

# Frequency Mixer

# ADE-R3GLH+

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>IF FIXED<br>@IF(OUT)=30MHz<br>(dB) |       |       |
|---------------------|-------------|-------------------------------------------------------|-------|-------|
|                     |             | @LO (dBm)                                             |       |       |
|                     |             | +7                                                    | +10   | +13   |
| 1240.0              | 1270.0      | 11.62                                                 | 10.62 | 10.25 |
| 1320.0              | 1350.0      | 10.38                                                 | 9.49  | 9.22  |
| 1400.0              | 1430.0      | 9.26                                                  | 8.57  | 8.35  |
| 1480.0              | 1510.0      | 8.37                                                  | 7.86  | 7.69  |
| 1560.0              | 1590.0      | 7.76                                                  | 7.38  | 7.34  |
| 1640.0              | 1670.0      | 7.24                                                  | 6.97  | 6.81  |
| 1720.0              | 1750.0      | 6.84                                                  | 6.51  | 6.25  |
| 1800.0              | 1830.0      | 6.49                                                  | 6.07  | 5.74  |
| 1880.0              | 1910.0      | 6.21                                                  | 5.74  | 5.40  |
| 1960.0              | 1990.0      | 5.92                                                  | 5.47  | 5.16  |
| 2040.0              | 2070.0      | 5.82                                                  | 5.36  | 5.11  |
| 2120.0              | 2150.0      | 5.85                                                  | 5.59  | 5.43  |
| 2200.0              | 2230.0      | 5.60                                                  | 5.45  | 5.38  |
| 2260.0              | 2290.0      | 5.36                                                  | 5.22  | 5.18  |
| 2340.0              | 2370.0      | 5.33                                                  | 5.15  | 5.10  |
| 2400.0              | 2430.0      | 5.33                                                  | 5.14  | 5.11  |
| 2480.0              | 2510.0      | 5.30                                                  | 5.08  | 5.01  |
| 2540.0              | 2570.0      | 5.28                                                  | 5.04  | 4.95  |
| 2620.0              | 2650.0      | 5.36                                                  | 5.12  | 5.03  |
| 2680.0              | 2710.0      | 5.42                                                  | 5.18  | 5.08  |
| 2760.0              | 2790.0      | 5.38                                                  | 5.17  | 5.08  |
| 2820.0              | 2850.0      | 5.38                                                  | 5.14  | 5.05  |
| 2900.0              | 2930.0      | 5.46                                                  | 5.20  | 5.10  |
| 2960.0              | 2990.0      | 5.55                                                  | 5.27  | 5.14  |
| 3040.0              | 3070.0      | 5.58                                                  | 5.30  | 5.18  |
| 3100.0              | 3130.0      | 5.58                                                  | 5.32  | 5.21  |
| 3180.0              | 3210.0      | 5.74                                                  | 5.49  | 5.39  |
| 3240.0              | 3270.0      | 6.09                                                  | 5.83  | 5.79  |
| 3320.0              | 3350.0      | 6.33                                                  | 6.09  | 6.05  |
| 3380.0              | 3410.0      | 6.39                                                  | 6.13  | 6.07  |
| 3460.0              | 3490.0      | 6.77                                                  | 6.54  | 6.45  |
| 3520.0              | 3550.0      | 7.31                                                  | 7.05  | 6.95  |
| 3600.0              | 3630.0      | 7.92                                                  | 7.65  | 7.51  |
| 3660.0              | 3690.0      | 8.16                                                  | 7.93  | 7.82  |
| 3740.0              | 3770.0      | 8.79                                                  | 8.64  | 8.58  |
| 3800.0              | 3830.0      | 9.34                                                  | 9.30  | 9.33  |
| 3880.0              | 3910.0      | 9.61                                                  | 9.58  | 9.67  |
| 3940.0              | 3970.0      | 9.61                                                  | 9.53  | 9.62  |
| 4020.0              | 4050.0      | 9.86                                                  | 9.68  | 9.74  |
| 4080.0              | 4110.0      | 10.38                                                 | 10.14 | 10.16 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP3 INPUT<br>(dBm) |       |       |
|---------------------|-------------|--------------------|-------|-------|
|                     |             | @LO (dBm)          |       |       |
|                     |             | +7                 | +10   | +13   |
| 1240.0              | 1270.0      | 15.66              | 17.12 | 16.74 |
| 1320.0              | 1350.0      | 14.30              | 15.33 | 13.84 |
| 1400.0              | 1430.0      | 13.22              | 13.81 | 11.31 |
| 1480.0              | 1510.0      | 10.55              | 11.16 | 8.80  |
| 1560.0              | 1590.0      | 7.06               | 7.10  | 6.38  |
| 1640.0              | 1670.0      | 6.78               | 9.05  | 10.53 |
| 1720.0              | 1750.0      | 7.98               | 11.09 | 11.66 |
| 1800.0              | 1830.0      | 8.40               | 11.28 | 11.19 |
| 1880.0              | 1910.0      | 8.94               | 11.48 | 12.54 |
| 1960.0              | 1990.0      | 8.50               | 11.26 | 14.60 |
| 2040.0              | 2070.0      | 9.27               | 13.13 | 16.39 |
| 2120.0              | 2150.0      | 10.32              | 14.47 | 17.21 |
