

Frequency Mixer

ADE-R2ASK+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	5.79	5.53	5.43
50.1	80.1	5.98	5.75	5.55
90.1	120.1	5.91	5.67	5.55
130.1	160.1	5.88	5.67	5.54
170.1	200.1	5.94	5.72	5.60
210.1	240.1	5.97	5.76	5.64
250.1	280.1	6.01	5.81	5.68
290.1	320.1	6.06	5.85	5.70
330.1	360.1	6.14	5.92	5.78
370.1	400.1	6.17	5.94	5.80
410.1	440.1	6.29	5.98	5.81
450.1	480.1	6.33	6.07	5.88
490.1	520.1	6.36	6.15	5.99
530.1	560.1	6.37	6.15	5.98
570.1	600.1	6.37	6.10	5.93
610.1	640.1	6.48	6.12	5.94
650.1	680.1	6.73	6.23	5.98
690.1	720.1	7.03	6.42	6.06
730.1	760.1	7.28	6.66	6.18
770.1	800.1	7.47	6.90	6.41
810.1	840.1	7.70	7.21	6.75
850.1	880.1	7.86	7.43	7.00
890.1	920.1	7.90	7.47	7.09
930.1	960.1	7.82	7.38	7.07
970.1	1000.1	7.72	7.29	7.04
990.1	1020.1	7.69	7.28	7.03
1030.1	1060.1	7.64	7.29	7.12
1050.1	1080.1	7.68	7.36	7.22
1090.1	1120.1	7.81	7.55	7.46
1110.1	1140.1	7.93	7.69	7.63
1150.1	1180.1	8.25	8.04	8.00
1170.1	1200.1	8.41	8.21	8.17
1210.1	1240.1	8.84	8.65	8.61
1230.1	1260.1	9.07	8.86	8.80
1270.1	1300.1	9.52	9.30	9.23
1290.1	1320.1	9.82	9.60	9.53
1330.1	1360.1	10.37	10.10	10.00
1350.1	1380.1	10.67	10.39	10.30
1390.1	1420.1	11.39	11.07	10.96
1410.1	1440.1	11.71	11.36	11.24

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	16.53	18.97	20.08
50.1	80.1	17.32	20.25	23.20
90.1	120.1	16.92	20.49	22.99
130.1	160.1	17.04	20.02	22.00
170.1	200.1	17.05	19.69	23.34
210.1	240.1	17.68	21.06	20.92
250.1	280.1	17.66	20.38	21.64
290.1	320.1	17.14	19.15	20.96
330.1	360.1	16.73	17.19	18.94
370.1	400.1	17.45	16.68	16.99
410.1	440.1	16.88	18.12	19.59
450.1	480.1	16.60	19.14	19.24
490.1	520.1	14.04	13.96	14.45
530.1	560.1	13.07	12.57	13.51
570.1	600.1	13.64	14.69	18.43
610.1	640.1	13.95	17.26	17.48
650.1	680.1	13.12	15.20	16.07
690.1	720.1	10.32	14.16	14.52
730.1	760.1	9.31	12.79	13.73
770.1	800.1	9.60	11.56	13.60
810.1	840.1	9.20	10.27	12.33
850.1	880.1	10.17	11.26	13.06
890.1	920.1	12.71	13.93	14.87
930.1	960.1	13.45	13.26	13.40
970.1	1000.1	11.24	11.84	11.81
990.1	1020.1	10.57	11.50	11.37
1030.1	1060.1	9.63	10.93	10.94
1050.1	1080.1	9.49	10.81	10.76
1090.1	1120.1	9.39	10.56	10.90
1110.1	1140.1	9.52	10.65	11.28
1150.1	1180.1	9.75	10.94	12.07
1170.1	1200.1	9.88	11.28	12.70
1210.1	1240.1	10.49	12.31	13.88
1230.1	1260.1	10.41	12.49	13.71
1270.1	1300.1	10.19	12.17	12.81
1290.1	1320.1	10.16	12.06	12.66
1330.1	1360.1	9.80	11.55	12.32
1350.1	1380.1	9.76	11.48	12.23
1390.1	1420.1	9.69	11.20	11.34
1410.1	1440.1	9.60	10.86	10.67

