

# Frequency Mixer

Level 7 (LO Power +7 dBm) 300 to 4000

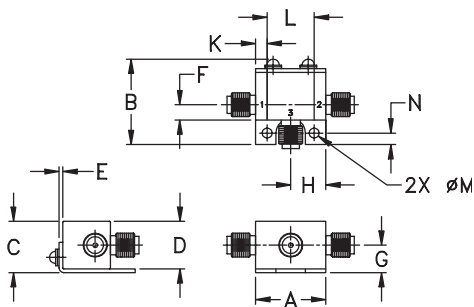
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -40°C to 85°C  |
| Storage Temperature                                             | -55°C to 100°C |
| RF Power                                                        | 50mW           |
| IF Current                                                      | 40mA           |
| Permanent damage may occur if any of these limits are exceeded. |                |

## Coaxial Connections

|    |   |
|----|---|
| LO | 1 |
| RF | 2 |
| IF | 3 |

## Outline Drawing



## Outline Dimensions (inch)

| A     | B     | C     | D     | E    | F    | G     |
|-------|-------|-------|-------|------|------|-------|
| .74   | .90   | .54   | .50   | .04  | .16  | .29   |
| 18.80 | 22.86 | 13.72 | 12.70 | 1.02 | 4.06 | 7.37  |
| H     | J     | K     | L     | M    | N    | wt    |
| .37   | --    | .122  | .496  | .106 | .122 | grams |
| 9.40  | --    | 3.10  | 12.60 | 2.69 | 3.10 | 20.0  |

## Features

- rugged construction
- small size
- low conversion loss
- high L-R isolation
- protected by US Patents 6,133,525 & 6,790,049

## Applications

- cellular
- PCS
- instrumentation
- satellite communication



Generic photo used for illustration purposes only

CASE STYLE: FL905

| Connectors | Model       |
|------------|-------------|
| SMA        | ZX05-30W-S+ |

**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

## Electrical Specifications (T<sub>AMB</sub>=25°C)

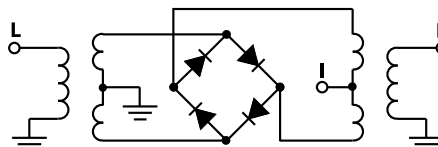
| FREQUENCY<br>(MHz)     |        | CONVERSION LOSS<br>(dB) |          |                        |     | LO-RF ISOLATION<br>(dB) |      | LO-IF ISOLATION<br>(dB) |      | IP3<br>at<br>center<br>band<br>(dBm) |
|------------------------|--------|-------------------------|----------|------------------------|-----|-------------------------|------|-------------------------|------|--------------------------------------|
| LO/RF<br>$f_L$ - $f_U$ | IF     | Mid-Band<br>m           |          | Total<br>Range<br>Max. |     |                         |      |                         |      |                                      |
|                        |        | $\overline{X}$          | $\sigma$ | Max.                   |     | Typ.                    | Min. | Typ.                    | Min. |                                      |
| 300-4000               | DC-950 | 6.8                     | 0.2      | 9.0                    | 9.8 | 35                      | 17   | 16                      | 7    |                                      |

1 dB COMP: +1 dBm typ.  
m= mid band [2f<sub>L</sub> to f<sub>U</sub>/2]

## Typical Performance Data

| Frequency (MHz) |         | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|---------|----------------------|--------------------|--------------------|-------------------|-------------------|
| RF              | LO      | LO +7dBm             | LO +7dBm           | LO +7dBm           | LO +7dBm          | LO +7dBm          |
| 300.10          | 330.10  | 5.34                 | 45.30              | 34.86              | 2.04              | 5.44              |
| 450.10          | 480.10  | 4.98                 | 41.41              | 32.02              | 1.54              | 3.61              |
| 600.10          | 630.10  | 5.02                 | 39.35              | 28.89              | 1.73              | 3.17              |
| 781.35          | 751.35  | 5.11                 | 37.95              | 28.09              | 2.81              | 2.51              |
| 943.85          | 913.85  | 6.22                 | 37.02              | 28.05              | 3.48              | 1.97              |
| 1106.35         | 1076.35 | 6.36                 | 39.38              | 23.65              | 2.77              | 1.70              |
| 1268.85         | 1238.85 | 6.45                 | 42.76              | 20.82              | 2.59              | 1.80              |
| 1431.35         | 1401.35 | 5.84                 | 40.76              | 18.75              | 3.06              | 2.17              |
| 1675.10         | 1645.10 | 7.37                 | 37.69              | 16.07              | 1.89              | 2.72              |
| 1837.60         | 1807.60 | 7.03                 | 37.60              | 14.80              | 2.87              | 3.10              |
| 2000.10         | 1970.10 | 7.54                 | 37.84              | 13.54              | 3.39              | 3.13              |
| 2211.87         | 2181.87 | 7.80                 | 37.90              | 12.47              | 3.19              | 3.29              |
| 2435.39         | 2405.39 | 7.94                 | 38.15              | 11.59              | 3.90              | 3.27              |
| 2658.92         | 2628.92 | 7.71                 | 39.90              | 10.55              | 4.70              | 3.21              |
| 2882.45         | 2852.45 | 7.49                 | 44.86              | 9.56               | 4.72              | 2.76              |
| 3105.98         | 3075.98 | 6.88                 | 38.93              | 10.01              | 4.06              | 1.96              |
| 3329.51         | 3299.51 | 6.50                 | 39.01              | 11.39              | 2.83              | 1.89              |
| 3553.04         | 3523.04 | 6.26                 | 41.76              | 14.66              | 2.41              | 2.39              |
| 3776.57         | 3746.57 | 6.25                 | 38.02              | 19.20              | 1.48              | 3.74              |
| 4000.10         | 3970.10 | 6.55                 | 34.99              | 25.24              | 1.19              | 5.27              |

