

Frequency Mixer

LRMS-860J

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=+1dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+4	+7	+10			+4	+7	+10			+4	+7	+10
120.1	150.1	11.13	10.52	10.26	120.1	150.1	16.18	15.82	17.95	120.1	150.1	-0.01	-0.03	-0.03
159.5	189.5	9.22	8.77	8.55	159.5	189.5	13.14	14.07	15.71	159.5	189.5	0.05	-0.01	-0.04
198.9	228.9	7.98	7.62	7.43	198.9	228.9	10.92	12.65	14.93	198.9	228.9	0.06	0.01	0.00
238.3	268.3	7.23	6.91	6.73	238.3	268.3	11.28	12.87	15.40	238.3	268.3	0.25	0.12	0.06
277.6	307.6	6.74	6.43	6.26	277.6	307.6	10.69	13.03	15.56	277.6	307.6	0.37	0.22	0.14
317.0	347.0	6.35	6.06	5.89	317.0	347.0	10.86	12.55	14.69	317.0	347.0	0.52	0.35	0.25
356.4	386.4	6.06	5.80	5.63	356.4	386.4	12.15	14.96	15.90	356.4	386.4	0.66	0.48	0.37
395.8	425.8	5.89	5.59	5.42	395.8	425.8	12.08	14.33	17.30	395.8	425.8	0.78	0.59	0.47
435.2	465.2	5.73	5.42	5.23	435.2	465.2	11.38	12.67	14.68	435.2	465.2	0.89	0.70	0.57
474.6	504.6	5.68	5.38	5.17	474.6	504.6	11.42	12.59	13.87	474.6	504.6	0.96	0.74	0.62
513.9	543.9	5.60	5.29	5.08	513.9	543.9	10.47	12.02	12.58	513.9	543.9	1.08	0.86	0.73
553.3	583.3	5.48	5.20	5.01	553.3	583.3	11.45	12.57	13.28	553.3	583.3	1.20	0.94	0.80
592.7	622.7	5.48	5.19	5.02	592.7	622.7	12.37	14.27	15.67	592.7	622.7	1.25	0.98	0.81
632.1	662.1	5.52	5.24	5.06	632.1	662.1	18.49	18.41	16.84	632.1	662.1	1.35	1.04	0.84
671.5	701.5	5.65	5.32	5.13	671.5	701.5	15.64	19.29	20.39	671.5	701.5	1.35	1.03	0.82
691.2	721.2	5.70	5.39	5.19	691.2	721.2	13.69	16.04	21.46	691.2	721.2	1.36	1.05	0.85
730.6	760.6	5.87	5.53	5.31	730.6	760.6	10.98	13.65	17.79	730.6	760.6	1.40	1.10	0.91
750.3	780.3	5.94	5.58	5.34	750.3	780.3	9.86	12.53	19.12	750.3	780.3	1.47	1.17	0.98
789.6	819.6	6.14	5.75	5.48	789.6	819.6	8.79	12.52	16.69	789.6	819.6	1.47	1.20	1.03
809.3	839.3	6.22	5.84	5.54	809.3	839.3	8.26	11.94	18.23	809.3	839.3	1.50	1.24	1.08
848.7	878.7	6.42	6.01	5.71	848.7	878.7	8.01	11.29	20.09	848.7	878.7	1.50	1.27	1.11
868.4	898.4	6.49	6.06	5.76	868.4	898.4	7.83	10.76	20.34	868.4	898.4	1.51	1.27	1.12
907.8	937.8	6.68	6.16	5.85	907.8	937.8	8.52	11.39	18.70	907.8	937.8	1.46	1.28	1.13
927.5	957.5	6.85	6.27	5.92	927.5	957.5	9.05	11.51	19.36	927.5	957.5	1.40	1.27	1.12
966.9	996.9	7.12	6.45	6.02	966.9	996.9	10.44	13.92	14.17	966.9	996.9	1.26	1.19	1.10
986.6	1016.6	7.22	6.56	6.08	986.6	1016.6	9.42	11.93	13.25	986.6	1016.6	1.17	1.13	1.05
1025.9	1055.9	7.45	6.76	6.25	1025.9	1055.9	8.37	10.04	12.55	1025.9	1055.9	1.08	1.02	0.98
1045.6	1075.6	7.55	6.87	6.38	1045.6	1075.6	7.70	9.97	11.72	1045.6	1075.6	1.01	0.97	0.92
1085.0	1115.0	7.73	7.09	6.62	1085.0	1115.0	7.58	9.99	12.06	1085.0	1115.0	0.93	0.83	0.77
1104.7	1134.7	7.81	7.18	6.74	1104.7	1134.7	7.71	10.04	12.06	1104.7	1134.7	0.86	0.75	0.68
1144.1	1174.1	7.98	7.40	7.01	1144.1	1174.1	8.17	10.58	12.66	1144.1	1174.1	0.79	0.64	0.52
1163.8	1193.8	8.07	7.48	7.13	1163.8	1193.8	7.92	9.92	12.39	1163.8	1193.8	0.75	0.58	0.45
1203.2	1233.2	8.34	7.75	7.38	1203.2	1233.2	7.54	9.76	11.42	1203.2	1233.2	0.62	0.46	0.34
1222.9	1252.9	8.51	7.90	7.53	1222.9	1252.9	7.65	9.86	12.16	1222.9	1252.9	0.54	0.40	0.31
1262.3	1292.3	8.85	8.25	7.87	1262.3	1292.3	7.53	9.84	12.00	1262.3	1292.3	0.45	0.35	0.27
1281.9	1311.9	9.04	8.42	8.06	1281.9	1311.9	7.37	9.87	12.40	1281.9	1311.9	0.42	0.33	0.27
1321.3	1351.3	9.41	8.81	8.45	1321.3	1351.3	7.74	10.23	12.74	1321.3	1351.3	0.34	0.31	0.25
1341.0	1371.0	9.59	8.99	8.63	1341.0	1371.0	7.64	10.28	13.43	1341.0	1371.0	0.29	0.28	0.24
1380.4	1410.4	9.96	9.41	9.04	1380.4	1410.4	7.62	10.65	13.13	1380.4	1410.4	0.29	0.26	0.24
1400.1	1430.1	10.15	9.63	9.25	1400.1	1430.1	8.07	10.57	13.41	1400.1	1430.1	0.25	0.24	0.24



