

# Frequency Mixer

**ZX05-14H+**

## 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   |
| 3000.1              | 3030.1      | 52.15                                                 | 32.91 | 15.88 |
| 3218.1              | 3248.1      | 39.61                                                 | 22.43 | 8.84  |
| 3436.2              | 3466.2      | 21.09                                                 | 9.32  | 6.88  |
| 3654.2              | 3684.2      | 9.19                                                  | 7.23  | 6.63  |
| 3872.3              | 3902.3      | 7.56                                                  | 6.89  | 6.54  |
| 4090.3              | 4120.3      | 7.17                                                  | 6.69  | 6.38  |
| 4308.4              | 4338.4      | 7.05                                                  | 6.53  | 6.16  |
| 4526.4              | 4556.4      | 6.54                                                  | 6.26  | 6.13  |
| 4744.5              | 4774.5      | 6.78                                                  | 6.42  | 6.24  |
| 4962.5              | 4992.5      | 7.28                                                  | 6.57  | 6.23  |
| 5180.6              | 5210.6      | 8.14                                                  | 7.27  | 6.84  |
| 5398.6              | 5428.6      | 8.22                                                  | 7.24  | 6.78  |
| 5616.6              | 5646.6      | 7.99                                                  | 7.10  | 6.60  |
| 5834.7              | 5864.7      | 7.70                                                  | 7.06  | 6.56  |
| 6052.7              | 6082.7      | 7.32                                                  | 6.66  | 6.17  |
| 6270.8              | 6300.8      | 7.15                                                  | 6.50  | 6.07  |
| 6488.8              | 6518.8      | 7.03                                                  | 6.42  | 6.04  |
| 6706.9              | 6736.9      | 7.10                                                  | 6.28  | 5.91  |
| 6924.9              | 6954.9      | 7.18                                                  | 6.31  | 5.92  |
| 7143.0              | 7173.0      | 7.64                                                  | 6.14  | 5.74  |
| 7361.0              | 7391.0      | 8.50                                                  | 6.16  | 5.75  |
| 7579.0              | 7609.0      | 8.81                                                  | 6.36  | 5.97  |
| 7797.1              | 7827.1      | 8.12                                                  | 6.20  | 5.83  |
| 8036.9              | 8066.9      | 7.47                                                  | 6.17  | 5.91  |
| 8255.0              | 8285.0      | 7.19                                                  | 6.14  | 5.93  |
| 8494.8              | 8524.8      | 7.64                                                  | 6.37  | 6.15  |
| 8712.9              | 8742.9      | 6.98                                                  | 6.33  | 6.19  |
| 8952.7              | 8982.7      | 7.68                                                  | 7.03  | 6.83  |
| 9170.8              | 9200.8      | 8.10                                                  | 7.42  | 7.24  |
| 9410.6              | 9440.6      | 8.85                                                  | 8.27  | 8.07  |
| 9628.7              | 9658.7      | 9.96                                                  | 9.07  | 8.90  |
| 9868.5              | 9898.5      | 9.78                                                  | 8.95  | 8.81  |
| 10086.6             | 10116.6     | 10.34                                                 | 9.36  | 9.11  |
| 10326.4             | 10356.4     | 10.69                                                 | 9.62  | 9.38  |
| 10544.5             | 10574.5     | 10.60                                                 | 9.59  | 9.45  |
| 10784.3             | 10814.3     | 11.70                                                 | 9.61  | 9.25  |
| 11002.4             | 11032.4     | 15.06                                                 | 9.81  | 9.39  |
| 11242.2             | 11272.2     | 23.36                                                 | 10.32 | 9.37  |
| 11460.3             | 11490.3     | 29.92                                                 | 10.95 | 9.52  |
| 11700.1             | 11730.1     | 40.64                                                 | 14.27 | 10.97 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP3 INPUT<br>(dBm) |       |       |
|---------------------|-------------|--------------------|-------|-------|
|                     |             | @LO (dBm)          |       |       |
|                     |             | +14                | +17   | +20   |
| 3000.1              | 3030.1      | 9.64               | 1.40  | 6.32  |
| 3218.1              | 3248.1      | 3.83               | 1.66  | 16.56 |
| 3436.2              | 3466.2      | 2.91               | 16.75 | 19.48 |
| 3654.2              | 3684.2      | 16.77              | 19.55 | 22.63 |
| 3872.3              | 3902.3      | 19.40              | 22.02 | 23.64 |
| 4090.3              | 4120.3      | 22.29              | 25.22 | 27.63 |
| 4308.4              | 4338.4      | 24.67              | 24.51 | 23.31 |
| 4526.4              | 4556.4      | 22.97              | 27.46 | 30.81 |
| 4744.5              | 4774.5      | 22.43              | 25.09 | 27.52 |
| 4962.5              | 4992.5      | 26.94              | 26.91 | 27.76 |
| 5180.6              | 5210.6      | 27.21              | 29.16 | 31.33 |
| 5398.6              | 5428.6      | 27.31              | 25.53 | 26.30 |
| 5616.6              | 5646.6      | 26.32              | 24.44 | 25.05 |
| 5834.7              | 5864.7      | 25.97              | 23.95 | 23.06 |
| 6052.7              | 6082.7      | 23.35              | 23.10 | 22.50 |
