



General Specifications

General	
Model Number	RSP1A
Frequency Range	1kHz – 2GHz
Antenna Connector	SMA
Antenna Impedance	50 Ohms
Operating Temperature Range	-10°C to +60°C
Current Consumption (Typical)	185mA
Case Size	95mm X 80mm X 30mm
Case Weight	110 grams
USB Connector	USB Type B
Maximum Input Power	+0dBm Continuous +10dBm Short Duration
ADC Sample Rates	2MSPS – 10.66MSPS
ADC Number of Bits	14bit 2MSPS – 6.048MSPS 12bit 6.048MSPS – 8.064MSPS 10bit 8.064MSPS – 9.216MSPS 8bit >9.216MSPS
Bias – T	4.7V 100mA Guaranteed <i>Note :- Bias T has an over current protection circuit. Current in excess of 100mA will cause the bias T voltage to disable. Removal of the overcurrent condition and a reset of the bias T control will re-establish the voltage</i>
Reference	0.5ppm 24MHz TCXO. Frequency error trimmable to 0.01ppm in field.

Sensitivity			
Band	AM	SSB/CW	FM
2200 meters	6.02uV	2.26uV	5.01uV
630 meters	5.88uV	2.19uV	4.84uV
160 meters	0.78uV	0.28uV	0.88uV
80 meters	0.89uV	0.31uV	0.69uV
60 meters	0.89uV	0.31uV	0.69uV
40 meters	0.72uV	0.30uV	0.57uV
30 meters	0.56uV	0.20uV	0.44uV
20 meters	0.48uV	0.16uV	0.36uV
17 meters	0.48uV	0.16uV	0.36uV
15 meters	0.48uV	0.16uV	0.36uV

Sensitivity			
Band	AM	SSB/CW	FM
12 meters	0.46uV	0.17uV	0.38uV
10 meters	0.46uV	0.17uV	0.38uV
6 meters	0.46uV	0.17uV	0.38uV
4 meters	0.15uV	0.05uV	0.11uV
2 meters	0.14uV	0.05uV	0.11uV
1.25 meters	0.15uV	0.05uV	0.12uV
70 cm	0.14uV	0.05uV	0.11uV
33 cm	0.18uV	0.06uV	0.12uV
23 cm	0.29uV	0.06uV	0.14uV

AM
 60% Modulation, 1kHz Modulating Tone
 3kHz Measurement Bandwidth
 AGC Enabled
 NR Enabled
 12dB SINAD

SSB/CW
 CW Tone, 1kHz Offset from Centre Frequency
 1.5kHz Measurement Bandwidth
 AGC Enabled
 NR Enabled
 12dB SINAD

FM
 1kHz Modulating Tone, 3kHz Frequency Deviation
 8kHz Measurement Bandwidth
 AGC Enabled
 NR Enabled
 12dB SINAD



Gain, Noise Figure and Linearity

LNA Gain Slider Position	Parameter	Frequency															
		1	2	4	8	11.99	12	17	21	25	29.99	30	35	41	47	53	59
0	Gain	97.75	96.79	97.40	97.04	96.52	97.00	96.62	96.30	95.86	95.40	95.09	95.31	95.20	94.58	93.82	92.66
	Noise Figure	21.20	18.37	20.62	18.00	16.39	15.30	15.01	15.41	14.68	15.73	15.49	14.70	15.00	15.51	15.58	15.14
	IIP3	-1.99	-4.35	-4.57	-4.24	-5.00	-4.09	-3.58	-3.28	-3.29	-3.44	-3.54	-3.58	-3.22	-2.50	-1.71	-5.27
1	Gain	90.89	90.47	91.23	90.08	89.85	90.35	90.13	89.64	89.02	88.72	88.59	88.82	88.50	87.53	86.67	85.43
	Noise Figure	25.34	23.39	25.46	23.13	22.00	21.55	21.13	21.88	22.28	22.18	22.12	21.79	22.07	22.92	23.33	25.07
	IIP3	5.55	1.89	2.22	1.94	0.39	2.26	2.95	3.23	3.20	2.91	3.04	3.01	3.55	4.34	5.36	6.50
2	Gain	84.64	84.22	85.10	83.66	83.48	83.92	83.80	83.26	82.61	82.34	82.25	82.52	82.13	81.14	80.24	79.08
	Noise Figure	32.46	29.49	31.59	28.25	28.26	27.89	27.60	28.26	27.65	28.96	25.50	28.10	28.33	28.62	30.22	31.12
	IIP3	12.40	8.17	8.48	7.51	4.54	8.41	9.38	9.69	9.42	9.16	9.53	9.34	9.84	10.62	11.52	12.57
3	Gain	78.92	78.46	79.41	77.83	77.63	78.04	77.93	77.40	76.71	76.49	76.42	76.66	76.25	75.25	74.40	73.25
	Noise Figure	37.63	35.15	37.88	35.04	34.00	33.30	33.47	34.13	34.22	34.32	33.35	33.54	34.80	34.93	36.45	36.15
	IIP3	16.72	14.12	13.78	11.38	7.18	13.98	15.18	15.52	15.37	14.77	15.41	15.22	15.88	16.51	17.36	17.32
4	Gain	58.33	58.60	58.93	58.12	58.12	58.63	58.54	57.97	57.25	56.97	56.93	57.18	56.77	55.68	54.69	53.25
	Noise Figure	49.64	49.43	49.61	50.51	48.88	50.03	49.02	49.82	50.07	50.71	50.85	49.61	51.38	52.16	52.92	52.52
	IIP3	20.62	14.74	14.79	13.68	9.88	14.64	15.58	16.06	16.08	15.60	15.75	15.66	16.25	17.25	18.12	19.81
5	Gain	55.57	54.73	54.89	54.13	54.13	54.57	54.44	53.89	53.23	52.95	52.90	53.03	52.62	51.69	50.84	49.78
	Noise Figure	56.81	55.28	55.18	54.99	55.77	55.73	54.89	55.80	56.99	56.57	56.67	56.57	57.16	58.41	59.61	59.51
	IIP3	20.26	21.11	20.66	15.89	11.40	25.23	29.00	31.51	32.43	32.13	31.23	31.80	29.86	30.09	30.54	29.81
6	Gain	36.41	36.52	36.77	36.18	36.17	36.55	36.44	36.01	35.52	35.31	35.24	35.34	35.04	34.40	33.82	33.20
	Noise Figure	72.66	73.41	72.17	72.82	72.62	72.92	72.06	72.62	73.45	75.07	73.29	73.28	73.89	73.83	75.94	75.76
	IIP3	22.92	23.68	23.32	18.49	14.07	26.85	30.24	31.83	32.27	32.94	32.15	32.28	30.15	29.89	30.04	30.56



