

# Frequency Mixer

# JMS-2H

## Typical Performance Data

| RF (IN) (MHz) | LO (MHz) | CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) |      |      | RF (IN) (MHz) | LO (MHz) | IP3 INPUT (dBm) |       |       | RF (IN) (MHz) | LO (MHz) | COMPRESSION @RF IN=+14dBm (dB) |      |      |
|---------------|----------|--|------|------|---------------|----------|-----------------|-------|-------|---------------|----------|--------------------------------|------|------|
|               |          | @LO (dBm)                                    |      |      |               |          | @LO (dBm)       |       |       |               |          | @LO (dBm)                      |      |      |
|               |          | +14  | +17  | +20  |               |          | +14             | +17   | +20   |               |          | +14                            | +17  | +20  |
| 20.1          | 50.1     | 8.11   | 7.09 | 6.64 | 20.1          | 50.1     | 21.92           | 26.25 | 30.17 | 20.1          | 50.1     | 0.25                           | 0.07 | 0.07 |
| 60.1          | 90.1     | 8.23   | 7.26 | 6.79 | 60.1          | 90.1     | 21.73           | 24.92 | 27.16 | 60.1          | 90.1     | 0.31                           | 0.04 | 0.03 |
| 100.1         | 130.1    | 8.12   | 7.14 | 6.71 | 100.1         | 130.1    | 22.95           | 26.98 | 27.14 | 100.1         | 130.1    | 0.23                           | 0.05 | 0.04 |
| 140.1         | 170.1    | 8.25   | 7.24 | 6.75 | 140.1         | 170.1    | 21.90           | 25.44 | 27.04 | 140.1         | 170.1    | 0.21                           | 0.05 | 0.07 |
| 180.1         | 210.1    | 8.16   | 7.11 | 6.72 | 180.1         | 210.1    | 23.06           | 25.61 | 28.15 | 180.1         | 210.1    | 0.18                           | 0.06 | 0.05 |
| 220.1         | 250.1    | 8.16   | 7.07 | 6.69 | 220.1         | 250.1    | 21.68           | 24.60 | 31.09 | 220.1         | 250.1    | 0.17                           | 0.13 | 0.09 |
| 260.1         | 290.1    | 8.01   | 7.03 | 6.70 | 260.1         | 290.1    | 22.25           | 25.58 | 28.36 | 260.1         | 290.1    | 0.29                           | 0.15 | 0.07 |
| 300.1         | 330.1    | 7.83   | 6.92 | 6.66 | 300.1         | 330.1    | 23.26           | 29.67 | 28.17 | 300.1         | 330.1    | 0.41                           | 0.20 | 0.08 |
| 340.1         | 370.1    | 7.91   | 7.00 | 6.72 | 340.1         | 370.1    | 21.66           | 26.95 | 26.97 | 340.1         | 370.1    | 0.38                           | 0.16 | 0.08 |
| 380.1         | 410.1    | 7.69   | 6.94 | 6.72 | 380.1         | 410.1    | 23.89           | 27.24 | 27.24 | 380.1         | 410.1    | 0.54                           | 0.15 | 0.06 |
| 420.1         | 450.1    | 7.64   | 6.96 | 6.72 | 420.1         | 450.1    | 23.41           | 25.94 | 27.04 | 420.1         | 450.1    | 0.58                           | 0.19 | 0.08 |
| 460.1         | 490.1    | 7.63   | 7.00 | 6.75 | 460.1         | 490.1    | 24.83           | 25.07 | 26.47 | 460.1         | 490.1    | 0.59                           | 0.14 | 0.07 |
| 500.1         | 530.1    | 7.52   | 6.96 | 6.72 | 500.1         | 530.1    | 29.29           | 25.17 | 25.40 | 500.1         | 530.1    | 0.71                           | 0.20 | 0.10 |
| 540.1         | 570.1    | 7.67   | 7.10 | 6.83 | 540.1         | 570.1    | 25.06           | 25.09 | 25.01 | 540.1         | 570.1    | 0.59                           | 0.15 | 0.07 |
| 580.1         | 610.1    | 7.68   | 7.13 | 6.84 | 580.1         | 610.1    | 24.48           | 25.34 | 26.93 | 580.1         | 610.1    | 0.61                           | 0.14 | 0.08 |
| 620.1         | 650.1    | 7.75   | 7.20 | 6.88 | 620.1         | 650.1    | 23.47           | 25.12 | 28.67 | 620.1         | 650.1    | 0.68                           | 0.17 | 0.14 |
| 660.1         | 690.1    | 7.81   | 7.30 | 6.95 | 660.1         | 690.1    | 23.34           | 23.41 | 26.07 | 660.1         | 690.1    | 0.67                           | 0.14 | 0.14 |
| 700.1         | 730.1    | 7.78   | 7.33 | 6.99 | 700.1         | 730.1    | 23.99           | 23.19 | 24.31 | 700.1         | 730.1    | 0.72                           | 0.20 | 0.16 |
