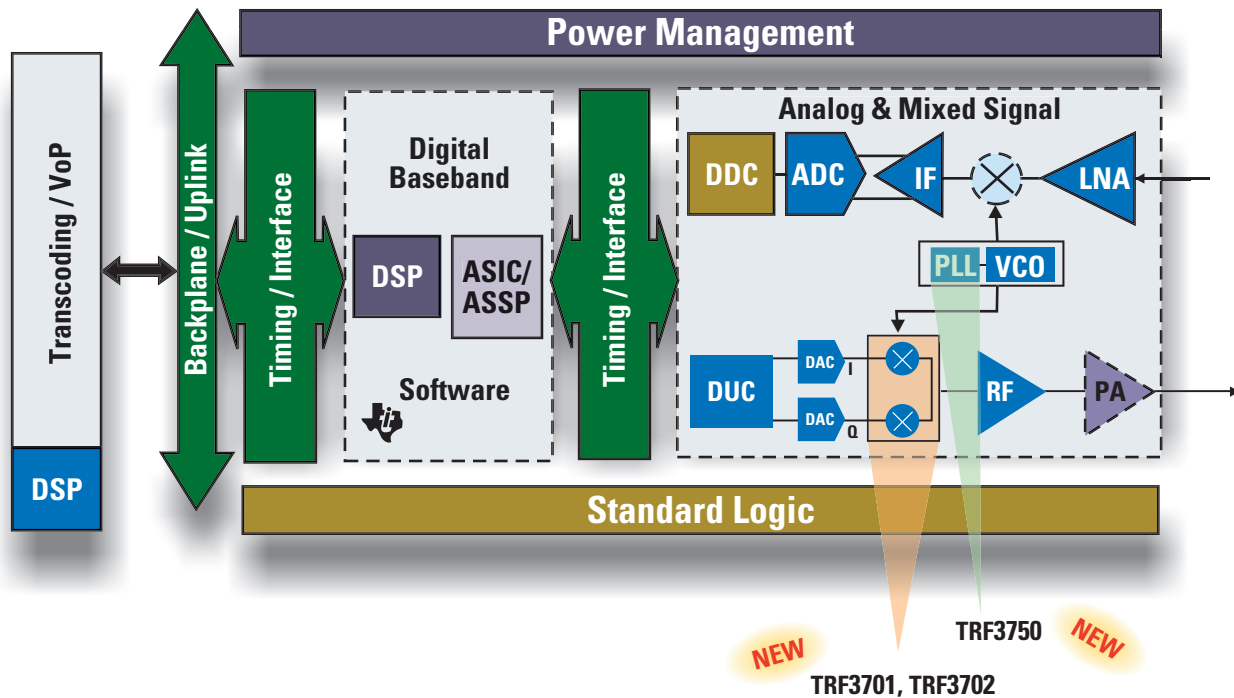


# Wireless Infrastructure RF Family Fact Sheet: TRF3701, TRF3702, TRF3750

Texas Instruments Wireless Infrastructure Family of RF Products Expands the Signal Chain Solution from Antenna to the Public Network.



TI's Complete Signal Chain Solution includes the RF Family of Products: TRF3701, TRF3702, TRF3750

Expanding its broad portfolio of analog and digital signal processing products for wireless infrastructure base station manufacturers, the Texas Instruments (TI) Radio Frequency (RF) product family includes the TRF3701, TRF3702 and TRF3750. These devices are designed to work with multiple, different wireless standards including GSM, CDMA and UMTS, delivering greater channel density, reduced costs, increased system flexibility, and enabling customers to get to market faster.

Capitalizing on TI's advanced analog BiCMOS technology, these products will enhance infrastructure systems, ultimately enabling cellular phone users to receive voice and data calls in more ways and with better service. By delivering the complete signal chain solution, TI can offer products that enable networks to deliver feature-rich services consumers desire.

## Low Noise Direct IQ Modulators Eliminate Intermediate IF Stage

The TRF3701 and TRF3702 devices are low noise quadrature direct modulators, capable of modulating complex input signals up to RF. An internal analog combiner sums the real and imaginary components of the RF input. This family offers high output power (P1dB = +7 dBm) with an ultra low noise floor (-156 dBm/Hz).

### Product Specifications: TRF3701/TRF3702

TRF3701 Parameters	Value
LO input	942 MHz @ 0 dBm
Vdc	5.0 V
Supply Current	145 mA
Unadjusted Carrier Suppression	43 dBc
Unadjusted Sideband Suppression	46 dBc
Phase Error	+/- 0.3°
IMD3 (two tone output, each @ -8dBm)	60 dBc
P1dB (output)	+7 dBm
Noise Spectral Density (I=Q=3.7V)	-156 dBm/Hz
Noise Spectral Density (Pout = 0 dBm)	-150 dBm/Hz
TRF3702 Parameters	Value
LO input	2000 MHz @ 0 dBm
Vdc	5.0 V
Supply Current	145 mA
Unadjusted Carrier Suppression	32 dBc
Unadjusted Sideband Suppression	45 dBc
Phase Error	+/- 0.5°
IMD3 (two tone output, each @ -8 dBm)	60 dBc
P1dB (output)	+7 dBm
Noise Spectral Density (I=Q=3.7V)	-156 dBm/Hz
W-CDMA ACPR (1X Ch. Power = -15 dBm, @ 61.44 MHz IF)	66 dB

