

Frequency Mixer

SRA-1-1+

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=+1dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
+4	+7	+10	+4	+7	+10	+4	+7	+10	+4	+7	+10			
10.1	40.1	5.12	4.83	4.74	10.1	40.1	15.16	17.67	20.44	10.1	40.1	1.77	1.76	1.18
30.1	60.1	5.57	5.40	5.26	30.1	60.1	15.91	17.49	18.05	30.1	60.1	1.48	1.16	1.02
50.1	80.1	5.55	5.38	5.22	50.1	80.1	17.21	19.18	21.08	50.1	80.1	1.54	1.25	1.07
70.1	100.1	5.52	5.34	5.26	70.1	100.1	16.13	18.78	21.37	70.1	100.1	1.61	1.28	1.03
90.1	120.1	5.49	5.33	5.26	90.1	120.1	15.92	20.91	17.79	90.1	120.1	1.51	1.15	0.91
110.1	140.1	5.54	5.34	5.27	110.1	140.1	17.27	20.40	15.19	110.1	140.1	1.36	1.06	0.87
130.1	160.1	5.63	5.40	5.29	130.1	160.1	18.01	16.78	15.43	130.1	160.1	1.37	1.05	0.85
150.1	180.1	5.64	5.46	5.35	150.1	180.1	17.41	16.32	13.93	150.1	180.1	1.32	1.04	0.82
170.1	200.1	5.58	5.43	5.33	170.1	200.1	17.34	14.45	15.05	170.1	200.1	1.36	1.05	0.84
190.1	220.1	5.57	5.41	5.33	190.1	220.1	11.21	9.70	10.06	190.1	220.1	1.31	1.01	0.82
210.1	240.1	5.69	5.48	5.35	210.1	240.1	11.03	9.93	10.78	210.1	240.1	1.19	0.89	0.74
230.1	260.1	5.78	5.54	5.42	230.1	260.1	18.35	15.79	19.51	230.1	260.1	1.25	0.96	0.74
250.1	280.1	5.84	5.63	5.50	250.1	280.1	14.46	15.08	19.00	250.1	280.1	1.34	1.08	0.86
270.1	300.1	5.89	5.71	5.61	270.1	300.1	10.49	10.40	11.67	270.1	300.1	1.36	1.11	0.90
290.1	320.1	5.95	5.77	5.65	290.1	320.1	9.61	9.13	9.74	290.1	320.1	1.48	1.18	0.96
310.1	340.1	5.99	5.82	5.71	310.1	340.1	8.54	8.55	9.54	310.1	340.1	1.70	1.32	1.12
330.1	360.1	6.07	5.89	5.80	330.1	360.1	8.23	8.77	10.87	330.1	360.1	1.96	1.51	1.26
350.1	380.1	6.17	5.99	5.90	350.1	380.1	9.70	11.60	13.11	350.1	380.1	2.10	1.61	1.31
370.1	400.1	6.33	6.07	5.96	370.1	400.1	9.10	13.18	15.33	370.1	400.1	2.29	1.80	1.51
390.1	420.1	6.61	6.23	6.01	390.1	420.1	5.04	9.19	13.50	390.1	420.1	2.50	2.05	1.69
410.1	440.1	6.97	6.57	6.18	410.1	440.1	2.70	5.59	10.46	410.1	440.1	2.56	2.24	1.88
430.1	460.1	7.18	6.81	6.34	430.1	460.1	1.68	3.34	7.24	430.1	460.1	2.67	2.28	2.04
450.1	480.1	7.29	6.89	6.43	450.1	480.1	1.72	2.92	5.12	450.1	480.1	2.63	2.32	2.11
470.1	500.1	7.49	7.10	6.69	470.1	500.1	1.47	2.37	3.70	470.1	500.1	2.56	2.25	2.02
490.1	520.1	7.73	7.32	6.94	490.1	520.1	1.51	2.20	3.43	490.1	520.1	2.44	2.15	1.92
510.1	540.1	7.70	7.28	6.89	510.1	540.1	2.00	2.88	4.17	510.1	540.1	2.50	2.22	2.02
530.1	560.1	7.69	7.22	6.81	530.1	560.1	3.23	4.61	6.77	530.1	560.1	2.45	2.21	1.99
550.1	580.1	7.70	7.19	6.79	550.1	580.1	5.00	7.62	12.34	550.1	580.1	2.36	2.09	1.82
570.1	600.1	7.64	7.11	6.68	570.1	600.1	6.43	10.68	15.71	570.1	600.1	2.36	2.05	1.80
590.1	620.1	7.49	6.96	6.59	590.1	620.1	8.91	13.97	15.42	590.1	620.1	2.48	2.11	1.83
610.1	640.1	7.30	6.87	6.61	610.1	640.1	8.75	11.08	12.38	610.1	640.1	2.55	2.15	1.82
630.1	660.1	7.39	7.02	6.84	630.1	660.1	8.26	10.20	10.73	630.1	660.1	2.44	1.98	1.62
670.1	700.1	7.50	7.20	7.11	670.1	700.1	7.18	8.75	10.08	670.1	700.1	2.48	1.96	1.59
690.1	720.1	7.72	7.41	7.32	690.1	720.1	6.57	7.90	9.87	690.1	720.1	2.47	1.97	1.59
730.1	760.1	8.31	8.02	7.92	730.1	760.1	6.05	7.30	9.48	730.1	760.1	2.35	1.87	1.58
750.1	780.1	8.63	8.37	8.29	750.1	780.1	5.84	7.35	9.19	750.1	780.1	2.43	1.90	1.61
790.1	820.1	9.43	9.17	9.06	790.1	820.1	7.01	8.57	9.38	790.1	820.1	2.16	1.62	1.39
810.1	840.1	9.81	9.50	9.36	810.1	840.1	7.93	9.43	10.13	810.1	840.1	2.12	1.54	1.30
850.1	880.1	10.62	10.14	9.93	850.1	880.1	7.95	9.54	10.37	850.1	880.1	2.34	1.70	1.36
870.1	900.1	11.32	10.78	10.56	870.1	900.1	9.03	10.66	11.34	870.1	900.1	2.24	1.51	1.17

