

Frequency Mixer

ADE-ED9681/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	6.93	6.68	6.57
50.1	80.1	7.18	6.79	6.52
90.1	120.1	7.20	6.82	6.65
130.1	160.1	7.12	6.75	6.57
170.1	200.1	7.19	6.85	6.69
210.1	240.1	7.13	6.82	6.65
250.1	280.1	7.22	6.90	6.73
290.1	320.1	7.16	6.87	6.72
330.1	360.1	7.18	6.87	6.70
370.1	400.1	7.18	6.90	6.74
410.1	440.1	7.18	6.89	6.73
450.1	480.1	7.27	6.96	6.77
490.1	520.1	7.30	7.01	6.82
530.1	560.1	7.38	7.07	6.88
570.1	600.1	7.40	7.07	6.87
610.1	640.1	7.44	7.07	6.85
650.1	680.1	7.53	7.19	6.96
690.1	720.1	7.62	7.30	7.07
730.1	760.1	7.75	7.45	7.23
770.1	800.1	7.76	7.45	7.23
810.1	840.1	7.83	7.45	7.20
850.1	880.1	7.80	7.38	7.13
890.1	920.1	7.97	7.47	7.21
930.1	960.1	8.17	7.59	7.29
970.1	1000.1	8.37	7.72	7.38
1010.1	1040.1	8.64	7.94	7.52
1050.1	1080.1	8.85	8.15	7.64
1090.1	1120.1	9.02	8.36	7.80
1130.1	1160.1	9.18	8.58	8.01
1170.1	1200.1	9.36	8.83	8.30
1210.1	1240.1	9.62	9.10	8.66
1230.1	1260.1	9.68	9.18	8.76
1270.1	1300.1	9.78	9.30	8.92
1290.1	1320.1	9.91	9.43	9.05
1330.1	1360.1	10.03	9.53	9.17
1350.1	1380.1	10.03	9.52	9.15
1390.1	1420.1	10.18	9.69	9.34
1410.1	1440.1	10.26	9.79	9.46
1450.1	1480.1	10.34	9.92	9.61
1470.1	1500.1	10.50	10.11	9.84

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	17.80	20.66	20.71
50.1	80.1	18.96	19.58	20.74
90.1	120.1	18.69	20.51	20.67
130.1	160.1	20.44	20.63	20.71
170.1	200.1	20.40	20.58	20.65
210.1	240.1	20.43	20.59	20.67
250.1	280.1	20.39	20.55	20.63
290.1	320.1	20.04	19.22	19.06
330.1	360.1	18.04	18.16	18.85
370.1	400.1	20.41	20.55	19.78
410.1	440.1	20.41	20.56	20.64
450.1	480.1	20.19	18.16	16.56
490.1	520.1	20.35	20.33	20.59
530.1	560.1	15.68	17.61	19.63
570.1	600.1	13.22	14.53	17.03
610.1	640.1	18.17	15.09	15.31
650.1	680.1	14.74	18.11	17.50
690.1	720.1	14.30	14.64	17.62
730.1	760.1	14.91	14.57	15.70
770.1	800.1	18.44	17.99	20.38
810.1	840.1	18.97	20.28	20.40
850.1	880.1	13.80	15.18	15.78
890.1	920.1	13.60	13.00	13.58
930.1	960.1	18.91	12.81	13.11
970.1	1000.1	12.98	14.90	13.86
1010.1	1040.1	10.64	17.41	13.90
1050.1	1080.1	9.85	15.79	14.35
1090.1	1120.1	9.79	13.84	14.52
1130.1	1160.1	10.20	12.88	12.21
1170.1	1200.1	10.19	12.08	11.09
1210.1	1240.1	10.12	13.09	19.32
1230.1	1260.1	10.16	13.81	16.83
1270.1	1300.1	11.59	19.35	13.41
1290.1	1320.1	12.62	19.11	13.06
1330.1	1360.1	16.67	14.73	14.07
1350.1	1380.1	16.61	13.92	14.84
1390.1	1420.1	13.20	14.48	16.33
1410.1	1440.1	12.41	14.19	15.93
1450.1	1480.1	11.62	14.37	15.58
1470.1	1500.1	11.98	14.52	15.39

