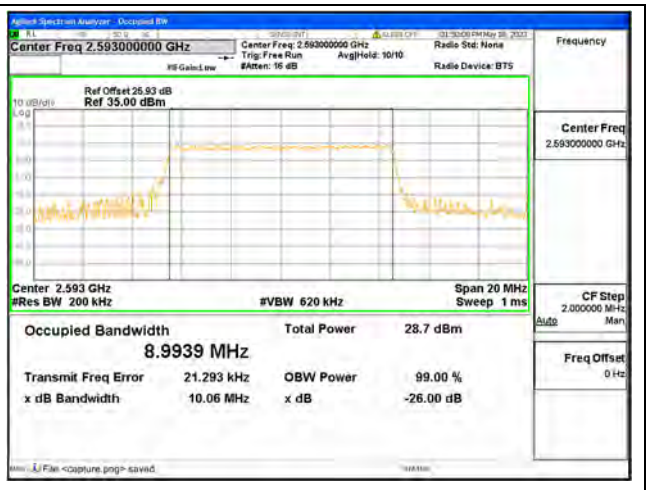
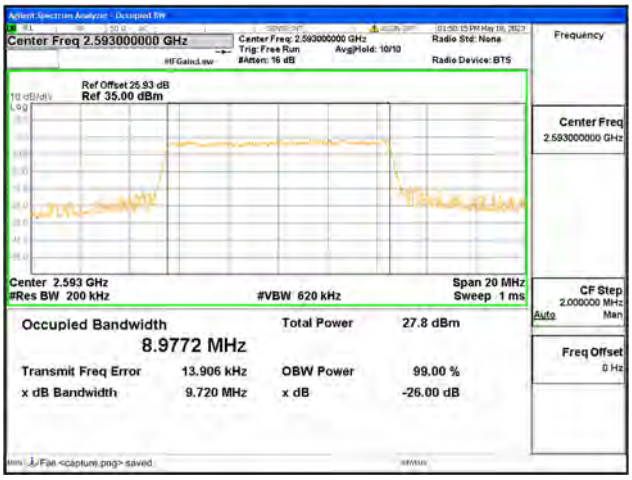
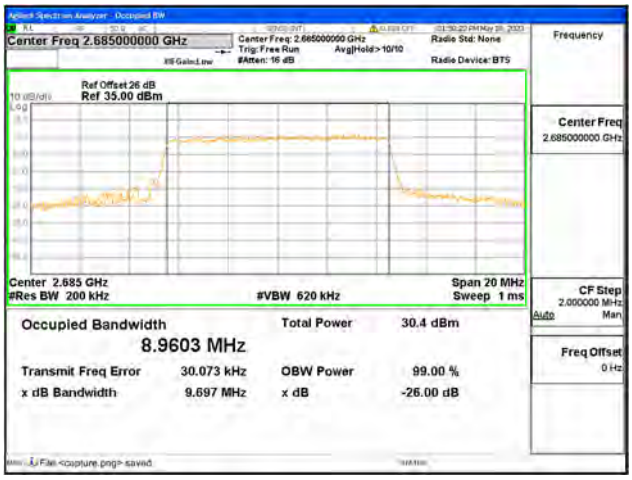
Band41 / 10MHz / QPSK/ Mid CH



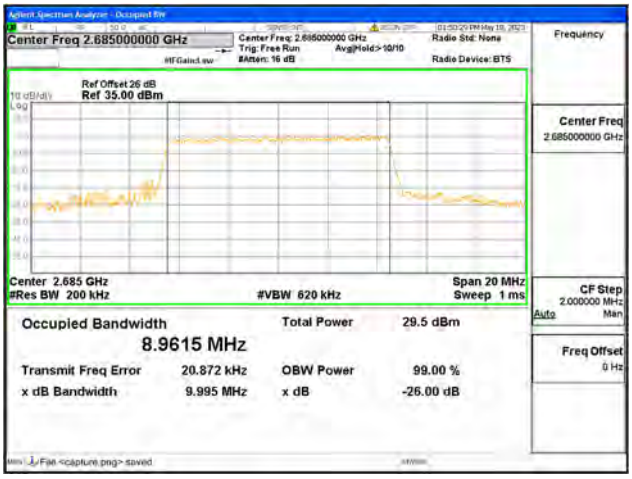
Band41 / 10MHz / 16QAM/ Mid CH



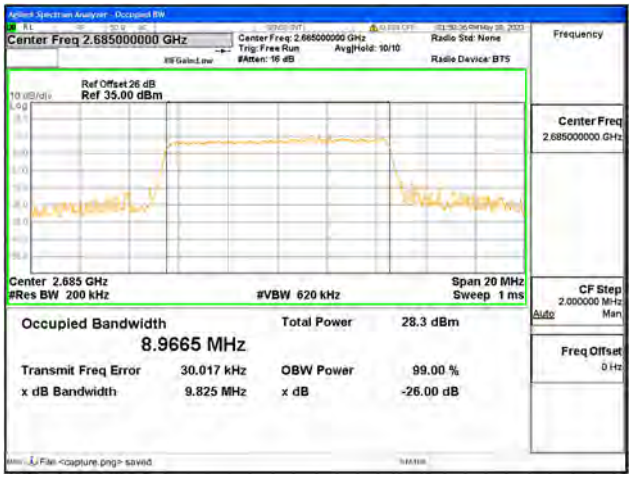
Band41 / 10MHz / 64QAM/ Mid CH



Band41 / 10MHz / QPSK/ High CH

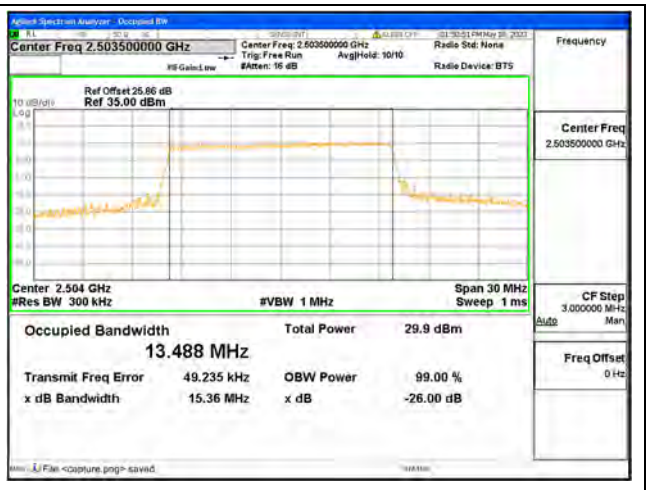


Band41 / 10MHz / 16QAM/ High CH

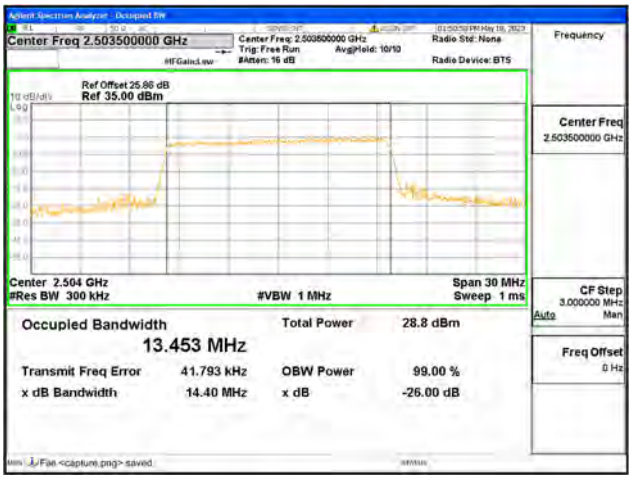


Band41 / 10MHz / 64QAM/ High CH

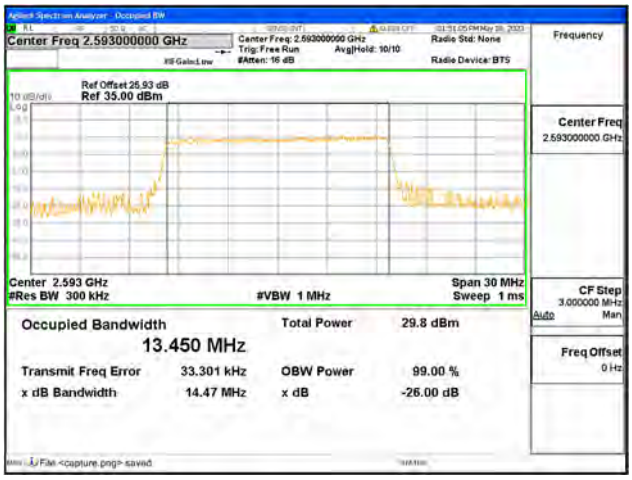
Band41 / 15MHz / QPSK/ Low CH



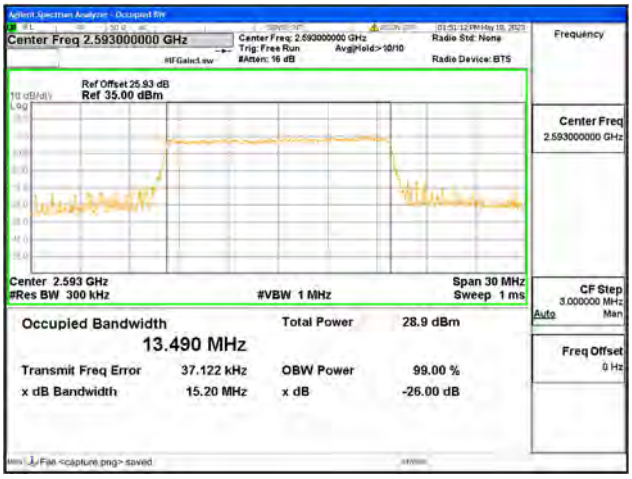
Band41 / 15MHz / 16QAM/ Low CH



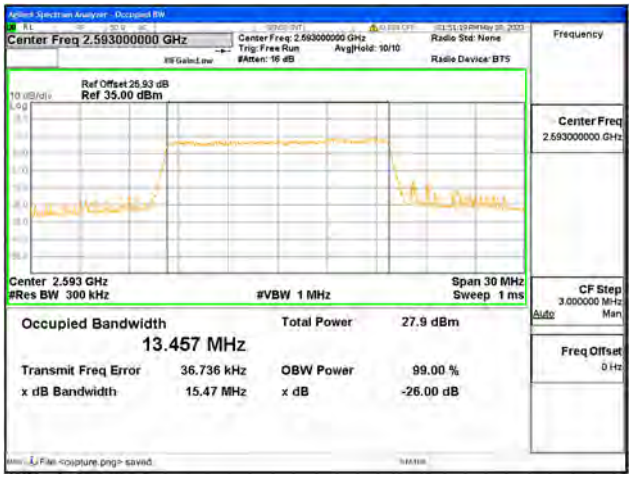
Band41 / 15MHz / 64QAM/ Low CH



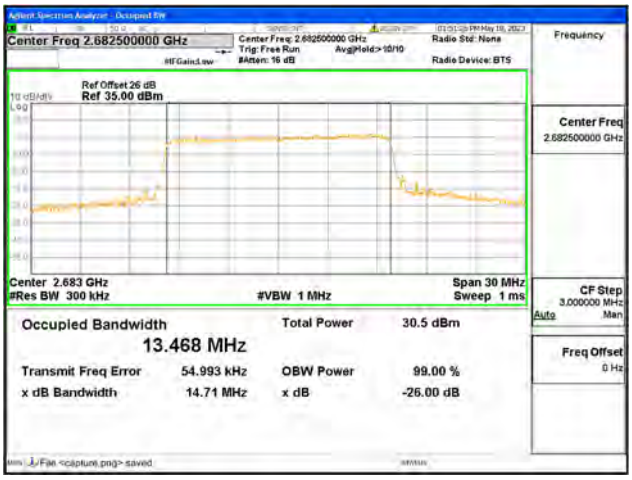
Band41 / 15MHz / QPSK/ Mid CH



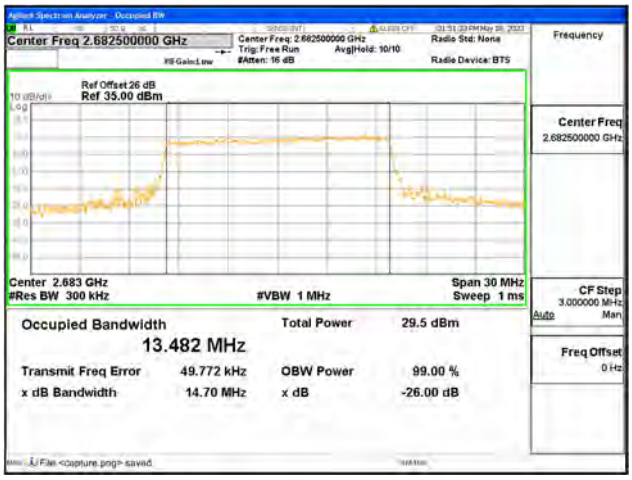
Band41 / 15MHz / 16QAM/ Mid CH



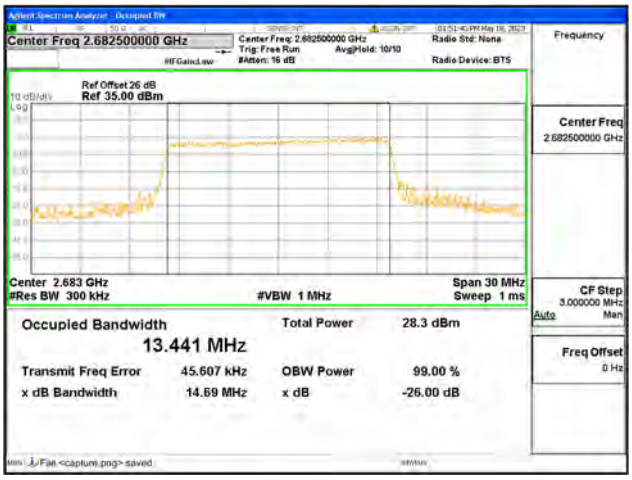
Band41 / 15MHz / 64QAM/ Mid CH



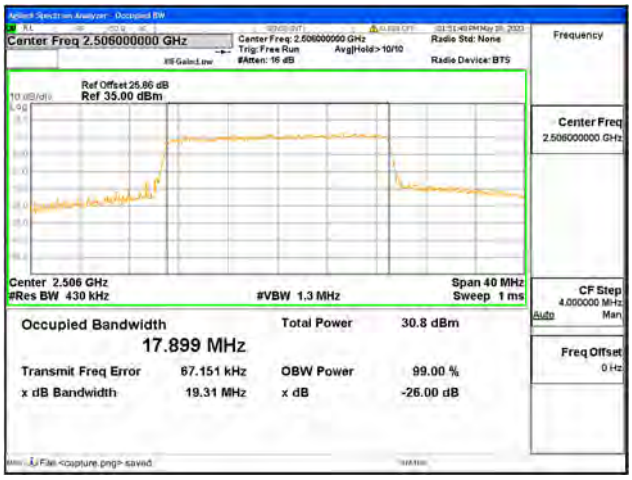
Band41 / 15MHz / QPSK/ High CH



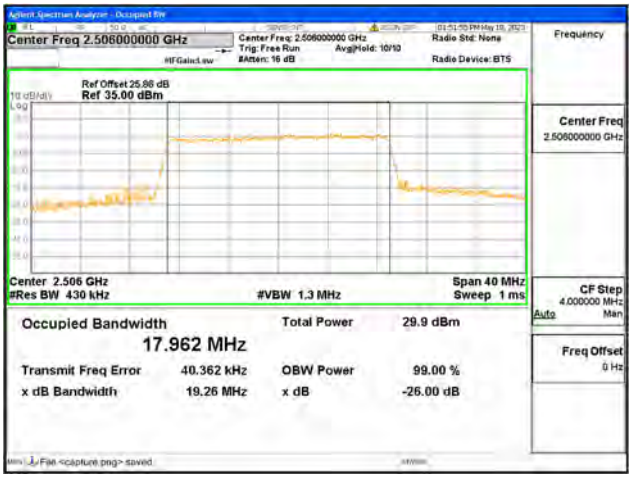
Band41 / 15MHz / 16QAM/ High CH



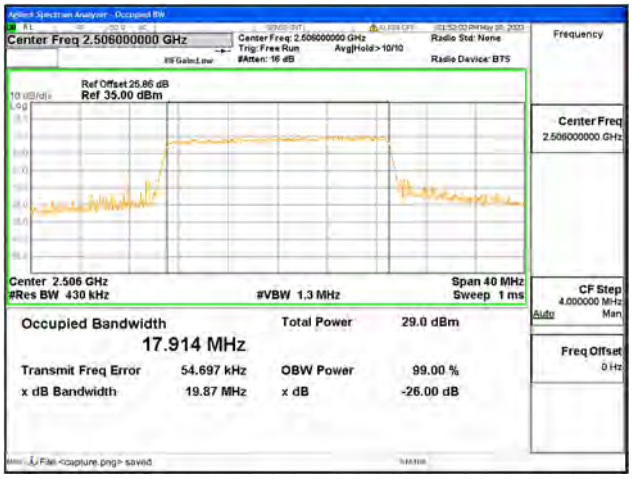
Band41 / 15MHz / 64QAM/ High CH



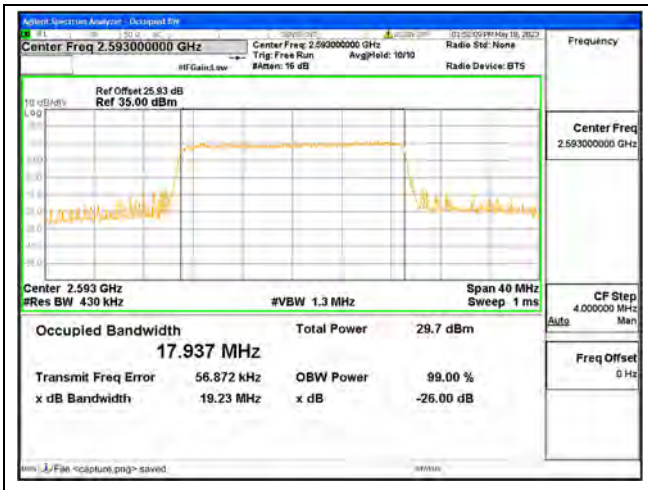
Band41 / 20MHz / QPSK/ Low CH



Band41 / 20MHz / 16QAM/ Low CH

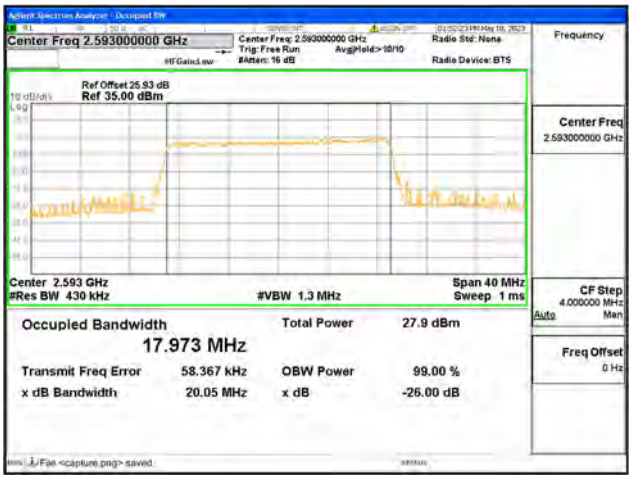


Band41 / 20MHz / 64QAM/ Low CH

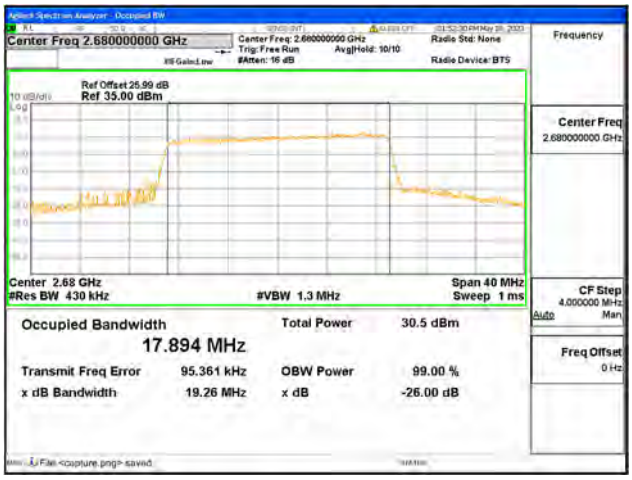


Band41 / 20MHz / QPSK/ Mid CH

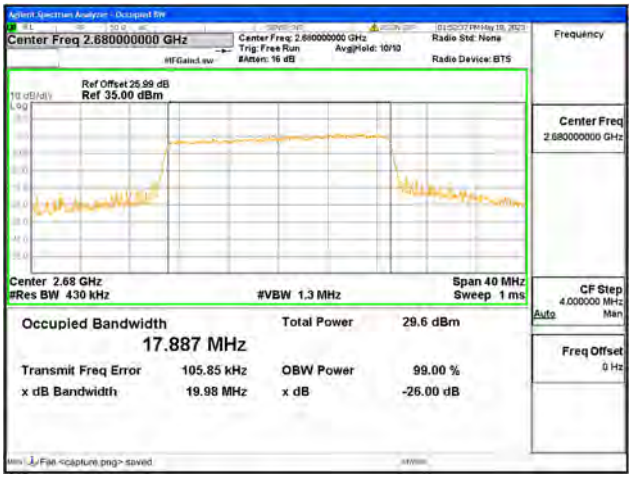
Band41 / 20MHz / 16QAM/ Mid CH



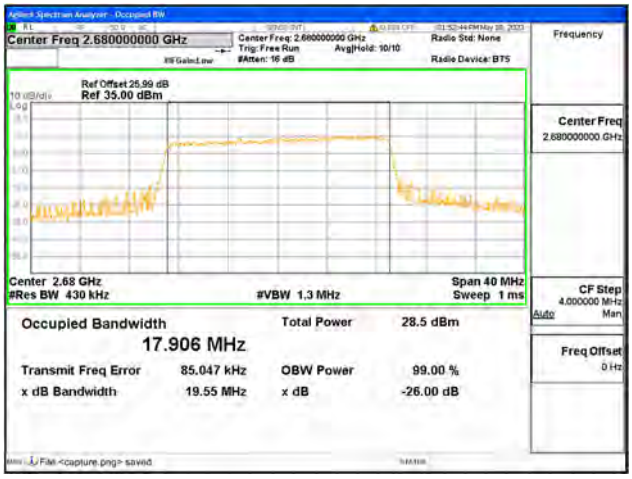
Band41 / 20MHz / 64QAM/ Mid CH



Band41 / 20MHz / QPSK/ High CH



Band41 / 20MHz / 16QAM/ High CH



Band41 / 20MHz / 64QAM/ High CH

2.3. Frequency Stability

2.3.1. Requirement

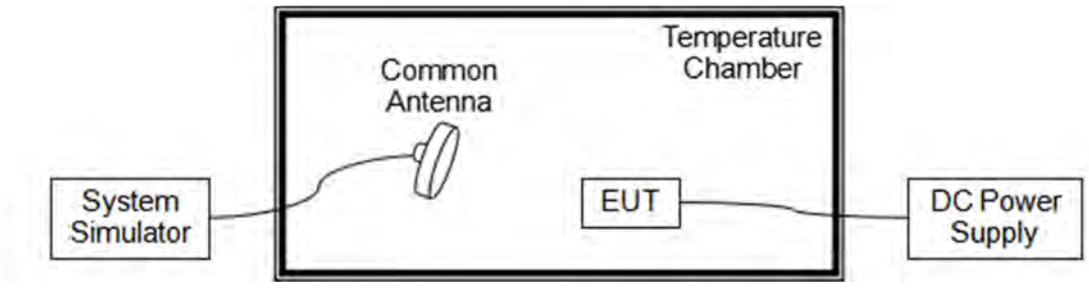
According to FCC section 2.1055, 24.235, 27.54, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(a) The temperature is varied from -30°C to +50°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.

Note: The operating temperature of EUT is from -20°C to 50°C, which are specified by the applicant.

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 3.87V, 4.40V and 3.50V, which are specified by the applicant; the normal temperature here used is 20°C.

LTE Band 2, QPSK, Channel 18900, Frequency 1880.0MHz Limit =Within Authorized Band					
Voltage(%)	**Power(VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	18	0.010	PASS
Normal		-20	16	0.009	
Normal		-10	19	0.010	
Normal		0	14	0.007	
Normal		+10	13	0.007	
Normal		+20	20	**0.011**	
Normal		+30	19	0.010	
Normal		+40	2	0.001	
Normal		+50	14	0.007	
High	4.40	+20	16	0.009	
BATT.ENDPOINT	3.50	+20	-4	-0.002	

LTE Band 4, QPSK, Channel 20175, Frequency 1732.5MHz Limit =Within Authorized Band					
Voltage(%)	**Power(VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	20	**0.012**	PASS
Normal		-20	19	0.011	
Normal		-10	18	0.010	
Normal		0	13	0.008	
Normal		+10	9	0.005	
Normal		+20	18	0.010	
Normal		+30	13	0.008	
Normal		+40	-21	-0.012	
Normal		+50	6	0.003	
High	4.40	+20	16	0.009	
BATT.ENDPOINT	3.50	+20	-11	-0.006	

LTE Band 5, QPSK, Channel 20525, Frequency 836.5MHz Limit=±2.5ppm					
Voltage(%)	**Power(VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	17	0.020	PASS
Normal		-20	-2	-0.002	
Normal		-10	15	0.018	
Normal		0	20	**0.024**	
Normal		+10	17	0.020	
Normal		+20	-10	-0.012	
Normal		+30	13	0.016	
Normal		+40	16	0.019	
Normal		+50	20	**0.024**	
High	4.40	+20	-8	-0.010	
BATT.ENDPOINT	3.50	+20	19	0.023	

LTE Band 7, QPSK, Channel 21100, Frequency 2535.0MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	18	0.007	PASS
Normal		-20	16	0.006	
Normal		-10	10	0.004	
Normal		0	20	0.008	
Normal		+10	19	0.007	
Normal		+20	23	**0.009**	
Normal		+30	-8	-0.003	
Normal		+40	13	0.005	
Normal		+50	14	0.006	
High	4.40	+20	23	**0.009**	
BATT.ENDPOINT	3.50	+20	7	0.003	

LTE Band 12, QPSK, Channel 23095, Frequency 707.5MHz Limit =Within Authorized Band					
Voltage(%)	**Power(VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	-5	-0.007	PASS
Normal		-20	19	0.027	
Normal		-10	15	0.021	
Normal		0	15	0.021	
Normal		+10	-11	-0.016	
Normal		+20	16	0.023	
Normal		+30	20	**0.028**	
Normal		+40	15	0.021	
Normal		+50	-6	-0.008	
High	4.40	+20	17	0.024	
BATT.ENDPOINT	3.50	+20	16	0.023	

LTE Band 17, QPSK, Channel 23790, Frequency 710.0MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	16	0.023	PASS
Normal		-20	17	0.024	
Normal		-10	15	0.021	
Normal		0	-19	-0.027	
Normal		+10	22	0.031	
Normal		+20	23	**0.032**	
Normal		+30	-8	-0.011	
Normal		+40	15	0.021	
Normal		+50	19	0.027	
High	4.40	+20	-21	-0.030	
BATT.ENDPOINT	3.50	+20	-2	-0.003	

LTE Band 38, QPSK, Channel 38000, Frequency 2595MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	7	0.003	PASS
Normal		-20	16	0.006	
Normal		-10	-3	-0.001	
Normal		0	18	0.007	
Normal		+10	19	**0.007**	
Normal		+20	5	0.002	
Normal		+30	15	0.006	
Normal		+40	16	0.006	
Normal		+50	-23	-0.009	
High	4.40	+20	16	0.006	
BATT.ENDPOINT	3.50	+20	14	0.005	

LTE Band 40, Block A, QPSK, Channel 38750, Frequency 2310MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	-1	0.000	PASS
Normal		-20	16	0.007	
Normal		-10	5	0.002	
Normal		0	18	0.008	
Normal		+10	15	0.006	
Normal		+20	18	0.008	
Normal		+30	17	0.007	
Normal		+40	20	**0.009**	
Normal		+50	15	0.006	
High	4.40	+20	-11	-0.005	
BATT.ENDPOINT	3.50	+20	14	0.006	

LTE Band 40 Block B, QPSK, Channel 39200, Frequency 2355MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	15	0.006	PASS
Normal		-20	18	0.008	
Normal		-10	-8	-0.003	
Normal		0	17	0.007	
Normal		+10	20	**0.008**	
Normal		+20	-2	-0.001	
Normal		+30	13	0.006	
Normal		+40	15	0.006	
Normal		+50	1	0.000	
High	4.40	+20	16	0.007	
BATT.ENDPOINT	3.50	+20	-19	-0.008	

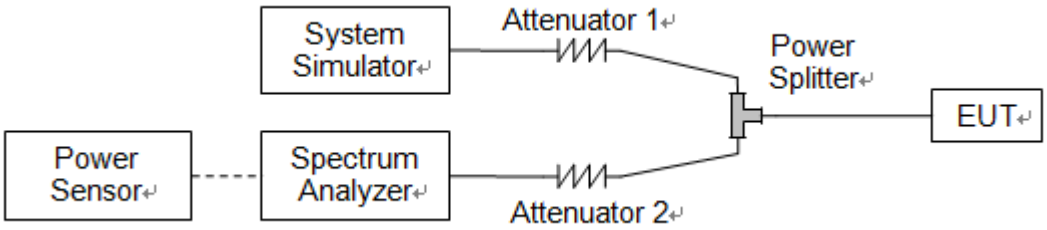
LTE Band 41, QPSK, Channel 40620, Frequency 2593MHz Limit =Within Authorized Band					
Voltage(%)	**Power(VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.87	+20(Ref)	15	0.006	PASS
Normal		-20	-23	-0.009	
Normal		-10	3	0.001	
Normal		0	14	0.005	
Normal		+10	3	0.001	
Normal		+20	15	0.006	
Normal		+30	9	0.003	
Normal		+40	19	**0.007**	
Normal		+50	19	**0.007**	
High	4.40	+20	15	0.006	
BATT.ENDPOINT	3.50	+20	18	0.007	

2.4. Peak to Average Radio

2.4.1. Requirement

According to FCC section 24.232(d), 27.50(d)and 27.50(j)(4), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

2.4.2. Test Description



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 50Ohm; 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.

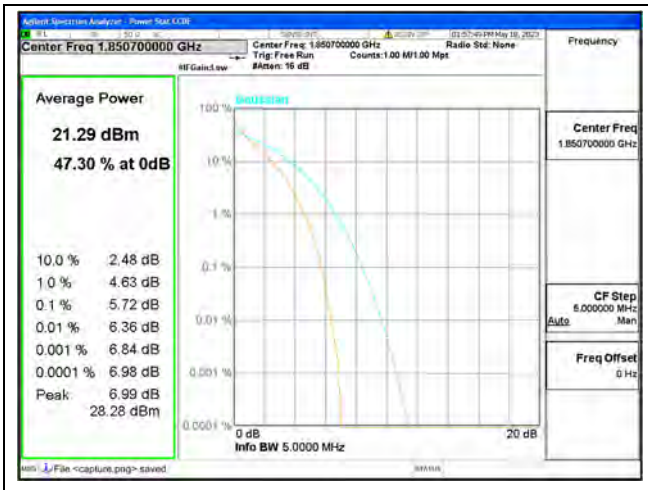
2.4.4. Test Result

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

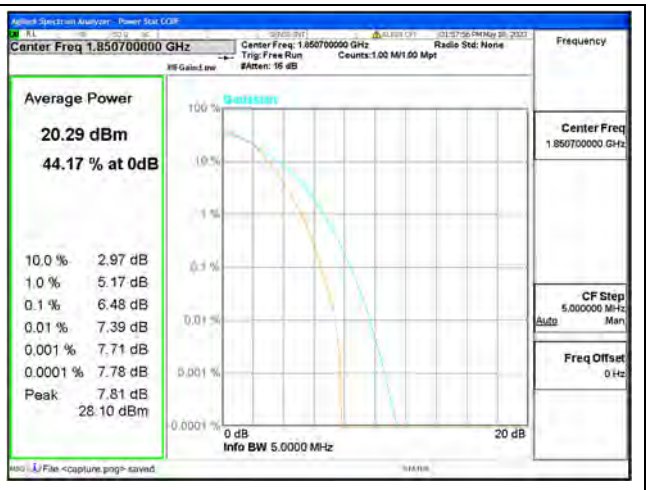
LTE Band	BW(MHz)	Channel Level	Channel	Frequency (MHz)	Modulation	Peak to Average Radio(dB)	Verdict
B2	1.4	Low	18607	1850.7	QPSK	5.72	PASS
B2	1.4	Low	18607	1850.7	16QAM	6.48	PASS
B2	1.4	Low	18607	1850.7	64QAM	6.55	PASS
B2	1.4	Mid	18900	1880	QPSK	5.84	PASS
B2	1.4	Mid	18900	1880	16QAM	6.58	PASS
B2	1.4	Mid	18900	1880	64QAM	6.40	PASS
B2	1.4	High	19193	1909.3	QPSK	5.59	PASS
B2	1.4	High	19193	1909.3	16QAM	5.87	PASS
B2	1.4	High	19193	1909.3	64QAM	6.36	PASS
B2	3	Low	18615	1851.5	QPSK	5.74	PASS
B2	3	Low	18615	1851.5	16QAM	6.53	PASS
B2	3	Low	18615	1851.5	64QAM	6.53	PASS
B2	3	Mid	18900	1880	QPSK	5.83	PASS
B2	3	Mid	18900	1880	16QAM	6.57	PASS
B2	3	Mid	18900	1880	64QAM	6.43	PASS
B2	3	High	19185	1908.5	QPSK	5.50	PASS
B2	3	High	19185	1908.5	16QAM	6.34	PASS
B2	3	High	19185	1908.5	64QAM	6.50	PASS
B2	5	Low	18625	1852.5	QPSK	5.83	PASS
B2	5	Low	18625	1852.5	16QAM	6.49	PASS
B2	5	Low	18625	1852.5	64QAM	6.68	PASS
B2	5	Mid	18900	1880	QPSK	5.85	PASS
B2	5	Mid	18900	1880	16QAM	6.44	PASS
B2	5	Mid	18900	1880	64QAM	6.53	PASS
B2	5	High	19175	1907.5	QPSK	5.69	PASS
B2	5	High	19175	1907.5	16QAM	6.34	PASS
B2	5	High	19175	1907.5	64QAM	6.46	PASS
B2	10	Low	18650	1855	QPSK	5.84	PASS
B2	10	Low	18650	1855	16QAM	6.51	PASS
B2	10	Low	18650	1855	64QAM	6.71	PASS
B2	10	Mid	18900	1880	QPSK	5.90	PASS
B2	10	Mid	18900	1880	16QAM	6.53	PASS
B2	10	Mid	18900	1880	64QAM	6.53	PASS
B2	10	High	19150	1905	QPSK	5.92	PASS
B2	10	High	19150	1905	16QAM	6.53	PASS

B2	10	High	19150	1905	64QAM	6.68	PASS
B2	15	Low	18675	1857.5	QPSK	5.86	PASS
B2	15	Low	18675	1857.5	16QAM	6.54	PASS
B2	15	Low	18675	1857.5	64QAM	6.76	PASS
B2	15	Mid	18900	1880	QPSK	6.07	PASS
B2	15	Mid	18900	1880	16QAM	6.60	PASS
B2	15	Mid	18900	1880	64QAM	6.69	PASS
B2	15	High	19125	1902.5	QPSK	6.08	PASS
B2	15	High	19125	1902.5	16QAM	6.67	PASS
B2	15	High	19125	1902.5	64QAM	6.91	PASS
B2	20	Low	18700	1860	QPSK	5.74	PASS
B2	20	Low	18700	1860	16QAM	6.53	PASS
B2	20	Low	18700	1860	64QAM	6.84	PASS
B2	20	Mid	18900	1880	QPSK	6.10	PASS
B2	20	Mid	18900	1880	16QAM	6.67	PASS
B2	20	Mid	18900	1880	64QAM	6.73	PASS
B2	20	High	19100	1900	QPSK	6.01	PASS
B2	20	High	19100	1900	16QAM	6.68	PASS
B2	20	High	19100	1900	64QAM	6.91	PASS
B4	1.4	Low	19957	1710.7	QPSK	5.64	PASS
B4	1.4	Low	19957	1710.7	16QAM	6.43	PASS
B4	1.4	Low	19957	1710.7	64QAM	6.53	PASS
B4	1.4	Mid	20175	1732.5	QPSK	5.72	PASS
B4	1.4	Mid	20175	1732.5	16QAM	6.46	PASS
B4	1.4	Mid	20175	1732.5	64QAM	6.46	PASS
B4	1.4	High	20393	1754.3	QPSK	5.49	PASS
B4	1.4	High	20393	1754.3	16QAM	6.13	PASS
B4	1.4	High	20393	1754.3	64QAM	6.03	PASS
B4	3	Low	19965	1711.5	QPSK	5.72	PASS
B4	3	Low	19965	1711.5	16QAM	6.41	PASS
B4	3	Low	19965	1711.5	64QAM	6.50	PASS
B4	3	Mid	20175	1732.5	QPSK	5.72	PASS
B4	3	Mid	20175	1732.5	16QAM	6.49	PASS
B4	3	Mid	20175	1732.5	64QAM	6.42	PASS
B4	3	High	20385	1753.5	QPSK	5.42	PASS
B4	3	High	20385	1753.5	16QAM	6.17	PASS
B4	3	High	20385	1753.5	64QAM	6.05	PASS
B4	5	Low	19975	1712.5	QPSK	5.71	PASS

