

# Frequency Mixer

# TUF-2HSM+

## 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  |
| 10.1          | 40.1     | 7.49   | 6.47  | 5.90 | 10.1          | 40.1     | 22.26           | 26.49 | 29.40 | 10.1          | 40.1     | 0.65                           | 0.28  | 0.14 |
| 51.1          | 81.1     | 7.47   | 6.51  | 6.04 | 51.1          | 81.1     | 22.06           | 25.46 | 29.44 | 51.1          | 81.1     | 0.78                           | 0.25  | 0.13 |
| 92.0          | 122.0    | 7.43   | 6.46  | 5.99 | 92.0          | 122.0    | 21.94           | 25.10 | 27.69 | 92.0          | 122.0    | 0.53                           | 0.24  | 0.12 |
| 133.0         | 163.0    | 7.23   | 6.34  | 5.92 | 133.0         | 163.0    | 24.06           | 26.83 | 25.79 | 133.0         | 163.0    | 0.80                           | 0.31  | 0.17 |
| 173.9         | 203.9    | 7.31   | 6.41  | 5.95 | 173.9         | 203.9    | 23.00           | 24.77 | 25.45 | 173.9         | 203.9    | 0.49                           | 0.22  | 0.15 |
| 214.9         | 244.9    | 7.20   | 6.25  | 5.88 | 214.9         | 244.9    | 23.69           | 23.02 | 29.32 | 214.9         | 244.9    | 0.69                           | 0.30  | 0.19 |
| 255.8         | 285.8    | 7.15   | 6.26  | 5.95 | 255.8         | 285.8    | 22.91           | 25.23 | 24.39 | 255.8         | 285.8    | 0.76                           | 0.36  | 0.17 |
| 296.8         | 326.8    | 7.13   | 6.21  | 5.95 | 296.8         | 326.8    | 20.77           | 27.16 | 22.42 | 296.8         | 326.8    | 0.71                           | 0.36  | 0.19 |
| 337.7         | 367.7    | 7.02   | 6.23  | 6.02 | 337.7         | 367.7    | 22.30           | 27.02 | 22.54 | 337.7         | 367.7    | 0.89                           | 0.33  | 0.15 |
| 378.7         | 408.7    | 6.92   | 6.22  | 6.08 | 378.7         | 408.7    | 22.94           | 23.10 | 22.83 | 378.7         | 408.7    | 0.98                           | 0.36  | 0.15 |
| 419.6         | 449.6    | 6.92   | 6.24  | 6.09 | 419.6         | 449.6    | 23.59           | 21.83 | 22.50 | 419.6         | 449.6    | 0.99                           | 0.40  | 0.18 |
| 440.1         | 470.1    | 6.81   | 6.19  | 6.07 | 440.1         | 470.1    | 31.36           | 20.58 | 22.15 | 440.1         | 470.1    | 1.06                           | 0.43  | 0.19 |
| 481.1         | 511.1    | 6.92   | 6.32  | 6.20 | 481.1         | 511.1    | 28.73           | 19.96 | 21.03 | 481.1         | 511.1    | 1.04                           | 0.39  | 0.19 |
| 501.5         | 531.5    | 6.87   | 6.34  | 6.21 | 501.5         | 531.5    | 25.93           | 20.35 | 21.76 | 501.5         | 531.5    | 1.12                           | 0.40  | 0.18 |
| 542.5         | 572.5    | 6.98   | 6.51  | 6.33 | 542.5         | 572.5    | 23.01           | 20.45 | 22.47 | 542.5         | 572.5    | 1.08                           | 0.36  | 0.18 |
| 563.0         | 593.0    | 6.93   | 6.51  | 6.35 | 563.0         | 593.0    | 21.92           | 20.79 | 23.44 | 563.0         | 593.0    | 1.24                           | 0.39  | 0.21 |
| 603.9         | 633.9    | 7.06   | 6.60  | 6.48 | 603.9         | 633.9    | 20.87           | 20.57 | 22.63 | 603.9         | 633.9    | 1.20                           | 0.38  | 0.21 |
| 624.4         | 654.4    | 7.02   | 6.60  | 6.50 | 624.4         | 654.4    | 19.90           | 20.64 | 22.49 | 624.4         | 654.4    | 1.29                           | 0.46  | 0.25 |
| 665.3         | 695.3    | 7.11   | 6.67  | 6.58 | 665.3         | 695.3    | 19.63           | 20.75 | 22.28 | 665.3         | 695.3    | 1.35                           | 0.49  | 0.27 |
| 685.8         | 715.8    | 7.10   | 6.69  | 6.59 | 685.8         | 715.8    | 19.28           | 21.10 | 22.39 | 685.8         | 715.8    | 1.29                           | 0.52  | 0.26 |