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	0.70	0.51	0.24
50.1	80.1	0.81	0.56	0.41
90.1	120.1	0.77	0.51	0.40
130.1	160.1	0.77	0.54	0.37
170.1	200.1	0.77	0.51	0.35
210.1	240.1	0.73	0.49	0.33
250.1	280.1	0.70	0.47	0.33
290.1	320.1	0.69	0.47	0.32
330.1	360.1	0.68	0.46	0.33
370.1	400.1	0.71	0.48	0.36
410.1	440.1	0.69	0.47	0.35
450.1	480.1	0.67	0.47	0.35
490.1	520.1	0.65	0.45	0.33
530.1	560.1	0.70	0.47	0.33
570.1	600.1	0.74	0.53	0.38
610.1	640.1	0.78	0.58	0.43
650.1	680.1	0.82	0.60	0.45
690.1	720.1	0.85	0.63	0.48
730.1	760.1	0.89	0.64	0.47
770.1	800.1	1.00	0.72	0.55
810.1	840.1	1.11	0.81	0.63
850.1	880.1	1.27	0.96	0.75
890.1	920.1	1.30	1.01	0.82
930.1	960.1	1.29	1.06	0.85
970.1	1000.1	1.23	1.07	0.87
1010.1	1040.1	1.12	1.04	0.89
1050.1	1080.1	1.08	1.03	0.93
1090.1	1120.1	1.06	0.98	0.93
1130.1	1160.1	1.03	0.92	0.89
1170.1	1200.1	1.05	0.88	0.82
1210.1	1240.1	1.00	0.82	0.72
1230.1	1260.1	1.00	0.82	0.70
1270.1	1300.1	1.09	0.88	0.74
1290.1	1320.1	1.05	0.86	0.71
1330.1	1360.1	1.11	0.90	0.73
1350.1	1380.1	1.19	0.97	0.78
1390.1	1420.1	1.16	0.90	0.72
1410.1	1440.1	1.17	0.87	0.71
1450.1	1480.1	1.21	0.88	0.74
1470.1	1500.1	1.11	0.80	0.68

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)
		@LO (dBm) +7
490.0	10.1	6.97
479.8	20.3	6.90
469.6	30.5	6.85
459.4	40.7	6.85
449.1	51.0	6.88
438.9	61.2	6.81
428.7	71.4	6.80
418.5	81.6	6.81
408.3	91.8	6.86
398.1	102.0	6.81
387.9	112.2	6.77
377.7	122.4	6.76
367.4	132.7	6.70
357.2	142.9	6.74
347.0	153.1	6.74
336.8	163.3	6.74
326.6	173.5	6.75
316.4	183.7	6.74
306.2	193.9	6.74
296.0	204.1	6.73
285.7	214.4	6.74
275.5	224.6	6.70
265.3	234.8	6.73
255.1	245.0	6.74
234.7	265.4	6.71
224.5	275.6	6.64
204.0	296.1	6.77
193.8	306.3	6.78
173.4	326.7	6.74
163.2	336.9	6.74
142.8	357.3	6.82
132.6	367.5	6.80
112.1	388.0	6.85
101.9	398.2	6.82
81.5	418.6	6.80
71.3	428.8	6.84
50.9	449.2	6.90
40.6	459.5	6.87
20.2	479.9	6.93
10.0	490.1	7.01

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm) +7
10.0	20.1	6.85
50.4	60.5	6.77
90.8	100.9	6.61
131.3	141.4	6.74
171.7	181.8	6.73
212.1	222.2	6.66
252.5	262.6	6.78
313.2	323.3	6.93
353.6	363.7	6.87
414.2	424.3	6.99
454.6	464.7	6.94
515.3	525.4	6.96
555.7	565.8	7.02
616.3	626.4	7.06
656.7	666.8	7.27
717.4	727.5	7.34
757.8	767.9	7.34
818.4	828.5	7.20
858.8	868.9	7.08
919.5	929.6	7.15
959.9	970.0	7.14
1020.5	1030.6	7.26
1060.9	1071.0	7.33
1121.6	1131.7	7.45
1162.0	1172.1	7.53
1222.6	1232.7	7.60
1263.1	1273.2	7.61
1323.7	1333.8	7.59
1364.1	1374.2	7.64
1424.7	1434.8	7.67
1465.2	1475.3	7.69
1525.8	1535.9	7.81
1566.2	1576.3	7.95
1626.8	1636.9	8.23
1667.3	1677.4	8.42
1727.9	1738.0	8.99
1768.3	1778.4	9.27
1828.9	1839.0	9.84
1869.4	1879.5	10.31
1930.0	1940.1	10.87

