

Frequency Mixer

ADE-ED8339/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	7.92	6.38	5.86
50.4	80.4	7.39	6.38	5.91
90.7	120.7	7.62	6.29	5.85
131.0	161.0	7.14	6.12	5.86
171.3	201.3	6.88	6.12	5.88
211.5	241.5	6.98	6.17	5.92
251.8	281.8	6.77	6.16	5.98
292.1	322.1	6.85	6.18	6.00
332.4	362.4	6.84	6.32	6.05
372.7	402.7	6.91	6.32	6.13
413.0	443.0	6.98	6.36	6.15
453.3	483.3	6.99	6.51	6.17
493.6	523.6	6.91	6.56	6.30
533.9	563.9	6.95	6.65	6.43
574.2	604.2	7.00	6.65	6.43
614.4	644.4	7.22	6.71	6.39
654.7	684.7	7.59	6.73	6.35
695.0	725.0	8.01	7.03	6.38
735.3	765.3	8.31	7.57	6.64
775.6	805.6	8.38	7.74	6.96
815.9	845.9	8.62	8.02	7.33
856.2	886.2	8.81	8.17	7.57
896.5	926.5	8.99	8.34	7.79
916.6	946.6	9.10	8.50	7.94
956.9	986.9	9.31	8.63	8.05
977.1	1007.1	9.46	8.72	8.06
1017.3	1047.3	9.80	8.83	8.01
1037.5	1067.5	9.97	8.82	7.95
1077.8	1107.8	10.57	8.90	7.91
1097.9	1127.9	10.77	8.88	7.83
1138.2	1168.2	11.43	8.91	7.89
1158.4	1188.4	11.71	8.96	7.96
1198.7	1228.7	12.30	9.06	8.22
1218.8	1248.8	12.41	9.11	8.40
1259.1	1289.1	13.03	9.54	8.77
1279.2	1309.2	13.37	9.76	9.00
1319.5	1349.5	13.43	10.08	9.47
1339.7	1369.7	13.58	10.37	9.77
1380.0	1410.0	14.01	10.99	10.31
1400.1	1430.1	13.99	11.15	10.52

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	18.30	23.34	25.67
50.4	80.4	20.45	22.89	30.58
90.7	120.7	20.07	28.27	32.23
131.0	161.0	26.56	29.04	32.04
171.3	201.3	25.31	29.68	31.05
211.5	241.5	23.59	29.13	27.66
251.8	281.8	25.92	28.56	28.25
292.1	322.1	25.40	32.30	26.61
332.4	362.4	25.59	23.79	25.59
372.7	402.7	27.19	24.80	23.10
413.0	443.0	23.69	27.91	25.46
453.3	483.3	24.32	25.56	27.97
493.6	523.6	27.28	23.98	23.69
533.9	563.9	31.86	24.02	22.48
574.2	604.2	25.53	23.74	21.49
614.4	644.4	22.84	23.91	21.71
654.7	684.7	25.21	24.56	26.15
695.0	725.0	17.20	22.98	26.78
735.3	765.3	15.15	17.61	24.16
775.6	805.6	15.15	15.49	21.28
815.9	845.9	15.42	14.97	17.29
856.2	886.2	16.07	15.26	16.07
896.5	926.5	16.52	15.75	15.81
916.6	946.6	17.05	16.20	16.19
956.9	986.9	17.84	17.04	16.82
977.1	1007.1	18.39	17.74	17.37
1017.3	1047.3	19.41	18.29	18.15
1037.5	1067.5	19.78	18.90	19.04
1077.8	1107.8	19.43	19.78	19.81
1097.9	1127.9	19.24	19.79	20.22
1138.2	1168.2	18.59	18.84	20.72
1158.4	1188.4	18.09	18.18	20.64
1198.7	1228.7	18.14	17.31	20.25
1218.8	1248.8	18.21	17.18	20.15
1259.1	1289.1	18.31	17.13	19.70
1279.2	1309.2	18.51	17.31	19.59
1319.5	1349.5	23.63	18.33	19.50
1339.7	1369.7	28.46	18.56	19.94
1380.0	1410.0	23.20	19.50	21.27
1400.1	1430.1	20.48	20.28	21.83