| 726.8         | 756.8    | 7.18   | 6.79  | 6.68 | 726.8         | 756.8    | 17.99           | 20.74 | 22.66 | 726.8         | 756.8    | 1.40                           | 0.55  | 0.31 |
| 747.2         | 777.2    | 7.17   | 6.83  | 6.72 | 747.2         | 777.2    | 17.76           | 20.13 | 22.79 | 747.2         | 777.2    | 1.44                           | 0.57  | 0.33 |
| 788.2         | 818.2    | 7.29   | 6.98  | 6.88 | 788.2         | 818.2    | 16.78           | 18.38 | 21.79 | 788.2         | 818.2    | 1.43                           | 0.58  | 0.34 |
| 808.7         | 838.7    | 7.35   | 7.05  | 6.95 | 808.7         | 838.7    | 16.08           | 17.79 | 20.93 | 808.7         | 838.7    | 1.47                           | 0.62  | 0.35 |
| 849.6         | 879.6    | 7.50   | 7.23  | 7.16 | 849.6         | 879.6    | 15.61           | 17.04 | 18.96 | 849.6         | 879.6    | 1.57                           | 0.72  | 0.38 |
| 870.1         | 900.1    | 7.62   | 7.35  | 7.29 | 870.1         | 900.1    | 15.47           | 16.96 | 18.99 | 870.1         | 900.1    | 1.50                           | 0.61  | 0.35 |
| 911.1         | 941.1    | 7.83   | 7.54  | 7.46 | 911.1         | 941.1    | 14.99           | 16.37 | 18.59 | 911.1         | 941.1    | 1.56                           | 0.66  | 0.31 |
| 931.5         | 961.5    | 8.02   | 7.66  | 7.56 | 931.5         | 961.5    | 15.16           | 16.56 | 18.93 | 931.5         | 961.5    | 1.54                           | 0.61  | 0.26 |
| 972.5         | 1002.5   | 8.28   | 7.78  | 7.64 | 972.5         | 1002.5   | 15.19           | 17.20 | 20.10 | 972.5         | 1002.5   | 1.45                           | 0.60  | 0.23 |
| 993.0         | 1023.0   | 8.45   | 7.82  | 7.63 | 993.0         | 1023.0   | 14.97           | 17.78 | 21.32 | 993.0         | 1023.0   | 1.41                           | 0.65  | 0.24 |
| 1033.9        | 1063.9   | 8.86   | 7.89  | 7.62 | 1033.9        | 1063.9   | 14.70           | 19.20 | 23.21 | 1033.9        | 1063.9   | 1.32                           | 0.71  | 0.30 |
| 1054.4        | 1084.4   | 8.95   | 7.90  | 7.58 | 1054.4        | 1084.4   | 14.89           | 20.00 | 24.11 | 1054.4        | 1084.4   | 1.19                           | 0.70  | 0.34 |
| 1095.3        | 1125.3   | 9.48   | 8.08  | 7.63 | 1095.3        | 1125.3   | 14.18           | 20.61 | 25.36 | 1095.3        | 1125.3   | 0.84                           | 0.74  | 0.40 |
| 1115.8        | 1145.8   | 9.74   | 8.18  | 7.65 | 1115.8        | 1145.8   | 13.89           | 20.86 | 26.17 | 1115.8        | 1145.8   | 0.68                           | 0.74  | 0.43 |
| 1156.8        | 1186.8   | 10.38  | 8.55  | 7.85 | 1156.8        | 1186.8   | 13.48           | 20.13 | 27.69 | 1156.8        | 1186.8   | 0.14                           | 0.57  | 0.45 |
| 1177.2        | 1207.2   | 10.68  | 8.74  | 7.85 | 1177.2        | 1207.2   | 13.08           | 19.11 | 28.62 | 1177.2        | 1207.2   | -0.07                          | 0.53  | 0.52 |
| 1218.2        | 1248.2   | 11.37  | 9.29  | 8.13 | 1218.2        | 1248.2   | 13.07           | 17.78 | 28.45 | 1218.2        | 1248.2   | -0.49                          | 0.31  | 0.55 |
| 1238.7        | 1268.7   | 11.52  | 9.43  | 8.22 | 1238.7        | 1268.7   | 13.35           | 17.81 | 27.56 | 1238.7        | 1268.7   | -0.71                          | 0.21  | 0.55 |
| 1279.6        | 1309.6   | 12.12  | 9.95  | 8.64 | 1279.6        | 1309.6   | 13.53           | 17.82 | 24.90 | 1279.6        | 1309.6   | -1.10                          | -0.03 | 0.43 |
| 1300.1        | 1330.1   | 12.52  | 10.30 | 8.89 | 1300.1        | 1330.1   | 13.80           | 17.98 | 24.60 | 1300.1        | 1330.1   | -1.25                          | -0.17 | 0.39 |



