

# Frequency Synthesizer

KSN-EDR10453ME

## Typical Performance Data

| FREQ.<br>(MHz) | POWER OUTPUT<br>(dBm) |       |        | HARMONICS<br>(dBc) |        |        |        |        |        | VCO CURRENT<br>(mA) |       |        | PLL CURRENT<br>(mA) |       |        |
|----------------|-----------------------|-------|--------|--------------------|--------|--------|--------|--------|--------|---------------------|-------|--------|---------------------|-------|--------|
|                |                       |       |        | F2                 |        |        | F3     |        |        |                     |       |        |                     |       |        |
|                | -20 °C                | +25°C | +80 °C | -20 °C             | +25°C  | +80 °C | -20 °C | +25°C  | +80 °C | -20 °C              | +25°C | +80 °C | -20 °C              | +25°C | +80 °C |
| 1865           | 4.08                  | 3.94  | 3.87   | -55.28             | -49.74 | -62.83 | -53.75 | -45.80 | -58.29 | 26.07               | 26.63 | 27.25  | 9.01                | 10.20 | 11.92  |
| 1867           | 4.08                  | 3.93  | 3.87   | -55.13             | -49.83 | -62.23 | -54.88 | -45.49 | -57.44 | 26.07               | 26.64 | 27.25  | 9.01                | 10.25 | 11.97  |
| 1868           | 4.08                  | 3.93  | 3.87   | -54.98             | -49.57 | -61.51 | -53.30 | -45.27 | -57.39 | 26.08               | 26.64 | 27.26  | 9.01                | 10.26 | 12.01  |
| 1870           | 4.07                  | 3.93  | 3.87   | -54.85             | -49.78 | -61.65 | -53.14 | -45.30 | -56.37 | 26.09               | 26.65 | 27.26  | 9.00                | 10.25 | 12.01  |
| 1870           | 4.07                  | 3.93  | 3.87   | -54.98             | -49.99 | -61.45 | -53.40 | -45.05 | -61.31 | 26.09               | 26.65 | 27.26  | 9.01                | 10.26 | 12.02  |
| 1871           | 4.09                  | 3.94  | 3.87   | -55.21             | -49.80 | -60.53 | -53.26 | -45.06 | -60.94 | 26.10               | 26.66 | 27.25  | 9.01                | 10.26 | 12.03  |
| 1873           | 4.09                  | 3.93  | 3.87   | -54.90             | -49.72 | -60.39 | -53.24 | -45.12 | -60.65 | 26.11               | 26.67 | 27.26  | 9.02                | 10.27 | 12.04  |
| 1875           | 4.05                  | 3.93  | 3.87   | -55.32             | -49.83 | -60.42 | -52.28 | -45.04 | -61.28 | 26.12               | 26.68 | 27.27  | 9.02                | 10.28 | 12.05  |
| 1876           | 4.10                  | 3.93  | 3.88   | -54.99             | -49.59 | -60.55 | -52.15 | -44.95 | -61.65 | 26.13               | 26.68 | 27.27  | 9.01                | 10.27 | 12.04  |
| 1878           | 4.11                  | 3.94  | 3.89   | -56.23             | -49.82 | -60.26 | -52.04 | -44.75 | -60.97 | 26.13               | 26.69 | 27.28  | 9.01                | 10.27 | 12.05  |
| 1879           | 4.11                  | 3.94  | 3.89   | -56.57             | -49.66 | -60.25 | -51.93 | -44.63 | -61.47 | 26.15               | 26.70 | 27.29  | 9.01                | 10.28 | 12.06  |
| 1881           | 4.12                  | 3.94  | 3.89   | -56.82             | -49.71 | -59.26 | -52.10 | -44.75 | -61.01 | 26.15               | 26.71 | 27.29  | 9.02                | 10.28 | 12.07  |
| 1883           | 4.13                  | 3.94  | 3.90   | -56.38             | -49.74 | -59.38 | -52.84 | -44.72 | -61.26 | 26.16               | 26.72 | 27.29  | 9.01                | 10.27 | 12.05  |
| 1884           | 4.14                  | 3.95  | 3.91   | -56.05             | -49.73 | -59.33 | -53.63 | -44.47 | -61.65 | 26.17               | 26.72 | 27.30  | 9.01                | 10.27 | 12.06  |
| 1885           | 4.15                  | 3.96  | 3.91   | -55.39             | -49.71 | -59.66 | -53.59 | -44.49 | -61.08 | 26.18               | 26.73 | 27.30  | 9.02                | 10.28 | 12.07  |
| 1886           | 4.15                  | 3.96  | 3.91   | -55.77             | -49.56 | -59.60 | -52.31 | -44.42 | -60.90 | 26.18               | 26.74 | 27.31  | 9.02                | 10.28 | 12.07  |
| 1887           | 4.16                  | 3.97  | 3.92   | -55.91             | -49.65 | -59.70 | -53.19 | -43.90 | -61.35 | 26.20               | 26.74 | 27.32  | 9.02                | 10.29 | 12.08  |
| 1890           | 4.17                  | 3.98  | 3.93   | -55.60             | -49.75 | -59.83 | -53.15 | -43.93 | -61.21 | 26.21               | 26.76 | 27.33  | 9.01                | 10.28 | 12.07  |

