Frequency Mixer SYM-42

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+4	+7	+10
300.1	330.1	11.94	10.30	9.69
400.1	430.1	10.66	9.64	8.98
500.1	530.1	10.01	9.06	8.48
600.1	630.1	9.40	8.61	8.12
700.1	730.1	8.76	7.99	7.63
800.1	830.1	8.08	7.45	7.08
900.1	930.1	7.53	7.02	6.71
1000.1	1030.1	6.78	6.40	6.12
1100.1	1130.1	6.41	6.05	5.78
1200.1	1230.1	5.92	5.69	5.42
1300.1	1330.1	5.68	5.40	5.19
1400.1	1430.1	5.45	5.16	5.04
1500.1	1530.1	5.28	5.02	4.93
1600.1	1630.1	5.33	4.94	4.81
1700.1	1730.1	5.37	5.06	4.83
1800.1	1830.1	5.88	5.47	5.22
1900.1	1930.1	5.90	5.44	5.14
2000.1	2030.1	5.45	5.07	4.84
2100.1	2130.1	5.38	4.97	4.73
2200.1	2230.1	5.36	5.08	4.80
2300.1	2330.1	5.46	5.09	4.92
2400.1	2430.1	5.54	5.14	4.97
2500.1	2530.1	5.73	5.33	5.16
2600.1	2630.1	6.00	5.64	5.33
2700.1	2730.1	5.97	5.63	5.47
2800.1	2830.1	5.94	5.69	5.47
2900.1	2930.1	6.14	5.86	5.67
3000.1	3030.1	6.39	5.99	5.95
3100.1	3130.1	6.53	6.16	5.98
3200.1	3230.1	6.65	6.30	6.23
3300.1	3330.1	7.15	6.68	6.75
3400.1	3430.1	7.21	6.87	7.23
3500.1	3530.1	7.25	7.04	7.16
3600.1	3630.1	7.36	6.86	6.81
3700.1	3730.1	7.43	6.79	6.50
3800.1	3830.1	7.57	6.82	6.46
3900.1	3930.1	7.41	6.84	6.43
4000.1	4030.1	7.29	6.74	6.35
4100.1	4130.1	7.68	7.05	6.68
4200.1	4230.1	7.54	6.91	6.66

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
300.1	330.1	13.91	17.24	12.34
400.1	430.1	17.64	19.77	17.71
500.1	530.1	12.11	14.15	13.18
600.1	630.1	12.13	14.33	12.16
700.1	730.1	9.65	12.62	12.31
800.1	830.1	10.37	10.86	10.66
900.1	930.1	8.94	9.15	9.26
1000.1	1030.1	9.11	9.49	9.53
1100.1	1130.1	8.58	8.58	9.44
1200.1	1230.1	8.18	8.98	8.89
1300.1	1330.1	7.20	7.95	8.55
1400.1	1430.1	8.95	9.85	10.76
1500.1	1530.1	9.52	13.53	12.11
1600.1	1630.1	7.89	9.18	10.78
1700.1	1730.1	6.68	8.29	10.92
1800.1	1830.1	10.54	10.51	10.51
1900.1	1930.1	7.34	7.69	8.08
2000.1	2030.1	7.58	8.35	8.45
2100.1	2130.1	7.86	8.79	11.15
2200.1	2230.1	8.65	10.93	12.37
2300.1	2330.1	8.04	11.35	12.41
2400.1	2430.1	10.05	11.03	11.30
2500.1	2530.1	9.86	10.10	14.23
2600.1	2630.1	8.78	10.32	12.62
2700.1	2730.1	8.57	10.27	11.26
2800.1	2830.1	9.89	10.95	11.72
2900.1	2930.1	11.53	11.25	11.89
3000.1	3030.1	12.66	13.75	12.56
3100.1	3130.1	12.63	12.69	14.24
3200.1	3230.1	13.59	12.31	8.71
3300.1	3330.1	12.99	9.98	8.39
3400.1	3430.1	9.16	10.12	12.41
3500.1	3530.1	9.63	10.84	13.32
3600.1	3630.1	10.98	14.39	13.86
3700.1	3730.1	13.41	14.02	15.42
3800.1	3830.1	14.51	15.10	12.09
3900.1	3930.1	11.11	11.27	11.52
4000.1	4030.1	13.44	14.32	12.89
4100.1	4130.1	10.03	13.54	13.69
4200.1	4230.1	10.75	10.23	12.82

