

Frequency Mixer

ZLW-3+

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
10.1	40.1	4.43	4.46	4.37	10.1	40.1	14.50	15.54	16.65	10.1	40.1	1.81	1.44	1.60
20.1	50.1	4.87	4.68	4.53	20.1	50.1	15.85	16.31	19.86	20.1	50.1	1.60	1.36	1.13
30.1	60.1	5.00	4.76	4.67	30.1	60.1	15.39	14.75	18.41	30.1	60.1	1.54	1.23	1.17
40.1	70.1	5.05	4.84	4.70	40.1	70.1	13.23	14.25	21.65	40.1	70.1	1.50	1.25	1.10
50.1	80.1	5.00	4.82	4.69	50.1	80.1	13.49	16.06	21.05	50.1	80.1	1.45	1.29	0.98
60.1	90.1	4.98	4.82	4.75	60.1	90.1	14.68	20.09	17.87	60.1	90.1	1.56	1.24	1.09
70.1	100.1	4.96	4.79	4.74	70.1	100.1	13.36	20.17	15.28	70.1	100.1	1.53	1.29	1.04
80.1	110.1	4.96	4.80	4.73	80.1	110.1	13.93	18.27	18.16	80.1	110.1	1.48	1.23	1.03
90.1	120.1	5.02	4.88	4.82	90.1	120.1	20.12	13.46	11.84	90.1	120.1	1.41	1.14	0.97
100.1	130.1	5.06	4.94	4.83	100.1	130.1	15.72	12.68	12.56	100.1	130.1	1.30	1.05	0.88
110.1	140.1	5.11	4.86	4.80	110.1	140.1	14.94	12.26	11.88	110.1	140.1	1.32	1.07	0.86
120.1	150.1	5.15	4.93	4.77	120.1	150.1	18.24	15.87	14.57	120.1	150.1	1.26	1.05	0.85
130.1	160.1	5.25	5.05	4.87	130.1	160.1	13.01	11.16	12.30	130.1	160.1	1.17	0.99	0.85
140.1	170.1	5.27	5.09	4.98	140.1	170.1	12.63	10.30	9.65	140.1	170.1	1.23	0.99	0.86
150.1	180.1	5.29	5.13	5.00	150.1	180.1	12.27	11.80	12.21	150.1	180.1	1.29	1.08	0.93
160.1	190.1	5.27	5.13	5.05	160.1	190.1	12.87	11.78	11.20	160.1	190.1	1.44	1.16	0.96
170.1	200.1	5.28	5.16	5.11	170.1	200.1	12.52	10.39	11.47	170.1	200.1	1.54	1.18	0.95
185.1	215.1	5.37	5.22	5.14	185.1	215.1	11.33	10.62	12.81	185.1	215.1	1.82	1.30	1.06
195.1	225.1	5.51	5.28	5.18	195.1	225.1	9.87	10.88	12.69	195.1	225.1	2.05	1.47	1.17
210.1	240.1	5.77	5.50	5.34	210.1	240.1	5.65	9.32	11.73	210.1	240.1	2.27	1.81	1.37
220.1	250.1	5.94	5.73	5.49	220.1	250.1	2.84	4.93	9.70	220.1	250.1	2.43	1.95	1.55
235.1	265.1	6.08	5.94	5.76	235.1	265.1	1.25	1.44	3.12	235.1	265.1	2.62	2.20	1.79
245.1	275.1	6.10	5.94	5.78	245.1	275.1	0.94	0.99	1.72	245.1	275.1	2.74	2.38	2.03
260.1	290.1	6.17	5.99	5.82	260.1	290.1	1.24	1.52	2.24	260.1	290.1	2.71	2.39	2.13
270.1	300.1	6.41	6.19	5.98	270.1	300.1	1.64	2.21	3.06	270.1	300.1	2.53	2.25	1.98
285.1	315.1	6.49	6.25	6.05	285.1	315.1	2.33	3.22	4.59	285.1	315.1	2.45	2.15	1.84
295.1	325.1	6.67	6.40	6.17	295.1	325.1	3.47	4.60	6.39	295.1	325.1	2.26	1.92	1.64
310.1	340.1	6.64	6.34	6.10	310.1	340.1	4.48	6.43	8.75	310.1	340.1	2.28	1.88	1.66
320.1	350.1	6.57	6.27	6.29	320.1	350.1	5.59	8.25	11.62	320.1	350.1	2.27	1.90	1.72
335.1	365.1	6.58	6.37	6.21	335.1	365.1	6.70	10.57	12.76	335.1	365.1	2.34	1.91	1.72
345.1	375.1	6.64	6.52	6.47	345.1	375.1	7.46	11.71	11.21	345.1	375.1	2.24	1.76	1.55
360.1	390.1	6.95	6.84	6.84	360.1	390.1	8.48	11.19	11.42	360.1	390.1	2.07	1.60	1.36
370.1	400.1	7.05	6.99	7.07	370.1	400.1	7.91	10.15	11.15	370.1	400.1	2.03	1.52	1.25
385.1	415.1	7.47	7.46	7.59	385.1	415.1	8.23	10.76	10.88	385.1	415.1	1.95	1.37	1.12
395.1	425.1	7.67	7.71	7.89	395.1	425.1	8.93	10.42	9.43	395.1	425.1	1.92	1.30	1.04
410.1	440.1	8.30	8.34	8.38	410.1	440.1	9.48	8.29	7.72	410.1	440.1	1.79	1.14	1.00
420.1	450.1	8.62	8.54	8.58	420.1	450.1	8.91	7.62	7.45	420.1	450.1	1.77	1.27	1.22
435.1	465.1	9.46	9.34	9.32	435.1	465.1	9.59	8.11	8.09	435.1	465.1	1.60	1.15	1.18
445.1	475.1	9.97	9.80	9.74	445.1	475.1	9.65	9.03	8.84	445.1	475.1	1.71	1.18	1.17
460.1	490.1	10.78	10.57	10.51	460.1	490.1	9.55	10.39	9.60	460.1	490.1	1.94	1.23	1.10

