

Frequency Mixer

HJK-261MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=70.1MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP-3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+10	+13	+16			+10	+13	+16			+10	+13	+16
10.0	80.1	7.78	7.58	7.42	10.0	80.1	21.44	23.49	25.63	10.0	80.1	1.48	0.66	0.26
32.0	102.1	7.80	7.60	7.41	32.0	102.1	20.43	22.23	24.36	32.0	102.1	1.64	0.81	0.43
43.0	113.1	7.65	7.46	7.29	43.0	113.1	21.70	23.98	26.94	43.0	113.1	1.48	0.71	0.37
65.0	135.1	7.35	7.18	7.05	65.0	135.1	22.93	25.49	27.29	65.0	135.1	1.05	0.52	0.28
87.0	157.1	7.45	7.31	7.20	87.0	157.1	23.19	25.92	28.70	87.0	157.1	0.92	0.49	0.26
98.0	168.1	7.37	7.22	7.11	98.0	168.1	23.46	26.30	29.15	98.0	168.1	0.88	0.46	0.25
120.0	190.1	7.10	6.95	6.84	120.0	190.1	24.11	27.25	30.47	120.0	190.1	0.75	0.37	0.19
136.0	206.1	7.11	6.99	6.91	136.0	206.1	25.19	28.25	31.46	136.0	206.1	0.55	0.28	0.16
141.0	211.1	7.20	7.09	7.01	141.0	211.1	25.69	28.55	31.86	141.0	211.1	0.48	0.25	0.14
151.0	221.1	7.11	7.00	6.94	151.0	221.1	26.61	29.60	33.07	151.0	221.1	0.36	0.20	0.11
156.0	226.1	7.01	6.90	6.82	156.0	226.1	26.90	30.26	33.91	156.0	226.1	0.32	0.17	0.10
166.0	236.1	6.75	6.65	6.57	166.0	236.1	26.69	29.87	33.44	166.0	236.1	0.26	0.14	0.08
174.0	244.1	6.71	6.61	6.54	174.0	244.1	26.93	30.39	33.91	174.0	244.1	0.24	0.13	0.08
184.0	254.1	6.81	6.73	6.67	184.0	254.1	27.88	31.88	34.91	184.0	254.1	0.23	0.13	0.08
204.0	274.1	6.98	6.91	6.85	204.0	274.1	28.17	31.97	34.69	204.0	274.1	0.23	0.13	0.08
224.0	294.1	6.77	6.67	6.58	224.0	294.1	27.21	30.70	34.22	224.0	294.1	0.29	0.15	0.09
234.0	304.1	6.82	6.70	6.61	234.0	304.1	26.42	29.92	33.23	234.0	304.1	0.39	0.20	0.10
254.0	324.1	7.13	6.99	6.90	254.0	324.1	24.21	27.88	31.40	254.0	324.1	0.66	0.34	0.18
274.0	344.1	7.10	6.91	6.78	274.0	344.1	22.51	25.95	30.10	274.0	344.1	1.02	0.48	0.24
284.0	354.1	7.13	6.92	6.78	284.0	354.1	21.84	25.23	29.30	284.0	354.1	1.35	0.62	0.30
304.0	374.1	7.55	7.31	7.14	304.0	374.1	19.72	22.90	26.49	304.0	374.1	2.25	1.04	0.51
314.0	384.1	7.70	7.42	7.23	314.0	384.1	18.77	21.84	25.35	314.0	384.1	2.78	1.34	0.64
334.0	404.1	7.82	7.45	7.20	334.0	404.1	17.43	20.47	23.81	334.0	404.1	3.75	2.00	0.89
354.0	424.1	7.99	7.60	7.33	354.0	424.1	16.23	19.20	22.35	354.0	424.1	4.36	2.55	1.23
364.0	434.1	8.15	7.72	7.44	364.0	434.1	15.70	18.66	21.75	364.0	434.1	4.61	2.80	1.39
384.0	454.1	8.40	7.89	7.56	384.0	454.1	14.72	17.74	20.82	384.0	454.1	5.24	3.40	1.78
404.0	474.1	8.65	8.05	7.65	404.0	474.1	13.46	16.31	19.33	404.0	474.1	6.01	4.19	2.43
414.0	484.1	8.89	8.22	7.79	414.0	484.1	12.90	15.63	18.64	414.0	484.1	6.36	4.57	2.78
434.0	504.1	9.29	8.51	8.02	434.0	504.1	12.30	14.92	17.91	434.0	504.1	6.76	5.04	3.24
454.0	524.1	9.39	8.55	8.02	454.0	524.1	12.06	14.51	17.41	454.0	524.1	6.96	5.29	3.49
464.0	534.1	9.46	8.60	8.05	464.0	534.1	11.88	14.21	17.10	464.0	534.1	7.10	5.44	3.64
484.0	554.1	9.88	8.94	8.34	484.0	554.1	11.59	13.85	16.76	484.0	554.1	7.31	5.71	3.92
504.0	574.1	10.28	9.19	8.50	504.0	574.1	11.13	13.07	15.86	504.0	574.1	7.69	6.21	4.45
514.0	584.1	10.48	9.29	8.56	514.0	584.1	10.92	12.70	15.36	514.0	584.1	7.88	6.48	4.75
534.0	604.1	10.91	9.63	8.83	534.0	604.1	10.74	12.31	14.81	534.0	604.1	8.03	6.73	5.05
544.0	614.1	11.06	9.77	8.96	544.0	614.1	10.75	12.34	14.88	544.0	614.1	7.99	6.69	5.03
564.0	634.1	11.15	9.79	8.94	564.0	634.1	10.75	12.26	14.68	564.0	634.1	8.05	6.82	5.19
584.0	654.1	11.44	10.03	9.14	584.0	654.1	10.63	12.03	14.31	584.0	654.1	8.10	6.93	5.34
594.0	664.1	11.67	10.22	9.30	594.0	664.1	10.60	11.96	14.21	594.0	664.1	8.10	6.97	5.41
604.0	674.1	11.91	10.39	9.43	604.0	674.1	10.58	11.87	14.04	604.0	674.1	8.13	7.07	5.55

