

Appendix for LTE Band 5

Product Name: Smart Phone

Model No: Black G4

Appendix A: Average Power Output Data

Test Result

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
1.4MHz	20407	824.7	QPSK	1	0	23.89	23.5±1	/
				1	2	24	23.5±1	/
				1	5	23.87	23.5±1	/
				3	0	23.93	23.5±1	/
				3	1	23.93	23.5±1	/
				3	2	23.86	23.5±1	/
				6	0	22.88	23.5±1	1.0
			16QAM	1	0	22.76	22.0±1	1.0
				1	2	22.91	22.0±1	1.0
				1	5	22.79	22.0±1	1.0
				3	0	22.82	22.0±1	1.0
				3	1	22.83	22.0±1	1.0
				3	2	22.79	22.0±1	1.0
				6	0	21.93	22.0±1	1.0
	20525	836.5	QPSK	1	0	23.65	23.0±1	/
				1	2	23.76	23.0±1	/
				1	5	23.65	23.0±1	/
				3	0	23.76	23.0±1	/
				3	1	23.79	23.0±1	/
				3	2	23.75	23.0±1	/
				6	0	22.72	23.0±1	1.0
			16QAM	1	0	23.01	22.5±1	1.0
				1	2	23.08	22.5±1	1.0
				1	5	22.98	22.5±1	1.0
				3	0	22.84	22.5±1	1.0
				3	1	22.91	22.5±1	1.0
				3	2	22.89	22.5±1	1.0
				6	0	21.61	22.5±1	1.0
	20634	848.3	QPSK	1	0	23.72	23.0±1	/
				1	2	23.9	23.0±1	/
				1	5	23.79	23.0±1	/
				3	0	23.9	23.0±1	/
				3	1	23.95	23.0±1	/
				3	2	23.92	23.0±1	/
				6	0	22.92	23.0±1	1.0
			16QAM	1	0	22.81	23.0±1	1.0

				1	2	22.79	23.0±1	1.0
				1	5	22.76	23.0±1	1.0
				3	0	23	23.0±1	1.0
				3	1	23.07	23.0±1	1.0
				3	2	23.04	23.0±1	1.0
				6	0	22.05	23.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
3MHz	20415	825.5	QPSK	1	0	23.94	23.5±1	/
				1	8	24.01	23.5±1	/
				1	14	23.86	23.5±1	/
				6	0	22.82	23.5±1	1.0
				6	4	22.85	23.5±1	1.0
				6	9	22.84	23.5±1	1.0
				15	0	22.8	23.5±1	1.0
			16QAM	1	0	22.64	22.0±1	1.0
				1	8	22.79	22.0±1	1.0
				1	14	22.64	22.0±1	1.0
				8	0	21.91	22.0±1	1.0
				8	4	21.9	22.0±1	1.0
				8	9	21.9	22.0±1	1.0
				15	0	21.83	22.0±1	1.0
	20525	836.5	QPSK	1	0	23.74	23.0±1	/
				1	8	23.83	23.0±1	/
				1	14	23.68	23.0±1	/
				6	0	22.68	23.0±1	1.0
				6	4	22.69	23.0±1	1.0
				6	9	22.64	23.0±1	1.0
				15	0	22.66	23.0±1	1.0
			16QAM	1	0	23.03	22.5±1	1.0
				1	8	23.16	22.5±1	1.0
				1	14	22.96	22.5±1	1.0
				6	0	21.77	22.5±1	1.0
				6	4	21.77	22.5±1	1.0
				6	9	21.69	22.5±1	1.0
				15	0	21.7	22.5±1	1.0
	20635	847.5	QPSK	1	0	23.79	23.0±1	/
				1	8	23.93	23.0±1	/
				1	14	23.8	23.0±1	/
				6	0	22.83	23.0±1	1.0

				6	4	22.88	23.0±1	1.0
				6	9	22.85	23.0±1	1.0
				15	0	22.81	23.0±1	1.0
			16QAM	1	0	22.76	22.0±1	1.0
				1	8	22.9	22.0±1	1.0
				1	14	22.77	22.0±1	1.0
				8	0	21.83	22.0±1	1.0
				8	4	21.89	22.0±1	1.0
				8	9	21.86	22.0±1	1.0
				15	0	21.81	22.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
5MHz	20425	826.5	QPSK	1	0	23.73	23.0±1	/
				1	49	23.92	23.0±1	/
				1	99	23.66	23.0±1	/
				12	0	22.79	23.0±1	1.0
				12	24	22.85	23.0±1	1.0
				12	49	22.78	23.0±1	1.0
				25	0	22.77	23.0±1	1.0
			16QAM	1	0	22.82	22.5±1	1.0
				1	49	23.07	22.5±1	1.0
				1	99	22.78	22.5±1	1.0
				12	0	21.82	22.5±1	1.0
				12	24	21.94	22.5±1	1.0
				12	49	21.85	22.5±1	1.0
				25	0	21.83	22.5±1	1.0
	20525	836.5	QPSK	1	0	23.63	23.0±1	/
				1	49	23.84	23.0±1	/
				1	99	23.57	23.0±1	/
				12	0	22.71	23.0±1	1.0
				12	24	22.74	23.0±1	1.0
				12	49	22.66	23.0±1	1.0
				25	0	22.66	23.0±1	1.0
			16QAM	1	0	23.08	22.5±1	1.0
				1	49	23.3	22.5±1	1.0
				1	99	23.02	22.5±1	1.0
				12	0	21.84	22.5±1	1.0
				12	24	21.84	22.5±1	1.0
				12	49	21.72	22.5±1	1.0
				25	0	21.73	22.5±1	1.0

	20625	846.5	QPSK	1	0	23.74	23.0±1	/
				1	49	23.98	23.0±1	/
				1	99	23.8	23.0±1	/
				12	0	22.84	23.0±1	1.0
				12	24	22.85	23.0±1	1.0
				12	49	22.78	23.0±1	1.0
				25	0	22.78	23.0±1	1.0
			16QAM	1	0	22.76	22.5±1	1.0
				1	49	23.02	22.5±1	1.0
				1	99	22.82	22.5±1	1.0
				12	0	21.89	22.5±1	1.0
				12	24	21.87	22.5±1	1.0
				12	49	21.83	22.5±1	1.0
				25	0	21.74	22.5±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
10MHz	20450	829	QPSK	1	0	24.03	23.5±1	/
				1	49	23.92	23.5±1	/
				1	99	23.75	23.5±1	/
				25	0	22.87	23.5±1	1.0
				25	24	22.86	23.5±1	1.0
				25	49	22.82	23.5±1	1.0
				50	0	22.81	23.5±1	1.0
			16QAM	1	0	22.67	22.0±1	1.0
				1	49	22.77	22.0±1	1.0
				1	99	22.61	22.0±1	1.0
				25	0	21.88	22.0±1	1.0
				25	24	21.91	22.0±1	1.0
				25	49	21.86	22.0±1	1.0
				50	0	21.86	22.0±1	1.0
	20525	836.5	QPSK	1	0	23.77	23.0±1	/
				1	49	23.79	23.0±1	/
				1	99	23.75	23.0±1	/
				25	0	22.73	23.0±1	1.0
				25	24	22.74	23.0±1	1.0
				25	49	22.7	23.0±1	1.0
				50	0	22.7	23.0±1	1.0
			16QAM	1	0	23.08	22.5±1	1.0
				1	49	23.1	22.5±1	1.0
				1	99	23.05	22.5±1	1.0

				25	0	21.79	22.5±1	1.0
				25	24	21.83	22.5±1	1.0
				25	49	21.73	22.5±1	1.0
				50	0	21.76	22.5±1	1.0
	20600	844	QPSK	1	0	23.65	23.0±1	/
				1	49	23.81	23.0±1	/
				1	99	23.85	23.0±1	/
				25	0	22.82	23.0±1	1.0
				25	24	22.86	23.0±1	1.0
				25	49	22.79	23.0±1	1.0
				50	0	22.82	23.0±1	1.0
			16QAM	1	0	22.61	22.0±1	1.0
				1	49	22.79	22.0±1	1.0
				1	99	22.81	22.0±1	1.0
				25	0	21.92	22.0±1	1.0
				25	24	21.96	22.0±1	1.0
				25	49	21.89	22.0±1	1.0
				50	0	21.83	22.0±1	1.0

