

# Cardinal™

## DUAL CHANNEL INDOOR PN SCANNER

The Cardinal™ is a handheld PN scanner used to measure and record ( $E_c/I_o$ ) IS-95B coverage of CDMA 2000 base stations. Cardinal measures active 1XRTT CDMA networks operating in BOTH PCS and Cellular frequencies using a precision dual band receiver. The instrument is ideal for indoor CDMA studies where GPS reception is poor or non-existent because both base station ID and UTC are derived from sync channel demodulation. Cardinal also features removable Li-Ion battery, Compact Flash® storage and built-in backlit LCD graphic display.

### KEY APPLICATIONS:

- Measures correlated signal strength ( $E_c/I_o$ ) of all 512 IS-95B base stations
- Verification of neighbor lists
- Optimization of Cell sites
- Verifies PN assignments
- Confirms handoff thresholds
- Analysis of coverage areas
- Measures pilot pollution

### FEATURES:

- Scans all 512 base stations (IS-95B & CDMA 2000 / 1XRTT) in less than one (1) second
- Measures BOTH PCS & Cellular CDMA correlated signal strength ( $E_c/I_o$ )  $\pm 1.0$  dB
- Derives Base Station ID and UTC from Sync Channel demodulation
- Reports Base Station System Time
- Internal, removable Li-Ion rechargeable battery system
- Removable Compact Flash™ for data storage
- Built-in graphic backlit LCD displays up to 4 PN's simultaneously
- Complete control and data output via RS-232 connection to any laptop PC
- Does not require GPS reception



**Cardinal** is just one of many exceptional design solutions from Berkeley Varitronics Systems. Call us today for more information:

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## SPECIFICATIONS

### CARDINAL™ RF PERFORMANCE:

FREQUENCY RANGE	PCS Cellular	1930-1990 MHz (Bands A-F) 869.04-893.97 MHz (A and B Bands)
IF BANDWIDTH	1.25 MHz	
MEASUREMENT ACCURACY	Ec/Io	± 1 dB @ 25 C° ± 2 dB (0 to 50 C°)
RECEIVER NOISE FIGURE	< 7.5 dB Pilot Tracking	
ANTENNA INPUT SENSITIVITY	-117 dBm	
MINIMAL SIGNAL ACQUISITION	-115 dBm Pilot Acquisition	
MAXIMUM SAFE INPUT	+10 dBm	

### CDMA PROCESSING:

PN GENERATOR SEQUENCES	IS-95 I and Q Pilot
MINIMUM Ec/Io	-20 dB
CORRELATION LENGTH	1024 chips (for both I and Q)
MINIMUM PILOT POWER DETECTABLE	-20 dB
BASE STATIONS SCAN RATE	< 1 sec.
DISPLAY UPDATE RATE	< 1 sec.
BASE STATION IDENTIFICATION	Direct IS-95 & 1XRTT BS ID demodulation
TIMING ACCURACY	Absolute (derived from the sync signal)
TIMING JITTER	± 200 ns

### GENERAL SPECIFICATIONS:

SOFTWARE	Cardinal Data Logger® & Chameleon CDMA® included
DATA RETENTION	Removable Compact Flash®
OPERATING TEMPERATURE RANGE	0 to 50 C°
STORAGE TEMPERATURE RANGE	-40 to 50 C°
DIMENSIONS	W=5.5" L=11" D=3.5"
WEIGHT	4 pounds
POWER	Internal battery External +12VDC @ 0.5A
CHARGER	External dual battery fast charger for Li-Ion batteries