

# Frequency Mixer

**JMS-1**

## 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  |
| 0.5                 | 30.5        | 7.81                                                  | 7.45  | 7.25 | 10.1                | 40.1        | 20.53              | 22.15 | 21.19 | 10.1                | 40.1        | 1.05                                | 0.73 | 0.55 |
| 1.0                 | 31.0        | 7.02                                                  | 6.68  | 6.52 | 50.8                | 80.8        | 18.60              | 20.22 | 19.60 | 50.8                | 80.8        | 0.94                                | 0.73 | 0.54 |
| 2.0                 | 32.0        | 6.45                                                  | 6.15  | 6.00 | 91.4                | 121.4       | 15.39              | 16.73 | 20.57 | 91.4                | 121.4       | 0.93                                | 0.67 | 0.46 |
| 5.0                 | 35.0        | 6.12                                                  | 5.84  | 5.69 | 132.1               | 162.1       | 14.65              | 17.24 | 21.57 | 132.1               | 162.1       | 0.92                                | 0.65 | 0.48 |
| 10.0                | 40.0        | 6.09                                                  | 5.78  | 5.64 | 172.7               | 202.7       | 15.14              | 20.38 | 21.90 | 172.7               | 202.7       | 0.82                                | 0.60 | 0.47 |
| 50.8                | 80.8        | 6.10                                                  | 5.70  | 5.51 | 213.4               | 243.4       | 15.58              | 19.16 | 23.23 | 213.4               | 243.4       | 0.87                                | 0.61 | 0.44 |
| 132.1               | 162.1       | 6.00                                                  | 5.72  | 5.57 | 254.0               | 284.0       | 16.60              | 21.97 | 24.24 | 254.0               | 284.0       | 0.86                                | 0.61 | 0.46 |
| 172.7               | 202.7       | 6.04                                                  | 5.76  | 5.61 | 274.4               | 304.4       | 16.26              | 19.62 | 26.17 | 274.4               | 304.4       | 0.83                                | 0.61 | 0.48 |
| 213.4               | 243.4       | 6.00                                                  | 5.76  | 5.60 | 315.0               | 345.0       | 16.61              | 20.63 | 23.81 | 315.0               | 345.0       | 0.89                                | 0.61 | 0.45 |
| 254.0               | 284.0       | 6.08                                                  | 5.81  | 5.65 | 335.3               | 365.3       | 22.63              | 22.12 | 21.24 | 335.3               | 365.3       | 0.90                                | 0.64 | 0.49 |
| 274.4               | 304.4       | 6.11                                                  | 5.83  | 5.67 | 376.0               | 406.0       | 16.04              | 17.02 | 20.87 | 376.0               | 406.0       | 0.82                                | 0.60 | 0.47 |
| 315.0               | 345.0       | 6.10                                                  | 5.83  | 5.69 | 396.3               | 426.3       | 16.75              | 17.80 | 21.87 | 396.3               | 426.3       | 0.80                                | 0.60 | 0.45 |
| 376.0               | 406.0       | 6.12                                                  | 5.85  | 5.68 | 437.0               | 467.0       | 18.87              | 19.96 | 21.68 | 437.0               | 467.0       | 0.78                                | 0.57 | 0.46 |
| 396.3               | 426.3       | 6.12                                                  | 5.84  | 5.68 | 457.3               | 487.3       | 17.50              | 18.82 | 19.05 | 457.3               | 487.3       | 0.78                                | 0.57 | 0.44 |
| 437.0               | 467.0       | 6.19                                                  | 5.92  | 5.73 | 498.0               | 528.0       | 13.46              | 15.75 | 16.21 | 498.0               | 528.0       | 0.84                                | 0.59 | 0.44 |
| 457.3               | 487.3       | 6.25                                                  | 5.98  | 5.77 | 518.3               | 548.3       | 15.52              | 15.55 | 16.22 | 518.3               | 548.3       | 0.88                                | 0.64 | 0.48 |
| 498.0               | 528.0       | 6.21                                                  | 5.93  | 5.76 | 559.0               | 589.0       | 18.31              | 20.00 | 19.04 | 559.0               | 589.0       | 0.93                                | 0.63 | 0.47 |
| 518.3               | 548.3       | 6.25                                                  | 5.96  | 5.79 | 579.3               | 609.3       | 24.25              | 22.27 | 21.04 | 579.3               | 609.3       | 0.93                                | 0.64 | 0.46 |
| 559.0               | 589.0       | 6.29                                                  | 6.00  | 5.83 | 619.9               | 649.9       | 14.40              | 15.27 | 22.49 | 619.9               | 649.9       | 0.99                                | 0.67 | 0.48 |
