Appendix for Band 13

Appendix A: Average Power Output Data

Test Result

Channel Bandwidth: 5 MHz

Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	23.61	PASS
		1	12	22.59	PASS
		1	24	23.55	PASS
		12	0	21.89	PASS
		12	6	21.56	PASS
		12	13	21.77	PASS
		25	0	21.81	PASS
	MCH	1	0	22.83	PASS
		1	12	23.45	PASS
		1	24	23.68	PASS
		12	0	21.83	PASS
		12	6	22.46	PASS
		12	13	22.70	PASS
		25	0	22.60	PASS
	HCH	1	0	23.68	PASS
		1	12	23.32	PASS
		1	24	22.75	PASS
		12	0	22.69	PASS
		12	6	22.64	PASS
		12	13	22.46	PASS
		25	0	22.61	PASS
16QAM	LCH	1	0	22.34	PASS
		1	12	22.01	PASS
		1	24	22.26	PASS
		12	0	21.16	PASS
		12	6	20.95	PASS
		12	13	21.15	PASS
		25	0	21.07	PASS
	MCH	1	0	22.37	PASS
		1	12	22.62	PASS
		1	24	22.35	PASS
		12	0	21.19	PASS
		12	6	21.80	PASS

		12	13	21.79	PASS
		25	0	21.63	PASS
	HCH	1	0	22.71	PASS
		1	12	22.65	PASS
		1	24	21.94	PASS
		12	0	21.67	PASS
		12	6	21.61	PASS
		12	13	21.62	PASS
		25	0	21.58	PASS

Channel Bandwidth: 10 MHz

Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	MCH	1	0	23.69	PASS
		1	24	23.36	PASS
		1	49	22.52	PASS
		25	0	21.97	PASS
		25	12	22.53	PASS
		25	25	22.81	PASS
		50	0	22.59	PASS
16QAM	MCH	1	0	22.81	PASS
		1	24	22.76	PASS
		1	49	21.99	PASS
		25	0	21.21	PASS
		25	12	21.61	PASS
		25	25	21.58	PASS
		50	0	21.60	PASS

Appendix B: Peak-to-Average Ratio

Test Result

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio	Limit	Verdict
		Size	Offset	[dB]	[dB]	
QPSK	LCH	1	0	3.9	<13	PASS
		1	12	5.24	<13	PASS
		1	24	4.89	<13	PASS
		12	0	5.42	<13	PASS
		12	6	5.64	<13	PASS
		12	13	5.68	<13	PASS
		25	0	5.75	<13	PASS
	MCH	1	0	5.38	<13	PASS
		1	12	5.01	<13	PASS
		1	24	4.08	<13	PASS
		12	0	5.78	<13	PASS
		12	6	5.44	<13	PASS
		12	13	5.09	<13	PASS
		25	0	5.43	<13	PASS
	HCH	1	0	4.68	<13	PASS
		1	12	4.09	<13	PASS
		1	24	4.27	<13	PASS
		12	0	5.04	<13	PASS
		12	6	4.81	<13	PASS
		12	13	4.57	<13	PASS
		25	0	4.93	<13	PASS
16QAM	LCH	1	0	4.67	<13	PASS
		1	12	6.2	<13	PASS
		1	24	5.71	<13	PASS
		12	0	6.18	<13	PASS
		12	6	6.34	<13	PASS
		12	13	6.41	<13	PASS
		25	0	6.46	<13	PASS
	MCH	1	0	5.94	<13	PASS
		1	12	5.52	<13	PASS
		1	24	4.81	<13	PASS
		12	0	6.58	<13	PASS
		12	6	6.31	<13	PASS

12	13	6.06	<13	PASS
25	0	6.2	<13	PASS
1	0	5.86	<13	PASS
1	12	5.08	<13	PASS
1	24	5.05	<13	PASS
HCH 12	0	5.85	<13	PASS
12	6	5.54	<13	PASS
12	13	5.3	<13	PASS
25	0	5.71	<13	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Peak-to-Average Ratio	Limit	Verdict
		Size	Offset	[dB]	[dB]	
QPSK	MCH	1	0	4.24	<13	PASS
		1	24	5.03	<13	PASS
		1	49	4.34	<13	PASS
		25	0	5.63	<13	PASS
		25	12	5.41	<13	PASS
		25	25	4.92	<13	PASS
		50	0	5.18	<13	PASS
16QAM	MCH	1	0	5.08	<13	PASS
		1	24	5.86	<13	PASS
		1	49	5.02	<13	PASS
		25	0	6.32	<13	PASS
		25	12	6.22	<13	PASS
		25	25	5.85	<13	PASS
		50	0	5.92	<13	PASS
		50	0	5.94	<13	PASS

Test Graphs

Channel Bandwidth: 5 MHz
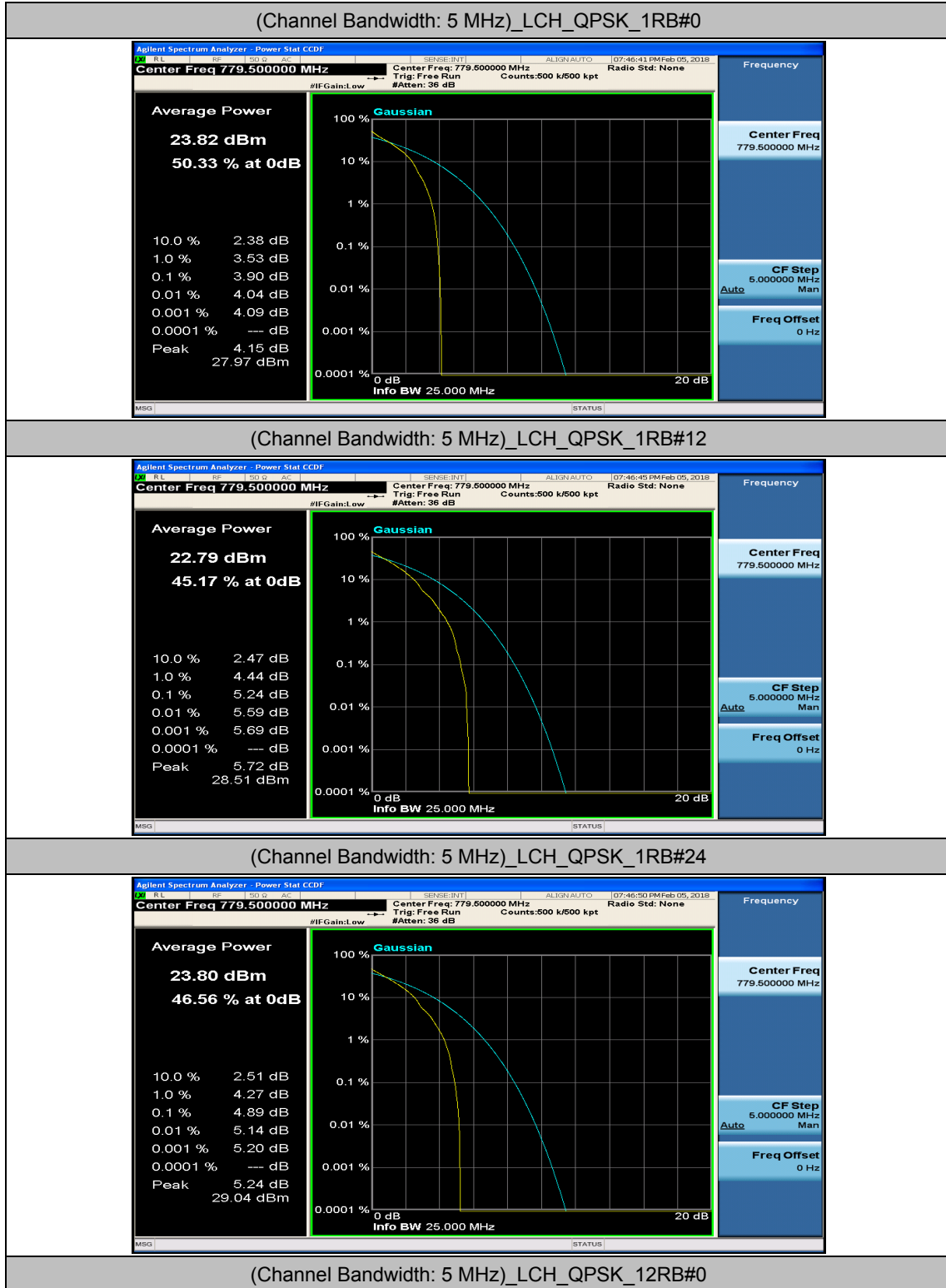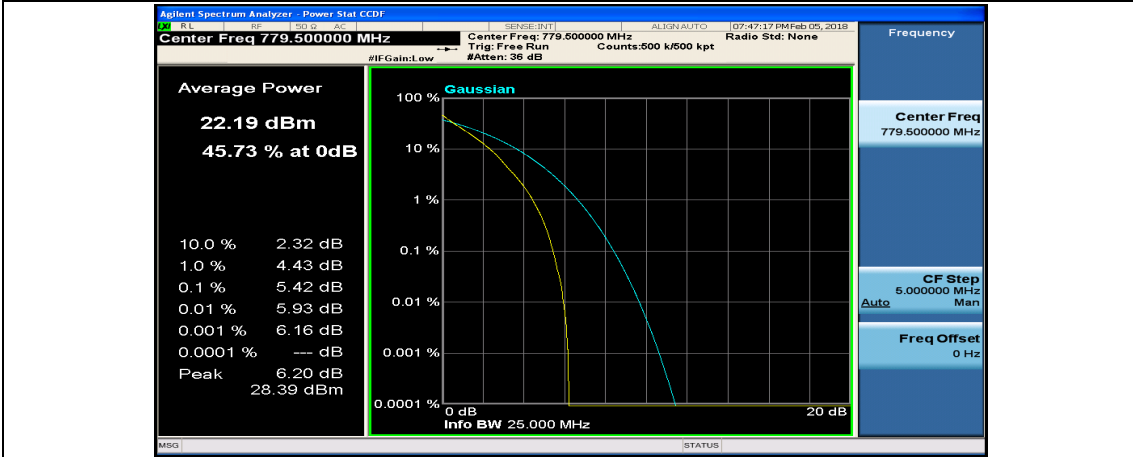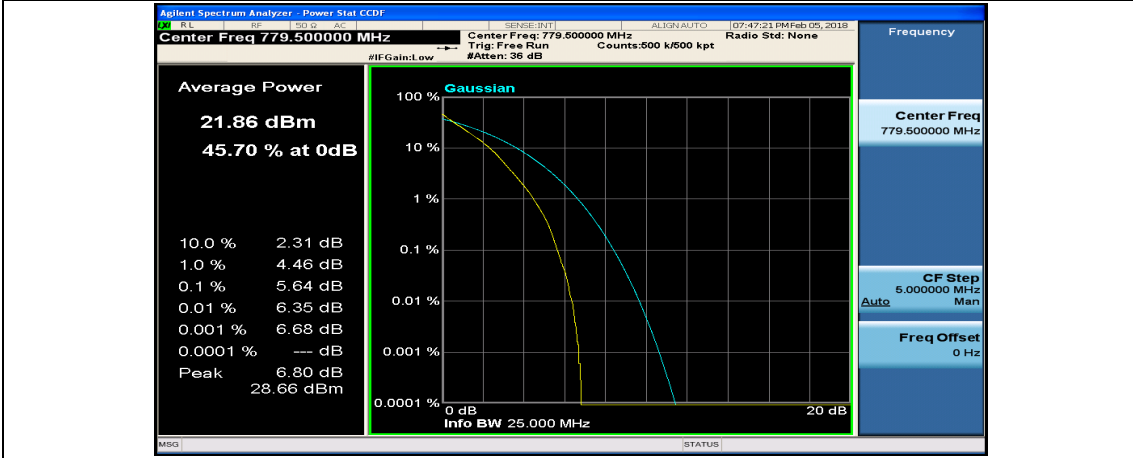
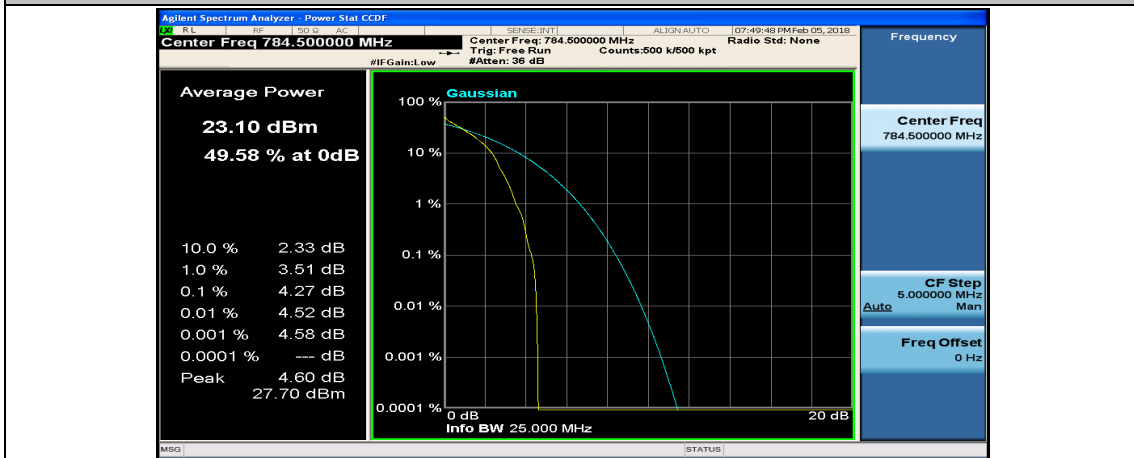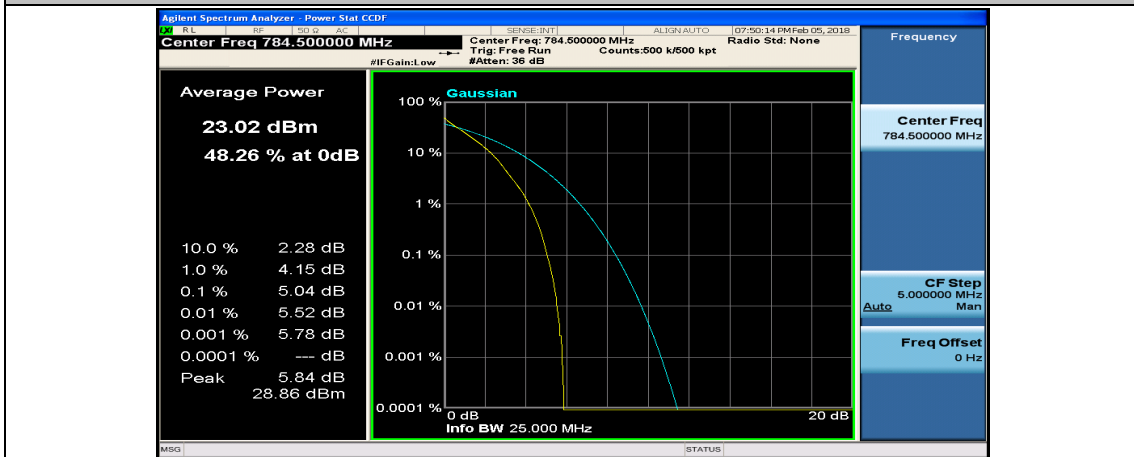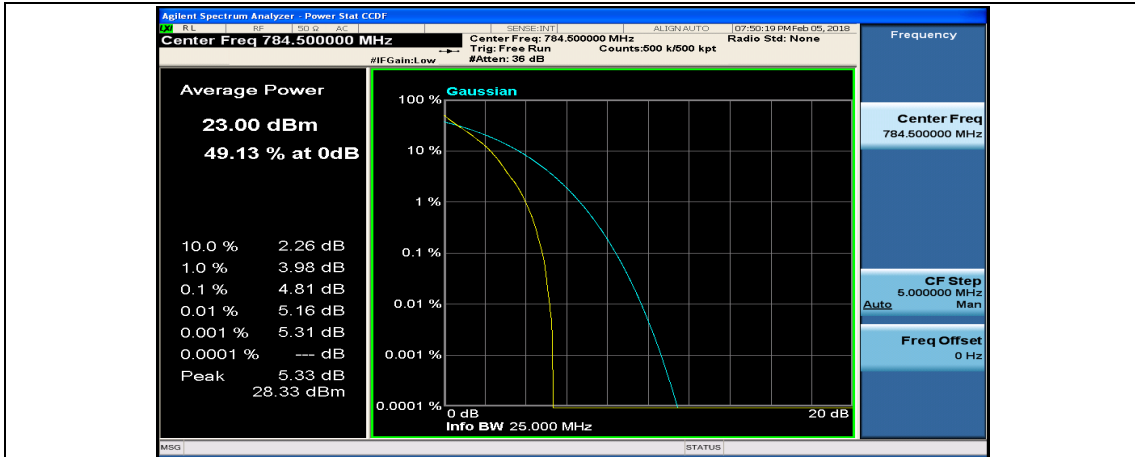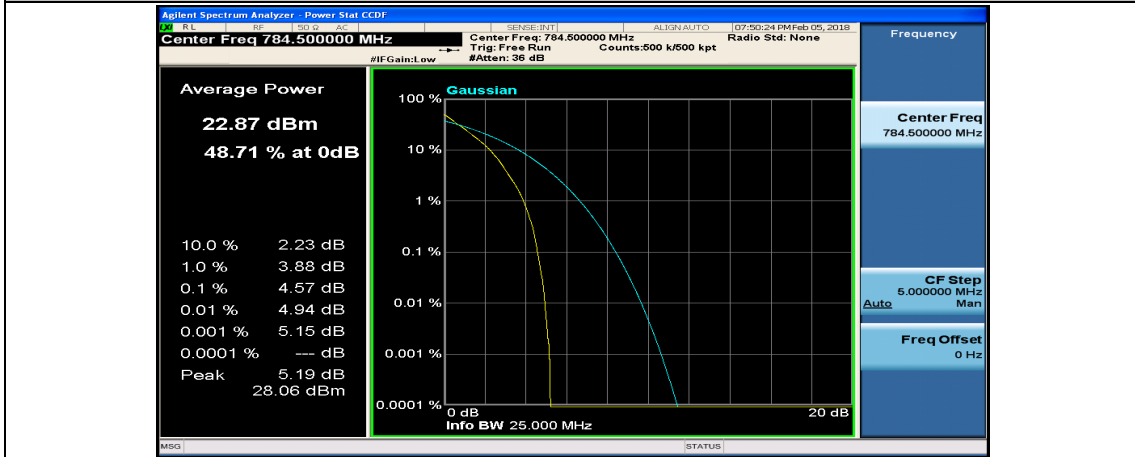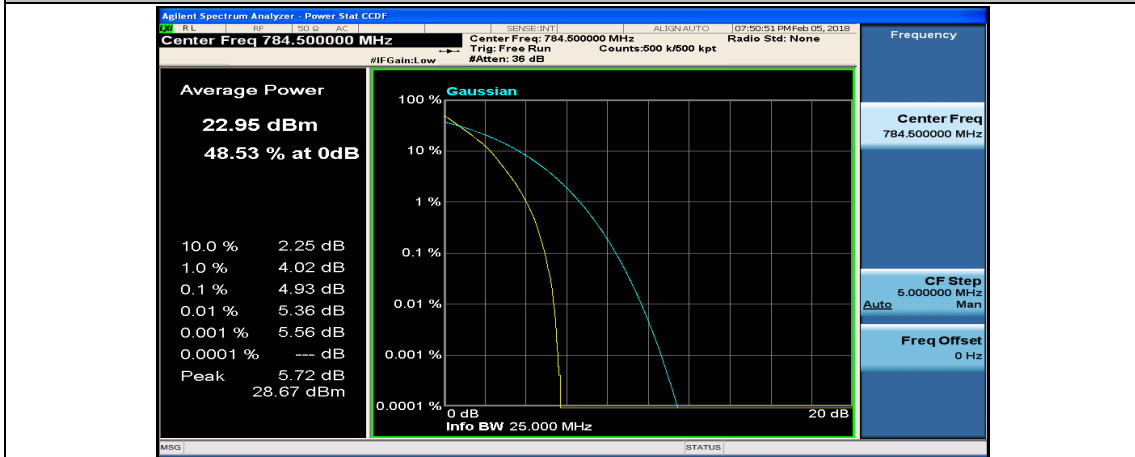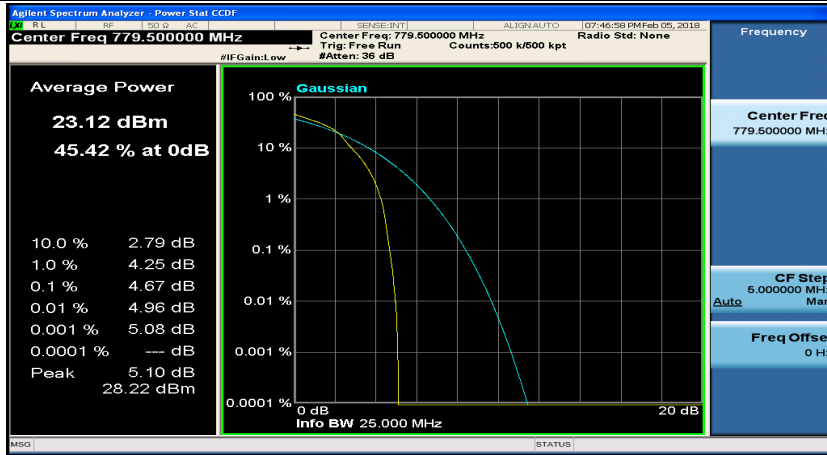| (Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#0 |
|---|
| |
| (Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#12 |
| |
| (Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#24 |
| |
| (Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#0 |

(Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#6
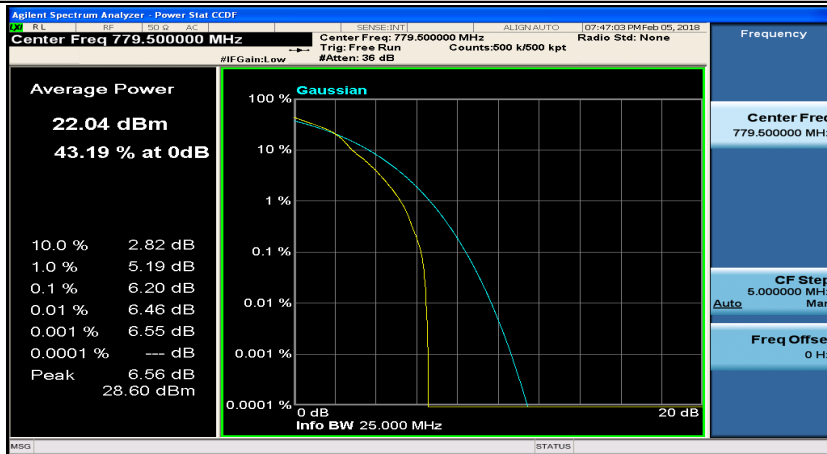

(Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#13
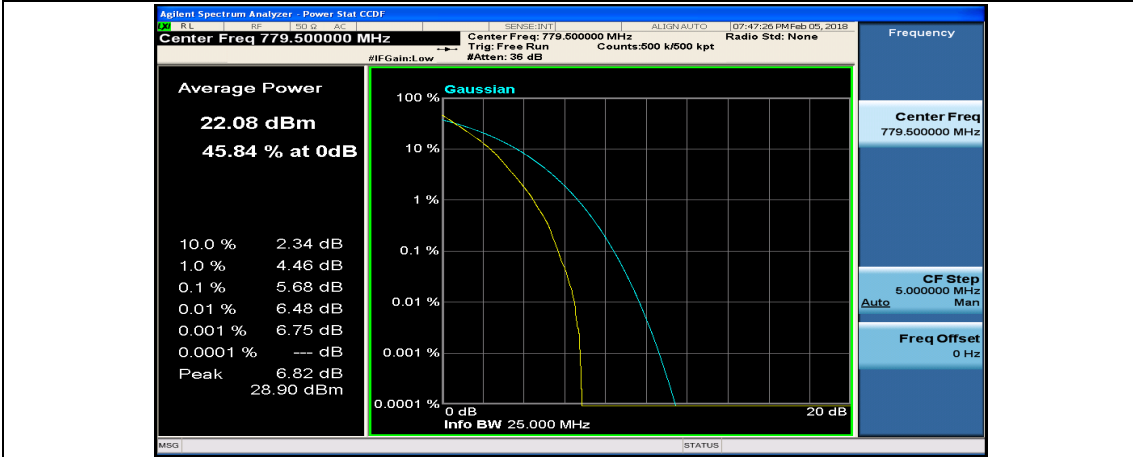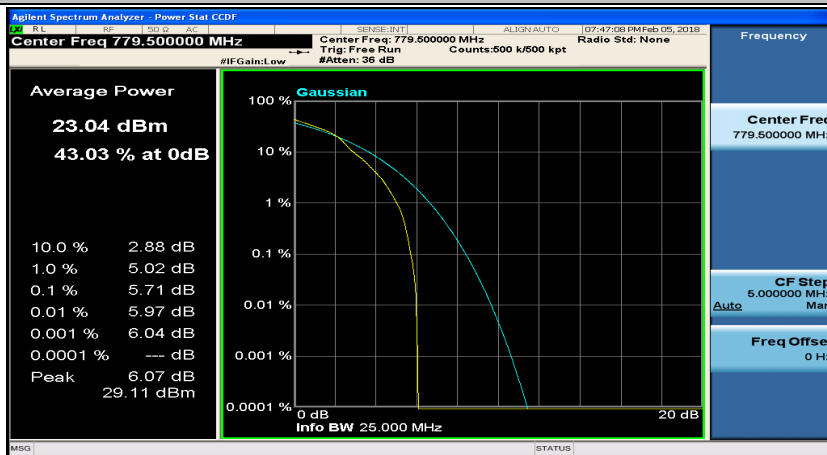

