

# Frequency Mixer

ADE-ED7940/1

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>IF FIXED<br>@IF(OUT)=30MHz<br>(dB) |       |      |
|---------------------|-------------|-------------------------------------------------------|-------|------|
|                     |             | @LO (dBm)                                             |       |      |
|                     |             | +14                                                   | +17   | +20  |
| 10.1                | 40.1        | 8.43                                                  | 7.03  | 6.55 |
| 50.1                | 80.1        | 8.86                                                  | 7.62  | 7.10 |
| 90.1                | 120.1       | 8.64                                                  | 7.36  | 6.92 |
| 130.1               | 160.1       | 8.85                                                  | 7.57  | 7.03 |
| 170.1               | 200.1       | 8.63                                                  | 7.40  | 6.89 |
| 210.1               | 240.1       | 8.78                                                  | 7.28  | 6.87 |
| 250.1               | 280.1       | 8.77                                                  | 7.40  | 7.01 |
| 290.1               | 320.1       | 8.34                                                  | 7.14  | 6.87 |
| 330.1               | 360.1       | 8.39                                                  | 7.28  | 6.98 |
| 370.1               | 400.1       | 8.14                                                  | 7.18  | 6.92 |
| 410.1               | 440.1       | 8.21                                                  | 7.26  | 6.94 |
| 450.1               | 480.1       | 8.20                                                  | 7.36  | 7.03 |
| 490.1               | 520.1       | 8.21                                                  | 7.32  | 7.00 |
| 530.1               | 560.1       | 8.41                                                  | 7.48  | 7.08 |
| 570.1               | 600.1       | 8.35                                                  | 7.44  | 6.99 |
| 610.1               | 640.1       | 8.43                                                  | 7.60  | 7.12 |
| 650.1               | 680.1       | 8.43                                                  | 7.62  | 7.16 |
| 690.1               | 720.1       | 8.63                                                  | 7.72  | 7.23 |
| 730.1               | 760.1       | 8.86                                                  | 7.84  | 7.30 |
| 770.1               | 800.1       | 8.90                                                  | 7.65  | 7.05 |
| 810.1               | 840.1       | 9.03                                                  | 7.53  | 6.90 |
| 850.1               | 880.1       | 8.99                                                  | 7.29  | 6.65 |
| 890.1               | 920.1       | 9.24                                                  | 7.35  | 6.65 |
| 930.1               | 960.1       | 9.33                                                  | 7.48  | 6.71 |
| 970.1               | 1000.1      | 9.20                                                  | 7.61  | 6.82 |
| 1030.1              | 1060.1      | 8.81                                                  | 7.66  | 6.95 |
| 1070.1              | 1100.1      | 8.75                                                  | 7.88  | 7.27 |
| 1130.1              | 1160.1      | 8.58                                                  | 8.00  | 7.58 |
| 1170.1              | 1200.1      | 8.42                                                  | 7.90  | 7.52 |
| 1230.1              | 1260.1      | 8.33                                                  | 7.82  | 7.47 |
| 1270.1              | 1300.1      | 8.10                                                  | 7.66  | 7.38 |
| 1330.1              | 1360.1      | 7.98                                                  | 7.60  | 7.41 |
| 1370.1              | 1400.1      | 7.92                                                  | 7.56  | 7.41 |
| 1430.1              | 1460.1      | 7.98                                                  | 7.65  | 7.52 |
| 1470.1              | 1500.1      | 8.01                                                  | 7.73  | 7.63 |
| 1530.1              | 1560.1      | 8.29                                                  | 7.97  | 7.84 |
| 1570.1              | 1600.1      | 8.49                                                  | 8.15  | 8.04 |
| 1630.1              | 1660.1      | 9.13                                                  | 8.70  | 8.54 |
| 1670.1              | 1700.1      | 9.72                                                  | 9.23  | 8.99 |
| 1730.1              | 1760.1      | 10.87                                                 | 10.13 | 9.80 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP3 INPUT<br>(dBm) |       |       |
|---------------------|-------------|--------------------|-------|-------|
|                     |             | @LO (dBm)          |       |       |
|                     |             | +14                | +17   | +20   |
| 10.1                | 40.1        | 19.51              | 24.24 | 27.95 |
| 50.1                | 80.1        | 19.78              | 23.87 | 27.50 |
| 90.1                | 120.1       | 20.30              | 24.78 | 26.22 |
| 130.1               | 160.1       | 20.90              | 23.38 | 28.52 |
| 170.1               | 200.1       | 20.98              | 24.59 | 26.98 |
| 210.1               | 240.1       | 19.67              | 24.35 | 26.84 |
| 250.1               | 280.1       | 19.53              | 24.18 | 26.63 |
| 290.1               | 320.1       | 22.73              | 25.48 | 28.45 |
| 330.1               | 360.1       | 22.10              | 25.05 | 27.77 |
| 370.1               | 400.1       | 21.62              | 24.84 | 27.05 |
| 410.1               | 440.1       | 21.57              | 24.70 | 27.93 |
| 450.1               | 480.1       | 21.73              | 23.91 | 25.42 |
| 490.1               | 520.1       | 22.58              | 25.93 | 26.91 |
