

# Frequency Mixer

# LRMS-2UMHJ

## 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=+9dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+10	+13	+16			+10	+13	+16			+10	+13	+16
10.1	40.1	6.12	5.87	5.68	10.1	40.1	21.78	23.54	22.13	10.1	40.1	1.68	1.45	1.16
70.1	100.1	6.42	6.14	6.02	70.1	100.1	16.87	15.49	14.59	70.1	100.1	1.42	1.16	1.00
130.1	160.1	6.57	6.28	6.11	130.1	160.1	12.75	12.96	13.91	130.1	160.1	1.53	1.27	1.08
190.1	220.1	6.90	6.54	6.27	190.1	220.1	11.10	12.29	14.49	190.1	220.1	1.51	1.36	1.24
250.1	280.1	7.17	6.73	6.36	250.1	280.1	11.08	12.94	15.89	250.1	280.1	1.70	1.50	1.45
310.1	340.1	7.69	7.08	6.59	310.1	340.1	10.63	13.23	17.01	310.1	340.1	1.64	1.58	1.57
370.1	400.1	7.72	6.89	6.34	370.1	400.1	11.21	14.84	19.20	370.1	400.1	1.84	1.95	1.98
430.1	460.1	8.29	7.31	6.69	430.1	460.1	11.84	15.96	19.03	430.1	460.1	1.79	1.93	1.95
490.1	520.1	8.28	7.25	6.69	490.1	520.1	12.91	18.04	18.90	490.1	520.1	1.98	2.11	2.00
550.1	580.1	8.34	7.04	6.43	550.1	580.1	11.65	16.92	19.04	550.1	580.1	1.94	2.29	2.22
610.1	640.1	9.04	7.65	6.86	610.1	640.1	10.75	14.86	18.28	610.1	640.1	1.36	1.82	1.91
670.1	700.1	8.58	7.43	6.81	670.1	700.1	12.58	15.76	17.91	670.1	700.1	1.81	2.01	2.03
730.1	760.1	8.37	7.56	7.05	730.1	760.1	14.48	16.00	17.31	730.1	760.1	1.88	1.87	1.85
790.1	820.1	8.41	7.72	7.33	790.1	820.1	15.03	16.69	17.72	790.1	820.1	1.75	1.66	1.62
870.1	900.1	8.55	8.15	7.86	870.1	900.1	15.75	17.19	18.89	870.1	900.1	1.22	1.03	0.98
930.1	960.1	8.33	8.08	7.93	930.1	960.1	17.00	17.37	18.11	930.1	960.1	1.06	0.80	0.72
1010.1	1040.1	8.00	7.80	7.67	1010.1	1040.1	20.13	19.74	19.51	1010.1	1040.1	0.86	0.64	0.58
1070.1	1100.1	7.96	7.72	7.60	1070.1	1100.1	20.24	20.92	21.35	1070.1	1100.1	0.74	0.48	0.42
1150.1	1180.1	8.08	7.69	7.57	1150.1	1180.1	20.92	24.37	25.02	1150.1	1180.1	0.67	0.36	0.29
1210.1	1240.1	8.38	7.85	7.69	1210.1	1240.1	22.07	25.01	27.21	1210.1	1240.1	0.54	0.34	0.28
1290.1	1320.1	9.09	8.21	7.94	1290.1	1320.1	22.20	24.63	27.41	1290.1	1320.1	0.36	0.35	0.32
1350.1	1380.1	9.64	8.57	8.13	1350.1	1380.1	20.53	22.85	24.69	1350.1	1380.1	0.23	0.26	0.30
1430.1	1460.1	10.22	8.94	8.49	1430.1	1460.1	19.29	22.05	22.98	1430.1	1460.1	-0.01	0.17	0.23
1490.1	1520.1	10.54	9.30	8.72	1490.1	1520.1	19.94	21.86	22.64	1490.1	1520.1	-0.11	0.07	0.22
1570.1	1600.1	10.93	9.48	8.95	1570.1	1600.1	18.47	22.18	21.89	1570.1	1600.1	-0.24	0.10	0.20
1630.1	1660.1	10.91	9.52	8.88	1630.1	1660.1	18.38	20.32	21.04	1630.1	1660.1	-0.24	0.04	0.25
1710.1	1740.1	10.55	9.37	8.79	1710.1	1740.1	18.41	19.57	20.22	1710.1	1740.1	-0.13	0.09	0.30
1770.1	1800.1	10.52	9.37	8.83	1770.1	1800.1	18.77	19.38	19.79	1770.1	1800.1	-0.05	0.11	0.31
1850.1	1880.1	10.29	9.19	8.78	1850.1	1880.1	18.71	18.87	19.43	1850.1	1880.1	0.08	0.18	0.33
1910.1	1940.1	10.04	9.01	8.70	1910.1	1940.1	18.94	18.83	18.77	1910.1	1940.1	0.19	0.25	0.37
1990.1	2020.1	9.90	8.99	8.71	1990.1	2020.1	18.47	19.08	20.08	1990.1	2020.1	0.29	0.26	0.36
2050.1	2080.1	9.85	8.94	8.67	2050.1	2080.1	18.81	18.65	19.55	2050.1	2080.1	0.36	0.30	0.38
2130.1	2160.1	9.78	8.76	8.49	2130.1	2160.1	18.98	18.77	19.23	2130.1	2160.1	0.47	0.37	0.40
2190.1	2220.1	9.76	8.90	8.65	2190.1	2220.1	18.05	18.73	19.37	2190.1	2220.1	0.50	0.37	0.37
2270.1	2300.1	9.89	9.10	8.84	2270.1	2300.1	18.01	17.97	18.95	2270.1	2300.1	0.55	0.37	0.36
2330.1	2360.1	9.93	9.10	8.85	2330.1	2360.1	17.71	17.56	18.77	2330.1	2360.1	0.74	0.45	0.38
2410.1	2440.1	10.10	9.30	9.01	2410.1	2440.1	17.25	17.92	18.74	2410.1	2440.1	0.86	0.49	0.37
2470.1	2500.1	10.28	9.58	9.28	2470.1	2500.1	17.43	17.99	18.91	2470.1	2500.1	0.81	0.46	0.34
2550.1	2580.1	10.56	9.88	9.58	2550.1	2580.1	16.65	17.69	18.74	2550.1	2580.1	0.81	0.42	0.27
2610.1	2640.1	10.80	10.11	9.79	2610.1	2640.1	15.75	16.97	18.15	2610.1	2640.1	0.89	0.45	0.27