B4	5	Low	19975	1712.5	16QAM	6.32	PASS
B4	5	Low	19975	1712.5	64QAM	6.51	PASS
B4	5	Mid	20175	1732.5	QPSK	5.81	PASS
B4	5	Mid	20175	1732.5	16QAM	6.41	PASS
B4	5	Mid	20175	1732.5	64QAM	6.60	PASS
B4	5	High	20375	1752.5	QPSK	5.73	PASS
B4	5	High	20375	1752.5	16QAM	6.14	PASS
B4	5	High	20375	1752.5	64QAM	6.24	PASS
B4	10	Low	20000	1715	QPSK	5.75	PASS
B4	10	Low	20000	1715	16QAM	6.32	PASS
B4	10	Low	20000	1715	64QAM	6.50	PASS
B4	10	Mid	20175	1732.5	QPSK	5.73	PASS
B4	10	Mid	20175	1732.5	16QAM	6.37	PASS
B4	10	Mid	20175	1732.5	64QAM	6.56	PASS
B4	10	High	20350	1750	QPSK	5.73	PASS
B4	10	High	20350	1750	16QAM	6.28	PASS
B4	10	High	20350	1750	64QAM	6.37	PASS
B4	15	Low	20025	1717.5	QPSK	5.71	PASS
B4	15	Low	20025	1717.5	16QAM	6.32	PASS
B4	15	Low	20025	1717.5	64QAM	6.56	PASS
B4	15	Mid	20175	1732.5	QPSK	5.73	PASS
B4	15	Mid	20175	1732.5	16QAM	6.37	PASS
B4	15	Mid	20175	1732.5	64QAM	6.68	PASS
B4	15	High	20325	1747.5	QPSK	5.79	PASS
B4	15	High	20325	1747.5	16QAM	6.39	PASS
B4	15	High	20325	1747.5	64QAM	6.50	PASS
B4	20	Low	20050	1720	QPSK	5.76	PASS
B4	20	Low	20050	1720	16QAM	6.39	PASS
B4	20	Low	20050	1720	64QAM	6.59	PASS
B4	20	Mid	20175	1732.5	QPSK	5.72	PASS
B4	20	Mid	20175	1732.5	16QAM	6.36	PASS
B4	20	Mid	20175	1732.5	64QAM	6.63	PASS
B4	20	High	20300	1745	QPSK	5.80	PASS
B4	20	High	20300	1745	16QAM	6.45	PASS
B4	20	High	20300	1745	64QAM	6.61	PASS

