

WIDEBAND POWER SENSOR

BIRD MODEL 5012

BIRD'S SITE MANAGEMENT SOLUTIONS FOR POWER MEASUREMENT

When combined with a Digital Power Meter¹, Site Analyzer Family of line and antenna analysis products, or a Personal Computer², the Wideband Power Sensor becomes an integral part of a very robust and sophisticated power measurement solution, spanning a large range of frequencies (**350MHz to 4000MHz**).

Let Bird® Be an Extension of Your RF Design Team!

The Bird® Engineering Design Team provides **over 250** years of collective RF Engineering experience.

Our R & D / Design Engineers focus on **leading edge** technology, product **integrity** and **quality** control.

We have the **expertise** to provide a **standard** or **custom** product to suit an environment or a specific design application.

Bird® Electronic Corporation **designs** and **manufactures** a diverse range of products, from RF power meters and antenna analyzers to high power RF load resistors. This broad product offering requires an equally diverse design skills base.

¹ Model 500-EX, next generation of our Model 5000 Digital Power Meter.

² Virtual Digital Power Meter (VDPM) Software Required.

FEATURES:

- EASY to use
- Multifunction
- Competitive price
- Wide dynamic range
- Direct connection to PC, Digital Power Meter or Site Analyzer
- NO BLACK BOX !!!!
- 30dB Directivity -Up to 3GHz; 28dB up to 4GHz
- Directional - Forward and Reflected Power
- **NO** Elements required!

MEASUREMENT MODES:

- True Average Power
- Average Burst Power
- Peak Power
- Crest Factor
- CCDF

SPECIFICATIONS:

Frequency Range:	350MHz- 4.0GHz
Maximum Power	150 Watts Average, 400 Watts Peak (see Page 2 for more details)
USB & RS-232 Connection	
Insertion Loss:	0.05dB to 1GHz .1dB to 4.0 GHz
Insertion VSWR	<1.05 to 2.5GHz 1.10 to 4.0 GHz

MARKETS

- TETRA / P25 (350-450 MHz)
- Two-Way Radio (UHF, analog and digital)
- Trunking
- Cellular, PCS, 3G(800 MHz , 1.9 GHz analog and digital, also 2.5G and 3G CDMA and WCDMA operating in various bands from 1700 to 4 GHz)
- TDMA, GSM, CDMA, WCDMA, etc..
- Paging Cellular Telephone Paging (900 MHz, 1800 MHz)
- Wireless Local Loop (3.5 to 3.7 GHz)
- Transportation, Industrial, etc...
- ISM (Semiconductor, Medical, 2.45 GHz)
- Tactical Military Communications
- Radar



MODEL 5012 WIDEBAND POWER SENSOR

Sensor Characteristics - General

Frequency Range: 350 MHz to 4 GHz
 Power Measurement Range: 0.15 W to 150 W average, 400 W peak
 Impedance: 50 Ohms (nominal)
 Insertion Loss: < 0.05 dB up to 1 GHz,
 <0.1 dB from 1 GHz to 4.0 GHz
 Insertion VSWR: 1.05 up to 2.5 GHz,
 1.10 from 2.5 to 4.0 GHz
 Input Connector: N Female
 Output Connector: N Female
 Directivity: 30 dB up to 3.0 GHz, 28 dB up to 4.0 GHz

Power Measurement Characteristics - Average Power

Power Measurement Range: 0.15 W to 150 W
 Peak/Average Ratio: 12 dB maximum
 Measurement Uncertainty: $\pm 4\%$ of reading ± 0.05 W, (+15 to +35 C)
 $\pm 7\%$ of reading ± 0.05 W, (-10 to +50 C)

Power Measurement Characteristics - Burst Average Power

Power Measurement Range: 2 to 150 W average
 Burst Width: 0.2us to 50 ms, Duty Cycle Entered
 1 us to 50 mS, Duty Cycle Measured
 Repetition rate: 15 Hz minimum
 Duty Cycle: D = Burst Width/Period, 0.001 to 1
 Measurement Uncertainty: $\pm 4\%$ of reading $\pm 0.05/D$ W,
 Duty Cycle Entered, (+15 to +35 C)
 $\pm 7\%$ of reading $\pm 0.05/D$ W,
 Duty Cycle Entered, (-10 to +50 C)
 add $\pm 2\%$ of reading if Duty Cycle Measured

Power Measurement Characteristics Crest Factor- Peak-to-Average

Power Measurement Range: 0.15W to 150W
 Measurement Uncertainty: Sum of peak and average power uncertainty

