

# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ 0°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	0.17	10.24	15.58	30.21	45.31	59.42	74.50	88.84
20	0.46	10.82	16.19	30.88	45.98	60.16	75.25	88.76
50	0.49	10.87	16.25	30.95	46.06	60.23	75.28	88.93
100	0.51	10.92	16.30	31.01	46.13	60.32	75.46	88.77
200	0.48	10.87	16.24	30.94	46.08	60.18	75.20	88.82
500	0.44	10.66	16.03	30.72	45.87	59.95	75.04	88.65
750	0.40	10.39	15.77	30.45	45.62	59.68	74.78	88.37
1000	0.35	10.10	15.49	30.15	45.33	59.34	74.39	88.02
1500	0.27	9.67	15.07	29.68	44.90	58.89	73.93	87.55
2000	0.23	9.52	14.92	29.51	44.77	58.71	73.86	87.50
2500	0.22	9.51	14.94	29.51	44.78	58.78	73.84	87.56
3000	0.23	9.50	14.95	29.53	44.83	58.85	73.94	87.68
3500	0.24	9.46	14.95	29.54	44.86	58.96	74.11	87.90
4000	0.27	9.49	15.02	29.61	44.95	59.21	74.43	88.23
4500	0.29	9.60	15.12	29.74	45.05	59.63	74.70	88.62
5000	0.31	9.74	15.22	29.87	45.17	59.78	75.01	88.96
5500	0.33	9.86	15.31	30.00	45.34	60.18	75.36	89.21
6000	0.34	9.96	15.38	30.13	45.57	60.62	76.28	91.74
6500	0.33	9.95	15.38	30.18	45.68	60.70	76.05	90.03
7000	0.30	9.76	15.20	30.06	45.70	60.79	76.46	91.46
7500	0.26	9.45	14.88	29.73	45.48	60.68	76.32	90.80
8000	0.21	9.26	14.62	29.47	45.41	60.50	76.41	91.11
8500	0.20	9.30	14.61	29.42	45.35	60.58	76.44	91.48
9000	0.20	9.34	14.64	29.41	45.34	60.45	76.49	90.62
9500	0.21	9.29	14.63	29.34	45.23	60.50	76.27	91.01
10000	0.22	9.25	14.65	29.32	45.09	60.34	76.11	90.09
10500	0.24	9.28	14.70	29.33	45.05	60.28	75.93	89.52
11000	0.24	9.29	14.67	29.29	44.88	60.24	75.77	90.75
11500	0.26	9.30	14.61	29.24	44.75	60.14	75.49	88.38
12000	0.27	9.35	14.59	29.22	44.69	59.88	75.24	89.32
12500	0.29	9.32	14.51	29.15	44.48	59.93	75.26	89.24
13000	0.30	9.08	14.20	28.80	44.16	59.33	74.54	87.88

**Notes**

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ 0°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	0.34	-0.07	-0.38	0.10	0.14	1.11	1.15	2.53
20	0.05	-0.70	-1.05	-0.62	-0.58	0.28	0.34	2.01
50	0.02	-0.76	-1.11	-0.70	-0.66	0.21	0.35	1.80
100	0.01	-0.80	-1.15	-0.74	-0.72	0.14	0.22	2.04
200	0.03	-0.76	-1.11	-0.66	-0.60	0.42	0.58	2.08
500	0.07	-0.56	-0.92	-0.46	-0.44	0.62	0.73	2.28
750	0.12	-0.28	-0.64	-0.18	-0.18	0.94	1.03	2.47
1000	0.17	0.02	-0.35	0.14	0.13	1.21	1.34	2.82
1500	0.26	0.48	0.11	0.63	0.57	1.72	1.89	3.39
2000	0.31	0.65	0.27	0.82	0.69	1.90	1.96	3.40
2500	0.33	0.66	0.27	0.83	0.70	1.87	1.99	3.40
3000	0.32	0.68	0.26	0.81	0.64	1.77	1.86	3.28
3500	0.31	0.72	0.26	0.81	0.69	1.67	1.72	3.15
4000	0.28	0.68	0.19	0.73	0.62	1.44	1.38	2.70
4500	0.26	0.56	0.06	0.58	0.47	0.99	1.08	2.21
5000	0.23	0.41	-0.05	0.43	0.27	0.71	0.70	1.88
5500	0.21	0.31	-0.12	0.31	0.17	0.37	0.35	1.50
6000	0.20	0.21	-0.20	0.18	-0.06	0.02	-0.53	-1.26
6500	0.21	0.20	-0.21	0.10	-0.22	-0.05	-0.13	1.24
7000	0.24	0.38	-0.04	0.21	-0.30	-0.29	-0.85	-0.78
7500	0.29	0.71	0.31	0.55	-0.06	-0.09	-0.56	0.05
8000	0.34	0.90	0.56	0.81	0.17	0.05	-0.66	0.06
8500	0.35	0.89	0.59	0.89	0.11	-0.05	-0.73	-0.52
9000	0.36	0.83	0.55	0.90	0.18	-0.04	-0.88	0.10
9500	0.35	0.90	0.57	0.97	0.25	0.03	-0.68	-0.06
10000	0.34	0.92	0.55	0.98	0.30	0.14	-0.37	0.62
10500	0.32	0.90	0.49	0.94	0.31	0.18	-0.28	1.37
11000	0.31	0.91	0.53	1.00	0.61	0.24	-0.07	-0.14
11500	0.30	0.94	0.62	1.10	0.76	0.34	0.10	1.89
12000	0.29	0.89	0.64	1.11	0.87	0.51	0.39	1.67
12500	0.27	0.87	0.70	1.13	0.95	0.51	0.34	1.15
13000	0.26	1.15	1.05	1.53	1.38	1.08	1.04	2.41

