

Frequency Mixer

LRMS-2LHJ

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+7	+10	+13
5.0	35.0	7.21	6.77	6.54
10.0	40.0	7.35	6.92	6.69
50.4	80.4	7.04	6.69	6.45
90.7	120.7	7.03	6.60	6.40
131.0	161.0	6.96	6.62	6.45
171.3	201.3	6.93	6.62	6.46
211.5	241.5	6.87	6.60	6.44
251.8	281.8	6.89	6.64	6.47
292.1	322.1	6.88	6.64	6.46
332.4	362.4	6.94	6.69	6.51
372.7	402.7	6.95	6.71	6.52
413.0	443.0	6.92	6.68	6.49
453.3	483.3	7.01	6.76	6.56
493.6	523.6	7.03	6.76	6.56
533.9	563.9	7.10	6.79	6.56
574.2	604.2	7.15	6.84	6.61
614.4	644.4	7.21	6.92	6.69
654.7	684.7	7.25	6.98	6.77
695.0	725.0	7.32	7.02	6.83
735.3	765.3	7.46	7.12	6.89
775.6	805.6	7.60	7.25	7.01
815.9	845.9	7.82	7.42	7.14
856.2	886.2	8.04	7.64	7.32
896.5	926.5	8.19	7.74	7.37
916.6	946.6	8.31	7.85	7.43
956.9	986.9	8.43	7.88	7.45
977.1	1007.1	8.52	7.90	7.45
1017.3	1047.3	8.67	7.91	7.46
1077.8	1107.8	9.00	8.15	7.64
1097.9	1127.9	9.07	8.19	7.69
1138.2	1168.2	9.24	8.33	7.83
1158.4	1188.4	9.27	8.40	7.87
1198.7	1228.7	9.41	8.54	8.05
1218.8	1248.8	9.48	8.62	8.13
1259.1	1289.1	9.72	8.93	8.49
1279.2	1309.2	9.92	9.16	8.72
1319.5	1349.5	10.21	9.61	9.22
1339.7	1369.7	10.41	9.87	9.48
1380.0	1410.0	10.73	10.27	9.93
1400.1	1430.1	10.85	10.42	10.15

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	19.82	21.13	28.96
50.4	80.4	19.52	24.74	23.67
90.7	120.7	19.70	20.41	25.54
131.0	161.0	20.52	23.05	25.52
171.3	201.3	18.93	26.65	27.89
211.5	241.5	22.24	25.52	25.99
251.8	281.8	28.90	23.95	24.90
292.1	322.1	22.72	27.42	24.11
332.4	362.4	23.90	26.32	29.90
372.7	402.7	24.28	26.44	25.13
413.0	443.0	21.32	26.10	26.51
453.3	483.3	18.92	20.90	26.18
493.6	523.6	25.99	23.64	28.53
533.9	563.9	21.35	31.25	23.23
574.2	604.2	22.22	26.71	24.89
614.4	644.4	23.70	21.92	27.40
654.7	684.7	27.99	21.38	21.60
695.0	725.0	22.10	19.86	23.65
735.3	765.3	16.85	20.83	22.13
775.6	805.6	14.36	18.16	20.86
815.9	845.9	13.71	16.75	20.02
856.2	886.2	12.51	15.45	19.32
896.5	926.5	11.86	14.75	23.18
916.6	946.6	12.07	14.39	26.92
956.9	986.9	12.81	14.34	20.59
977.1	1007.1	13.29	15.27	20.48
1017.3	1047.3	14.98	17.72	20.15
1037.5	1067.5	15.83	18.33	20.26
1077.8	1107.8	16.93	20.55	18.61
1097.9	1127.9	16.76	19.43	16.66
1138.2	1168.2	17.46	17.19	14.61
1158.4	1188.4	17.87	16.56	14.10
1198.7	1228.7	15.37	16.26	14.87
1218.8	1248.8	14.39	15.20	15.13
1259.1	1289.1	13.56	15.94	16.01
1279.2	1309.2	13.19	15.96	16.64
1319.5	1349.5	13.44	15.60	16.46
1339.7	1369.7	12.55	15.49	17.81
1380.0	1410.0	12.59	14.32	16.79
1400.1	1430.1	11.99	14.25	16.97

