



B4 / 3MHz / QPSK/ Low CH



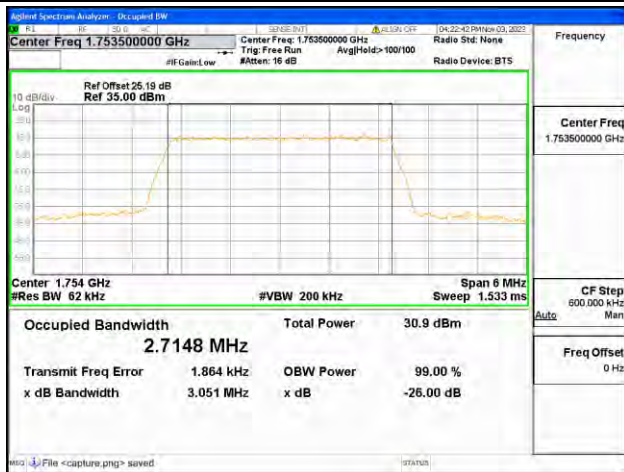
B4 / 3MHz / 16QAM/ Low CH



B4 / 3MHz / QPSK/ Mid CH



B4 / 3MHz / 16QAM/ Mid CH



B4 / 3MHz / QPSK/ High CH



B4 / 3MHz / 16QAM/ High CH



B4 / 5MHz / QPSK/ Low CH



B4 / 5MHz / 16QAM/ Low CH



B4 / 5MHz / QPSK/ Mid CH



B4 / 5MHz / 16QAM/ Mid CH



B4 / 5MHz / QPSK/ High CH



B4 / 5MHz / 16QAM/ High CH



B4 / 15MHz / QPSK/ Low CH



B4 / 15MHz / 16QAM/ Low CH



B4 / 15MHz / QPSK/ Mid CH



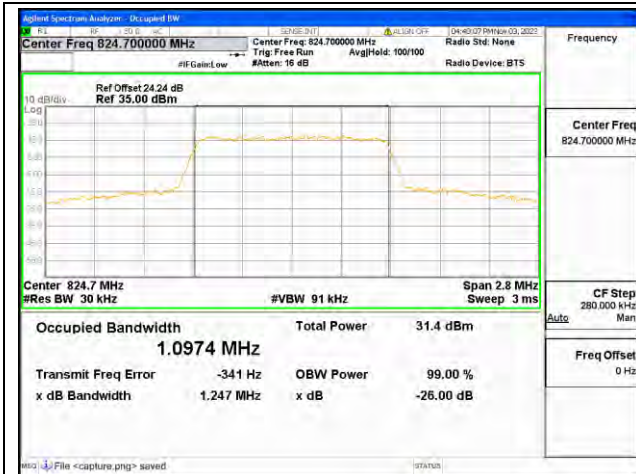
B4 / 15MHz / 16QAM/ Mid CH



B4 / 15MHz / QPSK/ High CH



B4 / 15MHz / 16QAM/ High CH



B5 / 1.4MHz / QPSK/ Low CH



B5 / 1.4MHz / 16QAM/ Low CH



B5 / 1.4MHz / QPSK/ Mid CH



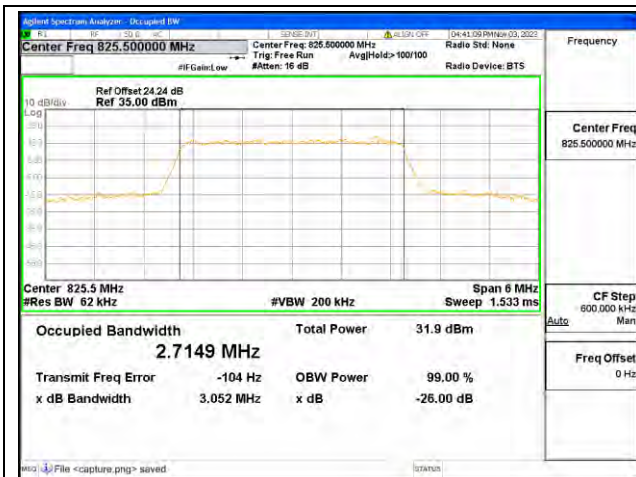
B5 / 1.4MHz / 16QAM/ Mid CH



B5 / 1.4MHz / QPSK/ High CH



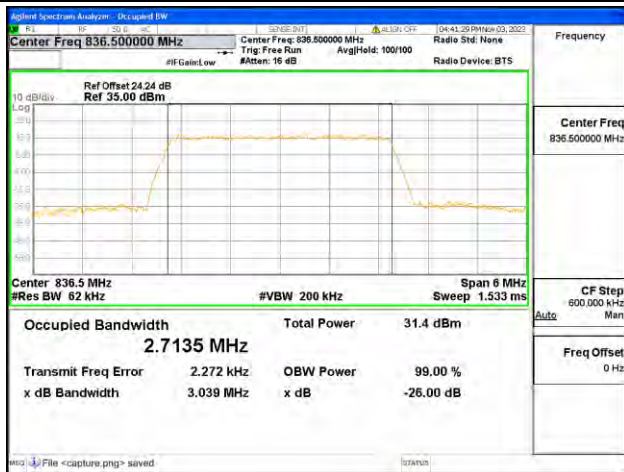
B5 / 1.4MHz / 16QAM/ High CH