REV. X2

ZLW-3+

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Page 1 of 5



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Frequency Mixer

ZLW-3+

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)
		+7			+7			+7
90.0	10.1	5.05	10.0	20.1	4.80	190.0	10.1	5.71
88.0	12.1	5.00	20.0	30.1	4.20	185.0	15.1	5.65
86.0	14.1	4.98	30.0	40.1	4.51	180.0	20.1	5.60
84.0	16.1	5.01	40.0	50.1	4.20	175.0	25.1	5.51
82.0	18.1	4.99	50.0	60.1	4.47	170.0	30.1	5.46
80.0	20.1	4.96	60.0	70.1	4.32	165.0	35.1	5.44
78.0	22.1	4.90	70.0	80.1	4.48	160.0	40.1	5.43
76.0	24.1	4.88	80.0	90.1	4.50	155.0	45.1	5.44
74.0	26.1	4.87	90.0	100.1	4.47	150.0	50.1	5.37
72.0	28.1	4.85	100.0	110.1	4.52	145.0	55.1	5.37
70.0	30.1	4.85	110.0	120.1	4.45	140.0	60.1	5.38
68.0	32.1	4.90	120.0	130.1	4.52	135.0	65.1	5.38
66.0	34.1	4.86	130.0	140.1	4.50	130.0	70.1	5.34
64.0	36.1	4.88	140.0	150.1	4.70	125.0	75.1	5.30
62.0	38.1	4.86	150.0	160.1	4.93	120.0	80.1	5.32
60.0	40.1	4.88	160.0	170.1	4.94	115.0	85.1	5.35
58.0	42.1	4.89	170.0	180.1	5.19	110.0	90.1	5.34
56.0	44.1	4.87	180.0	190.1	5.13	105.0	95.1	5.26
54.0	46.1	4.83	190.0	200.1	5.23	100.0	100.1	5.35
52.0	48.1	4.81	200.0	210.1	5.14	95.0	105.1	5.26
50.0	50.1	4.94	210.0	220.1	5.09	90.0	110.1	5.22
48.0	52.1	4.83	220.0	230.1	5.40	85.0	115.1	5.16
46.0	54.1	4.86	240.0	250.1	5.35	80.0	120.1	5.18
44.0	56.1	4.83	250.0	260.1	5.27	75.0	125.1	5.21
42.0	58.1	4.85	270.0	280.1	5.13	70.0	130.1	5.24
40.0	60.1	4.85	280.0	290.1	5.19	65.0	135.1	5.28
38.0	62.1	4.83	300.0	310.1	5.16	60.0	140.1	5.28
36.0	64.1	4.87	310.0	320.1	5.14	55.0	145.1	5.28
34.0	66.1	4.82	330.0	340.1	5.21	50.0	150.1	5.30
32.0	68.1	4.86	340.0	350.1	5.33	47.5	152.6	5.28
30.0	70.1	4.80	360.0	370.1	5.59	42.5	157.6	5.26
28.0	72.1	4.82	370.0	380.1	5.76	40.0	160.1	5.24
26.0	74.1	4.83	390.0	400.1	5.88	35.0	165.1	5.23
24.0	76.1	4.89	400.0	410.1	6.22	32.5	167.6	5.22
22.0	78.1	4.86	420.0	430.1	7.20	27.5	172.6	5.23
20.0	80.1	4.89	430.0	440.1	7.84	25.0	175.1	5.25
18.0	82.1	4.89	450.0	460.1	9.34	20.0	180.1	5.28
16.0	84.1	5.01	460.0	470.1	9.75	17.5	182.6	5.29
12.0	88.1	5.14	480.0	490.1	10.66	12.5	187.6	5.44
10.0	90.1	5.34	490.0	500.1	11.84	10.0	190.1	5.69



