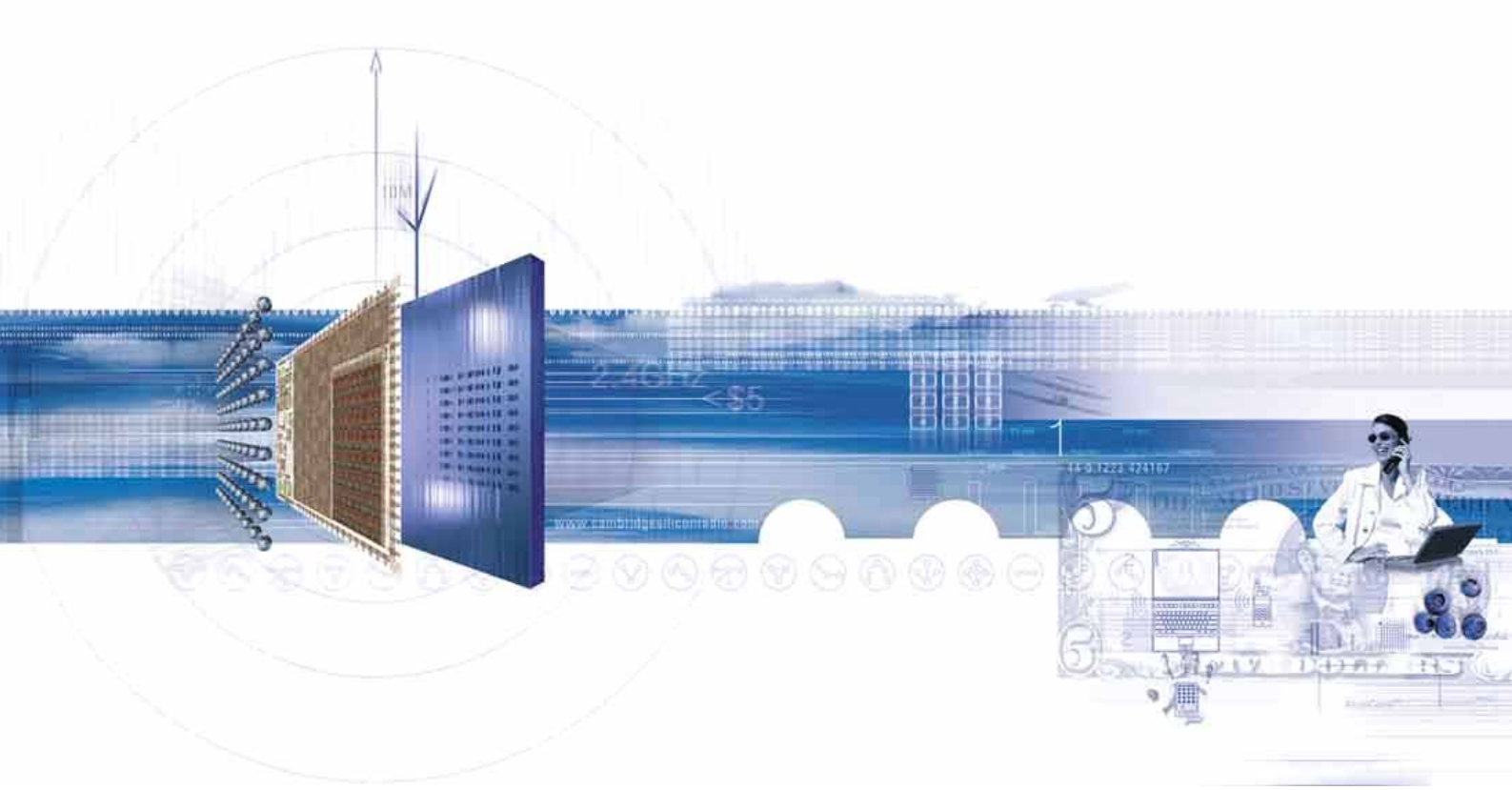
BlueCore™

BlueLab™ v2.8

Software Release Note

November 2003



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1 Introduction

This document describes BlueLab™ Professional v2.8, a software development kit for producing embedded applications for CSR's Bluetooth® wireless technology chips. More detailed documentation is included with BlueLab; see **docs/welcome.html** in the BlueLab installation package.

