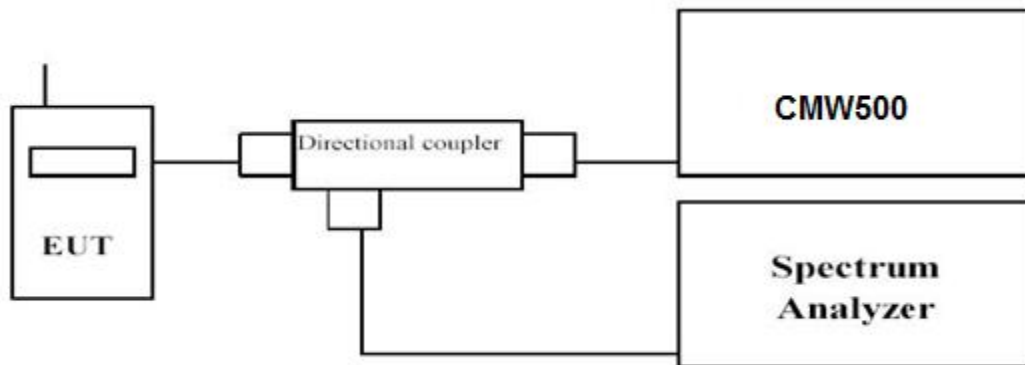


4.5 Spurious Emission on Antenna Port

LIMIT

Per FCC §24.238, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

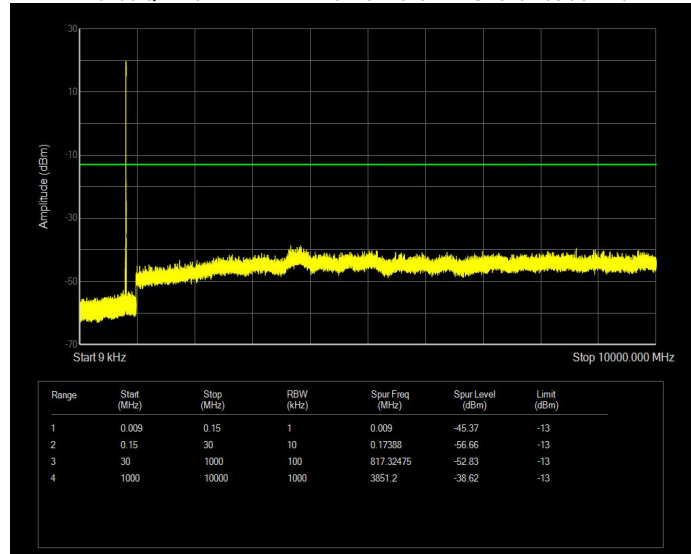
- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Coupler.
- EUT Communicate with CMW500, then select a channel for testing.
- Add a correction factor to the display of spectrum, and then test.
- The resolution bandwidth of the spectrum analyzer was set sufficient scans were taken to show the out of band Emission if any up to 10^{th} harmonic.
- Please refer to following tables for test antenna conducted emissions.

TEST RESULTS

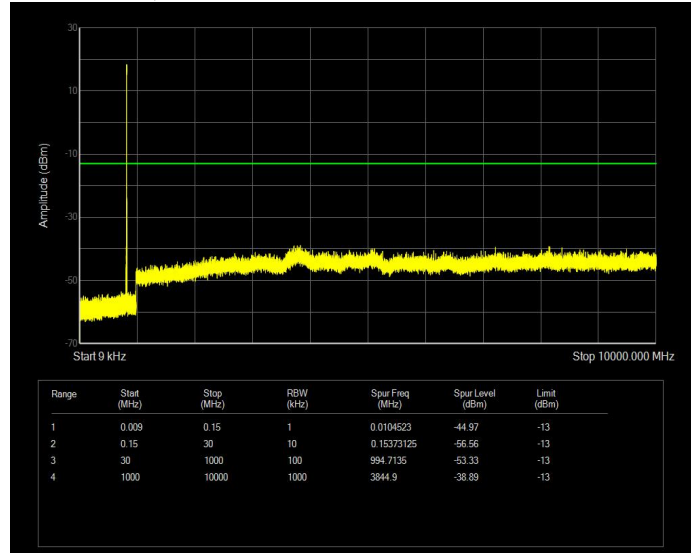
Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
Band5	1.4	20407	6	#0	QPSK	7294.15	-38.81	-13	PASS
Band5	1.4	20407	6	#0	QAM16	3851.20	-38.62	-13	PASS
Band5	1.4	20525	6	#0	QPSK	3877.30	-38.46	-13	PASS
Band5	1.4	20525	6	#0	QAM16	3844.90	-38.89	-13	PASS
Band5	1.4	20643	6	#0	QPSK	3799.90	-37.93	-13	PASS
Band5	1.4	20643	6	#0	QAM16	3798.55	-38.56	-13	PASS
Band5	3	20415	15	#0	QPSK	3816.78	-39.22	-13	PASS
Band5	3	20415	15	#0	QAM16	3837.03	-39.23	-13	PASS
Band5	3	20525	15	#0	QPSK	3832.08	-38.29	-13	PASS
Band5	3	20525	15	#0	QAM16	9445.38	-39.08	-13	PASS
Band5	3	20635	15	#0	QPSK	3808.23	-39.02	-13	PASS
Band5	3	20635	15	#0	QAM16	3823.53	-38.78	-13	PASS
Band5	5	20425	25	#0	QPSK	3802.15	-39.10	-13	PASS
Band5	5	20425	25	#0	QAM16	3763.23	-39.00	-13	PASS
Band5	5	20525	25	#0	QPSK	3793.83	-39.32	-13	PASS
Band5	5	20525	25	#0	QAM16	3787.30	-38.53	-13	PASS
Band5	5	20625	25	#0	QPSK	3923.20	-38.25	-13	PASS
Band5	5	20625	25	#0	QAM16	5091.40	-38.89	-13	PASS
Band5	10	20450	50	#0	QPSK	3925.68	-39.10	-13	PASS
Band5	10	20450	50	#0	QAM16	3854.58	-39.10	-13	PASS
Band5	10	20525	50	#0	QPSK	3773.35	-38.73	-13	PASS
Band5	10	20525	50	#0	QAM16	3845.58	-39.43	-13	PASS
Band5	10	20600	50	#0	QPSK	3834.78	-39.62	-13	PASS
Band5	10	20600	50	#0	QAM16	3742.98	-37.84	-13	PASS
Band38	5	37775	25	#0	QPSK	25744.85	-29.87	-25	PASS
Band38	5	37775	25	#0	16QAM	25979.50	-29.34	-25	PASS
Band38	5	38000	25	#0	QPSK	26977.90	-29.95	-25	PASS
Band38	5	38000	25	#0	16QAM	26649.65	-29.88	-25	PASS
Band38	5	38225	25	#0	QPSK	26405.25	-30.22	-25	PASS
Band38	5	38225	25	#0	16QAM	25308.70	-29.01	-25	PASS
Band38	10	37800	50	#0	QPSK	25348.35	-30.13	-25	PASS
Band38	10	37800	50	#0	16QAM	26709.45	-30.39	-25	PASS
Band38	10	38000	50	#0	QPSK	25651.90	-29.56	-25	PASS
Band38	10	38000	50	#0	16QAM	25616.15	-28.78	-25	PASS
Band38	10	38200	50	#0	QPSK	25242.40	-29.57	-25	PASS
Band38	10	38200	50	#0	16QAM	24786.75	-29.52	-25	PASS
Band38	15	37825	75	#0	QPSK	26071.80	-29.92	-25	PASS
Band38	15	37825	75	#0	16QAM	25616.15	-29.62	-25	PASS
Band38	15	38000	75	#0	QPSK	26017.20	-29.29	-25	PASS
Band38	15	38000	75	#0	16QAM	25219.00	-29.96	-25	PASS
Band38	15	38175	75	#0	QPSK	25678.55	-29.87	-25	PASS
Band38	15	38175	75	#0	16QAM	25360.70	-29.92	-25	PASS
Band38	20	37850	100	#0	QPSK	26039.95	-30.15	-25	PASS
Band38	20	37850	100	#0	16QAM	25700.00	-30.01	-25	PASS
Band38	20	38000	100	#0	QPSK	25398.40	-29.90	-25	PASS
Band38	20	38000	100	#0	16QAM	25980.15	-29.78	-25	PASS
Band38	20	38150	100	#0	QPSK	26671.10	-29.92	-25	PASS
Band38	20	38150	100	#0	16QAM	25635.00	-29.65	-25	PASS
Band40(2350-2360)	5	39175	25	#0	QPSK	21630.43	-42.39	-40	PASS
Band40(2350-2360)	5	39175	25	#0	16QAM	23836.13	-42.10	-40	PASS
Band40(2350-2360)	5	39200	25	#0	QPSK	23815.43	-41.88	-40	PASS
Band40(2350-2360)	5	39200	25	#0	16QAM	23823.48	-42.79	-40	PASS
Band40(2350-2360)	5	39225	25	#0	QPSK	20844.98	-42.38	-40	PASS
Band40(2350-2360)	5	39225	25	#0	16QAM	21629.28	-41.02	-40	PASS
Band40(2350-2360)	10	39200	50	#0	QPSK	21711.50	-42.36	-40	PASS
Band40(2350-2360)	10	39200	50	#0	16QAM	23888.45	-42.23	-40	PASS
Band40(2305-2315)	5	38725	25	#0	QPSK	23858.55	-42.31	-40	PASS
Band40(2305-2315)	5	38725	25	#0	16QAM	2375.98	-42.42	-40	PASS
Band40(2305-2315)	5	38750	25	#0	QPSK	23850.50	-42.09	-40	PASS
Band40(2305-2315)	5	38750	25	#0	16QAM	21165.25	-42.12	-40	PASS
Band40(2305-2315)	5	38775	25	#0	QPSK	23985.05	-41.78	-40	PASS
Band40(2305-2315)	5	38775	25	#0	16QAM	21617.78	-41.28	-40	PASS
Band40(2305-2315)	10	38750	50	#0	QPSK	21591.33	-41.74	-40	PASS
Band40(2305-2315)	10	38750	50	#0	16QAM	23977.58	-42.07	-40	PASS
Band41	5	39675	25	#0	QPSK	26055.55	-31.44	-25	PASS
Band41	5	39675	25	#0	16QAM	24837.45	-31.65	-25	PASS
Band41	5	40620	25	#0	QPSK	26303.20	-31.02	-25	PASS
Band41	5	40620	25	#0	16QAM	24592.40	-30.83	-25	PASS
Band41	5	41565	25	#0	QPSK	25597.30	-30.70	-25	PASS
Band41	5	41565	25	#0	16QAM	26924.60	-31.35	-25	PASS
Band41	10	39700	50	#0	QPSK	25913.85	-31.19	-25	PASS
Band41	10	39700	50	#0	16QAM	25974.95	-31.44	-25	PASS
Band41	10	40620	50	#0	QPSK	25954.80	-31.63	-25	PASS
Band41	10	40620	50	#0	16QAM	25969.10	-30.96	-25	PASS
Band41	10	41540	50	#0	QPSK	25295.70	-30.85	-25	PASS
Band41	10	41540	50	#0	16QAM	25993.80	-31.27	-25	PASS
Band41	15	39725	75	#0	QPSK	25766.95	-31.12	-25	PASS
Band41	15	39725	75	#0	16QAM	25356.15	-31.35	-25	PASS
Band41	15	40620	75	#0	QPSK	26639.25	-31.11	-25	PASS

Band41	15	40620	75	#0	16QAM	24758.80	-30.01	-25	PASS
Band41	15	41515	75	#0	QPSK	25284.65	-30.36	-25	PASS
Band41	15	41515	75	#0	16QAM	25295.70	-30.81	-25	PASS
Band41	20	39750	100	#0	QPSK	26349.35	-30.23	-25	PASS
Band41	20	39750	100	#0	16QAM	26012.00	-31.35	-25	PASS
Band41	20	40620	100	#0	QPSK	25371.10	-31.63	-25	PASS
Band41	20	40620	100	#0	16QAM	26721.80	-30.86	-25	PASS
Band41	20	41490	100	#0	QPSK	25010.35	-30.88	-25	PASS
Band41	20	41490	100	#0	16QAM	24839.40	-30.76	-25	PASS