| 2200.0              | 2230.0      | 11.37              | 13.93 | 15.42 |
| 2260.0              | 2290.0      | 12.08              | 13.23 | 14.03 |
| 2340.0              | 2370.0      | 13.60              | 13.76 | 13.85 |
| 2400.0              | 2430.0      | 14.29              | 14.51 | 14.12 |
| 2480.0              | 2510.0      | 14.60              | 15.43 | 15.88 |
| 2540.0              | 2570.0      | 15.16              | 16.16 | 16.35 |
| 2620.0              | 2650.0      | 15.56              | 15.76 | 15.54 |
| 2680.0              | 2710.0      | 14.07              | 14.85 | 15.31 |
| 2760.0              | 2790.0      | 14.19              | 14.51 | 14.98 |
| 2820.0              | 2850.0      | 14.68              | 14.60 | 14.86 |
| 2900.0              | 2930.0      | 14.66              | 14.46 | 14.98 |
| 2960.0              | 2990.0      | 14.32              | 14.79 | 15.09 |
| 3040.0              | 3070.0      | 12.75              | 13.23 | 14.12 |
| 3100.0              | 3130.0      | 13.47              | 12.96 | 13.69 |
| 3180.0              | 3210.0      | 11.13              | 11.01 | 10.20 |
| 3240.0              | 3270.0      | 11.33              | 10.09 | 9.72  |
| 3320.0              | 3350.0      | 10.53              | 11.11 | 10.98 |
| 3380.0              | 3410.0      | 11.95              | 12.47 | 12.39 |
| 3460.0              | 3490.0      | 14.85              | 15.40 | 15.94 |
| 3520.0              | 3550.0      | 15.67              | 16.42 | 16.92 |
| 3600.0              | 3630.0      | 17.14              | 17.26 | 17.89 |
| 3660.0              | 3690.0      | 16.95              | 18.16 | 18.90 |
| 3740.0              | 3770.0      | 15.49              | 19.29 | 20.10 |
| 3800.0              | 3830.0      | 15.65              | 19.15 | 20.72 |
| 3880.0              | 3910.0      | 17.15              | 17.97 | 19.98 |
| 3940.0              | 3970.0      | 19.81              | 16.61 | 18.32 |
| 4020.0              | 4050.0      | 13.65              | 17.93 | 17.63 |
| 4080.0              | 4110.0      | 14.04              | 20.55 | 18.29 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF IN=+4dBm<br>(dB) |      |      |
|---------------------|-------------|-------------------------------------|------|------|
|                     |             | @LO (dBm)                           |      |      |
|                     |             | +7                                  | +10  | +13  |
| 1240.0              | 1270.0      | -0.05                               | 0.15 | 0.25 |
| 1320.0              | 1350.0      | 0.29                                | 0.44 | 0.57 |
| 1400.0              | 1430.0      | 0.78                                | 0.82 | 0.90 |
| 1480.0              | 1510.0      | 1.20                                | 1.07 | 1.08 |
| 1560.0              | 1590.0      | 1.50                                | 1.21 | 1.00 |
| 1640.0              | 1670.0      | 1.69                                | 1.27 | 1.02 |
| 1720.0              | 1750.0      | 1.89                                | 1.51 | 1.30 |
| 1800.0              | 1830.0      | 1.96                                | 1.67 | 1.51 |
| 1880.0              | 1910.0      | 2.22                                | 1.90 | 1.69 |
| 1960.0              | 1990.0      | 2.10                                | 1.87 | 1.74 |
| 2040.0              | 2070.0      | 2.18                                | 1.96 | 1.77 |
| 2120.0              | 2150.0      | 1.81                                | 1.58 | 1.46 |
| 2200.0              | 2230.0      | 1.69                                | 1.41 | 1.28 |
| 2260.0              | 2290.0      | 1.58                                | 1.31 | 1.17 |
| 2340.0              | 2370.0      | 1.35                                | 1.07 | 0.94 |
| 2400.0              | 2430.0      | 1.32                                | 1.00 | 0.84 |
| 2480.0              | 2510.0      | 1.28                                | 0.95 | 0.77 |
| 2540.0              | 2570.0      | 1.17                                | 0.87 | 0.71 |
| 2620.0              | 2650.0      | 1.07                                | 0.75 | 0.56 |
| 2680.0              | 2710.0      | 1.04                                | 0.71 | 0.53 |
| 2760.0              | 2790.0      | 1.12                                | 0.81 | 0.60 |
| 2820.0              | 2850.0      | 1.06                                | 0.78 | 0.58 |
| 2900.0              | 2930.0      | 1.11                                | 0.85 | 0.68 |
| 2960.0              | 2990.0      | 1.12                                | 0.82 | 0.64 |
| 3040.0              | 3070.0      | 1.30                                | 1.02 | 0.85 |
| 3100.0              | 3130.0      | 1.44                                | 1.24 | 1.13 |
| 3180.0              | 3210.0      | 1.49                                | 1.37 | 1.30 |
| 3240.0              | 3270.0      | 1.45                                | 1.31 | 1.16 |
| 3320.0              | 3350.0      | 1.45                                | 1.22 | 1.06 |
| 3380.0              | 3410.0      | 1.41                                | 1.24 | 1.12 |
| 3460.0              | 3490.0      | 1.16                                | 0.96 | 0.87 |
| 3520.0              | 3550.0      | 0.95                                | 0.72 | 0.62 |
| 3600.0              | 3630.0      | 0.67                                | 0.52 | 0.44 |
| 3660.0              | 3690.0      | 0.58                                | 0.47 | 0.40 |
| 3740.0              | 3770.0      | 0.40                                | 0.33 | 0.31 |
| 3800.0              | 3830.0      | 0.27                                | 0.21 | 0.21 |
| 3880.0              | 3910.0      | 0.23                                | 0.16 | 0.18 |
| 3940.0              | 3970.0      | 0.26                                | 0.16 | 0.18 |
| 4020.0              | 4050.0      | 0.38                                | 0.18 | 0.19 |
| 4080.0              | 4110.0      | 0.32                                | 0.16 | 0.18 |

