Frequency Mixer TFM-2+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	6.19	5.90	5.63
50.3	80.3	6.45	6.06	5.83
90.5	120.5	6.42	6.10	5.95
130.8	160.8	6.38	6.08	5.92
171.0	201.0	6.36	6.08	5.94
211.2	241.2	6.39	6.09	5.94
251.4	281.4	6.31	6.06	5.92
291.7	321.7	6.32	6.07	5.92
331.9	361.9	6.32	6.06	5.91
372.1	402.1	6.32	6.07	5.94
412.3	442.3	6.46	6.16	5.99
452.6	482.6	6.39	6.14	5.98
492.8	522.8	6.45	6.16	6.00
533.0	563.0	6.47	6.17	5.99
573.2	603.2	6.52	6.23	6.05
613.5	643.5	6.64	6.36	6.15
653.7	683.7	6.65	6.39	6.20
693.9	723.9	6.74	6.43	6.23
734.1	764.1	6.74	6.40	6.19
794.5	824.5	6.92	6.43	6.19
834.7	864.7	7.16	6.53	6.22
895.0	925.0	7.50	6.77	6.32
935.3	965.3	7.68	6.92	6.39
995.6	1025.6	8.08	7.34	6.74
1035.8	1065.8	8.43	7.70	7.08
1096.2	1126.2	8.84	8.15	7.56
1136.4	1166.4	8.95	8.30	7.70
1196.7	1226.7	9.32	8.69	8.09
1237.0	1267.0	9.44	8.88	8.36
1297.3	1327.3	9.71	9.40	9.12
1337.5	1367.5	9.66	9.47	9.32
1397.9	1427.9	9.82	9.65	9.54
1438.1	1468.1	9.95	9.77	9.66
1498.4	1528.4	10.20	10.02	9.92
1538.6	1568.6	10.51	10.30	10.21
1599.0	1629.0	10.89	10.63	10.54
1639.2	1669.2	11.39	11.02	10.92
1699.5	1729.5	11.75	11.31	11.19
1739.8	1769.8	12.50	11.87	11.68
1800.1	1830.1	12.80	12.08	11.84

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
10.1	40.1	18.08	18.23	17.98
50.3	80.3	20.21	19.05	20.76
90.5	120.5	15.45	18.44	21.03
130.8	160.8	20.44	20.96	21.04
171.0	201.0	20.20	20.96	21.03
211.2	241.2	20.81	20.95	21.03
251.4	281.4	18.55	20.40	21.04
291.7	321.7	20.57	20.97	21.04
331.9	361.9	15.76	17.85	20.22
372.1	402.1	15.95	19.14	21.03
412.3	442.3	14.73	16.43	21.01
452.6	482.6	18.65	20.90	21.01
492.8	522.8	20.77	20.92	20.48
533.0	563.0	15.01	20.92	21.00
573.2	603.2	13.13	16.04	20.98
613.5	643.5	10.91	12.66	15.68
653.7	683.7	10.19	11.95	14.83
693.9	723.9	10.39	12.97	16.55
734.1	764.1	10.46	14.73	20.91
794.5	824.5	10.36	17.67	20.90
834.7	864.7	9.37	18.71	17.06
895.0	925.0	8.14	13.80	16.43
935.3	965.3	8.20	12.90	15.16
995.6	1025.6	7.70	10.10	11.76
1035.8	1065.8	6.68	8.35	9.79
1096.2	1126.2	5.81	6.80	8.18
1136.4	1166.4	5.79	6.56	8.03
1196.7	1226.7	6.25	7.25	9.00
1237.0	1267.0	7.42	8.64	10.44
1297.3	1327.3	10.22	11.02	12.37
1337.5	1367.5	12.39	12.34	13.18
1397.9	1427.9	14.90	13.71	14.26
1438.1	1468.1	16.28	14.79	14.39
1498.4	1528.4	15.23	18.39	15.89
1538.6	1568.6	15.67	16.99	18.89
1599.0	1629.0	16.63	17.15	18.73
1639.2	1669.2	17.39	17.26	18.54
1699.5	1729.5	17.64	15.99	18.41
1739.8	1769.8	17.75	16.33	16.32
1800.1	1830.1	17.60	16.71	16.27