2 Target Platform

BlueLab runs on machines operating on Microsoft Windows® NT4 (SP5) or Windows 2000. Some components require Cygwin or a Java™ runtime; suitable versions accompany compact disk (CD) releases of BlueLab.

Applications produced with this development kit run on CSR's **BlueCore™2** chips, with a firmware build supporting Virtual Machine (VM) v5.8. The development tools access BlueCore™ through the Serial Peripheral Interface (SPI) and RS232; therefore, a board supporting these (such as Casira™) is also required.

Notes:

Firmware builds supporting VM v5.8 will not be available for CSR's BlueCore01b chip.

If support is required for BlueCore01b, BlueLab v2.5 should be used.

Firmware supporting VM versions beyond v5.8 are likely to require 8Mbit devices.

Firmware supporting VM version 5.8 on 4Mbit devices may have restricted functionality.

3 Release Functionality

3.1 Toolchain

BlueLab includes a set of development tools for applications written in ANSI C.

- Compiler based on GCC v2.95.3 and targeting the BlueCore VM
- Supporting assembler, librarian and linker
- Graphical debugger for debugging applications off-chip
- CSR library providing access to BlueStack™, streams, audio, PIO, ADC, Persistent Store and events
- Libraries providing implementations of selected standard ANSI functions

Additional tools (from BlueSuite™) are provided for downloading applications and updating the Persistent Store.

3.2 Firmware

A selection of firmware builds are supplied. These are only suitable for development of applications, not for production. Details of the supplied firmware builds are included in the **docs/firmware.html** which is part of the BlueLab installation.

Important Note:

Users must obtain suitable production firmware before shipping products based on BlueLab applications. This is required in order to reference the firmware as a pre-qualified component.

3.3 Support Libraries

In addition to the standard libraries, BlueLab includes libraries specific to BlueCore and Bluetooth.

- Battery library sampling voltage level
- BlueStack headers for use with RFCOMM firmware
- Button library providing event-driven access to input pins
- I^2C™ library allowing an application to function as an I^2C master
- Message library for splitting applications into communicating tasks
- Panic library for detecting errors and terminating the application
- Sequence library for triggering timers in patterns
- Scheduler library for dispatching messages, events, and timers
- SPI library using PIO pins to implement an SPI/Microwire™ connection
- Timer library for scheduling timed and periodic events

3.4 Application Libraries

The following libraries build on the access to BlueStack to simplify the production of Bluetooth applications:

- Connection manager to establish a single RFCOMM connection
- Framework library extending the connection manager for audio applications
- Hshf library to adapt the framework for the headset and hands-free profiles
- Handshake library to implement SPP handshaking lines using PIO pins
- HID library for mouse and keyboard example designs
- PAN library for applications using BNEP

3.5 Example Applications

The following applications provide sample implementations of Bluetooth profiles:

- Headset (implements the Headset Profile v1.1)
- Hands-free (implements Hands-free Profile v1.0)
- Audio gateway (implements the gateway component of the above profiles)
- SPP slave and master (role A and B of the SPP profile)
- HID mouse
- HID keyboard
- HID dual boot dongle; combined USB HID proxy and Bluetooth HCI device
- PANU with simple HTTP server
- PANU with advanced HTTP server including dynamic content and overlapped fetching
- PANU with basic TCP services (echo, quote, daytime, discard and chargen)
- PANU with news ticker application using DHCP
- GN bridge

Applications that do not correspond to profiles include:

- Simple flashing light application (as used in MicroSira™)
- Flashing light application that counts active links
- Simpler applications that show how to use particular libraries are also provided, as well as the source code for all of the support and application libraries

3.6 Major Changes in BlueLab v2.8 Relative to BlueLab v2.7

- BlueLab v2.8 is available only in a Professional edition
- Applications can take control of the USB interface (including SPP application)
- Unified firmware includes HCI, PAN, RFC and HID functionality
- “Dual boot dongle” can act as a USB HID device or as a USB HCI Bluetooth device
- PAN functionality extended to include UDP in addition to TCP
- PAN applications can use DNS and DHCP
- Support for 64Kword applications on 8Mbit devices
- New Energy, Random, Transform and Test functionality
- DFU tools included; unified firmware includes DFU