| 740.1         | 770.1    | 7.89   | 7.46 | 7.15 | 740.1         | 770.1    | 24.39           | 23.80 | 24.11 | 740.1         | 770.1    | 0.72                           | 0.19 | 0.13 |
| 780.1         | 810.1    | 7.91   | 7.46 | 7.16 | 780.1         | 810.1    | 23.33           | 24.40 | 25.38 | 780.1         | 810.1    | 0.77                           | 0.28 | 0.19 |
| 820.1         | 850.1    | 8.03   | 7.54 | 7.21 | 820.1         | 850.1    | 21.89           | 24.11 | 25.83 | 820.1         | 850.1    | 0.85                           | 0.36 | 0.26 |
| 860.1         | 890.1    | 8.10   | 7.54 | 7.16 | 860.1         | 890.1    | 20.68           | 24.71 | 25.57 | 860.1         | 890.1    | 0.85                           | 0.47 | 0.35 |
| 900.1         | 930.1    | 8.22   | 7.53 | 7.16 | 900.1         | 930.1    | 18.80           | 24.70 | 27.30 | 900.1         | 930.1    | 0.94                           | 0.60 | 0.42 |
| 920.1         | 950.1    | 8.32   | 7.60 | 7.20 | 920.1         | 950.1    | 18.41           | 24.62 | 28.14 | 920.1         | 950.1    | 0.81                           | 0.59 | 0.45 |
| 960.1         | 990.1    | 8.50   | 7.66 | 7.25 | 960.1         | 990.1    | 16.57           | 23.60 | 29.52 | 960.1         | 990.1    | 0.78                           | 0.68 | 0.53 |
| 980.1         | 1010.1   | 8.63   | 7.75 | 7.29 | 980.1         | 1010.1   | 15.88           | 20.91 | 27.86 | 980.1         | 1010.1   | 0.80                           | 0.68 | 0.54 |
| 1020.1        | 1050.1   | 8.85   | 7.93 | 7.40 | 1020.1        | 1050.1   | 15.36           | 18.79 | 25.07 | 1020.1        | 1050.1   | 0.79                           | 0.69 | 0.59 |
| 1040.1        | 1070.1   | 8.95   | 8.07 | 7.44 | 1040.1        | 1070.1   | 15.12           | 16.93 | 23.23 | 1040.1        | 1070.1   | 0.72                           | 0.65 | 0.63 |
| 1080.1        | 1110.1   | 9.19   | 8.31 | 7.60 | 1080.1        | 1110.1   | 15.39           | 16.63 | 21.55 | 1080.1        | 1110.1   | 0.67                           | 0.60 | 0.64 |
| 1100.1        | 1130.1   | 9.27   | 8.47 | 7.73 | 1100.1        | 1130.1   | 15.36           | 16.19 | 19.70 | 1100.1        | 1130.1   | 0.59                           | 0.53 | 0.60 |
| 1140.1        | 1170.1   | 9.48   | 8.68 | 7.93 | 1140.1        | 1170.1   | 15.55           | 16.49 | 18.99 | 1140.1        | 1170.1   | 0.53                           | 0.45 | 0.56 |
| 1160.1        | 1190.1   | 9.60   | 8.82 | 8.03 | 1160.1        | 1190.1   | 15.55           | 16.21 | 18.56 | 1160.1        | 1190.1   | 0.50                           | 0.42 | 0.54 |
| 1200.1        | 1230.1   | 9.80   | 9.06 | 8.25 | 1200.1        | 1230.1   | 16.05           | 16.61 | 18.77 | 1200.1        | 1230.1   | 0.39                           | 0.29 | 0.45 |
| 1220.1        | 1250.1   | 9.94   | 9.17 | 8.35 | 1220.1        | 1250.1   | 16.05           | 16.78 | 18.94 | 1220.1        | 1250.1   | 0.34                           | 0.25 | 0.41 |
| 1260.1        | 1290.1   | 10.15  | 9.35 | 8.56 | 1260.1        | 1290.1   | 16.63           | 17.69 | 19.24 | 1260.1        | 1290.1   | 0.23                           | 0.18 | 0.33 |
| 1280.1        | 1310.1   | 10.36  | 9.50 | 8.70 | 1280.1        | 1310.1   | 16.84           | 18.42 | 20.00 | 1280.1        | 1310.1   | 0.10                           | 0.11 | 0.26 |
| 1320.1        | 1350.1   | 10.57  | 9.61 | 8.74 | 1320.1        | 1350.1   | 16.91           | 18.68 | 21.27 | 1320.1        | 1350.1   | 0.03                           | 0.11 | 0.30 |
| 1340.1        | 1370.1   | 10.74  | 9.69 | 8.77 | 1340.1        | 1370.1   | 17.04           | 18.82 | 21.46 | 1340.1        | 1370.1   | -0.08                          | 0.06 | 0.29 |
| 1380.1        | 1410.1   | 11.03  | 9.86 | 8.81 | 1380.1        | 1410.1   | 16.61           | 18.18 | 21.28 | 1380.1        | 1410.1   | -0.12                          | 0.11 | 0.44 |
| 1400.1        | 1430.1   | 11.08  | 9.82 | 8.70 | 1400.1        | 1430.1   | 16.66           | 18.33 | 22.53 | 1400.1        | 1430.1   | -0.10                          | 0.19 | 0.55 |