| 6270.8              | 6300.8      | 22.35              | 23.00 | 22.17 |
| 6488.8              | 6518.8      | 21.27              | 23.41 | 23.31 |
| 6706.9              | 6736.9      | 19.50              | 21.98 | 22.68 |
| 6924.9              | 6954.9      | 18.36              | 21.67 | 22.93 |
| 7143.0              | 7173.0      | 17.28              | 21.32 | 22.97 |
| 7361.0              | 7391.0      | 16.95              | 19.77 | 22.26 |
| 7579.0              | 7609.0      | 17.82              | 19.99 | 22.23 |
| 7797.1              | 7827.1      | 19.22              | 20.48 | 22.20 |
| 8036.9              | 8066.9      | 18.53              | 20.24 | 21.72 |
| 8255.0              | 8285.0      | 19.21              | 20.71 | 22.18 |
| 8494.8              | 8524.8      | 19.52              | 22.07 | 23.60 |
| 8712.9              | 8742.9      | 21.92              | 23.75 | 24.82 |
| 8952.7              | 8982.7      | 22.21              | 24.38 | 25.46 |
| 9170.8              | 9200.8      | 24.03              | 25.92 | 27.10 |
| 9410.6              | 9440.6      | 24.27              | 25.93 | 26.02 |
| 9628.7              | 9658.7      | 23.08              | 26.74 | 27.40 |
| 9868.5              | 9898.5      | 23.36              | 27.53 | 27.71 |
| 10086.6             | 10116.6     | 24.01              | 27.35 | 26.89 |
| 10326.4             | 10356.4     | 23.93              | 27.09 | 26.97 |
| 10544.5             | 10574.5     | 23.96              | 27.05 | 27.35 |
| 10784.3             | 10814.3     | 24.60              | 26.81 | 27.50 |
| 11002.4             | 11032.4     | 15.96              | 25.05 | 26.33 |
| 11242.2             | 11272.2     | 7.18               | 25.72 | 25.70 |
| 11460.3             | 11490.3     | 3.84               | 26.11 | 25.36 |
| 11700.1             | 11730.1     | 1.12               | 16.77 | 24.87 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF IN=+14dBm<br>(dB) |        |       |
|---------------------|-------------|--------------------------------------|--------|-------|
|                     |             | @LO (dBm)                            |        |       |
|                     |             | +14                                  | +17    | +20   |
| 3000.1              | 3030.1      | -34.79                               | -19.22 | -5.00 |
| 3218.1              | 3248.1      | -25.88                               | -10.74 | 0.36  |
| 3436.2              | 3466.2      | -9.51                                | 0.50   | 1.26  |
| 3654.2              | 3684.2      | 1.44                                 | 1.53   | 0.86  |
| 3872.3              | 3902.3      | 2.01                                 | 1.05   | 0.58  |
| 4090.3              | 4120.3      | 1.52                                 | 0.79   | 0.53  |
| 4308.4              | 4338.4      | 1.18                                 | 0.70   | 0.50  |
| 4526.4              | 4556.4      | 1.22                                 | 0.52   | 0.23  |
| 4744.5              | 4774.5      | 1.05                                 | 0.41   | 0.22  |
| 4962.5              | 4992.5      | 0.80                                 | 0.50   | 0.31  |
| 5180.6              | 5210.6      | 0.57                                 | 0.42   | 0.26  |
| 5398.6              | 5428.6      | 0.38                                 | 0.49   | 0.45  |
| 5616.6              | 5646.6      | 0.39                                 | 0.49   | 0.53  |
| 5834.7              | 5864.7      | 0.47                                 | 0.42   | 0.47  |
| 6052.7              | 6082.7      | 0.69                                 | 0.52   | 0.59  |
| 6270.8              | 6300.8      | 0.92                                 | 0.59   | 0.61  |
| 6488.8              | 6518.8      | 1.22                                 | 0.75   | 0.69  |
| 6706.9              | 6736.9      | 1.32                                 | 0.76   | 0.74  |
| 6924.9              | 6954.9      | 1.24                                 | 0.75   | 0.70  |
| 7143.0              | 7173.0      | 1.30                                 | 0.85   | 0.75  |
| 7361.0              | 7391.0      | 0.62                                 | 0.96   | 0.73  |
| 7579.0              | 7609.0      | 0.41                                 | 0.84   | 0.71  |
| 7797.1              | 7827.1      | 0.71                                 | 0.74   | 0.78  |
| 8036.9              | 8066.9      | 1.26                                 | 0.81   | 0.91  |
| 8255.0              | 8285.0      | 1.16                                 | 0.61   | 0.74  |
| 8494.8              | 8524.8      | 0.93                                 | 0.51   | 0.73  |
| 8712.9              | 8742.9      | 1.03                                 | 0.56   | 0.75  |
| 8952.7              | 8982.7      | 0.73                                 | 0.43   | 0.62  |
| 9170.8              | 9200.8      | 0.75                                 | 0.37   | 0.50  |
| 9410.6              | 9440.6      | 0.49                                 | 0.31   | 0.50  |
| 9628.7              | 9658.7      | 0.64                                 | 0.23   | 0.37  |
| 9868.5              | 9898.5      | 0.82                                 | 0.31   | 0.44  |
| 10086.6             | 10116.6     | 0.65                                 | 0.26   | 0.43  |
| 10326.4             | 10356.4     | 0.55                                 | 0.15   | 0.35  |
| 10544.5             | 10574.5     | 0.43                                 | 0.12   | 0.21  |
| 10784.3             | 10814.3     | 0.12                                 | 0.09   | 0.25  |
| 11002.4             | 11032.4     | -2.17                                | 0.01   | 0.08  |
| 11242.2             | 11272.2     | -9.17                                | -0.06  | 0.04  |
| 11460.3             | 11490.3     | -15.25                               | -0.44  | 0.01  |
| 11700.1             | 11730.1     | -24.56                               | -2.19  | -0.37 |