| 530.1               | 560.1       | 21.19              | 26.24 | 26.72 |
| 570.1               | 600.1       | 20.83              | 24.85 | 26.36 |
| 610.1               | 640.1       | 21.12              | 23.14 | 25.50 |
| 650.1               | 680.1       | 20.93              | 22.08 | 24.24 |
| 690.1               | 720.1       | 20.78              | 21.77 | 23.73 |
| 730.1               | 760.1       | 20.85              | 22.28 | 25.14 |
| 770.1               | 800.1       | 20.67              | 23.63 | 29.87 |
| 810.1               | 840.1       | 20.25              | 25.57 | 31.54 |
| 850.1               | 880.1       | 19.13              | 27.29 | 30.26 |
| 890.1               | 920.1       | 17.27              | 26.78 | 28.37 |
| 930.1               | 960.1       | 16.72              | 28.30 | 30.09 |
| 970.1               | 1000.1      | 17.38              | 25.49 | 32.81 |
| 1030.1              | 1060.1      | 19.73              | 24.43 | 31.15 |
| 1070.1              | 1100.1      | 20.22              | 24.23 | 28.39 |
| 1130.1              | 1160.1      | 22.15              | 25.00 | 25.75 |
| 1170.1              | 1200.1      | 24.01              | 28.00 | 25.29 |
| 1230.1              | 1260.1      | 27.29              | 27.52 | 24.95 |
| 1270.1              | 1300.1      | 23.85              | 26.20 | 25.79 |
| 1330.1              | 1360.1      | 21.60              | 24.68 | 26.47 |
| 1370.1              | 1400.1      | 21.10              | 24.20 | 26.70 |
| 1430.1              | 1460.1      | 20.23              | 24.12 | 26.43 |
| 1470.1              | 1500.1      | 19.23              | 23.49 | 26.53 |
| 1530.1              | 1560.1      | 17.39              | 21.47 | 24.12 |
| 1570.1              | 1600.1      | 16.23              | 19.82 | 22.32 |
| 1630.1              | 1660.1      | 14.62              | 17.55 | 20.63 |
| 1670.1              | 1700.1      | 14.25              | 16.87 | 20.48 |
| 1730.1              | 1760.1      | 13.10              | 15.52 | 19.43 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF IN=+13dBm<br>(dB) |       |       |
|---------------------|-------------|--------------------------------------|-------|-------|
|                     |             | @LO (dBm)                            |       |       |
|                     |             | +14                                  | +17   | +20   |
| 10.1                | 40.1        | -0.14                                | -0.09 | 0.03  |
| 50.1                | 80.1        | -0.30                                | -0.16 | -0.06 |
| 90.1                | 120.1       | -0.21                                | -0.07 | -0.03 |
| 130.1               | 160.1       | -0.26                                | -0.14 | -0.02 |
| 170.1               | 200.1       | -0.23                                | -0.07 | 0.01  |
| 210.1               | 240.1       | -0.27                                | 0.01  | 0.01  |
| 250.1               | 280.1       | -0.28                                | -0.05 | -0.02 |
| 290.1               | 320.1       | 0.05                                 | 0.03  | 0.00  |
| 330.1               | 360.1       | 0.05                                 | -0.01 | -0.02 |
| 370.1               | 400.1       | 0.14                                 | 0.03  | 0.02  |
| 410.1               | 440.1       | 0.14                                 | 0.00  | 0.01  |
| 450.1               | 480.1       | 0.11                                 | -0.04 | 0.01  |
| 490.1               | 520.1       | 0.17                                 | 0.00  | 0.02  |
| 530.1               | 560.1       | 0.13                                 | 0.00  | 0.04  |
| 570.1               | 600.1       | 0.20                                 | 0.06  | 0.12  |
| 610.1               | 640.1       | 0.23                                 | 0.00  | 0.10  |
| 650.1               | 680.1       | 0.23                                 | 0.00  | 0.10  |
| 690.1               | 720.1       | 0.25                                 | 0.00  | 0.10  |
| 730.1               | 760.1       | 0.18                                 | 0.00  | 0.13  |
| 770.1               | 800.1       | 0.24                                 | 0.21  | 0.30  |
| 810.1               | 840.1       | 0.25                                 | 0.43  | 0.45  |
| 850.1               | 880.1       | 0.23                                 | 0.65  | 0.63  |
| 890.1               | 920.1       | 0.06                                 | 0.75  | 0.75  |
| 930.1               | 960.1       | -0.05                                | 0.71  | 0.79  |
| 970.1               | 1000.1      | -0.01                                | 0.59  | 0.76  |
| 1030.1              | 1060.1      | 0.32                                 | 0.57  | 0.77  |
| 1070.1              | 1100.1      | 0.45                                 | 0.45  | 0.60  |
| 1130.1              | 1160.1      | 0.67                                 | 0.36  | 0.39  |
| 1170.1              | 1200.1      | 0.87                                 | 0.47  | 0.44  |
| 1230.1              | 1260.1      | 1.05                                 | 0.60  | 0.54  |
| 1270.1              | 1300.1      | 1.35                                 | 0.75  | 0.60  |
| 1330.1              | 1360.1      | 1.49                                 | 0.82  | 0.57  |
| 1370.1              | 1400.1      | 1.69                                 | 0.90  | 0.60  |
| 1430.1              | 1460.1      | 1.77                                 | 0.91  | 0.59  |
| 1470.1              | 1500.1      | 1.87                                 | 0.94  | 0.59  |
| 1530.1              | 1560.1      | 2.03                                 | 1.10  | 0.71  |
| 1570.1              | 1600.1      | 2.04                                 | 1.15  | 0.76  |
| 1630.1              | 1660.1      | 2.04                                 | 1.20  | 0.79  |
| 1670.1              | 1700.1      | 1.87                                 | 1.13  | 0.74  |
| 1730.1              | 1760.1      | 1.71                                 | 1.10  | 0.68  |