3.7 Major Changes in BlueLab v2.7 Relative to BlueLab v2.6

- BlueCore2-Flash, BlueCore2-Audio and BlueCore2-ROM variants are supported
- HID matrix keyboard support (BlueLab Professional only)
- PAN firmware and applications with IPv4 and IPv6 over BNEP
- Read-only file system for user data on 8Mbit devices
- Access to additional hardware (including strong pull-ups/pull-downs and AUX_DAC)

3.8 Major Changes in BlueLab v2.6 Relative to BlueLab v2.5

- BlueCore01b is no longer supported
- HID keyboard support (BlueLab Professional only)
- Hands-free application can also support combined headset and hands-free profiles
- SPP master and slave applications replace test_cable application
- Unified 8Mbit RFCOMM firmware supporting H4 and BCSP
- New debugger plugins for the PIO audio gateway and hands-free applications
- New functions PsFlood and PsCount to control defragmentation of Persistent Store
- New functions to control the internal CODEC on future BlueCore2 parts
- New functions to control default and maximum transmit power levels
- New faster I^2C library using firmware I^2C support

3.9 Major Changes in BlueLab v2.5 Relative to BlueLab v2.4

- HID mouse support (BlueLab Professional only)
- Headset application supports headset development board
- genparse (AT parser generator) now shipped
- New EventDetail calls support improved flashing-light applications
- StreamUartConfigure allows dynamic changes to raw serial settings
- StreamConfigure allows tuning for latency or throughput
- Raw UART access now respects PSKEY_DEEP_SLEEP_STATE.
- VmDeepSleepEnable allows applications to suppress Deep Sleep when necessary

3.10 Major Changes in BlueLab v2.4 Relative to BlueLab v2.3

- Handshake library introduced and supported by cable replacement
- StreamConnect function improves data throughput with streams
- Scheduler now handles multiple libraries using event-driven PIO
- Audio gateway now supports control by PIO

3.11 Major Changes in BlueLab v2.3 Relative to BlueLab v2.2

- Stream access introduced
- Direct access to UART provided
- Cable replacement example provided
- Alpha release of the hands-free example

3.12 Major Changes in BlueLab v2.2 Relative to BlueLab v2.1

- BlueCore2-External supported
- Debugger supports profiling of applications
- ADC routines support reading of VDD

3.13 Major Changes in BlueLab v2.1 Relative to BlueLab v2.0

- rfcomm_h4 firmware supported
- Updated version of BlueStack (in RFCOMM1.1v13.x firmware) and BlueStack User Guide
- Button library introduced
- Debugger time-stamps and colour-codes protocol dumps
- Low-power issues resolved in headset

4 Testing

4.1 Development Tools

The following tests exercise the compiler, librarian and linker.

Test Performed	Result
Compiler regressions tests	Pass
Full build of libraries from shipped source	Pass
Full build of applications from shipped source	Pass

Table 4.1: Development Tools

4.2 Installer

The following tests check the installer and documentation.

Test Performed	Result
Install from clean on Windows 2000	Pass
Uninstall from Control Panel	Pass
Install alongside BlueLab v2.71 on Windows 2000	Pass
Check links in documentation	Pass

Table 4.2: Installer

4.3 Libraries and Firmware

The following tests exercise basic libraries and the VM, and are performed on BlueCore2-External (using both HCI and unified firmware variants) and on BlueCore-Flash (using both HCI and RFCOMM firmware variants). Both H4 and BCSP transports are tested.

Test Performed	Result
Call printf with a range of format strings and values	Pass
Check flow control over BCSP channel 13	Pass
Check limits on memory allocation	Pass
Check incoming commands over BCSP channel 13	Pass

Table 4.3: Libraries and Firmware

4.4 Applications

The following test for the SPP master and slave application involves bonding the devices, then streaming data from slave to master, master to slave, then both simultaneously. The test was performed on various hardware combinations.

Tests were performed with 8Mbit unified firmware on BlueCore2-External and 4Mbit RFCOMM firmware on BlueCore2-Flash.

