

# Voltage Variable Equalizer, 50Ω

VAEQ-1220+

Typical Performance Data @  $V_+ = 5V$

Frequency (MHz)	Insertion Loss (dB) Vcontrol		Input Return Loss (dB) Vcontrol		Output Return Loss (dB) Vcontrol		Deviation from Linear Loss (dB) Vcontrol		Insertion Phase (Ph)0V Vcontrol	
	0V	2.8V	0V	2.8V	0V	2.8V	0V	2.8V	0V	2.8V
	10	20.79	20.39	11.64	11.71	16.04	13.59	-	-	-61.50
30	16.10	15.83	14.51	14.53	18.08	15.77	-	-	-29.93	-28.61
50	15.27	15.04	15.53	15.54	18.70	16.44	0.75	0.62	-18.89	-17.81
70	14.92	14.70	15.87	15.89	18.69	16.51	0.60	0.49	-13.39	-12.39
90	14.67	14.47	15.98	16.00	18.50	16.40	0.55	0.46	-9.96	-8.99
110	14.44	14.25	15.98	16.00	18.28	16.25	0.53	0.44	-7.45	-6.48
130	14.20	14.03	15.92	15.95	18.08	16.12	0.50	0.43	-5.35	-4.37
150	13.97	13.81	15.84	15.87	17.84	15.96	0.47	0.41	-3.42	-2.41
170	13.73	13.59	15.75	15.78	17.55	15.74	0.43	0.39	-1.57	-0.55
200	13.35	13.23	15.56	15.60	17.04	15.35	0.36	0.33	1.15	2.15
220	13.08	12.97	15.40	15.44	16.75	15.13	0.30	0.28	3.06	4.05
240	12.81	12.72	15.25	15.28	16.48	14.93	0.24	0.23	5.08	6.06
260	12.55	12.47	15.11	15.14	16.18	14.71	0.18	0.18	7.17	8.15
300	12.03	11.97	14.78	14.82	15.51	14.18	0.07	0.08	11.48	12.38
320	11.75	11.70	14.57	14.60	15.22	13.95	0.00	0.02	13.77	14.63
340	11.48	11.44	14.37	14.41	14.92	13.72	-0.07	-0.04	16.24	17.08
360	11.23	11.19	14.20	14.23	14.63	13.48	-0.12	-0.08	18.82	19.63
380	10.99	10.96	14.02	14.07	14.31	13.23	-0.15	-0.11	21.36	22.14
400	10.74	10.72	13.83	13.87	13.99	12.97	-0.20	-0.15	23.89	24.61
420	10.47	10.46	13.60	13.64	13.70	12.74	-0.26	-0.21	26.51	27.17
450	10.09	10.08	13.29	13.33	13.28	12.39	-0.33	-0.29	30.86	31.48
500	9.54	9.54	12.84	12.88	12.57	11.79	-0.37	-0.32	38.06	38.57
550	8.93	8.94	12.30	12.34	11.92	11.25	-0.46	-0.41	45.69	46.10
600	8.44	8.45	11.87	11.90	11.29	10.71	-0.45	-0.40	53.55	53.87
650	7.90	7.92	11.35	11.38	10.70	10.21	-0.47	-0.43	61.67	61.90
700	7.43	7.45	10.95	10.97	10.14	9.72	-0.43	-0.39	70.08	70.24
750	6.97	6.98	10.50	10.52	9.63	9.27	-0.38	-0.35	78.55	78.64
770	6.77	6.79	10.35	10.37	9.42	9.09	-0.36	-0.34	82.10	82.17
800	6.52	6.53	10.16	10.17	9.14	8.85	-0.31	-0.29	87.46	87.51
820	6.36	6.37	10.02	10.03	8.97	8.70	-0.26	-0.25	90.99	91.02
840	6.19	6.20	9.88	9.89	8.81	8.56	-0.23	-0.22	94.50	94.50
860	6.01	6.02	9.74	9.75	8.65	8.42	-0.20	-0.20	98.09	98.08
880	5.84	5.84	9.65	9.65	8.49	8.28	-0.17	-0.17	101.77	101.75
900	5.67	5.67	9.56	9.57	8.36	8.16	-0.14	-0.14	105.54	105.51
920	5.51	5.51	9.49	9.49	8.25	8.07	-0.09	-0.09	109.34	109.31
950	5.30	5.31	9.36	9.36	8.09	7.93	0.01	0.00	114.98	114.94
970	5.15	5.15	9.31	9.31	7.98	7.85	0.06	0.04	118.58	118.53
990	4.95	4.95	9.30	9.29	7.92	7.81	0.07	0.05	122.30	122.25
1000	4.84	4.84	9.27	9.26	7.90	7.79	0.06	0.04	124.37	124.32
1020	4.68	4.68	9.25	9.25	7.88	7.78	0.11	0.08	128.70	128.65
1040	4.58	4.58	9.26	9.26	7.87	7.78	0.22	0.19	132.89	132.84
1060	4.48	4.48	9.29	9.28	7.87	7.80	0.32	0.29	136.60	136.55
1100	4.04	4.04	9.40	9.40	8.01	7.97	0.29	0.25	144.65	144.60
1120	3.88	3.89	9.51	9.50	8.14	8.10	0.34	0.30	149.63	149.58
1140	3.84	3.84	9.65	9.64	8.30	8.28	0.50	0.46	154.33	154.29
1150	3.82	3.83	9.73	9.72	8.39	8.37	0.59	0.55	156.41	156.37
1180	3.62	3.63	10.00	9.99	8.76	8.75	0.69	0.65	162.27	162.23
1200	3.41	3.41	10.23	10.23	9.09	9.10	0.68	0.64	166.99	166.94
1220	3.28	3.29	10.49	10.49	9.45	9.46	0.76	0.71	172.44	172.40
1250	3.29	3.30	10.99	10.98	10.08	10.11	-	-	-179.95	-179.99
1300	3.10	3.12	12.01	12.01	11.53	11.60	-	-	-168.35	-168.40
1400	3.35	3.37	14.80	14.79	15.29	15.54	-	-	-142.80	-142.83