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ 0°C

FREQUENCY (MHz)	Input VSWR (:1)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	2.87	1.30	1.32	1.28	1.03	1.46	1.28	1.22
20	2.59	1.28	1.30	1.27	1.03	1.44	1.26	1.21
50	2.46	1.26	1.29	1.26	1.02	1.43	1.25	1.21
100	2.40	1.25	1.28	1.26	1.02	1.43	1.24	1.21
200	2.35	1.24	1.28	1.26	1.02	1.43	1.25	1.21
500	2.12	1.22	1.25	1.24	1.01	1.41	1.23	1.19
750	1.91	1.19	1.24	1.23	1.01	1.40	1.22	1.18
1000	1.72	1.18	1.23	1.23	1.01	1.40	1.22	1.18
1500	1.46	1.15	1.20	1.21	1.01	1.39	1.21	1.18
2000	1.40	1.13	1.20	1.22	1.02	1.39	1.22	1.18
2500	1.47	1.13	1.23	1.25	1.04	1.42	1.26	1.21
3000	1.54	1.12	1.27	1.30	1.07	1.48	1.31	1.27
3500	1.53	1.13	1.30	1.34	1.10	1.52	1.34	1.31
4000	1.53	1.20	1.33	1.36	1.14	1.54	1.35	1.34
4500	1.63	1.27	1.35	1.37	1.17	1.55	1.35	1.36
5000	1.83	1.33	1.39	1.40	1.21	1.57	1.36	1.39
5500	1.98	1.37	1.42	1.42	1.26	1.58	1.37	1.43
6000	1.95	1.39	1.45	1.45	1.32	1.59	1.37	1.47
6500	1.71	1.36	1.44	1.46	1.40	1.58	1.37	1.51
7000	1.37	1.31	1.40	1.45	1.46	1.53	1.35	1.52
7500	1.15	1.31	1.35	1.42	1.51	1.45	1.33	1.51
8000	1.19	1.39	1.33	1.39	1.56	1.35	1.32	1.47
8500	1.20	1.50	1.34	1.36	1.59	1.26	1.34	1.42
9000	1.25	1.58	1.38	1.36	1.60	1.21	1.41	1.37
9500	1.42	1.60	1.44	1.39	1.57	1.28	1.49	1.34
10000	1.54	1.55	1.50	1.43	1.51	1.40	1.57	1.34
10500	1.62	1.46	1.52	1.46	1.42	1.53	1.59	1.38
11000	1.78	1.41	1.51	1.48	1.32	1.62	1.54	1.43
11500	1.79	1.35	1.46	1.45	1.26	1.63	1.43	1.48
12000	1.54	1.32	1.41	1.45	1.36	1.60	1.34	1.55
12500	1.24	1.42	1.44	1.52	1.57	1.58	1.40	1.65
13000	1.37	1.64	1.55	1.63	1.80	1.56	1.57	1.72

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## Typical Performance Data @ 0°C