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	1.20	1.00	0.78
50.1	80.1	1.22	0.94	0.76
90.1	120.1	1.27	0.99	0.77
130.1	160.1	1.20	0.94	0.73
170.1	200.1	1.23	0.94	0.75
210.1	240.1	1.14	0.88	0.69
250.1	280.1	1.13	0.89	0.72
290.1	320.1	1.12	0.87	0.70
330.1	360.1	1.05	0.81	0.65
370.1	400.1	1.06	0.82	0.68
410.1	440.1	1.08	0.88	0.71
450.1	480.1	1.11	0.91	0.77
490.1	520.1	1.23	0.98	0.84
530.1	560.1	1.36	1.08	0.92
570.1	600.1	1.53	1.19	1.00
610.1	640.1	1.73	1.34	1.15
650.1	680.1	1.88	1.56	1.34
690.1	720.1	1.86	1.66	1.44
730.1	760.1	1.89	1.72	1.55
770.1	800.1	1.84	1.70	1.56
810.1	840.1	1.81	1.63	1.53
850.1	880.1	1.74	1.54	1.42
890.1	920.1	1.67	1.47	1.32
930.1	960.1	1.69	1.47	1.26
970.1	1000.1	1.77	1.48	1.27
990.1	1020.1	1.78	1.48	1.27
1030.1	1060.1	1.74	1.41	1.19
1050.1	1080.1	1.75	1.39	1.17
1090.1	1120.1	1.67	1.32	1.10
1110.1	1140.1	1.62	1.25	1.02
1150.1	1180.1	1.59	1.18	0.97
1170.1	1200.1	1.57	1.16	0.95
1210.1	1240.1	1.54	1.10	0.89
1230.1	1260.1	1.58	1.14	0.93
1270.1	1300.1	1.62	1.16	0.96
1290.1	1320.1	1.61	1.14	0.97
1330.1	1360.1	1.68	1.19	1.03
1350.1	1380.1	1.68	1.20	1.07
1390.1	1420.1	1.66	1.20	1.13
1410.1	1440.1	1.71	1.24	1.18

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=510.1MHz (dB)
		@LO (dBm) +7
500.1	10.0	6.15
490.1	20.0	6.04
480.1	30.0	6.01
470.1	40.0	5.97
460.1	50.0	5.96
450.1	60.0	5.97
440.1	70.0	5.93
430.1	80.0	5.92
420.1	90.0	5.93
410.1	100.0	5.90
400.1	110.0	5.90
390.1	120.0	5.90
380.1	130.0	5.87
370.1	140.0	5.90
360.1	150.0	5.90
350.1	160.0	5.89
340.1	170.0	5.90
330.1	180.0	5.90
320.1	190.0	5.89
310.1	200.0	5.92
290.1	220.0	5.90
280.1	230.0	5.91
260.1	250.0	5.90
250.1	260.0	5.92
230.1	280.0	5.93
220.1	290.0	5.93
200.1	310.0	5.94
190.1	320.0	5.93
170.1	340.0	5.97
160.1	350.0	5.98
140.1	370.0	5.99
130.1	380.0	5.97
110.1	400.0	5.98
100.1	410.0	5.97
80.1	430.0	5.95
70.1	440.0	5.99
50.1	460.0	6.03
40.1	470.0	6.06
20.1	490.0	6.17
10.1	500.0	6.58

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10MHz (dB)
		@LO (dBm) +7
10.1	20.1	5.90
30.1	40.1	5.49
50.1	60.1	5.48
70.1	80.1	5.44
90.1	100.1	5.41
110.1	120.1	5.36
130.1	140.1	5.49
150.1	160.1	5.47
170.1	180.1	5.43
190.1	200.1	5.53
210.1	220.1	5.61
230.1	240.1	5.45
250.1	260.1	5.59
270.1	280.1	5.60
290.1	300.1	5.56
310.1	320.1	5.57
330.1	340.1	5.65
350.1	360.1	5.66
370.1	380.1	5.48
390.1	400.1	5.56
430.1	440.1	5.69
450.1	460.1	5.87
490.1	500.1	5.93
510.1	520.1	5.90
550.1	560.1	5.92
570.1	580.1	5.78
610.1	620.1	5.73
630.1	640.1	5.79
670.1	680.1	5.73
690.1	700.1	5.75
730.1	740.1	5.99
750.1	760.1	5.89
790.1	800.1	6.07
810.1	820.1	6.11
850.1	860.1	5.99
870.1	880.1	6.15
910.1	920.1	6.00
930.1	940.1	6.15
970.1	980.1	5.86
990.1	1000.1	5.96