# Frequency Mixer

# TUF-2HSM+

## Typical Performance Data

| IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB) | IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=50.1MHz (dB) | IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB) |
|----------------|----------|--|----------------|----------|---|----------------|----------|---|
|                |          | @LO (dBm)  |                |          | @LO (dBm)   |                |          | @LO (dBm)   |
|                |          | +17  |                |          | +17   |                |          | +17   |
| 400.0          | 100.1    | 6.49   | 10.0           | 60.1     | 6.47  | 950.0          | 50.1     | 7.82  |
| 390.3          | 109.9    | 6.51   | 30.0           | 80.1     | 6.56  | 930.0          | 70.1     | 7.77  |
| 380.5          | 119.6    | 6.51   | 50.0           | 100.1    | 6.39  | 910.0          | 90.1     | 7.79  |
| 370.8          | 129.4    | 6.44   | 70.0           | 120.1    | 6.46  | 890.0          | 110.1    | 7.61  |
| 361.0          | 139.1    | 6.45   | 90.0           | 140.1    | 6.50  | 870.0          | 130.1    | 7.54  |
| 351.3          | 148.9    | 6.32   | 110.0          | 160.1    | 6.42  | 850.0          | 150.1    | 7.55  |
| 341.5          | 158.6    | 6.37   | 130.0          | 180.1    | 6.52  | 830.0          | 170.1    | 7.57  |
| 331.8          | 168.4    | 6.41   | 150.0          | 200.1    | 6.50  | 810.0          | 190.1    | 7.42  |
| 322.0          | 178.1    | 6.32   | 170.0          | 220.1    | 6.53  | 790.0          | 210.1    | 7.33  |
| 312.3          | 187.9    | 6.40   | 190.0          | 240.1    | 6.46  | 770.0          | 230.1    | 7.24  |
| 302.5          | 197.6    | 6.34   | 210.0          | 260.1    | 6.53  | 750.0          | 250.1    | 7.24  |
| 292.8          | 207.4    | 6.23   | 230.0          | 280.1    | 6.64  | 730.0          | 270.1    | 7.21  |
| 283.0          | 217.1    | 6.25   | 250.0          | 300.1    | 6.51  | 710.0          | 290.1    | 7.12  |
| 273.3          | 226.9    | 6.15   | 270.0          | 320.1    | 6.51  | 690.0          | 310.1    | 7.19  |
| 263.5          | 236.6    | 6.18   | 290.0          | 340.1    | 6.56  | 670.0          | 330.1    | 7.17  |
| 253.8          | 246.4    | 6.17   | 310.0          | 360.1    | 6.58  | 650.0          | 350.1    | 7.24  |
| 244.0          | 256.1    | 6.11   | 330.0          | 380.1    | 6.52  | 630.0          | 370.1    | 7.27  |
| 234.3          | 265.9    | 6.20   | 350.0          | 400.1    | 6.51  | 610.0          | 390.1    | 7.28  |
| 224.5          | 275.6    | 6.17   | 370.0          | 420.1    | 6.57  | 590.0          | 410.1    | 7.35  |
| 214.8          | 285.4    | 6.11   | 390.0          | 440.1    | 6.45  | 570.0          | 430.1    | 7.38  |
| 205.0          | 295.1    | 6.17   | 410.0          | 460.1    | 6.51  | 550.0          | 450.1    | 7.47  |
| 195.3          | 304.9    | 6.14   | 430.0          | 480.1    | 6.53  | 530.0          | 470.1    | 7.46  |
| 185.5          | 314.6    | 6.13   | 450.0          | 500.1    | 6.47  | 510.0          | 490.1    | 7.50  |
| 175.8          | 324.4    | 6.13   | 470.0          | 520.1    | 6.41  | 490.0          | 510.1    | 7.51  |
| 166.0          | 334.1    | 6.16   | 510.0          | 560.1    | 6.49  | 450.0          | 550.1    | 7.62  |
| 156.3          | 343.9    | 6.18   | 530.0          | 580.1    | 6.44  | 430.0          | 570.1    | 7.56  |
| 146.5          | 353.6    | 6.15   | 570.0          | 620.1    | 6.50  | 390.0          | 610.1    | 7.59  |
| 136.8          | 363.4    | 6.17   | 590.0          | 640.1    | 6.49  | 370.0          | 630.1    | 7.63  |
| 127.0          | 373.1    | 6.25   | 630.0          | 680.1    | 6.62  | 330.0          | 670.1    | 7.60  |
| 117.3          | 382.9    | 6.18   | 650.0          | 700.1    | 6.63  | 310.0          | 690.1    | 7.66  |
| 107.5          | 392.6    | 6.18   | 690.0          | 740.1    | 6.63  | 270.0          | 730.1    | 7.65  |
| 97.8           | 402.4    | 6.23   | 710.0          | 760.1    | 6.67  | 250.0          | 750.1    | 7.70  |
| 88.0           | 412.1    | 6.21   | 750.0          | 800.1    | 6.67  | 210.0          | 790.1    | 7.79  |
| 78.3           | 421.9    | 6.19   | 770.0          | 820.1    | 6.61  | 190.0          | 810.1    | 7.83  |
| 68.5           | 431.6    | 6.23   | 810.0          | 860.1    | 6.58  | 150.0          | 850.1    | 7.96  |
| 58.8           | 441.4    | 6.25   | 830.0          | 880.1    | 6.52  | 130.0          | 870.1    | 7.96  |
| 49.0           | 451.1    | 6.26   | 870.0          | 920.1    | 6.41  | 90.0           | 910.1    | 8.01  |
| 39.3           | 460.9    | 6.26   | 890.0          | 940.1    | 6.40  | 70.0           | 930.1    | 8.02  |
| 19.8           | 480.4    | 6.35   | 930.0          | 980.1    | 6.35  | 30.0           | 970.1    | 8.02  |
| 10.0           | 490.1    | 6.35   | 950.0          | 1000.1   | 6.32  | 10.0           | 990.1    | 7.93  |

