

# Frequency Mixer

# RMS-5MH+

## 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	6.33	5.74	5.46	10.1	40.1	18.79	21.64	24.14	10.1	40.1	0.87	0.58	0.35
69.8	99.8	6.13	5.67	5.34	69.8	99.8	19.97	23.39	28.27	69.8	99.8	1.15	0.77	0.63
129.6	159.6	6.18	5.66	5.37	129.6	159.6	20.07	20.82	18.49	129.6	159.6	1.18	0.83	0.64
189.3	219.3	6.14	5.68	5.43	189.3	219.3	20.38	16.83	18.37	189.3	219.3	1.30	0.87	0.68
249.1	279.1	6.13	5.74	5.47	249.1	279.1	15.94	16.70	18.19	249.1	279.1	1.30	0.85	0.68
308.8	338.8	6.14	5.79	5.50	308.8	338.8	15.02	16.36	18.52	308.8	338.8	1.22	0.83	0.68
368.5	398.5	6.32	5.89	5.58	368.5	398.5	14.85	16.63	19.76	368.5	398.5	1.22	0.88	0.76
428.3	458.3	6.37	5.93	5.62	428.3	458.3	15.22	17.51	19.77	428.3	458.3	1.37	1.04	0.89
488.0	518.0	6.49	6.03	5.66	488.0	518.0	14.48	17.29	21.50	488.0	518.0	1.46	1.15	1.07
547.8	577.8	6.55	6.10	5.76	547.8	577.8	14.94	16.62	17.99	547.8	577.8	1.68	1.26	1.08
607.5	637.5	6.76	6.16	5.75	607.5	637.5	14.46	18.07	19.52	607.5	637.5	1.81	1.51	1.28
667.2	697.2	7.04	6.33	5.79	667.2	697.2	12.59	18.12	22.79	667.2	697.2	1.80	1.63	1.50
727.0	757.0	7.20	6.55	5.97	727.0	757.0	12.62	15.79	22.06	727.0	757.0	1.90	1.60	1.55
786.7	816.7	7.42	6.67	6.11	786.7	816.7	13.39	16.20	18.95	786.7	816.7	1.92	1.58	1.50
846.4	876.4	7.67	6.75	6.09	846.4	876.4	14.13	16.73	19.68	846.4	876.4	1.88	1.65	1.61
906.2	936.2	7.87	6.70	5.99	906.2	936.2	14.99	19.45	22.05	906.2	936.2	1.81	1.81	1.72
965.9	995.9	8.24	6.84	6.10	965.9	995.9	13.95	23.22	23.36	965.9	995.9	1.51	1.85	1.74
1025.7	1055.7	8.51	7.16	6.30	1025.7	1055.7	12.86	17.07	21.74	1025.7	1055.7	1.25	1.67	1.69
1085.4	1115.4	8.52	7.45	6.57	1085.4	1115.4	12.20	14.65	17.89	1085.4	1115.4	1.02	1.34	1.43
1145.1	1175.1	8.44	7.67	6.92	1145.1	1175.1	12.70	13.31	16.84	1145.1	1175.1	0.92	1.00	1.09
1204.9	1234.9	8.27	7.75	7.19	1204.9	1234.9	13.00	12.35	15.47	1204.9	1234.9	0.94	0.81	0.85
1264.6	1294.6	8.17	7.77	7.35	1264.6	1294.6	13.77	11.96	13.81	1264.6	1294.6	0.93	0.74	0.66
1324.4	1354.4	8.14	7.83	7.54	1324.4	1354.4	15.42	13.67	13.87	1324.4	1354.4	0.95	0.63	0.48
1384.1	1414.1	8.09	7.79	7.50	1384.1	1414.1	21.75	19.45	16.50	1384.1	1414.1	1.04	0.65	0.52
1443.8	1473.8	7.99	7.65	7.38	1443.8	1473.8	19.08	19.04	20.65	1443.8	1473.8	1.05	0.70	0.55
1503.6	1533.6	7.96	7.57	7.23	1503.6	1533.6	17.20	17.14	21.09	1503.6	1533.6	1.14	0.75	0.59
1563.3	1593.3	7.94	7.53	7.15	1563.3	1593.3	15.99	16.66	19.90	1563.3	1593.3	1.19	0.75	0.60
1623.1	1653.1	8.04	7.52	7.12	1623.1	1653.1	14.94	15.59	18.50	1623.1	1653.1	1.23	0.79	0.58
1682.8	1712.8	8.20	7.53	7.10	1682.8	1712.8	14.55	14.63	16.33	1682.8	1712.8	1.26	0.82	0.55
1742.5	1772.5	8.40	7.62	7.21	1742.5	1772.5	14.60	16.08	18.38	1742.5	1772.5	1.25	0.83	0.47
1802.3	1832.3	8.64	7.78	7.40	1802.3	1832.3	14.59	18.11	21.59	1802.3	1832.3	1.36	0.80	0.40
1862.0	1892.0	8.91	7.99	7.63	1862.0	1892.0	14.38	19.64	24.64	1862.0	1892.0	1.46	0.79	0.42
1921.8	1951.8	9.07	8.15	7.81	1921.8	1951.8	14.53	20.10	25.33	1921.8	1951.8	1.45	0.78	0.41
1981.5	2011.5	9.69	8.37	7.97	1981.5	2011.5	14.94	20.44	24.67	1981.5	2011.5	1.33	0.77	0.43
2041.2	2071.2	10.33	8.62	8.15	2041.2	2071.2	15.84	19.60	22.86	2041.2	2071.2	1.00	0.70	0.35
2101.0	2131.0	11.39	9.06	8.44	2101.0	2131.0	15.42	22.94	23.85	2101.0	2131.0	0.57	0.64	0.30
2140.8	2170.8	12.17	9.21	8.54	2140.8	2170.8	14.71	20.81	23.93	2140.8	2170.8	0.23	0.78	0.33
2200.5	2230.5	13.19	9.48	8.60	2200.5	2230.5	14.19	19.16	22.69	2200.5	2230.5	-0.48	0.87	0.44
2240.4	2270.4	14.05	9.55	8.62	2240.4	2270.4	14.15	17.88	23.76	2240.4	2270.4	-0.87	0.94	0.48
2300.1	2330.1	15.44	10.01	8.69	2300.1	2330.1	15.20	16.73	24.12	2300.1	2330.1	-1.71	0.83	0.49