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=155.1MHz (dB)
		@LO (dBm) +13
145.1	10.0	10.60
130.1	25.0	8.96
120.1	35.0	8.52
105.1	50.0	8.07
90.1	65.0	7.85
80.1	75.0	7.74
65.1	90.0	7.59
50.1	105.0	7.57
40.1	115.0	7.50
37.1	118.0	7.48
34.1	121.0	7.46
32.1	123.0	7.44
29.1	126.0	7.41
26.1	129.0	7.38
24.1	131.0	7.35
21.1	134.0	7.31
18.1	137.0	7.29
16.1	139.0	7.27
13.1	142.0	7.24
10.1	145.0	7.19
11.0	166.0	7.22
51.0	206.0	6.88
81.0	236.0	6.90
121.0	276.0	6.83
161.0	316.0	7.02
191.0	346.0	7.08
231.0	386.0	7.22
271.0	426.0	7.41
311.0	466.0	7.57
341.0	496.0	7.93
381.0	536.0	8.08
421.0	576.0	8.37
451.0	606.0	8.70
491.0	646.0	8.92
531.0	686.0	9.49
561.0	716.0	9.78
585.0	740.0	9.85
605.0	760.0	10.08
620.0	775.0	10.30
640.0	795.0	10.58

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=136.1MHz (dB)
		@LO (dBm) +13
10.9	147.0	7.36
25.9	162.0	7.28
45.9	182.0	7.19
60.9	197.0	7.09
80.9	217.0	7.04
95.9	232.0	6.98
110.9	247.0	6.99
130.9	267.0	6.92
145.9	282.0	6.99
160.9	297.0	6.98
180.9	317.0	7.03
195.9	332.0	7.03
215.9	352.0	7.11
230.9	367.0	7.16
245.9	382.0	7.23
265.9	402.0	7.31
280.9	417.0	7.36
300.9	437.0	7.46
315.9	452.0	7.51
330.9	467.0	7.64
350.9	487.0	7.77
365.9	502.0	7.85
380.9	517.0	7.91
400.9	537.0	7.97
415.9	552.0	8.09
435.9	572.0	8.31
450.9	587.0	8.49
465.9	602.0	8.62
485.9	622.0	8.72
500.9	637.0	8.79
520.9	657.0	8.97
535.9	672.0	9.19
548.9	685.0	9.42
568.9	705.0	9.63
583.9	720.0	9.71
598.9	735.0	9.77
618.9	755.0	9.97
633.9	770.0	10.20
653.9	790.0	10.48
663.9	800.0	10.58

