

Frequency Mixer

ADE-12MH

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	7.07	6.52	6.24
50.3	80.3	7.34	6.80	6.53
90.5	120.5	7.37	6.78	6.49
130.8	160.8	7.32	6.71	6.45
171.0	201.0	7.25	6.68	6.45
211.2	241.2	7.15	6.62	6.44
251.4	281.4	7.10	6.65	6.45
291.7	321.7	7.04	6.61	6.46
331.9	361.9	6.98	6.63	6.44
372.1	402.1	6.98	6.60	6.46
412.3	442.3	6.90	6.58	6.40
452.6	482.6	6.95	6.59	6.41
492.8	522.8	6.89	6.51	6.31
533.0	563.0	6.89	6.53	6.31
573.2	603.2	6.88	6.54	6.35
613.5	643.5	6.87	6.52	6.34
653.7	683.7	6.90	6.51	6.33
693.9	723.9	6.96	6.54	6.33
734.1	764.1	7.08	6.65	6.38
794.5	824.5	7.17	6.77	6.49
834.7	864.7	7.23	6.80	6.50
895.0	925.0	7.13	6.65	6.37
935.3	965.3	7.01	6.49	6.21
995.6	1025.6	6.93	6.35	6.08
1035.8	1065.8	7.00	6.32	6.04
1096.2	1126.2	7.14	6.40	6.07
1136.4	1166.4	7.24	6.53	6.17
1196.7	1226.7	7.45	6.81	6.37
1237.0	1267.0	7.59	7.00	6.55
1297.3	1327.3	7.95	7.47	7.05
1337.5	1367.5	8.18	7.83	7.47
1397.9	1427.9	8.45	8.17	7.96
1438.1	1468.1	8.56	8.35	8.17
1498.4	1528.4	8.87	8.66	8.45
1538.6	1568.6	9.11	8.88	8.72
1599.0	1629.0	9.53	9.32	9.17
1639.2	1669.2	9.83	9.64	9.53
1699.5	1729.5	10.37	10.21	10.10
1739.8	1769.8	10.76	10.62	10.49
1800.1	1830.1	11.36	11.20	11.10

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	18.31	21.97	24.50
50.3	80.3	18.01	21.57	24.53
90.5	120.5	18.21	21.66	26.10
130.8	160.8	18.54	22.84	22.82
171.0	201.0	18.69	23.48	23.02
211.2	241.2	19.73	21.57	25.15
251.4	281.4	20.73	20.98	26.87
291.7	321.7	20.13	22.83	29.38
331.9	361.9	19.46	23.33	27.72
372.1	402.1	18.67	24.71	26.63
412.3	442.3	18.46	22.54	27.63
452.6	482.6	19.86	24.22	25.40
492.8	522.8	20.85	22.46	22.01
533.0	563.0	20.91	24.57	22.34
573.2	603.2	22.14	25.17	24.08
613.5	643.5	21.59	22.21	23.52
653.7	683.7	23.94	23.54	25.03
693.9	723.9	19.98	25.76	24.11
734.1	764.1	17.37	23.35	24.32
794.5	824.5	16.36	19.69	24.98
834.7	864.7	17.67	20.48	23.70
895.0	925.0	19.66	20.32	20.23
935.3	965.3	17.69	18.34	18.58
995.6	1025.6	15.89	16.18	17.00
1035.8	1065.8	15.52	15.32	16.30
1096.2	1126.2	14.25	14.57	15.21
1136.4	1166.4	13.35	14.05	14.91
1196.7	1226.7	12.70	13.38	14.41
1237.0	1267.0	12.60	13.35	14.26
1297.3	1327.3	12.91	13.52	14.39
1337.5	1367.5	13.28	13.72	14.53
1397.9	1427.9	14.35	14.30	14.84
1438.1	1468.1	15.37	14.96	15.30
1498.4	1528.4	17.94	16.61	17.20
1538.6	1568.6	20.03	18.89	19.59
1599.0	1629.0	20.38	22.50	23.02
1639.2	1669.2	19.25	22.50	24.42
1699.5	1729.5	19.92	22.88	25.25
1739.8	1769.8	20.68	23.19	25.18
1800.1	1830.1	19.71	22.95	27.19

