

Frequency Mixer

SYM-ED7305/1

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	7.75	6.75	6.61
90.1	120.1	7.03	6.46	6.22
170.1	200.1	7.15	6.53	6.27
250.1	280.1	7.38	6.75	6.42
330.1	360.1	7.69	6.94	6.46
410.1	440.1	7.87	6.88	6.51
490.1	520.1	7.87	6.76	6.38
570.1	600.1	7.62	6.59	6.34
650.1	680.1	7.16	6.53	6.34
730.1	760.1	6.96	6.49	6.36
810.1	840.1	6.89	6.49	6.39
890.1	920.1	6.87	6.52	6.42
970.1	1000.1	6.91	6.55	6.46
1050.1	1080.1	7.04	6.64	6.54
1130.1	1160.1	7.11	6.73	6.63
1210.1	1240.1	7.23	6.82	6.74
1290.1	1320.1	7.31	6.89	6.84
1370.1	1400.1	7.53	7.01	6.95
1450.1	1480.1	7.79	7.17	7.08
1510.1	1540.1	8.00	7.32	7.22
1590.1	1620.1	8.21	7.47	7.33
1650.1	1680.1	8.41	7.61	7.47
1730.1	1760.1	8.57	7.87	7.69
1790.1	1820.1	8.71	8.06	7.87
1870.1	1900.1	8.91	8.22	8.04
1930.1	1960.1	9.11	8.38	8.18
2010.1	2040.1	9.27	8.54	8.27
2070.1	2100.1	9.31	8.69	8.41
2150.1	2180.1	9.29	8.79	8.56
2210.1	2240.1	9.39	8.89	8.67
2290.1	2320.1	9.43	9.01	8.84
2350.1	2380.1	9.55	9.13	8.94
2430.1	2460.1	9.74	9.37	9.19
2490.1	2520.1	9.79	9.45	9.31
2570.1	2600.1	9.88	9.57	9.45
2630.1	2660.1	10.00	9.72	9.61
2710.1	2740.1	10.13	9.80	9.71
2770.1	2800.1	10.14	9.80	9.69
2850.1	2880.1	10.41	10.02	9.89
2910.1	2940.1	10.87	10.42	10.25

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	21.36	26.43	29.41
90.1	120.1	19.37	21.48	21.61
170.1	200.1	18.60	21.39	25.03
250.1	280.1	19.40	23.89	22.29
330.1	360.1	20.47	19.83	22.36
410.1	440.1	18.60	22.61	28.06
490.1	520.1	16.45	25.59	28.57
570.1	600.1	16.82	26.73	26.61
650.1	680.1	23.24	26.14	25.83
730.1	760.1	27.08	26.91	25.63
810.1	840.1	25.85	25.40	25.54
890.1	920.1	24.67	24.18	23.60
970.1	1000.1	23.08	24.35	24.82
1050.1	1080.1	23.04	24.37	24.34
1130.1	1160.1	22.45	23.97	23.92
1210.1	1240.1	24.03	26.43	25.63
1290.1	1320.1	25.72	26.94	26.61
1370.1	1400.1	28.14	26.20	26.06
1450.1	1480.1	29.63	26.75	27.02
1510.1	1540.1	27.08	29.21	27.96
1590.1	1620.1	27.27	30.06	31.08
1650.1	1680.1	25.98	29.75	30.45
1730.1	1760.1	24.06	30.22	30.63
1790.1	1820.1	24.80	33.47	32.66
1870.1	1900.1	23.57	27.09	27.03
1930.1	1960.1	21.69	30.28	26.76
2010.1	2040.1	23.21	31.33	28.64
2070.1	2100.1	23.87	29.25	28.26
2150.1	2180.1	23.80	27.84	27.25
2210.1	2240.1	24.84	27.10	27.79
2290.1	2320.1	24.73	25.14	25.98
2350.1	2380.1	24.44	24.51	24.66
2430.1	2460.1	24.60	24.50	23.95
2490.1	2520.1	24.54	24.51	23.91
2570.1	2600.1	24.59	25.50	24.78
2630.1	2660.1	23.43	25.51	24.93
2710.1	2740.1	22.05	25.30	25.69
2770.1	2800.1	21.63	24.78	25.01
2850.1	2880.1	21.88	24.63	25.85
2910.1	2940.1	21.93	24.90	26.84