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1010.1MHz (dB)
		@LO (dBm) +7
1000.1	10.0	7.70
978.3	31.8	7.67
956.6	53.5	7.62
934.8	75.3	7.64
913.1	97.0	7.63
891.3	118.8	7.64
869.6	140.5	7.59
847.8	162.3	7.56
826.0	184.1	7.58
804.3	205.8	7.54
782.5	227.6	7.56
760.8	249.3	7.49
739.0	271.1	7.48
717.2	292.9	7.46
695.5	314.6	7.42
662.8	347.3	7.37
641.1	369.0	7.38
608.5	401.6	7.29
586.7	423.4	7.17
554.1	456.0	7.20
532.3	477.8	7.26
499.7	510.4	7.31
477.9	532.2	7.28
445.3	564.8	7.15
423.5	586.6	7.01
390.9	619.2	6.84
369.1	641.0	6.86
336.5	673.6	6.91
314.7	695.4	7.00
282.1	728.0	7.19
260.3	749.8	7.39
227.7	782.4	7.55
205.9	804.2	7.64
173.3	836.8	7.75
151.5	858.6	7.85
118.9	891.2	7.83
97.1	913.0	7.77
64.5	945.6	7.71
42.7	967.4	7.58
10.1	1000.0	7.91

Frequency Mixer

ADE-R2ASK+

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	79.94	72.85	76.68	53.93	52.13	50.94
80.1	74.01	81.45	82.64	48.38	46.51	45.38
120.1	68.78	74.22	82.49	44.87	43.37	42.35
160.1	64.12	69.91	77.34	42.88	41.44	40.35
200.1	58.75	61.58	63.68	41.52	39.91	38.77
240.1	59.06	60.91	62.59	40.32	38.64	37.33
280.1	53.55	54.98	56.04	39.46	37.56	36.15
320.1	51.71	53.09	53.78	38.39	36.41	34.95
360.1	48.20	49.16	49.77	37.67	35.55	33.90
400.1	46.31	47.12	47.80	36.29	34.63	33.24
440.1	45.16	45.39	45.57	34.40	32.73	31.44
480.1	44.71	44.50	44.17	33.63	31.66	30.33
520.1	43.65	43.22	42.73	32.53	30.95	29.61
560.1	43.01	42.37	41.58	31.63	30.17	28.79
600.1	42.40	41.48	40.34	30.23	28.63	27.07
640.1	41.47	40.53	39.47	28.50	27.00	25.82
680.1	40.94	40.07	39.01	27.05	25.48	24.32
720.1	40.41	39.51	38.56	26.11	24.30	23.11
760.1	39.99	39.12	37.97	25.36	23.77	22.24
800.1	39.34	38.67	37.50	24.47	23.16	21.68
840.1	39.14	38.70	37.60	23.79	22.69	21.42
880.1	38.77	38.42	37.20	22.98	22.03	20.69
920.1	38.15	37.78	36.34	22.42	21.64	20.15
960.1	37.10	36.32	34.53	21.65	20.90	19.12
1000.1	36.22	34.44	32.68	20.64	19.56	17.87
1020.1	35.19	33.28	31.64	20.11	18.99	17.27
1060.1	32.71	30.67	29.38	18.87	17.69	16.31
1080.1	31.62	29.72	28.40	18.22	17.10	15.71
1120.1	29.45	27.86	26.57	17.12	16.36	15.13
1140.1	28.27	26.61	25.40	16.61	15.96	14.83
1180.1	26.32	24.96	23.76	15.48	15.21	14.18
1200.1	25.64	24.23	23.05	15.21	14.99	14.06
1240.1	23.98	22.80	21.72	14.43	14.49	13.72
1260.1	23.51	22.20	21.20	14.19	14.25	13.59
1300.1	22.40	21.12	20.11	13.69	13.95	13.38
1320.1	21.89	20.69	19.69	13.44	13.78	13.30
1360.1	21.12	19.95	18.94	12.99	13.54	13.18
1380.1	20.57	19.55	18.48	12.75	13.42	13.07
1420.1	19.74	18.90	17.95	12.40	13.21	13.01
1440.1	19.31	18.62	17.62	12.12	13.05	12.87

