

# Frequency Mixer

# RMS-5H+

## 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=+14dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+14	+17	+20			+14	+17	+20			+14	+17	+20
10.1	40.1	7.16	6.32	5.90	10.1	40.1	22.18	25.48	27.19	10.1	40.1	0.48	0.34	0.29
50.7	80.7	6.94	6.11	5.69	50.7	80.7	22.32	25.77	27.78	50.7	80.7	0.38	0.12	0.07
91.4	121.4	6.85	5.96	5.59	91.4	121.4	22.65	25.52	29.14	91.4	121.4	0.28	0.10	0.08
132.0	162.0	6.70	5.87	5.56	132.0	162.0	23.78	28.25	23.62	132.0	162.0	0.47	0.20	0.09
172.7	202.7	6.70	5.88	5.60	172.7	202.7	24.54	23.69	23.30	172.7	202.7	0.46	0.20	0.09
213.3	243.3	6.62	5.88	5.60	213.3	243.3	25.43	21.82	23.40	213.3	243.3	0.55	0.20	0.08
254.0	284.0	6.59	5.93	5.65	254.0	284.0	22.06	21.67	24.20	254.0	284.0	0.66	0.20	0.10
294.6	324.6	6.60	5.98	5.69	294.6	324.6	20.78	21.71	24.74	294.6	324.6	0.65	0.20	0.12
335.3	365.3	6.70	6.08	5.74	335.3	365.3	19.96	21.64	25.94	335.3	365.3	0.66	0.21	0.14
375.9	405.9	6.75	6.14	5.80	375.9	405.9	20.00	22.20	26.42	375.9	405.9	0.67	0.22	0.14
416.6	446.6	6.84	6.17	5.82	416.6	446.6	19.98	23.52	30.09	416.6	446.6	0.76	0.30	0.20
477.5	507.5	6.97	6.26	5.84	477.5	507.5	19.65	22.94	32.05	477.5	507.5	0.72	0.32	0.23
518.2	548.2	7.10	6.35	5.94	518.2	548.2	19.72	23.18	25.92	518.2	548.2	0.82	0.39	0.24
579.1	609.1	7.18	6.40	5.97	579.1	609.1	21.05	31.80	32.33	579.1	609.1	0.88	0.51	0.35
619.8	649.8	7.26	6.45	5.98	619.8	649.8	21.18	25.50	25.61	619.8	649.8	1.04	0.61	0.45
680.7	710.7	7.39	6.46	5.98	680.7	710.7	20.71	25.13	22.91	680.7	710.7	1.20	0.79	0.58
721.4	751.4	7.57	6.55	6.04	721.4	751.4	20.24	34.88	25.34	721.4	751.4	1.12	0.82	0.56
782.4	812.4	8.03	6.66	6.08	782.4	812.4	20.02	23.35	30.53	782.4	812.4	1.06	1.05	0.73
823.0	853.0	8.44	6.82	6.14	823.0	853.0	20.15	22.26	26.00	823.0	853.0	0.75	1.05	0.76
884.0	914.0	8.80	7.14	6.26	884.0	914.0	21.23	23.47	24.10	884.0	914.0	0.60	1.10	0.94
924.6	954.6	8.97	7.39	6.41	924.6	954.6	20.68	25.54	24.79	924.6	954.6	0.61	1.06	1.02
985.6	1015.6	9.04	7.63	6.71	985.6	1015.6	18.86	22.18	25.84	985.6	1015.6	0.67	1.02	1.01
1026.2	1056.2	9.14	7.89	6.97	1026.2	1056.2	17.73	20.84	25.05	1026.2	1056.2	0.59	0.82	0.85
1087.2	1117.2	9.19	8.23	7.46	1087.2	1117.2	16.71	19.08	24.88	1087.2	1117.2	0.68	0.64	0.64
1127.8	1157.8	9.18	8.44	7.73	1127.8	1157.8	16.55	18.50	24.13	1127.8	1157.8	0.67	0.44	0.46
1188.8	1218.8	9.09	8.59	8.08	1188.8	1218.8	17.17	18.65	26.59	1188.8	1218.8	0.87	0.35	0.33
1229.5	1259.5	8.98	8.61	8.20	1229.5	1259.5	18.08	18.77	26.57	1229.5	1259.5	0.93	0.29	0.23
1290.4	1320.4	8.84	8.57	8.35	1290.4	1320.4	19.18	19.34	24.12	1290.4	1320.4	1.23	0.37	0.25
1331.1	1361.1	8.74	8.51	8.38	1331.1	1361.1	19.57	19.75	23.58	1331.1	1361.1	1.29	0.39	0.24
1392.0	1422.0	8.69	8.42	8.41	1392.0	1422.0	19.22	20.05	21.96	1392.0	1422.0	1.75	0.62	0.36
1432.7	1462.7	8.66	8.36	8.38	1432.7	1462.7	18.87	20.79	21.35	1432.7	1462.7	1.86	0.66	0.32
1493.6	1523.6	8.78	8.30	8.25	1493.6	1523.6	18.30	20.77	20.72	1493.6	1523.6	1.95	0.77	0.47
1534.3	1564.3	8.87	8.31	8.25	1534.3	1564.3	17.98	20.96	20.56	1534.3	1564.3	1.91	0.77	0.46
1595.3	1625.3	9.13	8.40	8.28	1595.3	1625.3	17.31	21.13	21.21	1595.3	1625.3	2.05	0.89	0.49
1635.9	1665.9	9.38	8.49	8.33	1635.9	1665.9	16.77	21.98	23.99	1635.9	1665.9	2.03	0.95	0.49
1696.9	1726.9	9.92	8.84	8.54	1696.9	1726.9	15.76	21.13	25.01	1696.9	1726.9	2.31	1.14	0.60
1737.5	1767.5	10.23	9.02	8.67	1737.5	1767.5	15.16	21.09	25.17	1737.5	1767.5	2.44	1.23	0.63
1798.5	1828.5	10.92	9.36	8.86	1798.5	1828.5	14.42	20.46	25.90	1798.5	1828.5	2.54	1.45	0.69
1839.1	1869.1	11.54	9.56	8.96	1839.1	1869.1	13.71	19.51	25.55	1839.1	1869.1	2.54	1.69	0.75
1900.1	1930.1	12.88	9.96	9.10	1900.1	1930.1	12.67	18.26	25.17	1900.1	1930.1	2.05	1.85	0.86