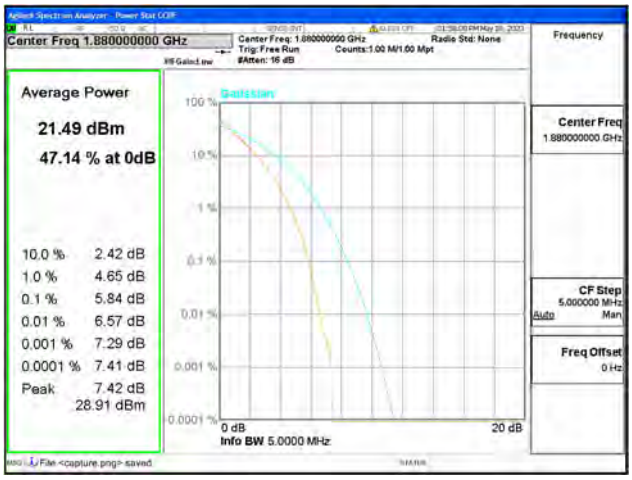


Band2 / 1.4MHz / Low CH / QPSK

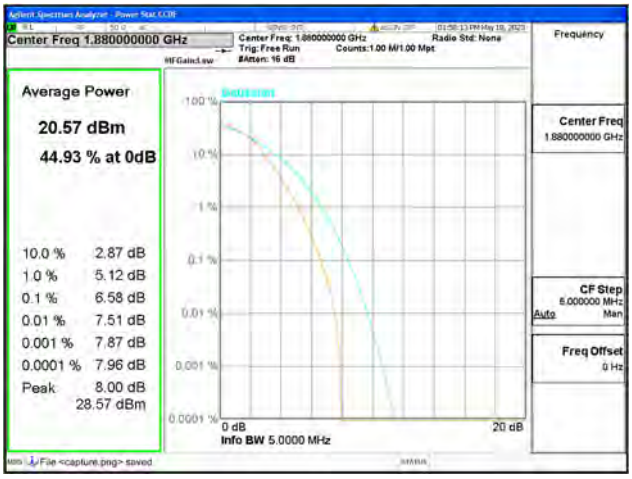


Band2 / 1.4MHz / Low CH / 16QAM

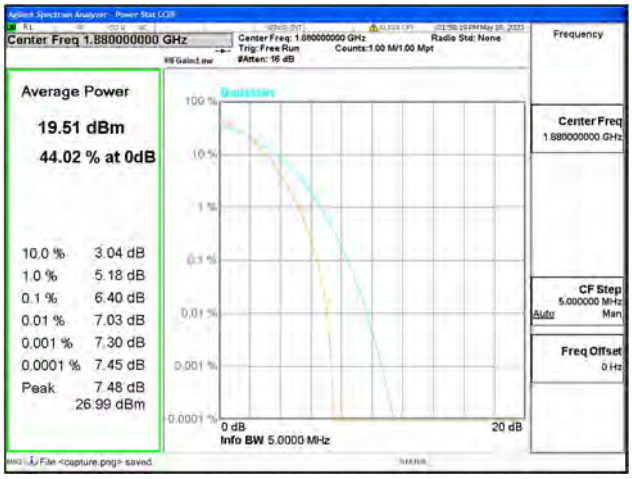
Band2 / 1.4MHz / Low CH / 64QAM



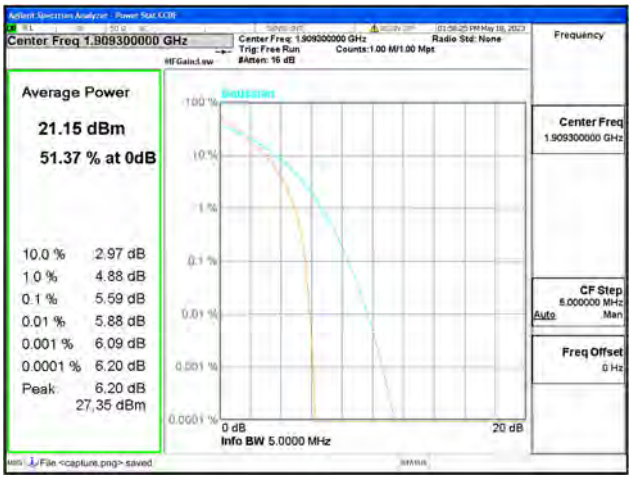
Band2 / 1.4MHz / Mid CH / QPSK



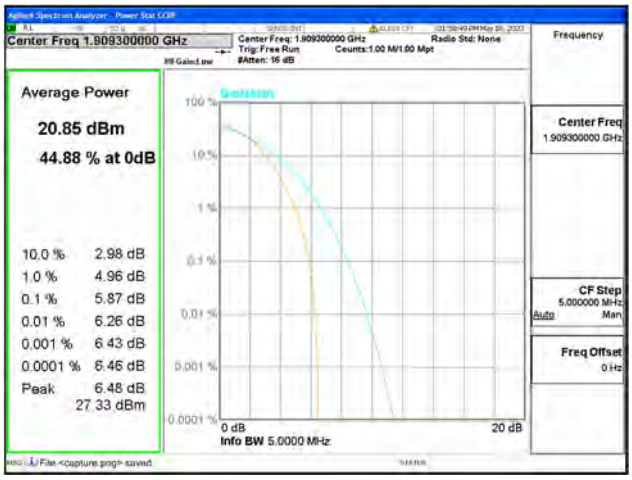
Band2 / 1.4MHz / Mid CH / 16QAM



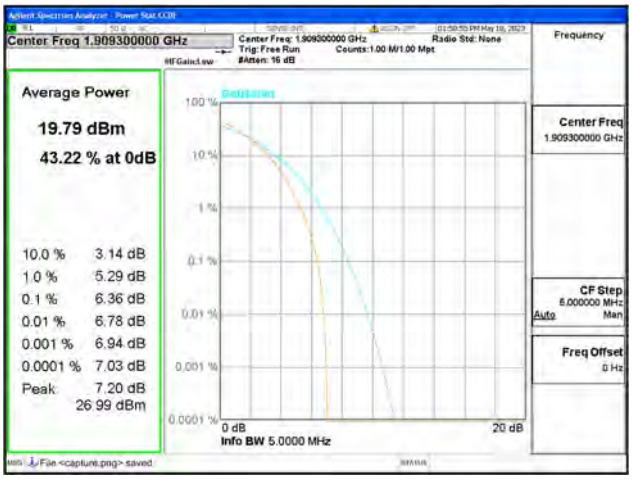
Band2 / 1.4MHz / Mid CH / 64QAM



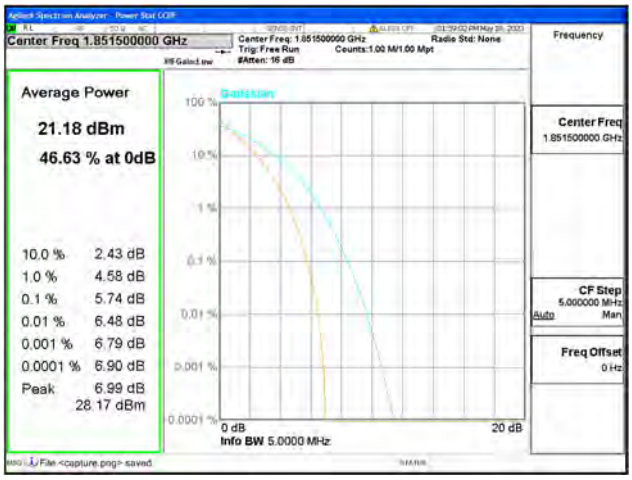
Band2 / 1.4MHz / High CH / QPSK



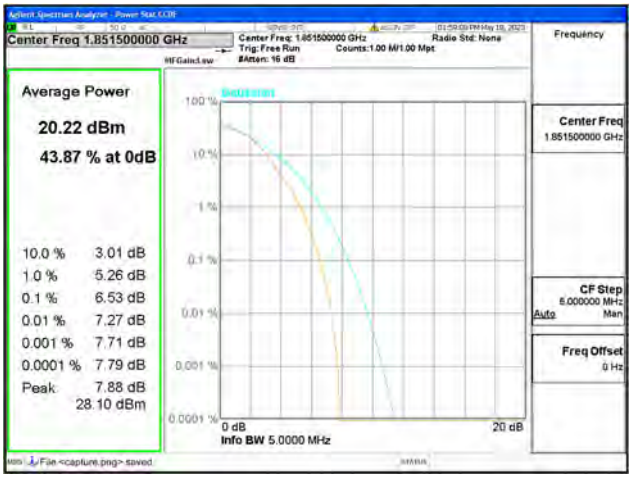
Band2 / 1.4MHz / High CH / 16QAM



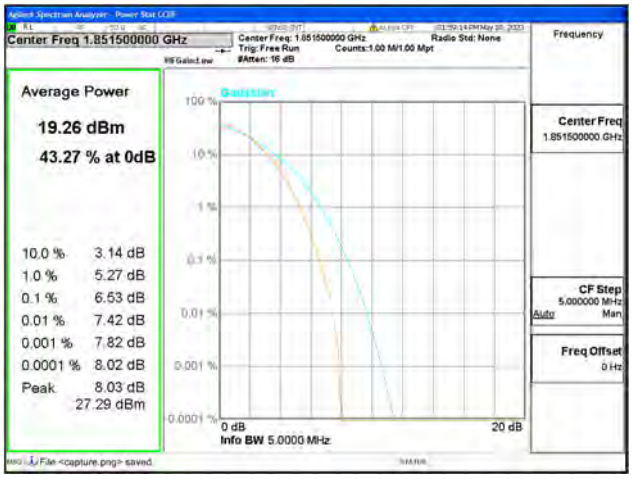
Band2 / 1.4MHz / High CH / 64QAM



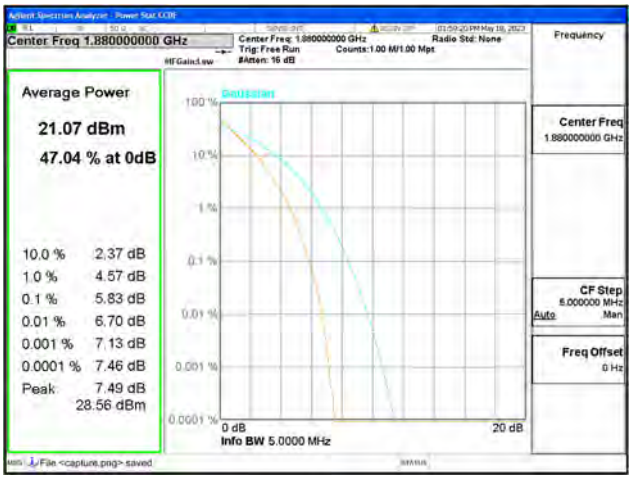
Band2 / 3MHz / Low CH / QPSK



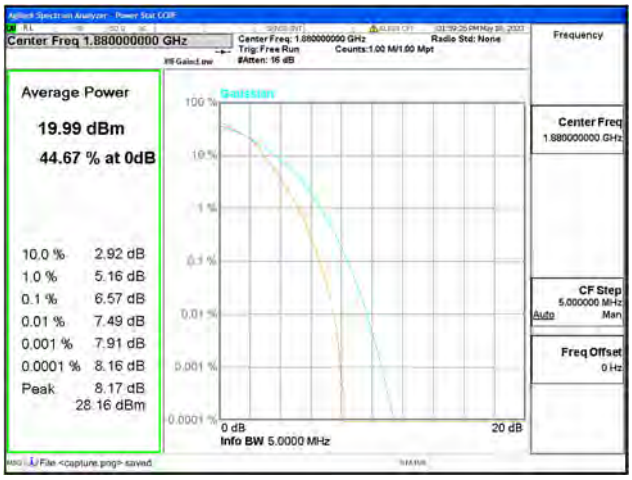
Band2 / 3MHz / Low CH / 16QAM



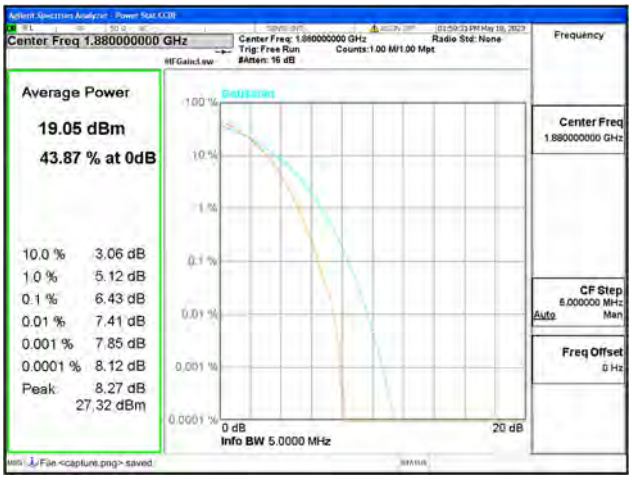
Band2 / 3MHz / Low CH / 64QAM



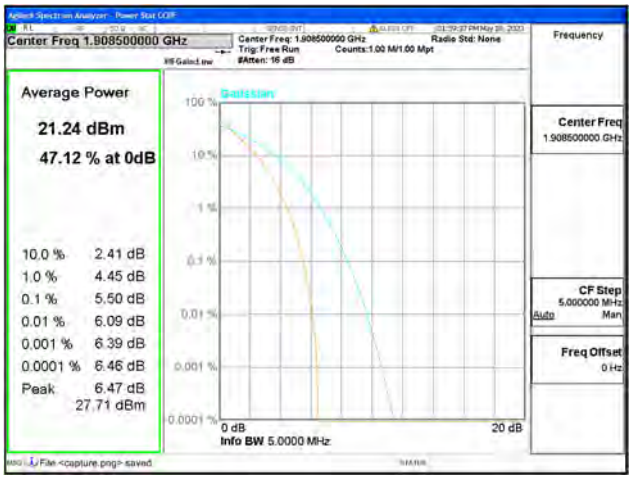
Band2 / 3MHz / Mid CH / QPSK



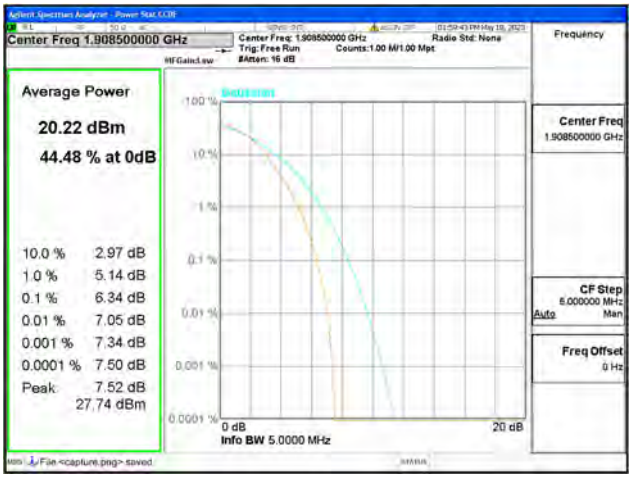
Band2 / 3MHz / Mid CH / 16QAM



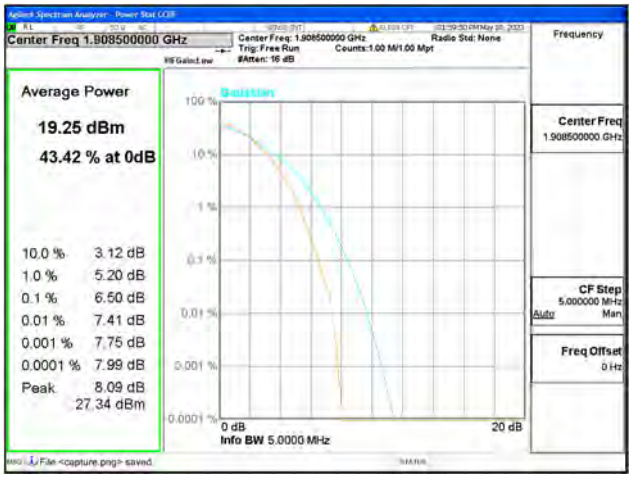
Band2 / 3MHz / Mid CH / 64QAM



Band2 / 3MHz / High CH / QPSK

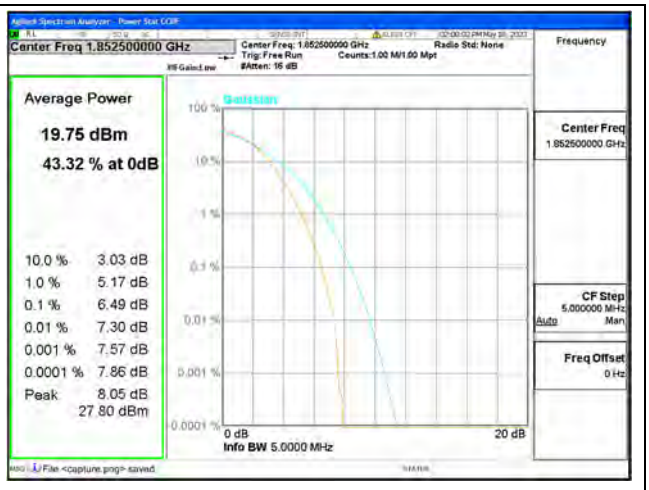


Band2 / 3MHz / High CH / 16QAM

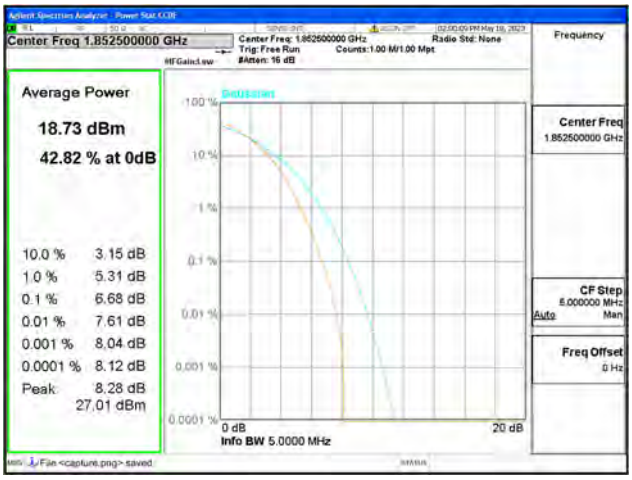


Band2 / 3MHz / High CH / 64QAM

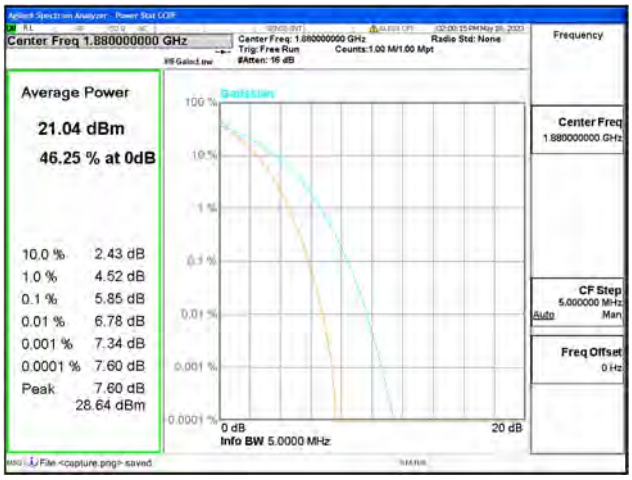
Band2 / 5MHz / Low CH / QPSK



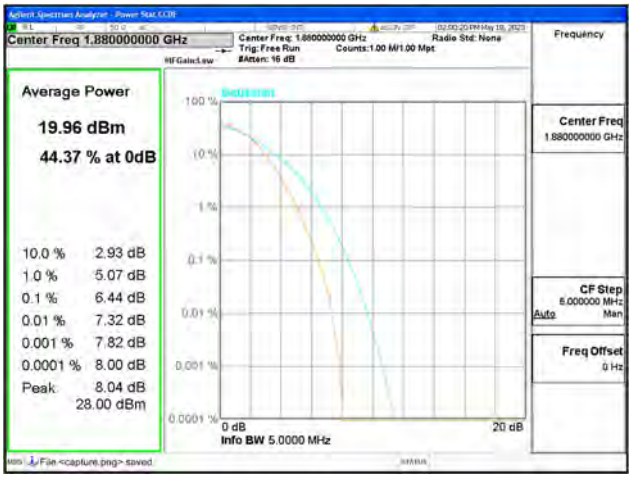
Band2 / 5MHz / Low CH / 16QAM



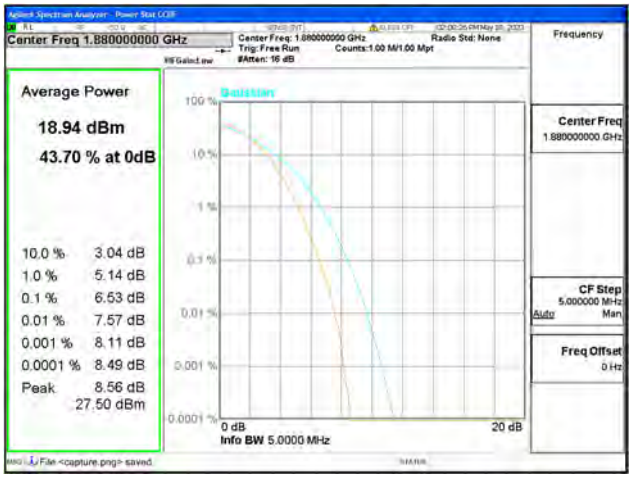
Band2 / 5MHz / Low CH / 64QAM



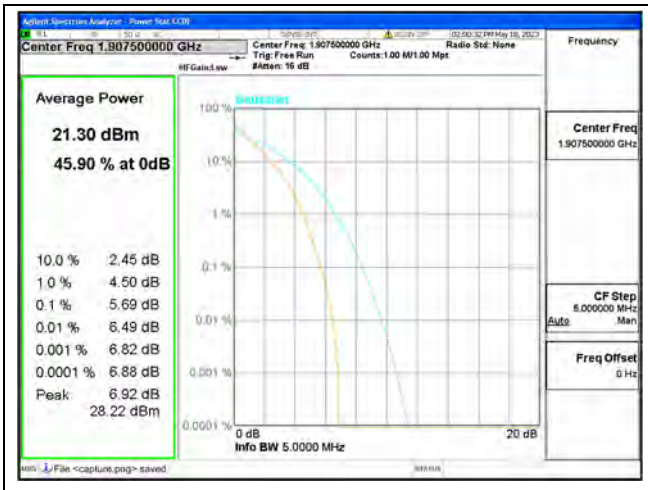
Band2 / 5MHz / Mid CH / QPSK



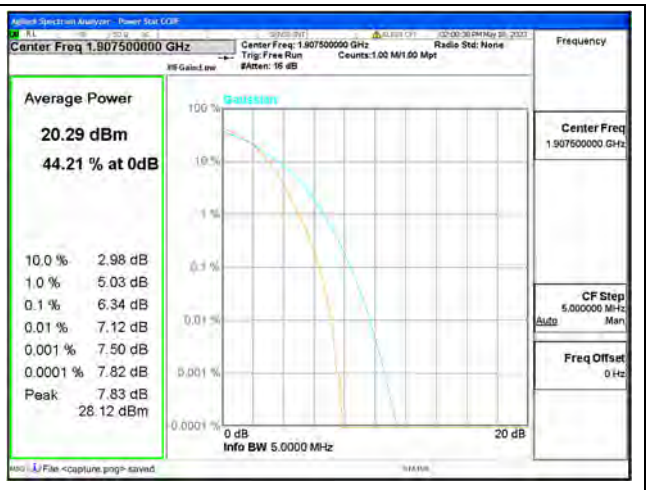
Band2 / 5MHz / Mid CH / 16QAM



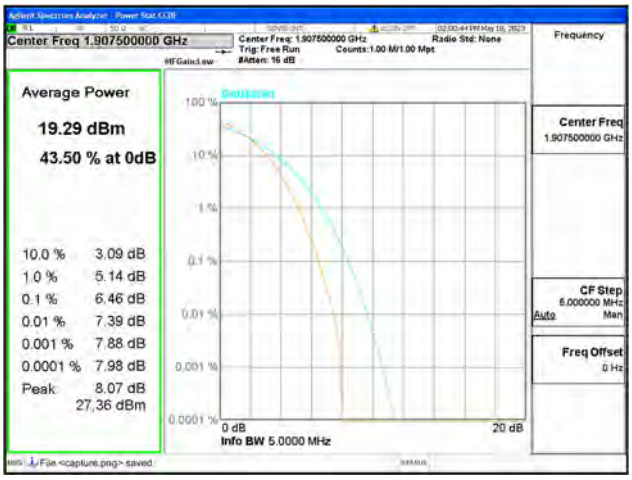
Band2 / 5MHz / Mid CH / 64QAM



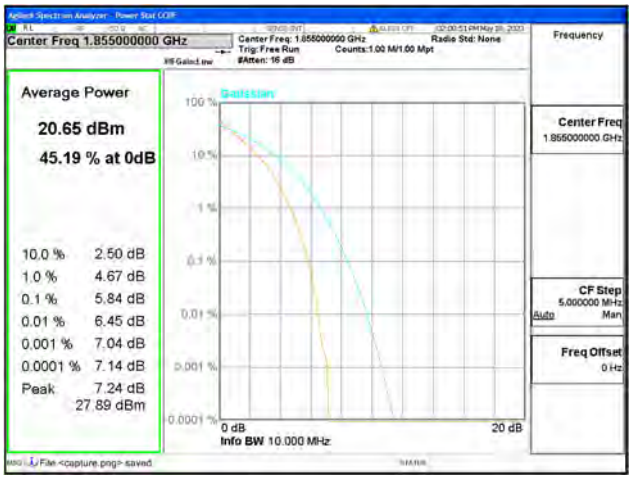
Band2 / 5MHz / High CH / QPSK



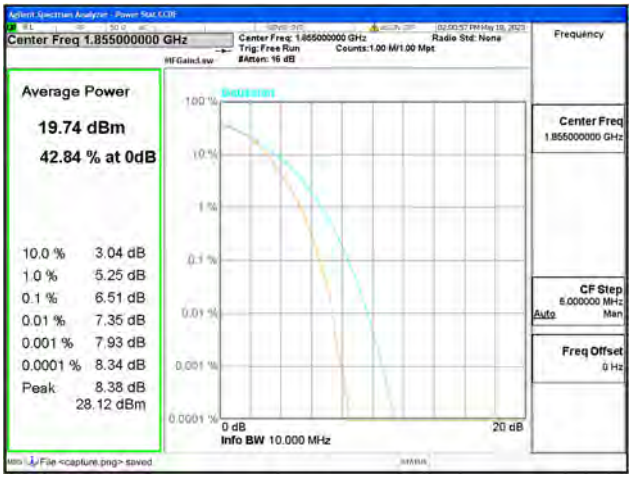
Band2 / 5MHz / High CH / 16QAM



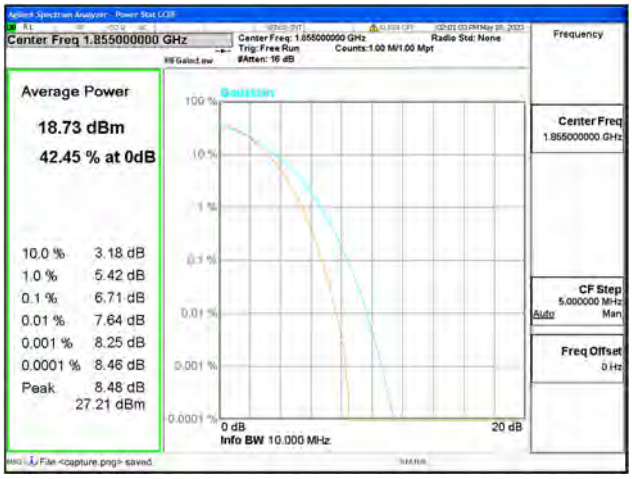
Band2 / 5MHz / High CH / 64QAM



Band2 / 10MHz / Low CH / QPSK

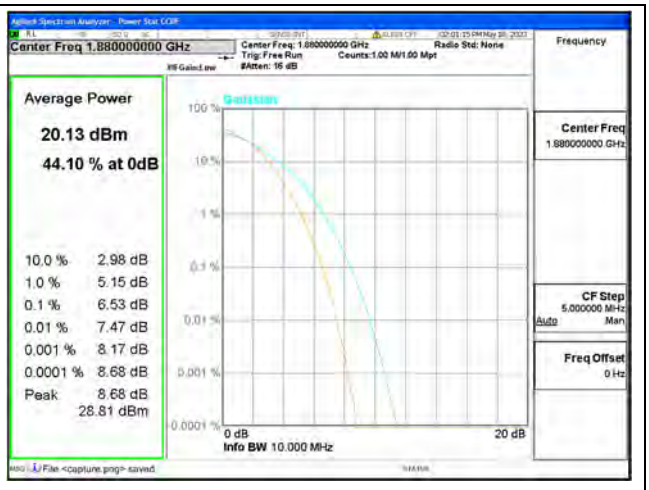


Band2 / 10MHz / Low CH / 16QAM

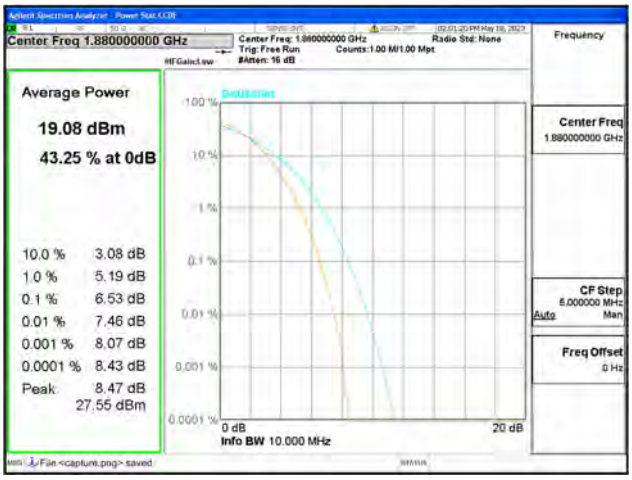


Band2 / 10MHz / Low CH / 64QAM

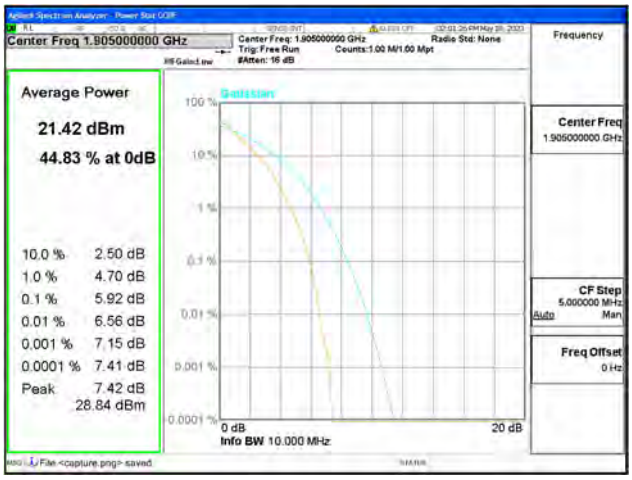
Band2 / 10MHz / Mid CH / QPSK



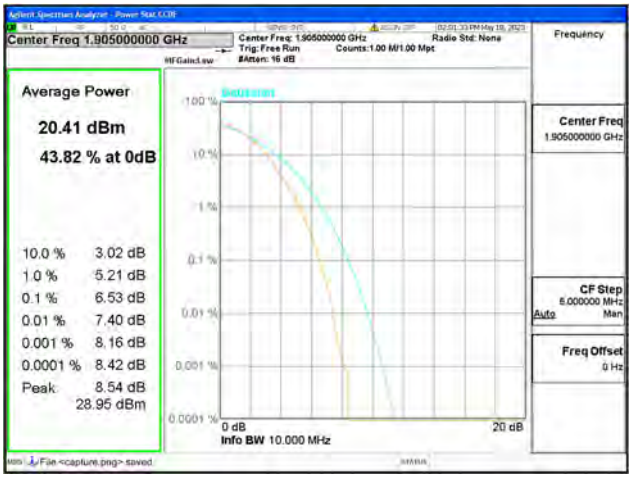
Band2 / 10MHz / Mid CH / 16QAM



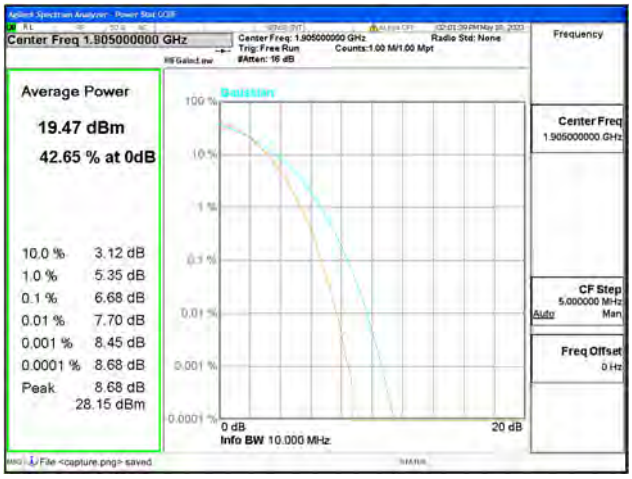
Band2 / 10MHz / Mid CH / 64QAM



Band2 / 10MHz / High CH / QPSK

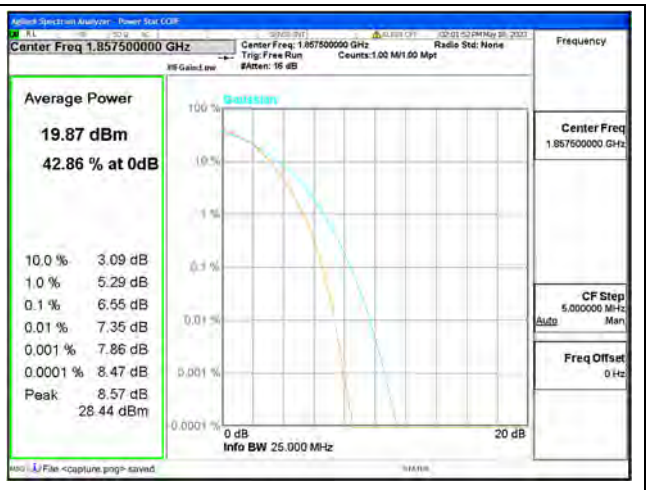


Band2 / 10MHz / High CH / 16QAM

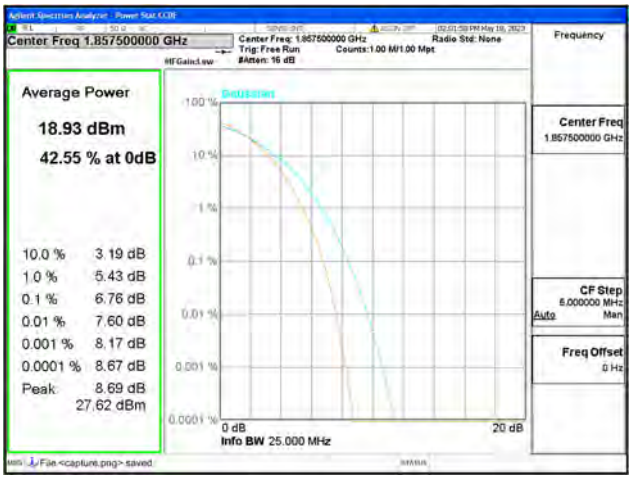


Band2 / 10MHz / High CH / 64QAM

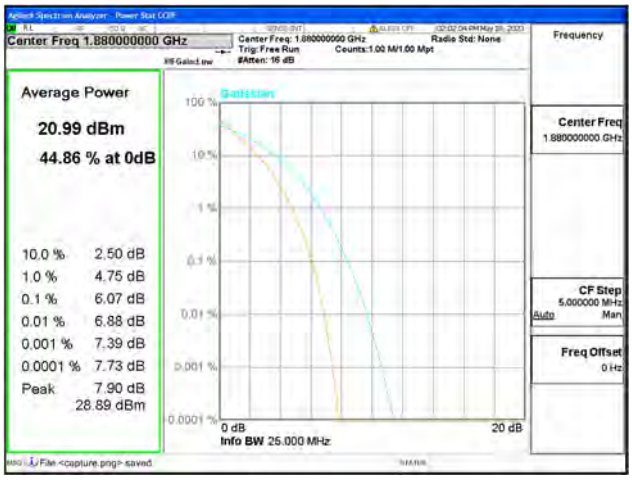
Band2 / 15MHz / Low CH / QPSK



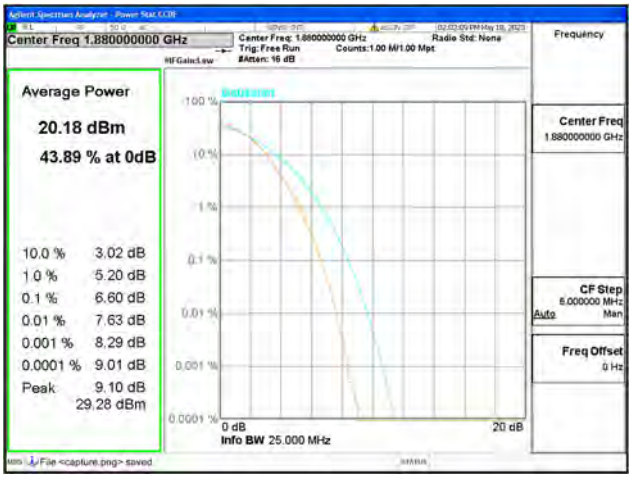
Band2 / 15MHz / Low CH / 16QAM



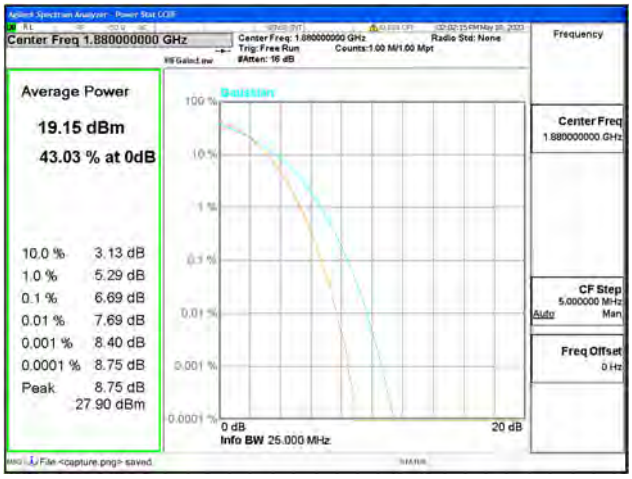
Band2 / 15MHz / Low CH / 64QAM



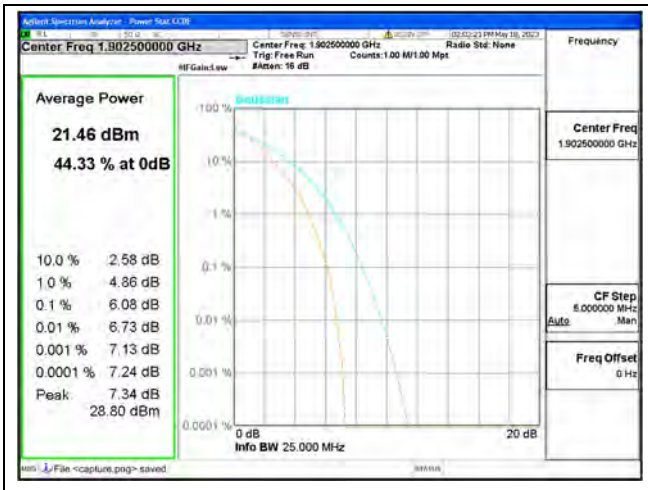
Band2 / 15MHz / Mid CH / QPSK



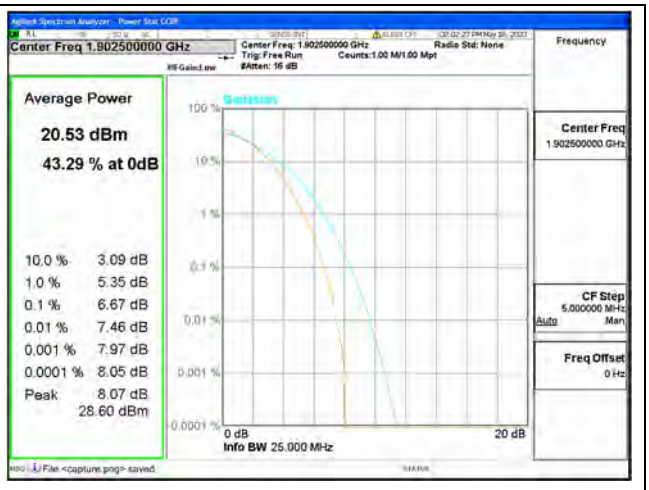
Band2 / 15MHz / Mid CH / 16QAM



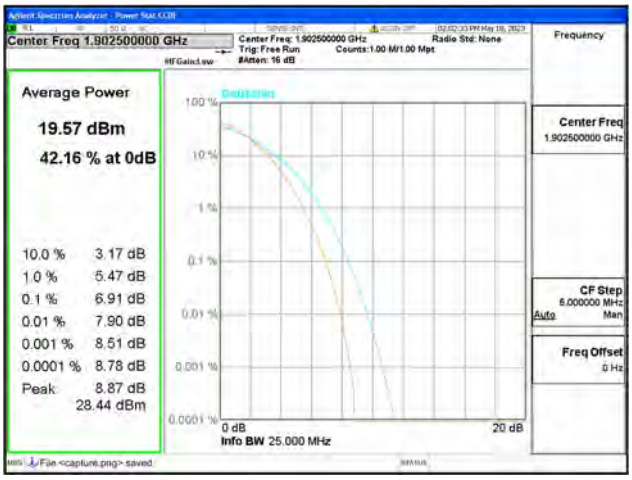
Band2 / 15MHz / Mid CH / 64QAM



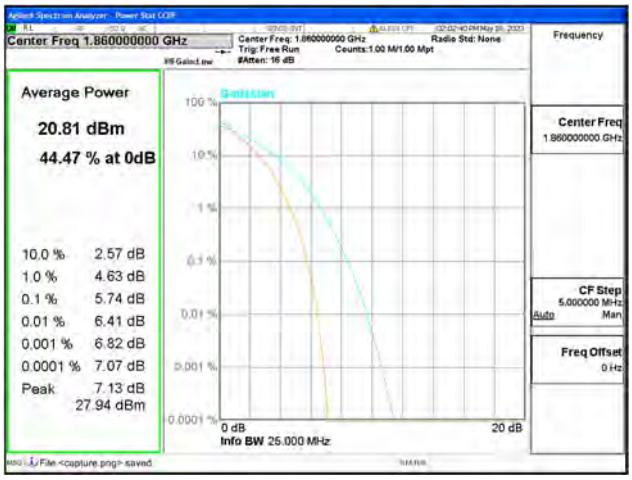
Band2 / 15MHz / High CH / QPSK



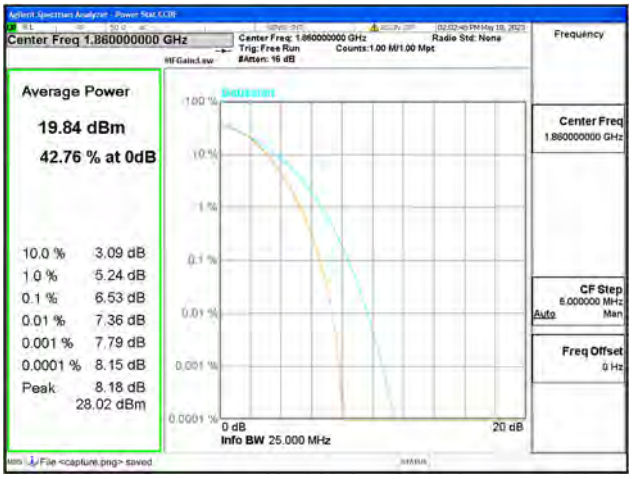
Band2 / 15MHz / High CH / 16QAM



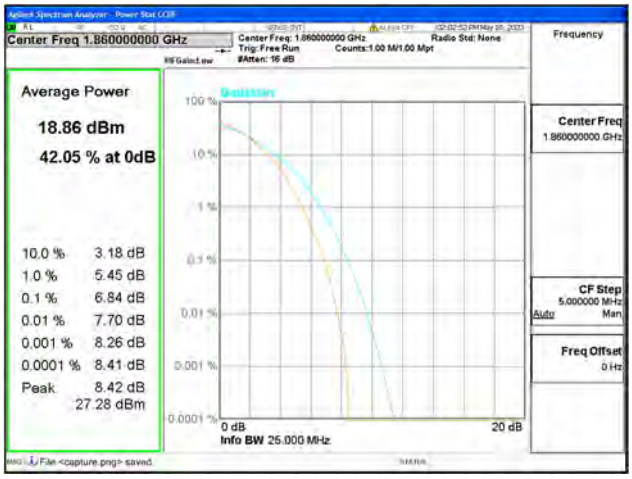
Band2 / 15MHz / High CH / 64QAM



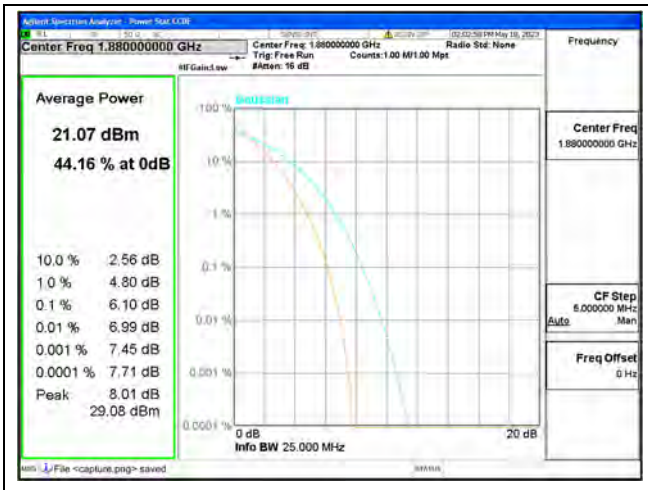
Band2 / 20MHz / Low CH / QPSK



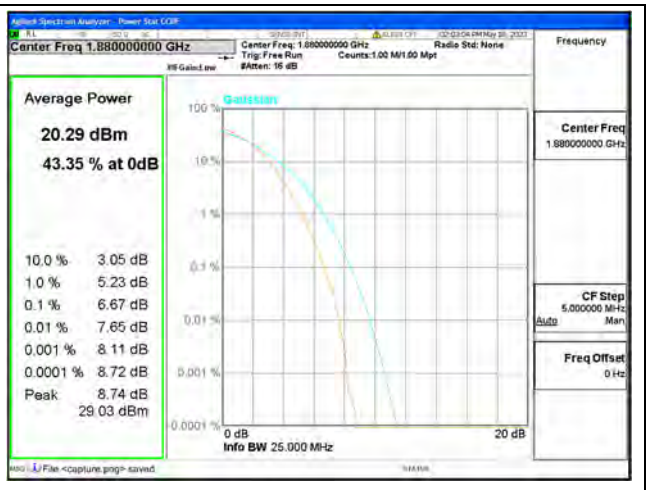
Band2 / 20MHz / Low CH / 16QAM



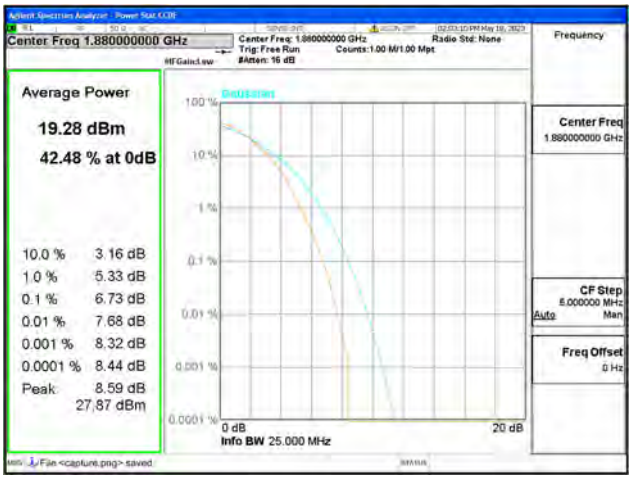
Band2 / 20MHz / Low CH / 64QAM



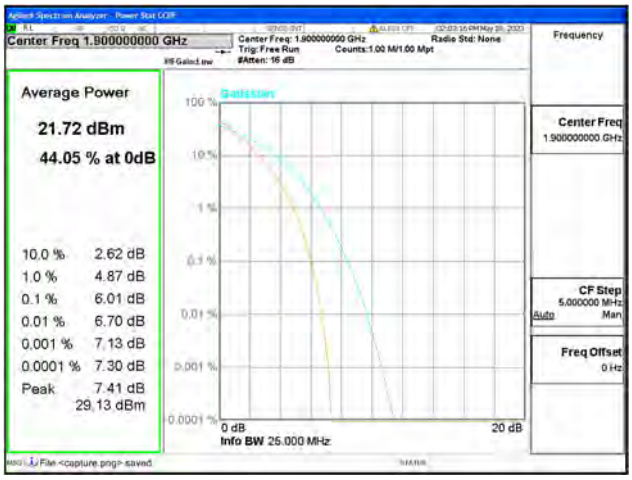
Band2 / 20MHz / Mid CH / QPSK



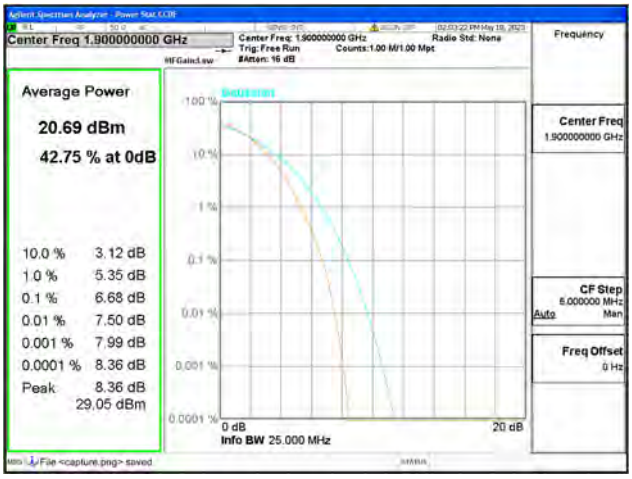
Band2 / 20MHz / Mid CH / 16QAM



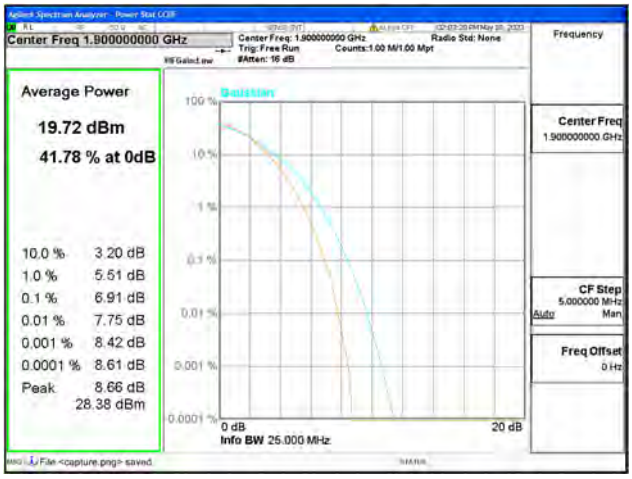
Band2 / 20MHz / Mid CH / 64QAM



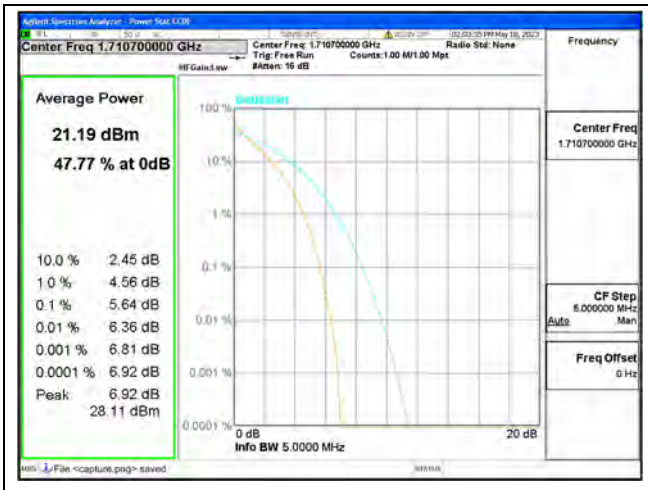
Band2 / 20MHz / High CH / QPSK



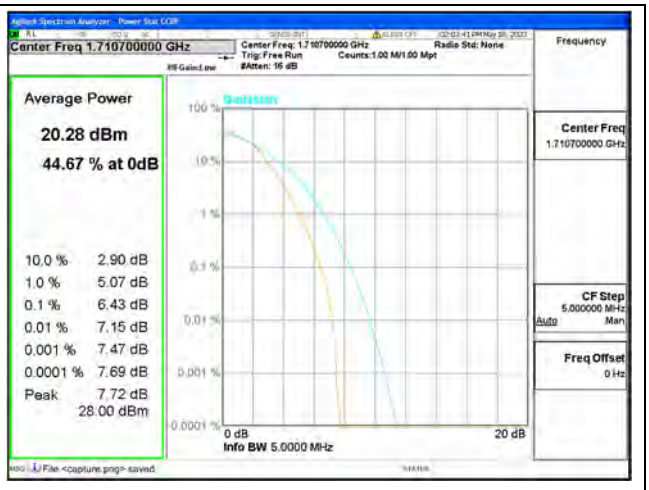
Band2 / 20MHz / High CH / 16QAM



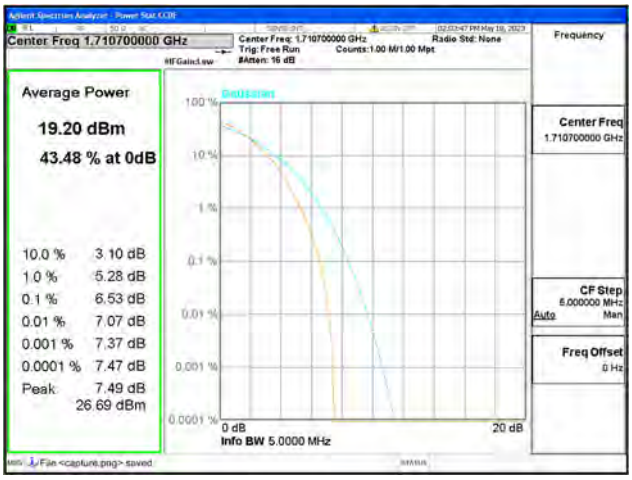
Band2 / 20MHz / High CH / 64QAM



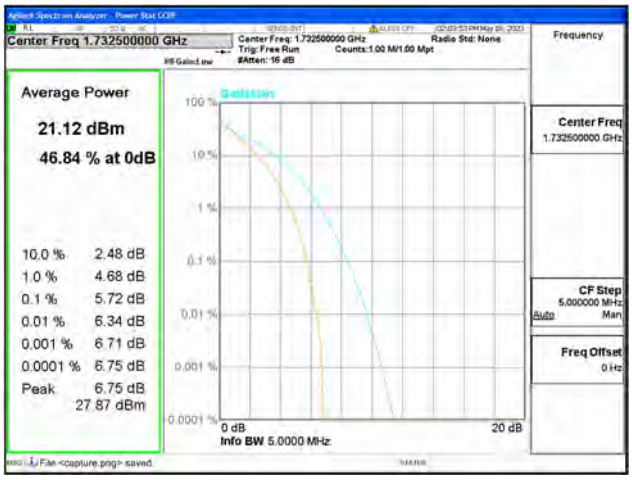
Band4 / 1.4MHz / Low CH / QPSK



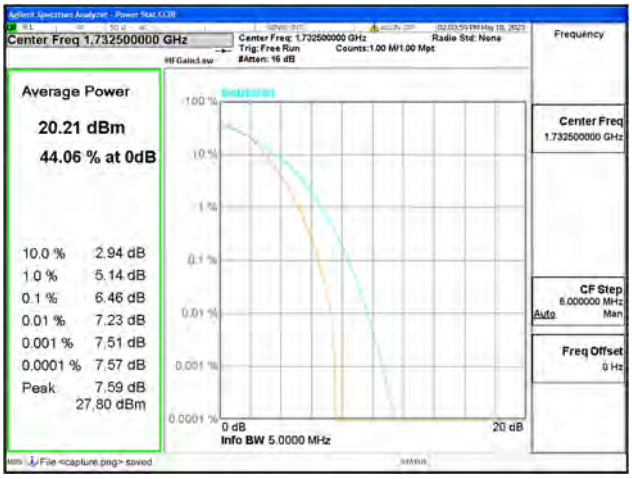
Band4 / 1.4MHz / Low CH / 16QAM



Band4 / 1.4MHz / Low CH / 64QAM

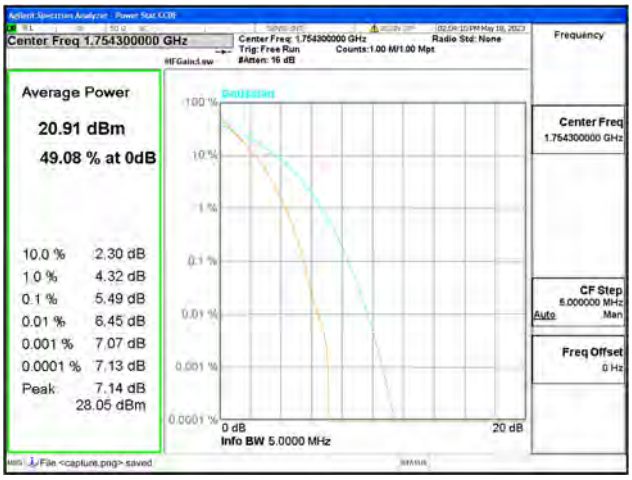


Band4 / 1.4MHz / Mid CH / QPSK

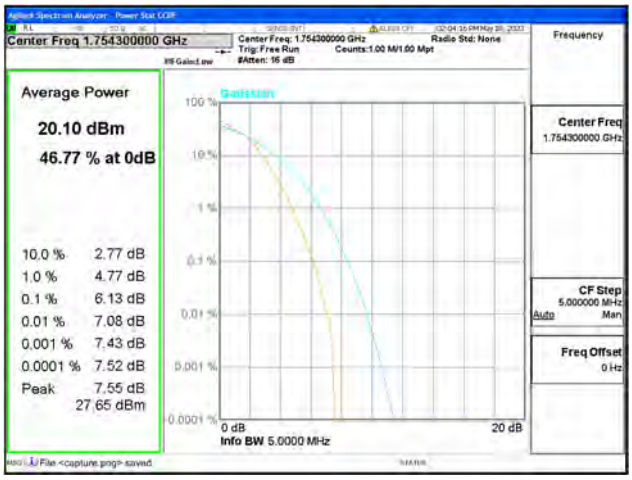


Band4 / 1.4MHz / Mid CH / 16QAM

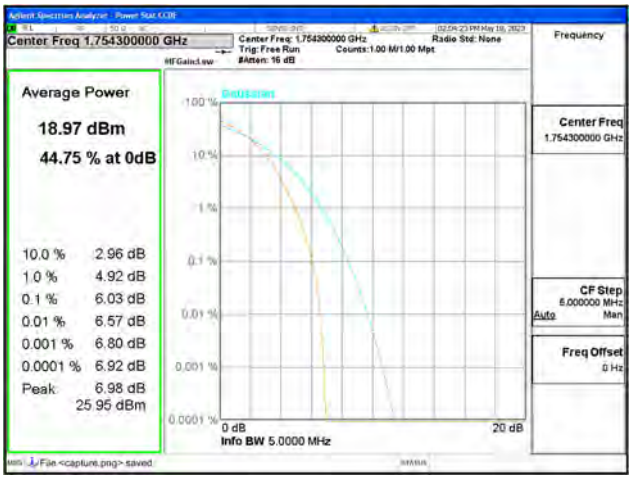
Band4 / 1.4MHz / Mid CH / 64QAM



