Frequency Mixer SYM-11+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+4	+7	+10
1.0	31.0	6.70	6.40	6.20
5.0	35.0	6.50	6.30	6.10
10.0	40.0	6.40	6.10	6.00
89.8	119.8	6.18	5.84	5.65
169.5	199.5	6.42	6.04	5.81
249.3	279.3	6.70	6.23	5.94
329.0	359.0	6.94	6.40	6.04
408.7	438.7	7.20	6.54	6.12
488.4	518.4	7.53	6.82	6.38
568.2	598.2	7.65	6.89	6.46
647.9	677.9	7.91	7.11	6.63
727.6	757.6	8.13	7.39	6.92
807.3	837.3	8.01	7.41	7.04
966.8	996.8	8.12	7.62	7.32
1046.5	1076.5	7.92	7.47	7.22
1126.2	1156.2	7.79	7.34	7.12
1206.0	1236.0	7.73	7.29	7.05
1285.7	1315.7	7.68	7.24	7.02
1365.4	1395.4	7.71	7.25	7.04
1445.1	1475.1	7.77	7.26	7.03
1504.9	1534.9	7.82	7.26	7.02
1584.7	1614.7	7.92	7.36	7.10
1644.4	1674.4	8.01	7.42	7.15
1724.2	1754.2	8.07	7.46	7.17
1784.0	1814.0	8.13	7.50	7.20
1863.7	1893.7	8.18	7.52	7.22
1923.5	1953.5	8.19	7.53	7.22
2003.2	2033.2	8.28	7.61	7.30
2063.0	2093.0	8.40	7.70	7.37
2142.7	2172.7	8.49	7.76	7.44
2202.5	2232.5	8.52	7.81	7.46
2282.2	2312.2	8.59	7.84	7.50
2421.8	2451.8	8.71	8.04	7.71
2481.5	2511.5	8.83	8.12	7.81
2561.3	2591.3	8.96	8.32	8.01
2621.1	2651.1	9.13	8.52	8.21
2700.8	2730.8	9.44	8.87	8.61
2760.6	2790.6	9.78	9.19	8.93
2840.3	2870.3	10.26	9.67	9.38
2900.1	2930.1	10.64	10.07	9.79

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
10.1	40.1	15.59	16.01	15.81
89.8	119.8	10.65	10.06	10.58
169.5	199.5	8.08	9.24	10.94
249.3	279.3	7.76	9.55	12.85
329.0	359.0	8.65	11.28	15.65
408.7	438.7	9.27	12.62	16.03
488.4	518.4	10.10	12.16	13.28
568.2	598.2	9.37	11.87	12.51
647.9	677.9	9.07	10.39	12.27
727.6	757.6	8.52	9.84	11.18
807.3	837.3	9.03	10.38	12.01
887.1	917.1	8.64	10.06	11.72
966.8	996.8	8.57	10.07	10.94
1046.5	1076.5	9.67	10.37	10.85
1126.2	1156.2	10.23	10.86	11.41
1206.0	1236.0	10.17	11.02	11.69
1285.7	1315.7	10.00	11.39	12.18
1365.4	1395.4	10.09	11.34	12.58
1445.1	1475.1	10.39	11.64	13.16
1504.9	1534.9	10.85	11.24	12.89
1584.7	1614.7	11.71	13.32	13.30
1644.4	1674.4	11.15	11.94	13.44
1724.2	1754.2	12.52	13.29	14.01
1784.0	1814.0	15.41	14.93	14.85
1863.7	1893.7	13.86	16.18	16.81
1923.5	1953.5	13.79	14.68	16.20
2003.2	2033.2	12.47	12.83	15.21
2063.0	2093.0	12.95	13.36	14.42
2142.7	2172.7	12.05	12.26	13.93
2202.5	2232.5	11.56	12.54	12.63
2282.2	2312.2	10.26	11.53	12.42
2342.0	2372.0	10.03	11.57	11.81
2421.8	2451.8	9.36	10.72	11.51
2481.5	2511.5	9.37	10.22	12.05
2561.3	2591.3	9.06	10.44	12.14
2621.1	2651.1	9.42	11.05	12.12
2700.8	2730.8	9.84	11.24	13.44
2760.6	2790.6	10.00	11.80	13.49
2840.3	2870.3	11.87	12.69	15.11
2900.1	2930.1	12.52	13.14	16.57