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	48.14	47.48	47.33
50.1	80.1	34.87	34.83	34.86
90.1	120.1	30.12	30.17	30.14
130.1	160.1	27.66	27.65	27.76
170.1	200.1	25.84	26.07	26.06
210.1	240.1	24.76	24.94	25.07
250.1	280.1	24.16	24.29	24.43
290.1	320.1	23.79	24.21	24.40
330.1	360.1	23.68	23.93	24.26
370.1	400.1	23.85	24.12	24.37
410.1	440.1	24.31	24.95	25.41
450.1	480.1	24.81	25.49	26.16
490.1	520.1	25.27	26.03	26.64
530.1	560.1	24.33	24.86	25.29
570.1	600.1	22.56	22.71	22.83
610.1	640.1	20.67	20.63	20.64
650.1	680.1	19.27	19.28	19.37
690.1	720.1	18.51	18.59	18.76
730.1	760.1	17.96	17.99	18.27
770.1	800.1	17.84	17.80	18.09
810.1	840.1	17.92	17.86	18.03
850.1	880.1	18.04	17.97	18.13
890.1	920.1	17.91	17.82	17.99
930.1	960.1	17.55	17.51	17.67
970.1	1000.1	17.04	17.00	17.08
990.1	1020.1	16.66	16.67	16.63
1030.1	1060.1	15.87	15.79	15.56
1050.1	1080.1	15.40	15.23	14.98
1090.1	1120.1	14.28	14.03	13.60
1110.1	1140.1	13.76	13.44	13.01
1150.1	1180.1	12.42	12.04	11.53
1170.1	1200.1	11.76	11.35	10.81
1210.1	1240.1	10.56	10.08	9.59
1230.1	1260.1	9.98	9.48	9.00
1270.1	1300.1	9.00	8.47	7.99
1290.1	1320.1	8.58	8.08	7.65
1330.1	1360.1	7.79	7.30	6.92
1350.1	1380.1	7.45	7.01	6.62
1390.1	1420.1	6.84	6.39	6.06
1410.1	1440.1	6.55	6.15	5.82

