

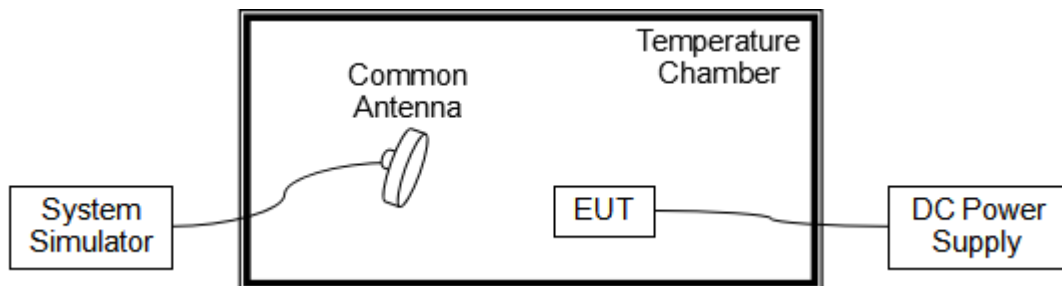
## 2.3. Frequency Stability

### 2.3.1. Requirement

According to FCC section 2.1055 & 27.54&24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from 0°C to +45°C at intervals of not more than 10°C.
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

### 2.3.2. Test Description



The EUT which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power. A call is established between the EUT and the SS via a Common Antenna.

### 2.3.3. Test procedure

KDB 971168 D01v03 Section 9.0 and ANSI/TIA-603-E-2016.

### 2.3.4. Test Result

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.35VDC and 3.5VDC, which are specified by the applicant; the normal temperature here used is 20°C.



LTE Band 5, QPSK, Channel 20525, Frequency 836.5MHz					
Limit= $\pm 2.5$ ppm					
Voltage (%)	Power (VDC)	Temp ( $^{\circ}$ C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.80	+20(Ref)	35	0.042	PASS
100		-20	43	0.051	
100		-10	39	0.050	
100		0	-32	-0.038	
100		+10	-53	-0.064	
100		+20	-42	-0.050	
100		+30	-37	-0.044	
100		+40	-52	-0.062	
100		+50	84	0.100	
115		4.35	+20	44	
85	3.50	+20	79	0.094	

LTE Band 7, QPSK, Channel 21100, Frequency 2535MHz					
Limit= $\pm 1$ ppm					
Voltage (%)	Power (VDC)	Temp ( $^{\circ}$ C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.80	+20(Ref)	-45	-0.054	PASS
100		-20	41	0.051	
100		-10	39	0.050	
100		0	16	0.019	
100		+10	35	0.042	
100		+20	-32	-0.038	
100		+30	-53	-0.064	
100		+40	-42	-0.050	
100		+50	-37	-0.044	
115		4.35	+20	-52	
85	3.50	+20	84	0.100	



LTE Band 38, QPSK, Channel 28000, Frequency 2595MHz					
Limit= $\pm 1$ ppm					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.80	+20(Ref)	-45	-0.054	PASS
100		-20	40	0.051	
100		-10	39	0.050	
100		0	16	0.019	
100		+10	35	0.042	
100		+20	-32	-0.038	
100		+30	-53	-0.064	
100		+40	-42	-0.050	
100		+50	-37	-0.044	
115		4.35	+20	-52	
85	3.50	+20	84	0.100	

LTE Band 40, QPSK, Channel 39150, Frequency 2350MHz					
Limit = $\pm 1$ ppm					
Voltage(%)	Power (VDC)	Temp(°C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
100	3.80	+20(Ref)	35	0.016	PASS
100		-20	42	0.051	
100		-10	39	0.050	
100		0	63	0.028	
100		+10	52	0.023	
100		+20	-54	-0.023	
100		+30	-63	-0.027	
100		+40	-44	-0.018	
100		+50	38	0.017	
115		4.35	+20	83	
85	3.50	+20	52	0.023	



LTE Band 41, QPSK, Channel 40740, Frequency 2605MHz Limit $\pm 1$ ppm					
Voltage(%)	Power (VDC)	Temp( $^{\circ}$ C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
100	3.80	+20(Ref)	26	0.012	PASS
100		-20	44	0.051	
100		-10	39	0.050	
100		0	37	0.016	
100		+10	48	0.021	
100		+20	-63	-0.026	
100		+30	-71	-0.030	
100		+40	-52	-0.022	
100		+50	54	0.024	
115		4.35	+20	79	
85	3.50	+20	37	0.016	

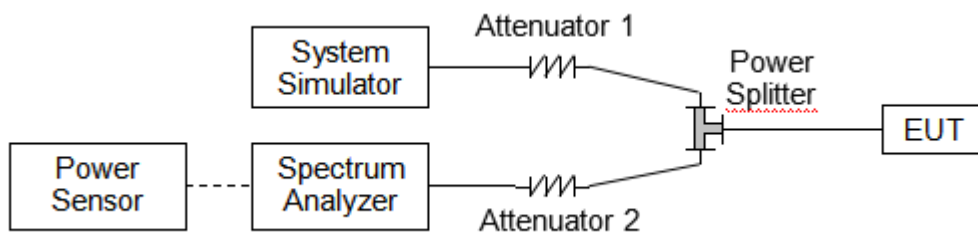
## 2.4. Peak to Average Ratio

### 2.4.1. Requirement

According to FCC section 24.232(d), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

### 2.4.2. Test Description

#### A. Test Set:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.4.3. Test procedure

KDB 971168 D01v03 Section 5.7 and ANSI/TIA-603-E-2016.

### 2.4.4. Test Result

Record the maximum PAPR level associated with a probability of 0.1%.



LTE Band 5					
BW(MHz)	Channel Level	Modulation	Peak to Average Radio(dB)	Limit (dB)	Verdict
1.4	Low	QPSK	4.67	<=13	PASS
1.4	Low	16QAM	5.50	<=13	PASS
1.4	Mid	QPSK	4.96	<=13	PASS
1.4	Mid	16QAM	5.69	<=13	PASS
1.4	High	QPSK	4.97	<=13	PASS
1.4	High	16QAM	5.56	<=13	PASS
3	Low	QPSK	4.80	<=13	PASS
3	Low	16QAM	5.64	<=13	PASS
3	Mid	QPSK	4.98	<=13	PASS
3	Mid	16QAM	5.83	<=13	PASS
3	High	QPSK	4.87	<=13	PASS
3	High	16QAM	5.64	<=13	PASS
5	Low	QPSK	4.93	<=13	PASS
5	Low	16QAM	5.54	<=13	PASS
5	Mid	QPSK	4.89	<=13	PASS
5	Mid	16QAM	5.65	<=13	PASS
5	High	QPSK	4.83	<=13	PASS
5	High	16QAM	5.53	<=13	PASS
10	Low	QPSK	5.03	<=13	PASS
10	Low	16QAM	5.69	<=13	PASS
10	Mid	QPSK	5.10	<=13	PASS
10	Mid	16QAM	5.77	<=13	PASS
10	High	QPSK	4.96	<=13	PASS
10	High	16QAM	5.62	<=13	PASS





