

# Frequency Mixer

# ADE-10H+

## 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=+14dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+14	+17	+20			+14	+17	+20			+14	+17	+20
160.1	190.1	25.06	11.14	7.61	160.1	190.1	3.93	16.84	22.73	160.1	190.1	-12.20	-1.45	0.13
220.1	250.1	12.76	7.92	6.91	220.1	250.1	13.86	21.35	30.50	220.1	250.1	-2.46	0.09	0.08
280.1	310.1	8.88	7.07	6.74	280.1	310.1	20.09	27.00	30.60	280.1	310.1	0.08	0.21	0.07
340.1	370.1	8.01	6.93	6.65	340.1	370.1	21.94	28.10	31.19	340.1	370.1	0.61	0.19	0.07
400.1	430.1	7.34	6.78	6.54	400.1	430.1	25.19	28.33	30.03	400.1	430.1	0.59	0.19	0.08
460.1	490.1	7.19	6.75	6.54	460.1	490.1	30.46	30.61	31.74	460.1	490.1	0.57	0.16	0.10
520.1	550.1	7.21	6.74	6.50	520.1	550.1	28.61	30.31	30.37	520.1	550.1	0.58	0.22	0.11
580.1	610.1	7.22	6.72	6.41	580.1	610.1	26.23	25.79	28.03	580.1	610.1	0.44	0.24	0.17
640.1	670.1	7.17	6.82	6.50	640.1	670.1	26.79	26.45	30.85	640.1	670.1	0.56	0.20	0.18
700.1	730.1	7.10	6.77	6.50	700.1	730.1	26.66	27.33	26.22	700.1	730.1	0.74	0.30	0.23
740.1	770.1	7.12	6.78	6.50	740.1	770.1	23.90	28.75	29.16	740.1	770.1	0.84	0.35	0.27
800.1	830.1	7.17	6.70	6.34	800.1	830.1	22.12	37.50	29.46	800.1	830.1	1.15	0.69	0.52
840.1	870.1	7.29	6.65	6.31	840.1	870.1	21.04	28.76	32.94	840.1	870.1	1.13	0.83	0.63
900.1	930.1	7.80	6.87	6.41	900.1	930.1	23.86	23.87	26.12	900.1	930.1	0.90	0.89	0.75
940.1	970.1	8.17	7.15	6.54	940.1	970.1	19.06	24.65	24.48	940.1	970.1	0.74	0.93	0.89
1000.1	1030.1	8.53	7.51	6.75	1000.1	1030.1	16.82	24.13	24.47	1000.1	1030.1	0.65	0.87	0.99
1040.1	1070.1	8.69	7.70	6.85	1040.1	1070.1	16.22	19.57	25.28	1040.1	1070.1	0.58	0.76	1.04
1100.1	1130.1	8.91	8.04	7.06	1100.1	1130.1	16.14	17.45	22.81	1100.1	1130.1	0.47	0.64	1.05
1140.1	1170.1	8.88	8.05	7.10	1140.1	1170.1	16.50	17.57	21.36	1140.1	1170.1	0.55	0.67	1.06
1200.1	1230.1	8.75	7.95	7.12	1200.1	1230.1	17.17	18.45	20.43	1200.1	1230.1	0.78	0.88	1.16
1240.1	1270.1	8.66	7.87	7.03	1240.1	1270.1	16.78	17.60	19.42	1240.1	1270.1	0.88	0.90	1.25
1300.1	1330.1	8.45	7.65	6.74	1300.1	1330.1	15.71	16.44	18.89	1300.1	1330.1	1.27	1.17	1.51
1340.1	1370.1	8.12	7.29	6.37	1340.1	1370.1	15.63	17.47	19.82	1340.1	1370.1	1.50	1.42	1.69
1400.1	1430.1	7.81	6.88	6.23	1400.1	1430.1	16.91	21.08	21.15	1400.1	1430.1	1.95	1.85	1.74
1440.1	1470.1	7.68	6.74	6.26	1440.1	1470.1	19.82	20.66	22.23	1440.1	1470.1	2.03	1.83	1.58
1500.1	1530.1	7.45	6.74	6.43	1500.1	1530.1	21.08	21.64	23.27	1500.1	1530.1	2.08	1.65	1.36
1540.1	1570.1	7.38	6.82	6.59	1540.1	1570.1	20.78	22.43	23.62	1540.1	1570.1	2.14	1.51	1.20
1600.1	1630.1	7.48	7.01	6.88	1600.1	1630.1	22.03	23.42	23.77	1600.1	1630.1	2.04	1.25	0.96
1640.1	1670.1	7.56	7.15	7.01	1640.1	1670.1	22.15	23.94	24.12	1640.1	1670.1	1.95	1.08	0.81
1700.1	1730.1	7.75	7.37	7.26	1700.1	1730.1	20.20	24.13	25.28	1700.1	1730.1	2.06	0.99	0.73
1740.1	1770.1	7.86	7.45	7.38	1740.1	1770.1	19.34	24.35	25.40	1740.1	1770.1	2.21	1.04	0.71
1800.1	1830.1	7.96	7.57	7.53	1800.1	1830.1	18.45	24.09	25.79	1800.1	1830.1	2.40	1.11	0.72
1840.1	1870.1	8.13	7.68	7.57	1840.1	1870.1	17.95	23.82	26.22	1840.1	1870.1	2.62	1.31	0.85
1900.1	1930.1	8.34	7.81	7.68	1900.1	1930.1	17.35	23.71	25.67	1900.1	1930.1	2.92	1.55	0.98
1940.1	1970.1	8.62	7.96	7.79	1940.1	1970.1	16.85	22.36	25.72	1940.1	1970.1	3.13	1.77	1.12
2000.1	2030.1	8.96	8.29	8.13	2000.1	2030.1	16.51	22.23	25.38	2000.1	2030.1	3.25	1.83	1.22
2040.1	2070.1	9.48	8.70	8.42	2040.1	2070.1	16.23	21.41	26.03	2040.1	2070.1	3.34	1.90	1.25
2100.1	2130.1	9.87	9.15	8.93	2100.1	2130.1	16.07	21.23	26.26	2100.1	2130.1	3.27	1.73	1.19
2140.1	2170.1	10.40	9.55	9.28	2140.1	2170.1	16.40	19.79	25.08	2140.1	2170.1	3.34	1.74	1.17
2200.1	2230.1	10.80	10.05	9.80	2200.1	2230.1	16.82	20.08	23.90	2200.1	2230.1	3.25	1.50	0.98