# Frequency Mixer

# LRMS-2UMHJ

## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=510.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1010.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+13			+13			+13
490.1	20.0	6.84	10.1	20.1	6.25	810.1	200.0	10.25
480.1	30.0	6.86	30.1	40.1	5.68	790.1	220.0	10.11
470.1	40.0	6.87	50.1	60.1	5.72	770.1	240.0	9.99
460.1	50.0	6.96	70.1	80.1	5.77	750.1	260.0	9.97
450.1	60.0	7.00	90.1	100.1	5.77	730.1	280.0	9.87
440.1	70.0	7.03	110.1	120.1	5.71	710.1	300.0	9.73
430.1	80.0	7.05	130.1	140.1	5.63	690.1	320.0	9.66
420.1	90.0	7.16	150.1	160.1	5.76	670.1	340.0	9.57
410.1	100.0	7.23	170.1	180.1	5.79	650.1	360.0	9.47
400.1	110.0	7.31	190.1	200.1	5.81	630.1	380.0	9.39
390.1	120.0	7.28	210.1	220.1	5.78	610.1	400.0	9.27
380.1	130.0	7.36	230.1	240.1	5.78	590.1	420.0	9.28
370.1	140.0	7.34	270.1	280.1	5.83	570.1	440.0	9.14
360.1	150.0	7.46	290.1	300.1	5.94	550.1	460.0	9.29
350.1	160.0	7.39	330.1	340.1	5.97	530.1	480.0	9.12
340.1	170.0	7.78	350.1	360.1	5.99	510.1	500.0	9.30
330.1	180.0	7.49	390.1	400.1	5.98	490.1	520.0	9.07
320.1	190.0	7.50	410.1	420.1	6.02	470.1	540.0	9.16
310.1	200.0	7.43	450.1	460.1	6.11	450.1	560.0	9.31
300.1	210.0	7.57	470.1	480.1	6.06	430.1	580.0	9.09
290.1	220.0	7.46	510.1	520.1	6.22	410.1	600.0	9.24
280.1	230.0	7.44	530.1	540.1	6.29	390.1	620.0	9.10
260.1	250.0	7.46	570.1	580.1	6.42	370.1	640.0	9.06
250.1	260.0	7.42	590.1	600.1	6.34	350.1	660.0	8.96
230.1	280.0	7.38	630.1	640.1	6.62	330.1	680.0	8.84
220.1	290.0	7.45	650.1	660.1	6.81	310.1	700.0	8.79
200.1	310.0	7.26	690.1	700.1	7.03	290.1	720.0	8.66
190.1	320.0	7.35	710.1	720.1	7.25	270.1	740.0	8.64
170.1	340.0	7.48	750.1	760.1	7.58	250.1	760.0	8.55
160.1	350.0	7.32	770.1	780.1	7.70	230.1	780.0	8.47
140.1	370.0	7.38	810.1	820.1	8.10	210.1	800.0	8.42
130.1	380.0	7.48	830.1	840.1	8.23	190.1	820.0	8.33
110.1	400.0	7.40	870.1	880.1	8.47	170.1	840.0	8.27
100.1	410.0	7.24	890.1	900.1	8.66	150.1	860.0	8.14
80.1	430.0	7.28	930.1	940.1	9.11	130.1	880.0	8.04
70.1	440.0	7.24	950.1	960.1	9.23	110.1	900.0	7.94
50.1	460.0	7.42	990.1	1000.1	9.56	90.1	920.0	7.89
40.1	470.0	7.29	1010.1	1020.1	9.73	70.1	940.0	7.90
20.1	490.0	7.42	1050.1	1060.1	10.14	30.1	980.0	7.98
10.1	500.0	7.99	1070.1	1080.1	10.43	10.1	1000.0	8.54