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+10dBm (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	0.14	0.26	0.03
90.1	120.1	-0.12	-0.04	-0.02
170.1	200.1	-0.18	-0.07	-0.07
250.1	280.1	-0.22	-0.17	-0.08
330.1	360.1	-0.35	-0.20	-0.03
410.1	440.1	-0.35	-0.07	0.03
490.1	520.1	-0.38	0.01	0.04
570.1	600.1	-0.20	0.06	0.02
650.1	680.1	0.11	0.06	0.03
730.1	760.1	0.17	0.06	0.03
810.1	840.1	0.19	0.07	0.05
890.1	920.1	0.16	0.07	0.06
970.1	1000.1	0.16	0.07	0.06
1050.1	1080.1	0.13	0.08	0.05
1130.1	1160.1	0.16	0.09	0.06
1210.1	1240.1	0.17	0.09	0.06
1290.1	1320.1	0.19	0.07	0.05
1370.1	1400.1	0.17	0.09	0.04
1450.1	1480.1	0.15	0.10	0.05
1510.1	1540.1	0.12	0.09	0.05
1590.1	1620.1	0.10	0.09	0.05
1650.1	1680.1	0.12	0.09	0.05
1730.1	1760.1	0.13	0.08	0.05
1790.1	1820.1	0.12	0.05	0.05
1870.1	1900.1	0.12	0.06	0.03
1930.1	1960.1	0.14	0.08	0.04
2010.1	2040.1	0.11	0.07	0.06
2070.1	2100.1	0.12	0.06	0.06
2150.1	2180.1	0.20	0.09	0.07
2210.1	2240.1	0.21	0.10	0.08
2290.1	2320.1	0.24	0.12	0.09
2350.1	2380.1	0.26	0.14	0.09
2430.1	2460.1	0.25	0.15	0.10
2490.1	2520.1	0.30	0.17	0.11
2570.1	2600.1	0.33	0.18	0.12
2630.1	2660.1	0.40	0.20	0.12
2710.1	2740.1	0.53	0.24	0.17
2770.1	2800.1	0.57	0.27	0.19
2850.1	2880.1	0.55	0.26	0.19
2910.1	2940.1	0.48	0.22	0.15

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=970.1MHz (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)=1930.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
950.1	20.0	8.54	10.1	40.0	6.98	1330.1	600.0	10.07
930.1	40.0	8.53	50.6	80.5	6.86	1289.5	640.6	9.98
910.1	60.0	8.50	91.0	120.9	6.97	1248.9	681.2	9.92
890.1	80.0	8.43	131.5	161.4	7.00	1208.3	721.8	9.82
870.1	100.0	8.35	171.9	201.8	6.98	1167.6	762.5	9.69
850.1	120.0	8.32	212.4	242.3	7.12	1127.0	803.1	9.59
830.1	140.0	8.25	252.9	282.8	7.33	1086.4	843.7	9.47
810.1	160.0	8.23	293.3	323.2	7.41	1045.8	884.3	9.38
790.1	180.0	8.19	333.8	363.7	7.31	1005.2	924.9	9.30
770.1	200.0	8.10	374.2	404.1	7.45	964.6	965.5	9.20
750.1	220.0	8.08	414.7	444.6	7.58	923.9	1006.2	9.14
730.1	240.0	7.99	455.2	485.1	7.63	883.3	1046.8	9.01
710.1	260.0	8.01	495.6	525.5	7.64	842.7	1087.4	8.94
690.1	280.0	7.92	536.1	566.0	7.68	802.1	1128.0	8.87
670.1	300.0	7.91	576.5	606.4	7.63	761.5	1168.6	8.79
650.1	320.0	7.82	617.0	646.9	7.71	741.2	1188.9	8.77
630.1	340.0	7.81	657.5	687.4	7.78	700.6	1229.5	8.68
610.1	360.0	7.71	697.9	727.8	7.90	680.3	1249.8	8.68
590.1	380.0	7.69	738.4	768.3	7.97	639.6	1290.5	8.66
570.1	400.0	7.54	778.8	808.7	8.07	619.3	1310.8	8.62
550.1	420.0	7.57	819.3	849.2	8.16	578.7	1351.4	8.58
530.1	440.0	7.48	859.8	889.7	8.17	558.4	1371.7	8.59
510.1	460.0	7.44	900.2	930.1	8.31	517.8	1412.3	8.57
490.1	480.0	7.39	960.9	990.8	8.52	497.5	1432.6	8.58
450.1	520.0	7.26	1001.4	1031.3	8.52	456.9	1473.2	8.57
430.1	540.0	7.14	1062.1	1092.0	8.76	436.6	1493.5	8.50
390.1	580.0	7.11	1102.5	1132.4	8.91	395.9	1534.2	8.58
370.1	600.0	7.06	1163.2	1193.1	9.01	375.6	1554.5	8.58
330.1	640.0	7.02	1203.7	1233.6	9.14	335.0	1595.1	8.58
310.1	660.0	6.94	1264.4	1294.3	9.25	314.7	1615.4	8.54
270.1	700.0	6.89	1304.8	1334.7	9.39	274.1	1656.0	8.52
250.1	720.0	6.88	1365.5	1395.4	9.43	253.8	1676.3	8.53
210.1	760.0	6.81	1406.0	1435.9	9.41	213.2	1716.9	8.52
190.1	780.0	6.85	1466.7	1496.6	9.65	192.9	1737.2	8.54
150.1	820.0	6.80	1507.1	1537.0	9.63	152.3	1777.8	8.52
130.1	840.0	6.79	1567.8	1597.7	9.82	131.9	1798.2	8.51
90.1	880.0	6.74	1608.3	1638.2	9.84	91.3	1838.8	8.49
70.1	900.0	6.70	1669.0	1698.9	10.01	71.0	1859.1	8.44
30.1	940.0	6.54	1709.4	1739.3	10.06	30.4	1899.7	8.32
10.1	960.0	6.66	1770.1	1800.0	10.20	10.1	1920.0	8.48