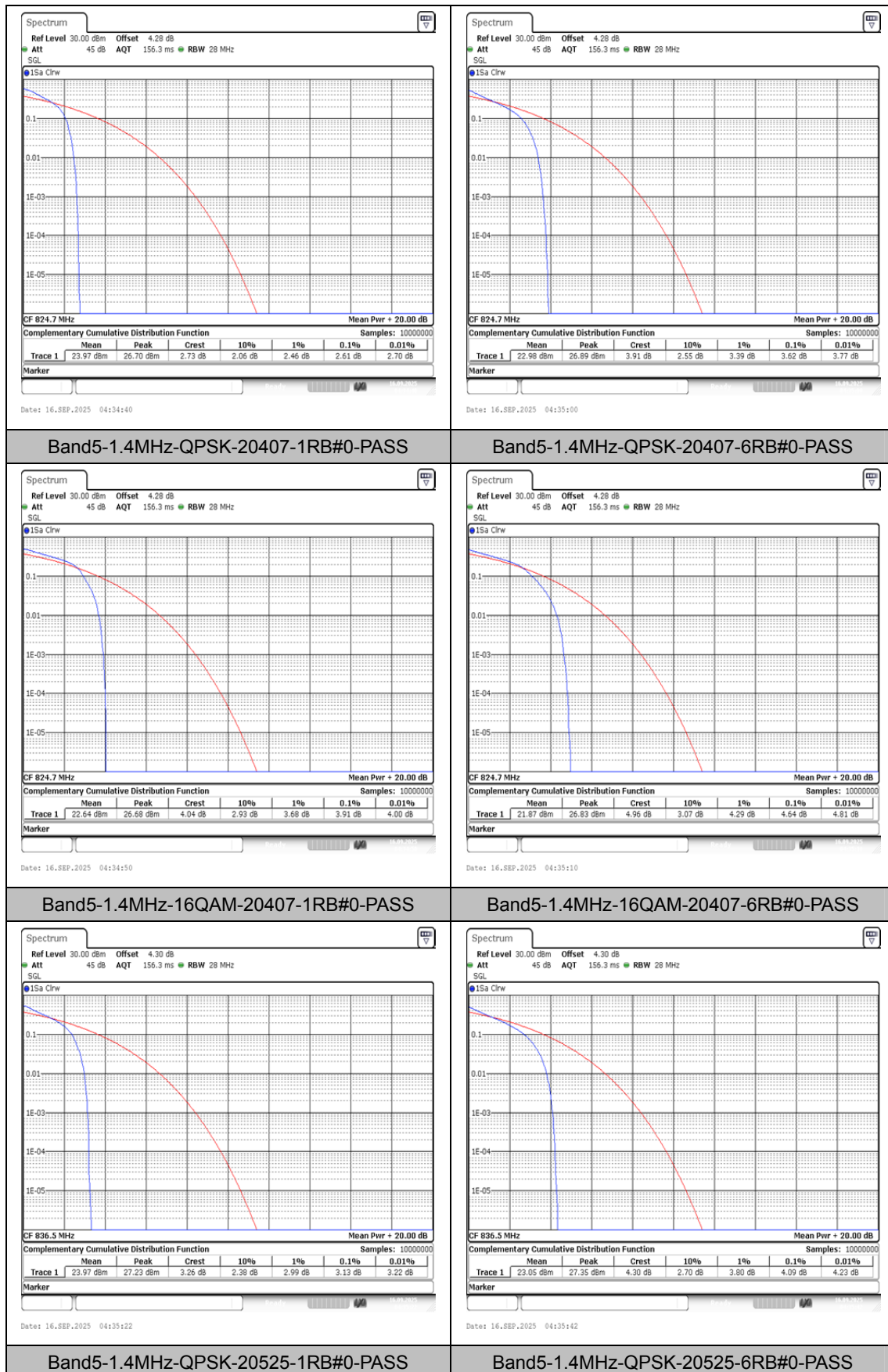
Appendix B: Peak-to-Average Ratio(CCDF)