# Frequency Mixer

# TUF-2HSM+

## 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   |
| 10.1        | 70.94                   | 74.41 | 77.00 | 61.80                   | 62.70 | 62.57 |
| 51.1        | 59.58                   | 61.76 | 63.70 | 58.56                   | 61.13 | 62.32 |
| 92.0        | 54.72                   | 56.70 | 58.69 | 55.36                   | 59.26 | 60.73 |
| 133.0       | 51.54                   | 53.70 | 55.84 | 52.66                   | 57.79 | 58.69 |
| 173.9       | 49.31                   | 51.39 | 53.46 | 50.64                   | 55.36 | 57.73 |
| 214.9       | 47.65                   | 49.77 | 52.06 | 48.67                   | 53.89 | 55.66 |
| 255.8       | 46.20                   | 48.52 | 50.91 | 46.94                   | 52.27 | 51.68 |
| 296.8       | 45.07                   | 47.28 | 49.99 | 45.67                   | 49.91 | 49.69 |
| 337.7       | 44.10                   | 46.34 | 49.00 | 44.42                   | 46.40 | 47.10 |
| 378.7       | 43.07                   | 45.77 | 48.27 | 43.19                   | 43.68 | 45.07 |
| 419.6       | 42.19                   | 45.45 | 48.32 | 41.98                   | 42.27 | 44.30 |
| 440.1       | 41.91                   | 45.26 | 48.25 | 40.44                   | 41.09 | 43.19 |
| 481.1       | 41.23                   | 44.05 | 46.60 | 39.21                   | 39.96 | 41.81 |
| 501.5       | 40.70                   | 43.75 | 46.04 | 38.09                   | 39.19 | 41.03 |
| 542.5       | 39.97                   | 42.45 | 44.60 | 36.96                   | 37.84 | 39.41 |
| 563.0       | 39.62                   | 41.77 | 43.92 | 36.07                   | 37.16 | 38.63 |
| 603.9       | 39.31                   | 41.20 | 43.40 | 35.15                   | 36.61 | 38.09 |
| 624.4       | 39.06                   | 40.90 | 43.26 | 34.40                   | 36.07 | 37.79 |
| 665.3       | 39.11                   | 41.05 | 43.23 | 33.39                   | 35.26 | 37.35 |
| 685.8       | 38.98                   | 41.24 | 43.32 | 32.97                   | 35.02 | 37.07 |
| 726.8       | 39.34                   | 42.45 | 44.86 | 32.24                   | 34.36 | 36.26 |
| 747.2       | 39.51                   | 42.97 | 45.53 | 31.94                   | 34.09 | 35.89 |
| 788.2       | 39.67                   | 43.16 | 45.62 | 31.54                   | 33.58 | 35.11 |
| 808.7       | 39.66                   | 42.80 | 44.90 | 31.21                   | 33.29 | 34.65 |
| 849.6       | 39.90                   | 42.55 | 43.90 | 30.63                   | 32.72 | 33.75 |
| 870.1       | 39.40                   | 41.79 | 43.11 | 30.11                   | 32.22 | 33.54 |
| 911.1       | 38.93                   | 40.69 | 41.46 | 29.52                   | 31.53 | 32.85 |
| 931.5       | 38.57                   | 40.02 | 40.79 | 29.20                   | 31.14 | 32.49 |
| 972.5       | 37.80                   | 39.09 | 40.11 | 28.49                   | 30.16 | 31.48 |
| 993.0       | 37.22                   | 38.45 | 39.55 | 28.27                   | 29.88 | 31.12 |
| 1033.9      | 36.41                   | 38.02 | 39.27 | 27.56                   | 29.04 | 30.08 |
| 1054.4      | 35.55                   | 37.24 | 38.80 | 27.19                   | 28.45 | 29.63 |
| 1095.3      | 34.37                   | 36.15 | 37.64 | 26.67                   | 27.74 | 28.78 |
| 1115.8      | 33.79                   | 35.65 | 37.17 | 26.32                   | 27.41 | 28.42 |
| 1156.8      | 32.63                   | 34.44 | 36.07 | 25.84                   | 26.66 | 27.60 |
| 1177.2      | 32.28                   | 33.93 | 35.45 | 25.65                   | 26.40 | 27.30 |
