AUDIOSCIENCE

((BUILT FOR BROADCAST))

ASI8821/ASI8921
PCI EXPRESS/PCI MULTICHANNELRADIO & ANALOG TV TUNER ADAPTERS

1 DESCRIPTION

The ASI8921/ASI8821 series are professional PCI tuner adapters designed for use in radio and analog television broadcast monitoring and auditing.

The ASI8921 and ASI8821 are based on tuner modules. Each module has four tuners on it and the ASI8921/ASI8821 can hold a maximum of two modules. The ASI8921 is a PCI adapter and the ASI8821 is a PCI Express (PCIe) adapter.

Up to eight different channels of AM, FM, NTSC, PAL or SECAM (audio only) can be received and recorded simultaneously from a single antenna input. Recording formats include PCM and MPEG-1 layer2 and MPEG-1 Layer 3 (MP3).

2 ORDERING INFORMATION

ASI8921-1000 ASI8821-1000	4 channels of AM/FM/RBDS/RDS
ASI8921-1100 ASI8821-1100	8 channels of AM/FM/RBDS/RDS
ASI8921-2000 ASI8821-2000	4 channels of AM/FM/RBDS/RDS + MCX external antenna jacks
ASI8921-2200 ASI8821-2200	8 channels of AM/FM/RBDS/RDS + MCX external antenna jacks
ASI8921-3000 ASI8821-3000	4 channels of NTSC/PAL/SECAM audio
ASI8921-3300 ASI8821-3300	8 channels of NTSC/PAL/SECAM audio

3 FEATURES

- Up to 8 channels of AM/FM audio capture

- Up to 8 channels of NTSC/PAL/SECAM TV audio capture

- PCI interface (ASI8921) or PCIe interface (ASI8821)

- Up to 8 channels of FM RBDS/RDS data capture

- AM/FM/RBDS/RDS tuners can be fed from individual external antennae

- Audio monitoring of all tuners simultaneously

- MRX technology allows each stream to have an independent sample rate of between 8 and 48kHz

- PCM and MPEG-1 Layer 2 and MP3 recording formats

- Half-length PCI card

- Up to 8 cards in one system

- Windows 7, XP, Server 2008/2003, and Linux software drivers available

4 SPECIFICATIONS

RF INPUT	
Connector	F type 75 ohms, on card bracket MCX connector (optional) (AM/FM only, per tuner, jumper selectable)

FM/RDS TUNER (-1000, -1100, -2000, -2200)		
FM		
Modes	Mono or Stereo	
Frequency range	75.9MHz - 108.1MHz, 50kHz channel spacing	
Sensitivity	15dBuV for -30dB THD+N	
Input Level	90 dBuV Maximum (F connector) 100 dBuV Maximum (External antenna connector)	
THD+N	-55dB @ 60dBuV RF Level, 1kHz sinewave, mono, 75kHz deviation, A-weighting	
De-emphasis	50us or 75us (software selectable)	
Audio bandwidth	30Hz-15kHz (+/-3dB)	
RDS/RDBS		
Sensitivity	25 dBuV	

AM TUNER (-1000, -1100, -2000, -2200)		
AM		
Frequency range	520kHz-1720kHz, 1kHz channel spacing	
Sensitivity	30dBuV for -30dB THD+N	
Input Level	F connector: External antenna MCX connector:	75 dBuV Maximum 90dBuV Maximum
THD+N	-50dB @ 60dBuV RF Level, 1kHz sinewave, 75% modulation, A-weighting, 2kHz bandwidth	
De-emphasis	None or 50us (software selectable)	
Audio bandwidth	100Hz - 2kHz (+/-3dB)	

ANALOG TELEVISION TUNER (-3000, -3300)		
Television System	NTSC-M, PAL-B/G/D/K, SECAM L	
Frequency range	42MHz – 864MHz	
Sensitivity	<TBD>	
Input Level	F connector:	90 dBuV Maximum
THD+N	40dB @ 60dBuV RF Level, 1kHz sinewave, mono, A-weighting, 15kHz bandwidth	
De-emphasis	None	
Audio bandwidth	50Hz - 15kHz (+/-3dB)	

LINE OUTPUT	
Connector	Mini 50pin on card bracket
Breakout Cable (included)	CBL3004 – Mini 50pin to 24 RCA jacks
Audio	4Vpp max into 10Kohms

SIGNAL PROCESSING	
DSP	Texas Instruments TMS320C6713@300MHz
Memory	8MB
Sample rates	8, 11.025, 12, 16, 22.05, 24, 32, 44.1, 48kHz
Audio Formats	8 bit unsigned PCM, 16bit signed PCM, 24 bit signed PCM 32bit IEEE floating point PCM MPEG-1 Layer 2, MPEG-1 Layer 3 (MP3)

