

Frequency Mixer

HJK-ED9307/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=199MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
600.1	799.1	14.16	10.58	8.30
620.1	819.1	13.57	10.21	8.05
640.1	839.1	13.07	9.91	7.81
660.1	859.1	12.62	9.51	7.55
680.1	879.1	11.99	8.81	7.25
700.1	899.1	11.30	8.37	7.13
720.1	919.1	10.43	7.98	7.00
740.1	939.1	9.56	7.64	6.90
760.1	959.1	8.91	7.44	6.91
775.1	974.1	8.49	7.31	6.91
795.1	994.1	8.14	7.20	6.87
810.1	1009.1	7.87	7.13	6.90
830.1	1029.1	7.65	7.06	6.86
845.1	1044.1	7.61	7.07	6.91
865.1	1064.1	7.56	7.11	6.97
880.1	1079.1	7.59	7.10	6.93
900.1	1099.1	7.61	7.14	6.98
915.1	1114.1	7.66	7.15	6.96
935.1	1134.1	7.85	7.27	7.03
950.1	1149.1	7.98	7.35	7.09
970.1	1169.1	8.21	7.46	7.13
985.1	1184.1	8.40	7.60	7.24
1005.1	1204.1	8.74	7.82	7.36
1020.1	1219.1	9.09	8.07	7.53
1040.1	1239.1	9.49	8.30	7.64
1055.1	1254.1	9.74	8.44	7.69
1075.1	1274.1	10.06	8.58	7.76
1090.1	1289.1	10.38	8.73	7.82
1110.1	1309.1	10.85	8.99	7.95
1125.1	1324.1	11.11	9.11	8.01
1145.1	1344.1	11.40	9.29	8.11
1160.1	1359.1	11.54	9.37	8.14
1180.1	1379.1	11.91	9.61	8.27
1195.1	1394.1	12.32	9.90	8.46
1215.1	1414.1	12.84	10.22	8.63
1230.1	1429.1	13.05	10.37	8.74
1250.1	1449.1	13.14	10.38	8.74
1265.1	1464.1	13.36	10.55	8.85
1285.1	1484.1	13.96	10.98	9.11
1300.1	1499.1	14.44	11.32	9.32

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
600.1	799.1	4.46	8.13	10.69
620.1	819.1	5.76	8.60	10.41
640.1	839.1	7.75	9.69	11.22
660.1	859.1	9.93	10.27	12.94
680.1	879.1	12.68	11.03	15.51
700.1	899.1	15.26	12.17	17.34
720.1	919.1	15.14	13.47	18.73
740.1	939.1	13.71	15.03	20.14
760.1	959.1	13.07	16.57	21.86
775.1	974.1	13.37	17.89	22.35
795.1	994.1	14.06	19.38	23.01
810.1	1009.1	14.90	20.33	23.21
830.1	1029.1	16.52	21.47	24.21
845.1	1044.1	17.15	21.99	24.79
865.1	1064.1	17.94	22.65	25.21
880.1	1079.1	17.77	22.88	25.30
900.1	1099.1	17.60	22.57	24.87
915.1	1114.1	17.57	22.37	25.68
935.1	1134.1	16.99	21.50	25.53
950.1	1149.1	16.91	21.03	25.87
970.1	1169.1	16.57	20.05	25.61
985.1	1184.1	16.71	20.07	25.39
1005.1	1204.1	17.17	20.10	25.45
1020.1	1219.1	17.37	20.07	24.86
1040.1	1239.1	17.84	20.80	24.31
1055.1	1254.1	17.85	21.06	23.85
1075.1	1274.1	18.80	22.16	23.25
1090.1	1289.1	19.29	23.42	23.19
1110.1	1309.1	21.02	21.78	23.00
1125.1	1324.1	20.15	21.63	22.66
1145.1	1344.1	21.08	19.71	21.87
1160.1	1359.1	21.93	18.56	21.12
1180.1	1379.1	18.65	17.96	20.34
1195.1	1394.1	17.02	16.91	19.21
1215.1	1414.1	15.43	16.24	18.32
1230.1	1429.1	14.78	15.97	17.91
1250.1	1449.1	15.68	15.59	17.65
1265.1	1464.1	14.05	15.82	17.57
1285.1	1484.1	12.27	15.66	17.03
1300.1	1499.1	10.95	15.56	16.89