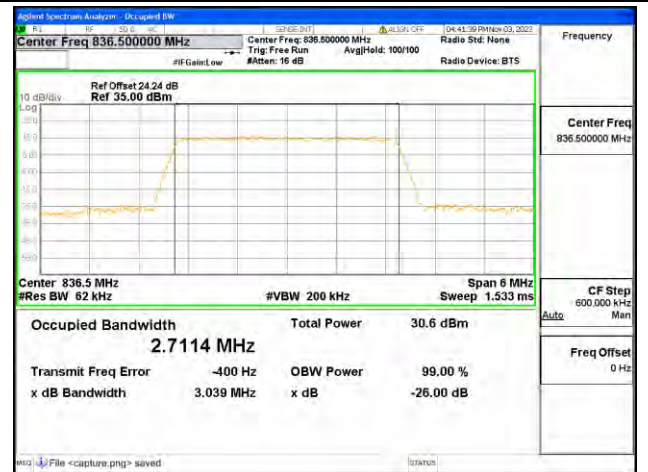
B5 / 3MHz / QPSK/ Low CH



B5 / 3MHz / 16QAM/ Low CH



B5 / 3MHz / QPSK/ Mid CH



B5 / 3MHz / 16QAM/ Mid CH



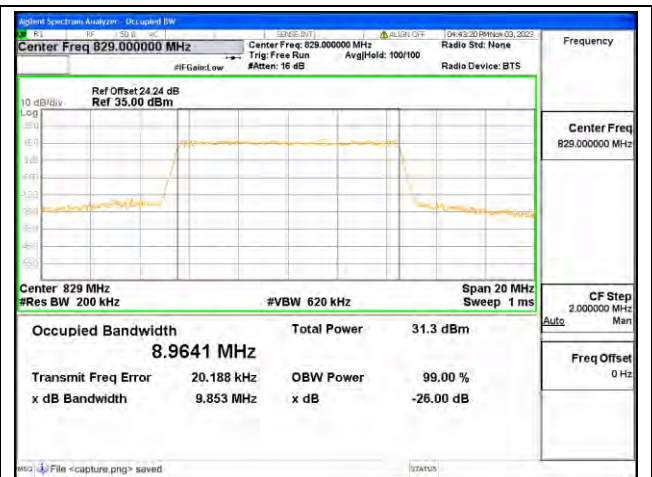
B5 / 3MHz / QPSK/ High CH



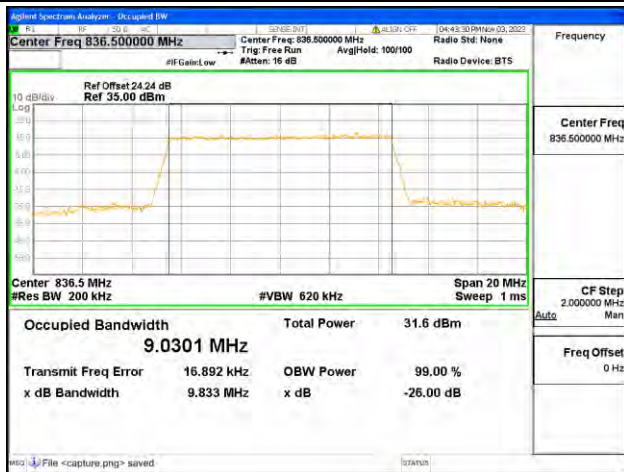
B5 / 3MHz / 16QAM/ High CH



B5 / 10MHz / QPSK/ Low CH



B5 / 10MHz / 16QAM/ Low CH



B5 / 10MHz / QPSK/ Mid CH



B5 / 10MHz / 16QAM/ Mid CH



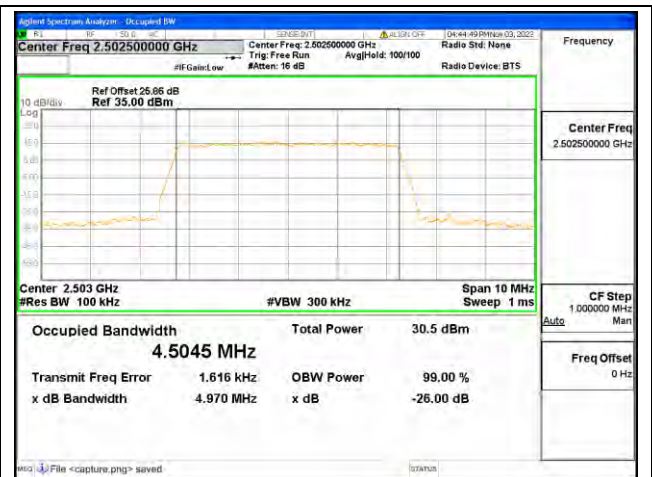
B5 / 10MHz / QPSK/ High CH



B5 / 10MHz / 16QAM/ High CH



B7 / 5MHz / QPSK/ Low CH



B7 / 5MHz / 16QAM/ Low CH



B7 / 5MHz / QPSK/ Mid CH



B7 / 5MHz / 16QAM/ Mid CH



B7 / 5MHz / QPSK/ High CH



B7 / 5MHz / 16QAM/ High CH



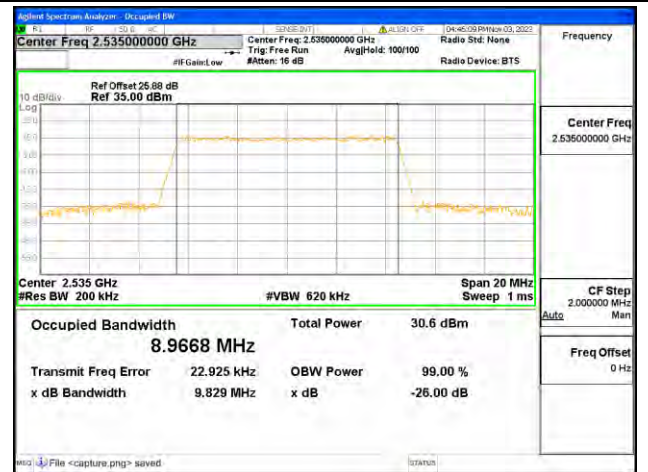
B7 / 10MHz / QPSK/ Low CH



B7 / 10MHz / 16QAM/ Low CH



B7 / 10MHz / QPSK/ Mid CH



B7 / 10MHz / 16QAM/ Mid CH



B7 / 10MHz / QPSK/ High CH



B7 / 10MHz / 16QAM/ High CH