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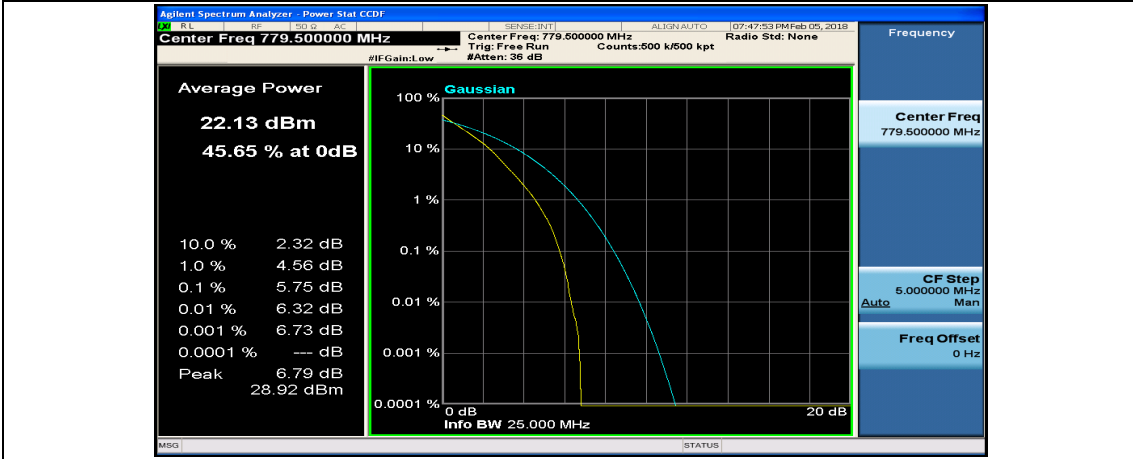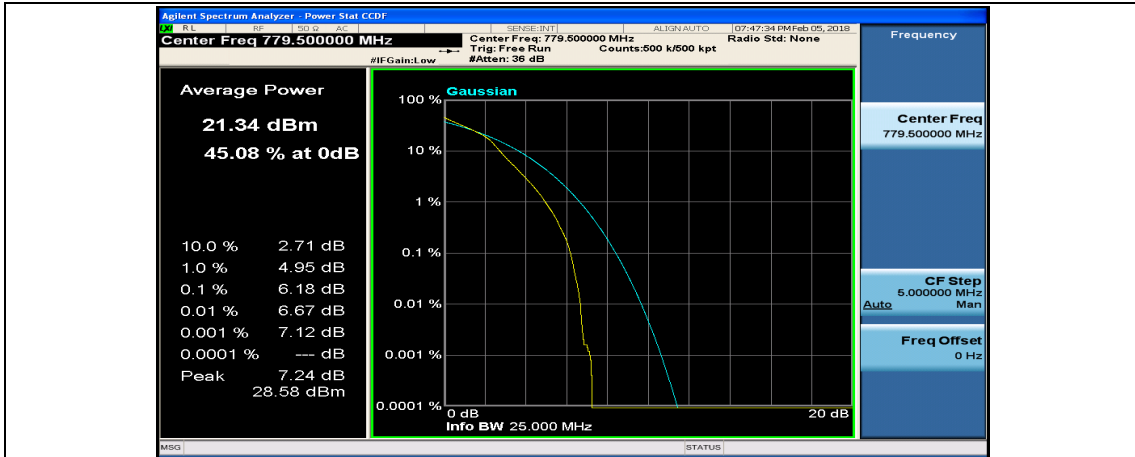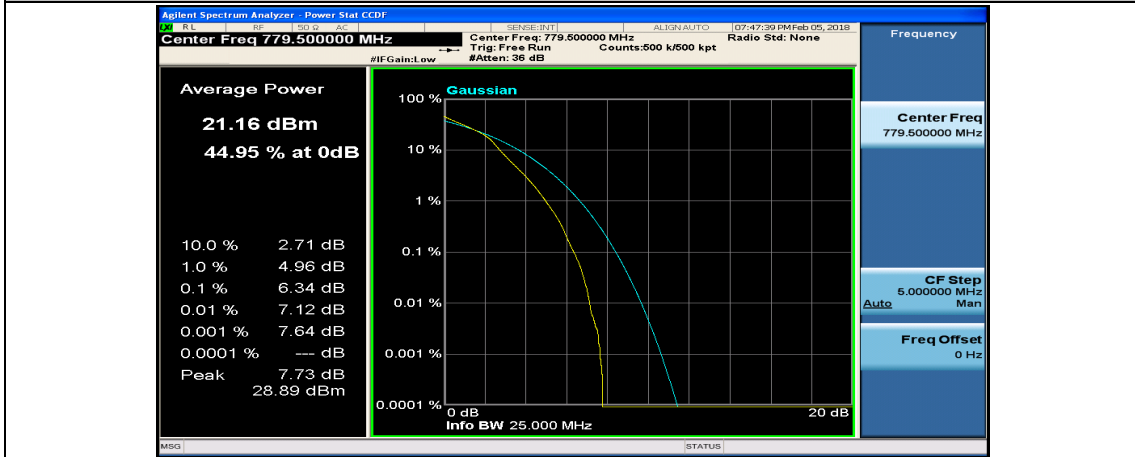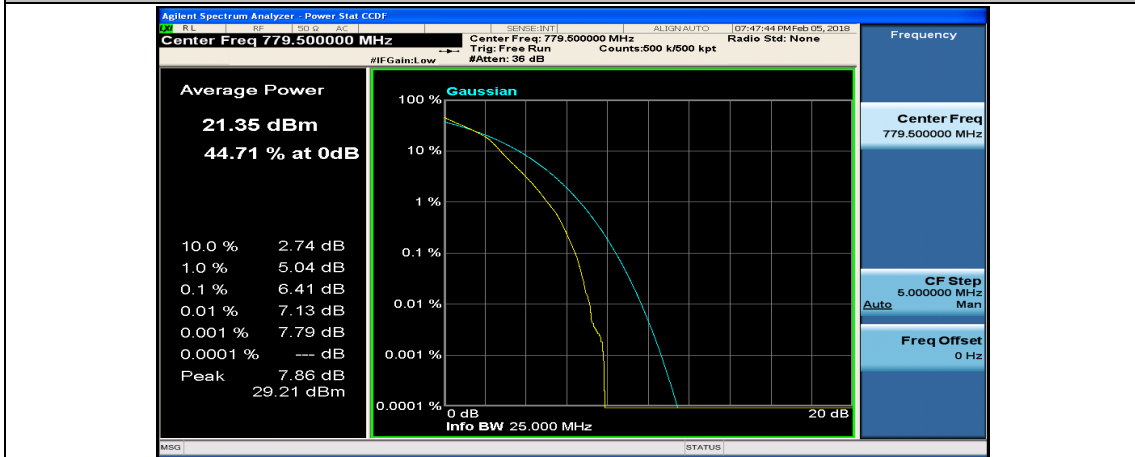
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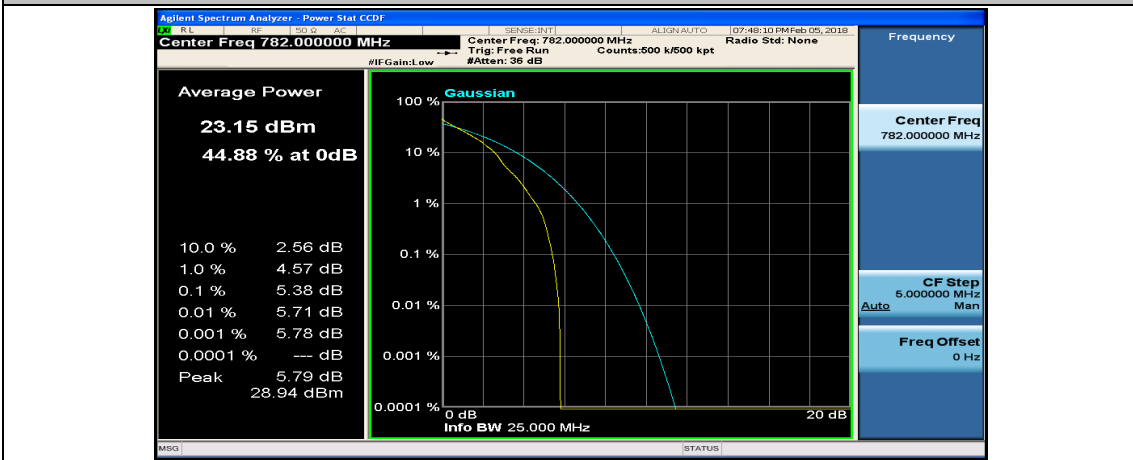
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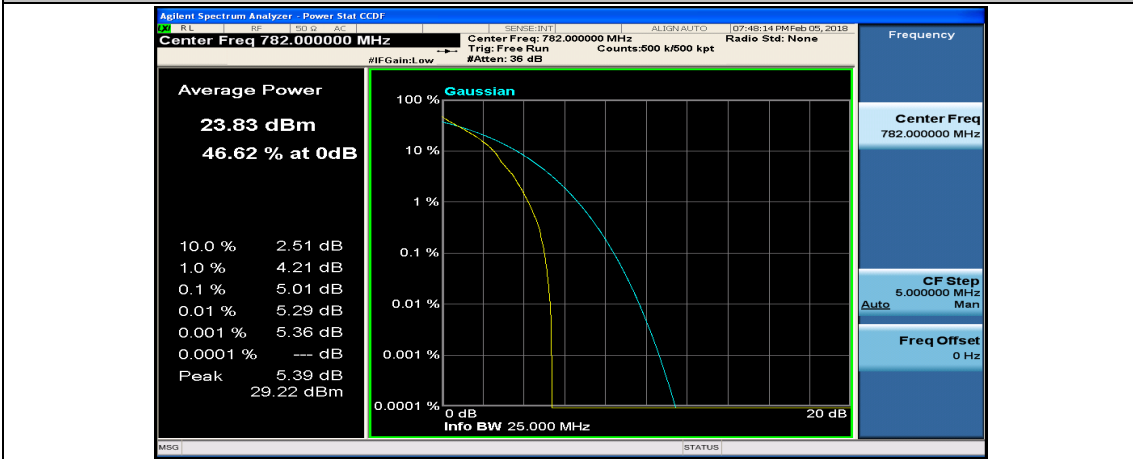
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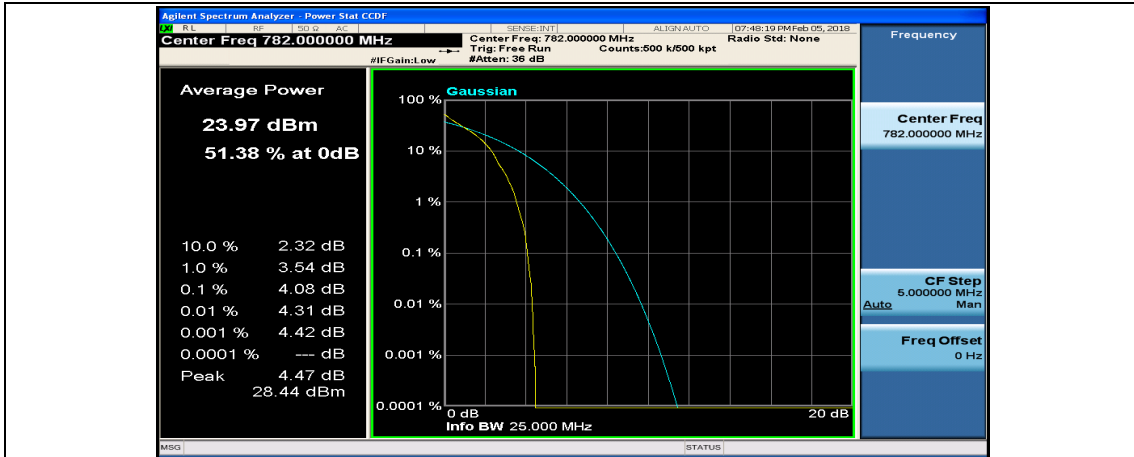
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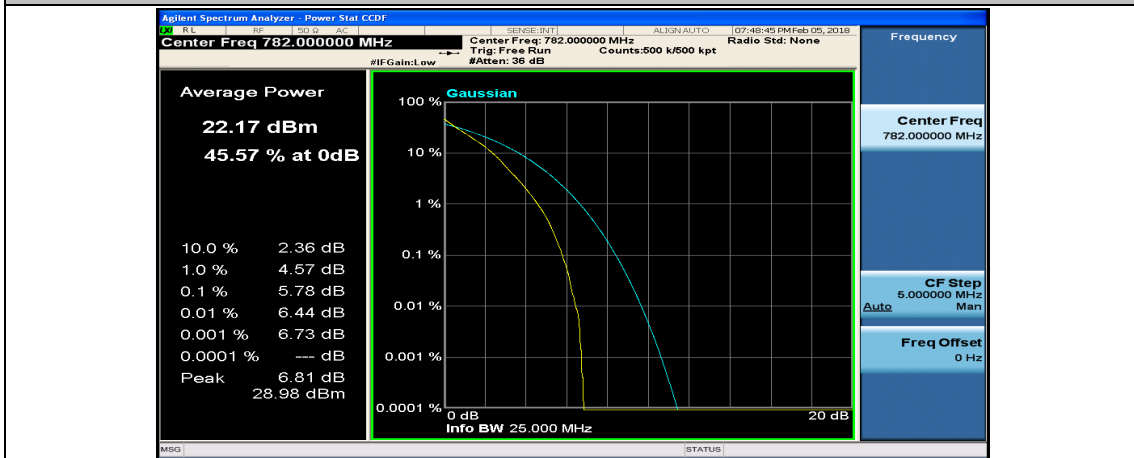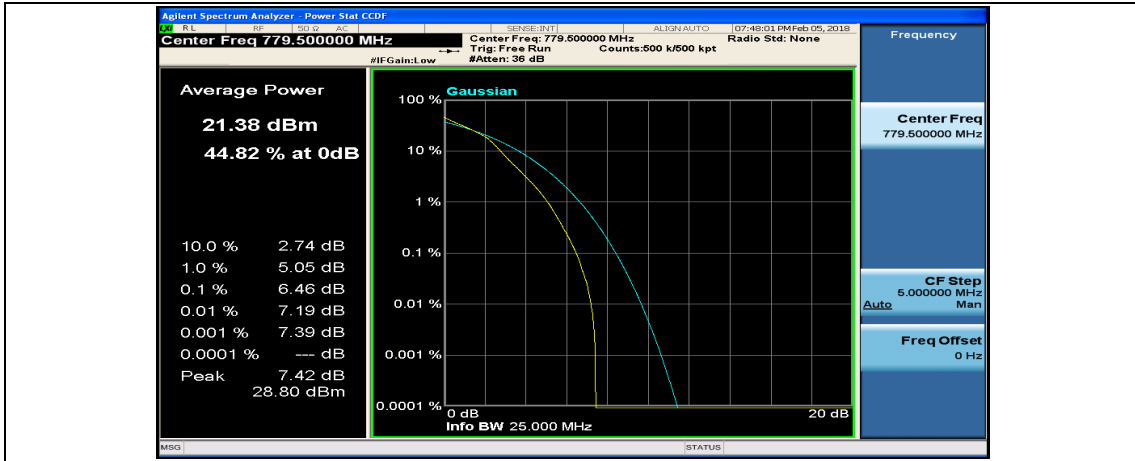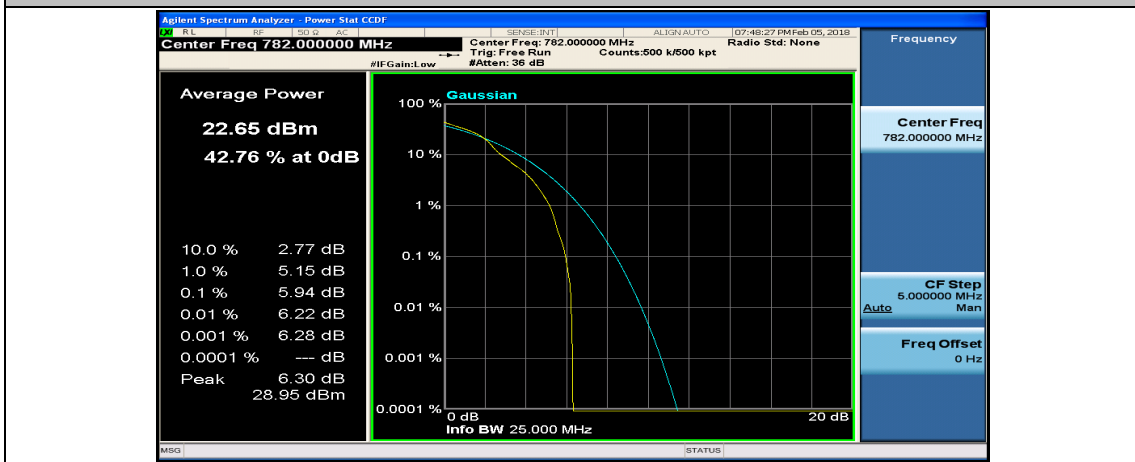

(Channel Bandwidth: 5 MHz)_MCH_QPSK_12RB#6
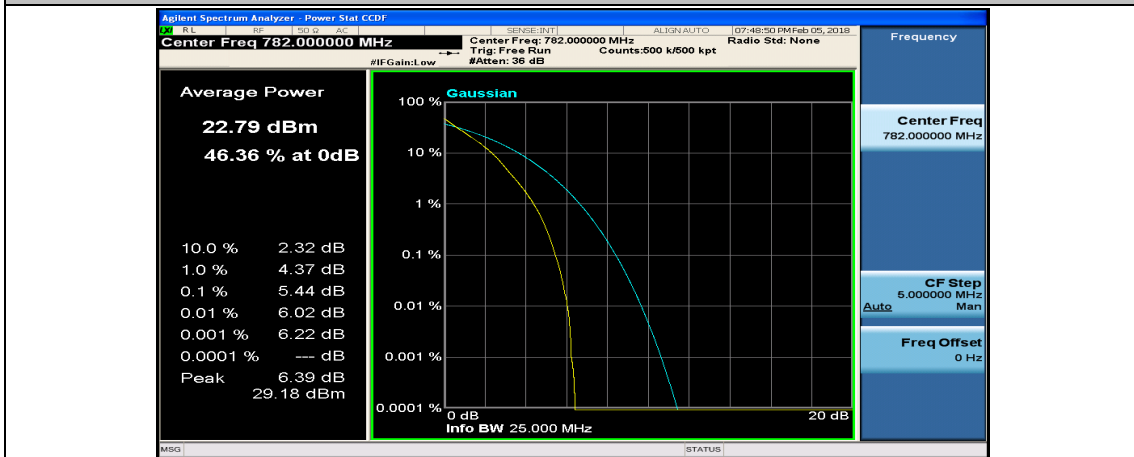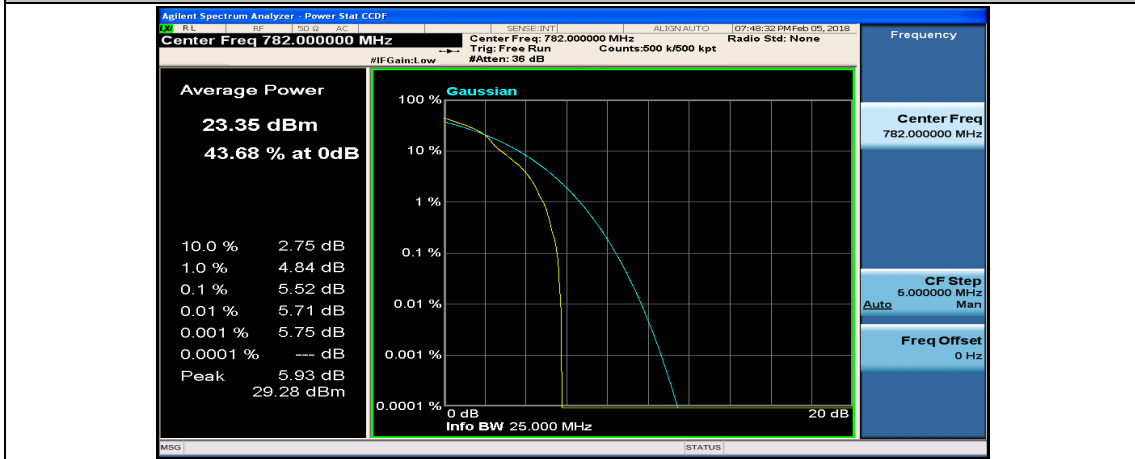

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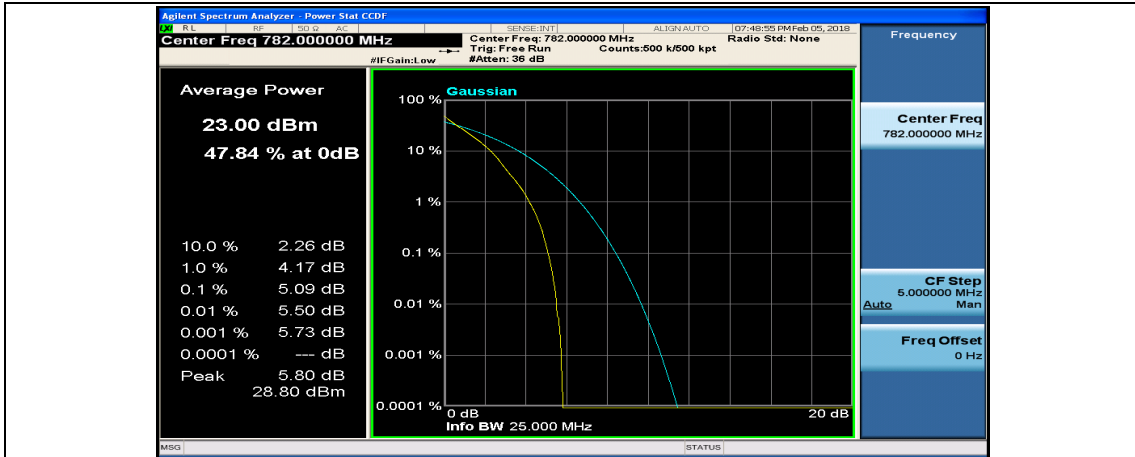
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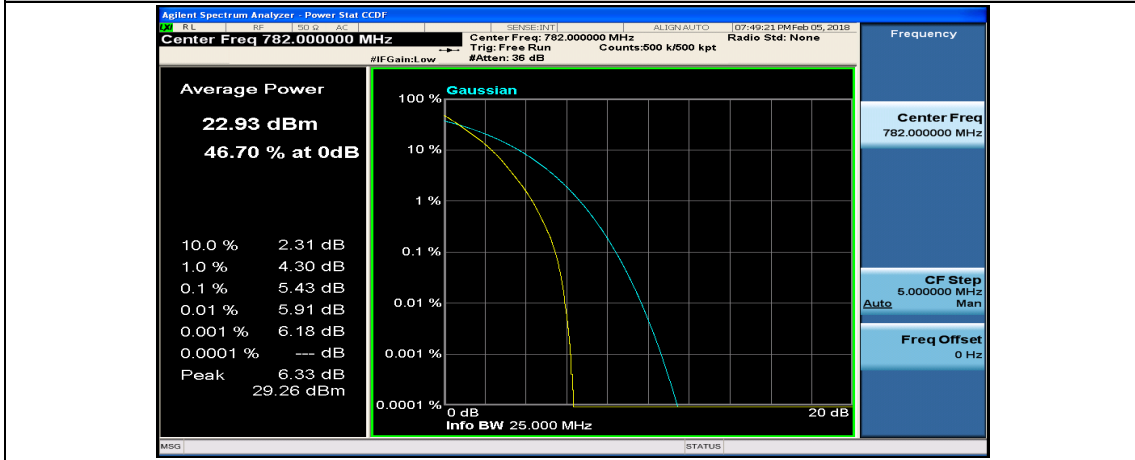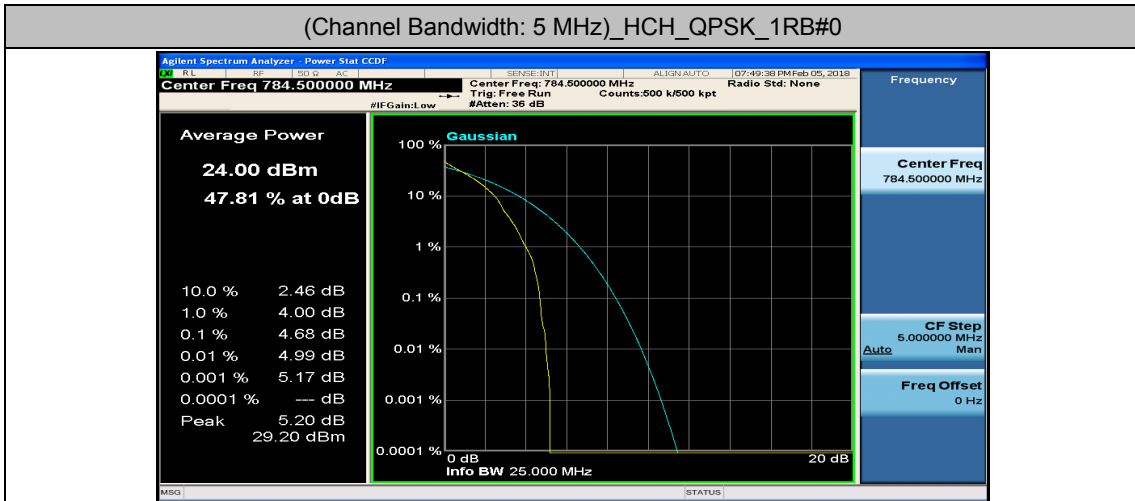
(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#0

