

Frequency Mixer

SYM-ED9627/1

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=+7dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+10	+13	+16			+10	+13	+16			+10	+13	+16
10.1	40.1	6.26	6.04	5.96	10.1	40.1	26.45	25.93	24.82	10.1	40.1	0.91	0.55	0.29
90.1	120.1	6.65	6.39	6.26	90.1	120.1	23.96	24.29	23.92	90.1	120.1	0.80	0.49	0.29
170.1	200.1	6.79	6.53	6.37	170.1	200.1	21.64	21.42	21.24	170.1	200.1	0.78	0.49	0.30
250.1	280.1	6.85	6.55	6.38	250.1	280.1	19.66	19.57	21.55	250.1	280.1	0.76	0.48	0.29
330.1	360.1	6.94	6.62	6.44	330.1	360.1	18.96	19.47	22.31	330.1	360.1	0.73	0.47	0.28
410.1	440.1	7.02	6.69	6.52	410.1	440.1	17.60	19.73	23.25	410.1	440.1	0.72	0.45	0.26
490.1	520.1	7.07	6.73	6.56	490.1	520.1	17.37	20.04	25.09	490.1	520.1	0.76	0.47	0.28
570.1	600.1	7.12	6.80	6.63	570.1	600.1	17.83	21.87	29.68	570.1	600.1	0.73	0.43	0.24
650.1	680.1	7.14	6.83	6.66	650.1	680.1	19.19	25.32	27.23	650.1	680.1	0.72	0.42	0.25
730.1	760.1	7.19	6.88	6.71	730.1	760.1	20.08	26.76	26.76	730.1	760.1	0.69	0.41	0.25
810.1	840.1	7.29	6.99	6.82	810.1	840.1	21.42	27.48	28.28	810.1	840.1	0.61	0.37	0.23
890.1	920.1	7.38	7.08	6.91	890.1	920.1	24.48	28.94	24.96	890.1	920.1	0.54	0.33	0.21
970.1	1000.1	7.50	7.18	7.01	970.1	1000.1	29.25	23.17	22.44	970.1	1000.1	0.48	0.29	0.19
1050.1	1080.1	7.62	7.27	7.08	1050.1	1080.1	25.48	22.18	22.65	1050.1	1080.1	0.44	0.27	0.18
1130.1	1160.1	7.82	7.44	7.23	1130.1	1160.1	23.36	22.46	22.57	1130.1	1160.1	0.40	0.24	0.17
1210.1	1240.1	7.98	7.56	7.35	1210.1	1240.1	25.71	23.91	23.68	1210.1	1240.1	0.38	0.22	0.15
1290.1	1320.1	8.09	7.64	7.42	1290.1	1320.1	26.51	26.72	25.52	1290.1	1320.1	0.40	0.24	0.17
1370.1	1400.1	8.22	7.76	7.51	1370.1	1400.1	27.85	24.90	24.57	1370.1	1400.1	0.39	0.24	0.18
1450.1	1480.1	8.36	7.89	7.65	1450.1	1480.1	26.99	27.71	25.64	1450.1	1480.1	0.43	0.27	0.20
1530.1	1560.1	8.55	8.07	7.83	1530.1	1560.1	24.34	28.96	26.98	1530.1	1560.1	0.46	0.29	0.21
1610.1	1640.1	8.91	8.38	8.09	1610.1	1640.1	22.99	28.81	25.38	1610.1	1640.1	0.40	0.26	0.20
1690.1	1720.1	9.24	8.68	8.36	1690.1	1720.1	21.99	27.58	26.04	1690.1	1720.1	0.34	0.23	0.19
1770.1	1800.1	9.47	8.86	8.49	1770.1	1800.1	21.61	24.26	23.99	1770.1	1800.1	0.33	0.24	0.21
1850.1	1880.1	9.52	8.88	8.51	1850.1	1880.1	22.39	21.10	21.17	1850.1	1880.1	0.37	0.27	0.25
1930.1	1960.1	9.53	8.88	8.50	1930.1	1960.1	20.21	19.36	19.28	1930.1	1960.1	0.39	0.31	0.30
2010.1	2040.1	9.58	8.90	8.51	2010.1	2040.1	18.86	18.28	18.59	2010.1	2040.1	0.38	0.33	0.32
2090.1	2120.1	9.68	9.02	8.62	2090.1	2120.1	17.99	17.49	17.73	2090.1	2120.1	0.41	0.36	0.34
2190.1	2220.1	9.56	8.97	8.62	2190.1	2220.1	16.70	16.62	16.87	2190.1	2220.1	0.51	0.41	0.38
2270.1	2300.1	9.61	9.05	8.71	2270.1	2300.1	16.24	16.32	16.59	2270.1	2300.1	0.54	0.42	0.37
2370.1	2400.1	9.58	9.03	8.71	2370.1	2400.1	15.63	16.04	16.55	2370.1	2400.1	0.65	0.48	0.41
2450.1	2480.1	9.56	9.03	8.72	2450.1	2480.1	15.29	15.79	16.44	2450.1	2480.1	0.68	0.53	0.45
2550.1	2580.1	9.61	9.08	8.75	2550.1	2580.1	15.20	15.61	16.20	2550.1	2580.1	0.74	0.54	0.46
2630.1	2660.1	9.71	9.17	8.82	2630.1	2660.1	14.98	15.60	16.20	2630.1	2660.1	0.84	0.58	0.47
2730.1	2760.1	9.93	9.39	9.02	2730.1	2760.1	14.22	14.90	15.38	2730.1	2760.1	0.98	0.71	0.56
2810.1	2840.1	9.87	9.33	8.98	2810.1	2840.1	13.18	14.00	14.61	2810.1	2840.1	1.20	0.89	0.71
2910.1	2940.1	10.04	9.44	9.11	2910.1	2940.1	12.72	13.63	14.43	2910.1	2940.1	1.33	0.91	0.70
2990.1	3020.1	10.19	9.62	9.26	2990.1	3020.1	12.65	13.70	14.78	2990.1	3020.1	1.41	0.97	0.70
3090.1	3120.1	10.70	10.06	9.63	3090.1	3120.1	12.88	13.96	15.36	3090.1	3120.1	1.52	0.98	0.68
3170.1	3200.1	11.05	10.39	9.95	3170.1	3200.1	13.22	14.30	15.72	3170.1	3200.1	1.61	1.04	0.72
3270.1	3300.1	11.68	10.96	10.46	3270.1	3300.1	13.69	14.66	15.96	3270.1	3300.1	1.72	1.14	0.80

