

Frequency Mixer

SRA-1MH+

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	5.61	5.27	5.19	10.1	40.1	23.22	22.17	23.74	10.1	40.1	1.66	1.22	0.94
27.3	57.3	6.44	6.07	5.85	27.3	57.3	24.96	24.04	27.57	27.3	57.3	1.05	0.74	0.48
44.5	74.5	6.31	5.98	5.80	44.5	74.5	20.75	23.13	28.79	44.5	74.5	1.15	0.88	0.61
61.6	91.6	6.20	5.93	5.81	61.6	91.6	23.13	28.79	27.57	61.6	91.6	1.20	0.82	0.54
78.8	108.8	6.06	5.87	5.80	78.8	108.8	22.11	26.36	28.21	78.8	108.8	1.28	0.81	0.56
96.0	126.0	6.05	5.87	5.79	96.0	126.0	23.04	24.85	32.18	96.0	126.0	1.21	0.79	0.49
113.2	143.2	6.18	5.95	5.83	113.2	143.2	25.73	25.38	26.83	113.2	143.2	1.10	0.71	0.43
130.4	160.4	6.09	5.89	5.81	130.4	160.4	22.65	24.16	30.20	130.4	160.4	1.11	0.73	0.47
147.5	177.5	6.09	5.90	5.79	147.5	177.5	21.88	24.07	21.77	147.5	177.5	1.19	0.76	0.54
164.7	194.7	6.03	5.90	5.83	164.7	194.7	22.18	28.62	20.71	164.7	194.7	1.19	0.72	0.50
181.9	211.9	6.09	5.93	5.85	181.9	211.9	20.58	21.87	28.78	181.9	211.9	1.07	0.64	0.45
199.1	229.1	6.03	5.89	5.81	199.1	229.1	22.67	27.72	22.88	199.1	229.1	1.09	0.66	0.48
216.3	246.3	6.04	5.86	5.78	216.3	246.3	25.40	22.26	18.64	216.3	246.3	1.05	0.66	0.50
233.4	263.4	6.03	5.86	5.78	233.4	263.4	19.50	18.90	16.95	233.4	263.4	1.11	0.76	0.58
250.6	280.6	6.08	5.93	5.85	250.6	280.6	16.42	15.15	15.36	250.6	280.6	0.99	0.71	0.59
267.8	297.8	6.15	6.01	5.93	267.8	297.8	16.49	14.40	13.95	267.8	297.8	0.98	0.68	0.58
285.0	315.0	6.32	6.15	6.03	285.0	315.0	22.60	18.49	17.64	285.0	315.0	0.80	0.49	0.38
302.2	332.2	6.31	6.12	5.98	302.2	332.2	16.75	21.44	24.68	302.2	332.2	0.84	0.52	0.42
319.3	349.3	6.36	6.13	5.99	319.3	349.3	15.87	19.91	29.87	319.3	349.3	0.94	0.65	0.46
336.5	366.5	6.31	6.13	6.02	336.5	366.5	19.01	18.24	26.49	336.5	366.5	1.16	0.86	0.62
353.7	383.7	6.29	6.16	6.08	353.7	383.7	21.36	24.93	25.97	353.7	383.7	1.24	0.94	0.71
370.9	400.9	6.27	6.15	6.08	370.9	400.9	17.05	16.22	16.64	370.9	400.9	1.41	1.05	0.81
388.0	418.0	6.26	6.12	6.05	388.0	418.0	16.54	14.85	14.03	388.0	418.0	1.49	1.13	0.93
405.2	435.2	6.33	6.20	6.14	405.2	435.2	14.95	13.83	13.44	405.2	435.2	1.86	1.41	1.14
422.4	452.4	6.37	6.26	6.22	422.4	452.4	14.87	13.57	13.37	422.4	452.4	2.03	1.52	1.20
439.6	469.6	6.44	6.34	6.32	439.6	469.6	14.38	13.33	13.50	439.6	469.6	2.30	1.70	1.31
456.8	486.8	6.50	6.40	6.39	456.8	486.8	13.80	13.27	14.35	456.8	486.8	2.60	1.80	1.39
473.9	503.9	6.61	6.48	6.45	473.9	503.9	13.71	13.74	15.20	473.9	503.9	2.76	1.89	1.46
491.1	521.1	6.76	6.56	6.49	491.1	521.1	12.71	13.58	14.89	491.1	521.1	3.17	2.14	1.65
508.3	538.3	7.03	6.73	6.62	508.3	538.3	11.64	13.24	14.56	508.3	538.3	3.22	2.33	1.76
525.5	555.5	7.23	6.77	6.54	525.5	555.5	9.51	12.43	13.92	525.5	555.5	3.31	2.58	1.97
542.7	572.7	7.64	7.02	6.66	542.7	572.7	7.25	11.06	13.31	542.7	572.7	3.17	2.67	2.07
559.8	589.8	7.97	7.27	6.60	559.8	589.8	5.76	9.30	13.67	559.8	589.8	3.12	2.70	2.33
577.0	607.0	8.57	7.98	6.98	577.0	607.0	4.41	6.54	12.22	577.0	607.0	2.75	2.29	2.26
594.2	624.2	8.99	8.41	7.25	594.2	624.2	3.76	5.00	9.18	594.2	624.2	2.42	2.03	2.24
611.4	641.4	9.76	9.07	7.95	611.4	641.4	3.20	4.15	6.79	611.4	641.4	1.75	1.51	1.71
628.6	658.6	10.57	9.65	8.47	628.6	658.6	2.81	3.78	5.74	628.6	658.6	0.87	0.91	1.20
645.7	675.7	11.67	10.61	9.34	645.7	675.7	2.61	3.61	5.25	645.7	675.7	-0.20	0.02	0.40
662.9	692.9	12.19	11.09	9.85	662.9	692.9	2.92	3.95	5.46	662.9	692.9	-0.80	-0.50	-0.08
680.1	710.1	12.22	11.21	10.06	680.1	710.1	3.81	4.82	6.44	680.1	710.1	-0.88	-0.64	-0.28

