Frequency Mixer TFM-1H+

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	7.16	6.39	5.98
30.5	60.5	7.17	6.40	6.06
50.8	80.8	7.21	6.48	6.10
71.2	101.2	7.16	6.44	6.12
111.9	141.9	7.10	6.36	6.03
132.2	162.2	7.10	6.36	6.05
172.9	202.9	6.94	6.26	6.04
193.3	223.3	7.01	6.29	6.04
234.0	264.0	7.00	6.31	6.05
254.3	284.3	6.83	6.24	6.04
295.0	325.0	6.88	6.31	6.11
315.4	345.4	6.83	6.31	6.11
356.1	386.1	6.83	6.31	6.12
376.4	406.4	6.85	6.31	6.12
417.1	447.1	6.97	6.46	6.23
437.5	467.5	6.99	6.49	6.27
478.2	508.2	7.01	6.52	6.29
498.5	528.5	7.16	6.63	6.35
539.2	569.2	7.07	6.64	6.36
559.6	589.6	7.19	6.75	6.46
600.3	630.3	7.20	6.77	6.52
620.6	650.6	7.18	6.78	6.55
661.3	691.3	7.29	6.87	6.66
681.7	711.7	7.31	6.86	6.65
722.4	752.4	7.48	6.95	6.71
742.7	772.7	7.53	6.97	6.73
783.4	813.4	7.88	7.20	6.85
803.8	833.8	8.03	7.34	6.94
844.5	874.5	8.31	7.63	7.13
864.8	894.8	8.49	7.85	7.29
905.5	935.5	8.73	8.10	7.49
925.9	955.9	8.95	8.33	7.69
966.6	996.6	9.35	8.64	7.99
986.9	1016.9	9.67	8.89	8.22
1027.6	1057.6	10.21	9.33	8.54
1048.0	1078.0	10.45	9.54	8.68
1088.7	1118.7	11.13	10.09	9.07
1109.0	1139.0	11.37	10.28	9.16
1149.7	1179.7	11.96	10.73	9.53
1170.1	1200.1	12.19	10.86	9.60

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+14	+17	+20
10.1	40.1	23.80	27.38	30.62
30.5	60.5	24.77	28.82	31.61
50.8	80.8	24.86	28.30	31.47
71.2	101.2	26.22	30.32	31.87
111.9	141.9	26.72	29.29	29.13
132.2	162.2	31.97	35.09	30.11
172.9	202.9	31.57	28.14	30.00
193.3	223.3	26.95	27.81	35.21
234.0	264.0	25.81	27.08	36.22
254.3	284.3	29.22	29.44	29.86
295.0	325.0	26.62	31.04	30.12
315.4	345.4	25.20	32.21	29.14
356.1	386.1	30.71	29.76	28.64
376.4	406.4	27.03	27.63	28.98
417.1	447.1	31.05	23.59	23.13
437.5	467.5	29.05	25.31	23.57
478.2	508.2	28.24	27.90	27.53
498.5	528.5	25.44	26.12	28.54
539.2	569.2	25.62	23.38	26.85
559.6	589.6	27.47	22.98	24.47
600.3	630.3	32.42	24.48	23.70
620.6	650.6	31.38	24.96	24.18
661.3	691.3	27.25	25.91	24.89
681.7	711.7	23.18	25.81	25.09
722.4	752.4	19.65	24.08	25.07
742.7	772.7	18.72	23.08	25.11
783.4	813.4	16.42	20.02	24.51
803.8	833.8	15.73	18.25	23.12
844.5	874.5	15.46	16.52	21.06
864.8	894.8	15.61	15.84	19.56
905.5	935.5	15.92	15.36	18.01
925.9	955.9	15.62	14.97	17.05
966.6	996.6	16.01	15.57	16.20
986.9	1016.9	15.97	15.94	16.28
1027.6	1057.6	15.79	16.56	17.35
1048.0	1078.0	15.87	16.79	18.13
1088.7	1118.7	15.66	16.90	19.22
1109.0	1139.0	15.69	16.93	19.77
1149.7	1179.7	15.86	16.94	19.24
1170.1	1200.1	15.98	17.02	19.33