REV. X2

ZX05-14H+

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## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=6850MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=3690MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=10010.099MHz<br>(dB) |
|----------------------|-------------|----------------------------------------------------------------|----------------------|-------------|----------------------------------------------------------------|----------------------|-------------|---------------------------------------------------------------------|
|                      |             | @LO (dBm)                                                      |                      |             | @LO (dBm)                                                      |                      |             | @LO (dBm)                                                           |
|                      |             | +17                                                            |                      |             | +17                                                            |                      |             | +17                                                                 |
| 2149.9               | 4700.1      | 8.57                                                           | 10.1                 | 3700.1      | 7.63                                                           | 910.0                | 9100.1      | 10.85                                                               |
| 2035.0               | 4815.0      | 8.73                                                           | 70.1                 | 3760.1      | 6.90                                                           | 890.0                | 9120.1      | 10.77                                                               |
| 1920.1               | 4929.9      | 8.57                                                           | 130.1                | 3820.1      | 6.86                                                           | 870.0                | 9140.1      | 10.79                                                               |
| 1805.2               | 5044.8      | 8.53                                                           | 190.1                | 3880.1      | 6.54                                                           | 850.0                | 9160.1      | 10.79                                                               |
| 1690.3               | 5159.7      | 8.29                                                           | 270.1                | 3960.1      | 6.52                                                           | 830.0                | 9180.1      | 10.83                                                               |
| 1575.4               | 5274.6      | 7.85                                                           | 330.1                | 4020.1      | 6.43                                                           | 810.0                | 9200.1      | 10.67                                                               |
| 1460.5               | 5389.5      | 7.49                                                           | 410.1                | 4100.1      | 6.37                                                           | 790.0                | 9220.1      | 10.60                                                               |
| 1345.6               | 5504.4      | 6.90                                                           | 470.1                | 4160.1      | 6.33                                                           | 770.0                | 9240.1      | 10.61                                                               |
| 1230.7               | 5619.3      | 6.60                                                           | 550.1                | 4240.1      | 6.42                                                           | 750.0                | 9260.1      | 10.49                                                               |
| 1115.9               | 5734.1      | 6.25                                                           | 610.1                | 4300.1      | 6.58                                                           | 730.0                | 9280.1      | 10.54                                                               |
| 1001.0               | 5849.0      | 6.10                                                           | 690.1                | 4380.1      | 6.33                                                           | 710.0                | 9300.1      | 10.32                                                               |
| 886.1                | 5963.9      | 6.02                                                           | 750.1                | 4440.1      | 6.17                                                           | 690.0                | 9320.1      | 10.30                                                               |
| 771.2                | 6078.8      | 5.92                                                           | 830.1                | 4520.1      | 6.14                                                           | 670.0                | 9340.1      | 10.28                                                               |
| 656.3                | 6193.7      | 5.81                                                           | 890.1                | 4580.1      | 6.03                                                           | 650.0                | 9360.1      | 10.29                                                               |
| 541.4                | 6308.6      | 5.83                                                           | 970.1                | 4660.1      | 6.24                                                           | 630.0                | 9380.1      | 10.37                                                               |
| 440.9                | 6409.1      | 5.89                                                           | 1030.1               | 4720.1      | 6.32                                                           | 610.0                | 9400.1      | 10.24                                                               |
| 326.0                | 6524.0      | 5.86                                                           | 1110.1               | 4800.1      | 6.46                                                           | 590.0                | 9420.1      | 10.16                                                               |
| 225.4                | 6624.6      | 5.97                                                           | 1170.1               | 4860.1      | 6.64                                                           | 570.0                | 9440.1      | 10.15                                                               |
| 110.5                | 6739.5      | 6.02                                                           | 1250.1               | 4940.1      | 6.96                                                           | 550.0                | 9460.1      | 10.06                                                               |
| 10.0                 | 6840.0      | 6.48                                                           | 1310.1               | 5000.1      | 7.08                                                           | 530.0                | 9480.1      | 10.09                                                               |
| 190.4                | 7040.4      | 6.12                                                           | 1390.1               | 5080.1      | 7.53                                                           | 510.0                | 9500.1      | 9.93                                                                |
| 370.8                | 7220.8      | 6.44                                                           | 1450.1               | 5140.1      | 7.57                                                           | 490.0                | 9520.1      | 9.84                                                                |
| 577.0                | 7427.0      | 6.79                                                           | 1530.1               | 5220.1      | 7.84                                                           | 470.0                | 9540.1      | 9.67                                                                |
| 757.4                | 7607.4      | 7.21                                                           | 1590.1               | 5280.1      | 8.23                                                           | 450.0                | 9560.1      | 9.76                                                                |
| 963.6                | 7813.6      | 7.49                                                           | 1670.1               | 5360.1      | 8.26                                                           | 430.0                | 9580.1      | 9.63                                                                |
| 1144.0               | 7994.0      | 7.76                                                           | 1730.1               | 5420.1      | 8.47                                                           | 410.0                | 9600.1      | 9.61                                                                |
| 1350.2               | 8200.2      | 7.46                                                           | 1810.1               | 5500.1      | 8.68                                                           | 390.0                | 9620.1      | 9.57                                                                |
| 1530.6               | 8380.6      | 7.34                                                           | 1870.1               | 5560.1      | 8.83                                                           | 370.0                | 9640.1      | 9.44                                                                |
| 1736.8               | 8586.8      | 7.17                                                           | 1950.1               | 5640.1      | 8.91                                                           | 330.0                | 9680.1      | 9.41                                                                |
| 1917.2               | 8767.2      | 7.12                                                           | 2010.1               | 5700.1      | 9.35                                                           | 310.0                | 9700.1      | 9.44                                                                |
| 2123.3               | 8973.3      | 7.27                                                           | 2090.1               | 5780.1      | 9.61                                                           | 270.0                | 9740.1      | 9.31                                                                |
| 2303.8               | 9153.8      | 7.47                                                           | 2150.1               | 5840.1      | 9.63                                                           | 250.0                | 9760.1      | 9.38                                                                |
| 2509.9               | 9359.9      | 7.86                                                           | 2230.1               | 5920.1      | 9.89                                                           | 210.0                | 9800.1      | 9.27                                                                |
| 2690.3               | 9540.3      | 7.79                                                           | 2290.1               | 5980.1      | 10.01                                                          | 190.0                | 9820.1      | 9.08                                                                |
| 2896.5               | 9746.5      | 8.01                                                           | 2370.1               | 6060.1      | 10.25                                                          | 150.0                | 9860.1      | 9.28                                                                |
| 3076.9               | 9926.9      | 8.39                                                           | 2430.1               | 6120.1      | 10.48                                                          | 130.0                | 9880.1      | 9.22                                                                |
| 3283.1               | 10133.1     | 8.32                                                           | 2510.1               | 6200.1      | 10.59                                                          | 90.0                 | 9920.1      | 9.11                                                                |
| 3463.5               | 10313.5     | 8.30                                                           | 2570.1               | 6260.1      | 10.83                                                          | 70.0                 | 9940.1      | 9.16                                                                |
| 3669.7               | 10519.7     | 8.78                                                           | 2650.1               | 6340.1      | 10.81                                                          | 30.0                 | 9980.1      | 9.27                                                                |
| 3850.1               | 10700.1     | 9.88                                                           | 2710.1               | 6400.1      | 10.82                                                          | 10.0                 | 10000.1     | 9.57                                                                |

