

# INTELLIGENT INTERACTIVE SYNTHESIZER

## SURFACE MOUNT MODEL: LFSFN200400-100

**WIDE BANDWIDTH**

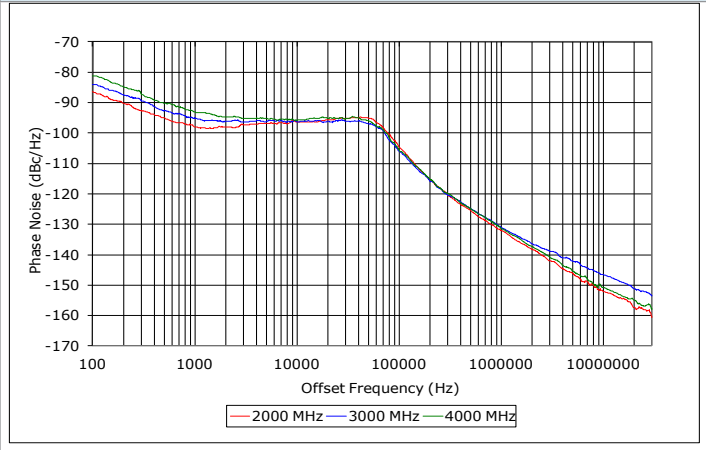
**2000 - 4000 MHz**

**FEATURES:**

- ▶ Exceptionally Low Phase Noise
- ▶ Interactive Communication
- ▶ Standard Programming Interface
- ▶ Ultra Wide Tuning Range
- ▶ Lead Free - RoHS Compliant
- ▶ Patented REL-PRO® Technology
- ▶ Small Size, Surface Mount
- ▶ Buffered Output



