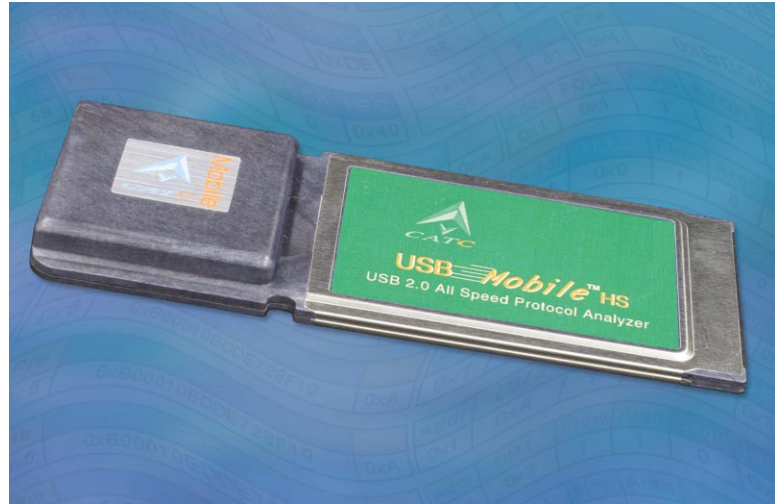# CATC USB*Mobile*

USB Bus & Protocol Analyzer Systems

CATC's USBMobile™ Systems are full function, portable, PC-Card based, bus and protocol analyzers. USBMobile can accurately and efficiently debug, test and verify High, Full and Low Speed USB semiconductors, devices, software and systems. Like all CATC analyzers, the USBMobile uses the highly intuitive CATC Trace™ expert software system, the de-facto standard for viewing USB protocol traffic. USBMobile's native On-The-Go (OTG) support automatically detects, decodes, and displays the HNP and SRP protocols, including VBus and Data line pulsing.

CATC's USB*Mobile* is the sixth generation USB analyzer system in CATC's highly popular line of industry-leading bus and protocol analyzers. Its PC-card design makes it truly portable, thus extending the testing environment beyond the lab. USB*Mobile* enables design engineers, technical support personnel and field application engineers to perform protocol debugging and verification testing virtually anywhere. USB*Mobile* boasts a full-feature capability and is able to detect, capture, decode, analyze and display USB traffic. USB*Mobile* Hi-Speed is able to capture all three USB speeds (1.5 Mbps, 12 Mbps and 480 Mbps), while USB*Mobile* Classic can capture both low and full speeds.

Based on the CATC USB*Tracer/Trainer* advanced verification system, USB*Mobile* offers a robust feature-set, which includes OTG and Hi-Speed

capture and analysis. In addition, USB*Mobile* provides extensive decoding support, including mass storage decoding and user-defined decoding. It also leverages CATC core technologies: the BusEngine™ Protocol Processor enables seamless updates for new software enhancements and features out in the field, while the CATC Trace enables USB*Mobile* to share trace files with the other CATC USB analyzers, USB*Tracer/Trainer*, USB Advisor and USB Chief.

The USB*Mobile* provides multiple mechanisms to measure and report on USB traffic. The CATC Trace's Traffic Summary function reports throughput, timing, error rates and other statistical data on any traces. Users can evaluate statistical reports at a glance or navigate to individual fields. A user may select Tokens, Data or Handshake at the Packet level, Handshakes at the Transaction level and Control at the Transfer level. Error searches are also included in the summary report.

For complete product information, please visit www.catc.com.

COMPUTER ACCESS TECHNOLOGY CORPORATION

| FEATURES	BENEFITS
• Low power, 16 bit, Type II, PC Card Design	Personal analyzer. Portable operation with any notebook PC.
• CATC Trace software display	De-facto industry standard speeds up interpretation and debug of USB traffic. Compatible with CATC Inspector, Chief, Advisor and USBTracer/Trainer analyzer software
• Captures all three USB Speeds*	Record, view and process low & full speed USB devices
• OTG (On-The-Go) Support	Record and analyze HNP and SRP including the capturing of VBus and Data Line pulses
• Advanced Triggering	Isolate important traffic, specific errors or data patterns
• Hardware Filtering	Faster analysis by removing non essential fields from the trace
• Intelligent Reporting	Quickly identify and track error rates, abnormal bus or timing conditions
• Sophisticated Viewing	View Packet, Transaction and Transfer layers of the USB protocol
• Accurate & Reliable	Non-intrusive design ensures data in its pure state & non-compromised
• Downloadable trace viewer software	Share and annotate trace recordings within a development team

* USBMobile Classic Version captures Low and Full Speed Only

THE CATC TRACE

The CATC Trace is a powerful and intuitive expert software system embedding detailed knowledge of the protocol hierarchy and intricacies, as defined in the protocol specification. The software allows the user to control the analyzer and set specific real-time triggering and filtering conditions. The CATC Trace utilizes a Windows-based graphical display that has been optimized for fast and easy navigation through a captured traffic session. Users are alerted as violations are detected at all levels of the protocol layering and can easily drill down on areas of interest or collapse and hide fields that are not relevant.

