

Appendix E: Test Results of Band 13 for eMTC operation

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APPENDIX E.1: RF POWER OUTPUT AND EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA FOR M1

Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	Index	Result (dBm)	Verdict
Band13	5MHz	23205	QPSK	1	0	Low	23.51	PASS
Band13	5MHz	23205	QPSK	6	0	Low	22.32	PASS
Band13	5MHz	23230	QPSK	1	0	Low	23.51	PASS
Band13	5MHz	23230	QPSK	6	0	Low	22.33	PASS
Band13	5MHz	23255	QPSK	1	5	High	23.25	PASS
Band13	5MHz	23255	QPSK	3	3	High	22.23	PASS
Band13	5MHz	23205	16QAM	1	0	Low	23.56	PASS
Band13	5MHz	23205	16QAM	6	0	Low	22.32	PASS
Band13	5MHz	23230	16QAM	1	0	Low	23.55	PASS
Band13	5MHz	23230	16QAM	6	0	Low	22.33	PASS
Band13	5MHz	23255	16QAM	1	5	High	23.31	PASS
Band13	5MHz	23255	16QAM	3	3	High	22.39	PASS
Band13	10MHz	23230	QPSK	1	0	Low	23.57	PASS
Band13	10MHz	23230	QPSK	1	5	High	23.21	PASS
Band13	10MHz	23230	QPSK	5	0	Low	22.40	PASS
Band13	10MHz	23230	QPSK	5	1	High	22.33	PASS
Band13	10MHz	23230	16QAM	1	0	Low	23.59	PASS
Band13	10MHz	23230	16QAM	1	5	High	23.31	PASS
Band13	10MHz	23230	16QAM	5	0	Low	22.50	PASS
Band13	10MHz	23230	16QAM	5	1	High	22.43	PASS

Note: The highest antenna gain permitted including cable loss, must satisfy both EIRP (ERP) limit and RF exposure requirements.

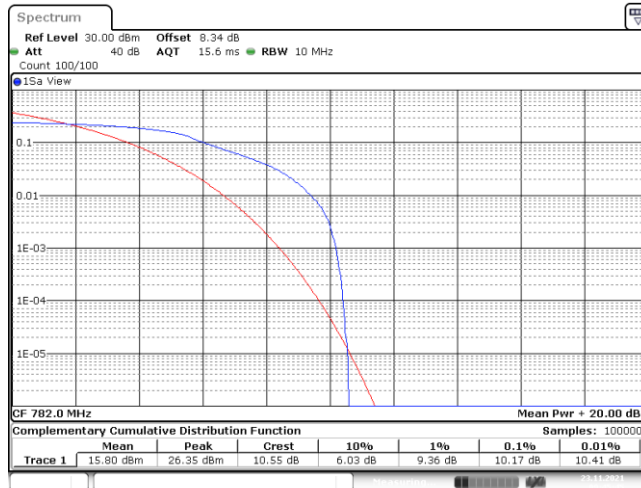
APPENDIX E.2: PEAK-TO-AVERAGE RATIO (CCDF) FOR M1

Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	Index	Result (dB)	Limit (dB)	Verdict
Band13	5MHz	23230	QPSK	6	0	Low	10.17	<=13	PASS
Band13	5MHz	23230	16QAM	6	0	Low	8.96	<=13	PASS
Band13	10MHz	23230	QPSK	6	0	Low	11.65	<=13	PASS
Band13	10MHz	23230	16QAM	6	0	Low	10.06	<=13	PASS

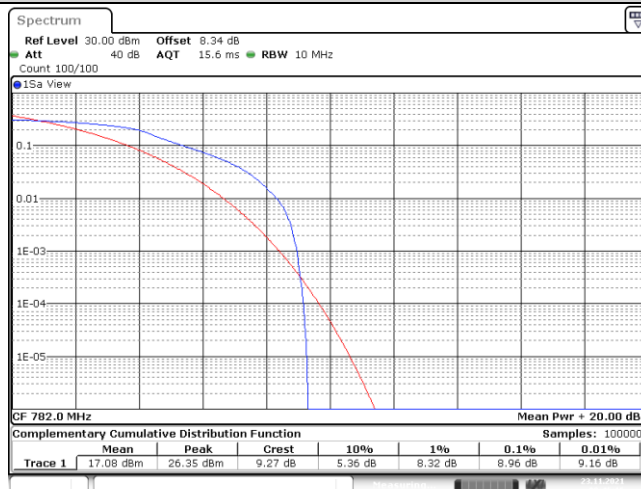
Test Graphs

Band13-5MHz-QPSK-23230-6-0-Low-10.17-<=13-PASS



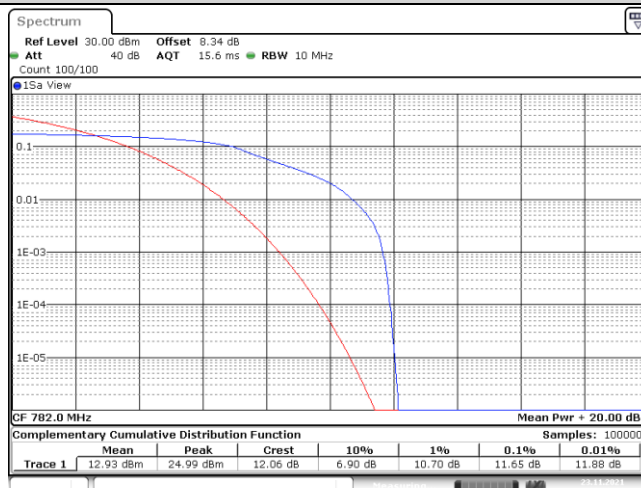
Date: 23.NOV.2021 09:45:45

Band13-5MHz-16QAM-23230-6-0-Low-8.96-<=13-PASS



Date: 23.NOV.2021 09:46:16

Band13-10MHz-QPSK-23230-6-0-Low-11.65-<=13-PASS



Date: 23.NOV.2021 09:46:30

Band13-10MHz-16QAM-23230-6-0-Low-10.06-<=13-PASS



Date: 23.NOV.2021 09:46:39

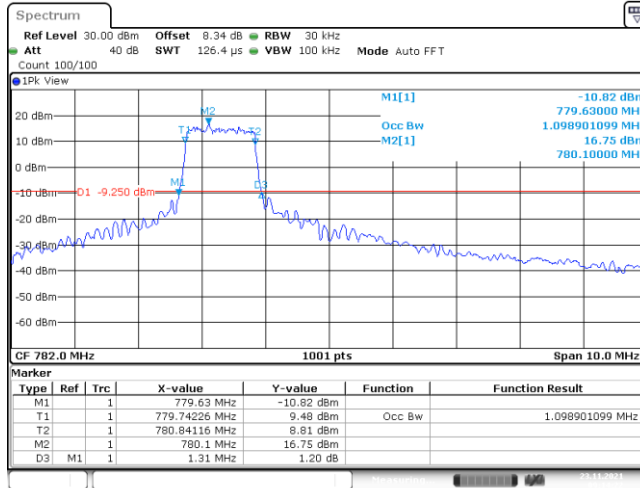
APPENDIX E.3: 26dB BANDWIDTH AND OCCUPIED BANDWIDTH FOR M1

Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	Index	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	23230	QPSK	6	0	Low	1.099	1.310	PASS
Band13	5MHz	23230	16QAM	6	0	Low	1.109	1.310	PASS
Band13	10MHz	23230	QPSK	6	0	Low	1.099	1.320	PASS
Band13	10MHz	23230	16QAM	6	0	Low	1.099	1.320	PASS

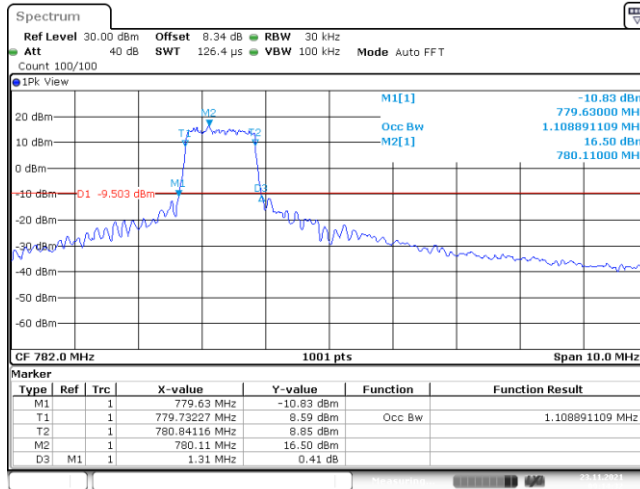
Test Graphs

Band13-5MHz-QPSK-23230-6-0-Low-1.099-1.310-PASS



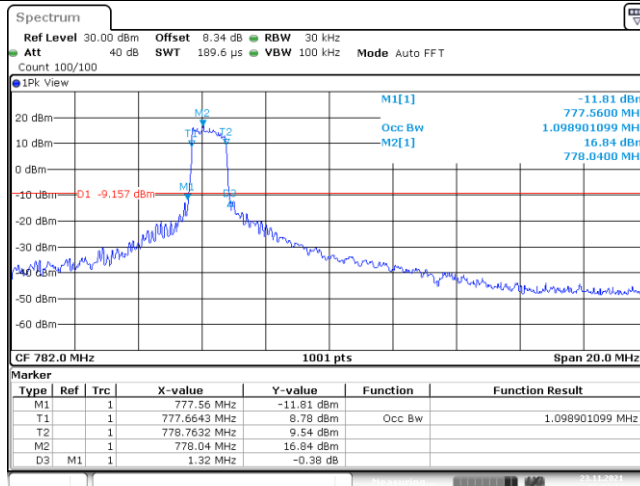
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Band13-5MHz-16QAM-23230-6-0-Low-1.109-1.310-PASS



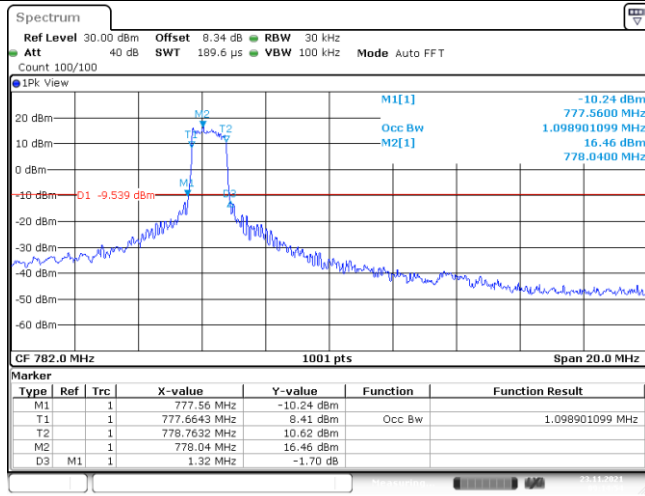
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Band13-10MHz-QPSK-23230-6-0-Low-1.099-1.320-PASS