Frequency (MHz)	Input IP3 (dBm) Vcontrol	
	0V	2.8V
	10	43.13
30	46.03	47.62
50	49.76	54.29
80	53.61	55.20
100	57.99	52.36
150	57.23	54.13
200	59.02	52.17
300	57.39	53.58
400	56.24	56.11
450	55.89	57.31
500	55.54	58.51
550	55.96	58.71
600	56.37	58.90
700	56.43	59.48
800	55.25	54.59
900	53.79	53.13
950	53.80	52.89
1000	53.80	52.64
1100	55.18	49.92
1220	56.27	56.88
1300	55.77	55.99
1400	54.44	54.16
1500	54.29	53.81

**Notes**

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuit's standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



# Voltage Variable Equalizer, 75Ω

VAEQ-1120-75+

Typical Performance Data @  $V_{+}=5V$

Frequency (MHz)	Insertion Loss (dB) Vcontrol		Input Return Loss (dB) Vcontrol		Output Return Loss (dB) Vcontrol		Deviation from Linear Loss (dB) Vcontrol		Insertion Phase (Ph)0V Vcontrol	
	5.7V	7V	5.7V	7V	5.7V	7V	5.7V	7V	5.7V	7V
	10	3.44	2.05	19.79	30.95	22.53	24.58	-	-	-3.35
30	3.17	1.74	20.57	36.23	25.92	33.10	-	-	2.18	2.10
50	3.11	1.67	20.78	36.09	26.80	37.90	0.09	0.28	5.90	5.98
70	3.08	1.65	20.89	34.91	27.30	37.83	0.06	0.23	9.26	9.47
90	3.07	1.64	20.96	33.52	27.57	35.12	0.04	0.19	12.51	12.81
110	3.07	1.63	21.03	32.22	27.69	33.02	0.02	0.16	15.67	16.06
130	3.07	1.63	21.12	31.05	27.58	31.46	0.01	0.13	18.79	19.27
150	3.07	1.64	21.19	30.01	27.27	29.89	0.01	0.11	21.85	22.45
170	3.07	1.64	21.19	29.02	26.87	28.40	0.00	0.09	24.89	25.59
200	3.08	1.65	21.16	27.68	26.37	26.69	-0.01	0.06	29.45	30.26
220	3.08	1.65	21.20	26.95	26.09	25.92	-0.01	0.04	32.49	33.39
240	3.09	1.66	21.27	26.34	25.73	25.25	-0.01	0.02	35.51	36.51
260	3.10	1.68	21.28	25.81	25.25	24.48	-0.01	0.01	38.49	39.61
300	3.11	1.70	21.20	24.64	24.39	23.08	-0.02	-0.02	44.46	45.74
320	3.11	1.70	21.24	24.10	24.08	22.63	-0.03	-0.04	47.47	48.83
340	3.12	1.72	21.33	23.72	23.73	22.14	-0.02	-0.05	50.49	51.96
360	3.14	1.74	21.39	23.38	23.37	21.67	-0.02	-0.06	53.47	55.06
380	3.15	1.76	21.39	23.05	22.96	21.17	-0.02	-0.06	56.41	58.10
400	3.15	1.77	21.35	22.64	22.62	20.71	-0.02	-0.07	59.33	61.10
420	3.15	1.78	21.37	22.24	22.34	20.37	-0.03	-0.09	62.32	64.16
450	3.17	1.81	21.53	21.87	21.95	19.89	-0.02	-0.11	66.86	68.87
500	3.21	1.87	21.64	21.33	21.17	19.01	-0.01	-0.11	74.13	76.40
550	3.22	1.91	21.90	20.84	20.59	18.38	-0.02	-0.13	81.58	84.08