Test Performed	Result
2 x matching devices at a range of baud rates up to 460k8	Pass

Table 4.4: Applications

5 Document References

Document:	Reference, Date:
Specification of the Bluetooth System	Volume 1, Core, v1.1, 22 February 2001
Specification of the Bluetooth System	Volume 2, Profiles, v1.1, 22 February 2001
Headset Profile	Headset Profile Part K:6, v1.1, 22 February 2001
Hands-free Profile	Hands-free Profile, v1.0, 29 April 2003

Appendix A Known Issues

This section lists currently known issues for BlueLab. The “Severity” column gives a subjective assessment (Low, Medium, High) of how severely each issue may affect the use of BlueLab.

ID	Severity	Description
99	Low	Recent versions of Cygwin may not function correctly with BlueLab. CSR recommends that users use the version of Cygwin supplied with BlueLab.
102	Medium	GCC can report register spills when compiling complex code, especially code involving 32-bit expressions. Most of these can be resolved by (selectively) using the ‘-msmall-class’ option described in tools.html. Please report such problems to CSR.
114	Low	Inquiry requests to connection manager do not complete on receipt of the maximum number of responses, only on timeout.
147	Low	The VM does not disable all print channels if the user transport is enabled. The user must do this using VmPutCharControl if required. (Failure to do this means that debug output from print statements will cause BCSP transmission timeouts and a firmware panic.)
156	Low	No documentation is provided for the command-line tool pscli used to reprogram the Persistent Store from Makefile.inc.
220	Low	Fix for issue ID 219 (Appendix E) causes additional register spills in 32-bit comparisons.
224	Low	Request for an event to indicate data flow through connected streams.
241	Low	Structure return in GCC uses excessive stack space; pass pointer for result instead.
294	High	Outgoing UART data corrupted by sleep at 19.2k and below.
B-94	Low	Clarification of BlueLab licensing conditions requested.
B-463	Medium	Total stack usage is unexpectedly large if many 32-bit temporaries are used.
B-548	Medium	PsFlood is not useful when persistent store is in EEPROM.
B-605	Medium	Functionality required to enable a VM application to determine the memory type being used for persistent store.
B-689	Low	The # format specifier not supported, so printf ("%#x", x) does not output a hex number.
B-876	Medium	pscli fails silently if options are mispelt or if input files do not exist.
B-902	Medium	Calling BattIssueRequest before BattInit does not work since the ADC event is not enabled until BattInit is called.
B-976	Low	Timer library does not support cancelling a timer from its own callback, other than by returning D_NEVER.
B-977	Low	Connection manager library can trigger B-976 if pairing times out.
B-997	Medium	Repeated CM_INQUIRY_REQs may panic the application. It is recommended that a delay of several hundred milliseconds is inserted between CM_INQUIRY_CFM and any subsequent call to CM_INQUIRY_REQ.
B-1057	Low	Changing TRANSPORT in the SPP makefiles does not force a rebuild; you need to "make clean" first.
B-1165	High	When SPP receives data, is connected over USB, and the virtual COM port is not open, the PC drivers lose the first 60 bytes of data. (Workaround: open port first.)
B-1210	Medium	VM panics on free(NULL) despite this being permitted by the ISO C standards.

