

# Frequency Mixer

# ADE-R6+

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+4	+7	+10			+4	+7	+10			+4	+7	+10
10.1	40.1	4.69	4.62	4.51	10.1	40.1	14.80	15.75	17.44	10.1	40.1	2.08	1.52	1.26
20.1	50.1	4.94	4.67	4.70	20.1	50.1	16.87	18.96	21.65	20.1	50.1	1.66	1.32	0.98
30.1	60.1	5.00	4.83	4.70	30.1	60.1	14.04	15.71	21.62	30.1	60.1	1.45	1.17	1.05
40.1	70.1	5.04	4.85	4.67	40.1	70.1	15.84	18.92	19.74	40.1	70.1	1.55	1.22	1.03
50.1	80.1	4.96	4.81	4.69	50.1	80.1	17.48	20.75	15.06	50.1	80.1	1.43	1.18	1.08
60.1	90.1	5.04	4.79	4.73	60.1	90.1	15.18	18.70	17.03	60.1	90.1	1.54	1.13	1.11
70.1	100.1	5.01	4.82	4.78	70.1	100.1	15.33	15.77	13.30	70.1	100.1	1.52	1.32	1.11
80.1	110.1	4.97	4.81	4.75	80.1	110.1	15.34	13.40	12.03	80.1	110.1	1.64	1.25	1.01
90.1	120.1	5.09	4.88	4.76	90.1	120.1	19.46	13.41	12.03	90.1	120.1	1.39	1.17	0.96
100.1	130.1	5.20	4.96	4.84	100.1	130.1	17.38	12.67	12.41	100.1	130.1	1.31	1.06	0.88
110.1	140.1	5.28	5.08	4.94	110.1	140.1	18.61	13.62	12.11	110.1	140.1	1.21	1.02	0.82
120.1	150.1	5.31	5.11	4.95	120.1	150.1	18.59	14.31	12.82	120.1	150.1	1.21	1.03	0.84
130.1	160.1	5.27	5.09	4.95	130.1	160.1	15.07	12.00	11.02	130.1	160.1	1.37	1.12	0.92
140.1	170.1	5.29	5.06	4.94	140.1	170.1	15.38	11.15	11.32	140.1	170.1	1.52	1.18	0.98
150.1	180.1	5.37	5.14	5.07	150.1	180.1	13.33	10.97	11.88	150.1	180.1	1.64	1.25	0.95
160.1	190.1	5.43	5.24	5.19	160.1	190.1	10.81	10.64	11.44	160.1	190.1	1.88	1.36	0.96
170.1	200.1	5.59	5.34	5.21	170.1	200.1	7.57	9.16	10.23	170.1	200.1	1.99	1.51	1.15
180.1	210.1	5.68	5.46	5.28	180.1	210.1	4.89	5.75	7.42	180.1	210.1	2.15	1.79	1.43
190.1	220.1	5.74	5.56	5.42	190.1	220.1	3.49	3.72	5.29	190.1	220.1	2.35	1.98	1.58
200.1	230.1	5.88	5.67	5.53	200.1	230.1	3.26	3.36	4.19	200.1	230.1	2.39	2.03	1.67
210.1	240.1	5.97	5.74	5.56	210.1	240.1	2.70	3.37	4.43	210.1	240.1	2.54	2.19	1.87
220.1	250.1	6.00	5.72	5.45	220.1	250.1	2.74	3.46	4.36	220.1	250.1	2.60	2.29	2.05
230.1	260.1	6.20	5.84	5.53	230.1	260.1	3.41	4.13	5.40	230.1	260.1	2.51	2.24	1.95
240.1	270.1	6.16	5.76	5.42	240.1	270.1	3.18	4.51	6.04	240.1	270.1	2.58	2.29	2.02
250.1	280.1	6.36	5.92	5.61	250.1	280.1	4.34	5.20	7.37	250.1	280.1	2.39	2.02	1.75
260.1	290.1	6.50	6.07	5.74	260.1	290.1	4.04	5.48	8.12	260.1	290.1	2.33	1.95	1.67
270.1	300.1	6.60	6.24	5.99	270.1	300.1	6.14	7.61	10.39	270.1	300.1	2.05	1.69	1.40
280.1	310.1	6.81	6.40	6.15	280.1	310.1	6.32	8.59	11.91	280.1	310.1	1.98	1.64	1.40
290.1	320.1	6.72	6.38	6.19	290.1	320.1	6.86	9.83	14.42	290.1	320.1	1.92	1.57	1.34
300.1	330.1	7.07	6.72	6.51	300.1	330.1	7.76	10.06	14.04	300.1	330.1	1.89	1.56	1.36
310.1	340.1	6.93	6.65	6.55	310.1	340.1	7.63	10.32	14.39	310.1	340.1	1.94	1.50	1.31
320.1	350.1	7.39	7.14	6.93	320.1	350.1	7.86	10.43	14.04	320.1	350.1	1.90	1.55	1.17
330.1	360.1	7.39	7.19	7.17	330.1	360.1	7.90	10.63	13.01	330.1	360.1	1.86	1.45	1.19
340.1	370.1	8.08	7.88	7.89	340.1	370.1	7.96	10.51	13.03	340.1	370.1	1.68	1.24	1.00
350.1	380.1	8.19	8.05	8.02	350.1	380.1	8.03	10.32	11.98	350.1	380.1	1.69	1.23	0.97
360.1	390.1	8.78	8.62	8.68	360.1	390.1	9.09	11.85	12.55	360.1	390.1	1.44	1.07	0.92
370.1	400.1	9.02	8.80	8.79	370.1	400.1	9.46	11.81	11.92	370.1	400.1	1.55	1.19	1.06
380.1	410.1	9.79	9.46	9.43	380.1	410.1	10.06	12.31	12.29	380.1	410.1	1.31	0.93	1.23
390.1	420.1	10.15	9.81	9.72	390.1	420.1	9.07	11.29	11.63	390.1	420.1	1.48	1.17	1.12
400.1	430.1	10.91	10.58	10.49	400.1	430.1	9.32	12.36	12.23	400.1	430.1	1.28	0.93	0.91



## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=135.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=260.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
125.1	10.0	5.39	10.1	20.1	4.68	250.1	10.0	7.58
122.5	12.6	5.38	20.1	30.1	4.47	245.1	15.0	7.53
120.0	15.1	5.39	30.1	40.1	4.42	240.1	20.0	7.41
117.4	17.7	5.36	40.1	50.1	4.76	235.1	25.0	7.37
114.9	20.2	5.34	50.1	60.1	4.60	230.1	30.0	7.28
112.3	22.8	5.30	60.1	70.1	4.69	225.1	35.0	7.24
109.8	25.3	5.25	70.1	80.1	4.76	220.1	40.0	7.27
107.2	27.9	5.25	80.1	90.1	4.81	215.1	45.0	7.20
104.7	30.4	5.28	90.1	100.1	4.44	210.1	50.0	7.14
102.1	33.0	5.25	100.1	110.1	5.05	205.1	55.0	7.13
99.5	35.6	5.23	110.1	120.1	4.99	200.1	60.0	7.02
97.0	38.1	5.21	120.1	130.1	4.97	195.1	65.0	7.11
94.4	40.7	5.15	130.1	140.1	5.15	190.1	70.0	7.04
91.9	43.2	5.20	140.1	150.1	5.50	185.1	75.0	7.07
89.3	45.8	5.21	150.1	160.1	5.21	180.1	80.0	7.10
86.8	48.3	5.18	160.1	170.1	5.24	175.1	85.0	7.06
84.2	50.9	5.14	170.1	180.1	5.12	170.1	90.0	7.00
81.7	53.4	5.11	180.1	190.1	4.85	165.1	95.0	7.05
79.1	56.0	5.13	190.1	200.1	5.29	160.1	100.0	6.93
76.5	58.6	5.18	200.1	210.1	5.43	155.1	105.0	6.93
74.0	61.1	5.17	210.1	220.1	5.34	150.1	110.0	6.94
71.4	63.7	5.14	220.1	230.1	5.40	145.1	115.0	6.81
68.9	66.2	5.16	230.1	240.1	5.43	135.1	125.0	6.82
66.3	68.8	5.16	240.1	250.1	5.47	130.1	130.0	6.89
63.8	71.3	5.17	250.1	260.1	5.46	120.1	140.0	6.57
61.2	73.9	5.19	260.1	270.1	5.32	115.1	145.0	6.54
58.7	76.4	5.14	270.1	280.1	5.50	105.1	155.0	6.39
56.1	79.0	5.08	280.1	290.1	5.19	100.1	160.0	6.45
51.0	84.1	5.08	290.1	300.1	5.43	90.1	170.0	6.25
48.4	86.7	5.09	300.1	310.1	5.51	85.1	175.0	6.24
43.3	91.8	5.02	310.1	320.1	5.70	75.1	185.0	6.12
40.8	94.3	5.01	320.1	330.1	5.78	70.1	190.0	6.21
35.7	99.4	5.02	330.1	340.1	6.45	60.1	200.0	6.29
33.1	102.0	5.01	340.1	350.1	6.61	55.1	205.0	6.37
28.0	107.1	4.98	350.1	360.1	6.76	45.1	215.0	6.53
25.4	109.7	4.96	360.1	370.1	6.93	40.1	220.0	6.66
20.3	114.8	5.05	370.1	380.1	7.49	30.1	230.0	6.62
17.8	117.3	5.03	380.1	390.1	7.45	25.1	235.0	6.55
12.7	122.4	5.02	400.1	410.1	8.65	15.1	245.0	6.51
10.1	125.0	5.10	410.1	420.1	9.71	10.1	250.0	6.55

## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
40.1	60.25	59.92	59.79	54.48	52.41	50.62
50.1	57.77	57.84	57.51	55.82	54.15	51.87
60.1	56.37	55.97	56.28	53.29	54.39	52.74
70.1	54.46	54.30	53.80	48.91	51.16	52.35
80.1	54.30	54.50	54.78	46.04	47.52	48.64
90.1	51.10	51.44	51.64	43.97	46.48	49.08
100.1	49.81	49.06	49.19	40.94	43.42	46.26
110.1	51.48	49.69	49.19	38.81	40.84	43.11
120.1	53.39	51.72	50.78	37.56	39.46	41.94
130.1	52.95	53.52	52.81	37.01	38.85	41.05
140.1	49.14	50.92	51.81	36.84	39.02	41.52
150.1	46.05	47.82	48.44	36.25	38.53	40.96
160.1	43.09	44.39	45.10	35.32	38.10	41.32
170.1	40.34	41.37	42.23	34.09	37.03	40.40
180.1	39.05	40.02	40.96	32.60	35.31	38.02
190.1	38.47	39.51	40.73	30.91	33.13	35.13
200.1	38.36	39.68	41.19	29.83	32.11	33.73
210.1	37.98	39.27	40.60	28.97	31.20	32.83
220.1	37.82	38.89	39.79	28.29	30.29	32.08
230.1	37.35	38.49	39.70	27.66	29.39	31.11
240.1	36.93	38.12	39.28	27.07	28.60	30.05
250.1	36.36	37.08	37.38	26.54	27.80	28.88
260.1	35.44	35.93	36.13	25.98	26.95	27.37
270.1	34.89	35.27	35.33	25.70	26.09	25.67
280.1	34.87	34.70	34.25	25.50	25.13	24.10
290.1	33.95	33.57	33.33	25.17	23.90	22.77
300.1	33.57	33.13	32.82	24.38	22.77	21.72
310.1	33.05	32.04	31.46	23.62	21.70	20.65
320.1	32.04	30.70	29.87	23.08	21.07	19.92
330.1	31.98	30.25	29.21	23.13	20.79	19.42
340.1	32.11	29.73	28.07	23.24	20.54	19.02
350.1	32.51	29.01	26.88	23.54	20.51	18.66
360.1	32.44	28.13	25.65	23.58	20.28	18.18
370.1	32.87	27.28	24.54	23.23	19.83	17.56
380.1	31.79	26.05	23.20	22.79	19.40	16.98
390.1	29.74	24.85	21.98	22.01	18.88	16.60
400.1	27.40	23.52	20.95	20.84	18.17	15.94
410.1	25.31	22.51	20.10	19.91	17.67	15.65
420.1	23.46	21.55	19.29	19.14	17.32	15.33
430.1	21.74	20.38	18.46	18.09	16.64	14.84