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
300.1	330.1	-0.09	-0.01	-0.04
400.1	430.1	0.10	0.05	0.01
500.1	530.1	0.26	0.21	0.19
600.1	630.1	0.51	0.43	0.26
700.1	730.1	0.72	0.63	0.55
800.1	830.1	1.12	0.95	0.80
900.1	930.1	1.19	1.00	0.91
1000.1	1030.1	1.42	1.17	1.00
1100.1	1130.1	1.43	1.20	1.01
1200.1	1230.1	1.57	1.34	1.12
1300.1	1330.1	1.63	1.39	1.16
1400.1	1430.1	1.63	1.32	1.14
1500.1	1530.1	1.43	1.15	0.97
1600.1	1630.1	1.10	0.80	0.65
1700.1	1730.1	0.96	0.66	0.49
1800.1	1830.1	1.16	0.90	0.71
1900.1	1930.1	1.43	1.19	1.00
2000.1	2030.1	1.46	1.18	0.96
2100.1	2130.1	1.34	1.03	0.83
2200.1	2230.1	1.17	0.90	0.72
2300.1	2330.1	1.13	0.84	0.72
2400.1	2430.1	1.14	0.83	0.69
2500.1	2530.1	0.98	0.76	0.67
2600.1	2630.1	0.97	0.75	0.69
2700.1	2730.1	0.89	0.71	0.66
2800.1	2830.1	0.85	0.70	0.72
2900.1	2930.1	0.81	0.70	0.74
3000.1	3030.1	0.82	0.72	0.81
3100.1	3130.1	0.84	0.78	0.92
3200.1	3230.1	0.93	0.89	1.08
3300.1	3330.1	0.99	1.01	1.14
3400.1	3430.1	0.93	0.91	0.96
3500.1	3530.1	0.82	0.75	0.84
3600.1	3630.1	0.79	0.63	0.72
3700.1	3730.1	0.63	0.47	0.48
3800.1	3830.1	0.53	0.39	0.36
3900.1	3930.1	0.45	0.32	0.35
4000.1	4030.1	0.52	0.38	0.40
4100.1	4130.1	0.50	0.41	0.50
4200.1	4230.1	0.69	0.60	0.75

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2600.1MHz (dB)
		@LO (dBm)
		+7
700.0	1900.1	8.19
659.4	1940.7	7.89
618.8	1981.3	7.59
578.2	2021.9	7.27
537.6	2062.5	7.00
497.1	2103.0	6.77
456.5	2143.6	6.78
415.9	2184.2	6.69
375.3	2224.8	6.67
334.7	2265.4	6.62
294.1	2306.0	6.40
253.5	2346.6	6.30
212.9	2387.2	6.15
172.4	2427.7	6.00
131.8	2468.3	5.86
91.2	2508.9	5.69
50.6	2549.5	5.57
10.0	2590.1	5.51
30.3	2630.4	5.52
70.9	2671.0	5.64
111.5	2711.6	5.76
152.1	2752.2	5.87
192.6	2792.7	6.02
212.9	2813.0	6.07
253.5	2853.6	6.21
273.8	2873.9	6.28
314.4	2914.5	6.41
334.7	2934.8	6.48
375.3	2975.4	6.63
395.6	2995.7	6.75
436.2	3036.3	6.86
456.5	3056.6	7.01
497.1	3097.2	7.12
517.4	3117.5	7.20
557.9	3158.0	7.49
578.2	3178.3	7.60
618.8	3218.9	7.86
639.1	3239.2	8.08
679.7	3279.8	8.39
700.0	3300.1	8.56

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB)
		@LO (dBm)
		+7
10.0	1010.1	6.35
14.9	1015.0	6.38
19.7	1019.8	6.37
24.6	1024.7	6.35
29.5	1029.6	6.35
34.4	1034.5	6.37
39.2	1039.3	6.36
44.1	1044.2	6.40
49.0	1049.1	6.45
53.8	1053.9	6.46
58.7	1058.8	6.45
63.6	1063.7	6.46
68.5	1068.6	6.48
73.3	1073.4	6.53
78.2	1078.3	6.58
83.1	1083.2	6.61
87.9	1088.0	6.60
92.8	1092.9	6.62
97.7	1097.8	6.62
102.6	1102.7	6.65
107.4	1107.5	6.71
112.3	1112.4	6.76
117.2	1117.3	6.78
122.1	1122.2	6.80
126.9	1127.0	6.79
131.8	1131.9	6.78
136.7	1136.8	6.80
141.5	1141.6	6.85
146.4	1146.5	6.87
151.3	1151.4	6.90
156.2	1156.3	6.93
161.0	1161.1	6.93
165.9	1166.0	6.97
170.8	1170.9	7.02
175.6	1175.7	7.05
180.5	1180.6	7.08
185.4	1185.5	7.10
190.3	1190.4	7.10
195.1	1195.2	7.10
200.0	1200.1	7.13