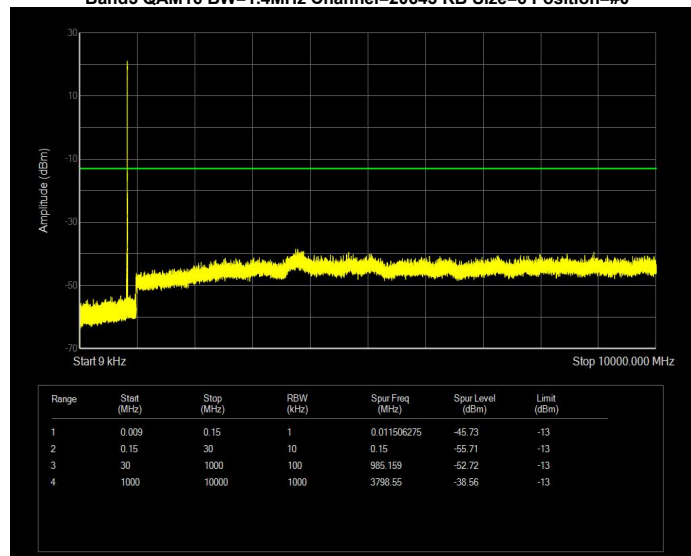
Band5 QAM16 BW=1.4MHz Channel=20407 RB Size=6 Position=#0



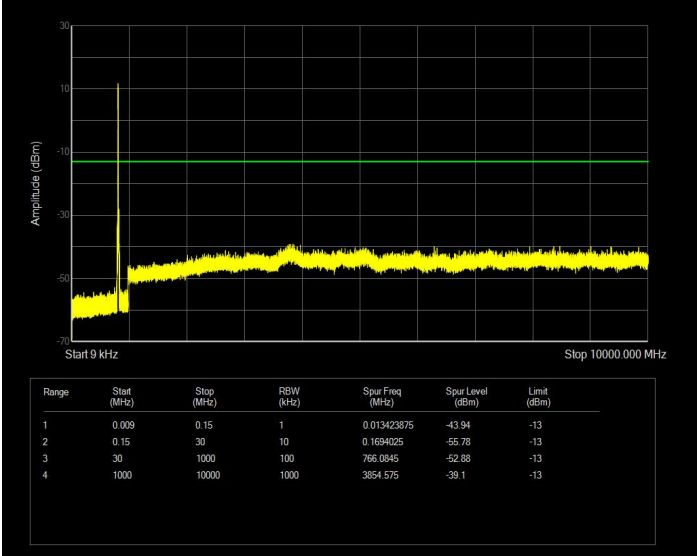
Band5 QAM16 BW=1.4MHz Channel=20525 RB Size=6 Position=#0



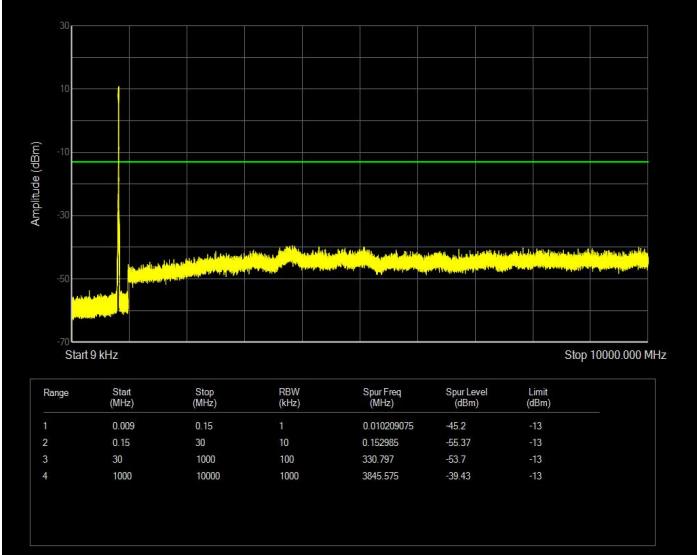
Band5 QAM16 BW=1.4MHz Channel=20643 RB Size=6 Position=#0



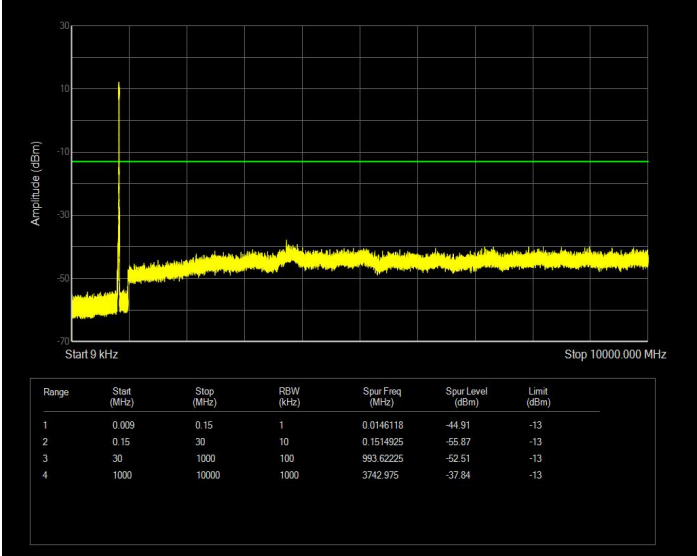
Band5 QAM16 BW=10MHz Channel=20450 RB Size=50 Position=#0



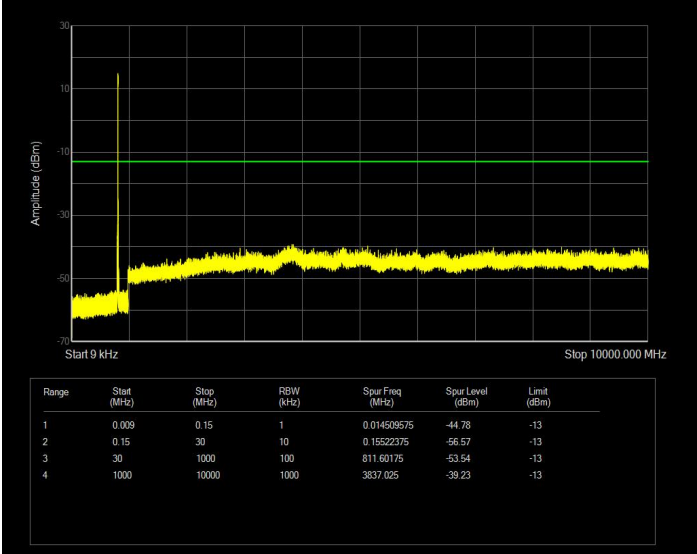
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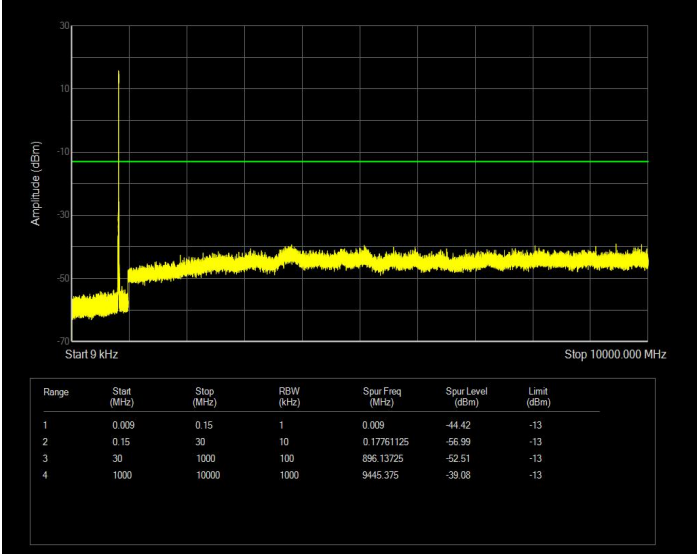
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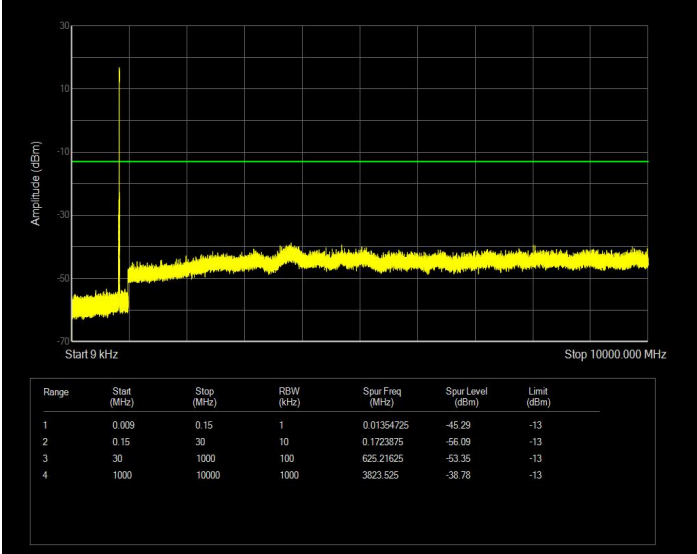
Band5 QAM16 BW=3MHz Channel=20415 RB Size=15 Position=#0



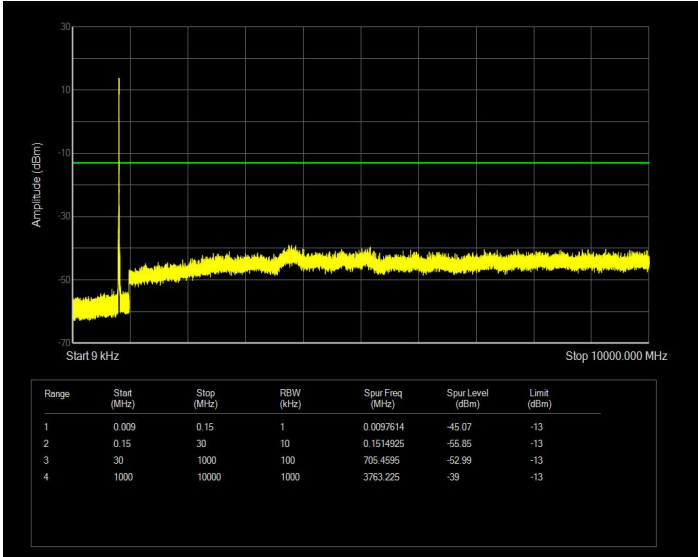
Band5 QAM16 BW=3MHz Channel=20525 RB Size=15 Position=#0



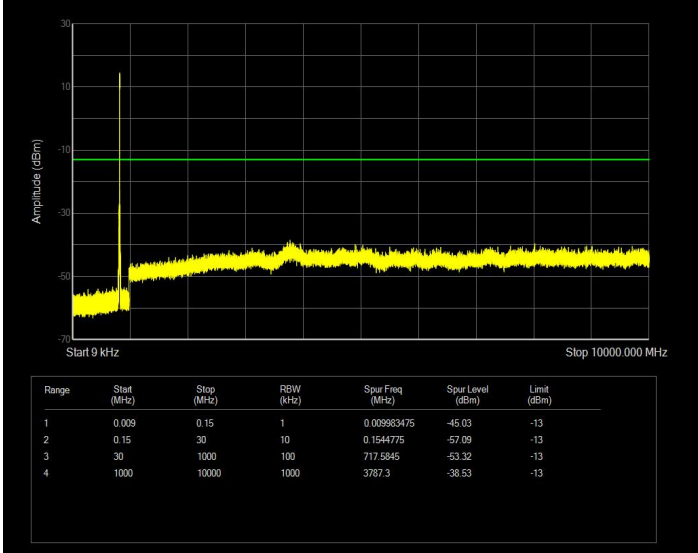
Band5 QAM16 BW=3MHz Channel=20635 RB Size=15 Position=#0