FREQUENCY (MHz)	Output VSWR (:1)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	2.87	1.30	1.32	1.28	1.03	1.46	1.28	1.22
20	2.59	1.28	1.30	1.27	1.03	1.44	1.26	1.21
50	2.46	1.26	1.29	1.26	1.02	1.43	1.25	1.21
100	2.40	1.25	1.28	1.26	1.02	1.43	1.24	1.21
200	2.35	1.24	1.28	1.26	1.02	1.43	1.25	1.21
500	2.12	1.22	1.25	1.24	1.01	1.41	1.23	1.19
750	1.91	1.19	1.24	1.23	1.01	1.40	1.22	1.18
1000	1.72	1.18	1.23	1.23	1.01	1.40	1.22	1.18
1500	1.46	1.15	1.20	1.21	1.01	1.39	1.21	1.18
2000	1.40	1.13	1.20	1.22	1.02	1.39	1.22	1.18
2500	1.47	1.13	1.23	1.25	1.04	1.42	1.26	1.21
3000	1.54	1.12	1.27	1.30	1.07	1.48	1.31	1.27
3500	1.53	1.13	1.30	1.34	1.10	1.52	1.34	1.31
4000	1.53	1.20	1.33	1.36	1.14	1.54	1.35	1.34
4500	1.63	1.27	1.35	1.37	1.17	1.55	1.35	1.36
5000	1.83	1.33	1.39	1.40	1.21	1.57	1.36	1.39
5500	1.98	1.37	1.42	1.42	1.26	1.58	1.37	1.43
6000	1.95	1.39	1.45	1.45	1.32	1.59	1.37	1.47
6500	1.71	1.36	1.44	1.46	1.40	1.58	1.37	1.51
7000	1.37	1.31	1.40	1.45	1.46	1.53	1.35	1.52
7500	1.15	1.31	1.35	1.42	1.51	1.45	1.33	1.51
8000	1.19	1.39	1.33	1.39	1.56	1.35	1.32	1.47
8500	1.20	1.50	1.34	1.36	1.59	1.26	1.34	1.42
9000	1.25	1.58	1.38	1.36	1.60	1.21	1.41	1.37
9500	1.42	1.60	1.44	1.39	1.57	1.28	1.49	1.34
10000	1.54	1.55	1.50	1.43	1.51	1.40	1.57	1.34
10500	1.62	1.46	1.52	1.46	1.42	1.53	1.59	1.38
11000	1.78	1.41	1.51	1.48	1.32	1.62	1.54	1.43
11500	1.79	1.35	1.46	1.45	1.26	1.63	1.43	1.48
12000	1.54	1.32	1.41	1.45	1.36	1.60	1.34	1.55
12500	1.24	1.42	1.44	1.52	1.57	1.58	1.40	1.65
13000	1.37	1.64	1.55	1.63	1.80	1.56	1.57	1.72

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ 0°C

FREQUENCY (MHz)	IP3 (dBm)	Insertion Loss @P <sub>IN</sub> =0 dBm (dB)	Insertion Loss @P <sub>IN</sub> =+23 dBm (dB)
10	22.51	5.63	6.88
50	35.25	5.35	5.41
100	39.19	5.85	5.88
200	40.40	6.45	6.48
500	40.47	7.03	7.10
1000	40.42	7.83	7.90
2000	40.02	8.78	8.93
3000	39.31	9.41	9.60
4000	40.12	9.92	10.06
5000	40.59	10.52	10.65
6000	41.17	10.91	11.05
7000	39.04	11.10	11.28
8000	40.40	11.90	12.11
9000	39.07	12.65	12.94
10000	40.46	12.99	13.21
11000	41.03	13.26	13.45
12000	41.37	13.28	13.47
13000	41.17	14.35	14.52

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ +25°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	0.17	10.24	15.58	30.21	45.31	59.42	74.50	88.84
20	0.46	10.82	16.19	30.88	45.98	60.16	75.25	88.76
50	0.49	10.87	16.25	30.95	46.06	60.23	75.28	88.93
100	0.51	10.92	16.30	31.01	46.13	60.32	75.46	88.77
200	0.48	10.87	16.24	30.94	46.08	60.18	75.20	88.82
500	0.44	10.66	16.03	30.72	45.87	59.95	75.04	88.65
750	0.40	10.39	15.77	30.45	45.62	59.68	74.78	88.37
1000	0.35	10.10	15.49	30.15	45.33	59.34	74.39	88.02
1500	0.27	9.67	15.07	29.68	44.90	58.89	73.93	87.55
2000	0.23	9.52	14.92	29.51	44.77	58.71	73.86	87.50
2500	0.22	9.51	14.94	29.51	44.78	58.78	73.84	87.56
3000	0.23	9.50	14.95	29.53	44.83	58.85	73.94	87.68
3500	0.24	9.46	14.95	29.54	44.86	58.96	74.11	87.90
4000	0.27	9.49	15.02	29.61	44.95	59.21	74.43	88.23
4500	0.29	9.60	15.12	29.74	45.05	59.63	74.70	88.62
5000	0.31	9.74	15.22	29.87	45.17	59.78	75.01	88.96
5500	0.33	9.86	15.31	30.00	45.34	60.18	75.36	89.21
6000	0.34	9.96	15.38	30.13	45.57	60.62	76.28	91.74
6500	0.33	9.95	15.38	30.18	45.68	60.70	76.05	90.03
7000	0.30	9.76	15.20	30.06	45.70	60.79	76.46	91.46
7500	0.26	9.45	14.88	29.73	45.48	60.68	76.32	90.80
8000	0.21	9.26	14.62	29.47	45.41	60.50	76.41	91.11
8500	0.20	9.30	14.61	29.42	45.35	60.58	76.44	91.48
9000	0.20	9.34	14.64	29.41	45.34	60.45	76.49	90.62
9500	0.21	9.29	14.63	29.34	45.23	60.50	76.27	91.01
10000	0.22	9.25	14.65	29.32	45.09	60.34	76.11	90.09
10500	0.24	9.28	14.70	29.33	45.05	60.28	75.93	89.52
11000	0.24	9.29	14.67	29.29	44.88	60.24	75.77	90.75
11500	0.26	9.30	14.61	29.24	44.75	60.14	75.49	88.38
12000	0.27	9.35	14.59	29.22	44.69	59.88	75.24	89.32
12500	0.29	9.32	14.51	29.15	44.48	59.93	75.26	89.24
13000	0.30	9.08	14.20	28.80	44.16	59.33	74.54	87.88