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB)
		@LO (dBm) +7
990.0	10.1	7.89
970.0	30.1	7.78
950.0	50.1	7.78
930.0	70.1	7.81
910.0	90.1	7.78
890.0	110.1	7.74
870.0	130.1	7.67
850.0	150.1	7.70
830.0	170.1	7.67
810.0	190.1	7.61
790.0	210.1	7.64
770.0	230.1	7.58
750.0	250.1	7.56
730.0	270.1	7.60
710.0	290.1	7.59
690.0	310.1	7.56
670.0	330.1	7.55
650.0	350.1	7.58
630.0	370.1	7.58
610.0	390.1	7.60
570.0	430.1	7.50
550.0	450.1	7.52
510.0	490.1	7.59
490.0	510.1	7.57
450.0	550.1	7.57
430.0	570.1	7.49
390.0	610.1	7.53
370.0	630.1	7.51
330.0	670.1	7.58
310.0	690.1	7.59
270.0	730.1	7.67
250.0	750.1	7.71
210.0	790.1	7.70
190.0	810.1	7.60
150.0	850.1	7.51
130.0	870.1	7.46
90.0	910.1	7.40
70.0	930.1	7.48
30.0	970.1	7.60
10.0	990.1	7.79

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	60.16	61.34	62.95	71.13	65.76	62.44
80.1	56.52	57.39	58.43	70.57	64.16	60.23
120.1	53.41	54.45	55.55	65.90	59.80	56.79
160.1	50.79	52.19	53.41	63.63	58.13	55.24
200.1	49.04	50.36	51.58	60.87	56.75	53.99
240.1	47.68	49.03	50.24	57.95	54.36	51.78
280.1	46.34	47.76	48.98	55.41	52.42	50.20
320.1	45.34	46.85	48.09	52.07	50.30	48.39
360.1	44.50	45.92	47.14	50.35	48.46	46.84
400.1	43.73	45.32	46.67	47.55	46.36	45.05
440.1	43.16	44.71	46.08	45.39	44.45	43.64
480.1	42.48	44.14	45.58	43.98	43.14	41.93
520.1	41.86	43.56	45.10	41.73	41.30	40.68
560.1	41.31	42.91	44.33	40.13	39.58	39.34
600.1	40.99	42.70	44.16	38.76	37.85	37.39
640.1	40.69	42.59	44.12	37.72	36.70	35.67
680.1	40.47	42.48	44.16	36.77	36.22	35.25
720.1	40.34	42.28	43.99	35.64	35.42	34.84
760.1	40.19	42.12	43.78	34.30	34.19	34.09
800.1	40.13	41.99	43.49	32.95	32.71	32.71
840.1	39.90	41.74	43.14	31.67	31.06	30.73
880.1	39.72	41.60	42.85	30.83	30.05	29.53
920.1	39.73	41.74	42.91	29.84	28.79	28.09
960.1	39.30	41.68	42.97	29.17	27.92	27.08
1000.1	39.08	41.84	43.61	28.43	27.56	26.53
1040.1	38.68	41.76	44.23	27.46	26.96	25.91
1080.1	38.07	41.23	44.30	26.49	26.34	25.49
1120.1	37.77	41.03	44.85	25.61	25.79	25.25
1160.1	37.44	40.72	45.07	24.56	24.97	24.87
1200.1	37.30	40.52	44.72	23.60	24.05	24.29
1240.1	37.46	41.16	46.21	22.67	23.03	23.32
1260.1	37.49	41.60	48.00	22.22	22.61	22.84
1300.1	37.42	42.51	53.04	21.61	22.04	22.25
1320.1	37.59	43.39	58.41	21.29	21.73	21.90
1360.1	37.70	45.05	51.31	20.57	21.08	21.13
1380.1	37.48	45.03	47.37	20.20	20.76	20.76
1420.1	37.71	44.57	41.99	19.82	20.30	20.08
1440.1	37.41	41.98	39.22	19.33	19.76	19.48
1480.1	36.12	38.63	36.47	18.73	19.11	18.83
1500.1	35.71	37.37	35.41	18.51	18.84	18.59

