

Appendix B.5

LTE Band 13



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1. Effective (Isotropic) Radiated Power Output Data

1.1 Test Result

1.1.1 B13_5MHz_ERP

Band: 13 / Bandwidth: 5MHz / NTNV								
Modulation	Frequency (MHz)	RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)		Verdict
		Size	Offset			Result	Limit	
QPSK	779.5	1	0	23.77	2.95	24.57	<=34.77	Pass
			13	23.94	2.95	24.74	<=34.77	Pass
			24	23.81	2.95	24.61	<=34.77	Pass
		12	0	22.76	2.95	23.56	<=34.77	Pass
			6	22.95	2.95	23.75	<=34.77	Pass
			13	22.90	2.95	23.70	<=34.77	Pass
		25	0	22.93	2.95	23.73	<=34.77	Pass
	782	1	0	23.88	2.95	24.68	<=34.77	Pass
			13	23.89	2.95	24.69	<=34.77	Pass
			24	23.80	2.95	24.60	<=34.77	Pass
		12	0	22.86	2.95	23.66	<=34.77	Pass
			6	22.83	2.95	23.63	<=34.77	Pass
			13	22.84	2.95	23.64	<=34.77	Pass
		25	0	22.91	2.95	23.71	<=34.77	Pass
	784.5	1	0	23.86	2.95	24.66	<=34.77	Pass
			13	23.93	2.95	24.73	<=34.77	Pass
			24	23.94	2.95	24.74	<=34.77	Pass
		12	0	22.79	2.95	23.59	<=34.77	Pass
			6	22.83	2.95	23.63	<=34.77	Pass
			13	22.91	2.95	23.71	<=34.77	Pass
		25	0	22.82	2.95	23.62	<=34.77	Pass
16QAM	779.5	1	0	22.88	2.95	23.68	<=34.77	Pass
			13	23.05	2.95	23.85	<=34.77	Pass
			24	22.87	2.95	23.67	<=34.77	Pass
		12	0	21.90	2.95	22.70	<=34.77	Pass
			6	21.94	2.95	22.74	<=34.77	Pass
			13	21.92	2.95	22.72	<=34.77	Pass
		25	0	21.95	2.95	22.75	<=34.77	Pass
	782	1	0	23.09	2.95	23.89	<=34.77	Pass



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			13	22.96	2.95	23.76	<=34.77	Pass
			24	22.95	2.95	23.75	<=34.77	Pass
		12	0	21.86	2.95	22.66	<=34.77	Pass
			6	21.93	2.95	22.73	<=34.77	Pass
			13	21.89	2.95	22.69	<=34.77	Pass
		25	0	21.92	2.95	22.72	<=34.77	Pass
	784.5	1	0	23.09	2.95	23.89	<=34.77	Pass
			13	23.21	2.95	24.01	<=34.77	Pass
			24	23.09	2.95	23.89	<=34.77	Pass
		12	0	21.81	2.95	22.61	<=34.77	Pass
			6	21.87	2.95	22.67	<=34.77	Pass
			13	21.86	2.95	22.66	<=34.77	Pass
		25	0	21.86	2.95	22.66	<=34.77	Pass

Note1: ERP=Conducted Power+Antenna Gain-2.15

Note1: ERP=Conducted Power+Antenna Gain-2.15

1.1.2 B13_10MHz_ERP

Band: 13 / Bandwidth: 10MHz / NTNV								
Modulation	Frequency (MHz)	RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)		Verdict
		Size	Offset			Result	Limit	
QPSK	782	1	0	23.74	2.95	24.54	<=34.77	Pass
			25	23.82	2.95	24.62	<=34.77	Pass
			49	23.85	2.95	24.65	<=34.77	Pass
		25	0	22.90	2.95	23.70	<=34.77	Pass
			13	22.91	2.95	23.71	<=34.77	Pass
			25	22.84	2.95	23.64	<=34.77	Pass
		50	0	23.04	2.95	23.84	<=34.77	Pass
16QAM	782	1	0	22.84	2.95	23.64	<=34.77	Pass
			25	23.01	2.95	23.81	<=34.77	Pass
			49	23.07	2.95	23.87	<=34.77	Pass
		25	0	21.89	2.95	22.69	<=34.77	Pass
			13	21.94	2.95	22.74	<=34.77	Pass
			25	21.87	2.95	22.67	<=34.77	Pass
		50	0	22.02	2.95	22.82	<=34.77	Pass

Note1: ERP=Conducted Power+Antenna Gain-2.15

2. Frequency Stability



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2.1 Test Result

2.1.1 B13_10MHz

Band: 13 / Bandwidth: 10MHz									
Modulation	Frequency (MHz)	RB Allocation		Temp. (°C)	Voltage (VDC)	Freq. Error (Hz)	Freq. vs. Rated (ppm)		Verdict
		Size	Offset				Result	Limit	
QPSK	782	50	0	20	3.27	-0.486	-0.0006	-2.5 to 2.5	Pass
					3.85	-0.043	-0.0001	-2.5 to 2.5	Pass
					4.43	-0.415	-0.0005	-2.5 to 2.5	Pass
				0	3.85	-0.672	-0.0009	-2.5 to 2.5	Pass
				10	3.85	0.072	0.0001	-2.5 to 2.5	Pass
				30	3.85	-1.073	-0.0014	-2.5 to 2.5	Pass
				40	3.85	-0.887	-0.0011	-2.5 to 2.5	Pass
16QAM	782	50	0	20	3.27	-0.186	-0.0002	-2.5 to 2.5	Pass
					3.85	-0.029	0.0000	-2.5 to 2.5	Pass
					4.43	1.874	0.0024	-2.5 to 2.5	Pass
				0	3.85	-0.515	-0.0007	-2.5 to 2.5	Pass
				10	3.85	0.014	0.0000	-2.5 to 2.5	Pass
				30	3.85	0.172	0.0002	-2.5 to 2.5	Pass
				40	3.85	0.572	0.0007	-2.5 to 2.5	Pass



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3. 99% & 26dB Bandwidth

3.1 Test Result

3.1.1 Band13_OBW

Band: 13 / NTNV							
Bandwidth (MHz)	Modulation	Frequency (MHz)	RB Allocation		99% Occupied Bandwidth (MHz)		Verdict
			Size	Offset	Result	Limit	
5	QPSK	779.5	25	0	4.541	/	Pass
		782	25	0	4.581	/	Pass
		784.5	25	0	4.572	/	Pass
	16QAM	779.5	25	0	4.533	/	Pass
		782	25	0	4.596	/	Pass
		784.5	25	0	4.579	/	Pass
10	QPSK	782	50	0	9.054	/	Pass
	16QAM	782	50	0	9.050	/	Pass

3.1.2 Band13_XDB

Band: 13 / NTNV							
Bandwidth (MHz)	Modulation	Frequency (MHz)	RB Allocation		26dB Bandwidth (MHz)		Verdict
			Size	Offset	Result	Limit	
5	QPSK	779.5	25	0	5.177	/	Pass
		782	25	0	5.255	/	Pass
		784.5	25	0	5.215	/	Pass
	16QAM	779.5	25	0	5.161	/	Pass
		782	25	0	5.343	/	Pass
		784.5	25	0	5.179	/	Pass
10	QPSK	782	50	0	10.171	/	Pass
	16QAM	782	50	0	10.119	/	Pass