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ +25°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	0.33	-0.24	-0.58	-0.21	-0.30	0.58	0.50	1.16
20	0.04	-0.81	-1.18	-0.88	-0.98	-0.16	-0.25	1.24
50	0.01	-0.87	-1.25	-0.95	-1.06	-0.23	-0.28	1.07
100	-0.01	-0.92	-1.30	-1.01	-1.13	-0.32	-0.45	1.23
200	0.02	-0.87	-1.24	-0.94	-1.08	-0.18	-0.20	1.18
500	0.06	-0.66	-1.03	-0.72	-0.87	0.05	-0.04	1.35
750	0.10	-0.39	-0.77	-0.45	-0.62	0.32	0.22	1.63
1000	0.15	-0.10	-0.49	-0.15	-0.33	0.66	0.61	1.98
1500	0.23	0.33	-0.07	0.32	0.10	1.11	1.07	2.45
2000	0.27	0.48	0.08	0.49	0.23	1.29	1.14	2.50
2500	0.28	0.49	0.06	0.49	0.22	1.22	1.16	2.44
3000	0.27	0.50	0.05	0.47	0.17	1.15	1.06	2.32
3500	0.26	0.54	0.05	0.46	0.14	1.04	0.89	2.10
4000	0.23	0.51	-0.02	0.39	0.05	0.79	0.57	1.77
4500	0.21	0.40	-0.12	0.26	-0.05	0.38	0.30	1.38
5000	0.19	0.26	-0.22	0.13	-0.17	0.22	-0.01	1.04
5500	0.17	0.14	-0.31	0.00	-0.34	-0.18	-0.36	0.79
6000	0.16	0.05	-0.38	-0.13	-0.57	-0.61	-1.28	-1.74
6500	0.17	0.05	-0.38	-0.18	-0.68	-0.70	-1.05	-0.03
7000	0.20	0.24	-0.20	-0.06	-0.70	-0.79	-1.46	-1.46
7500	0.24	0.55	0.12	0.27	-0.48	-0.67	-1.32	-0.80
8000	0.29	0.74	0.38	0.53	-0.40	-0.50	-1.41	-1.11
8500	0.30	0.70	0.39	0.58	-0.35	-0.57	-1.44	-1.48
9000	0.30	0.66	0.36	0.59	-0.34	-0.45	-1.49	-0.62
9500	0.29	0.71	0.37	0.66	-0.23	-0.50	-1.27	-1.01
10000	0.28	0.75	0.35	0.68	-0.08	-0.34	-1.11	-0.09
10500	0.26	0.73	0.30	0.67	-0.05	-0.28	-0.93	0.48
11000	0.26	0.71	0.33	0.71	0.13	-0.24	-0.77	-0.75
11500	0.24	0.70	0.39	0.76	0.25	-0.14	-0.49	1.62
12000	0.23	0.65	0.41	0.78	0.31	0.12	-0.24	0.68
12500	0.21	0.68	0.49	0.85	0.52	0.07	-0.26	0.76
13000	0.20	0.92	0.80	1.20	0.84	0.68	0.46	2.12

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# Programmable Attenuator RUDAT-13G-90

