

Frequency Mixer

LRMS-1LHJ

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
2.0	32.0	7.08	6.73	6.55	10.1	40.1	24.50	24.45	29.97	10.1	40.1	1.20	0.89	0.64
5.0	35.0	6.14	5.87	5.71	51.1	81.1	22.61	22.90	20.56	51.1	81.1	1.05	0.81	0.56
10.0	40.0	6.47	6.17	5.99	92.0	122.0	22.23	22.42	26.35	92.0	122.0	0.99	0.75	0.51
51.1	81.1	6.13	5.86	5.71	133.0	163.0	20.42	22.49	22.53	133.0	163.0	1.04	0.72	0.51
92.0	122.0	6.19	5.88	5.75	173.9	203.9	20.32	21.37	21.03	173.9	203.9	1.00	0.71	0.49
133.0	163.0	6.19	5.92	5.80	214.9	244.9	19.78	19.49	19.35	214.9	244.9	0.95	0.68	0.50
173.9	203.9	6.19	5.96	5.85	255.8	285.8	19.86	19.58	18.08	255.8	285.8	0.99	0.71	0.52
214.9	244.9	6.23	5.99	5.86	296.8	326.8	18.83	18.25	17.40	296.8	326.8	0.97	0.71	0.52
255.8	285.8	6.29	6.06	5.92	337.7	367.7	17.42	16.31	17.02	337.7	367.7	0.98	0.73	0.57
296.8	326.8	6.30	6.07	5.92	378.7	408.7	19.07	17.20	17.67	378.7	408.7	1.00	0.73	0.57
337.7	367.7	6.40	6.16	5.99	419.6	449.6	17.89	17.13	17.80	419.6	449.6	1.07	0.84	0.66
378.7	408.7	6.43	6.18	6.00	440.1	470.1	16.27	16.25	18.39	440.1	470.1	1.10	0.87	0.71
419.6	449.6	6.51	6.20	6.00	481.1	511.1	14.60	14.14	16.65	481.1	511.1	1.12	0.91	0.74
440.1	470.1	6.51	6.20	5.98	501.5	531.5	14.23	13.80	15.48	501.5	531.5	1.19	0.94	0.78
481.1	511.1	6.60	6.30	6.07	542.5	572.5	13.39	13.79	15.59	542.5	572.5	1.29	1.04	0.89
501.5	531.5	6.59	6.30	6.09	563.0	593.0	13.00	13.58	15.83	563.0	593.0	1.35	1.10	0.93
542.5	572.5	6.69	6.37	6.14	603.9	633.9	13.37	14.84	18.80	603.9	633.9	1.50	1.24	1.07
563.0	593.0	6.71	6.35	6.11	624.4	654.4	13.34	15.35	20.02	624.4	654.4	1.55	1.33	1.14
624.4	654.4	6.90	6.40	6.11	665.3	695.3	13.01	16.88	31.10	665.3	695.3	1.54	1.38	1.19
665.3	695.3	7.06	6.46	6.14	685.8	715.8	13.02	17.03	22.89	685.8	715.8	1.54	1.41	1.22
685.8	715.8	7.14	6.49	6.15	726.8	756.8	12.06	14.87	26.80	726.8	756.8	1.46	1.37	1.24
726.8	756.8	7.40	6.71	6.27	747.2	777.2	11.68	14.30	23.52	747.2	777.2	1.46	1.37	1.26
747.2	777.2	7.47	6.81	6.33	788.2	818.2	12.79	15.03	22.82	788.2	818.2	1.39	1.30	1.24
788.2	818.2	7.63	7.01	6.54	808.7	838.7	13.32	15.82	28.54	808.7	838.7	1.34	1.24	1.20
808.7	838.7	7.73	7.15	6.69	849.6	879.6	13.95	17.25	21.09	849.6	879.6	1.35	1.21	1.19
849.6	879.6	7.79	7.29	6.90	870.1	900.1	14.83	18.30	24.28	870.1	900.1	1.36	1.19	1.17
870.1	900.1	7.82	7.36	7.00	911.1	941.1	16.07	19.97	21.01	911.1	941.1	1.43	1.20	1.15
911.1	941.1	7.76	7.39	7.14	931.5	961.5	15.60	20.34	19.47	931.5	961.5	1.45	1.20	1.14
931.5	961.5	7.73	7.41	7.18	972.5	1002.5	15.74	18.01	18.14	972.5	1002.5	1.55	1.21	1.13
972.5	1002.5	7.69	7.43	7.27	993.0	1023.0	15.59	17.60	17.39	993.0	1023.0	1.52	1.19	1.11
1033.9	1063.9	7.75	7.56	7.49	1033.9	1063.9	15.21	15.98	17.67	1033.9	1063.9	1.56	1.17	1.07
1054.4	1084.4	7.81	7.60	7.54	1054.4	1084.4	14.79	15.89	16.86	1054.4	1084.4	1.61	1.21	1.13
1095.3	1125.3	7.97	7.82	7.78	1095.3	1125.3	13.77	15.39	15.93	1095.3	1125.3	1.62	1.19	1.13
1115.8	1145.8	8.09	7.94	7.92	1115.8	1145.8	13.22	14.97	15.71	1115.8	1145.8	1.61	1.16	1.10
1156.8	1186.8	8.42	8.28	8.27	1156.8	1186.8	11.72	13.60	15.32	1156.8	1186.8	1.58	1.10	1.12
1177.2	1207.2	8.68	8.55	8.56	1177.2	1207.2	11.18	13.08	15.00	1177.2	1207.2	1.50	1.03	1.07
1218.2	1248.2	9.16	9.02	9.00	1218.2	1248.2	10.92	13.27	14.58	1218.2	1248.2	1.49	1.02	1.12
1238.7	1268.7	9.46	9.24	9.22	1238.7	1268.7	10.45	12.67	13.73	1238.7	1268.7	1.58	1.08	1.16
1279.6	1309.6	10.18	9.87	9.86	1279.6	1309.6	10.47	12.77	14.06	1279.6	1309.6	1.64	1.15	1.14
1300.1	1330.1	10.51	10.15	10.11	1300.1	1330.1	9.96	12.35	13.23	1300.1	1330.1	1.74	1.25	1.23



