

Frequency Mixer

ADE-1H

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+14	+17	+20
0.5	30.5	6.42	5.92	5.58
1.0	31.0	6.04	5.41	5.24
2.0	32.0	5.72	5.22	4.89
5.0	35.0	5.38	4.88	4.54
10.0	40.0	5.21	4.71	4.54
50.5	80.5	5.65	5.26	5.04
70.7	100.7	5.66	5.25	5.05
90.9	120.9	5.79	5.29	5.08
111.1	141.1	5.70	5.27	5.10
151.5	181.5	5.73	5.37	5.18
171.7	201.7	5.73	5.39	5.23
191.9	221.9	5.72	5.39	5.23
212.1	242.1	5.76	5.42	5.25
232.3	262.3	5.79	5.47	5.30
252.5	282.5	5.88	5.54	5.34
272.8	302.8	6.01	5.66	5.40
293.0	323.0	6.03	5.69	5.44
333.4	363.4	6.08	5.77	5.55
353.6	383.6	6.10	5.77	5.55
373.8	403.8	6.21	5.81	5.56
394.0	424.0	6.32	5.85	5.58
434.4	464.4	6.72	6.09	5.67
454.6	484.6	6.97	6.31	5.80
495.0	525.0	7.27	6.65	5.99
515.2	545.2	7.56	6.89	6.19
555.6	585.6	7.92	7.13	6.31
575.8	605.8	8.13	7.25	6.37
636.4	666.4	8.31	7.29	6.52
676.8	706.8	8.21	7.24	6.54
697.0	727.0	8.26	7.28	6.66
737.4	767.4	8.43	7.48	6.95
757.7	787.7	8.49	7.57	7.08
798.1	828.1	8.67	7.84	7.45
858.7	888.7	9.01	8.35	8.12
878.9	908.9	9.25	8.61	8.45
919.3	949.3	9.98	9.21	9.06
939.5	969.5	10.51	9.49	9.31
979.9	1009.9	11.56	10.20	9.95
1000.1	1030.1	12.15	10.59	10.27

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	30.31	34.08	34.39
30.3	60.3	26.57	31.00	33.48
50.5	80.5	29.61	31.20	33.91
70.7	100.7	30.01	31.54	33.68
90.9	120.9	25.66	30.60	30.33
111.1	141.1	32.43	31.33	27.06
151.5	181.5	27.21	27.91	24.84
171.7	201.7	29.24	26.22	24.56
191.9	221.9	27.50	24.57	24.05
212.1	242.1	26.22	22.87	22.58
232.3	262.3	25.48	22.73	22.64
252.5	282.5	23.90	22.61	23.07
272.8	302.8	23.22	22.33	23.27
293.0	323.0	23.15	22.30	23.67
313.2	343.2	23.50	22.59	23.61
333.4	363.4	23.14	22.42	23.38
353.6	383.6	24.49	23.08	24.37
373.8	403.8	23.56	22.55	23.72
394.0	424.0	21.61	21.91	22.97
434.4	464.4	17.00	19.54	22.43
454.6	484.6	16.01	18.13	22.02
495.0	525.0	15.23	16.94	20.77
515.2	545.2	14.75	16.50	20.11
555.6	585.6	15.14	17.28	21.01
575.8	605.8	15.16	17.31	21.04
616.2	646.2	15.65	17.96	22.23
636.4	666.4	16.39	18.60	22.67
676.8	706.8	18.27	20.19	25.42
697.0	727.0	19.68	20.33	23.35
737.4	767.4	22.26	20.44	22.40
757.7	787.7	22.58	20.56	21.91
798.1	828.1	21.08	20.28	20.90
818.3	848.3	19.94	19.90	20.13
858.7	888.7	19.50	21.04	21.71
878.9	908.9	18.81	22.04	22.88
919.3	949.3	18.22	24.01	26.83
939.5	969.5	18.23	23.79	25.91
979.9	1009.9	18.72	24.02	27.45
1000.1	1030.1	18.50	24.16	26.92