LTE Band 7					
BW(MHz)	Channel Level	Modulation	Peak to Average Radio(dB)	Limit (dB)	Verdict
5	Low	QPSK	4.87	<=13	PASS
5	Low	16QAM	5.68	<=13	PASS
5	Mid	QPSK	5.16	<=13	PASS
5	Mid	16QAM	5.96	<=13	PASS
5	High	QPSK	5.05	<=13	PASS
5	High	16QAM	5.86	<=13	PASS
10	Low	QPSK	5.02	<=13	PASS
10	Low	16QAM	5.87	<=13	PASS
10	Mid	QPSK	5.23	<=13	PASS
10	Mid	16QAM	6.00	<=13	PASS
10	High	QPSK	5.15	<=13	PASS
10	High	16QAM	5.90	<=13	PASS
15	Low	QPSK	4.90	<=13	PASS
15	Low	16QAM	5.73	<=13	PASS
15	Mid	QPSK	5.10	<=13	PASS
15	Mid	16QAM	5.94	<=13	PASS
15	High	QPSK	5.02	<=13	PASS
15	High	16QAM	5.90	<=13	PASS
20	Low	QPSK	5.03	<=13	PASS
20	Low	16QAM	5.84	<=13	PASS
20	Mid	QPSK	5.10	<=13	PASS
20	Mid	16QAM	6.04	<=13	PASS
20	High	QPSK	5.19	<=13	PASS
20	High	16QAM	5.97	<=13	PASS



LTE Band 38					
BW(MHz)	Channel Level	Modulation	Peak to Average Radio(dB)	Limit (dB)	Verdict
5	Low	QPSK	11.21	<=13	PASS
5	Low	16QAM	9.43	<=13	PASS
5	Mid	QPSK	9.26	<=13	PASS
5	Mid	16QAM	9.77	<=13	PASS
5	High	QPSK	8.45	<=13	PASS
5	High	16QAM	9.66	<=13	PASS
10	Low	QPSK	8.42	<=13	PASS
10	Low	16QAM	10.34	<=13	PASS
10	Mid	QPSK	8.87	<=13	PASS
10	Mid	16QAM	10.38	<=13	PASS
10	High	QPSK	10.6	<=13	PASS
10	High	16QAM	9.95	<=13	PASS
15	Low	QPSK	8.48	<=13	PASS
15	Low	16QAM	9.05	<=13	PASS
15	Mid	QPSK	8.98	<=13	PASS
15	Mid	16QAM	8.86	<=13	PASS
15	High	QPSK	8.44	<=13	PASS
15	High	16QAM	9.73	<=13	PASS
20	Low	QPSK	9.57	<=13	PASS
20	Low	16QAM	9.86	<=13	PASS
20	Mid	QPSK	8.46	<=13	PASS
20	Mid	16QAM	9.41	<=13	PASS
20	High	QPSK	8.33	<=13	PASS
20	High	16QAM	9.74	<=13	PASS

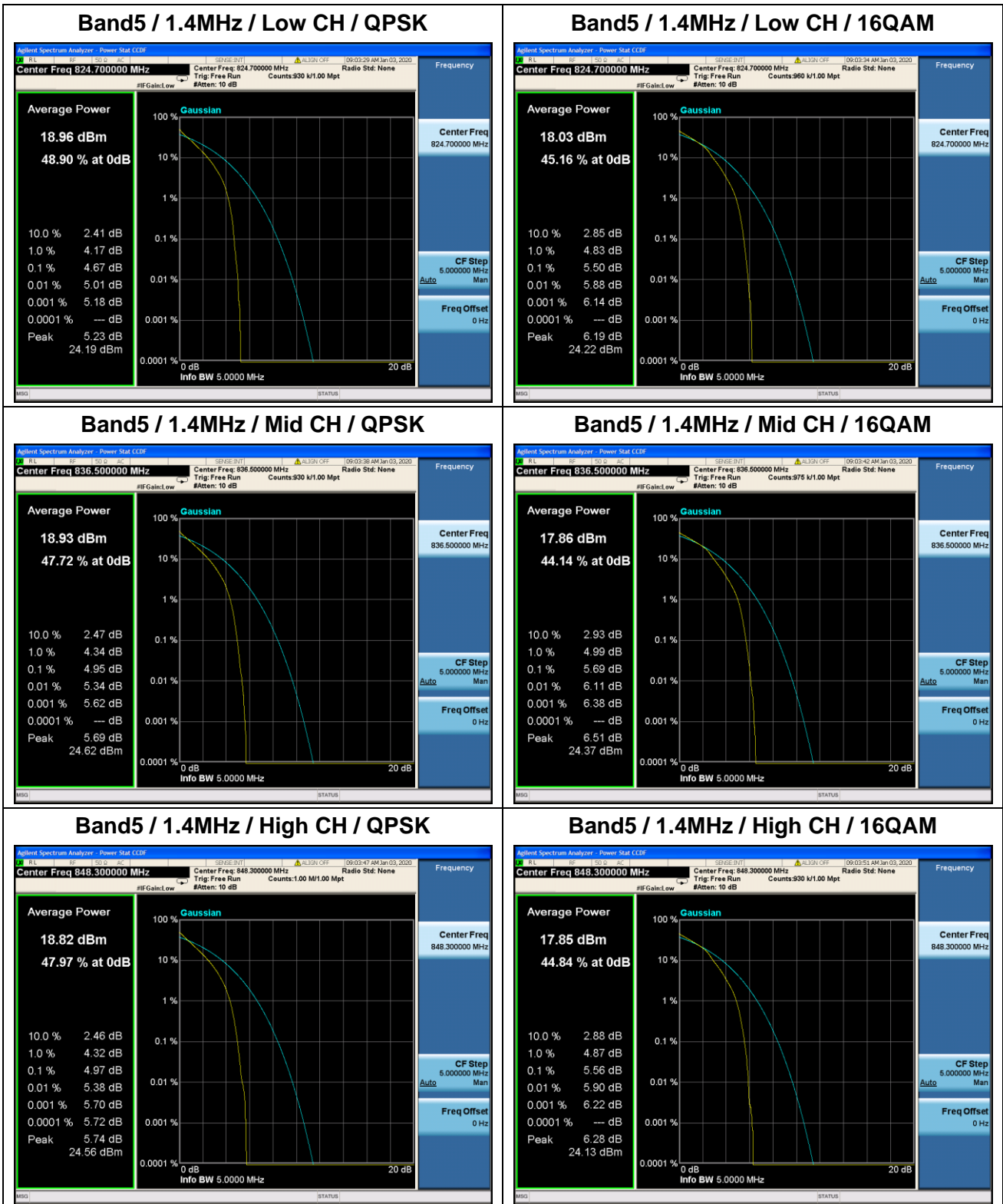


LTE Band 40(2305MHz-2315MHz)					
BW(MHz)	Channel Level	Modulation	Peak to Average Radio(dB)	Limit (dB)	Verdict
5	Low	QPSK	8.84	<=13	PASS
5	Low	16QAM	8.77	<=13	PASS
5	Mid	QPSK	9.11	<=13	PASS
5	Mid	16QAM	9.60	<=13	PASS
5	High	QPSK	9.17	<=13	PASS
5	High	16QAM	9.26	<=13	PASS
10	Mid	QPSK	8.75	<=13	PASS
10	Mid	16QAM	9.02	<=13	PASS

