

Frequency Mixer

HJK-ED9801/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=15.36MHz (dB)		
		@LO (dBm)		
		+17	+19	+21
10.1	25.5	5.69	5.56	5.51
40.1	55.5	5.94	5.78	5.71
80.1	95.5	5.99	5.85	5.73
110.1	125.5	6.01	5.79	5.72
150.1	165.5	5.81	5.72	5.68
180.1	195.5	5.81	5.75	5.73
220.1	235.5	5.80	5.74	5.72
250.1	265.5	5.81	5.76	5.73
290.1	305.5	5.88	5.82	5.79
320.1	335.5	5.91	5.83	5.79
360.1	375.5	5.91	5.85	5.82
390.1	405.5	5.99	5.89	5.86
430.1	445.5	6.08	5.95	5.88
460.1	475.5	6.12	5.99	5.93
500.1	515.5	6.09	5.98	5.93
530.1	545.5	6.06	5.96	5.91
570.1	585.5	6.25	6.11	6.05
600.1	615.5	6.24	6.08	6.01
640.1	655.5	6.52	6.28	6.16
670.1	685.5	6.75	6.47	6.30
710.1	725.5	6.92	6.61	6.41
740.1	755.5	7.19	6.90	6.66
780.1	795.5	7.23	6.93	6.68
810.1	825.5	7.24	6.90	6.64
850.1	865.5	7.10	6.73	6.50
880.1	895.5	7.01	6.70	6.51
920.1	935.5	6.90	6.66	6.51
950.1	965.5	6.92	6.70	6.55
990.1	1005.5	7.05	6.82	6.65
1020.1	1035.5	7.10	6.85	6.68
1060.1	1075.5	7.29	6.99	6.77
1090.1	1105.5	7.45	7.09	6.84
1130.1	1145.5	7.77	7.26	6.93
1160.1	1175.5	8.10	7.45	7.03
1200.1	1215.5	8.95	8.12	7.49
1230.1	1245.5	9.34	8.38	7.71
1270.1	1285.5	10.28	9.06	8.24
1300.1	1315.5	11.43	9.77	8.75
1340.1	1355.5	12.92	10.51	9.21
1370.1	1385.5	15.23	11.76	9.99

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+17	+19	+21
10.1	25.5	31.50	36.16	38.11
40.1	55.5	30.47	35.44	25.67
80.1	95.5	22.00	23.46	25.09
110.1	125.5	25.74	23.96	29.21
150.1	165.5	22.10	27.96	32.03
180.1	195.5	26.19	31.62	34.38
220.1	235.5	30.81	33.96	37.93
250.1	265.5	29.88	29.68	31.91
290.1	305.5	31.78	35.95	37.22
320.1	335.5	28.41	28.79	31.06
360.1	375.5	30.42	33.72	37.28
390.1	405.5	29.89	31.93	32.41
430.1	445.5	26.55	30.54	36.90
460.1	475.5	24.90	25.46	27.04
500.1	515.5	23.54	26.59	29.40
530.1	545.5	26.28	31.09	33.40
570.1	585.5	25.75	29.44	31.49
600.1	615.5	22.89	25.62	28.99
640.1	655.5	23.36	23.89	24.97
670.1	685.5	23.48	25.58	26.33
710.1	725.5	25.21	26.51	28.29
740.1	755.5	21.89	24.44	27.41
780.1	795.5	19.71	20.38	21.63
810.1	825.5	18.21	18.66	19.85
850.1	865.5	16.18	17.18	19.35
880.1	895.5	15.90	18.00	21.32
920.1	935.5	16.64	19.94	23.65
950.1	965.5	17.11	20.68	23.50
990.1	1005.5	17.22	20.36	22.66
1020.1	1035.5	16.38	19.31	21.63
1060.1	1075.5	15.20	17.89	20.52
1090.1	1105.5	14.22	16.62	19.21
1130.1	1145.5	13.39	15.05	17.24
1160.1	1175.5	13.31	14.63	16.22
1200.1	1215.5	13.13	14.66	15.68
1230.1	1245.5	12.89	14.82	16.10
1270.1	1285.5	12.69	14.67	16.48
1300.1	1315.5	12.61	13.95	16.18
1340.1	1355.5	13.93	13.82	15.93
1370.1	1385.5	19.89	14.39	15.74