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=174.1MHz (dB)
		@LO (dBm) +13
164.1	10.0	10.51
159.1	15.0	9.70
154.1	20.0	9.20
144.1	30.0	8.58
139.1	35.0	8.36
134.1	40.0	8.22
129.1	45.0	8.08
124.1	50.0	7.95
114.1	60.0	7.78
109.1	65.0	7.71
104.1	70.0	7.66
99.1	75.0	7.62
94.1	80.0	7.57
84.1	90.0	7.49
79.1	95.0	7.47
74.1	100.0	7.42
69.1	105.0	7.46
64.1	110.0	7.41
58.1	116.0	7.36
56.1	118.0	7.34
54.1	120.0	7.32
52.1	122.0	7.31
48.1	126.0	7.28
46.1	128.0	7.27
44.1	130.0	7.26
42.1	132.0	7.25
40.1	134.0	7.24
36.1	138.0	7.21
34.1	140.0	7.20
32.1	142.0	7.17
30.1	144.0	7.15
28.1	146.0	7.11
24.1	150.0	7.06
22.1	152.0	7.05
20.1	154.0	7.02
18.1	156.0	7.02
16.1	158.0	7.00
12.1	162.0	6.98
10.1	164.0	6.93

Frequency Mixer

HJK-261MH+

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LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
80.1	70.71	71.33	71.79	57.28	57.65	57.84
102.1	69.85	70.42	71.31	55.09	55.29	55.47
113.1	69.09	70.02	71.39	53.91	54.08	54.28
135.1	67.24	67.39	68.43	50.66	50.81	50.98
157.1	63.37	63.41	63.55	48.34	48.49	48.64
168.1	62.58	62.69	62.87	47.76	47.86	48.01
190.1	62.45	62.47	62.42	45.57	45.63	45.72
206.1	60.97	60.92	60.74	43.29	43.34	43.39
211.1	60.13	60.20	59.94	42.54	42.60	42.65
221.1	59.01	58.96	58.64	41.16	41.21	41.27
226.1	58.57	58.43	58.14	40.53	40.59	40.66
236.1	57.93	57.71	57.39	39.18	39.24	39.32
244.1	57.64	57.37	57.04	38.46	38.53	38.61
254.1	57.67	57.36	57.04	37.95	38.04	38.12
274.1	57.99	57.52	57.12	36.94	37.05	37.13
294.1	60.46	59.64	59.03	37.44	37.60	37.72
304.1	62.59	61.43	60.63	38.29	38.48	38.64
324.1	66.52	64.47	63.40	39.37	39.58	39.76
344.1	70.82	67.62	66.00	40.49	40.71	40.92
354.1	71.76	68.72	67.06	41.12	41.35	41.56
374.1	69.91	68.60	67.39	42.54	42.78	42.99
384.1	68.18	68.14	67.57	43.17	43.42	43.64
404.1	65.29	65.46	65.22	44.11	44.39	44.67
424.1	63.66	63.83	63.74	44.62	44.94	45.25
434.1	62.62	62.87	62.93	44.58	44.88	45.16
454.1	61.39	61.64	61.67	45.18	45.50	45.80
474.1	61.71	62.01	62.25	45.93	46.22	46.52
484.1	61.84	62.05	62.22	46.23	46.50	46.80
504.1	59.65	60.04	60.31	46.86	47.16	47.48
524.1	56.48	56.59	56.63	46.71	47.02	47.33
534.1	55.48	55.35	55.25	46.66	46.98	47.30
554.1	55.82	55.59	55.49	46.81	47.09	47.40
574.1	56.12	55.89	55.70	47.16	47.39	47.66
584.1	56.34	56.11	55.97	47.46	47.69	47.97
604.1	56.44	56.17	55.97	47.73	47.93	48.18
614.1	56.21	55.88	55.70	47.75	47.96	48.23
634.1	55.69	55.46	55.26	47.61	47.83	48.05
654.1	55.68	55.47	55.30	47.67	47.89	48.12
664.1	55.84	55.62	55.44	47.81	48.00	48.21
674.1	55.83	55.57	55.41	48.04	48.23	48.45

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.0	80.1	37.57	37.36	34.88
32.0	102.1	36.10	35.07	33.43
43.0	113.1	32.02	30.82	29.68
65.0	135.1	26.96	25.84	24.30
87.0	157.1	30.92	29.87	28.53
98.0	168.1	33.04	31.77	30.27
120.0	190.1	36.62	34.96	33.84
136.0	206.1	38.74	37.46	36.98
141.0	211.1	39.72	38.43	38.14
151.0	221.1	41.62	40.31	40.39
156.0	226.1	41.78	40.82	40.80
166.0	236.1	43.25	43.02	42.89
174.0	244.1	43.68	43.80	43.76
184.0	254.1	43.55	43.77	44.00
204.0	274.1	41.51	41.47	41.92
224.0	294.1	38.77	38.53	38.88
234.0	304.1	37.89	37.73	38.04
254.0	324.1	36.87	36.85	37.28
274.0	344.1	35.30	35.16	35.53
284.0	354.1	35.16	34.98	35.15
304.0	374.1	34.94	34.83	34.82
314.0	384.1	34.43	34.41	34.38
334.0	404.1	33.58	33.63	33.62
354.0	424.1	33.00	33.02	33.10
364.0	434.1	33.21	33.34	33.49
384.0	454.1	32.31	32.38	32.52
404.0	474.1	32.33	32.33	32.49
414.0	484.1	32.16	32.06	32.18
434.0	504.1	32.51	32.30	32.37
454.0	524.1	33.02	32.73	32.80
464.0	534.1	32.50	32.06	32.06
484.0	554.1	33.34	32.77	32.69
504.0	574.1	33.71	32.74	32.47
514.0	584.1	33.65	32.49	32.18
534.0	604.1	34.04	32.41	31.83
544.0	614.1	34.72	33.06	32.50
564.0	634.1	34.51	32.42	31.65
584.0	654.1	34.79	32.26	31.20
594.0	664.1	36.05	33.29	32.07
604.0	674.1	36.36	33.29	31.90