LTE Band 40(2350Hz-2360MHz)					
BW(MHz)	Channel Level	Modulation	Peak to Average Radio(dB)	Limit (dB)	Verdict
5	Low	QPSK	9.01	<=13	PASS
5	Low	16QAM	9.55	<=13	PASS
5	Mid	QPSK	9.09	<=13	PASS
5	Mid	16QAM	10.24	<=13	PASS
5	High	QPSK	9.03	<=13	PASS
5	High	16QAM	9.06	<=13	PASS
10	Mid	QPSK	8.82	<=13	PASS
10	Mid	16QAM	8.57	<=13	PASS

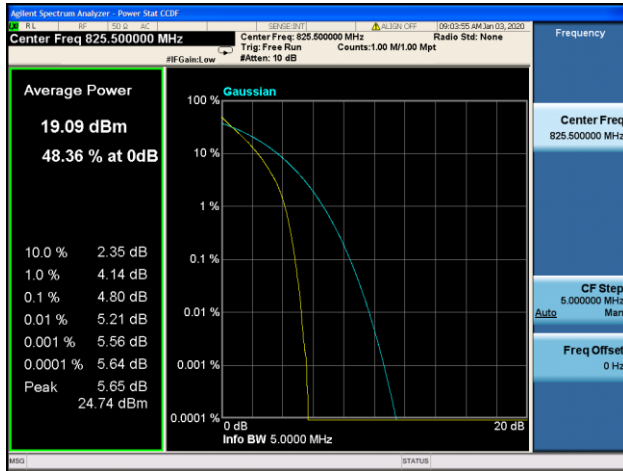


LTE Band 41					
BW(MHz)	Channel Level	Modulation	Peak to Average Radio(dB)	Limit (dB)	Verdict
5	Low	QPSK	10.30	<=13	PASS
5	Low	16QAM	9.13	<=13	PASS
5	Mid	QPSK	9.43	<=13	PASS
5	Mid	16QAM	9.30	<=13	PASS
5	High	QPSK	9.14	<=13	PASS
5	High	16QAM	8.94	<=13	PASS
10	Low	QPSK	8.69	<=13	PASS
10	Low	16QAM	8.72	<=13	PASS
10	Mid	QPSK	8.23	<=13	PASS
10	Mid	16QAM	8.28	<=13	PASS
10	High	QPSK	8.75	<=13	PASS
10	High	16QAM	9.29	<=13	PASS
15	Low	QPSK	9.24	<=13	PASS
15	Low	16QAM	9.59	<=13	PASS
15	Mid	QPSK	9.58	<=13	PASS
15	Mid	16QAM	9.57	<=13	PASS
15	High	QPSK	9.63	<=13	PASS
15	High	16QAM	9.47	<=13	PASS
20	Low	QPSK	10.03	<=13	PASS
20	Low	16QAM	10.49	<=13	PASS
20	Mid	QPSK	10.09	<=13	PASS
20	Mid	16QAM	9.85	<=13	PASS
20	High	QPSK	9.72	<=13	PASS
20	High	16QAM	9.86	<=13	PASS

