

# Plug-In, Low Noise Active Mixer

# NON-CATALOG

## UNCL-R1+

### Level 7 (LO Power +7 dBm) 10 to 500 MHz

#### Maximum Ratings

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature   | -55°C to 100°C |
| RF Power              | 50mW           |
| IF Current            | 40mA           |

#### Pin Connections

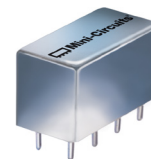
|             |       |
|-------------|-------|
| LO          | 7     |
| RF          | 1     |
| IF          | 8     |
| DC          | 4     |
| GROUND      | 3,5,6 |
| CASE GROUND | 3,5,6 |
| NOT USED    | 2     |

#### Features

- low noise figure, 4.3 dB typ.
- excellent conversion gain, 5.53 dB typ.
- high L-R isolation, 55 dB typ., L-I isolation, 30 dB typ.
- rugged welded construction
- protected by U.S. Patent 6,943,629

#### Applications

- VHF/UHF
- receivers



CASE STYLE: A01

Price: Contact Sales Dept.

**+RoHS Compliant**

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

#### Electrical Specifications

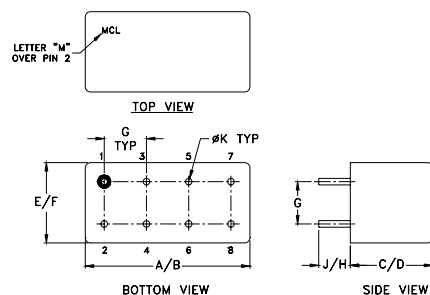
| FREQUENCY<br>(MHz) |        | CONVERSION GAIN<br>(dB) |          |      |                |      | LO-RF ISOLATION<br>(dB) |      |      |      |      |      | LO-IF ISOLATION<br>(dB) |      |      |      |      |      | INPUT<br>POWER<br>(dBm)<br>1 dB<br>Compr. | DC<br>POWER |  |
|--------------------|--------|-------------------------|----------|------|----------------|------|-------------------------|------|------|------|------|------|-------------------------|------|------|------|------|------|-------------------------------------------|-------------|--|
| LO/RF              | IF     | Mid-Band<br>m           |          |      | Total<br>Range |      | L                       |      | M    |      | U    |      | L                       |      | M    |      | U    |      |                                           | Current     |  |
| $f_L$ - $f_U$      |        | $\bar{X}$               | $\sigma$ | Min. | Typ.           | Min. | Typ.                    | Min. | Typ. | Min. | Typ. | Min. | Typ.                    | Min. | Typ. | Min. | Typ. | Typ. | Volt                                      | (mA)        |  |
| 10-500             | DC-500 | 5.53                    | 0.11     | 2    | 5              | 2    | 65                      | 45   | 55   | 40   | 47   | 35   | 40                      | 30   | 30   | 20   | 25   | 17   | -10                                       | 12 35       |  |

Up to -10 dBm RF

L = low range [ $f_L$  to  $10 f_L$ ]  
m = mid band [ $2f_L$  to  $f_U/2$ ]

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

#### Outline Drawing



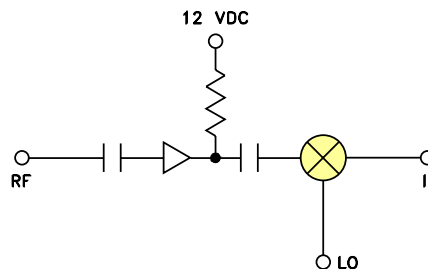
#### Outline Dimensions (inch)

| A     | B     | C    | D     | E     | F     |
|-------|-------|------|-------|-------|-------|
| .770  | .800  | .385 | .400  | .370  | .400  |
| 19.56 | 20.32 | 9.78 | 10.16 | 9.40  | 10.16 |
| G     | H     | J    | K     | wt    |       |
| .200  | .20   | .14  | .031  | grams |       |
| 5.08  | 5.08  | 3.56 | 0.79  | 5.2   |       |

#### Typical Performance Data

| Frequency<br>(MHz) |        | Conversion<br>Gain<br>(dB) | Isolation<br>L-R<br>(dB) | Isolation<br>L-I<br>(dB) | VSWR<br>RF Port<br>(:1) | VSWR<br>LO Port<br>(:1) |
|--------------------|--------|----------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| RF                 | LO     | LO<br>+7dBm                | LO<br>+7dBm              | LO<br>+7dBm              | LO<br>+7dBm             | LO<br>+7dBm             |
| 10.00              | 40.00  | 5.61                       | 77.62                    | 57.99                    | 1.56                    | 2.78                    |
| 20.00              | 50.00  | 5.49                       | 72.32                    | 52.25                    | 1.44                    | 2.84                    |
| 50.00              | 80.00  | 5.36                       | 66.36                    | 45.67                    | 1.39                    | 2.73                    |
| 53.24              | 83.24  | 5.37                       | 65.76                    | 45.21                    | 1.39                    | 2.69                    |
| 96.47              | 66.47  | 5.30                       | 60.66                    | 40.46                    | 1.39                    | 2.67                    |
| 100.00             | 70.00  | 5.32                       | 60.05                    | 40.13                    | 1.39                    | 2.68                    |
| 139.71             | 109.71 | 5.35                       | 57.13                    | 37.51                    | 1.40                    | 2.63                    |
| 182.94             | 152.94 | 5.31                       | 55.10                    | 35.92                    | 1.41                    | 2.57                    |
| 200.00             | 170.00 | 5.34                       | 54.43                    | 35.12                    | 1.42                    | 2.62                    |
| 226.18             | 196.18 | 5.30                       | 53.30                    | 34.24                    | 1.44                    | 2.69                    |
| 240.59             | 210.59 | 5.28                       | 52.81                    | 33.69                    | 1.45                    | 2.67                    |
| 250.00             | 220.00 | 5.29                       | 52.43                    | 33.48                    | 1.45                    | 2.65                    |
| 269.41             | 239.41 | 5.27                       | 51.67                    | 33.07                    | 1.46                    | 2.60                    |
| 312.65             | 282.65 | 5.22                       | 50.11                    | 31.62                    | 1.51                    | 2.64                    |
| 355.88             | 325.88 | 5.17                       | 48.93                    | 30.30                    | 1.55                    | 2.70                    |
| 399.12             | 369.12 | 5.12                       | 47.95                    | 29.10                    | 1.60                    | 2.68                    |
| 442.35             | 412.35 | 5.02                       | 46.61                    | 27.98                    | 1.66                    | 2.71                    |
| 471.18             | 441.18 | 4.99                       | 46.28                    | 27.35                    | 1.70                    | 2.75                    |
| 485.59             | 455.59 | 4.94                       | 46.20                    | 27.50                    | 1.72                    | 2.77                    |
| 500.00             | 470.00 | 4.93                       | 45.76                    | 26.91                    | 1.73                    | 2.77                    |

