	21.81	PASS
		25	25	22.87	21.76	PASS
		50	0	22.82	21.81	PASS
	HCH	1	0	23.79	23.31	PASS
		1	24	24.04	24.01	PASS
		1	49	24.01	23.36	PASS
		25	0	23.06	21.92	PASS
		25	12	23.11	22.00	PASS
		25	25	23.46	22.35	PASS
		50	0	23.20	22.18	PASS

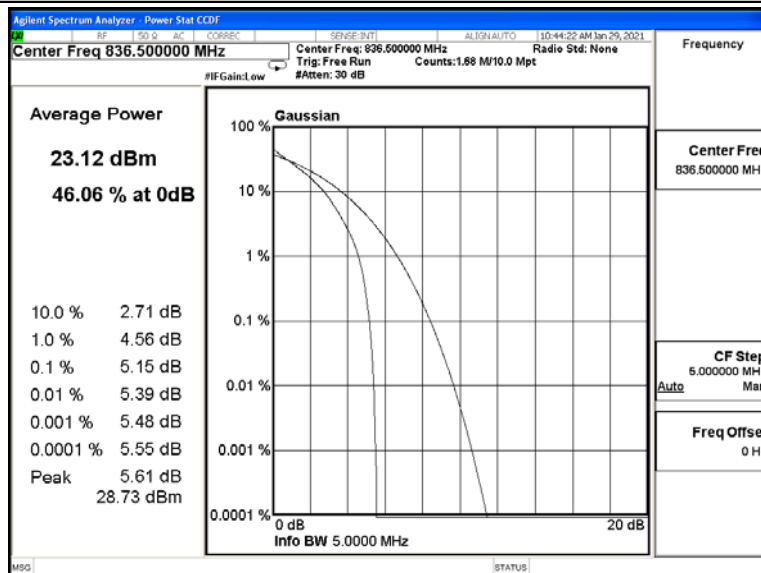
**A.2 Peak-to-Average Ratio**

Peak-to Average Ratio Test Result (Channel Bandwidth: 1.4 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.22	<13	PASS
	MCH	5.15	<13	PASS
	HCH	5.32	<13	PASS
16QAM	LCH	5.97	<13	PASS
	MCH	5.15	<13	PASS
	HCH	5.15	<13	PASS
Peak-to Average Ratio Test Result (Channel Bandwidth: 3 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.94	<13	PASS
	MCH	5.15	<13	PASS
	HCH	5.97	<13	PASS
16QAM	LCH	5.19	<13	PASS
	MCH	5.15	<13	PASS
	HCH	5.15	<13	PASS
Peak-to Average Ratio Test Result (Channel Bandwidth: 5 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.95	<13	PASS
	MCH	5.14	<13	PASS
	HCH	5.17	<13	PASS
16QAM	LCH	5.15	<13	PASS
	MCH	5.94	<13	PASS
	HCH	6.00	<13	PASS
Peak-to Average Ratio Test Result (Channel Bandwidth: 10 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.13	<13	PASS
	MCH	5.93	<13	PASS
	HCH	5.93	<13	PASS
16QAM	LCH	5.21	<13	PASS
	MCH	5.18	<13	PASS
	HCH	5.12	<13	PASS

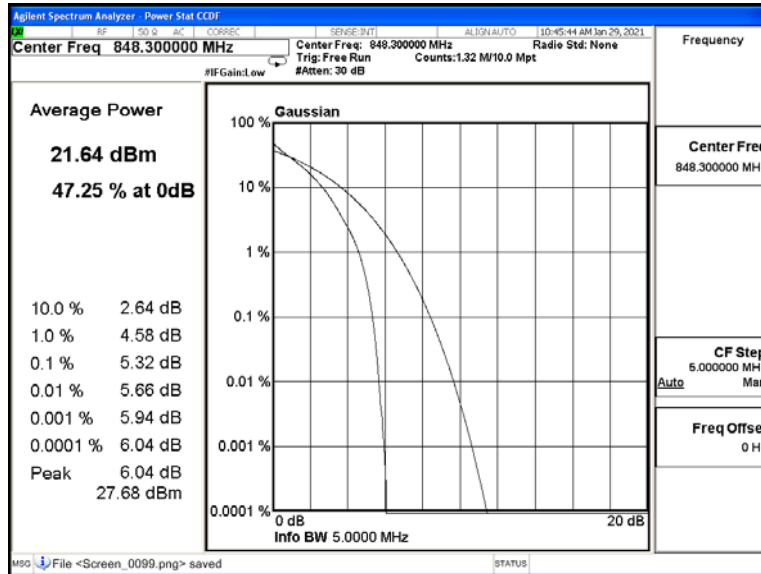
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_LCH\_QPSK



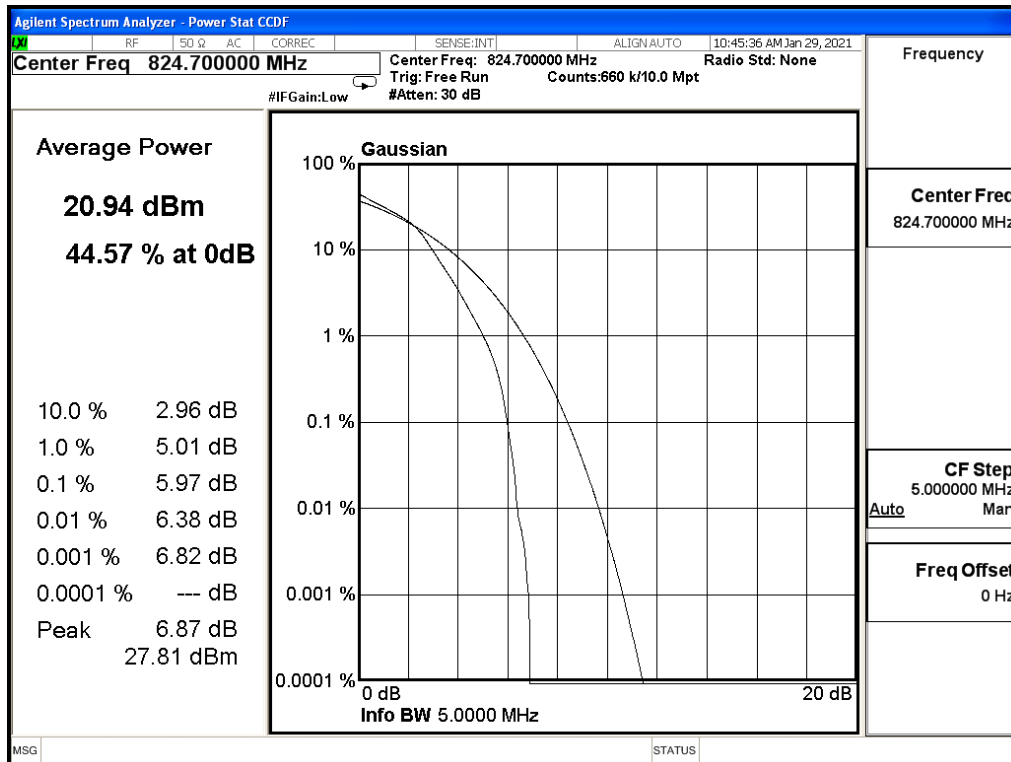
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_MCH\_QPSK



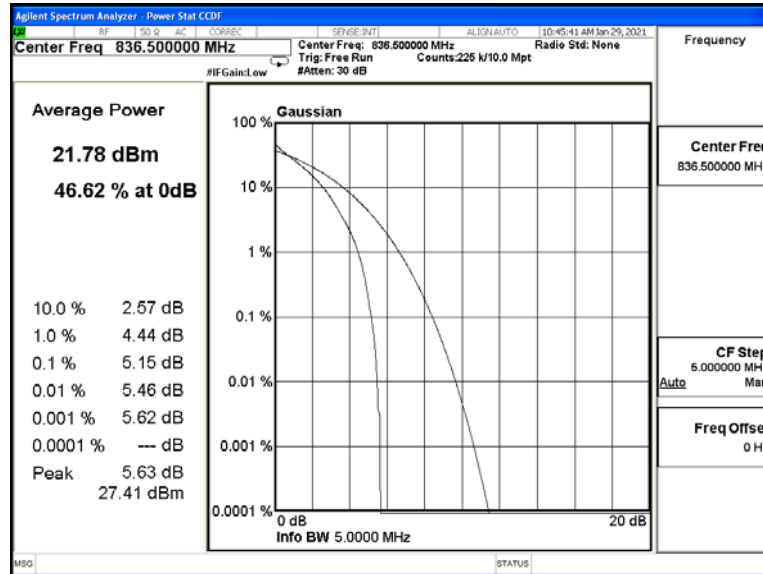
## Peak-to-Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_HCH\_QPSK



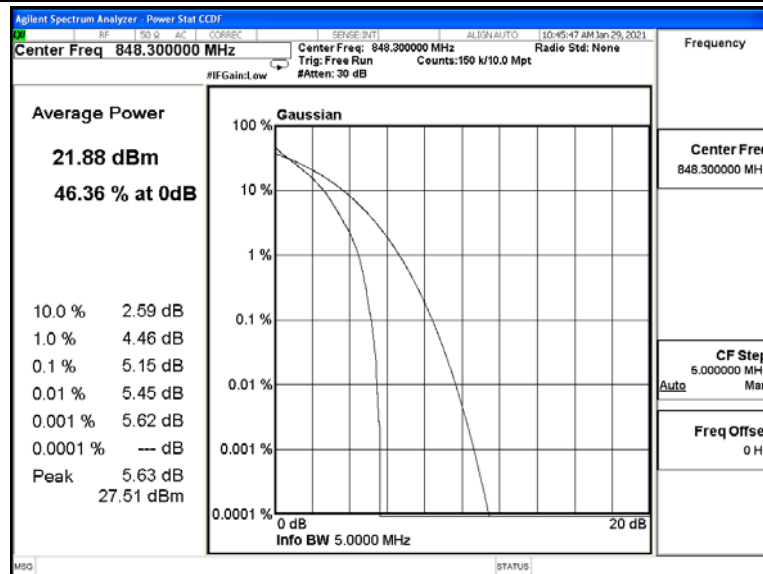
## Peak-to-Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_LCH\_16QAM



## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_MCH\_16QAM

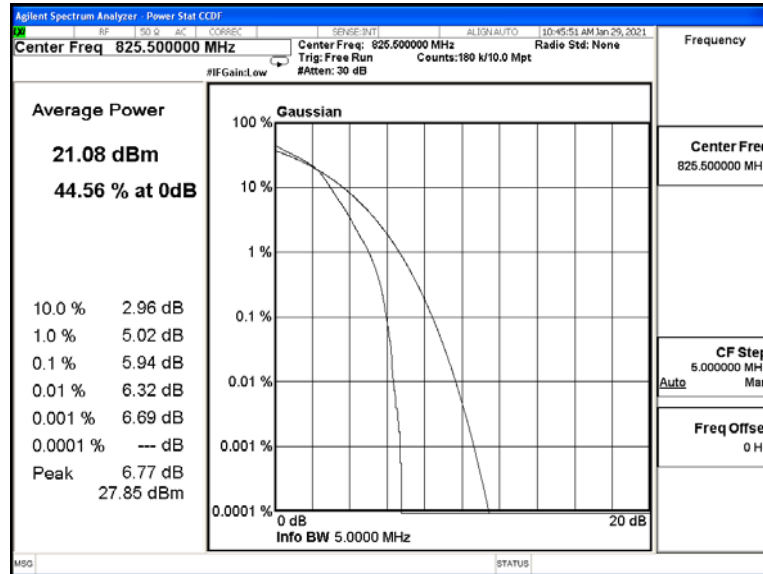


## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_HCH\_16QAM

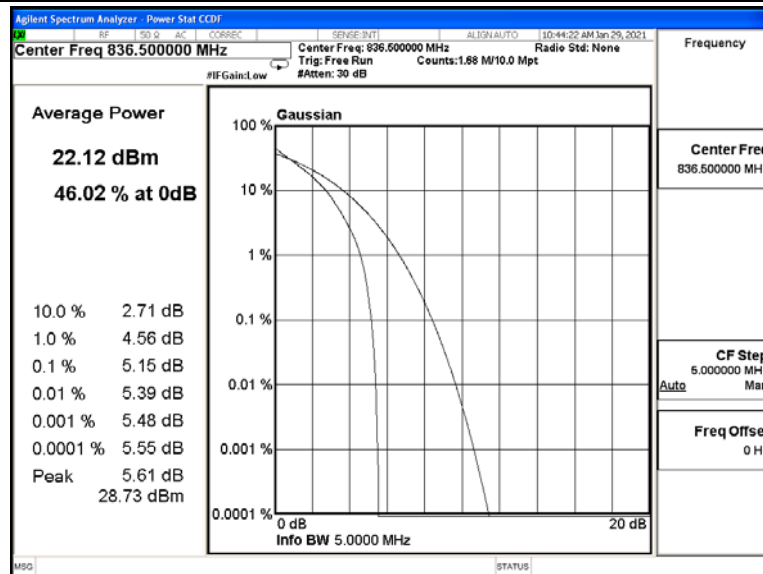




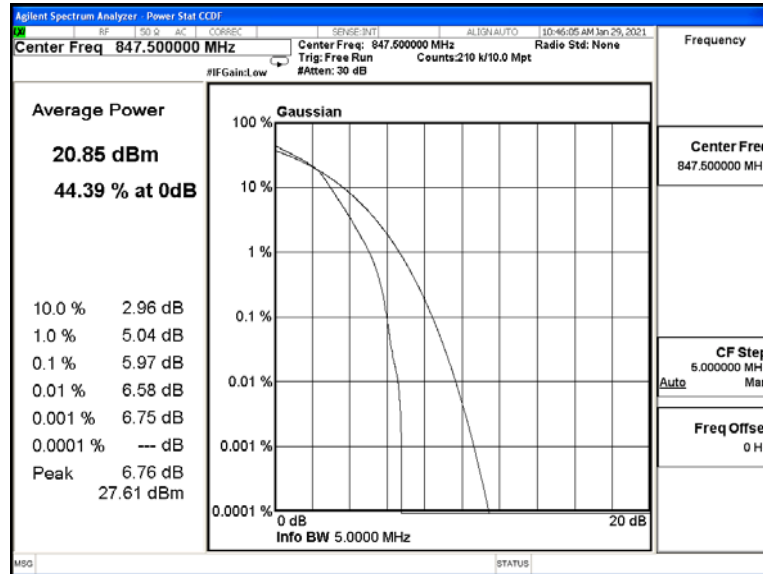
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)\_LCH\_QPSK



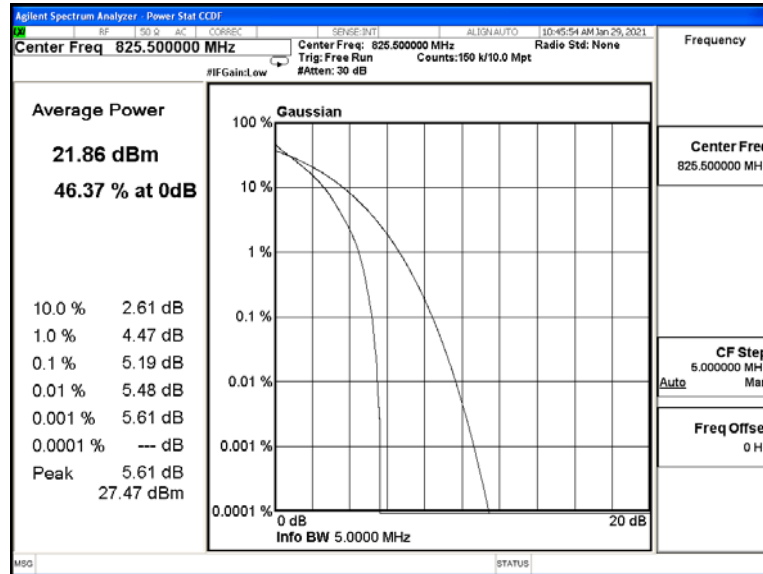
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)\_MCH\_QPSK



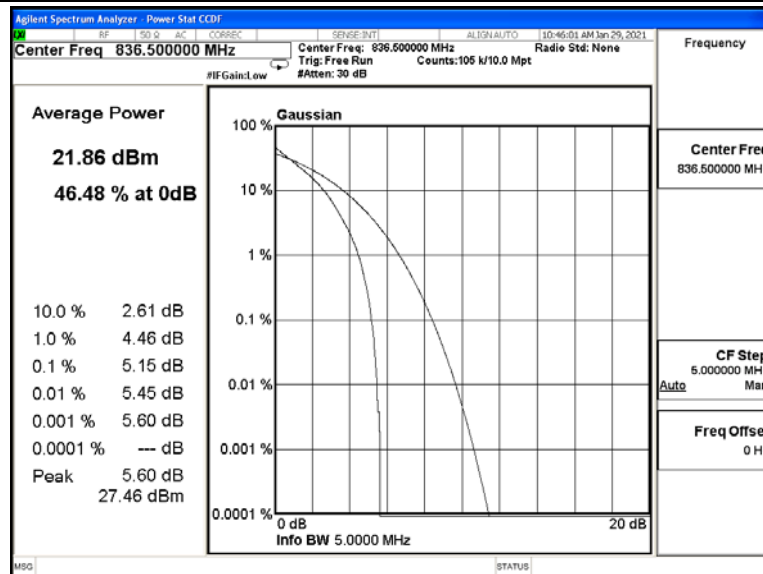
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)\_HCH\_QPSK



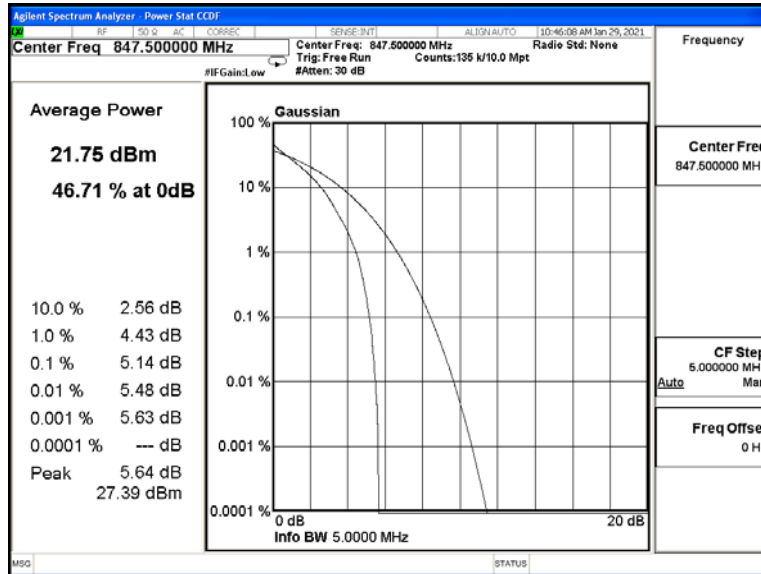
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)\_LCH\_16QAM