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	0.12	0.17	0.11
50.4	80.4	0.25	0.21	0.12
90.7	120.7	0.31	0.21	0.13
131.0	161.0	0.64	0.30	0.12
171.3	201.3	0.54	0.24	0.12
211.5	241.5	0.81	0.32	0.15
251.8	281.8	0.79	0.29	0.16
292.1	322.1	0.85	0.38	0.18
332.4	362.4	0.88	0.30	0.20
372.7	402.7	0.81	0.33	0.19
413.0	443.0	0.90	0.44	0.23
453.3	483.3	0.89	0.31	0.29
493.6	523.6	1.13	0.41	0.29
533.9	563.9	1.36	0.50	0.31
574.2	604.2	1.51	0.65	0.42
614.4	644.4	1.69	0.99	0.60
654.7	684.7	1.59	1.24	0.71
695.0	725.0	1.55	1.33	0.97
735.3	765.3	1.47	1.03	1.09
775.6	805.6	1.59	0.99	1.03
815.9	845.9	1.58	0.93	0.89
856.2	886.2	1.49	0.88	0.79
896.5	926.5	1.62	0.88	0.75
916.6	946.6	1.64	0.84	0.72
956.9	986.9	1.65	0.83	0.68
977.1	1007.1	1.79	0.83	0.70
1017.3	1047.3	1.71	0.90	0.86
1037.5	1067.5	1.59	0.95	0.95
1077.8	1107.8	1.33	1.12	1.08
1097.9	1127.9	1.25	1.21	1.18
1138.2	1168.2	0.94	1.39	1.16
1158.4	1188.4	0.90	1.55	1.22
1198.7	1228.7	0.77	1.74	1.20
1218.8	1248.8	0.77	1.81	1.19
1259.1	1289.1	0.71	1.89	1.17
1279.2	1309.2	0.78	1.83	1.11
1319.5	1349.5	0.93	1.75	1.06
1339.7	1369.7	1.16	1.72	1.01
1380.0	1410.0	1.39	1.71	1.03
1400.1	1430.1	1.45	1.62	1.04

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=375.1MHz (dB)
		@LO (dBm)
		+17
365.0	10.1	6.53
355.9	19.2	6.60
346.8	28.3	6.68
337.7	37.4	6.51
328.6	46.5	6.57
319.5	55.6	6.42
310.4	64.7	6.35
301.3	73.8	6.37
292.2	82.9	6.19
283.1	92.0	6.26
274.0	101.1	6.15
264.9	110.2	6.11
255.8	119.3	6.10
246.7	128.4	5.98
237.6	137.5	6.05
228.5	146.6	5.96
219.4	155.7	5.93
210.3	164.8	5.94
201.2	173.9	5.92
192.1	183.0	5.88
182.9	192.2	5.87
173.8	201.3	5.94
164.7	210.4	5.95
155.6	219.5	5.93
146.5	228.6	5.97
137.4	237.7	5.99
128.3	246.8	5.97
119.2	255.9	5.95
110.1	265.0	5.97
101.0	274.1	6.02
91.9	283.2	5.99
82.8	292.3	6.01
73.7	301.4	6.06
64.6	310.5	6.09
55.5	319.6	6.08
46.4	328.7	6.10
37.3	337.8	6.17
28.2	346.9	6.21
19.1	356.0	6.19
10.0	365.1	6.32

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm)
		+17
10.0	20.1	6.44
28.7	38.8	6.29
47.4	57.5	6.37
66.2	76.3	6.25
84.9	95.0	6.15
103.6	113.7	6.03
122.3	132.4	6.07
141.0	151.1	6.12
159.7	169.8	6.11
178.5	188.6	6.07
197.2	207.3	6.08
215.9	226.0	6.16
234.6	244.7	6.19
253.3	263.4	6.27
272.1	282.2	6.23
290.8	300.9	6.27
309.5	319.6	6.29
328.2	338.3	6.40
346.9	357.0	6.39
365.6	375.7	6.48
384.4	394.5	6.46
403.1	413.2	6.44
421.8	431.9	6.52
440.5	450.6	6.63
459.2	469.3	6.72
477.9	488.0	6.72
496.7	506.8	6.83
515.4	525.5	6.78
534.1	544.2	6.80
552.8	562.9	6.76
571.5	581.6	6.71
590.3	600.4	6.67
609.0	619.1	6.65
627.7	637.8	6.64
646.4	656.5	6.57
665.1	675.2	6.54
683.8	693.9	6.49
702.6	712.7	6.54
721.3	731.4	6.71
740.0	750.1	6.86

