Frequency Mixer TAK-6R

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+4	+7	+10
0.5	30.5	7.80	7.38	7.11
1.0	31.0	7.13	6.75	6.47
2.0	32.0	6.54	6.13	5.93
5.0	35.0	5.88	5.55	5.38
10.0	40.0	5.87	5.53	5.32
29.9	59.9	5.91	5.52	5.23
49.7	79.7	6.11	5.52	5.25
69.4	99.4	6.00	5.42	5.19
109.0	139.0	6.02	5.46	5.18
128.8	158.8	5.82	5.36	5.13
148.5	178.5	5.80	5.33	5.11
168.3	198.3	5.87	5.36	5.16
188.1	218.1	5.77	5.33	5.15
207.9	237.9	5.63	5.28	5.13
247.4	277.4	5.78	5.36	5.22
267.2	297.2	5.76	5.39	5.23
287.0	317.0	5.80	5.46	5.26
306.8	336.8	5.85	5.47	5.34
326.5	356.5	5.87	5.59	5.43
346.3	376.3	5.92	5.61	5.45
366.1	396.1	6.00	5.64	5.49
385.9	415.9	6.01	5.69	5.55
405.7	435.7	6.03	5.78	5.65
425.4	455.4	6.09	5.85	5.71
445.2	475.2	6.16	5.91	5.78
465.0	495.0	6.26	5.97	5.86
484.8	514.8	6.38	6.05	5.87
504.5	534.5	6.59	6.18	5.97
544.1	574.1	6.76	6.28	6.05
583.7	613.7	7.06	6.49	6.18
603.4	633.4	7.21	6.67	6.22
643.0	673.0	7.68	7.16	6.52
662.8	692.8	7.85	7.29	6.62
702.3	732.3	8.43	7.68	6.86
722.1	752.1	8.65	7.94	7.12
761.7	791.7	9.40	8.51	7.75
781.4	811.4	9.86	8.94	8.35
821.0	851.0	10.61	9.58	9.05
880.3	910.3	11.33	10.42	9.84
900.1	930.1	11.55	10.73	10.24

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
10.1	40.1	26.12	22.19	23.32
29.9	59.9	18.81	25.80	23.12
49.7	79.7	19.60	21.70	21.81
69.4	99.4	18.50	21.19	19.84
89.2	119.2	16.89	20.04	19.41
109.0	139.0	17.73	18.99	19.76
128.8	158.8	18.59	26.05	25.99
148.5	178.5	18.36	19.80	23.94
168.3	198.3	18.27	19.65	23.04
188.1	218.1	19.14	24.52	21.47
207.9	237.9	22.37	22.41	20.09
227.7	257.7	19.47	21.51	24.39
247.4	277.4	18.47	21.31	21.25
267.2	297.2	24.46	19.62	25.13
287.0	317.0	23.82	21.22	22.67
306.8	336.8	24.46	18.49	19.98
326.5	356.5	26.07	21.50	22.57
346.3	376.3	21.32	19.99	21.65
366.1	396.1	24.59	25.56	21.80
385.9	415.9	17.96	25.54	24.91
405.7	435.7	15.97	17.04	21.17
425.4	455.4	14.32	15.83	16.10
445.2	475.2	13.94	14.27	15.63
465.0	495.0	13.20	13.96	14.75
484.8	514.8	13.10	13.97	15.14
504.5	534.5	13.48	14.80	15.84
524.3	554.3	14.80	17.32	18.02
544.1	574.1	15.16	18.68	19.52
583.7	613.7	12.87	21.44	25.91
603.4	633.4	11.06	18.71	25.25
643.0	673.0	10.96	11.92	20.95
662.8	692.8	11.25	12.20	18.19
702.3	732.3	11.82	12.18	16.05
722.1	752.1	11.89	12.87	14.61
761.7	791.7	13.19	15.22	15.37
781.4	811.4	13.66	14.97	15.47
821.0	851.0	14.83	16.37	17.94
840.8	870.8	15.11	15.70	16.16
880.3	910.3	13.65	16.82	20.83
900.1	930.1	14.91	21.09	18.82