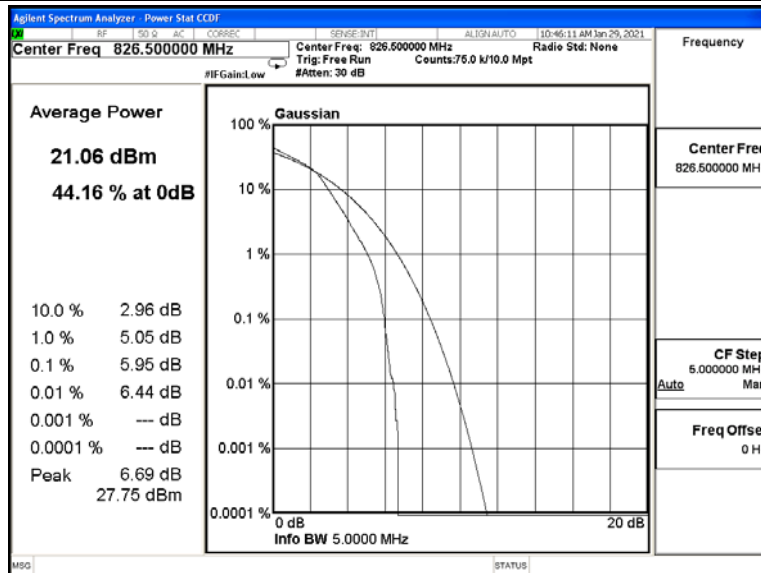
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)\_MCH\_16QAM



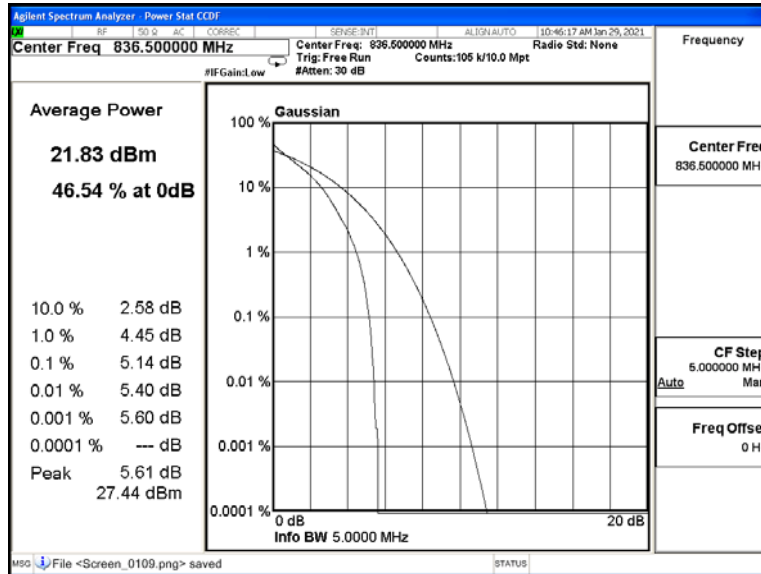
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)\_HCH\_16QAM



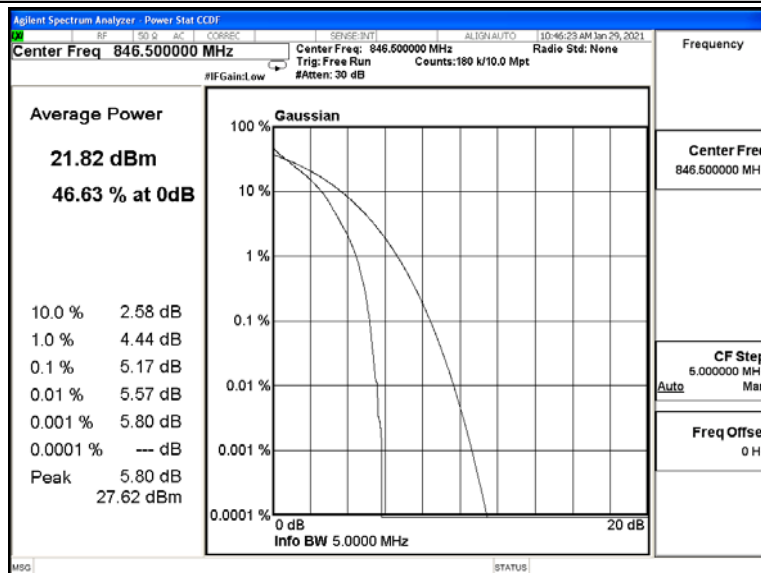
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)\_LCH\_QPSK



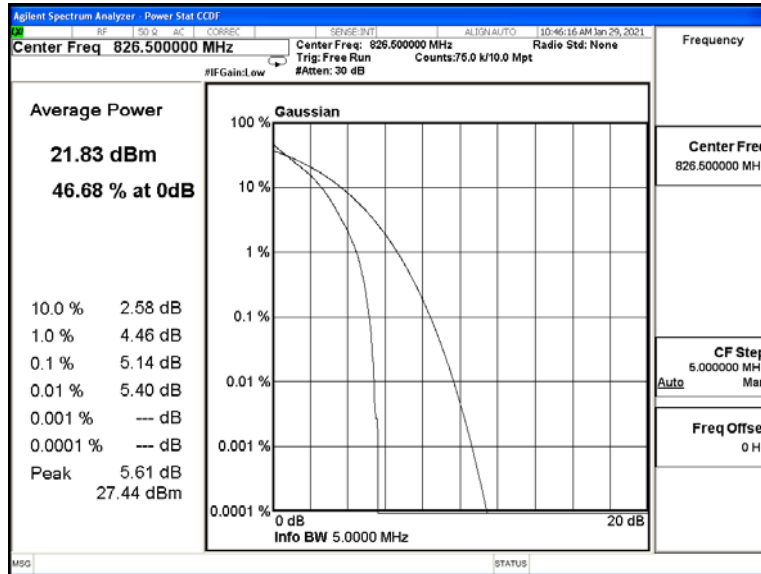
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)\_MCH\_QPSK



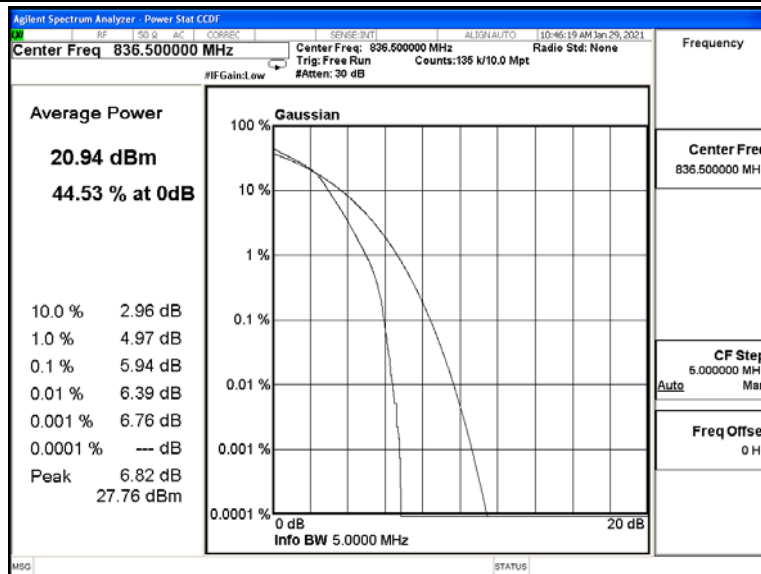
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)\_HCH\_QPSK



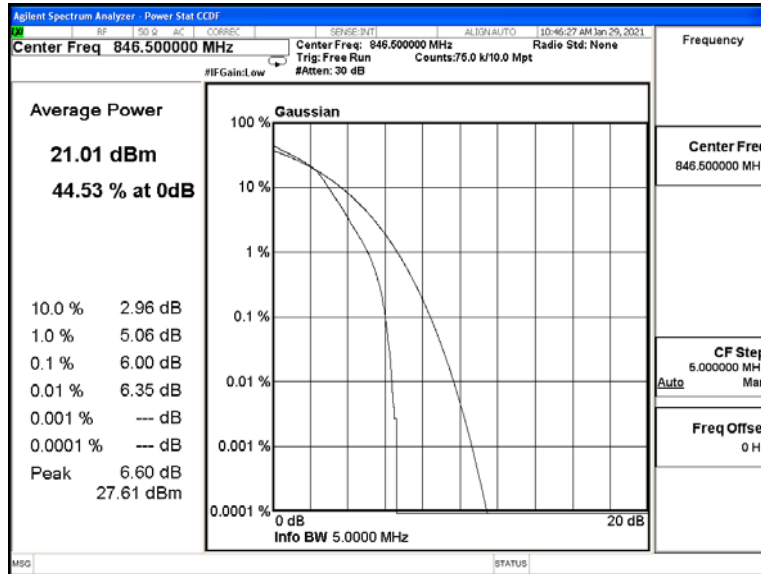
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)\_LCH\_16QAM



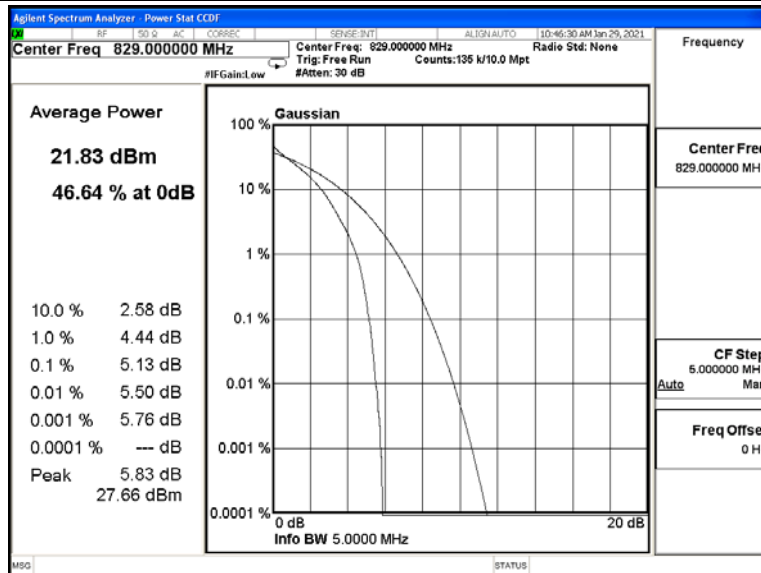
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)\_MCH\_16QAM



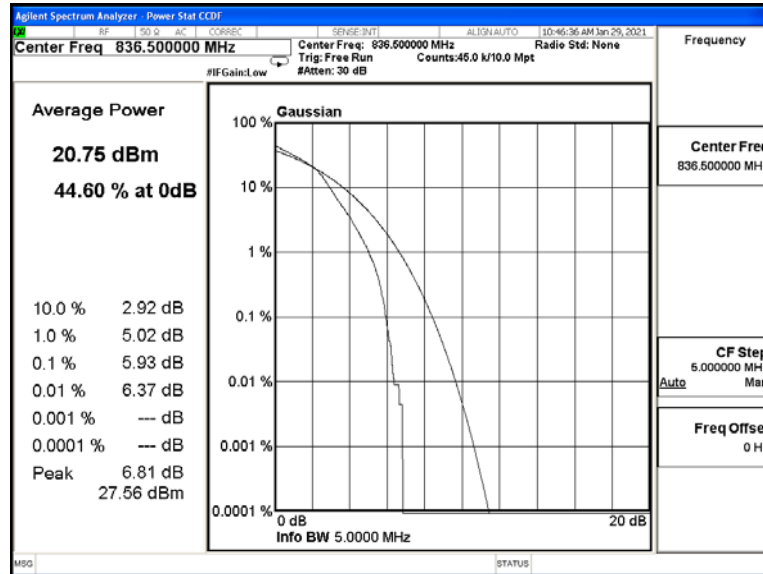
## Peak-to-Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)\_HCH\_16QAM



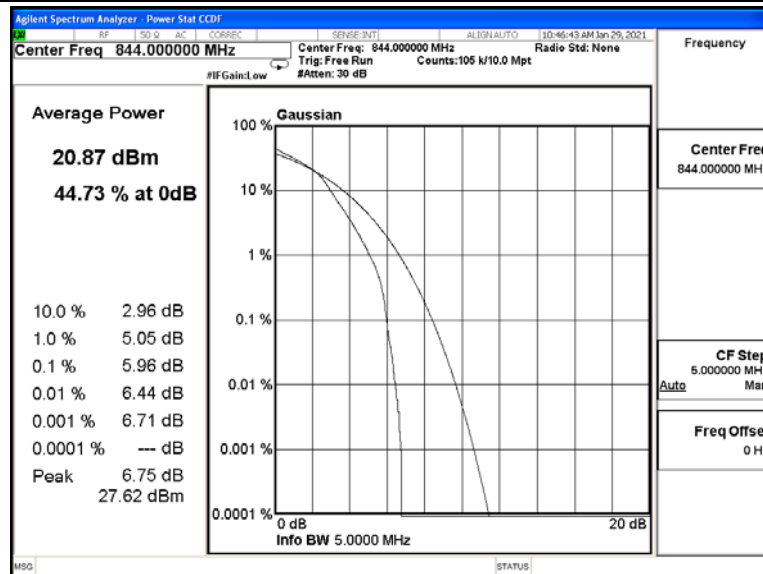
## Peak-to-Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)\_LCH\_QPSK



## Peak-to-Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)\_MCH\_QPSK

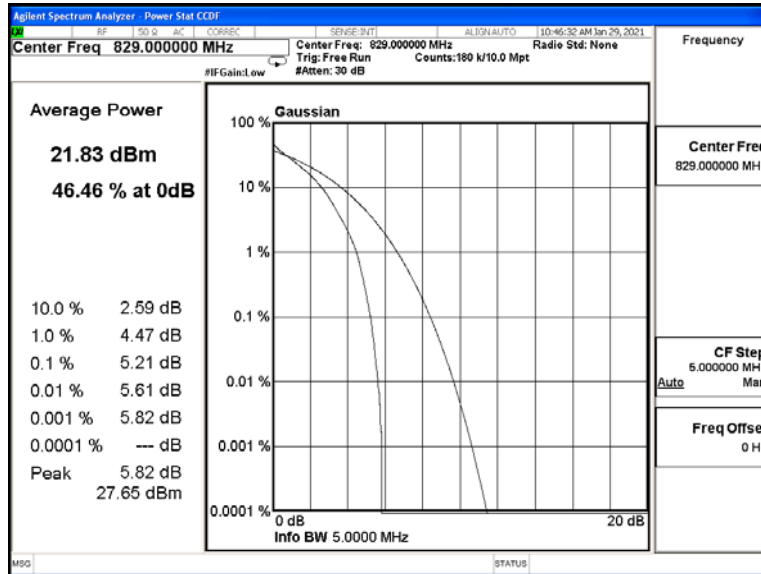


## Peak-to-Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)\_HCH\_QPSK

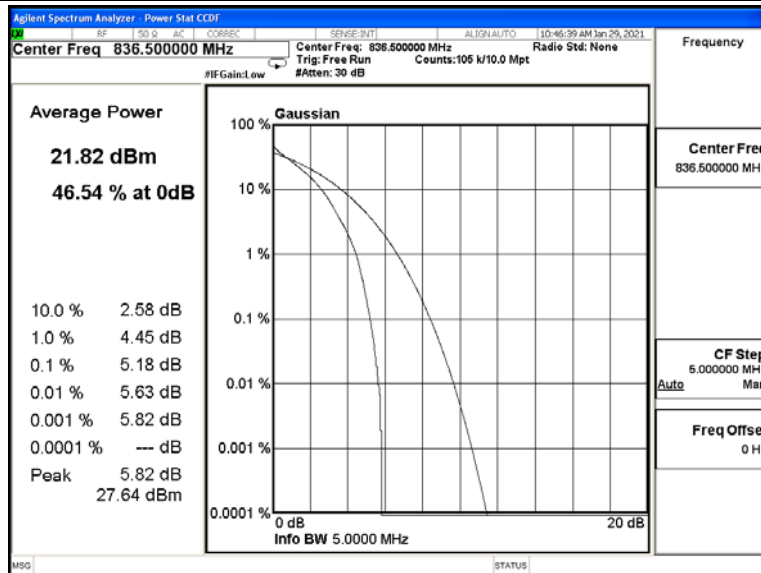




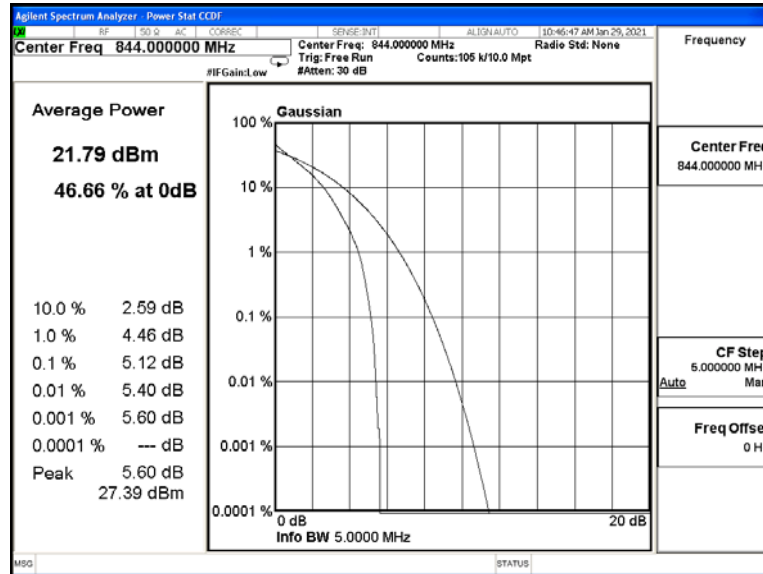
## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)\_LCH\_16QAM



## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)\_MCH\_16QAM



## Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)\_HCH\_16QAM



**A.3 26dB Bandwidth and Occupied Bandwidth**

EBW & OBW Test Result (Channel Bandwidth: 1.4 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	1.0797	1.240	PASS
	MCH	1.0774	1.179	PASS
	HCH	1.0742	1.234	PASS
16QAM	LCH	1.0778	1.247	PASS
	MCH	1.0788	1.223	PASS
	HCH	1.0785	1.247	PASS