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+15dBm (dB)		
		@LO (dBm)		
		+17	+19	+21
10.1	25.5	1.26	1.02	0.84
40.1	55.5	0.99	0.81	0.65
80.1	95.5	1.08	0.88	0.76
110.1	125.5	1.02	0.87	0.66
150.1	165.5	1.18	0.89	0.69
180.1	195.5	1.09	0.81	0.63
220.1	235.5	0.96	0.72	0.57
250.1	265.5	0.94	0.72	0.57
290.1	305.5	0.92	0.69	0.52
320.1	335.5	0.93	0.71	0.55
360.1	375.5	0.96	0.70	0.52
390.1	405.5	1.01	0.74	0.56
430.1	445.5	0.99	0.76	0.60
460.1	475.5	1.08	0.80	0.63
500.1	515.5	1.28	0.92	0.69
530.1	545.5	1.39	0.97	0.72
570.1	585.5	1.59	1.03	0.72
600.1	615.5	1.69	1.11	0.77
640.1	655.5	1.77	1.18	0.83
670.1	685.5	1.91	1.30	0.89
710.1	725.5	2.02	1.37	0.99
740.1	755.5	2.18	1.40	1.02
780.1	795.5	2.78	1.76	1.23
810.1	825.5	3.14	2.04	1.37
850.1	865.5	4.04	2.83	1.81
880.1	895.5	4.52	3.22	2.03
920.1	935.5	5.18	3.72	2.36
950.1	965.5	5.64	4.13	2.71
990.1	1005.5	6.04	4.51	3.02
1020.1	1035.5	6.48	4.91	3.41
1060.1	1075.5	6.92	5.40	3.88
1090.1	1105.5	7.29	5.78	4.28
1130.1	1145.5	7.59	6.28	4.80
1160.1	1175.5	7.64	6.43	5.02
1200.1	1215.5	7.66	6.62	5.35
1230.1	1245.5	7.59	6.66	5.50
1270.1	1285.5	7.23	6.54	5.52
1300.1	1315.5	6.76	6.49	5.68
1340.1	1355.5	5.60	6.05	5.55
1370.1	1385.5	3.73	5.26	5.17

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=240.1MHz (dB)
		@LO (dBm)
		+19
230.0	10.1	5.97
216.7	23.4	5.97
203.3	36.8	6.02
190.0	50.1	5.98
176.7	63.4	5.99
163.3	76.8	6.07
150.0	90.1	6.03
136.7	103.4	6.04
123.3	116.8	5.99
110.0	130.1	5.97
96.7	143.4	5.89
83.3	156.8	5.84
70.0	170.1	5.90
56.7	183.4	5.82
43.3	196.8	5.76
30.0	210.1	5.73
16.7	223.4	5.80
10.0	250.1	5.98
77.9	318.0	5.82
111.8	351.9	5.82
179.7	419.8	5.84
213.6	453.7	5.89
281.5	521.6	5.89
315.5	555.6	5.90
383.3	623.4	6.00
417.3	657.4	6.11
485.2	725.3	6.54
519.1	759.2	6.73
587.0	827.1	6.73
620.9	861.0	6.60
688.8	928.9	6.50
722.7	962.8	6.49
790.6	1030.7	6.59
824.5	1064.6	6.68
892.4	1132.5	6.89
926.4	1166.5	7.08
994.2	1234.3	7.86
1028.2	1268.3	8.24
1096.1	1336.2	9.78
1130.0	1370.1	10.71

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=140.1MHz (dB)
		@LO (dBm)
		+19
10.0	150.1	6.04
50.0	190.1	5.71
90.0	230.1	5.70
130.0	270.1	5.79
170.0	310.1	5.75
210.0	350.1	5.75
250.0	390.1	5.76
270.0	410.1	5.80
310.0	450.1	5.95
330.0	470.1	5.93
370.0	510.1	5.90
390.0	530.1	5.88
430.0	570.1	5.84
450.0	590.1	5.96
490.0	630.1	6.03
510.0	650.1	6.09
550.0	690.1	6.35
570.0	710.1	6.46
610.0	750.1	6.70
630.0	770.1	6.83
670.0	810.1	6.82
690.0	830.1	6.76
730.0	870.1	6.60
750.0	890.1	6.51
790.0	930.1	6.53
810.0	950.1	6.57
850.0	990.1	6.59
870.0	1010.1	6.64
910.0	1050.1	6.77
930.0	1070.1	6.79
970.0	1110.1	6.90
990.0	1130.1	7.00
1030.0	1170.1	7.23
1050.0	1190.1	7.40
1090.0	1230.1	8.03
1110.0	1250.1	8.32
1150.0	1290.1	8.86
1170.0	1310.1	9.38
1210.0	1350.1	10.42
1230.0	1370.1	10.99