Table Appendix A.1: Known Issues

Appendix B Issues Addressed Relative to BlueLab v2.7

ID	Severity	Description
153	Medium	vmSpy now supports all available host transports and speeds. It was restricted to BCSP at 38k4 and 115k2 baud.
275	High	Buffered stream data is no longer discarded when RFC connections are closed.
291	Low	`make eeprom` checks firmware compatibility.
295	Low	Improved performance of VMBuilder when writing output files.
B-83	Medium	Removed a possible memory leak in connection manager when remote names are received after inquiry has finished.
B-92	Low	Framework extended to allow sending of custom AT commands.
B-140	Low	AG no longer initiates SDP attribute search if a connection attempt failed.
B-175	Low	TimerAdd is now safer to call from a timer callback. Previously there could be a 30 second delay before such a timer fired.
B-180	Medium	HID library now supports negotiation of Sniff intervals (formerly issue ID 292.)
B-210	Minor	Connection manager uses valid pointer when searching for supported feature attribute after network attribute.
B-221	Low	Headset documentation now includes detail on the framework library.
B-241	Low	AG now rejects AT commands that are not defined in the active profile.
B-280	Low	genparse can now handle rules with empty strings between commas.
B-281	Low	Hands-free now supports call waiting and three way calling.
B-295	Low	hid_matrix_keyboard and hid_keyboard now use the correct USAGE_PAGE (6, not 8) to declare the PIN entry report.
B-361	Medium	hid_host no longer returns an erroneous HIDHOST_GET_REPORT_CFM in response to a HIDHOST_SET_REPORT_REQ.
B-370	Low	Applications should now set the class of device using CM_WRITE_COD_REQ instead of CM_SERVICE_REGISTER_REQ.
B-373	Medium	More selective linking to reduce the size of simple applications.
B-374	Low	Added frameworkInitialMicReq to set initial microphone gain and allow gain of zero to be set explicitly.
B-382	Low	Updated genparse and hands-free profile to support ranges of values (required for a variant of +CHLD.)
B-385	Low	Connection manager now closes connection if an AG rejects a DLC SABM with a DM.
B-414	Medium	64Kword applications permitted in filing system on 8Mbit devices.
B-422	Medium	VMBuilder reports names of missing trapsets.
B-425	Low	Support added to the framework library to allow the application to see the response to the NREC command.
B-426	High	File system broken in bc02_rfcomm_8m firmware supplied with BlueLab 2.7.
B-441	Low	File system images now include version number to support DFU.
B-442	Low	File system images now include a checksum for flash validation.
B-453	Low	Connection manager now closes connection if an AG rejects a DLC SABM with a DISC.
B-455	Medium	HID applications now delete local Virtual Cable information on becoming discoverable.

ID	Severity	Description (continued)
B-465	Medium	Timer documentation clarified.
B-466	Medium	Added functions to allow VM applications access to a random number source.
B-478	Medium	Scheduler supports energy estimation event.
B-482	Medium	Hands-free sends initial volume on SLC rather than SCO establishment for compliance with v1.0 of the hands-free profile.
B-506	High	Plug and Play SDP service records added to HID applications.
B-511	Medium	Stub timer library no longer prevents chip from sleeping.
B-521	Low	Connection manager now reports failure to enter chosen security mode.
B-536	Medium	genparse generated parsers now handle (malformed) space before the initial \r in AT commands.
B-544	Low	%* pattern added to genparse to accelerate handling of complex CIND commands.
B-546	Low	File system image contains application version for DFU.
B-565	Medium	Documented limits on size of I2CTransfers from VM.
B-572	Medium	Removed use of libgcc.a; 32-bit support code moved into libc.a as part of B-373.
B-573	Low	Use single version of C library (libc.a) for both release and debug builds..
B-575	Low	Trimmed size of BlueLab firmware images.
B-590	Medium	VMBuilder and PackFile now support signed filesystem images.
B-626	Medium	Firmware resource leak fixed which could cause TCP-based applications to fail after many TCP client open failures.
B-627	Medium	Firmware issue resolved which could cause L2CAP-based VM applications to crash.
B-628	Medium	Firmware issue resolved which could cause VM applications to hang if TCP open failed.
B-635	Medium	I2CTransfer return value now documented.
B-716	Medium	REJECTED. B-717 provoked a panic when unexpected CM_LINK_KEY_IND was received in SPP slave.
B-717	Medium	SPP slave now refuses a pairing request from a different master when it is already bonded.
B-775	Medium	RFCOMM sink events triggered less often, reducing CPU load.
B-801	Low	SPP master and slave can be configured to support Nanosira™.
B-807	Medium	HID documentation updated to suggest avoiding multi-slot packets.
B-819	Medium	Application makefiles now force default boot mode during `make flash`.
B-821	Medium	VMBuilder now generates images which will invalidate an existing filesystem on 8Mbit devices if no filesystem is explicitly specified.
B-853	Medium	spp_common/uart.c now compiles cleanly even if USE_HANDSHAKE is not defined.
B-855	Medium	vmSpy extended to handle stream-based host comms over BCSP channel 13.
B-890	Low	e2write now works with SPI multiplexor boards.
B-946	Medium	8Mbit firmware can no longer panic if filesystem is corrupted.
B-952	Low	vmSpy now includes timestamps and no longer clears the buffer on reconnect.
B-1111	Low	Cleaned up documentation, eliminated remaining references to BlueCore01.