| 579.3               | 609.3       | 6.35                                                  | 6.05  | 5.88 | 640.3               | 670.3       | 12.87              | 14.65 | 19.80 | 640.3               | 670.3       | 0.97                                | 0.70 | 0.51 |
| 619.9               | 649.9       | 6.47                                                  | 6.20  | 6.01 | 680.9               | 710.9       | 9.74               | 12.16 | 17.80 | 680.9               | 710.9       | 1.03                                | 0.75 | 0.57 |
| 640.3               | 670.3       | 6.58                                                  | 6.29  | 6.09 | 701.2               | 731.2       | 8.82               | 11.07 | 14.20 | 701.2               | 731.2       | 1.06                                | 0.79 | 0.60 |
| 680.9               | 710.9       | 6.69                                                  | 6.43  | 6.23 | 741.9               | 771.9       | 7.72               | 9.95  | 12.73 | 741.9               | 771.9       | 1.14                                | 0.87 | 0.69 |
| 741.9               | 771.9       | 6.93                                                  | 6.64  | 6.44 | 762.2               | 792.2       | 8.17               | 10.83 | 13.63 | 762.2               | 792.2       | 1.20                                | 0.91 | 0.72 |
| 762.2               | 792.2       | 6.94                                                  | 6.65  | 6.45 | 802.9               | 832.9       | 8.32               | 11.41 | 15.31 | 802.9               | 832.9       | 1.26                                | 0.96 | 0.79 |
| 802.9               | 832.9       | 7.08                                                  | 6.75  | 6.53 | 823.2               | 853.2       | 9.19               | 13.64 | 18.25 | 823.2               | 853.2       | 1.26                                | 1.01 | 0.83 |
| 823.2               | 853.2       | 7.11                                                  | 6.76  | 6.55 | 863.9               | 893.9       | 10.13              | 15.48 | 25.70 | 863.9               | 893.9       | 1.36                                | 1.10 | 0.92 |
| 863.9               | 893.9       | 7.24                                                  | 6.84  | 6.61 | 884.2               | 914.2       | 10.54              | 16.86 | 20.08 | 884.2               | 914.2       | 1.41                                | 1.13 | 0.94 |
| 884.2               | 914.2       | 7.27                                                  | 6.88  | 6.63 | 924.9               | 954.9       | 12.02              | 16.76 | 19.35 | 924.9               | 954.9       | 1.37                                | 1.13 | 0.93 |
| 924.9               | 954.9       | 7.52                                                  | 7.06  | 6.79 | 945.2               | 975.2       | 11.44              | 18.79 | 19.93 | 945.2               | 975.2       | 1.39                                | 1.12 | 0.94 |
| 945.2               | 975.2       | 7.62                                                  | 7.14  | 6.86 | 985.8               | 1015.8      | 14.46              | 14.59 | 16.58 | 985.8               | 1015.8      | 1.30                                | 1.05 | 0.89 |
| 985.8               | 1015.8      | 7.95                                                  | 7.45  | 7.11 | 1006.2              | 1036.2      | 13.16              | 13.44 | 14.04 | 1006.2              | 1036.2      | 1.29                                | 1.07 | 0.90 |
| 1006.2              | 1036.2      | 8.11                                                  | 7.59  | 7.24 | 1046.8              | 1076.8      | 10.12              | 11.20 | 12.42 | 1046.8              | 1076.8      | 1.18                                | 0.99 | 0.81 |
| 1046.8              | 1076.8      | 8.48                                                  | 7.92  | 7.57 | 1067.1              | 1097.1      | 9.58               | 10.53 | 11.80 | 1067.1              | 1097.1      | 1.12                                | 0.94 | 0.80 |
| 1067.1              | 1097.1      | 8.72                                                  | 8.16  | 7.77 | 1107.8              | 1137.8      | 8.15               | 9.27  | 10.44 | 1107.8              | 1137.8      | 0.99                                | 0.85 | 0.73 |
| 1128.1              | 1158.1      | 9.45                                                  | 8.86  | 8.44 | 1128.1              | 1158.1      | 8.03               | 8.56  | 10.01 | 1128.1              | 1158.1      | 0.92                                | 0.79 | 0.68 |
| 1168.8              | 1198.8      | 9.94                                                  | 9.34  | 8.92 | 1168.8              | 1198.8      | 7.24               | 8.26  | 9.29  | 1168.8              | 1198.8      | 0.88                                | 0.76 | 0.66 |
| 1189.1              | 1219.1      | 10.15                                                 | 9.57  | 9.14 | 1189.1              | 1219.1      | 7.59               | 8.59  | 9.21  | 1189.1              | 1219.1      | 0.86                                | 0.75 | 0.65 |
| 1229.8              | 1259.8      | 10.54                                                 | 9.99  | 9.58 | 1229.8              | 1259.8      | 8.11               | 9.04  | 10.53 | 1229.8              | 1259.8      | 0.82                                | 0.73 | 0.66 |