REV. X3

SRA-1-1+

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Page 1 of 5



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Frequency Mixer

SRA-1-1+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=260.1MHz (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)=510.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
250.1	10.0	5.76	10.0	20.1	5.68	500.1	10.0	7.46
243.9	16.2	5.64	30.5	40.6	5.00	487.5	22.6	7.34
237.8	22.3	5.63	51.0	61.1	4.62	475.0	35.1	7.25
231.6	28.5	5.55	71.5	81.6	4.91	462.4	47.7	7.15
225.5	34.6	5.53	92.0	102.1	4.59	449.8	60.3	7.15
219.3	40.8	5.55	112.4	122.5	4.87	437.3	72.8	7.06
213.2	46.9	5.46	132.9	143.0	5.07	424.7	85.4	6.99
207.0	53.1	5.49	153.4	163.5	5.04	412.2	97.9	7.05
200.9	59.2	5.41	173.9	184.0	4.83	399.6	110.5	7.07
194.7	65.4	5.45	194.4	204.5	5.09	387.0	123.1	7.06
188.6	71.5	5.42	214.9	225.0	5.16	374.5	135.6	7.02
182.4	77.7	5.46	235.4	245.5	5.22	361.9	148.2	7.05
176.3	83.8	5.47	255.9	266.0	5.00	349.3	160.8	7.04
170.1	90.0	5.42	276.3	286.4	5.30	336.8	173.3	7.01
163.9	96.2	5.45	296.8	306.9	5.50	324.2	185.9	6.97
157.8	102.3	5.40	317.3	327.4	5.72	311.6	198.5	6.95
151.6	108.5	5.46	337.8	347.9	5.39	299.1	211.0	6.91
145.5	114.6	5.41	358.3	368.4	5.66	286.5	223.6	6.89
139.3	120.8	5.48	378.8	388.9	5.53	273.9	236.2	6.93
133.2	126.9	5.43	399.3	409.4	5.60	261.4	248.7	6.95
127.0	133.1	5.45	419.8	429.9	5.42	248.8	261.3	6.95
120.9	139.2	5.46	440.2	450.3	5.79	236.3	273.8	6.89
114.7	145.4	5.44	460.7	470.8	5.18	223.7	286.4	6.91
108.6	151.5	5.48	481.2	491.3	5.37	211.1	299.0	6.89
102.4	157.7	5.45	501.7	511.8	5.32	198.6	311.5	6.80
96.3	163.8	5.50	522.2	532.3	5.23	186.0	324.1	6.75
90.1	170.0	5.44	542.7	552.8	5.49	173.4	336.7	6.73
83.9	176.2	5.50	563.2	573.3	5.15	160.9	349.2	6.67
77.8	182.3	5.49	583.7	593.8	5.19	148.3	361.8	6.57
71.6	188.5	5.50	604.1	614.2	5.56	135.7	374.4	6.44
65.5	194.6	5.53	624.6	634.7	5.46	123.2	386.9	6.32
59.3	200.8	5.53	645.1	655.2	5.20	110.6	399.5	6.20
53.2	206.9	5.57	665.6	675.7	5.70	98.0	412.1	6.22
47.0	213.1	5.53	686.1	696.2	5.59	85.5	424.6	6.32
40.9	219.2	5.60	706.6	716.7	5.68	72.9	437.2	6.57
34.7	225.4	5.56	727.1	737.2	5.98	60.4	449.7	6.76
28.6	231.5	5.61	748.0	748.1	7.27	47.8	462.3	6.88
22.4	237.7	5.67	768.5	768.6	7.69	35.2	474.9	7.16
16.3	243.8	5.78	789.0	789.1	9.32	22.7	487.4	7.35
10.1	250.0	6.41	810.0	810.1	10.68	10.1	500.0	8.11