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	53.10	54.12	51.34
50.1	80.1	41.46	41.87	42.04
90.1	120.1	37.45	37.68	37.71
130.1	160.1	35.18	35.53	35.69
170.1	200.1	33.48	33.84	33.99
210.1	240.1	32.37	32.74	33.04
250.1	280.1	31.86	32.36	32.65
290.1	320.1	31.52	31.96	32.42
330.1	360.1	30.94	31.60	31.96
370.1	400.1	30.91	31.67	32.22
410.1	440.1	30.74	31.60	32.09
450.1	480.1	29.76	30.46	30.89
490.1	520.1	28.73	29.20	29.52
530.1	560.1	27.94	28.44	28.75
570.1	600.1	26.58	27.03	27.36
610.1	640.1	24.86	25.05	25.23
650.1	680.1	23.43	23.47	23.47
690.1	720.1	22.10	22.13	22.11
730.1	760.1	20.58	20.50	20.45
770.1	800.1	19.36	19.24	19.12
810.1	840.1	18.51	18.34	18.22
850.1	880.1	17.75	17.57	17.46
890.1	920.1	17.17	16.95	16.87
930.1	960.1	16.84	16.58	16.49
970.1	1000.1	16.49	16.26	16.12
1010.1	1040.1	16.09	15.92	15.79
1050.1	1080.1	15.72	15.60	15.47
1090.1	1120.1	15.44	15.33	15.18
1130.1	1160.1	15.14	15.03	14.86
1170.1	1200.1	14.82	14.77	14.65
1210.1	1240.1	14.55	14.55	14.51
1230.1	1260.1	14.37	14.40	14.36
1270.1	1300.1	14.00	14.03	13.93
1290.1	1320.1	13.76	13.75	13.64
1330.1	1360.1	13.36	13.27	13.08
1350.1	1380.1	13.15	13.02	12.79
1390.1	1420.1	12.65	12.42	12.14
1410.1	1440.1	12.40	12.11	11.83
1450.1	1480.1	11.81	11.48	11.20
1470.1	1500.1	11.50	11.16	10.88