EBW & OBW Test Result (Channel Bandwidth: 3 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	2.6857	2.884	PASS
	MCH	2.6832	2.893	PASS
	HCH	2.6876	2.902	PASS
16QAM	LCH	2.6820	2.883	PASS
	MCH	2.6853	2.896	PASS
	HCH	2.6793	2.883	PASS

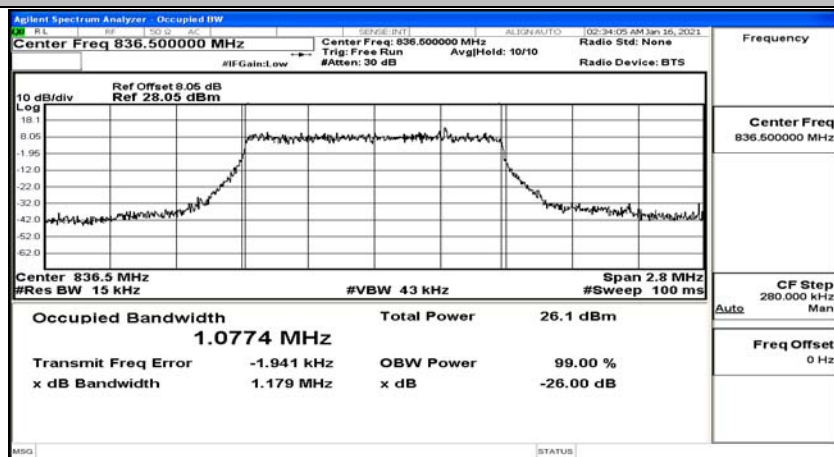
EBW & OBW Test Result (Channel Bandwidth: 5 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	4.4691	4.858	PASS
	MCH	4.4708	4.820	PASS
	HCH	4.4665	4.776	PASS
16QAM	LCH	4.4790	4.806	PASS
	MCH	4.4795	4.791	PASS
	HCH	4.4677	4.772	PASS

EBW & OBW Test Result (Channel Bandwidth: 10 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	8.9215	9.474	PASS
	MCH	8.9243	9.480	PASS
	HCH	8.9191	9.450	PASS
16QAM	LCH	8.9312	9.427	PASS
	MCH	8.9317	9.491	PASS
	HCH	8.9233	9.451	PASS

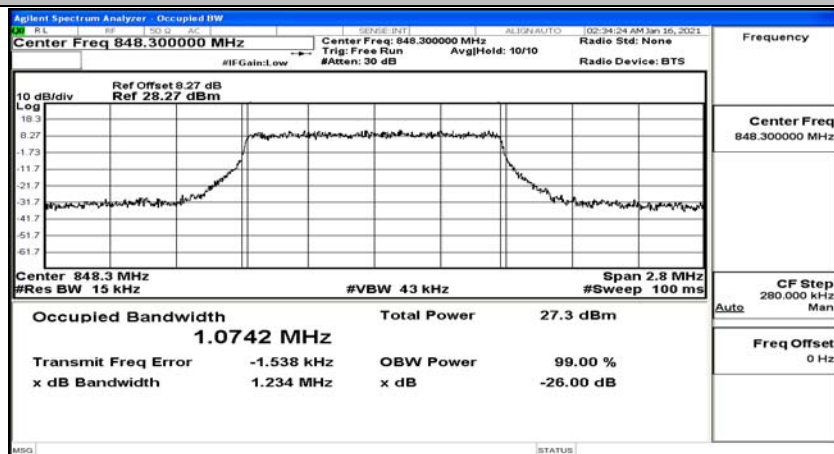
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_LCH\_QPSK



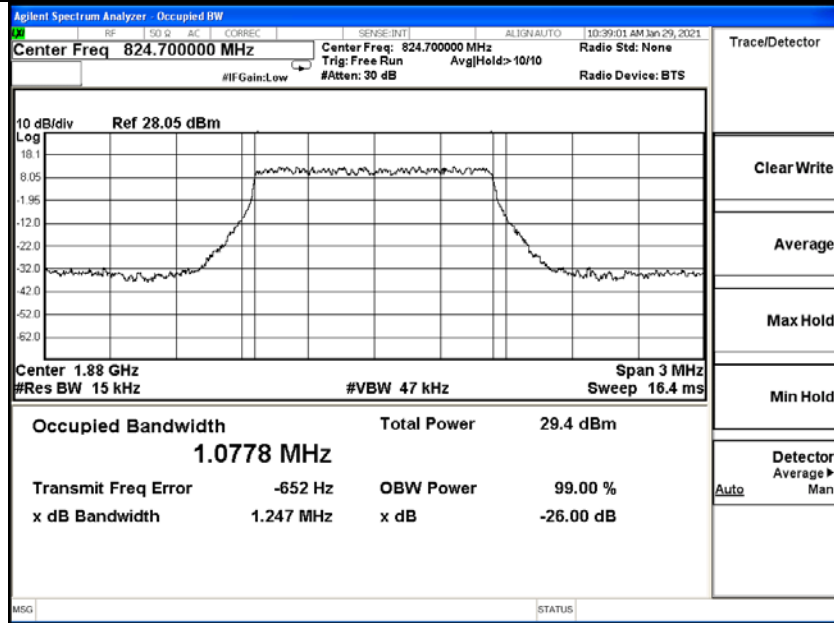
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_MCH\_QPSK



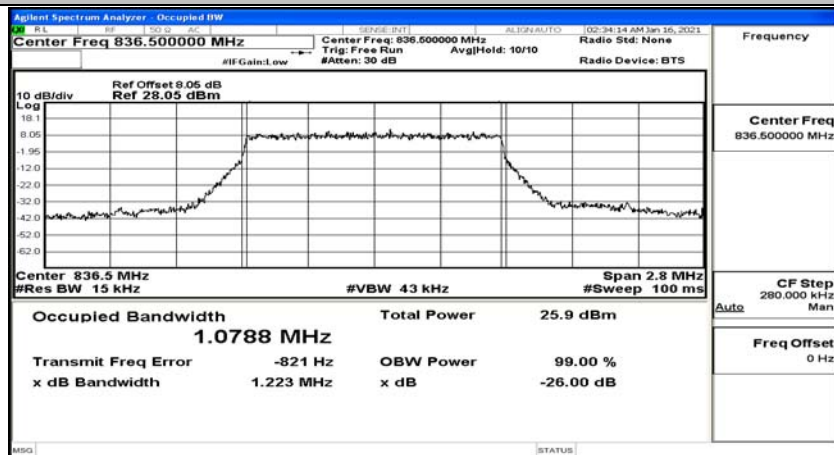
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_HCH\_QPSK



## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_LCH\_16QAM



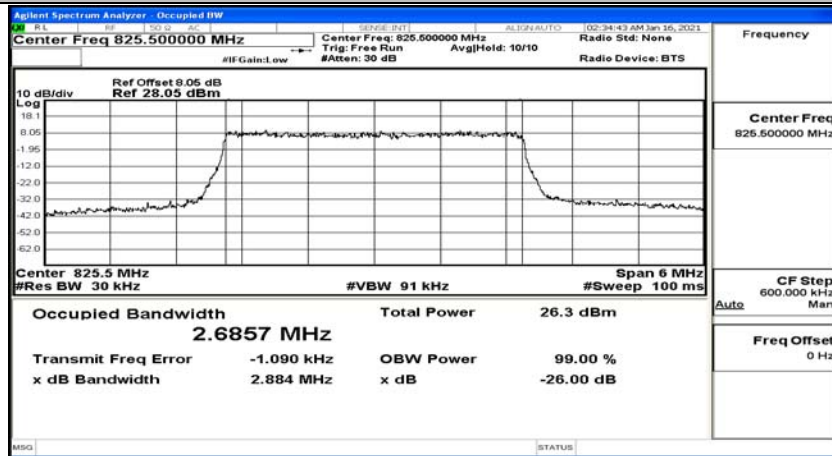
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_MCH\_16QAM



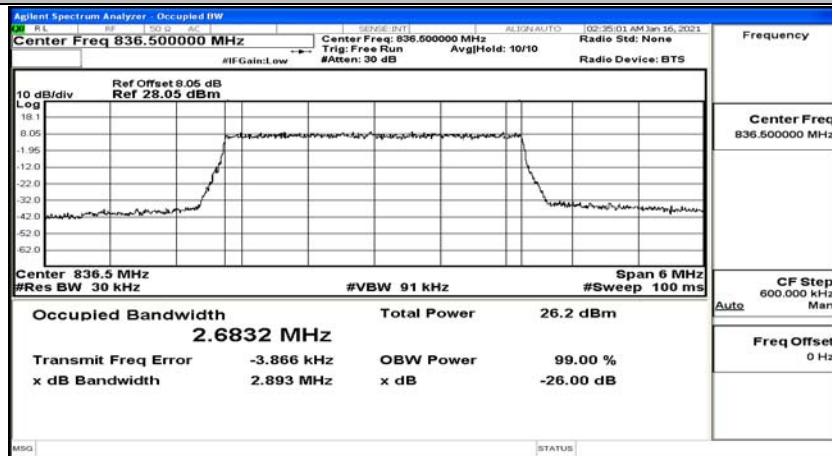
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_HCH\_16QAM



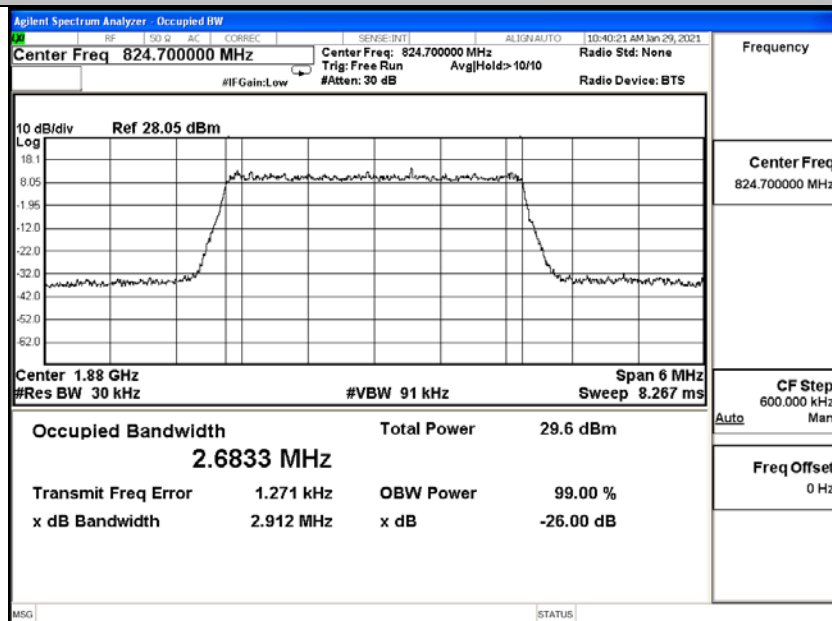
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 3 MHz)\_LCH\_QPSK



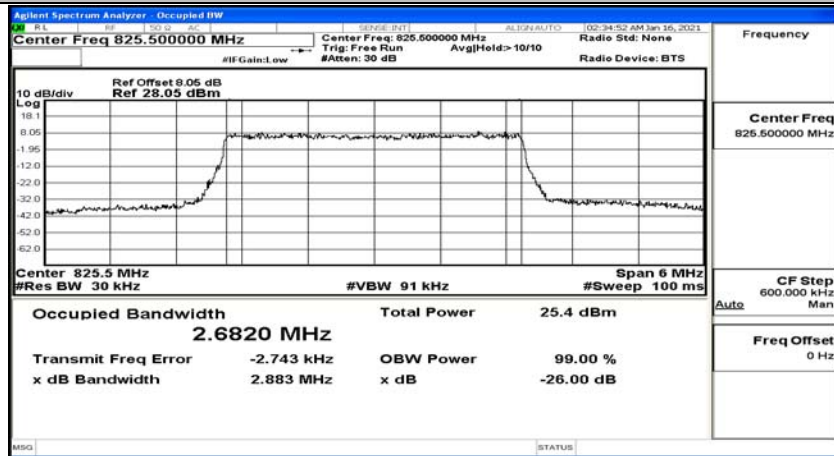
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 3 MHz)\_MCH\_QPSK



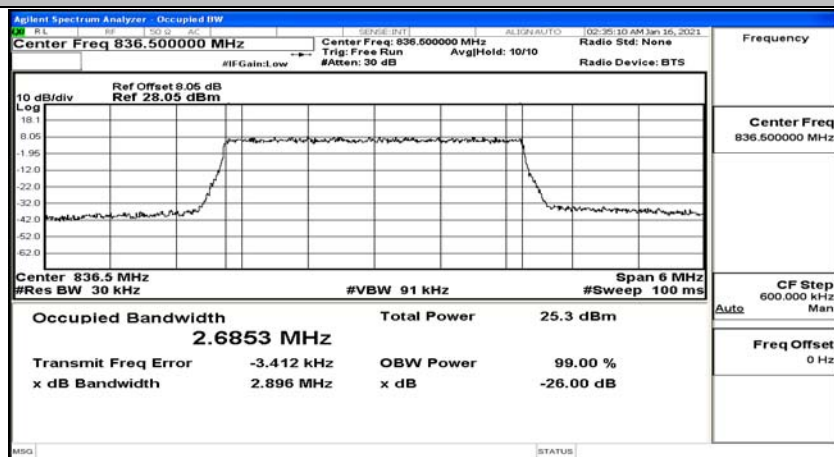
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 3 MHz)\_HCH\_QPSK



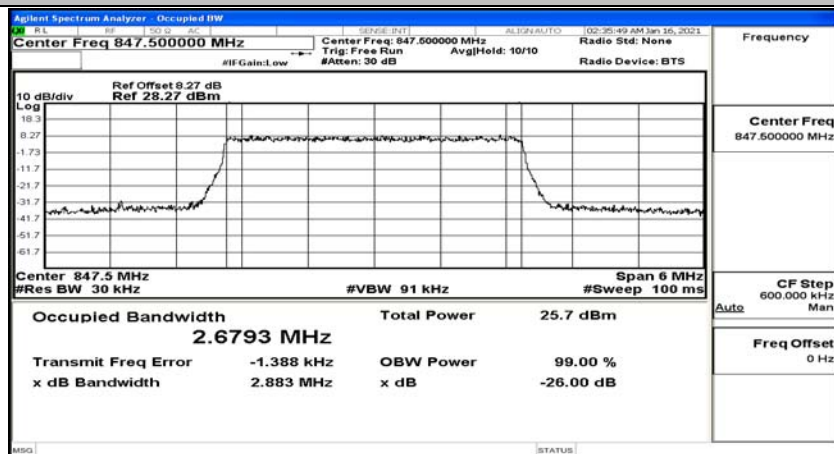
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 3 MHz)\_LCH\_16QAM



## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 3 MHz)\_MCH\_16QAM

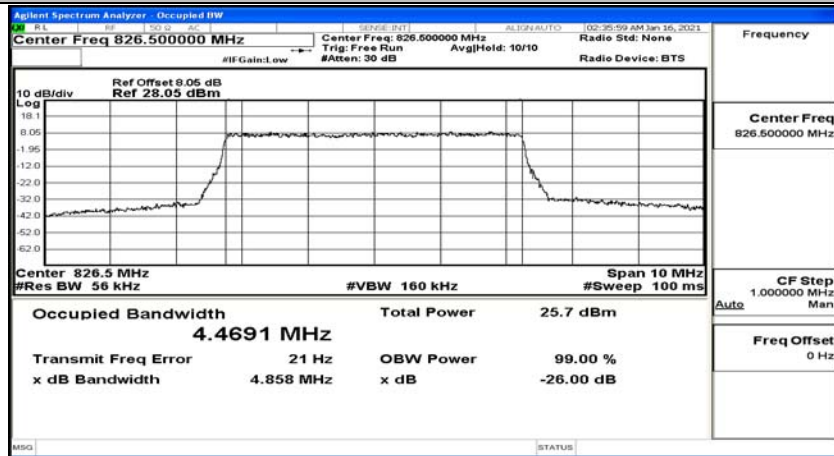


## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 3 MHz)\_HCH\_16QAM

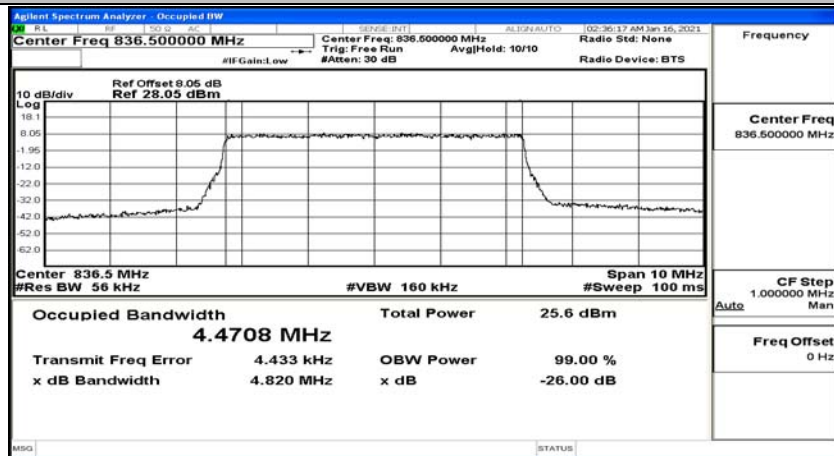




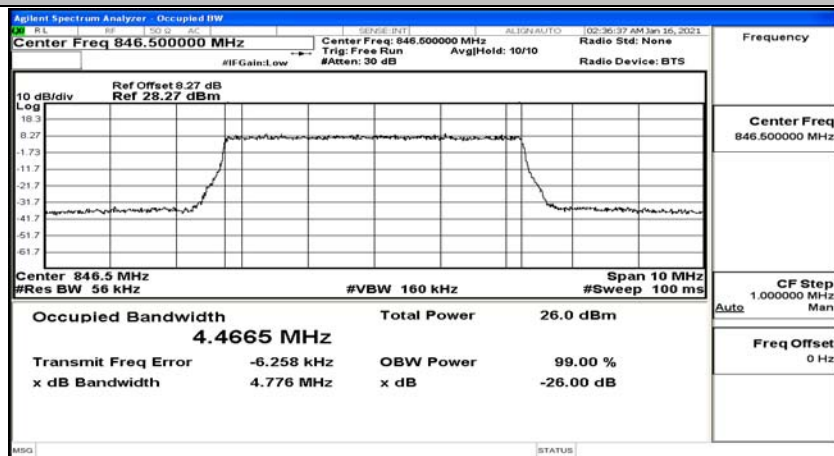
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 5 MHz)\_LCH\_QPSK



## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 5 MHz)\_MCH\_QPSK

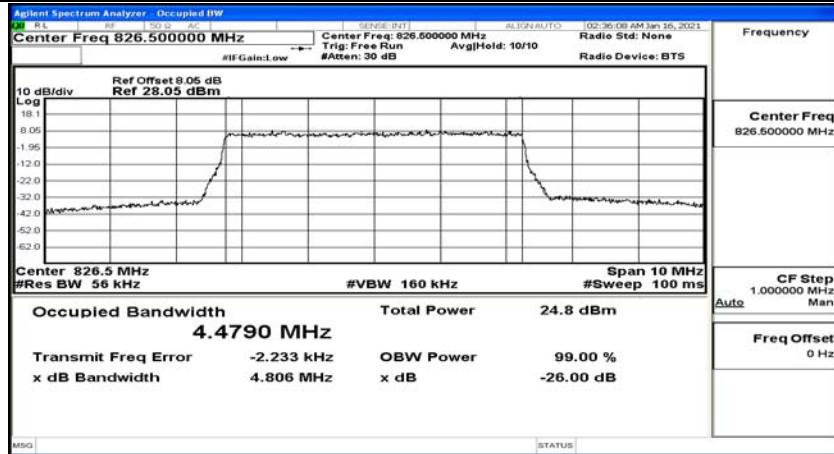


## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 5 MHz)\_HCH\_QPSK

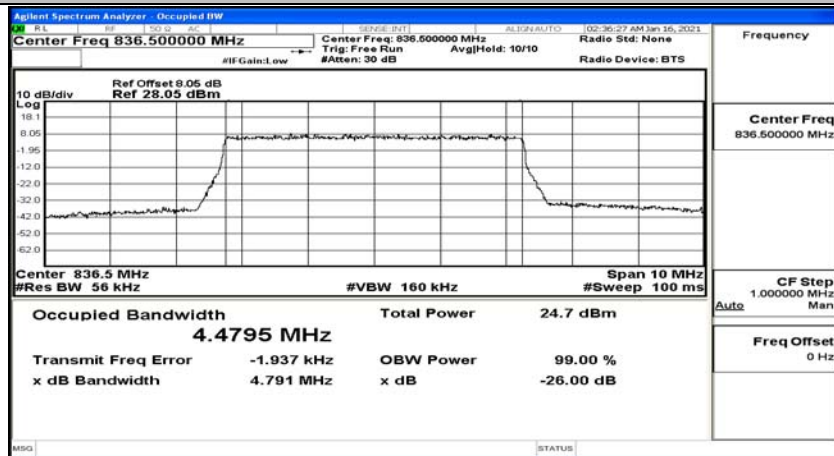




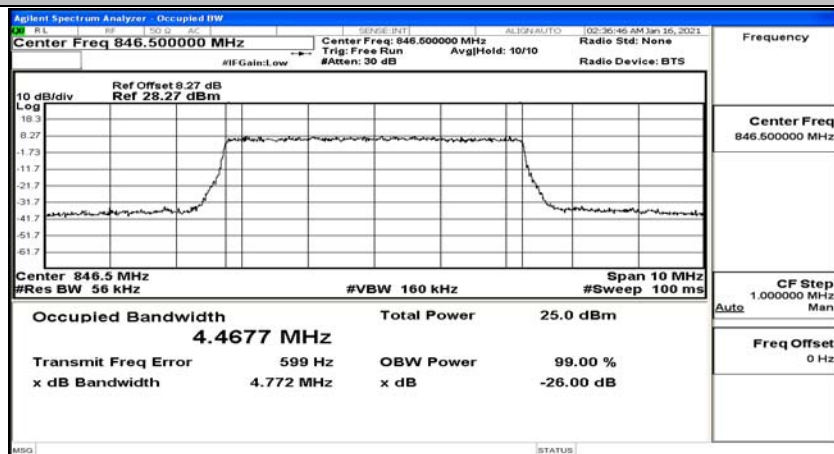
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 5 MHz)\_LCH\_16QAM



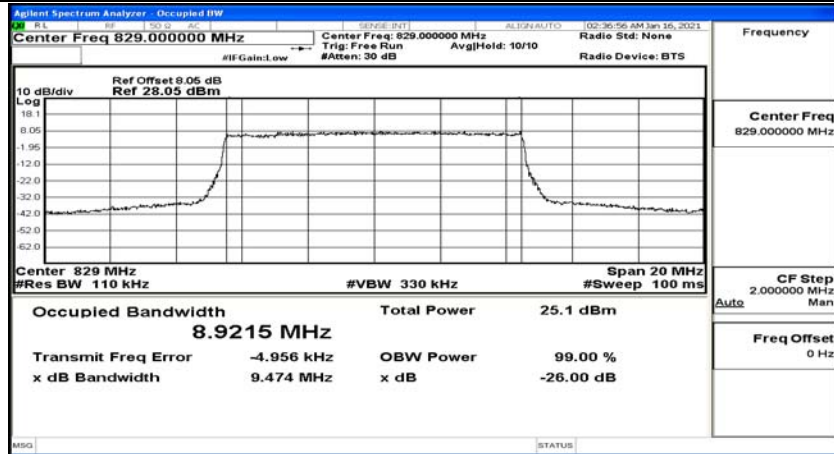
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 5 MHz)\_MCH\_16QAM



## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 5 MHz)\_HCH\_16QAM



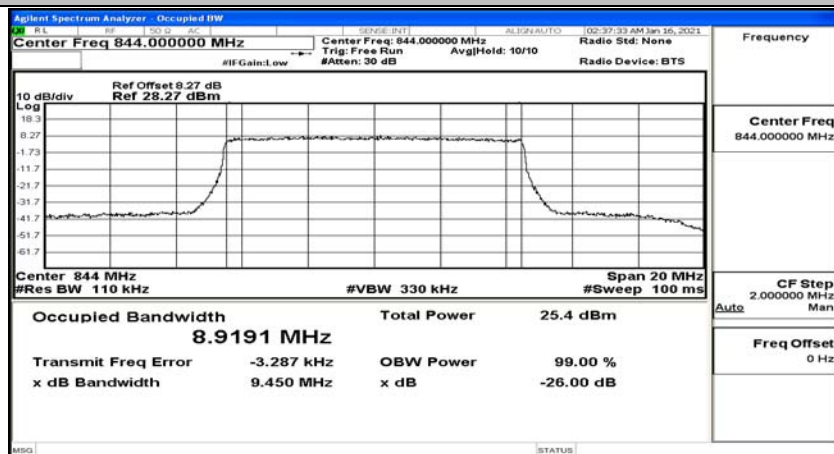
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 10 MHz)\_LCH\_QPSK



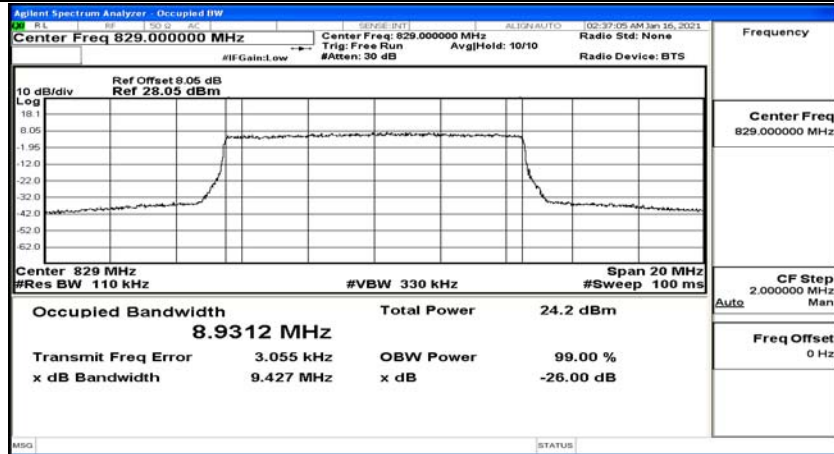
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 10 MHz)\_MCH\_QPSK



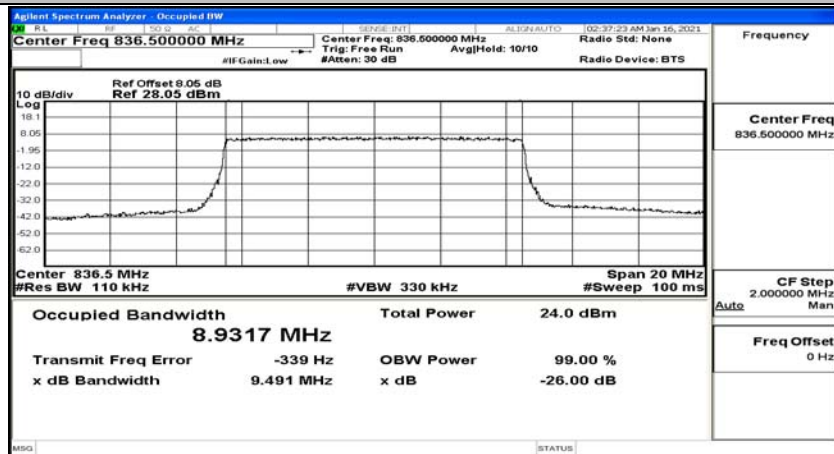
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 10 MHz)\_HCH\_QPSK



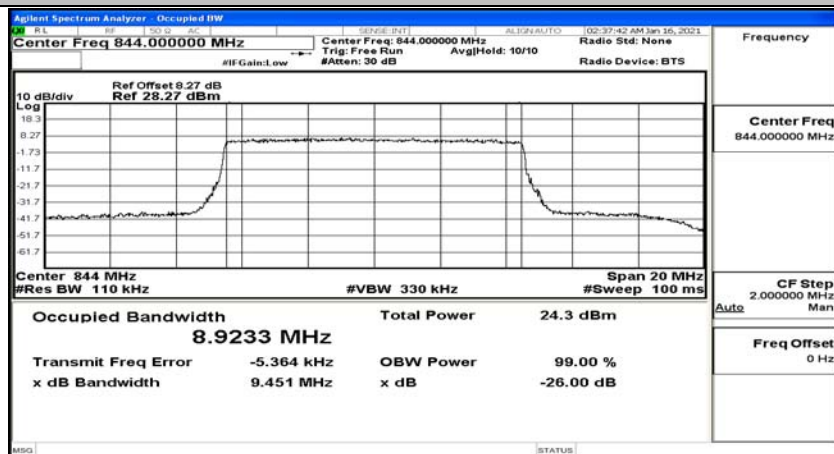
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 10 MHz)\_LCH\_16QAM



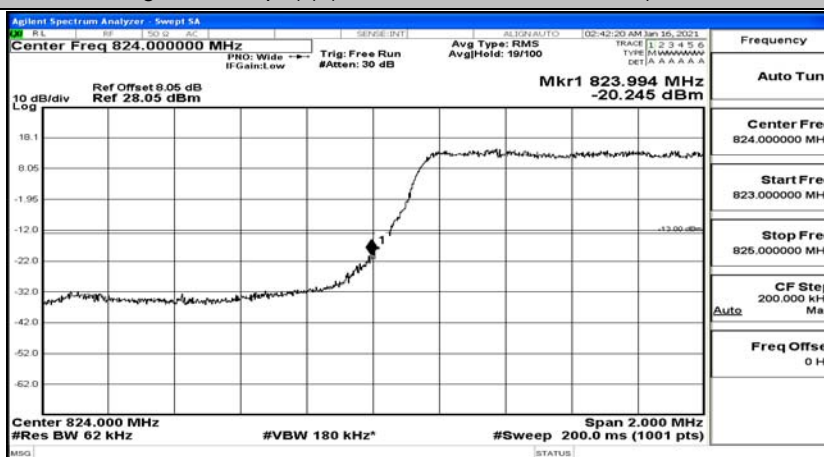
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 10 MHz)\_MCH\_16QAM



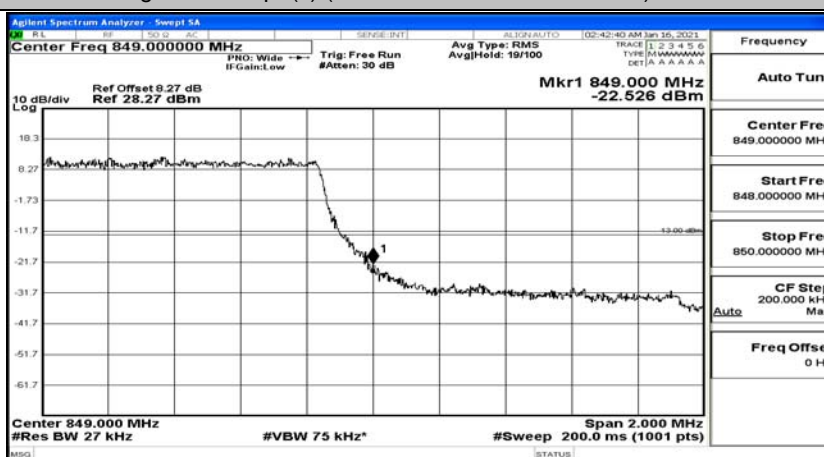
## EBW &amp; OBW Test Graph(s) (Channel Bandwidth: 10 MHz)\_HCH\_16QAM



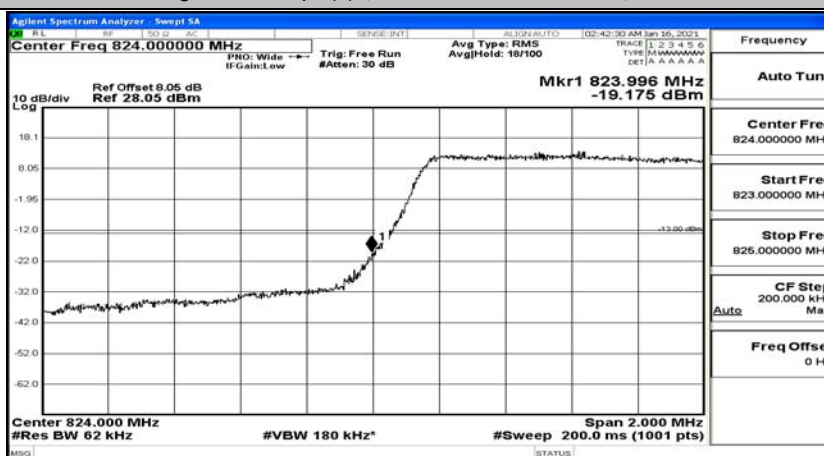
Band Edge Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_LCH\_QPSK



Band Edge Test Graph(s) (Channel Bandwidth: 1.4 MHz) HCH\_QPSK



Band Edge Test Graph(s) (Channel Bandwidth: 1.4 MHz)\_LCH\_16QAM



Agilent Spectrum Analyzer - Swept SA

Center Freq 849.000000 MHz

PRO: Wide IF Gain: Low

Trig: Free Run #Atten: 30 dB

Avg Type: RMS Avg/Hold: 19/100

02:42:49 AM Jan 26, 2021

TRACE 1 2 3 4 5 6  
TYPE IN WWWWWWWW  
DET IN A A A A A A

Frequency

Auto Tun

Mkr1 849.002 MHz  
-22.386 dBm

10 dB/div  
Log

Ref Offset 8.27 dB  
Ref 28.27 dBm

13.00 dBm

Center Freq 849.000000 MHz

Start Freq 848.000000 MHz

Stop Freq 850.000000 MHz

CF Step 200.000 kHz

Auto

Freq Offset 0 Hz

Center 849.000 MHz

#Res BW 27 kHz

#VBW 75 kHz\*

Span 2.000 MHz

#Sweep 200.0 ms (1001 pts)

MSO [STATUS]

Agilent Spectrum Analyzer - Swept SA

Center Freq 824.000000 MHz

Ref Offset 8.05 dB

Ref 28.05 dBm

10 dB/div

Log

Center Freq 823.998 MHz

-20.302 dBm

Span 2.000 MHz

#Res BW 62 kHz

#VBW 180 kHz\*

#Sweep 200.0 ms (1001 pts)

Auto Tun

Center Freq 824.000000 MHz

Start Freq 823.000000 MHz

Stop Freq 825.000000 MHz

CF Step 200.000 kHz

Auto

Freq Offset 0 Hz

Agilent Spectrum Analyzer - Swept SA

Center Freq 849.000000 MHz

PRO: Wide IF Gain: Low

Trig: Free Run #Atten: 30 dB

Avg Type: RMS Avg/Hold: 18/100

Trace 1 2 3 4 5 6

Type: MAAAAA

Det: RAAAAA

Frequency

Auto Tun

Mkr1 849.000 MHz -20.147 dBm

10 dB/div

Ref Offset 9.27 dB

Ref 28.27 dBm

Log

18.3

8.27

-1.73

-11.7

-21.7

-31.7

-41.7

-51.7

-61.7

Center 849.000 MHz

#Res BW 62 kHz

#VBW 180 kHz\*

Span 2.000 MHz

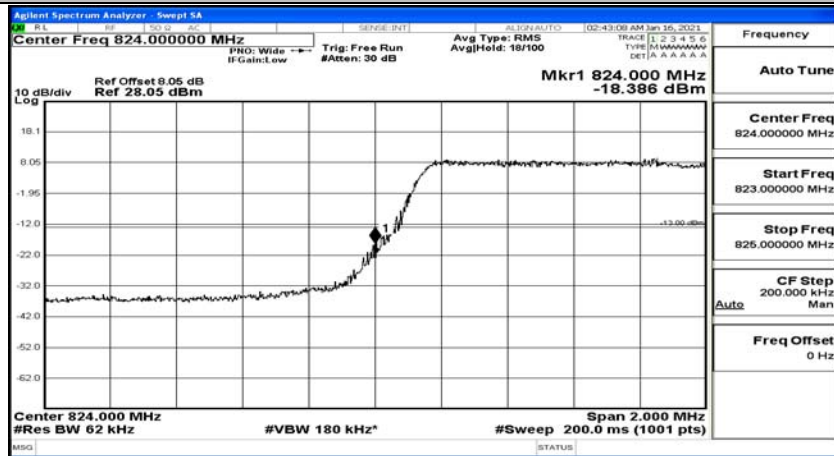
#Sweep 200.0 ms (1001 pts)