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+10dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
600.1	799.1	0.78	1.73	1.63
620.1	819.1	1.15	2.00	2.01
640.1	839.1	-0.44	1.03	1.77
660.1	859.1	-1.30	0.56	1.54
680.1	879.1	-1.50	0.69	1.32
700.1	899.1	-1.22	0.84	1.07
720.1	919.1	-0.69	0.95	0.88
740.1	939.1	-0.13	0.98	0.70
760.1	959.1	0.32	0.94	0.53
775.1	974.1	0.58	0.91	0.44
795.1	994.1	0.72	0.78	0.34
810.1	1009.1	0.87	0.71	0.30
830.1	1029.1	0.87	0.58	0.23
845.1	1044.1	0.85	0.52	0.20
865.1	1064.1	0.83	0.47	0.18
880.1	1079.1	0.77	0.46	0.19
900.1	1099.1	0.73	0.47	0.20
915.1	1114.1	0.63	0.44	0.20
935.1	1134.1	0.48	0.44	0.23
950.1	1149.1	0.37	0.40	0.23
970.1	1169.1	0.20	0.31	0.22
985.1	1184.1	0.13	0.27	0.21
1005.1	1204.1	-0.01	0.18	0.19
1020.1	1219.1	-0.08	0.15	0.19
1040.1	1239.1	-0.14	0.14	0.21
1055.1	1254.1	-0.14	0.16	0.23
1075.1	1274.1	-0.10	0.26	0.29
1090.1	1289.1	-0.15	0.29	0.32
1110.1	1309.1	-0.16	0.39	0.40
1125.1	1324.1	-0.17	0.45	0.46
1145.1	1344.1	-0.20	0.49	0.51
1160.1	1359.1	-0.19	0.57	0.59
1180.1	1379.1	-0.39	0.52	0.63
1195.1	1394.1	-0.53	0.51	0.72
1215.1	1414.1	-0.83	0.39	0.76
1230.1	1429.1	-1.03	0.28	0.71
1250.1	1449.1	-1.10	0.27	0.76
1265.1	1464.1	-1.32	0.12	0.69
1285.1	1484.1	-1.57	-0.01	0.70
1300.1	1499.1	-1.91	-0.22	0.64

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=920.1MHz (dB)
		@LO (dBm)
		+7
70.0	850.1	10.01
65.9	854.2	9.91
61.7	858.4	9.79
59.7	860.4	9.72
55.5	864.6	9.54
53.4	866.7	9.45
49.3	870.8	9.30
47.2	872.9	9.22
43.1	877.0	9.10
41.0	879.1	9.04
36.9	883.2	8.94
34.8	885.3	8.91
30.7	889.4	8.78
28.6	891.5	8.73
24.5	895.6	8.63
22.4	897.7	8.60
18.3	901.8	8.57
16.2	903.9	8.53
12.1	908.0	8.59
10.0	910.1	8.72
27.9	948.0	7.77
45.9	966.0	7.46
81.7	1001.8	7.20
99.7	1019.8	7.14
135.5	1055.6	7.08
153.4	1073.5	7.10
189.3	1109.4	7.15
207.2	1127.3	7.22
243.1	1163.2	7.42
261.0	1181.1	7.53
296.9	1217.0	7.96
314.8	1234.9	8.25
350.7	1270.8	8.51
368.6	1288.7	8.71
404.5	1324.6	9.10
422.4	1342.5	9.27
458.3	1378.4	9.57
476.2	1396.3	9.98
512.1	1432.2	10.41
530.0	1450.1	10.52

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=880.1MHz (dB)
		@LO (dBm)
		+7
10.0	890.1	9.14
20.0	900.1	8.56
30.0	910.1	8.35
40.0	920.1	8.08
50.0	930.1	7.93
60.0	940.1	7.77
70.0	950.1	7.62
80.0	960.1	7.50
90.0	970.1	7.39
100.0	980.1	7.32
120.0	1000.1	7.21
130.0	1010.1	7.15
150.0	1030.1	7.10
160.0	1040.1	7.10
180.0	1060.1	7.08
190.0	1070.1	7.10
210.0	1090.1	7.15
220.0	1100.1	7.14
240.0	1120.1	7.20
250.0	1130.1	7.26
270.0	1150.1	7.34
280.0	1160.1	7.38
300.0	1180.1	7.56
310.0	1190.1	7.70
330.0	1210.1	7.93
340.0	1220.1	8.06
360.0	1240.1	8.32
370.0	1250.1	8.41
390.0	1270.1	8.58
400.0	1280.1	8.62
420.0	1300.1	8.93
430.0	1310.1	9.04
450.0	1330.1	9.22
460.0	1340.1	9.32
480.0	1360.1	9.50
490.0	1370.1	9.63
510.0	1390.1	9.95
520.0	1400.1	10.14
540.0	1420.1	10.44
550.0	1430.1	10.51

