

Frequency Mixer

ADE-1MHW+

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=+9dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+10	+13	+16			+10	+13	+16			+10	+13	+16
10.1	40.1	5.58	5.44	5.36	10.1	40.1	25.24	28.54	28.58	10.1	40.1	1.60	1.29	1.07
40.1	70.1	5.67	5.36	5.22	40.1	70.1	26.88	28.25	29.11	40.1	70.1	1.51	1.32	1.15
70.1	100.1	5.63	5.38	5.24	70.1	100.1	28.15	28.28	27.63	70.1	100.1	1.64	1.36	1.18
100.1	130.1	5.66	5.43	5.32	100.1	130.1	26.80	25.74	25.17	100.1	130.1	1.51	1.25	1.07
130.1	160.1	5.66	5.41	5.30	130.1	160.1	23.09	24.32	22.69	130.1	160.1	1.54	1.28	1.10
160.1	190.1	5.69	5.48	5.35	160.1	190.1	21.31	22.71	23.82	160.1	190.1	1.55	1.26	1.09
190.1	220.1	5.69	5.49	5.38	190.1	220.1	22.41	22.38	23.54	190.1	220.1	1.49	1.21	1.05
220.1	250.1	5.75	5.53	5.42	220.1	250.1	22.48	22.66	21.21	220.1	250.1	1.44	1.16	1.03
250.1	280.1	5.82	5.62	5.48	250.1	280.1	19.94	18.34	19.66	250.1	280.1	1.42	1.13	1.01
280.1	310.1	5.78	5.58	5.48	280.1	310.1	21.58	20.79	20.42	280.1	310.1	1.43	1.16	1.00
310.1	340.1	5.88	5.63	5.44	310.1	340.1	16.53	19.03	25.38	310.1	340.1	1.31	1.11	1.01
340.1	370.1	5.96	5.76	5.61	340.1	370.1	17.27	16.39	16.59	340.1	370.1	1.27	1.00	0.90
370.1	400.1	5.92	5.73	5.61	370.1	400.1	23.60	21.14	21.70	370.1	400.1	1.39	1.09	0.95
400.1	430.1	6.02	5.71	5.53	400.1	430.1	19.99	22.89	25.57	400.1	430.1	1.35	1.13	0.97
430.1	460.1	6.14	5.77	5.50	430.1	460.1	15.33	26.44	24.59	430.1	460.1	1.36	1.25	1.11
460.1	490.1	6.09	5.89	5.70	460.1	490.1	15.17	15.20	17.86	460.1	490.1	1.53	1.29	1.15
490.1	520.1	6.20	6.00	5.85	490.1	520.1	14.96	14.81	15.58	490.1	520.1	1.62	1.35	1.21
520.1	550.1	6.29	6.07	5.91	520.1	550.1	15.63	15.08	15.37	520.1	550.1	1.80	1.48	1.36
550.1	580.1	6.27	6.05	5.90	550.1	580.1	16.73	16.08	16.53	550.1	580.1	2.06	1.66	1.49
580.1	610.1	6.40	6.07	5.87	580.1	610.1	17.18	17.63	21.71	580.1	610.1	2.27	1.80	1.58
640.1	670.1	6.82	6.08	5.84	640.1	670.1	15.69	23.81	25.70	640.1	670.1	2.56	2.27	1.97
670.1	700.1	7.48	6.38	5.95	670.1	700.1	9.08	20.03	24.74	670.1	700.1	2.27	2.41	2.12
700.1	730.1	7.91	6.82	6.12	700.1	730.1	8.29	13.52	25.65	700.1	730.1	1.99	2.23	2.15
730.1	760.1	8.05	7.12	6.33	730.1	760.1	8.94	11.54	16.67	730.1	760.1	1.83	2.00	2.06
760.1	790.1	8.30	7.42	6.54	760.1	790.1	9.47	11.01	14.04	760.1	790.1	1.71	1.88	2.10
790.1	820.1	8.64	7.88	7.00	790.1	820.1	10.90	11.57	13.58	790.1	820.1	1.46	1.58	1.90
820.1	850.1	8.66	8.19	7.60	820.1	850.1	12.77	12.87	14.40	820.1	850.1	1.41	1.31	1.47
850.1	880.1	8.74	8.34	7.94	850.1	880.1	14.07	14.41	16.05	850.1	880.1	1.45	1.30	1.26
880.1	910.1	8.88	8.45	8.10	880.1	910.1	16.72	16.66	19.62	880.1	910.1	1.51	1.36	1.24
910.1	940.1	8.73	8.33	8.06	910.1	940.1	18.08	16.51	19.45	910.1	940.1	1.75	1.52	1.30
940.1	970.1	8.68	8.19	7.94	940.1	970.1	16.86	15.29	16.60	940.1	970.1	1.92	1.71	1.43
970.1	1000.1	8.75	8.19	7.96	970.1	1000.1	16.33	14.71	15.30	970.1	1000.1	1.99	1.75	1.44
1000.1	1030.1	8.77	8.25	8.05	1000.1	1030.1	14.06	14.39	15.39	1000.1	1030.1	2.04	1.69	1.34
1030.1	1060.1	8.65	8.25	8.13	1030.1	1060.1	12.58	14.74	15.74	1030.1	1060.1	2.14	1.62	1.28
1120.1	1150.1	9.33	9.10	9.10	1120.1	1150.1	12.97	13.65	14.06	1120.1	1150.1	1.93	1.39	1.13
1160.1	1190.1	9.92	9.75	9.76	1160.1	1190.1	13.66	13.20	13.85	1160.1	1190.1	1.84	1.32	1.12
1190.1	1220.1	10.31	10.25	10.26	1190.1	1220.1	13.82	15.33	17.13	1190.1	1220.1	1.83	1.28	1.09

