Frequency Mixer HJK-481H+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+14	+17	+20
120.0	150.0	15.35	15.37	14.13
153.0	183.0	11.60	11.55	11.20
186.0	216.0	9.04	8.99	8.44
219.0	249.0	8.07	8.02	7.86
252.0	282.0	7.61	7.48	7.34
285.0	315.0	7.17	7.00	6.86
340.0	370.0	6.70	6.53	6.40
347.7	377.7	6.67	6.50	6.38
355.8	385.8	6.63	6.46	6.36
363.9	393.9	6.61	6.45	6.35
372.0	402.0	6.56	6.41	6.33
380.1	410.1	6.56	6.39	6.30
388.2	418.2	6.51	6.36	6.28
396.3	426.3	6.50	6.34	6.26
404.4	434.4	6.51	6.36	6.28
412.5	442.5	6.53	6.37	6.29
420.6	450.6	6.56	6.40	6.31
428.7	458.7	6.58	6.42	6.33
436.8	466.8	6.61	6.45	6.35
444.9	474.9	6.68	6.51	6.40
455.7	485.7	6.72	6.54	6.42
463.8	493.8	6.77	6.59	6.46
471.9	501.9	6.85	6.66	6.52
480.0	510.0	6.94	6.74	6.59
532.0	562.0	7.32	7.09	6.90
595.0	625.0	7.99	7.68	7.43
658.0	688.0	8.69	8.30	8.00
721.0	751.0	9.21	8.78	8.45
784.0	814.0	9.71	9.20	8.82
847.0	877.0	9.96	9.40	9.00
910.0	940.0	10.26	9.62	9.15
973.0	1003.0	10.57	9.85	9.33
1036.0	1066.0	10.72	9.94	9.40
1120.0	1150.0	11.13	10.26	9.64
1183.0	1213.0	11.44	10.48	9.79
1246.0	1276.0	11.52	10.52	9.82
1309.0	1339.0	11.77	10.70	9.96
1372.0	1402.0	11.96	10.82	10.05
1435.0	1465.0	12.08	10.89	10.13
1477.0	1507.0	12.36	11.09	10.29

RF (IN) (MHz)	LO (MHz)	IP-3 INPUT (dBm) @LO (dBm)		
		+14	+17	+20
120.0	150.0	27.88	30.36	27.42
153.0	183.0	19.65	22.04	24.98
186.0	216.0	19.96	21.77	24.33
219.0	249.0	22.93	25.32	28.52
252.0	282.0	22.38	24.49	27.00
285.0	315.0	22.32	25.41	29.82
318.0	348.0	23.68	27.18	32.15
347.7	377.7	25.44	29.23	34.65
355.8	385.8	26.33	30.43	36.61
363.9	393.9	26.89	31.01	38.28
372.0	402.0	27.69	31.91	40.38
380.1	410.1	28.12	32.50	43.89
388.2	418.2	28.64	32.92	40.70
396.3	426.3	29.07	33.37	39.78
404.4	434.4	29.70	33.98	38.57
412.5	442.5	29.18	32.33	39.30
420.6	450.6	30.29	33.90	40.42
428.7	458.7	30.76	34.65	40.95
436.8	466.8	30.86	34.85	43.86
444.9	474.9	31.46	35.38	45.20
455.7	485.7	31.70	34.99	40.08
463.8	493.8	32.16	35.72	39.13
471.9	501.9	31.82	35.25	37.86
480.0	510.0	31.90	35.82	38.16
532.0	562.0	27.00	27.45	30.61
595.0	625.0	23.99	25.59	26.19
658.0	688.0	21.06	22.89	23.47
721.0	751.0	18.40	20.10	20.98
784.0	814.0	16.12	17.98	19.49
847.0	877.0	15.07	16.93	18.48
910.0	940.0	14.53	16.41	17.92
973.0	1003.0	13.99	15.80	17.40
1036.0	1066.0	13.86	15.62	17.37
1120.0	1150.0	13.65	15.59	17.49
1183.0	1213.0	13.17	15.21	17.25
1246.0	1276.0	13.04	15.08	17.12
1309.0	1339.0	12.80	14.83	16.61
1372.0	1402.0	12.44	14.44	16.28
1435.0	1465.0	12.47	14.36	15.89
1477.0	1507.0	12.48	14.18	15.56