Frequency Mixer

LRMS-1LHJ

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=250.1MHz (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)=500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+10			+10			+10
240.0	10.1	6.08	10.0	20.1	5.72	490.0	10.1	6.31
234.1	16.0	6.07	22.3	32.4	5.54	477.7	22.4	6.25
228.2	21.9	6.02	34.6	44.7	5.55	465.4	34.7	6.21
222.3	27.8	6.04	46.9	57.0	5.56	453.1	47.0	6.22
216.4	33.7	6.02	59.2	69.3	5.55	440.8	59.3	6.22
210.5	39.6	6.00	71.5	81.6	5.59	428.5	71.6	6.18
204.6	45.5	6.03	83.8	93.9	5.63	416.2	83.9	6.16
198.7	51.4	5.98	96.2	106.3	5.60	403.8	96.3	6.12
192.8	57.3	6.00	108.5	118.6	5.60	391.5	108.6	6.09
186.9	63.2	5.99	120.8	130.9	5.59	379.2	120.9	6.09
181.0	69.1	5.97	133.1	143.2	5.59	366.9	133.2	6.07
175.1	75.0	6.05	145.4	155.5	5.64	354.6	145.5	6.06
169.2	80.9	5.98	157.7	167.8	5.68	342.3	157.8	6.08
163.3	86.8	5.96	170.0	180.1	5.68	330.0	170.1	6.08
157.4	92.7	6.00	182.3	192.4	5.70	317.7	182.4	6.10
151.5	98.6	5.95	194.6	204.7	5.69	305.4	194.7	6.09
145.6	104.5	5.96	206.9	217.0	5.70	293.1	207.0	6.07
139.7	110.4	5.94	219.2	229.3	5.72	280.8	219.3	6.07
133.8	116.3	5.92	231.5	241.6	5.71	268.5	231.6	6.10
127.9	122.2	5.92	243.8	253.9	5.74	256.2	243.9	6.12
122.1	128.0	5.89	256.2	266.3	5.78	243.8	256.3	6.12
116.2	133.9	5.90	268.5	278.6	5.82	231.5	268.6	6.13
110.3	139.8	5.93	280.8	290.9	5.83	219.2	280.9	6.11
104.4	145.7	5.94	293.1	303.2	5.84	206.9	293.2	6.13
98.5	151.6	5.95	305.4	315.5	5.83	194.6	305.5	6.14
92.6	157.5	5.94	317.7	327.8	5.86	182.3	317.8	6.13
86.7	163.4	5.94	330.0	340.1	5.88	170.0	330.1	6.13
80.8	169.3	5.95	342.3	352.4	5.89	157.7	342.4	6.15
74.9	175.2	5.94	354.6	364.7	5.93	145.4	354.7	6.17
69.0	181.1	5.94	366.9	377.0	5.98	133.1	367.0	6.22
63.1	187.0	5.93	379.2	389.3	5.98	120.8	379.3	6.20
57.2	192.9	5.92	391.5	401.6	5.97	108.5	391.6	6.16
51.3	198.8	5.93	403.8	413.9	5.93	96.2	403.9	6.17
45.4	204.7	5.95	416.2	426.3	5.94	83.8	416.3	6.16
39.5	210.6	5.96	428.5	438.6	6.00	71.5	428.6	6.17
33.6	216.5	5.96	440.8	450.9	6.06	59.2	440.9	6.20
27.7	222.4	5.96	453.1	463.2	6.08	46.9	453.2	6.19
21.8	228.3	5.98	465.4	475.5	6.11	34.6	465.5	6.23
15.9	234.2	6.01	477.7	487.8	6.09	22.3	477.8	6.27
10.0	240.1	6.12	490.0	500.1	6.12	10.0	490.1	6.41