(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#12

(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#24

(Channel Bandwidth: 5 MHz)_HCH_QPSK_12RB#0

(Channel Bandwidth: 5 MHz)_HCH_QPSK_12RB#6

(Channel Bandwidth: 5 MHz)_HCH_QPSK_12RB#13

(Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0

(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#0
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#12
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#24
(Channel Bandwidth: 5 MHz)_LCH_16QAM_12RB#0

(Channel Bandwidth: 5 MHz)_LCH_16QAM_12RB#6

(Channel Bandwidth: 5 MHz)_LCH_16QAM_12RB#13
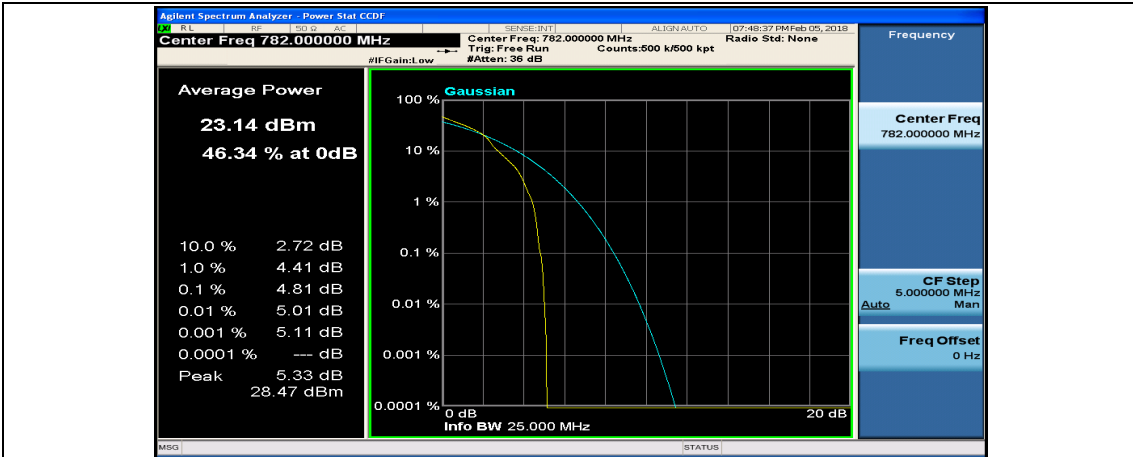

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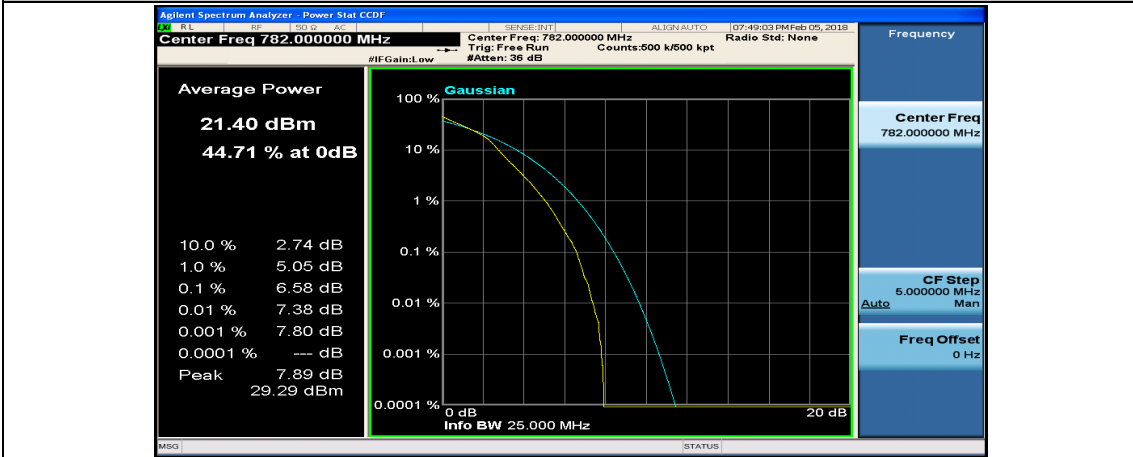
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#0

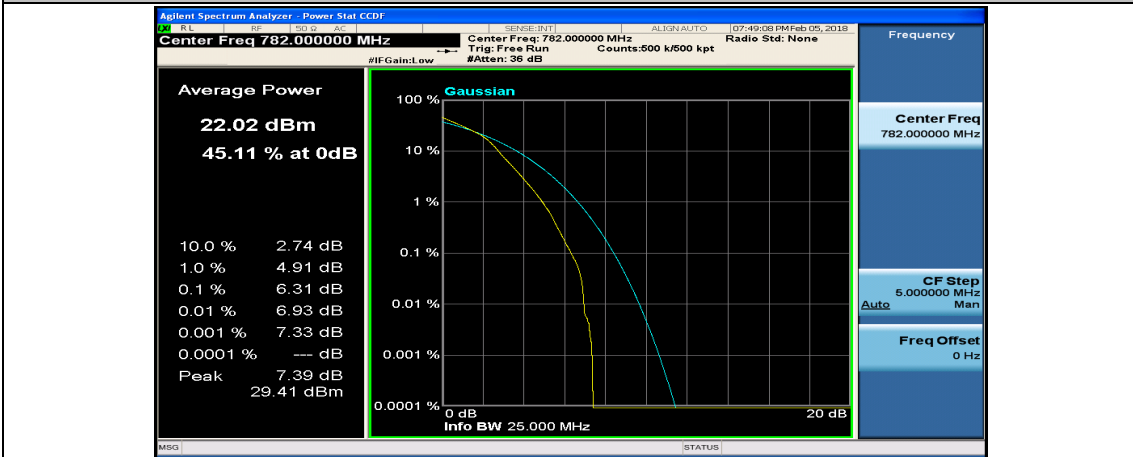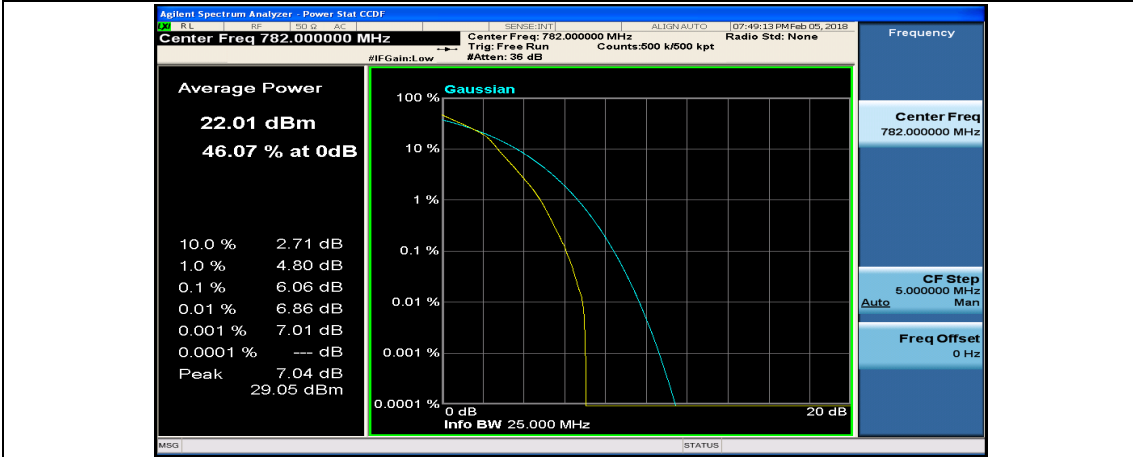| (Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#12 |
|---|

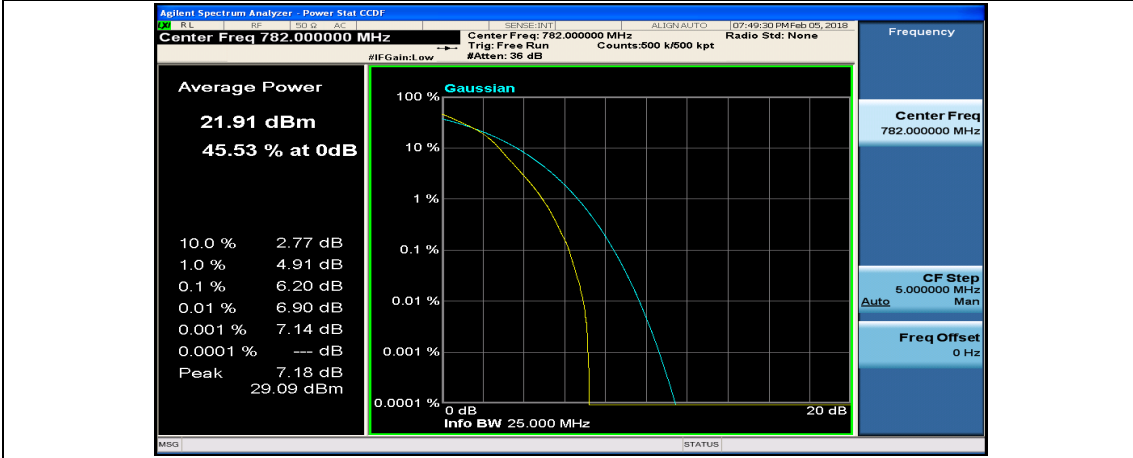| (Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#24 |
|---|

(Channel Bandwidth: 5 MHz)_MCH_16QAM_12RB#0
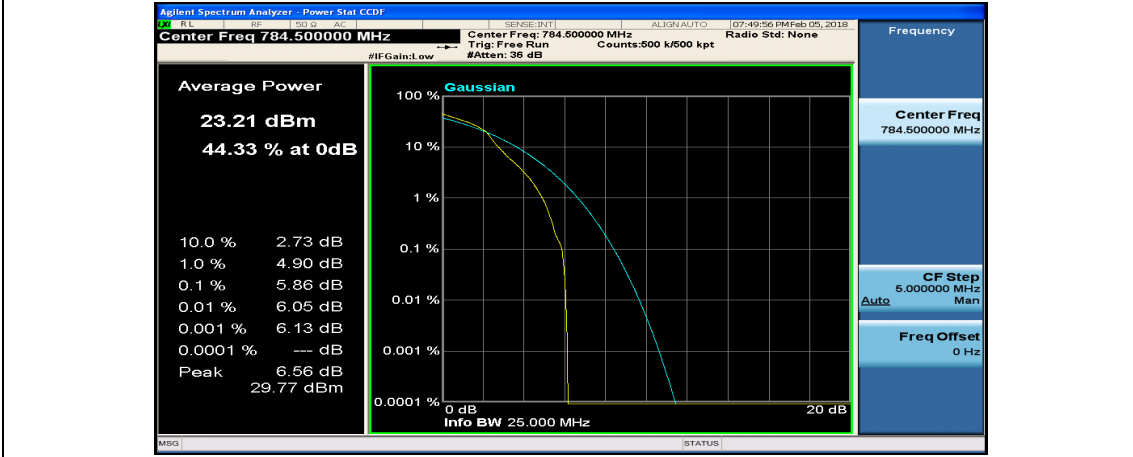

(Channel Bandwidth: 5 MHz)_MCH_16QAM_12RB#6

(Channel Bandwidth: 5 MHz)_MCH_16QAM_12RB#13

(Channel Bandwidth: 5 MHz)_MCH_16QAM_25RB#0
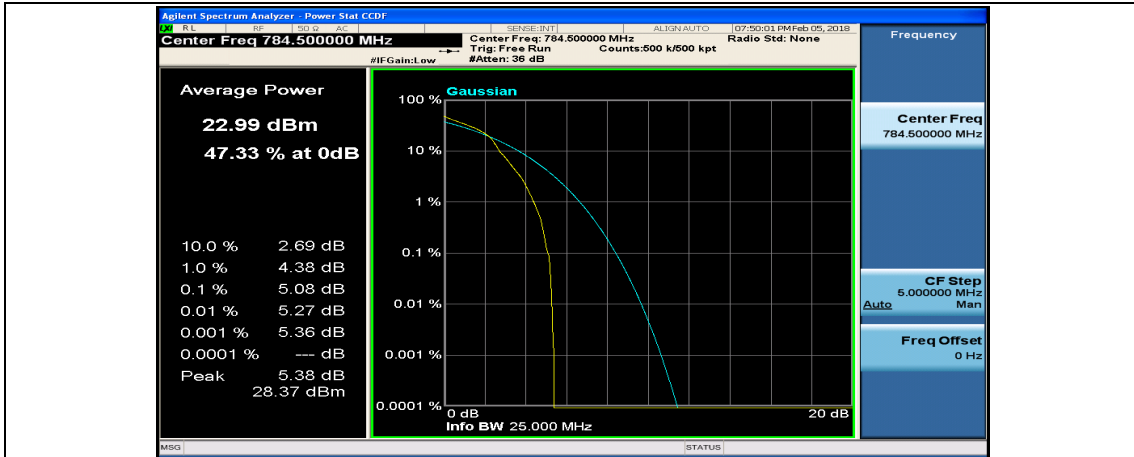

(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#0
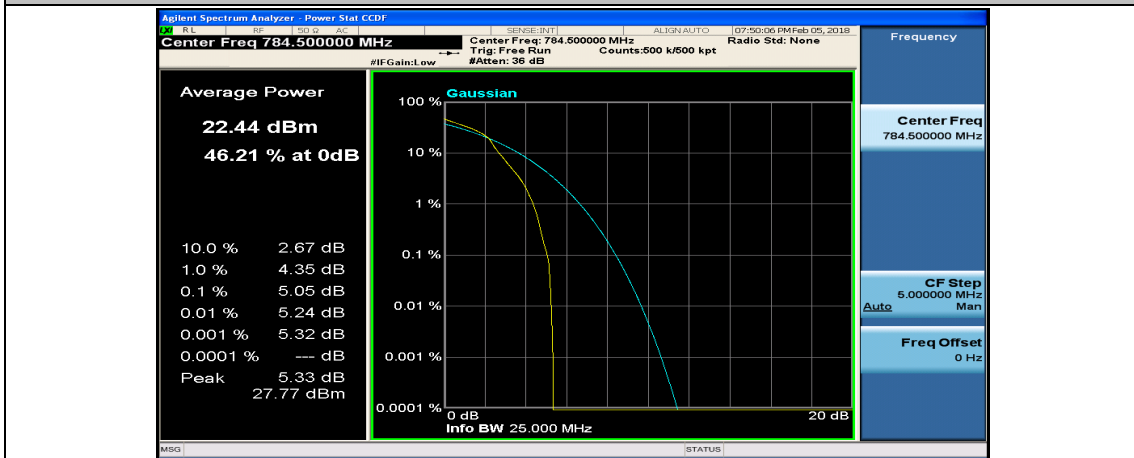

