Frequency Mixer HJK-20VH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=85MHz (dB) @LO (dBm)		
		+19	+20	+21
400.1	485.1	10.90	10.87	10.84
460.1	545.1	9.48	9.42	9.38
520.1	605.1	8.38	8.31	8.25
580.1	665.1	7.76	7.70	7.64
640.1	725.1	7.36	7.31	7.27
700.1	785.1	7.09	7.05	7.02
760.1	845.1	7.07	7.03	7.01
820.1	905.1	7.00	6.98	6.94
880.1	965.1	7.00	6.97	6.94
940.1	1025.1	7.06	7.02	7.00
1000.1	1085.1	7.02	6.97	6.94
1060.1	1145.1	6.98	6.94	6.91
1120.1	1205.1	7.01	6.97	6.94
1180.1	1265.1	7.11	7.07	7.03
1240.1	1325.1	7.08	7.03	6.99
1300.1	1385.1	7.04	6.98	6.94
1360.1	1445.1	6.95	6.89	6.85
1420.1	1505.1	6.76	6.69	6.65
1480.1	1565.1	6.67	6.60	6.54
1540.1	1625.1	6.53	6.46	6.41
1600.1	1685.1	6.42	6.36	6.30
1660.1	1745.1	6.45	6.38	6.33
1720.1	1805.1	6.46	6.40	6.35
1780.1	1865.1	6.55	6.49	6.44
1840.1	1925.1	6.67	6.62	6.58
1900.1	1985.1	6.89	6.85	6.81
1940.1	2025.1	7.03	6.99	6.96
2000.1	2085.1	7.28	7.24	7.22
2040.1	2125.1	7.44	7.41	7.39
2100.1	2185.1	7.68	7.66	7.65
2140.1	2225.1	7.85	7.84	7.83
2200.1	2285.1	8.04	8.03	8.02
2240.1	2325.1	8.35	8.34	8.34
2300.1	2385.1	8.52	8.51	8.51
2340.1	2425.1	8.88	8.87	8.86
2400.1	2485.1	9.00	8.98	8.98
2440.1	2525.1	9.42	9.40	9.39
2500.1	2585.1	9.56	9.53	9.52
2540.1	2625.1	9.92	9.88	9.86
2600.1	2685.1	9.99	9.96	9.94

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+19	+20	+21
400.1	485.1	25.70	26.15	26.70
460.1	545.1	25.21	25.86	26.52
520.1	605.1	23.58	24.27	24.90
580.1	665.1	24.12	24.94	25.70
640.1	725.1	23.96	24.58	25.12
700.1	785.1	26.40	27.18	27.96
760.1	845.1	27.91	28.74	29.54
820.1	905.1	29.02	29.65	30.34
880.1	965.1	29.34	30.03	30.66
940.1	1025.1	29.37	30.16	30.63
1000.1	1085.1	29.52	30.23	30.89
1060.1	1145.1	29.55	30.32	30.95
1120.1	1205.1	29.89	30.75	31.39
1180.1	1265.1	29.50	30.11	30.86
1240.1	1325.1	27.42	28.04	28.90
1300.1	1385.1	26.52	27.12	28.07
1360.1	1445.1	25.95	26.58	27.33
1420.1	1505.1	25.67	26.20	26.90
1480.1	1565.1	25.82	26.26	26.85
1540.1	1625.1	25.85	26.28	26.82
1600.1	1685.1	25.90	26.44	26.91
1660.1	1745.1	26.12	26.69	27.28
1720.1	1805.1	26.10	26.78	27.53
1780.1	1865.1	26.15	26.87	27.60
1840.1	1925.1	26.28	27.05	27.82
1900.1	1985.1	26.14	26.86	27.73
1940.1	2025.1	26.28	27.00	27.83
2000.1	2085.1	26.36	27.11	27.98
2040.1	2125.1	26.23	27.02	27.93
2100.1	2185.1	26.36	27.06	27.90
2140.1	2225.1	26.12	26.85	27.64
2200.1	2285.1	26.50	27.23	28.17
2240.1	2325.1	26.43	27.35	28.28
2300.1	2385.1	26.48	27.57	28.40
2340.1	2425.1	26.32	27.39	28.44
2400.1	2485.1	26.75	27.63	28.74
2440.1	2525.1	26.49	27.60	28.58
2500.1	2585.1	26.66	27.63	28.66
2540.1	2625.1	26.71	27.61	28.51
2600.1	2685.1	26.77	27.70	28.87

