

Frequency Mixer

ADE-R1L+

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=0dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		0	+3	+6			0	+3	+6			0	+3	+6
10.1	40.1	6.24	5.77	5.74	10.1	40.1	17.66	16.80	17.79	10.1	40.1	1.54	1.14	1.03
50.8	80.8	6.48	5.91	5.49	50.8	80.8	18.94	18.49	19.75	50.8	80.8	1.32	0.89	0.71
91.4	121.4	6.41	5.82	5.51	91.4	121.4	18.43	19.29	19.75	91.4	121.4	1.60	1.02	0.69
132.1	162.1	6.46	5.85	5.58	132.1	162.1	14.09	19.45	19.71	132.1	162.1	1.49	0.92	0.62
172.7	202.7	6.34	5.84	5.57	172.7	202.7	16.79	19.58	19.72	172.7	202.7	1.50	1.04	0.74
213.4	243.4	6.49	5.93	5.64	213.4	243.4	16.09	19.53	18.93	213.4	243.4	1.33	0.89	0.61
254.0	284.0	6.40	5.92	5.65	254.0	284.0	18.74	19.54	18.08	254.0	284.0	1.53	0.94	0.73
274.4	304.4	6.44	5.92	5.66	274.4	304.4	15.50	18.11	18.68	274.4	304.4	1.47	0.97	0.71
315.0	345.0	6.52	5.99	5.73	315.0	345.0	18.05	13.88	12.88	315.0	345.0	1.43	0.85	0.63
335.3	365.3	6.54	6.02	5.74	335.3	365.3	13.20	12.64	12.19	335.3	365.3	1.44	0.89	0.67
376.0	406.0	6.63	6.10	5.77	376.0	406.0	19.18	19.45	19.62	376.0	406.0	1.40	0.90	0.68
396.3	426.3	6.69	6.17	5.81	396.3	426.3	16.88	17.56	19.59	396.3	426.3	1.41	0.91	0.71
437.0	467.0	6.82	6.31	6.00	437.0	467.0	13.12	11.95	12.58	437.0	467.0	1.51	0.97	0.72
457.3	487.3	6.74	6.25	5.96	457.3	487.3	14.47	12.12	12.18	457.3	487.3	1.60	1.08	0.81
498.0	528.0	6.89	6.32	6.03	498.0	528.0	12.88	12.18	11.82	498.0	528.0	1.66	1.12	0.83
518.3	548.3	6.92	6.34	6.02	518.3	548.3	12.13	13.19	13.79	518.3	548.3	1.81	1.26	0.94
559.0	589.0	7.03	6.36	5.97	559.0	589.0	10.03	14.04	17.92	559.0	589.0	1.91	1.42	1.06
579.3	609.3	7.18	6.45	6.00	579.3	609.3	9.50	15.01	19.50	579.3	609.3	1.80	1.40	1.07
619.9	649.9	7.36	6.65	6.09	619.9	649.9	6.24	9.82	17.57	619.9	649.9	1.95	1.58	1.30
640.3	670.3	7.56	6.85	6.24	640.3	670.3	4.89	7.41	13.02	640.3	670.3	1.94	1.56	1.33
680.9	710.9	7.82	7.16	6.52	680.9	710.9	3.97	5.19	8.48	680.9	710.9	1.87	1.47	1.31
701.2	731.2	7.96	7.31	6.71	701.2	731.2	3.88	4.86	7.12	701.2	731.2	1.87	1.54	1.34
741.9	771.9	8.23	7.54	6.95	741.9	771.9	4.21	5.29	7.10	741.9	771.9	1.83	1.50	1.33
762.2	792.2	8.31	7.63	7.05	762.2	792.2	4.56	5.69	7.28	762.2	792.2	1.81	1.47	1.30
802.9	832.9	8.53	7.88	7.35	802.9	832.9	5.13	6.19	7.54	802.9	832.9	1.76	1.39	1.21
823.2	853.2	8.61	7.93	7.41	823.2	853.2	6.12	7.20	8.63	823.2	853.2	1.81	1.43	1.22
863.9	893.9	8.75	8.08	7.56	863.9	893.9	8.33	9.33	11.43	863.9	893.9	1.70	1.31	1.11
884.2	914.2	8.71	8.03	7.51	884.2	914.2	8.72	9.86	12.24	884.2	914.2	1.75	1.39	1.19
924.9	954.9	8.82	8.03	7.45	924.9	954.9	11.43	12.48	15.14	924.9	954.9	1.70	1.41	1.23
945.2	975.2	8.87	8.01	7.40	945.2	975.2	11.11	12.03	13.81	945.2	975.2	1.67	1.38	1.22
985.8	1015.8	8.91	7.95	7.37	985.8	1015.8	13.66	13.30	14.16	985.8	1015.8	1.75	1.50	1.25
1006.2	1036.2	9.02	8.02	7.48	1006.2	1036.2	13.66	12.38	13.61	1006.2	1036.2	1.68	1.45	1.20
1046.8	1076.8	9.24	8.22	7.74	1046.8	1076.8	11.04	11.04	12.78	1046.8	1076.8	1.79	1.46	1.17
1067.1	1097.1	9.39	8.36	7.93	1067.1	1097.1	9.64	10.24	11.94	1067.1	1097.1	1.85	1.43	1.10
1107.8	1137.8	9.79	8.78	8.36	1107.8	1137.8	8.64	9.74	11.35	1107.8	1137.8	1.84	1.33	0.97
1128.1	1158.1	10.03	8.99	8.56	1128.1	1158.1	8.65	9.93	11.28	1128.1	1158.1	1.80	1.29	0.93
1168.8	1198.8	10.65	9.51	9.08	1168.8	1198.8	8.58	10.09	11.68	1168.8	1198.8	1.75	1.20	0.84
1189.1	1219.1	10.90	9.74	9.33	1189.1	1219.1	8.34	10.45	12.28	1189.1	1219.1	1.65	1.18	0.81
1229.8	1259.8	11.53	10.20	9.72	1229.8	1259.8	7.98	10.21	12.36	1229.8	1259.8	1.67	1.22	0.84
1250.1	1280.1	11.93	10.54	10.03	1250.1	1280.1	7.96	10.17	12.31	1250.1	1280.1	1.65	1.21	0.81