**Phase Noise**

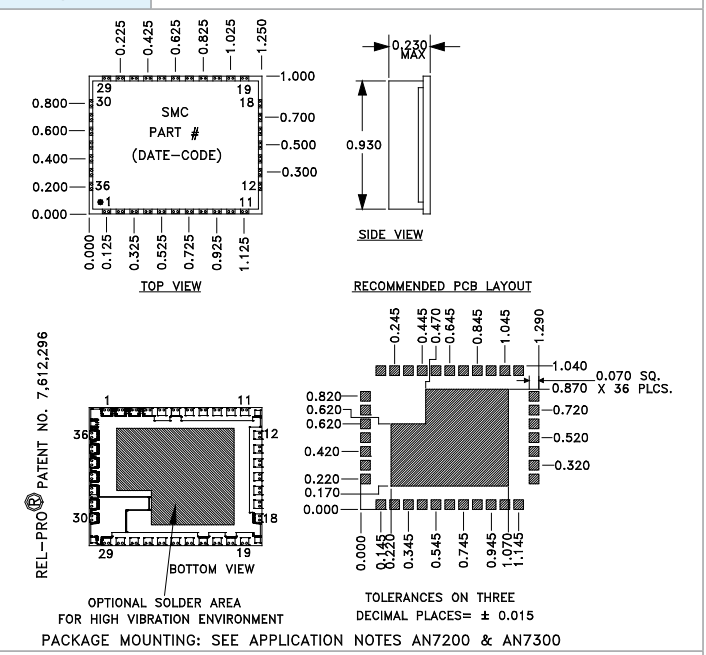


**SPECIFICATIONS**

|                             |                              |                    |                    |
|-----------------------------|------------------------------|--------------------|--------------------|
| Frequency                   | 2000 - 4000 MHz              |                    |                    |
| Step Size                   | 1000 kHz                     |                    |                    |
| Reference Input Frequency   | 10 MHz <sup>1</sup>          |                    |                    |
| Reference Input Voltage     | 1.0 V p-p to 3.3 V p-p       |                    |                    |
| Bias Voltage                | <b>Vcc</b>                   | <b>V (Vdc)</b>     | <b>I (mA Max.)</b> |
|                             | Digital                      | +5                 | 65                 |
|                             | VCO                          | +5                 | 50                 |
|                             | Tune                         | +5                 | 25                 |
| Output Power                | +7 dBm (Min.)                |                    |                    |
| Spurious Suppression        | 70 dB (Min.)                 |                    |                    |
| Harmonic Suppression        | 10 dB (Typ.)                 |                    |                    |
| Settling Time               | 1 mSec (Typ.) <sup>2</sup>   |                    |                    |
| Output Impedance            | 50 Ohms (Nom.)               |                    |                    |
| Lock Detect Indicator       | CMOS 3.3 V                   |                    |                    |
| Typical Phase Noise         | <b>Offset</b>                | <b>Phase Noise</b> |                    |
|                             | @ 1 kHz                      | -95 dBc/Hz         |                    |
|                             | @ 10 kHz                     | -95 dBc/Hz         |                    |
|                             | @ 100 kHz                    | -105 dBc/Hz        |                    |
| Operating Temperature Range | -40 to +85 °C                |                    |                    |
| Programming                 | See Application Note: AN7100 |                    |                    |

<sup>1</sup> Contact factory for other reference frequency options  
<sup>2</sup> From the rising edge of LE to stable lock detect

**Package # 197LF**



**Absolute Maximum Ratings**

|                              |                |
|------------------------------|----------------|
| Storage Temp. Range          | -55 to +125 °C |
| Bias Voltage (Digital)       | +5.25 V        |
| Bias Voltage (VCO)           | +5.5 V         |
| Bias Voltage (Tune)          | +8.0 V         |
| DC Voltage Applied to RF Out | ±25 V          |

**Patent :** <http://www.synergymwave.com/patents>

**Port Configuration**

|                           |                               |                           |
|---------------------------|-------------------------------|---------------------------|
| Pin 5 - RF out            | Pin 21 - Ref. In              | Pin 8,12,14,15,16,17 - NC |
| Pin 7 - Lock Detect Out * | Pin 23 - Vcc (Digital)        | All Others - Ground       |
| Pin 9 - Data In           | Pin 24 - Vtune (Output)       |                           |
| Pin 10 - Error Flag       | Pin 25 - Vcc (VCO)            | NC - No Connection        |
| Pin 11 - Clock In         | Pin 26 - Vout (Converter) *** |                           |
| Pin 13 - VCO (On/Off)**** | Pin 27 - Vcc (Tune) ***       |                           |
| Pin 19 - Latch Enable In  | Pin 28 - Vcc (Converter)      |                           |

\* High when locked (source/sink 500 uA)  
 \*\*\* Connect externally. Bypassed with a 10uF 35V tantalum capacitor.  
 \*\*\*\* NC if unused.

