

Frequency Mixer

SYM-ED8512/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+14	+17	+20
30.1	60.1	8.55	8.01	7.68
90.1	120.1	6.79	6.38	6.20
170.1	200.1	6.39	6.08	5.96
250.1	280.1	6.30	6.02	5.89
330.1	360.1	6.37	6.07	5.93
410.1	440.1	6.51	6.18	6.01
490.1	520.1	6.61	6.26	6.08
570.1	600.1	6.59	6.28	6.12
650.1	680.1	6.58	6.30	6.17
730.1	760.1	6.54	6.26	6.14
810.1	840.1	6.74	6.39	6.24
890.1	920.1	6.92	6.55	6.35
970.1	1000.1	7.06	6.67	6.47
1050.1	1080.1	7.10	6.73	6.55
1130.1	1160.1	7.29	6.89	6.69
1210.1	1240.1	7.55	7.14	6.93
1290.1	1320.1	7.79	7.37	7.13
1370.1	1400.1	8.22	7.70	7.45
1450.1	1480.1	8.66	8.06	7.74
1530.1	1560.1	9.34	8.56	8.10
1610.1	1640.1	9.69	8.88	8.34
1690.1	1720.1	9.74	8.90	8.39
1770.1	1800.1	9.75	8.95	8.44
1850.1	1880.1	9.90	9.02	8.50
1930.1	1960.1	9.85	8.97	8.47
1990.1	2020.1	9.69	8.80	8.29
2070.1	2100.1	9.32	8.52	8.08
2130.1	2160.1	9.16	8.42	8.03
2210.1	2240.1	9.22	8.42	8.05
2270.1	2300.1	9.14	8.35	7.97
2350.1	2380.1	8.96	8.26	7.94
2410.1	2440.1	9.06	8.38	8.04
2490.1	2520.1	9.20	8.50	8.17
2550.1	2580.1	9.21	8.57	8.26
2630.1	2660.1	9.31	8.71	8.42
2690.1	2720.1	9.58	8.90	8.64
2770.1	2800.1	9.85	9.14	8.88
2830.1	2860.1	10.05	9.38	9.10
2910.1	2940.1	10.43	9.75	9.48
2970.1	3000.1	10.81	10.14	9.88

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+14	+17	+20
30.1	60.1	26.82	28.80	31.37
90.1	120.1	26.25	27.28	27.94
170.1	200.1	24.43	27.32	35.57
250.1	280.1	24.08	30.13	34.11
330.1	360.1	25.82	31.20	33.41
410.1	440.1	26.60	30.86	32.37
490.1	520.1	28.40	32.28	32.39
570.1	600.1	27.42	29.56	32.02
650.1	680.1	25.69	30.30	33.23
730.1	760.1	24.86	27.99	29.79
810.1	840.1	22.78	24.20	25.99
890.1	920.1	22.42	24.09	27.44
970.1	1000.1	23.78	25.11	27.95
1050.1	1080.1	24.45	27.76	32.25
1130.1	1160.1	24.64	27.00	29.37
1210.1	1240.1	25.25	27.34	30.83
1290.1	1320.1	25.57	28.24	30.31
1370.1	1400.1	25.48	27.93	28.87
1450.1	1480.1	22.89	24.68	26.64
1530.1	1560.1	20.98	23.54	26.90
1610.1	1640.1	23.30	26.02	31.27
1690.1	1720.1	26.66	29.71	30.67
1770.1	1800.1	27.31	29.15	28.85
1850.1	1880.1	25.53	28.36	29.46
1930.1	1960.1	25.26	27.56	27.09
1990.1	2020.1	24.06	24.52	24.63
2070.1	2100.1	23.23	23.28	23.84
2130.1	2160.1	22.38	22.76	23.41
2210.1	2240.1	21.97	22.48	23.21
2270.1	2300.1	21.65	22.15	22.85
2350.1	2380.1	21.47	22.15	22.90
2410.1	2440.1	21.48	22.53	23.30
2490.1	2520.1	21.21	22.39	23.37
2550.1	2580.1	21.08	22.19	23.30
2630.1	2660.1	21.42	22.30	23.70
2690.1	2720.1	22.11	22.58	23.99
2770.1	2800.1	22.62	22.62	24.08
2830.1	2860.1	23.79	22.77	24.36
2910.1	2940.1	32.02	24.06	25.00
2970.1	3000.1	24.56	27.21	25.89