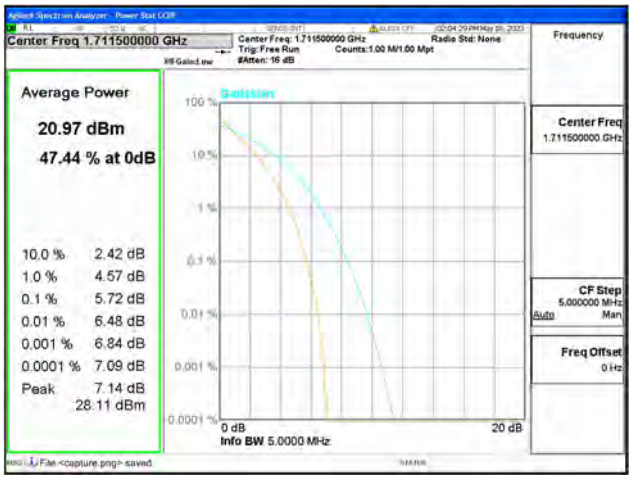
Band4 / 1.4MHz / High CH / QPSK



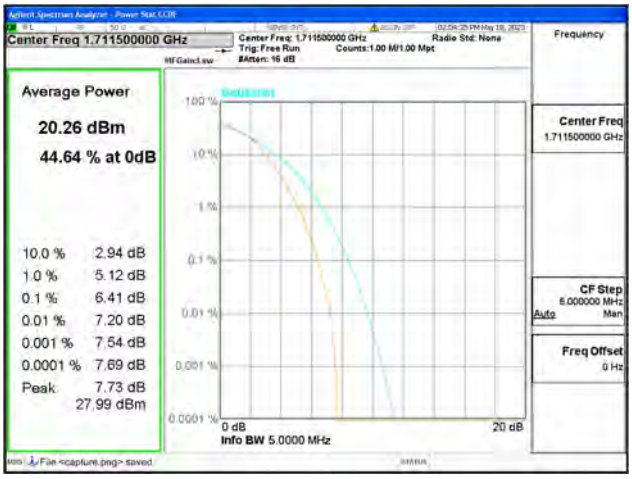
Band4 / 1.4MHz / High CH / 16QAM



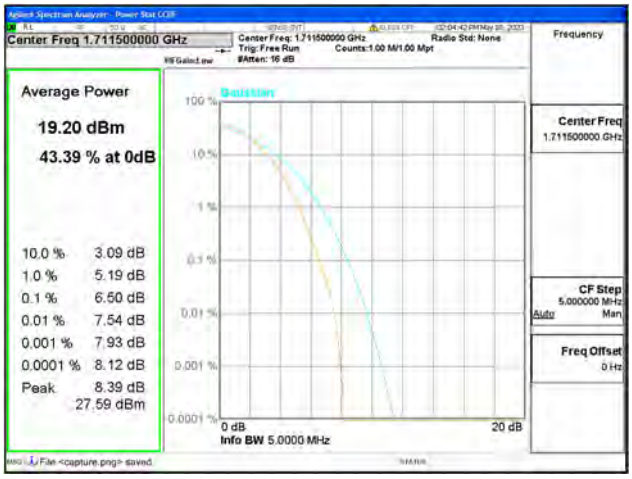
Band4 / 1.4MHz / High CH / 64QAM



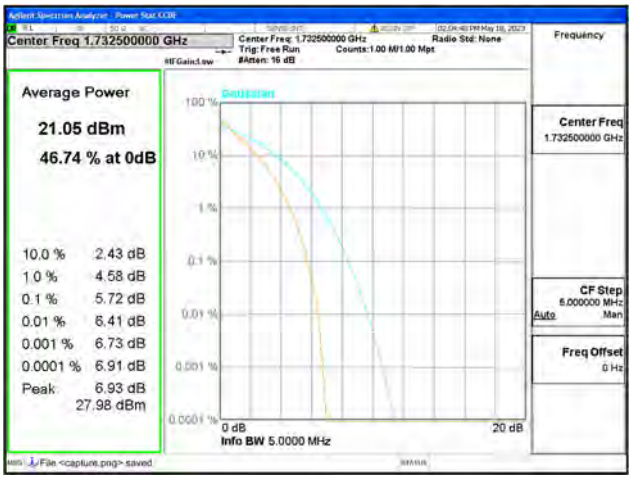
Band4 / 3MHz / Low CH / QPSK



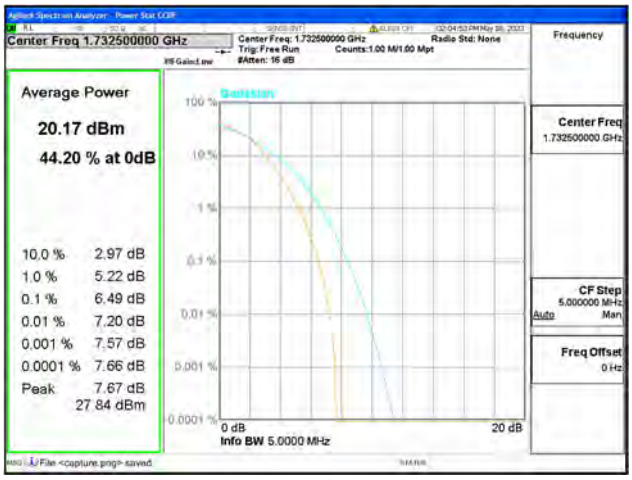
Band4 / 3MHz / Low CH / 16QAM



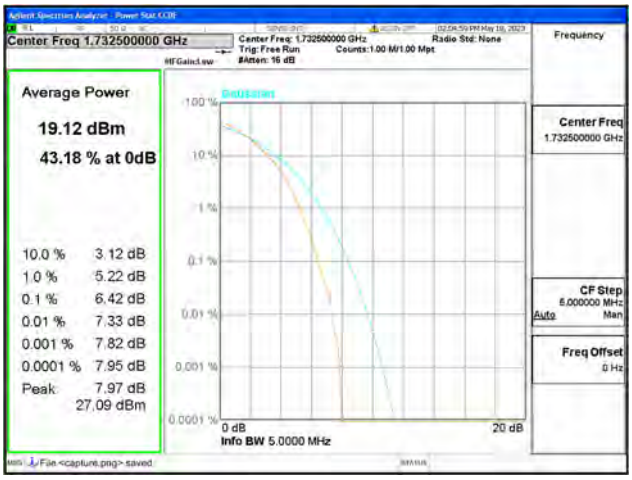
Band4 / 3MHz / Low CH / 64QAM



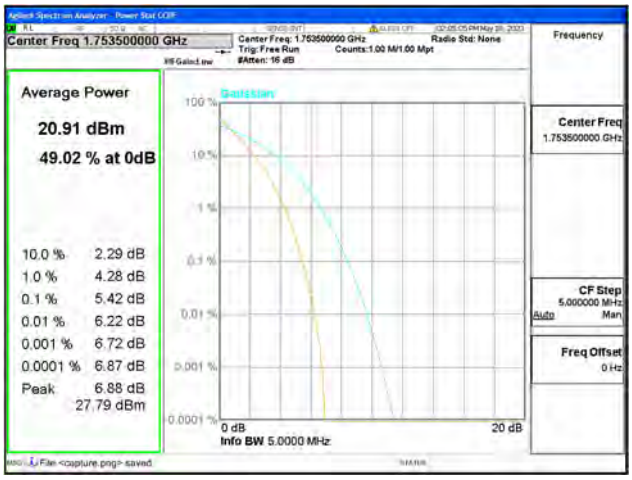
Band4 / 3MHz / Mid CH / QPSK



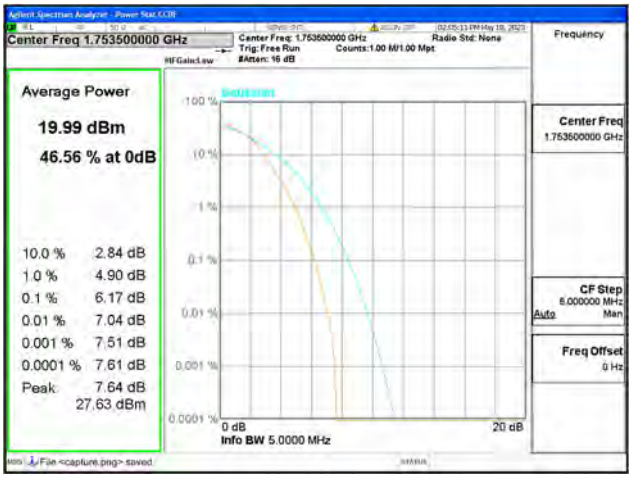
Band4 / 3MHz / Mid CH / 16QAM



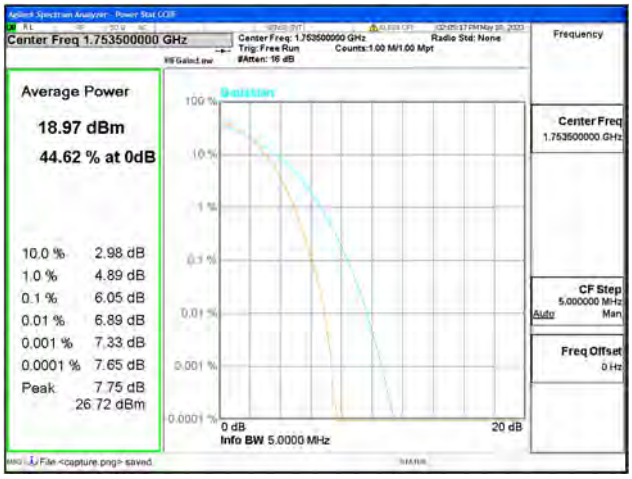
Band4 / 3MHz / Mid CH / 64QAM



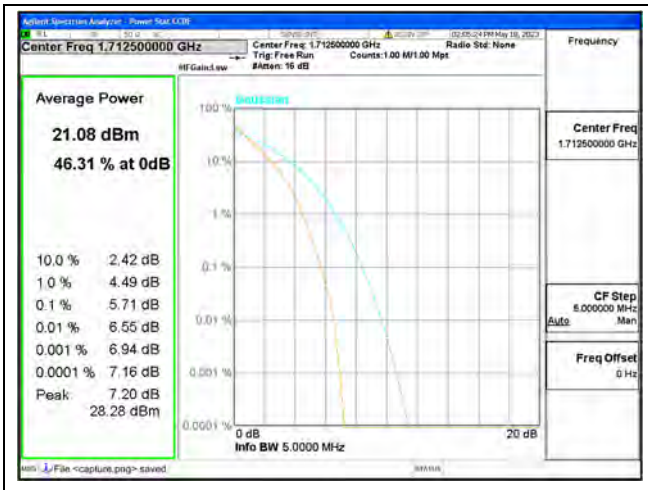
Band4 / 3MHz / High CH / QPSK



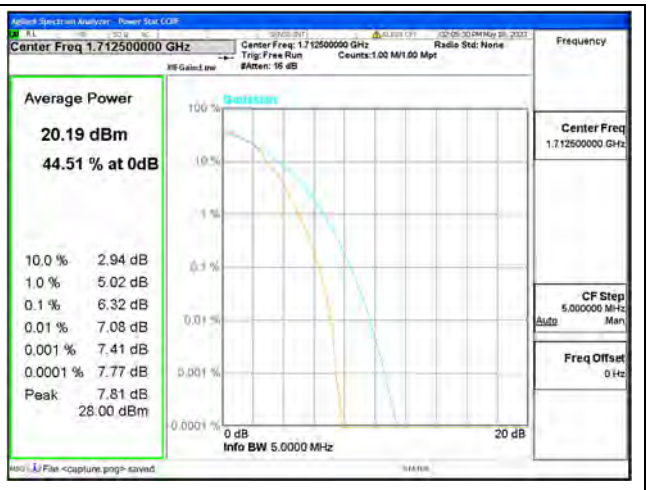
Band4 / 3MHz / High CH / 16QAM



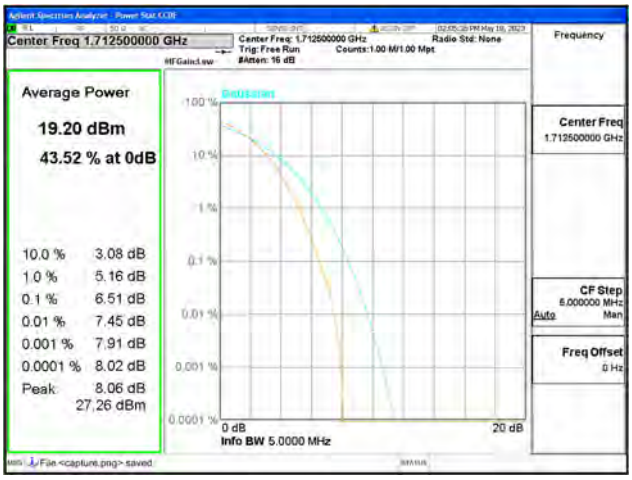
Band4 / 3MHz / High CH / 64QAM



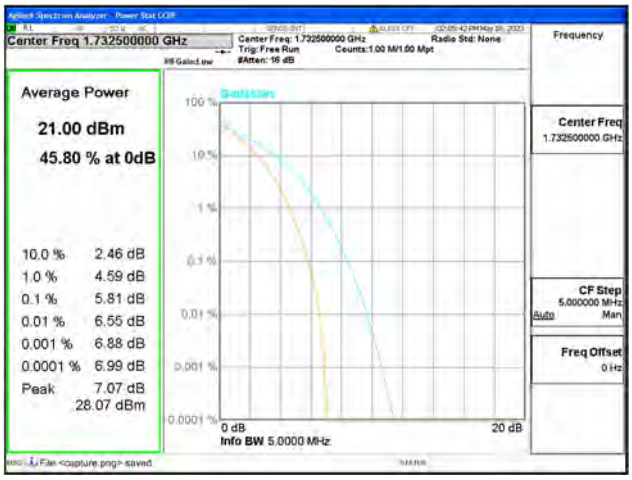
Band4 / 5MHz / Low CH / QPSK



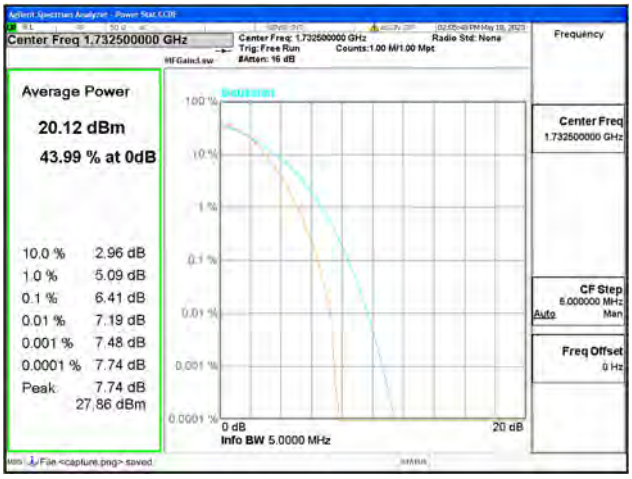
Band4 / 5MHz / Low CH / 16QAM



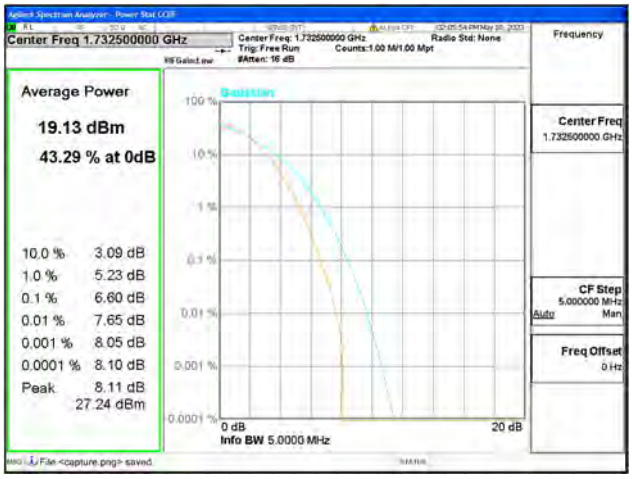
Band4 / 5MHz / Low CH / 64QAM



Band4 / 5MHz / Mid CH / QPSK

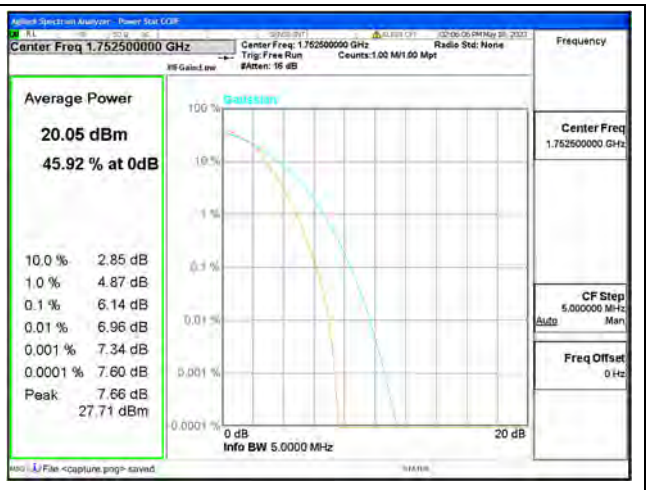


Band4 / 5MHz / Mid CH / 16QAM

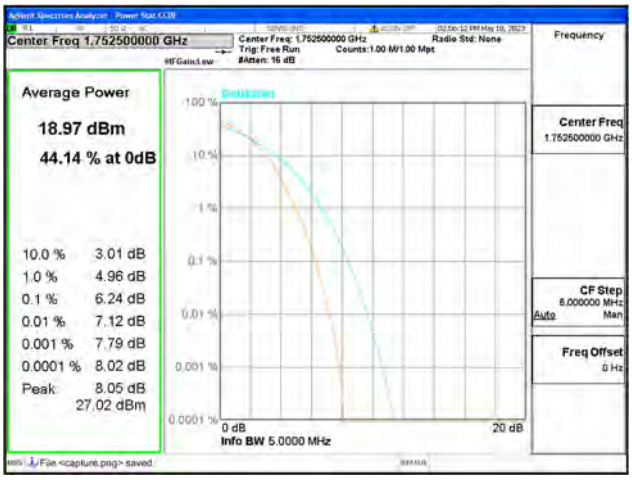


Band4 / 5MHz / Mid CH / 64QAM

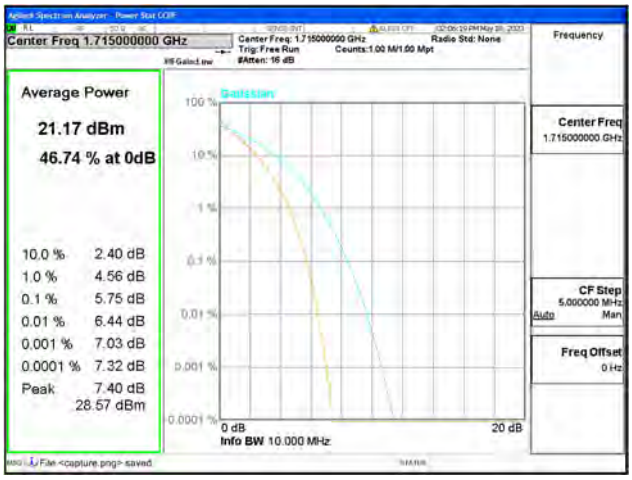
Band4 / 5MHz / High CH / QPSK



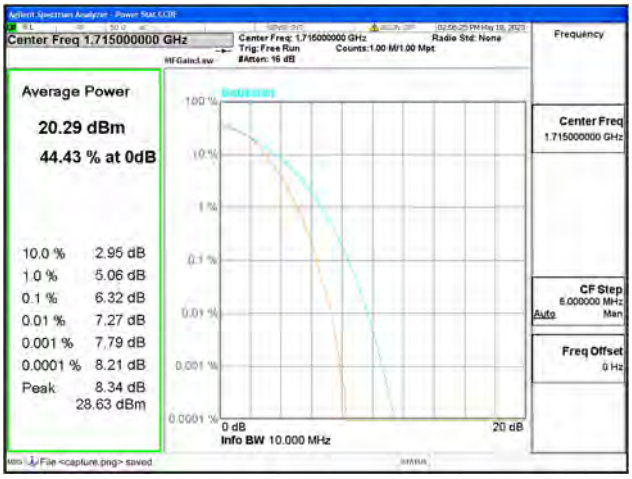
Band4 / 5MHz / High CH / 16QAM



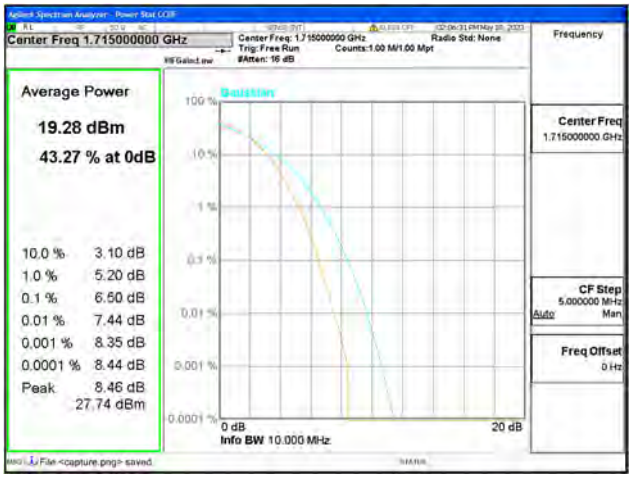
Band4 / 5MHz / High CH / 64QAM



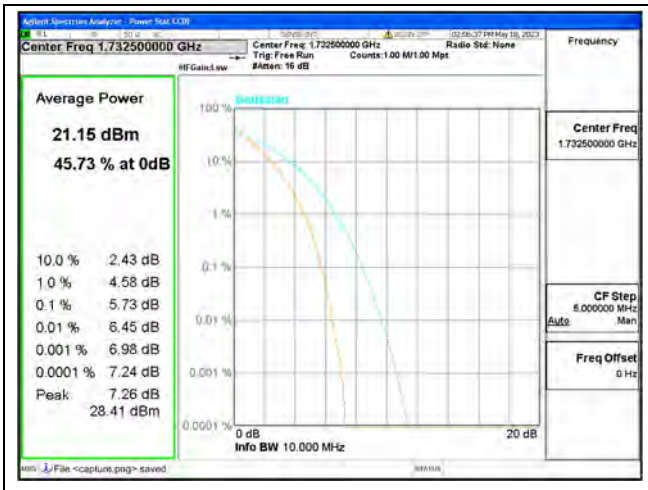
Band4 / 10MHz / Low CH / QPSK



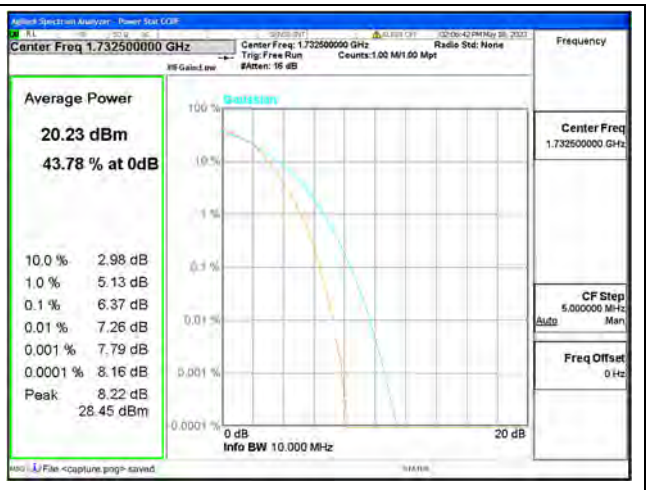
Band4 / 10MHz / Low CH / 16QAM



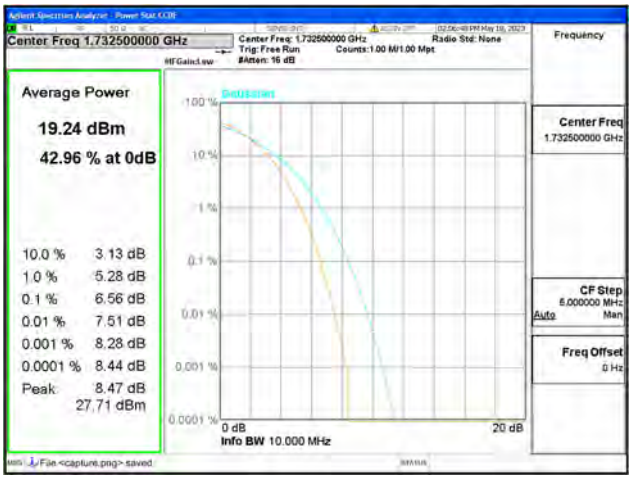
Band4 / 10MHz / Low CH / 64QAM



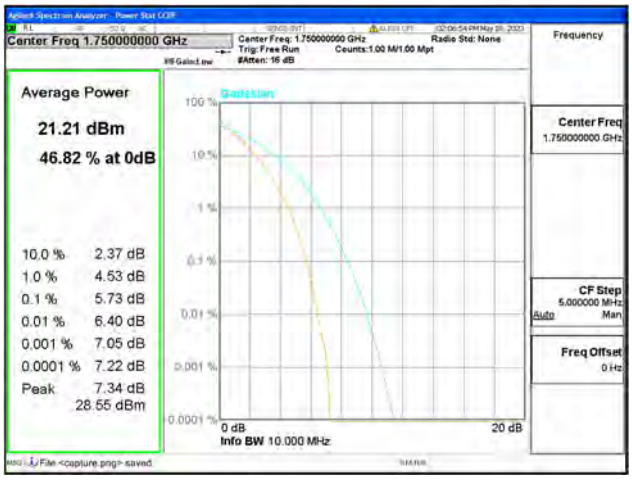
Band4 / 10MHz / Mid CH / QPSK



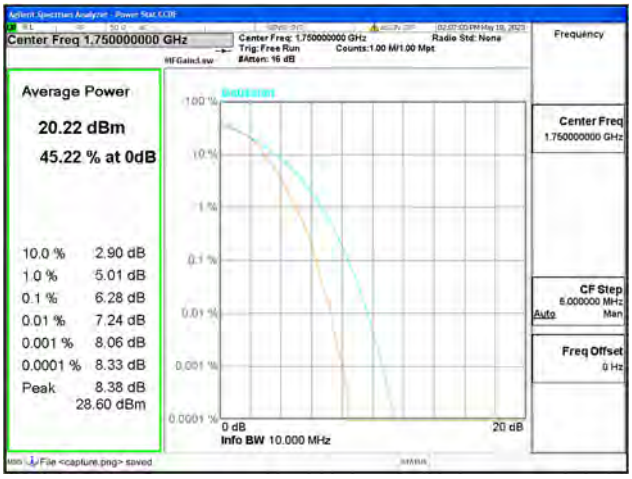
Band4 / 10MHz / Mid CH / 16QAM



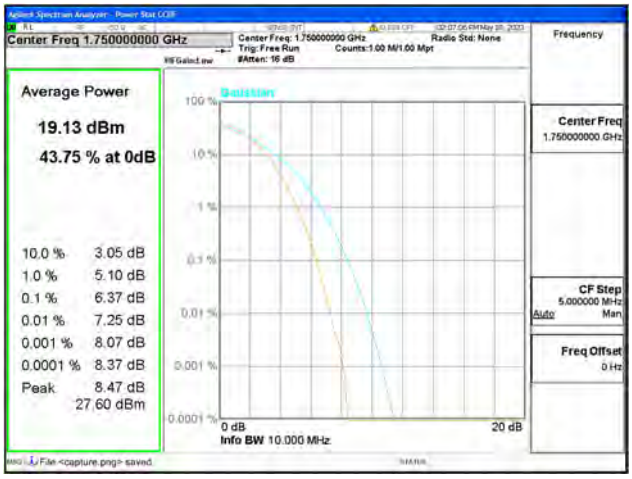
Band4 / 10MHz / Mid CH / 64QAM



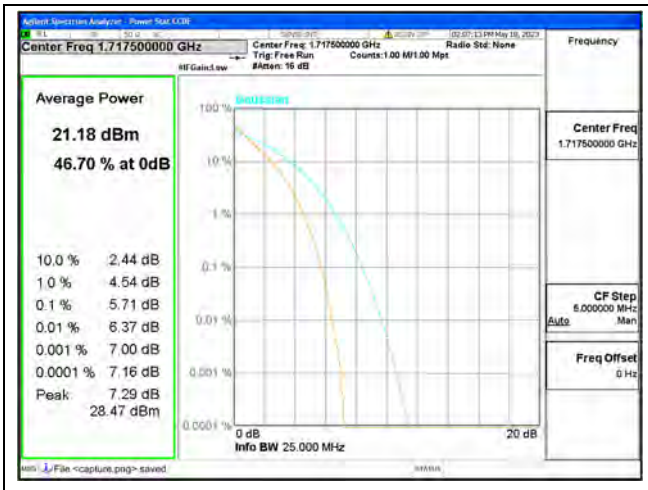
Band4 / 10MHz / High CH / QPSK



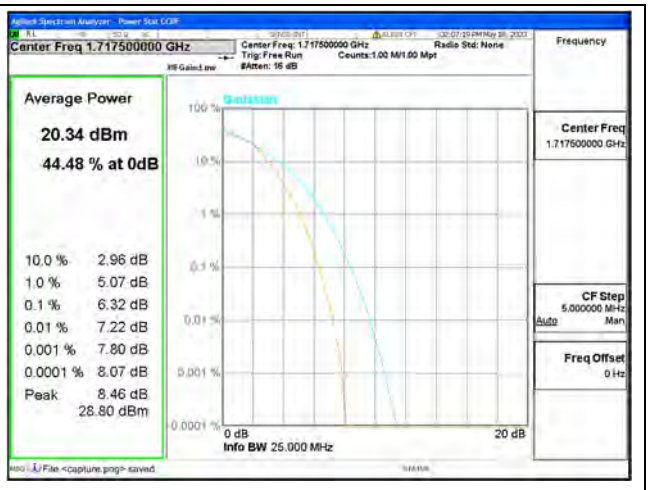
Band4 / 10MHz / High CH / 16QAM



Band4 / 10MHz / High CH / 64QAM

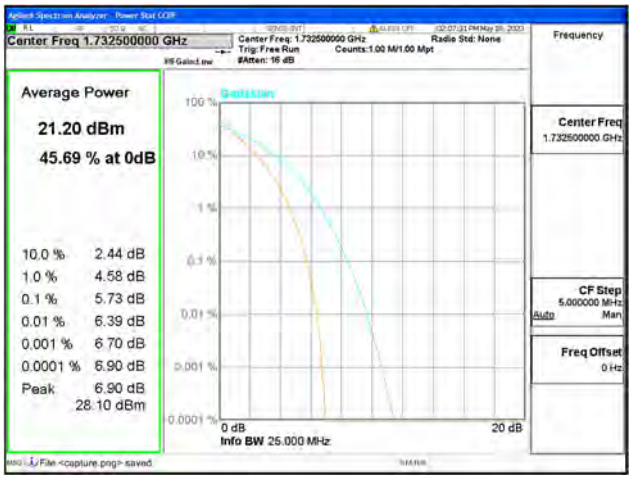


Band4 / 15MHz / Low CH / QPSK

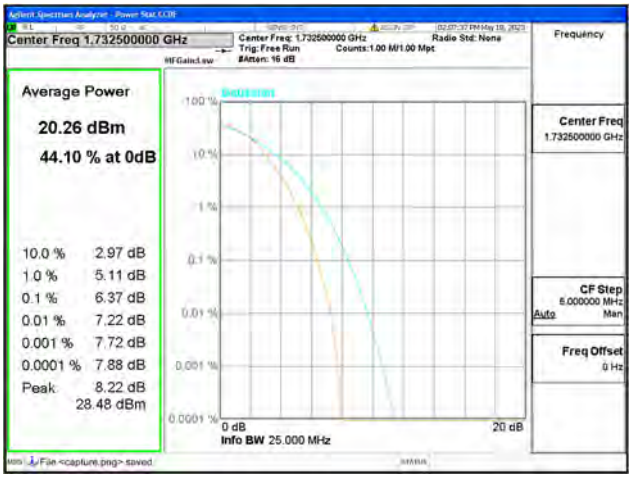


Band4 / 15MHz / Low CH / 16QAM

Band4 / 15MHz / Low CH / 64QAM

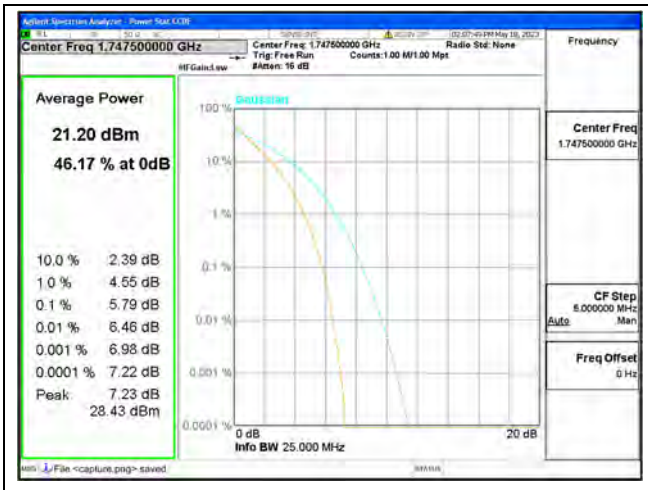


Band4 / 15MHz / Mid CH / QPSK

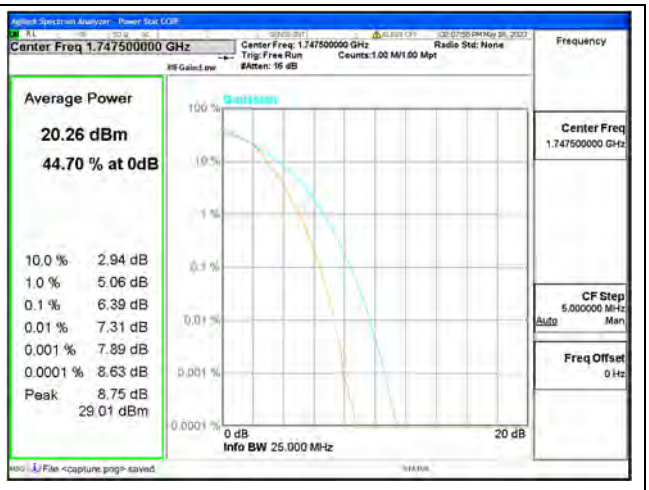


Band4 / 15MHz / Mid CH / 16QAM

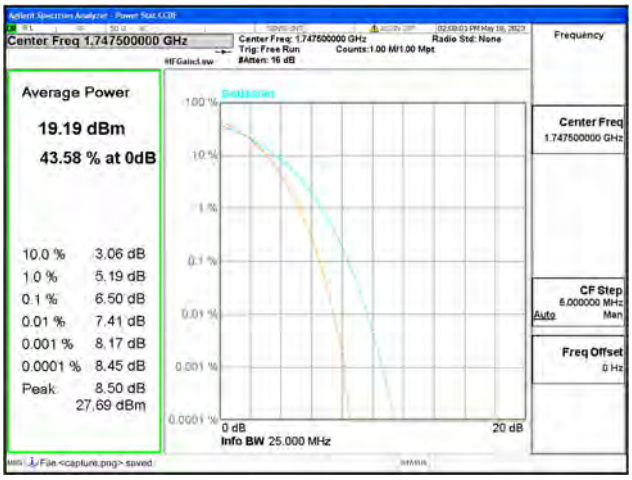
Band4 / 15MHz / Mid CH / 64QAM



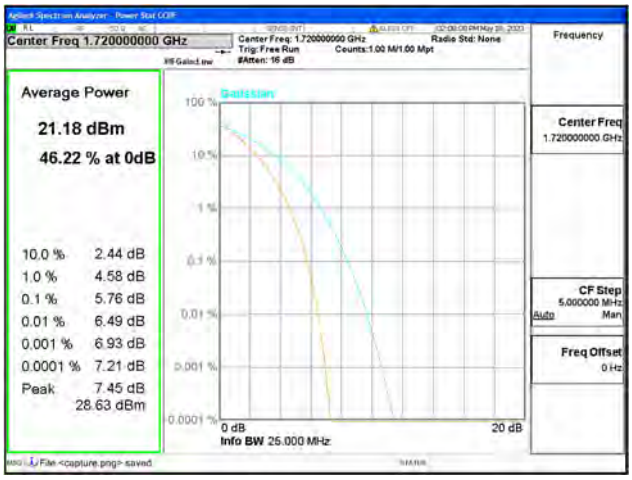
Band4 / 15MHz / High CH / QPSK



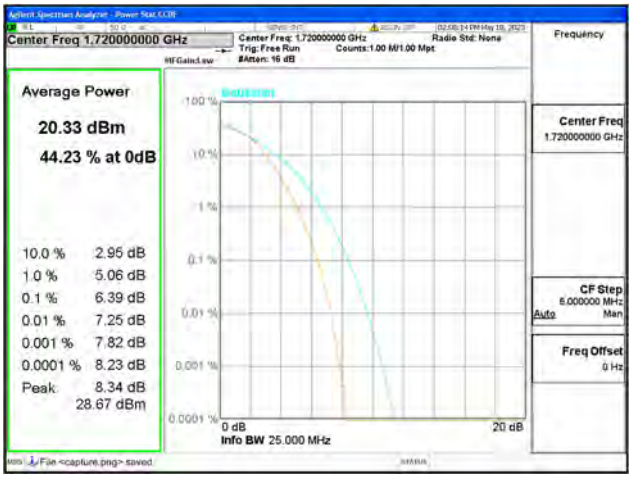
Band4 / 15MHz / High CH / 16QAM



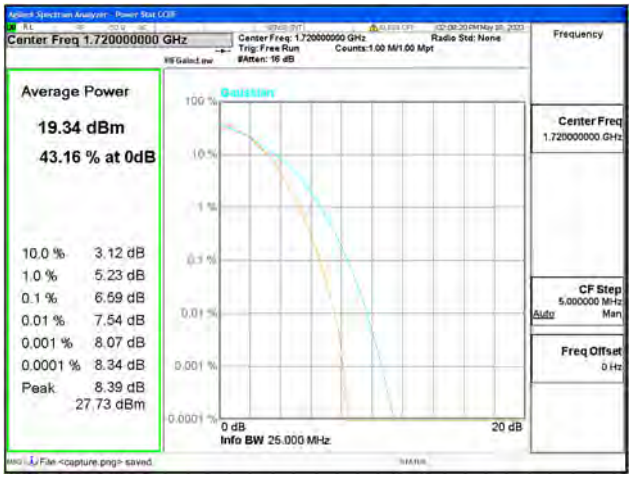
Band4 / 15MHz / High CH / 64QAM



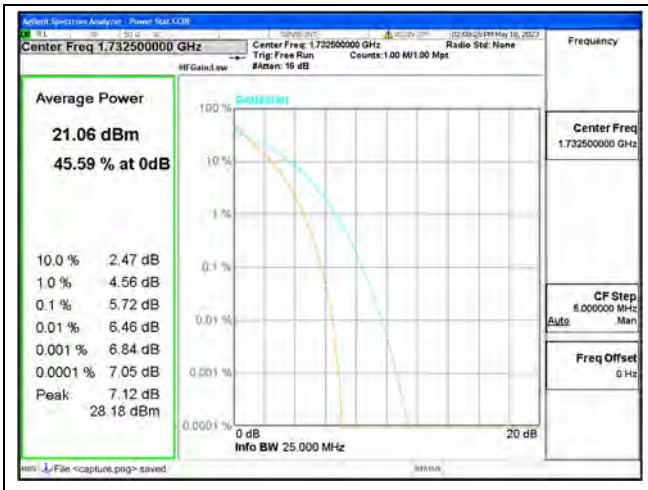
Band4 / 20MHz / Low CH / QPSK



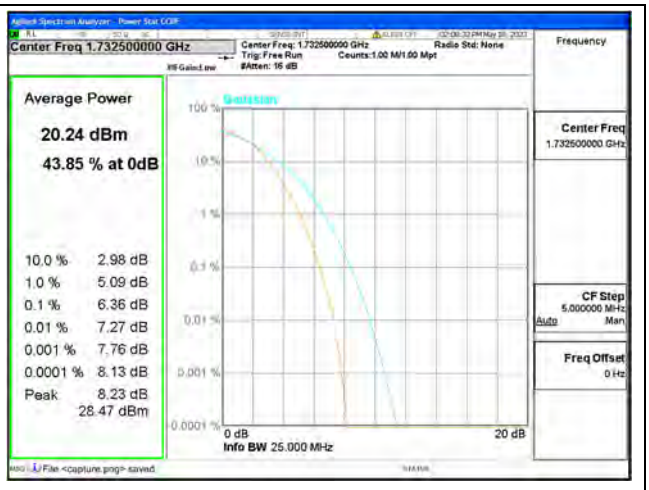
Band4 / 20MHz / Low CH / 16QAM



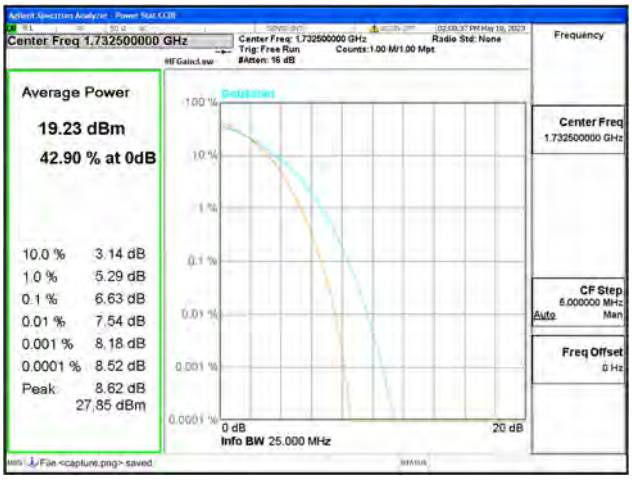
Band4 / 20MHz / Low CH / 64QAM



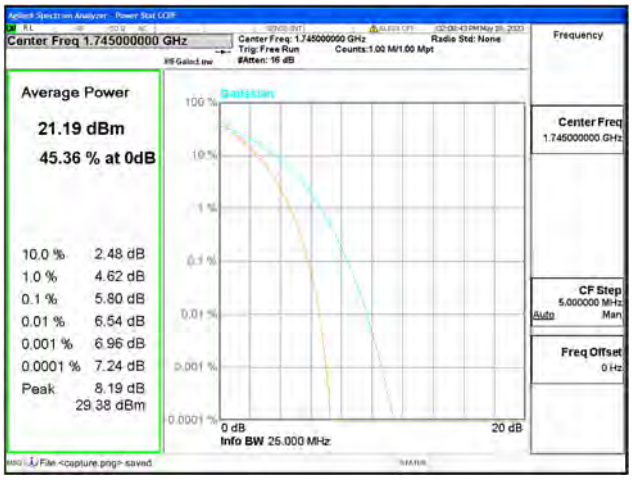
Band4 / 20MHz / Mid CH / QPSK



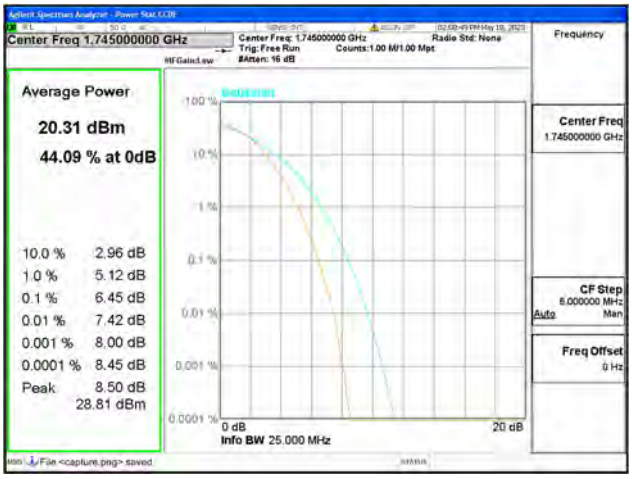
Band4 / 20MHz / Mid CH / 16QAM



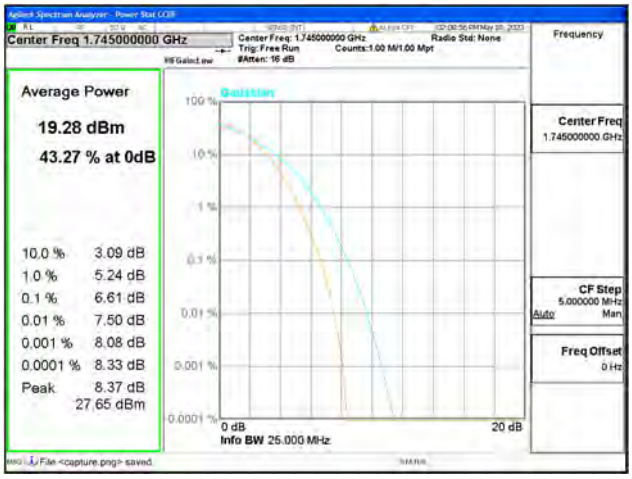
Band4 / 20MHz / Mid CH / 64QAM



Band4 / 20MHz / High CH / QPSK



Band4 / 20MHz / High CH / 16QAM



Band4 / 20MHz / High CH / 64QAM

2.5. Conducted Spurious Emissions

2.5.1. Requirement

According to FCC section 2.1051, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

Additional requirement for LTE Band 2:
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. This calculated to be -13dBm.

Additional requirement for LTE Band 4:
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB. This calculated to be -13dBm.

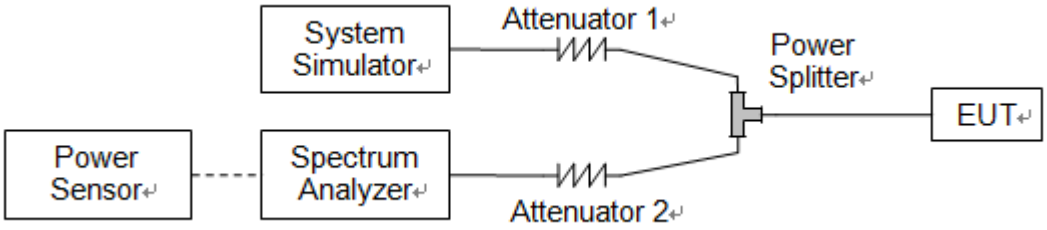
Additional requirement for LTE Band 5:
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. This calculated to be -13dBm.

Additional requirement for LTE Band 7/38/41:
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 55 + 10 log(P) dB. This calculated to be -25dBm.

Additional requirement for LTE Band 12/17:
For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. This calculated to be -13dBm.

Additional requirement for LTE Band 40:
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 70 + 10 log (P) dB. This calculated to be -40dBm.