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	1.11	0.67	0.44
30.3	60.3	0.88	0.63	0.47
50.5	80.5	1.00	0.69	0.44
70.7	100.7	1.03	0.63	0.43
90.9	120.9	0.96	0.61	0.39
111.1	141.1	1.02	0.58	0.36
151.5	181.5	1.01	0.57	0.37
171.7	201.7	0.94	0.52	0.34
191.9	221.9	0.97	0.49	0.35
212.1	242.1	0.95	0.52	0.37
232.3	262.3	0.95	0.51	0.36
252.5	282.5	0.89	0.48	0.33
272.8	302.8	0.79	0.44	0.35
293.0	323.0	0.90	0.48	0.37
313.2	343.2	0.99	0.50	0.39
333.4	363.4	1.19	0.62	0.48
353.6	383.6	1.27	0.71	0.55
373.8	403.8	1.40	0.81	0.61
394.0	424.0	1.45	0.94	0.71
434.4	464.4	1.52	1.21	0.89
454.6	484.6	1.44	1.17	0.95
495.0	525.0	1.38	1.16	1.08
515.2	545.2	1.33	1.12	1.12
555.6	585.6	1.14	1.08	1.16
575.8	605.8	1.02	1.06	1.17
616.2	646.2	1.08	1.18	1.24
636.4	666.4	1.07	1.16	1.19
676.8	706.8	1.15	1.18	1.16
697.0	727.0	1.24	1.23	1.14
737.4	767.4	1.32	1.23	1.09
757.7	787.7	1.37	1.23	1.08
798.1	828.1	1.48	1.17	0.98
818.3	848.3	1.56	1.12	0.90
858.7	888.7	1.66	0.98	0.71
878.9	908.9	1.77	0.96	0.63
919.3	949.3	1.73	0.95	0.59
939.5	969.5	1.67	0.96	0.63
979.9	1009.9	1.67	1.04	0.69
1000.1	1030.1	1.90	1.14	0.78

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Frequency Mixer

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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)
		+17			+17			+17
240.0	10.1	5.57	10.0	20.1	5.08	490.0	10.1	6.24
234.1	16.0	5.56	22.3	32.4	5.15	477.7	22.4	6.12
228.2	21.9	5.45	34.6	44.7	5.19	465.4	34.7	6.06
222.3	27.8	5.49	46.9	57.0	5.16	453.1	47.0	6.06
216.4	33.7	5.44	59.2	69.3	5.13	440.8	59.3	6.07
210.5	39.6	5.40	71.5	81.6	5.21	428.5	71.6	5.94
204.6	45.5	5.47	83.8	93.9	5.23	416.2	83.9	5.89
198.7	51.4	5.37	96.2	106.3	5.24	403.8	96.3	5.82
192.8	57.3	5.37	108.5	118.6	5.25	391.5	108.6	5.78
186.9	63.2	5.35	120.8	130.9	5.21	379.2	120.9	5.81
181.0	69.1	5.31	133.1	143.2	5.23	366.9	133.2	5.83
175.1	75.0	5.38	145.4	155.5	5.31	354.6	145.5	5.80
169.2	80.9	5.31	157.7	167.8	5.37	342.3	157.8	5.81
163.3	86.8	5.28	170.0	180.1	5.38	330.0	170.1	5.83
157.4	92.7	5.31	182.3	192.4	5.37	317.7	182.4	5.86
151.5	98.6	5.24	194.6	204.7	5.36	305.4	194.7	5.89
145.6	104.5	5.27	206.9	217.0	5.39	293.1	207.0	5.88
139.7	110.4	5.26	219.2	229.3	5.43	280.8	219.3	5.89
133.8	116.3	5.23	231.5	241.6	5.43	268.5	231.6	5.96
127.9	122.2	5.22	243.8	253.9	5.43	256.2	243.9	5.98
122.1	128.0	5.20	256.2	266.3	5.48	243.8	256.3	6.04
116.2	133.9	5.23	268.5	278.6	5.47	231.5	268.6	6.06
110.3	139.8	5.26	280.8	290.9	5.53	219.2	280.9	6.03
104.4	145.7	5.25	293.1	303.2	5.58	206.9	293.2	6.04
98.5	151.6	5.27	305.4	315.5	5.60	194.6	305.5	6.04
92.6	157.5	5.26	317.7	327.8	5.68	182.3	317.8	6.04
86.7	163.4	5.28	330.0	340.1	5.69	170.0	330.1	6.07
80.8	169.3	5.30	342.3	352.4	5.69	157.7	342.4	6.07
74.9	175.2	5.30	354.6	364.7	5.75	145.4	354.7	6.11
69.0	181.1	5.31	366.9	377.0	5.77	133.1	367.0	6.15
63.1	187.0	5.29	379.2	389.3	5.75	120.8	379.3	6.12
57.2	192.9	5.29	391.5	401.6	5.68	108.5	391.6	6.13
51.3	198.8	5.32	403.8	413.9	5.59	96.2	403.9	6.17
45.4	204.7	5.35	416.2	426.3	5.58	83.8	416.3	6.15
39.5	210.6	5.38	428.5	438.6	5.61	71.5	428.6	6.15
33.6	216.5	5.38	440.8	450.9	5.65	59.2	440.9	6.19
27.7	222.4	5.39	453.1	463.2	5.68	46.9	453.2	6.24
21.8	228.3	5.41	465.4	475.5	5.66	34.6	465.5	6.34
15.9	234.2	5.41	477.7	487.8	5.64	22.3	477.8	6.43
10.0	240.1	5.33	490.0	500.1	5.66	10.0	490.1	6.39

