Frequency Mixer SBL-1+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+4	+7	+10
1.0	31.0	6.99	6.67	6.45
2.0	32.0	6.50	6.24	6.05
5.0	35.0	5.96	5.74	5.60
10.0	40.0	5.85	5.58	5.46
30.6	60.6	5.74	5.31	5.01
51.1	81.1	5.95	5.39	5.11
71.6	101.6	5.66	5.38	5.30
92.1	122.1	5.73	5.55	5.18
112.5	142.5	5.64	5.24	5.24
133.0	163.0	5.66	5.45	5.29
153.5	183.5	5.71	5.63	5.21
174.0	204.0	5.70	5.43	5.31
194.5	224.5	5.71	5.50	5.32
235.5	265.5	5.86	5.68	5.43
256.0	286.0	5.94	5.59	5.41
276.4	306.4	5.90	5.67	5.50
296.9	326.9	5.86	5.86	5.59
317.4	347.4	6.07	5.89	5.74
337.9	367.9	6.10	5.85	5.78
358.4	388.4	6.17	6.00	5.87
378.9	408.9	6.33	6.11	5.99
399.4	429.4	6.49	6.25	6.03
419.9	449.9	6.65	6.31	6.03
460.8	490.8	7.31	6.63	6.12
481.3	511.3	7.63	6.93	6.28
501.8	531.8	8.00	7.33	6.58
522.3	552.3	8.26	7.66	6.80
542.8	572.8	8.38	7.87	7.17
563.3	593.3	8.61	8.06	7.33
583.8	613.8	8.64	8.17	7.63
604.2	634.2	8.72	8.24	7.60
645.2	675.2	8.68	8.11	7.64
665.7	695.7	8.63	8.09	7.67
686.2	716.2	8.63	8.10	7.77
706.7	736.7	8.77	8.21	7.89
727.2	757.2	8.81	8.30	8.06
768.1	798.1	9.02	8.65	8.39
788.6	818.6	9.33	8.92	8.61
829.6	859.6	10.04	9.65	9.37
850.1	880.1	10.56	10.15	9.83

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
10.1	40.1	26.04	23.13	26.42
30.6	60.6	26.13	26.34	21.79
51.1	81.1	24.36	21.59	26.44
71.6	101.6	26.17	25.61	26.35
92.1	122.1	24.82	23.78	26.41
112.5	142.5	26.18	23.47	25.75
133.0	163.0	26.17	21.44	26.35
153.5	183.5	20.69	20.80	26.40
174.0	204.0	26.15	23.50	23.03
194.5	224.5	22.38	26.25	23.33
215.0	245.0	22.58	25.83	21.15
235.5	265.5	21.89	21.37	26.28
256.0	286.0	23.03	21.11	24.98
276.4	306.4	20.78	26.16	26.11
296.9	326.9	22.28	19.99	25.76
317.4	347.4	24.53	18.53	22.16
337.9	367.9	22.13	22.48	24.79
358.4	388.4	25.92	20.49	20.85
378.9	408.9	24.70	23.08	22.36
399.4	429.4	22.84	18.48	24.73
419.9	449.9	23.57	25.85	24.03
440.3	470.3	20.39	25.11	24.75
460.8	490.8	20.42	21.84	23.15
481.3	511.3	17.46	18.96	19.50
501.8	531.8	17.40	16.40	17.60
522.3	552.3	16.11	17.71	16.75
542.8	572.8	16.63	17.19	15.59
563.3	593.3	18.57	17.06	14.91
583.8	613.8	16.24	20.01	16.67
604.2	634.2	19.92	17.84	17.77
624.7	654.7	18.98	20.71	19.01
645.2	675.2	20.83	24.95	19.76
665.7	695.7	20.67	24.96	18.90
686.2	716.2	18.31	21.15	25.12
706.7	736.7	21.33	24.90	23.79
727.2	757.2	18.93	24.85	18.48
768.1	798.1	18.53	21.47	18.90
788.6	818.6	15.85	19.69	16.45
829.6	859.6	21.84	17.67	14.39
850.1	880.1	19.42	18.60	13.96

