

# Frequency Mixer

Level 7 (LO Power +7 dBm) 5 to 1500 MHz

## ZX05-5-S+

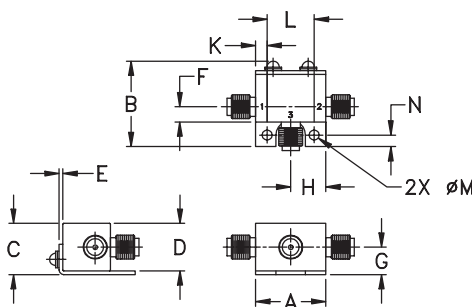
### Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| 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/mm)

| 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 |

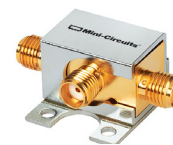
| H    | J  | K    | L     | M    | N    | wt    |
|------|----|------|-------|------|------|-------|
| .37  | -- | .122 | .496  | .106 | .122 | grams |
| 9.40 | -- | 3.10 | 12.60 | 2.69 | 3.10 | 20.0  |

### 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        | ZX05-5-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. |     | L                       |      | M    |      | U    |      | L                       |      | M    |      | U    |      |                                      |
|                        |         | $\bar{X}$               | $\sigma$ | Max.                   |     | Typ.                    | Min. | Typ. | Min. | Typ. | Min. | Typ.                    | Min. | Typ. | Min. | Typ. | Min. |                                      |
|                        |         |                         |          |                        |     |                         |      |      |      |      |      |                         |      |      |      |      |      |                                      |
| 5-1500                 | DC-1000 | 6.6                     | 0.1      | 7.5                    | 9.3 | 50                      | 40   | 40   | 25   | 33   | 23   | 50                      | 40   | 30   | 20   | 20   | 10   | 15                                   |

1 dB COMP: +1 dBm typ.

Positive detection: positive output with in-phase RF & LO signals

L = low range [ $f_L$  to  $10 f_L$ ]

m = mid band [ $2 f_L$  to  $f_U/2$ ]

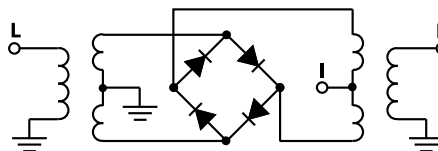
M = mid range [ $10 f_L$  to  $f_U/2$ ]

U = upper range [ $f_U/2$  to  $f_U$ ]

### 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          |
| 5.10            | 35.10   | 6.93                 | 82.10              | 96.28              | 1.48              | 1.83              |
| 35.10           | 65.10   | 6.51                 | 65.10              | 76.81              | 1.38              | 1.80              |
| 50.10           | 80.10   | 6.48                 | 61.74              | 69.65              | 1.37              | 1.80              |
| 100.10          | 70.10   | 6.60                 | 55.18              | 56.54              | 1.36              | 1.77              |
| 171.43          | 141.43  | 6.54                 | 50.58              | 45.84              | 1.35              | 1.80              |
| 254.10          | 224.10  | 6.51                 | 47.52              | 39.83              | 1.33              | 1.78              |
| 336.77          | 306.77  | 6.56                 | 45.52              | 36.24              | 1.32              | 1.78              |
| 419.43          | 389.43  | 6.63                 | 43.47              | 34.05              | 1.31              | 1.78              |
| 502.10          | 472.10  | 6.58                 | 42.13              | 31.97              | 1.30              | 1.81              |
| 584.77          | 554.77  | 6.56                 | 40.92              | 30.53              | 1.28              | 1.82              |
| 667.43          | 637.43  | 6.64                 | 37.49              | 29.33              | 1.25              | 1.84              |
| 750.10          | 720.10  | 6.78                 | 35.27              | 28.03              | 1.24              | 1.87              |
| 831.53          | 801.53  | 6.81                 | 34.84              | 25.74              | 1.19              | 1.90              |
| 934.39          | 904.39  | 6.70                 | 33.83              | 23.60              | 1.09              | 1.91              |
| 1037.24         | 1007.24 | 6.59                 | 33.85              | 22.24              | 1.05              | 1.97              |
| 1140.10         | 1110.10 | 6.66                 | 33.64              | 21.45              | 1.20              | 2.09              |
| 1242.96         | 1212.96 | 7.02                 | 32.75              | 20.75              | 1.41              | 2.22              |
| 1345.81         | 1315.81 | 7.39                 | 31.63              | 18.60              | 1.62              | 2.15              |
| 1448.67         | 1418.67 | 7.75                 | 29.54              | 17.12              | 1.84              | 2.01              |
| 1500.10         | 1470.10 | 7.94                 | 28.84              | 17.08              | 1.93              | 2.06              |

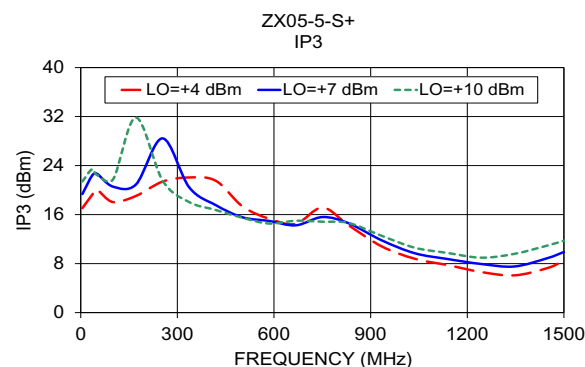
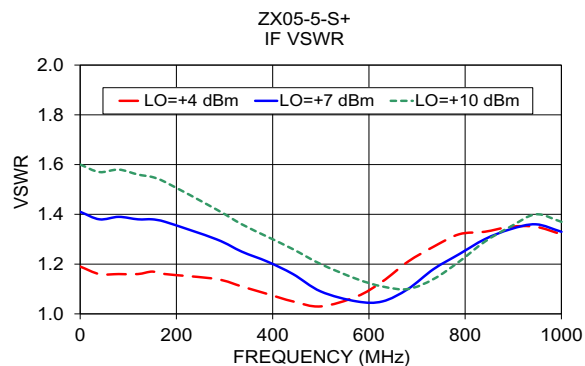
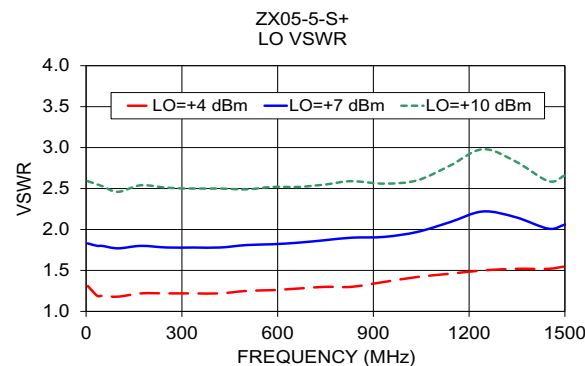
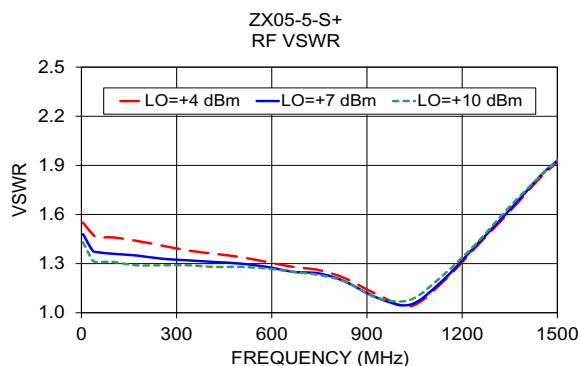
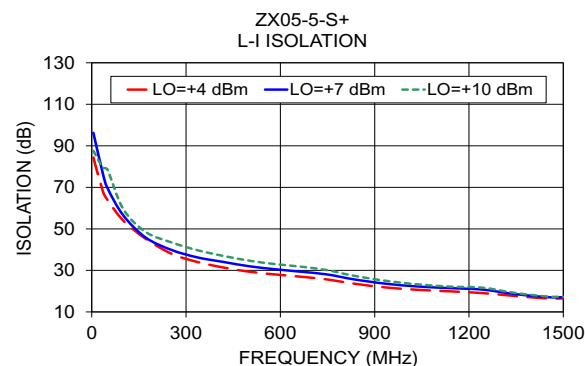
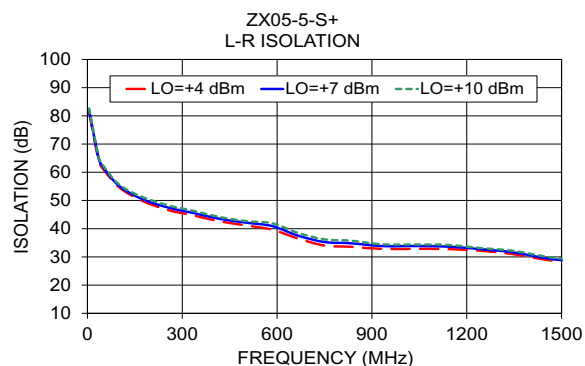
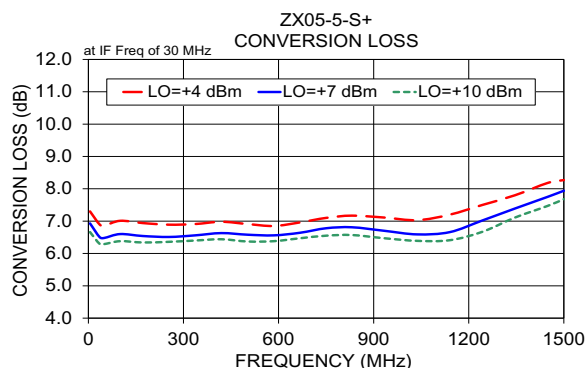
### Electrical Schematic



#### Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
 B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
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# Frequency Mixer

**ZX05-5+**

## 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   | +4    | +7                  | +10         |                                     |      |      |
| 5.0                 | 35.0        | 7.48                                                  | 6.98 | 6.78 | 10.1                | 40.1        | 15.58              | 20.51 | 23.05 | 10.1                | 40.1        | 0.45                                | 0.31 | 0.25 |
| 10.0                | 40.0        | 7.24                                                  | 6.64 | 6.44 | 49.9                | 79.9        | 15.26              | 20.08 | 20.07 | 49.9                | 79.9        | 0.53                                | 0.33 | 0.28 |
| 49.9                | 79.9        | 7.37                                                  | 6.84 | 6.60 | 89.7                | 119.7       | 14.88              | 18.96 | 20.00 | 89.7                | 119.7       | 0.50                                | 0.41 | 0.28 |
| 89.7                | 119.7       | 7.41                                                  | 6.89 | 6.65 | 129.5               | 159.5       | 15.49              | 15.95 | 20.95 | 129.5               | 159.5       | 0.49                                | 0.40 | 0.23 |
| 129.5               | 159.5       | 7.42                                                  | 6.87 | 6.66 | 169.3               | 199.3       | 14.96              | 17.56 | 20.45 | 169.3               | 199.3       | 0.49                                | 0.41 | 0.26 |
| 169.3               | 199.3       | 7.36                                                  | 6.88 | 6.66 | 209.0               | 239.0       | 14.80              | 17.96 | 19.47 | 209.0               | 239.0       | 0.57                                | 0.38 | 0.24 |
| 209.0               | 239.0       | 7.33                                                  | 6.87 | 6.69 | 248.8               | 278.8       | 14.87              | 18.74 | 23.99 | 248.8               | 278.8       | 0.55                                | 0.34 | 0.32 |
| 248.8               | 278.8       | 7.31                                                  | 6.89 | 6.69 | 308.5               | 338.5       | 14.65              | 18.93 | 17.31 | 308.5               | 338.5       | 0.47                                | 0.39 | 0.23 |
| 308.5               | 338.5       | 7.34                                                  | 6.94 | 6.75 | 348.3               | 378.3       | 17.66              | 18.72 | 17.98 | 348.3               | 378.3       | 0.60                                | 0.37 | 0.28 |
| 348.3               | 378.3       | 7.33                                                  | 6.95 | 6.74 | 408.0               | 438.0       | 15.65              | 17.13 | 18.08 | 408.0               | 438.0       | 0.62                                | 0.36 | 0.27 |
| 408.0               | 438.0       | 7.37                                                  | 6.98 | 6.78 | 447.8               | 477.8       | 16.68              | 20.38 | 17.17 | 447.8               | 477.8       | 0.50                                | 0.39 | 0.28 |
| 447.8               | 477.8       | 7.40                                                  | 7.00 | 6.80 | 507.5               | 537.5       | 17.82              | 17.23 | 17.43 | 507.5               | 537.5       | 0.49                                | 0.38 | 0.29 |
| 507.5               | 537.5       | 7.44                                                  | 7.04 | 6.87 | 547.3               | 577.3       | 16.90              | 17.00 | 16.06 | 547.3               | 577.3       | 0.46                                | 0.50 | 0.29 |
| 547.3               | 577.3       | 7.49                                                  | 7.08 | 6.89 | 606.9               | 636.9       | 15.01              | 15.88 | 15.85 | 606.9               | 636.9       | 0.52                                | 0.51 | 0.34 |
| 606.9               | 636.9       | 7.55                                                  | 7.10 | 6.83 | 646.7               | 676.7       | 15.61              | 15.91 | 15.01 | 646.7               | 676.7       | 0.70                                | 0.65 | 0.55 |
| 646.7               | 676.7       | 7.58                                                  | 7.17 | 6.89 | 706.4               | 736.4       | 16.16              | 16.86 | 17.45 | 706.4               | 736.4       | 0.63                                | 0.54 | 0.46 |
| 706.4               | 736.4       | 7.66                                                  | 7.24 | 6.99 | 746.2               | 776.2       | 16.41              | 17.01 | 16.57 | 746.2               | 776.2       | 0.70                                | 0.57 | 0.52 |
| 805.9               | 835.9       | 7.68                                                  | 7.24 | 6.94 | 805.9               | 835.9       | 15.03              | 15.52 | 14.82 | 805.9               | 835.9       | 0.83                                | 0.73 | 0.58 |
| 845.7               | 875.7       | 7.67                                                  | 7.17 | 6.89 | 845.7               | 875.7       | 13.72              | 14.23 | 14.92 | 845.7               | 875.7       | 1.08                                | 0.93 | 0.76 |
| 905.4               | 935.4       | 7.73                                                  | 7.18 | 6.86 | 905.4               | 935.4       | 12.88              | 12.10 | 13.20 | 905.4               | 935.4       | 1.15                                | 1.07 | 0.93 |
| 945.2               | 975.2       | 7.80                                                  | 7.19 | 6.85 | 945.2               | 975.2       | 12.26              | 11.50 | 12.30 | 945.2               | 975.2       | 1.17                                | 1.16 | 0.96 |
| 1004.8              | 1034.8      | 7.88                                                  | 7.26 | 6.89 | 1004.8              | 1034.8      | 11.09              | 11.31 | 11.03 | 1004.8              | 1034.8      | 1.27                                | 1.16 | 0.97 |
| 1044.6              | 1074.6      | 7.91                                                  | 7.28 | 6.89 | 1044.6              | 1074.6      | 10.10              | 10.80 | 12.00 | 1044.6              | 1074.6      | 1.10                                | 1.01 | 0.97 |
| 1104.3              | 1134.3      | 7.96                                                  | 7.36 | 6.94 | 1104.3              | 1134.3      | 8.96               | 9.96  | 11.18 | 1104.3              | 1134.3      | 1.18                                | 1.08 | 0.96 |
| 1144.1              | 1174.1      | 8.00                                                  | 7.42 | 7.00 | 1144.1              | 1174.1      | 8.35               | 9.98  | 10.73 | 1144.1              | 1174.1      | 1.19                                | 1.09 | 1.04 |
| 1203.8              | 1233.8      | 8.02                                                  | 7.51 | 7.12 | 1203.8              | 1233.8      | 7.74               | 9.22  | 9.32  | 1203.8              | 1233.8      | 1.30                                | 1.07 | 0.99 |
| 1243.6              | 1273.6      | 8.04                                                  | 7.54 | 7.22 | 1243.6              | 1273.6      | 7.33               | 8.33  | 10.20 | 1243.6              | 1273.6      | 1.33                                | 1.05 | 0.96 |
| 1303.3              | 1333.3      | 7.97                                                  | 7.50 | 7.16 | 1303.3              | 1333.3      | 8.15               | 10.60 | 12.48 | 1303.3              | 1333.3      | 1.48                                | 1.16 | 1.00 |
| 1343.0              | 1373.0      | 7.97                                                  | 7.52 | 7.21 | 1343.0              | 1373.0      | 8.92               | 11.15 | 12.65 | 1343.0              | 1373.0      | 1.47                                | 1.22 | 1.01 |
| 1402.7              | 1432.7      | 8.00                                                  | 7.56 | 7.29 | 1402.7              | 1432.7      | 9.92               | 12.80 | 13.65 | 1402.7              | 1432.7      | 1.38                                | 1.11 | 0.88 |
| 1442.5              | 1472.5      | 8.03                                                  | 7.63 | 7.37 | 1442.5              | 1472.5      | 10.21              | 13.09 | 14.38 | 1442.5              | 1472.5      | 1.32                                | 1.08 | 0.91 |
| 1502.2              | 1532.2      | 8.21                                                  | 7.84 | 7.66 | 1502.2              | 1532.2      | 10.87              | 12.83 | 14.40 | 1502.2              | 1532.2      | 1.28                                | 0.94 | 0.90 |
| 1542.0              | 1572.0      | 8.36                                                  | 8.07 | 7.88 | 1542.0              | 1572.0      | 11.83              | 14.09 | 15.96 | 1542.0              | 1572.0      | 1.19                                | 0.89 | 0.74 |
| 1601.7              | 1631.7      | 8.69                                                  | 8.43 | 8.29 | 1601.7              | 1631.7      | 11.25              | 13.16 | 16.08 | 1601.7              | 1631.7      | 0.95                                | 0.71 | 0.81 |
| 1641.5              | 1671.5      | 8.84                                                  | 8.68 | 8.59 | 1641.5              | 1671.5      | 11.08              | 13.06 | 15.88 | 1641.5              | 1671.5      | 0.74                                | 0.70 | 0.66 |
| 1701.2              | 1731.2      | 9.06                                                  | 8.89 | 8.82 | 1701.2              | 1731.2      | 11.38              | 13.94 | 15.06 | 1701.2              | 1731.2      | 0.72                                | 0.58 | 0.45 |
| 1740.9              | 1770.9      | 9.19                                                  | 9.03 | 8.97 | 1740.9              | 1770.9      | 12.51              | 13.39 | 15.86 | 1740.9              | 1770.9      | 0.87                                | 0.55 | 0.46 |
| 1800.6              | 1830.6      | 9.49                                                  | 9.31 | 9.24 | 1800.6              | 1830.6      | 13.91              | 16.85 | 18.66 | 1800.6              | 1830.6      | 0.69                                | 0.44 | 0.31 |
| 1840.4              | 1870.4      | 9.78                                                  | 9.54 | 9.44 | 1840.4              | 1870.4      | 15.41              | 16.40 | 18.41 | 1840.4              | 1870.4      | 0.51                                | 0.40 | 0.42 |
| 1900.1              | 1930.1      | 10.18                                                 | 9.93 | 9.87 | 1900.1              | 1930.1      | 14.49              | 18.96 | 17.05 | 1900.1              | 1930.1      | 0.61                                | 0.37 | 0.29 |