B7 / 15MHz / QPSK/ Low CH



B7 / 15MHz / 16QAM/ Low CH



B7 / 15MHz / QPSK/ Mid CH



B7 / 15MHz / 16QAM/ Mid CH



B7 / 15MHz / QPSK/ High CH



B7 / 15MHz / 16QAM/ High CH



B7 / 20MHz / QPSK/ Low CH



B7 / 20MHz / 16QAM/ Low CH



B7 / 20MHz / QPSK/ Mid CH



B7 / 20MHz / 16QAM/ Mid CH



B7 / 20MHz / QPSK/ High CH



B7 / 20MHz / 16QAM/ High CH

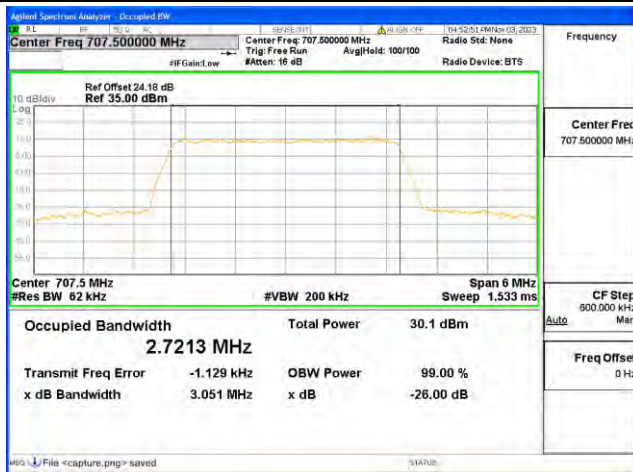




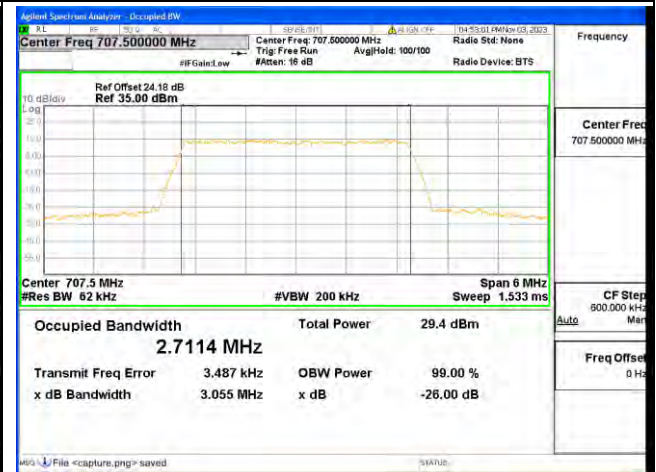
B12 / 3MHz / QPSK/ Low CH



B12 / 3MHz / 16QAM/ Low CH



B12 / 3MHz / QPSK/ Mid CH



B12 / 3MHz / 16QAM/ Mid CH



B12 / 3MHz / QPSK/ High CH



B12 / 3MHz / 16QAM/ High CH



B12 / 5MHz / QPSK/ Low CH



B12 / 5MHz / 16QAM/ Low CH



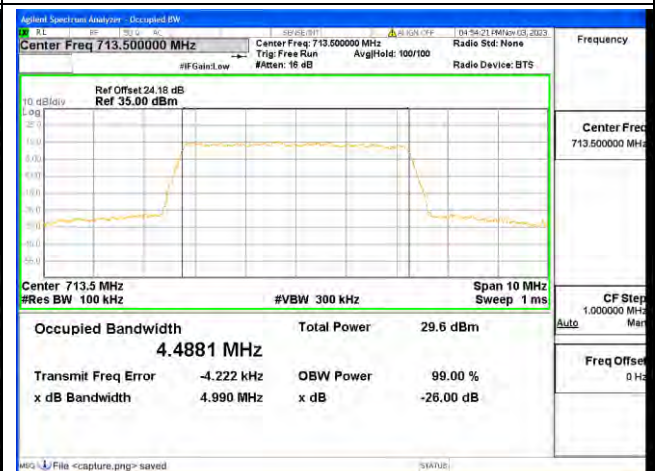
B12 / 5MHz / QPSK/ Mid CH



B12 / 5MHz / 16QAM/ Mid CH



B12 / 5MHz / QPSK/ High CH



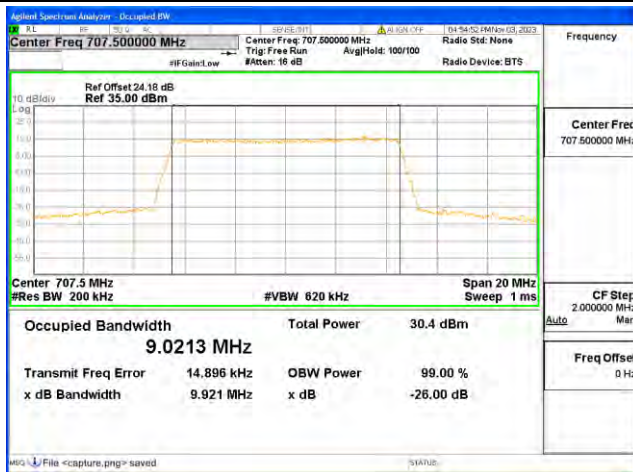
B12 / 5MHz / 16QAM/ High CH



B12 / 10MHz / QPSK/ Low CH



