

Frequency Mixer

LRMS-5LHJ

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+7	+10	+13			+7	+10	+13			+7	+10	+13
10.1	40.1	6.08	5.72	5.53	10.1	40.1	18.06	22.69	24.62	10.1	40.1	1.12	0.86	0.69
49.6	79.6	6.02	5.59	5.40	49.6	79.6	19.13	21.10	17.97	49.6	79.6	1.64	1.30	1.18
89.1	119.1	5.86	5.45	5.30	89.1	119.1	17.37	16.45	19.14	89.1	119.1	1.77	1.43	1.26
128.7	158.7	5.85	5.49	5.36	128.7	158.7	14.74	17.39	20.38	128.7	158.7	1.76	1.48	1.29
168.2	198.2	5.87	5.51	5.37	168.2	198.2	14.83	18.76	23.51	168.2	198.2	1.74	1.44	1.27
207.7	237.7	5.85	5.51	5.36	207.7	237.7	15.24	19.94	25.41	207.7	237.7	1.85	1.55	1.37
247.2	277.2	5.95	5.59	5.42	247.2	277.2	16.32	20.61	26.22	247.2	277.2	1.84	1.55	1.38
286.7	316.7	5.97	5.60	5.41	286.7	316.7	17.53	22.18	21.30	286.7	316.7	1.94	1.62	1.49
326.2	356.2	6.04	5.65	5.47	326.2	356.2	17.31	24.75	22.42	326.2	356.2	1.96	1.68	1.53
365.8	395.8	6.11	5.71	5.49	365.8	395.8	19.16	24.72	23.60	365.8	395.8	2.06	1.78	1.62
405.3	435.3	6.12	5.71	5.53	405.3	435.3	24.35	19.78	21.63	405.3	435.3	2.14	1.87	1.69
444.8	474.8	6.24	5.79	5.56	444.8	474.8	19.73	21.61	17.80	444.8	474.8	2.20	1.92	1.78
484.3	514.3	6.26	5.85	5.60	484.3	514.3	21.75	22.61	19.56	484.3	514.3	2.32	2.01	1.88
523.8	553.8	6.33	5.88	5.67	523.8	553.8	18.91	20.00	18.19	523.8	553.8	2.33	1.99	1.82
563.4	593.4	6.41	5.89	5.62	563.4	593.4	17.33	16.35	16.60	563.4	593.4	2.42	2.16	1.97
602.9	632.9	6.51	5.97	5.65	602.9	632.9	19.76	16.22	15.49	602.9	632.9	2.41	2.18	2.02
642.4	672.4	6.62	6.11	5.75	642.4	672.4	19.80	16.64	15.45	642.4	672.4	2.47	2.19	2.06
681.9	711.9	6.69	6.23	5.91	681.9	711.9	17.61	15.64	14.67	681.9	711.9	2.57	2.22	2.09
721.4	751.4	6.82	6.36	6.10	721.4	751.4	16.96	14.96	12.81	721.4	751.4	2.53	2.17	1.99
760.9	790.9	6.86	6.34	6.11	760.9	790.9	15.80	15.66	13.16	760.9	790.9	2.62	2.25	2.04
800.5	830.5	7.03	6.40	6.15	800.5	830.5	15.30	16.83	14.68	800.5	830.5	2.48	2.20	1.95
840.0	870.0	7.29	6.51	6.21	840.0	870.0	15.66	15.70	15.57	840.0	870.0	2.41	2.24	1.97
879.5	909.5	7.54	6.70	6.31	879.5	909.5	16.12	15.97	15.78	879.5	909.5	2.28	2.19	1.93
919.0	949.0	7.86	6.99	6.52	919.0	949.0	15.17	16.10	16.11	919.0	949.0	2.11	2.09	1.87
958.5	988.5	8.13	7.24	6.73	958.5	988.5	13.75	15.86	15.78	958.5	988.5	1.95	1.99	1.89
998.1	1028.1	8.45	7.63	7.05	998.1	1028.1	12.72	16.65	15.35	998.1	1028.1	1.68	1.75	1.74
1037.6	1067.6	8.75	8.08	7.49	1037.6	1067.6	11.57	15.33	16.95	1037.6	1067.6	1.39	1.36	1.47
1077.1	1107.1	9.05	8.58	8.08	1077.1	1107.1	10.77	13.24	16.88	1077.1	1107.1	1.11	0.98	1.08
1116.6	1146.6	9.13	8.83	8.49	1116.6	1146.6	10.92	11.58	14.21	1116.6	1146.6	1.08	0.78	0.82
1156.1	1186.1	9.12	8.92	8.73	1156.1	1186.1	11.86	11.61	13.54	1156.1	1186.1	1.07	0.70	0.68
1195.6	1225.6	9.12	8.95	8.86	1195.6	1225.6	12.91	11.88	13.73	1195.6	1225.6	1.10	0.68	0.62
1254.9	1284.9	9.17	9.02	9.03	1254.9	1284.9	13.40	12.78	14.01	1254.9	1284.9	1.31	0.79	0.62
1294.4	1324.4	9.30	9.11	9.15	1294.4	1324.4	13.76	13.04	14.14	1294.4	1324.4	1.20	0.69	0.53
1353.7	1383.7	9.52	9.27	9.30	1353.7	1383.7	13.64	13.60	14.07	1353.7	1383.7	1.27	0.74	0.60
1393.2	1423.2	9.70	9.38	9.37	1393.2	1423.2	12.84	13.62	14.30	1393.2	1423.2	1.43	0.81	0.61
1452.5	1482.5	9.90	9.45	9.40	1452.5	1482.5	12.70	15.16	15.34	1452.5	1482.5	1.56	0.82	0.62
1492.0	1522.0	10.16	9.54	9.47	1492.0	1522.0	12.53	15.55	15.92	1492.0	1522.0	1.51	0.76	0.60
1551.3	1581.3	10.48	9.72	9.62	1551.3	1581.3	11.97	16.20	16.09	1551.3	1581.3	1.39	0.69	0.53
1590.8	1620.8	10.84	9.88	9.78	1590.8	1620.8	11.35	14.90	15.23	1590.8	1620.8	1.38	0.64	0.49
1650.1	1680.1	11.52	10.16	10.04	1650.1	1680.1	9.80	14.13	14.72	1650.1	1680.1	1.36	0.73	0.40