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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
0.5	64.9	65.8	67.7	55.8	53.7	52.5
1.0	64.6	65.8	67.6	55.5	53.4	52.3
2.0	64.3	65.7	67.6	54.6	52.7	51.6
5.0	63.5	64.9	66.8	53.7	51.9	50.8
10.0	62.2	63.5	65.5	52.6	50.8	49.7
50.5	57.57	59.75	61.64	50.08	48.08	46.97
70.7	54.74	56.79	59.19	46.89	45.21	43.77
90.9	52.83	54.92	57.38	44.27	42.75	41.63
111.1	51.13	54.34	57.22	42.53	40.68	39.98
151.5	49.33	52.68	55.54	39.43	38.12	37.86
171.7	48.97	52.44	55.37	37.89	37.20	37.14
191.9	47.79	51.23	54.58	36.94	36.61	36.52
212.1	47.35	50.39	52.76	36.11	35.86	35.87
232.3	47.16	50.51	53.04	35.89	35.86	35.55
252.5	46.82	50.30	52.64	35.79	35.82	35.42
272.8	46.71	49.66	51.13	34.38	34.63	34.60
293.0	45.22	48.17	49.30	34.75	34.72	34.27
333.4	42.19	44.73	46.11	33.33	33.16	32.60
353.6	40.58	42.54	43.71	33.80	33.19	32.25
373.8	39.61	41.57	42.84	33.53	32.60	31.59
394.0	38.61	39.85	40.08	32.74	31.60	30.50
434.4	38.02	39.20	39.28	33.35	30.16	28.40
454.6	37.21	38.51	38.69	33.49	29.60	27.61
495.0	36.36	37.83	37.94	34.39	29.49	25.91
515.2	35.83	37.45	38.08	34.31	29.96	25.78
555.6	35.08	36.32	37.07	34.11	30.56	26.11
575.8	34.57	35.30	35.23	33.86	30.24	25.66
636.4	34.25	35.30	36.42	34.37	29.33	24.62
676.8	34.52	35.64	36.23	34.10	29.04	23.94
697.0	35.02	35.16	34.54	32.24	27.92	23.04
737.4	36.46	35.91	34.13	28.69	26.61	21.97
757.7	36.98	36.35	34.33	26.64	25.21	21.26
798.1	41.87	36.23	31.81	23.22	22.92	19.77
858.7	39.21	32.46	27.79	18.85	20.11	18.38
878.9	33.89	30.19	25.91	17.59	19.25	17.82
919.3	28.18	26.99	24.01	15.45	17.57	17.13
939.5	26.39	26.22	23.77	14.63	16.91	16.91
979.9	24.02	23.82	21.99	13.65	15.65	16.24
1000.1	23.01	22.83	21.15	13.28	15.11	15.92