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# RMS-5MH+

## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=750.1MHz (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)=1500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+13			+13			+13
730.0	20.1	6.26	10.0	20.1	6.02	900.0	600.1	8.81
711.5	38.6	6.19	29.6	39.7	5.83	880.2	619.9	8.70
693.1	57.0	6.19	49.1	59.2	5.90	860.4	639.7	8.71
674.6	75.5	6.20	68.7	78.8	5.90	840.7	659.4	8.69
656.2	93.9	6.16	88.2	98.3	5.89	820.9	679.2	8.67
637.7	112.4	6.12	107.8	117.9	5.86	801.1	699.0	8.69
619.2	130.9	6.09	127.3	137.4	5.83	781.3	718.8	8.68
600.8	149.3	6.09	146.9	157.0	5.87	761.6	738.5	8.75
582.3	167.8	6.12	166.4	176.5	5.84	741.8	758.3	8.46
563.8	186.3	6.16	186.0	196.1	5.82	722.0	778.1	8.57
545.4	204.7	6.20	205.6	215.7	5.79	702.2	797.9	8.50
526.9	223.2	6.22	225.1	235.2	5.76	682.4	817.7	8.45
508.5	241.6	6.24	244.7	254.8	5.78	662.7	837.4	8.42
490.0	260.1	6.27	264.2	274.3	5.82	642.9	857.2	8.34
471.5	278.6	6.26	283.8	293.9	5.80	623.1	877.0	8.29
453.1	297.0	6.28	303.3	313.4	5.79	603.3	896.8	8.18
434.6	315.5	6.28	322.9	333.0	5.83	583.6	916.5	8.13
416.2	333.9	6.26	342.4	352.5	5.81	563.8	936.3	8.10
397.7	352.4	6.24	362.0	372.1	5.86	544.0	956.1	8.02
379.2	370.9	6.16	381.6	391.7	5.88	524.2	975.9	7.99
360.8	389.3	6.25	401.1	411.2	5.85	504.4	995.7	7.90
342.3	407.8	6.23	420.7	430.8	5.88	484.7	1015.4	7.87
323.8	426.3	6.25	440.2	450.3	5.93	464.9	1035.2	7.84
305.4	444.7	6.21	459.8	469.9	5.96	445.1	1055.0	7.81
286.9	463.2	6.23	479.3	489.4	5.94	425.3	1074.8	7.80
268.5	481.6	6.25	498.9	509.0	5.97	405.6	1094.5	7.74
250.0	500.1	6.27	518.4	528.5	6.00	385.8	1114.3	7.76
231.5	518.6	6.28	538.0	548.1	6.00	366.0	1134.1	7.72
213.1	537.0	6.33	577.1	587.2	6.01	326.4	1173.7	7.69
194.6	555.5	6.34	596.7	606.8	6.01	306.7	1193.4	7.66
176.2	573.9	6.33	635.8	645.9	6.06	267.1	1233.0	7.67
157.7	592.4	6.35	655.3	665.4	6.09	247.3	1252.8	7.71
139.2	610.9	6.31	694.4	704.5	6.16	207.8	1292.3	7.76
120.8	629.3	6.31	714.0	724.1	6.21	188.0	1312.1	7.81
102.3	647.8	6.29	753.1	763.2	6.30	148.4	1351.7	7.92
83.8	666.3	6.35	772.7	782.8	6.32	128.7	1371.4	7.90
65.4	684.7	6.37	811.8	821.9	6.34	89.1	1411.0	7.89
46.9	703.2	6.45	831.3	841.4	6.41	69.3	1430.8	7.83
28.5	721.6	6.49	870.4	880.5	6.46	29.8	1470.3	7.72
10.0	740.1	6.70	890.0	900.1	6.47	10.0	1490.1	7.78