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	0.17	0.05	0.02
29.9	59.9	-0.19	-0.11	0.00
49.7	79.7	0.25	0.08	0.03
69.4	99.4	0.24	0.09	0.04
89.2	119.2	0.19	0.09	0.06
109.0	139.0	0.09	0.09	0.04
128.8	158.8	0.27	0.17	0.04
148.5	178.5	0.24	0.12	0.05
168.3	198.3	0.22	0.13	0.04
188.1	218.1	0.32	0.10	0.05
207.9	237.9	0.35	0.17	0.07
227.7	257.7	0.36	0.12	0.06
247.4	277.4	0.35	0.12	0.05
267.2	297.2	0.37	0.12	0.08
287.0	317.0	0.31	0.12	0.08
306.8	336.8	0.29	0.10	0.06
326.5	356.5	0.35	0.08	0.06
346.3	376.3	0.37	0.12	0.07
366.1	396.1	0.37	0.14	0.08
385.9	415.9	0.41	0.17	0.08
405.7	435.7	0.40	0.18	0.09
425.4	455.4	0.51	0.25	0.14
445.2	475.2	0.54	0.29	0.17
465.0	495.0	0.61	0.32	0.18
484.8	514.8	0.56	0.33	0.19
504.5	534.5	0.59	0.36	0.21
524.3	554.3	0.65	0.38	0.19
544.1	574.1	0.65	0.43	0.19
583.7	613.7	0.55	0.40	0.12
603.4	633.4	0.58	0.43	0.17
643.0	673.0	0.53	0.35	0.22
662.8	692.8	0.51	0.36	0.25
702.3	732.3	0.39	0.33	0.33
722.1	752.1	0.23	0.29	0.34
761.7	791.7	-0.06	0.15	0.28
781.4	811.4	-0.12	0.09	0.16
821.0	851.0	-0.09	0.25	0.26
840.8	870.8	0.09	0.41	0.43
880.3	910.3	0.35	0.47	0.44
900.1	930.1	0.43	0.45	0.42

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=300.1MHz (dB)
		@LO (dBm)
		+7
290.0	10.1	5.91
282.8	17.3	5.87
275.6	24.5	5.77
268.5	31.6	5.78
261.3	38.8	5.65
254.1	46.0	5.69
246.9	53.2	5.63
239.7	60.4	5.58
232.6	67.5	5.52
225.4	74.7	5.49
218.2	81.9	5.41
211.0	89.1	5.41
203.8	96.3	5.37
196.7	103.4	5.33
189.5	110.6	5.28
182.3	117.8	5.25
175.1	125.0	5.25
167.9	132.2	5.22
160.8	139.3	5.21
153.6	146.5	5.20
146.4	153.7	5.22
139.2	160.9	5.22
132.1	168.0	5.24
124.9	175.2	5.19
117.7	182.4	5.19
110.5	189.6	5.19
103.3	196.8	5.21
96.2	203.9	5.21
89.0	211.1	5.19
81.8	218.3	5.20
74.6	225.5	5.23
67.4	232.7	5.24
60.3	239.8	5.23
53.1	247.0	5.23
45.9	254.2	5.25
38.7	261.4	5.29
31.5	268.6	5.29
24.4	275.7	5.31
17.2	282.9	5.29
10.0	290.1	5.46

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm)
		+7
10.0	20.1	5.00
24.9	35.0	5.05
39.7	49.8	5.10
54.6	64.7	5.13
69.5	79.6	5.13
84.4	94.5	5.22
99.2	109.3	5.19
114.1	124.2	5.20
129.0	139.1	5.23
143.8	153.9	5.30
158.7	168.8	5.31
173.6	183.7	5.34
188.5	198.6	5.39
203.3	213.4	5.37
218.2	228.3	5.42
233.1	243.2	5.37
247.9	258.0	5.49
262.8	272.9	5.47
277.7	287.8	5.47
292.6	302.7	5.52
307.4	317.5	5.56
322.3	332.4	5.67
337.2	347.3	5.63
352.1	362.2	5.72
366.9	377.0	5.74
381.8	391.9	5.78
396.7	406.8	5.76
411.5	421.6	5.78
426.4	436.5	5.85
441.3	451.4	5.80
456.2	466.3	5.71
471.0	481.1	5.60
485.9	496.0	5.59
500.8	510.9	5.51
515.6	525.7	5.48
530.5	540.6	5.45
545.4	555.5	5.40
560.3	570.4	5.40
575.1	585.2	5.35
590.0	600.1	5.33