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+15dBm (dB) @LO (dBm)		
		+19	+20	+21
400.1	485.1	0.34	0.32	0.29
460.1	545.1	0.52	0.44	0.37
520.1	605.1	0.48	0.41	0.35
580.1	665.1	0.36	0.29	0.23
640.1	725.1	0.44	0.34	0.27
700.1	785.1	0.41	0.33	0.27
760.1	845.1	0.38	0.32	0.27
820.1	905.1	0.34	0.28	0.22
880.1	965.1	0.29	0.24	0.20
940.1	1025.1	0.27	0.22	0.18
1000.1	1085.1	0.25	0.21	0.17
1060.1	1145.1	0.25	0.21	0.17
1120.1	1205.1	0.24	0.19	0.16
1180.1	1265.1	0.20	0.16	0.13
1240.1	1325.1	0.20	0.16	0.13
1300.1	1385.1	0.18	0.15	0.12
1360.1	1445.1	0.17	0.14	0.11
1420.1	1505.1	0.19	0.16	0.13
1480.1	1565.1	0.20	0.16	0.14
1540.1	1625.1	0.22	0.18	0.15
1600.1	1685.1	0.25	0.21	0.18
1660.1	1745.1	0.26	0.22	0.19
1720.1	1805.1	0.29	0.24	0.20
1780.1	1865.1	0.32	0.27	0.23
1840.1	1925.1	0.34	0.28	0.23
1900.1	1985.1	0.37	0.30	0.25
1940.1	2025.1	0.40	0.33	0.27
2000.1	2085.1	0.41	0.32	0.27
2040.1	2125.1	0.42	0.34	0.28
2100.1	2185.1	0.42	0.34	0.28
2140.1	2225.1	0.48	0.38	0.31
2200.1	2285.1	0.48	0.38	0.29
2240.1	2325.1	0.52	0.41	0.31
2300.1	2385.1	0.53	0.40	0.32
2340.1	2425.1	0.58	0.44	0.35
2400.1	2485.1	0.54	0.43	0.34
2440.1	2525.1	0.57	0.44	0.35
2500.1	2585.1	0.55	0.42	0.34
2540.1	2625.1	0.56	0.45	0.37
2600.1	2685.1	0.56	0.45	0.36

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1520MHz (dB) @LO (dBm) +20
919.9	600.1	9.75
872.6	647.4	8.83
825.4	694.6	8.14
778.1	741.9	7.50
730.8	789.2	7.67
683.6	836.4	7.32
636.3	883.7	7.04
589.0	931.0	6.96
541.8	978.2	6.84
494.5	1025.5	6.82
447.2	1072.8	6.84
400.0	1120.0	6.84
352.7	1167.3	6.86
305.4	1214.6	6.81
258.2	1261.8	6.78
210.9	1309.1	6.69
163.6	1356.4	6.65
116.4	1403.6	6.61
69.1	1450.9	6.52
21.8	1498.2	6.55
66.4	1586.4	6.43
179.1	1699.1	6.43
291.8	1811.8	6.53
404.6	1924.6	6.72
517.3	2037.3	7.00
630.0	2150.0	7.29
742.8	2262.8	7.45
855.5	2375.5	7.64
968.2	2488.2	7.80
1081.0	2601.0	8.37
1193.7	2713.7	9.00
1306.4	2826.4	9.43
1419.2	2939.2	9.75
1531.9	3051.9	10.06
1644.6	3164.6	10.03
1757.4	3277.4	10.02
1870.1	3390.1	10.15
1982.8	3502.8	10.26
2095.6	3615.6	10.30
2180.1	3700.1	10.58

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1090MHz (dB) @LO (dBm) +20
10.1	1100.1	7.00
70.1	1160.1	6.92
130.1	1220.1	6.91
190.1	1280.1	7.04
250.1	1340.1	7.07
310.1	1400.1	7.07
370.1	1460.1	7.06
430.1	1520.1	6.98
490.1	1580.1	7.09
550.1	1640.1	7.15
610.1	1700.1	7.19
670.1	1760.1	7.28
730.1	1820.1	7.34
790.1	1880.1	7.49
850.1	1940.1	7.55
910.1	2000.1	7.68
970.1	2060.1	7.78
1030.1	2120.1	7.75
1090.1	2180.1	7.99
1150.1	2240.1	8.12
1210.1	2300.1	8.21
1270.1	2360.1	8.61
1330.1	2420.1	8.98
1390.1	2480.1	9.26
1450.1	2540.1	9.69
1510.1	2600.1	9.90
1550.1	2640.1	10.08
1610.1	2700.1	10.16
1650.1	2740.1	10.17
1710.1	2800.1	10.16
1750.1	2840.1	10.11
1810.1	2900.1	10.16
1850.1	2940.1	10.15
1910.1	3000.1	10.20
1950.1	3040.1	10.23
2010.1	3100.1	10.29
2050.1	3140.1	10.34
2110.1	3200.1	10.47
2150.1	3240.1	10.63
2210.1	3300.1	10.84

