Frequency Mixer ZFM-4H+

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	7.82	6.58	6.18
49.9	79.9	8.37	7.26	6.75
89.6	119.6	8.16	7.02	6.55
129.4	159.4	8.18	7.09	6.62
169.2	199.2	7.97	6.92	6.47
208.9	238.9	8.14	6.95	6.43
248.7	278.7	8.03	6.91	6.43
288.5	318.5	7.85	6.70	6.32
328.2	358.2	7.91	6.80	6.40
368.0	398.0	7.53	6.59	6.27
407.7	437.7	7.54	6.59	6.29
447.5	477.5	7.50	6.56	6.26
487.3	517.3	7.37	6.54	6.26
527.0	557.0	7.36	6.60	6.29
566.8	596.8	7.27	6.57	6.25
606.6	636.6	7.34	6.62	6.32
646.3	676.3	7.32	6.59	6.31
686.1	716.1	7.37	6.62	6.31
725.9	755.9	7.26	6.60	6.27
765.6	795.6	7.26	6.64	6.30
805.4	835.4	7.39	6.81	6.47
845.2	875.2	7.41	6.87	6.58
884.9	914.9	7.57	7.00	6.71
924.7	954.7	7.70	7.07	6.79
964.5	994.5	7.96	7.19	6.85
1004.2	1034.2	8.21	7.31	6.85
1044.0	1074.0	8.50	7.37	6.79
1103.6	1133.6	8.92	7.36	6.62
1143.4	1173.4	9.22	7.50	6.60
1203.0	1233.0	9.57	7.90	6.72
1242.8	1272.8	9.66	8.03	6.85
1302.5	1332.5	9.97	8.55	7.08
1342.2	1372.2	9.85	8.68	7.17
1401.9	1431.9	9.98	9.00	7.66
1441.6	1471.6	9.81	8.94	7.81
1501.3	1531.3	9.85	9.09	8.29
1541.0	1571.0	9.67	8.92	8.28
1600.7	1630.7	9.90	9.10	8.53
1640.5	1670.5	9.76	8.99	8.45
1700.1	1730.1	9.93	9.02	8.47

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+14	+17	+20
10.1	40.1	23.70	28.32	31.93
49.9	79.9	24.71	28.33	31.68
89.6	119.6	23.52	27.49	30.74
129.4	159.4	25.67	27.94	30.58
169.2	199.2	25.70	27.77	26.77
208.9	238.9	23.73	27.03	26.93
248.7	278.7	23.44	25.35	28.14
288.5	318.5	23.84	25.78	34.06
328.2	358.2	22.97	25.10	30.33
368.0	398.0	24.23	27.25	28.17
407.7	437.7	23.10	28.98	29.25
447.5	477.5	22.76	28.67	27.45
487.3	517.3	24.68	25.90	26.16
527.0	557.0	25.86	24.05	25.86
566.8	596.8	25.85	23.85	25.85
606.6	636.6	26.02	24.50	27.04
646.3	676.3	25.29	26.20	28.72
686.1	716.1	24.84	27.84	31.85
725.9	755.9	25.77	27.71	30.50
765.6	795.6	26.71	25.64	34.40
805.4	835.4	23.69	23.63	25.29
845.2	875.2	21.74	22.61	24.00
884.9	914.9	20.04	21.16	23.04
924.7	954.7	18.86	20.65	22.28
964.5	994.5	17.94	20.61	22.38
1004.2	1034.2	17.26	20.91	23.47
1044.0	1074.0	16.71	21.57	25.06
1103.6	1133.6	15.26	23.22	28.75
1143.4	1173.4	14.43	21.12	35.57
1203.0	1233.0	14.26	17.71	29.12
1242.8	1272.8	14.54	17.56	23.80
1302.5	1332.5	14.69	16.64	22.36
1342.2	1372.2	15.39	16.43	23.20
1401.9	1431.9	16.87	16.83	20.55
1441.6	1471.6	17.57	17.52	19.88
1501.3	1531.3	18.51	18.09	18.54
1541.0	1571.0	18.64	18.23	18.32
1600.7	1630.7	18.46	18.38	18.35
1640.5	1670.5	18.21	17.92	18.26
1700.1	1730.1	18.08	18.22	18.66