ID	Severity	Description (continued)
B-1138	Medium	Restrictions on deep sleep with SPP documented.
B-1155	Medium	unpackfile utility included.
B-1164	High	Energy library added.

Table Appendix B.1: Issues Addressed Relative to BlueLab v2.7

The following issues concern the BlueLab2 debugger and are still outstanding, but they will not be fixed since it is anticipated that a future version of BlueLab will replace the current debugger entirely.

ID	Severity	Description
33	Low	The debugger sometimes fails to display the appropriate source code on hitting a breakpoint. Double-click on the top item in the call-stack in the **Context** tab to work around this problem.
57	Low	Plugin documentation for debugger is weak.
92	Low	Audio functions are not implemented in the debugger, so always return a failure indication.
104 127	Medium	The debugger sometimes hangs or crashes when reloading a project. Closing and restarting the debugger instead works around this problem.
148	Low	The debugger sometimes incorrectly formats primitives in the protocol window. This is corrected when the window is redrawn.
185	Low	The debugger can crash on exit if there is active traffic on the serial port being used for the user transport.
208	Low	Handshaking lines (other than CTS/RTS) are not supported on the serial ports used for the user transport in the debugger.
225	Low	Debugger should handle read-only L2CAP service records (used by HID).
249	Low	Loading another application into the debugger can result in “no project” being loaded if the first project was still being processed.
257	Low	Power control API should work from the debugger.
258	High	Mapped sinks under the debugger confuse 8-bit and 16-bit memory. Code which writes to the sink out of order (or which reads back the contents) will behave differently under the debugger.
268	Low	PsFullRetrieve fails under the debugger.
273	Medium	StreamDisconnect fails in appdebug.
284	Medium	StreamConnect of UART fails in appdebug.
B-213	Low	Debugger can hang when application panics.
B-433	Low	Debugger can exit if application is restarted after running for more than five minutes.
B-464	Medium	Debugger can under-report worst case stack usage.

Table Appendix B.2: Closed Debugger Issues

Appendix C Issues Addressed Relative to BlueLab v2.6

ID	Severity	Description
272	Low	REJECTED. Memory exhaustion can panic the firmware if many tiny L2CAP packets are received.
276	Low	BlueLab malfunctions if Cygwin is installed under “Program Files”.
277	High	HID keyboard fails to type on initial connection after reboot.
278	Low	Linker should enforce 24K limit on constant data.
279	Low	Documentation states that HID functionality is internal rather than in BlueLab Professional
280	High	Outgoing UART data corrupted by sleep at 57.6k and 38.4k. See issue 294.
281	Medium	Bounds too low on loops in hshf parser.
283	Medium	Need to be able to issue additional battery readings.
286	Low	RCS Id tags present in app/bluestack headers.
288	Low	Application makefiles should use DEFS+= for defines.
290	Medium	Spp_master should allow multiple results from an inquiry.
B-206	Medium	Headset Sniff parameters adjusted to prevent collision between SCO and Sniff, preventing any data from being sent.
B-208	High	HID waits for BlueStack to change power mode until changing Sniff interval.

Table Appendix C.1: Issues Addressed Relative to BlueLab v2.6

Appendix D Issues Addressed Relative to BlueLab v2.5

ID	Severity	Description
235	Low	Example applications should make use of TimerCancelCallback.
240	Low	The test_cable application has been seen to lock with flow control asserted when transferring large amounts (>8M) of data at full speed, especially with data flowing both ways. (Problem attributed to resolved RFC issue 1-296.)
242	Low	Spurious –I flag in library Makefile unintentionally suppresses some compiler warnings.
243	Low	Inlining of application traps would offer a minor performance improvement.
248	Low	Calling BattInit frequently allocates many timers. (See issue 235.)
250	Low	PIO documentation confuses class 1 and class 2 modules.
253	Low	Genparse should support repeated elements. (Now used by hshf.)
254	Low	hiduart.gif image is broken in released documentation.
255	Low	SPP should ignore CONTROL_IND packets even if not using the handshake library.
256/7	Low	Request for new functions to control transmit power.
260	Medium	PioSet can modify the state of internal pull-ups which are not explicitly being modified.
261	Low	PsRetrieve fails on chip if buffer is smaller than the actual key. (This behaviour is correct; documentation and debugger implementation updated to match.)
263	Medium	Debugger preferences dialog is broken when no project is loaded.
269	Low	Documentation and header for timer library disagree over D_mSEC.
270	Medium	Under the debugger PsStore(key,0,0) panics the application rather than clearing the key.
274	Medium	Debugger can crash when closing an RFCOMMM connection.