Frequency Mixer

LRMS-5LHJ

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=750.1MHz (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)=1500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+10			+10			+10
730.0	20.1	6.38	10.0	20.1	6.09	900.0	600.1	9.72
711.5	38.6	6.41	29.6	39.7	5.91	880.2	619.9	9.78
693.1	57.0	6.40	49.1	59.2	5.97	860.4	639.7	9.67
674.6	75.5	6.41	68.7	78.8	5.97	840.7	659.4	9.66
656.2	93.9	6.39	88.2	98.3	5.96	820.9	679.2	9.64
637.7	112.4	6.40	107.8	117.9	5.94	801.1	699.0	9.59
619.2	130.9	6.38	127.3	137.4	5.91	781.3	718.8	9.54
600.8	149.3	6.38	146.9	157.0	5.96	761.6	738.5	9.52
582.3	167.8	6.36	166.4	176.5	5.96	741.8	758.3	9.42
563.8	186.3	6.34	186.0	196.1	5.98	722.0	778.1	9.47
545.4	204.7	6.35	205.6	215.7	5.97	702.2	797.9	9.44
526.9	223.2	6.33	225.1	235.2	5.97	682.4	817.7	9.41
508.5	241.6	6.31	244.7	254.8	6.00	662.7	837.4	9.44
490.0	260.1	6.32	264.2	274.3	6.03	642.9	857.2	9.44
471.5	278.6	6.29	283.8	293.9	6.04	623.1	877.0	9.51
453.1	297.0	6.28	303.3	313.4	6.05	603.3	896.8	9.55
434.6	315.5	6.27	322.9	333.0	6.08	583.6	916.5	9.50
416.2	333.9	6.26	342.4	352.5	6.08	563.8	936.3	9.53
397.7	352.4	6.21	362.0	372.1	6.13	544.0	956.1	9.53
379.2	370.9	6.16	381.6	391.7	6.15	524.2	975.9	9.54
360.8	389.3	6.18	401.1	411.2	6.12	504.4	995.7	9.50
342.3	407.8	6.15	420.7	430.8	6.16	484.7	1015.4	9.44
323.8	426.3	6.17	440.2	450.3	6.20	464.9	1035.2	9.42
305.4	444.7	6.13	459.8	469.9	6.20	445.1	1055.0	9.45
286.9	463.2	6.18	479.3	489.4	6.20	425.3	1074.8	9.39
268.5	481.6	6.20	498.9	509.0	6.20	405.6	1094.5	9.38
250.0	500.1	6.22	518.4	528.5	6.20	385.8	1114.3	9.39
231.5	518.6	6.19	538.0	548.1	6.20	346.2	1153.9	9.25
213.1	537.0	6.20	577.1	587.2	6.22	326.4	1173.7	9.25
194.6	555.5	6.20	596.7	606.8	6.27	306.7	1193.4	9.26
176.2	573.9	6.19	635.8	645.9	6.35	267.1	1233.0	9.27
157.7	592.4	6.21	655.3	665.4	6.38	247.3	1252.8	9.32
139.2	610.9	6.20	694.4	704.5	6.42	207.8	1292.3	9.36
120.8	629.3	6.25	714.0	724.1	6.48	188.0	1312.1	9.36
102.3	647.8	6.27	753.1	763.2	6.54	148.4	1351.7	9.35
83.8	666.3	6.35	772.7	782.8	6.59	128.7	1371.4	9.35
65.4	684.7	6.35	811.8	821.9	6.67	89.1	1411.0	9.33
46.9	703.2	6.40	831.3	841.4	6.77	69.3	1430.8	9.33
28.5	721.6	6.42	870.4	880.5	6.95	29.8	1470.3	9.33
10.0	740.1	6.58	890.0	900.1	7.07	10.0	1490.1	9.33