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=600.1MHz (dB)
		@LO (dBm)
		+7
590.0	10.1	7.91
575.1	25.0	7.77
560.3	39.8	7.77
545.4	54.7	7.74
530.5	69.6	7.69
515.6	84.5	7.60
500.8	99.3	7.47
485.9	114.2	7.39
471.0	129.1	7.24
456.2	143.9	7.26
441.3	158.8	7.24
426.4	173.7	7.26
411.5	188.6	7.14
396.7	203.4	7.07
381.8	218.3	7.10
366.9	233.2	7.09
352.1	248.0	7.07
337.2	262.9	7.00
322.3	277.8	7.05
307.4	292.7	6.98
292.6	307.5	6.98
277.7	322.4	6.88
262.8	337.3	6.87
247.9	352.2	6.90
233.1	367.0	6.79
218.2	381.9	6.78
203.3	396.8	6.73
188.5	411.6	6.73
173.6	426.5	6.70
158.7	441.4	6.83
143.8	456.3	6.82
129.0	471.1	6.74
114.1	486.0	6.80
99.2	500.9	6.68
84.4	515.7	6.73
69.5	530.6	6.73
54.6	545.5	6.66
39.7	560.4	6.57
24.9	575.2	6.63
10.0	590.1	6.67

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
0.5	64.00	67.00	70.00	64.00	67.00	70.00
1.0	64.00	67.00	70.00	64.00	67.00	70.00
2.0	64.00	67.00	70.00	64.00	67.00	70.00
5.0	64.00	67.00	70.00	64.00	67.00	70.00
10.0	64.00	67.00	70.00	64.00	67.00	64.95
29.9	57.82	59.72	61.73	68.75	73.58	75.77
49.7	55.90	57.78	59.54	73.83	72.45	71.96
69.4	53.91	55.43	57.33	69.60	69.10	65.07
109.0	50.59	52.35	54.40	59.87	57.74	58.20
128.8	49.23	51.73	53.94	55.13	54.31	56.75
148.5	48.27	50.60	52.55	52.25	52.23	55.42
168.3	47.36	49.85	51.82	49.90	50.89	53.71
188.1	46.58	49.16	51.37	47.98	50.40	53.52
207.9	45.78	47.54	49.35	46.22	48.77	51.68
247.4	45.89	48.02	49.36	44.88	47.71	50.55
267.2	46.02	48.55	49.96	44.44	46.55	48.41
287.0	45.74	49.39	51.31	42.69	45.06	47.27
306.8	43.99	47.23	50.23	41.67	43.50	45.04
326.5	42.73	45.09	47.22	42.01	43.49	43.35
346.3	41.65	43.69	45.51	41.76	43.14	42.76
366.1	40.15	42.34	44.30	41.45	43.73	41.96
385.9	39.41	41.36	43.44	40.28	45.71	43.60
405.7	39.64	42.07	44.95	38.89	43.73	43.11
425.4	39.92	42.29	44.96	38.54	42.24	41.22
445.2	40.15	42.90	46.49	38.17	40.81	40.89
465.0	40.64	43.28	45.89	38.77	40.67	40.62
484.8	40.93	43.78	47.04	39.67	40.37	39.54
504.5	42.22	45.04	47.02	39.81	39.94	38.41
544.1	42.84	45.95	46.54	39.27	38.71	36.33
583.7	40.82	43.58	43.12	37.80	36.68	33.42
603.4	39.60	42.47	42.25	36.11	34.60	31.15
643.0	37.57	40.25	40.63	34.08	30.79	27.97
662.8	37.41	39.93	41.61	33.20	29.99	27.39
702.3	37.30	40.01	42.93	31.45	28.37	25.35
722.1	37.19	39.53	41.83	29.99	27.27	24.41
761.7	37.43	41.03	44.97	26.99	25.21	22.98
781.4	37.36	42.31	48.46	25.40	23.98	21.96
821.0	37.43	47.72	43.45	22.32	21.93	20.40
880.3	33.98	39.15	34.39	18.20	19.00	18.14
900.1	32.31	36.06	32.29	16.86	17.98	17.24