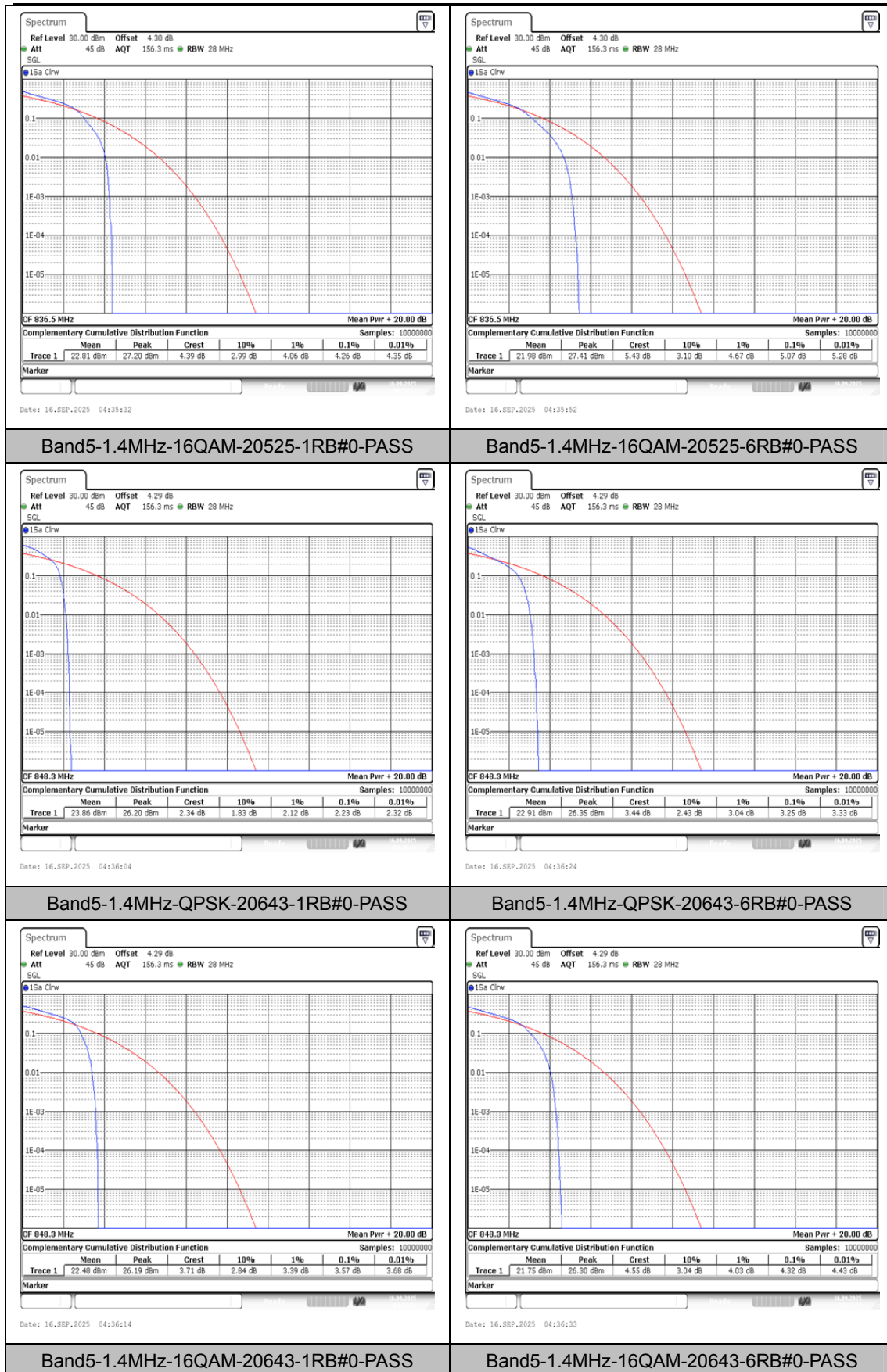
Test Result

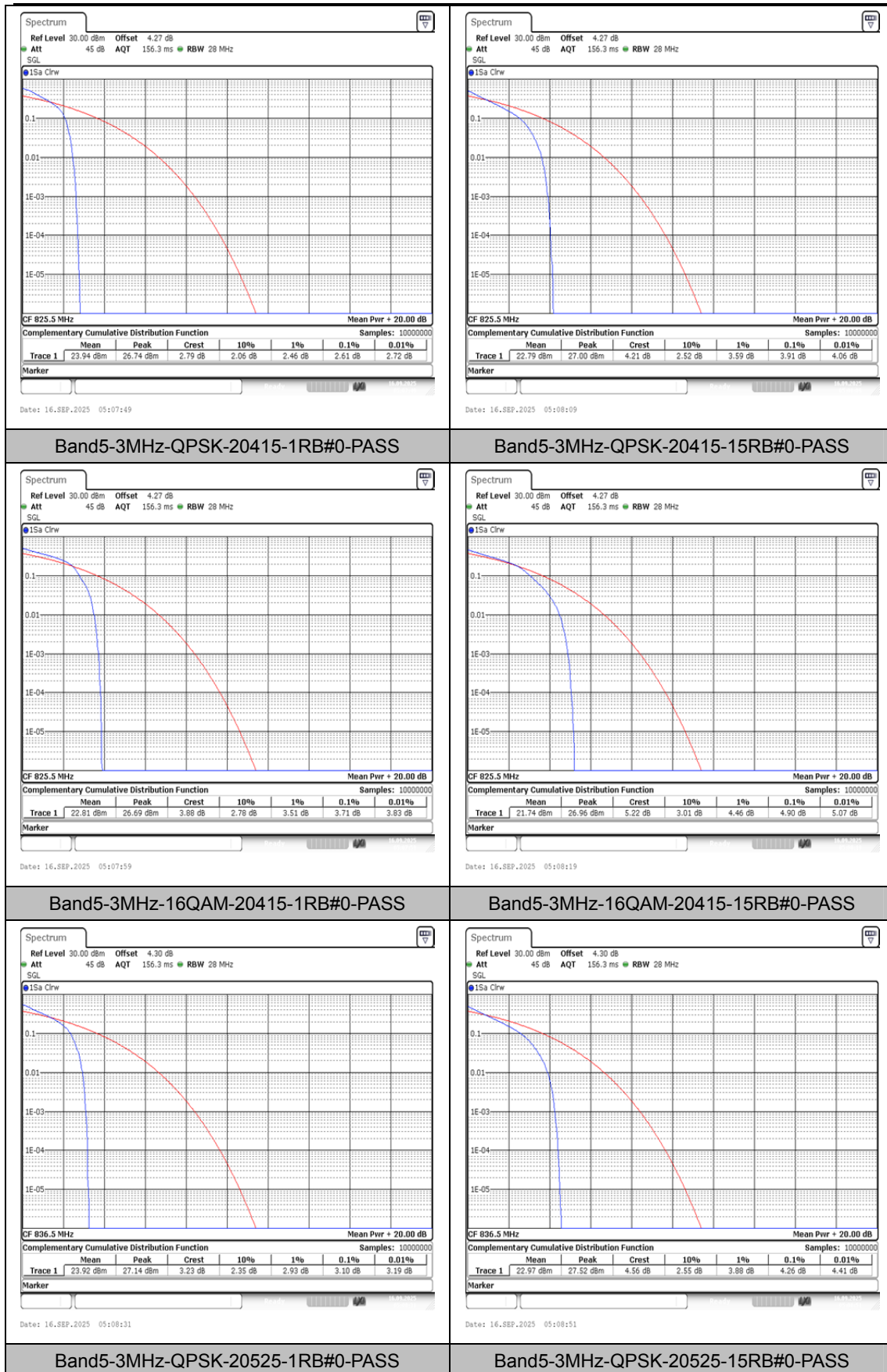
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band5	1.4MHz	QPSK	20407	1RB#0	2.61	13	PASS
Band5	1.4MHz	QPSK	20407	6RB#0	3.62	13	PASS
Band5	1.4MHz	16QAM	20407	1RB#0	3.91	13	PASS
Band5	1.4MHz	16QAM	20407	6RB#0	4.64	13	PASS
Band5	1.4MHz	QPSK	20525	1RB#0	3.13	13	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	4.09	13	PASS
Band5	1.4MHz	16QAM	20525	1RB#0	4.26	13	PASS
Band5	1.4MHz	16QAM	20525	6RB#0	5.07	13	PASS
Band5	1.4MHz	QPSK	20643	1RB#0	2.23	13	PASS
Band5	1.4MHz	QPSK	20643	6RB#0	3.25	13	PASS
Band5	1.4MHz	16QAM	20643	1RB#0	3.57	13	PASS
Band5	1.4MHz	16QAM	20643	6RB#0	4.32	13	PASS
Band5	3MHz	QPSK	20415	1RB#0	2.61	13	PASS
Band5	3MHz	QPSK	20415	15RB#0	3.91	13	PASS
Band5	3MHz	16QAM	20415	1RB#0	3.71	13	PASS
Band5	3MHz	16QAM	20415	15RB#0	4.90	13	PASS
Band5	3MHz	QPSK	20525	1RB#0	3.10	13	PASS
Band5	3MHz	QPSK	20525	15RB#0	4.26	13	PASS
Band5	3MHz	16QAM	20525	1RB#0	4.20	13	PASS
Band5	3MHz	16QAM	20525	15RB#0	5.19	13	PASS
Band5	3MHz	QPSK	20635	1RB#0	2.38	13	PASS
Band5	3MHz	QPSK	20635	15RB#0	3.48	13	PASS
Band5	3MHz	16QAM	20635	1RB#0	3.51	13	PASS
Band5	3MHz	16QAM	20635	15RB#0	4.46	13	PASS
Band5	5MHz	QPSK	20425	1RB#0	2.78	13	PASS
Band5	5MHz	QPSK	20425	25RB#0	4.09	13	PASS
Band5	5MHz	16QAM	20425	1RB#0	3.80	13	PASS
Band5	5MHz	16QAM	20425	25RB#0	5.01	13	PASS
Band5	5MHz	QPSK	20525	1RB#0	3.33	13	PASS
Band5	5MHz	QPSK	20525	25RB#0	4.29	13	PASS
Band5	5MHz	16QAM	20525	1RB#0	4.17	13	PASS
Band5	5MHz	16QAM	20525	25RB#0	5.19	13	PASS
Band5	5MHz	QPSK	20625	1RB#0	2.93	13	PASS
Band5	5MHz	QPSK	20625	25RB#0	3.68	13	PASS
Band5	5MHz	16QAM	20625	1RB#0	3.94	13	PASS
Band5	5MHz	16QAM	20625	25RB#0	4.64	13	PASS