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+15dBm (dB)		
		@LO (dBm)		
		+14	+17	+20
30.1	60.1	0.39	0.09	0.02
90.1	120.1	1.47	0.92	0.62
170.1	200.1	1.86	1.15	0.79
250.1	280.1	1.84	1.10	0.76
330.1	360.1	1.87	1.13	0.79
410.1	440.1	1.75	1.05	0.72
490.1	520.1	1.69	0.97	0.67
570.1	600.1	1.72	0.93	0.63
650.1	680.1	1.73	0.95	0.64
730.1	760.1	1.75	0.93	0.64
810.1	840.1	1.68	0.88	0.61
890.1	920.1	1.57	0.80	0.54
970.1	1000.1	1.48	0.71	0.47
1050.1	1080.1	1.57	0.76	0.48
1130.1	1160.1	1.55	0.78	0.50
1210.1	1240.1	1.56	0.75	0.49
1290.1	1320.1	1.48	0.74	0.48
1370.1	1400.1	1.20	0.67	0.45
1450.1	1480.1	1.05	0.65	0.46
1530.1	1560.1	0.80	0.58	0.47
1610.1	1640.1	0.78	0.57	0.50
1690.1	1720.1	0.85	0.62	0.52
1770.1	1800.1	0.79	0.60	0.54
1850.1	1880.1	0.71	0.56	0.54
1930.1	1960.1	0.74	0.57	0.54
1990.1	2020.1	0.95	0.71	0.64
2070.1	2100.1	1.29	0.90	0.77
2130.1	2160.1	1.32	0.93	0.78
2210.1	2240.1	1.39	0.92	0.76
2270.1	2300.1	1.53	0.97	0.77
2350.1	2380.1	1.66	0.99	0.78
2410.1	2440.1	1.52	0.90	0.66
2490.1	2520.1	1.58	0.86	0.60
2550.1	2580.1	1.47	0.81	0.56
2630.1	2660.1	1.41	0.77	0.50
2690.1	2720.1	1.35	0.70	0.46
2770.1	2800.1	1.21	0.62	0.41
2830.1	2860.1	1.09	0.59	0.38
2910.1	2940.1	0.94	0.56	0.36
2970.1	3000.1	0.72	0.44	0.30

Frequency Mixer

SYM-ED8512/1

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=760.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=29.9MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1510.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
750.1	10.0	6.66	10.1	40.0	8.23	1500.1	10.0	7.61
731.1	29.0	6.58	90.6	120.5	7.97	1460.4	49.7	7.57
712.2	47.9	6.64	171.1	201.0	7.91	1420.6	89.5	7.54
693.2	66.9	6.66	251.6	281.5	7.85	1380.9	129.2	7.45
674.2	85.9	6.71	332.2	362.1	7.88	1341.2	168.9	7.56
655.2	104.9	6.73	412.7	442.6	7.86	1301.4	208.7	7.51
636.3	123.8	6.55	493.2	523.1	7.88	1261.7	248.4	7.55
617.3	142.8	6.75	573.7	603.6	7.81	1222.0	288.1	7.58
598.3	161.8	6.70	654.2	684.1	7.73	1182.2	327.9	7.57
579.3	180.8	6.65	734.7	764.6	7.68	1142.5	367.6	7.57
560.4	199.7	6.62	815.3	845.2	7.71	1102.8	407.3	7.63
541.4	218.7	6.70	895.8	925.7	7.68	1063.0	447.1	7.74
522.4	237.7	6.63	976.3	1006.2	7.71	1023.3	486.8	7.69
503.4	256.7	6.73	1056.8	1086.7	7.72	983.6	526.5	7.77
484.5	275.6	6.67	1137.3	1167.2	7.79	943.8	566.3	7.88
465.5	294.6	6.61	1217.8	1247.7	8.06	904.1	606.0	7.86
446.5	313.6	6.61	1298.4	1328.3	8.39	864.4	645.7	7.91
427.5	332.6	6.51	1378.9	1408.8	8.81	824.6	685.5	7.76
408.6	351.5	6.42	1459.4	1489.3	8.96	784.9	725.2	7.53
389.6	370.5	6.05	1539.9	1569.8	9.15	745.2	764.9	7.37
370.6	389.5	6.16	1620.4	1650.3	9.07	705.4	804.7	8.00
351.6	408.5	6.48	1700.9	1730.8	8.77	665.7	844.4	8.12
332.7	427.4	6.65	1781.5	1811.4	8.52	626.0	884.1	7.99
313.7	446.4	6.62	1862.0	1891.9	8.43	586.2	923.9	8.00
294.7	465.4	6.58	1942.5	1972.4	8.30	546.5	963.6	8.04
275.7	484.4	6.63	2023.0	2052.9	8.28	506.8	1003.3	8.00
256.8	503.3	6.57	2103.5	2133.4	8.28	467.0	1043.1	8.02
237.8	522.3	6.54	2184.0	2213.9	8.20	427.3	1082.8	7.91
218.8	541.3	6.60	2264.6	2294.5	8.07	387.6	1122.5	8.01
199.8	560.3	6.54	2345.1	2375.0	8.03	347.8	1162.3	8.01
180.9	579.2	6.50	2425.6	2455.5	8.11	308.1	1202.0	8.00
161.9	598.2	6.53	2506.1	2536.0	8.30	268.4	1241.7	8.05
142.9	617.2	6.44	2586.6	2616.5	8.53	228.6	1281.5	8.00
123.9	636.2	6.45	2667.1	2697.0	8.73	188.9	1321.2	8.01
105.0	655.1	6.44	2747.6	2777.5	8.93	149.2	1360.9	8.06
86.0	674.1	6.41	2828.2	2858.1	9.16	129.3	1380.8	8.09
67.0	693.1	6.35	2908.7	2938.6	9.46	89.6	1420.5	8.13
48.0	712.1	6.48	2989.2	3019.1	9.94	69.7	1440.4	8.27
29.1	731.0	6.40	3069.7	3099.6	10.44	30.0	1480.1	8.23
10.1	750.0	6.70	3130.1	3160.0	10.56	10.1	1500.0	8.57