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=340.1MHz (dB)
		@LO (dBm)
		+19
330.0	10.1	6.06
321.8	18.3	6.03
313.6	26.5	6.05
305.4	34.7	6.07
297.2	42.9	6.11
289.0	51.1	6.11
280.8	59.3	6.07
272.6	67.5	6.15
264.4	75.7	6.08
256.2	83.9	6.18
247.9	92.2	6.10
239.7	100.4	6.13
231.5	108.6	6.04
223.3	116.8	6.05
215.1	125.0	5.99
206.9	133.2	5.93
198.7	141.4	5.99
190.5	149.6	5.88
182.3	157.8	5.95
174.1	166.0	5.90
165.9	174.2	5.86
157.7	182.4	5.89
149.5	190.6	5.78
141.3	198.8	5.88
133.1	207.0	5.86
124.9	215.2	5.91
116.7	223.4	5.83
108.5	231.6	5.88
100.3	239.8	5.84
92.1	248.0	5.85
83.8	256.3	5.88
75.6	264.5	5.68
67.4	272.7	5.71
59.2	280.9	5.80
51.0	289.1	5.87
42.8	297.3	5.81
34.6	305.5	5.84
26.4	313.7	5.86
18.2	321.9	5.83
10.0	330.1	6.09

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+17	+19	+21	+17	+19	+21
25.5	50.67	52.71	54.32	52.54	56.06	59.90
55.5	50.94	53.01	54.36	53.02	56.04	57.59
95.5	51.82	53.32	54.81	53.00	54.51	55.97
125.5	52.01	53.81	54.34	54.17	55.64	55.19
165.5	52.73	53.39	53.41	55.25	54.78	53.94
195.5	52.43	52.62	52.31	54.65	53.44	52.47
235.5	53.33	52.58	51.69	54.12	52.43	51.34
265.5	53.70	52.35	51.19	53.13	51.62	50.70
305.5	54.49	51.98	50.37	52.38	50.73	49.85
335.5	54.85	51.93	50.15	51.75	50.50	49.79
375.5	53.96	51.07	49.47	49.72	48.76	48.20
405.5	55.12	50.89	48.88	49.67	48.77	48.24
445.5	58.18	52.73	50.39	48.15	47.87	47.66
475.5	57.87	53.24	50.94	47.29	47.04	46.89
515.5	56.33	52.71	50.98	46.15	45.98	45.86
545.5	55.79	52.77	51.17	45.54	45.30	45.06
585.5	55.68	52.73	51.08	45.20	45.03	44.81
615.5	55.28	52.98	51.57	44.76	44.73	44.52
655.5	57.54	55.75	53.61	44.03	44.47	44.53
685.5	55.20	57.50	55.71	42.98	43.58	43.90
725.5	52.39	55.93	57.10	41.81	42.39	42.78
755.5	50.28	52.74	54.57	41.02	41.58	42.01
795.5	49.24	50.94	52.14	40.36	40.80	41.08
825.5	49.20	50.87	52.15	40.12	40.61	40.95
865.5	49.71	51.27	52.26	39.82	40.36	40.71
895.5	50.91	52.21	52.89	40.07	40.53	40.75
935.5	52.54	53.55	54.04	40.42	40.66	40.80
965.5	52.37	53.42	54.02	40.61	40.80	40.94
1005.5	51.16	52.45	53.42	40.45	40.69	40.84
1035.5	49.82	51.43	52.83	40.26	40.53	40.71
1075.5	47.15	48.84	50.48	39.96	40.39	40.63
1105.5	45.54	47.35	49.13	39.22	39.75	40.07
1145.5	43.77	45.70	47.67	38.36	39.13	39.67
1175.5	41.91	43.61	45.49	37.65	38.61	39.36
1215.5	40.05	41.59	43.26	36.20	37.17	38.05
1245.5	39.03	40.43	41.90	35.60	36.52	37.41
1285.5	37.29	38.56	39.87	34.80	35.70	36.55
1315.5	36.42	37.61	38.79	34.01	34.93	35.78
1355.5	35.18	36.31	37.43	33.26	34.26	35.15
1385.5	34.51	35.59	36.69	32.55	33.57	34.51