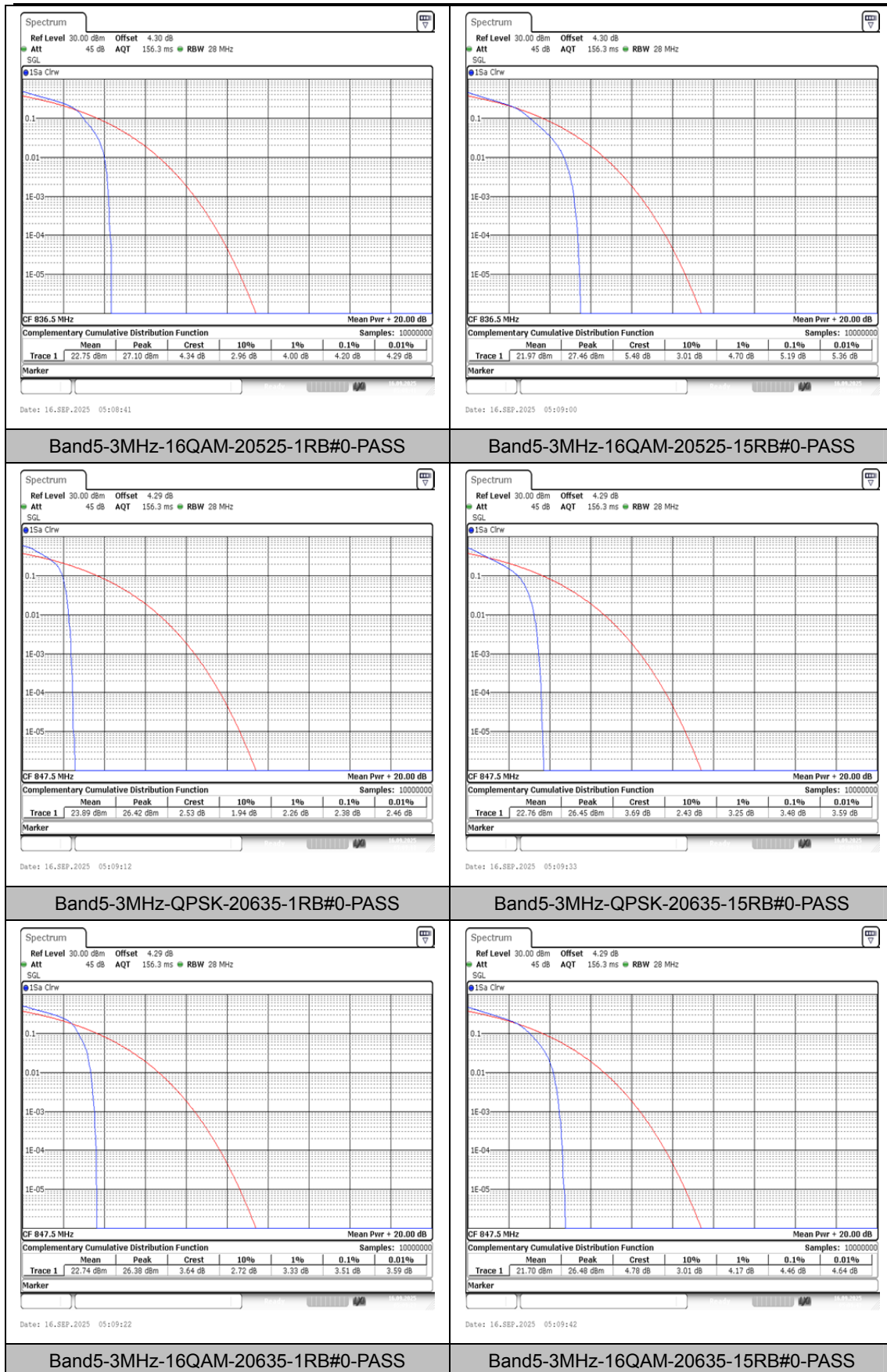
Band5	10MHz	QPSK	20450	1RB#0	2.64	13	PASS
Band5	10MHz	QPSK	20450	50RB#0	4.32	13	PASS
Band5	10MHz	16QAM	20450	1RB#0	3.74	13	PASS
Band5	10MHz	16QAM	20450	50RB#0	5.25	13	PASS
Band5	10MHz	QPSK	20525	1RB#0	3.33	13	PASS
Band5	10MHz	QPSK	20525	50RB#0	4.35	13	PASS
Band5	10MHz	16QAM	20525	1RB#0	4.41	13	PASS
Band5	10MHz	16QAM	20525	50RB#0	5.28	13	PASS
Band5	10MHz	QPSK	20600	1RB#0	3.07	13	PASS
Band5	10MHz	QPSK	20600	50RB#0	4.12	13	PASS
Band5	10MHz	16QAM	20600	1RB#0	4.09	13	PASS
Band5	10MHz	16QAM	20600	50RB#0	5.10	13	PASS