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
40.1	69.37	68.78	73.33	72.17	72.51	73.76
60.1	65.69	65.28	68.60	64.29	65.22	66.99
80.1	60.76	64.39	65.69	59.70	61.18	62.90
100.1	59.49	61.74	64.07	55.94	57.75	59.80
120.1	57.74	60.27	62.90	54.31	55.92	57.35
140.1	58.09	60.91	62.50	51.67	53.26	54.67
160.1	55.44	57.85	60.41	50.27	51.75	53.10
180.1	53.26	55.32	57.57	49.15	50.56	51.55
200.1	53.07	55.06	57.19	47.58	48.98	49.76
220.1	54.27	56.49	58.95	46.07	46.95	47.65
240.1	53.33	55.47	57.69	45.05	45.66	45.98
260.1	52.38	55.29	58.36	47.04	48.46	48.23
280.1	50.84	53.00	55.12	43.36	44.67	45.35
300.1	48.57	50.84	53.30	42.86	42.60	42.48
320.1	47.20	49.24	51.22	40.92	40.17	39.79
340.1	46.46	49.34	52.54	41.21	39.88	38.71
360.1	45.84	48.67	51.44	40.18	37.75	36.24
380.1	48.70	52.13	54.04	39.08	36.46	35.08
400.1	48.70	50.30	51.36	39.71	37.25	35.50
420.1	49.78	51.27	52.33	40.12	37.98	35.86
440.1	46.58	47.97	49.22	37.34	36.27	34.52
460.1	45.85	47.26	48.53	34.94	34.17	32.91
480.1	45.08	46.78	49.09	33.35	32.31	31.03
500.1	46.07	46.74	47.60	31.97	30.82	29.68
520.1	46.64	48.21	49.65	31.47	30.24	28.92
540.1	45.76	45.88	45.60	30.26	28.80	27.26
560.1	46.59	45.37	43.21	29.32	27.58	25.29
580.1	45.11	42.88	40.89	29.11	26.53	23.66
600.1	46.19	42.06	39.59	28.45	25.46	22.67
620.1	45.20	40.81	39.14	27.52	24.53	22.26
640.1	45.17	40.05	38.22	26.06	23.53	21.49
660.1	47.25	40.79	38.30	24.18	22.15	20.25
700.1	46.43	39.47	35.97	20.83	19.62	18.31
720.1	41.04	37.35	33.96	19.51	18.57	17.28
760.1	33.63	32.37	30.07	17.47	16.73	15.73
780.1	32.02	31.57	29.41	16.94	16.24	15.22
820.1	28.64	28.61	26.62	15.83	15.17	14.31
840.1	27.56	27.58	25.58	15.41	14.74	13.90
880.1	25.58	25.90	24.31	14.57	14.00	13.43
900.1	23.89	24.17	23.03	14.16	13.57	13.23

