



Bird

# Statistical Power Sensor

7022

Bird offers a new thru-line sensor for measuring and maintaining your most complex wireless systems. The Statistical Power Sensor is a rugged, easy to use field instrument that uses statistical sampling techniques.

In modern communications, signal average power, although important is no longer a sufficient control variable. These communication signals often require more diagnostic measurements. In the statistical mode, the power sensor measures the percentage of time the signal exists at a specific peak-to-average ratio. In the time domain mode, the sensor adds a variety of functions similar to an oscilloscope to our standard suite of measurements.

The statistical power sensor can be used in all known communication formats and is able to accurately measure a wide range of RF measurements for non-periodic signals such as EVDO, UMTS, LTE, and HDTV. Like all Bird Sensors, its calibration is also traceable to NIST standards with no field calibration required.

## TIME DOMAIN MODE

- ▶ Detailed breakdown of a single or multiple pulses.
- ▶ Includes a wide range of IEEE pulse parameters.
- ▶ Markers allows user to focus on particular portions of the signal for analysis.

## STATISTICAL MODE

- ▶ Analytical results of Signal of Interest using CCDF parameters.
- ▶ Isolate and identify specific breakpoints with the use of markers.

## AVERAGE POWER MODE

- ▶ Extremely accurate true average power measurements.
- ▶ True Average measurement of Forward and Reflected power.
- ▶ All related reflection calculations.
- ▶ Peak Power measurement.
- ▶ Burst Measurement of Pulse Power.

## APPLICATIONS

**WPS MEASURES:** Analog Cellular, Digital Cellular, 3G, 4G, Tetra, APCO/P25 Phase 1 & 2, DMR, MOTOTRBO, Trunking, CDMA, TDMA, WCDMA, GSM, Transportation, Tactical Military, Radar, Avionics, Marine, LMR, Analog Broadcast, Digital Broadcast, GSM, GPRS, EDGE, UMTS, HSDPA, Bluetooth, Fire, GPS, NPSPAC, Paging, Public Safety, Telematics, Utilities, WIMAX, WLAN, EVDO, UMTS, LTE, and HDTV.

# Statistical Power Sensor

## 7022

### GENERAL SENSOR CHARACTERISTICS

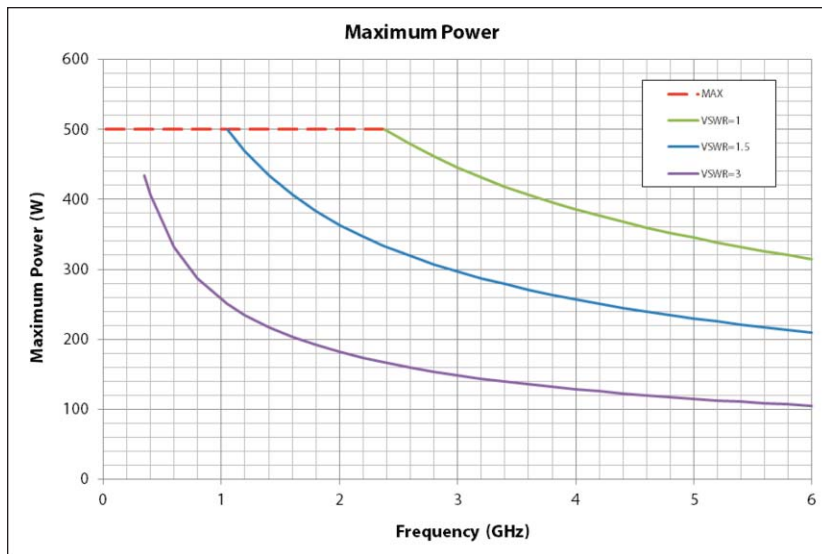
<b>Measurement Type</b>	Thru-Line Power
<b>Frequency Range</b>	350 MHz to 6 GHz
<b>Frequency Measurement accuracy</b>	± 3MHz with CW signals
<b>Power Measurement Range</b>	0.25 W to 500 W average, Average Power Rating limited by Chart below
<b>Dynamic Range</b>	33 dB
<b>Peak to Average Ratio</b>	12 dB, absolute peak power limited to 1500 W
<b>Impedance, Nominal</b>	50 Ohms
<b>Insertion Loss, Max</b>	0.05 dB
<b>Insertion VSWR, Max</b>	1.065 350 - 2500 MHz 1.12, 2500 - 6000 MHz
<b>RF Connectors</b>	N Female
<b>Directivity, Min</b>	<-30 dB, 350 - 3000 MHz, <-28dB, 3000 - 6000 MHz
<b>Factory Calibration</b>	NIST Traceable
<b>Field Calibration</b>	No Field Calibration Required
<b>Data Logging</b>	Yes, with the VPM3 software
<b>Interface</b>	USB 2.0 Type B (USBTMC)
<b>Power Supply</b>	USB Port

