Frequency Mixer TFM-1MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	6.38	6.05	5.86
50.9	80.9	6.79	6.36	6.10
91.7	121.7	6.83	6.37	6.15
132.6	162.6	6.86	6.34	6.13
173.4	203.4	6.72	6.29	6.16
214.2	244.2	6.67	6.30	6.16
255.0	285.0	6.69	6.32	6.19
295.9	325.9	6.58	6.31	6.19
336.7	366.7	6.61	6.37	6.25
377.5	407.5	6.50	6.32	6.24
418.3	448.3	6.55	6.32	6.21
459.1	489.1	6.64	6.43	6.31
500.0	530.0	6.77	6.53	6.39
540.8	570.8	6.85	6.59	6.42
581.6	611.6	6.92	6.64	6.46
622.4	652.4	6.99	6.76	6.61
663.3	693.3	7.09	6.89	6.77
704.1	734.1	7.23	7.02	6.89
744.9	774.9	7.30	7.07	6.93
785.7	815.7	7.38	7.08	6.92
826.5	856.5	7.47	7.10	6.91
867.4	897.4	7.67	7.21	6.98
908.2	938.2	7.99	7.31	7.02
949.0	979.0	8.43	7.53	7.07
989.8	1019.8	8.90	7.92	7.28
1030.6	1060.6	9.38	8.41	7.60
1071.5	1101.5	9.91	8.98	8.02
1112.3	1142.3	10.40	9.44	8.43
1153.1	1183.1	10.87	9.72	8.70
1193.9	1223.9	11.39	10.00	8.81
1234.8	1264.8	11.55	10.08	8.80
1255.2	1285.2	11.67	10.16	8.90
1296.0	1326.0	11.58	10.02	8.92
1316.4	1346.4	11.44	9.85	8.87
1357.2	1387.2	11.30	9.88	9.10
1377.6	1407.6	11.32	10.03	9.32
1418.5	1448.5	11.30	10.19	9.65
1438.9	1468.9	11.50	10.53	10.02
1479.7	1509.7	11.99	11.27	10.84
1500.1	1530.1	12.04	11.43	11.03

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+10	+13	+16
10.1	40.1	22.48	26.72	30.21
50.9	80.9	22.32	25.79	23.70
91.7	121.7	21.77	20.76	22.79
132.6	162.6	19.06	20.00	30.93
173.4	203.4	19.09	23.17	23.15
214.2	244.2	19.79	24.22	21.14
255.0	285.0	22.45	20.67	20.00
295.9	325.9	26.36	20.17	19.61
336.7	366.7	20.86	18.85	19.23
377.5	407.5	17.95	18.37	18.50
418.3	448.3	16.50	16.56	17.40
459.1	489.1	17.21	16.28	16.62
500.0	530.0	18.68	17.98	19.00
540.8	570.8	19.33	19.95	20.70
581.6	611.6	16.76	18.29	20.41
622.4	652.4	15.12	15.34	17.18
663.3	693.3	14.64	14.43	15.47
704.1	734.1	14.26	14.41	15.48
744.9	774.9	14.09	14.72	16.36
785.7	815.7	13.74	15.56	17.93
826.5	856.5	13.68	16.57	19.35
867.4	897.4	12.81	16.81	19.27
908.2	938.2	10.26	14.95	18.93
949.0	979.0	8.52	12.86	17.21
989.8	1019.8	7.36	10.66	14.92
1030.6	1060.6	6.93	9.20	13.03
1071.5	1101.5	6.95	8.32	12.06
1112.3	1142.3	7.59	8.46	11.19
1153.1	1183.1	8.23	9.90	12.15
1193.9	1223.9	8.19	10.86	14.61
1234.8	1264.8	8.60	11.54	16.65
1255.2	1285.2	8.99	12.19	17.41
1296.0	1326.0	9.75	14.03	19.89
1316.4	1346.4	10.37	15.32	21.06
1357.2	1387.2	11.89	18.12	22.10
1377.6	1407.6	12.82	19.67	22.62
1418.5	1448.5	14.67	21.44	24.62
1438.9	1468.9	14.61	19.56	24.61
1479.7	1509.7	15.21	17.98	22.30
1500.1	1530.1	15.76	17.64	21.68