Gain, Noise Figure and Linearity

LNA Gain Slider Position	Parameter	Frequency																	
		60	71	84	96	108	118	121	146	172	198	224	248	252	296	302	378	386	417
0	Gain	120.14	121.71	121.47	121.04	120.73	120.25	123.66	123.87	125.52	122.86	122.20	121.30	108.54	105.63	103.58	103.68	104.17	102.83
	Noise Figure	3.89	3.41	3.50	3.33	3.61	3.62	3.43	3.44	3.41	3.28	3.41	4.53	7.34	8.24	8.47	8.01	7.68	9.56
	IIP3	-24.75	-24.87	-23.67	-23.50	-23.63	-23.03	-25.99	-26.15	-28.62	-25.00	-24.22	-23.28	-25.09	-23.90	-22.37	-23.75	-24.22	-23.90
1	Gain	113.66	115.31	115.11	114.69	114.26	113.75	116.82	116.98	118.99	116.27	115.57	114.81	101.73	99.12	96.85	97.01	97.45	95.99
	Noise Figure	4.55	4.08	4.04	4.14	4.26	4.35	4.10	3.92	3.70	3.87	4.02	5.61	12.62	12.18	13.77	13.79	13.52	14.55
	IIP3	-18.26	-18.34	-17.40	-17.12	-16.98	-16.34	-19.10	-19.38	-22.35	-18.32	-17.52	-16.92	-18.68	-17.71	-16.09	-17.51	-17.94	-17.57
2	Gain	107.40	108.99	108.81	108.38	107.92	107.41	110.37	110.51	112.58	109.86	109.13	108.41	95.66	93.10	91.09	91.09	91.46	90.38
	Noise Figure	6.83	5.86	5.91	5.98	6.78	6.64	5.78	5.61	4.89	5.83	6.10	8.06	18.13	17.14	20.56	19.19	19.82	21.71
	IIP3	-11.78	-11.85	-11.02	-10.75	-10.47	-9.88	-12.60	-12.90	-15.96	-11.82	-11.06	-10.60	-12.31	-11.33	-9.86	-11.11	-11.57	-11.24
3	Gain	101.52	103.14	102.95	102.50	102.04	101.51	104.47	104.58	106.64	103.92	103.24	102.50	89.85	87.26	85.36	85.24	85.60	84.74
	Noise Figure	9.61	9.42	9.70	9.71	9.71	9.70	9.32	9.23	7.70	9.23	9.73	8.69	23.42	23.25	27.25	25.20	25.81	26.94
	IIP3	-6.06	-6.10	-5.12	-4.84	-4.66	-4.02	-6.72	-7.02	-10.02	-5.91	-5.11	-4.60	-6.41	-5.39	-3.84	-5.06	-5.55	-5.13
4	Gain	97.34	98.41	98.46	98.24	97.72	97.23	99.80	99.83	100.40	100.10	99.44	99.17	86.03	84.39	81.93	82.45	82.68	81.99
	Noise Figure	13.89	13.90	14.07	14.45	14.40	14.27	12.98	13.33	12.54	12.73	13.04	13.75	27.50	26.84	28.89	27.91	28.12	28.14
	IIP3	-1.05	-0.91	-1.20	-0.64	-0.06	0.36	-1.64	-2.25	-3.08	-1.80	-1.46	-1.49	-2.64	-2.88	-1.01	-2.64	-3.12	-2.88
5	Gain	92.01	92.86	92.96	92.61	92.36	91.89	94.54	94.63	94.91	94.62	94.04	93.70	84.21	81.28	80.41	79.97	80.04	80.81
	Noise Figure	19.76	19.82	19.53	19.51	19.55	19.92	18.87	18.32	18.49	19.21	18.20	19.06	32.71	32.65	35.57	33.65	34.09	35.85
	IIP3	4.88	5.03	5.31	5.43	5.80	6.27	4.08	3.41	2.87	3.97	4.45	4.75	3.52	3.93	5.59	3.98	3.49	3.82
6	Gain	85.61	86.04	86.02	85.82	85.54	85.07	87.95	88.08	88.31	88.01	87.41	86.86	74.15	71.59	69.69	69.83	70.16	69.47
	Noise Figure	27.63	26.21	26.21	26.91	26.81	27.01	24.46	25.08	25.10	24.50	24.59	25.62	39.49	39.70	42.91	40.31	40.44	41.72
	IIP3	11.44	11.55	11.71	11.92	12.14	12.73	10.23	9.77	9.29	10.25	10.86	11.25	9.66	10.35	11.96	10.31	9.88	10.14
7	Gain	80.28	81.02	81.12	80.76	80.67	80.17	82.78	82.88	83.10	82.78	82.21	81.99	68.27	65.84	64.01	64.02	64.37	63.76
	Noise Figure	32.66	32.15	31.67	32.46	32.45	33.16	30.34	30.92	30.75	30.53	30.74	31.95	44.26	45.63	47.52	46.63	47.29	47.57
	IIP3	17.07	17.32	17.38	17.55	17.55	18.20	15.89	15.41	15.03	15.92	16.59	16.80	15.55	16.31	18.06	16.39	15.91	16.23
8	Gain	63.73	64.19	64.29	64.08	63.94	63.71	68.19	68.22	68.26	68.13	67.94	67.95	50.52	49.16	48.23	48.58	48.70	48.61
	Noise Figure	46.31	46.52	46.58	47.14	45.66	46.77	43.55	43.31	43.25	42.24	42.59	43.56	58.87	60.42	63.01	61.06	61.63	63.61
	IIP3	17.78	17.79	18.09	18.14	18.30	18.95	16.47	16.10	15.46	16.44	17.26	17.39	15.57	16.34	18.08	16.22	15.93	16.28
9	Gain	62.05	62.25	62.21	62.17	62.10	62.00	71.19	71.18	71.15	71.19	71.12	71.14	51.19	50.83	50.79	51.16	51.20	51.68
	Noise Figure	52.74	50.99	51.71	51.77	52.05	52.91	47.46	46.68	46.36	45.32	46.90	47.12	65.27	65.37	65.66	65.32	66.99	66.29
	IIP3	36.74	36.15	35.92	35.64	35.46	35.39	36.73	36.18	35.63	35.60	36.85	35.89	29.70	28.42	28.66	28.23	28.45	28.10