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	43.09	43.29	42.68
30.1	60.1	35.39	35.17	35.26
50.1	80.1	31.32	31.52	31.36
70.1	100.1	28.69	29.45	29.52
90.1	120.1	27.63	28.34	27.04
110.1	140.1	26.42	26.48	27.13
130.1	160.1	25.75	25.64	25.76
150.1	180.1	25.08	25.36	25.90
170.1	200.1	25.27	25.79	26.05
190.1	220.1	24.49	25.47	25.78
210.1	240.1	24.56	25.11	25.34
230.1	260.1	24.28	25.02	25.21
250.1	280.1	24.41	25.09	25.43
270.1	300.1	25.18	25.76	26.09
290.1	320.1	25.63	26.28	26.91
310.1	340.1	25.04	26.03	26.83
330.1	360.1	24.16	24.97	25.87
350.1	380.1	22.68	23.39	23.90
370.1	400.1	21.10	21.26	21.41
390.1	420.1	20.04	20.16	20.13
410.1	440.1	19.06	19.12	19.27
430.1	460.1	18.53	18.74	19.08
450.1	480.1	18.23	18.49	18.65
470.1	500.1	17.84	18.14	18.38
490.1	520.1	18.24	18.27	18.46
510.1	540.1	18.44	18.35	18.43
530.1	560.1	18.62	18.60	18.55
550.1	580.1	18.62	18.41	18.22
570.1	600.1	18.54	18.16	17.68
590.1	620.1	18.25	17.59	17.07
610.1	640.1	17.75	17.12	16.74
630.1	660.1	17.35	16.77	16.12
670.1	700.1	16.11	15.47	14.74
690.1	720.1	15.38	14.64	13.84
730.1	760.1	13.58	12.68	12.00
750.1	780.1	12.71	11.91	11.40
790.1	820.1	11.09	10.54	10.23
810.1	840.1	10.65	10.11	9.76
850.1	880.1	9.68	9.28	9.13
870.1	900.1	9.27	8.83	8.59