## Typical Performance Data @ +25°C

FREQUENCY (MHz)	Input VSWR (:1)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	2.75	1.28	1.30	1.27	1.02	1.44	1.26	1.21
20	2.53	1.26	1.29	1.26	1.02	1.43	1.24	1.20
50	2.42	1.25	1.27	1.25	1.02	1.42	1.23	1.19
100	2.35	1.23	1.26	1.24	1.01	1.41	1.22	1.19
200	2.29	1.22	1.26	1.24	1.01	1.41	1.22	1.19
500	2.09	1.21	1.25	1.23	1.01	1.40	1.22	1.19
750	1.89	1.19	1.23	1.22	1.01	1.39	1.21	1.18
1000	1.70	1.17	1.22	1.22	1.01	1.39	1.20	1.18
1500	1.44	1.15	1.20	1.21	1.02	1.38	1.20	1.17
2000	1.39	1.14	1.20	1.22	1.02	1.39	1.22	1.18
2500	1.46	1.13	1.23	1.25	1.04	1.42	1.25	1.22
3000	1.52	1.11	1.26	1.29	1.07	1.47	1.29	1.26
3500	1.51	1.13	1.30	1.33	1.11	1.51	1.33	1.31
4000	1.53	1.21	1.34	1.37	1.15	1.55	1.36	1.35
4500	1.66	1.29	1.38	1.40	1.20	1.57	1.37	1.39
5000	1.85	1.35	1.41	1.42	1.23	1.58	1.38	1.42
5500	1.98	1.39	1.44	1.43	1.28	1.59	1.37	1.44
6000	1.95	1.39	1.45	1.45	1.33	1.59	1.37	1.48
6500	1.71	1.36	1.44	1.46	1.39	1.58	1.37	1.51
7000	1.37	1.32	1.42	1.46	1.47	1.55	1.36	1.53
7500	1.17	1.32	1.37	1.44	1.53	1.47	1.35	1.53
8000	1.22	1.41	1.35	1.41	1.59	1.37	1.34	1.49
8500	1.23	1.53	1.36	1.38	1.62	1.26	1.37	1.43
9000	1.28	1.60	1.39	1.37	1.61	1.22	1.43	1.37
9500	1.46	1.60	1.45	1.39	1.56	1.29	1.51	1.33
10000	1.56	1.51	1.49	1.42	1.47	1.41	1.55	1.33
10500	1.61	1.40	1.48	1.43	1.35	1.52	1.54	1.36
11000	1.74	1.34	1.45	1.42	1.24	1.58	1.47	1.40
11500	1.71	1.30	1.41	1.41	1.23	1.59	1.35	1.46
12000	1.46	1.30	1.38	1.43	1.37	1.56	1.30	1.53
12500	1.17	1.41	1.41	1.49	1.57	1.53	1.37	1.61
13000	1.37	1.63	1.51	1.59	1.77	1.49	1.53	1.66

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ +25°C

FREQUENCY (MHz)	Output VSWR (:1)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	2.75	1.28	1.30	1.27	1.02	1.44	1.26	1.21
20	2.53	1.26	1.29	1.26	1.02	1.43	1.24	1.20
50	2.42	1.25	1.27	1.25	1.02	1.42	1.23	1.19
100	2.35	1.23	1.26	1.24	1.01	1.41	1.22	1.19
200	2.29	1.22	1.26	1.24	1.01	1.41	1.22	1.19
500	2.09	1.21	1.25	1.23	1.01	1.40	1.22	1.19
750	1.89	1.19	1.23	1.22	1.01	1.39	1.21	1.18
1000	1.70	1.17	1.22	1.22	1.01	1.39	1.20	1.18
1500	1.44	1.15	1.20	1.21	1.02	1.38	1.20	1.17
2000	1.39	1.14	1.20	1.22	1.02	1.39	1.22	1.18
2500	1.46	1.13	1.23	1.25	1.04	1.42	1.25	1.22
3000	1.52	1.11	1.26	1.29	1.07	1.47	1.29	1.26
3500	1.51	1.13	1.30	1.33	1.11	1.51	1.33	1.31
4000	1.53	1.21	1.34	1.37	1.15	1.55	1.36	1.35
4500	1.66	1.29	1.38	1.40	1.20	1.57	1.37	1.39
5000	1.85	1.35	1.41	1.42	1.23	1.58	1.38	1.42
5500	1.98	1.39	1.44	1.43	1.28	1.59	1.37	1.44
6000	1.95	1.39	1.45	1.45	1.33	1.59	1.37	1.48
6500	1.71	1.36	1.44	1.46	1.39	1.58	1.37	1.51
7000	1.37	1.32	1.42	1.46	1.47	1.55	1.36	1.53
7500	1.17	1.32	1.37	1.44	1.53	1.47	1.35	1.53
8000	1.22	1.41	1.35	1.41	1.59	1.37	1.34	1.49
8500	1.23	1.53	1.36	1.38	1.62	1.26	1.37	1.43
9000	1.28	1.60	1.39	1.37	1.61	1.22	1.43	1.37
9500	1.46	1.60	1.45	1.39	1.56	1.29	1.51	1.33
10000	1.56	1.51	1.49	1.42	1.47	1.41	1.55	1.33
10500	1.61	1.40	1.48	1.43	1.35	1.52	1.54	1.36
11000	1.74	1.34	1.45	1.42	1.24	1.58	1.47	1.40
11500	1.71	1.30	1.41	1.41	1.23	1.59	1.35	1.46
12000	1.46	1.30	1.38	1.43	1.37	1.56	1.30	1.53
12500	1.17	1.41	1.41	1.49	1.57	1.53	1.37	1.61
13000	1.37	1.63	1.51	1.59	1.77	1.49	1.53	1.66