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# Frequency Mixer

# RMS-5H+

## 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)
		+17			+17			+17
730.0	20.1	6.64	10.0	20.1	6.74	900.0	600.1	9.79
711.5	38.6	6.57	29.8	39.9	6.67	879.3	620.8	9.77
693.1	57.0	6.57	49.6	59.7	6.75	858.6	641.5	9.75
674.6	75.5	6.60	69.3	79.4	6.79	837.9	662.2	9.73
656.2	93.9	6.56	89.1	99.2	6.72	817.2	682.9	9.62
637.7	112.4	6.49	108.9	119.0	6.73	796.5	703.6	9.58
619.2	130.9	6.46	128.7	138.8	6.73	775.8	724.3	9.51
600.8	149.3	6.44	148.4	158.5	6.73	755.1	745.0	9.50
582.3	167.8	6.45	168.2	178.3	6.72	734.4	765.7	9.34
563.8	186.3	6.46	188.0	198.1	6.72	713.7	786.4	9.36
545.4	204.7	6.52	207.8	217.9	6.68	693.0	807.1	9.35
526.9	223.2	6.54	227.6	237.7	6.61	672.3	827.8	9.34
508.5	241.6	6.56	247.3	257.4	6.65	651.6	848.5	9.38
490.0	260.1	6.59	267.1	277.2	6.69	630.9	869.2	9.40
471.5	278.6	6.59	286.9	297.0	6.64	610.2	889.9	9.39
453.1	297.0	6.62	306.7	316.8	6.63	589.5	910.6	9.38
434.6	315.5	6.64	326.4	336.5	6.68	568.8	931.3	9.34
416.2	333.9	6.60	346.2	356.3	6.65	548.1	952.0	9.28
397.7	352.4	6.58	366.0	376.1	6.72	527.4	972.7	9.19
379.2	370.9	6.47	385.8	395.9	6.72	506.7	993.4	9.10
360.8	389.3	6.58	405.6	415.7	6.67	486.0	1014.1	9.00
342.3	407.8	6.56	425.3	435.4	6.72	465.3	1034.8	8.91
323.8	426.3	6.59	445.1	455.2	6.75	444.7	1055.4	8.87
305.4	444.7	6.58	464.9	475.0	6.78	424.0	1076.1	8.79
286.9	463.2	6.59	484.7	494.8	6.76	403.3	1096.8	8.70
268.5	481.6	6.60	504.4	514.5	6.77	382.6	1117.5	8.66
250.0	500.1	6.62	524.2	534.3	6.76	361.9	1138.2	8.62
231.5	518.6	6.59	544.0	554.1	6.79	341.2	1158.9	8.57
213.1	537.0	6.64	583.6	593.7	6.81	320.5	1179.6	8.56
194.6	555.5	6.65	603.3	613.4	6.85	299.8	1200.3	8.53
176.2	573.9	6.65	642.9	653.0	6.93	279.1	1221.0	8.50
157.7	592.4	6.66	662.7	672.8	6.95	258.4	1241.7	8.52
139.2	610.9	6.64	702.2	712.3	6.96	217.0	1283.1	8.55
120.8	629.3	6.62	722.0	732.1	7.00	196.3	1303.8	8.56
102.3	647.8	6.59	761.6	771.7	7.07	154.9	1345.2	8.58
83.8	666.3	6.61	781.3	791.4	7.13	134.2	1365.9	8.58
65.4	684.7	6.60	820.9	831.0	7.20	92.8	1407.3	8.54
46.9	703.2	6.60	840.7	850.8	7.33	72.1	1428.0	8.53
28.5	721.6	6.59	880.2	890.3	7.53	30.7	1469.4	8.55
10.0	740.1	6.72	900.0	910.1	7.63	10.0	1490.1	8.64