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+17	+19	+21
10.1	25.5	31.87	32.78	33.76
40.1	55.5	31.22	31.52	31.79
80.1	95.5	31.68	31.93	32.26
110.1	125.5	32.08	32.51	32.48
150.1	165.5	33.61	33.85	33.95
180.1	195.5	33.93	34.31	34.69
220.1	235.5	34.94	35.50	36.19
250.1	265.5	35.25	35.73	36.18
290.1	305.5	36.27	36.86	37.32
320.1	335.5	36.45	36.66	36.84
360.1	375.5	38.03	38.37	38.54
390.1	405.5	38.75	39.83	40.63
430.1	445.5	38.74	40.20	41.67
460.1	475.5	40.27	41.37	42.74
500.1	515.5	41.96	42.90	44.00
530.1	545.5	43.40	44.05	44.53
570.1	585.5	47.34	48.21	49.28
600.1	615.5	53.64	57.74	63.02
640.1	655.5	57.11	52.83	49.05
670.1	685.5	52.16	56.58	50.31
710.1	725.5	48.51	54.00	52.68
740.1	755.5	46.76	50.07	50.29
780.1	795.5	44.88	47.03	47.38
810.1	825.5	44.66	46.51	46.38
850.1	865.5	45.91	47.53	47.62
880.1	895.5	47.96	49.69	49.42
920.1	935.5	48.25	51.12	52.83
950.1	965.5	44.75	46.68	48.29
990.1	1005.5	40.84	41.88	43.00
1020.1	1035.5	38.86	39.69	40.56
1060.1	1075.5	36.86	37.55	38.29
1090.1	1105.5	35.59	36.35	37.02
1130.1	1145.5	34.41	35.22	36.00
1160.1	1175.5	33.65	34.60	35.54
1200.1	1215.5	32.50	33.35	34.28
1230.1	1245.5	31.92	32.67	33.45
1270.1	1285.5	31.40	32.16	32.84
1300.1	1315.5	30.95	31.75	32.53
1340.1	1355.5	30.31	31.28	32.04
1370.1	1385.5	29.56	30.62	31.51

