

# Frequency Mixer

## HJK-ED14922/1

### Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>IF FIXED<br>@IF(OUT)=970MHz<br>(dB) |       |       | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP-3 INPUT<br>(dBm) |       |       | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF IN=+14dBm<br>(dB) |      |      |
|---------------------|-------------|--------------------------------------------------------|-------|-------|---------------------|-------------|---------------------|-------|-------|---------------------|-------------|--------------------------------------|------|------|
|                     |             | @LO (dBm)                                              |       |       |                     |             | @LO (dBm)           |       |       |                     |             | @LO (dBm)                            |      |      |
|                     |             | +14                                                    | +17   | +20   |                     |             | +14                 | +17   | +20   |                     |             | +14                                  | +17  | +20  |
| 25.1                | 995.1       | 10.34                                                  | 9.99  | 9.73  | 25.1                | 995.1       | 24.42               | 27.02 | 29.13 | 25.1                | 995.1       | 0.41                                 | 0.20 | 0.09 |
| 145.1               | 1115.1      | 7.75                                                   | 7.44  | 7.20  | 145.1               | 1115.1      | 20.73               | 24.42 | 27.50 | 145.1               | 1115.1      | 1.34                                 | 0.59 | 0.26 |
| 275.1               | 1245.1      | 7.89                                                   | 7.60  | 7.38  | 275.1               | 1245.1      | 20.92               | 23.85 | 26.46 | 275.1               | 1245.1      | 0.94                                 | 0.45 | 0.23 |
| 395.1               | 1365.1      | 7.86                                                   | 7.56  | 7.34  | 395.1               | 1365.1      | 20.66               | 23.46 | 25.94 | 395.1               | 1365.1      | 0.91                                 | 0.48 | 0.27 |
| 525.1               | 1495.1      | 7.84                                                   | 7.56  | 7.35  | 525.1               | 1495.1      | 21.32               | 24.11 | 27.26 | 525.1               | 1495.1      | 0.86                                 | 0.45 | 0.24 |
| 655.1               | 1625.1      | 7.85                                                   | 7.57  | 7.38  | 655.1               | 1625.1      | 21.43               | 24.64 | 27.86 | 655.1               | 1625.1      | 0.88                                 | 0.43 | 0.22 |
| 775.1               | 1745.1      | 7.78                                                   | 7.53  | 7.36  | 775.1               | 1745.1      | 21.92               | 25.30 | 28.74 | 775.1               | 1745.1      | 0.76                                 | 0.36 | 0.17 |
| 905.1               | 1875.1      | 7.82                                                   | 7.56  | 7.38  | 905.1               | 1875.1      | 21.74               | 24.85 | 28.57 | 905.1               | 1875.1      | 0.78                                 | 0.34 | 0.16 |
| 1035.1              | 2005.1      | 7.63                                                   | 7.37  | 7.19  | 1035.1              | 2005.1      | 21.19               | 24.03 | 28.84 | 1035.1              | 2005.1      | 0.81                                 | 0.37 | 0.19 |
| 1155.1              | 2125.1      | 7.72                                                   | 7.49  | 7.32  | 1155.1              | 2125.1      | 21.71               | 24.75 | 29.01 | 1155.1              | 2125.1      | 0.73                                 | 0.33 | 0.16 |
| 1285.1              | 2255.1      | 7.80                                                   | 7.60  | 7.45  | 1285.1              | 2255.1      | 22.53               | 26.41 | 31.00 | 1285.1              | 2255.1      | 0.66                                 | 0.28 | 0.13 |
| 1415.1              | 2385.1      | 7.79                                                   | 7.58  | 7.43  | 1415.1              | 2385.1      | 22.37               | 25.80 | 30.35 | 1415.1              | 2385.1      | 0.69                                 | 0.28 | 0.13 |
| 1535.1              | 2505.1      | 7.74                                                   | 7.50  | 7.32  | 1535.1              | 2505.1      | 22.33               | 26.37 | 30.25 | 1535.1              | 2505.1      | 0.83                                 | 0.34 | 0.15 |
| 1665.1              | 2635.1      | 7.63                                                   | 7.37  | 7.18  | 1665.1              | 2635.1      | 22.68               | 26.23 | 30.03 | 1665.1              | 2635.1      | 0.83                                 | 0.34 | 0.15 |
| 1785.1              | 2755.1      | 7.43                                                   | 7.16  | 6.97  | 1785.1              | 2755.1      | 22.55               | 25.73 | 29.88 | 1785.1              | 2755.1      | 0.80                                 | 0.33 | 0.15 |
| 1915.1              | 2885.1      | 7.45                                                   | 7.15  | 6.94  | 1915.1              | 2885.1      | 21.53               | 24.19 | 28.32 | 1915.1              | 2885.1      | 0.95                                 | 0.42 | 0.20 |
| 2045.1              | 3015.1      | 7.46                                                   | 7.19  | 6.99  | 2045.1              | 3015.1      | 22.01               | 25.14 | 29.51 | 2045.1              | 3015.1      | 0.75                                 | 0.36 | 0.17 |
| 2165.1              | 3135.1      | 7.40                                                   | 7.15  | 6.96  | 2165.1              | 3135.1      | 22.06               | 25.38 | 29.81 | 2165.1              | 3135.1      | 0.67                                 | 0.32 | 0.15 |
