

Frequency Mixer

ZLW-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
10.1	40.1	4.98	4.68	4.35	10.1	40.1	14.30	16.19	21.82	10.1	40.1	1.39	1.21	1.02
30.1	60.1	5.05	4.92	4.83	30.1	60.1	14.62	18.28	21.58	30.1	60.1	1.40	1.04	0.93
50.1	80.1	5.24	5.01	4.78	50.1	80.1	16.33	21.50	21.61	50.1	80.1	1.39	1.08	0.89
70.1	100.1	5.04	4.86	4.78	70.1	100.1	14.03	18.20	20.27	70.1	100.1	1.41	1.11	0.92
90.1	120.1	5.10	4.94	4.84	90.1	120.1	16.29	20.23	21.06	90.1	120.1	1.54	1.20	1.02
110.1	140.1	5.19	5.02	4.91	110.1	140.1	15.35	18.22	21.00	110.1	140.1	1.29	1.02	0.83
130.1	160.1	5.21	5.00	4.89	130.1	160.1	15.27	17.93	14.65	130.1	160.1	1.26	1.02	0.86
150.1	180.1	5.23	5.05	4.94	150.1	180.1	19.48	18.14	15.74	150.1	180.1	1.21	0.96	0.81
170.1	200.1	5.15	5.02	4.96	170.1	200.1	14.43	17.40	16.23	170.1	200.1	1.32	1.04	0.86
190.1	220.1	5.23	5.07	4.97	190.1	220.1	14.15	13.47	14.68	190.1	220.1	1.32	1.06	0.90
210.1	240.1	5.22	5.06	4.97	210.1	240.1	9.75	9.00	9.12	210.1	240.1	1.14	0.90	0.77
230.1	260.1	5.34	5.10	4.95	230.1	260.1	14.02	10.51	10.49	230.1	260.1	1.20	0.98	0.83
250.1	280.1	5.41	5.15	5.00	250.1	280.1	16.02	18.02	21.50	250.1	280.1	1.22	0.98	0.80
270.1	300.1	5.50	5.33	5.19	270.1	300.1	15.42	20.78	16.22	270.1	300.1	1.40	1.14	0.96
290.1	320.1	5.50	5.35	5.26	290.1	320.1	11.05	10.63	11.53	290.1	320.1	1.44	1.17	0.99
310.1	340.1	5.48	5.34	5.23	310.1	340.1	7.87	7.39	7.54	310.1	340.1	1.53	1.27	1.11
330.1	360.1	5.62	5.46	5.36	330.1	360.1	8.07	7.44	8.22	330.1	360.1	1.77	1.44	1.26
350.1	380.1	5.68	5.53	5.46	350.1	380.1	9.27	11.07	13.98	350.1	380.1	1.91	1.47	1.26
370.1	400.1	5.82	5.61	5.52	370.1	400.1	12.80	21.19	19.61	370.1	400.1	2.18	1.66	1.43
390.1	420.1	5.96	5.62	5.46	390.1	420.1	11.64	15.59	14.86	390.1	420.1	2.18	1.74	1.54
410.1	440.1	6.27	5.74	5.44	410.1	440.1	8.03	18.14	18.60	410.1	440.1	2.46	2.10	1.89
430.1	460.1	6.51	5.95	5.48	430.1	460.1	4.08	6.44	8.19	430.1	460.1	2.71	2.46	2.19
450.1	480.1	6.56	6.07	5.64	450.1	480.1	3.05	4.84	7.23	450.1	480.1	2.80	2.49	2.21
470.1	500.1	6.94	6.49	6.00	470.1	500.1	3.01	4.57	7.85	470.1	500.1	2.76	2.47	2.23
490.1	520.1	7.16	6.69	6.21	490.1	520.1	2.51	3.71	5.85	490.1	520.1	2.56	2.33	2.19
510.1	540.1	7.54	7.08	6.58	510.1	540.1	1.81	2.77	4.95	510.1	540.1	2.36	2.16	2.06
530.1	560.1	7.66	7.19	6.68	530.1	560.1	2.45	3.99	7.24	530.1	560.1	2.32	2.10	1.99
550.1	580.1	7.84	7.29	6.78	550.1	580.1	3.68	5.39	8.69	550.1	580.1	2.14	1.97	1.85
570.1	600.1	7.91	7.30	6.84	570.1	600.1	5.37	6.82	7.96	570.1	600.1	2.04	1.91	1.72
590.1	620.1	7.65	7.05	6.66	590.1	620.1	6.61	7.12	7.74	590.1	620.1	2.18	1.99	1.73
610.1	640.1	7.53	7.06	6.75	610.1	640.1	6.64	7.72	8.51	610.1	640.1	2.13	1.82	1.53
630.1	660.1	7.50	7.17	6.97	630.1	660.1	6.38	8.08	8.78	630.1	660.1	2.05	1.62	1.32
650.1	680.1	7.73	7.46	7.34	650.1	680.1	6.85	8.70	9.49	650.1	680.1	1.77	1.32	1.08
680.1	710.1	7.65	7.46	7.42	680.1	710.1	5.97	7.51	8.55	680.1	710.1	1.79	1.35	1.07
700.1	730.1	7.88	7.69	7.69	700.1	730.1	5.84	7.04	8.44	700.1	730.1	1.80	1.35	1.09
730.1	760.1	8.33	8.14	8.15	730.1	760.1	5.67	6.76	8.24	730.1	760.1	1.91	1.52	1.29
750.1	780.1	8.80	8.59	8.58	750.1	780.1	6.12	7.31	8.71	750.1	780.1	1.87	1.50	1.29
780.1	810.1	9.56	9.18	9.06	780.1	810.1	6.80	7.84	8.71	780.1	810.1	1.98	1.63	1.46
800.1	830.1	10.13	9.71	9.55	800.1	830.1	7.29	8.52	9.21	800.1	830.1	1.93	1.52	1.36
830.1	860.1	11.13	10.66	10.47	830.1	860.1	8.30	9.92	10.70	830.1	860.1	1.73	1.31	1.13

