

Frequency Mixer

SYM-ED7819/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+15dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+14	+17	+20			+14	+17	+20			+14	+17	+20
10.1	40.1	6.02	5.61	5.46	10.1	40.1	29.40	28.95	29.16	55.1	85.1	1.73	1.26	1.00
70.3	100.3	6.02	5.61	5.40	70.3	100.3	27.81	30.07	30.64	115.2	145.2	1.75	1.27	1.03
130.6	160.6	6.15	5.70	5.46	130.6	160.6	28.99	31.75	33.72	175.3	205.3	1.82	1.32	1.04
190.8	220.8	6.13	5.68	5.47	190.8	220.8	27.48	33.43	33.19	235.5	265.5	1.83	1.33	1.02
251.0	281.0	6.22	5.79	5.56	251.0	281.0	27.87	30.70	32.49	295.6	325.6	1.67	1.20	0.95
311.3	341.3	6.38	5.92	5.62	311.3	341.3	26.70	27.80	30.08	355.7	385.7	1.75	1.22	0.98
371.5	401.5	6.48	5.98	5.62	371.5	401.5	30.07	32.28	25.92	415.8	445.8	1.64	1.19	0.96
431.7	461.7	6.64	6.04	5.69	431.7	461.7	28.68	29.27	29.54	475.9	505.9	1.38	1.08	0.79
492.0	522.0	6.85	6.09	5.77	492.0	522.0	25.47	25.59	29.37	536.0	566.0	1.71	1.24	0.89
552.2	582.2	6.86	6.13	5.84	552.2	582.2	30.28	22.72	27.31	596.2	626.2	1.57	1.20	0.80
612.4	642.4	6.82	6.07	5.83	612.4	642.4	30.77	25.38	33.44	656.3	686.3	1.58	1.05	0.68
672.7	702.7	6.87	6.13	5.93	672.7	702.7	23.39	27.50	34.65	716.4	746.4	1.94	1.11	0.76
732.9	762.9	6.81	6.25	6.06	732.9	762.9	21.87	30.58	40.50	776.5	806.5	1.79	0.91	0.63
793.1	823.1	6.92	6.38	6.17	793.1	823.1	26.33	29.68	29.59	836.6	866.6	1.61	0.73	0.51
853.4	883.4	7.16	6.54	6.28	853.4	883.4	25.58	26.15	28.50	896.8	926.8	1.52	0.68	0.46
913.6	943.6	7.42	6.65	6.34	913.6	943.6	22.51	25.67	28.58	956.9	986.9	1.23	0.56	0.34
993.9	1023.9	7.76	6.78	6.45	993.9	1023.9	25.11	30.55	30.36	1017.0	1047.0	1.16	0.52	0.34
1054.1	1084.1	7.96	6.88	6.53	1054.1	1084.1	26.05	36.54	33.01	1077.1	1107.1	1.16	0.60	0.36
1134.4	1164.4	8.17	7.06	6.68	1134.4	1164.4	25.26	33.16	37.06	1137.2	1167.2	1.14	0.57	0.35
1194.7	1224.7	8.40	7.20	6.83	1194.7	1224.7	22.94	28.93	32.78	1197.3	1227.3	1.14	0.62	0.38
1275.0	1305.0	8.78	7.45	7.03	1275.0	1305.0	20.98	26.83	29.81	1277.5	1307.5	1.03	0.68	0.43
1335.2	1365.2	8.96	7.69	7.20	1335.2	1365.2	19.38	23.11	26.23	1337.6	1367.6	0.99	0.71	0.46
1415.5	1445.5	9.35	8.12	7.58	1415.5	1445.5	19.22	21.95	25.11	1417.8	1447.8	0.97	0.69	0.50
1475.8	1505.8	9.59	8.41	7.81	1475.8	1505.8	19.33	21.10	24.17	1477.9	1507.9	0.99	0.66	0.51
1556.1	1586.1	10.01	8.80	8.21	1556.1	1586.1	19.25	21.43	24.53	1558.1	1588.1	0.92	0.60	0.45
1616.3	1646.3	10.31	9.15	8.55	1616.3	1646.3	19.52	21.66	24.15	1618.2	1648.2	0.82	0.50	0.36
1696.6	1726.6	10.66	9.44	8.80	1696.6	1726.6	19.47	22.58	26.94	1698.3	1728.3	0.67	0.42	0.34
1756.8	1786.8	10.81	9.49	8.85	1756.8	1786.8	20.63	23.86	27.34	1758.4	1788.4	0.66	0.41	0.35
1837.2	1867.2	10.85	9.57	8.94	1837.2	1867.2	23.65	27.66	29.47	1838.6	1868.6	0.66	0.40	0.32
1897.4	1927.4	10.85	9.67	9.04	1897.4	1927.4	23.98	29.92	32.78	1898.7	1928.7	0.75	0.40	0.30
1977.7	2007.7	10.79	9.84	9.23	1977.7	2007.7	25.10	29.85	31.67	1978.9	2008.9	0.82	0.44	0.24
2037.9	2067.9	10.63	9.67	9.16	2037.9	2067.9	24.29	28.63	32.22	2039.0	2069.0	1.09	0.56	0.35
2118.2	2148.2	10.66	9.75	9.27	2118.2	2148.2	23.84	28.02	30.51	2119.2	2149.2	1.25	0.64	0.39
2178.5	2208.5	10.82	9.93	9.50	2178.5	2208.5	23.74	27.21	29.64	2179.3	2209.3	1.26	0.67	0.40
2258.8	2288.8	11.00	10.15	9.74	2258.8	2288.8	23.24	26.58	27.10	2259.4	2289.4	1.35	0.73	0.44
2319.0	2349.0	10.75	10.02	9.62	2319.0	2349.0	22.59	25.61	25.32	2319.5	2349.5	1.70	0.98	0.57
2399.3	2429.3	10.77	10.04	9.67	2399.3	2429.3	21.77	25.14	24.24	2399.7	2429.7	1.98	1.11	0.64
2459.6	2489.6	11.15	10.39	10.01	2459.6	2489.6	21.61	24.70	24.65	2459.8	2489.8	2.02	1.14	0.65
2539.9	2569.9	11.59	10.67	10.31	2539.9	2569.9	21.23	22.64	24.33	2540.0	2570.0	2.32	1.34	0.81
2600.1	2630.1	11.71	10.80	10.42	2600.1	2630.1	21.01	21.78	23.72	2600.1	2630.1	2.60	1.53	0.93