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB) @LO (dBm)		
		+14	+17	+20
10.1	40.1	0.37	0.12	0.10
50.8	80.8	0.28	0.06	0.03
91.5	121.5	0.22	0.10	0.07
132.3	162.3	0.23	0.04	0.03
173.0	203.0	0.42	0.16	0.11
213.7	243.7	0.30	0.10	0.06
254.4	284.4	0.25	0.08	0.07
295.2	325.2	0.34	0.20	0.09
335.9	365.9	0.39	0.16	0.06
376.6	406.6	0.60	0.24	0.11
417.3	447.3	0.54	0.19	0.08
458.1	488.1	0.76	0.27	0.13
498.8	528.8	0.72	0.22	0.10
539.5	569.5	0.72	0.19	0.10
580.2	610.2	0.70	0.17	0.08
620.9	650.9	0.68	0.14	0.06
661.7	691.7	0.72	0.17	0.08
702.4	732.4	0.59	0.13	0.06
743.1	773.1	0.77	0.19	0.15
783.8	813.8	0.80	0.19	0.15
824.6	854.6	0.92	0.24	0.16
865.3	895.3	0.92	0.28	0.15
906.0	936.0	0.97	0.31	0.10
946.7	976.7	0.83	0.33	0.14
987.4	1017.4	0.74	0.32	0.17
1028.2	1058.2	0.67	0.41	0.27
1068.9	1098.9	0.46	0.49	0.38
1109.6	1139.6	0.27	0.57	0.49
1150.3	1180.3	0.08	0.53	0.56
1191.1	1221.1	-0.02	0.39	0.60
1231.8	1261.8	-0.12	0.30	0.53
1292.9	1322.9	-0.17	0.09	0.48
1333.6	1363.6	-0.24	-0.08	0.44
1394.7	1424.7	-0.04	-0.17	0.28
1435.4	1465.4	-0.03	-0.17	0.14
1496.5	1526.5	0.04	-0.18	-0.13
1537.2	1567.2	0.29	0.10	0.04
1598.3	1628.3	0.15	0.10	0.03
1639.0	1669.0	0.33	0.28	0.21
1700.1	1730.1	0.35	0.38	0.31

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=610.1MHz (dB) @LO (dBm) +17
600.0	10.1	7.43
584.9	25.2	7.24
569.7	40.4	7.12
554.6	55.5	7.27
539.5	70.6	7.33
524.4	85.7	7.26
509.2	100.9	7.21
494.1	116.0	7.08
479.0	131.1	7.01
463.8	146.3	7.05
448.7	161.4	7.03
433.6	176.5	7.00
418.5	191.6	6.91
403.3	206.8	6.98
388.2	221.9	6.85
373.1	237.0	6.78
357.9	252.2	6.77
342.8	267.3	6.73
327.7	282.4	6.75
312.6	297.5	6.76
297.4	312.7	6.68
282.3	327.8	6.61
267.2	342.9	6.57
252.1	358.0	6.62
236.9	373.2	6.69
221.8	388.3	6.76
206.7	403.4	6.74
191.5	418.6	6.65
176.4	433.7	6.66
161.3	448.8	6.79
146.2	463.9	6.80
131.0	479.1	6.74
115.9	494.2	6.81
100.8	509.3	6.95
85.6	524.5	6.96
70.5	539.6	7.14
55.4	554.7	6.96
40.3	569.8	6.92
25.1	585.0	7.18
10.0	600.1	7.36

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +17
10.0	20.1	7.48
70.5	80.6	7.41
131.1	141.2	7.14
191.6	201.7	7.28
252.1	262.2	7.32
312.7	322.8	7.34
373.2	383.3	7.50
433.7	443.8	7.62
494.2	504.3	7.57
554.8	564.9	7.66
615.3	625.4	7.66
675.8	685.9	7.85
736.4	746.5	7.97
796.9	807.0	8.06
857.4	867.5	8.23
918.0	928.1	8.09
978.5	988.6	8.00
1039.0	1049.1	7.80
1099.6	1109.7	7.71
1160.1	1170.2	7.68
1220.6	1230.7	7.75
1281.2	1291.3	7.89
1341.7	1351.8	7.90
1402.2	1412.3	8.01
1462.7	1472.8	7.79
1523.3	1533.4	7.66
1583.8	1593.9	7.63
1644.3	1654.4	7.82
1704.9	1715.0	7.99
1765.4	1775.5	8.02
1825.9	1836.0	8.17
1886.5	1896.6	8.48
1926.8	1936.9	8.65
1987.3	1997.4	8.97
2027.7	2037.8	9.23
2088.2	2098.3	9.71
2128.6	2138.7	9.97
2189.1	2199.2	10.58
2229.5	2239.6	10.88
2290.0	2300.1	11.39