Auto

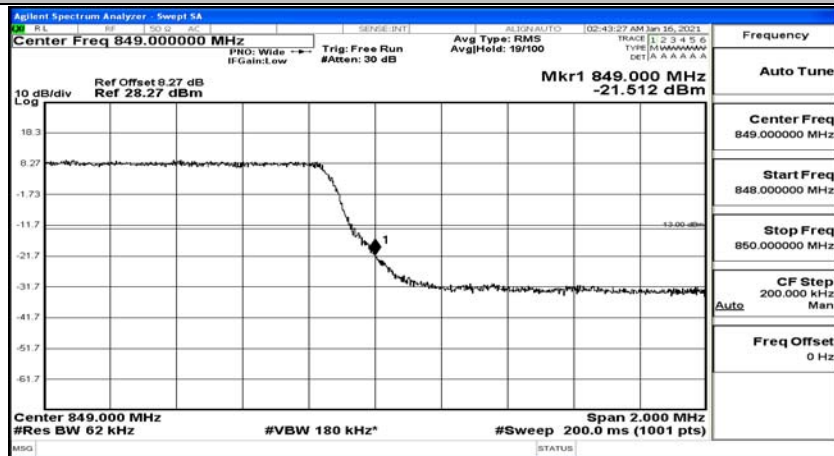
Freq Offset 0 Hz



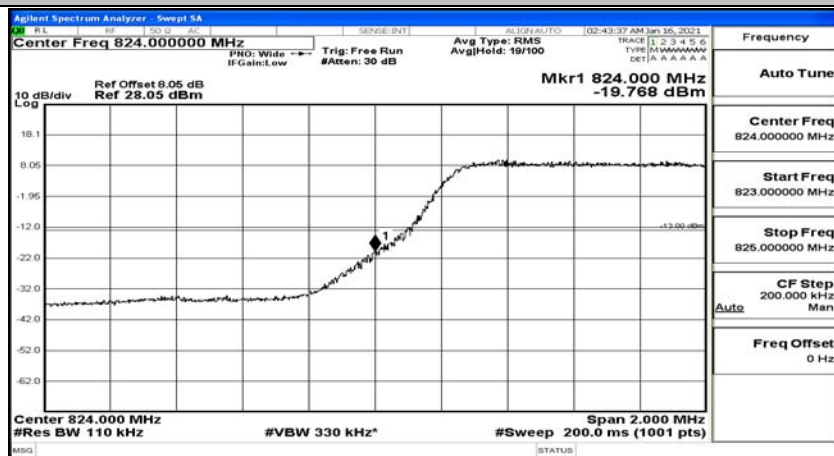
## Band Edge Test Graph(s) (Channel Bandwidth: 3 MHz)\_LCH\_16QAM



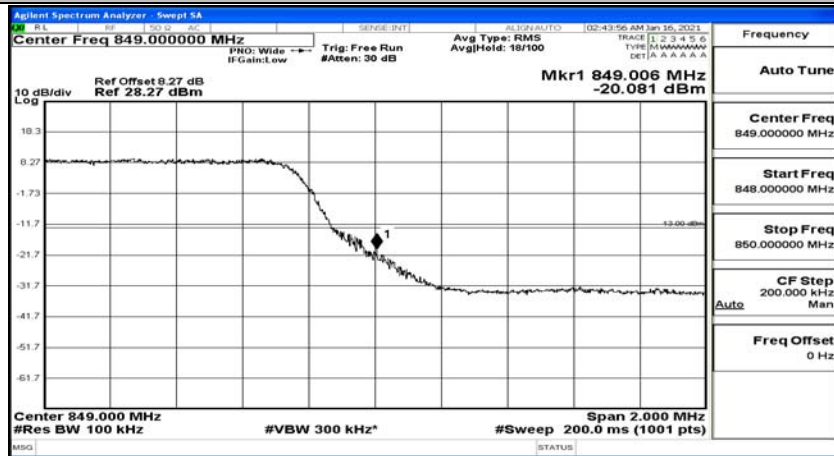
## Band Edge Test Graph(s) (Channel Bandwidth: 3 MHz)\_HCH\_16QAM



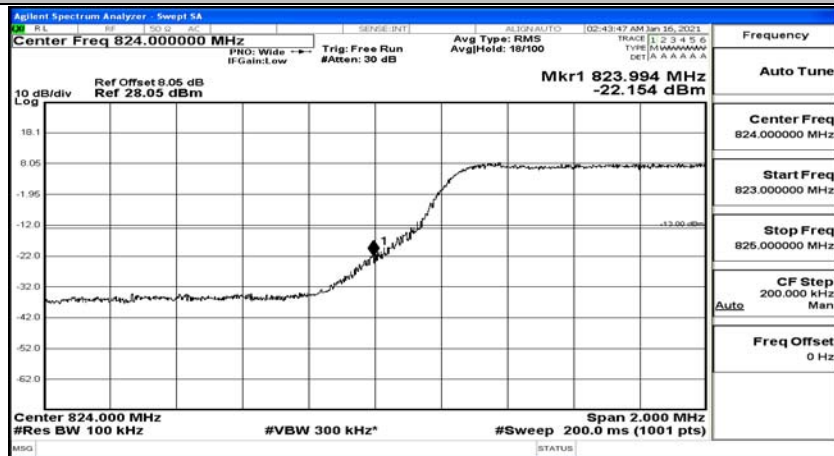
## Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)\_LCH\_QPSK



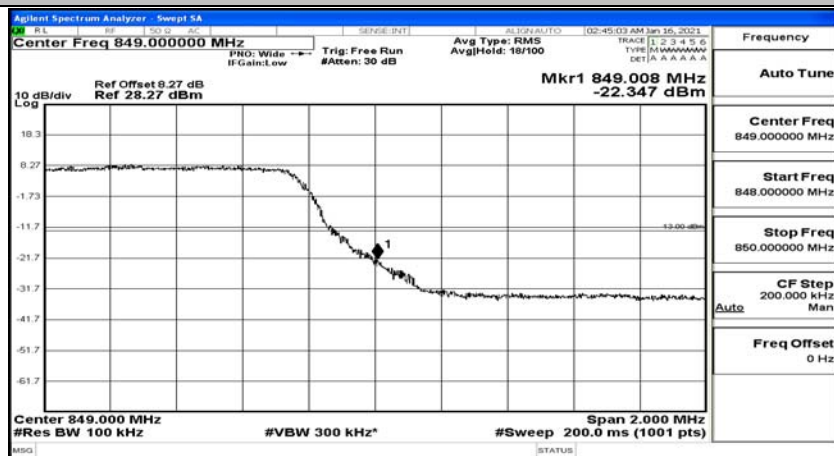
## Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)\_HCH\_QPSK



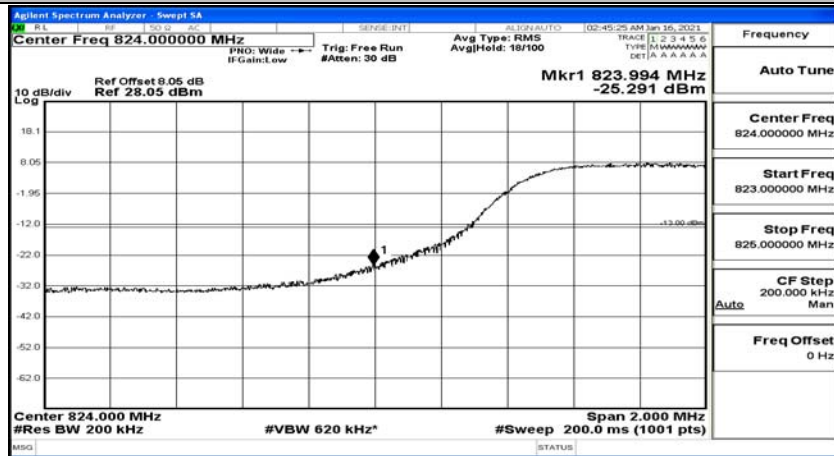
## Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)\_LCH\_16QAM



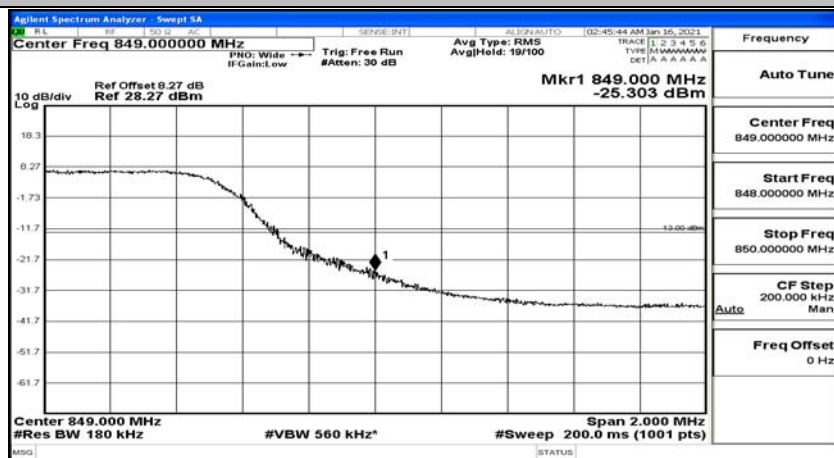
## Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)\_HCH\_16QAM



## Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)\_LCH\_QPSK

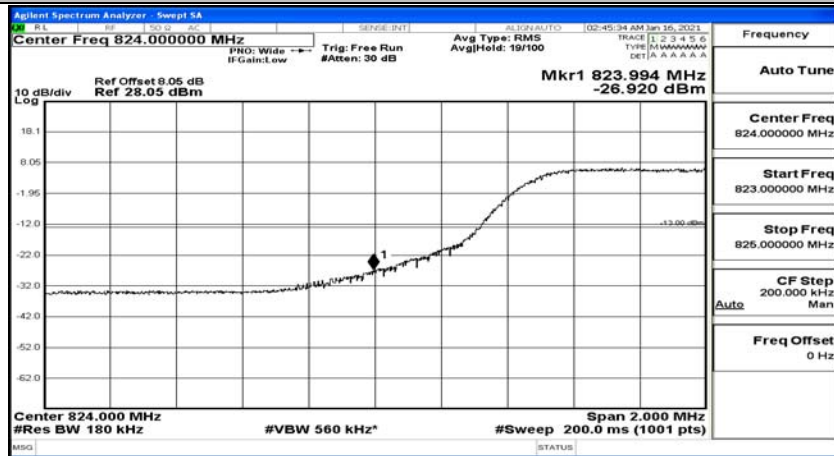


## Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)\_HCH\_QPSK

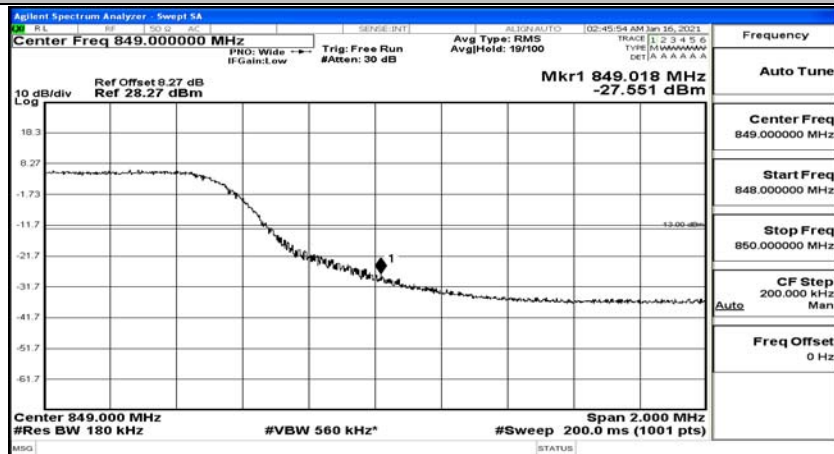




## Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)\_LCH\_16QAM



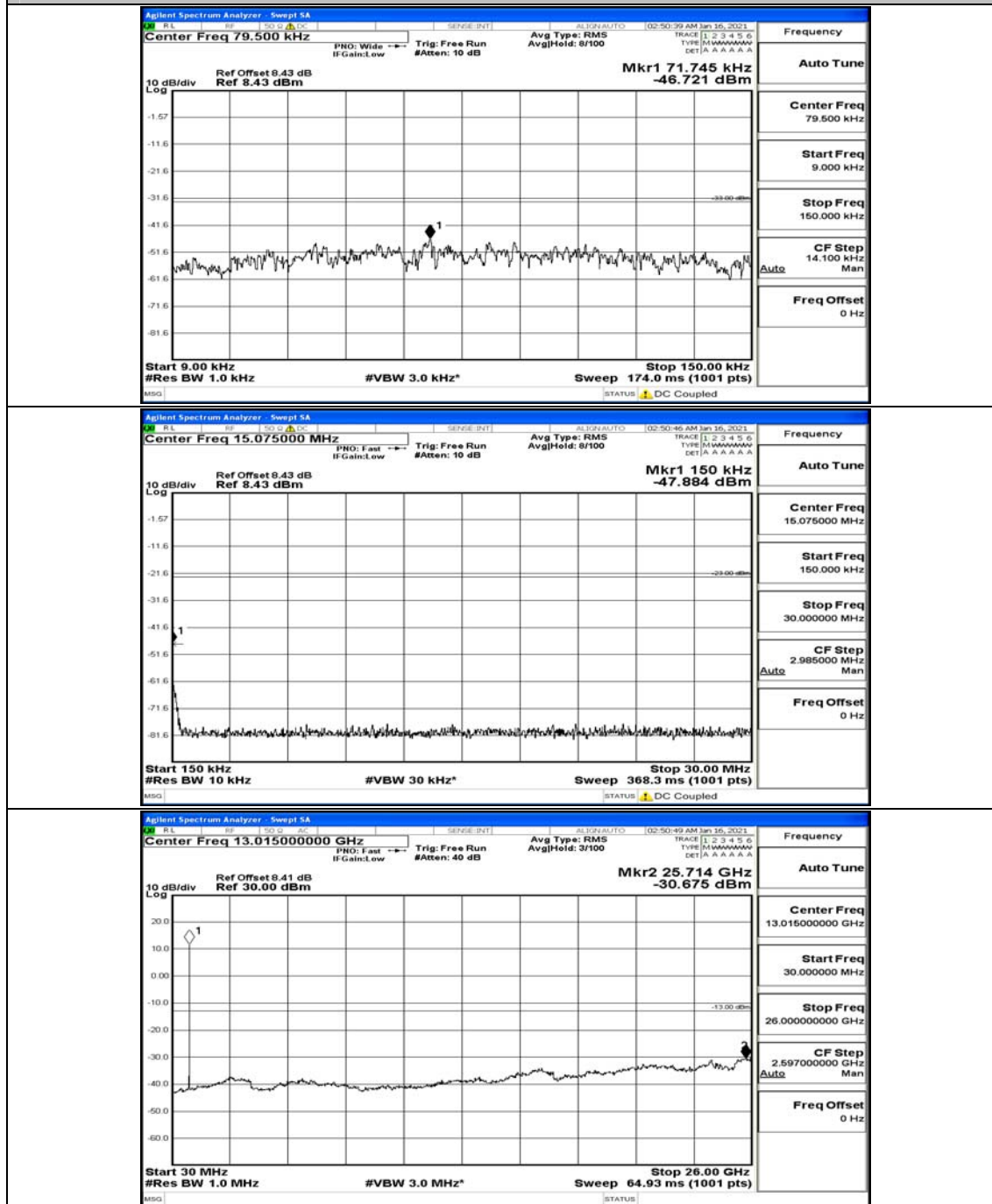
## Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)\_HCH\_16QAM



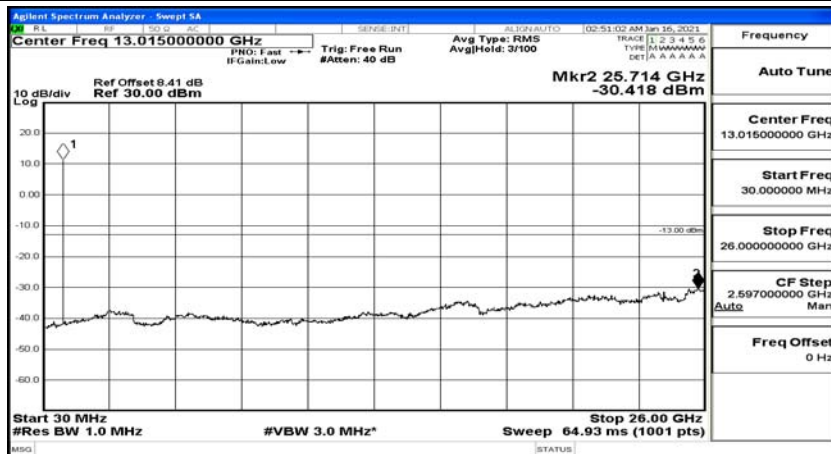
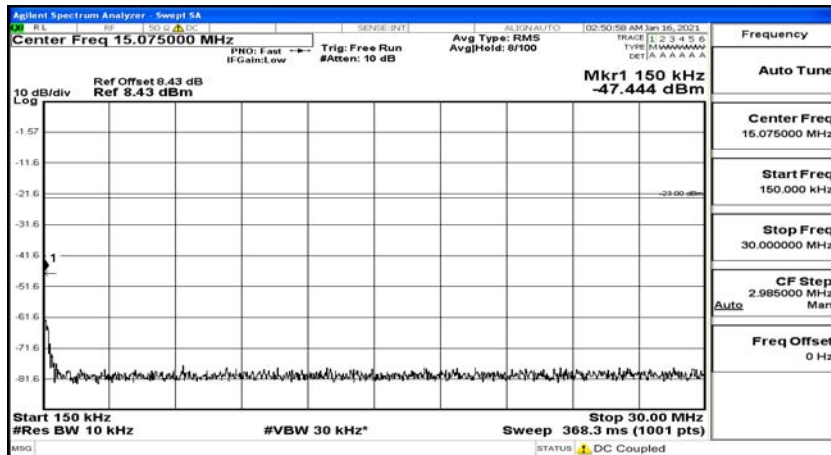
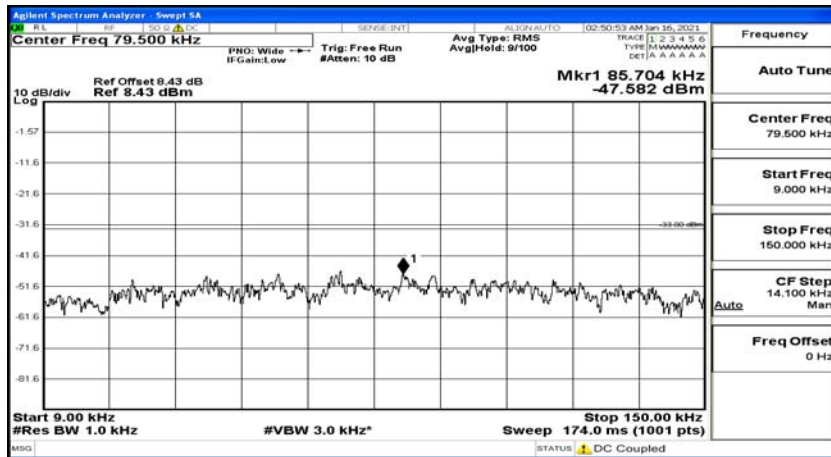
## A.5 Conducted Spurious Emission Test Graphs