REV. X2

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
60.1	53.74	57.75	59.96	39.73	44.83	49.71
120.1	50.71	54.08	55.68	39.78	45.07	49.52
200.1	50.03	51.20	51.75	40.96	46.72	49.83
280.1	49.19	49.22	49.28	42.16	49.04	50.37
360.1	49.11	48.17	47.52	43.60	52.55	50.01
440.1	49.19	46.86	45.86	46.13	63.00	49.70
520.1	50.69	46.41	44.61	46.94	63.31	50.24
600.1	53.18	46.82	44.27	47.44	53.22	49.37
680.1	52.58	46.95	44.18	46.61	48.48	47.23
760.1	48.53	51.45	50.82	45.08	47.89	48.69
840.1	46.44	45.69	44.57	42.21	43.28	43.83
920.1	47.25	46.06	44.47	40.36	41.16	41.47
1000.1	47.73	47.34	45.86	38.74	39.85	40.50
1080.1	42.60	43.61	43.79	38.16	38.79	39.10
1160.1	41.09	42.33	42.90	36.86	37.34	37.61
1240.1	40.35	41.69	42.73	37.16	37.43	37.45
1320.1	41.02	42.83	44.50	38.24	38.10	37.73
1400.1	40.93	43.22	45.55	37.96	37.78	37.59
1480.1	39.63	41.62	43.42	37.07	37.36	37.21
1560.1	39.21	41.19	42.73	36.67	37.61	38.05
1640.1	39.14	41.25	43.24	35.80	36.42	36.76
1720.1	39.23	41.28	43.18	35.06	35.33	35.60
1800.1	39.08	41.12	42.81	33.99	34.46	34.74
1880.1	38.28	39.84	40.90	33.36	33.47	33.93
1960.1	36.78	37.24	37.26	33.62	33.48	33.73
2020.1	34.60	34.55	34.48	33.07	32.82	33.02
2100.1	32.81	32.82	33.00	32.06	31.97	32.29
2160.1	32.27	32.68	33.00	31.55	31.76	32.11
2240.1	31.48	31.91	32.44	31.28	31.32	31.80
2300.1	30.89	31.42	31.85	31.00	31.22	31.62
2380.1	30.42	30.97	31.42	30.44	30.97	31.72
2440.1	30.08	30.87	31.03	29.96	30.83	31.61
2520.1	29.30	30.11	30.37	30.02	30.87	31.71
2580.1	28.72	29.56	29.81	30.55	31.44	32.16
2660.1	28.43	29.27	29.49	31.55	32.45	33.05
2720.1	28.46	29.29	29.72	32.48	33.33	34.09
2800.1	28.40	29.45	30.07	34.80	35.94	37.01
2860.1	28.61	29.73	30.47	37.62	39.32	41.18
2940.1	29.88	30.88	31.61	41.51	45.06	47.99
3000.1	32.13	32.68	33.09	34.72	36.13	36.66