# Frequency Mixer

# ADE-10H+

## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=700.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=400.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
300.0	400.1	5.91	10.0	410.1	6.73	500.0	500.1	5.44
284.7	415.4	6.01	22.6	422.7	6.72	487.4	512.7	5.51
269.5	430.6	6.05	35.1	435.2	6.74	474.9	525.2	5.72
254.2	445.9	6.14	47.7	447.8	6.76	462.3	537.8	5.85
238.9	461.2	6.17	60.3	460.4	6.86	449.7	550.4	5.93
223.7	476.4	6.24	72.8	472.9	6.86	437.2	562.9	5.99
208.4	491.7	6.22	85.4	485.5	6.86	424.6	575.5	6.02
193.2	506.9	6.29	97.9	498.0	6.88	412.1	588.0	6.06
177.9	522.2	6.31	110.5	510.6	6.84	399.5	600.6	6.07
162.6	537.5	6.36	123.1	523.2	6.90	386.9	613.2	6.10
147.4	552.7	6.39	135.6	535.7	6.96	374.4	625.7	6.16
132.1	568.0	6.38	148.2	548.3	6.96	361.8	638.3	6.14
116.8	583.3	6.39	160.8	560.9	7.04	349.2	650.9	6.19
101.6	598.5	6.41	173.3	573.4	7.06	336.7	663.4	6.29
86.3	613.8	6.46	185.9	586.0	7.07	324.1	676.0	6.29
71.1	629.0	6.43	198.5	598.6	7.17	311.5	688.6	6.30
55.8	644.3	6.56	211.0	611.1	7.17	299.0	701.1	6.32
40.5	659.6	6.63	223.6	623.7	7.19	286.4	713.7	6.36
25.3	674.8	6.69	236.2	636.3	7.30	273.8	726.3	6.42
10.0	690.1	6.75	248.7	648.8	7.33	261.3	738.8	6.43
10.0	710.1	6.77	261.3	661.4	7.43	248.7	751.4	6.46
24.5	724.6	6.77	273.8	673.9	7.49	236.2	763.9	6.53
39.0	739.1	6.79	286.4	686.5	7.43	223.6	776.5	6.51
53.5	753.6	6.82	299.0	699.1	7.48	211.0	789.1	6.52
68.0	768.1	6.77	311.5	711.6	7.49	198.5	801.6	6.56
82.5	782.6	6.85	324.1	724.2	7.46	185.9	814.2	6.52
97.0	797.1	6.78	336.7	736.8	7.53	173.3	826.8	6.54
111.5	811.6	6.74	349.2	749.3	7.47	160.8	839.3	6.60
126.0	826.1	6.78	361.8	761.9	7.49	148.2	851.9	6.57
140.5	840.6	6.79	374.4	774.5	7.55	135.6	864.5	6.56
155.0	855.1	6.80	386.9	787.0	7.44	123.1	877.0	6.56
169.5	869.6	6.77	399.5	799.6	7.40	110.5	889.6	6.55
184.0	884.1	6.84	412.1	812.2	7.41	97.9	902.2	6.64
198.5	898.6	6.93	424.6	824.7	7.35	85.4	914.7	6.60
213.0	913.1	7.04	437.2	837.3	7.43	72.8	927.3	6.67
227.5	927.6	7.18	449.7	849.8	7.42	60.3	939.8	6.81
242.0	942.1	7.29	462.3	862.4	7.39	47.7	952.4	6.82
256.5	956.6	7.55	474.9	875.0	7.47	35.1	965.0	6.97
285.5	985.6	7.71	487.4	887.5	7.50	22.6	977.5	7.08
300.0	1000.1	7.82	500.0	900.1	7.59	10.0	990.1	7.16

## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
160.1	45.18	44.42	43.34	34.72	35.10	36.81
220.1	44.81	42.46	41.26	30.11	32.39	36.93
280.1	42.54	40.33	39.68	27.03	31.18	34.96
340.1	38.73	38.39	38.69	26.37	30.46	33.64
400.1	36.36	36.73	37.44	25.92	29.36	32.26
460.1	35.07	35.96	36.74	24.70	27.82	30.90
520.1	33.73	35.18	36.29	24.15	27.27	29.95
580.1	32.66	34.17	35.71	23.04	26.48	29.56
640.1	32.30	33.68	34.86	22.22	24.91	27.90
700.1	32.04	33.75	35.00	22.34	24.73	26.89
740.1	31.62	33.34	34.48	22.40	24.77	26.47
800.1	31.12	32.86	34.19	23.15	25.73	27.20
840.1	30.61	32.19	33.39	23.43	26.36	27.83
900.1	30.29	31.80	33.02	22.99	27.74	29.74
940.1	29.85	31.66	33.29	22.20	27.16	29.87
1000.1	29.12	30.44	31.80	22.29	25.72	29.46
1040.1	29.06	30.38	32.05	22.80	25.28	28.75
1100.1	28.99	30.15	31.37	24.15	26.06	28.63
1140.1	29.04	30.41	31.55	25.15	26.59	28.40
1200.1	29.52	31.27	32.81	27.83	28.31	28.84
1240.1	30.17	32.20	34.13	30.35	29.65	28.77
1300.1	31.55	34.33	36.89	33.17	30.28	27.53
1340.1	32.84	36.29	37.42	30.84	28.29	25.04
1400.1	35.21	38.44	36.83	25.91	24.29	21.38
1440.1	37.58	38.85	36.77	23.12	21.72	19.46
1500.1	39.96	40.96	38.99	19.60	18.73	17.27
1540.1	39.62	41.43	39.83	17.54	16.94	15.82
1600.1	35.35	38.77	40.21	14.94	14.88	14.20
1640.1	33.55	36.66	38.48	13.32	13.38	12.87
1700.1	30.45	32.68	33.55	11.69	11.79	11.55
1740.1	29.33	30.93	31.16	10.90	11.01	10.70
1800.1	27.73	28.69	28.46	10.33	9.89	9.77
1840.1	26.97	27.35	26.97	9.92	9.25	9.13
1900.1	25.51	25.47	25.16	9.87	8.63	8.40
1940.1	24.41	24.15	23.60	9.34	8.22	7.77
2000.1	22.96	22.72	22.29	9.26	7.81	7.30
2040.1	21.97	21.72	21.36	8.78	7.56	7.04
2100.1	20.71	20.49	20.33	8.86	7.23	6.76
2140.1	19.56	19.42	19.44	8.07	6.84	6.50
2200.1	18.44	18.40	18.35	7.92	6.53	6.06