2.5.2. Test Description

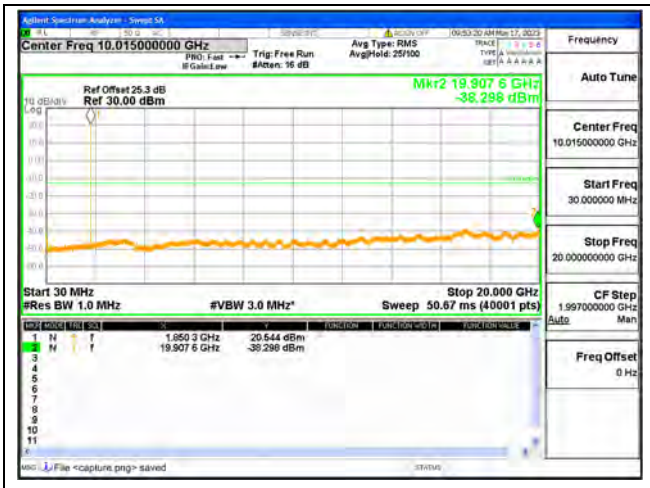


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

2.5.3. Test Procedure

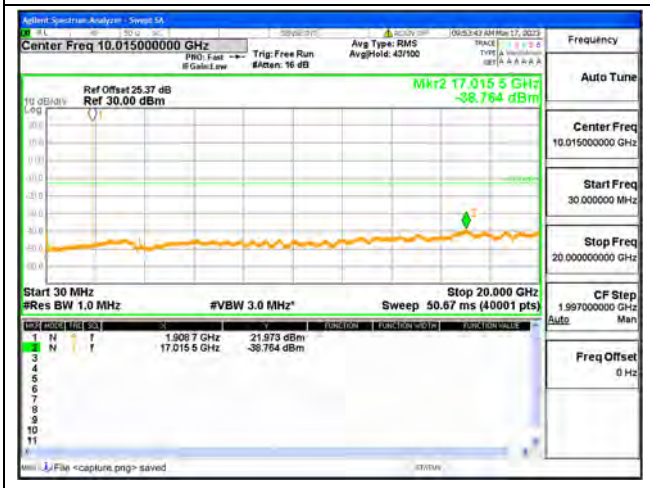
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

