Software Impact Analysis

Revision History:

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| --- | --- | --- | --- | --- |
| Version No. | Revision Date | Reason for Revision | Author/Revised by | Revision details |
| 0.1 | 16 June 2016 | First Draft | AHF | n/a |
| 0.2 | 21 June 2016 | Update | AHF | Update from feedback and to improve the content of one section. |
| 0.3 | 24 June 2016 | Disclaimer for modified libraries | AHF | Added disclaimer for liabililty and responsibility if 3rd party EmberPlus libraries are used. |
| 0.4 | 8 July 2016 | Added signature | AHF | Added PWs signature to disclaimer of copyright interest. |
| 1.0 | 8 July 2016 | Release | AHF | Updated revision for software release. |
| 1.1 | 11th July 2016 | Incorrect location for source code. Also added Summa. | RMW | UN5712-R2 reference should be UN5713-R2. On Summa this is UN6179-R1. |

Calrec Audio Ltd.

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# Introduction

This document should accompany any Calrec Audio Ltd software release that includes the EmberPlus shared library. It provides information about how Calrec Audio Ltd uses the libember and libs101 libraries from the open source ember-plus project and about the source code distributed with the EmberPlus binary.

# Licensing of the EmberPlus Library

The software in the EmberPlus library is licensed under the GNU Lesser General Public License Version 2.1 (GNU LGPL v2.1). A copy of the license should accompany the distributed source code. Otherwise it may be obtained by writing to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA. The text for the license along with the terms and conditions applicable to the license can also be obtained from the GNU website [here](https://www.gnu.org/licenses/old-licenses/lgpl-2.1.en.html).

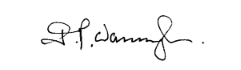
**The software is provided “AS IS” without any warranty or guarantees. Calrec Audio Ltd disclaims any expressed or implied warranties of merchantability and fitness for a particular use. Calrec Audio Ltd draws the reader’s attention to Sections 15 and 16 of the** [**GNU LGPL v2.1**](https://www.gnu.org/licenses/old-licenses/lgpl-2.1.en.html) **for the full terms of the warranty disclaimer.**

The EmberPlus library combines the libember and libs101 libraries from the ember-plus open source project hosted on the GitHub [**ember-plus page**](https://github.com/Lawo/ember-plus) into a single dynamically linked library.

To comply with the GNU LGPL v2.1, Calrec Audio Ltd is distributing the source code along with the binary of the EmberPlus library. The source code can be found in a gzip archive in the Sources folder of the UN5713-R2 for Apollo and UN6179-R1 for Summa. Under the terms of GNU LGPL v2.1 license third parties have the freedom to use and modify the library.

Disclaimer of Copyright Interest

**Calrec Audio Ltd acknowledges that the copyright for the source code for the libember and libs101 is owned by L-S-B Broadcast Technologies GmbH, part of Lawo AG and Calrec Audio Ltd disclaims all copyright interest in the libember and libs101 source code.**

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Patrick Warrington

Technical Director

Calrec Audio Ltd

Disclaimer for 3rd party EmberPlus Libraries

**Users of Calrec Audio Ltd software should note that it uses the version of the Application Programming Interfaces (API) of the ember-plus libraries as in the redistributed source code. This dependency means that any change to an EmberPlus API used by Calrec Audio Ltd software is very likely to prevent it working correctly. Other changes to the source code may introduce bugs when the modified EmberPlus library is used in conjunction with Calrec Audio Ltd software. Therefore Calrec Audio Ltd does not accept any liability in the event that a third party build of the binary for the EmberPlus library is used with its software.**

**Furthermore Calrec does not accept any responsibility for providing support for any version of the EmberPlus library created by a party other than Calrec Audio Ltd.**

# Use of the EmberPlus Library by Calrec Audio Ltd

The EmberPlus library combines the libember and libs101 libraries from ember-plus open source project into one convenient software binary. The code is built as a Linux shared library and Calrec Audio Ltd software uses the EmberPlus library by dynamically linking to it at runtime. As such it is a "work that uses the Library" as described in GNU LGPL v2.1 Section 5 and under the provisions given in GNU LGPL v2.1 Section 6.

The version of the libember library used by the EmberPlus library is identified by the Git changeset 21362c0e78c7fa325eb68072ad0d82cc09f058d in the [ember-plus git repository](https://github.com/Lawo/ember-plus).

The version of the libs101 library used by the EmberPlus library has the Git changeset a43e342fb28e348a027c5748a3be36acc1aaddb4.