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=760.1MHz<br>(dB) |
|----------------------|-------------|-----------------------------------------------------------------|
|                      |             | @LO (dBm)                                                       |
|                      |             | +17                                                             |
| 750.0                | 10.1        | 7.73                                                            |
| 730.3                | 29.8        | 7.77                                                            |
| 710.5                | 49.6        | 7.71                                                            |
| 690.8                | 69.3        | 7.56                                                            |
| 671.1                | 89.0        | 7.56                                                            |
| 651.3                | 108.8       | 7.58                                                            |
| 631.6                | 128.5       | 7.46                                                            |
| 611.9                | 148.2       | 7.35                                                            |
| 592.1                | 168.0       | 7.33                                                            |
| 572.4                | 187.7       | 7.30                                                            |
| 552.7                | 207.4       | 7.21                                                            |
| 532.9                | 227.2       | 7.14                                                            |
| 513.2                | 246.9       | 7.16                                                            |
| 493.5                | 266.6       | 7.08                                                            |
| 473.7                | 286.4       | 6.94                                                            |
| 454.0                | 306.1       | 6.96                                                            |
| 434.3                | 325.8       | 7.02                                                            |
| 414.5                | 345.6       | 7.05                                                            |
| 394.8                | 365.3       | 6.97                                                            |
| 375.1                | 385.0       | 6.87                                                            |
| 355.3                | 404.8       | 6.90                                                            |
| 335.6                | 424.5       | 7.00                                                            |
| 315.9                | 444.2       | 7.05                                                            |
| 296.1                | 464.0       | 7.08                                                            |
| 276.4                | 483.7       | 7.15                                                            |
| 256.7                | 503.4       | 7.07                                                            |
| 236.9                | 523.2       | 7.06                                                            |
| 217.2                | 542.9       | 7.21                                                            |
| 197.5                | 562.6       | 7.20                                                            |
| 177.7                | 582.4       | 7.30                                                            |
| 158.0                | 602.1       | 7.30                                                            |
| 138.3                | 621.8       | 7.44                                                            |
| 118.5                | 641.6       | 7.42                                                            |
| 98.8                 | 661.3       | 7.49                                                            |
| 79.1                 | 681.0       | 7.57                                                            |
| 69.2                 | 690.9       | 7.50                                                            |
| 49.5                 | 710.6       | 7.62                                                            |
| 39.6                 | 720.5       | 7.70                                                            |
| 19.9                 | 740.2       | 7.69                                                            |
| 10.0                 | 750.1       | 7.93                                                            |