2.5.4. Test Result



Band2 / 1.4MHz / Low CH / QPSK

Band2 / 1.4MHz / Mid CH / QPSK

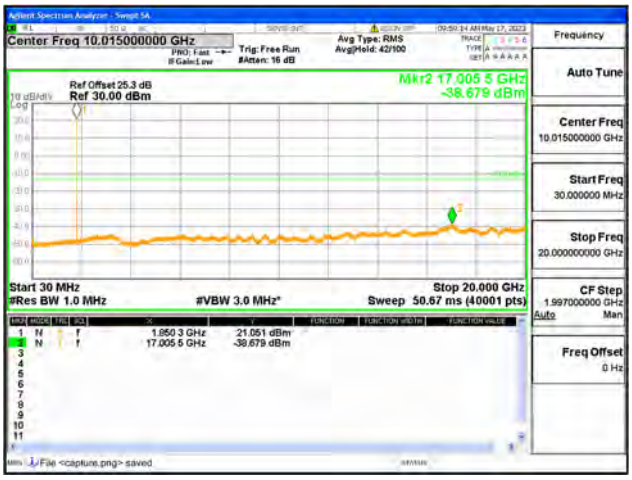


Band2 / 1.4MHz / High CH / QPSK

Band2 / 3MHz / Low CH / QPSK

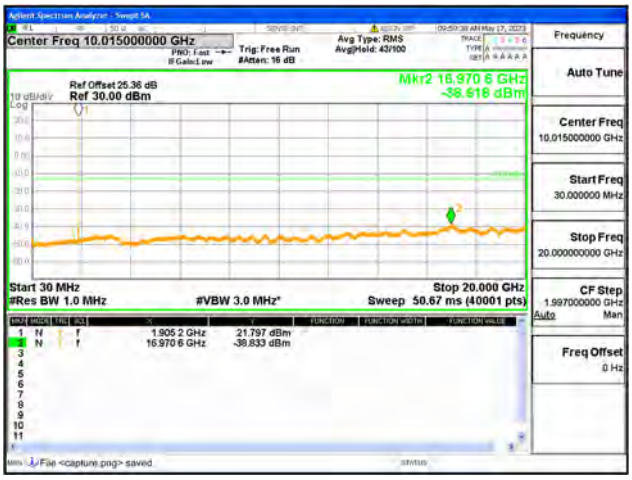
Band2 / 3MHz / Mid CH / QPSK

Band2 / 3MHz / High CH / QPSK



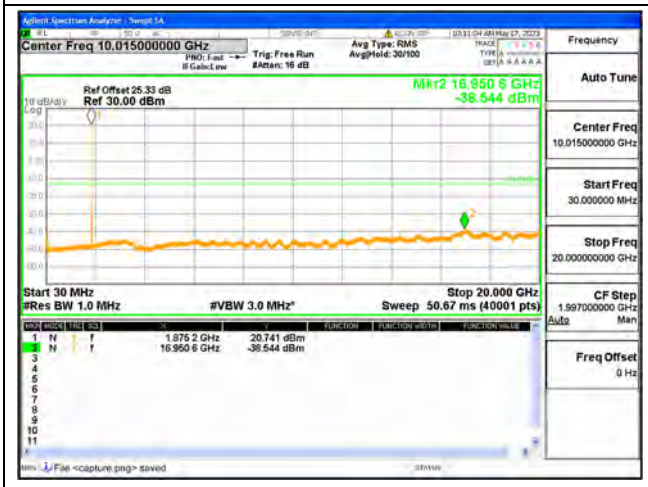
Band2 / 5MHz / Low CH / QPSK

Band2 / 5MHz / Mid CH / QPSK



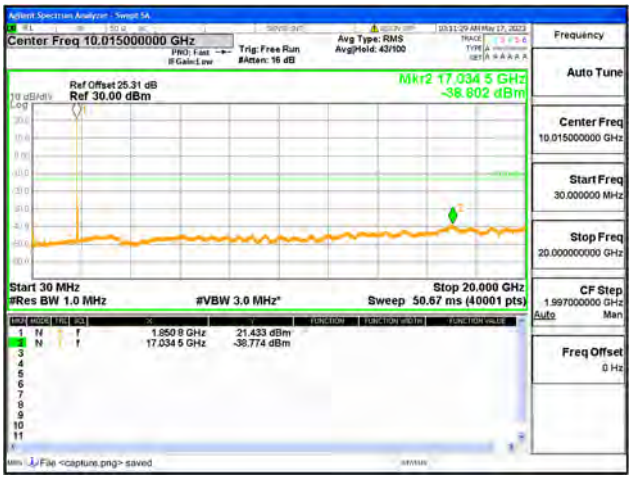
Band2 / 5MHz / High CH / QPSK

Band2 / 10MHz / Low CH / QPSK



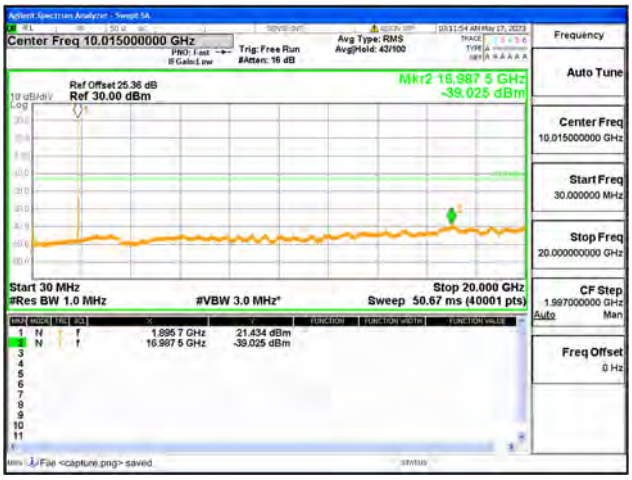
Band2 / 10MHz / Mid CH / QPSK

Band2 / 10MHz / High CH / QPSK



Band2 / 15MHz / Low CH / QPSK

Band2 / 15MHz / Mid CH / QPSK



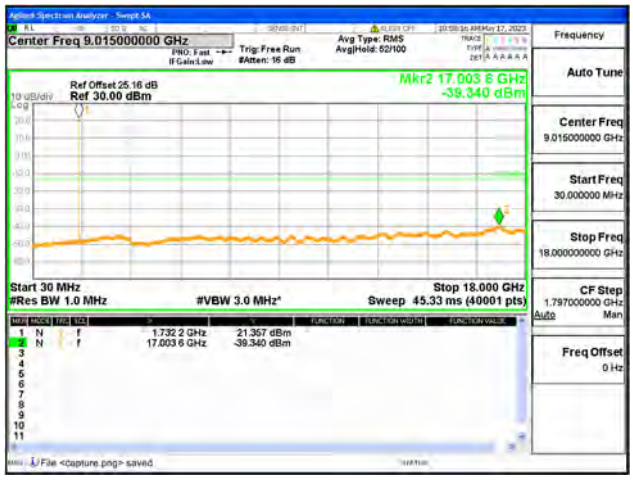
Band2 / 15MHz / High CH / QPSK

Band2 / 20MHz / Low CH / QPSK

Band2 / 20MHz / Mid CH / QPSK

Band2 / 20MHz / High CH / QPSK

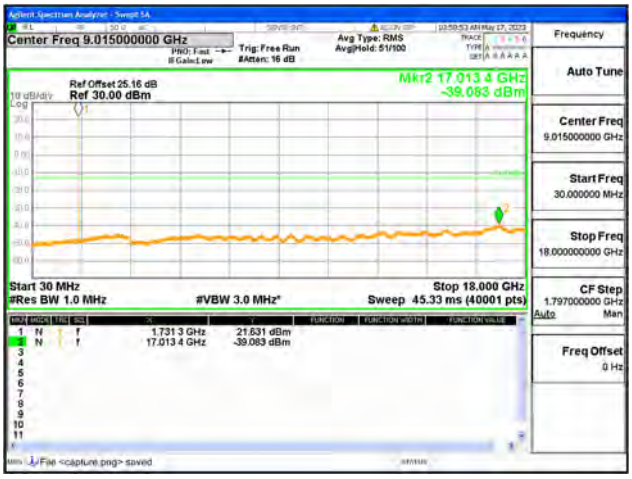
Band4 / 1.4MHz / Low CH / QPSK



Band4 / 1.4MHz / Mid CH / QPSK

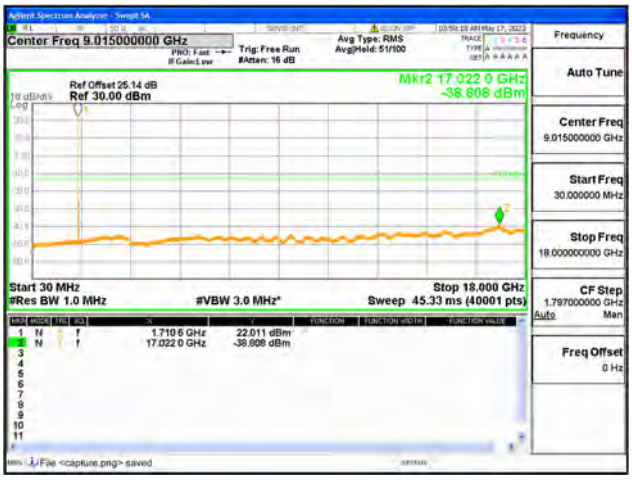
Band4 / 1.4MHz / High CH / QPSK

Band4 / 3MHz / Low CH / QPSK



Band4 / 3MHz / Mid CH / QPSK

Band4 / 3MHz / High CH / QPSK

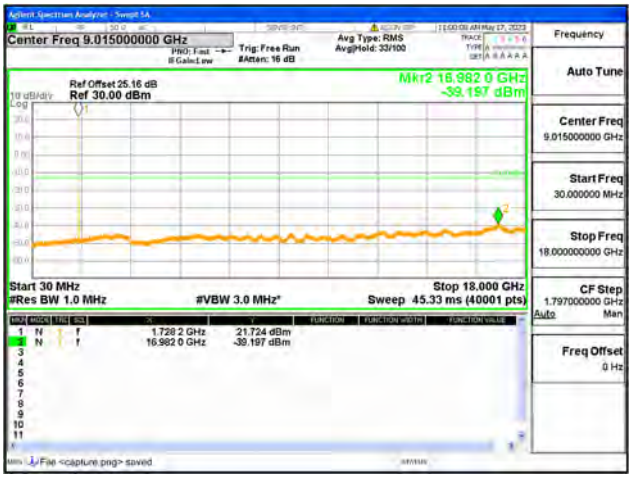


Band4 / 5MHz / Low CH / QPSK

Band4 / 5MHz / Mid CH / QPSK

Band4 / 5MHz / High CH / QPSK

Band4 / 10MHz / Low CH / QPSK



Band4 / 10MHz / Mid CH / QPSK

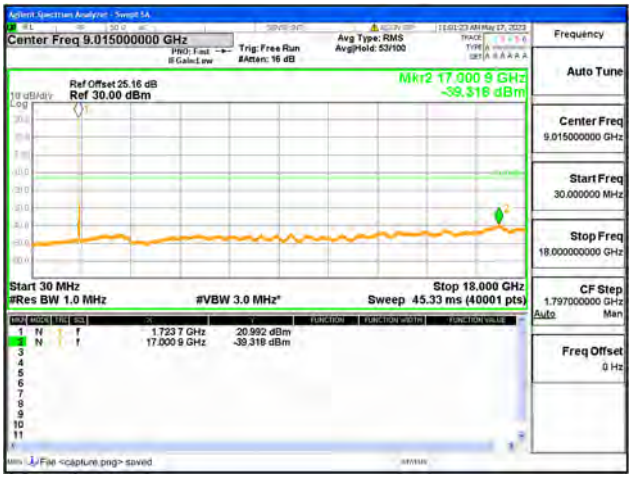
Band4 / 10MHz / High CH / QPSK

Band4 / 15MHz / Low CH / QPSK

Band4 / 15MHz / Mid CH / QPSK

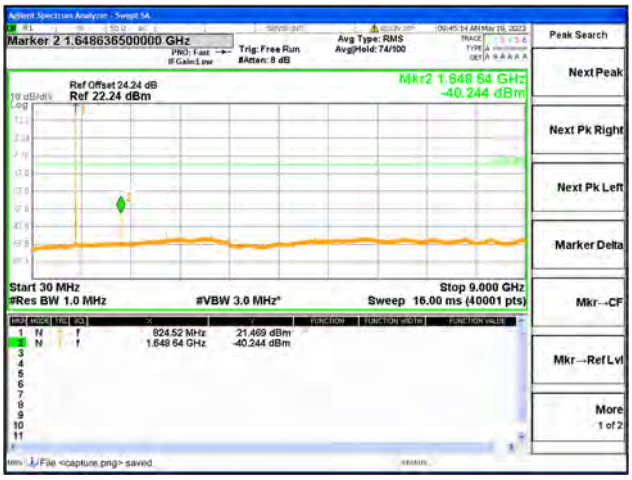
Band4 / 15MHz / High CH / QPSK

Band4 / 20MHz / Low CH / QPSK



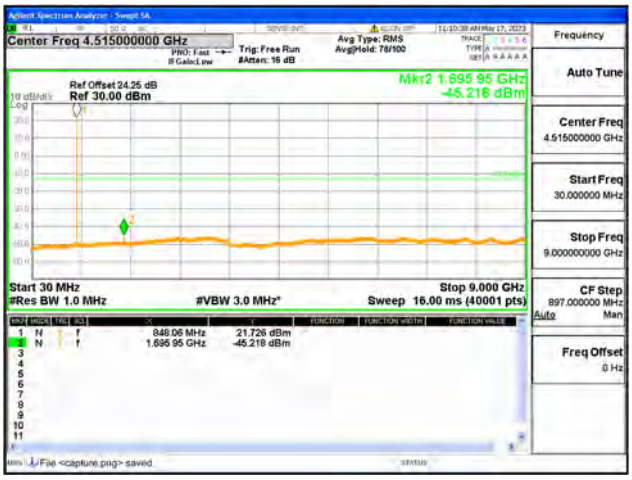
Band4 / 20MHz / Mid CH / QPSK

Band4 / 20MHz / High CH / QPSK



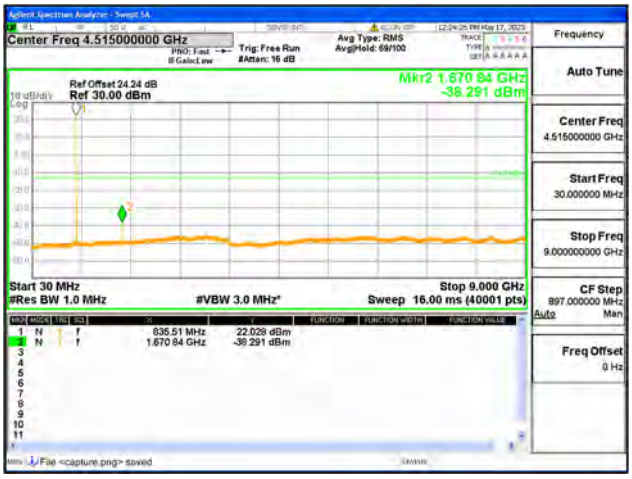
Band5 / 1.4MHz / Low CH / QPSK

Band5 / 1.4MHz / Mid CH / QPSK



Band5 / 1.4MHz / High CH / QPSK

Band5 / 3MHz / Low CH / QPSK

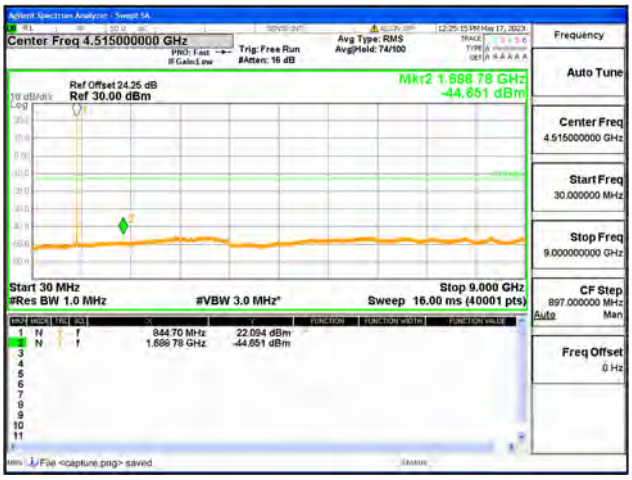


Band5 / 3MHz / Mid CH / QPSK

Band5 / 3MHz / High CH / QPSK

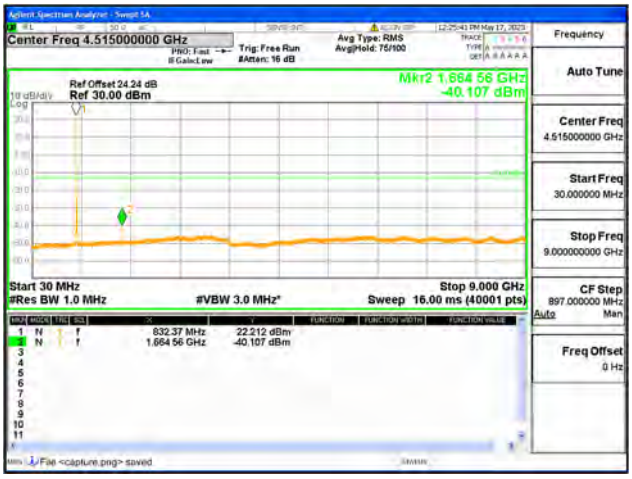
Band5 / 5MHz / Low CH / QPSK

Band5 / 5MHz / Mid CH / QPSK

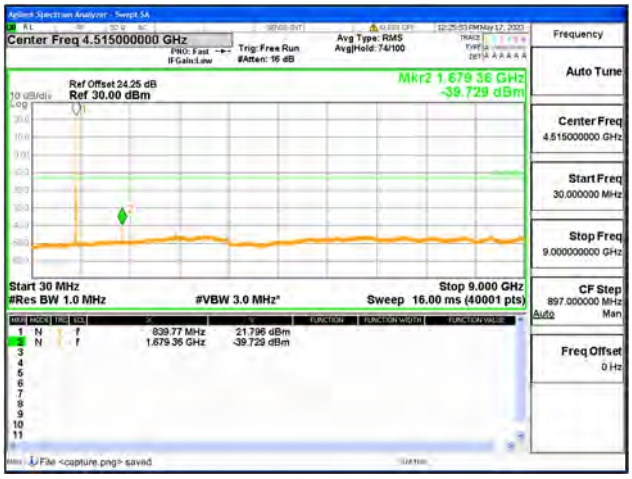


Band5 / 5MHz / High CH / QPSK

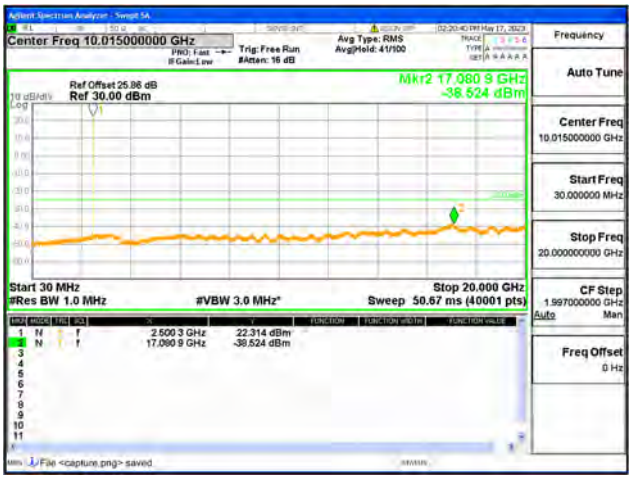
Band5 / 10MHz / Low CH / QPSK



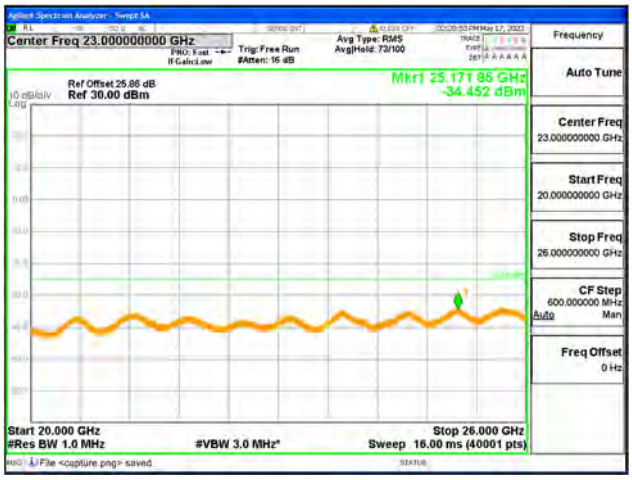
Band5 / 10MHz / Mid CH / QPSK



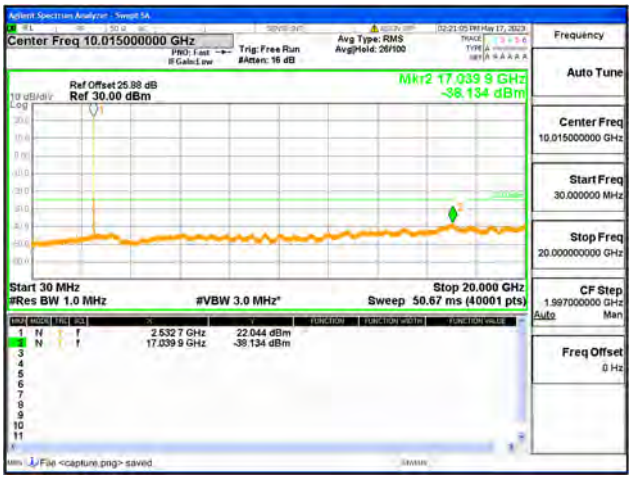
Band5 / 10MHz / High CH / QPSK



Band7-30M-20G / 5MHz / Low CH / QPSK

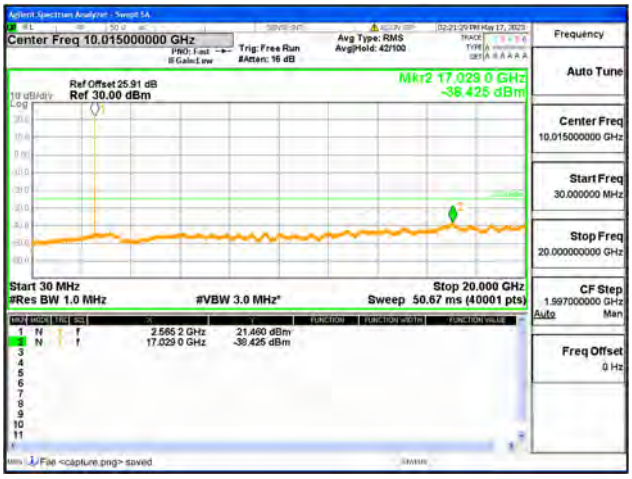


Band7-20G-26G / 5MHz / Low CH / QPSK



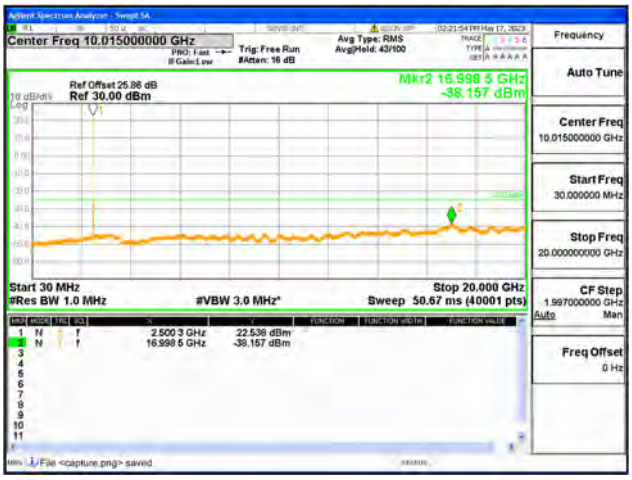
Band7-30M-20G / 5MHz / Mid CH / QPSK

Band7-20G-26G / 5MHz / Mid CH / QPSK

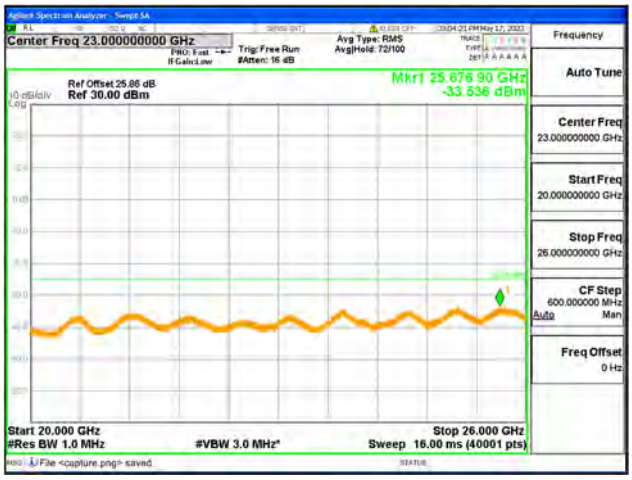


Band7-30M-20G / 5MHz / High CH / QPSK

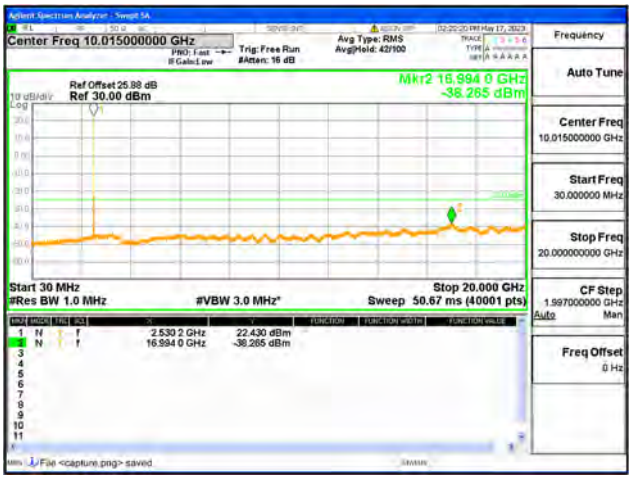
Band7-20G-26G / 5MHz / High CH / QPSK



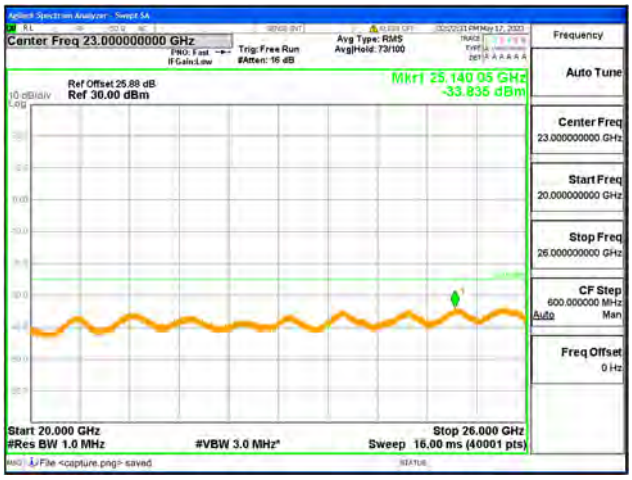
Band7-30M-20G / 10MHz / Low CH / QPSK



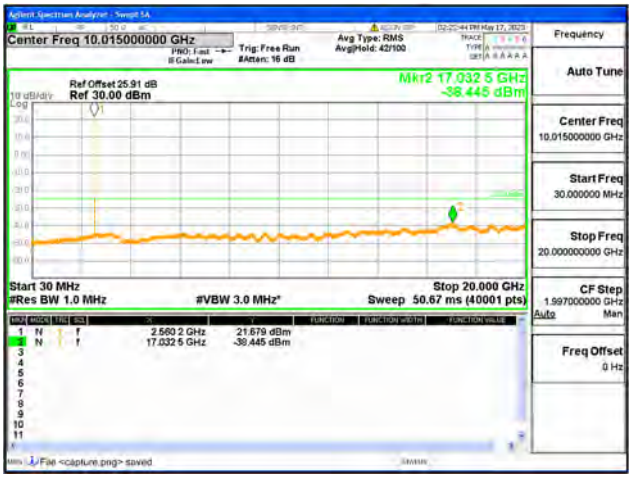
Band7-20G-26G / 10MHz / Low CH / QPSK



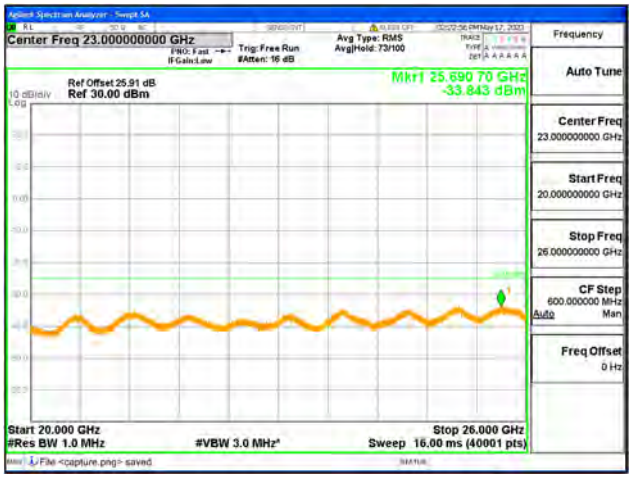
Band7-30M-20G / 10MHz / Mid CH / QPSK



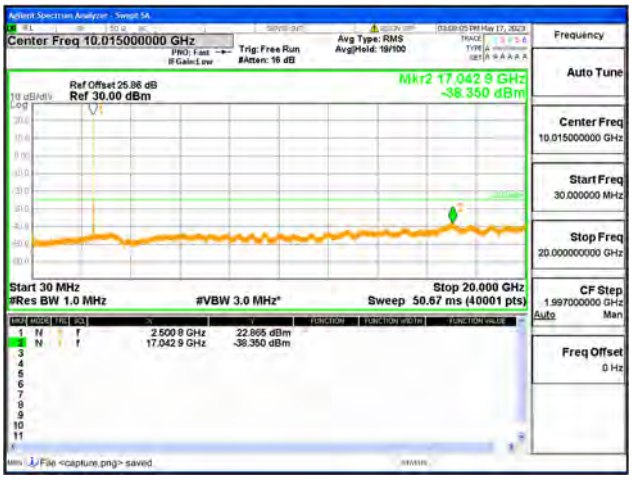
Band7-20G-26G / 10MHz / Mid CH / QPSK



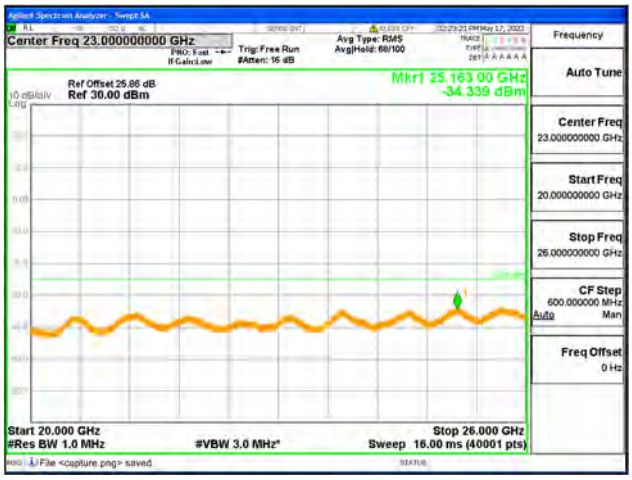
Band7-30M-20G / 10MHz / High CH / QPSK



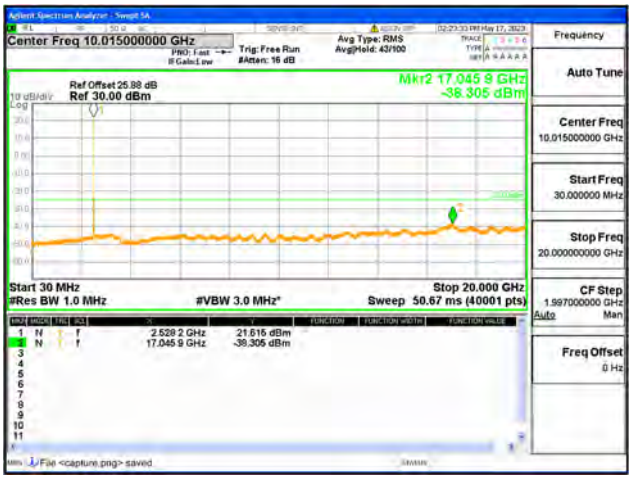
Band7-20G-26G / 10MHz / High CH / QPSK



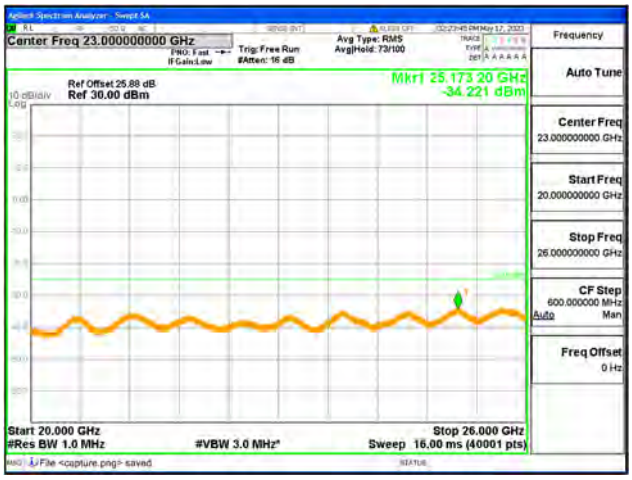
Band7-30M-20G / 15MHz / Low CH / QPSK



Band7-20G-26G / 15MHz / Low CH / QPSK



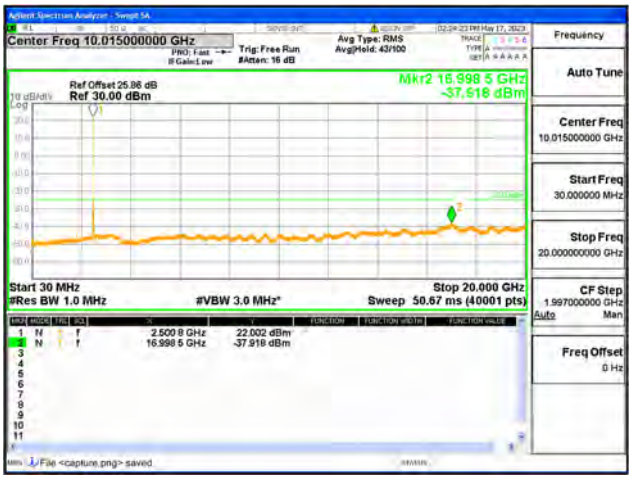
Band7-30M-20G / 15MHz / Mid CH / QPSK



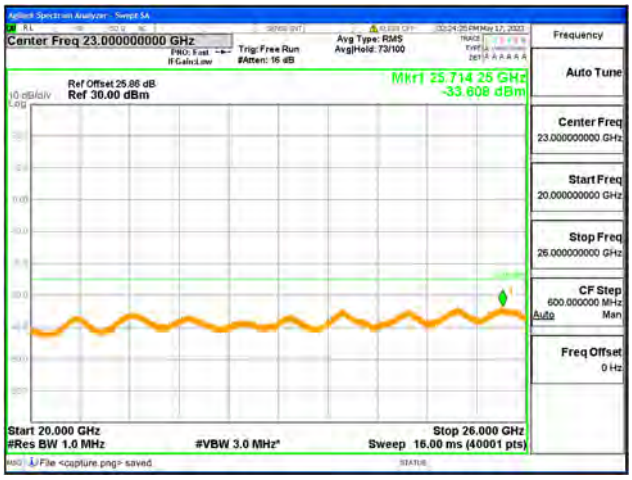
Band7-20G-26G / 15MHz / Mid CH / QPSK

Band7-30M-20G / 15MHz / High CH / QPSK

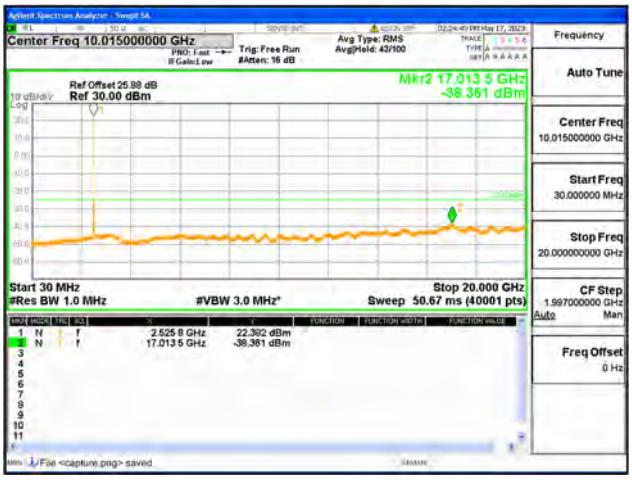
Band7-20G-26G / 15MHz / High CH / QPSK



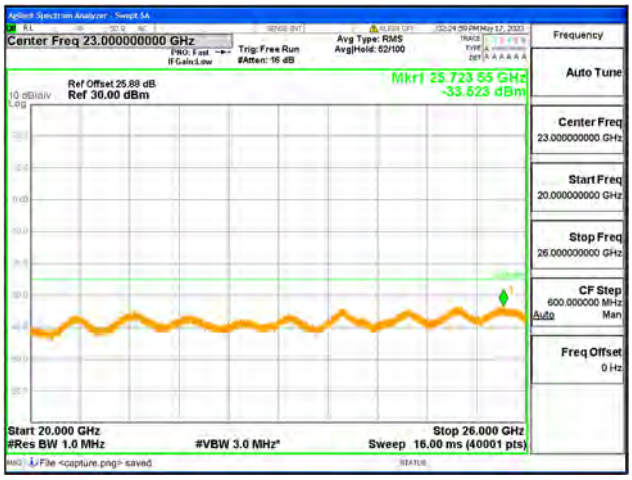
Band7-30M-20G / 20MHz / Low CH / QPSK



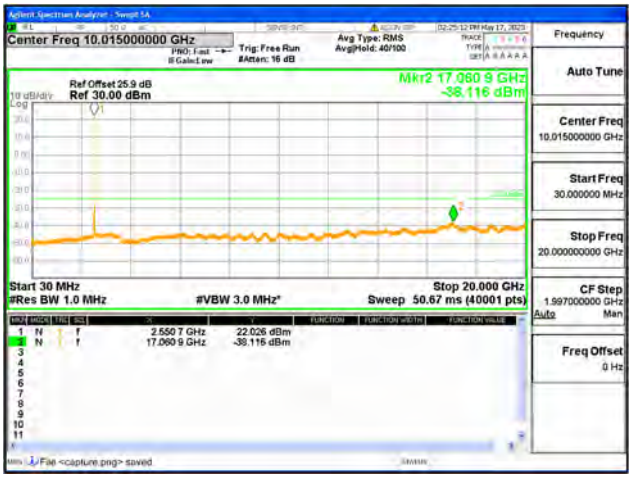
Band7-20G-26G / 20MHz / Low CH / QPSK



Band7-30M-20G / 20MHz / Mid CH / QPSK

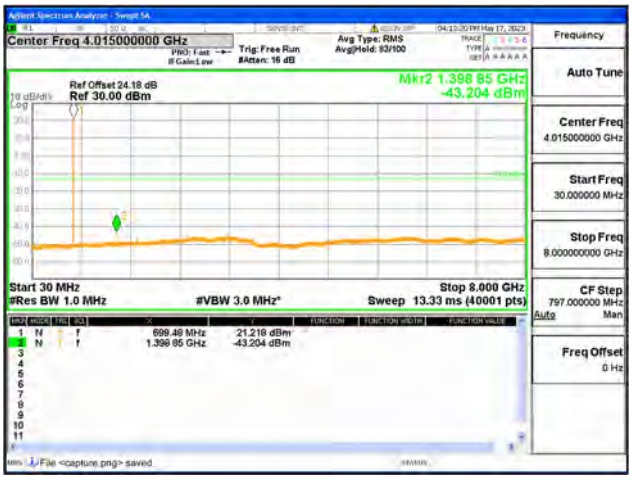


Band7-20G-26G / 20MHz / Mid CH / QPSK

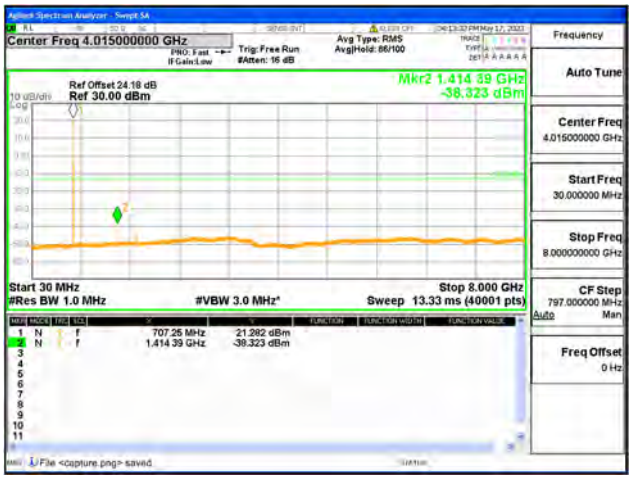


Band7-30M-20G / 20MHz / High CH / QPSK

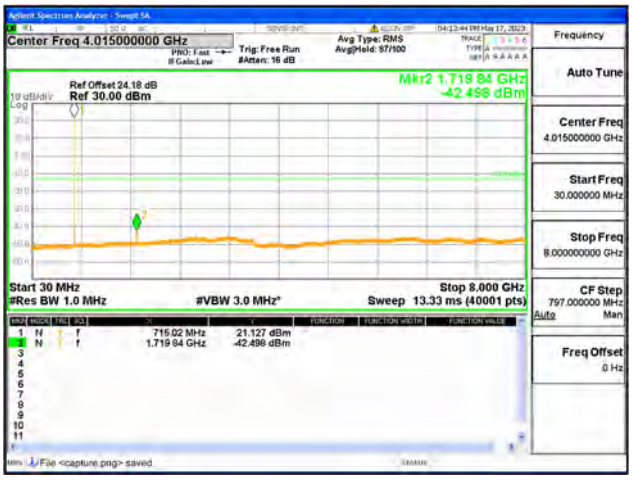
Band7-20G-26G / 20MHz / High CH / QPSK



Band12 / 1.4MHz / Low CH / QPSK

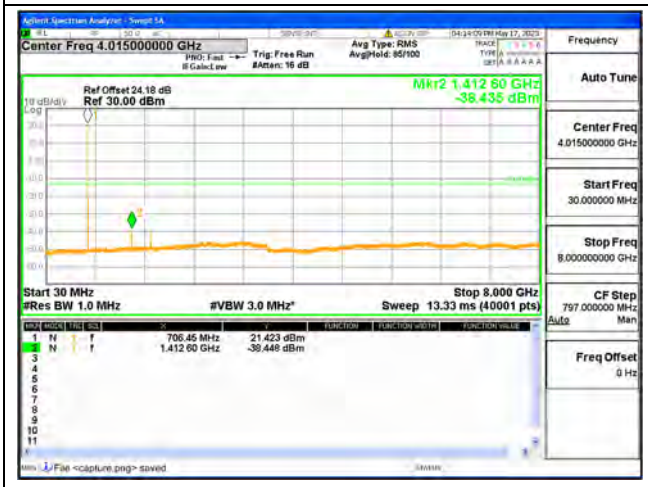


Band12 / 1.4MHz / Mid CH / QPSK

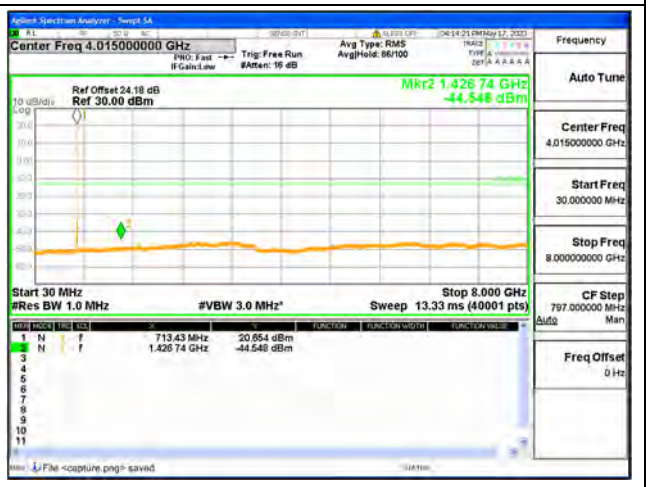


Band12 / 1.4MHz / High CH / QPSK

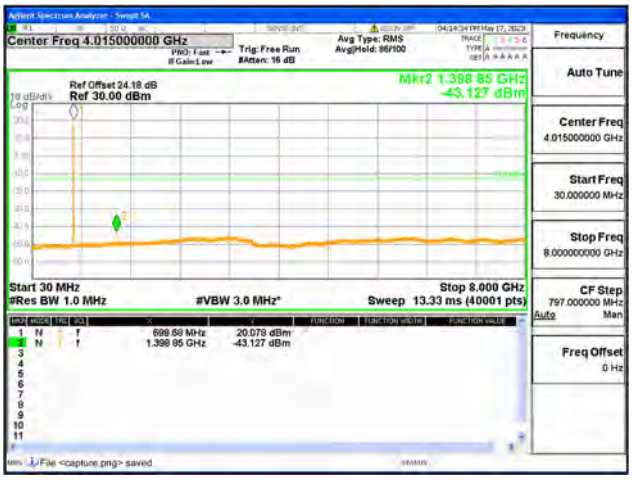
Band12 / 3MHz / Low CH / QPSK



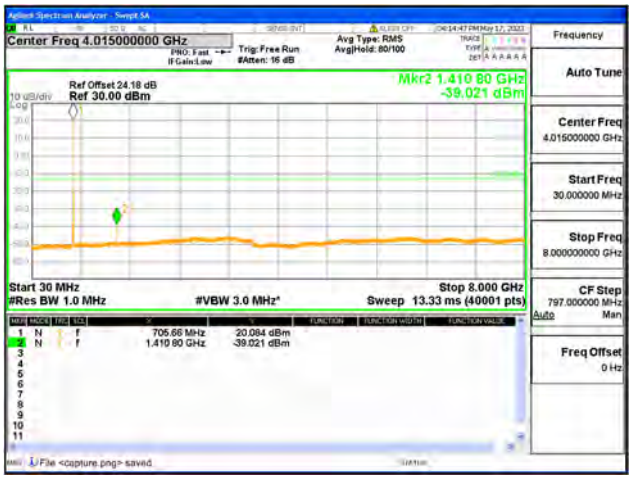
Band12 / 3MHz / Mid CH / QPSK



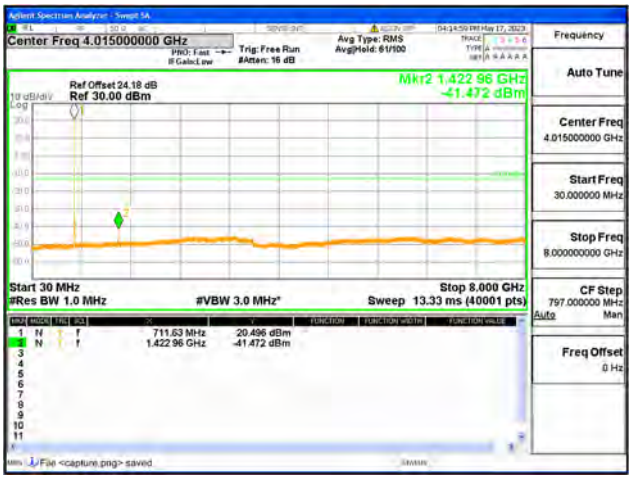
Band12 / 3MHz / High CH / QPSK



Band12 / 5MHz / Low CH / QPSK

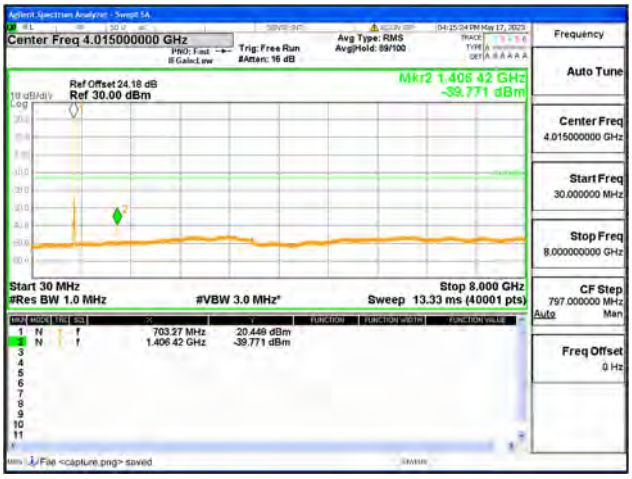


Band12 / 5MHz / Mid CH / QPSK

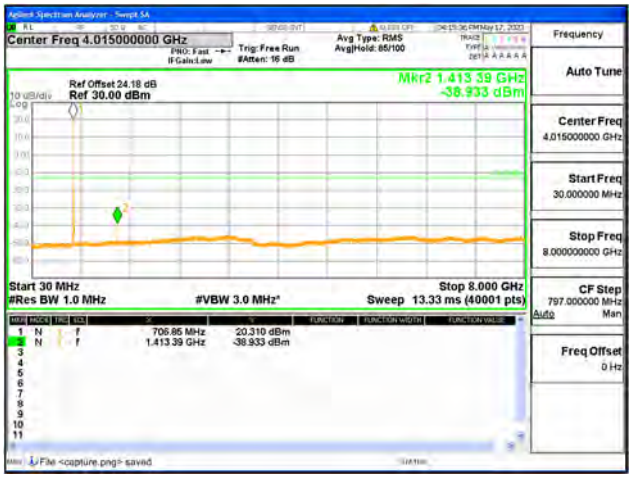


Band12 / 5MHz / High CH / QPSK

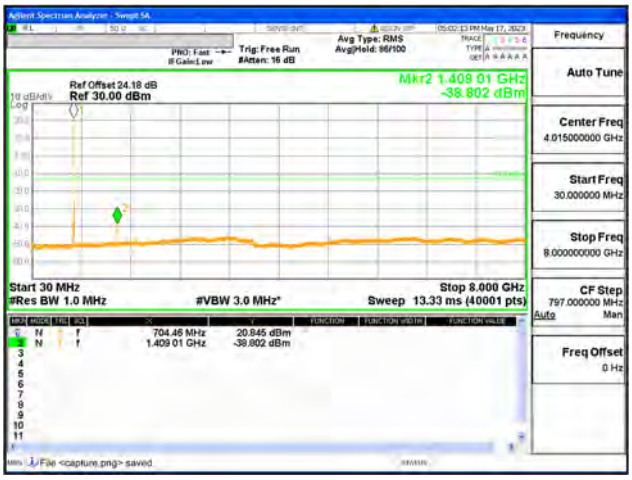
Band12 / 10MHz / Low CH / QPSK



Band12 / 10MHz / Mid CH / QPSK

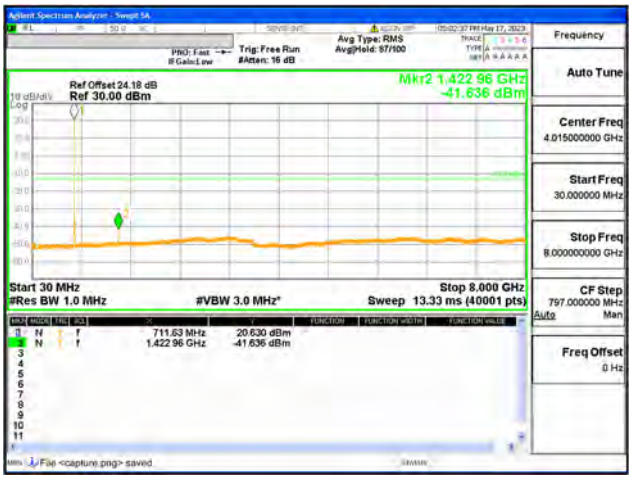


Band12 / 10MHz / High CH / QPSK

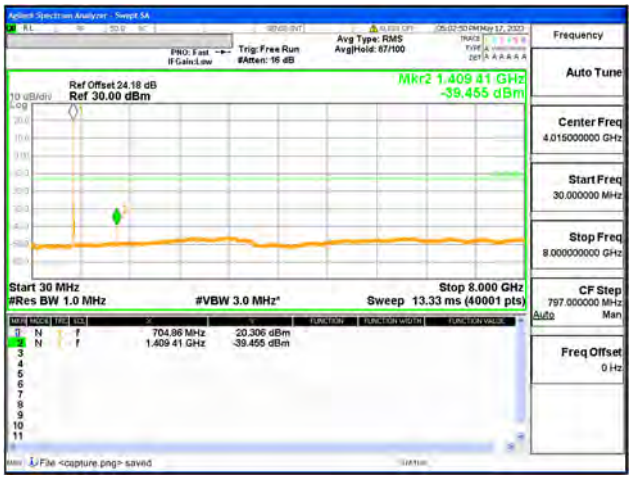


Band17 / 5MHz / Low CH / QPSK

Band17 / 5MHz / Mid CH / QPSK



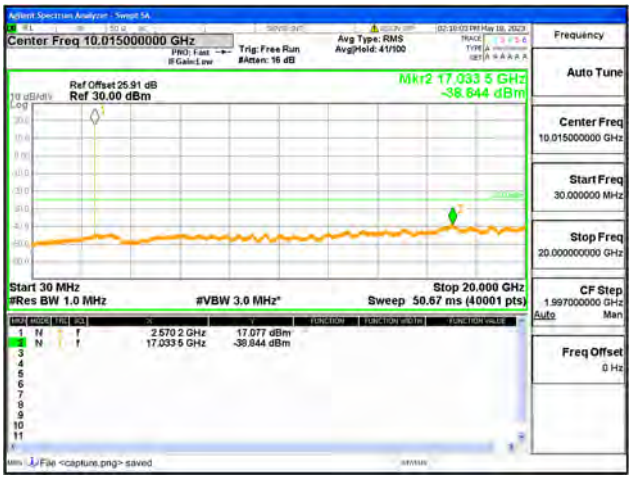
Band17 / 5MHz / High CH / QPSK



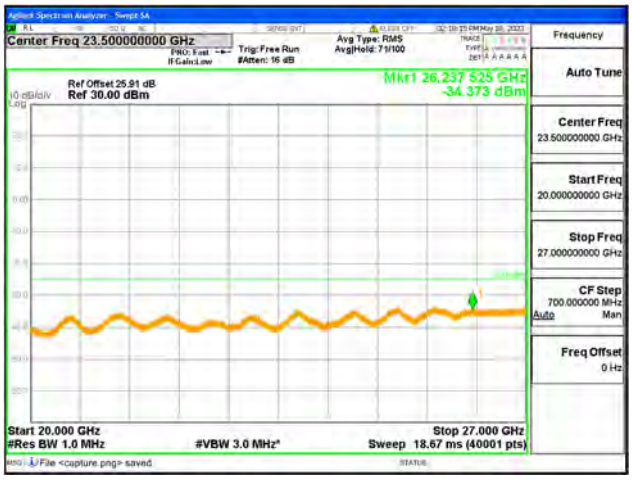
Band17 / 10MHz / Low CH / QPSK

Band17 / 10MHz / Mid CH / QPSK

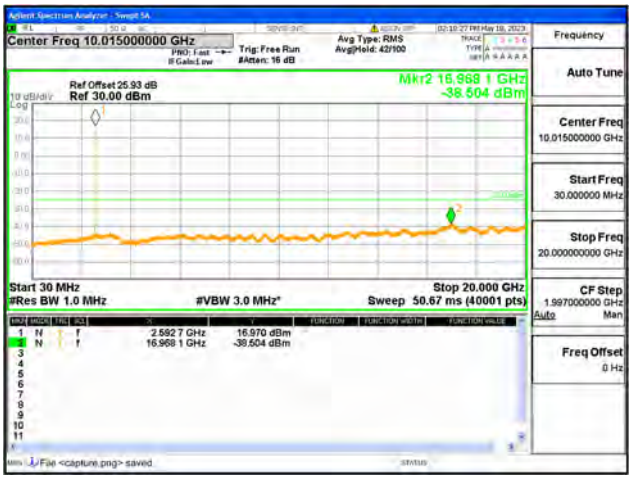