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+20dBm (dB) @LO (dBm)		
		+14	+17	+20
120.0	150.0	-0.46	-0.73	-0.48
153.0	183.0	0.53	0.13	-0.17
186.0	216.0	1.92	1.34	0.93
219.0	249.0	1.84	1.14	0.67
252.0	282.0	1.64	0.85	0.46
285.0	315.0	1.06	0.38	0.16
340.0	370.0	0.69	0.33	0.17
347.7	377.7	0.56	0.23	0.10
355.8	385.8	0.45	0.18	0.08
363.9	393.9	0.37	0.14	0.05
372.0	402.0	0.26	0.08	0.00
380.1	410.1	0.22	0.04	-0.03
388.2	418.2	0.26	0.07	0.00
396.3	426.3	0.38	0.16	0.07
404.4	434.4	0.45	0.21	0.08
412.5	442.5	0.56	0.28	0.15
420.6	450.6	0.63	0.33	0.19
428.7	458.7	0.66	0.35	0.21
436.8	466.8	0.60	0.30	0.17
444.9	474.9	0.52	0.23	0.13
455.7	485.7	0.49	0.18	0.10
463.8	493.8	0.50	0.14	0.07
471.9	501.9	0.61	0.17	0.07
480.0	510.0	0.74	0.24	0.11
532.0	562.0	1.91	0.75	0.34
595.0	625.0	3.84	2.07	0.91
658.0	688.0	4.34	2.46	1.08
721.0	751.0	5.66	3.74	2.11
784.0	814.0	6.64	4.87	3.23
847.0	877.0	6.70	5.01	3.36
910.0	940.0	7.98	6.17	4.39
973.0	1003.0	8.86	7.10	5.36
1036.0	1066.0	8.79	7.02	5.19
1120.0	1150.0	9.52	7.79	5.96
1183.0	1213.0	10.46	8.83	7.04
1246.0	1276.0	10.24	8.70	7.02
1309.0	1339.0	10.52	8.96	7.27
1372.0	1402.0	11.16	9.65	8.03
1435.0	1465.0	11.03	9.59	8.02
1477.0	1507.0	11.20	9.77	8.21

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=412.5MHz (dB)
		@LO (dBm)
		+17
10.0	422.5	6.22
32.5	445.0	6.31
58.8	471.3	6.38
77.5	490.0	6.43
103.8	516.3	6.50
126.3	538.8	6.56
148.8	561.3	6.85
218.0	630.5	7.48
242.0	654.5	7.96
266.0	678.5	8.54
294.0	706.5	9.02
318.0	730.5	9.41
342.0	754.5	10.05
366.0	778.5	10.81
477.5	890.0	13.69
531.5	944.0	14.92
585.5	998.0	16.75
648.5	1061.0	18.46
702.5	1115.0	19.96
756.5	1169.0	21.62
390.0	22.5	16.39
378.0	34.5	17.08
366.0	46.5	17.62
354.0	58.5	16.94
340.0	72.5	16.49
328.0	84.5	16.22
316.0	96.5	15.62
292.0	120.5	14.21
268.0	144.5	13.47
244.0	168.5	12.22
216.0	196.5	9.71
192.0	220.5	8.48
168.0	244.5	7.97
144.0	268.5	7.21
109.0	303.5	6.64
91.0	321.5	6.48
73.0	339.5	6.49
52.0	360.5	6.42
34.0	378.5	6.34
16.0	396.5	6.29