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	36.58	33.60	33.99
29.9	59.9	32.80	31.80	31.01
49.7	79.7	30.54	29.62	29.27
69.4	99.4	28.20	27.56	27.81
89.2	119.2	26.68	26.55	26.56
109.0	139.0	25.30	25.28	25.55
128.8	158.8	24.60	24.75	24.85
148.5	178.5	23.96	23.95	24.29
168.3	198.3	23.59	23.81	23.99
188.1	218.1	23.25	23.67	24.07
207.9	237.9	22.94	23.56	24.02
227.7	257.7	22.72	23.33	24.09
247.4	277.4	22.68	23.02	23.72
267.2	297.2	22.91	23.11	23.62
287.0	317.0	23.31	23.37	23.84
306.8	336.8	23.84	23.84	24.29
326.5	356.5	24.48	24.64	25.09
346.3	376.3	24.53	24.91	25.50
366.1	396.1	24.18	24.95	26.02
385.9	415.9	23.31	24.14	25.56
405.7	435.7	22.28	22.85	23.86
425.4	455.4	21.31	21.71	22.47
445.2	475.2	20.22	20.38	20.87
465.0	495.0	19.59	19.66	20.02
484.8	514.8	19.03	19.04	19.37
504.5	534.5	18.44	18.46	18.74
524.3	554.3	18.31	18.26	18.51
544.1	574.1	17.97	17.85	18.07
583.7	613.7	17.82	17.52	17.64
603.4	633.4	17.75	17.33	17.37
643.0	673.0	17.88	17.56	17.34
662.8	692.8	17.89	17.68	17.67
702.3	732.3	17.71	17.64	17.87
722.1	752.1	17.63	17.63	17.80
761.7	791.7	17.22	17.46	17.45
781.4	811.4	16.97	17.23	17.16
821.0	851.0	16.23	16.66	16.17
840.8	870.8	15.84	16.11	15.43
880.3	910.3	14.71	14.48	13.65
900.1	930.1	13.96	13.59	12.75

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
5.0	35.0	1.19	1.26	1.30
10.0	40.0	1.10	1.18	1.24
29.9	59.9	1.59	1.38	1.21
49.7	79.7	1.60	1.36	1.21
69.4	99.4	1.49	1.30	1.16
89.2	119.2	1.55	1.31	1.16
109.0	139.0	1.51	1.27	1.12
128.8	158.8	1.39	1.20	1.10
148.5	178.5	1.39	1.19	1.09
168.3	198.3	1.38	1.17	1.08
188.1	218.1	1.32	1.13	1.08
207.9	237.9	1.28	1.10	1.10
227.7	257.7	1.27	1.11	1.10
247.4	277.4	1.23	1.09	1.11
267.2	297.2	1.20	1.09	1.14
287.0	317.0	1.18	1.12	1.18
306.8	336.8	1.15	1.14	1.21
326.5	356.5	1.14	1.17	1.24
346.3	376.3	1.14	1.22	1.29
366.1	396.1	1.14	1.24	1.33
385.9	415.9	1.14	1.27	1.40
405.7	435.7	1.14	1.27	1.41
425.4	455.4	1.14	1.25	1.36
445.2	475.2	1.14	1.23	1.31
465.0	495.0	1.13	1.18	1.25
484.8	514.8	1.15	1.16	1.20
504.5	534.5	1.18	1.15	1.19
524.3	554.3	1.23	1.18	1.21
544.1	574.1	1.28	1.21	1.23
583.7	613.7	1.44	1.35	1.37
603.4	633.4	1.53	1.43	1.45
643.0	673.0	1.79	1.67	1.67
662.8	692.8	1.93	1.80	1.79
702.3	732.3	2.27	2.12	2.05
722.1	752.1	2.47	2.31	2.21
761.7	791.7	2.98	2.73	2.57
781.4	811.4	3.28	2.98	2.81
821.0	851.0	3.84	3.43	3.26
840.8	870.8	4.04	3.58	3.41
880.3	910.3	4.26	3.83	3.68
900.1	930.1	4.35	3.96	3.82