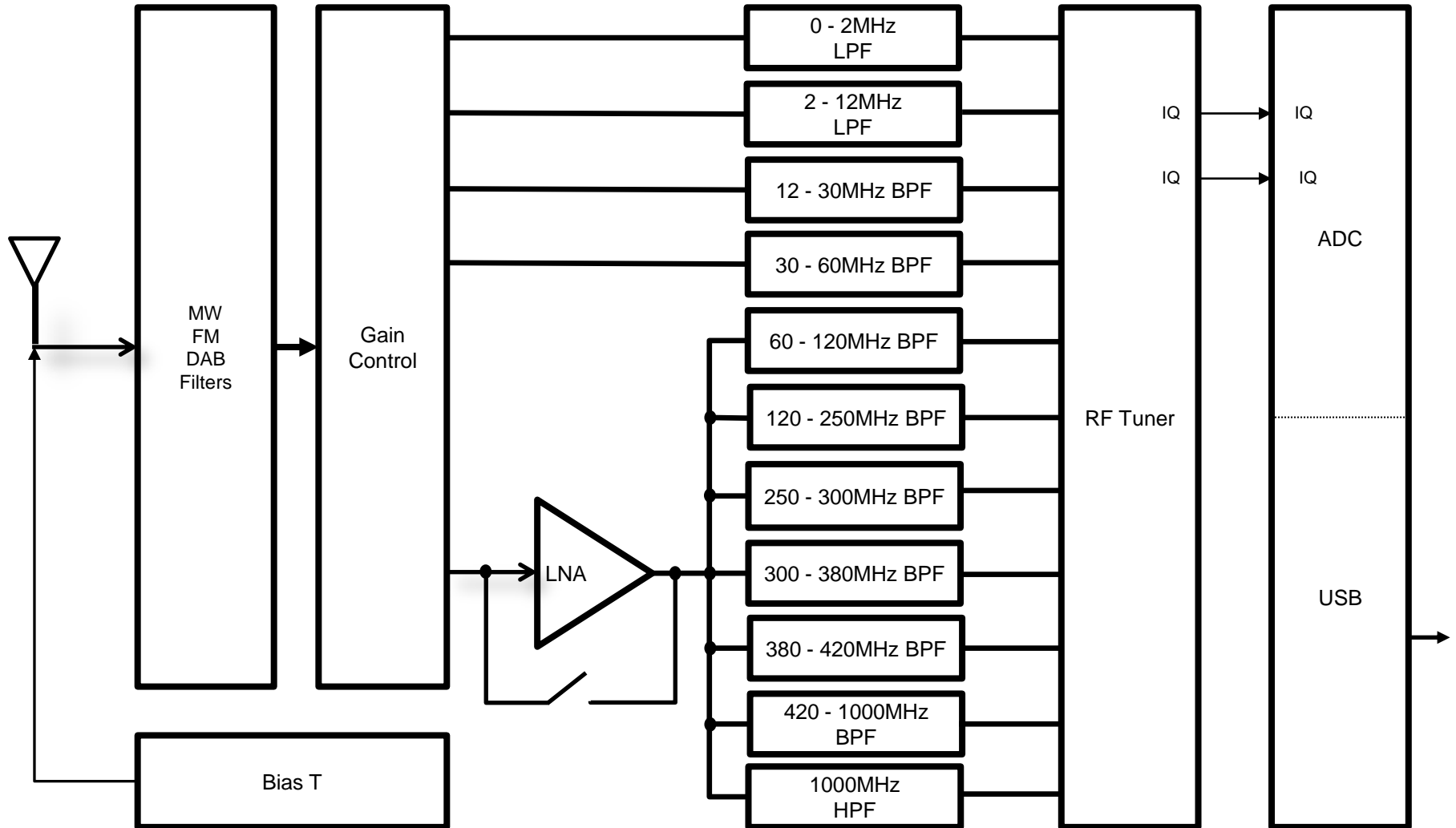
Gain, Noise Figure and Linearity

LNA Gain Slider Position	Parameter	Frequency										
		420	481	541	601	660	721	780	841	900	961	998
0	Gain	120.18	120.77	122.77	123.49	122.31	120.55	118.71	117.40	117.16	116.97	117.13
	Noise Figure	3.66	3.75	3.49	3.55	3.65	3.89	4.06	4.23	4.49	4.44	4.59
	IIP3	-22.51	-22.28	-24.20	-25.71	-24.93	-23.17	-21.90	-21.15	-21.01	-21.95	-22.65
1	Gain	112.27	113.04	115.06	115.49	114.13	112.40	110.69	109.41	109.06	108.99	109.09
	Noise Figure	4.50	4.43	4.02	4.02	4.32	4.58	5.07	5.42	5.70	5.62	5.80
	IIP3	-13.26	-13.16	-15.43	-16.66	-15.20	-13.28	-12.09	-11.72	-12.10	-13.53	-14.40
2	Gain	105.85	106.90	108.83	109.15	107.84	105.67	103.82	103.09	103.20	103.09	102.81
	Noise Figure	7.03	6.57	5.61	5.59	6.21	7.21	8.25	8.73	8.83	8.73	9.02
	IIP3	-6.80	-6.98	-9.13	-10.25	-8.85	-6.50	-5.30	-5.39	-6.26	-7.42	-7.87
3	Gain	99.42	100.52	102.37	102.62	101.28	99.03	97.18	96.45	96.59	96.40	96.08
	Noise Figure	11.88	10.92	9.61	9.47	10.42	12.25	13.23	14.14	14.23	14.04	14.39
	IIP3	-0.31	-0.57	-2.78	-3.79	-2.42	0.10	1.34	1.41	0.58	-0.47	-0.82
4	Gain	90.25	92.33	94.33	94.29	93.11	90.23	88.21	88.10	89.10	88.59	87.59
	Noise Figure	21.91	17.95	16.48	16.27	17.11	22.09	20.31	24.69	22.04	20.72	21.98
	IIP3	8.95	7.41	5.15	4.62	6.03	8.97	10.17	9.68	7.98	7.17	7.49
5	Gain	84.51	85.99	87.84	88.13	86.80	84.34	82.60	82.16	82.28	81.79	81.41
	Noise Figure	26.89	26.21	23.37	23.84	25.82	26.55	28.14	29.25	29.40	28.94	29.63
	IIP3	14.63	13.88	11.77	10.79	12.36	14.92	15.66	15.79	15.07	14.14	13.88
6	Gain	78.60	79.79	81.50	81.81	80.53	78.34	76.74	76.19	76.10	75.83	75.66
	Noise Figure	33.46	31.99	30.10	30.09	30.79	33.45	35.05	35.23	36.05	35.25	36.16
	IIP3	20.93	20.58	18.17	17.31	18.99	21.43	22.04	22.57	21.99	20.35	20.62
7	Gain	74.05	74.82	76.15	76.41	75.34	73.66	72.45	71.99	71.88	71.75	71.65
	Noise Figure	39.84	37.94	36.34	35.68	37.40	39.05	40.70	41.97	41.90	41.75	42.25
	IIP3	26.82	27.90	24.09	23.29	25.75	27.31	27.01	29.46	28.89	25.84	28.01
8	Gain	58.57	58.96	59.65	59.74	59.18	58.40	58.11	57.99	57.94	57.97	57.85
	Noise Figure	52.56	52.28	50.24	50.02	51.48	52.37	56.17	53.94	55.26	55.63	55.99
	IIP3	27.87	26.82	25.09	24.21	25.59	28.29	28.72	29.46	28.51	27.34	27.33

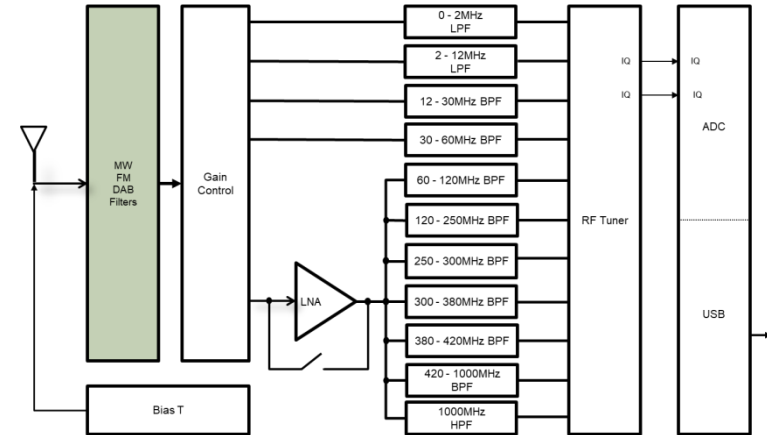
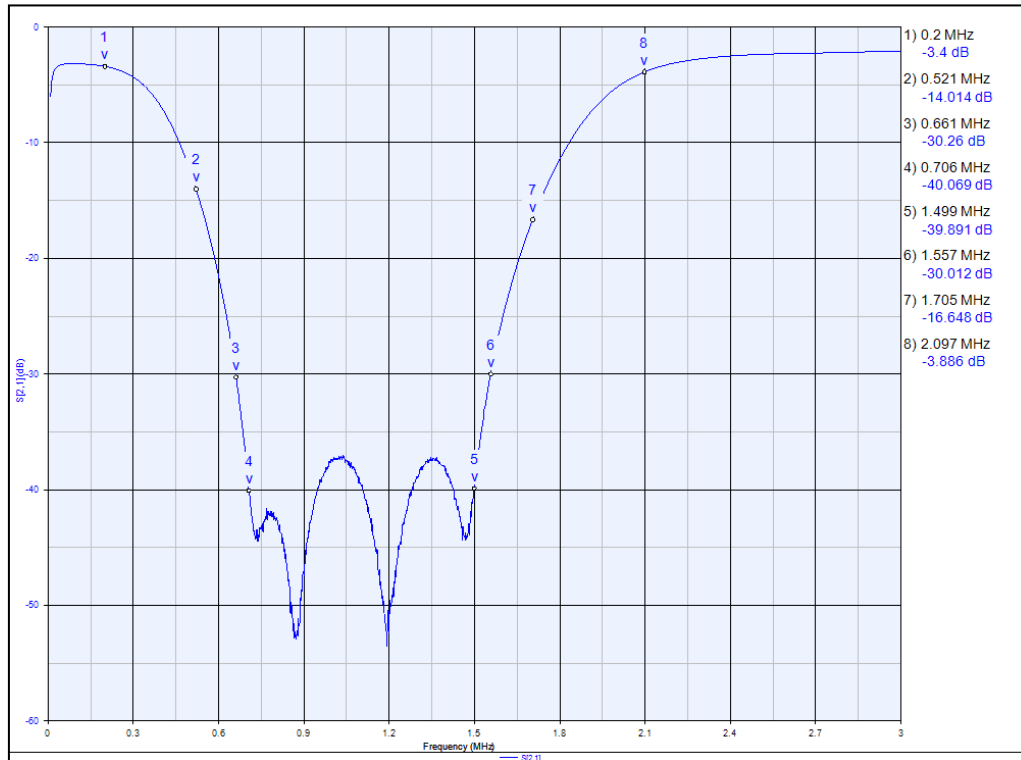


Gain, Noise Figure and Linearity

LNA Gain Slider Position	Parameter	Frequency										
		1000	1100	1202	1300	1400	1500	1600	1700	1802	1900	2000
0	Gain	108.94	111.41	112.18	115.51	114.82	113.15	111.65	110.41	108.29	106.82	103.26
	Noise Figure	5.00	4.71	4.85	4.80	4.68	5.07	5.35	5.76	6.34	7.90	9.59
	IIP3	-15.35	-14.90	-15.19	-17.97	-17.04	-15.39	-14.31	-13.26	-12.33	-11.22	-8.31
1	Gain	102.59	104.60	105.62	108.23	107.86	105.12	103.30	102.66	101.42	99.02	94.82
	Noise Figure	7.46	6.69	6.66	6.55	6.70	7.80	8.98	9.17	9.81	12.80	15.52
	IIP3	-9.27	-8.61	-8.92	-10.87	-10.22	-8.06	-6.51	-6.09	-5.77	-3.92	-0.78
2	Gain	95.87	97.85	98.78	101.24	100.98	97.92	96.06	95.56	94.55	92.13	87.97
	Noise Figure	12.65	11.17	10.87	10.45	11.22	13.22	14.18	15.10	15.34	20.48	19.79
	IIP3	-2.82	-1.94	-2.14	-4.03	-3.40	-0.95	0.81	0.82	0.84	2.77	6.05
3	Gain	88.46	90.06	93.64	96.67	97.40	95.49	94.12	94.07	92.58	90.64	86.59
	Noise Figure	19.50	18.26	15.85	13.96	13.23	14.68	16.41	16.10	16.59	19.92	25.95
	IIP3	4.98	5.80	3.19	0.78	0.21	1.43	2.81	2.42	3.33	4.40	7.78
4	Gain	81.58	83.75	86.18	89.91	90.95	88.64	87.34	87.06	85.85	83.44	78.62
	Noise Figure	21.51	23.49	21.24	19.54	19.44	21.16	21.05	24.33	24.94	25.90	39.06
	IIP3	11.83	12.13	10.80	7.60	6.74	8.18	9.71	9.60	10.07	11.66	15.85
5	Gain	75.20	77.37	79.34	83.10	84.10	81.80	80.41	80.14	79.35	77.23	73.19
	Noise Figure	33.41	30.92	29.49	26.80	25.85	28.44	29.01	29.66	30.34	33.78	36.69
	IIP3	19.49	19.41	18.15	16.67	16.98	16.37	17.00	16.88	17.21	18.60	22.82
6	Gain	70.49	72.07	73.47	76.70	77.75	75.72	74.62	74.54	74.48	73.25	70.44
	Noise Figure	39.92	38.19	35.84	32.75	32.61	34.80	36.57	36.42	36.94	39.16	43.69
	IIP3	25.52	25.77	24.78	21.95	20.54	22.34	23.86	23.40	23.13	24.40	28.65
7	Gain	53.57	54.44	55.26	57.66	58.55	56.80	55.86	55.87	55.76	54.52	53.00
	Noise Figure	55.81	54.38	53.11	48.83	48.66	50.65	51.50	50.47	52.58	53.37	58.56
	IIP3	25.65	25.91	24.95	22.26	20.84	22.66	24.20	23.75	23.42	24.69	28.62
8	Gain	67.06	68.78	69.44	71.74	72.57	70.24	68.85	68.75	68.78	67.30	64.18
	Noise Figure	41.44	39.61	38.62	37.66	37.37	38.90	40.00	40.52	40.64	42.15	45.81
	IIP3	24.91	25.18	25.24	23.97	23.09	24.95	26.16	26.06	25.73	26.29	29.40