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1960.1MHz (dB) @LO (dBm) +20
1350.0	610.1	10.49
1310.0	650.1	10.18
1270.0	690.1	9.36
1230.0	730.1	9.01
1190.0	770.1	8.78
1150.0	810.1	8.52
1110.0	850.1	8.36
1070.0	890.1	8.13
1030.0	930.1	7.89
990.0	970.1	7.47
950.0	1010.1	7.93
910.0	1050.1	7.71
870.0	1090.1	7.50
830.0	1130.1	7.40
790.0	1170.1	7.31
750.0	1210.1	7.21
710.0	1250.1	7.21
670.0	1290.1	7.17
630.0	1330.1	7.15
610.0	1350.1	7.16
570.0	1390.1	7.11
550.0	1410.1	7.09
510.0	1450.1	7.02
490.0	1470.1	7.04
450.0	1510.1	7.04
430.0	1530.1	6.99
390.0	1570.1	7.09
370.0	1590.1	7.08
330.0	1630.1	7.08
310.0	1650.1	7.10
270.0	1690.1	7.10
250.0	1710.1	7.08
210.0	1750.1	7.05
190.0	1770.1	7.04
150.0	1810.1	6.99
130.0	1830.1	6.93
90.0	1870.1	6.95
70.0	1890.1	6.94
30.0	1930.1	6.92
10.0	1950.1	6.90

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+19	+20	+21	+19	+20	+21
485.1	44.51	44.64	44.79	36.52	36.57	36.61
545.1	45.12	45.12	45.26	37.32	37.35	37.43
605.1	44.06	44.10	44.11	38.37	38.42	38.41
665.1	43.81	43.84	43.84	38.61	38.63	38.61
725.1	44.03	44.03	44.06	38.33	38.30	38.29
785.1	44.90	44.93	44.90	38.10	38.10	38.11
845.1	46.72	46.84	46.86	38.86	38.90	38.92
905.1	47.31	47.41	47.41	39.73	39.74	39.77
965.1	46.15	46.19	46.27	40.14	40.18	40.23
1025.1	46.07	46.14	46.14	40.35	40.42	40.41
1085.1	45.07	45.07	45.07	41.07	41.16	41.16
1145.1	43.49	43.44	43.38	41.09	41.26	41.31
1205.1	41.76	41.71	41.68	40.74	40.95	41.02
1265.1	39.75	39.66	39.59	40.08	40.28	40.34
1325.1	39.76	39.74	39.70	39.14	39.30	39.32
1385.1	39.77	39.79	39.80	39.26	39.42	39.47
1445.1	39.12	39.18	39.20	39.96	40.20	40.32
1505.1	38.60	38.67	38.68	41.04	41.39	41.67
1565.1	37.25	37.26	37.31	43.81	44.35	44.96
1625.1	36.72	36.75	36.82	48.58	49.63	50.99
1685.1	35.88	36.00	36.11	58.28	62.27	71.87
1745.1	34.87	34.99	35.11	53.52	52.39	50.98
1805.1	34.78	34.89	35.01	46.31	46.26	46.07
1865.1	34.39	34.49	34.59	42.50	42.64	42.79
1925.1	34.35	34.43	34.53	40.10	40.21	40.40
1985.1	35.56	35.68	35.75	38.86	38.96	39.12
2025.1	36.53	36.59	36.69	38.78	38.80	38.99
2085.1	38.22	38.34	38.56	38.87	38.99	39.27
2125.1	39.14	39.38	39.52	38.99	39.18	39.44
2185.1	40.27	40.46	40.76	39.03	39.17	39.46
2225.1	40.66	41.02	41.28	38.72	38.90	39.09
2285.1	40.86	41.22	41.50	38.32	38.47	38.70
2325.1	40.85	41.23	41.38	37.82	37.92	37.97
2385.1	40.94	41.14	41.39	37.10	36.97	37.20
2425.1	40.83	40.99	41.28	36.46	36.29	36.53
2485.1	40.19	40.44	40.56	35.30	35.35	35.57
2525.1	40.01	40.23	40.26	34.71	34.72	34.78
2585.1	38.95	39.08	39.06	34.04	34.06	34.17
2625.1	38.68	38.78	38.80	33.80	33.81	34.02
2685.1	37.89	37.98	37.95	33.74	33.83	34.01