Frequency Mixer

LRMS-1LHJ

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)					@LO (dBm)		
	+7	+10	+13	+7	+10	+13			+7	+10	+13
2.0	65.89	68.96	71.56	55.04	58.87	62.73	10.1	40.1	50.02	45.04	45.36
5.0	65.11	67.37	69.67	54.46	56.74	57.76	51.1	81.1	33.32	33.48	33.19
10.0	63.38	65.16	66.06	52.78	52.79	52.34	92.0	122.0	28.99	28.75	29.12
51.1	55.99	55.81	55.99	50.88	49.71	49.08	133.0	163.0	26.34	26.48	26.70
92.0	51.31	51.03	51.20	45.84	44.96	44.60	173.9	203.9	24.66	24.96	25.00
133.0	48.13	48.29	48.36	42.91	42.84	42.29	214.9	244.9	23.60	23.87	23.94
173.9	46.22	46.44	46.35	41.36	41.03	40.70	255.8	285.8	23.00	23.25	23.43
214.9	44.57	44.90	44.77	40.45	39.81	39.04	296.8	326.8	22.70	23.05	23.30
255.8	43.22	43.49	43.55	39.70	38.53	37.72	337.7	367.7	22.35	22.72	23.02
296.8	42.06	42.36	42.36	39.68	37.99	36.67	378.7	408.7	22.26	22.75	23.17
337.7	42.03	42.19	42.21	37.54	36.30	35.11	419.6	449.6	22.47	23.13	23.62
378.7	40.07	40.34	40.60	36.65	35.28	34.11	440.1	470.1	22.72	23.52	24.23
419.6	38.11	38.70	39.02	34.82	33.34	32.26	481.1	511.1	22.98	23.84	24.76
440.1	37.59	38.04	38.30	33.77	32.39	31.37	501.5	531.5	22.76	23.54	24.24
481.1	36.35	36.88	37.19	32.92	31.41	30.27	542.5	572.5	21.47	21.88	22.08
501.5	35.85	36.19	36.48	32.12	30.85	29.64	563.0	593.0	20.51	20.67	20.70
542.5	35.09	35.17	35.26	30.86	29.66	28.62	603.9	633.9	18.63	18.49	18.46
563.0	35.17	35.07	35.03	30.10	29.02	27.99	624.4	654.4	17.67	17.53	17.31
624.4	34.15	33.49	32.88	27.49	26.46	25.41	665.3	695.3	16.37	16.15	15.99
665.3	33.35	32.59	31.86	25.99	25.20	24.31	685.8	715.8	15.94	15.71	15.60
685.8	33.38	32.86	32.30	25.13	24.31	23.49	726.8	756.8	15.07	14.99	14.97
726.8	32.47	31.90	31.46	23.51	22.66	21.99	747.2	777.2	14.72	14.73	14.78
747.2	32.03	31.54	31.03	22.93	22.18	21.48	788.2	818.2	14.09	14.15	14.35
788.2	31.44	31.09	30.74	21.63	20.94	20.17	808.7	838.7	13.74	13.83	14.00
808.7	30.89	30.53	30.25	21.13	20.38	19.61	849.6	879.6	13.13	13.18	13.36
849.6	30.57	30.29	30.07	20.01	19.51	18.62	870.1	900.1	12.89	12.96	13.14
870.1	30.92	30.95	31.18	19.66	19.13	18.29	911.1	941.1	12.39	12.45	12.64
911.1	31.08	31.24	31.52	18.53	17.96	17.07	931.5	961.5	12.29	12.31	12.46
931.5	30.73	30.77	30.87	18.12	17.62	16.64	972.5	1002.5	11.99	12.06	12.14
972.5	31.55	31.66	31.55	17.09	16.51	15.01	993.0	1023.0	11.78	11.84	11.92
1033.9	33.61	33.16	32.21	15.42	14.90	13.96	1033.9	1063.9	11.49	11.50	11.53
1054.4	35.09	33.48	31.71	15.04	14.54	13.68	1054.4	1084.4	11.36	11.33	11.24
1095.3	37.65	32.60	29.76	13.95	13.52	12.68	1095.3	1125.3	10.72	10.58	10.39
1115.8	37.89	31.96	29.05	13.49	13.12	12.30	1115.8	1145.8	10.44	10.29	10.07
1156.8	35.04	29.37	26.75	12.62	12.28	11.56	1156.8	1186.8	9.60	9.47	9.18
1177.2	32.48	27.94	25.73	12.21	11.88	11.26	1177.2	1207.2	9.06	8.87	8.68
1218.2	28.55	25.32	23.71	11.52	11.17	10.61	1218.2	1248.2	8.27	8.11	7.90
1238.7	26.62	24.03	22.57	11.34	10.99	10.45	1238.7	1268.7	7.95	7.79	7.62
1279.6	24.54	22.29	20.94	11.06	10.56	9.90	1279.6	1309.6	7.40	7.21	7.03
1300.1	23.55	21.53	20.33	10.95	10.44	9.86	1300.1	1330.1	7.28	7.10	6.92