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	-0.53	0.83	-0.39
30.6	60.6	-0.38	-0.05	0.15
51.1	81.1	0.05	-0.05	0.37
71.6	101.6	0.11	0.00	0.01
92.1	122.1	-0.54	0.05	0.05
112.5	142.5	-0.39	0.05	-0.02
133.0	163.0	-0.17	0.07	0.07
153.5	183.5	-0.15	0.05	-0.05
174.0	204.0	0.03	-0.07	-0.06
194.5	224.5	0.08	0.01	-0.01
215.0	245.0	-0.07	-0.03	-0.09
235.5	265.5	-0.06	0.00	0.01
256.0	286.0	-0.06	0.06	-0.04
276.4	306.4	-0.02	0.01	0.07
296.9	326.9	-0.03	0.05	0.00
317.4	347.4	0.05	-0.03	-0.11
337.9	367.9	0.00	-0.03	0.03
358.4	388.4	-0.01	-0.01	-0.03
378.9	408.9	-0.03	0.07	-0.05
399.4	429.4	0.04	0.02	0.04
419.9	449.9	-0.04	0.08	0.04
440.3	470.3	0.03	0.07	0.01
460.8	490.8	-0.01	-0.03	-0.05
481.3	511.3	-0.09	0.00	-0.01
501.8	531.8	-0.08	-0.01	-0.01
522.3	552.3	-0.12	-0.13	-0.06
542.8	572.8	-0.16	-0.15	-0.04
563.3	593.3	-0.14	-0.11	-0.03
583.8	613.8	-0.16	-0.09	-0.06
604.2	634.2	-0.10	-0.07	-0.07
624.7	654.7	-0.11	-0.02	-0.02
645.2	675.2	-0.08	0.01	0.02
665.7	695.7	-0.03	-0.04	0.07
686.2	716.2	0.05	0.09	0.01
706.7	736.7	0.03	0.03	-0.02
727.2	757.2	0.06	0.01	-0.01
768.1	798.1	0.09	0.04	0.00
788.6	818.6	0.00	0.03	0.04
829.6	859.6	0.12	0.04	0.05
850.1	880.1	0.12	0.05	0.05

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=250.1MHz (dB)
		@LO (dBm)
		+7
240.0	10.1	5.87
234.1	16.0	5.82
228.2	21.9	5.70
222.3	27.8	5.67
216.4	33.7	5.63
210.5	39.6	5.61
204.6	45.5	5.57
198.7	51.4	5.53
192.8	57.3	5.52
186.9	63.2	5.49
181.0	69.1	5.53
175.1	75.0	5.50
169.2	80.9	5.50
163.3	86.8	5.51
157.4	92.7	5.49
151.5	98.6	5.50
145.6	104.5	5.50
139.7	110.4	5.50
133.8	116.3	5.45
127.9	122.2	5.45
122.1	128.0	5.48
116.2	133.9	5.52
110.3	139.8	5.53
104.4	145.7	5.52
98.5	151.6	5.47
92.6	157.5	5.49
86.7	163.4	5.49
80.8	169.3	5.50
74.9	175.2	5.50
69.0	181.1	5.48
63.1	187.0	5.50
57.2	192.9	5.49
51.3	198.8	5.55
45.4	204.7	5.55
39.5	210.6	5.63
33.6	216.5	5.55
27.7	222.4	5.59
21.8	228.3	5.55
15.9	234.2	5.74
10.0	240.1	5.39

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm)
		+7
10.0	20.1	5.09
22.3	32.4	5.11
34.6	44.7	5.20
46.9	57.0	5.20
59.2	69.3	5.23
71.5	81.6	5.28
83.8	93.9	5.18
96.2	106.3	5.37
108.5	118.6	5.45
120.8	130.9	5.32
133.1	143.2	5.72
145.4	155.5	5.64
157.7	167.8	5.59
170.0	180.1	5.53
182.3	192.4	5.57
194.6	204.7	5.68
206.9	217.0	5.52
219.2	229.3	5.62
231.5	241.6	5.86
243.8	253.9	5.71
256.2	266.3	5.77
268.5	278.6	5.75
280.8	290.9	5.88
293.1	303.2	6.09
305.4	315.5	6.09
317.7	327.8	6.39
330.0	340.1	6.45
342.3	352.4	6.20
354.6	364.7	6.22
366.9	377.0	6.22
379.2	389.3	6.09
391.5	401.6	5.94
403.8	413.9	6.11
416.2	426.3	5.99
428.5	438.6	5.98
440.8	450.9	5.95
453.1	463.2	5.67
465.4	475.5	6.04
477.7	487.8	5.96
490.0	500.1	5.86