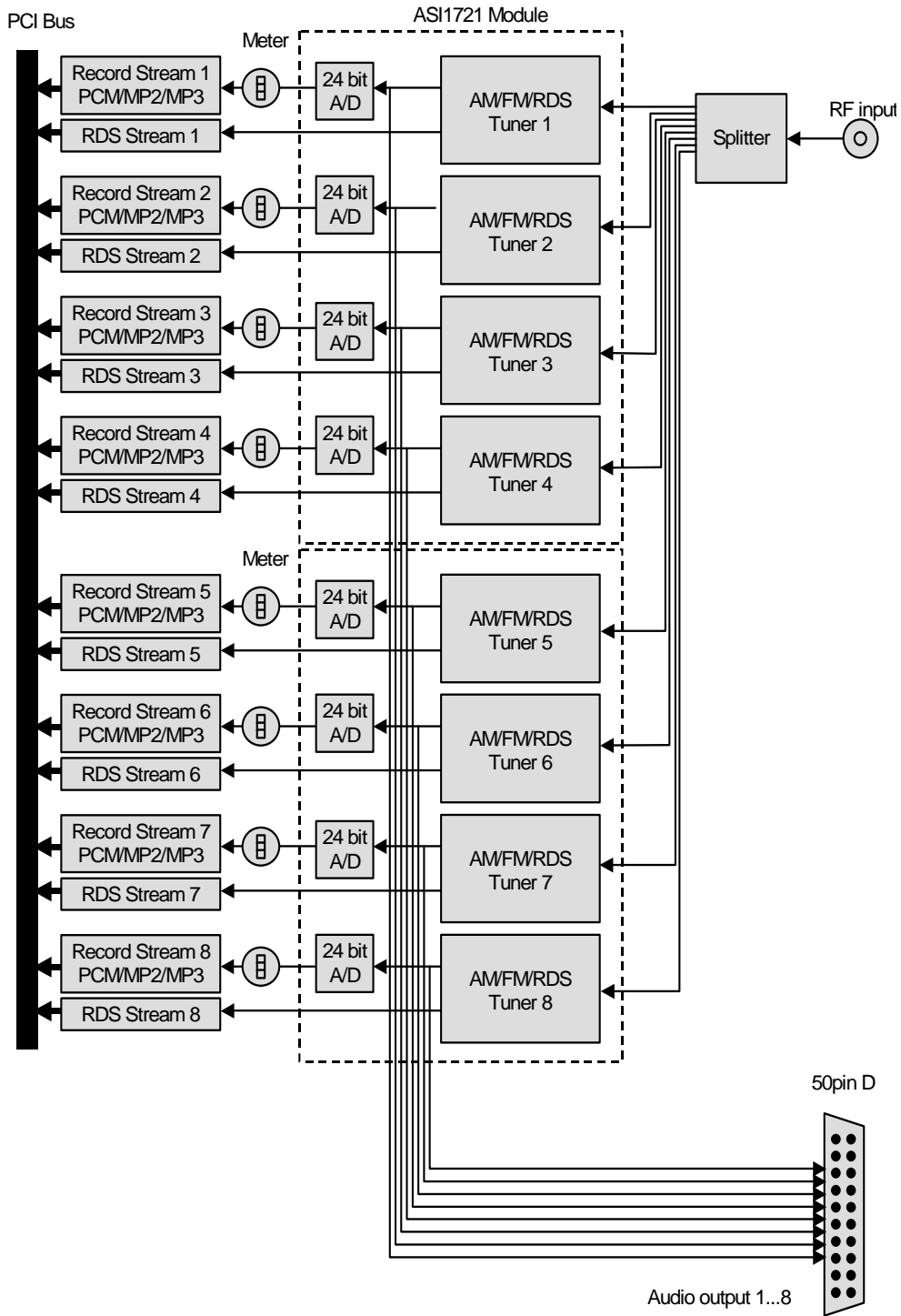|	
	(MPEG Layer-3 audio coding technology licensed from Fraunhofer IIS and THOMSON multimedia)
GENERAL	
Bus	ASI8921 – Universal 32bit PCI (3.3V or 5V signaling) ASI8821 – X1 PCI Express
Dimensions	PCI short-length form factor (6.6 inches/168mm long)
Weight	7oz (200g) max
Operating Temperature	0°C to 70°C
Power Requirements	3.3V @ 1.3A, +5V @ 0.8A, -12V @0.1A

5 REVISIONS

Date	Description
02 April 2008	Released.
23 January 2009	Formatting updates.
21 June 2010	Added ASI8821 (PCI Express version).
16 July 2010	First page: Added ASI8821 image and updated ASI8921 image.
30 August 2010	Added analog television options (-3000, -3300) and preliminary specs.
06 January 2011	Added HD-50 pinout

6 CONTENTS

7 BLOCK DIAGRAMS

ASI8921/ASI8821 - 8 x AM/FM/RDS

8 CONNECTORS

8.1 F-Type

The F connector feeds the RF signal from an external antenna to all tuners on the ASI8921/ASI8821.

8.2 HD50

The HD50 connector makes available the mono or stereo audio of each tuner output. Ch1 is sourced from a software-controlled mux and may be programmed to output Ch1-8. The output level is 2Vpp into 10Kohms.

HD50 Pinout
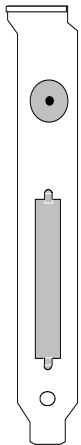
GND	1	26	VID8	Tuner Video Out 1..8
GND	2	27	VID7	Format is CVBS Composite
GND	3	28	VID6	analog video
GND	4	29	VID5	
GND	5	30	VID4	
GND	6	31	VID3	
GND	7	32	VID2	
GND	8	33	VID1	
GND	9	34	RO4	
GND	10	35	LO4	
GND	11	36	RO3	
GND	12	37	LO3	
GND	13	38	RO2	
GND	14	39	LO2	
GND	15	40	RO1	Tuner Audio Out 1..8
GND	16	41	LO1	LO1 = Left channel out, Tuner #1
GND	17	42	RO5	RO1 = Right channel out, Tuner #1
GND	18	43	LO5	
GND	19	44	RO6	
GND	20	45	LO6	
GND	21	46	RO7	
GND	22	47	LO7	
GND	23	48	RO8	
GND	24	49	LO8	
GND	25	50	GND	

9 CABLE

Breakout cable CBL3004 is supplied with the ASI8921/ASI8821. This supplies the 8 stereo audio outputs and 8 CVBS video outputs, all on RCA (phono) jacks. The video outputs are only active on the –3000 and -3300 models.