Frequency Mixer

ADE-R1L+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=260.1MHz (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)=510.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+3			+3			+3
250.1	10.0	6.04	10.1	20.1	5.91	500.1	10.0	6.32
243.9	16.2	5.96	50.1	60.1	5.69	487.5	22.6	6.26
237.8	22.3	5.98	90.1	100.1	5.70	475.0	35.1	6.13
231.6	28.5	5.92	130.1	140.1	6.03	462.4	47.7	6.15
225.5	34.6	5.92	170.1	180.1	5.81	449.8	60.3	6.13
219.3	40.8	5.96	210.1	220.1	5.68	437.3	72.8	6.05
213.2	46.9	5.89	250.1	260.1	5.75	424.7	85.4	6.03
207.0	53.1	5.97	290.1	300.1	5.87	412.2	97.9	6.02
200.9	59.2	5.81	330.1	340.1	6.23	399.6	110.5	6.02
194.7	65.4	5.91	370.1	380.1	5.93	387.0	123.1	6.00
188.6	71.5	5.88	410.1	420.1	6.19	374.5	135.6	6.00
182.4	77.7	5.97	450.1	460.1	6.38	361.9	148.2	6.04
176.3	83.8	5.92	490.1	500.1	6.38	349.3	160.8	6.03
170.1	90.0	5.92	530.1	540.1	6.23	336.8	173.3	6.00
163.9	96.2	5.89	570.1	580.1	6.21	324.2	185.9	5.98
157.8	102.3	5.85	610.1	620.1	5.98	311.6	198.5	5.98
151.6	108.5	5.90	650.1	660.1	6.10	299.1	211.0	6.00
145.5	114.6	5.83	690.1	700.1	6.20	286.5	223.6	6.00
139.3	120.8	5.85	730.1	740.1	5.93	273.9	236.2	6.02
133.2	126.9	5.79	770.1	780.1	6.08	261.4	248.7	6.06
127.0	133.1	5.78	810.1	820.1	6.10	248.8	261.3	6.08
120.9	139.2	5.84	850.1	860.1	5.98	236.3	273.8	6.07
114.7	145.4	5.79	890.1	900.1	6.40	223.7	286.4	6.06
108.6	151.5	5.84	910.1	920.1	5.98	211.1	299.0	6.08
102.4	157.7	5.79	950.1	960.1	6.60	198.6	311.5	6.08
96.3	163.8	5.84	970.1	980.1	6.05	186.0	324.1	6.10
90.1	170.0	5.87	1010.1	1020.1	6.42	173.4	336.7	6.15
83.9	176.2	5.87	1030.1	1040.1	6.46	160.9	349.2	6.20
77.8	182.3	5.90	1070.1	1080.1	6.50	148.3	361.8	6.22
71.6	188.5	5.81	1090.1	1100.1	6.46	135.7	374.4	6.20
65.5	194.6	5.89	1130.1	1140.1	7.03	123.2	386.9	6.20
59.3	200.8	5.79	1150.1	1160.1	7.13	110.6	399.5	6.19
53.2	206.9	5.87	1190.1	1200.1	7.64	98.0	412.1	6.18
47.0	213.1	5.81	1210.1	1220.1	7.40	85.5	424.6	6.18
40.9	219.2	5.85	1250.1	1260.1	8.35	72.9	437.2	6.25
34.7	225.4	5.86	1270.1	1280.1	8.56	60.4	449.7	6.31
28.6	231.5	5.83	1310.1	1320.1	9.24	47.8	462.3	6.29
22.4	237.7	5.88	1330.1	1340.1	9.66	35.2	474.9	6.30
16.3	243.8	5.82	1370.1	1380.1	10.66	22.7	487.4	6.31
10.1	250.0	6.03	1390.1	1400.1	11.04	10.1	500.0	6.45

