

# INTELLIGENT INTERACTIVE SYNTHESIZER

## SURFACE MOUNT MODEL: LFSW190410-50

**WIDE BANDWIDTH**

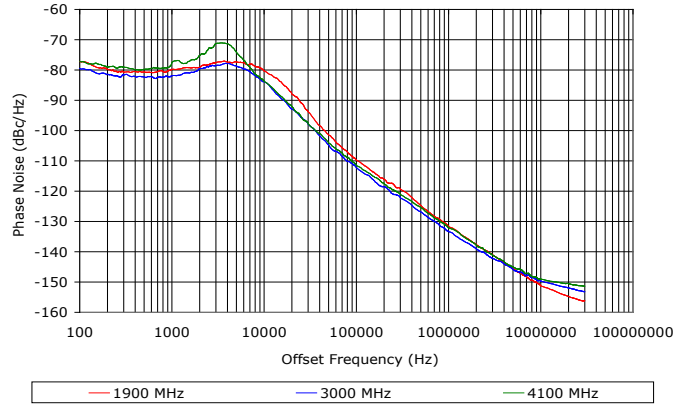
**1900 - 4100 MHz**

**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 (Rev. G 04/19/11)**

Frequency	1900 - 4100 MHz		
Step Size	500 kHz		
Reference Input Frequency	10 MHz <sup>1</sup>		
Reference Input Voltage	1 V p-p to 3.3 V p-p		
Bias Voltage	Vcc	V (Vdc)	I (mA Max.)
	Digital	+5	65
	VCO	+5	50
	Converter	+5	25
Output Power	+7 dBm (Min.)		
Spurious Suppression	70 dB (Typ.)		
Harmonic Suppression	10 dB (Typ.)		
Settling Time	15 mSec (Typ.) <sup>2</sup>		
Output Impedance	50 Ohms		
Lock Detect Indicator	CMOS 3.3 V		
Typical Phase Noise	Offset	Phase Noise	
	@ 1 kHz	-80 dbc/Hz	
	@ 10 kHz	-82 dbc/Hz	
	@ 100 kHz	-110 dbc/Hz	
Operating Temperature Range	-20 to +70 °C		
Programming	See Application Note: AN7100		

<sup>1</sup> Reference input frequency is programmable (see AN7100) in multiples of the step size, 10 MHz is the default setting. 150 MHz (Max.)  
<sup>2</sup> From the rising edge of LE to stable lock detect

**Package # 197LF**

**TOP VIEW**  
 Dimensions: 0.000 to 1.250 (X), 0.000 to 1.000 (Y). Pin locations: 1, 11, 12, 18, 19, 29, 30, 36.

**SIDE VIEW**  
 Dimensions: 0.230 MAX (height), 0.930 (width).

**RECOMMENDED PCB LAYOUT**  
 Dimensions: 0.000 to 1.290 (X), 0.000 to 1.040 (Y). Pin locations: 1, 11, 12, 18, 19, 29, 30, 36. Includes 0.070 SQ. X 36 PLCS.

**BOTTOM VIEW**  
 Dimensions: 0.000 to 1.145 (X), 0.000 to 0.170 (Y). Pin locations: 1, 11, 12, 18, 19, 29, 30, 36.

REL-PRO® PATENT NO. 7,612,286

OPTIONAL SOLDER AREA FOR HIGH VIBRATION ENVIRONMENT

TOLERANCES ON THREE DECIMAL PLACES= ± 0.015

PACKAGE MOUNTING: SEE APPLICATION NOTES AN7200 & AN7300

**Absolute Maximum Ratings**

Storage Temp. Range	-55 to +125 °C
Bias Voltage (Digital)	+5.25 V
Bias Voltage (VCO)	+5.5 V
Bias Voltage (Converter)	+8 V
DC Voltage Applied to RF Out	±25 V

**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.

This product is manufactured under one or more of the following patents: Approved: 5,160,810; 5,122,621; 5,390,349; 5,416,449; 5,660,754; 5,805,431; 6,525,623; 6,850,575; 7,088,189; 7,180,381; 7,196,591; 7,262,670; 7,265,642; 7,292,113; 7,365,612; 7,495,525; 2,548,311; 2,548,317; 7,545,229; 7,580,693; 7,586,361; 7,605,670; 7,636,021; 2,533,623 | Pending: 60/493075; 60/501371 & 60/501790; 60/527957 & 60/528670; 60/563481; 60/564173; 60/589090; 60/601823; 60/605791; EV31369834; 11/259766; 60/622485 & 60/710310; 10/937525/60/736901; 60/732787; 7,495,525; 2,548,311; 2,548,317; 7,545,229; 2,563,174; 7,580,693; 7,612,296; 2,524,751