REV. X2

JMS-2H

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

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# Frequency Mixer

# JMS-2H

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=500.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=20.1MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=1000.1MHz<br>(dB) |
|----------------------|-------------|---|----------------------|-------------|--|----------------------|-------------|--|
|                      |             | @LO (dBm)   |                      |             | @LO (dBm)  |                      |             | @LO (dBm)  |
|                      |             | +17   |                      |             | +17  |                      |             | +17  |
| 460.0                | 40.1        | 7.05  | 10.0                 | 30.1        | 7.15   | 980.0                | 20.1        | 7.91   |
| 448.5                | 51.6        | 7.09  | 29.8                 | 49.9        | 7.07   | 960.2                | 39.9        | 7.79   |
| 436.9                | 63.2        | 7.21  | 49.6                 | 69.7        | 7.10   | 940.4                | 59.7        | 7.85   |
| 425.4                | 74.7        | 7.15  | 69.4                 | 89.5        | 7.22   | 920.6                | 79.5        | 7.79   |
| 413.8                | 86.3        | 7.12  | 89.2                 | 109.3       | 7.18   | 900.8                | 99.3        | 7.65   |
| 402.3                | 97.8        | 7.09  | 109.0                | 129.1       | 7.12   | 881.0                | 119.1       | 7.51   |
| 390.8                | 109.3       | 7.03  | 128.8                | 148.9       | 7.14   | 861.2                | 138.9       | 7.51   |
| 379.2                | 120.9       | 7.04  | 148.6                | 168.7       | 7.34   | 841.4                | 158.7       | 7.45   |
| 367.7                | 132.4       | 6.88  | 168.4                | 188.5       | 7.31   | 821.6                | 178.5       | 7.37   |
| 356.2                | 143.9       | 6.83  | 188.2                | 208.3       | 7.24   | 801.8                | 198.3       | 7.30   |
| 344.6                | 155.5       | 6.92  | 208.0                | 228.1       | 7.25   | 782.0                | 218.1       | 7.20   |
| 333.1                | 167.0       | 6.95  | 227.8                | 247.9       | 7.35   | 762.2                | 237.9       | 7.16   |
| 321.5                | 178.6       | 6.82  | 247.6                | 267.7       | 7.40   | 742.4                | 257.7       | 7.13   |
| 310.0                | 190.1       | 6.78  | 267.3                | 287.4       | 7.38   | 722.7                | 277.4       | 7.16   |
| 298.5                | 201.6       | 6.82  | 287.1                | 307.2       | 7.50   | 702.9                | 297.2       | 7.04   |
| 286.9                | 213.2       | 6.72  | 306.9                | 327.0       | 7.38   | 683.1                | 317.0       | 7.01   |
| 275.4                | 224.7       | 6.62  | 326.7                | 346.8       | 7.37   | 663.3                | 336.8       | 7.02   |
| 263.8                | 236.3       | 6.65  | 346.5                | 366.6       | 7.46   | 643.5                | 356.6       | 7.04   |
| 252.3                | 247.8       | 6.63  | 366.3                | 386.4       | 7.58   | 623.7                | 376.4       | 7.07   |
| 240.8                | 259.3       | 6.66  | 386.1                | 406.2       | 7.47   | 603.9                | 396.2       | 7.03   |
| 229.2                | 270.9       | 6.65  | 425.7                | 445.8       | 7.57   | 564.3                | 435.8       | 7.09   |
| 217.7                | 282.4       | 6.61  | 445.5                | 465.6       | 7.59   | 544.5                | 455.6       | 7.14   |
| 206.2                | 293.9       | 6.65  | 485.1                | 505.2       | 7.53   | 504.9                | 495.2       | 7.13   |
| 194.6                | 305.5       | 6.65  | 504.9                | 525.0       | 7.56   | 485.1                | 515.0       | 7.19   |
| 183.1                | 317.0       | 6.59  | 544.5                | 564.6       | 7.57   | 445.5                | 554.6       | 7.29   |
| 171.5                | 328.6       | 6.63  | 564.3                | 584.4       | 7.64   | 425.7                | 574.4       | 7.27   |
| 160.0                | 340.1       | 6.70  | 603.9                | 624.0       | 7.54   | 386.1                | 614.0       | 7.31   |
| 148.5                | 351.6       | 6.66  | 623.7                | 643.8       | 7.67   | 366.3                | 633.8       | 7.32   |
| 136.9                | 363.2       | 6.69  | 663.3                | 683.4       | 7.74   | 326.7                | 673.4       | 7.36   |
| 125.4                | 374.7       | 6.76  | 683.1                | 703.2       | 7.69   | 306.9                | 693.2       | 7.39   |
| 113.8                | 386.3       | 6.74  | 722.7                | 742.8       | 7.84   | 267.3                | 732.8       | 7.46   |
| 102.3                | 397.8       | 6.74  | 742.4                | 762.5       | 7.81   | 247.6                | 752.5       | 7.51   |
| 90.8                 | 409.3       | 6.76  | 782.0                | 802.1       | 7.74   | 208.0                | 792.1       | 7.56   |
| 79.2                 | 420.9       | 6.74  | 801.8                | 821.9       | 7.73   | 188.2                | 811.9       | 7.57   |
| 67.7                 | 432.4       | 6.82  | 841.4                | 861.5       | 7.70   | 148.6                | 851.5       | 7.70   |
| 56.2                 | 443.9       | 6.86  | 861.2                | 881.3       | 7.60   | 128.8                | 871.3       | 7.68   |
| 44.6                 | 455.5       | 6.83  | 900.8                | 920.9       | 7.52   | 89.2                 | 910.9       | 7.66   |
| 33.1                 | 467.0       | 6.89  | 920.6                | 940.7       | 7.45   | 69.4                 | 930.7       | 7.64   |
| 21.5                 | 478.6       | 6.95  | 960.2                | 980.3       | 7.41   | 29.8                 | 970.3       | 7.75   |
| 10.0                 | 490.1       | 7.00  | 980.0                | 1000.1      | 7.37   | 10.0                 | 990.1       | 7.64   |

