

Frequency Mixer

ZX05-ED12902/12

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				
780.0	810.0	18.79	10.53	7.45	780.0	810.0	3.63	11.62	15.45	780.0	810.0	-4.78	0.49	1.11				
860.5	890.5	11.59	8.21	6.90	860.5	890.5	9.55	13.76	16.45	860.5	890.5	0.70	1.53	1.44				
940.9	970.9	11.09	8.76	7.43	940.9	970.9	10.81	14.33	17.38	940.9	970.9	-0.65	0.35	0.77				
1021.4	1051.4	9.52	8.11	7.05	1021.4	1051.4	15.03	16.52	18.27	1021.4	1051.4	0.07	0.43	0.75				
1101.8	1131.8	8.17	7.54	6.86	1101.8	1131.8	17.94	17.60	20.21	1101.8	1131.8	0.87	0.65	0.64				
1182.3	1212.3	7.45	6.73	6.42	1182.3	1212.3	20.95	19.18	20.38	1182.3	1212.3	0.84	0.67	0.54				
1262.8	1292.8	7.16	6.75	6.36	1262.8	1292.8	24.66	20.31	23.16	1262.8	1292.8	0.81	0.35	0.39				
1363.4	1393.4	7.13	6.38	6.18	1363.4	1393.4	32.64	22.27	26.42	1363.4	1393.4	0.67	0.39	0.28				
1443.8	1473.8	7.30	6.27	5.99	1443.8	1473.8	22.59	24.90	22.12	1443.8	1473.8	0.47	0.47	0.40				
1544.4	1574.4	7.26	6.32	5.90	1544.4	1574.4	23.32	24.38	25.07	1544.4	1574.4	0.69	0.41	0.42				
1624.9	1654.9	7.55	6.57	6.21	1624.9	1654.9	23.98	32.88	26.33	1624.9	1654.9	0.53	0.34	0.25				
1725.4	1755.4	7.64	6.85	6.44	1725.4	1755.4	33.94	23.68	23.46	1725.4	1755.4	0.61	0.26	0.25				
1805.9	1835.9	7.83	7.00	6.54	1805.9	1835.9	21.57	22.98	26.62	1805.9	1835.9	0.53	0.33	0.26				
1906.5	1936.5	7.94	6.93	6.61	1906.5	1936.5	18.95	20.98	26.90	1906.5	1936.5	0.55	0.39	0.18				
1986.9	2016.9	7.97	7.02	6.78	1986.9	2016.9	21.77	25.22	33.74	1986.9	2016.9	0.71	0.29	0.07				
2087.5	2117.5	7.75	6.95	6.73	2087.5	2117.5	19.82	29.33	31.56	2087.5	2117.5	1.03	0.27	0.08				
2168.0	2198.0	7.88	7.13	6.84	2168.0	2198.0	20.78	27.47	32.84	2168.0	2198.0	0.80	0.18	0.06				
2268.6	2298.6	8.70	7.43	6.98	2268.6	2298.6	25.02	33.91	30.31	2268.6	2298.6	0.31	0.08	0.07				
2349.0	2379.0	8.30	6.99	6.55	2349.0	2379.0	26.00	24.73	25.83	2349.0	2379.0	0.52	0.23	0.14				
2449.6	2479.6	8.31	6.89	6.42	2449.6	2479.6	18.40	21.49	24.93	2449.6	2479.6	0.31	0.26	0.17				
2530.1	2560.1	10.82	8.70	7.05	2530.1	2560.1	14.47	16.75	26.90	2530.1	2560.1	-0.95	-0.50	0.00				
2630.6	2660.6	10.65	8.96	7.73	2630.6	2660.6	19.79	20.74	21.81	2630.6	2660.6	-0.71	-0.45	0.04				
2711.1	2741.1	10.04	7.35	6.62	2711.1	2741.1	16.25	18.33	17.76	2711.1	2741.1	-0.50	0.37	0.62				
2811.7	2841.7	8.71	6.67	5.87	2811.7	2841.7	17.27	14.97	19.06	2811.7	2841.7	0.50	0.72	0.78				
2892.1	2922.1	8.83	6.20	5.36	2892.1	2922.1	15.15	15.18	22.56	2892.1	2922.1	0.05	0.81	0.80				
2992.7	3022.7	7.95	5.63	5.20	2992.7	3022.7	13.51	22.12	24.32	2992.7	3022.7	0.23	0.87	0.48				
3073.2	3103.2	7.78	5.42	5.17	3073.2	3103.2	12.79	23.76	24.99	3073.2	3103.2	0.42	0.88	0.38				
3173.8	3203.8	7.25	5.35	5.24	3173.8	3203.8	17.15	26.52	26.73	3173.8	3203.8	0.86	0.71	0.23				
3254.2	3284.2	6.77	5.39	5.29	3254.2	3284.2	18.87	26.81	28.10	3254.2	3284.2	1.22	0.60	0.22				
3354.8	3384.8	6.73	5.55	5.45	3354.8	3384.8	18.50	27.97	30.64	3354.8	3384.8	1.36	0.63	0.25				
3435.3	3465.3	6.91	5.70	5.57	3435.3	3465.3	17.34	25.54	27.14	3435.3	3465.3	1.30	0.61	0.24				
3535.8	3565.8	7.53	6.03	5.75	3535.8	3565.8	16.28	25.02	25.83	3535.8	3565.8	1.02	0.56	0.26				
3616.3	3646.3	8.03	6.38	5.91	3616.3	3646.3	15.90	21.86	26.63	3616.3	3646.3	0.64	0.57	0.32				
3716.9	3746.9	9.19	6.94	6.24	3716.9	3746.9	17.08	22.55	31.69	3716.9	3746.9	-0.19	0.32	0.22				
3797.3	3827.3	9.57	6.87	6.11	3797.3	3827.3	18.44	25.17	26.57	3797.3	3827.3	-0.37	0.49	0.36				
3897.9	3927.9	11.63	8.13	6.99	3897.9	3927.9	21.64	24.14	25.29	3897.9	3927.9	-0.99	0.21	0.26				
3978.4	4008.4	12.60	8.50	7.41	3978.4	4008.4	18.91	22.28	26.14	3978.4	4008.4	-1.52	0.09	0.10				
4079.0	4109.0	16.42	8.77	7.16	4079.0	4109.0	10.94	24.41	27.39	4079.0	4109.0	-4.98	-0.09	0.14				
4159.4	4189.4	17.29	9.15	7.36	4159.4	4189.4	11.52	25.57	27.91	4159.4	4189.4	-4.80	-0.10	0.13				
4260.0	4290.0	21.39	10.34	7.35	4260.0	4290.0	7.30	20.75	25.76	4260.0	4290.0	-8.76	-0.60	0.20				