(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#12

(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#24

(Channel Bandwidth: 5 MHz)_HCH_16QAM_12RB#0
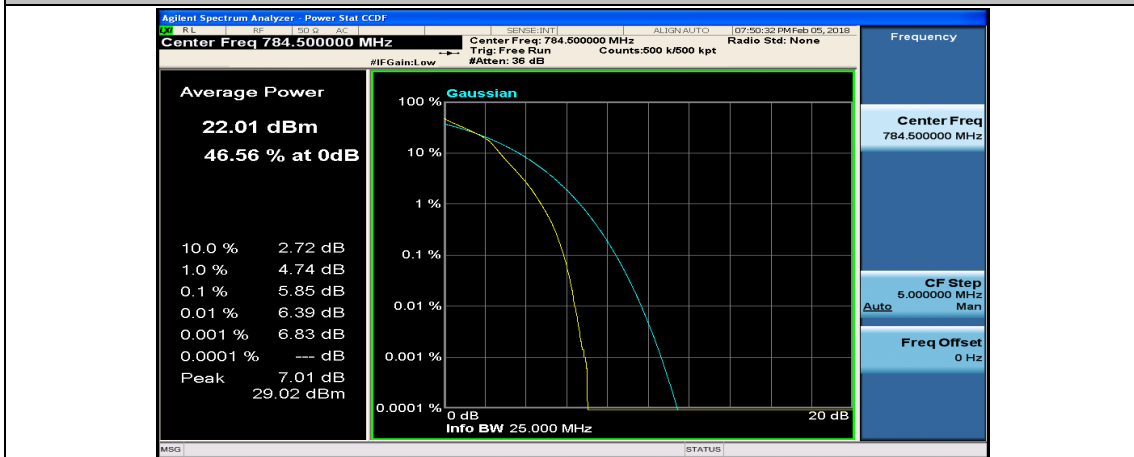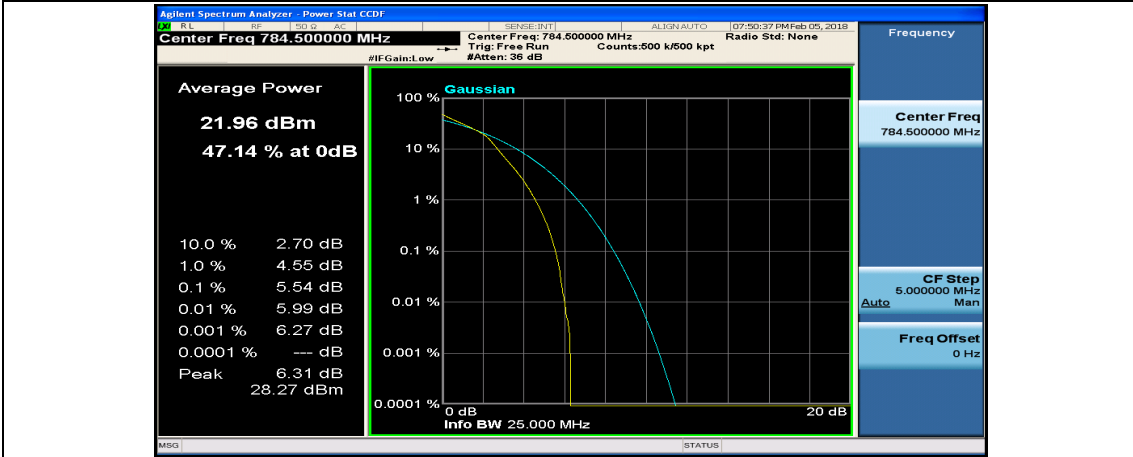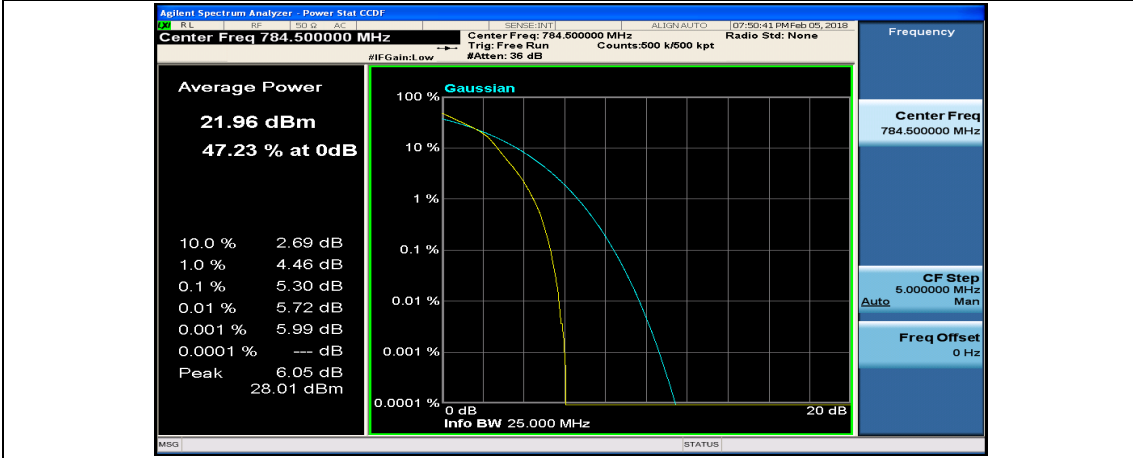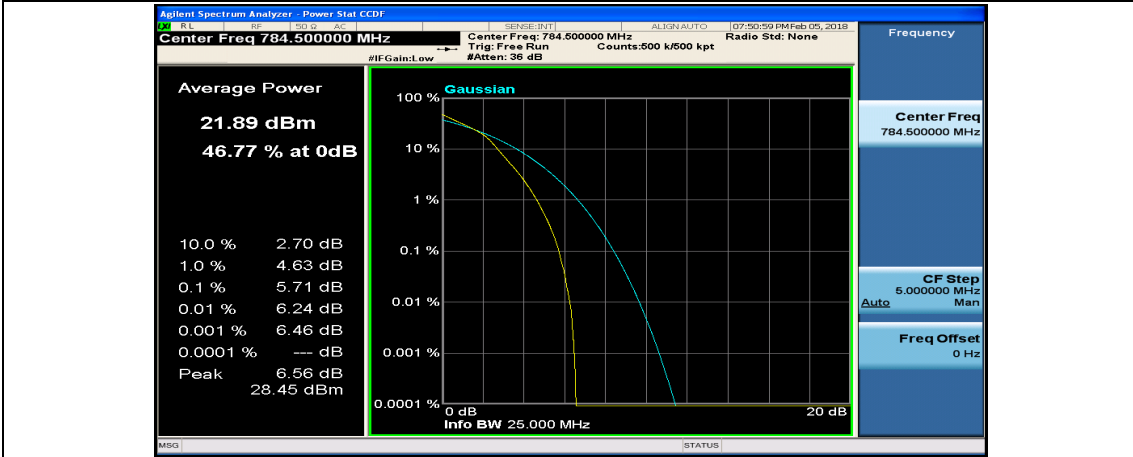

(Channel Bandwidth: 5 MHz)_HCH_16QAM_12RB#6

(Channel Bandwidth: 5 MHz)_HCH_16QAM_12RB#13

(Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#0
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#24
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#49
Channel Bandwidth: 10 MHz_MCH_QPSK_25RB#0

Channel Bandwidth: 10 MHz_MCH_QPSK_25RB#12

Channel Bandwidth: 10 MHz_MCH_QPSK_25RB#25

Channel Bandwidth: 10 MHz_MCH_QPSK_50RB#0

Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#0

Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#24

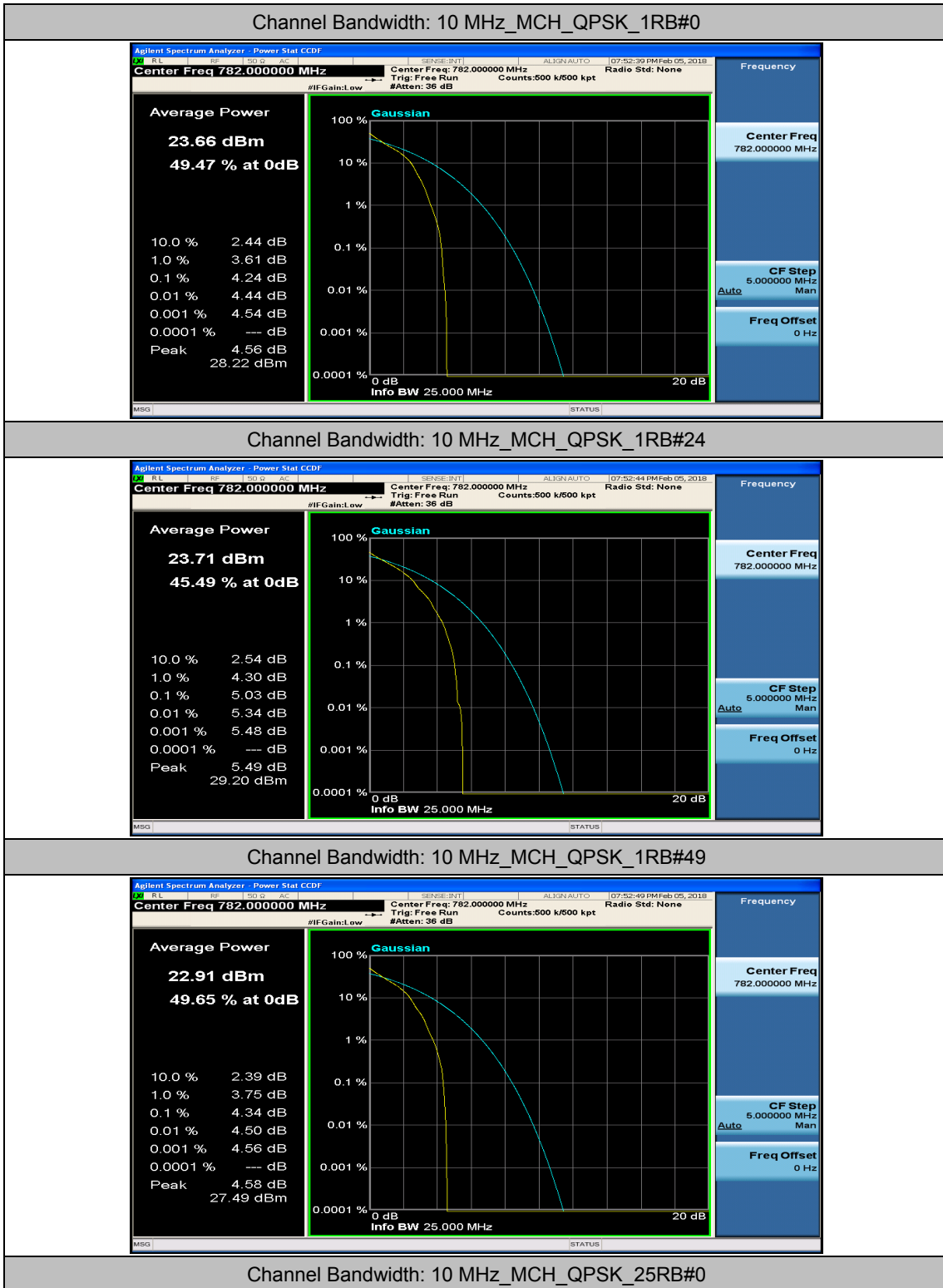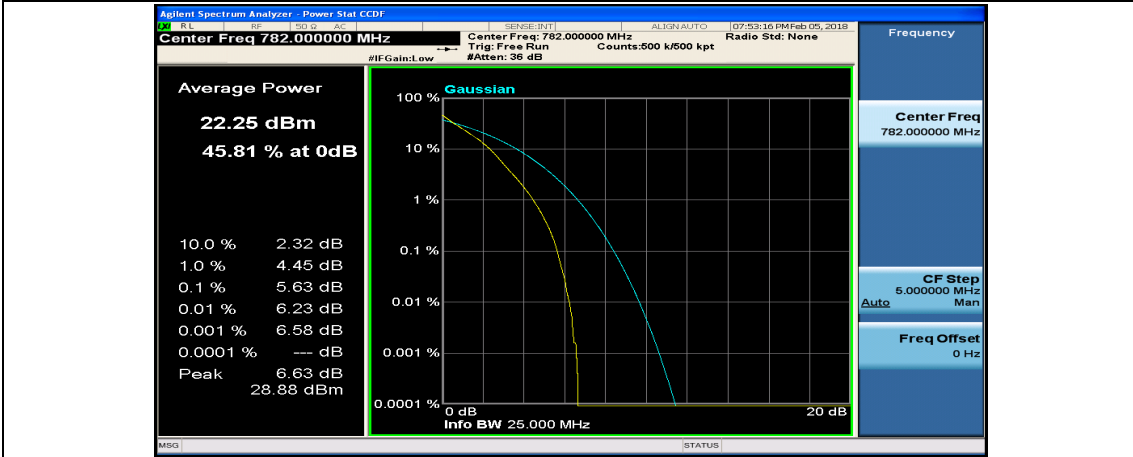**Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#49**

Channel Bandwidth: 10 MHz_MCH_16QAM_25RB#0

Channel Bandwidth: 10 MHz_MCH_16QAM_25RB#12

Channel Bandwidth: 10 MHz_MCH_16QAM_25RB#25

Channel Bandwidth: 10 MHz_MCH_16QAM_50RB#0
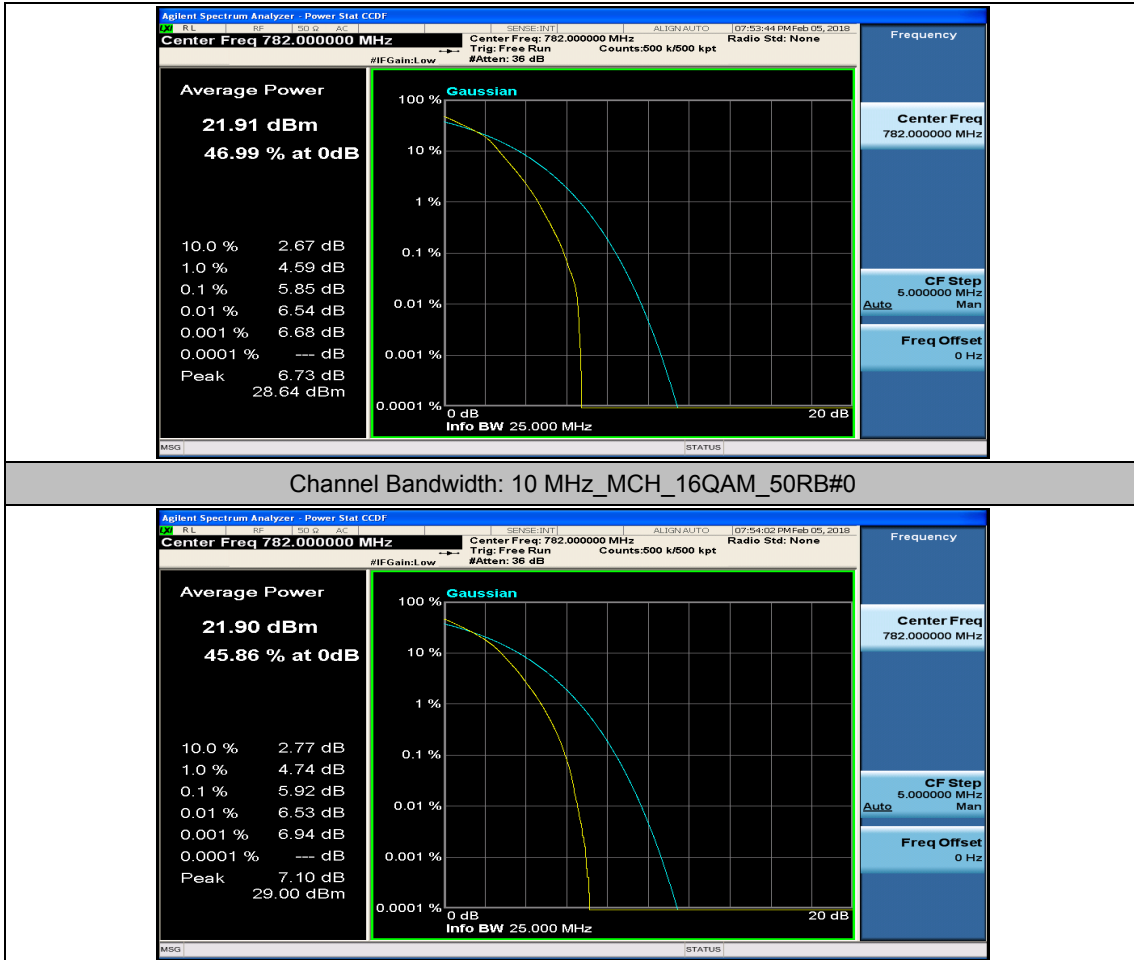
Appendix C: 26dB Bandwidth and Occupied Bandwidth