REV. X3

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=260.1MHz (dB)
		@LO (dBm) +13
250.0	10.1	5.89
243.8	16.3	5.80
237.7	22.4	5.62
231.5	28.6	5.70
225.4	34.7	5.58
219.2	40.9	5.51
213.1	47.0	5.60
206.9	53.2	5.55
200.8	59.3	5.49
194.6	65.5	5.48
188.5	71.6	5.47
182.3	77.8	5.42
176.2	83.9	5.40
170.0	90.1	5.42
163.8	96.3	5.31
157.7	102.4	5.35
151.5	108.6	5.40
145.4	114.7	5.34
139.2	120.9	5.42
133.1	127.0	5.42
126.9	133.2	5.45
120.8	139.3	5.48
114.6	145.5	5.38
108.5	151.6	5.46
102.3	157.8	5.52
96.2	163.9	5.43
90.0	170.1	5.64
83.8	176.3	5.59
77.7	182.4	5.71
71.5	188.6	5.52
65.4	194.7	5.61
59.2	200.9	5.62
53.1	207.0	5.60
46.9	213.2	5.57
40.8	219.3	5.70
34.6	225.5	5.78
28.5	231.6	5.66
22.3	237.8	5.66
16.2	243.9	6.22
10.0	250.1	6.47

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm) +13
10.0	20.1	6.03
22.3	32.4	5.11
34.6	44.7	5.27
46.9	57.0	5.19
59.2	69.3	5.30
71.5	81.6	5.06
83.8	93.9	5.06
96.2	106.3	5.06
108.5	118.6	5.14
120.8	130.9	5.15
133.1	143.2	5.14
145.4	155.5	5.11
157.7	167.8	5.10
170.0	180.1	5.13
182.3	192.4	5.12
194.6	204.7	5.22
206.9	217.0	5.20
219.2	229.3	5.16
231.5	241.6	5.20
243.8	253.9	5.23
256.2	266.3	5.33
268.5	278.6	5.27
280.8	290.9	5.36
293.1	303.2	5.21
305.4	315.5	5.28
317.7	327.8	5.37
330.0	340.1	5.41
342.3	352.4	5.31
354.6	364.7	5.64
366.9	377.0	5.82
379.2	389.3	5.87
391.5	401.6	6.09
403.8	413.9	6.22
416.2	426.3	6.00
428.5	438.6	5.86
440.8	450.9	5.84
453.1	463.2	5.76
465.4	475.5	5.52
477.7	487.8	5.47
490.0	500.1	5.39