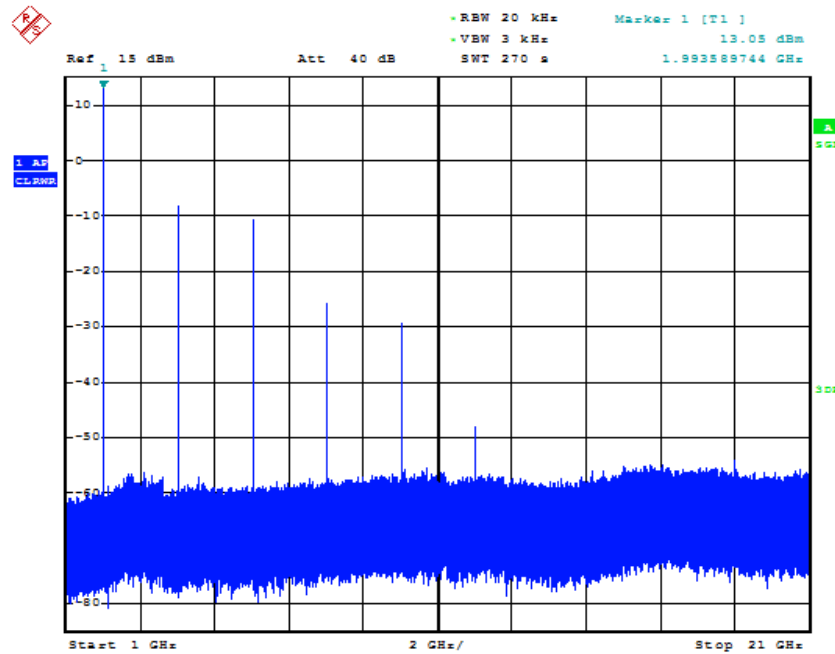
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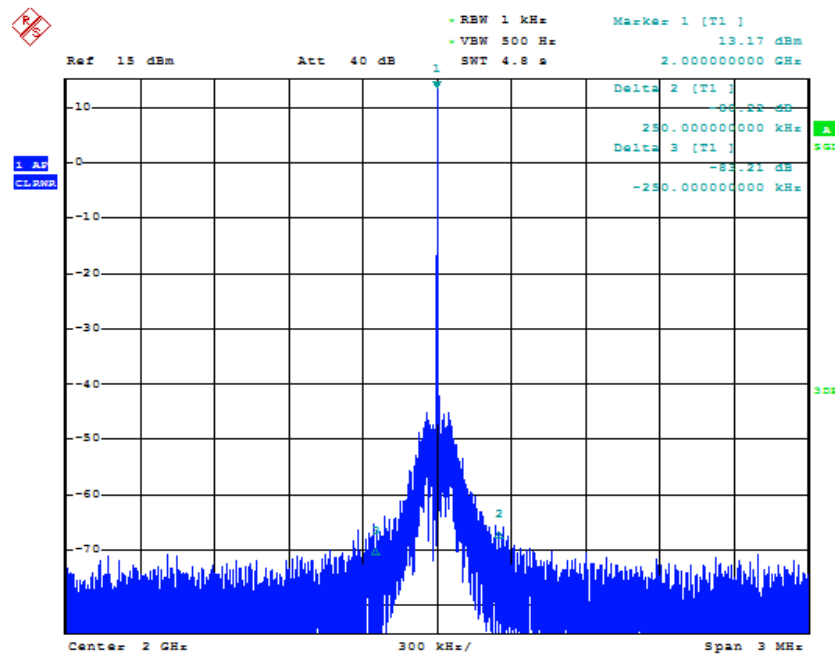
WIDE BANDWIDTH