| 2295.1              | 3265.1      | 7.53                                                   | 7.27  | 7.09  | 2295.1              | 3265.1      | 21.98               | 25.43 | 29.15 | 2295.1              | 3265.1      | 0.68                                 | 0.33 | 0.16 |
| 2425.1              | 3395.1      | 7.64                                                   | 7.38  | 7.20  | 2425.1              | 3395.1      | 22.87               | 25.98 | 30.07 | 2425.1              | 3395.1      | 0.61                                 | 0.30 | 0.15 |
| 2575.1              | 3545.1      | 7.74                                                   | 7.49  | 7.32  | 2575.1              | 3545.1      | 22.36               | 25.45 | 30.05 | 2575.1              | 3545.1      | 0.71                                 | 0.36 | 0.18 |
| 2675.1              | 3645.1      | 7.79                                                   | 7.56  | 7.40  | 2675.1              | 3645.1      | 22.13               | 25.54 | 29.16 | 2675.1              | 3645.1      | 0.69                                 | 0.35 | 0.18 |
| 2805.1              | 3775.1      | 7.94                                                   | 7.69  | 7.54  | 2805.1              | 3775.1      | 21.95               | 24.97 | 28.47 | 2805.1              | 3775.1      | 0.73                                 | 0.39 | 0.21 |
| 2925.1              | 3895.1      | 8.08                                                   | 7.82  | 7.64  | 2925.1              | 3895.1      | 21.25               | 24.28 | 27.41 | 2925.1              | 3895.1      | 0.83                                 | 0.45 | 0.26 |
| 3055.1              | 4025.1      | 8.18                                                   | 7.91  | 7.73  | 3055.1              | 4025.1      | 19.90               | 22.63 | 25.51 | 3055.1              | 4025.1      | 1.37                                 | 0.72 | 0.41 |
| 3185.1              | 4155.1      | 8.50                                                   | 8.24  | 8.05  | 3185.1              | 4155.1      | 19.63               | 22.47 | 25.55 | 3185.1              | 4155.1      | 1.68                                 | 0.90 | 0.53 |
| 3305.1              | 4275.1      | 8.67                                                   | 8.41  | 8.25  | 3305.1              | 4275.1      | 19.01               | 21.77 | 24.67 | 3305.1              | 4275.1      | 1.82                                 | 0.98 | 0.57 |
| 3435.1              | 4405.1      | 9.00                                                   | 8.72  | 8.59  | 3435.1              | 4405.1      | 19.40               | 22.72 | 26.35 | 3435.1              | 4405.1      | 2.03                                 | 1.00 | 0.59 |
| 3555.1              | 4525.1      | 9.05                                                   | 8.84  | 8.73  | 3555.1              | 4525.1      | 18.71               | 22.48 | 26.68 | 3555.1              | 4525.1      | 1.51                                 | 0.70 | 0.39 |
| 3685.1              | 4655.1      | 9.37                                                   | 9.14  | 9.03  | 3685.1              | 4655.1      | 17.29               | 20.95 | 25.32 | 3685.1              | 4655.1      | 2.03                                 | 0.95 | 0.49 |
| 3815.1              | 4785.1      | 9.50                                                   | 9.24  | 9.11  | 3815.1              | 4785.1      | 16.44               | 20.01 | 24.05 | 3815.1              | 4785.1      | 2.30                                 | 1.08 | 0.53 |
| 3935.1              | 4905.1      | 9.74                                                   | 9.46  | 9.35  | 3935.1              | 4905.1      | 15.91               | 19.58 | 23.39 | 3935.1              | 4905.1      | 2.54                                 | 1.21 | 0.73 |
| 4065.1              | 5035.1      | 9.94                                                   | 9.68  | 9.57  | 4065.1              | 5035.1      | 15.69               | 19.40 | 22.93 | 4065.1              | 5035.1      | 2.37                                 | 1.07 | 0.53 |
| 4195.1              | 5165.1      | 10.13                                                  | 9.83  | 9.72  | 4195.1              | 5165.1      | 14.80               | 18.42 | 22.30 | 4195.1              | 5165.1      | 2.74                                 | 1.29 | 0.69 |
| 4315.1              | 5285.1      | 10.34                                                  | 10.02 | 9.89  | 4315.1              | 5285.1      | 14.28               | 17.86 | 21.60 | 4315.1              | 5285.1      | 3.28                                 | 1.64 | 0.87 |
| 4445.1              | 5415.1      | 10.68                                                  | 10.27 | 10.08 | 4445.1              | 5415.1      | 13.54               | 17.07 | 20.61 | 4445.1              | 5415.1      | 3.90                                 | 2.15 | 1.02 |
| 4575.1              | 5545.1      | 10.77                                                  | 10.40 | 10.22 | 4575.1              | 5545.1      | 13.60               | 17.25 | 20.66 | 4575.1              | 5545.1      | 3.44                                 | 1.88 | 0.91 |
| 4695.1              | 5665.1      | 11.08                                                  | 10.69 | 10.51 | 4695.1              | 5665.1      | 13.60               | 17.07 | 20.27 | 4695.1              | 5665.1      | 3.45                                 | 1.87 | 0.91 |
| 4825.1              | 5795.1      | 11.49                                                  | 11.08 | 10.88 | 4825.1              | 5795.1      | 13.55               | 17.08 | 20.53 | 4825.1              | 5795.1      | 3.53                                 | 1.95 | 1.02 |
| 4955.1              | 5925.1      | 11.81                                                  | 11.43 | 11.25 | 4955.1              | 5925.1      | 13.92               | 17.48 | 20.72 | 4955.1              | 5925.1      | 3.22                                 | 1.67 | 0.73 |