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	1.05	0.57	0.51
50.3	80.3	0.94	0.67	0.56
90.5	120.5	1.01	0.64	0.50
130.8	160.8	0.88	0.68	0.45
171.0	201.0	0.99	0.69	0.50
211.2	241.2	0.87	0.60	0.42
251.4	281.4	0.92	0.65	0.47
291.7	321.7	0.86	0.60	0.44
331.9	361.9	0.86	0.59	0.45
372.1	402.1	0.90	0.65	0.49
412.3	442.3	0.79	0.55	0.44
452.6	482.6	0.94	0.68	0.53
492.8	522.8	0.92	0.67	0.51
533.0	563.0	1.09	0.80	0.61
573.2	603.2	1.12	0.86	0.66
613.5	643.5	1.26	0.96	0.76
653.7	683.7	1.41	1.09	0.87
693.9	723.9	1.46	1.12	0.91
734.1	764.1	1.71	1.35	1.11
794.5	824.5	1.83	1.50	1.22
834.7	864.7	1.84	1.58	1.29
895.0	925.0	1.69	1.54	1.30
935.3	965.3	1.70	1.57	1.39
995.6	1025.6	1.53	1.43	1.30
1035.8	1065.8	1.32	1.24	1.15
1096.2	1126.2	1.13	1.05	0.99
1136.4	1166.4	1.13	1.05	1.03
1196.7	1226.7	1.00	0.94	0.96
1237.0	1267.0	0.96	0.89	0.91
1297.3	1327.3	0.75	0.58	0.53
1337.5	1367.5	0.71	0.47	0.36
1397.9	1427.9	0.61	0.36	0.26
1438.1	1468.1	0.56	0.31	0.23
1498.4	1528.4	0.45	0.24	0.16
1538.6	1568.6	0.42	0.22	0.13
1599.0	1629.0	0.34	0.19	0.12
1639.2	1669.2	0.29	0.17	0.10
1699.5	1729.5	0.24	0.16	0.10
1739.8	1769.8	0.15	0.15	0.11
1800.1	1830.1	0.08	0.15	0.13

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=510.1MHz (dB) @LO (dBm) +7
500.0	10.1	6.32
487.4	22.7	6.20
474.9	35.2	6.09
462.3	47.8	6.11
449.7	60.4	6.11
437.2	72.9	6.01
424.6	85.5	5.97
412.1	98.0	5.99
399.5	110.6	5.97
386.9	123.2	5.95
374.4	135.7	5.95
361.8	148.3	5.99
349.2	160.9	5.99
336.7	173.4	5.99
324.1	186.0	5.98
311.5	198.6	5.96
299.0	211.1	5.97
286.4	223.7	5.98
273.8	236.3	6.00
261.3	248.8	6.04
248.7	261.4	6.06
236.2	273.9	6.04
223.6	286.5	6.02
211.0	299.1	6.02
198.5	311.6	6.00
185.9	324.2	6.01
173.3	336.8	6.04
160.8	349.3	6.09
148.2	361.9	6.12
135.6	374.5	6.11
123.1	387.0	6.11
110.5	399.6	6.11
97.9	412.2	6.10
85.4	424.7	6.10
72.8	437.3	6.15
60.3	449.8	6.18
47.7	462.4	6.16
35.1	475.0	6.14
22.6	487.5	6.16
10.0	500.1	6.39

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +7
10.0	20.1	6.26
50.0	60.1	5.78
90.0	100.1	5.97
130.0	140.1	5.78
170.0	180.1	5.98
210.0	220.1	5.83
250.0	260.1	6.25
310.0	320.1	6.11
350.0	360.1	5.99
410.0	420.1	6.23
450.0	460.1	6.23
510.0	520.1	6.25
550.0	560.1	6.29
610.0	620.1	6.55
650.0	660.1	6.46
710.0	720.1	6.37
750.0	760.1	6.12
810.0	820.1	6.16
850.0	860.1	6.13
910.0	920.1	6.03
950.0	960.1	6.01
1010.0	1020.1	6.29
1050.0	1060.1	6.35
1110.0	1120.1	6.17
1150.0	1160.1	6.17
1210.0	1220.1	5.99
1250.0	1260.1	6.31
1310.0	1320.1	6.26
1350.0	1360.1	6.21
1410.0	1420.1	6.65
1450.0	1460.1	7.17
1510.0	1520.1	7.32
1550.0	1560.1	7.54
1610.0	1620.1	8.09
1650.0	1660.1	8.48
1710.0	1720.1	9.15
1750.0	1760.1	9.48
1810.0	1820.1	10.15
1850.0	1860.1	10.59
1910.0	1920.1	11.02

