

Appendix A Test Results of Bluetooth BLE

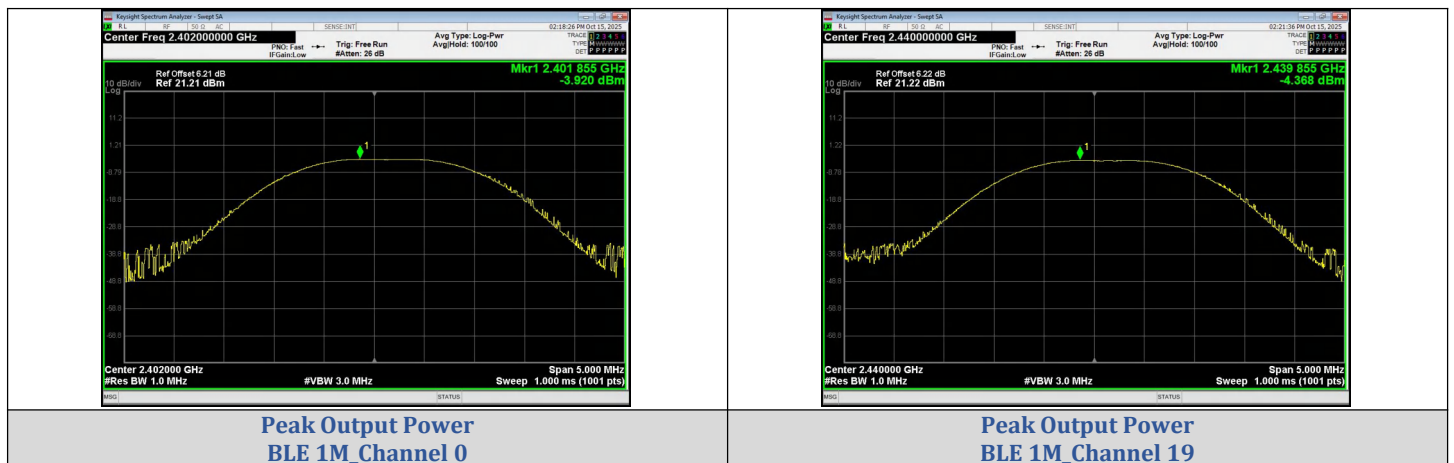
Conducted Output Power

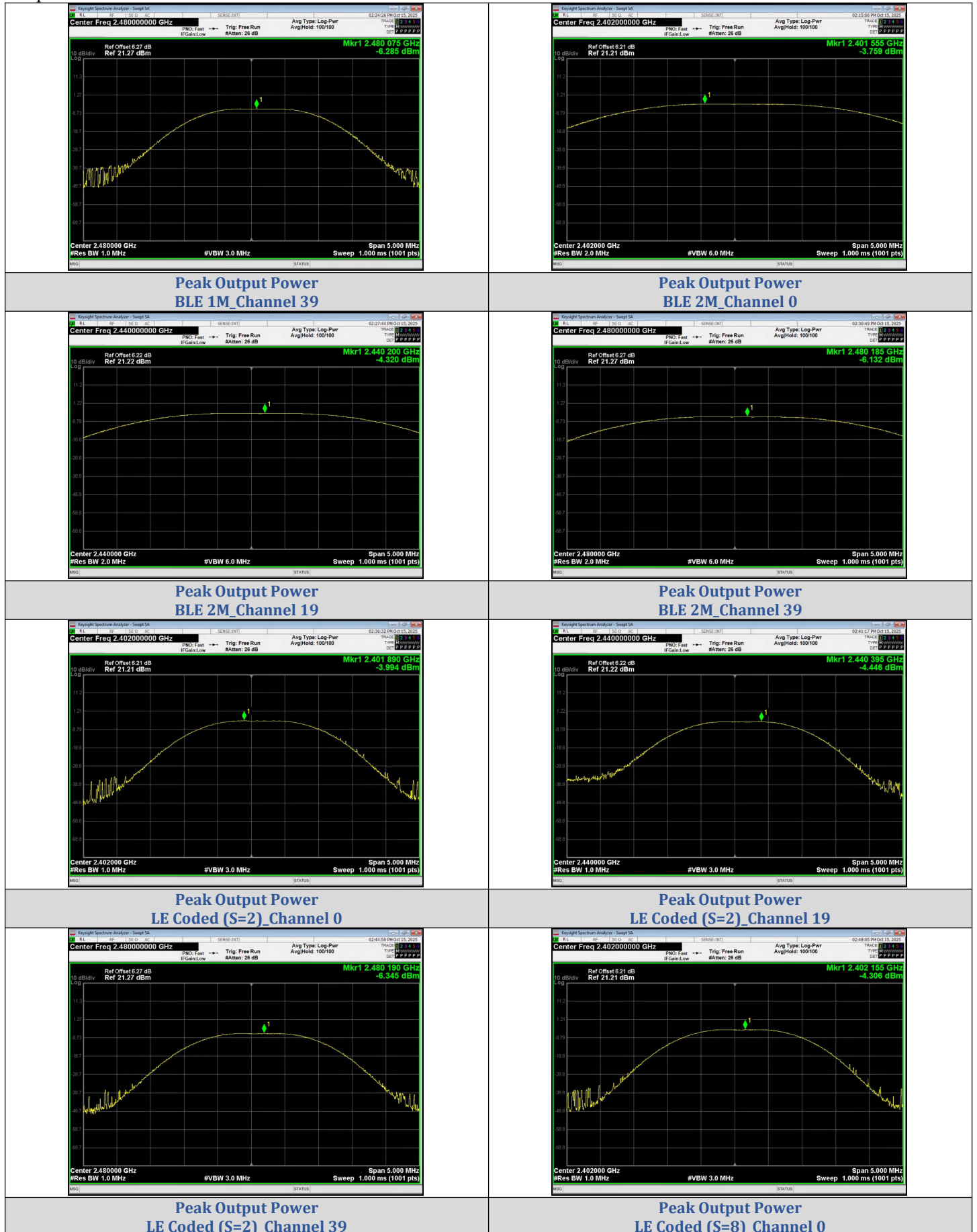
Test Result

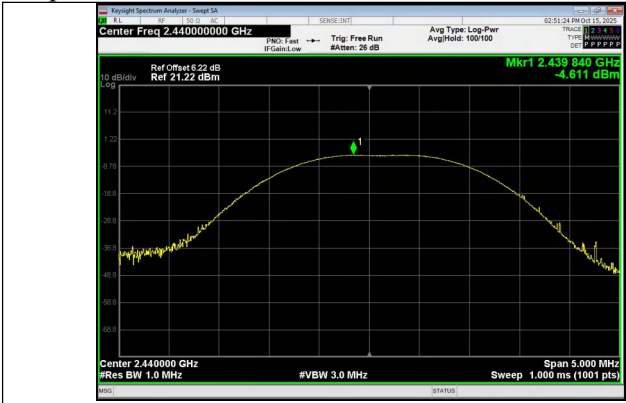
Mode	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
BLE 1M	0	-3.92	0.41	≤30	PASS
	19	-4.37	0.37	≤30	PASS
	39	-6.29	0.24	≤30	PASS
BLE 2M	0	-3.76	0.42	≤30	PASS
	19	-4.32	0.37	≤30	PASS
	39	-6.13	0.24	≤30	PASS
LE Coded (S=2)	0	-3.99	0.4	≤30	PASS
	19	-4.45	0.36	≤30	PASS
	39	-6.34	0.23	≤30	PASS
LE Coded (S=8)	0	-4.31	0.37	≤30	PASS
	19	-4.61	0.35	≤30	PASS
	39	-6.43	0.23	≤30	PASS

