

Appendix for Band 41

Product Name: LTE Outdoor CPE
Model No: TITAN4000

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	22.08	PASS
		1	12	22.57	PASS
		1	24	22.45	PASS
		12	0	22.58	PASS
		12	6	22.40	PASS
		12	13	22.53	PASS
		25	0	22.35	PASS
	MCH	1	0	23.40	PASS
		1	12	23.62	PASS
		1	24	23.48	PASS
		12	0	23.91	PASS
		12	6	23.52	PASS
		12	13	23.60	PASS
		25	0	23.50	PASS
	HCH	1	0	22.26	PASS
		1	12	22.42	PASS
		1	24	22.25	PASS
		12	0	22.76	PASS
		12	6	22.39	PASS
		12	13	22.42	PASS
		25	0	22.36	PASS
16QAM	LCH	1	0	22.15	PASS
		1	12	22.66	PASS
		1	24	22.55	PASS
		12	0	22.56	PASS
		12	6	22.38	PASS
		12	13	22.52	PASS
		25	0	22.31	PASS
	MCH	1	0	23.67	PASS
		1	12	23.89	PASS
		1	24	23.76	PASS
		12	0	23.92	PASS
		12	6	23.55	PASS

		12	13	23.63	PASS
		25	0	23.46	PASS
	HCH	1	0	22.39	PASS
		1	12	22.56	PASS
		1	24	22.40	PASS
		12	0	22.77	PASS
		12	6	22.39	PASS
		12	13	22.42	PASS
		25	0	22.32	PASS

Channel Bandwidth: 10 MHz

Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	22.58	PASS
		1	24	22.42	PASS
		1	49	23.07	PASS
		25	0	22.49	PASS
		25	12	22.54	PASS
		25	25	22.73	PASS
		50	0	22.56	PASS
	MCH	1	0	23.63	PASS
		1	24	23.51	PASS
		1	49	23.86	PASS
		25	0	23.57	PASS
		25	12	23.57	PASS
		25	25	23.59	PASS
		50	0	23.59	PASS
	HCH	1	0	22.55	PASS
		1	24	22.42	PASS
		1	49	22.78	PASS
		25	0	22.42	PASS
		25	12	22.51	PASS
		25	25	22.59	PASS
		50	0	22.58	PASS
16QAM	LCH	1	0	22.37	PASS
		1	24	22.64	PASS
		1	49	23.28	PASS
		25	0	22.45	PASS
		25	12	22.51	PASS
		25	25	22.71	PASS
		50	0	22.54	PASS

	MCH	1	0	23.90	PASS
		1	24	23.79	PASS
		1	49	24.15	PASS
		25	0	23.57	PASS
		25	12	23.56	PASS
		25	25	23.59	PASS
		50	0	23.60	PASS
	HCH	1	0	22.59	PASS
		1	24	22.61	PASS
		1	49	22.98	PASS
		25	0	22.39	PASS
		25	12	22.49	PASS
		25	25	22.57	PASS
		50	0	22.55	PASS

Channel Bandwidth: 15 MHz

Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	22.64	PASS
		1	37	22.70	PASS
		1	74	22.90	PASS
		37	0	22.36	PASS
		37	18	22.73	PASS
		37	38	22.80	PASS
		75	0	22.63	PASS
	MCH	1	0	23.70	PASS
		1	37	23.52	PASS
		1	74	23.83	PASS
		37	0	23.44	PASS
		37	18	23.45	PASS
		37	38	23.62	PASS
		75	0	23.57	PASS
	HCH	1	0	22.41	PASS
		1	37	22.52	PASS
		1	74	22.78	PASS
		37	0	22.20	PASS
		37	18	22.43	PASS
		37	38	22.60	PASS
		75	0	22.43	PASS
16QAM	LCH	1	0	22.46	PASS
		1	37	22.91	PASS

		1	74	23.11	PASS
		37	0	22.33	PASS
		37	18	22.70	PASS
		37	38	22.77	PASS
		75	0	22.60	PASS
	MCH	1	0	23.91	PASS
		1	37	23.73	PASS
		1	74	24.04	PASS
		37	0	23.45	PASS
		37	18	23.45	PASS
		37	38	23.61	PASS
		75	0	23.55	PASS
	HCH	1	0	22.78	PASS
		1	37	22.71	PASS
		1	74	22.97	PASS
		37	0	22.17	PASS
		37	18	22.39	PASS
		37	38	22.55	PASS
		75	0	22.39	PASS

Channel Bandwidth: 20 MHz

Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	22.79	PASS
		1	49	22.83	PASS
		1	99	22.51	PASS
		50	0	22.73	PASS
		50	25	22.71	PASS
		50	50	22.48	PASS
		100	0	22.68	PASS
	MCH	1	0	23.84	PASS
		1	49	23.55	PASS
		1	99	24.20	PASS
		50	0	23.53	PASS
		50	25	23.41	PASS
		50	50	23.67	PASS
		100	0	23.55	PASS
	HCH	1	0	22.26	PASS
		1	49	22.38	PASS
		1	99	22.85	PASS
		50	0	22.32	PASS

		50	25	22.38	PASS
		50	50	22.49	PASS
		100	0	22.28	PASS
16QAM	LCH	1	0	22.73	PASS
		1	49	23.05	PASS
		1	99	22.73	PASS
		50	0	22.65	PASS
		50	25	22.65	PASS
		50	50	22.44	PASS
		100	0	22.65	PASS
	MCH	1	0	24.08	PASS
		1	49	23.80	PASS
		1	99	24.27	PASS
		50	0	23.53	PASS
		50	25	23.42	PASS
		50	50	23.67	PASS
		100	0	23.51	PASS
	HCH	1	0	22.91	PASS
		1	49	22.61	PASS
		1	99	23.06	PASS
		50	0	22.27	PASS
		50	25	22.32	PASS
		50	50	22.44	PASS
		100	0	22.25	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 [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	8.35	<13	PASS
		1	12	7.8	<13	PASS
		1	24	7.91	<13	PASS
		12	0	7.53	<13	PASS
		12	6	7.79	<13	PASS
		12	13	8.93	<13	PASS
		25	0	7.73	<13	PASS
	MCH	1	0	9.16	<13	PASS
		1	12	8.22	<13	PASS
		1	24	9.57	<13	PASS
		12	0	7.81	<13	PASS
		12	6	8.06	<13	PASS
		12	13	11.7	<13	PASS
		25	0	8.2	<13	PASS
	HCH	1	0	8.04	<13	PASS
		1	12	9.15	<13	PASS
		1	24	11.06	<13	PASS
		12	0	6.77	<13	PASS
		12	6	8.17	<13	PASS
		12	13	9.59	<13	PASS
		25	0	8.01	<13	PASS
16QAM	LCH	1	0	9.42	<13	PASS
		1	12	10.29	<13	PASS
		1	24	12.64	<13	PASS
		12	0	8.16	<13	PASS
		12	6	7.28	<13	PASS
		12	13	7.84	<13	PASS
		25	0	10.35	<13	PASS
	MCH	1	0	10.94	<13	PASS
		1	12	10.09	<13	PASS
		1	24	9.55	<13	PASS

		12	0	8.66	<13	PASS
		12	6	10.09	<13	PASS
		12	13	8.73	<13	PASS
		25	0	11.42	<13	PASS
	HCH	1	0	8.9	<13	PASS
		1	12	9.98	<13	PASS
		1	24	11.49	<13	PASS
		12	0	8.83	<13	PASS
		12	6	9.34	<13	PASS
		12	13	10.39	<13	PASS
		25	0	8.98	<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	LCH	1	0	7.88	<13	PASS
		1	24	9.6	<13	PASS
		1	49	9.59	<13	PASS
		25	0	9.73	<13	PASS
		25	12	10.3	<13	PASS
		25	25	8.34	<13	PASS
		50	0	9.82	<13	PASS
	MCH	1	0	9.8	<13	PASS
		1	24	8.61	<13	PASS
		1	49	6.75	<13	PASS
		25	0	8.85	<13	PASS
		25	12	9.98	<13	PASS
		25	25	10.64	<13	PASS
		50	0	7.6	<13	PASS
	HCH	1	0	7.17	<13	PASS
		1	24	7.86	<13	PASS
		1	49	9.44	<13	PASS
		25	0	9.42	<13	PASS
		25	12	9.49	<13	PASS
		25	25	7.89	<13	PASS
		50	0	7.81	<13	PASS
16QAM	LCH	1	0	8.77	<13	PASS
		1	24	9.74	<13	PASS
		1	49	9.49	<13	PASS
		25	0	11.07	<13	PASS

		25	12	8.84	<13	PASS
		25	25	8.82	<13	PASS
		50	0	8.73	<13	PASS
	MCH	1	0	10.49	<13	PASS
		1	24	9.26	<13	PASS
		1	49	9.54	<13	PASS
		25	0	8.34	<13	PASS
		25	12	8.35	<13	PASS
		25	25	8.34	<13	PASS
		50	0	8.61	<13	PASS
	HCH	1	0	10.06	<13	PASS
		1	24	9.24	<13	PASS
		1	49	9.07	<13	PASS
		25	0	8.03	<13	PASS
		25	12	8.2	<13	PASS
		25	25	9.43	<13	PASS
		50	0	7.91	<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	LCH	1	0	8.46	<13	PASS
		1	37	8.32	<13	PASS
		1	74	8.55	<13	PASS
		37	0	7.61	<13	PASS
		37	18	8.17	<13	PASS
		37	38	8.26	<13	PASS
		75	0	12.43	<13	PASS
	MCH	1	0	8.94	<13	PASS
		1	37	7.72	<13	PASS
		1	74	8.48	<13	PASS
		37	0	9.72	<13	PASS
		37	18	8.13	<13	PASS
		37	38	7.46	<13	PASS
		75	0	7.09	<13	PASS
	HCH	1	0	8.57	<13	PASS
		1	37	8.35	<13	PASS
		1	74	9.23	<13	PASS
		37	0	9.22	<13	PASS
		37	18	9.12	<13	PASS

		37	38	7.69	<13	PASS
		75	0	9.79	<13	PASS
16QAM	LCH	1	0	10.92	<13	PASS
		1	37	9.06	<13	PASS
		1	74	8.89	<13	PASS
		37	0	10.18	<13	PASS
		37	18	9.72	<13	PASS
		37	38	8.99	<13	PASS
		75	0	9.09	<13	PASS
		75	0	9.09	<13	PASS
	MCH	1	0	10.81	<13	PASS
		1	37	10.03	<13	PASS
		1	74	8.9	<13	PASS
		37	0	9.74	<13	PASS
		37	18	8.93	<13	PASS
		37	38	8.51	<13	PASS
		75	0	9.76	<13	PASS
		75	0	9.76	<13	PASS
	HCH	1	0	9.58	<13	PASS
		1	37	7.25	<13	PASS
		1	74	8.34	<13	PASS
		37	0	10.73	<13	PASS
		37	18	9.18	<13	PASS
		37	38	10.29	<13	PASS
		75	0	10.17	<13	PASS
		75	0	10.17	<13	PASS

Channel Bandwidth: 20 MHz

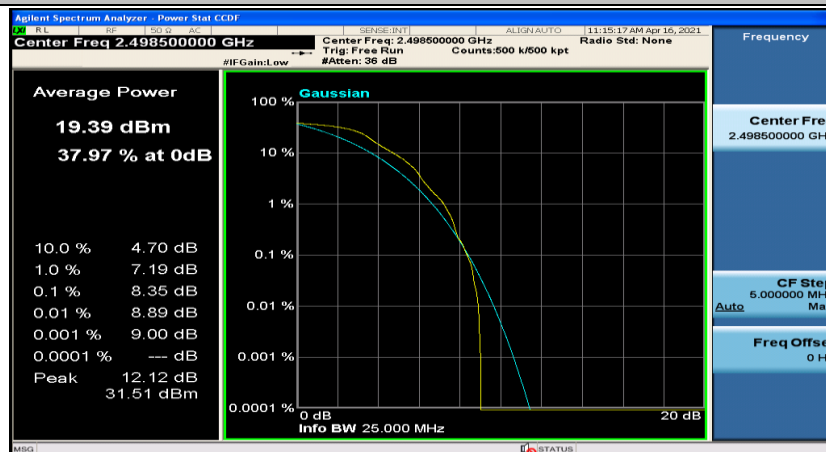
Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	7.54	<13	PASS
		1	49	8.29	<13	PASS
		1	99	7.91	<13	PASS
		50	0	7.51	<13	PASS
		50	25	8.22	<13	PASS
		50	50	8.44	<13	PASS
		100	0	8.43	<13	PASS
		100	0	8.43	<13	PASS
	MCH	1	0	9.97	<13	PASS
		1	49	8.79	<13	PASS
		1	99	12.9	<13	PASS
		50	0	12.55	<13	PASS
		50	25	8.72	<13	PASS
		50	50	8.11	<13	PASS

		100	0	9.94	<13	PASS
	HCH	1	0	8.39	<13	PASS
		1	49	8.85	<13	PASS
		1	99	7.41	<13	PASS
		50	0	8.68	<13	PASS
		50	25	9.23	<13	PASS
		50	50	8.84	<13	PASS
		100	0	8.24	<13	PASS
16QAM	LCH	1	0	8.61	<13	PASS
		1	49	7.84	<13	PASS
		1	99	12.65	<13	PASS
		50	0	9.71	<13	PASS
		50	25	9.08	<13	PASS
		50	50	6.88	<13	PASS
		100	0	11.56	<13	PASS
	MCH	1	0	7.97	<13	PASS
		1	49	11.39	<13	PASS
		1	99	9.26	<13	PASS
		50	0	10.54	<13	PASS
		50	25	9.57	<13	PASS
		50	50	9.99	<13	PASS
		100	0	9.03	<13	PASS
	HCH	1	0	8.2	<13	PASS
		1	49	7.6	<13	PASS
		1	99	10.07	<13	PASS
		50	0	10.24	<13	PASS
		50	25	9.09	<13	PASS
		50	50	7.49	<13	PASS
		100	0	8.6	<13	PASS