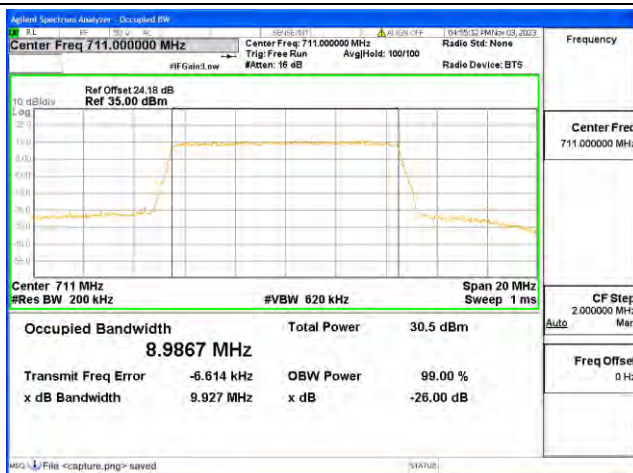
B12 / 10MHz / 16QAM/ Low CH



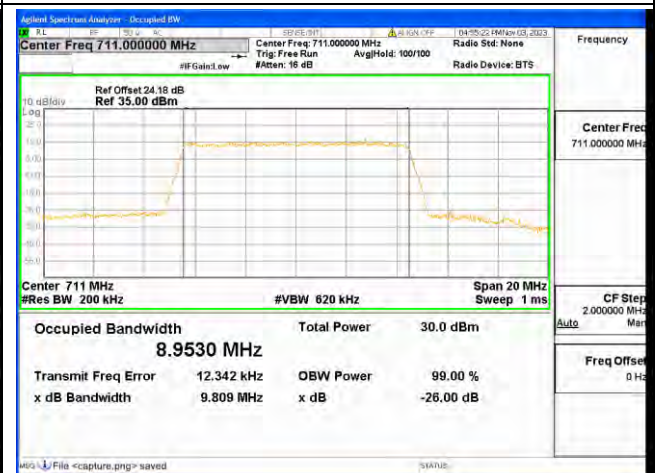
B12 / 10MHz / QPSK/ Mid CH



B12 / 10MHz / 16QAM/ Mid CH



B12 / 10MHz / QPSK/ High CH



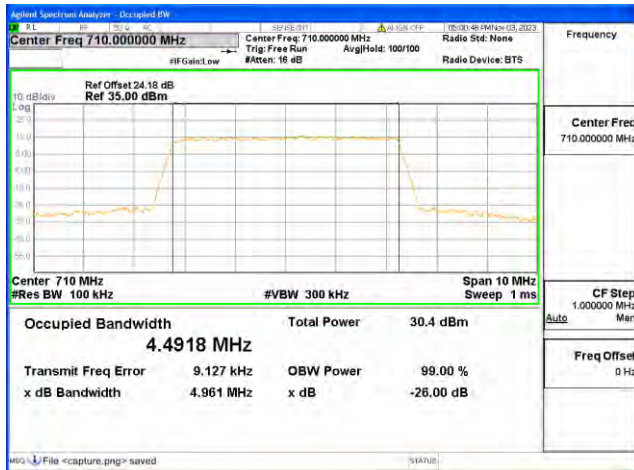
B12 / 10MHz / 16QAM/ High CH



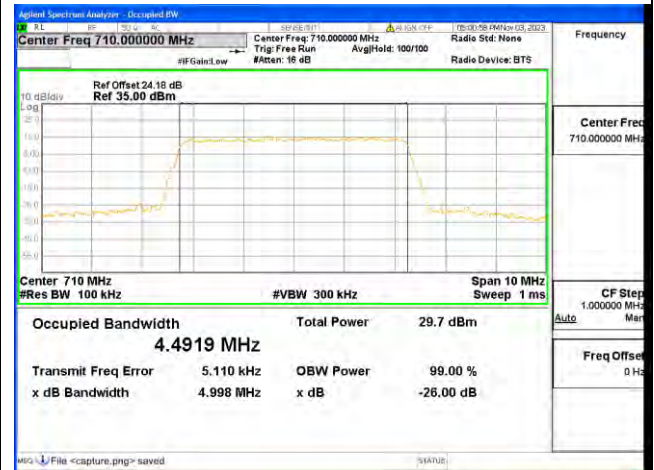
B17 / 5MHz / QPSK/ Low CH



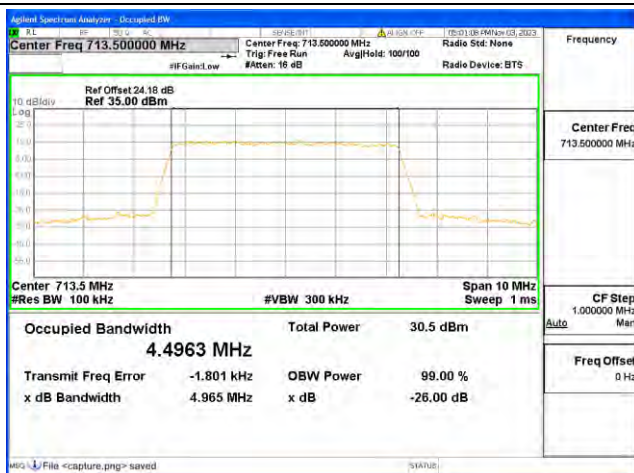
B17 / 5MHz / 16QAM/ Low CH



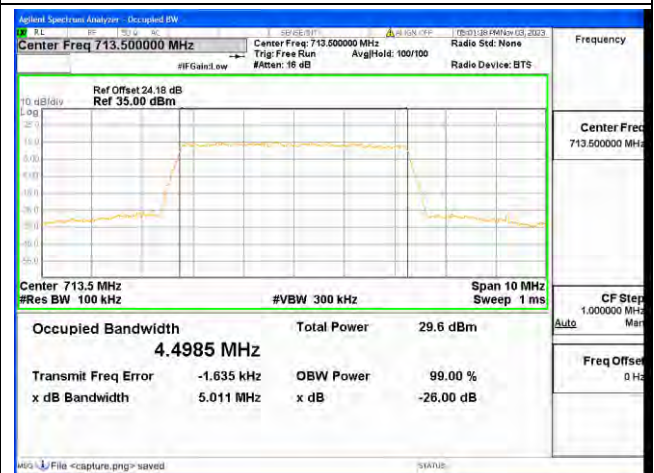
B17 / 5MHz / QPSK/ Mid CH



B17 / 5MHz / 16QAM/ Mid CH



B17 / 5MHz / QPSK/ High CH



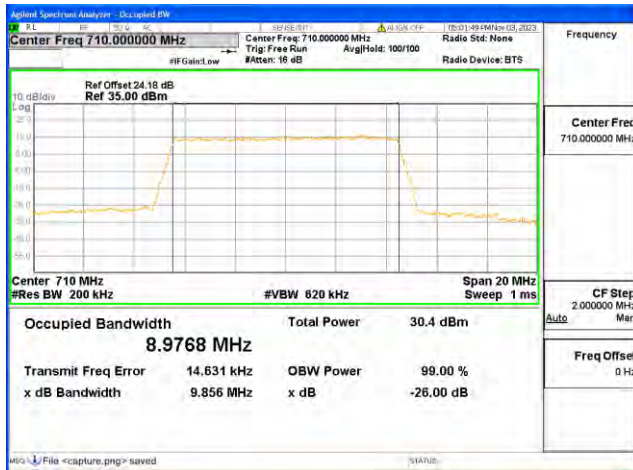
B17 / 5MHz / 16QAM/ High CH



B17 / 10MHz / QPSK/ Low CH



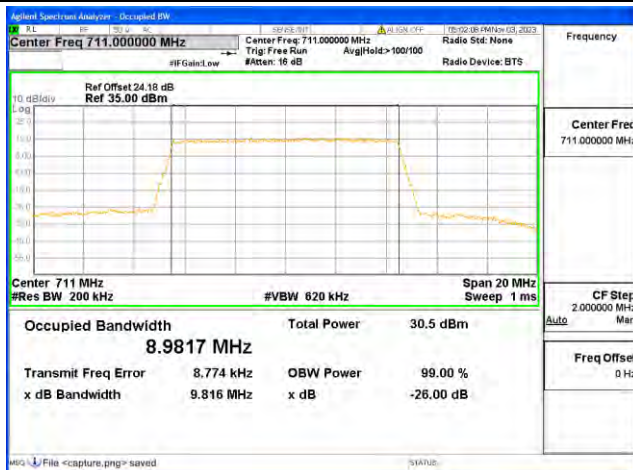
B17 / 10MHz / 16QAM/ Low CH



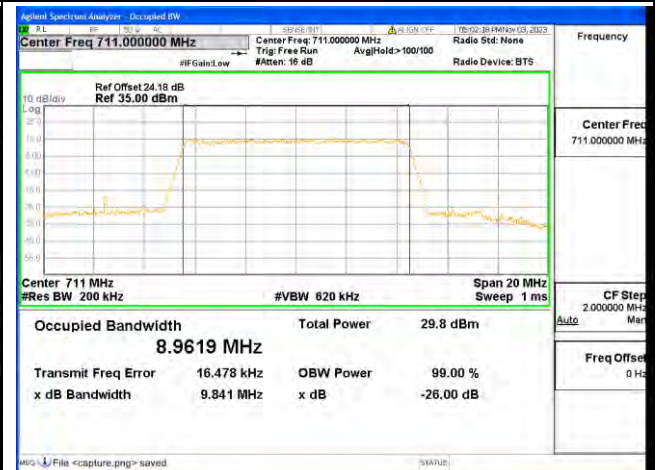
B17 / 10MHz / QPSK/ Mid CH



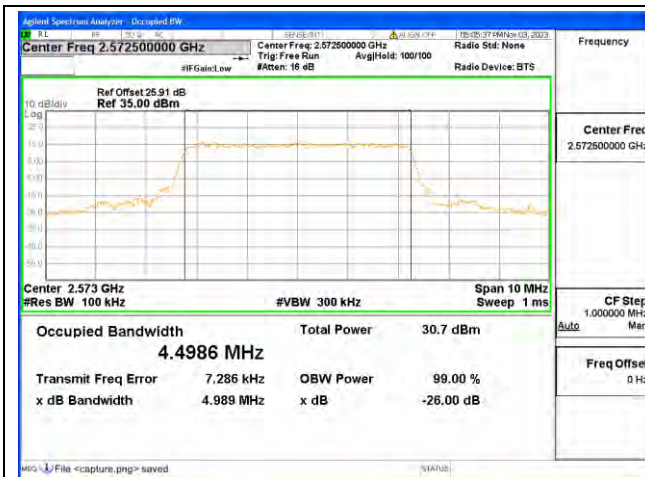
B17 / 10MHz / 16QAM/ Mid CH