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=345MHz (dB)
		@LO (dBm)
		+17
10.0	355.0	6.71
20.5	365.5	6.69
31.0	376.0	6.71
41.5	386.5	6.66
52.0	397.0	6.63
62.5	407.5	6.65
73.0	418.0	6.62
87.0	432.0	6.58
97.5	442.5	6.60
108.0	453.0	6.64
118.5	463.5	6.68
129.0	474.0	6.68
139.5	484.5	6.79
150.0	495.0	6.95
214.0	559.0	7.54
235.0	580.0	7.99
256.0	601.0	8.54
277.0	622.0	8.89
298.0	643.0	9.19
319.0	664.0	9.57
347.0	692.0	10.60
368.0	713.0	11.25
389.0	734.0	11.59
410.0	755.0	11.96
431.0	776.0	12.61
452.0	797.0	13.45
473.0	818.0	14.06
518.0	863.0	14.95
545.0	890.0	16.03
572.0	917.0	17.01
599.0	944.0	17.53
626.0	971.0	18.16
653.0	998.0	19.29
689.0	1034.0	20.27
716.0	1061.0	20.79
743.0	1088.0	21.73
770.0	1115.0	22.85
797.0	1142.0	23.44
824.0	1169.0	24.12
842.0	1187.0	24.91

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=480MHz (dB)
		@LO (dBm)
		+17
454.0	26.0	18.20
439.0	41.0	20.14
424.0	56.0	20.73
409.0	71.0	19.07
394.0	86.0	19.02
379.0	101.0	22.45
364.0	116.0	22.29
344.0	136.0	18.41
329.0	151.0	16.04
314.0	166.0	14.08
299.0	181.0	12.90
284.0	196.0	11.97
269.0	211.0	10.77
254.0	226.0	10.10
239.0	241.0	9.39
224.0	256.0	8.83
209.0	271.0	8.45
194.0	286.0	8.31
179.0	301.0	8.10
164.0	316.0	7.82
141.0	339.0	7.43
132.0	348.0	7.30
123.0	357.0	7.25
114.0	366.0	7.21
102.0	378.0	7.17
96.0	384.0	7.16
87.0	393.0	7.17
78.0	402.0	7.10
69.0	411.0	7.04
60.0	420.0	7.01
51.0	429.0	6.96
42.0	438.0	6.90
30.0	450.0	6.88
27.0	453.0	6.85
24.0	456.0	6.83
21.0	459.0	6.82
18.0	462.0	6.81
15.0	465.0	6.80
12.0	468.0	6.82
10.0	470.0	6.74

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+14	+17	+20	+14	+17	+20
150.0	49.20	49.29	51.72	45.00	45.25	45.82
183.0	54.70	55.27	55.58	48.15	48.37	49.09
216.0	60.02	60.40	54.91	47.16	47.08	46.55
249.0	57.62	56.75	57.79	43.87	43.67	43.70
282.0	56.13	55.79	55.32	42.00	41.78	41.81
315.0	54.44	54.42	53.68	39.18	38.96	38.94
348.0	53.92	54.13	54.14	37.21	36.96	36.92
377.7	54.14	54.34	54.67	35.92	35.66	35.66
385.8	54.25	54.41	55.49	35.43	35.19	35.45
393.9	54.32	54.47	56.33	35.10	34.88	35.37
402.0	54.62	54.69	57.43	34.71	34.53	35.21
410.1	54.86	54.94	58.33	34.50	34.35	35.15
418.2	55.16	55.13	59.02	34.44	34.32	35.21
426.3	55.42	55.39	59.35	34.59	34.49	35.40
434.4	55.75	55.68	59.30	34.66	34.58	35.44
442.5	56.09	55.98	59.09	34.96	34.92	35.75
450.6	56.56	56.39	58.82	35.35	35.35	36.12
458.7	57.05	56.80	58.60	35.70	35.73	36.43
466.8	57.74	57.39	58.27	36.06	36.13	36.71
474.9	58.74	58.30	58.50	36.60	36.73	37.23
485.7	60.28	59.74	59.94	37.30	37.48	37.86
493.8	61.47	60.78	59.39	37.85	38.08	38.32
501.9	62.55	61.64	60.12	38.51	38.79	39.08
510.0	64.07	62.75	61.01	39.13	39.45	39.77
562.0	79.83	71.39	69.98	43.37	43.84	44.42
625.0	62.29	63.45	66.42	48.83	49.62	50.42
688.0	57.32	58.20	58.95	56.23	57.65	59.08
751.0	54.21	54.65	55.36	64.02	62.80	61.53
814.0	54.02	54.36	54.79	55.70	54.82	54.13
877.0	54.32	55.17	56.16	51.48	51.07	50.77
940.0	53.31	54.27	54.87	48.43	48.22	48.04
1003.0	52.61	53.58	54.32	46.73	46.62	46.52
1066.0	51.59	52.56	53.63	44.94	44.89	44.84
1150.0	50.22	50.94	51.85	43.02	43.00	42.99
1213.0	49.92	50.59	52.80	42.15	42.13	42.13
1276.0	49.22	49.84	50.99	41.25	41.24	41.24
1339.0	48.56	49.13	50.60	40.25	40.25	40.24
1402.0	47.78	48.23	49.05	39.84	39.83	39.83
1465.0	46.59	46.91	47.70	39.08	39.08	39.08
1507.0	46.20	46.39	46.59	38.86	38.86	38.84