| FREQ.<br><br>(MHz) | PHASE NOISE (dBc/Hz) |        |        |         |         |        |        |        |         |         |        |        |        |         |         |
|--------------------|----------------------|--------|--------|---------|---------|--------|--------|--------|---------|---------|--------|--------|--------|---------|---------|
|                    | @ OFFSETS            |        |        |         |         |        |        |        |         |         |        |        |        |         |         |
|                    | -20 °C               |        |        |         |         | +25°C  |        |        |         |         | +80 °C |        |        |         |         |
|                    | 100Hz                | 1kHz   | 10kHz  | 100kHz  | 1MHz    | 100Hz  | 1kHz   | 10kHz  | 100kHz  | 1MHz    | 100Hz  | 1kHz   | 10kHz  | 100kHz  | 1MHz    |
| 1865               | -85.82               | -86.73 | -90.21 | -121.58 | -145.75 | -87.48 | -86.83 | -91.01 | -120.92 | -143.21 | -87.66 | -85.39 | -90.37 | -119.33 | -140.63 |
| 1867               | -84.41               | -85.13 | -91.06 | -121.53 | -144.86 | -85.30 | -84.69 | -90.84 | -120.75 | -143.39 | -84.42 | -86.13 | -90.99 | -119.37 | -140.07 |
| 1868               | -84.78               | -86.52 | -90.57 | -121.56 | -145.06 | -84.68 | -83.39 | -90.65 | -120.72 | -143.42 | -83.02 | -85.56 | -91.38 | -119.36 | -140.07 |
| 1870               | -83.52               | -84.14 | -90.47 | -121.54 | -145.40 | -85.90 | -84.74 | -90.39 | -120.71 | -143.47 | -86.38 | -84.45 | -92.03 | -119.32 | -140.76 |
| 1870               | -84.91               | -84.67 | -90.18 | -121.55 | -145.50 | -86.24 | -84.63 | -90.94 | -120.73 | -143.55 | -84.76 | -83.15 | -91.08 | -119.21 | -140.71 |
| 1871               | -83.35               | -84.65 | -90.69 | -121.59 | -144.92 | -85.12 | -85.59 | -90.55 | -120.84 | -143.40 | -85.66 | -85.21 | -91.35 | -119.33 | -140.50 |
| 1873               | -84.71               | -84.97 | -90.81 | -121.65 | -145.41 | -87.70 | -83.04 | -90.88 | -120.71 | -143.58 | -85.19 | -85.67 | -91.11 | -119.29 | -141.17 |
| 1875               | -85.15               | -84.03 | -90.50 | -121.61 | -144.97 | -85.88 | -84.47 | -90.85 | -120.71 | -142.91 | -83.40 | -85.96 | -90.94 | -119.42 | -140.57 |
| 1876               | -84.73               | -84.45 | -91.01 | -121.61 | -145.39 | -84.90 | -84.52 | -90.95 | -120.68 | -143.44 | -85.41 | -86.33 | -91.09 | -119.35 | -141.11 |
| 1878               | -84.74               | -85.06 | -90.68 | -121.50 | -145.34 | -86.40 | -85.23 | -91.19 | -120.57 | -143.03 | -83.48 | -86.31 | -91.42 | -119.34 | -140.93 |
| 1879               | -87.41               | -85.77 | -90.67 | -121.49 | -145.33 | -84.74 | -86.26 | -91.03 | -120.69 | -142.87 | -85.63 | -86.93 | -91.60 | -119.23 | -140.79 |
| 1881               | -84.87               | -85.61 | -90.14 | -121.48 | -145.11 | -86.47 | -86.59 | -90.90 | -120.78 | -142.10 | -86.42 | -83.33 | -91.52 | -119.15 | -141.00 |
| 1883               | -85.13               | -87.02 | -90.77 | -121.46 | -145.57 | -84.81 | -87.38 | -90.72 | -120.94 | -143.61 | -85.44 | -84.72 | -91.61 | -119.36 | -140.70 |
| 1884               | -85.48               | -84.57 | -90.65 | -121.65 | -145.53 | -84.69 | -86.58 | -90.61 | -120.68 | -143.23 | -84.12 | -84.58 | -91.57 | -119.43 | -140.46 |
| 1885               | -84.89               | -83.73 | -90.79 | -121.45 | -145.36 | -90.39 | -83.19 | -91.45 | -120.91 | -143.02 | -88.12 | -83.31 | -92.25 | -119.32 | -140.48 |
| 1886               | -84.11               | -86.22 | -90.95 | -121.51 | -145.31 | -86.65 | -84.06 | -91.19 | -120.88 | -142.77 | -84.09 | -85.05 | -91.88 | -119.38 | -140.38 |
| 1887               | -84.32               | -83.32 | -90.53 | -121.68 | -145.43 | -85.43 | -83.98 | -91.01 | -120.76 | -142.42 | -84.73 | -84.59 | -92.44 | -119.44 | -140.45 |
| 1890               | -85.38               | -83.27 | -90.72 | -121.71 | -145.14 | -85.37 | -86.02 | -91.22 | -121.01 | -143.38 | -87.12 | -86.00 | -91.95 | -119.41 | -139.74 |