CBL3004

Video outputs 1..8

Right audio outputs 1..8

Left audio outputs 1..8
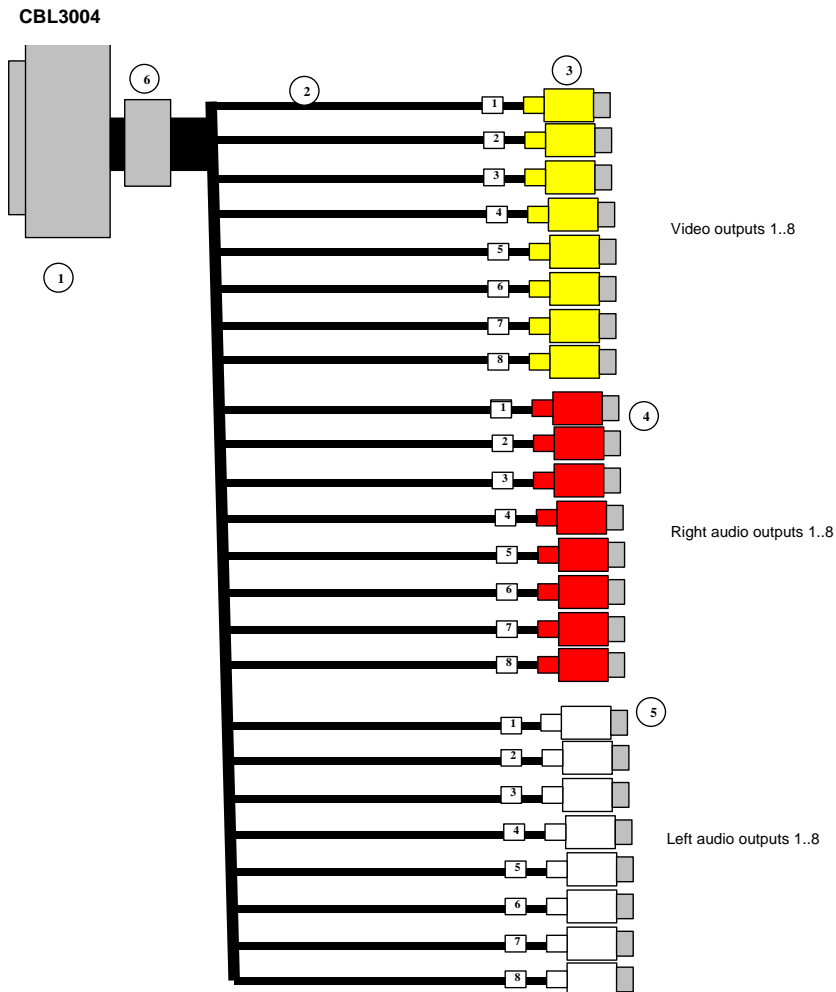
10 HARDWARE INSTALLATION

This section explains how to install one or more AudioScience adapters in a computer.

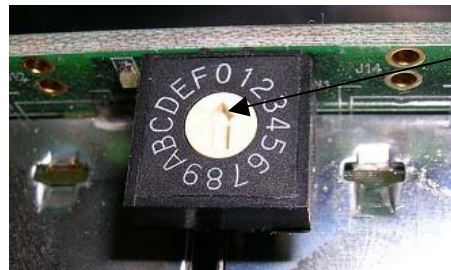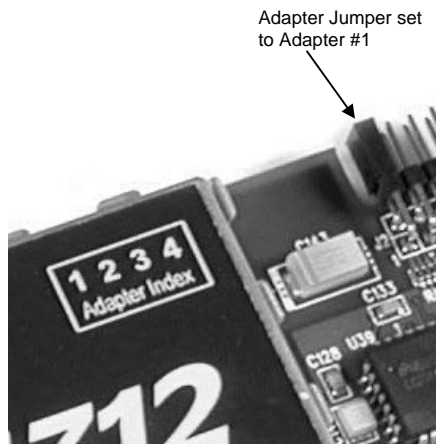## 10.1 Setting Adapter Index – One Adapter in the PC

1. Make sure your computer is turned off.

2. PCI adapters should be installed in any empty PCI slot and PCIe adapters should be installed in any x1 (or greater) PCIe slot.

3. Make sure the adapter jumper is set to adapter index #1, the factory default. For a new card no changes need to be made. For an AudioScience adapter from another installation, check that it is set to adapter index #1.

Depending on the adapter family, there are different ways of setting the adapter index.

For ASI5000 and ASI6000 families, there is an adapter jumper that must be set. The left most position represents adapter index #1.

For ASI5300, ASI6300, ASI8700, and ASI8900 families, there is a rotary switch.

NOTE: Position 0 (zero) represents adapter #1, position 1 is adapter #2, etc.

Adapter Jumper set to Adapter #1

Adapter Index switch set to Adapter #1

4. Turn on the computer and let it boot. Under Windows, a dialog box will pop up informing you that the computer has detected a new Multimedia Audio card. Cancel out of this dialog box and proceed to the software installation section of this datasheet.

10.2 Setting Adapter Index - Two or More Adapters in the PC

1. Make sure your computer is turned off.

2. PCI adapters should be installed in any empty PCI slots and PCIe adapters should be installed in any x1 (or greater) PCIe slots. Different adapter types can coexist in the same computer; for example, an ASI6416 and ASI8921 will work correctly if installed in the same PC. Different adapter types still require unique adapter index numbers.

3. Each adapter in the PC needs to have its adapter jumper/rotary switch position set to unique numbers. For example if you are installing two adapters, the first one would be set to adapter index #1 and the second to adapter index #2.

3.1. For ASI5000 and ASI6000 families, the position to the right of index #1, when jumpered, represents adapter index #2. The next position represents #3, and the rightmost position, when jumpered, represents #4.

3.2. For ASI5300, ASI6300, ASI8700, and ASI8900 families, rotate the rotary switch to indicate what position is required.

4. Turn on the computer and let it boot. Under Windows, a dialog box will pop up informing you that the computer has detected a new Multimedia Audio card. Cancel out of this dialog box and proceed to the software installation section of this datasheet.

11 SOFTWARE INSTALLATION

AudioScience makes audio adapters and drivers for various operating systems. Enhancements to an adapter's utility come from the integrators software that uses the audio driver to implement sophisticated audio playback and recording functions.

11.1 Drivers for Windows XP/Server 2003/Server 2008/7

The first step is what type of driver is needed for the adapter. There are two types of drivers for Windows: The WAVE driver and the WDM driver. Typically this will be decided by the application used with the AudioScience adapter. For any application that uses DirectSound, use the WDM driver.

Driver 3.10 and later present the user with three install options during installation:
- Install Standard PCI/PCIe Driver.
- Install Standard + Network Audio Driver.
- Remove all driver components

Traditional installs should select the first of these options. Users of AudioScience CobraNet products should select the second option with the "+Network Audio Driver." in the text.

11.1.1 WAVE Driver

Download the file named ASIWAVE_xxxxxx.EXE from www.audioscience.com and run it (_xxxxxx is the version number). After the EXE has run, reboot the computer and the audio adapter will be operational. If the cover is off the computer, one can see one or two blinking LEDs on top of the card indicating its DSP is running and communicating with the driver.

Verify that the adapter is running using ASIControl (see ASIControl section in this document).

11.1.2 WDM Driver

Download the file named ASIWDM_xxxxxx.EXE from www.audioscience.com and run it (_xxxxxx is the version number). After the EXE has run, reboot the computer and the audio adapter will be operational. If the cover is off the computer, one can see one or two blinking LEDs on top of the card indicating its DSP is running and communicating with the driver.