Frequency Mixer

ZLW-3+

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)					@LO (dBm)		
	+4	+7	+10	+4	+7	+10			+4	+7	+10
40.1	74.61	71.34	67.45	51.49	50.59	49.49	10.1	40.1	32.71	33.18	33.10
50.1	75.67	69.04	66.25	51.87	50.02	48.59	20.1	50.1	29.11	28.86	29.12
60.1	71.86	68.57	65.40	51.39	49.05	47.42	30.1	60.1	26.57	26.58	26.22
70.1	68.90	67.80	64.55	50.75	48.23	46.58	40.1	70.1	24.64	24.61	24.73
80.1	66.87	63.75	62.39	49.25	47.38	46.22	50.1	80.1	23.60	23.86	23.99
90.1	64.41	63.88	60.67	48.12	46.54	45.07	60.1	90.1	22.65	22.74	23.14
100.1	58.69	61.95	62.56	46.10	45.76	45.13	70.1	100.1	21.80	21.99	22.05
110.1	57.46	58.12	58.56	43.71	43.55	43.31	80.1	110.1	22.03	22.19	22.49
120.1	57.23	56.81	56.14	41.98	42.30	42.40	90.1	120.1	21.45	21.79	22.07
130.1	56.87	55.30	54.61	40.64	41.07	41.57	100.1	130.1	21.65	22.25	22.68
140.1	61.22	56.18	53.92	40.86	40.88	41.16	110.1	140.1	21.09	21.88	22.71
150.1	63.13	61.41	56.32	41.90	41.87	41.75	120.1	150.1	21.45	22.06	22.73
160.1	53.54	57.46	58.98	41.20	42.39	42.58	130.1	160.1	21.33	21.68	22.10
170.1	49.56	52.80	55.41	40.62	42.39	43.51	140.1	170.1	22.69	22.98	23.06
180.1	47.72	51.36	55.26	39.24	41.13	42.57	150.1	180.1	24.27	24.71	24.95
190.1	46.34	50.24	55.28	38.05	39.94	41.22	160.1	190.1	25.49	26.53	27.48
200.1	44.19	48.65	54.36	36.53	37.93	38.69	170.1	200.1	25.15	26.74	28.20
215.1	45.92	53.25	54.68	34.87	35.52	36.22	185.1	215.1	22.55	23.63	24.24
225.1	46.97	54.88	59.48	34.35	34.82	35.38	195.1	225.1	20.15	20.60	20.78
240.1	47.96	52.71	61.84	35.17	35.46	35.55	210.1	240.1	17.87	18.08	18.08
250.1	47.54	51.14	57.08	35.70	36.24	36.06	220.1	250.1	16.71	16.86	16.74
265.1	46.00	49.15	54.35	35.06	35.79	35.78	235.1	265.1	15.72	15.92	16.16
275.1	44.38	46.50	49.22	34.43	34.89	34.71	245.1	275.1	15.02	15.20	15.59
290.1	43.91	47.08	53.32	33.77	33.59	32.73	260.1	290.1	14.73	14.80	15.17
300.1	45.33	50.97	60.77	33.32	32.41	30.57	270.1	300.1	14.64	14.79	15.13
315.1	45.63	52.15	47.83	32.35	29.92	26.38	285.1	315.1	14.46	14.48	14.54
325.1	46.35	53.52	44.16	31.44	27.69	23.88	295.1	325.1	14.60	14.56	14.52
340.1	51.28	46.94	38.56	29.00	24.41	21.00	310.1	340.1	14.33	14.09	13.91
350.1	56.87	42.16	36.09	26.95	22.57	19.65	320.1	350.1	14.06	13.75	13.50
365.1	47.45	37.99	33.46	24.50	20.75	18.29	335.1	365.1	13.51	13.11	12.84
375.1	41.72	35.58	31.57	23.22	19.95	17.59	345.1	375.1	12.90	12.52	12.28
390.1	36.45	32.34	28.84	21.58	18.91	16.58	360.1	390.1	12.13	11.76	11.38
400.1	33.20	30.19	27.14	20.34	18.10	15.89	370.1	400.1	11.59	11.13	10.53
415.1	28.77	27.02	24.95	18.26	16.75	14.88	385.1	415.1	10.58	9.96	9.30
425.1	26.23	25.16	23.64	17.00	15.88	14.21	395.1	425.1	9.83	9.19	8.57
440.1	23.70	23.12	22.00	15.67	14.87	13.42	410.1	440.1	8.67	8.15	7.73
450.1	22.58	22.12	21.13	15.28	14.54	13.13	420.1	450.1	8.10	7.69	7.39
465.1	21.62	21.09	20.22	15.00	14.12	12.82	435.1	465.1	7.46	7.14	6.91
475.1	21.18	20.43	19.50	14.92	13.88	12.59	445.1	475.1	7.18	6.87	6.65
490.1	20.70	19.69	18.69	15.10	13.88	12.56	460.1	490.1	6.79	6.48	6.22