# Frequency Mixer

HJK-ED14922/1

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=2570MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=2565.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=2575MHz<br>(dB) |
|----------------------|-------------|----------------------------------------------------------------|----------------------|-------------|------------------------------------------------------------------|----------------------|-------------|----------------------------------------------------------------|
|                      |             | @LO (dBm)                                                      |                      |             | @LO (dBm)                                                        |                      |             | @LO (dBm)                                                      |
|                      |             | +17                                                            |                      |             | +17                                                              |                      |             | +17                                                            |
| 2359.9               | 210.1       | 12.61                                                          | 10.0                 | 2575.1      | 7.08                                                             | 2334.9               | 240.1       | 12.06                                                          |
| 2239.9               | 330.1       | 10.91                                                          | 70.0                 | 2635.1      | 7.03                                                             | 2284.9               | 290.1       | 11.34                                                          |
| 2119.9               | 450.1       | 10.00                                                          | 130.0                | 2695.1      | 7.12                                                             | 2224.9               | 350.1       | 10.84                                                          |
| 1999.9               | 570.1       | 9.42                                                           | 195.0                | 2760.1      | 7.17                                                             | 2164.9               | 410.1       | 10.20                                                          |
| 1879.9               | 690.1       | 9.04                                                           | 255.0                | 2820.1      | 7.16                                                             | 2104.9               | 470.1       | 9.87                                                           |
| 1759.9               | 810.1       | 8.74                                                           | 320.0                | 2885.1      | 7.23                                                             | 2044.9               | 530.1       | 9.65                                                           |
| 1639.9               | 930.1       | 8.50                                                           | 380.0                | 2945.1      | 7.27                                                             | 1984.9               | 590.1       | 9.42                                                           |
| 1519.9               | 1050.1      | 8.40                                                           | 445.0                | 3010.1      | 7.26                                                             | 1924.9               | 650.1       | 9.21                                                           |
| 1399.9               | 1170.1      | 8.31                                                           | 505.0                | 3070.1      | 7.15                                                             | 1864.9               | 710.1       | 9.00                                                           |
| 1279.9               | 1290.1      | 8.90                                                           | 565.0                | 3130.1      | 7.11                                                             | 1804.9               | 770.1       | 8.85                                                           |
| 1159.9               | 1410.1      | 8.11                                                           | 630.0                | 3195.1      | 7.16                                                             | 1744.9               | 830.1       | 8.72                                                           |
| 1039.9               | 1530.1      | 7.82                                                           | 690.0                | 3255.1      | 7.18                                                             | 1684.9               | 890.1       | 8.63                                                           |
| 919.9                | 1650.1      | 7.59                                                           | 755.0                | 3320.1      | 7.16                                                             | 1624.9               | 950.1       | 8.53                                                           |
| 799.9                | 1770.1      | 7.33                                                           | 815.0                | 3380.1      | 7.20                                                             | 1564.9               | 1010.1      | 8.52                                                           |
| 679.9                | 1890.1      | 7.20                                                           | 880.0                | 3445.1      | 7.24                                                             | 1504.9               | 1070.1      | 8.40                                                           |
| 559.9                | 2010.1      | 7.05                                                           | 940.0                | 3505.1      | 7.31                                                             | 1444.9               | 1130.1      | 8.38                                                           |
| 439.9                | 2130.1      | 7.03                                                           | 1000.0               | 3565.1      | 7.37                                                             | 1384.9               | 1190.1      | 8.30                                                           |
| 319.9                | 2250.1      | 7.07                                                           | 1065.0               | 3630.1      | 7.46                                                             | 1324.9               | 1250.1      | 8.17                                                           |
| 199.9                | 2370.1      | 7.13                                                           | 1125.0               | 3690.1      | 7.61                                                             | 1264.9               | 1310.1      | 8.53                                                           |
| 79.9                 | 2490.1      | 7.09                                                           | 1190.0               | 3755.1      | 7.72                                                             | 1204.9               | 1370.1      | 8.16                                                           |
| 10.0                 | 2580.1      | 7.11                                                           | 1250.0               | 3815.1      | 7.79                                                             | 1154.9               | 1420.1      | 8.12                                                           |
| 180.0                | 2750.1      | 7.17                                                           | 1315.0               | 3880.1      | 8.04                                                             | 1094.9               | 1480.1      | 8.01                                                           |
| 360.0                | 2930.1      | 7.22                                                           | 1375.0               | 3940.1      | 8.27                                                             | 1034.9               | 1540.1      | 7.85                                                           |
| 530.0                | 3100.1      | 7.15                                                           | 1440.0               | 4005.1      | 8.41                                                             | 974.9                | 1600.1      | 7.71                                                           |
| 710.0                | 3280.1      | 7.25                                                           | 1500.0               | 4065.1      | 8.60                                                             | 914.9                | 1660.1      | 7.62                                                           |
| 880.0                | 3450.1      | 7.25                                                           | 1560.0               | 4125.1      | 8.79                                                             | 854.9                | 1720.1      | 7.39                                                           |
| 1060.0               | 3630.1      | 7.48                                                           | 1625.0               | 4190.1      | 8.98                                                             | 794.9                | 1780.1      | 7.31                                                           |
| 1230.0               | 3800.1      | 7.80                                                           | 1685.0               | 4250.1      | 9.20                                                             | 734.9                | 1840.1      | 7.33                                                           |
| 1410.0               | 3980.1      | 8.35                                                           | 1750.0               | 4315.1      | 9.38                                                             | 674.9                | 1900.1      | 7.18                                                           |
| 1505.0               | 4075.1      | 8.60                                                           | 1810.0               | 4375.1      | 9.51                                                             | 614.9                | 1960.1      | 7.12                                                           |
| 1595.0               | 4165.1      | 8.91                                                           | 1875.0               | 4440.1      | 9.68                                                             | 554.9                | 2020.1      | 7.05                                                           |
| 1680.0               | 4250.1      | 9.22                                                           | 1935.0               | 4500.1      | 9.82                                                             | 494.9                | 2080.1      | 7.11                                                           |
| 1770.0               | 4340.1      | 9.45                                                           | 1995.0               | 4560.1      | 9.93                                                             | 434.9                | 2140.1      | 7.12                                                           |
| 1860.0               | 4430.1      | 9.68                                                           | 2060.0               | 4625.1      | 10.01                                                            | 374.9                | 2200.1      | 7.13                                                           |
| 1945.0               | 4515.1      | 9.87                                                           | 2120.0               | 4685.1      | 10.13                                                            | 314.9                | 2260.1      | 7.10                                                           |
| 2035.0               | 4605.1      | 9.99                                                           | 2185.0               | 4750.1      | 10.24                                                            | 254.9                | 2320.1      | 7.13                                                           |
| 2120.0               | 4690.1      | 10.16                                                          | 2245.0               | 4810.1      | 10.42                                                            | 194.9                | 2380.1      | 7.15                                                           |
| 2210.0               | 4780.1      | 10.39                                                          | 2310.0               | 4875.1      | 10.63                                                            | 134.9                | 2440.1      | 7.14                                                           |
| 2295.0               | 4865.1      | 10.56                                                          | 2370.0               | 4935.1      | 10.81                                                            | 74.9                 | 2500.1      | 7.09                                                           |
| 2385.0               | 4955.1      | 10.82                                                          | 2435.0               | 5000.1      | 10.94                                                            | 14.9                 | 2560.1      | 7.01                                                           |