## Electrical Schematic



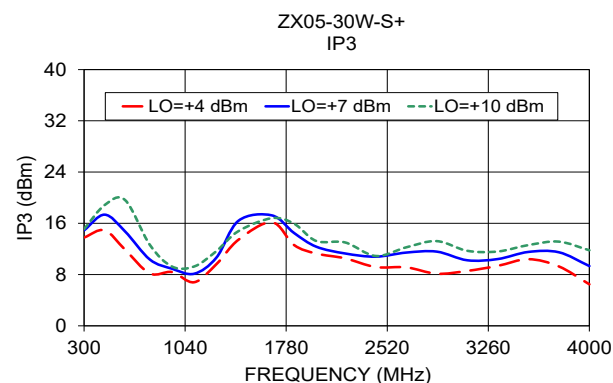
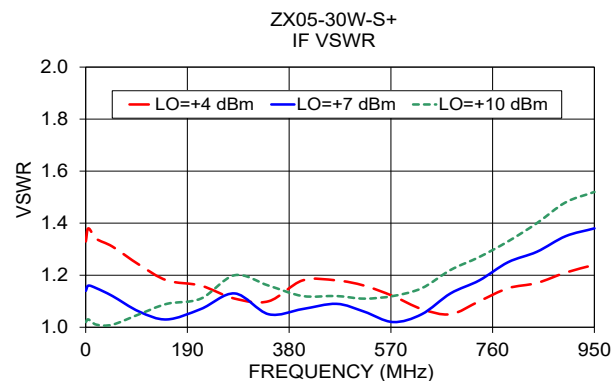
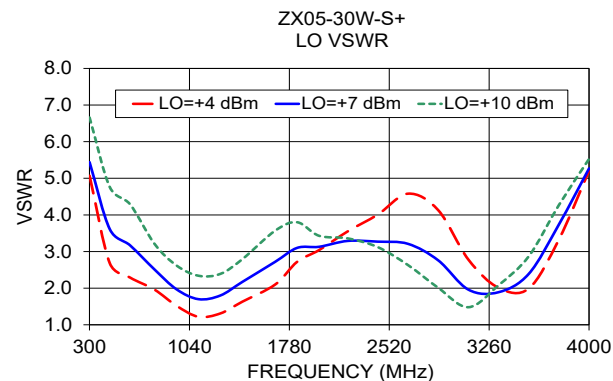
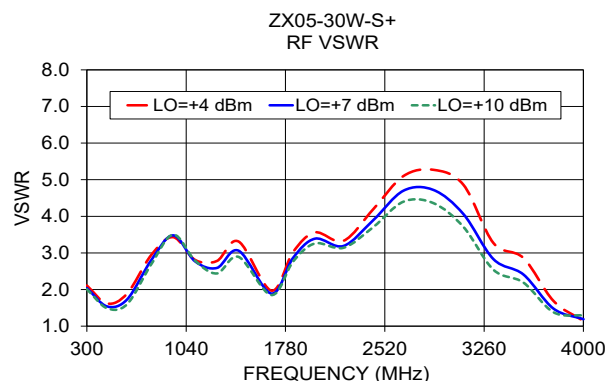
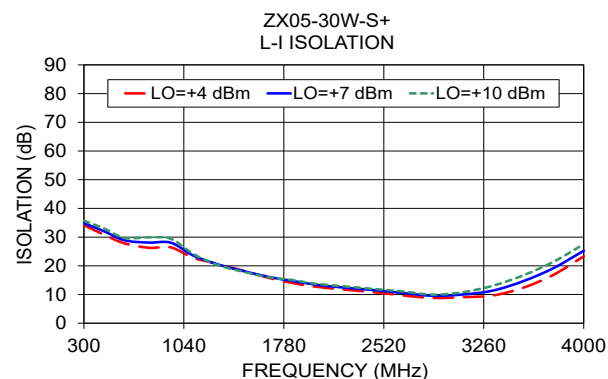
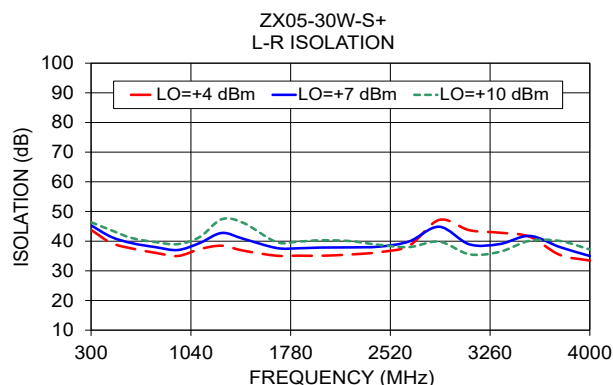
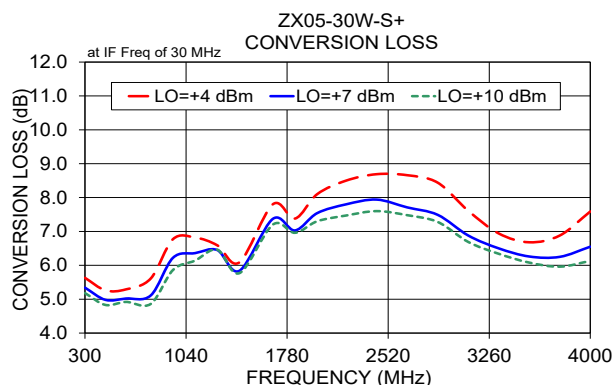
### Notes