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	1.11	0.72	0.50
89.8	119.8	0.98	0.70	0.50
169.5	199.5	1.12	0.92	0.67
249.3	279.3	1.31	1.07	0.85
329.0	359.0	1.40	1.19	1.02
408.7	438.7	1.41	1.28	1.09
488.4	518.4	1.18	0.98	0.88
568.2	598.2	1.24	1.10	0.88
647.9	677.9	1.05	0.92	0.80
727.6	757.6	0.84	0.74	0.66
807.3	837.3	0.70	0.54	0.44
887.1	917.1	0.66	0.50	0.39
966.8	996.8	0.71	0.52	0.36
1046.5	1076.5	0.66	0.50	0.39
1126.2	1156.2	0.58	0.40	0.33
1206.0	1236.0	0.47	0.36	0.27
1285.7	1315.7	0.40	0.31	0.20
1365.4	1395.4	0.39	0.25	0.24
1445.1	1475.1	0.40	0.20	0.18
1504.9	1534.9	0.35	0.20	0.14
1584.7	1614.7	0.34	0.21	0.15
1644.4	1674.4	0.38	0.22	0.17
1724.2	1754.2	0.36	0.23	0.23
1784.0	1814.0	0.38	0.27	0.26
1863.7	1893.7	0.38	0.26	0.20
1923.5	1953.5	0.33	0.22	0.22
2003.2	2033.2	0.33	0.23	0.19
2063.0	2093.0	0.32	0.24	0.20
2142.7	2172.7	0.33	0.25	0.23
2202.5	2232.5	0.35	0.23	0.21
2282.2	2312.2	0.34	0.25	0.20
2342.0	2372.0	0.36	0.23	0.20
2421.8	2451.8	0.35	0.23	0.21
2481.5	2511.5	0.34	0.21	0.19
2561.3	2591.3	0.32	0.21	0.16
2621.1	2651.1	0.29	0.20	0.13
2700.8	2730.8	0.21	0.19	0.08
2760.6	2790.6	0.24	0.12	0.12
2840.3	2870.3	0.15	0.09	0.10
2900.1	2930.1	0.18	0.12	0.10

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1250.1MHz (dB) @LO (dBm) +7
600.0	650.1	8.86
584.9	665.2	8.83
569.7	680.4	8.78
554.6	695.5	8.71
539.5	710.6	8.67
524.4	725.7	8.61
509.2	740.9	8.55
494.1	756.0	8.53
479.0	771.1	8.48
463.8	786.3	8.42
448.7	801.4	8.33
433.6	816.5	8.28
418.5	831.6	8.23
403.3	846.8	8.18
388.2	861.9	8.09
373.1	877.0	8.02
357.9	892.2	7.97
342.8	907.3	7.94
327.7	922.4	7.90
312.6	937.5	7.87
297.4	952.7	7.86
282.3	967.8	7.84
267.2	982.9	7.78
252.1	998.0	7.71
236.9	1013.2	7.66
221.8	1028.3	7.63
206.7	1043.4	7.59
191.5	1058.6	7.59
176.4	1073.7	7.55
161.3	1088.8	7.54
146.2	1103.9	7.51
131.0	1119.1	7.49
115.9	1134.2	7.47
100.8	1149.3	7.45
85.6	1164.5	7.40
70.5	1179.6	7.37
55.4	1194.7	7.33
40.3	1209.8	7.29
25.1	1225.0	7.23
10.0	1240.1	7.38

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +7
10.0	20.1	5.63
24.9	35.0	5.50
39.7	49.8	5.54
54.6	64.7	5.59
69.5	79.6	5.63
84.4	94.5	5.63
99.2	109.3	5.63
114.1	124.2	5.62
129.0	139.1	5.62
143.8	153.9	5.62
158.7	168.8	5.62
173.6	183.7	5.63
188.5	198.6	5.62
203.3	213.4	5.60
218.2	228.3	5.59
233.1	243.2	5.58
247.9	258.0	5.57
262.8	272.9	5.59
277.7	287.8	5.59
292.6	302.7	5.59
307.4	317.5	5.57
322.3	332.4	5.58
337.2	347.3	5.57
352.1	362.2	5.57
366.9	377.0	5.57
381.8	391.9	5.58
396.7	406.8	5.60
411.5	421.6	5.59
426.4	436.5	5.61
441.3	451.4	5.62
456.2	466.3	5.65
471.0	481.1	5.68
485.9	496.0	5.70
500.8	510.9	5.71
515.6	525.7	5.73
530.5	540.6	5.77
545.4	555.5	5.80
560.3	570.4	5.85
575.1	585.2	5.89
590.0	600.1	5.92