Frequency Mixer

ZLW-1-1+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=250.1MHz (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)=500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
240.0	10.1	5.21	10.0	20.1	4.88	490.0	10.1	6.66
235.0	15.1	5.24	30.0	40.1	4.56	480.0	20.1	6.57
230.0	20.1	5.23	50.0	60.1	4.75	470.0	30.1	6.55
225.0	25.1	5.14	70.0	80.1	4.31	460.0	40.1	6.46
220.0	30.1	5.09	90.0	100.1	4.60	450.0	50.1	6.52
215.0	35.1	5.06	110.0	120.1	4.66	440.0	60.1	6.48
210.0	40.1	5.03	130.0	140.1	4.65	430.0	70.1	6.47
205.0	45.1	5.02	150.0	160.1	4.63	420.0	80.1	6.44
200.0	50.1	4.95	170.0	180.1	4.62	410.0	90.1	6.38
195.0	55.1	4.94	190.0	200.1	4.54	400.0	100.1	6.42
190.0	60.1	4.96	210.0	220.1	4.57	390.0	110.1	6.34
185.0	65.1	4.98	230.0	240.1	4.55	380.0	120.1	6.41
180.0	70.1	4.98	250.0	260.1	4.64	370.0	130.1	6.32
175.0	75.1	4.93	270.0	280.1	4.79	360.0	140.1	6.36
170.0	80.1	4.94	290.0	300.1	5.24	350.0	150.1	6.34
165.0	85.1	4.97	310.0	320.1	5.12	340.0	160.1	6.33
160.0	90.1	4.98	330.0	340.1	5.18	330.0	170.1	6.37
155.0	95.1	4.92	350.0	360.1	5.05	320.0	180.1	6.35
150.0	100.1	4.91	370.0	380.1	5.01	310.0	190.1	6.45
145.0	105.1	4.93	390.0	400.1	4.88	300.0	200.1	6.35
140.0	110.1	4.98	410.0	420.1	4.90	290.0	210.1	6.38
135.0	115.1	4.99	430.0	440.1	4.82	280.0	220.1	6.33
130.0	120.1	4.94	450.0	460.1	4.75	260.0	240.1	6.39
125.0	125.1	4.92	470.0	480.1	4.83	250.0	250.1	6.47
120.0	130.1	4.96	490.0	500.1	4.81	230.0	270.1	6.13
115.0	135.1	4.98	510.0	520.1	4.73	220.0	280.1	6.12
105.0	145.1	4.92	530.0	540.1	4.70	200.0	300.1	6.22
100.0	150.1	4.96	550.0	560.1	5.00	190.0	310.1	6.22
90.0	160.1	5.00	590.0	600.1	5.26	170.0	330.1	6.22
85.0	165.1	4.97	610.0	620.1	5.00	160.0	340.1	6.07
75.0	175.1	4.98	650.0	660.1	4.92	140.0	360.1	6.04
70.0	180.1	4.98	670.0	680.1	4.81	130.0	370.1	5.91
60.0	190.1	4.93	710.0	720.1	5.07	110.0	390.1	5.51
55.0	195.1	4.95	730.0	740.1	5.34	100.0	400.1	5.50
45.0	205.1	5.02	770.0	780.1	6.01	80.0	420.1	5.34
40.0	210.1	5.02	790.0	800.1	6.48	70.0	430.1	5.34
30.0	220.1	5.07	830.0	840.1	7.73	50.0	450.1	6.01
25.0	225.1	5.05	850.0	860.1	8.59	40.0	460.1	6.15
15.0	235.1	5.10	890.0	900.1	10.01	20.0	480.1	6.30
10.0	240.1	5.32	910.0	920.1	11.02	10.0	490.1	6.89