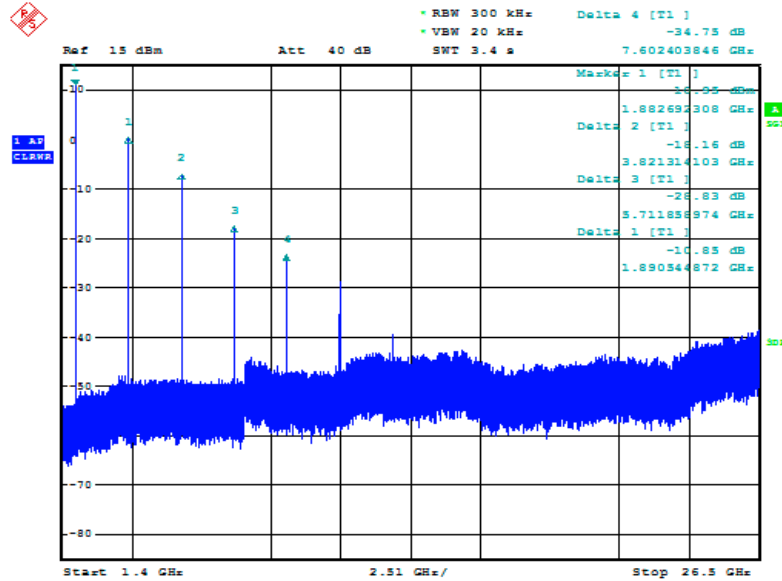
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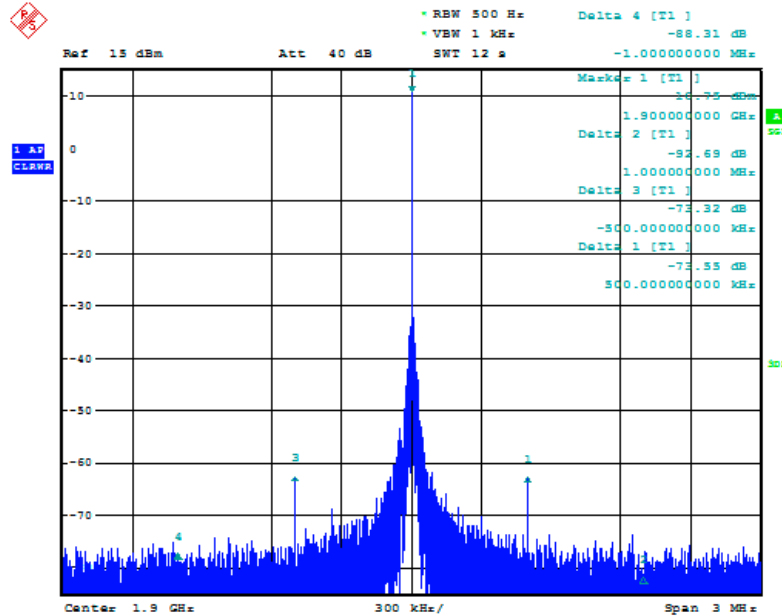
WIDE BANDWIDTH