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=750.1MHz (dB)
		@LO (dBm)
		+17
740.0	10.1	7.04
721.3	28.8	7.08
702.6	47.5	6.95
683.8	66.3	6.61
665.1	85.0	6.51
646.4	103.7	6.43
627.7	122.4	6.41
609.0	141.1	6.32
590.3	159.8	6.22
571.5	178.6	6.23
552.8	197.3	6.21
534.1	216.0	6.22
515.4	234.7	6.20
496.7	253.4	6.24
477.9	272.2	6.19
459.2	290.9	6.25
440.5	309.6	6.31
421.8	328.3	6.31
403.1	347.0	6.29
384.4	365.7	6.35
365.6	384.5	6.42
346.9	403.2	6.41
328.2	421.9	6.48
309.5	440.6	6.49
290.8	459.3	6.51
272.1	478.0	6.51
253.3	496.8	6.61
234.6	515.5	6.59
215.9	534.2	6.69
197.2	552.9	6.69
178.5	571.6	6.75
159.7	590.4	6.81
141.0	609.1	6.82
122.3	627.8	6.84
103.6	646.5	6.78
84.9	665.2	6.82
66.2	683.9	6.75
47.4	702.7	6.87
28.7	721.4	7.02
10.0	740.1	7.29

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
40.1	71.93	75.14	79.46	63.45	77.35	61.86
80.4	57.76	61.86	67.84	59.66	57.37	50.00
120.7	53.73	57.66	63.02	57.72	52.69	45.94
161.0	49.62	53.69	60.95	49.37	52.88	43.45
201.3	47.56	51.71	58.50	48.42	50.34	42.37
241.5	45.66	50.41	57.92	46.74	49.87	41.61
281.8	43.98	48.91	56.09	44.75	53.31	42.30
322.1	43.09	47.46	53.95	44.97	49.46	41.46
362.4	41.80	46.38	52.59	41.17	47.18	41.29
402.7	41.32	46.11	53.11	40.71	44.97	41.52
443.0	40.45	46.11	53.62	40.38	41.36	39.10
483.3	39.34	44.06	50.56	38.15	37.65	36.51
523.6	38.31	42.17	47.97	36.31	35.82	34.39
563.9	37.65	41.34	46.16	33.87	34.71	34.09
604.2	37.45	41.46	47.02	31.63	33.28	33.70
644.4	36.81	40.88	46.45	29.90	31.99	32.62
684.7	36.54	41.31	48.07	28.21	30.74	31.89
725.0	35.83	41.22	47.74	27.30	29.80	30.79
765.3	34.63	39.47	46.74	26.93	28.95	29.21
805.6	34.30	38.55	46.16	27.08	29.05	29.26
845.9	33.95	38.31	45.85	26.63	28.49	29.43
886.2	33.22	37.82	45.57	25.74	27.51	28.96
926.5	32.40	36.70	43.45	24.98	26.66	28.25
946.6	31.83	35.63	40.66	24.37	25.97	27.52
986.9	31.12	34.82	39.86	23.47	25.04	26.64
1007.1	30.69	34.42	39.96	23.02	24.50	26.22
1047.3	29.97	33.71	39.87	22.13	23.49	25.32
1067.5	29.74	33.77	41.31	21.68	22.96	24.99
1107.8	28.90	33.04	41.80	21.09	22.39	24.77
1127.9	28.60	32.54	41.01	20.59	21.83	24.28
1168.2	27.83	31.94	42.80	19.73	21.16	23.64
1188.4	27.40	31.53	42.23	19.31	20.79	23.22
1228.7	26.49	30.81	40.01	18.54	20.00	22.04
1248.8	26.14	30.54	37.97	18.10	19.60	21.55
1289.1	25.31	29.76	34.51	17.39	18.94	20.50
1309.2	24.99	29.17	33.68	17.02	18.36	19.97
1349.5	24.20	27.88	30.98	16.41	17.47	18.98
1369.7	23.94	27.51	30.44	15.93	17.12	18.66
1410.0	23.31	25.96	28.62	15.62	16.32	17.91
1430.1	23.15	25.39	27.97	15.49	15.96	17.63