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+14	+17	+20
120.0	150.0	26.54	26.68	23.46
153.0	183.0	26.13	25.31	24.65
186.0	216.0	23.22	22.53	31.12
219.0	249.0	24.10	24.00	24.26
252.0	282.0	28.73	29.10	30.42
285.0	315.0	31.32	31.49	33.60
318.0	348.0	34.09	34.30	35.37
347.7	377.7	37.61	37.85	35.01
355.8	385.8	38.62	38.86	36.98
363.9	393.9	39.71	39.86	37.76
372.0	402.0	40.58	40.71	38.55
380.1	410.1	41.69	41.77	39.91
388.2	418.2	42.76	42.77	41.03
396.3	426.3	43.81	43.85	42.06
404.4	434.4	44.93	44.98	42.36
412.5	442.5	46.34	46.32	42.38
420.6	450.6	47.83	47.48	41.95
428.7	458.7	49.75	49.28	41.55
436.8	466.8	52.21	51.29	40.71
444.9	474.9	55.40	53.81	40.34
455.7	485.7	60.62	58.37	41.89
463.8	493.8	64.09	66.72	44.19
471.9	501.9	64.67	67.82	47.79
480.0	510.0	59.70	60.06	49.46
532.0	562.0	48.00	47.61	47.91
595.0	625.0	44.10	44.28	43.96
658.0	688.0	42.92	42.88	42.88
721.0	751.0	42.26	42.24	42.17
784.0	814.0	42.31	42.21	42.19
847.0	877.0	41.63	41.51	41.47
910.0	940.0	40.93	40.82	40.35
973.0	1003.0	40.45	40.48	40.29
1036.0	1066.0	39.36	39.42	38.91
1120.0	1150.0	38.57	38.69	38.81
1183.0	1213.0	38.37	38.56	38.94
1246.0	1276.0	37.88	38.10	38.50
1309.0	1339.0	37.92	38.20	39.01
1372.0	1402.0	37.99	38.28	38.77
1435.0	1465.0	37.75	38.00	38.56
1477.0	1507.0	38.06	38.27	38.68