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2500.1MHz (dB) @LO (dBm) +7
600.0	1900.1	9.20
584.9	1915.2	9.18
569.7	1930.4	9.11
554.6	1945.5	9.05
539.5	1960.6	9.01
524.4	1975.7	8.97
509.2	1990.9	8.91
494.1	2006.0	8.88
479.0	2021.1	8.86
463.8	2036.3	8.81
448.7	2051.4	8.75
433.6	2066.5	8.71
418.5	2081.6	8.71
403.3	2096.8	8.68
388.2	2111.9	8.65
373.1	2127.0	8.58
357.9	2142.2	8.56
342.8	2157.3	8.54
327.7	2172.4	8.53
312.6	2187.5	8.50
297.4	2202.7	8.49
282.3	2217.8	8.48
267.2	2232.9	8.44
252.1	2248.0	8.42
236.9	2263.2	8.40
221.8	2278.3	8.40
206.7	2293.4	8.36
191.5	2308.6	8.35
176.4	2323.7	8.31
161.3	2338.8	8.31
146.2	2353.9	8.29
131.0	2369.1	8.30
115.9	2384.2	8.30
100.8	2399.3	8.29
85.6	2414.5	8.26
70.5	2429.6	8.24
55.4	2444.7	8.22
40.3	2459.8	8.21
25.1	2475.0	8.16
10.0	2490.1	8.34

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
1.0	67.00	68.00	68.00	58.00	60.00	61.00
5.0	66.00	67.00	67.00	57.00	60.00	60.60
10.0	65.75	66.89	66.90	56.92	59.19	60.30
89.8	59.85	61.25	61.98	73.51	71.75	68.04
169.5	54.66	56.50	58.06	57.10	59.54	61.48
249.3	51.44	53.48	55.40	48.97	50.20	50.76
329.0	48.98	51.19	53.37	43.97	44.74	45.08
408.7	47.07	49.42	51.79	40.32	40.91	41.24
488.4	45.54	47.85	50.06	37.43	37.91	38.18
568.2	44.43	46.72	48.79	34.89	35.46	35.67
647.9	43.51	45.63	47.58	32.93	33.49	33.73
727.6	42.51	44.26	45.81	31.33	31.76	32.01
807.3	41.61	42.93	43.97	30.19	30.58	30.83
966.8	39.55	40.29	40.94	28.48	28.86	29.00
1046.5	39.02	39.61	40.05	27.76	28.04	28.17
1126.2	38.56	38.85	38.96	27.10	27.34	27.38
1206.0	38.40	38.54	38.50	26.37	26.53	26.61
1285.7	37.91	37.87	37.71	25.69	25.87	25.89
1365.4	37.10	36.83	36.56	24.98	25.13	25.16
1445.1	35.71	35.41	35.17	24.33	24.44	24.47
1504.9	34.67	34.24	34.19	24.10	24.13	24.18
1584.7	32.83	32.48	32.36	23.93	23.83	23.74
1644.4	31.28	31.21	31.22	24.68	24.52	24.37
1724.2	30.07	30.13	30.37	32.02	31.55	31.21
1784.0	30.49	30.61	30.72	63.02	59.44	52.00
1863.7	31.76	31.73	31.69	35.71	36.56	37.30
1923.5	32.94	32.91	32.86	33.61	34.30	34.89
2003.2	33.94	33.89	33.91	32.59	33.19	33.76
2063.0	34.68	34.54	34.60	32.33	32.87	33.49
2142.7	35.84	35.66	35.57	32.05	32.62	33.19
2202.5	37.24	36.81	36.76	31.81	32.32	32.98
2282.2	39.71	39.10	38.72	31.17	31.76	32.39
2421.8	47.32	45.57	44.33	29.28	29.98	30.72
2481.5	56.95	49.49	45.84	28.34	28.93	29.74
2561.3	53.07	48.15	44.95	27.10	27.58	28.42
2621.1	47.16	45.43	43.26	26.18	26.77	27.49
2700.8	43.25	43.29	42.84	25.10	25.80	26.49
2760.6	41.55	41.63	41.53	24.40	25.08	25.84
2840.3	39.86	40.35	40.64	23.52	24.29	25.20
2900.1	38.83	39.29	39.89	22.99	23.81	24.73