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Band13-10MHz-16QAM-23230-6-0-Low-1.099-1.320-PASS



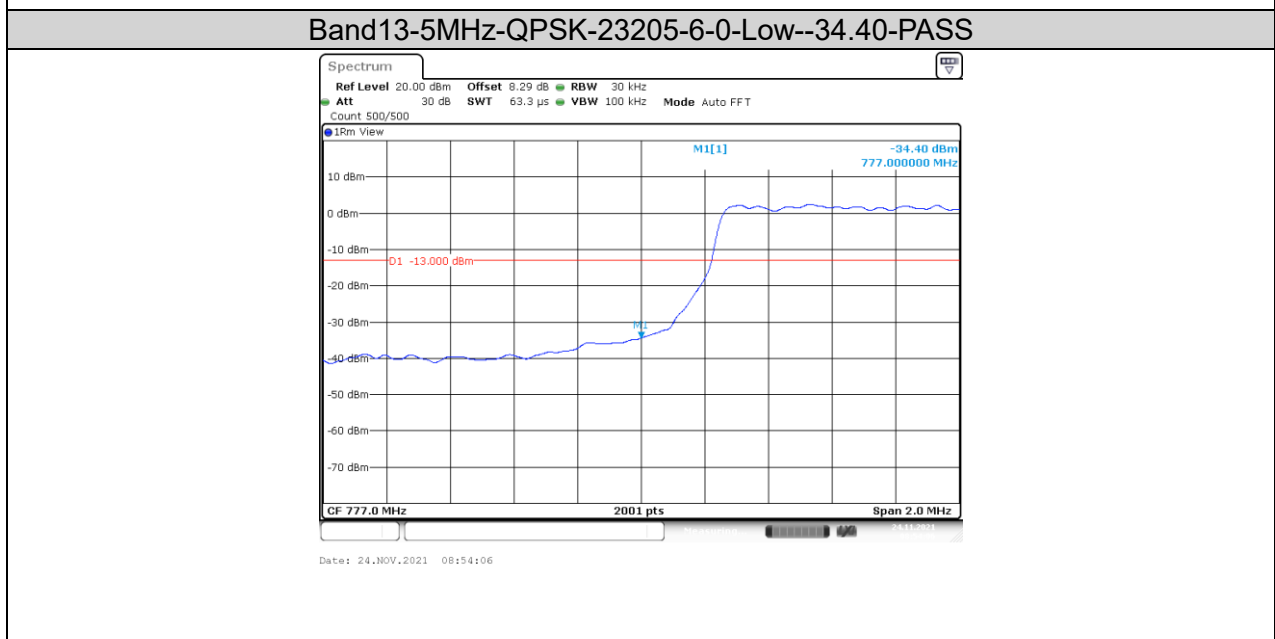
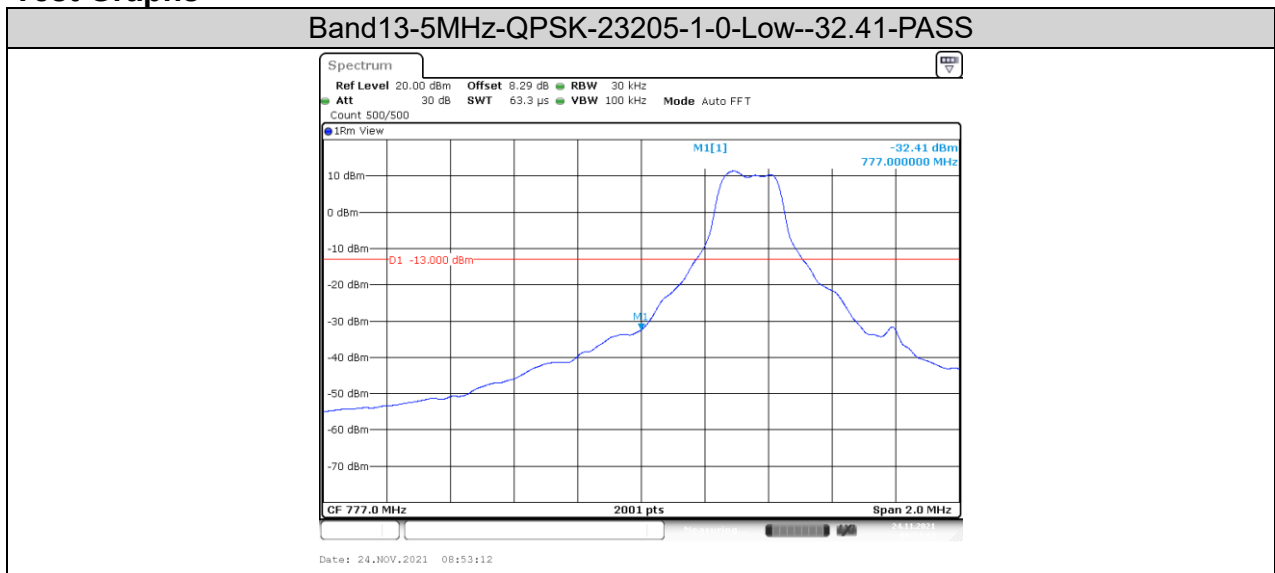
Date: 23.NOV.2021 09:14:54

APPENDIX E.4: BAND EDGE FOR M1

Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	NB Index	Result(dBm)	Verdict
Band13	5MHz	23205	QPSK	1	0	Low	-32.41	PASS
Band13	5MHz	23205	QPSK	6	0	Low	-34.40	PASS
Band13	5MHz	23255	QPSK	1	5	High	-32.33	PASS
Band13	5MHz	23255	QPSK	3	3	High	-33.74	PASS
Band13	5MHz	23205	16QAM	1	0	Low	-29.49	PASS
Band13	5MHz	23205	16QAM	6	0	Low	-35.18	PASS
Band13	5MHz	23255	16QAM	1	5	High	-32.28	PASS
Band13	5MHz	23255	16QAM	3	3	High	-31.16	PASS

Test Graphs

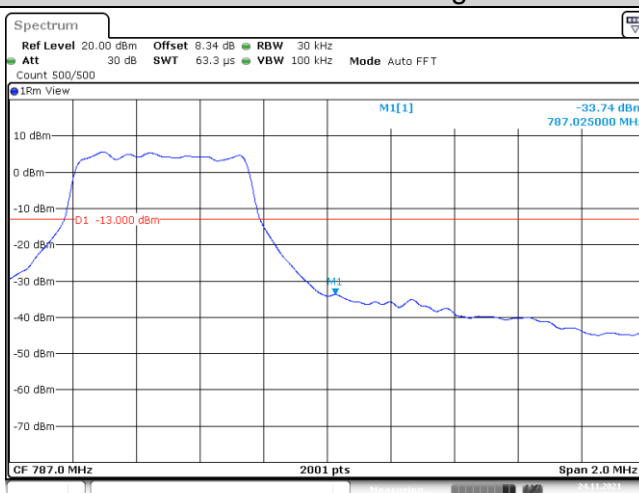


Band13-5MHz-QPSK-23255-1-5-High--32.33-PASS



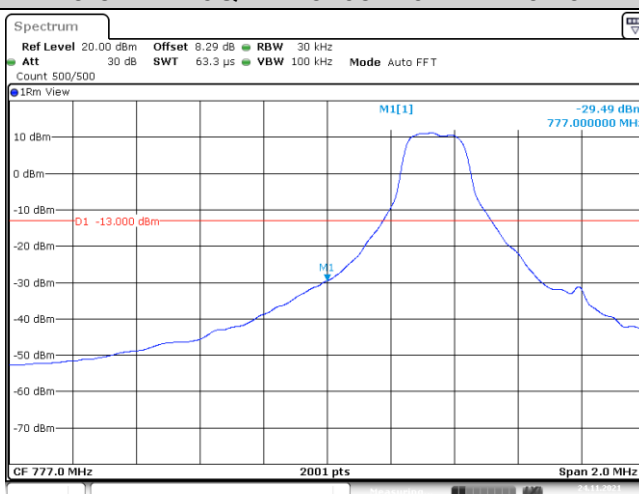
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Band13-5MHz-QPSK-23255-3-3-High--33.74-PASS



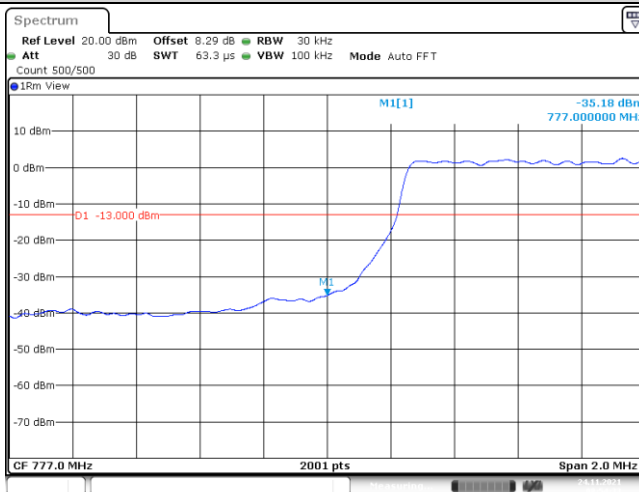
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Band13-5MHz-16QAM-23205-1-0-Low--29.49-PASS

