Frequency Mixer SYM-10DH

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	7.31	6.89	6.66
70.8	100.8	7.15	6.78	6.60
131.6	161.6	7.26	6.85	6.66
192.3	222.3	7.36	6.92	6.72
253.0	283.0	7.42	7.01	6.78
313.8	343.8	7.45	7.04	6.81
374.5	404.5	7.66	7.16	6.87
435.2	465.2	7.79	7.24	6.96
496.0	526.0	7.93	7.35	7.06
556.7	586.7	8.01	7.39	7.11
617.4	647.4	8.12	7.45	7.16
678.1	708.1	8.18	7.46	7.21
738.9	768.9	8.11	7.47	7.23
799.6	829.6	8.15	7.56	7.29
860.3	890.3	8.38	7.70	7.37
921.1	951.1	8.70	7.93	7.59
981.8	1011.8	9.21	8.28	7.88
1042.5	1072.5	9.87	8.81	8.32
1103.3	1133.3	10.51	9.29	8.74
1164.0	1194.0	10.68	9.44	8.88
1224.7	1254.7	10.58	9.40	8.80
1285.5	1315.5	10.44	9.31	8.75
1346.2	1376.2	10.58	9.28	8.71
1406.9	1436.9	10.65	9.33	8.68
1467.7	1497.7	10.67	9.32	8.66
1528.4	1558.4	10.72	9.32	8.69
1589.1	1619.1	10.78	9.35	8.69
1649.9	1679.9	10.72	9.28	8.68
1730.8	1760.8	10.60	9.19	8.67
1791.6	1821.6	10.58	9.15	8.68
1872.5	1902.5	10.45	9.00	8.60
1933.3	1963.3	10.30	8.95	8.59
2014.2	2044.2	10.16	8.91	8.55
2075.0	2105.0	10.16	8.90	8.55
2156.0	2186.0	10.12	8.94	8.58
2216.7	2246.7	10.11	9.02	8.64
2297.7	2327.7	10.12	9.12	8.76
2358.4	2388.4	10.05	9.18	8.84
2439.4	2469.4	9.98	9.27	8.96
2500.1	2530.1	10.10	9.43	9.15

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+14	+17	+20
10.1	40.1	29.57	28.98	28.17
70.8	100.8	30.16	27.28	28.30
131.6	161.6	25.44	26.05	27.86
192.3	222.3	25.08	26.62	25.96
253.0	283.0	24.18	25.06	24.54
313.8	343.8	24.41	23.92	24.78
374.5	404.5	22.85	22.49	24.05
435.2	465.2	22.27	22.22	25.35
496.0	526.0	22.38	24.46	28.78
556.7	586.7	20.77	21.96	25.77
617.4	647.4	21.09	22.63	26.53
678.1	708.1	20.83	23.86	28.15
738.9	768.9	20.35	25.68	31.74
799.6	829.6	21.57	27.94	37.86
860.3	890.3	23.88	29.63	37.26
921.1	951.1	25.35	29.97	34.86
981.8	1011.8	24.23	28.45	31.84
1042.5	1072.5	23.02	25.09	27.97
1103.3	1133.3	24.29	24.61	28.07
1164.0	1194.0	27.10	27.13	28.92
1224.7	1254.7	32.68	29.40	32.32
1285.5	1315.5	29.98	30.02	32.50
1346.2	1376.2	27.11	35.21	30.51
1406.9	1436.9	27.89	30.53	29.87
1467.7	1497.7	28.73	29.33	29.23
1528.4	1558.4	28.03	29.37	28.80
1589.1	1619.1	27.26	27.40	27.03
1649.9	1679.9	25.72	27.42	26.72
1730.8	1760.8	24.83	26.27	25.62
1791.6	1821.6	24.12	25.93	25.56
1872.5	1902.5	25.56	26.07	25.62
1933.3	1963.3	26.06	26.20	25.94
2014.2	2044.2	24.71	24.85	24.41
2075.0	2105.0	23.65	24.19	23.68
2156.0	2186.0	23.19	23.44	23.25
2216.7	2246.7	23.23	23.07	22.97
2297.7	2327.7	23.21	23.44	23.26
2358.4	2388.4	22.49	23.35	23.34
2439.4	2469.4	22.56	23.92	24.40
2500.1	2530.1	21.79	23.51	24.51