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=300.1MHz (dB)
		@LO (dBm)
		+13
290.0	10.1	5.53
282.8	17.3	5.55
275.6	24.5	5.49
268.5	31.6	5.45
261.3	38.8	5.41
254.1	46.0	5.49
246.9	53.2	5.40
239.7	60.4	5.41
232.6	67.5	5.42
225.4	74.7	5.34
218.2	81.9	5.35
211.0	89.1	5.37
203.8	96.3	5.33
196.7	103.4	5.31
189.5	110.6	5.34
182.3	117.8	5.33
175.1	125.0	5.29
167.9	132.2	5.30
160.8	139.3	5.36
153.6	146.5	5.32
146.4	153.7	5.33
139.2	160.9	5.40
132.1	168.0	5.36
124.9	175.2	5.34
117.7	182.4	5.38
110.5	189.6	5.37
103.3	196.8	5.36
96.2	203.9	5.41
89.0	211.1	5.42
81.8	218.3	5.38
74.6	225.5	5.27
67.4	232.7	5.33
60.3	239.8	5.31
53.1	247.0	5.45
45.9	254.2	5.49
38.7	261.4	5.48
31.5	268.6	5.51
24.4	275.7	5.54
17.2	282.9	5.54
10.0	290.1	5.63

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm)
		+13
10.0	20.1	5.55
50.0	60.1	5.29
90.0	100.1	5.30
130.0	140.1	5.32
170.0	180.1	5.33
210.0	220.1	5.28
250.0	260.1	5.40
290.0	300.1	5.61
330.0	340.1	5.45
370.0	380.1	5.30
410.0	420.1	5.52
430.0	440.1	5.56
470.0	480.1	5.63
490.0	500.1	5.62
530.0	540.1	5.53
550.0	560.1	5.65
590.0	600.1	5.55
610.0	620.1	5.50
650.0	660.1	5.37
670.0	680.1	5.41
710.0	720.1	5.47
730.0	740.1	5.50
770.0	780.1	5.41
790.0	800.1	5.43
830.0	840.1	5.56
850.0	860.1	5.59
890.0	900.1	5.60
910.0	920.1	5.65
950.0	960.1	5.75
970.0	980.1	5.65
1010.0	1020.1	5.70
1030.0	1040.1	5.77
1070.0	1080.1	5.79
1090.0	1100.1	5.83
1130.0	1140.1	6.09
1150.0	1160.1	6.34
1190.0	1200.1	7.13
1210.0	1220.1	8.26
1250.0	1260.1	9.50
1270.0	1280.1	9.90