REV. X2

ZX05-5+

100818

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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED • RoHS compliant

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



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## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=750.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=10.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=1500.1MHz<br>(dB) |
|----------------------|-------------|-----------------------------------------------------------------|----------------------|-------------|----------------------------------------------------------------|----------------------|-------------|------------------------------------------------------------------|
|                      |             | @LO (dBm)                                                       |                      |             | @LO (dBm)                                                      |                      |             | @LO (dBm)                                                        |
|                      |             | +7                                                              |                      |             | +7                                                             |                      |             | +7                                                               |
| 740.0                | 10.1        | 7.47                                                            | 10.0                 | 20.1        | 6.66                                                           | 1000.0               | 500.1       | 8.51                                                             |
| 721.3                | 28.8        | 7.48                                                            | 30.0                 | 40.1        | 6.24                                                           | 979.8                | 520.3       | 8.33                                                             |
| 702.6                | 47.5        | 7.46                                                            | 50.0                 | 60.1        | 6.16                                                           | 959.6                | 540.5       | 8.26                                                             |
| 683.8                | 66.3        | 7.47                                                            | 70.0                 | 80.1        | 6.24                                                           | 939.4                | 560.7       | 8.20                                                             |
| 665.1                | 85.0        | 7.40                                                            | 90.0                 | 100.1       | 6.22                                                           | 919.2                | 580.9       | 8.15                                                             |
| 646.4                | 103.7       | 7.37                                                            | 110.0                | 120.1       | 6.12                                                           | 899.0                | 601.1       | 8.06                                                             |
| 627.7                | 122.4       | 7.32                                                            | 130.0                | 140.1       | 6.16                                                           | 878.8                | 621.3       | 8.03                                                             |
| 609.0                | 141.1       | 7.25                                                            | 150.0                | 160.1       | 6.20                                                           | 858.6                | 641.5       | 7.97                                                             |
| 590.3                | 159.8       | 7.23                                                            | 170.0                | 180.1       | 6.18                                                           | 838.4                | 661.7       | 7.95                                                             |
| 571.5                | 178.6       | 7.19                                                            | 190.0                | 200.1       | 6.21                                                           | 818.2                | 681.9       | 7.95                                                             |
| 552.8                | 197.3       | 7.18                                                            | 210.0                | 220.1       | 6.20                                                           | 798.0                | 702.1       | 7.92                                                             |
| 534.1                | 216.0       | 7.14                                                            | 230.0                | 240.1       | 6.28                                                           | 777.8                | 722.3       | 7.90                                                             |
| 515.4                | 234.7       | 7.12                                                            | 250.0                | 260.1       | 6.22                                                           | 757.6                | 742.5       | 7.87                                                             |
| 496.7                | 253.4       | 7.10                                                            | 270.0                | 280.1       | 6.27                                                           | 737.3                | 762.8       | 7.88                                                             |
| 477.9                | 272.2       | 7.09                                                            | 290.0                | 300.1       | 6.36                                                           | 717.1                | 783.0       | 7.84                                                             |
| 459.2                | 290.9       | 7.08                                                            | 310.0                | 320.1       | 6.35                                                           | 696.9                | 803.2       | 7.79                                                             |
| 440.5                | 309.6       | 7.11                                                            | 330.0                | 340.1       | 6.37                                                           | 676.7                | 823.4       | 7.73                                                             |
| 421.8                | 328.3       | 7.09                                                            | 350.0                | 360.1       | 6.44                                                           | 656.5                | 843.6       | 7.72                                                             |
| 403.1                | 347.0       | 7.05                                                            | 370.0                | 380.1       | 6.41                                                           | 636.3                | 863.8       | 7.66                                                             |
| 384.4                | 365.7       | 7.04                                                            | 390.0                | 400.1       | 6.46                                                           | 616.1                | 884.0       | 7.63                                                             |
| 365.6                | 384.5       | 7.01                                                            | 430.0                | 440.1       | 6.86                                                           | 575.7                | 924.4       | 7.53                                                             |
| 346.9                | 403.2       | 7.04                                                            | 450.0                | 460.1       | 6.63                                                           | 555.5                | 944.6       | 7.54                                                             |
| 328.2                | 421.9       | 7.04                                                            | 490.0                | 500.1       | 6.59                                                           | 515.1                | 985.0       | 7.50                                                             |
| 309.5                | 440.6       | 7.02                                                            | 510.0                | 520.1       | 6.64                                                           | 494.9                | 1005.2      | 7.50                                                             |
| 290.8                | 459.3       | 7.01                                                            | 550.0                | 560.1       | 6.73                                                           | 454.5                | 1045.6      | 7.52                                                             |
| 272.1                | 478.0       | 7.03                                                            | 570.0                | 580.1       | 6.79                                                           | 434.3                | 1065.8      | 7.59                                                             |
| 253.3                | 496.8       | 7.04                                                            | 610.0                | 620.1       | 6.77                                                           | 393.9                | 1106.2      | 7.55                                                             |
| 234.6                | 515.5       | 6.98                                                            | 630.0                | 640.1       | 6.97                                                           | 373.7                | 1126.4      | 7.63                                                             |
| 215.9                | 534.2       | 7.06                                                            | 670.0                | 680.1       | 6.98                                                           | 333.3                | 1166.8      | 7.69                                                             |
| 197.2                | 552.9       | 7.04                                                            | 690.0                | 700.1       | 7.05                                                           | 313.1                | 1187.0      | 7.74                                                             |