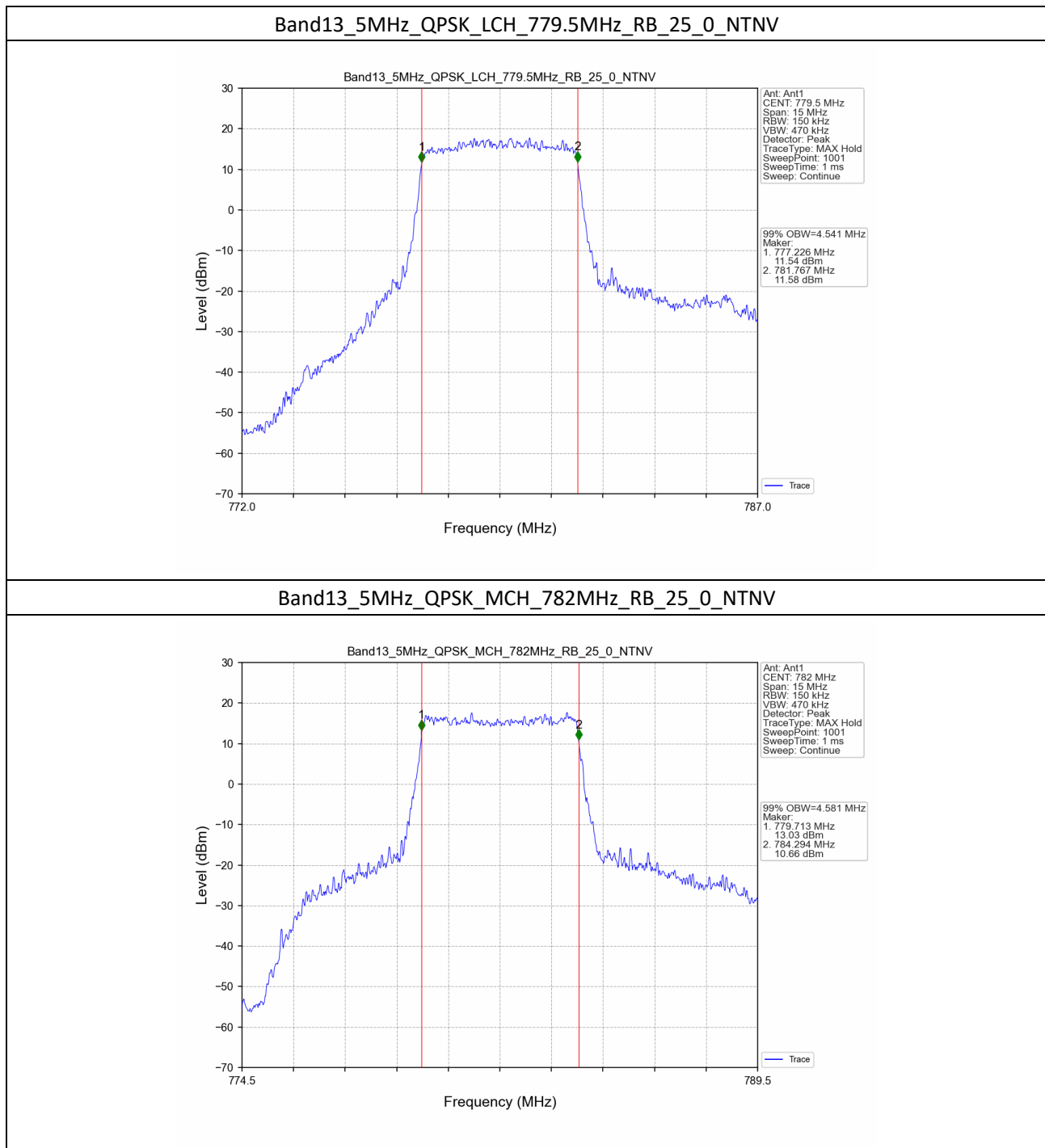
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3.2 Test Graph

3.2.1 Band13_OBW

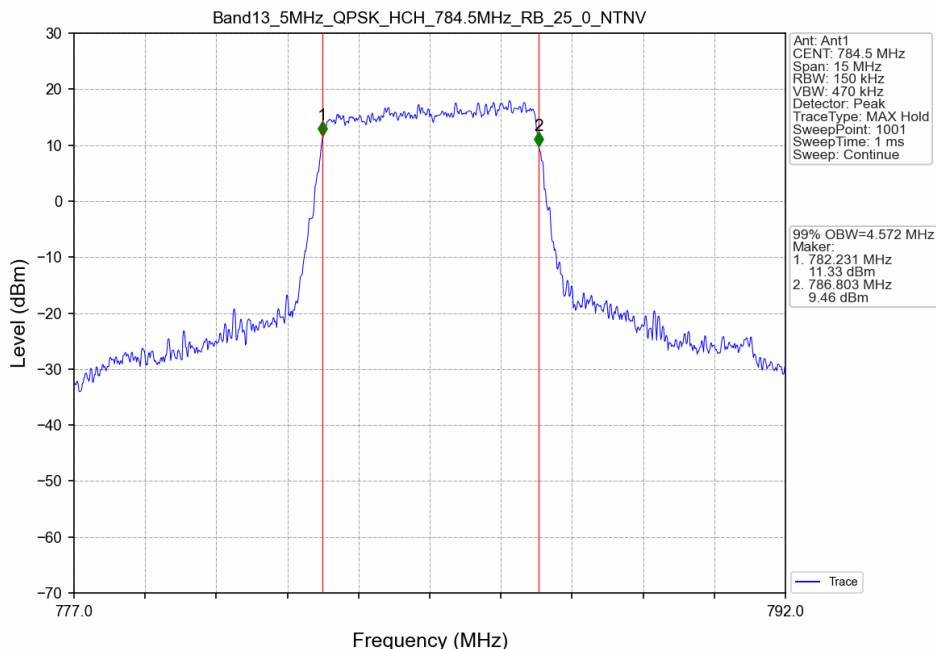


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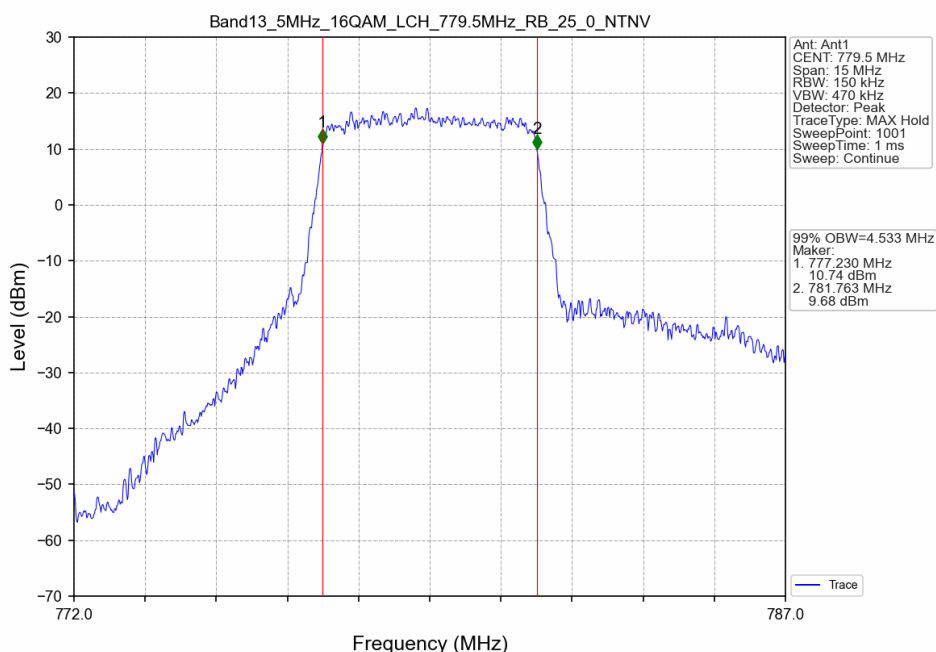
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Band13_5MHz_QPSK_HCH_784.5MHz_RB_25_0_NTNV