# Frequency Mixer

# JMS-2H

## Typical Performance Data

| LO<br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF ISOLATION<br>(dB) |       |       |
|-------------|-------------------------|-------|-------|-------------------------|-------|-------|
|             | @LO (dBm)               |       |       | @LO (dBm)               |       |       |
|             | +14                     | +17   | +20   | +14                     | +17   | +20   |
| 20.1        | 66.92                   | 67.13 | 67.30 | 66.94                   | 63.20 | 63.52 |
| 60.1        | 57.91                   | 58.61 | 59.40 | 56.86                   | 55.91 | 55.21 |
| 100.1       | 53.77                   | 55.06 | 55.73 | 52.30                   | 51.66 | 51.45 |
| 140.1       | 51.22                   | 52.42 | 53.52 | 49.38                   | 49.06 | 48.70 |
| 180.1       | 49.50                   | 50.91 | 52.78 | 47.83                   | 47.75 | 47.48 |
| 220.1       | 47.88                   | 50.16 | 52.35 | 46.49                   | 46.50 | 46.59 |
| 260.1       | 47.13                   | 49.75 | 51.63 | 45.51                   | 45.78 | 45.56 |
| 300.1       | 46.82                   | 49.86 | 51.15 | 44.86                   | 45.15 | 44.70 |
| 340.1       | 46.29                   | 49.10 | 50.21 | 44.19                   | 44.48 | 43.82 |
| 380.1       | 46.71                   | 48.95 | 49.68 | 43.70                   | 43.59 | 43.11 |
| 420.1       | 46.33                   | 48.33 | 48.79 | 43.03                   | 42.87 | 42.33 |
| 460.1       | 45.95                   | 47.29 | 47.89 | 42.68                   | 42.32 | 42.38 |
| 500.1       | 45.56                   | 46.33 | 46.78 | 42.24                   | 41.30 | 41.53 |
| 540.1       | 44.84                   | 45.48 | 45.85 | 42.43                   | 41.65 | 40.59 |
| 580.1       | 44.05                   | 44.71 | 45.27 | 41.94                   | 42.03 | 41.17 |
| 620.1       | 43.07                   | 43.72 | 44.39 | 41.63                   | 41.74 | 42.21 |
| 660.1       | 42.10                   | 42.75 | 43.52 | 42.24                   | 40.92 | 42.07 |
| 700.1       | 40.78                   | 41.61 | 42.54 | 42.54                   | 40.39 | 40.30 |
| 740.1       | 39.72                   | 40.64 | 41.69 | 42.06                   | 40.71 | 39.53 |
| 780.1       | 38.50                   | 39.53 | 40.72 | 40.84                   | 40.58 | 39.23 |
| 820.1       | 37.55                   | 38.69 | 39.95 | 39.59                   | 40.35 | 39.05 |
| 860.1       | 36.90                   | 38.02 | 39.33 | 38.27                   | 40.97 | 41.28 |
| 900.1       | 36.12                   | 37.28 | 38.54 | 36.79                   | 40.00 | 41.67 |
| 920.1       | 35.98                   | 37.03 | 38.24 | 35.85                   | 39.18 | 41.36 |
| 960.1       | 35.44                   | 36.57 | 37.79 | 34.98                   | 37.13 | 39.31 |
| 980.1       | 35.34                   | 36.52 | 37.68 | 34.69                   | 36.37 | 38.77 |
| 1020.1      | 34.91                   | 36.34 | 37.35 | 34.65                   | 35.04 | 37.37 |
| 1040.1      | 34.67                   | 36.14 | 37.17 | 34.99                   | 34.82 | 36.99 |
| 1080.1      | 34.36                   | 35.96 | 36.94 | 35.11                   | 34.31 | 36.27 |
| 1100.1      | 33.93                   | 35.56 | 36.60 | 35.69                   | 34.88 | 36.24 |
| 1140.1      | 33.41                   | 35.12 | 36.14 | 35.20                   | 34.45 | 35.52 |
| 1160.1      | 33.05                   | 34.79 | 35.97 | 36.28                   | 35.49 | 35.85 |
| 1200.1      | 32.34                   | 34.06 | 35.22 | 35.80                   | 35.31 | 35.34 |
| 1220.1      | 31.96                   | 33.68 | 34.84 | 36.76                   | 36.23 | 35.48 |