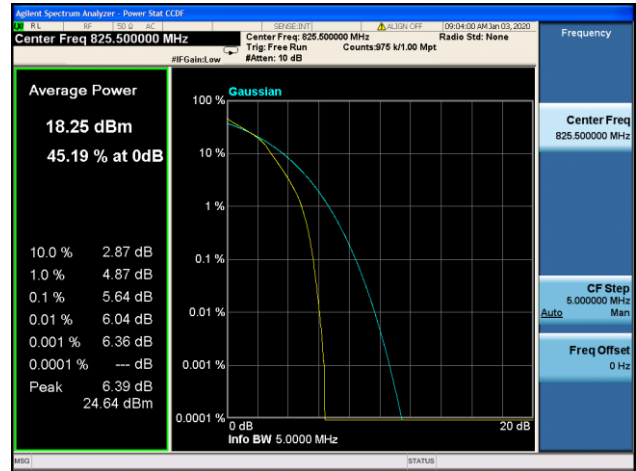




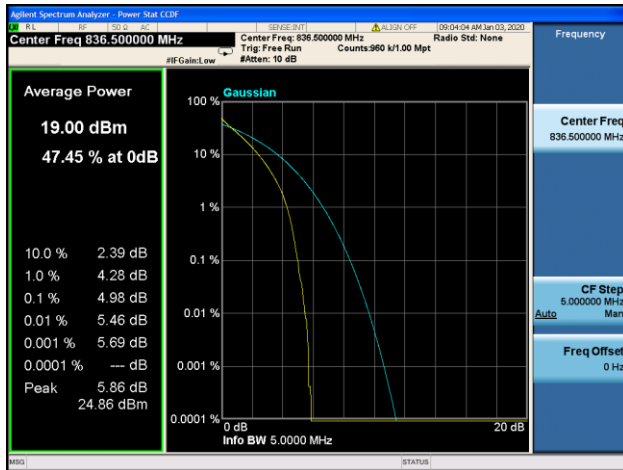
**Band5 / 3MHz / Low CH / QPSK**



**Band5 / 3MHz / Low CH / 16QAM**



**Band5 / 3MHz / Mid CH / QPSK**



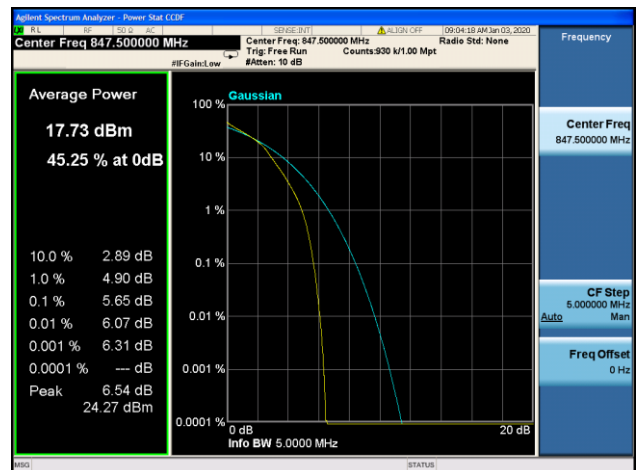
**Band5 / 3MHz / Mid CH / 16QAM**

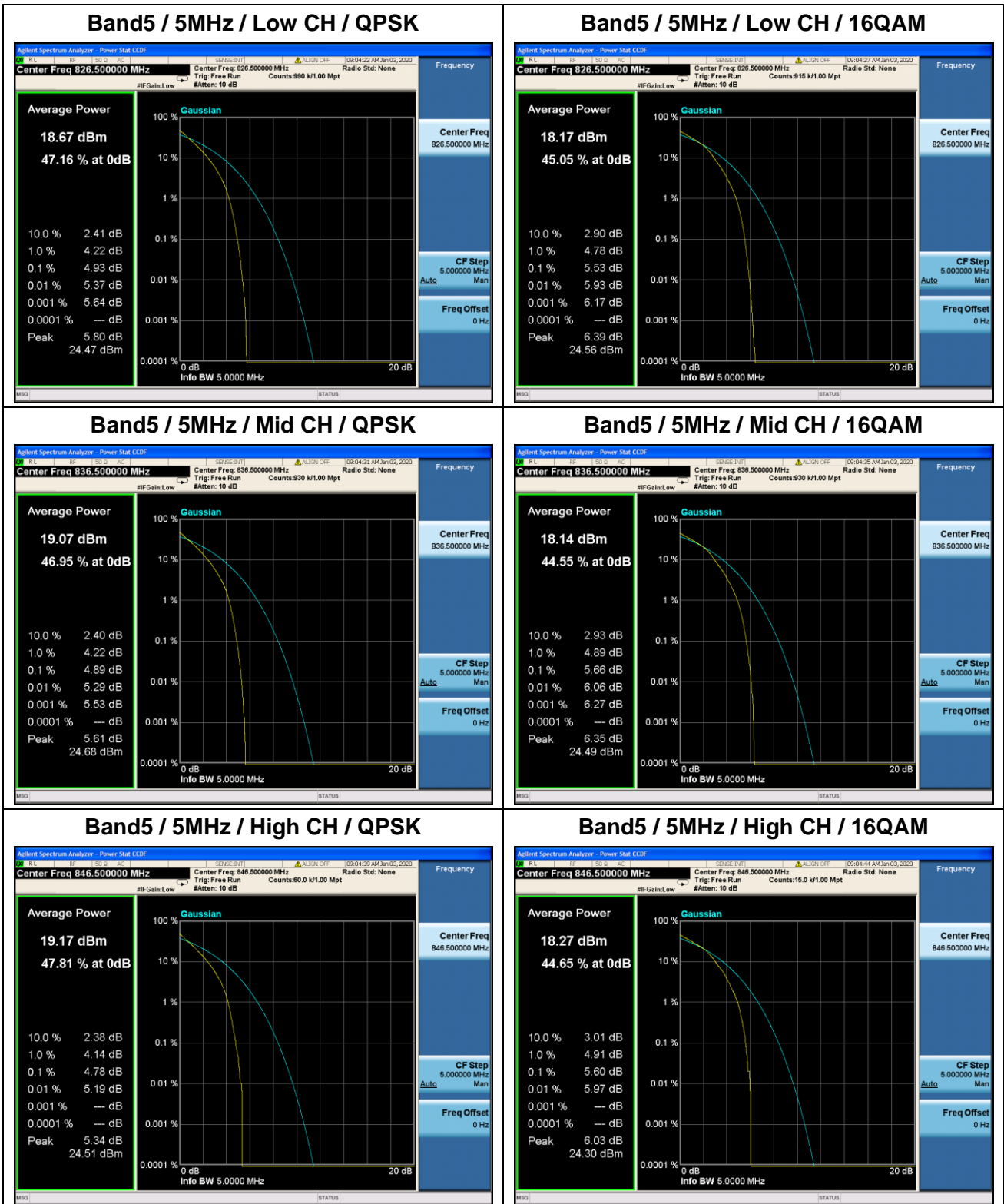


**Band5 / 3MHz / High CH / QPSK**



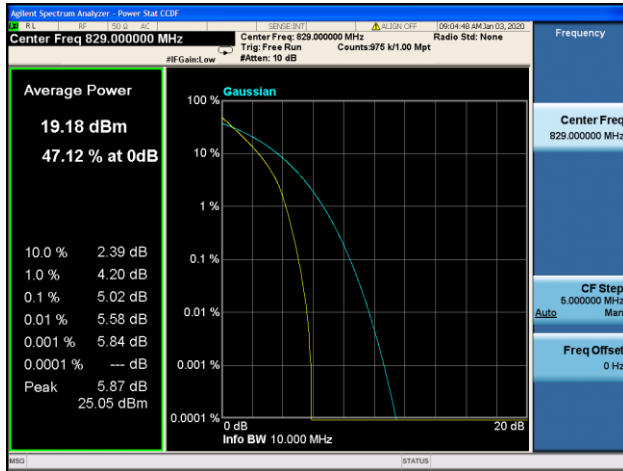
**Band5 / 3MHz / High CH / 16QAM**



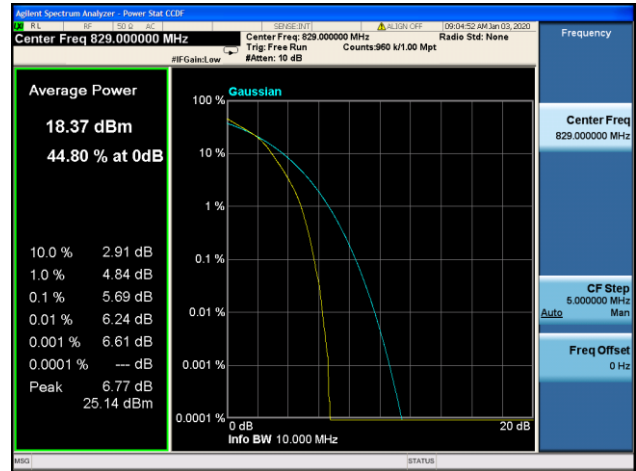




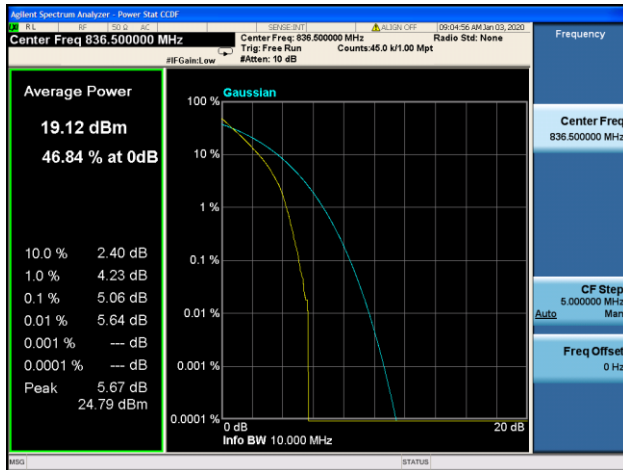
### Band5 / 10MHz / Low CH / QPSK



### Band5 / 10MHz / Low CH / 16QAM



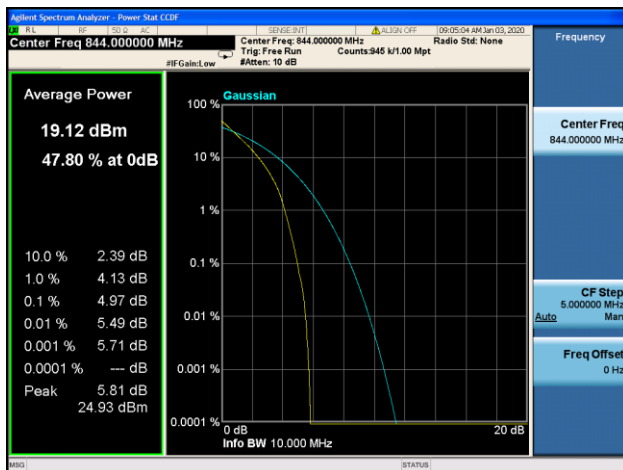