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB) @LO (dBm)		
		+14	+17	+20
10.1	40.1	0.59	0.27	0.15
70.8	100.8	0.64	0.31	0.17
131.6	161.6	0.62	0.31	0.16
192.3	222.3	0.69	0.29	0.16
253.0	283.0	0.64	0.29	0.16
313.8	343.8	0.61	0.31	0.15
374.5	404.5	0.57	0.31	0.14
435.2	465.2	0.59	0.27	0.13
496.0	526.0	0.57	0.25	0.13
556.7	586.7	0.64	0.24	0.15
617.4	647.4	0.65	0.24	0.14
678.1	708.1	0.55	0.21	0.13
738.9	768.9	0.55	0.22	0.13
799.6	829.6	0.54	0.25	0.15
860.3	890.3	0.42	0.22	0.17
921.1	951.1	0.39	0.25	0.21
981.8	1011.8	0.38	0.26	0.22
1042.5	1072.5	0.20	0.15	0.13
1103.3	1133.3	-0.07	-0.01	0.02
1164.0	1194.0	-0.41	-0.16	-0.06
1224.7	1254.7	-0.55	-0.23	-0.10
1285.5	1315.5	-0.46	-0.21	-0.08
1346.2	1376.2	-0.38	-0.13	-0.03
1406.9	1436.9	-0.37	-0.12	0.02
1467.7	1497.7	-0.18	-0.06	0.04
1528.4	1558.4	-0.12	-0.01	0.07
1589.1	1619.1	-0.07	-0.01	0.08
1649.9	1679.9	0.06	0.04	0.08
1730.8	1760.8	0.20	0.14	0.11
1791.6	1821.6	0.38	0.21	0.15
1872.5	1902.5	0.48	0.27	0.20
1933.3	1963.3	0.59	0.34	0.24
2014.2	2044.2	0.69	0.40	0.28
2075.0	2105.0	0.72	0.43	0.29
2156.0	2186.0	0.78	0.46	0.30
2216.7	2246.7	0.86	0.49	0.33
2297.7	2327.7	0.99	0.55	0.38
2358.4	2388.4	1.13	0.58	0.36
2439.4	2469.4	1.14	0.60	0.39
2500.1	2530.1	1.32	0.64	0.38

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=900.1MHz (dB) @LO (dBm) +17
100.0	800.1	7.79
95.3	804.8	7.81
90.5	809.6	7.81
85.8	814.3	7.79
81.1	819.0	7.78
76.3	823.8	7.76
71.6	828.5	7.76
66.8	833.3	7.77
62.1	838.0	7.78
57.4	842.7	7.77
52.6	847.5	7.79
47.9	852.2	7.80
43.2	856.9	7.77
38.4	861.7	7.78
33.7	866.4	7.80
28.9	871.2	7.84
24.2	875.9	7.87
19.5	880.6	7.90
14.7	885.4	7.91
10.0	890.1	7.89
10.0	910.1	8.09
14.7	914.8	8.03
19.5	919.6	7.96
24.2	924.3	7.93
28.9	929.0	7.91
33.7	933.8	7.89
38.4	938.5	7.89
43.2	943.3	7.89
47.9	948.0	7.89
52.6	952.7	7.87
57.4	957.5	7.84
62.1	962.2	7.84
66.8	966.9	7.84
71.6	971.7	7.86
76.3	976.4	7.87
81.1	981.2	7.86
85.8	985.9	7.86
90.5	990.6	7.85
95.3	995.4	7.83
100.0	1000.1	7.82

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=800.1MHz (dB) @LO (dBm) +17
20.0	820.1	7.64
24.6	824.7	7.64
29.2	829.3	7.63
33.8	833.9	7.59
38.5	838.6	7.56
43.1	843.2	7.52
47.7	847.8	7.52
52.3	852.4	7.53
56.9	857.0	7.47
61.5	861.6	7.52
66.2	866.3	7.52
70.8	870.9	7.49
75.4	875.5	7.48
80.0	880.1	7.48
84.6	884.7	7.49
89.2	889.3	7.48
93.8	893.9	7.52
98.5	898.6	7.50
103.1	903.2	7.49
107.7	907.8	7.46
112.3	912.4	7.45
116.9	917.0	7.45
121.5	921.6	7.46
126.2	926.3	7.47
130.8	930.9	7.47
135.4	935.5	7.45
140.0	940.1	7.44
144.6	944.7	7.43
149.2	949.3	7.42
153.8	953.9	7.43
158.5	958.6	7.44
163.1	963.2	7.44
167.7	967.8	7.43
172.3	972.4	7.41
176.9	977.0	7.39
181.5	981.6	7.38
186.2	986.3	7.40
190.8	990.9	7.41
195.4	995.5	7.40
200.0	1000.1	7.40