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Frequency Mixer

ZLW-1-1+

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	70.69	69.87	74.32	61.02	59.01	57.93
60.1	63.53	67.76	71.24	57.16	55.65	55.04
80.1	61.99	65.55	70.48	54.08	53.26	52.94
100.1	60.97	64.66	69.55	52.08	51.63	51.24
120.1	59.27	63.03	67.69	50.41	50.02	49.61
140.1	59.78	65.03	72.22	48.78	48.48	47.89
160.1	58.42	64.23	72.93	47.61	47.25	46.70
180.1	56.45	60.88	66.56	47.70	46.77	45.87
200.1	56.45	61.21	68.45	47.42	45.92	44.56
220.1	57.79	64.22	74.75	46.39	45.33	43.97
240.1	58.96	66.73	74.90	45.20	43.96	42.98
260.1	54.64	60.32	68.07	43.95	42.27	40.91
280.1	53.96	62.05	65.34	41.90	40.15	38.98
300.1	51.14	55.55	60.72	39.87	38.41	37.21
320.1	50.18	55.02	61.83	38.69	37.46	36.49
340.1	48.79	53.07	57.81	38.61	36.97	35.93
360.1	49.23	54.85	60.63	37.94	35.64	33.97
380.1	52.39	57.24	53.50	36.05	33.53	32.11
400.1	52.55	56.65	54.88	35.31	32.73	31.40
420.1	55.78	55.03	51.77	33.79	31.11	29.81
440.1	51.86	52.61	50.98	32.71	29.91	28.36
460.1	49.49	53.09	52.47	32.25	29.75	27.66
480.1	47.49	50.10	50.27	30.75	28.45	26.21
500.1	49.05	54.20	62.69	30.16	28.59	26.28
520.1	47.79	52.27	57.77	29.28	28.11	26.41
540.1	47.16	52.56	64.61	28.72	27.94	26.48
560.1	49.13	60.52	53.08	28.08	27.75	26.54
580.1	48.53	59.89	50.36	27.25	27.22	25.84
600.1	50.08	50.90	43.28	26.23	26.23	24.37
620.1	47.60	48.70	41.52	25.03	24.83	22.32
640.1	45.36	42.54	37.62	23.80	23.07	20.62
660.1	44.86	40.61	36.50	22.30	21.24	19.36
680.1	40.64	37.53	34.62	20.86	19.81	18.29
710.1	36.53	34.72	32.39	18.93	18.40	17.25
730.1	33.85	32.67	30.92	17.89	17.49	16.62
760.1	31.14	30.56	29.26	16.71	16.54	15.78
780.1	29.53	29.15	27.99	16.22	16.14	15.39
810.1	28.04	27.97	27.03	15.86	15.85	15.13
830.1	26.85	26.73	25.87	15.62	15.73	14.98
860.1	25.77	25.83	25.14	15.34	15.47	14.80