Frequency Mixer

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2500MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=989.9MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=4010.1001MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
1400.0	1100.0	11.30	10.1	1000.0	8.96	1150.1	2860.0	10.77
1325.9	1174.1	9.89	50.1	1040.0	8.31	1130.1	2880.0	10.64
1251.7	1248.3	8.44	90.1	1080.0	7.87	1110.1	2900.0	10.70
1177.6	1322.4	8.77	130.1	1120.0	7.66	1090.1	2920.0	10.43
1103.5	1396.5	10.13	170.1	1160.0	7.38	1050.1	2960.0	9.99
1029.3	1470.7	10.33	210.1	1200.0	7.03	1030.1	2980.0	10.07
955.2	1544.8	10.32	250.1	1240.0	6.94	990.1	3020.0	9.95
881.1	1618.9	11.01	290.1	1280.0	6.76	970.1	3040.0	9.66
806.9	1693.1	10.68	330.1	1320.0	6.75	930.1	3080.0	9.16
732.8	1767.2	9.88	370.1	1360.0	6.67	910.1	3100.0	9.05
658.7	1841.3	8.98	410.1	1400.0	6.30	870.1	3140.0	8.72
584.5	1915.5	8.27	450.1	1440.0	6.20	850.1	3160.0	8.64
510.4	1989.6	7.64	490.1	1480.0	6.42	810.1	3200.0	8.60
436.3	2063.7	7.19	530.1	1520.0	6.90	790.1	3220.0	8.64
362.1	2137.9	6.94	570.1	1560.0	7.05	750.1	3260.0	8.56
288.0	2212.0	6.65	610.1	1600.0	7.42	730.1	3280.0	8.68
213.9	2286.1	6.19	650.1	1640.0	7.55	690.1	3320.0	8.93
139.7	2360.3	6.13	690.1	1680.0	7.62	670.1	3340.0	8.88
65.6	2434.4	6.84	730.1	1720.0	7.80	630.1	3380.0	8.96
10.0	2510.0	8.06	770.1	1760.0	8.20	610.1	3400.0	9.01
95.9	2595.9	9.06	810.1	1800.0	8.33	570.1	3440.0	8.67
181.7	2681.7	9.60	850.1	1840.0	8.13	550.1	3460.0	8.63
267.6	2767.6	9.95	890.1	1880.0	8.15	510.1	3500.0	8.48
353.5	2853.5	9.99	930.1	1920.0	8.21	490.1	3520.0	8.34
439.3	2939.3	9.38	970.1	1960.0	8.25	450.1	3560.0	8.32
525.2	3025.2	8.46	1010.1	2000.0	8.32	430.1	3580.0	8.28
611.1	3111.1	8.06	1050.1	2040.0	8.27	390.1	3620.0	8.21
696.9	3196.9	7.91	1090.1	2080.0	8.45	370.1	3640.0	8.35
782.8	3282.8	7.67	1130.1	2120.0	8.54	330.1	3680.0	8.32
868.7	3368.7	7.71	1170.1	2160.0	8.66	310.1	3700.0	8.13
954.5	3454.5	7.64	1210.1	2200.0	8.78	270.1	3740.0	8.45
1018.9	3518.9	7.94	1250.1	2240.0	9.20	250.1	3760.0	8.37
1104.8	3604.8	8.23	1290.1	2280.0	9.29	210.1	3800.0	8.38
1169.2	3669.2	8.52	1330.1	2320.0	9.37	190.1	3820.0	8.56
1255.1	3755.1	9.05	1370.1	2360.0	9.38	150.1	3860.0	8.59
1319.5	3819.5	9.12	1410.1	2400.0	9.57	130.1	3880.0	8.65
1405.3	3905.3	9.47	1450.1	2440.0	9.56	90.1	3920.0	8.74
1469.7	3969.7	9.84	1490.1	2480.0	9.72	70.1	3940.0	8.63
1555.6	4055.6	10.72	1530.1	2520.0	10.07	30.1	3980.0	8.27
1620.0	4120.0	11.83	1590.1	2580.0	10.66	10.1	4000.0	8.46