Mode	Channel	Peak Output Power (dBm)	Peak Power Limit (dBm)	ISED EIRP (dBm)	ISED EIRP Limit (dBm)	Result
BLE 1M	0	-3.92	≤30	-1.12	≤36.02	PASS
	19	-4.37	≤30	-1.57	≤36.02	PASS
	39	-6.29	≤30	-3.49	≤36.02	PASS
BLE 2M	0	-3.76	≤30	-0.96	≤36.02	PASS
	19	-4.32	≤30	-1.52	≤36.02	PASS
	39	-6.13	≤30	-3.33	≤36.02	PASS
LE Coded (S=2)	0	-3.99	≤30	-1.19	≤36.02	PASS
	19	-4.45	≤30	-1.65	≤36.02	PASS
	39	-6.34	≤30	-3.54	≤36.02	PASS
LE Coded (S=8)	0	-4.31	≤30	-1.51	≤36.02	PASS
	19	-4.61	≤30	-1.81	≤36.02	PASS
	39	-6.43	≤30	-3.63	≤36.02	PASS

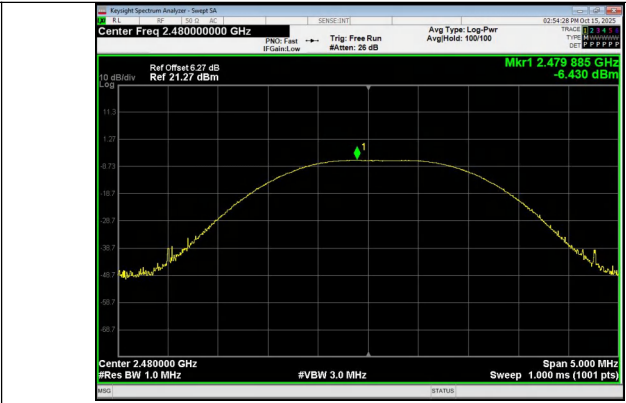
Test Graphs







Peak Output Power
LE Coded (S=8)_Channel 19



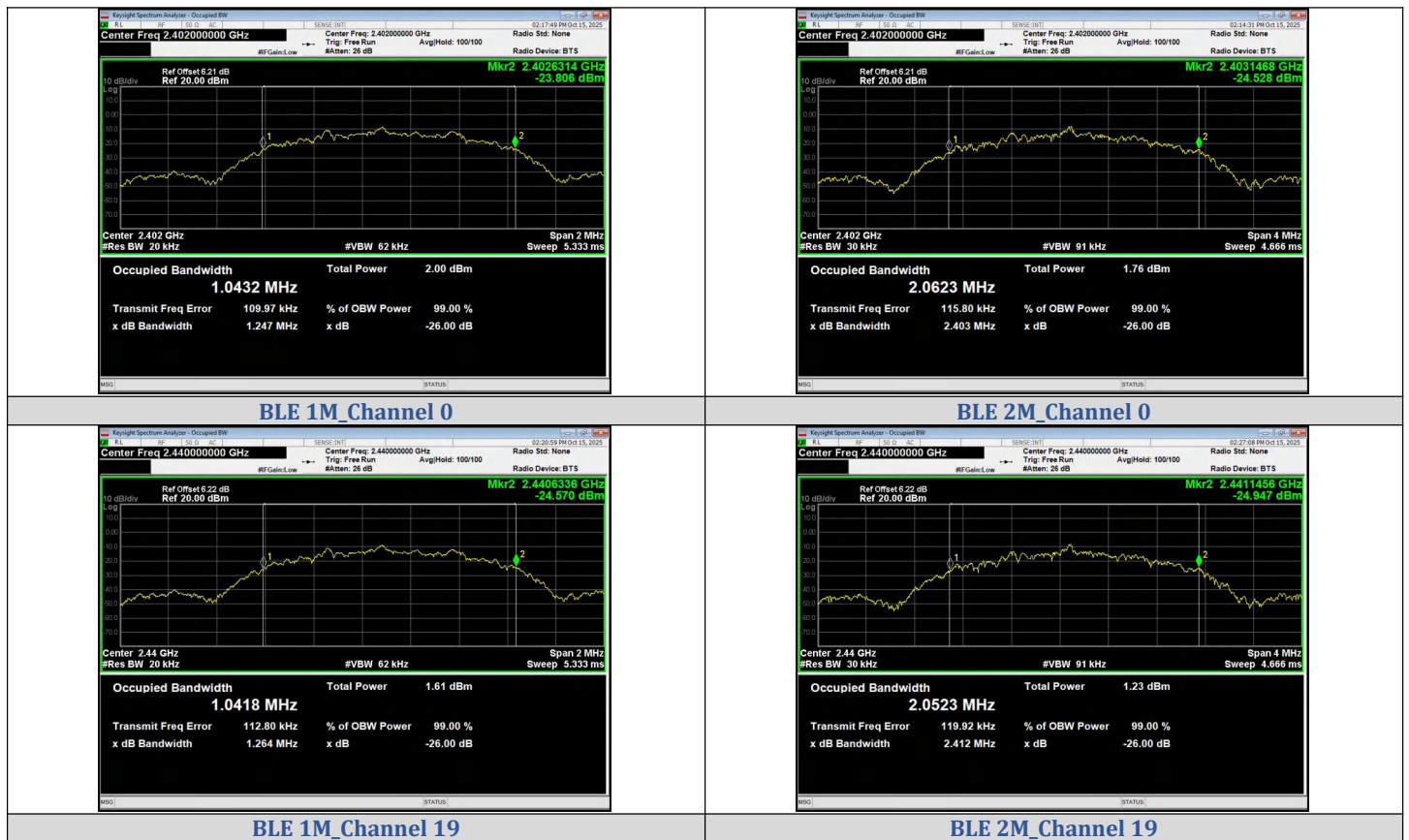
Peak Output Power
LE Coded (S=8)_Channel 39

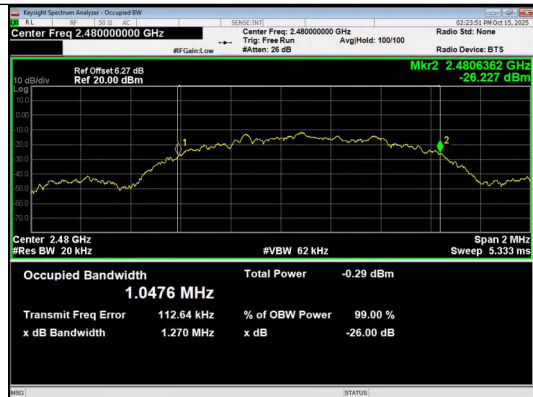
99% Bandwidth

Test Result

Mode	Channel	Center Frequency (MHz)	99% BW (MHz)
BLE 1M	0	2402	1.0432
BLE 1M	19	2440	1.0418
BLE 1M	39	2480	1.0476
BLE 2M	0	2402	2.0623
BLE 2M	19	2440	2.0523
BLE 2M	39	2480	2.0391
LE Coded (S=2)	0	2402	1.0435
LE Coded (S=2)	19	2440	1.0510
LE Coded (S=2)	39	2480	1.0456
LE Coded (S=8)	0	2402	1.0740
LE Coded (S=8)	19	2440	1.0747
LE Coded (S=8)	39	2480	1.0762