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1010.1MHz (dB) @LO (dBm) +7
1000.0	10.1	7.42
979.8	30.3	7.37
959.6	50.5	7.30
939.4	70.7	7.38
919.2	90.9	7.38
899.0	111.1	7.38
878.8	131.3	7.36
858.6	151.5	7.34
838.4	171.7	7.39
818.2	191.9	7.32
798.0	212.1	7.41
777.8	232.3	7.32
757.6	252.5	7.24
737.3	272.8	7.34
717.1	293.0	7.33
696.9	313.2	7.38
676.7	333.4	7.29
656.5	353.6	7.33
636.3	373.8	7.26
616.1	394.0	7.28
575.7	434.4	7.18
555.5	454.6	7.25
515.1	495.0	7.18
494.9	515.2	7.13
454.5	555.6	7.14
434.3	575.8	7.01
393.9	616.2	7.11
373.7	636.4	7.17
333.3	676.8	7.10
313.1	697.0	7.15
272.7	737.4	7.01
252.4	757.7	6.90
212.0	798.1	6.88
191.8	818.3	6.79
151.4	858.7	6.88
131.2	878.9	6.93
90.8	919.3	7.01
70.6	939.5	7.19
30.2	979.9	7.30
10.0	1000.1	7.57

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
40.1	62.77	61.78	61.54	55.19	53.39	52.41
80.3	57.29	57.84	58.11	50.74	49.09	48.05
120.5	54.42	54.93	55.40	47.43	46.00	45.07
160.8	52.21	52.87	53.47	45.40	44.09	43.17
201.0	50.34	51.13	51.65	43.97	42.71	41.63
241.2	49.11	49.92	50.39	42.57	41.36	40.30
281.4	48.09	48.78	49.31	41.96	40.64	39.56
321.7	47.14	47.84	48.37	40.89	39.51	38.60
361.9	46.26	46.95	47.37	39.94	38.77	37.81
402.1	45.43	46.18	46.64	38.76	37.64	36.88
442.3	44.73	45.38	45.99	37.96	36.89	35.82
482.6	44.24	44.82	45.26	37.11	36.56	35.88
522.8	44.29	44.92	45.20	36.09	35.53	35.17
563.0	43.64	44.64	45.17	35.46	34.51	34.02
603.2	42.85	43.41	43.91	34.85	33.89	32.99
643.5	42.25	42.59	42.80	34.62	34.15	33.16
683.7	41.71	41.97	42.13	33.76	33.99	33.56
723.9	41.33	41.62	41.93	32.75	33.14	33.14
764.1	41.08	41.62	41.73	31.90	32.37	32.40
824.5	40.51	41.19	41.37	30.77	30.79	30.92
864.7	39.67	40.56	41.01	30.61	30.25	30.35
925.0	39.37	40.27	40.79	31.10	30.13	29.85
965.3	39.48	40.23	40.74	31.98	30.70	30.02
1025.6	39.63	40.51	41.11	33.63	32.86	31.66
1065.8	39.37	40.29	40.99	34.81	34.63	33.33
1126.2	38.63	39.24	39.81	35.99	37.32	37.16
1166.4	38.11	38.40	38.73	36.65	38.98	40.04
1226.7	37.73	37.65	37.76	37.52	40.57	43.27
1267.0	38.00	37.81	37.73	38.49	41.82	45.44
1327.3	40.45	40.05	39.41	40.17	43.35	47.27
1367.5	42.00	41.32	40.60	40.45	42.37	44.12
1427.9	38.71	38.82	38.87	38.74	38.70	38.60
1468.1	37.13	37.80	38.28	45.83	42.08	39.66
1528.4	37.10	37.85	38.42	36.81	36.32	35.14
1568.6	36.28	37.04	37.51	34.07	34.03	33.22
1629.0	35.42	36.30	36.93	31.12	31.26	30.88
1669.2	34.48	35.32	36.03	29.52	29.83	29.59
1729.5	34.04	35.11	36.00	27.70	28.26	28.12
1769.8	32.83	33.82	34.52	26.38	27.23	27.31
1830.1	32.44	33.84	34.67	25.36	26.35	26.48