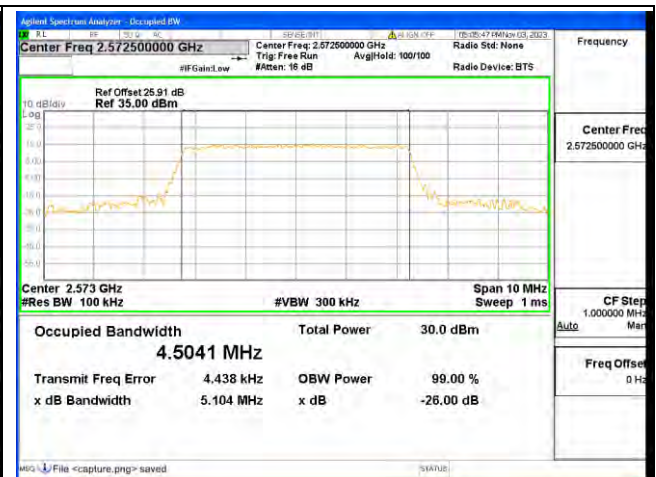
B17 / 10MHz / QPSK/ High CH



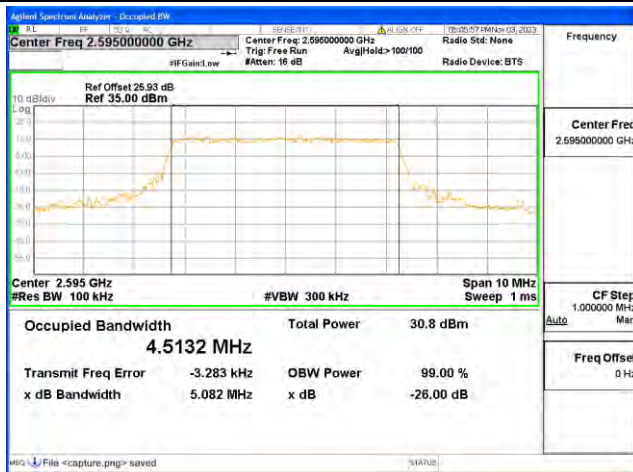
B17 / 10MHz / 16QAM/ High CH



B38 / 5MHz / QPSK/ Low CH



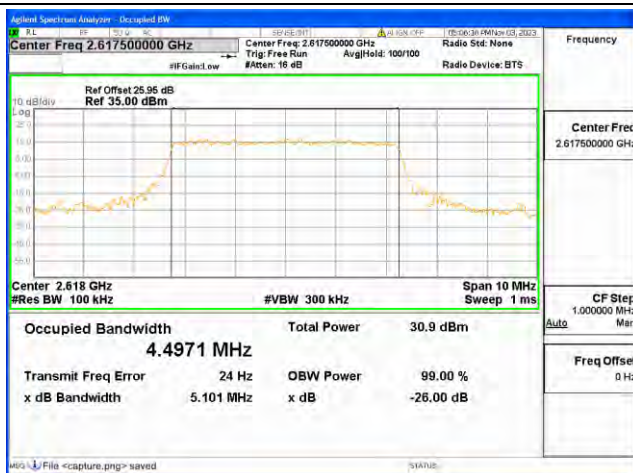
B38 / 5MHz / 16QAM/ Low CH



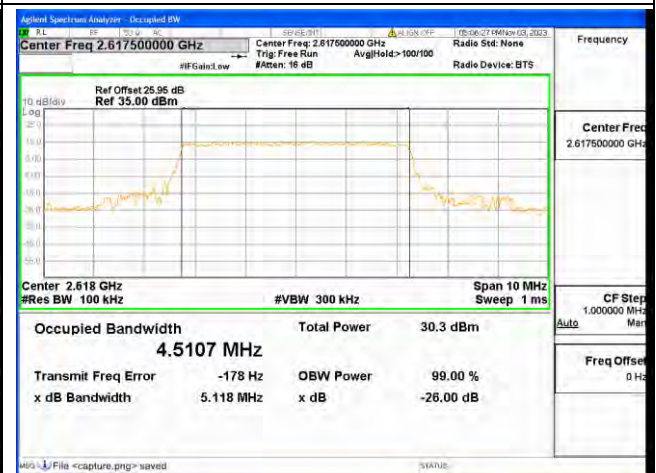
B38 / 5MHz / QPSK/ Mid CH



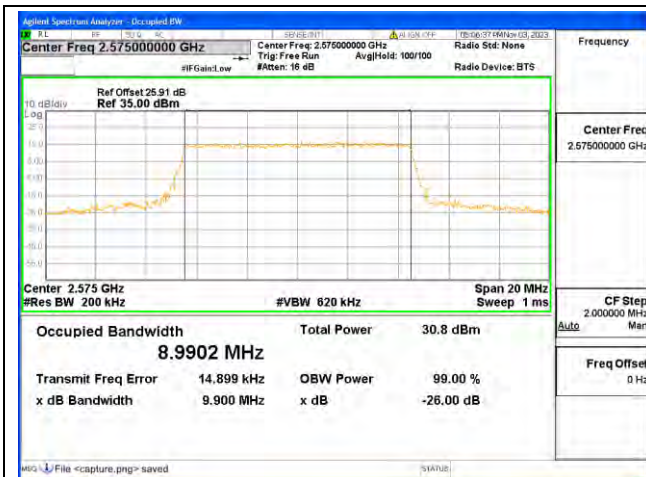
B38 / 5MHz / 16QAM/ Mid CH



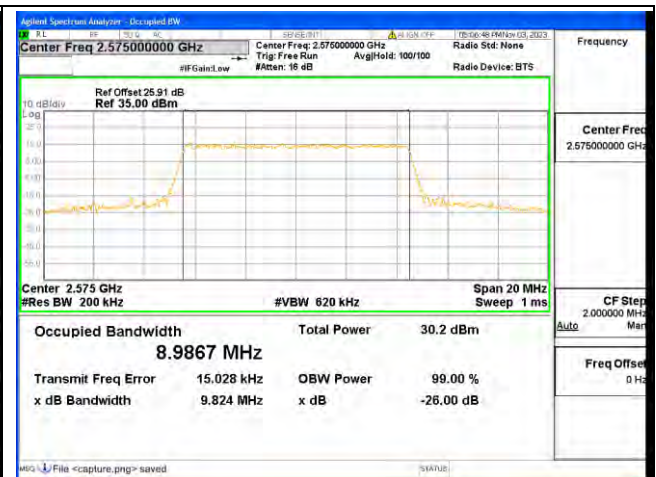
B38 / 5MHz / QPSK/ High CH



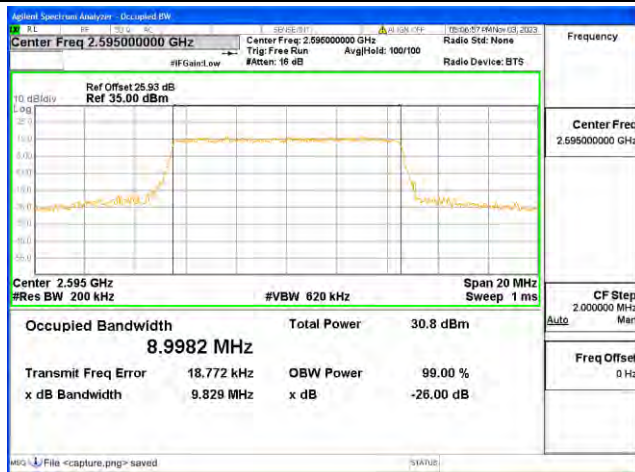
B38 / 5MHz / 16QAM/ High CH



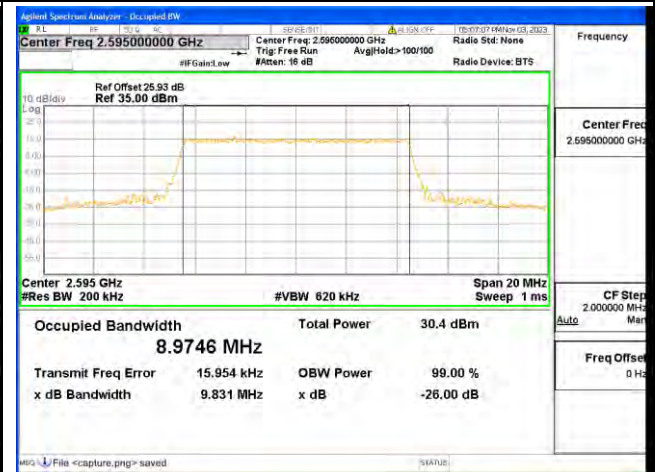
B38 / 10MHz / QPSK/ Low CH



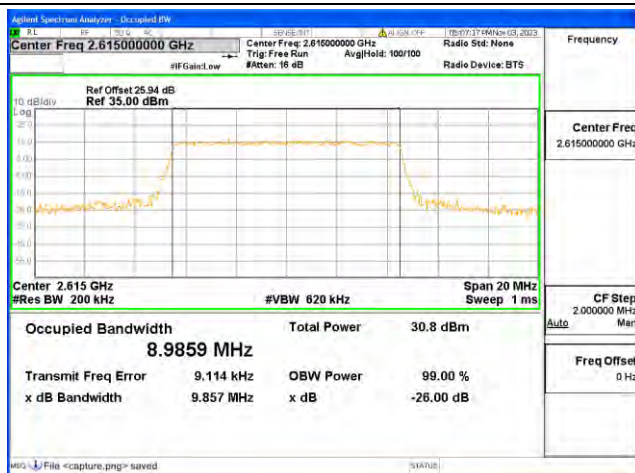
B38 / 10MHz / 16QAM/ Low CH



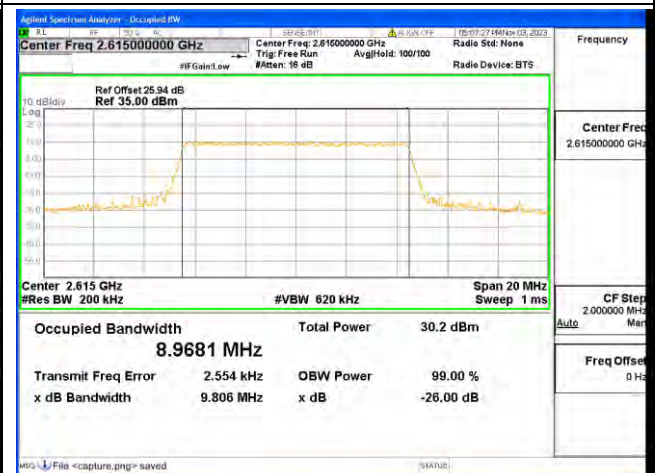
B38 / 10MHz / QPSK/ Mid CH



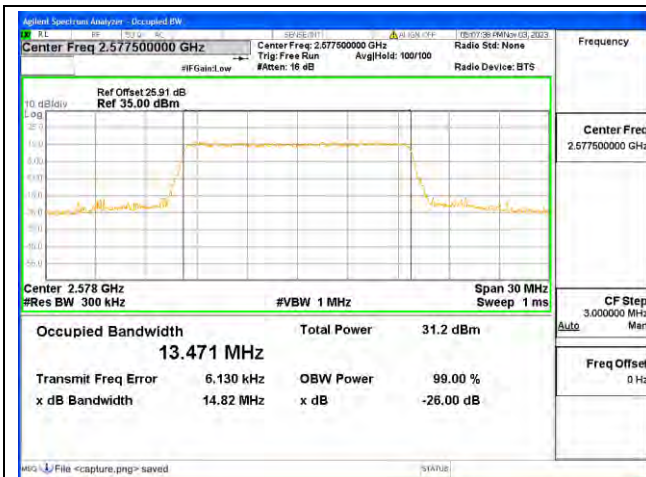
B38 / 10MHz / 16QAM/ Mid CH



B38 / 10MHz / QPSK/ High CH



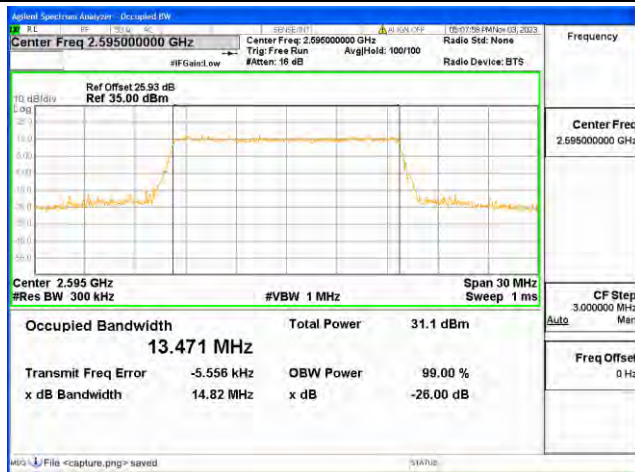
B38 / 10MHz / 16QAM/ High CH