Frequency Mixer

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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	59.92	60.28	61.02	53.06	54.27	53.44
49.6	58.19	56.42	54.97	51.49	47.13	44.28
89.1	58.40	54.61	51.99	50.82	43.87	40.44
128.7	58.59	52.71	49.00	48.75	40.96	37.48
168.2	60.62	51.39	47.86	49.20	39.48	35.79
207.7	57.06	49.32	45.72	49.52	38.29	33.81
247.2	53.31	47.67	44.52	47.56	36.68	32.51
286.7	49.31	45.67	43.06	44.25	35.43	31.52
326.2	46.20	43.63	41.28	40.04	33.76	29.95
365.8	43.94	41.98	40.10	37.02	31.96	28.64
405.3	41.82	40.30	38.74	34.46	30.44	27.46
444.8	40.07	39.07	37.67	32.41	28.63	25.91
484.3	38.53	37.75	36.74	30.96	27.91	25.24
523.8	36.95	36.41	35.55	28.66	26.32	24.24
563.4	35.79	35.47	34.70	27.01	24.70	23.00
602.9	34.66	34.55	33.90	25.80	23.28	21.48
642.4	33.79	33.94	33.36	24.83	22.72	20.49
681.9	32.74	33.10	32.75	23.49	21.96	20.02
721.4	31.96	32.30	32.19	22.04	20.76	19.28
760.9	31.07	31.60	31.51	20.87	20.04	18.67
800.5	30.40	30.97	31.03	19.59	18.76	17.77
840.0	29.85	30.54	30.77	18.38	17.52	16.69
879.5	29.31	30.06	30.37	17.80	16.58	15.82
919.0	28.88	29.79	30.14	17.12	15.83	14.89
958.5	28.26	29.29	29.68	16.63	15.49	14.28
998.1	27.83	28.93	29.45	15.98	15.05	13.86
1037.6	27.34	28.42	29.17	15.19	14.38	13.45
1077.1	26.85	28.00	28.79	14.47	13.91	13.05
1116.6	26.45	27.63	28.40	13.87	13.44	12.54
1156.1	25.97	27.13	27.92	13.30	12.95	12.12
1195.6	25.57	26.72	27.51	12.65	12.44	11.66
1254.9	25.05	26.12	26.95	11.86	11.69	11.11
1294.4	24.71	25.76	26.59	11.40	11.27	10.82
1353.7	24.25	25.37	26.18	10.59	10.73	10.38
1393.2	23.88	24.99	25.84	9.97	10.18	9.96
1452.5	23.47	24.52	25.46	9.38	9.57	9.52
1492.0	23.05	24.13	24.99	8.94	9.20	9.10
1551.3	22.57	23.62	24.44	8.43	8.76	8.68
1590.8	22.13	23.17	24.06	8.13	8.51	8.55
1650.1	21.53	22.48	23.27	7.67	8.12	8.18