Frequency Mixer

SYM-ED7819/1

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=652.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=45MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1294.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
632.0	20.1	6.08	10.1	55.1	5.78	1274.0	20.1	7.31
616.1	36.0	6.06	90.2	135.2	5.55	1233.9	60.2	7.44
600.1	52.0	6.15	170.3	215.3	5.61	1193.8	100.3	7.52
584.2	67.9	6.14	250.5	295.5	5.59	1153.6	140.5	7.58
568.2	83.9	6.20	330.6	375.6	5.58	1113.5	180.6	7.65
552.3	99.8	6.28	410.7	455.7	5.61	1073.4	220.7	7.68
536.3	115.8	6.28	490.8	535.8	5.48	1033.3	260.8	7.73
520.4	131.7	6.36	570.9	615.9	5.50	993.1	301.0	7.75
504.4	147.7	6.33	651.1	696.1	5.45	953.0	341.1	7.80
488.5	163.6	6.23	731.2	776.2	5.49	912.9	381.2	7.92
472.5	179.6	6.28	811.3	856.3	5.58	872.8	421.3	7.95
456.6	195.5	6.28	891.4	936.4	5.53	832.7	461.4	7.88
440.6	211.5	6.33	971.5	1016.5	5.45	812.6	481.5	7.81
424.7	227.4	6.38	1051.7	1096.7	5.47	792.5	501.6	7.73
408.7	243.4	6.43	1131.8	1176.8	5.57	752.4	541.7	7.69
392.8	259.3	6.42	1211.9	1256.9	5.73	732.3	561.8	7.58
376.8	275.3	6.42	1292.0	1337.0	5.92	692.2	601.9	7.56
360.9	291.2	6.37	1372.1	1417.1	6.21	672.1	622.0	7.46
344.9	307.2	6.33	1452.3	1497.3	6.58	632.0	662.1	7.33
329.0	323.1	6.30	1552.4	1597.4	6.99	612.0	682.1	7.29
313.0	339.1	6.42	1632.5	1677.5	7.33	571.8	722.3	7.24
297.1	355.0	6.45	1732.7	1777.7	7.56	551.8	742.3	7.26
281.1	371.0	6.47	1812.8	1857.8	7.67	511.6	782.5	7.18
265.2	386.9	6.38	1912.9	1957.9	7.62	491.6	802.5	7.16
249.2	402.9	6.33	1993.1	2038.1	7.60	451.5	842.6	7.08
233.3	418.8	6.32	2093.2	2138.2	7.59	431.4	862.7	7.00
217.3	434.8	6.31	2173.3	2218.3	7.69	391.3	902.8	6.95
201.4	450.7	6.35	2273.5	2318.5	7.70	371.2	922.9	6.99
185.4	466.7	6.39	2353.6	2398.6	7.83	331.1	963.0	7.01
169.5	482.6	6.36	2453.8	2498.8	7.97	311.0	983.1	7.02
153.5	498.6	6.31	2533.9	2578.9	8.15	270.9	1023.2	7.11
137.6	514.5	6.29	2634.0	2679.0	8.58	250.8	1043.3	7.13
121.6	530.5	6.17	2714.1	2759.1	8.73	210.7	1083.4	7.15
105.7	546.4	6.13	2814.3	2859.3	9.05	190.7	1103.4	7.19
89.7	562.4	6.14	2894.4	2939.4	9.29	150.5	1143.6	7.28
73.8	578.3	6.12	2994.6	3039.6	9.53	130.5	1163.6	7.29
57.8	594.3	6.19	3074.7	3119.7	9.82	90.3	1203.8	7.34
41.9	610.2	6.20	3174.8	3219.8	10.23	70.3	1223.8	7.38
25.9	626.2	6.22	3255.0	3300.0	10.57	30.2	1263.9	7.47
10.0	642.1	6.33	3355.1	3400.1	11.40	10.1	1284.0	7.56