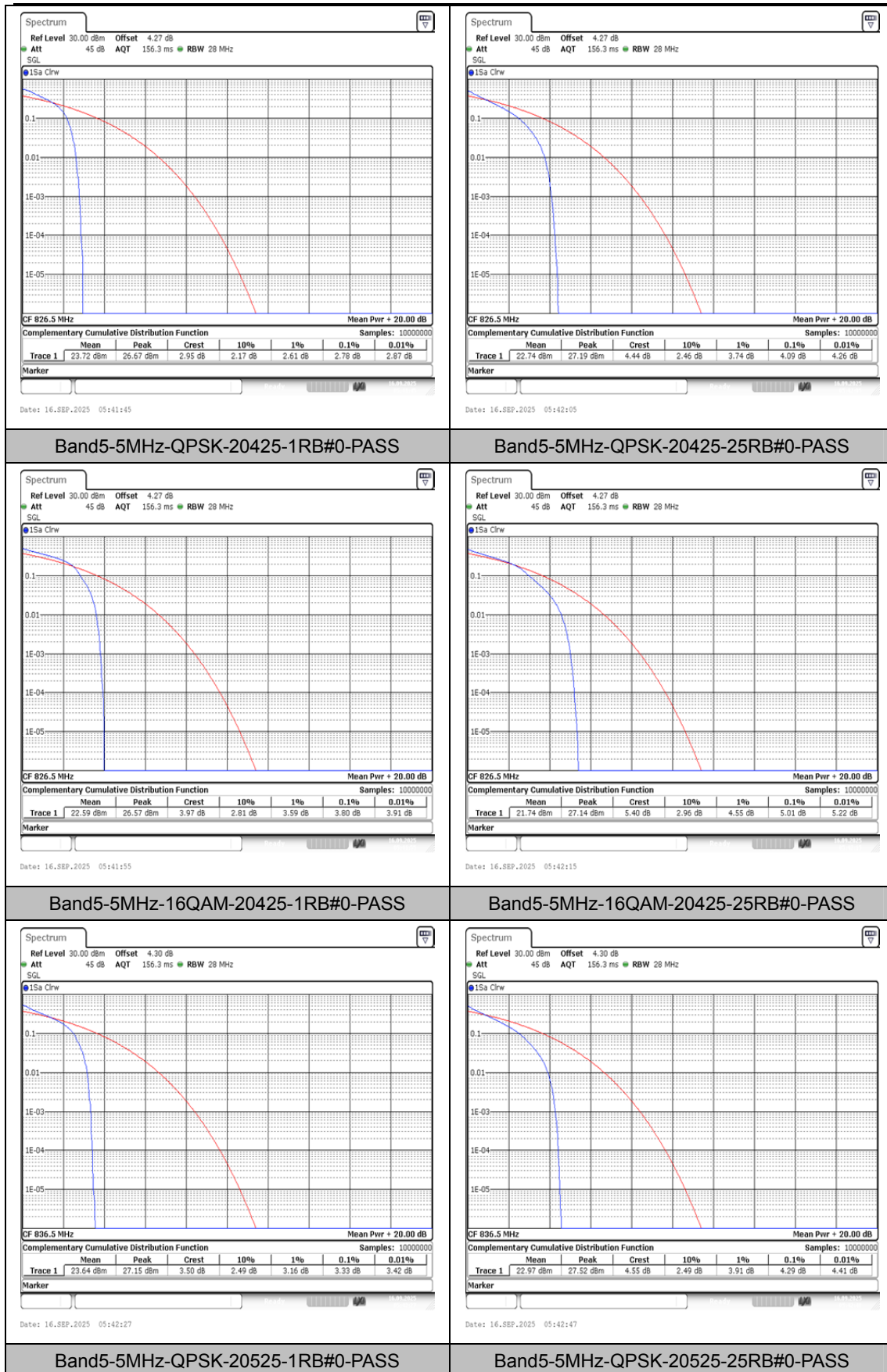
Test Graphs

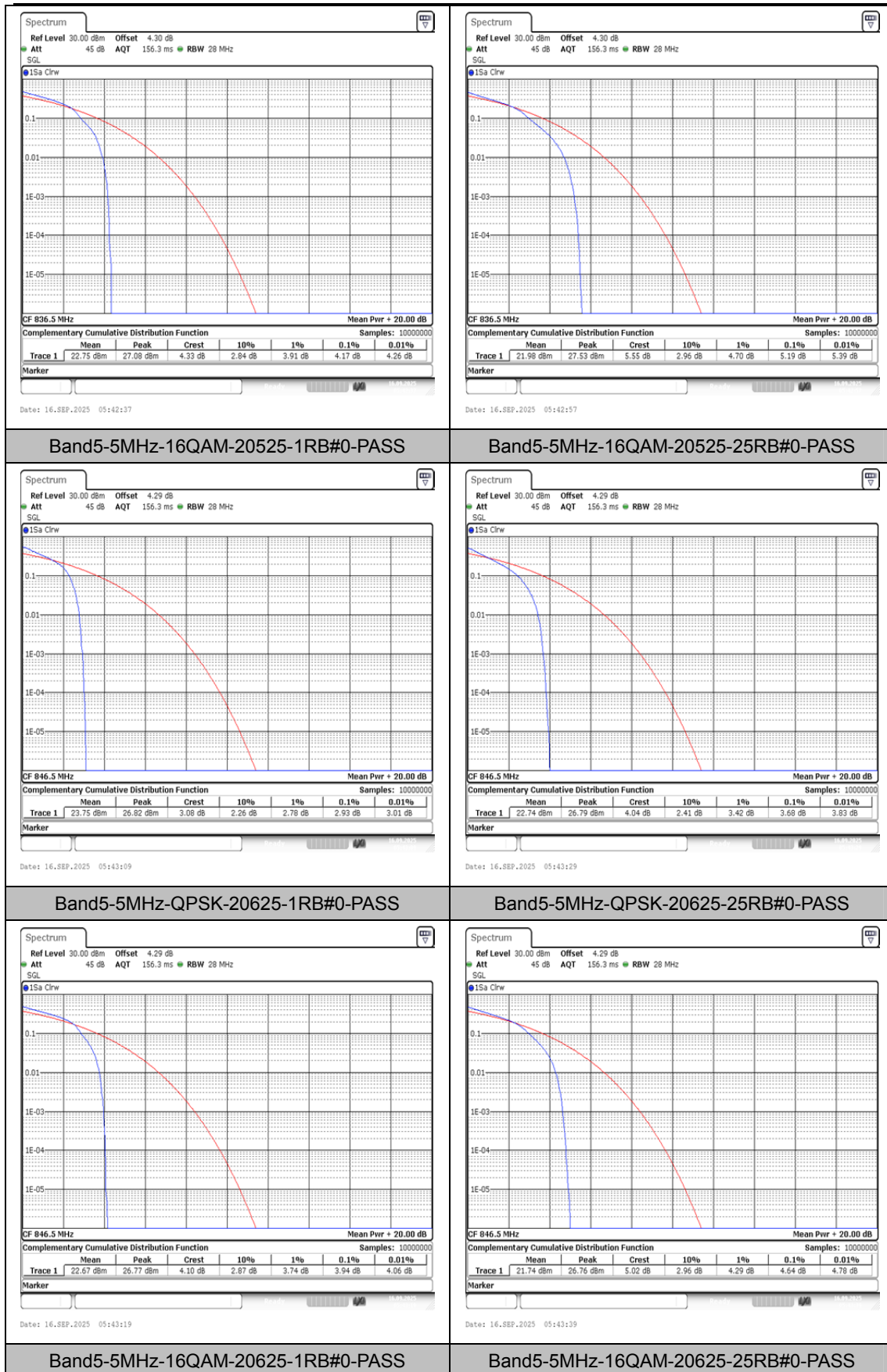


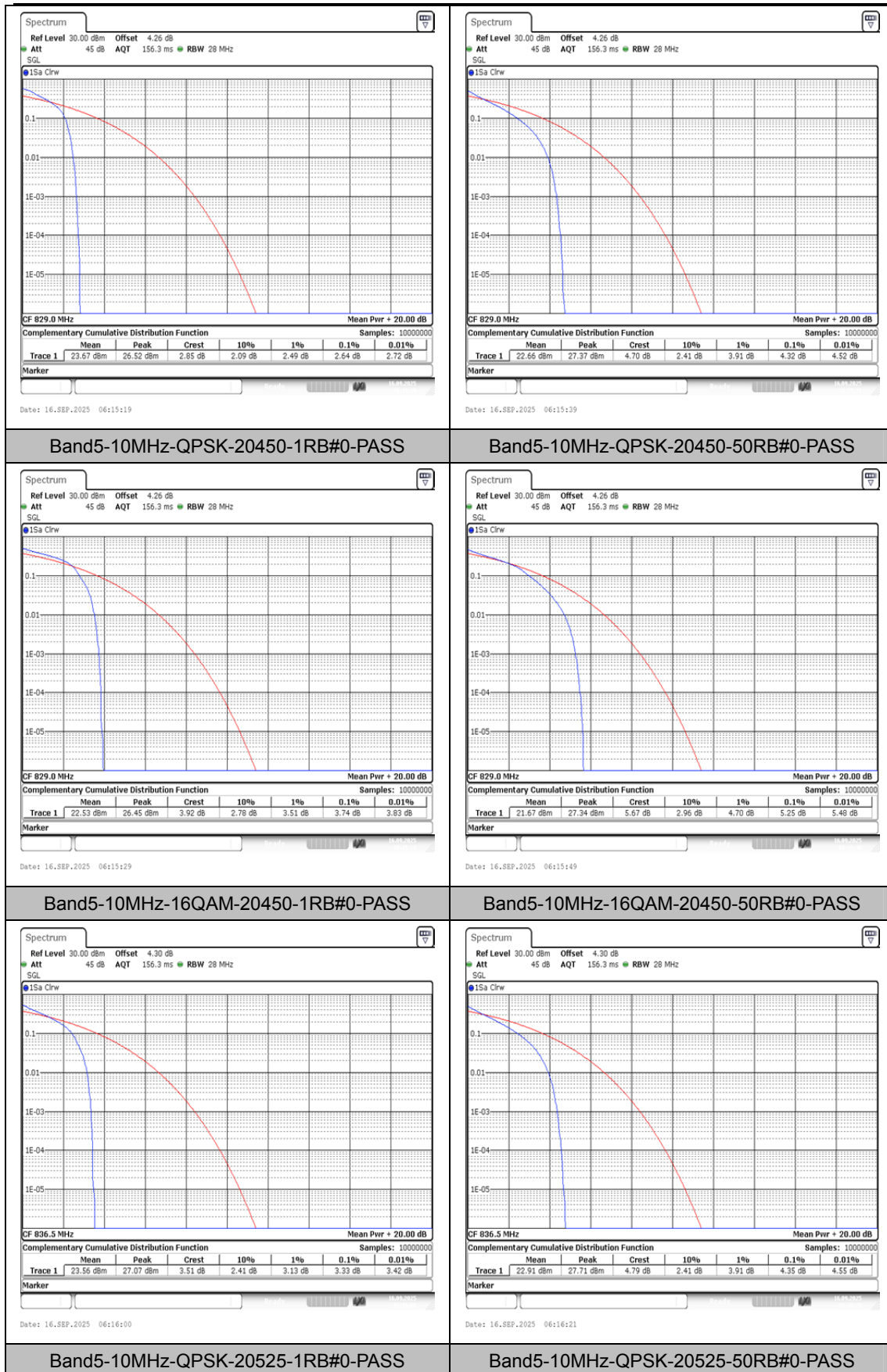


