

Frequency Mixer

SRA-3H+

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=+10dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+14	+17	+20			+14	+17	+20			+14	+17	+20
0.1	30.1	5.94	5.79	5.69	10.1	40.1	23.94	24.93	25.19	10.1	40.1	1.06	0.77	0.53
0.2	30.2	5.43	5.33	5.26	22.7	52.7	23.60	23.52	27.81	22.7	52.7	0.86	0.60	0.39
1.0	31.0	5.36	5.25	5.17	35.2	65.2	23.06	24.81	32.90	35.2	65.2	0.85	0.58	0.39
5.0	35.0	5.30	5.18	5.09	47.8	77.8	21.65	25.55	28.45	47.8	77.8	0.80	0.55	0.38
10.0	40.0	5.45	5.36	5.31	60.4	90.4	22.89	31.98	23.92	60.4	90.4	0.73	0.49	0.34
22.7	52.7	4.91	4.75	4.68	72.9	102.9	23.24	28.65	23.21	72.9	102.9	0.67	0.48	0.34
35.2	65.2	4.94	4.80	4.73	85.5	115.5	22.74	26.86	23.72	85.5	115.5	0.62	0.46	0.33
47.8	77.8	4.98	4.83	4.76	98.0	128.0	31.41	23.98	22.34	98.0	128.0	0.64	0.45	0.32
60.4	90.4	4.95	4.83	4.77	110.6	140.6	20.07	18.48	18.36	110.6	140.6	0.64	0.47	0.35
72.9	102.9	4.99	4.86	4.79	123.2	153.2	20.84	19.34	19.26	123.2	153.2	0.67	0.49	0.38
85.5	115.5	5.01	4.89	4.83	135.7	165.7	27.83	21.62	20.64	135.7	165.7	0.66	0.49	0.37
98.0	128.0	5.01	4.89	4.84	148.3	178.3	22.78	21.85	21.80	148.3	178.3	0.61	0.49	0.37
110.6	140.6	4.99	4.88	4.83	160.9	190.9	20.96	19.08	19.11	160.9	190.9	0.61	0.47	0.37
123.2	153.2	5.00	4.88	4.83	173.4	203.4	21.28	19.35	18.63	173.4	203.4	0.71	0.55	0.42
135.7	165.7	5.09	4.92	4.84	186.0	216.0	20.42	19.06	18.77	186.0	216.0	0.83	0.60	0.44
148.3	178.3	5.24	5.04	4.90	198.6	228.6	18.38	17.64	19.05	198.6	228.6	0.96	0.63	0.43
160.9	190.9	5.33	5.18	5.04	211.1	241.1	17.60	18.38	20.60	211.1	241.1	1.13	0.70	0.47
186.0	216.0	5.34	5.24	5.20	223.7	253.7	17.85	19.52	21.88	223.7	253.7	1.34	0.80	0.52
198.6	228.6	5.36	5.30	5.29	236.3	266.3	16.26	19.66	21.77	236.3	266.3	1.57	0.91	0.62
211.1	241.1	5.46	5.38	5.36	248.8	278.8	12.77	17.92	22.16	248.8	278.8	1.49	1.06	0.71
223.7	253.7	5.62	5.49	5.43	261.4	291.4	10.23	13.85	19.36	261.4	291.4	1.60	1.24	0.92
236.3	266.3	5.84	5.60	5.52	273.9	303.9	9.64	11.78	15.66	273.9	303.9	1.55	1.24	1.09
248.8	278.8	6.15	5.75	5.54	286.5	316.5	9.61	11.11	13.74	286.5	316.5	1.56	1.31	1.20
261.4	291.4	6.36	5.98	5.61	299.1	329.1	10.19	11.45	12.70	299.1	329.1	1.43	1.26	1.09
273.9	303.9	6.55	6.20	5.71	311.6	341.6	10.75	11.86	13.70	311.6	341.6	1.37	1.21	1.10
286.5	316.5	6.65	6.31	5.84	324.2	354.2	11.56	12.61	15.14	324.2	354.2	1.31	1.09	0.94
299.1	329.1	6.79	6.44	6.11	336.8	366.8	12.38	14.05	17.70	336.8	366.8	1.24	0.99	0.87
324.2	354.2	6.95	6.66	6.44	349.3	379.3	13.09	15.58	21.23	349.3	379.3	1.33	1.03	0.90
336.8	366.8	7.05	6.78	6.60	361.9	391.9	14.51	17.75	28.76	361.9	391.9	1.30	1.00	0.87
349.3	379.3	6.97	6.77	6.62	374.5	404.5	15.71	19.27	22.84	374.5	404.5	1.41	1.11	0.94
361.9	391.9	7.05	6.88	6.74	387.0	417.0	16.40	20.36	22.12	387.0	417.0	1.43	1.10	0.84
374.5	404.5	7.02	6.87	6.79	399.6	429.6	16.41	19.89	22.08	399.6	429.6	1.52	1.11	0.80
387.0	417.0	7.13	7.05	7.03	412.2	442.2	16.39	19.59	22.00	412.2	442.2	1.48	1.00	0.68
399.6	429.6	7.27	7.22	7.24	424.7	454.7	16.94	19.58	22.03	424.7	454.7	1.42	0.94	0.61
424.7	454.7	7.78	7.83	7.98	437.3	467.3	17.89	19.29	20.75	437.3	467.3	1.25	0.82	0.52
437.3	467.3	8.14	8.21	8.43	449.8	479.8	17.99	18.39	19.00	449.8	479.8	1.05	0.68	0.46
449.8	479.8	8.68	8.75	8.95	462.4	492.4	16.82	16.98	17.36	462.4	492.4	0.98	0.65	0.49
475.0	505.0	9.62	9.76	9.96	475.0	505.0	16.56	16.41	16.96	475.0	505.0	0.94	0.67	0.57
487.5	517.5	9.98	10.08	10.26	487.5	517.5	16.83	15.94	16.26	487.5	517.5	1.12	0.87	0.79
500.1	530.1	10.46	10.58	10.78	500.1	530.1	17.96	15.94	15.80	500.1	530.1	1.15	0.90	0.84