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)
		@LO (dBm)
		+7
490.0	10.1	7.46
477.7	22.4	7.33
465.4	34.7	7.25
453.1	47.0	7.22
440.8	59.3	7.25
428.5	71.6	7.16
416.2	83.9	7.09
403.8	96.3	7.07
391.5	108.6	6.99
379.2	120.9	7.02
366.9	133.2	7.04
354.6	145.5	6.97
342.3	157.8	7.00
330.0	170.1	6.98
317.7	182.4	7.00
305.4	194.7	7.02
293.1	207.0	6.95
280.8	219.3	6.94
268.5	231.6	6.95
256.2	243.9	6.95
243.8	256.3	7.06
231.5	268.6	7.00
219.2	280.9	6.91
206.9	293.2	6.90
194.6	305.5	6.84
182.3	317.8	6.84
170.0	330.1	6.88
157.7	342.4	6.91
145.4	354.7	6.95
133.1	367.0	6.94
120.8	379.3	6.85
108.5	391.6	6.82
96.2	403.9	6.67
83.8	416.3	6.48
71.5	428.6	6.36
59.2	440.9	6.27
46.9	453.2	6.29
34.6	465.5	6.42
22.3	477.8	6.58
10.0	490.1	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
1.0	62.73	67.00	68.01	61.88	65.61	70.00
2.0	61.86	67.00	67.46	61.93	67.00	70.00
5.0	61.73	64.84	66.12	62.43	67.00	70.00
10.0	61.35	64.19	65.15	61.72	64.81	66.04
30.6	63.29	64.90	66.09	58.07	56.85	55.84
51.1	59.26	60.58	61.78	54.56	53.47	52.63
71.6	56.16	57.67	58.95	53.00	51.50	50.57
92.1	54.28	55.59	56.83	50.97	50.27	48.66
112.5	52.52	54.29	55.26	49.14	48.68	47.44
133.0	51.12	52.35	53.33	47.12	46.83	45.72
153.5	50.11	51.43	52.45	46.28	45.82	45.16
174.0	48.88	50.14	51.16	45.09	45.28	44.51
194.5	47.54	48.68	49.67	43.58	44.07	43.80
235.5	46.70	47.99	49.18	41.02	41.48	41.68
256.0	46.11	47.26	48.38	39.94	40.74	41.43
276.4	45.11	46.42	47.41	40.36	41.34	42.12
296.9	44.87	46.08	47.18	39.89	41.02	41.72
317.4	44.36	45.82	46.99	39.77	41.43	42.35
337.9	42.79	44.25	45.53	39.04	40.93	42.37
358.4	42.74	44.32	45.84	37.42	39.19	40.70
378.9	42.32	43.90	45.39	36.56	38.53	40.37
399.4	42.38	44.52	47.23	35.62	37.41	39.43
419.9	42.41	44.95	47.71	34.83	36.27	38.03
460.8	41.99	44.40	46.97	34.41	35.05	36.45
481.3	42.13	45.13	49.18	35.04	35.37	36.49
501.8	43.18	46.30	49.52	35.29	35.86	36.61
522.3	43.46	47.39	52.77	35.59	36.22	36.58
542.8	43.43	46.82	49.97	35.33	35.96	36.44
563.3	44.39	48.68	52.30	35.26	35.55	35.51
583.8	43.21	45.17	46.03	35.49	35.47	35.11
604.2	44.06	46.45	47.42	35.46	34.96	34.23
645.2	43.90	44.33	43.37	34.50	33.04	31.39
665.7	43.47	41.83	39.48	33.12	31.22	28.60
686.2	44.30	41.21	38.11	31.26	28.71	25.69
706.7	45.36	38.99	35.70	29.55	26.45	23.81
727.2	44.68	37.44	34.55	27.76	24.64	22.34
768.1	40.31	34.45	32.17	24.58	22.27	20.71
788.6	37.55	33.06	30.96	23.36	21.42	19.96
829.6	33.78	30.97	29.08	21.38	20.02	18.81
850.1	32.11	29.84	28.12	20.52	19.44	18.25

