

Frequency Mixer

SBL-1XLH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	6.27	5.71	5.65
50.4	80.4	6.39	5.97	5.74
90.6	120.6	6.36	5.92	5.73
130.9	160.9	6.35	5.96	5.76
171.1	201.1	6.50	6.08	5.84
211.4	241.4	6.46	6.02	5.79
251.6	281.6	6.64	6.16	5.94
291.9	321.9	6.59	6.14	5.93
332.1	362.1	6.68	6.17	5.96
372.4	402.4	6.85	6.29	6.01
412.6	442.6	6.93	6.41	6.13
452.9	482.9	7.17	6.67	6.43
493.1	523.1	7.27	6.84	6.63
533.4	563.4	7.30	6.93	6.73
573.6	603.6	7.04	6.74	6.58
613.9	643.9	6.82	6.56	6.44
654.2	684.2	6.62	6.37	6.26
694.4	724.4	6.49	6.18	6.09
734.7	764.7	6.51	6.12	5.96
774.9	804.9	6.41	5.97	5.83
815.2	845.2	6.60	6.03	5.78
855.4	885.4	6.80	6.09	5.82
895.7	925.7	6.89	6.18	5.88
935.9	965.9	6.87	6.24	5.93
976.2	1006.2	6.65	6.15	5.83
1016.4	1046.4	6.64	6.18	5.90
1056.7	1086.7	6.53	6.12	5.90
1096.9	1126.9	6.64	6.20	5.97
1137.2	1167.2	6.72	6.35	6.12
1177.4	1207.4	6.96	6.55	6.34
1217.7	1247.7	7.24	6.89	6.69
1257.9	1287.9	7.42	7.15	6.99
1298.2	1328.2	7.76	7.52	7.29
1338.5	1368.5	8.03	7.83	7.53
1378.7	1408.7	8.45	8.16	7.81
1419.0	1449.0	8.93	8.46	8.13
1459.2	1489.2	9.32	8.77	8.60
1499.5	1529.5	9.74	9.23	9.15
1539.7	1569.7	10.04	9.73	9.65
1600.1	1630.1	10.62	10.27	10.18

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	22.67	21.19	20.29
50.4	80.4	15.99	16.12	16.25
90.6	120.6	15.14	15.30	17.15
130.9	160.9	13.89	16.13	23.87
171.1	201.1	12.93	17.24	20.19
211.4	241.4	14.43	21.09	17.77
251.6	281.6	16.42	16.97	15.62
291.9	321.9	19.14	15.99	15.56
332.1	362.1	17.90	15.87	15.74
372.4	402.4	13.67	13.97	14.95
412.6	442.6	11.63	11.71	13.27
452.9	482.9	10.64	11.52	12.99
493.1	523.1	10.01	10.79	12.39
533.4	563.4	10.02	10.85	12.46
573.6	603.6	10.36	10.69	12.76
613.9	643.9	12.99	11.70	12.49
654.2	684.2	13.46	13.53	12.90
694.4	724.4	14.63	15.38	15.33
734.7	764.7	12.91	15.73	16.56
774.9	804.9	11.61	15.68	15.53
815.2	845.2	12.29	17.15	14.83
855.4	885.4	11.31	15.38	18.44
895.7	925.7	9.94	12.63	15.09
935.9	965.9	8.79	9.97	11.77
976.2	1006.2	8.54	9.75	11.19
1016.4	1046.4	8.10	9.18	10.66
1056.7	1086.7	7.66	8.59	9.98
1096.9	1126.9	7.62	8.41	9.83
1137.2	1167.2	6.93	7.66	8.87
1177.4	1207.4	6.67	7.27	8.15
1217.7	1247.7	5.80	6.46	7.39
1257.9	1287.9	5.25	5.93	7.17
1298.2	1328.2	5.23	6.57	9.15
1338.5	1368.5	5.65	8.89	14.48
1378.7	1408.7	7.28	13.49	12.78
1419.0	1449.0	11.19	9.82	12.40
1459.2	1489.2	11.00	9.97	14.25
1499.5	1529.5	8.65	11.65	16.11
1539.7	1569.7	9.00	13.37	17.64
1600.1	1630.1	10.81	13.61	15.08