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	31.28	30.58	30.94
20.1	50.1	26.85	26.80	26.89
30.1	60.1	24.75	24.59	24.54
40.1	70.1	22.68	23.01	23.02
50.1	80.1	22.63	20.10	21.33
60.1	90.1	20.58	21.08	20.76
70.1	100.1	20.81	20.34	20.42
80.1	110.1	18.86	19.10	20.77
90.1	120.1	19.15	19.79	20.38
100.1	130.1	19.07	19.51	19.85
110.1	140.1	19.75	20.09	19.80
120.1	150.1	20.48	20.96	20.98
130.1	160.1	21.95	22.51	23.23
140.1	170.1	23.18	24.98	26.26
150.1	180.1	22.45	24.55	26.30
160.1	190.1	19.62	21.50	22.71
170.1	200.1	18.06	18.86	19.12
180.1	210.1	16.74	17.05	17.52
190.1	220.1	15.33	15.50	16.10
200.1	230.1	14.35	14.69	14.94
210.1	240.1	14.20	14.06	14.42
220.1	250.1	13.90	14.00	14.43
230.1	260.1	14.08	14.34	14.54
240.1	270.1	13.73	14.05	14.51
250.1	280.1	14.19	14.22	14.68
260.1	290.1	14.12	14.34	14.49
270.1	300.1	13.70	13.62	13.93
280.1	310.1	13.53	13.66	13.41
290.1	320.1	12.78	12.87	12.58
300.1	330.1	12.42	12.22	11.97
310.1	340.1	11.55	11.40	11.29
320.1	350.1	10.95	10.83	10.42
330.1	360.1	10.26	10.08	9.70
340.1	370.1	9.45	9.28	9.03
350.1	380.1	9.07	8.64	8.22
360.1	390.1	8.51	8.15	7.81
370.1	400.1	7.85	7.64	7.28
380.1	410.1	7.22	6.91	6.87
390.1	420.1	6.72	6.49	6.30
400.1	430.1	6.31	6.15	5.96

# Frequency Mixer

# ADE-R6+

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	1.30	1.35	1.09
20.1	50.1	1.36	1.24	1.13
30.1	60.1	1.34	1.23	1.17
40.1	70.1	1.34	1.24	1.17
50.1	80.1	1.34	1.23	1.17
60.1	90.1	1.31	1.22	1.15
70.1	100.1	1.30	1.20	1.14
80.1	110.1	1.27	1.16	1.11
90.1	120.1	1.24	1.13	1.07
100.1	130.1	1.25	1.15	1.08
110.1	140.1	1.21	1.14	1.09
120.1	150.1	1.17	1.11	1.09
130.1	160.1	1.15	1.10	1.12
140.1	170.1	1.12	1.11	1.16
150.1	180.1	1.09	1.10	1.16
160.1	190.1	1.08	1.10	1.16
170.1	200.1	1.10	1.04	1.12
180.1	210.1	1.14	1.03	1.07
190.1	220.1	1.20	1.11	1.05
200.1	230.1	1.24	1.16	1.09
210.1	240.1	1.31	1.24	1.18
220.1	250.1	1.35	1.27	1.20
230.1	260.1	1.45	1.35	1.27
240.1	270.1	1.49	1.38	1.31
250.1	280.1	1.57	1.46	1.39
260.1	290.1	1.66	1.55	1.48
270.1	300.1	1.69	1.60	1.54
280.1	310.1	1.79	1.70	1.65
290.1	320.1	1.78	1.70	1.66
300.1	330.1	1.98	1.89	1.83
310.1	340.1	1.92	1.83	1.78
320.1	350.1	2.07	1.97	1.90
330.1	360.1	2.05	1.94	1.88
340.1	370.1	2.20	2.08	2.00
350.1	380.1	2.17	2.03	1.96
360.1	390.1	2.20	2.07	2.00
370.1	400.1	2.18	2.05	1.96
380.1	410.1	2.21	2.07	2.00
390.1	420.1	2.21	2.07	1.99
400.1	430.1	2.22	2.07	2.00