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## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
10.1	64.40	65.04	65.25	58.95	59.81	62.94
69.8	62.52	63.09	62.74	46.11	53.00	56.39
129.6	60.71	62.00	61.03	40.93	48.06	51.76
189.3	58.73	61.38	60.37	37.69	43.76	49.45
249.1	57.23	61.42	59.48	35.27	41.53	46.58
308.8	57.02	62.52	57.58	33.33	39.89	44.37
368.5	58.32	63.07	55.50	31.85	38.86	42.39
428.3	60.74	61.05	53.67	30.95	38.27	40.03
488.0	67.36	56.56	50.58	30.11	38.05	38.15
547.8	64.75	52.74	48.31	29.93	37.23	35.99
607.5	59.13	49.97	45.56	30.29	38.34	33.57
667.2	56.32	47.03	43.17	29.79	37.86	31.13
727.0	53.97	46.49	42.05	30.03	35.27	29.55
786.7	50.04	44.92	41.34	31.63	34.15	28.74
846.4	46.31	42.77	39.99	35.00	32.65	26.74
906.2	43.90	41.03	39.30	39.50	29.06	24.38
965.9	42.84	40.49	39.35	37.56	26.20	22.37
1025.7	42.33	39.46	38.51	33.30	24.27	20.88
1085.4	43.47	39.63	38.31	30.52	22.99	19.84
1145.1	44.15	41.31	38.88	27.99	22.25	19.01
1204.9	43.61	42.97	40.56	26.38	21.33	18.49
1264.6	42.96	44.21	43.14	25.15	20.64	17.86
1324.4	41.68	44.23	44.43	24.15	19.91	17.33
1384.1	39.47	42.34	43.86	23.02	19.13	16.68
1443.8	37.87	40.57	42.67	21.65	18.03	15.83
1503.6	37.16	39.81	41.38	20.13	16.97	14.93
1563.3	36.79	39.79	41.39	18.68	15.83	14.19
1623.1	36.96	40.57	42.14	17.85	15.18	13.79
1682.8	37.71	41.49	41.95	17.05	14.60	13.42
1742.5	39.14	42.78	41.40	16.49	14.28	13.08
1802.3	40.90	45.07	43.57	16.19	14.23	13.07
1862.0	42.36	46.62	43.87	16.01	14.27	13.07
1921.8	42.52	47.98	46.05	16.06	14.37	13.26
1981.5	42.97	48.23	49.55	15.89	14.52	13.36
2041.2	42.63	46.90	48.91	15.82	14.48	13.48
2101.0	42.14	46.53	48.80	15.70	14.76	13.59
2140.8	41.02	45.02	46.90	15.53	14.87	13.68
2200.5	38.45	41.96	44.21	15.18	15.15	14.13
2240.4	37.31	40.64	42.87	14.93	15.15	14.27
2300.1	35.56	38.44	40.99	14.67	14.89	14.72