| 1250.1              | 1280.1      | 10.74                                                 | 10.19 | 9.81 | 1250.1              | 1280.1      | 9.10               | 9.74  | 11.99 | 1250.1              | 1280.1      | 0.84                                | 0.74 | 0.67 |

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# Frequency Mixer

**JMS-1**

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=250.1MHz<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)=500.1MHz<br>(dB) |
|----------------------|-------------|-----------------------------------------------------------------|----------------------|-------------|----------------------------------------------------------------|----------------------|-------------|-----------------------------------------------------------------|
|                      |             | @LO (dBm)                                                       |                      |             | @LO (dBm)                                                      |                      |             | @LO (dBm)                                                       |
|                      |             | +7                                                              |                      |             | +7                                                             |                      |             | +7                                                              |
| 240.0                | 10.1        | 5.97                                                            | 10.0                 | 20.1        | 5.51                                                           | 490.0                | 10.1        | 6.21                                                            |
| 234.1                | 16.0        | 5.95                                                            | 22.3                 | 32.4        | 5.48                                                           | 477.7                | 22.4        | 6.14                                                            |
| 228.2                | 21.9        | 5.89                                                            | 34.6                 | 44.7        | 5.50                                                           | 465.4                | 34.7        | 6.09                                                            |
| 222.3                | 27.8        | 5.88                                                            | 46.9                 | 57.0        | 5.56                                                           | 453.1                | 47.0        | 6.08                                                            |
| 216.4                | 33.7        | 5.87                                                            | 59.2                 | 69.3        | 5.53                                                           | 440.8                | 59.3        | 6.11                                                            |
| 210.5                | 39.6        | 5.84                                                            | 71.5                 | 81.6        | 5.63                                                           | 428.5                | 71.6        | 6.09                                                            |
| 204.6                | 45.5        | 5.86                                                            | 83.8                 | 93.9        | 5.61                                                           | 416.2                | 83.9        | 6.04                                                            |
| 198.7                | 51.4        | 5.85                                                            | 96.2                 | 106.3       | 5.61                                                           | 403.8                | 96.3        | 6.00                                                            |
| 192.8                | 57.3        | 5.86                                                            | 108.5                | 118.6       | 5.62                                                           | 391.5                | 108.6       | 5.95                                                            |
| 186.9                | 63.2        | 5.83                                                            | 120.8                | 130.9       | 5.61                                                           | 379.2                | 120.9       | 5.94                                                            |
| 181.0                | 69.1        | 5.85                                                            | 133.1                | 143.2       | 5.62                                                           | 366.9                | 133.2       | 5.93                                                            |
| 175.1                | 75.0        | 5.87                                                            | 145.4                | 155.5       | 5.68                                                           | 354.6                | 145.5       | 5.91                                                            |
| 169.2                | 80.9        | 5.81                                                            | 157.7                | 167.8       | 5.71                                                           | 342.3                | 157.8       | 5.92                                                            |