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=10.1MHz<br>(dB) |
|----------------------|-------------|----------------------------------------------------------------|
|                      |             | @LO (dBm)                                                      |
|                      |             | +17                                                            |
| 10.0                 | 20.1        | 7.25                                                           |
| 50.0                 | 60.1        | 7.00                                                           |
| 90.0                 | 100.1       | 6.86                                                           |
| 130.0                | 140.1       | 7.08                                                           |
| 170.0                | 180.1       | 7.05                                                           |
| 210.0                | 220.1       | 6.91                                                           |
| 250.0                | 260.1       | 6.98                                                           |
| 290.0                | 300.1       | 6.95                                                           |
| 330.0                | 340.1       | 6.95                                                           |
| 370.0                | 380.1       | 6.94                                                           |
| 410.0                | 420.1       | 7.09                                                           |
| 450.0                | 460.1       | 7.12                                                           |
| 490.0                | 500.1       | 7.20                                                           |
| 530.0                | 540.1       | 7.36                                                           |
| 570.0                | 580.1       | 7.43                                                           |
| 610.0                | 620.1       | 7.61                                                           |
| 650.0                | 660.1       | 7.82                                                           |
| 690.0                | 700.1       | 7.92                                                           |
| 730.0                | 740.1       | 7.94                                                           |
| 770.0                | 780.1       | 7.85                                                           |
| 810.0                | 820.1       | 7.79                                                           |
| 850.0                | 860.1       | 7.74                                                           |
| 890.0                | 900.1       | 7.82                                                           |
| 930.0                | 940.1       | 7.86                                                           |
| 970.0                | 980.1       | 7.97                                                           |
| 1010.0               | 1020.1      | 8.02                                                           |
| 1050.0               | 1060.1      | 8.15                                                           |
| 1090.0               | 1100.1      | 8.24                                                           |
| 1130.0               | 1140.1      | 8.35                                                           |
| 1170.0               | 1180.1      | 8.54                                                           |
| 1210.0               | 1220.1      | 8.63                                                           |
| 1250.0               | 1260.1      | 8.70                                                           |
| 1290.0               | 1300.1      | 8.90                                                           |
| 1330.0               | 1340.1      | 8.97                                                           |
| 1370.0               | 1380.1      | 9.35                                                           |
| 1390.0               | 1400.1      | 9.64                                                           |
| 1430.0               | 1440.1      | 9.93                                                           |
| 1450.0               | 1460.1      | 10.34                                                          |
| 1490.0               | 1500.1      | 11.02                                                          |
| 1510.0               | 1520.1      | 11.20                                                          |

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=1500.1MHz<br>(dB) |
|----------------------|-------------|------------------------------------------------------------------|
|                      |             | @LO (dBm)                                                        |
|                      |             | +17                                                              |
| 1490.0               | 10.1        | 10.52                                                            |
| 1449.5               | 50.6        | 10.51                                                            |
| 1408.9               | 91.2        | 10.28                                                            |
| 1368.4               | 131.7       | 10.03                                                            |
| 1327.8               | 172.3       | 9.91                                                             |
| 1287.3               | 212.8       | 9.62                                                             |
| 1246.7               | 253.4       | 9.33                                                             |
| 1206.2               | 293.9       | 9.15                                                             |
| 1165.6               | 334.5       | 8.95                                                             |
| 1125.1               | 375.0       | 8.70                                                             |
| 1084.5               | 415.6       | 8.61                                                             |
| 1044.0               | 456.1       | 8.53                                                             |
| 1003.4               | 496.7       | 8.36                                                             |
| 962.9                | 537.2       | 8.16                                                             |
| 922.3                | 577.8       | 8.15                                                             |
| 881.8                | 618.3       | 8.09                                                             |
| 841.2                | 658.9       | 8.03                                                             |
| 800.7                | 699.4       | 7.92                                                             |
| 760.1                | 740.0       | 7.85                                                             |
| 719.6                | 780.5       | 7.67                                                             |
| 679.0                | 821.1       | 7.64                                                             |
| 638.5                | 861.6       | 7.68                                                             |
| 597.9                | 902.2       | 7.72                                                             |
| 557.4                | 942.7       | 7.73                                                             |
| 516.8                | 983.3       | 7.83                                                             |
| 476.3                | 1023.8      | 7.89                                                             |
| 435.8                | 1064.3      | 7.93                                                             |
| 395.2                | 1104.9      | 7.96                                                             |
| 354.7                | 1145.4      | 7.94                                                             |
| 314.1                | 1186.0      | 8.02                                                             |
| 273.6                | 1226.5      | 8.06                                                             |
| 253.3                | 1246.8      | 8.04                                                             |
| 212.7                | 1287.4      | 8.04                                                             |
| 192.5                | 1307.6      | 8.09                                                             |
| 151.9                | 1348.2      | 8.03                                                             |
| 131.6                | 1368.5      | 7.92                                                             |
| 91.1                 | 1409.0      | 7.89                                                             |
| 70.8                 | 1429.3      | 7.93                                                             |
| 30.3                 | 1469.8      | 7.89                                                             |
| 10.0                 | 1490.1      | 8.12                                                             |