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# Performance Charts

## ZX05-30W-S+



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# Frequency Mixer

**ZX05-30W+**

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>IF FIXED<br>@IF(OUT)=30MHz<br>(dB) |       |      | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP3 INPUT<br>(dBm) |       |       | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF IN=+1dBm<br>(dB) |       |      |
|---------------------|-------------|-------------------------------------------------------|-------|------|---------------------|-------------|--------------------|-------|-------|---------------------|-------------|-------------------------------------|-------|------|
|                     |             | @LO (dBm)                                             |       |      |                     |             | @LO (dBm)          |       |       |                     |             | @LO (dBm)                           |       |      |
|                     |             | +4                                                    | +7    | +10  |                     |             | +4                 | +7    | +10   |                     |             | +4                                  | +7    | +10  |
| 130.1               | 160.1       | 17.67                                                 | 10.65 | 7.86 | 130.1               | 160.1       | -2.61              | 4.73  | 15.81 | 130.1               | 160.1       | -3.87                               | -0.89 | 0.15 |
| 229.4               | 259.4       | 6.64                                                  | 5.86  | 5.54 | 229.4               | 259.4       | 11.78              | 18.64 | 20.07 | 229.4               | 259.4       | 1.71                                | 1.13  | 0.85 |
| 328.6               | 358.6       | 5.58                                                  | 5.22  | 4.97 | 328.6               | 358.6       | 14.99              | 18.93 | 20.73 | 328.6               | 358.6       | 1.89                                | 1.44  | 1.22 |
| 427.9               | 457.9       | 5.37                                                  | 5.01  | 4.75 | 427.9               | 457.9       | 15.05              | 14.83 | 15.77 | 427.9               | 457.9       | 2.06                                | 1.68  | 1.51 |
| 527.2               | 557.2       | 5.26                                                  | 4.98  | 4.77 | 527.2               | 557.2       | 13.86              | 22.70 | 17.38 | 527.2               | 557.2       | 2.08                                | 1.78  | 1.58 |
| 626.4               | 656.4       | 5.08                                                  | 4.79  | 4.60 | 626.4               | 656.4       | 11.14              | 12.53 | 14.62 | 626.4               | 656.4       | 2.40                                | 2.05  | 1.74 |
| 725.7               | 755.7       | 5.68                                                  | 5.17  | 4.84 | 725.7               | 755.7       | 9.70               | 13.34 | 16.31 | 725.7               | 755.7       | 2.46                                | 2.18  | 1.93 |
| 825.0               | 855.0       | 6.39                                                  | 5.69  | 5.20 | 825.0               | 855.0       | 8.30               | 10.27 | 11.32 | 825.0               | 855.0       | 2.07                                | 1.99  | 1.83 |
| 924.2               | 954.2       | 6.88                                                  | 6.24  | 5.73 | 924.2               | 954.2       | 5.35               | 6.87  | 8.87  | 924.2               | 954.2       | 1.57                                | 1.45  | 1.36 |
| 1023.5              | 1053.5      | 6.81                                                  | 6.43  | 6.09 | 1023.5              | 1053.5      | 7.32               | 8.26  | 9.91  | 1023.5              | 1053.5      | 1.33                                | 1.11  | 0.97 |
| 1122.8              | 1152.8      | 6.53                                                  | 6.38  | 6.28 | 1122.8              | 1152.8      | 9.70               | 10.54 | 11.11 | 1122.8              | 1152.8      | 1.02                                | 0.82  | 0.66 |
| 1222.1              | 1252.1      | 6.03                                                  | 5.91  | 5.85 | 1222.1              | 1252.1      | 14.71              | 12.58 | 14.29 | 1222.1              | 1252.1      | 0.70                                | 0.51  | 0.42 |
| 1321.3              | 1351.3      | 5.64                                                  | 5.44  | 5.38 | 1321.3              | 1351.3      | 9.28               | 12.14 | 16.99 | 1321.3              | 1351.3      | 1.02                                | 0.73  | 0.52 |
| 1420.6              | 1450.6      | 7.57                                                  | 7.00  | 6.61 | 1420.6              | 1450.6      | 9.05               | 10.69 | 12.22 | 1420.6              | 1450.6      | 1.00                                | 0.92  | 0.85 |
| 1519.9              | 1549.9      | 8.31                                                  | 7.73  | 7.35 | 1519.9              | 1549.9      | 10.11              | 11.40 | 12.64 | 1519.9              | 1549.9      | 0.48                                | 0.43  | 0.42 |
| 1619.1              | 1649.1      | 7.87                                                  | 7.44  | 7.19 | 1619.1              | 1649.1      | 12.26              | 13.88 | 13.87 | 1619.1              | 1649.1      | 0.63                                | 0.48  | 0.45 |
| 1718.4              | 1748.4      | 7.71                                                  | 7.33  | 7.14 | 1718.4              | 1748.4      | 11.84              | 13.47 | 17.16 | 1718.4              | 1748.4      | 0.60                                | 0.44  | 0.38 |
| 1817.7              | 1847.7      | 7.89                                                  | 7.45  | 7.25 | 1817.7              | 1847.7      | 12.57              | 13.35 | 14.10 | 1817.7              | 1847.7      | 0.44                                | 0.36  | 0.28 |
| 1916.9              | 1946.9      | 8.00                                                  | 7.50  | 7.22 | 1916.9              | 1946.9      | 12.27              | 12.46 | 13.25 | 1916.9              | 1946.9      | 0.42                                | 0.30  | 0.23 |
| 2016.2              | 2046.2      | 8.06                                                  | 7.48  | 7.18 | 2016.2              | 2046.2      | 12.52              | 13.50 | 14.37 | 2016.2              | 2046.2      | 0.43                                | 0.30  | 0.24 |
| 2135.3              | 2165.3      | 8.19                                                  | 7.54  | 7.19 | 2135.3              | 2165.3      | 10.85              | 12.45 | 14.96 | 2135.3              | 2165.3      | 0.36                                | 0.29  | 0.25 |
| 2234.6              | 2264.6      | 8.21                                                  | 7.54  | 7.20 | 2234.6              | 2264.6      | 10.11              | 12.40 | 12.31 | 2234.6              | 2264.6      | 0.40                                | 0.32  | 0.29 |
| 2353.7              | 2383.7      | 8.04                                                  | 7.35  | 7.00 | 2353.7              | 2383.7      | 9.89               | 10.70 | 11.37 | 2353.7              | 2383.7      | 0.50                                | 0.41  | 0.34 |
| 2453.0              | 2483.0      | 7.87                                                  | 7.22  | 6.84 | 2453.0              | 2483.0      | 9.56               | 10.79 | 11.82 | 2453.0              | 2483.0      | 0.69                                | 0.53  | 0.40 |
| 2572.1              | 2602.1      | 7.76                                                  | 7.06  | 6.72 | 2572.1              | 2602.1      | 8.96               | 10.54 | 11.02 | 2572.1              | 2602.1      | 0.87                                | 0.67  | 0.53 |
| 2671.4              | 2701.4      | 7.65                                                  | 6.93  | 6.61 | 2671.4              | 2701.4      | 6.50               | 8.14  | 9.01  | 2671.4              | 2701.4      | 1.01                                | 0.82  | 0.71 |
| 2790.5              | 2820.5      | 7.55                                                  | 6.69  | 6.42 | 2790.5              | 2820.5      | 7.10               | 8.82  | 10.43 | 2790.5              | 2820.5      | 0.90                                | 0.67  | 0.56 |
| 2889.8              | 2919.8      | 7.26                                                  | 6.40  | 6.15 | 2889.8              | 2919.8      | 7.25               | 8.94  | 10.28 | 2889.8              | 2919.8      | 0.91                                | 0.65  | 0.54 |
| 3008.9              | 3038.9      | 6.76                                                  | 6.11  | 5.85 | 3008.9              | 3038.9      | 6.52               | 7.91  | 9.54  | 3008.9              | 3038.9      | 1.00                                | 0.70  | 0.61 |
| 3108.1              | 3138.1      | 6.45                                                  | 5.89  | 5.66 | 3108.1              | 3138.1      | 6.18               | 7.56  | 9.10  | 3108.1              | 3138.1      | 1.18                                | 0.90  | 0.75 |
| 3227.3              | 3257.3      | 6.17                                                  | 5.68  | 5.49 | 3227.3              | 3257.3      | 6.47               | 7.78  | 9.18  | 3227.3              | 3257.3      | 1.29                                | 0.94  | 0.90 |
| 3326.5              | 3356.5      | 6.05                                                  | 5.63  | 5.43 | 3326.5              | 3356.5      | 6.93               | 8.17  | 9.69  | 3326.5              | 3356.5      | 1.44                                | 1.13  | 1.08 |
| 3445.7              | 3475.7      | 6.05                                                  | 5.66  | 5.46 | 3445.7              | 3475.7      | 7.45               | 9.09  | 10.36 | 3445.7              | 3475.7      | 1.51                                | 1.17  | 1.10 |
| 3544.9              | 3574.9      | 6.19                                                  | 5.85  | 5.66 | 3544.9              | 3574.9      | 8.47               | 9.76  | 11.50 | 3544.9              | 3574.9      | 1.51                                | 1.17  | 1.10 |
| 3664.1              | 3694.1      | 6.50                                                  | 6.18  | 6.01 | 3664.1              | 3694.1      | 9.84               | 10.96 | 12.26 | 3664.1              | 3694.1      | 1.53                                | 1.09  | 0.98 |
| 3763.3              | 3793.3      | 6.99                                                  | 6.64  | 6.47 | 3763.3              | 3793.3      | 10.52              | 12.02 | 12.83 | 3763.3              | 3793.3      | 1.58                                | 1.06  | 0.88 |
| 3882.4              | 3912.4      | 7.83                                                  | 7.34  | 7.16 | 3882.4              | 3912.4      | 9.88               | 13.61 | 14.45 | 3882.4              | 3912.4      | 1.79                                | 1.00  | 0.75 |
| 3981.7              | 4011.7      | 8.66                                                  | 8.00  | 7.78 | 3981.7              | 4011.7      | 8.40               | 12.37 | 15.21 | 3981.7              | 4011.7      | 1.93                                | 0.99  | 0.62 |
| 4100.8              | 4130.8      | 10.05                                                 | 8.95  | 8.63 | 4100.8              | 4130.8      | 6.99               | 10.82 | 15.34 | 4100.8              | 4130.8      | 1.97                                | 1.09  | 0.57 |
| 4200.1              | 4230.1      | 11.71                                                 | 9.92  | 9.34 | 4200.1              | 4230.1      | 7.18               | 9.13  | 14.28 | 4200.1              | 4230.1      | 1.48                                | 1.19  | 0.64 |