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	1.64	1.18	0.86
50.4	80.4	1.69	1.12	0.78
90.6	120.6	1.42	1.09	0.81
130.9	160.9	1.77	1.14	0.86
171.1	201.1	1.65	1.19	0.93
211.4	241.4	1.75	1.31	1.02
251.6	281.6	1.75	1.35	1.09
291.9	321.9	1.93	1.46	1.13
332.1	362.1	1.91	1.53	1.25
372.4	402.4	1.80	1.51	1.29
412.6	442.6	1.72	1.46	1.29
452.9	482.9	1.51	1.31	1.18
493.1	523.1	1.34	1.08	0.95
533.4	563.4	1.32	1.04	0.92
573.6	603.6	1.49	1.16	1.05
613.9	643.9	1.67	1.30	1.12
654.2	684.2	1.84	1.49	1.27
694.4	724.4	1.86	1.58	1.37
734.7	764.7	1.80	1.56	1.44
774.9	804.9	1.79	1.57	1.44
815.2	845.2	1.53	1.36	1.28
855.4	885.4	1.30	1.16	1.08
895.7	925.7	1.11	0.93	0.85
935.9	965.9	1.13	0.80	0.69
976.2	1006.2	1.33	0.87	0.68
1016.4	1046.4	1.46	0.86	0.61
1056.7	1086.7	1.62	0.96	0.65
1096.9	1126.9	1.55	0.96	0.67
1137.2	1167.2	1.57	0.94	0.65
1177.4	1207.4	1.59	0.97	0.67
1217.7	1247.7	1.43	0.88	0.63
1257.9	1287.9	1.54	0.97	0.69
1298.2	1328.2	1.46	0.94	0.71
1338.5	1368.5	1.43	0.91	0.77
1378.7	1408.7	1.37	0.89	0.76
1419.0	1449.0	1.13	0.84	0.62
1459.2	1489.2	1.10	0.83	0.50
1499.5	1529.5	1.00	0.65	0.37
1539.7	1569.7	0.83	0.46	0.29
1600.1	1630.1	0.65	0.34	0.21

Frequency Mixer

SBL-1XLH+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+10			+10			+10
480.0	20.1	6.95	10.0	20.1	5.67	500.0	500.1	6.74
467.9	32.2	6.97	22.6	32.7	5.64	487.4	512.7	6.66
455.9	44.2	6.96	35.1	45.2	5.69	474.9	525.2	6.65
443.8	56.3	7.05	47.7	57.8	5.78	462.3	537.8	6.56
431.8	68.3	7.15	60.3	70.4	5.74	449.7	550.4	6.54
419.7	80.4	7.22	72.8	82.9	5.81	437.2	562.9	6.50
407.7	92.4	7.33	85.4	95.5	5.85	424.6	575.5	6.48
395.6	104.5	7.27	97.9	108.0	5.79	412.1	588.0	6.51
383.6	116.5	7.16	110.5	120.6	5.81	399.5	600.6	6.44
371.5	128.6	7.19	123.1	133.2	5.73	386.9	613.2	6.39
359.5	140.6	7.22	135.6	145.7	5.71	374.4	625.7	6.40
347.4	152.7	7.23	148.2	158.3	5.76	361.8	638.3	6.40
335.4	164.7	7.27	160.8	170.9	5.75	349.2	650.9	6.49
323.3	176.8	7.22	173.3	183.4	5.74	336.7	663.4	6.55
311.3	188.8	7.23	185.9	196.0	5.75	324.1	676.0	6.57
299.2	200.9	7.33	198.5	208.6	5.66	311.5	688.6	6.62
287.2	212.9	7.18	211.0	221.1	5.68	299.0	701.1	6.62
275.1	225.0	7.09	223.6	233.7	5.68	286.4	713.7	6.63
263.1	237.0	7.13	236.2	246.3	5.64	273.8	726.3	6.69
251.0	249.1	7.04	248.7	258.8	5.69	261.3	738.8	6.67
239.0	261.1	7.16	261.3	271.4	5.68	248.7	751.4	6.70
226.9	273.2	7.14	273.8	283.9	5.64	236.2	763.9	6.73
214.9	285.2	7.05	286.4	296.5	5.68	223.6	776.5	6.70
202.8	297.3	7.06	299.0	309.1	5.67	211.0	789.1	6.71
190.8	309.3	7.09	311.5	321.6	5.64	198.5	801.6	6.71
178.7	321.4	7.00	324.1	334.2	5.67	185.9	814.2	6.69
166.7	333.4	7.02	336.7	346.8	5.65	173.3	826.8	6.72
154.6	345.5	7.01	349.2	359.3	5.68	160.8	839.3	6.69
142.6	357.5	7.03	361.8	371.9	5.72	148.2	851.9	6.65
130.5	369.6	7.14	374.4	384.5	5.70	135.6	864.5	6.65
118.5	381.6	7.09	386.9	397.0	5.76	123.1	877.0	6.57
106.4	393.7	7.00	399.5	409.6	5.80	110.5	889.6	6.50
94.4	405.7	7.01	412.1	422.2	5.81	97.9	902.2	6.44
82.3	417.8	6.90	424.6	434.7	5.86	85.4	914.7	6.30
70.3	429.8	6.86	437.2	447.3	5.86	72.8	927.3	6.26
58.2	441.9	6.87	449.7	459.8	5.85	60.3	939.8	6.24
46.2	453.9	6.77	462.3	472.4	5.92	47.7	952.4	6.15
34.1	466.0	6.78	474.9	485.0	5.92	35.1	965.0	6.17
22.1	478.0	6.82	487.4	497.5	5.94	22.6	977.5	6.12
10.0	490.1	6.97	500.0	510.1	5.97	10.0	990.1	6.30

