

Frequency Mixer

ADE-ED9669/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=94MHz (dB)		
		@LO (dBm)		
		+3	+6	+9
90.0	184.0	17.01	11.14	9.32
130.0	224.0	13.57	9.41	7.99
170.0	264.0	13.27	9.21	7.73
210.0	304.0	11.20	8.24	7.13
250.0	344.0	11.36	8.14	7.10
290.0	384.0	10.21	7.57	6.82
330.0	424.0	10.18	7.48	6.82
370.0	464.0	9.45	7.26	6.71
410.0	504.0	9.06	7.16	6.67
450.0	544.0	8.86	7.12	6.65
490.0	584.0	8.34	6.98	6.52
530.0	624.0	8.49	7.05	6.58
570.0	664.0	8.04	6.86	6.46
610.0	704.0	8.14	6.94	6.50
650.0	744.0	7.91	6.85	6.43
690.0	784.0	7.86	6.85	6.42
730.0	824.0	7.93	6.94	6.50
770.0	864.0	7.82	6.88	6.48
810.0	904.0	7.93	6.99	6.55
850.0	944.0	7.91	7.02	6.56
890.0	984.0	7.92	7.04	6.58
930.0	1024.0	8.03	7.09	6.62
970.0	1064.0	7.98	7.06	6.57
1010.0	1104.0	8.00	7.10	6.59
1050.0	1144.0	8.01	7.11	6.59
1090.0	1184.0	7.94	7.08	6.58
1130.0	1224.0	7.91	7.07	6.58
1170.0	1264.0	7.86	7.03	6.56
1210.0	1304.0	7.85	7.03	6.55
1270.0	1364.0	7.90	7.13	6.61
1310.0	1404.0	7.98	7.25	6.70
1370.0	1464.0	8.09	7.43	6.91
1410.0	1504.0	8.24	7.67	7.15
1470.0	1564.0	8.50	8.04	7.60
1510.0	1604.0	8.70	8.34	7.95
1570.0	1664.0	8.97	8.77	8.58
1610.0	1704.0	9.08	8.92	8.79
1670.0	1764.0	9.52	9.33	9.24
1710.0	1804.0	9.78	9.55	9.44
1770.0	1864.0	10.56	10.32	10.19

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+3	+6	+9
90.0	184.0	1.80	9.74	12.75
130.0	224.0	3.73	10.94	14.24
170.0	264.0	4.06	10.54	19.71
210.0	304.0	6.62	11.11	19.70
250.0	344.0	6.10	13.34	21.35
290.0	384.0	7.09	15.95	21.39
330.0	424.0	7.42	16.11	21.72
370.0	464.0	8.59	15.76	22.65
410.0	504.0	10.58	16.65	19.65
450.0	544.0	11.08	18.02	20.10
490.0	584.0	12.64	18.16	17.35
530.0	624.0	12.47	17.87	17.16
570.0	664.0	13.98	18.58	17.29
610.0	704.0	13.39	18.92	17.76
650.0	744.0	14.26	18.40	18.11
690.0	784.0	14.47	18.31	18.12
730.0	824.0	13.32	17.97	17.97
770.0	864.0	13.76	17.27	17.14
810.0	904.0	12.96	17.06	16.58
850.0	944.0	13.37	16.73	15.49
890.0	984.0	13.91	16.88	14.69
930.0	1024.0	13.21	16.13	14.61
970.0	1064.0	13.49	14.54	13.94
1010.0	1104.0	11.86	12.98	13.34
1050.0	1144.0	10.43	11.60	12.52
1090.0	1184.0	9.59	10.85	11.89
1130.0	1224.0	8.80	10.04	11.32
1170.0	1264.0	8.30	9.49	10.74
1210.0	1304.0	8.03	9.18	10.58
1270.0	1364.0	8.47	9.34	10.89
1310.0	1404.0	8.73	9.55	11.18
1370.0	1464.0	9.37	10.21	11.74
1410.0	1504.0	9.96	10.74	12.24
1470.0	1564.0	11.60	11.79	13.19
1510.0	1604.0	12.21	12.16	13.50
1570.0	1664.0	13.75	13.42	14.30
1610.0	1704.0	14.13	14.83	15.36
1670.0	1764.0	12.96	16.68	17.30
1710.0	1804.0	12.14	16.28	18.46
1770.0	1864.0	10.96	14.45	17.99