# Frequency Mixer

**ZX05-30W+**

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=2000.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=300.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=4000.1MHz<br>(dB) |
|----------------------|-------------|------------------------------------------------------------------|----------------------|-------------|-----------------------------------------------------------------|----------------------|-------------|------------------------------------------------------------------|
|                      |             | @LO (dBm)                                                        |                      |             | @LO (dBm)                                                       |                      |             | @LO (dBm)                                                        |
|                      |             | +7                                                               |                      |             | +7                                                              |                      |             | +7                                                               |
| 950.0                | 1050.1      | 8.67                                                             | 10.0                 | 310.1       | 5.35                                                            | 950.0                | 3050.1      | 8.36                                                             |
| 930.0                | 1070.1      | 8.67                                                             | 30.0                 | 330.1       | 5.26                                                            | 930.0                | 3070.1      | 8.32                                                             |
| 910.0                | 1090.1      | 8.64                                                             | 50.0                 | 350.1       | 5.35                                                            | 910.0                | 3090.1      | 8.36                                                             |
| 890.0                | 1110.1      | 8.68                                                             | 70.0                 | 370.1       | 5.38                                                            | 890.0                | 3110.1      | 8.33                                                             |
| 870.0                | 1130.1      | 8.72                                                             | 90.0                 | 390.1       | 5.36                                                            | 870.0                | 3130.1      | 8.33                                                             |
| 850.0                | 1150.1      | 8.68                                                             | 110.0                | 410.1       | 5.35                                                            | 850.0                | 3150.1      | 8.32                                                             |
| 830.0                | 1170.1      | 8.71                                                             | 130.0                | 430.1       | 5.33                                                            | 830.0                | 3170.1      | 8.28                                                             |
| 810.0                | 1190.1      | 8.73                                                             | 150.0                | 450.1       | 5.33                                                            | 810.0                | 3190.1      | 8.28                                                             |
| 790.0                | 1210.1      | 8.70                                                             | 170.0                | 470.1       | 5.37                                                            | 790.0                | 3210.1      | 8.26                                                             |
| 770.0                | 1230.1      | 8.69                                                             | 190.0                | 490.1       | 5.39                                                            | 770.0                | 3230.1      | 8.24                                                             |
| 750.0                | 1250.1      | 8.62                                                             | 210.0                | 510.1       | 5.40                                                            | 750.0                | 3250.1      | 8.26                                                             |
| 730.0                | 1270.1      | 8.55                                                             | 230.0                | 530.1       | 5.38                                                            | 730.0                | 3270.1      | 8.25                                                             |
| 710.0                | 1290.1      | 8.50                                                             | 250.0                | 550.1       | 5.38                                                            | 710.0                | 3290.1      | 8.25                                                             |
| 690.0                | 1310.1      | 8.37                                                             | 270.0                | 570.1       | 5.33                                                            | 690.0                | 3310.1      | 8.19                                                             |
| 670.0                | 1330.1      | 8.32                                                             | 290.0                | 590.1       | 5.25                                                            | 670.0                | 3330.1      | 8.19                                                             |
| 650.0                | 1350.1      | 8.30                                                             | 310.0                | 610.1       | 5.19                                                            | 650.0                | 3350.1      | 8.18                                                             |
| 630.0                | 1370.1      | 8.33                                                             | 330.0                | 630.1       | 5.09                                                            | 630.0                | 3370.1      | 8.18                                                             |
| 610.0                | 1390.1      | 8.38                                                             | 350.0                | 650.1       | 5.03                                                            | 610.0                | 3390.1      | 8.17                                                             |
| 590.0                | 1410.1      | 8.45                                                             | 370.0                | 670.1       | 4.99                                                            | 590.0                | 3410.1      | 8.17                                                             |
| 570.0                | 1430.1      | 8.52                                                             | 390.0                | 690.1       | 4.92                                                            | 570.0                | 3430.1      | 8.16                                                             |
| 550.0                | 1450.1      | 8.57                                                             | 410.0                | 710.1       | 4.92                                                            | 550.0                | 3450.1      | 8.15                                                             |
| 530.0                | 1470.1      | 8.61                                                             | 430.0                | 730.1       | 4.91                                                            | 530.0                | 3470.1      | 8.16                                                             |
| 510.0                | 1490.1      | 8.60                                                             | 450.0                | 750.1       | 4.86                                                            | 510.0                | 3490.1      | 8.16                                                             |
| 490.0                | 1510.1      | 8.60                                                             | 470.0                | 770.1       | 4.86                                                            | 490.0                | 3510.1      | 8.17                                                             |
| 450.1                | 1550.0      | 8.60                                                             | 510.0                | 810.1       | 5.00                                                            | 450.0                | 3550.1      | 8.17                                                             |
| 430.1                | 1570.0      | 8.54                                                             | 530.0                | 830.1       | 5.12                                                            | 430.0                | 3570.1      | 8.22                                                             |
| 390.1                | 1610.0      | 8.09                                                             | 570.0                | 870.1       | 5.35                                                            | 390.0                | 3610.1      | 8.21                                                             |
| 370.1                | 1630.0      | 7.89                                                             | 590.0                | 890.1       | 5.47                                                            | 370.0                | 3630.1      | 8.25                                                             |
| 330.1                | 1670.0      | 7.71                                                             | 630.0                | 930.1       | 5.58                                                            | 330.0                | 3670.1      | 8.29                                                             |
| 310.1                | 1690.0      | 7.65                                                             | 650.0                | 950.1       | 5.59                                                            | 310.0                | 3690.1      | 8.32                                                             |
| 270.1                | 1730.0      | 7.60                                                             | 690.0                | 990.1       | 5.57                                                            | 270.0                | 3730.1      | 8.38                                                             |
| 250.1                | 1750.0      | 7.57                                                             | 710.0                | 1010.1      | 5.55                                                            | 250.0                | 3750.1      | 8.43                                                             |
| 210.1                | 1790.0      | 7.55                                                             | 750.0                | 1050.1      | 5.24                                                            | 210.0                | 3790.1      | 8.44                                                             |
| 190.1                | 1810.0      | 7.56                                                             | 770.0                | 1070.1      | 5.11                                                            | 190.0                | 3810.1      | 8.46                                                             |
| 150.1                | 1850.0      | 7.53                                                             | 810.0                | 1110.1      | 5.00                                                            | 150.0                | 3850.1      | 8.51                                                             |
| 130.1                | 1870.0      | 7.54                                                             | 830.0                | 1130.1      | 4.99                                                            | 130.0                | 3870.1      | 8.48                                                             |
| 90.1                 | 1910.0      | 7.53                                                             | 870.0                | 1170.1      | 4.98                                                            | 90.0                 | 3910.1      | 8.42                                                             |
| 70.1                 | 1930.0      | 7.51                                                             | 890.0                | 1190.1      | 4.96                                                            | 70.0                 | 3930.1      | 8.39                                                             |
| 30.1                 | 1970.0      | 7.44                                                             | 930.0                | 1230.1      | 4.97                                                            | 30.0                 | 3970.1      | 8.26                                                             |
| 10.1                 | 1990.0      | 7.62                                                             | 950.0                | 1250.1      | 4.99                                                            | 10.0                 | 3990.1      | 8.36                                                             |