| 178.5                | 571.6       | 7.04                                                            | 730.0                | 740.1       | 7.19                                                           | 272.7                | 1227.4      | 7.84                                                             |
| 159.7                | 590.4       | 7.03                                                            | 750.0                | 760.1       | 7.28                                                           | 252.4                | 1247.7      | 7.89                                                             |
| 141.0                | 609.1       | 7.04                                                            | 790.0                | 800.1       | 7.24                                                           | 212.0                | 1288.1      | 7.96                                                             |
| 122.3                | 627.8       | 7.06                                                            | 810.0                | 820.1       | 7.24                                                           | 191.8                | 1308.3      | 8.01                                                             |
| 103.6                | 646.5       | 7.10                                                            | 850.0                | 860.1       | 7.23                                                           | 151.4                | 1348.7      | 7.99                                                             |
| 84.9                 | 665.2       | 7.12                                                            | 870.0                | 880.1       | 7.13                                                           | 131.2                | 1368.9      | 7.96                                                             |
| 66.2                 | 683.9       | 7.14                                                            | 910.0                | 920.1       | 7.17                                                           | 90.8                 | 1409.3      | 7.94                                                             |
| 47.4                 | 702.7       | 7.15                                                            | 930.0                | 940.1       | 7.24                                                           | 70.6                 | 1429.5      | 7.91                                                             |
| 28.7                 | 721.4       | 7.26                                                            | 970.0                | 980.1       | 7.30                                                           | 30.2                 | 1469.9      | 7.81                                                             |
| 10.0                 | 740.1       | 7.14                                                            | 990.0                | 1000.1      | 7.30                                                           | 10.0                 | 1490.1      | 7.77                                                             |

## 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   |
| 5.0         | 62.6                    | 63.9  | 64.4  | 55.9                    | 53.6  | 52.4  |
| 10.0        | 61.4                    | 63.2  | 63.6  | 54.7                    | 52.2  | 51.4  |
| 49.9        | 61.08                   | 60.98 | 60.65 | 55.75                   | 54.61 | 55.38 |
| 89.7        | 55.41                   | 55.60 | 55.58 | 49.88                   | 49.37 | 48.68 |
| 129.5       | 52.30                   | 52.23 | 52.56 | 45.64                   | 44.95 | 44.63 |
| 169.3       | 50.10                   | 50.23 | 50.70 | 42.62                   | 41.75 | 42.08 |
| 209.0       | 48.36                   | 48.80 | 49.12 | 39.72                   | 39.51 | 40.26 |
| 248.8       | 46.94                   | 47.56 | 47.90 | 37.50                   | 37.92 | 38.88 |
| 308.5       | 45.40                   | 45.98 | 46.35 | 35.25                   | 36.14 | 37.21 |
| 348.3       | 44.61                   | 45.30 | 45.71 | 34.05                   | 35.20 | 36.31 |
| 408.0       | 43.15                   | 43.93 | 44.43 | 32.74                   | 34.07 | 35.15 |
| 447.8       | 42.36                   | 43.14 | 43.68 | 31.86                   | 33.18 | 34.18 |
| 507.5       | 41.41                   | 42.42 | 43.10 | 31.08                   | 32.51 | 33.50 |
| 547.3       | 40.59                   | 41.65 | 42.39 | 30.48                   | 31.87 | 32.81 |
| 606.9       | 39.04                   | 40.18 | 41.02 | 29.97                   | 31.20 | 31.87 |
| 646.7       | 37.90                   | 39.08 | 39.97 | 29.70                   | 30.95 | 31.53 |
| 706.4       | 36.33                   | 37.46 | 38.35 | 29.10                   | 30.30 | 30.82 |
| 805.9       | 34.21                   | 35.20 | 35.96 | 27.33                   | 28.08 | 28.44 |
| 845.7       | 33.70                   | 34.62 | 35.33 | 26.53                   | 27.07 | 27.37 |
| 905.4       | 32.94                   | 33.74 | 34.36 | 25.59                   | 25.92 | 26.07 |
| 945.2       | 32.65                   | 33.39 | 33.90 | 25.15                   | 25.36 | 25.35 |
| 1004.8      | 32.39                   | 33.13 | 33.57 | 24.57                   | 24.64 | 24.35 |
| 1044.6      | 32.16                   | 32.91 | 33.36 | 24.12                   | 24.17 | 23.78 |
| 1104.3      | 31.89                   | 32.59 | 33.03 | 23.70                   | 23.66 | 23.09 |
| 1144.1      | 31.75                   | 32.41 | 32.84 | 23.44                   | 23.43 | 22.85 |
| 1203.8      | 31.60                   | 32.15 | 32.52 | 23.00                   | 23.05 | 22.62 |
| 1243.6      | 31.58                   | 32.03 | 32.35 | 22.53                   | 22.58 | 22.33 |
| 1303.3      | 31.59                   | 31.90 | 32.06 | 21.45                   | 21.18 | 20.92 |
| 1343.0      | 31.54                   | 31.72 | 31.81 | 20.63                   | 20.08 | 19.65 |
| 1402.7      | 31.40                   | 31.41 | 31.44 | 19.80                   | 19.00 | 18.49 |
| 1442.5      | 31.29                   | 31.16 | 31.14 | 19.40                   | 18.56 | 18.04 |
| 1502.2      | 31.18                   | 30.82 | 30.62 | 19.01                   | 18.10 | 17.49 |
| 1542.0      | 31.23                   | 30.67 | 30.33 | 18.96                   | 17.97 | 17.30 |
| 1601.7      | 30.92                   | 29.97 | 29.37 | 18.78                   | 17.63 | 16.91 |
| 1641.5      | 30.61                   | 29.34 | 28.56 | 18.67                   | 17.39 | 16.57 |
| 1701.2      | 30.08                   | 28.40 | 27.40 | 18.55                   | 17.18 | 16.28 |
| 1740.9      | 29.78                   | 27.83 | 26.70 | 18.45                   | 17.03 | 16.09 |
| 1800.6      | 29.22                   | 26.97 | 25.70 | 18.31                   | 16.86 | 15.89 |
| 1840.4      | 28.86                   | 26.56 | 25.26 | 18.20                   | 16.76 | 15.78 |
| 1900.1      | 28.30                   | 25.88 | 24.49 | 18.09                   | 16.67 | 15.65 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +4                      | +7    | +10   |
| 10.1                | 40.1        | 42.19                   | 49.31 | 48.33 |
| 49.9                | 79.9        | 34.91                   | 34.84 | 34.69 |
| 89.7                | 119.7       | 29.97                   | 30.08 | 30.18 |
| 129.5               | 159.5       | 27.31                   | 27.39 | 27.37 |
| 169.3               | 199.3       | 25.29                   | 25.46 | 25.52 |
| 209.0               | 239.0       | 23.91                   | 24.05 | 24.11 |
| 248.8               | 278.8       | 22.84                   | 23.01 | 23.11 |
| 308.5               | 338.5       | 21.72                   | 21.97 | 22.10 |
| 348.3               | 378.3       | 21.20                   | 21.49 | 21.67 |
| 408.0               | 438.0       | 20.59                   | 20.97 | 21.21 |
| 447.8               | 477.8       | 20.20                   | 20.60 | 20.87 |
| 507.5               | 537.5       | 19.52                   | 19.96 | 20.26 |
| 547.3               | 577.3       | 19.12                   | 19.65 | 20.03 |
| 606.9               | 636.9       | 18.85                   | 19.54 | 20.02 |
| 646.7               | 676.7       | 18.66                   | 19.33 | 19.84 |
| 706.4               | 736.4       | 18.13                   | 18.63 | 18.98 |
| 746.2               | 776.2       | 17.48                   | 17.80 | 18.00 |
| 805.9               | 835.9       | 16.34                   | 16.43 | 16.46 |
| 845.7               | 875.7       | 15.62                   | 15.64 | 15.63 |
| 905.4               | 935.4       | 14.66                   | 14.61 | 14.58 |
| 945.2               | 975.2       | 14.18                   | 14.11 | 14.07 |
| 1004.8              | 1034.8      | 13.67                   | 13.60 | 13.54 |
| 1044.6              | 1074.6      | 13.44                   | 13.37 | 13.33 |
| 1104.3              | 1134.3      | 13.21                   | 13.16 | 13.14 |
| 1144.1              | 1174.1      | 13.06                   | 13.02 | 12.98 |
| 1203.8              | 1233.8      | 12.89                   | 12.84 | 12.81 |
| 1243.6              | 1273.6      | 12.75                   | 12.69 | 12.67 |
| 1303.3              | 1333.3      | 12.56                   | 12.43 | 12.33 |
| 1343.0              | 1373.0      | 12.35                   | 12.16 | 12.02 |
| 1402.7              | 1432.7      | 11.86                   | 11.63 | 11.47 |
| 1442.5              | 1472.5      | 11.46                   | 11.21 | 11.03 |
| 1502.2              | 1532.2      | 10.86                   | 10.57 | 10.36 |
| 1542.0              | 1572.0      | 10.38                   | 10.08 | 9.86  |
| 1601.7              | 1631.7      | 9.70                    | 9.37  | 9.14  |
| 1641.5              | 1671.5      | 9.22                    | 8.87  | 8.65  |
| 1701.2              | 1731.2      | 8.54                    | 8.15  | 7.87  |
| 1740.9              | 1770.9      | 8.13                    | 7.73  | 7.48  |
| 1800.6              | 1830.6      | 7.51                    | 7.11  | 6.86  |
| 1840.4              | 1870.4      | 7.17                    | 6.78  | 6.53  |
| 1900.1              | 1930.1      | 6.56                    | 6.20  | 5.98  |