## Typical Performance Data

| LO<br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF ISOLATION<br>(dB) |       |       |
|-------------|-------------------------|-------|-------|-------------------------|-------|-------|
|             | @LO (dBm)               |       |       | @LO (dBm)               |       |       |
|             | +14                     | +17   | +20   | +14                     | +17   | +20   |
| 40.1        | 63.74                   | 65.93 | 67.06 | 84.94                   | 53.13 | 46.98 |
| 80.1        | 58.76                   | 60.17 | 61.86 | 62.93                   | 48.43 | 43.27 |
| 120.1       | 55.62                   | 57.62 | 59.98 | 67.34                   | 45.47 | 39.83 |
| 160.1       | 53.42                   | 55.29 | 57.51 | 62.30                   | 44.26 | 37.91 |
| 200.1       | 51.54                   | 53.96 | 55.67 | 72.62                   | 41.02 | 38.04 |
| 240.1       | 49.77                   | 52.45 | 54.97 | 57.74                   | 41.20 | 38.15 |
| 280.1       | 48.70                   | 51.27 | 54.46 | 50.83                   | 41.33 | 37.71 |
| 320.1       | 47.58                   | 50.15 | 53.39 | 47.69                   | 49.96 | 38.13 |
| 360.1       | 46.43                   | 49.45 | 53.25 | 45.84                   | 52.55 | 37.79 |
| 400.1       | 45.76                   | 49.96 | 54.36 | 44.40                   | 46.22 | 36.19 |
| 440.1       | 44.73                   | 48.33 | 50.68 | 39.36                   | 42.61 | 36.52 |
| 480.1       | 43.61                   | 46.85 | 49.12 | 37.42                   | 39.90 | 35.30 |
| 520.1       | 41.64                   | 44.14 | 45.88 | 33.35                   | 36.04 | 33.90 |
| 560.1       | 41.00                   | 43.94 | 46.05 | 32.05                   | 33.65 | 32.38 |
| 600.1       | 41.01                   | 44.73 | 46.32 | 31.02                   | 32.62 | 30.85 |
| 640.1       | 40.72                   | 44.94 | 46.09 | 30.18                   | 31.84 | 29.89 |
| 680.1       | 41.76                   | 46.75 | 45.58 | 29.82                   | 31.32 | 29.23 |
| 720.1       | 42.58                   | 46.76 | 44.54 | 28.96                   | 30.50 | 28.68 |
| 760.1       | 43.46                   | 45.96 | 42.47 | 28.19                   | 29.26 | 27.45 |
| 800.1       | 44.72                   | 45.69 | 41.12 | 27.09                   | 28.07 | 26.26 |
| 840.1       | 45.55                   | 44.85 | 40.21 | 25.92                   | 26.58 | 24.90 |
| 880.1       | 45.64                   | 43.18 | 39.01 | 25.15                   | 25.40 | 23.66 |
| 920.1       | 45.40                   | 42.57 | 38.21 | 24.06                   | 23.78 | 22.13 |
| 960.1       | 44.43                   | 42.05 | 37.54 | 23.39                   | 22.70 | 21.03 |
| 1000.1      | 43.55                   | 42.44 | 37.91 | 22.53                   | 22.09 | 20.50 |
| 1060.1      | 42.01                   | 40.81 | 36.63 | 21.24                   | 20.82 | 19.45 |
| 1100.1      | 41.68                   | 40.71 | 36.01 | 20.61                   | 20.34 | 18.95 |
| 1160.1      | 42.12                   | 40.73 | 35.49 | 19.39                   | 19.37 | 17.92 |
| 1200.1      | 43.63                   | 40.23 | 34.20 | 18.73                   | 18.78 | 17.40 |
| 1260.1      | 49.07                   | 39.01 | 32.76 | 17.78                   | 17.83 | 16.41 |
| 1300.1      | 55.80                   | 37.42 | 31.51 | 17.29                   | 17.28 | 15.83 |
| 1360.1      | 44.97                   | 34.02 | 29.02 | 16.12                   | 16.09 | 14.67 |
| 1400.1      | 40.16                   | 32.31 | 27.95 | 15.53                   | 15.48 | 14.14 |
| 1460.1      | 33.34                   | 28.93 | 25.51 | 14.29                   | 14.30 | 13.18 |
| 1500.1      | 30.86                   | 27.54 | 24.58 | 13.76                   | 13.73 | 12.71 |
| 1560.1      | 27.41                   | 25.18 | 22.91 | 12.98                   | 12.90 | 12.14 |
| 1600.1      | 25.67                   | 23.87 | 21.91 | 12.74                   | 12.59 | 11.83 |
| 1660.1      | 23.69                   | 22.53 | 20.94 | 12.33                   | 12.27 | 11.49 |
| 1700.1      | 22.33                   | 21.38 | 19.93 | 12.07                   | 12.06 | 11.28 |
| 1760.1      | 20.42                   | 20.20 | 19.12 | 11.29                   | 11.65 | 11.02 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +14                     | +17   | +20   |
| 10.1                | 40.1        | 52.35                   | 52.51 | 52.98 |
| 50.1                | 80.1        | 38.58                   | 39.36 | 39.86 |
| 90.1                | 120.1       | 33.73                   | 34.89 | 35.68 |
| 130.1               | 160.1       | 31.22                   | 32.43 | 33.52 |
| 170.1               | 200.1       | 29.39                   | 30.77 | 31.91 |
| 210.1               | 240.1       | 27.77                   | 29.61 | 30.68 |
| 250.1               | 280.1       | 27.10                   | 29.06 | 30.16 |
| 290.1               | 320.1       | 26.51                   | 28.53 | 29.50 |
| 330.1               | 360.1       | 25.55                   | 27.53 | 28.59 |
| 370.1               | 400.1       | 25.33                   | 27.53 | 28.64 |
| 410.1               | 440.1       | 25.29                   | 27.31 | 28.42 |
| 450.1               | 480.1       | 24.47                   | 25.93 | 26.92 |
| 490.1               | 520.1       | 23.28                   | 24.87 | 26.13 |
| 530.1               | 560.1       | 22.89                   | 24.85 | 26.38 |
| 570.1               | 600.1       | 22.34                   | 24.52 | 25.83 |
| 610.1               | 640.1       | 22.01                   | 23.56 | 24.34 |
| 650.1               | 680.1       | 22.01                   | 22.85 | 22.89 |
| 690.1               | 720.1       | 21.57                   | 21.90 | 21.65 |
| 730.1               | 760.1       | 20.41                   | 20.39 | 19.91 |
| 770.1               | 800.1       | 19.47                   | 19.14 | 18.58 |
| 810.1               | 840.1       | 18.85                   | 18.40 | 17.91 |
| 850.1               | 880.1       | 18.32                   | 17.82 | 17.43 |
| 890.1               | 920.1       | 17.92                   | 17.33 | 16.94 |
| 930.1               | 960.1       | 17.75                   | 17.01 | 16.45 |
| 970.1               | 1000.1      | 17.55                   | 16.77 | 16.03 |
| 1030.1              | 1060.1      | 17.30                   | 16.48 | 15.54 |
| 1070.1              | 1100.1      | 17.04                   | 16.17 | 15.23 |
| 1130.1              | 1160.1      | 16.41                   | 15.41 | 14.50 |
| 1170.1              | 1200.1      | 15.86                   | 14.84 | 14.00 |
| 1230.1              | 1260.1      | 14.92                   | 13.95 | 13.19 |
| 1270.1              | 1300.1      | 14.14                   | 13.27 | 12.55 |
| 1330.1              | 1360.1      | 12.79                   | 12.06 | 11.38 |
| 1370.1              | 1400.1      | 11.98                   | 11.36 | 10.76 |
| 1430.1              | 1460.1      | 10.65                   | 10.18 | 9.63  |
| 1470.1              | 1500.1      | 9.87                    | 9.47  | 8.98  |
| 1530.1              | 1560.1      | 8.90                    | 8.54  | 8.11  |
| 1570.1              | 1600.1      | 8.29                    | 7.92  | 7.54  |
| 1630.1              | 1660.1      | 7.50                    | 7.18  | 6.89  |
| 1670.1              | 1700.1      | 7.01                    | 6.73  | 6.50  |
| 1730.1              | 1760.1      | 6.54                    | 6.32  | 6.14  |