REV. X2

ADE-R3GLH+

101013

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# Frequency Mixer

ADE-R3GLH+

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=2350MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=2289.8MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=2710.1MHz<br>(dB) |
|----------------------|-------------|----------------------------------------------------------------|----------------------|-------------|------------------------------------------------------------------|----------------------|-------------|------------------------------------------------------------------|
|                      |             | @LO (dBm)                                                      |                      |             | @LO (dBm)                                                        |                      |             | @LO (dBm)                                                        |
|                      |             | +10                                                            |                      |             | +10                                                              |                      |             | +10                                                              |
| 1850.0               | 500.0       | 11.07                                                          | 10.1                 | 2300.0      | 5.55                                                             | 1830.1               | 880.0       | 10.85                                                            |
| 1746.6               | 603.4       | 9.39                                                           | 50.1                 | 2340.0      | 5.28                                                             | 1790.1               | 920.0       | 10.10                                                            |
| 1643.3               | 706.7       | 8.37                                                           | 90.1                 | 2380.0      | 5.24                                                             | 1750.1               | 960.0       | 9.46                                                             |
| 1539.9               | 810.1       | 7.52                                                           | 130.1                | 2420.0      | 5.17                                                             | 1710.1               | 1000.0      | 8.89                                                             |
| 1436.5               | 913.5       | 6.75                                                           | 170.1                | 2460.0      | 5.10                                                             | 1670.1               | 1040.0      | 8.52                                                             |
| 1333.1               | 1016.9      | 6.26                                                           | 210.1                | 2500.0      | 5.06                                                             | 1630.1               | 1080.0      | 8.10                                                             |
| 1229.8               | 1120.2      | 5.83                                                           | 250.1                | 2540.0      | 5.10                                                             | 1590.1               | 1120.0      | 7.82                                                             |
| 1126.4               | 1223.6      | 5.67                                                           | 290.1                | 2580.0      | 5.20                                                             | 1550.1               | 1160.0      | 7.47                                                             |
| 1043.7               | 1306.3      | 5.51                                                           | 330.1                | 2620.0      | 5.25                                                             | 1510.1               | 1200.0      | 7.22                                                             |
| 940.3                | 1409.7      | 5.27                                                           | 370.1                | 2660.0      | 5.33                                                             | 1470.1               | 1240.0      | 6.89                                                             |
| 857.6                | 1492.4      | 5.25                                                           | 410.1                | 2700.0      | 5.37                                                             | 1430.1               | 1280.0      | 6.67                                                             |
| 754.3                | 1595.7      | 5.32                                                           | 450.1                | 2740.0      | 5.37                                                             | 1390.1               | 1320.0      | 6.48                                                             |
| 671.6                | 1678.4      | 5.43                                                           | 490.1                | 2780.0      | 5.39                                                             | 1350.1               | 1360.0      | 6.29                                                             |
| 568.2                | 1781.8      | 5.76                                                           | 530.1                | 2820.0      | 5.43                                                             | 1310.1               | 1400.0      | 6.17                                                             |
| 485.5                | 1864.5      | 5.79                                                           | 570.1                | 2860.0      | 5.41                                                             | 1270.1               | 1440.0      | 6.08                                                             |
| 382.1                | 1967.9      | 5.98                                                           | 610.1                | 2900.0      | 5.35                                                             | 1210.1               | 1500.0      | 6.02                                                             |
| 299.4                | 2050.6      | 5.96                                                           | 650.1                | 2940.0      | 5.32                                                             | 1170.1               | 1540.0      | 6.03                                                             |
| 196.1                | 2153.9      | 5.63                                                           | 710.1                | 3000.0      | 5.31                                                             | 1110.1               | 1600.0      | 5.91                                                             |
| 113.4                | 2236.6      | 5.43                                                           | 750.1                | 3040.0      | 5.26                                                             | 1070.1               | 1640.0      | 5.92                                                             |
| 10.0                 | 2340.0      | 5.38                                                           | 810.1                | 3100.0      | 5.29                                                             | 1010.1               | 1700.0      | 6.04                                                             |
| 68.7                 | 2418.7      | 5.08                                                           | 850.1                | 3140.0      | 5.37                                                             | 970.1                | 1740.0      | 6.12                                                             |
| 166.4                | 2516.4      | 5.03                                                           | 910.1                | 3200.0      | 5.69                                                             | 910.1                | 1800.0      | 6.03                                                             |
| 244.6                | 2594.6      | 5.16                                                           | 950.1                | 3240.0      | 5.87                                                             | 870.1                | 1840.0      | 5.98                                                             |
| 342.4                | 2692.4      | 5.28                                                           | 1010.1               | 3300.0      | 6.37                                                             | 810.1                | 1900.0      | 5.84                                                             |
| 420.6                | 2770.6      | 5.35                                                           | 1050.1               | 3340.0      | 6.38                                                             | 770.1                | 1940.0      | 5.68                                                             |
| 518.3                | 2868.3      | 5.43                                                           | 1110.1               | 3400.0      | 6.41                                                             | 710.1                | 2000.0      | 5.41                                                             |
| 596.5                | 2946.5      | 5.31                                                           | 1150.1               | 3440.0      | 6.38                                                             | 670.1                | 2040.0      | 5.37                                                             |
| 694.3                | 3044.3      | 5.21                                                           | 1210.1               | 3500.0      | 6.66                                                             | 610.1                | 2100.0      | 5.35                                                             |
| 772.5                | 3122.5      | 5.22                                                           | 1250.1               | 3540.0      | 6.80                                                             | 570.1                | 2140.0      | 5.39                                                             |
| 870.2                | 3220.2      | 5.56                                                           | 1310.1               | 3600.0      | 7.06                                                             | 510.1                | 2200.0      | 5.38                                                             |
| 948.4                | 3298.4      | 6.14                                                           | 1350.1               | 3640.0      | 7.18                                                             | 470.1                | 2240.0      | 5.35                                                             |
| 1046.2               | 3396.2      | 6.20                                                           | 1410.1               | 3700.0      | 7.58                                                             | 410.1                | 2300.0      | 5.28                                                             |
| 1124.4               | 3474.4      | 6.29                                                           | 1450.1               | 3740.0      | 7.81                                                             | 370.1                | 2340.0      | 5.25                                                             |
| 1222.1               | 3572.1      | 6.73                                                           | 1510.1               | 3800.0      | 8.10                                                             | 310.1                | 2400.0      | 5.34                                                             |
| 1300.3               | 3650.3      | 7.12                                                           | 1550.1               | 3840.0      | 8.38                                                             | 270.1                | 2440.0      | 5.41                                                             |
| 1398.1               | 3748.1      | 7.44                                                           | 1610.1               | 3900.0      | 9.24                                                             | 210.1                | 2500.0      | 5.42                                                             |
| 1476.3               | 3826.3      | 7.91                                                           | 1650.1               | 3940.0      | 9.72                                                             | 170.1                | 2540.0      | 5.42                                                             |
| 1574.0               | 3924.0      | 8.98                                                           | 1710.1               | 4000.0      | 10.27                                                            | 110.1                | 2600.0      | 5.31                                                             |
| 1652.2               | 4002.2      | 9.90                                                           | 1750.1               | 4040.0      | 10.84                                                            | 70.1                 | 2640.0      | 5.25                                                             |
| 1750.0               | 4100.0      | 10.81                                                          | 1810.1               | 4100.0      | 11.55                                                            | 10.1                 | 2700.0      | 5.37                                                             |