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	0.53	0.32	0.17
50.4	80.4	0.73	0.50	0.34
90.7	120.7	0.76	0.56	0.38
131.0	161.0	0.78	0.54	0.38
171.3	201.3	0.78	0.52	0.36
211.5	241.5	0.84	0.59	0.41
251.8	281.8	0.80	0.55	0.40
292.1	322.1	0.84	0.57	0.43
332.4	362.4	0.84	0.57	0.48
372.7	402.7	0.85	0.59	0.52
413.0	443.0	0.84	0.63	0.55
453.3	483.3	0.83	0.63	0.58
493.6	523.6	0.87	0.72	0.64
533.9	563.9	0.76	0.63	0.61
574.2	604.2	0.81	0.62	0.60
614.4	644.4	0.92	0.72	0.67
654.7	684.7	1.01	0.78	0.74
695.0	725.0	1.19	0.97	0.88
735.3	765.3	1.18	1.00	0.92
775.6	805.6	1.28	1.06	1.02
815.9	845.9	1.37	1.15	1.08
856.2	886.2	1.37	1.16	1.13
896.5	926.5	1.59	1.33	1.31
916.6	946.6	1.60	1.35	1.31
956.9	986.9	1.78	1.55	1.48
977.1	1007.1	1.84	1.62	1.54
1017.3	1047.3	1.85	1.73	1.67
1037.5	1067.5	1.85	1.81	1.74
1077.8	1107.8	1.73	1.79	1.77
1097.9	1127.9	1.83	1.90	1.85
1138.2	1168.2	1.66	1.78	1.72
1158.4	1188.4	1.75	1.81	1.73
1198.7	1228.7	1.68	1.74	1.63
1218.8	1248.8	1.66	1.73	1.64
1259.1	1289.1	1.65	1.66	1.52
1279.2	1309.2	1.53	1.53	1.35
1319.5	1349.5	1.42	1.34	1.18
1339.7	1369.7	1.32	1.18	1.01
1380.0	1410.0	1.36	1.13	0.90
1400.1	1430.1	1.33	1.05	0.81

Frequency Mixer

LRMS-2LHJ

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
490.0	10.1	6.87	10.0	20.1	6.66	990.0	10.1	7.90
477.7	22.4	6.84	30.0	40.1	6.51	970.0	30.1	7.81
465.4	34.7	6.80	50.0	60.1	6.60	950.0	50.1	7.72
453.1	47.0	6.78	70.0	80.1	6.57	930.0	70.1	7.72
440.8	59.3	6.78	90.0	100.1	6.61	910.0	90.1	7.68
428.5	71.6	6.73	110.0	120.1	6.58	890.0	110.1	7.58
416.2	83.9	6.70	130.0	140.1	6.55	870.0	130.1	7.54
403.8	96.3	6.67	150.0	160.1	6.61	850.0	150.1	7.54
391.5	108.6	6.62	170.0	180.1	6.63	830.0	170.1	7.53
379.2	120.9	6.57	190.0	200.1	6.64	810.0	190.1	7.49
366.9	133.2	6.55	210.0	220.1	6.64	790.0	210.1	7.48
354.6	145.5	6.52	230.0	240.1	6.64	770.0	230.1	7.45
342.3	157.8	6.53	250.0	260.1	6.68	750.0	250.1	7.42
330.0	170.1	6.53	270.0	280.1	6.73	730.0	270.1	7.48
317.7	182.4	6.52	290.0	300.1	6.73	710.0	290.1	7.46
305.4	194.7	6.52	310.0	320.1	6.74	690.0	310.1	7.42
293.1	207.0	6.51	330.0	340.1	6.77	670.0	330.1	7.41
280.8	219.3	6.51	350.0	360.1	6.77	650.0	350.1	7.43
268.5	231.6	6.52	370.0	380.1	6.84	630.0	370.1	7.43
256.2	243.9	6.52	390.0	400.1	6.87	610.0	390.1	7.43
243.8	256.3	6.53	430.0	440.1	6.87	570.0	430.1	7.40
231.5	268.6	6.54	450.0	460.1	6.93	550.0	450.1	7.43
219.2	280.9	6.53	490.0	500.1	6.91	510.0	490.1	7.44
206.9	293.2	6.56	510.0	520.1	6.89	490.0	510.1	7.47
194.6	305.5	6.56	550.0	560.1	6.95	450.0	550.1	7.52
182.3	317.8	6.56	570.0	580.1	6.99	430.0	570.1	7.52
170.0	330.1	6.57	610.0	620.1	7.04	390.0	610.1	7.53
157.7	342.4	6.58	630.0	640.1	7.11	370.0	630.1	7.56
145.4	354.7	6.59	670.0	680.1	7.15	330.0	670.1	7.57
133.1	367.0	6.62	690.0	700.1	7.16	310.0	690.1	7.59
120.8	379.3	6.61	730.0	740.1	7.26	270.0	730.1	7.62
108.5	391.6	6.61	750.0	760.1	7.27	250.0	750.1	7.67
96.2	403.9	6.62	790.0	800.1	7.32	210.0	790.1	7.73
83.8	416.3	6.62	810.0	820.1	7.33	190.0	810.1	7.76
71.5	428.6	6.65	850.0	860.1	7.36	150.0	850.1	7.86
59.2	440.9	6.67	870.0	880.1	7.38	130.0	870.1	7.86
46.9	453.2	6.67	910.0	920.1	7.42	90.0	910.1	7.91
34.6	465.5	6.68	930.0	940.1	7.40	70.0	930.1	7.96
22.3	477.8	6.70	970.0	980.1	7.44	30.0	970.1	7.98
10.0	490.1	6.84	990.0	1000.1	7.39	10.0	990.1	8.15