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	0.85	0.48	0.24
50.9	80.9	0.61	0.33	0.11
91.7	121.7	0.60	0.31	0.16
132.6	162.6	0.50	0.26	0.14
173.4	203.4	0.62	0.32	0.15
214.2	244.2	0.58	0.27	0.10
255.0	285.0	0.62	0.29	0.12
295.9	325.9	0.65	0.28	0.12
336.7	366.7	0.61	0.23	0.09
377.5	407.5	0.72	0.34	0.19
418.3	448.3	0.63	0.31	0.20
459.1	489.1	0.62	0.31	0.22
500.0	530.0	0.51	0.22	0.13
540.8	570.8	0.58	0.31	0.20
581.6	611.6	0.62	0.39	0.23
622.4	652.4	0.74	0.41	0.24
663.3	693.3	0.78	0.41	0.21
704.1	734.1	0.95	0.48	0.24
744.9	774.9	1.13	0.60	0.33
785.7	815.7	1.35	0.75	0.45
826.5	856.5	1.51	0.88	0.57
867.4	897.4	1.41	0.90	0.57
908.2	938.2	1.44	1.04	0.64
949.0	979.0	1.25	1.10	0.71
989.8	1019.8	1.03	0.95	0.70
1030.6	1060.6	0.72	0.65	0.59
1071.5	1101.5	0.34	0.31	0.42
1112.3	1142.3	-0.04	0.04	0.24
1153.1	1183.1	-0.40	-0.12	0.12
1193.9	1223.9	-0.74	-0.19	0.21
1234.8	1264.8	-0.73	-0.09	0.40
1255.2	1285.2	-0.68	-0.02	0.45
1296.0	1326.0	-0.40	0.29	0.63
1316.4	1346.4	-0.14	0.52	0.73
1357.2	1387.2	0.24	0.75	0.83
1377.6	1407.6	0.36	0.80	0.83
1418.5	1448.5	0.55	0.83	0.81
1438.9	1468.9	0.54	0.72	0.72
1479.7	1509.7	0.37	0.45	0.48
1500.1	1530.1	0.27	0.33	0.35

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=260.1MHz (dB) @LO (dBm) +13
250.0	10.1	6.48
243.8	16.3	6.43
237.7	22.4	6.36
231.5	28.6	6.43
225.4	34.7	6.34
219.2	40.9	6.34
213.1	47.0	6.37
206.9	53.2	6.33
200.8	59.3	6.36
194.6	65.5	6.33
188.5	71.6	6.36
182.3	77.8	6.35
176.2	83.9	6.37
170.0	90.1	6.39
163.8	96.3	6.29
157.7	102.4	6.33
151.5	108.6	6.27
145.4	114.7	6.27
139.2	120.9	6.34
133.1	127.0	6.22
126.9	133.2	6.25
120.8	139.3	6.23
114.6	145.5	6.20
108.5	151.6	6.23
102.3	157.8	6.18
96.2	163.9	6.19
90.0	170.1	6.18
83.8	176.3	6.23
77.7	182.4	6.22
71.5	188.6	6.18
65.4	194.7	6.20
59.2	200.9	6.15
53.1	207.0	6.21
46.9	213.2	6.21
40.8	219.3	6.18
34.6	225.5	6.22
28.5	231.6	6.22
22.3	237.8	6.23
16.2	243.9	6.19
10.0	250.1	6.35

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +13
10.0	20.1	6.23
50.4	60.5	6.20
90.9	101.0	6.17
131.3	141.4	6.19
171.7	181.8	6.31
212.2	222.3	6.30
252.6	262.7	6.27
293.0	303.1	6.32
333.4	343.5	6.34
373.9	384.0	6.36
414.3	424.4	6.30
474.9	485.0	6.35
515.4	525.5	6.48
576.0	586.1	6.50
616.5	626.6	6.72
677.1	687.2	6.68
717.5	727.6	6.64
778.2	788.3	6.47
818.6	828.7	6.31
879.2	889.3	6.14
919.7	929.8	6.19
980.3	990.4	6.29
1020.8	1030.9	6.30
1081.4	1091.5	6.51
1121.8	1131.9	6.57
1182.5	1192.6	6.72
1222.9	1233.0	6.62
1283.5	1293.6	6.71
1324.0	1334.1	6.62
1384.6	1394.7	6.68
1425.1	1435.2	6.87
1485.7	1495.8	7.12
1526.1	1536.2	7.32
1586.8	1596.9	7.63
1627.2	1637.3	7.86
1687.8	1697.9	8.43
1728.3	1738.4	8.68
1788.9	1799.0	9.48
1829.4	1839.5	9.99
1890.0	1900.1	10.45

