

Frequency Mixer

LRMS-2MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+10	+13	+16
5.0	35.0	7.41	6.87	6.60
10.0	40.0	7.27	6.71	6.43
50.4	80.4	7.19	6.70	6.49
90.7	120.7	7.20	6.68	6.45
131.0	161.0	7.02	6.62	6.46
171.3	201.3	7.07	6.68	6.48
211.5	241.5	6.99	6.65	6.50
251.8	281.8	7.04	6.70	6.53
292.1	322.1	7.03	6.70	6.52
332.4	362.4	7.07	6.75	6.56
372.7	402.7	7.10	6.77	6.56
413.0	443.0	7.13	6.76	6.56
453.3	483.3	7.18	6.78	6.57
493.6	523.6	7.17	6.75	6.52
533.9	563.9	7.25	6.86	6.57
574.2	604.2	7.26	6.89	6.61
614.4	644.4	7.32	6.96	6.69
654.7	684.7	7.38	6.95	6.69
695.0	725.0	7.44	6.97	6.69
735.3	765.3	7.66	7.03	6.74
775.6	805.6	7.80	7.08	6.73
815.9	845.9	8.09	7.27	6.82
856.2	886.2	8.28	7.47	6.93
896.5	926.5	8.48	7.73	7.13
916.6	946.6	8.53	7.86	7.25
956.9	986.9	8.61	8.02	7.46
977.1	1007.1	8.61	8.08	7.57
1017.3	1047.3	8.69	8.24	7.83
1077.8	1107.8	8.72	8.31	8.04
1097.9	1127.9	8.74	8.35	8.11
1138.2	1168.2	8.79	8.44	8.27
1158.4	1188.4	8.88	8.54	8.35
1198.7	1228.7	9.03	8.72	8.58
1218.8	1248.8	9.09	8.83	8.66
1259.1	1289.1	9.29	9.05	8.88
1279.2	1309.2	9.39	9.15	9.03
1319.5	1349.5	9.62	9.41	9.31
1339.7	1369.7	9.76	9.55	9.49
1380.0	1410.0	10.25	9.97	9.90
1400.1	1430.1	10.47	10.11	10.07

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	21.12	24.69	27.08
50.4	80.4	20.54	24.19	24.98
90.7	120.7	20.11	22.61	24.83
131.0	161.0	21.09	23.08	27.86
171.3	201.3	19.96	22.88	27.73
211.5	241.5	20.02	23.71	29.05
251.8	281.8	20.66	25.57	27.23
292.1	322.1	21.33	25.28	27.90
332.4	362.4	21.79	25.50	26.96
372.7	402.7	21.55	25.23	26.88
413.0	443.0	22.32	24.39	26.41
453.3	483.3	21.28	22.95	25.74
493.6	523.6	21.30	21.89	23.74
533.9	563.9	20.65	23.98	24.45
574.2	604.2	21.64	23.64	28.95
614.4	644.4	21.80	22.85	24.91
654.7	684.7	22.74	26.33	30.34
695.0	725.0	21.30	25.22	27.96
735.3	765.3	21.38	22.43	23.76
775.6	805.6	20.42	21.64	21.44
815.9	845.9	17.60	22.49	21.46
856.2	886.2	16.63	22.63	21.25
896.5	926.5	16.55	20.98	21.75
916.6	946.6	16.82	20.78	20.75
956.9	986.9	17.89	20.88	21.22
977.1	1007.1	18.15	21.23	22.15
1017.3	1047.3	19.87	25.39	24.88
1037.5	1067.5	21.39	26.56	25.73
1077.8	1107.8	24.05	21.86	22.15
1097.9	1127.9	20.67	20.47	21.44
1138.2	1168.2	18.18	19.54	21.39
1158.4	1188.4	17.80	19.73	21.86
1198.7	1228.7	17.33	19.96	21.56
1218.8	1248.8	17.35	19.85	21.39
1259.1	1289.1	17.50	20.11	21.46
1279.2	1309.2	17.28	20.00	20.84
1319.5	1349.5	17.53	20.44	20.47
1339.7	1369.7	17.24	20.05	20.77
1380.0	1410.0	16.87	19.29	19.35
1400.1	1430.1	16.66	19.09	19.34