Test Graphs





BLE 1M_Channel 39



BLE 2M_Channel 39



LE Coded (S=2)_Channel 0



LE Coded (S=8)_Channel 0



LE Coded (S=2)_Channel 19



LE Coded (S=8)_Channel 19



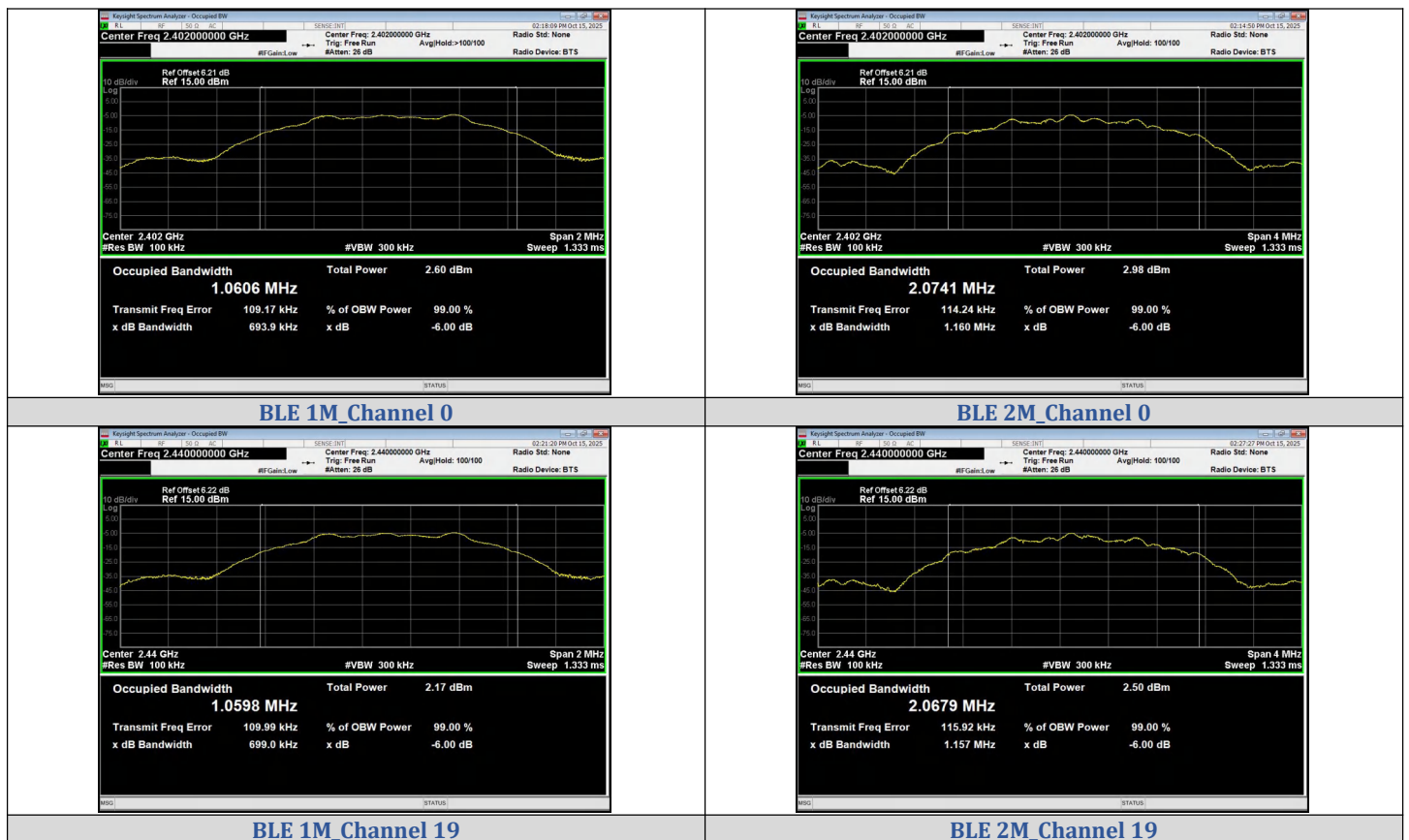
LE Coded (S=2)_Channel 39

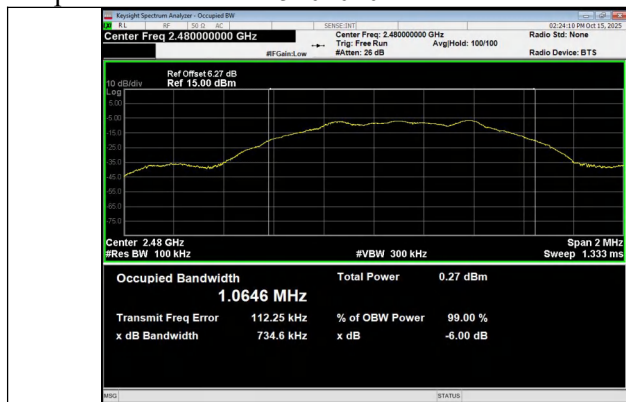


LE Coded (S=8)_Channel 39

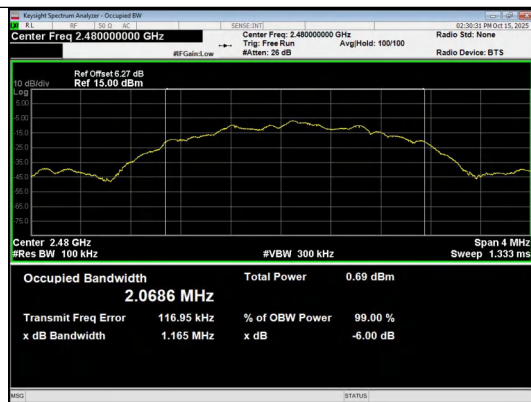
6dB Bandwidth**Test Result**

Mode	Channel	Center Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
BLE 1M	0	2402	0.6900	≥0.5	PASS
	19	2440	0.7000		PASS
	39	2480	0.7300		PASS
BLE 2M	0	2402	1.160		PASS
	19	2440	1.160		PASS
	39	2480	1.160		PASS
LE Coded (S=2)	0	2402	0.6900		PASS
	19	2440	0.6900		PASS
	39	2480	0.7200		PASS
LE Coded (S=8)	0	2402	0.6500		PASS
	19	2440	0.6500		PASS
	39	2480	0.6400		PASS