# Frequency Mixer

# LRMS-2UMHJ

## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
40.1	53.58	52.76	52.03	61.38	63.16	65.60
100.1	46.46	45.71	45.14	58.41	58.69	59.28
160.1	44.05	43.26	42.67	52.10	53.17	55.82
220.1	41.79	41.16	40.74	48.21	50.34	53.66
280.1	41.16	40.75	40.38	45.02	48.40	53.56
340.1	39.95	39.83	39.37	43.69	47.94	53.35
400.1	38.42	38.16	38.09	42.07	47.89	53.41
460.1	37.21	36.42	36.18	40.55	46.63	51.04
520.1	34.60	34.62	34.38	40.22	46.19	46.70
580.1	32.99	33.46	33.79	39.06	44.50	44.57
640.1	30.77	31.02	31.73	37.80	42.36	43.37
700.1	29.36	29.41	29.97	36.52	40.41	41.08
760.1	28.03	27.95	28.19	34.99	38.38	39.29
820.1	27.52	27.10	27.27	33.57	35.69	36.39
900.1	27.86	27.06	26.51	31.92	33.44	33.98
960.1	27.99	27.20	26.54	30.98	32.54	33.29
1040.1	26.79	26.64	26.03	29.73	31.48	32.22
1100.1	26.37	26.40	26.01	28.84	30.82	31.87
1180.1	26.02	26.42	26.19	27.58	29.67	30.98
1240.1	25.78	26.46	26.60	26.85	28.88	30.34
1320.1	26.08	26.67	27.03	26.16	28.16	29.87
1380.1	25.98	26.35	26.72	25.58	27.79	29.69
1460.1	25.84	26.22	26.76	24.63	27.01	29.21
1520.1	24.96	25.77	26.39	24.04	26.48	28.80
1600.1	24.03	25.51	26.60	23.96	26.35	28.80
1660.1	22.95	25.01	26.79	26.28	28.49	30.78
1740.1	22.49	25.17	27.49	33.04	34.11	34.84
1800.1	23.23	26.15	28.19	29.45	31.03	32.32
1880.1	23.89	27.71	30.05	27.09	28.94	30.51
1940.1	24.35	29.44	32.42	26.68	28.45	29.76
2020.1	25.36	32.97	32.49	26.88	28.29	28.48
2080.1	25.93	36.35	30.84	27.36	28.16	27.37
2160.1	27.23	44.41	27.83	28.59	27.54	25.16
2220.1	30.64	35.91	25.46	29.55	25.81	23.22
2300.1	38.00	29.39	22.53	28.85	23.54	20.68
2360.1	46.46	27.43	21.59	27.20	22.13	19.34
2440.1	38.62	25.25	20.96	23.85	19.86	17.59
2500.1	30.95	23.78	20.54	21.22	18.44	16.59
2580.1	27.01	22.20	20.13	19.00	16.69	15.41
2640.1	25.71	21.77	20.08	17.92	15.98	14.95

