

**SPI Frequency Synthesizer, 1 GHz to 6.4 GHz,
+18 dBm Pout, 20 MHz Step Size, 100 MHz External
Reference, -90 dBc/Hz Phase Noise, +5 Vdc, SMA**

The FMSN3909 is a Frequency Synthesizer module that covers a broadband frequency range from 1 GHz to 6.4 GHz and produces > +18 dBm output power. The 50 ohm design provides high resolution with a 20 MHz output frequency step size, and supports a 100 MHz External Reference for design flexibility. Impressive typical performance includes low Spurious Rejection of -62 dBc, and low Phase Noise of -90 dBc/Hz @ 1 kHz offset. Operating Voltage is +5 Vdc with 200 mA current. The rugged ultra small size package design supports field replaceable SMA female connectors and can be drop mounted onto a PWB, with DC bias pins, and a TTL controlled Lock pin. Additional pins for command control functions through a serial peripheral interface (SPI) for signal enable, clock signal, and data. The module operates across a wide temperature range of -40°C to +85°C, and can withstand relative humidity exposure up to 95% maximum.

Electrical Specifications (TA= -40°C to +85°C, Vd1 = 5 V, Id1 = 200 mA)

Reference
Control Interface

External
Serial, TTL

| Description | Min | Typ | Max | Units |
|-------------------------------------|------|-----|------|--------|
| Frequency Range | 1 | | 6.4 | GHz |
| Load Impedance | | 50 | | Ohms |
| Output Power | 15 | 18 | 20 | dBm |
| Step Size | | 20 | | MHz |
| Phase Locked Speed | | 300 | | us |
| Phase Noise @1kHz Offset | | -90 | | dBc/Hz |
| Spurious | | -62 | | dBc |
| 2nd Harmonic | | -12 | | dBc |
| Reference Frequency | | 100 | | MHz |
| Reference Power (CW) | 0 | 5 | 8 | dBm |
| Reference Phase Noise @ 1kHz Offset | | | -150 | dBc/Hz |
| Operating DC Voltage 1 | 4.75 | 5 | 5.25 | V |
| Operating DC Current 1 | | 200 | | mA |

Mechanical Specifications

Size

| | |
|--------|--------------------|
| Length | 1.18 in [29.97 mm] |
| Width | 1.18 in [29.97 mm] |
| Height | 0.4 in [10.16 mm] |
| Weight | 0.05 lbs [22.68 g] |

Configuration

| | |
|---------------------|------------------------------|
| Reference Connector | SMA Female Field Replaceable |
| Output Connector | SMA Female Field Replaceable |

Environmental Specifications

Temperature

| | |
|-----------------|-----------------|
| Operating Range | -40 to 85 deg C |
| Storage Range | -55 to 85 deg C |
| Humidity | 95% |



Features:

- SPI Frequency Synthesizer Module
- Frequency Range 1 GHz to 6.4 GHz
- 20 MHz Output Frequency Step Size
- 100 MHz External Reference
- Output Power > +18 dBm
- Spurious Rejection -62 dBc
- Phase Noise -90 dBc/Hz @ 1 kHz offset
- Hopping Time < 300 msec
- DC Bias +5V @ 200 mA
- Operational Temperature Range -40°C to +85°C
- Field Replaceable SMA Female Connectors
- Rugged and small Mil Grade Aluminum Package Design
- Designed to withstand Humidity exposure up to 95% max

Applications:

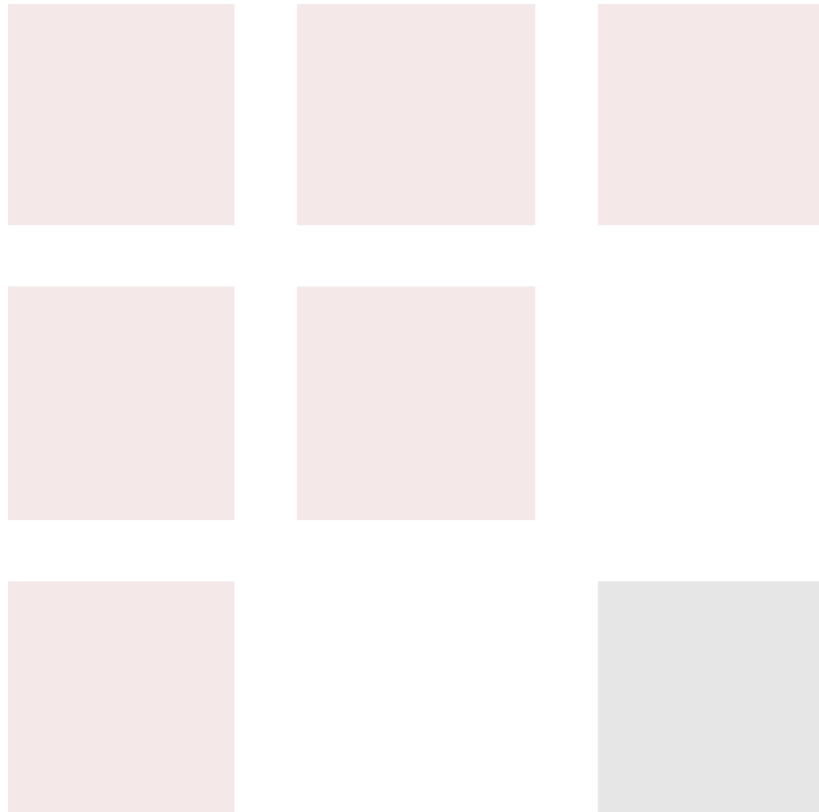
- Signal Generators
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- Radar Systems
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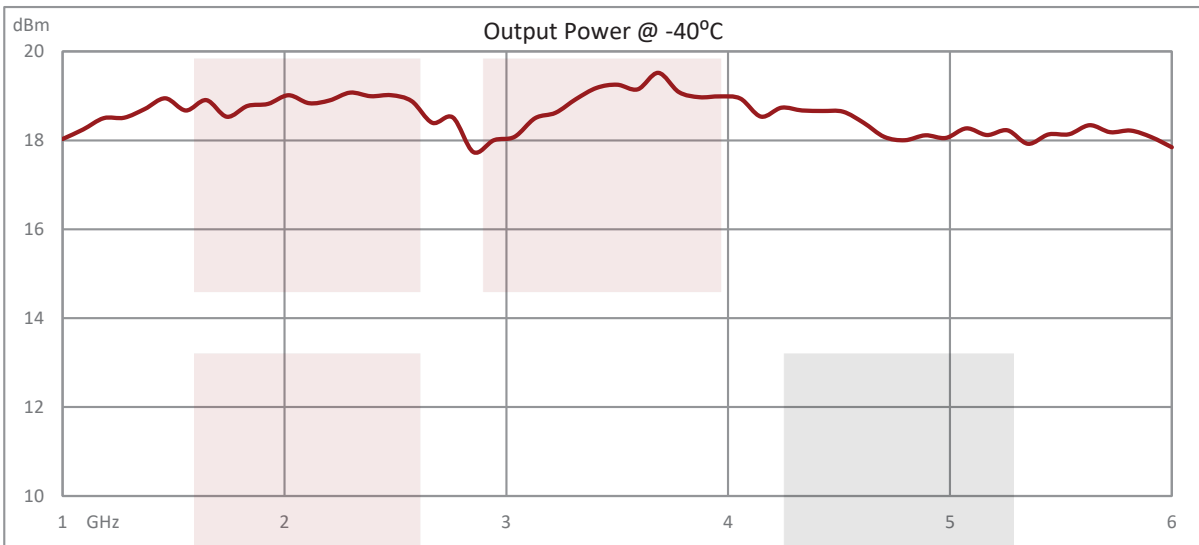
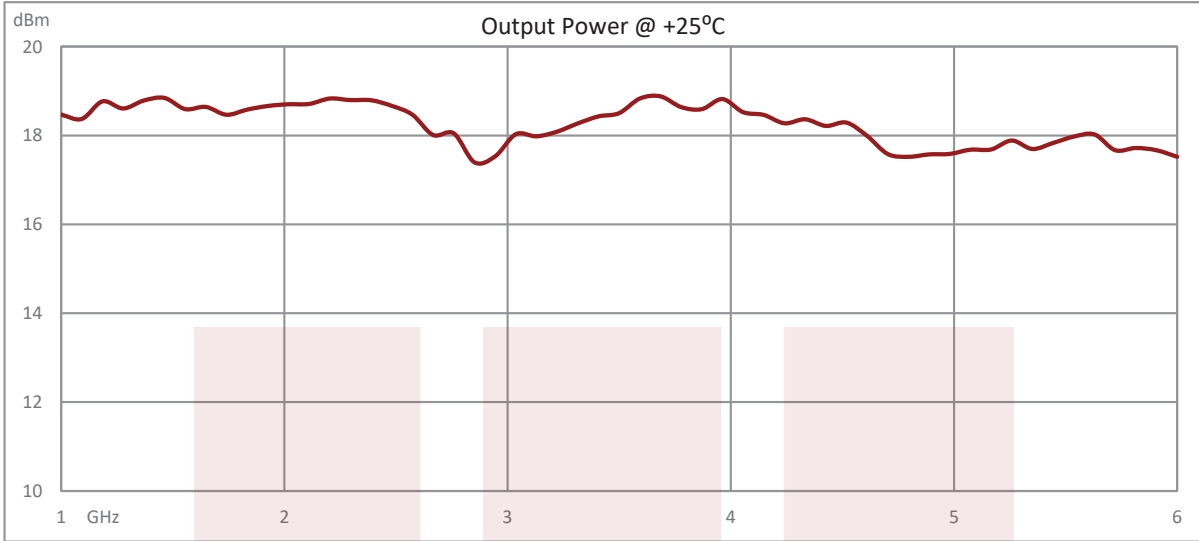
Compliance Certifications (see [product page](#) for current document)