Verify that the adapter is running using ASIControl (see ASIControl section in this document).

11.1.3 Combo Driver

The Combo driver presents both Wave and WDM devices to the user. Download the file named ASICOMBOV_xxxxxx.EXE from www.audioscience.com and run it (_xxxxxx is the version number). After the EXE has run, reboot your computer and the audio adapter will be operational. If the cover is off the computer, one can see one or two blinking LEDs on top of the card indicating its DSP is running and communicating with the driver.

Verify that the adapter is running using ASIControl (see ASIControl section in this document).

11.1.4 ASIO

All AudioScience drivers also install an ASIO driver interface. It is installed by default.

11.1.5 Driver Failure

In the event that an adapter's driver fails to load correctly, the OS's event viewer should be checked. The event log is viewed as follows:

XP: The system event log is accessed from \Start\Control Panel\Administrative Tools\Event Viewer. The System view should be selected.

7: The system event log is accessed from \Start\Control Panel\System and Maintenance\Administrative Tools\Event Viewer. The Windows Logs\System view should be selected.

If two or more adapters are installed in the same system, the first thing to check is that the adapters were assigned unique adapter numbers. If issues persist, please email support@audioscience.com.

11.2 Drivers for Linux

The latest Linux driver can be downloaded from the AudioScience website – www.audioscience.com

11.3 Applications for Windows

AudioScience provides two application for adapter set-up and configuration: ASIControl and ASIMixer.

11.3.1 ASIControl

All Windows drivers install an AudioScience application called ASIControl that can be used to setup and verify functionality of adapters. ASIControl provides a common interface for users across all driver types.

The following list of controls are uniquely supported in ASIControl (as opposed to ASIMixer):
- ASI8700 tuner pre-emphasis
- ASI8900 tuner RBDS
- ASI8900 tuner FM stereo indication
- ASI8914 HD Radio PSD field
- ASI8914 HD Radio Digital status field
- ASI8914 HD Radio Digital program number selection

From the Windows Start menu, navigate to Start→Programs→AudioScience and run the ASIControl program.

When started, ASIControl will look something like the following:
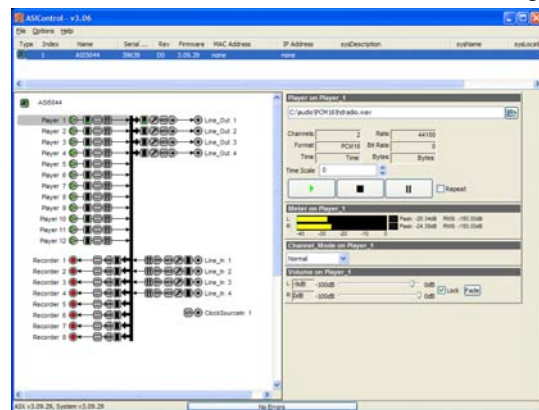

11.3.2 ASIMixer

ASIMixer is specific to the Wave and Combo drivers and is available from the AudioScience website. It uses the Wave/Mixer interface to control AudioScience adapters. Users of driver version 3.10 and later are encouraged to use ASIControl for manipulating adapter controls.
See the list of controls in the previous section that that are only available in ASIControl.
See the list of controls in the previous section that that are only available in ASIControl.

12 OPERATION USING ASICONTROL

Using ASIControl, the ASI8921-2200 will look like so:
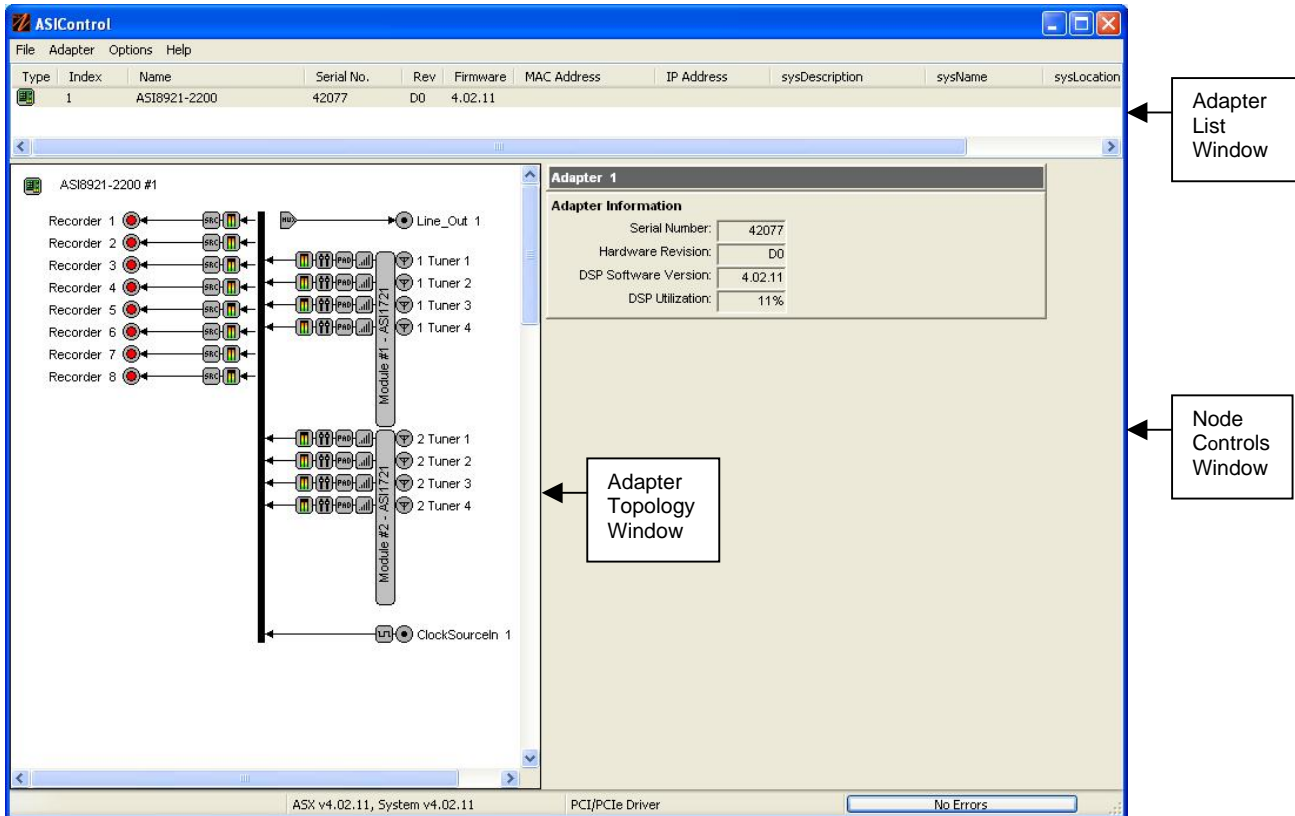
12.1 User Interface

ASIControl consists of three main windows: the adapter list in the top portion of the window, the adapter topology view on the left hand side, and the node control list on the right hand side.