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	57.15	57.43	57.51
50.3	80.3	43.15	43.58	43.76
90.5	120.5	38.84	38.75	39.92
130.8	160.8	36.61	36.80	37.68
171.0	201.0	34.61	35.33	36.19
211.2	241.2	33.68	34.78	35.20
251.4	281.4	33.08	34.04	34.43
291.7	321.7	33.01	34.17	35.13
331.9	361.9	32.98	34.57	35.91
372.1	402.1	32.99	34.51	36.41
412.3	442.3	33.35	34.81	35.96
452.6	482.6	33.82	35.48	37.05
492.8	522.8	33.42	34.99	36.42
533.0	563.0	32.26	33.02	33.16
573.2	603.2	30.25	30.29	29.97
613.5	643.5	28.19	27.88	27.49
653.7	683.7	26.67	26.11	25.85
693.9	723.9	25.12	24.58	24.31
734.1	764.1	24.29	23.70	23.24
794.5	824.5	24.05	23.14	22.54
834.7	864.7	23.91	22.92	22.14
895.0	925.0	24.59	23.40	22.20
935.3	965.3	25.46	24.29	23.02
995.6	1025.6	25.85	25.01	24.15
1035.8	1065.8	24.61	23.78	23.08
1096.2	1126.2	22.04	21.24	20.54
1136.4	1166.4	20.34	19.56	18.85
1196.7	1226.7	17.89	16.95	16.25
1237.0	1267.0	16.48	15.50	14.80
1297.3	1327.3	14.60	13.64	13.14
1337.5	1367.5	13.64	12.82	12.35
1397.9	1427.9	12.29	11.53	11.13
1438.1	1468.1	11.92	11.13	10.72
1498.4	1528.4	10.75	10.11	9.70
1538.6	1568.6	10.47	9.87	9.44
1599.0	1629.0	9.68	9.15	8.81
1639.2	1669.2	9.54	8.94	8.63
1699.5	1729.5	9.10	8.67	8.40
1739.8	1769.8	9.14	8.63	8.39
1800.1	1830.1	8.96	8.55	8.36

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
10.1	40.1	1.12	1.16	1.03
50.3	80.3	1.02	1.06	1.12
90.5	120.5	1.05	1.10	1.16
130.8	160.8	1.06	1.12	1.17
171.0	201.0	1.09	1.14	1.19
211.2	241.2	1.10	1.15	1.20
251.4	281.4	1.11	1.16	1.21
291.7	321.7	1.13	1.19	1.23
331.9	361.9	1.15	1.20	1.25
372.1	402.1	1.16	1.21	1.25
412.3	442.3	1.17	1.21	1.25
452.6	482.6	1.20	1.24	1.28
492.8	522.8	1.22	1.27	1.32
533.0	563.0	1.24	1.28	1.33
573.2	603.2	1.24	1.28	1.32
613.5	643.5	1.24	1.26	1.30
653.7	683.7	1.24	1.26	1.28
693.9	723.9	1.25	1.27	1.29
734.1	764.1	1.28	1.28	1.30
794.5	824.5	1.39	1.37	1.38
834.7	864.7	1.51	1.48	1.47
895.0	925.0	1.76	1.70	1.67
935.3	965.3	1.97	1.89	1.84
995.6	1025.6	2.31	2.21	2.13
1035.8	1065.8	2.55	2.44	2.34
1096.2	1126.2	2.86	2.75	2.65
1136.4	1166.4	3.06	2.95	2.84
1196.7	1226.7	3.28	3.18	3.06
1237.0	1267.0	3.40	3.33	3.22
1297.3	1327.3	3.52	3.49	3.43
1337.5	1367.5	3.54	3.54	3.52
1397.9	1427.9	3.56	3.54	3.52
1438.1	1468.1	3.55	3.52	3.49
1498.4	1528.4	3.62	3.58	3.54
1538.6	1568.6	3.67	3.62	3.58
1599.0	1629.0	3.73	3.67	3.64
1639.2	1669.2	3.79	3.70	3.67
1699.5	1729.5	3.91	3.83	3.79
1739.8	1769.8	4.00	3.90	3.86
1800.1	1830.1	4.13	4.05	4.01

