

# Frequency Mixer

# ADE-10H

## 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  |
| 160.1               | 190.1       | 25.06                                                 | 11.14 | 7.61 |
| 220.1               | 250.1       | 12.76                                                 | 7.92  | 6.91 |
| 280.1               | 310.1       | 8.88                                                  | 7.07  | 6.74 |
| 340.1               | 370.1       | 8.01                                                  | 6.93  | 6.65 |
| 400.1               | 430.1       | 7.34                                                  | 6.78  | 6.54 |
| 460.1               | 490.1       | 7.19                                                  | 6.75  | 6.54 |
| 520.1               | 550.1       | 7.21                                                  | 6.74  | 6.50 |
| 580.1               | 610.1       | 7.22                                                  | 6.72  | 6.41 |
| 640.1               | 670.1       | 7.17                                                  | 6.82  | 6.50 |
| 700.1               | 730.1       | 7.10                                                  | 6.77  | 6.50 |
| 740.1               | 770.1       | 7.12                                                  | 6.78  | 6.50 |
| 800.1               | 830.1       | 7.17                                                  | 6.70  | 6.34 |
| 840.1               | 870.1       | 7.29                                                  | 6.65  | 6.31 |
| 900.1               | 930.1       | 7.80                                                  | 6.87  | 6.41 |
| 940.1               | 970.1       | 8.17                                                  | 7.15  | 6.54 |
| 1000.1              | 1030.1      | 8.53                                                  | 7.51  | 6.75 |
| 1040.1              | 1070.1      | 8.69                                                  | 7.70  | 6.85 |
| 1100.1              | 1130.1      | 8.91                                                  | 8.04  | 7.06 |
| 1140.1              | 1170.1      | 8.88                                                  | 8.05  | 7.10 |
| 1200.1              | 1230.1      | 8.75                                                  | 7.95  | 7.12 |
| 1240.1              | 1270.1      | 8.66                                                  | 7.87  | 7.03 |
| 1300.1              | 1330.1      | 8.45                                                  | 7.65  | 6.74 |
| 1340.1              | 1370.1      | 8.12                                                  | 7.29  | 6.37 |
| 1400.1              | 1430.1      | 7.81                                                  | 6.88  | 6.23 |
| 1440.1              | 1470.1      | 7.68                                                  | 6.74  | 6.26 |
| 1500.1              | 1530.1      | 7.45                                                  | 6.74  | 6.43 |
| 1540.1              | 1570.1      | 7.38                                                  | 6.82  | 6.59 |
| 1600.1              | 1630.1      | 7.48                                                  | 7.01  | 6.88 |
| 1640.1              | 1670.1      | 7.56                                                  | 7.15  | 7.01 |
| 1700.1              | 1730.1      | 7.75                                                  | 7.37  | 7.26 |
| 1740.1              | 1770.1      | 7.86                                                  | 7.45  | 7.38 |
| 1800.1              | 1830.1      | 7.96                                                  | 7.57  | 7.53 |
| 1840.1              | 1870.1      | 8.13                                                  | 7.68  | 7.57 |
| 1900.1              | 1930.1      | 8.34                                                  | 7.81  | 7.68 |
| 1940.1              | 1970.1      | 8.62                                                  | 7.96  | 7.79 |
| 2000.1              | 2030.1      | 8.96                                                  | 8.29  | 8.13 |
| 2040.1              | 2070.1      | 9.48                                                  | 8.70  | 8.42 |
| 2100.1              | 2130.1      | 9.87                                                  | 9.15  | 8.93 |
| 2140.1              | 2170.1      | 10.40                                                 | 9.55  | 9.28 |
| 2200.1              | 2230.1      | 10.80                                                 | 10.05 | 9.80 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP3 INPUT<br>(dBm) |       |       |
|---------------------|-------------|--------------------|-------|-------|
|                     |             | @LO (dBm)          |       |       |
|                     |             | +14                | +17   | +20   |
| 160.1               | 190.1       | 3.93               | 16.84 | 22.73 |
| 220.1               | 250.1       | 13.86              | 21.35 | 30.50 |
| 280.1               | 310.1       | 20.09              | 27.00 | 30.60 |
| 340.1               | 370.1       | 21.94              | 28.10 | 31.19 |
| 400.1               | 430.1       | 25.19              | 28.33 | 30.03 |
| 460.1               | 490.1       | 30.46              | 30.61 | 31.74 |
| 520.1               | 550.1       | 28.61              | 30.31 | 30.37 |
| 580.1               | 610.1       | 26.23              | 25.79 | 28.03 |
| 640.1               | 670.1       | 26.79              | 26.45 | 30.85 |
| 700.1               | 730.1       | 26.66              | 27.33 | 26.22 |
| 740.1               | 770.1       | 23.90              | 28.75 | 29.16 |
| 800.1               | 830.1       | 22.12              | 37.50 | 29.46 |
| 840.1               | 870.1       | 21.04              | 28.76 | 32.94 |
| 900.1               | 930.1       | 23.86              | 23.87 | 26.12 |
| 940.1               | 970.1       | 19.06              | 24.65 | 24.48 |
| 1000.1              | 1030.1      | 16.82              | 24.13 | 24.47 |
| 1040.1              | 1070.1      | 16.22              | 19.57 | 25.28 |
| 1100.1              | 1130.1      | 16.14              | 17.45 | 22.81 |
| 1140.1              | 1170.1      | 16.50              | 17.57 | 21.36 |
| 1200.1              | 1230.1      | 17.17              | 18.45 | 20.43 |
| 1240.1              | 1270.1      | 16.78              | 17.60 | 19.42 |
| 1300.1              | 1330.1      | 15.71              | 16.44 | 18.89 |
