

Frequency Mixer

ADE-R1MHW+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	5.47	5.26	5.07
50.1	80.1	5.65	5.35	5.22
90.1	120.1	5.60	5.32	5.19
130.1	160.1	5.53	5.32	5.20
170.1	200.1	5.60	5.37	5.26
210.1	240.1	5.64	5.40	5.28
250.1	280.1	5.61	5.44	5.34
290.1	320.1	5.70	5.47	5.31
330.1	360.1	5.76	5.58	5.47
370.1	400.1	5.86	5.57	5.40
410.1	440.1	6.07	5.77	5.48
450.1	480.1	6.03	5.85	5.69
490.1	520.1	6.05	5.87	5.73
530.1	560.1	6.14	5.87	5.69
570.1	600.1	6.15	5.83	5.71
590.1	620.1	6.32	5.90	5.76
630.1	660.1	6.95	6.12	5.82
650.1	680.1	7.25	6.39	5.87
690.1	720.1	7.58	6.89	6.13
710.1	740.1	7.84	7.17	6.39
750.1	780.1	8.13	7.46	6.80
770.1	800.1	8.35	7.72	7.08
810.1	840.1	8.59	8.02	7.52
830.1	860.1	8.64	8.09	7.60
870.1	900.1	8.61	7.92	7.52
890.1	920.1	8.50	7.82	7.48
930.1	960.1	8.29	7.67	7.44
950.1	980.1	8.22	7.64	7.42
990.1	1020.1	8.17	7.71	7.52
1010.1	1040.1	8.17	7.80	7.66
1050.1	1080.1	8.30	8.04	7.96
1070.1	1100.1	8.41	8.18	8.12
1110.1	1140.1	8.80	8.57	8.56
1130.1	1160.1	9.02	8.78	8.78
1170.1	1200.1	9.56	9.39	9.48
1190.1	1220.1	9.85	9.75	9.87
1230.1	1260.1	10.45	10.43	10.52
1250.1	1280.1	10.81	10.77	10.82
1290.1	1320.1	11.58	11.42	11.37
1310.1	1340.1	11.99	11.76	11.69

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	21.77	24.44	31.97
50.1	80.1	22.03	22.27	24.96
90.1	120.1	20.18	23.89	27.81
130.1	160.1	21.22	23.86	23.45
170.1	200.1	21.10	24.65	28.13
210.1	240.1	20.24	24.54	24.54
250.1	280.1	23.76	22.21	20.54
290.1	320.1	15.31	18.25	28.07
330.1	360.1	20.22	18.57	17.92
370.1	400.1	19.50	22.25	29.72
410.1	440.1	14.48	17.89	26.41
450.1	480.1	17.27	16.83	17.11
490.1	520.1	18.42	17.65	18.51
530.1	560.1	22.77	18.15	18.94
570.1	600.1	20.76	23.64	35.37
590.1	620.1	17.51	24.89	25.47
630.1	660.1	7.90	21.42	22.81
650.1	680.1	5.98	13.32	24.42
690.1	720.1	6.21	8.15	14.29
710.1	740.1	6.65	7.73	11.22
750.1	780.1	8.04	8.25	9.73
770.1	800.1	8.99	8.96	10.18
810.1	840.1	12.26	12.54	13.15
830.1	860.1	13.35	14.67	15.57
870.1	900.1	13.98	16.87	22.14
890.1	920.1	15.65	15.68	28.98
930.1	960.1	19.10	16.25	21.49
950.1	980.1	16.06	17.05	22.52
990.1	1020.1	13.18	19.40	21.23
1010.1	1040.1	14.16	19.50	21.48
1050.1	1080.1	16.64	18.54	18.57
1070.1	1100.1	16.76	17.82	16.71
1110.1	1140.1	14.86	14.91	13.42
1130.1	1160.1	13.44	12.80	11.54
1170.1	1200.1	11.79	10.75	10.17
1190.1	1220.1	11.55	10.43	10.18
1230.1	1260.1	11.46	11.38	12.55
1250.1	1280.1	11.88	13.15	16.53
1290.1	1320.1	13.07	15.46	15.73
1310.1	1340.1	13.62	15.25	16.60