| 163.3                | 86.8        | 5.84                                                            | 170.0                | 180.1       | 5.74                                                           | 330.0                | 170.1       | 5.93                                                            |
| 157.4                | 92.7        | 5.84                                                            | 182.3                | 192.4       | 5.74                                                           | 317.7                | 182.4       | 5.93                                                            |
| 151.5                | 98.6        | 5.80                                                            | 194.6                | 204.7       | 5.72                                                           | 305.4                | 194.7       | 5.93                                                            |
| 145.6                | 104.5       | 5.80                                                            | 206.9                | 217.0       | 5.75                                                           | 293.1                | 207.0       | 5.90                                                            |
| 139.7                | 110.4       | 5.79                                                            | 219.2                | 229.3       | 5.79                                                           | 280.8                | 219.3       | 5.89                                                            |
| 133.8                | 116.3       | 5.77                                                            | 231.5                | 241.6       | 5.77                                                           | 268.5                | 231.6       | 5.91                                                            |
| 127.9                | 122.2       | 5.75                                                            | 243.8                | 253.9       | 5.80                                                           | 256.2                | 243.9       | 5.92                                                            |
| 122.1                | 128.0       | 5.74                                                            | 256.2                | 266.3       | 5.85                                                           | 243.8                | 256.3       | 5.94                                                            |
| 116.2                | 133.9       | 5.73                                                            | 268.5                | 278.6       | 5.85                                                           | 231.5                | 268.6       | 5.95                                                            |
| 110.3                | 139.8       | 5.77                                                            | 280.8                | 290.9       | 5.86                                                           | 219.2                | 280.9       | 5.93                                                            |
| 104.4                | 145.7       | 5.73                                                            | 293.1                | 303.2       | 5.88                                                           | 206.9                | 293.2       | 5.93                                                            |
| 98.5                 | 151.6       | 5.75                                                            | 305.4                | 315.5       | 5.88                                                           | 194.6                | 305.5       | 5.90                                                            |
| 92.6                 | 157.5       | 5.73                                                            | 317.7                | 327.8       | 5.91                                                           | 182.3                | 317.8       | 5.88                                                            |
| 86.7                 | 163.4       | 5.74                                                            | 330.0                | 340.1       | 5.92                                                           | 170.0                | 330.1       | 5.88                                                            |
| 80.8                 | 169.3       | 5.76                                                            | 342.3                | 352.4       | 5.93                                                           | 157.7                | 342.4       | 5.88                                                            |
| 74.9                 | 175.2       | 5.75                                                            | 354.6                | 364.7       | 5.96                                                           | 145.4                | 354.7       | 5.90                                                            |
| 69.0                 | 181.1       | 5.73                                                            | 366.9                | 377.0       | 5.95                                                           | 133.1                | 367.0       | 5.92                                                            |