# Frequency Mixer

ADE-R3GLH+

## Typical Performance Data

| LO<br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF ISOLATION<br>(dB) |       |       |
|-------------|-------------------------|-------|-------|-------------------------|-------|-------|
|             | @LO (dBm)               |       |       | @LO (dBm)               |       |       |
|             | +7                      | +10   | +13   | +7                      | +10   | +13   |
| 1270.0      | 28.29                   | 28.15 | 27.61 | 13.63                   | 13.53 | 13.15 |
| 1350.0      | 28.42                   | 28.10 | 27.66 | 14.03                   | 13.77 | 13.20 |
| 1430.0      | 29.01                   | 28.44 | 27.74 | 14.60                   | 14.08 | 13.43 |
| 1510.0      | 29.74                   | 29.24 | 28.33 | 15.17                   | 14.59 | 13.67 |
| 1590.0      | 30.34                   | 29.99 | 29.93 | 15.70                   | 15.03 | 14.21 |
| 1670.0      | 30.95                   | 30.53 | 30.42 | 15.86                   | 15.13 | 14.29 |
| 1750.0      | 32.16                   | 31.52 | 31.46 | 16.02                   | 15.04 | 14.17 |
| 1830.0      | 34.19                   | 32.98 | 32.71 | 16.08                   | 14.95 | 14.16 |
| 1910.0      | 37.20                   | 34.76 | 34.06 | 16.37                   | 15.05 | 14.35 |
| 1990.0      | 40.04                   | 38.04 | 37.21 | 16.95                   | 15.80 | 15.16 |
| 2070.0      | 39.70                   | 39.21 | 39.02 | 17.91                   | 16.87 | 16.23 |
| 2150.0      | 40.43                   | 40.21 | 40.17 | 19.17                   | 18.18 | 17.54 |
| 2230.0      | 40.28                   | 40.66 | 40.65 | 20.26                   | 19.19 | 18.52 |
| 2290.0      | 40.07                   | 40.61 | 40.61 | 20.98                   | 20.08 | 19.35 |
| 2370.0      | 39.93                   | 39.75 | 39.48 | 22.00                   | 21.23 | 20.63 |
| 2430.0      | 39.09                   | 39.03 | 38.62 | 22.66                   | 22.06 | 21.46 |
| 2510.0      | 37.09                   | 37.00 | 37.00 | 23.40                   | 22.86 | 22.48 |
| 2570.0      | 36.42                   | 36.41 | 36.31 | 24.11                   | 23.60 | 23.17 |
| 2650.0      | 35.16                   | 34.65 | 34.50 | 24.86                   | 24.53 | 24.20 |
| 2710.0      | 35.26                   | 34.20 | 33.70 | 25.54                   | 25.24 | 24.84 |
| 2790.0      | 35.35                   | 33.94 | 33.08 | 26.00                   | 26.02 | 25.71 |
| 2850.0      | 35.51                   | 33.91 | 32.99 | 26.51                   | 26.33 | 26.25 |
| 2930.0      | 34.19                   | 33.06 | 32.42 | 27.19                   | 26.99 | 26.89 |
| 2990.0      | 33.76                   | 32.50 | 31.89 | 27.72                   | 27.42 | 27.29 |
| 3070.0      | 33.13                   | 31.89 | 31.06 | 27.99                   | 27.94 | 27.65 |
| 3130.0      | 33.84                   | 32.42 | 31.29 | 27.95                   | 27.93 | 27.58 |
| 3210.0      | 35.70                   | 33.71 | 32.15 | 27.46                   | 27.51 | 27.33 |
| 3270.0      | 35.34                   | 34.35 | 32.34 | 27.26                   | 27.39 | 27.27 |
| 3350.0      | 30.81                   | 32.03 | 31.54 | 28.13                   | 27.67 | 27.67 |
| 3410.0      | 29.84                   | 30.72 | 30.50 | 28.96                   | 28.19 | 27.93 |
| 3490.0      | 29.49                   | 30.31 | 30.13 | 30.14                   | 28.96 | 28.58 |
| 3550.0      | 29.15                   | 29.89 | 29.73 | 30.75                   | 29.57 | 28.84 |
| 3630.0      | 29.43                   | 29.86 | 29.78 | 30.96                   | 29.76 | 29.16 |
| 3690.0      | 29.63                   | 30.02 | 29.93 | 30.93                   | 29.79 | 29.19 |