# Frequency Mixer

**ZX05-14H+**

## Typical Performance Data

| LO<br><br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF ISOLATION<br>(dB) |       |       | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|-----------------|-------------------------|-------|-------|-------------------------|-------|-------|---------------------|-------------|-------------------------|-------|-------|
|                 | @LO (dBm)               |       |       | @LO (dBm)               |       |       |                     |             | @LO (dBm)               |       |       |
|                 | +14                     | +17   | +20   | +14                     | +17   | +20   |                     |             | +14                     | +17   | +20   |
| 3030.1          | 40.41                   | 40.32 | 40.39 | 21.19                   | 21.13 | 21.36 | 3000.1              | 3030.1      | 16.67                   | 16.68 | 17.84 |
| 3248.1          | 39.97                   | 39.78 | 44.86 | 19.65                   | 19.83 | 20.02 | 3218.1              | 3248.1      | 17.65                   | 17.89 | 21.37 |
| 3466.2          | 40.51                   | 44.96 | 47.08 | 18.63                   | 18.57 | 18.79 | 3436.2              | 3466.2      | 18.59                   | 20.70 | 20.21 |
| 3684.2          | 45.93                   | 51.83 | 56.87 | 16.96                   | 17.48 | 18.63 | 3654.2              | 3684.2      | 21.74                   | 22.54 | 22.82 |
| 3902.3          | 55.35                   | 63.54 | 50.36 | 16.05                   | 17.16 | 17.93 | 3872.3              | 3902.3      | 23.59                   | 23.19 | 22.55 |
| 4120.3          | 57.77                   | 49.80 | 40.33 | 16.52                   | 17.36 | 17.35 | 4090.3              | 4120.3      | 22.17                   | 21.49 | 21.15 |
| 4338.4          | 48.90                   | 45.42 | 42.25 | 17.07                   | 17.07 | 17.04 | 4308.4              | 4338.4      | 20.14                   | 19.46 | 18.84 |
| 4556.4          | 52.71                   | 46.26 | 40.36 | 16.97                   | 16.52 | 15.75 | 4526.4              | 4556.4      | 18.88                   | 18.49 | 18.21 |
| 4774.5          | 44.18                   | 41.60 | 39.25 | 17.29                   | 15.96 | 14.78 | 4744.5              | 4774.5      | 20.71                   | 20.24 | 19.86 |
| 4992.5          | 46.36                   | 44.29 | 41.11 | 17.21                   | 15.71 | 14.32 | 4962.5              | 4992.5      | 24.09                   | 23.16 | 22.39 |
| 5210.6          | 38.39                   | 39.24 | 39.38 | 16.35                   | 15.47 | 14.41 | 5180.6              | 5210.6      | 27.09                   | 26.12 | 25.27 |
| 5428.6          | 37.54                   | 38.38 | 39.13 | 15.65                   | 15.31 | 14.75 | 5398.6              | 5428.6      | 25.53                   | 25.35 | 24.92 |
| 5646.6          | 36.92                   | 37.80 | 38.82 | 14.91                   | 15.14 | 15.11 | 5616.6              | 5646.6      | 24.48                   | 24.53 | 24.24 |
| 5864.7          | 38.63                   | 40.45 | 39.98 | 14.28                   | 15.15 | 15.59 | 5834.7              | 5864.7      | 24.05                   | 23.95 | 23.78 |
| 6082.7          | 37.10                   | 40.54 | 44.12 | 13.94                   | 15.27 | 16.13 | 6052.7              | 6082.7      | 24.48                   | 24.38 | 24.21 |
| 6300.8          | 36.91                   | 39.33 | 41.98 | 13.77                   | 15.35 | 16.70 | 6270.8              | 6300.8      | 25.29                   | 25.18 | 25.09 |
| 6518.8          | 38.21                   | 41.13 | 43.54 | 13.66                   | 15.48 | 17.25 | 6488.8              | 6518.8      | 26.44                   | 26.26 | 26.09 |
| 6736.9          | 38.11                   | 40.42 | 42.53 | 13.44                   | 15.41 | 17.40 | 6706.9              | 6736.9      | 28.65                   | 28.62 | 28.45 |
