



DS INSTRUMENTS

30GHZ PREMIUM SIGNAL GENERATOR



Description

Introducing the **SG30000PRO**, our **highest-performance device yet!**

A low-phase-noise 0.05 to 30GHz premium microwave signal generator.

After years of development [DS Instrument's](#) new ultra-wideband microwave signal generator has been released. The PRO version offers a single multi-band RF output port, harmonic filtering, a more stable frequency reference, and more robust output

level control than the standard [SG30000L](#). Like our [SG6000](#) product line, this RF generator is fully programmable via SCPI commands, or the front panel interface making it more flexible than any competing product. With an all-new low-phase-noise synthesizer, the **SG30000PRO** is aimed at phase-noise sensitive applications in C, X, Ku, K, and Ka-band development, testing, and converting.

New rev 5 (Feb 2021) delivers our highest output power, most attenuation options, and lowest noise!

SG30000PRO REV 7 (2021) Device Features:

- RF output covering **0.05 – 30GHz** ([single precision 2.92mm port](#))
- Calibrated power control (LF – 22GHz): **-45dBm to +15dBm** (step & vernier)
- Calibrated power control (22 – 30GHz): **-25dBm to +15dBm** (step & vernier) typical
- Calibrated power (LF-22GHz band) absolute accuracy: $\pm 1.0\text{dB}$ typical
- Calibrated power (22-30GHz band) absolute accuracy: $\pm 1.5\text{dB}$ typical
- Digital attenuator step size: 0.5dB
- Variable attenuator resolution (vernier control): $\sim 0.05\text{dB}$
- Internal harmonic filtering matrix (500MHz – 30GHz)
- Excellent phase noise: -92dBc @ 20GHz @ 10KHz offset
- Extremely small frequency step size: 2Hz
- Ultra-low-noise 100MHz VCXO locked to internal OCXO or external 10MHz reference
- Internal 10MHz precision oven-controlled oscillator reference ($\pm 10\text{PPB}$ stability)
- Compact powder-coated laser-etched enclosure
- External dedicated sweep trigger port (MCX)
- No-host-needed portable frequency sweeping support
- [Precision 2.92mm](#) (40GHz rated) output port (3.5mm compatible)
- [Ethernet](#) remote operation (DHCP default, static IP config)
- Windows control software included (USB & Network enabled)
- SCPI command aware via USB-C virtual COM port for remote control
- Front controls and bright OLED display for stand-alone usage
- Completely powered from Dual USB-C, **no DC adapter required!**



Common RF Applications:

- Automated testing environments
- General RF lab use
- Flexible LO sourcing
- Antenna design
- EMC testing
- Production verification and test setups
- Educational / university lab use
- Aerospace / Defense Research
- 802.11n development / Testing
- Ku-band satellite link testing
- X-band radar applications
- Ka-band development
- Up-converting and down-converting
- Line of sight link testing

- Wireless infrastructure design
- Transponder verification
- 5G testing
- mm wave technology

PC Control Application:

Signal Generator Control Pro - DS Instruments

Device Configuration

Search: **COM101** **Connect**

SG30000 - Rev 1 - SER:110 - V4

4.65 VDC 40 °C

30K-Tahoe Save Name

Locked (INT) Auto Detect Set Reference

Send Command

RF Power Meter

Frequency Cal: 3.7 GHz

-12.20 dBm

Enabled

RFO Control (10 - 30000MHz)