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
40.1	28.68	31.92	35.12	26.29	28.09	30.25
120.1	32.48	35.39	37.97	27.05	28.83	30.84
200.1	33.66	35.64	36.80	27.46	29.22	31.19
280.1	34.11	35.12	35.20	28.14	30.00	31.73
360.1	33.74	33.83	33.76	29.05	30.82	32.18
440.1	33.31	32.94	33.03	30.41	31.97	33.09
520.1	33.10	32.57	32.67	31.87	33.11	34.00
600.1	33.30	33.06	33.18	33.33	34.21	34.95
680.1	33.20	33.36	33.48	34.93	36.01	36.43
760.1	32.65	33.04	33.05	37.65	38.64	38.20
840.1	32.19	32.69	32.94	42.06	41.93	40.00
920.1	32.06	32.65	32.95	49.39	46.18	41.47
1000.1	32.19	32.92	32.99	52.65	50.38	43.29
1080.1	32.45	33.69	33.80	44.35	46.04	43.10
1160.1	32.53	33.92	34.22	40.04	42.19	41.68
1240.1	32.51	33.97	34.17	37.39	39.56	40.36
1320.1	32.55	34.18	34.05	35.39	37.46	38.91
1400.1	32.98	34.40	34.48	33.89	35.71	37.33
1480.1	33.64	35.60	35.80	32.95	34.56	36.09
1540.1	33.72	36.00	37.03	32.46	33.91	35.39
1620.1	32.77	34.28	35.85	31.89	33.10	34.50
1680.1	32.06	33.15	34.74	31.75	32.68	34.18
1760.1	31.36	32.72	34.44	31.32	32.26	33.65
1820.1	31.03	32.60	34.29	31.16	32.03	33.23
1900.1	30.48	32.35	34.08	30.95	31.85	32.89
1960.1	29.89	32.06	33.99	30.85	31.81	33.04
2040.1	29.46	31.81	33.97	30.36	31.44	32.81
2100.1	29.16	31.54	33.74	30.05	31.09	32.40
2180.1	28.67	30.98	33.15	29.85	30.90	32.16
2240.1	28.43	30.86	33.12	29.80	30.82	32.09
2320.1	28.41	30.79	32.62	29.71	30.68	31.74
2380.1	28.41	30.89	32.65	29.85	30.75	31.70
2460.1	28.44	31.22	33.29	30.12	30.92	31.61
2520.1	28.59	31.72	34.03	30.12	31.03	31.52
2600.1	28.61	32.49	35.42	30.02	30.85	31.21
2660.1	27.76	31.72	35.56	29.90	30.69	30.91
2740.1	26.40	29.84	33.60	29.71	30.23	30.57
2800.1	25.75	28.88	32.39	29.81	30.22	30.43
2880.1	25.24	27.87	31.04	30.24	30.69	30.60
2940.1	25.05	27.45	30.35	30.54	31.01	30.79