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=4200.1MHz (dB)
		@LO (dBm)
		+7
200.0	4000.1	7.96
195.1	4005.0	7.93
190.3	4009.8	7.89
185.4	4014.7	7.86
180.5	4019.6	7.84
175.6	4024.5	7.81
170.8	4029.3	7.79
165.9	4034.2	7.77
161.0	4039.1	7.72
156.2	4043.9	7.67
151.3	4048.8	7.62
146.4	4053.7	7.57
141.5	4058.6	7.54
136.7	4063.4	7.52
131.8	4068.3	7.50
126.9	4073.2	7.49
122.1	4078.0	7.46
117.2	4082.9	7.41
112.3	4087.8	7.36
107.4	4092.7	7.33
102.6	4097.5	7.27
97.7	4102.4	7.25
92.8	4107.3	7.21
87.9	4112.2	7.19
83.1	4117.0	7.18
78.2	4121.9	7.14
73.3	4126.8	7.10
68.5	4131.6	7.06
63.6	4136.5	7.02
58.7	4141.4	6.99
53.8	4146.3	6.97
49.0	4151.1	6.94
44.1	4156.0	6.90
39.2	4160.9	6.87
34.4	4165.7	6.84
29.5	4170.6	6.82
24.6	4175.5	6.83
19.7	4180.4	6.79
14.9	4185.2	6.84
10.0	4190.1	6.90

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
300.1	24.84	25.16	25.87	13.63	14.92	16.33
400.1	24.08	24.50	25.01	15.17	17.32	19.08
500.1	24.13	24.40	24.62	17.77	20.84	23.31
600.1	24.13	24.16	24.18	20.14	23.96	26.33
700.1	25.04	24.80	24.58	19.42	20.88	20.88
800.1	26.12	25.65	25.35	16.93	16.92	16.44
900.1	28.50	27.91	27.48	15.07	14.49	14.02
1000.1	31.99	31.30	30.86	14.13	13.41	12.84
1100.1	36.24	35.59	35.37	14.28	13.46	12.90
1200.1	42.98	42.29	41.91	14.86	14.02	13.51
1300.1	70.04	57.64	52.50	15.58	14.80	14.35
1400.1	42.05	42.41	42.34	16.49	15.86	15.38
1500.1	39.80	39.37	38.75	17.47	16.98	16.57
1600.1	38.97	38.33	37.42	18.18	17.98	17.77
1700.1	37.71	37.43	36.77	19.04	19.09	19.04
1800.1	38.43	38.41	37.95	20.07	20.29	20.37
1900.1	37.18	36.46	36.20	21.19	21.66	22.03
2000.1	37.85	36.24	34.75	22.35	23.32	23.93
2100.1	37.36	35.53	33.77	23.51	24.73	25.73
2200.1	36.01	34.56	33.35	24.73	26.25	27.71
2300.0	35.04	33.64	32.44	26.19	28.10	29.97
2400.0	35.08	33.51	32.50	27.81	29.92	32.16
2500.0	36.11	34.15	32.93	29.62	31.98	34.44
2600.0	36.72	34.64	33.23	31.91	34.96	38.12
2700.0	36.37	34.31	33.08	34.79	40.31	47.26
2800.0	37.16	35.14	33.80	36.73	44.73	45.53
2900.0	39.74	37.56	35.78	33.54	35.59	35.01
3000.0	43.01	40.78	39.31	29.39	30.28	30.09
3100.0	45.71	43.51	41.99	25.68	26.29	26.30
3200.0	47.79	47.53	44.94	22.39	23.12	23.41
3300.0	45.05	54.38	49.42	19.19	20.13	20.54
3400.0	42.69	57.47	40.31	18.12	18.55	19.11
3500.0	40.82	58.23	36.59	19.37	19.78	19.96
3600.0	38.60	39.48	34.36	19.25	20.26	20.91
3700.0	39.13	35.05	31.76	19.83	21.60	22.85
3800.0	37.60	33.39	30.71	20.02	22.38	24.66
3900.0	34.82	31.34	29.31	19.52	22.26	25.45
4000.0	32.50	29.54	27.69	19.06	21.90	25.43
4100.0	29.96	27.75	26.17	18.68	21.42	24.55
4200.0	27.85	26.05	24.94	18.61	20.89	22.90