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	44.72	44.66	43.30
30.3	60.3	35.84	35.38	35.13
50.5	80.5	31.56	31.76	31.65
70.7	100.7	29.11	29.16	29.40
90.9	120.9	27.36	27.66	27.82
111.1	141.1	26.11	26.53	26.61
151.5	181.5	24.57	24.89	25.11
171.7	201.7	24.24	24.64	24.91
191.9	221.9	23.93	24.44	24.79
212.1	242.1	23.45	24.11	24.46
232.3	262.3	23.49	24.05	24.48
252.5	282.5	23.51	24.05	24.46
272.8	302.8	23.56	24.21	24.64
293.0	323.0	23.97	24.76	25.29
313.2	343.2	23.97	24.75	25.39
333.4	363.4	23.89	24.69	25.47
353.6	383.6	23.03	23.73	24.40
373.8	403.8	22.00	22.63	23.22
394.0	424.0	21.00	21.43	21.91
434.4	464.4	19.15	19.30	19.47
454.6	484.6	18.57	18.76	18.94
495.0	525.0	17.95	18.02	18.32
515.2	545.2	17.92	17.82	18.08
555.6	585.6	18.01	17.87	18.22
575.8	605.8	18.13	18.01	18.32
616.2	646.2	17.90	17.68	17.40
636.4	666.4	17.47	17.23	16.75
676.8	706.8	15.95	15.46	14.90
697.0	727.0	15.03	14.63	14.22
737.4	767.4	13.27	13.08	12.78
757.7	787.7	12.45	12.31	12.00
798.1	828.1	11.03	10.89	10.63
818.3	848.3	10.40	10.26	10.05
858.7	888.7	9.12	8.92	8.61
878.9	908.9	8.55	8.43	8.11
919.3	949.3	7.39	7.32	7.04
939.5	969.5	6.89	6.77	6.51
979.9	1009.9	6.20	5.91	5.72
1000.1	1030.1	5.90	5.53	5.40

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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=500.1MHz (:1)			
		@LO (dBm)				@LO (dBm)					@LO (dBm)			
		+14	+17	+20		+14	+17	+20	+14		+17	+20		
0.5	30.5	1.74	1.65	1.61	0.5	1.09	1.54	2.27	1.0	3.86	3.16	2.43		
1.0	31.0	1.54	1.43	1.37	1.0	1.10	1.54	2.27	5.0	3.79	3.06	2.35		
2.0	32.0	1.50	1.34	1.26	2.0	1.12	1.55	2.23	10.0	3.79	3.01	2.37		
5.0	35.0	1.51	1.32	1.22	5.0	1.11	1.55	2.25	22.6	3.14	2.41	1.83		
10.0	40.0	1.50	1.30	1.21	10.0	1.11	1.54	2.25	35.1	3.06	2.35	1.79		
50.5	80.5	1.49	1.29	1.18	50.5	1.13	1.49	2.28	47.7	3.07	2.37	1.80		
70.7	100.7	1.45	1.28	1.17	70.7	1.12	1.44	2.14	60.3	3.07	2.39	1.82		
90.9	120.9	1.49	1.28	1.16	90.9	1.11	1.43	2.10	72.8	3.08	2.39	1.83		
111.1	141.1	1.43	1.24	1.13	111.1	1.12	1.45	2.18	85.4	3.08	2.39	1.83		
151.5	181.5	1.43	1.25	1.14	151.5	1.11	1.49	2.22	97.9	3.06	2.39	1.83		
171.7	201.7	1.38	1.21	1.12	171.7	1.11	1.46	2.15	110.5	3.06	2.40	1.84		
191.9	221.9	1.34	1.18	1.10	191.9	1.14	1.48	2.17	123.1	3.07	2.41	1.85		
212.1	242.1	1.35	1.19	1.11	212.1	1.13	1.53	2.25	135.6	3.08	2.40	1.85		
232.3	262.3	1.31	1.17	1.10	232.3	1.13	1.56	2.29	148.2	3.01	2.37	1.84		
252.5	282.5	1.29	1.16	1.09	252.5	1.17	1.56	2.26	160.8	2.95	2.33	1.83		
272.8	302.8	1.29	1.16	1.08	272.8	1.18	1.56	2.23	173.3	2.95	2.33	1.82		
293.0	323.0	1.25	1.12	1.06	293.0	1.19	1.59	2.27	185.9	2.96	2.34	1.83		
333.4	363.4	1.18	1.08	1.05	333.4	1.23	1.67	2.39	198.5	2.95	2.34	1.85		
353.6	383.6	1.16	1.07	1.08	353.6	1.26	1.67	2.35	211.0	2.95	2.35	1.86		
373.8	403.8	1.16	1.07	1.09	373.8	1.30	1.68	2.34	223.6	2.95	2.35	1.86		
394.0	424.0	1.16	1.09	1.11	394.0	1.35	1.72	2.39	236.2	2.93	2.33	1.85		
434.4	464.4	1.24	1.11	1.09	434.4	1.45	1.83	2.48	248.7	2.90	2.32	1.85		
454.6	484.6	1.28	1.14	1.07	454.6	1.47	1.87	2.49	273.8	2.89	2.30	1.84		
495.0	525.0	1.33	1.19	1.08	495.0	1.48	1.96	2.62	286.4	2.82	2.27	1.82		
515.2	545.2	1.39	1.25	1.14	515.2	1.50	2.01	2.69	299.0	2.76	2.22	1.80		
555.6	585.6	1.49	1.36	1.24	555.6	1.53	2.02	2.70	311.5	2.74	2.19	1.77		
575.8	605.8	1.57	1.43	1.30	575.8	1.56	2.05	2.73	324.1	2.73	2.19	1.78		
616.2	646.2	1.70	1.54	1.44	616.2	1.62	2.11	2.81	336.7	2.72	2.20	1.79		
636.4	666.4	1.74	1.60	1.51	636.4	1.65	2.11	2.79	349.2	2.74	2.20	1.79		
676.8	706.8	1.87	1.75	1.70	676.8	1.71	2.16	2.83	361.8	2.72	2.18	1.77		
697.0	727.0	1.97	1.86	1.83	697.0	1.76	2.20	2.87	374.4	2.67	2.15	1.76		
737.4	767.4	2.20	2.11	2.07	737.4	1.85	2.24	2.88	386.9	2.63	2.12	1.74		
757.7	787.7	2.29	2.20	2.15	757.7	1.91	2.27	2.91	399.5	2.64	2.10	1.72		
798.1	828.1	2.42	2.32	2.27	798.1	2.08	2.41	3.03	412.1	2.63	2.11	1.73		
818.3	848.3	2.48	2.37	2.32	818.3	2.20	2.48	3.07	424.6	2.57	2.08	1.71		
858.7	888.7	2.56	2.43	2.37	858.7	2.48	2.67	3.19	437.2	2.55	2.05	1.69		
878.9	908.9	2.59	2.46	2.40	878.9	2.65	2.78	3.26	449.7	2.58	2.05	1.69		
919.3	949.3	2.71	2.52	2.46	919.3	2.97	2.99	3.38	462.3	2.58	2.08	1.71		
939.5	969.5	2.72	2.50	2.42	939.5	3.12	3.08	3.43	474.9	2.58	2.07	1.71		
979.9	1009.9	2.80	2.50	2.41	979.9	3.27	3.24	3.52	487.4	2.60	2.07	1.70		
1000.1	1030.1	2.83	2.49	2.39	1000.1	3.27	3.26	3.53	500.0	2.46	2.08	1.87		