Frequency Mixer

SYM-ED9627/1

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=650.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1300.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+13			+13			+13
640.0	10.1	6.48	10.0	20.1	6.63	1290.0	10.1	7.44
620.0	30.1	6.53	90.0	100.1	5.89	1250.0	50.1	7.52
600.0	50.1	6.59	170.0	180.1	6.04	1210.0	90.1	7.63
580.0	70.1	6.61	250.0	260.1	5.81	1170.0	130.1	7.63
560.0	90.1	6.68	330.0	340.1	5.81	1130.0	170.1	7.77
540.0	110.1	6.66	410.0	420.1	5.76	1090.0	210.1	7.80
520.0	130.1	6.70	490.0	500.1	5.63	1050.0	250.1	7.78
500.0	150.1	6.69	570.0	580.1	5.70	1010.0	290.1	7.76
480.0	170.1	6.79	650.0	660.1	5.63	970.0	330.1	7.80
460.0	190.1	6.82	730.0	740.1	5.60	930.0	370.1	7.76
440.0	210.1	6.83	810.0	820.1	5.67	890.0	410.1	7.78
430.0	220.1	6.81	890.0	900.1	5.63	850.0	450.1	7.80
410.0	240.1	6.76	970.0	980.1	5.62	810.0	490.1	7.82
400.0	250.1	6.81	1050.0	1060.1	5.65	790.0	510.1	7.76
380.0	270.1	6.86	1130.0	1140.1	5.60	750.0	550.1	7.78
370.0	280.1	6.80	1210.0	1220.1	5.80	730.0	570.1	7.73
350.0	300.1	6.80	1290.0	1300.1	5.79	690.0	610.1	7.71
340.0	310.1	6.79	1390.0	1400.1	6.00	670.0	630.1	7.72
320.0	330.1	6.76	1470.0	1480.1	6.11	630.0	670.1	7.59
310.0	340.1	6.72	1570.0	1580.1	6.34	610.0	690.1	7.69
290.0	360.1	6.84	1650.0	1660.1	6.44	570.0	730.1	7.72
280.0	370.1	6.78	1750.0	1760.1	6.53	550.0	750.1	7.75
260.0	390.1	6.76	1830.0	1840.1	6.57	510.0	790.1	7.75
250.0	400.1	6.80	1930.0	1940.1	6.54	490.0	810.1	7.76
230.0	420.1	6.79	2010.0	2020.1	6.72	450.0	850.1	7.73
220.0	430.1	6.79	2110.0	2120.1	6.84	430.0	870.1	7.67
200.0	450.1	6.71	2190.0	2200.1	6.93	390.0	910.1	7.59
190.0	460.1	6.77	2290.0	2300.1	7.08	370.0	930.1	7.57
170.0	480.1	6.80	2370.0	2380.1	7.21	330.0	970.1	7.53
160.0	490.1	6.84	2470.0	2480.1	7.51	310.0	990.1	7.49
140.0	510.1	6.80	2550.0	2560.1	7.65	270.0	1030.1	7.59
130.0	520.1	6.82	2650.0	2660.1	7.90	250.0	1050.1	7.61
110.0	540.1	6.78	2730.0	2740.1	8.09	210.0	1090.1	7.67
100.0	550.1	6.85	2830.0	2840.1	8.34	190.0	1110.1	7.66
80.0	570.1	6.85	2910.0	2920.1	8.62	150.0	1150.1	7.65
70.0	580.1	6.78	3010.0	3020.1	8.97	130.0	1170.1	7.67
50.0	600.1	6.79	3090.0	3100.1	9.13	90.0	1210.1	7.70
40.0	610.1	6.78	3190.0	3200.1	9.46	70.0	1230.1	7.65
20.0	630.1	6.79	3270.0	3280.1	9.69	30.0	1270.1	7.69
10.0	640.1	7.31	3370.0	3380.1	10.05	10.0	1290.1	8.18