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	13.03	22.48	31.18
30.6	60.6	12.90	22.13	32.34
51.1	81.1	27.20	25.12	33.34
71.6	101.6	31.86	26.65	29.55
92.1	122.1	32.04	27.65	28.66
112.5	142.5	30.06	32.34	30.42
133.0	163.0	28.80	30.60	32.10
153.5	183.5	27.98	28.81	29.84
174.0	204.0	27.58	29.49	29.69
194.5	224.5	28.48	28.43	29.86
215.0	245.0	27.47	28.31	28.67
235.5	265.5	27.82	27.85	27.20
256.0	286.0	27.31	28.26	28.84
276.4	306.4	27.41	29.06	29.96
296.9	326.9	26.75	27.86	29.18
317.4	347.4	25.41	26.16	26.26
337.9	367.9	23.80	24.12	24.62
358.4	388.4	22.62	22.74	22.84
378.9	408.9	21.39	21.75	21.38
399.4	429.4	20.49	20.32	20.27
419.9	449.9	20.05	20.02	19.97
440.3	470.3	19.58	19.57	19.67
460.8	490.8	19.56	19.59	19.72
481.3	511.3	19.46	19.70	19.89
501.8	531.8	19.50	19.50	19.64
522.3	552.3	20.08	19.98	20.20
542.8	572.8	20.32	20.16	20.19
563.3	593.3	20.60	20.42	20.18
583.8	613.8	20.28	20.08	19.84
604.2	634.2	19.71	19.45	19.23
624.7	654.7	19.02	18.72	18.35
645.2	675.2	18.18	17.77	17.35
665.7	695.7	17.37	16.80	16.21
686.2	716.2	16.57	15.94	15.37
706.7	736.7	15.80	15.03	14.48
727.2	757.2	14.96	14.22	13.70
768.1	798.1	13.40	12.69	12.17
788.6	818.6	12.71	12.07	11.53
829.6	859.6	11.24	10.67	10.11
850.1	880.1	10.75	10.12	9.53

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
1.0	31.0	1.83	1.80	1.86
10.1	40.1	1.18	1.14	1.10
30.6	60.6	1.22	1.05	1.05
51.1	81.1	1.15	1.06	1.07
71.6	101.6	1.06	1.04	1.01
92.1	122.1	1.09	1.02	1.08
112.5	142.5	1.06	1.07	1.12
133.0	163.0	1.03	1.04	1.09
153.5	183.5	1.02	1.08	1.13
174.0	204.0	1.04	1.14	1.20
194.5	224.5	1.06	1.14	1.22
215.0	245.0	1.09	1.13	1.22
235.5	265.5	1.10	1.15	1.19
256.0	286.0	1.15	1.24	1.28
276.4	306.4	1.21	1.32	1.41
296.9	326.9	1.26	1.37	1.47
317.4	347.4	1.27	1.39	1.48
337.9	367.9	1.31	1.41	1.47
358.4	388.4	1.37	1.44	1.53
378.9	408.9	1.39	1.46	1.52
399.4	429.4	1.34	1.41	1.43
419.9	449.9	1.26	1.32	1.32
440.3	470.3	1.20	1.22	1.23
460.8	490.8	1.15	1.12	1.14
481.3	511.3	1.13	1.08	1.04
501.8	531.8	1.20	1.12	1.07
542.8	572.8	1.41	1.37	1.31
563.3	593.3	1.55	1.51	1.48
583.8	613.8	1.68	1.65	1.63
604.2	634.2	1.83	1.80	1.81
624.7	654.7	1.97	1.97	2.00
645.2	675.2	2.12	2.14	2.16
665.7	695.7	2.27	2.29	2.32
686.2	716.2	2.42	2.44	2.45
706.7	736.7	2.51	2.56	2.56
727.2	757.2	2.64	2.64	2.64
768.1	798.1	2.83	2.80	2.72
788.6	818.6	2.91	2.84	2.80
829.6	859.6	3.14	3.04	3.00
850.1	880.1	3.26	3.18	3.14

