

Wireless Audio/Video System

by Gerald Fitton

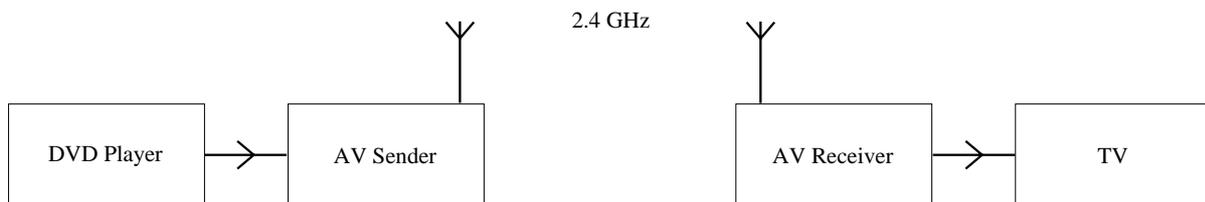
How can you watch a DVD or Sky TV in one room when your player is in a different room?

You can ‘pipe up’ your house with coaxial cable so that you can plug a TV into your ‘home network’ in any room and watch the output of the DVD player, the Video player, the Sky digibox, the Cable digibox or even the Freeview digibox.

An alternative is the ‘no wires’ solution which uses radio waves to transfer the audio and video signals from your ‘boxes’ to your TV. In this article I shall describe such a system and tell you about how well it works for me.

The System

The system consists of an Audio Video Sender (AV Sender) and an Audio Video Receiver (AV Receiver). The DVD player (or the Sky box or whatever you like) is connected to the AV Sender and the AV Receiver is connected to the TV in another room.



The DigiSender

The AV Sender in the picture is a beautiful grey box with an external aerial (which does not send the AV data—more about that later) and a couple of SCART input leads. This one is called “DigiSender”, a trade mark of the AEI Security & Communications Ltd from Sussex.



There are two SCART leads because you can connect the AV sender to two separate devices. For example you could connect SCART 1 to your DVD player and SCART 2 to your SKY digibox. In the picture of the rear of the AV Sender you can see a three position switch on the left marked "INPUT SELECT 1-AUTO-2".



There are four channels available in the 2.4GHz band for this system. They are: 2.414GHz, 2.432GHz, 2.450GHz and 2.468GHz. The switches which you see in the photograph labelled "AUDIO/VIDEO CHANNEL" can be used to select any one of these four channels.

More about the "IR" socket later.

The SCART input leads

I'd like you to look carefully at the SCART plug on the end of the lead. At the top of the picture is a standard SCART plug. At the bottom is a standard SCART socket. If you have something plugged into the only SCART socket of your DVD player then you can use the SCART which is on the end of this lead as a 'straight through' SCART connection.



A switched attenuator is included as part of the SCART socket so that, if the signal from the DVD or Sky box is too great then it can be changed with the “A/B” switch.

This model, the AEI DigiSender model, does not have a composite video input except through the SCART socket so that, if your device uses ‘Yellow, Red, White’ phono socket connectors rather than a SCART then you will need an adaptor.

One for All

The AV wireless system marketed by the Universal Electronics Company from The Netherlands is called “One for All”; you may have seen their infrared remote controls which can be used with many different electronic devices. One for All is cheaper than the AEI DigiSender but it has only one channel at 2.414 GHz.



You will see on the back panel that there is an “IR EYE” socket (more later) plus the video and audio ‘Yellow, Red, White’ phono sockets. A lead is supplied which has the usual Yellow, Red, White phono plugs at one end and a SCART at the other.

The AV Receivers

I am not going to include pictures of the AV Receivers for they are similar to the Senders except that there is no IR socket. However, there is a difference with the receiver which is the partner of the AEI DigiSender; it has both SCART and ‘Yellow, Red, White’ phono connectors. This extra facility makes installation at the receiver much more flexible.

Portable Use

Although the One for All AV sender has a power socket marked 18V 300mA I have found that it draws only 70mA at voltages from about 10V to 18V. I have used it with complete success from a portable 7AH 12V lead acid gel type battery. A battery of this size and weight can easily be clipped onto your belt. The AV Sender can be used in a portable installation.

I have hooked up the output of my digital video camcorder to this One for All AV Sender and transmitted the AV (Audio and Video) signal back to my not so portable DVD recorder. I was surprised to find that the signal over a 100 yard range is as perfect as you would expect from a system which uses composite video.

The One for All AV receiver does not like operating at 12 volts. The sound breaks up.

I decided to do a few portable tests using the AEI DigiSender. The AV Sender draws about 200mA. This is about three times the current drawn from the portable battery. The signal is just as good at 100 yards—I have not tried a longer range.

I found that I could transmit on Channel 1 (2.414GHz) using the AEI DigiSender and receive on either the AEI or One for All AV receiver. Similarly the transmissions from the One for All transmitter could be received on either receiver.

If the AEI DigiSender is set to Channel 4 (2.468 GHz) then there is no interference between it and the One for All system so we were able to use the two systems as a duplex (two way) AV communication system over a 100 yard range. It was good fun!

Another Use

The photograph below is taken from the back of one of my computers. It shows the sound card outputs in the lower part and some of the outputs from the video card in the upper part.



You will see that my video card has S-Video and Composite Video out sockets. The yellow phono socket in the picture marked “AV-OUT” is CV rather than AV out. I connected this to the yellow phono socket of the One for All AV Sender. My sound card has stereo audio out. With a suitable adaptor I coupled the ‘line out’ socket to the red and white phono sockets of the One for All AV Sender. Using this arrangement I have been able to record (remotely) on video tape and on a DVD recorder the dynamic (moving) screen display from the computer.

The Back Channel

Both the AEI DigiSender and the One for All systems have a ‘Back Channel’. The AV Receivers accept infrared (IR) pulses from an IR (remote) controller and these pulses are used to modulate a 433.92MHz ‘back channel’.

The AV Sender has a 433.92MHz receiver which outputs the pulses it receives to the IR socket shown in the photographs. The kit of parts (for both systems) includes an IR 'bulb', actually it is a light emitting diode (LED), which is plugged into the IR socket; this faithfully reproduces the pulses sent via the 'back channel' from the remote controller.

This 'back channel' allows you to control your DVD or Sky box etc using the IR remote from the location at which you have installed the AV Receiver.

The external aerials in the photographs are for this 'back channel' and not for the 2.4GHz AV signal. The 2.4GHz aerials are tucked away inside the boxes; you can't see them.

Performance

I have used both the AEI DigiSender and the One for All systems both here and in the house of my son (and four grandchildren). The pictures are of composite video (CV) quality. This is lower than S-Video quality and certainly less than the RGB (Red, Green, Blue) quality which I can receive from Sky and from DVD on my main TV set. Composite video is better than VHS video tape quality and the system does provide an excellent, totally stable picture.

The 100 yards at which I did most of my range testing is definitely not the limit of the system and this might lead to problems if neighbours decide to install wireless AV links which run on the same frequency as yours! The four channel AEI DigiSender is more expensive but does have four channels so if you get this problem then you can switch to a different channel.

Wireless Networking

I use wireless networking to link together a couple of my computers and it has been such a success that I shall soon link up a third machine. The frequencies allocated to this application in Europe (from 2.412GHz to 2.472GHz) do use the same 2.4GHz band as does the wireless AV systems I have described. By default most wireless computer networks use a frequency which goes by the name 'Channel 6'. This is close to the AV Channel called 'Channel 2' on the DigiSender. There is certainly potential for interference between the two services and I suggest that the best chance of avoiding it is to use Channel 4 of the AEI DigiSender.