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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
810.0	45.31	46.17	40.85	23.05	23.14	24.07
890.5	42.16	36.68	36.38	20.83	22.36	24.92
970.9	35.96	35.49	36.16	20.56	23.32	25.97
1051.4	39.36	39.64	40.16	21.78	24.82	27.59
1131.8	42.74	44.06	44.65	23.11	25.98	28.84
1212.3	42.42	43.37	42.80	24.56	27.86	30.89
1292.8	43.61	42.05	39.89	26.26	29.54	32.67
1393.4	42.27	39.50	36.97	27.91	31.28	34.53
1473.8	40.29	36.98	34.70	28.09	31.46	34.59
1574.4	39.14	36.93	35.26	25.19	26.53	27.73
1654.9	40.65	37.82	35.55	23.05	24.74	26.02
1755.4	40.24	37.68	36.78	19.29	21.04	22.20
1835.9	38.64	38.09	37.43	15.54	17.44	18.70
1936.5	36.45	37.05	36.13	11.13	12.96	14.35
2016.9	37.29	37.22	36.31	8.43	10.22	11.74
2117.5	39.50	38.37	37.16	7.16	9.00	10.72
2198.0	41.98	39.88	38.23	7.55	9.38	11.17
2298.6	42.27	39.64	37.83	8.77	10.54	12.43
2379.0	41.56	38.14	36.00	10.06	11.73	13.62
2479.6	43.33	39.84	36.69	11.58	13.28	15.02
2560.1	45.78	42.31	39.05	12.79	14.44	16.13
2660.6	42.89	36.87	33.57	14.45	16.02	17.48
2741.1	45.47	38.37	34.05	15.88	17.06	18.02
2841.7	42.55	36.10	31.83	17.96	18.75	19.10
2922.1	44.23	40.78	34.57	19.91	20.18	20.21
3022.7	41.13	36.53	31.80	22.98	22.74	22.04
3103.2	39.04	34.19	30.23	26.60	25.36	23.54
3203.8	36.53	32.55	29.62	31.30	27.88	25.58
3284.2	34.34	31.13	29.01	28.78	27.68	26.63
3384.8	33.77	31.77	30.08	24.35	24.63	24.62
3465.3	32.23	30.95	29.99	22.31	23.20	24.20
3565.8	29.84	29.04	28.78	21.07	22.07	23.02
3646.3	28.53	27.94	28.02	19.95	20.82	21.97
3746.9	28.20	27.77	27.38	18.73	18.70	19.68
3827.3	28.55	28.31	27.99	18.24	17.73	18.74
3927.9	29.81	29.23	28.61	20.52	18.24	18.47
4008.4	29.79	29.46	28.82	21.93	18.93	19.34
4109.0	30.45	30.37	29.86	22.94	20.24	19.93
4189.4	30.31	29.30	28.46	20.50	18.03	17.83
4290.0	30.63	30.16	28.90	18.43	17.69	17.06