| 6954.9          | 38.03                   | 39.62 | 40.13 | 13.44                   | 15.36 | 17.26 | 6924.9              | 6954.9      | 31.88                   | 32.22 | 32.24 |
| 7173.0          | 38.23                   | 40.83 | 41.80 | 13.66                   | 15.13 | 16.76 | 7143.0              | 7173.0      | 39.23                   | 40.12 | 40.61 |
| 7391.0          | 38.01                   | 41.35 | 43.13 | 14.23                   | 15.24 | 15.80 | 7361.0              | 7391.0      | 34.16                   | 32.89 | 32.09 |
| 7609.0          | 38.36                   | 41.75 | 39.50 | 15.89                   | 15.89 | 14.57 | 7579.0              | 7609.0      | 26.68                   | 26.18 | 26.23 |
| 7827.1          | 39.21                   | 38.10 | 36.13 | 19.21                   | 16.13 | 13.01 | 7797.1              | 7827.1      | 23.25                   | 23.13 | 22.78 |
| 8066.9          | 36.83                   | 35.82 | 34.96 | 19.02                   | 14.62 | 11.82 | 8036.9              | 8066.9      | 22.38                   | 22.11 | 21.94 |
| 8285.0          | 35.02                   | 36.52 | 36.42 | 15.40                   | 13.66 | 11.97 | 8255.0              | 8285.0      | 24.89                   | 24.02 | 23.51 |
| 8524.8          | 32.97                   | 35.79 | 38.22 | 13.67                   | 13.25 | 12.78 | 8494.8              | 8524.8      | 33.45                   | 30.44 | 28.17 |
| 8742.9          | 34.00                   | 37.46 | 44.36 | 13.15                   | 13.94 | 14.54 | 8712.9              | 8742.9      | 29.73                   | 30.85 | 30.10 |
| 8982.7          | 37.74                   | 45.34 | 42.44 | 13.47                   | 14.85 | 15.97 | 8952.7              | 8982.7      | 19.21                   | 19.22 | 19.18 |
| 9200.8          | 42.15                   | 44.06 | 37.79 | 14.53                   | 16.47 | 18.13 | 9170.8              | 9200.8      | 16.85                   | 16.67 | 16.58 |
| 9440.6          | 44.12                   | 42.80 | 37.31 | 15.99                   | 18.03 | 19.57 | 9410.6              | 9440.6      | 14.64                   | 14.52 | 14.50 |
| 9658.7          | 37.63                   | 39.66 | 36.84 | 17.16                   | 19.39 | 20.86 | 9628.7              | 9658.7      | 13.64                   | 14.00 | 14.18 |
| 9898.5          | 35.21                   | 39.82 | 40.06 | 18.52                   | 21.00 | 22.40 | 9868.5              | 9898.5      | 13.31                   | 14.41 | 15.11 |
| 10116.6         | 31.35                   | 34.40 | 36.81 | 19.69                   | 21.98 | 23.74 | 10086.6             | 10116.6     | 11.99                   | 12.71 | 13.23 |
| 10356.4         | 30.69                   | 33.54 | 35.30 | 22.40                   | 25.08 | 27.14 | 10326.4             | 10356.4     | 13.24                   | 14.28 | 14.92 |
| 10574.5         | 31.05                   | 34.37 | 35.34 | 24.90                   | 28.19 | 29.89 | 10544.5             | 10574.5     | 14.72                   | 15.73 | 16.07 |
| 10814.3         | 31.59                   | 34.77 | 35.91 | 27.36                   | 30.42 | 34.28 | 10784.3             | 10814.3     | 16.29                   | 17.70 | 18.34 |
| 11032.4         | 33.51                   | 36.54 | 37.99 | 29.50                   | 31.02 | 34.06 | 11002.4             | 11032.4     | 17.21                   | 19.05 | 19.66 |
| 11272.2         | 35.63                   | 38.24 | 39.28 | 30.04                   | 30.87 | 33.25 | 11242.2             | 11272.2     | 18.40                   | 20.28 | 21.20 |
| 11490.3         | 36.14                   | 37.85 | 37.42 | 30.60                   | 31.31 | 32.59 | 11460.3             | 11490.3     | 19.66                   | 21.23 | 22.09 |
| 11730.1         | 35.18                   | 35.65 | 36.66 | 31.24                   | 31.71 | 31.82 | 11700.1             | 11730.1     | 20.77                   | 21.66 | 22.15 |