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
160.1	190.1	44.46	44.25	42.66
220.1	250.1	37.81	40.36	39.94
280.1	310.1	39.78	38.21	38.15
340.1	370.1	38.56	37.45	37.49
400.1	430.1	37.69	37.51	37.34
460.1	490.1	37.03	37.35	38.03
520.1	550.1	38.47	38.49	37.98
580.1	610.1	37.00	35.66	34.51
640.1	670.1	35.19	35.17	34.60
700.1	730.1	36.72	37.63	39.07
740.1	770.1	39.92	42.01	45.33
800.1	830.1	38.65	38.09	36.44
840.1	870.1	32.74	31.70	31.09
900.1	930.1	28.97	27.01	26.69
940.1	970.1	26.89	25.33	24.50
1000.1	1030.1	24.11	23.21	22.31
1040.1	1070.1	22.90	22.21	21.51
1100.1	1130.1	20.96	20.43	19.95
1140.1	1170.1	19.94	19.51	19.23
1200.1	1230.1	18.86	18.18	17.58
1240.1	1270.1	18.48	17.52	16.91
1300.1	1330.1	18.37	17.27	17.55
1340.1	1370.1	18.68	17.98	19.02
1400.1	1430.1	19.58	19.34	20.28
1440.1	1470.1	20.22	19.93	20.72
1500.1	1530.1	21.19	21.14	21.87
1540.1	1570.1	22.17	22.33	23.15
1600.1	1630.1	23.61	24.12	25.23
1640.1	1670.1	24.56	25.36	26.71
1700.1	1730.1	28.01	28.23	29.02
1740.1	1770.1	32.57	30.97	29.20
1800.1	1830.1	30.27	30.27	26.58
1840.1	1870.1	27.32	26.06	24.26
1900.1	1930.1	23.74	21.32	20.79
1940.1	1970.1	22.03	19.94	19.74
2000.1	2030.1	18.97	17.28	17.29
2040.1	2070.1	17.88	16.23	16.44
2100.1	2130.1	15.55	14.35	14.80
2140.1	2170.1	14.93	13.59	14.24
2200.1	2230.1	13.43	12.44	13.35