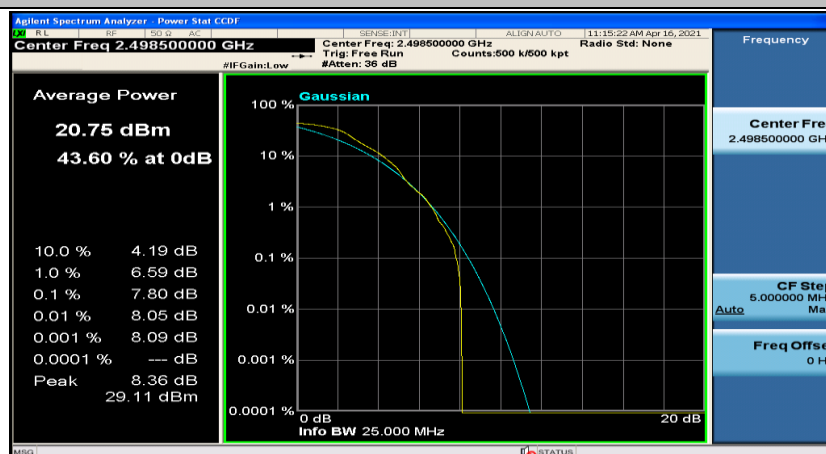
Test Graphs

Channel Bandwidth: 5 MHz

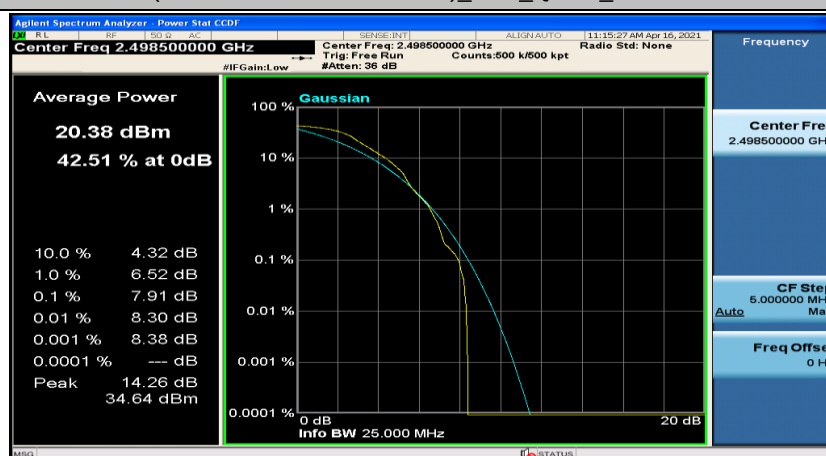
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#0



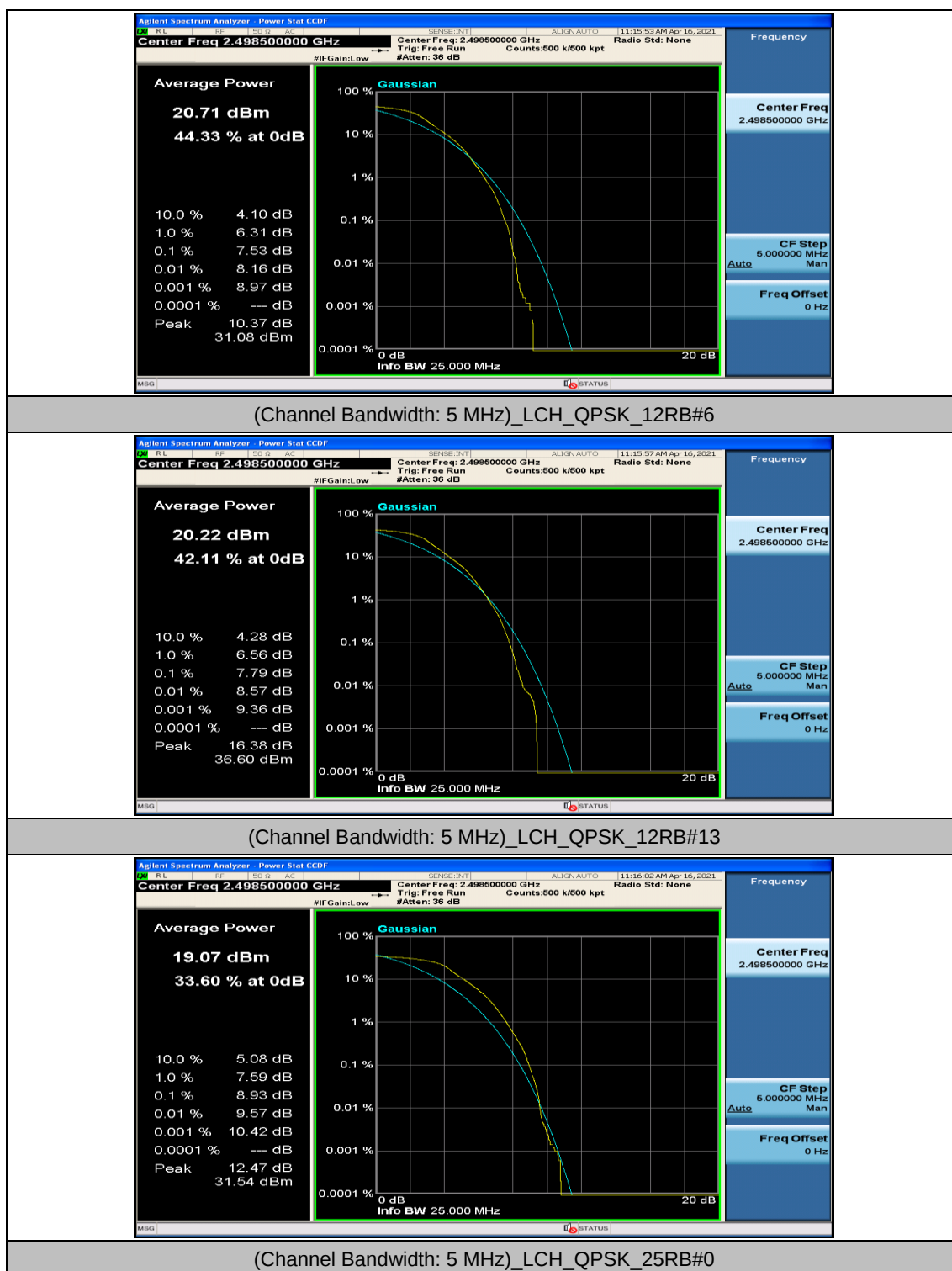
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#12

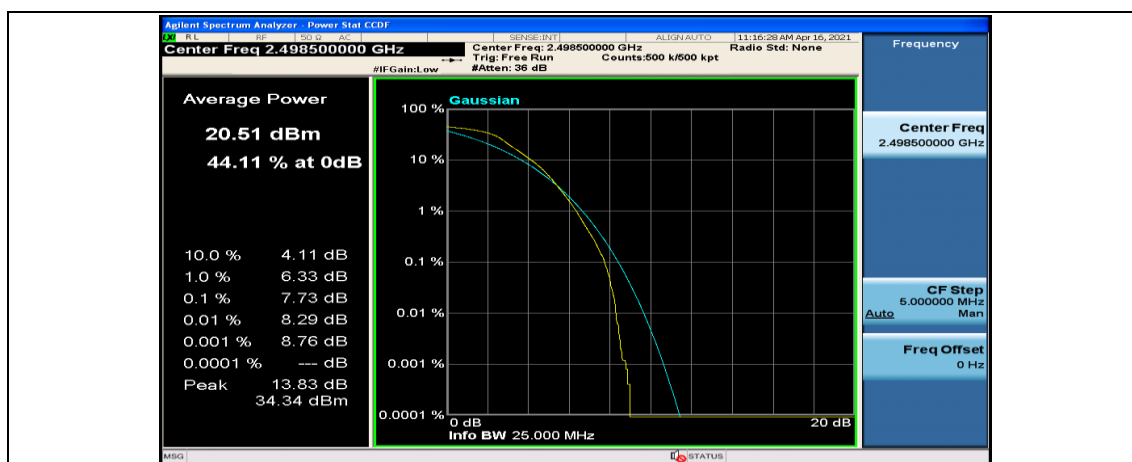


(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#24

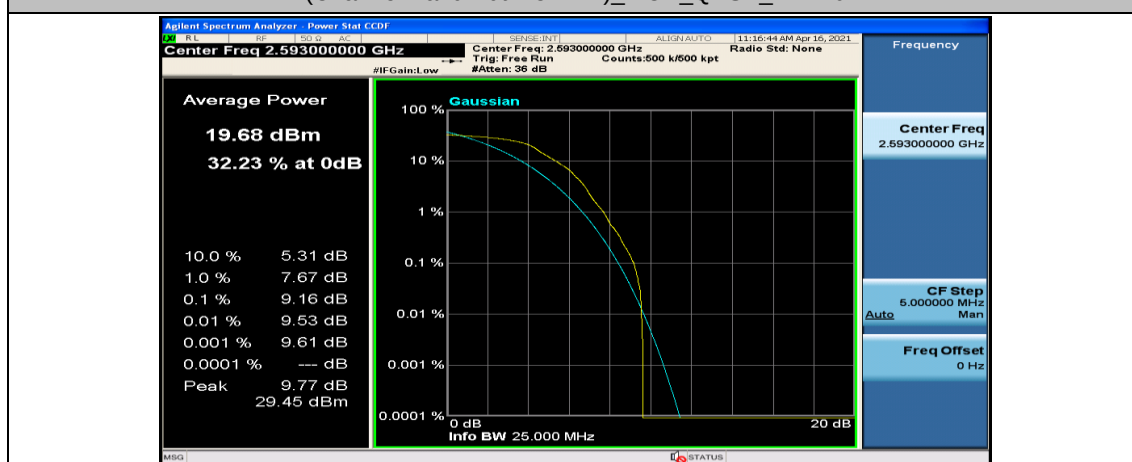


(Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#0

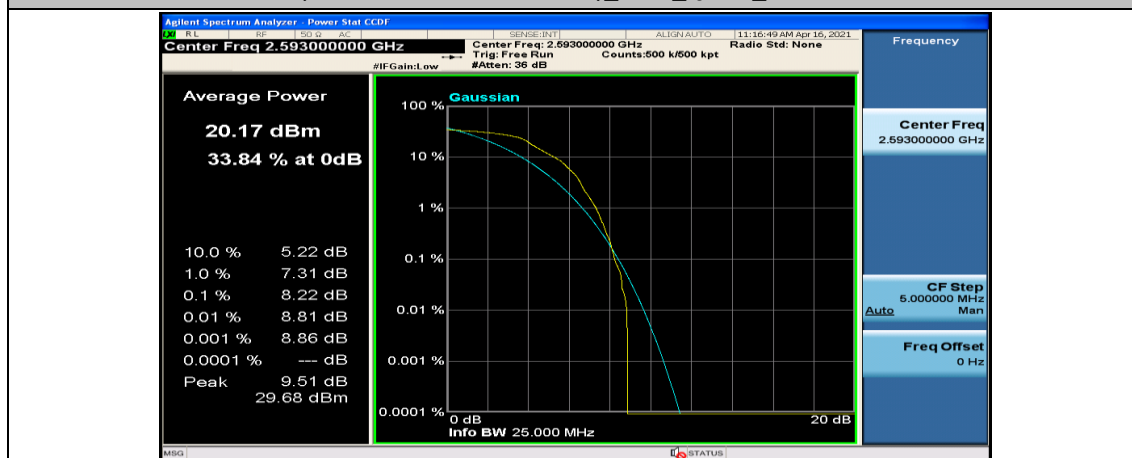




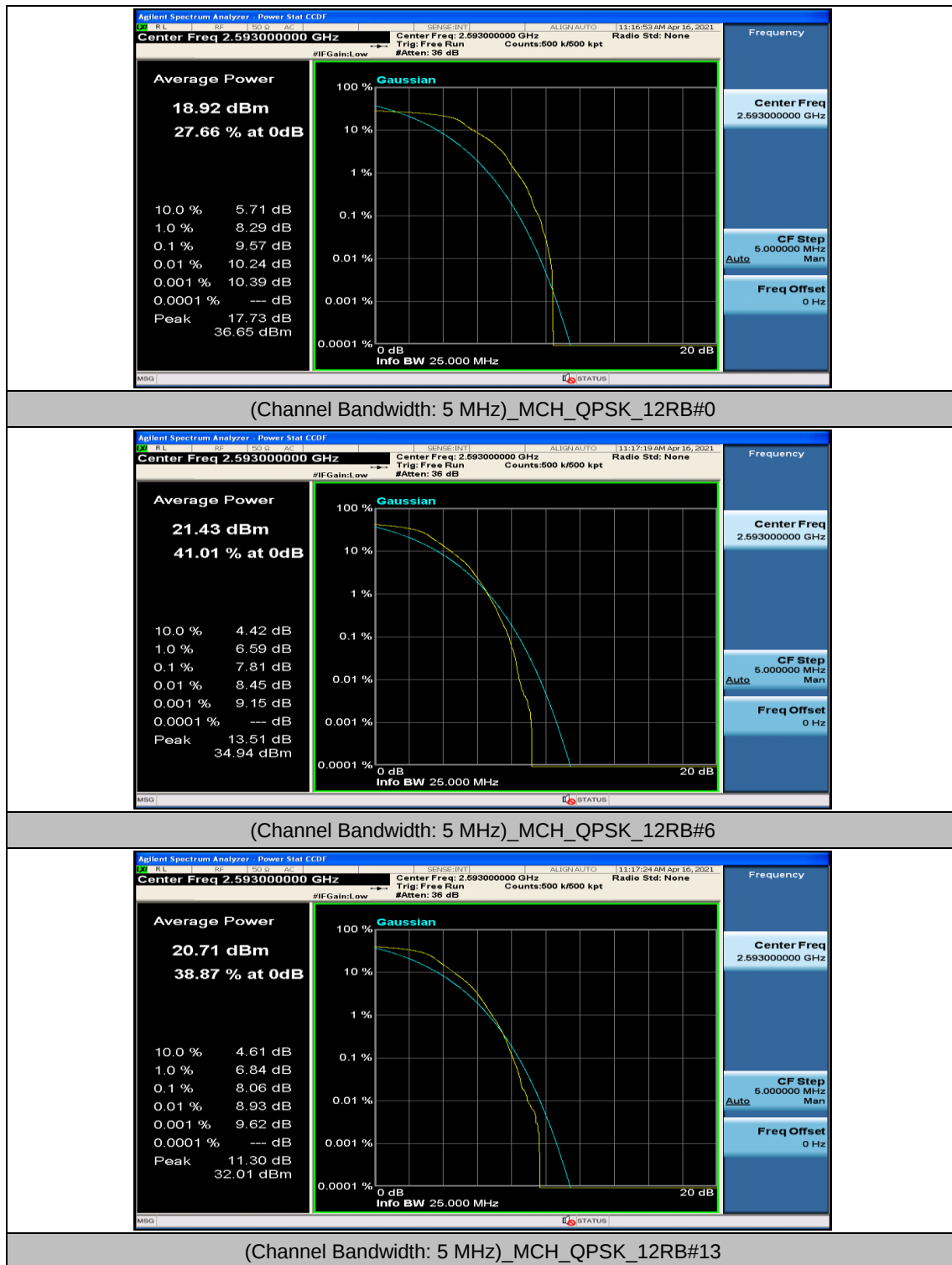
(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#0