Frequency: - **3700.00000** + **Set** Step (MHz) **1.0**

RF Power (dBm): **-12.00**

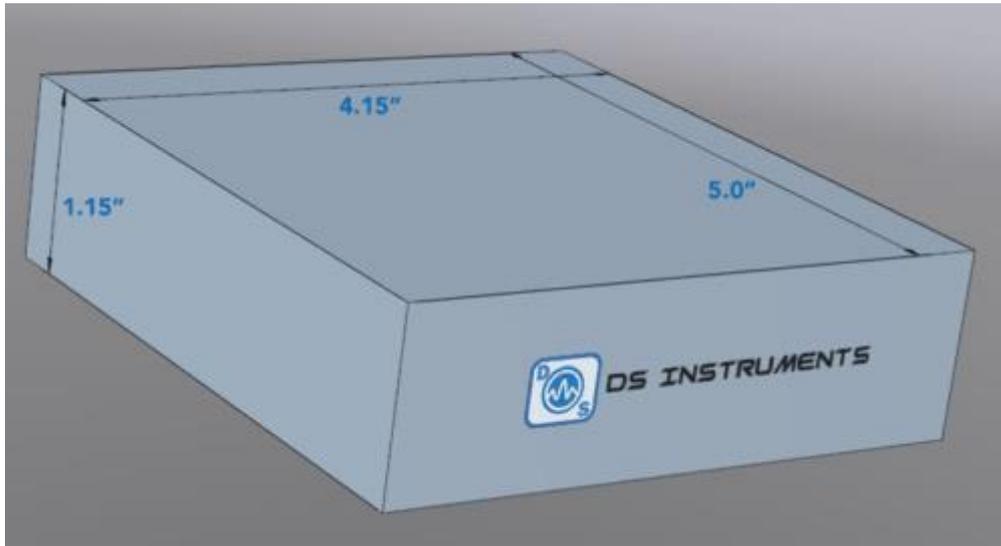
RF Power Vernier: - **0** +

RF OFF **RF ON**

Band 1 (SMA1)

[Help!](#)
V4.00

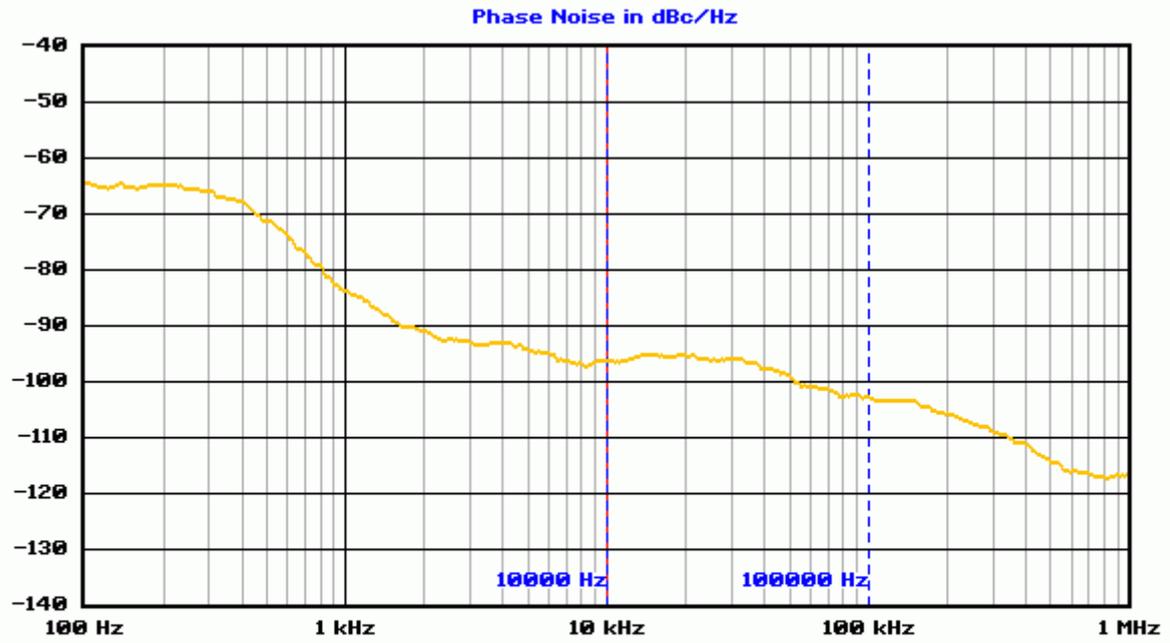
Mechanical Specifications:



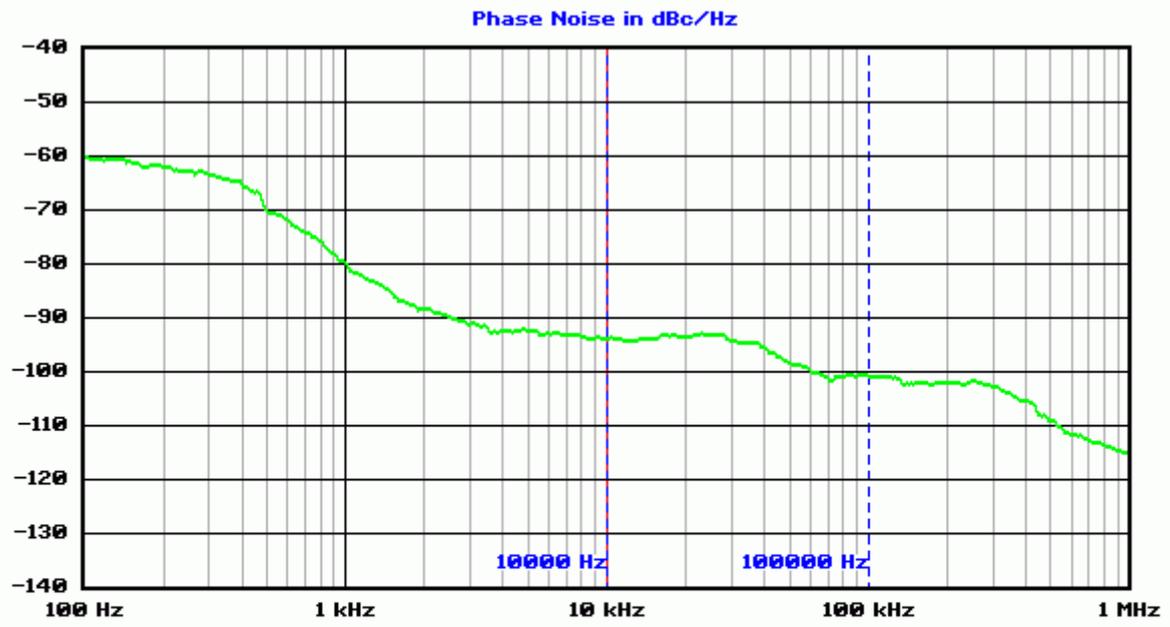
RF Performance Plots (Phase Noise):



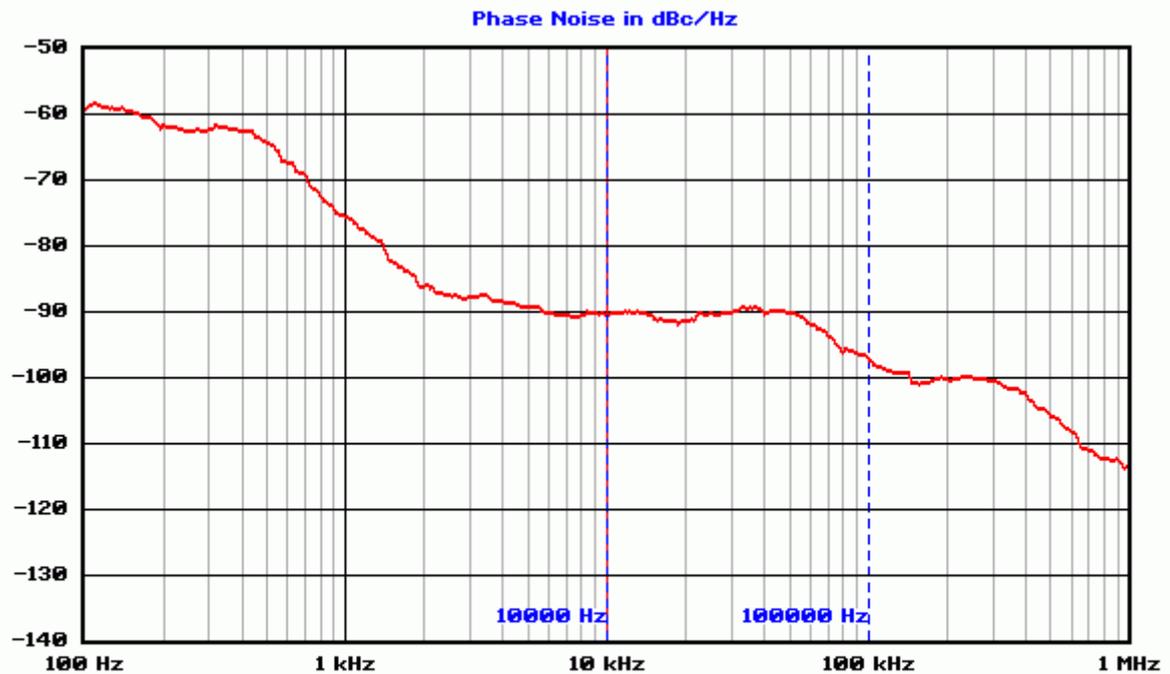
Trace	Carrier Hz	dBc/Hz at 10000 Hz	RMS Jitter
SG30000	6 000 000 000	-98.7	6.9E-014 s



Trace	Carrier Hz	dBc/Hz at 10000 Hz	RMS Jitter
SC30000	12 000 000 000	-96.1	6.8E-014 s



Trace	Carrier Hz	dBc/Hz at 10000 Hz	RMS Jitter
SC30000	18 000 000 000	-93.6	5.5E-014 s



Trace	Carrier Hz	dBc/Hz at 10000 Hz	RMS Jitter
SC30000	23 000 000 000	-90.2	7.7E-014 s

Performance Plots (CW Output):