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
30.1	43.18	49.05	54.12	34.04	37.02	39.76
90.6	54.13	54.99	55.48	38.90	43.31	48.21
151.0	48.59	51.14	51.22	40.71	45.49	48.18
211.5	47.06	48.37	50.62	41.19	43.85	44.72
272.0	45.42	46.85	49.42	40.58	42.06	42.39
332.4	42.82	44.49	47.20	39.94	40.52	39.65
392.9	42.01	44.42	46.36	39.05	39.19	37.84
453.4	41.25	43.96	44.17	38.52	38.15	36.77
513.8	39.59	42.46	43.84	37.95	36.83	36.12
574.3	39.59	42.43	42.94	36.03	34.88	34.70
634.8	42.49	41.13	40.67	34.37	33.81	33.66
695.2	43.52	39.43	38.47	33.61	33.42	33.69
755.7	42.55	39.06	38.53	32.83	32.66	32.89
816.1	39.47	38.65	38.52	32.64	32.37	32.57
876.6	37.64	39.20	38.81	32.79	32.32	32.35
937.1	37.32	40.47	39.26	32.43	32.02	31.90
1017.7	39.89	41.66	39.71	31.96	31.56	31.31
1078.2	41.76	41.32	39.78	30.68	30.53	30.11
1158.8	41.98	41.97	39.89	28.19	28.27	27.92
1219.2	38.99	41.69	40.45	26.97	27.28	27.13
1299.9	35.59	40.19	41.83	26.01	26.00	26.03
1360.3	33.97	38.48	41.39	25.54	25.31	25.35
1441.0	31.93	35.65	39.25	25.42	24.89	24.71
1501.4	30.65	33.87	37.83	25.14	24.61	24.33
1582.0	29.15	31.45	35.01	24.79	24.51	24.23
1642.5	28.37	30.32	33.54	24.56	24.28	23.81
1723.1	27.45	28.70	31.30	24.38	24.25	23.24
1783.6	27.24	28.32	30.89	24.20	23.75	22.87
1864.2	26.68	27.59	29.87	24.19	23.13	21.90
1924.7	26.15	27.01	28.93	24.05	22.49	21.02
2005.3	25.26	26.32	27.85	23.46	21.94	20.26
2065.8	24.74	25.89	27.25	22.98	21.35	19.61
2146.4	24.14	25.40	26.79	22.28	20.23	19.15
2206.8	23.71	25.06	26.58	21.70	19.68	18.68
2287.5	23.39	24.95	26.48	20.90	19.08	18.04
2347.9	23.33	25.11	26.58	20.17	18.80	17.59
2428.5	23.68	25.70	27.38	19.61	18.40	17.30
2489.0	24.19	26.47	28.72	19.47	18.26	17.14
2569.6	25.34	28.24	32.08	19.91	18.42	17.57
2630.1	25.43	28.45	32.19	20.78	19.37	18.50