2000 - 4000 MHz

HARMONIC SUPPRESSION



REFERENCE SIDEBAND SUPPRESSION

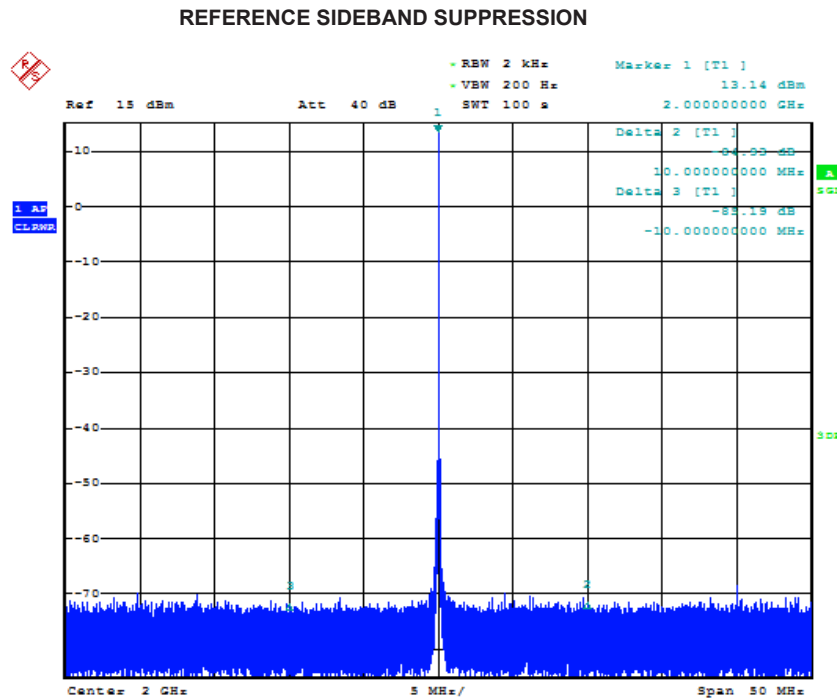


PERFORMANCE PLOTS

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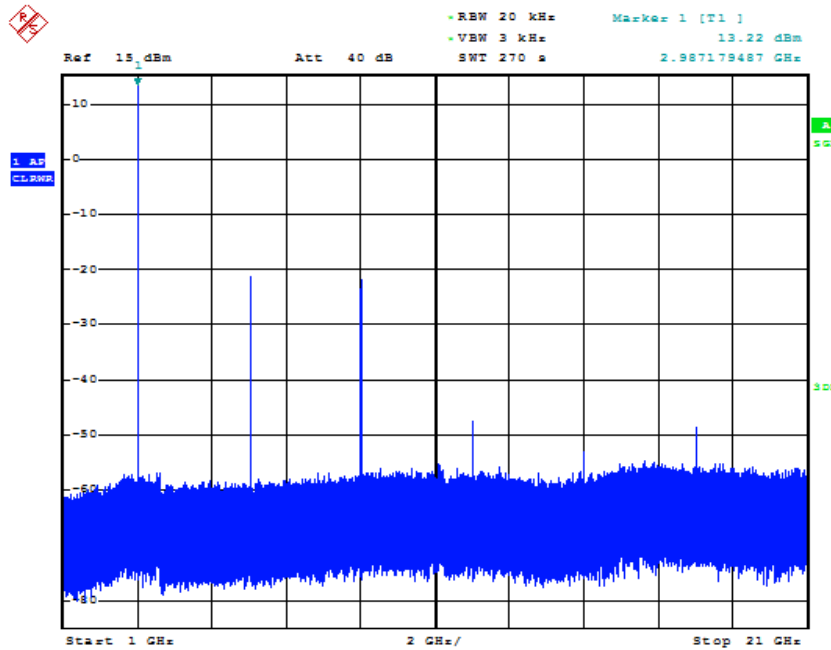
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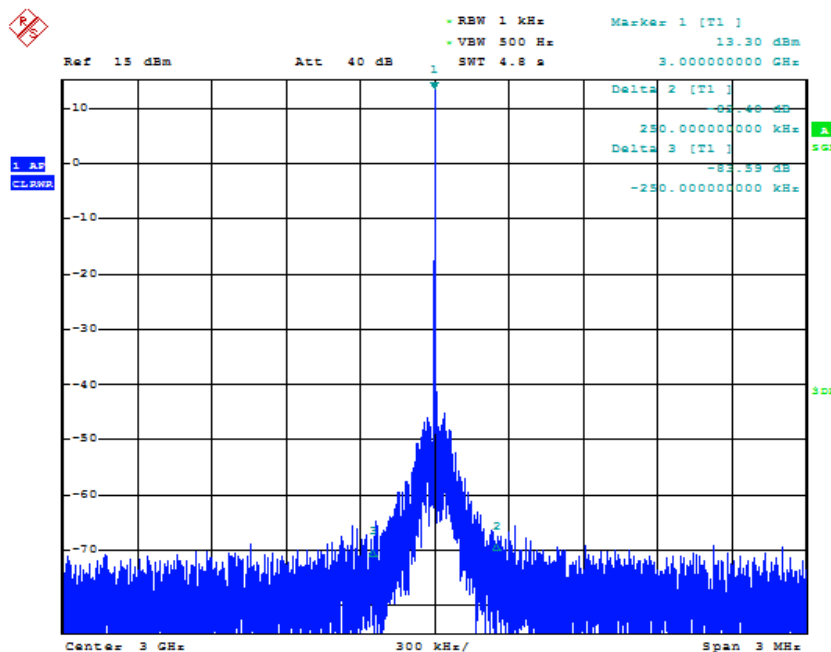
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PERFORMANCE PLOTS