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
40.1	59.75	64.51	66.72	37.82	41.38	44.38
120.1	61.99	68.94	62.73	37.53	40.21	41.48
200.1	64.29	67.32	59.33	37.39	38.85	38.94
280.1	60.29	62.30	57.28	37.60	37.85	37.15
360.1	55.94	57.43	54.88	37.48	36.78	35.73
440.1	52.40	54.21	52.75	36.83	35.46	34.30
520.1	49.07	51.21	51.09	36.16	34.55	33.40
600.1	46.48	48.23	48.39	35.45	33.73	32.68
680.1	44.06	45.86	46.51	34.26	32.68	31.84
760.1	42.36	44.47	45.27	33.12	31.72	30.98
840.1	41.15	43.76	44.89	32.49	31.25	30.52
920.1	39.58	42.13	43.59	31.98	30.81	30.18
1000.1	37.88	40.43	42.09	31.53	30.43	29.82
1080.1	36.90	39.52	41.40	31.17	30.10	29.51
1160.1	36.50	39.02	40.62	30.94	29.80	29.11
1240.1	36.03	38.06	38.51	30.94	29.78	29.12
1320.1	37.14	40.39	40.97	31.07	29.86	29.17
1400.1	37.39	41.55	42.00	31.33	30.10	29.34
1480.1	38.02	43.89	43.45	31.68	30.45	29.65
1560.1	39.03	48.28	45.17	32.54	31.57	30.77
1640.1	39.40	52.27	46.97	33.48	32.94	32.34
1720.1	39.51	50.85	48.92	34.11	34.42	34.16
1800.1	39.52	50.22	50.05	34.14	35.25	35.66
1880.1	39.74	51.25	50.66	33.69	35.13	36.07
1960.1	40.25	51.80	48.90	32.93	34.26	35.22
2040.1	40.53	49.16	45.84	32.26	33.19	33.83
2120.1	39.98	44.35	42.38	31.61	32.19	32.58
2220.1	37.80	39.13	38.27	31.00	31.13	31.28
2300.1	35.44	36.03	35.62	30.70	30.53	30.34
2400.1	33.22	33.73	33.60	30.28	29.72	29.27
2480.1	31.50	32.12	32.26	29.73	29.10	28.53
2580.1	29.88	30.49	30.89	29.51	28.54	27.89
2660.1	28.76	29.44	29.92	29.41	28.14	27.17
2760.1	27.35	28.25	28.87	29.26	27.96	26.76
2840.1	25.90	26.75	27.40	29.20	27.65	26.41
2940.1	24.88	25.65	26.43	29.81	27.58	26.35
3020.1	24.36	25.29	25.91	30.21	27.92	26.28
3120.1	24.26	25.20	25.74	31.93	28.84	26.62
3200.1	25.04	25.85	26.41	33.55	29.45	26.98
3300.1	25.87	26.59	26.94	34.64	30.11	27.00