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	50.80	47.24	48.92
49.6	79.6	44.02	43.77	43.92
89.1	119.1	40.48	40.11	39.39
128.7	158.7	37.91	37.53	37.52
168.2	198.2	36.22	35.66	35.46
207.7	237.7	34.72	34.38	34.04
247.2	277.2	33.54	33.00	32.90
286.7	316.7	32.59	32.07	31.96
326.2	356.2	31.48	31.04	30.65
365.8	395.8	30.38	30.08	29.84
405.3	435.3	29.23	28.83	28.46
444.8	474.8	28.16	27.79	27.49
484.3	514.3	26.96	26.58	26.24
523.8	553.8	25.86	25.45	24.99
563.4	593.4	24.94	24.56	24.22
602.9	632.9	24.05	23.83	23.50
642.4	672.4	23.41	23.19	22.94
681.9	711.9	22.65	22.42	22.30
721.4	751.4	22.07	21.83	21.75
760.9	790.9	21.75	21.42	21.42
800.5	830.5	21.57	21.26	21.15
840.0	870.0	21.48	21.22	20.97
879.5	909.5	21.29	21.09	20.69
919.0	949.0	21.15	21.07	20.70
958.5	988.5	20.88	21.00	20.86
998.1	1028.1	20.56	20.88	20.89
1037.6	1067.6	20.33	20.76	21.05
1077.1	1107.1	20.03	20.50	20.99
1116.6	1146.6	19.74	20.23	20.70
1156.1	1186.1	19.36	19.80	20.25
1195.6	1225.6	19.04	19.41	19.83
1254.9	1284.9	18.68	19.01	19.36
1294.4	1324.4	18.46	18.78	19.12
1353.7	1383.7	18.31	18.50	18.66
1393.2	1423.2	18.25	18.32	18.45
1452.5	1482.5	18.00	18.05	18.20
1492.0	1522.0	17.95	17.91	18.08
1551.3	1581.3	17.73	17.78	17.97
1590.8	1620.8	17.50	17.62	17.88
1650.1	1680.1	17.37	17.56	17.76

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	1.62	1.60	1.60
49.6	79.6	1.20	1.14	1.14
89.1	119.1	1.14	1.07	1.07
128.7	158.7	1.13	1.04	1.03
168.2	198.2	1.12	1.04	1.01
207.7	237.7	1.13	1.05	1.04
247.2	277.2	1.16	1.10	1.07
286.7	316.7	1.19	1.13	1.11
326.2	356.2	1.22	1.16	1.14
365.8	395.8	1.25	1.20	1.18
405.3	435.3	1.29	1.24	1.23
444.8	474.8	1.34	1.29	1.27
484.3	514.3	1.41	1.36	1.34
523.8	553.8	1.48	1.43	1.41
563.4	593.4	1.56	1.50	1.47
602.9	632.9	1.66	1.59	1.55
642.4	672.4	1.77	1.70	1.65
681.9	711.9	1.89	1.82	1.77
721.4	751.4	2.03	1.96	1.91
760.9	790.9	2.17	2.08	2.04
800.5	830.5	2.30	2.18	2.14
840.0	870.0	2.48	2.32	2.26
879.5	909.5	2.63	2.48	2.38
919.0	949.0	2.81	2.64	2.52
958.5	988.5	2.97	2.80	2.66
998.1	1028.1	3.12	2.95	2.80
1037.6	1067.6	3.24	3.12	2.99
1077.1	1107.1	3.34	3.27	3.17
1116.6	1146.6	3.38	3.36	3.31
1156.1	1186.1	3.42	3.42	3.40
1195.6	1225.6	3.42	3.45	3.45
1254.9	1284.9	3.46	3.48	3.50
1294.4	1324.4	3.50	3.52	3.54
1353.7	1383.7	3.52	3.54	3.56
1393.2	1423.2	3.55	3.56	3.58
1452.5	1482.5	3.58	3.56	3.59
1492.0	1522.0	3.59	3.55	3.57
1551.3	1581.3	3.60	3.52	3.53
1590.8	1620.8	3.67	3.54	3.52
1650.1	1680.1	3.74	3.53	3.49