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	50.24	53.31	49.70
69.8	99.8	42.59	40.85	40.29
129.6	159.6	37.38	36.43	35.80
189.3	219.3	34.61	33.85	33.42
249.1	279.1	33.19	32.60	32.18
308.8	338.8	32.40	31.74	31.35
368.5	398.5	31.78	30.95	30.34
428.3	458.3	30.61	30.02	29.73
488.0	518.0	29.71	29.28	28.93
547.8	577.8	28.36	28.59	28.61
607.5	637.5	26.79	26.53	26.25
667.2	697.2	25.23	24.69	24.34
727.0	757.0	24.09	23.77	23.19
786.7	816.7	22.83	22.63	22.29
846.4	876.4	21.71	21.61	21.54
906.2	936.2	21.19	21.22	21.28
965.9	995.9	21.00	21.06	21.24
1025.7	1055.7	20.72	20.86	20.93
1085.4	1115.4	20.53	20.88	21.04
1145.1	1175.1	20.50	20.90	21.13
1204.9	1234.9	20.47	20.85	20.98
1264.6	1294.6	20.41	20.80	21.24
1324.4	1354.4	20.23	20.74	21.41
1384.1	1414.1	20.04	20.80	21.71
1443.8	1473.8	20.28	21.23	22.08
1503.6	1533.6	20.74	21.73	22.62
1563.3	1593.3	21.47	22.55	23.38
1623.1	1653.1	22.25	23.58	24.63
1682.8	1712.8	22.97	24.55	25.67
1742.5	1772.5	23.55	25.15	25.99
1802.3	1832.3	23.57	24.82	25.35
1862.0	1892.0	23.09	24.06	24.53
1921.8	1951.8	22.35	23.09	23.60
1981.5	2011.5	21.48	22.16	22.63
2041.2	2071.2	20.91	21.55	21.88
2101.0	2131.0	20.21	20.98	21.27
2140.8	2170.8	19.82	20.58	20.99
2200.5	2230.5	19.48	20.19	20.49
2240.4	2270.4	19.35	20.02	20.33
2300.1	2330.1	19.15	19.71	19.97



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## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	1.74	1.62	1.59
69.8	99.8	1.37	1.21	1.13
129.6	159.6	1.34	1.17	1.09
189.3	219.3	1.32	1.15	1.09
249.1	279.1	1.30	1.16	1.10
308.8	338.8	1.30	1.17	1.12
368.5	398.5	1.31	1.20	1.15
428.3	458.3	1.33	1.23	1.18
488.0	518.0	1.36	1.26	1.21
547.8	577.8	1.41	1.32	1.27
607.5	637.5	1.52	1.41	1.34
667.2	697.2	1.67	1.55	1.45
727.0	757.0	1.84	1.72	1.61
786.7	816.7	2.03	1.89	1.79
846.4	876.4	2.23	2.05	1.91
906.2	936.2	2.41	2.17	2.01
965.9	995.9	2.58	2.30	2.13
1025.7	1055.7	2.69	2.44	2.25
1085.4	1115.4	2.69	2.51	2.35
1145.1	1175.1	2.63	2.52	2.42
1204.9	1234.9	2.55	2.49	2.43
1264.6	1294.6	2.48	2.42	2.38
1324.4	1354.4	2.44	2.38	2.34
1384.1	1414.1	2.41	2.34	2.31
1443.8	1473.8	2.38	2.31	2.29
1503.6	1533.6	2.37	2.28	2.25
1563.3	1593.3	2.36	2.27	2.22
1623.1	1653.1	2.38	2.25	2.17
1682.8	1712.8	2.41	2.25	2.14
1742.5	1772.5	2.43	2.24	2.14
1802.3	1832.3	2.46	2.26	2.18
1862.0	1892.0	2.52	2.32	2.27
1921.8	1951.8	2.58	2.40	2.35
1981.5	2011.5	2.73	2.51	2.43
2041.2	2071.2	2.87	2.62	2.51
2101.0	2131.0	3.03	2.71	2.59
2140.8	2170.8	3.13	2.75	2.63
2200.5	2230.5	3.22	2.77	2.68
2240.4	2270.4	3.28	2.77	2.71
2300.1	2330.1	3.43	2.85	2.75