Frequency Mixer

SRA-3H+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=100.1MHz (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)=200.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
90.0	10.1	5.04	10.0	20.1	4.60	190.0	10.1	5.74
87.9	12.2	5.03	14.6	24.7	4.45	185.4	14.7	5.67
85.9	14.2	5.02	19.2	29.3	4.40	180.8	19.3	5.60
83.8	16.3	5.00	23.8	33.9	4.38	176.2	23.9	5.54
81.8	18.3	4.98	28.5	38.6	4.37	171.5	28.6	5.50
79.7	20.4	4.96	33.1	43.2	4.40	166.9	33.2	5.45
77.7	22.4	4.93	37.7	47.8	4.40	162.3	37.8	5.43
75.6	24.5	4.92	42.3	52.4	4.42	157.7	42.4	5.41
73.6	26.5	4.92	46.9	57.0	4.43	153.1	47.0	5.40
71.5	28.6	4.91	51.5	61.6	4.45	148.5	51.6	5.39
69.5	30.6	4.89	56.2	66.3	4.45	143.8	56.3	5.38
67.4	32.7	4.89	60.8	70.9	4.46	139.2	60.9	5.37
65.4	34.7	4.87	65.4	75.5	4.48	134.6	65.5	5.34
63.3	36.8	4.86	70.0	80.1	4.51	130.0	70.1	5.33
61.3	38.8	4.86	74.6	84.7	4.53	125.4	74.7	5.33
59.2	40.9	4.85	79.2	89.3	4.54	120.8	79.3	5.32
57.2	42.9	4.85	83.8	93.9	4.53	116.2	83.9	5.32
55.1	45.0	4.84	88.5	98.6	4.54	111.5	88.6	5.30
53.1	47.0	4.83	93.1	103.2	4.57	106.9	93.2	5.29
51.0	49.1	4.81	97.7	107.8	4.58	102.3	97.8	5.26
49.0	51.1	4.81	102.3	112.4	4.61	97.7	102.4	5.27
46.9	53.2	4.83	106.9	117.0	4.62	93.1	107.0	5.26
44.9	55.2	4.84	111.5	121.6	4.64	88.5	111.6	5.24
42.8	57.3	4.84	116.2	126.3	4.65	83.8	116.3	5.22
40.8	59.3	4.84	120.8	130.9	4.66	79.2	120.9	5.22
38.7	61.4	4.84	125.4	135.5	4.67	74.6	125.5	5.23
36.7	63.4	4.84	130.0	140.1	4.66	70.0	130.1	5.23
34.6	65.5	4.85	134.6	144.7	4.68	65.4	134.7	5.25
32.6	67.5	4.85	139.2	149.3	4.68	60.8	139.3	5.28
30.5	69.6	4.85	143.8	153.9	4.69	56.2	143.9	5.30
28.5	71.6	4.85	148.5	158.6	4.70	51.5	148.6	5.32
26.4	73.7	4.85	153.1	163.2	4.71	46.9	153.2	5.32
24.4	75.7	4.85	157.7	167.8	4.73	42.3	157.8	5.30
22.3	77.8	4.86	162.3	172.4	4.79	37.7	162.4	5.31
20.3	79.8	4.87	166.9	177.0	4.87	33.1	167.0	5.32
18.2	81.9	4.87	171.5	181.6	4.98	28.5	171.6	5.31
16.2	83.9	4.89	176.2	186.3	5.11	23.8	176.3	5.33
14.1	86.0	4.92	180.8	190.9	5.19	19.2	180.9	5.35
12.1	88.0	4.97	185.4	195.5	5.25	14.6	185.5	5.38
10.0	90.1	5.08	190.0	200.1	5.32	10.0	190.1	5.55