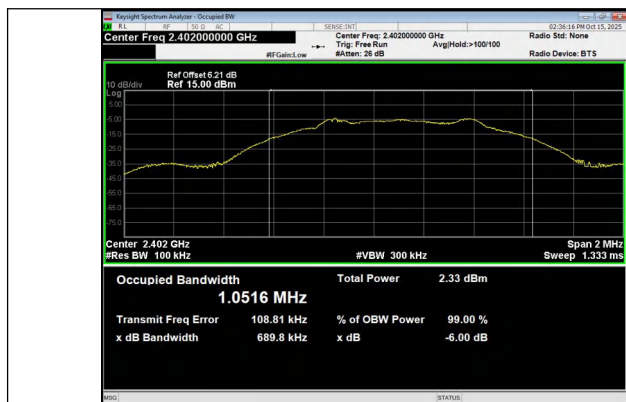
Test Graphs



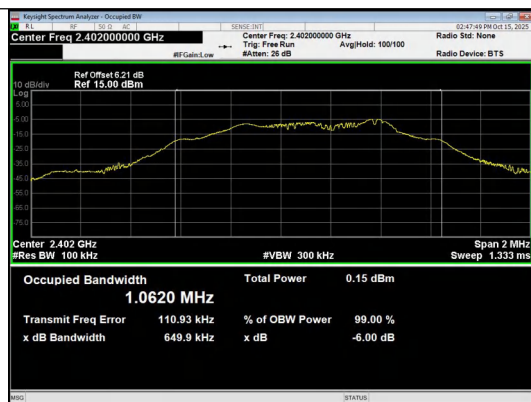
BLE 1M_Channel 39



BLE 2M_Channel 39



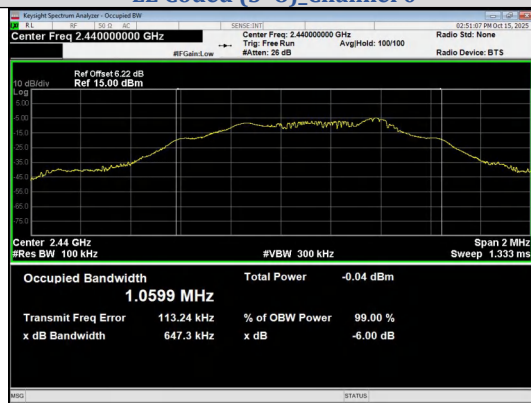
LE Coded (S=2)_Channel 0



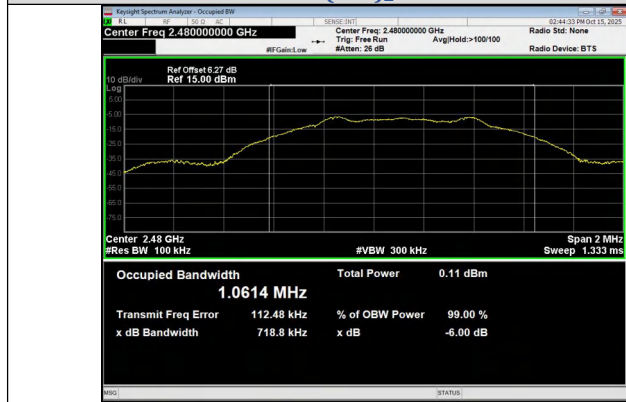
LE Coded (S=8)_Channel 0



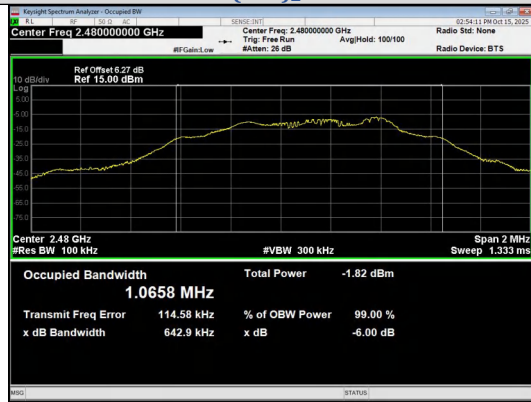
LE Coded (S=2)_Channel 19



LE Coded (S=8)_Channel 19



LE Coded (S=2)_Channel 39



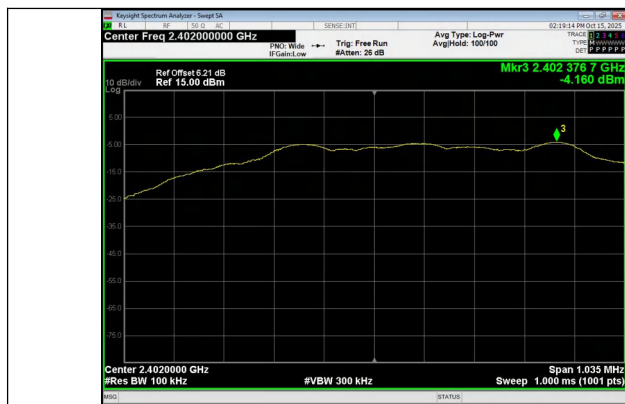
LE Coded (S=8)_Channel 39

Conducted Spurious & Band Edge Emission

Test Result

Mode	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
BLE 1M	0	2398.28	-47.645	-24.16	-23.485	PASS
		2400.00	-48.113	-24.16	-23.953	PASS
		4803.60	-40.732	-24.16	-16.572	PASS
	19	4879.80	-43.199	-24.56	-18.639	PASS
	39	2483.50	-56.338	-26.49	-29.848	PASS
		4959.70	-43.457	-26.49	-16.967	PASS
BLE 2M	0	2400.00	-40.660	-24.48	-16.180	PASS
		3418.43	-29.195	-24.48	-4.715	PASS
	19	4879.17	-44.911	-24.93	-19.981	PASS
	39	2483.50	-57.609	-26.67	-30.939	PASS
		4960.33	-45.594	-26.67	-18.924	PASS
LE Coded (S=2)	0	2398.24	-48.203	-24.26	-23.943	PASS
		2400.00	-50.380	-24.26	-26.120	PASS
		4804.90	-40.767	-24.26	-16.507	PASS
	19	4879.80	-43.842	-24.78	-19.062	PASS
	39	2483.50	-57.748	-26.6	-31.148	PASS
		4959.70	-44.409	-26.6	-17.809	PASS
LE Coded (S=8)	0	2398.26	-48.293	-24.53	-23.763	PASS
		2400.00	-49.954	-24.53	-25.424	PASS
		4804.90	-43.847	-24.53	-19.317	PASS
	19	4879.80	-45.065	-24.88	-20.185	PASS
	39	2483.50	-58.112	-26.75	-31.362	PASS
		4960.95	-41.901	-26.75	-15.151	PASS

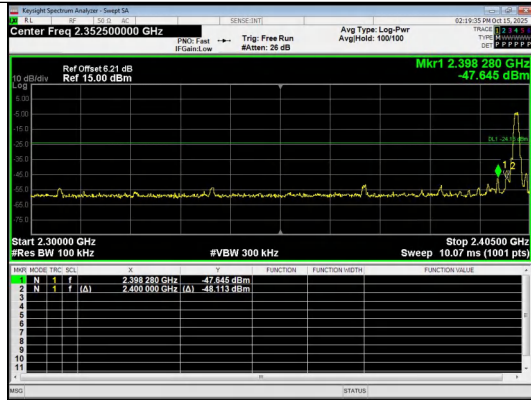
Test Graphs



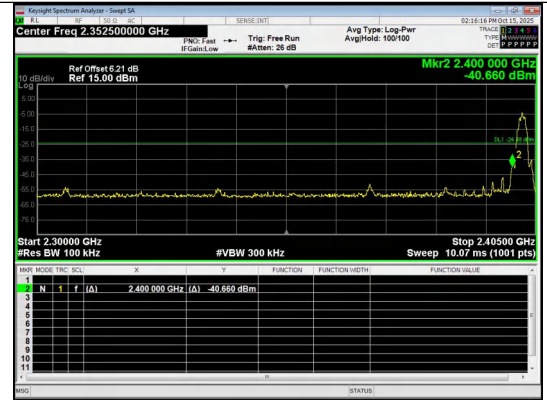
In-Band Reference Level
BLE 1M_Channel 0



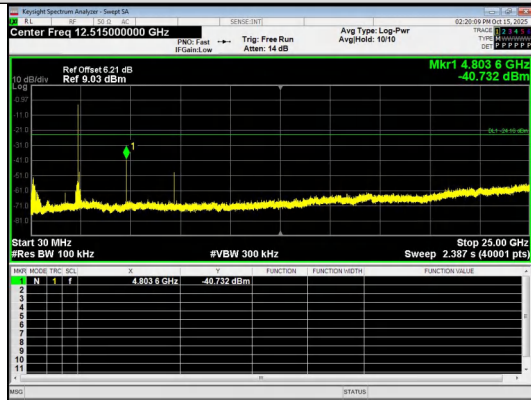
In-Band Reference Level
BLE 2M_Channel 0