Frequency Mixer

HJK-261MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=284.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
10.0	80.1	2.09	2.18	2.25	80.1	3.96	3.95	3.93	10.0	1.16	1.18	1.19
32.0	102.1	1.93	2.01	2.09	102.1	3.89	3.89	3.87	20.0	1.07	1.09	1.11
43.0	113.1	1.88	1.97	2.04	113.1	3.88	3.87	3.85	30.0	1.06	1.09	1.11
65.0	135.1	1.91	2.01	2.09	135.1	3.83	3.82	3.79	40.0	1.09	1.11	1.14
87.0	157.1	1.87	1.96	2.05	157.1	3.79	3.77	3.75	50.0	1.10	1.12	1.15
98.0	168.1	1.87	1.97	2.07	168.1	3.74	3.73	3.71	60.0	1.11	1.13	1.16
120.0	190.1	1.87	1.97	2.07	190.1	3.62	3.62	3.60	70.0	1.10	1.13	1.15
136.0	206.1	1.86	1.96	2.04	206.1	3.43	3.42	3.41	80.0	1.07	1.09	1.11
141.0	211.1	1.88	1.97	2.06	211.1	3.35	3.34	3.33	90.0	1.07	1.10	1.12
151.0	221.1	1.93	2.01	2.09	221.1	3.14	3.13	3.12	100.0	1.13	1.15	1.18
156.0	226.1	1.94	2.03	2.11	226.1	3.02	3.00	2.99	115.0	1.14	1.17	1.19
166.0	236.1	1.94	2.01	2.09	236.1	2.69	2.67	2.66	125.0	1.11	1.14	1.16
174.0	244.1	1.91	1.99	2.06	244.1	2.38	2.36	2.35	135.0	1.11	1.14	1.16
184.0	254.1	1.90	1.98	2.05	254.1	1.96	1.94	1.93	145.0	1.13	1.15	1.17
204.0	274.1	1.91	1.98	2.05	274.1	1.33	1.32	1.32	155.0	1.14	1.17	1.19
224.0	294.1	1.84	1.91	1.97	294.1	1.54	1.55	1.56	165.0	1.17	1.20	1.23
234.0	304.1	1.81	1.88	1.94	304.1	1.77	1.78	1.79	175.0	1.18	1.21	1.24
254.0	324.1	1.78	1.85	1.91	324.1	2.17	2.18	2.18	185.0	1.14	1.17	1.19
274.0	344.1	1.71	1.77	1.83	344.1	2.46	2.47	2.47	195.0	1.14	1.16	1.19
284.0	354.1	1.70	1.76	1.83	354.1	2.58	2.58	2.58	205.0	1.20	1.23	1.25
304.0	374.1	1.70	1.76	1.81	374.1	2.76	2.76	2.76	215.0	1.23	1.26	1.29
314.0	384.1	1.69	1.73	1.79	384.1	2.82	2.82	2.82	225.0	1.21	1.24	1.27
334.0	404.1	1.70	1.74	1.79	404.1	2.92	2.93	2.92	235.0	1.20	1.23	1.26
354.0	424.1	1.75	1.78	1.82	424.1	3.00	3.01	3.01	245.0	1.20	1.23	1.26
364.0	434.1	1.75	1.78	1.82	434.1	3.03	3.04	3.03	255.0	1.20	1.23	1.25
384.0	454.1	1.80	1.82	1.85	454.1	3.09	3.09	3.09	265.0	1.23	1.26	1.29
404.0	474.1	1.85	1.87	1.90	474.1	3.14	3.14	3.14	275.0	1.28	1.32	1.35
414.0	484.1	1.86	1.88	1.90	484.1	3.16	3.16	3.16	285.0	1.30	1.34	1.37
434.0	504.1	1.93	1.95	1.97	504.1	3.19	3.19	3.19	295.0	1.23	1.26	1.29
454.0	524.1	1.98	2.00	2.01	524.1	3.21	3.21	3.21	305.0	1.24	1.28	1.30
464.0	534.1	2.00	2.02	2.03	534.1	3.22	3.22	3.23	320.0	1.32	1.35	1.38
484.0	554.1	2.09	2.10	2.11	554.1	3.24	3.25	3.25	330.0	1.32	1.36	1.39
504.0	574.1	2.13	2.16	2.17	574.1	3.26	3.27	3.27	340.0	1.33	1.36	1.40
514.0	584.1	2.15	2.18	2.19	584.1	3.27	3.27	3.28	350.0	1.32	1.36	1.39
534.0	604.1	2.22	2.26	2.27	604.1	3.29	3.29	3.30	360.0	1.30	1.33	1.36
544.0	614.1	2.26	2.30	2.31	614.1	3.29	3.30	3.30	370.0	1.31	1.35	1.38
564.0	634.1	2.29	2.34	2.34	634.1	3.31	3.32	3.32	380.0	1.38	1.42	1.46
584.0	654.1	2.35	2.41	2.42	654.1	3.33	3.33	3.34	390.0	1.41	1.45	1.49
594.0	664.1	2.38	2.44	2.45	664.1	3.33	3.34	3.35	400.0	1.37	1.41	1.45
604.0	674.1	2.40	2.46	2.47	674.1	3.33	3.34	3.35	405.0	1.36	1.40	1.44