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	22.06	22.96	22.51
89.8	119.8	22.46	22.80	23.01
169.5	199.5	22.95	23.33	23.74
249.3	279.3	24.01	24.57	25.00
329.0	359.0	25.45	26.19	26.72
408.7	438.7	27.55	28.46	29.14
488.4	518.4	30.58	31.51	32.26
568.2	598.2	35.06	36.70	38.07
647.9	677.9	43.60	44.51	44.26
727.6	757.6	43.69	42.66	41.37
807.3	837.3	33.66	33.55	33.41
887.1	917.1	32.21	32.35	32.48
966.8	996.8	29.12	29.01	29.06
1046.5	1076.5	27.39	27.09	26.97
1126.2	1156.2	25.82	25.63	25.44
1206.0	1236.0	24.58	24.38	24.24
1285.7	1315.7	23.87	23.60	23.45
1365.4	1395.4	23.82	23.63	23.50
1445.1	1475.1	23.65	23.67	23.62
1504.9	1534.9	23.34	23.47	23.52
1584.7	1614.7	22.86	23.05	23.25
1644.4	1674.4	23.30	23.70	23.86
1724.2	1754.2	26.11	26.67	27.17
1784.0	1814.0	25.72	26.32	26.99
1863.7	1893.7	23.85	24.39	24.84
1923.5	1953.5	23.18	23.68	24.11
2003.2	2033.2	22.75	23.30	23.69
2063.0	2093.0	22.58	23.02	23.52
2142.7	2172.7	22.65	22.99	23.15
2202.5	2232.5	22.64	22.73	22.76
2282.2	2312.2	22.41	22.15	21.95
2342.0	2372.0	21.83	21.36	20.98
2421.8	2451.8	20.31	19.82	19.35
2481.5	2511.5	19.10	18.34	17.95
2561.3	2591.3	17.52	16.88	16.52
2621.1	2651.1	16.31	15.91	15.64
2700.8	2730.8	15.09	14.66	14.43
2760.6	2790.6	14.22	13.80	13.62
2840.3	2870.3	13.43	13.09	12.89
2900.1	2930.1	12.96	12.69	12.61

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
1.0	31.0	1.80	1.68	1.59
5.0	35.0	2.10	1.94	1.80
10.0	40.0	2.14	1.96	1.82
89.8	119.8	1.19	1.10	1.05
169.5	199.5	1.28	1.20	1.16
249.3	279.3	1.47	1.39	1.34
329.0	359.0	1.72	1.63	1.57
408.7	438.7	2.04	1.93	1.85
488.4	518.4	2.47	2.33	2.22
568.2	598.2	2.84	2.64	2.51
647.9	677.9	3.17	2.95	2.78
727.6	757.6	3.39	3.19	3.03
807.3	837.3	3.25	3.09	2.98
887.1	917.1	3.45	3.29	3.16
966.8	996.8	3.39	3.26	3.16
1046.5	1076.5	3.19	3.08	3.00
1126.2	1156.2	3.00	2.90	2.83
1206.0	1236.0	2.81	2.70	2.62
1285.7	1315.7	2.61	2.48	2.40
1365.4	1395.4	2.45	2.30	2.22
1445.1	1475.1	2.31	2.15	2.06
1504.9	1534.9	2.21	2.04	1.95
1584.7	1614.7	2.08	1.91	1.80
1644.4	1674.4	2.00	1.83	1.72
1724.2	1754.2	1.95	1.78	1.66
1784.0	1814.0	1.95	1.78	1.66
1863.7	1893.7	1.93	1.77	1.67
1923.5	1953.5	1.89	1.74	1.64
2003.2	2033.2	1.85	1.69	1.59
2063.0	2093.0	1.83	1.68	1.58
2142.7	2172.7	1.81	1.68	1.59
2202.5	2232.5	1.79	1.67	1.58
2282.2	2312.2	1.74	1.61	1.53
2342.0	2372.0	1.67	1.54	1.46
2421.8	2451.8	1.56	1.44	1.37
2481.5	2511.5	1.47	1.38	1.32
2561.3	2591.3	1.37	1.30	1.25
2621.1	2651.1	1.27	1.22	1.18
2700.8	2730.8	1.16	1.13	1.13
2760.6	2790.6	1.12	1.15	1.19
2840.3	2870.3	1.17	1.26	1.32
2900.1	2930.1	1.25	1.33	1.38