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	25.87	25.85	25.69
90.1	120.1	25.85	25.89	26.12
170.1	200.1	26.29	26.47	26.53
250.1	280.1	27.06	27.22	27.24
330.1	360.1	27.97	28.07	28.08
410.1	440.1	28.92	29.04	29.16
490.1	520.1	30.05	30.01	30.01
570.1	600.1	31.50	31.31	31.07
650.1	680.1	33.19	32.94	33.03
730.1	760.1	35.99	35.83	35.75
810.1	840.1	39.15	38.78	38.28
890.1	920.1	38.76	38.82	38.94
970.1	1000.1	37.13	37.36	37.53
1050.1	1080.1	36.05	36.13	36.26
1130.1	1160.1	33.98	33.56	33.43
1210.1	1240.1	31.63	30.84	30.49
1290.1	1320.1	29.68	28.76	28.22
1370.1	1400.1	28.44	27.67	27.24
1450.1	1480.1	28.38	27.88	27.65
1530.1	1560.1	28.96	28.97	29.09
1610.1	1640.1	30.77	31.51	32.38
1690.1	1720.1	32.06	33.09	34.23
1770.1	1800.1	31.03	31.32	31.65
1850.1	1880.1	28.72	28.57	28.72
1930.1	1960.1	26.95	26.60	26.54
2010.1	2040.1	25.76	25.49	25.32
2090.1	2120.1	24.80	24.57	24.40
2190.1	2220.1	24.07	23.90	23.72
2270.1	2300.1	23.77	23.57	23.39
2370.1	2400.1	23.54	23.35	23.19
2450.1	2480.1	23.47	23.29	23.11
2550.1	2580.1	23.49	23.27	23.12
2630.1	2660.1	23.29	23.01	22.80
2730.1	2760.1	23.25	22.86	22.54
2810.1	2840.1	23.76	23.34	22.94
2910.1	2940.1	24.57	23.93	23.48
2990.1	3020.1	25.31	24.46	23.96
3090.1	3120.1	26.54	25.25	24.40
3170.1	3200.1	27.94	26.25	25.07
3270.1	3300.1	29.71	27.47	25.99