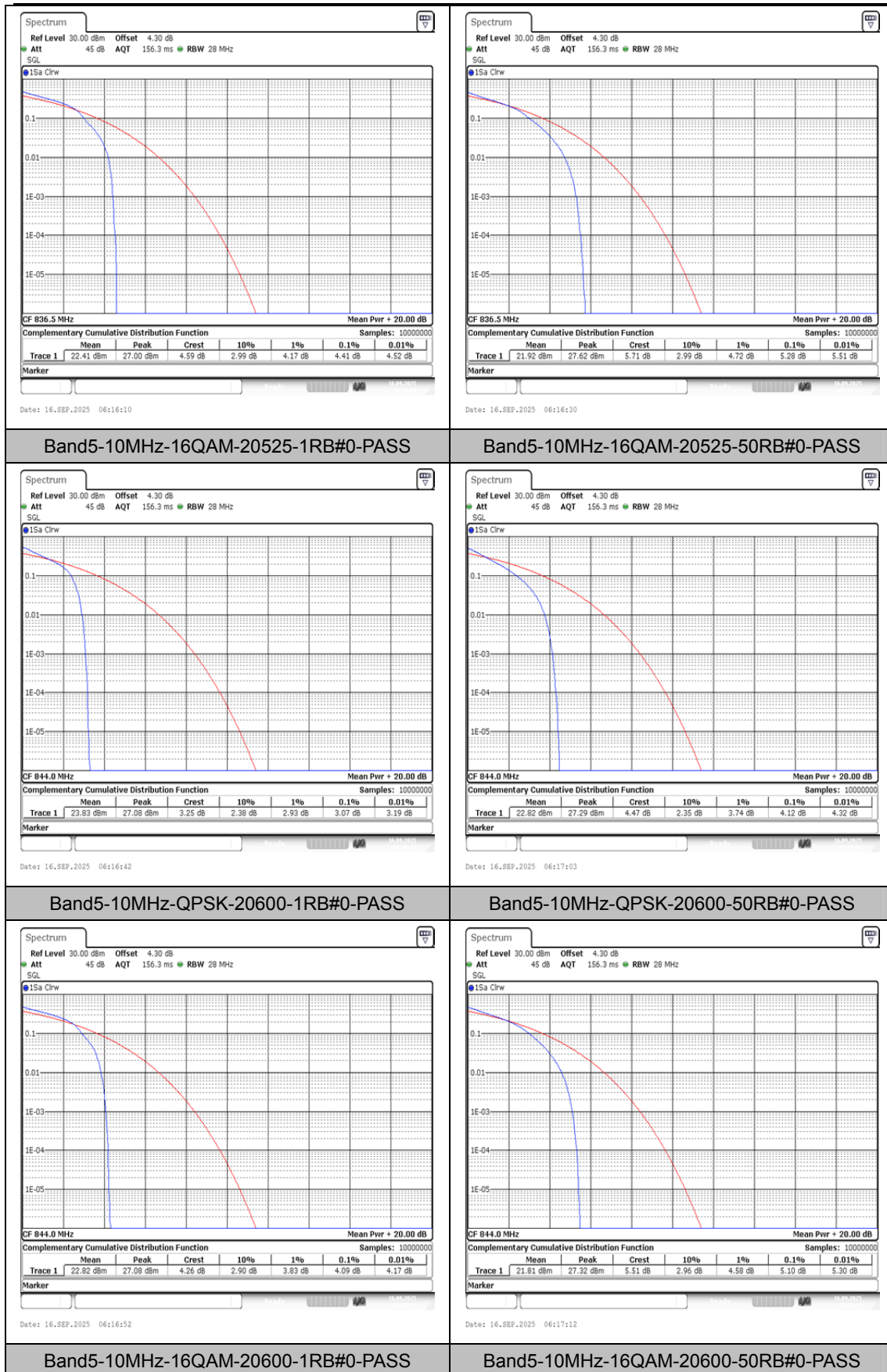










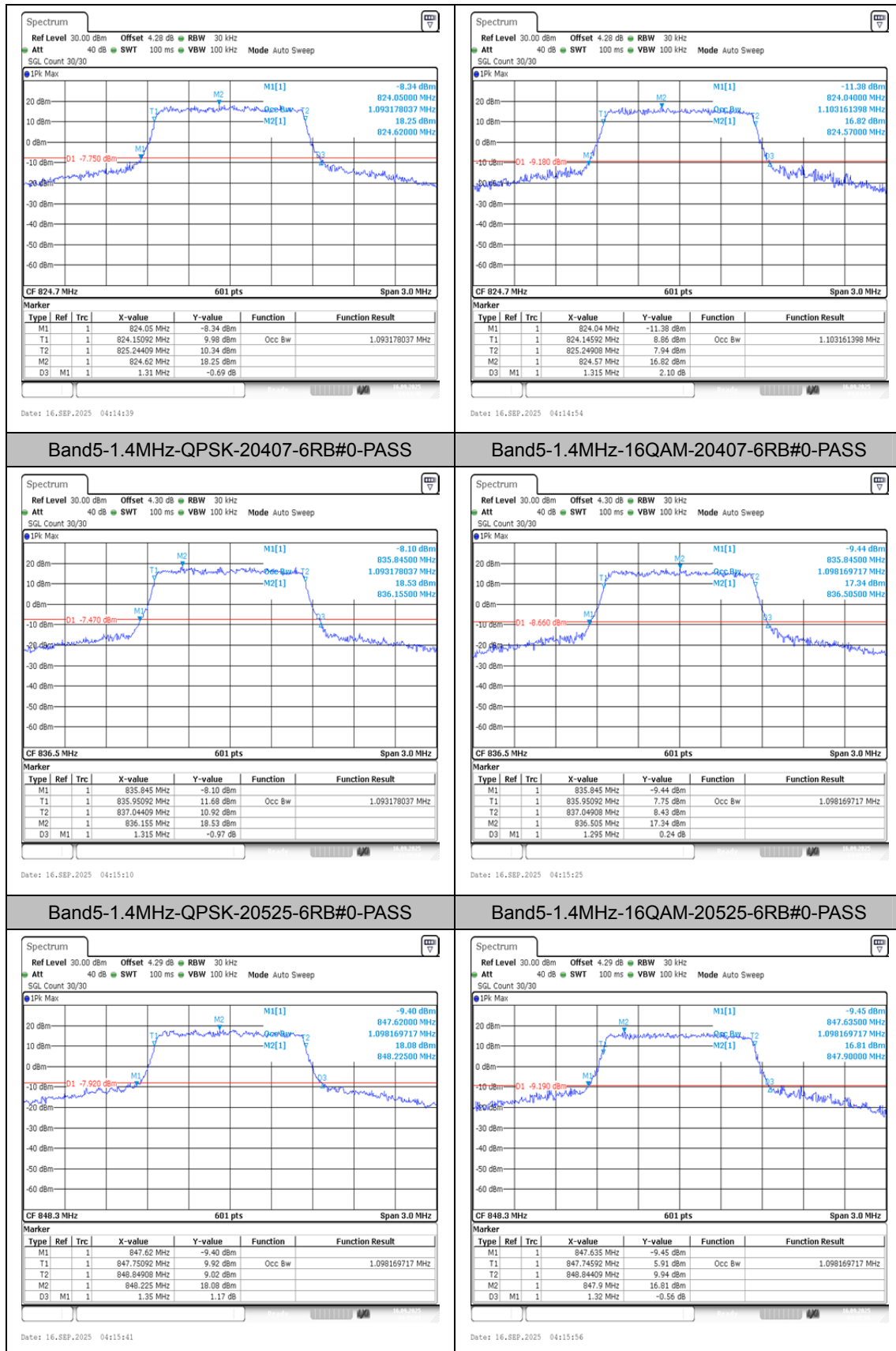


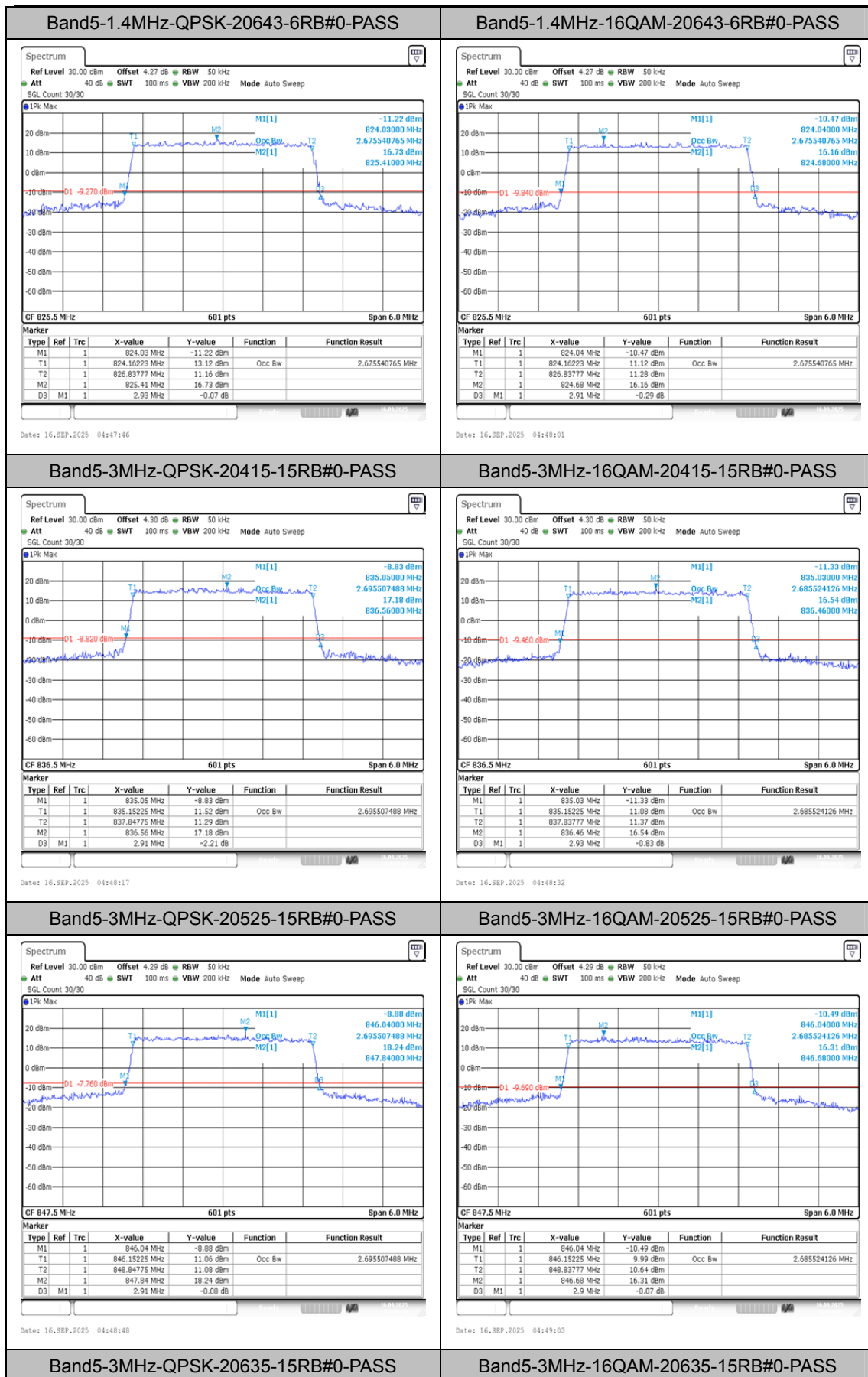
Appendix C: 26dB Bandwidth and Occupied Bandwidth