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# Frequency Mixer

ZX05-30W+

## Typical Performance Data

| LO<br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF ISOLATION<br>(dB) |       |       |
|-------------|-------------------------|-------|-------|-------------------------|-------|-------|
|             | @LO (dBm)               |       |       | @LO (dBm)               |       |       |
|             | +4                      | +7    | +10   | +4                      | +7    | +10   |
| 130.1       | 76.06                   | 73.17 | 65.95 | 51.03                   | 48.90 | 45.49 |
| 230.1       | 50.09                   | 50.44 | 50.99 | 42.40                   | 39.93 | 37.12 |
| 330.1       | 44.67                   | 46.93 | 49.09 | 34.64                   | 33.03 | 32.07 |
| 430.1       | 41.61                   | 44.27 | 46.89 | 30.39                   | 29.79 | 29.09 |
| 530.1       | 40.01                   | 42.47 | 44.70 | 27.27                   | 27.16 | 26.75 |
| 630.1       | 38.20                   | 39.65 | 40.73 | 25.37                   | 26.21 | 26.24 |
| 730.1       | 37.19                   | 38.61 | 39.59 | 23.80                   | 25.13 | 25.70 |
| 830.1       | 36.62                   | 38.43 | 39.84 | 22.83                   | 24.52 | 25.84 |
| 930.1       | 35.96                   | 37.61 | 39.49 | 23.02                   | 24.95 | 26.40 |
| 1030.1      | 35.43                   | 37.23 | 39.07 | 21.89                   | 24.42 | 26.43 |
| 1130.1      | 35.93                   | 37.95 | 39.97 | 20.46                   | 22.14 | 23.33 |
| 1230.1      | 37.22                   | 39.61 | 41.82 | 18.25                   | 19.07 | 19.42 |
| 1330.1      | 36.89                   | 39.25 | 41.35 | 15.98                   | 16.38 | 16.45 |
| 1430.1      | 34.63                   | 37.57 | 40.23 | 14.08                   | 14.38 | 14.49 |
| 1530.1      | 35.20                   | 38.47 | 41.52 | 12.75                   | 13.25 | 13.42 |
| 1630.1      | 34.61                   | 37.73 | 41.01 | 11.97                   | 12.65 | 12.82 |
| 1730.1      | 34.01                   | 36.76 | 39.51 | 11.12                   | 11.94 | 12.44 |
| 1830.1      | 33.52                   | 36.04 | 38.59 | 10.73                   | 11.72 | 12.32 |
| 1930.1      | 33.70                   | 36.34 | 38.94 | 10.91                   | 11.91 | 12.56 |
| 2030.1      | 34.14                   | 37.18 | 40.08 | 11.28                   | 12.30 | 12.91 |
| 2130.1      | 34.36                   | 37.60 | 40.87 | 11.77                   | 12.73 | 13.44 |
| 2230.1      | 34.61                   | 37.58 | 40.07 | 12.30                   | 13.31 | 13.96 |
| 2330.1      | 35.01                   | 37.29 | 38.48 | 12.69                   | 13.63 | 14.21 |
| 2430.1      | 35.45                   | 36.38 | 36.40 | 12.89                   | 13.75 | 14.39 |
| 2550.1      | 34.56                   | 33.74 | 32.58 | 13.09                   | 13.87 | 14.33 |
| 2650.1      | 31.33                   | 29.90 | 28.95 | 13.02                   | 13.82 | 14.14 |
| 2770.1      | 26.81                   | 26.12 | 26.01 | 12.79                   | 13.52 | 13.67 |
| 2870.1      | 26.59                   | 26.72 | 26.80 | 12.48                   | 12.99 | 13.14 |
| 2990.1      | 29.37                   | 28.79 | 27.81 | 12.03                   | 12.46 | 12.71 |
| 3090.1      | 31.25                   | 29.69 | 27.62 | 11.53                   | 12.18 | 12.35 |
| 3210.1      | 33.14                   | 29.84 | 27.32 | 11.13                   | 11.96 | 12.45 |
| 3310.1      | 33.91                   | 30.00 | 27.49 | 11.09                   | 12.15 | 12.95 |
| 3430.1      | 33.68                   | 30.43 | 28.26 | 11.34                   | 12.75 | 13.94 |
| 3530.1      | 33.47                   | 30.77 | 29.16 | 12.17                   | 13.72 | 15.22 |
| 3650.1      | 33.14                   | 31.54 | 30.48 | 13.86                   | 15.61 | 17.33 |
| 3750.1      | 33.33                   | 32.58 | 31.68 | 15.95                   | 17.78 | 19.48 |
| 3870.1      | 33.74                   | 33.69 | 33.09 | 18.64                   | 20.25 | 21.77 |
| 3970.1      | 33.64                   | 34.70 | 33.91 | 19.83                   | 20.66 | 21.90 |
| 4090.1      | 33.01                   | 35.56 | 34.96 | 20.08                   | 19.73 | 20.65 |
| 4190.1      | 32.39                   | 35.58 | 35.64 | 20.03                   | 19.39 | 19.76 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +4                      | +7    | +10   |
| 130.1               | 160.1       | 34.50                   | 31.63 | 29.04 |
| 230.1               | 260.1       | 26.10                   | 25.46 | 25.22 |
| 330.1               | 360.1       | 24.31                   | 24.06 | 23.87 |
| 430.1               | 460.1       | 24.50                   | 24.17 | 24.08 |
| 530.1               | 560.1       | 27.46                   | 27.20 | 26.93 |
| 630.1               | 660.1       | 30.16                   | 30.19 | 30.27 |
| 730.1               | 760.1       | 34.22                   | 32.92 | 31.91 |
| 830.1               | 860.1       | 29.04                   | 28.60 | 28.14 |
| 930.1               | 960.1       | 25.69                   | 25.57 | 25.47 |
| 1030.1              | 1060.1      | 23.34                   | 23.34 | 23.42 |
| 1130.1              | 1160.1      | 22.98                   | 22.84 | 22.86 |
| 1230.1              | 1260.1      | 23.74                   | 23.60 | 23.51 |
| 1330.1              | 1360.1      | 23.26                   | 23.19 | 23.02 |
| 1430.1              | 1460.1      | 21.35                   | 21.24 | 21.15 |
| 1530.1              | 1560.1      | 24.37                   | 24.25 | 24.13 |
| 1630.1              | 1660.1      | 27.27                   | 27.29 | 27.39 |
| 1730.1              | 1760.1      | 29.49                   | 29.52 | 29.65 |
| 1830.1              | 1860.1      | 29.68                   | 29.69 | 29.70 |
| 1930.1              | 1960.1      | 27.95                   | 28.00 | 28.03 |
| 2030.1              | 2060.1      | 26.27                   | 26.27 | 26.31 |
| 2130.1              | 2160.1      | 24.85                   | 24.85 | 24.90 |
| 2230.1              | 2260.1      | 23.78                   | 23.82 | 23.85 |
| 2330.1              | 2360.1      | 23.07                   | 23.08 | 23.15 |
| 2430.1              | 2460.1      | 22.64                   | 22.64 | 22.74 |
| 2550.1              | 2580.1      | 22.41                   | 22.42 | 22.51 |
| 2650.1              | 2680.1      | 22.30                   | 22.35 | 22.46 |
| 2770.1              | 2800.1      | 21.92                   | 22.03 | 22.18 |
| 2870.1              | 2900.1      | 21.08                   | 21.31 | 21.57 |
| 2990.1              | 3020.1      | 20.97                   | 21.31 | 21.65 |
| 3090.1              | 3120.1      | 21.26                   | 21.58 | 21.91 |
| 3210.1              | 3240.1      | 22.04                   | 22.31 | 22.58 |
| 3310.1              | 3340.1      | 23.00                   | 23.26 | 23.58 |
| 3430.1              | 3460.1      | 24.36                   | 24.76 | 25.15 |
| 3530.1              | 3560.1      | 25.56                   | 26.13 | 26.66 |
| 3650.1              | 3680.1      | 25.17                   | 25.74 | 26.20 |
| 3750.1              | 3780.1      | 22.79                   | 23.16 | 23.43 |
| 3870.1              | 3900.1      | 19.56                   | 19.95 | 20.09 |
| 3970.1              | 4000.1      | 17.07                   | 17.70 | 17.90 |
| 4090.1              | 4120.1      | 14.63                   | 15.64 | 16.09 |
| 4190.1              | 4220.1      | 13.13                   | 14.13 | 15.03 |