# Frequency Mixer

ADE-ED7940/1

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF VSWR<br>(:1) |      |      | LO<br>(MHz) | LO VSWR<br>(:1) |      |      | IF<br>(OUT)<br>(MHz) | IF VSWR<br>@LO=1500.1MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|------|------|----------------------|----------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |      |      |                      | @LO (dBm)                        |      |      |
|                     |             | +14             | +17  | +20  |             | +14             | +17  | +20  |                      | +14                              | +17  | +20  |
| 10.1                | 40.1        | 2.08            | 1.76 | 1.59 | 40.1        | 1.98            | 1.11 | 1.96 | 10.1                 | 1.94                             | 1.70 | 1.54 |
| 50.1                | 80.1        | 1.78            | 1.58 | 1.44 | 80.1        | 1.69            | 1.13 | 1.58 | 50.1                 | 1.95                             | 1.71 | 1.54 |
| 90.1                | 120.1       | 1.78            | 1.56 | 1.44 | 120.1       | 1.78            | 1.16 | 1.57 | 90.1                 | 1.93                             | 1.69 | 1.53 |
| 130.1               | 160.1       | 1.77            | 1.56 | 1.42 | 160.1       | 1.79            | 1.24 | 1.56 | 130.1                | 1.91                             | 1.68 | 1.52 |
| 170.1               | 200.1       | 1.77            | 1.56 | 1.41 | 200.1       | 1.75            | 1.24 | 1.56 | 170.1                | 1.89                             | 1.68 | 1.53 |
| 210.1               | 240.1       | 1.81            | 1.54 | 1.42 | 240.1       | 1.85            | 1.32 | 1.61 | 210.1                | 1.86                             | 1.66 | 1.52 |
| 250.1               | 280.1       | 1.76            | 1.52 | 1.41 | 280.1       | 1.78            | 1.33 | 1.61 | 250.1                | 1.85                             | 1.65 | 1.52 |
| 290.1               | 320.1       | 1.75            | 1.52 | 1.44 | 320.1       | 1.88            | 1.33 | 1.65 | 290.1                | 1.80                             | 1.62 | 1.50 |
| 330.1               | 360.1       | 1.71            | 1.52 | 1.43 | 360.1       | 1.84            | 1.35 | 1.67 | 330.1                | 1.77                             | 1.60 | 1.49 |
| 370.1               | 400.1       | 1.71            | 1.53 | 1.45 | 400.1       | 1.80            | 1.34 | 1.72 | 370.1                | 1.70                             | 1.54 | 1.46 |
| 410.1               | 440.1       | 1.71            | 1.54 | 1.46 | 440.1       | 1.80            | 1.37 | 1.76 | 410.1                | 1.65                             | 1.51 | 1.44 |
| 450.1               | 480.1       | 1.69            | 1.54 | 1.46 | 480.1       | 1.72            | 1.37 | 1.79 | 450.1                | 1.63                             | 1.51 | 1.46 |
| 490.1               | 520.1       | 1.70            | 1.54 | 1.47 | 520.1       | 1.71            | 1.40 | 1.86 | 490.1                | 1.58                             | 1.48 | 1.44 |
| 530.1               | 560.1       | 1.67            | 1.52 | 1.44 | 560.1       | 1.63            | 1.41 | 1.88 | 530.1                | 1.57                             | 1.47 | 1.43 |
| 570.1               | 600.1       | 1.68            | 1.53 | 1.44 | 600.1       | 1.60            | 1.44 | 1.95 | 570.1                | 1.51                             | 1.41 | 1.40 |
| 610.1               | 640.1       | 1.67            | 1.55 | 1.47 | 640.1       | 1.57            | 1.47 | 1.97 | 610.1                | 1.46                             | 1.37 | 1.36 |
| 650.1               | 680.1       | 1.65            | 1.54 | 1.46 | 680.1       | 1.52            | 1.52 | 2.04 | 650.1                | 1.42                             | 1.35 | 1.37 |
| 690.1               | 720.1       | 1.67            | 1.56 | 1.47 | 720.1       | 1.49            | 1.56 | 2.10 | 690.1                | 1.37                             | 1.30 | 1.33 |