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	0.89	0.70	0.56
50.4	80.4	0.85	0.66	0.54
90.7	120.7	0.83	0.66	0.54
131.0	161.0	0.92	0.69	0.52
171.3	201.3	0.80	0.63	0.49
211.5	241.5	0.89	0.63	0.51
251.8	281.8	0.91	0.64	0.51
292.1	322.1	0.86	0.63	0.53
332.4	362.4	0.87	0.66	0.55
372.7	402.7	0.88	0.69	0.60
413.0	443.0	0.91	0.73	0.63
453.3	483.3	0.95	0.76	0.65
493.6	523.6	1.03	0.87	0.76
533.9	563.9	1.08	0.90	0.82
574.2	604.2	1.18	0.96	0.88
614.4	644.4	1.27	1.02	0.91
654.7	684.7	1.38	1.11	1.00
695.0	725.0	1.47	1.22	1.09
735.3	765.3	1.42	1.25	1.10
775.6	805.6	1.37	1.31	1.14
815.9	845.9	1.23	1.27	1.16
856.2	886.2	1.19	1.24	1.22
896.5	926.5	1.17	1.20	1.26
916.6	946.6	1.16	1.16	1.21
956.9	986.9	1.13	1.09	1.15
977.1	1007.1	1.19	1.09	1.12
1017.3	1047.3	1.21	1.05	1.02
1037.5	1067.5	1.24	1.05	0.98
1077.8	1107.8	1.32	1.15	1.01
1097.9	1127.9	1.37	1.12	0.96
1138.2	1168.2	1.37	1.08	0.92
1158.4	1188.4	1.39	1.06	0.89
1198.7	1228.7	1.40	1.02	0.90
1218.8	1248.8	1.35	0.98	0.87
1259.1	1289.1	1.38	0.93	0.87
1279.2	1309.2	1.38	0.91	0.87
1319.5	1349.5	1.30	0.84	0.84
1339.7	1369.7	1.31	0.81	0.81
1380.0	1410.0	1.43	0.83	0.79
1400.1	1430.1	1.39	0.81	0.77

Frequency Mixer

LRMS-2MH+

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)
		+13			+13			+13
490.0	10.1	6.88	10.0	20.1	6.52	990.0	10.1	8.14
477.7	22.4	6.80	30.0	40.1	6.47	970.0	30.1	8.08
465.4	34.7	6.75	50.0	60.1	6.56	950.0	50.1	7.98
453.1	47.0	6.78	70.0	80.1	6.57	930.0	70.1	8.00
440.8	59.3	6.81	90.0	100.1	6.58	910.0	90.1	8.00
428.5	71.6	6.76	110.0	120.1	6.58	890.0	110.1	7.90
416.2	83.9	6.74	130.0	140.1	6.53	870.0	130.1	7.81
403.8	96.3	6.68	150.0	160.1	6.56	850.0	150.1	7.81
391.5	108.6	6.64	170.0	180.1	6.62	830.0	170.1	7.83
379.2	120.9	6.62	190.0	200.1	6.65	810.0	190.1	7.75
366.9	133.2	6.56	210.0	220.1	6.62	790.0	210.1	7.72
354.6	145.5	6.56	230.0	240.1	6.63	770.0	230.1	7.68
342.3	157.8	6.58	250.0	260.1	6.71	750.0	250.1	7.57
330.0	170.1	6.59	270.0	280.1	6.73	730.0	270.1	7.66
317.7	182.4	6.61	290.0	300.1	6.74	710.0	290.1	7.65
305.4	194.7	6.58	310.0	320.1	6.76	690.0	310.1	7.61
293.1	207.0	6.55	330.0	340.1	6.81	670.0	330.1	7.57
280.8	219.3	6.55	350.0	360.1	6.81	650.0	350.1	7.59
268.5	231.6	6.58	370.0	380.1	6.91	630.0	370.1	7.58
256.2	243.9	6.58	390.0	400.1	6.91	610.0	390.1	7.54
243.8	256.3	6.58	430.0	440.1	6.95	570.0	430.1	7.49
231.5	268.6	6.61	450.0	460.1	6.98	550.0	450.1	7.51
219.2	280.9	6.59	490.0	500.1	6.97	510.0	490.1	7.47
206.9	293.2	6.61	510.0	520.1	7.01	490.0	510.1	7.44
194.6	305.5	6.62	550.0	560.1	7.13	450.0	550.1	7.47
182.3	317.8	6.58	570.0	580.1	7.17	430.0	570.1	7.48
170.0	330.1	6.59	610.0	620.1	7.16	390.0	610.1	7.44
157.7	342.4	6.63	630.0	640.1	7.16	370.0	630.1	7.46
145.4	354.7	6.64	670.0	680.1	7.15	330.0	670.1	7.44
133.1	367.0	6.69	690.0	700.1	7.11	310.0	690.1	7.42
120.8	379.3	6.68	730.0	740.1	7.18	270.0	730.1	7.39
108.5	391.6	6.64	750.0	760.1	7.19	250.0	750.1	7.39
96.2	403.9	6.66	790.0	800.1	7.27	210.0	790.1	7.40
83.8	416.3	6.67	810.0	820.1	7.28	190.0	810.1	7.43
71.5	428.6	6.68	850.0	860.1	7.45	150.0	850.1	7.59
59.2	440.9	6.72	870.0	880.1	7.50	130.0	870.1	7.73
46.9	453.2	6.70	910.0	920.1	7.62	90.0	910.1	7.86
34.6	465.5	6.74	930.0	940.1	7.71	70.0	930.1	7.93
22.3	477.8	6.75	970.0	980.1	7.81	30.0	970.1	8.12
10.0	490.1	6.90	990.0	1000.1	7.79	10.0	990.1	8.39