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
300.1	330.1	11.94	10.67	10.24
400.4	430.4	10.76	10.13	9.84
500.6	530.6	10.02	9.67	9.46
600.9	630.9	9.81	9.52	9.34
701.1	731.1	10.12	9.91	9.79
801.4	831.4	10.77	10.59	10.55
901.6	931.6	11.79	11.77	11.69
1001.9	1031.9	13.89	13.95	14.06
1102.2	1132.2	16.01	16.14	16.35
1202.4	1232.4	18.65	18.89	19.07
1302.7	1332.7	21.15	21.32	21.48
1402.9	1432.9	23.81	24.01	24.24
1503.2	1533.2	25.94	26.49	26.82
1603.4	1633.4	27.28	27.60	28.17
1703.7	1733.7	28.50	28.83	29.03
1803.9	1833.9	29.80	29.91	30.01
1904.2	1934.2	32.30	32.50	32.77
2004.5	2034.5	34.96	35.14	35.31
2104.7	2134.7	36.76	36.75	36.66
2205.0	2235.0	37.32	37.07	36.66
2305.2	2335.2	37.68	37.21	37.16
2405.5	2435.5	39.19	38.70	38.42
2505.7	2535.7	41.43	41.20	40.99
2606.0	2636.0	38.19	38.87	39.49
2706.3	2736.3	35.36	35.39	35.48
2806.5	2836.5	35.45	35.26	35.19
2906.8	2936.8	35.04	35.03	34.84
3007.0	3037.0	33.67	33.84	33.62
3107.3	3137.3	32.32	32.32	32.10
3207.5	3237.5	31.44	31.31	31.27
3307.8	3337.8	30.75	30.46	31.18
3408.1	3438.1	30.18	30.42	30.76
3508.3	3538.3	29.66	29.98	29.79
3608.6	3638.6	28.36	28.30	28.04
3708.8	3738.8	28.46	27.97	27.57
3809.1	3839.1	28.73	27.92	26.96
3889.3	3919.3	28.19	27.13	26.24
3989.5	4019.5	27.02	25.99	25.17
4069.7	4099.7	26.51	25.64	24.73
4170.0	4200.0	25.16	24.34	23.61

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
300.1	330.1	8.35	7.63	7.44
400.4	430.4	6.97	6.51	6.35
500.6	530.6	6.26	5.87	5.66
600.9	630.9	5.46	5.14	5.02
701.1	731.1	4.72	4.48	4.33
801.4	831.4	4.15	3.95	3.79
901.6	931.6	3.76	3.60	3.47
1001.9	1031.9	3.39	3.20	3.06
1102.2	1132.2	3.16	2.98	2.83
1202.4	1232.4	2.80	2.62	2.51
1302.7	1332.7	2.46	2.29	2.17
1402.9	1432.9	2.06	1.88	1.78
1503.2	1533.2	1.76	1.58	1.46
1603.4	1633.4	1.81	1.57	1.42
1703.7	1733.7	1.98	1.73	1.56
1803.9	1833.9	2.32	2.06	1.88
1904.2	1934.2	2.32	2.07	1.89
2004.5	2034.5	2.03	1.79	1.65
2104.7	2134.7	1.92	1.69	1.56
2205.0	2235.0	1.94	1.72	1.57
2305.2	2335.2	1.94	1.75	1.64
2405.5	2435.5	1.99	1.82	1.72
2505.7	2535.7	2.12	1.95	1.85
2606.0	2636.0	2.35	2.16	2.06
2706.3	2736.3	2.48	2.32	2.23
2806.5	2836.5	2.56	2.39	2.29
2906.8	2936.8	2.65	2.44	2.31
3007.0	3037.0	2.78	2.56	2.40
3107.3	3137.3	2.94	2.70	2.55
3207.5	3237.5	3.16	2.92	2.72
3307.8	3337.8	3.27	2.92	2.65
3408.1	3438.1	3.14	2.78	2.56
3508.3	3538.3	3.12	2.70	2.49
3608.6	3638.6	3.28	2.84	2.58
3708.8	3738.8	3.54	3.02	2.74
3809.1	3839.1	3.67	3.15	2.86
3889.3	3919.3	3.73	3.18	2.85
3989.5	4019.5	3.65	3.16	2.82
4069.7	4099.7	3.75	3.28	2.96
4170.0	4200.0	3.59	3.16	2.86