The command level can be expanded and collapsed to the three layers of the USB protocol: Packet, Transaction and Transfer layers. It also supports vendor specific and user-defined decoding to ease USB development for developers looking to implement proprietary commands.

For additional information on the CATC Trace, please download the White Paper from the CATC website: http://www.catc.com/support/white_papers/index.html.
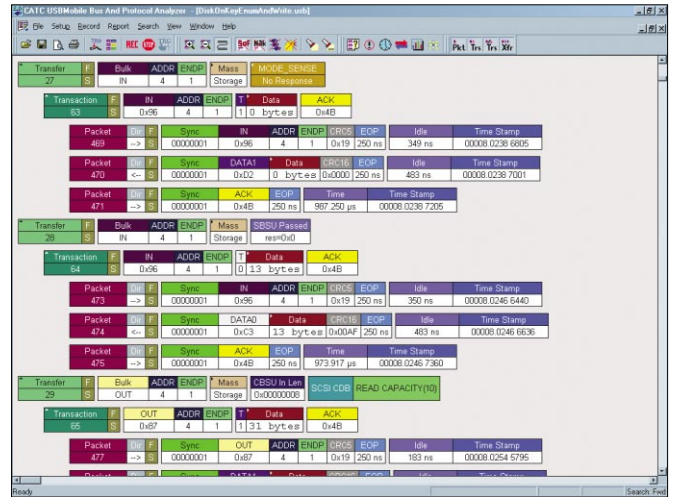
SPECIFICATIONS

Host PC Software Requirements
Works with any PC equipped with a functioning

Package
Dimensions: 5.3 x 2.1 x 0.4 inches
(135 x 54 x 10.5 mm)
Weight: 1.8 oz (51g)

Environmental Conditions
Operating Range: 0 to 55°C (32 to 131°F)
Storage Range: -20 to 80°C (-4 to 176°F)
Humidity: 10 to 90%, non-condensing

Recording Memory Size
USB*Mobile* Classic: 32MB
USB*Mobile* Hi-Speed: 64MB

Hardware Interfaces
16-bit Type II PC card
2 Mini-AB USB receptacles

Power Consumption
USB*Mobile* Classic
Idle: 250 mA (typical)
Active: 300 mA (typical)
USB*Mobile* Hi-Speed
Idle: 300 mA (typical)
Active: 400 mA (typical)

Host PC Software Requirements
Works with any PC equipped with a functioning
USB port and running Microsoft Windows 98SE,
Windows 2000, Windows Me and Windows XP

Basic Trigger Events -
Packet Identifiers: OUT, IN, SOF, DATA0, DATA1, DATA2, MDATA, ACK, NAK, STALL, NYET, PRE, SPLIT, PING, 0xFF, 0xC1

Token Patterns: Any PID, Address, Endpoint

Frame Patterns: All SOF Frames or Frame Number (0-7FF)

Device Request: Two optional requests for Pattern Definition (Hex, msb ->lsb, MSB -> LSB)

Data Pattern: Hex, msb ->lsb, MSB -> LSB

Bus Conditions: Classic Speed Branches Only (USB Reset, SE0, Suspend, Resume) High Speed Branches Only (Host Chirp, Full Speed J, Full Speed K)

Errors: Bit Stuff, Frame Length, CRC, PID, EOP, Short Byte, Time-out or Turnaround Violation, Excessive Empty Frame Detection, Babble Start Violation, Babble End Violation, Bad Data Toggle

Transactions: Selectable up to 3 options, Token PID, Address, Endpoint, Handshake

Data Length: Equal To, Not Equal To, Less Than, Greater Than (Range: 0-2047 Bytes, decimal)

Splits: Split type, Endpoint type, Hub & Port Addresses, Speed option

Reporting and Statistics
Packet Level: OUT, IN, SOF, DATA0, DATA1, DATA2, MDATA, ACK, NAK, STALL, NYET, PRE, SPLIT, PING, Reset, Suspend, Resume, Keep Alive, Chirp

Transaction Level: Handshake, Address, Endpoint, OUT, IN, SETUP, PING, S SPLIT, C SPLIT

Transfer Level: Address, Endpoint, Control, Isochronous, Bulk, Interrupt, Standard, Class, Vendor

Error Reports: Bad PID, Bad CRC5, Bad CRC16, Bad Packet Length, Bad Stuff Bits, Bad EOP, Babble Start, Babble End (LOA), Bad Frame Length, Bad Turnaround/ Timeout, Bad Data Toggle, Bad Frame/uFrame Number, Analyzer Internal Error, Last Byte Incomplete, Bad OTG Signal Value

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2403 Walsh Avenue
Santa Clara, CA 95051-1302
Tel: +1/ 800 909-2282 (US/Canada)
+1/ 408 727-6600 (Worldwide)
Fax: +1/ 408 727-6622
Email: sales@catc.com
www.catc.com