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=510.1MHz (dB)
		@LO (dBm) +13
500.0	10.1	6.71
487.4	22.7	6.54
474.9	35.2	6.37
462.3	47.8	6.27
449.7	60.4	6.30
437.2	72.9	6.13
424.6	85.5	6.05
412.1	98.0	6.02
399.5	110.6	6.02
386.9	123.2	5.97
374.4	135.7	6.00
361.8	148.3	5.99
349.2	160.9	5.94
336.7	173.4	5.97
324.1	186.0	6.05
311.5	198.6	6.06
299.0	211.1	6.18
286.4	223.7	6.15
273.8	236.3	6.10
261.3	248.8	6.16
248.7	261.4	6.33
236.2	273.9	6.17
223.6	286.5	6.15
211.0	299.1	6.26
198.5	311.6	6.19
185.9	324.2	6.12
173.3	336.8	6.09
160.8	349.3	6.07
148.2	361.9	6.11
135.6	374.5	6.18
123.1	387.0	6.26
110.5	399.6	6.27
97.9	412.2	6.32
85.4	424.7	6.40
72.8	437.3	6.42
60.3	449.8	6.52
47.7	462.4	6.55
35.1	475.0	6.71
22.6	487.5	6.45
10.0	500.1	7.24

Frequency Mixer

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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
40.1	61.97	62.65	64.15	64.65	62.98	62.23
57.5	60.39	61.54	62.84	65.84	63.49	62.35
75.0	57.97	58.88	60.45	67.86	64.41	63.11
92.4	56.11	58.07	59.71	72.63	67.13	64.15
109.8	54.65	56.76	58.37	80.10	68.39	64.15
127.3	53.53	55.76	57.58	70.44	67.22	63.52
144.7	52.23	54.29	55.74	64.87	64.89	63.11
162.2	51.33	53.63	55.24	60.84	62.09	61.72
179.6	50.27	51.99	53.37	57.93	59.71	60.03
197.0	50.18	51.91	53.10	55.44	56.66	57.46
214.5	49.15	51.11	52.42	53.39	55.14	56.01
231.9	48.55	50.36	51.53	51.38	53.23	55.12
249.3	47.55	49.21	50.26	51.01	51.77	52.86
266.8	46.62	48.22	49.39	50.62	51.50	51.84
284.2	45.84	47.15	48.31	48.18	50.09	51.53
301.6	45.68	46.93	48.03	46.35	48.26	50.20
319.1	45.57	46.64	47.58	45.61	47.36	49.16
336.5	45.63	46.65	47.62	46.06	47.33	48.92
353.9	45.51	46.50	47.27	46.75	47.68	49.03
371.4	45.02	46.51	47.43	45.82	46.87	48.10
388.8	44.55	46.12	47.05	43.95	45.65	47.61
406.3	43.43	44.37	44.98	42.96	44.55	46.25
423.7	43.05	44.04	44.80	42.38	44.06	45.59
441.1	42.24	43.00	43.57	42.05	43.74	45.21
458.6	41.90	42.83	43.61	41.82	43.49	44.80
476.0	40.53	41.36	42.33	41.62	43.13	44.14
493.4	40.19	41.29	42.49	41.63	42.64	42.96
510.9	39.46	40.91	42.49	41.35	41.91	42.49
528.3	39.75	41.25	42.68	41.69	42.01	42.51
545.7	39.29	40.96	42.58	42.27	42.64	42.96
563.2	39.06	40.47	41.74	43.84	43.22	43.02
580.6	38.33	39.64	40.98	43.35	43.96	43.32
598.0	38.43	39.95	41.25	41.68	43.89	44.18
615.5	37.67	39.16	40.37	40.74	41.88	43.69
632.9	37.64	39.23	40.73	40.62	41.57	42.40
650.4	36.81	38.20	39.40	40.14	40.84	41.18
667.8	36.65	37.86	38.89	40.09	40.48	40.95
685.2	36.10	37.02	37.78	40.13	40.12	39.97
702.7	35.60	36.15	36.84	40.72	40.42	40.33
720.1	35.09	35.49	35.85	41.72	41.08	40.47