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=600.1MHz (dB)
		@LO (dBm)
		+13
590.0	10.1	6.06
575.1	25.0	5.94
560.3	39.8	5.84
545.4	54.7	5.90
530.5	69.6	5.81
515.6	84.5	5.78
500.8	99.3	5.86
485.9	114.2	5.75
471.0	129.1	5.76
456.2	143.9	5.80
441.3	158.8	5.76
426.4	173.7	5.80
411.5	188.6	5.81
396.7	203.4	5.80
381.8	218.3	5.84
366.9	233.2	5.79
352.1	248.0	5.84
337.2	262.9	5.92
322.3	277.8	5.87
307.4	292.7	5.91
292.6	307.5	5.92
277.7	322.4	5.90
262.8	337.3	5.97
247.9	352.2	5.98
233.1	367.0	5.95
218.2	381.9	6.01
203.3	396.8	5.94
188.5	411.6	5.93
173.6	426.5	5.92
158.7	441.4	5.88
143.8	456.3	5.98
129.0	471.1	6.09
114.1	486.0	6.07
99.2	500.9	6.15
84.4	515.7	6.10
69.5	530.6	6.17
54.6	545.5	6.26
39.7	560.4	6.20
24.9	575.2	6.23
10.0	590.1	6.28

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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)		
	+10	+13	+16	+10	+13	+16			+10	+13	+16
40.1	55.32	55.53	55.25	54.21	51.60	49.87	10.1	40.1	47.77	46.90	45.78
70.1	52.72	53.13	53.62	50.88	48.68	47.36	40.1	70.1	36.26	36.42	36.67
100.1	49.72	50.49	50.90	48.23	46.24	45.39	70.1	100.1	31.94	32.16	32.33
130.1	48.26	48.99	49.20	45.88	44.60	43.84	100.1	130.1	29.64	29.66	29.79
160.1	47.33	48.16	48.51	44.48	43.53	42.73	130.1	160.1	27.94	28.13	28.34
190.1	45.94	46.46	46.53	44.45	43.39	42.14	160.1	190.1	26.49	26.75	26.88
220.1	45.26	45.76	45.70	43.56	42.33	40.90	190.1	220.1	25.46	25.70	25.87
250.1	44.34	44.79	45.06	42.72	41.28	40.06	220.1	250.1	25.33	25.48	25.55
280.1	43.40	43.71	43.65	42.99	41.08	39.08	250.1	280.1	25.13	25.45	25.70
310.1	43.38	43.41	43.27	42.45	40.20	38.43	280.1	310.1	24.51	25.08	25.42
340.1	42.73	43.07	42.82	40.98	38.88	37.27	310.1	340.1	24.63	25.06	25.70
370.1	41.28	41.69	41.81	39.53	37.70	36.05	340.1	370.1	25.31	25.60	25.82
400.1	40.29	40.70	40.73	37.49	36.27	35.09	370.1	400.1	25.64	25.96	26.24
430.1	38.69	38.89	39.05	35.74	34.79	33.78	400.1	430.1	26.80	27.29	27.90
460.1	37.88	38.17	38.18	35.94	32.76	31.81	430.1	460.1	27.30	28.37	29.53
490.1	37.45	37.64	37.56	36.53	32.84	30.33	460.1	490.1	25.91	26.80	27.96
520.1	37.24	37.43	37.42	36.96	33.41	30.80	490.1	520.1	24.08	24.23	24.43
550.1	37.16	36.93	36.57	36.13	33.00	30.58	520.1	550.1	22.57	22.62	22.64
580.1	37.40	36.81	36.01	34.91	32.29	29.62	550.1	580.1	21.29	21.23	21.13
640.1	36.75	35.72	34.77	30.65	29.41	27.17	610.1	640.1	18.62	18.37	18.23
670.1	36.00	35.36	34.43	28.28	26.93	25.46	640.1	670.1	18.39	17.91	17.74
700.1	34.69	34.68	34.34	27.14	24.98	23.67	670.1	700.1	18.18	17.66	17.44
730.1	34.23	33.89	33.61	26.46	24.46	22.61	700.1	730.1	17.96	17.86	17.71
760.1	34.10	33.83	33.54	25.60	24.14	22.06	730.1	760.1	17.94	17.78	17.82
790.1	33.53	33.51	33.55	24.54	23.37	21.61	760.1	790.1	17.82	17.68	17.78
820.1	33.43	33.25	33.08	23.68	22.68	21.14	790.1	820.1	17.66	17.54	17.61
850.1	33.35	33.17	32.97	22.78	22.17	20.92	820.1	850.1	17.20	17.18	17.30
880.1	33.59	33.66	33.77	22.07	21.65	20.56	850.1	880.1	16.83	16.96	17.29
910.1	33.92	33.85	33.59	21.09	20.96	19.98	880.1	910.1	16.51	16.68	16.93
940.1	34.37	34.20	33.40	20.40	20.56	19.58	910.1	940.1	16.04	16.14	16.22
970.1	35.37	35.42	34.06	19.57	19.98	18.86	940.1	970.1	15.82	15.89	15.87
1000.1	36.78	35.91	32.96	18.59	19.13	17.76	970.1	1000.1	15.27	15.23	15.10
1030.1	40.03	36.39	30.97	17.56	18.14	16.52	1000.1	1030.1	14.69	14.55	14.30
1120.1	33.33	28.65	25.69	14.19	14.45	13.51	1090.1	1120.1	12.30	12.07	11.66
1150.1	29.20	26.75	24.42	13.10	13.54	12.81	1120.1	1150.1	11.41	11.26	10.84
1190.1	25.57	24.44	22.63	12.05	12.69	12.26	1160.1	1190.1	9.88	9.93	9.55
1220.1	23.81	22.66	21.01	11.57	12.11	11.73	1190.1	1220.1	8.77	8.80	8.54