| 1260.1      | 31.26                   | 32.92 | 34.10 | 36.98                   | 36.92 | 36.08 |
| 1280.1      | 30.82                   | 32.39 | 33.44 | 38.19                   | 38.01 | 36.44 |
| 1320.1      | 29.91                   | 31.34 | 32.24 | 38.78                   | 41.54 | 40.31 |
| 1340.1      | 29.47                   | 30.89 | 31.80 | 39.28                   | 44.55 | 42.72 |
| 1380.1      | 28.62                   | 29.76 | 30.57 | 37.19                   | 43.33 | 56.15 |
| 1400.1      | 28.17                   | 29.29 | 30.08 | 36.23                   | 40.59 | 46.14 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +14                     | +17   | +20   |
| 20.1                | 50.1        | 44.99                   | 44.88 | 43.59 |
| 60.1                | 90.1        | 36.49                   | 36.47 | 36.00 |
| 100.1               | 130.1       | 32.59                   | 32.03 | 31.71 |
| 140.1               | 170.1       | 29.92                   | 29.56 | 29.35 |
| 180.1               | 210.1       | 28.12                   | 27.78 | 27.55 |
| 220.1               | 250.1       | 26.86                   | 26.53 | 26.32 |
| 260.1               | 290.1       | 25.94                   | 25.62 | 25.47 |
| 300.1               | 330.1       | 25.23                   | 24.95 | 24.90 |
| 340.1               | 370.1       | 24.71                   | 24.58 | 24.48 |
| 380.1               | 410.1       | 24.17                   | 24.27 | 24.18 |
| 420.1               | 450.1       | 23.63                   | 23.75 | 23.82 |
| 460.1               | 490.1       | 23.26                   | 23.31 | 23.40 |
| 500.1               | 530.1       | 22.79                   | 22.79 | 22.83 |
| 540.1               | 570.1       | 22.57                   | 22.43 | 22.42 |
| 580.1               | 610.1       | 22.18                   | 22.00 | 21.92 |
| 620.1               | 650.1       | 21.39                   | 21.31 | 21.37 |
| 660.1               | 690.1       | 20.30                   | 20.28 | 20.46 |
| 700.1               | 730.1       | 19.18                   | 19.25 | 19.49 |
| 740.1               | 770.1       | 18.13                   | 18.19 | 18.44 |
| 780.1               | 810.1       | 17.23                   | 17.27 | 17.51 |
| 820.1               | 850.1       | 16.38                   | 16.36 | 16.57 |
| 860.1               | 890.1       | 15.68                   | 15.57 | 15.72 |
| 900.1               | 930.1       | 15.13                   | 15.00 | 15.08 |
| 920.1               | 950.1       | 14.99                   | 14.84 | 14.92 |
| 960.1               | 990.1       | 14.57                   | 14.42 | 14.41 |
| 980.1               | 1010.1      | 14.32                   | 14.21 | 14.18 |
| 1020.1              | 1050.1      | 13.92                   | 13.91 | 13.94 |
| 1040.1              | 1070.1      | 13.67                   | 13.75 | 13.74 |
| 1080.1              | 1110.1      | 13.42                   | 13.56 | 13.65 |
| 1100.1              | 1130.1      | 13.28                   | 13.46 | 13.68 |
| 1140.1              | 1170.1      | 12.94                   | 13.19 | 13.46 |
| 1160.1              | 1190.1      | 12.77                   | 12.98 | 13.27 |
| 1200.1              | 1230.1      | 12.45                   | 12.68 | 13.02 |
| 1220.1              | 1250.1      | 12.30                   | 12.52 | 12.84 |
| 1260.1              | 1290.1      | 11.98                   | 12.22 | 12.49 |
| 1280.1              | 1310.1      | 11.85                   | 12.09 | 12.34 |
| 1320.1              | 1350.1      | 11.56                   | 11.87 | 12.10 |
| 1340.1              | 1370.1      | 11.38                   | 11.72 | 12.00 |
| 1380.1              | 1410.1      | 11.16                   | 11.56 | 11.93 |
| 1400.1              | 1430.1      | 11.07                   | 11.57 | 12.00 |