# Frequency Mixer

HJK-ED14922/1

## 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   |
| 995.1       | 46.56                   | 46.70 | 46.76 | 42.02                   | 41.92 | 41.85 |
| 1115.1      | 48.10                   | 48.14 | 48.12 | 43.17                   | 43.26 | 43.32 |
| 1245.1      | 49.49                   | 49.61 | 49.61 | 44.79                   | 44.97 | 45.16 |
| 1365.1      | 48.74                   | 48.78 | 48.74 | 45.91                   | 46.02 | 46.14 |
| 1495.1      | 47.42                   | 47.39 | 47.28 | 44.41                   | 44.43 | 44.46 |
| 1625.1      | 46.93                   | 46.74 | 46.48 | 42.10                   | 42.11 | 42.11 |
| 1745.1      | 46.38                   | 46.30 | 46.17 | 39.41                   | 39.45 | 39.49 |
| 1875.1      | 46.25                   | 46.32 | 46.40 | 37.02                   | 37.07 | 37.13 |
| 2005.1      | 46.80                   | 46.86 | 46.95 | 35.54                   | 35.61 | 35.68 |
| 2125.1      | 46.39                   | 46.60 | 46.88 | 34.08                   | 34.18 | 34.30 |
| 2255.1      | 47.25                   | 47.72 | 48.30 | 32.66                   | 32.79 | 32.91 |
| 2385.1      | 49.14                   | 49.68 | 50.29 | 32.52                   | 32.69 | 32.85 |
| 2505.1      | 48.60                   | 48.99 | 49.45 | 32.38                   | 32.60 | 32.79 |
| 2635.1      | 52.72                   | 53.44 | 54.19 | 32.17                   | 32.36 | 32.58 |
| 2755.1      | 53.71                   | 53.76 | 53.88 | 32.47                   | 32.61 | 32.79 |
| 2885.1      | 51.26                   | 51.13 | 51.08 | 33.33                   | 33.44 | 33.55 |
| 3015.1      | 49.34                   | 49.28 | 49.34 | 33.45                   | 33.48 | 33.49 |
| 3135.1      | 45.86                   | 45.81 | 45.83 | 33.80                   | 33.72 | 33.61 |
| 3265.1      | 44.14                   | 44.09 | 44.06 | 34.82                   | 34.62 | 34.34 |
| 3395.1      | 42.54                   | 42.53 | 42.53 | 35.28                   | 34.94 | 34.54 |
| 3545.1      | 38.48                   | 38.35 | 38.23 | 35.74                   | 35.23 | 34.70 |
| 3645.1      | 37.18                   | 37.00 | 36.85 | 36.50                   | 35.90 | 35.28 |
| 3775.1      | 35.14                   | 34.94 | 34.80 | 37.56                   | 36.89 | 36.34 |
| 3895.1      | 33.25                   | 33.05 | 32.92 | 39.39                   | 38.75 | 38.26 |
| 4025.1      | 32.60                   | 32.41 | 32.29 | 45.35                   | 45.27 | 45.01 |
| 4155.1      | 31.87                   | 31.67 | 31.50 | 40.22                   | 41.15 | 42.42 |
| 4275.1      | 31.05                   | 30.81 | 30.64 | 34.92                   | 35.25 | 35.65 |
| 4405.1      | 31.37                   | 31.12 | 30.87 | 32.56                   | 32.75 | 32.81 |
| 4525.1      | 31.88                   | 31.65 | 31.47 | 30.79                   | 30.88 | 30.93 |
| 4655.1      | 31.88                   | 31.71 | 31.58 | 29.68                   | 29.75 | 29.78 |
| 4785.1      | 32.11                   | 32.02 | 31.95 | 29.48                   | 29.59 | 29.68 |
| 4905.1      | 32.46                   | 32.41 | 32.39 | 29.25                   | 29.39 | 29.59 |
| 5035.1      | 32.51                   | 32.46 | 32.45 | 29.24                   | 29.39 | 29.54 |
| 5165.1      | 33.16                   | 33.15 | 33.12 | 29.50                   | 29.62 | 29.78 |
| 5285.1      | 33.37                   | 33.36 | 33.33 | 29.62                   | 29.73 | 29.79 |
| 5415.1      | 33.33                   | 33.34 | 33.36 | 29.39                   | 29.44 | 29.47 |