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	1.76	1.52	1.46
50.1	80.1	1.60	1.40	1.23
90.1	120.1	1.64	1.42	1.24
130.1	160.1	1.63	1.35	1.19
170.1	200.1	1.55	1.28	1.11
210.1	240.1	1.47	1.24	1.09
250.1	280.1	1.52	1.21	1.08
290.1	320.1	1.40	1.21	1.07
330.1	360.1	1.35	1.08	0.96
370.1	400.1	1.38	1.15	1.03
410.1	440.1	1.34	1.21	1.11
450.1	480.1	1.48	1.22	1.10
490.1	520.1	1.67	1.37	1.24
530.1	560.1	1.96	1.58	1.44
570.1	600.1	2.31	1.72	1.49
590.1	620.1	2.43	1.86	1.63
630.1	660.1	2.25	2.23	1.91
650.1	680.1	2.31	2.34	2.12
690.1	720.1	2.25	2.18	2.24
710.1	740.1	2.11	2.05	2.17
750.1	780.1	1.95	2.01	2.14
770.1	800.1	1.74	1.82	1.98
810.1	840.1	1.60	1.64	1.75
830.1	860.1	1.63	1.67	1.78
870.1	900.1	1.82	1.90	1.79
890.1	920.1	1.98	1.99	1.77
930.1	960.1	2.32	2.08	1.68
950.1	980.1	2.37	2.02	1.62
990.1	1020.1	2.47	1.84	1.50
1010.1	1040.1	2.35	1.70	1.37
1050.1	1080.1	2.23	1.57	1.25
1070.1	1100.1	2.16	1.53	1.22
1110.1	1140.1	1.97	1.40	1.13
1130.1	1160.1	1.98	1.45	1.21
1170.1	1200.1	1.89	1.43	1.21
1190.1	1220.1	1.94	1.44	1.22
1230.1	1260.1	2.03	1.44	1.22
1250.1	1280.1	2.04	1.43	1.23
1290.1	1320.1	1.95	1.41	1.21
1310.1	1340.1	1.93	1.36	1.14

REV. X2

ADE-R1MHW+

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Frequency Mixer

ADE-R1MHW+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=315.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=610.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+13			+13			+13
305.0	10.1	5.54	10.0	20.1	5.39	600.0	10.1	6.14
297.8	17.4	5.51	20.0	30.1	5.20	580.0	30.1	6.04
290.5	24.6	5.49	40.0	50.1	5.20	560.0	50.1	5.95
283.3	31.9	5.46	50.0	60.1	5.16	550.0	60.1	5.93
276.0	39.1	5.44	70.0	80.1	5.29	530.0	80.1	5.86
268.8	46.4	5.42	80.0	90.1	5.30	520.0	90.1	5.85
261.5	53.6	5.40	100.0	110.1	5.17	500.0	110.1	5.82
254.3	60.9	5.38	110.0	120.1	5.30	490.0	120.1	5.81
247.0	68.1	5.36	130.0	140.1	5.28	470.0	140.1	5.82
239.8	75.4	5.37	140.0	150.1	5.19	460.0	150.1	5.81
232.5	82.6	5.33	160.0	170.1	5.21	440.0	170.1	5.83
225.3	89.9	5.32	170.0	180.1	5.30	430.0	180.1	5.82
218.0	97.1	5.28	190.0	200.1	5.23	410.0	200.1	5.84
210.8	104.4	5.30	200.0	210.1	5.23	400.0	210.1	5.85
203.5	111.6	5.28	220.0	230.1	5.30	380.0	230.1	5.85
196.3	118.9	5.30	230.0	240.1	5.33	370.0	240.1	5.86
189.0	126.1	5.27	250.0	260.1	5.32	350.0	260.1	5.90
181.8	133.4	5.28	260.0	270.1	5.41	340.0	270.1	5.88
174.5	140.6	5.28	280.0	290.1	5.42	320.0	290.1	5.88
167.3	147.9	5.30	290.0	300.1	5.45	310.0	300.1	5.88
160.0	155.1	5.24	310.0	320.1	5.39	290.0	320.1	5.96
152.8	162.4	5.29	320.0	330.1	5.51	280.0	330.1	6.02
145.5	169.6	5.34	340.0	350.1	5.44	260.0	350.1	6.01
138.3	176.9	5.32	350.0	360.1	5.46	250.0	360.1	6.02
131.0	184.1	5.33	370.0	380.1	5.49	230.0	380.1	6.01
123.8	191.4	5.32	380.0	390.1	5.50	220.0	390.1	6.02
116.5	198.6	5.36	400.0	410.1	5.44	200.0	410.1	5.98
109.3	205.9	5.36	410.0	420.1	5.37	190.0	420.1	5.98
102.0	213.1	5.39	430.0	440.1	5.58	170.0	440.1	6.03
94.8	220.4	5.36	440.0	450.1	5.75	160.0	450.1	6.04
87.5	227.6	5.39	460.0	470.1	5.78	140.0	470.1	6.12
80.3	234.9	5.39	470.0	480.1	5.81	130.0	480.1	6.09
73.0	242.1	5.42	490.0	500.1	5.77	110.0	500.1	6.14
65.8	249.4	5.41	500.0	510.1	5.69	100.0	510.1	6.14
58.5	256.6	5.43	520.0	530.1	5.70	80.0	530.1	6.21
51.3	263.9	5.43	530.0	540.1	5.74	70.0	540.1	6.17
44.0	271.1	5.44	550.0	560.1	5.57	50.0	560.1	6.12
36.8	278.4	5.46	560.0	570.1	5.41	40.0	570.1	6.04
22.3	292.9	5.48	580.0	590.1	5.42	20.0	590.1	5.97
15.0	300.1	5.52	590.0	600.1	5.30	10.0	600.1	6.18