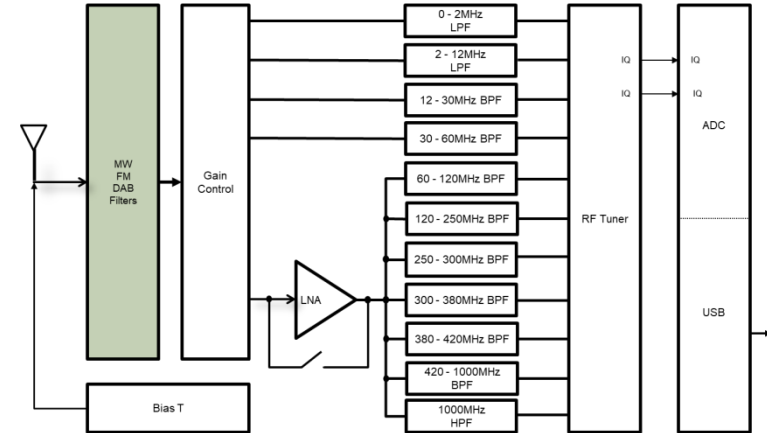
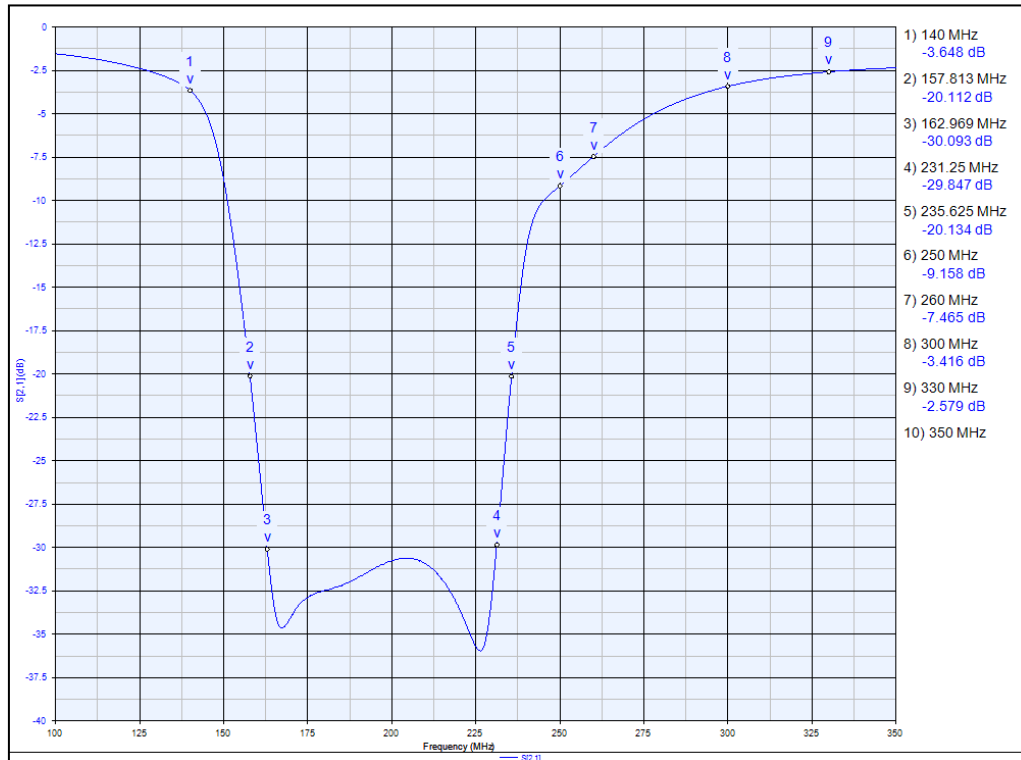


MW Notch Filter



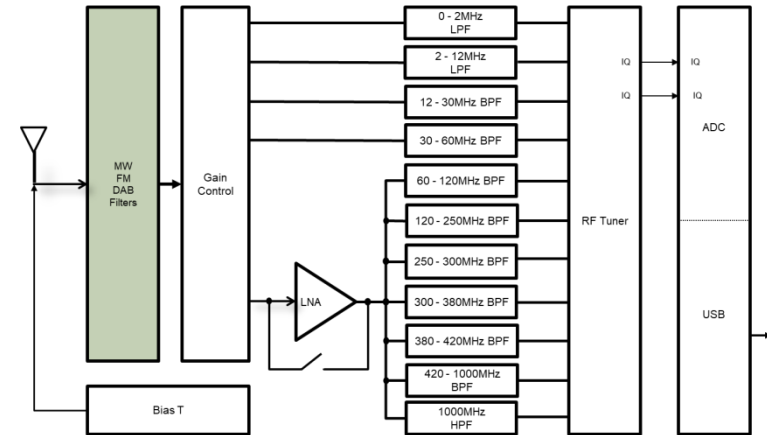
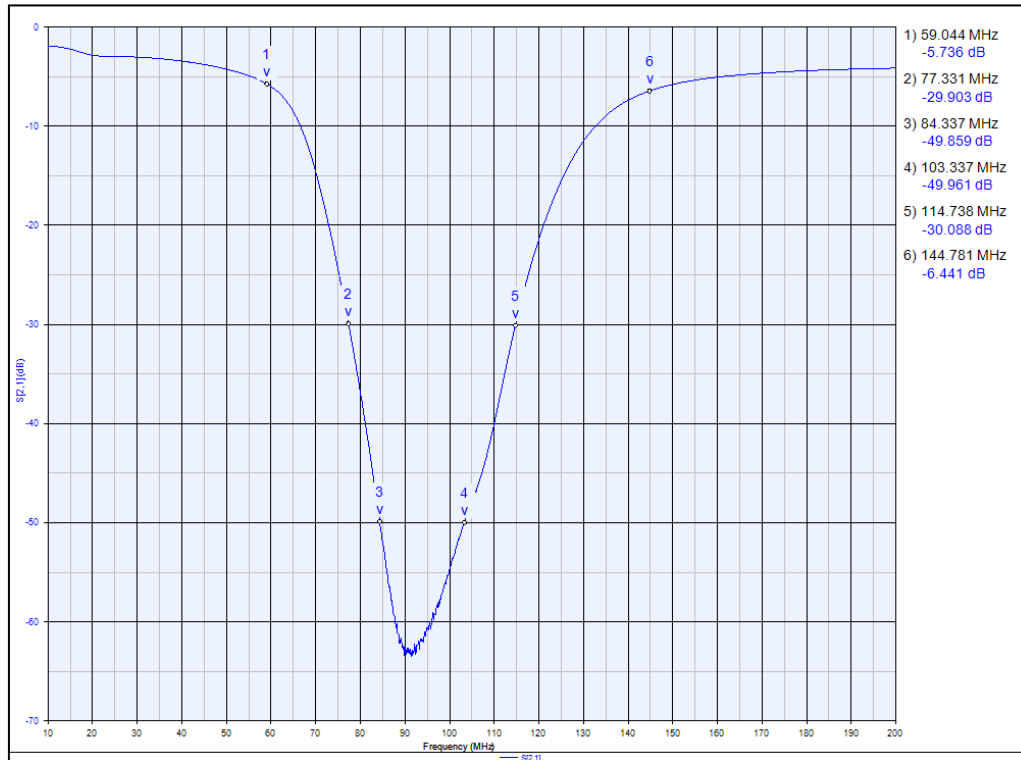
Frequency (kHz)		Attenuation
Lower	Upper	
522	1710	>14dB
660	1550	>30dB