Band13_5MHz_16QAM_LCH_779.5MHz_RB_25_0_NTNV

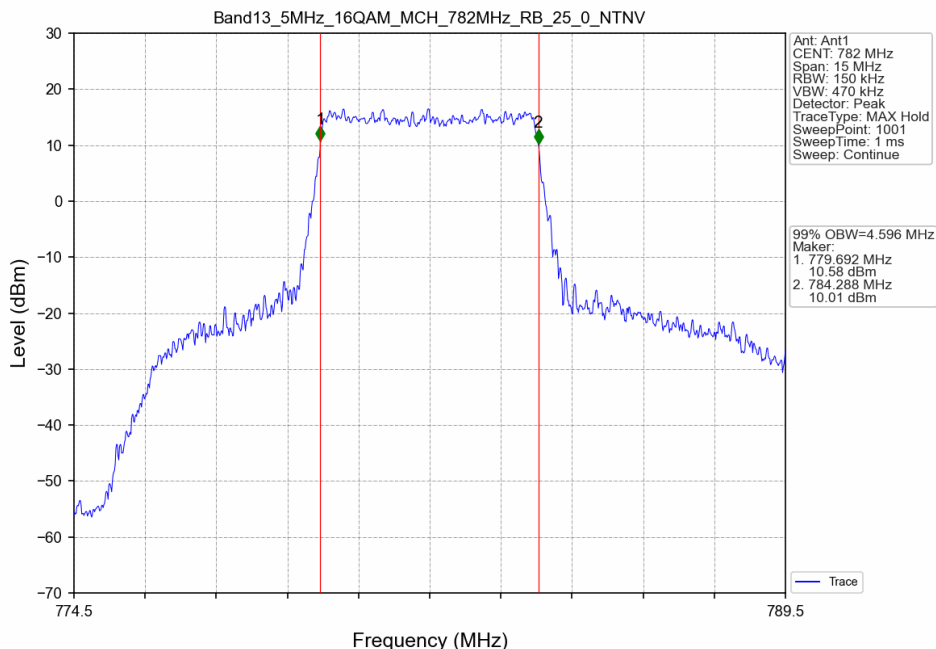


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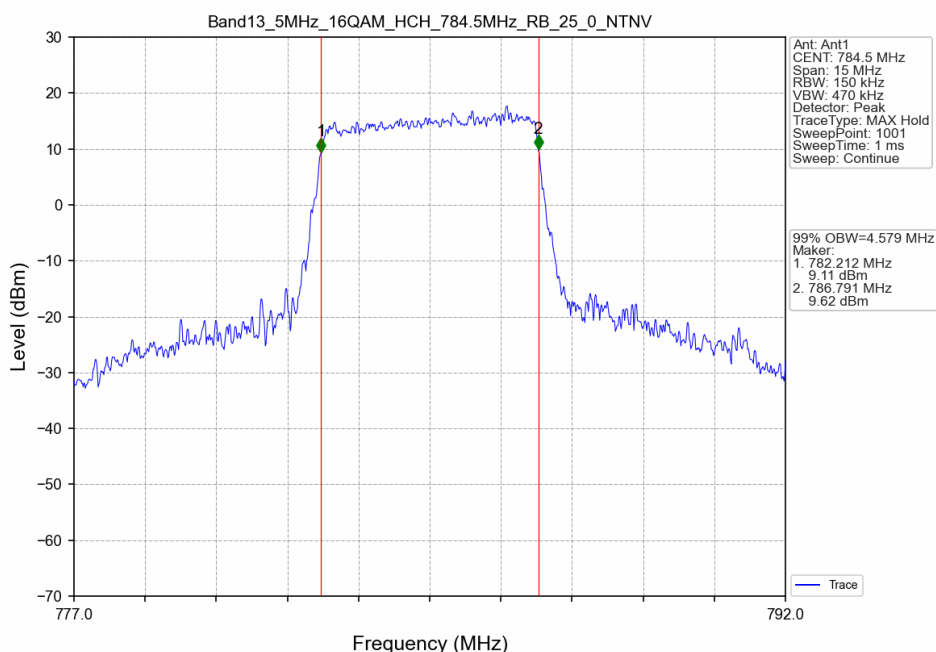
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Band13_5MHz_16QAM_MCH_782MHz_RB_25_0_NTNV



Band13_5MHz_16QAM_HCH_784.5MHz_RB_25_0_NTNV

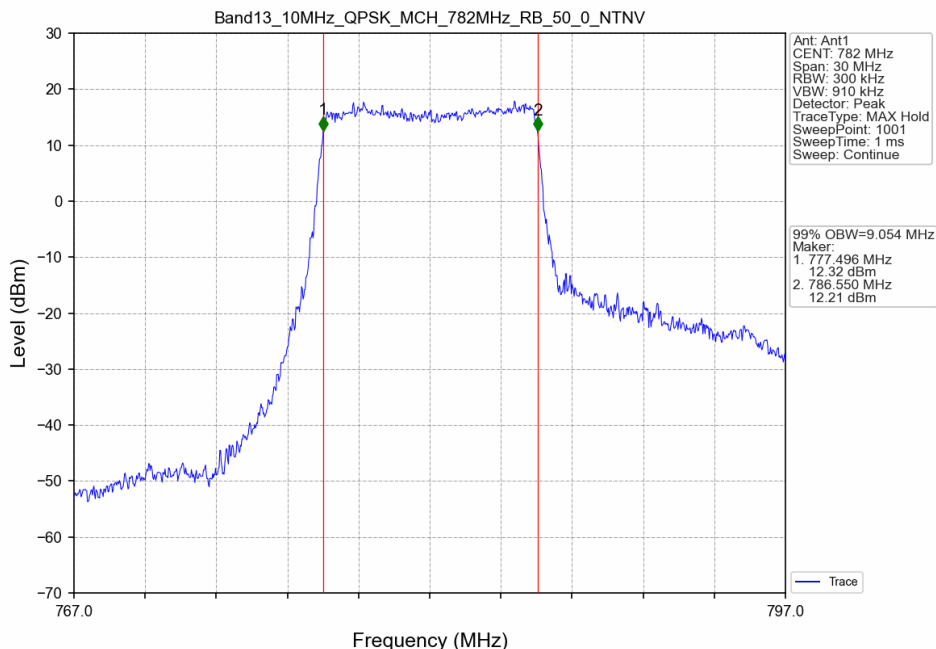


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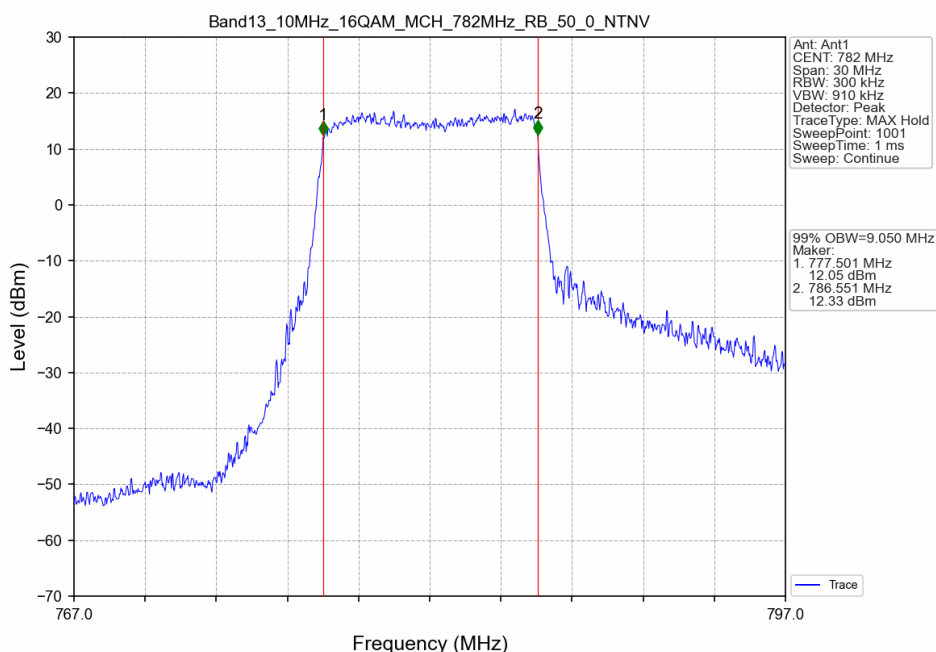
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Band13_10MHz_QPSK_MCH_782MHz_RB_50_0_NTNV



Band13_10MHz_16QAM_MCH_782MHz_RB_50_0_NTNV



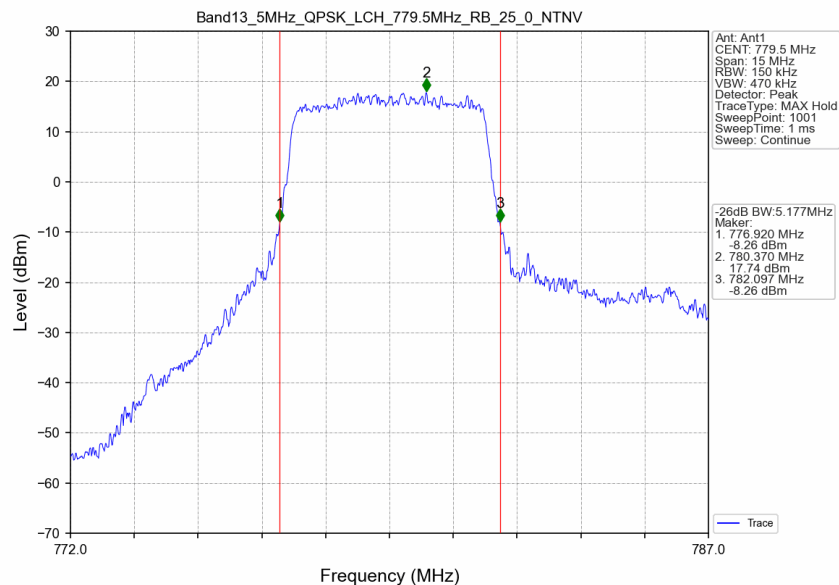
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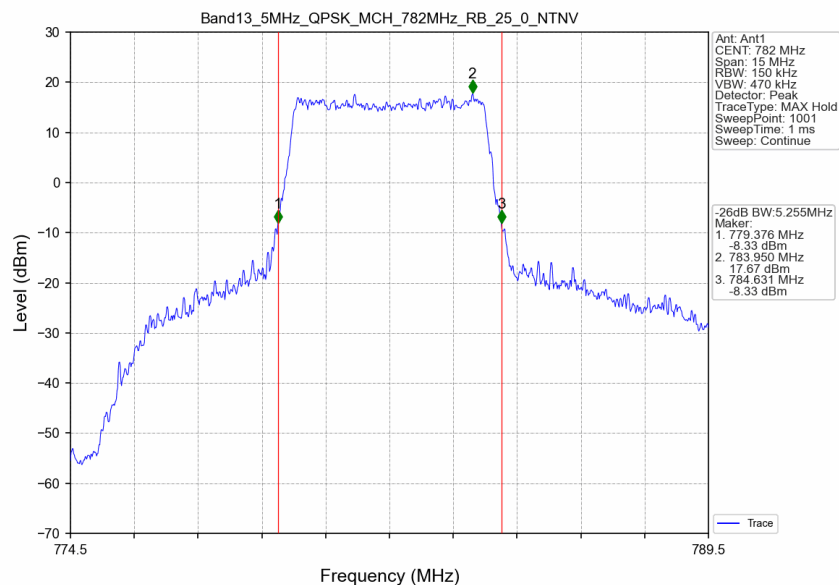
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3.2.2 Band13_XDB