Frequency Mixer

ADE-ED9681/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)				IF (OUT) (MHz)	IF VSWR @LO=1000MHz (:1)			
		@LO (dBm)				@LO (dBm)					@LO (dBm)			
		+4	+7	+10		+4	+7	+10	+4		+7	+10		
10.1	40.1	1.49	1.49	1.44	40.1	2.77	5.89	20.95	10.0	1.92	1.60	1.41		
50.1	80.1	1.15	1.23	1.30	80.1	1.92	2.82	4.12	30.0	1.97	1.64	1.45		
90.1	120.1	1.16	1.24	1.30	120.1	1.91	2.75	3.84	50.0	1.93	1.61	1.42		
130.1	160.1	1.20	1.28	1.34	160.1	1.83	2.59	3.55	70.0	1.96	1.64	1.46		
170.1	200.1	1.16	1.24	1.28	200.1	1.81	2.54	3.45	90.0	1.88	1.57	1.40		
210.1	240.1	1.21	1.29	1.34	240.1	1.85	2.60	3.54	110.0	1.94	1.62	1.44		
250.1	280.1	1.19	1.27	1.33	280.1	1.81	2.50	3.35	130.0	1.95	1.64	1.46		
290.1	320.1	1.21	1.28	1.33	320.1	1.86	2.58	3.45	150.0	1.93	1.62	1.44		
330.1	360.1	1.23	1.31	1.36	360.1	1.83	2.52	3.34	170.0	1.96	1.65	1.48		
370.1	400.1	1.23	1.30	1.35	400.1	1.87	2.55	3.37	190.0	1.89	1.59	1.42		
410.1	440.1	1.26	1.34	1.39	440.1	1.89	2.57	3.38	210.0	1.95	1.65	1.48		
450.1	480.1	1.25	1.33	1.38	480.1	1.90	2.57	3.34	230.0	1.92	1.63	1.47		
490.1	520.1	1.26	1.33	1.38	520.1	1.95	2.63	3.42	250.0	1.93	1.64	1.47		
530.1	560.1	1.27	1.34	1.39	560.1	1.95	2.61	3.36	270.0	1.95	1.66	1.51		
570.1	600.1	1.29	1.37	1.43	600.1	2.01	2.66	3.41	290.0	1.90	1.62	1.47		
610.1	640.1	1.30	1.39	1.45	640.1	2.02	2.66	3.38	310.0	1.95	1.67	1.52		
650.1	680.1	1.31	1.38	1.45	680.1	2.05	2.68	3.39	330.0	1.92	1.65	1.51		
690.1	720.1	1.32	1.38	1.43	720.1	2.09	2.71	3.41	350.0	1.95	1.68	1.54		
730.1	760.1	1.32	1.38	1.42	760.1	2.10	2.71	3.40	370.0	1.93	1.67	1.54		
770.1	800.1	1.33	1.38	1.43	800.1	2.14	2.74	3.41	390.0	1.92	1.65	1.52		
810.1	840.1	1.35	1.41	1.46	840.1	2.15	2.72	3.36	430.0	1.93	1.68	1.56		
850.1	880.1	1.35	1.42	1.47	880.1	2.21	2.76	3.38	450.0	1.95	1.71	1.60		
890.1	920.1	1.38	1.45	1.50	920.1	2.25	2.79	3.38	490.0	1.92	1.69	1.58		
930.1	960.1	1.38	1.44	1.49	960.1	2.31	2.84	3.42	510.0	1.95	1.72	1.63		
970.1	1000.1	1.41	1.47	1.52	1000.1	2.34	2.86	3.42	550.0	1.93	1.72	1.64		
1010.1	1040.1	1.49	1.53	1.58	1040.1	2.36	2.89	3.43	570.0	1.90	1.69	1.61		
1050.1	1080.1	1.54	1.56	1.59	1080.1	2.39	2.91	3.45	610.0	1.95	1.75	1.68		
1090.1	1120.1	1.65	1.66	1.68	1120.1	2.40	2.90	3.42	630.0	1.91	1.72	1.66		
1130.1	1160.1	1.77	1.77	1.78	1160.1	2.43	2.92	3.42	670.0	1.90	1.71	1.66		
1170.1	1200.1	1.87	1.87	1.87	1200.1	2.42	2.89	3.38	690.0	1.93	1.74	1.68		
1210.1	1240.1	2.00	2.00	1.99	1240.1	2.44	2.89	3.37	730.0	1.90	1.72	1.68		
1230.1	1260.1	2.05	2.05	2.04	1260.1	2.44	2.88	3.35	750.0	1.92	1.75	1.71		
1270.1	1300.1	2.10	2.10	2.09	1300.1	2.43	2.84	3.29	790.0	1.92	1.74	1.70		
1290.1	1320.1	2.18	2.18	2.18	1320.1	2.44	2.84	3.27	810.0	1.90	1.74	1.70		
1330.1	1360.1	2.29	2.29	2.29	1360.1	2.43	2.80	3.21	850.0	1.89	1.74	1.71		
1350.1	1380.1	2.31	2.30	2.30	1380.1	2.42	2.77	3.16	870.0	1.85	1.69	1.65		
1390.1	1420.1	2.39	2.39	2.39	1420.1	2.41	2.74	3.12	910.0	1.86	1.70	1.68		
1410.1	1440.1	2.46	2.47	2.45	1440.1	2.42	2.74	3.12	930.0	1.89	1.73	1.69		
1450.1	1480.1	2.49	2.49	2.47	1480.1	2.40	2.69	3.05	970.0	1.84	1.68	1.64		
1470.1	1500.1	2.51	2.52	2.50	1500.1	2.41	2.69	3.05	990.0	1.88	1.74	1.72		

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	15	27	13	27	22	35	24	35	40	47
1	-	23	+0	33	12	39	21	40	40	43	38	33
2	>90	>69	53	67	53	63	52	67	56	>69	56	66
3	>90	>69	67	>69	65	>69	60	>69	>69	>69	>69	>69
4	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
5	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
6	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
7	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
8	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
9	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
10	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 500 MHz; -14.00 dBm.
LO IN: 530 MHz; +7.00 dBm
IF OUT: 30 MHz; -21.06 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	25	38	25	39	34	48	38	50	54	61
1	-	24	+0	32	12	42	22	43	41	49	44	40
2	73	62	45	66	45	62	45	57	50	60	51	57
3	>90	56	47	53	73	59	44	62	52	56	56	60
4	>90	>79	69	72	66	69	65	70	60	>79	65	77
5	>90	77	72	68	60	65	56	66	55	64	60	75
6	>90	>79	>79	>79	>79	>79	>79	>79	77	>79	>79	>79
7	>90	>79	>79	>79	76	>79	>79	>79	77	>79	77	>79
8	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
9	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
10	>90	>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: 500 MHz; -4.00 dBm.
LO IN: 530 MHz; +7.00 dBm
IF OUT: 30 MHz; -11.05 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.