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	0.67	0.59	0.50
50.3	80.3	0.64	0.55	0.46
90.5	120.5	0.62	0.55	0.45
130.8	160.8	0.59	0.55	0.45
171.0	201.0	0.58	0.54	0.43
211.2	241.2	0.71	0.59	0.47
251.4	281.4	0.74	0.58	0.47
291.7	321.7	0.75	0.57	0.48
331.9	361.9	0.74	0.56	0.47
372.1	402.1	0.78	0.60	0.50
412.3	442.3	0.76	0.59	0.50
452.6	482.6	0.72	0.57	0.49
492.8	522.8	0.73	0.59	0.52
533.0	563.0	0.78	0.64	0.56
573.2	603.2	0.89	0.69	0.61
613.5	643.5	0.98	0.80	0.66
653.7	683.7	1.08	0.89	0.77
693.9	723.9	1.19	1.06	0.93
734.1	764.1	1.20	1.11	0.98
794.5	824.5	1.35	1.24	1.15
834.7	864.7	1.53	1.36	1.26
895.0	925.0	1.78	1.61	1.50
935.3	965.3	2.04	1.83	1.66
995.6	1025.6	2.29	2.07	1.87
1035.8	1065.8	2.36	2.19	1.95
1096.2	1126.2	2.38	2.26	2.03
1136.4	1166.4	2.39	2.29	2.07
1196.7	1226.7	2.35	2.27	2.12
1237.0	1267.0	2.27	2.24	2.10
1297.3	1327.3	1.93	1.87	1.86
1337.5	1367.5	1.68	1.59	1.58
1397.9	1427.9	1.47	1.31	1.24
1438.1	1468.1	1.40	1.19	1.09
1498.4	1528.4	1.22	0.98	0.86
1538.6	1568.6	1.11	0.84	0.70
1599.0	1629.0	0.82	0.56	0.41
1639.2	1669.2	0.63	0.39	0.30
1699.5	1729.5	0.46	0.24	0.20
1739.8	1769.8	0.38	0.20	0.16
1800.1	1830.1	0.26	0.14	0.10

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Frequency Mixer

ADE-12MH

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=600.1MHz (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)=1200.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+13			+13			+13
590.0	10.1	6.78	10.0	20.1	6.84	1190.0	10.1	7.83
575.1	25.0	6.72	50.0	60.1	6.59	1150.0	50.1	7.65
560.3	39.8	6.68	90.0	100.1	6.59	1110.0	90.1	7.52
545.4	54.7	6.65	110.0	120.1	6.61	1090.0	110.1	7.44
530.5	69.6	6.63	150.0	160.1	6.60	1050.0	150.1	7.34
515.6	84.5	6.59	170.0	180.1	6.62	1030.0	170.1	7.33
500.8	99.3	6.52	210.0	220.1	6.62	990.0	210.1	7.22
485.9	114.2	6.46	230.0	240.1	6.61	970.0	230.1	7.20
471.0	129.1	6.39	270.0	280.1	6.68	930.0	270.1	7.15
456.2	143.9	6.37	290.0	300.1	6.69	910.0	290.1	7.11
441.3	158.8	6.33	330.0	340.1	6.75	870.0	330.1	7.04
426.4	173.7	6.31	350.0	360.1	6.75	850.0	350.1	7.02
411.5	188.6	6.27	390.0	400.1	6.88	810.0	390.1	6.98
396.7	203.4	6.26	410.0	420.1	6.83	790.0	410.1	6.94
381.8	218.3	6.26	450.0	460.1	6.93	750.0	450.1	6.86
366.9	233.2	6.23	470.0	480.1	6.94	730.0	470.1	6.80
352.1	248.0	6.26	510.0	520.1	6.95	690.0	510.1	6.72
337.2	262.9	6.26	530.0	540.1	7.01	670.0	530.1	6.68
322.3	277.8	6.29	570.0	580.1	7.18	630.0	570.1	6.62
307.4	292.7	6.25	590.0	600.1	7.23	610.0	590.1	6.58
292.6	307.5	6.25	630.0	640.1	7.39	570.0	630.1	6.47
277.7	322.4	6.27	650.0	660.1	7.41	550.0	650.1	6.42
262.8	337.3	6.26	690.0	700.1	7.46	510.0	690.1	6.29
247.9	352.2	6.29	710.0	720.1	7.50	490.0	710.1	6.25
233.1	367.0	6.27	750.0	760.1	7.53	450.0	750.1	6.25
218.2	381.9	6.31	770.0	780.1	7.52	430.0	770.1	6.25
203.3	396.8	6.30	810.0	820.1	7.45	390.0	810.1	6.23
188.5	411.6	6.30	830.0	840.1	7.43	370.0	830.1	6.27
173.6	426.5	6.30	870.0	880.1	7.34	330.0	870.1	6.25
158.7	441.4	6.32	890.0	900.1	7.28	310.0	890.1	6.20
143.8	456.3	6.36	930.0	940.1	7.15	270.0	930.1	6.06
129.0	471.1	6.34	950.0	960.1	7.10	250.0	950.1	5.97
114.1	486.0	6.33	990.0	1000.1	7.07	210.0	990.1	5.87
99.2	500.9	6.31	1010.0	1020.1	7.08	190.0	1010.1	5.86
84.4	515.7	6.33	1050.0	1060.1	7.14	150.0	1050.1	5.93
69.5	530.6	6.34	1070.0	1080.1	7.18	130.0	1070.1	6.01
54.6	545.5	6.38	1110.0	1120.1	7.20	90.0	1110.1	6.15
39.7	560.4	6.42	1130.0	1140.1	7.22	70.0	1130.1	6.29
24.9	575.2	6.45	1170.0	1180.1	7.26	30.0	1170.1	6.53
10.0	590.1	6.68	1190.0	1200.1	7.28	10.0	1190.1	6.73