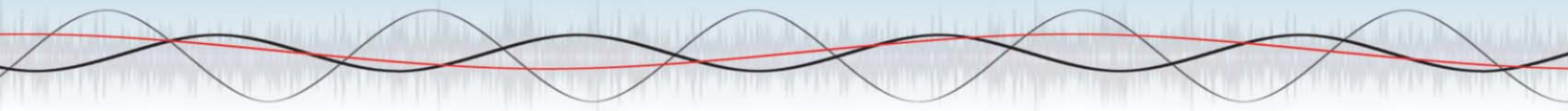
<b>Sample Rate</b>	44 M Samples/s Max
<b>Time Resolution</b>	50nSec to 10 Sec
<b>Time Base Accuracy</b>	.01%
<b>Display Refresh Rate</b>	10 times/ sec (Limited by communication)
<b>Video Bandwidth</b>	Settable: 20 MHz (none), 5 MHz, 400 kHz, 4.5 kHz
<b>Points per screen</b>	1001
<b>Trigger input connector</b>	BNC female (1MΩ Impedance; 3V High, 1.2V Low)
<b>Operating Temperature</b>	-10 to +50 °C (+14 to +122 °F)
<b>Storage Temperature</b>	-40 to +80 °C (-40 to +176 °F)
<b>Humidity, Max</b>	95% maximum (non-condensing)
<b>Altitude, Max</b>	15,000 ft. (4,500 m)
<b>Dimensions, Nominal</b>	5.9" x 4.8" x 1.3" (150 mm x 122 mm x 33 mm)
<b>Weight, Max</b>	1.5 lbs.
<b>Mechanical Shock and Vibration</b>	IAW MIL-PRF-28800F class 3
<b>Certifications</b>	EMC Directive (2004/108/EC) European Standard: EN 61326— Electrical Equipment for measurement, control and laboratory use; EMC Requirements

Test Spec (for radiated immunity):  
EN 61000-4-3—Testing and measurement techniques - 10V/meter

CE Mark

RoHS





## STATISTICAL MODE

<b>Peak-to-Average Ratio (Horizontal Axis)</b>	0 to 16 dB
<b>Percent Time Above Average Power (Vertical Axis)</b>	.0001 to 100% (log display)
<b>Number of samples*</b>	268 M samples max
<b>Elapsed Time*</b>	6.5 Seconds max
<b>Confidence Band*</b>	85-99.99 adjustable
<b>Modes on full buffer</b>	Re-start Stop

\*Number of samples, Elapsed Time and Confidence Band are all related, if one is set the other two parameters are calculated.

## AVERAGE MODE

<b>Average Forward Power Range</b>	0.25 W to 500 W
<b>Average Forward Power Accuracy</b>	4% of Reading $\pm$ 16 mW +3% outside 15-35°C
<b>Average Reflected Power Range</b>	0.025 W to 50 W
<b>Average Reflected Power Accuracy</b>	4% of Reading $\pm$ 1.6 mW +3% outside 15-35°C
<b>Return Loss</b>	0 to 23 dB
<b>VSWR</b>	1.15 to 99.9
<b>Rho</b>	0.07 to 1.0

## TIME DOMAIN MODE MEASUREMENT

<b>Peak Envelope Power Accuracy (up to 500 W)</b>	$\pm$ 5% +3.75% outside 15-35°C
<b>Peak Envelope Power</b>	up to 500 W
<b>Peak Envelope Power Accuracy (500 W to 1500 W)</b>	$\pm$ 11% +3.75% outside 15-35°C
<b>Burst Average Power Accuracy (0.25 W to 2 W)</b>	$\pm$ 7% +3.75% outside 15-35°C
<b>Burst Average Power Accuracy (2 W to 500 W)</b>	$\pm$ 5% +3.75% outside 15-35°C
<b>Burst Average Power Accuracy (500 W to 1500 W)</b>	$\pm$ 11% +3.75% outside 15-35°C
<b>Pulse measurements</b>	All IEEE Std 194 Pulse Parameters Pulse Off Time Pulse Width Pulse fall-time Pulse repetition frequency Pulse rise time Pulse period Pulse duty cycle Peak power Pulse overshoot
<b>Triggers</b>	Auto Free Run Marker Based (Video Trigger) External Trigger Hold Off

## STANDARD ACCESSORIES

<b>5A2653-6L</b>	USB SeaLatch™ Cable
<b>VPM3</b>	Virtual Power Meter
<b>920-7022</b>	Manual for Statistical Power Sensor
<b>920-VPM3</b>	Manual for Virtual Power Meter
<b>5A2918-11-6</b>	BNC / BNC Trigger Cable

## OPTIONAL ACCESSORIES

<b>PA-MNME</b>	Adapter, Male N to Male 7/16 (DIN)
<b>PA-MNFE</b>	Adapter, Male N to Female 7/16 (DIN)



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