#### Electrical Schematic



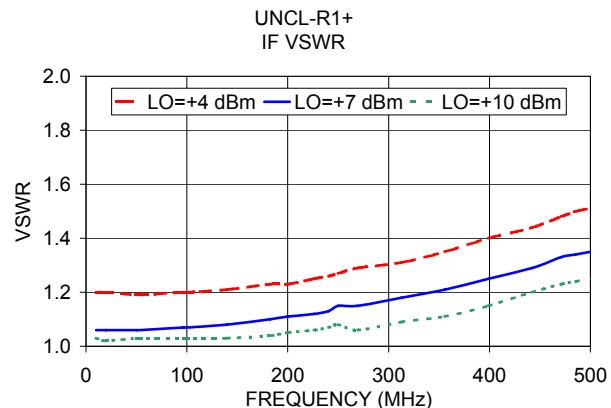
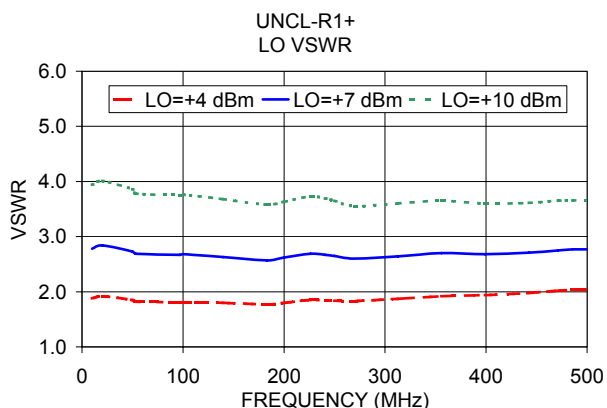
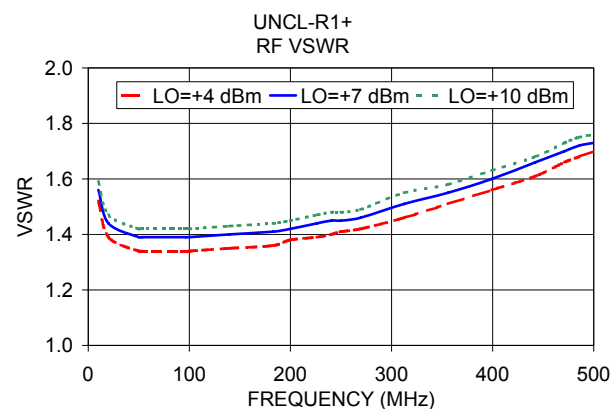
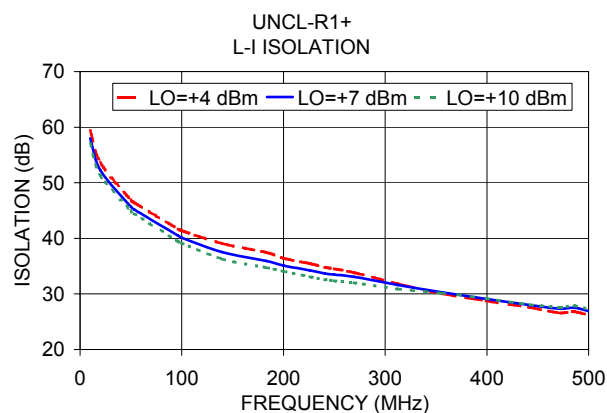
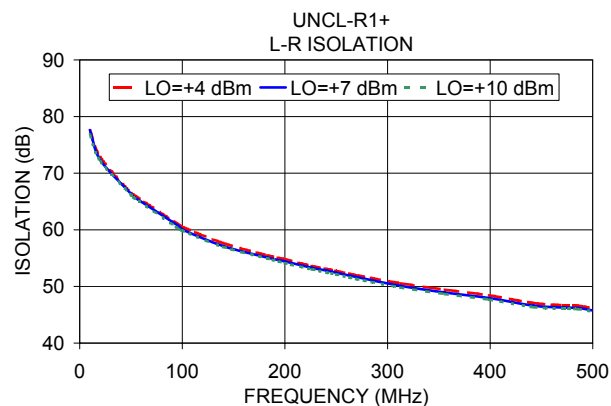
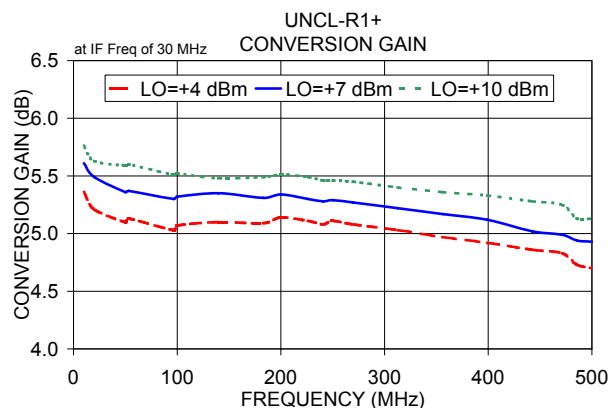
#### Notes

- 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.
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# Frequency Mixer