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
1.0	1.77	2.55	3.57
5.0	1.66	2.49	3.57
10.0	1.67	2.49	3.44
89.8	1.68	2.38	3.31
169.5	1.69	2.38	3.27
249.3	1.70	2.39	3.27
329.0	1.72	2.38	3.24
408.7	1.72	2.33	3.14
488.4	1.73	2.28	3.03
568.2	1.74	2.24	2.95
647.9	1.74	2.20	2.87
727.6	1.73	2.15	2.76
807.3	1.71	2.08	2.66
887.1	1.70	2.02	2.56
966.8	1.69	1.95	2.45
1046.5	1.69	1.90	2.35
1126.2	1.69	1.85	2.25
1206.0	1.70	1.81	2.19
1285.7	1.72	1.78	2.12
1365.4	1.72	1.74	2.06
1445.1	1.73	1.72	2.01
1504.9	1.73	1.70	1.97
1584.7	1.73	1.71	1.97
1644.4	1.73	1.72	2.00
1724.2	1.66	1.69	2.00
1784.0	1.62	1.66	1.97
1863.7	1.61	1.63	1.94
1923.5	1.60	1.61	1.90
2003.2	1.60	1.58	1.87
2063.0	1.60	1.58	1.85
2142.7	1.59	1.56	1.83
2202.5	1.59	1.54	1.79
2282.2	1.59	1.52	1.76
2342.0	1.59	1.51	1.74
2421.8	1.60	1.49	1.70
2481.5	1.60	1.47	1.65
2561.3	1.61	1.46	1.61
2621.1	1.60	1.45	1.59
2700.8	1.59	1.41	1.53
2760.6	1.58	1.40	1.50
2840.3	1.53	1.37	1.45
2900.1	1.50	1.34	1.43

IF (OUT) (MHz)	IF VSWR @LO=2500.1MHz (:1) @LO (dBm)		
	+4	+7	+10
1.0	1.29	1.32	1.39
5.0	1.18	1.09	1.17
10.0	1.16	1.04	1.14
25.2	1.04	1.17	1.29
40.4	1.09	1.19	1.33
55.5	1.01	1.17	1.41
70.6	1.04	1.21	1.29
85.7	1.04	1.20	1.34
100.9	1.06	1.23	1.36
116.0	1.06	1.21	1.32
131.1	1.07	1.23	1.35
146.3	1.09	1.23	1.35
161.4	1.10	1.23	1.34
176.5	1.09	1.24	1.36
191.6	1.09	1.24	1.37
206.8	1.09	1.24	1.38
221.9	1.10	1.25	1.37
237.0	1.12	1.26	1.39
252.2	1.14	1.29	1.41
267.3	1.16	1.31	1.43
282.4	1.16	1.34	1.46
297.5	1.17	1.35	1.49
312.7	1.19	1.37	1.52
327.8	1.20	1.37	1.51
342.9	1.20	1.38	1.51
358.0	1.21	1.40	1.55
373.2	1.23	1.42	1.57
388.3	1.23	1.42	1.57
403.4	1.24	1.44	1.59
418.6	1.26	1.46	1.62
433.7	1.28	1.48	1.63
448.8	1.27	1.49	1.65
463.9	1.29	1.51	1.67
479.1	1.31	1.53	1.70
494.2	1.31	1.54	1.71
509.3	1.32	1.55	1.72
524.5	1.34	1.57	1.75
539.6	1.35	1.60	1.78
554.7	1.37	1.63	1.80
569.8	1.38	1.63	1.82
585.0	1.40	1.67	1.86
600.1	1.43	1.69	1.88

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+2	16	26	30	23	41	25	46	30	61
1	-	17	+0	33	21	37	37	36	37	44	41	50
2	96	68	61	59	61	68	66	>79	60	73	54	74
3	>100	72	66	>79	59	76	66	74	74	72	68	77
4	>100	>79	>79	>79	>79	>79	>79	>79	>79	>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: 1250.1 MHz; -14.00 dBm.**
LO IN: 1280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -21.38 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	7	26	36	41	35	54	40	60	48	77
1	-	17	+0	34	21	40	38	40	41	50	51	62
2	78	62	54	53	55	58	59	64	53	69	51	73
3	>100	54	48	62	41	60	49	56	58	56	53	61
4	>100	83	84	81	74	78	74	84	72	77	70	82
5	>100	78	78	76	71	77	58	74	63	72	73	71
6	>100	>88	88	>88	88	>88	88	85	87	>88	>88	>88
7	>100	>88	>88	88	>88	>88	88	88	73	86	76	85
8	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
9	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
10	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 1250.1 MHz; -4.00 dBm.**
LO IN: 1280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -11.52 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.