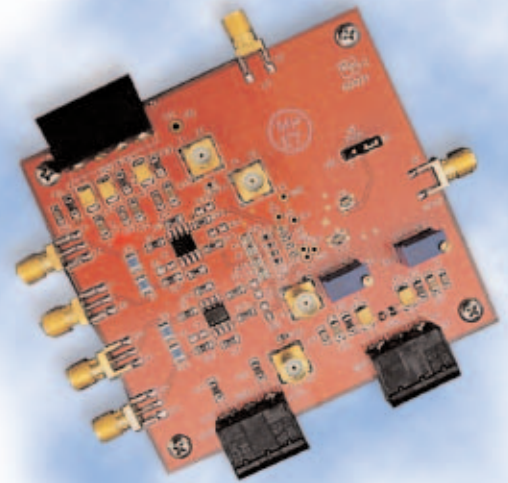
## Applications

- Wireless Infrastructure
- Communication Test Equipment
- Wireless LAN

Both devices are pin compatible and are optimized for use in direct up conversion architectures where space and cost savings are key considerations. This new technology enables customers to directly upconvert baseband or low IF signals from 0 - 250 MHz up to 1.5 GHz using the TRF3701, or up to 2.5 GHz using the TRF3702. As a result, this direct upconversion eliminates an intermediate IF stage, improving system efficiency and cost.

### Key Features: TRF3701, TRF3702

- TRF3701 supports up to 1.5 GHz output
- TRF3702 supports up to 2.5 GHz output
- Output power at 1 dB compression point of +7 dBm
- Low noise floor of -156 dBm/Hz
- Excellent carrier and sideband suppression
- Differential or single ended I&Q inputs
- Convenient single ended LO input
- 16-pin QFN package



TRF3701/2 Evaluation Module (EVM)

## Low Noise Phased Locked Loop Synthesizer

The TRF3750 is a monolithic phased locked loop (PLL) synthesizer optimized for low noise performance, a key factor in digital mobile communication. When used with a voltage controlled oscillator (VCO), the TRF3750 can generate frequencies from 100 MHz up to 2.4 GHz for GSM, UMTS and CDMA applications. The TRF3750 is released to production now and can be evaluated using the TRF3750EVM and Software. It is available in a 16-pin TSSOP package.

### Product Specifications: TRF3750

TRF3750 Parameters	Value
Phase Noise (900 MHz carrier, 1 kHz Offset, 200 kHz PFD, 20 kHz loop BW)	-91 dBc/Hz
Ref Spurs (900 MHz carrier, 1 kHz Offset, 200 kHz PFD, 20 kHz loop BW)	-100 dBc
Phase Noise (1960 MHz carrier, 1 kHz Offset, 200 kHz PFD, 20 kHz loop BW)	-84 dBc/Hz
Ref Spurs (1960 MHz carrier, 1 kHz Offset, 200 kHz PFD, 20 kHz loop BW)	-90 dBc

#### Key Features: TRF3750

- Single device operation from 100 MHz to 2.4 GHz
- Separate charge pump supply (Vcp) up to 8 V
- Simple 3-wire serial interface allows for fully programmable:
  - A, B & R counters
  - Dual modulus prescaler [8/9, 16/17, 32/33 & 64/65]
  - Charge pump current
  - Lock detect output (digital and analog)
- Hardware and software power down
- 16-pin TSSOP package

### Applications

- Wireless Infrastructure
- Communication Test Equipment
- Wireless LAN

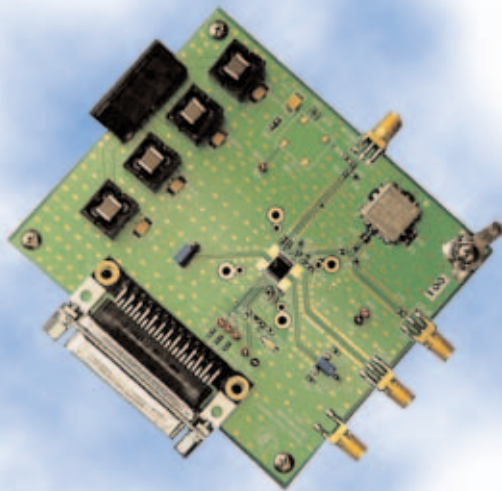
### Uniquely Positioned in the Wireless Infrastructure Market

TI is the only semiconductor company to offer a complete system-oriented solution for Wireless Infrastructure applications. These products include digital down/up converters, data converters, high-speed amplifiers, clock drivers, serializers/deserializers, LVDS, logic, bus switches and power management solutions.

The new family of RF devices joins TI's existing analog product line targeted for wireless infrastructure applications, including the recently announced GC5316 digital up and down converter, the ADS5500 (14-bit 125 MSPS) analog to digital converter (ADC) and DAC5686 (16-bit 500 MSPS) digital to analog converter (DAC).

Complementing the analog portion of the signal chain, TI's digital signal processors (DSP) lead the industry in deployment with 10 of the top 12 base station manufacturers using our products. The TMS320TC1100 delivers high performance at ultra-low power. Combined with Viterbi and Turbo coprocessors, this solution delivers over 600 voice channels and 35 data channels. For those customers wanting a custom solution, TI also offers a wide spectrum of SOC and DSP cores.

For more information about Texas Instruments and our portfolio of Wireless Infrastructure solutions, visit our web site at [www.ti.com/wirf](http://www.ti.com/wirf).



TRF3750EVM

### For More Information

If you have questions or want additional information on TI's leading analog wireless infrastructure portfolio, call your local TI Product Support representative (1-972-644-5580) or visit: [support.ti.com](http://support.ti.com)

### To Request a Sample

To order your EVM/sample email your request to [trf\\_evmreq@list.ti.com](mailto:trf_evmreq@list.ti.com), or contact your TI sales representative.

## TI Worldwide Technical Support

### Internet

**TI Semiconductor Product Information Center Home Page**  
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