12.1.1 Adapter List Window

The top portion of ASIControl shows a list of all the adapters that the application has found. By default, only bus based (i.e. PCI and/or PCI Express) adapters will be shown. If the network portion of the driver is installed (by selecting "Install Standard + Networked Audio Driver" after running the driver installer) and "Local PCI(e) + Networked adapters" is selected from ASIControl's Options→Configure adapter interface, then AudioScience and other third party CobraNet devices will be shown.

Adapters are listed in order of adapter index. For bus-based adapters, this is determined by the adapter index jumper on the card. For AudioScience CobraNet devices this is calculated from the unit's MAC address. Third party CobraNet devices are listed last as they have no AudioScience index.

12.1.2 Adapter Topology Window

The left hand side of ASIControl contains the topology view of the adapter. It is essentially a block diagram of the device showing the available physical inputs and outputs on the right hand side of the black, vertical 'bus' line. On the left hand side of the bus line, bus-based adapters show player and recorder streams, while CobraNet adapters show their network connections.

Each of the inputs and outputs is referred to as a node and each Node contains one or more controls. The topology shows each control as a small icon. A non-exhaustive list of nodes follows:

Line In	Recorder
Line Out	Tuner
AES/EBU In	Clock Source In
AES/EBU Out	CobraNet In
Player	CobraNet Out

Hovering the mouse over a particular node will highlight it. Clicking on a node will bring up the controls resident on that node in the right hand control list.

There is an adapter node in the top left corner of the topology window. Clicking on this will show adapter-specific controls and properties on the right hand side.

Not all adapters have all nodes.

12.1.3 Node Controls Window

The right hand side of ASIControl shows the controls associated with the selected node in the topology view. The controls are arranged, from top to bottom, in order of audio signal flow, i.e. the audio signal can be viewed as entering the node at the top control and leaving at the bottom control. Controls may be used to either manipulate the audio as it passes through the node, or report back control status information.

For a comprehensive listing of controls and how to operate ASIControl, please see the ASIControl manual available from www.audioscience.com and also installed by the driver. Not all adapters have all controls.
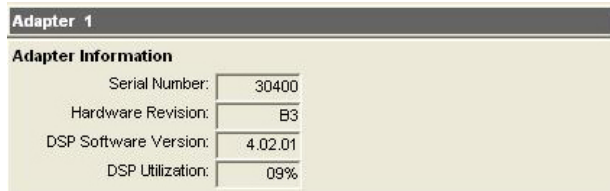
The section below lists some common and any specific controls, as seen in ASIControl, for this adapter.
The section below lists some common and any specific controls, as seen in ASIControl, for this adapter

12.2 Controls

12.2.1 Adapter Information

This control displays information about the installed AudioScience product.

12.2.1.1 Interface

Figure 1. Adapter information seen in right side of ASIControl.

Serial Number:
The serial number is displayed here.

Hardware Revision:
This lists the hardware revision of the AudioScience product.

DSP Software Version:
The DSP software version is displayed; usually the same as the driver version installed.

DSP Utilization:
This shows the loading of the AudioScience product's DSP in percent.
Note: Utilization should be kept below 90%.
Note: Utilization should be kept below 90%.

12.2.2 Tuner

The Tuner control is used to tune radio or TV channels on the ASI8700 and ASI8900 series tuner adapters. There are six sections to the tuner control: **Generic**, **Analog Radio**, **PSD/RBDS**, **Analog TV**, **Tuner** volume, and **Meter**. See below for a review on each section.

Note: Not all tuner adapters support all six sections.

12.2.2.1 Generic

Figure 2. Generic section of Tuner controls.

Band:
Selects which type of demodulation the tuner will perform. Depending on the adapter type, the following Bands may be available:

Band	Description	Supported adapters
AM	Mono AM radio	ASI87XX, ASI8921/8821
FM Mono	Mono FM radio	ASI87XX, ASI8921/8821
FM Stereo	Stereo FM radio	ASI87XX, ASI8921/8821
TV NTSC	Analog NTSC TV	ASI8723
TV PAL-B/G	Analog PAL-B/G TV	ASI8733
TV PAL-I	Analog PAL-I TV	ASI8733
TV PAL-D/K	Analog PAL-D/K TV	ASI8733
TV SECAM-L	Analog SECAM-L TV	ASI8733
Aux	Auxiliary input on ASI87XX (50pin header)	ASI87XX

Frequency:
Sets the frequency of the channel to be tuned. It is specified in kilohertz (kHz). For example, an FM radio frequency of 88.1MHz is specified as 88100 and NTSC-TV Ch2 is specified as 55250.

Attenuation:
Allows a 0db or 20dB attenuation of the incoming RF signal.
Supported adapters: ASI87XX series

RF Level:
Shows the RF signal strength of the incoming RF signal in dBuV.
Supported adapters: ASI87XX series, ASI8921/8821

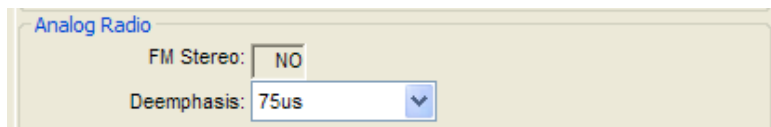### 12.2.2.2 Analog Radio

Figure 3. Analog Radio section of Tuner controls for ASI87XX and ASI8921/8821.

If an analog AM/FM tuner is present on the adapter then the following items are available.
Supported adapters: ASI87XX, ASI8921/8821

FM Stereo:
For analog FM, shows whether the signal is being received as stereo.