| 63.1                 | 187.0       | 5.73                                                            | 379.2                | 389.3       | 5.96                                                           | 120.8                | 379.3       | 5.90                                                            |
| 57.2                 | 192.9       | 5.72                                                            | 391.5                | 401.6       | 5.95                                                           | 108.5                | 391.6       | 5.90                                                            |
| 51.3                 | 198.8       | 5.72                                                            | 403.8                | 413.9       | 5.91                                                           | 96.2                 | 403.9       | 5.91                                                            |
| 45.4                 | 204.7       | 5.73                                                            | 416.2                | 426.3       | 5.94                                                           | 83.8                 | 416.3       | 5.90                                                            |
| 39.5                 | 210.6       | 5.74                                                            | 428.5                | 438.6       | 5.98                                                           | 71.5                 | 428.6       | 5.93                                                            |
| 33.6                 | 216.5       | 5.73                                                            | 440.8                | 450.9       | 6.01                                                           | 59.2                 | 440.9       | 5.94                                                            |
| 27.7                 | 222.4       | 5.73                                                            | 453.1                | 463.2       | 6.01                                                           | 46.9                 | 453.2       | 5.92                                                            |
| 21.8                 | 228.3       | 5.74                                                            | 465.4                | 475.5       | 6.02                                                           | 34.6                 | 465.5       | 5.95                                                            |
| 15.9                 | 234.2       | 5.71                                                            | 477.7                | 487.8       | 6.01                                                           | 22.3                 | 477.8       | 5.93                                                            |
| 10.0                 | 240.1       | 5.81                                                            | 490.0                | 500.1       | 6.02                                                           | 10.0                 | 490.1       | 5.96                                                            |

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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   |
| 0.5         | 77.47                   | 89.00 | 86.40 | 58.57                   | 64.40 | 71.90 |
| 1.0         | 76.77                   | 82.65 | 81.16 | 59.07                   | 64.35 | 70.66 |
| 2.0         | 74.40                   | 76.59 | 75.41 | 58.90                   | 63.49 | 66.01 |
| 5.0         | 68.98                   | 68.78 | 67.98 | 57.58                   | 59.68 | 59.61 |
| 10.0        | 63.87                   | 63.45 | 62.82 | 55.47                   | 55.38 | 54.46 |
| 50.8        | 59.00                   | 59.82 | 60.61 | 52.56                   | 51.08 | 50.21 |
| 132.1       | 49.81                   | 50.75 | 51.33 | 47.86                   | 46.48 | 44.78 |
| 172.7       | 47.13                   | 47.89 | 48.53 | 47.46                   | 45.40 | 43.33 |
| 213.4       | 45.21                   | 46.03 | 46.52 | 46.24                   | 43.93 | 42.05 |
| 254.0       | 43.37                   | 44.09 | 44.57 | 44.75                   | 42.70 | 40.70 |
| 274.4       | 42.66                   | 43.25 | 43.76 | 44.24                   | 42.05 | 40.29 |
| 315.0       | 41.34                   | 42.15 | 42.68 | 42.01                   | 40.51 | 39.08 |
| 376.0       | 39.26                   | 39.64 | 40.11 | 39.51                   | 38.77 | 37.63 |
| 396.3       | 38.81                   | 39.24 | 39.75 | 38.57                   | 38.40 | 37.55 |
| 437.0       | 38.32                   | 38.69 | 39.22 | 35.96                   | 36.45 | 36.18 |
| 457.3       | 38.11                   | 38.62 | 39.00 | 35.19                   | 35.69 | 35.72 |
| 498.0       | 37.40                   | 37.98 | 38.32 | 33.58                   | 33.96 | 34.17 |
| 518.3       | 36.95                   | 37.57 | 37.79 | 33.39                   | 33.61 | 33.63 |
| 559.0       | 35.99                   | 36.62 | 36.92 | 32.62                   | 32.75 | 32.77 |
| 579.3       | 35.25                   | 35.87 | 36.30 | 32.60                   | 32.97 | 32.84 |
| 619.9       | 34.15                   | 34.71 | 35.17 | 31.79                   | 32.94 | 32.66 |