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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
0.1	63.58	61.52	59.06	63.39	58.47	54.35
0.2	63.56	61.30	59.59	63.01	55.83	51.32
1.0	63.21	61.00	59.26	62.31	55.41	51.09
5.0	59.91	58.85	57.26	59.04	54.15	50.39
10.0	55.77	54.85	53.74	54.60	51.92	49.03
22.7	70.04	71.06	71.64	63.22	62.55	61.77
35.2	67.90	70.66	71.70	58.52	58.40	59.74
47.8	66.71	70.65	72.02	54.85	56.13	57.98
60.4	65.59	69.66	72.56	52.60	54.47	56.23
72.9	63.90	69.89	73.38	50.94	53.08	54.58
85.5	66.92	72.32	71.26	49.99	52.05	53.41
98.0	63.60	90.00	66.85	49.05	50.85	51.79
110.6	60.01	65.71	83.36	48.69	50.27	50.61
123.2	72.93	71.10	65.28	48.12	49.76	49.14
135.7	62.73	57.43	56.62	46.53	47.86	47.92
148.3	59.93	56.46	54.89	46.86	47.24	46.80
160.9	57.36	57.29	55.27	46.30	46.31	45.01
186.0	51.21	57.07	58.44	43.36	42.41	41.07
198.6	50.81	58.29	59.79	42.36	41.13	39.93
211.1	54.05	58.95	48.65	42.22	39.97	37.97
223.7	56.30	53.07	46.16	41.71	38.01	35.17
236.3	60.00	49.85	45.46	41.59	35.54	33.08
248.8	71.79	48.95	44.39	41.88	34.61	32.06
261.4	61.12	47.30	42.93	43.75	34.58	31.53
273.9	54.90	46.17	42.03	43.71	34.67	30.88
286.5	52.37	44.57	40.26	39.65	34.00	30.05
299.1	48.25	42.81	38.04	37.15	33.84	29.35
324.2	49.25	44.47	40.43	34.40	31.90	28.29
336.8	46.01	40.69	36.83	33.77	30.89	26.67
349.3	44.35	39.11	34.53	32.54	28.85	24.25
361.9	43.73	37.26	32.75	30.95	26.17	21.97
374.5	40.64	34.40	30.51	28.99	24.08	20.07
387.0	37.44	31.83	28.32	27.07	22.36	19.06
399.6	35.40	30.18	26.87	25.31	21.10	18.01
424.7	30.87	26.99	24.33	22.82	19.04	16.35
437.3	29.12	25.70	23.41	21.58	18.27	15.91
449.8	27.36	24.35	22.39	20.45	17.39	15.36
475.0	23.91	22.07	20.40	18.11	16.16	14.42
487.5	22.88	21.40	19.82	17.31	15.67	14.06
500.1	22.26	20.82	19.46	17.00	15.35	13.88