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# Programmable Attenuator RUDAT-13G-90

## Typical Performance Data @ +25°C

FREQUENCY (MHz)	IP3 (dBm)	Insertion Loss @P <sub>IN</sub> =0 dBm (dB)	Insertion Loss @P <sub>IN</sub> =+23 dBm (dB)
10	22.82	5.78	6.96
50	35.45	5.48	5.54
100	40.17	5.95	5.98
200	41.87	6.54	6.55
500	41.14	7.11	7.17
1000	40.40	7.87	7.93
2000	40.16	8.82	8.96
3000	40.24	9.38	9.60
4000	41.09	10.02	10.18
5000	40.72	10.52	10.67
6000	41.30	10.56	10.70
7000	41.01	11.08	11.27
8000	40.39	11.88	12.16
9000	40.70	12.67	12.99
10000	41.45	13.06	13.35
11000	42.67	13.37	13.59
12000	43.88	13.58	13.84
13000	42.61	14.72	14.90

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ +50°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	0.17	10.24	15.58	30.21	45.31	59.42	74.50	88.84
20	0.46	10.82	16.19	30.88	45.98	60.16	75.25	88.76
50	0.49	10.87	16.25	30.95	46.06	60.23	75.28	88.93
100	0.51	10.92	16.30	31.01	46.13	60.32	75.46	88.77
200	0.48	10.87	16.24	30.94	46.08	60.18	75.20	88.82
500	0.44	10.66	16.03	30.72	45.87	59.95	75.04	88.65
750	0.40	10.39	15.77	30.45	45.62	59.68	74.78	88.37
1000	0.35	10.10	15.49	30.15	45.33	59.34	74.39	88.02
1500	0.27	9.67	15.07	29.68	44.90	58.89	73.93	87.55
2000	0.23	9.52	14.92	29.51	44.77	58.71	73.86	87.50
2500	0.22	9.51	14.94	29.51	44.78	58.78	73.84	87.56
3000	0.23	9.50	14.95	29.53	44.83	58.85	73.94	87.68
3500	0.24	9.46	14.95	29.54	44.86	58.96	74.11	87.90
4000	0.27	9.49	15.02	29.61	44.95	59.21	74.43	88.23
4500	0.29	9.60	15.12	29.74	45.05	59.63	74.70	88.62
5000	0.31	9.74	15.22	29.87	45.17	59.78	75.01	88.96
5500	0.33	9.86	15.31	30.00	45.34	60.18	75.36	89.21
6000	0.34	9.96	15.38	30.13	45.57	60.62	76.28	91.74
6500	0.33	9.95	15.38	30.18	45.68	60.70	76.05	90.03
7000	0.30	9.76	15.20	30.06	45.70	60.79	76.46	91.46
7500	0.26	9.45	14.88	29.73	45.48	60.68	76.32	90.80
8000	0.21	9.26	14.62	29.47	45.41	60.50	76.41	91.11
8500	0.20	9.30	14.61	29.42	45.35	60.58	76.44	91.48
9000	0.20	9.34	14.64	29.41	45.34	60.45	76.49	90.62
9500	0.21	9.29	14.63	29.34	45.23	60.50	76.27	91.01
10000	0.22	9.25	14.65	29.32	45.09	60.34	76.11	90.09
10500	0.24	9.28	14.70	29.33	45.05	60.28	75.93	89.52
11000	0.24	9.29	14.67	29.29	44.88	60.24	75.77	90.75
11500	0.26	9.30	14.61	29.24	44.75	60.14	75.49	88.38
12000	0.27	9.35	14.59	29.22	44.69	59.88	75.24	89.32
12500	0.29	9.32	14.51	29.15	44.48	59.93	75.26	89.24
13000	0.30	9.08	14.20	28.80	44.16	59.33	74.54	87.88