Frequency Mixer

LRMS-860J

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=925.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=800.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1050.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
125.0	800.1	6.31	10.0	810.1	5.77	250.0	800.1	6.98
118.9	806.2	6.31	16.2	816.3	5.75	243.8	806.3	6.99
112.9	812.2	6.32	22.3	822.4	5.76	237.7	812.4	6.99
106.8	818.3	6.31	28.5	828.6	5.76	231.5	818.6	6.99
100.8	824.3	6.32	34.6	834.7	5.77	225.4	824.7	6.99
94.7	830.4	6.33	40.8	840.9	5.76	219.2	830.9	6.99
88.7	836.4	6.35	46.9	847.0	5.76	213.1	837.0	7.00
82.6	842.5	6.34	53.1	853.2	5.77	206.9	843.2	7.01
76.6	848.5	6.37	59.2	859.3	5.79	200.8	849.3	7.02
70.5	854.6	6.36	65.4	865.5	5.78	194.6	855.5	7.02
64.5	860.6	6.37	71.5	871.6	5.78	188.5	861.6	7.03
58.4	866.7	6.37	77.7	877.8	5.77	182.3	867.8	7.03
52.4	872.7	6.35	83.8	883.9	5.74	176.2	873.9	7.04
46.3	878.8	6.36	90.0	890.1	5.75	170.0	880.1	7.05
40.3	884.8	6.35	96.2	896.3	5.73	163.8	886.3	7.05
34.2	890.9	6.36	102.3	902.4	5.70	157.7	892.4	7.08
28.2	896.9	6.35	108.5	908.6	5.69	151.5	898.6	7.07
22.1	903.0	6.33	114.6	914.7	5.67	145.4	904.7	7.08
16.1	909.0	6.32	120.8	920.9	5.68	139.2	910.9	7.08
10.0	915.1	6.31	126.9	927.0	5.67	133.1	917.0	7.07
10.0	935.1	6.30	133.1	933.2	5.65	126.9	923.2	7.08
16.1	941.2	6.23	139.2	939.3	5.63	120.8	929.3	7.06
22.1	947.2	6.21	145.4	945.5	5.61	114.6	935.5	7.03
28.2	953.3	6.21	151.5	951.6	5.59	108.5	941.6	7.03
34.2	959.3	6.19	157.7	957.8	5.57	102.3	947.8	7.04
40.3	965.4	6.18	163.8	963.9	5.56	96.2	953.9	7.06
46.3	971.4	6.16	170.0	970.1	5.53	90.0	960.1	7.03
52.4	977.5	6.15	176.2	976.3	5.51	83.8	966.3	7.02
58.4	983.5	6.16	182.3	982.4	5.49	77.7	972.4	7.00
64.5	989.6	6.16	188.5	988.6	5.49	71.5	978.6	7.00
70.5	995.6	6.13	194.6	994.7	5.48	65.4	984.7	6.99
76.6	1001.7	6.13	200.8	1000.9	5.46	59.2	990.9	6.98
82.6	1007.7	6.13	206.9	1007.0	5.46	53.1	997.0	6.95
88.7	1013.8	6.14	213.1	1013.2	5.45	46.9	1003.2	6.92
94.7	1019.8	6.13	219.2	1019.3	5.44	40.8	1009.3	6.93
100.8	1025.9	6.12	225.4	1025.5	5.44	34.6	1015.5	6.94
106.8	1031.9	6.10	231.5	1031.6	5.44	28.5	1021.6	6.92
112.9	1038.0	6.11	237.7	1037.8	5.44	22.3	1027.8	6.91
118.9	1044.0	6.09	243.8	1043.9	5.43	16.2	1033.9	6.88
125.0	1050.1	6.11	250.0	1050.1	5.43	10.0	1040.1	6.90