Frequency Mixer

ZLW-3+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=200MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
10.1	40.1	1.31	1.38	1.11	40.1	1.91	2.93	4.36	10.1	1.57	1.39	1.23
20.1	50.1	1.27	1.15	1.09	50.1	1.88	2.83	4.12	15.1	1.54	1.36	1.21
30.1	60.1	1.26	1.16	1.09	60.1	1.86	2.75	3.95	20.1	1.51	1.33	1.18
40.1	70.1	1.20	1.11	1.04	70.1	1.83	2.67	3.78	25.1	1.51	1.33	1.18
50.1	80.1	1.18	1.12	1.07	80.1	1.80	2.61	3.67	30.1	1.54	1.36	1.20
60.1	90.1	1.17	1.09	1.07	90.1	1.79	2.57	3.58	35.1	1.58	1.40	1.24
70.1	100.1	1.17	1.10	1.09	100.1	1.81	2.59	3.61	40.1	1.63	1.44	1.28
80.1	110.1	1.19	1.12	1.11	110.1	1.82	2.62	3.62	45.1	1.67	1.48	1.32
90.1	120.1	1.16	1.13	1.12	120.1	1.85	2.65	3.67	50.1	1.67	1.49	1.34
100.1	130.1	1.12	1.07	1.08	130.1	1.88	2.67	3.69	55.1	1.66	1.48	1.34
110.1	140.1	1.10	1.07	1.12	140.1	1.89	2.66	3.62	60.1	1.64	1.47	1.32
120.1	150.1	1.11	1.08	1.14	150.1	1.91	2.67	3.60	65.1	1.63	1.45	1.31
130.1	160.1	1.14	1.11	1.13	160.1	1.90	2.66	3.59	70.1	1.63	1.46	1.31
140.1	170.1	1.13	1.11	1.12	170.1	1.89	2.63	3.57	75.1	1.68	1.49	1.34
150.1	180.1	1.12	1.12	1.15	180.1	1.89	2.61	3.52	80.1	1.75	1.56	1.40
160.1	190.1	1.11	1.15	1.21	190.1	1.91	2.62	3.52	85.1	1.81	1.62	1.45
170.1	200.1	1.12	1.19	1.27	200.1	1.95	2.64	3.54	90.1	1.87	1.68	1.52
185.1	215.1	1.11	1.22	1.28	215.1	2.03	2.71	3.58	95.1	1.92	1.73	1.56
195.1	225.1	1.07	1.21	1.26	225.1	2.11	2.79	3.65	100.1	1.91	1.73	1.58
210.1	240.1	1.03	1.12	1.19	240.1	2.18	2.89	3.73	105.1	1.89	1.72	1.57
220.1	250.1	1.10	1.03	1.11	250.1	2.18	2.92	3.76	110.1	1.89	1.71	1.57
235.1	265.1	1.19	1.11	1.04	265.1	2.20	2.95	3.82	115.1	1.88	1.70	1.56
245.1	275.1	1.26	1.18	1.12	275.1	2.21	2.97	3.84	120.1	1.91	1.73	1.58
260.1	290.1	1.33	1.26	1.20	290.1	2.26	3.02	3.90	125.1	1.97	1.79	1.63
270.1	300.1	1.41	1.33	1.25	300.1	2.30	3.06	3.94	130.1	2.06	1.87	1.71
285.1	315.1	1.44	1.35	1.29	315.1	2.34	3.09	3.95	135.1	2.13	1.94	1.78
295.1	325.1	1.52	1.44	1.40	325.1	2.36	3.10	3.92	140.1	2.17	1.98	1.83
310.1	340.1	1.60	1.54	1.51	340.1	2.39	3.09	3.86	145.1	2.17	1.99	1.84
320.1	350.1	1.68	1.64	1.61	350.1	2.40	3.08	3.84	150.1	2.15	1.97	1.83
335.1	365.1	1.82	1.78	1.74	365.1	2.45	3.11	3.84	152.6	2.14	1.97	1.83