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
10.1	75.62	76.70	77.70	74.83	66.15	64.02
50.3	62.03	64.14	65.87	61.22	57.91	55.94
90.5	57.15	59.01	60.86	57.81	54.47	52.08
130.8	53.91	56.03	57.87	56.31	52.20	50.69
171.0	51.69	53.48	55.57	54.59	51.85	49.91
211.2	49.73	51.71	54.17	53.42	51.72	48.71
251.4	47.99	50.44	52.82	52.05	50.55	47.39
291.7	46.67	49.20	51.67	48.72	48.45	46.60
331.9	45.53	48.16	50.72	45.19	46.16	45.34
372.1	44.98	47.74	50.34	42.82	44.55	44.40
412.3	44.19	47.08	49.95	41.17	42.95	43.19
452.6	43.11	45.56	48.25	38.91	41.12	42.25
492.8	42.09	44.56	47.06	37.48	39.27	40.88
533.0	41.43	44.15	47.21	36.39	38.10	39.19
573.2	41.31	43.97	47.10	35.81	38.03	39.33
613.5	41.66	43.92	46.35	35.31	37.63	39.45
653.7	42.47	45.04	47.38	34.88	36.82	38.83
693.9	42.62	46.06	49.03	34.60	36.16	37.94
734.1	42.25	45.53	48.52	34.01	35.82	37.26
794.5	40.67	43.24	45.41	32.20	34.44	36.24
834.7	39.07	41.16	43.00	30.87	33.07	35.11
895.0	37.41	39.08	40.22	29.14	31.03	32.94
935.3	36.55	38.47	39.80	27.94	29.65	31.59
995.6	35.22	37.30	38.46	26.80	28.62	30.61
1035.8	34.12	36.26	37.33	26.27	28.10	30.06
1096.2	32.93	35.13	36.39	26.20	27.97	29.86
1136.4	32.32	34.45	35.71	26.11	27.93	29.76
1196.7	31.47	33.41	34.47	25.92	27.78	29.49
1237.0	30.93	32.74	33.58	25.86	27.81	29.45
1297.3	30.32	31.96	32.64	25.60	27.65	29.28
1337.5	30.00	31.60	32.28	25.20	27.22	28.83
1397.9	28.95	30.45	31.17	24.62	26.22	27.60
1438.1	27.92	29.29	30.05	24.10	25.27	26.39
1498.4	26.90	28.02	28.61	23.30	23.85	24.24
1538.6	26.44	27.44	28.05	22.92	23.10	23.39
1599.0	25.87	26.77	27.33	22.40	22.51	22.78
1639.2	25.64	26.37	26.65	22.30	22.38	22.45
1699.5	25.68	26.15	26.21	23.00	22.81	22.51
1739.8	25.89	26.11	26.03	23.64	23.09	22.47
1800.1	26.11	26.03	25.68	24.73	23.60	22.61