| 730.1               | 760.1       | 1.65            | 1.52 | 1.43 | 760.1       | 1.45            | 1.59 | 2.14 | 730.1                | 1.35                             | 1.30 | 1.35 |
| 770.1               | 800.1       | 1.68            | 1.53 | 1.43 | 800.1       | 1.43            | 1.63 | 2.21 | 770.1                | 1.32                             | 1.26 | 1.31 |
| 810.1               | 840.1       | 1.65            | 1.47 | 1.37 | 840.1       | 1.40            | 1.65 | 2.23 | 810.1                | 1.29                             | 1.23 | 1.27 |
| 850.1               | 880.1       | 1.63            | 1.43 | 1.32 | 880.1       | 1.38            | 1.68 | 2.28 | 850.1                | 1.25                             | 1.19 | 1.26 |
| 890.1               | 920.1       | 1.64            | 1.42 | 1.29 | 920.1       | 1.39            | 1.73 | 2.33 | 890.1                | 1.23                             | 1.15 | 1.22 |
| 930.1               | 960.1       | 1.62            | 1.40 | 1.26 | 960.1       | 1.40            | 1.77 | 2.36 | 930.1                | 1.19                             | 1.12 | 1.22 |
| 970.1               | 1000.1      | 1.59            | 1.38 | 1.24 | 1000.1      | 1.44            | 1.84 | 2.44 | 970.1                | 1.18                             | 1.08 | 1.20 |
| 1030.1              | 1060.1      | 1.49            | 1.33 | 1.18 | 1060.1      | 1.49            | 1.92 | 2.51 | 1010.1               | 1.17                             | 1.05 | 1.18 |
| 1070.1              | 1100.1      | 1.47            | 1.32 | 1.20 | 1100.1      | 1.53            | 1.99 | 2.58 | 1050.1               | 1.15                             | 1.02 | 1.20 |
| 1130.1              | 1160.1      | 1.37            | 1.26 | 1.20 | 1160.1      | 1.57            | 2.05 | 2.61 | 1090.1               | 1.18                             | 1.02 | 1.17 |
| 1170.1              | 1200.1      | 1.35            | 1.28 | 1.25 | 1200.1      | 1.61            | 2.10 | 2.66 | 1130.1               | 1.19                             | 1.07 | 1.21 |
| 1230.1              | 1260.1      | 1.37            | 1.35 | 1.35 | 1260.1      | 1.65            | 2.14 | 2.66 | 1170.1               | 1.21                             | 1.11 | 1.23 |
| 1270.1              | 1300.1      | 1.35            | 1.35 | 1.37 | 1300.1      | 1.68            | 2.17 | 2.68 | 1210.1               | 1.25                             | 1.15 | 1.25 |
| 1330.1              | 1360.1      | 1.44            | 1.48 | 1.52 | 1360.1      | 1.71            | 2.17 | 2.63 | 1250.1               | 1.29                             | 1.22 | 1.32 |
| 1370.1              | 1400.1      | 1.50            | 1.53 | 1.57 | 1400.1      | 1.74            | 2.19 | 2.65 | 1290.1               | 1.32                             | 1.26 | 1.36 |
| 1430.1              | 1460.1      | 1.61            | 1.64 | 1.67 | 1460.1      | 1.77            | 2.19 | 2.62 | 1310.1               | 1.35                             | 1.28 | 1.37 |
| 1470.1              | 1500.1      | 1.68            | 1.71 | 1.73 | 1500.1      | 1.82            | 2.22 | 2.65 | 1350.1               | 1.42                             | 1.37 | 1.47 |
| 1530.1              | 1560.1      | 1.81            | 1.81 | 1.81 | 1560.1      | 1.90            | 2.27 | 2.64 | 1370.1               | 1.44                             | 1.40 | 1.51 |
| 1570.1              | 1600.1      | 1.85            | 1.85 | 1.85 | 1600.1      | 1.99            | 2.35 | 2.70 | 1410.1               | 1.49                             | 1.45 | 1.54 |
| 1630.1              | 1660.1      | 2.00            | 2.01 | 2.00 | 1660.1      | 2.10            | 2.39 | 2.69 | 1430.1               | 1.54                             | 1.50 | 1.60 |
| 1670.1              | 1700.1      | 2.02            | 2.04 | 2.04 | 1700.1      | 2.17            | 2.46 | 2.76 | 1470.1               | 1.62                             | 1.59 | 1.69 |
| 1730.1              | 1760.1      | 2.11            | 2.14 | 2.15 | 1760.1      | 2.17            | 2.44 | 2.71 | 1490.1               | 1.64                             | 1.61 | 1.70 |