# Frequency Mixer

**ZX05-30W+**

## 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=4000.1MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|-------|-------|----------------------|----------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |       |       |                      | @LO (dBm)                        |      |      |
|                     |             | +4              | +7   | +10  |             | +4              | +7    | +10   |                      | +4                               | +7   | +10  |
| 130.1               | 160.1       | 16.26           | 8.20 | 5.85 | 130.1       | 59.91           | 49.64 | 31.60 | 10.1                 | 2.81                             | 2.05 | 1.89 |
| 230.1               | 260.1       | 2.82            | 2.51 | 2.40 | 230.1       | 14.62           | 9.08  | 8.55  | 30.1                 | 2.57                             | 2.08 | 1.84 |
| 330.1               | 360.1       | 1.71            | 1.61 | 1.56 | 330.1       | 4.84            | 5.31  | 6.51  | 50.1                 | 2.49                             | 2.07 | 1.81 |
| 430.1               | 460.1       | 1.33            | 1.24 | 1.19 | 430.1       | 3.38            | 4.37  | 5.70  | 70.1                 | 2.44                             | 2.02 | 1.76 |
| 530.1               | 560.1       | 1.31            | 1.22 | 1.16 | 530.1       | 2.84            | 3.87  | 5.16  | 90.1                 | 2.48                             | 2.05 | 1.81 |
| 630.1               | 660.1       | 1.55            | 1.45 | 1.38 | 630.1       | 2.55            | 3.52  | 4.69  | 110.1                | 2.52                             | 2.07 | 1.83 |
| 730.1               | 760.1       | 2.17            | 2.02 | 1.91 | 730.1       | 2.39            | 3.22  | 4.26  | 130.1                | 2.47                             | 2.04 | 1.80 |
| 830.1               | 860.1       | 3.15            | 2.89 | 2.69 | 830.1       | 2.32            | 3.01  | 3.90  | 150.1                | 2.40                             | 1.97 | 1.74 |
| 930.1               | 960.1       | 3.88            | 3.63 | 3.42 | 930.1       | 2.15            | 2.72  | 3.48  | 170.1                | 2.38                             | 1.96 | 1.73 |
| 1030.1              | 1060.1      | 3.99            | 3.86 | 3.73 | 1030.1      | 1.94            | 2.40  | 3.08  | 190.1                | 2.37                             | 1.97 | 1.75 |
| 1130.1              | 1160.1      | 3.57            | 3.55 | 3.54 | 1130.1      | 1.73            | 2.11  | 2.72  | 210.1                | 2.38                             | 1.97 | 1.75 |
| 1230.1              | 1260.1      | 3.08            | 3.02 | 3.01 | 1230.1      | 1.66            | 1.96  | 2.49  | 230.1                | 2.33                             | 1.94 | 1.72 |
| 1330.1              | 1360.1      | 2.68            | 2.46 | 2.34 | 1330.1      | 1.60            | 1.89  | 2.39  | 250.1                | 2.28                             | 1.90 | 1.70 |
| 1430.1              | 1460.1      | 3.68            | 3.42 | 3.21 | 1430.1      | 1.55            | 1.87  | 2.37  | 270.1                | 2.25                             | 1.88 | 1.68 |
| 1530.1              | 1560.1      | 4.91            | 4.59 | 4.35 | 1530.1      | 1.51            | 1.89  | 2.41  | 290.1                | 2.26                             | 1.88 | 1.69 |
| 1630.1              | 1660.1      | 4.56            | 4.32 | 4.13 | 1630.1      | 1.49            | 1.91  | 2.46  | 310.1                | 2.23                             | 1.86 | 1.68 |
| 1730.1              | 1760.1      | 4.48            | 4.24 | 4.09 | 1730.1      | 1.62            | 2.01  | 2.55  | 330.1                | 2.19                             | 1.83 | 1.66 |
| 1830.1              | 1860.1      | 4.43            | 4.15 | 3.94 | 1830.1      | 1.85            | 2.18  | 2.69  | 350.1                | 2.16                             | 1.80 | 1.64 |
| 1930.1              | 1960.1      | 4.38            | 4.05 | 3.81 | 1930.1      | 2.07            | 2.37  | 2.86  | 370.1                | 2.14                             | 1.80 | 1.65 |
| 2030.1              | 2060.1      | 4.42            | 4.08 | 3.82 | 2030.1      | 2.32            | 2.56  | 3.02  | 390.1                | 2.12                             | 1.78 | 1.64 |
| 2130.1              | 2160.1      | 4.50            | 4.11 | 3.85 | 2130.1      | 2.58            | 2.75  | 3.16  | 410.1                | 2.10                             | 1.76 | 1.63 |
| 2230.1              | 2260.1      | 4.23            | 3.88 | 3.62 | 2230.1      | 2.84            | 2.90  | 3.22  | 430.1                | 2.07                             | 1.74 | 1.62 |
| 2330.1              | 2360.1      | 3.98            | 3.64 | 3.38 | 2330.1      | 3.12            | 2.99  | 3.21  | 450.1                | 2.07                             | 1.74 | 1.63 |
| 2430.1              | 2460.1      | 3.95            | 3.64 | 3.30 | 2430.1      | 3.30            | 3.02  | 3.14  | 470.1                | 2.03                             | 1.73 | 1.63 |
| 2550.1              | 2580.1      | 3.64            | 3.31 | 3.06 | 2550.1      | 3.47            | 2.95  | 2.95  | 510.1                | 2.01                             | 1.71 | 1.62 |
| 2650.1              | 2680.1      | 3.17            | 2.81 | 2.58 | 2650.1      | 3.50            | 2.78  | 2.65  | 530.1                | 1.97                             | 1.68 | 1.62 |
| 2770.1              | 2800.1      | 2.63            | 2.27 | 2.12 | 2770.1      | 3.35            | 2.49  | 2.23  | 570.1                | 1.96                             | 1.68 | 1.63 |
| 2870.1              | 2900.1      | 2.53            | 2.23 | 2.07 | 2870.1      | 3.40            | 2.40  | 2.00  | 590.1                | 1.95                             | 1.67 | 1.63 |
| 2990.1              | 3020.1      | 2.32            | 2.03 | 1.84 | 2990.1      | 3.26            | 2.20  | 1.67  | 630.1                | 1.89                             | 1.63 | 1.61 |
| 3090.1              | 3120.1      | 1.99            | 1.72 | 1.57 | 3090.1      | 2.90            | 1.95  | 1.41  | 650.1                | 1.86                             | 1.62 | 1.61 |
| 3210.1              | 3240.1      | 1.66            | 1.43 | 1.31 | 3210.1      | 2.41            | 1.70  | 1.34  | 690.1                | 1.82                             | 1.58 | 1.59 |
| 3310.1              | 3340.1      | 1.45            | 1.26 | 1.17 | 3310.1      | 2.02            | 1.62  | 1.57  | 710.1                | 1.80                             | 1.57 | 1.58 |
| 3430.1              | 3460.1      | 1.11            | 1.10 | 1.19 | 3430.1      | 1.71            | 1.75  | 2.01  | 750.1                | 1.75                             | 1.55 | 1.59 |
| 3530.1              | 3560.1      | 1.10            | 1.26 | 1.38 | 3530.1      | 1.71            | 2.04  | 2.48  | 770.1                | 1.74                             | 1.54 | 1.58 |
| 3650.1              | 3680.1      | 1.32            | 1.50 | 1.63 | 3650.1      | 1.99            | 2.51  | 3.10  | 810.1                | 1.69                             | 1.51 | 1.57 |
| 3750.1              | 3780.1      | 1.57            | 1.75 | 1.91 | 3750.1      | 2.47            | 3.04  | 3.69  | 830.1                | 1.67                             | 1.51 | 1.57 |
| 3870.1              | 3900.1      | 1.92            | 2.15 | 2.33 | 3870.1      | 3.37            | 3.85  | 4.47  | 870.1                | 1.63                             | 1.48 | 1.55 |
| 3970.1              | 4000.1      | 2.21            | 2.50 | 2.73 | 3970.1      | 4.32            | 4.57  | 5.03  | 890.1                | 1.59                             | 1.45 | 1.53 |
| 4090.1              | 4120.1      | 2.54            | 2.80 | 3.10 | 4090.1      | 5.65            | 5.65  | 5.83  | 930.1                | 1.54                             | 1.43 | 1.54 |
| 4190.1              | 4220.1      | 3.04            | 3.11 | 3.46 | 4190.1      | 6.73            | 6.53  | 6.49  | 950.1                | 1.51                             | 1.42 | 1.53 |

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## Harmonics Tables

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | +16 | 20  | 5   | 34  | 17  | 38  | 37  | 48  | 34  | 52  |
| 1  | -      | 17     | +0  | 42  | 26  | 48  | 33  | 47  | 36  | 52  | 48  | 67  |
| 2  | >100   | 58     | 51  | 51  | 49  | 63  | 52  | 64  | 58  | 78  | 65  | 76  |
| 3  | >100   | 74     | 65  | >79 | 64  | >79 | 71  | >79 | 72  | >79 | 68  | >79 |
| 4  | 92     | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 5  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 6  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 7  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 8  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 9  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 10 | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions: RF IN: 2150.1 MHz; -14.00 dBm.  
LO IN: 2180.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -21.37 dBm