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	45.19	53.90	56.96
50.4	80.4	36.51	36.99	37.68
90.7	120.7	31.43	32.48	32.74
131.0	161.0	28.97	29.69	29.96
171.3	201.3	27.34	28.02	28.23
211.5	241.5	25.93	26.61	26.90
251.8	281.8	25.31	25.91	26.28
292.1	322.1	24.57	25.47	25.86
332.4	362.4	24.18	24.91	25.37
372.7	402.7	24.12	24.73	25.10
413.0	443.0	23.98	24.63	24.85
453.3	483.3	23.95	24.61	24.97
493.6	523.6	23.71	24.18	24.62
533.9	563.9	22.81	23.02	23.26
574.2	604.2	21.68	21.78	22.01
614.4	644.4	20.42	20.33	20.34
654.7	684.7	19.70	19.32	19.22
695.0	725.0	19.76	19.43	19.15
735.3	765.3	19.72	19.66	19.35
775.6	805.6	19.42	19.34	19.34
815.9	845.9	19.24	19.12	19.10
856.2	886.2	18.91	18.88	18.88
896.5	926.5	18.38	18.42	18.68
916.6	946.6	18.15	18.23	18.38
956.9	986.9	17.50	17.68	17.97
977.1	1007.1	17.15	17.50	17.76
1017.3	1047.3	16.40	16.94	17.00
1037.5	1067.5	15.95	16.60	16.57
1077.8	1107.8	15.06	15.80	15.75
1097.9	1127.9	14.61	15.34	15.27
1138.2	1168.2	13.58	14.30	14.29
1158.4	1188.4	13.04	13.80	13.82
1198.7	1228.7	12.08	12.79	12.74
1218.8	1248.8	11.65	12.27	12.12
1259.1	1289.1	10.67	11.29	11.09
1279.2	1309.2	10.27	10.83	10.58
1319.5	1349.5	9.45	9.86	9.64
1339.7	1369.7	8.95	9.37	9.20
1380.0	1410.0	8.32	8.51	8.49
1400.1	1430.1	8.06	8.15	8.12