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+3dBm (dB)		
		@LO (dBm)		
		+3	+6	+9
90.0	184.0	-4.10	-0.93	-0.32
130.0	224.0	-2.38	-0.44	-0.14
170.0	264.0	-2.09	-0.42	-0.05
210.0	304.0	-1.17	-0.22	0.02
250.0	344.0	-1.23	-0.05	0.04
290.0	384.0	-0.59	0.14	0.05
330.0	424.0	-0.63	0.11	0.06
370.0	464.0	-0.21	0.23	0.10
410.0	504.0	-0.03	0.16	0.07
450.0	544.0	0.12	0.18	0.10
490.0	584.0	0.35	0.18	0.11
530.0	624.0	0.25	0.19	0.10
570.0	664.0	0.52	0.28	0.16
610.0	704.0	0.42	0.22	0.13
650.0	744.0	0.63	0.33	0.22
690.0	784.0	0.62	0.32	0.24
730.0	824.0	0.63	0.35	0.24
770.0	864.0	0.76	0.47	0.34
810.0	904.0	0.75	0.49	0.37
850.0	944.0	0.86	0.59	0.46
890.0	984.0	0.91	0.65	0.51
930.0	1024.0	0.85	0.65	0.54
970.0	1064.0	0.94	0.73	0.63
1010.0	1104.0	1.00	0.78	0.68
1050.0	1144.0	1.04	0.86	0.74
1090.0	1184.0	1.14	0.95	0.81
1130.0	1224.0	1.15	0.97	0.81
1170.0	1264.0	1.22	1.01	0.83
1210.0	1304.0	1.25	1.06	0.86
1270.0	1364.0	1.25	1.03	0.82
1310.0	1404.0	1.23	1.00	0.81
1370.0	1464.0	1.30	0.99	0.81
1410.0	1504.0	1.24	0.88	0.71
1470.0	1564.0	1.21	0.76	0.60
1510.0	1604.0	1.19	0.68	0.51
1570.0	1664.0	1.18	0.59	0.38
1610.0	1704.0	1.19	0.59	0.34
1670.0	1764.0	1.07	0.54	0.32
1710.0	1804.0	0.96	0.49	0.30
1770.0	1864.0	0.84	0.43	0.28

Frequency Mixer

ADE-ED9669/1

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=810.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=339.9MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1610.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+6			+6			+6
710.1	100.0	11.57	10.1	350.0	7.84	1390.1	220.0	10.37
692.4	117.7	9.24	50.1	390.0	7.33	1350.1	260.0	10.19
674.7	135.4	8.97	90.1	430.0	7.42	1310.1	300.0	9.81
656.9	153.2	9.05	130.1	470.0	7.43	1270.1	340.0	9.60
639.2	170.9	8.66	170.1	510.0	7.46	1230.1	380.0	9.35
621.5	188.6	8.08	210.1	550.0	7.48	1190.1	420.0	9.33
603.8	206.3	7.64	250.1	590.0	7.54	1150.1	460.0	9.08
586.0	224.1	7.51	290.1	630.0	7.68	1110.1	500.0	8.90
568.3	241.8	7.51	330.1	670.0	7.73	1070.1	540.0	8.84
550.6	259.5	7.33	370.1	710.0	7.76	1030.1	580.0	8.70
532.9	277.2	7.28	410.1	750.0	7.81	990.1	620.0	8.64
515.2	294.9	7.04	450.1	790.0	8.00	950.1	660.0	8.54
497.4	312.7	6.84	490.1	830.0	8.18	910.1	700.0	8.45
479.7	330.4	6.81	530.1	870.0	8.24	870.1	740.0	8.36
462.0	348.1	6.69	570.1	910.0	8.31	830.1	780.0	7.99
444.3	365.8	6.49	610.1	950.0	8.29	790.1	820.0	7.74
426.6	383.5	6.21	650.1	990.0	8.29	750.1	860.0	8.10
408.8	401.3	5.98	710.1	1050.0	8.15	710.1	900.0	8.23
391.1	419.0	6.03	750.1	1090.0	8.13	670.1	940.0	8.26
373.4	436.7	6.26	810.1	1150.0	7.99	630.1	980.0	8.34
355.7	454.4	6.33	850.1	1190.0	8.05	590.1	1020.0	8.42
337.9	472.2	6.40	910.1	1250.0	8.09	550.1	1060.0	8.53
320.2	489.9	6.42	950.1	1290.0	8.23	510.1	1100.0	8.44
302.5	507.6	6.42	1010.1	1350.0	8.33	490.1	1120.0	8.47
284.8	525.3	6.48	1050.1	1390.0	8.42	450.1	1160.0	8.48
267.1	543.0	6.50	1110.1	1450.0	8.42	430.1	1180.0	8.36
249.3	560.8	6.48	1150.1	1490.0	8.50	390.1	1220.0	8.49
231.6	578.5	6.46	1210.1	1550.0	8.53	370.1	1240.0	8.49
213.9	596.2	6.45	1250.1	1590.0	8.60	330.1	1280.0	8.61
196.2	613.9	6.56	1310.1	1650.0	8.71	310.1	1300.0	8.61
178.5	631.6	6.57	1350.1	1690.0	8.77	270.1	1340.0	8.71
160.7	649.4	6.59	1410.1	1750.0	8.80	250.1	1360.0	8.78
143.0	667.1	6.57	1450.1	1790.0	8.89	210.1	1400.0	8.89
125.3	684.8	6.58	1510.1	1850.0	9.02	190.1	1420.0	8.99
107.6	702.5	6.74	1550.1	1890.0	9.17	150.1	1460.0	9.06
89.8	720.3	6.72	1610.1	1950.0	9.31	130.1	1480.0	9.19
72.1	738.0	6.73	1650.1	1990.0	9.39	90.1	1520.0	9.18
54.4	755.7	6.74	1710.1	2050.0	9.65	70.1	1540.0	9.19
36.7	773.4	6.76	1750.1	2090.0	9.77	30.1	1580.0	9.18
10.1	800.0	7.08	1810.1	2150.0	10.08	10.1	1600.0	9.37