# Frequency Mixer

**ZX05-5+**

## 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=1500.1MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|------|------|----------------------|----------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |      |      |                      | @LO (dBm)                        |      |      |
|                     |             | +4              | +7   | +10  |             | +4              | +7   | +10  |                      | +4                               | +7   | +10  |
| 5.0                 | 35.0        | 1.68            | 1.59 | 1.54 | 5.0         | 1.11            | 1.91 | 2.80 | 0.1                  | 1.32                             | 1.10 | 1.02 |
| 10.0                | 40.0        | 1.64            | 1.51 | 1.45 | 10.0        | 1.11            | 1.94 | 2.76 | 5.0                  | 1.39                             | 1.16 | 1.06 |
| 49.9                | 79.9        | 1.41            | 1.30 | 1.24 | 49.9        | 1.12            | 1.69 | 2.45 | 10.0                 | 1.39                             | 1.15 | 1.05 |
| 89.7                | 119.7       | 1.49            | 1.38 | 1.32 | 89.7        | 1.12            | 1.69 | 2.42 | 30.3                 | 1.80                             | 1.54 | 1.43 |
| 129.5               | 159.5       | 1.42            | 1.33 | 1.28 | 129.5       | 1.14            | 1.68 | 2.39 | 50.5                 | 1.64                             | 1.44 | 1.24 |
| 169.3               | 199.3       | 1.47            | 1.38 | 1.32 | 169.3       | 1.17            | 1.71 | 2.43 | 70.7                 | 1.59                             | 1.38 | 1.25 |
| 209.0               | 239.0       | 1.44            | 1.35 | 1.32 | 209.0       | 1.17            | 1.69 | 2.37 | 90.9                 | 1.69                             | 1.47 | 1.32 |
| 248.8               | 278.8       | 1.41            | 1.34 | 1.30 | 248.8       | 1.21            | 1.73 | 2.44 | 111.1                | 1.74                             | 1.50 | 1.37 |
| 308.5               | 338.5       | 1.43            | 1.37 | 1.34 | 308.5       | 1.22            | 1.75 | 2.46 | 131.3                | 1.68                             | 1.46 | 1.33 |
| 348.3               | 378.3       | 1.41            | 1.35 | 1.32 | 348.3       | 1.25            | 1.82 | 2.55 | 151.5                | 1.63                             | 1.42 | 1.30 |
| 408.0               | 438.0       | 1.40            | 1.35 | 1.33 | 408.0       | 1.26            | 1.83 | 2.55 | 171.7                | 1.66                             | 1.43 | 1.31 |
| 447.8               | 477.8       | 1.45            | 1.40 | 1.37 | 447.8       | 1.30            | 1.88 | 2.63 | 191.9                | 1.71                             | 1.48 | 1.36 |
| 507.5               | 537.5       | 1.48            | 1.43 | 1.40 | 507.5       | 1.32            | 1.92 | 2.67 | 212.1                | 1.70                             | 1.48 | 1.35 |
| 547.3               | 577.3       | 1.47            | 1.43 | 1.41 | 547.3       | 1.36            | 1.99 | 2.75 | 232.3                | 1.65                             | 1.43 | 1.31 |
| 606.9               | 636.9       | 1.49            | 1.45 | 1.43 | 606.9       | 1.39            | 2.01 | 2.76 | 252.5                | 1.61                             | 1.41 | 1.29 |
| 646.7               | 676.7       | 1.43            | 1.40 | 1.39 | 646.7       | 1.45            | 2.09 | 2.87 | 272.8                | 1.61                             | 1.42 | 1.30 |
| 706.4               | 736.4       | 1.42            | 1.40 | 1.39 | 706.4       | 1.49            | 2.12 | 2.88 | 293.0                | 1.64                             | 1.44 | 1.32 |
| 746.2               | 776.2       | 1.33            | 1.31 | 1.30 | 746.2       | 1.54            | 2.20 | 2.99 | 313.2                | 1.63                             | 1.43 | 1.31 |
| 805.9               | 835.9       | 1.30            | 1.28 | 1.28 | 805.9       | 1.58            | 2.22 | 2.98 | 333.4                | 1.58                             | 1.39 | 1.29 |
| 845.7               | 875.7       | 1.27            | 1.23 | 1.22 | 845.7       | 1.64            | 2.29 | 3.06 | 353.6                | 1.56                             | 1.38 | 1.29 |
| 905.4               | 935.4       | 1.24            | 1.20 | 1.19 | 905.4       | 1.71            | 2.37 | 3.14 | 394.0                | 1.59                             | 1.42 | 1.33 |
| 945.2               | 975.2       | 1.26            | 1.21 | 1.19 | 945.2       | 1.79            | 2.46 | 3.23 | 434.4                | 1.55                             | 1.39 | 1.31 |
| 1004.8              | 1034.8      | 1.16            | 1.12 | 1.12 | 1004.8      | 1.88            | 2.57 | 3.35 | 454.6                | 1.55                             | 1.40 | 1.33 |
| 1044.6              | 1074.6      | 1.15            | 1.11 | 1.11 | 1044.6      | 1.95            | 2.64 | 3.43 | 495.0                | 1.57                             | 1.43 | 1.36 |
| 1104.3              | 1134.3      | 1.06            | 1.05 | 1.10 | 1104.3      | 2.03            | 2.73 | 3.52 | 515.2                | 1.55                             | 1.42 | 1.36 |
| 1144.1              | 1174.1      | 1.08            | 1.09 | 1.13 | 1144.1      | 2.10            | 2.81 | 3.61 | 555.6                | 1.56                             | 1.44 | 1.39 |
| 1203.8              | 1233.8      | 1.25            | 1.25 | 1.26 | 1203.8      | 2.15            | 2.84 | 3.62 | 575.8                | 1.57                             | 1.46 | 1.41 |
| 1243.6              | 1273.6      | 1.29            | 1.30 | 1.32 | 1243.6      | 2.23            | 2.93 | 3.73 | 616.2                | 1.56                             | 1.47 | 1.43 |
| 1303.3              | 1333.3      | 1.37            | 1.37 | 1.38 | 1303.3      | 2.22            | 2.86 | 3.62 | 636.4                | 1.57                             | 1.48 | 1.45 |
| 1343.0              | 1373.0      | 1.44            | 1.45 | 1.47 | 1343.0      | 2.29            | 2.94 | 3.70 | 676.8                | 1.59                             | 1.51 | 1.48 |
| 1402.7              | 1432.7      | 1.50            | 1.52 | 1.54 | 1402.7      | 2.29            | 2.90 | 3.63 | 697.0                | 1.57                             | 1.50 | 1.47 |
| 1442.5              | 1472.5      | 1.60            | 1.63 | 1.64 | 1442.5      | 2.36            | 2.97 | 3.71 | 737.4                | 1.58                             | 1.53 | 1.52 |
| 1502.2              | 1532.2      | 1.80            | 1.83 | 1.84 | 1502.2      | 2.44            | 3.03 | 3.76 | 757.7                | 1.60                             | 1.55 | 1.53 |
| 1542.0              | 1572.0      | 1.90            | 1.93 | 1.94 | 1542.0      | 2.55            | 3.12 | 3.83 | 798.1                | 1.56                             | 1.51 | 1.50 |
| 1601.7              | 1631.7      | 2.08            | 2.11 | 2.12 | 1601.7      | 2.71            | 3.26 | 3.94 | 818.3                | 1.55                             | 1.52 | 1.52 |
| 1641.5              | 1671.5      | 1.99            | 2.03 | 2.04 | 1641.5      | 2.84            | 3.35 | 4.01 | 858.7                | 1.58                             | 1.56 | 1.55 |
| 1701.2              | 1731.2      | 2.02            | 2.05 | 2.06 | 1701.2      | 3.03            | 3.48 | 4.10 | 878.9                | 1.56                             | 1.53 | 1.53 |
| 1740.9              | 1770.9      | 1.88            | 1.91 | 1.93 | 1740.9      | 3.20            | 3.62 | 4.21 | 919.3                | 1.51                             | 1.50 | 1.51 |
| 1800.6              | 1830.6      | 1.92            | 1.93 | 1.94 | 1800.6      | 3.36            | 3.70 | 4.21 | 939.5                | 1.52                             | 1.51 | 1.53 |
| 1840.4              | 1870.4      | 2.03            | 2.04 | 2.07 | 1840.4      | 3.56            | 3.84 | 4.33 | 979.9                | 1.49                             | 1.47 | 1.48 |
| 1900.1              | 1930.1      | 2.09            | 2.09 | 2.10 | 1900.1      | 3.69            | 3.88 | 4.29 | 1000.1               | 1.44                             | 1.44 | 1.45 |

REV. X2

ZX05-5+

100818

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## Harmonics Tables

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | +0  | 20  | 8   | 36  | 18  | 27  | 34  | 38  | 58  | 44  |
| 1      | -      | 10     | +0  | 27  | 14  | 39  | 33  | 41  | 47  | 38  | 59  | 48  |
| 2      | 124    | 63     | 48  | 59  | 50  | 59  | 51  | 62  | 63  | 61  | 69  | 64  |
| 3      | 117    | 68     | 79  | 67  | 67  | 68  | 65  | 86  | 79  | 77  | 81  | 82  |
| 4      | 118    | 96     | 90  | 91  | 83  | 81  | 83  | 91  | 90  | 92  | 92  | 94  |
| 5      | 116    | 107    | 103 | 130 | 110 | 95  | 86  | 104 | 100 | 99  | 102 | 105 |
| 6      | 119    | 102    | 109 | 100 | 99  | 119 | 104 | 83  | 119 | 102 | 114 | 112 |
| 7      | 114    | 101    | 103 | 114 | 115 | 125 | 100 | 95  | 102 | 109 | 109 | 109 |
| 8      | 109    | 99     | 103 | 114 | 110 | 97  | 110 | 101 | 97  | 91  | 101 | 106 |
| 9      | 117    | 95     | 106 | 112 | 107 | 106 | 102 | 109 | 108 | 95  | 97  | 98  |
| 10     | 114    | 99     | 98  | 102 | 122 | 111 | 107 | 102 | 104 | 110 | 104 | 96  |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

### LO HARMONICS ORDER

Test conditions: RF IN: 750.1 MHz; -14.00 dBm.  
LO IN: 780.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -21.11 dBm

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |    |    |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| 0      | -      | -      | 10  | 31  | 18  | 42  | 28  | 39  | 48  | 53  | 63 | 66 |
| 1      | -      | 10     | +0  | 28  | 14  | 42  | 33  | 46  | 56  | 43  | 67 | 54 |
| 2      | 89     | 51     | 37  | 47  | 39  | 48  | 42  | 57  | 71  | 54  | 67 | 60 |
| 3      | 116    | 47     | 60  | 49  | 50  | 50  | 47  | 65  | 61  | 60  | 63 | 59 |
| 4      | 115    | 78     | 71  | 69  | 58  | 61  | 58  | 77  | 61  | 70  | 64 | 64 |
| 5      | 114    | 73     | 76  | 73  | 66  | 66  | 62  | 72  | 64  | 73  | 71 | 75 |
| 6      | 111    | 91     | 87  | 91  | 88  | 78  | 70  | 71  | 70  | 72  | 72 | 78 |
| 7      | 122    | 92     | 97  | 94  | 107 | 87  | 78  | 78  | 78  | 79  | 85 | 89 |
| 8      | 106    | 110    | 104 | 99  | 102 | 116 | 92  | 91  | 83  | 82  | 82 | 93 |
| 9      | 113    | 121    | 111 | 116 | 109 | 104 | 105 | 103 | 107 | 105 | 94 | 97 |
| 10     | 105    | 111    | 113 | 111 | 130 | 111 | 114 | 116 | 106 | 99  | 99 | 98 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10 |    |