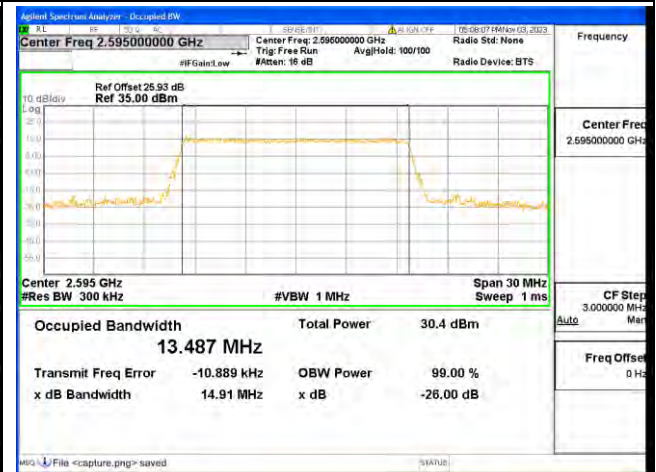
B38 / 15MHz / QPSK/ Low CH



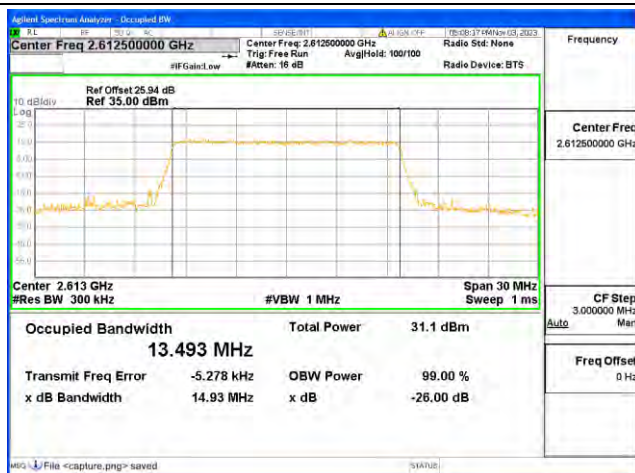
B38 / 15MHz / 16QAM/ Low CH



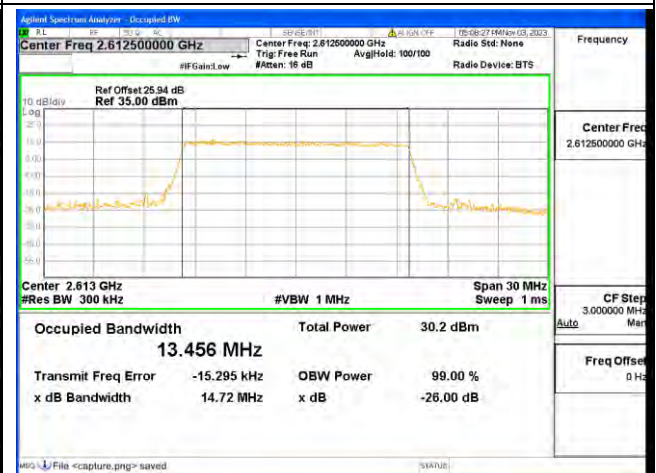
B38 / 15MHz / QPSK/ Mid CH



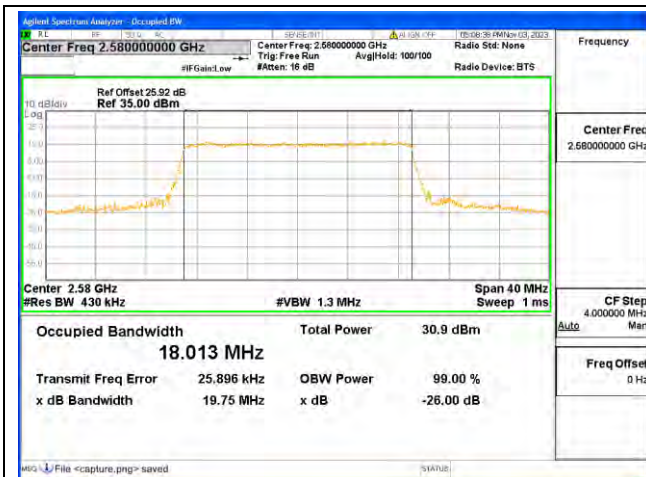
B38 / 15MHz / 16QAM/ Mid CH



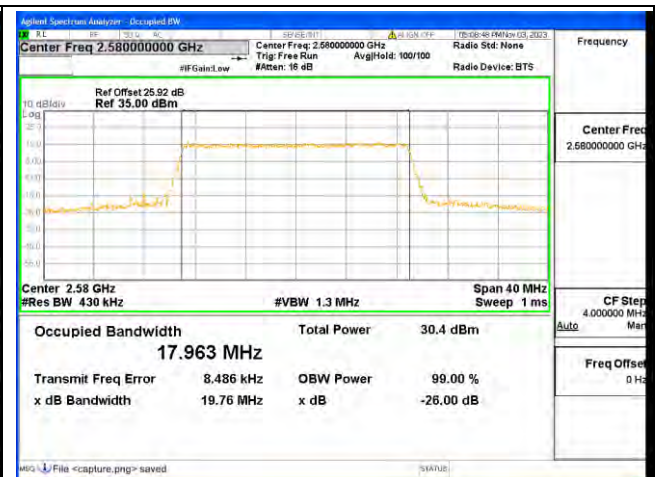
B38 / 15MHz / QPSK/ High CH



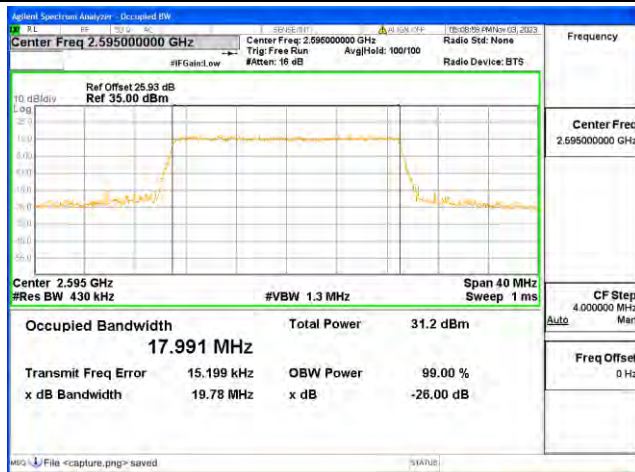
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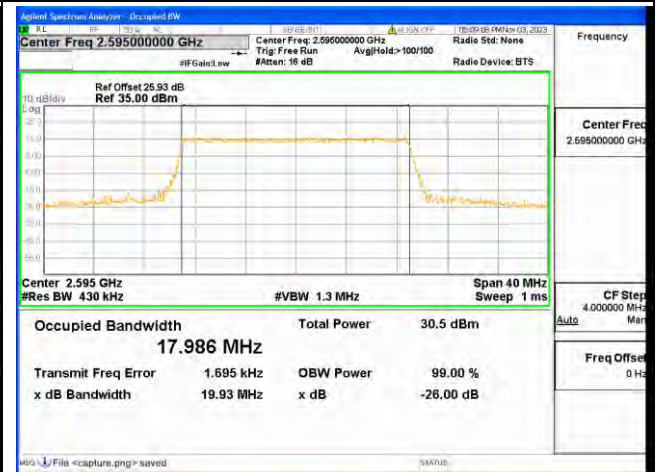
B38 / 20MHz / QPSK/ Low CH



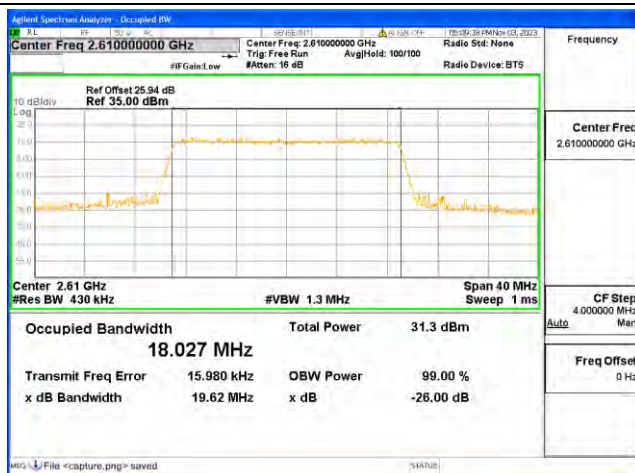
B38 / 20MHz / 16QAM/ Low CH



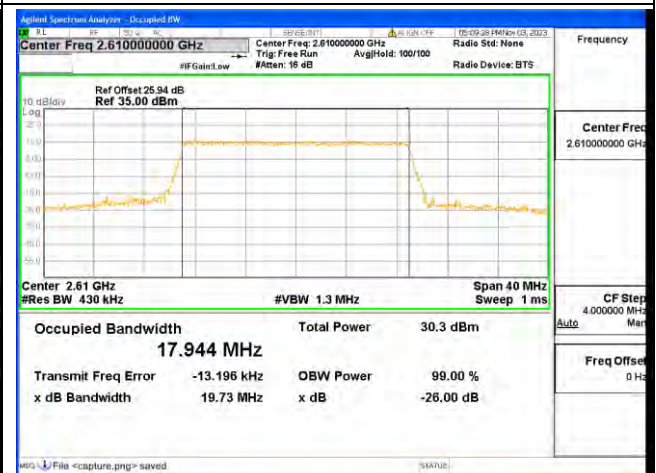
B38 / 20MHz / QPSK/ Mid CH



B38 / 20MHz / 16QAM/ Mid CH



B38 / 20MHz / QPSK/ High CH



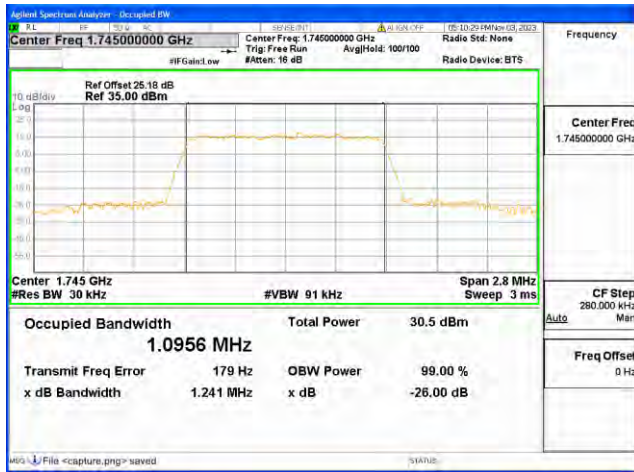
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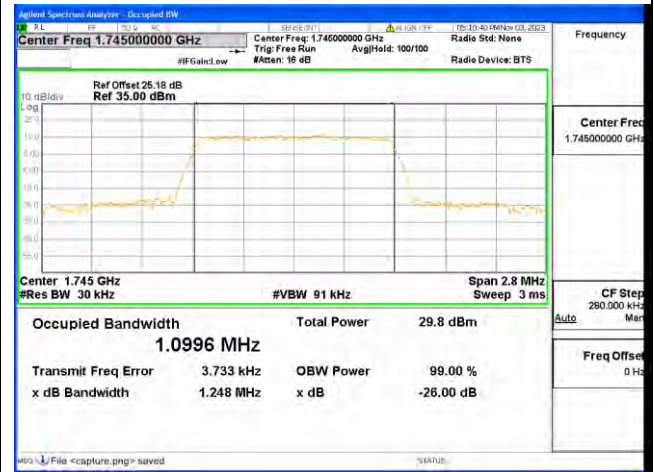
B66 / 1.4MHz / QPSK/ Low CH