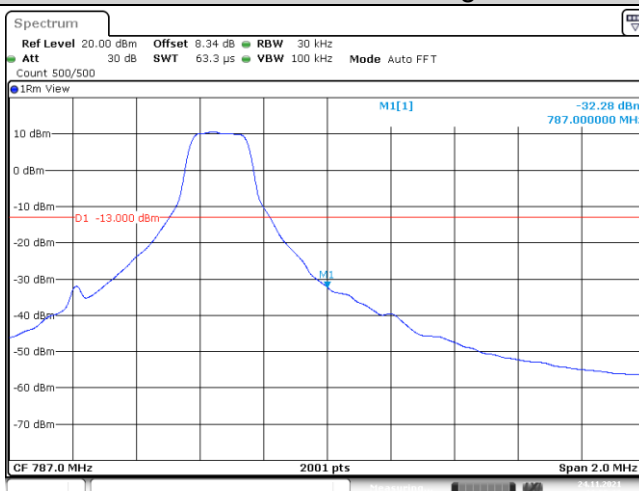


Date: 24.NOV.2021 08:53:39

Band13-5MHz-16QAM-23205-6-0-Low--35.18-PASS



Band13-5MHz-16QAM-23255-1-5-High--32.28-PASS



Band13-5MHz-16QAM-23255-3-3-High--31.16-PASS



APPENDIX E.5: CONDUCTED SPURIOUS EMISSION FOR M1

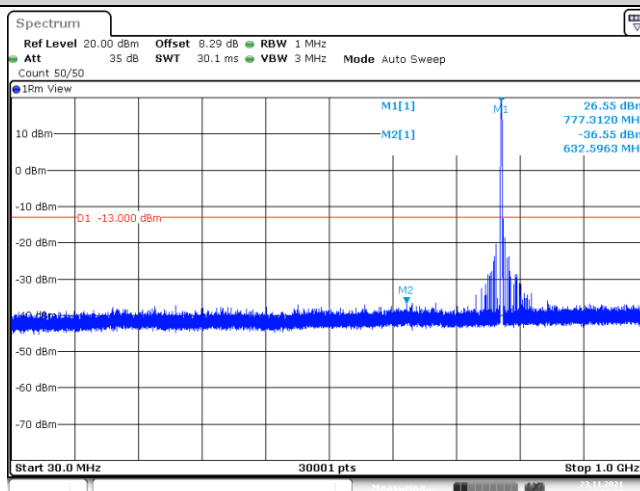
Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	Index	Start Freq	Stop Freq	Result (dBm)	Verdict
Band13	5MHz	23205	QPSK	1	0	Low	30	1000	-36.55	PASS
Band13	5MHz	23205	QPSK	1	0	Low	1000	5000	-37.85	PASS
Band13	5MHz	23205	QPSK	1	0	Low	5000	12000	-54.62	PASS
Band13	5MHz	23205	QPSK	1	0	Low	12000	26500	-50.85	PASS
Band13	5MHz	23205	QPSK	6	0	Low	30	1000	-35.91	PASS
Band13	5MHz	23205	QPSK	6	0	Low	1000	5000	-40.02	PASS
Band13	5MHz	23205	QPSK	6	0	Low	5000	12000	-54.54	PASS
Band13	5MHz	23205	QPSK	6	0	Low	12000	26500	-50.81	PASS
Band13	5MHz	23230	QPSK	1	0	Low	30	1000	-35.99	PASS
Band13	5MHz	23230	QPSK	1	0	Low	1000	5000	-37.72	PASS
Band13	5MHz	23230	QPSK	1	0	Low	5000	12000	-54.32	PASS
Band13	5MHz	23230	QPSK	1	0	Low	12000	26500	-50.79	PASS
Band13	5MHz	23230	QPSK	6	0	Low	30	1000	-36.25	PASS
Band13	5MHz	23230	QPSK	6	0	Low	1000	5000	-40.02	PASS
Band13	5MHz	23230	QPSK	6	0	Low	5000	12000	-54.5	PASS
Band13	5MHz	23230	QPSK	6	0	Low	12000	26500	-50.62	PASS
Band13	5MHz	23255	QPSK	1	5	High	30	1000	-36.04	PASS
Band13	5MHz	23255	QPSK	1	5	High	1000	5000	-38.08	PASS
Band13	5MHz	23255	QPSK	1	5	High	5000	12000	-54.55	PASS
Band13	5MHz	23255	QPSK	1	5	High	12000	26500	-50.77	PASS
Band13	5MHz	23255	QPSK	3	3	High	30	1000	-35.3	PASS
Band13	5MHz	23255	QPSK	3	3	High	1000	5000	-39.57	PASS
Band13	5MHz	23255	QPSK	3	3	High	5000	12000	-54.57	PASS
Band13	5MHz	23255	QPSK	3	3	High	12000	26500	-50.71	PASS
Band13	5MHz	23205	16QAM	1	0	Low	30	1000	-35.57	PASS
Band13	5MHz	23205	16QAM	1	0	Low	1000	5000	-37.13	PASS
Band13	5MHz	23205	16QAM	1	0	Low	5000	12000	-54.58	PASS
Band13	5MHz	23205	16QAM	1	0	Low	12000	26500	-50.69	PASS
Band13	5MHz	23205	16QAM	6	0	Low	30	1000	-35.58	PASS
Band13	5MHz	23205	16QAM	6	0	Low	1000	5000	-39.9	PASS
Band13	5MHz	23205	16QAM	6	0	Low	5000	12000	-54.64	PASS
Band13	5MHz	23205	16QAM	6	0	Low	12000	26500	-50.78	PASS
Band13	5MHz	23230	16QAM	1	0	Low	30	1000	-36.66	PASS
Band13	5MHz	23230	16QAM	1	0	Low	1000	5000	-36.98	PASS
Band13	5MHz	23230	16QAM	1	0	Low	5000	12000	-54.53	PASS
Band13	5MHz	23230	16QAM	1	0	Low	12000	26500	-50.6	PASS
Band13	5MHz	23230	16QAM	6	0	Low	30	1000	-35.81	PASS
Band13	5MHz	23230	16QAM	6	0	Low	1000	5000	-40.1	PASS
Band13	5MHz	23230	16QAM	6	0	Low	5000	12000	-54.66	PASS
Band13	5MHz	23230	16QAM	6	0	Low	12000	26500	-50.66	PASS
Band13	5MHz	23255	16QAM	1	5	High	30	1000	-36.22	PASS

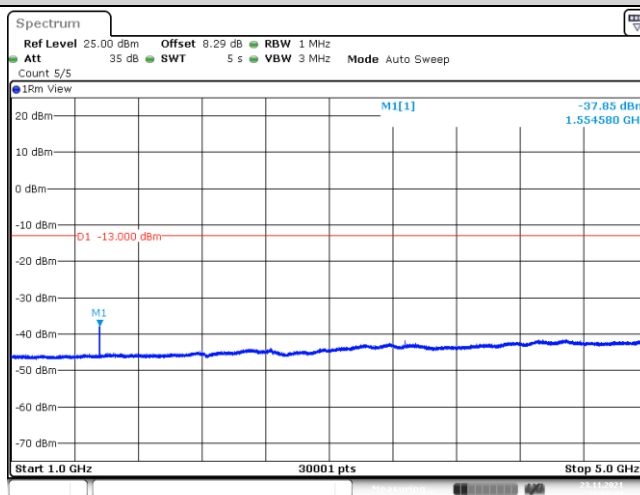
Band13	5MHz	23255	16QAM	1	5	High	1000	5000	-38.3	PASS
Band13	5MHz	23255	16QAM	1	5	High	5000	12000	-54.52	PASS
Band13	5MHz	23255	16QAM	1	5	High	12000	26500	-50.82	PASS
Band13	5MHz	23255	16QAM	3	3	High	30	1000	-36.11	PASS
Band13	5MHz	23255	16QAM	3	3	High	1000	5000	-39.21	PASS
Band13	5MHz	23255	16QAM	3	3	High	5000	12000	-54.58	PASS
Band13	5MHz	23255	16QAM	3	3	High	12000	26500	-50.7	PASS

Test Graphs

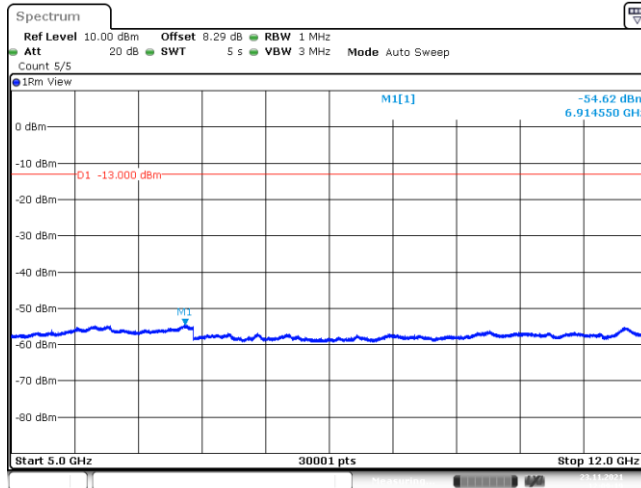
Band13-5MHz-QPSK-23205-1-0-Low-30-1000--36.55-PASS



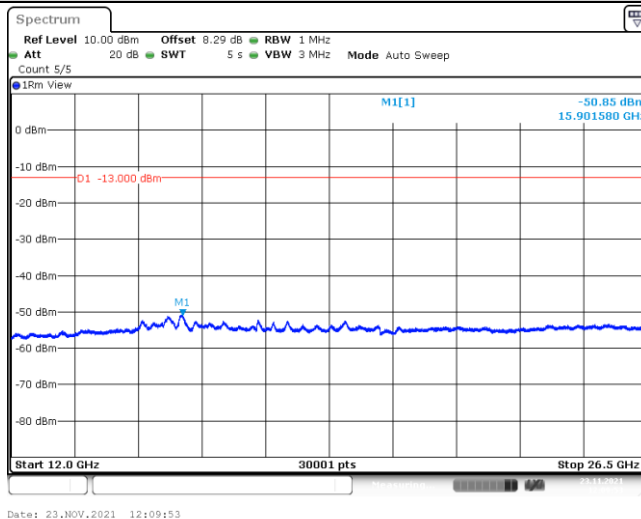
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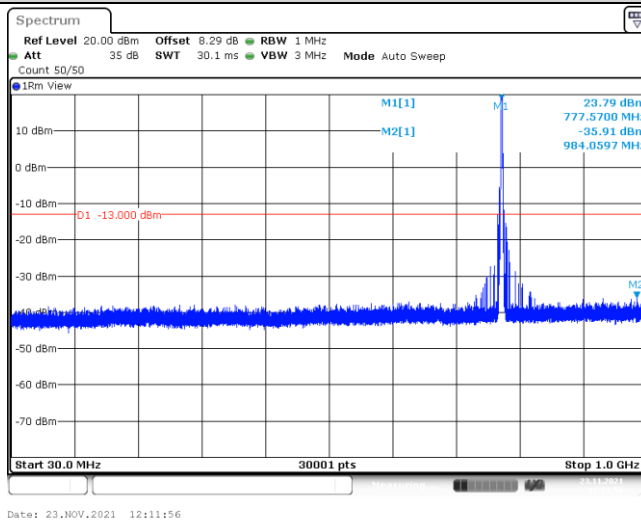
Band13-5MHz-QPSK-23205-1-0-Low-5000-12000--54.62-PASS