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
1.0	2.45	3.75	5.47
10.1	1.85	2.60	3.76
30.6	1.84	2.73	3.80
51.1	1.76	2.56	3.56
71.6	1.67	2.37	3.27
92.1	1.69	2.38	3.26
112.5	1.74	2.51	3.45
133.0	1.79	2.57	3.51
153.5	1.75	2.48	3.37
174.0	1.75	2.44	3.29
194.5	1.80	2.52	3.38
215.0	1.88	2.62	3.52
235.5	1.91	2.65	3.52
256.0	1.90	2.61	3.45
276.4	1.93	2.63	3.47
296.9	2.01	2.73	3.58
317.4	2.10	2.84	3.70
337.9	2.12	2.85	3.70
358.4	2.13	2.84	3.67
378.9	2.18	2.91	3.74
399.4	2.27	2.99	3.84
419.9	2.32	3.03	3.86
440.3	2.36	3.04	3.84
460.8	2.42	3.10	3.89
481.3	2.53	3.24	4.02
501.8	2.64	3.37	4.16
542.8	2.72	3.44	4.24
563.3	2.78	3.50	4.30
583.8	2.87	3.60	4.41
604.2	2.95	3.67	4.47
624.7	2.97	3.68	4.47
645.2	3.00	3.69	4.46
665.7	3.05	3.73	4.50
686.2	3.10	3.76	4.51
706.7	3.12	3.76	4.48
727.2	3.14	3.76	4.46
768.1	3.27	3.86	4.56
788.6	3.38	3.94	4.61
829.6	3.63	4.09	4.68
850.1	3.79	4.21	4.75

IF (OUT) (MHz)	IF VSWR @LO=500.1MHz (:1) @LO (dBm)		
	+4	+7	+10
1.0	1.67	1.44	1.30
22.6	2.17	1.84	1.61
35.1	2.22	1.88	1.65
47.7	2.40	2.02	1.77
60.3	2.50	2.11	1.85
72.8	2.49	2.12	1.86
85.4	2.39	2.05	1.81
97.9	2.31	1.97	1.76
110.5	2.31	1.99	1.78
123.1	2.41	2.07	1.87
135.6	2.52	2.18	1.96
148.2	2.59	2.24	2.02
160.8	2.58	2.22	2.01
173.3	2.54	2.19	1.98
185.9	2.54	2.20	2.00
198.5	2.56	2.23	2.04
211.0	2.58	2.25	2.08
223.6	2.61	2.27	2.10
236.2	2.63	2.29	2.11
248.7	2.66	2.33	2.14
261.3	2.71	2.36	2.17
273.8	2.72	2.38	2.19
286.4	2.69	2.36	2.19
299.0	2.65	2.33	2.17
311.5	2.67	2.34	2.17
324.1	2.74	2.40	2.23
336.7	2.81	2.47	2.29
349.2	2.85	2.49	2.29
361.8	2.79	2.45	2.25
374.4	2.72	2.39	2.20
386.9	2.71	2.37	2.18
399.5	2.75	2.40	2.20
412.1	2.80	2.44	2.24
424.6	2.75	2.40	2.21
437.2	2.73	2.35	2.15
449.7	2.72	2.36	2.13
462.3	2.74	2.36	2.15
474.9	2.77	2.37	2.14
487.4	2.76	2.37	2.13
500.0	2.51	2.36	2.35

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	20	37	17	35	25	40	42	44	51	68
1	-	25	+0	39	11	37	25	45	37	48	41	48
2	>100	72	55	74	57	80	60	80	61	72	74	77
3	>100	71	63	68	65	73	59	73	>80	75	70	77
4	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
5	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
6	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
7	>100	>80	>80	>80	>80	>80	>80	79	>80	>80	>80	>80
8	>100	>80	>80	>80	>80	>80	>80	>80	77	>80	>80	>80
9	>100	>80	>80	>80	>80	>80	>80	>80	>80	61	>80	>80
10	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	64	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -14.00 dBm.
LO IN: 280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -19.54 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	30	47	27	46	36	52	55	56	72	74
1	-	26	+0	36	12	36	27	52	39	58	50	57
2	97	58	50	63	51	62	59	64	57	66	66	77
3	>100	57	37	51	42	65	36	54	51	59	55	66
4	>100	78	71	75	64	75	64	78	66	>90	68	81
5	>100	74	61	68	53	64	53	68	58	64	73	68
6	>100	>90	90	86	88	85	87	>90	77	84	84	>90
7	>100	>90	80	83	70	76	64	79	64	83	63	74
8	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	86	>90
9	>100	88	>90	>90	>90	>90	81	>90	83	72	83	90
10	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	82	>90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -4.00 dBm.
LO IN: 280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -9.63 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.