# Frequency Mixer

**ZX05-14H+**

## 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=10000MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|-------|-------|----------------------|---------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |       |       |                      | @LO (dBm)                       |      |      |
|                     |             | +14             | +17  | +20  |             | +14             | +17   | +20   |                      | +14                             | +17  | +20  |
| 3000.1              | 3030.1      | 8.08            | 7.02 | 4.30 | 3030.1      | 27.16           | 24.48 | 19.98 | 10.0                 | 1.61                            | 1.24 | 1.05 |
| 3218.1              | 3248.1      | 9.43            | 6.66 | 3.00 | 3248.1      | 27.59           | 25.56 | 19.11 | 129.7                | 1.63                            | 1.27 | 1.13 |
| 3436.2              | 3466.2      | 7.80            | 3.65 | 2.87 | 3466.2      | 24.48           | 17.22 | 11.24 | 249.5                | 1.70                            | 1.34 | 1.22 |
| 3654.2              | 3684.2      | 3.98            | 3.22 | 3.00 | 3684.2      | 10.19           | 7.02  | 7.25  | 369.2                | 1.88                            | 1.50 | 1.36 |
| 3872.3              | 3902.3      | 3.54            | 3.22 | 3.04 | 3902.3      | 3.82            | 4.29  | 5.17  | 488.9                | 2.12                            | 1.72 | 1.56 |
| 4090.3              | 4120.3      | 3.50            | 3.19 | 2.93 | 4120.3      | 2.45            | 3.22  | 4.01  | 608.7                | 2.33                            | 1.89 | 1.72 |
| 4308.4              | 4338.4      | 3.39            | 3.02 | 2.71 | 4338.4      | 1.81            | 2.46  | 3.18  | 728.4                | 2.55                            | 2.06 | 1.85 |
| 4526.4              | 4556.4      | 2.88            | 2.64 | 2.48 | 4556.4      | 1.49            | 1.92  | 2.52  | 848.1                | 2.86                            | 2.31 | 2.06 |
| 4744.5              | 4774.5      | 3.08            | 2.80 | 2.59 | 4774.5      | 1.69            | 1.66  | 2.01  | 967.9                | 3.19                            | 2.56 | 2.27 |
| 4962.5              | 4992.5      | 3.76            | 3.26 | 2.91 | 4992.5      | 1.72            | 1.42  | 1.62  | 1087.6               | 3.42                            | 2.74 | 2.41 |
| 5180.6              | 5210.6      | 4.26            | 3.76 | 3.46 | 5210.6      | 1.56            | 1.18  | 1.49  | 1207.3               | 3.68                            | 2.92 | 2.54 |
| 5398.6              | 5428.6      | 4.64            | 4.01 | 3.71 | 5428.6      | 1.29            | 1.23  | 1.71  | 1327.1               | 3.98                            | 3.13 | 2.71 |
| 5616.6              | 5646.6      | 4.47            | 3.90 | 3.49 | 5646.6      | 1.13            | 1.49  | 2.06  | 1446.8               | 4.24                            | 3.30 | 2.83 |
| 5834.7              | 5864.7      | 4.11            | 3.70 | 3.24 | 5864.7      | 1.36            | 1.83  | 2.44  | 1566.5               | 4.41                            | 3.42 | 2.92 |
| 6052.7              | 6082.7      | 3.62            | 3.26 | 2.85 | 6082.7      | 1.73            | 2.18  | 2.80  | 1686.3               | 4.50                            | 3.48 | 2.98 |
| 6270.8              | 6300.8      | 3.42            | 3.05 | 2.74 | 6300.8      | 2.29            | 2.63  | 3.24  | 1806.0               | 4.41                            | 3.41 | 2.92 |
| 6488.8              | 6518.8      | 3.04            | 2.72 | 2.49 | 6518.8      | 2.92            | 3.00  | 3.58  | 1925.7               | 4.47                            | 3.40 | 2.89 |
| 6706.9              | 6736.9      | 2.87            | 2.49 | 2.25 | 6736.9      | 3.79            | 3.33  | 3.67  | 2045.5               | 4.55                            | 3.44 | 2.91 |
| 6924.9              | 6954.9      | 2.54            | 2.15 | 1.93 | 6954.9      | 4.68            | 3.55  | 3.56  | 2165.2               | 4.47                            | 3.38 | 2.86 |
