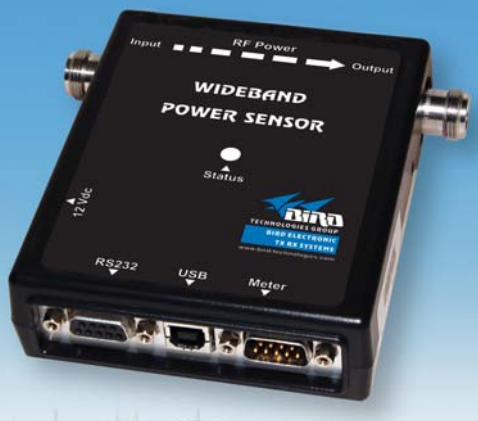

Bird Technologies®

Wideband Power Sensor

5012B, 5016B, 5017B, 5018B, 5019B

Bird's® Wideband Power Sensor (WPS) never requires field calibration, only requires factory calibration once per year and is traceable to National Institute of Standards and Technology (NIST). The WPS measures True Average Power, Peak Power, and Duty Cycle directly with exceptional accuracy and uses these precise measurements to calculate a wide range of other important factors, such as VSWR, Return Loss, Reflection Coefficient, Crest Factor, Average Burst Power, and CCDF.

PROBLEMS ▸ SOLUTIONS

Downtime is neccessary
- Monitor and perform maintenance for monitoring while DUT is in-service.
- Measure forward and reflected power to troubleshoot system failures.

Have analog, digital, and multi-carrier signals to measure
- Modulation independent measurements

Tight budgets
- USB connectivity, no meter required

Varying field tech skill levels
- Sensor plugs and plays with 5000-XT meter

Need greater confidence in measurement
- No field calibration required
- NIST traceable calibration

APPLICATIONS

WPS measures: Analog Cellular, Digital Cellular, 3G, 4G, Tetra, APCO/P25, 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, Project 25, Public Safety, Telematics, Utilites, WIMAX and WLAN.

Measurements performed: Peak power, true average power and Duty Cycle.

Calculations Performed: VSWR, Return Loss, Reflection Co-efficient, Crest Factor, Average Burst Power and CCDF.

Wideband Power Sensor

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GENERAL SPECIFICATIONS

Connector	N Female (Both)
Power Supply	USB Port: Less than one low-power USB load DC Input Connector: 7-18 VDC at less than 0.1A
Impedance	50 Ohms (nominal)
Interfaces	DB9 proprietary interface
DPM	
PC Interface (1)	RS-232, 9600 Baud, no parity, 8 data bits, 1 stop bit, DB9
PC Interface (2)	USB 2.0 Type B
Weight	1.2 lb. maximum
Dimensions HxWxD [inches (mm)]	4.8"x 4.6"x 1.3" (122 mm x 117 mm x 33 mm)
Data Logging	Requires 5000-XT or VPM2
Operating Temps [°C(°F)]	-10° to 50°C (+14° to + 122°F)
Storage Temps [°C(°F)]	-40° to + 80°C (-40° to +176°F)
Mechanical Shock & Vibration	IAQ MIL-PRF-28800F class3
CE	EMC EN 61326-1-2006