345.1	375.1	1.86	1.83	1.80	375.1	2.50	3.14	3.85	157.6	2.13	1.96	1.82
360.1	390.1	1.99	1.95	1.93	390.1	2.58	3.18	3.85	160.1	2.14	1.97	1.83
370.1	400.1	2.00	1.97	1.98	400.1	2.63	3.20	3.83	165.1	2.18	2.01	1.87
385.1	415.1	2.14	2.11	2.11	415.1	2.73	3.24	3.81	167.6	2.22	2.04	1.90
395.1	425.1	2.17	2.13	2.13	425.1	2.82	3.29	3.81	172.6	2.31	2.13	1.99
410.1	440.1	2.23	2.15	2.11	440.1	2.99	3.42	3.89	175.1	2.36	2.18	2.03
420.1	450.1	2.22	2.10	2.04	450.1	3.03	3.43	3.86	180.1	2.43	2.25	2.11
435.1	465.1	2.29	2.13	2.05	465.1	3.12	3.48	3.90	182.6	2.45	2.29	2.15
445.1	475.1	2.32	2.13	2.05	475.1	3.15	3.49	3.88	187.6	2.48	2.33	2.19
460.1	490.1	2.37	2.18	2.09	490.1	3.17	3.47	3.84	190.1	2.49	2.34	2.21

REV. X2

ZLW-3+

101011

Page 4 of 5



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	15	26	20	31	19	45	30	44	51	54
1	-	19	+0	26	11	36	20	38	41	48	38	55
2	>90	60	59	61	59	66	>71	65	55	64	59	>71
3	>90	59	57	62	60	61	62	59	68	65	62	>71
4	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
5	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
6	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
7	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
8	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
9	>90	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71	>71
10	>90	>71	>71	>71	>71	>71	>71	>71	>71	61	>71	>71
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 100.1 MHz; -14.00 dBm.
 LO IN: 130.1 MHz; +7.00 dBm
 IF OUT: 30 MHz; -19.06 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	25	37	30	43	31	61	44	58	62	75
1	-	19	+0	27	12	45	21	44	39	53	49	61
2	74	59	56	58	58	58	50	56	49	64	56	74
3	>90	44	38	52	37	46	38	53	43	52	58	62
4	>90	63	77	65	76	67	62	78	64	71	62	76
5	>90	69	59	62	60	59	57	58	65	58	65	64
6	>90	81	80	77	>81	75	80	77	>81	73	75	81
7	>90	>81	69	72	72	73	79	71	67	70	61	68
8	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
9	>90	>81	>81	>81	80	>81	>81	>81	>81	>81	>81	79
10	>90	>81	>81	>81	>81	>81	>81	>81	>81	73	>81	>81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 100.1 MHz; -4.00 dBm.
 LO IN: 130.1 MHz; +7.00 dBm
 IF OUT: 30 MHz; -9.06 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. X2
 ZLW-3+
 101011