Band17 / 10MHz / High CH / QPSK



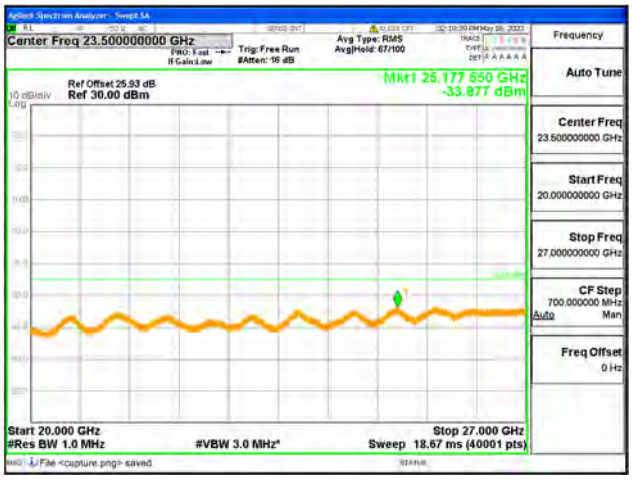
Band38-30M-20G / 5MHz / Low CH / QPSK



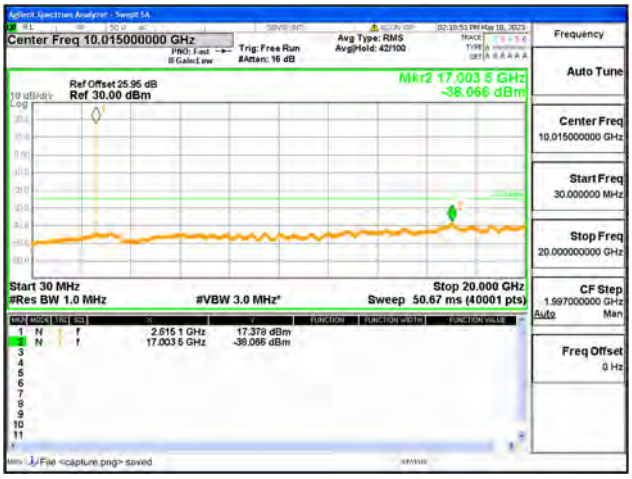
Band38-20G-27G / 5MHz / Low CH / QPSK



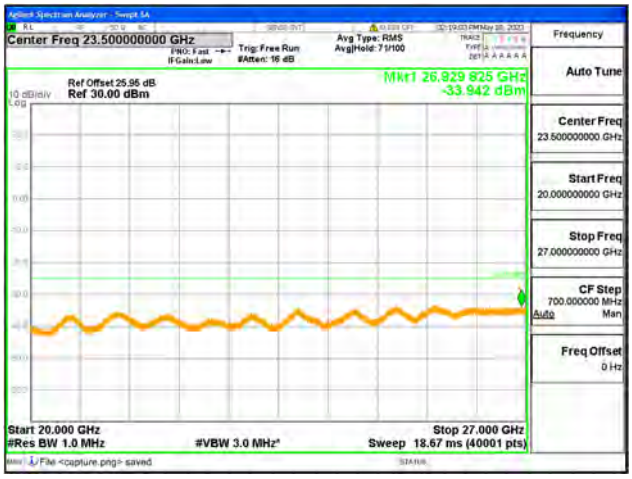
Band38-30M-20G / 5MHz / Mid CH / QPSK



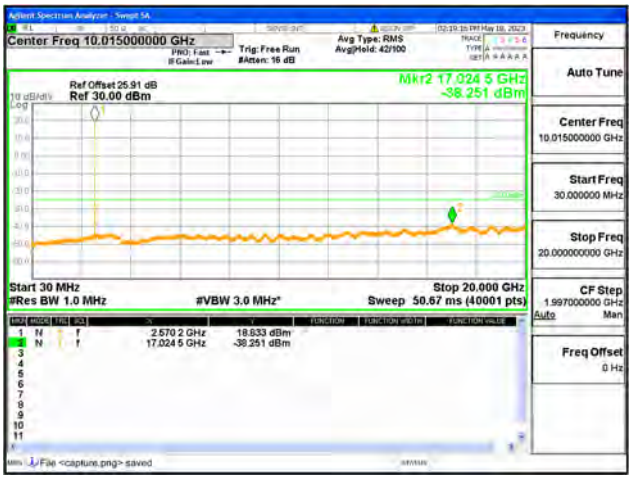
Band38-20G-27G / 5MHz / Mid CH / QPSK



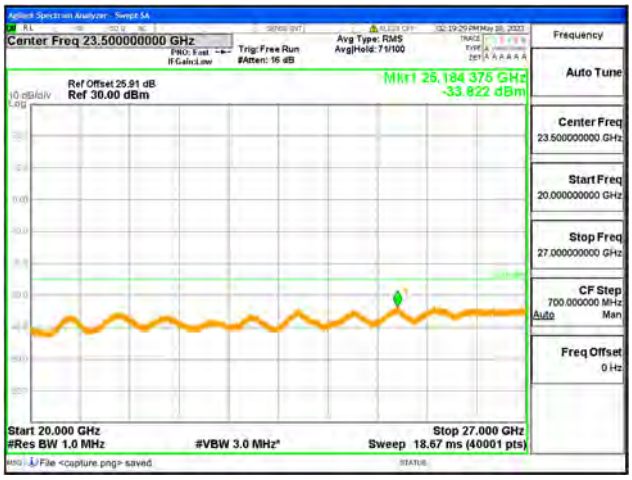
Band38-30M-20G / 5MHz / High CH / QPSK



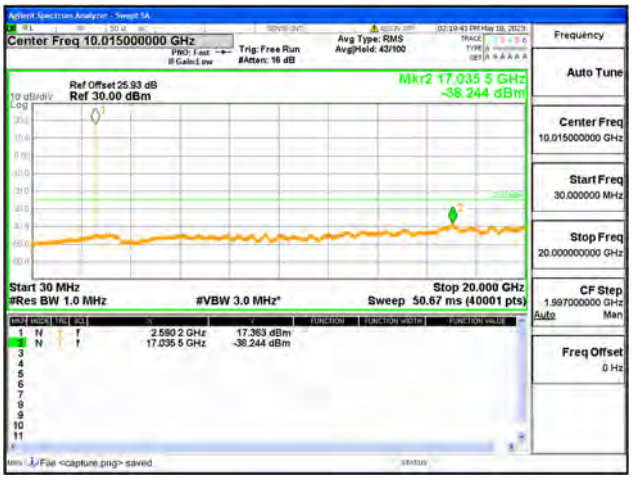
Band38-20G-27G / 5MHz / High CH / QPSK



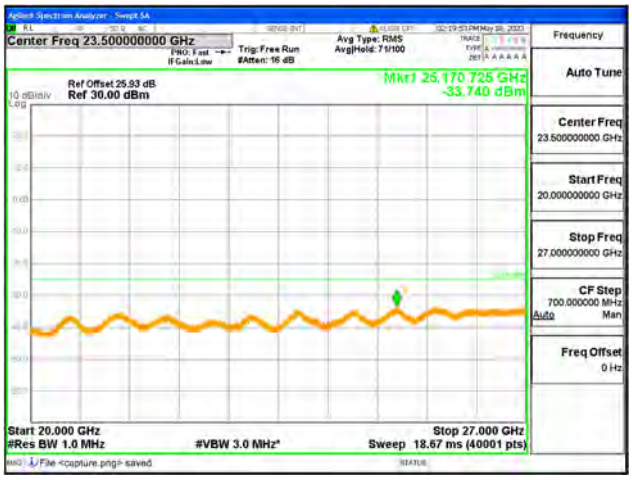
Band38-30M-20G / 10MHz / Low CH / QPSK



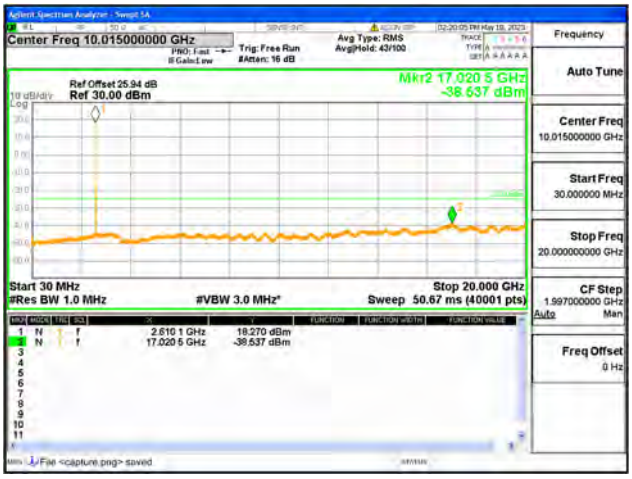
Band38-20G-27G / 10MHz / Low CH / QPSK



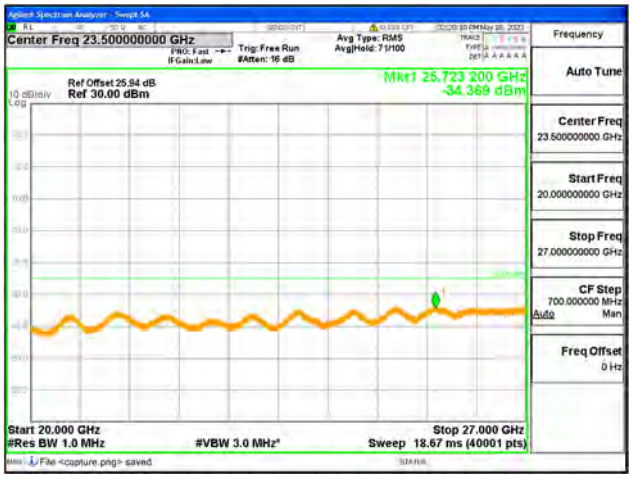
Band38-30M-20G / 10MHz / Mid CH / QPSK



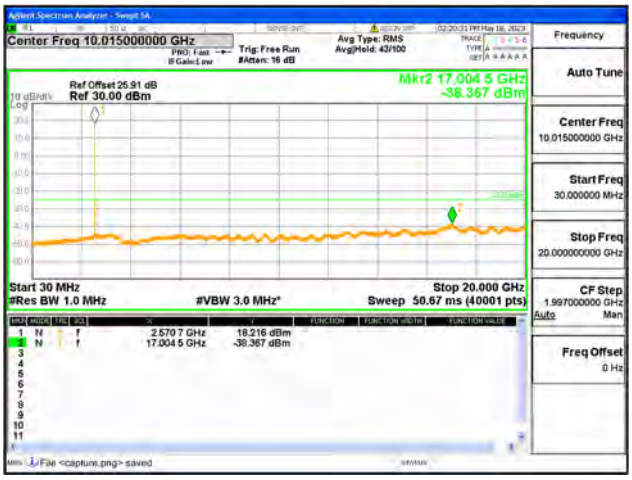
Band38-20G-27G / 10MHz / Mid CH / QPSK



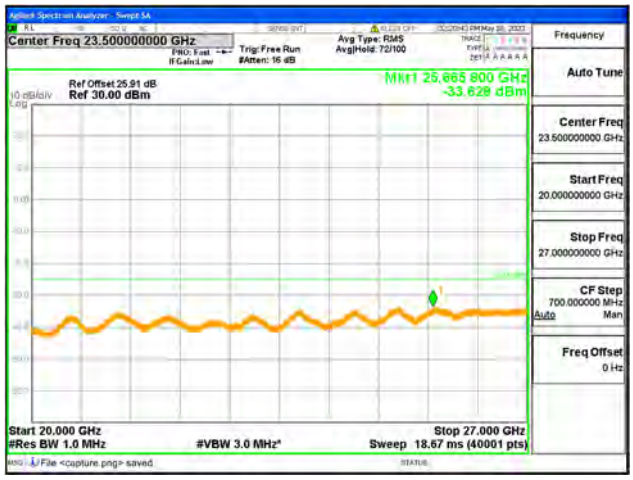
Band38-30M-20G / 10MHz / High CH / QPSK



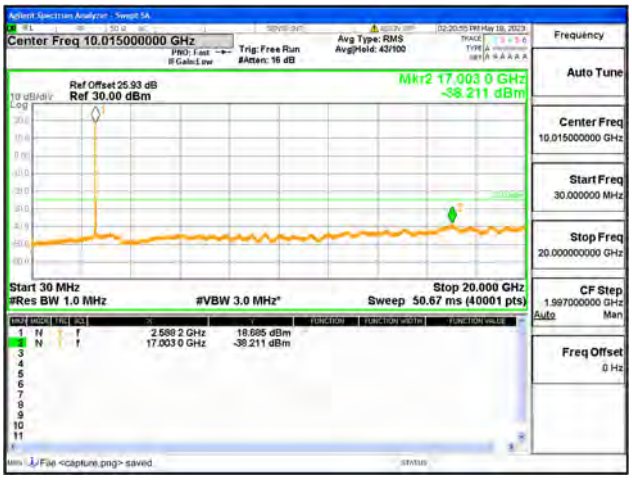
Band38-20G-27G / 10MHz / High CH / QPSK



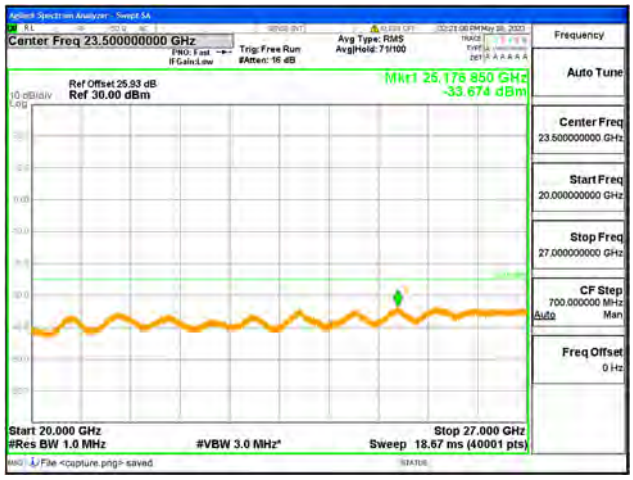
Band38-30M-20G / 15MHz / Low CH / QPSK



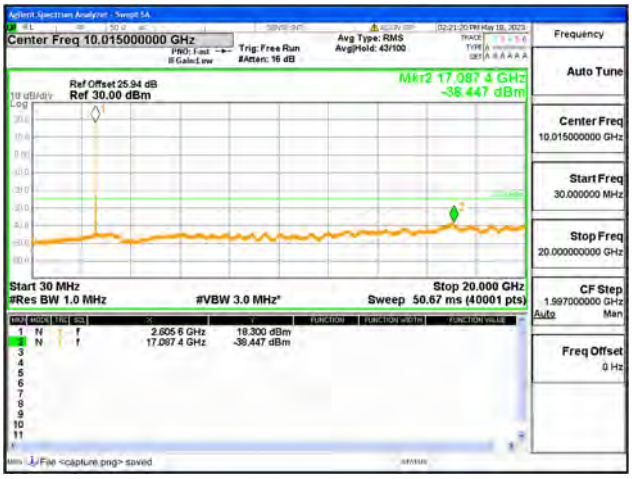
Band38-20G-27G / 15MHz / Low CH / QPSK



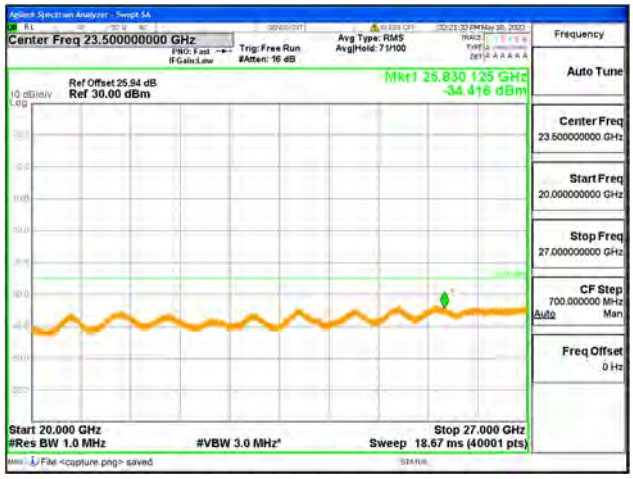
Band38-30M-20G / 15MHz / Mid CH / QPSK



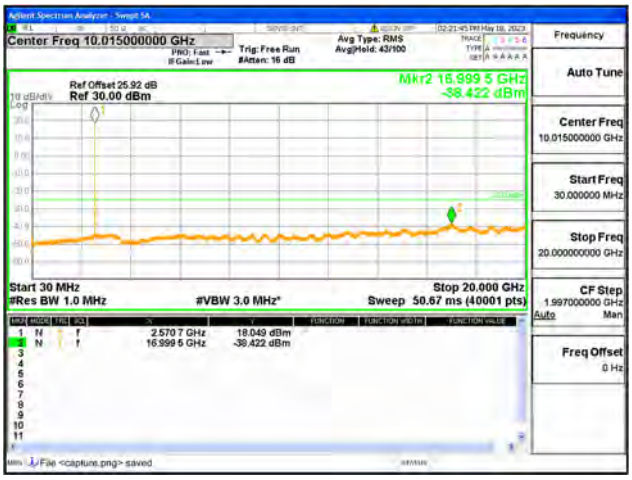
Band38-20G-27G / 15MHz / Mid CH / QPSK



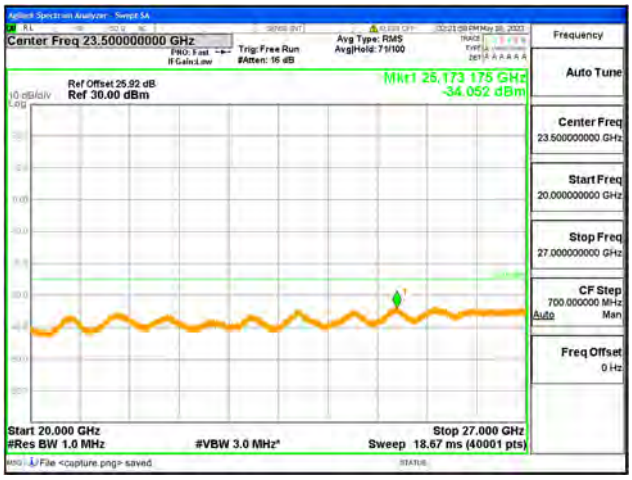
Band38-30M-20G / 15MHz / High CH / QPSK



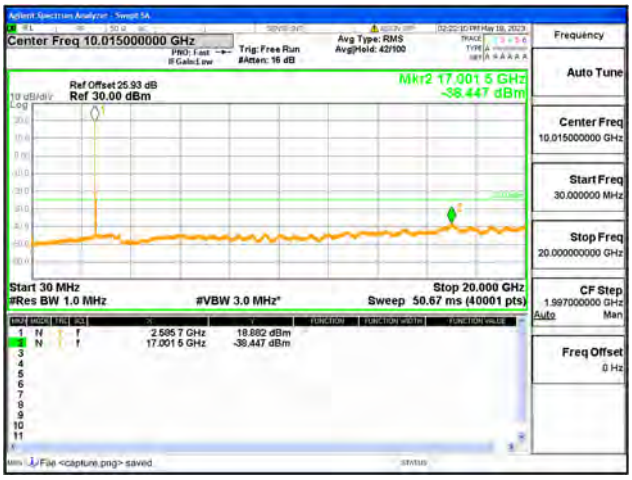
Band38-20G-27G / 15MHz / High CH / QPSK



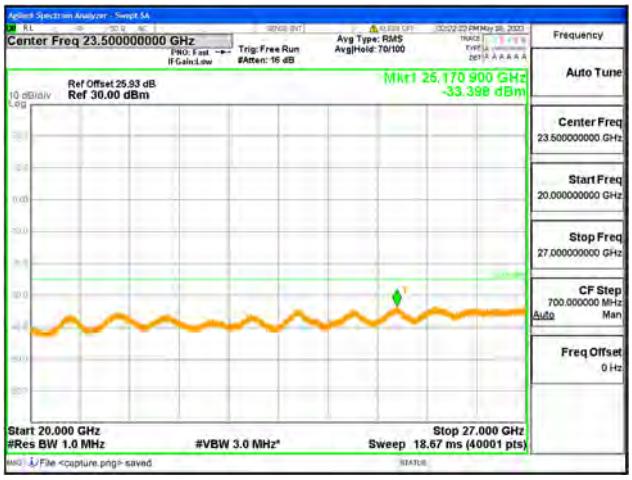
Band38-30M-20G / 20MHz / Low CH / QPSK



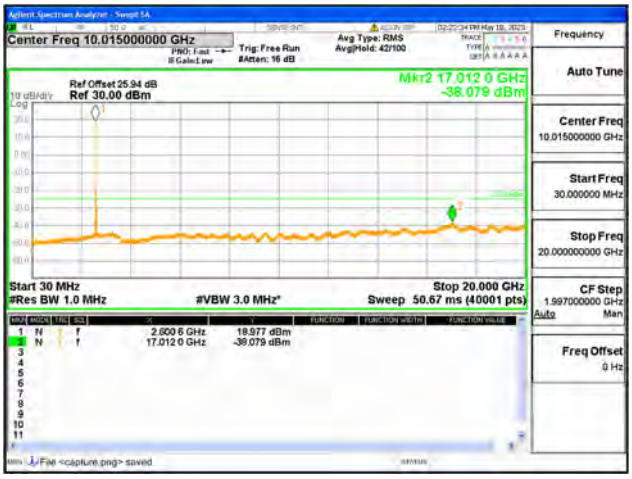
Band38-20G-27G / 20MHz / Low CH / QPSK



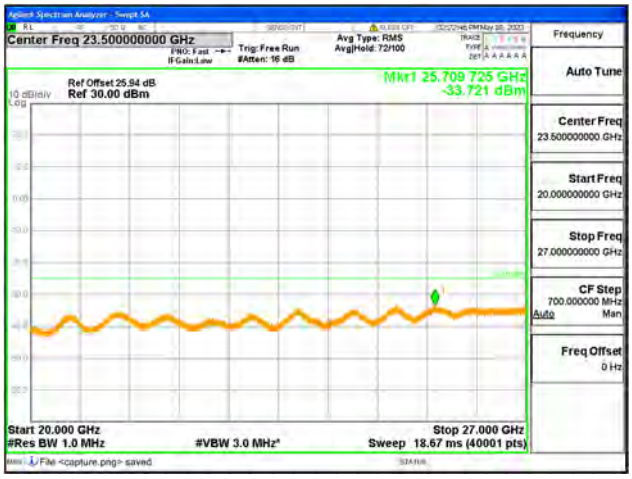
Band38-30M-20G / 20MHz / Mid CH / QPSK



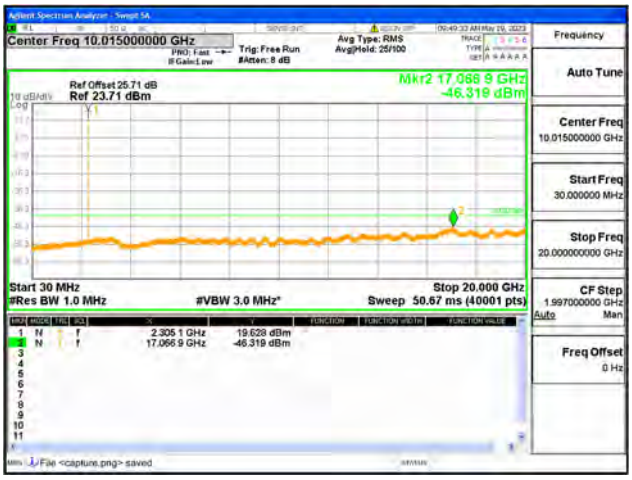
Band38-20G-27G / 20MHz / Mid CH / QPSK



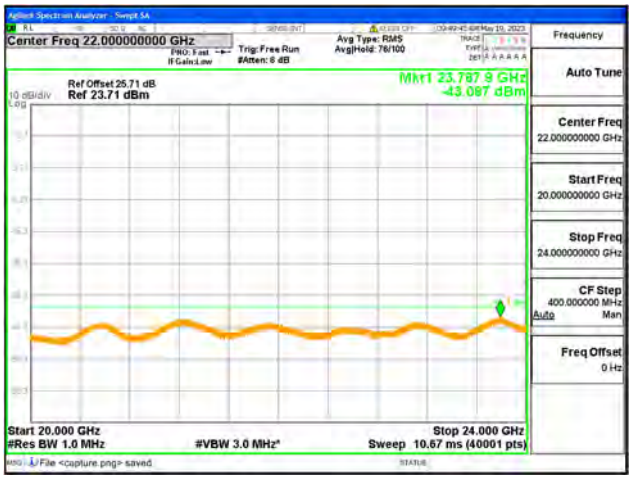
Band38-30M-20G / 20MHz / High CH / QPSK



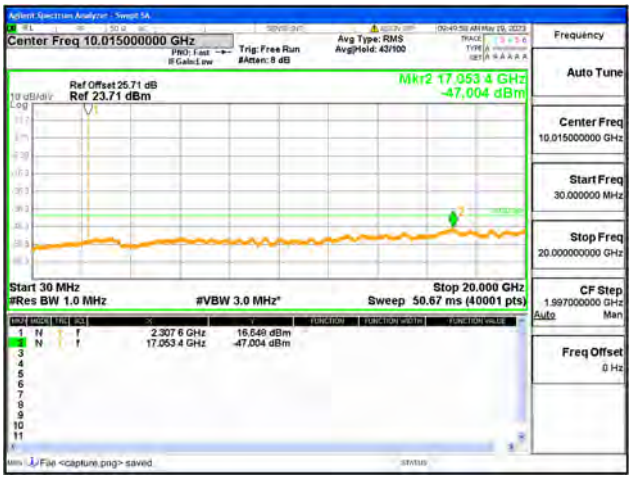
Band38-20G-27G / 20MHz / High CH / QPSK



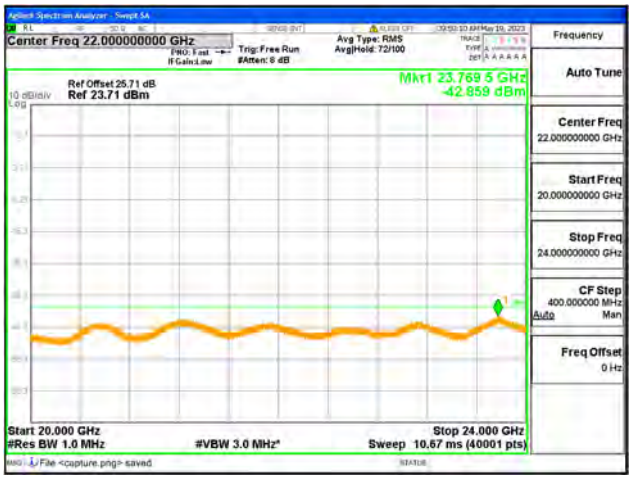
Band40-1-30M-20G / 5MHz / Low CH / QPSK



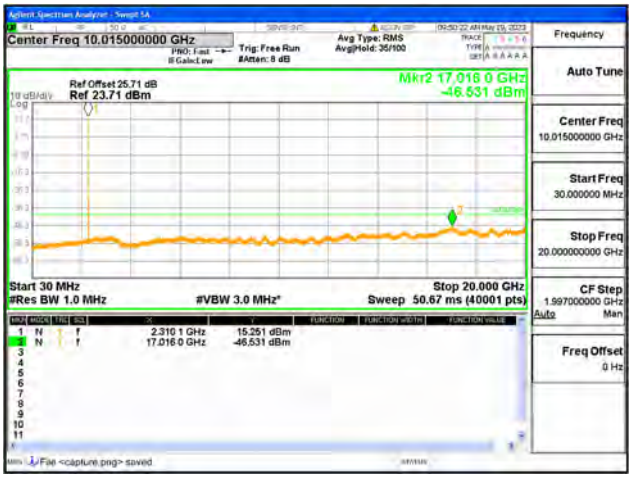
Band40-1-20G-24G / 5MHz / Low CH / QPSK



Band40-1-30M-20G / 5MHz / Mid CH / QPSK

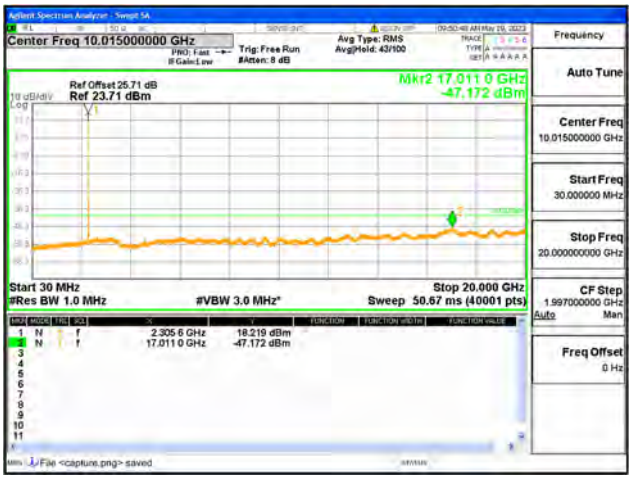


Band40-1-20G-24G / 5MHz / Mid CH / QPSK

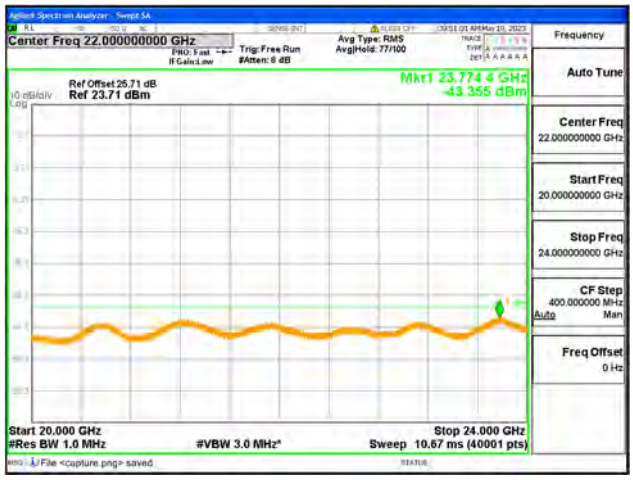


Band40-1-30M-20G / 5MHz / High CH / QPSK

Band40-1-20G-24G / 5MHz / High CH / QPSK



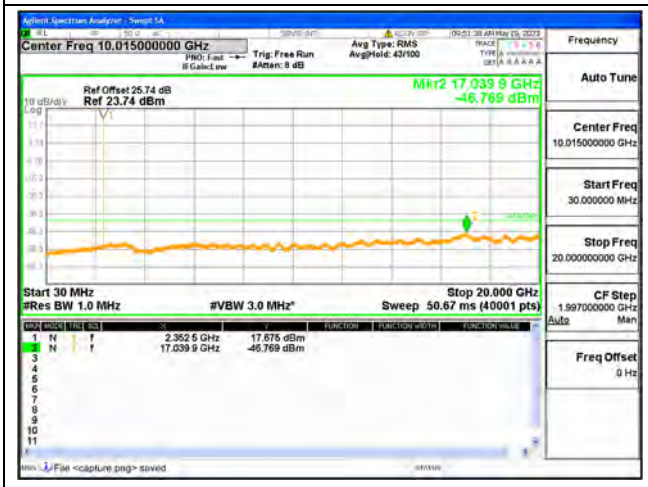
Band40-1-30M-20G / 10MHz / Mid CH / QPSK



Band40-1-20G-24G / 10MHz / Mid CH / QPSK

Band40-2-30M-20G / 5MHz / Low CH / QPSK

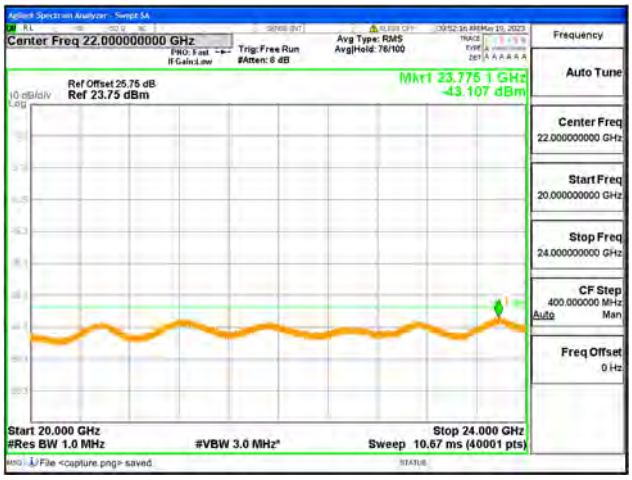
Band40-2-20G-24G / 5MHz / Low CH / QPSK



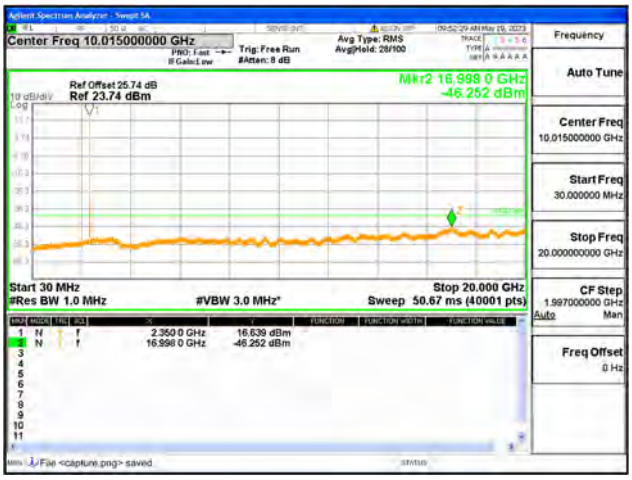
Band40-2-30M-20G / 5MHz / Mid CH / QPSK

Band40-2-20G-24G / 5MHz / Mid CH / QPSK

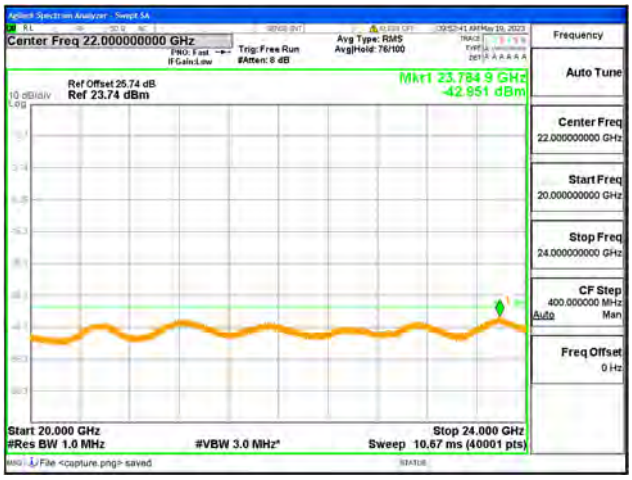
Band40-2-30M-20G / 5MHz / High CH / QPSK



Band40-2-20G-24G / 5MHz / High CH / QPSK



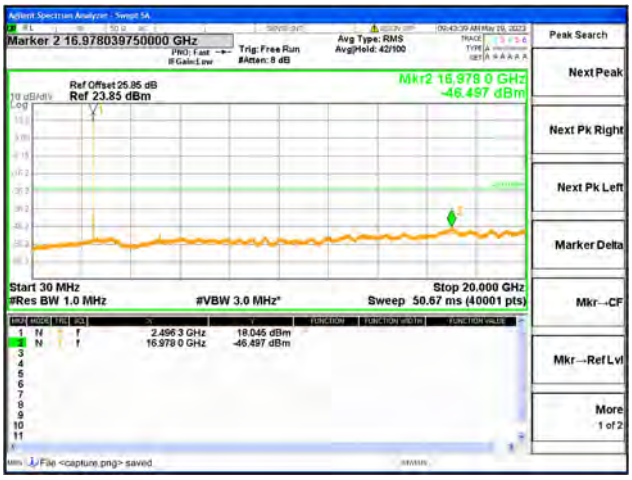
Band40-2-30M-20G / 10MHz / Mid CH / QPSK



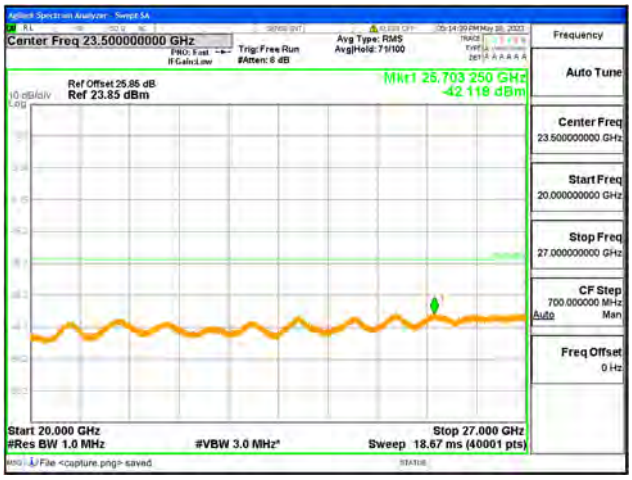
Band40-2-20G-24G / 10MHz / Mid CH / QPSK

Band40-1 Duty cycle

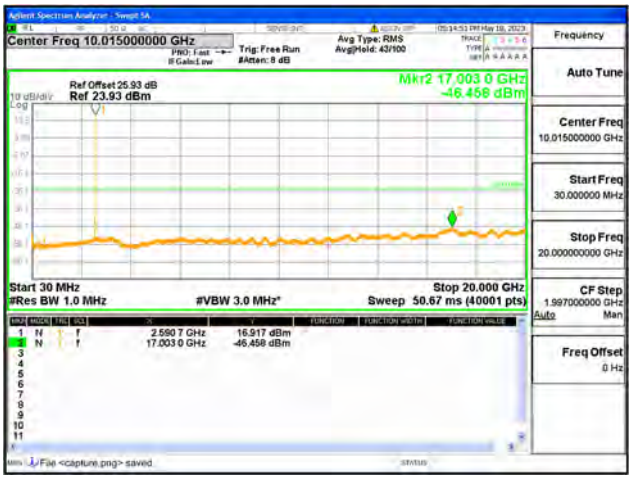
Band40-2 Duty cycle



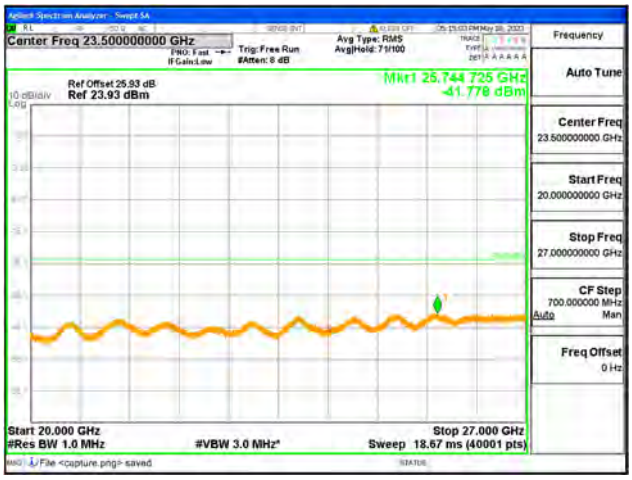
Band41-30M-20G / 5MHz / Low CH / QPSK



Band41-20G-27G / 5MHz / Low CH / QPSK

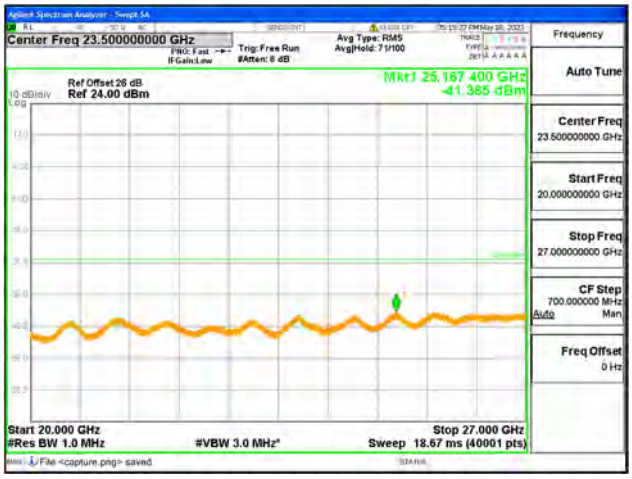


Band41-30M-20G / 5MHz / Mid CH / QPSK

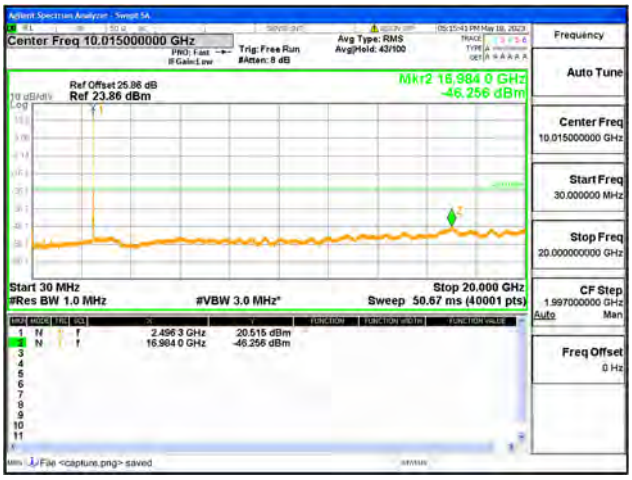


Band41-20G-27G / 5MHz / Mid CH / QPSK

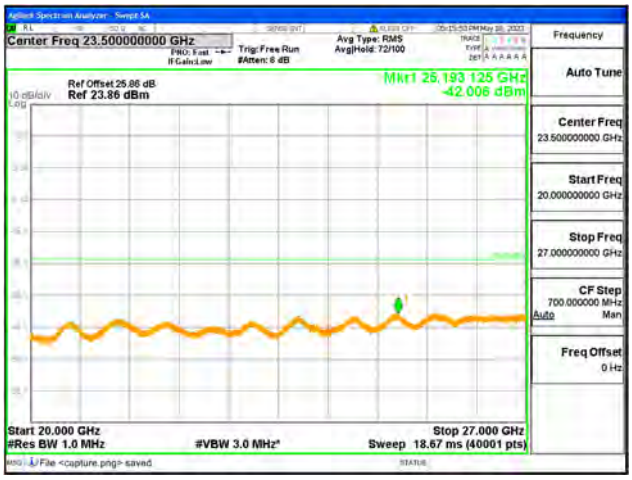
Band41-30M-20G / 5MHz / High CH / QPSK



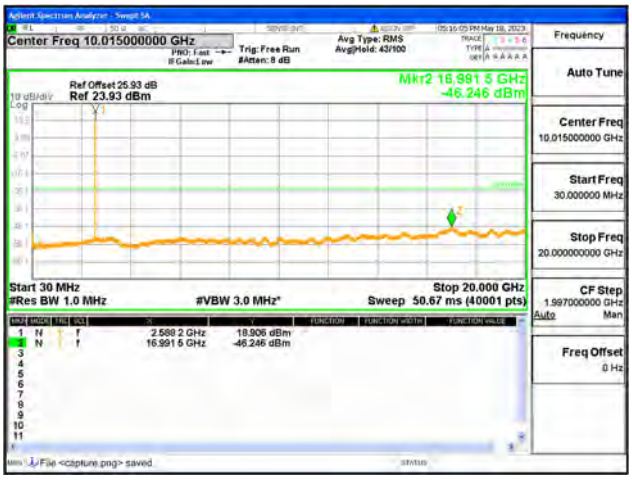
Band41-20G-27G / 5MHz / High CH / QPSK



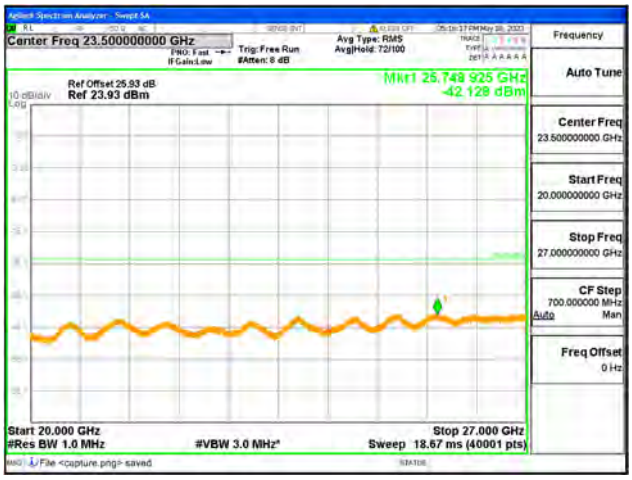
Band41-30M-20G / 10MHz / Low CH / QPSK



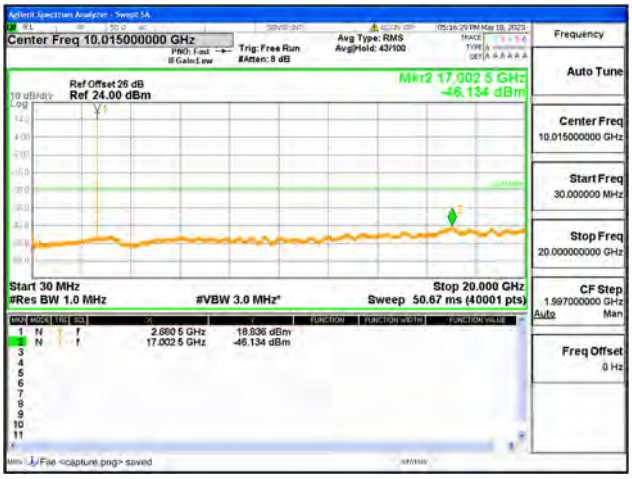
Band41-20G-27G / 10MHz / Low CH / QPSK



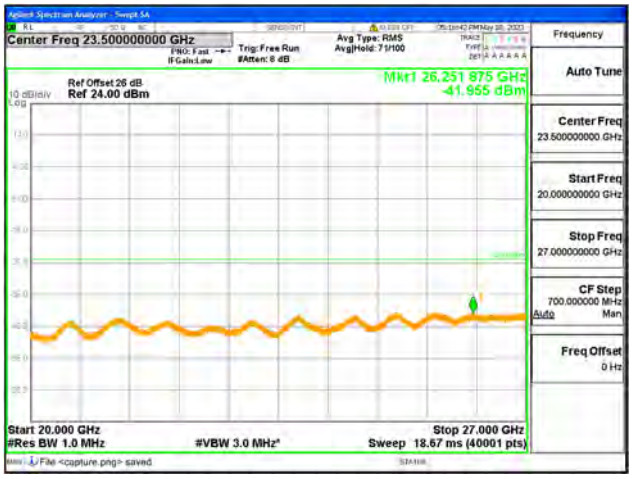
Band41-30M-20G / 10MHz / Mid CH / QPSK



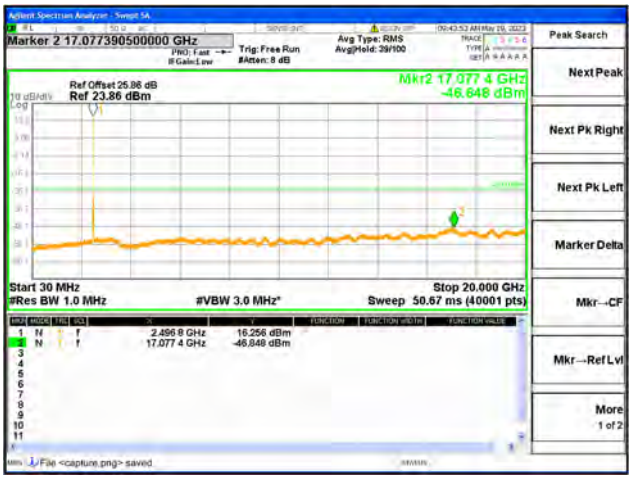
Band41-20G-27G / 10MHz / Mid CH / QPSK



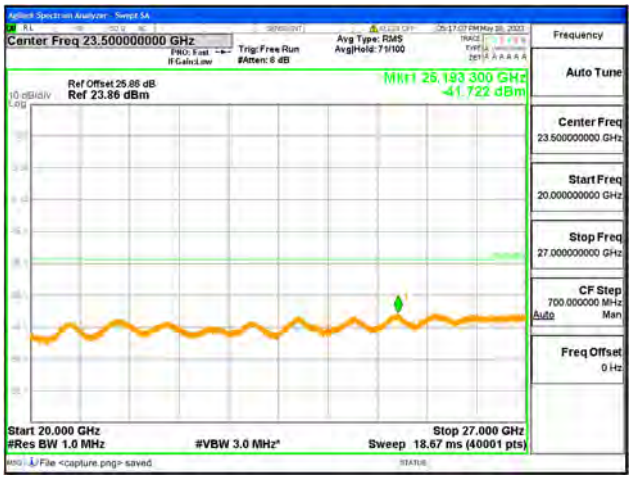
Band41-30M-20G / 10MHz / High CH / QPSK



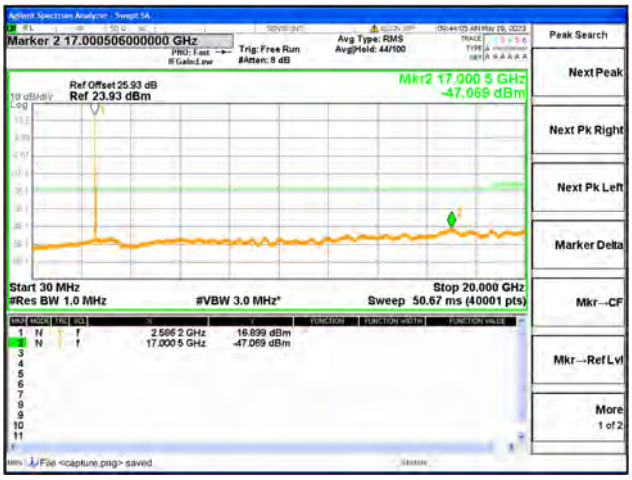
Band41-20G-27G / 10MHz / High CH / QPSK



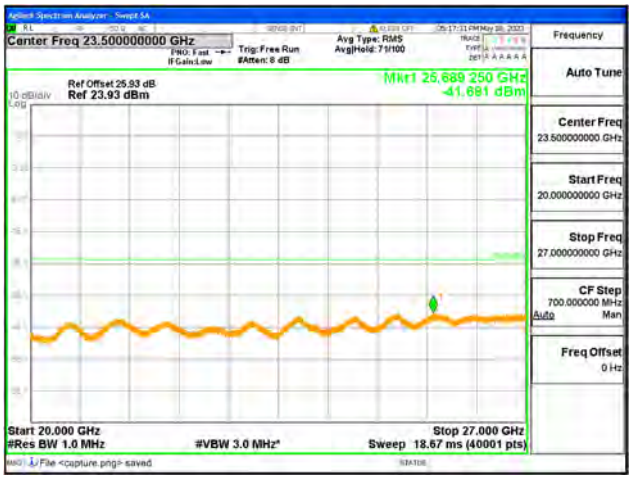
Band41-30M-20G / 15MHz / Low CH / QPSK



Band41-20G-27G / 15MHz / Low CH / QPSK

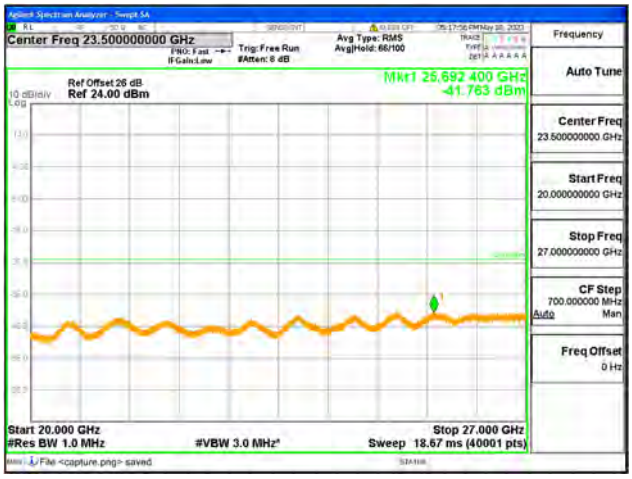


Band41-30M-20G / 15MHz / Mid CH / QPSK

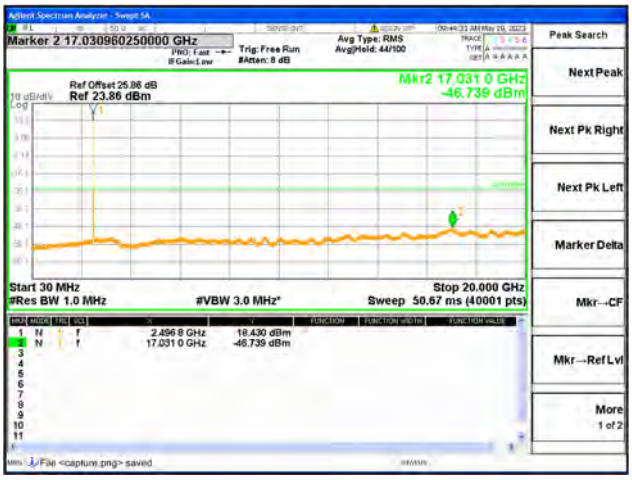


Band41-20G-27G / 15MHz / Mid CH / QPSK

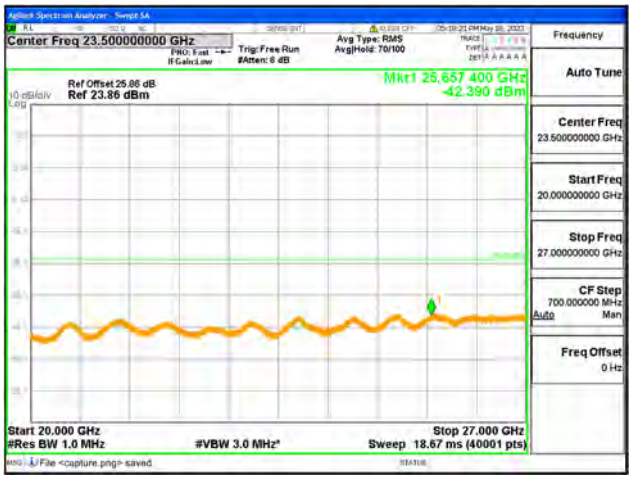
Band41-30M-20G / 15MHz / High CH / QPSK



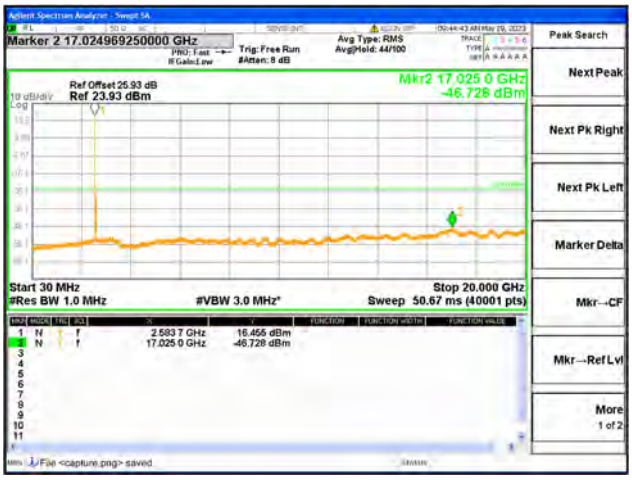
Band41-20G-27G / 15MHz / High CH / QPSK



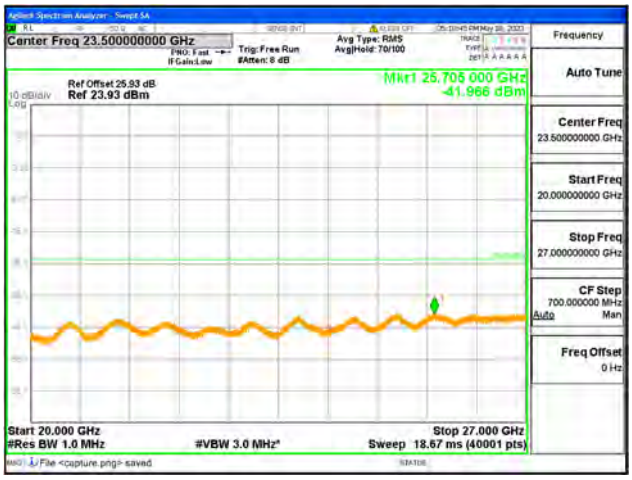
Band41-30M-20G / 20MHz / Low CH / QPSK



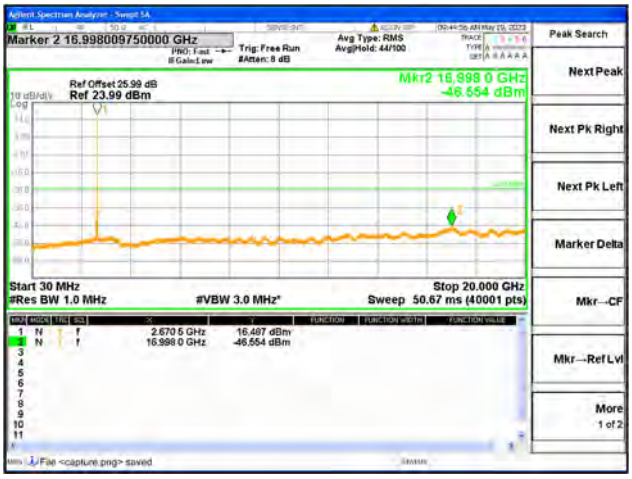
Band41-20G-27G / 20MHz / Low CH / QPSK



Band41-30M-20G / 20MHz / Mid CH / QPSK



Band41-20G-27G / 20MHz / Mid CH / QPSK



Band41-30M-20G / 20MHz / High CH / QPSK

Band41-20G-27G / 20MHz / High CH / QPSK

2.6. Band Edge

2.6.1. Requirement

Band 2

According to FCC section 24.238(a), for operations in the 1850–1910MHz bands, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dBin a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Band 4