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	0	+3	+6	0	+3	+6
40.1	56.99	59.97	61.38	53.36	52.03	50.65
80.8	57.58	58.88	61.43	52.79	50.92	48.54
121.4	54.77	56.77	59.72	52.47	48.30	45.94
162.1	52.69	55.06	57.43	50.58	46.59	44.29
202.7	50.39	52.23	54.77	49.60	45.35	42.81
243.4	48.01	50.16	52.20	48.18	43.92	41.39
284.0	47.01	48.98	50.86	47.36	43.31	40.34
304.4	46.11	48.17	50.06	47.49	42.71	40.04
345.0	44.69	46.33	47.89	46.45	41.88	38.92
365.3	44.10	45.37	46.58	44.43	40.74	38.22
406.0	43.49	44.65	45.73	42.21	38.96	37.16
426.3	43.30	44.65	45.74	40.68	37.73	35.98
467.0	42.35	43.58	44.61	38.98	35.95	34.00
487.3	42.45	43.54	44.24	38.32	35.67	33.67
528.0	42.08	43.06	43.44	36.91	34.55	32.59
548.3	41.82	42.92	43.27	36.04	34.14	32.13
589.0	40.75	41.95	42.55	34.18	32.89	31.12
609.3	40.18	41.74	42.47	33.07	32.06	30.32
649.9	39.63	41.72	42.50	31.27	30.45	28.94
670.3	38.95	40.95	41.73	30.50	29.67	28.22
710.9	38.21	39.88	40.62	29.07	28.27	27.00
731.2	37.69	39.58	40.52	28.55	27.94	26.72
771.9	37.45	39.55	40.57	27.20	26.74	25.70
792.2	36.99	38.80	39.58	26.58	26.08	25.07
832.9	36.43	38.39	39.36	25.59	25.44	24.63
853.2	36.82	38.87	40.04	25.19	25.09	24.37
893.9	36.48	38.28	39.14	23.98	24.34	23.82
914.2	36.10	37.74	38.50	23.44	24.02	23.67
954.9	35.79	37.18	37.59	22.26	23.28	23.00
975.2	35.43	36.22	36.01	21.58	22.70	22.21
1015.8	34.86	35.07	34.12	20.31	21.72	21.19
1036.2	34.56	34.29	33.19	19.72	21.10	20.48
1076.8	33.73	32.55	31.06	18.32	19.68	19.29
1097.1	32.83	31.30	29.83	17.70	19.04	18.83
1137.8	31.25	29.64	28.03	16.58	17.93	17.94
1158.1	30.55	29.03	27.38	16.00	17.37	17.51
1198.8	28.70	27.47	25.94	14.96	16.42	16.86
1219.1	27.81	26.70	25.36	14.61	16.07	16.54
1259.8	26.52	25.60	24.41	13.76	15.27	16.09
1280.1	25.52	24.95	23.76	13.27	14.88	15.80