Band13_5MHz_QPSK_LCH_779.5MHz_RB_25_0_NTNV



Band13_5MHz_QPSK_MCH_782MHz_RB_25_0_NTNV

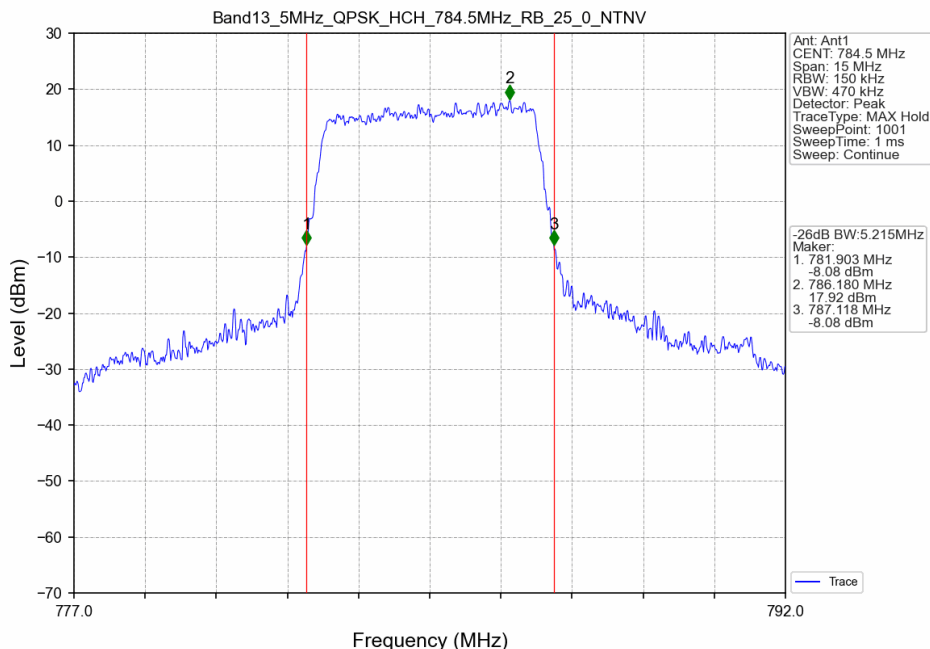


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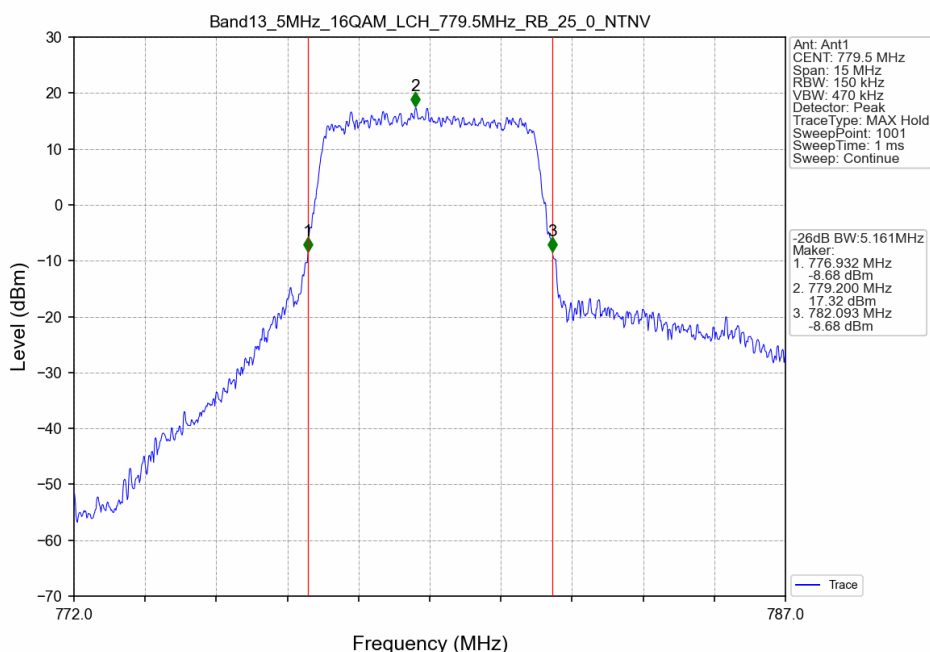
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Band13_5MHz_16QAM_LCH_779.5MHz_RB_25_0_NTNV

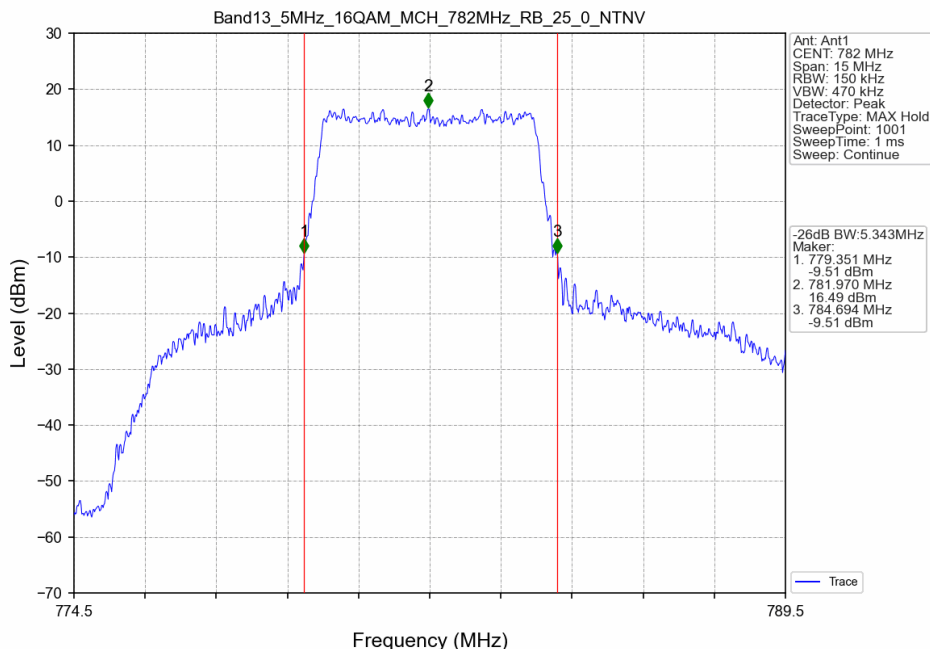


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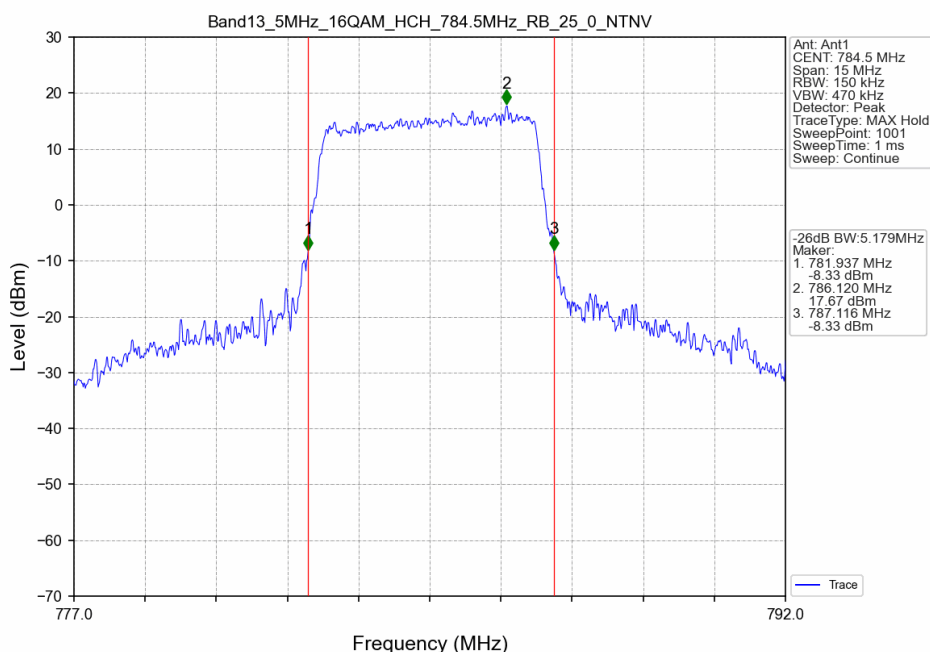
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Band13_5MHz_16QAM_MCH_782MHz_RB_25_0_NTNV