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## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
10.1	71.87	69.30	67.58	58.29	63.03	76.62
50.7	64.49	60.40	57.81	43.24	50.35	62.01
91.4	61.58	56.79	54.11	38.20	44.96	56.72
132.0	59.87	54.32	51.15	35.09	42.33	51.79
172.7	59.00	52.97	49.74	32.86	40.16	49.92
213.3	56.77	51.10	47.43	31.46	38.40	49.38
254.0	55.44	49.81	46.72	29.95	36.72	49.38
294.6	51.86	47.75	44.99	28.89	35.58	49.27
335.3	48.96	46.01	43.73	27.87	34.91	49.99
375.9	46.39	44.18	42.07	26.98	34.08	50.77
416.6	44.43	42.59	40.75	26.45	34.85	45.64
477.5	41.61	40.32	39.06	25.54	34.04	42.08
518.2	40.09	38.80	37.75	25.43	35.68	38.94
579.1	38.15	36.98	35.59	25.10	39.14	33.68
619.8	36.90	36.36	35.19	24.99	42.13	30.49
680.7	35.21	35.22	34.17	25.11	41.90	29.53
721.4	33.83	33.78	33.00	25.78	45.09	27.82
782.4	32.31	32.48	32.15	27.28	36.79	25.79
823.0	31.53	31.66	31.37	28.46	31.30	23.61
884.0	30.43	30.81	30.86	30.75	26.24	21.15
924.6	29.92	30.46	30.31	32.22	24.21	19.49
985.6	29.08	29.98	29.96	33.28	22.49	17.83
1026.2	28.57	29.65	29.79	30.81	21.35	16.93
1087.2	27.86	29.17	29.79	27.38	20.02	16.04
1127.8	27.36	28.85	29.88	25.41	19.22	15.57
1188.8	26.46	28.06	29.42	22.68	18.05	14.73
1229.5	25.82	27.43	28.97	20.93	17.09	14.15
1290.4	25.12	26.63	28.09	18.56	15.82	13.18
1331.1	24.77	26.23	27.64	17.12	14.84	12.56
1392.0	24.44	25.88	27.16	15.28	13.52	11.79
1432.7	24.32	25.76	26.95	14.40	12.93	11.34
1493.6	24.08	25.45	26.39	13.27	12.03	10.52
1534.3	23.80	25.18	26.23	12.57	11.49	10.37
1595.3	23.19	24.43	25.10	11.73	10.94	9.72
1635.9	22.68	23.88	24.56	11.06	10.39	9.27
1696.9	21.85	23.03	23.76	10.28	9.92	8.94
1737.5	21.40	22.50	23.27	9.85	9.55	8.78
1798.5	20.73	21.81	22.58	8.90	8.97	8.43
1839.1	20.63	21.60	22.32	8.46	8.69	8.27
1900.1	20.66	21.33	22.04	7.66	8.08	7.92