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1210.1MHz (dB) @LO (dBm) +17
1200.0	10.1	8.11
1159.7	50.4	7.89
1119.3	90.8	7.88
1099.2	110.9	7.64
1058.8	151.3	7.47
1038.6	171.5	7.37
998.3	211.8	7.23
978.1	232.0	7.12
937.8	272.3	7.12
917.6	292.5	7.01
877.3	332.8	7.04
857.1	353.0	7.03
816.8	393.3	7.01
796.6	413.5	7.05
756.3	453.8	7.04
736.1	474.0	7.01
695.8	514.3	7.09
675.6	534.5	7.10
635.3	574.8	7.14
615.1	595.0	7.19
574.7	635.4	7.25
554.6	655.5	7.31
514.2	695.9	7.40
494.1	716.0	7.37
453.7	756.4	7.43
433.6	776.5	7.49
393.2	816.9	7.59
373.1	837.0	7.68
332.7	877.4	7.81
312.5	897.6	7.90
272.2	937.9	7.92
252.0	958.1	7.95
211.7	998.4	8.02
191.5	1018.6	7.94
151.2	1058.9	7.95
131.0	1079.1	7.87
90.7	1119.4	7.81
70.5	1139.6	8.07
30.2	1179.9	7.57
10.0	1200.1	8.36

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	62.85	64.05	64.43	61.10	62.46	63.36
79.9	57.53	58.55	59.26	55.82	57.81	59.61
119.6	54.10	55.33	56.23	52.75	55.11	57.41
159.4	51.80	52.97	53.97	50.48	53.02	55.67
199.2	49.81	50.88	51.93	48.73	51.29	54.48
238.9	48.09	49.17	50.24	47.46	50.37	53.84
278.7	46.80	47.93	49.22	46.24	49.43	52.69
318.5	45.54	46.83	48.11	45.10	48.50	51.16
358.2	44.53	45.88	47.04	44.37	47.70	50.11
398.0	43.52	45.13	46.40	43.51	46.47	48.76
437.7	42.80	44.43	45.72	42.84	45.62	47.96
477.5	41.94	43.49	44.84	42.02	44.38	46.60
517.3	41.37	42.83	43.97	41.00	43.14	45.64
557.0	40.89	42.22	43.26	40.52	42.49	44.85
596.8	40.53	42.02	42.96	40.22	42.47	44.62
636.6	40.18	41.77	42.80	39.76	42.03	44.36
676.3	39.82	41.68	42.80	39.22	41.58	44.14
716.1	39.65	41.49	42.87	38.90	41.34	44.12
755.9	39.39	41.31	42.84	38.58	40.89	43.98
795.6	39.05	41.05	42.65	38.13	40.52	43.72
835.4	38.81	40.84	42.33	37.99	40.86	43.50
875.2	38.30	40.36	41.94	37.80	40.91	43.90
914.9	37.80	39.61	41.32	37.28	40.50	44.32
954.7	37.26	39.04	40.85	37.01	39.98	44.22
994.5	36.76	38.68	40.59	37.24	40.76	45.01
1034.2	36.40	38.63	40.57	37.21	41.01	45.97
1074.0	35.87	38.28	40.37	37.05	41.34	47.39
1133.6	35.58	38.03	40.31	37.74	41.77	48.58
1173.4	35.31	37.61	40.01	38.36	41.33	49.26
1233.0	35.15	37.22	39.83	39.86	41.96	49.93
1272.8	35.04	36.97	39.61	40.74	43.02	49.98
1332.5	34.87	36.85	38.58	43.15	47.07	53.63
1372.2	34.32	36.31	37.85	43.63	50.29	55.68
1431.9	31.46	32.97	34.53	33.25	36.22	38.69
1471.6	32.39	34.15	36.01	32.84	35.72	39.04
1531.3	33.17	35.05	36.47	34.13	38.00	41.75
1571.0	33.36	35.03	36.41	34.33	38.47	41.93
1630.7	33.49	34.70	35.95	33.69	38.22	41.93
1670.5	33.53	34.38	35.29	33.26	37.86	41.02
1730.1	33.96	34.46	35.07	31.99	36.74	40.18