Channel Bandwidth: 1.4 MHz

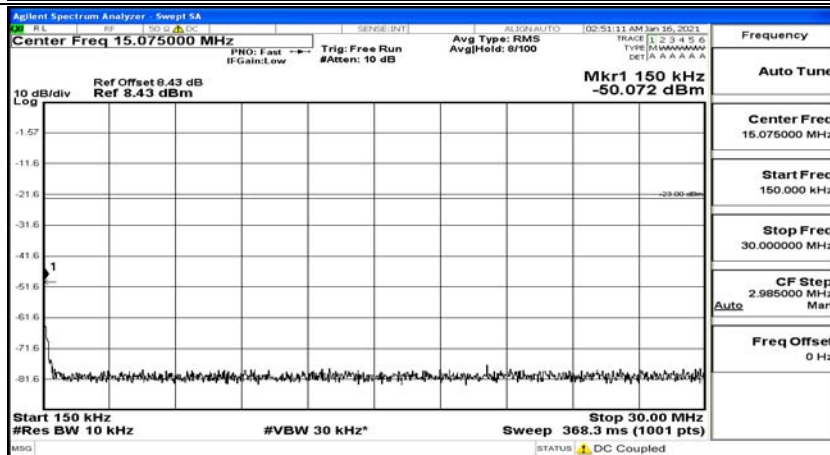
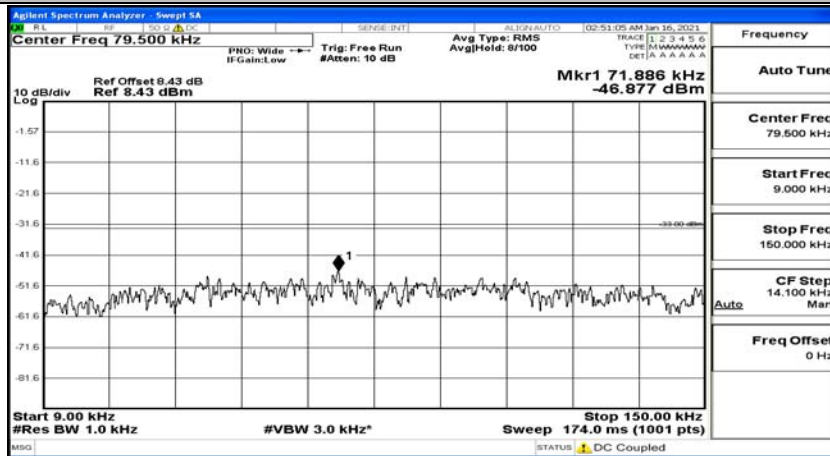
(Channel Bandwidth: 1.4 MHz)\_LCH\_QPSK\_1RB#0



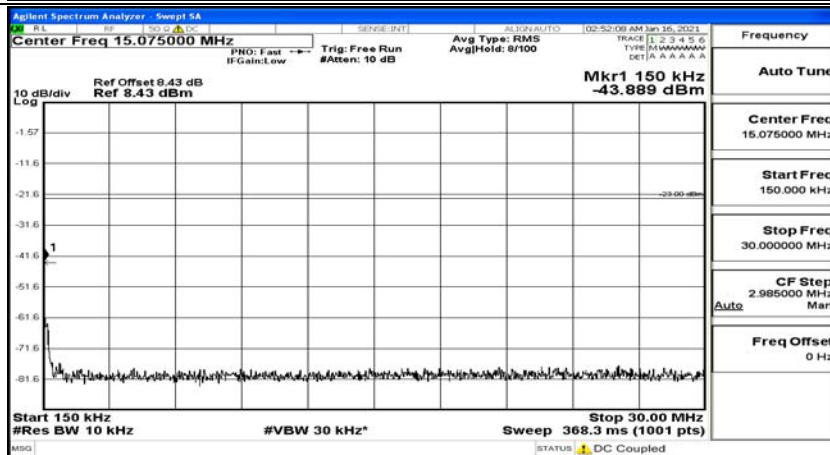
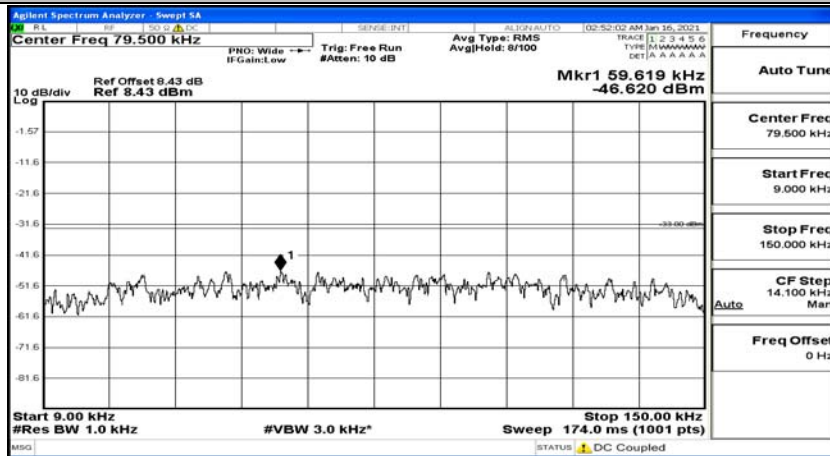
(Channel Bandwidth: 1.4 MHz)\_LCH\_QPSK\_1RB#3



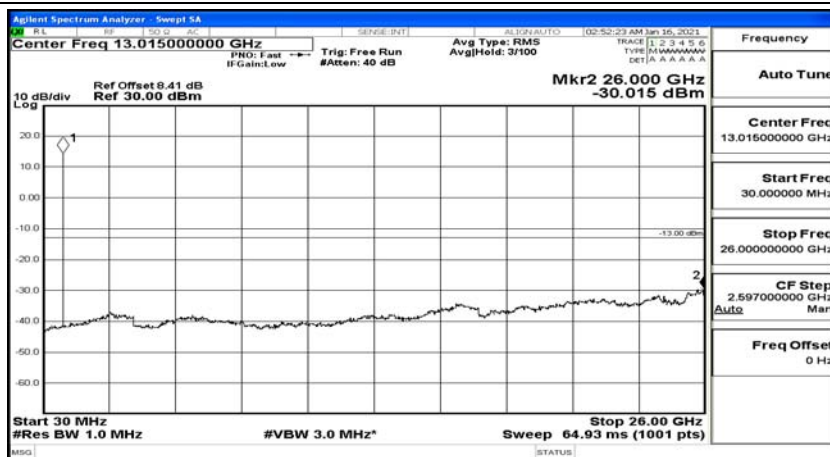
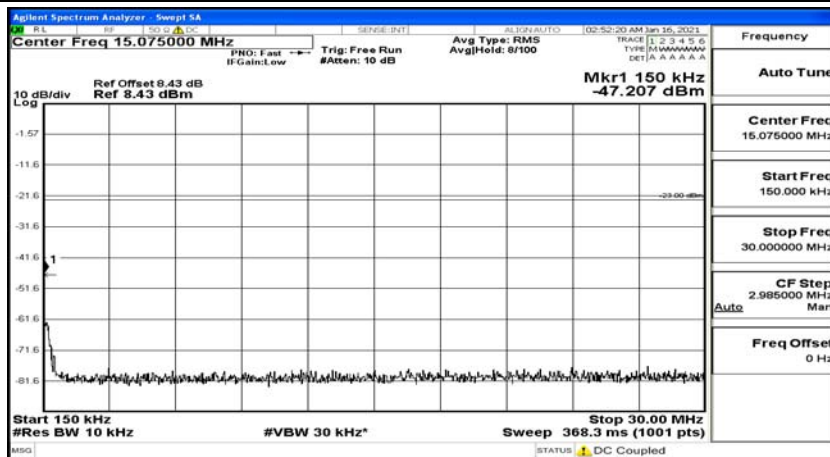
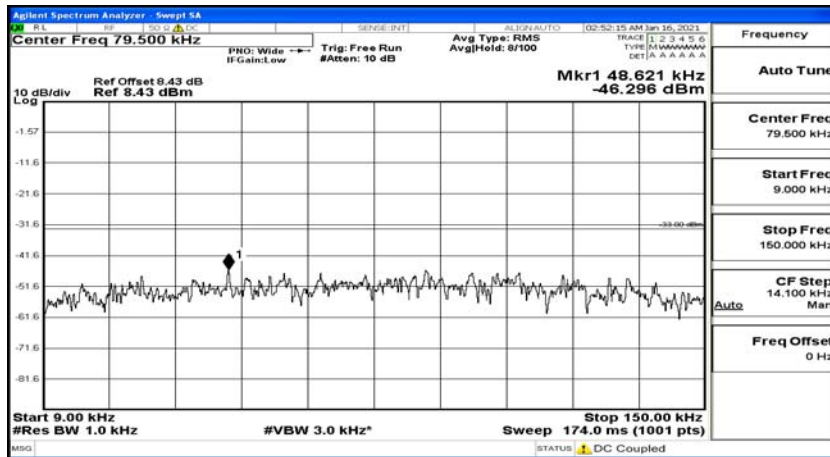
(Channel Bandwidth: 1.4 MHz)\_LCH\_QPSK\_1RB#5



(Channel Bandwidth: 1.4 MHz)\_MCH\_QPSK\_1RB#0

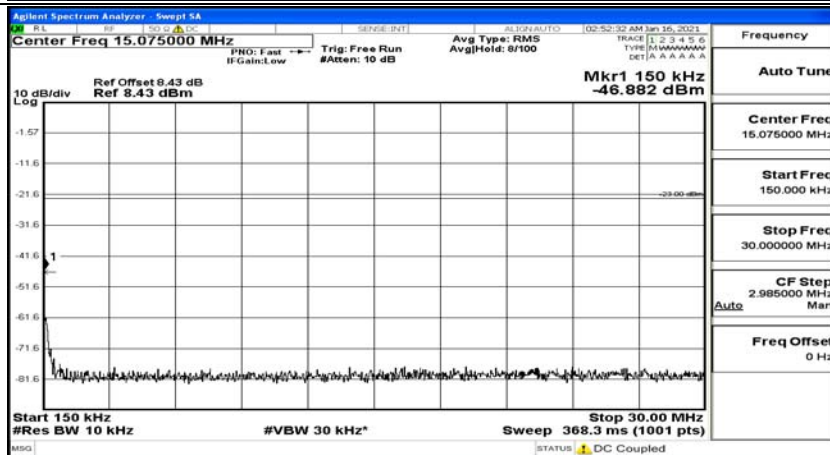
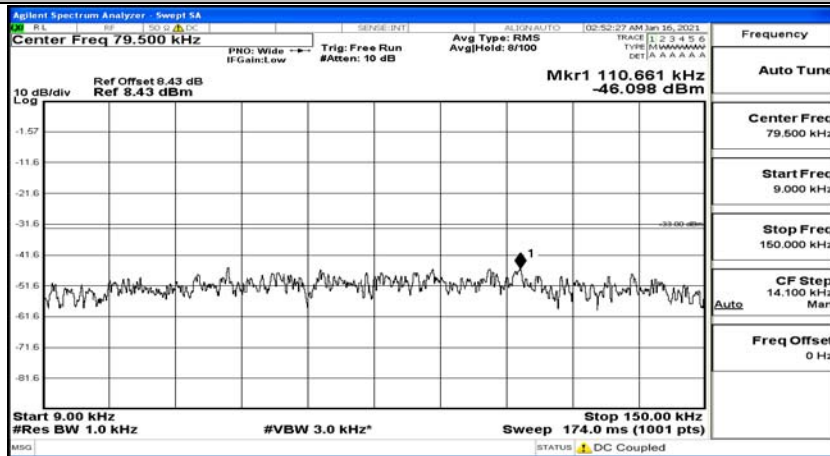


(Channel Bandwidth: 1.4 MHz)\_MCH\_QPSK\_1RB#3

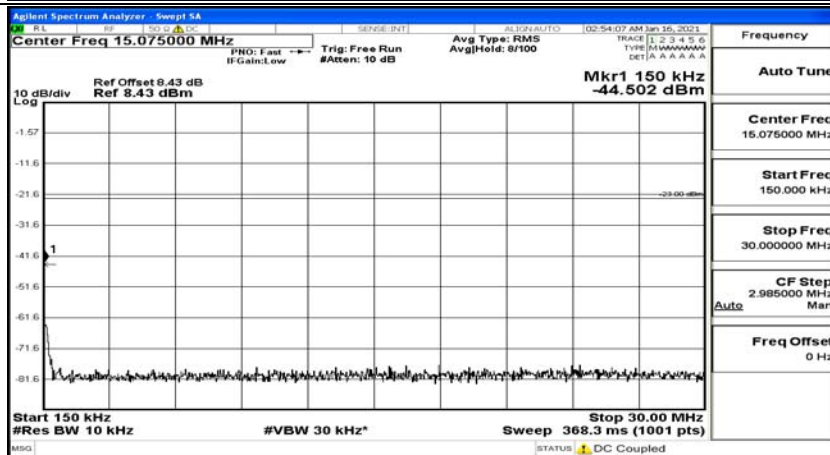
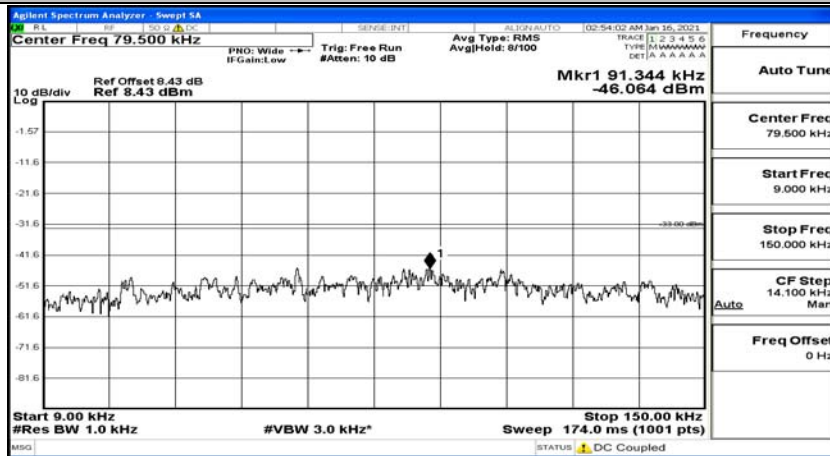




(Channel Bandwidth: 1.4 MHz)\_MCH\_QPSK\_1RB#5

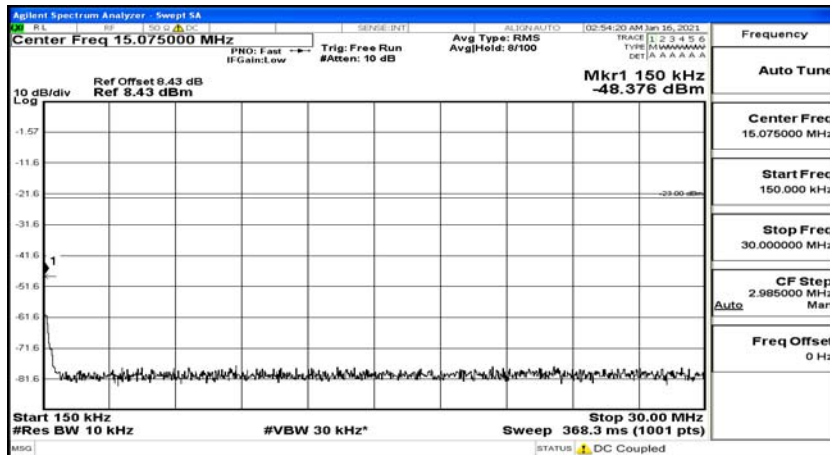
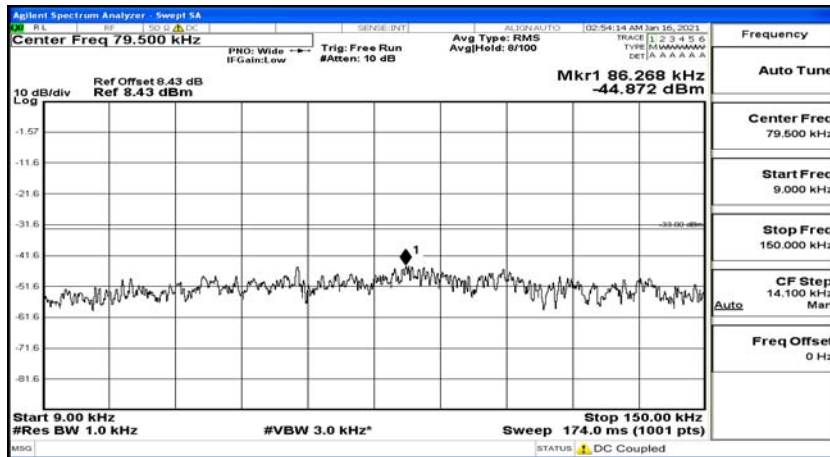