### Band5 / 10MHz / Mid CH / QPSK



### Band5 / 10MHz / Mid CH / 16QAM



### Band5 / 10MHz / High CH / QPSK



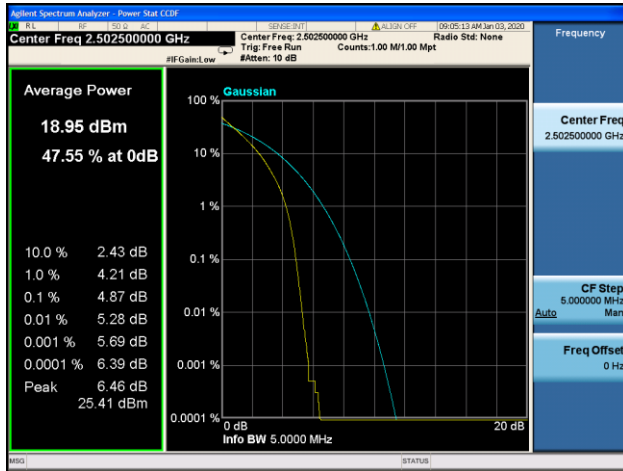
### Band5 / 10MHz / High CH / 16QAM



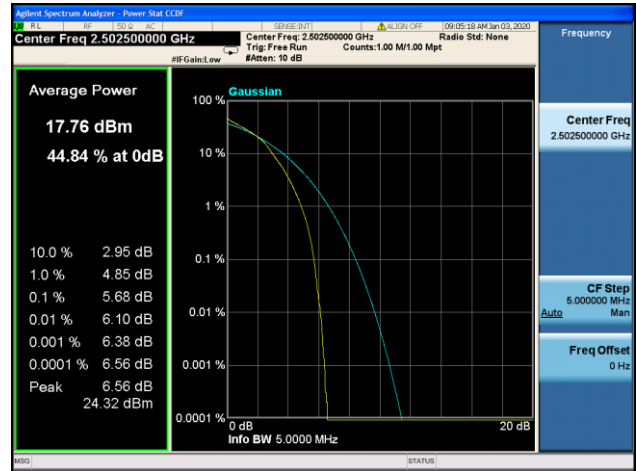




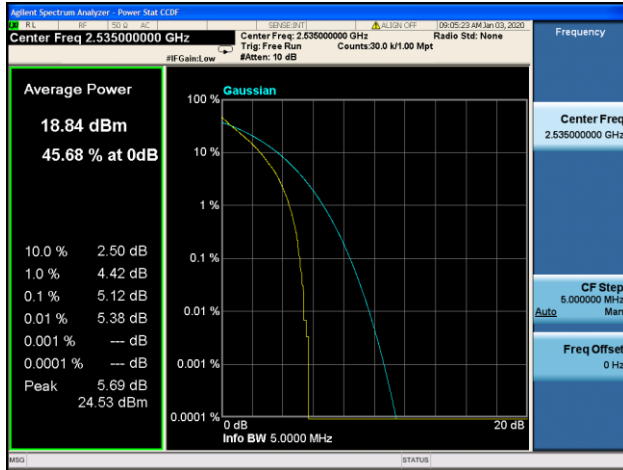
### Band7 / 5MHz / Low CH / QPSK



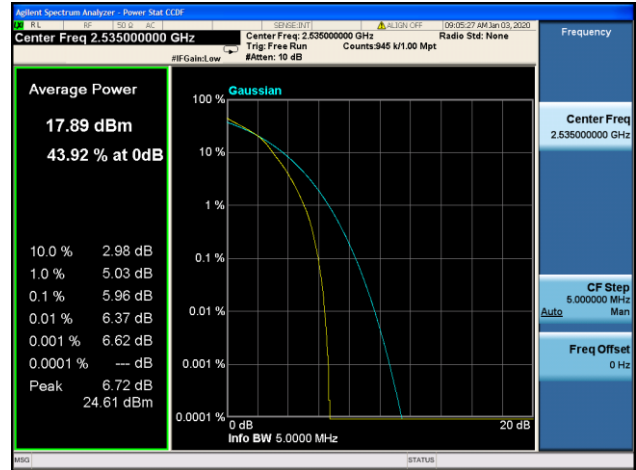
### Band7 / 5MHz / Low CH / 16QAM



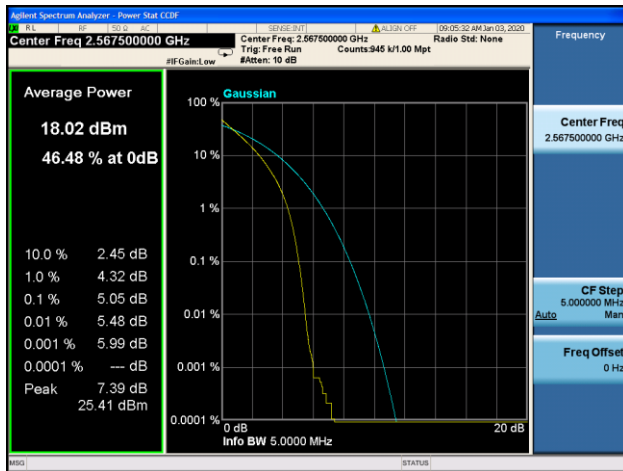
### Band7 / 5MHz / Mid CH / QPSK



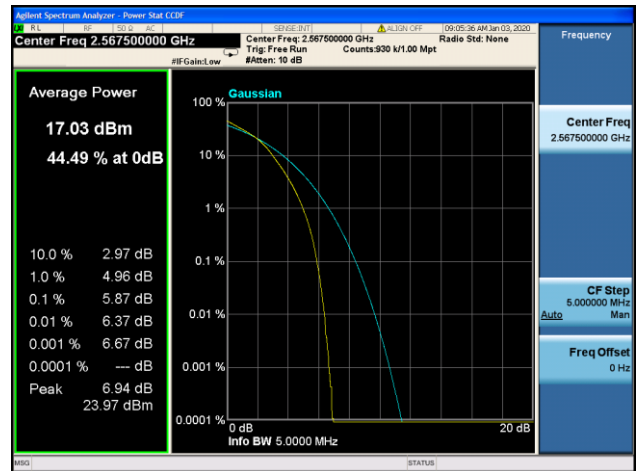