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=960.1MHz (dB)
		@LO (dBm)
		+7
130.0	830.1	10.84
127.0	833.1	10.78
124.0	836.1	10.70
121.0	839.1	10.59
118.0	842.1	10.45
115.0	845.1	10.34
112.0	848.1	10.22
109.0	851.1	10.13
106.0	854.1	10.07
103.0	857.1	9.97
100.0	860.1	9.86
97.0	863.1	9.73
94.0	866.1	9.59
91.0	869.1	9.48
88.0	872.1	9.38
85.0	875.1	9.29
82.0	878.1	9.18
79.0	881.1	9.10
76.0	884.1	8.97
73.0	887.1	8.88
70.0	890.1	8.79
67.0	893.1	8.73
64.0	896.1	8.68
61.0	899.1	8.64
58.0	902.1	8.58
55.0	905.1	8.51
52.0	908.1	8.44
49.0	911.1	8.37
46.0	914.1	8.32
43.0	917.1	8.29
40.0	920.1	8.24
37.0	923.1	8.20
34.0	926.1	8.16
31.0	929.1	8.09
28.0	932.1	8.03
25.0	935.1	7.98
22.0	938.1	7.93
19.0	941.1	7.96
13.0	947.1	8.00
10.0	950.1	8.18

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
799.1	41.23	40.87	40.44	35.54	35.77	36.34
819.1	40.62	39.87	39.39	35.17	35.44	36.01
839.1	39.93	39.19	38.93	34.81	35.12	35.65
859.1	38.97	38.24	38.15	34.49	34.87	35.38
879.1	37.90	37.38	37.44	34.17	34.60	35.07
899.1	36.76	36.46	36.49	33.88	34.32	34.77
919.1	35.87	35.74	35.71	33.52	34.01	34.48
939.1	35.15	35.50	35.77	33.25	33.89	34.55
959.1	34.48	35.07	35.55	33.10	34.08	35.21
974.1	34.27	35.27	36.08	33.21	34.60	36.16
994.1	33.74	34.79	35.62	33.52	35.44	37.42
1009.1	33.54	34.61	35.47	33.83	36.02	38.22
1029.1	33.26	34.27	35.12	34.53	37.05	39.52
1044.1	33.06	34.01	34.92	35.02	37.67	40.27
1064.1	33.22	34.35	35.39	35.61	38.19	40.66
1079.1	33.08	34.15	35.12	36.02	38.52	40.92
1099.1	33.49	34.57	35.52	36.82	39.26	41.58
1114.1	33.73	34.74	35.63	37.45	39.80	41.97
1134.1	34.27	35.19	35.98	38.38	40.65	42.55
1149.1	34.91	35.77	36.49	39.15	41.38	43.06
1169.1	35.40	35.94	36.41	40.20	42.24	43.47
1184.1	36.15	36.47	36.76	40.92	42.75	43.57
1204.1	36.50	36.42	36.50	41.72	43.30	43.73
1219.1	36.82	36.44	36.45	42.25	43.67	43.88
1239.1	37.07	36.55	36.72	42.81	44.02	44.05
1254.1	36.68	36.14	36.47	43.28	44.36	44.16
1274.1	36.64	36.26	36.82	43.73	44.55	44.22
1289.1	36.44	36.19	36.87	44.10	44.85	44.28
1309.1	36.37	36.33	37.14	44.70	45.18	44.36
1324.1	36.44	36.62	37.58	44.83	45.19	44.25
1344.1	36.21	36.65	37.72	45.54	45.50	43.95
1359.1	36.33	37.00	38.15	45.78	45.56	43.88
1379.1	36.35	37.20	38.36	46.09	45.37	43.38
1394.1	36.31	37.33	38.51	46.18	45.41	43.46
1414.1	36.39	37.58	38.76	45.64	45.09	43.42
1429.1	36.33	37.65	38.88	45.09	44.38	42.76
1449.1	36.39	37.86	39.12	44.29	43.81	42.58
1464.1	36.30	37.78	38.96	43.73	43.06	41.90
1484.1	36.21	37.76	38.89	43.35	42.52	41.35
1499.1	36.25	37.79	38.88	43.18	42.28	41.06