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	36.43	35.78	37.11
22.7	52.7	30.60	30.97	31.33
35.2	65.2	27.80	27.99	28.14
47.8	77.8	25.90	26.16	26.49
60.4	90.4	24.66	25.07	25.45
72.9	102.9	23.81	24.06	24.31
85.5	115.5	23.93	24.34	24.55
98.0	128.0	23.68	24.43	25.07
110.6	140.6	23.28	23.93	24.63
123.2	153.2	23.11	23.63	24.15
135.7	165.7	23.16	23.62	24.11
148.3	178.3	23.82	24.27	24.68
160.9	190.9	24.02	24.46	24.93
173.4	203.4	22.95	23.36	23.78
186.0	216.0	21.10	21.48	21.78
198.6	228.6	19.00	19.22	19.35
211.1	241.1	17.50	17.60	17.65
223.7	253.7	16.17	16.19	16.20
236.3	266.3	15.43	15.49	15.52
248.8	278.8	14.93	15.00	15.19
261.4	291.4	14.49	14.65	14.92
273.9	303.9	14.43	14.75	15.13
286.5	316.5	14.22	14.56	15.19
299.1	329.1	14.24	14.45	14.91
311.6	341.6	14.27	14.38	14.55
324.2	354.2	14.04	13.97	13.98
336.8	366.8	13.87	13.72	13.67
349.3	379.3	13.41	13.23	13.01
361.9	391.9	12.89	12.65	12.31
374.5	404.5	12.31	11.97	11.49
387.0	417.0	11.56	11.06	10.32
399.6	429.6	10.85	10.22	9.49
412.2	442.2	9.94	9.36	8.75
424.7	454.7	9.02	8.54	8.02
437.3	467.3	8.14	7.83	7.48
449.8	479.8	7.36	7.17	6.96
462.4	492.4	6.78	6.65	6.57
475.0	505.0	6.38	6.28	6.24
487.5	517.5	6.14	6.03	6.03
500.1	530.1	5.82	5.68	5.65

Frequency Mixer

SRA-3H+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=200.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
5.0	35.0	1.32	1.22	1.15	5.0	1.61	2.35	3.15	5.0	1.63	1.53	1.40
10.0	40.0	1.33	1.23	1.15	10.0	1.57	2.27	3.04	10.0	1.64	1.54	1.41
22.7	52.7	1.30	1.20	1.14	22.7	1.61	2.31	3.13	14.9	2.13	1.99	1.80
35.2	65.2	1.29	1.19	1.13	35.2	1.65	2.39	3.24	19.7	2.08	1.92	1.75
47.8	77.8	1.27	1.17	1.11	47.8	1.66	2.39	3.26	24.6	1.99	1.87	1.68
60.4	90.4	1.24	1.14	1.08	60.4	1.66	2.37	3.20	29.5	1.98	1.88	1.69
72.9	102.9	1.21	1.12	1.06	72.9	1.64	2.32	3.13	34.4	1.95	1.84	1.66
85.5	115.5	1.17	1.08	1.04	85.5	1.62	2.29	3.06	39.2	1.89	1.78	1.62
98.0	128.0	1.14	1.04	1.03	98.0	1.62	2.28	3.05	44.1	1.86	1.75	1.58
110.6	140.6	1.13	1.05	1.03	110.6	1.64	2.31	3.08	49.0	1.83	1.73	1.57
123.2	153.2	1.11	1.06	1.05	123.2	1.67	2.35	3.13	53.8	1.83	1.71	1.56
135.7	165.7	1.09	1.05	1.08	135.7	1.69	2.38	3.15	58.7	1.82	1.72	1.57
148.3	178.3	1.09	1.05	1.10	148.3	1.70	2.37	3.14	63.6	1.85	1.74	1.58
160.9	190.9	1.05	1.05	1.11	160.9	1.71	2.36	3.10	68.5	1.88	1.77	1.61
173.4	203.4	1.06	1.11	1.17	173.4	1.73	2.36	3.08	73.3	1.91	1.80	1.65
186.0	216.0	1.11	1.18	1.24	186.0	1.74	2.38	3.10	78.2	1.97	1.85	1.69
198.6	228.6	1.19	1.26	1.32	198.6	1.76	2.41	3.14	83.1	2.03	1.91	1.75
211.1	241.1	1.23	1.30	1.33	211.1	1.79	2.44	3.17	87.9	2.10	1.98	1.80
223.7	253.7	1.25	1.30	1.32	223.7	1.81	2.46	3.19	92.8	2.15	2.02	1.84
236.3	266.3	1.24	1.28	1.30	236.3	1.84	2.46	3.19	97.7	2.19	2.07	1.88
248.8	278.8	1.26	1.26	1.26	248.8	1.87	2.47	3.18	102.6	2.24	2.11	1.91
261.4	291.4	1.29	1.25	1.23	261.4	1.92	2.50	3.18	107.4	2.27	2.14	1.95
273.9	303.9	1.31	1.24	1.18	273.9	1.96	2.55	3.20	112.3	2.30	2.17	1.97
286.5	316.5	1.32	1.25	1.17	286.5	2.00	2.60	3.25	117.2	2.32	2.18	1.98
299.1	329.1	1.31	1.23	1.14	299.1	2.03	2.66	3.31	122.1	2.31	2.17	1.98
311.6	341.6	1.33	1.22	1.13	311.6	2.07	2.70	3.35	126.9	2.32	2.18	1.99
324.2	354.2	1.28	1.18	1.12	324.2	2.09	2.72	3.37	131.8	2.31	2.18	1.99
336.8	366.8	1.29	1.22	1.18	336.8	2.10	2.73	3.37	136.7	2.33	2.20	2.01
349.3	379.3	1.28	1.24	1.22	349.3	2.11	2.73	3.34	141.5	2.35	2.22	2.03
361.9	391.9	1.35	1.33	1.32	361.9	2.13	2.73	3.31	146.4	2.38	2.25	2.07
374.5	404.5	1.38	1.37	1.38	374.5	2.15	2.73	3.29	151.3	2.42	2.29	2.10
387.0	417.0	1.46	1.46	1.47	387.0	2.17	2.73	3.27	156.2	2.46	2.33	2.15
399.6	429.6	1.54	1.55	1.55	399.6	2.19	2.73	3.25	161.0	2.52	2.39	2.20
412.2	442.2	1.59	1.61	1.61	412.2	2.20	2.73	3.22	165.9	2.56	2.43	2.25
424.7	454.7	1.67	1.68	1.68	424.7	2.20	2.70	3.17	170.8	2.62	2.49	2.30
437.3	467.3	1.71	1.73	1.74	437.3	2.20	2.68	3.13	175.6	2.67	2.53	2.35
449.8	479.8	1.77	1.78	1.78	449.8	2.21	2.67	3.11	180.5	2.70	2.57	2.39
462.4	492.4	1.78	1.79	1.79	462.4	2.24	2.67	3.09	185.4	2.74	2.61	2.43
475.0	505.0	1.82	1.81	1.81	475.0	2.28	2.69	3.08	190.3	2.76	2.63	2.46
487.5	517.5	1.83	1.81	1.81	487.5	2.33	2.72	3.09	195.1	2.79	2.67	2.48
500.1	530.1	1.86	1.83	1.83	500.1	2.38	2.76	3.10	200.0	2.88	2.75	2.57