| 5545.1      | 32.97                   | 33.04 | 33.12 | 28.49                   | 28.47 | 28.45 |
| 5665.1      | 32.29                   | 32.39 | 32.48 | 27.40                   | 27.35 | 27.30 |
| 5795.1      | 32.02                   | 32.13 | 32.24 | 26.48                   | 26.39 | 26.31 |
| 5925.1      | 31.18                   | 31.31 | 31.45 | 25.37                   | 25.26 | 25.16 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +14                     | +17   | +20   |
| 25.1                | 995.1       | 44.08                   | 45.91 | 48.53 |
| 145.1               | 1115.1      | 37.89                   | 39.45 | 42.17 |
| 275.1               | 1245.1      | 39.07                   | 41.29 | 45.26 |
| 395.1               | 1365.1      | 39.79                   | 42.84 | 51.14 |
| 525.1               | 1495.1      | 41.66                   | 46.56 | 58.61 |
| 655.1               | 1625.1      | 41.92                   | 46.13 | 41.69 |
| 775.1               | 1745.1      | 38.05                   | 40.00 | 41.64 |
| 905.1               | 1875.1      | 35.24                   | 36.13 | 37.45 |
| 1035.1              | 2005.1      | 34.07                   | 34.39 | 34.87 |
| 1155.1              | 2125.1      | 34.04                   | 34.48 | 34.90 |
| 1285.1              | 2255.1      | 33.15                   | 33.34 | 33.53 |
| 1415.1              | 2385.1      | 32.76                   | 32.86 | 32.94 |
| 1535.1              | 2505.1      | 33.15                   | 33.28 | 33.46 |
| 1665.1              | 2635.1      | 34.55                   | 34.70 | 34.72 |
| 1785.1              | 2755.1      | 35.83                   | 35.62 | 35.28 |
| 1915.1              | 2885.1      | 34.99                   | 34.41 | 33.43 |
| 2045.1              | 3015.1      | 33.67                   | 32.98 | 32.15 |
| 2165.1              | 3135.1      | 32.55                   | 32.01 | 31.26 |
| 2295.1              | 3265.1      | 32.30                   | 31.77 | 31.26 |
| 2425.1              | 3395.1      | 32.40                   | 32.00 | 31.55 |
| 2575.1              | 3545.1      | 32.94                   | 32.56 | 32.18 |
| 2675.1              | 3645.1      | 33.65                   | 33.37 | 33.07 |
| 2805.1              | 3775.1      | 35.29                   | 35.05 | 34.73 |
| 2925.1              | 3895.1      | 36.21                   | 35.99 | 35.90 |
| 3055.1              | 4025.1      | 36.88                   | 36.60 | 36.29 |
| 3185.1              | 4155.1      | 38.23                   | 37.86 | 37.58 |
| 3305.1              | 4275.1      | 42.16                   | 40.83 | 39.14 |
| 3435.1              | 4405.1      | 41.61                   | 39.86 | 38.42 |
| 3555.1              | 4525.1      | 38.60                   | 37.28 | 36.20 |
| 3685.1              | 4655.1      | 35.76                   | 34.69 | 33.58 |
| 3815.1              | 4785.1      | 33.79                   | 32.90 | 31.88 |
| 3935.1              | 4905.1      | 31.66                   | 30.82 | 29.83 |
| 4065.1              | 5035.1      | 29.94                   | 29.22 | 28.48 |
| 4195.1              | 5165.1      | 28.92                   | 28.30 | 27.94 |
| 4315.1              | 5285.1      | 27.99                   | 27.51 | 27.39 |
| 4445.1              | 5415.1      | 26.70                   | 26.37 | 26.16 |
| 4575.1              | 5545.1      | 25.85                   | 25.63 | 25.44 |
| 4695.1              | 5665.1      | 25.18                   | 25.03 | 24.87 |
| 4825.1              | 5795.1      | 24.86                   | 24.79 | 24.62 |
| 4955.1              | 5925.1      | 24.44                   | 24.43 | 24.47 |