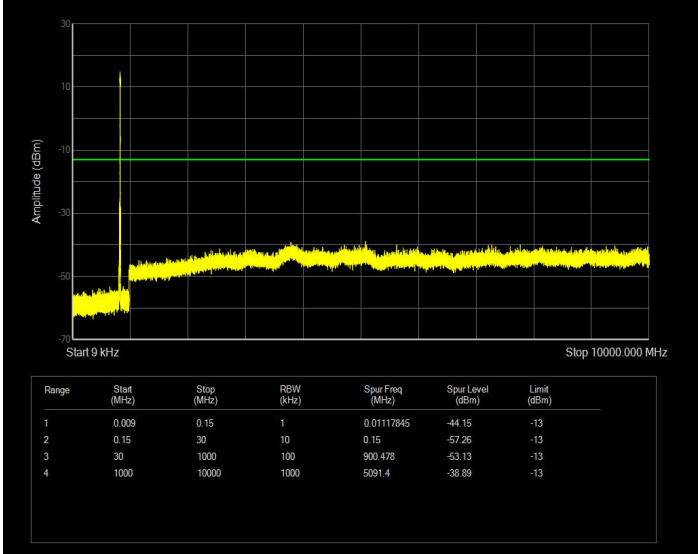
Band5 QAM16 BW=5MHz Channel=20425 RB Size=25 Position=#0



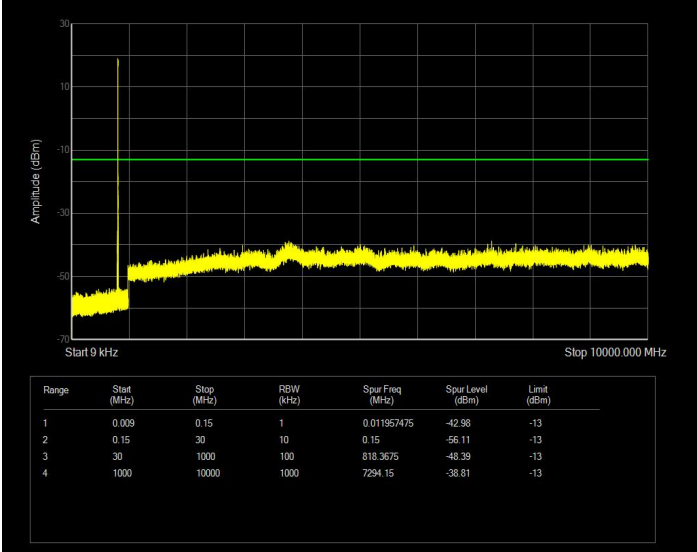
Band5 QAM16 BW=5MHz Channel=20525 RB Size=25 Position=#0



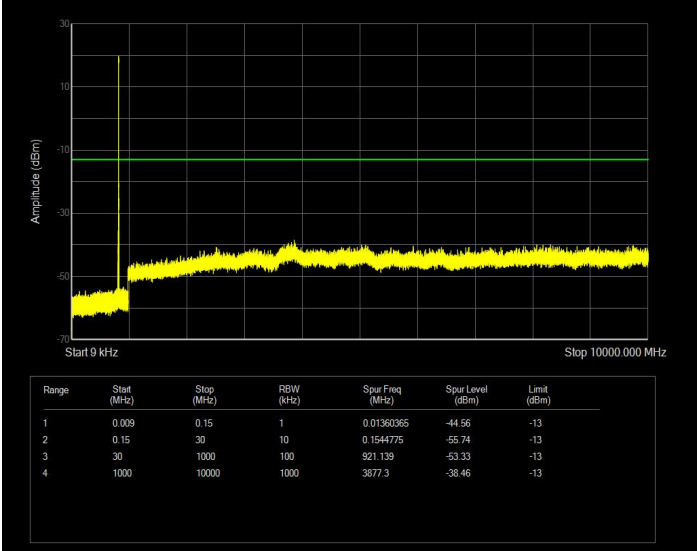
Band5 QAM16 BW=5MHz Channel=20625 RB Size=25 Position=#0



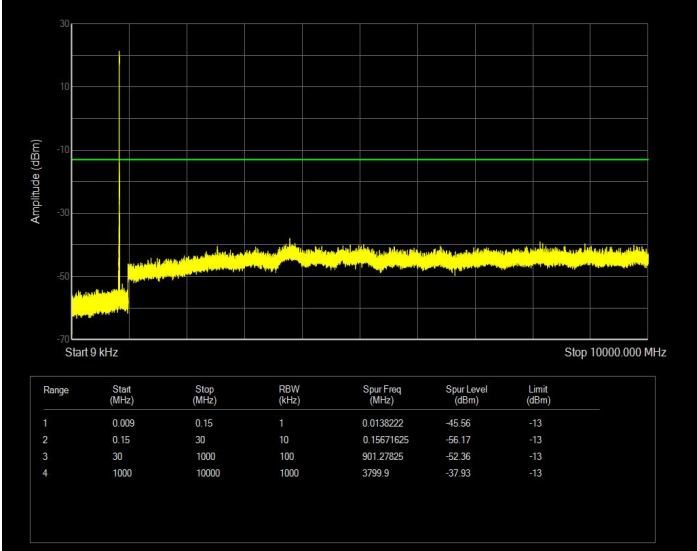
Band5 QPSK BW=1.4MHz Channel=20407 RB Size=6 Position=#0



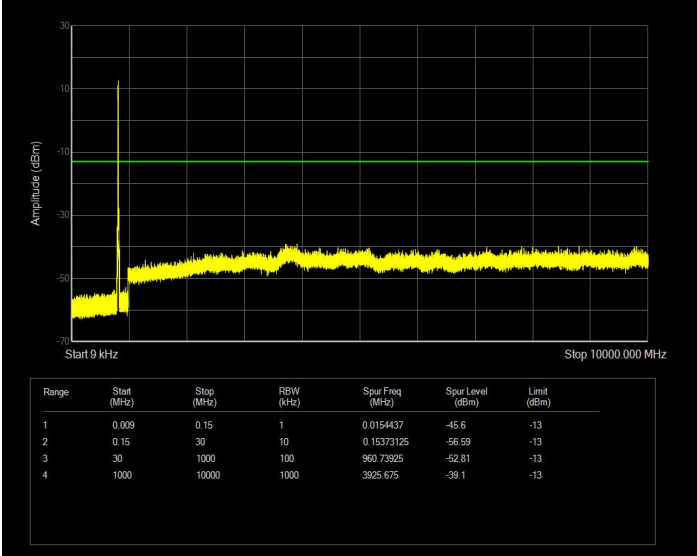
Band5 QPSK BW=1.4MHz Channel=20525 RB Size=6 Position=#0



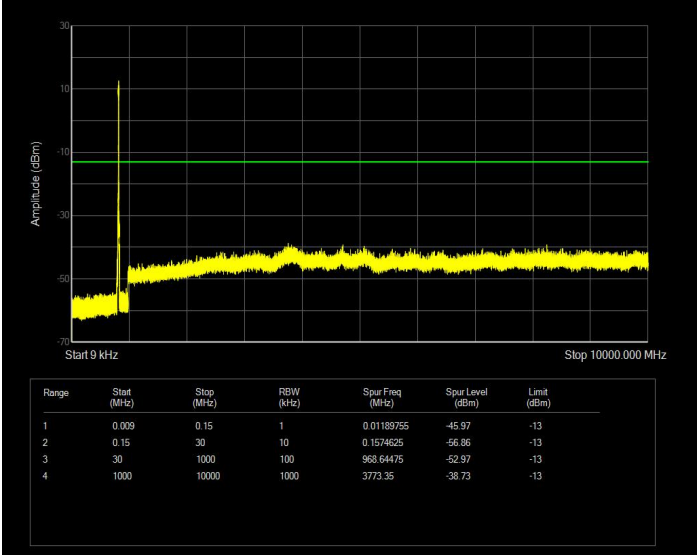
Band5 QPSK BW=1.4MHz Channel=20643 RB Size=6 Position=#0



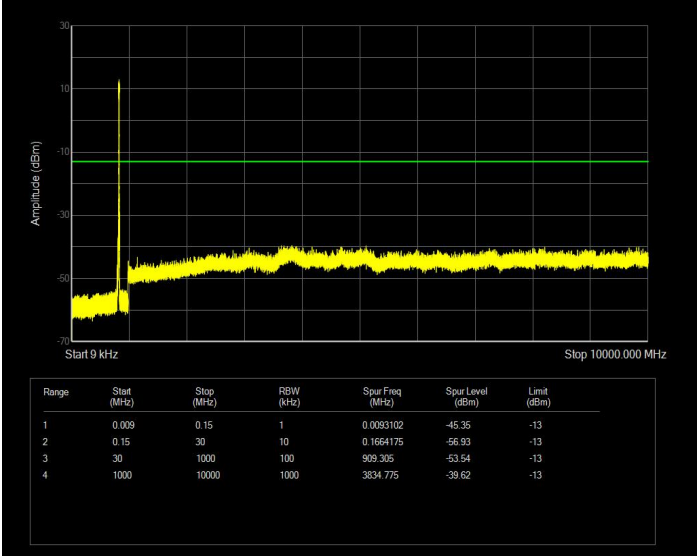
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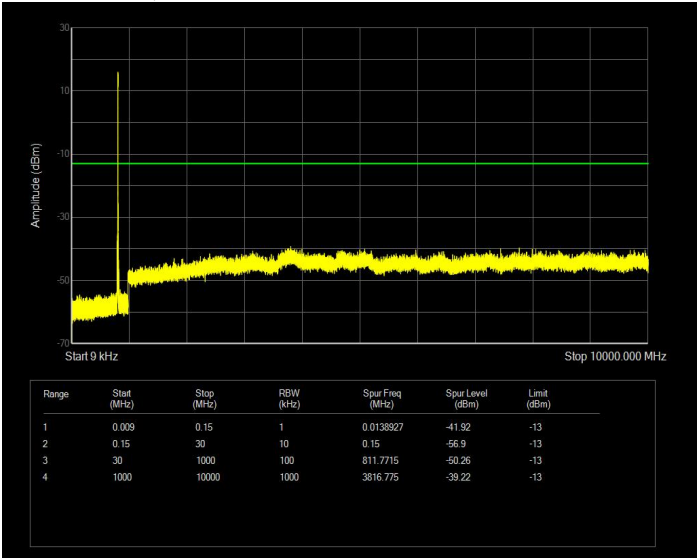
Band5 QPSK BW=10MHz Channel=20525 RB Size=50 Position=#0



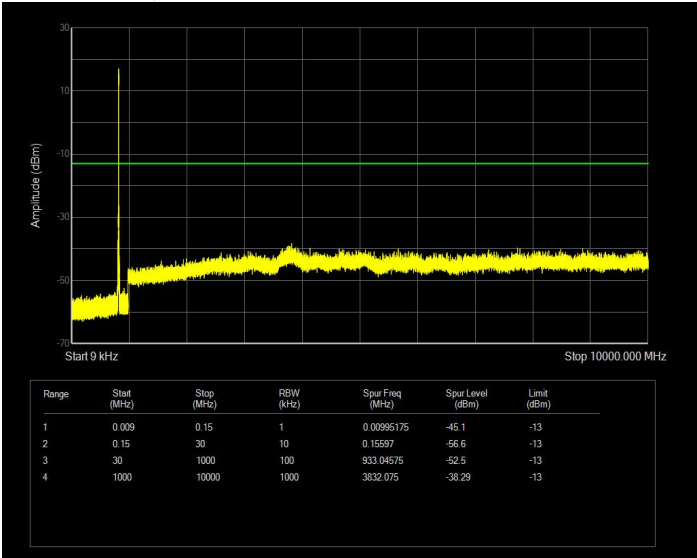
Band5 QPSK BW=10MHz Channel=20600 RB Size=50 Position=#0