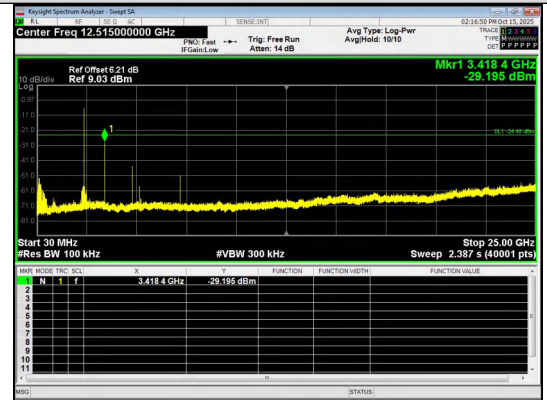
Out Of Band Emission
BLE 1M_Channel 0



Out Of Band Emission
BLE 2M_Channel 0



30.0 MHz - 25000.0 MHz
BLE 1M_Channel 0



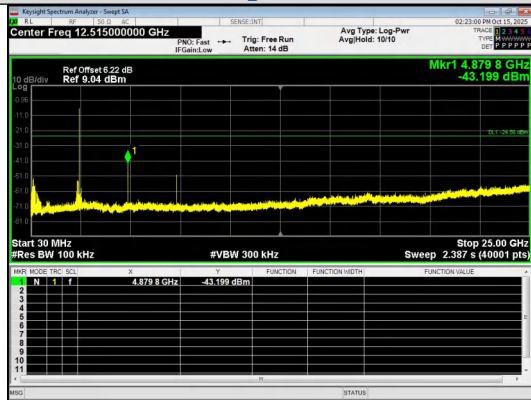
30.0 MHz - 25000.0 MHz
BLE 2M_Channel 0



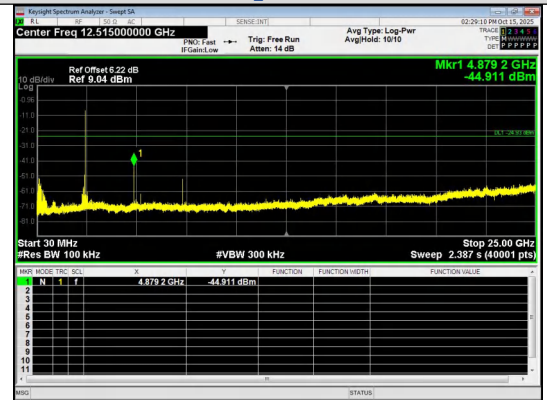
In-Band Reference Level
BLE 1M_Channel 19



In-Band Reference Level
BLE 2M_Channel 19



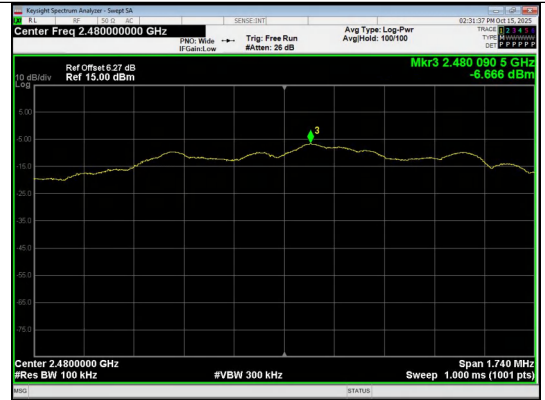
30.0 MHz - 25000.0 MHz
BLE 1M_Channel 19



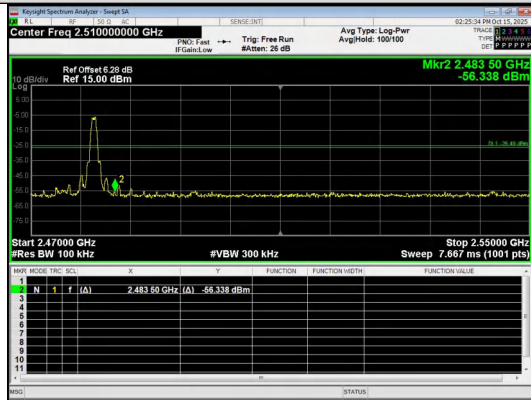
30.0 MHz - 25000.0 MHz
BLE 2M_Channel 19



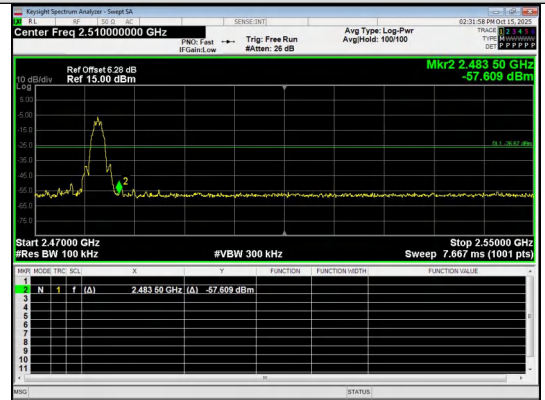
In-Band Reference Level
BLE 1M_Channel 39



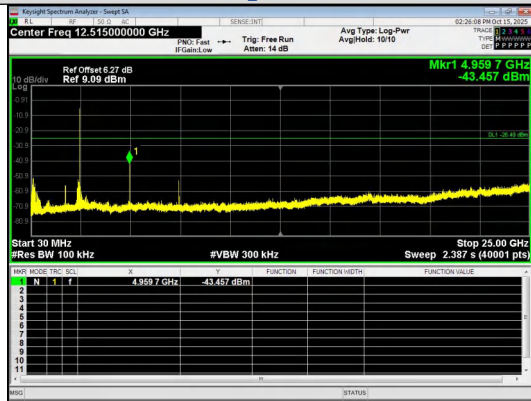
In-Band Reference Level
BLE 2M_Channel 39



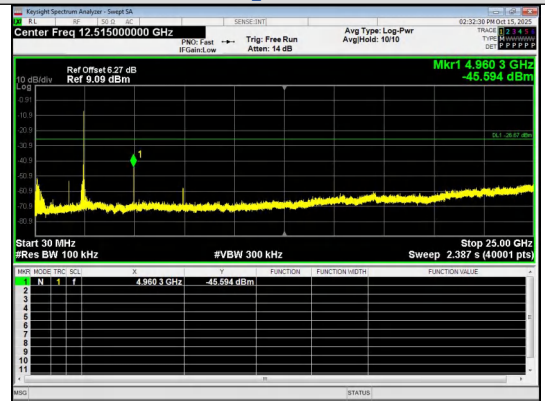
Out Of Band Emission
BLE 1M_Channel 39



Out Of Band Emission
BLE 2M_Channel 39



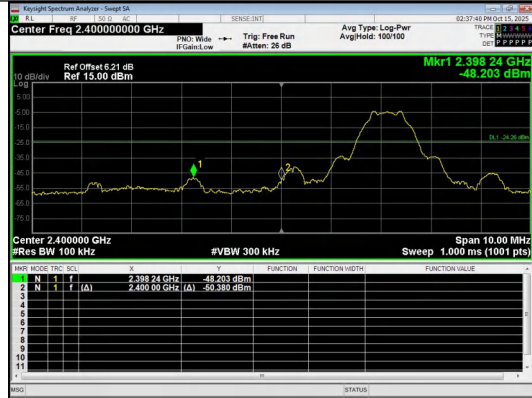
30.0 MHz - 25000.0 MHz
BLE 1M_Channel 39