| 3770.0      | 29.86                   | 30.28 | 29.87 | 30.99                   | 30.06 | 29.07 |
| 3830.0      | 30.00                   | 30.32 | 29.96 | 30.68                   | 30.06 | 29.21 |
| 3910.0      | 30.64                   | 30.77 | 30.14 | 30.57                   | 29.90 | 29.17 |
| 3970.0      | 30.83                   | 31.18 | 30.51 | 30.56                   | 29.89 | 29.08 |
| 4050.0      | 30.56                   | 31.16 | 30.80 | 30.47                   | 29.72 | 28.92 |
| 4110.0      | 30.59                   | 31.12 | 30.96 | 30.39                   | 29.65 | 28.81 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +7                      | +10   | +13   |
| 1240.0              | 1270.0      | 12.46                   | 12.07 | 11.93 |
| 1320.0              | 1350.0      | 11.65                   | 11.16 | 11.06 |
| 1400.0              | 1430.0      | 11.10                   | 10.60 | 10.50 |
| 1480.0              | 1510.0      | 10.93                   | 10.52 | 10.47 |
| 1560.0              | 1590.0      | 11.05                   | 10.81 | 10.97 |
| 1640.0              | 1670.0      | 11.23                   | 11.02 | 10.97 |
| 1720.0              | 1750.0      | 11.29                   | 11.08 | 10.92 |
| 1800.0              | 1830.0      | 11.54                   | 11.50 | 11.41 |
| 1880.0              | 1910.0      | 11.91                   | 11.88 | 11.91 |
| 1960.0              | 1990.0      | 12.63                   | 12.55 | 12.49 |
| 2040.0              | 2070.0      | 12.88                   | 12.88 | 12.94 |
| 2120.0              | 2150.0      | 13.10                   | 13.08 | 13.10 |
| 2200.0              | 2230.0      | 13.65                   | 13.70 | 13.73 |
| 2260.0              | 2290.0      | 13.96                   | 14.23 | 14.31 |
| 2340.0              | 2370.0      | 14.35                   | 14.82 | 15.10 |
| 2400.0              | 2430.0      | 14.61                   | 15.20 | 15.58 |
| 2480.0              | 2510.0      | 15.11                   | 15.61 | 16.00 |
| 2540.0              | 2570.0      | 15.74                   | 16.13 | 16.44 |
| 2620.0              | 2650.0      | 16.19                   | 16.58 | 16.87 |
| 2680.0              | 2710.0      | 16.72                   | 17.00 | 17.19 |
| 2760.0              | 2790.0      | 17.25                   | 17.38 | 17.46 |
| 2820.0              | 2850.0      | 17.51                   | 17.50 | 17.50 |
| 2900.0              | 2930.0      | 17.88                   | 17.71 | 17.57 |
| 2960.0              | 2990.0      | 18.00                   | 17.70 | 17.44 |
| 3040.0              | 3070.0      | 17.77                   | 17.44 | 17.18 |
| 3100.0              | 3130.0      | 17.31                   | 16.99 | 16.74 |
| 3180.0              | 3210.0      | 16.53                   | 16.20 | 15.98 |
| 3240.0              | 3270.0      | 15.96                   | 15.65 | 15.35 |
| 3320.0              | 3350.0      | 15.53                   | 15.15 | 14.90 |
| 3380.0              | 3410.0      | 15.42                   | 15.05 | 14.89 |
| 3460.0              | 3490.0      | 15.18                   | 14.91 | 14.77 |
| 3520.0              | 3550.0      | 14.97                   | 14.71 | 14.59 |
| 3600.0              | 3630.0      | 14.84                   | 14.66 | 14.60 |
| 3660.0              | 3690.0      | 14.81                   | 14.66 | 14.65 |
| 3740.0              | 3770.0      | 14.94                   | 14.75 | 14.73 |
| 3800.0              | 3830.0      | 15.12                   | 14.97 | 14.90 |
| 3880.0              | 3910.0      | 15.43                   | 15.25 | 15.17 |
| 3940.0              | 3970.0      | 15.62                   | 15.44 | 15.38 |
| 4020.0              | 4050.0      | 16.00                   | 15.86 | 15.79 |
| 4080.0              | 4110.0      | 16.27                   | 16.13 | 16.09 |