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	1.15	1.09	1.04
40.1	70.1	1.16	1.07	1.04
70.1	100.1	1.14	1.04	1.02
100.1	130.1	1.15	1.04	1.02
130.1	160.1	1.13	1.03	1.05
160.1	190.1	1.13	1.05	1.05
190.1	220.1	1.13	1.05	1.05
220.1	250.1	1.11	1.05	1.07
250.1	280.1	1.13	1.09	1.10
280.1	310.1	1.12	1.08	1.10
310.1	340.1	1.12	1.08	1.13
340.1	370.1	1.14	1.12	1.14
370.1	400.1	1.15	1.14	1.16
400.1	430.1	1.16	1.19	1.24
430.1	460.1	1.19	1.22	1.29
460.1	490.1	1.21	1.22	1.28
490.1	520.1	1.20	1.22	1.26
520.1	550.1	1.22	1.24	1.28
550.1	580.1	1.23	1.26	1.30
580.1	610.1	1.21	1.25	1.29
640.1	670.1	1.34	1.34	1.38
670.1	700.1	1.44	1.38	1.40
700.1	730.1	1.64	1.56	1.54
730.1	760.1	1.83	1.74	1.69
760.1	790.1	1.97	1.87	1.78
790.1	820.1	2.25	2.15	2.02
820.1	850.1	2.42	2.35	2.25
850.1	880.1	2.48	2.41	2.34
880.1	910.1	2.65	2.59	2.54
910.1	940.1	2.80	2.77	2.74
940.1	970.1	2.82	2.77	2.75
970.1	1000.1	3.00	2.95	2.92
1000.1	1030.1	3.16	3.11	3.07
1030.1	1060.1	3.19	3.13	3.07
1120.1	1150.1	3.45	3.40	3.33
1160.1	1190.1	3.40	3.37	3.30
1190.1	1220.1	3.31	3.29	3.23