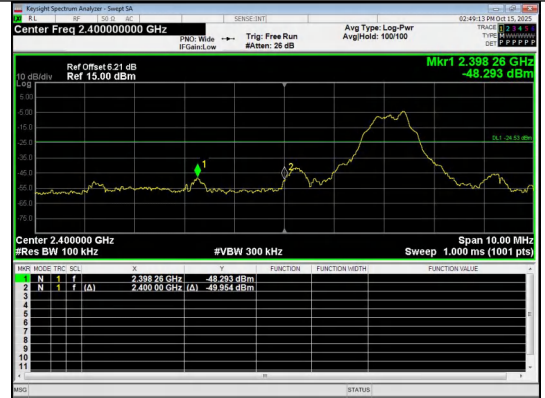
30.0 MHz - 25000.0 MHz
BLE 2M_Channel 39



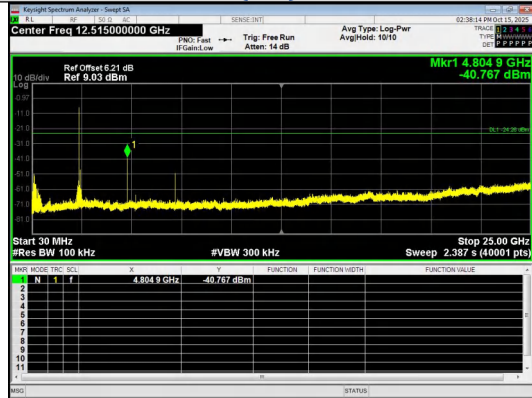
**In-Band Reference Level
LE Coded (S=2)_Channel 0**



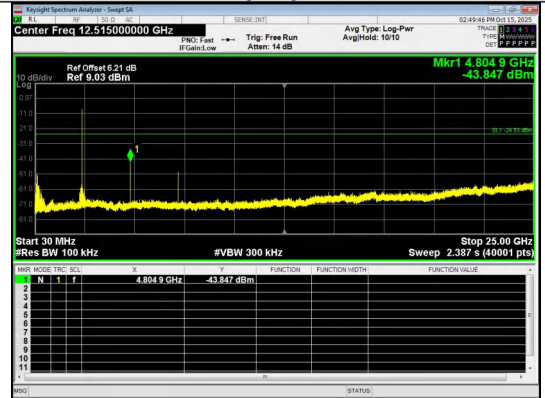
**In-Band Reference Level
LE Coded (S=8)_Channel 0**



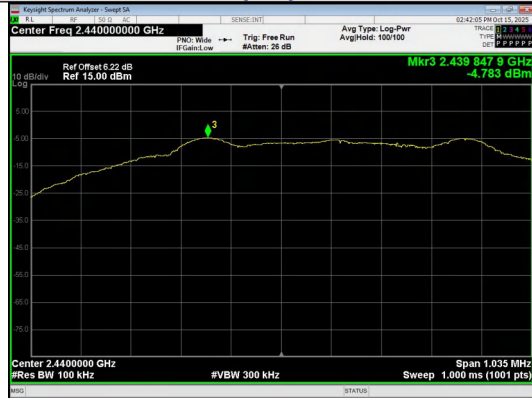
**Out Of Band Emission
LE Coded (S=2)_Channel 0**



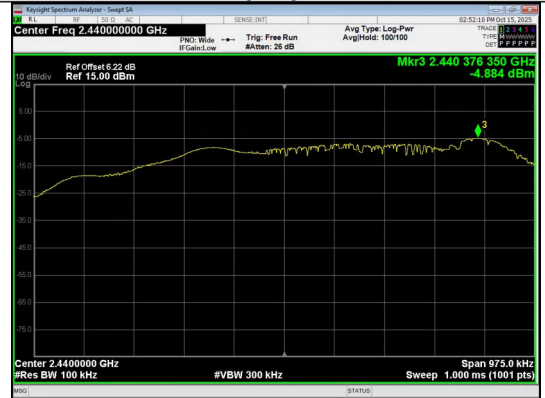
**Out Of Band Emission
LE Coded (S=8)_Channel 0**



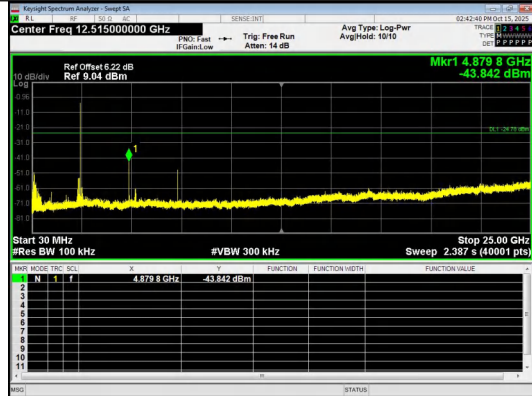
**30.0 MHz - 25000.0 MHz
LE Coded (S=2)_Channel 0**



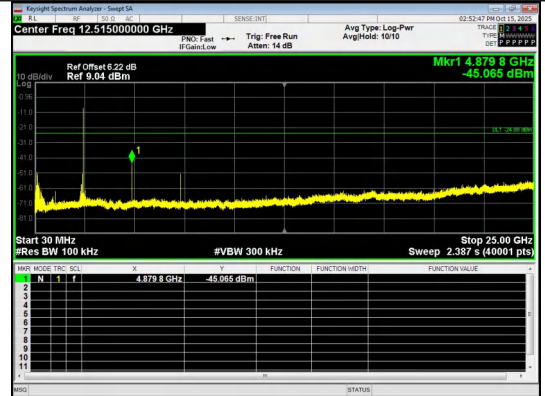
**30.0 MHz - 25000.0 MHz
LE Coded (S=8)_Channel 0**