De-emphasis:
Sets the de-emphasis for analog radio. Available choices are:
      AM: none, 50us
      FM: 50 or 75us

12.2.2.3 PSD/RBDS

This control shows metadata that is contained in an analog FM broadcast. (The PSD information is for HD Radio broadcast metadata available on the ASI8914.)
Supported adapters: ASI8921/8821

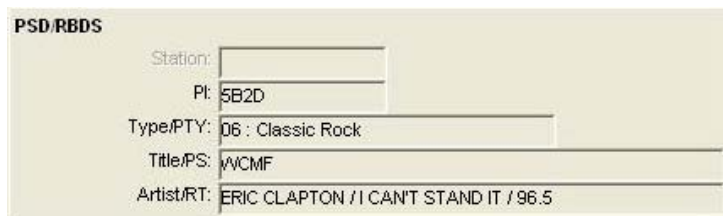### 12.2.2.3.1 RBDS - Analog FM

Figure 4. FM RBDS information as seen in ASIControl.

When an analog FM signal is being received that has RDS (Europe) or RBDS (United States) data, the following fields are available:

Station:
Not an RBDS field (a PSD field)

PI:
Short for Program Identification. A unique code that identifies the station. 5B2D is shown above.

PTY:
Short for Program Type. A code representing up to 31 different radio program types. RDS and RBDS definitions are different. In the above example the PTY code is 06, which represents in RBDS coding, Classic Rock type.

PS:
Short for Program Service. It is an eight-character string that represents the call letters or station identity. In this example WCMF is shown.

RT:
Short for Radio Text. This is a string up to 64 characters long. In the example shown, the current artist (ERIC CLAPTON) and song (I CAN'T STAND IT), as well as frequency (96.5) are shown.
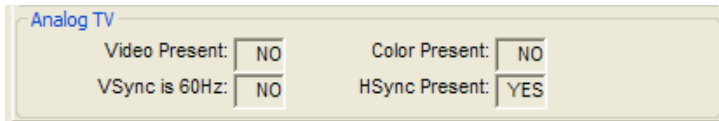
12.2.2.4 Analog TV

Figure 5. Analog TV section of Tuner controls.

If an analog TV tuner is present on the adapter then the following items are available.
Supported adapters: ASI8723, ASI8733

Video Present:
Shows whether video is present in the TV signal being received.

Color Present:
Shows whether color information is present in the TV signal being received.

Vsync is 60Hz:
Shows whether the vertical sync is 60Hz. This will be YES for NTSC and NO for PAL signals.

Hsync Present:
Shows whether the horizontal sync is present.Shows whether the horizontal sync is present.

12.2.3 Volume
The Volume control allows the audio signal's gain to be altered in the range of −100 to +20dB.
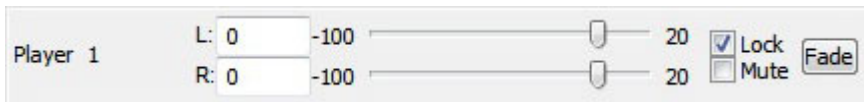
12.2.3.1 Interface

Figure 6. A Volume of a Player in ASIControl.

Left and **Right** display boxes:
Displays the gain settings that the slider bars are set to.

Slider Bars:
Click on the bar with the mouse and drag to desired gain. Once the bars are selected, the left and right arrow keys can also be used to change the settings.

Lock:
When checked, locks the left and right channels to the same gain value. When unchecked, allows the left and right channels to have independent gains. (Note that if an adapter is in SSX2 mode, the Player volumes cannot be unlocked to move the left and right channels independently.)

Mute:
Check this box to mute the volume.

Fade:
When pressed, automatically fades the volume to the opposite end of the scale.

12.2.3.2 Developer

12.2.3.2.1 Windows APIs

Wave/Mixer – MIXERCONTROL_CONTROLTYPE_VOLUME
This is a Windows standard volume control. Settings are in the range of 0 to 65535, where 0 completely mutes the output and 65535 is the maximum volume.
HPI – HPI_Volume APIs.
ASX – ASX_Volume APIs.
DirectSound – TBD.

12.2.3.2.2 Linux APIs

HPI –HPI_Volume APIs.
ASX –ASX_Volume APIs.
ALSA – TBD.

12.2.4 Meter

Meters in ASIControl are located on audio nodes and display the audio level as the audio signal passes through the node. Most AudioScience devices return both RMS and peak level readings and ASIControl displays both simultaneously.
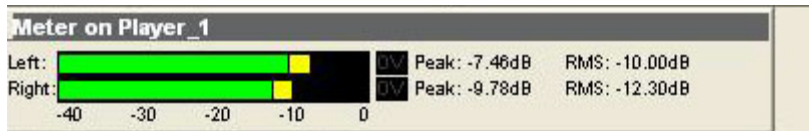
12.2.4.1 Interface

Figure 7. A stereo peak meter display. The RMS is the green bar and the peak is the yellow bar.

To the right of the peak meter is the absolute readings in dBFS. These can be useful when testing input tones of a specific known level.

12.2.4.2 Developer

12.2.4.2.1 Windows APIs

Wave/Mixer – Meters are read using mixerGetControlDetails() on a control of type signed and with type "Peak" the name "Peak Meter". A minimum value is 0 and maximum is 32767. The interface returns the peak readings only, not the RSM level. It confirms to expected Windows functionality.
HPI – Meters are read using the HPI_Meterxxx() API.
ASX – Meters are read using the ASX_Meter_xxx() API.
DirectSound – TBD.

12.2.4.2.2 Linux APIs

HPI – Meters are read using the HPI_Meterxxx() API.
ASX – Meters are read using the ASX_Meter_xxx() API.
ALSA – TBD.

12.2.5 Recorder

The Recorder control supports recording of an audio file.
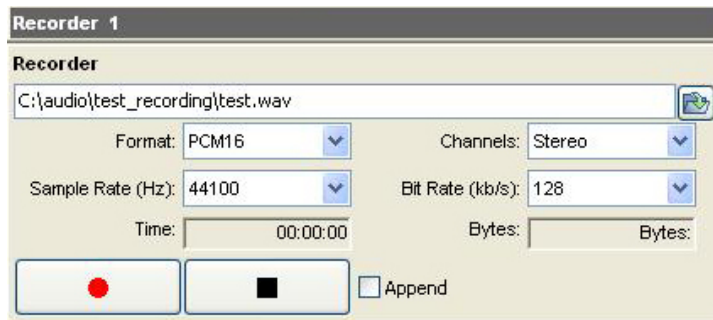
12.2.5.1 Interface

Figure 8. A recorder in ASIControl.