### Notes

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

KSN-EDR10453ME

## Typical Performance Data

| COMPARISON<br>SPURIOUS ORDER | COMPARISON SPURIOUS<br>@Fcarrier 1870 MHz±<br>(n*Fcomparison)<br>(dBc) NOTE 1 |         |         | COMPARISON SPURIOUS<br>@Fcarrier 1878 MHz±<br>(n*Fcomparison)<br>(dBc) NOTE 1 |         |        | COMPARISON SPURIOUS<br>@Fcarrier 1885 MHz±<br>(n*Fcomparison)<br>(dBc) NOTE 1 |         |        |
|------------------------------|-------------------------------------------------------------------------------|---------|---------|-------------------------------------------------------------------------------|---------|--------|-------------------------------------------------------------------------------|---------|--------|
|                              | n                                                                             | -20 °C  | +25°C   | +80 °C                                                                        | -20 °C  | +25°C  | +80 °C                                                                        | -20 °C  | +25°C  |
| -5                           | -106.86                                                                       | -114.17 | -104.46 | -110.33                                                                       | -116.64 | -98.51 | -113.54                                                                       | -107.96 | -99.18 |
| -4                           | -106.55                                                                       | -110.68 | -101.38 | -108.74                                                                       | -109.29 | -95.66 | -105.99                                                                       | -107.49 | -93.48 |
| -3                           | -101.63                                                                       | -108.26 | -98.76  | -106.70                                                                       | -101.61 | -92.10 | -106.33                                                                       | -101.13 | -92.11 |
| -2                           | -99.16                                                                        | -99.99  | -92.39  | -99.16                                                                        | -99.49  | -88.02 | -98.67                                                                        | -98.40  | -87.98 |
| -1                           | -83.96                                                                        | -87.48  | -79.94  | -86.20                                                                        | -85.82  | -77.22 | -87.26                                                                        | -86.40  | -76.39 |
| 0 <sup>note 2</sup>          | -                                                                             | -       | -       | -                                                                             | -       | -      | -                                                                             | -       | -      |
| +1                           | -85.64                                                                        | -87.79  | -83.50  | -88.78                                                                        | -89.66  | -77.66 | -89.92                                                                        | -89.68  | -77.29 |
| +2                           | -98.96                                                                        | -101.46 | -93.15  | -103.42                                                                       | -102.89 | -87.66 | -102.03                                                                       | -97.08  | -86.39 |
| +3                           | -104.40                                                                       | -108.93 | -95.67  | -107.11                                                                       | -102.19 | -92.58 | -110.72                                                                       | -102.87 | -92.20 |
| +4                           | -106.98                                                                       | -110.67 | -100.71 | -104.18                                                                       | -109.50 | -96.02 | -104.00                                                                       | -107.25 | -92.94 |
| +5                           | -109.39                                                                       | -115.29 | -102.57 | -110.21                                                                       | -114.07 | -97.83 | -114.78                                                                       | -108.08 | -97.97 |