Frequency Mixer

SRA-1-1+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=500MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
10.1	40.1	1.54	1.39	1.23	40.1	1.73	2.48	3.40	10.0	2.28	2.07	1.86
30.1	60.1	1.29	1.18	1.14	60.1	1.68	2.38	3.22	22.3	2.31	2.10	1.89
50.1	80.1	1.17	1.09	1.04	80.1	1.62	2.25	3.03	34.6	2.36	2.14	1.93
70.1	100.1	1.15	1.06	1.02	100.1	1.64	2.29	3.07	46.9	2.42	2.19	1.98
90.1	120.1	1.16	1.06	1.03	120.1	1.70	2.40	3.23	59.2	2.37	2.15	1.95
110.1	140.1	1.16	1.07	1.02	140.1	1.73	2.43	3.25	71.5	2.45	2.22	2.01
130.1	160.1	1.11	1.04	1.06	160.1	1.71	2.36	3.14	83.8	2.34	2.13	1.92
150.1	180.1	1.05	1.04	1.08	180.1	1.71	2.36	3.12	96.2	2.45	2.22	2.01
170.1	200.1	1.04	1.05	1.12	200.1	1.77	2.45	3.24	108.5	2.42	2.21	2.01
190.1	220.1	1.07	1.06	1.09	220.1	1.84	2.54	3.35	120.8	2.52	2.30	2.09
210.1	240.1	1.08	1.10	1.13	240.1	1.86	2.54	3.33	133.1	2.55	2.34	2.14
230.1	260.1	1.08	1.15	1.20	260.1	1.87	2.52	3.29	145.4	2.51	2.30	2.10
250.1	280.1	1.08	1.16	1.24	280.1	1.92	2.60	3.37	157.7	2.60	2.39	2.19
270.1	300.1	1.12	1.19	1.26	300.1	2.00	2.70	3.51	170.0	2.50	2.30	2.11
290.1	320.1	1.17	1.24	1.30	320.1	2.05	2.76	3.57	182.3	2.65	2.43	2.23
310.1	340.1	1.23	1.31	1.37	340.1	2.07	2.75	3.55	194.6	2.57	2.37	2.18
330.1	360.1	1.29	1.38	1.44	360.1	2.09	2.77	3.56	206.9	2.66	2.46	2.26
350.1	380.1	1.30	1.38	1.42	380.1	2.17	2.86	3.66	219.2	2.63	2.43	2.25
370.1	400.1	1.28	1.34	1.36	400.1	2.28	2.97	3.77	231.5	2.67	2.47	2.28
390.1	420.1	1.25	1.29	1.31	420.1	2.35	3.04	3.82	243.8	2.70	2.51	2.34
410.1	440.1	1.23	1.24	1.23	440.1	2.41	3.11	3.88	256.2	2.63	2.44	2.26
430.1	460.1	1.20	1.18	1.15	460.1	2.48	3.20	4.00	268.5	2.74	2.54	2.36
450.1	480.1	1.21	1.16	1.10	480.1	2.56	3.30	4.10	280.8	2.63	2.44	2.26
470.1	500.1	1.24	1.18	1.11	500.1	2.60	3.33	4.14	293.1	2.77	2.56	2.37
490.1	520.1	1.30	1.24	1.18	520.1	2.62	3.34	4.13	305.4	2.67	2.47	2.29
510.1	540.1	1.35	1.29	1.25	540.1	2.66	3.37	4.15	317.7	2.76	2.56	2.37
530.1	560.1	1.44	1.39	1.36	560.1	2.72	3.43	4.21	330.0	2.72	2.52	2.35
550.1	580.1	1.52	1.48	1.48	580.1	2.75	3.45	4.21	342.3	2.71	2.50	2.31
570.1	600.1	1.61	1.59	1.59	600.1	2.73	3.40	4.13	354.6	2.73	2.53	2.35
590.1	620.1	1.75	1.73	1.74	620.1	2.71	3.35	4.06	366.9	2.65	2.43	2.24
610.1	640.1	1.86	1.85	1.85	640.1	2.72	3.35	4.06	379.2	2.77	2.55	2.35
630.1	660.1	1.99	1.97	1.97	660.1	2.76	3.38	4.07	391.5	2.60	2.39	2.20
670.1	700.1	2.23	2.20	2.18	700.1	2.80	3.34	3.95	403.8	2.76	2.52	2.31
690.1	720.1	2.36	2.31	2.28	720.1	2.84	3.33	3.90	416.2	2.65	2.43	2.22
730.1	760.1	2.54	2.47	2.43	760.1	2.99	3.40	3.90	428.5	2.68	2.45	2.23
750.1	780.1	2.63	2.57	2.52	780.1	3.01	3.37	3.86	440.8	2.64	2.41	2.19
790.1	820.1	2.76	2.69	2.67	820.1	2.92	3.24	3.72	453.1	2.61	2.36	2.13
810.1	840.1	2.75	2.68	2.66	840.1	2.89	3.20	3.70	465.4	2.65	2.40	2.17
850.1	880.1	2.90	2.82	2.80	880.1	2.72	3.04	3.59	477.7	2.55	2.29	2.05
870.1	900.1	3.01	2.93	2.93	900.1	2.61	2.92	3.47	490.0	2.74	2.47	2.21

REV. X3

SRA-1-1+

101031

Page 4 of 5



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	17	35	15	29	16	39	35	62	54	62
1	-	20	+0	30	11	30	23	42	38	53	46	51
2	>90	62	57	62	63	60	>70	>70	57	68	64	>70
3	>90	>70	60	>70	61	69	58	>70	>70	>70	70	>70
4	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
5	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
6	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
7	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
8	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
9	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
10	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70	>70
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

Test conditions:

RF IN: 250 MHz; -14.00 dBm.

LO IN: 280 MHz; +7.00 dBm

IF OUT: 30 MHz; -19.81 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	27	47	26	40	27	51	52	68	71	>80
1	-	21	+0	30	12	32	26	46	39	64	51	65
2	73	55	47	56	54	52	58	66	51	61	62	78
3	>90	50	39	49	39	50	37	50	49	59	54	64
4	>90	>80	66	>80	69	72	77	69	66	74	64	76
5	>90	71	65	64	53	72	53	76	57	72	66	73
6	>90	>80	>80	>80	>80	77	>80	76	>80	>80	79	>80
7	>90	>80	>80	>80	77	71	65	74	66	73	64	74
8	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
9	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	77	>80
10	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 250 MHz; -4.00 dBm.

LO IN: 280 MHz; +7.00 dBm

IF OUT: 30 MHz; -9.86 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. X3

SRA-1-1+

101031

Page 5 of 5