| 7143.0              | 7173.0      | 2.49            | 1.91 | 1.71 | 7173.0      | 5.83            | 3.86  | 3.39  | 2284.9               | 4.28                            | 3.23 | 2.73 |
| 7361.0              | 7391.0      | 2.50            | 1.74 | 1.51 | 7391.0      | 6.51            | 3.96  | 3.13  | 2404.7               | 4.18                            | 3.17 | 2.69 |
| 7579.0              | 7609.0      | 2.38            | 1.68 | 1.52 | 7609.0      | 6.03            | 3.67  | 2.84  | 2524.4               | 4.17                            | 3.18 | 2.73 |
| 7797.1              | 7827.1      | 2.22            | 1.69 | 1.56 | 7827.1      | 5.52            | 3.37  | 2.51  | 2644.1               | 4.05                            | 3.11 | 2.68 |
| 8036.9              | 8066.9      | 2.12            | 1.79 | 1.71 | 8066.9      | 4.84            | 2.95  | 2.18  | 2743.9               | 3.99                            | 3.08 | 2.68 |
| 8255.0              | 8285.0      | 2.22            | 1.98 | 1.97 | 8285.0      | 4.21            | 2.61  | 1.92  | 2863.6               | 3.82                            | 3.00 | 2.64 |
| 8494.8              | 8524.8      | 2.62            | 2.35 | 2.33 | 8524.8      | 3.88            | 2.31  | 1.70  | 2963.4               | 3.77                            | 2.98 | 2.66 |
| 8712.9              | 8742.9      | 2.81            | 2.69 | 2.67 | 8742.9      | 3.11            | 1.92  | 1.48  | 3083.2               | 3.71                            | 2.99 | 2.71 |
| 8952.7              | 8982.7      | 3.13            | 2.91 | 2.80 | 8982.7      | 2.69            | 1.70  | 1.40  | 3182.9               | 3.57                            | 2.93 | 2.69 |
| 9170.8              | 9200.8      | 3.42            | 3.11 | 3.01 | 9200.8      | 2.57            | 1.65  | 1.46  | 3302.7               | 3.44                            | 2.88 | 2.70 |
| 9410.6              | 9440.6      | 3.88            | 3.58 | 3.46 | 9440.6      | 2.41            | 1.67  | 1.55  | 3402.4               | 3.32                            | 2.86 | 2.73 |
| 9628.7              | 9658.7      | 4.32            | 3.95 | 3.86 | 9658.7      | 2.64            | 1.77  | 1.61  | 3522.2               | 3.22                            | 2.87 | 2.82 |
| 9868.5              | 9898.5      | 3.93            | 3.73 | 3.61 | 9898.5      | 2.60            | 1.79  | 1.66  | 3622.0               | 3.15                            | 2.91 | 2.92 |
| 10086.6             | 10116.6     | 4.24            | 3.98 | 3.78 | 10116.6     | 2.55            | 1.84  | 1.73  | 3741.7               | 3.06                            | 2.96 | 3.05 |
| 10326.4             | 10356.4     | 4.35            | 4.08 | 3.95 | 10356.4     | 2.72            | 2.02  | 1.91  | 3841.5               | 3.08                            | 3.11 | 3.27 |
| 10544.5             | 10574.5     | 4.79            | 4.41 | 4.38 | 10574.5     | 3.12            | 2.30  | 2.17  | 3961.2               | 3.09                            | 3.30 | 3.54 |
| 10784.3             | 10814.3     | 5.74            | 4.95 | 4.72 | 10814.3     | 4.27            | 2.95  | 2.56  | 4061.0               | 3.19                            | 3.56 | 3.87 |
| 11002.4             | 11032.4     | 6.56            | 4.99 | 4.69 | 11032.4     | 6.49            | 4.13  | 3.33  | 4180.7               | 3.35                            | 3.87 | 4.27 |
| 11242.2             | 11272.2     | 8.95            | 5.89 | 5.17 | 11272.2     | 10.02           | 6.53  | 4.60  | 4280.5               | 3.54                            | 4.21 | 4.66 |
| 11460.3             | 11490.3     | 9.18            | 5.99 | 5.17 | 11490.3     | 12.80           | 8.90  | 6.21  | 4400.2               | 3.76                            | 4.55 | 5.06 |
| 11700.1             | 11730.1     | 8.95            | 6.32 | 5.46 | 11730.1     | 14.74           | 12.01 | 9.48  | 4500.0               | 3.93                            | 4.80 | 5.30 |