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	26.61	26.30	25.95
90.1	120.1	26.00	25.89	25.75
170.1	200.1	25.45	25.21	25.22
250.1	280.1	25.56	25.25	25.26
330.1	360.1	25.92	25.91	25.56
410.1	440.1	27.40	27.13	26.85
490.1	520.1	28.91	28.45	28.39
570.1	600.1	31.87	30.92	30.88
650.1	680.1	34.58	33.56	33.14
730.1	760.1	35.47	34.74	34.36
810.1	840.1	35.75	35.16	34.99
890.1	920.1	34.92	34.29	34.31
970.1	1000.1	33.57	33.43	33.22
1050.1	1080.1	31.99	32.22	32.44
1130.1	1160.1	30.76	31.34	31.74
1210.1	1240.1	30.42	31.36	31.64
1290.1	1320.1	30.25	31.16	31.07
1370.1	1400.1	30.20	31.46	31.46
1450.1	1480.1	30.26	31.81	31.31
1510.1	1540.1	30.13	31.07	31.84
1590.1	1620.1	30.33	31.42	31.80
1650.1	1680.1	30.78	31.75	32.14
1730.1	1760.1	31.37	32.22	32.96
1790.1	1820.1	31.97	32.60	33.04
1870.1	1900.1	32.95	33.50	34.04
1930.1	1960.1	33.94	34.75	35.19
2010.1	2040.1	34.86	35.57	36.97
2070.1	2100.1	35.80	36.27	36.87
2150.1	2180.1	36.77	36.43	37.07
2210.1	2240.1	37.55	36.94	36.92
2290.1	2320.1	39.00	37.77	37.96
2350.1	2380.1	39.45	39.16	38.79
2430.1	2460.1	40.68	40.14	40.39
2490.1	2520.1	40.70	41.63	41.26
2570.1	2600.1	42.16	43.03	42.99
2630.1	2660.1	43.31	43.91	43.05
2710.1	2740.1	45.40	43.96	42.55
2770.1	2800.1	46.17	42.98	41.64
2850.1	2880.1	47.23	42.02	38.68
2910.1	2940.1	48.88	41.24	38.06