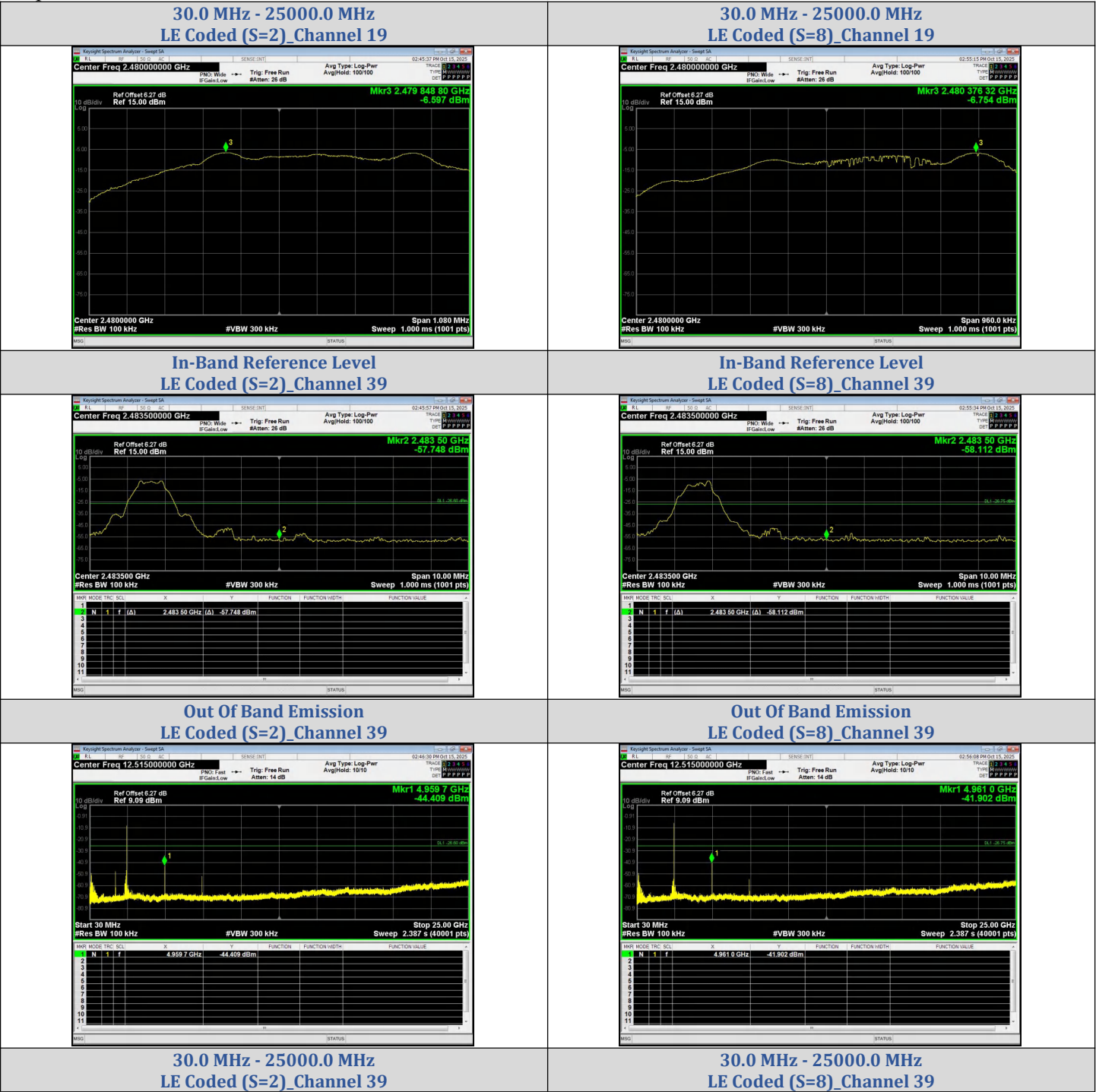


**In-Band Reference Level
LE Coded (S=2)_Channel 19**



**In-Band Reference Level
LE Coded (S=8)_Channel 19**



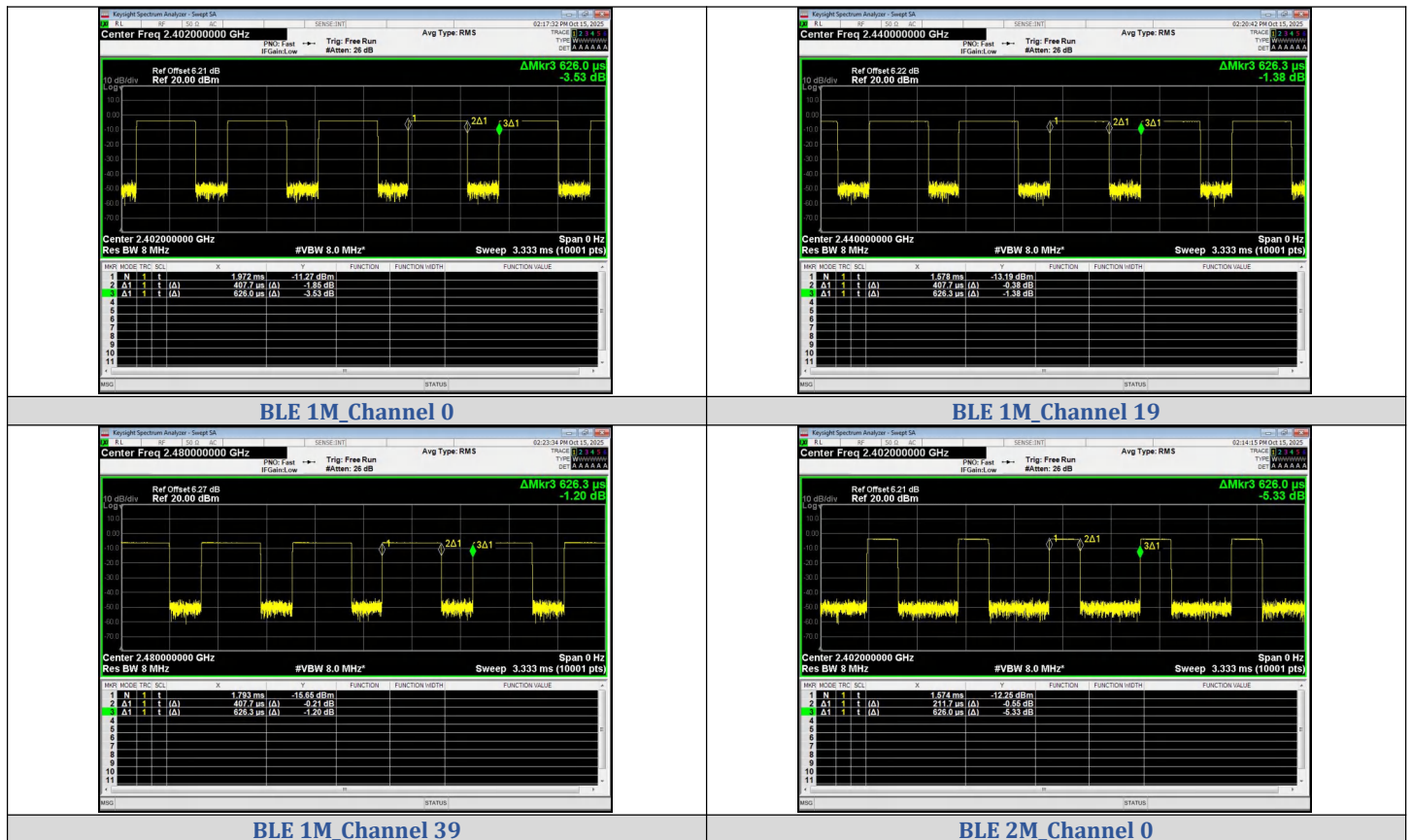


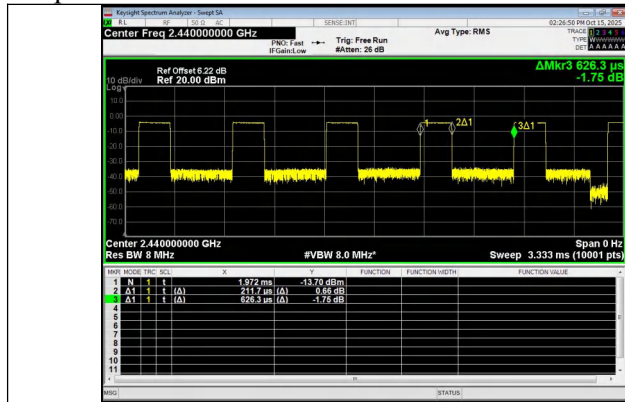
Duty Cycle

Test Result

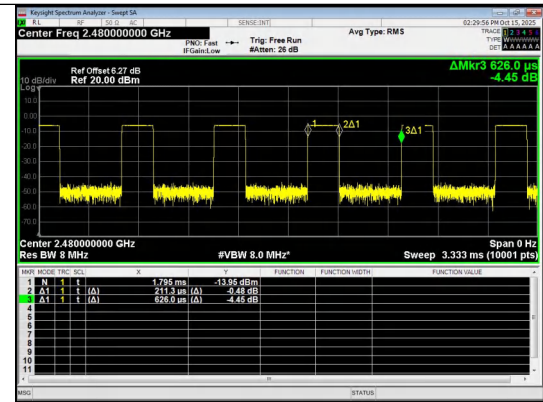
Mode	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
BLE 1M	0	0.408	0.626	65.12	0.6512	1.8629	2.4510
	19	0.408	0.626	65.09	0.6509	1.8649	2.4510
	39	0.408	0.626	65.09	0.6509	1.8649	2.4510
BLE 2M	0	0.212	0.626	33.81	0.3381	4.7095	4.7170
	19	0.212	0.626	33.79	0.3379	4.7121	4.7170
	39	0.211	0.626	33.76	0.3376	4.716	4.7393
LE Coded (S=2)	0	1.079	1.873	57.62	0.5762	2.3943	0.9268
	19	1.079	1.874	57.60	0.5760	2.3958	0.9268
	39	1.078	1.873	57.58	0.5758	2.3973	0.9276
LE Coded (S=8)	0	3.120	3.749	83.22	0.8322	0.7977	0.3205
	19	3.120	3.749	83.22	0.8322	0.7977	0.3205