DAB Notch Filter



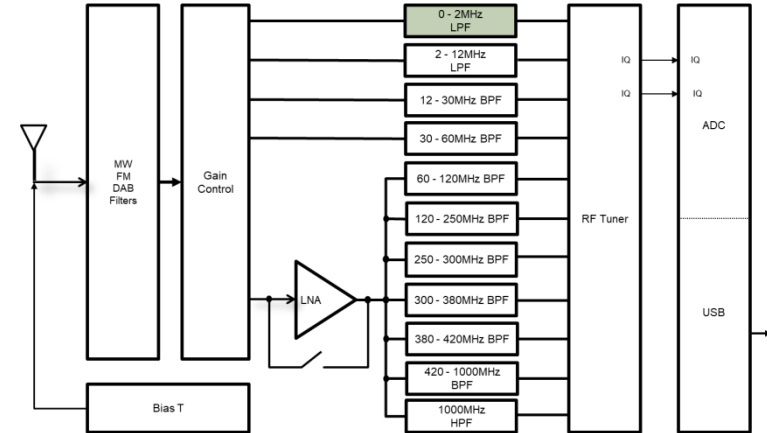
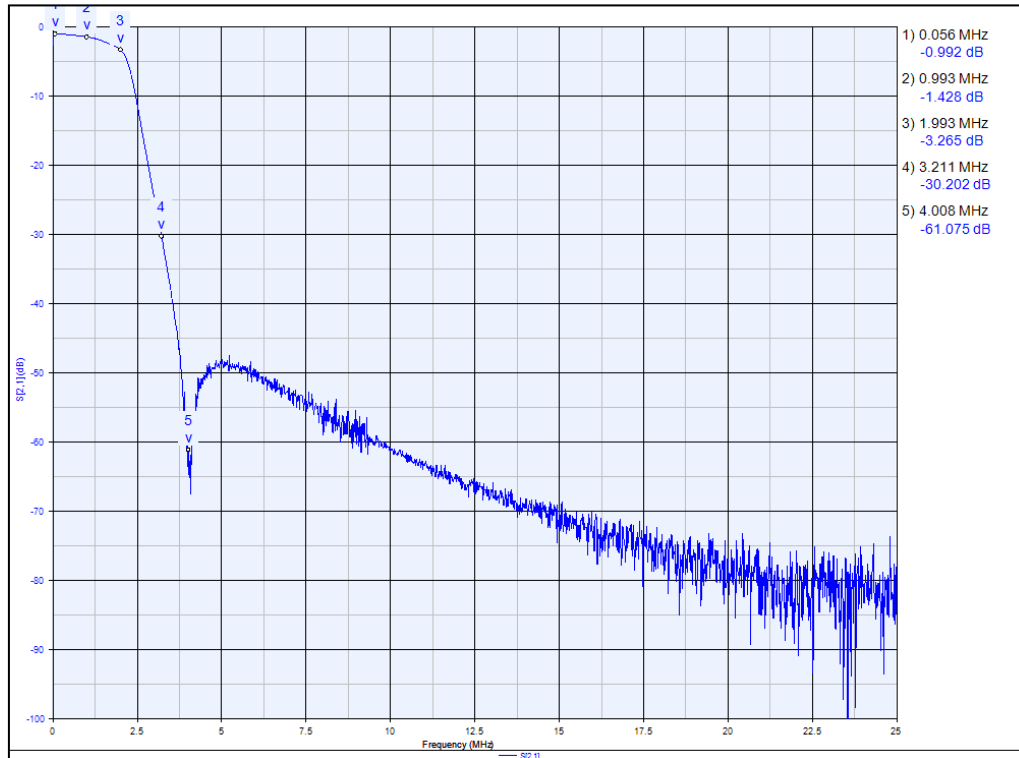
Frequency (MHz)		Attenuation
Lower	Upper	
160	235	>20dB
165	230	>30dB

FM Notch Filter

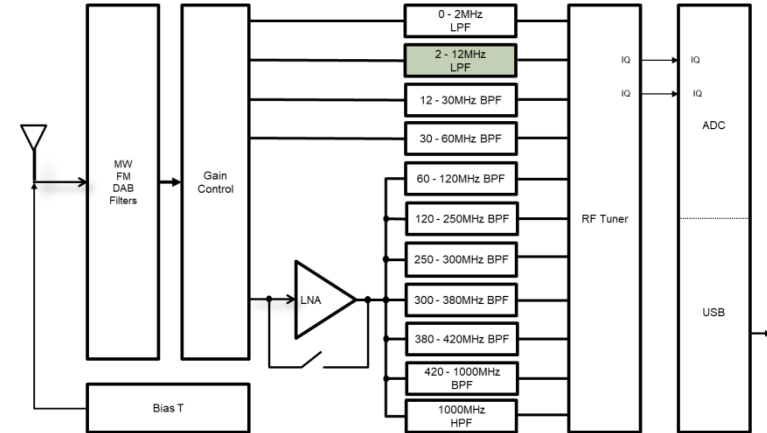
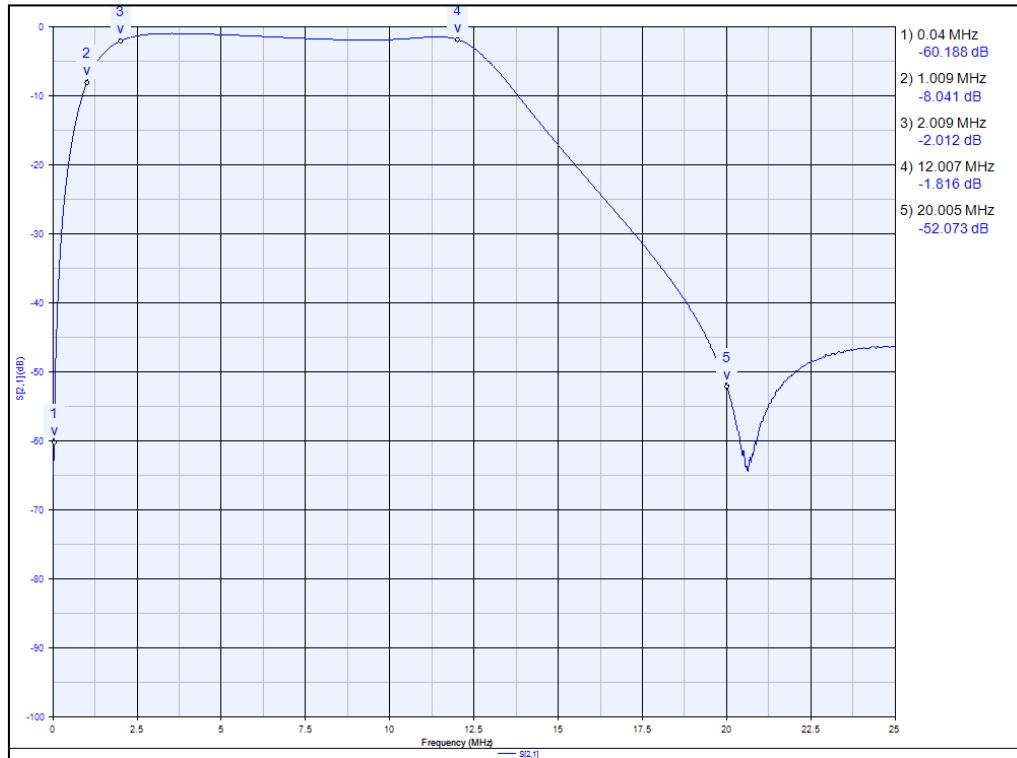


Frequency (MHz)		Attenuation
Lower	Upper	
77	115	>30dB
85	100	>50dB

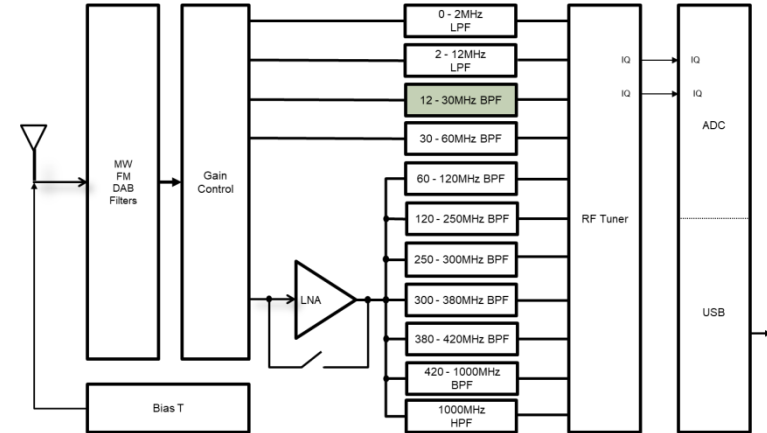
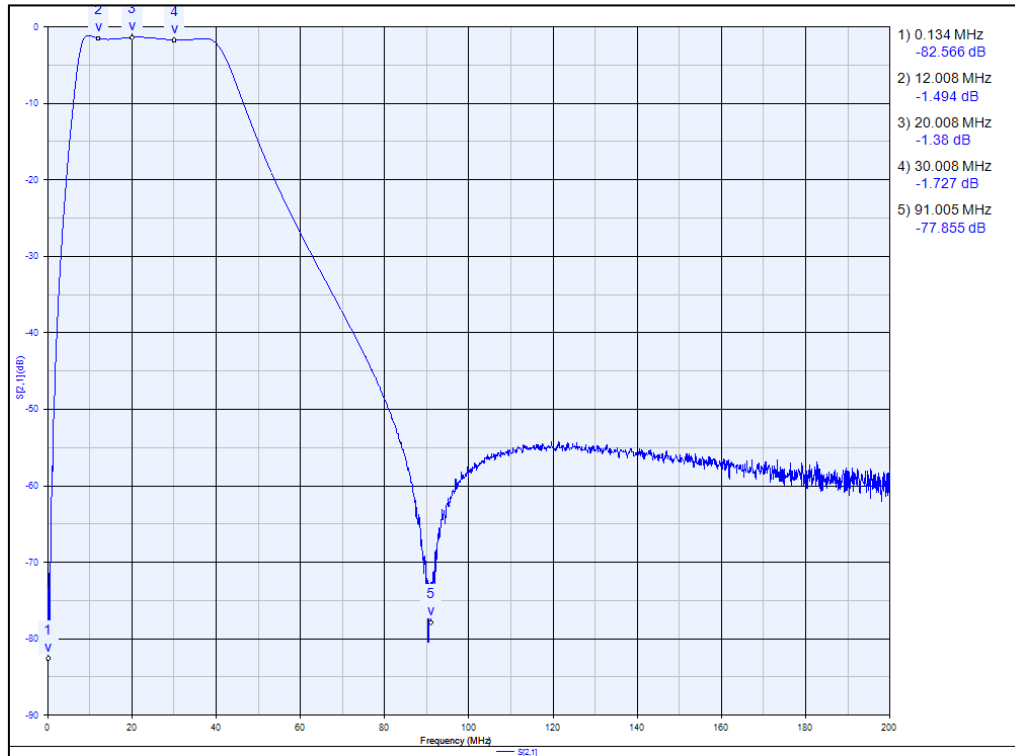
0 – 2MHz Low Pass Filter