Test Result

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth	26dB Bandwidth	Verdict
		Size	Offset	(MHz)	(MHz)	
QPSK	LCH	25	0	4.4794	4.848	PASS
	MCH	25	0	4.4778	4.790	PASS
	HCH	25	0	4.4797	4.797	PASS
16QAM	LCH	25	0	4.4857	4.838	PASS
	MCH	25	0	4.4787	4.792	PASS
	HCH	25	0	4.4799	4.828	PASS

Channel Bandwidth: 10 MHz

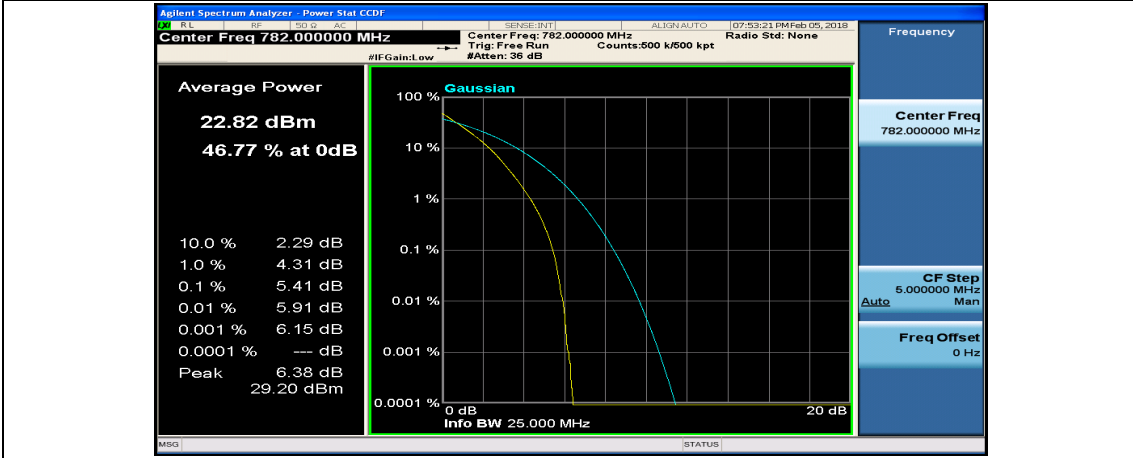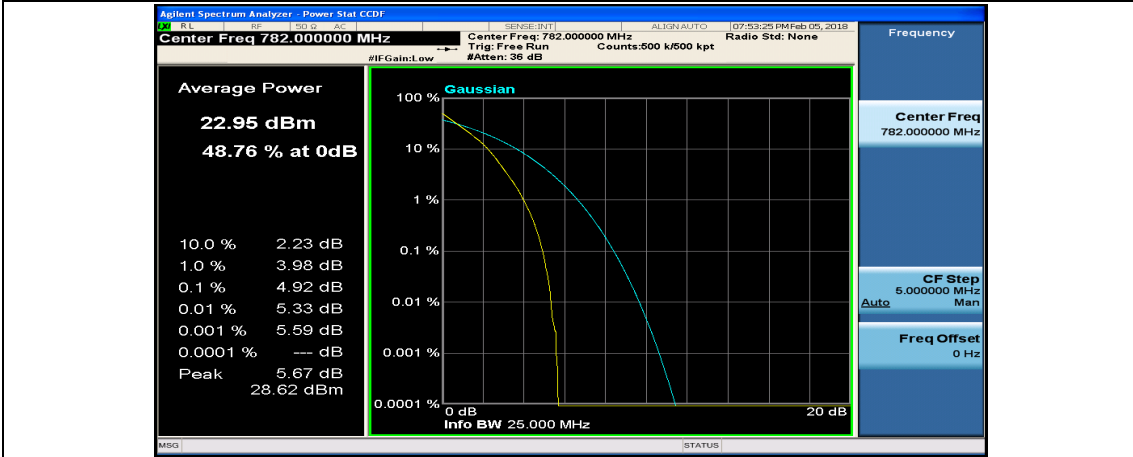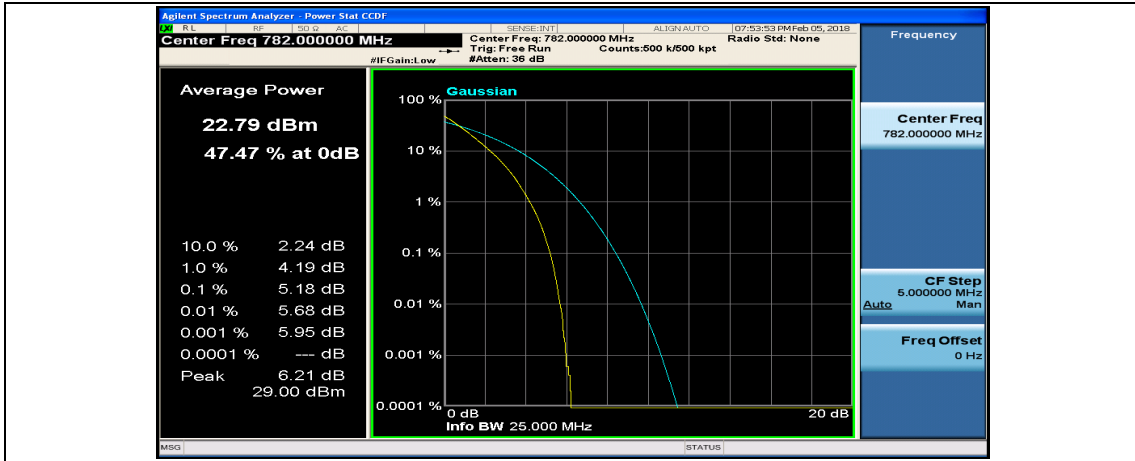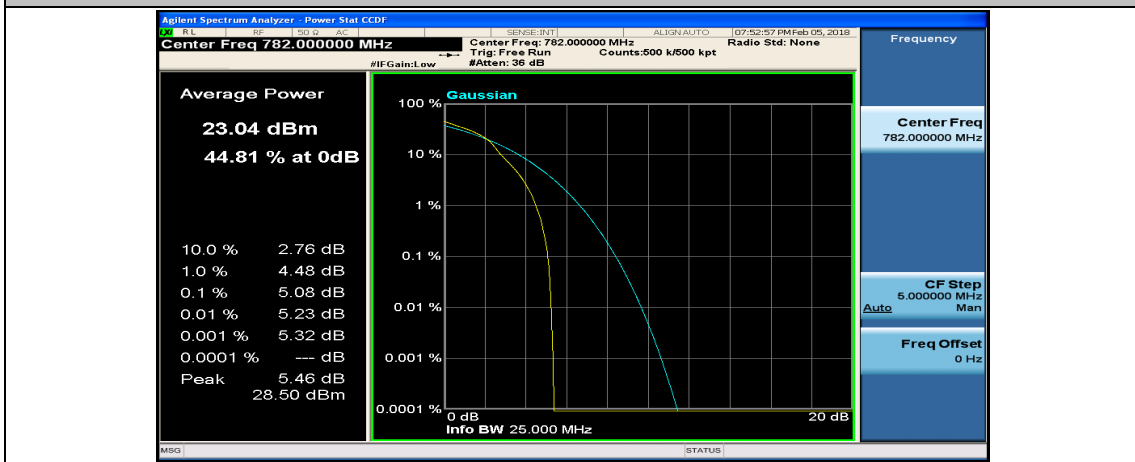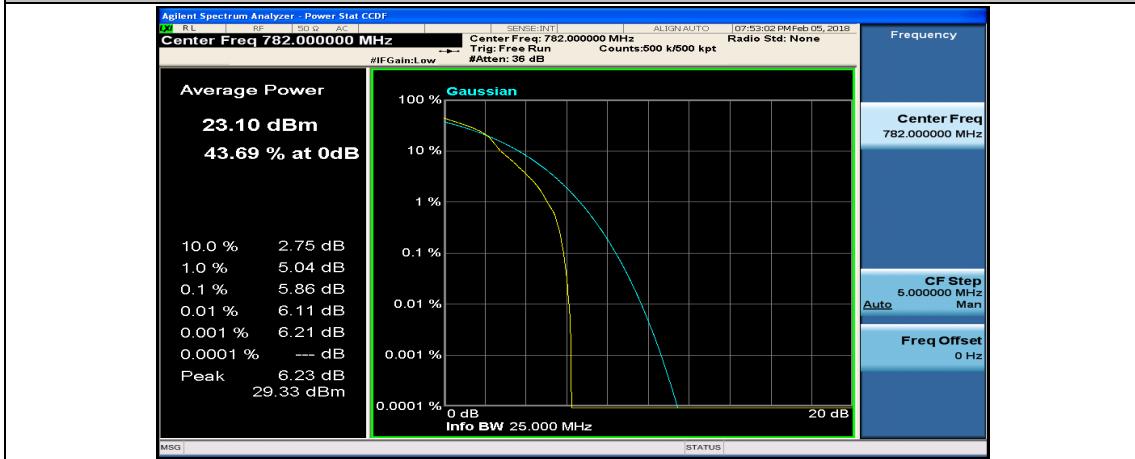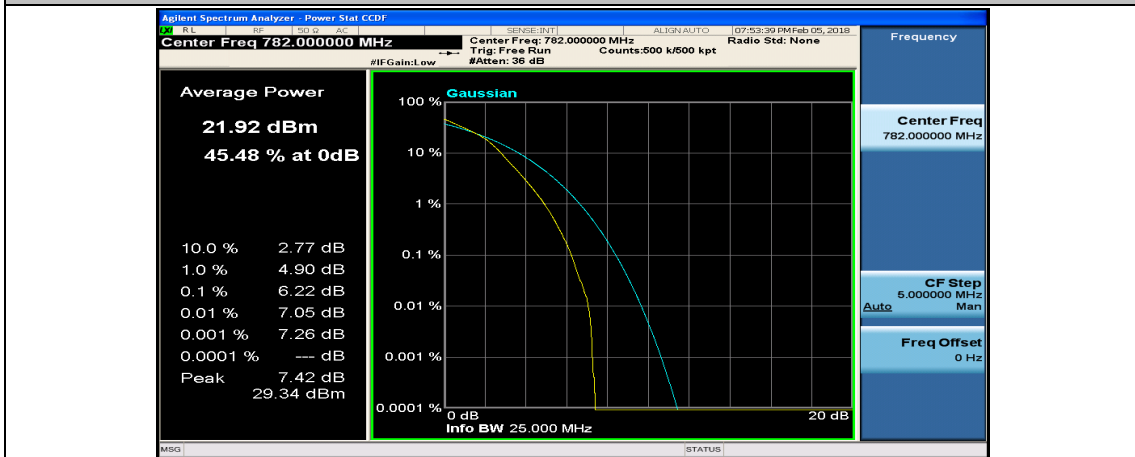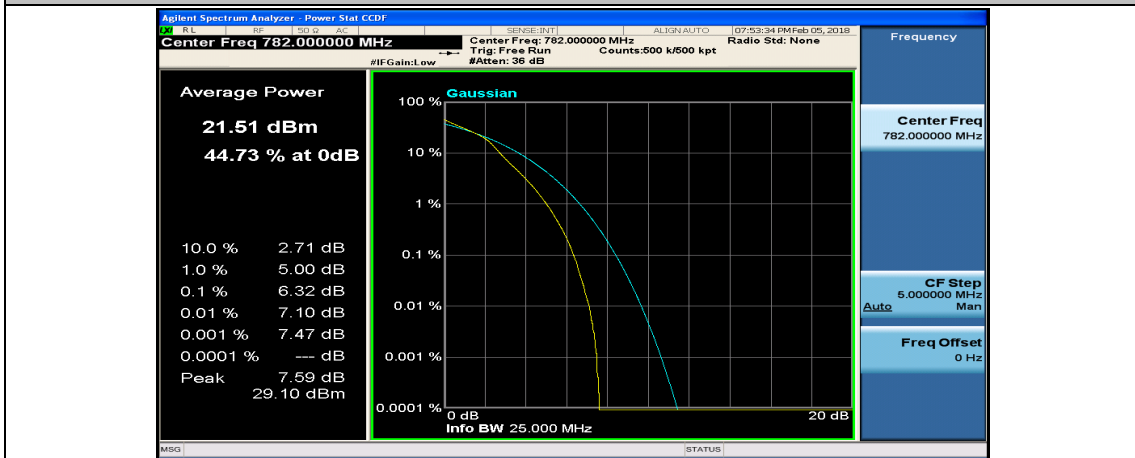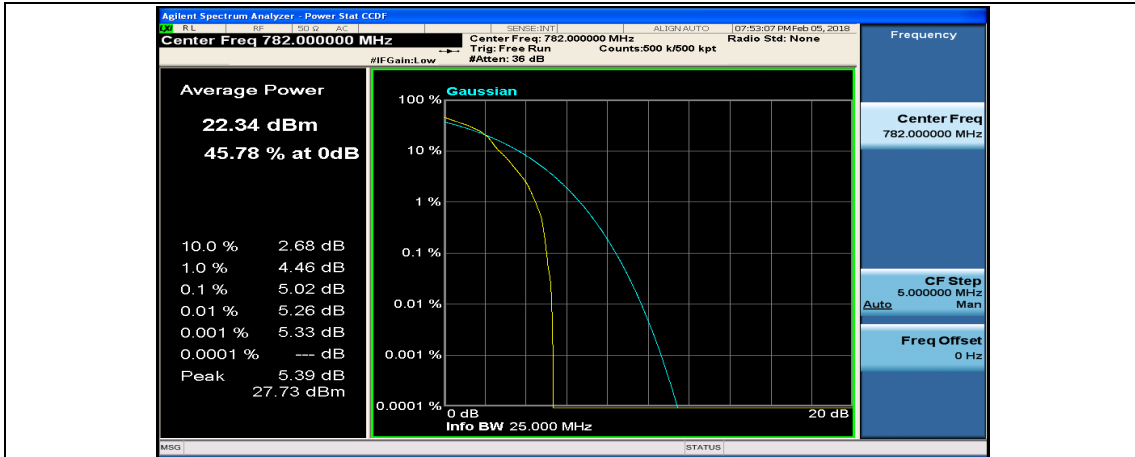| Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth	26dB Bandwidth	Verdict
		Size	Offset	(MHz)	(MHz)	
QPSK	MCH	50	0	8.9231	9.444	PASS
16QAM	MCH	50	0	8.9207	9.387	PASS

Test Graphs

Channel Bandwidth: 5 MHz

(Channel Bandwidth: 5 MHz)_LCH_QPSK_25RB#0

(Channel Bandwidth: 5 MHz)_MCH_QPSK_25RB#0

(Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0

(Channel Bandwidth: 5 MHz)_LCH_16QAM_25RB#0

Agilent Spectrum Analyzer - Occupied BW

LXI R L | RF | 50 Ω | AC | SENSE:INT | ALIGN AUTO | 07:57:16 PM Feb 05, 2018

Center Freq 779.500000 MHz | Center Freq: 779.500000 MHz | Radio Std: None
Trig: Free Run | Avg|Hold: 10/10
#IF Gain:Low | #Atten: 36 dB | Radio Device: BTS

10 dB/div | Ref Offset 8.16 dB
Log | Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