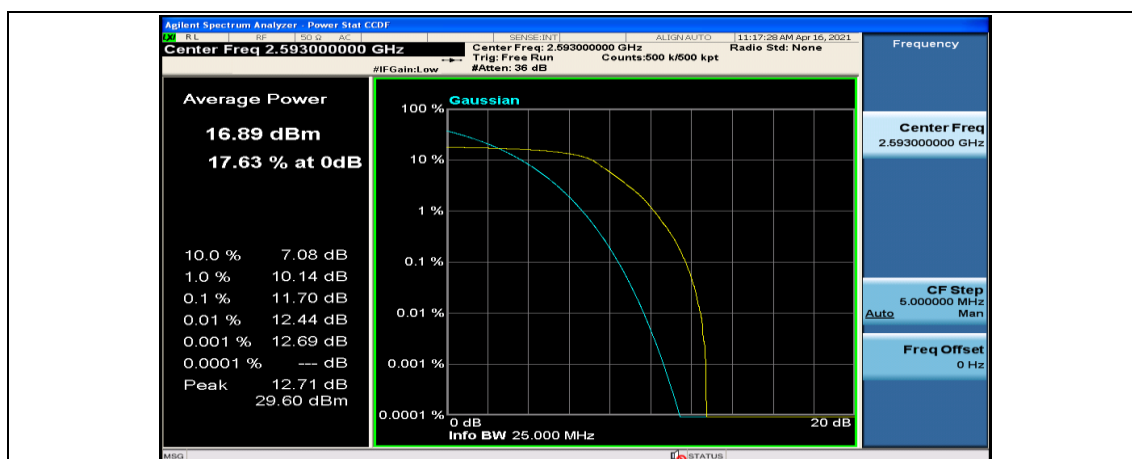


(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#12

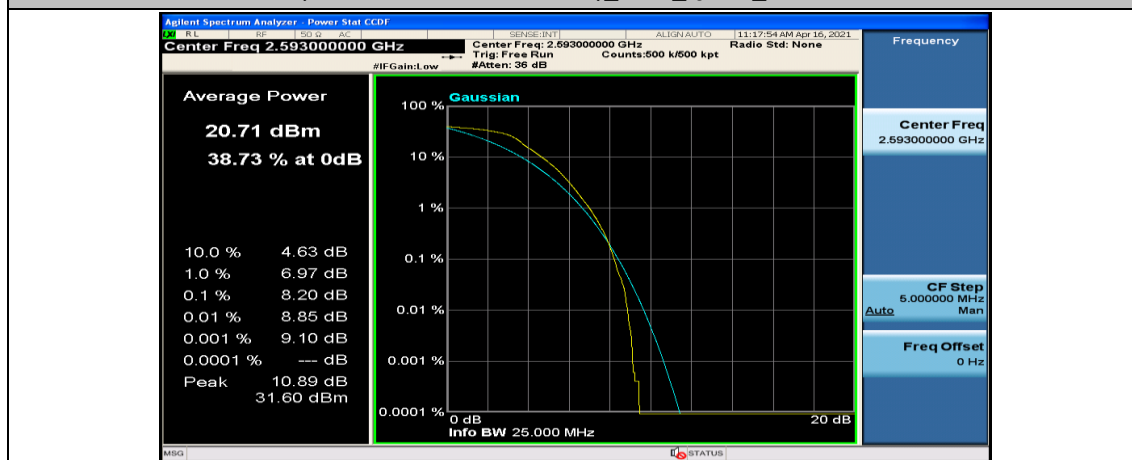


(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#24

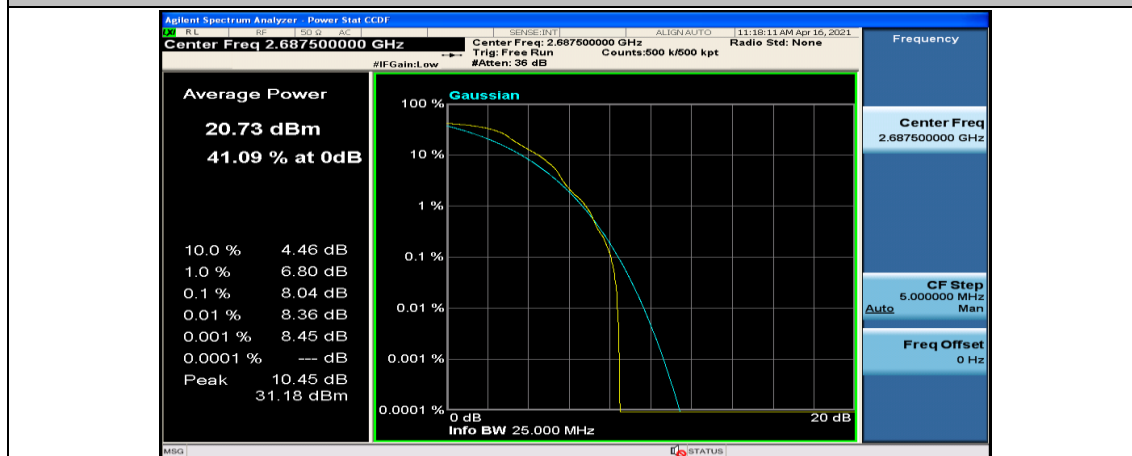




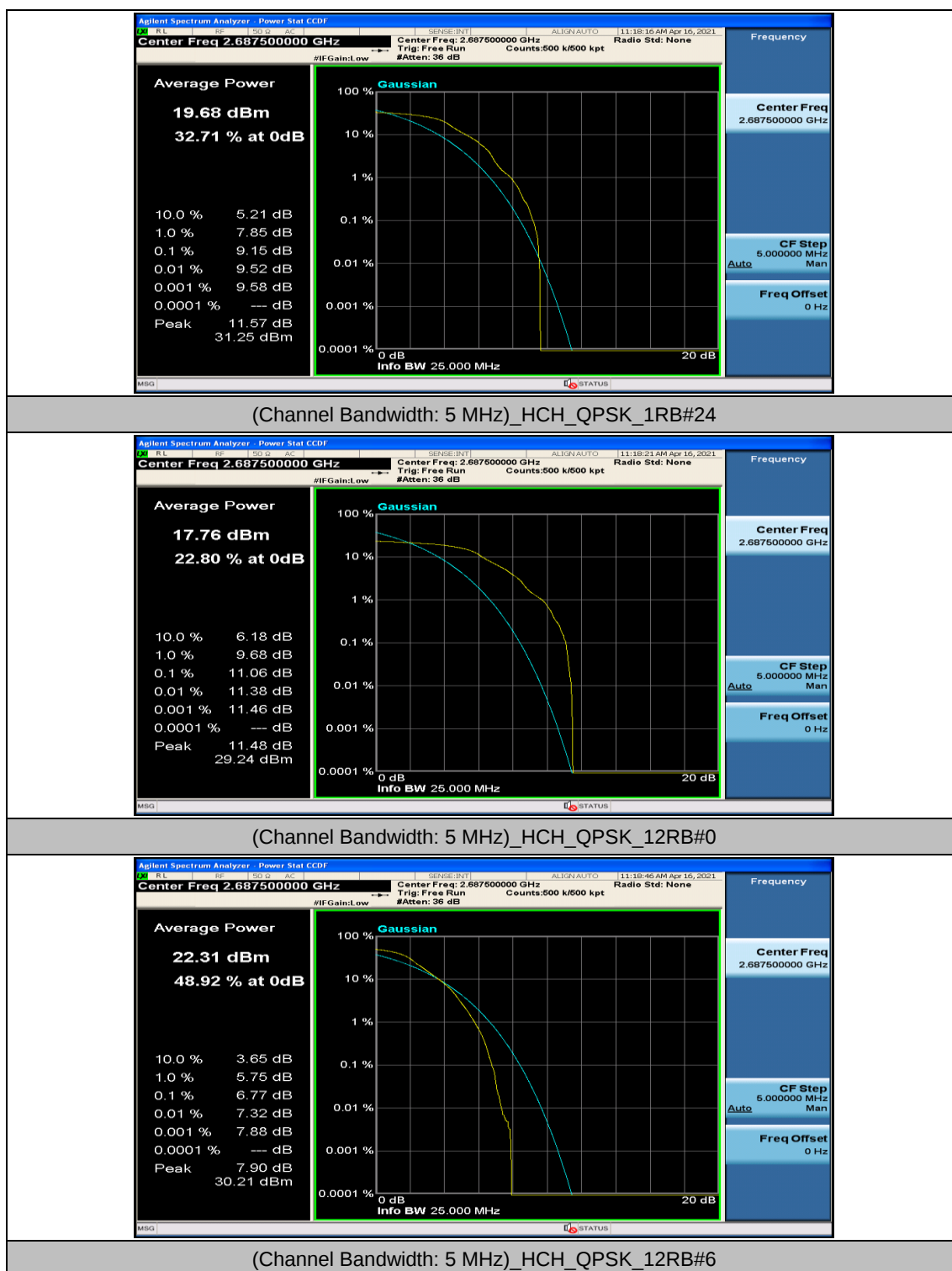
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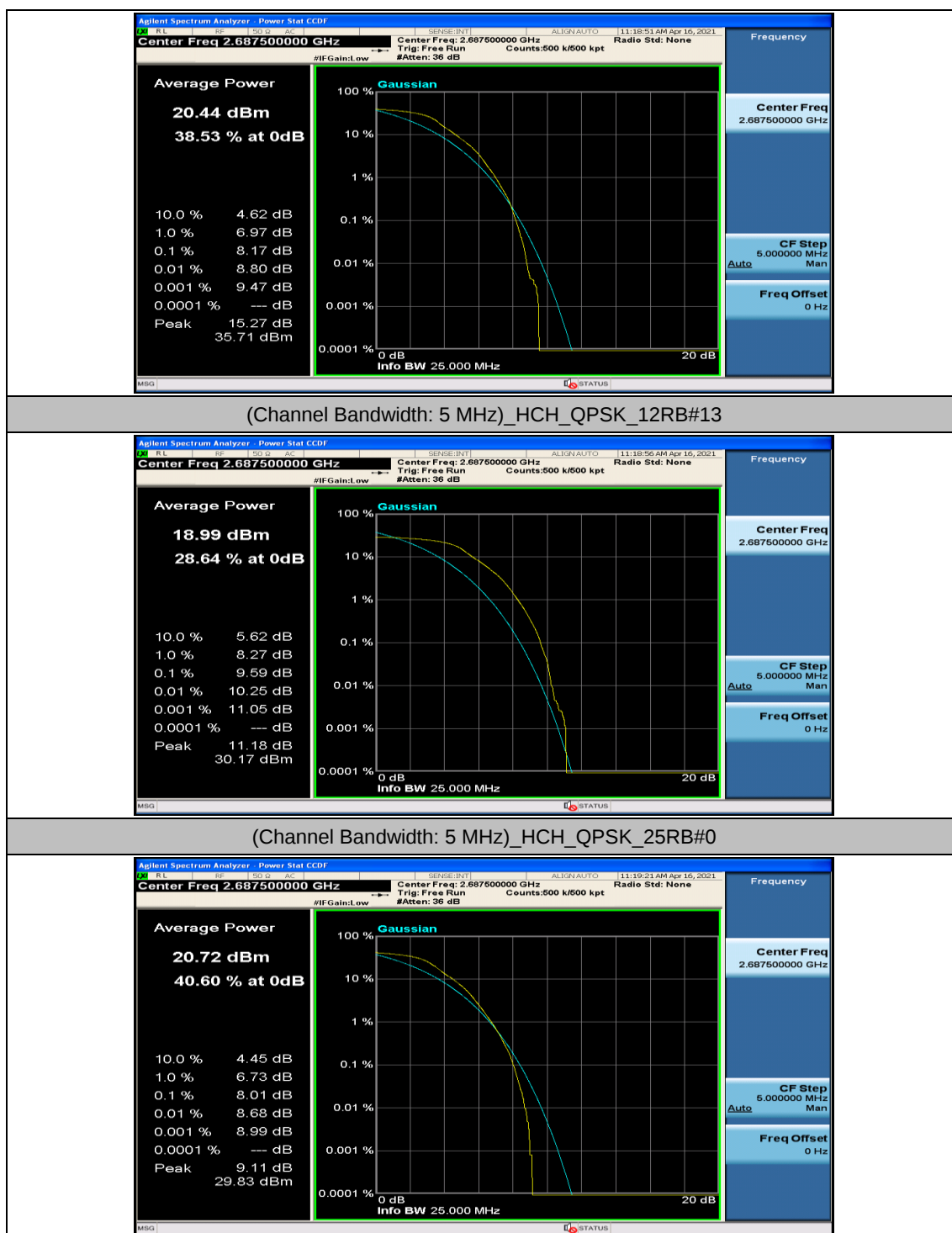


