

Adrienne Electronics Corporation

“AEC Bootable Test Software Guide”

Introduction:

This document describes how best to use the AEC bootable test software. Said software makes it easy to test time code sources, cables, connectors, AEC products, and Host PC's, all independent of the installed operating system.

Running The Bootable Software:

Obtain the bootable media which came with your AEC device, plug it into your Host PC, then turn on the Host PC power. The bootable software should start automatically. No installation process is required. If you are concerned about the integrity of your hard drive, as perhaps you should be in today's world full of cyber criminals, disconnect its power cable and/or data cable before booting up your PC. Our software does not access the hard drive.

Enabling The Bootable Media:

The “BIOS” (boot software) installed on all PC's will sometimes not boot to the AEC bootable media. If that is the case, enter the BIOS setup menus by pressing a special key (or key combination) during the BIOS boot process (before the operating system software loads). That special key code varies from one PC to the next, and is often displayed on-screen momentarily during the BIOS boot process. Use the internet to find out the key code which works for your PC if necessary. Once you are in the BIOS setup menus, enable the AEC bootable media device. For example, if you are using an AEC bootable CDROM, use the BIOS setups to enable “Boot from CDROM”. After you are done using our bootable software, you can restore your PC to its original settings.

Making Your Own Bootable Media:

In case you do not presently have access to AEC manufactured bootable media, you can make your own. Just visit our website at <www.adrielec.com>, download the bootable media binary file, and create your own bootable media. You may need to obtain a USB CDROM drive for this process, they are very inexpensive and readily available.

AEC Device Selection:

If you only have 1 AEC device connected to your PC, you can ignore this section. Otherwise a menu will pop up which asks you to select which AEC device you wish to use for testing purposes. Some versions of the bootable test software can accommodate multiple AEC devices simultaneously, in which case no device selection menu will appear.

Functional Block Definition:

All AEC devices have “functional blocks”. Each functional block performs a different task. For example, a single AEC device could contain 1x LTC Reader (“LRDR”) block, 1x VITC Reader (“VRDR”) block, 1x LTC Generator (“LGEN”) block, and 1x Video Sync (“VSYNC”) block. Or it could contain 4x LRDR blocks. These are just examples. Some variations of the bootable software will display the functional block numbers as “FB1”, “FB2”, etc., so that you can tell the difference between functional blocks which appear to be otherwise identical. For example, a 4x LRDR product will display “FB1”, “FB2”, “FB3”, and “FB4”, all of which are LRDR data blocks.

Bootable Software Main Menu Options:

In most cases the bootable software will proceed directly and automatically to the test/demo program which is appropriate for your AEC device. That simple program satisfies over 95% of our customers. But if you want to explore more AEC device test options, just press the “Esc” key, and a “Main Menu” will appear, allowing you can proceed with the more advanced program options. In particular, there are usually several program options which allow you to test for time code source signal dropouts, counting errors, counting jumps, and so forth. This can be extremely helpful with finding and logging problems due to intermittent cables, intermittent connectors, intermittent RF and electrical interference, etc., etc..

Optional TC Data Logging Software:

One of the main menu program options is called the “Time Code Data Logging” program. This program displays the (selected) AEC device model number and firmware revision, the Host PC's current date and time, the current time code input data, and a time and date stamped log of all unexpected time code events. Time code signal dropouts and counting anomalies are displayed. This free program can be extremely useful for detecting occasional time code glitches due to source signal problems, intermittent cables and connectors, electrical or RF interference, and other issues.

At present this free software only works with the first time code reader functional block on the AEC device (almost always an LTC reader block).

At present this free software may display one or two “error” lines when you first start the program (just ignore them).

You can let this program run for days until it detects and displays a problem, at which time you can take one or more digital pictures of the display screen.

Optional “Final Test” Software:

One of the main menu program options is called the “AEC Product Final Test” program. In most cases, this is the exact same software that we use to test all AEC products just before we put them in a box and ship them to you. All installed time code readers and generators are activated. You will see a separate display block for each “Functional Block” present in the AEC device. Each functional block display includes the AEC device model number, firmware revision, functional block number, the device location within the PC, plus data which demonstrates the performance of that functional block.