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
5.0	1.88	2.80	4.21
10.0	1.84	2.76	3.86
29.9	1.09	1.55	2.41
49.7	1.08	1.53	2.36
69.4	1.08	1.46	2.19
89.2	1.09	1.46	2.22
109.0	1.10	1.46	2.19
128.8	1.11	1.49	2.27
148.5	1.13	1.50	2.26
168.3	1.13	1.48	2.17
188.1	1.15	1.48	2.20
207.9	1.19	1.49	2.21
227.7	1.20	1.54	2.27
247.4	1.19	1.53	2.24
267.2	1.24	1.54	2.22
287.0	1.27	1.56	2.20
306.8	1.28	1.56	2.23
326.5	1.32	1.62	2.29
346.3	1.36	1.64	2.28
366.1	1.40	1.68	2.34
385.9	1.43	1.65	2.25
405.7	1.46	1.70	2.29
425.4	1.47	1.74	2.32
445.2	1.49	1.75	2.33
465.0	1.51	1.79	2.39
484.8	1.53	1.75	2.31
504.5	1.55	1.77	2.33
524.3	1.57	1.79	2.33
544.1	1.59	1.78	2.29
583.7	1.63	1.79	2.23
603.4	1.64	1.82	2.25
643.0	1.64	1.89	2.31
662.8	1.62	1.85	2.28
702.3	1.60	1.85	2.30
722.1	1.59	1.83	2.27
761.7	1.57	1.79	2.20
781.4	1.55	1.79	2.20
821.0	1.50	1.75	2.15
840.8	1.47	1.70	2.08
880.3	1.41	1.67	2.03
900.1	1.39	1.66	2.00

IF (OUT) (MHz)	IF VSWR @LO=600.1MHz (:1) @LO (dBm)		
	+4	+7	+10
5.0	1.49	1.31	1.21
10.0	1.50	1.32	1.21
25.1	2.72	2.09	1.78
40.3	2.58	2.04	1.75
55.4	2.45	1.95	1.70
70.5	2.49	1.97	1.71
85.6	2.56	2.03	1.78
100.8	2.68	2.11	1.86
115.9	2.72	2.15	1.89
131.0	2.64	2.11	1.88
146.2	2.63	2.10	1.87
161.3	2.73	2.18	1.95
176.4	2.75	2.21	2.01
191.5	2.78	2.23	2.04
206.7	2.79	2.25	2.06
221.8	2.86	2.31	2.11
236.9	2.94	2.37	2.16
252.1	2.92	2.38	2.18
267.2	2.87	2.34	2.15
282.3	2.92	2.34	2.15
297.4	3.00	2.42	2.23
312.6	3.00	2.44	2.28
327.7	2.97	2.42	2.26
342.8	3.00	2.43	2.26
357.9	3.04	2.46	2.28
373.1	3.09	2.49	2.30
388.2	3.03	2.46	2.29
403.3	2.99	2.42	2.25
418.5	3.08	2.46	2.27
433.6	3.18	2.54	2.33
448.7	3.20	2.56	2.34
463.8	3.16	2.50	2.27
479.0	3.13	2.46	2.22
494.1	3.14	2.46	2.20
509.2	3.18	2.48	2.22
524.4	3.18	2.48	2.22
539.5	3.19	2.47	2.18
554.6	3.31	2.52	2.18
569.7	3.37	2.56	2.18
584.9	3.33	2.52	2.14
600.0	3.33	2.62	2.31

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	17	28	9	30	21	39	26	40	33	70
1	-	20	+0	29	12	39	23	43	33	56	41	61
2	>100	61	64	60	63	59	56	70	60	72	62	74
3	>100	79	66	78	68	79	64	78	64	78	68	>81
4	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
5	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
6	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
7	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
8	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
9	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
10	>100	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 300.1 MHz; -14.00 dBm.
LO IN: 330.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -19.49 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	27	42	20	42	32	52	39	52	47	81
1	-	21	+0	29	12	39	23	45	36	56	46	66
2	>100	54	59	54	58	52	49	61	53	65	56	65
3	>100	58	49	59	50	58	47	69	52	64	52	70
4	>100	79	77	76	76	72	74	71	70	>91	73	85
5	>100	80	81	77	67	75	62	74	61	73	67	81
6	>100	>91	88	>91	84	>91	83	89	83	89	85	>91
7	>100	>91	>91	>91	88	84	88	85	82	85	79	86
8	>100	>91	>91	>91	>91	>91	>91	>91	88	90	>91	>91
9	>100	>91	>91	>91	>91	>91	>91	>91	>91	90	>91	>91
10	>100	>91	>91	>91	>91	>91	>91	>91	>91	>91	88	>91
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 300.1 MHz; -4.00 dBm.
LO IN: 330.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -9.4 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.