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
120.1	29.48	31.55	33.75	54.29	47.46	44.78
159.5	29.49	31.86	34.03	54.25	46.88	44.03
198.9	30.09	32.41	34.59	48.06	44.86	42.37
238.3	30.95	33.33	35.39	43.40	41.76	40.23
277.6	31.70	33.96	35.83	40.01	39.43	38.72
317.0	32.73	34.82	36.31	37.34	37.04	36.60
356.4	33.66	35.52	36.58	35.24	35.48	35.29
395.8	34.45	35.77	36.48	33.50	33.94	33.99
435.2	34.82	35.73	36.03	31.51	32.00	32.03
474.6	35.18	35.85	36.01	30.12	30.84	31.11
513.9	35.69	36.08	36.16	28.67	29.49	29.99
553.3	36.06	36.10	35.99	27.65	28.46	29.05
592.7	36.04	35.83	35.53	27.05	27.84	28.20
632.1	35.03	35.13	35.04	26.17	27.16	27.41
671.5	33.55	34.16	34.55	25.31	26.77	27.25
691.2	32.90	33.70	34.26	24.86	26.49	27.06
730.6	31.90	32.85	33.67	23.72	25.60	26.63
750.3	31.73	32.58	33.53	23.31	25.23	26.54
789.6	31.91	32.77	33.71	22.47	24.33	25.88
809.3	32.31	33.18	34.02	22.17	23.93	25.40
848.7	33.61	34.66	35.44	21.43	23.06	24.47
868.4	34.68	35.84	36.54	21.26	22.89	24.31
907.8	37.06	38.44	38.87	20.50	22.00	23.43
927.5	39.01	40.25	40.06	20.32	21.77	23.17
966.9	42.15	41.51	39.96	19.77	21.11	22.45
986.6	41.97	40.01	38.58	19.63	20.88	22.17
1025.9	38.78	36.77	35.62	19.09	20.21	21.32
1045.6	37.03	35.28	34.36	19.01	20.15	21.26
1085.0	33.94	32.60	32.02	18.77	19.89	21.01
1104.7	33.13	31.81	31.17	18.62	19.78	20.91
1144.1	31.67	30.48	29.88	18.49	19.89	21.10
1163.8	31.00	29.95	29.36	18.43	19.99	21.32
1203.2	29.63	29.05	28.59	17.99	19.78	21.38
1222.9	28.97	28.65	28.25	17.76	19.61	21.28
1262.3	27.34	27.43	27.35	17.26	19.19	21.04
1281.9	26.64	26.82	26.88	17.09	19.03	20.94
1321.3	25.38	25.72	25.95	16.71	18.61	20.60
1341.0	24.92	25.31	25.59	16.60	18.54	20.56
1380.4	23.95	24.37	24.85	16.42	18.31	20.35
1400.1	23.60	24.08	24.61	16.29	18.17	20.23