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	22.96	23.47	23.68
70.3	100.3	27.45	27.65	27.98
130.6	160.6	28.24	28.31	28.58
190.8	220.8	28.83	29.04	29.54
251.0	281.0	29.51	29.94	30.43
311.3	341.3	30.56	31.15	31.37
371.5	401.5	31.42	32.23	33.51
431.7	461.7	32.32	33.09	34.16
492.0	522.0	35.38	35.77	37.07
552.2	582.2	40.43	42.08	42.67
612.4	642.4	43.63	50.45	46.30
672.7	702.7	48.47	58.06	72.50
732.9	762.9	52.07	45.84	45.54
793.1	823.1	51.56	44.05	40.93
853.4	883.4	48.13	42.41	38.69
913.6	943.6	42.11	39.92	38.62
993.9	1023.9	34.27	37.29	37.51
1054.1	1084.1	30.49	34.09	35.08
1134.4	1164.4	27.01	30.46	32.57
1194.7	1224.7	25.45	28.54	30.39
1275.0	1305.0	24.68	27.63	29.90
1335.2	1365.2	24.43	27.61	29.79
1415.5	1445.5	24.24	27.26	29.76
1475.8	1505.8	24.65	27.89	31.02
1556.1	1586.1	25.37	28.94	32.06
1616.3	1646.3	25.72	29.44	32.61
1696.6	1726.6	26.06	30.04	32.71
1756.8	1786.8	25.68	29.81	32.44
1837.2	1867.2	26.01	28.72	31.56
1897.4	1927.4	27.02	28.29	30.37
1977.7	2007.7	28.48	28.46	29.42
2037.9	2067.9	29.85	28.75	28.69
2118.2	2148.2	31.61	28.90	27.61
2178.5	2208.5	31.75	28.35	26.63
2258.8	2288.8	31.91	28.10	26.06
2319.0	2349.0	30.85	27.60	25.36
2399.3	2429.3	29.73	27.36	25.25
2459.6	2489.6	29.48	27.22	25.82
2539.9	2569.9	29.63	28.10	26.41
2600.1	2630.1	30.39	30.54	28.75