# Frequency Mixer

# ADE-10H+

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1000.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
160.1	190.1	5.75	3.79	2.85	160.1	52.65	42.38	16.72	10.1	2.60	1.88	1.49
220.1	250.1	3.86	2.77	2.46	220.1	30.49	11.53	6.30	22.4	2.69	1.92	1.51
280.1	310.1	2.94	2.45	2.32	280.1	16.41	6.37	4.57	34.6	2.58	1.80	1.44
340.1	370.1	2.69	2.37	2.26	340.1	7.05	3.90	3.84	46.9	2.58	1.83	1.48
400.1	430.1	2.48	2.29	2.20	400.1	4.00	3.08	3.48	59.1	2.55	1.83	1.48
460.1	490.1	2.40	2.26	2.18	460.1	3.02	2.69	3.30	71.4	2.52	1.80	1.48
520.1	550.1	2.36	2.23	2.16	520.1	2.35	2.53	3.33	83.6	2.59	1.85	1.50
580.1	610.1	2.28	2.15	2.07	580.1	2.02	2.38	3.23	95.9	2.62	1.86	1.52
640.1	670.1	2.23	2.13	2.05	640.1	1.85	2.36	3.27	108.1	2.67	1.90	1.55
700.1	730.1	2.14	2.07	2.01	700.1	1.74	2.40	3.35	120.4	2.60	1.87	1.54
740.1	770.1	2.09	2.02	1.97	740.1	1.68	2.39	3.35	132.6	2.64	1.91	1.56
800.1	830.1	2.03	1.96	1.91	800.1	1.64	2.42	3.42	144.9	2.57	1.87	1.52
840.1	870.1	2.02	1.94	1.90	840.1	1.63	2.41	3.40	157.1	2.55	1.85	1.51
900.1	930.1	1.99	1.89	1.84	900.1	1.70	2.50	3.50	169.4	2.50	1.82	1.49
940.1	970.1	1.97	1.86	1.80	940.1	1.76	2.57	3.56	181.6	2.53	1.85	1.52
1000.1	1030.1	1.92	1.81	1.73	1000.1	1.86	2.69	3.70	193.9	2.61	1.91	1.57
1040.1	1070.1	1.85	1.73	1.64	1040.1	1.92	2.76	3.78	206.1	2.57	1.90	1.56
1100.1	1130.1	1.73	1.62	1.49	1100.1	1.99	2.83	3.84	218.4	2.58	1.91	1.56
1140.1	1170.1	1.63	1.51	1.38	1140.1	2.05	2.89	3.92	230.6	2.50	1.85	1.52
1200.1	1230.1	1.46	1.34	1.20	1200.1	2.12	2.93	3.95	242.9	2.46	1.83	1.51
1240.1	1270.1	1.35	1.22	1.07	1240.1	2.18	2.99	4.00	255.1	2.47	1.84	1.52
1300.1	1330.1	1.24	1.13	1.15	1300.1	2.22	2.97	3.94	267.4	2.50	1.87	1.54
1340.1	1370.1	1.22	1.20	1.33	1340.1	2.27	2.99	3.95	279.6	2.56	1.91	1.58
1400.1	1430.1	1.34	1.45	1.62	1400.1	2.26	2.90	3.81	291.9	2.53	1.90	1.57
1440.1	1470.1	1.47	1.64	1.81	1440.1	2.28	2.92	3.85	304.1	2.51	1.89	1.56
1500.1	1530.1	1.70	1.91	2.09	1500.1	2.33	2.92	3.79	316.4	2.54	1.91	1.57
1540.1	1570.1	1.84	2.06	2.26	1540.1	2.46	3.03	3.88	328.6	2.49	1.88	1.55
1600.1	1630.1	2.00	2.24	2.48	1600.1	2.69	3.09	3.81	340.9	2.50	1.90	1.57
1640.1	1670.1	2.09	2.32	2.59	1640.1	2.88	3.20	3.86	353.1	2.49	1.90	1.58
1700.1	1730.1	2.25	2.46	2.73	1700.1	3.23	3.27	3.80	365.4	2.49	1.89	1.57
1740.1	1770.1	2.33	2.51	2.77	1740.1	3.44	3.38	3.83	377.6	2.47	1.87	1.55
1800.1	1830.1	2.50	2.65	2.86	1800.1	3.83	3.47	3.76	389.9	2.44	1.86	1.55
1840.1	1870.1	2.59	2.69	2.87	1840.1	3.90	3.53	3.76	402.1	2.47	1.89	1.57
1900.1	1930.1	2.79	2.81	2.94	1900.1	4.19	3.58	3.67	414.4	2.48	1.90	1.58
1940.1	1970.1	2.92	2.87	2.94	1940.1	4.15	3.58	3.62	426.6	2.46	1.89	1.58
2000.1	2030.1	3.15	3.05	3.09	2000.1	4.39	3.60	3.54	438.9	2.47	1.89	1.57
2040.1	2070.1	3.35	3.19	3.20	2040.1	4.28	3.61	3.52	451.1	2.38	1.83	1.53
2100.1	2130.1	3.55	3.38	3.39	2100.1	4.46	3.64	3.43	463.4	2.38	1.83	1.53
2140.1	2170.1	3.74	3.52	3.55	2140.1	4.24	3.58	3.38	487.9	2.43	1.88	1.58
2200.1	2230.1	3.87	3.70	3.82	2200.1	4.34	3.62	3.33	500.1	2.42	1.88	1.57

## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+0	26	2	22	3	37	28	53	26	66
1	-	29	+0	42	14	26	38	40	32	59	42	56
2	93	56	39	62	42	56	39	55	41	57	53	71
3	>100	62	59	63	56	65	50	63	65	67	66	76
4	>100	86	74	86	74	88	69	80	71	79	71	80
5	>100	>92	>92	>92	88	>92	82	>92	82	89	87	>92
6	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
7	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
8	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
9	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
10	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 700.1 MHz; -1.00 dBm.  
 LO IN: 730.01 MHz; +17.00 dBm  
 IF OUT: 29.91 MHz; -8.04 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	12	33	14	35	16	46	34	55	36	71
1	-	32	+0	37	14	29	37	39	42	63	58	64
2	72	46	31	54	31	51	30	47	32	68	52	68
3	>100	46	41	51	45	50	36	48	51	58	46	71
4	>100	68	57	62	49	80	51	58	49	60	53	64
5	>100	72	74	68	55	61	52	63	50	61	66	64
6	>100	82	67	87	70	73	60	76	56	67	57	66
7	>100	93	76	91	85	77	83	77	78	72	66	71
8	>100	98	83	88	89	86	71	83	68	82	71	73
9	>100	>102	>102	97	95	97	87	83	79	80	76	78
10	>100	>102	>102	>102	101	91	95	93	85	84	83	84
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 700.1 MHz; 9.00 dBm.  
 LO IN: 730.01 MHz; +17.00 dBm  
 IF OUT: 29.91 MHz; 1.97 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  
 ADE-10H+  
 100817  
 Page 5 of 5



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