B66 / 1.4MHz / 16QAM/ Low CH



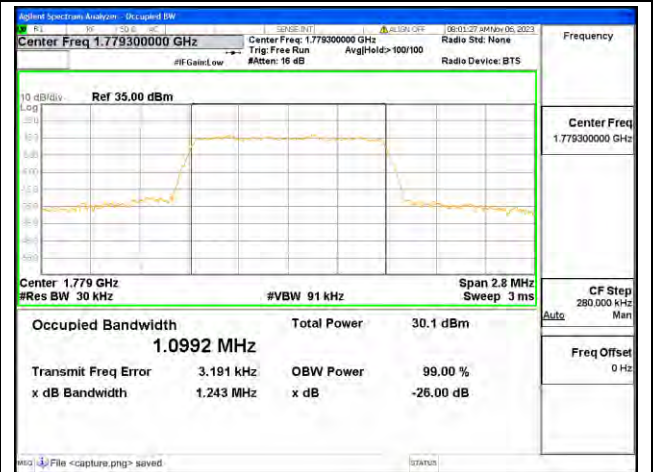
B66 / 1.4MHz / QPSK/ Mid CH



B66 / 1.4MHz / 16QAM/ Mid CH



B66 / 1.4MHz / QPSK/ High CH



B66 / 1.4MHz / 16QAM/ High CH



B66 / 3MHz / QPSK/ Low CH



B66 / 3MHz / 16QAM/ Low CH



B66 / 3MHz / QPSK/ Mid CH



B66 / 3MHz / 16QAM/ Mid CH



B66 / 3MHz / QPSK/ High CH



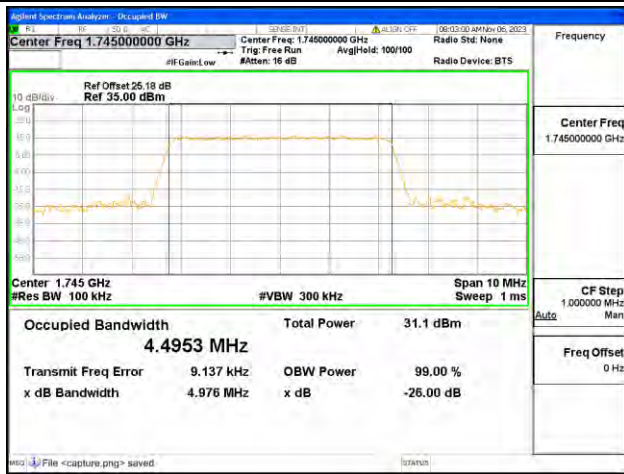
B66 / 3MHz / 16QAM/ High CH



B66 / 5MHz / QPSK/ Low CH



B66 / 5MHz / 16QAM/ Low CH



B66 / 5MHz / QPSK/ Mid CH



B66 / 5MHz / 16QAM/ Mid CH



B66 / 5MHz / QPSK/ High CH



B66 / 5MHz / 16QAM/ High CH



B66 / 10MHz / QPSK/ Low CH



B66 / 10MHz / 16QAM/ Low CH



B66 / 10MHz / QPSK/ Mid CH



B66 / 10MHz / 16QAM/ Mid CH



B66 / 10MHz / QPSK/ High CH



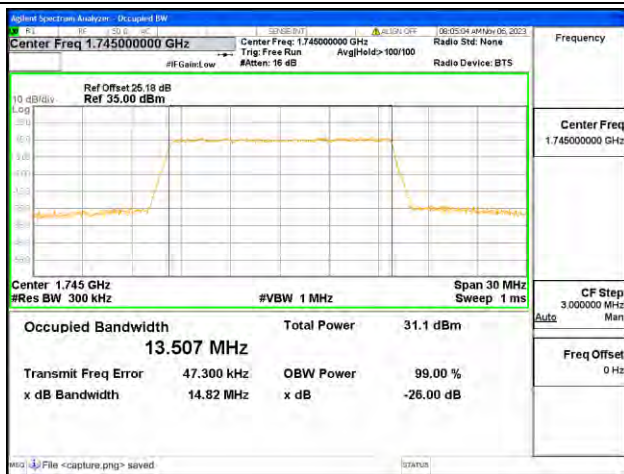
B66 / 10MHz / 16QAM/ High CH



B66 / 15MHz / QPSK/ Low CH



B66 / 15MHz / 16QAM/ Low CH



B66 / 15MHz / QPSK/ Mid CH



B66 / 15MHz / 16QAM/ Mid CH



B66 / 15MHz / QPSK/ High CH



B66 / 15MHz / 16QAM/ High CH



B71 / 5MHz / QPSK/ Low CH



B71 / 5MHz / 16QAM/ Low CH



B71 / 5MHz / QPSK/ Mid CH



B71 / 5MHz / 16QAM/ Mid CH



B71 / 5MHz / QPSK/ High CH



B71 / 5MHz / 16QAM/ High CH



B71 / 15MHz / QPSK/ Low CH



B71 / 15MHz / 16QAM/ Low CH



B71 / 15MHz / QPSK/ Mid CH



B71 / 15MHz / 16QAM/ Mid CH



B71 / 15MHz / QPSK/ High CH



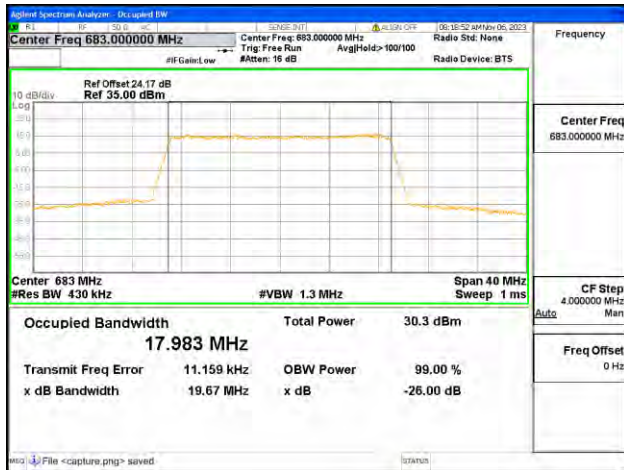
B71 / 15MHz / 16QAM/ High CH



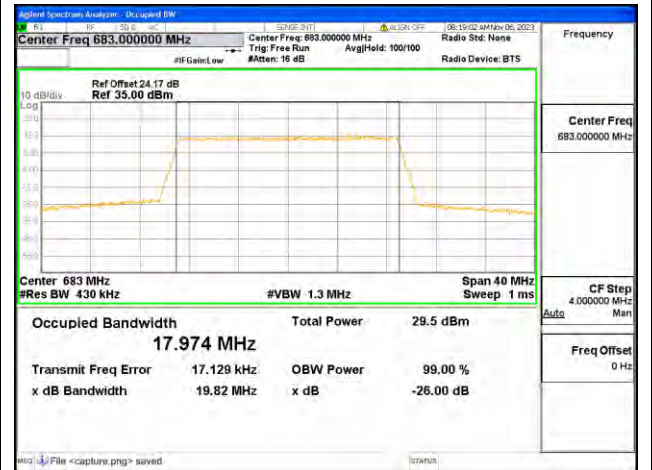
B71 / 20MHz / QPSK/ Low CH



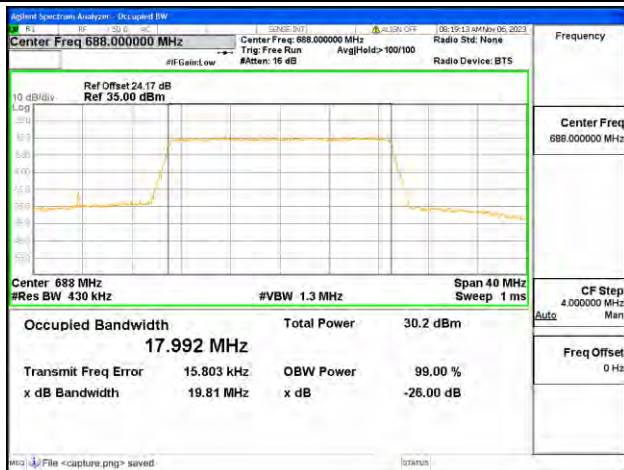
B71 / 20MHz / 16QAM/ Low CH



B71 / 20MHz / QPSK/ Mid CH



B71 / 20MHz / 16QAM/ Mid CH



B71 / 20MHz / QPSK/ High CH



B71 / 20MHz / 16QAM/ High CH

2.3. Frequency Stability

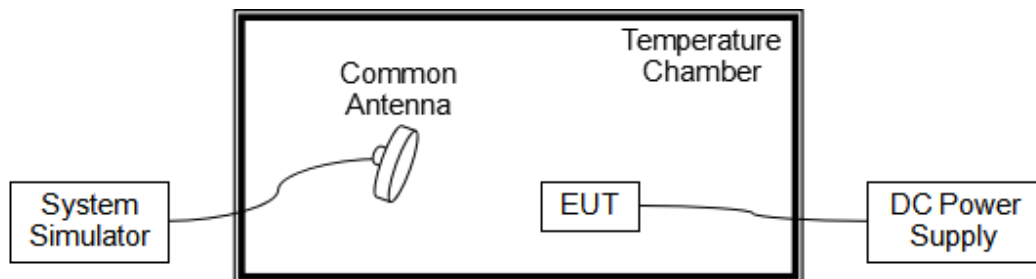
2.3.1. Requirement

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 $+50^{\circ}\text{C}$ 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 -10°C to 55°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, 4.45V and 3.40V, which are specified by the applicant; the normal temperature here used is 20°C.