(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#0

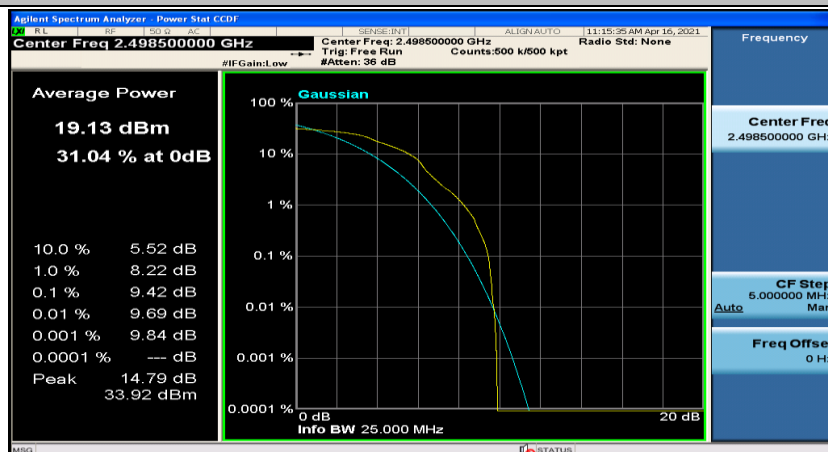


(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#12

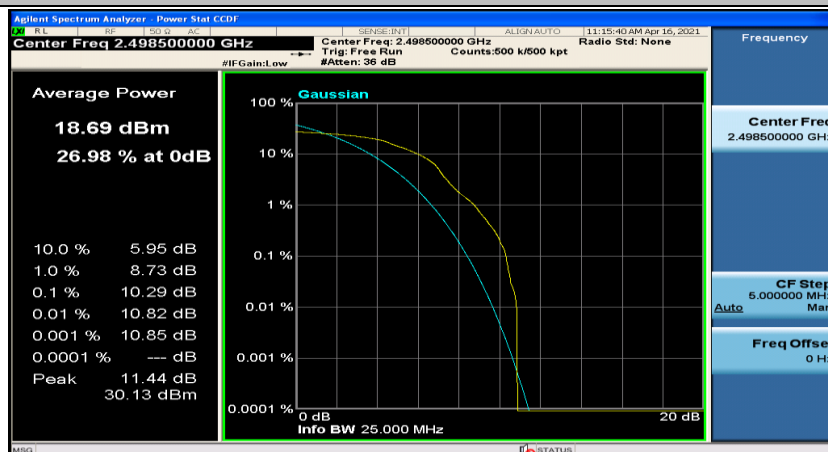




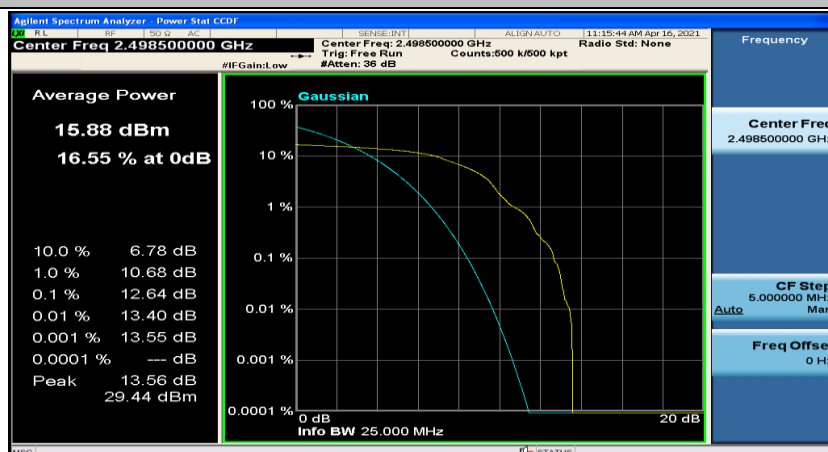
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#0



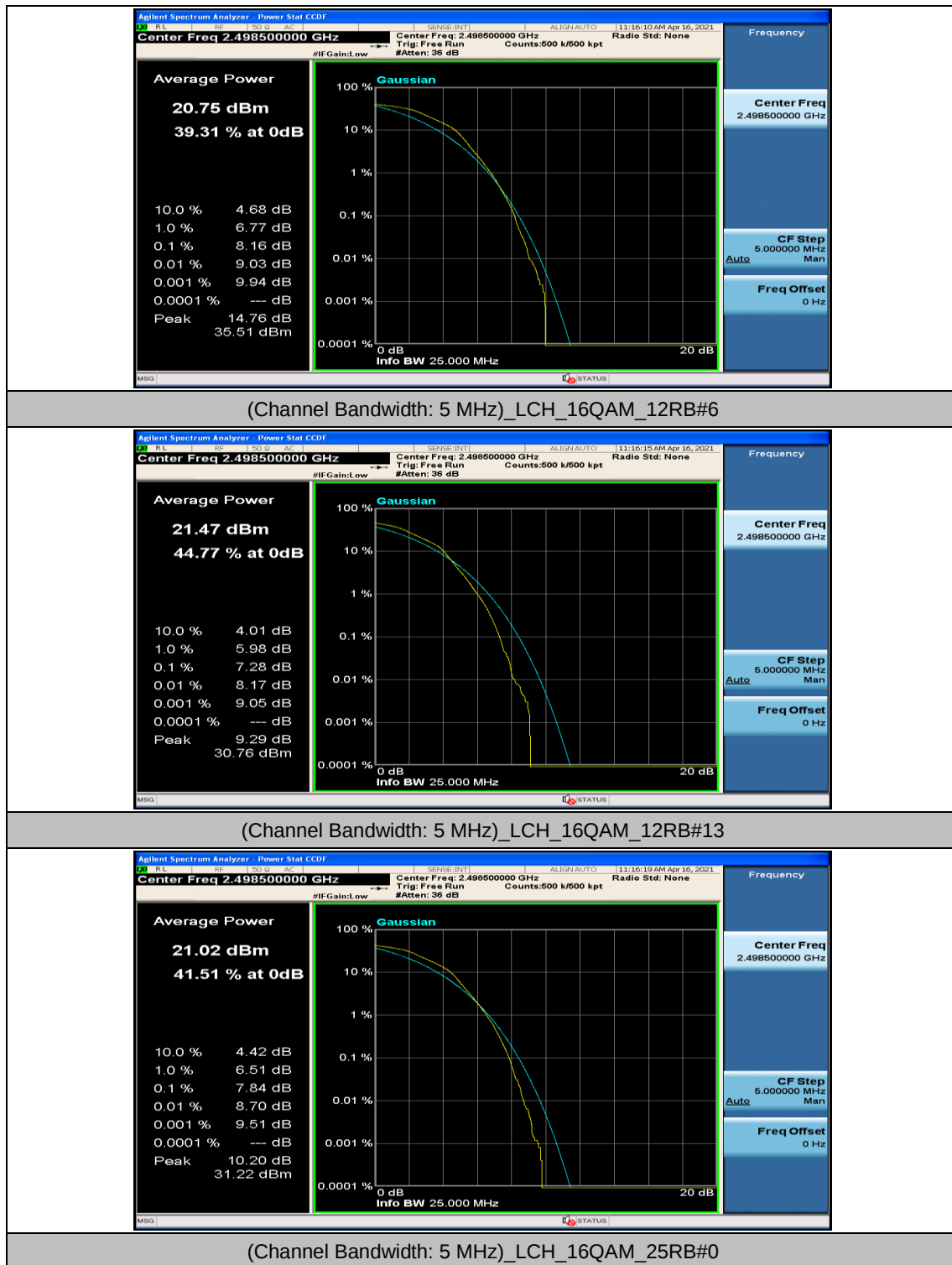
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#12