| 1218.2      | 31.57                   | 33.17 | 34.81 | 25.21                   | 25.83 | 26.61 |
| 1238.7      | 31.12                   | 32.79 | 34.48 | 24.93                   | 25.60 | 26.37 |
| 1279.6      | 30.72                   | 32.22 | 33.80 | 24.70                   | 25.28 | 25.91 |
| 1300.1      | 30.52                   | 32.09 | 33.63 | 24.57                   | 25.33 | 25.93 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +14                     | +17   | +20   |
| 10.1                | 40.1        | 47.85                   | 48.27 | 47.51 |
| 51.1                | 81.1        | 33.41                   | 33.69 | 33.99 |
| 92.0                | 122.0       | 28.69                   | 28.99 | 29.35 |
| 133.0               | 163.0       | 25.89                   | 26.38 | 26.65 |
| 173.9               | 203.9       | 23.97                   | 24.42 | 24.83 |
| 214.9               | 244.9       | 22.67                   | 23.31 | 23.66 |
| 255.8               | 285.8       | 21.96                   | 22.51 | 23.01 |
| 296.8               | 326.8       | 21.38                   | 22.12 | 22.50 |
| 337.7               | 367.7       | 20.91                   | 22.03 | 22.42 |
| 378.7               | 408.7       | 20.67                   | 21.84 | 22.48 |
| 419.6               | 449.6       | 20.58                   | 21.64 | 22.43 |
| 440.1               | 470.1       | 20.98                   | 21.93 | 22.81 |
| 481.1               | 511.1       | 21.36                   | 21.95 | 22.46 |
| 501.5               | 531.5       | 21.96                   | 22.48 | 22.67 |
| 542.5               | 572.5       | 22.32                   | 23.03 | 23.15 |
| 563.0               | 593.0       | 22.44                   | 22.95 | 23.19 |
| 603.9               | 633.9       | 22.28                   | 22.61 | 23.13 |
| 624.4               | 654.4       | 21.65                   | 21.99 | 22.79 |
| 665.3               | 695.3       | 20.12                   | 20.56 | 21.45 |
| 685.8               | 715.8       | 19.30                   | 19.68 | 20.55 |
| 726.8               | 756.8       | 17.63                   | 17.89 | 18.36 |
| 747.2               | 777.2       | 17.06                   | 17.13 | 17.38 |
| 788.2               | 818.2       | 15.97                   | 15.75 | 15.60 |
| 808.7               | 838.7       | 15.55                   | 15.36 | 15.17 |
| 849.6               | 879.6       | 14.92                   | 14.60 | 14.40 |
| 870.1               | 900.1       | 14.57                   | 14.19 | 13.93 |
| 911.1               | 941.1       | 14.18                   | 13.74 | 13.53 |
| 931.5               | 961.5       | 13.93                   | 13.51 | 13.36 |
| 972.5               | 1002.5      | 13.65                   | 13.27 | 13.07 |
| 993.0               | 1023.0      | 13.55                   | 13.15 | 12.91 |
| 1033.9              | 1063.9      | 13.36                   | 12.91 | 12.56 |
| 1054.4              | 1084.4      | 13.23                   | 12.76 | 12.37 |
| 1095.3              | 1125.3      | 13.03                   | 12.53 | 12.16 |
| 1115.8              | 1145.8      | 12.86                   | 12.40 | 12.04 |
| 1156.8              | 1186.8      | 12.57                   | 12.19 | 11.89 |
| 1177.2              | 1207.2      | 12.44                   | 12.14 | 11.89 |
| 1218.2              | 1248.2      | 12.18                   | 12.04 | 11.93 |
| 1238.7              | 1268.7      | 12.06                   | 12.02 | 12.01 |
| 1279.6              | 1309.6      | 11.80                   | 11.91 | 12.05 |
| 1300.1              | 1330.1      | 11.63                   | 11.78 | 11.96 |