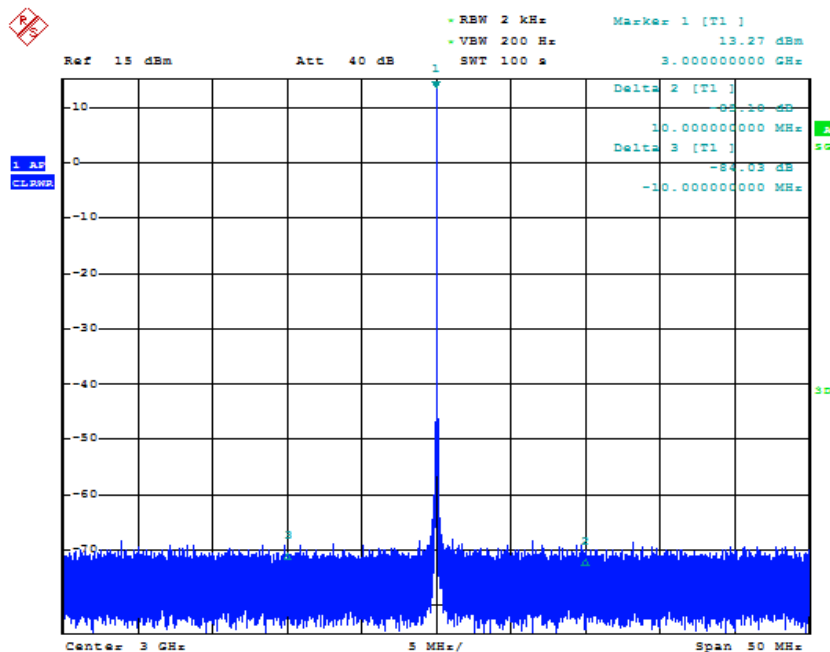
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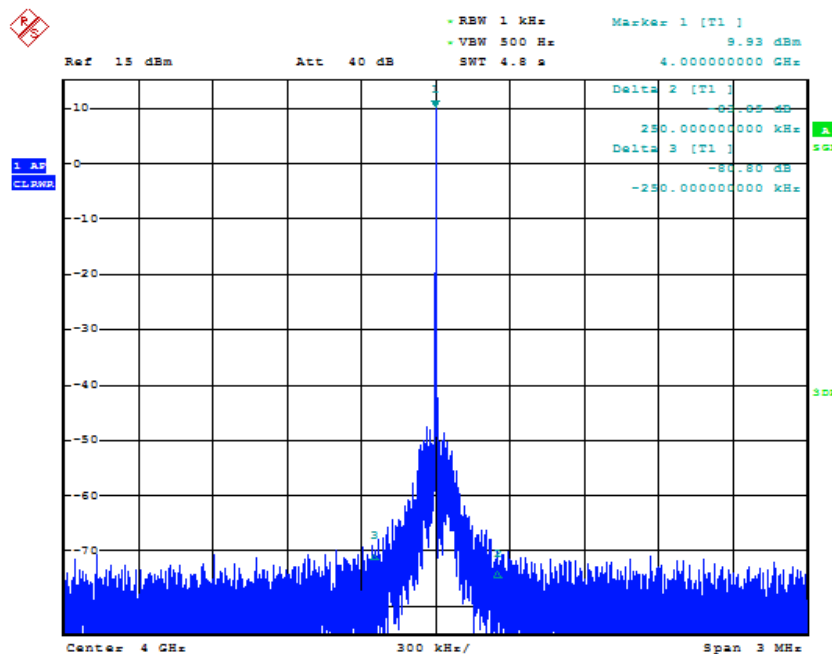
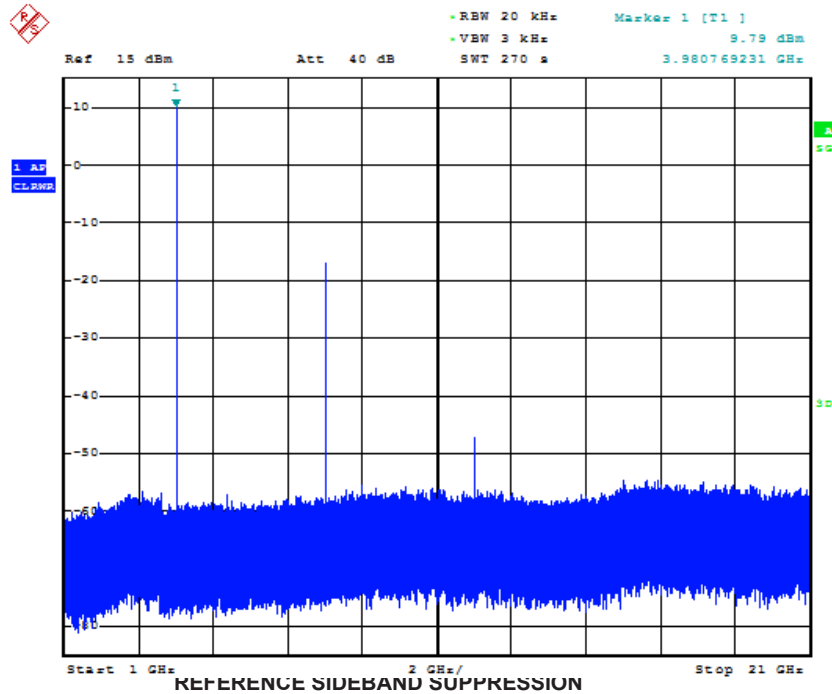
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### HARMONIC SUPPRESSION