Frequency Mixer

LRMS-2MH+

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
5.0	68.00	67.46	67.25	64.60	60.42	58.26
10.0	61.75	61.14	60.85	58.56	54.89	52.71
50.4	55.33	55.91	56.13	51.88	50.93	50.19
90.7	50.79	51.08	51.07	47.44	46.46	45.24
131.0	47.38	47.98	48.34	44.52	43.39	42.76
171.3	45.33	45.81	46.35	42.67	41.55	40.81
211.5	43.57	44.22	44.61	40.95	40.09	39.23
251.8	42.35	43.05	43.54	40.54	39.23	38.06
292.1	41.11	41.88	42.35	39.44	37.98	36.94
332.4	40.09	40.82	41.25	38.20	36.70	35.56
372.7	39.08	39.84	40.29	37.29	35.51	34.39
413.0	38.11	38.85	39.34	35.37	34.18	33.08
453.3	36.92	37.62	38.11	33.81	32.78	32.06
493.6	36.06	36.77	37.21	32.40	31.06	30.51
533.9	35.15	35.91	36.21	31.31	30.13	29.13
574.2	34.31	35.06	35.49	30.12	29.45	28.61
614.4	33.81	34.33	34.78	28.38	28.04	27.56
654.7	33.21	33.62	33.91	27.06	26.85	26.67
695.0	32.65	32.87	33.12	25.59	25.33	25.20
735.3	32.03	32.22	32.23	24.35	23.80	23.54
775.6	31.45	31.61	31.53	23.58	22.94	22.51
815.9	30.70	31.01	30.86	22.53	22.07	21.57
856.2	29.93	30.41	30.44	21.60	21.34	20.93
896.5	29.54	30.15	30.44	20.55	20.55	20.19
916.6	29.45	30.23	30.86	20.05	20.16	19.83
956.9	29.04	29.87	30.66	19.17	19.47	19.26
977.1	28.85	29.70	30.69	18.81	19.14	19.12
1017.3	28.70	29.75	30.97	17.78	18.27	18.35
1077.8	28.37	29.74	31.24	16.60	17.23	17.50
1097.9	28.63	30.50	32.66	16.15	16.80	17.06
1138.2	28.93	31.45	34.21	15.35	16.11	16.27
1158.4	29.31	32.14	35.10	15.07	15.78	15.98
1198.7	30.27	34.41	39.34	14.24	14.99	15.19
1218.8	30.37	34.80	40.16	13.88	14.72	14.86
1259.1	31.57	38.33	52.26	13.26	14.07	14.20
1279.2	31.66	39.93	52.66	12.97	13.75	13.99
1319.5	31.38	39.32	40.34	12.23	13.07	13.32
1339.7	31.67	38.84	37.55	12.03	12.89	13.12
1380.0	30.05	34.26	33.23	11.46	12.33	12.66
1400.1	29.46	33.14	32.30	11.19	12.09	12.47