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
300.1	6.32	4.16	3.58
400.1	4.75	3.51	3.44
500.1	3.83	3.22	3.48
600.1	3.25	3.09	3.58
700.1	2.82	2.98	3.62
800.1	2.60	2.95	3.67
900.1	2.44	2.92	3.67
1000.1	2.25	2.85	3.65
1100.1	2.18	2.86	3.70
1200.1	2.16	2.90	3.76
1300.1	2.18	2.93	3.82
1400.1	2.20	2.95	3.82
1500.1	2.26	2.97	3.83
1600.1	2.44	3.07	3.86
1700.1	2.62	3.15	3.86
1800.1	2.73	3.16	3.80
1900.1	2.71	3.04	3.61
2000.1	2.56	2.76	3.25
2100.1	2.61	2.65	3.03
2200.1	2.58	2.51	2.80
2300.0	2.41	2.24	2.48
2400.0	2.31	2.05	2.21
2500.0	2.19	1.88	1.98
2600.0	1.98	1.71	1.82
2700.0	1.75	1.54	1.70
2800.0	1.60	1.46	1.69
2900.0	1.49	1.47	1.75
3000.0	1.44	1.51	1.84
3100.0	1.45	1.57	1.91
3200.0	1.47	1.60	1.94
3300.0	1.51	1.59	1.90
3400.0	1.38	1.47	1.73
3500.0	1.51	1.45	1.63
3600.0	1.74	1.57	1.66
3700.0	2.00	1.70	1.69
3800.0	2.14	1.72	1.60
3900.0	2.13	1.63	1.43
4000.0	1.94	1.45	1.21
4100.0	1.70	1.25	1.03
4200.0	1.42	1.17	1.31

IF (OUT) (MHz)	IF VSWR @LO=4200MHz (:1) @LO (dBm)		
	+4	+7	+10
10.1	1.67	1.80	1.96
15.0	1.51	1.88	2.34
19.8	1.32	1.73	1.78
24.7	1.20	1.62	1.80
29.6	1.32	1.78	1.88
34.5	1.32	1.65	1.84
39.3	1.34	1.74	1.91
44.2	1.36	1.78	2.02
49.1	1.36	1.76	1.93
53.9	1.37	1.70	2.01
58.8	1.42	1.72	2.04
63.7	1.44	1.75	1.98
68.6	1.45	1.78	2.04
73.4	1.50	1.84	2.04
78.3	1.47	1.84	2.09
83.2	1.46	1.78	2.00
88.0	1.49	1.75	1.98
92.9	1.48	1.81	2.00
97.8	1.46	1.77	1.94
102.7	1.51	1.78	1.96
107.5	1.49	1.75	1.94
112.4	1.51	1.81	1.98
117.3	1.54	1.85	2.03
122.2	1.52	1.79	1.92
127.0	1.55	1.83	2.01
131.9	1.57	1.84	2.04
136.8	1.61	1.89	2.05
141.6	1.63	1.90	2.11
146.5	1.66	1.94	2.18
151.4	1.67	1.95	2.11
156.3	1.66	1.97	2.12
161.1	1.68	1.97	2.11
166.0	1.70	1.93	2.08
170.9	1.68	1.97	2.09
175.7	1.68	1.93	2.05
180.6	1.68	1.94	2.07
185.5	1.70	1.96	2.11
190.4	1.73	2.01	2.17
195.2	1.76	2.03	2.14
200.1	1.83	2.08	2.25

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	6	21	12	36	30	38	31	57	42	---
1	-	18	+0	44	28	35	45	49	45	54	60	64
2	>100	67	75	63	72	77	63	72	69	76	63	>79
3	>100	72	>79	>79	70	>79	>79	78	>79	>79	>79	>79
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	98	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
10	---	---	>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: 2600.1 MHz; -14.00 dBm.
LO IN: 2630.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -20.98 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	16	30	22	47	41	49	45	75	59	---
1	-	18	+0	44	28	36	45	51	48	57	64	66
2	81	58	66	52	63	68	54	64	62	67	57	78
3	>100	51	59	69	46	76	61	60	75	72	64	71
4	>100	>89	80	78	>89	80	83	79	82	79	80	86
5	100	>89	>89	86	88	>89	82	>89	84	82	>89	>89
6	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
7	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
8	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
9	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
10	---	---	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 2600.1 MHz; -4.00 dBm.
LO IN: 2630.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -11.02 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.