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB) @LO (dBm)		
		+14	+17	+20
10.1	40.1	0.62	0.26	0.16
30.5	60.5	0.48	0.22	0.11
50.8	80.8	0.66	0.26	0.14
71.2	101.2	0.62	0.28	0.14
111.9	141.9	0.61	0.31	0.17
132.2	162.2	0.67	0.30	0.14
172.9	202.9	0.87	0.39	0.20
193.3	223.3	0.74	0.34	0.19
234.0	264.0	0.71	0.32	0.17
254.3	284.3	0.91	0.39	0.20
295.0	325.0	0.84	0.31	0.16
315.4	345.4	0.84	0.32	0.15
356.1	386.1	0.93	0.36	0.19
376.4	406.4	0.89	0.36	0.21
417.1	447.1	0.79	0.29	0.18
437.5	467.5	0.89	0.34	0.19
478.2	508.2	0.87	0.35	0.21
498.5	528.5	0.72	0.26	0.17
539.2	569.2	1.00	0.37	0.26
559.6	589.6	1.00	0.34	0.22
600.3	630.3	1.07	0.35	0.20
620.6	650.6	1.06	0.41	0.23
661.3	691.3	1.05	0.44	0.22
681.7	711.7	1.17	0.55	0.27
722.4	752.4	1.17	0.62	0.30
742.7	772.7	1.13	0.68	0.36
783.4	813.4	1.01	0.71	0.40
803.8	833.8	1.07	0.73	0.45
844.5	874.5	1.07	0.71	0.50
864.8	894.8	0.87	0.57	0.44
905.5	935.5	0.94	0.60	0.50
925.9	955.9	0.90	0.55	0.44
966.6	996.6	0.81	0.49	0.36
986.9	1016.9	0.61	0.30	0.21
1027.6	1057.6	0.26	0.09	0.10
1048.0	1078.0	0.03	-0.05	0.06
1088.7	1118.7	-0.32	-0.32	-0.09
1109.0	1139.0	-0.46	-0.41	-0.11
1149.7	1179.7	-0.73	-0.58	-0.19
1170.1	1200.1	-0.79	-0.57	-0.12

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=260.1MHz (dB) @LO (dBm) +17
250.1	10.0	6.62
243.9	16.2	6.53
237.8	22.3	6.55
231.6	28.5	6.48
225.5	34.6	6.45
219.3	40.8	6.52
213.2	46.9	6.41
207.0	53.1	6.53
200.9	59.2	6.34
194.7	65.4	6.48
188.6	71.5	6.41
182.4	77.7	6.53
176.3	83.8	6.45
170.1	90.0	6.45
163.9	96.2	6.44
157.8	102.3	6.37
151.6	108.5	6.39
145.5	114.6	6.31
139.3	120.8	6.41
133.2	126.9	6.31
127.0	133.1	6.31
120.9	139.2	6.30
114.7	145.4	6.29
108.6	151.5	6.27
102.4	157.7	6.26
96.3	163.8	6.26
90.1	170.0	6.30
83.9	176.2	6.27
77.8	182.3	6.39
71.6	188.5	6.23
65.5	194.6	6.28
59.3	200.8	6.17
53.2	206.9	6.22
47.0	213.1	6.20
40.9	219.2	6.19
34.7	225.4	6.25
28.6	231.5	6.16
22.4	237.7	6.27
16.3	243.8	6.14
10.1	250.0	6.39

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +17
10.0	20.1	6.39
50.0	60.1	6.21
90.0	100.1	6.34
130.0	140.1	6.29
170.0	180.1	6.31
210.0	220.1	6.31
250.0	260.1	6.39
310.0	320.1	6.43
350.0	360.1	6.47
410.0	420.1	6.55
450.0	460.1	6.63
510.0	520.1	6.72
550.0	560.1	6.79
610.0	620.1	6.93
650.0	660.1	6.94
710.0	720.1	6.86
750.0	760.1	6.74
810.0	820.1	6.75
850.0	860.1	6.75
910.0	920.1	6.89
950.0	960.1	7.02
1010.0	1020.1	7.05
1050.0	1060.1	7.11
1110.0	1120.1	7.06
1150.0	1160.1	6.93
1210.0	1220.1	6.81
1250.0	1260.1	6.76
1310.0	1320.1	6.64
1350.0	1360.1	6.53
1410.0	1420.1	6.65
1450.0	1460.1	6.77
1510.0	1520.1	7.12
1550.0	1560.1	7.24
1610.0	1620.1	7.69
1650.0	1660.1	7.90
1710.0	1720.1	8.55
1750.0	1760.1	8.98
1810.0	1820.1	9.69
1850.0	1860.1	10.14
1910.0	1920.1	10.65