# UNCL-R1+

## 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=-10dBm<br>(dB) |      |      |
|---------------------|-------------|-------------------------------------------------------|------|------|---------------------|-------------|--------------------|-------|-------|---------------------|-------------|--------------------------------------|------|------|
|                     |             | @LO (dBm)                                             |      |      |                     |             | @LO (dBm)          |       |       |                     |             | @LO (dBm)                            |      |      |
|                     |             |                                                       |      |      |                     |             |                    |       |       |                     |             |                                      |      |      |
| +4                  | +7          | +10                                                   | +4   | +7   | +10                 | +4          | +7                 | +10   | +4    | +7                  | +10         |                                      |      |      |
| 10.1                | 40.1        | 2.61                                                  | 4.47 | 4.17 | 10.1                | 40.1        | 3.25               | 3.89  | 3.54  | 10.1                | 40.1        | 1.62                                 | 1.82 | 1.40 |
| 49.8                | 79.8        | 3.69                                                  | 3.88 | 4.04 | 49.8                | 79.8        | 3.02               | 2.79  | 2.70  | 49.8                | 79.8        | 1.43                                 | 1.30 | 1.36 |
| 89.6                | 119.6       | 3.78                                                  | 4.09 | 4.21 | 89.6                | 119.6       | 2.99               | 2.87  | 2.80  | 89.6                | 119.6       | 1.56                                 | 1.44 | 1.36 |
| 129.3               | 159.3       | 3.55                                                  | 3.80 | 3.92 | 129.3               | 159.3       | 2.87               | 2.84  | 2.66  | 129.3               | 159.3       | 1.59                                 | 1.49 | 1.42 |
| 169.0               | 199.0       | 3.70                                                  | 3.94 | 4.10 | 169.0               | 199.0       | 2.58               | 2.76  | 2.73  | 169.0               | 199.0       | 1.58                                 | 1.49 | 1.39 |
| 208.8               | 238.8       | 3.65                                                  | 3.92 | 4.00 | 208.8               | 238.8       | 2.83               | 2.76  | 2.42  | 208.8               | 238.8       | 1.61                                 | 1.51 | 1.43 |
| 248.5               | 278.5       | 3.65                                                  | 3.88 | 4.04 | 248.5               | 278.5       | 2.80               | 2.82  | 2.51  | 248.5               | 278.5       | 1.66                                 | 1.50 | 1.44 |
| 288.2               | 318.2       | 3.72                                                  | 3.96 | 4.04 | 288.2               | 318.2       | 2.77               | 2.56  | 2.49  | 288.2               | 318.2       | 1.57                                 | 1.45 | 1.45 |
| 328.0               | 358.0       | 3.61                                                  | 3.83 | 3.91 | 328.0               | 358.0       | 2.28               | 2.11  | 2.14  | 328.0               | 358.0       | 1.65                                 | 1.52 | 1.48 |
| 367.7               | 397.7       | 3.65                                                  | 3.87 | 4.01 | 367.7               | 397.7       | 1.86               | 2.11  | 2.31  | 367.7               | 397.7       | 1.60                                 | 1.50 | 1.44 |
| 407.4               | 437.4       | 3.54                                                  | 3.77 | 3.93 | 407.4               | 437.4       | 2.53               | 2.43  | 2.41  | 407.4               | 437.4       | 1.67                                 | 1.57 | 1.53 |
| 447.2               | 477.2       | 3.49                                                  | 3.73 | 3.90 | 447.2               | 477.2       | 2.79               | 2.54  | 2.49  | 447.2               | 477.2       | 1.64                                 | 1.54 | 1.49 |
| 486.9               | 516.9       | 3.39                                                  | 3.69 | 3.87 | 486.9               | 516.9       | 2.56               | 2.25  | 2.27  | 486.9               | 516.9       | 1.74                                 | 1.62 | 1.55 |
| 526.6               | 556.6       | 3.31                                                  | 3.57 | 3.74 | 526.6               | 556.6       | 1.98               | 2.00  | 1.94  | 526.6               | 556.6       | 1.62                                 | 1.51 | 1.47 |
| 566.4               | 596.4       | 3.31                                                  | 3.55 | 3.71 | 566.4               | 596.4       | 0.81               | 1.37  | 1.81  | 566.4               | 596.4       | 1.71                                 | 1.59 | 1.52 |
| 606.1               | 636.1       | 3.19                                                  | 3.42 | 3.57 | 606.1               | 636.1       | -0.18              | 0.88  | 1.64  | 606.1               | 636.1       | 1.75                                 | 1.59 | 1.55 |
| 645.8               | 675.8       | 3.09                                                  | 3.36 | 3.54 | 645.8               | 675.8       | -0.19              | 0.79  | 1.69  | 645.8               | 675.8       | 1.83                                 | 1.68 | 1.62 |
| 685.6               | 715.6       | 2.94                                                  | 3.28 | 3.47 | 685.6               | 715.6       | 0.99               | 2.00  | 2.55  | 685.6               | 715.6       | 1.88                                 | 1.76 | 1.70 |
| 725.3               | 755.3       | 2.81                                                  | 3.23 | 3.46 | 725.3               | 755.3       | 1.98               | 2.87  | 3.00  | 725.3               | 755.3       | 1.91                                 | 1.81 | 1.75 |
| 765.0               | 795.0       | 2.60                                                  | 3.15 | 3.47 | 765.0               | 795.0       | 2.05               | 2.98  | 2.63  | 765.0               | 795.0       | 1.95                                 | 1.89 | 1.83 |
| 804.8               | 834.8       | 2.32                                                  | 2.97 | 3.36 | 804.8               | 834.8       | 1.54               | 3.85  | 2.24  | 804.8               | 834.8       | 1.86                                 | 1.87 | 1.86 |
| 844.5               | 874.5       | 1.94                                                  | 2.68 | 3.22 | 844.5               | 874.5       | -0.83              | 8.17  | 2.62  | 844.5               | 874.5       | 1.72                                 | 1.82 | 1.84 |
| 884.2               | 914.2       | 1.75                                                  | 2.49 | 3.01 | 884.2               | 914.2       | -0.31              | 8.74  | 2.92  | 884.2               | 914.2       | 1.61                                 | 1.70 | 1.74 |
| 924.0               | 954.0       | 1.71                                                  | 2.39 | 2.89 | 924.0               | 954.0       | -0.29              | 4.29  | 3.54  | 924.0               | 954.0       | 1.51                                 | 1.60 | 1.63 |
| 963.7               | 993.7       | 1.76                                                  | 2.45 | 2.96 | 963.7               | 993.7       | -1.88              | 0.77  | 1.68  | 963.7               | 993.7       | 1.53                                 | 1.61 | 1.63 |
| 1003.4              | 1033.4      | 1.86                                                  | 2.51 | 3.01 | 1003.4              | 1033.4      | -3.13              | -1.13 | 0.34  | 1003.4              | 1033.4      | 1.48                                 | 1.51 | 1.52 |
| 1043.2              | 1073.2      | 1.90                                                  | 2.50 | 2.98 | 1043.2              | 1073.2      | -3.95              | -2.32 | -0.58 | 1043.2              | 1073.2      | 1.58                                 | 1.54 | 1.52 |
| 1082.9              | 1112.9      | 2.01                                                  | 2.56 | 2.99 | 1082.9              | 1112.9      | -3.98              | -2.46 | -0.65 | 1082.9              | 1112.9      | 1.63                                 | 1.54 | 1.49 |
| 1122.6              | 1152.6      | 2.03                                                  | 2.57 | 2.96 | 1122.6              | 1152.6      | -3.87              | -2.53 | -0.74 | 1122.6              | 1152.6      | 1.79                                 | 1.65 | 1.55 |
| 1162.4              | 1192.4      | 2.01                                                  | 2.56 | 2.92 | 1162.4              | 1192.4      | -3.33              | -1.89 | -0.31 | 1162.4              | 1192.4      | 1.83                                 | 1.66 | 1.53 |
| 1202.1              | 1232.1      | 2.00                                                  | 2.50 | 2.82 | 1202.1              | 1232.1      | -2.09              | -0.76 | 0.26  | 1202.1              | 1232.1      | 1.83                                 | 1.63 | 1.47 |
| 1241.8              | 1271.8      | 1.87                                                  | 2.31 | 2.59 | 1241.8              | 1271.8      | -0.83              | 0.31  | 0.81  | 1241.8              | 1271.8      | 1.85                                 | 1.62 | 1.47 |
| 1281.6              | 1311.6      | 1.81                                                  | 2.19 | 2.41 | 1281.6              | 1311.6      | 0.21               | 1.26  | 1.80  | 1281.6              | 1311.6      | 1.78                                 | 1.57 | 1.41 |
| 1321.3              | 1351.3      | 1.59                                                  | 1.95 | 2.14 | 1321.3              | 1351.3      | 0.87               | 1.80  | 2.63  | 1321.3              | 1351.3      | 1.69                                 | 1.52 | 1.38 |
| 1361.0              | 1391.0      | 1.36                                                  | 1.67 | 1.86 | 1361.0              | 1391.0      | 1.14               | 1.97  | 3.10  | 1361.0              | 1391.0      | 1.59                                 | 1.43 | 1.32 |
| 1380.9              | 1410.9      | 1.16                                                  | 1.46 | 1.65 | 1380.9              | 1410.9      | 1.06               | 1.75  | 2.69  | 1380.9              | 1410.9      | 1.58                                 | 1.41 | 1.29 |
| 1420.6              | 1450.6      | 0.73                                                  | 1.01 | 1.19 | 1420.6              | 1450.6      | 0.99               | 1.88  | 2.94  | 1420.6              | 1450.6      | 1.49                                 | 1.33 | 1.26 |
| 1440.5              | 1470.5      | 0.59                                                  | 0.87 | 1.06 | 1440.5              | 1470.5      | 1.27               | 2.28  | 3.78  | 1440.5              | 1470.5      | 1.41                                 | 1.29 | 1.22 |
| 1480.2              | 1510.2      | 0.26                                                  | 0.54 | 0.74 | 1480.2              | 1510.2      | 2.12               | 2.50  | 4.19  | 1480.2              | 1510.2      | 1.31                                 | 1.18 | 1.13 |
| 1500.1              | 1530.1      | 0.11                                                  | 0.35 | 0.54 | 1500.1              | 1530.1      | 2.95               | 3.05  | 4.81  | 1500.1              | 1530.1      | 1.30                                 | 1.17 | 1.12 |

REV. X3

UNCL-R1+

101011

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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED • RoHS compliant