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	22	44	18	28	16	39	21	47	33	54
1	-	19	+0	27	12	43	18	37	37	51	39	48
2	>100	61	51	63	51	62	51	66	56	65	60	70
3	>100	60	56	62	62	65	58	60	66	68	59	72
4	>100	90	79	>90	69	77	77	83	77	>90	>90	87
5	>100	87	84	85	88	75	88	90	85	83	80	>90
6	>100	>90	>90	>90	>90	>90	86	>90	>90	>90	>90	>90
7	>100	>90	>90	>90	>90	>90	85	87	>90	>90	>90	>90
8	>100	>90	>90	>90	>90	>90	>90	77	85	>90	>90	>90
9	>100	>90	>90	>90	>90	>90	>90	>90	66	>90	>90	>90
10	>100	>90	>90	>90	>90	>90	>90	>90	85	79	>90	>90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 100.1 MHz; -5.00 dBm.
 LO IN: 130.01 MHz; +17.00 dBm
 IF OUT: 29.91 MHz; -9.82 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	30	59	29	38	28	53	33	59	46	63
1	-	20	+0	28	12	42	19	40	35	55	42	60
2	86	60	51	61	52	63	49	60	50	62	54	70
3	>100	48	44	55	45	53	43	50	47	53	55	61
4	>100	72	62	70	62	71	61	72	61	75	71	73
5	>100	68	59	63	62	62	59	64	58	60	62	69
6	>100	97	74	91	74	84	73	87	73	85	72	89
7	>100	81	77	76	67	70	71	74	70	71	73	74
8	>100	>100	89	>100	86	94	86	96	83	94	82	>100
9	>100	99	82	85	88	81	83	77	80	82	80	78
10	>100	>100	>100	>100	97	>100	93	>100	86	85	89	94
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 100.1 MHz; 5.00 dBm.
 LO IN: 130.01 MHz; +17.00 dBm
 IF OUT: 29.91 MHz; .09 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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