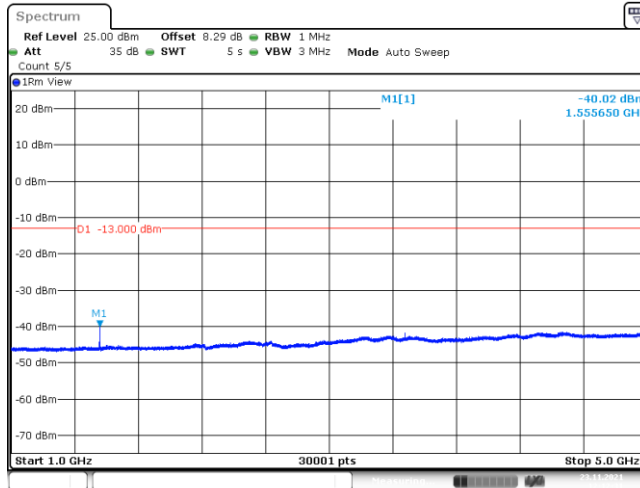
Band13-5MHz-QPSK-23205-1-0-Low-12000-26500--50.85-PASS



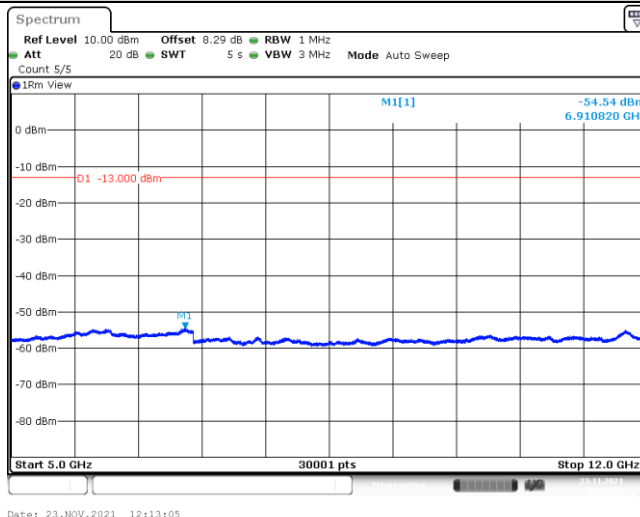
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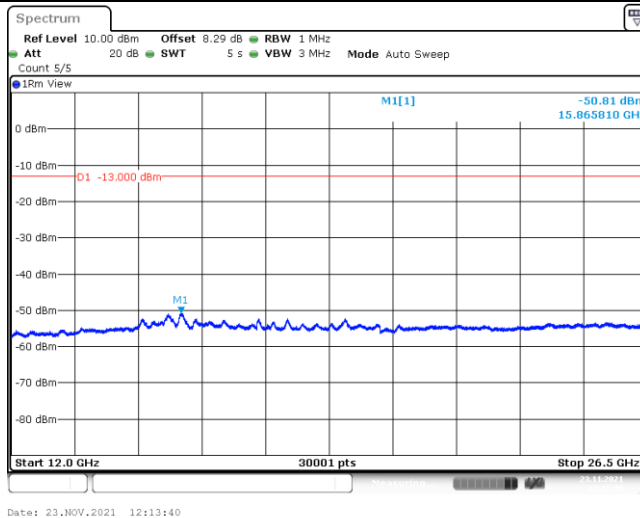
Band13-5MHz-QPSK-23205-6-0-Low-1000-5000--40.02-PASS



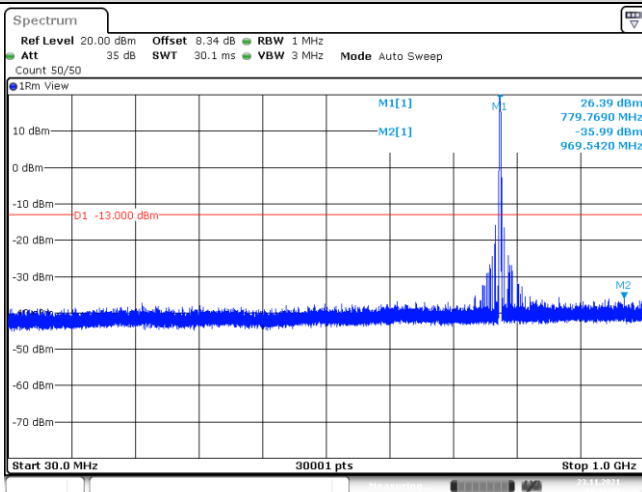
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Band13-5MHz-QPSK-23205-6-0-Low-12000-26500--50.81-PASS

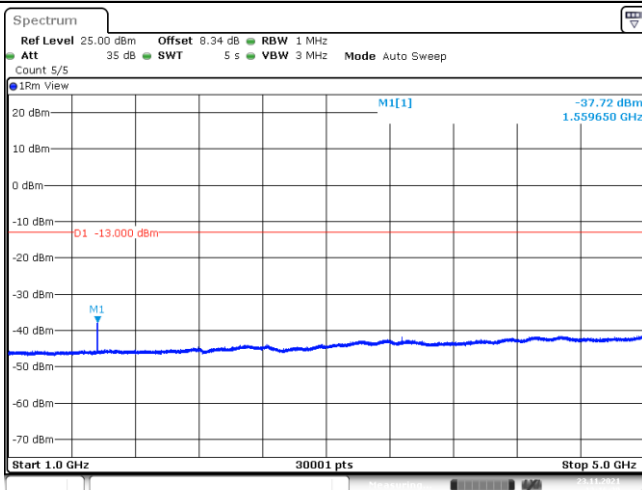


Band13-5MHz-QPSK-23230-1-0-Low-30-1000--35.99-PASS



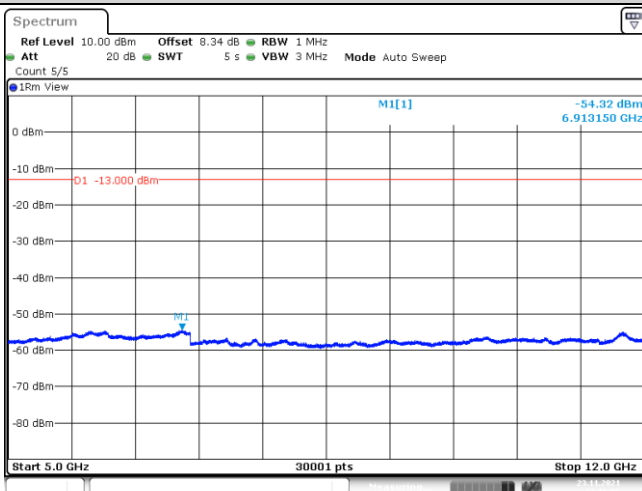
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Band13-5MHz-QPSK-23230-1-0-Low-1000-5000--37.72-PASS



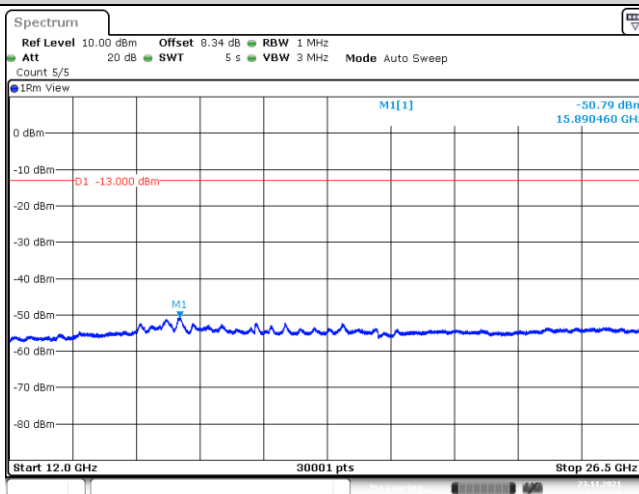
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Band13-5MHz-QPSK-23230-1-0-Low-5000-12000--54.32-PASS



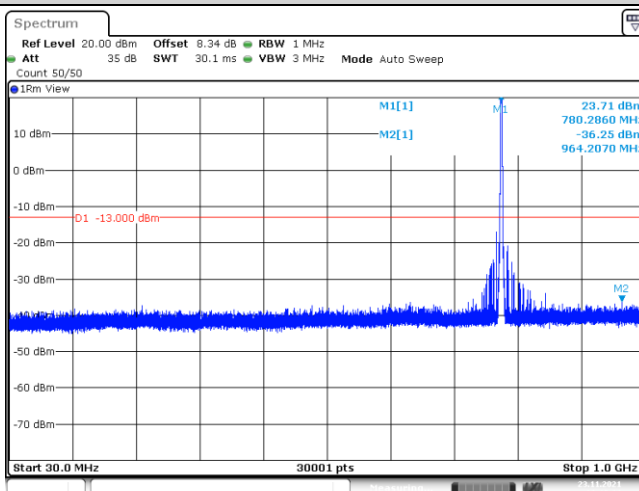
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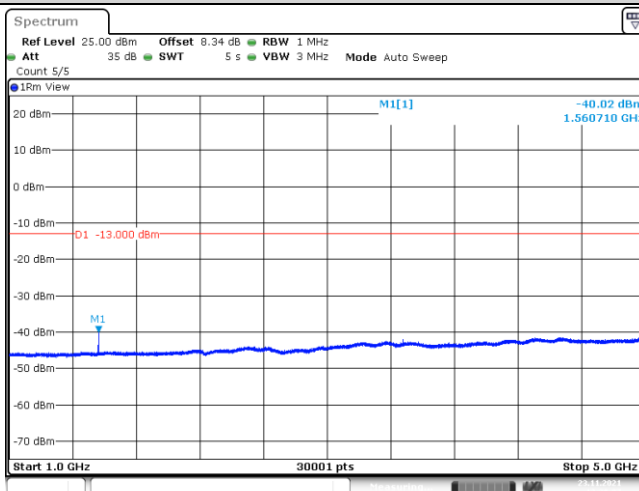
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Band13-5MHz-QPSK-23230-6-0-Low-30-1000--36.25-PASS