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB) @LO (dBm) +17
200.0	800.1	8.15
195.4	804.7	8.15
190.8	809.3	8.13
186.2	813.9	8.14
181.5	818.6	8.16
176.9	823.2	8.17
172.3	827.8	8.16
167.7	832.4	8.13
163.1	837.0	8.11
158.5	841.6	8.09
153.8	846.3	8.08
149.2	850.9	8.12
144.6	855.5	8.13
140.0	860.1	8.14
135.4	864.7	8.15
130.8	869.3	8.14
126.2	873.9	8.12
121.5	878.6	8.13
116.9	883.2	8.14
112.3	887.8	8.16
107.7	892.4	8.18
103.1	897.0	8.19
98.5	901.6	8.19
93.8	906.3	8.17
89.2	910.9	8.17
84.6	915.5	8.20
80.0	920.1	8.24
75.4	924.7	8.27
70.8	929.3	8.28
66.2	933.9	8.27
61.5	938.6	8.27
56.9	943.2	8.22
52.3	947.8	8.29
47.7	952.4	8.31
43.1	957.0	8.35
38.5	961.6	8.38
33.8	966.3	8.38
29.2	970.9	8.38
24.6	975.5	8.38
20.0	980.1	8.40

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+14	+17	+20	+14	+17	+20
10.1	38.25	43.17	48.05	30.19	32.25	34.19
70.8	48.90	57.93	58.34	36.38	40.30	44.60
131.6	53.21	55.65	50.66	38.53	43.61	47.18
192.3	56.86	51.64	47.24	40.36	44.20	44.36
253.0	59.10	48.88	44.90	41.74	43.38	41.36
313.8	60.32	46.90	43.60	43.09	41.70	39.18
374.5	55.92	44.96	42.52	43.54	39.57	37.30
435.2	53.40	44.56	41.97	42.14	38.17	36.13
496.0	52.56	44.05	41.74	39.72	36.28	34.76
556.7	52.60	44.52	41.70	36.17	34.07	33.01
617.4	53.29	44.88	41.81	33.66	32.25	31.83
678.1	51.97	44.27	41.38	32.13	31.06	30.56
738.9	48.42	42.69	40.55	31.10	29.77	29.31
799.6	46.18	42.74	41.06	30.81	29.62	28.99
860.3	45.97	42.83	40.67	30.78	29.31	28.32
921.1	44.70	42.02	40.05	30.60	28.80	27.91
981.8	42.68	41.17	39.41	30.05	28.51	27.46
1042.5	41.15	40.54	38.48	29.50	27.87	26.72
1103.3	38.21	38.70	37.24	29.18	27.65	26.48
1164.0	36.52	37.16	36.33	28.71	27.47	26.41
1224.7	34.99	35.79	35.51	28.40	27.23	26.25
1285.5	33.73	34.67	34.89	28.18	27.16	26.19
1346.2	32.82	33.55	34.08	27.67	26.93	26.27
1406.9	31.77	32.79	33.34	27.25	26.99	26.30
1467.7	30.55	31.99	32.91	26.80	27.09	26.72
1528.4	29.67	31.20	32.35	26.39	26.94	26.93
1589.1	29.04	30.73	31.91	26.18	26.63	26.79
1649.9	28.01	29.95	31.64	25.80	26.13	26.37
1730.8	27.04	29.03	30.76	25.37	25.43	25.46
1791.6	25.75	27.80	29.85	24.81	24.57	24.68
1872.5	24.70	26.59	28.54	23.98	23.59	23.60
1933.3	24.25	26.10	27.93	23.58	22.95	22.72
2014.2	23.48	25.29	26.92	23.02	22.46	22.01
2075.0	23.13	25.00	26.50	22.54	22.11	21.60
2156.0	22.44	24.27	25.97	21.90	21.57	21.15
2216.7	22.20	23.80	25.32	21.66	21.41	20.73
2297.7	22.08	23.62	25.17	21.23	21.00	20.62
2358.4	21.85	23.38	24.70	21.16	20.94	20.36
2439.4	21.68	22.84	24.15	21.26	20.88	20.42
2500.1	21.72	22.88	24.03	21.17	20.87	20.38