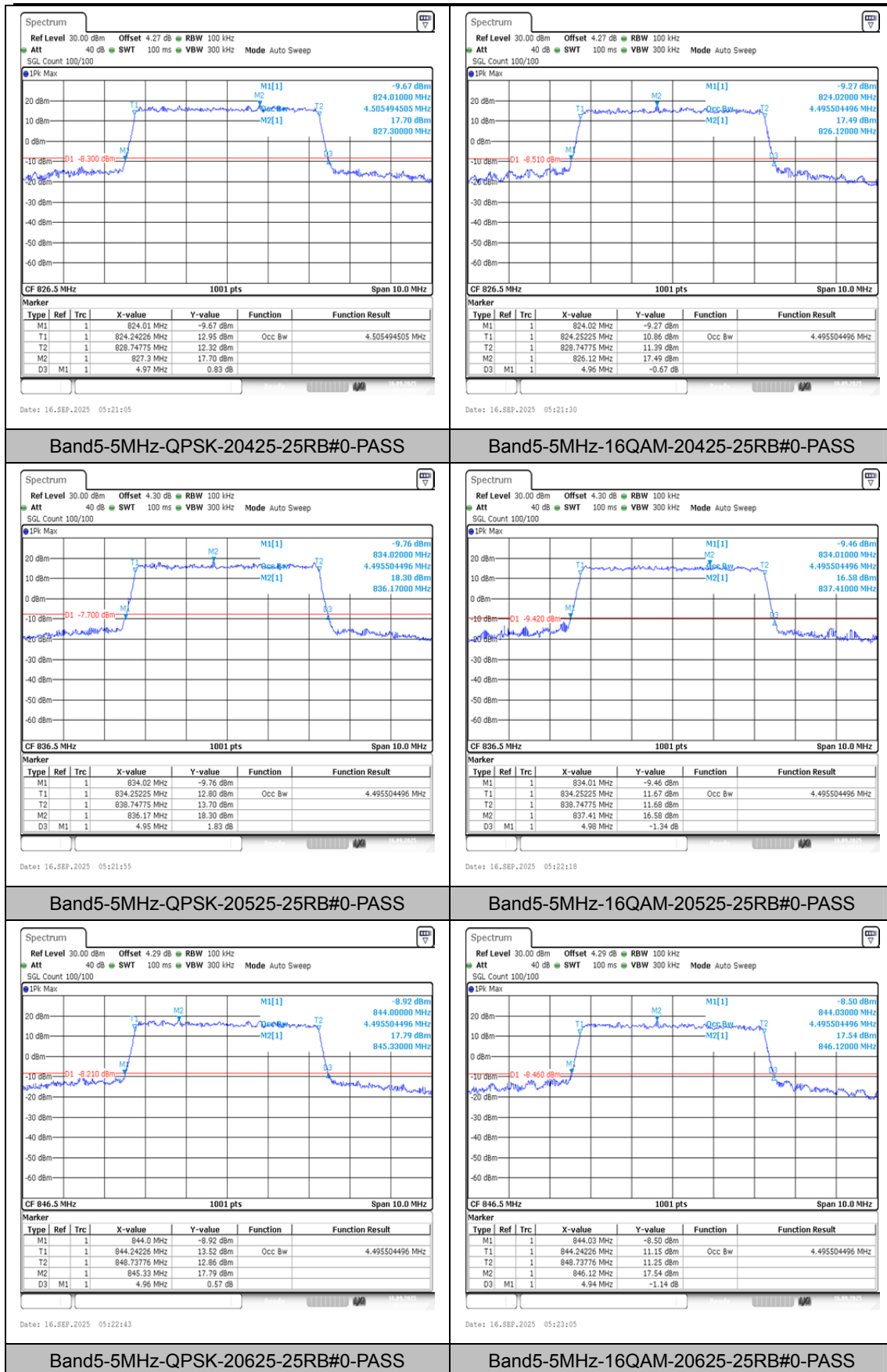
Test Result

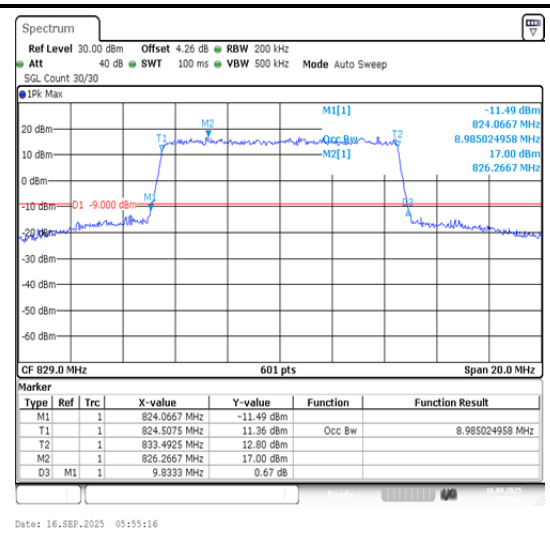
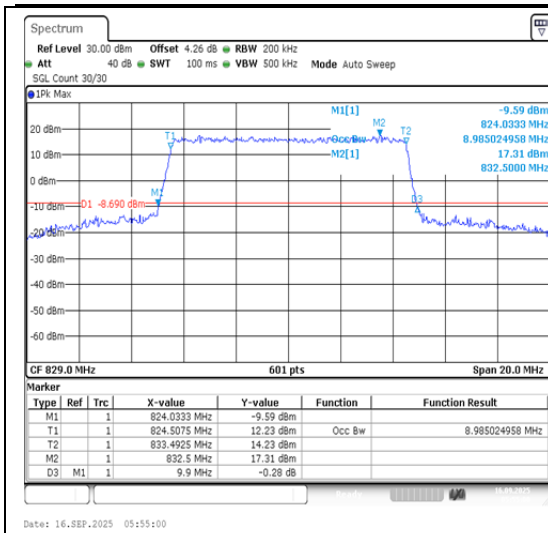
Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band5	1.4MHz	QPSK	20407	6RB#0	1.093	1.31	PASS
Band5	1.4MHz	16QAM	20407	6RB#0	1.103	1.31	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	1.093	1.31	PASS
Band5	1.4MHz	16QAM	20525	6RB#0	1.098	1.29	PASS
Band5	1.4MHz	QPSK	20643	6RB#0	1.098	1.35	PASS
Band5	1.4MHz	16QAM	20643	6RB#0	1.098	1.32	PASS
Band5	3MHz	QPSK	20415	15RB#0	2.676	2.93	PASS
Band5	3MHz	16QAM	20415	15RB#0	2.676	2.91	PASS
Band5	3MHz	QPSK	20525	15RB#0	2.696	2.91	PASS
Band5	3MHz	16QAM	20525	15RB#0	2.686	2.93	PASS
Band5	3MHz	QPSK	20635	15RB#0	2.696	2.91	PASS
Band5	3MHz	16QAM	20635	15RB#0	2.686	2.90	PASS
Band5	5MHz	QPSK	20425	25RB#0	4.505	4.97	PASS
Band5	5MHz	16QAM	20425	25RB#0	4.496	4.96	PASS
Band5	5MHz	QPSK	20525	25RB#0	4.496	4.95	PASS
Band5	5MHz	16QAM	20525	25RB#0	4.496	4.98	PASS
Band5	5MHz	QPSK	20625	25RB#0	4.496	4.96	PASS
Band5	5MHz	16QAM	20625	25RB#0	4.496	4.94	PASS
Band5	10MHz	QPSK	20450	50RB#0	8.985	9.90	PASS
Band5	10MHz	16QAM	20450	50RB#0	8.985	9.83	PASS
Band5	10MHz	QPSK	20525	50RB#0	9.018	9.87	PASS
Band5	10MHz	16QAM	20525	50RB#0	9.018	9.90	PASS
Band5	10MHz	QPSK	20600	50RB#0	8.985	9.90	PASS
Band5	10MHz	16QAM	20600	50RB#0	8.985	9.77	PASS