1900 - 4100 MHz

### HARMONIC SUPPRESSION



### REFERENCE SIDEBAND SUPPRESSION



PERFORMANCE PLOTS

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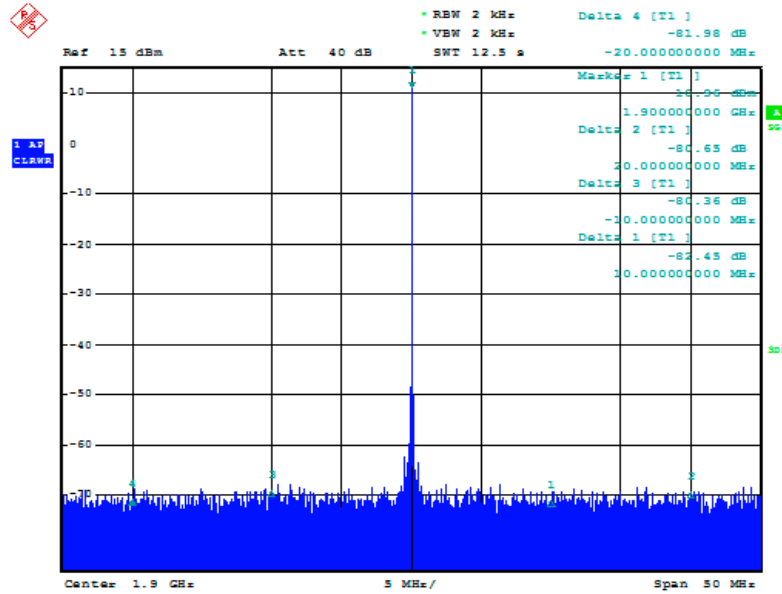
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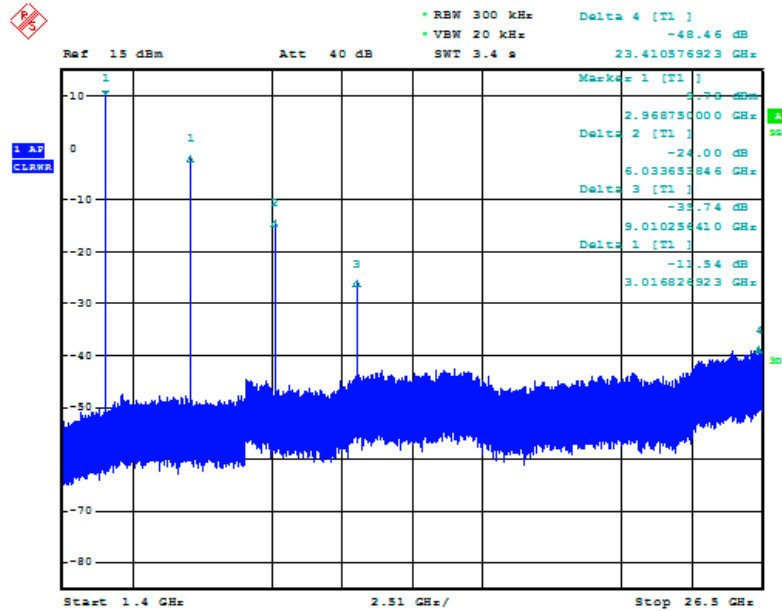
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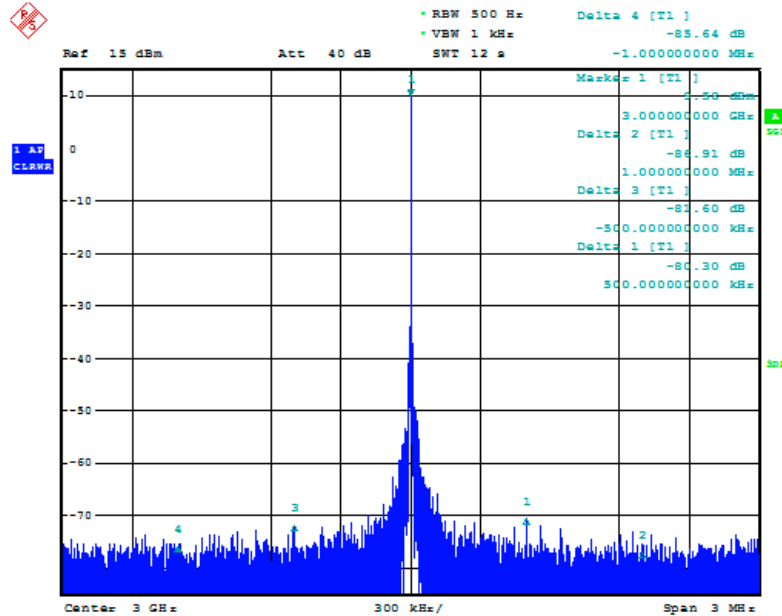