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
600.1	799.1	37.78	33.53	32.55
620.1	819.1	36.29	32.56	31.94
640.1	839.1	35.46	31.63	32.11
660.1	859.1	34.60	30.93	32.01
680.1	879.1	32.98	30.73	32.71
700.1	899.1	32.16	31.23	33.54
720.1	919.1	31.69	31.50	33.86
740.1	939.1	31.69	32.37	35.19
760.1	959.1	31.85	33.31	36.30
775.1	974.1	32.30	34.45	37.51
795.1	994.1	33.28	35.74	38.35
810.1	1009.1	34.04	36.41	38.55
830.1	1029.1	35.31	37.21	38.69
845.1	1044.1	36.13	37.49	38.50
865.1	1064.1	37.22	38.04	38.81
880.1	1079.1	38.31	38.95	39.61
900.1	1099.1	39.60	40.13	40.46
915.1	1114.1	40.82	41.65	41.77
935.1	1134.1	39.89	43.16	43.65
950.1	1149.1	37.46	42.63	44.54
970.1	1169.1	34.07	40.56	48.05
985.1	1184.1	31.76	38.73	48.14
1005.1	1204.1	29.69	37.48	43.44
1020.1	1219.1	28.44	36.52	41.85
1040.1	1239.1	27.99	40.03	35.42
1055.1	1254.1	28.43	47.08	32.19
1075.1	1274.1	28.95	45.19	30.45
1090.1	1289.1	29.27	40.25	29.71
1110.1	1309.1	29.94	37.10	28.97
1125.1	1324.1	30.50	35.85	28.83
1145.1	1344.1	32.02	33.50	28.32
1160.1	1359.1	33.02	32.63	28.18
1180.1	1379.1	33.32	32.46	28.30
1195.1	1394.1	33.37	32.24	28.20
1215.1	1414.1	33.70	32.17	27.84
1230.1	1429.1	34.87	31.01	27.25
1250.1	1449.1	35.57	29.14	26.39
1265.1	1464.1	34.99	28.34	25.93
1285.1	1484.1	33.13	27.44	25.43
1300.1	1499.1	32.03	27.12	25.40