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
30.1	60.1	32.05	32.78	33.58
90.1	120.1	30.52	31.27	31.86
170.1	200.1	32.87	34.07	35.08
250.1	280.1	35.84	37.36	38.84
330.1	360.1	38.19	40.44	42.94
410.1	440.1	41.03	42.75	44.65
490.1	520.1	46.00	47.51	48.73
570.1	600.1	48.64	49.21	48.64
650.1	680.1	53.79	50.23	48.37
730.1	760.1	44.39	42.69	41.23
810.1	840.1	41.00	40.02	38.86
890.1	920.1	38.22	37.90	37.46
970.1	1000.1	36.18	36.53	36.97
1050.1	1080.1	34.39	34.89	35.68
1130.1	1160.1	34.51	34.86	35.55
1210.1	1240.1	35.20	35.32	35.44
1290.1	1320.1	33.86	33.80	34.18
1370.1	1400.1	32.54	32.83	33.30
1450.1	1480.1	31.79	32.55	33.28
1530.1	1560.1	28.34	29.36	30.38
1610.1	1640.1	30.80	31.74	33.02
1690.1	1720.1	37.59	38.10	39.41
1770.1	1800.1	45.79	46.69	51.00
1850.1	1880.1	46.90	48.85	49.59
1930.1	1960.1	41.27	42.61	42.76
1990.1	2020.1	37.58	38.49	39.04
2070.1	2100.1	36.01	36.92	37.63
2130.1	2160.1	36.18	36.82	36.87
2210.1	2240.1	36.39	36.78	36.76
2270.1	2300.1	37.21	37.51	37.50
2350.1	2380.1	38.19	38.20	38.13
2410.1	2440.1	39.03	38.77	38.65
2490.1	2520.1	38.92	37.98	37.69
2550.1	2580.1	37.08	36.05	35.77
2630.1	2660.1	32.98	32.07	31.77
2690.1	2720.1	30.33	29.32	28.99
2770.1	2800.1	27.11	26.16	25.85
2830.1	2860.1	25.04	24.28	24.03
2910.1	2940.1	22.93	22.33	22.25
2970.1	3000.1	21.87	21.32	21.39