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	50.62	53.11	48.82
50.3	80.3	35.48	35.60	35.64
90.5	120.5	30.72	30.80	30.90
130.8	160.8	27.91	27.95	28.00
171.0	201.0	25.92	26.00	26.04
211.2	241.2	24.50	24.62	24.67
251.4	281.4	23.42	23.59	23.64
291.7	321.7	22.67	22.72	22.79
331.9	361.9	22.06	22.21	22.28
372.1	402.1	21.63	21.86	21.99
412.3	442.3	21.23	21.51	21.59
452.6	482.6	20.68	20.87	21.04
492.8	522.8	20.30	20.57	20.84
533.0	563.0	20.22	20.61	20.93
573.2	603.2	20.23	20.81	21.14
613.5	643.5	20.12	20.70	21.03
653.7	683.7	19.41	19.81	20.01
693.9	723.9	18.44	18.56	18.59
734.1	764.1	17.40	17.34	17.24
794.5	824.5	16.03	15.99	15.86
834.7	864.7	15.51	15.51	15.40
895.0	925.0	15.06	15.06	15.10
935.3	965.3	14.94	15.09	15.19
995.6	1025.6	14.80	14.96	15.09
1035.8	1065.8	14.85	14.87	14.91
1096.2	1126.2	15.42	15.19	15.02
1136.4	1166.4	15.82	15.63	15.32
1196.7	1226.7	16.39	16.30	15.99
1237.0	1267.0	16.50	16.51	16.25
1297.3	1327.3	16.03	16.05	15.88
1337.5	1367.5	15.33	15.25	15.04
1397.9	1427.9	14.02	13.75	13.44
1438.1	1468.1	13.14	12.73	12.36
1498.4	1528.4	11.81	11.25	10.79
1538.6	1568.6	10.82	10.15	9.68
1599.0	1629.0	9.21	8.65	8.28
1639.2	1669.2	8.32	7.79	7.54
1699.5	1729.5	7.23	6.81	6.59
1739.8	1769.8	6.69	6.30	6.09
1800.1	1830.1	6.04	5.67	5.47