# Frequency Mixer

# JMS-2H

## Typical Performance Data

| RF (IN)<br>(MHz) | LO<br>(MHz) | RF VSWR (:1) |      |      |
|------------------|-------------|--------------|------|------|
|                  |             | @LO (dBm)    |      |      |
|                  |             | +14          | +17  | +20  |
| 20.1             | 50.1        | 1.08         | 1.17 | 1.27 |
| 60.1             | 90.1        | 1.03         | 1.14 | 1.24 |
| 100.1            | 130.1       | 1.04         | 1.16 | 1.26 |
| 140.1            | 170.1       | 1.04         | 1.14 | 1.25 |
| 180.1            | 210.1       | 1.05         | 1.16 | 1.27 |
| 220.1            | 250.1       | 1.05         | 1.16 | 1.28 |
| 260.1            | 290.1       | 1.06         | 1.18 | 1.30 |
| 300.1            | 330.1       | 1.06         | 1.21 | 1.33 |
| 340.1            | 370.1       | 1.04         | 1.20 | 1.31 |
| 380.1            | 410.1       | 1.07         | 1.24 | 1.34 |
| 420.1            | 450.1       | 1.08         | 1.24 | 1.35 |
| 460.1            | 490.1       | 1.10         | 1.26 | 1.37 |
| 500.1            | 530.1       | 1.13         | 1.29 | 1.39 |
| 540.1            | 570.1       | 1.13         | 1.29 | 1.38 |
| 580.1            | 610.1       | 1.17         | 1.32 | 1.41 |
| 620.1            | 650.1       | 1.19         | 1.34 | 1.44 |
| 660.1            | 690.1       | 1.22         | 1.35 | 1.46 |
| 700.1            | 730.1       | 1.25         | 1.38 | 1.48 |
| 740.1            | 770.1       | 1.27         | 1.39 | 1.48 |
| 780.1            | 810.1       | 1.28         | 1.41 | 1.50 |
| 820.1            | 850.1       | 1.28         | 1.42 | 1.51 |
| 860.1            | 890.1       | 1.28         | 1.44 | 1.54 |
| 900.1            | 930.1       | 1.29         | 1.46 | 1.55 |
| 920.1            | 950.1       | 1.28         | 1.44 | 1.54 |
| 960.1            | 990.1       | 1.27         | 1.44 | 1.53 |
| 980.1            | 1010.1      | 1.28         | 1.41 | 1.52 |
| 1020.1           | 1050.1      | 1.28         | 1.39 | 1.49 |
| 1040.1           | 1070.1      | 1.30         | 1.37 | 1.49 |
| 1080.1           | 1110.1      | 1.33         | 1.38 | 1.48 |
| 1100.1           | 1130.1      | 1.35         | 1.38 | 1.47 |
| 1140.1           | 1170.1      | 1.40         | 1.42 | 1.48 |
| 1160.1           | 1190.1      | 1.43         | 1.44 | 1.50 |
| 1200.1           | 1230.1      | 1.51         | 1.51 | 1.54 |
| 1220.1           | 1250.1      | 1.56         | 1.55 | 1.58 |
| 1260.1           | 1290.1      | 1.66         | 1.64 | 1.66 |
| 1280.1           | 1310.1      | 1.73         | 1.70 | 1.72 |
| 1320.1           | 1350.1      | 1.85         | 1.83 | 1.83 |
| 1340.1           | 1370.1      | 1.93         | 1.90 | 1.91 |
| 1380.1           | 1410.1      | 2.09         | 2.05 | 2.05 |
| 1400.1           | 1430.1      | 2.18         | 2.14 | 2.14 |