Frequency Mixer

SYM-ED8512/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1500MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
30.1	60.1	4.82	4.43	4.21	60.1	1.12	1.49	2.23	10.0	1.07	1.27	1.46
90.1	120.1	1.69	1.58	1.55	120.1	1.17	1.53	2.28	50.5	1.06	1.28	1.48
170.1	200.1	1.23	1.14	1.13	200.1	1.16	1.51	2.22	91.1	1.05	1.27	1.47
250.1	280.1	1.17	1.07	1.04	280.1	1.13	1.53	2.23	131.6	1.06	1.24	1.43
330.1	360.1	1.29	1.20	1.18	360.1	1.11	1.58	2.29	172.2	1.06	1.25	1.44
410.1	440.1	1.43	1.34	1.30	440.1	1.09	1.64	2.37	212.7	1.08	1.19	1.36
490.1	520.1	1.59	1.48	1.43	520.1	1.13	1.72	2.48	253.3	1.08	1.21	1.38
570.1	600.1	1.71	1.59	1.53	600.1	1.17	1.79	2.57	293.8	1.10	1.14	1.29
650.1	680.1	1.82	1.69	1.61	680.1	1.21	1.86	2.65	334.4	1.13	1.16	1.30
730.1	760.1	1.91	1.73	1.63	760.1	1.27	1.91	2.69	374.9	1.13	1.10	1.24
810.1	840.1	2.11	1.88	1.75	840.1	1.32	1.96	2.73	415.5	1.19	1.12	1.22
890.1	920.1	2.30	2.07	1.90	920.1	1.36	1.99	2.75	456.0	1.18	1.07	1.18
970.1	1000.1	2.43	2.18	2.01	1000.1	1.39	2.02	2.79	496.6	1.26	1.10	1.12
1050.1	1080.1	2.44	2.18	2.01	1080.1	1.46	2.06	2.82	537.1	1.26	1.09	1.11
1130.1	1160.1	2.50	2.24	2.07	1160.1	1.51	2.09	2.82	577.7	1.36	1.16	1.06
1210.1	1240.1	2.51	2.26	2.09	1240.1	1.59	2.13	2.83	618.2	1.37	1.17	1.08
1290.1	1320.1	2.51	2.28	2.11	1320.1	1.66	2.18	2.87	658.8	1.46	1.24	1.11
1370.1	1400.1	2.56	2.34	2.20	1400.1	1.73	2.24	2.92	699.3	1.49	1.28	1.14
1450.1	1480.1	2.63	2.44	2.32	1480.1	1.80	2.27	2.94	739.9	1.55	1.32	1.19
1530.1	1560.1	2.76	2.59	2.48	1560.1	1.85	2.28	2.92	780.4	1.64	1.41	1.27
1610.1	1640.1	2.82	2.67	2.56	1640.1	1.90	2.30	2.92	821.0	1.64	1.41	1.27
1690.1	1720.1	2.82	2.65	2.53	1720.1	2.00	2.35	2.94	861.5	1.78	1.55	1.41
1770.1	1800.1	2.73	2.57	2.44	1800.1	2.15	2.44	3.00	902.1	1.75	1.53	1.38
1850.1	1880.1	2.64	2.46	2.34	1880.1	2.25	2.49	3.03	942.6	1.92	1.69	1.55
1930.1	1960.1	2.52	2.34	2.22	1960.1	2.29	2.47	2.99	983.2	1.92	1.68	1.54
1990.1	2020.1	2.42	2.24	2.11	2020.1	2.35	2.44	2.87	1023.7	2.04	1.81	1.66
2070.1	2100.1	2.24	2.07	1.96	2100.1	2.43	2.44	2.80	1064.2	2.12	1.88	1.72
2130.1	2160.1	2.10	1.94	1.84	2160.1	2.50	2.46	2.82	1104.8	2.17	1.93	1.78
2210.1	2240.1	1.96	1.80	1.71	2240.1	2.57	2.42	2.71	1145.3	2.28	2.04	1.88
2270.1	2300.1	1.87	1.71	1.62	2300.1	2.62	2.36	2.56	1185.9	2.30	2.05	1.90
2350.1	2380.1	1.71	1.58	1.51	2380.1	2.57	2.29	2.45	1226.4	2.47	2.22	2.05
2410.1	2440.1	1.61	1.50	1.44	2440.1	2.54	2.22	2.39	1246.7	2.40	2.15	1.99
2490.1	2520.1	1.50	1.40	1.37	2520.1	2.53	2.13	2.24	1287.3	2.56	2.31	2.14
2550.1	2580.1	1.41	1.34	1.33	2580.1	2.46	2.05	2.13	1307.5	2.58	2.32	2.16
2630.1	2660.1	1.31	1.29	1.31	2660.1	2.32	1.95	2.04	1348.1	2.57	2.33	2.17
2690.1	2720.1	1.25	1.27	1.32	2720.1	2.24	1.88	1.97	1368.4	2.61	2.36	2.20
2770.1	2800.1	1.19	1.28	1.35	2800.1	2.13	1.79	1.88	1408.9	2.61	2.37	2.21
2830.1	2860.1	1.18	1.30	1.39	2860.1	2.03	1.73	1.81	1429.2	2.60	2.37	2.22
2910.1	2940.1	1.22	1.37	1.47	2940.1	1.91	1.68	1.78	1469.7	2.31	2.09	1.97
2970.1	3000.1	1.28	1.42	1.52	3000.1	1.85	1.65	1.78	1490.0	1.96	1.73	1.60

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	22	22	32	27	32	37	34	43	42	52
1	-	33	+0	35	13	37	20	41	44	41	35	48
2	62	50	55	53	55	50	61	55	54	64	61	57
3	>90	77	56	77	51	68	53	62	50	64	57	65
4	>90	>84	>84	74	>84	72	>84	72	80	80	84	83
5	>90	>84	80	>84	80	>84	78	82	80	82	76	83
6	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
7	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
8	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
9	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
10	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 770 MHz; 0.00 dBm.
LO IN: 800 MHz; +17.00 dBm
IF OUT: 30 MHz; -6.34 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	30	33	47	39	51	52	59	58	55	70
1	-	35	+0	38	13	44	23	47	44	50	46	61
2	42	43	45	51	47	50	50	49	53	61	57	76
3	65	55	40	57	37	54	47	56	38	58	51	57
4	>90	63	66	55	65	55	60	52	68	64	61	59
5	>90	65	72	67	55	71	55	67	54	64	49	70
6	>90	79	80	80	76	67	92	63	75	59	70	69
7	>90	79	75	77	64	82	66	82	64	84	68	69
8	>90	85	88	88	78	80	81	88	77	75	77	71
9	>90	>94	81	>94	80	78	74	82	76	79	75	79
10	>90	>94	>94	89	89	86	87	84	83	78	82	80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 770 MHz; 10.00 dBm.
LO IN: 800 MHz; +17.00 dBm
IF OUT: 30 MHz; 3.54 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.