Frequency Mixer

SYM-ED7305/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)				IF (OUT) (MHz)	IF VSWR @LO=1920MHz (:1)			
		@LO (dBm)				@LO (dBm)					@LO (dBm)			
		+14	+17	+20		+14	+17	+20	+14		+17	+20		
10.1	40.1	1.93	1.57	1.62	40.1	1.27	1.53	2.30	10.0	1.63	1.31	1.13		
90.1	120.1	1.76	1.56	1.43	120.1	1.15	1.44	2.15	50.4	1.66	1.34	1.19		
170.1	200.1	1.82	1.63	1.54	200.1	1.12	1.39	2.04	90.9	1.73	1.39	1.24		
250.1	280.1	1.90	1.74	1.61	280.1	1.12	1.38	2.01	131.3	1.69	1.37	1.22		
330.1	360.1	2.05	1.86	1.66	360.1	1.12	1.37	2.00	171.8	1.70	1.38	1.25		
410.1	440.1	2.21	1.92	1.75	440.1	1.14	1.35	1.98	212.2	1.65	1.36	1.23		
490.1	520.1	2.33	2.00	1.82	520.1	1.15	1.34	1.97	252.7	1.63	1.35	1.24		
570.1	600.1	2.33	1.99	1.85	600.1	1.20	1.31	1.93	293.1	1.60	1.32	1.21		
650.1	680.1	2.23	1.98	1.87	680.1	1.26	1.27	1.88	333.6	1.53	1.29	1.22		
730.1	760.1	2.14	1.94	1.84	760.1	1.32	1.23	1.81	374.0	1.52	1.29	1.22		
810.1	840.1	2.08	1.91	1.81	840.1	1.37	1.20	1.75	414.5	1.44	1.23	1.20		
890.1	920.1	2.01	1.84	1.74	920.1	1.43	1.19	1.69	454.9	1.39	1.22	1.22		
970.1	1000.1	1.97	1.78	1.68	1000.1	1.48	1.17	1.65	495.4	1.34	1.19	1.21		
1050.1	1080.1	1.92	1.72	1.61	1080.1	1.53	1.14	1.59	535.8	1.27	1.17	1.24		
1130.1	1160.1	1.82	1.61	1.51	1160.1	1.55	1.10	1.54	576.3	1.24	1.17	1.24		
1210.1	1240.1	1.73	1.52	1.42	1240.1	1.58	1.07	1.49	616.7	1.15	1.17	1.28		
1290.1	1320.1	1.65	1.44	1.36	1320.1	1.61	1.03	1.47	657.2	1.14	1.20	1.31		
1370.1	1400.1	1.65	1.44	1.35	1400.1	1.63	1.01	1.47	697.6	1.07	1.19	1.32		
1450.1	1480.1	1.63	1.46	1.39	1480.1	1.62	1.02	1.47	738.1	1.09	1.26	1.40		
1510.1	1540.1	1.60	1.47	1.41	1540.1	1.58	1.06	1.47	798.8	1.11	1.31	1.45		
1590.1	1620.1	1.55	1.46	1.43	1620.1	1.57	1.10	1.49	839.2	1.14	1.34	1.48		
1650.1	1680.1	1.52	1.45	1.43	1680.1	1.58	1.12	1.51	899.9	1.22	1.42	1.56		
1730.1	1760.1	1.45	1.41	1.40	1760.1	1.54	1.16	1.54	940.3	1.27	1.47	1.61		
1790.1	1820.1	1.36	1.34	1.35	1820.1	1.51	1.21	1.56	1001.0	1.35	1.55	1.69		
1870.1	1900.1	1.28	1.29	1.31	1900.1	1.50	1.26	1.58	1041.5	1.38	1.57	1.70		
1930.1	1960.1	1.22	1.25	1.29	1960.1	1.50	1.29	1.61	1102.1	1.49	1.68	1.81		
2010.1	2040.1	1.15	1.21	1.27	2040.1	1.49	1.36	1.68	1142.6	1.52	1.70	1.83		
2070.1	2100.1	1.18	1.25	1.32	2100.1	1.51	1.42	1.72	1203.3	1.62	1.80	1.93		
2150.1	2180.1	1.28	1.35	1.42	2180.1	1.52	1.48	1.76	1243.7	1.64	1.80	1.91		
2210.1	2240.1	1.35	1.42	1.48	2240.1	1.52	1.53	1.83	1304.4	1.75	1.92	2.03		
2290.1	2320.1	1.51	1.58	1.64	2320.1	1.51	1.60	1.91	1344.8	1.77	1.92	2.03		
2350.1	2380.1	1.60	1.68	1.74	2380.1	1.51	1.64	1.95	1405.5	1.85	2.00	2.10		
2430.1	2460.1	1.73	1.80	1.87	2460.1	1.53	1.72	2.02	1446.0	1.90	2.03	2.12		
2490.1	2520.1	1.81	1.89	1.95	2520.1	1.57	1.79	2.11	1506.6	1.96	2.08	2.18		
2570.1	2600.1	1.93	2.00	2.06	2600.1	1.62	1.88	2.20	1547.1	2.02	2.15	2.24		
2630.1	2660.1	2.01	2.07	2.14	2660.1	1.67	1.94	2.23	1607.8	2.05	2.16	2.24		
2710.1	2740.1	2.07	2.14	2.20	2740.1	1.71	1.99	2.28	1648.2	2.11	2.21	2.29		
2770.1	2800.1	2.15	2.21	2.27	2800.1	1.76	2.07	2.37	1708.9	2.16	2.25	2.31		
2850.1	2880.1	2.25	2.29	2.35	2880.1	1.86	2.18	2.46	1749.3	2.20	2.28	2.35		
2910.1	2940.1	2.27	2.29	2.33	2940.1	1.88	2.18	2.43	1810.0	2.22	2.27	2.33		

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	18	18	19	22	26	28	27	27	29	34
1	-	26	+0	43	15	41	25	51	32	54	41	58
2	70	75	71	68	65	68	69	76	69	>78	65	65
3	>90	>78	70	>78	68	>78	77	>78	>78	>78	77	>78
4	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
5	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
6	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
7	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
8	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
9	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
10	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 980 MHz; -5.00 dBm.
LO IN: 1010 MHz; +17.00 dBm
IF OUT: 30 MHz; -11.87 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	30	28	30	32	37	39	40	39	42	48
1	-	26	+0	43	15	41	25	51	32	52	44	64
2	50	75	63	58	56	58	59	65	59	63	58	58
3	81	71	50	>88	48	67	57	70	59	78	56	82
4	>90	77	87	78	80	75	78	>88	79	>88	84	83
5	>90	>88	82	87	77	>88	71	>88	74	87	76	87
6	>90	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
7	>90	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
8	>90	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
9	>90	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
10	>90	>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: 980 MHz; 5.00 dBm.
LO IN: 1010 MHz; +17.00 dBm
IF OUT: 30 MHz; -1.82 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.