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	39	14	33	16	34	24	49	38	53
1	-	18	+0	27	13	29	26	34	34	51	32	45
2	98	67	49	66	49	67	45	65	52	63	56	73
3	>100	64	53	69	52	66	48	84	53	80	56	68
4	>100	86	75	80	72	75	67	76	66	79	76	83
5	>100	92	86	84	80	80	75	79	72	80	79	86
6	>100	>93	91	>93	85	93	83	93	87	91	89	>93
7	>100	>93	>93	>93	>93	>93	>93	86	91	>93	>93	>93
8	>100	>93	>93	>93	>93	>93	>93	>93	81	>93	>93	>93
9	>100	>93	>93	>93	>93	>93	>93	>93	93	77	>93	>93
10	>100	>93	>93	>93	>93	>93	>93	>93	>93	>93	80	90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -1.00 dBm.
LO IN: 280.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -6.92 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	20	50	26	45	30	47	39	68	47	73
1	-	19	+0	28	13	34	25	38	39	52	44	62
2	79	61	41	58	43	59	40	56	44	57	49	65
3	>100	44	40	48	46	51	39	45	55	51	47	63
4	>100	73	64	72	65	70	61	82	57	69	63	66
5	>100	83	59	64	50	70	47	57	45	62	54	69
6	>100	78	77	83	68	87	72	74	65	74	63	75
7	>100	78	76	76	61	72	62	76	61	67	58	69
8	>100	88	80	101	82	83	71	85	69	77	69	80
9	>100	94	92	102	82	86	70	77	68	76	67	73
10	>100	99	102	101	95	103	90	84	78	84	78	81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; 9.00 dBm.
LO IN: 280.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; 3.12 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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