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+7	+10	+13	+7	+10	+13
10.1	74.65	68.79	63.79	66.86	81.37	81.46
50.4	60.68	57.39	55.60	67.59	69.10	72.24
90.6	57.65	54.33	51.49	61.77	63.38	64.55
130.9	54.23	50.88	49.02	57.66	59.69	61.59
171.1	52.85	49.49	47.85	54.90	56.64	58.38
211.4	51.46	48.50	46.60	52.95	55.03	56.48
251.6	50.63	47.29	45.20	51.75	53.37	54.34
291.9	49.46	46.33	44.26	50.57	52.36	53.41
332.1	46.54	44.50	43.07	49.02	50.34	51.48
372.4	44.34	43.07	41.59	47.65	48.59	49.25
412.6	41.40	40.50	40.37	47.27	48.17	49.09
452.9	40.57	39.03	38.33	47.56	48.05	48.69
493.1	39.55	39.17	38.32	47.81	48.05	47.67
533.4	38.41	38.50	38.27	47.10	48.47	48.68
573.6	37.21	37.43	37.58	45.09	46.26	47.03
613.9	36.37	35.82	35.57	43.43	43.96	44.71
654.2	35.67	35.14	34.08	42.33	42.75	43.29
694.4	34.61	34.74	33.70	41.84	42.68	43.64
734.7	33.94	34.87	34.44	41.60	43.56	45.48
774.9	32.48	34.16	34.91	39.98	42.00	44.12
815.2	31.52	33.56	34.93	38.86	40.86	43.00
855.4	30.05	32.20	34.26	38.36	40.40	42.69
895.7	28.45	30.11	32.21	38.35	40.56	43.04
935.9	27.84	29.03	30.94	39.26	41.52	44.19
976.2	27.63	28.43	29.92	39.95	42.12	44.50
1016.4	27.88	28.62	29.86	40.72	42.64	44.44
1056.7	27.76	28.83	29.92	41.55	43.45	45.26
1096.9	27.98	29.24	30.12	41.77	43.37	45.19
1137.2	28.63	30.37	30.87	41.92	43.22	44.82
1177.4	28.99	31.36	31.94	41.17	42.17	43.54
1217.7	29.61	32.80	34.21	41.16	41.65	42.39
1257.9	29.34	33.08	36.02	42.05	42.54	43.00
1298.2	29.00	32.70	36.48	43.15	43.75	44.20
1338.5	28.83	32.89	37.12	43.89	44.71	45.08
1378.7	29.19	33.51	37.45	43.17	44.26	44.89
1419.0	29.85	34.46	38.08	43.46	44.41	45.18
1459.2	31.07	35.30	38.46	42.99	44.20	45.31
1499.5	31.90	35.48	38.34	43.34	44.54	45.73
1539.7	32.44	35.43	38.08	43.67	44.92	46.23
1600.1	32.23	34.73	37.09	43.92	45.19	46.32