# Frequency Mixer

# TUF-2HSM+

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF VSWR<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|
|                     |             | @LO (dBm)       |      |      |
|                     |             | +14             | +17  | +20  |
| 10.1                | 40.1        | 1.34            | 1.14 | 1.07 |
| 51.1                | 81.1        | 1.36            | 1.16 | 1.05 |
| 92.0                | 122.0       | 1.38            | 1.17 | 1.05 |
| 133.0               | 163.0       | 1.35            | 1.15 | 1.04 |
| 173.9               | 203.9       | 1.35            | 1.17 | 1.06 |
| 214.9               | 244.9       | 1.35            | 1.15 | 1.07 |
| 255.8               | 285.8       | 1.34            | 1.15 | 1.09 |
| 296.8               | 326.8       | 1.36            | 1.15 | 1.10 |
| 337.7               | 367.7       | 1.34            | 1.14 | 1.11 |
| 378.7               | 408.7       | 1.31            | 1.12 | 1.13 |
| 419.6               | 449.6       | 1.31            | 1.11 | 1.13 |
| 440.1               | 470.1       | 1.28            | 1.11 | 1.14 |
| 481.1               | 511.1       | 1.28            | 1.10 | 1.12 |
| 501.5               | 531.5       | 1.25            | 1.11 | 1.13 |
| 542.5               | 572.5       | 1.25            | 1.12 | 1.14 |
| 563.0               | 593.0       | 1.23            | 1.12 | 1.15 |
| 603.9               | 633.9       | 1.23            | 1.13 | 1.16 |
| 624.4               | 654.4       | 1.22            | 1.14 | 1.17 |
| 665.3               | 695.3       | 1.21            | 1.14 | 1.17 |
| 685.8               | 715.8       | 1.19            | 1.14 | 1.19 |
| 726.8               | 756.8       | 1.17            | 1.13 | 1.17 |
| 747.2               | 777.2       | 1.16            | 1.12 | 1.17 |
| 788.2               | 818.2       | 1.14            | 1.09 | 1.13 |
| 808.7               | 838.7       | 1.12            | 1.08 | 1.12 |
| 849.6               | 879.6       | 1.12            | 1.05 | 1.07 |
| 870.1               | 900.1       | 1.12            | 1.05 | 1.07 |
| 911.1               | 941.1       | 1.16            | 1.09 | 1.10 |
| 931.5               | 961.5       | 1.19            | 1.12 | 1.13 |
| 972.5               | 1002.5      | 1.26            | 1.20 | 1.22 |
| 993.0               | 1023.0      | 1.30            | 1.24 | 1.26 |
| 1033.9              | 1063.9      | 1.40            | 1.34 | 1.35 |
| 1054.4              | 1084.4      | 1.43            | 1.37 | 1.38 |
| 1095.3              | 1125.3      | 1.55            | 1.47 | 1.47 |
| 1115.8              | 1145.8      | 1.61            | 1.51 | 1.51 |
| 1156.8              | 1186.8      | 1.73            | 1.62 | 1.60 |
| 1177.2              | 1207.2      | 1.79            | 1.67 | 1.64 |
| 1218.2              | 1248.2      | 1.91            | 1.79 | 1.74 |
| 1238.7              | 1268.7      | 1.96            | 1.84 | 1.79 |
| 1279.6              | 1309.6      | 2.08            | 1.96 | 1.89 |
| 1300.1              | 1330.1      | 2.13            | 2.01 | 1.94 |