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
120.1	150.1	31.84	31.53	31.29
159.5	189.5	27.97	27.67	27.48
198.9	228.9	25.29	25.12	24.98
238.3	268.3	23.46	23.41	23.39
277.6	307.6	22.39	22.32	22.28
317.0	347.0	21.82	21.95	21.97
356.4	386.4	21.80	22.04	22.27
395.8	425.8	22.42	22.77	23.12
435.2	465.2	23.63	23.75	23.87
474.6	504.6	26.09	25.88	25.71
513.9	543.9	29.09	29.12	29.09
553.3	583.3	26.57	27.20	27.77
592.7	622.7	22.19	22.71	23.05
632.1	662.1	18.98	19.18	19.39
671.5	701.5	16.74	16.74	16.89
691.2	721.2	15.93	15.84	15.98
730.6	760.6	14.60	14.41	14.43
750.3	780.3	13.98	13.80	13.76
789.6	819.6	13.03	12.84	12.74
809.3	839.3	12.60	12.36	12.31
848.7	878.7	11.90	11.80	11.72
868.4	898.4	11.68	11.57	11.57
907.8	937.8	11.28	11.29	11.33
927.5	957.5	11.08	11.15	11.22
966.9	996.9	10.99	11.15	11.36
986.6	1016.6	11.05	11.28	11.56
1025.9	1055.9	11.23	11.56	12.06
1045.6	1075.6	11.35	11.79	12.29
1085.0	1115.0	11.62	12.22	12.83
1104.7	1134.7	11.77	12.38	13.00
1144.1	1174.1	12.07	12.71	13.20
1163.8	1193.8	12.20	12.81	13.24
1203.2	1233.2	12.40	13.01	13.42
1222.9	1252.9	12.45	13.09	13.44
1262.3	1292.3	12.34	12.96	13.26
1281.9	1311.9	12.20	12.80	13.02
1321.3	1351.3	11.82	12.24	12.33
1341.0	1371.0	11.56	11.90	11.95
1380.4	1410.4	11.02	11.20	11.11
1400.1	1430.1	10.76	10.82	10.69

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+4	+7	+10
120.1	150.1	13.60	12.35	11.69
159.5	189.5	8.35	7.66	7.31
198.9	228.9	5.70	5.36	5.12
238.3	268.3	4.32	4.05	3.92
277.6	307.6	3.43	3.26	3.17
317.0	347.0	2.81	2.69	2.63
356.4	386.4	2.38	2.29	2.24
395.8	425.8	2.04	1.98	1.95
435.2	465.2	1.77	1.73	1.72
474.6	504.6	1.57	1.53	1.53
513.9	543.9	1.37	1.35	1.36
553.3	583.3	1.21	1.22	1.26
592.7	622.7	1.11	1.18	1.25
632.1	662.1	1.06	1.18	1.26
671.5	701.5	1.09	1.20	1.29
691.2	721.2	1.11	1.21	1.29
730.6	760.6	1.16	1.22	1.30
750.3	780.3	1.18	1.23	1.29
789.6	819.6	1.27	1.28	1.32
809.3	839.3	1.31	1.31	1.34
848.7	878.7	1.45	1.43	1.45
868.4	898.4	1.53	1.49	1.50
907.8	937.8	1.72	1.67	1.66
927.5	957.5	1.84	1.77	1.75
966.9	996.9	2.12	2.03	1.99
986.6	1016.6	2.25	2.16	2.11
1025.9	1055.9	2.57	2.47	2.40
1045.6	1075.6	2.71	2.60	2.53
1085.0	1115.0	3.01	2.92	2.84
1104.7	1134.7	3.15	3.04	3.00
1144.1	1174.1	3.39	3.31	3.25
1163.8	1193.8	3.51	3.42	3.35
1203.2	1233.2	3.73	3.64	3.58
1222.9	1252.9	3.84	3.76	3.68
1262.3	1292.3	3.99	3.92	3.85
1281.9	1311.9	4.05	4.00	3.94
1321.3	1351.3	4.18	4.14	4.08
1341.0	1371.0	4.23	4.20	4.13
1380.4	1410.4	4.25	4.24	4.15
1400.1	1430.1	4.27	4.26	4.19