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	54.33	51.69	49.04
50.4	80.4	37.17	37.26	37.19
90.7	120.7	32.63	32.62	32.85
131.0	161.0	29.96	30.07	30.21
171.3	201.3	28.32	28.44	28.38
211.5	241.5	27.12	27.19	27.30
251.8	281.8	26.33	26.48	26.54
292.1	322.1	25.92	26.15	26.21
332.4	362.4	25.55	25.82	26.01
372.7	402.7	25.37	25.74	25.93
413.0	443.0	25.24	25.66	26.02
453.3	483.3	25.22	25.70	26.03
493.6	523.6	25.04	25.54	25.82
533.9	563.9	24.08	24.49	24.67
574.2	604.2	22.37	22.70	22.83
614.4	644.4	20.48	20.50	20.54
654.7	684.7	18.71	18.59	18.59
695.0	725.0	17.42	17.24	17.20
735.3	765.3	16.42	16.22	16.17
775.6	805.6	15.70	15.57	15.51
815.9	845.9	15.08	15.04	15.05
856.2	886.2	14.48	14.56	14.64
896.5	926.5	13.99	14.18	14.38
916.6	946.6	13.83	14.07	14.31
956.9	986.9	13.56	13.89	14.25
977.1	1007.1	13.54	13.94	14.34
1017.3	1047.3	13.43	13.93	14.43
1037.5	1067.5	13.42	13.95	14.45
1077.8	1107.8	13.34	13.89	14.31
1097.9	1127.9	13.26	13.79	14.21
1138.2	1168.2	13.17	13.59	13.90
1158.4	1188.4	13.10	13.43	13.71
1198.7	1228.7	12.89	13.13	13.26
1218.8	1248.8	12.79	12.91	13.03
1259.1	1289.1	12.39	12.53	12.48
1279.2	1309.2	12.15	12.20	12.16
1319.5	1349.5	11.65	11.70	11.56
1339.7	1369.7	11.36	11.38	11.23
1380.0	1410.0	10.69	10.70	10.55
1400.1	1430.1	10.47	10.43	10.26

Frequency Mixer

LRMS-2MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+10	+13	+16
5.0	35.0	1.43	2.23	3.52
10.0	40.0	1.34	2.14	3.44
50.4	80.4	1.15	1.24	1.32
90.7	120.7	1.15	1.26	1.34
131.0	161.0	1.18	1.28	1.34
171.3	201.3	1.17	1.28	1.34
211.5	241.5	1.20	1.29	1.35
251.8	281.8	1.20	1.29	1.34
292.1	322.1	1.21	1.29	1.35
332.4	362.4	1.22	1.30	1.36
372.7	402.7	1.24	1.31	1.37
413.0	443.0	1.26	1.33	1.39
453.3	483.3	1.29	1.36	1.42
493.6	523.6	1.34	1.42	1.48
533.9	563.9	1.37	1.44	1.51
574.2	604.2	1.42	1.48	1.55
614.4	644.4	1.48	1.54	1.59
654.7	684.7	1.53	1.59	1.66
695.0	725.0	1.60	1.66	1.73
735.3	765.3	1.67	1.74	1.81
775.6	805.6	1.77	1.84	1.91
815.9	845.9	1.92	1.96	2.03
856.2	886.2	2.08	2.11	2.16
896.5	926.5	2.27	2.28	2.31
916.6	946.6	2.37	2.38	2.41
956.9	986.9	2.59	2.61	2.63
977.1	1007.1	2.72	2.75	2.77
1017.3	1047.3	2.95	3.00	3.03
1037.5	1067.5	3.07	3.13	3.17
1077.8	1107.8	3.27	3.34	3.40
1097.9	1127.9	3.36	3.43	3.48
1138.2	1168.2	3.58	3.65	3.72
1158.4	1188.4	3.66	3.73	3.79
1198.7	1228.7	3.86	3.95	4.00
1218.8	1248.8	3.99	4.07	4.11
1259.1	1289.1	4.09	4.16	4.20
1279.2	1309.2	4.16	4.23	4.27
1319.5	1349.5	4.24	4.30	4.33
1339.7	1369.7	4.28	4.33	4.36
1380.0	1410.0	4.36	4.39	4.43
1400.1	1430.1	4.37	4.40	4.42