Frequency Mixer

HJK-ED9801/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)				IF (OUT) (MHz)	IF VSWR @LO=255.36MHz (:1)			
		@LO (dBm)				@LO (dBm)					@LO (dBm)			
		+17	+19	+21		+17	+19	+21	+17		+19	+21		
10.1	25.7	1.11	1.06	1.06	25.5	2.04	3.52	6.81	10.0	1.07	1.09	1.12		
40.1	55.7	1.15	1.08	1.03	55.5	1.69	2.51	3.74	15.0	1.05	1.05	1.08		
80.1	95.7	1.21	1.12	1.07	95.5	1.42	1.91	2.53	20.0	1.03	1.03	1.06		
110.1	125.7	1.14	1.07	1.09	125.5	1.34	1.83	2.43	25.0	1.02	1.03	1.06		
150.1	165.7	1.14	1.13	1.14	165.5	1.17	1.57	2.03	30.0	1.01	1.05	1.09		
180.1	195.7	1.14	1.14	1.15	195.5	1.08	1.45	1.88	35.0	1.01	1.06	1.09		
220.1	235.7	1.18	1.19	1.20	235.5	1.09	1.30	1.69	40.0	1.01	1.05	1.09		
250.1	265.7	1.22	1.22	1.23	265.5	1.16	1.18	1.53	45.0	1.02	1.03	1.07		
290.1	305.7	1.25	1.25	1.25	305.5	1.32	1.08	1.41	50.0	1.04	1.01	1.04		
320.1	335.7	1.29	1.28	1.28	335.5	1.44	1.18	1.37	55.0	1.05	1.03	1.05		
360.1	375.7	1.31	1.30	1.31	375.5	1.66	1.39	1.50	60.0	1.06	1.05	1.07		
390.1	405.7	1.34	1.33	1.34	405.5	1.86	1.58	1.66	65.0	1.07	1.08	1.10		
430.1	445.7	1.42	1.39	1.38	445.5	2.16	1.95	2.05	70.0	1.06	1.08	1.11		
460.1	475.7	1.46	1.42	1.40	475.5	2.61	2.39	2.48	75.0	1.05	1.08	1.11		
500.1	515.7	1.49	1.46	1.45	515.5	3.12	2.92	3.04	80.0	1.03	1.06	1.10		
530.1	545.7	1.52	1.49	1.48	545.5	3.31	3.26	3.49	85.0	1.03	1.05	1.08		
570.1	585.7	1.56	1.52	1.50	585.5	3.68	3.73	4.06	90.0	1.05	1.06	1.08		
600.1	615.7	1.62	1.57	1.54	615.5	3.97	4.15	4.57	95.0	1.08	1.08	1.10		
640.1	655.7	1.71	1.63	1.59	655.5	4.40	4.69	5.23	100.0	1.08	1.10	1.13		
670.1	685.7	1.78	1.69	1.63	685.5	4.87	5.17	5.75	105.0	1.08	1.11	1.14		
710.1	725.7	1.91	1.79	1.71	725.5	5.68	6.09	6.73	110.0	1.06	1.10	1.13		
740.1	755.7	2.01	1.89	1.79	755.5	6.39	6.83	7.53	115.0	1.04	1.07	1.11		
780.1	795.7	2.08	1.95	1.84	795.5	7.44	7.90	8.55	125.0	1.05	1.05	1.07		
810.1	825.7	2.05	1.90	1.78	825.5	8.12	8.68	9.33	130.0	1.08	1.07	1.08		
850.1	865.7	1.97	1.81	1.71	865.5	8.77	9.38	10.13	140.0	1.11	1.12	1.13		
880.1	895.7	1.92	1.78	1.69	895.5	8.95	9.58	10.37	145.0	1.11	1.12	1.14		
920.1	935.7	1.87	1.76	1.68	935.5	9.13	10.07	11.09	155.0	1.09	1.10	1.12		
950.1	965.7	1.88	1.77	1.70	965.5	9.23	10.31	11.46	160.0	1.09	1.09	1.11		
990.1	1005.7	1.94	1.83	1.75	1005.5	9.58	10.75	11.77	170.0	1.13	1.13	1.14		
1020.1	1035.7	1.98	1.87	1.78	1035.5	9.85	11.17	12.44	175.0	1.14	1.15	1.17		
1060.1	1075.7	2.07	1.94	1.84	1075.5	10.19	11.46	12.61	185.0	1.12	1.14	1.17		
1090.1	1105.7	2.13	1.98	1.88	1105.5	10.62	11.77	12.71	190.0	1.10	1.12	1.15		
1130.1	1145.7	2.26	2.07	1.93	1145.5	11.24	12.61	13.81	200.0	1.10	1.10	1.12		
1160.1	1175.7	2.41	2.16	1.98	1175.5	12.09	13.29	14.26	205.0	1.13	1.13	1.14		
1200.1	1215.7	2.67	2.37	2.14	1215.5	13.19	14.15	14.74	215.0	1.16	1.17	1.18		
1230.1	1245.7	2.82	2.50	2.24	1245.5	14.26	15.26	16.26	220.0	1.15	1.17	1.19		
1270.1	1285.7	3.13	2.73	2.43	1285.5	15.00	15.39	15.53	230.0	1.11	1.12	1.14		
1300.1	1315.7	3.40	2.91	2.58	1315.5	15.81	15.96	15.96	235.0	1.13	1.13	1.14		
1340.1	1355.7	3.76	3.10	2.70	1355.5	17.75	17.57	17.75	245.0	1.19	1.19	1.20		
1370.1	1385.7	4.34	3.42	2.91	1385.5	19.32	18.30	17.39	250.0	1.22	1.22	1.23		

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	28	27	40	37	44	43	38	42	34	44
1	-	29	+0	44	10	51	16	59	23	53	30	50
2	70	61	68	67	69	65	67	68	70	69	69	68
3	>90	>84	70	>84	67	>84	66	>84	66	>84	68	82
4	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
5	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	83	>84
6	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
7	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
8	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
9	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
10	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 240 MHz; 0.00 dBm.
LO IN: 255.46 MHz; +19.00 dBm
IF OUT: 15.46 MHz; -5.86 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	39	38	55	49	57	56	51	58	52	63
1	-	29	+0	43	11	51	17	58	24	56	33	55
2	50	55	57	65	58	63	57	66	60	69	59	63
3	76	71	53	71	48	78	43	72	45	73	44	70
4	>90	84	>94	86	82	82	86	81	85	79	81	78
5	>90	81	68	83	67	84	65	>94	63	86	60	82
6	>90	91	93	89	>94	88	93	87	>94	88	87	91
7	>90	91	74	91	72	>94	69	94	67	87	67	87
8	>90	>94	>94	>94	>94	>94	>94	93	>94	92	>94	94
9	>90	>94	>94	>94	93	>94	85	>94	85	>94	82	91
10	>90	>94	>94	>94	>94	>94	>94	>94	>94	>94	>94	>94
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 240 MHz; 10.00 dBm.
LO IN: 255.46 MHz; +19.00 dBm
IF OUT: 15.46 MHz; 4.1 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.