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=510.1MHz (dB) @LO (dBm) +13
500.0	10.1	6.59
487.4	22.7	6.50
474.9	35.2	6.37
462.3	47.8	6.39
449.7	60.4	6.50
437.2	72.9	6.39
424.6	85.5	6.32
412.1	98.0	6.31
399.5	110.6	6.21
386.9	123.2	6.17
374.4	135.7	6.16
361.8	148.3	6.16
349.2	160.9	6.07
336.7	173.4	6.08
324.1	186.0	6.06
311.5	198.6	6.03
299.0	211.1	6.07
286.4	223.7	6.05
273.8	236.3	6.01
261.3	248.8	6.09
248.7	261.4	6.13
236.2	273.9	6.09
223.6	286.5	6.16
211.0	299.1	6.22
198.5	311.6	6.15
185.9	324.2	6.18
173.3	336.8	6.22
160.8	349.3	6.20
148.2	361.9	6.25
135.6	374.5	6.30
123.1	387.0	6.28
110.5	399.6	6.34
97.9	412.2	6.40
85.4	424.7	6.35
72.8	437.3	6.37
60.3	449.8	6.46
47.7	462.4	6.44
35.1	475.0	6.47
22.6	487.5	6.56
10.0	500.1	6.65

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+10	+13	+16	+10	+13	+16
40.1	63.29	63.02	63.65	76.63	73.42	70.64
80.9	57.16	58.06	58.91	77.56	79.76	71.74
121.7	53.98	55.07	55.96	69.00	78.30	73.04
162.6	51.52	52.59	53.73	61.59	65.88	65.09
203.4	49.35	50.67	51.95	56.73	56.57	59.01
244.2	47.86	49.41	50.50	52.42	52.81	56.37
285.0	46.46	47.85	48.92	49.13	49.92	53.01
325.9	45.56	46.87	47.73	45.87	47.67	50.80
366.7	44.65	46.27	47.16	43.73	46.23	49.55
407.5	43.78	45.35	46.21	42.42	45.19	48.42
448.3	42.35	43.69	44.66	41.15	43.70	46.73
489.1	41.60	42.57	43.63	39.93	42.06	44.76
530.0	41.03	41.85	42.72	39.43	41.82	44.58
570.8	41.57	42.37	43.16	38.94	41.69	44.84
611.6	41.85	43.01	43.64	38.30	41.33	44.34
652.4	42.28	43.40	44.04	37.56	40.36	43.01
693.3	41.90	42.74	43.18	36.95	39.58	41.89
734.1	41.61	42.36	42.67	36.22	38.70	40.62
774.9	40.49	41.19	41.81	35.20	37.34	38.84
815.7	39.60	40.57	41.51	34.59	36.20	37.33
856.5	38.54	39.72	40.67	33.50	34.66	35.57
897.4	37.41	38.82	39.92	32.87	33.94	34.64
938.2	36.51	37.95	39.21	32.25	33.36	33.63
979.0	35.59	37.10	38.34	31.93	33.02	33.16
1019.8	35.08	36.43	37.72	32.06	32.99	33.08
1060.6	34.57	35.71	36.85	31.51	32.51	32.41
1101.5	34.13	35.18	36.14	31.47	32.44	32.60
1142.3	33.76	34.87	35.62	31.24	32.16	32.19
1183.1	33.37	34.49	35.11	30.88	31.70	31.55
1223.9	33.17	34.26	34.89	30.78	31.20	30.36
1264.8	32.79	33.83	34.29	30.29	29.91	28.37
1285.2	32.85	33.98	34.53	30.11	29.21	27.36
1326.0	32.70	33.45	33.67	29.63	27.65	25.89
1346.4	32.56	33.06	33.12	29.07	26.80	25.29
1387.2	32.41	32.68	32.82	27.82	25.41	24.46
1407.6	32.11	32.27	32.25	27.10	24.98	24.15
1448.5	31.59	31.69	31.61	25.93	24.44	23.82
1468.9	31.62	31.84	31.81	25.43	24.21	23.50
1509.7	31.44	31.63	31.51	24.89	23.91	23.19
1530.1	31.21	31.30	31.08	24.86	23.82	23.06