# Frequency Mixer

HJK-ED14922/1

## 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=3783.1MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|------|------|----------------------|----------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |      |      |                      | @LO (dBm)                        |      |      |
|                     |             | +14             | +17  | +20  |             | +14             | +17  | +20  |                      | +14                              | +17  | +20  |
| 25.1                | 995.1       | 8.40            | 7.75 | 7.59 | 995.1       | 3.97            | 3.97 | 3.95 | 300.1                | 1.34                             | 1.25 | 1.17 |
| 145.1               | 1115.1      | 1.55            | 1.48 | 1.42 | 1115.1      | 3.97            | 3.96 | 3.94 | 342.1                | 1.49                             | 1.42 | 1.36 |
| 275.1               | 1245.1      | 1.27            | 1.21 | 1.16 | 1245.1      | 3.94            | 3.94 | 3.92 | 386.1                | 1.24                             | 1.17 | 1.13 |
| 395.1               | 1365.1      | 1.19            | 1.13 | 1.08 | 1365.1      | 3.90            | 3.90 | 3.89 | 430.1                | 1.51                             | 1.43 | 1.37 |
| 525.1               | 1495.1      | 1.17            | 1.11 | 1.08 | 1495.1      | 3.81            | 3.82 | 3.81 | 474.1                | 1.24                             | 1.21 | 1.22 |
| 655.1               | 1625.1      | 1.18            | 1.13 | 1.08 | 1625.1      | 3.68            | 3.68 | 3.66 | 516.1                | 1.39                             | 1.31 | 1.24 |
| 775.1               | 1745.1      | 1.21            | 1.14 | 1.09 | 1745.1      | 3.56            | 3.55 | 3.52 | 560.1                | 1.36                             | 1.34 | 1.34 |
| 905.1               | 1875.1      | 1.25            | 1.19 | 1.13 | 1875.1      | 3.48            | 3.48 | 3.46 | 604.1                | 1.23                             | 1.15 | 1.07 |
| 1035.1              | 2005.1      | 1.28            | 1.22 | 1.19 | 2005.1      | 3.41            | 3.42 | 3.41 | 648.1                | 1.39                             | 1.36 | 1.36 |
| 1155.1              | 2125.1      | 1.26            | 1.22 | 1.21 | 2125.1      | 3.35            | 3.36 | 3.36 | 692.1                | 1.09                             | 1.08 | 1.13 |
| 1285.1              | 2255.1      | 1.23            | 1.20 | 1.20 | 2255.1      | 3.27            | 3.28 | 3.27 | 734.1                | 1.29                             | 1.24 | 1.21 |
| 1415.1              | 2385.1      | 1.20            | 1.15 | 1.13 | 2385.1      | 3.23            | 3.22 | 3.19 | 778.1                | 1.19                             | 1.27 | 1.36 |
| 1535.1              | 2505.1      | 1.23            | 1.16 | 1.11 | 2505.1      | 3.19            | 3.20 | 3.19 | 822.1                | 1.20                             | 1.12 | 1.05 |
| 1665.1              | 2635.1      | 1.34            | 1.26 | 1.21 | 2635.1      | 3.12            | 3.13 | 3.13 | 866.1                | 1.30                             | 1.39 | 1.49 |
| 1785.1              | 2755.1      | 1.46            | 1.39 | 1.33 | 2755.1      | 3.00            | 3.00 | 3.00 | 910.1                | 1.31                             | 1.30 | 1.31 |
| 1915.1              | 2885.1      | 1.53            | 1.46 | 1.41 | 2885.1      | 2.86            | 2.86 | 2.84 | 962.1                | 1.42                             | 1.52 | 1.63 |
| 2045.1              | 3015.1      | 1.53            | 1.47 | 1.44 | 3015.1      | 2.74            | 2.74 | 2.72 | 996.1                | 1.57                             | 1.60 | 1.65 |
| 2165.1              | 3135.1      | 1.51            | 1.48 | 1.45 | 3135.1      | 2.60            | 2.61 | 2.61 | 1040.1               | 1.15                             | 1.23 | 1.32 |
| 2295.1              | 3265.1      | 1.49            | 1.46 | 1.45 | 3265.1      | 2.43            | 2.44 | 2.44 | 1084.1               | 1.91                             | 1.99 | 2.08 |