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	42.77	42.63	42.14
30.1	60.1	34.77	34.59	34.73
50.1	80.1	30.92	30.99	30.91
70.1	100.1	28.66	28.77	28.79
90.1	120.1	26.90	27.01	27.04
110.1	140.1	26.17	26.46	26.67
130.1	160.1	25.46	25.60	25.72
150.1	180.1	25.48	25.63	25.68
170.1	200.1	25.47	26.07	26.46
190.1	220.1	24.79	25.44	26.14
210.1	240.1	24.52	24.92	25.26
230.1	260.1	24.59	24.77	25.05
250.1	280.1	25.93	26.25	26.51
270.1	300.1	27.23	27.88	28.42
290.1	320.1	28.25	29.34	30.39
310.1	340.1	26.76	27.59	28.42
330.1	360.1	24.26	24.74	25.22
350.1	380.1	22.00	22.02	21.99
370.1	400.1	20.24	20.00	19.82
390.1	420.1	19.07	18.70	18.51
410.1	440.1	18.57	18.25	18.11
430.1	460.1	18.07	17.88	17.70
450.1	480.1	17.72	17.67	17.49
470.1	500.1	17.57	17.56	17.45
490.1	520.1	17.56	17.55	17.54
510.1	540.1	18.07	18.02	17.97
530.1	560.1	18.18	18.11	17.84
550.1	580.1	18.22	18.12	17.84
570.1	600.1	17.48	17.28	16.83
590.1	620.1	16.98	16.51	16.04
610.1	640.1	15.96	15.55	15.02
630.1	660.1	15.16	14.71	14.28
650.1	680.1	14.37	14.02	13.63
680.1	710.1	13.41	13.01	12.58
700.1	730.1	12.75	12.30	11.88
730.1	760.1	11.69	11.29	10.75
750.1	780.1	11.01	10.63	10.33
780.1	810.1	10.34	10.03	9.73
800.1	830.1	9.81	9.44	9.11
830.1	860.1	9.00	8.68	8.38