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=510.1MHz (dB) @LO (dBm) +17
500.0	10.1	6.90
487.4	22.7	6.80
474.9	35.2	6.66
462.3	47.8	6.72
449.7	60.4	6.70
437.2	72.9	6.56
424.6	85.5	6.52
412.1	98.0	6.48
399.5	110.6	6.49
386.9	123.2	6.44
374.4	135.7	6.41
361.8	148.3	6.45
349.2	160.9	6.40
336.7	173.4	6.38
324.1	186.0	6.31
311.5	198.6	6.28
299.0	211.1	6.24
286.4	223.7	6.22
273.8	236.3	6.24
261.3	248.8	6.28
248.7	261.4	6.29
236.2	273.9	6.26
223.6	286.5	6.23
211.0	299.1	6.22
198.5	311.6	6.20
185.9	324.2	6.21
173.3	336.8	6.25
160.8	349.3	6.31
148.2	361.9	6.34
135.6	374.5	6.33
123.1	387.0	6.33
110.5	399.6	6.34
97.9	412.2	6.36
85.4	424.7	6.37
72.8	437.3	6.44
60.3	449.8	6.51
47.7	462.4	6.50
35.1	475.0	6.49
22.6	487.5	6.53
10.0	500.1	6.73

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+14	+17	+20	+14	+17	+20
40.1	64.28	62.19	60.51	60.35	55.86	53.46
60.5	63.30	60.46	58.76	59.58	54.36	51.46
80.8	61.87	59.59	58.12	58.06	52.70	49.90
101.2	61.29	58.66	57.07	57.44	51.42	48.46
141.9	57.93	55.67	53.99	55.13	48.82	45.61
162.2	58.16	56.05	54.43	54.50	48.47	45.59
202.9	57.04	54.69	52.56	52.33	46.76	44.22
223.3	56.64	53.94	51.94	50.87	45.85	43.45
264.0	55.79	52.98	50.81	48.26	44.83	42.54
284.3	55.38	52.46	50.48	46.69	43.99	41.91
325.0	54.02	51.08	48.73	44.16	41.99	40.07
345.4	53.71	50.37	48.42	43.33	41.37	39.74
386.1	52.93	50.66	48.39	40.73	39.47	38.34
406.4	51.58	49.75	47.70	39.47	38.48	37.55
447.1	50.07	47.77	46.80	37.42	36.56	36.23
467.5	49.62	47.35	46.27	36.17	35.54	35.45
508.2	48.54	46.22	44.82	34.54	33.89	33.81
528.5	48.12	46.07	44.37	34.02	33.42	33.28
569.2	47.34	45.61	44.29	32.61	32.39	32.24
589.6	47.43	45.36	44.53	31.89	31.83	31.84
630.3	48.59	45.10	43.80	30.63	30.71	31.12
650.6	48.96	45.29	43.54	30.10	30.30	30.74
691.3	49.43	46.06	43.73	28.88	29.42	29.95
711.7	49.33	46.33	43.84	28.33	28.87	29.45
752.4	49.26	47.35	44.78	27.45	28.06	28.82
772.7	48.29	47.43	44.98	27.10	27.72	28.55
813.4	47.19	47.05	45.05	26.33	26.96	27.73
833.8	46.73	46.62	45.02	26.09	26.68	27.46
874.5	46.18	45.91	44.72	25.55	26.08	26.83
894.8	46.22	45.99	45.19	25.07	25.70	26.49
935.5	46.22	45.70	45.06	24.52	25.19	26.02
955.9	46.41	45.75	45.01	24.29	25.00	25.84
996.6	46.81	45.89	44.59	23.66	24.40	25.25
1016.9	47.54	46.27	44.76	23.37	24.12	25.04
1057.6	48.96	47.25	45.32	22.98	23.86	24.77
1078.0	49.45	47.16	45.48	22.78	23.54	24.49
1118.7	49.98	47.09	45.80	22.20	23.11	24.12
1139.0	49.78	47.00	45.99	22.09	23.07	24.10
1179.7	48.30	46.45	46.02	21.73	22.72	23.85
1200.1	47.08	45.68	45.63	21.49	22.47	23.68