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+14	+17	+20
10.1	40.1	25.10	25.56	24.83
70.8	100.8	27.80	27.92	27.82
131.6	161.6	28.54	28.69	28.64
192.3	222.3	29.31	29.26	29.03
253.0	283.0	29.87	29.90	29.80
313.8	343.8	30.49	30.57	30.40
374.5	404.5	31.47	31.16	30.92
435.2	465.2	33.01	32.25	32.03
496.0	526.0	35.04	34.44	34.01
556.7	586.7	35.59	35.06	34.47
617.4	647.4	34.63	34.64	34.72
678.1	708.1	35.16	35.63	35.95
738.9	768.9	36.58	36.55	36.21
799.6	829.6	38.02	36.17	34.92
860.3	890.3	35.64	33.98	33.15
921.1	951.1	33.43	32.49	32.00
981.8	1011.8	34.22	33.80	32.92
1042.5	1072.5	37.05	36.96	36.32
1103.3	1133.3	40.26	45.62	46.74
1164.0	1194.0	34.69	37.42	38.58
1224.7	1254.7	30.20	31.75	32.37
1285.5	1315.5	27.57	28.60	29.13
1346.2	1376.2	25.94	26.62	27.01
1406.9	1436.9	24.85	25.41	25.75
1467.7	1497.7	24.52	24.94	25.29
1528.4	1558.4	24.35	24.60	24.97
1589.1	1619.1	24.26	24.16	24.52
1649.9	1679.9	24.43	24.10	24.14
1730.8	1760.8	24.54	24.27	24.04
1791.6	1821.6	24.69	24.33	24.19
1872.5	1902.5	24.73	24.25	24.02
1933.3	1963.3	24.83	24.37	24.18
2014.2	2044.2	24.90	24.39	24.34
2075.0	2105.0	25.16	24.53	24.42
2156.0	2186.0	25.44	25.08	24.84
2216.7	2246.7	25.68	25.63	25.64
2297.7	2327.7	25.87	25.90	26.01
2358.4	2388.4	26.29	26.23	26.40
2439.4	2469.4	27.15	26.70	26.46
2500.1	2530.1	27.48	27.11	26.73

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+14	+17	+20
10.1	40.1	1.55	1.40	1.31
70.8	100.8	1.62	1.46	1.36
131.6	161.6	1.61	1.45	1.35
192.3	222.3	1.61	1.45	1.35
253.0	283.0	1.56	1.41	1.30
313.8	343.8	1.53	1.37	1.27
374.5	404.5	1.51	1.34	1.26
435.2	465.2	1.45	1.30	1.23
496.0	526.0	1.41	1.27	1.21
556.7	586.7	1.37	1.25	1.19
617.4	647.4	1.33	1.24	1.19
678.1	708.1	1.31	1.24	1.20
738.9	768.9	1.33	1.26	1.22
799.6	829.6	1.38	1.30	1.24
860.3	890.3	1.42	1.34	1.28
921.1	951.1	1.49	1.40	1.34
981.8	1011.8	1.57	1.47	1.42
1042.5	1072.5	1.65	1.58	1.53
1103.3	1133.3	1.77	1.70	1.65
1164.0	1194.0	1.89	1.81	1.75
1224.7	1254.7	1.99	1.90	1.83
1285.5	1315.5	2.07	1.97	1.89
1346.2	1376.2	2.15	2.03	1.95
1406.9	1436.9	2.21	2.08	1.99
1467.7	1497.7	2.24	2.12	2.02
1528.4	1558.4	2.30	2.16	2.04
1589.1	1619.1	2.33	2.18	2.06
1649.9	1679.9	2.34	2.19	2.08
1730.8	1760.8	2.34	2.18	2.07
1791.6	1821.6	2.32	2.16	2.06
1872.5	1902.5	2.28	2.13	2.03
1933.3	1963.3	2.25	2.09	1.99
2014.2	2044.2	2.20	2.03	1.92
2075.0	2105.0	2.15	1.99	1.87
2156.0	2186.0	2.05	1.92	1.80
2216.7	2246.7	1.97	1.87	1.76
2297.7	2327.7	1.88	1.78	1.69
2358.4	2388.4	1.79	1.69	1.62
2439.4	2469.4	1.66	1.58	1.53
2500.1	2530.1	1.61	1.54	1.49