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+14	+17	+20
120.0	150.0	1.61	1.67	1.69
153.0	183.0	1.54	1.62	1.76
186.0	216.0	2.07	2.30	2.00
219.0	249.0	2.22	2.41	2.53
252.0	282.0	1.92	2.04	2.13
285.0	315.0	1.63	1.71	1.77
318.0	348.0	1.38	1.44	1.48
347.7	377.7	1.25	1.30	1.37
355.8	385.8	1.24	1.29	1.36
363.9	393.9	1.25	1.29	1.37
372.0	402.0	1.27	1.30	1.39
380.1	410.1	1.29	1.33	1.40
388.2	418.2	1.32	1.35	1.42
396.3	426.3	1.36	1.38	1.45
404.4	434.4	1.41	1.42	1.47
412.5	442.5	1.46	1.47	1.51
420.6	450.6	1.50	1.50	1.53
428.7	458.7	1.55	1.55	1.58
436.8	466.8	1.59	1.59	1.61
444.9	474.9	1.64	1.63	1.64
455.7	485.7	1.72	1.70	1.70
463.8	493.8	1.78	1.76	1.75
471.9	501.9	1.84	1.81	1.80
480.0	510.0	1.88	1.85	1.83
532.0	562.0	2.24	2.19	2.14
595.0	625.0	2.68	2.59	2.52
658.0	688.0	3.08	2.98	2.90
721.0	751.0	3.26	3.19	3.12
784.0	814.0	3.29	3.23	3.17
847.0	877.0	3.23	3.17	3.12
910.0	940.0	3.16	3.11	3.06
973.0	1003.0	3.05	2.99	2.94
1036.0	1066.0	2.87	2.81	2.76
1120.0	1150.0	2.68	2.60	2.53
1183.0	1213.0	2.55	2.47	2.43
1246.0	1276.0	2.38	2.29	2.22
1309.0	1339.0	2.23	2.13	2.07
1372.0	1402.0	2.10	1.98	1.89
1435.0	1465.0	1.94	1.82	1.70
1477.0	1507.0	1.89	1.75	1.60

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+14	+17	+20
150.0	3.19	3.17	3.32
183.0	3.79	3.79	3.79
216.0	4.07	4.06	4.12
249.0	4.05	4.03	4.01
282.0	3.84	3.83	3.81
315.0	3.42	3.41	3.40
348.0	2.81	2.79	2.69
377.7	2.17	2.15	1.98
385.8	1.98	1.96	1.79
393.9	1.80	1.78	1.61
402.0	1.63	1.61	1.46
410.1	1.46	1.45	1.33
418.2	1.31	1.29	1.21
426.3	1.17	1.15	1.13
434.4	1.05	1.04	1.12
442.5	1.08	1.10	1.19
450.6	1.21	1.22	1.30
458.7	1.34	1.36	1.42
466.8	1.49	1.51	1.56
474.9	1.63	1.66	1.70
485.7	1.83	1.85	1.88
493.8	1.97	2.00	2.02
501.9	2.11	2.14	2.16
510.0	2.25	2.28	2.30
562.0	2.99	3.00	3.02
625.0	3.48	3.49	3.52
688.0	3.71	3.74	3.78
751.0	3.78	3.81	3.83
814.0	3.76	3.80	3.85
877.0	3.69	3.72	3.76
940.0	3.60	3.63	3.66
1003.0	3.47	3.47	3.48
1066.0	3.35	3.35	3.36
1150.0	3.19	3.19	3.18
1213.0	3.08	3.07	3.08
1276.0	2.94	2.94	2.94
1339.0	2.81	2.80	2.80
1402.0	2.68	2.67	2.67
1465.0	2.53	2.52	2.52
1507.0	2.44	2.43	2.43

IF (OUT) (MHz)	IF VSWR @LO=530MHz (:1) @LO (dBm)		
	+14	+17	+20
10.0	1.23	1.27	1.32
16.0	1.22	1.27	1.31
22.0	1.24	1.28	1.33
30.0	1.27	1.31	1.35
34.0	1.28	1.31	1.35
40.0	1.28	1.32	1.35
46.0	1.30	1.33	1.36
51.0	1.33	1.35	1.38
54.0	1.35	1.37	1.40
57.0	1.37	1.39	1.42
60.0	1.40	1.42	1.44
63.0	1.42	1.44	1.46
66.0	1.44	1.46	1.48
70.0	1.46	1.48	1.50
76.0	1.49	1.50	1.52
82.0	1.52	1.53	1.54
88.0	1.56	1.56	1.58
94.0	1.61	1.61	1.61
100.0	1.66	1.65	1.66
106.0	1.70	1.70	1.70
114.0	1.78	1.77	1.77
120.0	1.85	1.83	1.83
126.0	1.91	1.90	1.89
132.0	1.97	1.95	1.93
138.0	2.01	1.98	1.97
144.0	2.05	2.02	2.00
150.0	2.11	2.07	2.05
156.0	2.18	2.14	2.12
162.0	2.28	2.24	2.21
168.0	2.36	2.32	2.28
174.0	2.43	2.38	2.35
180.0	2.50	2.44	2.40
186.0	2.57	2.51	2.46
194.0	2.66	2.60	2.55
200.0	2.75	2.68	2.62
206.0	2.83	2.75	2.69
212.0	2.92	2.84	2.78
218.0	3.02	2.94	2.87
224.0	3.15	3.06	2.99
228.0	3.24	3.15	3.07