Frequency Mixer

LRMS-2LHJ

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+7	+10	+13	+7	+10	+13
5.0	62.90	63.03	63.17	61.70	59.74	58.59
10.0	60.72	60.63	60.56	56.64	54.85	53.02
50.4	51.72	50.56	49.63	45.24	43.25	41.95
90.7	47.12	45.90	45.18	40.27	38.46	37.31
131.0	44.57	43.33	42.39	37.26	35.86	34.95
171.3	43.19	41.82	40.70	36.05	34.65	33.34
211.5	41.87	40.16	39.04	34.98	33.83	32.39
251.8	40.77	39.03	37.66	34.77	32.97	31.26
292.1	39.55	37.91	36.65	34.49	32.23	30.64
332.4	38.14	36.51	35.23	33.34	31.39	29.51
372.7	37.03	35.42	34.22	32.51	30.41	28.68
413.0	35.77	34.27	33.26	31.59	29.71	28.17
453.3	34.74	33.33	32.26	30.44	28.64	27.18
493.6	33.49	32.27	31.42	29.17	27.88	26.74
533.9	31.92	31.06	30.20	27.71	26.70	25.63
574.2	30.88	29.96	29.33	26.70	25.61	24.65
614.4	29.82	29.03	28.43	25.47	24.73	23.84
654.7	29.22	28.39	27.65	24.36	23.80	23.05
695.0	28.49	27.64	26.85	23.35	22.73	22.06
735.3	28.04	26.91	26.25	22.51	21.45	20.84
775.6	27.46	26.43	25.56	22.05	21.08	20.05
815.9	26.95	25.77	24.96	21.30	20.47	19.53
856.2	26.52	25.49	24.79	20.43	19.97	19.26
896.5	25.93	25.09	24.24	19.48	19.40	18.76
916.6	25.78	24.96	24.24	18.93	18.94	18.46
956.9	25.12	24.46	23.79	18.17	18.26	18.01
977.1	24.83	24.25	23.64	17.73	17.87	17.66
1017.3	24.40	23.73	23.34	17.03	16.98	16.81
1077.8	23.71	23.33	23.10	16.19	16.09	15.85
1097.9	23.55	23.24	23.05	15.86	15.76	15.47
1138.2	23.34	23.14	23.01	15.58	15.43	14.96
1158.4	23.10	23.00	22.83	15.37	15.31	14.84
1198.7	23.10	23.09	23.06	14.91	14.96	14.51
1218.8	22.96	22.98	23.03	14.71	14.81	14.38
1259.1	23.02	23.07	23.30	14.29	14.36	14.09
1279.2	22.95	23.09	23.41	14.03	14.22	13.96
1319.5	23.14	23.34	23.67	13.44	13.78	13.59
1339.7	23.08	23.34	23.67	13.19	13.62	13.45
1380.0	23.40	23.74	24.04	12.62	13.27	13.20
1400.1	23.56	23.95	24.19	12.29	13.00	12.97