### Band7 / 5MHz / Mid CH / 16QAM



### Band7 / 5MHz / High CH / QPSK

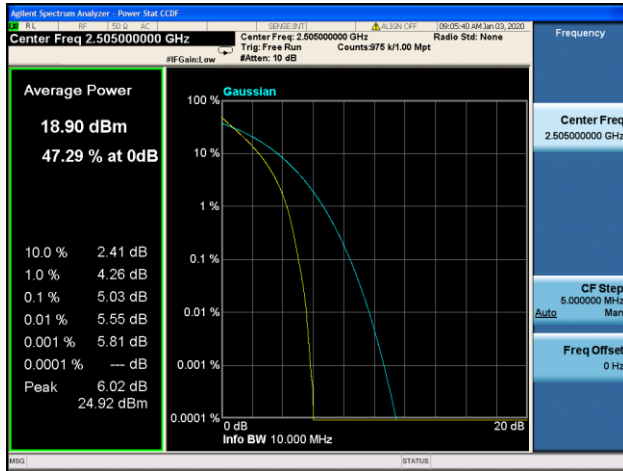


### Band7 / 5MHz / High CH / 16QAM

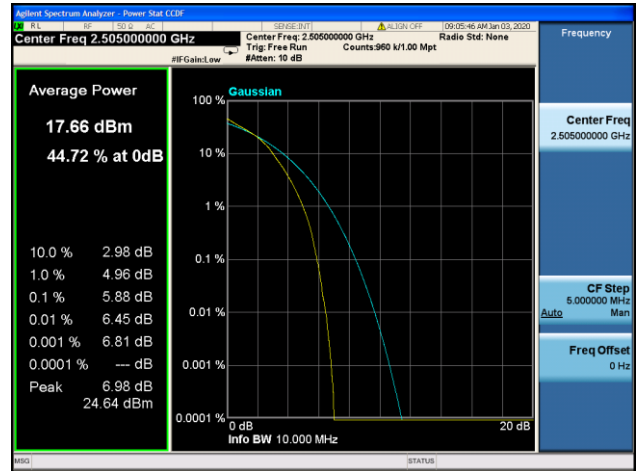




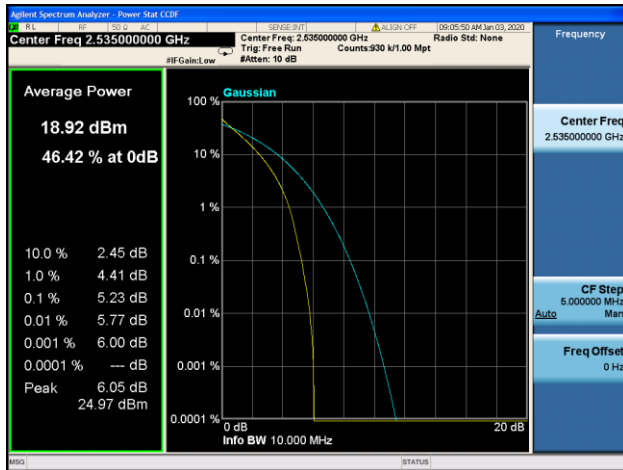
**Band7 / 10MHz / Low CH / QPSK**



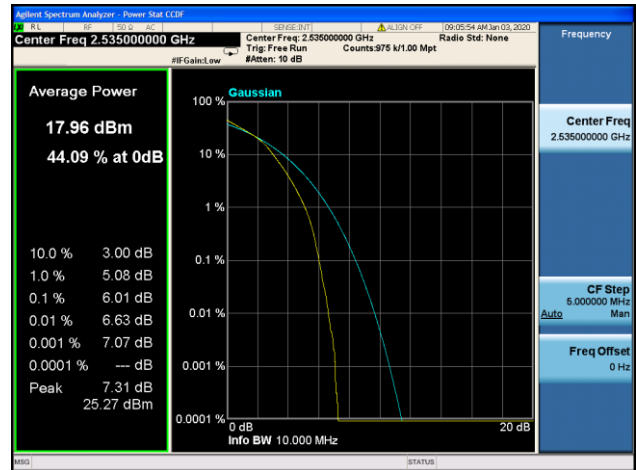
**Band7 / 10MHz / Low CH / 16QAM**



**Band7 / 10MHz / Mid CH / QPSK**



**Band7 / 10MHz / Mid CH / 16QAM**



**Band7 / 10MHz / High CH / QPSK**

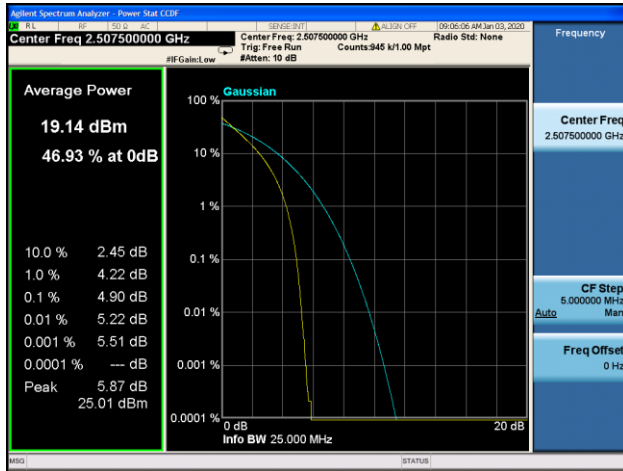


**Band7 / 10MHz / High CH / 16QAM**

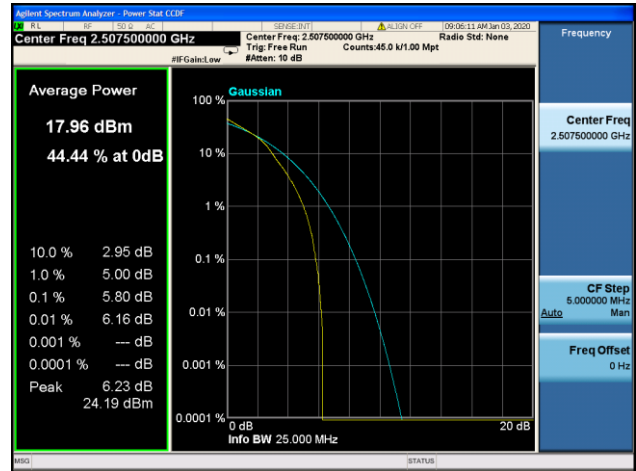




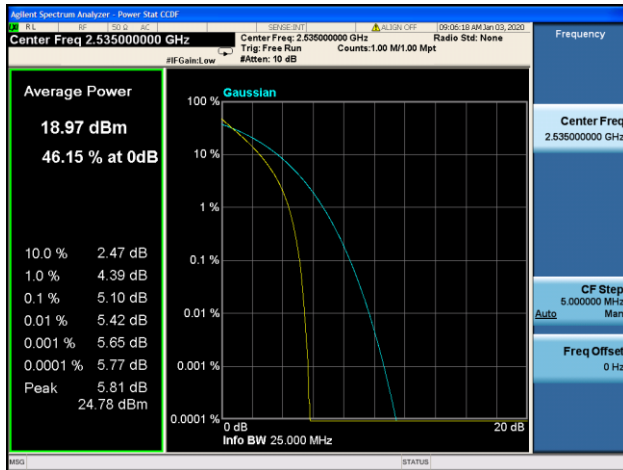