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+4	+7	+10
40.1	1.78	2.64	3.70
50.1	1.75	2.54	3.52
60.1	1.71	2.44	3.34
70.1	1.67	2.36	3.21
80.1	1.66	2.34	3.17
90.1	1.68	2.36	3.19
100.1	1.73	2.42	3.28
110.1	1.78	2.50	3.38
120.1	1.83	2.57	3.46
130.1	1.86	2.60	3.50
140.1	1.86	2.57	3.45
150.1	1.86	2.52	3.36
160.1	1.86	2.48	3.29
170.1	1.89	2.48	3.27
180.1	1.95	2.54	3.32
190.1	2.02	2.64	3.42
200.1	2.09	2.75	3.56
210.1	2.14	2.84	3.68
220.1	2.17	2.88	3.73
230.1	2.17	2.86	3.71
240.1	2.15	2.83	3.66
250.1	2.14	2.79	3.60
260.1	2.13	2.77	3.57
270.1	2.15	2.78	3.57
280.1	2.17	2.80	3.60
290.1	2.21	2.83	3.63
300.1	2.24	2.85	3.65
310.1	2.27	2.86	3.65
320.1	2.30	2.87	3.63
330.1	2.35	2.88	3.61
340.1	2.41	2.90	3.60
350.1	2.49	2.95	3.61
360.1	2.59	3.00	3.63
370.1	2.71	3.08	3.67
380.1	2.84	3.16	3.71
390.1	3.00	3.25	3.76
400.1	3.13	3.32	3.76
410.1	3.24	3.37	3.76
420.1	3.33	3.41	3.74
430.1	3.34	3.41	3.70

IF (OUT) (MHz)	IF VSWR @LO=250.1MHz (:1)		
	@LO (dBm)		
	+4	+7	+10
10.0	1.99	1.81	1.61
15.0	2.03	1.84	1.64
20.0	1.98	1.80	1.61
25.0	1.93	1.75	1.56
30.0	1.90	1.73	1.55
35.0	1.96	1.78	1.60
40.0	2.00	1.84	1.65
45.0	2.01	1.84	1.67
50.0	1.98	1.81	1.64
55.0	1.95	1.78	1.60
60.0	1.96	1.80	1.62
65.0	2.04	1.87	1.70
70.0	2.10	1.94	1.77
75.0	2.09	1.94	1.78
80.0	2.04	1.90	1.75
85.0	2.02	1.88	1.73
90.0	2.05	1.90	1.75
95.0	2.11	1.97	1.82
100.0	2.15	2.02	1.87
105.0	2.12	2.00	1.87
110.0	2.06	1.95	1.83
115.0	2.01	1.90	1.80
120.0	2.04	1.92	1.82
125.0	2.10	1.99	1.88
130.0	2.13	2.03	1.92
135.0	2.11	2.00	1.90
145.0	2.02	1.93	1.85
150.0	2.07	1.97	1.89
160.0	2.12	2.03	1.95
165.0	2.09	2.00	1.93
175.0	2.09	1.99	1.91
180.0	2.12	2.03	1.96
190.0	2.04	1.97	1.93
195.0	1.97	1.90	1.84
205.0	2.05	1.94	1.85
210.0	2.11	2.01	1.91
220.0	2.01	1.92	1.85
225.0	1.95	1.84	1.77
235.0	2.08	1.95	1.82
240.0	2.17	2.03	1.90

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## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	13	18	11	36	25	37	29	43	32	40
1	-	18	+0	25	11	35	35	46	39	47	32	49
2	>90	52	42	54	43	52	50	66	59	>71	59	69
3	>90	>71	60	66	61	>71	65	64	63	69	65	69
4	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
5	>90	>71	>71	>71	>71	62	>71	>71	>71	>71	>71	>71
6	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
7	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
8	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
9	>90	>71	>71	>71	>71	>71	>71	>71	69	>71	>71	>71
10	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 125 MHz; -14.00 dBm.  
 LO IN: 155 MHz; +7.00 dBm  
 IF OUT: 30 MHz; -19.37 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	24	29	21	45	37	53	42	57	44	70
1	-	18	+0	25	12	35	35	58	48	60	40	67
2	73	46	38	46	38	45	51	60	59	63	55	58
3	>90	53	37	54	39	54	41	56	60	63	56	57
4	>90	69	58	60	54	60	53	63	67	>81	67	77
5	>90	70	60	60	57	63	58	62	75	66	67	66
6	>90	>81	77	>81	>81	67	67	73	67	72	78	78
7	>90	>81	>81	>81	75	71	68	69	68	71	74	74
8	>90	>81	>81	>81	>81	>81	>81	80	>81	>81	>81	>81
9	>90	>81	>81	>81	>81	>81	>81	>81	71	77	77	>81
10	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 125 MHz; -4.00 dBm.  
 LO IN: 155 MHz; +7.00 dBm  
 IF OUT: 30 MHz; -9.34 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.