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		0	+3	+6
10.1	40.1	44.07	45.27	44.20
50.8	80.8	33.50	33.31	33.22
91.4	121.4	28.55	29.26	28.64
132.1	162.1	26.17	26.60	26.76
172.7	202.7	24.85	25.40	25.67
213.4	243.4	23.90	24.35	24.70
254.0	284.0	23.18	23.72	24.08
274.4	304.4	22.98	23.35	23.71
315.0	345.0	22.92	23.39	23.79
335.3	365.3	22.67	23.06	23.65
376.0	406.0	22.93	23.47	23.85
396.3	426.3	23.14	23.92	24.44
437.0	467.0	23.45	24.52	25.24
457.3	487.3	23.39	24.58	25.10
498.0	528.0	23.00	24.22	24.92
518.3	548.3	22.52	23.55	24.13
559.0	589.0	21.25	21.85	21.98
579.3	609.3	20.80	21.27	21.23
619.9	649.9	19.70	19.96	20.08
640.3	670.3	19.33	19.40	19.59
680.9	710.9	18.96	18.89	18.89
701.2	731.2	18.78	18.51	18.49
741.9	771.9	18.57	18.35	18.18
762.2	792.2	18.74	18.53	18.45
802.9	832.9	18.76	18.59	18.35
823.2	853.2	18.67	18.49	18.41
863.9	893.9	18.20	18.10	17.96
884.2	914.2	17.93	17.87	17.72
924.9	954.9	17.39	17.24	17.19
945.2	975.2	16.96	16.90	16.93
985.8	1015.8	16.10	16.17	16.28
1006.2	1036.2	15.45	15.61	15.90
1046.8	1076.8	14.52	14.62	14.63
1067.1	1097.1	14.01	14.07	13.94
1107.8	1137.8	12.83	12.69	12.34
1128.1	1158.1	12.37	12.00	11.73
1168.8	1198.8	11.24	10.74	10.25
1189.1	1219.1	10.78	10.16	9.61
1229.8	1259.8	9.99	9.29	8.69
1250.1	1280.1	9.66	8.90	8.22