Frequency Mixer

ADE-12MH

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1200.5MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
10.1	40.1	1.52	1.41	1.34	10.1	1.04	1.52	2.26	10.0	2.24	1.75	1.50
50.3	80.3	1.52	1.40	1.33	50.3	1.09	1.66	2.49	50.3	2.18	1.79	1.55
90.5	120.5	1.53	1.40	1.32	90.5	1.06	1.60	2.36	90.7	2.23	1.83	1.61
130.8	160.8	1.52	1.39	1.31	130.8	1.11	1.61	2.39	110.8	2.32	1.88	1.64
171.0	201.0	1.51	1.38	1.31	171.0	1.12	1.61	2.36	151.2	2.25	1.83	1.61
211.2	241.2	1.50	1.37	1.31	211.2	1.13	1.60	2.36	171.4	2.15	1.76	1.54
251.4	281.4	1.49	1.37	1.32	251.4	1.15	1.63	2.40	211.7	2.36	1.92	1.70
291.7	321.7	1.48	1.37	1.33	291.7	1.14	1.60	2.34	231.9	2.27	1.84	1.61
331.9	361.9	1.47	1.38	1.34	331.9	1.14	1.63	2.39	272.2	2.25	1.83	1.63
372.1	402.1	1.47	1.38	1.34	372.1	1.14	1.63	2.37	292.4	2.28	1.85	1.64
412.3	442.3	1.46	1.39	1.34	412.3	1.13	1.65	2.40	332.7	2.25	1.83	1.61
452.6	482.6	1.44	1.38	1.34	452.6	1.12	1.67	2.42	352.9	2.22	1.81	1.61
492.8	522.8	1.41	1.35	1.31	492.8	1.12	1.67	2.41	393.2	2.25	1.84	1.64
533.0	563.0	1.38	1.32	1.29	533.0	1.12	1.70	2.45	413.4	2.31	1.88	1.66
573.2	603.2	1.35	1.31	1.29	573.2	1.13	1.71	2.45	453.7	2.14	1.75	1.56
613.5	643.5	1.33	1.29	1.28	613.5	1.15	1.75	2.49	473.9	2.20	1.82	1.63
653.7	683.7	1.32	1.29	1.28	653.7	1.16	1.76	2.49	514.2	2.23	1.84	1.65
693.9	723.9	1.32	1.29	1.29	693.9	1.18	1.78	2.51	534.4	2.18	1.81	1.62
734.1	764.1	1.33	1.30	1.29	734.1	1.21	1.82	2.55	574.7	2.19	1.84	1.67
794.5	824.5	1.31	1.27	1.26	794.5	1.24	1.85	2.57	594.9	2.18	1.84	1.67
834.7	864.7	1.27	1.24	1.23	834.7	1.28	1.89	2.61	635.3	2.10	1.80	1.64
895.0	925.0	1.18	1.15	1.14	895.0	1.30	1.90	2.61	655.4	2.07	1.79	1.65
935.3	965.3	1.12	1.07	1.08	935.3	1.33	1.93	2.64	695.8	2.15	1.88	1.72
995.6	1025.6	1.10	1.04	1.08	995.6	1.37	1.95	2.64	715.9	2.09	1.83	1.68
1035.8	1065.8	1.16	1.12	1.14	1035.8	1.43	2.02	2.71	756.3	2.02	1.81	1.70
1096.2	1126.2	1.29	1.26	1.27	1096.2	1.47	2.04	2.70	776.4	2.04	1.83	1.72
1136.4	1166.4	1.41	1.38	1.38	1136.4	1.53	2.11	2.79	816.8	1.95	1.78	1.68
1196.7	1226.7	1.63	1.62	1.61	1196.7	1.57	2.13	2.77	836.9	1.94	1.79	1.71
1237.0	1267.0	1.81	1.80	1.79	1237.0	1.62	2.20	2.86	877.3	1.94	1.81	1.73
1297.3	1327.3	2.06	2.08	2.07	1297.3	1.65	2.20	2.83	897.5	1.91	1.78	1.71
1337.5	1367.5	2.21	2.25	2.26	1337.5	1.70	2.26	2.91	937.8	1.78	1.70	1.66
1397.9	1427.9	2.34	2.39	2.43	1397.9	1.72	2.25	2.87	958.0	1.83	1.76	1.73
1438.1	1468.1	2.43	2.47	2.51	1438.1	1.75	2.28	2.91	998.3	1.80	1.72	1.69
1498.4	1528.4	2.57	2.59	2.61	1498.4	1.73	2.24	2.84	1018.5	1.70	1.65	1.64
1538.6	1568.6	2.67	2.69	2.71	1538.6	1.74	2.25	2.86	1058.8	1.76	1.73	1.74
1599.0	1629.0	2.77	2.76	2.76	1599.0	1.70	2.18	2.78	1079.0	1.75	1.71	1.71
1639.2	1669.2	2.77	2.74	2.73	1639.2	1.74	2.23	2.84	1119.3	1.59	1.58	1.60
1699.5	1729.5	2.70	2.67	2.65	1699.5	1.81	2.26	2.85	1139.5	1.60	1.62	1.66
1739.8	1769.8	2.64	2.60	2.57	1739.8	1.92	2.35	2.93	1179.8	1.68	1.68	1.70
1800.1	1830.1	2.53	2.48	2.45	1800.1	2.03	2.40	2.93	1200.0	1.74	1.80	1.88

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	22	11	29	22	30	22	45	41	70
1	-	14	+0	36	12	32	30	43	50	37	62	54
2	97	65	57	61	57	66	58	67	64	65	59	78
3	>100	67	70	66	63	68	59	69	75	85	84	84
4	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
5	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
6	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
7	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
8	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
9	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
10	>100	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 600.1 MHz; -6.00 dBm.
LO IN: 630.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -12.54 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	21	33	22	42	33	41	34	58	62	73
1	-	15	+0	32	12	33	30	48	57	43	68	61
2	81	54	51	62	45	53	46	54	54	61	51	66
3	>100	44	45	53	49	48	40	54	63	59	60	54
4	>100	78	67	60	66	60	72	59	61	74	79	71
5	>100	71	73	71	57	60	55	64	54	58	69	75
6	>100	95	96	85	74	74	73	75	67	71	77	80
7	>100	91	94	>97	84	76	77	77	75	70	73	82
8	>100	96	92	97	97	95	92	81	82	82	79	76
9	>100	>97	>97	96	>97	>97	>97	89	81	83	82	80
10	>100	>97	>97	>97	>97	>97	>97	96	89	87	90	88
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 600.1 MHz; 4.00 dBm.
LO IN: 630.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -2.57 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.



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