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+10	+13	+16
10.1	1.32	1.85	2.73
69.8	1.36	2.00	2.79
129.6	1.34	1.99	2.82
189.3	1.33	1.95	2.73
249.1	1.35	2.00	2.79
308.8	1.35	1.99	2.80
368.5	1.38	2.01	2.78
428.3	1.42	2.07	2.86
488.0	1.44	2.07	2.82
547.8	1.50	2.13	2.87
607.5	1.55	2.16	2.87
667.2	1.60	2.20	2.89
727.0	1.65	2.25	2.93
786.7	1.69	2.27	2.94
846.4	1.76	2.31	2.94
906.2	1.82	2.34	2.94
965.9	1.90	2.39	2.95
1025.7	1.98	2.48	3.01
1085.4	2.02	2.53	3.08
1145.1	2.07	2.59	3.12
1204.9	2.09	2.58	3.13
1264.6	2.15	2.63	3.15
1324.4	2.18	2.63	3.13
1384.1	2.23	2.64	3.13
1443.8	2.29	2.67	3.11
1503.6	2.33	2.65	3.07
1563.3	2.41	2.67	3.05
1623.1	2.47	2.66	3.01
1682.8	2.54	2.67	3.04
1742.5	2.65	2.73	3.11
1802.3	2.77	2.81	3.17
1862.0	2.97	2.97	3.30
1921.8	3.27	3.15	3.40
1981.5	3.57	3.30	3.51
2041.2	4.03	3.56	3.65
2101.0	4.51	3.73	3.75
2140.8	4.83	3.95	3.86
2200.5	5.27	4.21	3.99
2240.4	5.51	4.43	4.10
2300.1	5.72	4.79	4.33

IF (OUT) (MHz)	IF VSWR @LO=1500.1MHz (:1)		
	@LO (dBm)		
	+10	+13	+16
10.1	1.87	1.61	1.32
29.9	1.74	1.53	1.34
49.7	1.58	1.40	1.27
69.4	1.50	1.35	1.26
89.2	1.59	1.42	1.30
109.0	1.67	1.47	1.32
128.8	1.64	1.44	1.29
148.5	1.62	1.43	1.29
168.3	1.62	1.43	1.31
188.1	1.64	1.44	1.30
207.9	1.66	1.45	1.29
227.7	1.68	1.45	1.29
247.4	1.64	1.43	1.28
267.2	1.62	1.41	1.26
287.0	1.66	1.44	1.27
306.8	1.68	1.44	1.27
326.5	1.66	1.42	1.24
346.3	1.64	1.40	1.23
366.1	1.65	1.41	1.24
385.9	1.66	1.42	1.24
405.7	1.68	1.43	1.23
425.4	1.70	1.43	1.24
445.2	1.68	1.41	1.22
465.0	1.66	1.40	1.21
484.8	1.69	1.43	1.23
504.5	1.73	1.45	1.25
524.3	1.71	1.43	1.23
544.1	1.69	1.40	1.21
583.7	1.71	1.42	1.21
603.4	1.71	1.42	1.21
643.0	1.73	1.43	1.23
662.8	1.71	1.41	1.21
702.3	1.77	1.46	1.25
722.1	1.77	1.46	1.26
761.7	1.79	1.46	1.28
781.4	1.80	1.47	1.27
821.0	1.83	1.50	1.32
840.8	1.85	1.52	1.35
880.3	1.84	1.51	1.34
900.1	1.86	1.54	1.37

## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	14	43	18	36	21	54	31	57	40	62
1	-	15	+0	35	21	39	39	50	40	52	41	56
2	78	42	31	41	28	60	39	47	42	53	44	75
3	>100	50	38	41	38	43	53	56	41	60	49	59
4	>100	53	60	52	43	49	45	55	58	55	50	70
5	>100	55	54	58	56	65	47	67	58	71	59	64
6	>100	74	62	63	68	68	48	66	46	70	56	60
7	>100	79	67	68	62	83	63	65	72	63	69	69
8	>100	93	84	86	68	69	76	63	60	60	64	69
9	>100	94	89	85	74	83	79	82	72	69	71	67
10	>100	93	94	93	86	80	73	73	96	78	67	85
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 750.1 MHz; 4.00 dBm.  
 LO IN: 780.01 MHz; +13.00 dBm  
 IF OUT: 29.91 MHz; -2.59 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	8	32	7	26	7	42	20	41	31	44
1	-	16	+0	30	20	36	30	42	30	46	35	50
2	96	47	34	44	32	52	57	48	49	62	50	63
3	>100	77	51	56	47	56	54	75	54	66	61	66
4	>100	>87	>87	77	61	70	58	75	70	77	67	71
5	>100	>87	82	>87	73	76	69	75	75	84	78	>87
6	>100	>87	>87	>87	>87	85	80	80	77	>87	>87	>87
7	>100	>87	>87	>87	>87	>87	>87	>87	85	>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: 750.1 MHz; -6.00 dBm.  
 LO IN: 780.01 MHz; +13.00 dBm  
 IF OUT: 29.91 MHz; -12.77 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  
 RMS-5MH+  
 100818  
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