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	17.70	39.90	29.92	40.23	32.99	35.03	40.72	59.73	42.29	65.02
1	---	37.76	---	39.23	11.32	43.04	19.76	45.97	25.04	48.99	34.16	50.84
2	90.50	66.36	59.63	64.69	66.37	66.83	82.46	70.14	79.64	72.56	72.48	79.10
3	80.99	94.51	63.66	96.65	66.37	94.00	62.62	92.67	63.40	101.30	64.94	88.12
4	128.85	102.30	95.61	102.90	96.29	104.28	98.86	107.50	101.07	102.91	106.72	103.78
5	128.23	107.85	100.19	109.92	100.28	110.59	99.52	107.86	102.62	108.14	104.26	110.89
6	128.35	111.05	109.69	99.85	103.13	100.01	103.31	110.39	109.69	116.93	111.60	117.87
7	128.96	118.15	99.60	118.01	87.75	115.63	87.54	118.52	99.96	118.65	108.31	118.32
8	129.84	114.66	115.38	105.28	102.59	93.66	102.36	93.69	112.75	106.19	116.88	117.15
9	127.67	119.27	116.17	117.92	116.19	113.05	109.13	108.81	108.44	116.17	113.77	119.24
10	126.87	117.30	118.18	117.59	117.40	104.22	110.51	104.10	112.15	113.65	118.53	118.81
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 155 MHz; 0 dBm.
LO IN: 265 MHz; +13.00 dBm
IF OUT: 110 MHz; -6.83 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	27.11	45.88	41.20	54.77	43.53	45.84	52.49	64.07	50.81	58.92
1	---	36.02	---	37.86	11.98	42.77	21.16	45.76	27.19	50.18	39.02	53.72
2	70.73	53.34	49.00	53.19	54.41	55.92	67.38	61.05	68.64	64.10	61.48	65.52
3	50.70	90.32	53.76	76.90	47.90	71.23	44.22	71.54	45.54	71.43	47.04	69.00
4	95.06	82.23	74.81	81.68	75.45	80.54	76.26	80.76	78.95	80.99	78.85	78.84
5	93.46	101.34	68.98	102.19	72.83	95.31	72.63	95.79	71.09	97.45	71.10	92.20
6	124.18	92.24	86.07	90.24	83.47	89.71	83.50	90.80	86.81	93.92	90.61	94.21
7	125.38	101.47	81.65	97.87	79.26	97.63	79.27	98.13	81.74	102.46	85.35	105.03
8	126.23	111.78	103.48	113.40	104.11	101.64	102.22	101.79	98.67	111.12	100.68	120.75
9	124.67	105.74	95.49	104.78	94.52	103.58	95.69	103.70	93.24	104.61	93.03	106.55
10	126.25	119.18	108.09	118.40	107.91	105.45	111.47	106.14	111.52	117.36	108.00	121.08
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 155 MHz; 10 dBm.
LO IN: 265 MHz; +13.00 dBm
IF OUT: 110 MHz; 3.07 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.