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+3	+6	+9	+3	+6	+9
184.0	49.64	49.28	49.32	46.64	50.67	52.20
224.0	46.57	46.78	47.00	45.02	49.97	48.51
264.0	43.90	44.33	44.73	43.15	47.64	48.52
304.0	42.39	42.86	43.82	42.29	46.82	48.61
344.0	40.93	41.42	42.79	40.89	44.81	50.31
384.0	39.28	40.03	41.72	40.03	44.20	51.15
424.0	37.92	39.06	41.03	39.11	43.93	50.37
464.0	36.85	38.27	40.27	38.28	43.95	51.43
504.0	35.64	37.26	39.34	37.42	43.92	54.00
544.0	34.58	36.20	38.14	36.69	42.95	55.30
584.0	33.90	35.64	37.63	36.04	42.80	51.69
624.0	33.33	35.26	37.45	35.48	42.80	48.28
664.0	32.95	34.93	37.12	35.67	43.04	45.60
704.0	32.38	34.46	36.49	35.41	42.94	43.14
744.0	31.96	34.14	36.03	35.64	43.31	42.03
784.0	31.62	33.89	35.76	35.71	42.77	40.40
824.0	31.09	33.39	35.20	35.26	40.99	39.36
864.0	30.63	32.84	34.67	35.00	39.35	37.53
904.0	30.08	32.25	34.03	34.41	38.06	35.82
944.0	29.49	31.56	33.38	33.95	36.92	34.67
984.0	28.98	30.84	32.55	33.25	35.15	33.08
1024.0	28.53	30.40	32.05	32.67	34.12	32.30
1064.0	28.00	30.01	31.69	31.89	32.99	31.38
1104.0	27.65	29.78	31.40	31.14	31.99	30.39
1144.0	27.13	29.46	31.25	30.39	31.24	29.76
1184.0	26.88	29.20	31.14	29.43	30.38	29.24
1224.0	26.58	29.08	31.11	28.73	29.76	28.99
1264.0	26.31	28.91	31.09	27.79	28.65	28.41
1304.0	26.35	29.13	31.44	26.96	27.42	27.18
1364.0	26.28	29.47	32.18	26.05	26.46	25.98
1404.0	26.32	29.75	32.74	25.46	25.95	25.33
1464.0	26.72	30.57	33.94	24.70	25.29	24.83
1504.0	27.11	31.27	34.78	24.08	24.92	24.45
1564.0	27.77	32.64	36.55	23.35	24.34	24.14
1604.0	28.19	33.60	37.31	22.96	24.06	23.82
1664.0	28.70	34.88	37.96	22.18	23.33	23.28
1704.0	29.28	36.08	37.44	21.86	23.12	22.99
1764.0	30.82	40.53	36.96	21.25	22.47	22.51
1804.0	32.14	45.77	35.78	21.18	22.32	22.34
1864.0	34.03	48.52	33.91	20.88	22.09	22.13