Many functional block display areas include a “period” number, which indicates the time from one event to the next. Typical time code periods are 33.3ms, 40.0ms, and 41.7ms. Typical video sync periods are 16.7ms, 20.0ms, 33.3ms, and 40.0ms. You will note that these period numbers often change quickly and slightly (like a blur) from one reading to the next. For non-USB devices, the timing accuracy is typically plus or minus 0.1ms. For USB devices, the timing accuracy is typically plus or minus 1.0ms (due to inherent USB system delays).

This program not only displays the time code (or other) data, it is also (in the background) checking for input signal dropouts, significant timing period changes, and time code data counting errors. If any such errors are detected, the “number of errors” display will be updated. No details are shown about the type of error detected (instead use the time code data logging program for that purpose). If the display continues to say “0 errors detected” after many hours or days of testing, you can be certain that your time code source(s), your cables and connectors, your AEC device, and your Host PC are all working properly.

This free software can be used to test and display the functional block performance of multiple AEC devices simultaneously. The only limitation at present is that only up to 8 functional blocks can be displayed at any given time. So (for example) if you have 3 LTC/VITC reader products installed, each of which has 3 functional blocks (LRDR/VRDR/VSNC), the last functional block for the last AEC device will not be displayed.

The number in the upper right corner of the display screen indicates the average number of milliseconds for each loop of this program. In most cases it will display “0.0ms”, indicating that less than 50us is required for each program loop. If a large number appears here, you may have a really slow PC. Smaller numbers (smaller loop delays) give better timing display accuracy.

When you are finished with this program, just press the “Esc” key to return to the main menu.

25-Pin GPIO Connector Test Notes

If you have an AEC product which includes a 25-pin “D” connector with GPIO functionality, there are actually 12x GPO pins, 12x GPI pins, plus 1x GND pin. The “GPO 1-12” line displays the current status of the GPO pins. Note that they are all normally high, but one at a time gets pulled low momentarily. The “GPI 1-12” line displays the current status of the GPI pins.

This test is designed to work properly only when a “6-pin offset loopback connector” is attached. For example, connect GPO1 to GPI7, connect GPO2 to GPI8, connect GPO12 to GPI6, and so on. The displayed error count is only meaningful when this special loopback connector is installed before starting the test. The 6-pin offset is used to ensure that all shorts between adjacent pins will be detected. You will have to make your own loopback connector.

A 6-pin offset loopback connector connected directly to the 25-pin “D” connector can be used to check the AEC device circuitry for errors. A 6-pin offset loopback connector installed at the far end of a parallel GPIO cable can be used to test for cable errors, connector errors, and electrical interference such as RF signal pickup, ground potential differences, etc..

The test software display actually shows only about 1 out of every 100 tests. To display the tests at full speed would be a meaningless blur. Each GPO pin goes low for 5ms, then back high for 5ms, then the next GPO pin is tested, etc.. So 100 pin-pair tests are being performed every second. You can use an oscilloscope to check all the GPO pins at full speed if desired.

It is indeed possible to use this version of the test software to display the GPI pins status, just be aware that the GPI pins status display is only updated every 500ms, even if the GPI signals are changing faster than that.

Possible USB Device “Not Found” Problem:

With the current version of our bootable test/demo software, when an AEC USB device is attached, it is possible that the Host PC will not be able to detect said device. Intel designed the original USB hardware and software, and used what are called “UHCI” USB Host Controller chips. Our bootable test/demo software does not yet support UHCI. Look for a different Host PC which uses the more common “OHCI” (not Intel proprietary) Host Controller chip.

Possible USB Device “Startup” Problem(s):

With the current version of our bootable test/demo software, when an AEC USB device is attached, some Host PC's are known to have trouble booting up properly. This often manifests itself by the PC keyboard appearing not to be working properly. It may take a 5-second power reset sequence to turn off your PC (or just unplug it). Fixing this issue is on our very lengthy “to do” list. Short-term, just look for and use a different PC if possible.

In Case of Trouble:

If you have good reason to believe that things aren't working quite right, contact us at <support@adrielec.com>, or via the phone number(s) found at <www.adrielec.com>. Please remember that this is free software, so adjust your expectations accordingly. It is often extremely helpful if you can take one or more digital pictures of the bootable software display screen(s), and send them to us via e-mail. It is possible that we need to explain something better, or perhaps you have discovered a new software “feature” (bug). Remember always that the most common cause of “AEC device failures” turns out to be bad cables and connectors (over 90% of the time). This bootable software makes it easy to find those. That said, we want you to be a happy customer who will order more AEC devices and recommend them to your friends, so please give us a chance to fix problems and make improvements if and where needed.