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	16.05	17.06	17.23
70.1	100.1	20.87	21.03	21.21
130.1	160.1	21.37	21.55	21.88
190.1	220.1	21.87	22.36	22.64
250.1	280.1	23.21	23.64	24.13
310.1	340.1	24.31	25.08	25.81
370.1	400.1	26.68	27.28	27.98
430.1	460.1	30.25	31.09	30.66
490.1	520.1	33.54	32.51	31.13
550.1	580.1	33.51	31.14	29.60
610.1	640.1	28.50	27.89	27.06
670.1	700.1	25.89	26.20	26.24
730.1	760.1	24.27	24.52	24.69
790.1	820.1	22.90	23.22	23.45
870.1	900.1	21.26	21.40	21.49
930.1	960.1	20.91	20.78	20.77
1010.1	1040.1	19.88	19.68	19.55
1070.1	1100.1	18.78	18.60	18.49
1150.1	1180.1	17.65	17.55	17.47
1210.1	1240.1	17.27	17.24	17.21
1290.1	1320.1	17.11	17.14	17.11
1350.1	1380.1	16.83	16.76	16.75
1430.1	1460.1	15.78	15.69	15.64
1490.1	1520.1	14.95	14.87	14.90
1570.1	1600.1	14.21	14.21	14.22
1630.1	1660.1	14.17	14.22	14.25
1710.1	1740.1	15.69	15.65	15.61
1770.1	1800.1	15.63	15.61	15.56
1850.1	1880.1	14.64	14.72	14.77
1910.1	1940.1	14.24	14.40	14.53
1990.1	2020.1	13.91	14.13	14.36
2050.1	2080.1	13.80	14.11	14.36
2130.1	2160.1	13.68	14.00	14.27
2190.1	2220.1	13.63	13.87	14.05
2270.1	2300.1	13.31	13.41	13.48
2330.1	2360.1	12.96	12.94	12.87
2410.1	2440.1	12.27	12.19	12.07
2470.1	2500.1	11.79	11.75	11.70
2550.1	2580.1	11.21	11.22	11.29
2610.1	2640.1	10.99	11.00	11.07