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	43.00	43.48	50.66
50.4	80.4	37.81	37.89	38.76
90.6	120.6	33.36	33.75	33.69
130.9	160.9	30.87	31.27	31.45
171.1	201.1	29.28	29.68	29.94
211.4	241.4	28.27	28.63	29.10
251.6	281.6	28.26	28.55	28.72
291.9	321.9	27.94	28.91	29.52
332.1	362.1	27.27	28.50	29.19
372.4	402.4	27.32	27.74	28.14
412.6	442.6	27.88	28.13	28.24
452.9	482.9	28.44	29.15	29.52
493.1	523.1	28.38	29.43	30.35
533.4	563.4	26.47	27.43	28.40
573.6	603.6	24.43	25.09	25.59
613.9	643.9	22.72	23.02	23.25
654.2	684.2	21.77	21.84	21.84
694.4	724.4	21.10	21.16	21.18
734.7	764.7	20.84	20.91	21.07
774.9	804.9	20.56	20.59	20.67
815.2	845.2	20.53	20.51	20.48
855.4	885.4	20.74	20.42	20.17
895.7	925.7	20.35	19.78	19.33
935.9	965.9	20.29	19.73	19.09
976.2	1006.2	20.25	19.81	19.32
1016.4	1046.4	19.85	19.60	19.25
1056.7	1086.7	19.16	19.06	18.83
1096.9	1126.9	18.44	18.45	18.34
1137.2	1167.2	17.77	17.77	17.69
1177.4	1207.4	16.89	16.88	16.79
1217.7	1247.7	15.97	15.87	15.68
1257.9	1287.9	15.19	15.00	14.73
1298.2	1328.2	14.56	14.23	13.83
1338.5	1368.5	13.94	13.50	13.06
1378.7	1408.7	13.32	12.76	12.31
1419.0	1449.0	12.61	12.02	11.65
1459.2	1489.2	12.05	11.45	11.18
1499.5	1529.5	11.46	11.01	10.81
1539.7	1569.7	11.05	10.70	10.60
1600.1	1630.1	10.57	10.36	10.19

Frequency Mixer

SBL-1XLH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	1.31	1.13	1.03
50.4	80.4	1.41	1.19	1.07
90.6	120.6	1.40	1.20	1.11
130.9	160.9	1.42	1.25	1.18
171.1	201.1	1.53	1.35	1.28
211.4	241.4	1.60	1.46	1.39
251.6	281.6	1.77	1.63	1.55
291.9	321.9	1.94	1.79	1.69
332.1	362.1	2.12	1.95	1.83
372.4	402.4	2.35	2.15	2.00
412.6	442.6	2.52	2.30	2.13
452.9	482.9	2.71	2.46	2.29
493.1	523.1	2.79	2.58	2.44
533.4	563.4	2.84	2.64	2.50
573.6	603.6	2.84	2.63	2.48
613.9	643.9	2.81	2.59	2.44
654.2	684.2	2.78	2.52	2.36
694.4	724.4	2.75	2.46	2.25
734.7	764.7	2.79	2.43	2.17
774.9	804.9	2.78	2.32	2.01
815.2	845.2	2.87	2.30	1.94
855.4	885.4	3.01	2.41	2.06
895.7	925.7	3.06	2.48	2.14
935.9	965.9	3.02	2.47	2.07
976.2	1006.2	2.85	2.38	1.97
1016.4	1046.4	2.73	2.30	1.93
1056.7	1086.7	2.63	2.22	1.90
1096.9	1126.9	2.58	2.18	1.88
1137.2	1167.2	2.57	2.21	1.94
1177.4	1207.4	2.64	2.33	2.09
1217.7	1247.7	2.70	2.43	2.24
1257.9	1287.9	2.72	2.51	2.37
1298.2	1328.2	2.71	2.56	2.51
1338.5	1368.5	2.73	2.68	2.77
1378.7	1408.7	2.85	2.95	3.17
1419.0	1449.0	3.06	3.33	3.62
1459.2	1489.2	3.36	3.73	4.01
1499.5	1529.5	3.72	4.10	4.34
1539.7	1569.7	4.04	4.37	4.56
1600.1	1630.1	4.25	4.47	4.59