| LO<br>(MHz) | LO VSWR (:1) |      |      |
|-------------|--------------|------|------|
|             | @LO (dBm)    |      |      |
|             | +14          | +17  | +20  |
| 20.1        | 1.15         | 1.72 | 2.60 |
| 60.1        | 1.08         | 1.68 | 2.54 |
| 100.1       | 1.08         | 1.62 | 2.41 |
| 140.1       | 1.10         | 1.70 | 2.57 |
| 180.1       | 1.10         | 1.62 | 2.39 |
| 220.1       | 1.14         | 1.68 | 2.51 |
| 260.1       | 1.12         | 1.65 | 2.45 |
| 300.1       | 1.14         | 1.65 | 2.45 |
| 340.1       | 1.15         | 1.70 | 2.52 |
| 380.1       | 1.14         | 1.66 | 2.44 |
| 420.1       | 1.16         | 1.72 | 2.55 |
| 460.1       | 1.13         | 1.70 | 2.50 |
| 500.1       | 1.14         | 1.72 | 2.53 |
| 540.1       | 1.15         | 1.75 | 2.56 |
| 580.1       | 1.15         | 1.75 | 2.55 |
| 620.1       | 1.17         | 1.79 | 2.61 |
| 660.1       | 1.18         | 1.79 | 2.58 |
| 700.1       | 1.19         | 1.83 | 2.64 |
| 740.1       | 1.22         | 1.85 | 2.65 |
| 780.1       | 1.24         | 1.87 | 2.67 |
| 820.1       | 1.26         | 1.90 | 2.70 |
| 860.1       | 1.29         | 1.91 | 2.69 |
| 900.1       | 1.33         | 1.94 | 2.72 |
| 920.1       | 1.34         | 1.95 | 2.73 |
| 960.1       | 1.38         | 1.97 | 2.75 |
| 980.1       | 1.40         | 2.00 | 2.78 |
| 1020.1      | 1.43         | 2.04 | 2.81 |
| 1040.1      | 1.45         | 2.07 | 2.84 |
| 1080.1      | 1.48         | 2.09 | 2.86 |
| 1100.1      | 1.50         | 2.12 | 2.89 |
| 1140.1      | 1.52         | 2.14 | 2.90 |
| 1160.1      | 1.55         | 2.17 | 2.94 |
| 1200.1      | 1.57         | 2.17 | 2.92 |
| 1220.1      | 1.59         | 2.18 | 2.93 |
| 1260.1      | 1.62         | 2.21 | 2.96 |
| 1280.1      | 1.64         | 2.21 | 2.95 |
| 1320.1      | 1.65         | 2.20 | 2.91 |
| 1340.1      | 1.67         | 2.21 | 2.93 |
| 1380.1      | 1.70         | 2.21 | 2.91 |
| 1400.1      | 1.69         | 2.18 | 2.87 |