| 2425.1              | 3395.1      | 1.46            | 1.45 | 1.46 | 3395.1      | 2.28            | 2.28 | 2.27 | 1128.1               | 1.19                             | 1.20 | 1.22 |
| 2575.1              | 3545.1      | 1.46            | 1.47 | 1.48 | 3545.1      | 2.18            | 2.18 | 2.17 | 1170.1               | 1.94                             | 2.05 | 2.17 |
| 2675.1              | 3645.1      | 1.47            | 1.48 | 1.50 | 3645.1      | 2.13            | 2.14 | 2.14 | 1214.1               | 1.56                             | 1.54 | 1.53 |
| 2805.1              | 3775.1      | 1.48            | 1.49 | 1.51 | 3775.1      | 2.09            | 2.10 | 2.10 | 1258.1               | 1.67                             | 1.77 | 1.88 |
| 2925.1              | 3895.1      | 1.50            | 1.51 | 1.54 | 3895.1      | 2.08            | 2.08 | 2.07 | 1302.1               | 1.98                             | 1.96 | 1.95 |
| 3055.1              | 4025.1      | 1.50            | 1.51 | 1.54 | 4025.1      | 2.10            | 2.09 | 2.08 | 1346.1               | 1.28                             | 1.34 | 1.41 |
| 3185.1              | 4155.1      | 1.45            | 1.47 | 1.50 | 4155.1      | 2.15            | 2.14 | 2.14 | 1388.1               | 2.24                             | 2.26 | 2.28 |
| 3305.1              | 4275.1      | 1.38            | 1.41 | 1.45 | 4275.1      | 2.22            | 2.21 | 2.21 | 1432.1               | 1.36                             | 1.31 | 1.27 |
| 3435.1              | 4405.1      | 1.33            | 1.38 | 1.44 | 4405.1      | 2.32            | 2.32 | 2.31 | 1476.1               | 2.18                             | 2.22 | 2.28 |
| 3555.1              | 4525.1      | 1.31            | 1.37 | 1.45 | 4525.1      | 2.45            | 2.44 | 2.43 | 1520.1               | 1.96                             | 1.87 | 1.79 |
| 3685.1              | 4655.1      | 1.28            | 1.36 | 1.44 | 4655.1      | 2.61            | 2.61 | 2.62 | 1564.1               | 1.77                             | 1.83 | 1.89 |
| 3815.1              | 4785.1      | 1.29            | 1.38 | 1.47 | 4785.1      | 2.76            | 2.76 | 2.77 | 1606.1               | 2.72                             | 2.63 | 2.54 |
| 3935.1              | 4905.1      | 1.33            | 1.43 | 1.52 | 4905.1      | 2.92            | 2.92 | 2.92 | 1650.1               | 1.29                             | 1.33 | 1.38 |
| 4065.1              | 5035.1      | 1.37            | 1.47 | 1.57 | 5035.1      | 3.08            | 3.07 | 3.06 | 1694.1               | 3.02                             | 2.96 | 2.91 |
| 4195.1              | 5165.1      | 1.41            | 1.52 | 1.63 | 5165.1      | 3.22            | 3.19 | 3.13 | 1738.1               | 1.18                             | 1.15 | 1.12 |
| 4315.1              | 5285.1      | 1.42            | 1.53 | 1.64 | 5285.1      | 3.41            | 3.40 | 3.37 | 1782.1               | 2.74                             | 2.76 | 2.77 |
| 4445.1              | 5415.1      | 1.43            | 1.53 | 1.63 | 5415.1      | 3.57            | 3.57 | 3.58 | 1824.1               | 1.68                             | 1.61 | 1.54 |
| 4575.1              | 5545.1      | 1.46            | 1.56 | 1.65 | 5545.1      | 3.62            | 3.63 | 3.63 | 1868.1               | 2.07                             | 2.13 | 2.20 |
| 4695.1              | 5665.1      | 1.52            | 1.62 | 1.71 | 5665.1      | 3.53            | 3.53 | 3.52 | 1912.1               | 2.19                             | 2.12 | 2.05 |
| 4825.1              | 5795.1      | 1.63            | 1.72 | 1.82 | 5795.1      | 3.43            | 3.42 | 3.38 | 1956.1               | 1.59                             | 1.67 | 1.75 |
| 4955.1              | 5925.1      | 1.75            | 1.84 | 1.94 | 5925.1      | 3.31            | 3.31 | 3.29 | 2000.1               | 2.70                             | 2.65 | 2.61 |