Frequency Mixer

SYM-ED7819/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1284MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
10.1	40.1	1.38	1.26	1.19	40.1	1.07	1.57	2.35	10.0	1.42	1.17	1.23
70.3	100.3	1.39	1.23	1.13	100.3	1.07	1.46	2.13	50.1	1.44	1.06	1.11
130.6	160.6	1.46	1.30	1.20	160.6	1.10	1.47	2.13	90.3	1.44	1.05	1.10
190.8	220.8	1.56	1.37	1.27	220.8	1.13	1.48	2.15	130.4	1.45	1.06	1.10
251.0	281.0	1.60	1.43	1.32	281.0	1.15	1.43	2.03	170.5	1.46	1.07	1.11
311.3	341.3	1.66	1.48	1.36	341.3	1.17	1.41	2.01	210.6	1.46	1.08	1.11
371.5	401.5	1.73	1.54	1.41	401.5	1.21	1.38	1.96	250.8	1.46	1.09	1.12
431.7	461.7	1.81	1.58	1.46	461.7	1.23	1.33	1.88	290.9	1.45	1.10	1.13
492.0	522.0	1.88	1.61	1.48	522.0	1.26	1.30	1.84	331.0	1.45	1.11	1.14
552.2	582.2	1.90	1.65	1.52	582.2	1.33	1.25	1.77	371.1	1.46	1.12	1.14
612.4	642.4	1.87	1.63	1.52	642.4	1.39	1.22	1.69	411.3	1.46	1.14	1.15
672.7	702.7	1.86	1.62	1.53	702.7	1.48	1.21	1.65	431.3	1.46	1.14	1.16
732.9	762.9	1.80	1.60	1.51	762.9	1.56	1.19	1.58	471.5	1.47	1.16	1.16
793.1	823.1	1.79	1.59	1.50	823.1	1.59	1.17	1.52	491.5	1.47	1.16	1.17
853.4	883.4	1.77	1.55	1.45	883.4	1.62	1.15	1.47	531.7	1.48	1.17	1.18
913.6	943.6	1.73	1.49	1.39	943.6	1.63	1.13	1.42	551.7	1.48	1.18	1.18
993.9	1023.9	1.66	1.42	1.33	1023.9	1.63	1.11	1.37	591.8	1.49	1.19	1.19
1054.1	1084.1	1.57	1.35	1.26	1084.1	1.64	1.10	1.34	611.9	1.49	1.20	1.19
1134.4	1164.4	1.41	1.25	1.17	1164.4	1.63	1.08	1.33	652.0	1.50	1.21	1.20
1194.7	1224.7	1.34	1.18	1.11	1224.7	1.62	1.07	1.33	672.1	1.51	1.22	1.20
1275.0	1305.0	1.30	1.11	1.03	1305.0	1.57	1.05	1.36	712.2	1.52	1.23	1.21
1335.2	1365.2	1.27	1.08	1.02	1365.2	1.51	1.03	1.37	732.3	1.53	1.24	1.21
1415.5	1445.5	1.28	1.12	1.07	1445.5	1.44	1.04	1.40	772.4	1.54	1.25	1.21
1475.8	1505.8	1.32	1.19	1.15	1505.8	1.41	1.06	1.43	792.5	1.55	1.26	1.22
1556.1	1586.1	1.40	1.31	1.28	1586.1	1.35	1.10	1.47	832.6	1.56	1.27	1.22
1616.3	1646.3	1.48	1.42	1.39	1646.3	1.31	1.13	1.49	852.7	1.58	1.28	1.23
1696.6	1726.6	1.62	1.59	1.57	1726.6	1.25	1.17	1.51	892.8	1.59	1.29	1.23
1756.8	1786.8	1.76	1.74	1.73	1786.8	1.23	1.19	1.53	912.9	1.60	1.30	1.24
1837.2	1867.2	1.94	1.93	1.90	1867.2	1.19	1.24	1.57	953.0	1.62	1.31	1.24
1897.4	1927.4	2.09	2.06	2.02	1927.4	1.15	1.26	1.59	973.0	1.63	1.31	1.25
1977.7	2007.7	2.27	2.22	2.17	2007.7	1.10	1.30	1.62	1013.2	1.64	1.33	1.25
2037.9	2067.9	2.38	2.32	2.25	2067.9	1.08	1.33	1.63	1033.2	1.65	1.33	1.26
2118.2	2148.2	2.51	2.43	2.35	2148.2	1.08	1.36	1.65	1073.4	1.67	1.34	1.26
2178.5	2208.5	2.60	2.50	2.43	2208.5	1.10	1.39	1.66	1093.4	1.67	1.35	1.27
2258.8	2288.8	2.69	2.58	2.49	2288.8	1.13	1.40	1.65	1133.6	1.69	1.37	1.28
2319.0	2349.0	2.71	2.60	2.49	2349.0	1.17	1.42	1.65	1153.6	1.70	1.37	1.28
2399.3	2429.3	2.77	2.63	2.49	2429.3	1.23	1.45	1.65	1193.7	1.71	1.39	1.29
2459.6	2489.6	2.78	2.62	2.48	2489.6	1.28	1.47	1.64	1213.8	1.72	1.40	1.30
2539.9	2569.9	2.81	2.61	2.47	2569.9	1.39	1.54	1.68	1253.9	1.74	1.43	1.33
2600.1	2630.1	2.86	2.65	2.50	2630.1	1.53	1.67	1.81	1274.0	1.76	1.46	1.37

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	12	25	33	31	25	27	32	40	34	40
1	-	44	+0	35	13	38	29	36	32	42	28	49
2	62	46	41	46	43	43	46	54	51	50	58	51
3	>90	67	56	60	61	68	58	62	54	67	55	68
4	>90	73	70	77	71	73	71	70	74	67	70	68
5	>90	>83	80	82	80	82	>83	>83	>83	81	>83	>83
6	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
7	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
8	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
9	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 650 MHz; 0.00 dBm.
LO IN: 680 MHz; +17.00 dBm
IF OUT: 30 MHz; -6.72 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	24	28	31	45	42	41	47	51	52	57
1	-	43	+0	32	14	35	32	40	41	52	40	66
2	42	44	35	38	39	38	43	54	54	45	55	51
3	69	51	51	46	54	62	52	51	45	56	55	56
4	>90	56	54	50	64	47	56	53	54	50	60	50
5	>90	54	50	68	53	57	48	60	50	56	73	66
6	>90	71	64	72	62	65	68	64	90	61	66	56
7	>90	77	64	81	63	72	64	70	68	67	64	66
8	>90	77	80	78	80	72	68	71	70	68	77	64
9	>90	87	86	82	88	74	74	87	80	75	75	79
10	>90	81	91	81	88	80	88	76	76	80	78	73
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 650 MHz; 10.00 dBm.
LO IN: 680 MHz; +17.00 dBm
IF OUT: 30 MHz; 2.74 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.