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+14	+17	+20
10.1	40.1	50.26	49.78	49.76
30.5	60.5	41.54	41.64	41.06
50.8	80.8	37.24	37.81	37.83
71.2	101.2	34.80	35.47	35.57
111.9	141.9	31.48	32.07	32.43
132.2	162.2	30.31	30.81	31.24
172.9	202.9	28.93	29.58	29.97
193.3	223.3	27.88	28.85	29.15
234.0	264.0	27.25	28.05	28.53
254.3	284.3	27.37	27.97	28.44
295.0	325.0	27.13	28.10	28.39
315.4	345.4	27.13	28.40	29.04
356.1	386.1	26.85	28.33	29.33
376.4	406.4	26.55	27.89	29.05
417.1	447.1	27.28	28.15	29.04
437.5	467.5	28.08	28.88	29.45
478.2	508.2	28.59	29.57	29.94
498.5	528.5	28.82	29.66	30.38
539.2	569.2	28.08	28.64	29.40
559.6	589.6	26.83	27.18	27.77
600.3	630.3	24.48	24.63	25.04
620.6	650.6	23.45	23.53	23.84
661.3	691.3	21.80	21.56	21.67
681.7	711.7	21.25	20.96	21.00
722.4	752.4	20.16	19.65	19.49
742.7	772.7	19.96	19.31	19.04
783.4	813.4	19.51	18.68	18.28
803.8	833.8	19.21	18.35	17.87
844.5	874.5	18.85	18.14	17.50
864.8	894.8	18.69	18.08	17.43
905.5	935.5	18.33	17.93	17.43
925.9	955.9	18.25	17.93	17.53
966.6	996.6	17.97	17.75	17.47
986.9	1016.9	17.73	17.51	17.26
1027.6	1057.6	17.46	17.31	17.10
1048.0	1078.0	17.40	17.30	17.17
1088.7	1118.7	17.26	17.34	17.29
1109.0	1139.0	17.23	17.30	17.43
1149.7	1179.7	17.07	17.24	17.52
1170.1	1200.1	16.86	17.11	17.45

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+14	+17	+20
10.1	40.1	1.24	1.08	1.06
30.5	60.5	1.21	1.06	1.04
50.8	80.8	1.23	1.08	1.03
71.2	101.2	1.22	1.08	1.03
111.9	141.9	1.22	1.08	1.07
132.2	162.2	1.20	1.08	1.08
172.9	202.9	1.21	1.10	1.11
193.3	223.3	1.23	1.11	1.12
234.0	264.0	1.23	1.13	1.14
254.3	284.3	1.22	1.13	1.15
295.0	325.0	1.23	1.15	1.17
315.4	345.4	1.23	1.16	1.18
356.1	386.1	1.24	1.18	1.20
376.4	406.4	1.27	1.19	1.22
417.1	447.1	1.28	1.20	1.22
437.5	467.5	1.27	1.21	1.22
478.2	508.2	1.30	1.24	1.25
498.5	528.5	1.31	1.25	1.26
539.2	569.2	1.32	1.27	1.28
559.6	589.6	1.32	1.28	1.29
600.3	630.3	1.33	1.30	1.31
620.6	650.6	1.33	1.30	1.32
661.3	691.3	1.33	1.30	1.32
681.7	711.7	1.33	1.30	1.32
722.4	752.4	1.34	1.28	1.31
742.7	772.7	1.34	1.26	1.29
783.4	813.4	1.36	1.26	1.27
803.8	833.8	1.38	1.26	1.27
844.5	874.5	1.40	1.29	1.27
864.8	894.8	1.43	1.32	1.29
905.5	935.5	1.48	1.38	1.34
925.9	955.9	1.51	1.42	1.37
966.6	996.6	1.61	1.52	1.48
986.9	1016.9	1.68	1.59	1.55
1027.6	1057.6	1.82	1.73	1.67
1048.0	1078.0	1.90	1.80	1.74
1088.7	1118.7	2.05	1.95	1.88
1109.0	1139.0	2.13	2.03	1.95
1149.7	1179.7	2.29	2.18	2.09
1170.1	1200.1	2.36	2.25	2.14