| IF (OUT)<br>(MHz) | IF VSWR @LO=1000.1MHz (:1) |      |      |
|-------------------|----------------------------|------|------|
|                   | @LO (dBm)                  |      |      |
|                   | +14                        | +17  | +20  |
| 10.1              | 3.19                       | 2.24 | 1.86 |
| 30.1              | 3.20                       | 2.33 | 1.87 |
| 50.1              | 3.19                       | 2.28 | 1.81 |
| 70.1              | 3.36                       | 2.40 | 1.89 |
| 90.1              | 3.25                       | 2.34 | 1.87 |
| 110.1             | 3.17                       | 2.30 | 1.83 |
| 130.1             | 3.31                       | 2.40 | 1.91 |
| 150.1             | 3.29                       | 2.36 | 1.88 |
| 170.1             | 3.16                       | 2.28 | 1.82 |
| 190.1             | 3.17                       | 2.30 | 1.85 |
| 210.1             | 3.21                       | 2.33 | 1.89 |
| 230.1             | 3.04                       | 2.22 | 1.81 |
| 250.1             | 3.06                       | 2.22 | 1.81 |
| 270.1             | 3.12                       | 2.28 | 1.85 |
| 290.1             | 3.07                       | 2.26 | 1.85 |
| 310.1             | 2.96                       | 2.19 | 1.81 |
| 330.1             | 3.03                       | 2.23 | 1.84 |
| 350.1             | 3.05                       | 2.25 | 1.87 |
| 370.1             | 2.94                       | 2.20 | 1.83 |
| 390.1             | 2.91                       | 2.17 | 1.81 |
| 430.1             | 2.87                       | 2.17 | 1.84 |
| 450.1             | 2.77                       | 2.09 | 1.78 |
| 490.1             | 2.80                       | 2.13 | 1.82 |
| 510.1             | 2.76                       | 2.09 | 1.80 |
| 550.1             | 2.72                       | 2.07 | 1.79 |
| 570.1             | 2.70                       | 2.07 | 1.80 |
| 610.1             | 2.66                       | 2.02 | 1.75 |
| 630.1             | 2.62                       | 2.01 | 1.76 |
| 670.1             | 2.55                       | 1.94 | 1.71 |
| 690.1             | 2.60                       | 1.98 | 1.74 |
| 730.1             | 2.51                       | 1.88 | 1.67 |
| 750.1             | 2.51                       | 1.89 | 1.67 |
| 790.1             | 2.46                       | 1.85 | 1.64 |
| 810.1             | 2.44                       | 1.81 | 1.60 |
| 850.1             | 2.38                       | 1.77 | 1.58 |
| 870.1             | 2.35                       | 1.74 | 1.54 |
| 910.1             | 2.39                       | 1.75 | 1.54 |
| 930.1             | 2.34                       | 1.70 | 1.50 |
| 970.1             | 2.32                       | 1.69 | 1.48 |
| 990.1             | 2.32                       | 1.70 | 1.50 |

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## Harmonics Tables

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | 16  | 20  | 24  | 26  | 27  | 44  | 25  | 51  | 31  | 55  |
| 1  | -      | 16     | +0  | 31  | 14  | 37  | 25  | 38  | 31  | 44  | 32  | 58  |
| 2  | 96     | 60     | 61  | 63  | 57  | 73  | 56  | 59  | 53  | 63  | 56  | 85  |
| 3  | >100   | 65     | 60  | 69  | 59  | 69  | 52  | 71  | 51  | 71  | 57  | 76  |
| 4  | >100   | 79     | >92 | 82  | 91  | 78  | 82  | 84  | 79  | 78  | 84  | 89  |
| 5  | >100   | >92    | 80  | >92 | 81  | >92 | 78  | 87  | 80  | 86  | 79  | 91  |
| 6  | >100   | >92    | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 |
| 7  | >100   | >92    | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 |
| 8  | >100   | >92    | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 |
| 9  | >100   | >92    | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 |
| 10 | >100   | >92    | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 | >92 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions: RF IN: 500.1 MHz; -1.00 dBm.  
 LO IN: 530.01 MHz; +17.00 dBm  
 IF OUT: 29.91 MHz; -8.27 dBm

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |    |      |    |    |    |    |    |    |    |    |
|----|--------|--------|----|------|----|----|----|----|----|----|----|----|
| 0  | -      | -      | 26 | 30   | 35 | 36 | 41 | 58 | 46 | 63 | 42 | 68 |
| 1  | -      | 16     | +0 | 31   | 14 | 41 | 23 | 40 | 38 | 51 | 40 | 60 |
| 2  | 78     | 52     | 55 | 58   | 53 | 54 | 53 | 59 | 52 | 64 | 48 | 73 |
| 3  | >100   | 48     | 40 | 53   | 44 | 49 | 37 | 57 | 43 | 65 | 45 | 61 |
| 4  | >100   | 73     | 67 | 84   | 69 | 70 | 64 | 68 | 62 | 64 | 64 | 69 |
| 5  | >100   | 64     | 59 | 62   | 54 | 63 | 53 | 60 | 49 | 62 | 49 | 65 |
| 6  | >100   | 82     | 80 | 93   | 76 | 86 | 84 | 79 | 71 | 80 | 69 | 73 |
| 7  | >100   | >102   | 78 | 82   | 74 | 74 | 69 | 73 | 64 | 68 | 62 | 68 |
| 8  | >100   | >102   | 89 | 88   | 92 | 81 | 87 | 82 | 84 | 79 | 79 | 80 |
| 9  | >100   | 98     | 94 | 94   | 82 | 82 | 76 | 77 | 74 | 77 | 76 | 74 |
| 10 | >100   | >102   | 98 | >102 | 98 | 97 | 90 | 89 | 87 | 89 | 86 | 90 |
|    | RF CAL | 0      | 1  | 2    | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |

### LO HARMONICS ORDER

Test conditions: RF IN: 500.1 MHz; 9.00 dBm.  
 LO IN: 530.01 MHz; +17.00 dBm  
 IF OUT: 29.91 MHz; 1.8 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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