Calrec Audio Ltd has made one bug fix to the ember-plus project source code. Calrec Audio Ltd has also added a Makefile and associated include files to allow the EmberPlus library to be easily built from the Linux command line. Details of the changes are given in the Change History section.

The source code for the EmberPlus library is re-distributed by Calrec Audio Ltd under the terms of the GNU LGPL v2. Therefore another party may modify the code and recompile the library providing they comply with the terms and restrictions of the GNU LGPL v2.1.

However, it must be noted though that Calrec Audio Ltd software is compiled against the version of the EmberPlus source that is in the re-distributed library and is therefore dependent on the version of the APIs within that source code. Any changes to these is likely to cause the Calrec Audio Ltd software to cease working properly.

A list of the header files that define the APIs that are used by Calrec Audio Ltd software is given in Appendix A.

# Building the EmberPlus Library

This document assumes that the reader has experience of C++ development on the Linux platform and is familiar with building C++ code using the GNU GCC collection of build tools on the Linux command line. If not then the reader should refer to references about C++ software development using GNU GCC with Linux.

The EmberPlus library can be built from the command line by the use of the GNU make command. The release version of Linux kernel, the Linux System libraries, and the GNU GCC build tools used for rebuilding the EmberPlus library should be compatible with those used to create the Calrec Audio Ltd software that will be used with the new version of the EmberPlus library. The Linux version used for building Calrec Audio Ltd software components can be obtained by contacting Calrec Audio Ltd with details of the component versions.

The following options are available for building with GNU make:

clean: This cleans the binaries created by the build process.

Enter “make clean” on the command line in the same directory as the Makefile to execute the command.

debug: This creates a debug build of the library.

Enter “make debug” on the command line in the same directory as the Makefile to execute the command

release: This creates a release build of the library.

Enter “make release” on the command line in the same directory as the Makefile to execute the command

If files are added or removed from the library then the Makefile include files *make\_objfiles* and the *make\_dependencies* must be updated with the details of the changes otherwise build will not compile new files or try to build removed files.

# Software Change History

26/04/2016 libember/Headers/ember/util/StreamBuffer.hpp

Fixed a bug in the clear() function of the StreamBuffer class. The function previously erroneously set the buffer length to the maximum size when it cleared the contents of the buffer.

26/04/2016 Added Makefile for convenience in building the EmberPlus library.

16/06/2016 Added two include files for the object files and their dependencies:-

make\_objfiles: lists the object files that the build creates.

make\_dependencies: gives the dependencies for compiling each object file.

# Appendix A – ember-plus APIs used by Calrec Audio Ltd

This section lists the header files from the ember-plus project that are used by Calrec Audio Ltd software, listed by sub directory within the library directory. The APIs defined in in these files are required by Calrec Audio Ltd software and it may not operate normally if there are any changes to these APIs.

## libember

### BER files

ember/ber/Type.hpp

ember/ber/ObjectIdentifier.hpp

ember/ber/Octets.hpp

### DOM files

ember/dom/AsyncDomReader.hpp

ember/dom/Node.hpp

### Glow files

ember/glow/Access.hpp

ember/glow/ConnectionDisposition.hpp

ember/glow/ConnectionOperation.hpp

ember/glow/DirFieldMask.hpp

ember/glow/GlowConnection.hpp

ember/glow/GlowCommand.hpp

ember/glow/GlowConnection.hpp

ember/glow/GlowContainer.hpp

ember/glow/GlowDtd.hpp

ember/glow/GlowElementCollection.hpp

ember/glow/GlowMatrix.hpp

ember/glow/GlowMatrixBase.hpp

ember/glow/GlowNode.hpp

ember/glow/GlowNodeBase.hpp

ember/glow/GlowNodeFactory.hpp

ember/glow/GlowMatrixBase.hpp

ember/glow/GlowParameter.hpp

ember/glow/GlowQualifiedNode.hpp

ember/glow/GlowQualifiedMatrix.hpp

ember/glow/GlowQualifiedParameter.hpp

ember/glow/GlowRootElementCollection.hpp

ember/glow/GlowType.hpp

ember/glow/MatrixProperty.hpp

ember/glow/MatrixType.hpp

ember/glow/ParameterType.hpp

### Util files

ember/util/OctetStream.hpp

## libs101

### s101 files

s101/CommandType.hpp

s101/Dtd.hpp

s101/MessageType.hpp

s101/PackageFlag.hpp

s101/StreamDecoder.hpp

s101/StreamEncoder.hpp