Frequency Mixer ZP-3MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+10	+13	+16
0.1	30.1	5.47	5.15	4.95
1.0	31.0	4.85	4.57	4.42
5.0	35.0	4.92	4.68	4.54
10.0	40.0	4.99	4.73	4.56
27.8	57.8	4.92	4.69	4.55
45.5	75.5	5.00	4.74	4.61
63.2	93.2	4.92	4.71	4.57
80.9	110.9	4.90	4.73	4.63
98.6	128.6	4.93	4.75	4.64
133.9	163.9	4.98	4.81	4.71
151.6	181.6	5.04	4.83	4.71
169.3	199.3	5.11	4.95	4.83
187.0	217.0	5.14	4.95	4.83
204.7	234.7	5.11	4.90	4.81
222.4	252.4	5.27	5.00	4.84
240.1	270.1	5.31	5.10	4.91
257.8	287.8	5.27	5.15	5.04
275.5	305.5	5.26	5.12	5.02
293.2	323.2	5.30	5.14	5.03
310.9	340.9	5.43	5.19	5.05
346.3	376.3	6.12	5.33	5.01
363.9	393.9	6.82	5.69	5.05
381.6	411.6	7.08	5.92	5.16
399.3	429.3	7.19	6.13	5.32
417.0	447.0	7.59	6.54	5.65
434.7	464.7	7.76	6.89	6.15
452.4	482.4	7.91	7.08	6.42
470.1	500.1	7.57	6.87	6.49
487.8	517.8	7.36	6.93	6.75
505.5	535.5	7.55	7.18	6.97
523.2	553.2	7.57	7.23	7.05
540.9	570.9	7.48	7.21	7.09
558.6	588.6	7.42	7.29	7.27
576.3	606.3	7.62	7.58	7.64
593.9	623.9	7.89	7.87	7.90
611.6	641.6	8.15	8.19	8.25
629.3	659.3	8.39	8.46	8.54
664.7	694.7	9.32	9.40	9.53
682.4	712.4	9.65	9.78	9.89
700.1	730.1	10.04	10.17	10.30

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+10	+13	+16
10.1	40.1	24.64	25.70	35.07
27.8	57.8	27.92	35.29	34.28
45.5	75.5	24.74	28.25	28.25
63.2	93.2	23.59	24.40	23.70
80.9	110.9	29.22	27.17	22.72
98.6	128.6	27.44	21.79	20.83
116.3	146.3	24.15	22.81	21.99
133.9	163.9	26.28	20.15	19.03
151.6	181.6	19.95	20.29	20.34
169.3	199.3	17.39	16.44	17.04
187.0	217.0	19.79	18.07	18.11
204.7	234.7	24.48	25.22	22.87
222.4	252.4	21.21	28.07	21.39
240.1	270.1	15.52	15.82	18.67
257.8	287.8	15.78	15.76	16.73
275.5	305.5	16.02	16.05	17.15
293.2	323.2	15.05	15.35	15.76
310.9	340.9	14.73	15.03	17.23
328.6	358.6	14.30	16.70	21.58
346.3	376.3	12.69	18.59	25.79
363.9	393.9	9.18	15.81	21.90
381.6	411.6	8.58	13.02	17.97
399.3	429.3	9.82	13.86	15.98
417.0	447.0	10.99	16.29	16.31
434.7	464.7	12.31	17.16	19.50
452.4	482.4	12.64	17.85	20.86
470.1	500.1	15.52	29.32	27.37
487.8	517.8	19.63	22.55	23.08
505.5	535.5	21.19	21.60	21.32
523.2	553.2	20.04	18.78	20.18
540.9	570.9	19.07	16.71	19.18
558.6	588.6	16.16	16.02	18.68
576.3	606.3	14.77	15.90	18.86
593.9	623.9	14.22	15.44	18.31
611.6	641.6	13.50	14.76	17.50
629.3	659.3	12.89	13.51	15.64
647.0	677.0	13.62	14.03	15.77
664.7	694.7	14.14	14.15	15.11
682.4	712.4	15.39	14.68	15.07
700.1	730.1	16.02	15.22	15.35