Center 779.5 MHz | Span 10 MHz
#Res BW 56 kHz | #VBW 160 kHz | #Sweep 100 ms

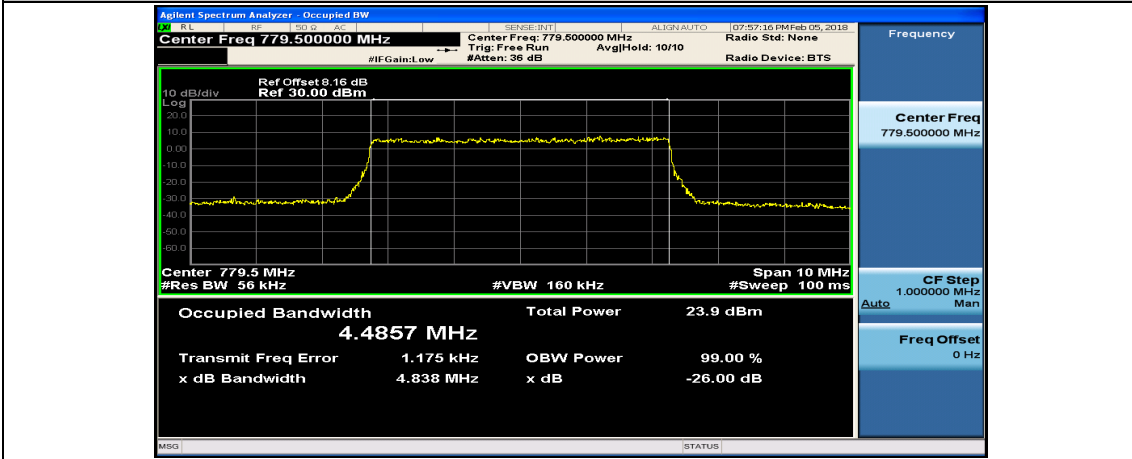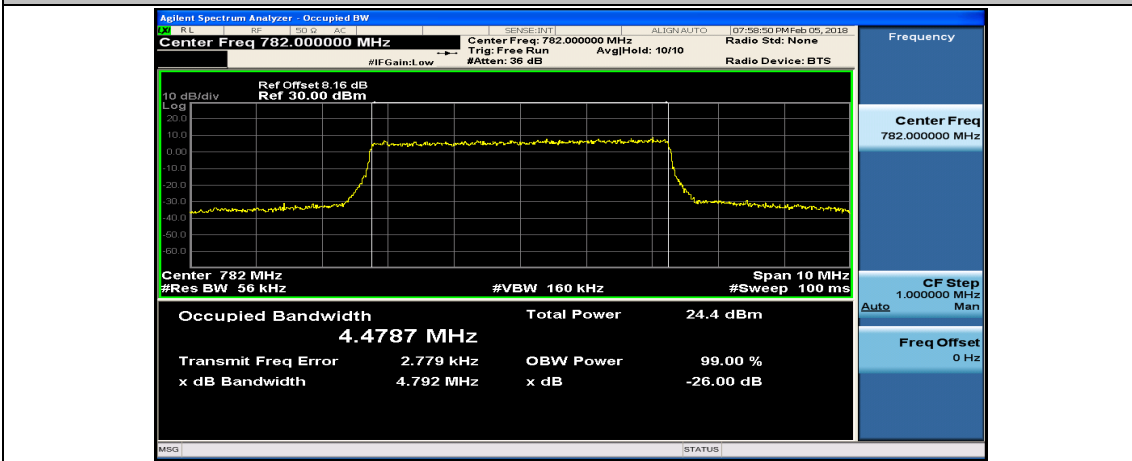| Occupied Bandwidth		Total Power	23.9 dBm
4.4857 MHz			
Transmit Freq Error	1.175 kHz	OBW Power	99.00 %
x dB Bandwidth	4.838 MHz	x dB	-26.00 dB

Frequency
Center Freq 779.500000 MHz
CF Step 1.000000 MHz
Auto Man
Freq Offset 0 Hz

MSG | STATUS

(Channel Bandwidth: 5 MHz)_MCH_16QAM_25RB#0

Agilent Spectrum Analyzer - Occupied BW

LXI R L | RF | 50 Ω | AC | SENSE:INT | ALIGN AUTO | 07:58:50 PM Feb 05, 2018

Center Freq 782.000000 MHz | Center Freq: 782.000000 MHz | Radio Std: None
Trig: Free Run | Avg|Hold: 10/10
#IF Gain:Low | #Atten: 36 dB | Radio Device: BTS

10 dB/div | Ref Offset 8.16 dB
Log | Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

Center 782 MHz | Span 10 MHz
#Res BW 56 kHz | #VBW 160 kHz | #Sweep 100 ms

Occupied Bandwidth		Total Power	24.4 dBm
4.4787 MHz			
Transmit Freq Error	2.779 kHz	OBW Power	99.00 %
x dB Bandwidth	4.792 MHz	x dB	-26.00 dB

Frequency
Center Freq 782.000000 MHz
CF Step 1.000000 MHz
Auto Man
Freq Offset 0 Hz

MSG | STATUS

(Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0

Agilent Spectrum Analyzer - Occupied BW

LXI R L | RF | 50 Ω | AC | SENSE:INT | ALIGN AUTO | 08:00:22 PM Feb 05, 2018

Center Freq 784.500000 MHz | Center Freq: 784.500000 MHz | Radio Std: None
Trig: Free Run | Avg|Hold: 10/10
#IF Gain:Low | #Atten: 36 dB | Radio Device: BTS

10 dB/div | Ref Offset 8.16 dB
Log | Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

Center 784.5 MHz | Span 10 MHz
#Res BW 56 kHz | #VBW 160 kHz | #Sweep 100 ms

Occupied Bandwidth		Total Power	24.4 dBm
4.4799 MHz			
Transmit Freq Error	-1.206 kHz	OBW Power	99.00 %
x dB Bandwidth	4.828 MHz	x dB	-26.00 dB

Frequency
Center Freq 784.500000 MHz
CF Step 1.000000 MHz
Auto Man
Freq Offset 0 Hz

MSG | STATUS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz_MCH_QPSK_50RB#0

Channel Bandwidth: 10 MHz_MCH_16QAM_50RB#0

Appendix D: Band Edge

Test Graphs

Channel Bandwidth: 5 MHz

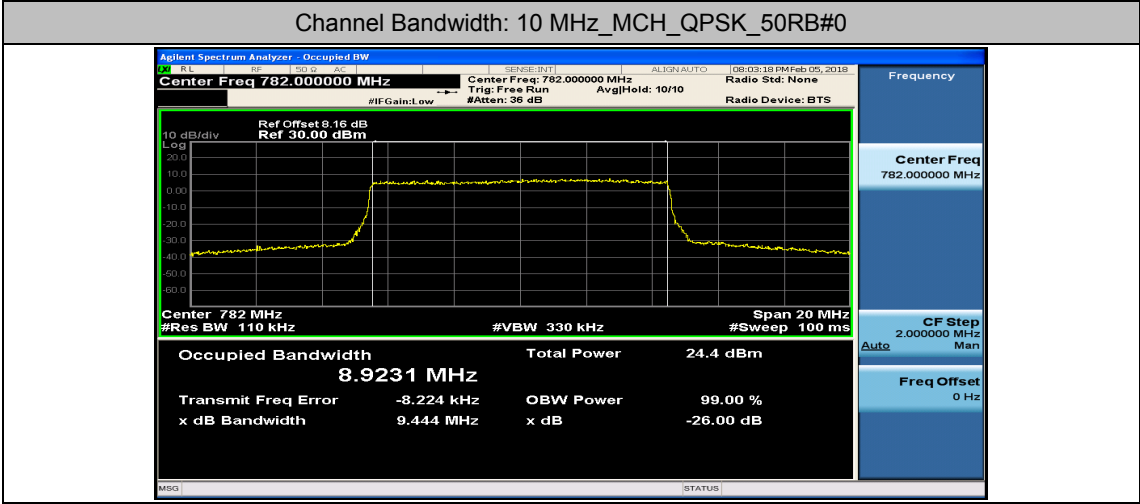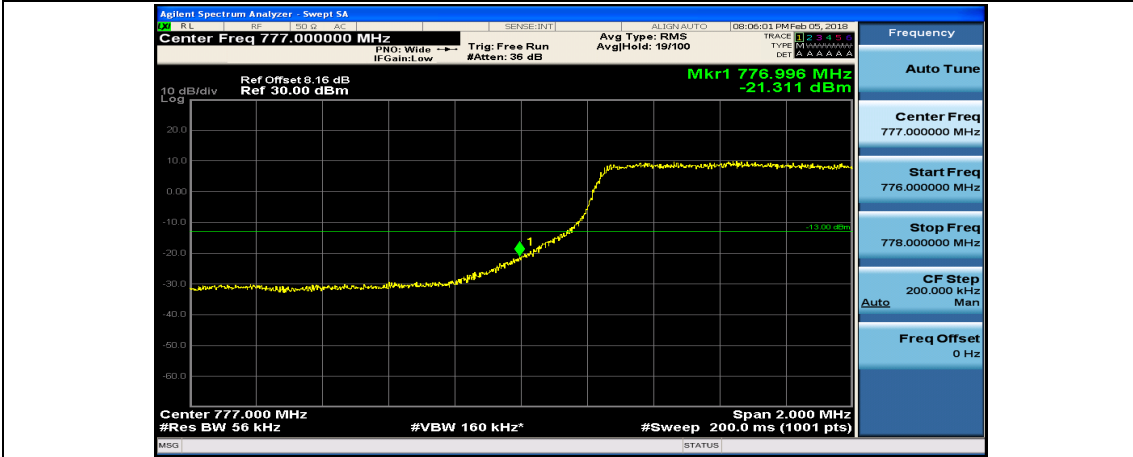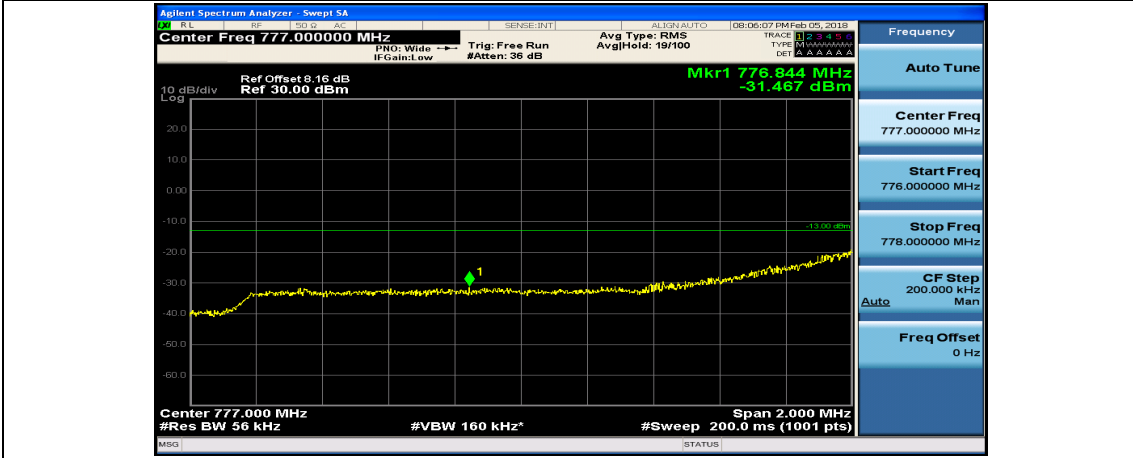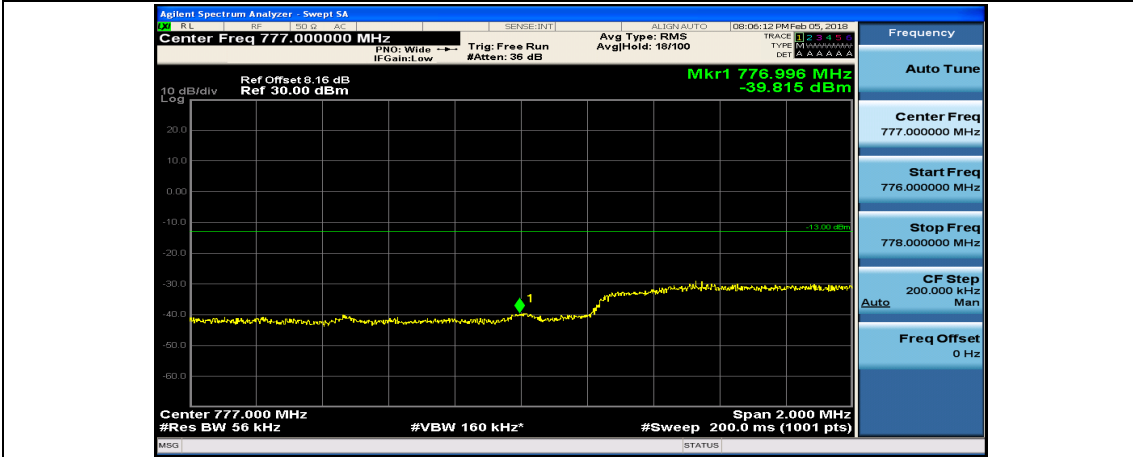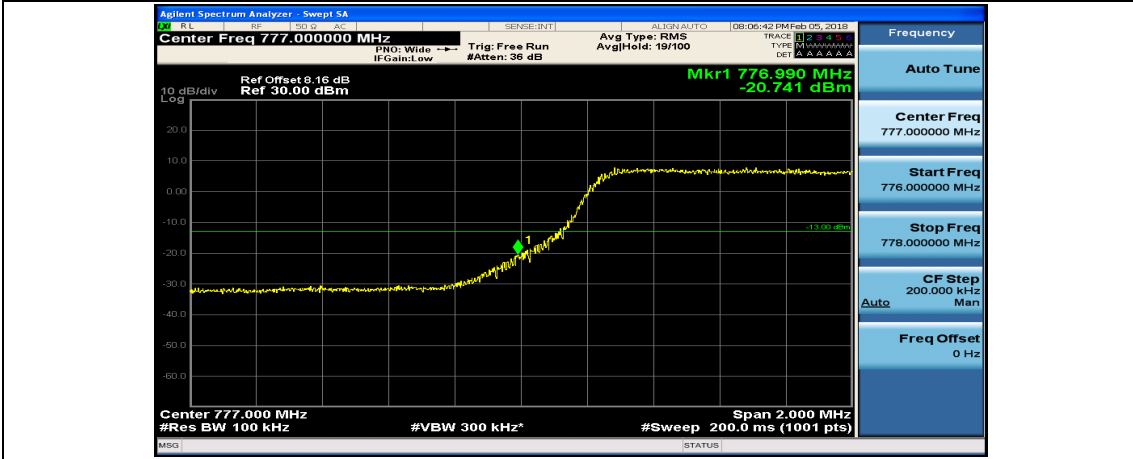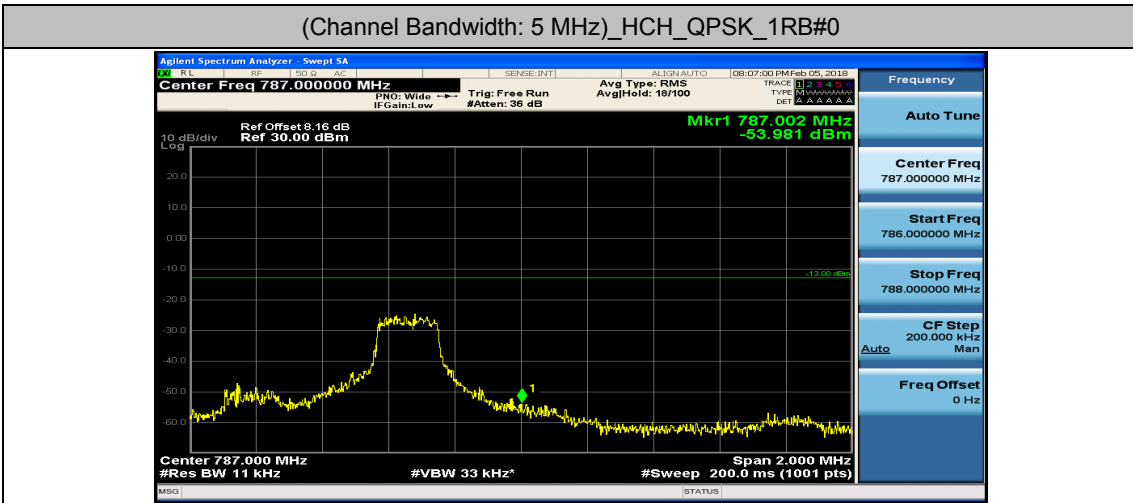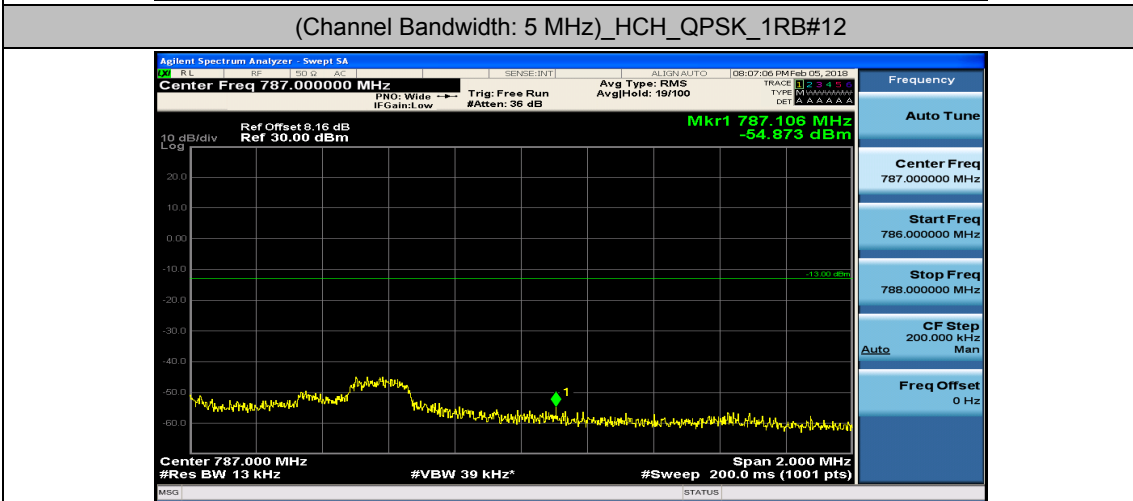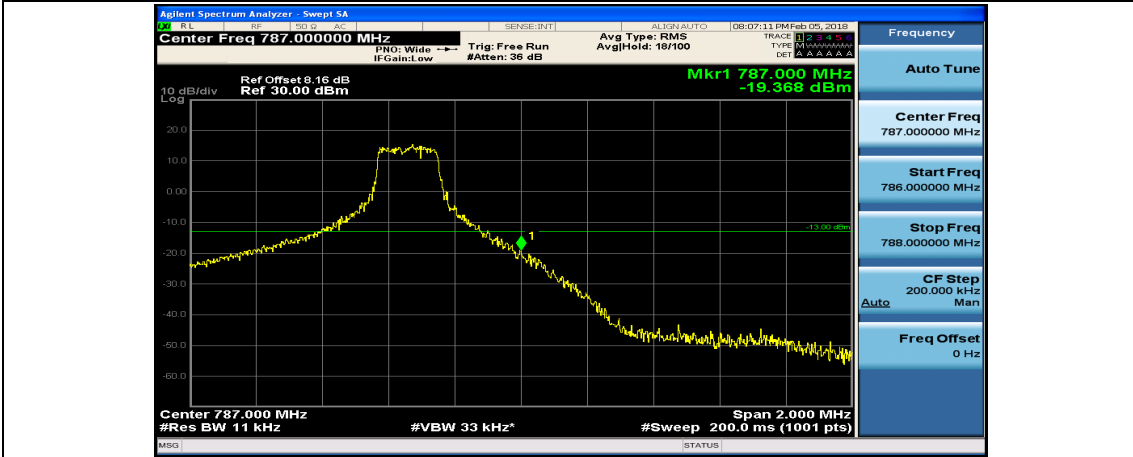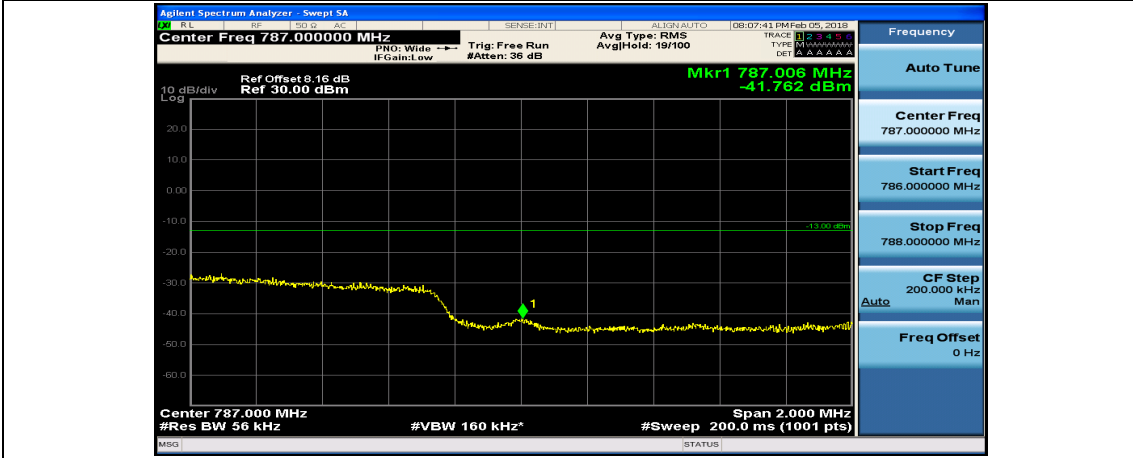| (Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#0 |
|---|
| |
| (Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#12 |
| |
| (Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#24 |
| |
| (Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#0 |

(Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#6

(Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#13

(Channel Bandwidth: 5 MHz)_LCH_QPSK_25RB#0

(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#0

(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#12
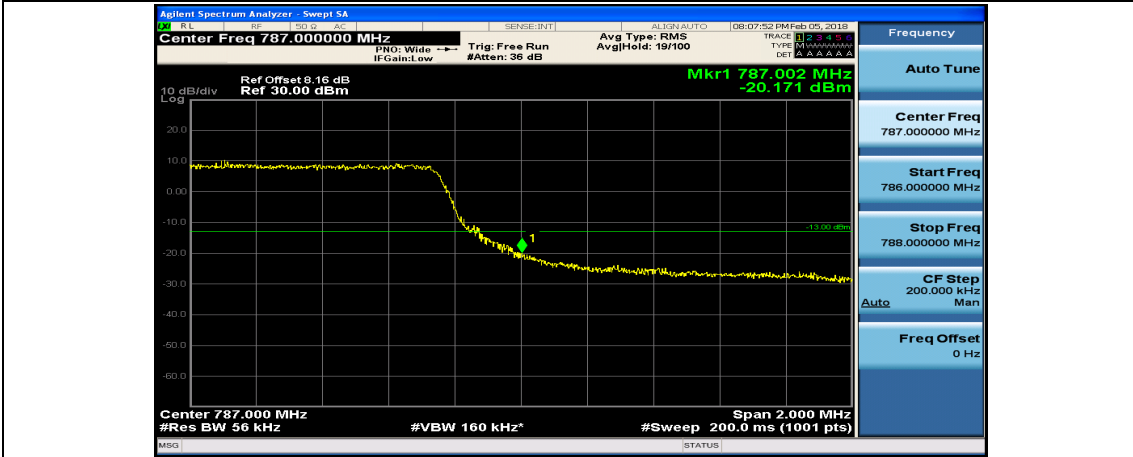

(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#24
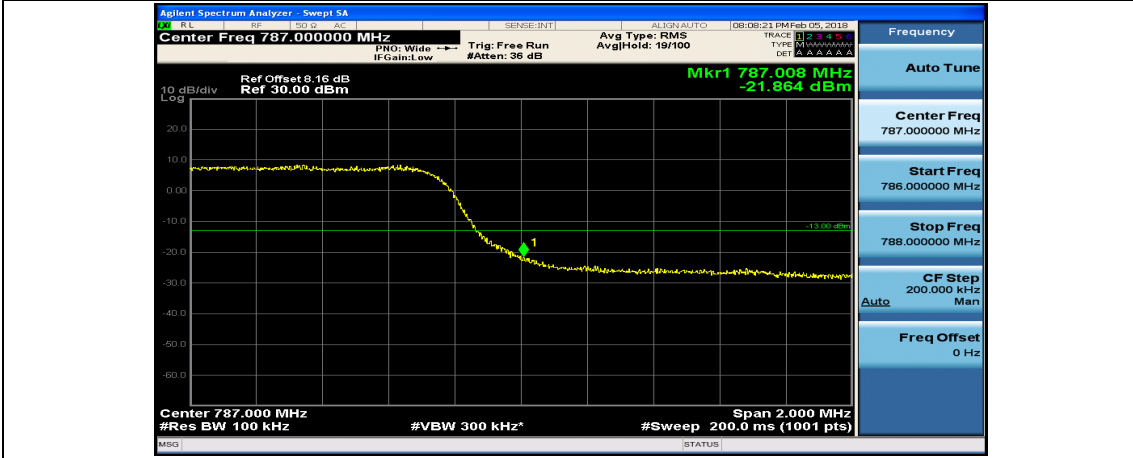
(Channel Bandwidth: 5 MHz)_HCH_QPSK_12RB#0
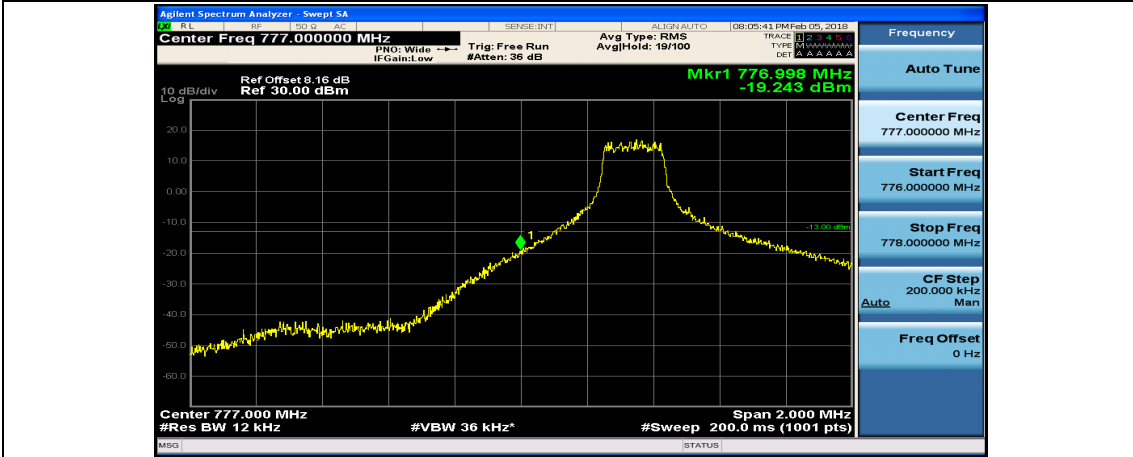

(Channel Bandwidth: 5 MHz)_HCH_QPSK_12RB#6

(Channel Bandwidth: 5 MHz)_HCH_QPSK_12RB#13

(Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0
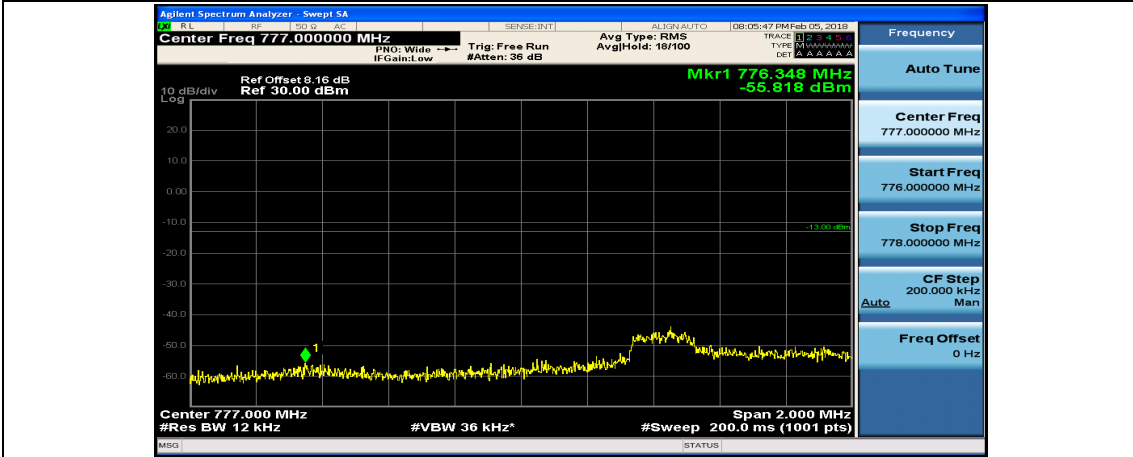

(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#0
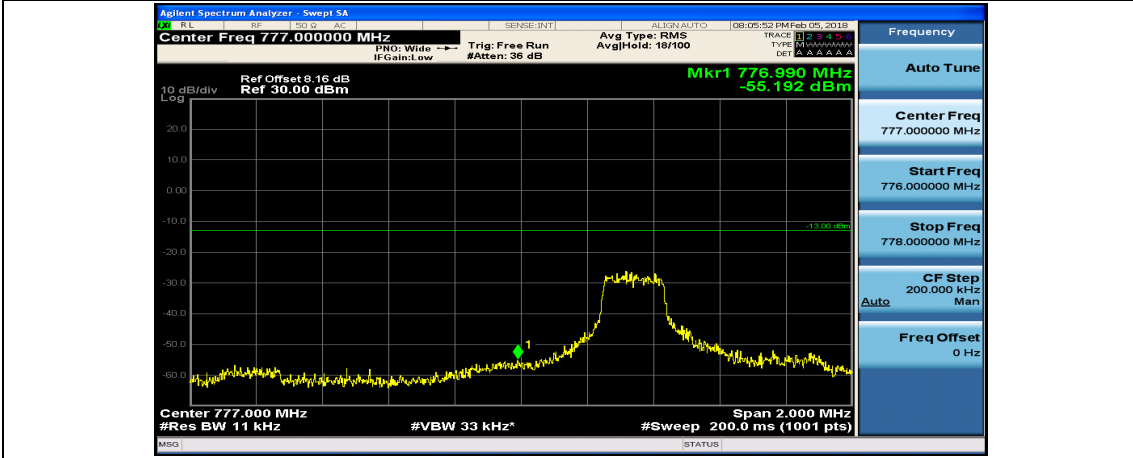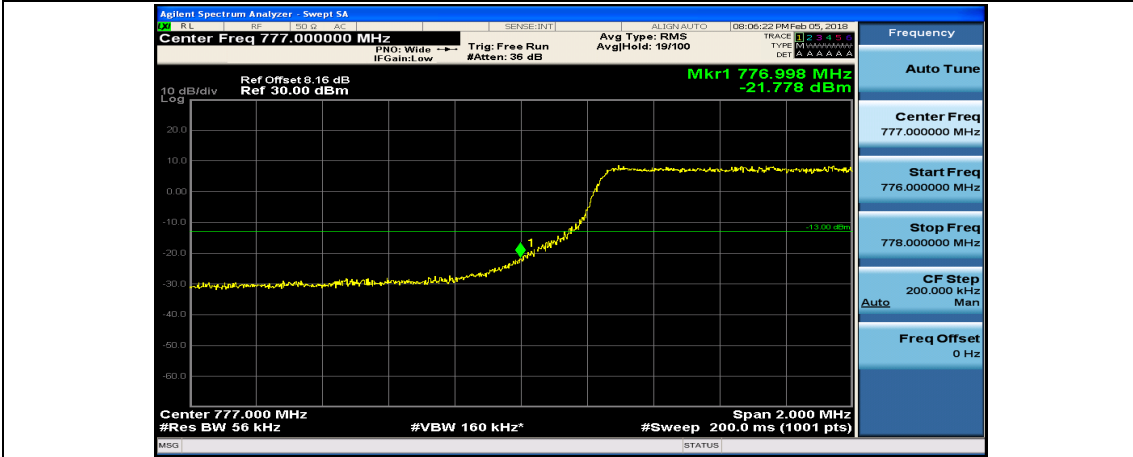

(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#12

(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#24

(Channel Bandwidth: 5 MHz)_LCH_16QAM_12RB#0

(Channel Bandwidth: 5 MHz)_LCH_16QAM_12RB#6