LTE Band 2, 16QAM, 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)	-7	-0.004	PASS
Normal		-10	18	0.010	
Normal		0	19	0.010	
Normal		+10	20	0.011	
Normal		+20	18	0.010	
Normal		+30	18	0.010	
Normal		+40	20	0.011	
Normal		+50	13	0.007	
Normal		+55	18	0.010	
High	4.45	+20	2	0.001	
BATT.ENDPOINT	3.40	+20	18	0.010	

LTE Band 4, 16QAM, 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)	13	0.008	PASS
Normal		-10	3	0.002	
Normal		0	14	0.008	
Normal		+10	19	0.011	
Normal		+20	16	0.009	
Normal		+30	19	0.011	
Normal		+40	-12	-0.007	
Normal		+50	13	0.008	
Normal		+55	-2	-0.001	
High	4.45	+20	13	0.008	
BATT.ENDPOINT	3.40	+20	14	0.008	



LTE Band 5, 16QAM, Channel 20525, Frequency 836.5MHz					
Limit=±2.5ppm					
Voltage (%)	Power (VDC)	Temp(°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
Normal	3.87	+20(Ref)	15	0.018	PASS
Normal		-10	-10	-0.012	
Normal		0	13	0.016	
Normal		+10	-18	-0.022	
Normal		+20	0	0.000	
Normal		+30	17	0.020	
Normal		+40	-19	-0.023	
Normal		+50	-19	-0.023	
Normal		+55	16	0.019	
High	4.45	+20	23	0.027	
BATT.ENDPOINT	3.40	+20	22	0.026	

LTE Band 7, 16QAM, Channel 21100, Frequency 2535MHz					
Limit= Within Authorized Band					
Voltage (%)	Power (VDC)	Temp(°C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
Normal	3.87	+20(Ref)	14	0.006	PASS
Normal		-10	18	0.007	
Normal		0	14	0.006	
Normal		+10	20	0.008	
Normal		+20	14	0.006	
Normal		+30	23	0.009	
Normal		+40	-14	-0.006	
Normal		+50	-8	-0.003	
Normal		+55	14	0.006	
High	4.45	+20	14	0.006	
BATT.ENDPOINT	3.40	+20	20	0.008	



LTE Band 12, 16QAM, 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)	10	0.014	PASS
Normal		-10	14	0.020	
Normal		0	15	0.021	
Normal		+10	14	0.020	
Normal		+20	17	0.024	
Normal		+30	14	0.020	
Normal		+40	14	0.020	
Normal		+50	7	0.010	
Normal		+55	18	0.025	
High	4.45	+20	14	0.020	
BATT.ENDPOINT	3.40	+20	-20	-0.028	

LTE Band 17, 16QAM, Channel 23790, Frequency 710MHz Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp(°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
Normal	3.87	+20(Ref)	13	0.018	PASS
Normal		-10	14	0.020	
Normal		0	-9	-0.013	
Normal		+10	20	0.028	
Normal		+20	18	0.025	
Normal		+30	-22	-0.031	
Normal		+40	-12	-0.017	
Normal		+50	15	0.021	
Normal		+55	19	0.027	
High	4.45	+20	-10	-0.014	
BATT.ENDPOINT	3.40	+20	19	0.027	



LTE Band 38, 16QAM, Channel 38000, Frequency 2595.0MHz					
Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
Normal	3.87	+20(Ref)	16	0.006	PASS
Normal		-10	-10	-0.004	
Normal		0	13	0.005	
Normal		+10	15	0.006	
Normal		+20	12	0.005	
Normal		+30	17	0.007	
Normal		+40	13	0.005	
Normal		+50	5	0.002	
Normal		+55	20	0.008	
High		4.45	+20	17	
BATT.ENDPOINT	3.40	+20	20	0.008	

LTE Band 66, 16QAM, Channel 132322, Frequency 1745.0MHz					
Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
Normal	3.87	+20(Ref)	-5	-0.003	PASS
Normal		-10	17	0.010	
Normal		0	16	0.009	
Normal		+10	-22	-0.013	
Normal		+20	-13	-0.007	
Normal		+30	-19	-0.011	
Normal		+40	9	0.005	
Normal		+50	19	0.011	
Normal		+55	17	0.010	
High		4.45	+20	13	
BATT.ENDPOINT	3.40	+20	20	0.011	



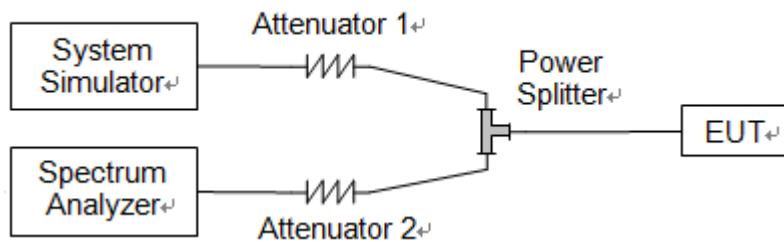
LTE Band 71, 16QAM, Channel 133322, Frequency 683.0MHz					
Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
Normal	3.87	+20(Ref)	-17	-0.025	PASS
Normal		-10	11	0.016	
Normal		0	14	0.020	
Normal		+10	19	0.028	
Normal		+20	-1	-0.001	
Normal		+30	18	0.026	
Normal		+40	17	0.025	
Normal		+50	-15	-0.022	
Normal		+55	11	0.016	
High		4.45	+20	17	
BATT.ENDPOINT	3.40	+20	17	0.025	

2.4. Peak to Average Ratio

2.4.1. Requirement

According to FCC section 24.232(d) and 27.50(d), 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 2					
BW(MHz)	Channel Level	Modulation	PAR Radio(dB)	Limit(dB)	Verdict
1.4	Low	QPSK	4.50	<=13	PASS
	Low	16QAM	5.39	<=13	PASS
	Mid	QPSK	5.22	<=13	PASS
	Mid	16QAM	6.25	<=13	PASS
	High	QPSK	4.97	<=13	PASS
	High	16QAM	5.52	<=13	PASS
3	Low	QPSK	4.30	<=13	PASS
	Low	16QAM	5.30	<=13	PASS
	Mid	QPSK	5.22	<=13	PASS
	Mid	16QAM	6.09	<=13	PASS
	High	QPSK	4.77	<=13	PASS
	High	16QAM	5.63	<=13	PASS
5	Low	QPSK	4.81	<=13	PASS
	Low	16QAM	5.46	<=13	PASS
	Mid	QPSK	5.43	<=13	PASS
	Mid	16QAM	6.16	<=13	PASS
	High	QPSK	5.21	<=13	PASS
	High	16QAM	5.77	<=13	PASS
10	Low	QPSK	5.07	<=13	PASS
	Low	16QAM	5.67	<=13	PASS
	Mid	QPSK	5.55	<=13	PASS
	Mid	16QAM	6.17	<=13	PASS
	High	QPSK	5.30	<=13	PASS
	High	16QAM	5.86	<=13	PASS
15	Low	QPSK	4.86	<=13	PASS
	Low	16QAM	5.45	<=13	PASS
	Mid	QPSK	5.43	<=13	PASS
	Mid	16QAM	6.13	<=13	PASS
	High	QPSK	5.19	<=13	PASS
	High	16QAM	5.97	<=13	PASS
20	Low	QPSK	5.23	<=13	PASS
	Low	16QAM	5.67	<=13	PASS
	Mid	QPSK	5.52	<=13	PASS
	Mid	16QAM	6.20	<=13	PASS
	High	QPSK	5.39	<=13	PASS
	High	16QAM	6.09	<=13	PASS



LTE Band 4					
BW(MHz)	Channel Level	Modulation	PAR Radio(dB)	Limit(dB)	Verdict
1.4	Low	QPSK	5.75	<=13	PASS
	Low	16QAM	6.60	<=13	PASS
	Mid	QPSK	5.91	<=13	PASS
	Mid	16QAM	6.59	<=13	PASS
	High	QPSK	5.78	<=13	PASS
	High	16QAM	6.53	<=13	PASS
3	Low	QPSK	5.71	<=13	PASS
	Low	16QAM	6.49	<=13	PASS
	Mid	QPSK	5.87	<=13	PASS
	Mid	16QAM	6.55	<=13	PASS
	High	QPSK	5.77	<=13	PASS
	High	16QAM	6.55	<=13	PASS
5	Low	QPSK	5.65	<=13	PASS
	Low	16QAM	6.32	<=13	PASS
	Mid	QPSK	5.83	<=13	PASS
	Mid	16QAM	6.39	<=13	PASS
	High	QPSK	5.71	<=13	PASS
	High	16QAM	6.38	<=13	PASS
10	Low	QPSK	5.92	<=13	PASS
	Low	16QAM	6.54	<=13	PASS
	Mid	QPSK	5.93	<=13	PASS
	Mid	16QAM	6.45	<=13	PASS
	High	QPSK	5.74	<=13	PASS
	High	16QAM	6.28	<=13	PASS
15	Low	QPSK	5.79	<=13	PASS
	Low	16QAM	6.47	<=13	PASS
	Mid	QPSK	5.82	<=13	PASS
	Mid	16QAM	6.44	<=13	PASS
	High	QPSK	5.61	<=13	PASS
	High	16QAM	6.46	<=13	PASS
20	Low	QPSK	5.73	<=13	PASS
	Low	16QAM	6.44	<=13	PASS
	Mid	QPSK	5.84	<=13	PASS
	Mid	16QAM	6.48	<=13	PASS
	High	QPSK	5.80	<=13	PASS
	High	16QAM	6.28	<=13	PASS