Table Appendix D.1: Issues Addressed Relative to BlueLab v2.5

Appendix E Issues Addressed Relative to BlueLab v2.4

ID	Severity	Description
155	Medium	The debugger sometimes fails to correctly calculate the value of pointers held in local variables when displaying them in the Context tab.
167	Medium	Sending BCSP:13 packets quickly over H4 seems to stop the VM (rejected as unconfirmed).
209	Medium	Audio gateway application does not work in debugger (causes resource exhaustion).
212	Low	Implausible call to my_strnicmp in ag_athandler.c (code rewritten).
213	Low	Additional symbols for tracking trapsets confuse the debugger (symbols hidden).
214	Medium	Adc library unable to read AIO2 on BlueCore2-External (TEST_C added).
216	Low	VmTransmitEnable requested.
217	Low	Button library should support PIO12 and up.
218	Low	Arrays do not display correctly in the debugger.
219	High	Code generator for GCC swapped arguments for some 32-bit subtractions and comparisons.
221	Low	Debugger should support PioDirect configuration for BlueCore2-External applications.
222	Low	Applications should be able to change raw UART settings.
223	Low	Event documentation still refers to PIO4/5 for PIOINT.
226	Low	A variant of TimerCancel taking the callback instead of the handle would be useful.
228	Medium	as/ar/ld use Cygwin and must be released in source for GPL compliance.
230	Low	Installer does not require a modify option.
231	Low	The copy of Cygwin supplied on the BlueLab CD can be simplified.
232	Medium	VMBuilder accesses incorrect software look-up table for major VM revision on HCI firmware.
233	Medium	Chip to host comms from VM was not tunnelled over USB.
234	Low	PSKEY_VM_DISABLE makes null application redundant.
237	Low	Request for VmDeepSleepEnable to suppress sleep (intended for raw UART).
238	Medium	Debugger version of calloc sometimes failed to zero blocks, typically causing random application panics when restarting the application inside an exsiting debug session.
1-207	Medium	AT parser too restrictive when processing fields from CIND commands in hands-free.
1-265	Low	Race condition between SCO and Sniff. See the software release note for Embedded Headset Profile (BlueLab v2.5) for details.
1-266	Low	Race condition closing RFCOMM in Park. See the software release note for Embedded Headset Profile (BlueLab v2.5) for details.
1-267	Low	Race condition releasing RFCOMM and SCO. See the software release note for Embedded Headset Profile (BlueLab v2.5) for details.

Table Appendix E.1: Issues Addressed Relative to BlueLab v2.4

Note:

Issues affecting only the headset application (ID 1-268 and ID 1-271) are listed in Appendix B of the software release note for Embedded Headset Profile (BlueLab v2.5).

Appendix F Issues Addressed Relative to BlueLab v2.3

ID	Severity	Description
186	Low	Enabling both Park and Sniff causes connections to fail after approximately 100 attempts.
187	Low	The battery library reports VDD as 3.3V on the 1.8V BlueCore2-External due to a scaling error.
188	Low	A bug in the firmware shipped with BlueLab v2.2 prevents access to PIO8 on BlueCore2-External.
189	Low	The application debugger generates malformed BCCMD packets when polling for on-chip events, slowing down radio access from an application running inside the debugger.
190	Low	CM_LINK_KEY_RES messages should set the address for rejected requests.
191	Low	The headset application limits volumes to 1..15, when 0 should be allowed.
196	Low	SourceMap should be declared to return a pointer to const, indicating that the stream contents cannot be modified. (The documentation is correct.)
197	Medium	Stream-based L2CAP connections should respect the MTU size to make them more resilient under high-throughput.
199	Medium	The button library should initialise its last reading from the PIO pins during initialisation to prevent problems when buttons are held closed during start-up.
204	Low	CM_READ_BD_ADDR message not documented.