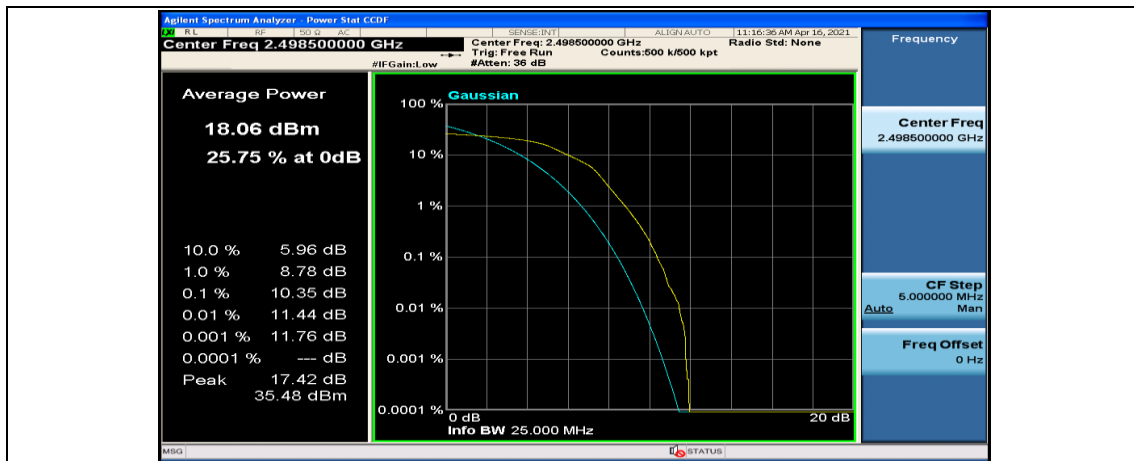


(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#24

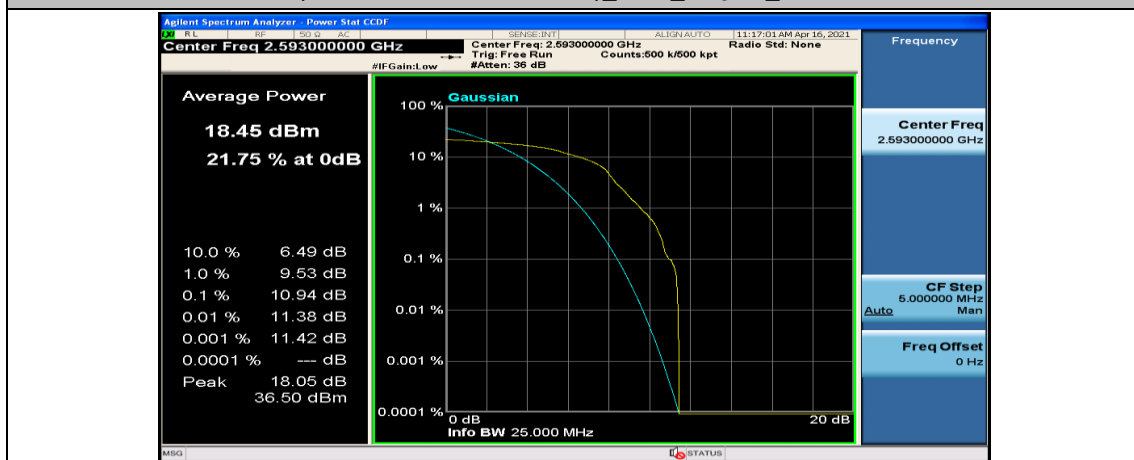


(Channel Bandwidth: 5 MHz)_LCH_16QAM_12RB#0

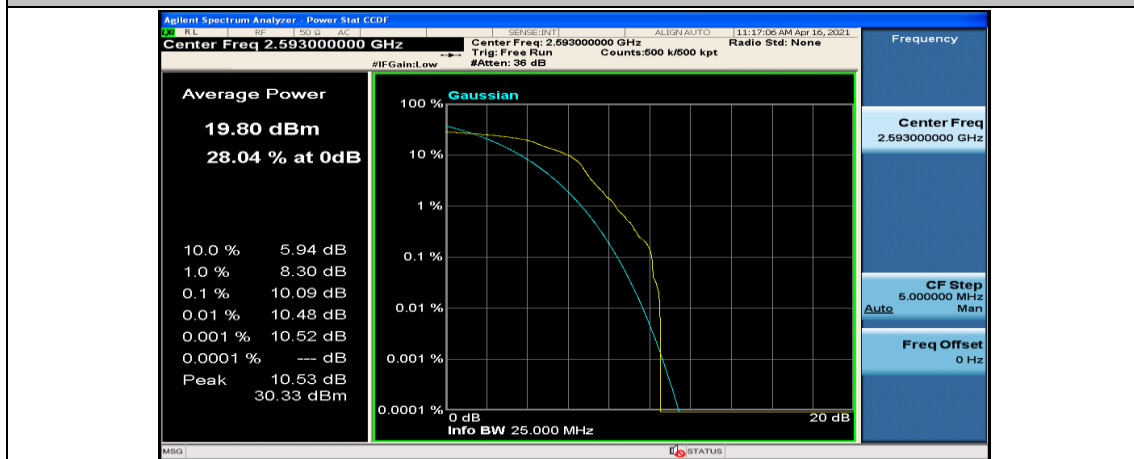




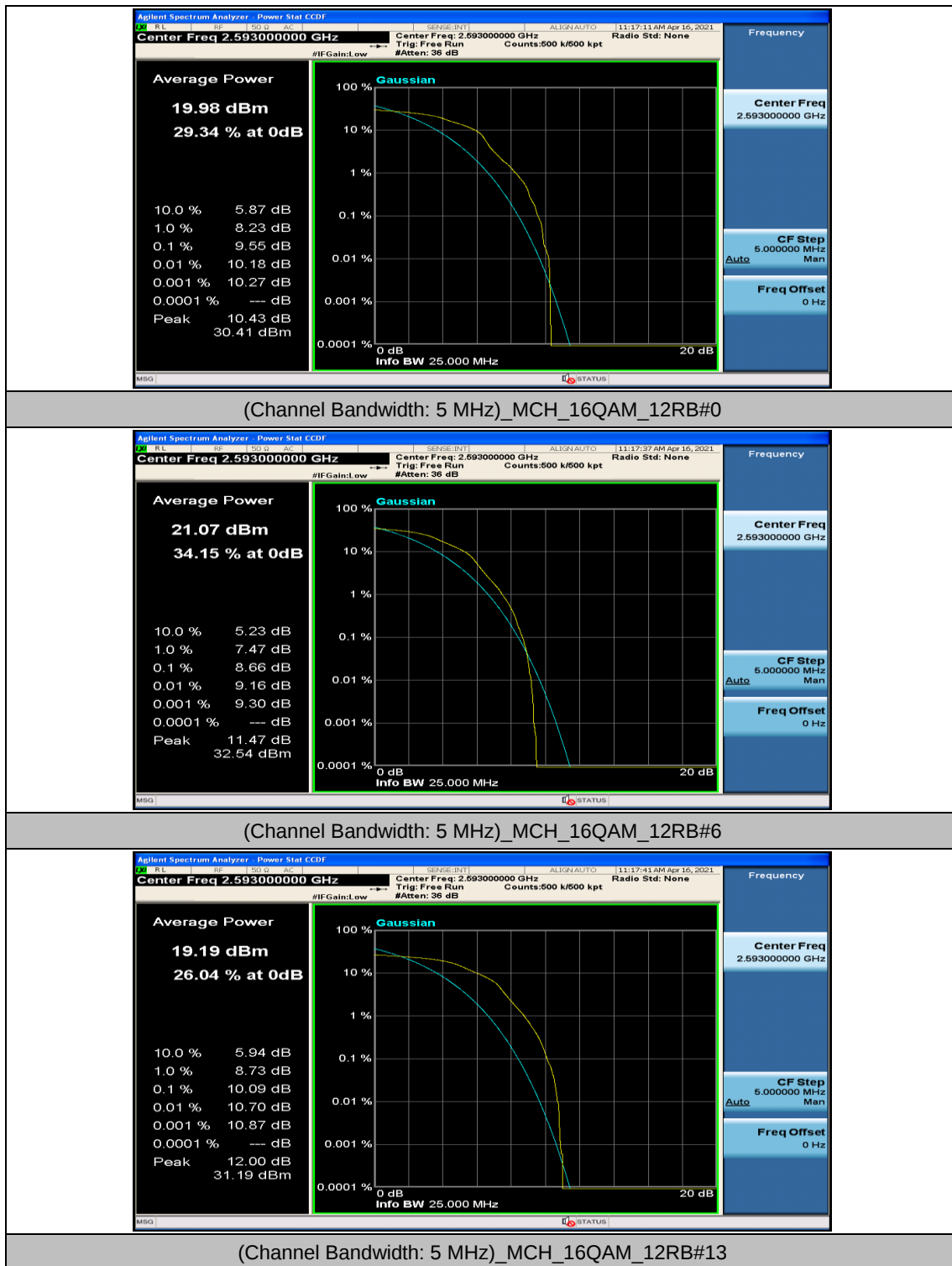
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#0



(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#12

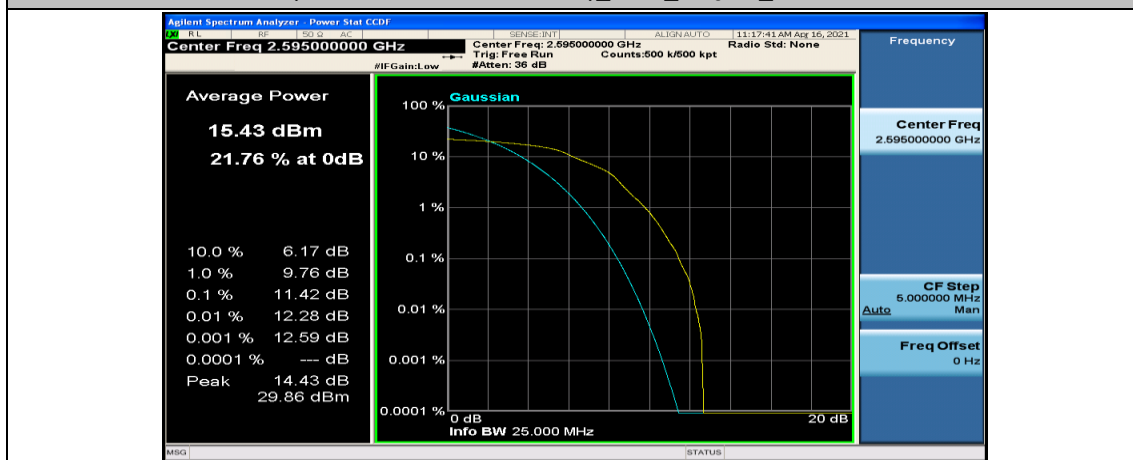


(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#24

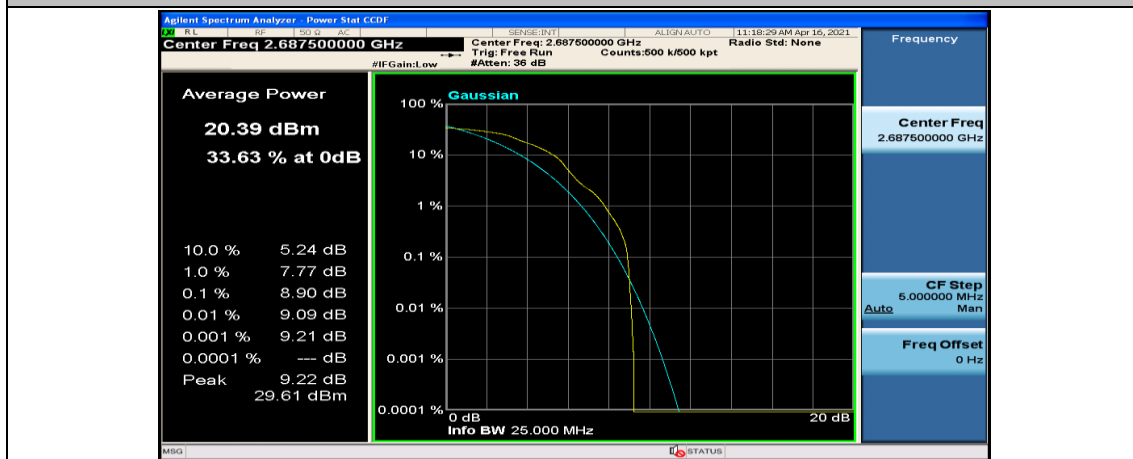




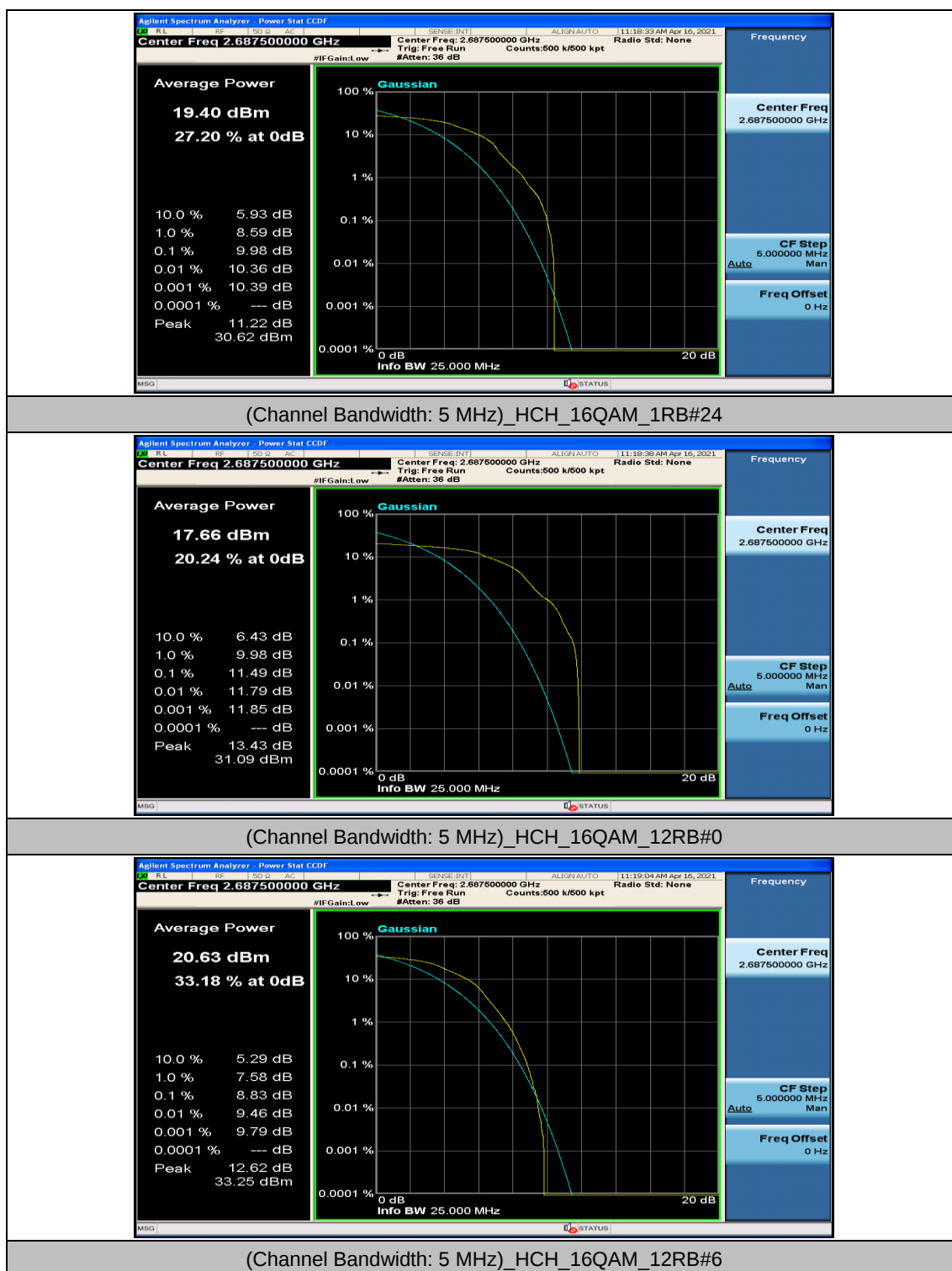
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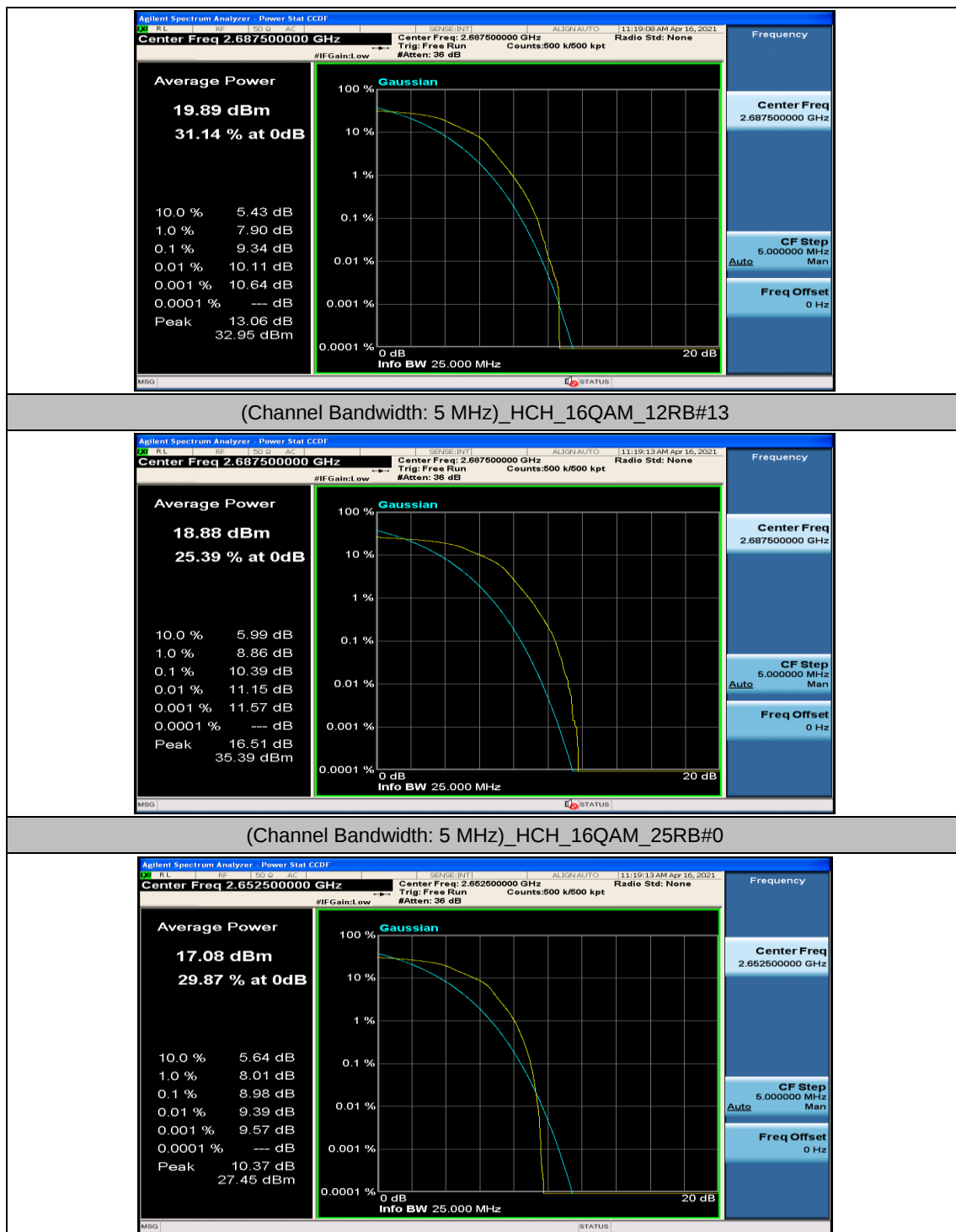