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | +6  | 31  | 16  | 44  | 29  | 50  | 48  | 71  | 47  | 65  |
| 1  | -      | 17     | +0  | 43  | 25  | 48  | 34  | 51  | 41  | 58  | 57  | 82  |
| 2  | 79     | 49     | 41  | 42  | 40  | 54  | 44  | 59  | 49  | 68  | 66  | 76  |
| 3  | >100   | 54     | 46  | 69  | 43  | 68  | 56  | 67  | 53  | 76  | 54  | 73  |
| 4  | 79     | 75     | 72  | 68  | 67  | 64  | 65  | 69  | 65  | 66  | 76  | 79  |
| 5  | >100   | >89    | 88  | 80  | 69  | 81  | 61  | 88  | 69  | 78  | 69  | 77  |
| 6  | >100   | >89    | >89 | 89  | >89 | >89 | >89 | 76  | 85  | 80  | 83  | 78  |
| 7  | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | 79  | >89 | 84  | 89  |
| 8  | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 |
| 9  | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 |
| 10 | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions: RF IN: 2150.1 MHz; -4.00 dBm.  
LO IN: 2180.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -11.35 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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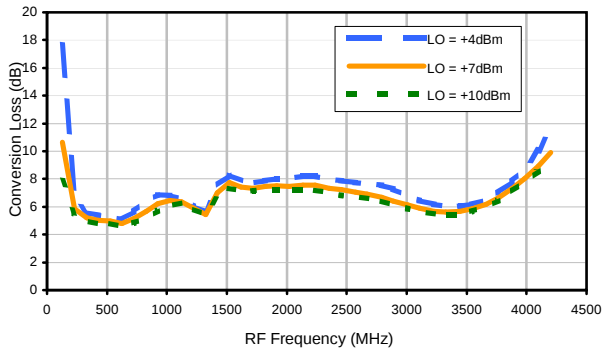


# Frequency Mixer

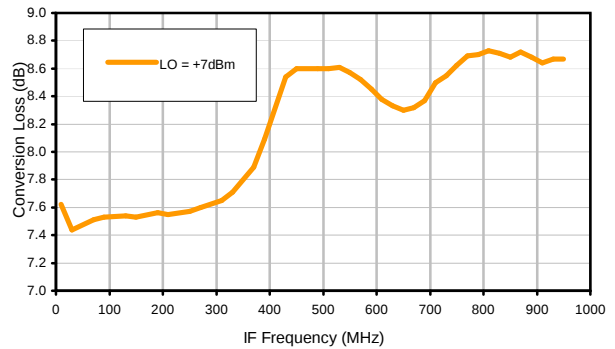
**ZX05-30W+**

## Typical Performance Curves

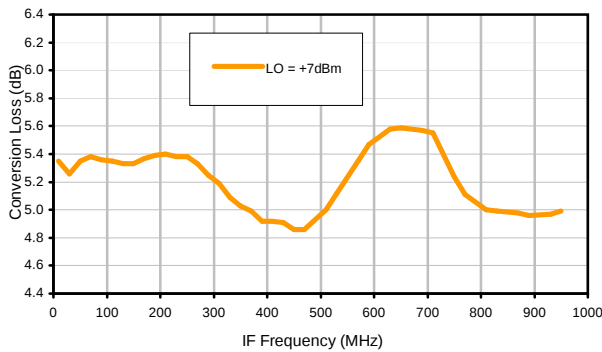
Conversion Loss @ IF=30MHz



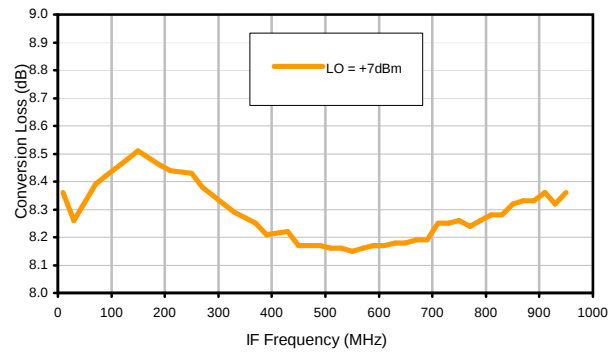
Conversion Loss vs. IF @ RF=2000.1MHz



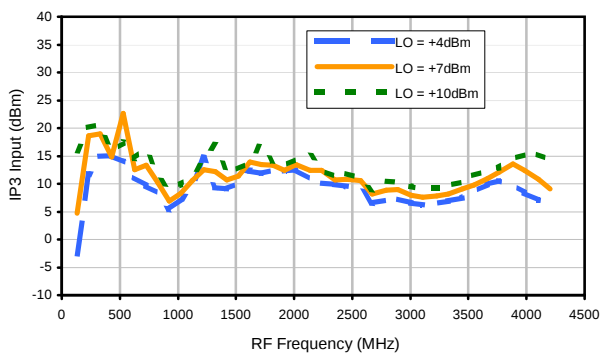
Conversion Loss vs. IF @ RF=300.1MHz



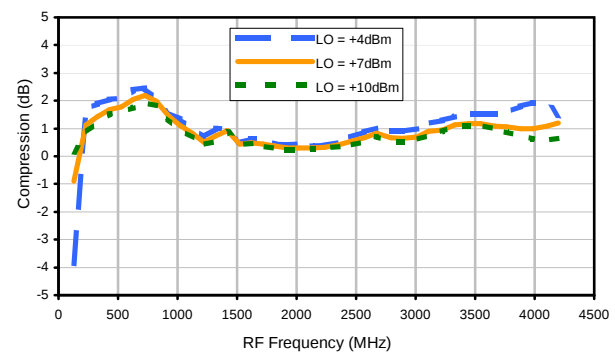
Conversion Loss vs. IF @ RF=4000.1MHz



IP3 Input



Compression @ RF IN=+1dBm



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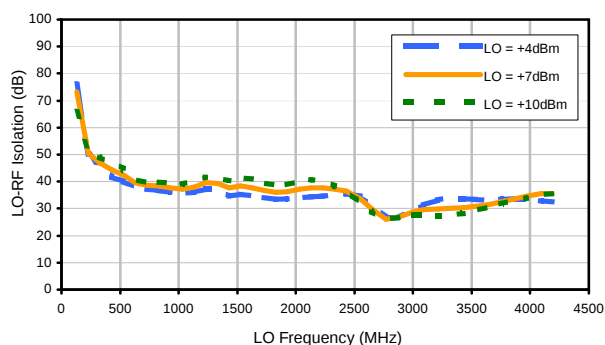


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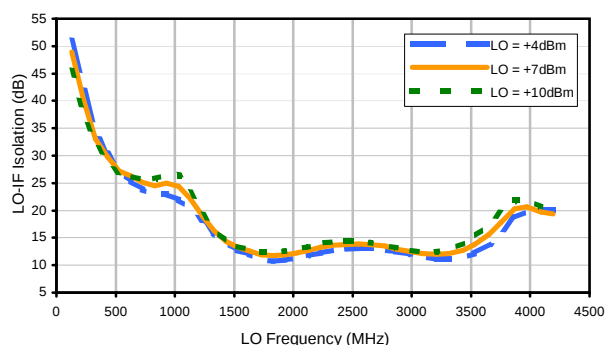