Band13_5MHz_16QAM_HCH_784.5MHz_RB_25_0_NTNV

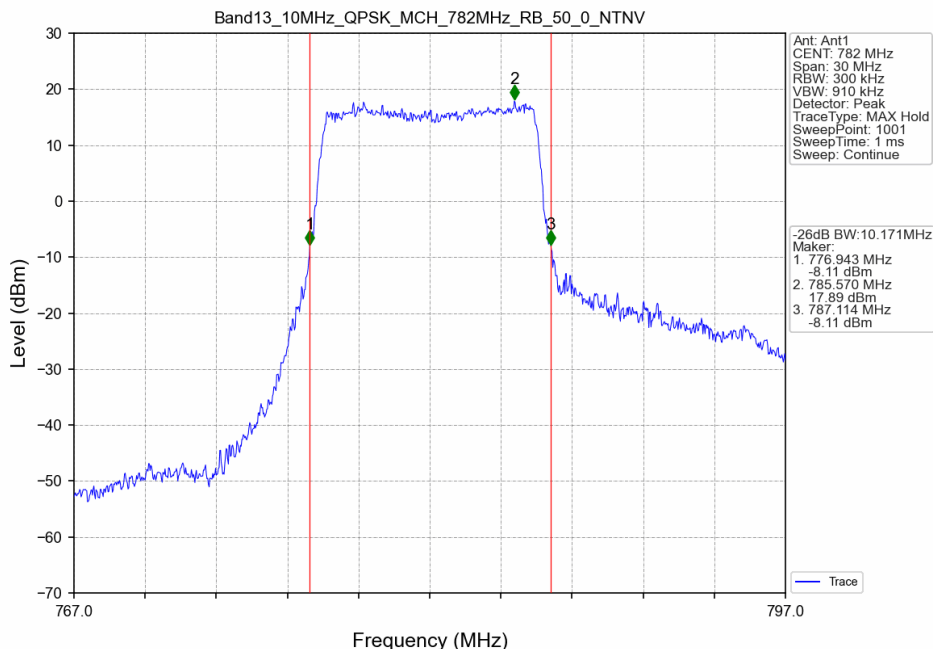


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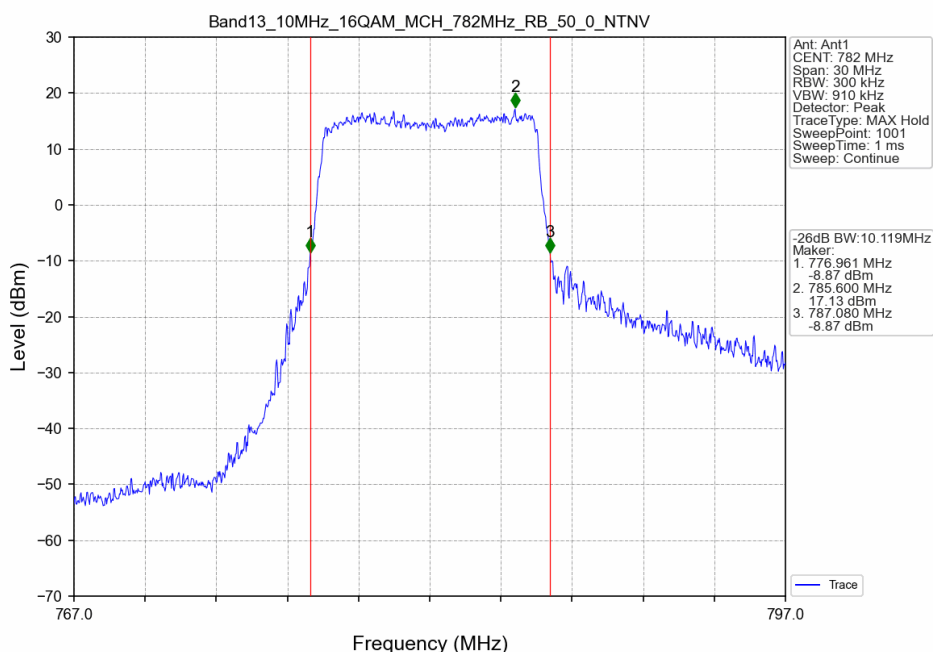
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Band13_10MHz_QPSK_MCH_782MHz_RB_50_0_NTNV



Band13_10MHz_16QAM_MCH_782MHz_RB_50_0_NTNV



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4. Peak-Average Ratio

4.1 Test Result

4.1.1 B13_10MHz

Band: 13 / Bandwidth: 10MHz / NTNV						
Modulation	Frequency (MHz)	RB Allocation		Peak-Average Ratio (dB)		Verdict
		Size	Offset	Result	Limit	
QPSK	782	50	0	5.42	<=13	Pass
16QAM	782	50	0	6.20	<=13	Pass



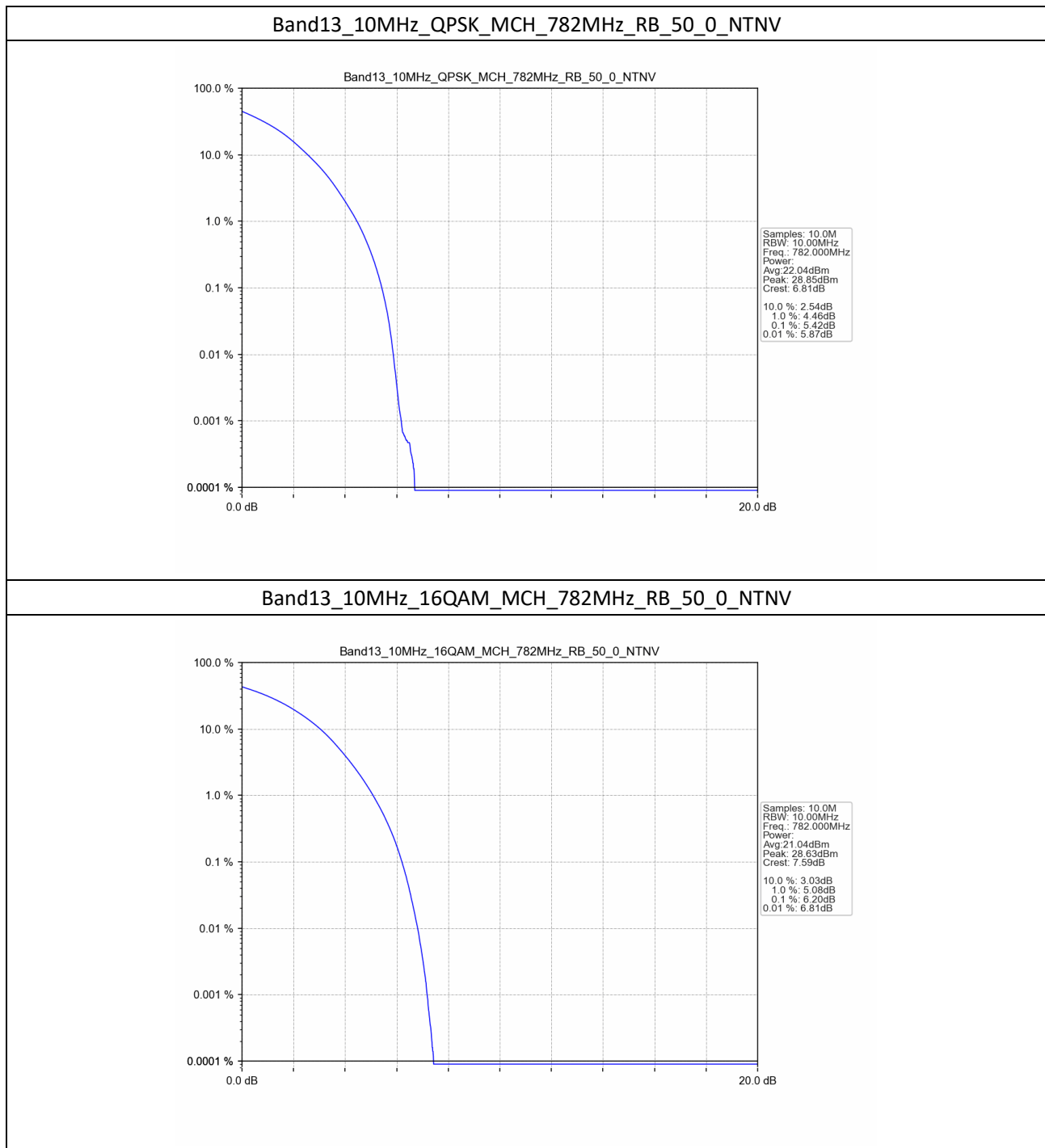
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4.2 Test Graph

4.2.1 B13_10MHz



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5. Spurious Emission

5.1 Test Result

5.1.1 B13_5MHz

Band: 13 / Bandwidth: 5MHz / NTNV						
Modulation	Frequency (MHz)	RB Allocation		Spurious Emission		Verdict
		Size	Offset	Result	Limit	
QPSK	779.5	1	0	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		Pass
	782	1	0	Refer To Test Graph		Pass
	784.5	1	0	Refer To Test Graph		Pass
			24	Refer To Test Graph		Pass
		25	0	Refer To Test Graph		Pass

5.1.2 B13_10MHz

Band: 13 / Bandwidth: 10MHz / NTNV						
Modulation	Frequency (MHz)	RB Allocation		Spurious Emission		Verdict
		Size	Offset	Result	Limit	
QPSK	782	1	0	Refer To Test Graph		Pass
		50	0	Refer To Test Graph		Pass
	782	1	49	Refer To Test Graph		Pass
		50	0	Refer To Test Graph		Pass