Frequency Mixer

ZLW-1-1+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=500.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
10.1	40.1	1.22	1.05	1.12	40.1	1.89	2.95	4.41	10.1	2.18	1.91	1.66
30.1	60.1	1.21	1.12	1.02	60.1	1.80	2.71	3.89	20.1	2.26	1.97	1.71
50.1	80.1	1.20	1.09	1.04	80.1	1.74	2.56	3.59	30.1	2.28	1.99	1.73
70.1	100.1	1.15	1.07	1.03	100.1	1.81	2.69	3.80	40.1	2.26	1.98	1.72
90.1	120.1	1.15	1.07	1.04	120.1	1.71	2.47	3.40	50.1	2.27	1.99	1.73
110.1	140.1	1.11	1.03	1.05	140.1	1.86	2.76	3.86	60.1	2.30	2.01	1.75
130.1	160.1	1.10	1.04	1.05	160.1	1.76	2.53	3.46	70.1	2.31	2.03	1.77
150.1	180.1	1.09	1.06	1.08	180.1	1.80	2.59	3.56	80.1	2.30	2.03	1.78
170.1	200.1	1.07	1.05	1.10	200.1	1.83	2.60	3.53	90.1	2.25	1.98	1.75
190.1	220.1	1.06	1.02	1.08	220.1	1.79	2.52	3.40	100.1	2.29	2.02	1.78
210.1	240.1	1.03	1.03	1.08	240.1	1.93	2.76	3.74	110.1	2.37	2.10	1.85
230.1	260.1	1.03	1.07	1.12	260.1	1.82	2.52	3.35	120.1	2.43	2.15	1.91
250.1	280.1	1.05	1.13	1.19	280.1	1.95	2.72	3.62	130.1	2.42	2.16	1.92
270.1	300.1	1.05	1.12	1.20	300.1	1.92	2.66	3.50	140.1	2.39	2.13	1.91
290.1	320.1	1.07	1.15	1.21	320.1	1.98	2.74	3.62	150.1	2.42	2.16	1.93
310.1	340.1	1.12	1.19	1.25	340.1	2.06	2.84	3.75	160.1	2.47	2.21	1.98
330.1	360.1	1.16	1.25	1.32	360.1	1.99	2.70	3.52	170.1	2.45	2.20	1.99
350.1	380.1	1.20	1.28	1.33	380.1	2.09	2.82	3.68	180.1	2.42	2.17	1.97
370.1	400.1	1.18	1.25	1.28	400.1	2.08	2.77	3.56	190.1	2.46	2.22	2.01
390.1	420.1	1.14	1.19	1.22	420.1	2.27	3.02	3.89	200.1	2.55	2.29	2.08
410.1	440.1	1.12	1.13	1.15	440.1	2.38	3.11	3.93	210.1	2.59	2.34	2.14
430.1	460.1	1.16	1.11	1.10	460.1	2.34	3.05	3.84	220.1	2.56	2.32	2.12
450.1	480.1	1.20	1.13	1.08	480.1	2.57	3.37	4.22	240.1	2.61	2.36	2.16
470.1	500.1	1.27	1.20	1.13	500.1	2.58	3.39	4.29	250.1	2.67	2.43	2.23
490.1	520.1	1.37	1.29	1.21	520.1	2.63	3.43	4.33	270.1	2.56	2.33	2.15
510.1	540.1	1.54	1.46	1.39	540.1	2.69	3.49	4.40	280.1	2.57	2.34	2.14
530.1	560.1	1.70	1.62	1.55	560.1	2.79	3.61	4.53	300.1	2.69	2.46	2.27
550.1	580.1	1.84	1.76	1.70	580.1	2.91	3.74	4.67	310.1	2.66	2.43	2.24
570.1	600.1	1.90	1.85	1.82	600.1	2.97	3.79	4.69	330.1	2.65	2.42	2.21
590.1	620.1	2.01	1.98	1.97	620.1	3.00	3.79	4.64	340.1	2.70	2.48	2.27
610.1	640.1	2.12	2.13	2.12	640.1	3.06	3.82	4.64	360.1	2.56	2.35	2.16
630.1	660.1	2.24	2.25	2.25	660.1	3.15	3.89	4.74	370.1	2.53	2.31	2.10
650.1	680.1	2.38	2.39	2.39	680.1	3.23	3.96	4.82	390.1	2.61	2.39	2.18
680.1	710.1	2.48	2.48	2.48	710.1	3.39	4.10	4.95	400.1	2.57	2.35	2.16
700.1	730.1	2.62	2.62	2.62	730.1	3.57	4.26	5.06	420.1	2.50	2.28	2.07
730.1	760.1	2.70	2.67	2.63	760.1	3.92	4.55	5.31	430.1	2.54	2.31	2.10
750.1	780.1	2.78	2.73	2.69	780.1	4.15	4.74	5.46	450.1	2.42	2.19	1.99
780.1	810.1	3.03	2.94	2.89	810.1	4.45	4.99	5.65	460.1	2.36	2.11	1.89
800.1	830.1	3.20	3.10	3.05	830.1	4.62	5.13	5.77	480.1	2.44	2.17	1.94
830.1	860.1	3.43	3.32	3.26	860.1	4.79	5.31	5.93	490.1	2.40	2.14	1.91

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	14	41	15	37	21	29	40	38	45	63
1	-	21	+0	26	10	38	24	40	34	40	51	68
2	83	>69	55	66	57	66	52	>69	66	>69	>69	>69
3	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
4	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
5	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
6	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
7	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
8	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
9	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
10	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -14.00 dBm.
 LO IN: 280.1 MHz; +7.00 dBm
 IF OUT: 30 MHz; -19.95 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	24	69	28	48	33	42	51	52	60	>80
1	-	21	+0	27	11	37	26	44	36	47	57	71
2	62	59	45	57	48	56	47	64	76	62	64	66
3	>90	51	42	49	44	54	38	65	48	53	53	53
4	>90	>80	73	>80	66	>80	65	75	59	75	74	>80
5	>90	>80	60	60	52	67	54	67	57	68	69	72
6	>90	>80	>80	>80	80	>80	>80	>80	>80	>80	>80	>80
7	>90	>80	>80	>80	73	72	69	75	70	77	67	>80
8	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
9	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
10	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	79
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -4.00 dBm.
 LO IN: 280.1 MHz; +7.00 dBm
 IF OUT: 30 MHz; -9.23 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.