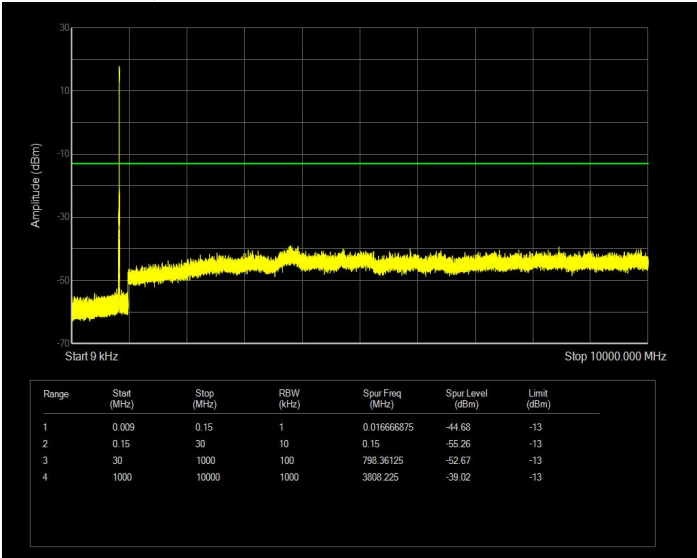
Band5 QPSK BW=3MHz Channel=20415 RB Size=15 Position=#0



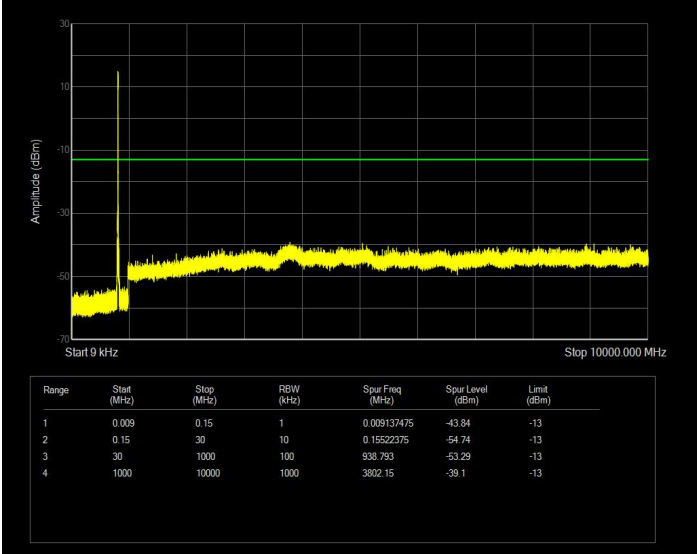
Band5 QPSK BW=3MHz Channel=20525 RB Size=15 Position=#0



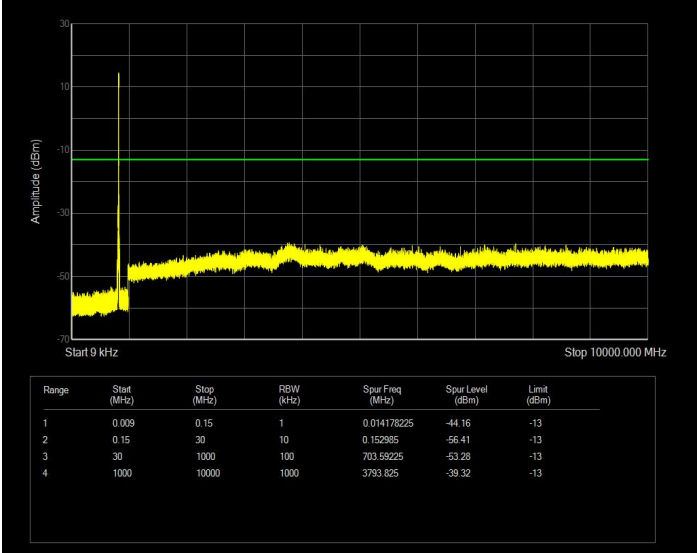
Band5 QPSK BW=3MHz Channel=20635 RB Size=15 Position=#0



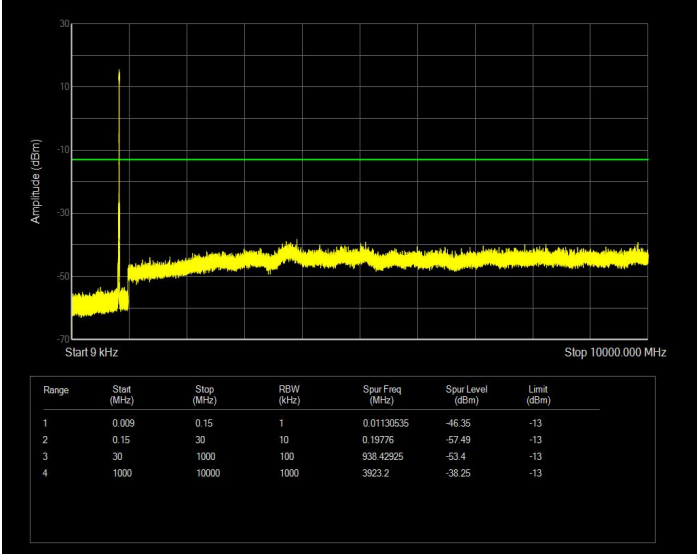
Band5 QPSK BW=5MHz Channel=20425 RB Size=25 Position=#0



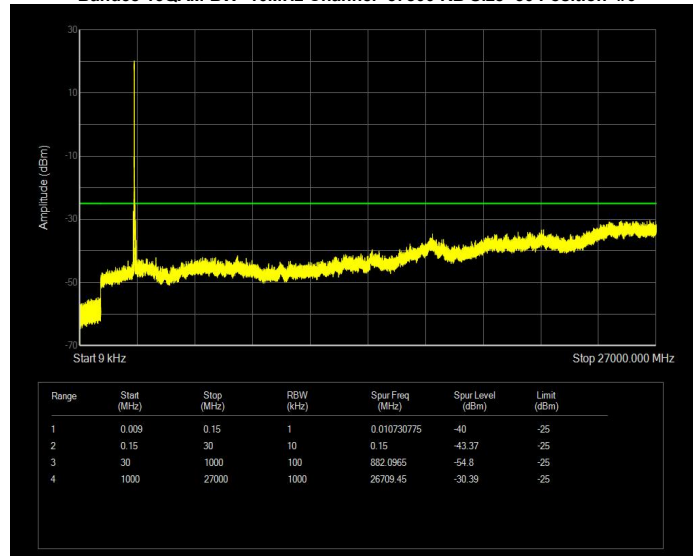
Band5 QPSK BW=5MHz Channel=20525 RB Size=25 Position=#0



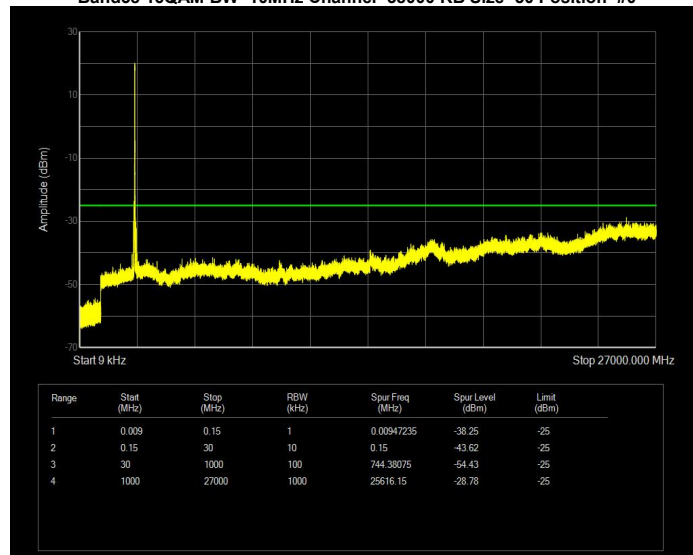
Band5 QPSK BW=5MHz Channel=20625 RB Size=25 Position=#0



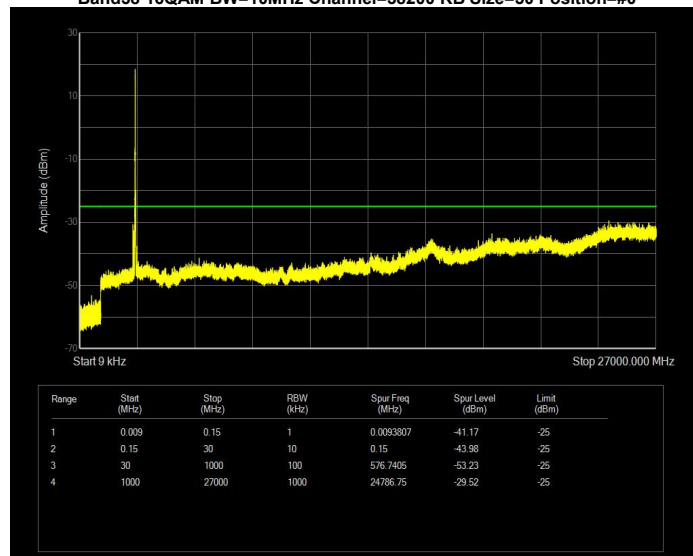
Band38 16QAM BW=10MHz Channel=37800 RB Size=50 Position=#0



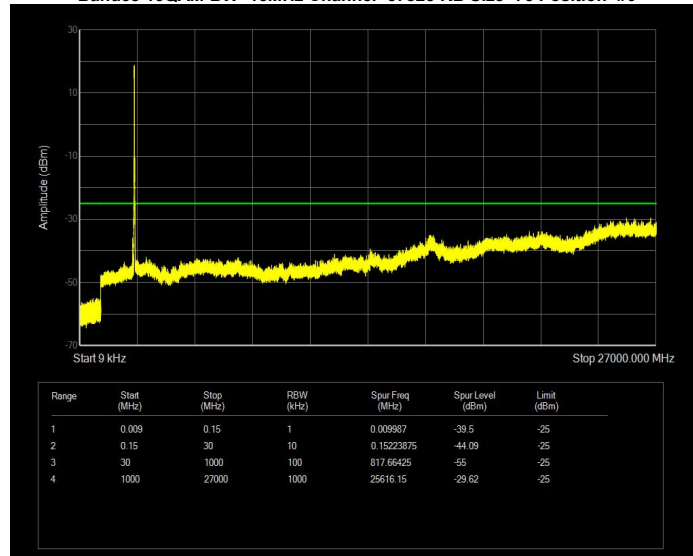
Band38 16QAM BW=10MHz Channel=38000 RB Size=50 Position=#0



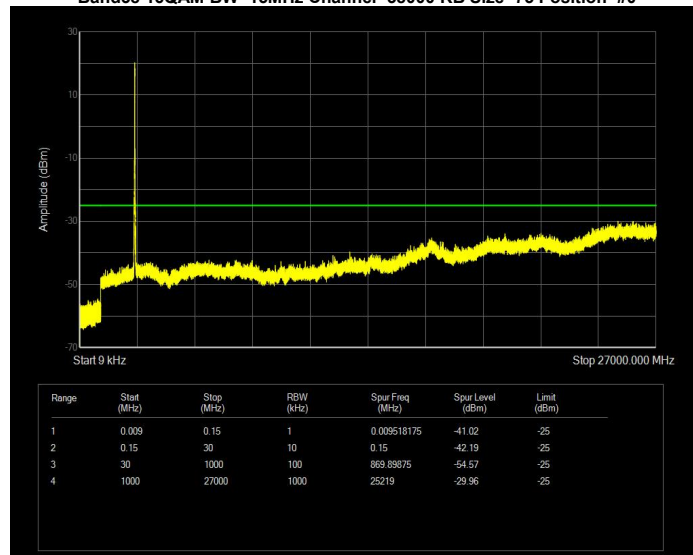
Band38 16QAM BW=10MHz Channel=38200 RB Size=50 Position=#0