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
780.0	810.0	25.29	22.34	15.88
860.5	890.5	20.84	14.91	13.33
940.9	970.9	15.07	13.37	12.64
1021.4	1051.4	15.80	14.49	13.72
1101.8	1131.8	18.73	17.10	16.20
1182.3	1212.3	20.82	19.29	18.64
1262.8	1292.8	22.70	21.62	20.96
1363.4	1393.4	24.82	23.96	24.04
1443.8	1473.8	26.59	25.18	24.66
1544.4	1574.4	25.93	25.53	25.83
1624.9	1654.9	26.53	25.85	25.86
1725.4	1755.4	24.90	25.23	25.69
1805.9	1835.9	25.77	26.50	26.77
1906.5	1936.5	29.06	29.67	29.45
1986.9	2016.9	34.50	34.32	34.30
2087.5	2117.5	42.74	41.24	39.96
2168.0	2198.0	39.18	37.95	37.30
2268.6	2298.6	38.68	38.14	38.19
2349.0	2379.0	40.29	39.36	39.58
2449.6	2479.6	39.15	39.65	40.30
2530.1	2560.1	35.73	34.80	35.51
2630.6	2660.6	33.69	32.31	31.34
2711.1	2741.1	33.03	31.01	29.78
2811.7	2841.7	28.80	27.01	27.08
2892.1	2922.1	28.95	26.45	24.14
2992.7	3022.7	28.35	25.55	24.97
3073.2	3103.2	27.28	24.49	24.25
3173.8	3203.8	25.62	23.03	22.60
3254.2	3284.2	25.13	22.71	22.30
3354.8	3384.8	32.53	32.65	30.26
3435.3	3465.3	24.20	21.44	20.70
3535.8	3565.8	21.67	19.71	19.45
3616.3	3646.3	20.56	18.57	18.03
3716.9	3746.9	22.46	20.25	19.40
3797.3	3827.3	24.39	21.71	20.52
3897.9	3927.9	28.86	27.46	24.25
3978.4	4008.4	29.86	29.26	26.43
4079.0	4109.0	33.98	37.88	34.87
4159.4	4189.4	29.54	26.38	22.71
4260.0	4290.0	27.71	26.10	21.77

Frequency Mixer

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=4000MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
780.0	810.0	5.27	2.84	2.42	810.0	19.54	17.39	9.43	10.0	2.88	1.35	1.02
860.5	890.5	2.95	2.18	1.87	890.5	11.38	5.97	4.75	50.0	2.75	1.38	1.12
940.9	970.9	3.00	2.36	2.05	970.9	3.64	2.82	3.06	90.0	2.86	1.44	1.22
1021.4	1051.4	3.26	2.79	2.45	1051.4	1.84	1.67	2.12	130.0	3.02	1.57	1.33
1101.8	1131.8	3.47	3.20	2.93	1131.8	1.73	1.17	1.52	170.0	3.21	1.69	1.45
1182.3	1212.3	3.60	3.25	3.08	1212.3	2.47	1.38	1.13	210.0	3.48	1.80	1.53
1262.8	1292.8	3.76	3.41	3.18	1292.8	3.33	1.76	1.13	250.0	3.76	1.96	1.66
1363.4	1393.4	4.01	3.45	3.12	1393.4	4.07	2.05	1.35	290.0	4.06	2.11	1.78
1443.8	1473.8	4.19	3.43	3.02	1473.8	4.02	2.16	1.60	330.0	4.39	2.27	1.90</

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+12	13	18	24	29	46	40	46	36	---
1	-	30	+0	35	21	33	25	50	37	64	61	56
2	63	46	44	46	48	49	49	55	61	64	77	>81
3	>90	58	50	76	45	64	52	61	55	78	65	>81
4	>90	>81	>81	80	>81	72	>81	76	79	>81	>81	>81
5	>90	>81	>81	>81	>81	>81	80	>81	>81	>81	>81	>81
6	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
7	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
8	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
9	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
10	---	---	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 2500 MHz; -1.00 dBm.
LO IN: 2530 MHz; +17.00 dBm
IF OUT: 30 MHz; -9.23 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+2	24	33	39	44	56	52	60	51	---
1	-	30	+0	37	24	41	33	56	44	66	60	61
2	43	39	35	44	39	48	44	58	61	66	72	67
3	71	43	34	65	30	54	38	53	45	71	59	89
4	>90	69	59	59	63	56	59	60	53	63	68	74
5	>90	81	58	59	51	86	47	59	55	60	55	80
6	>90	>91	89	84	68	69	77	64	66	70	64	72
7	>90	>91	89	88	78	70	65	>91	59	67	69	70
8	>90	>91	>91	>91	91	89	74	80	88	72	72	80
9	>90	>91	>91	>91	>91	>91	>91	80	80	>91	71	73
10	---	---	>91	>91	>91	>91	>91	>91	80	89	>91	80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 2500 MHz; 9.00 dBm.
LO IN: 2530 MHz; +17.00 dBm
IF OUT: 30 MHz; 1.01 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.