The first line of text contains the name given to the recorded file along with the location where it is to be saved. Below the filename is the file information, the record time and record bytes, the recorder control buttons and the file Append option.

12.2.5.2 How To Record a File

The first step in recording a file is to have audio coming into the adapter. This can be from a line-in or from one of the players in ASIControl. See appropriate sections in this datasheet to accomplish this. Next, the new file needs a name and place to be saved, or an existing audio file can be selected to be overwritten or appended to. Use the **file icon button** to navigate to the location to create the file and to give it a name, or to open a previously recorded file to overwrite or append to it. Next, from the dropdown arrows, select the number of "**Channels"**, the "**Sample Rate"**, the "**Format"**, and the "**Bitrate"** that the file should be recorded in.

Check the **Append** checkbox to save the audio to the end of an already existing file.

The file is now ready to be recorded. To start recording, press the **record button**. At this point the "**Time'** and "**Bytes'** fields report record time and the number of bytes of the file that have been recorded.

Once recording has started, the **stop** and **pause buttons** can be used to stop or pause the playback.

12.2.5.3 Developer

12.2.5.3.1 Windows APIs

Wave – use waveInOpen(), waveInStart() etc.
HPI – use HPI_InStreamxxx() functions.
ASX – use ASX_Recorder_xxx() functions.
DirectSound – TBD.

12.2.5.3.2 Linux APIs

HPI – use HPI_InStreamxxx() functions.
ASX – use ASX_Recorder_xxx() functions.
ALSA – TBD

/*AUDIOSCIENCE*

12.3 Antennas

AudioScience has tested and can recommend the following antenna configuration for use with the ASI8700 and ASI8900 series adapters.

The configuration is made up of an omni-directional FM whip antenna, plus multiple ferrite stick antennas, each oriented and tuned to pick up a particular AM station. The antenna's signals are mixed using a common 75-ohm cable TV splitter, which we have found has the necessary low end bandwidth to pass AM signals.

The FM antenna is made by Fanfare (http://www.fanfarefm.com) and is part number FM-2G. Besides FM stations, this antenna will also pickup strong AM stations.

The AM antenna is made by C. Crane (http://www.ccrane.com) and is part number TCA. This antenna has a tuning control that allows you to tune into a particular station using a dial on the front of the control.

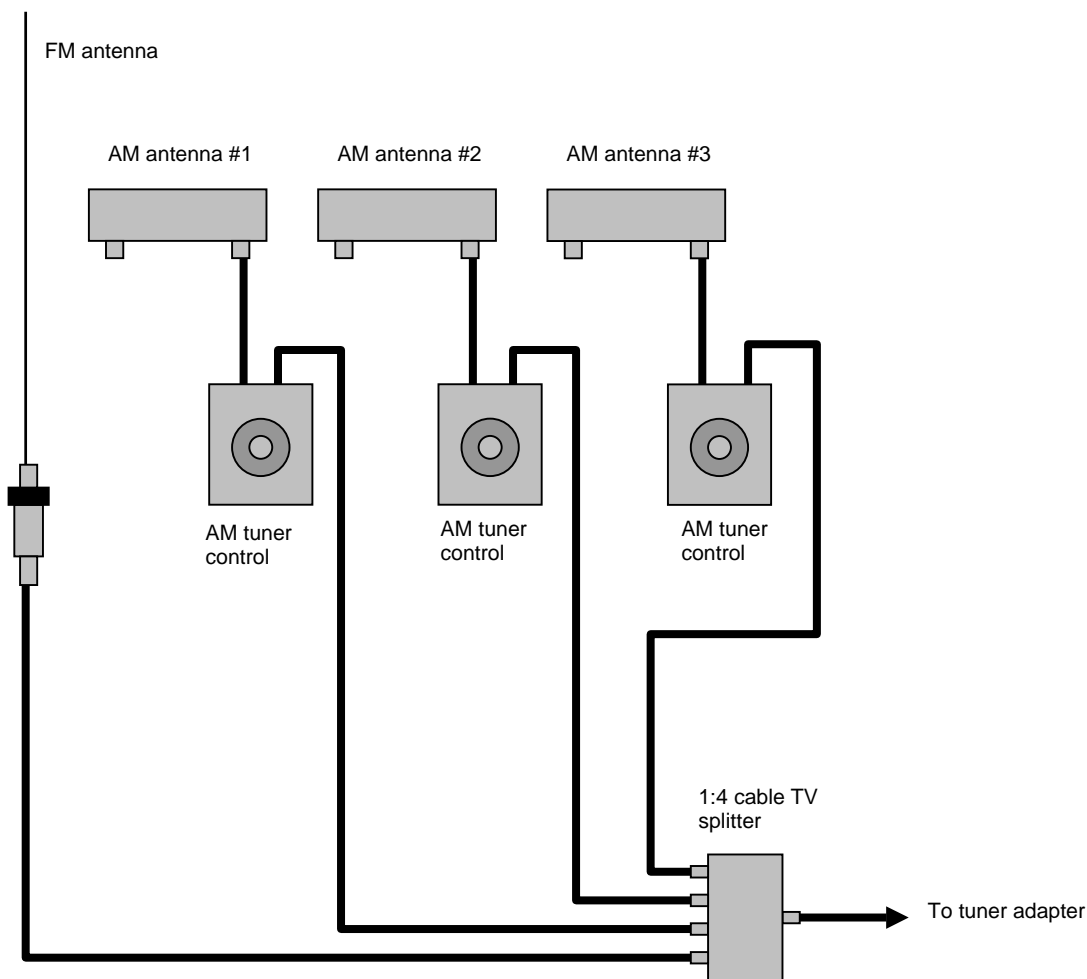The following diagram shows how three AM and the one FM antennas would be wired.

FM antenna

AM antenna #1   AM antenna #2   AM antenna #3

AM tuner control   AM tuner control   AM tuner control

1:4 cable TV splitter

To tuner adapter

Figure 9. Four antennas, three AM and one FM, wired together.

Figure 10. Four antennas, three AM and one FM, wired together

12.4 Per-Tuner External Antennas

The ASI8921/8821 allows each tuner to be connected to an individual external antenna rather than being fed from the F connector on the bracket. This is accomplished by jumpering the appropriate tuner to use the MCX jack as an RF signal input. MCX jacks are only available on ASI8921/8821-2000 and –2200 models.