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.76	1.42	1.20
27.8	57.8	1.61	1.27	1.09
45.5	75.5	1.62	1.33	1.08
63.2	93.2	1.55	1.21	0.99
80.9	110.9	1.50	1.18	0.97
98.6	128.6	1.43	1.07	0.90
116.3	146.3	1.33	1.02	0.86
133.9	163.9	1.37	1.09	0.93
151.6	181.6	1.35	1.06	0.88
169.3	199.3	1.20	0.92	0.79
187.0	217.0	1.25	0.95	0.82
204.7	234.7	1.31	0.99	0.81
222.4	252.4	1.30	1.12	0.92
240.1	270.1	1.45	1.21	1.08
257.8	287.8	1.72	1.39	1.22
275.5	305.5	1.99	1.63	1.45
293.2	323.2	2.35	1.82	1.62
310.9	340.9	2.49	1.88	1.67
328.6	358.6	2.69	2.06	1.78
346.3	376.3	2.56	2.30	1.98
363.9	393.9	2.37	2.43	2.19
381.6	411.6	2.17	2.31	2.17
399.3	429.3	2.00	2.18	2.14
417.0	447.0	1.69	1.93	2.02
434.7	464.7	1.49	1.68	1.82
452.4	482.4	1.50	1.69	1.80
470.1	500.1	1.71	1.80	1.73
487.8	517.8	1.67	1.60	1.48
505.5	535.5	1.65	1.42	1.35
523.2	553.2	1.62	1.32	1.31
540.9	570.9	1.77	1.35	1.25
558.6	588.6	1.76	1.22	1.15
576.3	606.3	1.57	1.04	0.94
593.9	623.9	1.55	0.96	0.84
611.6	641.6	1.40	0.84	0.77
629.3	659.3	1.46	0.81	0.69
647.0	677.0	1.34	0.78	0.75
664.7	694.7	1.22	0.83	0.88
682.4	712.4	1.41	1.00	1.04
700.1	730.1	1.46	1.14	1.23

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=200.1MHz (dB) @LO (dBm) +13
190.0	10.1	5.10
185.4	14.7	5.11
180.8	19.3	5.06
176.2	23.9	4.99
171.5	28.6	4.99
166.9	33.2	4.93
162.3	37.8	4.91
157.7	42.4	4.90
153.1	47.0	4.92
148.5	51.6	4.88
143.8	56.3	4.82
139.2	60.9	4.86
134.6	65.5	4.84
130.0	70.1	4.85
125.4	74.7	4.86
120.8	79.3	4.87
116.2	83.9	4.86
111.5	88.6	4.86
106.9	93.2	4.85
102.3	97.8	4.81
97.7	102.4	4.83
93.1	107.0	4.85
88.5	111.6	4.87
83.8	116.3	4.86
79.2	120.9	4.86
74.6	125.5	4.83
70.0	130.1	4.84
65.4	134.7	4.82
60.8	139.3	4.84
56.2	143.9	4.85
51.5	148.6	4.85
46.9	153.2	4.86
42.3	157.8	4.85
37.7	162.4	4.85
33.1	167.0	4.85
28.5	171.6	4.89
23.8	176.3	4.88
19.2	180.9	4.85
14.6	185.5	4.95
10.0	190.1	5.07

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +13
10.0	20.1	4.61
19.7	29.8	4.46
29.5	39.6	4.39
39.2	49.3	4.44
49.0	59.1	4.48
58.7	68.8	4.45
68.5	78.6	4.50
78.2	88.3	4.54
87.9	98.0	4.53
97.7	107.8	4.55
107.4	117.5	4.57
117.2	127.3	4.57
126.9	137.0	4.56
136.7	146.8	4.60
146.4	156.5	4.68
156.2	166.3	4.70
165.9	176.0	4.65
175.6	185.7	4.66
185.4	195.5	4.73
195.1	205.2	4.68
204.9	215.0	4.64
214.6	224.7	4.70
224.4	234.5	4.68
234.1	244.2	4.69
243.8	253.9	4.85
253.6	263.7	5.00
263.3	273.4	4.95
273.1	283.2	5.02
282.8	292.9	5.03
292.6	302.7	4.90
302.3	312.4	4.94
312.1	322.2	4.95
321.8	331.9	4.82
331.5	341.6	4.84
341.3	351.4	4.78
351.0	361.1	4.71
360.8	370.9	4.84
370.5	380.6	4.85
380.3	390.4	4.78
390.0	400.1	4.88