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	53.19	52.83	53.06
50.9	80.9	38.99	39.55	39.59
91.7	121.7	34.93	35.17	35.56
132.6	162.6	32.20	32.60	32.58
173.4	203.4	31.02	31.39	31.70
214.2	244.2	30.03	30.37	30.66
255.0	285.0	29.42	29.72	29.87
295.9	325.9	29.60	29.89	29.91
336.7	366.7	29.86	30.30	30.78
377.5	407.5	29.51	30.24	30.65
418.3	448.3	29.14	29.40	29.45
459.1	489.1	29.06	28.72	28.61
500.0	530.0	28.58	28.20	28.20
540.8	570.8	27.07	27.25	27.88
581.6	611.6	24.56	24.68	25.25
622.4	652.4	22.17	22.13	22.31
663.3	693.3	20.32	20.20	20.20
704.1	734.1	19.05	18.83	18.79
744.9	774.9	18.11	17.82	17.60
785.7	815.7	17.32	17.03	16.75
826.5	856.5	16.81	16.39	16.19
867.4	897.4	16.37	16.04	15.79
908.2	938.2	16.18	15.83	15.57
949.0	979.0	16.00	15.58	15.31
989.8	1019.8	15.70	15.26	15.03
1030.6	1060.6	15.50	15.19	14.86
1071.5	1101.5	15.23	15.12	14.86
1112.3	1142.3	14.80	14.83	14.72
1153.1	1183.1	14.44	14.53	14.55
1193.9	1223.9	14.07	14.17	14.22
1234.8	1264.8	13.63	13.73	13.89
1255.2	1285.2	13.45	13.52	13.69
1296.0	1326.0	13.00	13.14	13.29
1316.4	1346.4	12.70	12.83	12.93
1357.2	1387.2	12.17	12.27	12.26
1377.6	1407.6	11.91	12.00	11.96
1418.5	1448.5	11.47	11.47	11.37
1438.9	1468.9	11.33	11.23	11.16
1479.7	1509.7	10.85	10.66	10.56
1500.1	1530.1	10.56	10.36	10.21

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.13	1.16	1.20
50.9	80.9	1.13	1.03	1.04
91.7	121.7	1.10	1.00	1.08
132.6	162.6	1.13	1.02	1.07
173.4	203.4	1.08	1.03	1.11
214.2	244.2	1.08	1.05	1.12
255.0	285.0	1.07	1.05	1.13
295.9	325.9	1.06	1.08	1.15
336.7	366.7	1.03	1.07	1.13
377.5	407.5	1.04	1.13	1.19
418.3	448.3	1.02	1.09	1.15
459.1	489.1	1.04	1.12	1.18
500.0	530.0	1.05	1.10	1.15
540.8	570.8	1.07	1.16	1.21
581.6	611.6	1.09	1.18	1.24
622.4	652.4	1.10	1.19	1.25
663.3	693.3	1.14	1.22	1.27
704.1	734.1	1.12	1.18	1.22
744.9	774.9	1.19	1.25	1.28
785.7	815.7	1.12	1.16	1.17
826.5	856.5	1.17	1.19	1.19
867.4	897.4	1.04	1.07	1.10
908.2	938.2	1.08	1.06	1.07
949.0	979.0	1.07	1.08	1.13
989.8	1019.8	1.20	1.12	1.10
1030.6	1060.6	1.20	1.16	1.19
1071.5	1101.5	1.40	1.34	1.31
1112.3	1142.3	1.37	1.32	1.31
1153.1	1183.1	1.66	1.61	1.59
1193.9	1223.9	1.61	1.56	1.53
1234.8	1264.8	1.90	1.85	1.83
1255.2	1285.2	1.96	1.90	1.86
1296.0	1326.0	1.85	1.81	1.79
1316.4	1346.4	2.05	2.02	2.01
1357.2	1387.2	2.19	2.13	2.09
1377.6	1407.6	2.05	2.01	1.97
1418.5	1448.5	2.37	2.33	2.30
1438.9	1468.9	2.46	2.40	2.37
1479.7	1509.7	2.22	2.18	2.15
1500.1	1530.1	2.42	2.40	2.37