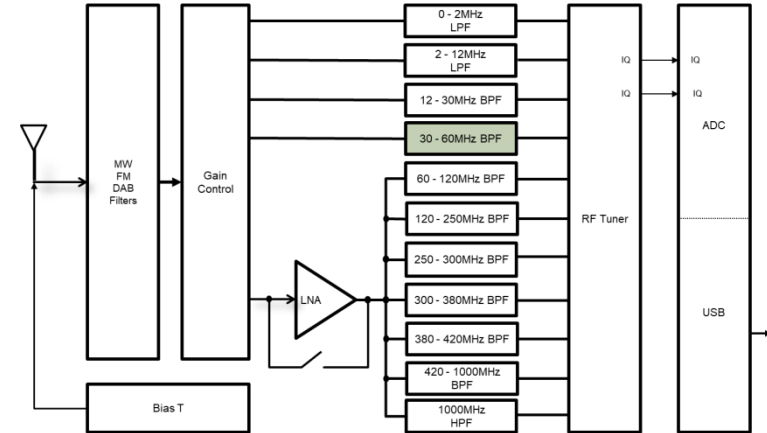
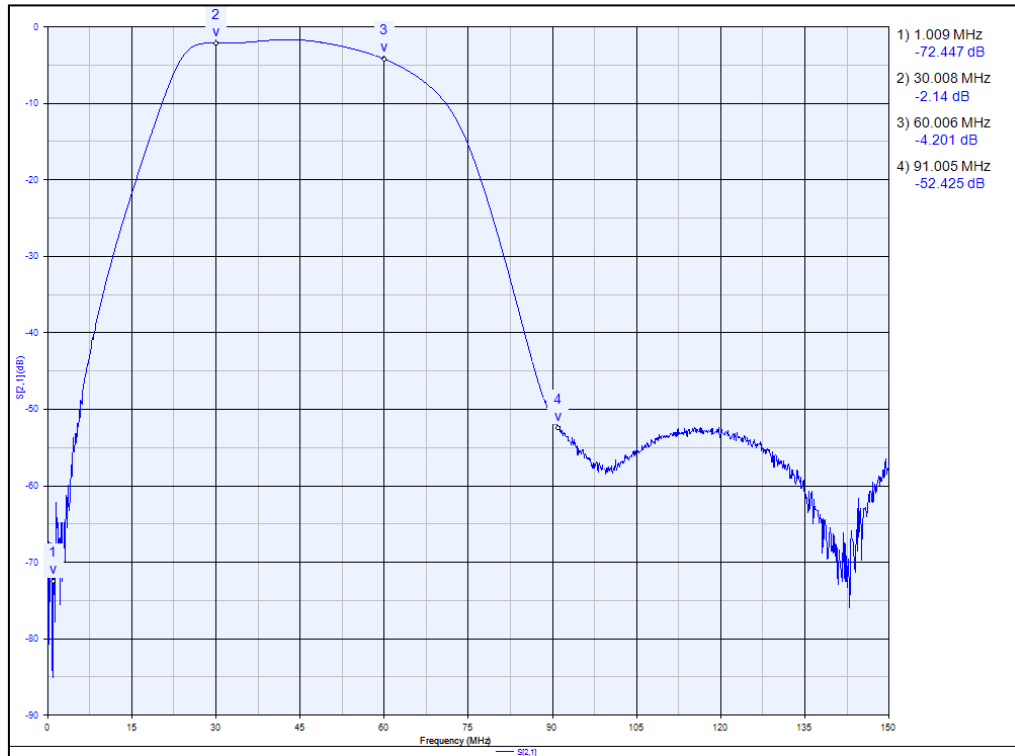
2 – 12MHz Band Pass Filter



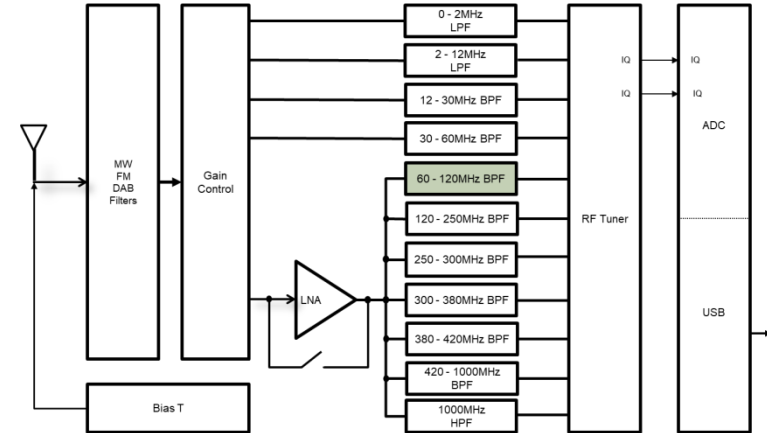
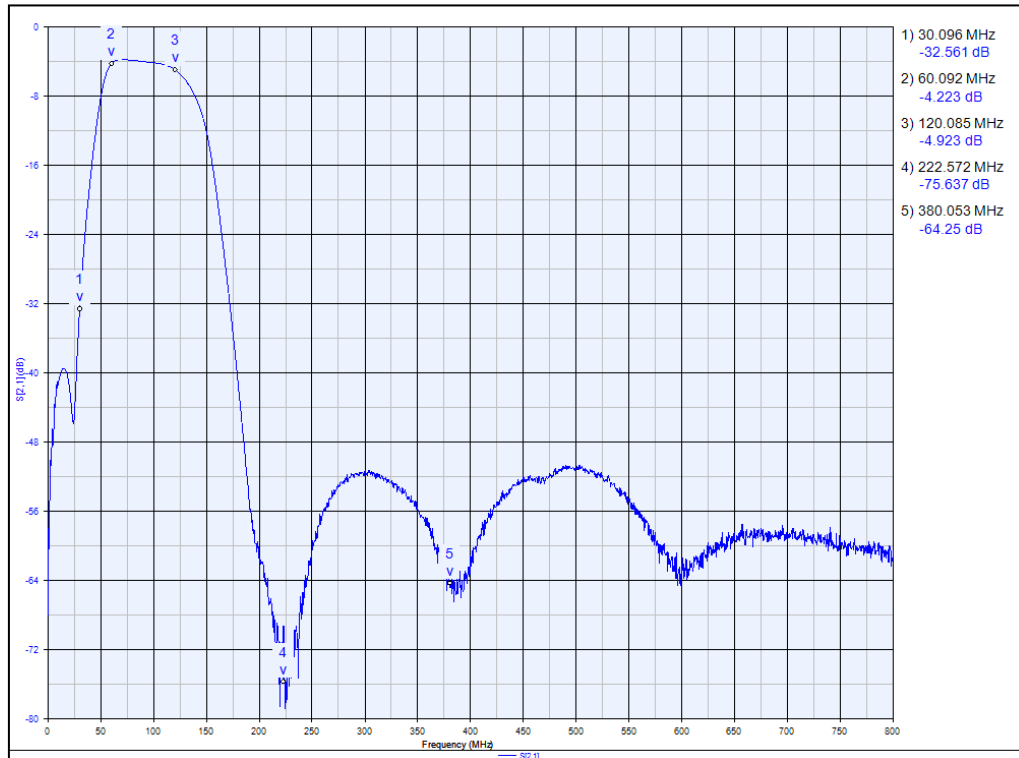
12 – 30MHz Band Pass Filter