### LO HARMONICS ORDER

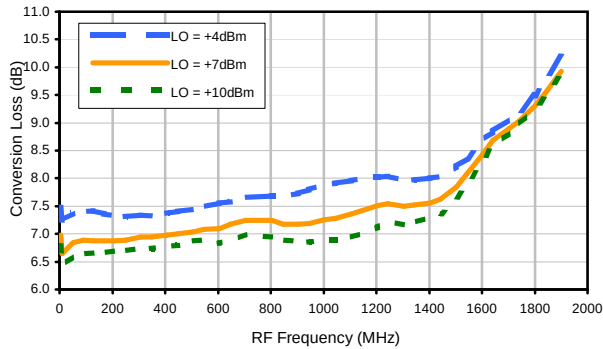
Test conditions: RF IN: 750.1 MHz; -4.00 dBm.  
LO IN: 780.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -11.16 dBm

- 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.

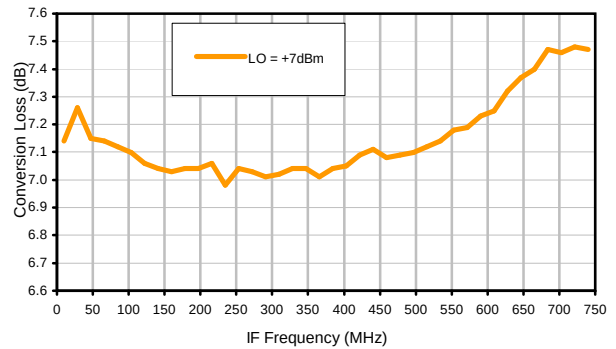
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## Typical Performance Curves

