

# IBOC Update

## HD Radio™ Tech Bulletin

**iBiquity Digital is issuing this tech bulletin in an effort to help broadcast engineers maintain quality HD Radio operations and increase the benefits of HD Radio technology to its growing listener base. We plan to issue future bulletins as necessary.**

### New Exciter Software

**The latest software load for Exporter and Exciters has been released by iBiquity's manufacturing partners.**

Several equipment manufacturers recently released a new version of HD Radio™ Exciter software. The version number is v2.4.2 and it contains some useful fixes and features that make upgrading worthy of consideration. There are also two bulletin items that station engineers need to know and need to act on if and when they decide to upgrade their Exciters and Exporters to this new version. The software released is an iBiquity core, but each manufacturer has enhanced with their own features that they see as marketable or required by their customers.

New features in the iBiquity core include support for HD1 data rates down to 32 kb/s, using TCP/IP connectivity on the Exporter to Exgine (E2X) link, the ability to feed analog transmitters from the Exgine/Exciter to save bandwidth on your STL, improved performance for the Digital Up-converter (DUC) in the Exgine, and advanced features for Station Information Service (SIS) text messages to support BTC and TMC traffic services. There is a slight tradeoff for this rich feature set in this release: latency in the digital audio stream has increased by as much as a second and a half. Also packet errors in the IBOC stream are being handled differently. This leads to two bulletin points.

#### **Bulletin #1: Blend Alignment in Exporter v2.4.2 Requires Attention**

The digital audio latency has increased, in some cases by as much as a second and a half. This is mainly due to the manufacturers' implementation of TCP on the E2X link. Some manufacturers have added extra buffering to make for a more robust link. The overall result has pushed the digital latency to beyond 9 seconds. This may create a problem for stations that use an external audio processor to delay their analog audio. Most processors can delay the audio up to 8.2 seconds, which is not enough to delay the analog audio so it matches with the digital.

There are two solutions to this situation:

1. Upgrade the processor with more memory, or
2. Use the delay feature in the Exporter which has sufficient memory.

The first solution adds versatility to your processor and maintains a separate path for your primary analog audio. The second solution can be more cost effective if the addition of a simple failover switch can re-route the primary analog audio in case of an Exporter failure.

## **Bulletin #2: All Platforms Must be Synchronized and Running on a Sound Network**

The IBOC air chain is closely analogous to a data pipe. Data in the form of AES audio and text enters in one end, is formatted, encoded, packetized and assembled into frames and then sent to the Exciter to be modulated. In order to operate smoothly without overflows and under runs, all the devices in the air chain, including audio cards, Exporters, and Exciters must be synchronized to a master clock. This can be done one of two ways:

1. With a single reference and clock timing sent over various links, e.g. Importer to Exporter (I2E), and Exporter to Exgine (E2X).
2. With separate GPS receivers providing a 10 MHz reference at the studio and at the transmitter site(s).

The first method works only if the links involved are almost completely free of dropouts, jitter and other timing errors. iBiquity strongly recommends using the second method. Special broadcast requirements can make the second method mandatory.

Whichever method you choose for synchronization, you need a sound network to connect everything together. iBiquity has published a trio of documents on best practices for tying the IBOC network together. By following these recommendations and requirements, you can reduce problems with dropouts and alignment drift down to a very small number.

***Follow these links for more information on best practices for HD Radio networking:***

[HD Radio Data Network Requirements](#)

[HD Radio Networking Implementation Recommendations](#)

[HD Radio Networking Best Practices](#)

### **Time Alignment Reminder**

Reports of stations where the analog and digital audio are not synchronized are increasing. This is the single most important factor in the evaluation of HD Radio technology by automakers, receiver manufacturers and retailers, as well as consumers. It is very important to the success of the technology that stations continue to operate with time aligned audio. Even slightly misaligned signals are being reported. Software upgrades, changes to processing and other common actions may cause time alignment to drift. If you are not automatically monitoring your time alignment, we ask that you check it frequently.

***For more information about setting blend alignment, you can follow this link:***

[Blend Alignment Information](#)

**Thank you for your continued support!**

Please direct any questions, comments or report technical issues to: Tom Walker, iBiquity Digital Corporation, 6711 Columbia Gateway Drive, Suite 500, Columbia, MD 21046, (443) 539-4332, [walker@ibiquity.com](mailto:walker@ibiquity.com)

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