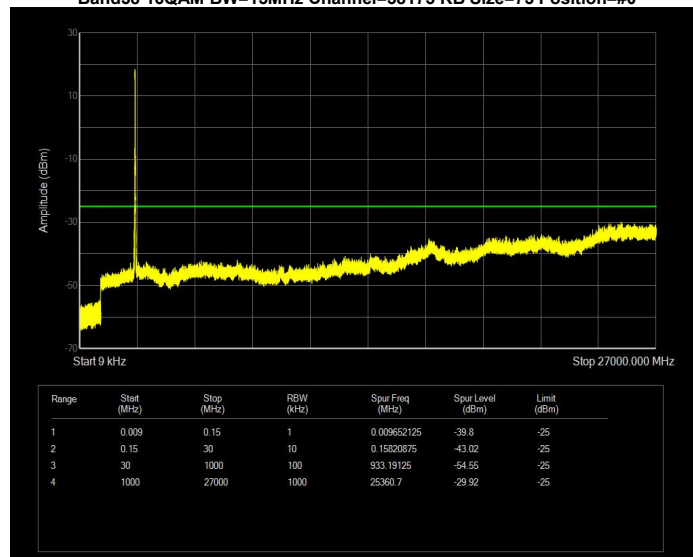
Band38 16QAM BW=15MHz Channel=37825 RB Size=75 Position=#0



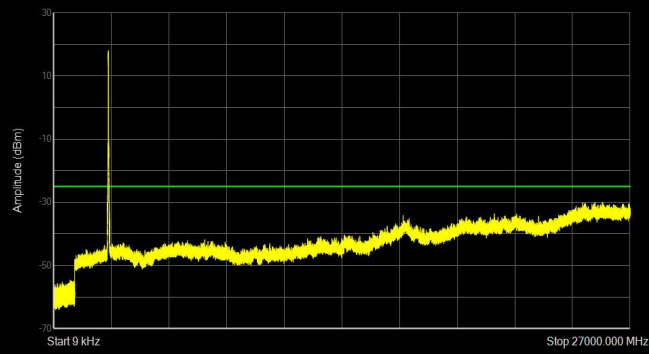
Band38 16QAM BW=15MHz Channel=38000 RB Size=75 Position=#0



Band38 16QAM BW=15MHz Channel=38175 RB Size=75 Position=#0

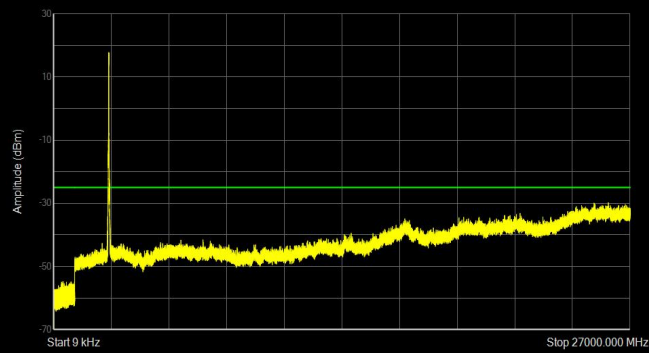


Band38 16QAM BW=20MHz Channel=37850 RB Size=100 Position=#0



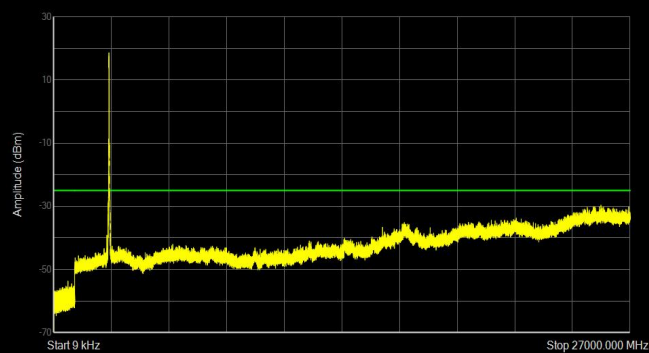
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.01086825	-40.49	-25
2	0.15	30	10	0.15	-44.44	-25
3	30	1000	100	784.58725	-54.66	-25
4	1000	27000	1000	25700	-30.01	-25

Band38 16QAM BW=20MHz Channel=38000 RB Size=100 Position=#0



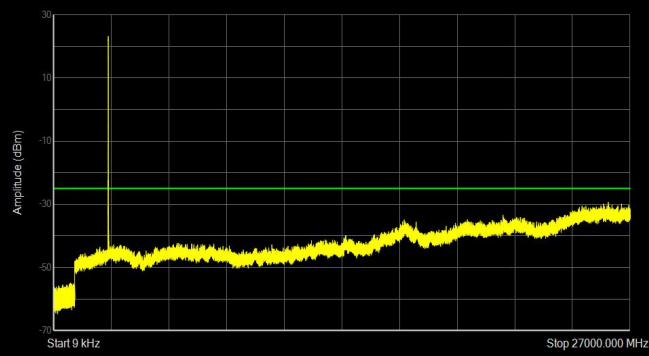
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.009144525	-39.16	-25
2	0.15	30	10	0.15522375	-42.45	-25
3	30	1000	100	460.4375	-54.82	-25
4	1000	27000	1000	25980.15	-29.78	-25

Band38 16QAM BW=20MHz Channel=38150 RB Size=100 Position=#0



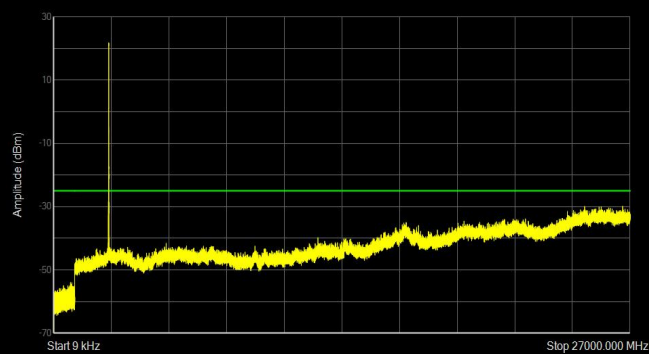
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.0090554	-40.2	-25
2	0.15	30	10	0.16567125	-43.97	-25
3	30	1000	100	686.37475	-53.71	-25
4	1000	27000	1000	25635	-29.65	-25

Band38 16QAM BW=5MHz Channel=37775 RB Size=25 Position=#0



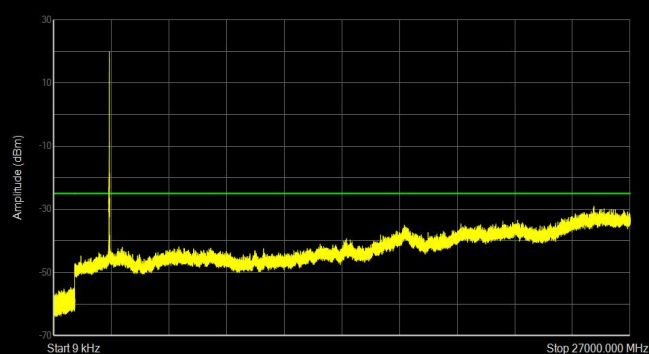
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.009	-38.69	-25
2	0.15	30	10	0.152985	-44.5	-25
3	30	1000	100	807.09125	-54.91	-25
4	1000	27000	1000	25979.5	-29.34	-25

Band38 16QAM BW=5MHz Channel=38000 RB Size=25 Position=#0



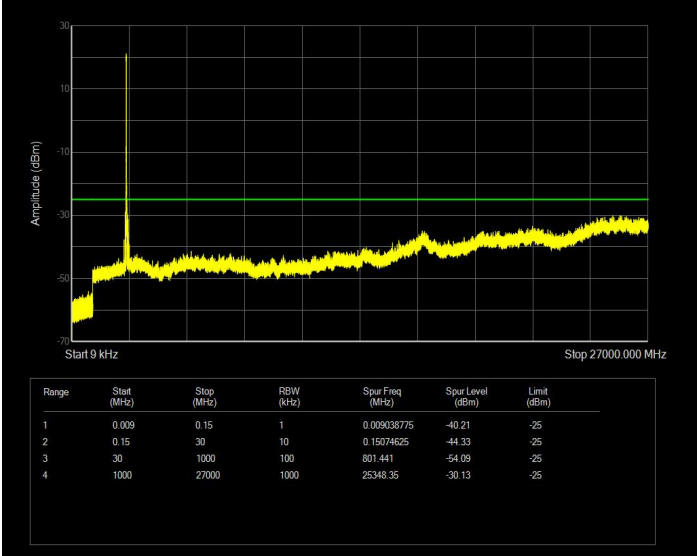
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.009588	-40.97	-25
2	0.15	30	10	0.15223675	-43.31	-25
3	30	1000	100	803.187	-53.97	-25
4	1000	27000	1000	26649.65	-29.88	-25

Band38 16QAM BW=5MHz Channel=38225 RB Size=25 Position=#0

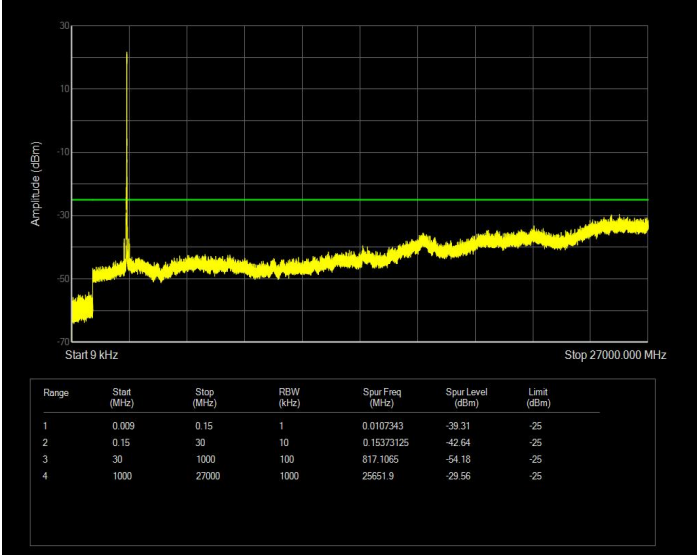


Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.009	-40.47	-25
2	0.15	30	10	0.15597	-43.44	-25
3	30	1000	100	816.476	-54.77	-25
4	1000	27000	1000	25308.7	-29.01	-25

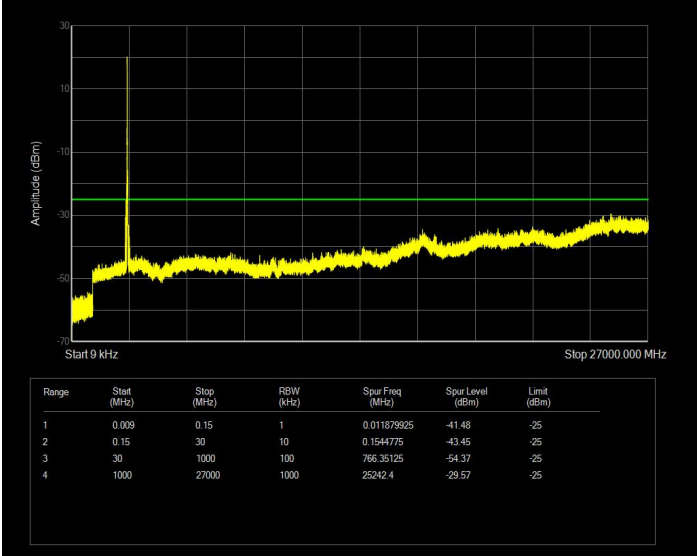
Band38 QPSK BW=10MHz Channel=37800 RB Size=50 Position=#0



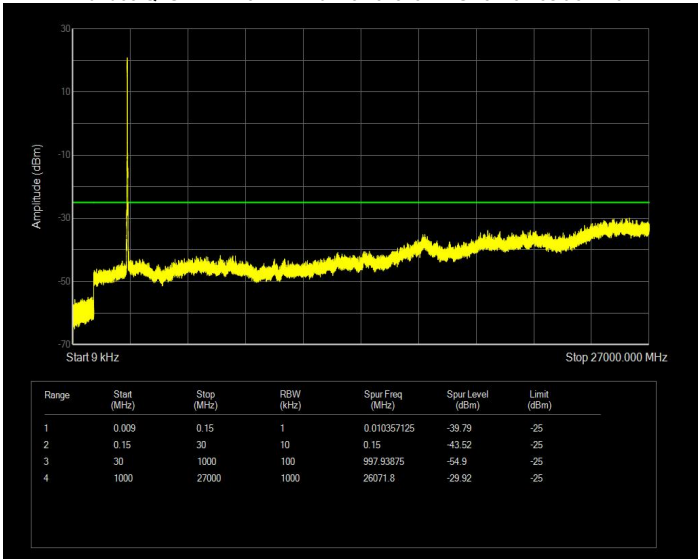
Band38 QPSK BW=10MHz Channel=38000 RB Size=50 Position=#0