## Harmonics Tables

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | 2   | 26  | 5   | 33  | 18  | 43  | 29  | 39  | 27  | 44  |
| 1  | -      | 13     | +0  | 22  | 15  | 34  | 43  | 43  | 35  | 50  | 37  | 68  |
| 2  | 66     | 46     | 41  | 48  | 43  | 54  | 49  | 53  | 53  | 55  | 58  | 69  |
| 3  | >90    | 74     | 62  | 61  | 57  | 59  | 59  | 66  | 66  | 75  | 71  | 79  |
| 4  | >90    | >80    | >80 | >80 | >80 | 75  | 75  | 79  | >80 | >80 | >80 | >80 |
| 5  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 6  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 7  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >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: 750.1 MHz; -2.00 dBm.  
LO IN: 780.1 MHz; +17.00 dBm  
IF OUT: 30 MHz; -9.52 dBm

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |    |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 0  | -      | -      | 12  | 36  | 17  | 44  | 31  | 45  | 39  | 52  | 38  | 56 |
| 1  | -      | 12     | +0  | 23  | 16  | 36  | 60  | 48  | 39  | 65  | 43  | 61 |
| 2  | 47     | 37     | 31  | 45  | 30  | 50  | 39  | 50  | 46  | 51  | 64  | 64 |
| 3  | 71     | 53     | 43  | 42  | 39  | 43  | 42  | 51  | 51  | 66  | 55  | 65 |
| 4  | >90    | 69     | 68  | 55  | 55  | 50  | 48  | 55  | 63  | 62  | 63  | 89 |
| 5  | >90    | 78     | 68  | 76  | 70  | 68  | 61  | 61  | 61  | 70  | 69  | 72 |
| 6  | >90    | 88     | >91 | >91 | 87  | 69  | 73  | 68  | 77  | 70  | 73  | 75 |
| 7  | >90    | >91    | 89  | >91 | 89  | >91 | 83  | 77  | 81  | 69  | >91 | 80 |
| 8  | >90    | >91    | >91 | >91 | >91 | >91 | >91 | 85  | 79  | 78  | 79  | 78 |
| 9  | >90    | >91    | >91 | >91 | >91 | >91 | >91 | >91 | 89  | 85  | >91 | 82 |
| 10 | >90    | >91    | >91 | >91 | >91 | >91 | >91 | >91 | >91 | >91 | >91 | 88 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10 |

### LO HARMONICS ORDER

Test conditions: RF IN: 750.1 MHz; 8.00 dBm.  
LO IN: 780.1 MHz; +17.00 dBm  
IF OUT: 30 MHz; 0.57 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.