(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#0

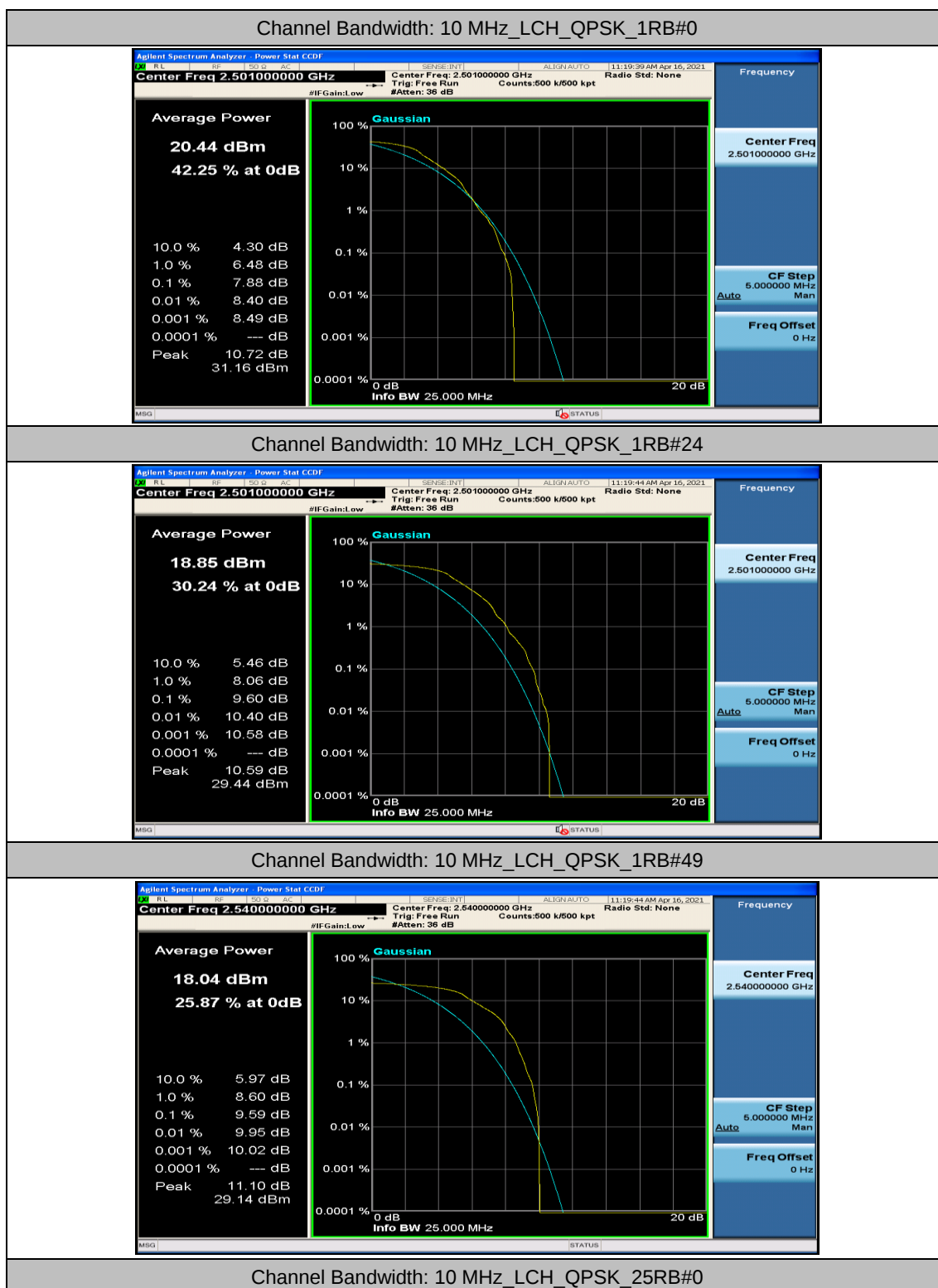


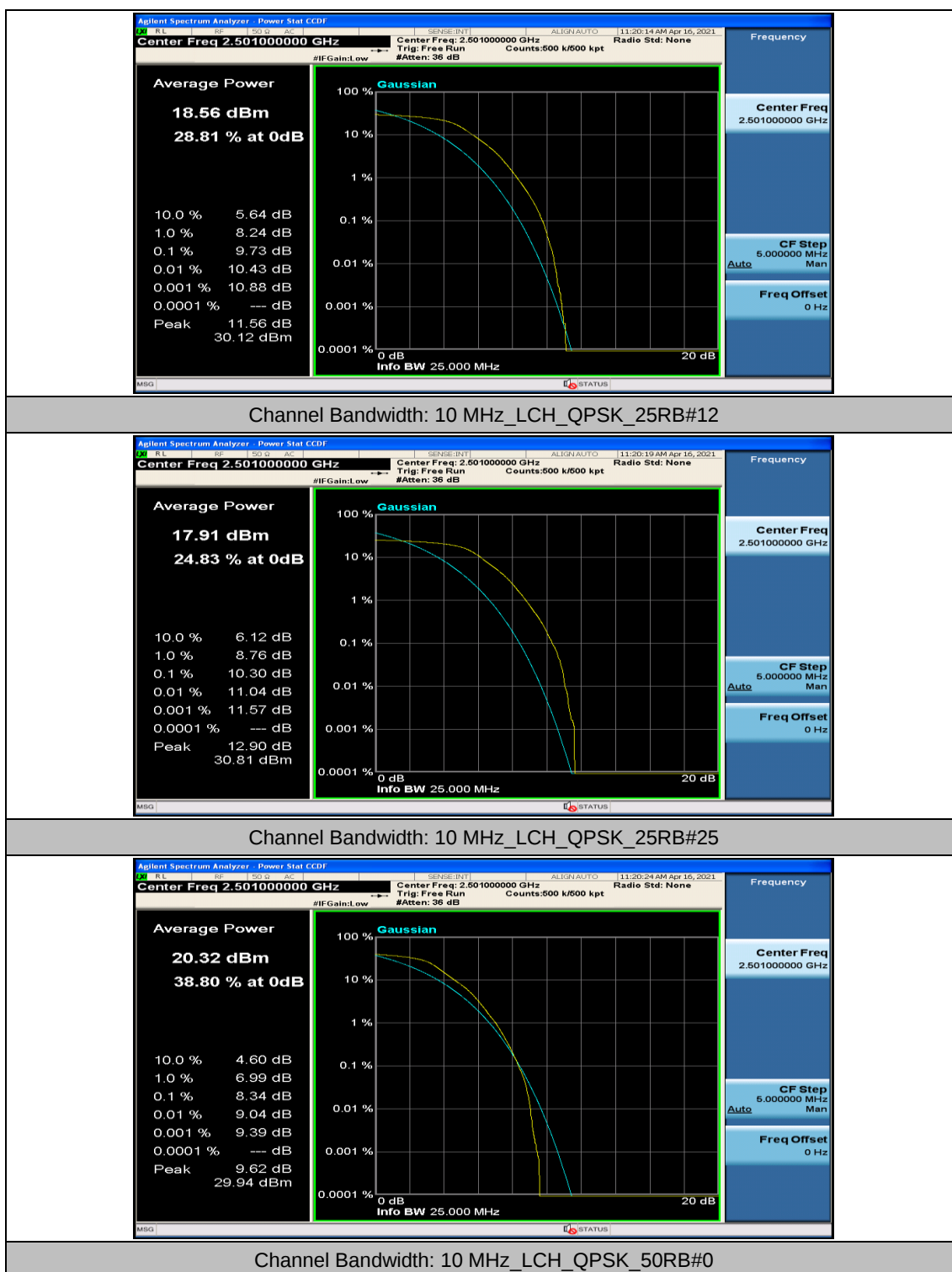
(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#12