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# Frequency Mixer

UNCL-R1+

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=260.1MHz<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)=510.1MHz<br>(dB) |
|----------------------|-------------|-----------------------------------------------------------------|----------------------|-------------|----------------------------------------------------------------|----------------------|-------------|-----------------------------------------------------------------|
|                      |             | @LO (dBm)                                                       |                      |             | @LO (dBm)                                                      |                      |             | @LO (dBm)                                                       |
|                      |             | +7                                                              |                      |             | +7                                                             |                      |             | +7                                                              |
| 250.0                | 10.1        | 3.87                                                            | 10.0                 | 20.1        | 3.92                                                           | 500.0                | 10.1        | 3.61                                                            |
| 243.8                | 16.3        | 3.80                                                            | 70.6                 | 80.7        | 4.76                                                           | 487.4                | 22.7        | 3.60                                                            |
| 237.7                | 22.4        | 3.84                                                            | 131.2                | 141.3       | 5.62                                                           | 474.9                | 35.2        | 3.65                                                            |
| 231.5                | 28.6        | 3.83                                                            | 191.7                | 201.8       | 5.23                                                           | 462.3                | 47.8        | 3.69                                                            |
| 225.4                | 34.7        | 3.88                                                            | 252.3                | 262.4       | 3.62                                                           | 449.7                | 60.4        | 3.65                                                            |
| 219.2                | 40.9        | 3.97                                                            | 312.9                | 323.0       | 4.78                                                           | 437.2                | 72.9        | 3.65                                                            |
| 213.1                | 47.0        | 3.91                                                            | 373.5                | 383.6       | 3.38                                                           | 424.6                | 85.5        | 3.75                                                            |
| 206.9                | 53.2        | 3.94                                                            | 434.1                | 444.2       | 5.12                                                           | 412.1                | 98.0        | 3.76                                                            |
| 200.8                | 59.3        | 3.90                                                            | 494.7                | 504.8       | 3.93                                                           | 399.5                | 110.6       | 3.73                                                            |
| 194.6                | 65.5        | 3.91                                                            | 555.2                | 565.3       | 4.56                                                           | 386.9                | 123.2       | 3.77                                                            |
| 188.5                | 71.6        | 3.85                                                            | 615.8                | 625.9       | 4.27                                                           | 374.4                | 135.7       | 3.81                                                            |
| 182.3                | 77.8        | 3.93                                                            | 676.4                | 686.5       | 3.14                                                           | 361.8                | 148.3       | 3.74                                                            |
| 176.2                | 83.9        | 3.93                                                            | 716.8                | 726.9       | 3.96                                                           | 349.2                | 160.9       | 3.75                                                            |
| 170.0                | 90.1        | 3.93                                                            | 777.4                | 787.5       | 2.58                                                           | 336.7                | 173.4       | 3.77                                                            |
| 163.8                | 96.3        | 3.95                                                            | 817.8                | 827.9       | 4.22                                                           | 324.1                | 186.0       | 3.75                                                            |
| 157.7                | 102.4       | 3.93                                                            | 878.3                | 888.4       | 4.11                                                           | 311.5                | 198.6       | 3.73                                                            |
| 151.5                | 108.6       | 3.94                                                            | 918.7                | 928.8       | 3.95                                                           | 299.0                | 211.1       | 3.75                                                            |
| 145.4                | 114.7       | 3.93                                                            | 979.3                | 989.4       | 4.49                                                           | 286.4                | 223.7       | 3.78                                                            |
| 139.2                | 120.9       | 3.95                                                            | 1019.7               | 1029.8      | 3.59                                                           | 273.8                | 236.3       | 3.73                                                            |
| 133.1                | 127.0       | 3.98                                                            | 1080.3               | 1090.4      | 3.04                                                           | 261.3                | 248.8       | 3.76                                                            |
| 126.9                | 133.2       | 4.03                                                            | 1120.7               | 1130.8      | 3.58                                                           | 248.7                | 261.4       | 3.78                                                            |
| 120.8                | 139.3       | 4.00                                                            | 1181.3               | 1191.4      | 4.11                                                           | 236.2                | 273.9       | 3.74                                                            |
| 114.6                | 145.5       | 3.97                                                            | 1221.7               | 1231.8      | 5.32                                                           | 223.6                | 286.5       | 3.69                                                            |
| 108.5                | 151.6       | 3.94                                                            | 1282.2               | 1292.3      | 4.41                                                           | 211.0                | 299.1       | 3.72                                                            |
| 102.3                | 157.8       | 3.94                                                            | 1322.6               | 1332.7      | 3.80                                                           | 198.5                | 311.6       | 3.75                                                            |
| 96.2                 | 163.9       | 3.93                                                            | 1383.2               | 1393.3      | 3.78                                                           | 185.9                | 324.2       | 3.72                                                            |
| 90.0                 | 170.1       | 3.96                                                            | 1423.6               | 1433.7      | 2.02                                                           | 173.3                | 336.8       | 3.71                                                            |
| 83.8                 | 176.3       | 3.96                                                            | 1484.2               | 1494.3      | 2.83                                                           | 160.8                | 349.3       | 3.73                                                            |
| 77.7                 | 182.4       | 3.97                                                            | 1524.6               | 1534.7      | 1.37                                                           | 148.2                | 361.9       | 3.72                                                            |
| 71.5                 | 188.6       | 3.96                                                            | 1585.1               | 1595.2      | 1.21                                                           | 135.6                | 374.5       | 3.69                                                            |
| 65.4                 | 194.7       | 3.95                                                            | 1625.5               | 1635.6      | -0.61                                                          | 123.1                | 387.0       | 3.65                                                            |
| 59.2                 | 200.9       | 3.95                                                            | 1686.1               | 1696.2      | -0.01                                                          | 110.5                | 399.6       | 3.70                                                            |
| 53.1                 | 207.0       | 3.91                                                            | 1726.5               | 1736.6      | -1.09                                                          | 97.9                 | 412.2       | 3.68                                                            |
| 46.9                 | 213.2       | 3.95                                                            | 1787.1               | 1797.2      | -2.10                                                          | 85.4                 | 424.7       | 3.66                                                            |
| 40.8                 | 219.3       | 3.96                                                            | 1827.5               | 1837.6      | -2.86                                                          | 72.8                 | 437.3       | 3.71                                                            |
| 34.6                 | 225.5       | 3.98                                                            | 1888.1               | 1898.2      | -4.94                                                          | 60.3                 | 449.8       | 3.75                                                            |
| 28.5                 | 231.6       | 3.96                                                            | 1928.4               | 1938.5      | -4.59                                                          | 47.7                 | 462.4       | 3.65                                                            |
| 22.3                 | 237.8       | 3.90                                                            | 1989.0               | 1999.1      | -7.27                                                          | 35.1                 | 475.0       | 3.60                                                            |
| 16.2                 | 243.9       | 3.92                                                            | 2029.4               | 2039.5      | -8.09                                                          | 22.6                 | 487.5       | 3.65                                                            |
| 10.0                 | 250.1       | 3.66                                                            | 2090.0               | 2100.1      | -12.55                                                         | 10.0                 | 500.1       | 3.45                                                            |