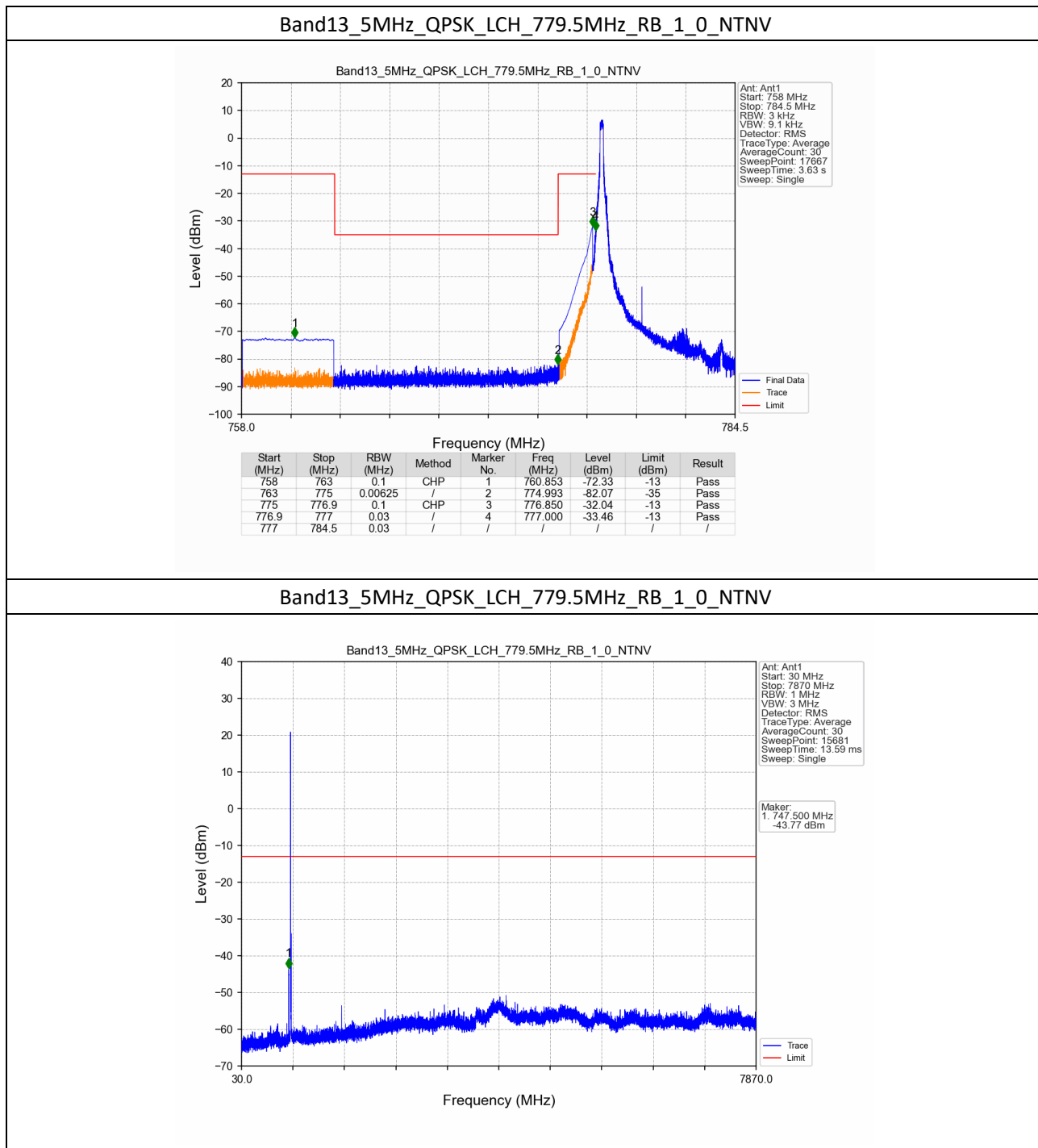
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5.2 Test Graph

5.2.1 B13_5MHz

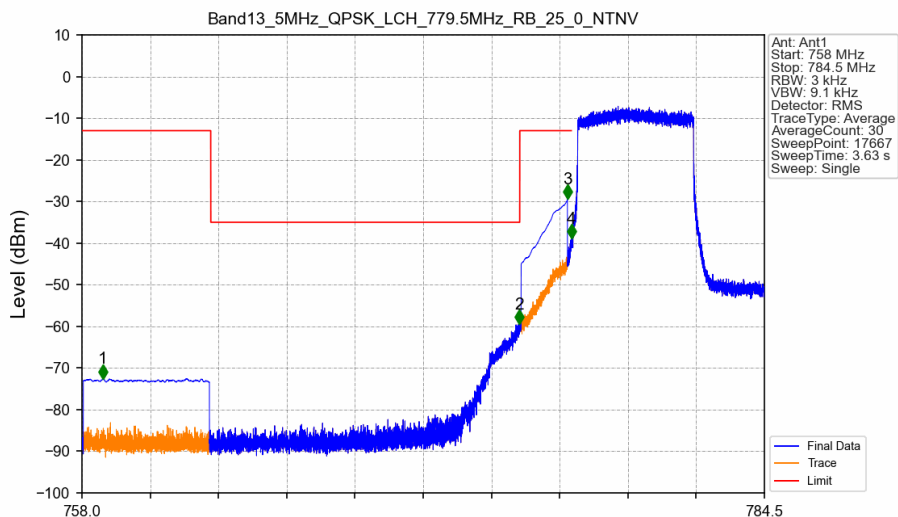


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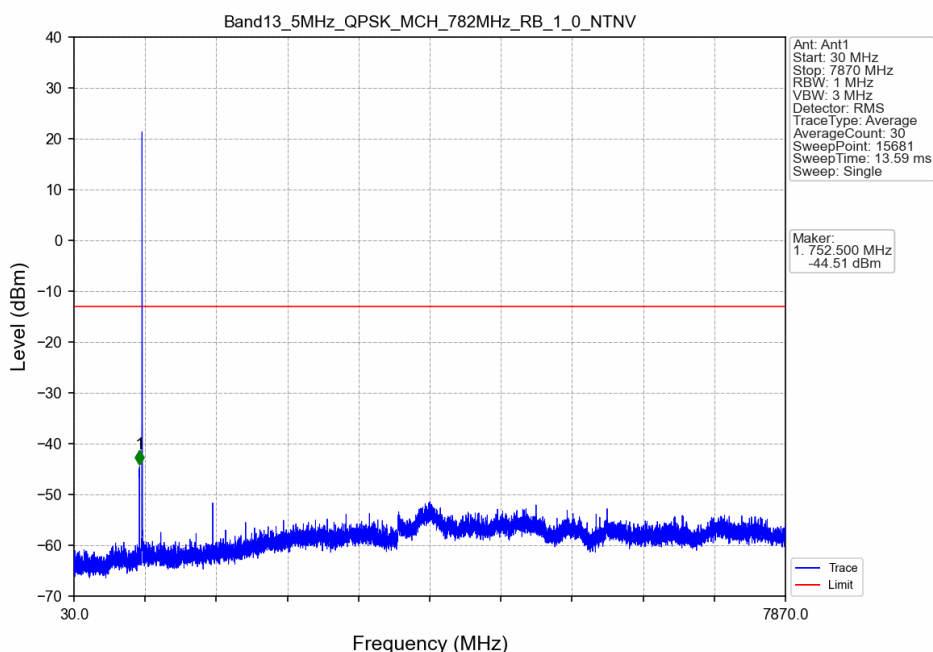
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Band13_5MHz_QPSK_LCH_779.5MHz_RB_25_0_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	Method	Marker No.	Freq (MHz)	Level (dBm)	Limit (dBm)	Result
758	763	0.1	CHP	1	758.809	-72.57	-13	Pass
763	775	0.00625	/	2	774.978	-59.47	-35	Pass
775	776.9	0.1	CHP	3	776.850	-29.45	-13	Pass
776.9	777	0.03	/	4	777.000	-38.96	-13	Pass
777	784.5	0.03	/	/	/	/	/	/