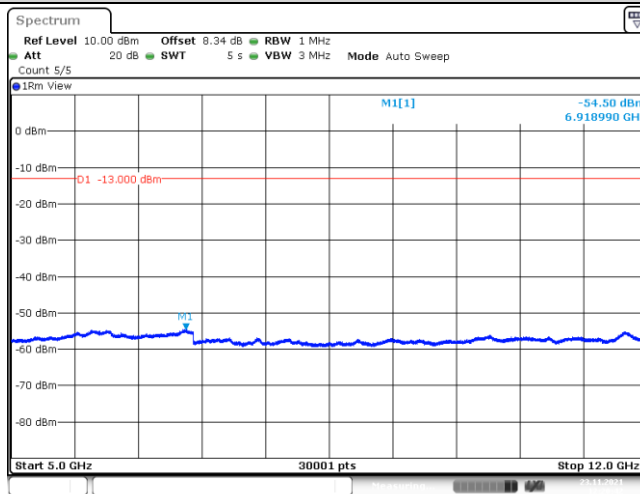
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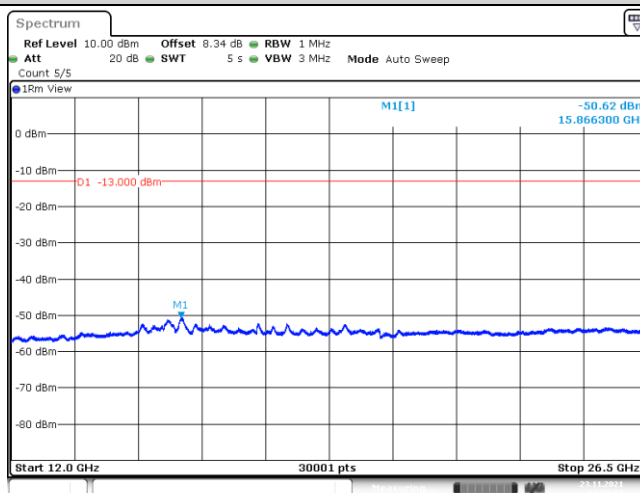
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Band13-5MHz-QPSK-23230-6-0-Low-5000-12000--54.5-PASS



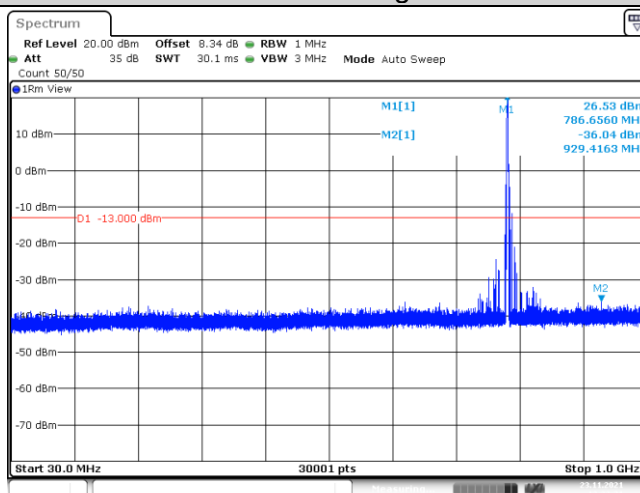
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Band13-5MHz-QPSK-23230-6-0-Low-12000-26500--50.62-PASS



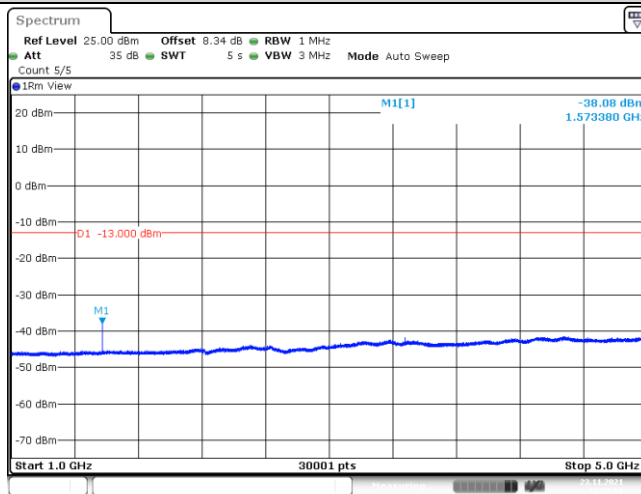
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Band13-5MHz-QPSK-23255-1-5-High-30-1000--36.04-PASS



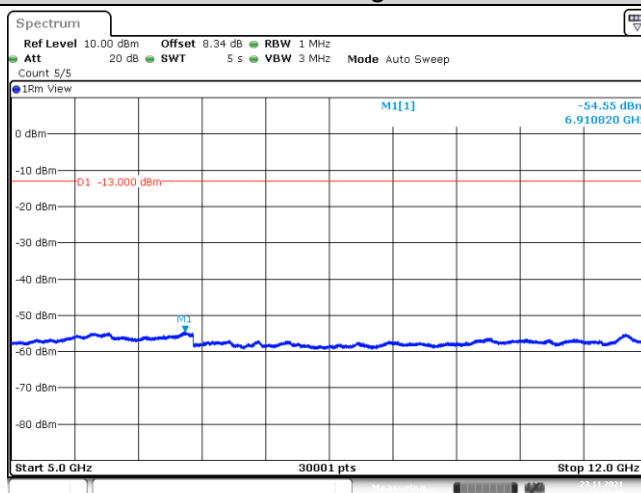
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Band13-5MHz-QPSK-23255-1-5-High-1000-5000--38.08-PASS



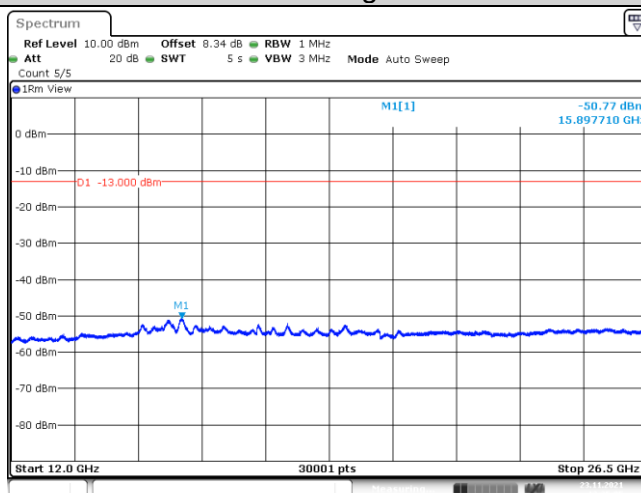
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Band13-5MHz-QPSK-23255-1-5-High-5000-12000--54.55-PASS



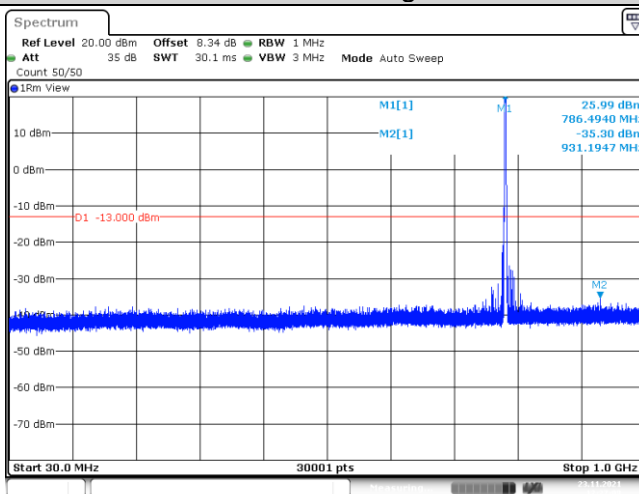
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Band13-5MHz-QPSK-23255-1-5-High-12000-26500--50.77-PASS



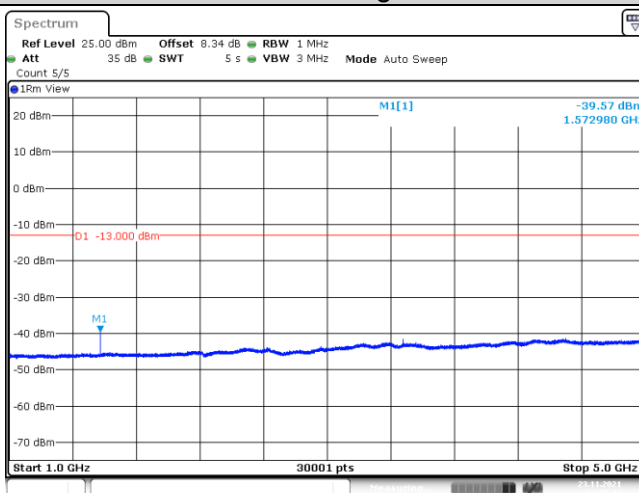
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Band13-5MHz-QPSK-23255-3-3-High-30-1000--35.3-PASS



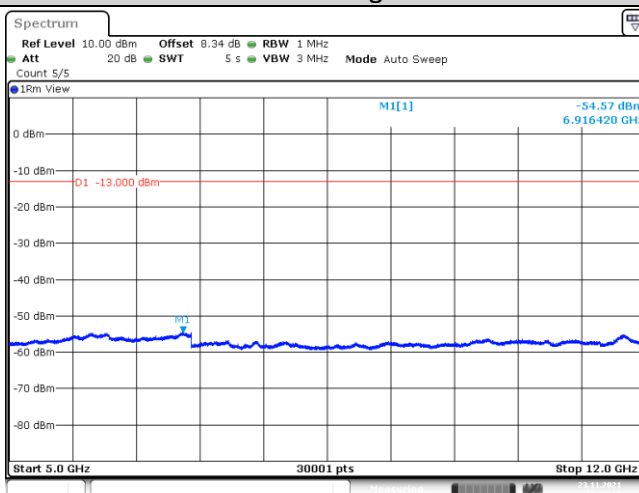
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Band13-5MHz-QPSK-23255-3-3-High-1000-5000--39.57-PASS