	39	3.120	3.749	83.22	0.8322	0.7977	0.3205

Test Graphs

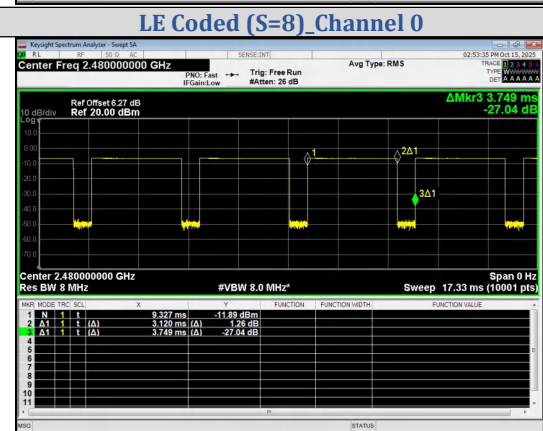
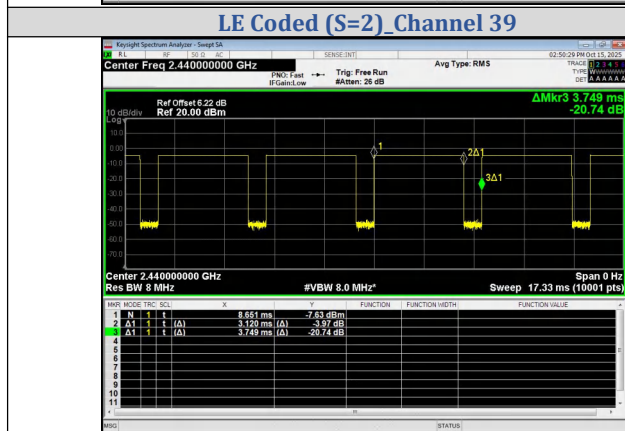
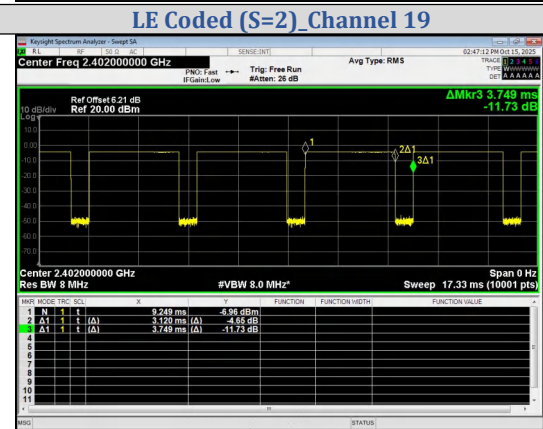
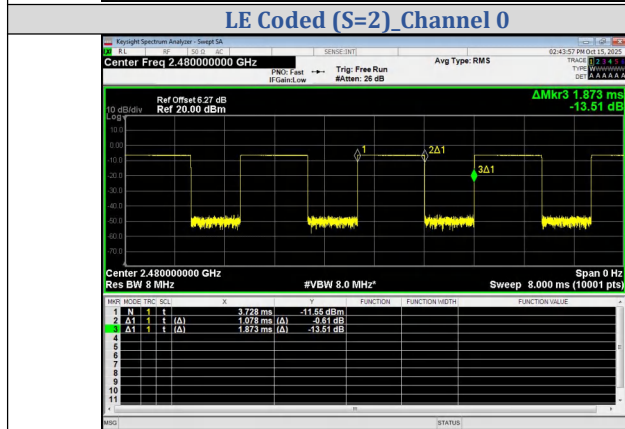
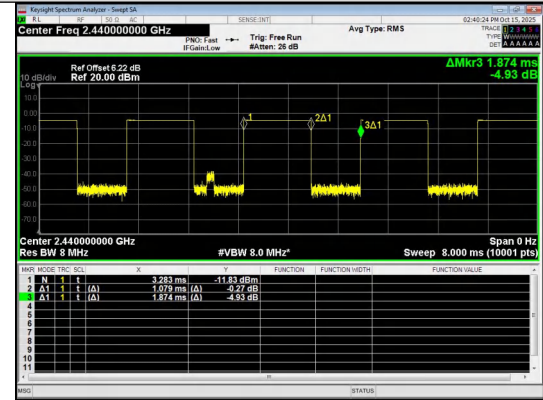
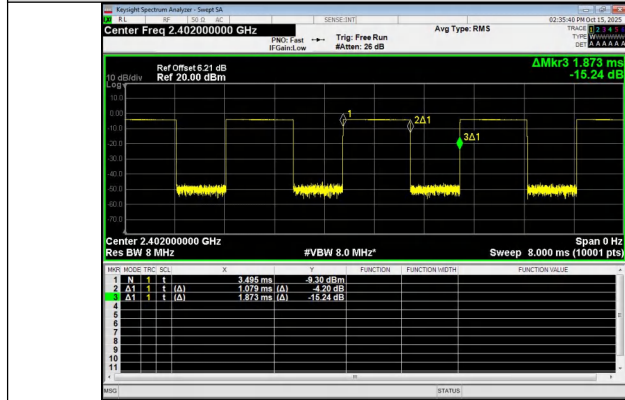




BLE 2M_Channel 19



BLE 2M_Channel 39



LE Coded (S=8)_Channel 19

LE Coded (S=8)_Channel 39

Power Spectral Density

Test Result

Mode	Channel	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
BLE 1M	0	-20.080	≤8	PASS
BLE 1M	19	-20.460	≤8	PASS
BLE 1M	39	-22.260	≤8	PASS
BLE 2M	0	-23.090	≤8	PASS
BLE 2M	19	-22.590	≤8	PASS
BLE 2M	39	-24.710	≤8	PASS
LE Coded (S=2)	0	-10.260	≤8	PASS
LE Coded (S=2)	19	-10.650	≤8	PASS
LE Coded (S=2)	39	-12.540	≤8	PASS
LE Coded (S=8)	0	-10.370	≤8	PASS
LE Coded (S=8)	19	-10.650	≤8	PASS
LE Coded (S=8)	39	-12.480	≤8	PASS

Test Graphs