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+3	+6	+9
90.0	184.0	31.55	31.62	31.95
130.0	224.0	28.08	28.48	28.45
170.0	264.0	25.32	25.93	26.59
210.0	304.0	23.77	24.61	24.82
250.0	344.0	22.23	23.30	23.89
290.0	384.0	21.45	22.81	23.16
330.0	424.0	20.70	21.95	22.48
370.0	464.0	20.07	21.46	22.10
410.0	504.0	19.65	21.03	21.74
450.0	544.0	19.13	20.82	21.47
490.0	584.0	18.82	20.44	21.18
530.0	624.0	18.19	20.02	20.77
570.0	664.0	18.28	20.13	21.00
610.0	704.0	18.60	20.77	22.06
650.0	744.0	19.03	21.38	22.79
690.0	784.0	19.48	21.83	23.00
730.0	824.0	19.33	21.32	22.21
770.0	864.0	19.14	20.70	21.12
810.0	904.0	18.71	19.73	20.10
850.0	944.0	18.06	18.76	18.95
890.0	984.0	17.22	17.79	17.92
930.0	1024.0	16.83	17.11	17.25
970.0	1064.0	16.51	16.76	16.94
1010.0	1104.0	16.43	16.64	16.73
1050.0	1144.0	16.46	16.68	16.85
1090.0	1184.0	16.47	16.66	16.88
1130.0	1224.0	16.38	16.58	16.78
1170.0	1264.0	16.71	16.81	16.89
1210.0	1304.0	17.14	17.28	17.28
1270.0	1364.0	17.83	17.93	17.82
1310.0	1404.0	18.34	18.42	18.12
1370.0	1464.0	18.74	18.45	17.77
1410.0	1504.0	18.44	17.95	17.06
1470.0	1564.0	17.46	16.70	15.76
1510.0	1604.0	16.36	15.41	14.45
1570.0	1664.0	14.65	13.58	12.75
1610.0	1704.0	13.47	12.43	11.54
1670.0	1764.0	12.12	11.04	10.23
1710.0	1804.0	11.18	10.10	9.35
1770.0	1864.0	10.00	9.13	8.39