# Frequency Mixer

## Harmonics Tables

HJK-ED14922/1

RF HARMONICS ORDER

|    | (-dBm) | (dBc)  |        |        |        |        |        |        |        |        |        |        |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0  | ---    | ---    | 10.76  | 20.41  | 26.55  | 30.36  | 46.99  | 60.68  | 48.42  | ---    | ---    | ---    |
| 1  | ---    | 26.94  | ---    | 39.13  | 43.09  | 44.64  | 39.19  | 51.45  | 70.72  | 82.40  | ---    | ---    |
| 2  | 107.62 | 53.08  | 63.69  | 54.39  | 71.56  | 71.36  | 67.36  | 66.89  | 90.52  | 106.54 | ---    | ---    |
| 3  | 118.88 | 76.75  | 63.56  | 83.07  | 68.77  | 76.35  | 86.75  | 88.18  | 107.99 | 90.80  | 105.77 | ---    |
| 4  | 118.93 | 98.54  | 99.94  | 84.46  | 85.71  | 85.71  | 96.51  | 103.84 | 110.13 | 110.28 | 109.47 | 106.33 |
| 5  | 117.21 | 113.03 | 111.85 | 112.59 | 89.01  | 104.02 | 95.14  | 116.10 | 106.67 | 104.73 | 110.00 | 110.06 |
| 6  | 115.81 | 112.61 | 114.10 | 115.49 | 111.68 | 111.85 | 109.63 | 112.59 | 113.03 | 113.73 | 112.81 | 109.69 |
| 7  | 113.06 | 109.80 | 114.47 | 114.02 | 117.71 | 110.96 | 115.10 | 113.04 | 117.08 | 114.06 | 114.15 | 112.24 |
| 8  | 111.60 | 107.83 | 109.62 | 115.30 | 113.02 | 115.60 | 111.61 | 112.64 | 113.51 | 115.36 | 114.51 | 111.01 |
| 9  | 109.86 | 108.17 | 111.08 | 113.10 | 114.20 | 114.85 | 115.40 | 111.42 | 111.18 | 115.23 | 115.77 | 114.18 |
| 10 | 108.50 | 104.51 | 107.13 | 110.06 | 111.64 | 114.66 | 116.23 | 114.35 | 109.63 | 110.82 | 114.24 | 115.68 |
|    | RF CAL | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |

### LO HARMONICS ORDER

Test conditions: RF IN: 2570 MHz; 0 dBm.  
LO IN: 3540 MHz; +17.00 dBm  
IF OUT: 970 MHz; -6.69 dBm

RF HARMONICS ORDER

|    | (-dBm) | (dBc)  |        |        |        |        |        |        |        |        |        |        |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0  | ---    | ---    | 15.72  | 34.18  | 35.84  | 43.26  | 56.23  | 75.82  | 61.67  | ---    | ---    | ---    |
| 1  | ---    | 25.02  | ---    | 40.67  | 40.48  | 44.96  | 40.96  | 54.15  | 75.41  | 88.16  | ---    | ---    |
| 2  | 91.32  | 40.44  | 47.23  | 40.62  | 66.92  | 62.80  | 59.67  | 54.68  | 79.82  | 88.21  | ---    | ---    |
| 3  | 114.97 | 62.07  | 42.23  | 68.59  | 42.49  | 60.34  | 67.82  | 68.85  | 85.92  | 73.35  | 96.55  | ---    |
| 4  | 114.32 | 65.92  | 92.16  | 66.26  | 66.86  | 75.86  | 76.62  | 72.16  | 70.49  | 97.72  | 87.99  | 98.40  |
| 5  | 113.66 | 97.21  | 99.52  | 80.01  | 60.95  | 65.38  | 67.26  | 87.15  | 84.42  | 94.68  | 102.64 | 108.05 |
| 6  | 112.55 | 88.19  | 87.77  | 94.03  | 88.79  | 71.48  | 86.18  | 81.05  | 103.32 | 89.10  | 96.12  | 99.16  |
| 7  | 109.64 | 116.99 | 91.82  | 96.66  | 90.34  | 77.52  | 67.76  | 75.60  | 86.34  | 88.98  | 90.47  | 104.10 |
| 8  | 109.53 | 117.04 | 109.66 | 110.13 | 102.24 | 92.51  | 87.92  | 75.06  | 93.77  | 111.76 | 108.34 | 99.30  |
| 9  | 104.78 | 116.14 | 119.71 | 102.10 | 106.32 | 111.45 | 91.61  | 80.54  | 81.48  | 89.77  | 107.50 | 109.13 |
| 10 | 106.50 | 112.29 | 120.12 | 120.50 | 120.89 | 107.32 | 112.75 | 102.09 | 88.59  | 105.65 | 101.35 | 115.88 |
|    | RF CAL | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |

### LO HARMONICS ORDER

Test conditions: RF IN: 2570 MHz; 10 dBm.  
LO IN: 3540 MHz; +17.00 dBm  
IF OUT: 970 MHz; 3.20 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 represents the Harmonics level of the RF Input Signal to the mixer