# Frequency Mixer

ADE-R3GLH+

## 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=2700MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|------|------|----------------------|--------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |      |      |                      | @LO (dBm)                      |      |      |
|                     |             | +7              | +10  | +13  |             | +7              | +10  | +13  |                      | +7                             | +10  | +13  |
| 1240.0              | 1270.0      | 9.85            | 8.95 | 8.51 | 1270.0      | 2.03            | 1.64 | 1.87 | 10.0                 | 1.26                           | 1.14 | 1.08 |
| 1320.0              | 1350.0      | 7.90            | 7.02 | 6.58 | 1350.0      | 1.87            | 1.58 | 1.88 | 50.0                 | 1.28                           | 1.17 | 1.10 |
| 1400.0              | 1430.0      | 6.28            | 5.61 | 5.27 | 1430.0      | 1.74            | 1.56 | 1.91 | 90.0                 | 1.28                           | 1.17 | 1.12 |
| 1480.0              | 1510.0      | 5.00            | 4.54 | 4.20 | 1510.0      | 1.62            | 1.55 | 1.93 | 130.0                | 1.37                           | 1.25 | 1.20 |
| 1560.0              | 1590.0      | 3.98            | 3.65 | 3.35 | 1590.0      | 1.56            | 1.57 | 1.96 | 170.0                | 1.34                           | 1.22 | 1.17 |
| 1640.0              | 1670.0      | 3.04            | 2.86 | 2.68 | 1670.0      | 1.49            | 1.55 | 1.96 | 210.0                | 1.46                           | 1.35 | 1.29 |
| 1720.0              | 1750.0      | 2.30            | 2.22 | 2.15 | 1750.0      | 1.40            | 1.54 | 1.98 | 250.0                | 1.42                           | 1.31 | 1.24 |
| 1800.0              | 1830.0      | 1.77            | 1.76 | 1.76 | 1830.0      | 1.33            | 1.55 | 2.01 | 310.0                | 1.50                           | 1.39 | 1.33 |
| 1880.0              | 1910.0      | 1.40            | 1.43 | 1.49 | 1910.0      | 1.27            | 1.55 | 2.03 | 350.0                | 1.52                           | 1.40 | 1.33 |
| 1960.0              | 1990.0      | 1.15            | 1.24 | 1.33 | 1990.0      | 1.24            | 1.54 | 2.04 | 410.0                | 1.59                           | 1.47 | 1.40 |
| 2040.0              | 2070.0      | 1.20            | 1.29 | 1.33 | 2070.0      | 1.20            | 1.53 | 2.04 | 450.0                | 1.51                           | 1.39 | 1.33 |
| 2120.0              | 2150.0      | 1.44            | 1.55 | 1.56 | 2150.0      | 1.14            | 1.52 | 2.07 | 510.0                | 1.63                           | 1.51 | 1.44 |
| 2200.0              | 2230.0      | 1.56            | 1.71 | 1.74 | 2230.0      | 1.07            | 1.54 | 2.13 | 550.0                | 1.54                           | 1.42 | 1.34 |
| 2260.0              | 2290.0      | 1.62            | 1.77 | 1.85 | 2290.0      | 1.05            | 1.56 | 2.15 | 610.0                | 1.59                           | 1.46 | 1.38 |
| 2340.0              | 2370.0      | 1.66            | 1.74 | 1.82 | 2370.0      | 1.10            | 1.55 | 2.13 | 650.0                | 1.49                           | 1.37 | 1.30 |
| 2400.0              | 2430.0      | 1.67            | 1.68 | 1.73 | 2430.0      | 1.17            | 1.59 | 2.17 | 710.0                | 1.50                           | 1.39 | 1.31 |
| 2480.0              | 2510.0      | 1.76            | 1.71 | 1.70 | 2510.0      | 1.26            | 1.64 | 2.23 | 750.0                | 1.44                           | 1.34 | 1.27 |
| 2540.0              | 2570.0      | 1.79            | 1.72 | 1.69 | 2570.0      | 1.31            | 1.63 | 2.18 | 810.0                | 1.39                           | 1.32 | 1.28 |
| 2620.0              | 2650.0      | 1.74            | 1.66 | 1.62 | 2650.0      | 1.41            | 1.67 | 2.18 | 850.0                | 1.34                           | 1.29 | 1.26 |