Power Measurement Characteristics - Peak Envelope power Power

Power Measurement Range: 4.0 to 400 W
 Measurement Uncertainty:
 $\pm 7\%$ of reading ± 0.2 W from 200 us (+15 to +35 C)
 $\pm 10\%$ of reading ± 0.4 W from 1 us (+15 to +35 C)
 add $\pm 3\%$ of reading if temperature -10 to +15 or +35 to +50 C
 add $\pm 1.5\%$ of reading + 0.15W for period > 0.1 seconds
 add ± 0.1 W for D from 0.001 to 0.1
 add $\pm 5\%$ or reading for burst widths less than 1 us
 add $\pm 10\%$ of reading for burst widths less than 0.5 us

Power Measurement Characteristics - Complementary Cumulative Distribution Function (CCDF)

Measurement Range: 0.1 to 100%
 Measurement Uncertainty: $\pm 0.2\%$
 Threshold level range: 2 to 400 W
 Level Set Accuracy: $\pm 5\%$ of level ± 0.5 W

Reflection Measurement Characteristics

Measurement Range: Return Loss, 0.0 to 23 dB
 VSWR, 1.15 to 99.9
 Rho, 0.07 to 1.0
 Minimum Forward Power: 0.5W
 Measurement Uncertainty: See Chart 1

Interface Specifications:

DPM Interface: EIA-232, 9600 Baud, no parity, 8 data bits, 1 stop bit
 PC Interface(1): EIA-232, 9600 Baud, no parity, 8 data bits, 1 stop bit
 PC Interface(2): USB 1.1 compliant interface

Power Requirements:

USB port: less than one low-power USB load.
 DC input connector: 4-18 VDC at less than 0.1A

Data Logging:

Ensemble Size: up to 250 records.
 Data Capture: time, forward average or peak power, reflected power
 Sampling Interval: 1 to 1000 seconds

Physical and Environmental Specifications

General: Thru-Line power measurement
 Operating Temperature: -10° to $+50^{\circ}$ C ($+14^{\circ}$ to $+122^{\circ}$ F)
 Storage Temperature: -40° to $+80^{\circ}$ C (-40° to $+176^{\circ}$ F)
 Mechanical Shock: IAW MIL-PRF-28800F class 3
 Vibration: IAW MIL-PRF-28800F class 3
 Humidity: 95% maximum (non-condensing)
 Altitude: 15,000 ft operating
 Safety: Complies with EN-61010-1:1995 including Amendment 2
 EMC: IAW Low Voltage Directive (73/23/EEC)
 Complies with EN 61326-1:1997
 IAW EMC Directive (89/336/EEC)
 Size: 3.78 (4.74) X 4.56 X 1.28 inches without connector
 4.74 X 4.56 X 1.28 inches including connectors
 Weight: 1.2 lb. maximum

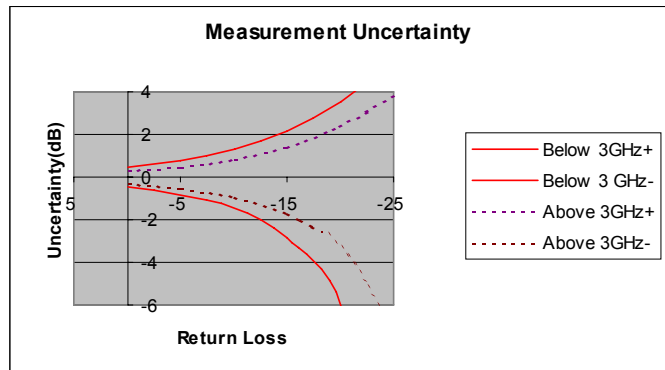


Chart 1

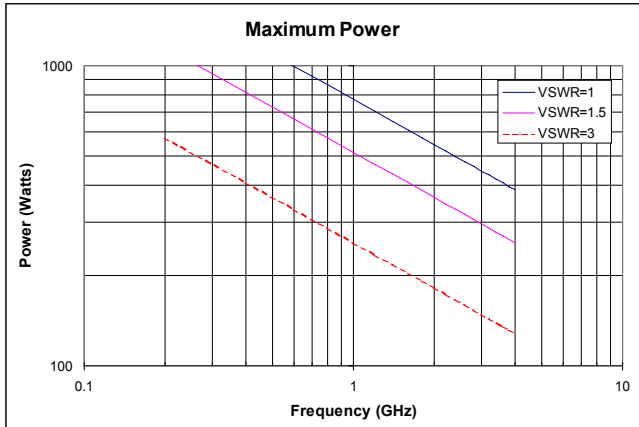


Chart 2