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	59.18	52.86	48.69
50.7	80.7	46.05	44.30	42.85
91.4	121.4	41.54	40.16	39.08
132.0	162.0	38.87	37.64	37.01
172.7	202.7	37.17	35.92	35.35
213.3	243.3	35.84	34.71	34.07
254.0	284.0	34.54	33.69	33.15
294.6	324.6	33.85	32.90	32.42
335.3	365.3	33.25	32.52	32.08
375.9	405.9	32.58	31.67	31.37
416.6	446.6	31.74	31.17	30.61
477.5	507.5	29.71	30.02	29.79
518.2	548.2	28.40	28.69	28.68
579.1	609.1	26.50	26.41	26.18
619.8	649.8	25.54	25.27	25.10
680.7	710.7	24.23	23.68	22.97
721.4	751.4	23.04	22.78	22.39
782.4	812.4	21.53	21.53	21.87
823.0	853.0	20.73	20.94	21.28
884.0	914.0	19.74	19.98	20.11
924.6	954.6	19.43	19.65	19.72
985.6	1015.6	19.13	19.25	19.39
1026.2	1056.2	19.03	19.09	19.11
1087.2	1117.2	18.85	18.82	18.80
1127.8	1157.8	18.62	18.80	19.28
1188.8	1218.8	18.33	19.22	20.26
1229.5	1259.5	18.27	19.51	20.72
1290.4	1320.4	18.39	19.66	21.01
1331.1	1361.1	18.67	19.81	21.13
1392.0	1422.0	19.22	20.15	21.27
1432.7	1462.7	19.56	20.33	21.24
1493.6	1523.6	20.05	20.81	21.28
1534.3	1564.3	20.29	20.96	21.48
1595.3	1625.3	20.00	20.67	21.29
1635.9	1665.9	19.66	20.27	20.96
1696.9	1726.9	18.92	19.62	20.24
1737.5	1767.5	18.68	19.30	19.82
1798.5	1828.5	19.05	19.41	19.68
1839.1	1869.1	19.38	19.56	19.67
1900.1	1930.1	20.55	20.47	20.21

# Frequency Mixer

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## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	2.00	1.84	1.76
50.7	80.7	1.50	1.29	1.18
91.4	121.4	1.48	1.25	1.12
132.0	162.0	1.44	1.21	1.09
172.7	202.7	1.44	1.20	1.08
213.3	243.3	1.42	1.18	1.08
254.0	284.0	1.38	1.18	1.09
294.6	324.6	1.37	1.18	1.10
335.3	365.3	1.37	1.20	1.13
375.9	405.9	1.37	1.21	1.15
416.6	446.6	1.39	1.23	1.17
477.5	507.5	1.42	1.28	1.21
518.2	548.2	1.46	1.33	1.26
579.1	609.1	1.54	1.40	1.33
619.8	649.8	1.61	1.48	1.40
680.7	710.7	1.77	1.62	1.51
721.4	751.4	1.92	1.74	1.61
782.4	812.4	2.17	1.92	1.76
823.0	853.0	2.35	2.06	1.87
884.0	914.0	2.59	2.28	2.05
924.6	954.6	2.72	2.43	2.18
985.6	1015.6	2.89	2.61	2.36
1026.2	1056.2	2.98	2.73	2.48
1087.2	1117.2	3.07	2.88	2.66
1127.8	1157.8	3.07	2.94	2.76
1188.8	1218.8	3.02	2.96	2.87
1229.5	1259.5	2.96	2.94	2.89
1290.4	1320.4	2.89	2.89	2.86
1331.1	1361.1	2.86	2.85	2.83
1392.0	1422.0	2.81	2.78	2.78
1432.7	1462.7	2.79	2.75	2.73
1493.6	1523.6	2.79	2.69	2.65
1534.3	1564.3	2.78	2.64	2.58
1595.3	1625.3	2.80	2.60	2.52
1635.9	1665.9	2.84	2.62	2.52
1696.9	1726.9	2.94	2.68	2.57
1737.5	1767.5	2.99	2.73	2.61
1798.5	1828.5	3.08	2.79	2.67
1839.1	1869.1	3.17	2.84	2.70
1900.1	1930.1	3.35	2.89	2.72