Test Graphs



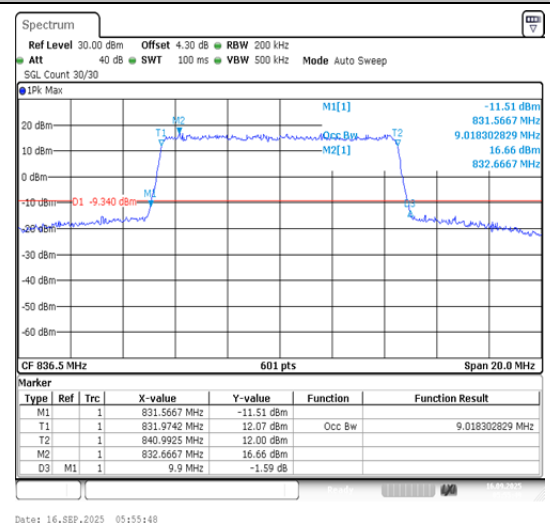
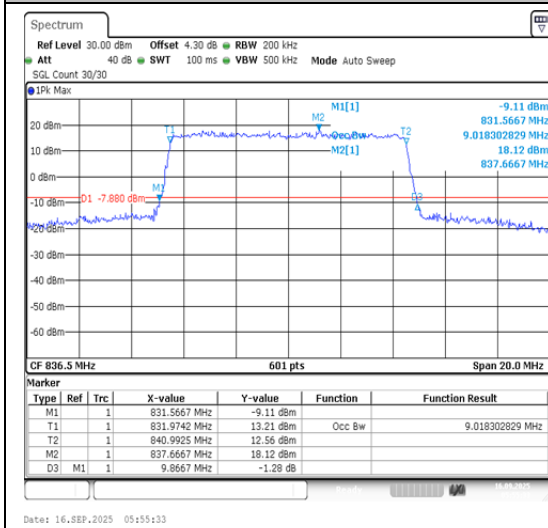






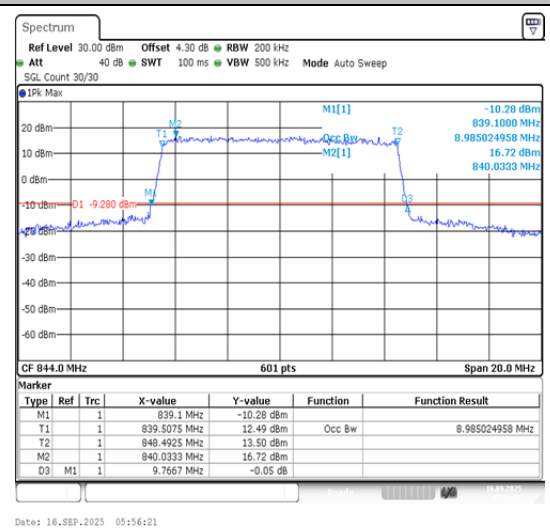
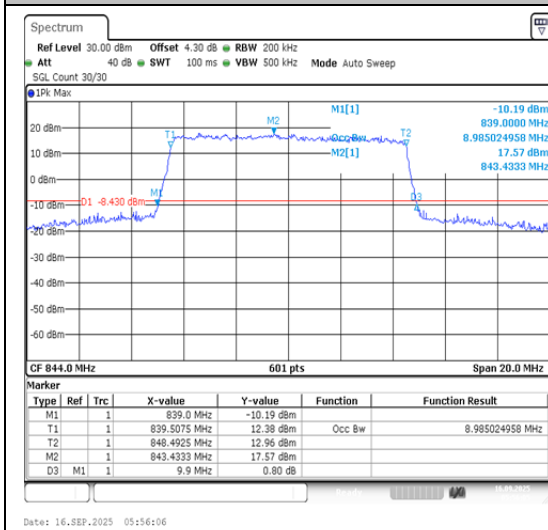
Band5-10MHz-QPSK-20450-50RB#0-PASS

Band5-10MHz-16QAM-20450-50RB#0-PASS



Band5-10MHz-QPSK-20525-50RB#0-PASS

Band5-10MHz-16QAM-20525-50RB#0-PASS



Band5-10MHz-QPSK-20600-50RB#0-PASS

Band5-10MHz-16QAM-20600-50RB#0-PASS

Appendix D: Band Edge

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band5	1.4MHz	QPSK	20407	1RB#0	-18.91	PASS
Band5	1.4MHz	QPSK	20407	1RB#5	-25.55	PASS
Band5	1.4MHz	QPSK	20407	6RB#0	-23.78	PASS
Band5	1.4MHz	16QAM	20407	1RB#0	-21.94	PASS
Band5	1.4MHz	16QAM	20407	1RB#5	-27.03	PASS
Band5	1.4MHz	16QAM	20407	6RB#0	-27.32	PASS
Band5	1.4MHz	QPSK	20643	1RB#0	-25.09	PASS
Band5	1.4MHz	QPSK	20643	1RB#5	-18.49	PASS
Band5	1.4MHz	QPSK	20643	6RB#0	-20.96	PASS
Band5	1.4MHz	16QAM	20643	1RB#0	-26.55	PASS
Band5	1.4MHz	16QAM	20643	1RB#5	-20.65	PASS
Band5	1.4MHz	16QAM	20643	6RB#0	-25.27	PASS
Band5	3MHz	QPSK	20415	1RB#0	-15.99	PASS
Band5	3MHz	QPSK	20415	1RB#14	-49.42	PASS
Band5	3MHz	QPSK	20415	15RB#0	-26.92	PASS
Band5	3MHz	16QAM	20415	1RB#0	-18.09	PASS
Band5	3MHz	16QAM	20415	1RB#14	-49.20	PASS
Band5	3MHz	16QAM	20415	15RB#0	-29.30	PASS
Band5	3MHz	QPSK	20635	1RB#0	-50.20	PASS
Band5	3MHz	QPSK	20635	1RB#14	-13.87	PASS
Band5	3MHz	QPSK	20635	15RB#0	-24.17	PASS
Band5	3MHz	16QAM	20635	1RB#0	-50.25	PASS
Band5	3MHz	16QAM	20635	1RB#14	-17.57	PASS
Band5	3MHz	16QAM	20635	15RB#0	-27.31	PASS
Band5	5MHz	QPSK	20425	1RB#0	-18.45	PASS
Band5	5MHz	QPSK	20425	1RB#24	-48.20	PASS
Band5	5MHz	QPSK	20425	25RB#0	-27.26	PASS
Band5	5MHz	16QAM	20425	1RB#0	-19.06	PASS
Band5	5MHz	16QAM	20425	1RB#24	-48.05	PASS
Band5	5MHz	16QAM	20425	25RB#0	-29.46	PASS
Band5	5MHz	QPSK	20625	1RB#0	-47.75	PASS
Band5	5MHz	QPSK	20625	1RB#24	-17.50	PASS
Band5	5MHz	QPSK	20625	25RB#0	-25.65	PASS
Band5	5MHz	16QAM	20625	1RB#0	-47.47	PASS
Band5	5MHz	16QAM	20625	1RB#24	-19.10	PASS
Band5	5MHz	16QAM	20625	25RB#0	-27.73	PASS