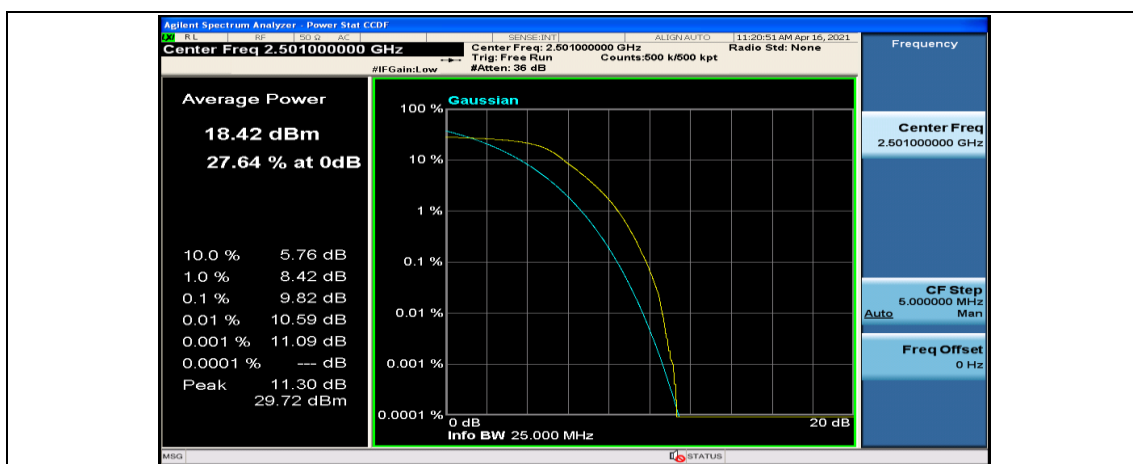




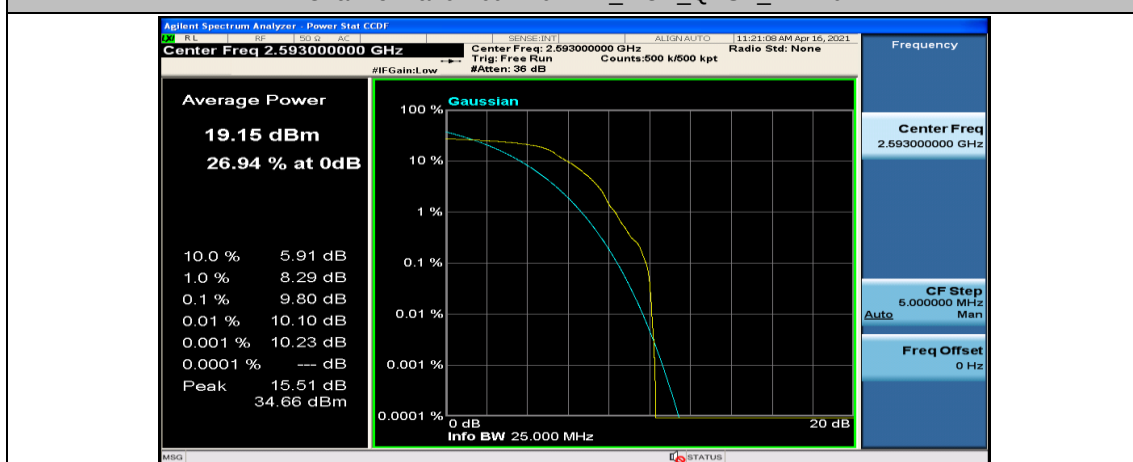
Channel Bandwidth: 10 MHz



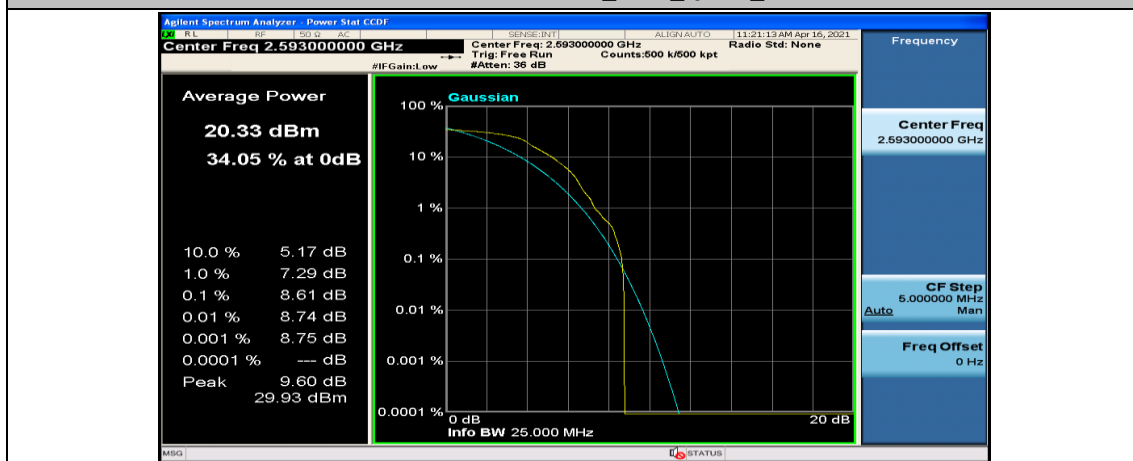




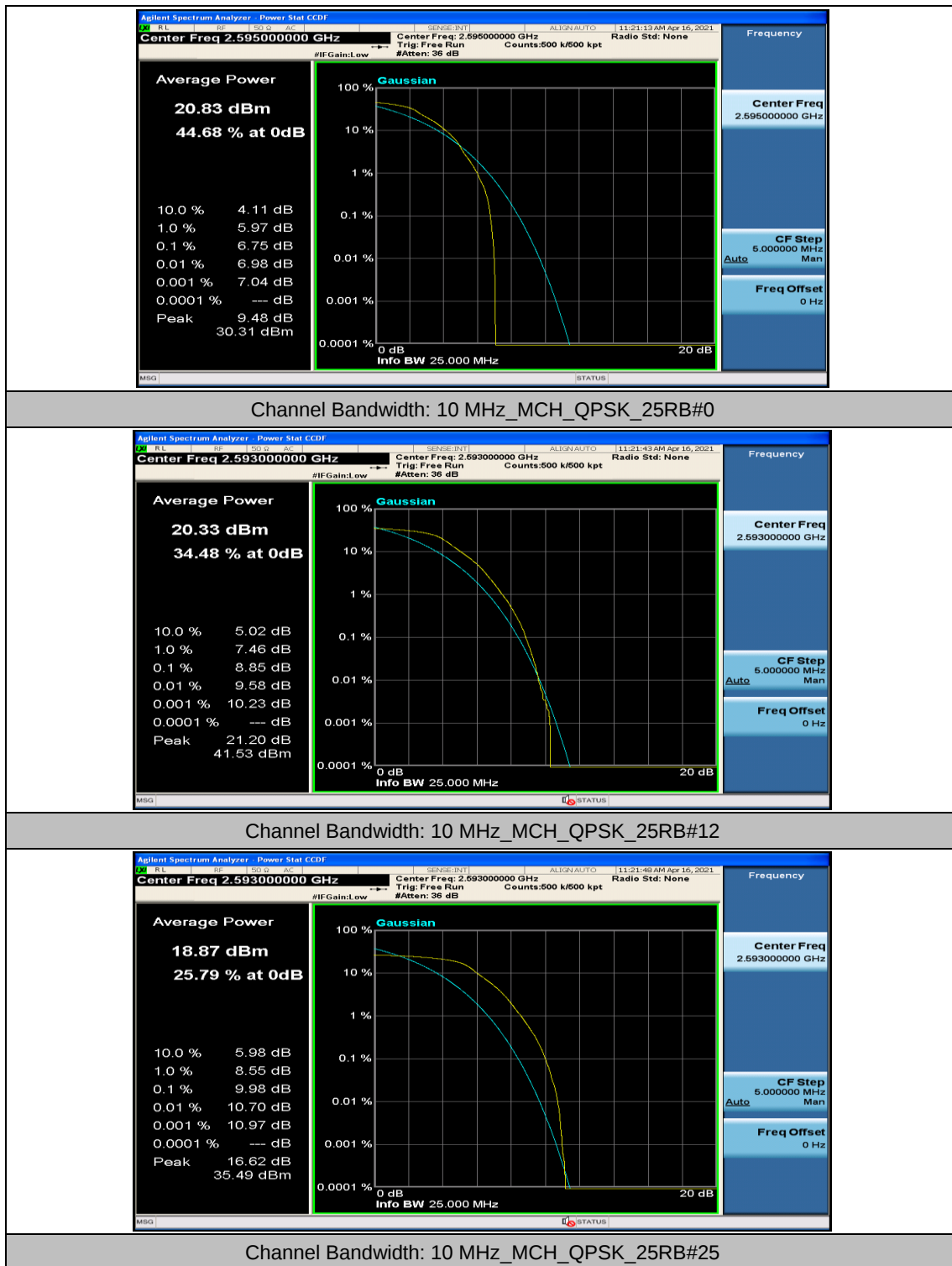
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#0

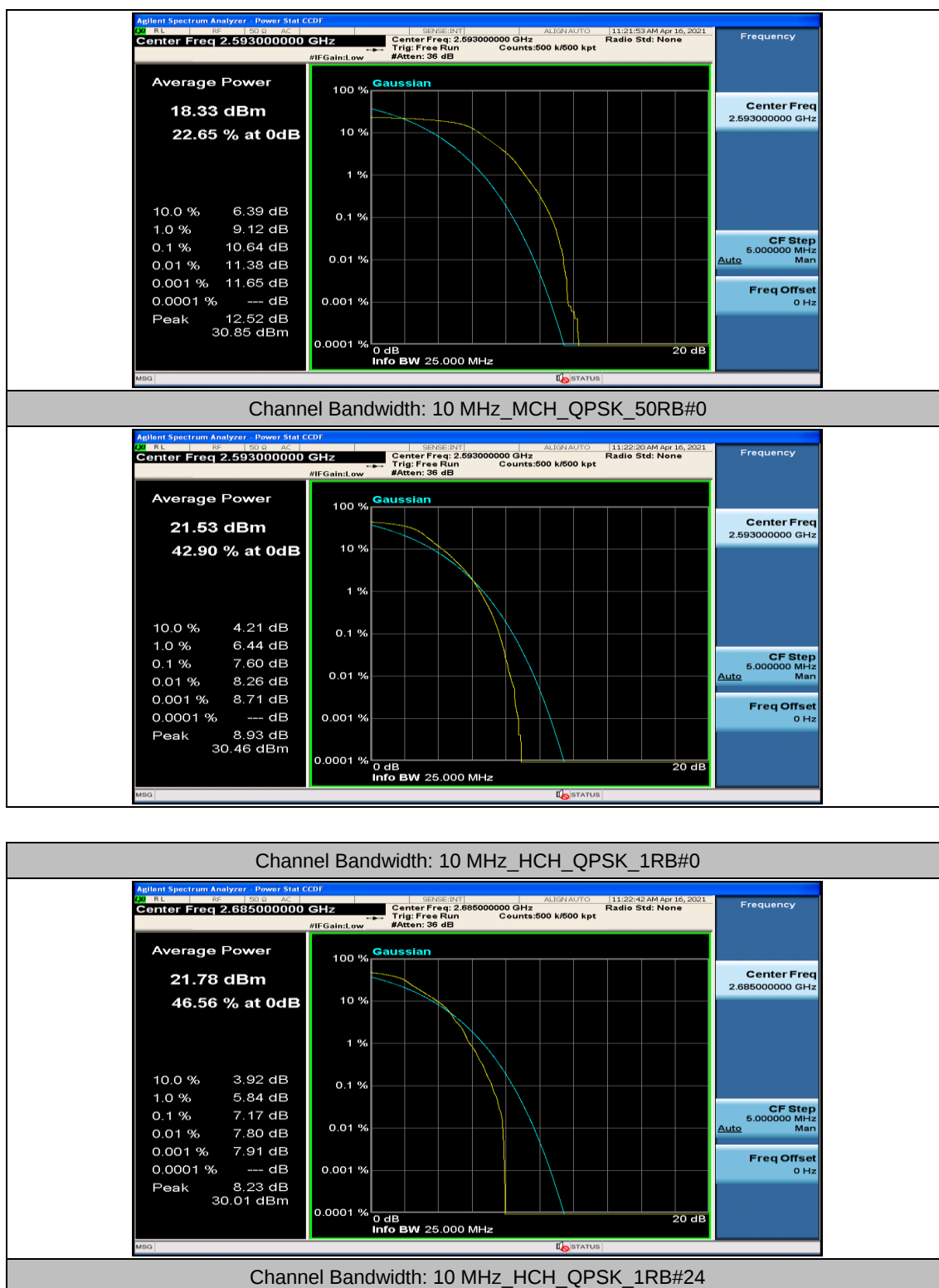


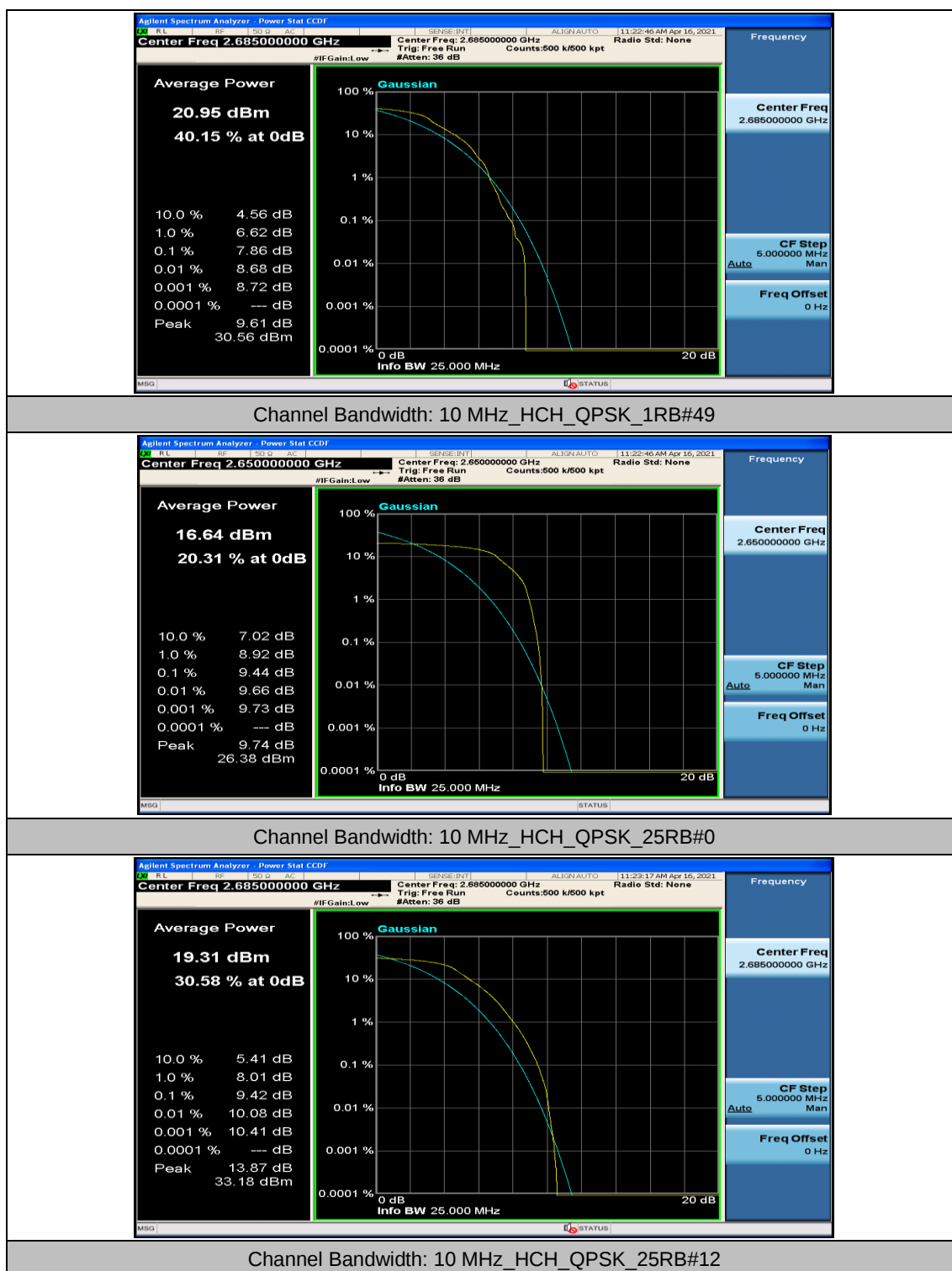
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#24