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+14	+17	+20
10.1	1.16	1.54	2.20
70.8	1.05	1.51	2.22
131.6	1.10	1.53	2.29
192.3	1.12	1.51	2.17
253.0	1.15	1.46	2.13
313.8	1.19	1.43	2.08
374.5	1.20	1.47	2.11
435.2	1.22	1.39	1.95
496.0	1.28	1.31	1.88
556.7	1.33	1.32	1.86
617.4	1.35	1.25	1.77
678.1	1.47	1.23	1.68
738.9	1.54	1.23	1.68
799.6	1.53	1.22	1.58
860.3	1.59	1.21	1.52
921.1	1.70	1.20	1.52
981.8	1.65	1.17	1.44
1042.5	1.66	1.15	1.39
1103.3	1.79	1.13	1.39
1164.0	1.67	1.10	1.33
1224.7	1.66	1.08	1.33
1285.5	1.74	1.06	1.38
1346.2	1.61	1.07	1.36
1406.9	1.58	1.08	1.38
1467.7	1.63	1.12	1.44
1528.4	1.57	1.15	1.47
1589.1	1.46	1.20	1.53
1649.9	1.47	1.24	1.61
1730.8	1.42	1.32	1.66
1791.6	1.46	1.34	1.71
1872.5	1.39	1.38	1.74
1933.3	1.36	1.40	1.75
2014.2	1.31	1.43	1.78
2075.0	1.28	1.47	1.82
2156.0	1.28	1.50	1.85
2216.7	1.28	1.53	1.84
2297.7	1.31	1.59	1.90
2358.4	1.34	1.62	1.91
2439.4	1.37	1.64	1.93
2500.1	1.42	1.68	1.96

IF (OUT) (MHz)	IF VSWR @LO=1000.1MHz (:1) @LO (dBm)		
	+14	+17	+20
20.0	1.26	1.11	1.16
24.6	1.18	1.08	1.18
29.2	1.16	1.12	1.23
33.8	1.16	1.06	1.18
38.5	1.20	1.13	1.23
43.1	1.15	1.13	1.25
47.7	1.13	1.13	1.26
52.3	1.13	1.11	1.23
56.9	1.14	1.11	1.23
61.5	1.10	1.10	1.23
66.2	1.11	1.10	1.22
70.8	1.13	1.09	1.21
75.4	1.11	1.09	1.22
80.0	1.10	1.10	1.23
84.6	1.13	1.06	1.19
89.2	1.12	1.07	1.21
93.8	1.13	1.08	1.21
98.5	1.14	1.07	1.20
103.1	1.15	1.06	1.19
107.7	1.15	1.08	1.20
112.3	1.16	1.07	1.19
116.9	1.17	1.07	1.18
121.5	1.17	1.08	1.19
126.2	1.19	1.08	1.18
130.8	1.18	1.07	1.18
135.4	1.18	1.06	1.17
140.0	1.17	1.07	1.18
144.6	1.17	1.07	1.17
149.2	1.16	1.07	1.18
153.8	1.15	1.07	1.19
158.5	1.13	1.08	1.20
163.1	1.14	1.08	1.20
167.7	1.13	1.09	1.21
172.3	1.14	1.09	1.21
176.9	1.13	1.09	1.21
181.5	1.15	1.07	1.20
186.2	1.16	1.07	1.19
190.8	1.17	1.07	1.19
195.4	1.17	1.06	1.17
200.0	1.19	1.06	1.17

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	4	19	27	20	34	23	22	40	40	32
1	-	24	+0	34	18	51	19	42	40	41	38	59
2	89	57	45	57	46	55	54	59	52	58	53	67
3	>100	73	65	74	57	72	60	77	57	79	61	75
4	>100	84	80	85	>91	87	89	85	77	90	89	88
5	>100	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91
6	>100	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91
7	>100	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91
8	>100	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91
9	>100	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91
10	>100	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91	>91
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 900.1 MHz; -1.00 dBm.
LO IN: 930.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -8.89 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	14	28	42	29	45	35	40	51	59	48
1	-	24	+0	34	17	59	21	46	42	45	45	53
2	73	46	37	45	41	46	45	50	45	52	46	63
3	>100	52	46	53	42	50	44	65	45	65	47	62
4	>100	64	58	62	61	78	52	67	78	63	58	67
5	>100	77	59	66	57	74	53	68	58	73	54	73
6	>100	82	73	79	70	80	77	72	66	68	63	68
7	>100	86	83	86	83	88	79	90	75	78	78	86
8	>100	93	92	>101	89	94	90	89	82	85	76	86
9	>100	>101	99	>101	100	>101	89	89	88	89	78	>101
10	>100	>101	99	101	96	>101	93	>101	>101	98	88	84
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 900.1 MHz; 9.00 dBm.
LO IN: 930.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; 1.14 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.