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+19	+20	+21
400.1	485.1	27.60	27.55	27.60
460.1	545.1	22.61	22.58	22.64
520.1	605.1	21.56	21.57	21.62
580.1	665.1	22.55	22.69	22.86
640.1	725.1	24.71	25.00	25.34
700.1	785.1	26.39	26.65	26.98
760.1	845.1	29.99	30.86	31.96
820.1	905.1	31.78	32.48	33.32
880.1	965.1	34.85	35.60	36.42
940.1	1025.1	38.24	38.52	38.24
1000.1	1085.1	38.89	38.97	38.72
1060.1	1145.1	39.59	39.15	38.53
1120.1	1205.1	41.21	40.57	39.66
1180.1	1265.1	44.43	44.24	43.47
1240.1	1325.1	46.53	46.72	45.91
1300.1	1385.1	43.61	43.86	43.73
1360.1	1445.1	42.13	41.97	41.57
1420.1	1505.1	42.54	42.30	41.56
1480.1	1565.1	44.76	44.35	43.29
1540.1	1625.1	48.51	47.52	45.51
1600.1	1685.1	54.05	52.49	49.54
1660.1	1745.1	59.05	54.85	51.26
1720.1	1805.1	48.42	47.91	47.56
1780.1	1865.1	44.25	44.13	44.40
1840.1	1925.1	44.07	43.96	44.28
1900.1	1985.1	47.36	46.94	46.96
1940.1	2025.1	48.00	47.26	46.47
2000.1	2085.1	44.47	44.00	43.38
2040.1	2125.1	42.79	42.34	41.83
2100.1	2185.1	41.25	40.88	40.47
2140.1	2225.1	40.60	40.24	39.95
2200.1	2285.1	38.66	38.33	38.01
2240.1	2325.1	37.89	37.59	37.30
2300.1	2385.1	36.43	36.09	35.83
2340.1	2425.1	36.22	35.91	35.64
2400.1	2485.1	35.84	35.58	35.38
2440.1	2525.1	36.28	36.01	35.80
2500.1	2585.1	37.01	36.79	36.59
2540.1	2625.1	38.56	38.47	38.30
2600.1	2685.1	41.85	42.02	42.14

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+19	+20	+21
400.1	485.1	1.84	1.85	1.86
460.1	545.1	1.90	1.90	1.90
520.1	605.1	2.01	2.00	2.00
580.1	665.1	2.08	2.07	2.07
640.1	725.1	2.09	2.08	2.07
700.1	785.1	2.11	2.09	2.07
760.1	845.1	2.09	2.06	2.04
820.1	905.1	2.05	2.01	1.98
880.1	965.1	2.04	1.99	1.96
940.1	1025.1	2.02	1.97	1.93
1000.1	1085.1	2.03	1.98	1.94
1060.1	1145.1	2.06	2.01	1.96
1120.1	1205.1	2.10	2.05	2.01
1180.1	1265.1	2.17	2.12	2.08
1240.1	1325.1	2.18	2.13	2.09
1300.1	1385.1	2.10	2.05	2.01
1360.1	1445.1	2.01	1.97	1.93
1420.1	1505.1	1.92	1.88	1.84
1480.1	1565.1	1.77	1.73	1.69
1540.1	1625.1	1.60	1.56	1.52
1600.1	1685.1	1.42	1.39	1.36
1660.1	1745.1	1.25	1.22	1.20
1720.1	1805.1	1.10	1.09	1.08
1780.1	1865.1	1.08	1.11	1.13
1840.1	1925.1	1.24	1.27	1.29
1900.1	1985.1	1.41	1.45	1.48
1940.1	2025.1	1.55	1.59	1.62
2000.1	2085.1	1.77	1.81	1.84
2040.1	2125.1	1.89	1.94	1.97
2100.1	2185.1	2.08	2.13	2.17
2140.1	2225.1	2.17	2.22	2.27
2200.1	2285.1	2.37	2.41	2.47
2240.1	2325.1	2.47	2.52	2.57
2300.1	2385.1	2.65	2.71	2.75
2340.1	2425.1	2.75	2.80	2.84
2400.1	2485.1	2.95	3.00	3.03
2440.1	2525.1	3.06	3.11	3.14
2500.1	2585.1	3.28	3.31	3.34
2540.1	2625.1	3.38	3.41	3.43
2600.1	2685.1	3.57	3.59	3.60