**Band7 / 15MHz / Low CH / QPSK**



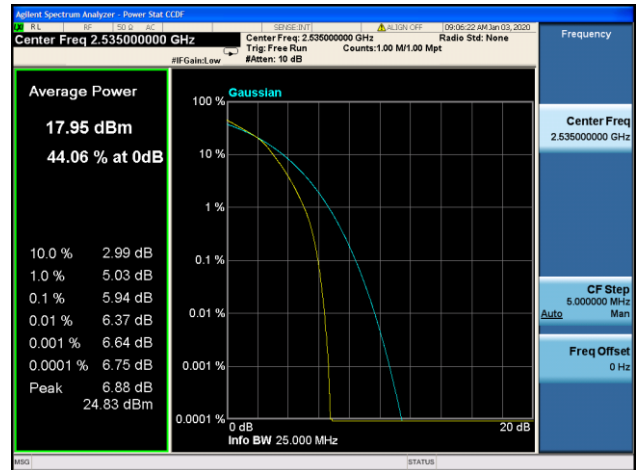
**Band7 / 15MHz / Low CH / 16QAM**



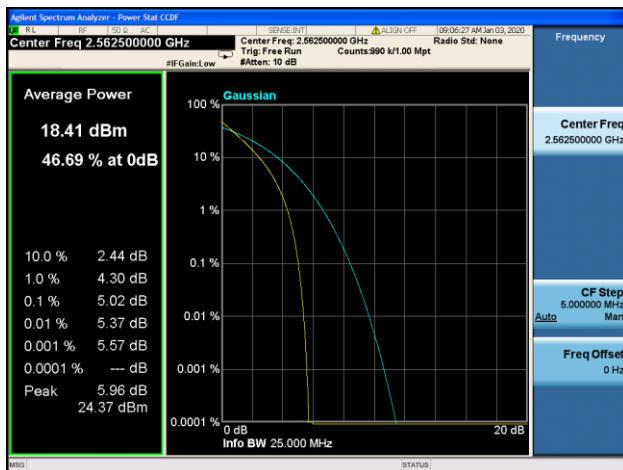
**Band7 / 15MHz / Mid CH / QPSK**



**Band7 / 15MHz / Mid CH / 16QAM**



**Band7 / 15MHz / High CH / QPSK**

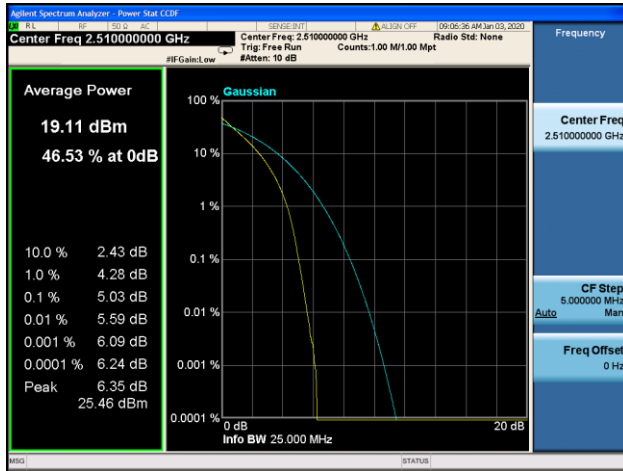


**Band7 / 15MHz / High CH / 16QAM**

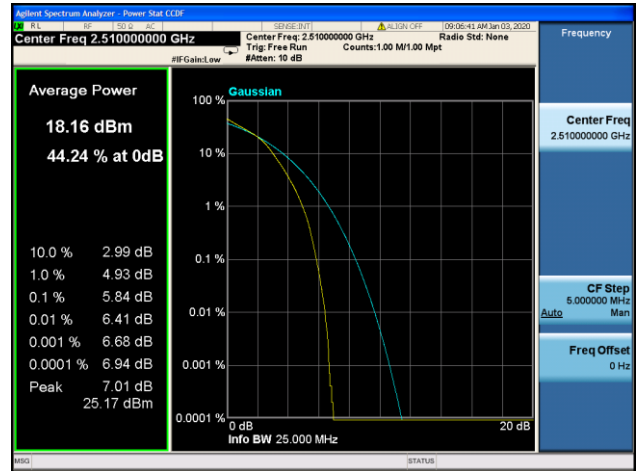




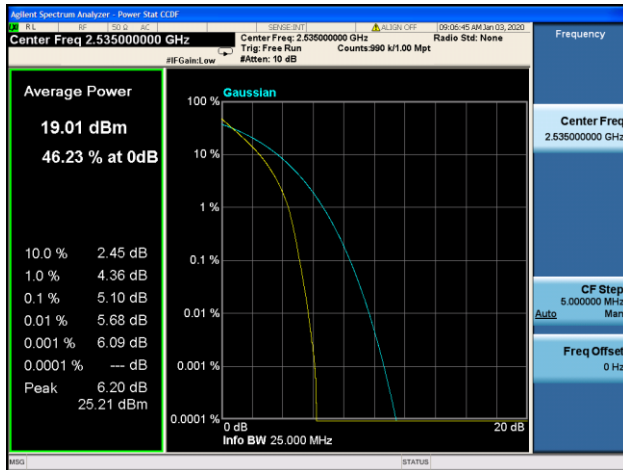
**Band7 / 20MHz / Low CH / QPSK**



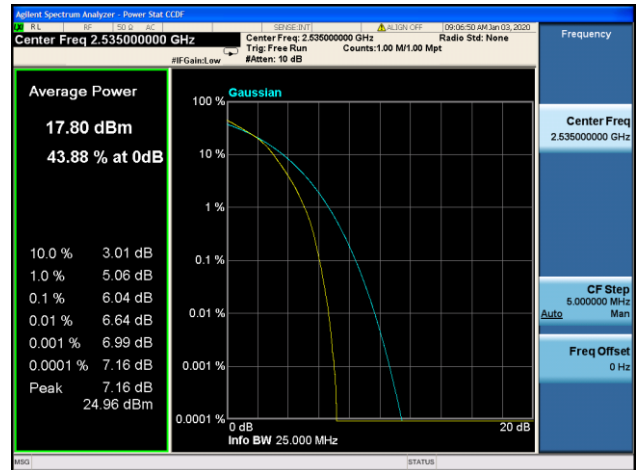
**Band7 / 20MHz / Low CH / 16QAM**



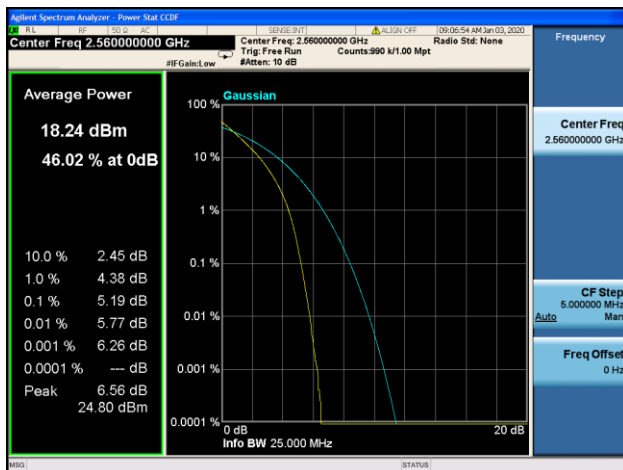