Frequency Mixer

ADE-R1MHW+

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
10.1	62.28	63.16	67.09	59.00	59.06	59.09
50.1	59.41	58.05	57.16	50.42	49.30	48.53
90.1	54.65	53.80	53.09	46.17	44.91	44.25
130.1	52.96	51.72	50.30	43.20	42.45	41.97
170.1	51.71	50.00	48.60	41.40	40.77	40.32
210.1	49.57	47.69	46.25	40.48	39.82	39.07
250.1	47.51	46.00	44.84	39.81	38.81	37.76
290.1	46.06	44.32	43.41	39.23	37.90	36.89
330.1	44.80	43.43	42.27	38.65	36.80	35.24
370.1	42.73	42.07	41.38	37.39	36.10	34.97
410.1	40.28	39.65	39.01	34.82	33.75	32.86
450.1	39.07	38.31	37.48	33.61	31.79	30.61
490.1	37.81	37.04	36.40	32.49	30.81	29.66
530.1	36.88	36.06	35.11	31.54	30.06	28.81
570.1	36.15	34.67	33.40	30.27	28.48	26.64
590.1	35.80	34.21	33.27	29.64	27.65	25.99
630.1	35.11	33.67	32.79	28.18	26.90	25.81
650.1	35.02	33.72	32.85	27.60	25.77	24.99
690.1	34.42	33.46	32.53	26.67	24.56	23.04
710.1	33.94	32.88	31.86	25.99	24.33	22.50
750.1	33.52	32.75	31.77	24.75	23.74	22.23
770.1	33.78	33.02	32.19	24.26	23.32	22.07
810.1	33.30	32.63	31.52	23.28	22.62	21.39
830.1	33.46	32.77	31.79	22.94	22.44	21.32
870.1	33.39	32.72	31.76	21.81	21.62	20.64
890.1	33.16	32.29	31.08	21.32	21.32	20.24
930.1	33.45	31.90	30.36	20.62	20.97	19.83
950.1	33.98	32.06	30.32	20.34	20.89	19.56
990.1	34.40	31.05	28.81	19.22	19.89	18.18
1010.1	34.94	30.14	28.14	18.69	19.05	17.41
1050.1	33.95	29.20	27.58	17.40	17.37	16.15
1070.1	32.77	28.60	27.05	16.47	16.41	15.41
1110.1	30.38	27.43	25.83	14.78	15.10	14.51
1130.1	29.11	26.68	25.00	14.09	14.63	14.07
1170.1	26.97	25.13	23.65	12.68	13.44	13.21
1190.1	25.76	24.19	22.68	12.09	12.97	12.82
1230.1	24.47	23.04	21.47	11.46	12.41	12.38
1250.1	24.03	22.73	20.94	11.23	12.23	12.15
1290.1	22.54	21.53	19.72	10.76	11.89	11.87
1310.1	21.96	21.02	19.35	10.62	11.75	11.80