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## 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   |
| 40.1        | 84.37                   | 77.44 | 81.83 | 50.80                   | 49.50 | 48.26 |
| 79.8        | 75.96                   | 80.36 | 89.53 | 45.30                   | 43.96 | 42.98 |
| 119.6       | 74.43                   | 81.67 | 81.93 | 42.27                   | 41.10 | 40.20 |
| 159.3       | 72.39                   | 75.71 | 78.02 | 40.42                   | 39.30 | 38.22 |
| 199.0       | 71.49                   | 74.18 | 75.62 | 38.99                   | 37.85 | 36.75 |
| 238.8       | 66.80                   | 67.76 | 68.89 | 37.33                   | 36.25 | 35.20 |
| 278.5       | 69.30                   | 71.17 | 72.78 | 35.67                   | 34.79 | 33.81 |
| 318.2       | 65.53                   | 66.90 | 67.69 | 34.31                   | 33.65 | 32.71 |
| 358.0       | 63.82                   | 64.42 | 65.11 | 33.07                   | 32.65 | 31.84 |
| 397.7       | 62.84                   | 63.99 | 64.76 | 31.57                   | 31.53 | 31.10 |
| 437.4       | 62.57                   | 63.38 | 63.94 | 30.27                   | 30.57 | 30.38 |
| 477.2       | 61.75                   | 63.02 | 63.49 | 29.07                   | 29.65 | 29.77 |
| 516.9       | 60.24                   | 61.02 | 61.50 | 28.02                   | 28.79 | 29.04 |
| 556.6       | 59.04                   | 60.00 | 60.60 | 27.48                   | 28.30 | 28.72 |
| 596.4       | 56.71                   | 57.80 | 58.72 | 27.05                   | 27.93 | 28.31 |
| 636.1       | 54.75                   | 56.05 | 57.16 | 26.57                   | 27.64 | 28.10 |
| 675.8       | 54.74                   | 56.38 | 57.92 | 25.79                   | 27.20 | 27.95 |
| 715.6       | 54.70                   | 56.67 | 58.65 | 24.92                   | 26.59 | 27.66 |
| 755.3       | 54.76                   | 56.89 | 59.13 | 23.58                   | 25.39 | 26.87 |
| 795.0       | 53.62                   | 55.54 | 57.48 | 22.33                   | 23.92 | 25.57 |
| 834.8       | 53.19                   | 55.00 | 56.84 | 21.51                   | 22.95 | 24.52 |
| 874.5       | 52.80                   | 54.53 | 56.44 | 20.90                   | 22.19 | 23.70 |
| 914.2       | 51.70                   | 53.21 | 54.88 | 20.60                   | 21.97 | 23.53 |
| 954.0       | 51.31                   | 52.77 | 54.38 | 20.03                   | 21.48 | 23.08 |
| 993.7       | 50.08                   | 51.35 | 52.70 | 20.13                   | 21.75 | 23.49 |
| 1033.4      | 49.47                   | 50.72 | 52.03 | 19.94                   | 21.72 | 23.62 |
| 1073.2      | 48.47                   | 49.65 | 50.86 | 19.72                   | 21.74 | 23.92 |
| 1112.9      | 47.52                   | 48.65 | 49.80 | 19.65                   | 21.81 | 24.16 |
| 1152.6      | 46.99                   | 48.13 | 49.29 | 19.09                   | 21.24 | 23.53 |
| 1192.4      | 46.54                   | 47.59 | 48.70 | 18.83                   | 20.81 | 22.90 |
| 1232.1      | 45.92                   | 46.96 | 48.08 | 18.44                   | 20.23 | 22.10 |
| 1271.8      | 45.47                   | 46.49 | 47.54 | 18.35                   | 19.99 | 21.64 |
| 1311.6      | 45.44                   | 46.46 | 47.45 | 18.76                   | 20.26 | 21.62 |
| 1351.3      | 45.28                   | 46.18 | 47.00 | 18.93                   | 20.18 | 21.16 |
| 1391.0      | 45.63                   | 46.40 | 47.01 | 19.57                   | 20.48 | 21.00 |
| 1410.9      | 45.62                   | 46.24 | 46.71 | 19.62                   | 20.39 | 20.79 |
| 1450.6      | 45.87                   | 46.22 | 46.37 | 20.11                   | 20.43 | 20.39 |
| 1470.5      | 46.04                   | 46.22 | 46.20 | 20.43                   | 20.40 | 20.07 |
| 1510.2      | 46.67                   | 46.47 | 46.11 | 21.16                   | 20.57 | 19.84 |
| 1530.1      | 46.82                   | 46.36 | 45.80 | 21.32                   | 20.45 | 19.55 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +4                      | +7    | +10   |
| 10.1                | 40.1        | 44.76                   | 43.38 | 44.75 |
| 49.8                | 79.8        | 30.24                   | 30.83 | 30.97 |
| 89.6                | 119.6       | 25.44                   | 25.87 | 26.33 |
| 129.3               | 159.3       | 22.83                   | 23.21 | 23.45 |
| 169.0               | 199.0       | 21.07                   | 21.49 | 21.84 |
| 208.8               | 238.8       | 19.85                   | 20.43 | 20.72 |
| 248.5               | 278.5       | 19.20                   | 19.79 | 20.21 |
| 288.2               | 318.2       | 18.94                   | 19.57 | 20.05 |
| 328.0               | 358.0       | 18.91                   | 19.79 | 20.44 |
| 367.7               | 397.7       | 18.98                   | 20.06 | 21.03 |
| 407.4               | 437.4       | 19.05                   | 20.13 | 21.03 |
| 447.2               | 477.2       | 18.61                   | 20.02 | 21.31 |
| 486.9               | 516.9       | 18.35                   | 19.89 | 21.51 |
| 526.6               | 556.6       | 18.08                   | 19.62 | 21.09 |
| 566.4               | 596.4       | 17.30                   | 18.35 | 19.16 |
| 606.1               | 636.1       | 16.10                   | 16.60 | 16.90 |
| 645.8               | 675.8       | 14.69                   | 14.90 | 14.97 |
| 685.6               | 715.6       | 13.32                   | 13.33 | 13.25 |
| 725.3               | 755.3       | 12.19                   | 12.08 | 11.96 |
| 765.0               | 795.0       | 11.89                   | 11.80 | 11.76 |
| 804.8               | 834.8       | 11.90                   | 11.94 | 11.99 |
| 844.5               | 874.5       | 12.26                   | 12.25 | 12.30 |
| 884.2               | 914.2       | 12.82                   | 12.82 | 12.75 |
| 924.0               | 954.0       | 13.75                   | 13.60 | 13.34 |
| 963.7               | 993.7       | 14.61                   | 14.33 | 13.75 |
| 1003.4              | 1033.4      | 14.98                   | 14.38 | 13.61 |
| 1043.2              | 1073.2      | 14.37                   | 13.73 | 12.78 |
| 1082.9              | 1112.9      | 13.04                   | 12.20 | 11.30 |
| 1122.6              | 1152.6      | 11.43                   | 10.67 | 9.91  |
| 1162.4              | 1192.4      | 9.80                    | 9.08  | 8.54  |
| 1202.1              | 1232.1      | 8.18                    | 7.48  | 7.04  |
| 1241.8              | 1271.8      | 6.72                    | 6.03  | 5.63  |
| 1281.6              | 1311.6      | 5.32                    | 4.71  | 4.35  |
| 1321.3              | 1351.3      | 4.09                    | 3.53  | 3.13  |
| 1361.0              | 1391.0      | 3.03                    | 2.53  | 2.18  |
| 1380.9              | 1410.9      | 2.76                    | 2.20  | 1.83  |
| 1420.6              | 1450.6      | 2.01                    | 1.42  | 1.08  |
| 1440.5              | 1470.5      | 1.62                    | 1.07  | 0.73  |
| 1480.2              | 1510.2      | 1.19                    | 0.59  | 0.24  |
| 1500.1              | 1530.1      | 0.88                    | 0.30  | 0.04  |