REV. X2

ZX05-14H+

101011

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## Harmonics Tables

| RF HARMONICS ORDER | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------------------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                    | 0      | -      | -   | +10 | 30  | 17  | --- | --- | --- | --- | --- | --- |
|                    | 1      | -      | 24  | +0  | 46  | 29  | 46  | --- | --- | --- | --- | --- |
|                    | 2      | 60     | 63  | 41  | 56  | 42  | 70  | 60  | --- | --- | --- | --- |
|                    | 3      | >90    | 74  | 62  | 72  | 57  | 77  | 74  | >83 | --- | --- | --- |
|                    | 4      | ---    | --- | >83 | >83 | 80  | 81  | 77  | >83 | >83 | --- | --- |
|                    | 5      | ---    | --- | --- | >83 | >83 | >83 | >83 | >83 | >83 | >83 | --- |
|                    | 6      | ---    | --- | --- | --- | >83 | >83 | >83 | >83 | >83 | >83 | >83 |
|                    | 7      | ---    | --- | --- | --- | --- | >83 | >83 | >83 | >83 | >83 | >83 |
|                    | 8      | ---    | --- | --- | --- | --- | --- | >83 | >83 | >83 | >83 | >83 |
|                    | 9      | ---    | --- | --- | --- | --- | --- | --- | >83 | >83 | >83 | >83 |
|                    | 10     | ---    | --- | --- | --- | --- | --- | --- | --- | >83 | >83 | >83 |
|                    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions:

RF IN: 6850 MHz; -1.00 dBm.

LO IN: 6880 MHz; +17.00 dBm

IF OUT: 30 MHz; -7.44 dBm

| RF HARMONICS ORDER | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------------------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                    | 0      | -      | -   | +0  | 43  | 29  | --- | --- | --- | --- | --- | --- |
|                    | 1      | -      | 23  | +0  | 48  | 29  | 50  | --- | --- | --- | --- | --- |
|                    | 2      | 40     | 52  | 32  | 50  | 34  | 60  | 53  | --- | --- | --- | --- |
|                    | 3      | 61     | 53  | 42  | 56  | 38  | 66  | 61  | 72  | --- | --- | --- |
|                    | 4      | ---    | --- | 73  | 85  | 54  | 61  | 53  | 70  | 75  | --- | --- |
|                    | 5      | ---    | --- | --- | 82  | 67  | 72  | 52  | 72  | 68  | 79  | --- |
|                    | 6      | ---    | --- | --- | --- | >92 | 88  | 70  | 67  | 66  | 81  | 74  |
|                    | 7      | ---    | --- | --- | --- | --- | >92 | 81  | 84  | 66  | 79  | 80  |
|                    | 8      | ---    | --- | --- | --- | --- | --- | >92 | >92 | 83  | 75  | 75  |
|                    | 9      | ---    | --- | --- | --- | --- | --- | --- | >92 | >92 | >92 | 76  |
|                    | 10     | ---    | --- | --- | --- | --- | --- | --- | --- | >92 | >92 | >92 |
|                    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions:

RF IN: 6850 MHz; 9.00 dBm.

LO IN: 6880 MHz; +17.00 dBm

IF OUT: 30 MHz; 2.46 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.