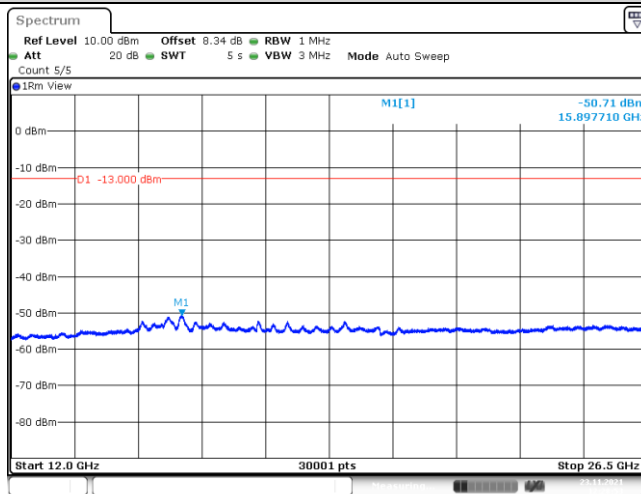
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Band13-5MHz-QPSK-23255-3-3-High-5000-12000--54.57-PASS



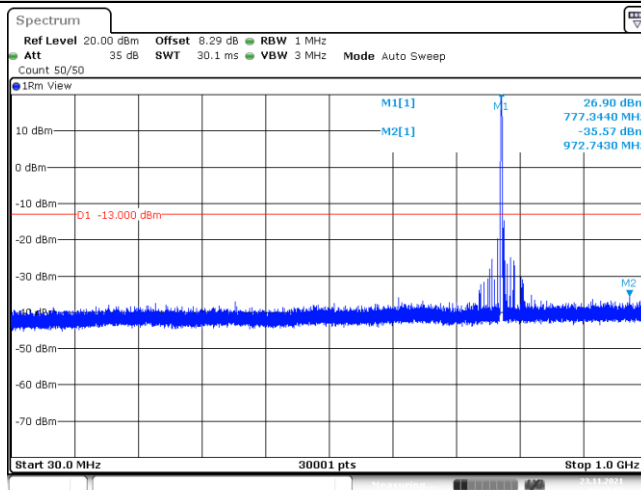
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Band13-5MHz-QPSK-23255-3-3-High-12000-26500--50.71-PASS



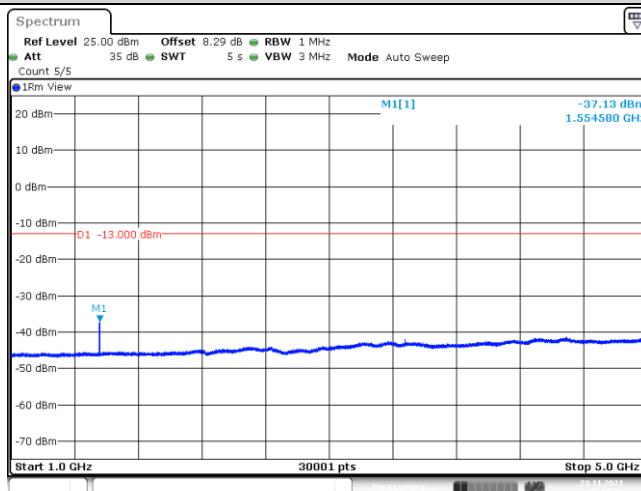
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Band13-5MHz-16QAM-23205-1-0-Low-30-1000--35.57-PASS