| 2680.0              | 2710.0      | 1.68            | 1.59 | 1.54 | 2710.0      | 1.46            | 1.72 | 2.24 | 910.0                | 1.39                           | 1.38 | 1.38 |
| 2760.0              | 2790.0      | 1.59            | 1.49 | 1.44 | 2790.0      | 1.54            | 1.73 | 2.22 | 950.0                | 1.40                           | 1.43 | 1.45 |
| 2820.0              | 2850.0      | 1.53            | 1.43 | 1.38 | 2850.0      | 1.60            | 1.74 | 2.18 | 1010.0               | 1.41                           | 1.50 | 1.55 |
| 2900.0              | 2930.0      | 1.43            | 1.34 | 1.29 | 2930.0      | 1.66            | 1.77 | 2.19 | 1050.0               | 1.41                           | 1.51 | 1.57 |
| 2960.0              | 2990.0      | 1.35            | 1.28 | 1.24 | 2990.0      | 1.74            | 1.81 | 2.23 | 1110.0               | 1.50                           | 1.62 | 1.69 |
| 3040.0              | 3070.0      | 1.30            | 1.28 | 1.27 | 3070.0      | 1.84            | 1.84 | 2.22 | 1150.0               | 1.52                           | 1.66 | 1.74 |
| 3100.0              | 3130.0      | 1.33            | 1.34 | 1.36 | 3130.0      | 1.88            | 1.86 | 2.20 | 1210.0               | 1.49                           | 1.66 | 1.74 |
| 3180.0              | 3210.0      | 1.51            | 1.57 | 1.62 | 3210.0      | 1.90            | 1.86 | 2.21 | 1250.0               | 1.46                           | 1.62 | 1.70 |
| 3240.0              | 3270.0      | 1.71            | 1.82 | 1.91 | 3270.0      | 1.98            | 1.87 | 2.19 | 1310.0               | 1.45                           | 1.60 | 1.68 |
| 3320.0              | 3350.0      | 1.99            | 2.14 | 2.25 | 3350.0      | 2.21            | 1.99 | 2.22 | 1350.0               | 1.42                           | 1.51 | 1.66 |
| 3380.0              | 3410.0      | 2.29            | 2.42 | 2.52 | 3410.0      | 2.33            | 2.10 | 2.31 | 1410.0               | 1.33                           | 1.46 | 1.54 |
| 3460.0              | 3490.0      | 2.70            | 2.86 | 2.95 | 3490.0      | 2.47            | 2.17 | 2.34 | 1450.0               | 1.30                           | 1.43 | 1.49 |
| 3520.0              | 3550.0      | 3.01            | 3.17 | 3.25 | 3550.0      | 2.66            | 2.22 | 2.30 | 1510.0               | 1.36                           | 1.45 | 1.51 |
| 3600.0              | 3630.0      | 3.57            | 3.71 | 3.74 | 3630.0      | 2.82            | 2.34 | 2.38 | 1550.0               | 1.46                           | 1.53 | 1.58 |
| 3660.0              | 3690.0      | 4.11            | 4.29 | 4.32 | 3690.0      | 2.95            | 2.40 | 2.43 | 1610.0               | 1.73                           | 1.78 | 1.81 |
| 3740.0              | 3770.0      | 4.70            | 5.02 | 5.10 | 3770.0      | 3.19            | 2.50 | 2.44 | 1650.0               | 1.93                           | 1.98 | 2.02 |
| 3800.0              | 3830.0      | 5.03            | 5.44 | 5.58 | 3830.0      | 3.29            | 2.57 | 2.46 | 1710.0               | 2.38                           | 2.46 | 2.51 |
| 3880.0              | 3910.0      | 5.52            | 5.91 | 6.13 | 3910.0      | 3.44            | 2.66 | 2.51 | 1750.0               | 2.78                           | 2.89 | 2.95 |
| 3940.0              | 3970.0      | 5.99            | 6.42 | 6.68 | 3970.0      | 3.67            | 2.74 | 2.54 | 1810.0               | 3.60                           | 3.76 | 3.83 |
| 4020.0              | 4050.0      | 6.46            | 6.81 | 7.11 | 4050.0      | 3.95            | 2.87 | 2.58 | 1850.0               | 4.24                           | 4.43 | 4.52 |
| 4080.0              | 4110.0      | 6.94            | 7.11 | 7.31 | 4110.0      | 4.04            | 2.95 | 2.61 | 1910.0               | 5.52                           | 5.77 | 5.89 |