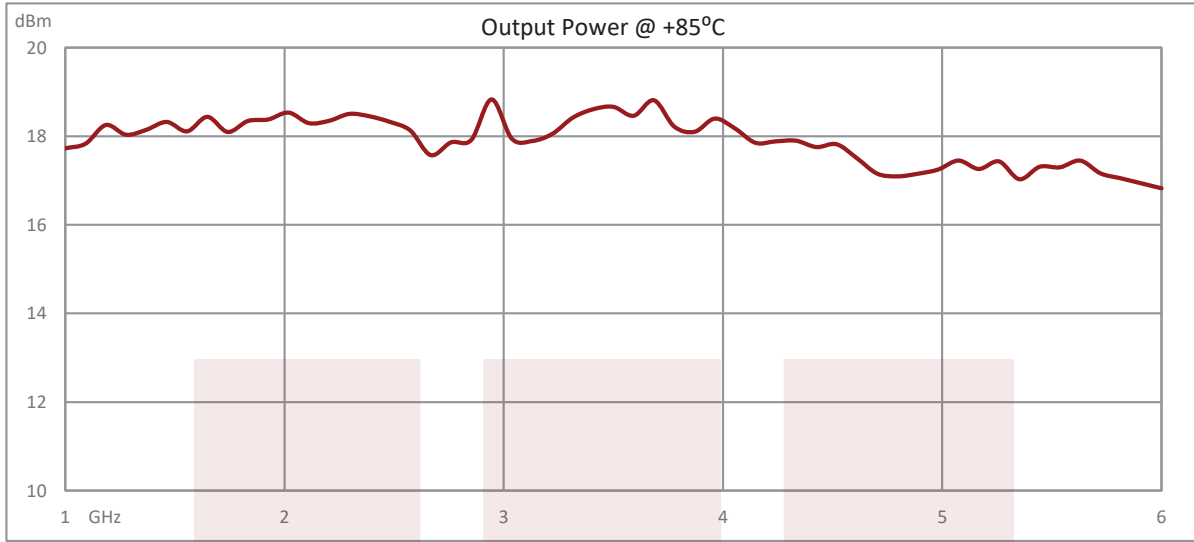
Plotted and Other Data

Notes:



Typical Performance Data





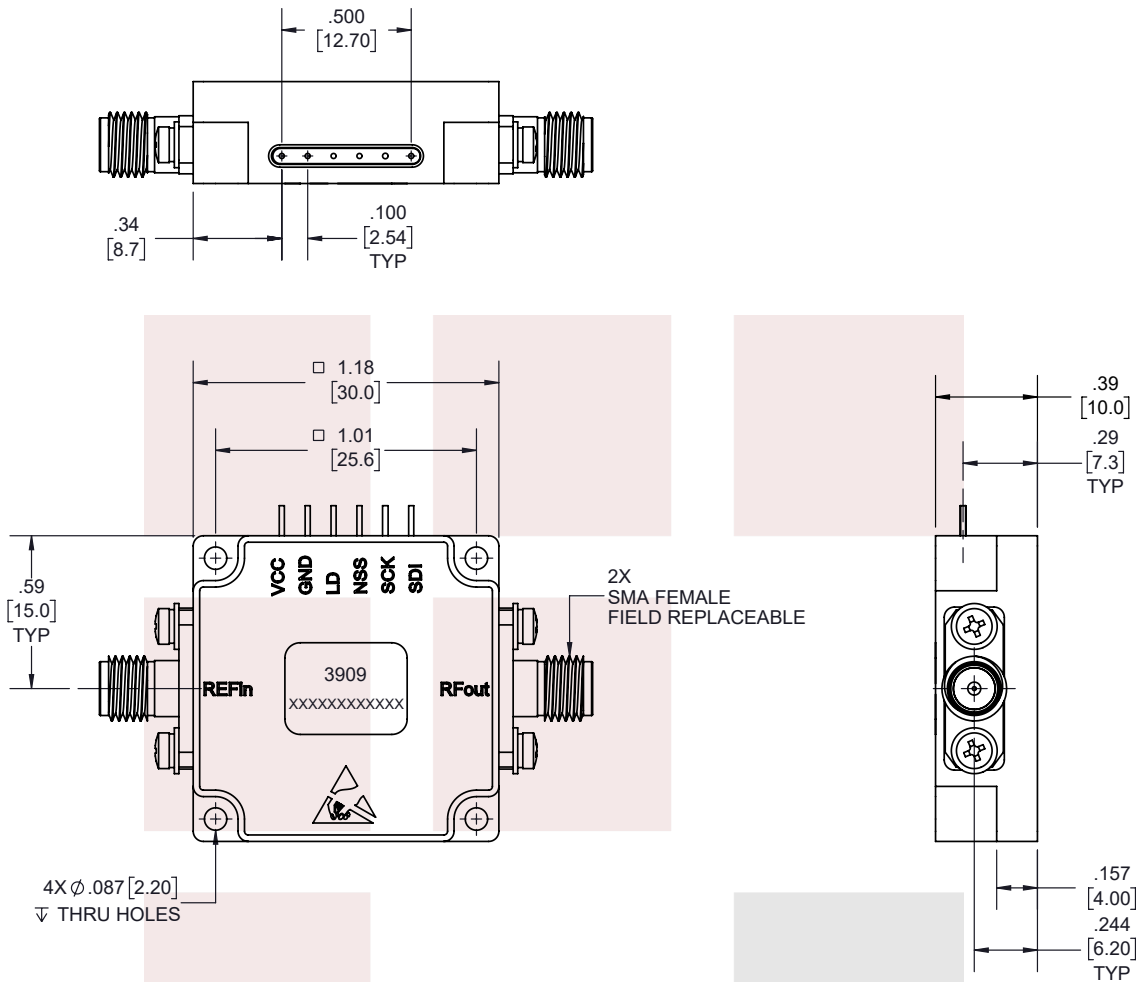
SPI Frequency Synthesizer, 1 GHz to 6.4 GHz, +18 dBm Pout, 20 MHz Step Size, 100 MHz External Reference, -90 dBc/Hz Phase Noise, +5 Vdc, SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [SPI Frequency Synthesizer, 1 GHz to 6.4 GHz, +18 dBm Pout, 20 MHz Step Size, 100 MHz External Reference, -90 dBc/Hz Phase Noise, +5 Vdc, SMA FMSN3909](https://www.fairviewmicrowave.com/spi-frequency-synthesizer-pll-1-6.4-ghz-sma-fmsn3909-p.aspx)

URL: <https://www.fairviewmicrowave.com/spi-frequency-synthesizer-pll-1-6.4-ghz-sma-fmsn3909-p.aspx>

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| REVISIONS | | | |
|-----------|-----------------|----------|----------|
| REV. | DESCRIPTION | DATE | APPROVED |
| A | INITIAL RELEASE | 5/3/2022 | T. GALLA |



| PIN CONFIGURATION | | |
|-------------------|-----|--|
| 1 | VCC | +5V IN |
| 2 | GND | GND |
| 3 | LD | Lock Directive: High level: Locked Low level: Unlock |
| 4 | NSS | SPI Enable Signal |
| 5 | SCK | SPI Clock Signal |
| 6 | SDI | SPI Data |

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TITLE
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UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES
DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES: CABLE LENGTH (L) TOLERANCES:

| | | |
|--------------------|-------------|---|
| .X = ±.2 [5.08] | FRACTIONS | L ≤ 12 [305] = +1 [25] / -0 |
| .XX = ±.02 [.51] | ± 1/32 | 12 [305] < L ≤ 60 [1524] = +2 [51] / -0 |
| .XXX = ±.005 [.13] | ANGLES ± 1° | 60 [1524] < L ≤ 120 [3048] = +4 [102] / -0 |
| | | 120 [3048] < L ≤ 300 [7620] = +6 [152] / -0 |
| | | 300 [7620] < L = +5%L / -0 |

THIRD-ANGLE PROJECTION



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SHEET 1 OF 1

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SCALE N/A

| | | | | |
|-----------|--------------------|--------------------|----------------------|----------|
| SIZE A | CAGE CODE 3FKR5 | DRAWN BY K.DANG | ITEM NO. FMSN3909 | REV A |
|-----------|--------------------|--------------------|----------------------|----------|

T-Rev.D