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+10	+13	+16
5.0	1.22	1.26	1.31
10.0	1.11	1.16	1.23
50.4	1.71	2.62	3.82
90.7	1.61	2.37	3.38
131.0	1.68	2.55	3.70
171.3	1.62	2.41	3.45
211.5	1.67	2.50	3.58
251.8	1.69	2.53	3.60
292.1	1.70	2.51	3.54
332.4	1.80	2.66	3.74
372.7	1.80	2.60	3.62
413.0	1.90	2.75	3.80
453.3	1.95	2.76	3.78
493.6	2.01	2.82	3.82
533.9	2.12	2.95	3.95
574.2	2.15	2.96	3.95
614.4	2.27	3.10	4.10
654.7	2.33	3.10	4.06
695.0	2.44	3.20	4.15
735.3	2.56	3.30	4.21
775.6	2.66	3.40	4.29
815.9	2.80	3.56	4.44
856.2	2.88	3.64	4.51
896.5	2.99	3.76	4.64
916.6	3.03	3.80	4.68
956.9	3.10	3.83	4.70
977.1	3.14	3.86	4.72
1017.3	3.21	3.90	4.75
1037.5	3.24	3.90	4.73
1077.8	3.29	3.90	4.69
1097.9	3.31	3.90	4.66
1138.2	3.38	3.93	4.64
1158.4	3.42	3.93	4.62
1198.7	3.48	3.92	4.55
1218.8	3.53	3.94	4.54
1259.1	3.63	3.97	4.53
1279.2	3.69	3.98	4.50
1319.5	3.79	4.01	4.48
1339.7	3.86	4.06	4.52
1380.0	3.95	4.10	4.48
1400.1	3.99	4.10	4.46

IF (OUT) (MHz)	IF VSWR @LO=1000.1MHz (:1)		
	@LO (dBm)		
	+10	+13	+16
5.0	1.70	1.38	1.18
10.0	1.70	1.38	1.18
30.2	2.50	2.04	1.67
50.4	2.39	1.97	1.59
70.6	2.35	1.95	1.59
90.8	2.39	1.98	1.61
111.0	2.45	2.02	1.64
131.2	2.44	2.01	1.64
151.4	2.37	1.96	1.61
171.6	2.33	1.93	1.58
191.8	2.36	1.97	1.62
212.0	2.40	2.00	1.65
232.2	2.39	1.99	1.64
252.4	2.38	1.99	1.64
272.7	2.40	2.01	1.66
292.9	2.38	2.00	1.66
313.1	2.34	1.96	1.64
333.3	2.32	1.95	1.64
353.5	2.34	1.98	1.68
373.7	2.33	1.98	1.68
393.9	2.30	1.95	1.65
434.3	2.21	1.91	1.65
454.5	2.22	1.92	1.68
494.9	2.26	1.96	1.71
515.1	2.18	1.90	1.68
555.5	2.17	1.91	1.71
575.7	2.19	1.95	1.75
616.1	2.14	1.90	1.71
636.3	2.10	1.87	1.70
676.7	2.09	1.88	1.73
696.9	2.11	1.90	1.75
737.3	2.00	1.81	1.67
757.6	1.95	1.78	1.66
798.0	1.93	1.78	1.68
818.2	1.92	1.78	1.68
858.6	1.84	1.70	1.62
878.8	1.79	1.66	1.59
919.2	1.78	1.68	1.63
939.4	1.78	1.67	1.62
979.8	1.69	1.60	1.56
1000.0	1.75	1.85	2.04

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	4	21	9	41	23	26	19	32	35	43
1	-	18	+0	32	13	32	28	37	40	37	65	43
2	>100	58	44	60	45	58	47	74	57	65	54	54
3	>100	69	78	69	64	67	60	69	71	72	63	85
4	>100	>87	87	>87	86	>87	81	85	>87	>87	85	>87
5	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
6	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
7	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
8	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
9	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
10	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 500.1 MHz; -6.00 dBm.

LO IN: 530.01 MHz; +13.00 dBm

IF OUT: 29.91 MHz; -12.86 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	14	32	21	57	35	38	33	51	50	74
1	-	19	+0	30	13	36	29	43	41	42	57	51
2	>100	50	37	50	36	55	40	60	52	65	46	53
3	>100	50	48	65	48	53	45	52	58	54	51	54
4	>100	78	62	74	59	67	63	61	56	78	69	64
5	>100	91	75	77	57	63	54	62	53	63	62	72
6	>100	93	80	97	81	74	71	69	64	68	67	77
7	>100	78	83	86	81	78	75	82	75	93	95	86
8	>100	94	>97	>97	>97	>97	92	89	87	88	82	81
9	>100	>97	>97	>97	>97	95	91	86	83	88	83	92
10	>100	>97	>97	>97	>97	>97	>97	>97	94	>97	91	95
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 500.1 MHz; 4.00 dBm.

LO IN: 530.01 MHz; +13.00 dBm

IF OUT: 29.91 MHz; -2.79 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

LRMS-2MH+

100817

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