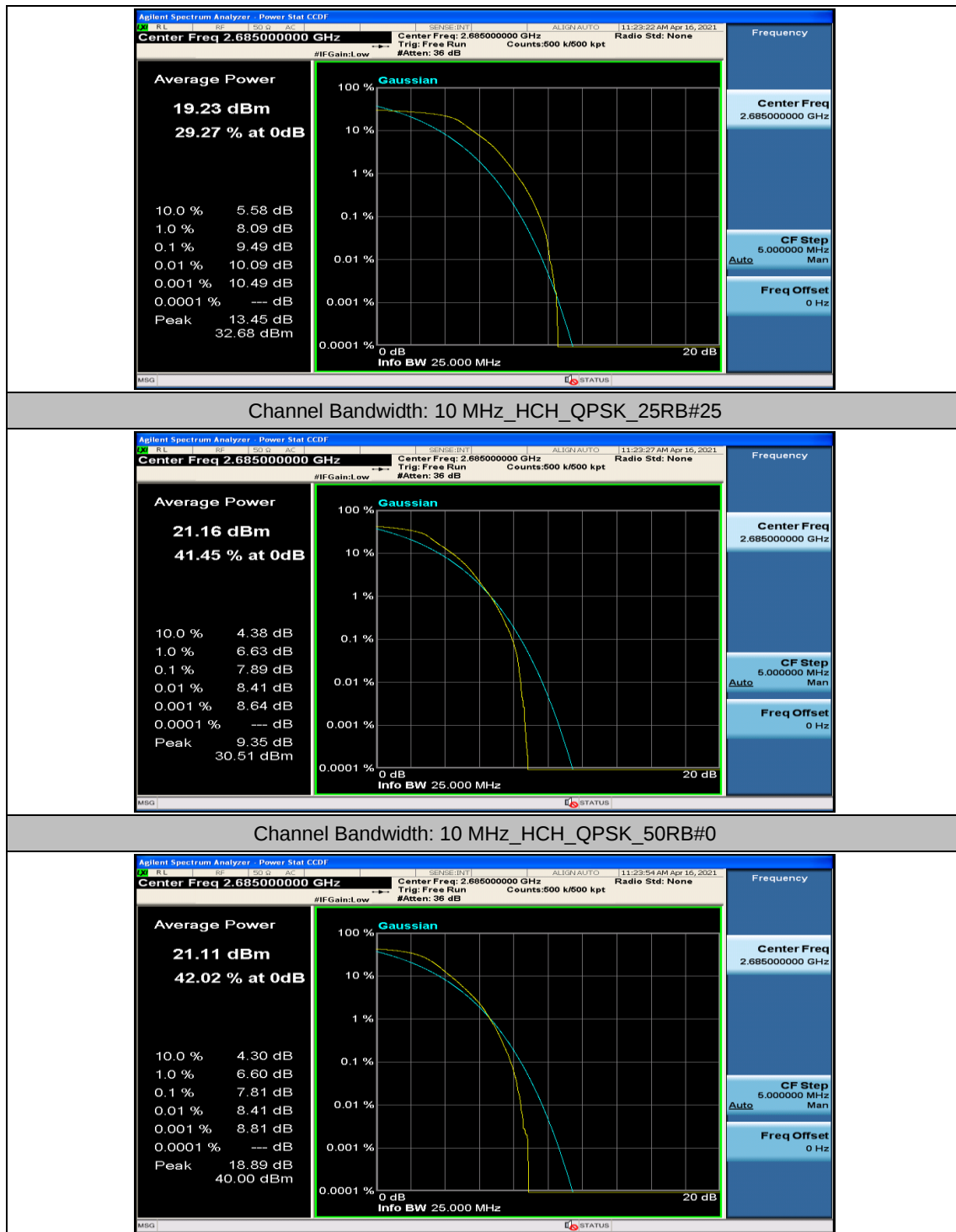


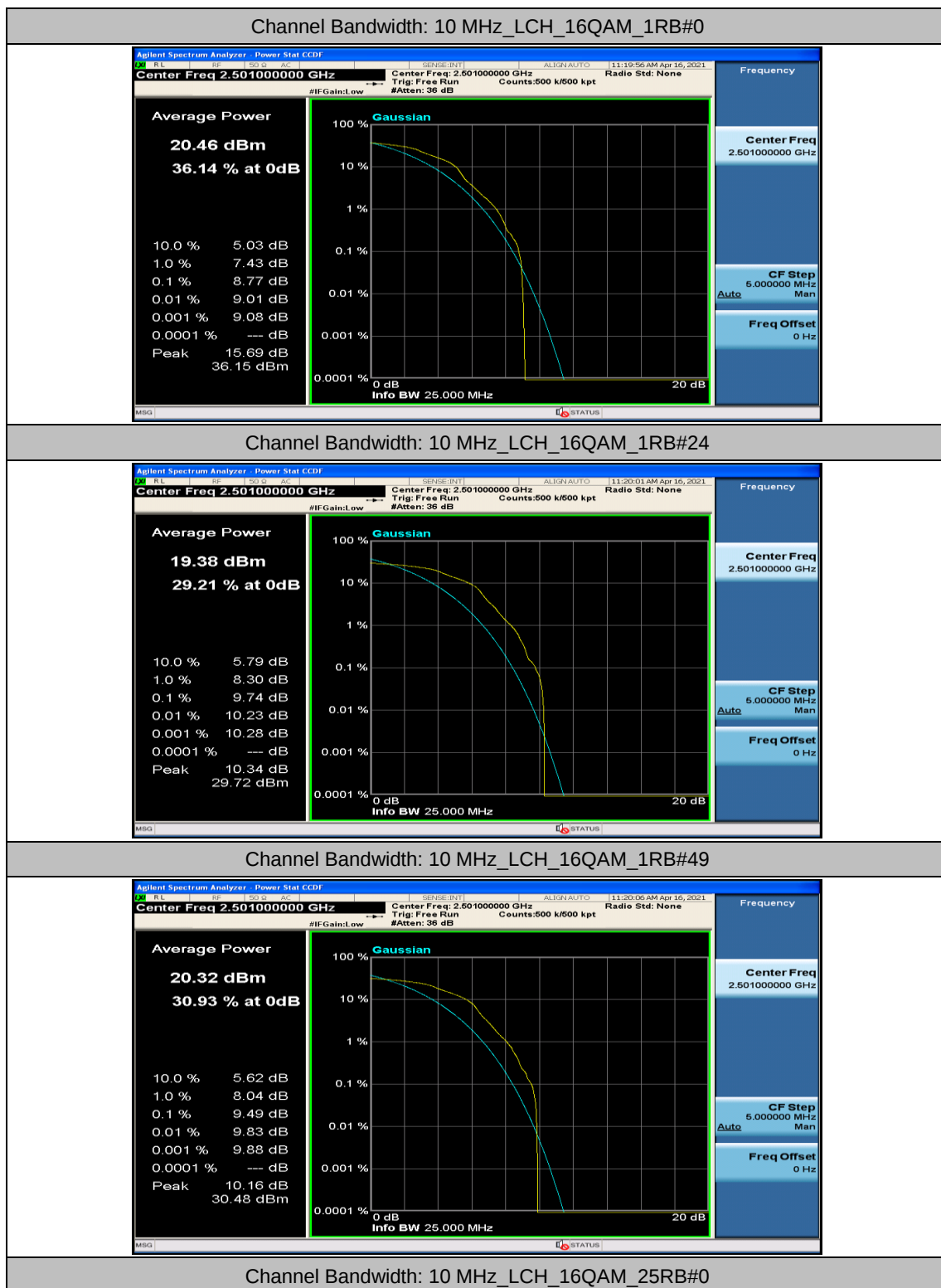
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#49

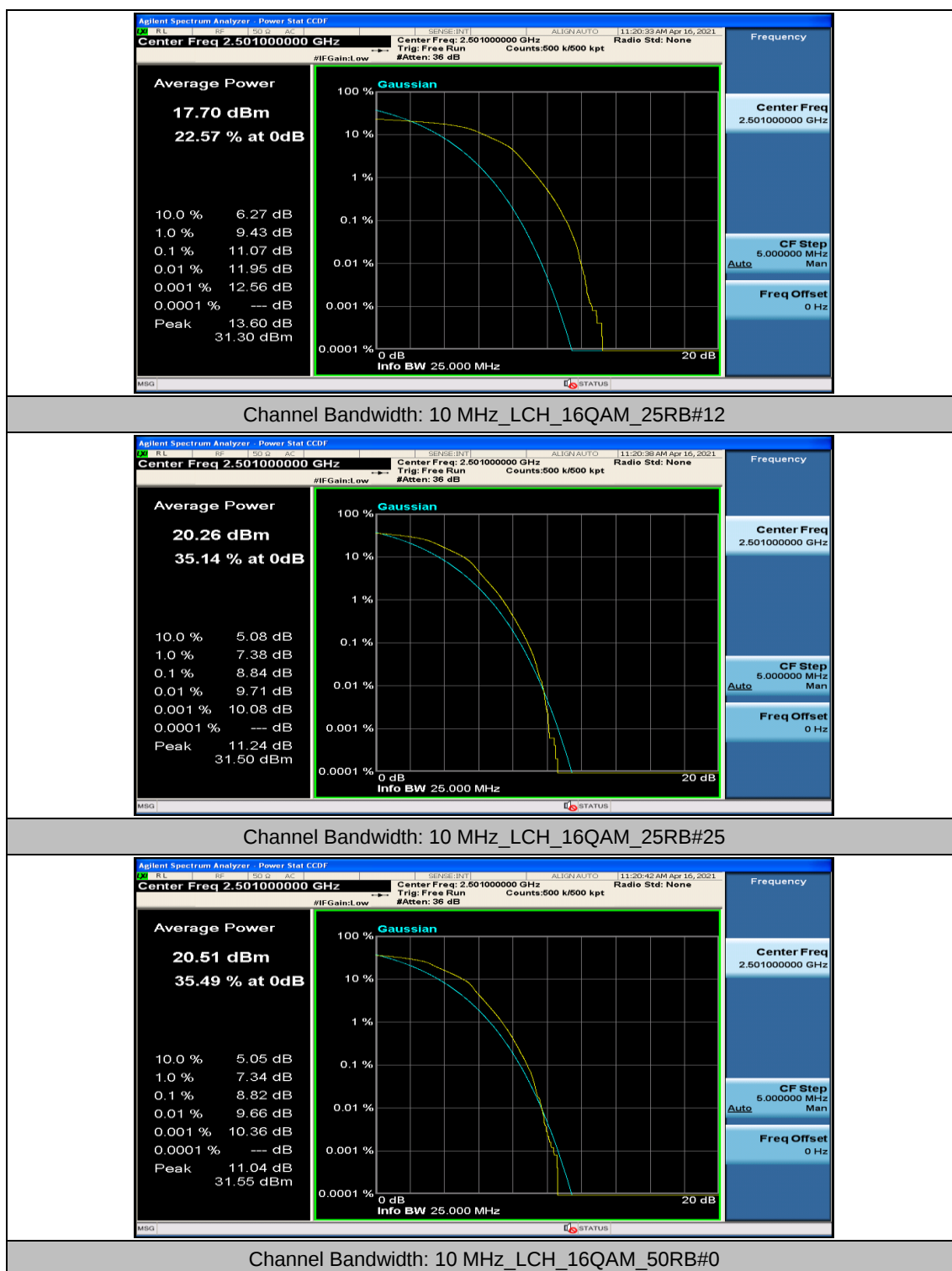


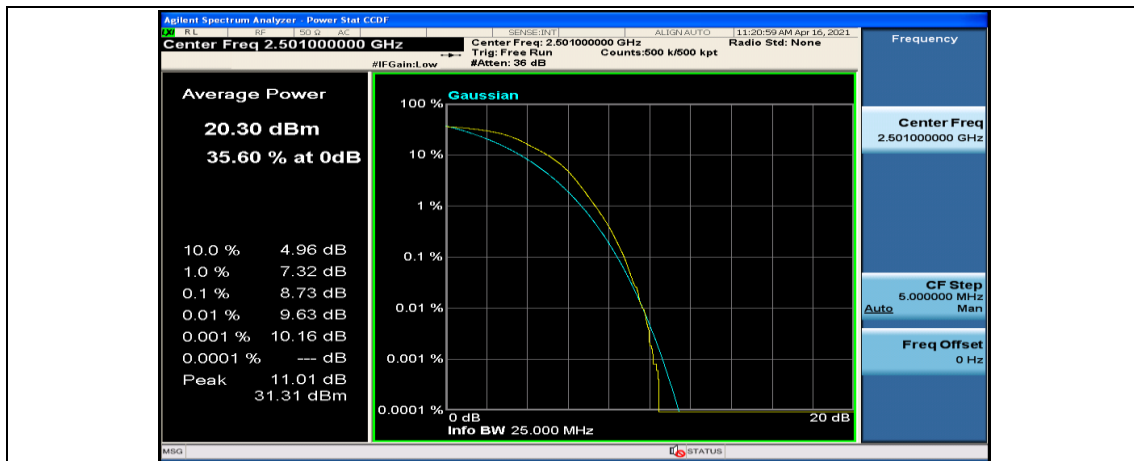




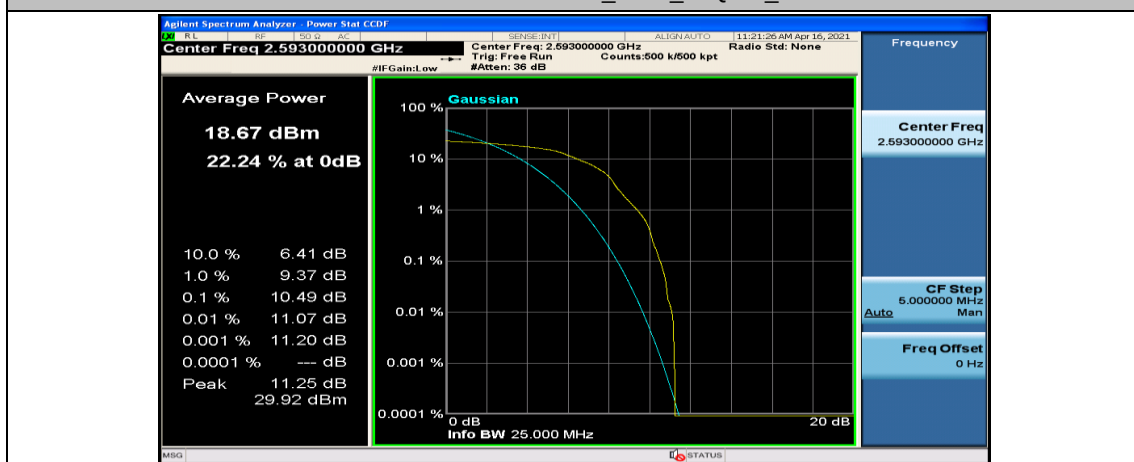




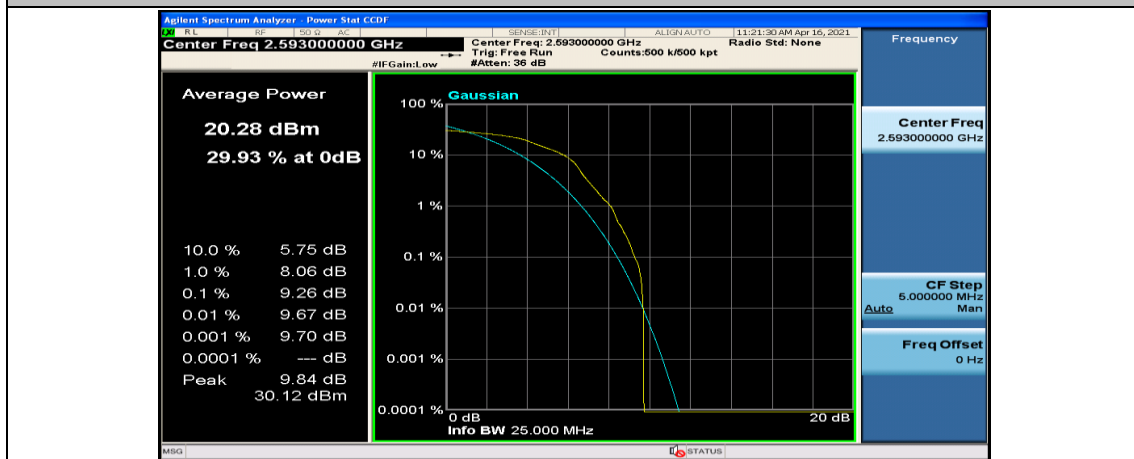




Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#0



Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#24



Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#49