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	52.36	46.86	48.66
50.4	80.4	35.63	35.65	35.80
90.7	120.7	31.47	31.19	31.15
131.0	161.0	28.77	28.67	28.63
171.3	201.3	27.06	26.95	26.86
211.5	241.5	25.90	25.81	25.75
251.8	281.8	25.01	24.92	25.03
292.1	322.1	24.57	24.51	24.54
332.4	362.4	24.40	24.41	24.30
372.7	402.7	24.32	24.40	24.37
413.0	443.0	24.32	24.51	24.57
453.3	483.3	24.27	24.37	24.26
493.6	523.6	24.08	23.84	23.63
533.9	563.9	23.67	23.53	23.26
574.2	604.2	23.10	23.05	22.99
614.4	644.4	21.91	21.95	21.92
654.7	684.7	20.20	20.39	20.20
695.0	725.0	18.45	18.66	18.47
735.3	765.3	16.78	16.91	16.88
775.6	805.6	15.43	15.40	15.48
815.9	845.9	14.43	14.19	14.27
856.2	886.2	13.62	13.39	13.35
896.5	926.5	12.98	12.70	12.65
916.6	946.6	12.66	12.45	12.33
956.9	986.9	12.12	12.00	12.05
977.1	1007.1	11.93	11.91	12.00
1017.3	1047.3	11.58	11.72	11.98
1037.5	1067.5	11.44	11.67	12.03
1077.8	1107.8	11.17	11.54	12.03
1097.9	1127.9	11.07	11.47	12.05
1138.2	1168.2	10.87	11.33	12.00
1158.4	1188.4	10.80	11.31	12.02
1198.7	1228.7	10.73	11.37	12.15
1218.8	1248.8	10.74	11.40	12.20
1259.1	1289.1	10.77	11.50	12.27
1279.2	1309.2	10.77	11.51	12.27
1319.5	1349.5	10.91	11.63	12.35
1339.7	1369.7	10.92	11.68	12.35
1380.0	1410.0	10.93	11.66	12.27
1400.1	1430.1	10.94	11.59	12.07