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+14	+17	+20
10.1	40.1	54.85	54.08	53.80
49.9	79.9	41.64	42.03	42.22
89.6	119.6	36.78	37.27	37.64
129.4	159.4	34.11	34.64	35.12
169.2	199.2	32.33	33.14	33.68
208.9	238.9	31.05	32.01	32.64
248.7	278.7	30.21	31.17	31.70
288.5	318.5	29.61	30.47	31.08
328.2	358.2	29.25	30.00	30.37
368.0	398.0	28.85	29.96	30.60
407.7	437.7	28.66	29.92	30.91
447.5	477.5	28.28	29.57	31.05
487.3	517.3	28.21	29.91	31.53
527.0	557.0	27.97	29.53	30.58
566.8	596.8	27.51	28.52	29.03
606.6	636.6	26.98	27.60	27.92
646.3	676.3	26.21	26.85	27.37
686.1	716.1	25.36	25.99	26.54
725.9	755.9	24.48	24.90	25.15
765.6	795.6	23.67	23.80	23.67
805.4	835.4	22.83	22.64	22.32
845.2	875.2	21.92	21.54	21.22
884.9	914.9	21.01	20.36	19.95
924.7	954.7	20.16	19.44	19.00
964.5	994.5	19.56	18.71	18.18
1004.2	1034.2	19.13	18.13	17.59
1044.0	1074.0	18.74	17.61	17.04
1103.6	1133.6	18.44	17.23	16.72
1143.4	1173.4	18.01	17.12	16.59
1203.0	1233.0	17.89	17.45	17.07
1242.8	1272.8	17.70	17.45	17.23
1302.5	1332.5	17.51	17.35	17.22
1342.2	1372.2	17.37	17.30	17.11
1401.9	1431.9	17.07	17.04	16.70
1441.6	1471.6	17.72	17.72	17.41
1501.3	1531.3	17.33	17.45	17.23
1541.0	1571.0	16.85	16.91	16.67
1600.7	1630.7	16.01	16.02	15.69
1640.5	1670.5	15.40	15.25	14.84
1700.1	1730.1	14.55	14.15	13.53

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm) +14	+17	+20
10.1	40.1	1.67	1.49	1.38
49.9	79.9	1.70	1.52	1.41
89.6	119.6	1.70	1.52	1.41
129.4	159.4	1.68	1.49	1.39
169.2	199.2	1.68	1.50	1.40
208.9	238.9	1.71	1.52	1.40
248.7	278.7	1.70	1.52	1.39
288.5	318.5	1.69	1.49	1.36
328.2	358.2	1.69	1.49	1.35
368.0	398.0	1.66	1.46	1.32
407.7	437.7	1.66	1.43	1.31
447.5	477.5	1.67	1.44	1.31
487.3	517.3	1.63	1.40	1.29
527.0	557.0	1.60	1.39	1.28
566.8	596.8	1.59	1.39	1.29
606.6	636.6	1.55	1.36	1.27
646.3	676.3	1.55	1.36	1.27
686.1	716.1	1.52	1.33	1.24
725.9	755.9	1.47	1.29	1.20
765.6	795.6	1.45	1.28	1.19
805.4	835.4	1.43	1.27	1.19
845.2	875.2	1.42	1.28	1.21
884.9	914.9	1.41	1.28	1.22
924.7	954.7	1.42	1.29	1.23
964.5	994.5	1.45	1.32	1.26
1004.2	1034.2	1.48	1.34	1.27
1044.0	1074.0	1.52	1.37	1.28
1103.6	1133.6	1.59	1.39	1.30
1143.4	1173.4	1.65	1.44	1.32
1203.0	1233.0	1.72	1.53	1.39
1242.8	1272.8	1.76	1.58	1.45
1302.5	1332.5	1.84	1.69	1.54
1342.2	1372.2	1.87	1.75	1.58
1401.9	1431.9	1.92	1.83	1.69
1441.6	1471.6	1.95	1.86	1.74
1501.3	1531.3	2.03	1.96	1.88
1541.0	1571.0	2.06	2.00	1.94
1600.7	1630.7	2.14	2.06	2.01
1640.5	1670.5	2.14	2.07	2.03
1700.1	1730.1	2.20	2.12	2.08