(Channel Bandwidth: 1.4 MHz)\_HCH\_QPSK\_1RB#0

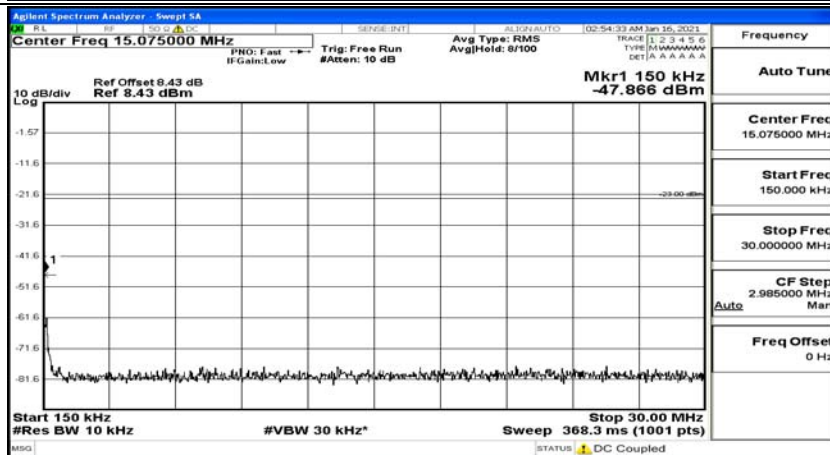
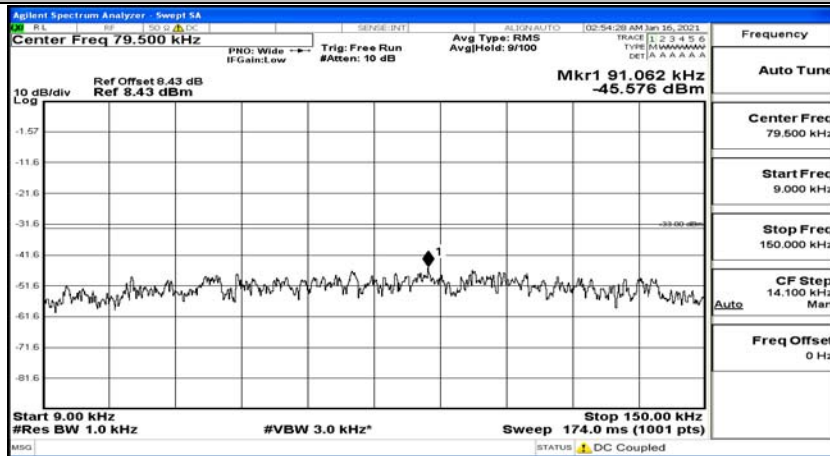




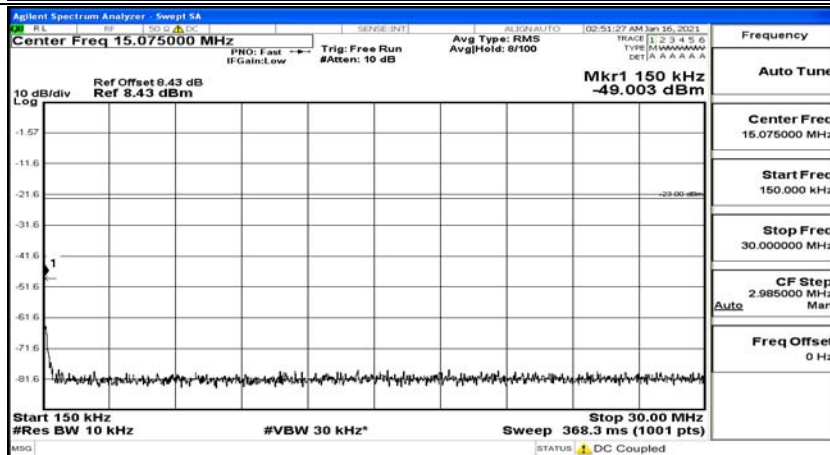
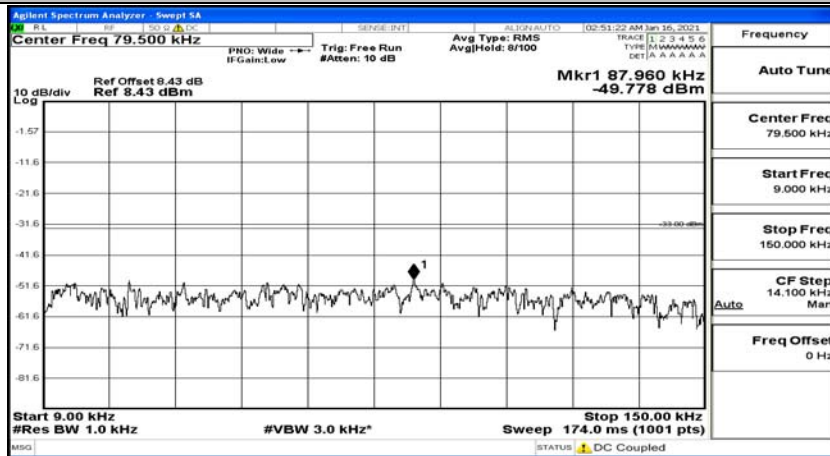
(Channel Bandwidth: 1.4 MHz)\_HCH\_QPSK\_1RB#3



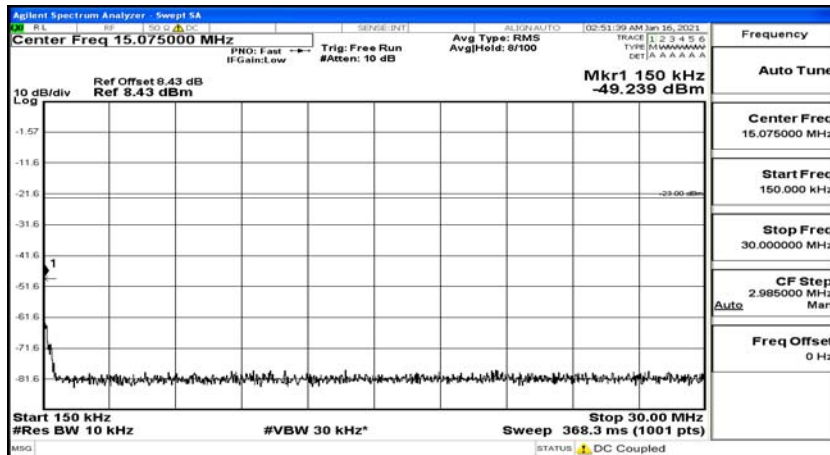
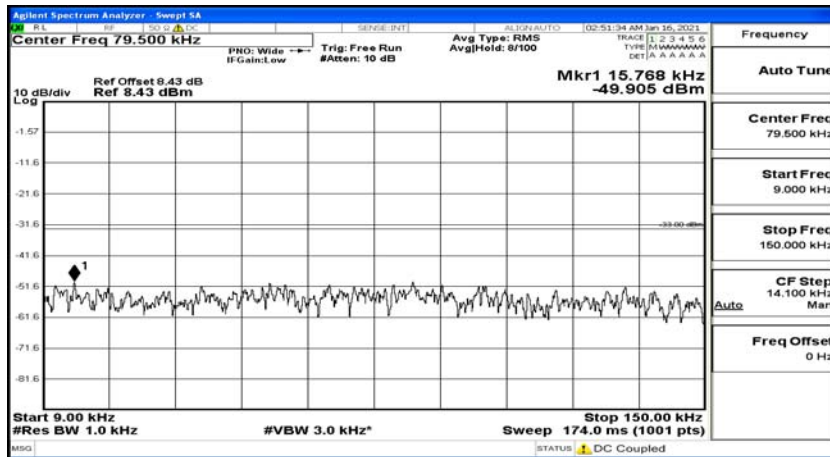
(Channel Bandwidth: 1.4 MHz)\_HCH\_QPSK\_1RB#5



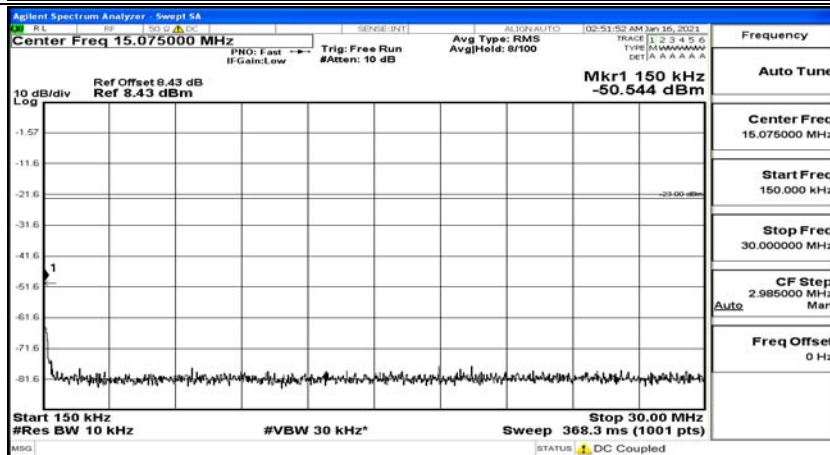
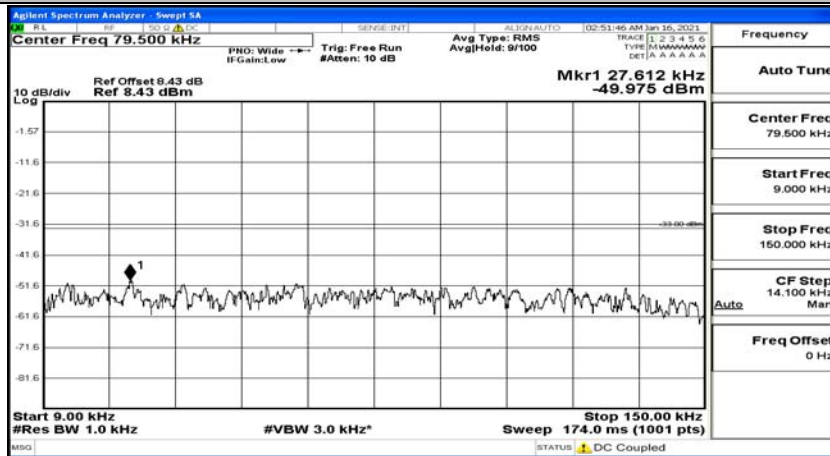
(Channel Bandwidth: 1.4 MHz)\_LCH\_16QAM\_1RB#0



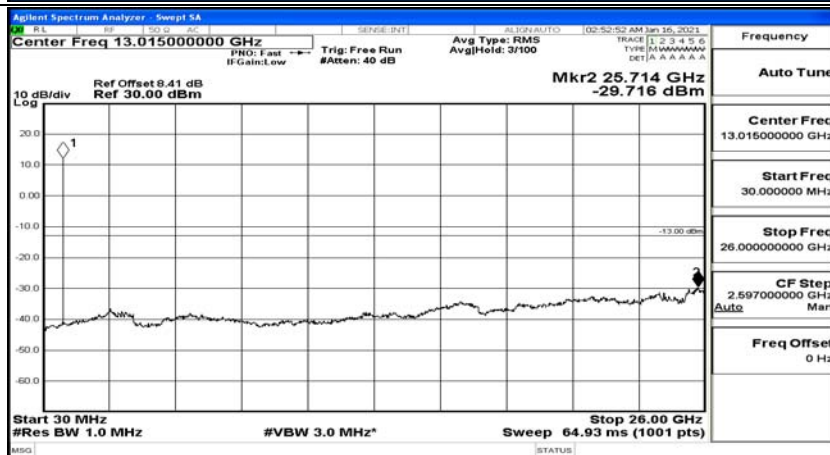
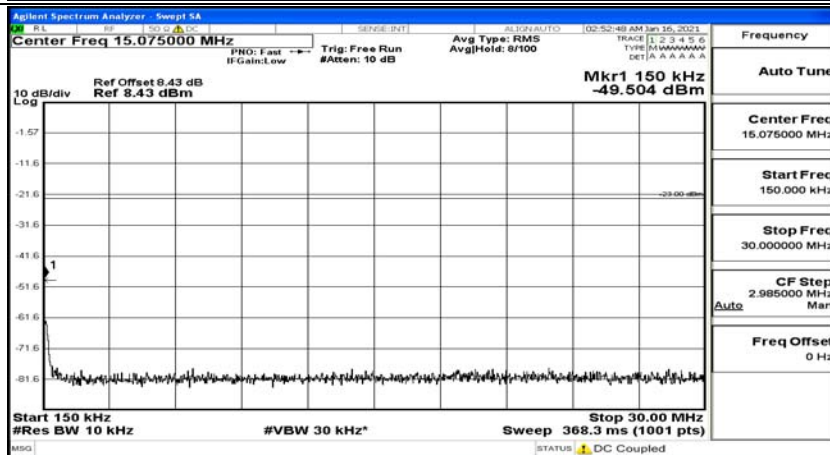
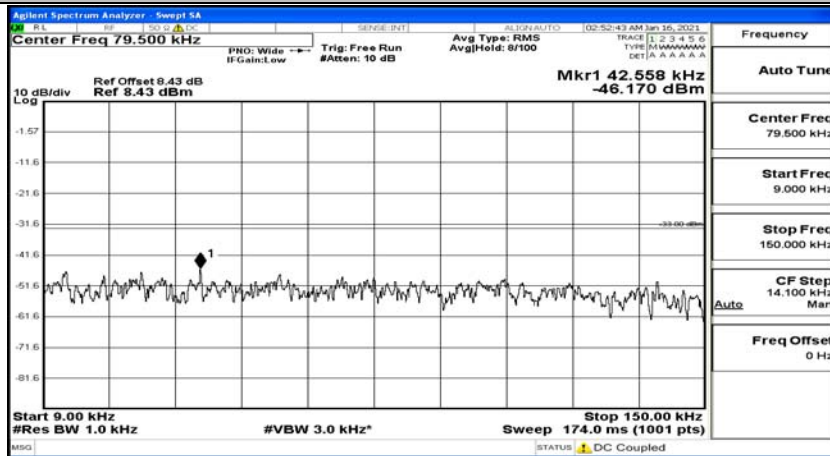
(Channel Bandwidth: 1.4 MHz)\_LCH\_16QAM\_1RB#3



(Channel Bandwidth: 1.4 MHz)\_LCH\_16QAM\_1RB#5

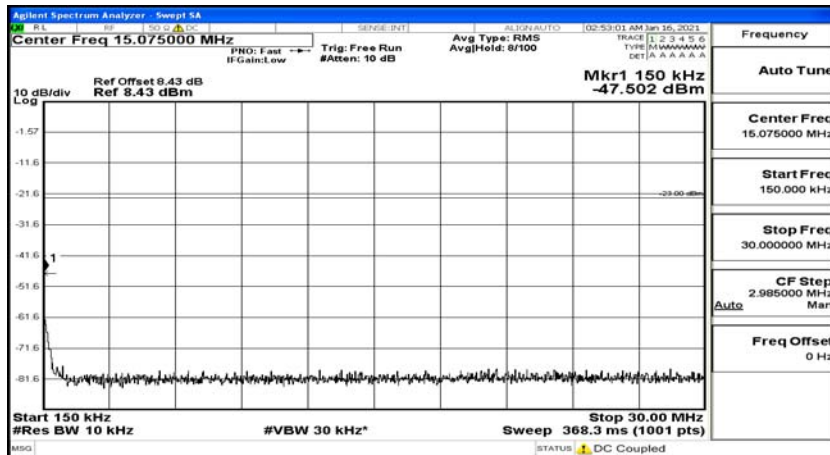
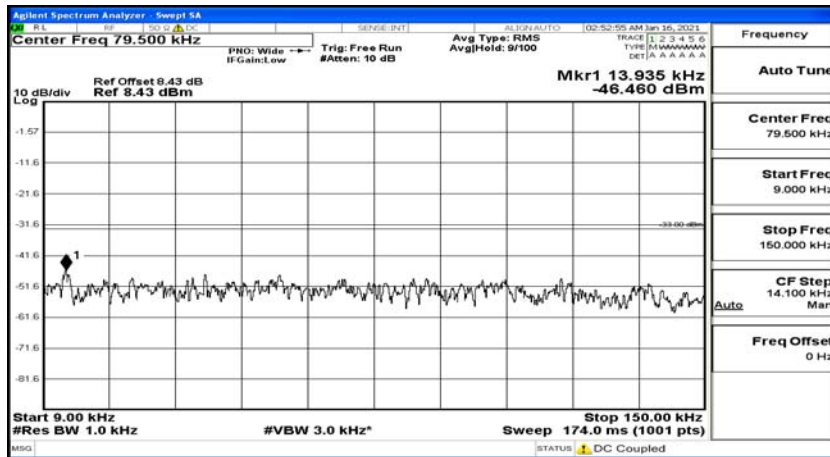


(Channel Bandwidth: 1.4 MHz)\_MCH\_16QAM\_1RB#0

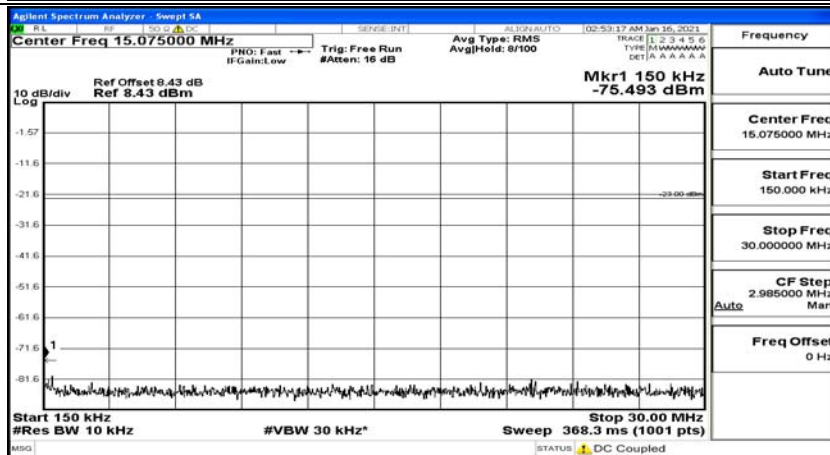
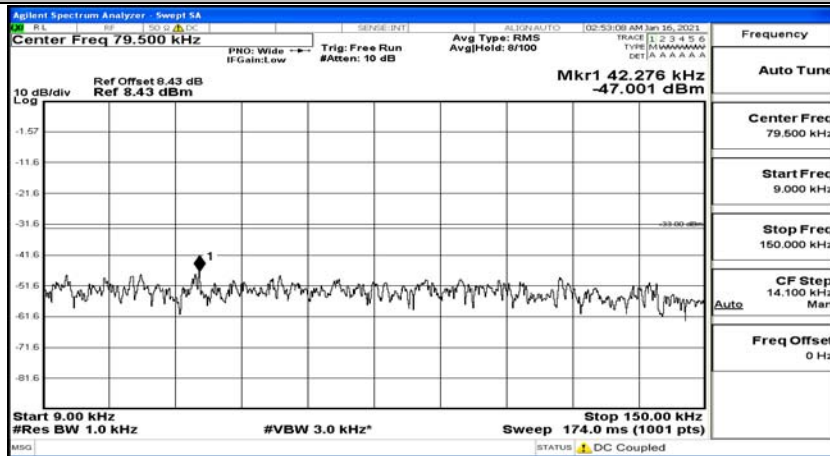