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	48.15	48.37	48.02
27.3	57.3	40.88	40.81	40.67
44.5	74.5	36.92	37.36	37.21
61.6	91.6	34.96	35.34	35.38
78.8	108.8	33.60	33.35	33.60
96.0	126.0	31.83	32.41	32.66
113.2	143.2	30.83	31.14	31.27
130.4	160.4	29.59	30.41	31.05
147.5	177.5	29.00	29.45	29.84
164.7	194.7	29.09	29.32	29.38
181.9	211.9	28.90	29.28	29.49
199.1	229.1	28.68	29.17	29.91
216.3	246.3	27.88	28.63	29.13
233.4	263.4	27.52	28.48	29.29
250.6	280.6	27.27	27.98	28.57
267.8	297.8	26.99	27.41	27.60
285.0	315.0	27.46	27.62	27.82
302.2	332.2	27.44	27.64	27.97
319.3	349.3	28.40	29.11	29.73
336.5	366.5	28.07	29.41	30.74
353.7	383.7	27.43	28.26	29.71
370.9	400.9	26.73	27.48	28.43
388.0	418.0	25.25	25.59	25.90
405.2	435.2	24.17	24.43	24.60
422.4	452.4	23.18	23.32	23.26
439.6	469.6	22.32	22.27	22.12
456.8	486.8	21.72	21.63	21.52
473.9	503.9	20.88	20.75	20.77
491.1	521.1	20.20	20.20	20.47
508.3	538.3	19.67	19.77	19.90
525.5	555.5	19.27	19.28	19.39
542.7	572.7	18.83	18.91	19.05
559.8	589.8	18.43	18.54	18.83
577.0	607.0	18.41	18.57	18.99
594.2	624.2	18.58	18.80	19.44
611.4	641.4	19.08	19.25	19.66
628.6	658.6	20.29	20.55	20.91
645.7	675.7	22.23	22.25	22.43
662.9	692.9	25.16	25.11	25.04
680.1	710.1	27.58	27.26	26.87

Frequency Mixer

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	1.28	1.24	1.13
27.3	57.3	1.32	1.18	1.10
44.5	74.5	1.24	1.11	1.05
61.6	91.6	1.15	1.04	1.02
78.8	108.8	1.15	1.05	1.04
96.0	126.0	1.17	1.06	1.03
113.2	143.2	1.18	1.06	1.00
130.4	160.4	1.13	1.02	1.05
147.5	177.5	1.09	1.01	1.08
164.7	194.7	1.07	1.02	1.07
181.9	211.9	1.07	1.04	1.10
199.1	229.1	1.05	1.04	1.12
216.3	246.3	1.04	1.10	1.16
233.4	263.4	1.04	1.12	1.20
250.6	280.6	1.04	1.11	1.18
267.8	297.8	1.03	1.07	1.11
285.0	315.0	1.02	1.06	1.11
302.2	332.2	1.06	1.13	1.18
319.3	349.3	1.12	1.23	1.31
336.5	366.5	1.14	1.30	1.39
353.7	383.7	1.16	1.31	1.43
370.9	400.9	1.19	1.31	1.42
388.0	418.0	1.25	1.35	1.45
405.2	435.2	1.31	1.41	1.50
422.4	452.4	1.36	1.46	1.54
439.6	469.6	1.40	1.51	1.58
456.8	486.8	1.44	1.53	1.56
473.9	503.9	1.45	1.51	1.51
491.1	521.1	1.45	1.50	1.48
508.3	538.3	1.39	1.43	1.41
525.5	555.5	1.33	1.38	1.35
542.7	572.7	1.34	1.36	1.33
559.8	589.8	1.39	1.37	1.33
577.0	607.0	1.48	1.44	1.37
594.2	624.2	1.61	1.54	1.44
611.4	641.4	1.81	1.71	1.59
628.6	658.6	2.05	1.92	1.77
645.7	675.7	2.32	2.18	2.00
662.9	692.9	2.52	2.37	2.20
680.1	710.1	2.69	2.54	2.37