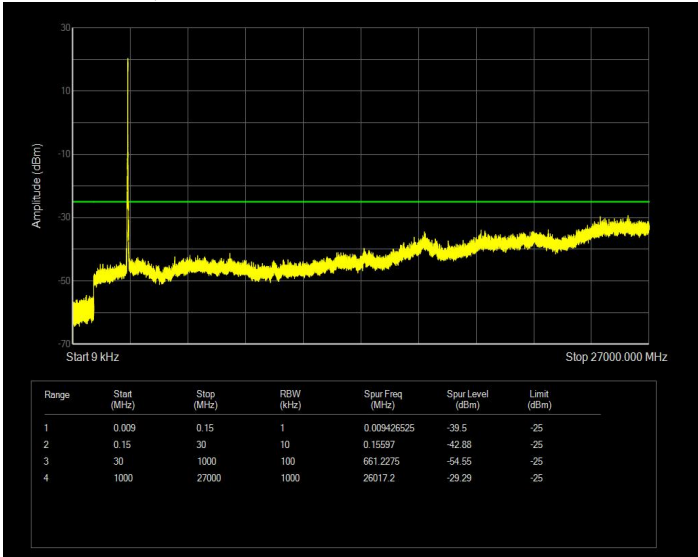
Band38 QPSK BW=10MHz Channel=38200 RB Size=50 Position=#0



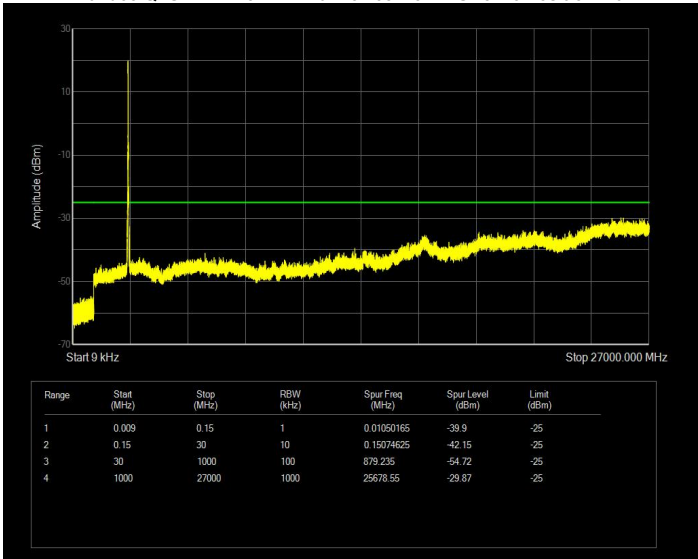
Band38 QPSK BW=15MHz Channel=37825 RB Size=75 Position=#0



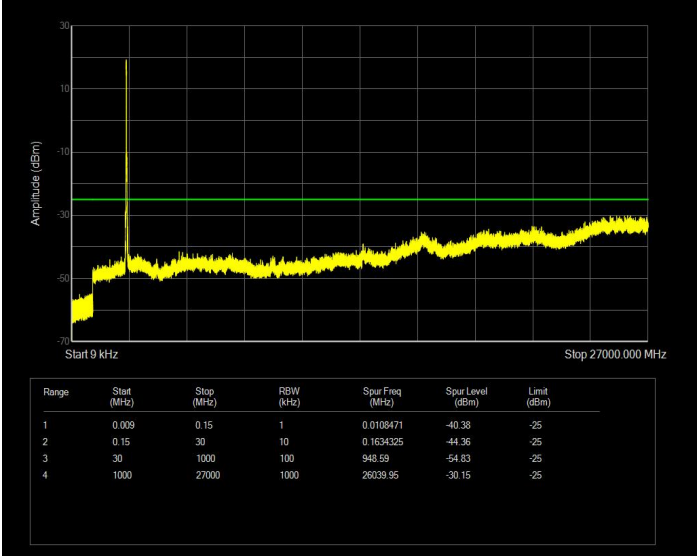
Band38 QPSK BW=15MHz Channel=38000 RB Size=75 Position=#0



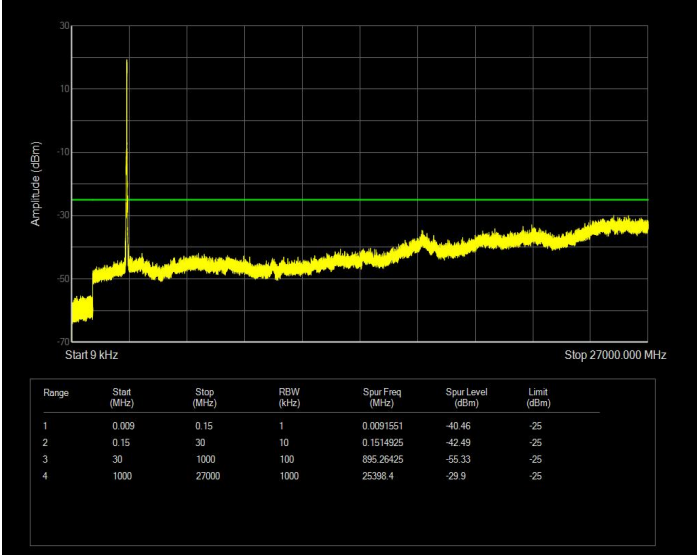
Band38 QPSK BW=15MHz Channel=38175 RB Size=75 Position=#0



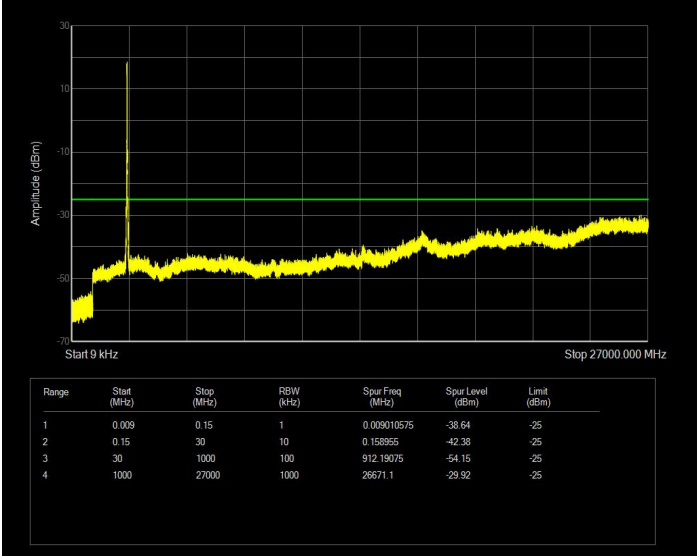
Band38 QPSK BW=20MHz Channel=37850 RB Size=100 Position=#0



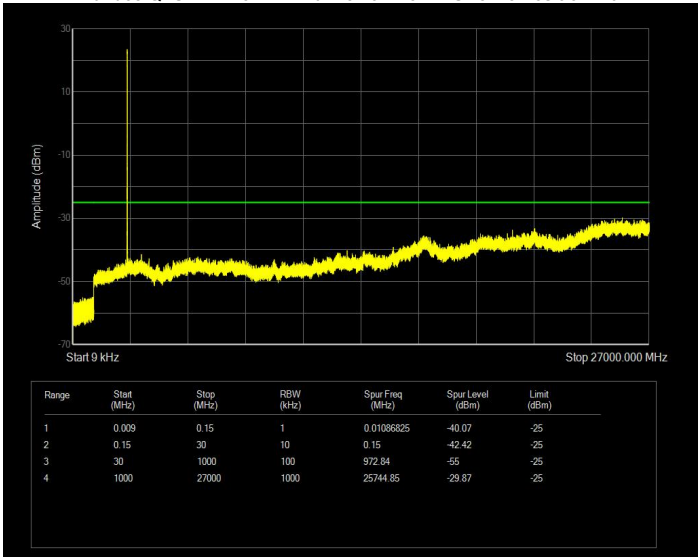
Band38 QPSK BW=20MHz Channel=38000 RB Size=100 Position=#0



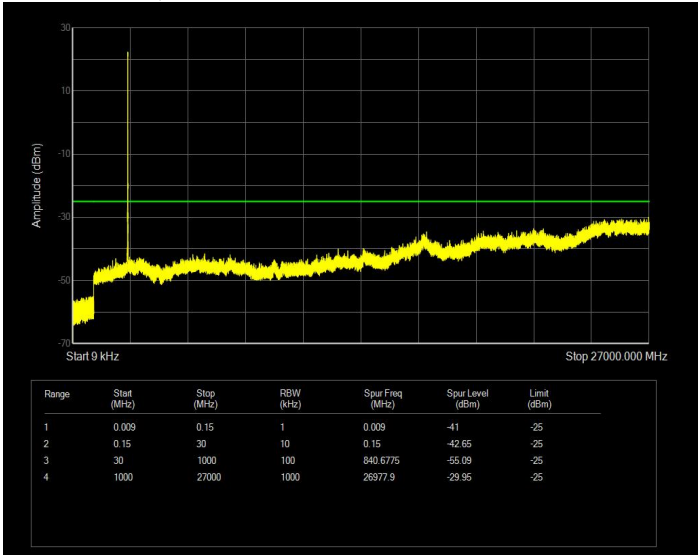
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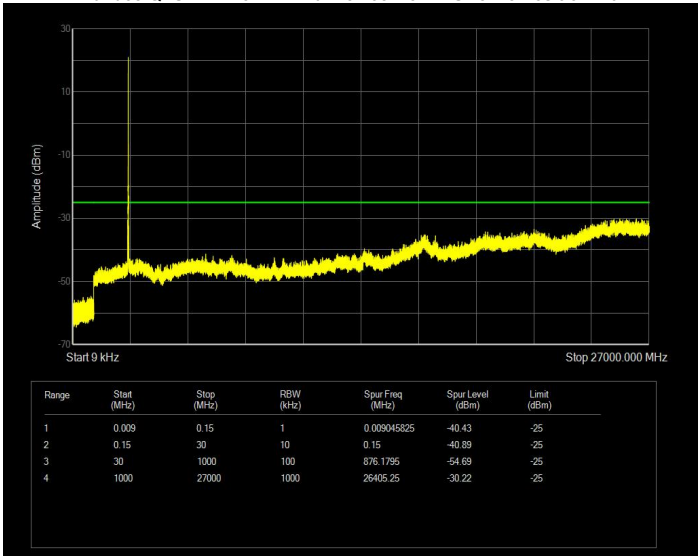
Band38 QPSK BW=5MHz Channel=37775 RB Size=25 Position=#0



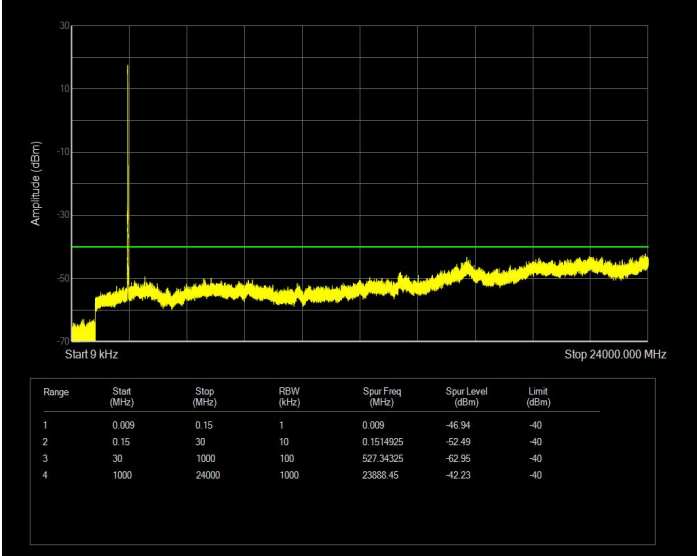
Band38 QPSK BW=5MHz Channel=38000 RB Size=25 Position=#0