# Frequency Mixer

UNCL-R1+

## 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=500MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|------|------|----------------------|-------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |      |      |                      | @LO (dBm)                     |      |      |
|                     |             | +4              | +7   | +10  |             | +4              | +7   | +10  |                      | +4                            | +7   | +10  |
| 10.1                | 40.1        | 1.69            | 1.76 | 2.20 | 40.1        | 1.35            | 2.36 | 4.21 | 10.0                 | 1.28                          | 1.13 | 1.04 |
| 49.8                | 79.8        | 1.54            | 1.63 | 1.54 | 79.8        | 2.41            | 3.93 | 6.68 | 22.3                 | 1.28                          | 1.14 | 1.04 |
| 89.6                | 119.6       | 1.53            | 1.54 | 1.60 | 119.6       | 1.98            | 2.99 | 4.47 | 34.6                 | 1.25                          | 1.11 | 1.03 |
| 129.3               | 159.3       | 1.57            | 1.60 | 1.63 | 159.3       | 1.70            | 2.48 | 3.50 | 46.9                 | 1.26                          | 1.12 | 1.02 |
| 169.0               | 199.0       | 1.53            | 1.56 | 1.58 | 199.0       | 2.26            | 3.42 | 5.07 | 59.2                 | 1.28                          | 1.13 | 1.04 |
| 208.8               | 238.8       | 1.57            | 1.61 | 1.62 | 238.8       | 1.82            | 2.63 | 3.67 | 71.5                 | 1.27                          | 1.13 | 1.04 |
| 248.5               | 278.5       | 1.60            | 1.62 | 1.64 | 278.5       | 2.09            | 3.02 | 4.27 | 83.8                 | 1.29                          | 1.14 | 1.05 |
| 288.2               | 318.2       | 1.59            | 1.62 | 1.62 | 318.2       | 2.10            | 3.03 | 4.26 | 96.2                 | 1.30                          | 1.16 | 1.07 |
| 328.0               | 358.0       | 1.64            | 1.66 | 1.65 | 358.0       | 1.87            | 2.61 | 3.56 | 108.5                | 1.27                          | 1.13 | 1.05 |
| 367.7               | 397.7       | 1.59            | 1.60 | 1.62 | 397.7       | 2.14            | 2.97 | 4.05 | 120.8                | 1.28                          | 1.14 | 1.05 |
| 407.4               | 437.4       | 1.65            | 1.66 | 1.67 | 437.4       | 2.13            | 3.00 | 4.21 | 133.1                | 1.29                          | 1.15 | 1.06 |
| 447.2               | 477.2       | 1.64            | 1.64 | 1.64 | 477.2       | 2.24            | 3.11 | 4.26 | 145.4                | 1.28                          | 1.14 | 1.06 |
| 486.9               | 516.9       | 1.63            | 1.63 | 1.63 | 516.9       | 2.42            | 3.35 | 4.56 | 157.7                | 1.30                          | 1.15 | 1.06 |
| 526.6               | 556.6       | 1.67            | 1.66 | 1.66 | 556.6       | 2.33            | 3.20 | 4.32 | 170.0                | 1.31                          | 1.17 | 1.08 |
| 566.4               | 596.4       | 1.60            | 1.59 | 1.58 | 596.4       | 2.64            | 3.68 | 5.07 | 182.3                | 1.30                          | 1.16 | 1.08 |
| 606.1               | 636.1       | 1.67            | 1.66 | 1.65 | 636.1       | 2.43            | 3.30 | 4.43 | 194.6                | 1.31                          | 1.17 | 1.08 |
| 645.8               | 675.8       | 1.62            | 1.61 | 1.59 | 675.8       | 2.63            | 3.58 | 4.88 | 206.9                | 1.33                          | 1.18 | 1.10 |
| 685.6               | 715.6       | 1.67            | 1.66 | 1.64 | 715.6       | 2.48            | 3.23 | 4.26 | 219.2                | 1.31                          | 1.17 | 1.09 |
| 725.3               | 755.3       | 1.72            | 1.70 | 1.69 | 755.3       | 2.48            | 3.20 | 4.18 | 231.5                | 1.33                          | 1.18 | 1.09 |
| 765.0               | 795.0       | 1.71            | 1.69 | 1.67 | 795.0       | 2.73            | 3.47 | 4.45 | 243.8                | 1.34                          | 1.19 | 1.11 |
| 804.8               | 834.8       | 1.87            | 1.84 | 1.81 | 834.8       | 2.48            | 3.13 | 3.95 | 256.2                | 1.33                          | 1.19 | 1.10 |
| 844.5               | 874.5       | 1.80            | 1.76 | 1.73 | 874.5       | 3.03            | 3.95 | 5.16 | 268.5                | 1.35                          | 1.20 | 1.11 |
| 884.2               | 914.2       | 1.92            | 1.88 | 1.84 | 914.2       | 2.76            | 3.48 | 4.40 | 280.8                | 1.38                          | 1.23 | 1.14 |
| 924.0               | 954.0       | 1.86            | 1.82 | 1.78 | 954.0       | 2.89            | 3.76 | 4.88 | 293.1                | 1.36                          | 1.22 | 1.13 |
| 963.7               | 993.7       | 1.82            | 1.78 | 1.75 | 993.7       | 3.03            | 3.85 | 4.91 | 305.4                | 1.38                          | 1.23 | 1.13 |
| 1003.4              | 1033.4      | 1.85            | 1.81 | 1.77 | 1033.4      | 2.52            | 3.14 | 3.92 | 317.7                | 1.40                          | 1.24 | 1.15 |
| 1043.2              | 1073.2      | 1.65            | 1.62 | 1.59 | 1073.2      | 2.95            | 3.69 | 4.68 | 330.0                | 1.38                          | 1.23 | 1.14 |
| 1082.9              | 1112.9      | 1.71            | 1.67 | 1.64 | 1112.9      | 2.57            | 3.06 | 3.73 | 342.3                | 1.40                          | 1.24 | 1.15 |
| 1122.6              | 1152.6      | 1.49            | 1.47 | 1.44 | 1152.6      | 2.68            | 3.28 | 4.10 | 354.6                | 1.43                          | 1.27 | 1.17 |
| 1162.4              | 1192.4      | 1.48            | 1.45 | 1.43 | 1192.4      | 2.99            | 3.56 | 4.38 | 366.9                | 1.42                          | 1.27 | 1.17 |
| 1202.1              | 1232.1      | 1.40            | 1.38 | 1.37 | 1232.1      | 2.52            | 2.98 | 3.60 | 379.2                | 1.44                          | 1.28 | 1.18 |
| 1241.8              | 1271.8      | 1.25            | 1.24 | 1.23 | 1271.8      | 3.09            | 3.72 | 4.56 | 391.5                | 1.46                          | 1.30 | 1.20 |
| 1281.6              | 1311.6      | 1.31            | 1.30 | 1.30 | 1311.6      | 2.85            | 3.29 | 3.89 | 403.8                | 1.45                          | 1.28 | 1.19 |
| 1321.3              | 1351.3      | 1.17            | 1.17 | 1.18 | 1351.3      | 2.99            | 3.48 | 4.15 | 416.2                | 1.46                          | 1.30 | 1.19 |
| 1361.0              | 1391.0      | 1.19            | 1.19 | 1.20 | 1391.0      | 3.47            | 3.88 | 4.53 | 428.5                | 1.49                          | 1.32 | 1.21 |
| 1380.9              | 1410.9      | 1.25            | 1.26 | 1.27 | 1410.9      | 3.31            | 3.64 | 4.18 | 440.8                | 1.48                          | 1.31 | 1.21 |
| 1420.6              | 1450.6      | 1.21            | 1.22 | 1.23 | 1450.6      | 3.69            | 4.12 | 4.80 | 453.1                | 1.50                          | 1.33 | 1.22 |
| 1440.5              | 1470.5      | 1.16            | 1.18 | 1.19 | 1470.5      | 4.07            | 4.38 | 5.00 | 465.4                | 1.53                          | 1.36 | 1.25 |
| 1480.2              | 1510.2      | 1.31            | 1.33 | 1.34 | 1510.2      | 3.89            | 4.01 | 4.42 | 477.7                | 1.51                          | 1.35 | 1.24 |
| 1500.1              | 1530.1      | 1.35            | 1.37 | 1.38 | 1530.1      | 3.88            | 4.11 | 4.61 | 490.0                | 1.54                          | 1.37 | 1.26 |

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## Harmonics Tables

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | 3   | 16  | 7   | 39  | 10  | 26  | 20  | 32  | 26  | 36  |
| 1      | -      | 23     | +0  | 34  | 12  | 41  | 21  | 36  | 29  | 39  | 44  | 41  |
| 2      | >90    | 57     | 39  | >67 | 44  | >67 | 44  | >67 | 46  | 61  | 61  | >67 |
| 3      | >90    | >67    | 64  | >67 | >67 | >67 | >67 | >67 | 65  | >67 | >67 | >67 |
| 4      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 5      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 6      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 7      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 8      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 9      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 10     | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

### LO HARMONICS ORDER

Test conditions: RF IN: 250 MHz; -25.00 dBm.  
LO IN: 280 MHz; +7.00 dBm  
IF OUT: 30 MHz; -22.64 dBm

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | 13  | 26  | 19  | 49  | 21  | 36  | 31  | 44  | 39  | 50  |
| 1      | -      | 23     | +0  | 34  | 12  | 43  | 21  | 38  | 29  | 42  | 43  | 45  |
| 2      | >90    | 48     | 28  | 62  | 36  | 58  | 37  | 61  | 40  | 54  | 53  | 64  |
| 3      | >90    | 54     | 43  | 59  | 57  | 63  | 65  | 58  | 51  | 57  | 65  | 61  |
| 4      | >90    | 71     | 59  | 75  | 59  | >77 | 57  | >77 | 57  | >77 | 58  | 72  |
| 5      | >90    | >77    | >77 | >77 | 69  | >77 | 65  | >77 | 64  | >77 | 61  | >77 |
| 6      | >90    | >77    | 75  | >77 | 73  | >77 | 73  | >77 | 73  | >77 | 72  | >77 |
| 7      | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| 8      | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| 9      | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| 10     | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