| 640.3       | 33.40                   | 34.07 | 34.63 | 31.22                   | 33.10 | 33.19 |
| 680.9       | 32.52                   | 33.24 | 33.91 | 29.98                   | 32.44 | 33.70 |
| 741.9       | 31.70                   | 32.55 | 33.27 | 28.19                   | 30.59 | 32.76 |
| 762.2       | 31.60                   | 32.46 | 33.24 | 27.72                   | 30.03 | 32.20 |
| 802.9       | 31.57                   | 32.57 | 33.36 | 26.71                   | 28.79 | 30.81 |
| 823.2       | 31.76                   | 32.77 | 33.58 | 26.19                   | 28.03 | 29.88 |
| 863.9       | 31.89                   | 32.86 | 33.61 | 25.30                   | 26.74 | 28.40 |
| 884.2       | 31.86                   | 32.67 | 33.19 | 24.92                   | 26.19 | 27.69 |
| 924.9       | 31.41                   | 32.01 | 32.33 | 24.42                   | 25.42 | 26.70 |
| 945.2       | 31.05                   | 31.42 | 31.69 | 24.43                   | 25.33 | 26.51 |
| 985.8       | 30.18                   | 30.36 | 30.46 | 24.69                   | 25.41 | 26.51 |
| 1006.2      | 29.95                   | 29.97 | 30.18 | 24.84                   | 25.54 | 26.58 |
| 1046.8      | 29.56                   | 29.37 | 29.48 | 24.99                   | 25.96 | 27.05 |
| 1067.1      | 29.29                   | 29.00 | 28.98 | 25.10                   | 26.20 | 27.36 |
| 1128.1      | 29.01                   | 28.59 | 28.31 | 24.54                   | 26.23 | 27.77 |
| 1168.8      | 28.71                   | 28.22 | 27.99 | 24.13                   | 26.12 | 28.11 |
| 1189.1      | 28.47                   | 28.02 | 27.75 | 23.82                   | 25.81 | 27.93 |
| 1229.8      | 28.02                   | 27.64 | 27.42 | 23.30                   | 25.39 | 27.76 |
| 1250.1      | 27.60                   | 27.32 | 27.10 | 23.08                   | 25.20 | 27.68 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +4                      | +7    | +10   |
| 10.1                | 40.1        | 54.11                   | 44.61 | 45.41 |
| 50.8                | 80.8        | 35.59                   | 36.10 | 35.85 |
| 91.4                | 121.4       | 31.21                   | 31.33 | 31.61 |
| 132.1               | 162.1       | 28.67                   | 28.81 | 29.26 |
| 172.7               | 202.7       | 27.07                   | 27.30 | 27.53 |
| 213.4               | 243.4       | 26.21                   | 26.60 | 26.87 |
| 254.0               | 284.0       | 25.98                   | 26.06 | 26.35 |
| 274.4               | 304.4       | 25.80                   | 26.17 | 26.21 |
| 315.0               | 345.0       | 26.00                   | 26.44 | 26.97 |
| 335.3               | 365.3       | 25.95                   | 26.63 | 27.37 |
| 376.0               | 406.0       | 26.25                   | 26.79 | 27.34 |
| 396.3               | 426.3       | 26.54                   | 27.03 | 27.40 |
| 437.0               | 467.0       | 26.83                   | 27.09 | 27.30 |
| 457.3               | 487.3       | 26.81                   | 27.13 | 27.38 |
| 498.0               | 528.0       | 25.12                   | 25.82 | 26.38 |
| 518.3               | 548.3       | 23.65                   | 24.33 | 24.87 |
| 559.0               | 589.0       | 20.73                   | 21.16 | 21.61 |
| 579.3               | 609.3       | 19.47                   | 19.68 | 20.00 |
| 619.9               | 649.9       | 17.50                   | 17.52 | 17.62 |
| 640.3               | 670.3       | 16.77                   | 16.67 | 16.68 |
| 680.9               | 710.9       | 15.65                   | 15.47 | 15.46 |
| 701.2               | 731.2       | 15.24                   | 15.06 | 15.00 |
| 741.9               | 771.9       | 14.52                   | 14.28 | 14.15 |
| 762.2               | 792.2       | 14.16                   | 14.02 | 13.89 |
| 802.9               | 832.9       | 13.61                   | 13.44 | 13.37 |
| 823.2               | 853.2       | 13.40                   | 13.26 | 13.20 |
| 863.9               | 893.9       | 13.02                   | 13.02 | 13.01 |
| 884.2               | 914.2       | 12.91                   | 12.91 | 12.95 |
| 924.9               | 954.9       | 12.65                   | 12.66 | 12.82 |
| 945.2               | 975.2       | 12.55                   | 12.60 | 12.71 |
| 985.8               | 1015.8      | 12.40                   | 12.47 | 12.59 |
| 1006.2              | 1036.2      | 12.32                   | 12.38 | 12.59 |
| 1046.8              | 1076.8      | 12.09                   | 12.25 | 12.38 |
| 1067.1              | 1097.1      | 12.00                   | 12.19 | 12.28 |
| 1107.8              | 1137.8      | 11.59                   | 11.82 | 12.01 |
| 1128.1              | 1158.1      | 11.43                   | 11.63 | 11.79 |
| 1168.8              | 1198.8      | 10.97                   | 11.21 | 11.41 |
| 1189.1              | 1219.1      | 10.73                   | 10.98 | 11.11 |
| 1229.8              | 1259.8      | 10.32                   | 10.46 | 10.62 |
| 1250.1              | 1280.1      | 10.13                   | 10.25 | 10.31 |