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+4	+7	+10
120.1	3.82	3.70	4.34
159.5	2.82	3.12	3.95
198.9	2.33	2.86	3.77
238.3	2.11	2.78	3.79
277.6	1.96	2.66	3.65
317.0	1.92	2.69	3.72
356.4	1.87	2.67	3.70
395.8	1.85	2.65	3.65
435.2	1.89	2.71	3.75
474.6	1.89	2.69	3.69
513.9	1.93	2.73	3.74
553.3	1.97	2.77	3.76
592.7	2.01	2.78	3.75
632.1	2.07	2.82	3.79
671.5	2.13	2.85	3.78
691.2	2.16	2.87	3.79
730.6	2.23	2.93	3.85
750.3	2.25	2.95	3.85
789.6	2.32	2.99	3.88
809.3	2.34	3.01	3.90
848.7	2.40	3.04	3.91
868.4	2.42	3.05	3.91
907.8	2.46	3.06	3.90
927.5	2.47	3.06	3.90
966.9	2.50	3.05	3.86
986.6	2.51	3.05	3.86
1025.9	2.55	3.05	3.84
1045.6	2.58	3.05	3.83
1085.0	2.63	3.06	3.80
1104.7	2.67	3.07	3.79
1144.1	2.77	3.12	3.82
1163.8	2.83	3.14	3.82
1203.2	2.98	3.20	3.83
1222.9	3.08	3.26	3.87
1262.3	3.25	3.37	3.93
1281.9	3.33	3.40	3.93
1321.3	3.48	3.48	3.97
1341.0	3.58	3.55	4.02
1380.4	3.71	3.62	4.04
1400.1	3.77	3.64	4.03

IF (OUT) (MHz)	IF VSWR @LO=1050.1MHz (:1)		
	@LO (dBm)		
	+4	+7	+10
10.1	2.70	1.75	1.36
16.3	2.02	1.69	1.66
22.4	2.33	1.83	1.73
28.6	2.03	1.70	1.49
34.7	1.97	1.74	1.48
40.9	2.00	1.64	1.38
47.0	1.98	1.70	1.38
53.2	2.04	1.60	1.50
59.3	1.93	1.63	1.41
65.5	2.01	1.68	1.47
71.6	1.99	1.65	1.45
77.8	2.03	1.67	1.43
83.9	1.99	1.70	1.48
90.1	2.02	1.70	1.47
96.3	1.98	1.69	1.46
102.4	1.98	1.67	1.48
108.6	2.00	1.69	1.47
114.7	2.03	1.73	1.50
120.9	2.00	1.70	1.47
127.0	2.03	1.70	1.47
133.2	2.00	1.71	1.47
139.3	2.00	1.70	1.50
145.5	2.04	1.69	1.49
151.6	2.00	1.69	1.48
157.8	2.00	1.69	1.48
163.9	1.96	1.68	1.49
170.1	1.99	1.68	1.49
176.3	2.00	1.68	1.49
182.4	1.99	1.69	1.50
188.6	2.01	1.70	1.51
194.7	2.02	1.71	1.52
200.9	2.00	1.72	1.50
207.0	1.98	1.69	1.52
213.2	1.99	1.71	1.53
219.3	2.01	1.71	1.53
225.5	2.01	1.71	1.53
231.6	1.99	1.72	1.53
237.8	2.00	1.72	1.54
243.9	2.01	1.72	1.54
250.1	2.02	1.74	1.55

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+7	13	2	23	21	52	38	44	33	41
1	-	5	+0	22	15	36	38	32	48	50	52	55
2	111	46	41	44	42	45	49	63	61	65	83	74
3	109	66	58	72	55	61	66	68	68	79	74	85
4	110	94	103	87	81	95	86	98	87	93	86	93
5	115	95	98	113	107	96	87	95	97	104	97	99
6	131	106	110	116	113	112	99	91	116	108	100	101
7	125	105	107	106	103	104	98	97	89	108	101	101
8	107	93	102	100	100	115	108	109	93	86	104	96
9	121	102	104	101	100	105	107	98	109	107	90	100
10	135	97	106	101	101	104	100	99	108	103	89	92
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 920.1 MHz; -14.00 dBm.
 LO IN: 950.01 MHz; +7.00 dBm
 IF OUT: 29.91 MHz; -20.94 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	4	26	13	34	33	66	46	57	45	58
1	-	5	+0	23	16	41	43	37	53	58	57	64
2	92	36	33	39	32	39	40	62	67	62	70	68
3	116	44	38	48	41	53	51	53	51	54	61	69
4	117	54	73	58	52	50	55	59	68	64	66	65
5	117	55	65	64	57	63	54	60	59	67	71	75
6	123	77	67	76	93	63	65	67	70	71	74	82
7	107	93	85	76	74	89	70	77	77	76	80	87
8	106	103	96	88	82	82	91	82	89	75	90	81
9	127	102	105	116	97	81	92	94	81	82	86	84
10	122	110	112	111	106	104	90	92	102	92	89	92
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 920.1 MHz; -4.00 dBm.
 LO IN: 950.01 MHz; +7.00 dBm
 IF OUT: 29.91 MHz; -10.99 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.

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