600	3.26	1.99	22.18	20.57	19.95	17.75	0.00	-0.12	88.84	91.61
650	3.27	2.04	22.55	20.25	19.41	17.26	-0.01	-0.13	96.19	99.17
700	3.30	2.13	23.05	20.25	18.84	16.80	0.00	-0.11	103.49	106.68
750	3.32	2.22	23.41	20.15	18.26	16.41	-0.01	-0.09	110.76	114.09
770	3.32	2.25	23.65	20.24	18.02	16.27	-0.01	-0.08	113.70	117.06
800	3.34	2.31	23.87	20.42	17.67	16.09	-0.01	-0.06	118.12	121.51
820	3.36	2.35	23.87	20.45	17.44	15.98	0.00	-0.04	121.03	124.42
840	3.37	2.40	23.84	20.48	17.18	15.86	0.00	-0.02	123.91	127.28
860	3.37	2.43	23.80	20.56	16.91	15.75	-0.01	-0.01	126.82	130.13
880	3.38	2.47	23.75	20.72	16.63	15.64	-0.01	0.00	129.75	133.00
900	3.39	2.51	23.60	20.87	16.35	15.53	-0.01	0.01	132.71	135.87
920	3.41	2.56	23.35	20.95	16.08	15.43	0.00	0.03	135.65	138.72
950	3.45	2.63	22.70	20.89	15.62	15.22	0.03	0.07	139.99	142.89
970	3.47	2.68	22.29	20.85	15.27	15.03	0.04	0.09	142.77	145.55
990	3.48	2.71	21.90	20.79	14.96	14.86	0.04	0.10	145.53	148.18
1000	3.48	2.72	21.60	20.67	14.79	14.76	0.04	0.09	146.99	149.56
1020	3.49	2.76	21.08	20.45	14.46	14.54	0.05	0.10	149.96	152.39
1040	3.55	2.82	20.54	20.13	14.12	14.29	0.09	0.15	152.81	155.12
1060	3.60	2.90	19.98	19.72	13.76	14.01	0.14	0.20	155.33	157.54
1100	3.56	2.92	18.86	18.77	13.08	13.43	0.08	0.16	160.13	161.98
1120	3.54	2.92	18.33	18.29	12.78	13.16	0.05	0.13	162.92	164.51
1140	3.56	2.95	17.81	17.77	12.52	12.93	0.06	0.15	165.54	166.90
1150	3.57	2.98	17.55	17.51	12.41	12.82	0.07	0.15	166.66	167.90
1180	3.46	2.90	16.84	16.84	12.18	12.65	-0.06	0.04	169.55	170.33
1200	3.27	2.71	16.47	16.56	12.19	12.70	-0.26	-0.18	172.01	172.35
1220	3.09	2.51	16.16	16.42	12.30	12.89	-0.45	-0.40	175.25	175.16
1250	2.96	2.33	15.95	16.54	12.73	13.48	-	-	-179.82	179.74
1300	2.60	1.93	16.10	17.57	14.14	15.22	-	-	-171.53	-172.45
1400	2.54	1.75	17.48	21.64	17.77	19.27	-	-	-152.77	-154.34

Frequency (MHz)	Input IP3 (dBm) Vcontrol	
	5.7V	7V
	10	40.81
30	47.87	55.16
50	50.77	54.99
80	58.02	61.16
100	55.12	58.23
150	56.50	60.40
200	56.90	64.36
300	58.37	60.50
400	56.51	58.09
450	56.52	57.75
500	56.52	57.41
550	57.01	58.53
600	57.50	59.64
700	56.46	57.25
800	55.63	54.62
900	54.94	53.70
950	55.00	52.82
1000	55.06	51.93
1100	57.27	51.60
1220	56.40	54.95
1300	57.18	54.61
1400	54.70	52.81
1500	54.79	52.48

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