Band13_5MHz_QPSK_MCH_782MHz_RB_1_0_NTNV

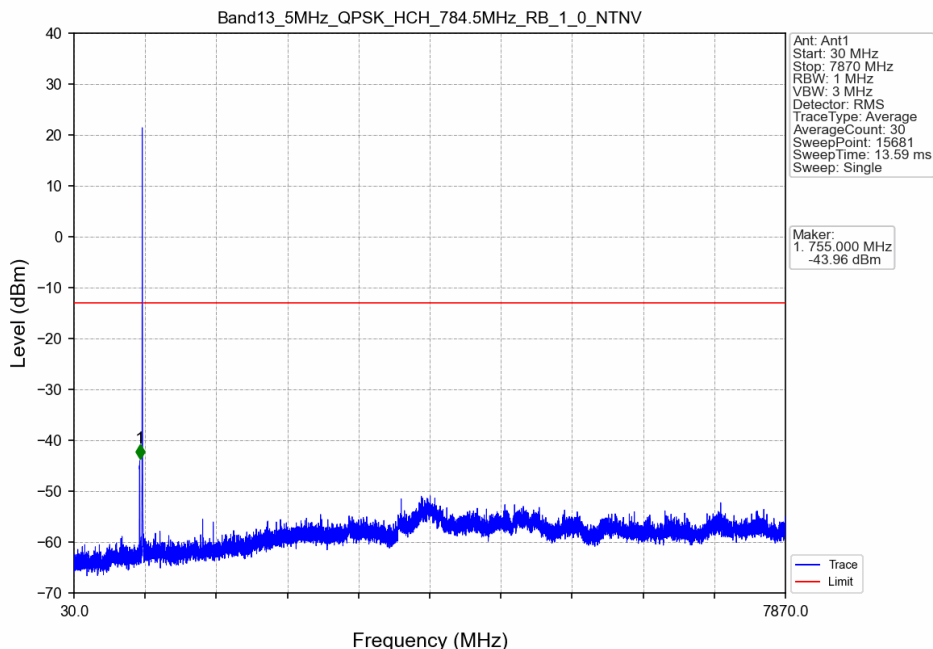


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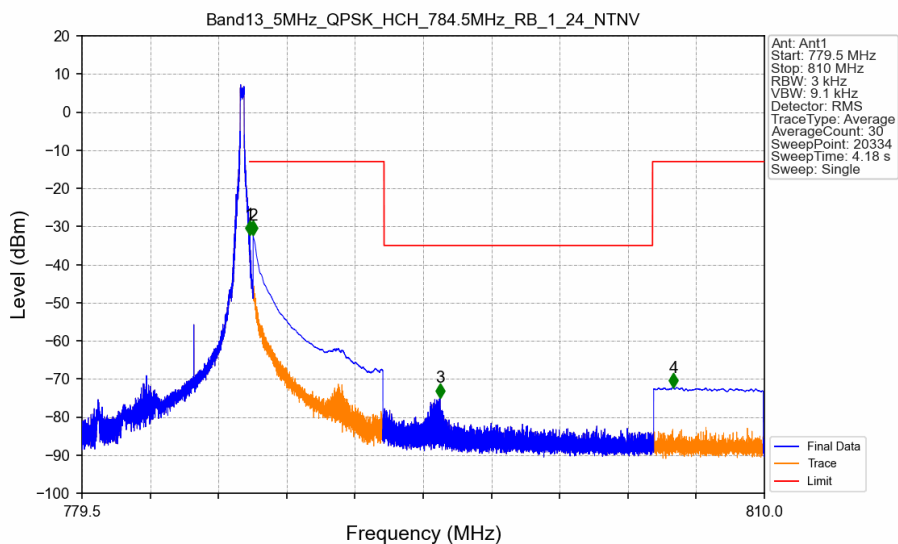
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Band13_5MHz_QPSK_HCH_784.5MHz_RB_1_0_NTNV



Band13_5MHz_QPSK_HCH_784.5MHz_RB_1_24_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	Method	Marker No.	Freq (MHz)	Level (dBm)	Limit (dBm)	Result
779.5	787	0.03	/	1	787.000	-32.21	-13	Pass
787	787.1	0.03	/	2	787.150	-32.31	-13	Pass
787.1	793	0.1	CHP	3	795.502	-74.93	-35	Pass
793	805	0.00625	/	4	805.942	-72.24	-13	Pass
805	810	0.1	CHP					



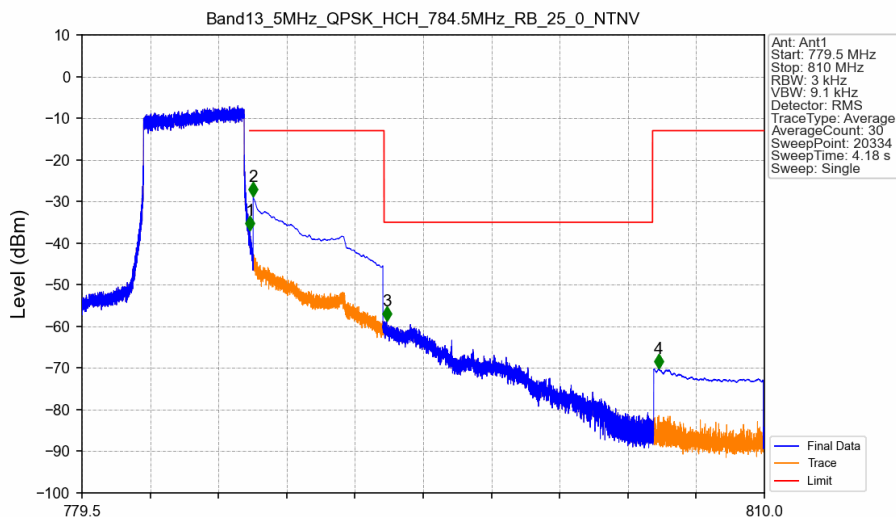
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Band13_5MHz_QPSK_HCH_784.5MHz_RB_25_0_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	Method	Marker No.	Freq (MHz)	Level (dBm)	Limit (dBm)	Result
779.5	787	0.03	/	1	787.002	-36.92	-13	/
787	787.1	0.03	/	2	787.150	-28.76	-13	Pass
787.1	793	0.1	CHP	3	793.120	-58.69	-35	Pass
793	805	0.00625	/	4	805.263	-70.16	-13	Pass
805	810	0.1	CHP					