Band38 QPSK BW=5MHz Channel=38225 RB Size=25 Position=#0



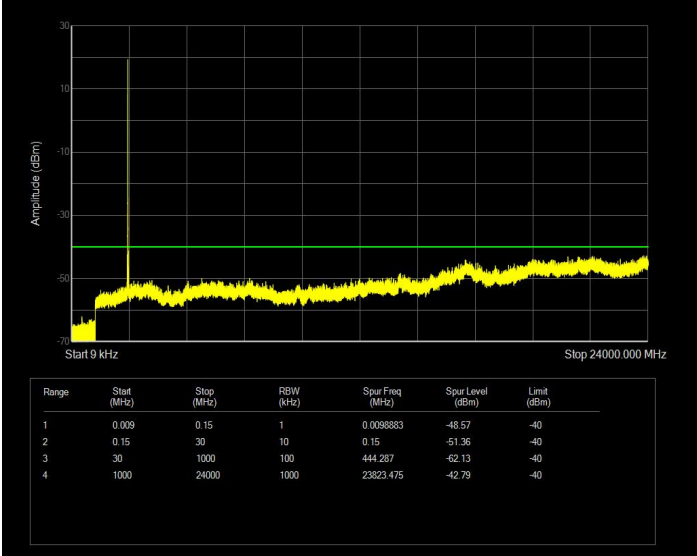
Band40(2350-2360) 16QAM BW=10MHz Channel=39200 RB Size=50 Position=#0



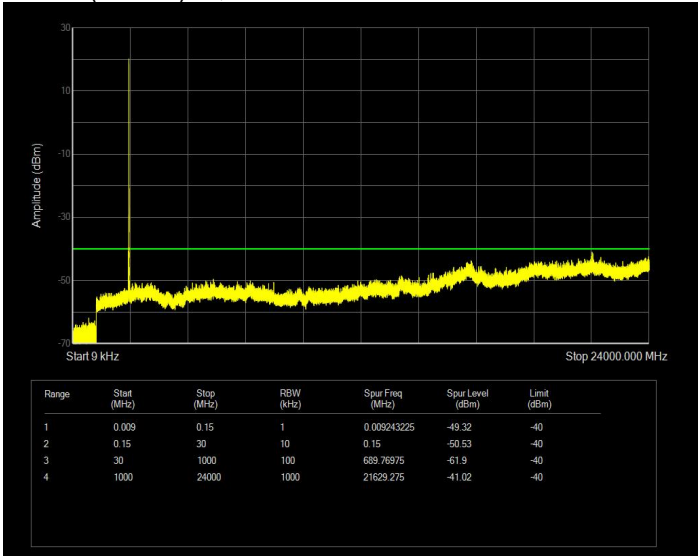
Band40(2350-2360) 16QAM BW=5MHz Channel=39175 RB Size=25 Position=#0



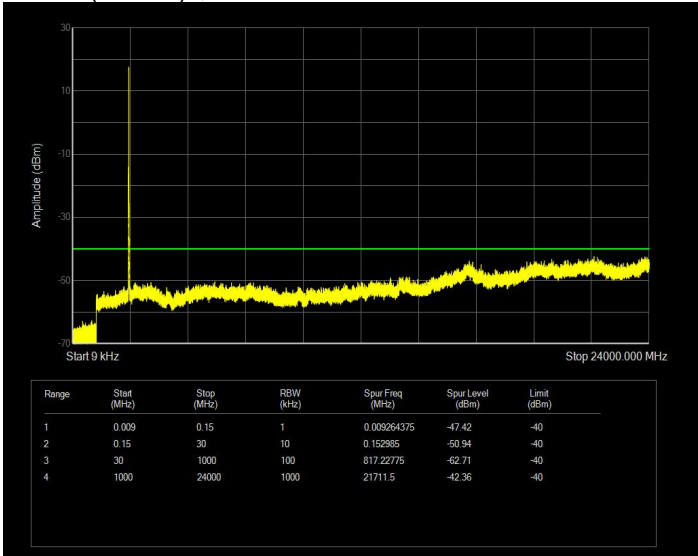
Band40(2350-2360) 16QAM BW=5MHz Channel=39200 RB Size=25 Position=#0



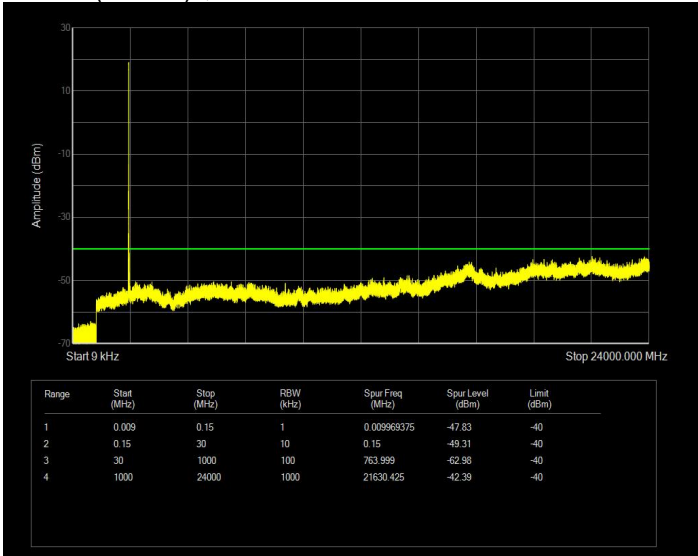
Band40(2350-2360) 16QAM BW=5MHz Channel=39225 RB Size=25 Position=#0



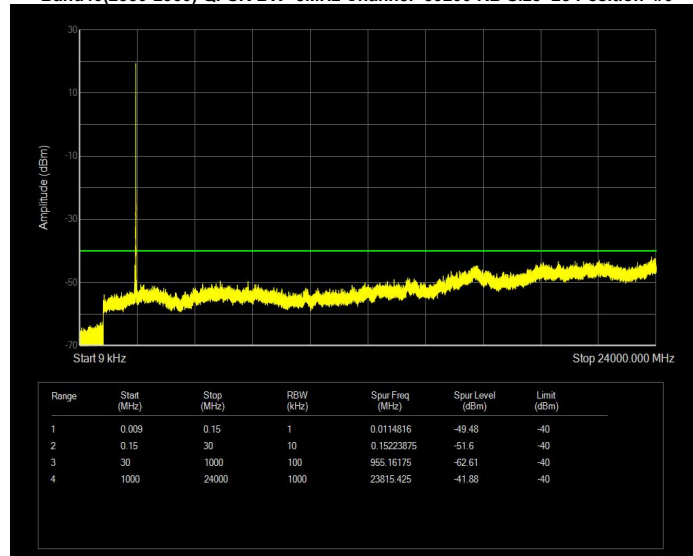
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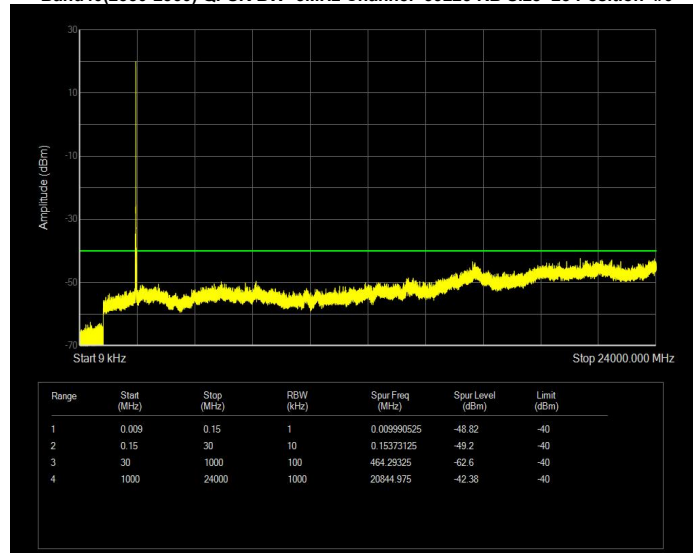
Band40(2350-2360) QPSK BW=5MHz Channel=39175 RB Size=25 Position=#0



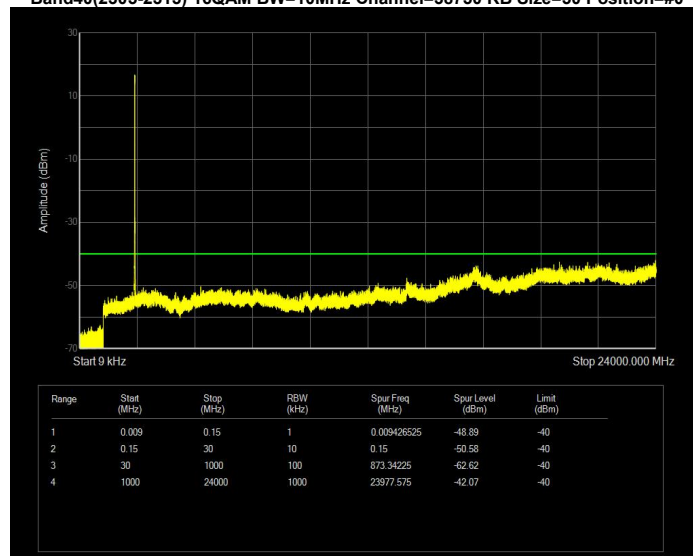
Band40(2350-2360) QPSK BW=5MHz Channel=39200 RB Size=25 Position=#0



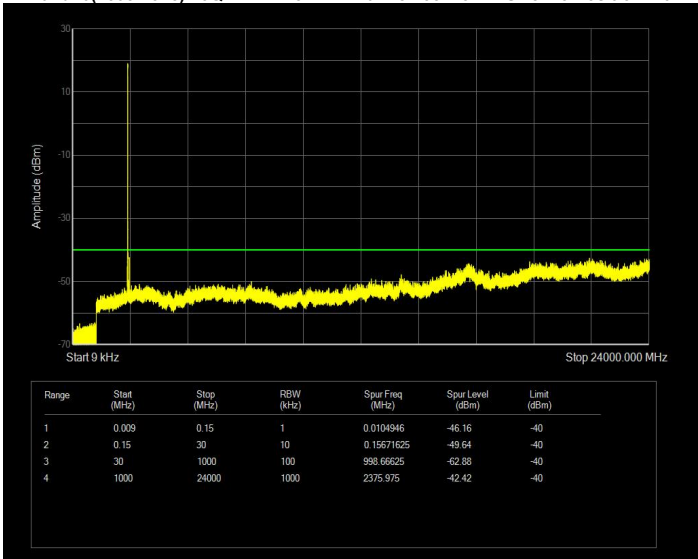
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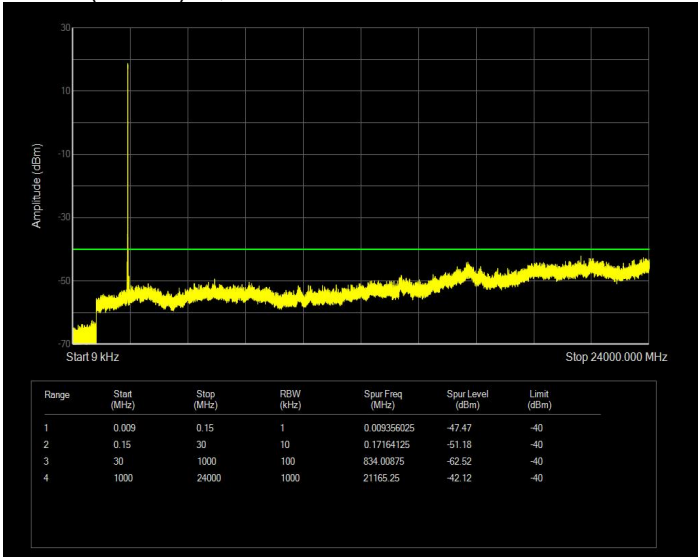
Band40(2305-2315) 16QAM BW=10MHz Channel=38750 RB Size=50 Position=#0