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## 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=500.1MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|------|------|----------------------|---------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |      |      |                      | @LO (dBm)                       |      |      |
|                     |             | +4              | +7   | +10  |             | +4              | +7   | +10  |                      | +4                              | +7   | +10  |
| 0.5                 | 30.5        | 1.13            | 1.11 | 1.12 | 0.5         | 1.58            | 2.27 | 3.21 | 5.0                  | 1.41                            | 1.24 | 1.12 |
| 1.0                 | 31.0        | 1.10            | 1.05 | 1.07 | 1.0         | 1.57            | 2.27 | 3.08 | 10.0                 | 1.41                            | 1.25 | 1.13 |
| 2.0                 | 32.0        | 1.09            | 1.02 | 1.05 | 2.0         | 1.68            | 2.43 | 3.34 | 22.6                 | 1.58                            | 1.36 | 1.28 |
| 5.0                 | 35.0        | 1.09            | 1.01 | 1.05 | 5.0         | 1.75            | 2.52 | 3.51 | 35.1                 | 1.54                            | 1.38 | 1.28 |
| 10.0                | 40.0        | 1.09            | 1.01 | 1.05 | 10.0        | 1.77            | 2.50 | 3.52 | 47.7                 | 1.63                            | 1.45 | 1.28 |
| 50.8                | 80.8        | 1.03            | 1.04 | 1.09 | 50.8        | 1.87            | 2.75 | 3.88 | 60.3                 | 1.65                            | 1.46 | 1.30 |
| 132.1               | 162.1       | 1.02            | 1.07 | 1.13 | 132.1       | 1.85            | 2.68 | 3.76 | 72.8                 | 1.67                            | 1.46 | 1.31 |
| 172.7               | 202.7       | 1.02            | 1.09 | 1.15 | 172.7       | 1.77            | 2.52 | 3.48 | 85.4                 | 1.63                            | 1.45 | 1.30 |
| 213.4               | 243.4       | 1.04            | 1.11 | 1.18 | 213.4       | 1.83            | 2.61 | 3.60 | 97.9                 | 1.59                            | 1.42 | 1.29 |
| 254.0               | 284.0       | 1.06            | 1.13 | 1.19 | 254.0       | 1.84            | 2.60 | 3.58 | 110.5                | 1.58                            | 1.40 | 1.28 |
| 274.4               | 304.4       | 1.06            | 1.14 | 1.20 | 274.4       | 1.82            | 2.55 | 3.48 | 123.1                | 1.59                            | 1.42 | 1.30 |
| 315.0               | 345.0       | 1.11            | 1.19 | 1.25 | 315.0       | 1.87            | 2.64 | 3.60 | 135.6                | 1.64                            | 1.45 | 1.31 |
| 335.3               | 365.3       | 1.12            | 1.20 | 1.27 | 335.3       | 1.90            | 2.67 | 3.65 | 148.2                | 1.63                            | 1.46 | 1.31 |
| 376.0               | 406.0       | 1.15            | 1.24 | 1.30 | 376.0       | 1.87            | 2.59 | 3.50 | 160.8                | 1.64                            | 1.46 | 1.31 |
| 396.3               | 426.3       | 1.17            | 1.25 | 1.31 | 396.3       | 1.90            | 2.62 | 3.54 | 173.3                | 1.62                            | 1.45 | 1.31 |
| 437.0               | 467.0       | 1.22            | 1.28 | 1.34 | 437.0       | 1.96            | 2.70 | 3.63 | 185.9                | 1.60                            | 1.42 | 1.30 |
| 457.3               | 487.3       | 1.24            | 1.31 | 1.37 | 457.3       | 1.95            | 2.66 | 3.57 | 198.5                | 1.60                            | 1.43 | 1.31 |
| 498.0               | 528.0       | 1.33            | 1.41 | 1.48 | 498.0       | 1.97            | 2.68 | 3.58 | 211.0                | 1.59                            | 1.43 | 1.32 |
| 518.3               | 548.3       | 1.35            | 1.44 | 1.51 | 518.3       | 2.00            | 2.72 | 3.62 | 223.6                | 1.61                            | 1.44 | 1.33 |
| 559.0               | 589.0       | 1.43            | 1.53 | 1.61 | 559.0       | 2.03            | 2.71 | 3.58 | 236.2                | 1.62                            | 1.46 | 1.34 |
| 579.3               | 609.3       | 1.46            | 1.56 | 1.64 | 579.3       | 2.05            | 2.73 | 3.59 | 248.7                | 1.66                            | 1.48 | 1.36 |
| 619.9               | 649.9       | 1.51            | 1.61 | 1.70 | 619.9       | 2.12            | 2.82 | 3.69 | 261.3                | 1.67                            | 1.49 | 1.37 |
| 640.3               | 670.3       | 1.52            | 1.62 | 1.70 | 640.3       | 2.14            | 2.82 | 3.68 | 273.8                | 1.66                            | 1.49 | 1.37 |
| 680.9               | 710.9       | 1.54            | 1.64 | 1.72 | 680.9       | 2.15            | 2.83 | 3.68 | 286.4                | 1.63                            | 1.47 | 1.36 |
| 741.9               | 771.9       | 1.55            | 1.62 | 1.69 | 741.9       | 2.20            | 2.86 | 3.70 | 299.0                | 1.61                            | 1.44 | 1.34 |
| 762.2               | 792.2       | 1.57            | 1.63 | 1.70 | 762.2       | 2.20            | 2.85 | 3.67 | 311.5                | 1.59                            | 1.44 | 1.34 |