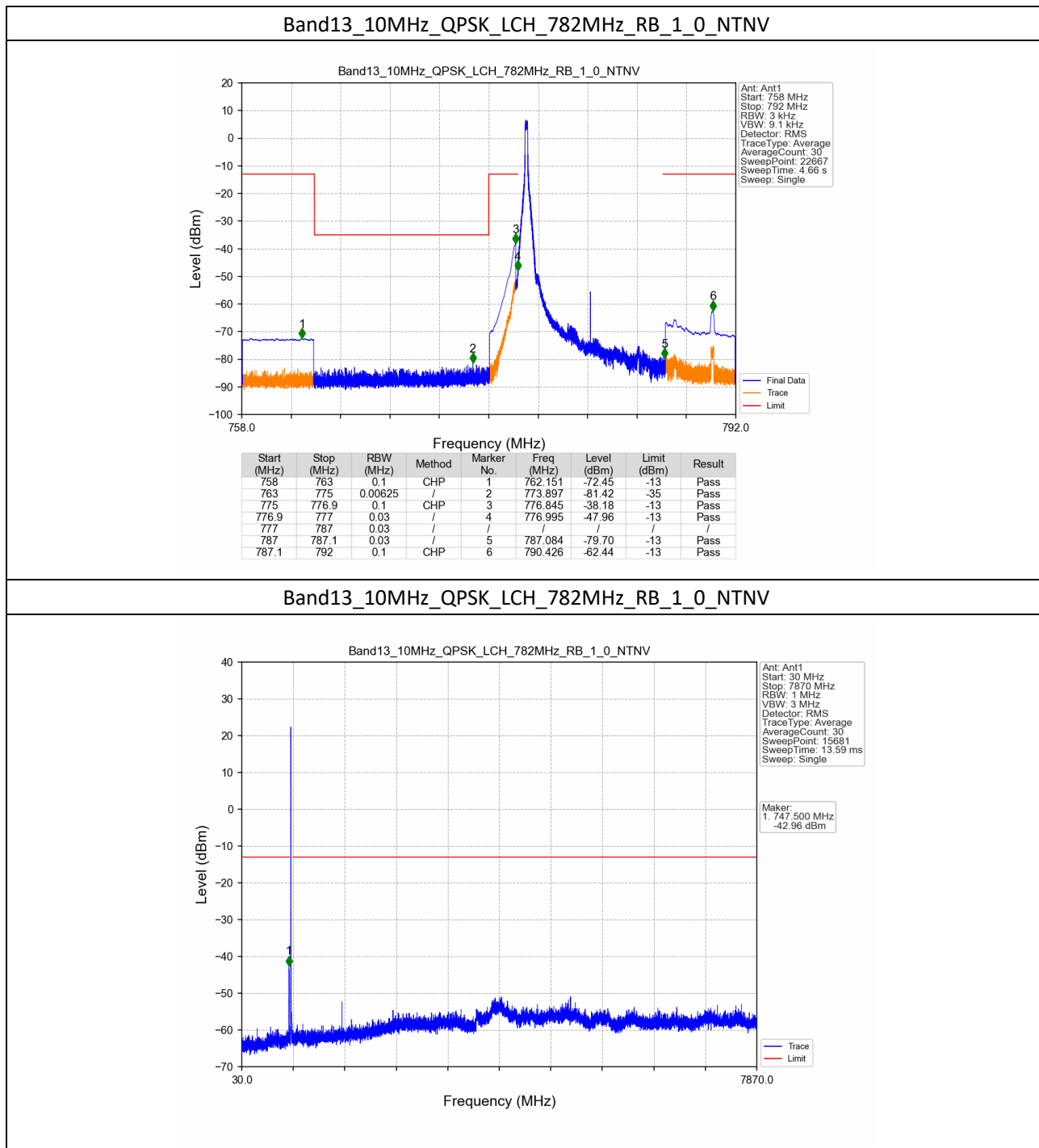


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5.2.2 B13_10MHz

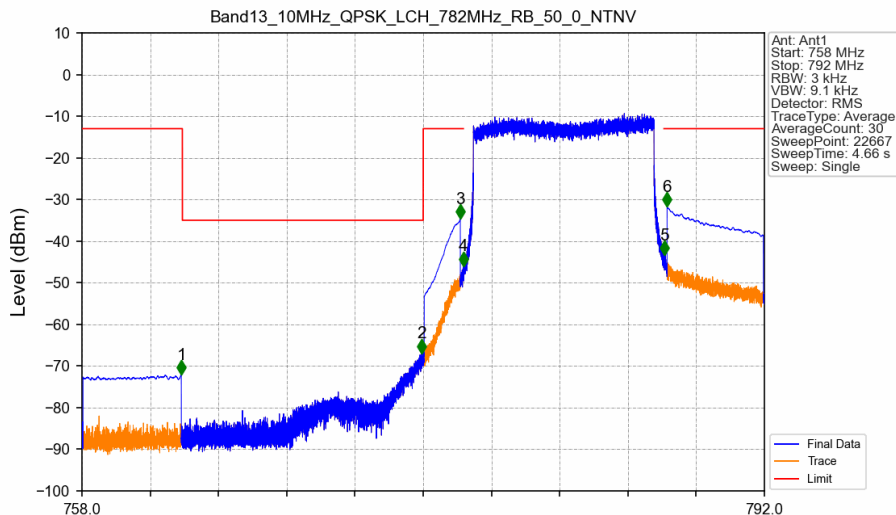


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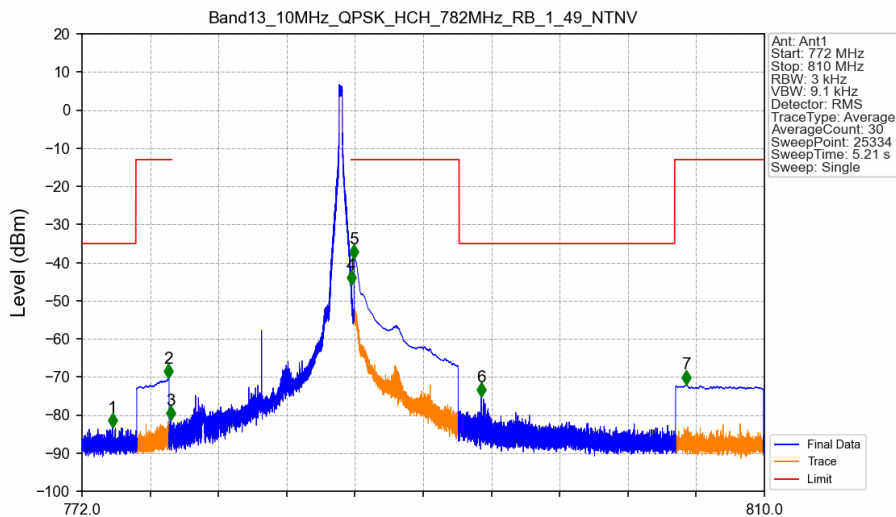
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Band13_10MHz_QPSK_LCH_782MHz_RB_50_0_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	Method	Marker No.	Freq (MHz)	Level (dBm)	Limit (dBm)	Result
758	763	0.1	CHP	1	762.949	-72.01	-13	Pass
763	775	0.00625	/	2	774.916	-66.95	-35	Pass
775	776.9	0.1	CHP	3	776.850	-34.62	-13	Pass
776.9	777	0.03	/	4	776.998	-45.99	-13	Pass
777	787	0.03	/	/	/	/	/	/
787	787.1	0.03	/	5	787.015	-43.30	-13	Pass
787.1	792	0.1	CHP	6	787.150	-31.74	-13	Pass

Band13_10MHz_QPSK_HCH_782MHz_RB_1_49_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	Method	Marker No.	Freq (MHz)	Level (dBm)	Limit (dBm)	Result
772	775	0.00625	/	1	773.706	-83.33	-35	Pass
775	776.9	0.1	CHP	2	776.824	-70.46	-13	Pass
776.9	777	0.03	/	3	776.944	-81.42	-13	Pass
777	787	0.03	/	/	/	/	/	/
787	787.1	0.03	/	4	787.002	-45.76	-13	Pass
787.1	793	0.1	CHP	5	787.150	-39.04	-13	Pass
793	805	0.00625	/	6	794.229	-75.30	-35	Pass
805	810	0.1	CHP	7	805.662	-71.96	-13	Pass

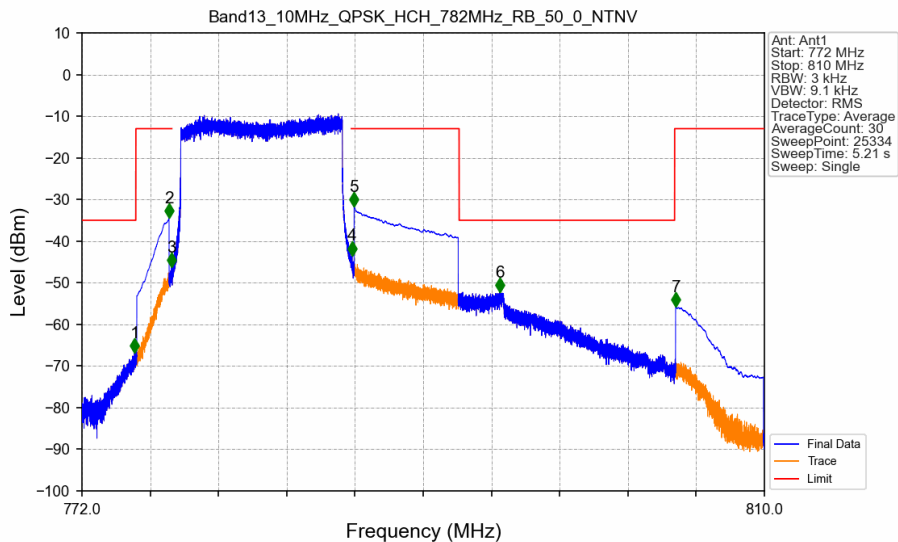


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Band13_10MHz_QPSK_HCH_782MHz_RB_50_0_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	Method	Marker No.	Freq (MHz)	Level (dBm)	Limit (dBm)	Result
772	775	0.00625	/	1	774.927	-66.86	-35	Pass
775	776.9	0.1	CHP	2	776.850	-34.43	-13	Pass
776.9	777	0.03	/	3	776.985	-46.28	-13	Pass
777	787	0.03	/	/	/	/	/	/
787	787.1	0.03	/	4	787.036	-43.48	-13	Pass
787.1	793	0.1	CHP	5	787.150	-31.70	-13	Pass
793	805	0.00625	/	6	795.267	-52.24	-35	Pass
805	810	0.1	CHP	7	805.080	-55.74	-13	Pass



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6. Field Strength of Spurious Radiation

LTE Band 13-Low channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1554.5	-65.83	-13	-52.83	-69.53	2.04	5.74	Horizontal	Pass
2331.75	-63.21	-13	-50.21	-66.07	2.56	5.42	Horizontal	Pass
3109.0	-61.34	-13	-48.34	-65.5	3.03	7.19	Horizontal	Pass
1554.5	-65.43	-13	-52.43	-69.13	2.04	5.74	Vertical	Pass
2331.75	-63.1	-13	-50.1	-65.96	2.56	5.42	Vertical	Pass
3109.0	-60.6	-13	-47.6	-64.76	3.03	7.19	Vertical	Pass
LTE Band 13-Middle channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1559.5	-66.72	-40	-26.72	-70.41	2.04	5.73	Horizontal	Pass
2339.25	-62.74	-13	-49.74	-65.61	2.56	5.43	Horizontal	Pass
3119.0	-59.21	-13	-46.21	-63.39	3.04	7.22	Horizontal	Pass
1559.5	-65.75	-40	-25.75	-69.44	2.04	5.73	Vertical	Pass
2339.25	-62.37	-13	-49.37	-65.24	2.56	5.43	Vertical	Pass
3119.0	-61.71	-13	-48.71	-65.89	3.04	7.22	Vertical	Pass
LTE Band 13-High channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1564.5	-66.86	-40	-26.86	-70.53	2.05	5.72	Horizontal	Pass
2346.75	-62.05	-13	-49.05	-64.94	2.56	5.45	Horizontal	Pass
3129.0	-60.55	-13	-47.55	-64.74	3.05	7.24	Horizontal	Pass
1564.5	-66.77	-40	-26.77	-70.44	2.05	5.72	Vertical	Pass
2346.75	-62.49	-13	-49.49	-65.38	2.56	5.45	Vertical	Pass
3129.0	-61.86	-13	-48.86	-66.05	3.05	7.24	Vertical	Pass

---End of Attachment---



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