(Channel Bandwidth: 1.4 MHz)\_MCH\_16QAM\_1RB#3

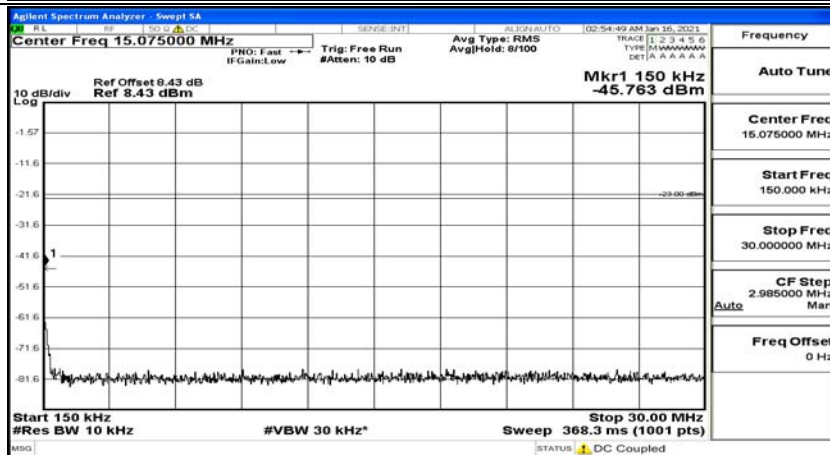
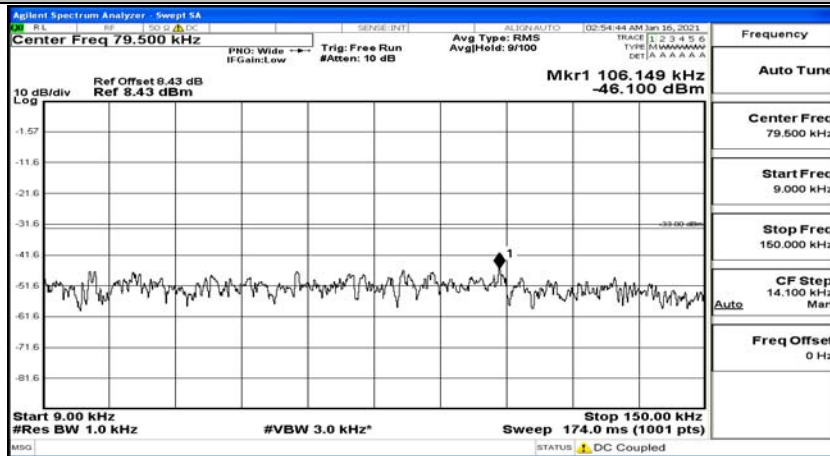


(Channel Bandwidth: 1.4 MHz)\_MCH\_16QAM\_1RB#5

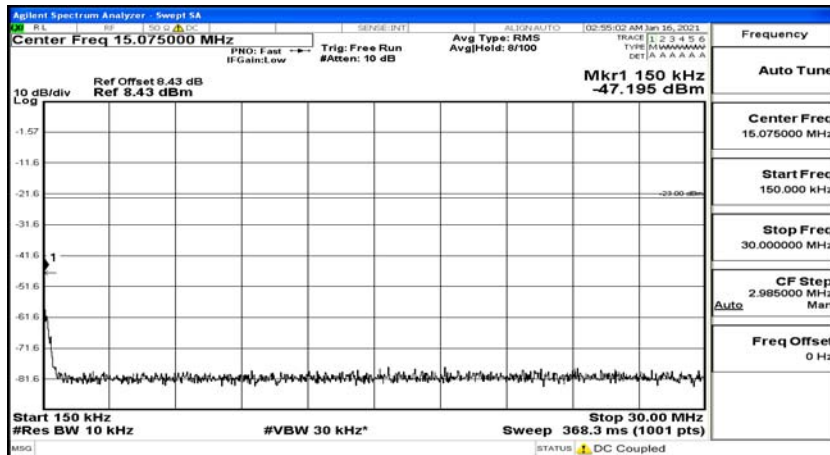
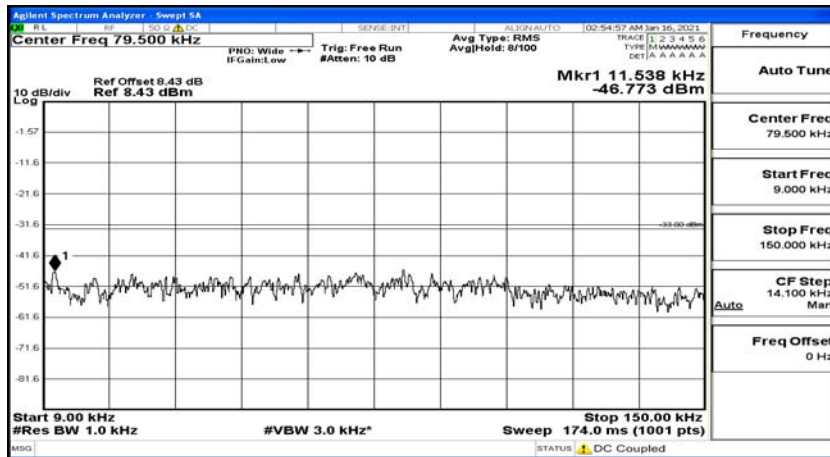




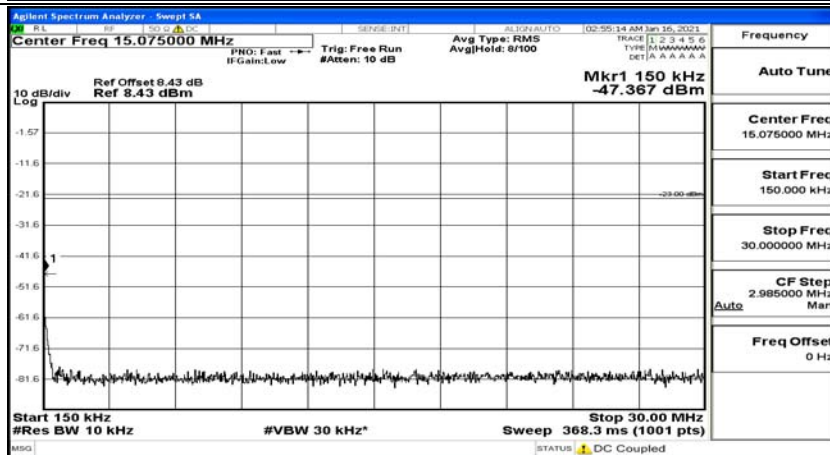
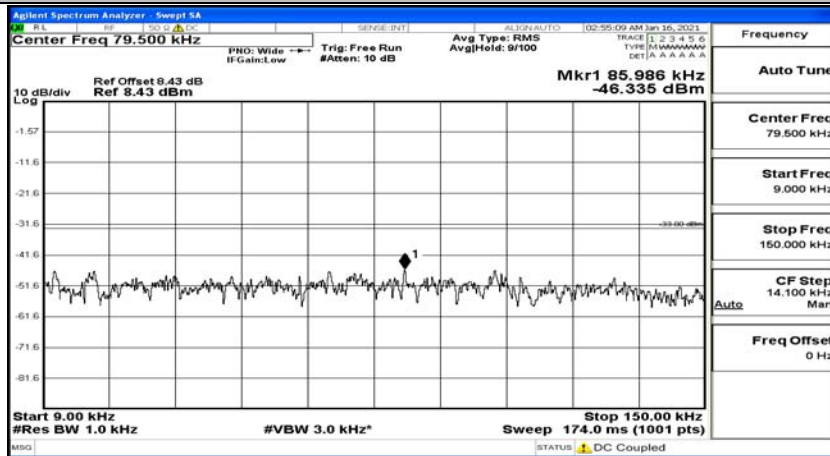
(Channel Bandwidth: 1.4 MHz)\_HCH\_16QAM\_1RB#0



(Channel Bandwidth: 1.4 MHz)\_HCH\_16QAM\_1RB#3

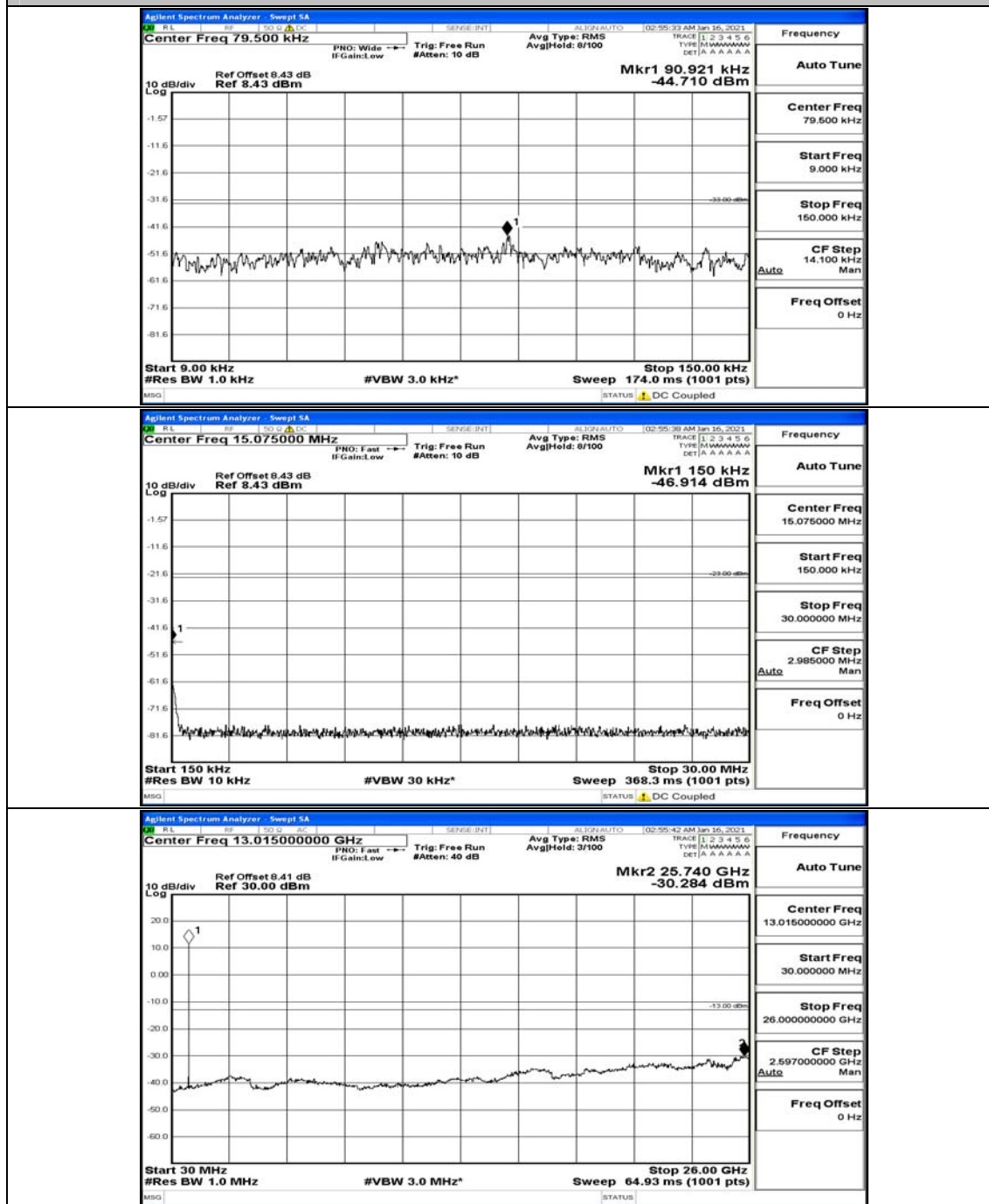


(Channel Bandwidth: 1.4 MHz)\_HCH\_16QAM\_1RB#5

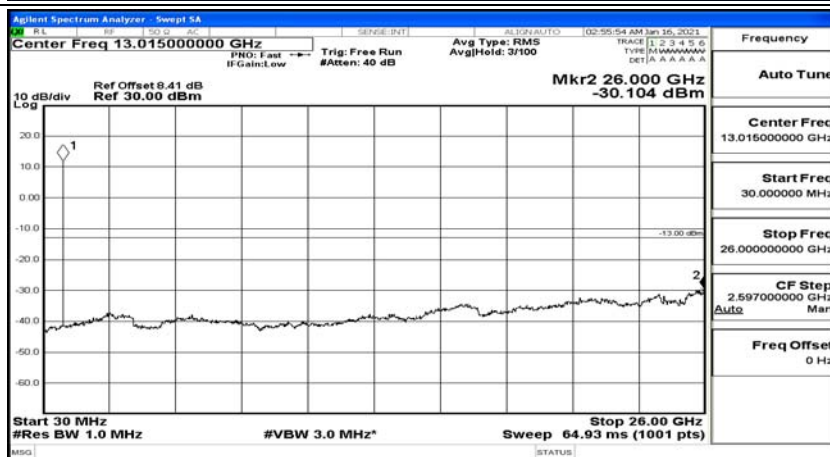
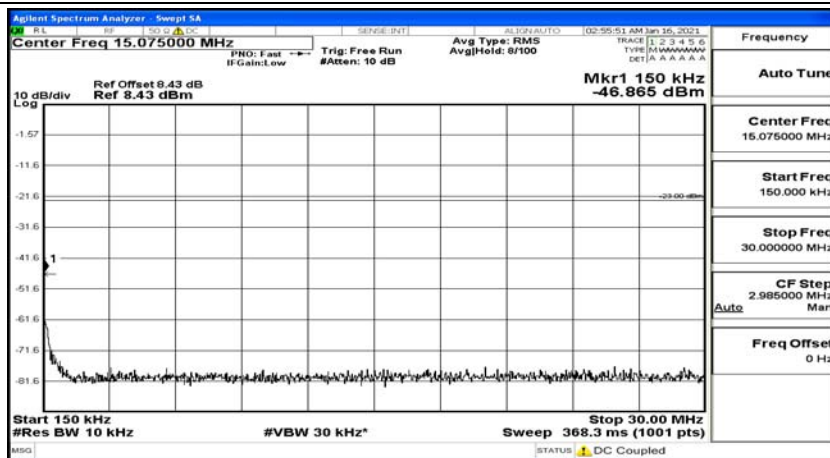
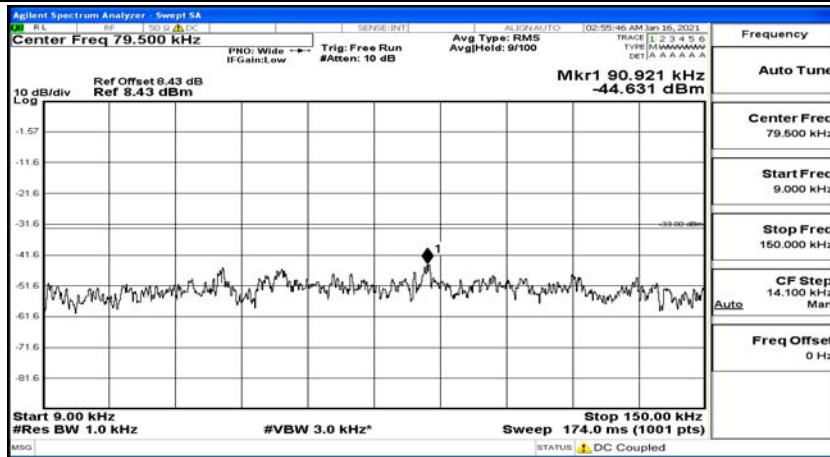


## Channel Bandwidth: 3 MHz

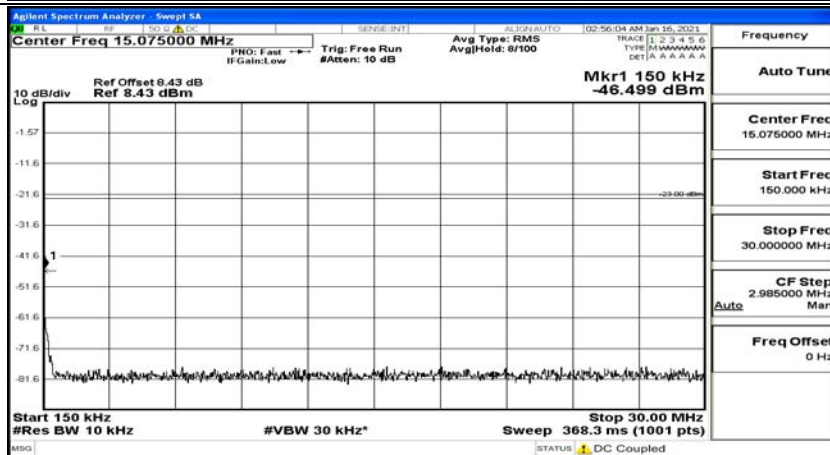
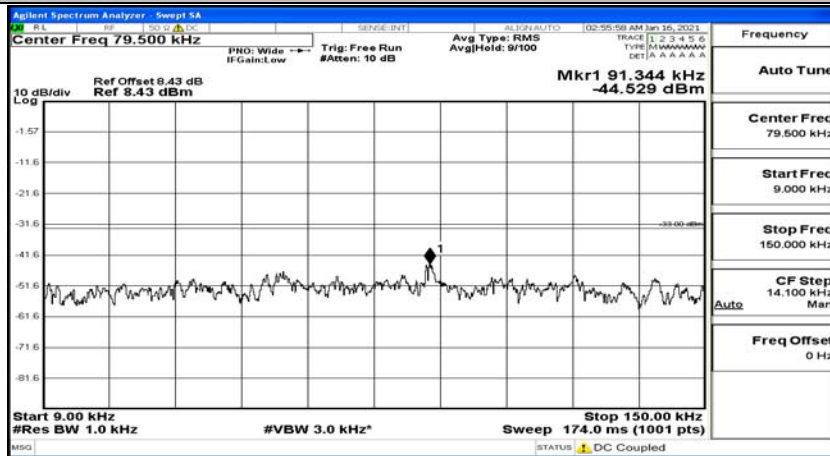
(Channel Bandwidth: 3 MHz)\_LCH\_QPSK\_1RB#0



(Channel Bandwidth: 3 MHz) LCH\_QPSK\_1RB#7



(Channel Bandwidth: 3 MHz)\_LCH\_QPSK\_1RB#14





(Channel Bandwidth: 3 MHz)\_MCH\_QPSK\_1RB#0