LO (MHz)	LO VSWR (:1) @LO (dBm) +14	+17	+20
40.1	1.04	1.62	2.39
79.9	1.03	1.52	2.18
119.6	1.05	1.56	2.26
159.4	1.07	1.55	2.24
199.2	1.08	1.51	2.16
238.9	1.12	1.56	2.25
278.7	1.15	1.52	2.15
318.5	1.16	1.53	2.20
358.2	1.20	1.56	2.20
398.0	1.25	1.56	2.18
437.7	1.27	1.59	2.22
477.5	1.31	1.60	2.18
517.3	1.36	1.63	2.22
557.0	1.38	1.64	2.20
596.8	1.43	1.67	2.22
636.6	1.48	1.72	2.25
676.3	1.51	1.72	2.22
716.1	1.54	1.76	2.25
755.9	1.59	1.79	2.25
795.6	1.62	1.80	2.26
835.4	1.65	1.83	2.29
875.2	1.70	1.85	2.28
914.9	1.74	1.86	2.28
954.7	1.78	1.88	2.27
994.5	1.83	1.90	2.26
1034.2	1.87	1.92	2.25
1074.0	1.90	1.95	2.25
1133.6	1.94	2.01	2.28
1173.4	1.96	2.06	2.33
1233.0	1.98	2.09	2.37
1272.8	2.00	2.11	2.40
1332.5	2.03	2.10	2.39
1372.2	2.04	2.11	2.40
1431.9	2.06	2.07	2.35
1471.6	2.07	2.07	2.35
1531.3	2.14	2.07	2.32
1571.0	2.14	2.06	2.30
1630.7	2.19	2.05	2.26
1670.5	2.18	2.03	2.23
1730.1	2.22	2.02	2.19

IF (OUT) (MHz)	IF VSWR @LO=1210MHz (:1) @LO (dBm) +14	+17	+20
10.0	3.02	2.08	1.52
50.3	3.02	2.08	1.54
90.7	3.00	2.06	1.53
110.8	3.09	2.13	1.58
151.2	3.10	2.15	1.61
171.4	3.04	2.11	1.57
211.7	3.01	2.10	1.57
231.9	3.09	2.17	1.63
272.2	3.04	2.15	1.64
292.4	3.03	2.15	1.64
332.7	3.04	2.17	1.67
352.9	3.00	2.15	1.66
393.2	2.92	2.11	1.64
413.4	3.03	2.20	1.71
453.7	3.04	2.24	1.77
473.9	2.93	2.15	1.69
514.2	2.93	2.17	1.72
534.4	2.96	2.20	1.76
574.7	2.86	2.14	1.73
594.9	2.92	2.19	1.76
635.3	2.92	2.21	1.80
655.4	2.83	2.14	1.74
695.8	2.78	2.10	1.70
715.9	2.85	2.17	1.77
756.3	2.77	2.11	1.74
776.4	2.72	2.07	1.69
816.8	2.77	2.12	1.73
836.9	2.67	2.03	1.68
877.3	2.60	1.97	1.61
897.5	2.66	2.03	1.66
937.8	2.60	1.99	1.63
958.0	2.54	1.92	1.56
998.3	2.51	1.90	1.53
1018.5	2.51	1.91	1.54
1058.8	2.42	1.83	1.47
1079.0	2.45	1.86	1.48
1119.3	2.46	1.87	1.48
1139.5	2.35	1.78	1.40
1179.8	2.28	1.73	1.36
1200.0	2.33	1.78	1.40

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	17	26	17	31	27	37	41	47	45	55
1	-	21	+0	37	16	45	43	32	37	34	36	36
2	64	57	61	59	60	70	54	66	62	78	64	68
3	>90	69	56	68	54	74	50	63	53	67	70	65
4	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
5	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
6	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
7	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
8	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
9	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
10	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 610 MHz; -1.00 dBm.
LO IN: 640 MHz; +17.00 dBm
IF OUT: 30 MHz; -8.45 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	27	36	30	43	42	50	62	67	69	91
1	-	22	+0	34	16	40	33	36	44	38	45	44
2	44	53	56	55	52	75	47	59	54	65	61	73
3	71	57	41	55	44	55	35	52	42	52	55	53
4	>90	68	70	68	68	73	71	76	65	84	>92	76
5	>90	83	57	64	51	68	49	87	48	62	54	62
6	>90	89	85	81	88	77	85	84	77	76	74	80
7	>90	76	83	86	71	73	67	78	66	81	61	72
8	>90	>92	>92	>92	>92	>92	88	>92	86	87	>92	82
9	>90	>92	>92	>92	90	>92	78	85	75	91	76	87
10	>90	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 610 MHz; 9.00 dBm.
LO IN: 640 MHz; +17.00 dBm
IF OUT: 30 MHz; 1.64 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.