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ +50°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	0.10	-0.71	-1.07	-0.77	-0.90	-0.06	-0.21	1.14
20	-0.02	-0.96	-1.34	-1.08	-1.23	-0.43	-0.43	1.03
50	-0.03	-0.98	-1.37	-1.12	-1.27	-0.46	-0.53	0.88
100	-0.05	-1.03	-1.42	-1.17	-1.34	-0.53	-0.62	1.07
200	-0.04	-0.99	-1.38	-1.11	-1.29	-0.39	-0.48	0.87
500	-0.01	-0.77	-1.16	-0.89	-1.08	-0.18	-0.29	1.05
750	0.03	-0.51	-0.90	-0.62	-0.82	0.13	0.02	1.35
1000	0.08	-0.23	-0.63	-0.33	-0.54	0.41	0.30	1.65
1500	0.15	0.19	-0.23	0.12	-0.14	0.88	0.76	2.08
2000	0.18	0.34	-0.08	0.29	-0.02	1.02	0.91	2.24
2500	0.19	0.34	-0.09	0.29	-0.04	1.00	0.87	2.16
3000	0.19	0.36	-0.10	0.27	-0.06	0.91	0.77	2.04
3500	0.17	0.40	-0.11	0.26	-0.08	0.77	0.61	1.83
4000	0.15	0.38	-0.17	0.19	-0.14	0.54	0.38	1.54
4500	0.13	0.27	-0.26	0.07	-0.25	0.25	0.05	1.13
5000	0.12	0.14	-0.35	-0.04	-0.39	-0.07	-0.28	0.71
5500	0.11	0.01	-0.44	-0.17	-0.57	-0.39	-0.61	0.51
6000	0.10	-0.08	-0.51	-0.30	-0.77	-0.77	-1.38	-1.40
6500	0.11	-0.06	-0.50	-0.34	-0.90	-0.89	-1.27	-0.49
7000	0.13	0.13	-0.31	-0.19	-0.88	-1.00	-1.68	-1.48
7500	0.18	0.43	0.01	0.12	-0.66	-0.82	-1.54	-1.01
8000	0.21	0.61	0.23	0.35	-0.55	-0.71	-1.56	-1.28
8500	0.23	0.57	0.25	0.40	-0.55	-0.78	-1.76	-1.74
9000	0.23	0.52	0.21	0.42	-0.52	-0.75	-1.59	-0.96
9500	0.22	0.60	0.25	0.51	-0.37	-0.60	-1.43	-0.78
10000	0.21	0.64	0.22	0.52	-0.26	-0.56	-1.26	-0.31
10500	0.19	0.59	0.16	0.46	-0.20	-0.54	-1.01	0.35
11000	0.18	0.56	0.17	0.50	-0.07	-0.46	-1.03	-1.18
11500	0.18	0.54	0.23	0.57	0.07	-0.32	-0.44	1.57
12000	0.17	0.50	0.26	0.59	0.16	-0.18	-0.38	-0.03
12500	0.15	0.55	0.38	0.71	0.31	0.09	-0.08	1.02
13000	0.14	0.81	0.68	1.07	0.72	0.59	0.62	2.25

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# Programmable Attenuator

# RUDAT-13G-90

## Typical Performance Data @ +50°C

FREQUENCY (MHz)	Input VSWR (:1)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	2.63	1.27	1.29	1.26	1.02	1.43	1.24	1.20
20	2.49	1.26	1.28	1.25	1.02	1.42	1.23	1.20
50	2.40	1.24	1.27	1.24	1.01	1.41	1.22	1.19
100	2.33	1.22	1.25	1.23	1.00	1.40	1.21	1.18
200	2.27	1.22	1.25	1.23	1.00	1.39	1.21	1.18
500	2.09	1.21	1.25	1.23	1.01	1.40	1.21	1.19
750	1.89	1.20	1.24	1.23	1.01	1.40	1.21	1.18
1000	1.70	1.18	1.22	1.22	1.01	1.39	1.21	1.18
1500	1.44	1.14	1.20	1.21	1.01	1.38	1.20	1.17
2000	1.37	1.12	1.19	1.21	1.01	1.38	1.21	1.18
2500	1.44	1.11	1.21	1.23	1.03	1.40	1.23	1.20
3000	1.49	1.10	1.24	1.27	1.05	1.44	1.27	1.24
3500	1.49	1.12	1.29	1.32	1.10	1.49	1.32	1.29
4000	1.52	1.20	1.34	1.37	1.15	1.54	1.36	1.35
4500	1.68	1.30	1.39	1.42	1.20	1.59	1.39	1.40
5000	1.90	1.39	1.45	1.46	1.26	1.63	1.41	1.45
5500	2.05	1.43	1.49	1.48	1.32	1.64	1.42	1.49
6000	1.98	1.43	1.49	1.49	1.37	1.63	1.41	1.52
6500	1.68	1.38	1.46	1.48	1.43	1.59	1.39	1.53
7000	1.33	1.32	1.40	1.46	1.48	1.53	1.36	1.53
7500	1.13	1.31	1.35	1.41	1.52	1.43	1.33	1.50
8000	1.19	1.39	1.32	1.37	1.56	1.32	1.31	1.45
8500	1.19	1.50	1.32	1.34	1.57	1.22	1.34	1.38
9000	1.26	1.55	1.35	1.33	1.55	1.18	1.39	1.32
9500	1.42	1.53	1.40	1.34	1.49	1.25	1.45	1.28
10000	1.49	1.44	1.42	1.36	1.40	1.37	1.49	1.28
10500	1.54	1.33	1.41	1.36	1.28	1.45	1.46	1.29
11000	1.64	1.26	1.37	1.34	1.17	1.50	1.38	1.33
11500	1.60	1.22	1.31	1.32	1.17	1.48	1.27	1.37
12000	1.38	1.21	1.28	1.33	1.29	1.45	1.21	1.42
12500	1.09	1.30	1.29	1.37	1.45	1.40	1.26	1.47
13000	1.25	1.47	1.36	1.43	1.59	1.35	1.38	1.49