According to FCC section 27.53(h),for operations in the 1710–1755MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dBa 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Band 5

According to FCC section 22.917(a),for operations in the 824–849MHz bands, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dBin a 100kHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Band 7,38,41

According to FCC section 27.53(m) (4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Band 12, 17

According to FCC section 27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Band 40

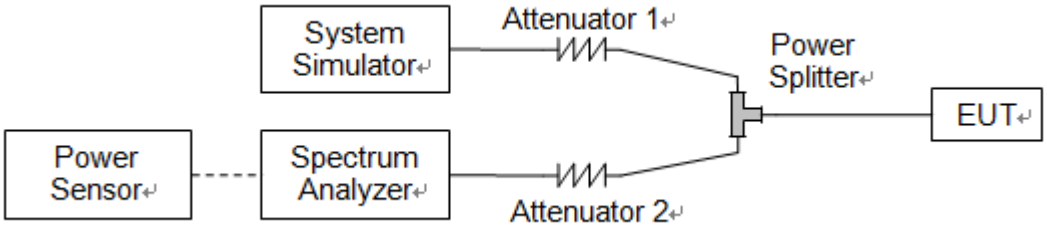
According to FCC section 27.53(a) (4), for mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz;

(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

2.6.2. Test Description

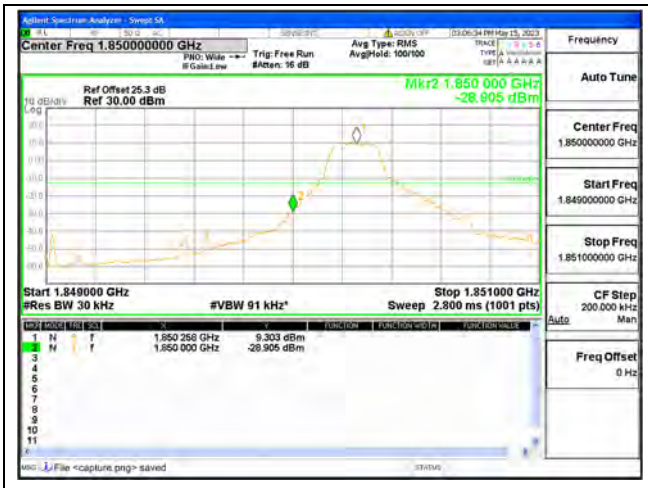


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

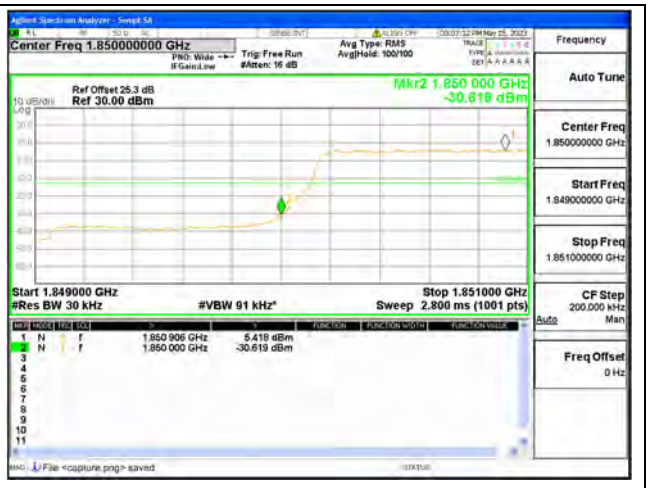
2.6.3. Test Procedure

KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

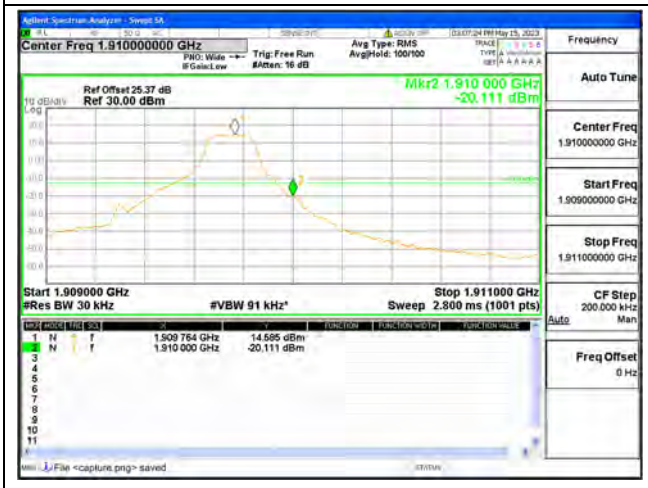
2.6.4. Test Result



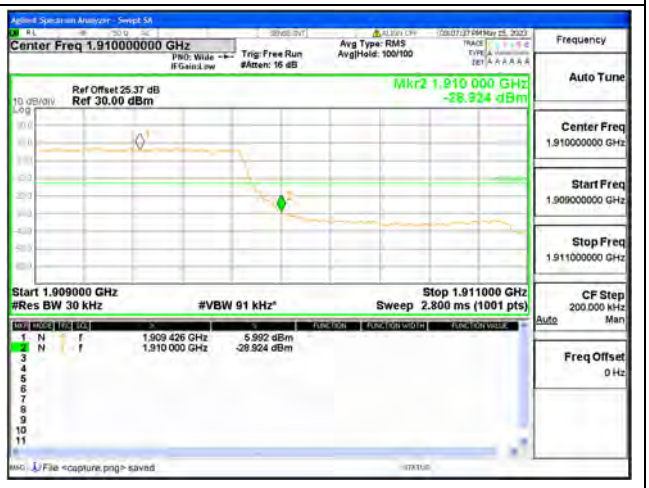
Band2 / 1.4MHz / Low CH / QPSK / 1 RB



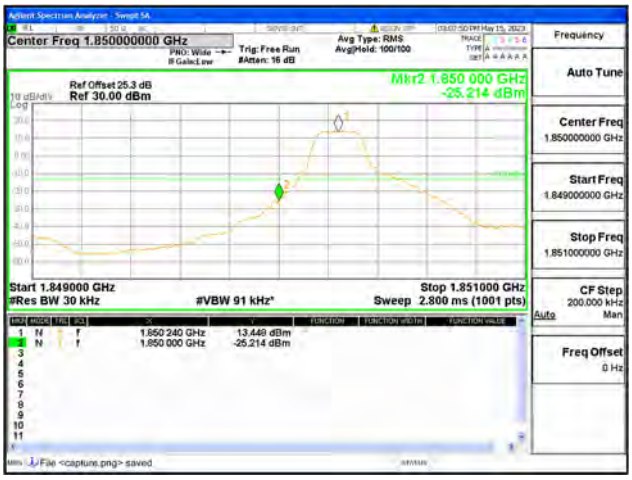
Band2 / 1.4MHz / Low CH / QPSK / FULL RB



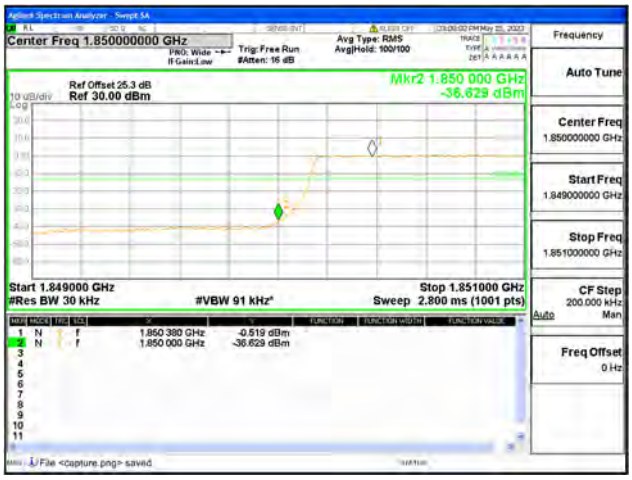
Band2 / 1.4MHz / High CH / QPSK / 1 RB



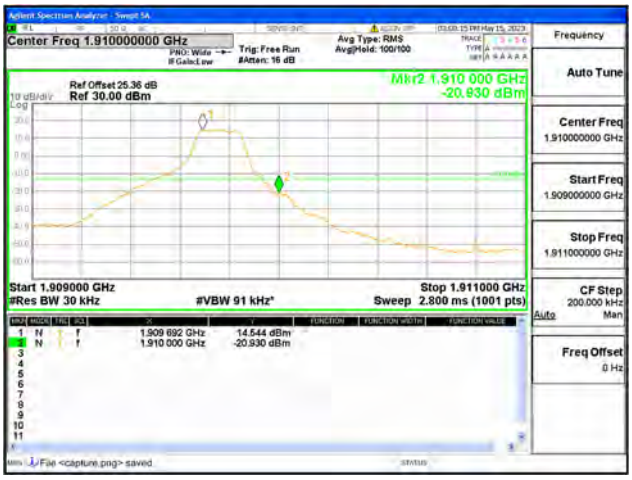
Band2 / 1.4MHz / High CH / QPSK / FULL RB



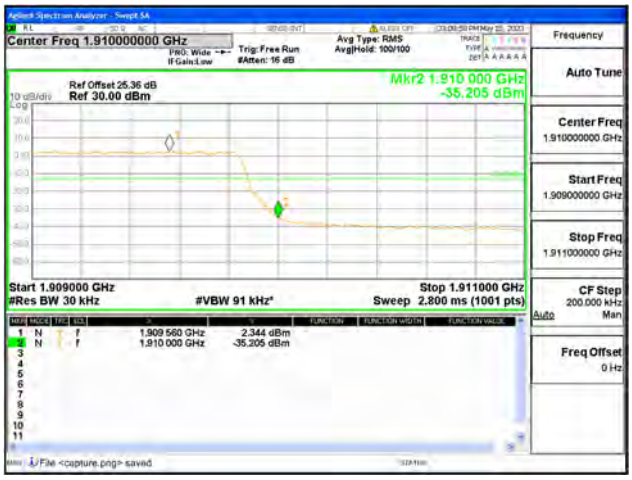
Band2 / 3MHz / Low CH / QPSK / 1 RB



Band2 / 3MHz / Low CH / QPSK / FULL RB

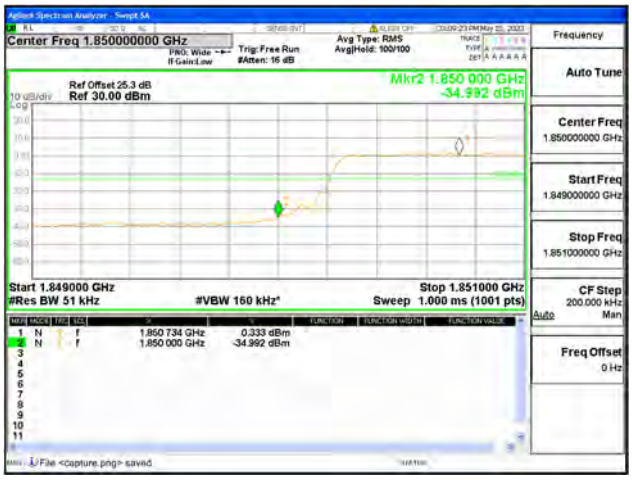


Band2 / 3MHz / High CH / QPSK / 1 RB



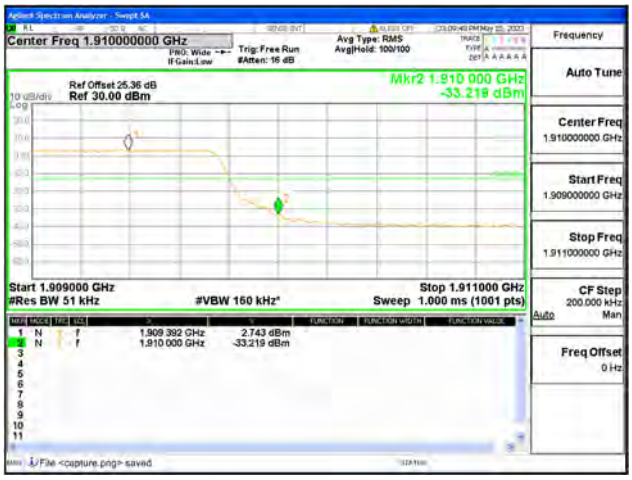
Band2 / 3MHz / High CH / QPSK / FULL RB

Band2 / 5MHz / Low CH / QPSK / 1 RB



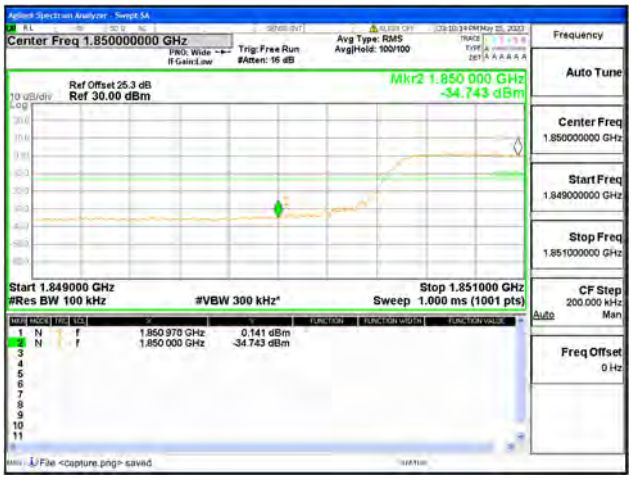
Band2 / 5MHz / Low CH / QPSK / FULL RB

Band2 / 5MHz / High CH / QPSK / 1 RB

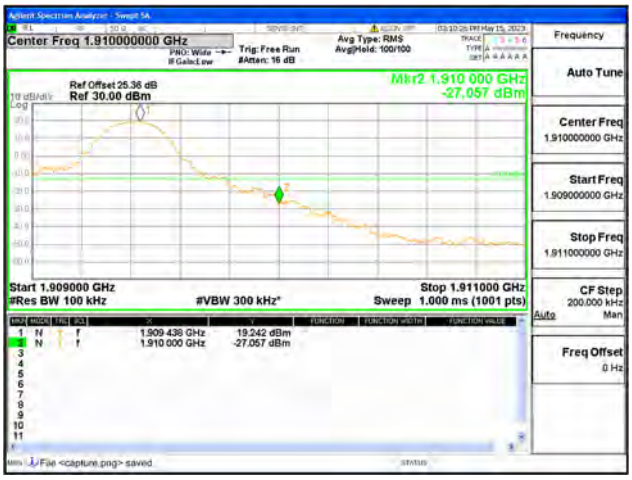


Band2 / 5MHz / High CH / QPSK / FULL RB

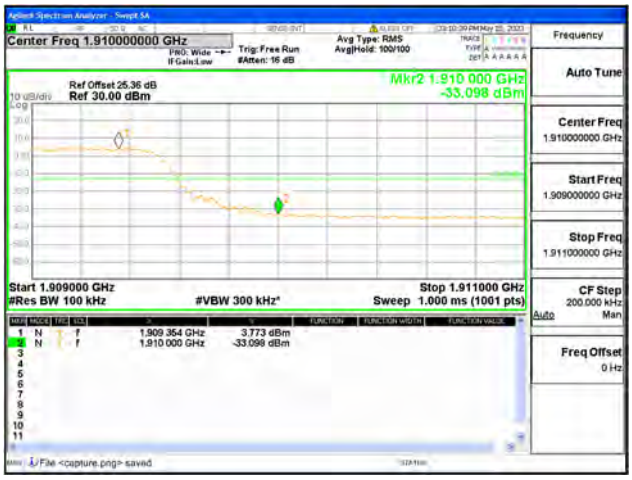
Band2 / 10MHz / Low CH / QPSK / 1 RB



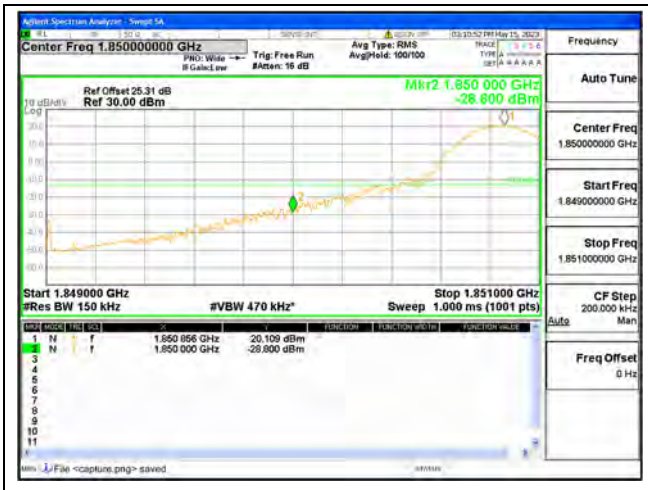
Band2 / 10MHz / Low CH / QPSK / FULL RB



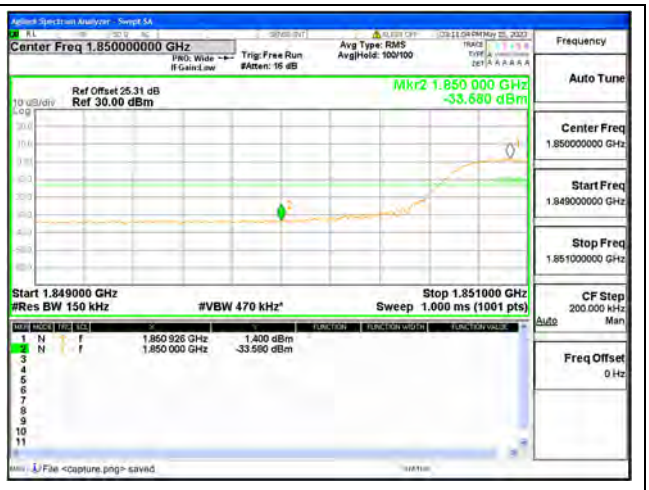
Band2 / 10MHz / High CH / QPSK / 1 RB



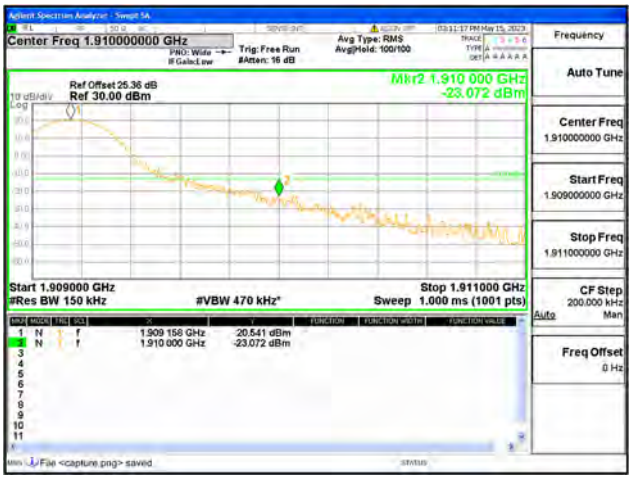
Band2 / 10MHz / High CH / QPSK / FULL RB



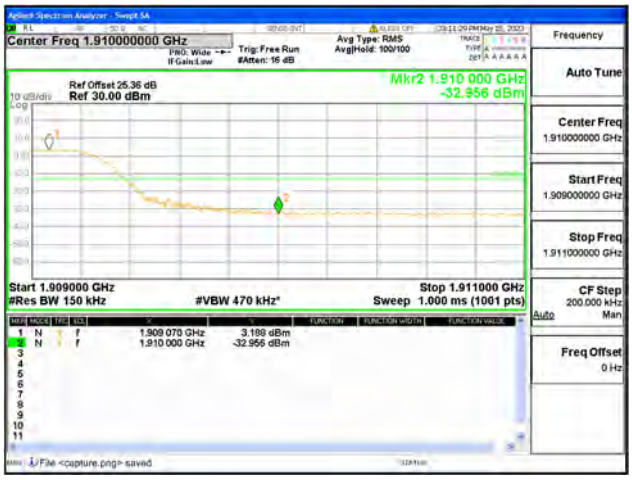
Band2 / 15MHz / Low CH / QPSK / 1 RB



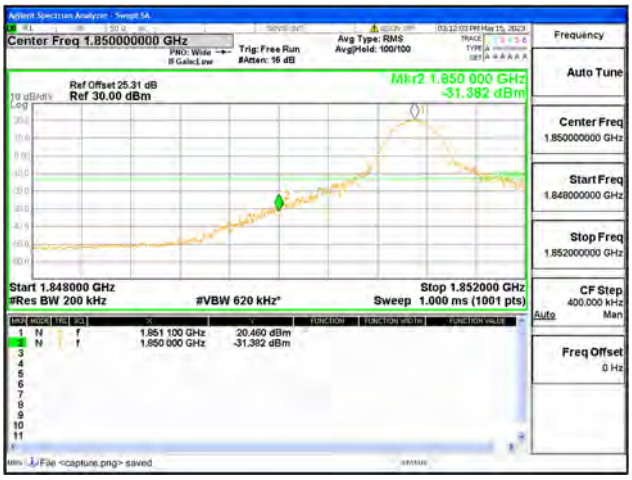
Band2 / 15MHz / Low CH / QPSK / FULL RB



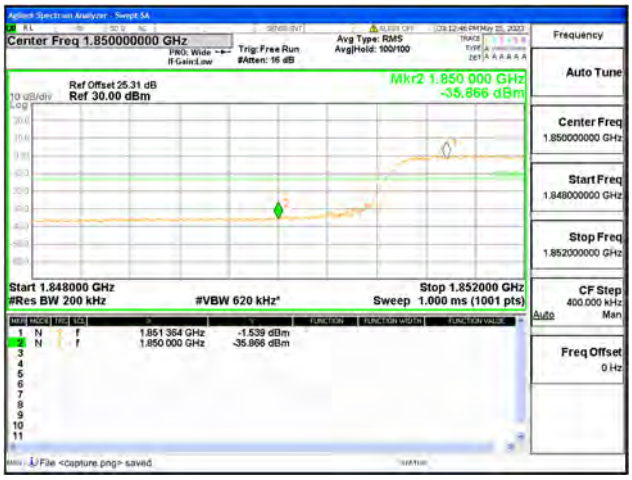
Band2 / 15MHz / High CH / QPSK / 1 RB



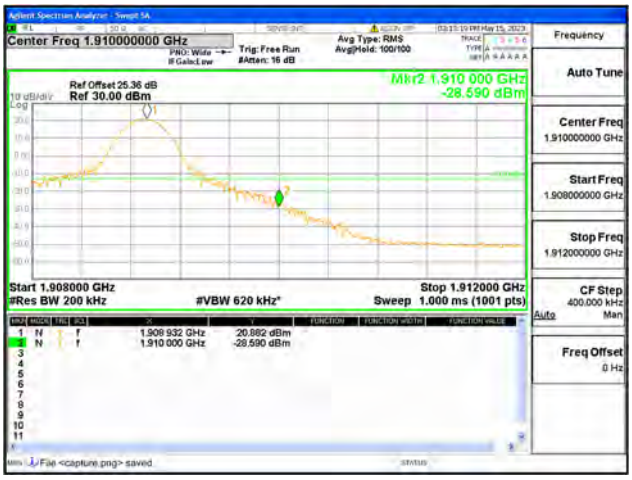
Band2 / 15MHz / High CH / QPSK / FULL RB



Band2 / 20MHz / Low CH / QPSK / 1 RB

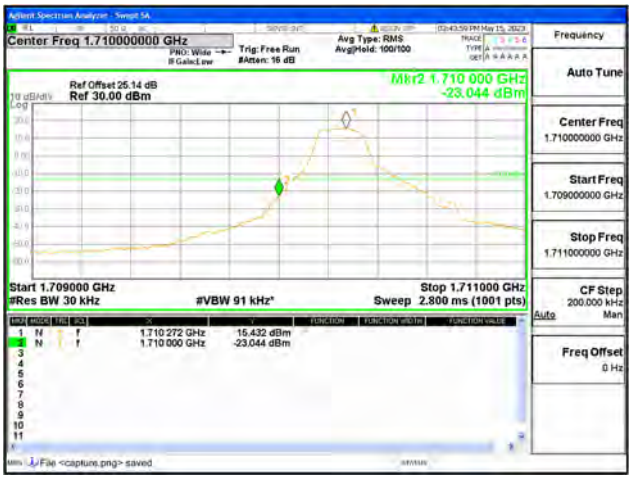


Band2 / 20MHz / Low CH / QPSK / FULL RB

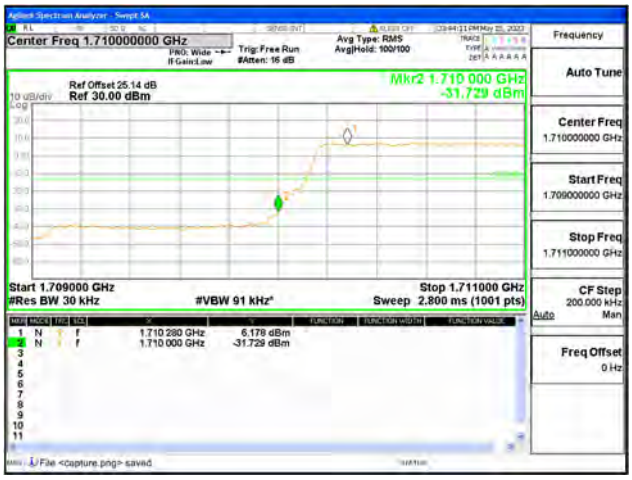


Band2 / 20MHz / High CH / QPSK / 1 RB

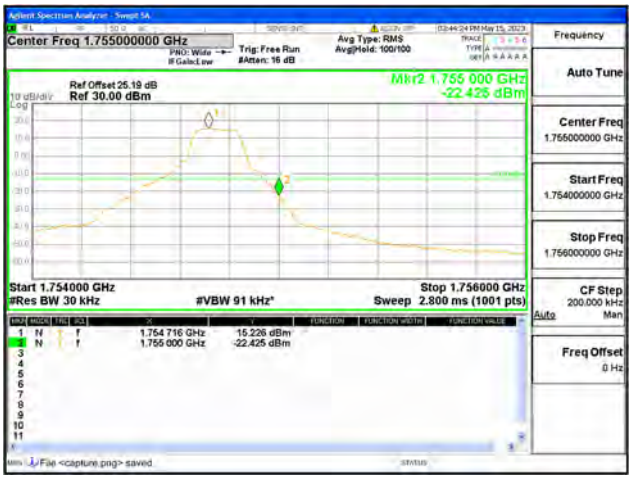
Band2 / 20MHz / High CH / QPSK / FULL RB



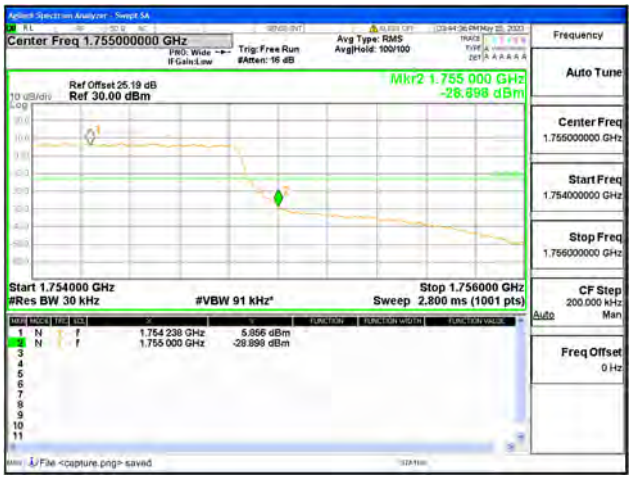
Band4 / 1.4MHz / Low CH / QPSK / 1 RB



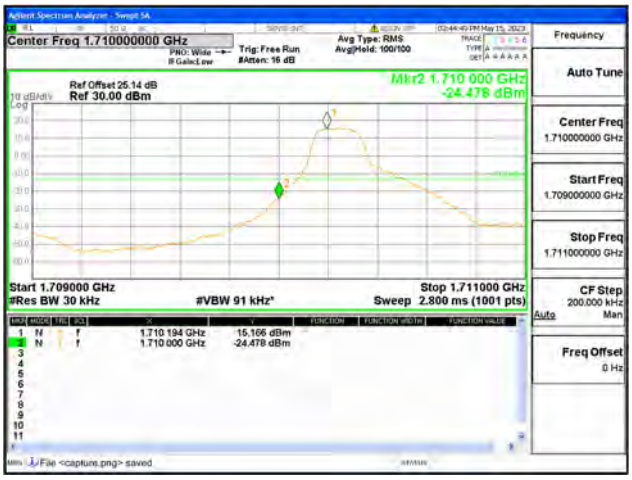
Band4 / 1.4MHz / Low CH / QPSK / FULL RB



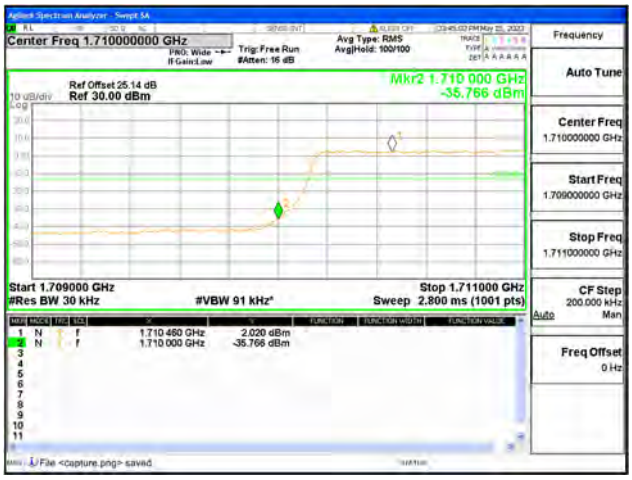
Band4 / 1.4MHz / High CH / QPSK / 1 RB



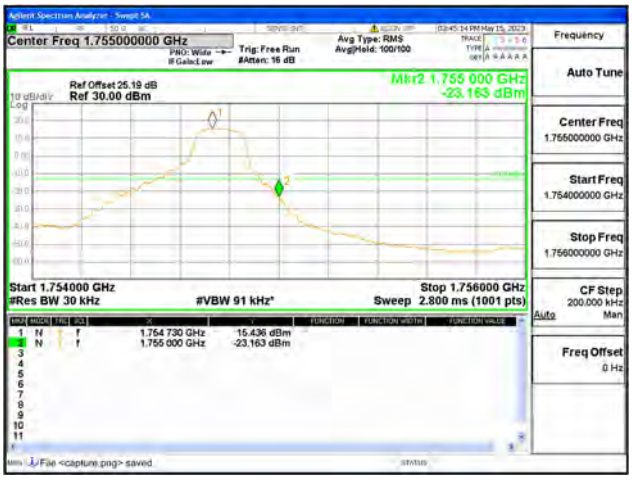
Band4 / 1.4MHz / High CH / QPSK / FULL RB



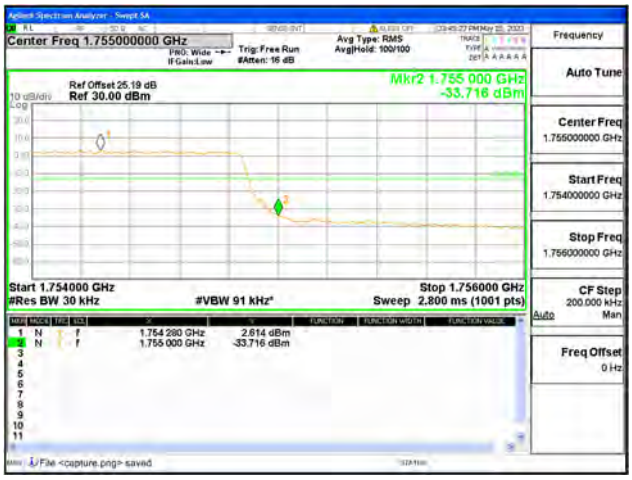
Band4 / 3MHz / Low CH / QPSK / 1 RB



Band4 / 3MHz / Low CH / QPSK / FULL RB



Band4 / 3MHz / High CH / QPSK / 1 RB



Band4 / 3MHz / High CH / QPSK / FULL RB