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=400.1MHz (dB) @LO (dBm) +13
390.0	10.1	5.96
380.3	19.8	5.89
370.5	29.6	5.82
360.8	39.3	5.79
351.0	49.1	5.76
341.3	58.8	5.73
331.5	68.6	5.72
321.8	78.3	5.79
312.1	88.0	5.78
302.3	97.8	5.74
292.6	107.5	5.77
282.8	117.3	5.76
273.1	127.0	5.75
263.3	136.8	5.80
253.6	146.5	5.87
243.8	156.3	5.85
234.1	166.0	5.83
224.4	175.7	5.87
214.6	185.5	5.88
204.9	195.2	5.87
195.1	205.0	5.90
185.4	214.7	5.89
175.6	224.5	5.88
165.9	234.2	5.83
156.2	243.9	5.86
146.4	253.7	5.87
136.7	263.4	5.89
126.9	273.2	5.99
117.2	282.9	6.04
107.4	292.7	5.95
97.7	302.4	6.01
87.9	312.2	6.09
78.2	321.9	6.00
68.5	331.6	5.90
58.7	341.4	5.73
49.0	351.1	5.65
39.2	360.9	5.55
29.5	370.6	5.48
19.7	380.4	5.63
10.0	390.1	5.70

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+10	+13	+16	+10	+13	+16
0.1	70.00	73.00	76.00	59.41	60.91	63.34
1.0	70.00	73.00	76.00	59.03	60.66	63.06
5.0	70.00	73.00	76.00	58.89	60.53	62.89
10.0	70.00	73.00	71.81	58.55	60.07	62.11
27.8	59.55	60.37	61.04	56.36	54.09	53.18
45.5	55.47	56.19	56.92	51.16	49.68	48.12
63.2	52.61	53.48	54.35	48.26	46.39	45.78
80.9	50.41	51.48	52.27	45.04	44.31	44.15
98.6	48.77	49.63	50.02	43.07	42.64	42.47
133.9	45.76	46.16	46.42	40.12	40.26	39.90
151.6	44.86	45.75	46.13	39.99	39.94	39.27
169.3	42.34	43.16	43.64	40.08	39.54	38.66
187.0	41.14	41.18	41.43	41.05	39.70	38.29
204.7	40.29	40.81	41.25	39.39	38.34	37.07
222.4	40.15	39.92	39.95	38.86	37.68	36.30
240.1	42.00	40.71	40.47	37.16	35.44	34.49
257.8	46.62	43.74	41.23	38.41	33.92	31.87
275.5	49.17	45.26	41.86	40.33	35.17	31.87
293.2	47.31	45.08	42.73	41.94	35.84	32.56
310.9	42.95	41.85	39.92	44.89	36.15	32.23
346.3	38.07	38.29	37.67	37.26	31.84	27.66
363.9	36.65	37.51	37.76	33.32	28.80	25.97
381.6	36.50	37.27	38.23	32.19	28.16	25.57
399.3	36.66	36.44	36.58	31.14	26.73	24.44
417.0	37.96	38.40	38.32	29.63	25.13	22.70
434.7	37.75	37.39	35.87	29.16	24.91	21.54
452.4	38.83	38.60	36.46	27.81	23.88	20.71
470.1	39.10	38.73	36.24	27.39	24.03	20.53
487.8	38.51	37.68	34.22	26.86	23.40	19.74
505.5	36.94	35.26	32.10	25.79	22.16	18.24
523.2	34.72	32.56	29.40	24.54	21.54	17.36
540.9	33.62	31.16	28.10	22.96	19.56	15.84
558.6	31.82	29.62	26.89	21.51	18.44	15.08
576.3	30.08	27.80	25.16	20.18	17.19	14.04
593.9	27.97	25.68	23.51	18.56	15.52	12.88
611.6	25.43	23.83	22.03	16.92	14.74	12.35
629.3	23.69	22.44	21.08	15.48	13.76	11.82
664.7	20.82	20.07	19.04	13.67	12.43	10.76
682.4	19.82	19.14	18.40	13.19	11.83	10.48
700.1	19.11	18.44	17.62	12.86	11.55	10.03