**Band7 / 20MHz / Mid CH / QPSK**



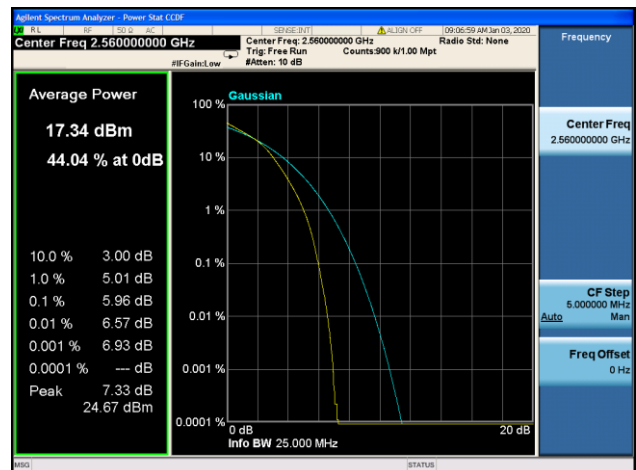
**Band7 / 20MHz / Mid CH / 16QAM**



**Band7 / 20MHz / High CH / QPSK**

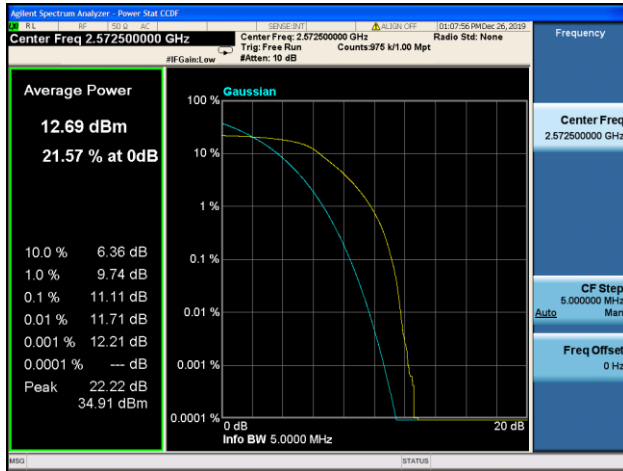


**Band7 / 20MHz / High CH / 16QAM**

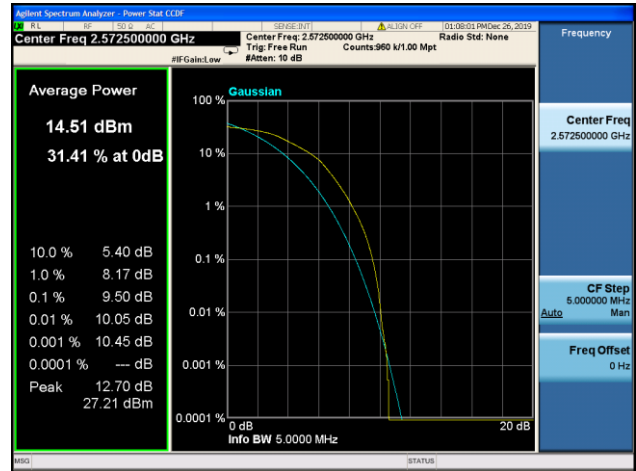




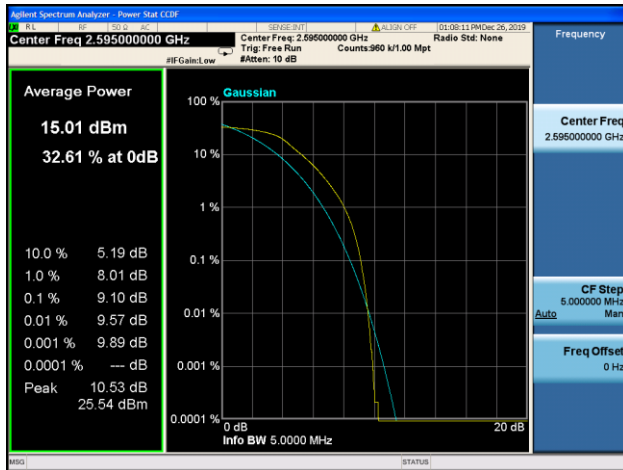
**Band38 / 5MHz / Low CH / QPSK**



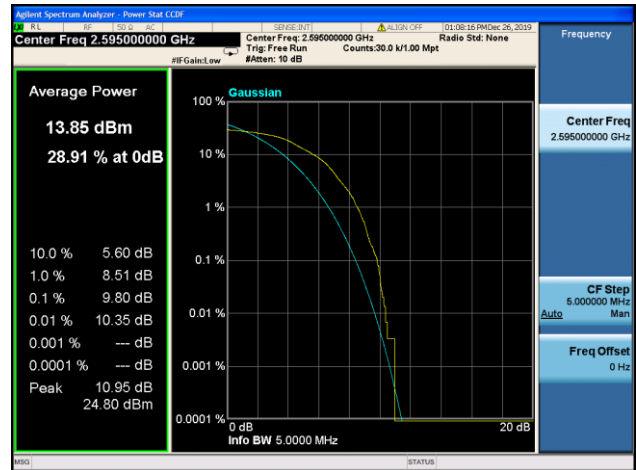
**Band38 / 5MHz / Low CH / 16QAM**



**Band38 / 5MHz / Mid CH / QPSK**



**Band38 / 5MHz / Mid CH / 16QAM**



**Band38 / 5MHz / High CH / QPSK**



**Band38 / 5MHz / High CH / 16QAM**