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+7	+10	+13
10.1	1.71	2.47	3.20
50.4	1.80	2.62	3.66
90.6	1.69	2.39	3.28
130.9	1.76	2.55	3.54
171.1	1.71	2.43	3.33
211.4	1.74	2.48	3.41
251.6	1.75	2.50	3.43
291.9	1.74	2.46	3.34
332.1	1.81	2.56	3.48
372.4	1.79	2.50	3.37
412.6	1.86	2.58	3.47
452.9	1.87	2.58	3.43
493.1	1.90	2.60	3.44
533.4	1.96	2.67	3.50
573.6	1.96	2.64	3.43
613.9	2.04	2.74	3.54
654.2	2.06	2.73	3.52
694.4	2.11	2.78	3.56
734.7	2.17	2.82	3.58
774.9	2.20	2.81	3.54
815.2	2.26	2.86	3.58
855.4	2.31	2.88	3.57
895.7	2.39	2.96	3.65
935.9	2.46	3.05	3.73
976.2	2.51	3.10	3.77
1016.4	2.55	3.15	3.82
1056.7	2.60	3.19	3.86
1096.9	2.63	3.21	3.86
1137.2	2.68	3.23	3.88
1177.4	2.72	3.25	3.88
1217.7	2.75	3.24	3.86
1257.9	2.80	3.26	3.86
1298.2	2.80	3.22	3.79
1338.5	2.83	3.21	3.76
1378.7	2.84	3.18	3.73
1419.0	2.85	3.15	3.70
1459.2	2.89	3.21	3.79
1499.5	2.95	3.26	3.82
1539.7	3.09	3.40	3.94
1600.1	3.35	3.56	4.04

IF (OUT) (MHz)	IF VSWR @LO=1000.1MHz (:1)		
	@LO (dBm)		
	+7	+10	+13
10.0	1.35	1.56	1.71
22.6	1.33	1.52	1.68
35.1	1.40	1.59	1.77
47.7	1.41	1.62	1.79
60.3	1.41	1.61	1.77
72.8	1.40	1.59	1.74
85.4	1.41	1.60	1.76
97.9	1.42	1.61	1.78
110.5	1.42	1.61	1.77
123.1	1.41	1.58	1.73
135.6	1.40	1.57	1.70
148.2	1.41	1.57	1.71
160.8	1.43	1.61	1.76
173.3	1.45	1.63	1.78
185.9	1.45	1.61	1.75
198.5	1.43	1.58	1.70
211.0	1.42	1.56	1.68
223.6	1.43	1.58	1.70
236.2	1.46	1.61	1.73
248.7	1.47	1.62	1.74
261.3	1.46	1.60	1.71
273.8	1.44	1.57	1.66
286.4	1.43	1.55	1.64
299.0	1.44	1.56	1.66
311.5	1.45	1.58	1.67
324.1	1.45	1.57	1.65
336.7	1.43	1.53	1.61
349.2	1.40	1.50	1.58
361.8	1.40	1.50	1.57
374.4	1.41	1.51	1.59
386.9	1.42	1.52	1.59
399.5	1.41	1.50	1.57
412.1	1.37	1.45	1.51
424.6	1.35	1.43	1.49
437.2	1.36	1.44	1.50
449.7	1.36	1.44	1.51
462.3	1.36	1.43	1.49
474.9	1.34	1.40	1.45
487.4	1.31	1.37	1.41
500.0	1.29	1.35	1.41

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	29	30	42	46	40	42	33	58	50	64
1	-	23	+0	48	17	32	47	37	40	34	53	49
2	90	42	57	47	55	41	52	61	62	52	41	68
3	>100	48	32	53	36	53	34	44	62	51	64	49
4	>100	75	72	57	65	52	67	50	63	80	69	64
5	>100	70	79	67	50	58	48	61	47	60	73	61
6	>100	82	83	86	80	71	82	65	69	63	71	81
7	>100	68	78	81	78	80	64	72	61	68	61	71
8	>100	90	77	89	90	93	88	89	83	79	77	71
9	>100	84	90	82	90	92	>93	93	78	79	75	75
10	>100	>93	93	>93	89	>93	>93	>93	>93	88	90	85
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 500.1 MHz; 0.00 dBm.

LO IN: 530.01 MHz; +10.00 dBm

IF OUT: 29.91 MHz; -6.95 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	20	25	33	34	30	29	17	41	45	54
1	-	23	+0	39	16	27	40	32	40	29	44	38
2	>100	45	60	47	69	42	55	70	58	60	50	58
3	>100	61	47	64	48	72	46	58	78	62	57	62
4	>100	>83	>83	68	81	69	79	69	80	>83	80	73
5	>100	>83	>83	>83	77	>83	80	>83	76	>83	>83	>83
6	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
7	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
8	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
9	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 500.1 MHz; -10.00 dBm.

LO IN: 530.01 MHz; +10.00 dBm

IF OUT: 29.91 MHz; -16.99 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.

REV. X2

SBL-1XLH+

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