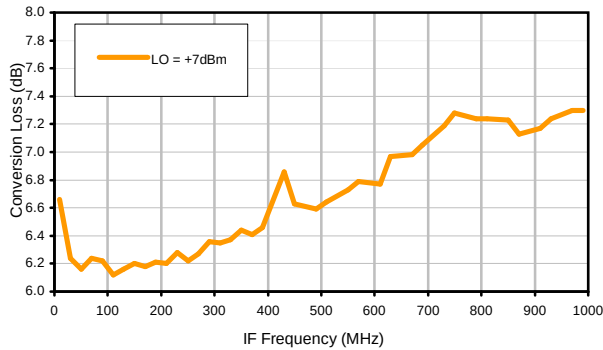
Conversion Loss @ IF=30MHz



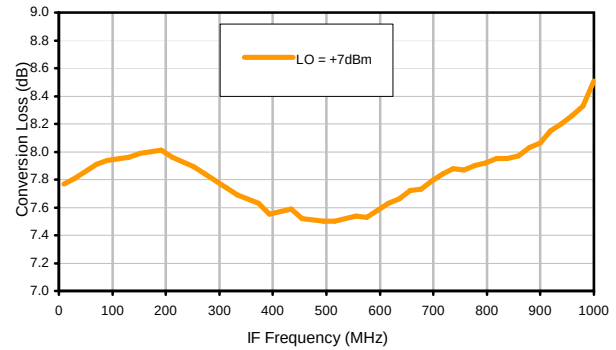
Conversion Loss vs. IF @ RF=750.1MHz



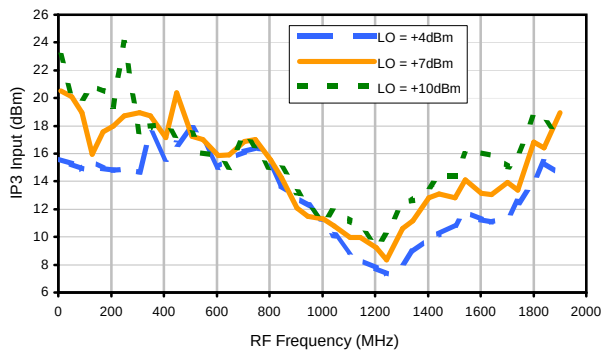
Conversion Loss vs. IF @ RF=10.1MHz



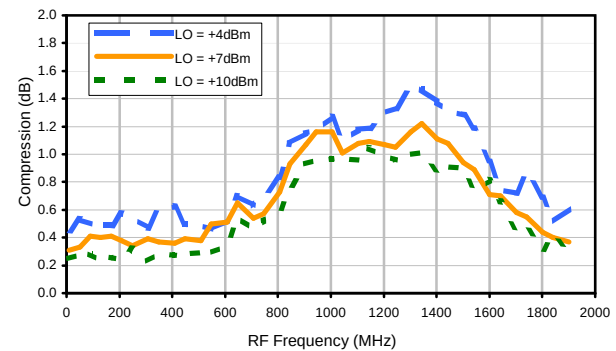
Conversion Loss vs. IF @ RF=1500.1MHz



IP3 Input



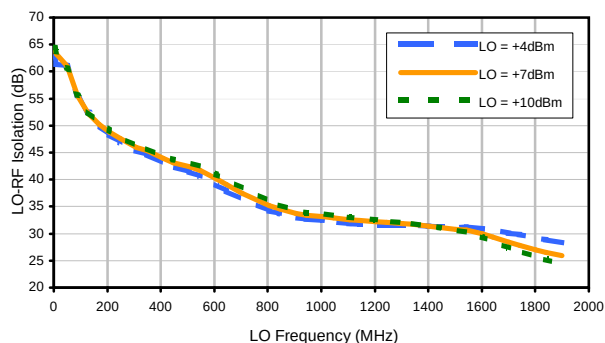
Compression @ RF IN=+1dBm



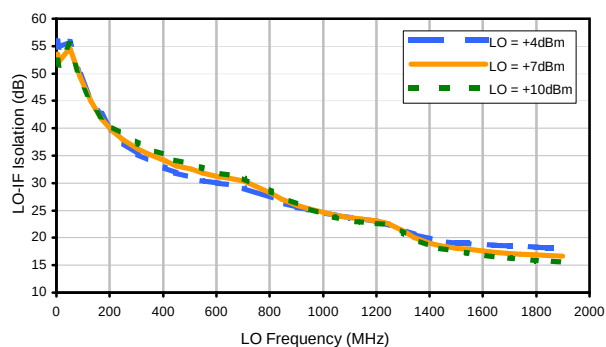


## Typical Performance Curves

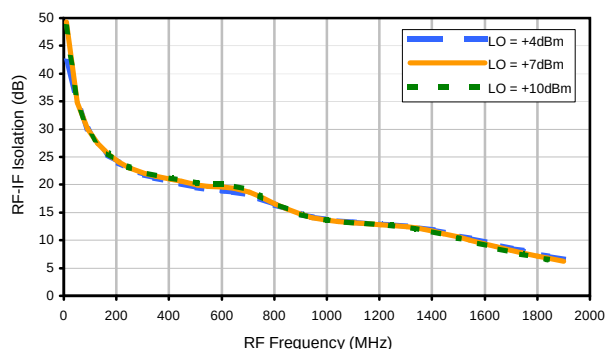
LO-RF Isolation



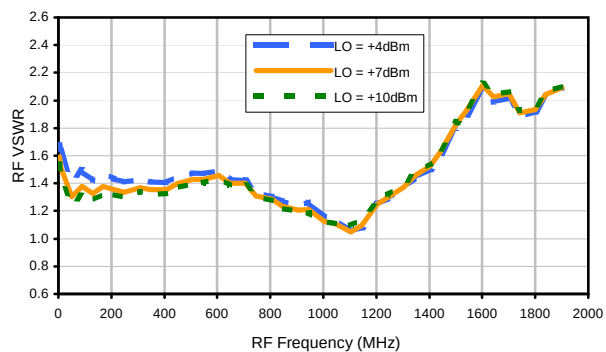
LO-IF Isolation



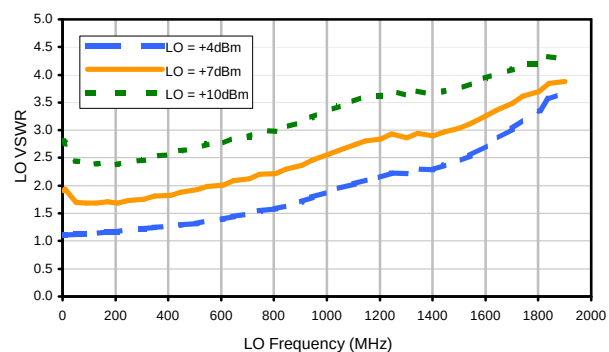
RF-IF Isolation



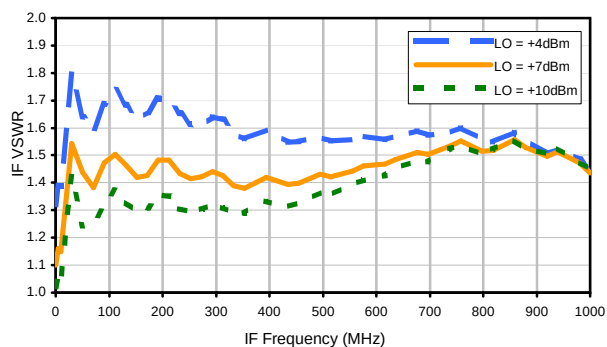
RF VSWR



LO VSWR



IF VSWR



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## Harmonics Tables

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | +0  | 20  | 8   | 36  | 18  | 27  | 34  | 38  | 58  | 44  |
| 1      | -      | 10     | +0  | 27  | 14  | 39  | 33  | 41  | 47  | 38  | 59  | 48  |
| 2      | 124    | 63     | 48  | 59  | 50  | 59  | 51  | 62  | 63  | 61  | 69  | 64  |
| 3      | 117    | 68     | 79  | 67  | 67  | 68  | 65  | 86  | 79  | 77  | 81  | 82  |
| 4      | 118    | 96     | 90  | 91  | 83  | 81  | 83  | 91  | 90  | 92  | 92  | 94  |
| 5      | 116    | 107    | 103 | 130 | 110 | 95  | 86  | 104 | 100 | 99  | 102 | 105 |
| 6      | 119    | 102    | 109 | 100 | 99  | 119 | 104 | 83  | 119 | 102 | 114 | 112 |
| 7      | 114    | 101    | 103 | 114 | 115 | 125 | 100 | 95  | 102 | 109 | 109 | 109 |
| 8      | 109    | 99     | 103 | 114 | 110 | 97  | 110 | 101 | 97  | 91  | 101 | 106 |
| 9      | 117    | 95     | 106 | 112 | 107 | 106 | 102 | 109 | 108 | 95  | 97  | 98  |
| 10     | 114    | 99     | 98  | 102 | 122 | 111 | 107 | 102 | 104 | 110 | 104 | 96  |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