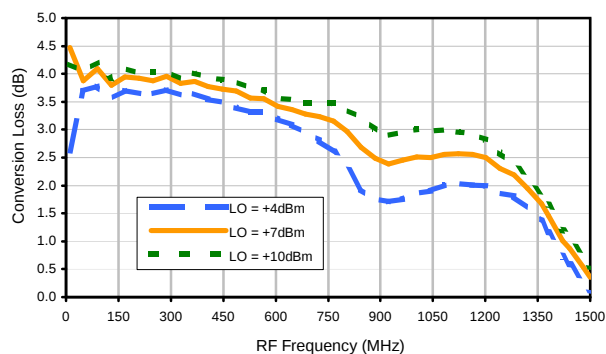
### LO HARMONICS ORDER

Test conditions: RF IN: 250 MHz; -15.00 dBm.  
LO IN: 280 MHz; +7.00 dBm  
IF OUT: 30 MHz; -12.69 dBm

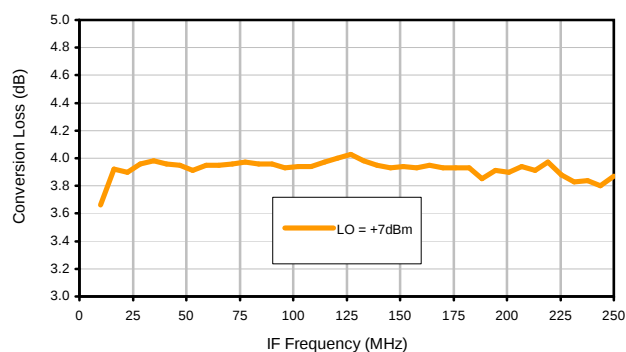
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.  
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.  
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