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+7	+10	+13
10.1	1.83	2.64	3.88
49.6	1.90	2.80	3.96
89.1	1.82	2.64	3.69
128.7	1.86	2.71	3.82
168.2	1.83	2.66	3.69
207.7	1.86	2.68	3.74
247.2	1.90	2.73	3.76
286.7	1.90	2.71	3.70
326.2	1.99	2.81	3.83
365.8	2.01	2.80	3.76
405.3	2.06	2.85	3.80
444.8	2.14	2.91	3.82
484.3	2.17	2.92	3.81
523.8	2.25	2.99	3.86
563.4	2.30	3.01	3.84
602.9	2.36	3.06	3.86
642.4	2.43	3.11	3.89
681.9	2.48	3.15	3.90
721.4	2.55	3.18	3.90
760.9	2.61	3.21	3.91
800.5	2.69	3.26	3.92
840.0	2.77	3.29	3.89
879.5	2.85	3.37	3.95
919.0	2.92	3.43	3.98
958.5	2.98	3.47	4.01
998.1	3.04	3.52	4.05
1037.6	3.10	3.56	4.04
1077.1	3.14	3.56	4.04
1116.6	3.19	3.58	4.02
1156.1	3.24	3.60	4.01
1195.6	3.26	3.59	3.99
1254.9	3.37	3.62	3.98
1294.4	3.41	3.62	3.96
1353.7	3.54	3.69	3.95
1393.2	3.57	3.67	3.89
1452.5	3.70	3.71	3.89
1492.0	3.76	3.71	3.85
1551.3	3.95	3.77	3.86
1590.8	3.98	3.86	3.91
1650.1	4.09	3.93	3.94

IF (OUT) (MHz)	IF VSWR @LO=1500.1MHz (:1)		
	@LO (dBm)		
	+7	+10	+13
10.1	1.24	1.03	1.17
29.9	1.14	1.06	1.22
49.7	1.13	1.08	1.23
69.4	1.08	1.11	1.26
89.2	1.11	1.08	1.23
109.0	1.11	1.07	1.24
128.8	1.12	1.07	1.23
148.5	1.12	1.08	1.24
168.3	1.11	1.08	1.25
188.1	1.11	1.08	1.25
207.9	1.11	1.08	1.26
227.7	1.12	1.09	1.26
247.4	1.11	1.10	1.27
267.2	1.11	1.11	1.29
287.0	1.11	1.10	1.29
306.8	1.11	1.10	1.29
326.5	1.10	1.12	1.32
346.3	1.09	1.14	1.34
366.1	1.10	1.13	1.33
385.9	1.10	1.13	1.33
405.7	1.10	1.15	1.36
425.4	1.10	1.15	1.37
445.2	1.08	1.16	1.38
465.0	1.06	1.17	1.40
484.8	1.07	1.17	1.40
504.5	1.08	1.16	1.39
524.3	1.07	1.18	1.42
544.1	1.05	1.20	1.45
583.7	1.05	1.20	1.45
603.4	1.05	1.21	1.46
643.0	1.05	1.22	1.48
662.8	1.03	1.24	1.51
702.3	1.05	1.24	1.50
722.1	1.04	1.25	1.51
761.7	1.04	1.27	1.54
781.4	1.04	1.26	1.53
821.0	1.06	1.29	1.54
840.8	1.06	1.29	1.55
880.3	1.06	1.32	1.59
900.1	1.08	1.33	1.59

Frequency Mixer

LRMS-5LHJ

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	1	24	23	48	22	50	40	59	53	67
1	-	15	+0	41	19	48	38	57	40	59	49	74
2	81	42	23	49	24	47	44	60	42	63	53	64
3	>100	45	39	49	35	50	42	63	51	69	50	83
4	>100	65	58	50	46	56	39	62	59	60	63	67
5	>100	63	61	72	51	51	54	60	52	78	56	64
6	>100	80	83	73	69	66	51	59	59	66	67	67
7	>100	>94	76	>94	82	81	63	60	67	61	64	82
8	>100	93	91	85	81	78	89	82	63	63	66	72
9	>100	>94	>94	>94	83	80	84	80	77	72	65	66
10	>100	>94	>94	>94	>94	92	83	85	85	75	74	73
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 750.1 MHz; 0.00 dBm.
 LO IN: 780.01 MHz; +10.00 dBm
 IF OUT: 29.91 MHz; -6.46 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+7	12	12	36	10	34	28	41	39	50
1	-	15	+0	39	17	48	31	45	33	61	45	62
2	>100	50	32	51	31	58	48	56	46	56	57	61
3	>100	69	59	59	62	61	57	>84	58	64	61	71
4	>100	>84	>84	83	71	81	70	79	80	77	73	75
5	>100	>84	>84	>84	>84	>84	>84	83	>84	>84	83	>84
6	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
7	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
8	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
9	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
10	>100	>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: 750.1 MHz; -10.00 dBm.
 LO IN: 780.01 MHz; +10.00 dBm
 IF OUT: 29.91 MHz; -16.26 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.

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