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	38.46	37.04	36.30
27.8	57.8	30.78	31.01	31.12
45.5	75.5	26.97	27.09	27.30
63.2	93.2	24.78	24.94	25.21
80.9	110.9	23.19	23.52	23.76
98.6	128.6	22.18	22.38	22.48
116.3	146.3	21.62	22.00	22.08
133.9	163.9	20.89	21.26	21.53
151.6	181.6	20.49	21.04	21.60
169.3	199.3	20.42	20.84	21.25
187.0	217.0	21.20	21.42	21.66
204.7	234.7	21.82	22.20	22.49
222.4	252.4	22.71	23.54	24.22
240.1	270.1	23.18	24.33	25.62
257.8	287.8	23.45	24.46	25.78
275.5	305.5	21.98	22.69	23.59
293.2	323.2	20.09	20.52	20.85
310.9	340.9	18.61	18.73	18.62
328.6	358.6	17.37	17.29	17.27
346.3	376.3	16.51	16.51	16.53
363.9	393.9	15.88	15.69	15.77
381.6	411.6	15.87	15.76	15.87
399.3	429.3	15.97	15.83	15.62
417.0	447.0	16.40	16.30	15.97
434.7	464.7	16.13	16.05	15.70
452.4	482.4	15.72	15.62	15.10
470.1	500.1	14.95	14.73	14.23
487.8	517.8	14.20	13.78	13.38
505.5	535.5	13.60	13.03	12.82
523.2	553.2	12.84	12.36	12.25
540.9	570.9	12.07	11.65	11.43
558.6	588.6	11.37	10.98	10.70
576.3	606.3	10.46	10.01	9.58
593.9	623.9	9.64	9.22	8.87
611.6	641.6	8.64	8.26	7.98
629.3	659.3	7.80	7.47	7.26
647.0	677.0	7.13	6.82	6.66
664.7	694.7	6.48	6.21	6.05
682.4	712.4	6.14	5.94	5.82
700.1	730.1	5.81	5.62	5.47

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+10	+13	+16
5.0	35.0	1.51	1.33	1.21
10.0	40.0	1.52	1.33	1.22
27.8	57.8	1.39	1.25	1.16
45.5	75.5	1.42	1.27	1.17
63.2	93.2	1.37	1.22	1.14
80.9	110.9	1.34	1.22	1.14
98.6	128.6	1.30	1.19	1.13
116.3	146.3	1.30	1.19	1.11
133.9	163.9	1.30	1.19	1.13
151.6	181.6	1.31	1.17	1.10
169.3	199.3	1.29	1.19	1.12
187.0	217.0	1.25	1.17	1.12
204.7	234.7	1.21	1.11	1.07
222.4	252.4	1.25	1.11	1.07
240.1	270.1	1.25	1.13	1.06
257.8	287.8	1.20	1.12	1.06
275.5	305.5	1.18	1.10	1.05
293.2	323.2	1.18	1.11	1.06
310.9	340.9	1.23	1.15	1.10
328.6	358.6	1.34	1.22	1.18
346.3	376.3	1.51	1.35	1.28
363.9	393.9	1.72	1.50	1.37
381.6	411.6	1.83	1.59	1.41
399.3	429.3	1.87	1.67	1.46
417.0	447.0	2.06	1.85	1.64
434.7	464.7	2.14	1.95	1.74
452.4	482.4	2.17	1.96	1.76
470.1	500.1	2.06	1.87	1.73
487.8	517.8	1.99	1.84	1.76
505.5	535.5	2.09	1.97	1.91
523.2	553.2	2.11	2.02	1.97
540.9	570.9	2.07	2.00	1.97
558.6	588.6	2.04	2.01	1.99
576.3	606.3	2.08	2.08	2.06
593.9	623.9	2.16	2.14	2.13
611.6	641.6	2.18	2.17	2.15
629.3	659.3	2.14	2.15	2.15
647.0	677.0	2.14	2.15	2.14
664.7	694.7	2.14	2.15	2.14
682.4	712.4	2.15	2.13	2.12
700.1	730.1	2.12	2.09	2.07