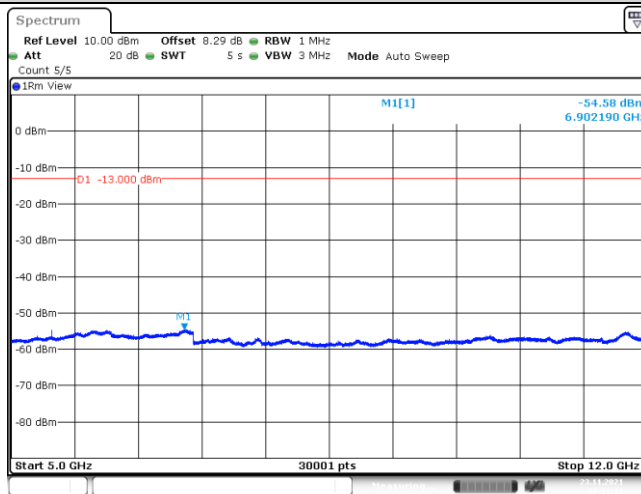
Date: 23.NOV.2021 12:10:02

Band13-5MHz-16QAM-23205-1-0-Low-1000-5000--37.13-PASS



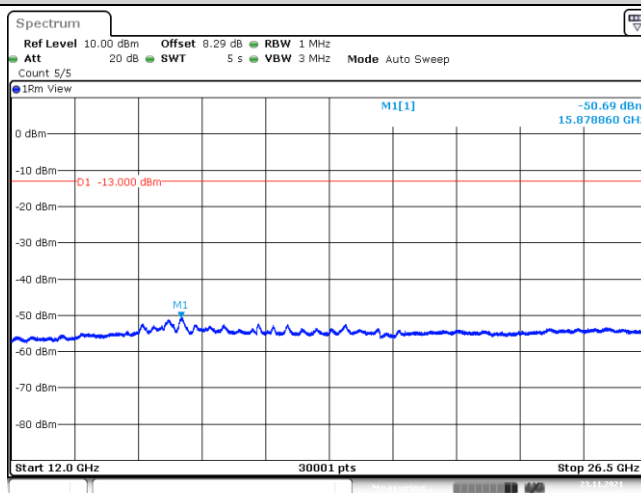
Date: 23.NOV.2021 12:10:37

Band13-5MHz-16QAM-23205-1-0-Low-5000-12000--54.58-PASS



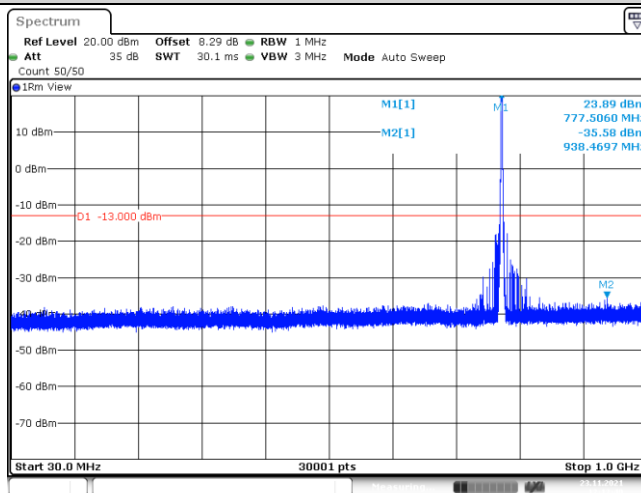
Date: 23.NOV.2021 12:11:12

Band13-5MHz-16QAM-23205-1-0-Low-12000-26500--50.69-PASS



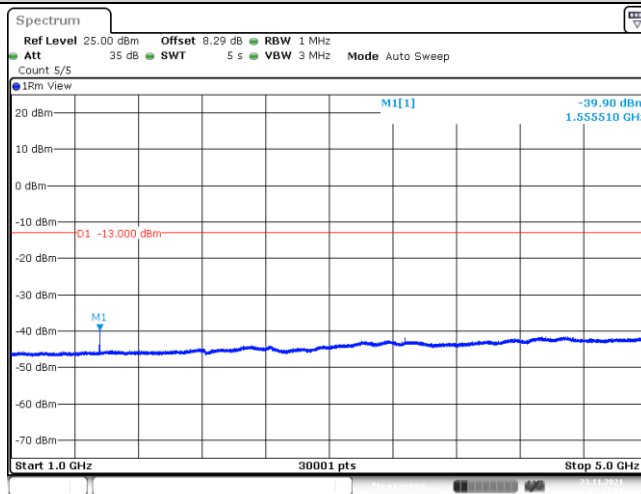
Date: 23.NOV.2021 12:11:47

Band13-5MHz-16QAM-23205-6-0-Low-30-1000--35.58-PASS



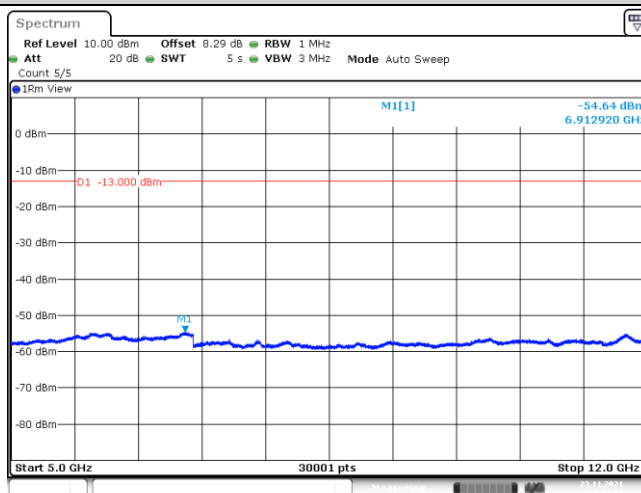
Date: 23.NOV.2021 12:13:49

Band13-5MHz-16QAM-23205-6-0-Low-1000-5000--39.9-PASS



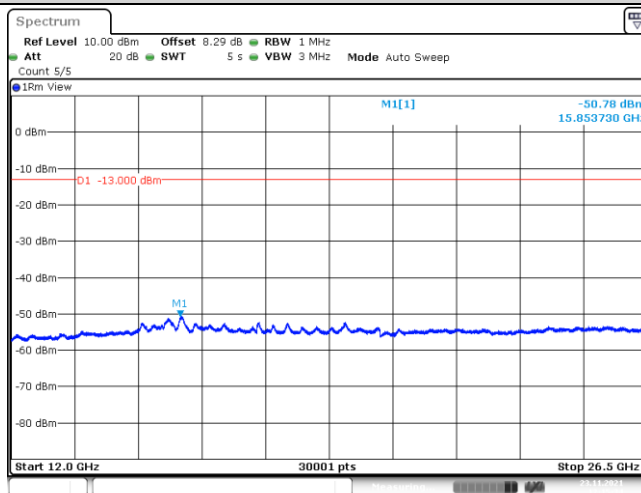
Date: 23.NOV.2021 12:14:24

Band13-5MHz-16QAM-23205-6-0-Low-5000-12000--54.64-PASS



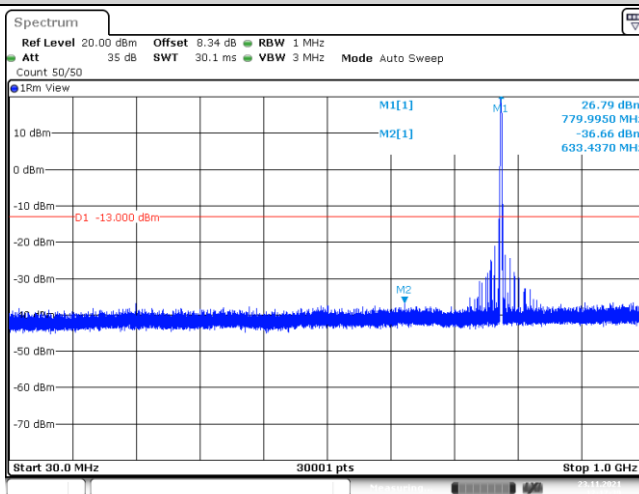
Date: 23.NOV.2021 12:14:59

Band13-5MHz-16QAM-23205-6-0-Low-12000-26500--50.78-PASS



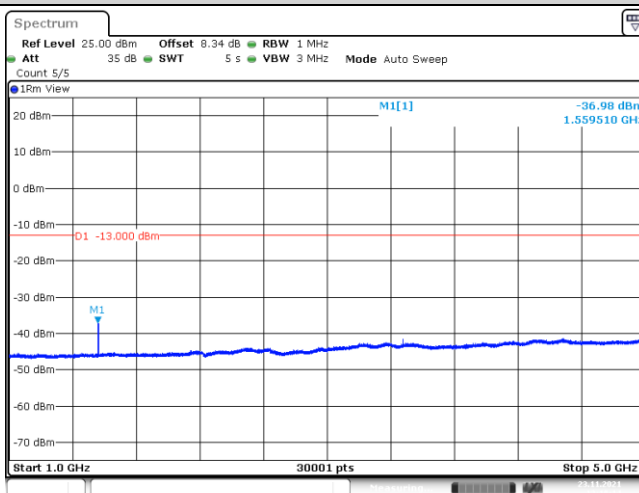
Date: 23.NOV.2021 12:15:34

Band13-5MHz-16QAM-23230-1-0-Low-30-1000--36.66-PASS



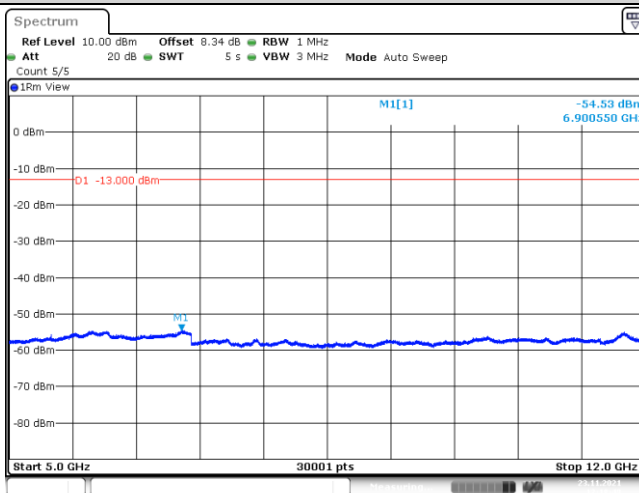
Date: 23.NOV.2021 12:17:39

Band13-5MHz-16QAM-23230-1-0-Low-1000-5000--36.98-PASS



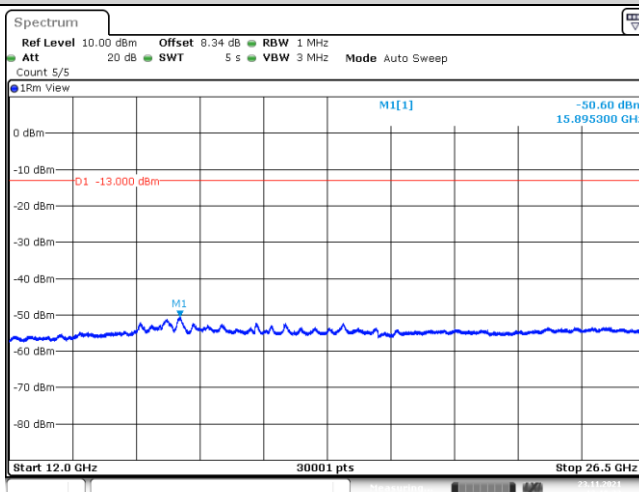
Date: 23.NOV.2021 12:18:14

Band13-5MHz-16QAM-23230-1-0-Low-5000-12000--54.53-PASS



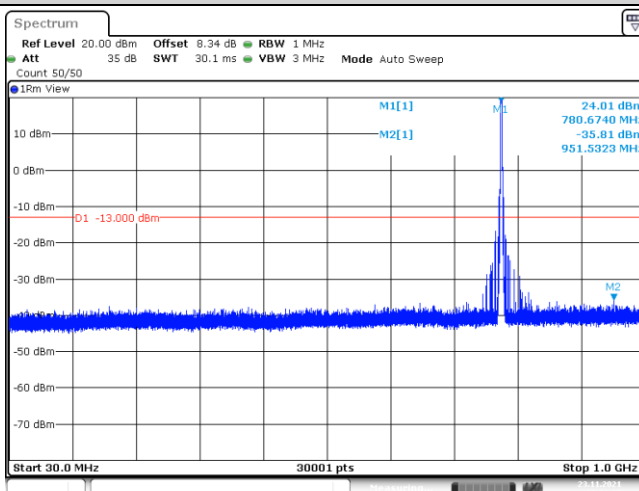
Date: 23.NOV.2021 12:18:48

Band13-5MHz-16QAM-23230-1-0-Low-12000-26500--50.6-PASS



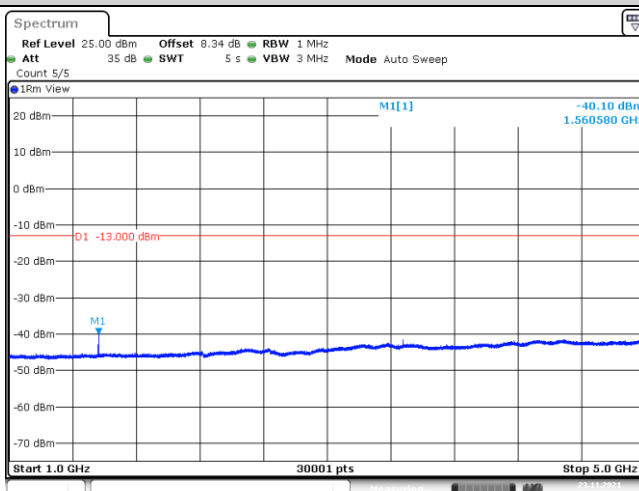
Date: 23.NOV.2021 12:19:23

Band13-5MHz-16QAM-23230-6-0-Low-30-1000--35.81-PASS



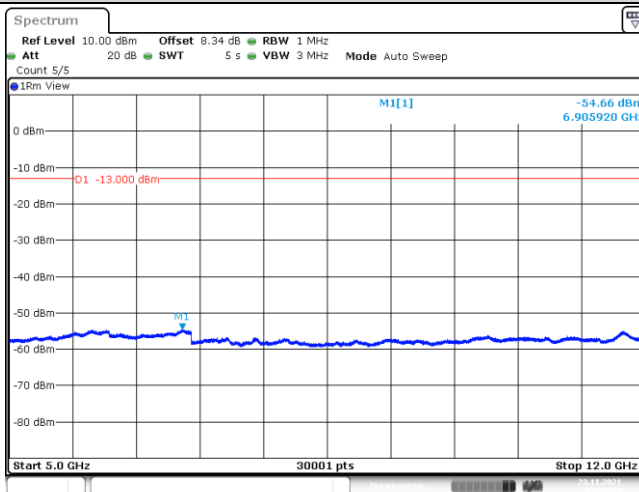
Date: 23.NOV.2021 12:21:25

Band13-5MHz-16QAM-23230-6-0-Low-1000-5000--40.1-PASS



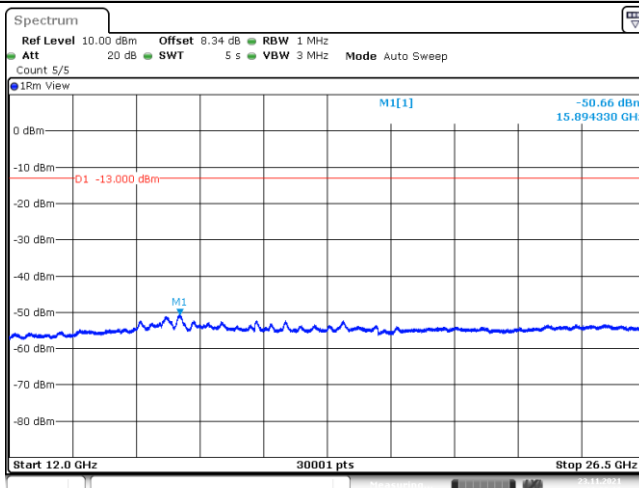
Date: 23.NOV.2021 12:22:00

Band13-5MHz-16QAM-23230-6-0-Low-5000-12000--54.66-PASS



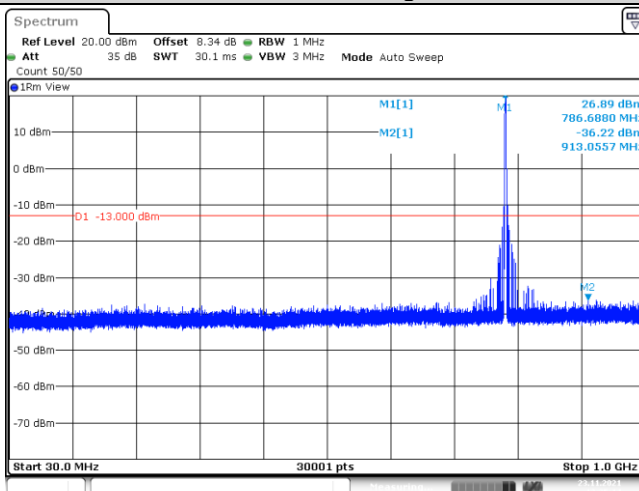
Date: 23.NOV.2021 12:22:35

Band13-5MHz-16QAM-23230-6-0-Low-12000-26500--50.66-PASS



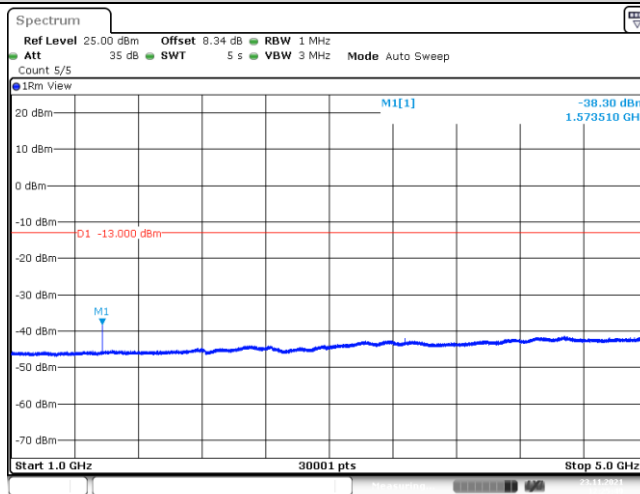
Date: 23.NOV.2021 12:23:10

Band13-5MHz-16QAM-23255-1-5-High-30-1000--36.22-PASS



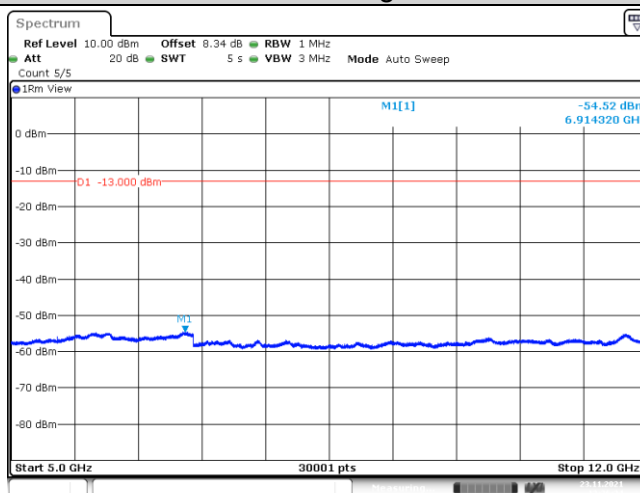
Date: 23.NOV.2021 12:25:15

Band13-5MHz-16QAM-23255-1-5-High-1000-5000--38.3-PASS



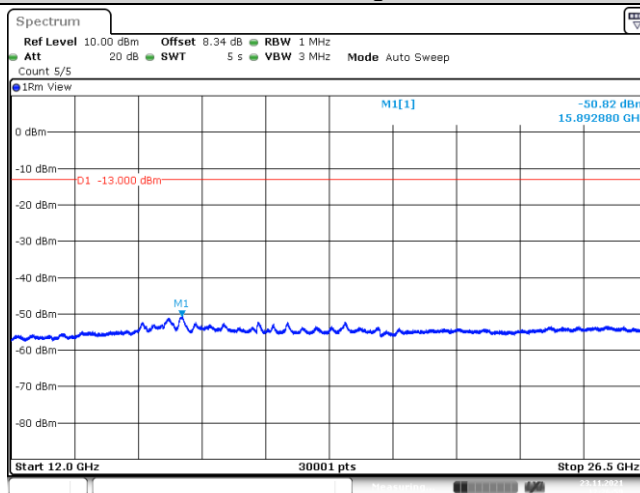
Date: 23.NOV.2021 12:25:49

Band13-5MHz-16QAM-23255-1-5-High-5000-12000--54.52-PASS



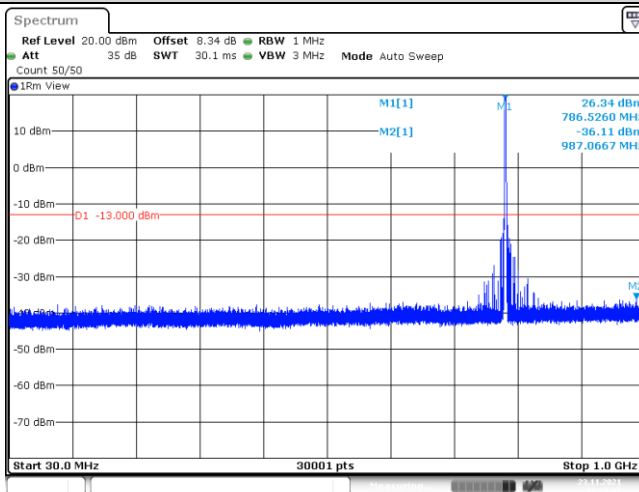
Date: 23.NOV.2021 12:26:24

Band13-5MHz-16QAM-23255-1-5-High-12000-26500--50.82-PASS



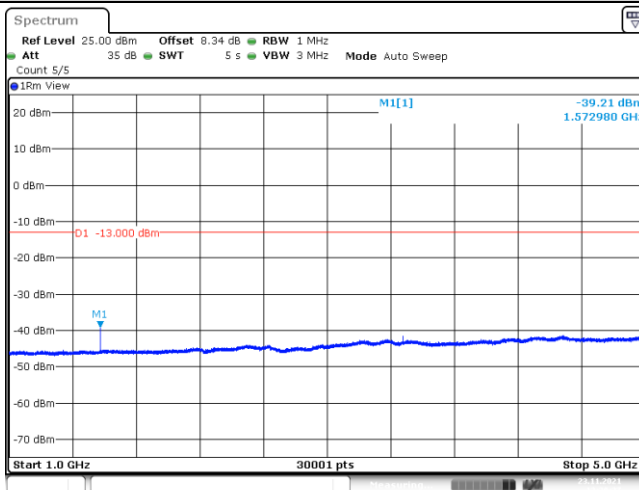
Date: 23.NOV.2021 12:26:59

Band13-5MHz-16QAM-23255-3-3-High-30-1000--36.11-PASS



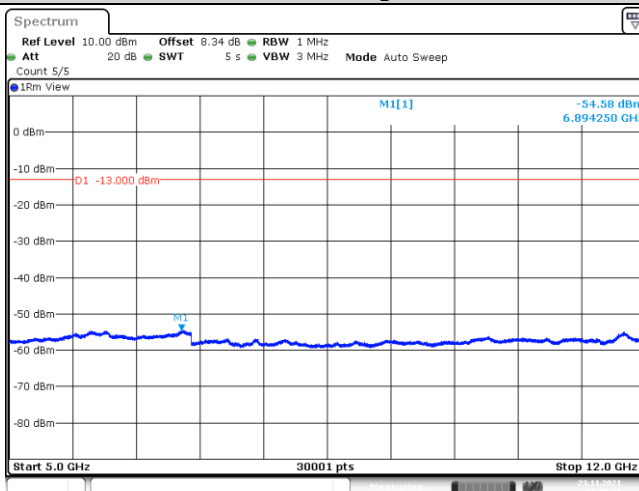
Date: 23.NOV.2021 12:29:02

Band13-5MHz-16QAM-23255-3-3-High-1000-5000--39.21-PASS



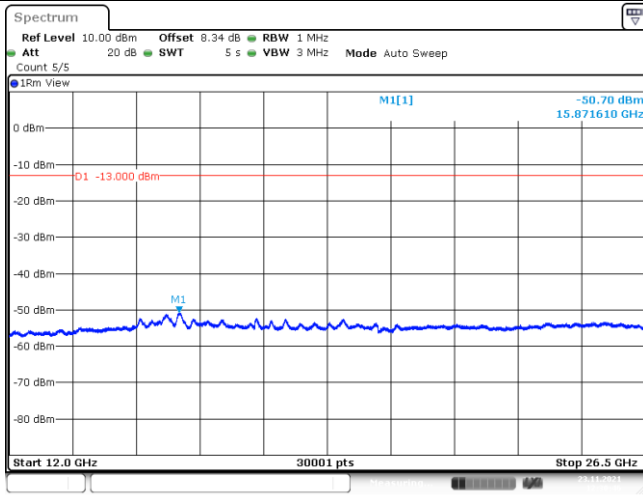
Date: 23.NOV.2021 12:29:37

Band13-5MHz-16QAM-23255-3-3-High-5000-12000--54.58-PASS



Date: 23.NOV.2021 12:30:12