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1300MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
10.1	40.1	1.22	1.12	1.10	30.1	1.86	3.34	6.51	10.0	1.11	1.26	1.38
90.1	120.1	1.17	1.11	1.10	110.3	1.53	2.22	3.10	50.0	1.10	1.26	1.38
170.1	200.1	1.21	1.15	1.13	190.6	1.49	2.10	2.85	90.0	1.11	1.27	1.39
250.1	280.1	1.27	1.21	1.20	270.8	1.47	2.04	2.75	130.0	1.11	1.27	1.38
330.1	360.1	1.34	1.27	1.25	351.1	1.45	2.00	2.68	170.0	1.09	1.25	1.37
410.1	440.1	1.40	1.34	1.31	431.3	1.42	1.95	2.59	210.0	1.10	1.26	1.37
490.1	520.1	1.52	1.44	1.40	511.6	1.37	1.87	2.47	250.0	1.08	1.23	1.35
570.1	600.1	1.63	1.54	1.49	591.8	1.33	1.79	2.35	290.0	1.08	1.23	1.34
650.1	680.1	1.77	1.68	1.63	672.1	1.29	1.69	2.21	330.0	1.07	1.21	1.32
730.1	760.1	1.86	1.76	1.70	752.3	1.26	1.61	2.08	370.0	1.06	1.19	1.30
810.1	840.1	1.92	1.82	1.76	832.6	1.24	1.53	1.96	410.0	1.09	1.22	1.32
890.1	920.1	1.99	1.88	1.82	912.8	1.23	1.44	1.85	450.0	1.07	1.19	1.29
970.1	1000.1	2.11	1.99	1.91	993.0	1.22	1.35	1.73	490.0	1.09	1.22	1.33
1050.1	1080.1	2.21	2.07	1.98	1073.3	1.21	1.28	1.64	510.0	1.07	1.19	1.30
1130.1	1160.1	2.26	2.11	2.01	1153.5	1.20	1.21	1.57	550.0	1.04	1.17	1.27
1210.1	1240.1	2.21	2.05	1.95	1233.8	1.20	1.17	1.53	570.0	1.07	1.20	1.31
1290.1	1320.1	2.16	1.99	1.89	1314.0	1.20	1.18	1.55	610.0	1.08	1.20	1.30
1370.1	1400.1	2.14	1.98	1.88	1394.3	1.22	1.24	1.60	630.0	1.05	1.13	1.23
1450.1	1480.1	2.15	2.00	1.90	1474.5	1.25	1.32	1.68	670.0	1.04	1.15	1.25
1530.1	1560.1	2.13	2.00	1.91	1554.8	1.28	1.40	1.76	690.0	1.05	1.18	1.29
1610.1	1640.1	2.18	2.06	1.99	1635.0	1.31	1.48	1.86	730.0	1.02	1.13	1.23
1690.1	1720.1	2.17	2.07	2.01	1715.3	1.34	1.56	1.96	750.0	1.04	1.14	1.24
1770.1	1800.1	2.12	2.04	1.97	1795.5	1.37	1.64	2.06	790.0	1.06	1.15	1.25
1850.1	1880.1	2.12	2.03	1.96	1875.7	1.41	1.72	2.17	810.0	1.05	1.10	1.19
1930.1	1960.1	2.14	2.04	1.97	1956.0	1.46	1.81	2.27	850.0	1.03	1.11	1.21
2010.1	2040.1	2.13	2.03	1.95	2036.2	1.51	1.87	2.32	870.0	1.03	1.15	1.26
2090.1	2120.1	2.07	1.97	1.89	2116.5	1.55	1.91	2.34	910.0	1.04	1.09	1.19
2190.1	2220.1	1.98	1.88	1.81	2216.8	1.60	1.98	2.41	930.0	1.05	1.09	1.19
2270.1	2300.1	1.88	1.78	1.70	2297.0	1.63	2.01	2.42	970.0	1.05	1.09	1.19
2370.1	2400.1	1.84	1.73	1.65	2397.3	1.70	2.09	2.49	990.0	1.04	1.10	1.21
2450.1	2480.1	1.75	1.65	1.57	2477.6	1.76	2.14	2.52	1030.0	1.06	1.11	1.20
2550.1	2580.1	1.67	1.57	1.49	2577.9	1.83	2.21	2.57	1050.0	1.03	1.11	1.22
2630.1	2660.1	1.60	1.50	1.43	2658.1	1.92	2.29	2.63	1090.0	1.04	1.10	1.21
2730.1	2760.1	1.53	1.44	1.37	2758.4	2.00	2.34	2.67	1110.0	1.08	1.08	1.17
2810.1	2840.1	1.44	1.35	1.29	2838.7	2.09	2.42	2.72	1150.0	1.07	1.10	1.20
2910.1	2940.1	1.28	1.20	1.15	2939.0	2.17	2.45	2.72	1170.0	1.04	1.13	1.23
2990.1	3020.1	1.20	1.13	1.09	3019.2	2.24	2.49	2.73	1210.0	1.07	1.10	1.20
3090.1	3120.1	1.08	1.04	1.09	3119.5	2.29	2.49	2.69	1230.0	1.08	1.09	1.18
3170.1	3200.1	1.05	1.05	1.11	3199.8	2.28	2.46	2.63	1270.0	1.05	1.09	1.19
3270.1	3300.1	1.11	1.12	1.16	3300.1	2.32	2.46	2.59	1290.0	1.09	1.11	1.19

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	5	12	20	24	24	26	27	32	31	49
1	-	27	+0	39	11	49	25	42	26	54	35	56
2	78	58	54	59	57	58	57	60	65	64	66	66
3	>90	>75	68	>75	67	>75	72	74	65	>75	66	>75
4	>90	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75
5	>90	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75
6	>90	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75
7	>90	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75
8	>90	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75
9	>90	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75
10	>90	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75	>75
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 650.1 MHz; -8.00 dBm.
LO IN: 680.1 MHz; +13.00 dBm
IF OUT: 30 MHz; -15.15 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	15	22	30	35	33	38	39	46	44	62
1	-	28	+0	36	11	50	24	44	28	52	37	59
2	58	50	46	55	47	56	48	54	52	58	58	60
3	89	52	47	57	54	64	48	57	51	59	51	71
4	>90	71	70	67	69	64	70	62	67	67	74	65
5	>90	68	61	71	63	73	59	68	57	71	61	74
6	>90	80	83	84	>85	80	83	82	>85	83	75	>85
7	>90	>85	81	>85	80	>85	76	>85	80	>85	73	84
8	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
9	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
10	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 650.1 MHz; 2.00 dBm.
LO IN: 680.1 MHz; +13.00 dBm
IF OUT: 30 MHz; -5.26 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.