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=750.5MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
10.1	40.1	1.44	1.19	1.12	40.1	2.48	1.42	1.12	10.0	3.30	2.33	1.69
50.4	80.4	1.33	1.11	1.04	80.4	3.14	1.60	1.26	28.5	3.56	2.53	1.82
90.7	120.7	1.34	1.08	1.05	120.7	2.58	1.57	1.35	47.0	3.38	2.42	1.77
131.0	161.0	1.26	1.04	1.06	161.0	3.16	1.70	1.42	65.5	3.12	2.25	1.67
171.3	201.3	1.21	1.02	1.07	201.3	2.82	1.67	1.51	84.0	3.23	2.32	1.70
211.5	241.5	1.23	1.03	1.06	241.5	2.70	1.62	1.61	102.5	3.33	2.38	1.76
251.8	281.8	1.17	1.02	1.07	281.8	2.59	1.64	1.69	121.0	3.28	2.36	1.75
292.1	322.1	1.20	1.02	1.07	322.1	2.25	1.62	1.80	139.5	3.22	2.32	1.72
332.4	362.4	1.18	1.03	1.07	362.4	2.13	1.62	1.90	158.0	3.18	2.31	1.72
372.7	402.7	1.17	1.03	1.07	402.7	1.94	1.67	1.99	176.5	3.30	2.40	1.80
413.0	443.0	1.17	1.04	1.09	443.0	1.84	1.73	2.13	195.0	3.31	2.40	1.79
453.3	483.3	1.14	1.06	1.13	483.3	1.75	1.75	2.19	213.5	3.18	2.32	1.75
493.6	523.6	1.11	1.08	1.13	523.6	1.71	1.85	2.31	232.0	3.21	2.34	1.78
533.9	563.9	1.09	1.10	1.15	563.9	1.64	1.91	2.40	250.5	3.07	2.26	1.74
574.2	604.2	1.09	1.11	1.17	604.2	1.57	1.97	2.52	269.0	3.01	2.23	1.72
614.4	644.4	1.11	1.12	1.19	644.4	1.54	2.04	2.62	287.5	2.98	2.21	1.71
654.7	684.7	1.17	1.13	1.21	684.7	1.55	2.07	2.66	306.0	3.04	2.27	1.77
695.0	725.0	1.28	1.15	1.21	725.0	1.63	2.16	2.76	324.5	2.99	2.24	1.76
735.3	765.3	1.36	1.23	1.23	765.3	1.72	2.25	2.83	343.0	2.84	2.14	1.69
775.6	805.6	1.42	1.30	1.27	805.6	1.82	2.39	2.98	361.5	2.83	2.13	1.69
815.9	845.9	1.51	1.39	1.35	845.9	1.89	2.49	3.11	380.0	2.86	2.17	1.74
856.2	886.2	1.62	1.51	1.45	886.2	1.97	2.57	3.20	398.5	2.83	2.14	1.73
896.5	926.5	1.73	1.62	1.56	926.5	2.07	2.68	3.33	417.0	2.77	2.09	1.69
916.6	946.6	1.80	1.68	1.61	946.6	2.12	2.72	3.37	435.5	2.77	2.09	1.69
956.9	986.9	1.93	1.80	1.72	986.9	2.22	2.79	3.44	454.0	2.74	2.09	1.71
977.1	1007.1	2.02	1.88	1.79	1007.1	2.28	2.83	3.48	472.5	2.65	2.03	1.68
1017.3	1047.3	2.18	2.00	1.92	1047.3	2.42	2.91	3.56	491.0	2.64	2.01	1.65
1037.5	1067.5	2.28	2.08	2.01	1067.5	2.48	2.95	3.58	509.5	2.71	2.06	1.69
1077.8	1107.8	2.48	2.24	2.17	1107.8	2.63	3.00	3.61	528.0	2.62	2.00	1.67
1097.9	1127.9	2.57	2.32	2.25	1127.9	2.72	3.04	3.62	546.5	2.53	1.93	1.62
1138.2	1168.2	2.80	2.49	2.41	1168.2	2.92	3.14	3.67	565.0	2.53	1.93	1.61
1158.4	1188.4	2.92	2.56	2.47	1188.4	3.01	3.16	3.65	583.5	2.57	1.96	1.65
1198.7	1228.7	3.11	2.70	2.58	1228.7	3.24	3.25	3.67	602.0	2.54	1.94	1.64
1218.8	1248.8	3.18	2.75	2.64	1248.8	3.37	3.33	3.73	620.5	2.50	1.89	1.60
1259.1	1289.1	3.34	2.86	2.71	1289.1	3.62	3.50	3.85	639.0	2.51	1.89	1.58
1279.2	1309.2	3.40	2.90	2.75	1309.2	3.76	3.59	3.89	657.5	2.50	1.89	1.60
1319.5	1349.5	3.39	2.93	2.79	1349.5	4.07	3.83	4.05	676.0	2.46	1.87	1.59
1339.7	1369.7	3.43	2.98	2.84	1369.7	4.19	3.95	4.13	694.5	2.47	1.85	1.55
1380.0	1410.0	3.43	3.00	2.86	1410.0	4.45	4.15	4.21	731.5	2.55	1.90	1.59
1400.1	1430.1	3.43	3.00	2.87	1430.1	4.57	4.24	4.25	750.0	2.33	1.80	1.66

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	17	32	7	25	17	37	39	42	38	46
1	-	18	0	32	14	31	30	35	28	58	33	52
2	>100	85	44	57	43	56	40	62	50	59	62	62
3	>100	65	56	66	55	73	49	68	49	65	52	71
4	>100	76	77	78	85	73	75	76	74	74	71	79
5	>100	>92	78	85	79	83	74	80	74	80	77	83
6	>100	>92	>92	89	90	92	86	>92	84	>92	84	>92
7	>100	>92	>92	>92	>92	>92	>92	92	90	>92	>92	>92
8	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
9	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
10	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 370.1 MHz; -1.00 dBm.
LO IN: 400.1 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -7.6 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	27	42	20	37	32	57	55	63	52	62
1	-	19	0	33	14	34	25	37	36	58	43	55
2	89	57	41	53	38	57	35	54	43	59	64	64
3	>100	51	42	54	47	58	38	50	43	55	42	74
4	>100	65	52	82	52	67	52	65	48	84	61	72
5	>100	73	59	77	53	73	50	63	46	67	49	63
6	>100	89	63	77	65	77	66	78	65	84	63	79
7	>100	83	84	78	67	91	67	78	63	76	60	80
8	>100	99	85	89	79	79	80	78	76	75	69	78
9	>100	100	91	100	80	91	70	80	69	80	70	78
10	>100	102	>102	101	102	93	89	85	78	84	76	83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 370.1 MHz; 9.00 dBm.
LO IN: 400.1 MHz; +17.00 dBm
IF OUT: 29.91 MHz; 2.38 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.