Note 1: Comparison frequency 200 kHz

Note 2: All spurs are referenced to carrier signal (n=0).

| REFERENCE<br>SPURIOUS ORDER | REFERENCE SPURIOUS<br>@Fcarrier 1870 MHz±<br>(n*Freference)<br>(dBc) NOTE 3 |         |         | REFERENCE SPURIOUS<br>@Fcarrier 1878 MHz±<br>(n*Freference)<br>(dBc) NOTE 3 |         |         | REFERENCE SPURIOUS<br>@Fcarrier 1885 MHz±<br>(n*Freference)<br>(dBc) NOTE 3 |         |         |        |
|-----------------------------|-----------------------------------------------------------------------------|---------|---------|-----------------------------------------------------------------------------|---------|---------|-----------------------------------------------------------------------------|---------|---------|--------|
|                             | n                                                                           | -20 °C  | +25°C   | +80 °C                                                                      | -20 °C  | +25°C   | +80 °C                                                                      | -20 °C  | +25°C   | +80 °C |
|                             |                                                                             |         |         |                                                                             |         |         |                                                                             |         |         |        |
| -5                          | -120.31                                                                     | -119.72 | -122.04 | -119.36                                                                     | -121.21 | -118.62 | -121.77                                                                     | -120.93 | -117.95 |        |
| -4                          | -125.74                                                                     | -126.55 | -117.06 | -126.12                                                                     | -125.14 | -118.04 | -123.57                                                                     | -121.07 | -118.30 |        |
| -3                          | -112.86                                                                     | -121.34 | -125.44 | -113.94                                                                     | -121.06 | -119.38 | -118.39                                                                     | -126.74 | -124.07 |        |
| -2                          | -114.66                                                                     | -120.17 | -122.40 | -114.57                                                                     | -119.49 | -123.02 | -115.84                                                                     | -120.11 | -126.63 |        |
| -1                          | -101.77                                                                     | -95.07  | -106.43 | -100.43                                                                     | -94.58  | -107.82 | -100.58                                                                     | -94.96  | -108.30 |        |
| 0 <sup>note 4</sup>         | -                                                                           | -       | -       | -                                                                           | -       | -       | -                                                                           | -       | -       |        |
| +1                          | -99.36                                                                      | -101.06 | -114.48 | -99.94                                                                      | -102.70 | -107.69 | -105.07                                                                     | -104.65 | -108.60 |        |
| +2                          | -116.97                                                                     | -119.15 | -118.14 | -116.35                                                                     | -117.32 | -115.86 | -114.99                                                                     | -114.35 | -119.00 |        |
| +3                          | -117.10                                                                     | -117.76 | -123.09 | -119.56                                                                     | -118.30 | -122.44 | -121.99                                                                     | -125.14 | -123.02 |        |
| +4                          | -115.81                                                                     | -114.03 | -117.33 | -116.34                                                                     | -113.50 | -117.74 | -114.10                                                                     | -112.33 | -117.75 |        |
| +5                          | -117.44                                                                     | -116.54 | -121.30 | -118.01                                                                     | -115.01 | -121.85 | -120.21                                                                     | -118.48 | -123.49 |        |

Note 3: Reference frequency 26 MHz

Note 4: All spurs are referenced to carrier signal (n=0).

### Notes

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