## Typical Performance Curves

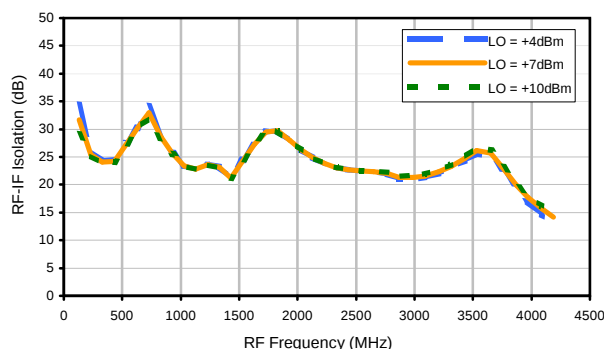
LO-RF Isolation



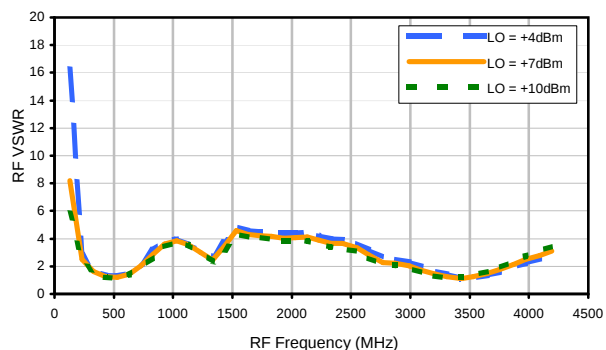
LO-IF Isolation



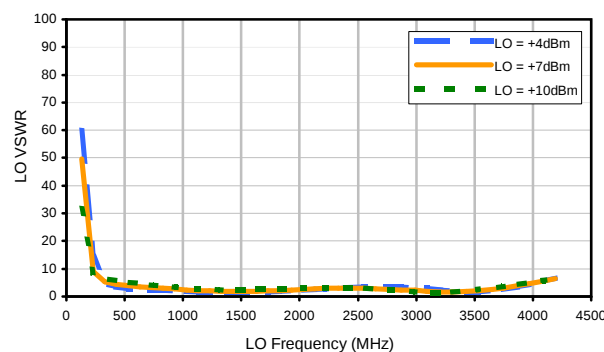
RF-IF Isolation



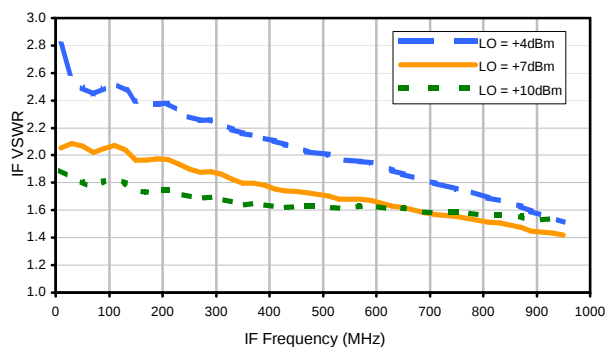
RF VSWR



LO VSWR



IF VSWR



## Harmonics Tables

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | +16 | 20  | 5   | 34  | 17  | 38  | 37  | 48  | 34  | 52  |
| 1  | -      | 17     | +0  | 42  | 26  | 48  | 33  | 47  | 36  | 52  | 48  | 67  |
| 2  | >100   | 58     | 51  | 51  | 49  | 63  | 52  | 64  | 58  | 78  | 65  | 76  |
| 3  | >100   | 74     | 65  | >79 | 64  | >79 | 71  | >79 | 72  | >79 | 68  | >79 |
| 4  | 92     | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 5  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 6  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 7  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 8  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 9  | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
| 10 | >100   | >79    | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 | >79 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions: RF IN: 2150.1 MHz; -14.00 dBm.  
LO IN: 2180.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -21.37 dBm

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | +6  | 31  | 16  | 44  | 29  | 50  | 48  | 71  | 47  | 65  |
| 1  | -      | 17     | +0  | 43  | 25  | 48  | 34  | 51  | 41  | 58  | 57  | 82  |
| 2  | 79     | 49     | 41  | 42  | 40  | 54  | 44  | 59  | 49  | 68  | 66  | 76  |
| 3  | >100   | 54     | 46  | 69  | 43  | 68  | 56  | 67  | 53  | 76  | 54  | 73  |
| 4  | 79     | 75     | 72  | 68  | 67  | 64  | 65  | 69  | 65  | 66  | 76  | 79  |
| 5  | >100   | >89    | 88  | 80  | 69  | 81  | 61  | 88  | 69  | 78  | 69  | 77  |
| 6  | >100   | >89    | >89 | 89  | >89 | >89 | >89 | 76  | 85  | 80  | 83  | 78  |
| 7  | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | 79  | >89 | 84  | 89  |
| 8  | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 |
| 9  | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 |
| 10 | >100   | >89    | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 | >89 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions: RF IN: 2150.1 MHz; -4.00 dBm.  
LO IN: 2180.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -11.35 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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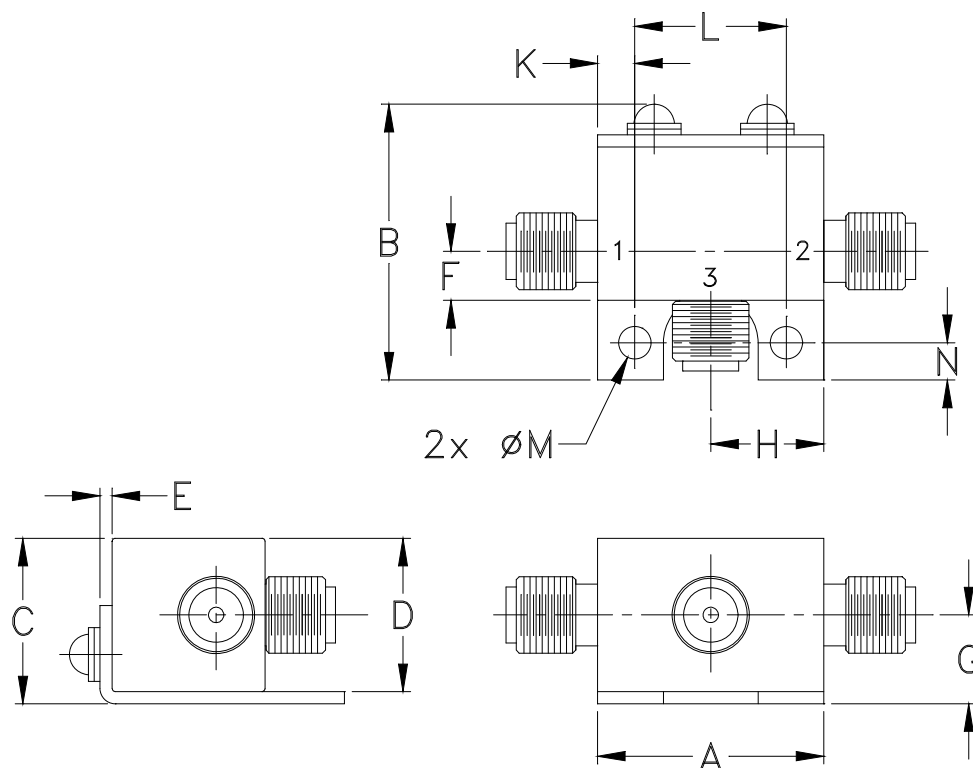
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### Outline Dimensions



| CASE #. | A              | B              | C              | D              | E             | F             | G             | H             | J      | K              | L               | M              | N              | WT,<br>GRAM |
|---------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|--------|----------------|-----------------|----------------|----------------|-------------|
| FL905   | .74<br>(18.80) | .90<br>(22.86) | .54<br>(13.72) | .50<br>(12.70) | .04<br>(1.02) | .16<br>(4.06) | .29<br>(7.37) | .37<br>(9.40) | -<br>- | .122<br>(3.10) | .496<br>(12.60) | .106<br>(2.69) | .122<br>(3.10) | 20.0        |

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3Pl.  $\pm .015$ .

Tolerance on hole size and interaxes dimensions to be  $\pm .005$ .

#### Notes:

- Case material: Brass.
- Case finish: Nickel plate.



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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification              | Test/Inspection Condition                                                              | Reference/Spec                       |
|----------------------------|----------------------------------------------------------------------------------------|--------------------------------------|
| Operating Temperature      | -40° to 85°C                                                                           | Individual Model Data Sheet          |
| Storage Temperature        | -55° to 100° C<br>Ambient Environment                                                  | Individual Model Data Sheet          |
| Barometric Pressure        | 100,000 Feet                                                                           | MIL-STD-202, Method 105, Condition D |
| Humidity                   | 90% RH, 65°C<br>Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103              |
| Thermal Shock              | -65° to 125°C, 5 cycles                                                                | MIL-STD-202, Method 107, Condition B |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)    | MIL-STD-202, Method 204, Condition D |
| Mechanical Shock           | 100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)                          | MIL-STD-202, Method 213, Condition I |