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	46.37	46.05	45.10
50.1	80.1	35.81	36.03	36.31
90.1	120.1	31.32	31.89	31.93
130.1	160.1	29.22	29.43	29.90
170.1	200.1	27.53	27.98	28.27
210.1	240.1	26.83	27.16	27.54
250.1	280.1	26.59	27.05	27.47
290.1	320.1	25.98	27.03	28.01
330.1	360.1	26.41	26.92	27.35
370.1	400.1	26.92	27.55	28.35
410.1	440.1	27.86	29.12	30.79
450.1	480.1	27.14	27.82	28.67
490.1	520.1	24.90	25.03	25.07
530.1	560.1	22.24	22.01	22.01
570.1	600.1	20.29	20.06	19.90
590.1	620.1	19.78	19.50	19.37
630.1	660.1	18.99	18.76	18.55
650.1	680.1	18.51	18.41	18.39
690.1	720.1	18.35	17.91	18.00
710.1	740.1	18.37	17.96	17.72
750.1	780.1	18.67	18.32	18.02
770.1	800.1	18.75	18.38	18.18
810.1	840.1	18.47	18.17	18.13
830.1	860.1	18.22	18.07	18.34
870.1	900.1	17.38	17.42	17.83
890.1	920.1	17.00	17.07	17.24
930.1	960.1	16.26	16.23	16.00
950.1	980.1	15.79	15.63	15.29
990.1	1020.1	14.85	14.44	13.95
1010.1	1040.1	14.34	13.96	13.44
1050.1	1080.1	13.25	12.73	12.17
1070.1	1100.1	12.77	12.22	11.59
1110.1	1140.1	11.70	11.15	10.53
1130.1	1160.1	11.14	10.57	9.98
1170.1	1200.1	10.07	9.68	9.12
1190.1	1220.1	9.57	9.31	8.79
1230.1	1260.1	8.61	8.32	7.90
1250.1	1280.1	8.14	7.70	7.30
1290.1	1320.1	7.30	6.80	6.51
1310.1	1340.1	6.92	6.41	6.15

Frequency Mixer

ADE-R1MHW+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=610.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
10.1	40.1	1.15	1.11	1.12	10.1	1.47	2.19	3.21	10.1	1.82	1.44	1.28
50.1	80.1	1.13	1.04	1.06	50.1	1.55	2.42	3.55	24.9	1.83	1.44	1.29
90.1	120.1	1.17	1.06	1.04	90.1	1.50	2.28	3.30	39.6	1.81	1.43	1.28
130.1	160.1	1.12	1.02	1.04	130.1	1.51	2.34	3.41	54.4	1.82	1.44	1.29
170.1	200.1	1.13	1.05	1.06	170.1	1.52	2.31	3.34	69.1	1.85	1.46	1.31
210.1	240.1	1.09	1.03	1.07	210.1	1.55	2.35	3.38	83.9	1.83	1.46	1.31
250.1	280.1	1.07	1.06	1.09	250.1	1.58	2.38	3.39	98.6	1.86	1.48	1.33
290.1	320.1	1.07	1.07	1.15	290.1	1.61	2.38	3.37	113.4	1.82	1.46	1.31
330.1	360.1	1.07	1.08	1.11	330.1	1.66	2.46	3.47	128.1	1.86	1.49	1.34
370.1	400.1	1.08	1.13	1.19	370.1	1.70	2.45	3.43	142.9	1.82	1.46	1.32
410.1	440.1	1.14	1.19	1.28	410.1	1.77	2.51	3.46	157.6	1.88	1.52	1.37
450.1	480.1	1.14	1.18	1.23	450.1	1.82	2.59	3.56	172.4	1.85	1.50	1.36
490.1	520.1	1.19	1.23	1.29	490.1	1.86	2.61	3.58	187.1	1.89	1.54	1.40
530.1	560.1	1.19	1.27	1.34	530.1	1.91	2.63	3.57	201.9	1.86	1.52	1.39
570.1	600.1	1.24	1.33	1.38	570.1	1.95	2.61	3.50	216.6	1.89	1.54	1.41
590.1	620.1	1.22	1.31	1.36	590.1	2.00	2.65	3.54	231.4	1.88	1.54	1.42
630.1	660.1	1.20	1.25	1.31	630.1	2.17	2.79	3.65	246.1	1.91	1.57	1.44
650.1	680.1	1.24	1.24	1.31	650.1	2.22	2.88	3.70	260.9	1.91	1.59	1.46
690.1	720.1	1.36	1.32	1.33	690.1	2.28	3.03	3.86	275.6	1.92	1.60	1.47
710.1	740.1	1.44	1.40	1.37	710.1	2.29	3.05	3.90	290.4	1.95	1.63	1.51
750.1	780.1	1.67	1.61	1.56	750.1	2.32	3.06	3.93	305.1	1.92	1.61	1.49
770.1	800.1	1.80	1.74	1.68	770.1	2.34	3.08	3.95	319.9	1.96	1.65	1.54
810.1	840.1	2.07	2.01	1.96	810.1	2.37	3.09	3.94	334.6	1.95	1.64	1.53
830.1	860.1	2.22	2.16	2.11	830.1	2.38	3.08	3.92	349.4	2.01	1.70	1.59
870.1	900.1	2.37	2.31	2.29	870.1	2.41	3.09	3.90	364.1	1.98	1.68	1.58
890.1	920.1	2.44	2.39	2.38	890.1	2.42	3.09	3.88	378.9	2.03	1.73	1.63
930.1	960.1	2.65	2.61	2.63	930.1	2.41	3.04	3.79	393.6	1.98	1.70	1.60
950.1	980.1	2.72	2.69	2.69	950.1	2.42	3.02	3.73	408.4	2.03	1.74	1.64
990.1	1020.1	2.88	2.84	2.82	990.1	2.42	2.97	3.63	423.1	2.01	1.73	1.64
1010.1	1040.1	2.97	2.94	2.91	1010.1	2.41	2.92	3.60	437.9	2.06	1.78	1.69
1050.1	1080.1	3.05	3.00	2.97	1050.1	2.41	2.91	3.59	452.6	2.04	1.78	1.69
1070.1	1100.1	3.09	3.03	3.00	1070.1	2.45	2.95	3.61	467.4	2.06	1.79	1.70
1110.1	1140.1	3.24	3.16	3.12	1110.1	2.62	3.07	3.67	482.1	2.05	1.80	1.71
1130.1	1160.1	3.26	3.18	3.12	1130.1	2.72	3.12	3.67	496.9	2.06	1.81	1.72
1170.1	1200.1	3.37	3.29	3.20	1170.1	2.89	3.21	3.70	511.6	2.08	1.83	1.75
1190.1	1220.1	3.42	3.32	3.23	1190.1	2.97	3.28	3.73	526.4	2.08	1.83	1.74
1230.1	1260.1	3.32	3.21	3.12	1230.1	3.05	3.35	3.74	541.1	2.10	1.87	1.79
1250.1	1280.1	3.30	3.17	3.08	1250.1	3.03	3.34	3.72	555.9	2.07	1.84	1.75
1290.1	1320.1	3.15	3.00	2.92	1290.1	3.02	3.36	3.75	585.4	2.08	1.86	1.78
1310.1	1340.1	3.06	2.91	2.84	1310.1	2.99	3.35	3.74	600.1	2.15	1.94	1.86