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1159MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
600.1	799.1	3.40	2.19	1.48	799.1	25.56	24.48	24.14	19.0	1.33	1.08	1.10
620.1	819.1	3.21	2.08	1.43	819.1	23.81	22.87	22.29	49.0	1.34	1.11	1.14
640.1	839.1	3.12	2.03	1.42	839.1	21.46	20.70	19.98	79.0	1.39	1.16	1.14
660.1	859.1	3.04	1.97	1.40	859.1	18.70	17.93	17.39	109.0	1.43	1.23	1.22
680.1	879.1	2.86	1.83	1.37	879.1	16.26	15.67	14.87	139.0	1.49	1.29	1.28
700.1	899.1	2.61	1.69	1.36	899.1	14.15	13.49	12.71	169.0	1.55	1.34	1.29
720.1	919.1	2.39	1.62	1.38	919.1	12.09	11.38	10.69	199.0	1.62	1.42	1.37
740.1	939.1	2.19	1.58	1.43	939.1	9.96	9.28	8.60	229.0	1.72	1.52	1.47
760.1	959.1	2.03	1.56	1.48	959.1	8.01	7.41	6.83	259.0	1.77	1.55	1.48
775.1	974.1	1.93	1.55	1.50	974.1	6.73	6.19	5.74	289.0	1.89	1.65	1.57
795.1	994.1	1.83	1.54	1.53	994.1	5.33	4.89	4.56	319.0	1.99	1.74	1.65
810.1	1009.1	1.78	1.56	1.57	1009.1	4.46	4.11	3.84	349.0	2.05	1.80	1.69
830.1	1029.1	1.76	1.59	1.62	1029.1	3.54	3.29	3.10	379.0	2.17	1.89	1.76
845.1	1044.1	1.78	1.63	1.65	1044.1	3.06	2.89	2.76	409.0	2.28	1.99	1.86
865.1	1064.1	1.80	1.65	1.67	1064.1	2.73	2.66	2.61	439.0	2.37	2.06	1.91
880.1	1079.1	1.82	1.66	1.67	1079.1	2.69	2.68	2.69	469.0	2.47	2.13	1.96
900.1	1099.1	1.86	1.69	1.69	1099.1	2.85	2.92	2.98	499.0	2.59	2.24	2.07
915.1	1114.1	1.91	1.73	1.70	1114.1	3.10	3.22	3.32	529.0	2.74	2.36	2.17
935.1	1134.1	2.04	1.81	1.75	1134.1	3.57	3.75	3.90	559.0	2.78	2.37	2.17
950.1	1149.1	2.14	1.87	1.78	1149.1	4.02	4.24	4.41	589.0	2.92	2.51	2.29
970.1	1169.1	2.28	1.95	1.82	1169.1	4.69	4.93	5.14	619.0	3.00	2.58	2.35
985.1	1184.1	2.37	2.01	1.85	1184.1	5.20	5.47	5.68	649.0	3.04	2.61	2.37
1005.1	1204.1	2.52	2.10	1.90	1204.1	5.91	6.17	6.39	679.0	3.15	2.71	2.46
1020.1	1219.1	2.66	2.19	1.97	1219.1	6.44	6.71	6.94	709.0	3.22	2.78	2.51
1040.1	1239.1	2.86	2.32	2.06	1239.1	7.17	7.44	7.73	739.0	3.29	2.82	2.53
1055.1	1254.1	2.99	2.39	2.10	1254.1	7.70	7.97	8.27	769.0	3.33	2.86	2.57
1075.1	1274.1	3.15	2.49	2.16	1274.1	8.27	8.60	8.90	799.0	3.29	2.84	2.57
1090.1	1289.1	3.29	2.57	2.20	1289.1	8.68	8.99	9.33	829.0	3.36	2.90	2.61
1110.1	1309.1	3.50	2.69	2.28	1309.1	9.18	9.53	9.85	859.0	3.30	2.86	2.57
1125.1	1324.1	3.65	2.80	2.35	1324.1	9.58	10.02	10.37	889.0	3.23	2.82	2.57
1145.1	1344.1	3.84	2.94	2.44	1344.1	10.13	10.62	11.03	919.0	3.24	2.84	2.60
1160.1	1359.1	4.00	3.04	2.51	1359.1	10.50	11.03	11.38	949.0	3.13	2.75	2.52
1180.1	1379.1	4.22	3.18	2.58	1379.1	10.89	11.38	11.85	969.0	3.07	2.72	2.54
1195.1	1394.1	4.39	3.29	2.66	1394.1	11.09	11.69	12.09	999.0	2.98	2.66	2.49
1215.1	1414.1	4.59	3.40	2.73	1414.1	11.46	12.09	12.61	1019.0	2.85	2.54	2.40
1230.1	1429.1	4.66	3.46	2.78	1429.1	11.77	12.44	12.99	1049.0	2.72	2.42	2.31
1250.1	1449.1	4.74	3.53	2.84	1449.1	12.18	12.89	13.49	1069.0	2.62	2.31	2.21
1265.1	1464.1	4.86	3.62	2.91	1464.1	12.26	12.99	13.60	1099.0	2.44	2.10	2.00
1285.1	1484.1	5.09	3.79	3.01	1484.1	12.35	13.09	13.60	1119.0	2.35	1.98	1.86
1300.1	1499.1	5.22	3.89	3.07	1499.1	12.44	13.19	13.60	1149.0	2.20	1.77	1.59

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	21	23	33	36	40	48	43	44	51	46
1	-	34	+0	30	15	37	24	41	32	50	45	58
2	72	40	50	68	59	71	59	57	61	65	59	69
3	>100	69	50	71	49	69	53	65	55	68	65	76
4	>100	84	>88	82	80	85	>88	76	84	87	82	87
5	>100	>88	>88	>88	82	>88	75	>88	78	>88	81	>88
6	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
7	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
8	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
9	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
10	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 920.1 MHz; -5.00 dBm.
LO IN: 1119.1 MHz; +7.00 dBm
IF OUT: 199 MHz; -12.28 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	27	34	36	42	45	57	57	69	58	82
1	-	34	+0	31	15	42	26	45	33	54	47	65
2	52	31	40	59	45	59	54	60	56	64	69	66
3	81	54	32	54	33	51	42	53	43	58	53	70
4	>100	64	66	60	56	75	67	57	70	69	68	77
5	>100	74	64	84	46	65	46	63	52	64	54	67
6	>100	85	86	76	70	75	68	71	84	70	76	80
7	>100	85	78	91	67	84	62	77	58	72	64	71
8	>100	95	>98	90	87	88	85	80	74	79	90	81
9	>100	>98	>98	>98	84	94	79	83	75	86	71	79
10	>100	>98	>98	>98	96	94	>98	>98	84	88	82	96
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 920.1 MHz; 5.00 dBm.
LO IN: 1119.1 MHz; +7.00 dBm
IF OUT: 199 MHz; -2.47 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.