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+10	+13	+16
5.0	1.05	1.72	2.63
10.0	1.04	1.65	2.54
27.8	1.33	2.10	3.10
45.5	1.35	2.14	3.15
63.2	1.31	2.02	2.94
80.9	1.29	1.96	2.84
98.6	1.30	1.99	2.84
116.3	1.33	2.03	2.92
133.9	1.38	2.09	3.01
151.6	1.38	2.07	2.94
169.3	1.38	2.01	2.84
187.0	1.40	2.08	2.90
204.7	1.41	2.06	2.90
222.4	1.48	2.13	2.98
240.1	1.54	2.15	2.96
257.8	1.55	2.16	2.94
275.5	1.55	2.25	3.06
293.2	1.54	2.14	2.95
310.9	1.59	2.21	3.02
328.6	1.64	2.23	3.02
346.3	1.70	2.22	2.97
363.9	1.80	2.34	3.13
381.6	1.83	2.32	3.02
399.3	1.86	2.44	3.14
417.0	1.91	2.56	3.27
434.7	1.88	2.50	3.22
452.4	1.92	2.60	3.31
470.1	1.88	2.48	3.15
487.8	1.87	2.48	3.17
505.5	1.92	2.56	3.22
523.2	1.89	2.48	3.11
540.9	1.90	2.49	3.06
558.6	1.88	2.41	2.93
576.3	1.88	2.37	2.88
593.9	1.91	2.40	2.86
611.6	1.90	2.34	2.79
629.3	1.93	2.35	2.77
647.0	1.99	2.39	2.78
664.7	1.98	2.35	2.74
682.4	2.01	2.39	2.77
700.1	1.99	2.36	2.74

IF (OUT) (MHz)	IF VSWR @LO=400.1MHz (:1) @LO (dBm)		
	+10	+13	+16
5.0	1.69	1.54	1.45
10.0	1.69	1.54	1.45
20.0	2.46	1.74	1.38
30.0	2.42	1.74	1.38
40.0	2.23	1.60	1.27
50.0	2.13	1.56	1.23
60.0	2.07	1.52	1.21
70.0	2.08	1.53	1.23
80.0	2.22	1.64	1.30
90.0	2.32	1.70	1.37
100.0	2.40	1.78	1.43
110.0	2.46	1.81	1.47
120.0	2.40	1.78	1.45
130.0	2.34	1.73	1.41
140.0	2.31	1.72	1.40
150.0	2.32	1.74	1.42
160.0	2.36	1.81	1.48
170.0	2.41	1.86	1.54
180.0	2.46	1.88	1.58
190.0	2.48	1.90	1.59
200.0	2.46	1.90	1.59
210.0	2.42	1.89	1.60
220.0	2.44	1.90	1.61
230.0	2.45	1.92	1.63
240.0	2.46	1.95	1.66
250.0	2.43	1.95	1.68
260.0	2.37	1.92	1.68
270.0	2.37	1.91	1.67
280.0	2.40	1.93	1.68
290.0	2.43	1.97	1.72
300.0	2.42	1.99	1.77
310.0	2.41	1.98	1.76
320.0	2.39	1.96	1.74
330.0	2.34	1.93	1.72
340.0	2.28	1.91	1.71
350.0	2.26	1.88	1.70
360.0	2.31	1.89	1.70
370.0	2.36	1.94	1.73
380.0	2.35	1.95	1.76
390.0	2.28	1.91	1.74
400.0	2.34	1.97	1.82

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	21	33	20	43	34	51	38	45	39	50
1	-	17	+0	24	12	36	29	46	37	47	41	53
2	92	49	40	49	42	44	41	60	53	55	46	57
3	>100	43	38	45	43	49	40	58	52	51	46	51
4	>100	62	59	53	53	53	52	60	57	76	65	78
5	>100	65	54	49	46	54	46	56	47	61	58	62
6	>100	75	77	76	80	64	63	62	61	66	70	69
7	>100	76	>99	76	70	59	61	64	61	67	63	89
8	>100	87	83	94	88	75	74	69	90	66	65	72
9	>100	80	78	80	77	78	67	64	67	72	69	72
10	>100	88	89	88	91	89	86	83	77	74	85	75
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 200.1 MHz; 4.00 dBm.
LO IN: 230.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -1.32 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	12	23	8	30	25	34	22	33	29	37
1	-	17	+0	23	11	34	30	39	36	41	32	43
2	>100	50	48	47	48	49	47	65	54	62	59	62
3	>100	80	72	74	59	64	58	78	60	65	57	67
4	>100	>89	76	76	73	73	70	74	77	85	72	86
5	>100	>89	84	>89	85	>89	80	83	80	87	>89	88
6	>100	>89	>89	>89	>89	>89	79	>89	>89	>89	>89	>89
7	>100	>89	>89	>89	>89	>89	>89	81	>89	>89	>89	>89
8	>100	>89	>89	>89	>89	>89	>89	88	67	88	>89	>89
9	>100	>89	>89	>89	>89	>89	>89	>89	>89	80	>89	>89
10	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 200.1 MHz; -6.00 dBm.
LO IN: 230.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -11.3 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.