Frequency Range	**5012B** 350 MHz - 4.0 GHz **5016B** 350 MHz - 4.0 GHz **5017B** 25 MHz - 1.0 GHz **5018B** 150 MHz - 4.0 GHz **5019B** 25 MHz - 1.0 GHz
Power Range	**5012B** 150 mW - 150 Watts Avg, 400 Watts Peak **5016B** 25 mW - 25 Watts Avg, 60 Watts Peak **5017B** 500mW - 500 Watts Avg, 1300 Watts Peak **5018B** 100 mW - 25 Watts Avg, 60 Watts Peak **5019B** 100 mW - 100 Watts, 260 Watts Peak
Insertion VSWR	**5012B** <1.05 from 0.35 to 2.5 GHz, <1.10 from 2.5 to 4 GHz **5016B** <1.05 from 0.35 to 2.5 GHz, <1.10 from 2.5 to 4 GHz **5017B** <1.05 **5018B** <1.05 from 0.35 to 2.5 Ghz, <1.10 from 2.5 to 4 GHz **5019B** <1.05
Insertion Loss	**5012B** <0.05 dB from 0.35 to 1.0 GHz, <0.1 dB from 1 to 4 GHz **5016B** <0.05 dB from 0.35 to 1.0 GHz, <0.1 dB from 1 to 4 GHz **5017B** <0.05 dB **5018B** <0.05 dB from 0.35 to 1.0 GHz, <0.1 dB from 1 to 4 GHz **5019B** <0.05 dB
Directivity	**5012B** 30 dB up to 3.0 GHz, 28 dB from 3.0 to 4.0 GHz **5016B** 30 dB up to 3.0 GHz, 28 dB from 3.0 to 4.0 GHz **5017B** 28 dB up to 100 MHz, 30 dB from 100 to 1000 MHz **5018B** 30 dB up to 3.0 GHz, 28 dB from 3.0 to 4.0 GHz **5019B** 28 dB up to 100 MHz, 30 dB from 100 to 1000 MHz

AVERAGE POWER

Average Forward Power Range	**5012B** 150 mW - 150 Watts Avg, 400 Watts Peak **5016B** 25 mW - 25 Watts Avg, 60 Watts Peak **5017B** 500 mW - 500 Watts Avg, 1300 Watts Peak **5018B** 100 mW - 25 Watts Avg, 60 Watts Peak **5019B** 100 mW - 100 Watts, 260 Watts Peak
***Accuracy, Average Forward Power**	**5012B** ± 4% of reading, + 0.05 W **5016B** ± 4% of reading, + 0.008 W **5017B** ± 4% of reading, + 0.17 W **5018B** ± 4% of reading, + 0.008 W **5019B** ± 4% of reading, + 0.04 W
Minimum Forward Power for Reflected Measurement	**5012B** .5 **5016B** .1 **5017B** .5 **5018B** .1 **5019B** .3
Return Loss	**5012B** 0.0 to 23 dB **5016B** 0.0 to 23 dB **5017B** 0.0 to 23 dB **5018B** 0.0 to 23 dB **5019B** 0.0 to 23 dB
VSWR	**5012B** 1.15 to 99.9 **5016B** 1.15 to 99.9 **5017B** 1.15 to 99.9 **5018B** 1.15 to 99.9 **5019B** 1.15 to 99.9

Wideband Power Sensor

5012B, 5016B, 5017B, 5018B, 5019B

BURST AVERAGE POWER

Burst Average Power Range	**5012B**	4W - 150 Watts Avg
	5016B	.7W - 25 Watts Avg
	5017B	13.5W - 500 Watts Avg
	5018B	.7 W - 25 Watts Avg
	5019B	2.7 W - 100 Watts Avg
Burst Width	**5012B**	1 µs to 5 ms
	5016B	1 µs to 5 ms
	5017B	1 µs to 5 ms
	5018B	1 µs to 5 ms
	5019B	1 µs to 5 ms
Repetitions Rate	**5012B**	200 Hz, Min
	5016B	200 Hz, Min
	5017B	200 Hz, Min
	5018B	200 Hz, Min
	5019B	200 Hz, Min
Duty Cycle (D)	**5012B**	.001 to 1.0
	5016B	.001 to 1.0
	5017B	.001 to 1.0
	5018B	.001 to 1.0
	5019B	.001 to 1.0
***Accuracy, Burst Average Power**	**5012B**	± 6% of reading, + 0.05 W
	5016B	± 6% of reading, + 0.008 W
	5017B	± 6% of reading, + 0.17W
	5018B	± 6% of reading, + 0.008 W
	5019B	± 6% of reading, + 0.04 W

PEAK ENVELOPE POWER

Peak Envelope Power Range	**5012B**	4.0 - 400 W
	5016B	0.7 - 60 W
	5017B	13.5 - 1300 W
	5018B	0.7 - 60 W
	5019B	2.7 - 260 W