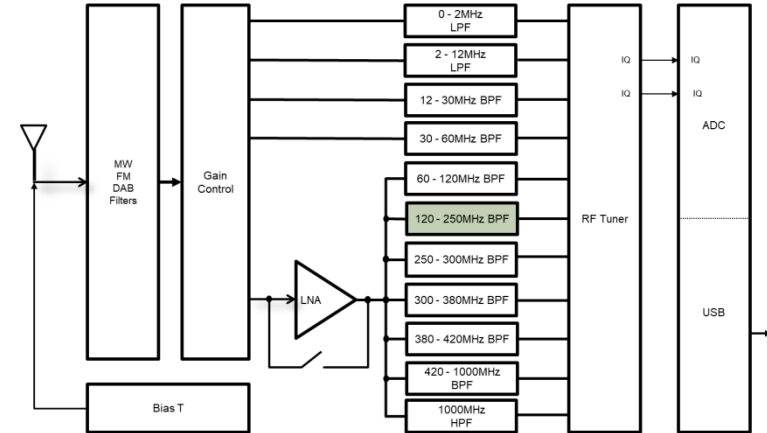
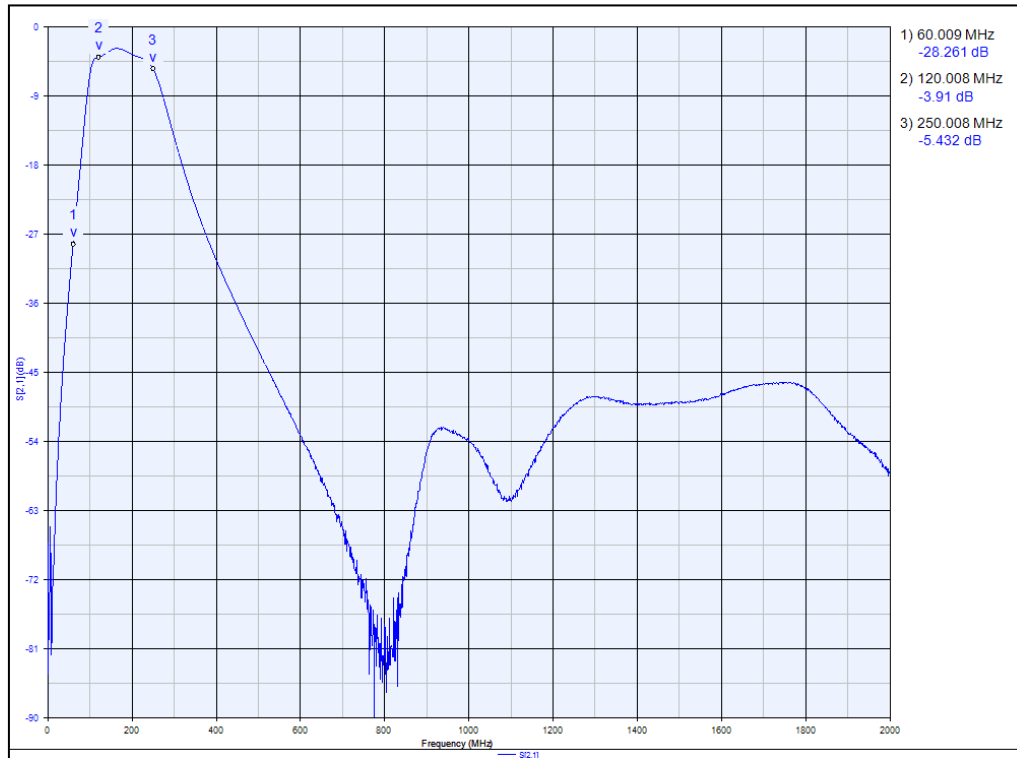
30 – 60MHz Band Pass Filter



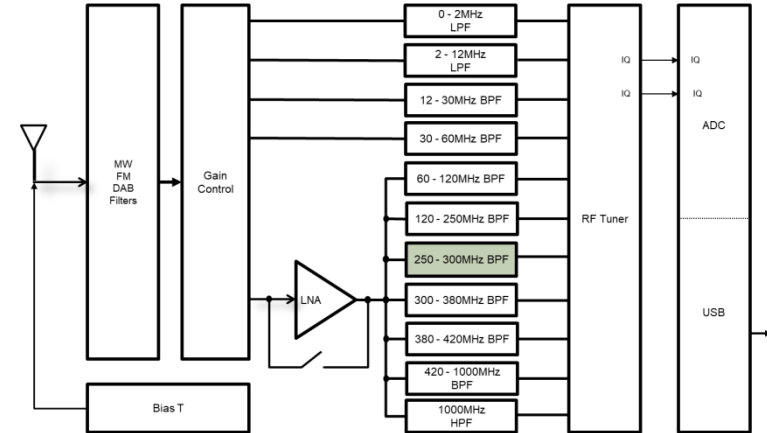
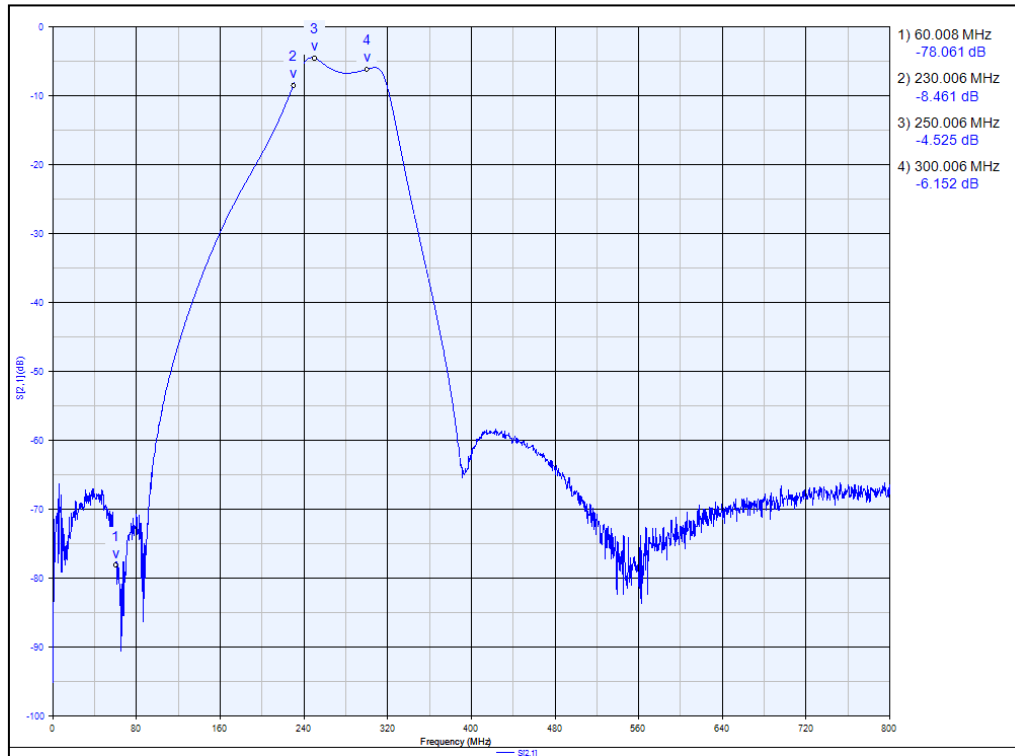
60 – 120MHz Band Pass Filter



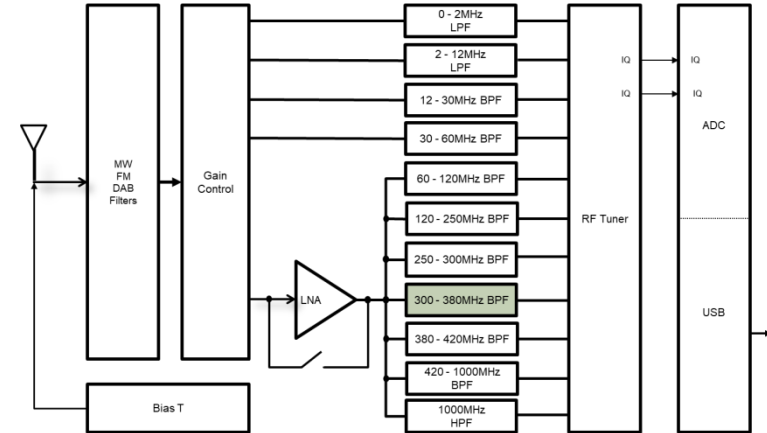
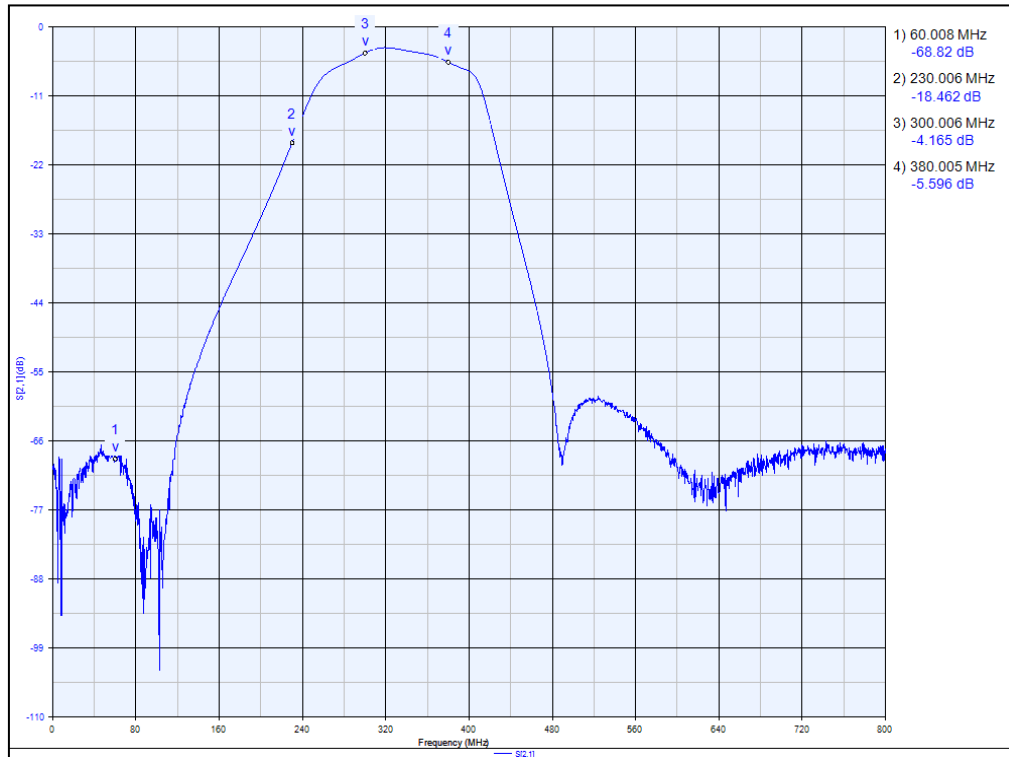
120 - 250MHz Band Pass Filter