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+14	+17	+20
40.1	1.09	1.53	2.34
60.5	1.11	1.46	2.19
80.8	1.09	1.42	2.08
101.2	1.11	1.42	2.09
141.9	1.12	1.47	2.20
162.2	1.12	1.43	2.12
202.9	1.14	1.43	2.10
223.3	1.14	1.46	2.16
264.0	1.15	1.45	2.10
284.3	1.18	1.45	2.08
325.0	1.22	1.50	2.15
345.4	1.20	1.49	2.13
386.1	1.24	1.51	2.11
406.4	1.27	1.54	2.15
447.1	1.30	1.56	2.14
467.5	1.32	1.56	2.12
508.2	1.36	1.61	2.16
528.5	1.36	1.63	2.17
569.2	1.39	1.64	2.15
589.6	1.42	1.66	2.18
630.3	1.46	1.69	2.19
650.6	1.48	1.69	2.16
691.3	1.53	1.72	2.18
711.7	1.55	1.74	2.18
752.4	1.60	1.76	2.16
772.7	1.61	1.79	2.17
813.4	1.64	1.84	2.22
833.8	1.65	1.86	2.23
874.5	1.67	1.89	2.26
894.8	1.68	1.90	2.28
935.5	1.71	1.91	2.29
955.9	1.73	1.92	2.30
996.6	1.77	1.93	2.30
1016.9	1.79	1.94	2.30
1057.6	1.83	1.95	2.29
1078.0	1.86	1.96	2.28
1118.7	1.90	1.96	2.27
1139.0	1.92	1.97	2.27
1179.7	1.97	1.97	2.24
1200.1	2.00	1.96	2.23

IF (OUT) (MHz)	IF VSWR @LO=500MHz (:1) @LO (dBm)		
	+14	+17	+20
10.0	1.86	1.57	1.39
22.3	1.90	1.61	1.42
34.6	1.90	1.61	1.43
46.9	1.86	1.57	1.39
59.2	1.94	1.65	1.46
71.5	1.84	1.56	1.38
83.8	1.96	1.66	1.47
96.2	1.88	1.59	1.41
108.5	1.94	1.64	1.46
120.8	1.93	1.65	1.47
133.1	1.88	1.59	1.42
145.4	1.96	1.66	1.48
157.7	1.89	1.60	1.42
170.0	2.01	1.70	1.52
182.3	1.93	1.64	1.46
194.6	1.97	1.68	1.49
206.9	1.97	1.68	1.51
219.2	1.94	1.65	1.47
231.5	2.03	1.73	1.55
243.8	1.93	1.64	1.47
256.2	2.06	1.75	1.56
268.5	1.99	1.69	1.51
280.8	2.05	1.74	1.55
293.1	2.03	1.74	1.56
305.4	2.01	1.71	1.52
317.7	2.09	1.80	1.61
330.0	2.00	1.71	1.53
342.3	2.14	1.83	1.64
354.6	2.07	1.77	1.59
366.9	2.14	1.82	1.62
379.2	2.12	1.82	1.64
391.5	2.10	1.79	1.60
403.8	2.20	1.89	1.70
416.2	2.10	1.80	1.61
428.5	2.24	1.92	1.72
440.8	2.15	1.85	1.66
453.1	2.23	1.91	1.71
465.4	2.21	1.90	1.72
477.7	2.20	1.88	1.68
490.0	2.31	2.00	1.81

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	17	21	16	29	20	38	30	42	40	44
1	-	20	+0	32	15	44	31	44	24	37	26	48
2	66	68	46	58	47	53	47	57	50	54	61	61
3	>90	65	61	66	53	67	48	78	47	61	45	61
4	>90	>83	75	>83	>83	75	78	74	71	75	68	77
5	>90	>83	81	>83	76	>83	71	>83	71	>83	72	>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: 250 MHz; -1.00 dBm.
LO IN: 280 MHz; +17.00 dBm
IF OUT: 30 MHz; -7.46 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	25	31	29	43	39	55	46	67	55	67
1	-	20	+0	32	15	43	26	41	33	45	38	56
2	47	53	43	55	42	55	40	54	43	57	53	63
3	69	50	48	55	51	63	45	55	43	59	38	53
4	>90	80	61	70	59	65	61	60	60	62	62	63
5	>90	64	76	65	57	64	51	61	49	65	48	66
6	>90	77	67	77	67	>93	78	80	73	80	67	81
7	>90	76	85	80	74	76	64	72	60	75	61	82
8	>90	82	74	80	85	79	80	78	81	78	72	82
9	>90	>93	78	78	75	77	71	79	69	81	69	86
10	>90	>93	>93	>93	86	91	87	89	84	>93	79	91
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250 MHz; 9.00 dBm.
LO IN: 280 MHz; +17.00 dBm
IF OUT: 30 MHz; 2.53 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.