*PEAK ENVELOPE POWER ACCURACY

burst width > 200 µs	**5012B**	± 7% of reading, + 0.20 W
	5016B	± 7% of reading, + 0.05 W
	5017B	± 7% of reading, + 0.70 W
	5018B	± 7% of reading, + 0.05 W
	5019B	± 7% of reading, + 0.13 W
1 µs < burst width < 200 µs	**5012B**	± 10% of reading, + 0.40 W
	5016B	± 10% of reading, + 0.10 W
	5017B	± 10% of reading, + 1.40 W
	5018B	± 10% of reading, + 0.10 W
	5019B	± 10% of reading, + 0.26 W
0.5 µs < burst width < 1 µs	**5012B**	± 15% of reading, + 0.40 W
	5016B	± 15% of reading, + 0.10 W
	5017B	± 15% of reading, + 1.40 W
	5018B	± 15% of reading, + 0.10 W
	5019B	± 15% of reading, + 0.26 W
burst width < 0.5 µs	**5012B**	± 20% of reading, + 0.40 W
	5016B	± 20% of reading, + 0.10 W
	5017B	± 20% of reading, + 1.40 W
	5018B	± 20% of reading, + 0.10 W
	5019B	± 20% of reading, + 0.26 W

CREST FACTOR

Crest Factor Measurement Range	**5012B**	150 mW - 150 Watts
	5016B	25 mW - 25 Watts
	5017B	500 mW - 25 Watts
	5018B	25 mW - 25 Watts
	5019B	100 mW - 100 Watts
***Accuracy, Crest Factor**	**5012B**, **5016B**, **5017B**, **5018B**, **5019B**	Linear Sum of Peak and Average Power Accuracies

COMPLEMENTARY CUMULATIVE DISTRIBUTION FUNCTION (CCDF)

CCDF Measurement Range	**5012B**	0.1 to 100%
	5016B	0.1 to 100%
	5017B	0.1 to 100%
	5018B	0.1 to 100%
	5019B	0.1 to 100%
Threshold Measurement Range	**5012B**	4.0 - 400 W
	5016B	0.7 - 25 W
	5017B	13.5 - 500 W
	5018B	0.7 - 25 W
	5019B	2.7 -100 W
Measurement Uncertainty	**5012B**	± 0.2%
	5016B	± 0.2%
	5017B	± 0.2%
	5018B	± 0.2%
	5019B	± 0.2%
***Level Set Accuracy**	**5012B**, **5016B**, **5017B**, **5018B**, **5019B**	As Peak Envelope Power Accuracy + 2.0%

STANDARD ACCESSORIES

5A2653-10	USB Cable
VPM2	Virtual Power Meter
920-5012S	Instruction Book
920-VPM2	Instruction Book

OPTIONAL ACCESSORIES

PTA-MNMN	Precision Test Adapter Male N to Male N
PTA-MNME	Male N to Male 7/16 (DIN)
PTA-MNFE	Male N to Female 7/16 (DIN)
5A2226	Power Supply, Intl
5A2229	Power Supply, US
5A2224-09-MF-10	DB9 Cable, 10"

COMPATIBLE DEVICES

	5012B	5016B	5017B	5018B	5019B
5000-EX	Yes	Yes	Yes	Yes	Yes
5000-XT	Yes	Yes	Yes	Yes	Yes
VPM2	Yes	Yes	Yes	Yes	Yes
SA-1700 EXP	Yes	Yes	Yes	No	No
SA-2500 EX	Yes	Yes	Yes	No	No
SA-6000 EX	Yes	Yes	Yes	No	No
SA-3600 XT	Yes	Yes	Yes	Yes	Yes
SA-3600 XT	Yes	Yes	Yes	Yes	Yes
SH-36S	Yes	Yes	Yes	Yes	Yes
SH-361S	Yes	Yes	Yes	Yes	Yes
SH-362	Yes	Yes	Yes	Yes	Yes
SH-362S	Yes	Yes	Yes	Yes	Yes

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