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+19	+20	+21
485.1	4.80	4.80	4.79
545.1	5.12	5.12	5.12
605.1	5.56	5.56	5.56
665.1	5.72	5.72	5.70
725.1	5.49	5.47	5.47
785.1	5.20	5.20	5.20
845.1	4.79	4.78	4.77
905.1	4.36	4.35	4.34
965.1	3.89	3.88	3.87
1025.1	3.41	3.40	3.38
1085.1	3.02	3.01	3.00
1145.1	2.65	2.64	2.63
1205.1	2.32	2.31	2.30
1265.1	2.02	2.01	2.01
1325.1	1.76	1.76	1.76
1385.1	1.56	1.55	1.55
1445.1	1.42	1.41	1.41
1505.1	1.38	1.38	1.38
1565.1	1.46	1.46	1.47
1625.1	1.64	1.64	1.65
1685.1	1.88	1.89	1.90
1745.1	2.16	2.17	2.18
1805.1	2.50	2.51	2.52
1865.1	2.81	2.82	2.83
1925.1	3.15	3.16	3.17
1985.1	3.49	3.50	3.52
2025.1	3.65	3.65	3.65
2085.1	3.96	3.98	3.99
2125.1	4.08	4.08	4.06
2185.1	4.32	4.33	4.34
2225.1	4.35	4.33	4.31
2285.1	4.46	4.46	4.46
2325.1	4.38	4.36	4.33
2385.1	4.36	4.36	4.35
2425.1	4.25	4.22	4.18
2485.1	4.17	4.16	4.15
2525.1	3.98	3.95	3.90
2585.1	3.85	3.84	3.83
2625.1	3.66	3.63	3.60
2685.1	3.53	3.52	3.51

IF (OUT) (MHz)	IF VSWR @LO=1950MHz (:1) @LO (dBm)		
	+19	+20	+21
20.0	1.27	1.30	1.34
60.0	1.28	1.31	1.34
100.0	1.31	1.34	1.37
140.0	1.37	1.40	1.42
180.0	1.42	1.45	1.48
240.0	1.57	1.60	1.62
280.0	1.64	1.67	1.70
340.0	1.76	1.79	1.81
380.0	1.82	1.85	1.88
440.0	1.86	1.89	1.91
480.0	1.89	1.92	1.95
540.0	1.91	1.94	1.96
580.0	1.92	1.94	1.96
640.0	1.89	1.92	1.94
680.0	1.89	1.91	1.93
740.0	1.78	1.79	1.81
780.0	1.76	1.77	1.78
840.0	1.66	1.67	1.68
880.0	1.62	1.63	1.64
940.0	1.58	1.58	1.58
980.0	1.53	1.53	1.53
1040.0	1.49	1.48	1.48
1080.0	1.43	1.43	1.43
1140.0	1.40	1.39	1.38
1180.0	1.35	1.34	1.33
1240.0	1.37	1.36	1.35
1280.0	1.33	1.32	1.31
1340.0	1.34	1.33	1.31
1380.0	1.34	1.32	1.31
1440.0	1.31	1.29	1.28
1480.0	1.34	1.32	1.30
1540.0	1.31	1.29	1.28
1580.0	1.35	1.33	1.32
1640.0	1.41	1.39	1.38
1680.0	1.45	1.44	1.42
1740.0	1.49	1.48	1.46
1780.0	1.53	1.51	1.50
1840.0	1.53	1.52	1.51
1880.0	1.56	1.55	1.54
1940.0	1.51	1.53	1.54

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	14	23	28	14	32	30	32	25	35	55
1	-	31	+0	40	19	49	28	50	36	51	37	51
2	61	48	61	56	71	53	77	52	73	58	64	77
3	>90	>84	60	82	57	>84	64	>84	68	>84	71	>84
4	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
5	>90	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>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: 1520 MHz; 0.00 dBm.
LO IN: 1605 MHz; +20.00 dBm
IF OUT: 85 MHz; -6.21 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	23	37	38	22	41	36	45	35	49	58
1	-	31	+0	39	20	49	29	50	39	51	41	54
2	41	39	53	46	83	45	68	43	62	51	58	69
3	83	67	43	69	39	74	46	88	49	77	55	75
4	>90	68	86	67	77	67	83	65	77	63	86	65
5	>90	90	73	91	61	81	57	83	66	>94	68	87
6	>90	92	>94	81	>94	>94	88	78	92	81	88	81
7	>90	91	>94	>94	87	>94	75	90	71	93	80	>94
8	>90	93	>94	>94	>94	92	>94	91	91	86	91	>94
9	>90	>94	>94	>94	>94	>94	>94	>94	87	>94	82	>94
10	>90	>94	>94	>94	>94	>94	>94	>94	>94	>94	92	90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1520 MHz; 10.00 dBm.
LO IN: 1605 MHz; +20.00 dBm
IF OUT: 85 MHz; 3.74 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.