Band13-5MHz-16QAM-23255-3-3-High-12000-26500--50.7-PASS



Date: 23.NOV.2021 12:30:46

APPENDIX E.6: FREQUENCY STABILITY FOR M1

Test Result

Voltage												
Band	Bandwidth	Channel	Modulation	RB Size	RB Start	Index	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	5MHz	23230	QPSK	1	0	Low	HV	NT	-7.93	-0.010141	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	LV	NT	-7.88	-0.010077	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	NT	-8.05	-0.010294	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	HV	NT	-8.04	-0.010281	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	LV	NT	-8.24	-0.010537	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	NT	-8.65	-0.011061	±2.5	PASS

Temperature												
Band	Bandwidth	Modulation	Channel	RB Size	RB Start	Index	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	5MHz	23230	QPSK	1	0	Low	NV	85	-7.17	-0.009169	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	-30	-7.50	-0.009591	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	-20	-8.14	-0.010409	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	-10	-8.63	-0.011036	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	0	-9.21	-0.011777	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	10	-9.24	-0.011816	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	20	-7.93	-0.010141	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	30	-6.55	-0.008376	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	40	-7.04	-0.009003	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	50	-6.95	-0.008887	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	60	-7.05	-0.009015	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	70	-7.10	-0.009079	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	-40	-8.81	-0.011266	±2.5	PASS
Band13	5MHz	23230	QPSK	1	0	Low	NV	80	-6.72	-0.008593	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	85	-8.08	-0.010332	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	-30	-6.19	-0.007916	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	-20	-6.85	-0.008760	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	-10	-6.49	-0.008299	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	0	-8.53	-0.010908	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	10	-9.78	-0.012506	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	20	-6.41	-0.008197	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	30	-5.39	-0.006893	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	40	-6.79	-0.008683	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	50	-9.48	-0.012123	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	60	-6.49	-0.008299	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	70	-7.00	-0.008951	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	80	-8.21	-0.010499	±2.5	PASS
Band13	5MHz	23230	16QAM	1	0	Low	NV	-40	-7.87	-0.010064	±2.5	PASS