| LO<br>(MHz) | LO VSWR<br>(:1) |      |      |
|-------------|-----------------|------|------|
|             | @LO (dBm)       |      |      |
|             | +14             | +17  | +20  |
| 10.1        | 1.09            | 1.49 | 2.09 |
| 51.1        | 1.06            | 1.53 | 2.29 |
| 92.0        | 1.04            | 1.47 | 2.17 |
| 133.0       | 1.06            | 1.49 | 2.22 |
| 173.9       | 1.05            | 1.45 | 2.10 |
| 214.9       | 1.05            | 1.46 | 2.13 |
| 255.8       | 1.06            | 1.45 | 2.12 |
| 296.8       | 1.06            | 1.43 | 2.07 |
| 337.7       | 1.06            | 1.46 | 2.13 |
| 378.7       | 1.07            | 1.42 | 2.10 |
| 419.6       | 1.08            | 1.44 | 2.10 |
| 440.1       | 1.08            | 1.45 | 2.10 |
| 481.1       | 1.08            | 1.42 | 2.06 |
| 501.5       | 1.11            | 1.44 | 2.07 |
| 542.5       | 1.11            | 1.46 | 2.09 |
| 563.0       | 1.12            | 1.46 | 2.08 |
| 603.9       | 1.13            | 1.46 | 2.08 |
| 624.4       | 1.14            | 1.47 | 2.10 |
| 665.3       | 1.15            | 1.47 | 2.07 |
| 685.8       | 1.16            | 1.48 | 2.07 |
| 726.8       | 1.17            | 1.50 | 2.09 |
| 747.2       | 1.18            | 1.53 | 2.11 |
| 788.2       | 1.19            | 1.51 | 2.08 |
| 808.7       | 1.21            | 1.53 | 2.10 |
| 849.6       | 1.21            | 1.56 | 2.10 |
| 870.1       | 1.23            | 1.53 | 2.09 |
| 911.1       | 1.24            | 1.55 | 2.11 |
| 931.5       | 1.25            | 1.58 | 2.15 |
| 972.5       | 1.27            | 1.56 | 2.09 |
| 993.0       | 1.28            | 1.56 | 2.09 |
| 1033.9      | 1.30            | 1.59 | 2.09 |
| 1054.4      | 1.31            | 1.57 | 2.09 |
| 1095.3      | 1.33            | 1.60 | 2.10 |
| 1115.8      | 1.34            | 1.62 | 2.14 |
| 1156.8      | 1.35            | 1.64 | 2.14 |
| 1177.2      | 1.36            | 1.66 | 2.15 |
| 1218.2      | 1.37            | 1.69 | 2.17 |
| 1238.7      | 1.37            | 1.69 | 2.18 |
| 1279.6      | 1.39            | 1.71 | 2.20 |
| 1300.1      | 1.40            | 1.74 | 2.22 |