The picture below shows the jumper positions for the external antenna for one of the two modules. The second module is the same

MCX connector   Jumper in position for external antenna

Jumper in position for internal feed from F connector
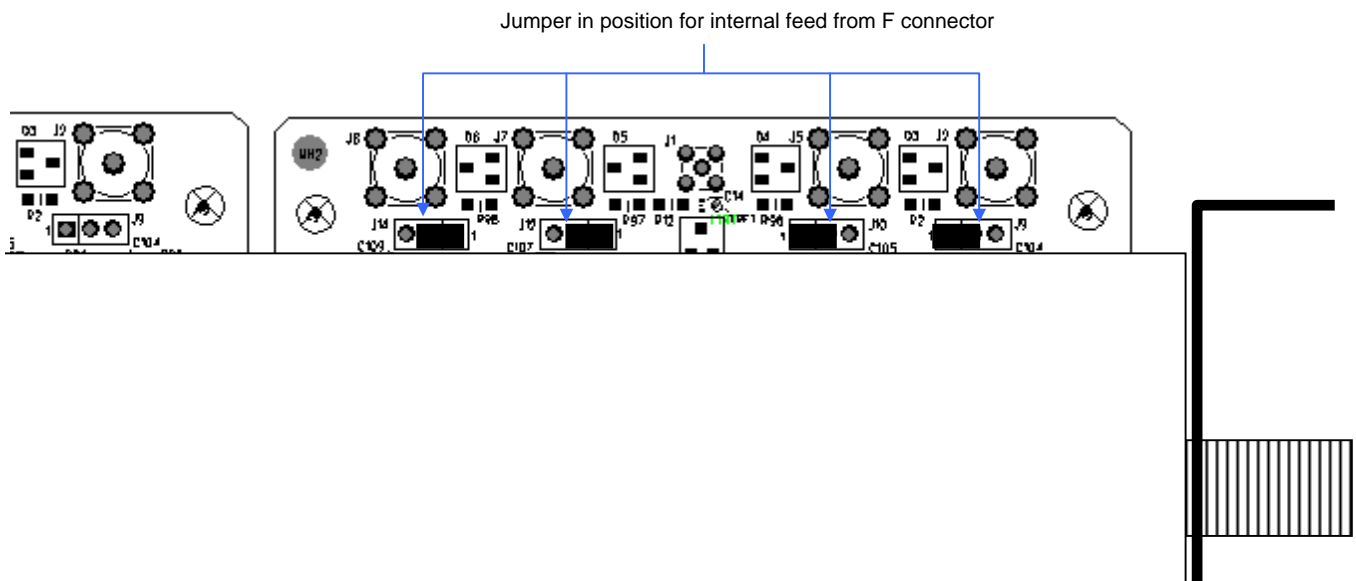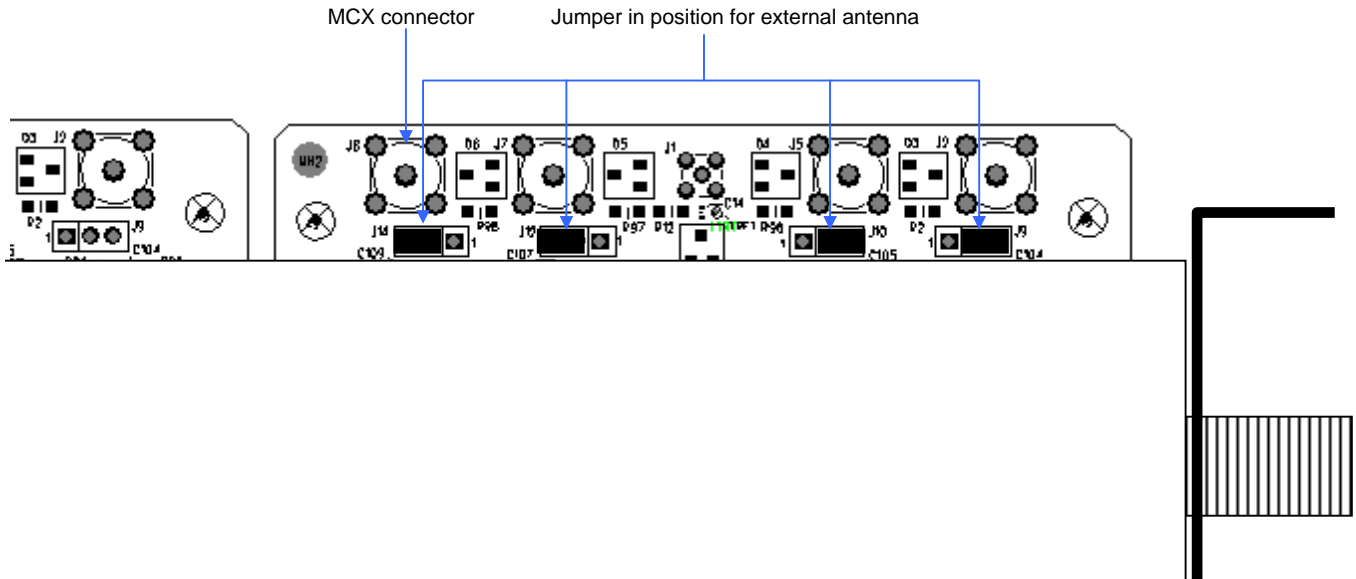
NOTE: There is no amplification of the RF signal when using the antenna via the MCX jack so the received signal strength (RF level) may be lower than when using the internal signal feed from the F connector.

AudioScience has available a cable (Part # CBL3001) that connects to the MCX jack and provides an F connector on the other end.

13 ERRATA

This section lists known issues for specific hardware revisions.

13.1 Rev D0

Tuner 5 through 8: Right channels are not present on the mini DB-50 connector

14 REFERENCES

14.1 RDS

Wright, Scott, 1997, "The broadcaster's guide to RDS", ISBN 0-240-80278-0

14.2 Specifications

SPCHPI.PDF - Hardware Programming Interface (HPI) Specification

SPCWAVX.PDF - WavX - AudioScience Windows Multimedia Extensions

These documents are available from www.audioscience.com in the Technical Info section.

<end>