# Frequency Mixer

# LRMS-2UMHJ

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1000MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
10.1	40.1	1.40	1.36	1.42	40.1	1.58	2.54	3.82	10.0	1.56	1.55	1.57
70.1	100.1	1.14	1.06	1.07	100.1	1.46	2.23	3.26	30.0	1.21	1.21	1.24
130.1	160.1	1.18	1.09	1.05	160.1	1.48	2.27	3.30	50.0	1.18	1.16	1.19
190.1	220.1	1.30	1.21	1.17	220.1	1.56	2.33	3.37	70.0	1.10	1.10	1.16
250.1	280.1	1.43	1.36	1.31	280.1	1.54	2.22	3.13	90.0	1.14	1.12	1.17
310.1	340.1	1.65	1.56	1.49	340.1	1.61	2.27	3.17	110.0	1.11	1.11	1.19
370.1	400.1	1.90	1.77	1.69	400.1	1.64	2.24	3.11	130.0	1.15	1.12	1.17
430.1	460.1	2.26	2.08	1.96	460.1	1.67	2.21	3.00	150.0	1.09	1.10	1.19
490.1	520.1	2.59	2.38	2.24	520.1	1.75	2.28	3.03	170.0	1.12	1.13	1.20
550.1	580.1	2.94	2.61	2.42	580.1	1.68	2.18	2.92	190.0	1.12	1.17	1.26
610.1	640.1	3.40	3.00	2.72	640.1	1.66	2.11	2.80	210.0	1.14	1.17	1.25
670.1	700.1	3.50	3.15	2.93	700.1	1.64	2.08	2.77	230.0	1.14	1.19	1.29
730.1	760.1	3.60	3.34	3.15	760.1	1.65	2.03	2.67	250.0	1.14	1.19	1.29
790.1	820.1	3.73	3.50	3.34	820.1	1.73	2.04	2.62	270.0	1.18	1.27	1.39
870.1	900.1	3.69	3.58	3.48	900.1	1.89	2.08	2.58	290.0	1.19	1.27	1.39
930.1	960.1	3.47	3.43	3.39	960.1	2.02	2.10	2.54	310.0	1.25	1.35	1.47
1010.1	1040.1	3.24	3.19	3.14	1040.1	2.14	2.09	2.46	330.0	1.22	1.32	1.44
1070.1	1100.1	3.12	3.03	2.98	1100.1	2.24	2.07	2.38	350.0	1.29	1.42	1.56
1150.1	1180.1	3.01	2.85	2.78	1180.1	2.43	2.08	2.29	370.0	1.29	1.42	1.55
1210.1	1240.1	3.03	2.83	2.73	1240.1	2.52	2.10	2.25	390.0	1.38	1.53	1.67
1290.1	1320.1	3.22	2.94	2.80	1320.1	2.64	2.11	2.18	410.0	1.36	1.50	1.64
1350.1	1380.1	3.43	3.12	2.95	1380.1	2.75	2.12	2.10	430.0	1.44	1.60	1.75
1430.1	1460.1	3.56	3.22	3.06	1460.1	2.78	2.07	1.99	450.0	1.45	1.61	1.77
1490.1	1520.1	3.60	3.30	3.10	1520.1	2.75	2.02	1.90	470.0	1.54	1.72	1.88
1570.1	1600.1	3.60	3.30	3.12	1600.1	2.80	1.95	1.76	490.0	1.55	1.73	1.89
1630.1	1660.1	3.56	3.29	3.10	1660.1	2.81	1.89	1.64	510.0	1.61	1.80	1.96
1710.1	1740.1	3.58	3.32	3.12	1740.1	2.79	1.81	1.48	530.0	1.63	1.83	1.99
1770.1	1800.1	3.70	3.40	3.17	1800.1	2.82	1.76	1.36	550.0	1.70	1.90	2.07
1850.1	1880.1	3.65	3.33	3.10	1880.1	2.91	1.76	1.24	590.0	1.80	2.01	2.18
1910.1	1940.1	3.49	3.16	2.95	1940.1	2.92	1.77	1.22	610.0	1.84	2.06	2.24
1990.1	2020.1	3.36	3.03	2.80	2020.1	2.86	1.78	1.26	650.0	1.97	2.21	2.39
2050.1	2080.1	3.29	2.92	2.69	2080.1	2.89	1.83	1.35	670.0	1.99	2.22	2.39
2130.1	2160.1	3.17	2.78	2.53	2160.1	2.91	1.89	1.48	710.0	2.07	2.30	2.47
2190.1	2220.1	3.01	2.66	2.44	2220.1	2.72	1.88	1.56	730.0	2.17	2.42	2.61
2270.1	2300.1	2.84	2.51	2.33	2300.1	2.57	1.91	1.69	770.0	2.29	2.55	2.73
2330.1	2360.1	2.77	2.44	2.25	2360.1	2.57	1.96	1.78	790.0	2.27	2.52	2.69
2410.1	2440.1	2.62	2.35	2.20	2440.1	2.44	1.97	1.88	830.0	2.40	2.66	2.83
2470.1	2500.1	2.44	2.25	2.13	2500.1	2.28	1.96	1.94	850.0	2.55	2.82	3.00
2550.1	2580.1	2.32	2.20	2.14	2580.1	2.14	1.98	2.04	890.0	2.65	2.92	3.10
2610.1	2640.1	2.26	2.18	2.16	2640.1	2.08	2.01	2.11	910.0	2.66	2.92	3.09

## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	19	13	13	28	17	28	29	41	40	52
1	-	25	+0	30	18	39	33	34	31	44	40	56
2	76	48	54	48	54	55	58	54	58	62	60	74
3	>90	68	51	58	47	56	53	76	55	59	60	74
4	>90	>77	>77	>77	74	>77	74	>77	>77	72	76	>77
5	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
6	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
7	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
8	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
9	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
10	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 505 MHz; -6.00 dBm.  
 LO IN: 535 MHz; +13.00 dBm  
 IF OUT: 30 MHz; -13.38 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	29	25	25	42	31	42	47	75	51	67
1	-	23	+0	31	19	50	45	43	45	58	53	68
2	56	36	51	44	65	49	51	50	55	53	58	68
3	85	43	33	43	39	46	46	60	39	49	49	68
4	>90	66	58	50	61	46	58	56	>87	61	57	74
5	>90	57	55	64	46	47	44	49	53	70	61	60
6	>90	60	64	71	66	56	61	60	60	76	80	61
7	>90	74	53	57	69	62	56	56	56	62	73	72
8	>90	81	81	64	65	76	78	68	63	65	67	68
9	>90	>87	>87	82	68	63	80	73	68	64	67	66
10	>90	83	>87	79	85	70	69	86	74	74	69	70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 505 MHz; 4.00 dBm.  
 LO IN: 535 MHz; +13.00 dBm  
 IF OUT: 30 MHz; -3.19 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.