Frequency Mixer

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+7	+10	+13
5.0	35.0	1.15	1.16	1.18
10.0	40.0	1.09	1.08	1.11
51.1	81.1	1.04	1.05	1.10
92.0	122.0	1.02	1.06	1.12
133.0	163.0	1.01	1.07	1.12
173.9	203.9	1.02	1.08	1.13
214.9	244.9	1.03	1.08	1.13
255.8	285.8	1.03	1.09	1.13
296.8	326.8	1.04	1.10	1.15
337.7	367.7	1.03	1.10	1.14
378.7	408.7	1.05	1.11	1.16
419.6	449.6	1.05	1.12	1.18
440.1	470.1	1.05	1.13	1.19
481.1	511.1	1.06	1.13	1.19
501.5	531.5	1.08	1.14	1.20
542.5	572.5	1.09	1.16	1.21
563.0	593.0	1.10	1.17	1.22
603.9	633.9	1.12	1.18	1.23
624.4	654.4	1.13	1.18	1.23
665.3	695.3	1.18	1.22	1.27
685.8	715.8	1.21	1.25	1.30
726.8	756.8	1.31	1.33	1.38
747.2	777.2	1.37	1.39	1.43
788.2	818.2	1.51	1.52	1.55
808.7	838.7	1.56	1.57	1.60
849.6	879.6	1.66	1.68	1.70
870.1	900.1	1.70	1.73	1.76
911.1	941.1	1.81	1.85	1.89
931.5	961.5	1.88	1.93	1.98
972.5	1002.5	2.05	2.10	2.15
993.0	1023.0	2.11	2.17	2.22
1033.9	1063.9	2.26	2.32	2.37
1054.4	1084.4	2.31	2.36	2.41
1095.3	1125.3	2.41	2.46	2.50
1115.8	1145.8	2.48	2.53	2.57
1156.8	1186.8	2.56	2.61	2.65
1177.2	1207.2	2.60	2.65	2.69
1218.2	1248.2	2.67	2.71	2.74
1238.7	1268.7	2.67	2.70	2.73
1279.6	1309.6	2.68	2.69	2.72
1300.1	1330.1	2.67	2.67	2.69