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+10	+13	+16
40.1	1.23	1.87	2.65
80.9	1.19	1.72	2.38
121.7	1.22	1.80	2.50
162.6	1.19	1.74	2.41
203.4	1.18	1.72	2.38
244.2	1.19	1.75	2.43
285.0	1.17	1.70	2.34
325.9	1.19	1.75	2.41
366.7	1.18	1.72	2.34
407.5	1.19	1.73	2.36
448.3	1.20	1.73	2.35
489.1	1.21	1.73	2.33
530.0	1.23	1.75	2.35
570.8	1.24	1.73	2.30
611.6	1.27	1.76	2.34
652.4	1.28	1.76	2.33
693.3	1.29	1.76	2.33
734.1	1.29	1.75	2.30
774.9	1.29	1.74	2.27
815.7	1.31	1.74	2.28
856.5	1.34	1.75	2.27
897.4	1.39	1.79	2.30
938.2	1.42	1.82	2.31
979.0	1.43	1.85	2.34
1019.8	1.44	1.87	2.35
1060.6	1.44	1.88	2.36
1101.5	1.44	1.88	2.37
1142.3	1.44	1.88	2.37
1183.1	1.44	1.88	2.36
1223.9	1.44	1.88	2.36
1264.8	1.44	1.89	2.37
1285.2	1.44	1.88	2.36
1326.0	1.44	1.89	2.38
1346.4	1.45	1.90	2.40
1387.2	1.45	1.89	2.39
1407.6	1.45	1.90	2.41
1448.5	1.48	1.95	2.48
1468.9	1.49	1.96	2.47
1509.7	1.52	1.99	2.50
1530.1	1.56	2.03	2.55

IF (OUT) (MHz)	IF VSWR @LO=500MHz (:1) @LO (dBm)		
	+10	+13	+16
10.0	1.82	1.64	1.50
22.3	1.76	1.59	1.46
34.6	1.85	1.68	1.54
46.9	1.80	1.64	1.50
59.2	1.76	1.59	1.45
71.5	1.86	1.69	1.54
83.8	1.82	1.65	1.50
96.2	1.80	1.62	1.48
108.5	1.90	1.72	1.57
120.8	1.84	1.67	1.52
133.1	1.77	1.61	1.47
145.4	1.87	1.70	1.55
157.7	1.86	1.69	1.54
170.0	1.81	1.64	1.49
182.3	1.92	1.74	1.59
194.6	1.89	1.72	1.57
206.9	1.82	1.65	1.50
219.2	1.91	1.73	1.58
231.5	1.88	1.71	1.56
243.8	1.83	1.66	1.51
256.2	1.94	1.76	1.61
268.5	1.94	1.76	1.61
280.8	1.88	1.70	1.55
293.1	1.97	1.79	1.63
305.4	1.96	1.77	1.62
317.7	1.88	1.70	1.55
330.0	1.99	1.80	1.64
342.3	2.01	1.82	1.66
354.6	1.93	1.74	1.59
366.9	2.03	1.83	1.67
379.2	2.03	1.84	1.68
391.5	1.94	1.76	1.60
403.8	2.04	1.85	1.68
416.2	2.07	1.88	1.71
428.5	1.99	1.80	1.63
440.8	2.09	1.89	1.71
453.1	2.10	1.90	1.73
465.4	1.99	1.80	1.64
477.7	2.12	1.91	1.74
490.0	2.15	1.95	1.78

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	25	32	27	43	28	35	36	60	41	61
1	-	24	+0	34	14	36	22	44	32	38	29	42
2	78	69	52	72	52	70	55	71	55	69	59	69
3	>90	64	57	68	53	70	47	72	47	61	43	65
4	>90	>78	75	>78	73	>78	77	>78	>78	>78	>78	>78
5	>90	>78	75	>78	72	>78	65	>78	64	>78	63	>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: 250 MHz; -6.00 dBm.**
LO IN: 280 MHz; +13.00 dBm
IF OUT: 30 MHz; -12.37 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	37	43	40	56	44	53	54	62	54	67
1	-	24	+0	35	13	38	22	43	33	44	41	53
2	58	57	54	78	55	69	57	64	52	56	55	80
3	84	52	43	57	50	58	48	53	50	57	43	51
4	>90	74	63	78	62	84	62	80	63	80	63	79
5	>90	63	64	67	60	67	53	65	48	67	47	63
6	>90	79	73	82	71	82	70	85	72	84	72	81
7	>90	80	65	78	63	74	74	73	60	74	59	79
8	>90	87	77	86	80	>88	80	>88	81	>88	>88	>88
9	>90	87	79	84	73	86	72	82	68	79	64	83
10	>90	>88	>88	>88	>88	87	84	>88	87	>88	>88	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 250 MHz; 4.00 dBm.**
LO IN: 280 MHz; +13.00 dBm
IF OUT: 30 MHz; -2.44 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.