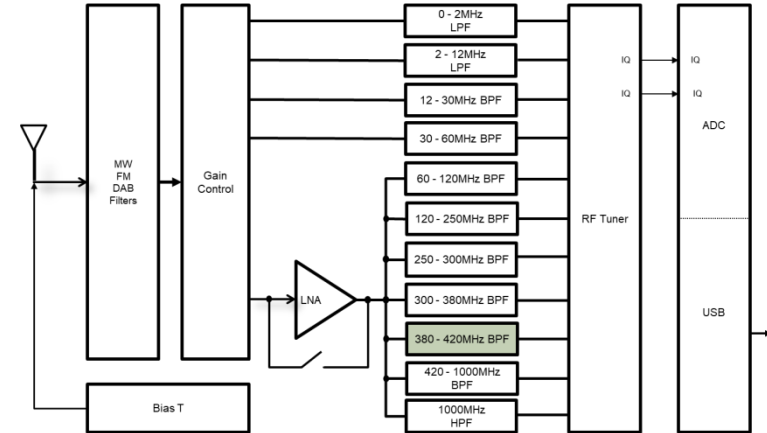
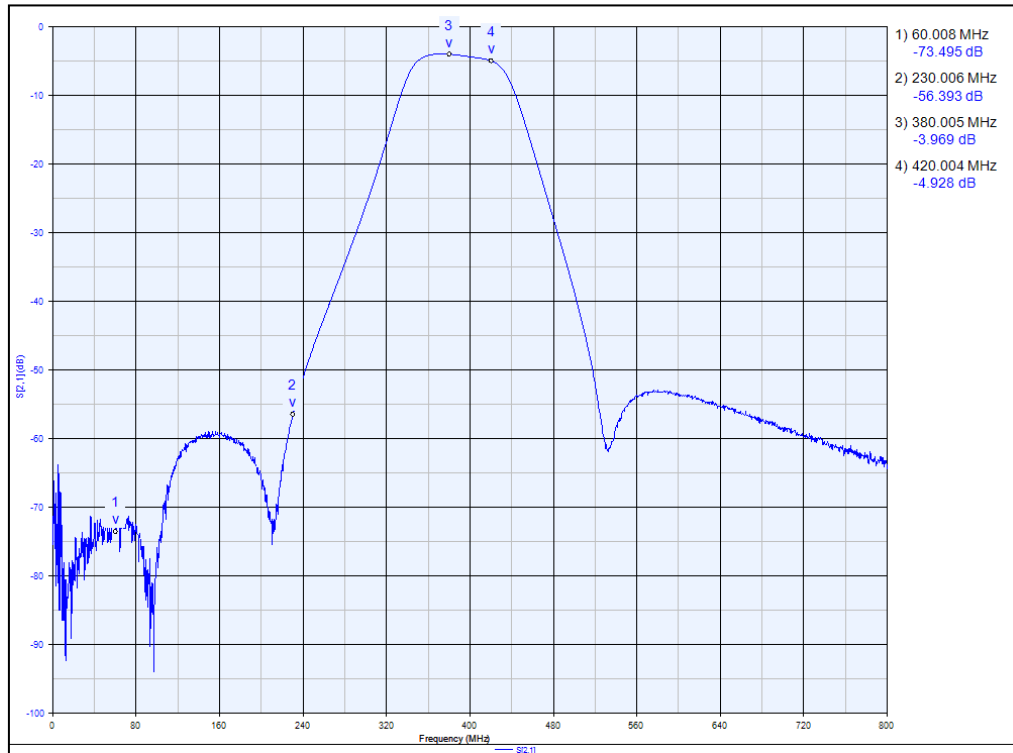
250 - 300MHz Band Pass Filter



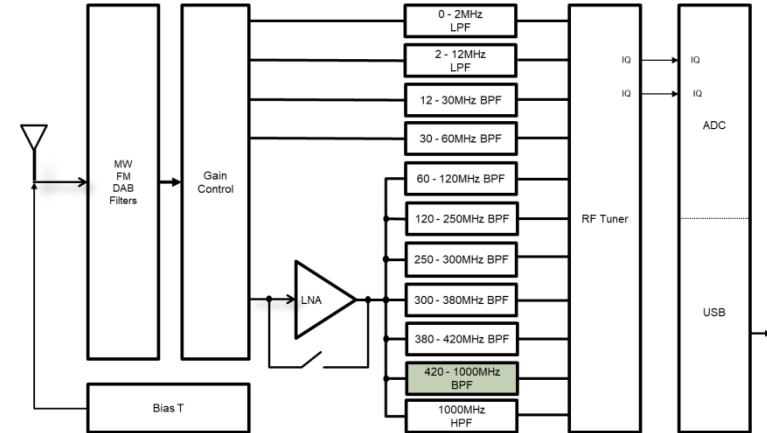
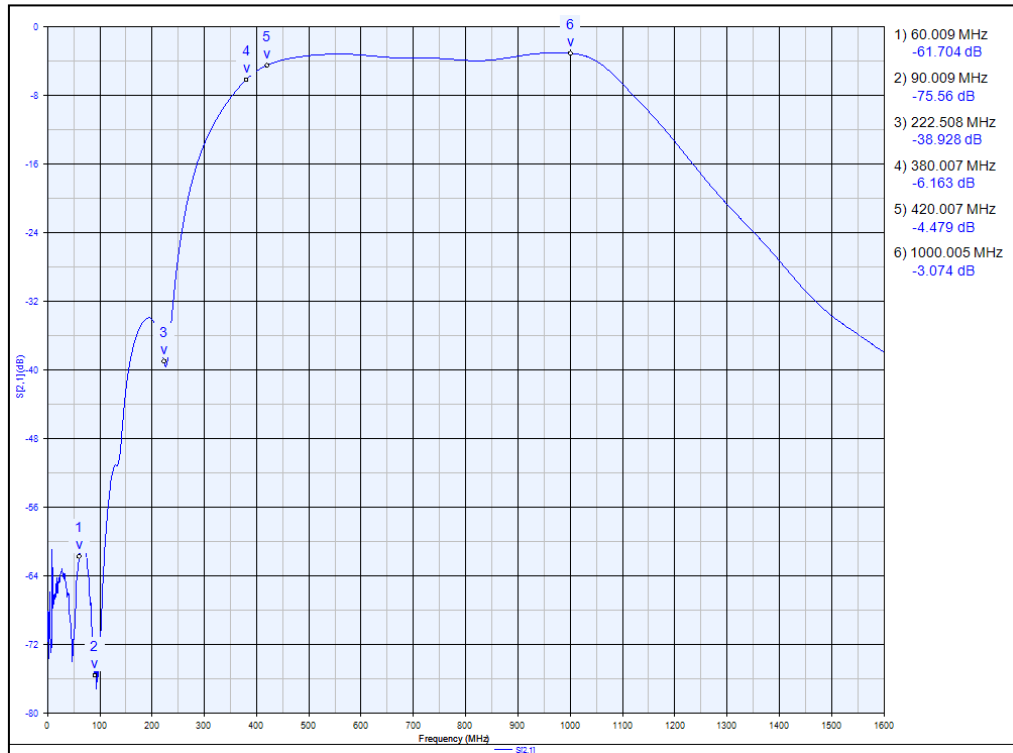
300 - 380MHz Band Pass Filter



380 - 420MHz Band Pass Filter



420 - 1000MHz Band Pass Filter



1000 - 2000MHz High Pass Filter