Frequency Mixer

LRMS-2LHJ

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1000.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+7	+10	+13		+7	+10	+13		+7	+10	+13
5.0	35.0	1.33	1.36	1.41	5.0	1.63	2.36	3.52	5.0	1.32	1.14	1.01
10.0	40.0	1.19	1.24	1.30	10.0	1.60	2.34	3.39	10.0	1.33	1.15	1.02
50.4	80.4	1.16	1.24	1.31	50.4	1.71	2.49	3.52	30.1	2.15	1.72	1.45
90.7	120.7	1.15	1.25	1.31	90.7	1.66	2.38	3.33	50.1	2.22	1.77	1.50
131.0	161.0	1.16	1.25	1.31	131.0	1.70	2.46	3.45	70.1	2.23	1.80	1.51
171.3	201.3	1.18	1.26	1.32	171.3	1.65	2.37	3.29	90.1	2.20	1.78	1.49
211.5	241.5	1.19	1.27	1.33	211.5	1.69	2.44	3.38	110.1	2.15	1.73	1.45
251.8	281.8	1.19	1.27	1.33	251.8	1.69	2.43	3.34	130.1	2.18	1.76	1.48
292.1	322.1	1.21	1.29	1.35	292.1	1.70	2.43	3.33	150.1	2.20	1.79	1.51
332.4	362.4	1.21	1.30	1.36	332.4	1.76	2.52	3.43	170.1	2.19	1.77	1.50
372.7	402.7	1.24	1.32	1.38	372.7	1.76	2.48	3.34	190.1	2.17	1.76	1.49
413.0	443.0	1.25	1.34	1.41	413.0	1.81	2.55	3.43	210.1	2.17	1.76	1.50
453.3	483.3	1.26	1.34	1.40	453.3	1.84	2.57	3.42	230.1	2.14	1.75	1.49
493.6	523.6	1.28	1.36	1.43	493.6	1.87	2.59	3.43	250.1	2.14	1.75	1.50
533.9	563.9	1.30	1.38	1.45	533.9	1.93	2.65	3.47	270.1	2.17	1.78	1.52
574.2	604.2	1.33	1.41	1.48	574.2	1.96	2.67	3.47	290.1	2.14	1.76	1.51
614.4	644.4	1.37	1.46	1.53	614.4	2.01	2.71	3.49	310.1	2.10	1.72	1.48
654.7	684.7	1.42	1.52	1.60	654.7	2.05	2.73	3.49	330.1	2.08	1.72	1.49
695.0	725.0	1.45	1.56	1.65	695.0	2.11	2.78	3.51	350.1	2.09	1.74	1.51
735.3	765.3	1.47	1.57	1.66	735.3	2.15	2.81	3.51	370.1	2.07	1.74	1.52
775.6	805.6	1.48	1.57	1.64	775.6	2.21	2.87	3.57	390.1	2.06	1.73	1.51
815.9	845.9	1.47	1.54	1.61	815.9	2.26	2.90	3.58	430.1	2.02	1.70	1.51
856.2	886.2	1.46	1.53	1.59	856.2	2.31	2.95	3.60	450.1	1.98	1.69	1.51
896.5	926.5	1.45	1.53	1.60	896.5	2.38	3.00	3.65	490.1	2.01	1.74	1.56
916.6	946.6	1.46	1.52	1.60	916.6	2.39	3.00	3.62	510.1	1.99	1.71	1.55
956.9	986.9	1.49	1.56	1.65	956.9	2.44	3.04	3.65	550.1	1.92	1.69	1.55
977.1	1007.1	1.52	1.60	1.68	977.1	2.48	3.07	3.69	570.1	1.93	1.72	1.59
1017.3	1047.3	1.61	1.69	1.78	1017.3	2.53	3.10	3.68	610.1	1.96	1.75	1.63
1037.5	1067.5	1.68	1.76	1.85	1037.5	2.55	3.11	3.68	630.1	1.92	1.73	1.61
1077.8	1107.8	1.80	1.87	1.96	1077.8	2.63	3.19	3.76	670.1	1.87	1.72	1.63
1097.9	1127.9	1.87	1.94	2.03	1097.9	2.65	3.20	3.76	690.1	1.91	1.77	1.68
1138.2	1168.2	2.02	2.08	2.16	1138.2	2.69	3.22	3.76	730.1	1.87	1.74	1.65
1158.4	1188.4	2.10	2.15	2.23	1158.4	2.72	3.25	3.80	750.1	1.82	1.71	1.63
1198.7	1228.7	2.27	2.31	2.37	1198.7	2.78	3.30	3.83	790.1	1.82	1.74	1.70
1218.8	1248.8	2.35	2.37	2.42	1218.8	2.79	3.31	3.82	810.1	1.82	1.74	1.69
1259.1	1289.1	2.52	2.52	2.54	1259.1	2.85	3.35	3.86	850.1	1.74	1.66	1.63
1279.2	1309.2	2.60	2.60	2.61	1279.2	2.89	3.38	3.89	870.1	1.70	1.64	1.62
1319.5	1349.5	2.76	2.76	2.77	1319.5	2.92	3.40	3.88	910.1	1.72	1.68	1.66
1339.7	1369.7	2.85	2.86	2.87	1339.7	2.96	3.43	3.90	930.1	1.70	1.65	1.64
1380.0	1410.0	3.01	3.05	3.08	1380.0	3.04	3.48	3.95	970.1	1.60	1.57	1.57
1400.1	1430.1	3.10	3.15	3.18	1400.1	3.04	3.49	3.95	990.1	1.61	1.60	1.62

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	9	17	16	30	30	40	41	60	42	51
1	-	17	+0	31	12	29	24	45	39	44	49	46
2	90	43	33	44	33	46	34	52	46	56	49	72
3	>100	49	46	55	53	52	44	46	50	60	63	57
4	>100	59	56	53	52	56	55	57	47	60	61	76
5	>100	73	66	68	57	72	56	65	56	66	74	80
6	>100	89	78	68	67	66	68	67	63	72	67	83
7	>100	81	90	84	72	75	70	80	75	79	76	69
8	>100	>93	>93	>93	>93	85	75	81	76	80	74	78
9	>100	>93	>93	>93	>93	>93	82	87	81	87	85	81
10	>100	>93	>93	>93	>93	>93	>93	84	87	83	>93	87
	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; -7.36 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+1	7	5	18	18	28	29	48	27	50
1	-	16	+0	33	12	26	22	43	39	39	46	40
2	>100	50	40	53	40	52	40	64	52	74	56	62
3	>100	67	63	74	63	70	57	70	67	79	72	81
4	>100	>83	81	>83	80	>83	78	81	78	>83	>83	>83
5	>100	>83	>83	>83	>83	>83	>83	>83	>83	>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; -16.97 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

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