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+7	+10	+13
5.0	1.61	2.42	3.53
10.0	1.58	2.33	3.49
51.1	1.69	2.50	3.52
92.0	1.60	2.30	3.19
133.0	1.67	2.47	3.45
173.9	1.62	2.34	3.23
214.9	1.68	2.44	3.38
255.8	1.69	2.44	3.35
296.8	1.70	2.44	3.34
337.7	1.77	2.54	3.47
378.7	1.77	2.50	3.38
419.6	1.86	2.62	3.54
440.1	1.89	2.63	3.54
481.1	1.90	2.64	3.52
501.5	1.95	2.71	3.60
542.5	1.99	2.74	3.62
563.0	2.00	2.73	3.61
603.9	2.08	2.82	3.71
624.4	2.12	2.85	3.73
665.3	2.17	2.88	3.73
685.8	2.23	2.94	3.79
726.8	2.31	3.03	3.86
747.2	2.33	3.05	3.87
788.2	2.39	3.12	3.94
808.7	2.42	3.15	3.96
849.6	2.43	3.14	3.93
870.1	2.45	3.15	3.93
911.1	2.49	3.17	3.91
931.5	2.49	3.16	3.87
972.5	2.51	3.13	3.79
993.0	2.51	3.12	3.76
1033.9	2.52	3.09	3.68
1054.4	2.53	3.07	3.64
1095.3	2.51	3.00	3.50
1115.8	2.53	2.98	3.47
1156.8	2.53	2.94	3.37
1177.2	2.52	2.89	3.31
1218.2	2.51	2.86	3.22
1238.7	2.51	2.83	3.17
1279.6	2.46	2.75	3.07
1300.1	2.42	2.72	3.00

IF (OUT) (MHz)	IF VSWR @LO=500.1MHz (:1)		
	@LO (dBm)		
	+7	+10	+13
5.0	1.31	1.18	1.08
10.0	1.31	1.18	1.08
22.6	1.80	1.60	1.39
35.1	1.69	1.49	1.32
47.7	1.65	1.44	1.28
60.3	1.62	1.42	1.24
72.8	1.62	1.42	1.25
85.4	1.66	1.45	1.29
97.9	1.69	1.49	1.31
110.5	1.71	1.50	1.33
123.1	1.71	1.49	1.33
135.6	1.70	1.49	1.31
148.2	1.68	1.46	1.29
160.8	1.65	1.45	1.28
173.3	1.65	1.44	1.28
185.9	1.65	1.45	1.28
198.5	1.65	1.45	1.28
211.0	1.66	1.46	1.29
223.6	1.67	1.47	1.30
236.2	1.69	1.48	1.31
248.7	1.69	1.48	1.31
261.3	1.70	1.49	1.32
273.8	1.69	1.49	1.31
286.4	1.69	1.48	1.31
299.0	1.67	1.47	1.30
311.5	1.65	1.45	1.29
324.1	1.64	1.43	1.27
336.7	1.62	1.42	1.26
349.2	1.63	1.44	1.27
361.8	1.65	1.45	1.28
374.4	1.67	1.47	1.30
386.9	1.66	1.47	1.30
399.5	1.65	1.45	1.29
412.1	1.64	1.44	1.28
424.6	1.61	1.42	1.27
437.2	1.61	1.42	1.26
449.7	1.62	1.43	1.28
462.3	1.65	1.46	1.31
474.9	1.69	1.49	1.33
487.4	1.71	1.52	1.35
500.0	1.45	1.37	1.35

Frequency Mixer

LRMS-1LHJ

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	9	19	11	25	11	31	18	37	20	39
1	-	17	+0	27	12	35	19	42	31	45	42	46
2	>100	69	48	69	49	67	49	74	53	76	68	71
3	>100	74	79	76	68	77	62	>80	64	>80	68	>80
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	79	>80	>80	>80	>80	>80
7	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
8	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
9	>100	>80	>80	>80	>80	>80	>80	>80	>80	68	>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; +10.00 dBm
 IF OUT: 29.91 MHz; -20.13 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	18	29	22	36	22	42	28	47	31	48
1	-	17	+0	27	12	35	19	42	30	46	39	47
2	>100	60	41	61	42	57	42	68	45	65	62	70
3	>100	57	56	62	54	68	46	61	49	74	56	67
4	>100	76	61	85	61	83	64	77	63	87	69	89
5	>100	80	71	79	70	75	66	72	63	78	64	82
6	>100	>90	84	>90	84	>90	>90	>90	89	86	80	>90
7	>100	>90	>90	88	88	87	82	>90	79	85	80	>90
8	>100	>90	>90	>90	>90	>90	>90	>90	81	>90	87	>90
9	>100	>90	>90	>90	>90	>90	>90	>90	>90	69	>90	>90
10	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	77	>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; +10.00 dBm
 IF OUT: 29.91 MHz; -10.25 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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