| 802.9               | 832.9       | 1.60            | 1.66 | 1.71 | 802.9       | 2.22            | 2.87 | 3.70 | 324.1                | 1.61                            | 1.45 | 1.35 |
| 823.2               | 853.2       | 1.64            | 1.69 | 1.74 | 823.2       | 2.22            | 2.87 | 3.69 | 336.7                | 1.64                            | 1.48 | 1.38 |
| 863.9               | 893.9       | 1.72            | 1.77 | 1.82 | 863.9       | 2.22            | 2.85 | 3.66 | 349.2                | 1.67                            | 1.51 | 1.40 |
| 884.2               | 914.2       | 1.80            | 1.84 | 1.89 | 884.2       | 2.26            | 2.88 | 3.69 | 361.8                | 1.67                            | 1.53 | 1.41 |
| 924.9               | 954.9       | 1.98            | 2.01 | 2.05 | 924.9       | 2.30            | 2.90 | 3.70 | 374.4                | 1.68                            | 1.52 | 1.41 |
| 945.2               | 975.2       | 2.10            | 2.13 | 2.16 | 945.2       | 2.33            | 2.92 | 3.70 | 386.9                | 1.68                            | 1.52 | 1.42 |
| 985.8               | 1015.8      | 2.39            | 2.40 | 2.42 | 985.8       | 2.40            | 2.97 | 3.74 | 399.5                | 1.68                            | 1.52 | 1.42 |
| 1006.2              | 1036.2      | 2.54            | 2.54 | 2.55 | 1006.2      | 2.44            | 3.00 | 3.76 | 412.1                | 1.70                            | 1.54 | 1.44 |
| 1046.8              | 1076.8      | 2.88            | 2.87 | 2.87 | 1046.8      | 2.49            | 3.02 | 3.76 | 424.6                | 1.69                            | 1.54 | 1.45 |
| 1067.1              | 1097.1      | 3.06            | 3.04 | 3.02 | 1067.1      | 2.54            | 3.06 | 3.79 | 437.2                | 1.69                            | 1.54 | 1.45 |
| 1128.1              | 1158.1      | 3.56            | 3.51 | 3.45 | 1128.1      | 2.64            | 3.11 | 3.79 | 449.7                | 1.71                            | 1.56 | 1.46 |
| 1168.8              | 1198.8      | 3.76            | 3.70 | 3.64 | 1168.8      | 2.71            | 3.15 | 3.83 | 462.3                | 1.73                            | 1.59 | 1.50 |
| 1189.1              | 1219.1      | 3.82            | 3.76 | 3.69 | 1189.1      | 2.73            | 3.16 | 3.82 | 474.9                | 1.78                            | 1.64 | 1.53 |
| 1229.8              | 1259.8      | 3.94            | 3.86 | 3.78 | 1229.8      | 2.78            | 3.16 | 3.79 | 487.4                | 1.81                            | 1.66 | 1.57 |
| 1250.1              | 1280.1      | 3.95            | 3.89 | 3.79 | 1250.1      | 2.81            | 3.17 | 3.81 | 500.0                | 1.86                            | 1.86 | 1.87 |

## Harmonics Tables

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | 14  | 24  | 14  | 31  | 15  | 30  | 19  | 45  | 29  | 39  |
| 1      | -      | 21     | +0  | 30  | 12  | 33  | 18  | 32  | 23  | 49  | 41  | 48  |
| 2      | >100   | 72     | 52  | 67  | 52  | 69  | 52  | 66  | 49  | 60  | 51  | 71  |
| 3      | >100   | 70     | 77  | 75  | 72  | >80 | 64  | 76  | 67  | >80 | 67  | >80 |
| 4      | >100   | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 5      | >100   | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 6      | >100   | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 7      | >100   | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 8      | >100   | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 9      | >100   | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | 66  | >80 | >80 |
| 10     | >100   | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | 70  | >80 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

### LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -14.00 dBm.  
LO IN: 280.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -19.92 dBm

RF HARMONICS ORDER

|        | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0      | -      | -      | 23  | 34  | 26  | 44  | 27  | 45  | 32  | 63  | 45  | 55  |
| 1      | -      | 21     | +0  | 31  | 12  | 34  | 19  | 34  | 26  | 51  | 43  | 57  |
| 2      | 93     | 62     | 45  | 68  | 45  | 60  | 45  | 58  | 44  | 56  | 47  | 68  |
| 3      | >100   | 49     | 51  | 55  | 48  | 56  | 48  | 53  | 45  | 56  | 46  | 63  |
| 4      | >100   | 72     | 72  | 72  | 67  | 72  | 65  | 74  | 60  | 74  | 58  | 71  |
| 5      | >100   | 67     | 70  | 71  | 60  | 76  | 57  | 73  | 56  | 83  | 58  | 70  |
| 6      | >100   | 87     | 80  | 83  | 86  | 83  | 85  | 87  | 82  | 86  | 81  | >90 |
| 7      | >100   | >90    | 80  | >90 | 83  | >90 | >90 | >90 | 88  | 84  | 72  | 81  |
| 8      | >100   | >90    | >90 | >90 | >90 | >90 | >90 | >90 | >90 | >90 | >90 | >90 |
| 9      | >100   | >90    | >90 | >90 | 84  | 89  | 83  | >90 | 83  | 84  | 87  | >90 |
| 10     | >100   | >90    | >90 | >90 | >90 | >90 | >90 | >90 | >90 | >90 | 76  | >90 |
| RF CAL | 0      | 1      | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |     |

### LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -4.00 dBm.  
LO IN: 280.01 MHz; +7.00 dBm  
IF OUT: 29.91 MHz; -9.93 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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