PERFORMANCE PLOTS

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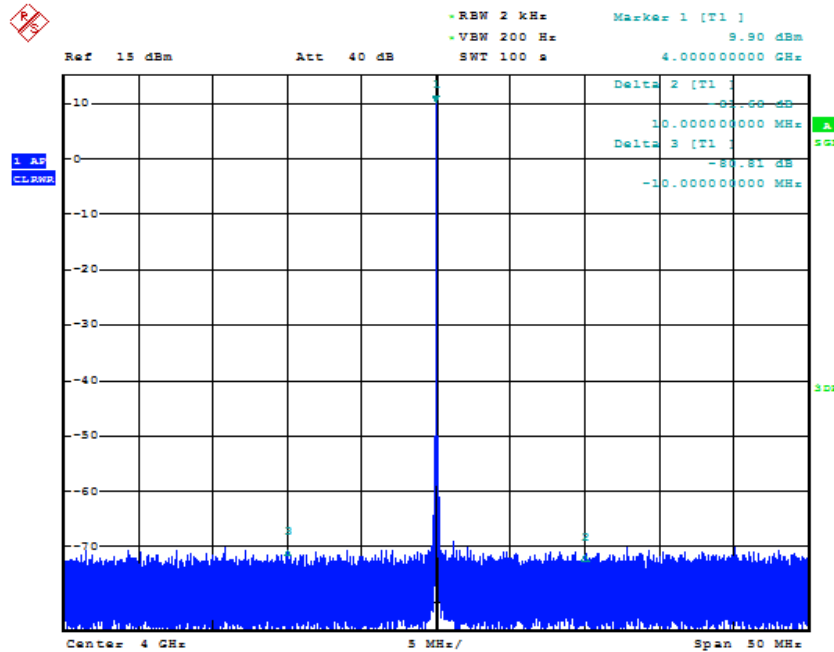
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