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+10	+13	+16
40.1	1.57	2.54	3.95
70.1	1.48	2.29	3.38
100.1	1.47	2.25	3.29
130.1	1.50	2.32	3.40
160.1	1.47	2.25	3.25
190.1	1.47	2.22	3.18
220.1	1.51	2.28	3.26
250.1	1.53	2.27	3.22
280.1	1.53	2.25	3.18
310.1	1.57	2.31	3.24
340.1	1.61	2.34	3.24
370.1	1.62	2.33	3.23
400.1	1.68	2.37	3.27
430.1	1.74	2.41	3.27
460.1	1.75	2.45	3.30
490.1	1.79	2.50	3.38
520.1	1.84	2.54	3.43
550.1	1.86	2.52	3.37
580.1	1.90	2.53	3.36
610.1	1.96	2.56	3.37
670.1	2.15	2.72	3.47
700.1	2.22	2.86	3.60
730.1	2.24	2.92	3.66
760.1	2.25	2.92	3.69
790.1	2.29	2.96	3.74
820.1	2.33	2.99	3.76
850.1	2.34	2.98	3.73
880.1	2.36	2.98	3.72
910.1	2.38	2.99	3.71
940.1	2.40	2.99	3.69
970.1	2.42	2.97	3.63
1000.1	2.42	2.95	3.56
1030.1	2.43	2.91	3.47
1060.1	2.42	2.85	3.37
1150.1	2.62	2.96	3.43
1190.1	2.74	3.03	3.43
1220.1	2.78	3.10	3.47

IF (OUT) (MHz)	IF VSWR @LO=600MHz (:1)		
	@LO (dBm)		
	+10	+13	+16
10.1	1.85	1.58	1.37
20.1	1.87	1.58	1.37
40.1	1.87	1.59	1.38
50.1	1.87	1.59	1.38
70.1	1.87	1.59	1.38
80.1	1.88	1.61	1.40
100.1	1.88	1.61	1.40
110.1	1.90	1.62	1.41
130.1	1.90	1.62	1.42
140.1	1.89	1.62	1.42
160.1	1.88	1.61	1.41
170.1	1.89	1.62	1.42
190.1	1.92	1.66	1.47
200.1	1.93	1.67	1.48
220.1	1.92	1.67	1.48
230.1	1.90	1.66	1.48
250.1	1.93	1.67	1.49
260.1	1.95	1.70	1.52
280.1	1.94	1.70	1.53
290.1	1.96	1.71	1.55
320.1	1.95	1.72	1.56
340.1	1.97	1.74	1.58
350.1	1.99	1.77	1.61
370.1	1.95	1.74	1.60
380.1	1.96	1.75	1.60
400.1	2.02	1.80	1.65
410.1	2.00	1.79	1.65
430.1	2.00	1.79	1.65
440.1	2.03	1.82	1.68
460.1	1.98	1.79	1.67
470.1	1.97	1.78	1.65
490.1	2.04	1.84	1.71
500.1	2.03	1.84	1.71
520.1	2.00	1.82	1.70
560.1	1.97	1.80	1.69
580.1	2.03	1.87	1.75
590.1	2.07	1.90	1.79

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(dBc)										
0	-	-	14	25	12	37	15	36	32	45	30	55
1	-	20	+0	29	11	44	19	35	40	42	43	46
2	77	59	47	62	48	56	44	58	50	65	62	66
3	>90	64	60	64	56	71	54	63	57	71	64	78
4	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
5	>90	>78	>78	>78	>78	>78	>78	>78	77	>78	>78	>78
6	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
7	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
8	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
9	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
10	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 300.1 MHz; -6.00 dBm.
 LO IN: 330.1 MHz; +13.00 dBm
 IF OUT: 30 MHz; -11.6 dBm

RF HARMONICS ORDER

	(-dBm)	(dBc)										
0	-	-	22	36	23	48	28	50	42	63	46	64
1	-	21	+0	30	11	43	20	41	37	49	47	55
2	57	63	42	65	44	62	39	65	45	66	57	69
3	84	49	41	50	42	51	39	51	42	51	58	55
4	>90	66	58	63	59	64	58	62	52	63	60	70
5	>90	75	75	71	49	67	47	73	46	62	50	70
6	>90	82	73	73	76	73	88	74	71	70	75	70
7	>90	>88	72	76	61	69	67	77	68	85	58	82
8	>90	>88	>88	>88	81	80	76	82	74	>88	71	81
9	>90	>88	>88	>88	78	>88	70	76	80	82	75	80
10	>90	>88	>88	>88	>88	>88	>88	>88	85	86	87	88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 300.1 MHz; 4.00 dBm.
 LO IN: 330.1 MHz; +13.00 dBm
 IF OUT: 30 MHz; -1.58 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.