## Typical Performance Curves

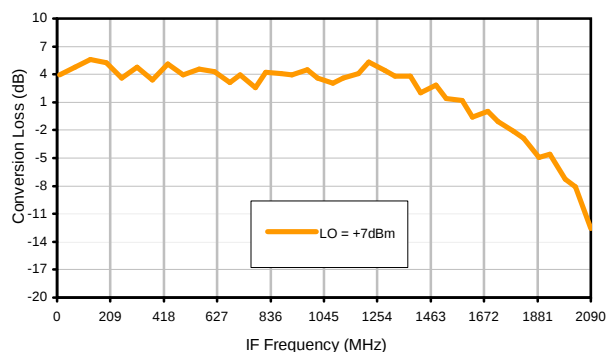
Conversion Loss @ IF=30MHz



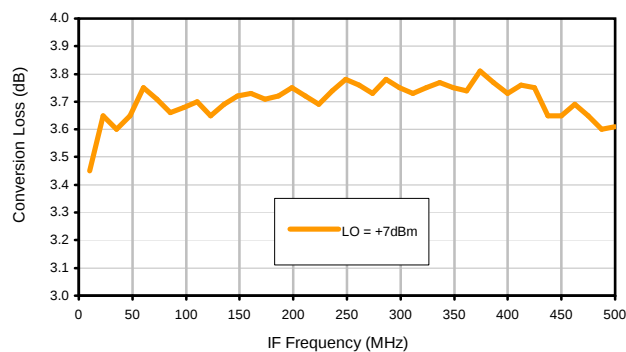
Conversion Loss vs. IF @ RF=260.1MHz



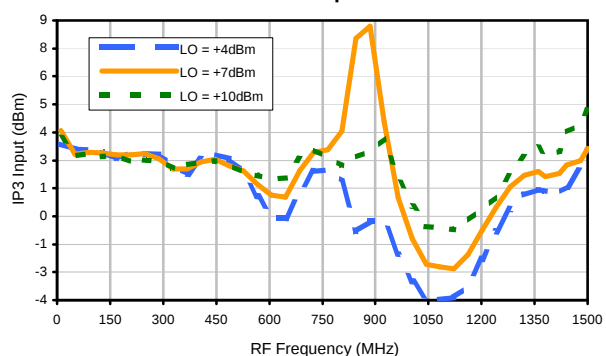
Conversion Loss vs. IF @ RF=10.1MHz



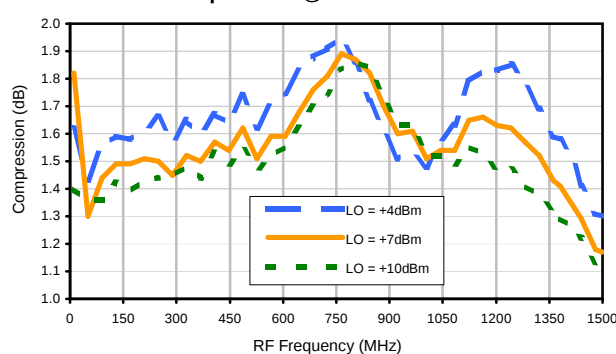
Conversion Loss vs. IF @ RF=510.1MHz



IP3 Input

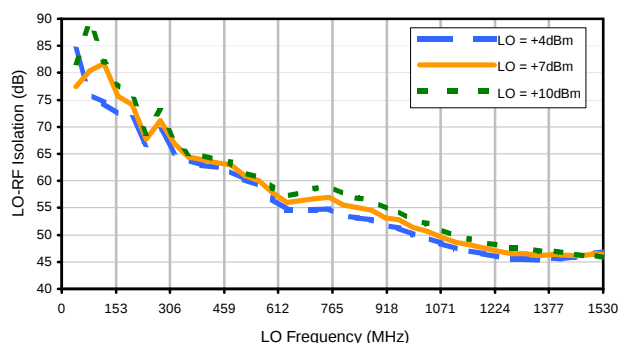


Compression @ RF IN=-10dBm

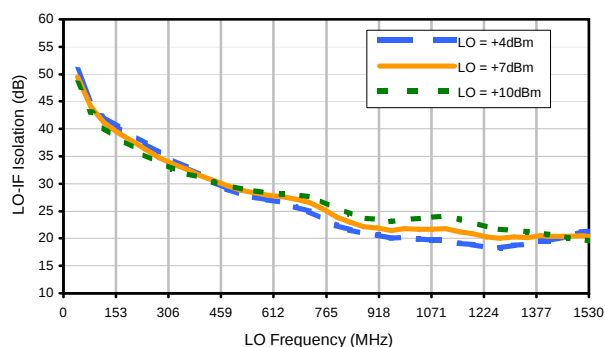


## Typical Performance Curves

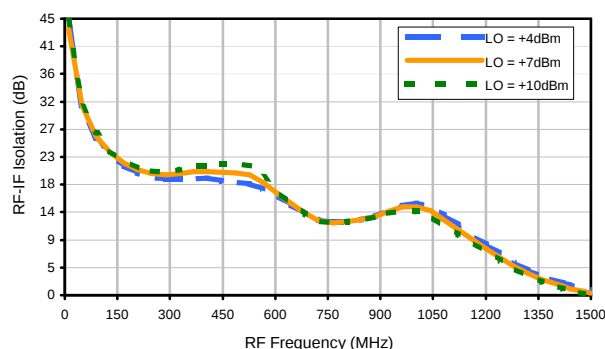
LO-RF Isolation



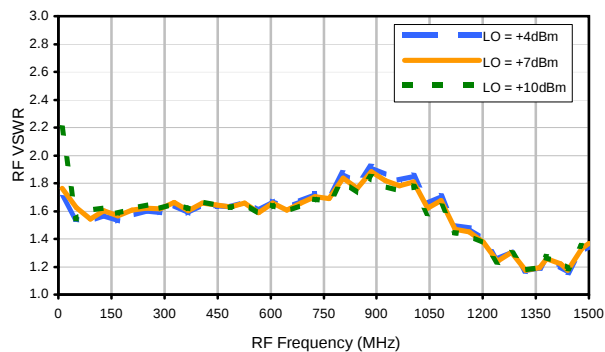
LO-IF Isolation



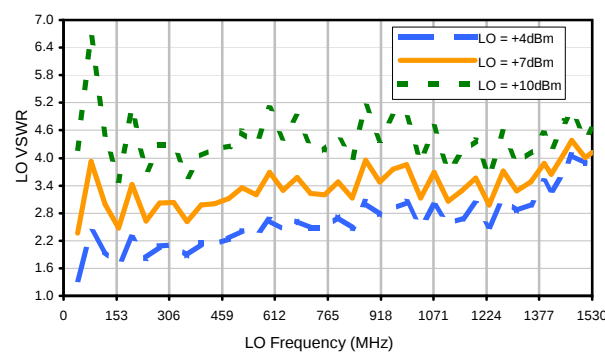
RF-IF Isolation



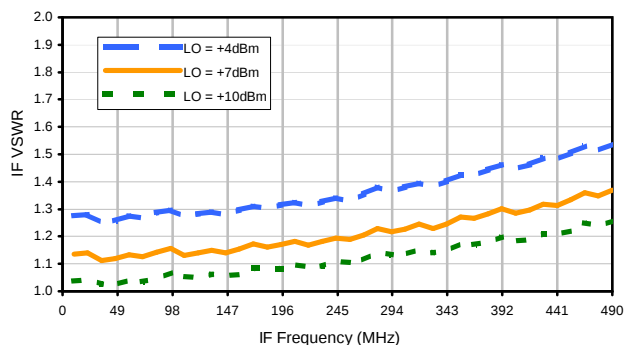
RF VSWR



LO VSWR



IF VSWR



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## Harmonics Tables

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | 3   | 16  | 7   | 39  | 10  | 26  | 20  | 32  | 26  | 36  |
| 1      | -      | 23     | +0  | 34  | 12  | 41  | 21  | 36  | 29  | 39  | 44  | 41  |
| 2      | >90    | 57     | 39  | >67 | 44  | >67 | 44  | >67 | 46  | 61  | 61  | >67 |
| 3      | >90    | >67    | 64  | >67 | >67 | >67 | >67 | >67 | 65  | >67 | >67 | >67 |
| 4      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 5      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 6      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 7      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 8      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 9      | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| 10     | >90    | >67    | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 | >67 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

### LO HARMONICS ORDER

Test conditions: RF IN: 250 MHz; -25.00 dBm.  
LO IN: 280 MHz; +7.00 dBm  
IF OUT: 30 MHz; -22.64 dBm

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | 13  | 26  | 19  | 49  | 21  | 36  | 31  | 44  | 39  | 50  |
| 1      | -      | 23     | +0  | 34  | 12  | 43  | 21  | 38  | 29  | 42  | 43  | 45  |
| 2      | >90    | 48     | 28  | 62  | 36  | 58  | 37  | 61  | 40  | 54  | 53  | 64  |
| 3      | >90    | 54     | 43  | 59  | 57  | 63  | 65  | 58  | 51  | 57  | 65  | 61  |
| 4      | >90    | 71     | 59  | 75  | 59  | >77 | 57  | >77 | 57  | >77 | 58  | 72  |
| 5      | >90    | >77    | >77 | >77 | 69  | >77 | 65  | >77 | 64  | >77 | 61  | >77 |
| 6      | >90    | >77    | 75  | >77 | 73  | >77 | 73  | >77 | 73  | >77 | 72  | >77 |
| 7      | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| 8      | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| 9      | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| 10     | >90    | >77    | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 | >77 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

### LO HARMONICS ORDER

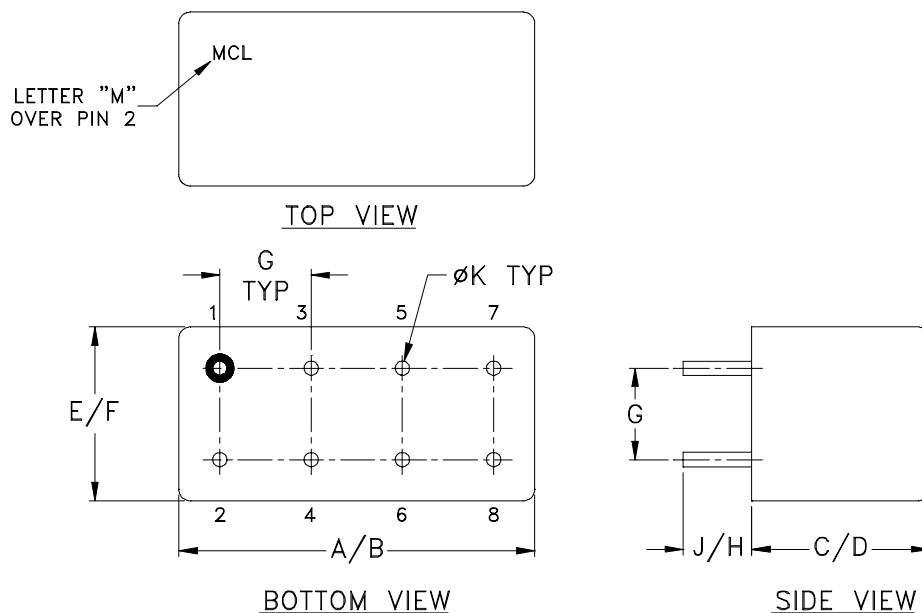
Test conditions: RF IN: 250 MHz; -15.00 dBm.  
LO IN: 280 MHz; +7.00 dBm  
IF OUT: 30 MHz; -12.69 dBm

- 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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A01  
A04  
A05  
A06

## Outline Dimensions



| CASE# | A               | B               | C              | D               | E              | F               | G              | H             | J             | K             | WT,<br>GRAM |
|-------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|---------------|---------------|---------------|-------------|
| A01   | .770<br>(19.56) | .800<br>(20.32) | .385<br>(9.78) | .400<br>(10.16) | .370<br>(9.40) | .400<br>(10.16) | .200<br>(5.08) | .20<br>(5.08) | .14<br>(3.56) | .031<br>(.79) | 5.2         |
| A04   |                 |                 | .200<br>(5.08) | .210<br>(5.33)  |                |                 |                |               |               |               | 3.7         |
| A05   |                 |                 | .240<br>(6.10) | .250<br>(6.35)  |                |                 |                |               |               |               | 3.7         |
| A06   |                 |                 | .285<br>(7.24) | .310<br>(7.87)  |                |                 |                |               |               |               | 5.2         |

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

### Notes:

- Header material: C.R.S.  
Pin material: #52 alloy.  
Cover material: Cupro-Nickel.
- Pin finish: Electro Tin-Silver.
- Insulated spacer available. Request P/N B14-045-01.
- Tolerance on pin diameter  $\pm .005$  inch.
- Glass meniscus 0.015 inch max.
- Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.



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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          | -55° to 100° C<br>Ambient Environment                                                                                                                           | Individual Model Data Sheet                                                                          |
| Storage Temperature            | -55° to 100° C<br>Ambient Environment                                                                                                                           | Individual Model Data Sheet                                                                          |
| Thermal Shock                  | -55° to 100°C, 100 cycles                                                                                                                                       | MIL-STD-202, Method 107, Condition A-3, except +100°C                                                |
| 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               | 50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes                                                                                               | MIL-STD-202, Method 213, Condition A                                                                 |
| Moisture Resistance            | 10 cycles, 24 hours per cycle                                                                                                                                   | MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours |
| Solderability                  | 10X Magnification                                                                                                                                               | J-STD-002, 95% Coverage                                                                              |
| Resistance to Solder Heat      | 260°C for 10 seconds                                                                                                                                            | MIL-STD-202, Method 210, Condition B                                                                 |
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C;<br>distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215                                                                              |
| Terminal Strength              | 4 1/2 Pound Pull                                                                                                                                                | MIL-STD-202, Method 211, Condition A                                                                 |



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                       |
|---------------------|---------------------------|--------------------------------------|
| Gross Leak          | 125°C Bubble Test         | MIL-STD-202, Method 112, Condition D |
| Barometric Pressure | 100,000 Feet              | MIL-STD-202, Method 105, Condition D |