Frequency Mixer

ADE-R1L+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=500MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		0	+3	+6		0	+3	+6		0	+3	+6
10.1	40.1	1.19	1.18	1.10	40.1	1.20	2.40	5.95	10.0	1.76	1.53	1.38
50.8	80.8	1.24	1.12	1.02	80.8	1.11	1.75	2.82	22.3	1.81	1.57	1.43
91.4	121.4	1.21	1.09	1.03	121.4	1.09	1.74	2.72	34.6	1.83	1.59	1.44
132.1	162.1	1.21	1.09	1.04	162.1	1.10	1.68	2.54	46.9	1.79	1.55	1.40
172.7	202.7	1.21	1.10	1.07	202.7	1.12	1.67	2.48	59.2	1.86	1.62	1.47
213.4	243.4	1.20	1.10	1.08	243.4	1.16	1.72	2.53	71.5	1.76	1.52	1.37
254.0	284.0	1.20	1.11	1.09	284.0	1.19	1.70	2.45	83.8	1.85	1.61	1.46
274.4	304.4	1.19	1.11	1.11	304.4	1.20	1.73	2.49	96.2	1.80	1.56	1.41
315.0	345.0	1.19	1.12	1.12	345.0	1.27	1.78	2.53	108.5	1.85	1.61	1.46
335.3	365.3	1.21	1.13	1.13	365.3	1.28	1.78	2.50	120.8	1.85	1.62	1.47
376.0	406.0	1.22	1.16	1.16	406.0	1.33	1.84	2.58	133.1	1.82	1.58	1.43
396.3	426.3	1.21	1.16	1.16	426.3	1.37	1.88	2.61	145.4	1.87	1.63	1.48
437.0	467.0	1.23	1.18	1.18	467.0	1.42	1.91	2.63	157.7	1.81	1.58	1.43
457.3	487.3	1.24	1.19	1.19	487.3	1.45	1.94	2.67	170.0	1.90	1.66	1.51
498.0	528.0	1.25	1.20	1.21	528.0	1.53	2.01	2.71	182.3	1.85	1.61	1.46
518.3	548.3	1.26	1.22	1.22	548.3	1.56	2.02	2.70	194.6	1.89	1.65	1.50
559.0	589.0	1.29	1.23	1.24	589.0	1.65	2.11	2.78	206.9	1.88	1.65	1.51
579.3	609.3	1.30	1.24	1.25	609.3	1.70	2.17	2.84	219.2	1.88	1.64	1.49
619.9	649.9	1.37	1.30	1.29	649.9	1.77	2.26	2.92	231.5	1.95	1.71	1.56
640.3	670.3	1.41	1.33	1.31	670.3	1.81	2.33	3.02	243.8	1.88	1.64	1.49
680.9	710.9	1.51	1.43	1.39	710.9	1.90	2.43	3.15	256.2	1.97	1.73	1.58
701.2	731.2	1.59	1.51	1.46	731.2	1.93	2.43	3.15	268.5	1.91	1.67	1.53
741.9	771.9	1.78	1.70	1.64	771.9	2.01	2.51	3.23	280.8	1.96	1.73	1.57
762.2	792.2	1.88	1.80	1.73	792.2	2.07	2.56	3.27	293.1	1.95	1.72	1.57
802.9	832.9	2.12	2.04	1.98	832.9	2.15	2.60	3.28	305.4	1.94	1.71	1.56
823.2	853.2	2.26	2.17	2.11	853.2	2.19	2.62	3.29	317.7	2.01	1.78	1.63
863.9	893.9	2.48	2.39	2.33	893.9	2.30	2.70	3.35	330.0	1.96	1.73	1.58
884.2	914.2	2.59	2.51	2.44	914.2	2.35	2.72	3.34	342.3	2.05	1.82	1.67
924.9	954.9	2.80	2.69	2.61	954.9	2.44	2.75	3.34	354.6	1.97	1.75	1.61
945.2	975.2	2.88	2.76	2.68	975.2	2.49	2.77	3.34	366.9	2.03	1.80	1.64
985.8	1015.8	3.08	2.94	2.84	1015.8	2.61	2.83	3.36	379.2	2.00	1.78	1.64
1006.2	1036.2	3.20	3.05	2.94	1036.2	2.68	2.86	3.39	391.5	2.00	1.77	1.62
1046.8	1076.8	3.42	3.24	3.12	1076.8	2.86	3.00	3.50	403.8	2.08	1.86	1.71
1067.1	1097.1	3.52	3.31	3.20	1097.1	2.97	3.09	3.58	416.2	2.04	1.81	1.65
1107.8	1137.8	3.72	3.50	3.37	1137.8	3.25	3.31	3.73	428.5	2.12	1.89	1.75
1128.1	1158.1	3.81	3.56	3.43	1158.1	3.40	3.42	3.79	440.8	2.03	1.82	1.68
1168.8	1198.8	3.94	3.66	3.52	1198.8	3.71	3.65	3.95	453.1	2.08	1.86	1.72
1189.1	1219.1	4.01	3.70	3.55	1219.1	3.83	3.75	4.03	465.4	2.06	1.84	1.70
1229.8	1259.8	4.11	3.74	3.55	1259.8	4.05	3.90	4.11	477.7	2.06	1.83	1.69
1250.1	1280.1	4.13	3.73	3.53	1280.1	4.10	3.97	4.15	490.0	2.15	1.94	1.81

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	--	--	17	35	12	30	17	40	35	45	38	56
1	--	48	+0	29	14	35	22	40	35	46	38	63
2	96	64	47	63	48	58	45	65	48	65	62	68
3	>100	62	66	68	63	>79	54	71	58	72	59	75
4	>100	>79	>79	>79	>79	>79	>79	>79	77	>79	>79	>79
5	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
6	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
7	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
8	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
9	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
10	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 251 MHz; -15.00 dBm.
LO IN: 281 MHz; +3.00 dBm
IF OUT: 30 MHz; -21.12 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	--	--	24	46	25	44	33	52	55	66	56	71
1	--	18	+0	30	14	39	24	44	43	54	52	81
2	76	56	40	61	42	63	41	60	44	66	61	67
3	>100	43	42	48	43	51	44	51	47	57	51	62
4	>100	73	67	68	60	65	60	63	54	72	57	78
5	>100	75	60	70	54	74	53	69	52	73	57	69
6	>100	85	72	>89	74	87	78	79	77	74	73	75
7	>100	83	77	81	79	77	69	74	66	72	64	79
8	>100	>89	86	>89	83	>89	88	89	86	>89	83	>89
9	>100	>89	>89	>89	83	>89	88	87	>89	>89	87	88
10	>100	>89	>89	>89	>89	>89	>89	>89	>89	87	>89	>89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 251 MHz; -5.00 dBm.
LO IN: 281 MHz; +3.00 dBm
IF OUT: 30 MHz; -11.17 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.

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