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+14	+17	+20
10.1	1.10	1.62	2.31
50.7	1.09	1.65	2.39
91.4	1.08	1.60	2.28
132.0	1.08	1.62	2.33
172.7	1.09	1.59	2.27
213.3	1.09	1.61	2.31
254.0	1.09	1.62	2.32
294.6	1.10	1.64	2.32
335.3	1.13	1.69	2.39
375.9	1.15	1.70	2.38
416.6	1.19	1.76	2.45
477.5	1.25	1.81	2.48
518.2	1.30	1.87	2.54
579.1	1.38	1.92	2.57
619.8	1.43	1.99	2.63
680.7	1.51	2.05	2.66
721.4	1.58	2.11	2.72
782.4	1.68	2.18	2.76
823.0	1.75	2.25	2.80
884.0	1.85	2.32	2.83
924.6	1.90	2.37	2.88
985.6	1.99	2.44	2.92
1026.2	2.04	2.48	2.95
1087.2	2.12	2.51	2.93
1127.8	2.18	2.54	2.95
1188.8	2.26	2.58	2.95
1229.5	2.33	2.62	2.97
1290.4	2.42	2.65	2.95
1331.1	2.49	2.68	2.96
1392.0	2.58	2.71	2.93
1432.7	2.66	2.74	2.93
1493.6	2.73	2.75	2.89
1534.3	2.83	2.81	2.91
1595.3	2.92	2.82	2.88
1635.9	2.97	2.85	2.89
1696.9	3.07	2.89	2.87
1737.5	3.16	2.96	2.90
1798.5	3.21	3.06	2.94
1839.1	3.33	3.12	3.01
1900.1	3.42	3.24	3.08

IF (OUT) (MHz)	IF VSWR @LO=1500.1MHz (:1)		
	@LO (dBm)		
	+14	+17	+20
10.0	1.34	1.16	1.09
29.8	1.31	1.14	1.03
49.6	1.28	1.12	1.06
69.3	1.29	1.13	1.05
89.1	1.31	1.13	1.04
108.9	1.32	1.15	1.03
128.7	1.33	1.15	1.04
148.4	1.33	1.14	1.06
168.2	1.32	1.13	1.06
188.0	1.33	1.14	1.06
207.8	1.35	1.14	1.06
227.6	1.35	1.14	1.08
247.3	1.35	1.13	1.09
267.1	1.37	1.14	1.09
286.9	1.38	1.15	1.09
306.7	1.39	1.15	1.11
326.4	1.40	1.16	1.13
346.2	1.39	1.15	1.14
366.0	1.38	1.13	1.14
385.8	1.40	1.14	1.14
405.6	1.43	1.17	1.15
425.3	1.43	1.17	1.17
445.1	1.40	1.15	1.20
464.9	1.40	1.14	1.20
484.7	1.42	1.14	1.18
504.4	1.44	1.16	1.18
524.2	1.45	1.18	1.22
544.0	1.44	1.18	1.24
583.6	1.41	1.14	1.23
603.3	1.45	1.16	1.22
642.9	1.47	1.20	1.27
662.7	1.45	1.20	1.30
702.2	1.46	1.20	1.28
722.0	1.49	1.23	1.30
761.6	1.49	1.27	1.36
781.3	1.47	1.26	1.37
820.9	1.50	1.29	1.38
840.7	1.52	1.32	1.41
880.2	1.51	1.36	1.48
900.0	1.51	1.37	1.50



## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	18	5	30	14	31	22	36	35	38
1	-	16	+0	35	19	44	35	40	30	50	42	59
2	>100	45	31	44	29	54	44	51	53	56	57	58
3	>100	72	56	54	51	54	58	74	55	66	57	72
4	>100	83	81	71	61	65	59	68	78	71	77	79
5	>100	>92	>92	>92	76	77	69	75	74	86	76	81
6	>100	>92	>92	>92	>92	91	87	83	81	89	>92	>92
7	>100	>92	>92	>92	>92	>92	>92	91	90	90	>92	>92
8	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
9	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
10	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 750.1 MHz; -1.00 dBm.  
 LO IN: 780.01 MHz; +17.00 dBm  
 IF OUT: 29.91 MHz; -7.78 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	22	30	17	48	29	48	37	53	52	59
1	-	15	+0	38	21	49	54	50	36	55	49	59
2	92	38	25	43	22	54	39	53	51	78	49	61
3	>100	53	43	42	49	46	44	59	48	57	52	68
4	>100	65	56	49	47	45	45	53	56	57	62	74
5	>100	67	59	72	55	54	54	52	61	65	56	60
6	>100	74	68	72	72	81	50	59	49	60	64	63
7	>100	80	68	77	66	76	60	67	54	61	61	69
8	>100	>102	78	97	72	85	86	71	68	73	63	74
9	>100	91	90	91	83	81	85	83	73	66	69	68
10	>100	94	102	102	89	88	86	79	81	72	75	67
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 750.1 MHz; 9.00 dBm.  
 LO IN: 780.01 MHz; +17.00 dBm  
 IF OUT: 29.91 MHz; 2.22 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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 RMS-5H+  
 100818  
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