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1600MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+3	+6	+9		+3	+6	+9		+3	+6	+9
90.0	184.0	5.17	4.17	3.68	184.0	5.07	3.88	3.06	10.0	3.33	2.90	2.46
130.0	224.0	4.18	3.34	2.92	224.0	4.37	3.21	2.71	50.0	3.33	2.92	2.48
170.0	264.0	3.90	3.05	2.63	264.0	4.13	3.02	2.53	90.0	3.27	2.87	2.46
210.0	304.0	3.52	2.82	2.46	304.0	3.70	2.73	2.37	130.0	3.24	2.86	2.45
250.0	344.0	3.50	2.73	2.38	344.0	3.67	2.67	2.26	170.0	3.20	2.84	2.46
290.0	384.0	3.29	2.58	2.32	384.0	3.43	2.47	2.16	210.0	3.09	2.76	2.39
330.0	424.0	3.24	2.52	2.29	424.0	3.40	2.35	2.10	250.0	3.09	2.77	2.43
370.0	464.0	3.06	2.45	2.26	464.0	3.24	2.22	2.05	290.0	2.96	2.68	2.37
410.0	504.0	2.95	2.41	2.24	504.0	3.10	2.09	2.04	330.0	2.93	2.67	2.37
450.0	544.0	2.86	2.39	2.23	544.0	2.99	2.01	2.01	370.0	2.88	2.65	2.38
490.0	584.0	2.69	2.32	2.18	584.0	2.75	1.90	2.02	410.0	2.74	2.53	2.29
530.0	624.0	2.65	2.27	2.14	624.0	2.68	1.85	2.02	450.0	2.72	2.52	2.30
570.0	664.0	2.50	2.20	2.09	664.0	2.44	1.78	2.03	490.0	2.61	2.45	2.26
610.0	704.0	2.43	2.16	2.05	704.0	2.34	1.74	2.07	530.0	2.53	2.38	2.21
650.0	744.0	2.32	2.10	2.01	744.0	2.20	1.70	2.07	570.0	2.50	2.38	2.24
690.0	784.0	2.24	2.04	1.96	784.0	2.05	1.68	2.13	610.0	2.41	2.31	2.20
730.0	824.0	2.19	2.00	1.93	824.0	1.95	1.66	2.15	650.0	2.39	2.30	2.20
770.0	864.0	2.12	1.96	1.90	864.0	1.83	1.66	2.19	690.0	2.34	2.27	2.20
810.0	904.0	2.07	1.92	1.86	904.0	1.75	1.67	2.24	730.0	2.29	2.23	2.17
850.0	944.0	2.01	1.88	1.81	944.0	1.65	1.67	2.26	770.0	2.25	2.20	2.16
890.0	984.0	1.93	1.82	1.75	984.0	1.56	1.68	2.32	810.0	2.24	2.21	2.19
930.0	1024.0	1.84	1.74	1.68	1024.0	1.50	1.70	2.37	850.0	2.18	2.15	2.14
970.0	1064.0	1.74	1.65	1.61	1064.0	1.44	1.73	2.41	890.0	2.18	2.17	2.17
1010.0	1104.0	1.61	1.54	1.51	1104.0	1.39	1.77	2.47	930.0	2.16	2.16	2.18
1050.0	1144.0	1.50	1.44	1.42	1144.0	1.35	1.80	2.53	970.0	2.12	2.11	2.13
1090.0	1184.0	1.39	1.35	1.35	1184.0	1.34	1.84	2.57	1010.0	2.14	2.16	2.19
1130.0	1224.0	1.25	1.25	1.29	1224.0	1.34	1.90	2.66	1050.0	2.09	2.10	2.15
1170.0	1264.0	1.15	1.20	1.26	1264.0	1.35	1.93	2.68	1090.0	2.11	2.12	2.16
1210.0	1304.0	1.10	1.22	1.31	1304.0	1.38	1.98	2.75	1130.0	2.11	2.15	2.22
1270.0	1364.0	1.21	1.34	1.45	1364.0	1.43	2.06	2.83	1170.0	2.05	2.08	2.14
1310.0	1404.0	1.35	1.47	1.59	1404.0	1.49	2.13	2.90	1210.0	2.12	2.16	2.24
1370.0	1464.0	1.59	1.71	1.81	1464.0	1.57	2.22	3.00	1250.0	2.07	2.12	2.20
1410.0	1504.0	1.77	1.90	2.00	1504.0	1.63	2.30	3.09	1290.0	2.08	2.12	2.20
1470.0	1564.0	2.07	2.20	2.30	1564.0	1.73	2.38	3.17	1330.0	2.10	2.16	2.25
1510.0	1604.0	2.27	2.42	2.52	1604.0	1.81	2.47	3.27	1370.0	2.06	2.11	2.20
1570.0	1664.0	2.49	2.66	2.78	1664.0	1.93	2.56	3.34	1390.0	2.09	2.15	2.25
1610.0	1704.0	2.63	2.80	2.93	1704.0	2.03	2.67	3.47	1430.0	2.06	2.13	2.23
1670.0	1764.0	2.77	2.88	2.98	1764.0	2.18	2.77	3.53	1450.0	2.07	2.15	2.26
1710.0	1804.0	2.89	2.98	3.05	1804.0	2.31	2.89	3.67	1490.0	2.06	2.14	2.25
1770.0	1864.0	3.05	3.07	3.09	1864.0	2.48	3.00	3.72	1510.0	2.07	2.17	2.29

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	8	16	25	28	20	31	31	35	29	37
1	-	9	+0	22	14	38	60	35	42	48	42	54
2	85	60	45	53	41	70	62	61	57	55	>71	64
3	>90	69	>71	56	60	58	66	>71	>71	>71	67	>71
4	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
5	>90	>71	>71	>71	>71	>71	>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	>71	>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: 975 MHz; -12.00 dBm.
LO IN: 1069 MHz; +6.00 dBm
IF OUT: 94 MHz; -19.13 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	19	27	37	39	35	48	41	54	45	57
1	-	9	+0	23	15	43	66	41	51	55	51	59
2	64	49	38	42	32	53	55	57	50	55	58	62
3	>90	50	58	37	39	40	46	54	60	56	54	64
4	>90	73	>81	60	52	58	54	62	69	59	66	60
5	>90	60	75	71	57	61	53	64	60	71	63	72
6	>90	>81	80	>81	81	70	64	69	63	75	80	70
7	>90	>81	>81	80	>81	>81	68	69	68	71	77	81
8	>90	>81	>81	>81	>81	>81	>81	>81	74	>81	76	>81
9	>90	>81	>81	>81	>81	>81	>81	>81	81	>81	79	>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: 975 MHz; -2.00 dBm.
LO IN: 1069 MHz; +6.00 dBm
IF OUT: 94 MHz; -8.98 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.