| 1340.1              | 1370.1      | 15.63              | 17.47 | 19.82 |
| 1400.1              | 1430.1      | 16.91              | 21.08 | 21.15 |
| 1440.1              | 1470.1      | 19.82              | 20.66 | 22.23 |
| 1500.1              | 1530.1      | 21.08              | 21.64 | 23.27 |
| 1540.1              | 1570.1      | 20.78              | 22.43 | 23.62 |
| 1600.1              | 1630.1      | 22.03              | 23.42 | 23.77 |
| 1640.1              | 1670.1      | 22.15              | 23.94 | 24.12 |
| 1700.1              | 1730.1      | 20.20              | 24.13 | 25.28 |
| 1740.1              | 1770.1      | 19.34              | 24.35 | 25.40 |
| 1800.1              | 1830.1      | 18.45              | 24.09 | 25.79 |
| 1840.1              | 1870.1      | 17.95              | 23.82 | 26.22 |
| 1900.1              | 1930.1      | 17.35              | 23.71 | 25.67 |
| 1940.1              | 1970.1      | 16.85              | 22.36 | 25.72 |
| 2000.1              | 2030.1      | 16.51              | 22.23 | 25.38 |
| 2040.1              | 2070.1      | 16.23              | 21.41 | 26.03 |
| 2100.1              | 2130.1      | 16.07              | 21.23 | 26.26 |
| 2140.1              | 2170.1      | 16.40              | 19.79 | 25.08 |
| 2200.1              | 2230.1      | 16.82              | 20.08 | 23.90 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF IN=+14dBm<br>(dB) |       |      |
|---------------------|-------------|--------------------------------------|-------|------|
|                     |             | @LO (dBm)                            |       |      |
|                     |             | +14                                  | +17   | +20  |
| 160.1               | 190.1       | -12.20                               | -1.45 | 0.13 |
| 220.1               | 250.1       | -2.46                                | 0.09  | 0.08 |
| 280.1               | 310.1       | 0.08                                 | 0.21  | 0.07 |
| 340.1               | 370.1       | 0.61                                 | 0.19  | 0.07 |
| 400.1               | 430.1       | 0.59                                 | 0.19  | 0.08 |
| 460.1               | 490.1       | 0.57                                 | 0.16  | 0.10 |
| 520.1               | 550.1       | 0.58                                 | 0.22  | 0.11 |
| 580.1               | 610.1       | 0.44                                 | 0.24  | 0.17 |
| 640.1               | 670.1       | 0.56                                 | 0.20  | 0.18 |
| 700.1               | 730.1       | 0.74                                 | 0.30  | 0.23 |
| 740.1               | 770.1       | 0.84                                 | 0.35  | 0.27 |
| 800.1               | 830.1       | 1.15                                 | 0.69  | 0.52 |
| 840.1               | 870.1       | 1.13                                 | 0.83  | 0.63 |
| 900.1               | 930.1       | 0.90                                 | 0.89  | 0.75 |
| 940.1               | 970.1       | 0.74                                 | 0.93  | 0.89 |
| 1000.1              | 1030.1      | 0.65                                 | 0.87  | 0.99 |
| 1040.1              | 1070.1      | 0.58                                 | 0.76  | 1.04 |
| 1100.1              | 1130.1      | 0.47                                 | 0.64  | 1.05 |
| 1140.1              | 1170.1      | 0.55                                 | 0.67  | 1.06 |
| 1200.1              | 1230.1      | 0.78                                 | 0.88  | 1.16 |
| 1240.1              | 1270.1      | 0.88                                 | 0.90  | 1.25 |
| 1300.1              | 1330.1      | 1.27                                 | 1.17  | 1.51 |
| 1340.1              | 1370.1      | 1.50                                 | 1.42  | 1.69 |
| 1400.1              | 1430.1      | 1.95                                 | 1.85  | 1.74 |
| 1440.1              | 1470.1      | 2.03                                 | 1.83  | 1.58 |
| 1500.1              | 1530.1      | 2.08                                 | 1.65  | 1.36 |
| 1540.1              | 1570.1      | 2.14                                 | 1.51  | 1.20 |
| 1600.1              | 1630.1      | 2.04                                 | 1.25  | 0.96 |
| 1640.1              | 1670.1      | 1.95                                 | 1.08  | 0.81 |
| 1700.1              | 1730.1      | 2.06                                 | 0.99  | 0.73 |
| 1740.1              | 1770.1      | 2.21                                 | 1.04  | 0.71 |
| 1800.1              | 1830.1      | 2.40                                 | 1.11  | 0.72 |
| 1840.1              | 1870.1      | 2.62                                 | 1.31  | 0.85 |
| 1900.1              | 1930.1      | 2.92                                 | 1.55  | 0.98 |
| 1940.1              | 1970.1      | 3.13                                 | 1.77  | 1.12 |
| 2000.1              | 2030.1      | 3.25                                 | 1.83  | 1.22 |
| 2040.1              | 2070.1      | 3.34                                 | 1.90  | 1.25 |
| 2100.1              | 2130.1      | 3.27                                 | 1.73  | 1.19 |
| 2140.1              | 2170.1      | 3.34                                 | 1.74  | 1.17 |
| 2200.1              | 2230.1      | 3.25                                 | 1.50  | 0.98 |

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ADE-10H

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# Frequency Mixer

# ADE-10H

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=700.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=400.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=1000.1MHz<br>(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                                                             |

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## 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   |
| 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<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(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<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=1000.1MHz<br>(: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 |

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## 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.

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