REV. X2

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Harmonics Tables

RF HARMONICS ORDER	(-dBm)											
	(-dBc)											
0	-	-	16	22	17	26	18	38	32	63	34	52
1	-	19	+0	29	12	31	17	39	39	46	40	52
2	76	53	45	57	46	50	45	58	53	67	55	66
3	> 90	76	53	66	53	68	48	62	52	> 78	57	> 78
4	> 90	> 78	71	> 78	73	> 78	75	78	71	> 78	> 78	> 78
5	> 90	> 78	> 78	> 78	> 78	> 78	> 78	> 78	> 78	> 78	> 78	> 78
6	> 90	> 78	78	> 78	> 78	> 78	> 78	> 78	> 78	> 78	> 78	> 78
7	> 90	> 78	> 78	78	71	77	76	> 78	73	> 78	71	> 78
8	> 90	> 78	57	77	52	62	48	69	53	66	53	75
9	> 90	66	55	67	53	58	45	50	46	57	45	53
10	> 90	51	40	46	39	39	17	31	12	29	+0	19
RF CAL 0 1 2 3 4 5 6 7 8 9 10												

LO HARMONICS ORDER

Test conditions: RF IN: 300.00 MHz; -6.00 dBm.
LO IN: 330.00 MHz; +13.00 dBm
IF OUT: 30.00 MHz; -11.56 dBm

RF HARMONICS ORDER	(-dBm)											
	(-dBc)											
0	-	-	24	32	30	41	31	52	44	73	48	68
1	-	20	+0	29	12	33	18	43	38	52	44	60
2	56	55	42	62	44	53	46	55	50	65	51	68
3	83	49	42	52	44	54	38	57	43	52	49	61
4	> 90	66	57	65	61	62	66	57	56	60	62	69
5	> 90	62	62	60	52	64	48	61	46	69	49	75
6	> 90	75	49	69	46	61	48	64	52	61	62	62
7	> 90	69	62	60	56	57	66	62	61	65	57	66
8	> 90	61	49	52	43	57	38	54	44	52	42	49
9	> 90	68	51	65	50	55	47	53	44	62	42	55
10	> 90	60	45	52	38	43	18	34	12	29	+0	20
RF CAL 0 1 2 3 4 5 6 7 8 9 10												

LO HARMONICS ORDER

Test conditions: RF IN: 300.00 MHz; +4.00 dBm.
LO IN: 330.00 MHz; +13.00 dBm
IF OUT: 30.00 MHz; -1.62 dBm

- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.