Table Appendix F.1: Issues Addressed Relative to BlueLab v2.3

Appendix G Issues Addressed Relative to BlueLab v2.2

ID	Severity	Description
88	Low	The application debugger can lock up on exit.
109	Low	The headset should clear RFC flow control on disconnection.
116	Low	Documentation of link_type in CM_DISCONNECT_REQ is incorrect.
130	Low	Firmware limit on allocation size should be lifted to 512 from 128 to allow (non-recommended) use of custom pool sizes.
138	Low	Audio library should document frequencies generated for notes.
140	Low	First packet from audio gateway (AG) to headset can be lost due to rfc_handler bug.
143	Low	Timer library should document how many timers can reasonably be used.
144	Low	Connection manager should use masks from rfcomm_prim in RFC_CONTROL_REQ.
146	Low	Documentation missing for CM_SERVICE_REGISTER_REQ and _CFM.
150	Low	Debugger prevents entry to low-power mode because DM_HCI_WRITE_LP_SETTINGS is incorrectly implemented.
157	Low	Makefile should have additional targets (`make flash`, `make bc01`, `make bc02`).
159	Low	CM_INQUIRY_REQ timeout should be a Delay, not a time in milliseconds.
160	Low	seenAddrBefore in connection manager incorrectly resizes an array.
161	Low	Release scripts corrupt some GIFs referred to in the documentation.
164	Low	PIO documentation should discuss internal resistors on BlueCore2.

Table Appendix G.1: Issues Addressed Relative to BlueLab v2.2

Acronyms and Definitions

BlueCore™	Group term for CSR's range of Bluetooth wireless technology chips
BlueLab™	CSR's development toolset for building applications to run in the firmware's VM
Bluetooth®	Set of technologies providing audio and data transfer over short-range radio connections
BlueStack™	Mezoe's implementation of a Bluetooth protocol stack (up to RFCOMM level)
BlueSuite™	Family of software utilities for Bluetooth evaluation and development (supplied with CSR development systems Casira, MicroSira, CompactSira).
Casira™	CSR's main Bluetooth evaluation hardware
MicroSira™	Low cost development platform for USB connected host-side software
Persistent Store	Storage of BlueCore's configuration values in non-volatile memory
ADC	Analogue to Digital Converter (the analogue inputs on BlueCore)
AG	Audio Gateway
AT	Attention (modem command prefix)
API	Application Programming Interface
BCCMD	BlueCore Command
BCSP	BlueCore Serial Protocol
BNEP	Bluetooth Network Encryption Protocol
CD	Compact Disk
CODEC	Coder DECoder
CSR	Cambridge Silicon Radio
CTS	Clear To Send
DHCP	Dynamic Host Configuration Protocol
DM	Device Manager
DNS	Domain Name System
EAG	Embedded Audio Gateway
GCC	GNU C Compiler
GN	Group ad hoc Network
H4	UART-based HCI transport, described in section of H4of v1.0b of Bluetooth Specification
HCI	Host Controller Interface
HID	Human Interface Design
I^2C™	Inter-Integrated Circuit; electrical bus defined by Philips®
MTU	Maximum Transmission Unit
PAN	Personal Area Network
PANU	PAN User
PIO	Parallel Input Output; the parallel port on BlueCore
RCS	Revision Control System
RFCx	Version x of BlueCore firmware, including BlueStack API for RFCOMM
RFCOMM	Serial cable emulation protocol (element of Bluetooth)
RTS	Ready To Send
SIG	Special Interest Group (Bluetooth SIG controls the Bluetooth specifications)
SPI	Serial Peripheral Interface
SPP	Serial Port Profile
TCP	Transport Control Protocol
UART	Universal Asynchronous Receiver Transmitter

UDP	User Datagram Protocol
USB	Universal Serial Bus
VM	Virtual Machine; environment in the BlueCore firmware for running application-specific code produced with BlueLab

Record of Changes

Date	Revision	Reason for Change
03 NOV 03	a	Original publication of this document. (CSR reference: bcore-srn-034Pa)

BlueCore

BlueLab v2.8 Software Release Note

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