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	--	--	13.25	50.51	49.46	49.12	43.13	53.43	34.30	49.08	38.80	52.78
1	--	42.75	--	45.55	32.65	53.84	32.26	52.96	38.03	54.92	37.80	74.83
2	89.82	79.78	58.09	61.75	68.92	85.18	85.38	79.27	96.24	75.53	68.71	69.15
3	91.12	109.03	76.09	89.72	74.85	99.04	96.33	100.46	82.23	102.56	73.39	100.93
4	127.45	118.94	120.00	114.12	102.50	98.41	113.47	119.88	118.93	119.25	110.19	112.02
5	126.90	119.47	119.50	118.89	116.36	111.28	96.34	118.88	119.79	119.75	116.40	117.10
6	127.28	117.50	113.66	120.32	119.58	117.05	102.85	102.25	108.69	119.45	114.25	118.63
7	126.60	118.35	117.81	119.62	118.81	119.92	112.70	111.89	111.00	118.39	119.58	119.65
8	125.59	117.04	116.92	119.74	117.32	115.76	119.78	114.62	109.36	111.62	119.56	120.07
9	128.60	119.07	117.87	117.82	118.11	118.38	119.42	120.01	106.79	115.36	106.04	119.57
10	128.87	119.51	118.38	118.69	117.83	118.87	119.22	119.70	118.93	109.43	110.93	110.67
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 412.50 MHz; 0.00 dBm.
LO IN: 462.50 MHz; +17.00 dBm
IF OUT: 50.00 MHz; -6.35 dBm

(-dBm)

RF HARMONICS ORDER

0	(-dBm)	(-dBc)										
1	--	--	24.25	56.40	58.41	54.89	56.04	59.07	45.97	51.80	51.70	54.95
2	--	37.80	--	58.55	34.52	59.49	31.42	59.98	37.14	56.11	40.64	54.64
3	69.09	68.86	50.63	50.33	61.38	77.95	82.89	67.42	76.70	64.24	59.87	63.21
4	61.35	96.91	60.06	87.57	58.74	81.23	82.30	90.02	63.58	86.69	54.77	75.40
5	91.34	100.69	109.37	95.01	81.67	87.44	84.34	115.23	93.04	96.28	86.51	82.49
6	100.95	105.80	87.94	116.02	78.67	95.57	72.90	103.90	98.31	109.25	85.53	107.80
7	113.36	108.30	109.68	115.17	115.36	100.32	101.17	91.54	107.92	115.04	113.74	104.78
8	113.63	109.17	101.06	113.93	105.63	115.78	91.81	98.78	85.94	115.67	108.03	114.43
9	124.74	111.47	113.33	115.53	114.52	114.71	115.95	108.24	108.71	104.92	115.05	115.00
10	127.94	114.10	112.72	113.99	113.99	115.31	115.33	115.01	103.08	115.00	99.01	114.90
	128.71	112.13	111.00	87.42	113.27	114.41	114.44	115.56	114.42	114.69	114.36	113.93
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

Test conditions: RF IN: 412.50 MHz; 10.00 dBm.
LO IN: 462.50 MHz; +17.00 dBm
IF OUT: 50.00 MHz; 3.56 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 represents the Harmonics level of the RF Input Signal to the mixer