**Notes**

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# Programmable Attenuator RUDAT-13G-90

## Typical Performance Data @ +50°C

FREQUENCY (MHz)	Output VSWR (:1)							
	0.5 dB	10 dB	15 dB	30 dB	45 dB	60 dB	75 dB	90 dB
10	2.63	1.27	1.29	1.26	1.02	1.43	1.24	1.20
20	2.49	1.26	1.28	1.25	1.02	1.42	1.23	1.20
50	2.40	1.24	1.27	1.24	1.01	1.41	1.22	1.19
100	2.33	1.22	1.25	1.23	1.00	1.40	1.21	1.18
200	2.27	1.22	1.25	1.23	1.00	1.39	1.21	1.18
500	2.09	1.21	1.25	1.23	1.01	1.40	1.21	1.19
750	1.89	1.20	1.24	1.23	1.01	1.40	1.21	1.18
1000	1.70	1.18	1.22	1.22	1.01	1.39	1.21	1.18
1500	1.44	1.14	1.20	1.21	1.01	1.38	1.20	1.17
2000	1.37	1.12	1.19	1.21	1.01	1.38	1.21	1.18
2500	1.44	1.11	1.21	1.23	1.03	1.40	1.23	1.20
3000	1.49	1.10	1.24	1.27	1.05	1.44	1.27	1.24
3500	1.49	1.12	1.29	1.32	1.10	1.49	1.32	1.29
4000	1.52	1.20	1.34	1.37	1.15	1.54	1.36	1.35
4500	1.68	1.30	1.39	1.42	1.20	1.59	1.39	1.40
5000	1.90	1.39	1.45	1.46	1.26	1.63	1.41	1.45
5500	2.05	1.43	1.49	1.48	1.32	1.64	1.42	1.49
6000	1.98	1.43	1.49	1.49	1.37	1.63	1.41	1.52
6500	1.68	1.38	1.46	1.48	1.43	1.59	1.39	1.53
7000	1.33	1.32	1.40	1.46	1.48	1.53	1.36	1.53
7500	1.13	1.31	1.35	1.41	1.52	1.43	1.33	1.50
8000	1.19	1.39	1.32	1.37	1.56	1.32	1.31	1.45
8500	1.19	1.50	1.32	1.34	1.57	1.22	1.34	1.38
9000	1.26	1.55	1.35	1.33	1.55	1.18	1.39	1.32
9500	1.42	1.53	1.40	1.34	1.49	1.25	1.45	1.28
10000	1.49	1.44	1.42	1.36	1.40	1.37	1.49	1.28
10500	1.54	1.33	1.41	1.36	1.28	1.45	1.46	1.29
11000	1.64	1.26	1.37	1.34	1.17	1.50	1.38	1.33
11500	1.60	1.22	1.31	1.32	1.17	1.48	1.27	1.37
12000	1.38	1.21	1.28	1.33	1.29	1.45	1.21	1.42
12500	1.09	1.30	1.29	1.37	1.45	1.40	1.26	1.47
13000	1.25	1.47	1.36	1.43	1.59	1.35	1.38	1.49

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# Programmable Attenuator RUDAT-13G-90

## Typical Performance Data @ +50°C

FREQUENCY (MHz)	IP3 (dBm)	Insertion Loss @P <sub>IN</sub> =0 dBm (dB)	Insertion Loss @P <sub>IN</sub> =+23 dBm (dB)
10	23.09	5.70	6.84
50	36.23	5.40	5.46
100	40.78	5.86	5.89
200	41.20	6.44	6.45
500	41.01	7.03	7.08
1000	41.00	7.74	7.81
2000	41.04	8.75	8.88
3000	41.24	9.40	9.54
4000	40.52	10.05	10.17
5000	40.89	10.64	10.72
6000	42.00	10.69	10.77
7000	41.63	11.17	11.25
8000	41.11	12.02	12.12
9000	41.49	12.69	12.92
10000	42.27	13.12	13.24
11000	41.26	13.43	13.55
12000	41.44	13.78	13.86
13000	42.10	14.85	14.93

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