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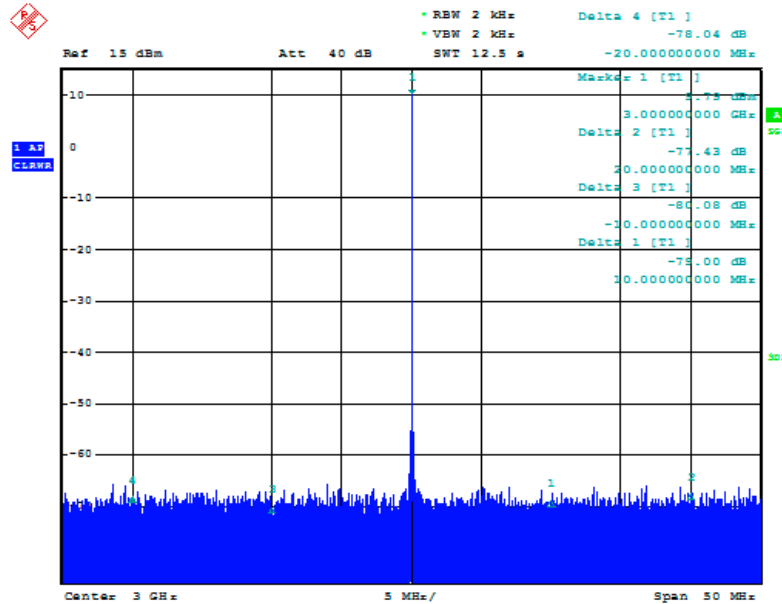
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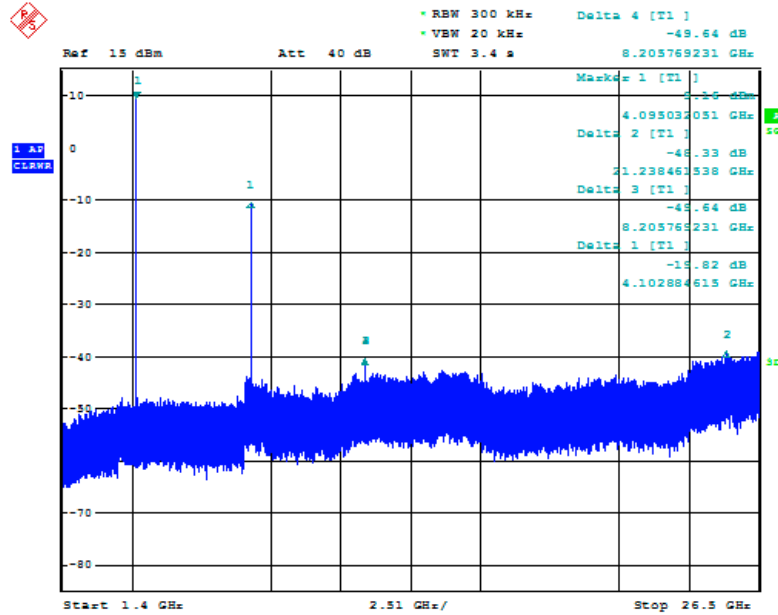
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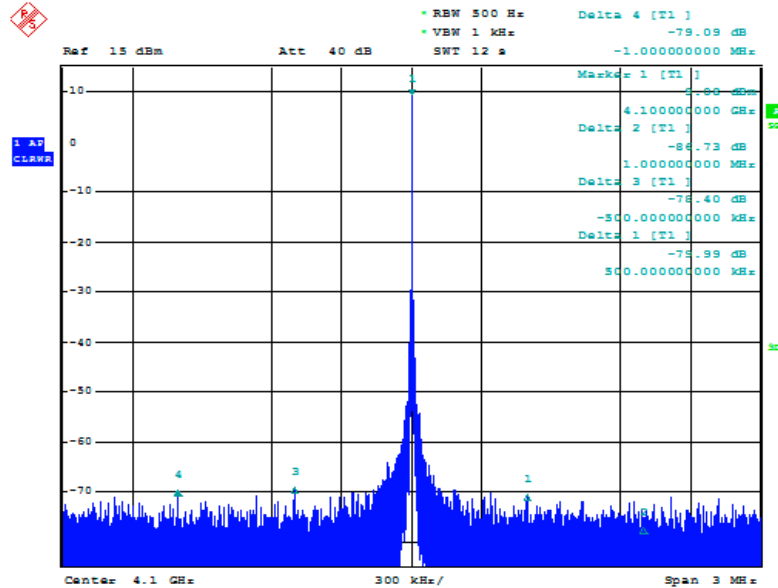
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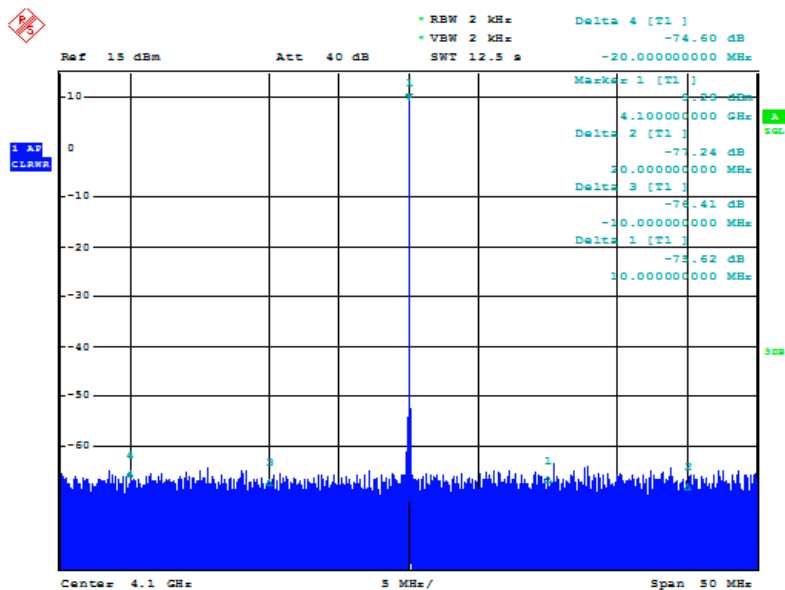
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