Frequency Mixer

ADE-R2ASK+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1010.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
10.1	40.1	1.24	1.13	1.19	40.1	1.88	2.73	3.81	10.0	1.61	1.38	1.20
50.1	80.1	1.11	1.11	1.16	80.1	1.84	2.63	3.66	40.0	1.63	1.40	1.22
90.1	120.1	1.07	1.08	1.12	120.1	1.82	2.61	3.62	70.0	1.64	1.40	1.23
130.1	160.1	1.04	1.03	1.07	160.1	1.85	2.65	3.67	100.0	1.63	1.40	1.24
170.1	200.1	1.08	1.10	1.14	200.1	1.83	2.60	3.57	120.0	1.64	1.42	1.27
210.1	240.1	1.08	1.08	1.11	240.1	1.88	2.67	3.66	150.0	1.66	1.45	1.31
250.1	280.1	1.08	1.12	1.15	280.1	1.87	2.63	3.58	170.0	1.67	1.46	1.33
290.1	320.1	1.11	1.14	1.17	320.1	1.93	2.70	3.65	200.0	1.67	1.46	1.34
330.1	360.1	1.10	1.13	1.17	360.1	1.96	2.73	3.68	220.0	1.67	1.48	1.37
370.1	400.1	1.15	1.18	1.22	400.1	1.99	2.74	3.67	250.0	1.69	1.51	1.42
410.1	440.1	1.15	1.19	1.24	440.1	2.07	2.82	3.74	270.0	1.71	1.53	1.45
450.1	480.1	1.19	1.24	1.28	480.1	2.09	2.85	3.77	300.0	1.72	1.54	1.46
490.1	520.1	1.21	1.24	1.27	520.1	2.15	2.90	3.83	320.0	1.71	1.54	1.48
530.1	560.1	1.24	1.28	1.32	560.1	2.17	2.89	3.77	350.0	1.73	1.57	1.52
570.1	600.1	1.24	1.28	1.33	600.1	2.23	2.92	3.79	370.0	1.74	1.59	1.55
610.1	640.1	1.23	1.28	1.32	640.1	2.32	2.99	3.82	400.0	1.75	1.60	1.57
650.1	680.1	1.28	1.30	1.33	680.1	2.44	3.11	3.93	420.0	1.74	1.60	1.56
690.1	720.1	1.32	1.30	1.32	720.1	2.53	3.24	4.04	450.0	1.75	1.62	1.60
730.1	760.1	1.46	1.42	1.41	760.1	2.56	3.27	4.09	470.0	1.75	1.63	1.62
770.1	800.1	1.63	1.57	1.53	800.1	2.62	3.34	4.17	500.0	1.75	1.64	1.63
810.1	840.1	1.82	1.75	1.70	840.1	2.64	3.34	4.14	520.0	1.76	1.64	1.63
850.1	880.1	2.06	1.99	1.92	880.1	2.67	3.35	4.14	550.0	1.76	1.65	1.64
890.1	920.1	2.12	2.07	2.02	920.1	2.71	3.37	4.12	570.0	1.74	1.64	1.64
930.1	960.1	2.37	2.33	2.29	960.1	2.70	3.31	4.00	600.0	1.74	1.64	1.64
970.1	1000.1	2.48	2.44	2.39	1000.1	2.73	3.31	3.97	620.0	1.76	1.66	1.66
990.1	1020.1	2.52	2.48	2.42	1020.1	2.73	3.29	3.94	650.0	1.74	1.65	1.65
1030.1	1060.1	2.74	2.68	2.62	1060.1	2.72	3.24	3.87	670.0	1.71	1.62	1.62
1050.1	1080.1	2.79	2.72	2.65	1080.1	2.76	3.28	3.91	700.0	1.70	1.61	1.61
1090.1	1120.1	2.77	2.71	2.64	1120.1	2.88	3.37	3.96	720.0	1.70	1.62	1.63
1110.1	1140.1	2.86	2.80	2.74	1140.1	2.91	3.37	3.94	750.0	1.68	1.60	1.60
1150.1	1180.1	2.97	2.90	2.83	1180.1	3.04	3.46	3.98	770.0	1.65	1.55	1.55
1170.1	1200.1	2.92	2.85	2.78	1200.1	3.13	3.53	4.02	800.0	1.62	1.53	1.53
1210.1	1240.1	3.03	2.95	2.87	1240.1	3.20	3.54	3.97	820.0	1.60	1.52	1.53
1230.1	1260.1	3.09	2.99	2.90	1260.1	3.23	3.55	3.95	850.0	1.57	1.48	1.49
1270.1	1300.1	2.99	2.87	2.78	1300.1	3.33	3.62	4.00	870.0	1.56	1.45	1.45
1290.1	1320.1	3.02	2.90	2.81	1320.1	3.31	3.60	3.96	900.0	1.51	1.40	1.41
1330.1	1360.1	3.06	2.92	2.83	1360.1	3.26	3.54	3.86	920.0	1.49	1.37	1.38
1350.1	1380.1	2.97	2.83	2.74	1380.1	3.25	3.54	3.87	950.0	1.44	1.32	1.33
1390.1	1420.1	2.89	2.77	2.68	1420.1	3.17	3.48	3.80	970.0	1.43	1.30	1.31
1410.1	1440.1	2.90	2.77	2.68	1440.1	3.09	3.39	3.72	1000.0	1.40	1.27	1.28

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	6	19	14	23	17	34	54	48	58	56
1	-	19	+0	33	11	34	34	41	41	42	56	58
2	> 90	67	45	63	44	64	47	63	57	60	> 70	69
3	> 90	66	59	63	58	67	58	> 70	70	> 70	> 70	> 70
4	> 90	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70
5	> 90	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70
6	> 90	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70
7	> 90	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70
8	> 90	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70
9	> 90	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70
10	> 90	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70	> 70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 500.00 MHz; -14.00 dBm.
LO IN: 530.00 MHz; +7.00 dBm
IF OUT: 30.00 MHz; -19.98 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	15	30	26	34	29	46	62	66	63	71
1	-	19	+0	31	12	35	34	44	48	50	62	67
2	72	52	39	59	39	64	41	66	48	56	68	68
3	> 90	46	41	50	43	63	41	53	57	62	58	61
4	> 90	69	68	71	54	63	51	64	56	68	66	67
5	> 90	70	75	64	56	62	54	62	56	71	69	> 80
6	> 90	> 80	> 80	79	77	> 80	> 80	78	75	76	> 80	77
7	> 90	> 80	> 80	> 80	> 80	> 80	73	> 80	73	78	71	> 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	> 80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 500.00 MHz; -4.00 dBm.
LO IN: 530.00 MHz; +7.00 dBm
IF OUT: 30.00 MHz; -10.01 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.