FMSN3900 is a Frequency Synthesizer Module that covers a wide frequency band from 35 MHz to 4.4 GHz with exceptional spurious rejection and phase noise performance. Output power ranges from -20 dBm to +10 dBm typical across the entire frequency band. This high quality signal source has several outstanding features including a USB 2.0 interface that is powered and command controlled directly by a host PC and a Female SMA output connector, and is VISA compliant which enables seamless cross platform use. The synthesizer can be GUI controlled via Windows®, Macintosh®, or Linux® platforms, or with SCPI compliant VISA commands (downloadable user manual), or with other system design software such as LabVIEW®. The compact size makes it ideal for bench top test and measurement use or for radar and communication systems. Frequency resolution of the FMSN3900 is available in integer and fractional operating modes and the User can select between an internal reference (capable of phase locking) or externally applied reference. The module supports integrated phase locked loop (PLL) circuitry that the User can select between an internal reference (capable of phase locking) or externally applied reference. The RF Synthesizer Module comes complete with a USB 2.0 A extension and an SMA male to MMCX plug cable.

**Features:**
- Wideband Output Frequency
- 35 MHz to 4.4 GHz
- Integer and Fractional operating modes
- Output Power from -20 dBm to +10 dBm typical
- USB 2.0 Interface
- Female SMA output
- USBTMC VISA Compliant
- User Selectable internal reference or externally applied reference
- Small compact package size
- Downloadable User Manual
- Accessory cables included

**Applications:**
- Signal Generators
- Test Equipment
- Communications Systems
- EW Systems
- Radar Systems
- Frequency Conversion
- OEM Integration into RF Systems
- SIGINT

### Electrical Specifications (TA= 25°C)

<table>
<thead>
<tr>
<th>Description</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>0.035</td>
<td>4.4</td>
<td>GHz</td>
<td></td>
</tr>
<tr>
<td>Step Size (Fractional Mode)</td>
<td>2.441</td>
<td></td>
<td></td>
<td>kHz</td>
</tr>
<tr>
<td>Phase Locked Speed</td>
<td>1</td>
<td></td>
<td></td>
<td>ms</td>
</tr>
<tr>
<td>Phase Noise @100kHz Offset</td>
<td>103</td>
<td></td>
<td></td>
<td>dBC/Hz</td>
</tr>
<tr>
<td>Reference Frequency</td>
<td>10</td>
<td>50</td>
<td>100</td>
<td>MHz</td>
</tr>
<tr>
<td>Reference Power (CW)</td>
<td>+0</td>
<td>+15</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Internal Reference Frequency</td>
<td>50</td>
<td></td>
<td></td>
<td>MHz</td>
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<tr>
<td>Internal Reference Accuracy</td>
<td>0.5</td>
<td></td>
<td></td>
<td>ppm</td>
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</table>
Performance by Frequency

<table>
<thead>
<tr>
<th>Description</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>0.2</td>
<td>2</td>
<td>4</td>
<td>GHz</td>
</tr>
<tr>
<td>Phase Noise @ 100 KHz Offset (with internal reference)</td>
<td>-117</td>
<td>-108</td>
<td>-103</td>
<td>dBC/Hz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>.035</td>
<td>2.2</td>
<td>2.2</td>
<td>GHz</td>
</tr>
<tr>
<td>Step Size (Integer Mode)</td>
<td>25</td>
<td>50</td>
<td></td>
<td>MHz</td>
</tr>
</tbody>
</table>

Electrical Specification Notes:
Step size specified under default conditions (a 50 MHz reference input with a reference divider of 1).

Mechanical Specifications

**Size**
- Length: 3.3 in [83.82 mm]
- Width: 0.9 in [22.86 mm]
- Height: 0.6 in [15.24 mm]
- Weight: 0.1641 lbs [74.43 g]

**Configuration**
- Package Type: Connectorized
- Reference Connector: MMCX Female
- Output Connector: SMA Female
- Control Connector: USB Type A - Male
Reference Divider Out Connector: MMCX Female

Mechanical Specification Notes:
The USB Type A - Male connector is used for both Power and Control.

**Environmental Specifications**

**Temperature**
- Operating Range: 0 to +55 deg C
- Storage Range: -50 to +100 deg C

**Compliance Certifications** (see product page for current document)

**Plotted and Other Data**
Notes:
Typical Performance Data

![Graph 1: Phase Noise - Carrier Frequency Comparison, Fractional Mode](image1)

![Graph 2: Phase Noise - Carrier Frequency Comparison, Integer Mode](image2)
USB Frequency Synthesizer PLL (Phase Locked Loop), Operating From 35 MHz to 4.4 GHz With SMA Output from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: USB Frequency Synthesizer PLL (Phase Locked Loop), Operating From 35 MHz to 4.4 GHz With SMA Output FMSN3900


The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Fairview Microwave reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Fairview Microwave does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Fairview Microwave does not assume any liability arising out of the use of any part or documentation.
USB Frequency Synthesizer PLL (Phase Locked Loop), Operating From 35 MHz to 4.4 GHz With SMA Output

FAIRVIEW MICROWAVE INC.
ALLEN, TX 75013 WWW.FAIRVIEWMICROWAVE.COM

NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.
3. DIMENSIONS ARE IN INCHES [mm].

FAIRVIEW MICROWAVE FMSN3900

STANDARD TOLERANCES
.X ±0.2
.XX ±0.1
.XXX ±0.05

*STANDARD TOLERANCES APPLY ONLY TO DIMENSIONS IN INCHES

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