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## Harmonics Tables

| RF HARMONICS ORDER | (-dBm) |     | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------------------|--------|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                    | 0      | -   | -      | 5   | 23  | 5   | 36  | 16  | 18  | 25  | 41  | 34  | 42  |
|                    | 1      | -   | 9      | +0  | 43  | 31  | 33  | 38  | 35  | 36  | 35  | 50  | 59  |
|                    | 2      | 83  | >74    | 53  | 55  | 54  | >74 | 47  | >74 | 44  | 50  | 71  | 63  |
|                    | 3      | >90 | 71     | >74 | >74 | 58  | >74 | >74 | 68  | >74 | 66  | >74 | 66  |
|                    | 4      | >90 | >74    | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 |
|                    | 5      | >90 | >74    | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 |
|                    | 6      | >90 | >74    | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 |
|                    | 7      | >90 | >74    | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 |
|                    | 8      | >90 | >74    | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 |
|                    | 9      | >90 | >74    | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 |
|                    | 10     | >90 | >74    | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 | >74 |
|                    | RF CAL |     | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

## LO HARMONICS ORDER

Test conditions:

RF IN: 2350 MHz; -11.00 dBm.

LO IN: 2380 MHz; +10.00 dBm

IF OUT: 30 MHz; -16.18 dBm

| RF HARMONICS ORDER | (-dBm) |     | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------------------|--------|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                    | 0      | -   | -      | 5   | 33  | 16  | 48  | 32  | 34  | 38  | 67  | 60  | 68  |
|                    | 1      | -   | 9      | +0  | 42  | 32  | 35  | 40  | 40  | 37  | 41  | 55  | >84 |
|                    | 2      | 63  | 65     | 44  | 43  | 45  | 64  | 40  | 63  | 38  | 46  | 53  | 63  |
|                    | 3      | >90 | 48     | 55  | 57  | 36  | 57  | 56  | 53  | 58  | 52  | 56  | 53  |
|                    | 4      | >90 | >84    | 58  | >84 | 64  | 61  | 67  | 76  | 56  | 78  | 50  | 60  |
|                    | 5      | >90 | 64     | 81  | 77  | 80  | 80  | 59  | 79  | 75  | 69  | 72  | 66  |
|                    | 6      | >90 | 75     | 82  | >84 | 73  | >84 | 76  | 72  | >84 | >84 | 71  | >84 |
|                    | 7      | >90 | >84    | >84 | 75  | >84 | 81  | >84 | >84 | 71  | >84 | >84 | 83  |
|                    | 8      | >90 | >84    | >84 | >84 | >84 | >84 | >84 | >84 | >84 | 80  | >84 | >84 |
|                    | 9      | >90 | >84    | >84 | >84 | >84 | >84 | >84 | >84 | >84 | >84 | 82  | >84 |
|                    | 10     | >90 | >84    | >84 | >84 | >84 | >84 | >84 | >84 | >84 | >84 | >84 | >84 |
|                    | RF CAL | 0   | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

## LO HARMONICS ORDER

Test conditions:

RF IN: 2350 MHz; -1.00 dBm.

LO IN: 2380 MHz; +10.00 dBm

IF OUT: 30 MHz; -6.32 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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