| IF<br>(OUT)<br>(MHz) | IF VSWR<br>@LO=1000.1MHz<br>(:1) |      |      |
|----------------------|----------------------------------|------|------|
|                      | @LO (dBm)                        |      |      |
|                      | +14                              | +17  | +20  |
| 10.0                 | 2.90                             | 2.34 | 2.10 |
| 30.2                 | 2.69                             | 2.14 | 1.91 |
| 50.4                 | 2.56                             | 2.03 | 1.80 |
| 70.6                 | 2.58                             | 2.05 | 1.82 |
| 90.8                 | 2.59                             | 2.06 | 1.84 |
| 111.0                | 2.64                             | 2.11 | 1.88 |
| 131.2                | 2.71                             | 2.16 | 1.92 |
| 151.4                | 2.65                             | 2.11 | 1.89 |
| 171.6                | 2.56                             | 2.05 | 1.83 |
| 191.8                | 2.63                             | 2.11 | 1.89 |
| 212.0                | 2.68                             | 2.16 | 1.94 |
| 232.2                | 2.61                             | 2.11 | 1.89 |
| 252.4                | 2.59                             | 2.09 | 1.87 |
| 272.7                | 2.66                             | 2.15 | 1.94 |
| 292.9                | 2.64                             | 2.16 | 1.96 |
| 313.1                | 2.59                             | 2.12 | 1.92 |
| 333.3                | 2.65                             | 2.16 | 1.96 |
| 353.5                | 2.66                             | 2.19 | 1.99 |
| 373.7                | 2.59                             | 2.14 | 1.96 |
| 393.9                | 2.59                             | 2.14 | 1.95 |
| 434.3                | 2.60                             | 2.16 | 2.00 |
| 454.5                | 2.58                             | 2.13 | 1.97 |
| 494.9                | 2.63                             | 2.19 | 2.03 |
| 515.1                | 2.54                             | 2.11 | 1.96 |
| 555.5                | 2.61                             | 2.18 | 2.02 |
| 575.7                | 2.59                             | 2.17 | 2.02 |
| 616.1                | 2.57                             | 2.13 | 1.97 |
| 636.3                | 2.55                             | 2.13 | 1.98 |
| 676.7                | 2.60                             | 2.15 | 1.99 |
| 696.9                | 2.63                             | 2.17 | 2.00 |
| 737.3                | 2.50                             | 2.05 | 1.88 |
| 757.6                | 2.57                             | 2.12 | 1.93 |
| 798.0                | 2.55                             | 2.07 | 1.87 |
| 818.2                | 2.52                             | 2.04 | 1.83 |
| 858.6                | 2.48                             | 2.01 | 1.81 |
| 878.8                | 2.52                             | 2.04 | 1.81 |
| 919.2                | 2.49                             | 1.99 | 1.74 |
| 939.4                | 2.40                             | 1.92 | 1.68 |
| 979.8                | 2.48                             | 1.99 | 1.73 |
| 1000.0               | 2.21                             | 1.86 | 1.77 |

## Harmonics Tables

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | 14  | 31  | 16  | 30  | 40  | 39  | 33  | 36  | 41  | 56  |
| 1  | -      | 16     | +0  | 23  | 13  | 32  | 28  | 37  | 38  | 32  | 41  | 36  |
| 2  | 90     | 59     | 51  | 54  | 50  | 61  | 48  | 58  | 84  | 75  | 59  | 57  |
| 3  | >100   | 64     | 52  | 77  | 51  | 63  | 50  | 68  | 56  | 71  | 65  | 64  |
| 4  | >100   | 80     | >93 | 82  | 89  | 87  | 86  | 84  | >93 | 89  | 86  | 92  |
| 5  | >100   | >93    | 86  | 87  | 83  | 87  | 80  | 83  | 79  | 88  | 86  | >93 |
| 6  | >100   | >93    | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | 93  | >93 |
| 7  | >100   | >93    | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
| 8  | >100   | >93    | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
| 9  | >100   | >93    | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
| 10 | >100   | >93    | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
|    | 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; -7.4 dBm

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |    |    |      |     |    |      |    |    |    |    |
|----|--------|--------|----|----|------|-----|----|------|----|----|----|----|
| 0  | -      | -      | 25 | 44 | 29   | 48  | 53 | 50   | 55 | 48 | 64 | 69 |
| 1  | -      | 16     | +0 | 25 | 13   | 32  | 28 | 41   | 45 | 40 | 52 | 41 |
| 2  | 74     | 58     | 46 | 52 | 43   | 64  | 42 | 55   | 65 | 66 | 56 | 59 |
| 3  | >100   | 49     | 37 | 52 | 38   | 46  | 37 | 58   | 50 | 52 | 51 | 48 |
| 4  | >100   | 65     | 65 | 66 | 60   | 61  | 59 | 64   | 56 | 64 | 77 | 77 |
| 5  | >100   | 83     | 53 | 60 | 50   | 62  | 49 | 56   | 48 | 68 | 55 | 70 |
| 6  | >100   | 83     | 80 | 73 | 75   | 72  | 69 | 72   | 69 | 71 | 68 | 77 |
| 7  | >100   | 77     | 86 | 80 | 65   | 66  | 62 | 68   | 62 | 65 | 61 | 73 |
| 8  | >100   | 91     | 97 | 89 | 89   | 85  | 81 | 86   | 77 | 81 | 76 | 79 |
| 9  | >100   | 91     | 93 | 92 | 90   | 82  | 75 | 72   | 70 | 73 | 71 | 72 |
| 10 | >100   | 91     | 94 | 96 | >103 | 101 | 96 | >103 | 85 | 99 | 83 | 86 |
|    | 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; 2.61 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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