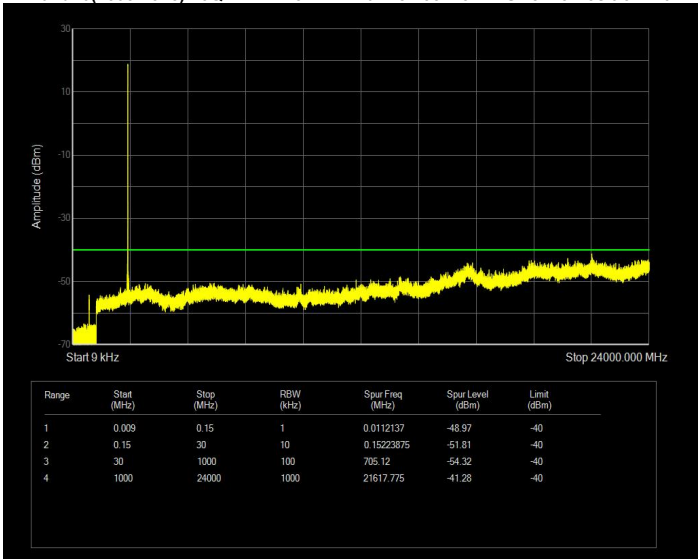
Band40(2305-2315) 16QAM BW=5MHz Channel=38725 RB Size=25 Position=#0



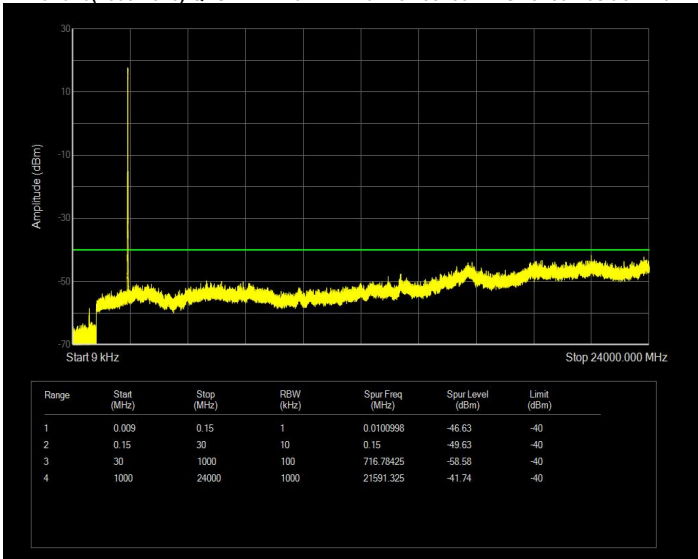
Band40(2305-2315) 16QAM BW=5MHz Channel=38750 RB Size=25 Position=#0



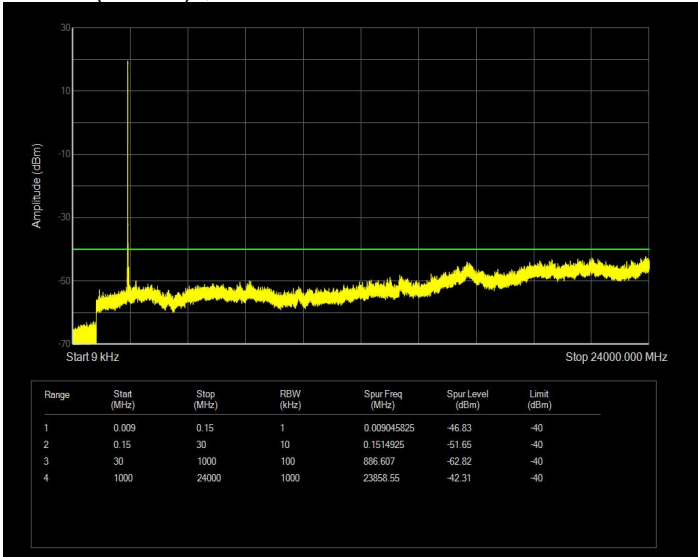
Band40(2305-2315) 16QAM BW=5MHz Channel=38775 RB Size=25 Position=#0



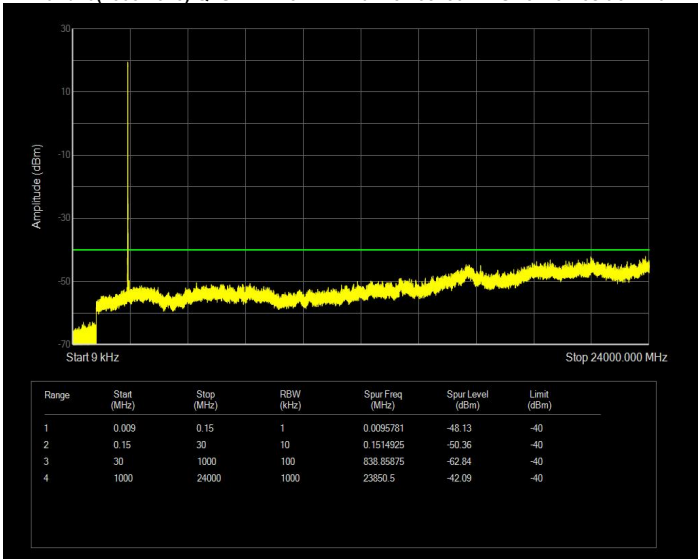
Band40(2305-2315) QPSK BW=10MHz Channel=38750 RB Size=50 Position=#0



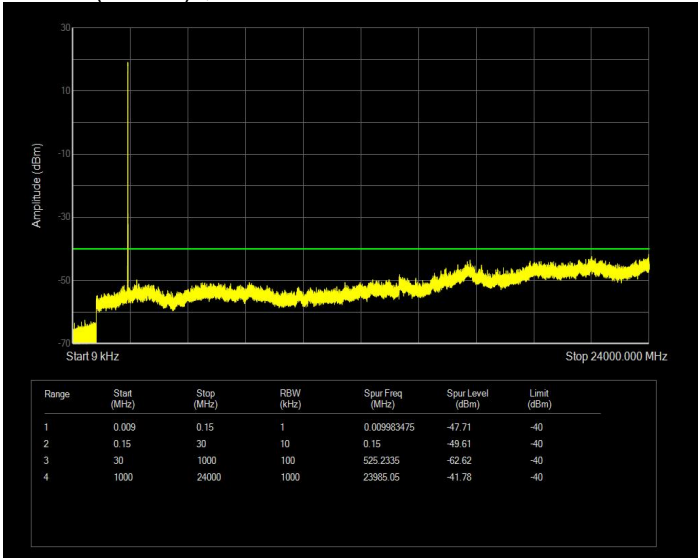
Band40(2305-2315) QPSK BW=5MHz Channel=38725 RB Size=25 Position=#0



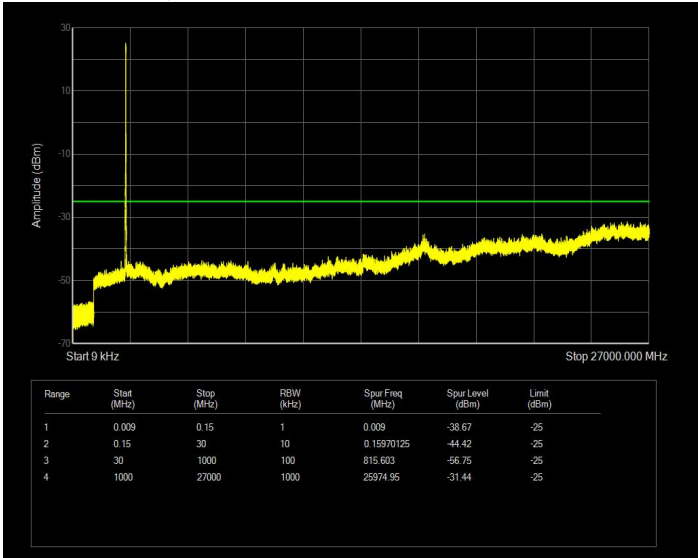
Band40(2305-2315) QPSK BW=5MHz Channel=38750 RB Size=25 Position=#0



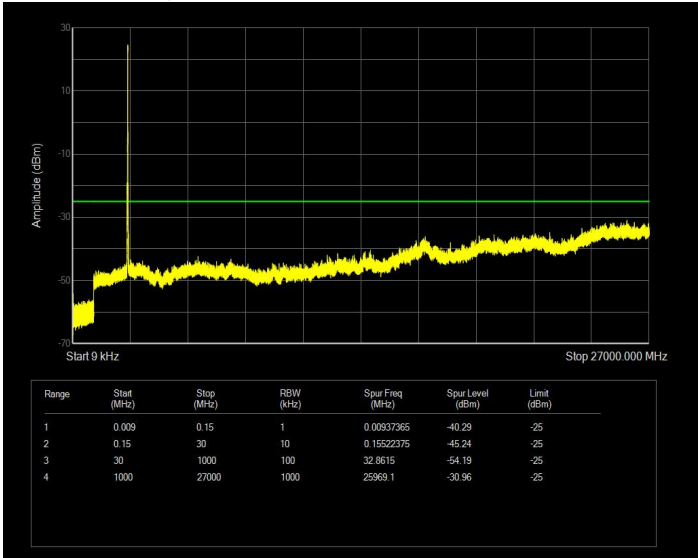
Band40(2305-2315) QPSK BW=5MHz Channel=38775 RB Size=25 Position=#0



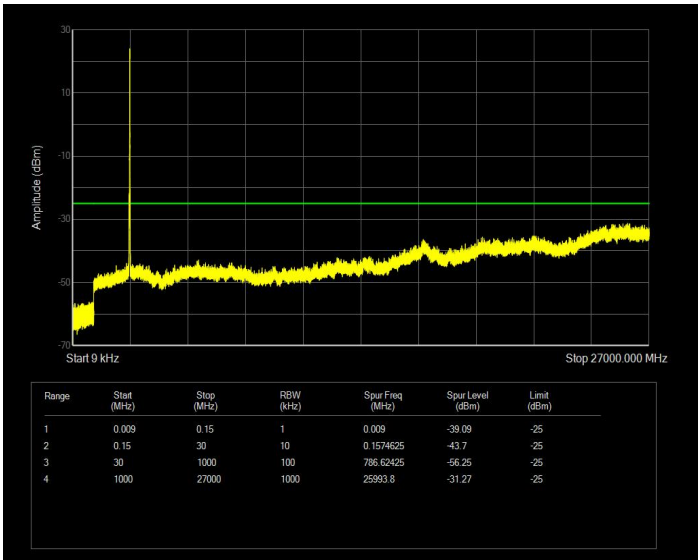
Band41 16QAM BW=10MHz Channel=39700 RB Size=50 Position=#0



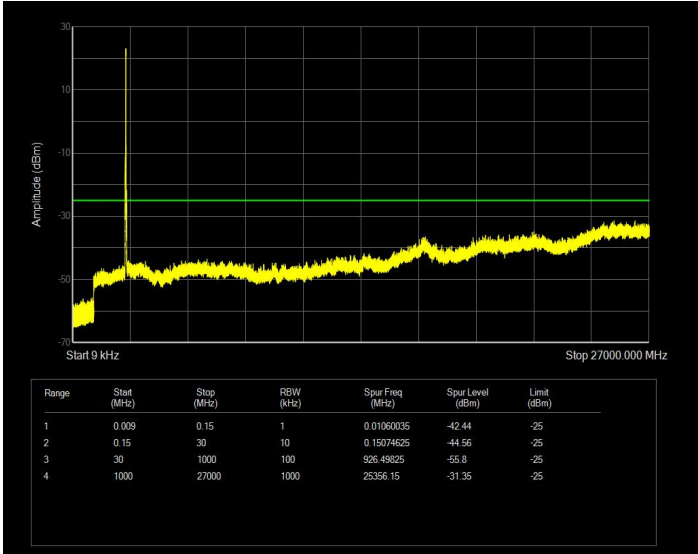
Band41 16QAM BW=10MHz Channel=40620 RB Size=50 Position=#0



Band41 16QAM BW=10MHz Channel=41540 RB Size=50 Position=#0



Band41 16QAM BW=15MHz Channel=39725 RB Size=75 Position=#0



Band41 16QAM BW=15MHz Channel=40620 RB Size=75 Position=#0