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+10	+13	+16
40.1	1.28	1.96	2.78
57.5	1.29	1.91	2.68
75.0	1.27	1.84	2.55
92.4	1.26	1.82	2.53
109.8	1.26	1.88	2.62
127.3	1.29	1.94	2.71
144.7	1.31	1.93	2.69
162.2	1.30	1.90	2.62
179.6	1.30	1.89	2.60
197.0	1.32	1.94	2.68
214.5	1.36	2.01	2.78
231.9	1.38	2.04	2.80
249.3	1.39	2.03	2.77
266.8	1.41	2.03	2.76
284.2	1.44	2.08	2.83
301.6	1.48	2.15	2.93
319.1	1.52	2.20	2.97
336.5	1.54	2.20	2.96
353.9	1.57	2.21	2.96
371.4	1.61	2.27	3.03
388.8	1.66	2.35	3.14
406.3	1.70	2.41	3.22
423.7	1.73	2.43	3.22
441.1	1.75	2.44	3.22
458.6	1.78	2.46	3.25
476.0	1.83	2.52	3.31
493.4	1.88	2.56	3.37
510.9	1.93	2.59	3.39
528.3	2.00	2.63	3.42
545.7	2.08	2.71	3.48
563.2	2.17	2.83	3.60
580.6	2.24	2.95	3.72
598.0	2.29	3.03	3.79
615.5	2.30	3.04	3.82
632.9	2.31	3.04	3.85
650.4	2.35	3.10	3.90
667.8	2.42	3.17	3.99
685.2	2.47	3.21	4.04
702.7	2.48	3.21	4.02
720.1	2.49	3.20	3.99

IF (OUT) (MHz)	IF VSWR @LO=500MHz (:1)		
	@LO (dBm)		
	+10	+13	+16
10.0	2.01	1.73	1.51
22.3	2.00	1.72	1.50
34.6	2.07	1.79	1.58
46.9	2.08	1.80	1.57
59.2	2.05	1.77	1.55
71.5	2.06	1.80	1.59
83.8	2.05	1.78	1.57
96.2	2.05	1.78	1.56
108.5	2.13	1.87	1.66
120.8	2.17	1.90	1.68
133.1	2.18	1.91	1.69
145.4	2.20	1.94	1.74
157.7	2.20	1.94	1.74
170.0	2.20	1.95	1.75
182.3	2.25	2.00	1.81
194.6	2.31	2.04	1.84
206.9	2.33	2.07	1.87
219.2	2.37	2.12	1.94
231.5	2.39	2.14	1.95
243.8	2.36	2.13	1.95
256.2	2.39	2.16	2.00
268.5	2.43	2.19	2.01
280.8	2.42	2.18	2.01
293.1	2.52	2.27	2.10
305.4	2.59	2.33	2.14
317.7	2.55	2.31	2.14
330.0	2.57	2.33	2.17
342.3	2.60	2.35	2.18
354.6	2.54	2.30	2.14
366.9	2.61	2.35	2.18
379.2	2.71	2.42	2.23
391.5	2.71	2.43	2.23
403.8	2.78	2.48	2.28
416.2	2.83	2.52	2.31
428.5	2.72	2.43	2.22
440.8	2.77	2.46	2.24
453.1	2.84	2.51	2.28
465.4	2.78	2.46	2.22
477.7	2.94	2.58	2.31
490.0	3.03	2.66	2.39

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	33	53	46	47	39	57	43	53	48	62
1	-	22	+0	32	12	44	17	40	40	60	38	58
2	58	61	59	63	63	68	62	62	53	67	57	68
3	84	53	39	54	39	56	39	54	41	52	54	60
4	>90	72	82	76	80	78	85	76	79	77	67	78
5	>90	68	50	64	56	62	58	62	52	58	51	76
6	>90	>88	80	84	80	81	86	84	85	84	87	>88
7	>90	83	74	71	58	69	58	72	60	72	59	67
8	>90	>88	87	>88	>88	>88	>88	>88	88	>88	84	85
9	>90	>88	71	86	78	72	67	74	70	76	68	77
10	>90	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

Test conditions:

RF IN: 250 MHz; 4.00 dBm.
LO IN: 280 MHz; +13.00 dBm
IF OUT: 30 MHz; -2.1 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	23	42	36	35	26	42	29	41	36	47
1	-	21	+0	32	12	54	16	36	42	51	31	47
2	78	73	69	72	68	70	65	77	55	69	64	71
3	>90	59	48	61	54	68	48	59	49	70	56	72
4	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	75	>78
5	>90	>78	67	76	70	76	69	>78	64	74	63	>78
6	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
7	>90	>78	>78	>78	>78	>78	>78	>78	78	>78	>78	>78
8	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
9	>90	>78	>78	>78	>78	>78	>78	>78	77	>78	>78	>78
10	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 250 MHz; -6.00 dBm.
LO IN: 280 MHz; +13.00 dBm
IF OUT: 30 MHz; -12.03 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.