### LO HARMONICS ORDER

Test conditions: RF IN: 750.1 MHz; -14.00 dBm.  
LO IN: 780.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -21.11 dBm

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |    |    |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| 0      | -      | -      | 10  | 31  | 18  | 42  | 28  | 39  | 48  | 53  | 63 | 66 |
| 1      | -      | 10     | +0  | 28  | 14  | 42  | 33  | 46  | 56  | 43  | 67 | 54 |
| 2      | 89     | 51     | 37  | 47  | 39  | 48  | 42  | 57  | 71  | 54  | 67 | 60 |
| 3      | 116    | 47     | 60  | 49  | 50  | 50  | 47  | 65  | 61  | 60  | 63 | 59 |
| 4      | 115    | 78     | 71  | 69  | 58  | 61  | 58  | 77  | 61  | 70  | 64 | 64 |
| 5      | 114    | 73     | 76  | 73  | 66  | 66  | 62  | 72  | 64  | 73  | 71 | 75 |
| 6      | 111    | 91     | 87  | 91  | 88  | 78  | 70  | 71  | 70  | 72  | 72 | 78 |
| 7      | 122    | 92     | 97  | 94  | 107 | 87  | 78  | 78  | 78  | 79  | 85 | 89 |
| 8      | 106    | 110    | 104 | 99  | 102 | 116 | 92  | 91  | 83  | 82  | 82 | 93 |
| 9      | 113    | 121    | 111 | 116 | 109 | 104 | 105 | 103 | 107 | 105 | 94 | 97 |
| 10     | 105    | 111    | 113 | 111 | 130 | 111 | 114 | 116 | 106 | 99  | 99 | 98 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10 |    |

### LO HARMONICS ORDER

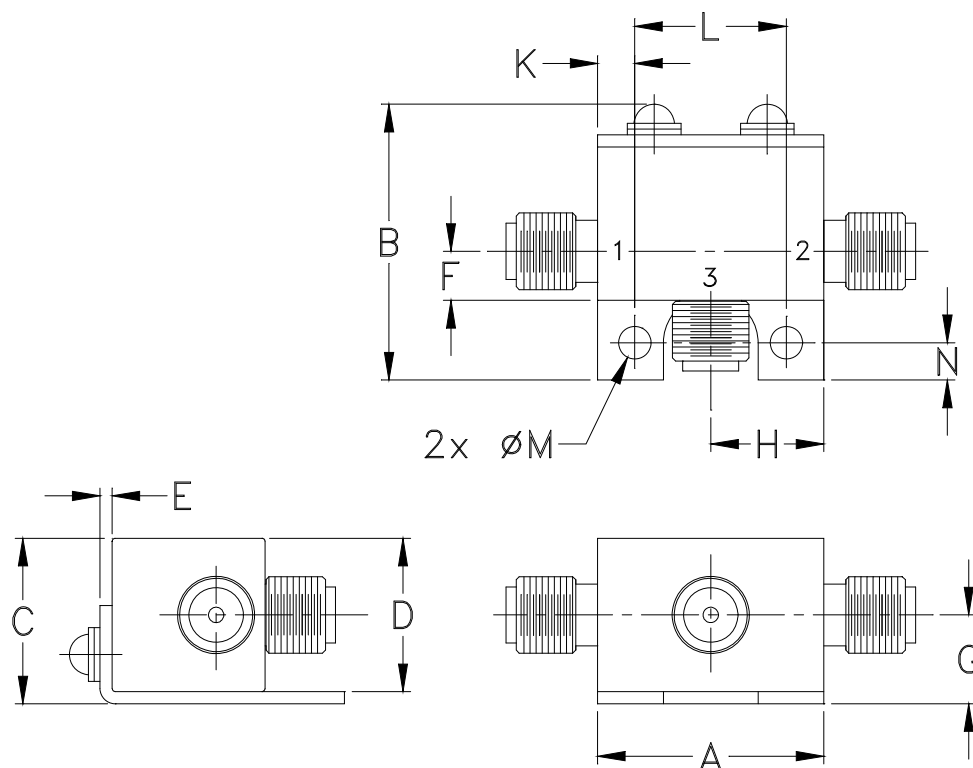
Test conditions: RF IN: 750.1 MHz; -4.00 dBm.  
LO IN: 780.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -11.16 dBm

- 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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### 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:

1. Case material: Brass.
2. Case finish: Nickel plate.



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| 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 |