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
40.1	1.89	2.77	3.90
80.3	1.72	2.44	3.37
120.5	1.78	2.56	3.56
160.8	1.75	2.49	3.43
201.0	1.72	2.44	3.35
241.2	1.76	2.52	3.46
281.4	1.72	2.41	3.29
321.7	1.77	2.50	3.40
361.9	1.76	2.45	3.30
402.1	1.78	2.47	3.33
442.3	1.80	2.48	3.31
482.6	1.81	2.47	3.28
522.8	1.85	2.52	3.32
563.0	1.86	2.49	3.27
603.2	1.90	2.55	3.34
643.5	1.90	2.53	3.29
683.7	1.92	2.55	3.30
723.9	1.96	2.56	3.29
764.1	1.96	2.54	3.25
824.5	2.05	2.62	3.31
864.7	2.08	2.65	3.33
925.0	2.15	2.72	3.39
965.3	2.17	2.74	3.42
1025.6	2.22	2.79	3.47
1065.8	2.23	2.80	3.47
1126.2	2.26	2.82	3.48
1166.4	2.27	2.81	3.46
1226.7	2.28	2.80	3.45
1267.0	2.28	2.78	3.43
1327.3	2.33	2.84	3.50
1367.5	2.39	2.87	3.52
1427.9	2.53	3.00	3.64
1468.1	2.63	3.06	3.67
1528.4	2.83	3.23	3.82
1568.6	2.97	3.30	3.86
1629.0	3.20	3.48	4.02
1669.2	3.36	3.57	4.07
1729.5	3.62	3.78	4.26
1769.8	3.82	3.84	4.17
1830.1	4.09	4.11	4.48

IF (OUT) (MHz)	IF VSWR @LO=1000MHz (:1) @LO (dBm)		
	+4	+7	+10
10.0	1.99	1.69	1.46
30.0	1.95	1.66	1.43
50.0	2.01	1.71	1.48
70.0	2.03	1.73	1.50
90.0	1.96	1.66	1.44
110.0	1.97	1.68	1.46
130.0	2.05	1.75	1.53
150.0	2.03	1.73	1.51
170.0	2.00	1.71	1.50
190.0	2.03	1.74	1.53
210.0	2.04	1.74	1.52
230.0	2.03	1.73	1.52
250.0	2.08	1.80	1.60
270.0	2.08	1.79	1.58
290.0	2.02	1.73	1.53
310.0	2.07	1.79	1.59
330.0	2.14	1.85	1.65
350.0	2.10	1.81	1.61
370.0	2.09	1.81	1.61
390.0	2.15	1.86	1.66
430.0	2.12	1.84	1.63
450.0	2.18	1.90	1.70
490.0	2.11	1.82	1.61
510.0	2.17	1.88	1.67
550.0	2.16	1.87	1.66
570.0	2.14	1.86	1.65
610.0	2.20	1.90	1.68
630.0	2.16	1.88	1.66
670.0	2.17	1.88	1.65
690.0	2.13	1.85	1.63
730.0	2.18	1.90	1.67
750.0	2.09	1.82	1.60
790.0	2.13	1.87	1.65
810.0	2.08	1.83	1.61
850.0	2.05	1.81	1.60
870.0	2.01	1.78	1.58
910.0	1.99	1.78	1.59
930.0	1.97	1.76	1.58
970.0	1.85	1.66	1.50
990.0	1.92	1.74	1.58

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	4	14	26	26	16	33	19	35	40	58
1	-	24	+0	41	11	29	26	46	42	39	45	64
2	>90	59	50	63	50	66	52	>70	56	>70	52	67
3	>90	64	>70	66	>70	68	66	>70	>70	>70	>70	>70
4	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
5	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
6	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
7	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
8	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
9	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
10	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 500 MHz; -14.00 dBm.
LO IN: 530 MHz; +7.00 dBm
IF OUT: 30 MHz; -20.43 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	14	26	33	40	27	45	33	50	58	77
1	-	25	+0	38	11	33	27	50	43	46	55	75
2	72	51	42	61	42	58	47	62	48	58	47	60
3	>90	44	46	49	48	52	42	54	54	64	58	57
4	>90	75	74	64	59	63	57	72	58	75	68	69
5	>90	74	75	>80	57	65	57	65	59	64	74	>80
6	>90	>80	>80	77	76	78	75	79	>80	74	76	>80
7	>90	>80	>80	>80	79	>80	75	>80	>80	>80	73	>80
8	>90	>80	>80	>80	>80	>80	>80	>80	>80	77	79	>80
9	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
10	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 500 MHz; -4.00 dBm.
LO IN: 530 MHz; +7.00 dBm
IF OUT: 30 MHz; -10.36 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.